

TWO CO-LOCATED EVENTS

PROGRAMME  
OVERVIEW

EXHIBITION  
GUIDE



Celebrating two  
decades of innovation

# SPIE. PHOTONICS EUROPE

[www.spie.org/pe](http://www.spie.org/pe)

**Conferences and Courses:** 7-11 April 2024

**Exhibition:** 9-10 April 2024

Palais de la Musique et des Congrès  
Strasbourg, France

# SPIE. OPTICAL SYSTEMS DESIGN

[www.spie.org/osd](http://www.spie.org/osd)

# SPIE. PHOTONICS EUROPE



Celebrating two decades of innovation

THE PREMIER EUROPEAN OPTICS AND PHOTONICS RESEARCH AND DEVELOPMENT EVENT

[www.spie.org/pe](http://www.spie.org/pe)

#SPIEPhotonicsEurope

Cutting-Edge Research | Exhibition | Ind



## Download the SPIE Conference and Exhibition App

### Enhance your SPIE conference experience

Download the mobile app to enrich your meeting experience. View events, exhibitors, and connect with participants all in the palm of your hand. The app is free, easy to use, and loaded with features designed for planning and connecting on the go.

Make the most of your time with these app features:

- » Real-time program updates
- » Plan exhibitor visits
- » Customize your schedule
- » Navigate the venue
- » Organize your meeting notes
- » Bookmark specific research
- » Add new connections to your contacts
- » Create meeting reports
- » And a whole lot more.



Get the App



### Explore the meeting with the SPIE App

THANK YOU TO OUR LOCAL SPONSORS FOR THEIR GENEROUS SUPPORT



#### 2024 PHOTONICS EUROPE SYMPOSIUM CHAIRS



**Francis Berghmans**  
Vrije Universiteit Brussel (Belgium)



**Thierry Georges**  
Oxxius (France)



**Anna Mignani**  
Istituto di Fisica Applicata "Nello Carrara" (Italy)



**Paul Montgomery**  
Univ. of Strasbourg (France)

# SPIE. OPTICAL SYSTEMS DESIGN

THE LATEST ADVANCES IN OPTICAL SYSTEMS APPLICATIONS, MATERIALS, AND PROCESSING

[www.spie.org/osd](http://www.spie.org/osd)

#SPIEOpticalSystems

Industry Programme | Training and Education

## Experience the energy of SPIE Photonics Europe + SPIE Optical Systems Design

Get ready to enjoy real conversations, hear the latest breakthroughs, and make important connections in person. Hear cutting-edge research at the only cross-disciplinary event highlighting compelling optics and photonics technologies.

**Conferences and Courses:** 7-11 April 2024

**Courses:** 7 April 2024

**Exhibition:** 9-10 April 2024

Palais de la Musique et des Congrès  
Strasbourg, France

### CONTENTS

**Floor Plans** ..... PAGES 2-3

**Sponsors** ..... PAGES 4-5

**Onsite Services** ..... PAGE 6

**Event Schedule** ..... Page 7

**Photonics Europe Hot Topics** ..... PAGES 8-9

**Optical System Design**

**Plenary Events** ..... PAGES 10-11

**Technical Events** ..... PAGE 12

**Social and Networking Events** ..... PAGE 13

**Photonics Marketplace** ..... PAGES 14-15

**Professional Development Events** ..... PAGE 16

**Courses** ..... PAGES 17

PHOTONICS EUROPE CONFERENCE  
SCHEDULE ..... PAGES 34-264

OPTICAL SYSTEMS DESIGN CONFERENCE  
SCHEDULE ..... PAGE 265-303

**Application Tracks** ..... PAGE 21

**Exhibition Guide** ..... PAGES 22-31

**SPIE Corporate Members** ..... PAGES 32-33

**SPIE Policies** ..... PAGES 304-305

2024 OPTICAL SYSTEMS DESIGN SYMPOSIUM CHAIRS



**Marta C. de la Fuente**  
ASE Optics  
Europe (Spain)



**Tina Kidger**  
Kidger Optics  
Associates  
(United Kingdom)



**Thierry Lépine**  
Institut  
d'Optique &  
Hubert Curien  
Lab (France)

COOPERATING ORGANISATIONS



# PALAIS DE LA MUSIQUE ET DES CONGRÈS

## Ground Floor Rez-de-chaussée



(\*) les galeries peuvent être utilisées en espaces d'exposition

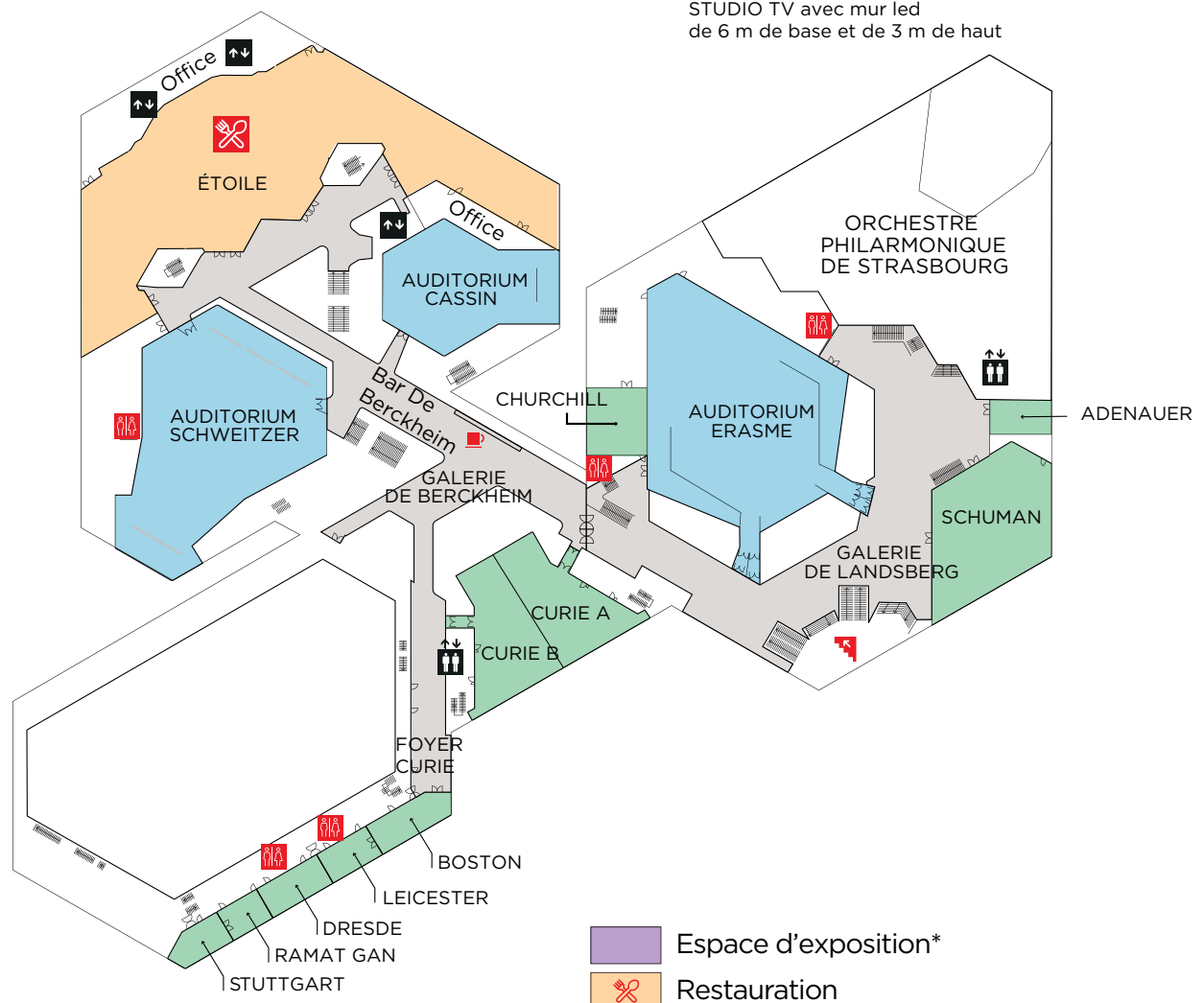
- Espace d'exposition\*
- Restauration
- Auditorium
- Salle de réunion/sous-commission

- ♿ Toilettes
- 👕 Vestiaires
- ⬆️⬆️⬆️ Monte charges
- ⬆️⬆️⬆️ Ascenseur
- ☺️ Bar



# First Floor 1er étage

CHURCHILL :  
STUDIO TV avec mur led  
de 6 m de base et de 3 m de haut



(\*) les galeries peuvent être utilisées en espaces d'exposition

- Espace d'exposition\*
- ✂ Restauration
- Auditorium
- Salle de réunion/sous-commission
- ♿ Toilettes
- 👕 Vestiaires
- ⬆️⬆️ Monte charges
- ⬆️⬆️ Ascenseur
- ☕ Bar

# Thank you to our sponsors for their generous support

## PLATINUM SPONSORS



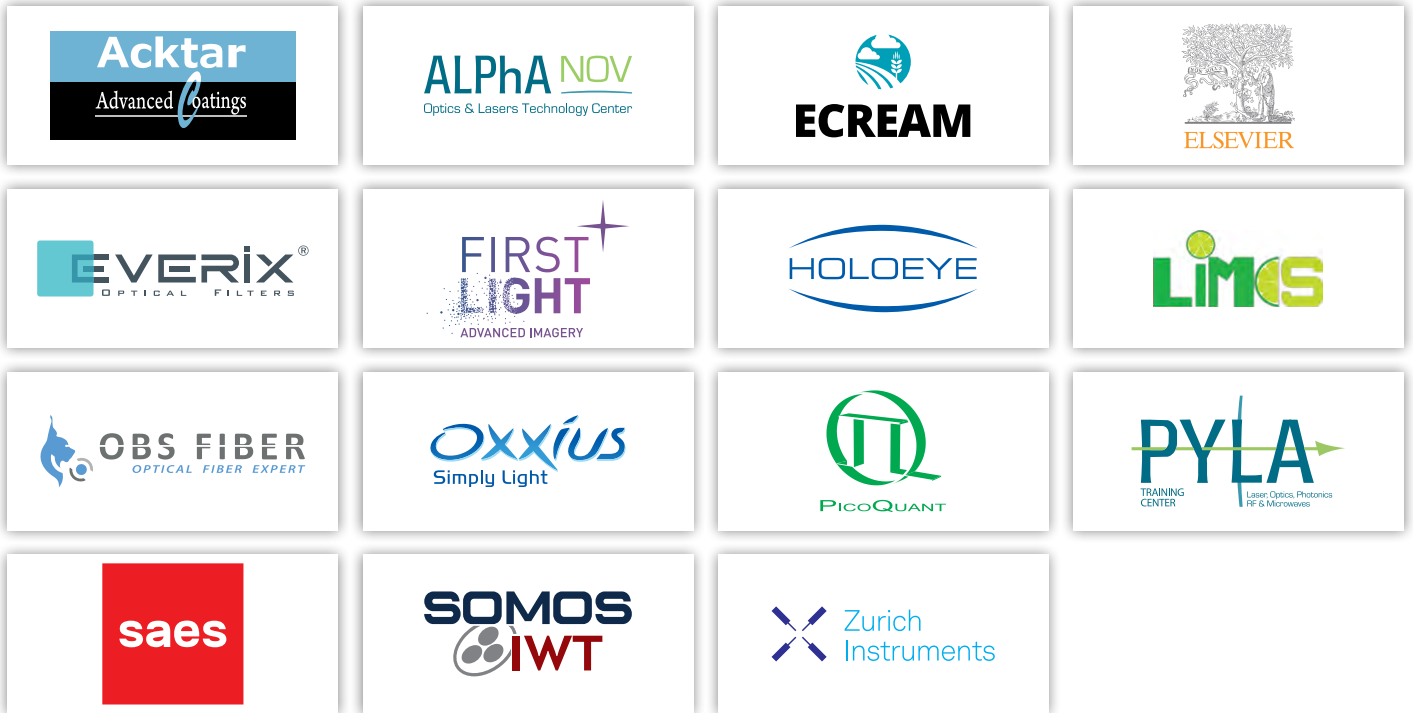
## SILVER SPONSORS



## CONFERENCE SPONSORS



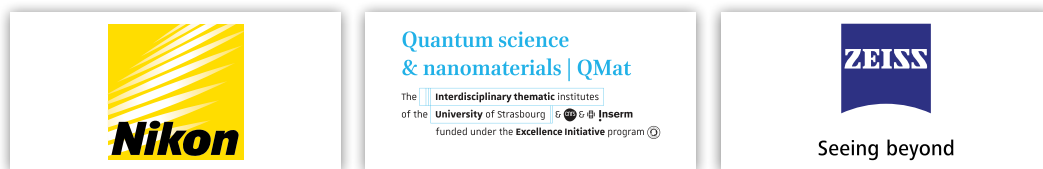
GOLD SPONSORS



SILVER SPONSORS



CONFERENCE SPONSORS



PROMOTIONAL PARTNERS



# ONSITE SERVICES

## Badge pick-up and registration hours

Palais de la Musique et des Congrès  
Main Foyer

Sunday 7 April	7:30 - 18:00
Monday 8 April	7:30 - 17:00
Tuesday 9 April	8:00 - 17:00
Wednesday 10 April	8:00 - 17:00
Thursday 11 April	8:00 - 16:00

(Thursday is conference registration only.)

## SPIE Cashier

Palais de la Musique et des Congrès, Entrance Schweitzer -  
Open during registration hours

### Registration payments

If you are planning to register onsite, your credit card payment will be processed during registration. If you wish to pay with cash or check, register at the "Need to Register" stations; you will be directed to the Cashier once you have completed registration except for final payment.

If you have already registered and wish to add a course, workshop or special event, you may do this online by signing into your SPIE account.

### Receipt and Certificate of Attendance

Preregistered attendees who need an SPIE-stamped receipt or attendees who need a Certificate of Attendance may obtain those at the Cashier.

### Badge Corrections

Badge corrections can be made at the Cashier. Please mark your badge with your changes before approaching the counter.

## Speaker Ready Room

Location: Galerie Schweitzer - Open during registration hours

All speakers must stop at the Speaker Ready Room to upload and preview their slide presentation files at least two hours before their scheduled session or the day before if they present in the first session. Speakers are not able to present using their own devices. All conference rooms have a laptop, projector, screen, lapel microphone, and laser pointer.

SPIE will record the audio plus screen content of all presentations; Recordings will be published on the SPIE Digital Library with author permission only.

Sunday 7 April	7:30 - 18:00
Monday 8 April	7:30 - 17:00
Tuesday 9 April	8:00 - 17:00
Wednesday 10 April	8:00 - 17:00
Thursday 11 April	8:00 - 16:00

## SPIE Course Materials

Location: Palais de la Musique et des Congrès, Registration Desk - Open during registration hours

Stop by to pick up course materials for the course you booked.

## SPIE Conference and Exhibition App Information

Search and browse the programme, special events, participants, exhibitors, courses, and more. Build your personalized schedule and sync with the online MySchedule tool. Free SPIE Conference App available for iPhone and Android phones. Information about restaurants and food options is also available on the App. Download the SPIE App: [spie.org/apps](http://spie.org/apps)

Our SPIE App developer will be onsite and available to answer any questions on its use or navigation and how to get the best user experience. We welcome your feedback.

## SPIE Luggage & Coat Check

Foyer Schweitzer . . . . . Daily: 8:00 - 20:00

Complimentary luggage, package, and coat storage are available. Please note the posted hours; no late pickup is available.

## Privacy Room

Location: Open during registration hours. Please see SPIE Cashier for access.

This room is available for nursing mothers, silent meditation, reflection, or prayer. There is no storage, running water, or refrigeration available in this space.

## SPIE Health and Safety products

Registration desk

Stop by to pick up face masks, hand sanitizer, and other safety products all free from SPIE.

## Urgent Message Line

An urgent message line is available during registration hours: +44 29 2089 4747.

## Lost and Found

Location: Palais de la Musique et des Congrès, Cashier - Open during registration hours

Found items will be kept at SPIE Cashier in the Registration area during the meeting and available only during registration hours. At the end of the day, all items will be turned over to the security team of the Palais.

## Food and Beverage Services

Complimentary coffee will be available at coffee stations in the following locations:

Monday and Thursday . . . . . open during registration hours

Location: Galerie Schweitzer

Tuesday and Wednesday . . . . . open during registration hours

Location: Exhibition Hall, Hall Rhin

## Food & Refreshments for Purchase

Location: Palais de la Musique et des Congrès Location

Monday and Thursday

Food Trucks will be located near the front entrance of the facility for attendees to purchase lunch.

Tuesday and Wednesday

Food stations will be available in Hall Rhin on Tuesday and Wednesday. Sandwiches, salads, and beverages will be available.

Restaurants

Strasbourg city centre has a great range of restaurants in many price categories. A site such as Trip Advisor will help you narrow down the selection by food, price, and location.



# EVENT SCHEDULE

Sunday 7 April	Monday 8 April	Tuesday 9 April	Wednesday 10 April	Thursday 11 April
<b>SC1217: Design, Modeling and Fabrication Techniques for Micro-Optics: Applications to Display, Imaging, Sensing and Metrology</b> 8:30 - 12:30	<b>Hot Topics I</b> 9:00 - 11:00 <i>Auditorium Schweitzer, Niveau/Level 0</i>	<b>Tuesday Plenary Session</b> 9:00 - 10:35 <i>Auditorium Schweitzer, Niveau/Level 0</i>	<b>Understanding interaction light - biological surfaces: possibility for new electronic materials and devices (PhoBioS)</b> 8:00 - 16:00 <i>Londres 1, Niveau/Level 0</i>	<b>11th Sino-French Photonics and Optoelectronics PHOTONET International Research Network Workshop</b> 8:45 - 16:00 <i>Churchill, Niveau/Level 01</i>
<b>SC1338: Display Engines for Mixed Reality: Optical Design &amp; Technology</b> 8:30 - 12:30			<b>ICFO meeting EU Digital Innovation Hubs</b> 8:00 - 17:00 <i>Contades, Hilton Strasbourg</i>	<b>Hot Topics III</b> 9:00 - 10:35 <i>Auditorium Schweitzer, Niveau/Level 0</i>
<b>SC1313: Designing Illumination Optics</b> 8:30 - 17:30	<b>Turn Your Research i</b> 9:00 - 10:30 <i>Luxembourg, Niveau/Level 0</i>	<b>Photonics Marketplace I</b> 10:00 - 16:30 <i>Photonics Marketplace, Rhin Hall</i>	<b>Photonics Marketplace II</b> 10:00 - 16:00 <i>Photonics Marketplace, Rhin Hall</i>	
	<b>Light Interference Art-Science Exhibition</b> 10:00 - 17:00 <i>Foyers Level 0 and 1</i>			
	<b>Master Your Speaking Skills: befriend stress and optimize your body language</b> 10:45 - 12:15 <i>Luxembourg, Niveau/Level 0</i>			
		<b>SPIE Fellow &amp; Senior Member Luncheon</b> 12:30 - 13:30 <i>Orangerie C/D, Hilton Strasbourg</i>	<b>Lunch &amp; Learn: Creating Inclusive Workplaces</b> 12:00 - 13:00 <i>Galerie De Landsberg, Niveau/Level 01</i>	
<b>SC1218: Optical Technologies and Architectures for Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) Head-Mounted Displays (HMDs)</b> 13:30 - 17:30	<b>Monday Plenary Session</b> 13:30 - 15:15 <i>Auditorium Schweitzer, Niveau/Level 0</i>	<b>The 7 Habits of Highly Effective Academic Team Leads</b> 13:00 - 14:45 <i>Ramat Gan, Niveau/Level 01</i>		
	<b>Women in Optics Meetup</b> 15:00 - 16:00 <i>Galerie, Hilton Strasbourg</i>			
		<b>Hot Topics II</b> 16:30 - 18:05 <i>Auditorium Schweitzer, Niveau/Level 0</i>	<b>LGBTQ+ Meetup</b> 16:00 - 17:00 <i>Galerie, Hilton Strasbourg</i>	
		<b>SPIE Student Meetup!</b> 17:00 - 18:00 <i>Galerie Erasme, Niveau/Level 0</i>	<b>Posters-Wednesday</b> 17:45 - 19:45 <i>Galerie Schweitzer, Niveau/Level 0</i>	
	<b>Welcome Reception</b> 18:00 - 20:00 <i>Galerie Erasme, Niveau/Level 0</i>	<b>Posters-Tuesday</b> 18:10 - 20:00 <i>Galerie Schweitzer, Niveau/Level 0</i>	<b>SPIE Members Reception</b> 19:30 - 20:30 <i>Galerie Erasme, Niveau/Level 0</i>	

# SPIE PHOTONICS EUROPE HOT TOPIC PRESENTATIONS

Hear from world-class speakers sharing their research and perspectives.

## Hot Topics I

8 April 2024 • 9:00 - 11:00

Auditorium Schweitzer, Niveau/Level 0

Join us for the Symposium welcome and outstanding experts discussing the newest research in quantum technologies and the new breakthroughs in organic photonics research.



9:00 - 9:10

### Welcome and Opening Remarks

**Paul Montgomery**

Univ. of Strasbourg (France)  
2024 Symposium Chair

9:10 - 9:15

### Welcome To Strasbourg, Mme Pia Imbs

Présidente de l'Eurométropole (France)

9:15

### Introduction to Hot Topics



9:20 - 10:05

### Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing

**Stefanie Barz**

Ctr for Integrated Quantum Science and Technology, Univ. Stuttgart (Germany)

Barz will explore various facets of photonic quantum systems and their application in photonic quantum technologies. Firstly, she will focus into quantum foundations and by discuss quantum interference, a key element in photonic quantum technologies. She will highlight how the distinguishability and mixedness of quantum states influence the interference of multiple single photons – and demonstrate novel schemes for generating multipartite entangled quantum states. She will then address photonic quantum computing, specifically focusing on the building blocks of photonic quantum computers. This includes the generation of resource states essential for photonic quantum computing. Then shift to photonic quantum networks, covering both their hardware aspects and showcasing quantum-network applications that extend beyond bi-partite quantum communication. Lastly, will outline how photonic integration facilitates the scalability of these systems and discuss the associated challenges.



10:10 - 10:55

### Organic photonics for biomedical research and next generation displays

**Malte Gather**

Humboldt Centre for Nano- and Biophotonics, Univ. zu Köln (Germany)

Joining the rich photophysics of organic light-emitting materials with the exquisite sensitivity of optical resonances to geometry and refractive index enables a plethora of devices with unusual and exciting properties. Examples from my team include bio-integrated microlasers for real time sensing of cellular activity and long-term cell tracking, as well as the development of photonic implants with extreme form factors and wireless power supply that support thousands of individually addressable organic LEDs and thus allow optogenetic targeting of neurons deep in the brain with unprecedented spatial control. Very recently, by driving the interaction between excited states in organic materials and resonances in thin optical cavities into the strong coupling regime, we unlocked new tuning parameters which may play a crucial role in the next generation of TVs and computer displays to achieve even more saturated colour while retaining angle-independent emission characteristics.

## Hot Topics II

9 April 2024 • 16:30 - 18:05

Auditorium Schweitzer, Niveau/Level 0

Hear the world-renowned speakers present the latest in innovations in photonics computing and 3D laser nanoimprinting.



16:30 - 16:35

### Welcome and Opening Remarks

Speaker Introduction

**Anna Mignani**

Istituto di Fisica Applicata  
"Nello Carrara" (Italy)  
2024 Symposium Chair



16:35 - 17:20

### Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing

**Kathy Lüdge**

Technische Univ. Ilmenau (Germany)

Optical cavities with nonlinear elements and delayed self-coupling are widely explored candidates for photonic reservoir computing (RC). For time series prediction applications that appear in many real-world problems, energy efficiency, robustness and performance are key indicators. With this contribution I want to clarify the role of internal dynamic coupling and timescales on the performance of a photonic RC system and discuss routes for optimization.

By numerically comparing various delay-based RC systems e.g., quantum-dot lasers, spin-VCSEL (vertically emitting semiconductor lasers), and semiconductor amplifiers regarding their performance on different time series prediction tasks, to messages are emphasized: First, a concise understanding of the nonlinear dynamic response (bifurcation structure) of the chosen dynamical system is necessary in order to use its full potential for RC and prevent operation with unsuitable parameters. Second, the input scheme (optical injection, current modulation etc.) crucially changes the outcome as it changes the direction of the perturbation and therewith the nonlinearity. The input can be further utilized to externally add a memory timescale that is needed for the chosen task and thus offers an easy tunability of RC systems.



17:20 - 18:05

### General-purpose programmable integrated photonics processors: what things can you do with them?

**José Capmany Franco**

Univ. Politècnica de València (Spain)

Programmable photonic circuits manipulate the flow of light on a chip by electrically controlling a set of tunable analog gates connected by optical waveguides. Light is distributed and spatially rerouted to implement various linear functions by interfering signals along different paths. A general-purpose photonic processor can be built by integrating this flexible hardware in a technology stack comprising an electronic monitoring and controlling layer and a software layer for resource control and programming. This processor can leverage the unique properties of photonics in terms of ultra-high bandwidth, high-speed operation, and low power consumption while operating in a complementary and synergistic way with electronic processors.

This talk will review the recent advances in the field and it will also delve into the potential application fields for this technology including, communications, 6G systems, interconnections, switching for data centers and computing.

## Hot Topics III

11 April 2024 • 9:00 - 10:35

Auditorium Schweitzer, Niveau/Level 0

Top the week with the latest news on integrated photonics processors and the newest discoveries in optical and optoacoustic technologies for biology and medicine



9:00 – 9:05

### Welcome and Opening Remarks

Speaker Introduction

**Thierry Georges**

Oxxius (France)

2024 Symposium Chair



9:05 - 9:50

### 3D laser nanoprinting

**Martin Wegener**

Institute of Nanotechnology, Karlsruhe

Institute of Technology (Germany)

3D laser nanoprinting based on multi-photon absorption (or multi-step absorption) has become an established commercially available and widespread technology. Here, we focus on recent progress concerning increasing print speed, improving the accessible spatial resolution beyond the diffraction limit, increasing the palette of available materials, and reducing instrument cost.



9:50 - 10:35

### Listening to light: going beyond optical imaging using optoacoustics

**Vasilis Ntziachristos**

Helmholtz Zentrum München GmbH

(Germany)

Biological discovery is a driving force of biomedical progress. With rapidly advancing technology to collect and analyze information from cells and tissues, we generate biomedical knowledge at rates never before attainable to science. Nevertheless, conversion of this knowledge to patient benefits remains a slow process. To accelerate the process of reaching solutions for healthcare, it would be important to complement this culture of discovery with a culture of problem-solving in healthcare.

The talk focuses on recent progress with optical and optoacoustic technologies, as well as computational methods, which open new paths for solutions in biology and medicine. Particular attention is given on the use of these technologies for early detection and monitoring of disease evolution. The talk further shows new classes of imaging systems and sensors for assessing biochemical and pathophysiological parameters of systemic diseases, complement knowledge from -omic analytics and drive integrated solutions for improving healthcare.



# SPIE OPTICAL SYSTEMS DESIGN PLENARY PRESENTATIONS

Hear from world-class speakers sharing their research and perspectives.

## Monday Plenary Session

8 April 2024 • 13:30 - 15:15 | Auditorium Schweitzer, Niveau/Level 0

Hear world-class experts discussing the future of optical system and lens design in AI era, and the progress of freeform optics for illumination.



13:00 - 13:40

### Welcome and Opening Remarks

**Thierry Lepine**

Institut d'Optique & Hubert Curien Lab  
(France)  
2024 Symposium Chair



13:45 - 14:30

### Future of optical system and lens design in the AI era

**Simon Thibault**

Univ. Laval (Canada)



13:40-13:45

### Speaker Introduction

**Marta C. de la Fuente**

ASE Optics Europe (Spain)  
2024 Symposium Chair



**Tina Kidger**

Kidger Optics Associates  
(United Kingdom)  
2024 Symposium Chair

In this presentation, I will first give a brief history of how AI has impacted optical system design since 40 years. Then I will use examples to discuss the extraordinary acceleration in works over the past 5 years, the choices that have or haven't been made, and the importance of having access to source code from publications. Finally, I will conclude with some thoughts on what may or may not lie ahead, and how we can introduce these new technologies into the training of future optical system designers.



14:30 - 15:15

### Freeform optics for illumination: past, present and future

**Julius A. Muschaweck**

JMO GmbH (Germany)

Freeform optics for illumination, pioneered over 20 years ago, are now widely used to light up streets, automobiles, architecture and more. But many questions remain: Do we have good, accessible design methods, especially for extended sources? Do we have proven processes to estimate and specify tolerances, to ensure full production yield without overengineering? Do we fully understand diffractive structures on freeform surfaces? The talk discusses the progress of design and manufacturing methods over the last 30 years, shows the knowledge gaps we're suffering from, and concludes with an outlook to a non-obvious but exciting new approach for coherent light: What happens when we combine freeform surfaces with scattering and spatial light modulation?



---

## Tuesday Plenary Session

9 April 2024 • 09:00 - 10:35 | Auditorium Schweitzer, Niveau/Level 0

Tuesday plenary session showcases captivating presentations on discoveries and perspectives in lens design and on the manufacturing of segments for the Extremely Large Telescope (ELT).



9:00 – 9:05

### Welcome and Opening Remarks

**Thierry Lepine**  
Institut d'Optique & Hubert Curien Lab  
(France)  
2024 Symposium Chair



9:50 - 10:35

### Manufacturing ELT M1 segments: large optics in a smart factory

**Camille Frapoli**  
Safran Reosc (France)

In 2017, the European Southern Observatory (ESO) awarded a contract for the Polishing, integration and final figuring of the Segment Assemblies of the primary mirror (M1) for the Extremely Large Telescope (ELT) to Safran Reosc. Since then, the design and commissioning of a production unit dedicated to ELT M1 has been accomplished and the plant has been producing many mirrors since spring 2022. We will introduce the smart factory, its processes and their automation that enabled reaching the current throughput of one mirror per day. We will then present the status of the project, some lessons learned and highlight the successes that have been achieved so far.



### Speaker Introduction

**Marta C. de la Fuente**  
ASE Optics Europe (Spain)  
2024 Symposium Chair



**Tina Kidger**  
Kidger Optics Associates  
(United Kingdom)  
2024 Symposium Chair



9:05-9:50

### Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?

**Julie L. Bentley**  
The Institute of Optics,  
Univ. of Rochester (United States)

Rudolf Kingslake is widely regarded as one of the founders of modern optical design. When educating his students at The Institute of Optics, Professor Kingslake championed the importance of lens design fundamentals as a complement to computer-aided design. At that time, ray tracing speed was a major bottleneck in the lens design process. Now that lens designers can trace rays in fractions of a second and have access to powerful computational tools like global optimization and AI are these same fundamentals needed? Should we keep teaching them? One of Kingslake's biggest fears was that we would forget "our laboriously acquired knowledge of geometrical optics and substitute for it the mathematical problem of optimizing a merit function". In this talk we'll take a closer look at several of these forgotten problems and discuss how their solutions are still relevant for modern lens design today.

# TECHNICAL EVENTS



## Posters-Tuesday

9 April 2024 • 18:10 - 20:00

Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe and Optical Systems Design poster session on Tuesday evening. Feature posters from selected conferences will be represented. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

### Poster Setup: Tuesday 10:00 - 17:30

Poster authors, view poster presentation guidelines and set-up instructions at:

<http://spie.org/EPE/poster-presentation-guidelines>

## Posters-Wednesday

10 April 2024 • 17:45 - 19:45

Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Feature posters from selected conferences will be represented. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

### Poster Setup: Wednesday 10:00 - 17:30

Poster authors, view poster presentation guidelines and set-up instructions at:

<http://spie.org/EPE/poster-presentation-guidelines>

## 11th Sino-French Photonics and Optoelectronics PHOTONET International Research Network Workshop

11 April 2024 • 8:45 - 16:00 | Churchill, Niveau/Level 01

The PHOTONET International Research Network (IRN) was created in 2015 by the French National Centre for Scientific Research (CNRS) in order to support and develop over long-term existing collaborations, as well as new partnerships, between French and Chinese groups, laboratories, and universities, in the fields of optoelectronics, photonics, and biomedical optics.

This workshop aims to bring together a large community of scientists and engineers working on fundamental concepts in these technology areas as well as methodological developments of innovative solutions covering three key research axes in photonics: (i) integrated optics and optical communications, (ii) emerging materials and concepts in photonics, and (iii) biomedical optics and biophotonics.

# SOCIAL AND NETWORKING EVENTS

Connect with your colleagues in relaxed gatherings throughout the event

## Light Interference Art-Science Exhibition

8 April 2024 • 10:00 - 17:00 | Foyers Level 0 and 1

Following the success of “Light Culture” at SPIE Photonics Europe in 2018, taking a look back at holography and the history of 3D imaging, and “Light Work/s” in 2022 exploring the frontier between art and science in the field of light, imaging and photonics, “Light Interference” looks at the different ways in which light can “interfere” with matter. The exhibition will mainly be based on the works of the French artist, Lucien Bitaux (French), who has been commissioned to present his work in this field, together with a series of photos on the theme of interference and a “montage” of video clips of research carried out using interference in the ICube Laboratory in Strasbourg. Lucien Bitaux is a young artist who seeks ways of capturing and showing reality, with photography, optical capture and light projection being his favorite mediums. Graduated from ENSAD (Paris), he has recently begun a doctoral thesis in artistic creation. In “Light Interference”, he presents three of his major works: “Phenomenological images”, a series of engraved photos; “Resonances”, a large plastic print of organic materials, and “Nadir - Picture Elements Explorer”, a complete installation of working machine, camera targets and wall of LCD screens. In parallel, there will be information boards associated with the different works of art discussing the related artistic and scientific aspects. “Light Interference” reveals different ways in which light can interfere with matter, a central theme of SPIE Photonics Europe, bringing together art and research and raising fundamental questions of how we understand physical phenomena and how they can be used to tackle some of today’s challenges in society. To open the exhibition, there will be an official “vernissage” during the conference reception on the Monday evening. The exhibition will be on show throughout the Strasbourg Convention Centre and will also be open to high school classes. The exhibition is organized by Christine Montgomery in collaboration with ICube and SPIE.

## Women in Optics Meetup

8 April 2024 • 15:00 - 16:00 | Galerie, Hilton Strasbourg

Join us for an informal meetup of women in optics.

## Welcome Reception

8 April 2024 • 18:00 - 20:00  
Galerie Erasme, Niveau/Level 0

All attendees are invited to the Welcome Reception. Relax, socialize, enjoy the refreshments, and explore the “Light Interference” Art-Science Exhibition. Please remember to wear your registration badge. Dress is casual.

## SPIE Fellow & Senior Member Luncheon

9 April 2024 • 12:30 - 13:30  
Orangerie C/D, Hilton Strasbourg

All Fellow and Senior Members of SPIE are invited to join your colleagues for an informal SPIE hosted lunch.

## SPIE Student Meetup!

9 April 2024 • 17:00 - 18:00 | Galerie Erasme, Niveau/Level 0

All Student Attendees, Student Conference Support Award Winners, and Student Chapter Members are welcome!

## Lunch & Learn: Creating Inclusive Workplaces

10 April 2024 • 12:00 - 13:00  
Galerie De Landsberg, Niveau/Level 01

Join us for a lunchtime panel discussion on how we can foster inclusive and equitable workplaces. Our panelists will detail their experiences as women working in the field of optics and photonics and share takeaways from these experiences. We’ll ask them to share their advice on to navigate your career and how we can all work together to build the inclusive and equitable workplaces we need.



Moderator  
**Jessica Wade**  
Imperial College London



Panelists  
**Agnes Hübscher**  
Edmund Optics



**Hamideh Salehi**  
University of  
Strasbourg



**Anna Mignani**  
Institute of  
Applied Physics  
“Nello Carrara”

## LGBTQ+ Meetup

10 April 2024 • 16:00 - 17:00 | Galerie, Hilton Strasbourg

Come join us and socialize and network with other LGBTQ+ scientists and allies in the optics and photonics community.

## SPIE Members Reception

10 April 2024 • 19:30 - 20:30  
Galerie Erasme, Niveau/Level 0

All SPIE Members are cordially invited to a reception in their honour. We invite you to enjoy refreshments while engaging with new colleagues and re-connecting with long-time friends.

Please wear your registration badge and Member ribbon. New SPIE Members who joined on site must bring registration receipt for proof of membership.



# PHOTONICS MARKETPLACE

Valuable information for anyone—from engineers to programme managers—looking for the latest on business insights. Join your peers to hear industry leaders address the markets and opportunities for photonics in Europe, State of the Art Overviews, Product Demonstrations, and the latest funding information in the Horizon Europe programme.

## Photonics Marketplace I

9 April 2024 • 10:00 - 16:30 | Photonics Marketplace, Rhin Hall

Listen to a wide range of opportunities and developments in the photonics industry - industry trends, European funding, technical overviews, exhibitor product demonstrations, and finally, the winners in the 2024 Innovation Village competition.

10:00 - 10:45

### Product Demonstrations



10:00 - 10:30

#### Defect automatic detection on transparent materials with a technology based on deflectometry

**Quentin Peryani**  
V-Optics (France)

10:45 - 11:45

### Global Market Trends



10:45 - 11:00

#### Global market trends

**Andrew Brown**  
Sr Director, Global Business Development,  
SPIE (United States)



11:00 - 11:15

#### Silicon photonics market and applications: from optical transceivers to emerging uses

**Eric Mounier**  
Chief Analyst, Fellow, Yole Development  
(France)



11:15 - 11:30

#### Investment (fundraising) in photonics

**Benoît d'Humières**  
Consultant, TEMATYS (France)



11:30 - 11:45

#### Industry trends, benchmarks and future

**John R. Lincoln**  
Chief Executive, Photonics Leadership Group/  
Harlin Ltd. (United Kingdom)

13:00 - 13:30

### Product Demonstrations



#### Acktar's ultra-black coatings

**Alexander Telle**  
Acktar (France)

14:00 - 15:00

### State of the Art Overviews



14:00 - 14:30

#### "Planting" optical fibers along with trees: can optical fiber sensors benefit Precision Agriculture?

**Stavros Pissadakis**  
IESL, Foundation for Research and  
Technology (FORTH) (Greece)



14:30 - 15:00

#### How mixed reality and augmented reality head-mounted display systems can assist surgeons

**Luc Soler**  
CEO, Visible Patient (United States)

15:00 - 16:30

### Product Demonstrations



15:00 - 15:30

#### Multibeam: a new laser technology to boost productivity of industrial material processing A new laser technology to boost productivity of industrial material processing.

**Florent Thibault**  
QIOVA



15:30 - 16:00

#### EKSPLA tunable high repetition rate OPO systems and their application examples for multimodal photoacoustic microscopy

**Giedrius Kudaba**  
EKSPLA



---

## Understanding interaction light - biological surfaces: possibility for new electronic materials and devices (PhoBioS)

10 April 2024 • 8:00 - 16:00 | Londres 1, Niveau/Level 0

Project meeting for “Understanding interaction light - biological surfaces: possibility for new electronic materials and devices (PhoBioS)” COST action.

---

## ICFO meeting EU Digital Innovation Hubs

10 April 2024 • 8:00 - 17:00 | Contades, Hilton Strasbourg



---

## Photonics Marketplace II

10 April 2024 • 10:00 - 16:00 | Hall Rhin, Photonics Marketplace, Rhin Hall

Listen to a wide range of opportunities and developments in the photonics industry — industry trends, European funding, technical overviews, exhibitor product demonstrations, and finally, the winners in the 2024 Innovation Village competition.

10:15 - 12:00

### Horizon Europe: Funding opportunities and Open Science Policies



10:15 - 10:20

### Introduction

**Anna Mignani**

Istituto di Fisica Applicata “Nello Carrara” (Italy)

10:20 - 10:45

### Open Science Policies and Research Assessment at the European Research Council (ERC)



**Anna Pelagotti**

European Research Council (Belgium)

10:45 - 11:10

### European Research Council calls: scientific excellence at the basis of frontier research



**Vittorianna Tasco**

European Research Council (Belgium)

11:10 - 11:35

### The EU Photonics Partnership - Current Activities and Funding Opportunities



**Sybille Niemeier**

Photonics 21, Coordinator Photonics Partnership Secretariat Brussels (Germany / Belgium)



11:35 - 12:00

### PhotonHub Europe: a unique one-stop-shop photonics innovation hub for European SME's

**Lien Smeesters**

PhotonHub (Belgium)

13:30 - 14:00

### State of the Art Overviews

13:30 - 14:00

### Laser technologies for advanced manufacturing



**John Lopez**

Club Laser et Procédés and Univ. of Bordeaux (France)

14:00 - 14:30

### High-speed imaging, history, and state of the art



**Wilfried Uhring**

Univ. of Strasbourg (France)

14:45 - 16:00

### Innovation Village Announcement and Ceremony

# PROFESSIONAL DEVELOPMENT EVENTS

Enhance your career and hone your skills through these development events

---

## Turn Your Research into a Memorable Pitch

8 April 2024 • 9:00 - 10:30 | Luxembourg, Niveau/Level 0

Learn fundamental aspects of mastering your elevator pitch to capture your audience and communicate your research in this mini-workshop.



**Abigail Swillens**  
Clever Coyote

In this mini-workshop, attendees will learn fundamental aspects of crafting your elevator pitch. This course will cover content strategy, as well as delivery style, to create a genuine, captivating storyline your listeners will want to hear more about.

### INTENDED AUDIENCE

This workshop is open to all with a technical attendee badge. No advance registration is required. However, seating is limited and will be granted on a first-come, first-served basis. Students and those in their early careers may find this course especially valuable.

---

## Master Your Speaking Skills: befriend stress and optimize your body language

8 April 2024 • 10:45 - 12:15 | Luxembourg, Niveau/Level 0

Master your pitch and take the next steps towards captivating your audience during presentations in this mini-workshop.

**Abigail Swillens**  
Clever Coyote

Everyone experiences stress, imposter syndrome, or doubt when invited to present their research for the first (or Nth!) time. In this mini-workshop, attendees will master their elevator pitch and use it as a foundation to take their presentations to the next level. This course will refine your live audience communication style, from word choice to body language, so you can be confident in creating a positive and memorable presentation. This course can be taken independently or in conjunction with the prior mini-workshop, "Turn Your Research into a Memorable Pitch."

### INTENDED AUDIENCE

This workshop is open to all with a technical attendee badge. No advance registration is required. However, seating is limited and will be granted on a first-come, first-served basis. Students and those in their early career may find this course especially valuable.

---

## The 7 Habits of Highly Effective Academic Team Leads

9 April 2024 • 13:00 - 14:45 | Ramat Gan, Niveau/Level 01

Hone your communication and conflict resolution skills to build the foundation of a strong leader.

**Abigail Swillens**  
Clever Coyote

Good leaders can sit at all levels of an organization, and they're not the ones with all the answers... they're the ones with the right questions. This mini-workshop provides strategies and tools for optimizing time with your superiors, networking with colleagues, and stepping into the role of team lead.

### INTENDED AUDIENCE

This workshop is open to all with a technical attendee badge. No advance registration is required. However, seating is limited and will be granted on a first-come, first-served basis. This workshop may be found especially valuable by graduate and post-graduate team leads who are new to their roles, or want to enhance their leadership skills. Those who are not currently an academic team lead, but may be one in the future or are simply interested in leadership dynamics and skills are welcome to join.

# COURSES

## In-person instruction in Strasbourg

Join us for in-person training at SPIE Photonics Europe and SPIE Optical Systems Design. SPIE courses are designed to expand your knowledge and skills. Take what you learn in class and apply it directly to your work.

### Design, Modeling and Fabrication Techniques for Micro-Optics: Applications to Display, Imaging, Sensing and Metrology

Instructor: **Bernard C. Kress**, Google (United States)

**Course SC1217 | Level: Intermediate**  
**Sunday, 7 April 2024 • 8:30 - 12:30**  
**Member: \$480.00 | Non-member: \$575.00**  
**Student member: \$330.00**

This course provides an overview of the various design and fabrication techniques available to the optical engineer for micro / nano optics, diffractive optics and holographic optics. Emphasis is put on DFM (Design For Manufacturing) for wafer scale fabrication, Diamond Turning Machining (DTM) and holographic exposure. The course shows how design techniques can be tailored to address specific fabrication techniques' requirements and production equipment constraints. The course will also address various current application fields such as display, imaging, sensing and metrology. The course is built around 4 points: (1) design, (2) modeling, (3) fabrication/mass production and (4) application fields.

### Optical Technologies and Architectures for Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) Head-Mounted Displays (HMDs)

Instructor: **Bernard C. Kress**, Google (United States)

**Course SC1218 | Level: Intermediate**  
**Sunday, 7 April 2024 • 13:30 - 17:30**  
**Member: \$480.00 | Non-member: \$575.00**  
**Student member: \$330.00**

In order to design next generation head worn systems, one needs to fully understand the specifics and limitations of the human visual system, and design the optics and the optical architecture around such. Challenges for next generation systems are reviewed, where immersion and comfort need to be addressed along with consumer level costs requirements. The course reviews market analysts' expectations, projected over the next 5 to 10 years, and lists the main actors (major product design companies, start-ups and optical building block vendors, and current investment rounds in such). Demonstration of some of the state of the art AR, MR and VR headsets will be offered to attendees at the end of the course.

#### MONEY-BACK GUARANTEE

We are confident that once you experience an SPIE course for yourself you will look to us for your future education needs. However, if for any reason you are dissatisfied, we will gladly refund your money. We just ask that you tell us what you did not like; suggestions for improvement are always welcome.

#### Digital badges and certificates

SPIE awards digital badges and certificates to participants who attend courses and complete the evaluation and quiz. Digital credentials are always accessible, easily shareable, printable at any time, and verified. For more information visit [spie.org/digital-badges](https://spie.org/digital-badges)

SPIE reserves the right to cancel a course due to insufficient advance registration.



### Designing Illumination Optics

Instructors: **Julius Muschaweck**, JMO GmbH (Germany)  
**Henning Rehn**, FISBA AG (Switzerland)

**Course SC1313 | Level: Intermediate**  
**Sunday, 7 April 2024 • 8:30 - 17:30**  
**Member: \$820.00 | Non-member: \$935.00**  
**Student member: \$474.00**

This course first explains the deep, beautiful, and immensely useful theory of light for illumination: the theory that lets us see what can or cannot be done in illumination optics, and that guides us towards viable solutions. Étendue, the most mysterious quantity in illumination optics is fully explained and revealed as the most important quantity in illumination optics. Then, the course introduces "design patterns" in illumination optics: optical elements as building blocks, providing reusable solution approaches to recurring problems. These building blocks (e.g., TIR lenses, mixing rods and Köhler illumination) are explained by what they do to the light, and how to combine them. Practical examples as well as exercises with solutions for later self-study are an integral part of the course.

### Display Engines for Mixed Reality: Optical Design & Technology

Instructor: **Andreas Georgiou**, Reality Optics (United Kingdom)

**Course SC1338 | Level: Intermediate**  
**Sunday, 7 April 2024 • 8:30 - 12:30**  
**Member: \$480.00 | Non-member: \$575.00**  
**Student member: \$330.00**

Mixed Reality hardware encompasses a wide range of devices to fit specific applications. Characteristics like the optical see-through, field of view, eye box size, and resolution determine each headset's optical design and technology. The display engine is the heart of the optical system as it forms the image and creates an exit pupil for the eye box or the waveguide. This course looks at the two fundamental aspects of display engines: (a) the optical design and (b) the modulator technology forming the image pixels.

## Onsite courses

View full course descriptions and register online.

# SPIE PHOTONICS EUROPE CONFERENCE SCHEDULE

Sunday 7 April	Monday 8 April	Tuesday 9 April	Wednesday 10 April	Thursday 11 April
	<b>Hot Topics I</b> 9:00 - 11:00 Auditorium Schweitzer, Niveau/Level 0	<b>Hot Topics II</b> 16:30 - 18:05 Auditorium Schweitzer, Niveau/Level 0		<b>Hot Topics III</b> 9:00 - 10:35 Auditorium Schweitzer, Niveau/Level 0
<b>Nano- and Quantum Sciences</b> — Chair: <b>David L. Andrews</b> , Univ. of East Anglia (United Kingdom)				
	Conference 12990: <b>Metamaterials XIV</b> , Chairs: Kevin F. MacDonald; Isabelle Staude; Anatoly V. Zayats <i>Etoile C, Niveau/Level 1</i>			
	Conference 12991: <b>Nanophotonics X</b> , Chairs: David L. Andrews; Angus J. Bain; Antonio Ambrosio <i>Adenauer, Niveau/Level 1</i>			
		Conference 12992: <b>Advances in Ultrafast Condensed Phase Physics IV</b> , Chair: Stefan Haacke <i>Boston/Salon 11, Niveau/Level 1</i>		
	Conference 12993: <b>Quantum Technologies 2024</b> , Chairs: Florent Baboux; Virginia D'Auria; Tom Bienaimé <i>Londres 1/Salon 8, Niveau/Level 0</i>			
	Conference 12994: <b>Terahertz Photonics III</b> , Chairs: Mona Jarrahi; Sascha Preu; Dmitry Turchinovich <i>Dresde/Salon 13, Niveau/Level 1</i>			
<b>Optical Imaging and Sensing</b> — Chair: <b>Francis Berghmans</b> , Vrije Univ. Brussel (Belgium)				
	Conference 12995: <b>3D Printed Optics and Additive Photonic Manufacturing IV</b> , Chairs: Alois M. Herkommer; Georg von Freymann; Manuel Flury <i>Londres 2/Salon 7, Niveau/Level 0</i>			
	Conference 12996: <b>Unconventional Optical Imaging IV</b> , Chairs: Irene Georgakoudi; Marc P. Georges; Nicolas Verrier <i>Curie B, Niveau/Level 1</i>			
		Conference 12997: <b>Optics and Photonics for Advanced Dimensional Metrology III</b> , Chairs: Peter J. de Groot; Felipe Guzman; Pascal Picart <i>Rome/Salon 5, Niveau/Level 0</i>		
		Conference 12998: <b>Optics, Photonics and Digital Technologies for Imaging Applications VIII</b> , Chairs: Peter Schelkens; Tomasz Kozacki <i>Londres 2/Salon 7, Niveau/Level 0</i>		
	Conference 12999: <b>Optical Sensing and Detection VIII</b> , Chairs: Francis Berghmans; Ioanna Zergioti <i>Schuman, Niveau/Level 1</i>			
	Conference 13000: <b>Real-time Processing of Image, Depth and Video Information 2024</b> , Chairs: Matthias F. Carlsohn; Gian Domenico Licciardo; Viktor J. Schneider <i>Stuttgart/Salon 15, Niveau/Level 1</i>			
<b>Lasers and Nonlinear Optics</b> — Chair: <b>Kyriacos Kalli</b> , Cyprus Univ. of Technology (Cyprus)				
		Conference 13001: <b>Specialty Optical Fibres VIII</b> , Chairs: Kyriacos Kalli; Pavel Peterka; Christian-Alexander Bunge <i>Adenauer, Niveau/Level 1</i>		
		Conference 13002: <b>Semiconductor Lasers and Laser Dynamics XI</b> , Chairs: Marc Sciamanna; Fan-Yi Lin; Jesper Mørk <i>Dresde/Salon 13, Niveau/Level 1</i>		
	Conference 13003: <b>Fiber Lasers and Glass Photonics: Materials through Applications IV</b> , Chairs: Stefano Taccheo; Maria Rita Cicconi; Matthias L. Jäger <i>Amsterdam/Salon 6, Niveau/Level 0</i>			
	Conference 13004: <b>Nonlinear Optics and its Applications 2024</b> , Chairs: John M. Dudley; Anna C. Peacock; Birgit Stiller; Giovanna Tissoni <i>Churchill, Niveau/Level 1</i>			
	Conference 13005: <b>Lasers and Photonics for Advanced Manufacturing</b> , Chairs: François Courvoisier; Sylvain Lecler; Wilhelm Pfleging <i>Curie A, Niveau/Level 1</i>			

Sunday 7 April	Monday 8 April	Tuesday 9 April	Wednesday 10 April	Thursday 11 April
	<b>Hot Topics I</b> 9:00 - 11:00 Auditorium Schweitzer, Niveau/Level 0	<b>Hot Topics II</b> 16:30 - 18:05 Auditorium Schweitzer, Niveau/Level 0		<b>Hot Topics III</b> 9:00 - 10:35 Auditorium Schweitzer, Niveau/Level 0
<b>Biophotonics</b> — Chairs: <b>Jürgen Popp</b> , Leibniz-Institut für Photonische Technologien e.V. (Germany); <b>Sylvain Gioux</b> , Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France)				
	Conference 13006: <b>Biomedical Spectroscopy, Microscopy, and Imaging III</b> , Chairs: Jürgen Popp; Csilla Gergely <i>Etoile B, Niveau/Level 1</i>			
	Conference 13007: <b>Neurophotonics II</b> , Chairs: Tomáš Čížmár; Tommaso Fellin <i>Boston/Salon 11, Niveau/Level 1</i>		Conference 13008: <b>Biophotonics in Point-of-Care III</b> , Chairs: Michael T. Canva; Ambra Giannetti; Hatice Altug; Julien Moreau <i>Leicester/Salon 12, Niveau/Level 1</i>	
Conference 13009: <b>Clinical Biophotonics III</b> , Chairs: Daniel S. Elson; Sylvain Gioux; Brian W. Pogue <i>Rome/Salon 5, Niveau/Level 0</i>				
		Conference 13010: <b>Tissue Optics and Photonics III</b> , Chairs: Valery V. Tuchin; Walter C. P. M. Blondel; Zeev Zalevsky <i>Auditorium Erasme, Niveau/Level 0</i>		
			Conference 13011: <b>Data Science for Photonics and Biophotonic</b> , Chairs: Thomas Bocklitz <i>Bruxelles/Salon 10, Niveau/Level 0</i>	
<b>Applications of Photonics Technology</b> — Chair: Laurent Vivien, Ctr. de Nanosciences et de Nanotechnologies (France)				
	Conference 13012: <b>Integrated Photonics Platforms III</b> , Chairs: Roel G. Baets; Peter O'Brien; Laurent Vivien <i>Bruxelles/Salon 10, Niveau/Level 0</i>			
		Conference 13013: <b>Organic Electronics and Photonics: Fundamentals and Devices IV</b> , Chairs: Sebastian Reineke; Koen Vandewal; Wouter Maes <i>Berlin/Salon 9, Niveau/Level 0</i>		
			Conference 13014: <b>Photonics for Solar Energy Systems X</b> , Chairs: Alexander N. Sprafke; Jan Christoph Goldschmidt; Luana Mazzarella <i>Madrid 1/Salon 3, Niveau/Level 0</i>	
	Conference 13015: <b>Photosensitive Materials and their Applications III</b> , Chairs: Robert R. McLeod; Inmaculada Pascual Villalobos; Yasuo Tomita <i>Madrid 1/Salon 3, Niveau/Level 0</i>			
	Conference 13016: <b>Liquid Crystals Optics and Photonic Devices</b> , Chairs: Ibrahim Abdulhalim; Camilla Parmeggiani <i>Luxembourg/Salon 2, Niveau/Level 0</i>			
	Conference 13017: <b>Machine Learning in Photonics</b> , Chairs: Francesco Ferranti; Mehdi Keshavarz Hedayati; Andrea Fratalocchi <i>Madrid 2/Salon 4, Niveau/Level 0</i>			
Conference WS200: <b>Women in Renewable Energy (WiRE) 2024</b> , Chairs: Zakya H. Kafafi; Natalie Stingelin; Natalie Banerji <i>Berlin/Salon 9, Niveau/Level 0</i>				Conference WS201: <b>11th Annual Sino-French "Photonics and Optoelectronics" PHOTONET International Research Network Workshop</b> , Chairs: Walter C. P. M. Blondel; Boris Gralak; Christophe Peucheret <i>Churchill, Niveau/Level 01</i>

Sunday 7 April	Monday 8 April	Tuesday 9 April	Wednesday 10 April	Thursday 11 April
	<b>Monday Plenary Session</b> 13:30 - 15:15 Auditorium Schweitzer, Niveau/Level 0	<b>Tuesday Plenary Session</b> 9:00 - 10:35 Auditorium Schweitzer, Niveau/Level 0		
	Conference 13019: <b>Optical Design and Engineering IX</b> , Chairs: Thierry Lépine; James Babington; Herbert Gross <i>Etoile A, Niveau/Level 1</i>			
	Conference 13020: <b>Advances in Optical Thin Films VIII</b> , Chairs: Michel Lequime; Detlev Ristau <i>Varsovie/Salon 1, Niveau/Level 0</i>			
	Conference 13021: <b>Optical Fabrication and Testing VIII</b> , Chairs: Eric Ruch; Reinhard Völkel <i>Leicester/Salon 12, Niveau/Level 1</i>			
	Conference 13022: <b>Illumination Optics VII</b> , Chairs: Tina E. Kidger; Stuart David; Thorsten Schupp <i>Ramat Gan/Salon 14, Niveau/Level 1</i>		Conference 13023: <b>Computational Optics 2024</b> , Chairs: Daniel G. Smith; Andreas Erdmann <i>Stuttgart/Salon 15, Niveau/Level 1</i>	
			Conference 13024: <b>Optical Instrument Science, Technology, and Applications III</b> , Chairs: Holger Münz; Breann N. Sitarski; Richard N. Youngworth <i>Ramat Gan/Salon 14, Niveau/Level 1</i>	

# APPLICATION TRACKS

---

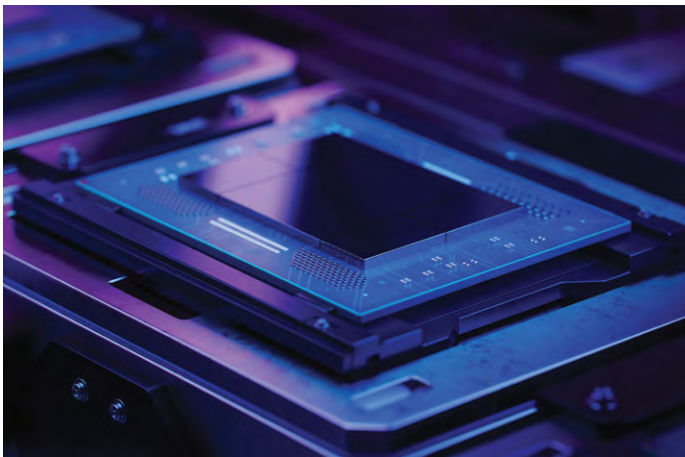
Application tracks enable attendees to group and explore presentations in the conference programs to more easily plan their event schedule around the topic of interest. Application track filters span across all conferences at an SPIE event. The ability to group presentations together across the entire event in this way helps participants more easily locate a presentation in their area of interest and has the reciprocal benefit of helping authors' presentations be more easily found.

## Three application tracks to explore



### Sustainability

Papers that highlight the use of optics and photonics for renewable energy, natural resource management, sustainable manufacturing, and greenhouse gas mitigation in support of the UN Sustainable Development Goals.



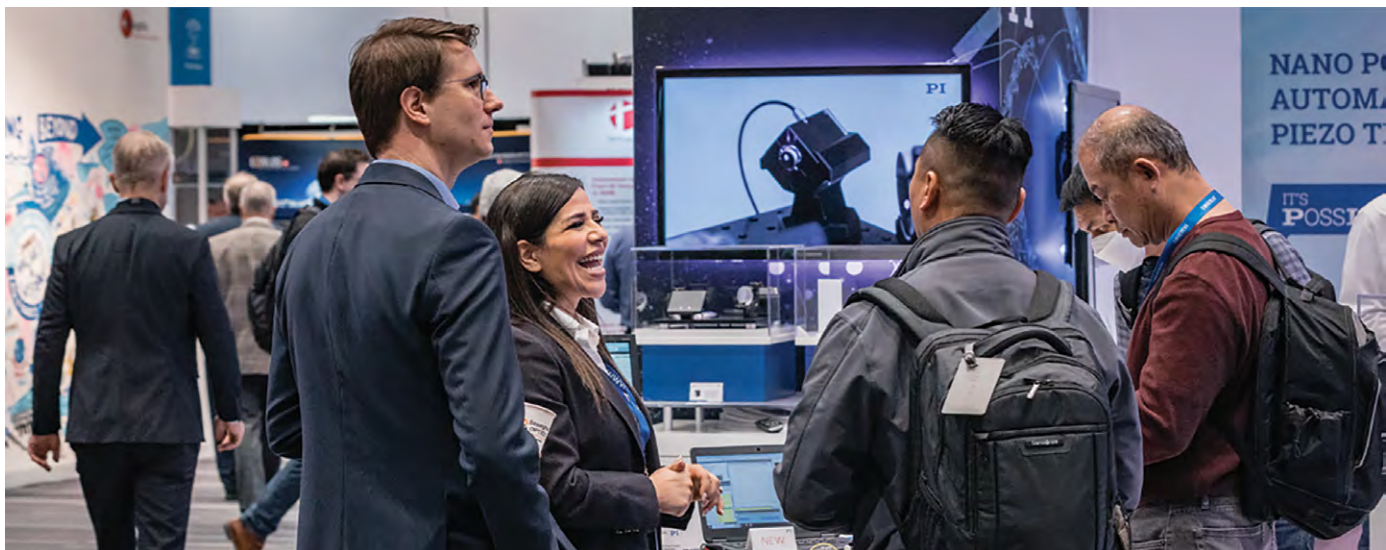
### AI/ML

Papers that highlight the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems across multiple sectors, technologies, and applications.



### EU-funded research programmes

Papers presenting research supported by current EU-funded programmes, initiatives, and innovation projects



## Explore the two free exhibitions

Palais de la Musique et des Congrès  
Exhibition floor

Tuesday 9 April • 10.00–17.00  
Wednesday 10 April • 10.00–16.00

These free exhibitions are a prime opportunity for researchers and engineers to connect with leading companies supplying optics and photonics technologies.

**Photonics Europe exhibition**—showcases the latest innovations in detection, imaging, sensing, lasers, and their supporting components and devices.

**Optical Systems Design exhibition**—an innovative exhibition on optical design, thin films, detectors, signal processing, and metrology from the wide field of optical system design which includes computational optics, illumination optics, optical fabrication, optical instrument sciences, and applications.

### Additional opportunities on the exhibition floor

#### Innovation Village

The 10<sup>th</sup> edition of the European Photonics Innovation Village will be organised by the Université de Strasbourg and take place at Strasbourg Convention + Exhibition Centre

Showcasing research and innovative products from universities, nonprofits, and research centres. Universities, nonprofits, and research centres take part in a competition for prizes by sharing their latest findings and innovative products with industry innovators and other photonics visionaries.

Winners announced Wednesday, 10 April 2024 at the Innovation Village, followed by a reception.

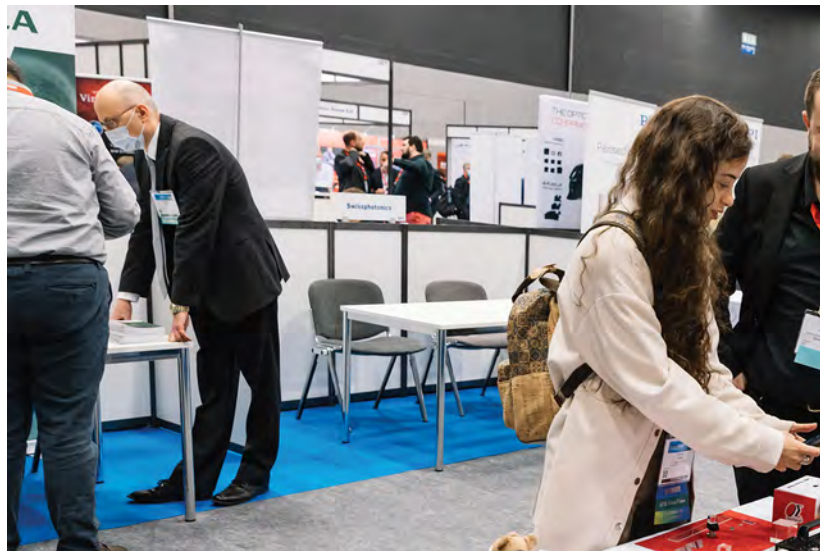
First place: €1500

First and second runners-up: €500 each



Stand Number	Innovation name	Lab. /company
IV1	Capteurs d'imagerie spectrale compressée	<b>Photonics Open Projects</b>
IV2	High Field NV Magnetometer	<b>KWAN-TEK</b>
IV3	Adaptive Metamaterials for Smart Standalone Histopathology with Polarized Light	<b>SINTEF Digital</b>
IV4	Vitrage dynamique autonome photovoltaïque	<b>p-layer</b>
IV5	NanoCarac	<b>XLIM laboratory - CNRS</b>
IV6	Optiive at a Glance	<b>Optiive</b>
IV7	Optical-calculation	<b>CLAVIS</b>





## Product Demonstrations

Learn new possibilities at these half-hour demonstrations, which are free to all attendees.

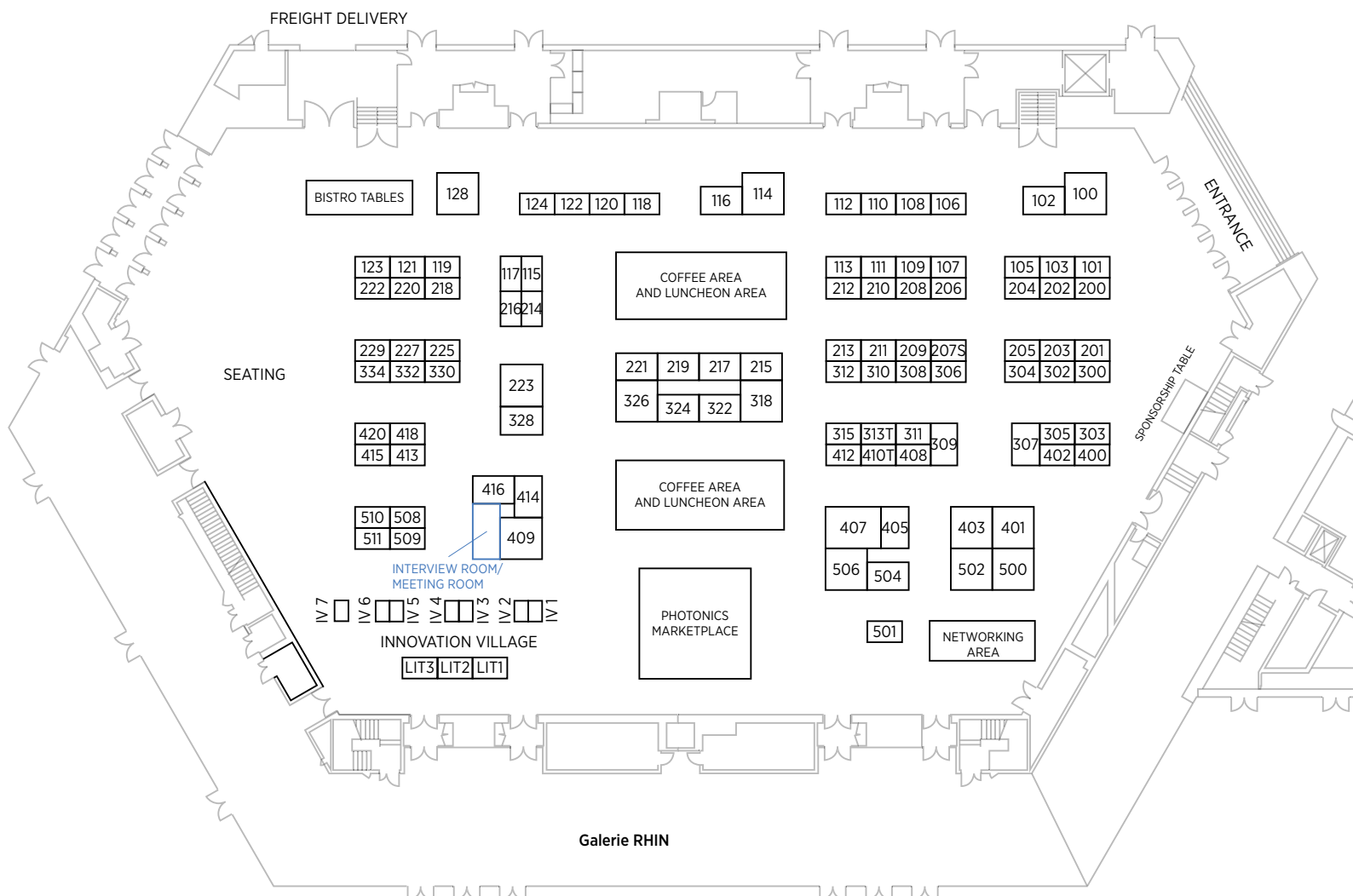
Photonics Marketplace - Hall Rhin

TIME	Tuesday • 9 April
10:00 - 10:30	<p><b>Quentin Peyrani</b>  <b>V-Optics</b>  <b>Defect automatic detection on transparent materials with a technology based on deflectometry.</b></p> <p>Defects in industrial manufacturing processes can cause significant production losses and compromise product quality. Visual quality inspection is a subjective process that requires expert intervention, which limits process efficiency and can lead to errors in defect detection. In this talk, we will give an overview of the automated optical inspection (AOI) based on our patented technology which uses distorted pattern analysis or deflectometry; with emphasis to present defect detection on transparent materials in diverse industries (ophthalmic, aeronautics, watch glasses).</p>
13:00 - 13:30	<p><b>Alexander Telle</b>  <b>Acktar (ACM Coatings GmbH)</b>  <b>Acktar's ultra-black coatings - beyond space</b></p> <p>Acktar's ultra-black coatings not only offer unsurpassed performance for space applications but are also the best choice for stray light suppression in industrial and research environments.</p>
15:00 - 15:30	<p><b>Florent Thibault</b>  <b>QIOVA</b>  <b>Multibeam : a new laser technology to boost productivity of industrial material processing</b></p> <p>QIOVA provides laser solutions for laser marking and surface treatment, based on patented multibeam technology that delivers typically 5x faster throughput than current laser solutions. The productivity step offered by our VULQ1™ laser systems enable manufacturers to add product personalization directly in-line. Join to discover the new industrial applications allowed by this breakthrough innovation, from in-line serialization of mass products in pharmaceuticals or electronics industries to sustainable decoration of luxury products.</p>
15:30 - 16:00	<p><b>Giedrius Kudaba • EKSPLA</b>  <b>EKSPLA tunable high repetition rate OPO systems and their application examples for multimodal photoacoustic microscopy</b></p> <p>Introduction of high repetition rate OPO systems specially tailored for emerging applications- photoacoustic microscopy. System features single-house design and extra wide tuning range.</p>



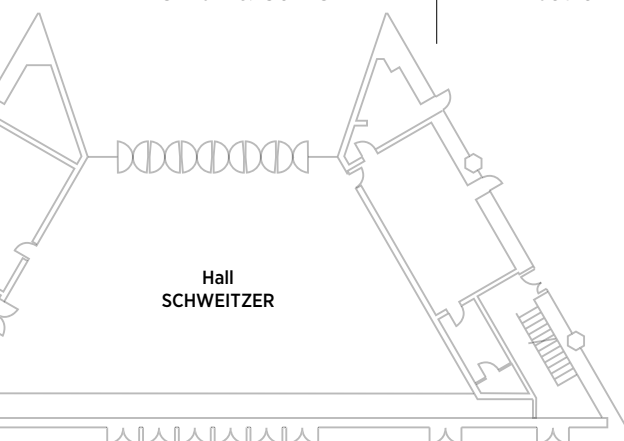
# Exhibition Directory

Exhibitors are listed in alphabetical order with full contact information and booth location. Full company descriptions, product announcements, and other information are available on the SPIE App and on [spie.org](http://spie.org).



# EXHIBITOR BOOTH LISTING

1 IV PHOTONICS OPEN PROJECTS	119 NANE0 Precision IBS Coatings GmbH	222 ACTIVE TECHNOLOGIES	400 HTDS
1 LIT Electro Optics Magazine	120 Finetech	223 Raytron Technology Co., Ltd.	401 Photonics Grand Est 1 (ICube, IREPA LASER, Giova)
2 IV KWAN-TEK	121 THORLABS SAS	225 PHASICS SA	402 Photoniques
2 LIT Photonics Media	122 Vistec Electron Beam GmbH	227 Lithium Lasers	403 Photonics Grand Est 2 (Chaire Photonique, SATT Sayens, Cristal Laser)
3 IV SINTEF	123 New Imaging Technologies (NIT)	229 Liquid Instruments	405 Oxxius
3 LIT European Optical Society	124 Opton Laser International	300 Optosigma Europe SAS.	407 Mitutoyo Europe GmbH
4 IV P-Layer	128 optics.org	302 AdlOptica GmbH	408 LUMIBIRD
5 IV IotaMetrix	200 NKT Photonics	303 TOPTICA Photonics AG	409 Photonic Cleaning Technologies
6 IV OPTIIVE	201 FYLA Laser s.l.	304 EKSPILA	410 Noisy Labs GmbH
7 IV CLAVIS	202 Luceda Photonics	305 Nanoscribe GmbH & Co. KG	412 Photonics Bretagne
100 Beneq Oy	203 Springer Nature Group	306 HEF Photonics	413 SCHOTT AG
101 Exail	204 I-Photonics	307 ECREAM	414 Somos SAS
102 ACKTAR (ACM Coatings GmbH)	205 Light Conversion	308 EssentOptics Europe UAB	415 attocube systems AG
103 Evosens	206 PlanOpSim NV	308 VM-TIM GmbH	416 FIRST LIGHT IMAGING
105 LEUKOS	207 Fluence sp.z o.o	309 LIMES Cluster	418 AMPLITUDE
106 Spectrogon UK Ltd.	208 Cutting Edge Coatings GmbH	310 Photonics Industries International, Inc.	420 OCTLIGHT
107 Laser 2000	209 Imagine Optic	311 Symétrie	500 Photonics France
108 SOMO IR Co., Ltd.	210 Synopsys GmbH	312 Ciposa S.A.	501 WYSE LIGHT
109 Ocean Optics	211 CILAS	313 Opton Laser International	502 Photonics Grand Est 3 (UTT, EUR Nanophotonique, PhaseLab)
110 Argotech a.s.	212 Savimex	315 SET	503 Avantes BV.
111 UltraFast Innovations GmbH	213 V-OPTICS	318 LightTrans International GmbH	504 OBS Fiber
112 MOEWE Optical Solutions GmbH	214 PRO-LITE TECHNOLOGY FRANCE	322 PYLA Training Center	506 Le Verre Fluoré
113 scia Systems GmbH	215 HOLOEYE Photonics AG	324 ALPhANOV	508 Coherent Europe B.V.
114 Photon Design	216 Nanosurf AG	326 Fiber Optic Center	509 SI Stuttgart Instruments GmbH
115 Menhir Photonics	217 Zurich Instruments AG	326 SG Controls Ltd.	510 Optogear Oy
116 SAES Getters SpA	218 Femto Easy	328 Everix, Inc.	511 Flexible Optical BV
117 Berkeley Nucleonics Corp.	219 PicoQuant GmbH	330 Menlo Systems GmbH	
118 HÜBNER Photonics	220 Chroma Technology	332 ABSYS	
119 MONTFORT Laser GmbH & Co KG	221 Elsevier	334 Casix Inc.	



# EXHIBITOR LISTING

## ABSYS

#332

Parc d'Activité de la Fontaine de Jouvence, 19 rue Levacher  
Cintrat, Marcoussis, 91460 France  
+33 1 69632636; fax +33 1 69632637  
ventes@absysfrance.com; www.absysfrance.com

## SPONSOR

### ACKTAR (ACM Coatings GmbH)

#102

Jakobsring 3, Naumburg (Saale),  
06618 Germany  
+49 3445791565-0  
info@acktar.de; www.acktar.com



## ACTIVE TECHNOLOGIES

#222

Via Bela Bartok 29B, Ferrara, 44124 Italy  
+39 0532 1772145  
info@activetechnologies.it; www.activetechnologies.it

## AdlOptica Optical Systems GmbH

#302

SPIE. CORPORATE MEMBER

Rudower Chaussee 29, Berlin, 12489 Germany  
+49 305 6590 8880  
info@adloptica.com; www.adloptica.com

## SPONSOR

### ALPhANOV

#324

Institut d'optique d'Aquitaine, rue François  
Mitterrand, Talence, 33400 France  
+33 524 545 200  
info@alphanov.com; www.alphanov.com



## SPONSOR

### AMPLITUDE

#418

Cite de la Photonique, 11 av de Canteranne, Pessac, 33600  
France  
+33 5 5646 4060  
info@amplitude-laser.com; www.amplitude-laser.com

## Argotech a.s.

#110

Holubova 978, Nachod 1, 547 01 Czech Republic  
+420 778 437 750  
info@argotech.cz; www.argotech.cz

## attocube systems AG

#415

Eglfinger Weg 2, Haar, 85540 Germany  
+49 89 420 797 0  
info@attocube.com; www.attocube.com

## Avantes BV.

#503

Oude Apeldoornseweg, Apeldoorn, Gelderland, Netherlands  
7333NS  
+31 313 670 170  
marketing@avantes.com; www.avantes.com

## SPONSOR

### Beneq Oy

#100

SPIE. CORPORATE MEMBER

Olarinluoma 9, Espoo, 02200 Finland  
+358 9 7599 530  
marketing@beneq.com;  
www.beneq.com/en



## SPONSOR

### Berkeley Nucleonics Corp.

#117

BNC Europe, 2955 Kerner Blvd, San Rafael, CA, 94901-5516  
United States  
+1 800 234 7859  
info@berkeleynucleonics.com; www.berkeleynucleonics.com

## Casix Inc.

#334

Fuxing Investment District, PO Box 11033, 20 Fuxing Street,  
Fuzhou, AH, 350014 China  
+86 591 83610148  
sales@casix.com; www.casix.com

## Chroma Technology

#220

SPIE. CORPORATE MEMBER

10 Imtec Ln, Bellows Falls, VT, 05101 United States  
+1 800 824 7662; fax +1 802 428 2525  
sales@chroma.com; www.chroma.com

## CILAS

#211

8 Avenue Buffon, Orléans, 45100 France  
+33 442369700; fax +33 442369701  
optics@cilas.com; www.cilas.com

## SPONSOR

### Ciposa S.A.

#312

Rouges-Terres 61, Hauterive,  
2068 Switzerland  
+41 32 566 6600



contact@ciposa.com; www.ciposa.com/en/photonics

## CLAVIS

#71V

29 Bd Marius Thomas, Marseille, 13007 France  
+33 6 09 71 67 10  
contactus@optical-calculation.com;  
www.optical-calculation.com

## Coherent Europe B.V.

#508

Huis ter Heideweg 14, Zeist, 3705 LZ Netherlands  
+31 302806060; fax +31 302806077  
coherent.france@coherent.com; www.coherent.com

## Cutting Edge Coatings GmbH

#208

Hollerithallee 18, Hannover, 30419 Germany  
+49 511 4759300  
info@cutting-edge-coatings.com;  
www.cutting-edge-coatings.com

## SPONSOR

### ECREAM

#307

Dr Rorig Damn 22, Paderborn,  
33102 Germany  
+49 5251 184 5331  
bruce@vividcomponents.co.uk;  
www.ecream.eu



ECREAM

## SPONSOR

### EKSPLA

#304

Savanoriu Ave 237, Vilnius, Vilniaus, 02300 Lithuania  
+370 5 264 9629  
sales@ekspla.com; www.ekspla.com

OSD = SPIE Optical Systems Design Exhibitor

**PROMOTIONAL PARTNER****Electro Optics Magazine**

#1LIT

4 Signet Ct, Cambridge, CB5 8LA United Kingdom  
+44 1223 221030  
sales@europascience.com; www.electrooptics.com

**SPONSOR****Elsevier**

#221

Radarweg 29, Amsterdam,  
1043 NX Netherlands  
+31 78 6449770  
h.craik@elsevier.com; www.elsevier.com

**EssentOptics Europe UAB**

#308

Mokslininku 2a, Vilnius, Lithuania 08412  
+370 616 19161  
office@essentoptics.com; www.essentoptics.com

**European Optical Society**

#3LIT

Länsikatu 15, Joensuu, 80110 Finland  
www.europeanoptics.org

**SPONSOR****Everix, Inc.**

#328

**SPIE. CORPORATE MEMBER**

1468 N Goldenrod Rd Ste 200,  
Orlando, FL, 32807 United States  
+1 407 637 2987  
marcom@everix.co; www.everix.co

**Evosens**

#103

Technopôle Brest Iroise, 185 rue René Descartes, Plouzané,  
29280 France  
+33 2 3079 4600  
contact@evosens.fr; www.evosens.fr

**SPONSOR****Exail**

#101

**SPIE. CORPORATE MEMBER**

34 Rue de la Croix de Fer, Saint-Germain-en-Laye, 78100  
France  
+33 1 30088888  
contact.photonics@exail.com; www.exail.com

**Femto Easy**

#218

Batiment Gienah, Cite Photonique, 11 avenue de Canteranne,  
Pessac, 33600 France  
+33 9 72 60 27 92  
info@femtoeasy.eu; www.femtoeasy.eu

**SPONSOR****Fiber Optic Center**

#326

**SPIE. CORPORATE MEMBER**

23 Centre St, New Bedford,  
MA, 02740 United States  
+1 508 992 6464  
sales@focenter.com; www.focenter.com

**Finetech**

#120

Boxberger Str 14, Berlin, 12681 Germany  
+49 30 936681 0  
finetech@finetech.de; www.finetech.de

**SPONSOR****FIRST LIGHT IMAGING**

#416

**SPIE. CORPORATE MEMBER**

Europarc Ste Victoire Bât 5,  
Rte de Valbrillant Le Canet,  
Meyreuil, 13590 France  
+33 4 42 61 29 20  
contact@first-light.fr; www.first-light-imaging.com

**Flexible Optical BV**

#511

Polakweg 10-11, Rijswijk, Netherlands 2288 GG  
+31 70 262 9420; fax + 31 70 710 1400  
oko@okotech.com; www.okotech.com

**SPONSOR****Fluence sp. z o.o**

#207

**SPIE. CORPORATE MEMBER**

ul. Kolejowa 5/7, Warszawa, Poland, 01-217  
+48 797 890 595;  
marketing@fluence.pl; www.fluence.technology

**SPONSOR****FYLA Laser s.l.**

#201

Ronda Guglielmo Marconi 14 Parque  
Tecnológico, Paterna-Valencia,  
46980 Spain  
+34 607 971 021  
sales@fyala.com; www.fyala.com

**SPONSOR****HEF Photonics**

#306

69 avenue Benoit Fourneryon, Aura, 42160 France  
+33 477 55 52 22  
pgoupilleau@hef.group; www.hef.fr

**SPONSOR****HOLOEYE Photonics AG**

#215

**SPIE. CORPORATE MEMBER**

Volmerstr. 1, Berlin,  
12489 Germany  
+49 30 4036 9380  
contact@holoeye.com; www.holoeye.com

**HTDS**

#400

BP 246, 3 rue du Saule Trapu, Massy CEDEX, France  
+33 1 6486 2828; fax +33 1 6486 2828  
info@htds.fr; www.htds.fr

**HUBNER Photonics**

#118

**SPIE. CORPORATE MEMBER**

Wilhelmine-Reichard Strasse 6, Kassel, 34123 Germany  
+49 561 994 060 - 0; fax +49 561 994 060 - 13  
info.se@hubner-photonics.com; hubner-photonics.com/

**Imagine Optic**

#209

**SPIE. CORPORATE MEMBER**

18 rue Charles de Gaulle, Orsay, 91400 France  
+33 16 486 1560  
contact@imagine-optic.com; www.imagine-optic.com

# EXHIBITOR LISTING

## IotaMetrix

#51V

XLIM/ALPhANOV, 123 av Albert Thomas, Limoges CEDEX 2, 87060 France  
+33 5 87 50 24 83  
aguilarmora@xlim.fr

### SPONSOR

## I-Photonics

#204

**SPIE.** CORPORATE MEMBER

Parko g. 3, Avizieniai, 14198 Lithuania  
+3706 0683186  
info@i-photonics.lt; www.i-photonics.lt

## KWAN-TEK

#21V

1 Rue Galilée, Espace Innova, Parc Technologique De Soye, Ploemeur, 56270 France  
+33 0 2 56 31 26 99  
contact@kwan-tek.com; www.kwan-tek.com

### SPONSOR

## Laser 2000

#107

Cite de la Photonique Bat Sirah, 11 avenue de Canteranne, Pessac, 33600 France  
+33 5 57 10 92 80; fax +33 5 57 10 92 81  
inquiry@laser2000.fr; www.laser2000.fr

### SPONSOR

## Le Verre Fluore

#506

**SPIE.** CORPORATE MEMBER

1 Rue Gabriel Voisin, Bruz, 35170 France  
+33 2 9905 3130  
info@leverrefluore.com; www.leverrefluore.com



### SPONSOR

## LEUKOS

#105

**SPIE.** CORPORATE MEMBER

Beaublanc, 2 Rue Edouard Michaud, Limoges, 87000 France  
+33 5 87 20 00 25  
contactus@leukos-laser.com; www.leukos-laser.com

### SPONSOR

## Light Conversion

#205

**SPIE.** CORPORATE MEMBER

Keramiku g. 2B, Vilnius, 10233 Lithuania  
+370 5 249 1830  
company@lightcon.com; www.lightcon.com

### SPONSOR

## LightTrans International GmbH

#318

**SPIE.** CORPORATE MEMBER

Kahlaische Str 4, Jena, 07745 Germany  
+49 3641 53129-50 fax +49 3641 53129-01  
info@lighttrans.com; www.lighttrans.com



### SPONSOR

## LIMES Cluster

#309

Dr Rorig Damn 22, Paderborn, 33102 Germany  
+49 5251 184 5331  
bruce@vividcomponents.co.uk;  
www.metamorpha.eu/limes-cluster



## Liquid Instruments

#229

**SPIE.** CORPORATE MEMBER

12526 High Bluff Dr Ste 150, San Diego, CA, 92130 United States  
+1 619 332 6230  
info@liquidinstruments.com; www.liquidinstruments.com

## Lithium Lasers Srl

#227

**SPIE.** CORPORATE MEMBER

Registered Office, Via Borromei 2, Milan, 20123 Italy  
+39 389 490 4012  
info@lithiumlasers.com; www.lithiumlasers.com

## Luceda Photonics

#202

**SPIE.** CORPORATE MEMBER

Noordlaan 21, Dendermonde, 9200 Belgium  
+32 52 339 838  
info@lucedaphotonics.com; www.lucedaphotonics.com

## LUMIBIRD

#408

2 rue Paul Sabatier, Lannion, 22300 France  
+33 1 69 29 17 00  
contact@lumibird.com; www.lumibird.com

## Menhir Photonics

#115

Industriestrasse 42, Glattbrugg, 8152 Switzerland  
+41 61 331 45 45  
sales@menhir-photonics.com; www.menhir-photonics.com

### SPONSOR

## Menlo Systems GmbH

#330

Bunsenstr. 5, Martinsried, 82152 Germany  
+49 89 189166 0  
sales@menlosystems.com; www.menlosystems.com

### SPONSOR

## Mitutoyo Europe GmbH

#407

Borsigstr 8-10, Neuss, 41469 Germany  
+49 2137 1020  
info@mitutoyo.de; www.mitutoyo.eu



### SPONSOR

## MOEWE Optical Solutions GmbH

#112

Leipziger Str. 27, Mittweida, 09648 Germany  
+49 3727 9989407  
office@moewe-optik.de; www.moewe-optik.de

### SPONSOR

## MONTFORT Laser GmbH & Co. KG

#119

**SPIE.** CORPORATE MEMBER

Im Holderlob 6a, Götzis, Vorarlberg, 6840 Austria  
+43 720 733 462  
info@montfortlaser.com; www.montfortlaser.com

**OSD = SPIE Optical Systems Design Exhibitor**

## NANEO Precision IBS Coatings GmbH #119

Heuriedweg 31a, Lindau (Bodensee), 88131 Germany  
sales@naneo.com; www.naneo.com

## Nanoscribe GmbH & Co. KG #305

Hermann-von-Helmholtz-Platz 6, Eggenstein-  
Leopoldshafen, 76344 Germany  
+49 721 981 980 0  
sales@nanoscribe.com; www.nanoscribe.com

## Nanosurf AG #216

Gräubernstrasse 12, Liestal, 4410 Switzerland  
+41 61 927 47 47; fax +41 61 927 47 00  
info@nanosurf.com; www.nanosurf.com

## New Imaging Technologies (NIT) #123

1-4 impasse de la noisette, Verrières le Buisson, France 91370  
+33 1 64 47 88 58  
info@new-imaging-technologies.com;  
www.new-imaging-technologies.com

### SPONSOR

## NKT Photonics #200

**SPIE** CORPORATE MEMBER

Blokken 84, Birkerød, 3460 Denmark  
+45 4348 3900  
thf@nktphotonics.com; www.nktphotonics.com

## Noisy Labs GmbH #410

Luruper Hauptstr. 1, Hamburg, 22547 Germany  
+49 40 22632723  
info@noisy-labs.com; www.noisy-labs.com

### SPONSOR

## OBS Fiber #504

1 rue de Terre Neuve - Batiment F,  
Les Ulis, 91940 France  
+33 (0)1 60 92 41 22  
admin@obs-fiber.fr; www.obs-fiber.fr



## Ocean Optics #109

**SPIE** CORPORATE MEMBER

OSD

Service and Support, Geograaf 24, Duiven, 6921 EW  
Netherlands  
+31 26 319 0500  
info@oceanoptics.com; www.oceanoptics.com

## OCTLIGHT #420

Diplomvej 381, Kongens Lyngby, 2800 Denmark  
+45 538 62737  
mail@octlight.com; www.octlight.com

### PROMOTIONAL PARTNER

## optics.org #128

Ffordd Pengam, 2 Alexandra Gate, Cardiff, CF24 2SA United  
Kingdom  
+44 29 2089 4747; fax +44 29 2089 4750  
sales@optics.org; www.optics.org

## OPTIIVE #6IV

300 Boulevard Sebastien Brant, Illkirch-Graffenstaden,  
67412 France  
eric.halter@optiive.com; www.optiive.com

## Optogear Oy #510

Kuormatie 14, Nummela, 03100 Finland  
+358 9 2227799; fax +358 9 2227789  
optogear@optogear.fi; www.optogear.fi

## Opton Laser International #124, 313

6 Avenue Des Andes-Bât 8 / ZA de Courtabœuf, Les Ulis,  
91940 France  
+33 1 6941 0405  
contact@optonlaser.com; www.optonlaser.com

### SPONSOR

## OptoSigma Europe S.A.S. #300

**SPIE** CORPORATE MEMBER

3 rue de la Terre de Feu, Les Ulis Essonne, 91940 France  
+33 169181700; fax +33 160100929  
sales@optosigma-europe.com;  
www.optosigma.com/eu\_en

### SPONSOR

## Oxxius #405

**SPIE** CORPORATE MEMBER

4 Rue Louis de Broglie,  
Lannion, 22300 France  
+33 2 96 485374  
sales@oxxius.com; www.oxxius.com



### SPONSOR

## PHASICS SA #225

Bât Explorer Espace Technologique, Rte de l'Orme des  
Merisiers, Saint Aubin, 91190 France  
+33 1 80 75 06 33  
events@phasics.fr; www.phasics.fr

### SPONSOR

## Photon Design #114

34 Leopold St, Oxford,  
OX4 1TW United Kingdom  
+44 1865 324990;  
fax +44 1865 324991  
info@photond.com; www.photond.com



### SPONSOR

## Photonic Cleaning Technologies #409

**SPIE** CORPORATE MEMBER

Bldgs 1 & 2, 1895 Short Ln,  
Platteville, WI, 53818 United States  
+1 608 467 5396  
sales@photoniccleaning.com; www.photoniccleaning.com



### SPONSOR

## Photonics Bretagne #412

4 rue Louis de Broglie, Lannion,  
22300 France  
+33 2 96 48 58 89  
contact@photonics-bretagne.com;  
www.photonics-bretagne.com

# EXHIBITOR LISTING

## SPONSOR

### Photonics France

#500

60 Avenue Daumesnil,  
Paris, 75012 France  
+33 1 83 92 31 20  
contact@photonics-france.org;  
www.photonics-france.org



Photonics  
France

## SPONSOR

### Photonics Grand Est 1 (iCube, IREPALASER, Qiova)

#401

300 boulevard Sebastien BRANT  
CS10413, Illkirch, 67412 France  
+33 3 68 85 45 54  
contact@icube.unistra.fr;  
www.icube.unistra.fr



## SPONSOR

### Photonics Grand Est 2 (Chaire Photonique, SATT Sayens, Cristal Laser)

#403

300 boulevard Sebastien BRANT  
CS10413, Illkirch, 67412 France  
+33 3 68 85 45 54  
contact@icube.unistra.fr;  
www.icube.unistra.fr



## SPONSOR

### Photonics Grand Est 3 (UTT, EUR Nanophotonique, PhaseLab)

#502

300 boulevard Sebastien  
BRANT CS10413, Illkirch, 67412 France  
+33 3 68 85 45 54  
contact@icube.unistra.fr;  
www.icube.unistra.fr



## SPONSOR

### Photonics Industries International, Inc.

#310

**SPIE.** CORPORATE MEMBER

1800 Ocean Ave, Ronkonkoma, NY, 11779-6532 United States  
+1 631 218 2240  
emea@photonix.com; www.photonix.com

## PROMOTIONAL PARTNER

### Photonics Media

#2LIT

**SPIE.** CORPORATE MEMBER

3rd Fl, 100 West St, Pittsfield, MA, 01201 United States  
+1 413 499 0514; fax +1 413 442 3180  
info@photonics.com; www.photonics.com

## PHOTONICS OPEN PROJECTS

#1IV

4 Rue André Marie ampère, Lannion, 22300 France  
+33 7 83 41 41 36  
contact@photonics-open-projects.com;  
www.photonics-open-projects.com

**OSD = SPIE Optical Systems Design Exhibitor**

## PROMOTIONAL PARTNER

### Photoniques

#402

17, Avenue du Hoggar, Les Ulis, 91944 France  
+ 33 7 87 57 07 59  
bernadette.dufour@edpsciences.org;  
www.photoniques.com

## SPONSOR

### PicoQuant GmbH

#219

**SPIE.** CORPORATE MEMBER

Rudower Chaussee 29,  
Berlin, 12489 Germany  
+49 30 1208820-89;  
fax +49 30 1208820-90  
info@picoquant.com; www.picoquant.com



## P-Layer

#41V

37 E Rue des Vignès, Lingolsheim, 67380 France  
+33 6 51 31 11 95  
contact@p-layer.fr; www.p-layer.fr

## SPONSOR

### PlanOpSim NV

#206

**SPIE.** CORPORATE MEMBER

OSD

Boterbloemstraat 29, Melle, 9090 Belgium  
+32 496 68 72 20  
info@planopsim.com; www.planopsim.com

## PRO-LITE TECHNOLOGY FRANCE

#214

10 avenue Roger Lapébie, Villenave d'Ornon, 33140 France  
+33 5 47 489 070  
info@pro-lite.fr; www.pro-lite.fr

## SPONSOR

### PYLA Training Center

#322

Bât Institut d'Optique d'Aquitaine,  
Rue François Mitterrand,  
Talence, 33400 France  
+33 524 545 200  
info@alphanov.com; www.pyla-formation.com



## SPONSOR

### Raytron Technology Co., Ltd.

#223

Yantai Economic Development Zone,  
11 Guiyang St, YEDA,  
Yantai, SD, 264006 China  
+86 400 998 3088  
orders@infrared.com; www.infrared.com



## SPONSOR

### SAES Getters SpA

#116

Viale Italia 77, Lainate Milan,  
20045 Italy  
+39 02 931 78 1;  
fax +39 02 93178 250  
www.saesgroup.com



## SPONSOR

### Savimex

#212

OSD

Parc d'activités des Bois de Grasse,  
1 ave Louison Bobet, Grasse, 06131 France  
+33 4 9370 4131  
savimex@savimex-fr.com; www.savimex-fr.com



**SPONSOR**  
**SCHOTT AG**

**SPIE** CORPORATE MEMBER

Advanced Optics, Hattenbergstr 10, Mainz, 55122 Germany  
+49 6131 66 1812  
info.optics@schott.com; www.schott.com

**#413**  
**OSD**

**SPONSOR**  
**scia Systems GmbH**

**SPIE** CORPORATE MEMBER

Clemens-Winkler-Str. 6c, Chemnitz, 09116 Germany  
+49 371 33561 0  
info@scia-systems.com; www.scia-systems.com

**#113**  
**OSD**

**SPONSOR**  
**SET**

131 Impasse Barteudet, Saint-Jeoire, 74490 France  
+33 4 50 35 83 92  
info@set-sas.fr; www.set-sas.fr

**#315**

**SG Controls Ltd.**

Newton Hall, Newton Cambridge, CB22 7ZE United Kingdom  
+44 1223 872822; fax +44 1223 872983  
info@newtonhall.co.uk; www.sgcontrols.co.uk

**#326**

**SI Stuttgart Instruments GmbH**

**SPIE** CORPORATE MEMBER

Curiestr. 2, Stuttgart, 70563 Germany  
+49 711 3420325-0  
sales@s-instruments.de; www.s-instruments.de

**#509**

**SINTEF**

Strindvegen 4, Trondheim, 7034 Norway  
+47 400 05 100  
info@sintef.no; www.sintef.no

**#31V**

**SPONSOR**  
**SOMO IR Co., Ltd.**

5F Business SOMO Bldg,  
311 Yeongdong-daero, Gangnam-Gu,  
06189 Korea, Republic of  
+82 02 3450 6954;  
fax +82 02 3450 6990  
irsales@somogroup.co.kr; www.somoir.com

**#108**

**SPONSOR**

**Somos SAS**

**#414**

20 ave des Temps Modernes,  
Chasseneuil du Poitou, 86360 France  
+33 9 72 34 8541  
commercial@somos-nanotec.com;  
www.somos-group.com



**SPONSOR**  
**Spectrogon UK Ltd.**

**SPIE** CORPORATE MEMBER

Whitworth Rd, Southfield Industrial Estate, Glenrothes, Fife,  
KY6 2TF United Kingdom  
+44 1592 770 000; fax +44 1592 770 040  
sales.uk@spectrogon.com; www.spectrogon.com

**#106**

**Springer Nature Group**

Van Godewijkstraat 30, Dordrecht, 3311 GX Netherlands  
+31 78 657 60 00; fax +31 78 657 65 55  
Cindy.Zitter@springer.com; www.Springer.com

**#203**

**Symétrie**

10 Allée Charles Babbage, Nîmes, 30000 France  
+33 4 66 29 43 88  
info@symetrie.fr; www.symetrie.fr

**#311**

**Synopsys GmbH**

**SPIE** CORPORATE MEMBER

Karl-Hammerschmidt-Str.34, Aschheim Dornach, 85609  
Germany  
+49 8999 3200  
monika.sperl@synopsys.com;  
https://www.synopsys.com/optical-solutions.html

**#210**  
**OSD**

**THORLABS SAS**

14 Rue Gambetta, Le Mesnil-le-Roi, 78600 France  
+33 970 444 844; fax +33 183 711 131  
europe@thorlabs.com; www.thorlabs.com

**#121**

**SPONSOR**  
**TOPTICA Photonics AG**

**SPIE** CORPORATE MEMBER

Lochamer Schlag 19, Graefelfing Muenchen, 82166  
Germany  
+49 89 85837 0; fax +49 89 85837 200  
sales@toptica.com; www.toptica.com

**#303**

**UltraFast Innovations GmbH**

Dieselstr. 5, Garching bei Muenchen,  
85748 Germany  
+49 89 36039-437; fax +49 89 36039-453  
info@ultrafast-innovations.com;  
www.ultrafast-innovations.com

**#111**  
**OSD**

**Vistec Electron Beam GmbH**

Ilmstr 4, Jena, 07743 Germany  
+49 3641 799 80; fax +49 3641 7998 222  
electron-beam@vistec-semi.com; www.vistec-semi.com

**#122**

**VM-TIM GmbH**

Victor-Goettler- Str. 9, Jena, 07745 Germany  
+49 3641 384859; fax +49 3641 384860  
info@vm-tim.de; www.vm-tim.de

**#308**

**SPONSOR**  
**V-OPTICS**

**SPIE** CORPORATE MEMBER

2 Rue du Travail, Illkirch-Graffenstaden, 67400 France  
+33 (0)3 67 10 28 60  
info@v-optics.fr; www.v-optics.fr

**#213**

**WYSE LIGHT**

5 Rue de la Productique, Saint-Etienne,  
France 42000  
+33 782 71 51 52  
contact@wyse-light.com; www.wyse-light.com

**#501**  
**OSD**

**SPONSOR**

**Zurich Instruments AG**

**#217**

**SPIE** CORPORATE MEMBER

Technopark Strasse 1,  
Zurich, 8005 Switzerland  
+41 44 515 0410  
info@zhinst.com; www.zhinst.com



# SPIE.

## Corporate Members

- 3 fotonai  
3L Systems  
3SAE Technologies, Inc.  
4D Technology Corp.  
4in1 Photonics LLC  
A.J. Tuck Co.  
Abrisa Technologies  
ABTech, Inc.  
Access Laser Co.  
AccuCoat Inc.  
Acqiris SA  
Acqubit  
Active Fiber Systems GmbH  
Addoptics BV  
AdlOptica Optical Systems GmbH  
Admesy B.V.  
ADOS-tech, UAB  
AdTech Ceramics  
AdTech Photonics, Inc.  
AdValue Photonics, Inc.  
Advance Reproductions Corp.  
Advanced Fiber Resources (Zhuhai) Ltd.  
Advanced Microoptic Systems GmbH  
Advanced Research Corp.  
AdvR, Inc.  
Aeluma, Inc.  
AEMtec GmbH  
AeroDIODE  
Aerotech Ltd.  
Aerotech, Inc.  
AFL  
AKELA Laser Corp.
- Alazar Technologies, Inc.  
Albis Optoelectronics AG  
Allegro MicroSystems, Inc.  
Allied Vision Technologies  
Alluxa, Inc.  
ALPAO S.A.S.  
Alpine Research Optics  
Altechna UAB  
Altos Photonics, Inc.  
American Ctr. for Optics Manufacturing, Inc.  
AMETEK Electronic Packaging  
AMETEK, Inc.  
Amonics Ltd.  
AMPHOS GmbH  
Amplitude Laser Group  
Amplitude Laser Inc.  
Analog Modules, Inc.  
Andor Technology Ltd.  
Andover Corp.  
Ansys Canada Ltd.  
Ansys, Inc.  
A-One Technology Ltd.  
AP Technologies Ltd.  
Aperture Optical Sciences Inc.  
Apollo Optical Systems, LLC  
Applied Image, Inc.  
Applied Optics  
Applied Physics & Electronics, Inc.  
Applied Surface Technologies
- Apré Instruments, Inc.  
April Electro-Optics Co., Ltd.  
Archer OptTx, Inc.  
Arizona Optical Metrology LLC  
ARKA Group, L.P.  
Armadillo SIA  
Arroyo Instruments, LLC  
ASA Astroysteme GmbH  
Asahi Spectra USA Inc.  
asphericon  
asphericon GmbH  
A-Star Photonics, Inc.  
attocube systems Inc.  
Auxora, Inc.  
Avantes, Inc.  
Avantier Inc.  
Avo Photonics, Inc.  
Axine Water Technologies  
Axiom Optics  
Ayase America Inc.  
Ball Aerospace  
BaySpec, Inc.  
Beamtech Optronics Co., Ltd.  
Beijing RealLight Technology Co., Ltd.  
Beijing TRANS Manufacture and Trade Co., Ltd.  
Beneq Oy  
Berkshire Photonics  
Bionic France SARL  
BluGlass, Ltd.  
Boston Electronics Corp.  
Boston Micromachines Corp.  
Boulder Nonlinear Systems  
Boxin Photoelectric Co., Ltd.  
Brandywine Photonics, LLC  
Brewer Science, Inc.  
Brightlaser Ltd.  
Bristol Instruments, Inc.  
Bühler Inc.
- BWT Beijing Ltd.  
Caeleste CVBA  
Calmar Laser  
Canon U.S.A., Inc.  
CASTECH Inc.  
CDA GmbH  
Ceres Holographics Ltd.  
Changchun New Industries Optoelectronics Technology Co., Ltd.  
Chenter Industries Group Ltd.  
Chotest Technology Inc.  
Chroma Technology Corp.  
CI Systems, Inc.  
Citrogene, Inc.  
Clark-MXR Inc.  
Clear Align  
CMC Microsystems  
Coastal Connections  
Collimated Holes, Inc.  
Colorado Thin Films, Inc.  
Commonlands LLC  
Conductive Containers Inc.  
Coractive  
Covesion Ltd.  
CREAL SA  
CREOL, The College of Optics and Photonics, Univ. of Central Florida  
Cristal Laser S.A.  
Cryslaser Inc.  
CrystaLaser LC  
CRYSTECH Inc.  
Crystran Ltd.  
Ctr. for Process Innovation Ltd.  
Cygnus Photonics  
DataRay Inc.  
DAYY Photonics Corporation  
Deltronic Crystal Industries, Inc.  
DeUve Photonics  
DFM A/S  
Dino-Lite Digital Microscope  
Dioptric GmbH  
Dispelix Oy  
Diverse Optics Inc.
- DRS Daylight Solutions  
Dynasil Fused Silica  
Dyoptr, LLC  
E.R. Precision Optical Corp.  
Ecoclean Inc.  
Edmund Optics GmbH  
Edmund Optics Inc.  
Edmund Optics UK Ltd.  
Eidetic Optical Systems  
ELAS Technologies Investment GmbH  
Electro Optical Components, Inc.  
ElFys Oy  
Emberion Oy  
Empire West, Inc.  
Energetiq Technology, Inc.  
EPIX, Inc.  
Eratech Pte. Ltd.  
Evaporated Coatings, Inc.  
Everix, Inc.  
Exail SAS  
EXALOS AG  
ExOptronics, Inc.  
FastMicro B.V.  
FEMTOprint SA  
Fiber Optic Ctr., Inc.  
FiberBridge Photonics GmbH  
Fibercore Ltd.  
Fiberoptic Systems, Inc.  
Fibertech Optica Inc.  
First Light Imaging S.A.S.  
FISBA AG  
FJW Optical Systems, Inc.  
FlexEnable Technology Ltd.  
Fluence sp. z o.o  
Focuslight Technologies, Inc.  
FOS Inon Optics GmbH  
Fotofab, LLC  
Frankfurt Laser Co.  
Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP  
Fraunhofer-Institut für Photonische Mikrosysteme IPMS  
Freedom Photonics, LLC  
Fresnel Technologies Inc.
- Fujian Hitronics Technologies Inc.  
Fuzhou Alpha Optics Co., Ltd.  
Fuzhou Intpho Technology Co., Ltd.  
Fuzhou WTS Photonics Co., Ltd.  
G&H Group  
G5 Infrared, LLC  
GAMDAN Optics  
Gamma Scientific  
Gauss Labs  
GenlSys Inc  
Gentec Electro-Optics Inc.  
Glenair, Inc.  
Global Superabrasives, LLC  
Greenlight Optics, LLC  
Grintech GmbH  
Gudeng, Inc.  
Guernsey Coating Labs., Inc.  
Guiding Photonics  
GW Laser Technology LLC  
Haas Laser Technologies, Inc.  
Hamamatsu Corp.  
Haphit, Inc.  
HC Photonics Corp.  
Headwall Photonics, Inc.  
Heidelberg Instruments Inc.  
Heidelberg Instruments Mikrotechnik GmbH  
HEIDENHAIN Corp.  
Hellma Materials GmbH  
Heraeus Quartz North America LLC  
HighRI Optics, Inc.  
Hinds Instruments, Inc.  
Hitachi High-Tech America, Inc.  
HIWIN Corp.  
Hofstadter Analytical Services, LLC  
HOLO/OR Ltd.  
HOLOEYE Photonics AG  
Holographix LLC  
HORIBA Scientific  
HOYA Corp. USA  
Huanic Corp.  
Hyperion Optics USA Inc.  
HySpex, Norsk Elektro Optikk AS  
IDEX Health & Science, LLC  
IDEX Optical Technologies  
ilis gmbh
- Imagine Optic SA  
imec  
IMPhotonix  
IMRA America, Inc.  
IMT Precision on Glass  
Incom, Inc.  
Industrial Laser Machines, LLC  
Infrared Materials, Inc.  
InfraTec Infrared LLC  
INGENERIC GmbH  
Innolite GmbH  
Innolume GmbH  
Innovation DIC Chemtronics, Inc.  
INO  
Inrad Optics  
International Defense & Security Solutions, Inc.  
InterOptics, LLC  
Intlvac Thin Film  
Intpho (Fujian) Technology Co., Ltd.  
IO Industries, Inc.  
I-Photonics UAB  
iPronics Programmable Photonics, S.L.  
IRD Glass  
IRflex Corporation  
Irisiome Solutions  
IRnova AB  
J.A. Woollam Co., Inc.  
Janos Technology, LLC  
JENOPTIK Optical Systems GmbH  
Luvantix SSCP  
Luxel Corp.  
Luxottica S.r.l.  
Machinix Ltd.  
Mad City Labs., Inc.  
Mahr  
Marina Photonics, Inc.  
Market Tech, Inc.  
Materion Balzers Optics  
Maxphotonics Co., Ltd.  
Meadowlark Optics, Inc.  
MEETOPTICS  
MegaWatt Lasers, Inc.  
memQ Inc.  
Meopta - optika, s.r.o.  
MES SOLUTIONS DOO  
Metoree  
MICLEDI microdisplays  
Micro Laser Systems, Inc.
- Micro-LAM, Inc.  
MICRONIX USA, LLC  
MIKROP AG  
Mikro-Tasarim Elektronik San. ve Tic. A.S.  
Mildex, Inc.  
Mindrum Precision, Inc.  
Minus K Technology Inc.  
Mirrorcle Technologies, Inc.  
MKS Instruments, Inc.  
MLD Technologies, LLC  
MLOPTIC Corp.  
MONTFORT Laser GmbH & Co. KG  
Moore Nanotechnology Systems, LLC  
MPA Crystal Corp.  
MPB Communications Inc.  
MPS Micro Precision Systems AG  
Myrias Optics, Inc.  
Naked Optics Corp.  
Nanomotion Inc.  
nanoplus Nanosystems and Technologies GmbH  
nanosystec Inc.  
Nantong Ruisen Optical Co., Ltd.  
National Aperture, Inc.  
National Institute of Standards and Technology  
National Scientific Optics, Inc.  
Natsume Optical Corp.  
Naval Surface Warfare Ctr. Dahlgren Div.  
Navitar Inc.  
Necsel IP, Inc.  
New Imaging Technologies  
New Source Technology, LLC  
New York Photonics  
NexDome Observatories Inc.  
NextCorps  
NIL Technology ApS

# Moving technology to market - together.



NKT Photonics A/S  
 NKT Photonics Inc.  
 nLIGHT, Inc.  
 NLM Photonics  
 NoIR InSight  
 NorPix, Inc.  
 North American Coating Labs.  
 Northrop Grumman Cutting Edge Optronics  
 Novanta, Inc.  
 Novotech, Inc.  
 NP Photonics, Inc.  
 NTFL  
 NuFlare Technology, Inc.  
 NUVIEW, Inc.  
 Nüvü Cameras Inc.  
 O/E Land Inc.  
 Obducat Technologies AB  
 Ocean Insight B.V.  
 Ocean Optics  
 Octave Photonics LLC  
 OEwaves, Inc.  
 Ohara Corp.  
 OHTAMA Co., Ltd.  
 Omega Optical Holdings, LLC  
 Omicron Laserer Laserprodukte GmbH  
 Ontar Corporation  
 Optical Engines, Inc.  
 Optical Filter Source, LLC  
 Optical Support, Inc.  
 Opticho Inc., Ltd.  
 Optics Technology, Inc.  
 Optics Valley  
 Optiforms, Inc.  
 OptiGrate - IPG Photonics  
 Optikos Corp.

Optikron GmbH  
 Optimax Systems, Inc.  
 OptiPro Systems, LLC  
 OptiPulse, Inc.  
 Optiwave Systems Inc.  
 Opto-Alignment Technology, Inc.  
 Optogama UAB  
 Optogration Inc.  
 Opto-Line International, Inc.  
 OPTOMAN  
 Optonetic LLC  
 Optonique  
 Optoprofiler LLC  
 OptoSigma Corp.  
 OptoSigma Europe S.A.S.  
 OptoTech Optikmaschinen GmbH  
 Optotune Switzerland AG  
 optX Imaging Systems  
 OSELA Inc.  
 OSI Optoelectronics, Inc.  
 Oxsius SA  
 OZ Optics Ltd.  
 Pacific Lasertec, LLC  
 Palomar Technologies, Inc.  
 Pantec Biosolutions AG  
 Park Optics  
 Pavilion Integration Corp.  
 Pecchioli Research Srl  
 Perkins Precision Developments, LLC  
 PFG Precision Optics, Inc.  
 PHASICS Corp.  
 PHIX Photonics Assembly  
 Photon Engineering LLC

Photon Etc. Inc  
 Photon Force Ltd.  
 PHOTON LINES Ltd.  
 Photonic Cleaning Technologies  
 Photonics Foundry GmbH  
 Photonics Industries International, Inc.  
 Photonics Industry & Technology Development Association  
 Photonics Media/Laurin Publishing  
 Photonics Technologies Ltd.  
 PHOTONIS Netherlands B.V.  
 Photonis Scientific, Inc.  
 PhotoSound Technologies, Inc.  
 PI (Physik Instrumente) L.P.  
 PIEZOCONCEPT  
 PIKE Technologies  
 Pixel Photonics GmbH  
 Planar JSC  
 PlanOpSim  
 PLC Industries Pte Ltd.  
 POG Precision Optics Gera  
 poLight ASA  
 Power Technology, Inc.  
 PowerPhotonic Inc.  
 PowerPhotonic Ltd  
 Precision Glass & Optics  
 Precision Optical  
 Precitech Inc.  
 Princeton Infrared Technologies, Inc.  
 Prior Scientific Inc.  
 Prospective Instruments LK OG  
 Pure Photonics  
 Pureon Inc.  
 PWY Service GmbH & Co. KG

QDI Systems B.V.  
 QED Optics  
 QED Technologies, Inc.  
 Qingdao Lasence Co., Ltd.  
 QPC Lasers Inc.  
 Qual Diamond Hi-Tech  
 QuantCAD LLC  
 QuantIC  
 Quartus Engineering Inc.  
 Qunnect, Inc.  
 QZabre Ltd.  
 R Specialty Optical Fibers LLC  
 Radiant Vision Systems, LLC  
 Raicol Crystals Ltd.  
 Rainbow Research Optics, Inc.  
 Raptor Photonics Ltd.  
 Raysung Photonics Inc.  
 Redondo Optics, Inc.  
 RedWave Labs Ltd.  
 Reynard Corp.  
 RICOR USA, Inc.  
 Rigaku Innovative Technologies, Inc.  
 Riverhawk Co.  
 Rochester Precision Optics, LLC  
 Rocky Mountain Instrument Co.  
 Ruda Optical  
 Sacher Lasertechnik GmbH  
 Safran Optics 1  
 Santec USA Corp.  
 Satisloh North America Inc.  
 SCANLAB America, Inc.  
 ScannerMAX  
 Schäfter + Kirchoff GmbH  
 Schneider Optical Machines Inc.  
 Schneider Optics, Inc.  
 SCHOTT North America, Inc.  
 SCI Engineered Materials  
 scia Systems GmbH  
 Science and Technology Facilities Council  
 Seattle Photonics Associates LLC  
 Seiwa Optical America Inc.  
 SemiNex Corp.  
 Sensalight Technologies GmbH  
 Sensir Inc.

SFC Energy B.V.  
 Shanghai Optics Inc.  
 Shearman Laser, Inc.  
 SICART (Zuhai) Technology Co., Ltd.  
 Sierra Precision Optics  
 Sierra-Olympia Technologies, Inc.  
 SILIOS Technologies  
 Sill Optics GmbH  
 Siskiyou Corporation  
 SmarAct Inc.  
 Somos IWT son-x GmbH  
 Spectrogon AB  
 Spectrogon UK Ltd.  
 Spectrogon US, Inc.  
 Spectrolight Inc.  
 Spectrum Scientific, Inc.  
 Spica Technologies, Inc.  
 SPO Precision Optics  
 SPU System Inc.  
 SRI International  
 Stanford Computer Optics, Inc.  
 Sunny Technology  
 Superlum Diodes Ltd.  
 Surface Optics Corp.  
 Swabian Instruments GmbH  
 Swabian Instruments USA Inc.  
 SWIR Vision Systems  
 Sydor Optics, Inc.  
 Synopsys GmbH  
 Synopsys, Inc.  
 TAU Systems, Inc.

Taylor Hobson  
 Technica Optical Components, LLC  
 Technical Manufacturing Corp.  
 Tecnisco Ltd.  
 TelAztec LLC  
 Teledyne Imaging  
 TeraXion Inc.  
 The Aerospace Corp.  
 The Institute of Optics, Univ. of Rochester  
 Thermo Fisher Scientific Inc.  
 ThinFilms, Inc.  
 Thorlabs, Inc.  
 TLC International World Headquarters  
 TOPTICA Photonics AG  
 TOPTICA Photonics, Inc.  
 Torrent Photonics  
 Tower Optical Corp.  
 TrILite Technologies GmbH  
 TRUMPF Inc.  
 TRUMPF Scientific Lasers GmbH + Co. KG  
 Tucsen Photonics Co., Ltd.  
 Turning Point Lasers Corporation  
 TwinStar Optics, Coatings & Crystals, Inc.

Twoptics Systems Design SL  
 Tydex  
 Umicore Optical Materials USA, Inc.  
 UNI Optics Co., Ltd.  
 Universal Photonics Inc.  
 Valtech Corp.  
 Vermont Photonics Technologies Corp.  
 Vertilite Inc.  
 Vescent Photonics Inc.  
 VIALUX GmbH  
 ViaSat, Inc.  
 Viavi Solutions Inc.  
 Video Scope International, Ltd.  
 Video Systems Srl  
 Videology Industrial-Grade Cameras, an inTEST Co.  
 Vincent Associates  
 VisiMax Technologies, Inc.  
 Vital Optics Technology Co., Ltd.  
 V-Optics SAS  
 Vortex Optical Coatings Ltd.  
 Walk Laser Optics, LLC  
 Wasatch Photonics, Inc.  
 Wavelength Electronics, Inc.

Wavelength Opto-Electronic (S) Pte. Ltd.  
 WEINERT Fiber Optics, Inc.  
 WINHO Optical Mfg. Co., Ltd.  
 World Star Tech  
 Wyant College of Optical Sciences  
 Wyse Light  
 Wyvern  
 Xcimer Energy, Inc.  
 XIMEA Corp.  
 XONOX Technology Inc.  
 Youopto Technology Co., Ltd.  
 YSL Photonics  
 Z & Z Optoelectronics Tech. Co., Ltd.  
 Zaber Technologies Inc.  
 ZAZA, Inc.  
 Zemax, LLC  
 Zhejiang Lante Optics Co., Ltd.  
 Zhongshan Meisu Technology Co., Ltd.  
 Z-Optics Co., Ltd.  
 Zurich Instruments AG  
 Zurich Instruments USA, Inc.  
 Zygo Corporation



[spie.org/corporate](https://spie.org/corporate)

SPIE Corporate Member list as of 1 March 2024

CONFERENCE 12990 ..... PAGES 35–46 <b>Metamaterials XIV</b> Chairs: Kevin F. MacDonald; Isabelle Staude; Anatoly V. Zayats	CONFERENCE 13005 ..... PAGES 165–174 <b>Lasers and Photonics for Advanced Manufacturing</b> Chairs: François Courvoisier; Sylvain Lecler; Wilhelm Pflöging
CONFERENCE 12991 ..... PAGES 47–62 <b>Nanophotonics X</b> Chairs: David L. Andrews; Angus J. Bain; Antonio Ambrosio	CONFERENCE 13006 ..... PAGES 175–188 <b>Biomedical Spectroscopy, Microscopy, and Imaging III</b> Chairs: Jürgen Popp; Csilla Gergely
CONFERENCE 12992 ..... PAGES 63–70 <b>Advances in Ultrafast Condensed Phase Physics IV</b> Chairs: Stefan Haacke	CONFERENCE 13007 ..... PAGES 189–191 <b>Neurophotonics II</b> Chairs: Tomáš Čížmár; Tommaso Fellin
CONFERENCE 12993 ..... PAGES 71–78 <b>Quantum Technologies 2024</b> Chairs: Florent Baboux; Virginia D'Auria; Tom Bienaimé	CONFERENCE 13008 ..... PAGES 192–197 <b>Biophotonics in Point-of-Care III</b> Chairs: Michael T. Canva; Ambra Giannetti; Hatice Altug; Julien Moreau
CONFERENCE 12994 ..... PAGES 79–85 <b>Terahertz Photonics III</b> Chairs: Mona Jarrahi; Sascha Preu; Dmitry Turchinovich	CONFERENCE 13009 ..... PAGES 198–203 <b>Clinical Biophotonics III</b> Chairs: Daniel S. Elson; Sylvain Gioux; Brian W. Pogue
CONFERENCE 12995 ..... PAGES 86–90 <b>3D Printed Optics and Additive Photonic Manufacturing IV</b> Chairs: Alois M. Herkommer; Georg von Freymann; Manuel Flury	CONFERENCE 13010 ..... PAGES 204–211 <b>Tissue Optics and Photonics III</b> Chairs: Valery V. Tuchin; Walter C. P. M. Blondel; Zeev Zalevsky
CONFERENCE 12996 ..... PAGES 91–101 <b>Unconventional Optical Imaging IV</b> Chairs: Irene Georgakoudi; Marc P. Georges; Nicolas Verrier	CONFERENCE 13011 ..... PAGES 212–215 <b>Data Science for Photonics and Biophotonics</b> Chairs: Thomas Bocklitz
CONFERENCE 12997 ..... PAGES 102–108 <b>Optics and Photonics for Advanced Dimensional Metrology III</b> Chairs: Peter J. de Groot; Felipe Guzman; Pascal Picart	CONFERENCE 13012 ..... PAGES 216–223 <b>Integrated Photonics Platforms III</b> Chairs: Roel G. Baets; Peter O'Brien; Laurent Vivien
CONFERENCE 12998 ..... PAGES 109–116 <b>Optics, Photonics and Digital Technologies for Imaging Applications VIII</b> Chairs: Peter Schelkens; Tomasz Kozacki	CONFERENCE 13013 ..... PAGES 224–230 <b>Organic Electronics and Photonics: Fundamentals and Devices IV</b> Chairs: Sebastian Reineke; Koen Vandewal; Wouter Maes
CONFERENCE 12999 ..... PAGES 117–129 <b>Optical Sensing and Detection VIII</b> Chairs: Francis Berghmans; Ioanna Zergioti	CONFERENCE 13014 ..... PAGES 231–234 <b>Photonics for Solar Energy Systems X</b> Chairs: Alexander N. Sprafke; Jan Christoph Goldschmidt; Luana Mazzarella
CONFERENCE 13000 ..... PAGES 130–133 <b>Real-time Processing of Image, Depth and Video Information 2024</b> Chairs: Matthias F. Carlsohn; Gian Domenico Licciardo; Viktor J. Schneider	CONFERENCE 13015 ..... PAGES 235–241 <b>Photosensitive Materials and their Applications III</b> Chairs: Robert R. McLeod; Inmaculada Pascual Villalobos; Yasuo Tomita
CONFERENCE 13001 ..... PAGES 134–139 <b>Specialty Optical Fibres VIII</b> Chairs: Kyriacos Kalli; Pavel Peterka; Christian-Alexander Bunge	CONFERENCE 13016 ..... PAGES 242–249 <b>Liquid Crystals Optics and Photonic Devices</b> Chairs: Ibrahim Abdulhalim; Camilla Parmeggiani
CONFERENCE 13002 ..... PAGES 140–145 <b>Semiconductor Lasers and Laser Dynamics XI</b> Chairs: Marc Sciamanna; Fan-Yi Lin; Jesper Mørk	CONFERENCE 13017 ..... PAGES 250–258 <b>Machine Learning in Photonics</b> Chairs: Francesco Ferranti; Mehdi Keshavarz Hedayati; Andrea Fratalocchi
CONFERENCE 13003 ..... PAGES 146–155 <b>Fiber Lasers and Glass Photonics: Materials through Applications IV</b> Chairs: Stefano Taccheo; Maria Rita Cicconi; Matthias L. Jäger	CONFERENCE WS200 ..... PAGES 259–261 <b>Women in Renewable Energy (WiRE) 2024</b> Chairs: Zakya H. Kafafi; Natalie Stingelin; Natalie Banerji
CONFERENCE 13004 ..... PAGES 156–164 <b>Nonlinear Optics and its Applications 2024</b> Chairs: John M. Dudley; Anna C. Peacock; Birgit Stiller; Giovanna Tissoni	CONFERENCE WS201 ..... PAGES 262–264 <b>11th annual Sino-French "Photonics and Optoelectronics" PHOTONET International Research Network Workshop</b> Chairs: Walter C. P. M. Blondel; Boris Gralak; Christophe Peucheret

# CONFERENCE 12990

## Metamaterials XIV

07 - 11 April 2024 | Etoile C, Niveau/Level 1

**Conference Chair(s):** Kevin F. MacDonald, Univ. of Southampton (United Kingdom); Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany); Anatoly V. Zayats, King's College London (United Kingdom)

**Program Committee:** Hatice Altug, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Angela Barreda, Carlos III Univ. of Madrid (Spain); Sergey I. Bozhevolnyi, Univ. of Southern Denmark (Denmark); Michele Celebrano, Politecnico di Milano (Italy); Andrea Di Falco, Univ. of St. Andrews (United Kingdom); Tal Ellenbogen, Tel Aviv Univ. (Israel); Patrice Genevet, Colorado School of Mines (United States); Baohua Jia, RMIT Univ. (Australia); Maria Kafesaki, Foundation for Research and Technology-Hellas (Greece); Guixin Li, Southern Univ. of Science and Technology (China); Stefan Linden, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany); Natalia M. Litchinitser, Duke Univ. (United States); Alejandro Martínez, Univ. Politècnica de València (Spain); Martin W. McCall, Imperial College London (United Kingdom); Dorota A. Pawlak, Institute of Electronic Materials Technology (Poland); Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany); Mario Silveirinha, Univ. Técnica de Lisboa (Portugal); Philippe Tassin, Chalmers Univ. of Technology (Sweden); Jason G. Valentine, Vanderbilt Univ. (United States); Joel Yang, Singapore Univ. of Technology and Design (Singapore)

### Sunday 7 April 2024

#### SESSION 1: ACTIVE MEDIA AND METADEVICES I

07 April 2024 • 01:10 PM - 03:10 PM | Etoile C, Niveau/Level 1

Session Chair(s): Kevin F. MacDonald, Optoelectronics Research Ctr. (United Kingdom)

12990-1 • 01:10 PM - 01:40 PM

**Organic Photoswitches for Metasurface Resonance Tuning** (*Invited Paper*)

Author(s): Sarah L. Walden, Purushottam Poudel, Chengjun Zou, Thomas Siefke, Pallabi Paul, Adriana Szeghalmi, Thomas Pertsch, Felix H. Schacher, Isabelle Staude, Friedrich-Schiller-Univ. Jena (Germany)

12990-2 • 01:40 PM - 01:55 PM

**Tunable fast optical filter using metamaterials and phase change material**

Author(s): Rudra Gnawali, Air Force Research Lab. (United States); Andrew Volk, Applied Optimization, Inc. (United States); Joshua R. Hendrickson, Shivashankar Vangala, Air Force Research Lab. (United States); Partha P. Banerjee, Univ. of Dayton (United States)

12990-70 • 01:55 PM - 02:25 PM

**Scalable Monolayer MoS<sub>2</sub> Plasmonic Phototransistors** (*Invited Paper*)

Author(s): Yu-Jung Lu, Research Ctr. for Applied Sciences - Academia Sinica (Taiwan)

12990-4 • 02:25 PM - 02:40 PM

**Metasurface integration into thin-film piezoelectric MEMS: Realizations of a tunable waveplate and a tunable lens**

Author(s): Christopher A. Dirdal, Paul C. V. Thrane, SINTEF (Norway); Chao Meng, Univ. of Southern Denmark (Denmark); Firehun T. Dullo, Jesil Jose, SINTEF (Norway); Igor Meglinski, Aliaksander Bykau, Univ. of Oulu (Finland); Sergey Bozhevolnyi, Univ. of Southern Denmark (Denmark)

12990-5 • 02:40 PM - 03:10 PM

**Electrically-driven single-crystal plasmonic nanocavities** (*Invited Paper*)

Author(s): Pan Wang, Zhejiang Univ. (China)

**Coffee Break 03:10 PM - 03:40 PM**

#### SESSION 2: CONTROLLING LIGHT-MATTER INTERACTIONS

07 April 2024 • 03:40 PM - 05:10 PM | Etoile C, Niveau/Level 1

Session Chair(s): Pan Wang, Zhejiang Univ. (China)

12990-6 • 03:40 PM - 04:10 PM

**Ultrafast all-optical metasurfaces: controlling light and manipulating matter** *(Invited Paper)*

Author(s): **Margherita Maiuri, Andrea Schirato, Mert Akturk, Giulia Crotti**, Politecnico di Milano (Italy); **Remo Proietti Zaccaria**, Istituto Italiano di Tecnologia (Italy); **Alessandro Alabastri**, Rice Univ. (United States); **Giulio Cerullo, Giuseppe Della Valle**, Politecnico di Milano (Italy)

12990-7 • 04:10 PM - 04:25 PM

**Hybrid metal-dielectric resonator for anapole-assisted enhanced chiral sensing applications**

Author(s): **Guillermo Serrera, Javier González-Colsa, Pablo Albella**, Univ. de Cantabria (Spain)

12990-8 • 04:25 PM - 04:40 PM

**Extreme light confinement mediated by the transverse Kerker effect.**

Author(s): **Sergey A. Gladyshev, Adria Canos Valero, Thomas Weiss**, Karl-Franzens-Univ. Graz (Austria)

12990-9 • 04:40 PM - 05:10 PM

**Spectrally selective metasurfaces for spatially encoded light-matter coupling** *(Invited Paper)*

Author(s): **Andreas Tittl**, Ludwig-Maximilians-Univ. München (Germany)

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Koln (Germany)

### Coffee Break 11:00 AM - 11:30 AM

### SESSION 3: MEAMATERIAL DESIGN AND MODELLING

08 April 2024 • 11:30 AM - 12:45 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Anatoly V. Zayats**, King's College London (United Kingdom)

12990-10 • 11:30 AM - 12:00 PM

**Learning faster and better: embedding Maxwell equations into machine learning** *(Invited Paper)*

Author(s): **Viktor A. Podolskiy**, Univ. of Massachusetts Lowell (United States)

12990-11 • 12:00 PM - 12:15 PM

**Biomimetic all-organic near zero-index photonics inspired by photosynthetic photonic crystals**

Author(s): **Miguel A. Castillo**, INL - International Iberian Nanotechnology Lab. (Portugal); **Carla Estévez-Varela**, Univ. de Vigo (Spain); **Diogo Filipe Pinto Cunha**, Univ. do Minho (Portugal), Univ. do Porto (Portugal); **William P. Wardley**, Univ. of Exeter (United Kingdom); **Rosalía Serna Galan**, Instituto de Óptica "Daza de Valdés", Consejo Superior de Investigaciones Científicas (Spain); **Mikhail Vasilevskiy**, Univ. do Minho (Portugal), Univ. do Porto (Portugal); **Isabel Pastoriza-Santos**, Univ. de Vigo (Spain); **Sara Nunez-Sanchez**, Univ. do Minho (Portugal), Univ. do Porto (Portugal); **Martín López-García**, INL - International Iberian Nanotechnology Lab. (Portugal)

12990-12 • 12:15 PM - 12:30 PM

**Bio-inspired building blocks for all-organic metamaterials**

Author(s): **Samuel Thomas Holder**, Univ. of Bristol (United Kingdom); **Carla Estévez-Varela, Isabel Pastoriza-Santos**, CINBIO, Univ. de Vigo (Spain); **Martín López-García**, INL - International Iberian Nanotechnology Lab. (Portugal); **Ruth Oulton**, Univ. of Bristol (United Kingdom); **Sara Núñez-Sánchez**, Univ. de Vigo (Portugal)

12990-13 • 12:30 PM - 12:45 PM

**Modelling 2D-material-enhanced metasurfaces and gratings with quasinormal modes**

Author(s): **Thomas Christopoulos**, National Hellenic Research Foundation (Greece), Aristotle Univ. of Thessaloniki (Greece); **Georgios Nousios, Emmanouil E. Kriezis**, Aristotle Univ. of Thessaloniki (Greece); **Odysseas Tsilipakos**, National Hellenic Research Foundation (Greece)

**Lunch Break 12:45 PM - 01:45 PM****SESSION 4: SPACE-TIME PHENOMENA**

08 April 2024 • 01:45 PM - 03:30 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Viktor A. Podolskiy**, Univ. of Massachusetts Lowell (United States)

12990-18 • 01:45 PM - 02:15 PM

**Optical effects in spatiotemporal metasurfaces and metamaterials** *(Invited Paper)*

Author(s): **Carsten Rockstuhl, Puneet Garg**, Karlsruher Institut für Technologie (Germany); **Mohammad M. Asgari**, Aalto Univ. (Finland); **Xuchen Wang**, Karlsruher Institut für Technologie (Germany); **Mohammad S. Mirmoosa**, Univ. of Eastern Finland (Finland); **Aristeidis G. Lamprianidis**, Karlsruher Institut für Technologie (Germany); **Barbara Verfürth**, Universitätsklinikum Bonn (Germany); **Viktar Asadchy**, Aalto Univ. (Finland)

12990-15 • 02:15 PM - 02:30 PM

**Linear-frequency conversion with time-varying metasurfaces**

Author(s): **Claude Amra**, Institut Fresnel (France); **Ali Passian**, Oak Ridge National Lab. (United States); **Philippe Tchamitchian**, Institut Fresnel (France); **Mauro Ettore, Ahmed Alwakil**, Institut d'Electronique et de Télécommunications de Rennes (France); **Juan Antonio Zapien**, City Univ. of Hong Kong (Hong Kong, China); **Paul Rouquette, Yannick Abautret, Myriam Zerrad**, Institut Fresnel (France)

12990-14 • 02:30 PM - 03:00 PM

**Optical Nonreciprocal Forces, Ergodicity and Entropy of Space-Time Crystals** *(Invited Paper)*

Author(s): **Venugopal Raskatla, Tongjun Liu**, Univ. of Southampton (United Kingdom); **Jinxiang Li**, Nanyang Technological Univ. (Singapore); **Kevin F. MacDonald**, Univ. of Southampton (United Kingdom); **Nikolay I. Zheludev**, Univ. of Southampton (United Kingdom), Nanyang Technological Univ. (Singapore)

12990-17 • 03:00 PM - 03:15 PM

**Generalized Clausius-Mossotti mixing formula for 3D spacetime crystals**

Author(s): **Filipa Prudencio**, Instituto de Telecomunicações (Portugal), Instituto Superior Técnico (Portugal), Instituto Univ. de Lisboa (Portugal); **Mario Silveirinha**, Instituto de Telecomunicações (Portugal), Instituto Superior Técnico (Portugal), Instituto Univ. de Lisboa (Portugal)

12990-16 • 03:15 PM - 03:30 PM

**Quantum theory of wave scattering from time interfaces**

Author(s): **Mohammad Sajjad Mirmoosa, Andreas Norrman**, Univ. of Eastern Finland (Finland)

**Coffee Break 03:30 PM - 04:00 PM****SESSION 5: QUANTUM AND TOPOLOGICAL PHENOMENA**

08 April 2024 • 04:00 PM - 05:45 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Natalia M. Litchinitser**, Duke Univ. (United States)

12990-19 • 04:00 PM - 04:30 PM

**Generation and manipulation of quantum light using bulk nonlinear metamaterials** *(Invited Paper)*

Author(s): **Ady Arie**, Tel Aviv Univ. (Israel)

12990-20 • 04:30 PM - 04:45 PM

**Nonlinear optical effects from CdSe quantum dots on plasmonic metasurfaces**

Author(s): **Jeetendra Gour, Sebastian Beer**, Friedrich-Schiller-Univ. Jena (Germany); **Raktim Baruah**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Alessandro Alberucci**, Friedrich-Schiller-Univ. Jena (Germany); **Maria Wächtler**, Rheinland-Pfälzische Technische Univ. Kaiserslautern-Landau (Germany); **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Uwe Detlef Zeitner**, Hochschule für Angewandte Wissenschaften München (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

12990-21 • 04:45 PM - 05:00 PM

**Manipulation of photon emission with on-chip emitter-coupled holography metasurfaces**

Author(s): **Yinhui Kan, Xujing Liu, Shailesh Kumar, Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

12990-22 • 05:00 PM - 05:30 PM

**Shaking Photons Out of Topological Material** *(Invited Paper)*

Author(s): **Mário G. Silveirinha**, Instituto de Telecomunicações (Portugal)

12990-23 • 05:30 PM - 05:45 PM

**dual-toroidal mode assisted “slow-light” propagation in terahertz metasurfaces**

Author(s): **Soumyajyoti Mallick, Shreeya Rane, Nityananda Acharyya, Dibakar Roy Chowdhury**, Mahindra Univ. (India)

## Tuesday 9 April 2024

### SESSION 6: METAMATERIALS FOR METROLOGY, SENSING AND IMAGING

09 April 2024 • 08:30 AM - 10:30 AM | Etoile C, Niveau/Level 1

Session Chair(s): **Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

12990-24 • 08:30 AM - 09:00 AM

**Prospects for Metamaterials for Precision Sensing and Metrology** *(Invited Paper)*

Author(s): **Stefanie Kroker**, Technische Univ. Braunschweig (Germany); **Bernd Bodermann**, Physikalisch-Technische Bundesanstalt (Germany); **Johannes Dickmann, Mika Gaedtke, Steffen Sauer**, Technische Univ. Braunschweig (Germany); **Tim Käseberg**, Physikalisch-Technische Bundesanstalt (Germany); **Liam Shelling Neto, Anastasiia Sorokina, Stefanie Kort, Nico Wagner**, Technische Univ. Braunschweig (Germany)

12990-25 • 09:00 AM - 09:15 AM

**A metalens based focus variation instrument exploiting focal plane scanning via illumination wavelength**

Author(s): **Pengqian Yang, Andrew Henning, Haydn Martin, Xiangqian Jiang**, Univ. of Huddersfield (United Kingdom)

12990-26 • 09:15 AM - 09:30 AM

**Flexible holographic metasurfaces for shape dependent imaging and curvature sensing**

Author(s): **Jianling Xiao, Tomasz Plaskocinski, Robert I. Hunter, Mohammad Biabanifard, Duncan A. Robertson, Graham M. Smith**, Univ. of St. Andrews (United Kingdom); **Simon Horsley**, Univ. of Exeter (United Kingdom); **Sebastian A. Schulz, Andrea Di Falco**, Univ. of St. Andrews (United Kingdom)

12990-27 • 09:30 AM - 10:00 AM

**Metasurface system integration for 3D imaging** *(Invited Paper)*

Author(s): **Patrice Genevet**, Colorado School of Mines (United States)

12990-28 • 10:00 AM - 10:15 AM

**Metasurfaces-based polarisation imaging systems for small form-factor satellites**

Author(s): **Sarah E. Dean, Josephine Munro, Neuton Li**, The Australian National Univ. (Australia), TMOS, The ARC Centre for Transformative Meta-Optical Systems (Australia); **Rob Sharp**, The Australian National Univ. (Australia); **Dragomir N. Neshev, Andrey A. Sukhorukov**, The Australian National Univ. (Australia), TMOS, The ARC Centre for Transformative Meta-Optical Systems (Australia)

12990-29 • 10:15 AM - 10:30 AM

**Novel design of photonic filter chip for micro-spectrometer**

Author(s): **Rahul Kumar, Hiroyuki Okino**, Hitachi, Ltd. (Japan)

**Coffee Break 10:30 AM - 11:00 AM**

### SESSION 7: METAMATERIALS FOR WAVEFRONT AND POLARIZATION CONTROL

09 April 2024 • 11:00 AM - 12:45 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Humeyra Caglayan**, Tampere Univ. (Finland)

12990-30 • 11:00 AM - 11:30 AM

**Beam shaping and frequency conversion in nonlinear all-dielectric metasurfaces** *(Invited Paper)*

Author(s): **Natalia M. Litchinitser, Jiannan Gao, Dmitrii Tsvetkov, Danilo Gomes Pires**, Duke Univ. (United States); **Maria A. Vincenti**, Univ. degli Studi di Brescia (Italy); **Yun Xu**, Dassault Systemes SIMULIA Corp. (United States); **Ivan Kravchenko**, Oak Ridge National Lab. (United States); **Jesse Frantz**, U.S. Naval Research Lab. (United States); **Anthony Clabeau**, Univ. Research Foundation (United States); **Xingdu Qiao, Liang Feng**, Univ. of Pennsylvania (United States); **Michael Scalora**, U.S. Army Combat Capabilities Development Command (United States)

12990-31 • 11:30 AM - 11:45 AM

**Universal active nonlocal metasurface with ultimate wavefront shaping performance**

Author(s): **Mahmoud Elsayy, Stéphane Lanteri**, Univ. Côte d'Azur (France)



12990-32 • 11:45 AM - 12:00 PM

**Symmetry breaking of the angular transmittance by a metagrating**

Author(s): **Mahmoud A. A. Abouelatta, Olivier J. F. Martin, Karim Achouri**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

12990-33 • 12:00 PM - 12:15 PM

**Vectorial polarisation control with epsilon-near-zero metamaterials**

Author(s): **Vittorio Aita, Anatoly V. Zayats**, King's College London (United Kingdom)

12990-34 • 12:15 PM - 12:45 PM

**Robust monolithic meta-optics for high-power laser beam shaping from near-UV to near-IR** (*Invited Paper*)

Author(s): **Maria Beatriz Silva Oliveira, Patricia Estrela, Pablo San Miguel Claveria, Pedro Araujo, Marta Fajardo, Marco Piccardo**, Instituto Superior Técnico (Portugal)

**Lunch/Exhibition Break 12:45 PM - 02:00 PM**

**SESSION 8: METAMATERIALS FOR IMAGING AND TRAPPING**

09 April 2024 • 02:00 PM - 04:00 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Carsten Rockstuhl**, Karlsruhe Institut für Technologie (Germany)

12990-35 • 02:00 PM - 02:30 PM

**Imaging Applications through Learning-Enhanced Metasurface Optics** (*Invited Paper*)

Author(s): **Humeyra Caglayan**, Tampere Univ. (Finland)

12990-36 • 02:30 PM - 02:45 PM

**Super-resolution hyperspectral characterisation of microwave metamaterials**

Author(s): **Harry Penketh, Cameron P. Gallagher, Michal Mrnka, Ian R. Hooper**, Univ. of Exeter (United Kingdom); **Christopher R. Lawrence**, QinetiQ Ltd. (United Kingdom); **David B. Phillips, Euan Hendry**, Univ. of Exeter (United Kingdom)

12990-37 • 02:45 PM - 03:15 PM

**Holographic metasurfaces for imaging, sensing, and optical trapping applications** (*Invited Paper*)

Author(s): **Andrea Di Falco**, Univ. of St. Andrews (United Kingdom)

12990-39 • 03:15 PM - 03:45 PM

**Imaging with metaleses - opportunities and limitations** (*Invited Paper*)

Author(s): **Uriel Levy, Jacob Engelberg, Noa Mazurski, Roy Maman, Eitan Mualem**, The Hebrew Univ. of Jerusalem (Israel)

12990-40 • 03:45 PM - 04:00 PM

**Light Field Modulation and Imaging Based on Metalens**

Author(s): **Juntao Li**, Sun Yat-Sen Univ. (China)

**Coffee Break 04:00 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## Wednesday 10 April 2024

## SESSION 9: NONRECIPROCIITY AND SYMMETRY

10 April 2024 • 08:30 AM - 10:15 AM | Etoile C, Niveau/Level 1

Session Chair(s): **Marco Piccardo**, Harvard John A. Paulson School of Engineering and Applied Sciences (United States)

12990-45 • 08:30 AM - 09:00 AM

**Bound states the in continuum for enhancing nonreciprocal effects in metasurfaces** (*Invited Paper*)Author(s): **Luis Manuel Mánez-Espina**, Univ. Politècnica de València (Spain); **Ihgar Faniayeu**, Göteborgs Univ. (Sweden); **Viktar Asadchy**, Aalto Univ. (Finland); **Ana Díaz-Rubio**, Univ. Politècnica de València (Spain)

12990-42 • 09:00 AM - 09:15 AM

**Unusual energy transfer from lower-to-higher bandgap 2D materials in ambient conditions**Author(s): **Tsz Wing Lo**, King's College London (United Kingdom); **Takashi Taniguchi Kenji Watanabe**, National Institute for Materials Science (Japan); **Anatoly V. Zayats**, King's College London (United Kingdom)

12990-43 • 09:15 AM - 09:30 AM

**Role of asymmetries in q-BIC formation**Author(s): **Helena Weigand**, **Loic Millet**, ETH Zurich (Switzerland); **Luca Carletti**, **Domenico de Ceglia**, **Davide Rocco**, Univ. degli Studi di Brescia (Italy); **Gregoire Saerens**, ETH Zurich (Switzerland); **Jiannan Gao**, **Hooman Barati Sedeh**, **Wenhao Li**, **Natalia M. Litchinitser**, Duke Univ. (United States); **Rachel Grange**, ETH Zurich (Switzerland); **Maria Antonietta A. Vincenti**, Univ. degli Studi di Brescia (Italy)

12990-44 • 09:30 AM - 09:45 AM

**Supersymmetric transmissionless potentials in optics**Author(s): **Ugo Tricoli**, ONERA (France)

12990-38 • 09:45 AM - 10:15 AM

**Multipole coupling mechanisms of light propagation control and trapping by dielectric nanoparticle structures** (*Invited Paper*)Author(s): **Andrey B. Evlyukhin**, Leibniz Univ. Hannover (Germany)

## Coffee Break 10:15 AM - 10:45 AM

## SESSION 10: METASURFACES I

10 April 2024 • 10:45 AM - 12:30 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Ana Díaz-Rubio**, Univ. Politècnica de València (Spain)

12990-46 • 10:45 AM - 11:15 AM

**Hybrid metasurfaces** (*Invited Paper*)Author(s): **Olivier J. F. Martin**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

12990-47 • 11:15 AM - 11:30 AM

**Metasurface-enabled compact and fast polarimeter**Author(s): **Chao Meng**, Univ. of Southern Denmark (Denmark); **Paul Thrane**, SINTEF (Norway), Univ. of Southern Denmark (Denmark); **Christopher A. Dirdal**, SINTEF (Norway); **Oleksii Sieryi**, **Alexander Bykov**, **Igor Meglinski**, Univ. of Oulu (Finland); **Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

12990-48 • 11:30 AM - 11:45 AM

**Femtosecond pulse shaping with semiconductor Huygens' metasurfaces**Author(s): **Katsuya Tanaka**, Institut für Angewandte Physik, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany); **Dennis Arslan**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Maximilian Weißflog**, Institute of Applied Physics, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany); **Nils Geib**, Institute of Applied Physics, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); **Kristin Gerold**, **Adriana Szeghalmi**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Mario Ziegler**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Falk Eilenberger**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany), Max Planck School of Photonics (Germany), Institute of Applied Physics (Germany); **Thomas Pertsch**, Institute of Applied Physics, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany), Max Planck School of Photonics (Germany); **Isabelle Staude**, Institute of Solid State Physics, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany)

12990-49 • 11:45 AM - 12:00 PM

**temporal synthesis of ultrafast Kerr nonlinearity in plasmonic metamaterials**Author(s): **Jingyi Wu**, **Anton Y. Bykov**, **Anastasiia Zaleska**, **Anatoly V. Zayats**, King's College London (United Kingdom)

12990-50 • 12:00 PM - 12:30 PM

**Tailoring the visual appearance with disordered arrays of resonant metaatoms** *(Invited Paper)*

Author(s): **Philippe Lalanne**, Lab. Photonique, Numérique et Nanosciences, CNRS (France)

## Lunch/Exhibition Break 12:30 PM - 01:30 PM

### SESSION 11: LIGHT EMISSION

10 April 2024 • 01:30 PM - 03:30 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Olivier J.F. Martin**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

12990-51 • 01:30 PM - 02:00 PM

**Scientific and technological breakthroughs in thermal emission engineering: From spatial to temporal approaches** *(Invited Paper)*

Author(s): **J. Enrique Vázquez-Lozano, Iñigo Liberal**, Univ. Pública de Navarra (Spain)

12990-52 • 02:00 PM - 02:15 PM

**Experimental investigation of the thermal emission cross-section of nano-resonators using hyperuniform distributions**

Author(s): **Denis Langevin**, Univ. Clermont Auvergne (France); **Patrick Bouchon, Riad Haidar, Julien Jaeck, Baptiste Fix, Clément Verlhac,**

**Eva Taupeau**, ONERA (France); **Yannick de Wilde**, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France);

**Nathalie Bardou, Christophe Dupuis**, Ctr. de Nanosciences et de Nanotechnologies (France); **Loubnan Abou-Hamdan**, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France)

12990-53 • 02:15 PM - 02:30 PM

**Spherical Bragg Resonators for advanced electromagnetic emission engineering and lasing applications**

Author(s): **Yalina García Puente, Raman Kashyap**, Polytechnique Montréal (Canada)

12990-54 • 02:30 PM - 03:00 PM

**Interferometric control of the nonlinear optical emission at the nanoscale** *(Invited Paper)*

Author(s): **Attilio Zilli, Agostino Di Francescantonio, Marco Finazzi, Michele Celebrano**, Politecnico di Milano (Italy)

12990-55 • 03:00 PM - 03:15 PM

**Resonance-enhanced generation of optical harmonics from dielectric metasurfaces**

Author(s): **Pavel Tonkaev**, The Australian National Univ. (Australia); **Fangxing Lai, Qinghai Song**, Harbin Institute of Technology (China);

**Sergey Kruk, Kirill Koshelev, Yuri Kivshar**, The Australian National Univ. (Australia)

12990-56 • 03:15 PM - 03:30 PM

**Polarization controllable laser using chiral metamaterials with gain**

Author(s): **Ioannis Katsantonis**, Foundation for Research and Technology-Hellas (Greece); **Anna Tasolambrou**, Foundation for Research and

Technology-Hellas (Greece), National and Kapodistrian Univ. of Athens (Greece); **Thomas Koschny**, Ames Lab., U.S. Dept. of Energy (United

States); **Maria Kafesaki**, Foundation for Research and Technology-Hellas (Greece)

## Coffee Break 03:30 PM - 04:00 PM

### SESSION 12: METASURFACES II

10 April 2024 • 04:00 PM - 06:00 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Attilio Zilli**, Politecnico di Milano (Italy)

12990-57 • 04:00 PM - 04:30 PM

**Tuning the quasi-bound states in the continuum resonance of an all-dielectric metasurface via gradual heating** *(Invited Paper)*

Author(s): **Angela Barreda**, Univ. Carlos III de Madrid (Spain); **Athira Kuppadakkath, Lilit Ghazaryan, Tobias Bucher**, Friedrich-Schiller-Univ.

Jena (Germany); **Kirill Koshelev**, The Australian National Univ. (Australia); **Thomas Pertsch, Adriana Szeghalmi**, Friedrich-Schiller-Univ. Jena

(Germany); **Duk Choi**, The Australian National Univ. (Australia); **Falk Eilenberger, Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

12990-58 • 04:30 PM - 04:45 PM

**Trapping light in air with dielectric Mie voids**

Author(s): **Kirill Koshelev**, The Australian National Univ. (Australia); **Mario Hentschel, Florian Sterl, Steffen Both, Julian Karst, Lida**

**Shamsafar**, Univ. Stuttgart (Germany); **Thomas Weiss**, Univ. Stuttgart (Germany), Karl-Franzens-Univ. Graz (Austria); **Yuri Kivshar**, The

Australian National Univ. (Australia); **Harald Giessen**, Univ. Stuttgart (Germany)

12990-59 • 04:45 PM - 05:00 PM

**Nonlinear optical effects of sub-5 nm plasmonic nanogap metasurfaces**

Author(s): **Sebastian Beer, Jeetendra Gour, Alessandro Alberucci**, Friedrich-Schiller-Univ. Jena (Germany); **Uwe Detlef Zeitner**, Hochschule

für Angewandte Wissenschaften München (Germany); **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany)

12990-60 • 05:00 PM - 05:30 PM

**Passive and active flat optics based on dielectric nanoantennas** (*Invited Paper*)

*Author(s):* **Arseniy I. Kuznetsov**, A\*STAR Institute of Materials Research and Engineering (Singapore)

12990-61 • 05:30 PM - 05:45 PM

**Ultra-broad and reversible ENZ tunability in copper-based plasmonic metamaterials.**

*Author(s):* **Anastasiia Zaleska, Alexey V. Krasavin, Anatoly V. Zayats, Wayne Dickson**, King's College London (United Kingdom)

12990-62 • 05:45 PM - 06:00 PM

**Nonlinear optoelectronic dynamics in epsilon-near-zero (ENZ) materials**

*Author(s):* **Heng Wang, Guixin Li**, Southern Univ. of Science and Technology (China)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12990-74 • 05:45 PM - 07:45 PM

**Mechanical properties of carbon fiber/epoxy resin composite interface based on molecular dynamics**

*Author(s):* **YaFeng Qiu, Longkang Zhang, Rongguo Fu, Taining Shi**, Nanjing Univ. of Science and Technology (China)

12990-75 • 05:45 PM - 07:45 PM

**Design and development of OAM-generating dielectric metasurfaces**

*Author(s):* **Arttu Nieminen, Humeyra Caglayan**, Tampere Univ. (Finland)

12990-76 • 05:45 PM - 07:45 PM

**dual-functional metasurfaces as half-waveplates and retroreflectors**

*Author(s):* **Hsin Ling Chang, Ta Jen Yen**, National Tsing Hua Univ. (Taiwan)

12990-77 • 05:45 PM - 07:45 PM

**Ellipsoidal nanowire metamaterials for biomedical applications**

*Author(s):* **Tatjana Gric**, Vilnius Gediminas Technical Univ. (Lithuania); **Edik U. Rafailov**, Aston Univ. (United Kingdom)

12990-78 • 05:45 PM - 07:45 PM

**Sensing of nanoporous 2D materials like r-GO using THz hole arrays**

*Author(s):* **Vaishnavi Sajeev, Shreeya Rane**, Mahindra Univ. (India); **Debal Ghosh**, CSIR-Central Glass & Ceramic Research Institute (India);

**Nityananda Acharyya, Palash Choudhury**, Mahindra Univ. (India); **Arnab Mukherjee**, CSIR-Central Glass & Ceramic Research Institute (India); **Dibakar Roy Chowdhury**, Mahindra Univ. (India)

12990-79 • 05:45 PM - 07:45 PM

**Nanostructured blazed gratings for high performance spectrographs**

*Author(s):* **Simon Ans**, Lab. d'Astrophysique de Marseille (France), Institut Fresnel (France); **Frédéric Zamkotsian**, Lab. d'Astrophysique de Marseille (France); **Guillaume Demesy**, Institut Fresnel (France); **Nicolas Passilly, Andrei Mursa**, FEMTO-ST (France)

12990-80 • 05:45 PM - 07:45 PM

**Spaceplates supporting orthogonal resonances**

*Author(s):* **Francisco Javier Díaz-Fernández**, Univ. Politècnica de València (Spain), Aalto Univ. (Finland); **Ana Díaz-Rubio, Luis Manuel Máñez-Espina**, Univ. Politècnica de València (Spain); **Viktar Asadchy**, Aalto Univ. (Finland)

12990-81 • 05:45 PM - 07:45 PM

**Design of multilayer band-pass filters for processing RAPAS alerts**

*Author(s):* **Noémie Gambaudo**, ICube (France); **Xavier Queyroux De Bizemont**, INSA (France); **Patrice Twardowski**, ICube (France); **Thierry Midavaine**, La Société astronomique de France (France); **Philippe Gérard**, ICube (France); **Romain Jagu**, Ophthalmic Compagnie (France); **Manuel Flury**, ICube (France)

12990-82 • 05:45 PM - 07:45 PM

**Metasurfaces as an enabling technology to realise ultra-compact sensors for manufacturing applications**

*Author(s):* **Justin Chan, Haydn Martin, Andrew Henning, Jane Jiang**, Univ. of Huddersfield (United Kingdom)

12990-83 • 05:45 PM - 07:45 PM

**Flexible holographic metasurfaces for augmented reality near-eye display**

*Author(s):* **Yuhui Gan, Jianling Xiao, Tomasz Plaskocinski, Saydulla Persheyev, Mohammad Biabanifard, Hossein Abadi, Andrea Di Falco**, Univ. of St. Andrews (United Kingdom)

12990-84 • 05:45 PM - 07:45 PM

**High numerical aperture ZrO<sub>2</sub> holographic metasurfaces for imaging and optical trapping applications in the visible range**

*Author(s):* **Mohammad Biabanifard, Tomasz Plaskocinski, Jianling Xiao, Andrea Di Falco**, Univ. of St. Andrews (United Kingdom)

12990-85 • 05:45 PM - 07:45 PM

**Shaping ultrafast hot carriers in plasmonic metasurfaces: from all-optical reconfiguration to photothermal catalysis**

*Author(s):* **Andrea Schirato**, Politecnico di Milano (Italy); **Stephen K. Sanders**, Rice Univ. (United States); **Andrea Toma**, Istituto Italiano di Tecnologia (Italy); **Remo Proietti Zaccaria**, Istituto Italiano di Tecnologia (Italy), Ningbo Institute of Materials Technology and Engineering (China); **Peter Nordlander**, Rice Univ. (United States); **Giulio Cerullo, Margherita Maiuri**, Politecnico di Milano (Italy); **Alessandro Alabastri**, Rice Univ. (United States); **Giuseppe Della Valle**, Politecnico di Milano (Italy)

12990-86 • 05:45 PM - 07:45 PM

**Electrically tunable MEMS optical metasurfaces**

*Author(s):* **Yadong Deng, Chao Meng**, Univ. of Southern Denmark (Denmark); **Paul C. V. Thrane**, Univ. of Southern Denmark (Denmark), SINTEF (Norway); **Sören im Sande, Sergey I. Bozhevolnyi, Fei Ding**, Univ. of Southern Denmark (Denmark)

12990-87 • 05:45 PM - 07:45 PM

**Investigation of the coupling properties between a graded epsilon-near-zero medium and a plasmonic antenna array**

*Author(s):* **Anindita Das, Laura C. Wynne, Andrea Di Falco, Sebastian A. Schulz**, Univ. of St. Andrews (United Kingdom)

12990-88 • 05:45 PM - 07:45 PM

**Laser induced optical anisotropy of plasmonic metasurfaces**

*Author(s):* **Igor A. Gladskikh, Daler R. Dadadzhanov**, ITMO Univ. (Russian Federation); **Nikita A. Toropov**, Univ. of Southampton (United Kingdom); **Anton Gladskikh, Daria Gorbenko, Tigran A. Vartanyan, Daria A. Gorbenko**, ITMO Univ. (Russian Federation)

12990-89 • 05:45 PM - 07:45 PM

**Material-induced bianisotropy of hybrid metal-dielectric particles for the composition of metasurfaces with quasi-BIC resonances**

*Author(s):* **Mariia Poleva**, Karlsruher Institut für Technologie (Germany); **Andrey B. Evlyukhin**, Leibniz Univ. Hannover (Germany)

12990-90 • 05:45 PM - 07:45 PM

**High-resolution aluminum-based plasmonic devices using metamaterials for cancer cell detection**

*Author(s):* **Ashwin Sathish Kumar, Debajani Mahanta, Pankaj Arora**, Birla Institute of Technology and Science, Pilani (India)

12990-91 • 05:45 PM - 07:45 PM

**Optimizing the design of ultra-broadband perfect absorber based on hexagonal lattice of titanium (Ti) parabolic nanoarrays**

*Author(s):* **Manoj Kumar Vishwakarma, Joby Joseph**, Indian Institute of Technology Delhi (India)

12990-92 • 05:45 PM - 07:45 PM

**Nanolasing and Sensing enabled by Self-Assembled Plasmonic Metasurfaces**

*Author(s):* **Mindaugas Juodėnas, Nadzeya Khinevich, Gvidas Klyvis, Asta Tamulevičiene, Tomas Tamulevičius, Sigita Tamulevičiūtė**, Kaunas Univ. of Technology (Lithuania)

12990-93 • 05:45 PM - 07:45 PM

**Metamaterial devices for tunability and energy management in the SWIR region.**

*Author(s):* **Amaljith Chandroth Kalliyadan, Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

12990-95 • 05:45 PM - 07:45 PM

**Design of responsive mesoporous-based open-cavity acoustic resonators operating in the GHz range**

*Author(s):* **Edson R. Cardozo de Oliveira**, Univ. Paris-Saclay, Ctr. de Nanosciences et de Nanotechnologies, CNRS (France); **Priscila Vensaus**, Univ. Nacional De San Martín (Argentina); **Galo J.A. A. Soler-Illia**, Instituto de Nanosistemas, Escuela de Bio y Nanotecnologías, Universidad Nacional de San Martín (Argentina); **Norberto Daniel Lanzillotti-Kimura**, Univ. Paris-Saclay, Ctr. de Nanosciences et de Nanotechnologies, CNRS (France)

12990-96 • 05:45 PM - 07:45 PM

**Ultra-miniaturized crossings based on digitized metamaterials for one-dimensional grating waveguides**

*Author(s):* **Ahmet Oguz Sakin, Beyza Akcay, Ahmet Canberk Songur, Mehmet Ünlü**, TOBB ETÜ (Turkey)

12990-98 • 05:45 PM - 07:45 PM

**Strong circular dichroism in displaced bilayer photonic crystal slabs**

*Author(s):* **Xiangning Li, Xinze Li, Wenjia Li, Jianlong Liu**, Harbin Engineering Univ. (China)

12990-99 • 05:45 PM - 07:45 PM

**Molecular sensing platform using hyperbolic polaritons in nanostructured van der Waals crystals***Author(s): Nihar Ranjan Sahoo, Anshuman Kumar, Indian Institute of Technology Bombay (India)*

12990-100 • 05:45 PM - 07:45 PM

**Investigation of ion transport in solid-state nanopores with different properties using COMSOL modeling***Author(s): Anastasiia Sapunova, Istituto Italiano di Tecnologia (Italy), Univ. degli Studi di Milano-Bicocca (Italy); Lyuye Lin, Istituto Italiano di Tecnologia (Italy); Shukun Weng, Istituto Italiano di Tecnologia (Italy), Univ. degli Studi di Milano-Bicocca (Italy); German Lanzavecchia, Istituto Italiano di Tecnologia (Italy), Univ. degli Studi di Genova (Italy); Ali Douaki, Roman Krahn, Denis Garoli, Istituto Italiano di Tecnologia (Italy)*

12990-101 • 05:45 PM - 07:45 PM

**Experimental evidence of quasi-BICs for applications in the near-infrared range***Author(s): Souhaila Boublouh, Gao Feng, Abderrahmane Belkhir, Miguel Suarez, Abdelkrim Khelif, Fadi Baida, FEMTO-ST (France)*

12990-103 • 05:45 PM - 07:45 PM

**Strong chirality in self-organized silver metasurface via circularly polarized light***Author(s): Daler R. Dadadzhyanov, ITMO Univ. (Russian Federation), Tel Aviv Univ. (Israel); Igor A. Gladskikh, Nikita S. Petrov, ITMO Univ. (Russian Federation); Daniel Feferman, Tel Aviv Univ. (Israel); Anastasiia Sapunova, Istituto Italiano di Tecnologia (Italy); Antonina I. Dadadzhyanova, ITMO Univ. (Russian Federation); Roman A. Zakoldaev, UiT The Arctic Univ. of Norway (Norway); Gil Markovich, Tel Aviv Univ. (Israel); Tigran A. Vartanyan, Daria A. Gorbenko, ITMO Univ. (Russian Federation)*

12990-104 • 05:45 PM - 07:45 PM

**AR-Coatings based on quantized nanolaminates manufactured by IBS***Author(s): Sina Malobabic, Maximilian Machate, Laser Components Germany GmbH (Germany)*

12990-105 • 05:45 PM - 07:45 PM

**Humidity-sensitive polyvinyl alcohol metasurfaces for realizing advanced optical security***Author(s): Byoungsu Ko, Trevon Badloe, Younghwan Yang, Junsuk Rho, Pohang Univ. of Science and Technology (Korea, Republic of)*

12990-106 • 05:45 PM - 07:45 PM

**A dielectric metasurface for the generation of cold atoms***Author(s): Zixian Hu, Guixin Li, Southern Univ. of Science and Technology (China)*

12990-107 • 05:45 PM - 07:45 PM

**Enhanced photon-pair generation from a nonlinear metasurface cavity***Author(s): Tongmiao Fan, Andrey Sukhorukov, Jihua Zhang, The Australian National Univ. (Australia)*

12990-108 • 05:45 PM - 07:45 PM

**Meta-lenslet array for laser guide star anamorphic compression***Author(s): Josephine Munro, The Australian National Univ. (Australia); Sarah E Dean, Neuton Li, The Australian National University (Australia), TMOS, ARC Centre for Transformative Meta-Optical Systems (Australia); Israel Vaughn, Andrew W Kruse, Tony Travouillon, The Australian National University (Australia); Dragomir N Neshev, The Australian National University (Australia), TMOS, ARC Centre for Transformative Meta-Optical Systems (Australia); Robert Sharp, The Australian National University (Australia); Andrey A Sukhorukov, The Australian National University (Australia), TMOS, ARC Centre for Transformative Meta-Optical Systems (Australia)***Thursday 11 April 2024****HOT TOPICS III**

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)*Author(s): Martin Wegener, Karlsruher Institut für Technologie (Germany)*

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)*Author(s): Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany)*

## Coffee Break 10:35 AM - 11:00 AM

## SESSION 13: MATERIALS AND MANUFACTURING

11 April 2024 • 11:00 AM - 12:45 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Mindaugas Juodėnas**, Kaunas Univ. of Technology (Lithuania)

12990-63 • 11:00 AM - 11:30 AM

**Low-cost and scalable manufacturing of optical metasurfaces in the visible using engineered optical materials** (*Invited Paper*)Author(s): **Junsuk Rho**, Pohang Univ. of Science and Technology (Korea, Republic of)

12990-64 • 11:30 AM - 11:45 AM

**Second harmonic generation in monolithic gallium phosphide metasurfaces**Author(s): **Muyi Yang, Maximilian A. Weissflog, Dennis Arslan, Stefan Börner, Thomas Pertsch, Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

12990-65 • 11:45 AM - 12:15 PM

**Meta-fibers: merging metasurfaces with optical fibers via 3D nanoprining for flexible beam manipulation** (*Invited Paper*)Author(s): **Markus A. Schmidt, Jisoo Kim, Matthias Zeisberger, Malte Plidschun**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Chenhao Li, Johannes Buerger**, Ludwig-Maximilians-Univ. München (Germany); **Haoran Ren, Stefan A. Maier**, Monash Univ. (Australia)

12990-66 • 12:15 PM - 12:30 PM

**Tunable photonic nanostructures based on atomically thin semiconductors**Author(s): **Alexey Ustinov, Anna Fedotova, Katsuya Tanaka, Vipin Krishna**, Friedrich-Schiller-Univ. Jena (Germany); **Duk-Yong Choi**, The Australian National Univ. (Australia); **Giancarlo Soavi, Frank Setzpfandt**, Friedrich-Schiller-Univ. Jena (Germany); **Thomas Pertsch**, Friedrich-Schiller-Univ. Jena (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

12990-67 • 12:30 PM - 12:45 PM

**Mapping Local Optical Constants in Deep-Subwavelength Resonant Structures of Ultra-High Index Topological Insulators Bi<sub>2</sub>Se<sub>3</sub> and Bi<sub>2</sub>Te<sub>3</sub>**Author(s): **Sukanta Nandi, Shany Z. Cohen, Danveer Singh, Michal Poplinger, Pilkhaz Nanikashvili, Doron Naveh, Tomer Lewi**, Bar-Ilan Univ. (Israel)

## Lunch Break 12:45 PM - 01:45 PM

## SESSION 14: ACTIVE MEDIA AND METADEVICES II

11 April 2024 • 01:45 PM - 04:00 PM | Etoile C, Niveau/Level 1

Session Chair(s): **Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

12990-68 • 01:45 PM - 02:15 PM

**Miniature Photonics Devices enabled by Metagrating-Integrated VCSEs** (*Invited Paper*)Author(s): **Mindaugas Juodėnas**, Chalmers Univ. of Technology (Sweden), Kaunas Univ. of Technology (Lithuania); **Erik Strandberg, Alexander Grabowski, Johan Gustavsson, Hana Šipová-Jungová, Anders Larsson, Mikael Käll**, Chalmers Univ. of Technology (Sweden)

12990-69 • 02:15 PM - 02:30 PM

**Metasurfaces embedded in inhomogeneously aligned liquid crystals**Author(s): **Maximilian Beddoe, Sarah Walden, Slobodan Miljevic**, Friedrich-Schiller-Univ. Jena (Germany), Abbe School of Photonics (Germany); **Chengjun Zou**, Friedrich-Schiller-Univ. Jena (Germany), Institute of Microelectronics (China); **Angela Barreda**, Friedrich-Schiller-Univ. Jena (Germany), Univ. Carlos III de Madrid (Spain); **Thomas Pertsch**, Friedrich-Schiller-Univ. Jena (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany), Abbe School of Photonics (Germany)

12990-70 • 02:30 PM - 03:00 PM

**Dynamic MEMS-integrated optical metasurfaces** (*Invited Paper*)Author(s): **Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

12990-71 • 03:00 PM - 03:15 PM

**N-type redox-tuneable conducting polymer nanoantennas**Author(s): **Suraya Kazi, Shangzhi Chen, Magnus P. Jonsson**, Linköping Univ. (Sweden)

12990-72 • 03:15 PM - 03:45 PM

**Frugal open-loop coherent wave control in metasurface-programmable complex media** (*Invited Paper*)

*Author(s):* **Philipp del Hougne**, Univ. de Rennes, CNRS (France)

12990-73 • 03:45 PM - 04:00 PM

**Programmable Plasmonic Metamaterial Enabling Logic Devices**

*Author(s):* **Jinhui Shi, Zhaoqi Jiang, Yuxiang Li, Zheng Zhu, Chunying Guan**, Harbin Engineering Univ. (China)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

12990-94

**Synthesis of metasurface-enabled broadband polarization-independent light structuring**

*Author(s):* **Naureen Butt**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia); **Tauseef Tauqeer, Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)



# CONFERENCE 12991

## Nanophotonics X

07 - 11 April 2024 | Adenauer, Niveau/Level 1

**Conference Chair(s):** David L. Andrews, Univ. of East Anglia (United Kingdom); Angus J. Bain, Univ. College London (United Kingdom); Antonio Ambrosio, Istituto Italiano di Tecnologia (Italy)

**Program Committee:** Sophie Brasselet, Institut Fresnel (France); Michele Celebrano, Politecnico di Milano (Italy); Raul de Oliveira Freitas, Lab. Nacional de Luz Sincrotron (Brazil); Itai Epstein, Tel Aviv Univ. (Israel); Robert Fickler, Tampere Univ. (Finland); Céline Fiorini-Debuisschert, Commissariat à l'Énergie Atomique (France); Kayn A. Forbes, Univ. of East Anglia (United Kingdom); Vincent Ginis, Vrije Univ. Brussel (Belgium); Christoph Lienau, Carl von Ossietzky Univ. Oldenburg (Germany); Raúl J. Martín-Palma, Univ. Autónoma de Madrid (Spain); Dorota A. Pawlak, ENSEMBLE3 sp. z o.o. (Poland); Jean-Luc Pelouard, Ctr. de Nanosciences et de Nanotechnologies (France); Monika Ritsch-Marte, Medizinische Univ. Innsbruck (Austria); Cesare Soci, Nanyang Technological Univ. (Singapore); Anatoly V. Zayats, King's College London (United Kingdom)

### Sunday 7 April 2024

#### SESSION 1: IMAGING AND SENSING I

07 April 2024 • 01:30 PM - 03:20 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): Antonio Ambrosio, Istituto Italiano di Tecnologia (Italy)

12991-1 • 01:30 PM - 02:00 PM

**The theory of 3D polarization and its use in microscopy** (*Invited Paper*)

Author(s): Miguel A. Alonso, Institut Fresnel (France), Univ. of Rochester (United States)

12991-2 • 02:00 PM - 02:30 PM

**Electroluminescence and photoluminescence with sub-molecular resolution.** (*Invited Paper*)

Author(s): Guillaume Schull, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12991-3 • 02:30 PM - 03:00 PM

**Mie resonators under microscope** (*Invited Paper*)

Author(s): Xiangping Li, Jinan Univ. (China)

12991-4 • 03:00 PM - 03:20 PM

**Toward microwave electromagnetic jets for detection, imaging, and local characterization applications**

Author(s): Bruno Sauviac, Lab. Hubert Curien, CNRS (France), Univ. Jean Monnet Saint-Etienne (France); Ali Ghaddar, Lab. Hubert Curien, CNRS (France), Univ. Jean Monnet Saint-Etienne (France); Antoine Deubaibe, Univ. de Ndjaména (Chad, Republic of); Hishem Hyani, Lab. Hubert Curien, CNRS (France), Univ. Jean Monnet Saint-Etienne (France); Bernard Bayard, Lab. Hubert Curien, CNRS (France), Univ. Jean Monnet Saint-Etienne (France)

#### Coffee Break 03:20 PM - 03:50 PM

#### SESSION 2: PLASMONICS I

07 April 2024 • 03:50 PM - 04:50 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): David L. Andrews, Univ. of East Anglia (United Kingdom)

12991-6 • 03:50 PM - 04:10 PM

**Plasmon-induced Long-Lived Hot Electron dynamics in hyperbolic meta-antennas**

Author(s): Rakesh Dhama, Humeyra Caglayan, Tampere Univ. (Finland)

12991-7 • 04:10 PM - 04:30 PM

**Plasmonic nanodevice for nanoparticle optical propulsion**

Author(s): Sergio Balestrieri, Giuseppe Coppola, Mario Iodice, Gianluigi Zito, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy)

12991-8 • 04:30 PM - 04:50 PM

**Design and Numerical Modeling Plasmonic Nanostructures for Chemical and Biological Sensing in the UV Spectral Regime**

Author(s): **Vaibhav Chaturvedi, Kaleem Ahmed, Ajay Kumar Agrawal, Mohd Asif, Merbin John, Anuj Dhawan**, Indian Institute of Technology Delhi (India)

**Monday 8 April 2024**

**HOT TOPICS I**

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Kolnn (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

**SESSION 3: TIME-RESOLVED INTERACTIONS**

08 April 2024 • 11:30 AM - 12:40 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

**Session 3 runs concurrently with Session 4 (Manipulation and Trapping I)**

12991-9 • 11:30 AM - 12:00 PM

**Nonlinear valleytronics in atomically thin semiconductors** (*Invited Paper*)

Author(s): **Giancarlo Soavi**, Friedrich-Schiller-Univ. Jena (Germany)

12991-10 • 12:00 PM - 12:20 PM

**Single-molecule lifetime imaging of plasmonic and dielectric nanostructures: where biophysics meets nanophotonics**

Author(s): **Valentina Krachmalnicoff, R. Margoth Cordova-Castro, Bart van Dam, Clement Cabriel, Yannick De Wilde, Ignacio Izeddin**, Institut Langevin (France)

12991-11 • 12:20 PM - 12:40 PM

**Rationale behind Ultrafast Optical Response of Al-doped ZnO under Intraband Excitation**

Author(s): **Conglong Chen**, Shanghai Jiao Tong Univ. (China)

**Lunch Break 12:40 PM - 01:50 PM**

**SESSION 4: MANIPULATION AND TRAPPING I**

08 April 2024 • 11:30 AM - 12:40 PM | Adenauer, Niveau/Level 1

Session Chair(s): **David L. Andrews**, Univ. of East Anglia (United Kingdom)

**Session 4 runs concurrently with Session 3 (Time-resolved Interactions)**

12991-5 • 11:30 AM - 12:00 PM

**Terahertz near-field mapping of plasmon-polaritons in layered nanomaterials** (*Invited Paper*)

Author(s): **Miriam S. Vitiello**, Istituto Nanoscienze (Italy)

12991-13 • 12:00 PM - 12:20 PM

**Optomechanics of magnetic particles levitated inside chiral hollow-core photonic crystal fibre**

Author(s): **Soumya Chakraborty**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Max-Planck-Institut für die Physik des Lichts (Germany); **Gordon Kwan Leung Wong**, Max-Planck-Institut für die Physik des Lichts (Germany); **Ferdi Oda**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Vanessa Wachter**, **Silvia Viola Kusminskiy**, RWTH Aachen Univ. (Germany), Max-Planck-Institut für die Physik des Lichts (Germany); **Tadahiro Yokosawa**, **Sabine Huebner**, **Benjamin Apeleo Zubiri**, **Erdmann Spiecker**, **Monica Distaso**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Philip Russell**, Max-Planck-Institut für die Physik des Lichts (Germany); **Nicolas Joly**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Max-Planck-Institut für die Physik des Lichts (Germany)

12991-14 • 12:20 PM - 12:40 PM

**Enhanced optical forces for trapping dielectric nanoparticles with hybrid plasmonic waveguides**

Author(s): **Chander Bhan**, STMicroelectronics (France), Institut des Nanotechnologies de Lyon (France), Univ. de Sherbrooke (Canada); **Guillaume Beaudin**, Univ. de Sherbrooke (Canada); **Stephane Monfray**, **Frédéric Boeuf**, STMicroelectronics (France); **Regis Orobtcouk**, Institut des Nanotechnologies de Lyon (France); **Paul Charette**, Univ. de Sherbrooke (Canada)

**Lunch Break 12:40 PM - 01:50 PM**

**SESSION 5: METASURFACES I**

08 April 2024 • 01:50 PM - 03:10 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

Session 5 runs concurrently with Session 6 (Manipulation and Trapping II)

12991-15 • 01:50 PM - 02:20 PM

**Thin Film Metamaterials Harnesses the Potential of Fano Resonances, Hyperbolicity, and Extreme Optomechanics (Invited Paper)**

Author(s): **Giuseppe Strangi**, Case Western Reserve Univ. (United States)

12991-16 • 02:20 PM - 02:40 PM

**Dual-functional metalenses for structured light generation**

Author(s): **Andrea Vogliardi**, **Gianluca Ruffato**, **Daniele Bonaldo**, Univ. degli Studi di Padova (Italy); **Simone Dal Zilio**, Istituto Officina dei Materiali, Consiglio Nazionale delle Ricerche (Italy); **Filippo Romanato**, Univ. degli Studi di Padova (Italy)

12991-17 • 02:40 PM - 03:10 PM

**Optimal multipole centers (Invited Paper)**

Author(s): **Alexander V. Kildishev**, Purdue Univ. (United States); **Karim Achouri**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Daria Smirnova**, The Australian National Univ. (Australia)

**Coffee Break 03:10 PM - 03:40 PM**

**SESSION 6: MANIPULATION AND TRAPPING II**

08 April 2024 • 01:50 PM - 03:30 PM | Adenauer, Niveau/Level 1

Session Chair(s): **Giancarlo Soavi**, Friedrich-Schiller-Univ. Jena (Germany)

Session 6 runs concurrently with Session 5 (Metasurfaces I)

12991-18 • 01:50 PM - 02:10 PM

**Sub-wavelength photonic hooks generated in photonic chips with asymmetric array of Si<sub>3</sub>N<sub>4</sub> micropillars**

Author(s): **Aneesh V. Veluthandath**, **Ganapathy S. Murugan**, Univ. of Southampton (United Kingdom)

12991-19 • 02:10 PM - 02:30 PM

**controlling fluid flow direction in microfluidic systems using photothermal effects**

Author(s): **Pantea Dara**, **Mahdi Shanei**, **Steven Jones**, **Mikael Käll**, Chalmers Univ. of Technology (Sweden)

12991-21 • 02:30 PM - 02:50 PM

**Coherent excitation of torsional mechanical modes in acoustoplasmonic antennas**

Author(s): **Antonio Garcia-Martin**, **Jorge García**, Instituto de Micro y Nanotecnología, Consejo Superior de Investigaciones Científicas (Spain); **Chushuang Xiang**, **Norberto Daniel Lanzillotti-Kimura**, Univ. Paris-Saclay, CNRS (France)

12991-22 • 02:50 PM - 03:10 PM

**Probing molecular affinity with optical tweezers**

Author(s): **Joana Teixeira**, INESC TEC (Portugal), Univ. do Porto (Portugal); **José A. Ribeiro**, Ctr. de Investigação em Química da Univ. do Porto (Portugal); **Pedro A. S. Jorge**, **Nuno A. Silva**, INESC TEC (Portugal)

12991-12 • 03:10 PM - 03:30 PM

**Particle trapping using plasmonic arrays**

Author(s): **German Suslin, Viet Giang Truong, Sile Nic Chormaic**, Okinawa Institute of Science and Technology Graduate Univ. (Japan)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 7: METASURFACES II**

08 April 2024 • 04:00 PM - 05:30 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Giuseppe Strangi**, Case Western Reserve Univ. (United States)

Session 7 runs concurrently with Session 8 (RET, Photophysics and Nanoemitters)

12991-23 • 04:00 PM - 04:30 PM

**Metasurfaces for Light Detection and Ranging** (*Invited Paper*)

Author(s): **Patrice Genevet**, Colorado School of Mines (United States); **Christina Kyrou**, CRHEA (France)

12991-24 • 04:30 PM - 04:50 PM

**Novel and robust metasurfaces based on optically lossy elements: towards integrated sustainable nanophotonics for color generation**

Author(s): **Fernando Chacón-Sánchez, Carlota Ruiz de Galarreta**, Instituto de Óptica "Daza de Valdés" (Spain); **Martin Lopez-Garcia**, INL - International Iberian Nanotechnology Lab. (Portugal); **Rosalía Serna**, Instituto de Óptica "Daza de Valdés" (Spain)

12991-25 • 04:50 PM - 05:10 PM

**High-order topological states using band inversion in 1D superlattices**

Author(s): **Konstantinos Papatryfonos, Anne Rodriguez, Edson R. Cardozo de Oliveira, Norberto Daniel Lanzillotti-Kimura**, Ctr. de Nanosciences et de Nanotechnologies, CNRS (France)

12991-79 • 05:10 PM - 05:30 PM

**Coupling semiconductor and metal plasmons for nonlinear frequency conversion**

Author(s): **Richard F. Haglund, Yueming Yan**, Vanderbilt Univ. (United States); **Nathan J. Spear**, Kansas State Univ. (United States); **Karina Khusainova, Janet E. Macdonald**, Vanderbilt Univ. (United States)

**SESSION 8: RET, PHOTOPHYSICS AND NANOEMITTERS**

08 April 2024 • 04:00 PM - 05:40 PM | Adenauer, Niveau/Level 1

Session Chair(s): **Angus J. Bain**, Univ. College London (United Kingdom)

Session 8 runs concurrently with Session 7 (Metasurfaces II)

12991-26 • 04:00 PM - 04:20 PM

**Thermally-equilibrated delayed fluorescence of gold-doped silver nanoclusters in a solid matrix**

Author(s): **Ruth Jeane Soebroto, Russel Cruz Sevilla, Hsiu-Ying Huang, Chi-Tsu Yuan**, Chung Yuan Christian Univ. (Taiwan), Research Ctr. of Semiconductor Materials and Advance Optics (Taiwan)

12991-27 • 04:20 PM - 04:40 PM

**Purcell enhancement of a quantum emitter placed within the Nanoparticle on Mirror cavity**

Author(s): **Arjun Upadhyay, Sushant Sharma, Parinda Vasa**, Indian Institute of Technology Bombay (India)

12991-28 • 04:40 PM - 05:00 PM

**Spatial and Spectral Control of Defects Emission in Hexagonal Boron Nitride**

Author(s): **Giacomo Venturi, Stefano Chiodini, Nicola Melchioni**, Istituto Italiano di Tecnologia (Italy); **Eli Janzen, James H. Edgar**, Kansas State Univ. (United States); **Carsten Ronning**, Friedrich-Schiller-Univ. Jena (Germany); **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

12991-29 • 05:00 PM - 05:20 PM

**Controlled FRET effect between AgInS<sub>2</sub> quantum dot and a fluorophore using DNA strands**

Author(s): **Nicolas Daveau**, Univ. Grenoble Alpes (France), SyMMES, UGA, CEA (France); **Christine Saint-Pierre, Yanxia Hou, Peter Reiss, Didier Gasparutto**, SyMMES, UGA, CEA (France); **Kuntheak Kheng**, Univ. Grenoble Alpes (France)

12991-30 • 05:20 PM - 05:40 PM

**FRET-mediated collective blinking of self-assembled stacks of semiconducting nanoplatelets**

Author(s): **Laurent Coolen, Guillaume Baillard, Zakarya Ouzit**, Institut des nanosciences de Paris (France); **Benjamin Abécassis, Lilian Guillemeney, Benoît Wagnon**, Ecole Normale Supérieure de Lyon (France); **Jiawen Liu**, Institut des nanosciences de Paris (France)

## Tuesday 9 April 2024

### SESSION 9: STRUCTURED LIGHT AND CHIRALITY I

09 April 2024 • 08:30 AM - 10:10 AM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **David L. Andrews**, Univ. of East Anglia (United Kingdom)

12991-31 • 08:30 AM - 09:00 AM

**Polarization and Wavefront Sensing** (*Invited Paper*)

Author(s): **Angela L. Dudley**, Univ. of the Witwatersrand, Johannesburg (South Africa)

12991-32 • 09:00 AM - 09:20 AM

**Phonon transduction in plasmonic chiral structures**

Author(s): **Beatriz Castillo Lopez de Larrinzar**, **Antonio Garcia-Martin**, Instituto de Micro y Nanotecnología (Spain); **Daniel Lanzillotti-Kimura**, **Edson R. Cardozo de Oliveira**, **Chushuang Xiang**, Univ. Paris-Saclay, CNRS (France)

12991-33 • 09:20 AM - 09:40 AM

**Twisting light in 4D: Helical wave packets with unique properties**

Author(s): **Michael De Oliveira**, Istituto Italiano di Tecnologia (Italy), Politecnico di Milano (Italy); **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

12991-34 • 09:40 AM - 10:10 AM

**Topological dichroism and birefringence of twisted light** (*Invited Paper*)

Author(s): **Kayn A. Forbes**, **Dale Green**, Univ. of East Anglia (United Kingdom)

### Coffee Break 10:10 AM - 10:40 AM

### SESSION 10: NANOPARTICLES

09 April 2024 • 10:40 AM - 12:00 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Anatoly V. Zayats**, King's College London (United Kingdom)

12991-35 • 10:40 AM - 11:00 AM

**Infrared optical properties of nanocube dimers with Nanometric Gaps**

Author(s): **Yina Wu**, ICFO - Institut de Ciències Fotòniques (Spain); **Andrea Konečná**, Brno Univ. of Technology (Czech Republic); **Shin Hum Cho**, Keimyung Univ. (Korea, Republic of); **Delia Milliron**, The Univ. of Texas at Austin (United States); **Jordan Hachtel**, Oak Ridge National Lab. (United States); **F. Javier García de Abajo**, ICFO - Institut de Ciències Fotòniques (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain)

12991-36 • 11:00 AM - 11:20 AM

**Polarized luminescent nanoprobe and their application for in situ flow shear measurements.**

Author(s): **Lilian Magermans**, **Zijun Wang**, **Jeongmo Kim**, **Thierry Gacoin**, **Jongwook Kim**, Lab. de physique de la matière condensée, Ecole Polytechnique, Institut Polytechnique de Paris, CNRS (France)

12991-37 • 11:20 AM - 11:40 AM

**Plexcitonic nanorattles for ultra-efficient SERS detection**

Author(s): **Carla Estévez-Varela**, Univ. de Vigo (Spain); **Sara Núñez-Sánchez**, Univ. do Minho (Portugal); **Paula Piñeiro-Varela**, CIC biomaGUNE, Basque Research & Technology Alliance (Spain), Ctr. de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina (Spain), IKERBASQUE, Basque Foundation for Science (Spain); **Dorleta Jiménez de Aberasturi**, CIC biomaGUNE (Spain), Ctr. de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina (Spain), IKERBASQUE, Basque Foundation for Science (Spain); **Luis M. Liz-Marzán**, CIC biomaGUNE (Spain), Ctr. de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina (Spain), Univ. de Vigo (Spain); **Jorge Pérez-Juste**, **Isabel Pastoriza-Santos**, Univ. de Vigo (Spain)

12991-38 • 11:40 AM - 12:00 PM

**Photoluminescence spectrum of implanted quantum emitters in hexagonal boron nitride**

Author(s): **Giacomo Venturi**, **Nicola Melchioni**, **Stefano Chiodini**, Istituto Italiano di Tecnologia (Italy); **Alexander Biewald**, **Achim Hartschuh**, Ludwig-Maximilians-Univ. München (Germany); **Eli Janzen**, **James H. Edgar**, Kansas State Univ. (United States); **Carsten Ronning**, Friedrich-Schiller-Univ. Jena (Germany); **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

### Lunch/Exhibition Break 12:00 PM - 01:10 PM

### SESSION 11: NEAR-FIELD IMAGING

09 April 2024 • 01:10 PM - 03:40 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Christoph Lienau**, Carl von Ossietzky Univ. Oldenburg (Germany)

12991-39 • 01:10 PM - 01:40 PM

**Nanooptics in 2D materials** (*Invited Paper*)

Author(s): **Pablo Alonso González**, Univ. de Oviedo (Spain)

12991-40 • 01:40 PM - 02:00 PM

**Visible and near-infrared nanoscale spectroscopy with photoinduced force microscopy**

Author(s): **Stefano Chiodini, Andrea Mancini, Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

12991-41 • 02:00 PM - 02:30 PM

**Earth-Abundant Layered Materials: Vibrational Properties and Nanophotonics Applications** (*Invited Paper*)

Author(s): **Ingrid Barcelos**, Lab. Nacional de Luz Sincrotron (Brazil), Ctr. Nacional de Pesquisa em Energia e Materiais (Brazil)

12991-86 • 02:30 PM - 02:50 PM

**Selecting high performance plasmonic nanoheaters for biomedical applications**

Author(s): **Renato E. de Araujo**, Univ. Federal de Pernambuco (Brazil)

12991-42 • 02:50 PM - 03:10 PM

**The first effort applying photonic jet microscopy using endoscopy camera and glass micro-spheres**

Author(s): **Andri Abdurrochman, Lusi Safriani**, Univ. Padjadjaran (Indonesia)

12991-43 • 03:10 PM - 03:40 PM

**Infrared correlation nanoscopy with unprecedented spectral coverage** (*Invited Paper*)

Author(s): **Tobias Gokus, Philip Schäfer, Andreas Huber**, attocube systems AG (Germany)

**Coffee Break 03:40 PM - 04:50 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## Wednesday 10 April 2024

### SESSION 12: OPTICAL DEVICES

10 April 2024 • 08:30 AM - 10:20 AM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

12991-44 • 08:30 AM - 09:00 AM

**Integrated optics for frequency-comb sensing** (*Invited Paper*)

Author(s): **Nathalie Picqué**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

12991-45 • 09:00 AM - 09:20 AM

**High-performance, robust, and compact grating-based surface plasmon resonance sensor for biosensing: utilizing a tunable laser**

Author(s): **Duc H. Le, Anni Ranta-Lassila, Teemu Sipola, Mikko Karppinen, Jarno Petäjä, Minna Kehusmaa, Sanna Aikio**, VTT Technical Research Ctr. of Finland Ltd. (Finland); **Tian-long Guo, Matthieu Roussey**, Univ. of Eastern Finland (Finland); **Jussi Hiltunen, Alexey Popov**, VTT Technical Research Ctr. of Finland Ltd. (Finland)

12991-46 • 09:20 AM - 09:40 AM

**Enhancing sensitivity in surface plasmon resonance detection through dynamic Joule heating**

Author(s): **Samuel Kenny, Silas O'Toole, Giulia Di Fazio, Dominic Zerulla**, Univ. College Dublin (Ireland)

12991-47 • 09:40 AM - 10:00 AM

**Elucidating photoinduced dynamics in organometallic and plasmonic photocatalytic materials using Xfel and Synchrotron Xray radiation pulses**

*Author(s):* **Gabriel Karras**, Diamond Light Source Ltd. (United Kingdom)

12991-48 • 10:00 AM - 10:20 AM

**Enhanced collection efficiency from single colour centres in aluminium nitride micropillars**

*Author(s):* **Huseyin Yagci, Sam G. Bishop, Joseph K. Cannon, John P. Hadden, Anthony J. Bennett**, Cardiff Univ. (United Kingdom)

**Coffee Break 10:20 AM - 10:50 AM**

### SESSION 13: THERMAL EFFECTS

10 April 2024 • 10:50 AM - 12:20 PM | Auditorium Cassin, Niveau/Level 0

*Session Chair(s):* **Yao-Wei Huang**, National Yang Ming Chiao Tung Univ. (Taiwan)

12991-49 • 10:50 AM - 11:20 AM

**New horizons in enhancing and controlling local heat delivery based on thermoplasmonics** (*Invited Paper*)

*Author(s):* **Javier González-Colsa, Guillermo Serrera, Alfredo Franco, Dolores Ortiz, Fernando Moreno, Jose M. Saiz**, Univ. de Cantabria (Spain); **Fernando Bresme**, Imperial College London (United Kingdom); **Francisco González, Pablo Albella**, Univ. de Cantabria (Spain)

12991-50 • 11:20 AM - 11:40 AM

**High precision measurements of temperature dependent optical constants for simulation-based optimisation of plasmonic behaviour at the nanoscale**

*Author(s):* **Giulia di Fazio, Silas O'Toole, Dominic Zerulla**, Univ. College Dublin (Ireland)

12991-51 • 11:40 AM - 12:00 PM

**Driving waveform dependency of energy dissipation of trapped particles**

*Author(s):* **Martin Kernbach**, Johannes Kepler Univ. Linz (Austria); **Oskar Sund**, Leibniz Univ. Hannover (Germany); **Andreas W. Schell**, Johannes Kepler Univ. Linz (Austria)

12991-52 • 12:00 PM - 12:20 PM

**role of the interfacial thermal conductance on the thermoplasmonic response of Janus nanoparticles under nanosecond pulsed illumination.**

*Author(s):* **Javier González-Colsa**, Univ. de Cantabria (Spain); **Fernando Bresme**, Imperial College London (United Kingdom); **Pablo Albella**, Univ. de Cantabria (Spain)

**Lunch/Exhibition Break 12:20 PM - 01:30 PM**

### SESSION 14: LIGHT SOURCES

10 April 2024 • 01:30 PM - 03:00 PM | Auditorium Cassin, Niveau/Level 0

*Session Chair(s):* **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

12991-53 • 01:30 PM - 02:00 PM

**Compact depth perception from integration of metasurface and PCSEL** (*Invited Paper*)

*Author(s):* **Yao-Wei Huang**, National Yang Ming Chiao Tung Univ. (Taiwan)

12991-54 • 02:00 PM - 02:20 PM

**Lasing in nanoparticle arrays with complex unit cells**

*Author(s):* **Rebecca Heilmann, Kristian Arjas, Päivi Törmä**, Aalto Univ. (Finland)

12991-55 • 02:20 PM - 02:40 PM

**Direct band-gap hexagonal Silicon-Germanium type-I quantum wells**

*Author(s):* **Riccardo Farina, Victor T. van Lange, Wouter H. J. Peeters, Marcel A. Verheijen, Max C. van Hemert, Erik P. A. M. Bakkers, Jos E. M. Haverkort**, Technische Univ. Eindhoven (Netherlands)

12991-56 • 02:40 PM - 03:00 PM

**Ultracompact single-photon sources of highly polarized vortex beams based on quantum emitter coupled anisotropic metasurface**

*Author(s):* **Xujing Liu, Yinhui Kan, Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

**Coffee Break 03:00 PM - 03:30 PM**

## SESSION 15: STRUCTURED LIGHT AND CHIRALITY II

10 April 2024 • 03:30 PM - 05:30 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Kayn A. Forbes**, Univ. of East Anglia (United Kingdom)

12991-57 • 03:30 PM - 04:00 PM

**Novel nonlinear chiroptical scattering effects** (Invited Paper)

Author(s): **Ventsislav K. Valev**, Univ. of Bath (United Kingdom)

12991-58 • 04:00 PM - 04:30 PM

**Harness optical angular momentum for the dynamic and spatial control of 2D nanomaterial properties** (Invited Paper)

Author(s): **Malcolm Kadodwala**, Univ. of Glasgow (United Kingdom)

12991-60 • 04:30 PM - 05:00 PM

**Structured light metafibres** (Invited Paper)

Author(s): **Chenhao Li**, Ludwig-Maximilians-Univ. München (Germany); **Markus Schmidt**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Stefan Maier**, **Haoran Ren**, Monash Univ. (Australia)

12991-61 • 05:00 PM - 05:30 PM

**A new era of materials characterization: can we achieve atomic sensitivity using visible light?** (Invited Paper)

Author(s): **Giuliana Di Martino**, Univ. of Cambridge (United Kingdom)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12991-20 • 05:45 PM - 07:45 PM

**Optical trapping with photonic nanojet (PNJ) using various sized polystyrene spheres**

Author(s): **Uma Shankar**, **Jayesh Goswami**, **Gokul Nalupurackal**, **Basudev Roy**, Indian Institute of Technology Madras (India)

12991-88 • 05:45 PM - 07:45 PM

**Born-Padé method for scattering by a diffraction grating: s polarization**

Author(s): **Thomas van der Sijs**, **Omar El Gawhary**, **Paul Urbach**, Technische Univ. Delft (Netherlands)

12991-89 • 05:45 PM - 07:45 PM

**Realization of isolated InGaN/GaN-based Dot-LEDs using electrochemical etching for advancing display**

Author(s): **Minji Ko**, **Soyeon Kim**, **Keyong Nam Lee**, **Young Rag Do**, Kookmin Univ. (Korea, Republic of)

12991-90 • 05:45 PM - 07:45 PM

**Bandgap Engineering of CsMAPbI<sub>3</sub>-xBr<sub>x</sub> quantum dots for Intermediate band Solar cell**

Author(s): **Deborah Eric**, Dong-A Univ. (Korea, Republic of)

12991-91 • 05:45 PM - 07:45 PM

**Photoluminescence spectra in GaAs biconical quantum dots**

Author(s): **Sargis Gavalajyan**, Russian-Armenian Univ. (Armenia)

12991-92 • 05:45 PM - 07:45 PM

**Single electron states and intraband absorption in dumbbell quantum dot**

Author(s): **Narek Yengibaryan**, Russian-Armenian Univ. (Armenia)

12991-93 • 05:45 PM - 07:45 PM

**Resonant transition metal dichalcogenide nanoparticles with tunable optical response for nanophotonic applications**

Author(s): **Gleb I. Tselikov**, **Georgy A. Ermolaev**, Xpanceo (United Arab Emirates); **Anton A. Popov**, National Research Nuclear Univ. MEPhI (Russian Federation); **Andrey A. Vyshnevyy**, Xpanceo (United Arab Emirates); **Andrei V. Kabashin**, Aix-Marseille Univ., CNRS (France); **Aleksey V. Arsenin**, **Valentyn S. Volkov**, Xpanceo (United Arab Emirates)

12991-94 • 05:45 PM - 07:45 PM

**Spectral response analysis of 1D photonic crystals**

Author(s): **Qinggang Liu**, **Yaopu Lang**, **Qi Wang**, **Mantong Chen**, Tianjin Univ. (China)



12991-96 • 05:45 PM - 07:45 PM

**White light interferometry applied to local spectroscopy of oriented assemblies of silver nanowires**

*Author(s):* **Farid Mahfoud, Sebastien Marbach, Christophe Cordier, Jesse Schiffler**, ICube (France); **Michel Tschopp, Matthias Pauly, Olivier Felix**, Institut Charles Sadron (France); **Manuel Flury**, ICube (France); **Paul Montgomery**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France)

12991-97 • 05:45 PM - 07:45 PM

**Centimeter scale color printing with grayscale lithography**

*Author(s):* **Yu Chen, Guixin Li**, Southern Univ. of Science and Technology (China)

12991-98 • 05:45 PM - 07:45 PM

**Two-photon-polymerization as a method to place a single quantum dot near a single Au bipyramid to achieve room temperature strong coupling**

*Author(s):* **Kseniia Mamaeva, Carolyn Elliott**, Trinity College Dublin (Ireland), Irish Photonic Integration Ctr. (IPIC), Tyndall National Institute (Ireland); **Teodora Faraone, Colm Delaney, Larisa Florea**, Trinity College Dublin (Ireland); **A. Louise Bradley**, Trinity College Dublin (Ireland), Irish Photonic Integration Ctr. (IPIC), Tyndall National Institute (Ireland)

12991-99 • 05:45 PM - 07:45 PM

**Local (nanometric) quantification of the optical properties of dielectric layers with scattering Scanning Nearfield Optical Microscope**

*Author(s):* **Valentin Allard, Lucas Arzac, Fabien Lemarchand, Julien Lumeau, Aude Lereu**, Institut Fresnel (France)

12991-100 • 05:45 PM - 07:45 PM

**Light management by self-assembled photonic structures inspired by opal-like structures in brown algae**

*Author(s):* **Francisca Guedes, Martín López-García**, INL - International Iberian Nanotechnology Lab. (Portugal)

12991-102 • 05:45 PM - 07:45 PM

**Detection of stress biomarkers cortisol and creatinine with a grating-coupled surface plasmon resonance sensor**

*Author(s):* **Anni Ranta-Lassila, Duc H. Le, Teemu Sipola, Mikko Karppinen, Jarno Petäjä, Minna Kehusmaa, Sanna Aikio**, VTT Technical Research Ctr. of Finland Ltd. (Finland); **Tianlong Guo, Matthieu Roussey**, Univ. of Eastern Finland (Finland); **Jussi Hiltunen, Alexey Popov**, VTT Technical Research Ctr. of Finland Ltd. (Finland)

12991-104 • 05:45 PM - 07:45 PM

**Core-shell structure filter using phase change material**

*Author(s):* **Niloufar Pirouzfam, Kursat Sendur**, Sabanci Univ. (Turkey)

12991-105 • 05:45 PM - 07:45 PM

**FDTD modeling of 2PP-fabricated SERS substrates: design, simulation and hotspot analysis**

*Author(s):* **Qing Liu, Tatevik Chalyan, Mehdi Feizpour, Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

12991-106 • 05:45 PM - 07:45 PM

**Exciton binding energy and interband absorption in a cylindrical quantum dot GaN/InxGa1-xN**

*Author(s):* **Gor Kharatyan**, Institute for Physical Research, NAS RA (Armenia)

12991-108 • 05:45 PM - 07:45 PM

**Valley-selective emission from 2D semiconductors scattered by a resonant plasmonic nanoparticle**

*Author(s):* **Zlata Fedorova, Tobias Bucher**, Friedrich-Schiller-Univ. Jena (Germany); **Laura Valencia**, ARC Centre of Excellence for Transformative Meta-Optical Systems (Australia), Friedrich-Schiller-Univ. Jena (Germany); **Angela Barreda**, Carlos III University of Madrid (Spain); **Mostafa Abasifard**, Friedrich-Schiller-Univ. Jena (Germany); **Matthias Wurdack**, Friedrich-Schiller-Univ. Jena (Germany), The Australian National Univ. (Australia); **Rajeshkumar Mupparapu, Emad Najafidehaghani, Heiko Knopf, Antony George, Falk Eilenberger, Thomas Pertch, Andrey Turchanin, Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

12991-109 • 05:45 PM - 07:45 PM

**Analytical expressions for round pulsed scalar and electromagnetic spatiotemporal optical vortices**

*Author(s):* **Sophie Vo**, The Institute of Optics, Univ. of Rochester (United States); **Rodrigo Gutierrez-Cuevas**, Institut Langevin, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, Univ. PSL, CNRS (France); **Miguel A. Alonso**, The Institute of Optics, Univ. of Rochester (United States), Aix-Marseille Univ., Ecole Centrale de Marseille, Institut Fresnel (France)

12991-110 • 05:45 PM - 07:45 PM

**An ultra-sensitive plasmonic biosensor for detecting various Anaemic conditions in human blood**

*Author(s):* **Rahul Runthala, Pritham Raghunath, Sanyam Mehta, Pankaj Arora**, Birla Institute of Technology and Science, Pilani (India)

12991-111 • 05:45 PM - 07:45 PM

**Coherent acoustic phonon transport in optophononic waveguides**

*Author(s):* **Chushuang Xiang, Edson R. Cardozo de Oliveira, Konstantinos Papatryfonos, Omar Ortiz, Priya Priya, Anne Rodriguez, Luc Le Gratiet, Isabelle Sagnes, Martina Morassi, Aristide Lemaître, Sandeep Sathyan, Martin Esmann, Norberto Daniel Lanzillotti-Kimura**, Ctr. de Nanosciences et de Nanotechnologies (France)

12991-113 • 05:45 PM - 07:45 PM

**Guided mode resonance optimization for spatial dispersion control**

*Author(s):* **Ignas Lukošiusas**, Vilnius Univ. (Lithuania); **Julianija Nikitina, Lina Grineviciute**, Ctr. for Physical Sciences and Technology (Lithuania); **Darius Gailevicius**, Vilnius Univ. (Lithuania); **Kestutis Staliunas**, ICREA - Institutió Catalana de Recerca i Estudis Avançats (Spain)

12991-114 • 05:45 PM - 07:45 PM

**Flat emission grating couplers design enabling optical antennas for high performance LIDAR systems**

*Author(s):* **Thenia Prousalidi, Giannis Pouloupoulos, Evrydiki Kyriazi, Georgios Syriopoulos**, National Technical Univ. of Athens (Greece); **Peter Maat, Roel Botter**, LioniX International BV (Netherlands); **Charalampos Zervos**, National Technical Univ. of Athens (Greece), Talos Analytics IKE (Greece); **Dimitrios Apostolopoulos, Hercules Avramopoulos**, National Technical Univ. of Athens (Greece)

12991-115 • 05:45 PM - 07:45 PM

**Optimal filtering of polarisation-controlled Brillouin scattering in elliptical optophononic resonators**

*Author(s):* **Elham Mehdi, Anne Rodriguez, Priya Priya, Edson R. Cardozo de Oliveira, Abdelmounaim Harouri, Isabelle Sagnes, Martina Morassi, Luc Le Gratiet, Aristide Lemaître, Loïc Lanco, Martin Esmann, Norberto Daniel Lanzillotti-Kimura**, Ctr. de Nanosciences et de Nanotechnologies, CNRS (France), Univ. Paris-Saclay (France)

12991-116 • 05:45 PM - 07:45 PM

**Chiral light in twisted Fabry-Pérot cavities**

*Author(s):* **Sergey Dyakov, Natalia Salakhova, Alexey Ignatov**, Skolkovo Institute of Science and Technology (Russian Federation); **Iliia Fradkin**, Skolkovo Institute of Science and Technology (Russian Federation), Moscow Institute of Physics and Technology (Russian Federation); **Nikolay Gippius**, Skolkovo Institute of Science and Technology (Russian Federation)

12991-118 • 05:45 PM - 07:45 PM

**Accelerating the spontaneous emission of PbS quantum dots with 3D photonic band gap crystals**

*Author(s):* **Timon J. Vreman, Melissa J. Goodwin, Cornelis A. M. Hartevelde, Ad Lagendijk, Willem L. Vos**, Univ. Twente (Netherlands)

12991-119 • 05:45 PM - 07:45 PM

**Predefined SERS substrates through UV-Nanoimprint Lithography: Achieving Reproducibility, Cost-Efficiency, and High Throughput**

*Author(s):* **Karolina Milenko, Firehun Tsige Dullo, Christopher Dirdal, Elizaveta Vereshchagina**, SINTEF (Norway); **Elizaveta Vereshchagina, Anand Summanwar**, SINTEF (Norway)

12991-121 • 05:45 PM - 07:45 PM

**Ultrafast laser nanopatterning of copper plasmonic photocathodes for enhanced photoemission in electron accelerators**

*Author(s):* **Miguel Martinez Calderon, Baptiste Groussin, Victoria Bjelland, Eric Chevally, Valentin Fedosseev, Marcel Himmerlich**, CERN (Switzerland); **Pierre Lorenz**, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany); **Alejandro Manjavacas**, Instituto de Óptica "Daza de Valdés" (Spain); **Bruce Marsh, Holger Neupert, Ralf Rossel, Walter Wuensch, Eduardo Granados**, CERN (Switzerland)

12991-122 • 05:45 PM - 07:45 PM

**Direct laser ablation of high-bandgap materials for multi-level diffractive optical elements using femtosecond UV laser pulses**

*Author(s):* **Dominyka Stonyte, Darius Gailevicius, Vytautas Jukna, Vitalija Smirnovaite, Domas Paipulas**, Vilnius Univ. (Lithuania)

12991-123 • 05:45 PM - 07:45 PM

**reverse design method of meta-surface absorber based on deep learning strategy**

*Author(s):* **Jianchen Zi**, Ji Hua Lab. (China)

12991-124 • 05:45 PM - 07:45 PM

**Raman spectroscopy of PPV in the proximity of metal nanogaps**

*Author(s):* **Arjun Upadhyay**, Indian Institute of Technology Bombay (India); **Bamadev Das**, Ulsan National Institute of Science and Technology (Korea, Republic of); **Sushant Sharma**, Indian Institute of Technology Bombay (India); **Dai-Sik Kim**, Ulsan National Institute of Science and Technology (Korea, Republic of); **Parinda Vasa**, Indian Institute of Technology Bombay (India)

12991-125 • 05:45 PM - 07:45 PM

**Design of polarization-sensitive meta micro-reflectors in Bragg grating waveguide**

*Author(s):* **Ahmet Oguz Sakin, Beyza Akcay, Ahmet Canberk Songur, Mehmet Ünlü**, TOBB ETÜ (Turkey)

12991-126 • 05:45 PM - 07:45 PM

**Cavity continuum**

*Author(s):* **Fan Cheng**, Tel Aviv Univ. (Israel); **Vladimir Shuvayev**, Queens College (United States); **Mark Dovidzon**, Technion-Israel Institute of Technology (Israel); **Lev Deych**, The Graduate Ctr., CUNY (United States); **Tal E. Carmon**, Tel Aviv Univ. (Israel)

12991-127 • 05:45 PM - 07:45 PM

**Optimized amplitude distributions for grating and side lobe suppression in optical phased array antennas**

*Author(s):* **Ahmet Oguz Sakin, Beyza Akcay, Ahmet Canberk Songur, Mehmet Ünlü**, TOBB ETÜ (Turkey)

12991-128 • 05:45 PM - 07:45 PM

**Global optimization for inverse design in nanophotonics**

*Author(s):* **Pauline Bennet, Denis Langevin**, Univ. Clermont Auvergne (France); **Abdourahman Khaireh-Walieh**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France), Univ. de Toulouse (France); **Olivier Teytaud**, Meta (France); **Peter Wiecha**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Antoine Moreau**, Univ. Clermont Auvergne (France)

12991-129 • 05:45 PM - 07:45 PM

**Dielectric metasurface enabled digital holography for quantitative phase imaging**

*Author(s):* **Jyoti Sardana, Shital Devinder**, Indian Institute of Technology Delhi (India); **Wenqi Zhu, Amit Agrawal**, National Institute of Standards and Technology (United States); **Joby Joseph**, Indian Institute of Technology Delhi (India)

12991-130 • 05:45 PM - 07:45 PM

**Near-zero index XUV plasmonic waveguides**

*Author(s):* **Luca Assogna**, Univ. degli Studi dell'Aquila (Italy); **Carino Ferrante, Alessandro Ciattoni**, Istituto Superconduttori, Materiali Innovativi e Dispositivi (Italy); **Andrea Marini**, Univ. degli Studi dell'Aquila (Italy)

12991-132 • 05:45 PM - 07:45 PM

**Implementation of aberration-corrected optical supercritical lenses via topology optimization**

*Author(s):* **Tsung Sheng Kao, Kuan-Lin Chiang, Yi-Chen Chen**, National Yang Ming Chiao Tung Univ. (Taiwan)

12991-133 • 05:45 PM - 07:45 PM

**Angular interrogation of surface plasmons on metal-dielectric gratings with broad geometric range**

*Author(s):* **Shafeek Abdul Samad, Nityanand Kumawat, Priyamvada Venugopalan**, New York Univ. Abu Dhabi (United Arab Emirates); **Sunil Kumar**, New York Univ. Abu Dhabi (United Arab Emirates), New York Univ. (United States)

12991-134 • 05:45 PM - 07:45 PM

**Two-photon absorption-based silicon photodetector with topology optimized cavity**

*Author(s):* **Robin Dahiya, Ayman N. Kamel, Rasmus E. Christiansen**, Technical Univ. of Denmark (Denmark); **Andrey Marchevsky**, Technical Univ. of Denmark (Denmark), Microsoft (Denmark); **Ole Hansen, Kresten Yvind**, Technical Univ. of Denmark (Denmark)

12991-135 • 05:45 PM - 07:45 PM

**2D semiconductors as integrated light sources for plasmonic waveguides**

*Author(s):* **Christian Frydendahl, Torgom Yezekyan Vladimir Zenin, Sergey I. Bozhevolnyi**, Univ. of Southern Denmark (Denmark)

12991-137 • 05:45 PM - 07:45 PM

**Local measurements at a distance: combining retroreflective gratings with tunable lasers**

*Author(s):* **Paul Thrane**, SINTEF (Norway); **Carson G. Valdez, Annie Kroo, Olav Solgaard**, Stanford Univ. (United States)

12991-138 • 05:45 PM - 07:45 PM

**The interplay between structure, composition and optical response of core-shell nanowires**

*Author(s):* **Valentina Bonino, Madeleine Han, Jaime Dolado, Cyril Guilloud, Vicente Rey-Bakaikoa, Remi Tucoulou, Julie Villanova, Jaime Segura Ruiz, Gema Martinez-Criado**, ESRF - The European Synchrotron (France); **Fanlu Zhang, Yue Bian, Lan Fu**, Australian National University (Australia)

12991-139 • 05:45 PM - 07:45 PM

**Modeling heat treatment effects on low-E glass coatings using artificial neural networks: a novel approach in nanophotonic material design**

*Author(s):* **Benan Akca**, Marmara Univ. (Turkey); **Seniz Turkuz, Utku Er, Sinem Eraslan**, SISECAM (Turkey); **Ahmet Fevzi Baba**, Marmara Univ. (Turkey); **Batuhan Gundogdu**, The Univ. of Chicago (United States)

12991-141 • 05:45 PM - 07:45 PM

**Cayley Fractal for Near field plasmonic switching.**

*Author(s):* **Asbah Masih, Yashna Sharma**, Delhi Technological Univ. (India)

12991-142 • 05:45 PM - 07:45 PM

**Resonant and non-resonant microcavity effects on nitrogen vacancy centres**

*Author(s):* **Debojyoti Ray Chawdhury, Tulika Agrawal, Prem Ballabh Bisht**, Indian Institute of Technology Madras (India)

12991-143 • 05:45 PM - 07:45 PM

**Photonic jets out from a 4-cores fiber**

*Author(s): Sylvain Lecler, Tony Hajj, ICube (France), Institut National des Sciences Appliquées de Strasbourg (France); Laurent Bigot, Lab. de Physique des Lasers, Atomes et Molécules, CNRS (France), Univ. de Lille (France); Aymeric Pastre, Monika Bouet, Geraud Bouwmans, Univ. de Lille (France); Grégoire Chabrol, Icam, site de Strasbourg-Europe (France), ICube (France); Assia Guessoum, Laboratoire d'Optique Appliquée (Algeria), Univ. Ferhat Abbas Sétif 1 (Algeria); Demagh Nacer, Lab. d'Optique Appliquée (Algeria)*

12991-144 • 05:45 PM - 07:45 PM

**Mesoporous-based responsive acoustic resonators operating in the GHz range**

*Author(s): Edson R. Cardozo de Oliveira, Chushuang Xiang, Univ. Paris-Saclay (France), Ctr. de Nanosciences et de Nanotechnologies, CNRS (France); Priscila Vensaus, Univ. Nacional De San Martín (Argentina); Konstantinos Papatryfonos, Abdelmounaim Harouri, Univ. Paris-Saclay (France), Ctr. de Nanosciences et de Nanotechnologies, CNRS (France); Galo J. A. A. Soler-Illia, Univ. Nacional De San Martín (Argentina); Norberto Daniel Lanzillotti-Kimura, Univ. Paris-Saclay (France), Ctr. de Nanosciences et de Nanotechnologies, CNRS (France)*

12991-146 • 05:45 PM - 07:45 PM

**Operation a spin-waveguide with memory elements**

*Author(s): Dmitrii Raskhodchikov, Kirill Nikolaev, Jannis Bensmann, Wolfram Pernice, Westfälische Wilhelms-Univ. Münster (Germany)*

12991-147 • 05:45 PM - 07:45 PM

**Light propagation in one-dimensional stealthy hyperuniform disordered photonic structures**

*Author(s): Alexander Meek, Marian Florescu, Univ. of Surrey (United Kingdom)*

12991-148 • 05:45 PM - 07:45 PM

**Unraveling the origin of long-lifetime emission in low-dimensional copper halides via a magneto-optical study**

*Author(s): Xinrui Wang, Nanjing Tech Univ. (China)*

12991-149 • 05:45 PM - 07:45 PM

**The role of geometry in tailoring the linear and nonlinear optical properties of semiconductor quantum dots**

*Author(s): Grigor A. Mantashian, Institute of Chemical Physics after A. B. Nalbandyan NAS RA (Armenia), Russian-Armenian Univ. (Armenia)*

12991-150 • 05:45 PM - 07:45 PM

**Absorption efficiency enhancement of silicon photodetectors via nanophotonic photon management**

*Author(s): Ali P. Vafa, Marian Florescu, Univ. of Surrey (United Kingdom)*

12991-151 • 05:45 PM - 07:45 PM

**Enhanced photoelectrochemical performance of black silicon via introduction of a TiO<sub>2</sub> passivation layer**

*Author(s): Dong Hyeok Seo, Hyeonmin Yim, Won Jin Kim, Woo-Byoung Kim, Dankook Univ. (Korea, Republic of)*

12991-152 • 05:45 PM - 07:45 PM

**Inverse design of nanophotonic meta-atoms with desired multipoles**

*Author(s): Sadeq Bahmani, Leibniz Univ Hannover (Germany); Andrey Evlyukhin, Institute of Quantum Optics, Leibniz University Hannover (Germany); Emadeldeen Hassan, Umeå universitet (Sweden); Antonio Cala Lesina, Leibniz Univ Hannover (Germany)*

12991-153 • 05:45 PM - 07:45 PM

**UV luminescence in Jersey Tiger Moths**

*Author(s): Ventsislav K. Valev, Univ. of Bath (United Kingdom)*

12991-154 • 05:45 PM - 07:45 PM

**Spatial and spectral mapping of supercontinuum level-crossing**

*Author(s): Nitzan Shani, Amit K Shakya, Fan Cheng, tel aviv university (Israel); Vladimir Shuvayev, Queens College of CUNY (United States); Lev Deych, The Graduate Center of CUNY (United States); Tal Carmon, tel aviv university (Israel)*

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruhe Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

**Coffee Break 10:35 AM - 11:00 AM**

## SESSION 16: PLASMONICS II

11 April 2024 • 11:00 AM - 12:40 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Giuliana Di Martino**, Univ. of Cambridge (United Kingdom)

Session 16 runs concurrently with Session 17 (Novel Materials and Electrodynamics I)

12991-62 • 11:00 AM - 11:20 AM

**Analyzing SERS reproducibility and performance: the role of illumination area**

Author(s): **Mehdi Feizpour, Qing Liu, Hugo Thienpont, Wendy Meulebroeck, Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

12991-63 • 11:20 AM - 11:40 AM

**Resonators of many phases of matter including plasma and liquid.**

Author(s): **Tal E. Carmon**, Tel Aviv Univ. (Israel)

12991-64 • 11:40 AM - 12:00 PM

**Capillary interactions for fabrication of non-coalescent liquid-metallic nanospheres enabling tuneable gap-plasmon-based mechanochromic sensors**

Author(s): **Renu Raman Sahu, Alwar Samy Ramasamy, Tapajyoti Das Gupta**, Indian Institute of Science, Bengaluru (India)

12991-65 • 12:00 PM - 12:20 PM

**Plasmonic electronically addressable super-resolution (PEAR)**

Author(s): **Conor O'Donnell, Silas O'Toole**, Univ. College Dublin (Ireland); **Dominic Zerulla**, Univ. College Dublin (Ireland), PEARlabs Technologies Ltd. (Ireland)

12991-66 • 12:20 PM - 12:40 PM

**Development of Plasmonic Hydrogen Sensors with High Sensitivity**

Author(s): **Merbin John, Ajay Kumar Agrawal, Kamal Kumar, Anuj Dhawan**, Indian Institute of Technology Delhi (India)

**Lunch Break 12:40 PM - 02:00 PM**

## SESSION 17: NOVEL MATERIALS AND ELECTRODYNAMICS I

11 April 2024 • 11:00 AM - 12:20 PM | Adenauer, Niveau/Level 1

Session Chair(s): **Isabelle Staude**, Friedrich-Schiller-Univ. Jena (Germany)

Session 17 runs concurrently with Session 16 (Plasmonics II)

12991-67 • 11:00 AM - 11:20 AM

**Fano Resonances at the Edge of a Continuum**

Author(s): **Kestutis Staliunas**, Univ. Politècnica de Catalunya (Spain); **Ignas Lukošiusas**, Vilnius Univ. (Lithuania); **Lina Grineviciute, Julijanija Nikitina**, Ctr. for Physical Sciences and Technology (Lithuania); **Darius Gailevicius**, Vilnius Univ. (Lithuania)

12991-68 • 11:20 AM - 11:40 AM

**Exploring strong light-matter interaction: computational insights into hybrid states and propagation length of surface plasmon polaritons on metal-dielectric interfaces in the Kretschmann configuration**

Author(s): **Sushant Sharma, Arjun Upadhyay, Parinda Vasa**, Indian Institute of Technology Bombay (India)

12991-69 • 11:40 AM - 12:00 PM

**Coherent control of critical coupling in non PT-symmetric defective photonic crystals**

Author(s): **Nancy Ghangas**, Indian Institute of Technology Ropar (India)

12991-70 • 12:00 PM - 12:20 PM

**Light transmission and energy deposition in resonant disordered media.**

Author(s): **Romain Rescanieres**, Institut Langevin, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France); **Arthur Goetschy, Romain Pierrat**, Institut Langevin (France)

**Lunch Break 12:20 PM - 01:30 PM****SESSION 18: PLASMONICS III**

11 April 2024 • 02:00 PM - 03:00 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Angus J. Bain**, Univ. College London (United Kingdom)

Session 18 runs concurrently with Session 19 (Novel Materials and Electrodynamics II)

12991-71 • 02:00 PM - 02:20 PM

**Coupling colloidal quantum dot supraparticle microlasers with surface plasmon resonances via plasmonic gold substrates**

Author(s): **Isaac Noman, Charlotte Eling, Pedro Alves, Nicolas Laurand**, Univ. of Strathclyde (United Kingdom)

12991-72 • 02:20 PM - 02:40 PM

**Modification of micro- and macroproperties of plasmon-molecule systems by strong coupling**

Author(s): **Tomasz J. Antosiewicz, Maria Bancerek, Katarzyna Kluczyk-Korch**, Univ. of Warsaw (Poland)

12991-73 • 02:40 PM - 03:00 PM

**Nanopores with Customized 3D Shape: Tailored Structures for Enhanced Optical and Electrical Applications**

Author(s): **Germàn Lanzavecchia, Ali Douaki, Anastasia Sapunova, Shukun Weng, Denis Garoli**, Istituto Italiano di Tecnologia (Italy)

**Coffee Break 03:00 PM - 03:30 PM****SESSION 19: NOVEL MATERIALS AND ELECTRODYNAMICS II**

11 April 2024 • 01:30 PM - 03:10 PM | Adenauer, Niveau/Level 1

Session Chair(s): **David L. Andrews**, Univ. of East Anglia (United Kingdom)

Session 19 runs concurrently with Session 18 (Plasmonics III)

12991-74 • 01:30 PM - 01:50 PM

**Giant optical anisotropy in Van der Waals materials: perspectives and challenges**

Author(s): **Valentyn S. Volkov, Georgy Ermolaev, Dmitriy Grudin, Andrey A. Vyshnevyy, Aleksey Arsenin**, XPANCEO (United Arab Emirates); **Kostya S. Novoselov**, National Univ. of Singapore (Singapore)

12991-75 • 01:50 PM - 02:10 PM

**Wavelength-dispersive optical axes in natural and artificial anisotropic materials**

Author(s): **Georgy Ermolaev**, Xpanceo (United Arab Emirates)

12991-76 • 02:10 PM - 02:30 PM

**Experimental observation of 3D strong electromagnetic wave localization in Vogel spirals**

Author(s): **Geoffroy Aubry, Luis A. Razo-López**, Institut de Physique de Nice (France); **Felipe A. Pinheiro**, UFRJ (Brazil); **Fabrice Mortessagne**, Institut de Physique de Nice (France)

12991-77 • 02:30 PM - 02:50 PM

**Rotating chiral dipoles for unidirectional scattering**

Author(s): **Yuanyang Xie, Alexey V. Krasavin, Diane J. Roth, Anatoly V. Zayats**, King's College London (United Kingdom)

12991-78 • 02:50 PM - 03:10 PM

**Optically manipulated photonic membranes for biophotonics**

Author(s): **Tomasz Plaskocinski, Libin Yan**, Univ. of St. Andrews (United Kingdom); **Marcel Schubert**, Univ. zu Köln (Germany); **Malte Gather**, Univ. zu Köln (Germany), Univ. of St. Andrews (United Kingdom); **Andrea Di Falco**, Univ. of St. Andrews (United Kingdom)

**Coffee Break 03:10 PM - 03:40 PM****SESSION 20: PLASMONICS IV**

11 April 2024 • 03:30 PM - 04:30 PM | Auditorium Cassin, Niveau/Level 0

Session Chair(s): **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

Session 20 runs concurrently with Session 21 (Bio Applications and Interactions)

12991-80 • 03:30 PM - 03:50 PM

**Photonic and phononic characterization of twisted acoustoplasmonic nanostructures**

Author(s): **Antonio García-Martín, Jorge García**, Instituto de Micro y Nanotecnología, Consejo Superior de Investigaciones Científicas (Spain); **Chushuang Xiang**, Univ. Paris-Saclay, CNRS (France); **Daniel Lanzillotti-Kimura**, CNRS (France)

12991-81 • 03:50 PM - 04:10 PM

**Nanometer-scale light confinement in tunable nanobeam cavity**

*Author(s):* **Sergei Lepeshov, Daniel Farbowitz, Thor Weis, Mikkel Heuck, Søren Stobbe**, Technical Univ. of Denmark (Denmark)

12991-82 • 04:10 PM - 04:30 PM

**Optical modes enhance solar water splitting in one-dimensional plasmonic particle grating**

*Author(s):* **Saurabh Pandey, Shereena Joseph**, Indian Institute of Technology Delhi (India); **Jagriti Ahuja**, Indian Institute Of Technology Delhi (IITD) (India); **Shital Devinder**, Indian Institute of Technology Delhi (India); **Shumile Ahmed Siddiqui**, Institute of Nano Science & Technology (India); **Aditya Singh, Suddhasatwa Basu**, Indian Institute of Technology Delhi (India); **Kaushik Ghosh**, Institute of Nano Science & Technology (India); **Joby Joseph**, Indian Institute of Technology Delhi (India)

## SESSION 21: BIO APPLICATIONS AND INTERACTIONS

11 April 2024 • 03:40 PM - 05:00 PM | Adenauer, Niveau/Level 1

*Session Chair(s):* **Angus J. Bain**, Univ. College London (United Kingdom)

**Session 21 runs concurrently with Session 20 (Plasmonics IV)**

12991-83 • 03:40 PM - 04:00 PM

**The synergistic effects of gamma-aminobutyric acid silver nanoparticles and light in antimicrobial photodynamic therapy**

*Author(s):* **Isabela S. Lopes, Vitor G. Vital, Suzan P. Vasconcellos, Lilia C. Courrol**, Univ. Federal de São Paulo (Brazil)

12991-84 • 04:00 PM - 04:20 PM

**NIR-active CPNs for targeted tumor cell applications in bioimaging and PDT**

*Author(s):* **Miao Zhao, Mark Green**, King's College London (United Kingdom); **Philip Manning**, Newcastle Univ. (United Kingdom); **Aliaksandra Rakovich**, King's College London (United Kingdom)

12991-85 • 04:20 PM - 04:40 PM

**Controlled localization and scattering of light via multipole coupling in finite-size arrays of Mie-resonant nanoparticles**

*Author(s):* **Nikita Ustimenko, Carsten Rockstuhl**, Karlsruher Institut für Technologie (Germany); **Andrey Evlyukhin**, Leibniz Univ. Hannover (Germany)

12991-87 • 04:40 PM - 05:00 PM

**Aperiodic nano-photonics devices to control quantum light emission**

*Author(s):* **Oliver Trojak**, Univ. of Southampton (United Kingdom); **Claire Munro**, Univ. of Cambridge (United Kingdom); **Jin Dong Song**, Korea Institute of Science and Technology (Korea, Republic of); **Luca Sapienza**, Univ. of Cambridge (United Kingdom)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

12991-103

**Generation of optical pulses due to phase modulation of surface electromagnetic wave in a cylindrical semiconductor waveguide with a space charge wave**

*Author(s):* **Aleksei S. Abramov, Aleksei S. Kadochkin**, Ulyanovsk State Univ. (Russian Federation); **Sergey G. Moiseev**, Ulyanovsk State University (Russian Federation); **Dmitry G. Sannikov**, Ulyanovsk State Univ. (Russian Federation); **Andrei A. Fotiadi**, University of Mons (Belgium), University of Oulu (Finland)

12991-112

**The total suppression of light reflection from a one-dimensional photonic crystal by a two-dimensional array of nanoparticles**

*Author(s):* **Sergey G. Moiseev, Igor L. Glukhov**, Ulyanovsk State Univ. (Russian Federation), Kotelnikov Institute of Radio Engineering and Electronics (Russian Federation); **Andrei A. Fotiadi**, University of Mons (Belgium), University of Oulu (Finland)

12991-117

**Versatile broadband generation of polygonal perfect vortex beams in the visible spectrum**

*Author(s):* **Muhammad Danial Shafqat**, Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Qammer H. Abbasi**, University of Glasgow, James Watt School of Engineering, Glasgow, G12 8QQ, UK (United Kingdom); **Muhammad Zubair**, King Abdullah Univ. of Science & Technology (Saudi Arabia), Glasgow, G12 8QQ, UK (United Kingdom)

12991-131

**Whispering-gallery microlasers doped with plasmonic nanoparticles**

*Author(s):* **Evgeniia Soloveva, Kamilla Kurassova, Kirill Bogdanov, Daler Dadadzhyanov, Anton Starovoytov**, ITMO Univ. (Russian Federation); **Nikita Toropov**, Univ. of Southampton (United Kingdom)

12991-140

**Development of plasmonic nanostructures of gold and silver with a high degree of anisotropy**

*Author(s):* **Alexandra Afanasjeva, Evgeniia Soloveva, Igor Gladskikh, Daler Dadadzhanov**, ITMO Univ. (Russian Federation); **Anastasiia Sapunova**, Istituto Italiano di Tecnologia (Italy)

12991-120

**Advancing spectral resolution with ultracompact helicity multiplexed all-dielectric metadvice**

*Author(s):* **Naureen Butt**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia); **Tauseef Tauqeer, Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)



# CONFERENCE 12992

## Advances in Ultrafast Condensed Phase Physics IV

09 - 11 April 2024 | Boston/Salon 11, Niveau/Level 1

CONFERENCE CO-SPONSOR

Quantum science  
& nanomaterials | QMat

The Interdisciplinary thematic institutes  
of the University of Strasbourg | Inserm  
funded under the Excellence Initiative program

**Conference Chair(s):** Stefan Haacke, Institut de physique et chimie des matériaux de Strasbourg (France)

**Program Committee:** Jens Biegert, ICFO - Institut de Ciències Fotòniques (Spain); Joachim Burgdörfer, Vienna Univ. of Technology (Austria); Giulio N. Cerullo, Politecnico di Milano (Italy); Joanna Czapla-Masztafiak, Institute of Nuclear Physics PAN (Poland); Olof Johansson, The Univ. of Edinburgh (United Kingdom); Wolfgang W. Langbein, Cardiff Univ. (United Kingdom); Christoph Lienau, Carl von Ossietzky Univ. Oldenburg (Germany); Maciej Lorenc, CNRS-Rennes (France); Hamed Merdji, CEA-Saclay (France); Markus Ossiander, Technische Univ. Graz (Austria); Antonio Picón, Univ. Autónoma de Madrid (Spain); Jelena Sjakste, Ecole Polytechnique (France)

### Tuesday 9 April 2024

#### SESSION 1: ELECTRON DYNAMICS I

09 April 2024 • 08:30 AM - 10:20 AM | Boston/Salon 11, Niveau/Level 1

**Session Chair(s):** Wolfgang W. Langbein, Cardiff Univ. (United Kingdom)

12992-1 • 08:30 AM - 09:00 AM

**Theoretical description of attosecond x-ray imaging and spectroscopy of electron dynamics (Invited Paper)**

**Author(s):** Daria Gorelova, Univ. Hamburg (Germany)

12992-2 • 09:00 AM - 09:20 AM

**Layer-independent lifetime and coherence of anisotropic excitons in ReS<sub>2</sub>**

**Author(s):** Rup K. Chowdhury, Samiul Islam, Marie Barthelemy, Francois Fras, Univ. de Strasbourg (France), Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France)

12992-3 • 09:20 AM - 09:40 AM

**Many-body interactions in semiconductors revealed by two-dimensional electronic spectroscopy**

**Author(s):** Thomas Deckert, Daniele Brida, Univ. du Luxembourg (Luxembourg)

12992-4 • 09:40 AM - 10:00 AM

**Femtosecond switching of strong light-matter interactions in 2D semiconductor microcavities**

**Author(s):** Armando Genco, Charalambos Louca, Cristina Cruciano, Chiara Trovatiello, Politecnico di Milano (Italy); Sam Randerson, Peter Claronino, Rahul Jayaprakash, The Univ. of Sheffield (United Kingdom); Kenji Watanabe, Takashi Taniguchi, National Institute for Materials Science (Japan); David G. Lidzey, The Univ. of Sheffield (United Kingdom); Stefano Dal Conte, Politecnico di Milano (Italy); Alexander I. Tartakovskii, The Univ. of Sheffield (United Kingdom); Giulio N. Cerullo, Politecnico di Milano (Italy)

12992-5 • 10:00 AM - 10:20 AM

**Homotrilayer MoSe<sub>2</sub> for increased lifetime and oscillator strength of hybridised interlayer excitons**

**Author(s):** Charalambos Louca, Francesco Gucci, Armando Genco, Politecnico di Milano (Italy); David Ruiz-Tijerina, Univ. Nacional Autónoma de México (Mexico); Johanna Zultak, The Univ. of Manchester (United Kingdom); Cristina Cruciano, Politecnico di Milano (Italy); Roman V. Gorbachev, The Univ. of Manchester (United Kingdom); Alexander I. Tartakovskii, The Univ. of Sheffield (United Kingdom); Stefano Dal Conte, Politecnico di Milano (Italy); Giulio N. Cerullo, Politecnico di Milano (Italy), CNR-Istituto di Fotonica e Nanotecnologie (Italy)

**Coffee Break 10:20 AM - 10:50 AM**

#### SESSION 2: ULTRAFAST MAGNETISM I

09 April 2024 • 10:50 AM - 12:40 PM | Boston/Salon 11, Niveau/Level 1

Session Chair(s): **Gunnar Johansson**, Chalmers Univ. of Technology (Sweden)

12992-6 • 10:50 AM - 11:20 AM

**Femtosecond dynamics of quantum materials** (Invited Paper)

Author(s): **Sangeeta Sharma**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

12992-8 • 11:20 AM - 11:40 AM

**Towards an ultrafast optical control of metal-insulator transition**

Author(s): **Valérie Halté, Jayash Panigrahi, Erwan Terrier, Marie Barthelemy**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France); **Sunglae Cho**, Univ. of Ulsan (Korea, Republic of)

12992-9 • 11:40 AM - 12:00 PM

**Frequency scaling and figure of merit for ultrafast magneto-acoustics**

Author(s): **Tudor-Gabriel Mocioj, Antonia Ghita**, Ecole Polytechnique (France), Univ. Paris-Saclay (France), Institut Polytechnique de Paris (France); **Alexey M. Lomonosov**, Hochschule Offenburg (Germany); **Jiwan Kim**, Kunsan National Univ. (Korea, Republic of); **Paolo Vavassori**, CIC nanoGUNE (Spain); **IKERBASQUE**, Basque Foundation for Science (Spain); **Vasily V. Temnov**, Ecole Polytechnique (France), CNRS (France), Institut Polytechnique de Paris (France)

12992-10 • 12:00 PM - 12:20 PM

**Ultrafast magnetization dynamics in NiCo thin films presenting weak stripes domains**

Author(s): **Juliette Dubois**, Lab. d'Optique Appliquée (France), Lab. de Chimie Physique - Matière et Rayonnement (France); **Boris Vodungbo**, Lab. de Chimie Physique - Matière et Rayonnement (France); **Marcel Hennes**, Institut des nanosciences de Paris (France); **Guillaume Lambert**, Lab. d'Optique Appliquée (France); **Emmanuelle Jal, Renaud Delaunay**, Lab. de Chimie Physique - Matière et Rayonnement (France); **Frank Vidal**, Institut des nanosciences de Paris (France)

12992-58 • 12:20 PM - 12:40 PM

**Altermagnetic platform for coherent terahertz magnonics**

Author(s): **Rostislav Mikhaylovskiy**, Lancaster Univ. (United Kingdom)

**Lunch/Exhibition Break 12:40 PM - 01:50 PM**

## SESSION 3: NEW TECHNIQUES

09 April 2024 • 01:50 PM - 04:00 PM | Boston/Salon 11, Niveau/Level 1

Session Chair(s): **Christoph Lienau**, Carl von Ossietzky Univ. Oldenburg (Germany)

12992-11 • 01:50 PM - 02:20 PM

**Merging advanced photonics with ultrafast electron microscopy** (Invited Paper)

Author(s): **Armin Feist**, Georg-August-Univ. Göttingen (Germany), Max Planck Institute for Multidisciplinary Sciences (Germany)

12992-12 • 02:20 PM - 02:40 PM

**Water-based high stability supercontinuum generation at multi-kilohertz repetition rates**

Author(s): **Kilian R. Keller, Ricardo Rojas-Aedo, Aline Vanderhaegen**, Univ. du Luxembourg (Luxembourg); **Markus Ludwig**, Deutsches Elektronen-Synchrotron (Germany); **Daniele Brida**, Univ. du Luxembourg (Luxembourg)

12992-13 • 02:40 PM - 03:00 PM

**An Alternative Referencing Scheme that Suppresses Large Noise Contributions in Ultrafast Transient Absorption Spectroscopy with Broadband Vis-NIR Detection**

Author(s): **Julien Réhault, Kaila Yallum, Natalie Banerji**, Univ. Bern (Switzerland)

12992-14 • 03:00 PM - 03:20 PM

**Phonon dynamics in novel materials and hybrid structures: Towards ultrafast nanoacoustic sensing and reconfigurable devices.**

Author(s): **Sandeep Sathyan**, Univ. Paris-Saclay (France), Ctr. de Nanosciences et de Nanotechnologies, CNRS (France), CNRS (France); **Edson R. Cardozo de Oliveira**, Univ. Paris-Saclay (France), Ctr. de Nanosciences et de Nanotechnologies (France), CNRS (France); **Carme Gomez Carbonell**, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain), Consejo Superior de Investigaciones Científicas (Spain), The Barcelona Institute of Science and Technology - BIST (Spain); **Martina Morassi, Aristide Lemaître**, Univ. Paris-Saclay (France), CNRS (France), Ctr. de Nanosciences et de Nanotechnologies (France); **Priscila Priscila Vensaus**, Univ. Nacional de San Martín (Argentina); **Elham Mehdi, Chushuang Xiang**, Univ. Paris-Saclay (France), CNRS (France), Ctr. de Nanosciences et de Nanotechnologies (France); **Santiago Carreira, Javier Briatico**, Unité Mixte de Physique CNRS/Thales (France), Univ. Paris-Saclay (France); **Laura B. Steren**, INN, CNEA CONICET (Argentina); **Sergio O. Valenzuela**, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain), Consejo Superior de Investigaciones Científicas (Spain); **Galo J. A. A. Soler-Illia**, Univ. Nacional De San Martín (Argentina); **Norberto Daniel Lanzillotti-Kimura**, Univ. Paris-Saclay (France), CNRS (France), Ctr. de Nanosciences et de Nanotechnologies (France)

12992-15 • 03:20 PM - 03:40 PM

**Attosecond SXR spectroscopy reveals many-body dynamics in solids**

*Author(s):* **Themis P.H. Sidiropoulos, Nicola Di Palo, Daniel E. Rivas, Adam Summers, Stefano Severino, Maurizio Reduzzi, Jens Biegert,** ICFO - Institut de Ciències Fotòniques (Spain)

12992-16 • 03:40 PM - 04:00 PM

**Conduction band dynamics revealed by attosecond currents**

*Author(s):* **Marcus Ossiander,** Technische Univ. Graz (Austria), Harvard Univ. (United States); **Kehan Golyari, Kevin Scharl,** Max-Planck-Institut für Quantenoptik (Germany); **Isabella Floss, Valerie Smejkal, Joachim Burgdörfer, Christoph Lemell,** Technische Univ. Wien (Austria); **Ferenc Krausz,** Max-Planck-Institut für Quantenoptik (Germany); **Martin Schultze,** Technische Univ. Graz (Austria)

**Coffee Break 04:00 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani,** Istituto di Fisica Applicata "Nello Carrara" (Italy)  
*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge,** Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy,** Univ. Politècnica de València (Spain)

**Wednesday 10 April 2024**

**SESSION 4: MOLECULAR DYNAMICS I**

10 April 2024 • 08:30 AM - 10:20 AM | Boston/Salon 11, Niveau/Level 1

*Session Chair(s):* **Joanna Czapla-Masztafiak,** Institute of Nuclear Physics PAN (Poland)

12992-17 • 08:30 AM - 09:00 AM

**TBA III** (*Invited Paper*)

*Author(s):* **T. Scopigno,** Sapienza Univ. di Roma (Italy)

12992-40 • 09:00 AM - 09:20 AM

**Direct evidence of ultrafast energy delocalization between optically hybridized J-aggregates in a strongly coupled microcavity**

*Author(s):* **Mattia Russo,** Politecnico di Milano (Italy); **Kyriacos Georgiou,** Univ. of Cyprus (Cyprus), The Univ. of Sheffield (United Kingdom); **Armando Genco,** Politecnico di Milano (Italy); **Simone De Liberato,** Univ. of Southampton (United Kingdom); **Giulio N. Cerullo,** Politecnico di Milano (Italy), CNR-Istituto di Fotonica e Nanotecnologie (Italy); **David G. Lidzey,** The Univ. of Sheffield (United Kingdom); **Andreas Othonos,** Univ. of Cyprus (Cyprus); **Tersilla Virgili,** CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Margherita Maiuri,** Politecnico di Milano (Italy)

12992-19 • 09:20 AM - 09:40 AM

**Ultrafast photoreaction dynamics of oxindole-based molecular switches**

*Author(s):* **Jérémie Léonard, Matthew Mgbukwu,** Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France); **Camilo Granados,** Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France), Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Alina Khodko,** Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany), Institute of Physics, NASU (Ukraine); **Oleg Kornilov,** Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Stefan Haacke,** Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France)

12992-20 • 09:40 AM - 10:00 AM

**Ultrafast dynamics of Metanil Yellow studied by time-resolved transient absorption and XUV photoelectron spectroscopies in solution**

*Author(s):* **Alina Khodko**, MBI für Nichtlineare Optik und Kurzzeitspektroskopie (Germany), Institute of Physics, NASU (Ukraine); **Matthew Mgbukwu**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Univ. de Strasbourg (France), CNRS (France); **Oleg Kornilov**, **Camilo Granados**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Evgenii Titov**, Univ. Potsdam (Germany); **Nataliia M. Kachalova**, Institute of Physics, NASU (Ukraine), L. M. Litvinenko Institute of Physical-Organic Chemistry and Coal Chemistry (Ukraine); **Valerii Voitsekhovych**, Institute of Physics, NASU (Ukraine); **Ihor Dmytruk**, Institute of Physics, NASU (Ukraine), Taras Shevchenko National Univ. of Kyiv (Ukraine); **Stefan Haacke**, **Jérémie Léonard**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12992-21 • 10:00 AM - 10:20 AM

**Exciton Dephasing by Phonon-Induced Scattering between Bright Exciton States in InP/ZnSe Colloidal Quantum Dots**

*Author(s):* **Vigneshwaran Chandrasekaran**, Univ. Gent (Belgium); **Lorenzo Scarpelli**, **Francesco Masia**, **Paola Borri**, Cardiff Univ. (United Kingdom); **Zeger Hens**, Univ. Gent (Belgium); **Wolfgang W. Langbein**, Cardiff Univ. (United Kingdom)

**Coffee Break 10:20 AM - 10:50 AM****SESSION 5: ULTRAFAST MAGNETISM II**

10 April 2024 • 10:50 AM - 12:10 PM | Boston/Salon 11, Niveau/Level 1

*Session Chair(s):* **Sangeeta Sharma**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

12992-22 • 10:50 AM - 11:10 AM

**Ultrafast Spin Dynamics in Perovskites tracked with Transient Holographic Imaging**

*Author(s):* **Julia Anthea Gessner**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Martin Hörmann**, Politecnico di Milano (Italy); **Shangpu Liu**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Giulio N. Cerullo**, **Franco V. A. Camargo**, Politecnico di Milano (Italy); **Felix Deschler**, Ruprecht-Karls-Univ. Heidelberg (Germany)

12992-23 • 11:10 AM - 11:30 AM

**Ultrafast structural transformations in metals studied by time resolved XRD.**

*Author(s):* **Ryszard Sobierajski**, Institute of Physics (Poland); **Jerzy Antonowicz**, Warsaw Univ. of Technology (Poland); **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany); **Peter Zalden**, European XFEL GmbH (Germany); **Iwanna Jacyna**, **Oleksii Liubchenko**, **Roman Minikayev**, Institute of Physics (Poland); **Adam Olczak**, **Przemysław Dzięgielewski**, Warsaw Univ. of Technology (Poland)

12992-24 • 11:30 AM - 11:50 AM

**Terahertz spin dynamics across Jahn-Teller-like magnetic phase transition**

*Author(s):* **Oleksandr Y. Kovalenko**, **Nikolay R. Vovk**, Lancaster Univ. (United Kingdom); **Roman M. Dubrovin**, **Roman V. Pisarev**, Ioffe Institute (Russian Federation); **Rostislav V. Mikhaylovskiy**, Lancaster Univ. (United Kingdom)

12992-25 • 11:50 AM - 12:10 PM

**On the generality of the Landau-Lifshitz-Gilbert equation (LLG) equation to the optical limit: An optically-induced helicity dependent torque emerging from the LLG equation**

*Author(s):* **Amir Capua**, **Benjamin Assouline**, The Hebrew Univ. of Jerusalem (Israel)

**Lunch/Exhibition Break 12:10 PM - 01:40 PM****SESSION 6: ELECTRON DYNAMICS II**

10 April 2024 • 01:40 PM - 03:20 PM | Boston/Salon 11, Niveau/Level 1

*Session Chair(s):* **Antonio Picón**, Univ. Autónoma de Madrid (Spain)

12992-26 • 01:40 PM - 02:00 PM

**Ultrafast nonthermal transient reduction in conductivity**

*Author(s):* **Mariusz Lejman**, Lab. d'Optique Appliquée (France); **Mateusz Weis**, Lab. d'Optique Appliquée (France), Ecole Polytechnique, Institut Polytechnique de Paris (France), CNRS (France); **Niloufar Nilforoushan**, **Jérôme Faure**, Lab. d'Optique Appliquée (France); **V. Ta Phuoc**, Univ. de Tours (France), Institut National des Sciences Appliquées Centre Val de Loire (France), CNRS (France); **Laurent Cario**, Univ. de Nantes (France), Institut des Matériaux Jean Rouxel (France), CNRS (France); **Davide Boschetto**, Lab. d'Optique Appliquée (France)

12992-27 • 02:00 PM - 02:20 PM

**Ultrafast exciton dynamics in 2D van der Waals nanostructures: probing the hot exciton relaxation of size-controlled & well-dispersed graphene nanoflakes**

Author(s): **Sébastien Quistebert**, LuMIn (France); **Daniel Medina-Lopez**, NIMBE/LICSEN (France), Univ. Paris-Saclay (France), CNRS (France); **Stéphane Campidelli**, NIMBE/LICSEN (France); **Jean-Sébastien Lauret**, LuMIn (France); **Elsa Cassette**, LuMIn (France), Univ. Paris-Saclay (France), CNRS (France)

12992-28 • 02:20 PM - 02:40 PM

**Electron-phonon coupling and transient dynamics of hot carriers: from interpretation of photoemission experiments to transport simulations in devices.**

Author(s): **Mohammad Ghanem**, Université Paris Saclay, Centre des nanosciences et de Nanotechnologies (France); **Philippe Dollfus**, Université Paris Saclay, Centre des Nanosciences et de Nanotechnologies (France); **Jérôme Saint-Martin**, Université Paris Saclay, ENS Paris Saclay, CNRS, SATIE (France); **Nathalie Vast**, Laboratoire des Solides Irradiés, CEA/DRF/IRAMIS, Ecole Polytechnique, CNRS, Institut Polytechnique (France); **Raja Sen**, Institut de Minéralogie, de Physiques des Matériaux et de Cosmochimie, Sorbonne Université (France); **Jelena Sjakste**, Lab. des Solides Irradiés (France)

12992-29 • 02:40 PM - 03:00 PM

**Optical control of the tunnelling current across the junction of a scanning tunnelling microscope**

Author(s): **Andrea Rossetti**, **Daniele Brida**, Univ. du Luxembourg (Luxembourg)

12992-30 • 03:00 PM - 03:20 PM

**Attosecond Photoinjection Dynamics in Germanium**

Author(s): **Giacomo Inzani**, Politecnico di Milano (Italy); **Lyudmyla Adamska**, Istituto Nanoscienze (Italy); **Amir Eskandari-asi**, Univ. degli Studi di Salerno (Italy); **Nicola Di Palo**, **Gian Luca Dolso**, **Bruno Moio**, Politecnico di Milano (Italy); **Luciano Jacopo D'Onofrio**, Univ. degli Studi di Salerno (Italy); **Alessio Lamperti**, **Alessandro Molle**, **Rocio Borrego-Varillas**, Istituto per la Microelettronica e Microsistemi (Italy); **Mauro Nisoli**, Politecnico di Milano (Italy), Istituto per la Microelettronica e Microsistemi (Italy); **Stefano Pittalis**, **Carlo Andrea Rozzi**, Istituto Nanoscienze (Italy); **Adolfo Avella**, Univ. degli Studi di Salerno (Italy); **Matteo Lucchini**, Politecnico di Milano (Italy), CNR-Istituto di Fotonica e Nanotecnologie (Italy)

**Coffee Break 03:20 PM - 03:50 PM****SESSION 7: STRONG FIELD PROCESSES I**

10 April 2024 • 03:50 PM - 05:40 PM | Boston/Salon 11, Niveau/Level 1

Session Chair(s): **Stefan Haacke**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12992-31 • 03:50 PM - 04:20 PM

**TBA V (Invited Paper)**

Author(s): **Cristian Svetina**, IMDEA Nanociencia (Spain)

12992-32 • 04:20 PM - 04:40 PM

**Attosecond virtual transitions in dielectrics**

Author(s): **Matteo Lucchini**, **Gian Luca Dolso**, Politecnico di Milano (Italy); **Shunsuke A. Sato**, Univ. of Tsukuba (Japan); **Nicola Di Palo**, **Giacomo Inzani**, Politecnico di Milano (Italy); **Rocio Borrego-Varillas**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Mauro Nisoli**, Politecnico di Milano (Italy)

12992-34 • 04:40 PM - 05:00 PM

**Spatial transformations of High-order Harmonic Generation in Transition Metal Dichalcogenides**

Author(s): **Leon Schlemmer**, Univ. Paris-Saclay (France), CY Cergy Paris Univ. (France); **Peng Ye**, Univ. Paris-Saclay (France); **David Gauthier**, Univ. Paris-Saclay (France), CY Cergy Paris Univ. (France); **Vijay Sunuganty**, **Sergey Babenkov**, Univ. Paris-Saclay (France), CY Cergy Paris Univ. (France), CEA (France); **Marie Froidevaux**, Ecole Polytechnique (France), Ecole Nationale Supérieure de Techniques Avancées (France), CNRS (France); **Xu Liu**, Univ. Paris-Saclay (France), CY Cergy Paris Univ. (France), CEA (France); **Hamed Merdji**, Lab. d'Optique Appliquée (France), Ecole Polytechnique (France), CNRS (France); **Willem Boutu**, Univ. Paris-Saclay (France), CY Cergy Paris Univ. (France), CEA (France)

12992-35 • 05:00 PM - 05:20 PM

**Influence of pulse duration on high harmonics emitted from wide bandgap dielectrics**

Author(s): **Hortense Allegre**, **Joseph Broughton**, **Tim Klee**, **Yan Li**, **Katarzyna Kowalczyk**, **Nikolas Thatte**, **Daniel Lim**, **Jon P. Marangos**, **Mary Matthews**, **John W G Tisch**, Imperial College London (United Kingdom)

12992-36 • 05:20 PM - 05:40 PM

**High-harmonic generation in semi-Dirac and Weyl semimetals with broken time-reversal symmetry: exploring the case of multiple semi-Dirac points**

Author(s): **Luka Medic**, Jožef Stefan Institute (Slovenia); **Jernej Mravlje**, **Anton Ramšak**, **Tomaž Rejec**, Jožef Stefan Institute (Slovenia), Faculty of Mathematics and Physics (Slovenia)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12992-47 • 05:45 PM - 07:45 PM

**Ultrafast spins and charges dynamics of the Van der Waals antiferromagnet FePS<sub>3</sub>**

*Author(s):* **Jean Besbas**, Univ. de Strasbourg (France), Institut de Physique et de Chimie des Matériaux de Strasbourg, CNRS (France); **Valérie Halté, Joanna Wolff, Arnaud Gloppe, Marie Barthelemy**, Institut de Physique et de Chimie des Matériaux de Strasbourg, CNRS (France), Univ. de Strasbourg (France)

12992-48 • 05:45 PM - 07:45 PM

**Femtosecond spectroscopy of new iron bidentate complexes with extended lifetimes**

*Author(s):* **Ronan Viel**, CNRS (France), Institut de Physique et de Chimie des Matériaux de Strasbourg (France); **Ulises Carrillo**, CNRS (France), Univ. de Lorraine (France); **Carole Duboc, Florian Molton**, Univ. Grenoble Alpes (France); **Philippe Gros**, CNRS (France), Univ. de Lorraine (France); **Cristina Cebrián-Avila**, CNRS (France), ICS (France); **Stefan Haacke**, CNRS (France), Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12992-49 • 05:45 PM - 07:45 PM

**Time-resolved imaging of electronic-ionic dynamics in spinel lithium manganese oxide**

*Author(s):* **Philipp Kollenz, Julia A. Gessner, Garrett May, Ning Yuan**, Physikalisches Institut der Univ. Heidelberg (Germany); **Rüdiger Klingeler, Felix Deschler**, Ruprecht-Karls-Univ. Heidelberg (Germany)

12992-51 • 05:45 PM - 07:45 PM

**Self-trapped excitons mediated energy transfer to Ho<sup>3+</sup> in Bi-Ho co-doped double perovskite nanocrystals**

*Author(s):* **Md Soif Ahmed**, Indian Institute of Technology Hyderabad (India), Univ. Bern (Switzerland); **Chinmay Barman**, Indian Institute of Technology Hyderabad (India); **Demetra Tsokkou, Natalie Banerji**, Univ. Bern (Switzerland); **Sai Santosh Kumar Raavi**, Indian Institute of Technology Hyderabad (India)

12992-52 • 05:45 PM - 07:45 PM

**Including electron-hole interactions in non-linear optical responses of semiconductors**

*Author(s):* **Juan José Esteve-Paredes**, Univ. Autónoma de Madrid (Spain)

12992-53 • 05:45 PM - 07:45 PM

**Investigation of the ultrafast excitation dynamic of carriers in polar ZnO / ZnMgO quantum wells**

*Author(s):* **Daniel Osee Siebadji Tchuiameni**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Lab. de Physique et Chimie des Nano-objets (France); **Marc Ziegler, Olivier Crégut, Pierre Gilliot**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Univ. de Strasbourg (France); **Andrea Balocchi**, Lab. de Physique et Chimie des Nano-objets (France), Institut National des Sciences Appliquées de Toulouse (France); **Christian Morhain**, Univ. Côte d'Azur (France), CNRS (France), CRHEA (France); **Mathieu Gallart**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Univ. de Strasbourg (France)

12992-54 • 05:45 PM - 07:45 PM

**X-ray chronoscopy: a window into the world of attosecond dynamics in matter**

*Author(s):* **Wojciech Błachucki**, Institute of Nuclear Physics PAN (Poland); **Anna Wach**, Jagiellonian Univ. in Krakow (Poland); **Joanna Czaplak-Masztafiak**, Institute of Nuclear Physics PAN (Poland); **Mickaël Delcey**, KTH Royal Institute of Technology (Sweden); **Christopher Arrell**, Paul Scherrer Institut (Switzerland); **Rafał Faselow**, Institute of Nuclear Physics PAN (Poland); **Pavle Juranić**, Paul Scherrer Institut (Switzerland); **Marcus Lundberg**, Uppsala Univ. (Sweden); **Christopher J. Milne**, European XFEL GmbH (Germany); **Jacinto Sá**, Uppsala Univ. (Sweden), Institute of Physical Chemistry PAS (Poland); **Jakub Szlachetko**, Jagiellonian Univ. in Krakow (Poland)

12992-55 • 05:45 PM - 07:45 PM

**Optimal generation and detection of GHz acoustic phonon using elliptical micropillars**

*Author(s):* **Chushuang Xiang, Anne Rodriguez, Edson R. Cardozo de Oliveira, Luc Le Gratiet, Isabelle Sagnes, Martina Morassi, Aristide Lemaître, Norberto Daniel Lanzillotti-Kimura**, Ctr. de Nanosciences et de Nanotechnologies (France); **P. Priya**, Univ. Paris-Saclay, CNRS, Ctr. de Nanosciences et de Nanotechnologies (France)

12992-56 • 05:45 PM - 07:45 PM

**Frequency resolved cross correlation between XUV high harmonics and IR fundamental laser pulses by transient multiphoton absorption spectroscopy in gases**

Author(s): **Juliette Dubois**, Lab. d'Optique Appliquée (France), Lab. de Chimie Physique - Matière et Rayonnement (France); **Léonardo Rico**, Lab. de Chimie Physique - Matière et Rayonnement (France); **Julien Gautier**, **Fabien Tissandier**, Lab. d'Optique Appliquée (France); **Boris Vodungbo**, **Camille Lévêque**, **Jérémie Caillat**, **Richard Taiëb**, Lab. de Chimie Physique - Matière et Rayonnement (France); **Guillaume Lambert**, Lab. d'Optique Appliquée (France)

12992-57 • 05:45 PM - 07:45 PM

**High harmonic generation in solids driven by a high energy fiber laser system**

Author(s): **Djamila Boukhaoui**, GPM (France); **Said Idlahcen**, Complexe de Recherche Interprofessionnel en Aérothermochimie (France); **Jonathan Houard**, **Ivan Blum**, GPM (France); **Thomas Godin**, Complexe de Recherche Interprofessionnel en Aérothermochimie (France); **Foued Amrani**, **Frédéric Jérôme**, **Fetah Benabid**, GLOphotonics (France); **David Gauthier**, Université Paris-Saclay, CEA, LIDYL, 91191 Gif sur Yvette, France ; CY Cergy Paris Université, (France); **Willem BOUTU**, . Université Paris-Saclay, CEA, LIDYL, 91191 Gif sur Yvette, France ; 6. CY Cergy Paris Université (France); **Ammar A. Hideur**, Complexe de Recherche Interprofessionnel en Aérothermochimie (France); **Angela Vella**, GPM (France)

12992-59 • 05:45 PM - 07:45 PM

**Out-of-equilibrium Hubbard dimer within DPOA**

Author(s): **Amir Eskandari-asl**, **Adolfo Avella**, Università degli Studi di Salerno (Italy)

12992-60 • 05:45 PM - 07:45 PM

**Dynamical projective operatorial approach (DPOA) for pump-probe setups in the ultrafast regime**

Author(s): **Amir Eskandariasl**, **Adolfo Avella**, University of Salerno (Italy)

**Thursday 11 April 2024****HOT TOPICS III**

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

**Coffee Break 10:35 AM - 11:00 AM****SESSION 8: MOLECULAR DYNAMICS II**

11 April 2024 • 11:00 AM - 12:30 PM | Boston/Salon 11, Niveau/Level 1

Session Chair(s): **Giulio N. Cerullo**, Politecnico di Milano (Italy)

12992-37 • 11:00 AM - 11:30 AM

**TBA** (Invited Paper)

Author(s): **Ilaria Zardo**, Univ. Basel (Switzerland)

12992-38 • 11:30 AM - 11:50 AM

**Ultrafast photoinduced phase-changes in the photocatalyst BiVO<sub>4</sub>**

Author(s): **Viktoria Kunzelmann**, Technische Univ. München (Germany); **Philipp Kollenz**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Verena Streibel**, Technische Univ. München (Germany); **Peter Zalden**, **Yohei Uemura**, European XFEL GmbH (Germany); **Tsedenia Zewdie**, Technische Univ. München (Germany); **Danyellen Galindo**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Elise Sirotti**, Technische Univ. München (Germany); **Burak Guzelturk**, Argonne National Lab. (United States); **Ian Sharp**, Technische Univ. München (Germany); **Felix Deschler**, Ruprecht-Karls-Univ Heidelberg (Germany)

12992-39 • 11:50 AM - 12:10 PM

**Ultrafast fluorescence spectroscopy unravels efficient exciton transport within dye-loaded organic nanoparticles**

*Author(s):* **Amira Mounya Gharbi**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Univ. de Strasbourg (France), CNRS (France); **Deep Sekhar Biswas**, Univ. de Strasbourg (France); **Pavel Malý**, Charles Univ. (Czech Republic); **Andrey S. Klymchenko**, Univ. de Strasbourg (France); **Jérémie Léonard**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Univ. de Strasbourg (France), CNRS (France)

12992-18 • 12:10 PM - 12:30 PM

**Changes in the excited state dynamics of ArchaeRhodopsin-3 via site-specific mutations**

*Author(s):* **Krystyna Herasymenko**, **Arnaud Marquette**, Univ. de Strasbourg (France), Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France); **Bogdan Marekha**, École Normale Supérieure de Lyon (France); **Masae Konno-Inoue**, The Institute for Solid State Physics, The Univ. of Tokyo (Japan), Japan Science and Technology Agency (Japan); **Keichi Inoue**, The Institute for Solid State Physics (Japan); **Stefan Haacke**, Univ. de Strasbourg (France), CNRS (France)

**Lunch Break 12:30 PM - 01:30 PM****SESSION 9: STRONG FIELD PROCESSES II**

11 April 2024 • 01:30 PM - 03:20 PM | Boston/Salon 11, Niveau/Level 1

*Session Chair(s):* **Marcus Ossiander**, Harvard John A. Paulson School of Engineering and Applied Sciences (United States)

12992-41 • 01:30 PM - 02:00 PM

**High-harmonic spectroscopy of low-energy electron-scattering dynamics in liquids** (*Invited Paper*)

*Author(s):* **Angana Mondal**, Laboratory of Physical Chemistry, ETH Zürich (Switzerland); **Ofer Neufeld**, Max-Planck-Institut für Struktur und Dynamik der Materie (Germany); **Zhong Yin**, Laboratory of Physical Chemistry (Switzerland); **Zahra Nourbakhsh**, Max-Planck-Institut für Struktur und Dynamik der Materie (Germany); **Vit Svoboda**, Laboratory of Physical Chemistry (Switzerland); **Angel Rubio**, **Nicolas Tancogne-Dejean**, Max-Planck-Institut für Struktur und Dynamik der Materie (Germany); **Hans-Jakob Wörner**, Laboratory of Physical Chemistry (Switzerland)

12992-42 • 02:00 PM - 02:20 PM

**Experimental evidences of quantum properties in a high-harmonic-based bipartite system**

*Author(s):* **David Theidel**, Ecole Polytechnique (France); **Viviane Cotte**, Laboratoire d'Optique Appliquée (France); **René Sondenheimer**, Fraunhofer Institute for Applied Optics and Precision Engineering IOF (Germany), Friedrich-Schiller-University Jena (Germany); **Viktoriia Shiriyaeva**, **Marie Froidevaux**, **Vladislav Severin**, **Adam Merdji-Larue**, Laboratoire d'Optique Appliquée (France); **Philip Mosel**, Institut für Quantenoptik, Leibniz Universität Hannover (Germany); **Sven Fröhlich**, **Kim-Alessandro Weber**, **Uwe Morgner**, **Milutin Kovacev**, Institut für Quantenoptik (Germany); **Jens Biegert**, ICFO - Institut de Ciències Fotòniques, The Barcelona Institute of Science and Technology (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain); **Hamed Merdji**, Laboratoire d'Optique Appliquée (France)

12992-43 • 02:20 PM - 02:40 PM

**Universal valley control with polarization tailored light**

*Author(s):* **Igor Tyulnev**, ICFO - Institut de Ciències Fotòniques (Spain); **Alvaro Jimenez-Galan**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Julita Poborska**, **Lenard Vamos**, ICFO - Institut de Ciències Fotòniques (Spain); **Philip St. J. Russell**, **Francesco Tani**, Max-Planck-Institut für die Physik des Lichts (Germany); **Olga Smirnova**, **Misha Ivanov**, **Rui F. Silva**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Jens Biegert**, ICFO - Institut de Ciències Fotòniques (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain)

12992-44 • 02:40 PM - 03:00 PM

**Attosecond science in 2D materials**

*Author(s):* **Antonio Picón**, Univ. Autónoma de Madrid (Spain)

12992-46 • 03:00 PM - 03:20 PM

**Nonperturbative Floquet-Landau-Zener Mechanism in Multiphoton Photoemission on Metal Surface**

*Author(s):* **Yun Yen**, Paul Scherrer Institut (Switzerland); **Marcel Reutzler**, Georg-August-Universität Göttingen (Germany); **Andi Li**, **Hrvoje Petek**, Univ. of Pittsburgh (United States); **Michael Schüler**, Paul Scherrer Institut (Switzerland)



# CONFERENCE 12993

## Quantum Technologies 2024

08 - 10 April 2024 | Londres 1/Salon 8, Niveau/Level 0

**Conference Chair(s):** Florent Baboux, Lab. Matériaux et Phénomènes Quantiques (France); Virginia D'Auria, Institut de Physique de Nice (France); Tom Bienaimé, Univ. de Strasbourg (France)

**Program Committee:** Eleni Diamanti, CNRS, Sorbonne Univ. (France); Sara Ducci, Univ. Paris 7-Diderot (France); Thomas Gerrits, National Institute of Standards and Technology (United States); Robin Kaiser, Institut de Physique de Nice (France); Chiara Macchiavello, Univ. degli Studi di Pavia (Italy); Fabio Sciarrino, Sapienza Univ. di Roma (Italy); Magdalena Stobinska, Univ. of Warsaw (Poland); Nicolas Treps, Lab. Kastler Brossel (France)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s): Stefanie Barz*, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s): Malte C. Gather*, Univ. zu Koln (Germany)

#### Coffee Break 11:00 AM - 11:30 AM

#### SESSION 1: NOVEL PLATFORMS I

08 April 2024 • 11:30 AM - 12:40 PM | Londres 1/Salon 8, Niveau/Level 0

*Session Chair(s): Tom Bienaimé*, Univ. de Strasbourg (France)

12993-1 • 11:30 AM - 12:00 PM

**Cold Rydberg atom excitation mediated via an optical nanofibre** (*Invited Paper*)

*Author(s): Aswathy Raj*, Okinawa Institute of Science and Technology Graduate Univ. (Japan); **Veronika Giricz**, Okinawa Institute of Science and Technology Graduate Univ. (Japan), University of Stuttgart (Germany); **Dylan Brown**, **Alexey Vylegzhanin**, **Sile Nic Chormaic**, Okinawa Institute of Science and Technology Graduate Univ. (Japan)

12993-2 • 12:00 PM - 12:20 PM

**Generating scalable graph states in an atom-nanophotonic interface**

*Author(s): C.H. Chien*, National Taiwan Univ. (Taiwan), Institute of Atomic and Molecular Sciences - Academia Sinica (Taiwan); **Sumit Goswami**, **C.-C. Wu**, Institute of Atomic and Molecular Sciences - Academia Sinica (Taiwan); **W.-S. Hiew**, National Taiwan Univ. (Taiwan), Institute of Atomic and Molecular Sciences - Academia Sinica (Taiwan); **Y.-C. Chen**, Institute of Atomic and Molecular Sciences - Academia Sinica (Taiwan); **H.H. Jen**, Institute of Atomic and Molecular Sciences - Academia Sinica (Taiwan), National Ctr. for Theoretical Sciences (Taiwan)

12993-3 • 12:20 PM - 12:40 PM

**Electrical manipulation of telecom color centers in silicon**

Author(s): **Madison Sutula, Aaron Day, Jonathan Dietz, Alex Ruan**, Harvard Univ. (United States); **Denis Sukachev, Mihir Bhaskar**, Amazon Web Services (United States); **Evelyn Hu**, Harvard Univ. (United States)

**Lunch Break 12:40 PM - 02:00 PM****SESSION 2: QUANTUM SENSING AND METROLOGY**

08 April 2024 • 02:00 PM - 03:30 PM | Londres 1/Salon 8, Niveau/Level 0

Session Chair(s): **Florent Baboux**, Lab. Matériaux et Phénomènes Quantiques (France)

12993-4 • 02:00 PM - 02:30 PM

**Quantitative phase imaging enhanced by quantum correlation in a non-interferometric scheme** *(Invited Paper)*

Author(s): **Ivano Ruo Berchera**, Istituto Nazionale di Ricerca Metrologica (Italy)

12993-5 • 02:30 PM - 02:50 PM

**Nonclassicality and wave-particle duality in quantum interferometer**

Author(s): **Tai Hyun Yoon, Chanseul Lee**, Korea Univ. (Korea, Republic of)

12993-6 • 02:50 PM - 03:10 PM

**Experimental demonstration of time measurement precision limitations in Hong-Ou-Mandel interferometry**

Author(s): **Othmane Meskine, Eloi Descamps**, Lab. Matériaux et Phénomènes Quantiques (France); **Arne Keller**, Lab. Matériaux et Phénomènes Quantiques (France), Univ. Paris-Saclay (France); **Aristide Lemaître**, Ctr. de Nanosciences et de Nanotechnologies (France); **Florent Baboux, Sara Ducci, Perola Milman**, Lab. Matériaux et Phénomènes Quantiques (France)

12993-7 • 03:10 PM - 03:30 PM

**Gravitational redshift induces quantum interference**

Author(s): **David E. Bruschi**, Forschungszentrum Jülich GmbH (Germany); **Andreas W. Schell**, Johannes Kepler Univ. Linz (Austria)

**Coffee Break 03:30 PM - 04:00 PM****SESSION 3: INTEGRATED DEVICES**

08 April 2024 • 04:00 PM - 05:30 PM | Londres 1/Salon 8, Niveau/Level 0

Session Chair(s): **Martin Bowen**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12993-8 • 04:00 PM - 04:30 PM

**Development of superconducting single-photon detectors based on NbTiN and graphene** *(Invited Paper)*

Author(s): **Cristina García Pérez, Julia García Pérez, Fernando Jiménez Urbanos, María Acebrón Rodicio**, Madrid Institute for Advanced Studies (Spain); **María Teresa Magaz**, Madrid Institute for Advanced Studies (Spain), Centro de Astrobiología (Spain); **Alicia Gómez**, Centro de Astrobiología (Spain); **Daniel Granados, Ramón Bernardo-Gavito**, Madrid Institute for Advanced Studies (Spain)

12993-9 • 04:30 PM - 04:50 PM

**Towards on-chip demonstration of a high-dimensional quantum random number generator**

Author(s): **Maddalena Genzini, Caterina Vigliar, Mujtaba Zahidy**, Technical Univ. of Denmark (Denmark); **Yunhong Ding**, Technical Univ. of Denmark (Denmark), SiPhotonIC ApS (Denmark); **Davide Bacco**, Univ. degli Studi di Firenze (Italy); **Francesco Da Ros**, Technical Univ. of Denmark (Denmark)

12993-10 • 04:50 PM - 05:10 PM

**Hybrid III-V/Silicon photonic circuits embedding generation and routing of entangled photon pairs**

Author(s): **Lorenzo Lazzari, Jérémie Schuhmann**, Lab. Matériaux et Phénomènes Quantiques, Univ. Paris Cité (France), Ctr. de Nanosciences et de Nanotechnologies, Univ. Paris-Saclay (France), STMicroelectronics S.A. (France); **Aristide Lemaître**, Ctr. de Nanosciences et de Nanotechnologies, Univ. Paris-Saclay (France); **Maria I. Amanti**, Lab. Matériaux et Phénomènes Quantiques, Univ. Paris Cité (France); **Frédéric Boeuf**, STMicroelectronics S.A. (France); **Fabrice Raineri**, Institut de Physique de Nice, Univ. Côte d'Azur (France), Ctr. de Nanosciences et de Nanotechnologies, Univ. Paris-Saclay (France); **Florent Baboux, Sara Ducci**, Lab. Matériaux et Phénomènes Quantiques, Univ. Paris Cité (France)

12993-11 • 05:10 PM - 05:30 PM

**Ultracompact and tunable Bell state source using transition metal dichalcogenides**

*Author(s):* **Maximilian A. Weissflog**, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany); **Anna Fedotova**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Yilin Tang**, The Australian National Univ. (Australia); **Elkin A. Santos**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Benjamin Laudert**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany); **Saniya Shinde**, **Fatemeh Abtahi**, **Mina Afsharnia**, **Inmaculada Pérez Pérez**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Sebastian Ritter**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany); **Hao Qin**, The Australian National Univ. (Australia); **Jiri Janousek**, The Australian National Univ. (Australia), ARC Ctr. of Excellence for Quantum Computation and Communication Technology (Australia); **Sai Shradha**, Technische Univ. Darmstadt (Germany); **Isabelle Staude**, Abbe Ctr. of Photonics (Germany), Max Planck School of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Sina Saravi**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Thomas Pertsch**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Frank Setzpfandt**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Yuerui Lu**, The Australian National Univ. (Germany), ARC Ctr. of Excellence for Quantum Computation and Communication Technology (Australia); **Falk Eilenberger**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

Tuesday 9 April 2024

**SESSION 4: QUANTUM COMMUNICATION**

09 April 2024 • 09:00 AM - 10:30 AM | Londres 1/Salon 8, Niveau/Level 0

*Session Chair(s):* **Sîle Nic Chormaic**, Okinawa Institute of Science and Technology Graduate Univ. (Japan)

12993-12 • 09:00 AM - 09:30 AM

**Enhancing free space DI QKD via employing NPA hierarchy method (Invited Paper)***Author(s):* **Magdalena Stobinska**, **Maryam Afsary**, **Morteza Moradi**, Univ. of Warsaw (Poland)

12993-13 • 09:30 AM - 09:50 AM

**Experimental simulation of an underwater QKD system in a real scenario**

*Author(s):* **Marco Pinel**, Istituto Nazionale di Ottica (Italy), Univ. degli Studi di Napoli Federico II (Italy), QTI S.R.L. (Italy); **Elena Fanella**, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy), Univ. degli Studi di Napoli Federico II (Italy), QTI S.R.L. (Italy); **Sebastiano Cocchi**, Univ. degli Studi di Firenze (Italy), QTI S.R.L. (Italy); **Marco Menchetti**, **Tommaso Occhipinti**, QTI S.R.L. (Italy); **Alessandro Zavatta**, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy), Univ. degli Studi di Firenze (Italy), QTI S.R.L. (Italy); **Davide Bacco**, Univ. degli Studi di Firenze (Italy), QTI S.R.L. (Italy)

12993-14 • 09:50 AM - 10:10 AM

**Twin-field QKD in a real-world network**

*Author(s):* **Alice Meda**, **Salvatore Virzi**, **Cecilia Clivati**, Istituto Nazionale di Ricerca Metrologica (Italy); **Carlo Liorni**, Leonardo S.p.A. (Italy); **Gianluca Bertaina**, **Simone Donadello**, **Marco Gramegna**, **Ivo Pietro Degiovanni**, Istituto Nazionale di Ricerca Metrologica (Italy); **Mirko Pittaluga**, Toshiba Europe Ltd. (United Kingdom); **Marco Lucamarini**, Univ. of York (United Kingdom); **Zhiliang Yuan**, Beijing Academy of Quantum Information Sciences (China); **Andrew Shields**, Toshiba Europe Ltd. (United Kingdom); **Massimiliano Dispenza**, Leonardo (Italy); **Marco Genovese**, **Davide Calonico**, Istituto Nazionale di Ricerca Metrologica (Italy)

12993-15 • 10:10 AM - 10:30 AM

**Global quantum communication without quantum memory**

*Author(s):* **Sumit Goswami**, Univ. of Calgary (Canada), Institute of Atomic and Molecular Sciences - Academia Sinica (Taiwan); **Sayandip Dhara**, Univ. of Central Florida (United States), New York Univ. (United States)

**Coffee Break 10:30 AM - 11:00 AM****SESSION 5: NOVEL PLATFORMS II**

09 April 2024 • 11:00 AM - 12:10 PM | Londres 1/Salon 8, Niveau/Level 0

*Session Chair(s):* **Virginia D'Auria**, Institut de Physique de Nice (France)

12993-16 • 11:00 AM - 11:30 AM

**Spintronics across individual atoms: an emerging quantum technology platform to encode information and harvest thermal energy (Invited Paper)***Author(s):* **Martin Bowen**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12993-17 • 11:30 AM - 11:50 AM

**Structural dependence of antibunching and fluorescence lifetime**

Author(s): **Madhura Ghosh Dastidar, Praveen Hegde, Immanuel Thekkooden, Vidya Praveen Bhallamudi**, Indian Institute of Technology Madras (India)

12993-18 • 11:50 AM - 12:10 PM

**Large-scale statistical analysis of defect emission in hBN: Revealing spectral families and influence of flakes morphology**

Author(s): **Md Samiul Islam, Rup K. Chowdhury, Marie Barthelemy**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France), Univ. de Strasbourg (France); **Loic Moczko**, Technische Univ. Eindhoven (Netherlands); **Pascal Hebraud, Stéphane Berciaud, Alberto Barsella, Francois Fras**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), CNRS (France), Univ. de Strasbourg (France)

**Lunch/Exhibition Break 12:10 PM - 02:00 PM**

**SESSION 6: QUANTUM IMAGING**

09 April 2024 • 02:00 PM - 03:30 PM | Londres 1/Salon 8, Niveau/Level 0

Session Chair(s): **Ivano Ruo Berchera**, Istituto Nazionale di Ricerca Metrologica (Italy)

12993-19 • 02:00 PM - 02:30 PM

**taking photos of quantum entanglement** (*Invited Paper*)

Author(s): **Baptiste Courme**, Institut des nanosciences de Paris (France), Lab. Kastler Brossel (France); **Chloé Vernière**, Institut des nanosciences de Paris (France); **Patrick Cameron**, Institut des nanosciences de Paris (France), Univ. of Glasgow (United Kingdom); **Raj Pandya**, Institut des nanosciences de Paris (France), Univ. of Cambridge (United Kingdom), Lab. Kastler Brossel (France); **Hugo Defienne**, Institut des nanosciences de Paris (France)

12993-20 • 02:30 PM - 02:50 PM

**Optimisation of simple quantum illumination**

Author(s): **John Jeffers, Thomas Brougham**, Univ. of Strathclyde (United Kingdom)

12993-21 • 02:50 PM - 03:10 PM

**Encoding images in quantum correlations**

Author(s): **Chloé Vernière, Hugo Defienne**, Institut des nanosciences de Paris, CNRS (France)

12993-22 • 03:10 PM - 03:30 PM

**Application of polarization-entangled photon pairs for studying the density of microorganisms**

Author(s): **Vira R. Besaga**, Abbe School of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Institute of Applied Physics, Friedrich-Schiller-Univ. Jena (Germany); **Fabian Ott, Tobias Meyer-Zedler**, Abbe School of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany), Institute of Physical Chemistry, Friedrich-Schiller-Univ. Jena (Germany); **Frank Setzpfandt**, Abbe School of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Institute of Applied Physics, Friedrich-Schiller-Univ. Jena (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

**Coffee Break 03:30 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12993-31 • 06:10 PM - 08:00 PM

**Current challenges of QML: a study on celestial object classification using real IBM quantum computers**

*Author(s):* **James Chao, Ramiro Rodriguez**, Naval Information Warfare Ctr. Pacific (United States)

12993-32 • 06:10 PM - 08:00 PM

**Coherence interpretation of the observed quantum eraser using an attenuated laser**

*Author(s):* **Byoung Seung Ham**, Gwangju Institute of Science and Technology (Korea, Republic of)

12993-33 • 06:10 PM - 08:00 PM

**Advantages and limitations of using positively frequency correlated light in Quantum Optical Coherence Tomography**

*Author(s):* **Crislane de Brito**, Nicolaus Copernicus Univ. (Poland); **Sylvia Kolenderska**, Nicolaus Copernicus Univ. (Poland), Univ. of Canterbury (New Zealand); **Piotr Kolenderski**, Nicolaus Copernicus Univ. (Poland)

12993-34 • 06:10 PM - 08:00 PM

**Discrete phase CV-QKD over a hybrid free space - fiber channel with K-means clustering.**

*Author(s):* **Saravana Vilashini M., Prabhakar A.**, Indian Institute of Technology Madras (India)

12993-35 • 06:10 PM - 08:00 PM

**Single mode thin film lithium niobate waveguides for the generation of spectrally pure single photons at telecommunication wavelengths**

*Author(s):* **Muskan Arora, Pranav Chokkara, Jasleen Lugani**, Indian Institute of Technology Delhi (India)

12993-36 • 06:10 PM - 08:00 PM

**Theoretical investigation of fluorescent defects in hexagonal boron nitride and their applications in quantum technologies**

*Author(s):* **Chanaprom Cholsuk**, Friedrich-Schiller-Univ. Jena (Germany); **Asli Cakan**, Technische Univ. München (Germany); **Sujin Suwana**, Mahidol Univ. (Thailand); **Tobias Vogl**, Technische Univ. München (Germany), Friedrich-Schiller-Univ. Jena (Germany)

12993-37 • 06:10 PM - 08:00 PM

**Hybrid quantum accelerometer-gyroscope for autonomous navigation**

*Author(s):* **Clément Salducci, Yannick Bidet**, ONERA (France); **Malo Cadoret**, Lab. Commun de Métrologie, Conservatoire National des Arts et Métiers (France), ONERA (France); **Nassim Zahzam, Cédric Blanchard, Alexis Bonnin, Sylvain Schwartz, Alexandre Bresson**, ONERA (France)

12993-38 • 06:10 PM - 08:00 PM

**Quantum information with time frequency states: Metrology and error correction**

*Author(s):* **Eloi Descamps**, Lab. Matériaux et Phénomènes Quantiques (France); **Nicolas Fabre**, Télécom Paris (France); **Arne Keller, Perola Milman**, Lab. Matériaux et Phénomènes Quantiques (France)

12993-39 • 06:10 PM - 08:00 PM

**Quantum Optomechanics with Quasi-2D Optomechanical Crystal Cavities**

*Author(s):* **Liu Chen**, Technische Univ. Delft (Netherlands); **Alex Korsch**, Westlake Univ. (China); **Cauê M. Kersul, Thiago P. Mayer Alegre**, Univ. of Campinas (Brazil); **Simon Groeblacher**, Technische Univ. Delft (Netherlands), Westlake Univ. (China)

12993-40 • 06:10 PM - 08:00 PM

**Optimization of AlGaAs-based Bragg-reflection waveguides for entangled photon sources**

*Author(s):* **Thorsten Passow, Quankui Yang, Vivienne Leidel, Robert Keil, Silvia Giudicatti, Marina Preschle, Elke Diwo-Emmer, Patrick Waltereit**, Fraunhofer-Institut für Angewandte Festkörperphysik IAF (Germany)

12993-41 • 06:10 PM - 08:00 PM

**Polarization entangled photon-pair source in a dual displacement interferometric configuration**

*Author(s):* **Giacomo Paganini, Álvaro Cuevas, Robin Camphausen, Alexander Demuth**, ICFO - Institut de Ciències Fotòniques (Spain); **Valerio Pruneri**, ICFO - Institut de Ciències Fotòniques (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain)

12993-42 • 06:10 PM - 08:00 PM

**Implementation of a fast optical Schrödinger-cat source**

*Author(s):* **Hector Simon, Lucas Caron, Romaric Journet**, Institut d'Optique Graduate School, Univ. Paris-Saclay, CNRS (France); **Rosa Tualle-Brouri**, Institut d'Optique Graduate School, Univ. Paris-Saclay, CNRS (France), Lab. Charles Fabry, CNRS (France)

12993-43 • 06:10 PM - 08:00 PM

**Coincidence-feedback-based wavefront shaping through a scattering layer**

*Author(s):* **Baptiste Courme**, Institut des nanosciences de Paris (France), Lab. Kastler Brossel (France); **Daniele Faccio**, Univ. of Glasgow (United Kingdom); **Sylvain Gigan**, Lab. Kastler Brossel (France); **Hugo Defienne**, Institut des nanosciences de Paris (France)

12993-44 • 06:10 PM - 08:00 PM

**Entanglement-preserving measurement of the Bell parameter on a single entangled pair**

*Author(s):* **Francesco Atzori, Salvatore Virzì, Enrico Rebufello, Alessio Avella, Fabrizio Piacentini**, Istituto Nazionale di Ricerca Metrologica (Italy); **Rudi Lussana, Iris Cusini, Francesco Madonini, Federica Alberta Villa**, Politecnico di Milano (Italy); **Marco Gramagna**, Istituto Nazionale di Ricerca Metrologica (Italy); **Eliahu Cohen**, Bar Ilan University (Israel); **Ivo Pietro Degiovanni, Marco Genovese**, Istituto Nazionale di Ricerca Metrologica (Italy)

12993-45 • 06:10 PM - 08:00 PM

**AI-enhanced non-line of sight imaging**

*Author(s):* **Pierfrancesco Ulpiani, Massimiliano Proietti, Luigi Sabetta, Lorenzo Francesco Livi, Ugo Zanforlin**, Leonardo S.p.A. (Italy); **Riccardo Romanelli**, Università degli Studi di Bari Aldo Moro (Italy); **Massimiliano Dispenza**, Leonardo S.p.A. (Italy)

12993-46 • 06:10 PM - 08:00 PM

**15.6 Gbps Source-independent Quantum Random Number Generator on Chip**

*Author(s):* **Yiming Bian, Haoyuan Jiang**, Beijing Univ. of Posts and Telecommunications (China); **Jie Yang**, Beijing Univ. of Posts and Telecommunications (China), The 30th Research Institute of China Electronic Technology Group Corp. (China); **Song Yu**, Beijing Univ. of Posts and Telecommunications (China); **Bingjie Xu**, The 30th Research Institute of China Electronic Technology Group Corp. (China); **Yichen Zhang**, Beijing Univ. of Posts and Telecommunications (China)

12993-47 • 06:10 PM - 08:00 PM

**Precision minimally-destructive detection of ultra-cold atomic ensembles**

*Author(s):* **Ioannis Drougkakis**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); **Georgios Vasilakis, Wolf von Klitzing**, Institute of Electronic Structure and Laser (Greece)

12993-48 • 06:10 PM - 08:00 PM

**Chip-scale Remote Quantum Sensing of Magnetic and RF Fields**

*Author(s):* **Avital Giat, Kfir Levi, Liron Stern**, The Hebrew Univ. of Jerusalem (Israel)

12993-49 • 06:10 PM - 08:00 PM

**Single mode coupled emission of resonant cw excited GaAs quantum dots**

*Author(s):* **Martin Kernbach**, Johannes Kepler Univ. Linz (Austria); **Sophia Fuchs, Julian Siller**, Leibniz Univ. Hannover (Germany); **Andreas W. Schell**, Johannes Kepler Univ. Linz (Austria)

12993-50 • 06:10 PM - 08:00 PM

**Quantum Photonic Integrated Circuits simulation tool for Linear Optical Quantum Computing gates**

*Author(s):* **Argiris Ntanos, Giannis Giannoulis, Aris Stathis, Dimitris Zavitsanos, Hercules Avramopoulos**, Institute of Communication and Computer Systems (Greece), National Technical Univ. of Athens (Greece)

12993-51 • 06:10 PM - 08:00 PM

**A novel decoy state BB84 QKD transmission scheme using optical-switch-based polarization multiplexing**

*Author(s):* **De-Wei Liao, Yuan-Ren Yeh**, National Sun Yat-sen Univ. (Taiwan); **Chong-You Hong**, Broadband Networks Laboratory, Telecommunication Laboratories Chunghwa Telecom Co., Ltd. (Taiwan); **Jhih-Heng Yen, Chin-Cheng Hu, Yu-Ping Yu**, Broadband Networks Laboratory (Taiwan); **Yu-Han Hung**, National Sun Yat-sen Univ. (Taiwan)

12993-52 • 06:10 PM - 08:00 PM

**Entanglement-enabled adaptics optics**

*Author(s):* **Patrick Cameron**, Univ. of Glasgow (United Kingdom); **Baptiste Courme**, Institut des nanosciences de Paris, Sorbonne Univ., CNRS (France), Lab. Kastler Brossel (France), Ecole normale supérieure - PSL (France); **Daniele Faccio**, Univ. of Glasgow (United Kingdom); **Hugo Defienne**, Institut des nanosciences de Paris, Sorbonne Univ., CNRS (France), Univ. of Glasgow (United Kingdom)

12993-53 • 06:10 PM - 08:00 PM

**High-performance quantum battery with non-linearities**

*Author(s):* **Muhammad Shoufie Ukhary**, Univ. of Exeter (United Kingdom), National Research and Innovation Agency (Poland); **Charles Downing**, Univ. of Exeter (United Kingdom); **Ahmad Ridwan Tresna Nugraha**, National Research and Innovation Agency (Indonesia); **Adam B. Cahaya**, Univ. of Indonesia (Indonesia); **Andrivo Rusydi**, National Univ. of Singapore (Singapore); **Azziz Majidi**, Univ. of Indonesia (Indonesia)

12993-54 • 06:10 PM - 08:00 PM

**Nonclassicality of output fields from seeded nondegenerate optical parametric oscillator**

*Author(s):* **Chanseul Lee, Tai Hyun Yoon**, Korea Univ. (Korea, Republic of)

12993-55 • 06:10 PM - 08:00 PM

**Light shift mitigation for the 5S-5D two-photon transition in rubidium**

*Author(s):* **Roman Blum**, CSEM SA (Switzerland), Univ. de Neuchâtel (Switzerland); **Stefan Kundermann, Thibaud Ruelle, Steve Lecomte, Sylvain Karlen**, CSEM SA (Switzerland)

12993-57 • 06:10 PM - 08:00 PM

**Quantum interferometry-based metrology of magneto-optical properties at infrared wavelengths**

*Author(s):* **Tanmoy Chakraborty**, A\*STAR Quantum Innovation Centre (Q.InC), Institute of Materials Research and Engineering (IMRE), Agency for Science, Technology and Research (A\*STAR), Singapore (Singapore); **Thomas Produit**, A\*STAR Quantum Innovation Centre (Q.InC), IMRE, Agency for Science, Technology and Research (A\*STAR) (Singapore); **Harish Natarajan Swaha Krishnamoorthy**, Centre for Disruptive Photonic Technologies, The Photonics Institute, NTU, Singapore (Singapore), Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, NTU, Singapore (Singapore); **Cesare Soci**, Centre for Disruptive Photonic Technologies (Singapore), Division of Physics and Applied Physics (Singapore); **Anna Paterova**, A\*STAR Quantum Innovation Centre (Q.InC), IMRE, Agency for Science, Technology and Research (A\*STAR) (Singapore)

12993-58 • 06:10 PM - 08:00 PM

**QTris, a quantum game and a game for quantum**

*Author(s):* **Maria Bondani**, CNR-INF (Italy); **Sergio Caprara**, Univ. Roma La Sapienza (Italy); **Fabio Chiarello**, CNR - Istituto Fotonica e Nanotecnologie (Italy); **Maurizio Dabbicco**, Univ degli studi di Bari Aldo Moro (Italy); **Alioscia Hamma**, Università di Napoli Federico II (Italy); **Massimiliano Malgieri**, Università di Pavia (Italy); **Irene Marzoli**, Univ. Camerino (Italy); **Michela Nazzaro**, Università di Napoli Federico II (Italy); **Elisabetta Paladino**, Univ Catania (Italy)

12993-59 • 06:10 PM - 08:00 PM

**Quantum diamond microscope with circularly polarized microwave excitation for wide-field vector magnetometry**

*Author(s):* **Jaka Pribosek, Marie Eder, Damiano Caponi, Claudius Mullen**, Silicon Austria Labs (Austria)

12993-60 • 06:10 PM - 08:00 PM

**Towards on-chip magnetometry for SiC power electronics using Si vacancies in 4H-SiC**

*Author(s):* **Claudius Mullen, Gerald Auböck, Jaka Pribosek**, Silicon Austria Labs (Austria)

## Wednesday 10 April 2024

### SESSION 7: QUANTUM INFORMATION AND SENSING

10 April 2024 • 09:00 AM - 10:30 AM | Londres 1/Salon 8, Niveau/Level 0

*Session Chair(s):* **Hugo Defienne**, Institut des nanosciences de Paris (France)

12993-23 • 09:00 AM - 09:30 AM

**Quantum information and sensing with structured light** (*Invited Paper*)

*Author(s):* **Vincenzo D'Ambrosio**, Univ. degli Studi di Napoli Federico II (Italy)

12993-24 • 09:30 AM - 09:50 AM

**Quantum error correction of time-frequency single photon states**

*Author(s):* **Nicolas Fabre**, Télécom Paris (France)

12993-25 • 09:50 AM - 10:10 AM

**Experimental quantum noise sensing via quantum Zeno and anti-Zeno effects**

*Author(s):* **Salvatore Virzi**, Istituto Nazionale di Ricerca Metrologica (Italy); **Laura Knoll**, Consejo Nacional de Investigaciones Científicas y Técnicas (Argentina), Istituto Nazionale di Ricerca Metrologica (Italy); **Alessio Avella, Fabrizio Piacentini**, Istituto Nazionale di Ricerca Metrologica (Italy); **Stefano Gherardini**, Istituto Nazionale di Ottica (Italy); **Tomás Opatrný**, Palacký Univ. Olomouc (Czech Republic); **Abraham Kofman**, Univ. of Michigan (United States); **Gershon Kurizki**, Weizmann Institute of Science (Israel); **Marco Gramegna**, Istituto Nazionale di Ricerca Metrologica (Italy); **Filippo Caruso**, Univ. degli Studi di Firenze (Italy), LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy), Istituto Nazionale di Ottica (Italy); **Ivo Degiovanni, Marco Genovese**, Istituto Nazionale di Ricerca Metrologica (Italy), Istituto Nazionale di Fisica Nucleare (Italy)

12993-26 • 10:10 AM - 10:30 AM

**Reconfigurable quantum-optical circuits in a complex medium**

*Author(s):* **Suraj Goel, Saroch Leedumrongwatthanakun, Natalia Herrera Valencia, Will McCutcheon**, Institute of Photonics and Quantum Sciences, Heriot-Watt Univ. (United Kingdom); **Armin Tavakoli**, Lund Univ. (Sweden); **Claudio Conti**, Sapienza Univ. di Roma (Italy); **Pepijn W. H. Pinkse**, MESA+ Institute, Univ. Twente (Netherlands); **Mehul Malik**, Institute of Photonics and Quantum Sciences, Heriot-Watt Univ. (United Kingdom)

## Coffee Break 10:30 AM - 11:00 AM

## SESSION 8: SINGLE-PHOTON EMITTERS

10 April 2024 • 11:00 AM - 12:00 PM | Londres 1/Salon 8, Niveau/Level 0

Session Chair(s): **Vincenzo D'Ambrosio**, Univ. degli Studi di Napoli Federico II (Italy)

12993-27 • 11:00 AM - 11:20 AM

**Promising single-photon emitter in the blue-green spectral range with an epitaxial CdSe/ZnSe nanowire quantum dot**

Author(s): **Kuntheak Kheng**, Univ. Grenoble Alpes (France); **Francis Granger**, Univ. Grenoble Alpes (France), CEA, PHELIQS (France); **Gilles Nogues**, Univ. Grenoble Alpes (France), CNRS, Inst. NEEL (France); **Edith Bellet-Amalric**, Univ. Grenoble Alpes (France), CEA, PHELIQS (France); **Joel Cibert**, **David Ferrand**, Univ. Grenoble Alpes (France), CNRS (France)

12993-28 • 11:20 AM - 11:40 AM

**Near-ideal room-temperature single photon emitters coupled with photonic integrated circuits**

Author(s): **Tjorben Matthes**, Technische Univ. München (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Anand Kumar**, Friedrich-Schiller-Univ. Jena (Germany); **Chanaprom Cholsuk**, Technische Univ. München (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Mohammad Mishuk**, Friedrich-Schiller-Univ. Jena (Germany); **Josefine Krause**, Friedrich-Schiller-Univ. Jena (Germany), Max Planck School of Photonics (Germany); **Mouli Hazra**, Friedrich-Schiller-Univ. Jena (Germany); **Asli Cakan**, Technische Univ. München (Germany); **Kabilan Sripathy**, Friedrich-Schiller-Univ. Jena (Germany); **Giacomo Corrielli**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Tobias Vogl**, Technische Univ. München (Germany), Friedrich-Schiller-Univ. Jena (Germany)

12993-29 • 11:40 AM - 12:00 PM

**Single photons via quantum dot excitation using a narrowband tunable fiber laser**

Author(s): **Niklas Lüpken**, **Maximilian Brinkmann**, **Sven Dobner**, **Tim Hellwig**, Refined Laser Systems GmbH (Germany)



# CONFERENCE 12994

## Terahertz Photonics III

07 - 09 April 2024 | Dresde/Salon 13, Niveau/Level 1

**Conference Chair(s):** **Mona Jarrahi**, Univ. of California, Los Angeles (United States); **Sascha Preu**, Technische Univ. Darmstadt (Germany); **Dmitry Turchinovich**, Univ. Bielefeld (Germany)

**Program Committee:** **Jan C. Balzer**, Univ. of Duisburg-Essen (Germany); **Enrique Castro-Camus**, Centro de Investigaciones en Óptica, A.C. (Mexico); **Jean-François Lampin**, Institute of Electronics, Microelectronics and Nanotechnology (France); **Hiroaki Minamide**, RIKEN (Japan); **Taiichi Otsuji**, Tohoku Univ. (Japan); **Willie J. Padilla**, Duke Univ. (United States); **Romain Peretti**, **Emilien Peytavit**, Institut d'Electronique de Microélectronique et de Nanotechnologie (France); **Marco Rahm**, Technische Univ. Kaiserslautern (Germany); **François Simoens**, CEA-LETI (France); **Andreas Stöhr**, Univ. Duisburg-Essen (Germany); **Zach Taylor**, Aalto Univ. (Finland); **Shang Hua Yang**, National Tsing Hua Univ. (Taiwan); **Nezih Tolga Yardimci**, Univ. of California, Los Angeles (United States)

### Sunday 7 April 2024

#### SESSION 1: BASIC SCIENCE

07 April 2024 • 01:00 PM - 03:10 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Sascha Preu**, Technische Univ. Darmstadt (Germany)

12994-1 • 01:00 PM - 01:30 PM

**THz Helicity Mapping towards Coherent Control of Chiral Low-Energy Excitations** (*Invited Paper*)

*Author(s):* **Sebastian F. Maehrlein**, Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany)

12994-2 • 01:30 PM - 02:00 PM

**Plasmonic nonlinearities for terahertz applications** (*Invited Paper*)

*Author(s):* **Martin Mittendorff**, Univ. Duisburg-Essen (Germany)

12994-3 • 02:00 PM - 02:30 PM

**High Q and sub-wavelength THz electric field confinement in ultrastrongly coupled THz resonators** (*Invited Paper*)

*Author(s):* **Simon Messelot**, **Solen Coeymans**, **Jérôme Tignon**, **Sukhdeep Dhillon**, **Juliette Mangeney**, Lab. de Physique Statistique de l'ENS (France)

12994-4 • 02:30 PM - 02:50 PM

**THz time shape control via laser chirp and wavelength dispersion**

*Author(s):* **Anna Martinez**, Scuola Superiore Meridionale (Italy); **Jonathan Houard**, Univ. de Rouen Normandie (France); **Ammar Hideur**, Complexe de Recherche Interprofessionnel en Aérothermochimie (France); **Domenico Paparo**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Angela Vella**, Complexe de Recherche Interprofessionnel en Aérothermochimie (France)

12994-5 • 02:50 PM - 03:10 PM

**Dirac plasmon polaritons and magnetic modes in topological-insulator nanoparticles**

*Author(s):* **Nikolaos Kyvelos**, Univ. of Southern Denmark (Denmark); **Vassilios Yannopapas**, National Technical Univ. of Athens (Greece); **N. Asger Mortensen**, Danish Institute for Advanced Study, Univ. of Southern Denmark (Denmark); **Christos Tserkezis**, Univ. of Southern Denmark (Denmark)

**Coffee Break 03:10 PM - 03:40 PM**

#### SESSION 2: DEVICES

07 April 2024 • 03:40 PM - 05:50 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Martin Mittendorff**, Univ. Duisburg-Essen (Germany)

12994-6 • 03:40 PM - 04:10 PM

**Photoexcited Multiport Terahertz Integrated Switches with Demonstration of Multi-beam Antennas** (*Invited Paper*)

*Author(s):* **Panisa Dechwechprasit**, **Withawat Withayachumnankul**, **Harrison Lees**, The Univ. of Adelaide (Australia); **Christophe Fumeaux**, The Univ. of Queensland (Australia); **Daniel Headland**, Univ. Carlos III de Madrid (Spain)

12994-7 • 04:10 PM - 04:40 PM

**Development of terahertz devices for integration into a platform of photonic integrated circuits** (*Invited Paper*)

*Author(s):* **Shihab Al-Daffaie, Alaa Jumaah, Maira Pérez Sosa**, Technische Univ. Eindhoven (Netherlands); **Hartmut G. Roskos**, Goethe-Univ. Frankfurt am Main (Germany); **Marion Matters-Kammerer, Jaime Gómez Rivas**, Technische Univ. Eindhoven (Netherlands)

12994-8 • 04:40 PM - 05:10 PM

**Efficient spintronic Terahertz source for lightwave scanning tunnelling microscopy** (*Invited Paper*)

*Author(s):* **Melanie Müller**, Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany)

12994-9 • 05:10 PM - 05:30 PM

**THz harmonic generation in graphene/metamaterial active modulator**

*Author(s):* **Yuezhen Lu, Abdullah M. Zaman**, Lancaster Univ. (United Kingdom); **Jack Woolley**, The Univ. of Warwick (United Kingdom);

**Wadood Tadbier, Stephan Hofmann**, Univ. of Cambridge (United Kingdom); **Sukhdeep Dhillon**, Ecole Normale Supérieure (France); **James Lloyd-Hughes**, The Univ. of Warwick (United Kingdom); **Riccardo Degl'Innocenti**, Queen Mary Univ. of London (United Kingdom)

12994-10 • 05:30 PM - 05:50 PM

**Comparative analysis between FSO and bidirectional fiber transmission links for Sub-THz transceiver design compatible for future 6G networks**

*Author(s):* **Rangana Banerjee Chaudhuri**, Dublin City Univ. (Ireland); **Ahmad Atieh**, Optiwave Systems Inc (Canada); **Liam Barry**, Dublin City Univ. (Ireland)

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

### Coffee Break 11:00 AM - 11:30 AM

### SESSION 3: PHOTONIC SOURCES

08 April 2024 • 11:30 AM - 12:40 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Hassan A. Hafez Eid**, Univ. Bielefeld (Germany)

12994-11 • 11:30 AM - 12:00 PM

**Eliminating the reststrahlenband: Broadband THz emission from photoconductive THz emitters based on Ge and GeSn** (*Invited Paper*)

*Author(s):* **Stephan F. Winnerl**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany)

12994-12 • 12:00 PM - 12:20 PM

**Increasing terahertz spintronic emission with planar antennas**

*Author(s):* **Matthias Pacé**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France); **Oleksandr Kovalenko**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France), Lancaster Univ. (United Kingdom); **José Solano**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France); **Michel Hehn**, Institut Jean Lamour (France); **Mircea Vomir, Matthieu Bailleul**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

12994-13 • 12:20 PM - 12:40 PM

**Temperature dependence of THz transients generated by FeCo/graphene nanobilayers excited by femtosecond optical laser pulses**

*Author(s):* **Ivan V. Komissarov, Jing Cheng**, Univ. of Rochester (United States); **Iraida N. Demchenko**, Institute of Plasma Physics and Laser Microfusion (Poland); **Kostiantyn Nikiforow**, Institute of Physical Chemistry (Poland); **Debamitra Chakraborty**, Univ. of Rochester (United States); **Leszek Gladczuk**, Institute of Physics, Polish Academy of Sciences (Poland); **Roman Adam, Daniel E. Bürgler, Claus M. Michael Schneider**, Forschungszentrum Jülich GmbH (Germany); **Serghej L. Prischepa**, Univ. degli Studi di Salerno (Italy); **Roman Sobolewski**, Univ. of Rochester (United States)

**Lunch Break 12:40 PM - 01:50 PM**

## SESSION 4: SOURCES

08 April 2024 • 01:50 PM - 03:40 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Sergio Carbajo**, UCLA Samueli School of Engineering (United States)

12994-14 • 01:50 PM - 02:20 PM

**THz coherent source based on light structuration using III-V semiconductor laser technology** (*Invited Paper*)

*Author(s):* **Adrian Bartolo, Mohamed Nadrani, Baptiste Chomet, Alaeddine Abbes, Nathan Vigne**, Institut d'Électronique et des Systèmes (France), CNRS (France); **Grégoire Beaudoin**, Ctr. de Nanosciences et de Nanotechnologies (France), CNRS (France); **Mathias Marconi**, Institut de Physique de Nice (France); **Luc Le Gratiet, Konstantinos Pantzas**, CNRS (France), Univ. Paris-Saclay (France); **Annick Pénerier, Philippe Nouvel**, Institut d'Électronique et des Systèmes (France), CNRS (France); **Guillaume Ducournau**, Institut d'Électronique de Microélectronique et de Nanotechnologie (France), CNRS (France); **Ping-Keng Liu, Mona Jarrahi**, Univ. of California, Los Angeles (United States); **Massimo Giudici**, Institut de Physique de Nice (France); **Isabelle Sagnes**, CNRS (France), Univ. Paris-Saclay (France); **Arnaud Garnache, Stephane Blin**, Institut d'Électronique et des Systèmes (France), CNRS (France)

12994-15 • 02:20 PM - 02:40 PM

**High conversion efficiency photonic THz mixers based on iron-doped InGaAs embedded in a plasmonic microcavity**

*Author(s):* **Victor Merupo, Charbel Tannoury, Giuseppe Di Gioia, David Troadec, Yves Deblock**, Institut d'Électronique de Microélectronique et de Nanotechnologie (France); **Steffen Breuer, Robert Kohlhaas**, Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany); **Emilien Peytavit**, Institut d'Électronique de Microélectronique et de Nanotechnologie (France)

12994-16 • 02:40 PM - 03:00 PM

**Theoretical investigation of harmonic frequency comb formation dynamics in defect-engineered THz quantum cascade lasers**

*Author(s):* **Lukas Seitner, Johannes Popp, Michael A. Schreiber, Michael Haider, Christian Jirauschek**, Technische Univ. München (Germany)

12994-17 • 03:00 PM - 03:20 PM

**Comb flatness dependence for orthogonally sampled high bandwidth signals**

*Author(s):* **Souvaraj De**, Technische Univ. Braunschweig (Germany), Physikalisch-Technische Bundesanstalt (Germany); **Janosch Meier, Younus Mandalawi, Karanveer Singh, Abhinand Venugopalan, Deepanshu Yadav, Ranjan Das**, Technische Univ. Braunschweig (Germany); **Nora Meyne, Kai Baaske, Thomas Kleine-Ostmann**, Physikalisch-Technische Bundesanstalt (Germany); **Thomas Schneider**, Technische Univ. Braunschweig (Germany)

12994-43 • 03:20 PM - 03:40 PM

**Reflective diffraction grating operating around 3,3 THz for space applications**

*Author(s):* **Gonzalo García, Guillermo Mercant, María Manuela Fernández Rodríguez, María del Carmen Torquemada, Luis Miguel González, Tomás Belenguer**, INTA Instituto Nacional de Técnica Aeroespacial (Spain); **Alexander Cuadrado**, Univ. Rey Juan Carlos (Spain); **Luis Miguel Sánchez Brea, Javier Alda**, Univ. Complutense de Madrid (Spain)

**Coffee Break 03:40 PM - 04:10 PM**

## SESSION 5: BIOLOGICAL APPLICATIONS

08 April 2024 • 04:10 PM - 06:00 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Stephan F. Winnerl**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany)

12994-18 • 04:10 PM - 04:40 PM

**Unraveling Non-equilibrium Biophysics through Strong-Field THz Radiation** (*Invited Paper*)

*Author(s):* **Sergio Carbajo Garcia**, UCLA Samueli School of Engineering (United States)

12994-19 • 04:40 PM - 05:10 PM

**THz metamaterial biodetection platform for label-free, sensitive and selective DNA-, protein- or supermolecular-based biomarker analysis** (*Invited Paper*)*Author(s):* **Merle Richter, Yannik Loth**, Univ. Siegen (Germany); **Nicole Rachinger**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Anna Katharina Wigger**, Univ. Siegen (Germany); **Anja Katrin Bosserhoff**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Peter Haring Bolívar**, Univ. Siegen (Germany)

12994-20 • 05:10 PM - 05:40 PM

**Terahertz photons for bio-sensing, bio-effects, and bio-information** (*Invited Paper*)*Author(s):* **Chao Chang**, Xi'an Jiaotong Univ. (China), Peking Univ. (China); **Wenyu Peng**, Xi'an Jiaotong Univ. (China)

12994-22 • 05:40 PM - 06:00 PM

**High-frequency Terahertz waves regulate the dynamic network of mitochondria in neuropathic pain model of mouse***Author(s):* **Yuchen Tian**, Northwest Univ. (China); **Wenyu Peng**, PLA Air Force Military Medical Univ. (China)**Tuesday 9 April 2024****SESSION 6: SPECTROSCOPY**

09 April 2024 • 08:30 AM - 10:20 AM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Fabian Friederich**, Fraunhofer-Institut für Techno- und Wirtschaftsmathematik ITWM (Germany)

12994-23 • 08:30 AM - 09:00 AM

**Advances in coherent optoelectronic cw-THz spectroscopy** (*Invited Paper*)*Author(s):* **Lars Liebermeister, Lauri Schwenson, Milan Deumer, Konstantin Wenzel, Florian Walter, Steffen Breuer, Simon Nellen, Sebastian Lauck**, Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany); **Cornelius Mach, Alexander Jäckel, Enrique Castro-Camus, Martin Koch**, Philipps-Univ. Marburg (Germany); **Martin Schell**, Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany), Technische Univ. Berlin (Germany); **Robert B. Kohlhaas**, Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany)

12994-24 • 09:00 AM - 09:30 AM

**Terahertz conductivity of polymer electrolytes** (*Invited Paper*)*Author(s):* **Hassan A. Hafez Eid**, Univ. Bielefeld (Germany); **Johanna Weidelt**, Bielefeld University (Germany); **Jijeesh Nair, Diddo Diddens**, Helmholtz-Institute Münster (Germany); **Wentao Zhang**, Bielefeld University (Germany); **Felix Pfeiffer**, Helmholtz-Institute Münster (Germany); **Tiago de Oliveira Schneider, Markus Meinert**, Technical University of Darmstadt (Germany); **Tomoki Hiraoka, Linda Nesterov**, Bielefeld University (Germany); **Masoud Baghernejad**, Helmholtz-Institute Münster (Germany); **Dmitry Turchinovich**, Bielefeld University (Germany)

12994-25 • 09:30 AM - 10:00 AM

**Pushing limits of THz resolution with high-speed single-THz-pulse spectroscopy and sensitive single-THz-photon detection** (*Invited Paper*)*Author(s):* **Angela Gamouras**, National Research Council Canada (Canada); **Nicolas Couture, Wei Cui**, Univ. of Ottawa (Canada); **Markus Lippl**, Max-Planck-Institut für die Physik des Lichts (Germany); **Défi J. Jubgang Fandio, Aswin Vishnu Radhan, Eeswar K. Yalavarthi, Rachel Ostic**, Univ. of Ottawa (Canada); **Nicolas Joly**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Jean Michel Ménard**, Univ. of Ottawa (Canada)

12994-26 • 10:00 AM - 10:20 AM

**Terahertz bench for comprehensive characterization and non-destructive testing of laminated materials***Author(s):* **Yannick Abautret**, ONERA (France); **Claude Amra, Myriam Zerrad**, Institut Fresnel (France)**Coffee Break 10:20 AM - 10:40 AM****SESSION 7: SPECTROSCOPY AND APPLICATIONS**

09 April 2024 • 10:40 AM - 12:40 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Agnieszka Siemion**, Warsaw Univ. of Technology (Poland)

12994-27 • 10:40 AM - 11:10 AM

**Inspection of Electrodes in Battery Production Using a Multi-Channel Photonic Terahertz Radar** (*Invited Paper*)*Author(s):* **Andreas Keil, Shiva Mohammadzadeh, Fabian Friederich**, Fraunhofer-Institut für Techno- und Wirtschaftsmathematik ITWM (Germany)

12994-28 • 11:10 AM - 11:40 AM

**Dielectric silicon slot-waveguides for farinfrared THz-spectroscopy** (*Invited Paper*)*Author(s):* **Lisa Schmitt, Kristof Kother, Marcel Burfeindt, Jan Barowski, Martin Hoffmann**, Ruhr-Univ. Bochum (Germany)

12994-29 • 11:40 AM - 12:10 PM

**Portable terahertz time-domain spectroscopy systems enabled by monolithic mode-locked laser diodes: From theory to applications**  
(Invited Paper)

Author(s): **Kevin Kolpatzeck**, Univ. Duisburg-Essen (Germany)

12994-30 • 12:10 PM - 12:40 PM

**Long-wave infrared and terahertz spectroscopy based on organic nonlinear crystals pumped at telecommunication wavelengths**  
(Invited Paper)

Author(s): **Lukasz A. Sterczewski, Jakub Mnich, Jaroslaw Sotor**, Wroclaw Univ. of Science and Technology (Poland)

**Lunch/Exhibition Break 12:40 PM - 01:30 PM**

### SESSION 8: JOINT SESSION: TERAHERTZ IMAGING

09 April 2024 • 01:30 PM - 04:10 PM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

**Joint Session between conferences 12994 (THz Photonics) and 12996 (Unconventional Optical Imaging)**

**This Joint Session (Session 7) runs concurrently with Session 6, Conf. 12996 (Unconventional Optical Imaging)**

12996-29 • 01:30 PM - 02:00 PM

**High speed terahertz imaging based on optimized galvanometric illumination** (Invited Paper)

Author(s): **Yuzhe Zhang**, Beijing Univ. of Technology (China); **Ran Ning**, Shenzhen Univ. (China), Shenzhen Key Lab. of Micro-Nano Photonic Information Technology (China); **Jie Zhao, Shufeng Lin, Lu Rong, Dayong Wang**, Beijing Univ. of Technology (China), Beijing Engineering Research Ctr. of Precision Measurement Technology and Instruments (China)

12994-31 • 02:00 PM - 02:30 PM

**Terahertz optical setups using spatial filtering methods to image low-absorbing samples** (Invited Paper)

Author(s): **Adrianna Nieradka**, Warsaw Univ. of Technology (Poland); **Pawel Komorowski**, Military Univ. of Technology (Poland); **Mateusz Kaluza, Mateusz Surma, Agnieszka Siemion**, Warsaw Univ. of Technology (Poland)

12994-32 • 02:30 PM - 02:50 PM

**Computational terahertz imaging via spatio-temporal emissivity modulation**

Author(s): **Michal Mrnka, Harry Penketh, Ian R. Hooper, Sonal Saxena**, Univ. of Exeter (United Kingdom); **Nicholas E. Grant, John D. Murphy**, The Univ. of Warwick (United Kingdom); **David B. Phillips, Euan Hendry**, Univ. of Exeter (United Kingdom)

12994-33 • 02:50 PM - 03:10 PM

**Terahertz imaging using C-shaped metallic metasurface-based optics**

Author(s): **Rusne Ivaškevičiute-Povilauskiene, Vladislovas Čižas, Ernestas Nacius, Ignas Grigelionis, Karolis Redeckas, Kasparas Stanaitis, Sergej Orlov, Gintaras Valušis, Linas Minkevicius**, Ctr. for Physical Sciences and Technology (Lithuania)

12994-34 • 03:10 PM - 03:30 PM

**Terahertz assisted Atom Probe Tomography: Effect of single-cycle THz pulses on ion dynamics**

Author(s): **Angela Vella, Michella Karam, Jonathan Houard, Matteo De Tullio**, Univ. de Rouen Normandie (France)

12996-30 • 03:30 PM - 03:50 PM

**Sub-wavelength Terahertz microscopy based on a cross-filament**

Author(s): **Xinke Wang, Yan Zhang**, Capital Normal Univ. (China)

12996-31 • 03:50 PM - 04:10 PM

**Terahertz off-axis digital holography reconstruction using inverse problem resolution with the Alternating Direction Method of Multipliers**

Author(s): **Murielle Kirkove, Yuchen Zhao**, Ctr. Spatial de Liège (Belgium); **Olivier Leblanc, Laurent Jacques**, Univ. Catholique de Louvain (Belgium); **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

**Coffee Break 04:10 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Franco**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12994-37 • 06:10 PM - 08:00 PM

**Asymmetric terahertz spoof surface plasmon polariton antennas with end-fire radiation**

Author(s): **Ahmet Canberk Songur, Mesut Demircioglu, Beyza Akcay, Ahmet Oguz Sakin, Mehmet Ünlü**, TOBB ETÜ (Turkey)

12994-38 • 06:10 PM - 08:00 PM

**Effect of below and above bandgap excitation on the THz emission from single crystalline MoS<sub>2</sub>**

Author(s): **Neetesh Dhakar**, Indian Institute of Technology Delhi (India)

12994-39 • 06:10 PM - 08:00 PM

**Investigation of gelatine hydrogel properties in THz frequency**

Author(s): **Sonal Saxena, Ciaran Bench, Diksha Garg, Patric Boardman, Michal Mrnka, Harry Penketh, Nicholas Stone, Euan Hendry**, Univ. of Exeter (United Kingdom)

12994-40 • 06:10 PM - 08:00 PM

**Implementation of THz confocal imaging at 300GHz based on super-oscillating lens, Fibonacci lens and transmissive convex lenses**

Author(s): **Xu Yang, Lu Rong, Binjie Ji**, Beijing Univ. of Technology (China); **Min Wan**, Univ. College Dublin (Ireland); **Dayong Wang**, Beijing Univ. of Technology (China)

12994-41 • 06:10 PM - 08:00 PM

**Detection of real-time hidden metallic object using prototype THz radar system for public security and defense application**

Author(s): **Chandan Ghorui, Anil Kumar Chaudhary**, Univ. of Hyderabad (India)

12994-42 • 06:10 PM - 08:00 PM

**Application of terahertz metamaterials for low-concentration sensing of premium explosives like RDX and TNT**

Author(s): **Rajesh Koalla**, Advanced Ctr. of Research in High Energy Materials, Univ. of Hyderabad (India); **Anil Kumar Chaudhary**, Advanced Ctr. of Research in High Energy Materials (India); **Dibakar Roy Chowdhury**, École Centrale School of Engineering, Mahindra University (India)

12994-44 • 06:10 PM - 08:00 PM

**Modulating THz polarization through laser chirp and wavelength dispersion**

Author(s): **Anna Martinez**, Univ. degli Studi di Napoli Federico II (Italy); **Jonathan Houard**, Univ. de Rouen Normandie (France); **Ammar Hideur**, Complexe de Recherche Interprofessionnel en Aérothermochimie (France); **Domenico Paparo**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Angela Vella**, Univ. de Rouen Normandie (France)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

12994-36

**The concept of the terahertz generator based on an array of double-walled carbon nanotubes with a direct current pump**

*Author(s):* **Sergey A. Afanas'ev, Aleksei S. Kadochkin, Dmitry G. Sannikov**, Ulyanovsk State Univ. (Russian Federation); **Andrei A. Fotiadi**, University of Mons (Belgium), University of Oulu (Finland)

# CONFERENCE 12995

## 3D Printed Optics and Additive Photonic Manufacturing IV

08 - 09 April 2024 | Londres 2/Salon 7, Niveau/Level 0

**Conference Chair(s):** **Alois M. Herkommer**, Univ. Stuttgart (Germany); **Georg von Freymann**, Technische Univ. Kaiserslautern (Germany); **Manuel Flury**, ICube Lab., INSA Strasbourg (France)

**Program Committee:** **Klaus Bade**, Karlsruher Institut für Technologie (Germany); **Muriel Carin**, Univ. de Bretagne-Sud (France); **Thierry Engel**, IREPA LASER (France); **Harald Giessen**, Univ. Stuttgart (Germany); **Kevin J. Heggarty**, IMT Atlantique (France); **Andreas Heinrich**, Hochschule Aalen - Technik und Wirtschaft (Germany); **Hans Peter Herzig**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Christian Koos**, Karlsruher Institut für Technologie (Germany); **David Pietroy**, Univ. Jean Monnet Saint-Etienne (France); **Michael Thiel**, Nanoscribe GmbH (Germany); **Michael Totzeck**, Carl Zeiss SMT GmbH (Germany); **Reinhard Voelkel**, SUSS MicroOptics SA (Switzerland)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

2024 Symposium Chair

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: TECHNOLOGIES I

08 April 2024 • 11:30 AM - 12:40 PM | Londres 2/Salon 7, Niveau/Level 0

Session Chair(s): **Alois M. Herkommer**, Institut für Technische Optik (Germany)

12995-1 • 11:30 AM - 12:00 PM

**A micro-printed waveguide structure for broadband mode division multiplexing** (*Invited Paper*)

Author(s): **Julian Schulz**, **Georg von Freymann**, Rheinland-Pfälzische Technische Univ. Kaiserslautern-Landau (Germany)

12995-2 • 12:00 PM - 12:20 PM

**X-color 3D lithography: with femtosecond lasers and without photoinitiators**

Author(s): **Edvinas Skliutas**, **Antanas Butkus**, Vilnius Univ. (Lithuania); **Dimitra Ladika**, **Maria Farsari**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); **Saulius Juodkazis**, Vilnius Univ. (Lithuania), Swinburne Univ. of Technology (Australia), Tokyo Institute of Technology (Japan); **Mangirdas Malinauskas**, Vilnius Univ. (Lithuania)

12995-3 • 12:20 PM - 12:40 PM



**Isotropic sub-100nm direct laser writing using spherical reflector-enabled 4Pi excitation at 405nm wavelength***Author(s):* **Lukas Payne, Joseph Askey, Ioannis Pitsios, Sam Ladak, Wolfgang Langbein**, Cardiff Univ. (United Kingdom)**Lunch Break 12:40 PM - 01:50 PM****SESSION 2: TECHNOLOGIES II**

08 April 2024 • 01:50 PM - 03:20 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Manuel Flury**, ICube Lab., INSA Strasbourg (France)

12995-4 • 01:50 PM - 02:20 PM

**STED-inspired optical lithography beyond acrylates** (*Invited Paper*)*Author(s):* **Sourav Islam, Georgii Gvindziliia, Thomas A. Klar**, Johannes Kepler Univ. Linz (Austria)

12995-5 • 02:20 PM - 02:40 PM

**Development of polymer-dye hybrids for optical limitation: photopolymerization by 3D printing vs thermal polymerization***Author(s):* **Jade Caillieaudeaux**, Institut Franco-Allemand de Recherches de Saint-Louis (France), Laboratory of photochemistry and macromolecular engineering (France); **Morgane Guerchoux, Olivier Muller, Célia Bruder, Lionel Merlat**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Anne-Sophie Schuller, Christelle Delaite**, Laboratory of photochemistry and macromolecular engineering (France)

12995-6 • 02:40 PM - 03:00 PM

**Additive manufacturing of high performance metalenses, waveguides and metamaterials via direct nanoimprint lithography***Author(s):* **Dae-Eon Jung, Vince Einck, Lucas Verrastro, Uzodinma Okoroanyanwu, Amir Arbabi, James J. Watkins**, Univ. of Massachusetts Amherst (United States)

12995-7 • 03:00 PM - 03:20 PM

**Comprehensive evaluation of grayscale laser lithography build accuracy via benchmark artefacts***Author(s):* **Adrian Lutey**, Univ. degli Studi di Parma (Italy); **Dušan Chorvát**, Centrum vedecko-technických informácií Slovenskej republiky (Slovakia); **David Kuhness**, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); **Daniel Haško**, Centrum vedecko-technických informácií Slovenskej republiky (Slovakia); **Christine Schuster, Anja Voigt**, micro resist technology GmbH (Germany); **Vincenzo Ferraro, Seyyedhossein Mckee, Annamaria Cucinotta**, Univ. degli Studi di Parma (Italy); **Ladislav Kuna**, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria)**Coffee Break 03:20 PM - 03:50 PM****SESSION 3: APPLICATION OF 3D PRINTING OPTICS I**

08 April 2024 • 03:50 PM - 06:00 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Georg von Freymann**, Rheinland-Pfälzische Technische Univ. Kaiserslautern-Landau (Germany)

12995-8 • 03:50 PM - 04:20 PM

**A 3D-printed fiber core multiplexing endoscope** (*Invited Paper*)*Author(s):* **Andrea Toulouse, Florian Rothermel, Johannes Drozella**, Institut für Technische Optik, Univ. Stuttgart (Germany); **Simon Thiele**, Printopectix GmbH (Germany); **Alois Herkommer**, Institut für Technische Optik, Univ. Stuttgart (Germany)

12995-9 • 04:20 PM - 04:40 PM

**High performance imaging and sensing systems for biomedical applications fabricated with 2-Photon Polymerization based additive manufacturing.***Author(s):* **Tomasz S. Tkaczyk, Jiawei Lu, Jinyun Liu**, Rice Univ. (United States); **David Piston**, Washington Univ. School of Medicine in St. Louis (United States)

12995-10 • 04:40 PM - 05:00 PM

**Miniaturized fiber-based Airy light-sheet generator with a 3D nano-printed freeform optical phase plate***Author(s):* **Yanis Taeye**, Univ. of Freiburg (Germany); **Madhu Veettikazhy**, Technical Univ. of Denmark (Denmark); **Tim Samuel Winter**, Univ. of Freiburg (Germany); **Stefan Mark Jensen**, Technical Univ. of Denmark (Denmark); **Sophia Laura Stark**, Grintech GmbH (Germany); **Anja Lykke Borre, Lars Rene Lindvold**, Technical Univ. of Denmark (Denmark); **Bernhard Messerschmidt**, Grintech GmbH (Germany); **Dominik Marti, Peter Eskil Andersen**, Technical Univ. of Denmark (Denmark); **Çaglar Ataman**, Univ. of Freiburg (Germany)

12995-11 • 05:00 PM - 05:20 PM

**3D nanoprinting of high-numerical aperture multilevel metalenses.***Author(s):* **Koen Vanmol, Al Ameen Abdul Nazar, Hugo Thienpont, Francesco Ferranti, Jürgen Van Erps**, Vrije Univ. Brussel (Belgium)

12995-12 • 05:20 PM - 05:40 PM

**Manufacturing of solid core optical waveguide based pressure sensor for 3D-printed below-knee orthosis***Author(s): Akshay Manoj Shahane, Abhijeet Shrotri, Christian Wittenbröker, Oliver Stübbe*, Technische Hochschule Ostwestfalen-Lippe (Germany)

12995-13 • 05:40 PM - 06:00 PM

**Monolithic mounting structures for robust optical systems through passive compensation of mechanical and thermal loads***Author(s): Patrick Pfuhl, Markus Degünther*, Technische Hochschule Mittelhessen (Germany)**Tuesday 9 April 2024****SESSION 4: MODELLING AND DESIGN**

09 April 2024 • 08:30 AM - 10:20 AM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s): Andrea Toulouse*, Institut für Technische Optik (Germany)

12995-14 • 08:30 AM - 09:00 AM

**Modelling and compensating proximity effects in a massively parallelized multi-photon photoplotter** (*Invited Paper*)*Author(s): Florie Ogor, Thomas Le Deun*, IMT Atlantique Bretagne-Pays de la Loire (France); *Valeriia Sedova*, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); *Joël Rovera*, IMT Atlantique Bretagne-Pays de la Loire (France); *Andreas Erdmann*, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); *Manuel Flury*, ICube Lab., INSA Strasbourg (France); *Kevin Heggarty*, IMT Atlantique Bretagne-Pays de la Loire (France)

12995-15 • 09:00 AM - 09:20 AM

**Machine learning in multi-photon laser lithography***Author(s): Julian Hering-Stratemeier, Sven Enns, Nicolas Lang, Georg von Freymann*, Rheinland-Pfälzische Technische Univ. Kaiserslautern-Landau (Germany)

12995-16 • 09:20 AM - 09:40 AM

**Numerical analysis of micro-optics based single photon sources via a combined physical optics and rigorous simulation approach***Author(s): Carlos Jimenez*, Institut für Technische Optik, Univ. Stuttgart (Germany)

12995-17 • 09:40 AM - 10:00 AM

**Design and simulation of a nozzle-mask for optical fiber 3D-printing***Author(s): Abhijeet Shrotri, Christian Wittenbröker*, Technische Hochschule Ostwestfalen-Lippe (Germany); *Sascha Preu*, Technische Univ. Darmstadt (Germany); *Oliver Stübbe*, Technische Hochschule Ostwestfalen-Lippe (Germany)

12995-18 • 10:00 AM - 10:20 AM

**Image formation through a 3D printed conic lens considering a linear array of point sources***Author(s): Osvaldo Ponce-Hernández, Maximino Avendaño-Alejo, Martín Jiménez-Rodríguez, Ismael Velázquez-Gómez*, Univ. Nacional Autónoma de México (Mexico); *Jesús DelOlmo-Márquez*, Universidad Nacional Autónoma de México (Mexico)**Coffee Break 10:20 AM - 10:40 AM****SESSION 5: APPLICATION OF 3D PRINTING OPTICS II**

09 April 2024 • 10:40 AM - 12:30 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s): Georg von Freymann*, Rheinland-Pfälzische Technische Univ. Kaiserslautern-Landau (Germany)

12995-19 • 10:40 AM - 11:10 AM

**3D nanoprinted on-chip and on-fiber hollow-core waveguides – a novel platform for analytics** (*Invited Paper*)*Author(s): Markus A. Schmidt, Jisoo Kim, Matthias Zeisberger, Diana Pereira, Xue Qi*, Leibniz-Institut für Photonische Technologien e.V. (Germany); *Julian Gargiulo, Johannes Bürger*, Ludwig-Maximilians-Univ. München (Germany); *Stefan A. Maier*, Monash Univ. (Australia)

12995-20 • 11:10 AM - 11:30 AM

**Towards 3D-printed immersion micro optics***Author(s): Marco Wende*, Institut für Technische Optik (Germany); *Michael Heymann*, University of Stuttgart/IBBS (Germany); *Andrea Toulouse*, Institut für Technische Optik (Germany)

12995-21 • 11:30 AM - 11:50 AM

**Adaptative additive fabrication of parallel, high-performing 3D integrated optical interconnects***Author(s): Adrià Grabulosa i Vallmajó*, FEMTO-ST (France); *Javier Porte*, Univ. of Strathclyde (United Kingdom); *Johnny Moughames*, FEMTO-ST (France); *Erik Jung*, Ruprecht-Karls-Univ. Heidelberg (Germany); *Kanhaya Sharma, Daniel Brunner*, FEMTO-ST (France)

12995-22 • 11:50 AM - 12:10 PM

**Thermally expanded core fiber: a novel platform for meta-fibers**

*Author(s):* **Mohammadhossein Khosravi**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Malte Plidschun, Jisoo Kim**, Leibniz-Institut für Photonische Technologien e.V. (Germany), ASML Netherlands B.V. (Netherlands); **Matthias Zeisberger, Torsten Wieduwilt**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Markus A. Schmidt**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Abbe Ctr. of Photonics (Germany), Otto Schott Institute of Materials Research, Friedrich-Schiller-Univ. Jena (Germany)

12995-23 • 12:10 PM - 12:30 PM

**3D printing technology solution of transparent multi-component nanoporous glasses via vat photopolymerization**

*Author(s):* **Beining Li**, Shanghai Institute of Optics and Fine Mechanics (China), Univ. of Chinese Academy of Sciences (China); **Zhenjiang Li**, Shanghai Institute of Applied Physics (China), Univ. of Chinese Academy of Sciences (China); **Wenze Shan, Shuaipeng Wang, Jin He**, Shanghai Institute of Optics and Fine Mechanics (China); **Shlomo Magdassi**, The Hebrew Univ. of Jerusalem (Israel); **Benxue Jiang**, Shanghai Institute of Optics and Fine Mechanics (China)

**Lunch/Exhibition Break 12:30 PM - 01:30 PM**

**SESSION 6: JOINT SESSION: 3D LASER ADDITIVE MANUFACTURING**

09 April 2024 • 01:30 PM - 04:10 PM | Curie A, Niveau/Level 1

*Session Chair(s):* **Rainer Kling**, Berner Fachhochschule (Switzerland)

**Joint Session between conferences 12995 (3D Printed Optics and Additive Photonic Manufacturing) and 13005 (Lasers and Photonics for Advanced Manufacturing)**

13005-23 • 01:30 PM - 01:50 PM

**Laser Induced Forward Transfer of metallic interconnections for photonic applications**

*Author(s):* **Marina Makrygianni, Kostas Andritsos**, National Technical Univ. of Athens (Greece); **Sohrab Kamyar, Erik Schreuder, Ronald Dekker**, LioniX International BV (Netherlands); **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

13005-24 • 01:50 PM - 02:10 PM

**Ultrasonic levitation as containerless handling for In-Space Manufacturing**

*Author(s):* **Böhm Torben, Jan Düsing**, Laser Zentrum Hannover e.V. (Germany); **Lotz Christoph**, Hannover Institute of Technology, Leibniz Univ. Hannover (Germany); **Bapat Salil**, Purdue Univ. (United States); **Peter Jäschke, Stefan Kaierle**, Laser Zentrum Hannover e.V. (Germany); **Malshe P. Ajay**, Purdue Univ. (United States); **Ludger Overmeyer**, Institute of Transport and Automation Technology, Leibniz Univ. Hannover (Germany)

13005-25 • 02:10 PM - 02:40 PM

**3D nanoprinting** (*Invited Paper*)

*Author(s):* **Maria Farsari**, Foundation for Research and Technology-Hellas (Greece)

13005-26 • 02:40 PM - 03:00 PM

**Proof of feasibility of optical fiber embedding in a metal structure using the DED-CLAD® process**

*Author(s):* **Samuel Berthe**, ICube, Univ. de Strasbourg (France), Icam, site de Strasbourg-Europe (France); **Pierre Pfeiffer**, ICube, Univ. de Strasbourg (France); **Nathan Meyer**, IREPA LASER (France); **Grégoire Chabrol**, ICube, Univ. de Strasbourg (France), Icam, site de Strasbourg-Europe (France); **Massamaesso Bilasse**, ICube (France), Icam, site de Strasbourg-Europe (France); **Nadia Bahlouli**, ICube, Univ. de Strasbourg (France); **Didier Boisselier**, IREPA LASER (France); **Sylvain Lecler**, ICube, Univ. de Strasbourg (France), Institut National des Sciences Appliquées de Strasbourg (France)

12995-24 • 03:00 PM - 03:30 PM

**Photonics at the heart of additive manufacturing of large metal parts** (*Invited Paper*)

*Author(s):* **Didier Boisselier, Jérôme Wursthorn, Nathan Mayer**, IREPA LASER (France)

12995-25 • 03:30 PM - 03:50 PM

**Comparative study about the properties of in-situ synthesized TiN/Ti6Al4V sandwich structure materials by selective laser melting and laser directed energy deposition**

*Author(s):* **Vyacheslav A. Trofimov, Zhiheng Tai, Di Wang, Yunmian Xiao, Jiale Lv, Yongqiang Yang**, South China Univ. of Technology (China)

12995-26 • 03:50 PM - 04:10 PM

**Formation mechanism for ultra-thin wall thickness of additively manufactured tungsten grids via selective laser melting**

*Author(s):* **Vyacheslav A. Trofimov, Meng Wang, Changjun Han, Yongqiang Yang, Menglong Jiang, Chao Yang, Yongwei Feng**, South China Univ. of Technology (China); **Ming Yan**, Southern University of Science and Technology (China); **Di Wang**, South China Univ. of Technology (China)

**Coffee Break 04:10 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s): Kathy Lüdge*, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s): José Capmany Francoy*, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12995-27 • 06:10 PM - 08:00 PM

**The exploration of novel 3D lithography by utilizing the electron beam driving**

*Author(s): Zhenjiang Li*, Shanghai Institute of Applied Physics (China), Univ. of Chinese Academy of Sciences (China); **Beining Li**, Shanghai Institute of Optics and Fine Mechanics (China), Univ. of Chinese Academy of Sciences (China); **Yanqing Wu, Renzhong Tai, Yong Wang**, Shanghai Institute of Applied Physics (China), Shanghai Synchrotron Radiation Facility (China)

12995-28 • 06:10 PM - 08:00 PM

**Integrating 3D-Printed Nylon 12 into FPCB Micromirror Manufacturing for Ultra-Low-Cost Applications**

*Author(s): Behrad Ghazinouri, Siyuan He, Matthew McEachern*, Toronto Metropolitan Univ. (Canada)

12995-29 • 06:10 PM - 08:00 PM

**Challenges in the simulation of a multimode arrayed waveguide grating**

*Author(s): Katharina Strathmann, Sebastian Smarzyk, Matthias Haupt*, Jade Hochschule (Germany)

12995-30 • 06:10 PM - 08:00 PM

**Micro photonic broadband vector beam generator 3D printed on a single-mode fiber.**

*Author(s): Diana Laura Gonzalez Hernandez, Andrea Bertocini, Innem V.A.K. Reddy, Carlo Liberale*, KAUST (Saudi Arabia)

# CONFERENCE 12996

## Unconventional Optical Imaging IV

08 - 11 April 2024 | Curie B, Niveau/Level 1

**Conference Chair(s):** Irene Georgakoudi, Tufts Univ. (United States); Marc P. Georges, Liège Univ. (Belgium); Nicolas Verrier, IRIMAS-Univ. de Haute-Alsace (France)

**Program Committee:** Tatiana Alieva, Univ. Complutense de Madrid (Spain); Pierre H. Chavel, Institut d'Optique Graduate School (France); Jürgen W. Czarske, TU Dresden (Germany); Julien Fade, Univ. de Rennes 1 (France); Corinne Fournier, Univ. Jean Monnet Saint-Etienne (France); Sylvain Gioux, Univ. de Strasbourg (France); Keisuke Goda, The Univ. of Tokyo (Japan); Olivier Haeberlé, Univ. de Haute Alsace (France); Elizabeth M.C. Hillman, Columbia Univ. (United States); Giancarlo Pedrini, Institut für Technische Optik (Germany); Neus Sabater, Technicolor (France); Anne Sentenac, Institut Fresnel (France); Guohai Situ, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China); Enrique Tajahuerce, Univ. Jaume I (Spain); Pauline Trouvé-Peloux, ONERA (France); Wilfried Uhring, ICube-SERTIT (France); Laura Waller, Univ. of California, Berkeley (United States); Chao Zuo, Nanjing Univ. of Science and Technology (China)

### INFORMATION

#### In Memoriam

This year's conference is dedicated to the memory of [Gabriel "Gabi" Popescu](#), the William L. Everitt Distinguished Professor in Electrical and Computer Engineering and a faculty researcher at the Beckman Institute, Univ. of Illinois Urbana-Champaign (United States).

Gabi Popescu was a creative leader in biophotonics, with pioneering contributions to quantitative phase imaging and spectroscopy, an engaging collaborator and an inspiration to his friends, colleagues and students.

Gabi served as the 2018-2022 Chair of the SPIE conference on Unconventional Optical Imaging.

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s): Stefanie Barz*, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s): Malte C. Gather*, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: QUANTITATIVE PHASE IMAGING I: MEMORIAL SESSION IN HONOR OF PROF. GABI POPESCU

08 April 2024 • 11:30 AM - 12:40 PM | Curie B, Niveau/Level 1

Session Chair(s): **Irene Georgakoudi**, Tufts Univ. (United States)

This session is dedicated to the memory of **Gabriel "Gabi" Popescu**, the William L. Everitt Distinguished Professor in Electrical and Computer Engineering and a faculty researcher at the Beckman Institute, Univ. of Illinois Urbana-Champaign (United States), and the 2018-2022 Chair of the Unconventional Optical Imaging Conference.

12996-1 • 11:30 AM - 12:00 PM

**Molecular kinetics of gene regulation and nuclear organization in developing embryos** (*Invited Paper*)

Author(s): **Mustafa Mir**, Univ. of Pennsylvania (United States)

12996-2 • 12:00 PM - 12:40 PM

**Machine learning-enabled quantitative phase imaging – my collaborations with Prof. Gabi Popescu** (Keynote Presentation)

Author(s): **Mark A. Anastasio**, Univ. of Illinois (United States)

## Lunch Break 12:40 PM - 01:50 PM

### SESSION 2: QUANTITATIVE PHASE IMAGING II: MEMORIAL SESSION IN HONOR OF PROF. GABI POPESCU

08 April 2024 • 01:50 PM - 03:20 PM | Curie B, Niveau/Level 1

Session Chair(s): **Irene Georgakoudi**, Tufts Univ. (United States)

This session is dedicated to the memory of **Gabriel "Gabi" Popescu**, the William L. Everitt Distinguished Professor in Electrical and Computer Engineering and a faculty researcher at the Beckman Institute, Univ. of Illinois Urbana-Champaign (United States), and the 2018-2022 Chair of the Unconventional Optical Imaging Conference.

12996-3 • 01:50 PM - 02:20 PM

**Aberration free nonlinear holographic microscopy** (*Invited Paper*)

Author(s): **Randy A. Bartels**, Morgridge Institute for Research (United States)

12996-4 • 02:20 PM - 02:50 PM

**Advances in multiscale biomedical imaging with quantitative phase imaging** (*Invited Paper*)

Author(s): **Catherine A. Best-Popescu**, Univ. of Illinois (United States)

12996-5 • 02:50 PM - 03:20 PM

**Staining-free optical imaging techniques toward digital histopathology** (*Invited Paper*)

Author(s): **Woonggyu Jung**, Ulsan National Institute of Science and Technology (Korea, Republic of)

## Coffee Break 03:20 PM - 03:50 PM

### SESSION 3: QUANTITATIVE PHASE IMAGING III

08 April 2024 • 03:50 PM - 06:10 PM | Curie B, Niveau/Level 1

Session Chair(s): **Nicolas Verrier**, Univ. de Haute-Alsace (France)

12996-6 • 03:50 PM - 04:10 PM

**Lensing effect in biological samples: application and perspectives**

Author(s): **Lisa Miccio, Daniele Pirone, Jaromír Behal, Giusy Giugliano, Michela Schiavo, Vittorio Bianco, Pasquale Memmolo, Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy)

12996-7 • 04:10 PM - 04:30 PM

**Inverse problems based self-calibrated reconstruction for tomographic diffractive microscopy**

Author(s): **Dylan Brault, Fabien Momey**, Lab. Hubert Curien (France); **Mathieu Debailleul, Nicolas Verrier, Olivier Haeberlé**, Institut de Recherche en Informatique, Mathématiques, Automatique et Signal, Univ. de Haute Alsace (France)

12996-8 • 04:30 PM - 04:50 PM

**Lensless microendoscope for quantitative phase imaging with flexible working distance**

Author(s): **Jie Zhang**, TU Dresden (Germany); **Jiawei Sun**, Shanghai Artificial Intelligence Lab. (China); **Nektarios Koukourakis, Jürgen W. Czarske**, The Competence Ctr. BIOLAS, TU Dresden (Germany)

12996-9 • 04:50 PM - 05:10 PM

**3D-printed organoid phantoms – a tool for developing quantitative phase imaging methods for highly-scattering samples**

Author(s): **Arkadiusz T. Kus, Michal Ziemczonok**, Warsaw Univ. of Technology (Poland); **Cécile Fiche, Sylvia Desissaire, Clement Acquitter, Lionel Hervé**, Univ. Grenoble Alpes (France), CEA-LETI (France); **Marie Fackeure, Jeremy Neri**, Institut de Génomique Fonctionnelle de Lyon (France); **Wojciech Krauze**, Warsaw Univ. of Technology (Poland); **Kiran Padmanabhan**, Institut de Génomique Fonctionnelle de Lyon (France), Institut National de la Santé et de la Recherche Médicale (France); **Chiara Paviolo**, Univ. Grenoble Alpes (France), CEA-LETI (France)

12996-10 • 05:10 PM - 05:30 PM

**Optimization of Fourier Ptychographic microscope using phase images, for malaria detection**

*Author(s):* **Houda Hassini, Bernadette Dorizzi**, Samovar, Télécom SudParis (France), Institut Polytechnique de Paris (France); **Jacques Klossa**, TRIBVN (France); **Yaneck Gottesman**, Samovar, Télécom SudParis (France), Institut Polytechnique de Paris (France)

12996-11 • 05:30 PM - 05:50 PM

**Computational phase imaging for label-free 3D microscopy: noninterferometric phase retrieval and intensity diffraction tomography**

*Author(s):* **Chao Zuo**, Nanjing Univ. of Science and Technology (China)

12996-12 • 05:50 PM - 06:10 PM

**Methods for imaging and analysis of histological tissue slides via Fourier Ptychographic Microscopy**

*Author(s):* **Vittorio Bianco, Marika Valentino, Daniele Pirone, Lisa Miccio, Pasquale Memmolo**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Luigi Coppola, Valentina Brancato, Giovanni Smaldone**, IRCCS SYNLAB SDN (Italy); **Massimiliano D'aiuto**, Villa Fiorita-Aversa-SpA (Italy); **Gennaro Mossetti**, Casa di cura Maria Rosaria SPA (Italy); **Marco Salvatore**, IRCCS SYNLAB SDN (Italy); **Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy)

## Tuesday 9 April 2024

### SESSION 4: INTERFEROMETRIC IMAGING

09 April 2024 • 09:00 AM - 10:00 AM | Curie B, Niveau/Level 1

*Session Chair(s):* **Jürgen W. Czarske**, TU Dresden (Germany)

12996-13 • 09:00 AM - 09:20 AM

**Joint estimation of calibration bead's parameters and monochromatic aberrations in in-line digital holographic microscopy**

*Author(s):* **Sachin Joshi, Dylan Brault, Thomas Olivier**, Lab. Hubert Curien, Univ. Jean Monnet Saint-Etienne, CNRS (France); **Loïc Méès**, Lab. de Mécanique des Fluides et d'Acoustique, École Centrale de Lyon, CNRS (France); **Corinne Fournier**, Lab. Hubert Curien, Univ. Jean Monnet Saint-Etienne, CNRS (France)

12996-15 • 09:20 AM - 09:40 AM

**Multi-wavelength aberration corrected in-line holographic microscopy applied to Gram-stained blood smears imaging**

*Author(s):* **Thomas Olivier, Dylan Brault**, Lab. Hubert Curien (France); **Nicolas Faure**, bioMérieux SA (France); **Sophie Dixneuf**, BIOASTER (France); **Chloé Kolytcheff, Elodie Charmette**, bioMérieux SA (France); **Corinne Fournier**, Lab. Hubert Curien (France)

12996-16 • 09:40 AM - 10:00 AM

**Interferometric Gated Off-Axis Reflectometry (iGOR): ultrasensitive label-free tracking of nanoparticles and suspended membranes in three dimensions**

*Author(s):* **Wolfgang W. Langbein, Freya Turley, David Regan, Paola Borri**, Cardiff Univ. (United Kingdom)

### Coffee Break 10:00 AM - 10:40 AM

### SESSION 5: COMPUTATIONAL IMAGING

09 April 2024 • 10:40 AM - 12:20 PM | Curie B, Niveau/Level 1

*Session Chair(s):* **Jürgen W. Czarske**, TU Dresden (Germany)

12996-18 • 10:40 AM - 11:00 AM

**Exploring PSF engineering for enhanced FOV in computational imaging systems while overcoming practical constraints**

*Author(s):* **Ritika Malik, Kedar Khare**, Indian Institute of Technology Delhi (India)

12996-19 • 11:00 AM - 11:20 AM

**Reproducible hyperspectral single-pixel imaging using the OpenSpyrit ecosystem**

*Author(s):* **Juan Felipe Perez Juste Abascal, Laurent Mahieu-Williams**, Institut National des Sciences Appliquées de Lyon (France), Univ. de Lyon (France), Ctr. National de la Recherche Scientifique (France); **Thomas Baudier, Nicolas Ducros**, Univ. de Lyon (France), Institut National des Sciences Appliquées de Lyon (France), Ctr. National de la Recherche Scientifique (France)

12996-20 • 11:20 AM - 11:40 AM

**Spatial modulations testing in a hyperspectral single-pixel microscopy**

*Author(s):* **Lukas Klein**, Technical Univ. of Liberec (Czech Republic), Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic); **Karel Žídek**, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic)

12996-21 • 11:40 AM - 12:00 PM

**Comparison of model-based and data-based co-design of phase masks for depth of field extension**

*Author(s):* **Pauline Trouvé-Peloux, Alice Fontbonne, Marius Dufraisse, Frédéric Champagnat**, ONERA (France)

12996-22 • 12:00 PM - 12:20 PM

**Fast quantitative phase imaging with an LED array microscope using a perturbative approach**

*Author(s):* **Jonathan Dong, Kuan-Chen Shen, Michael Unser**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Laura Waller, Ruiming Cao**, Univ. of California, Berkeley (United States)

**Lunch/Exhibition Break 12:20 PM - 01:30 PM**

### SESSION 6: IMAGING IN SCATTERING MEDIA

09 April 2024 • 01:50 PM - 04:00 PM | Curie B, Niveau/Level 1

*Session Chair(s):* **Nicolas Verrier**, Univ. de Haute-Alsace (France)

**Session 6 (Imaging in Scattering Media) runs concurrently with Session 7 (Terahertz Imaging)**

12996-23 • 01:50 PM - 02:20 PM

**Wavefront shaping for fluorescence imaging in complex media** (*Invited Paper*)

*Author(s):* **Sylvain Gigan**, Lab. Kastler Brossel (France)

12996-24 • 02:20 PM - 02:40 PM

**PISTIL interferometry: Metrology device for regular segmented wavefront measurement**

*Author(s):* **Cindy Bellanger, Thomas Rousseaux, Bastien Rouze, Jérôme Primot**, ONERA (France)

12996-25 • 02:40 PM - 03:00 PM

**Matrix approach for computational multi-conjugate adaptive optics**

*Author(s):* **Jad Aoun, Paul Balondrade, Victor Barolle, Claude Boccara, Mathias Fink, Alexandre Aubry**, Institut Langevin (France)

12996-26 • 03:00 PM - 03:20 PM

**A versatile wavefront sensor journey from macroscopic to microscopic applications**

*Author(s):* **Carlos Cairós**, Univ. de La Laguna (Spain); **Ricardo Oliva-García**, Woptix, S.L. (Spain); **Vahid Pourreza Ghouschi**, Woptix (Spain); **Miriam Velasco-Ocaña, Juan Manuel Trujillo-Sevilla, José Manuel Ramos-Rodríguez**, Woptix, S.L. (Spain)

12996-27 • 03:20 PM - 03:40 PM

**Enhanced Doppler holography of the human eye fundus through aberration correction by direct wavefront estimation from signal correlation across sub-apertures**

*Author(s):* **Zofia Bratasz, Olivier Martinache, Yohan Blazy, Michael Atlan, Julia Sverdlin**, Institut Langevin (France); **Vincent Borderie, Katharine Grieve**, Ctr. Hospitalier National d'Ophthalmologie des Quinze-Vingts (France); **Damien Gatinel**, La Fondation Ophtalmologique Adolphe de Rothschild (France)

12996-28 • 03:40 PM - 04:00 PM

**Imaging through translucent layers in digital holographic microscopy and application to the metrology of human red blood cells observed behind an endothelial cell layer**

*Author(s):* **Jérôme Dohet-Eraly, Jonathan Nasimba Nacimba, Frank Dubois**, Univ. Libre de Bruxelles (Belgium)

**Coffee Break 04:00 PM - 04:30 PM**

### SESSION 7: JOINT SESSION: TERAHERTZ IMAGING

09 April 2024 • 01:30 PM - 04:10 PM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

**Joint Session between conferences 12994 (THz Photonics) and 12996 (Unconventional Optical Imaging)**

**This Joint Session (Session 7) runs concurrently with Session 6, Conf. 12996 (Unconventional Optical Imaging)**

12996-29 • 01:30 PM - 02:00 PM

**High speed terahertz imaging based on optimized galvanometric illumination** (*Invited Paper*)

*Author(s):* **Yuzhe Zhang**, Beijing Univ. of Technology (China); **Ran Ning**, Shenzhen Univ. (China), Shenzhen Key Lab. of Micro-Nano Photonic Information Technology (China); **Jie Zhao, Shufeng Lin, Lu Rong, Dayong Wang**, Beijing Univ. of Technology (China), Beijing Engineering Research Ctr. of Precision Measurement Technology and Instruments (China)

12994-31 • 02:00 PM - 02:30 PM

**Terahertz optical setups using spatial filtering methods to image low-absorbing samples** (*Invited Paper*)

*Author(s):* **Adrianna Nieradka**, Warsaw Univ. of Technology (Poland); **Pawel Komorowski**, Military Univ. of Technology (Poland); **Mateusz Kaluza, Mateusz Surma, Agnieszka Siemion**, Warsaw Univ. of Technology (Poland)



12994-32 • 02:30 PM - 02:50 PM

**Computational terahertz imaging via spatio-temporal emissivity modulation**

*Author(s):* **Michal Mrnka, Harry Penketh, Ian R. Hooper, Sonal Saxena**, Univ. of Exeter (United Kingdom); **Nicholas E. Grant, John D. Murphy**, The Univ. of Warwick (United Kingdom); **David B. Phillips, Euan Hendry**, Univ. of Exeter (United Kingdom)

12994-33 • 02:50 PM - 03:10 PM

**Terahertz imaging using C-shaped metallic metasurface-based optics**

*Author(s):* **Rusne Ivaškevičute-Povilauskiene, Vladislovas Čižas, Ernestas Nacius, Ignas Grigelionis, Karolis Redeckas, Kasparas Stanaitis, Sergej Orlov, Gintaras Valušis, Linas Minkevicius**, Ctr. for Physical Sciences and Technology (Lithuania)

12994-34 • 03:10 PM - 03:30 PM

**Terahertz assisted Atom Probe Tomography: Effect of single-cycle THz pulses on ion dynamics**

*Author(s):* **Angela Vella, Michella Karam, Jonathan Houard, Matteo De Tullio**, Univ. de Rouen Normandie (France)

12996-30 • 03:30 PM - 03:50 PM

**Sub-wavelength Terahertz microscopy based on a cross-filament**

*Author(s):* **Xinke Wang, Yan Zhang**, Capital Normal Univ. (China)

12996-31 • 03:50 PM - 04:10 PM

**Terahertz off-axis digital holography reconstruction using inverse problem resolution with the Alternating Direction Method of Multipliers**

*Author(s):* **Murielle Kirkove, Yuchen Zhao**, Ctr. Spatial de Liège (Belgium); **Olivier Leblanc, Laurent Jacques**, Univ. Catholique de Louvain (Belgium); **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

**Coffee Break 04:10 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

**Wednesday 10 April 2024**

**SESSION 8: POLARIZATION**

10 April 2024 • 08:40 AM - 10:20 AM | Curie B, Niveau/Level 1

*Session Chair(s):* **Olivier Haeberlé**, Univ. de Haute-Alsace (France)

12996-32 • 08:40 AM - 09:00 AM

**Towards polarization sensitive tomographic diffraction microscopy: quantitative 3D Differential Interference Contrast microscopy**

*Author(s):* **Nicolas Verrier**, Univ. de Haute-Alsace (France); **Matthieu Debailleul**, Univ. de Haute Alsace (France); **Olivier Haeberlé**, Univ. de Haute-Alsace (France)

12996-33 • 09:00 AM - 09:20 AM

**Digital harmonic holographic microscope and polarization multiplexing in nonlinear regime**

*Author(s):* **Serena Goldmann, Yannick De Wilde**, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France); **Gilles Tessier**, Institut de la Vision (France), Sorbonne Univ. (France); **Samuel Grésillon**, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France)

12996-34 • 09:20 AM - 09:40 AM

**Three-dimensional orientation tomography in liquid crystal assemblies using polarized luminescence***Author(s): Lilian Magermans, Jeongmo Kim, Thierry Gacoin, Jongwook Kim, Lab. de Physique de la Matière Condensée, CNRS (France), Ecole Polytechnique, Institut Polytechnique de Paris (France)*

12996-35 • 09:40 AM - 10:00 AM

**Computing the volumetric Mueller matrix with in-line holography***Author(s): Maria Josef Lopera Acosta, Vrije Univ. Brussel (Belgium), Univ. EAFIT (Colombia); Maciej Trusiak, Warsaw Univ. of Technology (Poland); Ana Doblaz, Univ. of Massachusetts Dartmouth (United States); Yunfeng Nie, Heidi Ottevaere, Vrije Univ. Brussel (Belgium); Carlos Trujillo, Univ. EAFIT (Colombia)*

12996-36 • 10:00 AM - 10:20 AM

**Phase shifting common path polarization grating based diffraction tomography***Author(s): Piotr Zdankowski, Julianna Winnik, Mikolaj Rogalski, Marcin Marzejon, Emilia Wdowiak, Maciej Trusiak, Warsaw Univ. of Technology (Poland)***Coffee Break 10:20 AM - 10:50 AM****SESSION 9: MULTISPECTRAL IMAGING**

10 April 2024 • 10:50 AM - 12:30 PM | Curie B, Niveau/Level 1

*Session Chair(s): Irene Georgakoudi, Tufts Univ. (United States)*

12996-37 • 10:50 AM - 11:10 AM

**Data-driven discovery from 5-dimensional microscopy of living things***Author(s): Elizabeth M. C. Hillman, Columbia Univ. (United States)*

12996-38 • 11:10 AM - 11:30 AM

**A bimodal fluorescence and phase microscope for time-lapse imaging of 3D multi-scattering objects***Author(s): Chiara Paviolo, Sylvia Desissaire, CEA (France); Edgar del Llano, Univ. Grenoble Alpes (France); Marie Fackeure, Jeremy Neri, Institut de Génomique Fonctionnelle de Lyon (France); Cécile Fiche, CEA (France); Corinne Loeuillet, Pierre F. Ray, Christophe Arnoult, Univ. Grenoble Alpes (France); Kiran Padmanabhan, Institut de Génomique Fonctionnelle de Lyon (France); Lionel Hervé, CEA (France)*

12996-39 • 11:30 AM - 11:50 AM

**Hyperspectral Computational SPIM for Quantitative Multicolor Imaging***Author(s): Cédric Ray, Sébastien Crombez, CREATIS (France); Chloé Exbrayat-Heritier, Florence Ruggiero, Ecole Normale Supérieure de Lyon (France); Nicolas Ducros, CREATIS (France)*

12996-40 • 11:50 AM - 12:10 PM

**3D speckle patterns for spectrally resolved photoluminescence tomography of optical materials***Author(s): Šárka Lisková, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic); Jiri Junek, Institute of Plasma Physics of the CAS (Czech Republic); Jiri Hlubucek, Josef Hrdlička, Karel Židek, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic)*

12996-41 • 12:10 PM - 12:30 PM

**Translation of hyperspectral imaging into clinical practice – Potential, challenges and strategies***Author(s): Adrian Rühm, Matthäus Linek, Ester Pachyn, Christian Freymüller, Maximilian Aumiller, Marco Seeber, Daniel Happach, Ina Stadler, Veronika Volgger, Axelle Felicio-Briegel, Ronald Sroka, Klinikum der Univ. München (Germany)***Lunch Exhibition Break 12:30 PM - 01:50 PM****SESSION 10: NONLINEAR IMAGING**

10 April 2024 • 01:50 PM - 03:20 PM | Curie B, Niveau/Level 1

*Session Chair(s): Elizabeth M.C. Hillman, Columbia Univ. (United States)*

12996-42 • 01:50 PM - 02:20 PM

**Advances in label-free multimodal multiphoton imaging of living tissues (Invited Paper)***Author(s): Chiara Stringari, Ecole Polytechnique (France)*

12996-43 • 02:20 PM - 02:40 PM

**Monitoring dynamic metabolic cell interactions in engineered brain tissue models using label-free, multi-modal two photon excited fluorescence***Author(s): Irene Georgakoudi, Yang Zhang, Maria T. Savvidou, Olga Liaudanskaya, David L. Kaplan, Tufts Univ. (United States)*

12996-45 • 02:40 PM - 03:00 PM

**Correction quality criterion for DOPC guide-stars**

Author(s): **John Böhm, David Krause, Nektarios Koukourakis, Jürgen W. Czarsteke**, TU Dresden (Germany)

12996-88 • 03:00 PM - 03:20 PM

**Ultrabroadband optical diffraction tomography towards ultrafast 3D imaging**

Author(s): **Martin Hörmann**, Politecnico di Milano (Italy); **Franco V.A. Camargo**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Niek F. van Hulst**, ICFO - Institut de Ciències Fotòniques (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain); **Giulio Cerullo**, Politecnico di Milano (Italy), CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Matz Liebel**, Vrije Univ. Amsterdam (Netherlands), ICFO - Institut de Ciències Fotòniques (Spain)

**Coffee Break 03:20 PM - 03:50 PM**

**SESSION 11: AI FOR BIOMEDICAL IMAGING**

10 April 2024 • 03:50 PM - 05:40 PM | Curie B, Niveau/Level 1

Session Chair(s): **Chiara Stringari**, Ecole Polytechnique (France)

12996-46 • 03:50 PM - 04:20 PM

**Lensless fiber imaging using deep neural networks and quantum technology (Invited Paper)**

Author(s): **Jürgen W. Czarsteke**, TU Dresden (Germany)

12996-47 • 04:20 PM - 04:40 PM

**Removal of unwanted terms from single shot in-line digital holograms by convolutional neural network**

Author(s): **Bora Duman, Gökhan Bora Esmer**, Marmara Üniv. (Turkey)

12996-48 • 04:40 PM - 05:00 PM

**Machine-learning-based classification of co-cultured cells from the phase images in digital holographic microscopy**

Author(s): **Harshal R. Chaudhari, Rishikesh Kulkarni, M. K. Bhuyan, Pradeep K. Sundaravadivelu, Rajkumar Thummer**, Indian Institute of Technology Guwahati (India)

12996-49 • 05:00 PM - 05:20 PM

**Quantitative analysis of cell culture through learning-enabled lens-free microscopy**

Author(s): **Florian Lemarchand, Martin Alice, Lionel Hervé**, Univ. Grenoble Alpes (France), CEA-LETI (France); **Kiran Padmanabhan**, Institut de Génomique Fonctionnelle de Lyon, Ecole Normale Supérieure de Lyon, CNRS (France), Univ. Claude Bernard Lyon 1 (France); **Cédric Allier**, Univ. Grenoble Alpes (France), CEA-LETI (United States), Janelia Farm Research Campus, Howard Hughes Medical Institute (United States); **Chiara Paviolo**, Univ. Grenoble Alpes (France), CEA-LETI (France)

12996-50 • 05:20 PM - 05:40 PM

**Detection of Rare Circulating Tumor Cell Clusters in Whole Blood Using Deep Learning-Enabled, Label-free, Flow Cytometry**

Author(s): **Irene Georgakoudi**, Tufts Univ. (United States)

**POSTERS-WEDNESDAY**

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12996-44 • 05:45 PM - 07:45 PM

**Spectral interferometric polarization imaging using broadband CARS**

Author(s): **Ryan Muddiman**, National Univ. of Ireland, Maynooth (Ireland); **Syed Baryalay, Matthew McCartney, Grace Hoysted, Bryan Hennelly**, National Univ. of Ireland (Ireland)

12996-65 • 05:45 PM - 07:45 PM

**Low-power coherent light and wavefront shaping for reducing photobleaching effect in fluorescence based imaging**

Author(s): **Amit Kumar, Ayush Sharma, Sarvesh Thakur, S.K. Biswas**, Indian Institute of Science Education and Research Mohali (India)

12996-66 • 05:45 PM - 07:45 PM

**Non-negative iterative approach for ghost imaging**

Author(s): **Sangho Lee**, KAIST (Korea, Republic of); **Junhyeok Kim**, Korea Atomic Energy Research Institute (Korea, Republic of); **Jisung Hwang, Kilyoung Ko, Jaehyun Park, Wonku Kim, Gyohyeok Song, Gyuseong Cho**, KAIST (Korea, Republic of)

12996-67 • 05:45 PM - 07:45 PM

**Enhanced phase imaging based on sampling frequency improvement**

*Author(s):* **Alim Yolalmaz, Jeroen Kalkman**, Technische Univ. Delft (Netherlands)

12996-68 • 05:45 PM - 07:45 PM

**100  $\mu$ s - 100 Hz coherent beam combining of laser amplifiers for Fourier transform acousto-optic imaging**

*Author(s):* **Qin Liu, Sylvie Janicot**, Lab. Charles Fabry (France); **François Figliolia, François Ramaz**, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France); **Jean-Michel Tualle**, Lab. de Physique des Lasers (France); **Patrick Georges**, Lab. Charles Fabry (France); **Maïmouna Bocoum**, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France); **Gaëlle Lucas-Leclain**, Lab. Charles Fabry (France)

12996-69 • 05:45 PM - 07:45 PM

**Visualizing densely interwoven fiber networks in biological tissues using Computational Scattered Light Imaging**

*Author(s):* **Loes Ettema**, Technische Univ. Delft (Netherlands); **Hamed Abbasi**, Technische Univ. Delft (Netherlands), Erasmus MC (Netherlands); **Viktoras Mazeika**, Vilnius Univ. (Lithuania); **Mehdi Alizadeh, Virginijus Barzda**, Univ. of Toronto (Canada), Vilnius Univ. (Lithuania); **Miriam Menzel**, Technische Univ. Delft (Netherlands)

12996-70 • 05:45 PM - 07:45 PM

**Spatial-frequency-domain hyperspectral microscopy**

*Author(s):* **Lisa Uguen, Ronan Piedevache**, Photonics Bretagne (France); **Gaspard Russias**, Photonics Bretagne (France), Photonics Open Projects (France); **Sofian Helmer**, Photonics Bretagne (France); **Antoine Fournier**, ARVALIS - Institut du végétal (France); **Denis Tregogat, Stéphane Perrin**, Photonics Bretagne (France)

12996-71 • 05:45 PM - 07:45 PM

**Common-path off-axis differential interference contrast microscope for monitoring cell dynamics**

*Author(s):* **Anuj Saxena**, Indian Institute of Technology Delhi (India); **Azeem Ahmad, Vishesh Dubey, Hong Mao**, UiT The Arctic Univ. of Norway (Norway); **Anand Kumar**, Indian Institute of Technology Delhi (India); **Anowarul Habib**, UiT The Arctic Univ. of Norway (Norway); **Satish K. Dubey**, Indian Institute of Technology Delhi (India); **Balpreet S. Ahluwalia**, UiT The Arctic Univ. of Norway (Norway); **Dalip S. Mehta**, Indian Institute of Technology Delhi (India)

12996-72 • 05:45 PM - 07:45 PM

**Multitask deep co-design for extended depth of field and depth from defocus**

*Author(s):* **Marius Dufraisse**, ONERA (France); **Rémy Leroy**, Institut National de Recherche en Informatique et en Automatique (France); **Pauline Trouvé-Peloux, Frédéric Champagnat, Jean-Baptiste C. Volatier**, ONERA (France)

12996-73 • 05:45 PM - 07:45 PM

**Impact of interchannel misalignment on the performance of demosaicing algorithms dedicated to polarization images**

*Author(s):* **Ronan Dumoulin, Pierre-Jean Lapray, Alban Foulonneau, Laurent Bigué**, Institut de Recherche en Informatique, Mathématiques, Automatique et Signal, Univ. de Haute Alsace (France)

12996-74 • 05:45 PM - 07:45 PM

**Taking into account wave effects in Monte Carlo simulation of phase contrast imaging using the Wigner distribution function**

*Author(s):* **Emilie Pietersoone**, Techniques de l'Ingénierie Médicale et de la Complexité-Info Mathématiques et Applications, Univ. Grenoble Alpes, CNRS (France), VetAgro Sup (France), Grenoble INP (France); **Jean-Michel Letang, Simon Rit**, Institut National des Sciences Appliquées de Lyon, Univ. de Lyon (France), Univ. Jean Monnet Saint-Etienne (France), CREATIS, Univ. Claude Bernard Lyon 1, Institut National de la Santé et de la Recherche Médicale, CNRS (France); **Emmanuel Brun**, Rayonnement Synchrotron pour la Recherche Biomédicale, Institut National de la Santé et de la Recherche Médicale (France), Univ. Grenoble Alpes (France); **Max Langer**, Techniques de l'Ingénierie Médicale et de la Complexité-Info Mathématiques et Applications, Univ. Grenoble Alpes, CNRS (France), VetAgro Sup (France), Grenoble INP (France)

12996-76 • 05:45 PM - 07:45 PM

**Application of the Time-of-Flight method for straylight characterization in optical calibration facilities: application to the NAC instrument**

*Author(s):* **Lionel Clermont, Pascal Blain, Emmanuel Mazy**, Ctr. Spatial de Liège (Belgium); **Wassim Khaddour, Wilfried Uhring**, Univ. de Strasbourg (France); **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

12996-78 • 05:45 PM - 07:45 PM

**3D fluorescence recovery by using a new algorithm implementing total variation regularization and the positivity constraint**

*Author(s):* **Lionel Hervé, Stéphane Bonnet, Sylvia Desissaire**, Univ. Grenoble Alpes (France), CEA-LETI (France); **Edgar del Llano, Corinne Loeuillet, Pierre F. Ray, Christophe Arnoult**, Univ. Grenoble Alpes (France), Institut National de la Santé et de la Recherche Médicale (France), Ctr. National de la Recherche Scientifique (France); **Chiara Paviolo**, Univ. Grenoble Alpes (France), CEA-LETI (France)

12996-79 • 05:45 PM - 07:45 PM

**Augmented reality for spectral imaging applications**

*Author(s):* **Rafael Cavaco**, Univ. do Porto (Portugal), INESC TEC (Portugal); **Tomás J. Moreira Lopes, Pedro Alberto Silva Jorge**, INESC TEC (Portugal), Univ. do Porto (Portugal); **Nuno A. Silva**, Univ. do Porto (Portugal), INESC TEC (Portugal)

12996-80 • 05:45 PM - 07:45 PM

**Single-pixel transmission matrix recovery via 2-photon fluorescence**

*Author(s):* **Shupeng Zhao, Bernhard Rauer, Lorenzo Valzania**, Lab. Kastler Brossel, Ecole normale supérieure - PSL, CNRS (France); **Jonathan Dong**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Ruifeng Liu, Fuli Li**, Xi'an Jiaotong Univ. (China); **Sylvain Gigan, Hilton B. de Aguiar**, Lab. Kastler Brossel, Ecole normale supérieure - PSL, CNRS (France)

12996-81 • 05:45 PM - 07:45 PM

**RGB realistic synthetic interferograms in a white light interference microscope**

*Author(s):* **Hernando Altamar-Mercado, Andres Marrugo, Alberto Patiño-Vanegas**, Univ. Tecnológica de Bolívar (Colombia)

12996-82 • 05:45 PM - 07:45 PM

**Computer-generated hologram and focusing technique for three-dimensional profile**

*Author(s):* **Alberto Patiño-Vanegas, Hernando Altamar-Mercado**, Univ. Tecnológica de Bolívar (Colombia)

12996-83 • 05:45 PM - 07:45 PM

**Fractal Fourier Ptychography to assess copper pollution in water through its effects on microalgae bioprobes**

*Author(s):* **Vittorio Bianco, Daniele Pirone**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Elena Cavalletti**, Stazione Zoologica Anton Dohrn (Italy); **Jaromír Behal, Pasquale Memmolo**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Angela Sardo**, Stazione Zoologica Anton Dohrn (Italy); **Lisa Miccio, Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy)

12996-85 • 05:45 PM - 07:45 PM

**Advances in label-free optical quantification of Alzheimer's disease associated cellular and tissue level pathology**

*Author(s):* **Jorge Maldonado**, Beckman Institute for Advanced Science and Technology (United States); **Catherine A. Best-Popescu**, Univ. of Illinois (United States)

12996-86 • 05:45 PM - 07:45 PM

**Quantitative histopathology of breast and bladder cancer using color spatial light interference microscopy (CSLIM) with computational specificity (PICS)**

*Author(s):* **Jingfang Zhang**, Beckman Institute for Advanced Science and Technology (United States); **Catherine A. Best-Popescu**, Univ. of Illinois (United States)

12996-87 • 05:45 PM - 07:45 PM

**Imaging of localized whispering-gallery-modes in a cylindrical fiber**

*Author(s):* **Nitzan Shani, Fan Cheng**, Tel Aviv Univ. (Israel); **Lev I. Deych**, Queens College (United States); **Tal Carmon**, Tel Aviv Univ. (Israel)

12996-89 • 05:45 PM - 07:45 PM

**Steering photonic nanojets using phase-only modulation**

*Author(s):* **Mirza Karamehmedovic**, Technical Univ. of Denmark (Denmark); **Jesper Glückstad**, Univ. of Southern Denmark (Denmark)

12996-90 • 05:45 PM - 07:45 PM

**Non-destructive inspection by MIR OCT of sub-surface defects in 3D printed alumina**

*Author(s):* **Coraline Lapre**, Technical Univ. of Denmark (Denmark); **Dominik Brouczek, Martin Schwentenwein**, Lithoz GmbH (Austria); **Kevin Neumann, Niels Benson**, airCode (Germany); **Christian Rosenberg Petersen**, Technical Univ. of Denmark (Denmark), NORBLIS ApS (Denmark); **Ole Bang**, Technical Univ. of Denmark (Denmark), NORBLIS ApS (Denmark), NKT Photonics A/S (Denmark); **Niels Møller Israelsen**, Technical Univ. of Denmark (Denmark), NORBLIS ApS (Denmark)

12996-91 • 05:45 PM - 07:45 PM

**Towards image synthesis with photon counting stellar intensity interferometry**

*Author(s):* **Alessia Spolon, Michele Fiori, Luca Zampieri**, INAF - Observatory of Padova (Italy); **Marco Landoni**, INAF - Observatory of Brera (Italy)

12996-92 • 05:45 PM - 07:45 PM

**MICROSCOM Erasmus Mundus Master: computational microscopy and applications**

*Author(s):* **Gloria Bueno**, Univ. de Castilla-La Mancha (Spain); **Gabriel Cristobal**, Instituto de Optica - CSIC (Spain); **Richard Bowman**, University of Glasgow (United Kingdom); **Jeremy Simpson**, University College Dublin (Ireland); **Oscar Deniz**, Univ. de Castilla-La Mancha (Spain)

12996-93 • 05:45 PM - 07:45 PM

**Experimental errors in a Mueller matrix imaging polarimeter based on liquid crystal variable retarders**

*Author(s):* **Ivan Montes Gonzalez, Judit Bisbal, Irene Estévez, Monica Canabal-Carbia, Angel Lizana, Juan Campos**, Universitat Autònoma de Barcelona (Spain)

## Thursday 11 April 2024

## HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)Author(s): **Martin Wegener**, Karlsruhe Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)**Coffee Break 10:35 AM - 11:00 AM**

## SESSION 12: LENSLESS IMAGING

11 April 2024 • 11:00 AM - 12:30 PM | Curie B, Niveau/Level 1

Session Chair(s): **Nicolas Verrier**, Univ. de Haute-Alsace (France)

12996-51 • 11:00 AM - 11:30 AM

**Enhancement and evaluation of phase imaging capabilities in lensless digital holographic microscopy** (Invited Paper)Author(s): **Maciej Trusiak, Mikolaj Rogalski, Piotr Arcab, Emilia Wdowiak, Piotr Zdankowski**, Warsaw Univ. of Technology (Poland)

12996-52 • 11:30 AM - 11:50 AM

**Impact of emissive point distribution density in a retinal projection near-eye display**Author(s): **Fabian Rainouard**, CEA-LETI (France); **Olivier Haeberlé**, Institut de Recherche en Informatique, Mathématiques, Automatique et Signal, Univ. de Haute-Alsace (France); **Christophe Martinez**, CEA-LETI (France)

12996-53 • 11:50 AM - 12:10 PM

**Identifying heterogeneity in cell culture through machine learning-enabled lens-free microscopy**Author(s): **Martin Alice, Florian Lemarchand**, Univ. Grenoble Alpes (France), CEA-LETI (France); **Kiran Padmanabhan**, Institut de Génomique Fonctionnelle de Lyon, CNRS (France), Univ. Claude Bernard Lyon 1 (France), Ecole Normale Supérieure de Lyon (France); **Lionel Hervé, Olivier Cioni**, CEA-LETI (France), Univ. Grenoble Alpes (France); **Chiara Paviolo**, Univ. Grenoble Alpes (France), CEA-LETI (France)

12996-61 • 12:10 PM - 12:30 PM

**Label-free super-resolution imaging using patchy microspheres in various mediums**Author(s): **Pengxin Zou, Chu Xu**, Nanjing Normal Univ. (China); **Zengbo Wang**, Bangor University (United Kingdom); **Sorin Melinte**, Université catholique de Louvain (Belgium); **Ran Ye**, Nanjing Normal Univ. (China)**Lunch Break 12:30 PM - 01:40 PM**

## SESSION 13: ULTRAFAST/SINGLE-PHOTON IMAGING

11 April 2024 • 01:40 PM - 03:30 PM | Curie B, Niveau/Level 1

Session Chair(s): **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

12996-55 • 01:40 PM - 02:10 PM

**Single-photon LiDAR goes long ranges** (Invited Paper)Author(s): **Feihu Xu**, Univ. of Science and Technology of China (China)

12996-56 • 02:10 PM - 02:30 PM

**Single-shot spatiotemporal measurement of ultrashort pulses and its application in ultrafast laser plasma diagnosis**Author(s): **Ping Zhu, Youjian Yi, Yingming Xu, Fucai Ding, Qiang Zhang, Dongjun Zhang, Xuejie Zhang, Xiao Liang, Meizhi Sun, Xinglong Xie, Jianqiang Zhu**, Shanghai Institute of Optics and Fine Mechanics (China)

12996-57 • 02:30 PM - 02:50 PM

**Inpainting sparse scenes through physics aware transformers for single-photon LiDAR**

*Author(s):* **Luke McEvoy, Daniel Tafone, Yong Meng Sua, Yuping Huang**, Stevens Institute of Technology (United States)

12996-58 • 02:50 PM - 03:10 PM

**CMOS sensor for subnanosecond integrated Streak camera**

*Author(s):* **Pierre Willinger-Adam**, ICube (France), Optronis GmbH (Germany); **Wilfried Uhring, Jean-Baptiste Schell**, ICube (France); **Vincent Wlotzko, Patrick Summ**, Optronis GmbH (Germany)

12996-59 • 03:10 PM - 03:30 PM

**Re-interpreting the step-response probability curve to extract fundamental physical parameters of event-based vision sensors**

*Author(s):* **Brian J. Mcreynolds**, Institute of Neuroinformatics, Univ. Zürich (Switzerland), ETH Zurich (Germany); **Rui P. Graca**, Institute of Neuroinformatics, Univ. Zürich (Switzerland); **Lucas Kulesza, Peter McMahon-Crabtree**, Air Force Research Lab. (United States)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 14: SUPER-RESOLUTION**

11 April 2024 • 04:00 PM - 05:20 PM | Curie B, Niveau/Level 1

*Session Chair(s):* **Marc P. Georges**, Ctr. Spatial de Liège (Belgium)

12996-60 • 04:00 PM - 04:20 PM

**Super-resolution confocal quantitative phase imaging**

*Author(s):* **Pierre Bon**, Lab. Photonique, Numérique et Nanosciences (France); **Alberto Aguilar, Duc-Minh Ta**, XLIM (France)

12996-62 • 04:20 PM - 04:40 PM

**Far-field super-resolution imaging using scanning photonic nanojets**

*Author(s):* **Mirza Karamahmedovic, Kristoffer Linder-Steinlein**, Technical Univ. of Denmark (Denmark); **Poul-Erik Hansen**, DFM A/S (Denmark); **Peng Chen**, Georgia Institute of Technology (United States); **Amal M. A. Alghamdi**, Technical Univ. of Denmark (Denmark); **Jesper Glückstad**, Univ. of Southern Denmark (Denmark)

12996-63 • 04:40 PM - 05:00 PM

**Resolution-Enhanced Single-Pixel Fluorescence Microscopy**

*Author(s):* **Luis Ordóñez Angamarca, Armin Lenz**, Univ. Jaume I (Spain); **Naru Yoneda, Manoj Kumar**, Kobe Univ. (Japan); **Jesús Lancis**, Univ. Jaume I (Spain); **Osamu Matoba**, Kobe Univ. (Japan); **Enrique Tajahuerce**, Univ. Jaume I (Spain)

12996-64 • 05:00 PM - 05:20 PM

**Observation of SARS-CoV-2 viral particles using electron microscopy-guided multiphoton microscopy**

*Author(s):* **Claire Lefort**, XLIM, Univ. de Limoges, CNRS (France); **Erwan Ferrandon**, XLIM, Univ. de Limoges, CNRS (France), RESINFIT, Institut National de la Santé et de la Recherche Médicale, Univ. de Limoges (France); **Mathis Courant**, RESINFIT, Univ. de Limoges (France), Institut National de la Santé et de la Recherche Médicale (France); **Camelia Popescu**, Institut de Recherche sur les Céramiques, Univ. de Limoges, CNRS (France); **Yann Launay**, Institut de Recherche sur les Céramiques (France); **Sophie Alain**, RESINFIT, Univ. de Limoges (France)

**DIGITAL POSTERS**

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

12996-77

**Revolutionizing endoscopy: non-invasive high-resolution imaging with time-domain optical coherence tomography**

*Author(s):* **Abdul Jabbar**, Information Technology Univ. of the Punjab (Pakistan); **Ramna Khalid**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy), Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Nasir Mahmood**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

# CONFERENCE 12997

## Optics and Photonics for Advanced Dimensional Metrology III

09 - 11 April 2024 | Rome/Salon 5, Niveau/Level 0

**Conference Chair(s):** **Peter J. de Groot**, Zygo Corporation (United States); **Felipe Guzman**, Wyant College of Optical Sciences, Univ. of Arizona (United States); **Pascal Picart**, LAUM CNRS, Le Mans Univ. (France)

**Program Committee:** **Roger Artigas Pursals**, Sensofar-Tech, S.L. (Spain); **Jürgen W. Czarske**, Technische Univ. Dresden (Germany); **Fengzhou Fang**, Tianjin Univ. (China); **Pietro Ferraro**, Istituto Nazionale di Ottica (Italy); **Ines Fortmeier**, Physikalisch-Technische Bundesanstalt (Germany); **Yoshio Hayasaki**, Utsunomiya Univ. (Japan); **Helia Hooshmand-Ziafi**, The Univ. of Nottingham (United Kingdom); **Michal Józwiak**, Warsaw Univ. of Technology (Poland); **Dae Wook Kim**, College of Optical Sciences, The Univ. of Arizona (United States); **Eberhard Manske**, Technische Univ. Ilmenau (Germany); **Paul C. Montgomery**, Univ. de Strasbourg (France); **Yukitoshi Otani**, Utsunomiya Univ. (Japan); **Heidi Ottevaere**, Vrije Univ. Brussel (Belgium); **Anne-Sophie Poulin-Girard**, Univ. Laval (Canada); **Christof Pruss**, Univ. Stuttgart (Germany); **Katharina Schmidt**, TU Dresden (Germany); **Mikael Sjödaahl**, Lulea Univ. of Technology (Sweden); **Rong Su**, The Univ. of Nottingham (United Kingdom); **Carlos A. Trujillo**, Univ. EAFIT (Colombia)

Tuesday 9 April 2024

### OPENING REMARKS

09 April 2024 • 01:10 PM - 01:20 PM | Rome/Salon 5, Niveau/Level 0

**Peter J. de Groot**, Zygo Corporation (United States)

*Conference Chair*

### SESSION 1: NEW METHODS AND ADVANCED PHOTONICS

09 April 2024 • 01:20 PM - 04:00 PM | Rome/Salon 5, Niveau/Level 0

*Session Chair(s):* **Jürgen W. Czarske**, TU Dresden (Germany)

12997-1 • 01:20 PM - 01:50 PM

**Ultrafast and scan-less three-dimensional imaging using all-optical information conversion with chirped optical frequency comb**

*(Invited Paper)*

*Author(s):* **Kaoru Minoshima, Takashi Kato**, The Univ. of Electro-Communications (Japan)

12997-2 • 01:50 PM - 02:10 PM

**Developing on-machine, In-process sensors enabled by multifunctional metasurface elements**

*Author(s):* **Daniel J. Townend, Andrew J. Henning, Justin H. T. Chan, James Williamson, Dawei Tang, Nityanand Sharma, Haydn Martin, Xiangqian Jiang**, Univ. of Huddersfield (United Kingdom)

12997-3 • 02:10 PM - 02:40 PM

**Optimizing fringe projection profilometry through theoretical analysis** *(Invited Paper)*

*Author(s):* **Qian Kemaoy**, Nanyang Technological Univ. (Singapore)

12997-4 • 02:40 PM - 03:00 PM

**Image flow-cytometry meets virtual reality: a new scenario for label-free quantitative phase contrast microscopy and single cell analysis**

*Author(s):* **Vittorio Bianco**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Massimo D'agostino**, Univ. degli Studi di Napoli Federico II (Italy); **Daniele Pirone, Giusy Giugliano**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Nicola Mosca, Maria di Summa**, Sistemi e Tecnologie Industriali Intelligenti per il Manifatturiero Avanzato (Italy); **Pasquale Memmolo, Lisa Miccio**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Tommaso Russo**, Univ. degli Studi di Napoli Federico II (Italy); **Ettore Stella**, Sistemi e Tecnologie Industriali Intelligenti per il Manifatturiero Avanzato (Italy); **Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy)

12997-5 • 03:00 PM - 03:20 PM

**Advanced evaluation of imaging Mueller matrix ellipsometry**



Author(s): **Tim Käseberg, Jana Grundmann**, Physikalisch-Technische Bundesanstalt (Germany); **Thomas Siefke**, Friedrich-Schiller-Univ. Jena (Germany); **Stefanie Kroker**, Technische Univ. Braunschweig (Germany); **Bernd Bodermann**, Physikalisch-Technische Bundesanstalt (Germany)

12997-6 • 03:20 PM - 03:40 PM

**In-process detection of laser-generated ultrasound for controlling material laser processing**

Author(s): **Yoshio Hayasaki, Sotaro Komatsu, Kaede Yamauchi, Takuma Miura**, Utsunomiya Univ. (Japan)

12997-7 • 03:40 PM - 04:00 PM

**Application of frequency-shifted feedback laser optical frequency combs for distance and refraction coefficient measurements**

Author(s): **Sergey N. Mantsevich, Ekaterina Kostyleva**, M. V. Lomonosov Moscow State Univ. (Russian Federation)

**Coffee Break 04:00 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12997-39 • 06:10 PM - 08:00 PM

**Lensless single-shot dual-wavelength digital holography for integrated circuit metrology**

Author(s): **Huangcheng Shangguan, Paul Urbach, Jeroen Kalkman**, Technische Univ. Delft (Netherlands)

12997-40 • 06:10 PM - 08:00 PM

**Theoretical modeling of scattering transportation for unpatterned silicon wafer metrology**

Author(s): **Lihong Liu, Yijie Ren, Huabing Yang, Boyuan Wang, Xingang Wang, Zhengtao Zhang**, Institute of Automation (China)

12997-41 • 06:10 PM - 08:00 PM

**Phase-shifting algorithm using a single interferogram and deep learning**

Author(s): **Jurim Jeon, Yangjin Kim**, Pusan National Univ. (Korea, Republic of)

12997-42 • 06:10 PM - 08:00 PM

**Influence of specimen positioning stage drift in tilted-wave interferometry for accurate form measurements for aspherical and freeform surfaces**

Author(s): **Gregor Scholz, Daniel Evers, Ines Fortmeier**, Physikalisch-Technische Bundesanstalt (Germany)

12997-43 • 06:10 PM - 08:00 PM

**Interferometric method for characterizing optical retarders**

Author(s): **Jesus del Hoyo, Joaquin Andres-Porras, Angela Soria-Garcia, Luis Miguel Sanchez-Brea, Veronica Pastor-Villarrubia, Mahmoud H. Elshorbagy, Javier Alda**, Univ. Complutense de Madrid (Spain)

12997-44 • 06:10 PM - 08:00 PM

**Three-degree-of-freedom pose measurement using a femto-second pulse beam**

*Author(s):* **Liheng Shi, Guanhao Wu**, Tsinghua Univ. (China)

12997-45 • 06:10 PM - 08:00 PM

**Tilt-to-length coupling metrology in the LISA mission**

*Author(s):* **Frederic Cleva**, CNRS (France); **Jean-Pierre Coulon, Marco Nardello**, Observatoire de la Côte d'Azur (France)

12997-46 • 06:10 PM - 08:00 PM

**Diffractions: an open-source library for diffraction and interference calculations**

*Author(s):* **Luis Miguel Sanchez-Brea, Angela Soria-Garcia, Joaquin Andres-Porras, Veronica Pastor-Villarrubia, Mahmoud H. Elshorbagy, Jesus del Hoyo**, Univ. Complutense de Madrid (Spain); **Francisco Jose Torcal-Milla**, Univ. de Zaragoza (Spain); **Javier Alda**, Univ. Complutense de Madrid (Spain)

12997-47 • 06:10 PM - 08:00 PM

**Phase measurements in Linnik interferometer with physically and numerically minimized errors**

*Author(s):* **Michal Józwiak, Maria Cywinska, Mikolaj Rogalski, Emilia Wdowiak, Maciej Trusiak**, Warsaw Univ. of Technology (Poland)

12997-48 • 06:10 PM - 08:00 PM

**Distance metrology by dual-Frequency scanning interferometry based on Electro-Optic Modulation**

*Author(s):* **Zhongwen Deng**, Xidian Univ. (China)

12997-49 • 06:10 PM - 08:00 PM

**A comparison of three different Maxwell solvers for the application in optical microscopy**

*Author(s):* **Silvana Wyss, Jan Krüger, Jana Grundmann, Bernd Bodermann, Sai Gao**, Physikalisch-Technische Bundesanstalt (Germany); **Liwei Fu, Alexander Birk**, Univ. Stuttgart (Germany)

12997-50 • 06:10 PM - 08:00 PM

**Fast-ranging using a Tunable Electro-optics Comb**

*Author(s):* **Xingyu Jia**, Tsinghua Univ. (China)

12997-51 • 06:10 PM - 08:00 PM

**A digital holographic system for measuring bacterial growth in micro-fluidic chambers**

*Author(s):* **Hussein Kamel, Julian Schmid, Moaaz R. Nizami, Igor Alekseenko, Florian Hausladen, Daniel Claus, Rainer Wittig, Damien P. Kelly**, Institut für Lasertechnologien in der Medizin und Meßtechnik an der Univ. Ulm (Germany)

12997-52 • 06:10 PM - 08:00 PM

**Uncertainty on Brillouin frequency on bulk polymethyl methacrylate for acoustic waves velocities**

*Author(s):* **Patrice Salzenstein**, FEMTO-ST (France), CNRS (France); **Thomas Y. Wu**, National Metrology Ctr. (Singapore)

12997-53 • 06:10 PM - 08:00 PM

**Differential confocal microscopy for stable scanning-microsphere assisted direct laser writing**

*Author(s):* **Johannes Belkner, Jaqueline Stauffenberg, Guido Straube, Ingo Ortlepp, Thomas Kissinger, Eberhard Manske**, Technische Univ. Ilmenau (Germany)

12997-54 • 06:10 PM - 08:00 PM

**A twin, double-sided heterodyne interferometer for studying subnanometer drift displacement in opto-mechanical devices.**

*Author(s):* **Walter Knulst**, VSL Dutch Metrology Institute (Netherlands)

12997-55 • 06:10 PM - 08:00 PM

**Technological challenges in the measurement of photonic products with white light interferometry**

*Author(s):* **Adriaan Zuiderweg, Israfil Ansari, Natã Franco Soares de Bem, Kalaiselvi Shenbaga Manogara Pandian**, Mitutoyo Research Ctr. Europe B.V. (Netherlands)

12997-56 • 06:10 PM - 08:00 PM

**OpenRRI – theory and application of open-source interferometry**

*Author(s):* **Guido Straube, Alexander Barth, Christoph Hemeling, Folker Schwesinger, Vitalii Shmagun, Juan Sebastian Fischer Calderón, Thomas Kissinger**, Technische Univ. Ilmenau (Germany)

12997-57 • 06:10 PM - 08:00 PM

**A comparison of inspections using an on-machine tactile probe and in-situ laser tracker in shop floor conditions**

*Author(s):* **Feng Li, Joseph Hileya, Simon Cavill, David Stoddarta**, The Univ. of Sheffield (United Kingdom)

12997-58 • 06:10 PM - 08:00 PM

**Towards online monitoring of water pollutants: an optofluidic chip for characterizing microplastics in water**

*Author(s):* **Mehrdad Lotfi Choobbari, Yousef Pourvais Bahramvandi**, Vrije Univ. Brussel (Belgium); **Leonardo Ciaccheri**, Istituto di Fisica Applicata "Nello Carrara" IFAC – CNR Via Madonna del Piano (Italy); **Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

12997-59 • 06:10 PM - 08:00 PM

**Freeform surface quality enhancement on single crystal germanium using a hybrid toolpath approach**

*Author(s): Kundan Kumar Prasad, Indian Institute of Technology Delhi (India)*

12997-60 • 06:10 PM - 08:00 PM

**Scatterometry of nano-particles on silicon wafer**

*Author(s): Lihong Liu, Yijie Ren, Huabin Yang, Boyuan Wang, Xingang Wang, Zhengtao Zhang, Institute of Automation (China)*

12997-63 • 06:10 PM - 08:00 PM

**Fourier-Bessel series expansion-based fringe pattern denoising and inpainting**

*Author(s): Rishikesh D. Kulkarni, Indian Institute of Technology Guwahati (India)*

## Wednesday 10 April 2024

### SESSION 2: INTERFEROMETRY AND HOLOGRAPHY

10 April 2024 • 08:30 AM - 10:20 AM | Rome/Salon 5, Niveau/Level 0

*Session Chair(s): Daewook Kim, Wyant College of Optical Sciences (United States)*

12997-8 • 08:30 AM - 09:00 AM

**Nanopositioning and nanomeasuring machines - in the footsteps of Albert Michelson and Ernst Abbe** *(Invited Paper)*

*Author(s): Eberhard Manske, Technische Univ. Ilmenau (Germany)*

12997-9 • 09:00 AM - 09:20 AM

**Zoom system for coherent imaging with no moving lens groups**

*Author(s): Nate S. Austin, Zygo Corporation (United States); Bruce Truax, Diffraction Limited Design, LLC (United States)*

12997-10 • 09:20 AM - 09:40 AM

**In vivo investigation of anuran sound localization with achiral digital Fresnel holography**

*Author(s): Rémi Kieber, Stéphane Letourneur, Le Mans Univ. (France); Morgane Sowinski, Muséum national d'Histoire naturelle (France); Nicolas Joly, Le Mans Univ. (France); Fabienne Aujard, Muséum national d'Histoire naturelle (France); Emmanuel Brun, Univ. Grenoble Alpes (France); Renaud Boistel, Muséum national d'Histoire naturelle (France); Pascal Picart, Le Mans Univ. (France)*

12997-11 • 09:40 AM - 10:00 AM

**Adapting multi-lateral shearing interferometry to new measurement needs: metasurfaces and segmented surfaces**

*Author(s): Jérôme Primot, Cécile Le Gall, Bastien Rouzé, Julien Jaeck, Cindy Bellanger, ONERA (France)*

12997-12 • 10:00 AM - 10:20 AM

**Light Source based on Adiabatic Frequency Conversion in Whispering Gallery Resonators tailored for holographic metrology**

*Author(s): Peter Holl, Michael Basler, Fraunhofer-Institut für Angewandte Festkörperphysik IAF (Germany); Alexander Mrokon, Yannick Minet, Univ. of Freiburg (Germany); Ingo Breunig, Univ. of Freiburg (Germany), Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); Tobias Seyler, Alexander Bertz, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); Marcel Rattunde, Fraunhofer-Institut für Angewandte Festkörperphysik IAF (Germany)*

### Coffee Break 10:20 AM - 10:50 AM

### SESSION 3: INTERFEROMETRY FOR TOPOGRAPHY AND SHAPE

10 April 2024 • 10:50 AM - 12:20 PM | Rome/Salon 5, Niveau/Level 0

*Session Chair(s): Eberhard Manske, Technische Univ. Ilmenau (Germany)*

12997-13 • 10:50 AM - 11:20 AM

**Analysis and improvement of the lateral resolution of CSI instruments based on the universal Fourier optics (UFO) model** *(Invited Paper)*

*Author(s): Peter Lehmann, André Stelter, Marco Künne, Tobias Pahl, Felix Rosenthal, Univ. Kassel (Germany)*

12997-14 • 11:20 AM - 11:40 AM

**Multispectral interferometry for characterizing nano-objects**

*Author(s): Dariusz Litwin, Kamil Radziak, Adam Czyzewski, Jacek Galas, Tadeusz Kryszczynski, Tele and Radio Research Institute (Poland); Robert Szumski, Justyna Niedziela, Central Office of Measures (Poland)*

12997-15 • 11:40 AM - 12:00 PM

**Refocus criterion in dual-wavelength digital holographic interferometry for accurate shape measurement**

*Author(s): Mikael Sjö Dahl, Lulea Univ. of Technology (Sweden); Pascal Picart, Lab. d'Acoustique de l'Univ. du Mans (France)*

12997-16 • 12:00 PM - 12:20 PM

**Suppression of scanning nonlinearities through computational self-correction in optical profilometry**

Author(s): **Lena Zhukova, Roger Artigas, Guillem Carles**, Sensofar-Tech, S.L. (Spain)

**Lunch/Exhibition Break 12:20 PM - 01:30 PM**

#### SESSION 4: INTERFEROMETRY FOR DISTANCES, WAVEFRONTS, AND FORM

10 April 2024 • 01:30 PM - 03:10 PM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **Mikael Sjö Dahl**, Lulea Univ. of Technology (Sweden)

12997-17 • 01:30 PM - 01:50 PM

**James C. Wyant**

Author(s): **Daewook Kim**, Wyant College of Optical Sciences (United States)

12997-18 • 01:50 PM - 02:20 PM

**Multiplexing interferometers using range-resolved interferometry** (Invited Paper)

Author(s): **Thomas Kissinger**, Technische Univ. Ilmenau (Germany)

12997-19 • 02:20 PM - 02:50 PM

**Synchrotron mirror inspection and fabrication using stitching interferometry and ion beam figuring at NSLS-II** (Invited Paper)

Author(s): **Lei Huang, Tianyi Wang, Corey Austin, Mourad Idir**, Brookhaven National Lab. (United States)

12997-20 • 02:50 PM - 03:10 PM

**Interferometer cosine error and uncertainty minimisation using an external cavity**

Author(s): **Douglas J. Little, Brady Shearan, John R. Fiander, Yabai He**, National Measurement Institute of Australia (Australia)

**Coffee Break 03:10 PM - 03:40 PM**

#### SESSION 5: CONFOCAL, SPECKLE, AND SPECTRAL METROLOGY

10 April 2024 • 03:40 PM - 05:40 PM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **Roger Artigas Pursals**, Sensofar-Tech, S.L. (Spain)

12997-21 • 03:40 PM - 04:00 PM

**Digital Twins for 3D Confocal Microscopy**

Author(s): **Poul Erik Hansen**, DFM A/S (Denmark); **Tobias Pahl**, Measurement Technology Group, University of Kassel (Germany); **Liwei Fu**, Institute of Applied Optics, University of Stuttgart (Germany); **Astrid T. Rømer**, DFM A/S (Denmark); **Felix Rosenthal**, Measurement Technology Group, University of Kassel (Germany); **Laurya Siaudinyte**, VSL Dutch Metrology Institute (Netherlands); **Stephan Reichelt**, Institute of Applied Optics (Germany); **Peter Lehmann**, Measurement Technology Group, University of Kassel Group (Germany); **Mirza Karamehmedovic**, Technical Univ. of Denmark (Denmark)

12997-22 • 04:00 PM - 04:20 PM

**Universal Fourier optics model for virtual confocal microscopes**

Author(s): **Felix Rosenthal, Tobias Pahl, Tim Eckhardt, Sebastian Hagemeyer, Jonas Compagnone, Tim Czasch, Peter Lehmann**, Univ. Kassel (Germany)

12997-23 • 04:20 PM - 04:40 PM

**Implementations of ESFS for fast topographic acquisition**

Author(s): **Narcís Vilar Sole, Roger Artigas**, Sensofar-Tech, S.L. (Spain); **Martí Duocastella**, Univ. de Barcelona (Spain); **Guillem Carles**, Sensofar-Tech, S.L. (Spain)

12997-24 • 04:40 PM - 05:00 PM

**Speckle pattern optimization in laser speckle photometry for non-destructive testing**

Author(s): **Elena Stoykova**, Institute of Optical Materials and Technologies (Bulgaria); **Violeta Dimitrova Madjarova**, Bulgarian Academy of Sciences - Institute of Optical Materials and Technologies (Bulgaria); **Branimir Ivanov**, Institute of Optical Materials and Technologies (Bulgaria); **Maryam Viqar**, Bulgarian Academy of Sciences - Institute of Optical Materials and Technologies (Bulgaria)

12997-25 • 05:00 PM - 05:20 PM

**Inline inspection of coating thickness on polymers using infrared reflection-absorption spectroscopy**

Author(s): **Friederike Münch, Lars Eschbach**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); **Ingo Breunig**, Univ. of Freiburg (Germany), Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); **Jürgen Geng**, Plasma Electronic GmbH (Germany); **Daniel Carl, Benedikt Hauer**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany)

12997-26 • 05:20 PM - 05:40 PM

**Advancements in metrology for advanced semiconductor packaging**

Author(s): **Wei-Hsin Chein, Gaurav Pandey, Surajit Das, Liang-Chia Chen**, National Taiwan Univ. (Taiwan)

**Thursday 11 April 2024**

**HOT TOPICS III**

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

**Coffee Break 10:35 AM - 11:00 AM**

**SESSION 6: BIG SCIENCE: GRAVITY WAVES, TELESCOPES, UV OPTICS**

11 April 2024 • 11:00 AM - 12:30 PM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **Felipe Guzman**, Wyant College of Optical Sciences (United States)

12997-27 • 11:00 AM - 11:30 AM

**The laser interferometer space antenna (LISA)** (Invited Paper)

Author(s): **Guido Mueller**, Max-Planck-Institut für Gravitationsphysik (Germany), Univ. of Florida (United States), Leibniz Univ. Hannover (Germany)

12997-28 • 11:30 AM - 12:00 PM

**Achieving a cosmological reach: from advanced LIGO to the next generation of ground-based gravitational wave detectors** (Invited Paper)

Author(s): **Paul Fulda**, Univ. of Florida (United States)

12997-29 • 12:00 PM - 12:30 PM

**Rigid body motion tracking in lateral shifting interferometry for measuring astronomical X-ray mirror figure** (Invited Paper)

Author(s): **Brandon D. Chalifoux**, The Univ. of Arizona (United States); **Hayden J. Wisniewski**, ASML (United States); **Mark L. Schattenburg**, **Ralf K. Heilmann**, Massachusetts Institute of Technology (United States); **Ian J. Arnold**, The Univ. of Arizona (United States); **Mallory M. Whalen**, Massachusetts Institute of Technology (United States)

**Lunch Break 12:30 PM - 01:40 PM**

**SESSION 7: AI, MACHINE LEARNING, AND COMPUTATIONAL IMAGING**

11 April 2024 • 01:40 PM - 03:30 PM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **Katharina Schmidt**, TU Dresden (Germany)

12997-30 • 01:40 PM - 02:10 PM

**Machine Learning Algorithms for Alignment Verification of the Roman Space Telescope** (Invited Paper)

Author(s): **Joseph M. Howard**, **Samuel Nissim**, **Robert Campion**, **Scott Rohrbach**, **Matt Bolcar**, **Alice Liu**, NASA Goddard Space Flight Ctr. (United States)

12997-31 • 02:10 PM - 02:30 PM

**Ensemble deep learning for fringe-pattern analysis**

Author(s): **Shijie Feng**, Nanjing Univ. of Science and Technology (China)

12997-32 • 02:30 PM - 02:50 PM

**Evaluating autofocus metrics in digital lensless holographic microscopy**

*Author(s):* **Maria Josef Lopera Acosta**, Vrije Univ. Brussel (Belgium), Univ. EAFIT (Colombia); **Jorge García-Sucerquia**, Univ. Nacional de Colombia Sede Medellín (Colombia); **Yunfeng Nie**, **Heidi Ottevaere**, Vrije Univ. Brussel (Belgium); **Carlos Trujillo**, Univ. EAFIT (Colombia)

12997-33 • 02:50 PM - 03:10 PM

**Correlating machine vision and learning with robot handling in increasing productivity of airbags manufacturing**

*Author(s):* **Bogdan Negrei**, Autoliv Inc. (Romania), Univ. Politehnica Timisoara (Romania); **Virgil-Florin Duma**, Univ. "Aurel Vlaicu" din Arad (Romania), Univ. Politehnica Timisoara (Romania)

12997-34 • 03:10 PM - 03:30 PM

**Dynamic mode decomposition-based algorithm for phase-shifting interferometry in the presence of miscalibration and vibration**

*Author(s):* **Rishikesh D. Kulkarni**, **Raghubandan Kalibhat**, Indian Institute of Technology Guwahati (India)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 8: DEFLECTOMETRY AND FRINGE PROJECTION**

11 April 2024 • 04:00 PM - 05:20 PM | Rome/Salon 5, Niveau/Level 0

*Session Chair(s):* **Carlos A. Trujillo**, Univ. EAFIT (Colombia)

12997-35 • 04:00 PM - 04:20 PM

**High-speed 3D imaging and metrology: from classical fringe projection to deep learning approaches**

*Author(s):* **Chao Zuo**, Nanjing Univ. of Science and Technology (China)

12997-36 • 04:20 PM - 04:40 PM

**Gamma correction in simultaneously dual fringe projection moiré profilometry**

*Author(s):* **Sotero Ordoñez Nogales**, **Rong Su**, Shanghai Institute of Optics and Fine Mechanics (China)

12997-37 • 04:40 PM - 05:00 PM

**Snapshot 3D profilometry by a RGB Stokes imager**

*Author(s):* **Yukitoshi Otani**, **Yuuki Maeda**, **Nathan Hagen**, Utsunomiya Univ. (Japan)

12997-38 • 05:00 PM - 05:20 PM

**Phase measuring deflectometry with monoscopic active display registration**

*Author(s):* **Yann Sperling**, BIAS - Bremer Institut für angewandte Strahltechnik GmbH (Germany); **Ralf B. Bergmann**, BIAS - Bremer Institut für angewandte Strahltechnik GmbH (Germany), Univ. Bremen (Germany)

**CLOSING REMARKS**

11 April 2024 • 05:20 PM - 05:30 PM | Rome/Salon 5, Niveau/Level 0

**Pascal Picart**, LAUM CNRS, Le Mans Univ. (France)

*Conference Chair*

# CONFERENCE 12998

## Optics, Photonics and Digital Technologies for Imaging Applications VIII

09 - 11 April 2024 | Londres 2/Salon 7, Niveau/Level 0

**Conference Chair(s):** Peter Schelkens, Vrije Univ. Brussel (Belgium); Tomasz Kozacki, Warsaw Univ. of Technology (Poland)

**Program Committee:** Pierre-Alexandre J. Blanche, Wyant College of Optical Sciences (United States); David Blinder, Vrije Univ. Brussel (Belgium); Adrian Bradu, Univ. of Kent (United Kingdom); Liangcai Cao, Tsinghua Univ. (China); Praneeth K. Chakravarthula, Princeton Univ. (United States); Daping Chu, Univ. of Cambridge (United Kingdom); Gabriel Cristóbal, Consejo Superior de Investigaciones Científicas (Spain); Touradj Ebrahimi, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Boris Escalante-Ramírez, Univ. Nacional Autónoma de México (Mexico); John J. Healy, Univ. College Dublin (Ireland); Thomas J. Naughton, National Univ. of Ireland, Maynooth (Ireland); Yunfeng Nie, Vrije Univ. Brussel (Belgium); Takashi Nishitsuji, Toho Univ. (Japan); Jae-Hyeung Park, Inha Univ. (Korea, Republic of); Stuart W. Perry, Canon Information Systems Research (Australia); Tomoyoshi Shimobaba, Chiba Univ. (Japan); Athanassios N. Skodras, Univ. of Patras (Greece)

### Tuesday 9 April 2024

#### SESSION 1: BIOMEDICAL IMAGE PROCESSING

09 April 2024 • 01:30 PM - 02:30 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* Adrian Bradu, Univ. of Kent (United Kingdom)

12998-1 • 01:30 PM - 01:50 PM

**Synthetic vs real: Exploring the impact of synthetic data on medical image classification**

*Author(s):* José Carlos Moreno Tagle, Jimena Olveres, Boris Escalante Ramírez, Univ. Nacional Autónoma de México (Mexico)

12998-2 • 01:50 PM - 02:10 PM

**Advancing Cellular Analyses through a Fully Automated Imaging-Based Liquid Handling Platform**

*Author(s):* Meryem B. Avci, Sevim D. Yasar, Arif E. Cetin, Izmir Biomedicine and Genome Ctr. (Turkey)

12998-3 • 02:10 PM - 02:30 PM

**Visible and Near Infrared LCTF-based Hyperspectral Dermoscope targeting Early Detection of Skin Cancer**

*Author(s):* Maria Castro-Fernandez, Guillermo V. Socorro-Marrero, Carlos Vega, Nerea Márquez-Suárez, Cristina Marcello, Raquel León, Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain); Himar Fabelo, Fundación Canaria Instituto de Investigación Sanitaria de Canarias (Spain), Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain); Gustavo M. Callicó, Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain)

#### SESSION 2: MACHINE LEARNING AND IMAGE PROCESSING

09 April 2024 • 02:30 PM - 03:50 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* Gabriel Cristóbal Perez, Instituto de Óptica "Daza de Valdés" (Spain)

12998-5 • 02:30 PM - 02:50 PM

**Neural style transfer in tiny sets of ultrasound images for data augmentation.**

*Author(s):* Alan Mauricio Camargo, Jimena Olveres, Boris Escalante-Ramírez, Univ. Nacional Autónoma de México (Mexico)

12998-6 • 02:50 PM - 03:10 PM

**Enhancing interpretability and bias control in deep learning models for medical image analysis using generative AI**

*Author(s):* Carlos Minutti-Martinez, Boris Escalante-Ramirez, Jimena Olveres, Univ. Nacional Autónoma de México (Mexico)

12998-7 • 03:10 PM - 03:30 PM

**Microscopic Image Quality in Few-Shot GAN-Generated Cyanobacteria Images and Its Impact on Classification Networks**

*Author(s):* Gloria Bueno, Lucia Sanchez, Univ. de Castilla-La Mancha (Spain); Elvira Perona, Alejandro Hiruelas, M. Angeles Munnoz, Univ. Autónoma de Madrid (Spain); Gabriel Cristobal, Instituto de Óptica "Daza de Valdés", Consejo Superior de Investigaciones Científicas (Spain)

12998-8 • 03:30 PM - 03:50 PM

**Minimal FCN for image segmentation**

*Author(s):* **Rodrigo Ramos**, Univ. Nacional Autónoma de México (Mexico); **Jimena Olveres**, **Boris Escalante-Ramírez**, Univ. Nacional Autónoma de México (Mexico), Ctr. de Estudios en Computación Avanzada, Univ. Nacional Autónoma de México (Mexico)

**Coffee Break 03:50 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

**Wednesday 10 April 2024**

**SESSION 3: CAMERA OPTICS**

10 April 2024 • 08:40 AM - 10:20 AM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Tomasz Kozacki**, Warsaw Univ. of Technology (Poland)

12998-9 • 08:40 AM - 09:00 AM

**Black box evolutionary optimization design of complex optical systems**

*Author(s):* **Sébastien Héron**, **Laure Lee**, **Yann Semet**, **Rémi Barrère**, Thales Research & Technology (France)

12998-10 • 09:00 AM - 09:20 AM

**Multi-focus camera optics with 5x extending the depth of field**

*Author(s):* **Alexander V. Laskin**, **Vadim Laskin**, AdlOptica Optical Systems GmbH (Germany); **Aleksei Ostrun**, ITMO Univ. (Russian Federation)

12998-11 • 09:20 AM - 09:40 AM

**Compact Multichannel Imaging System with Wide FOV and 4x Optical Magnification**

*Author(s):* **Christos Katopodis**, **Ioanna Zergioti**, National Technical Univ. of Athens (Greece); **Dimitrios Papazoglou**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece)

12998-12 • 09:40 AM - 10:00 AM

**Wide field of view compact lens with variable focus based on Alvarez lens**

*Author(s):* **Hugo Maurey**, ICube (France), Optiive SAS (France); **Patrice Twardowski**, ICube (France); **Robin Pierron**, Optiive SAS (France); **Philippe Gerard**, **Manuel Flury**, ICube (France)

12998-13 • 10:00 AM - 10:20 AM

**Active lens and mirror technology through tailored thermal expansion**

*Author(s):* **Silas O'Toole**, Univ. College Dublin (Ireland)

**Coffee Break 10:20 AM - 10:50 AM**

**SESSION 4: COMPUTER-GENERATED HOLOGRAPHY I**

10 April 2024 • 10:50 AM - 12:20 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Tomoyoshi Shimobaba**, Chiba Univ. (Japan)



12998-14 • 10:50 AM - 11:20 AM

**Asymmetric point-spread functions for slanted wavefront recording planes** (*Invited Paper*)

*Author(s):* **Fan Wang**, Chiba Univ. (Japan); **David Blinder**, Chiba Univ. (Japan), Vrije Univ. Brussel (Belgium); **Tomoyoshi Ito, Tomoyoshi Shimobaba**, Chiba Univ. (Japan)

12998-15 • 11:20 AM - 11:40 AM

**A comparative review of optical flow estimation methods for computer-generated holograms.**

*Author(s):* **Nabil Madali**, b<>com (France), Institut d'Electronique et de Télécommunications de Rennes (France); **Antonin Gilles**, b<>com (France); **Patrick Gioia**, b<>com (France), Orange SA (France); **Luce Morin**, b<>com (France), Institut d'Electronique et de Télécommunications de Rennes (France)

12998-16 • 11:40 AM - 12:00 PM

**Joint color optimization for computer-generated holography without color replicas**

*Author(s):* **David Blinder**, Vrije Univ. Brussel (Belgium), imec (Belgium), Chiba Univ. (Japan); **Fan Wang**, Chiba Univ. (Japan); **Colas Schretter**, Vrije Univ. Brussel (Belgium), imec (Belgium); **Kakue Takashi, Tomoyoshi Shimobaba**, Chiba Univ. (Japan); **Peter Schelkens**, Vrije Univ. Brussel (Belgium), imec (Belgium)

12998-17 • 12:00 PM - 12:20 PM

**Fast and flexible GPU implementation of the view-dependent error diffusion algorithm**

*Author(s):* **Antoine Lagrange**, b<>com (France), IMT Atlantique Bretagne-Pays de la Loire (France); **Antonin Gilles**, b<>com (France); **Kevin Heggarty, Bruno Fracasso**, IMT Atlantique Bretagne-Pays de la Loire (France)

**Lunch/Exhibition Break 12:20 PM - 01:50 PM**

## SESSION 5: COMPUTER-GENERATED HOLOGRAPHY II

10 April 2024 • 01:50 PM - 02:50 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **David Blinder**, Vrije Univ. Brussel (Belgium)

12998-18 • 01:50 PM - 02:10 PM

**Linear Canonical Transformations in Phase Space: the Gabor Frames Approach**

*Author(s):* **Patrick Gioia**, Orange SA (France), b<>com (France); **Antonin Gilles, Antoine Lagrange, Anas El Rhammad**, b<>com (France); **San Vu-Ngoc**, Univ. de Rennes 1 (France)

12998-19 • 02:10 PM - 02:30 PM

**Information capacity of phase-only computer-generated holograms for holographic displays**

*Author(s):* **Jinze Sha, Andrew Kadis, Benjamin Wetherfield, Roubing Meng, Zhongling Huang, Dilawer Singh, Antoni Wojcik, Timothy D. Wilkinson**, Univ. of Cambridge (United Kingdom)

12998-21 • 02:30 PM - 02:50 PM

**Lossy compression of digital holograms using gabor frames**

*Author(s):* **Anas El Rhammad, Antonin Gilles**, b<>com (France); **Patrick Gioia**, Orange SA (France)

**Coffee Break 02:50 PM - 03:30 PM**

## SESSION 6: COMPUTATIONAL MICROSCOPY

10 April 2024 • 03:30 PM - 05:30 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Yunfeng Nie**, Vrije Univ. Brussel (Belgium)

12998-22 • 03:30 PM - 03:50 PM

**Estimating the Point-Spread-Function using 1  $\mu\text{m}$  diameter microspheres for image restoration in biomedical multiphoton microscopy**

*Author(s):* **Ségolène Martin**, Ctr. de Vision Numérique, CentraleSupélec, Univ. Paris-Saclay, Institut National de Recherche en Informatique et en Automatique (France); **Julien Ajdenbaum, Emilie Chouzenoux**, Ctr. de Vision Numérique (France); **Laetitia Magnol**, EpiMaCT, INSERM, INRAE (France), Univ. de Limoges (France); **Véronique Blanquet**, INSERM (France), Univ. de Limoges (France); **Jean-Christophe Pesquet**, Ctr. de Vision Numérique (France); **Claire Lefort**, XLIM (France)

12998-23 • 03:50 PM - 04:10 PM

**Contrast improvement through deep Learning by utilizing a dataset obtained from a line-scanning confocal microscope.**

*Author(s):* **Amir Mohammad Ketabchi**, Koç Univ. (Turkey); **Berna Morova**, Istanbul Technical Univ. (Turkey); **Nima Bavili, Alper Kiraz, Koç** Univ. (Turkey)

12998-24 • 04:10 PM - 04:30 PM

**Evaluating Simulation Approaches for Digital Lensless Holographic Microscopy**

*Author(s):* **Maria Josef Lopera Acosta**, Vrije Univ. Brussel (Belgium), Univ. EAFIT (Colombia); **Jorge García-Sucerquia**, Univ. Nacional de Colombia Sede Medellín (Colombia); **Yunfeng Nie**, **Heidi Ottevaere**, Vrije Univ. Brussel (Belgium); **Carlos Trujillo**, Univ. EAFIT (Colombia)

12998-25 • 04:30 PM - 04:50 PM

**Super-sensitive multipass phase imaging**

*Author(s):* **Álvaro Cuevas**, **Daniel Tiemann**, **Robin Camphausen**, ICFO - Institut de Ciències Fotòniques (Spain); **Iris Cusini**, ICFO - Institut de Ciències Fotòniques (Spain), Politecnico di Milano (Italy); **Antonio Panzani**, **Federica Villa**, Politecnico di Milano (Italy); **Valerio Pruneri**, ICFO - Institut de Ciències Fotòniques (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain)

12998-26 • 04:50 PM - 05:10 PM

**Self-reference transmission matrix measurements of a multimode fiber**

*Author(s):* **Aleksandra Ivanina**, Advanced Research Ctr. for Nanolithography (Netherlands), Vrije Univ. Amsterdam (Netherlands); **Benjamin Lochocki**, Advanced Research Ctr. for Nanolithography (Netherlands); **Lyubov V. Amitonova**, Vrije Univ. Amsterdam (Netherlands), Advanced Research Ctr. for Nanolithography (Netherlands)

12998-27 • 05:10 PM - 05:30 PM

**An ImageJ plugin for image fusion based on edge preserving filtering**

*Author(s):* **Harbinder Singh**, Univ. de Castilla-La Mancha (Spain); **Manuel Forero**, **Nuray Agaoglu**, Univ. de Ibagué (Colombia); **Gloria Bueno**, **Oscar Déniz**, Univ. de Castilla-La Mancha (Spain); **Gabriel Cristóbal**, Instituto de Óptica "Daza de Valdés" (Spain)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12998-32 • 05:45 PM - 07:45 PM

**Directional display for AR applications based on holography and photonic integrated circuits**

*Author(s):* **Salaheddine Toubi**, CEA-LETI (France); **Elise Ghibaud**, IMEP-LAHC (France); **Christophe Martinez**, CEA-LETI (France)

12998-44 • 05:45 PM - 07:45 PM

**How to copy a human viscus**

*Author(s):* **Zishen Yang**, **Tao Yang**, Texas Instruments Inc. (China)

12998-45 • 05:45 PM - 07:45 PM

**How to measure a subpixel displacement**

*Author(s):* **María-Baralida Tomás**, **Belen Ferrer**, **David Mas**, Univ. de Alicante (Spain)

12998-47 • 05:45 PM - 07:45 PM

**Calibration of a photographic slider for subpixel tracking tests on heavy objects**

*Author(s):* **Belen Ferrer**, **María-Baralida Tomás**, **David Mas**, Univ. de Alicante (Spain)

12998-48 • 05:45 PM - 07:45 PM

**Thermic distortions in target tracking with subpixel accuracy**

*Author(s):* **David Mas**, **María-Baralida Tomás**, **Belen Ferrer**, Univ. de Alicante (Spain)

12998-49 • 05:45 PM - 07:45 PM

**Learning-based metasurface optics: addressing chromatic aberration and depth in fluorescence microscopy**

*Author(s):* **Ipek Anil Atalay Ipek**, **Erdem Sahin**, Tampere Univ. (Finland); **Christine Guillemot**, Institut National de Recherche en Informatique et en Automatique (France); **Humeyra Caglayan**, Tampere Univ. (Finland)

12998-50 • 05:45 PM - 07:45 PM

**Deep-learning-based semantic segmentation of mussel beds in the Wadden Sea of the North Sea**

*Author(s):* **Felix Zilske**, **Leif O. Harders**, Fachhochschule Westküste (Germany); **Anna Kersten**, **Marc Schnurawa**, BioConsult SH GmbH & Co. KG (Germany); **Stephan Hußmann**, Fachhochschule Westküste (Germany)

12998-51 • 05:45 PM - 07:45 PM

**A weed control approach in Christmas tree production based on tree crown detection using remote sensing and deep learning**

*Author(s):* **Leif Ole Harders**, Fachhochschule Westküste (Germany); **Thorsten Ufer, Andreas Wrede**, Landwirtschafts-kammer Schleswig-Holstein (Germany); **Stephan Hußmann**, Fachhochschule Westküste (Germany); **Eberhard Hartung**, Christian-Albrechts-Univ. zu Kiel (Germany)

12998-52 • 05:45 PM - 07:45 PM

**Hyperboloidal reflection for full-parallax multi-view 3D display observable from all directions**

*Author(s):* **Yusuke Sando, Yutaro Goto, Makoto Kawamura**, Osaka Research Institute of Industrial Science and Technology (Japan)

12998-53 • 05:45 PM - 07:45 PM

**The novel care-cure pressure ulcer mobile sensor and algorithm for super aging people**

*Author(s):* **Taemi Jung, Jong-Ha Lee**, Keimyung Univ. (Korea, Republic of)

12998-54 • 05:45 PM - 07:45 PM

**Application of computational imaging for food monitoring**

*Author(s):* **Piotr Garbat**, Warsaw Univ. of Technology (Poland)

12998-55 • 05:45 PM - 07:45 PM

**3D medical image analysis with autoencoder-based feature extraction and shallow models**

*Author(s):* **Jesús García-Ramírez**, Univ. Nacional Autónoma de México (Mexico); **Hugo Didier Longines Tapía**, Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas (Mexico); **Boris Escalante-Ramírez, Jimena Olveres**, Univ. Nacional Autónoma de México (Mexico), Ctr. de Estudios en Computación Avanzada (Mexico)

12998-56 • 05:45 PM - 07:45 PM

**Algorithm evaluation for parallel detection and tracking of UAVs**

*Author(s):* **Denis Ojdanic**, Technische Univ. Wien (Austria); **Christopher Naverschnigg**, Technischen Univ. Wien (Austria); **Andreas Sinn, Georg Schitter**, Technische Univ. Wien (Austria)

12998-57 • 05:45 PM - 07:45 PM

**A deep (learning) dive into bacterial classification**

*Author(s):* **Alberto Daniel Fuentes-Villegas, Haydee O. Hernández, Boris Escalante-Ramírez, Jimena Olveres**, Univ. Nacional Autónoma de México (Mexico)

12998-58 • 05:45 PM - 07:45 PM

**Data augmentation via video frame interpolation: an application to cardiac ultrasound videos**

*Author(s):* **Lucas Cervantes, Boris Escalante-Ramírez, Jimena Olveres**, Univ. Nacional Autónoma de México (Mexico)

12998-61 • 05:45 PM - 07:45 PM

**Numerical approximation of the Bai distribution function**

*Author(s):* **Yushi Zheng**, Univ. College Dublin (Ireland); **Min Wan**, TU Eindhoven (Netherlands); **John J. Healy**, Univ. College Dublin (Ireland)

12998-62 • 05:45 PM - 07:45 PM

**Extending FOV of holographic display with alternating lasers**

*Author(s):* **Roubing Meng, Jinze Sha, Zhongling Huang, Timothy D. Wilkinson**, Univ. of Cambridge (United Kingdom)

12998-63 • 05:45 PM - 07:45 PM

**Digital holographic profilometry with volumetric aberration compensation**

*Author(s):* **Moncy Sajeev Idicula**, Warsaw Univ. of Technology (Poland); **Kai Wen**, Warsaw Univ. of Technology (Poland), Xidian Univ. (China); **Tomasz Kozacki, Michal Józwik**, Warsaw Univ. of Technology (Poland); **Hyon-Gon Choo**, Electronics and Telecommunications Research Institute (Korea, Republic of); **Peng Gao**, Xidian Univ. (China)

12998-64 • 05:45 PM - 07:45 PM

**Impact of eye tracker sampling rate on fixation stability measurement**

*Author(s):* **Evita Serpa, Gunta Krumina, Ilze Ceple, Evita Kassaliete**, Univ. of Latvia (Latvia)

12998-65 • 05:45 PM - 07:45 PM

**Multicore fibres for spatial offset optical coherence tomography**

*Author(s):* **Stefan Mark Jensen, Gavrielle R. Untracht, Madhu Veetikazhy**, Technical Univ. of Denmark (Denmark); **Esbén Ravn Andresen**, Univ. de Lille (France); **Peter Eskil Andersen**, Technical Univ. of Denmark (Denmark)

12998-67 • 05:45 PM - 07:45 PM

**Systematic design of a wide-angle eyepiece as study case, finding new local minima by constructing saddle points, comparison with optimizers**

*Author(s):* **Aurelien Argy, Florin Baumann, Jelil Belheine, Pierre Bibal-Sobeaux, Benoit Brouillet, Hugo Maurey, Patrice Twardowski**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France)

12998-68 • 05:45 PM - 07:45 PM

**Sampling error analysis of FTIR and design of low noise sampling system**

*Author(s):* **Xiangning Lu, Min Huang, Wei Han, Lulu Qian, Zhanchao Wang**, Aerospace Information Research Institute (China)

12998-69 • 05:45 PM - 07:45 PM

**Design of image interface conversion system for embedded processor based on FPGA**

*Author(s):* **Wenhao Zhao, Zhanchao Wang, Zixuan Zhang, Yan Sun**, Aerospace Information Research Institute (China); **Min Huang**, Aerospace Information Research Institute (China), Univ. of Chinese Academy of Sciences (China); **Lulu Qian**, Aerospace Information Research Institute (China)

12998-70 • 05:45 PM - 07:45 PM

**A new algorithm for recreating the technological process of high-speed multi-coordinate processing based on improving key indicators of image recognition**

*Author(s):* **Petr M. Pivkin, Artem A. Ershov**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12998-71 • 05:45 PM - 07:45 PM

**A New Method and Practical Recommendations for Measuring Geometric accuracy, Linear and Angular Measurements of Helical Surfaces of End Mill for HSM**

*Author(s):* **Petr M. Pivkin**, Moscow State Univ. of Technology "STANKIN" (Russian Federation); **Anton M. Yazev**, Moscow State Univ. of Technology (Russian Federation); **Alexey B. Nadykto**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12998-77 • 05:45 PM - 07:45 PM

**Real-time caterpillar detection and tracking in Jujube orchard with YOLO NAS and SORT**

*Author(s):* **Sumesh Nair, Guo-Fong Hong, Chai-Wei Hsu, Yvonne Yuling Hu, Shean-Jen Chen**, National Yang Ming Chiao Tung Univ. (Taiwan)

12998-78 • 05:45 PM - 07:45 PM

**Suppression of ringing artifacts in diffraction calculations**

*Author(s):* **Tomoyoshi Shimobaba, Fan Wang**, Chiba Univ. (Japan); **Yogi Udjaja**, Chiba Univ. (Japan), Bina Nusantara University (Indonesia); **Takashi Nishitsuji**, Toho University (Japan); **Atsushi Shiraki, Tomoyoshi Ito**, Chiba Univ. (Japan)

12998-79 • 05:45 PM - 07:45 PM

**A comparative study of Lorenz- and single-switch chaotic oscillator algorithms for image encryption**

*Author(s):* **Alya Al Abdouli**, Univ. of Sharjah (United Arab Emirates); **Aisha Al Ali**, University of sharjah (United Arab Emirates); **Talal Bonny, Alya Al Abdouli**, Univ. of Sharjah (United Arab Emirates)

12998-4 • 05:45 PM - 07:45 PM

**Malaria detection using machine learning**

*Author(s):* **Talal Bonny, Asma Almakhzoumi, Mohammad Al-Shabi, Alya Al Abdouli**, Univ. of Sharjah (United Arab Emirates)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

*2024 Symposium Chair*

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

*Author(s):* **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

*Author(s):* **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

**SESSION 7: AUGMENTED REALITY AND HOLOGRAPHIC DISPLAY SYSTEMS**

11 April 2024 • 11:00 AM - 12:00 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Tomasz Kozacki**, Warsaw Univ. of Technology (Poland)

12998-29 • 11:00 AM - 11:20 AM

**AR Image Enhancement with Holography-based Diffractive Element***Author(s):* **Leehwan Hwang, Seunghyun Lee**, Kwangwoon Univ. (Korea, Republic of)

12998-30 • 11:20 AM - 11:40 AM

**Large field of view full color near-eye holographic display***Author(s):* **Tomasz Kozacki, Maksymilian Chlipala**, Warsaw Univ. of Technology (Poland); **Maria L. Cruz**, Univ. Panamericana (Mexico);**Moncy Sajeev Idicula, Rafal Kukolowicz**,

12998-31 • 11:40 AM - 12:00 PM

**Simple optical structure for EDOF AR system***Author(s):* **Sung Kyu Kim, Ki Hyuk Yoon, Jinho Yoon**, Korea Institute of Science and Technology (Korea, Republic of)**Lunch Break 12:00 PM - 01:30 PM****SESSION 8: COMPUTATIONAL IMAGING**

11 April 2024 • 01:30 PM - 03:10 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **John J. Healy**, Univ. College Dublin (Ireland)

12998-33 • 01:30 PM - 01:50 PM

**Toward a Femtosecond Laser Written 3D Photonic Integrated Circuit for Hyperspectral Imaging***Author(s):* **Sébastien Bourdel, Olivier Gazzano**, ONERA (France); **Maxime Cavillon**, Institut de Chimie Moléculaire et des Matériaux d'Orsay (France); **Guillaume Druart**, ONERA (France); **Matthieu Lancry**, Institut de Chimie Moléculaire et des Matériaux d'Orsay (France)

12998-34 • 01:50 PM - 02:10 PM

**Digital aberration correction to enhance the spectral resolution of miniaturized optical spectrometers***Author(s):* **Jinyan Liu, Colas Schretter, Artem Shcheglov, Heidi Ottevaere, Yunfeng Nie**, Vrije Univ. Brussel (Belgium)

12998-35 • 02:10 PM - 02:30 PM

**Orthogonal matching pursuit vs. iterative hard thresholding: addressing phase discontinuities in digital holography***Author(s):* **Yue Wang, John Healy**, Univ. College Dublin (Ireland)

12998-36 • 02:30 PM - 02:50 PM

**A histogram compensation process for SPAD-based d-ToF LiDAR systems for high photon flux measurements***Author(s):* **Alessandro Tontini**, Fondazione Bruno Kessler (Italy); **Sonia Mazzucchi, Roberto Passerone, Nicolò Broseghini**, Univ. degli Studi di Trento (Italy); **Leonardo Gasparini**, Fondazione Bruno Kessler (Italy)

12998-38 • 02:50 PM - 03:10 PM

**Improved quantitative phase imaging via an optimization based transport of intensity equation***Author(s):* **Shubham Tiwari**, Indian Institute of Technology Delhi (India)**Coffee Break 03:10 PM - 03:30 PM****SESSION 9: COMPUTER VISION APPLICATIONS**

11 April 2024 • 03:30 PM - 04:50 PM | Londres 2/Salon 7, Niveau/Level 0

*Session Chair(s):* **Peter Schelkens**, Vrije Univ. Brussel (Belgium)

12998-39 • 03:30 PM - 03:50 PM

**Combined structural and functional 3D structure from motion plant imaging for the studying plant-pathogen interaction***Author(s):* **Alim Yolalmaz, Jeroen Kalkman**, Technische Univ. Delft (Netherlands)

12998-40 • 03:50 PM - 04:10 PM

**Automated classification of olive fruit for enhanced olive oil production using computer vision***Author(s):* **Dimitrios Kosmopoulos, Konstantinos Blekos**, Univ. of Patras (Greece)

12998-42 • 04:10 PM - 04:30 PM

**An Iteration Algorithm of Aerosol Retrieval from Dual-Wavelength Mie Lidar Observations***Author(s):* **Rongrong Qin, Weiyuan Yao, Ning Wang**, Aerospace Information Research Institute (China)

12998-43 • 04:30 PM - 04:50 PM

**A Study on the Forward Vehicle Detection Method Based on the Vehicle Width Matching and Improved AdaBoost Algorithm**

*Author(s):* **Lei Liu, Xin Tan**, Nanjing Univ. of Science and Technology (China)

**DIGITAL POSTERS**

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

12998-46

**Brain tumor detection using machine learning**

*Author(s):* **Talal Bonny, Maryam Al Jaziri, Mohammad Al-Shabi**, Univ. of Sharjah (United Arab Emirates)

12998-59

**Improving blood cancer diagnosis through morphological insights using quantitative phase imaging**

*Author(s):* **Ramna Khalid, Isma Javed**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy), Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Masoomed Dashtdar**, Department of Physics, Shahid Beheshti University (Iran, Islamic Republic of); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan); **Muhammad Zubair**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

12998-60

**Broadband light structuring through all-dielectric metasurfaces for imaging applications**

*Author(s):* **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# CONFERENCE 12999

## Optical Sensing and Detection VIII

07 - 11 April 2024 | Schuman, Niveau/Level 1

**Conference Chair(s):** Francis Berghmans, Vrije Univ. Brussel (Belgium); Ioanna Zergioti, National Technical Univ. of Athens (Greece)

**Program Committee:** Francesco Chiavaioli, Istituto di Fisica Applicata "Nello Carrara" (Italy); Roger M. Groves, Technische Univ. Delft (Netherlands); Jane Hodgkinson, Cranfield Univ. (United Kingdom); Jiri Homola, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Maria Konstantaki, Foundation for Research and Technology-Hellas (Greece); Anna G. Mignani, Istituto di Fisica Applicata Nello Carrara (Italy); Sinead O'Keefe, Univ. of Limerick (Ireland); Kate Sugden, Aston Univ. (United Kingdom); Alessandro Tredicucci, NEST (Italy); Wacław Urbanczyk, Wrocław Univ. of Technology (Poland); Jan Van Roosbroeck, FBGS International NV (Belgium); Libo Yuan, Harbin Engineering Univ. (China)

### Sunday 7 April 2024

#### SESSION 1: OPTICAL FIBER-BASED SENSORS I

07 April 2024 • 02:00 PM - 03:20 PM | Schuman, Niveau/Level 1

Session Chair(s): Ioanna Zergioti, National Technical Univ. of Athens (Greece)

12999-1 • 02:00 PM - 02:20 PM

**Measurements of the chromatic refractive index signature of wine models using a fibre long period gratings.**

Author(s): Thomas Allsop, Aston Institute of Photonic Technologies, Aston Univ. (United Kingdom); Andreas Ioannou, Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus); Ranjeet Bhamber, Bristol Medical School, Univ. of Bristol (United Kingdom); Evelyne Aguera, Alain Samson, INRAE (France); Peggy Rigou, Univ. de Montpellier (France), INRAE (France); Bernard Dussardier, Institut de Physique de Nice (France); Bernard Dussardier, Institut de Physique de Nice (France); Cédric Saucier, Univ. de Montpellier (France), INRAE (France)

12999-4 • 02:20 PM - 02:40 PM

**The biophotonic sensor designed for the precise detection of SARS-CoV-2-specific IgG antibodies**

Author(s): Malgorzata Szczerska, Pawel Wityk, Gdansk Univ. of Technology (Poland); Monika Kosowska, Bydgoszcz Univ. of Science and Technology (Poland); Kacper Cierpiak, Aneta Luczkiewicz, Sylwia Faudala-Książek, Gdansk Univ. of Technology (Poland)

12999-5 • 02:40 PM - 03:00 PM

**Top-hat square-mode fiber as D-shape platform for sensing**

Author(s): Rafal A. Kasztelanic, Univ. of Warsaw (Poland)

12999-6 • 03:00 PM - 03:20 PM

**Coreless silica fiber sensor based on self-image theory and coated with graphene oxide**

Author(s): Cristina Cunha, Catarina S. Monteiro, INESC TEC (Portugal); António Vaz, INESC TEC (Portugal), Univ. do Porto (Portugal); Susana Silva, Orlando Frazão, Susana Novais, INESC TEC (Portugal)

**Coffee Break 03:20 PM - 03:50 PM**

#### SESSION 2: OPTICAL FIBER-BASED SENSORS II

07 April 2024 • 03:50 PM - 05:40 PM | Schuman, Niveau/Level 1

Session Chair(s): Ioanna Zergioti, National Technical Univ. of Athens (Greece)

12999-7 • 03:50 PM - 04:20 PM

**Long term strain and temperature measurements on a railway using Brillouin OTDR (Invited Paper)**

Author(s): Roger I. Crickmore, Luna Innovations Inc. (United Kingdom); M. Ali Allousch, Benjamin Marx, Thibault North, Sebastian Pitikaris, Luna Innovations Germany GmbH (Germany); Brendon Purnell, Luna Innovations Inc. (United Kingdom); Shane Donohue, Univ. College Dublin (Ireland); Andrew Trafford, iCRAG (Ireland)

12999-9 • 04:20 PM - 04:40 PM

**Detection of fatigue weld cracks using optical frequency domain reflectometry-based strain sensing**

Author(s): Sergei Mikhailov, Vrije Univ. Brussel (Belgium); Jeroen van Wittenberghe, OCAS NV (Belgium); Geert Luyckx, Com & Sens

(Belgium); **Philippe Thibaux**, OCAS NV (Belgium); **Thomas Geernaert**, **Francis Berghmans**, Vrije Univ. Brussel (Belgium)

12999-11 • 04:40 PM - 05:00 PM

**Cure monitoring and mechanical testing of composite materials with embedded microstructured optical fiber Bragg grating sensors**

*Author(s):* **Sidney Goossens**, Vrije Univ. Brussel (Belgium); **Miguel Jiménez**, Element Materials Technology Seville SL (Spain); **Evangelos Karachalios**, Hellenic Aerospace Industry S.A. (Greece); **Francis Berghmans**, Vrije Univ. Brussel (Belgium)

12999-12 • 05:00 PM - 05:20 PM

**Internal Monitorization and Evaluation of Specific 18650 Li-ion Cells parameters by Using Tailored Optical Fiber Sensors**

*Author(s):* **Lucca Matuck**, **Marta S. Ferreira**, **Micael Nascimento**, Univ. de Aveiro (Portugal); **Jörg Bierlich**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

12999-97 • 05:20 PM - 05:40 PM

**Mathematical modeling and experimental validation of optical fiber sensors for simultaneous measurement of angular and linear displacements**

*Author(s):* **Gorka Zubia Garea**, **Joseba Zubia**, **Josu Amorebieta**, **Gotzon Aldabaldetrek**, **Gaizka Durana**, Univ. del Pais Vasco (Spain)

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Kolnn (Germany)

### Coffee Break 11:00 AM - 11:30 AM

### SESSION 3: OPTICAL FIBER-BASED SENSORS III

08 April 2024 • 11:30 AM - 12:40 PM | Schuman, Niveau/Level 1

*Session Chair(s):* **Sidney Goossens**, Vrije Univ. Brussel (Belgium)

12999-13 • 11:30 AM - 12:00 PM

**Radioluminescence fiber optic and imaging dosimetry in radiation therapy** (*Invited Paper*)

*Author(s):* **Arash Darafsheh**, Washington Univ. School of Medicine in St. Louis (United States)

12999-14 • 12:00 PM - 12:20 PM

**Scintillation-based optical fiber dosimeters for high dose rate and low dose rate brachytherapy**

*Author(s):* **Jürgen Van Erps**, **Agnieszka Gierej**, **Tigran Baghdasaryan**, **Kurt Rochlitz**, **Sergey Verlinski**, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium); **Michael Martyn**, Galway Clinic (Ireland), Univ. of Galway (Ireland); **Peter Woulfe**, Galway Clinic (Ireland); **Owen Mc Laughlin**, **Kevin Prise**, **Geraldine Workman**, Queen's Univ. Belfast (United Kingdom); **Sinead O'Keeffe**, Univ. of Limerick (Ireland); **Agnese Giaz**, **Romualdo Santoro**, **Massimo Caccia**, Univ. degli Studi dell'Insubria (Italy); **Francis Berghmans**, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium)

12999-16 • 12:20 PM - 12:40 PM

**Fiber optic sensing for temperature control during laser ablation of cancer tissues**

*Author(s):* **Sanzhar Korganbayev**, **Francesca Lanzini**, **Beatrice Andrea Mantegari**, **Anna Diamante Nasuti**, **Paola Saccomandi**, Politecnico di Milano (Italy)



## Lunch Break 12:40 PM - 02:00 PM

## SESSION 4: OPTICAL FIBER-BASED SENSORS IV

08 April 2024 • 02:00 PM - 03:20 PM | Schuman, Niveau/Level 1

Session Chair(s): **Sidney Goossens**, Vrije Univ. Brussel (Belgium)

12999-10 • 02:00 PM - 02:20 PM

**A fiber-optic sensing system for rock mass monitoring in coal mines**

Author(s): **Stanislaw Stopinski**, LightHouse sp. z o.o. (Poland), Warsaw Univ. of Technology (Poland); **Krzysztof Anders, Anna Jusza**, LightHouse Sp. z o.o. (Poland), Warsaw Univ. of Technology (Poland); **Aleksandra Bieniek-Kaczorek, Paweł Bortnowski, Franciszek Zabierowski, Sławomir Szostak**, Warsaw Univ. of Technology (Poland); **Bartosz Marciniak**, Lubelski Wegiel BOGDANKA S.A. (Poland); **Paweł Mergo, Adam Pazdzior**, Maria Curie-Skłodowska Univ. (Poland); **Lukasz Wzorek, Lukasz Bednarski**, SHM System Sp. z o.o. Sp. kom. (Poland); **Krzysztof Skrzypkowski**, AGH Univ. of Science and Technology (Poland); **Ryszard Piramidowicz**, LightHouse sp. z o.o. (Poland), Warsaw Univ. of Technology (Poland)

12999-18 • 02:20 PM - 02:40 PM

**Optical fiber probe for VOC vapour monitoring with sub-ppb detectivity**

Author(s): **Eleni Grantzioti, Stavros Pissadakis, Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

12999-19 • 02:40 PM - 03:00 PM

**Cascaded Fabry-Perot fiber sensor based on silica capillary with PMMA for the detection of volatile organic compounds**

Author(s): **Ana Almeida, João M. Leça**, Univ. de Aveiro (Portugal); **Jörg Bierlich**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Marta S. Ferreira**, Univ. de Aveiro (Portugal)

12999-20 • 03:00 PM - 03:20 PM

**Porphyrin-embedded graphene oxide coated U-bent fiber optical probe: multiple volatile organic gas sensing protocol on a single photonic platform**

Author(s): **Soma Saha, Tapanendu Kundu**, Indian Institute of Technology Bombay (India)

## Coffee Break 03:20 PM - 03:50 PM

## SESSION 5: VOLATILE ORGANIC COMPOUND AND GAS SENSING

08 April 2024 • 03:50 PM - 05:50 PM | Schuman, Niveau/Level 1

Session Chair(s): **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

12999-21 • 03:50 PM - 04:10 PM

**Benzene detection using long wavelength QCL through LITES optical sensor**

Author(s): **Andrea Zifarelli, Lavinia A Mongelli**, Univ. degli Studi di Bari Aldo Moro (Italy); **Francesco Paciolla**, Politecnico di Bari (Italy); **Kumar Kinjalk**, Institut d'Électronique et des Systèmes (France); **Vincenzo Spagnolo**, Politecnico di Bari (Italy); **Pietro Patimisco**, Univ. degli Studi di Bari Aldo Moro (Italy)

12999-22 • 04:10 PM - 04:30 PM

**A multi-gas sensor for environmental gases: towards miniaturization with mid-infrared Quantum Cascade Lasers (QCL) and silicon integration of photoacoustic cells**

Author(s): **Christophe Constancias, Badhise Ben Bakir, Maeva Doron, Olivier Lartigue, Sonia Messaoudene, Adrien Poizat, Sarah Renault, Jules Skubich, Marion Volpert, Olivier Masson, Clément Garaffa, Julien Marianne, Eric Gautier**, Univ. Grenoble Alpes (France), CEA-LETI (France); **Séverine Moune, Edouard Regis, Philippe Labazuy**, Univ. Clermont Auvergne (France)

12999-23 • 04:30 PM - 04:50 PM

**Multiplexed dual-core QCL-based sensor for real-time standoff-spectroscopy in crime scene investigations**

Author(s): **Marko Haertelt, Yuri V. Flores**, Fraunhofer-Institut für Angewandte Festkörperphysik IAF (Germany); **Markus Schwarzenberg, Andre Merten**, Fraunhofer-Institut für Photonische Mikrosysteme IPMS (Germany); **Christian Ulrich, Frank Schnürer**, Fraunhofer-Institut für Chemische Technologie ICT (Germany)

12999-24 • 04:50 PM - 05:10 PM

**Light Powered Battery-less Non-Dispersive Infrared Sensor for Methane Gas Detection**

Author(s): **Lewis S. Fleming**, Univ. of the West of Scotland (United Kingdom), AlbaSense Ltd. (United Kingdom); **Ewan Waddell**, AlbaSense Ltd. (United Kingdom); **Greg McGann**, Univ. of the West of Scotland (United Kingdom); **David Hutson**, AlbaSense Ltd. (United Kingdom); **Emma Keel**, Univ. of the West of Scotland (United Kingdom); **Carlos Garcia Nunez**, Univ. of Glasgow (United Kingdom); **Matthias Kauer, Matthieu Bellenger**, Lightricity Ltd. (United Kingdom); **Des Gibson**, Univ. of the West of Scotland (United Kingdom), AlbaSense Ltd. (United Kingdom); **Sam Ahmadzadeh**, Univ. of the West of Scotland (United Kingdom); **Ian Brinkley**, AlbaSense Ltd. (United Kingdom)

12999-25 • 05:10 PM - 05:30 PM

**Integrated interferometers as a new platform for low-cost gas chromatography detection. Proof of concept and first performance assessment**

*Author(s):* **Pomme Hirschauer, Maryse Fournier, Sonia Messaoudene**, Univ. Grenoble Alpes (France), CEA-LETI (France); **Yanxia Hou**, Univ. Grenoble Alpes, CNRS (France), CEA (France); **Bertrand Bourlon, Loïc Laplatine**, Univ. Grenoble Alpes (France), CEA-LETI (France)

12999-26 • 05:30 PM - 05:50 PM

**Design of a miniaturized MID-IR spectroscopy solution, based on a 400 nm SiPh platform, for the detection of CO2 and CH4**

*Author(s):* **Georgios Syriopoulos**, National Technical Univ. of Athens (Greece); **Charalampos Zervos**, National Technical Univ. of Athens (Greece), Talos Analytics (Greece); **Giannis Pouloupoulos, Evrydiki Kyriazi, Thenia Prousalidi**, National Technical Univ. of Athens (Greece); **Pen-Sheng Lin, Frank Niklaus, Kristinn Gylfason**, KTH Royal Institute of Technology (Sweden); **Stephan Suckow, Nour Negm, Max C. Lemme**, AMO GmbH (Germany); **Dimitris Apostolopoulos, Hercules Avramopoulos**, National Technical Univ. of Athens (Greece)

## Tuesday 9 April 2024

### SESSION 6: PLASMONIC SENSORS

09 April 2024 • 08:30 AM - 10:30 AM | Schuman, Niveau/Level 1

*Session Chair(s):* **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

12999-3 • 08:30 AM - 08:50 AM

**Enhancing bioanalytical performance of long period grating fiber sensors through antifouling polymer brush coatings**

*Author(s):* **Markéta Vrabcová**, Institute of Physics (Czech Republic), Charles Univ. (Czech Republic); **Monika Spasovová**, Institute of Physics (Czech Republic), Charles Univ. (Czech Republic); **Michala Forinová**, Institute of Physics (Czech Republic), Charles Univ. (Czech Republic); **Ambra Giannetti**, Istituto di Fisica Applicata "Nello Carrara" (Italy); **Milan Houska**, Institute of Physics (Czech Republic); **N. Scott Lynn Jr., Jaromír Kopecek**, Institute of Physics (Czech Republic); **Francesco Baldini**, Istituto di Fisica Applicata "Nello Carrara" (Italy); **Hana Vaisocherová-Lísalová**, Institute of Physics (Czech Republic); **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

12999-27 • 08:50 AM - 09:10 AM

**Plasmonic Refractive Index Sensor based on Vanadium Dioxide Nanostructures-Enhanced Goos-Hänchen Effects**

*Author(s):* **Joelle Youssef**, XLIM (France), ALPhANOV (France); **Aurelian Crunteanu, Flavien Beffara**, XLIM (France); **Sébastien A. J. Vergnole**, ALPhANOV (France); **Georges Humbert**, XLIM (France); **Shuwen Zeng**, Lab. Lumière, nanomatériaux et nanotechnologies, CNRS (France), Univ. de Technologie de Troyes (France)

12999-28 • 09:10 AM - 09:30 AM

**Plasmonic platform for integrated mid-IR sensing applications**

*Author(s):* **Andreas Tortschanoff, Florian Dubois, Cristina Consani, Jasmin Spettel, Thang Dao**, Silicon Austria Labs. GmbH (Austria)

12999-29 • 09:30 AM - 09:50 AM

**Plasmonic (Ti/Hf)N vs. Au Nanodisk Arrays: A Comparative Study of Refractometric Sensitivity**

*Author(s):* **Beyza Nur Günaydin, Defne Hiz, Selen Ezgi Cankurtaran, Mert Gülmez, Meral Yüce**, Sabanci Univ. (Turkey); **Hasan Kurt**, Imperial College London (United Kingdom)

12999-30 • 09:50 AM - 10:10 AM

**Enhanced Near-Infrared Plasmonic Sensing Chips with Ultra-Thin Optical Absorption Nanolayer Fabricated by Cross-beam Pulsed Laser Deposition (CB-PLD)**

*Author(s):* **Nurzad Zakirov**, Lab. Lumière, nanomatériaux et nanotechnologies, CNRS, Univ. de Technologie Troyes (France), Ctr. Énergie, Matériaux et Télécommunications, Institut National de la Recherche Scientifique (Canada); **Amine Zitouni**, Ctr. Énergie, Matériaux et Télécommunications, Institut National de la Recherche Scientifique (Canada); **Shaodi Zhu**, Lab. Lumière, nanomatériaux et nanotechnologies, CNRS, Univ. de Technologie Troyes (France); **Zahra Shayegan, Etienne Charette, Boris Le Drogoff, Mohamed Chaker**, Ctr. Énergie, Matériaux et Télécommunications, Institut National de la Recherche Scientifique (Canada); **Shuwen Zeng**, Lab. Lumière, nanomatériaux et nanotechnologies, CNRS, Univ. de Technologie Troyes (France)

12999-31 • 10:10 AM - 10:30 AM

**A Comparative Study of Multi- and Mono-layer Structures for Bulk and Thin Film Plasmonic Sensing**

*Author(s):* **Siham Refki**, Moroccan Foundation for Advanced Science, Innovation and Research (Morocco), Mohammed VI Polytechnic Univ. (Morocco); **Amina Badir, Zouheir Sekkat**, Moroccan Foundation for Advanced Science, Innovation and Research/Mohammed VI Polytechnic University (Morocco), Department of Chemistry, Faculty of Sciences, University Mohammed V, Rabat, Morocco (Morocco)

**Coffee Break 10:30 AM - 11:00 AM**

### SESSION 7: INTEGRATED, LAB-ON-CHIP AND RESONANCE-BASED SENSORS I

09 April 2024 • 11:00 AM - 12:50 PM | Schuman, Niveau/Level 1

*Session Chair(s):* **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

12999-32 • 11:00 AM - 11:30 AM

**Challenges and solutions of photonic chip integrations into micro-fluidic cartridges** (*Invited Paper*)

*Author(s):* **Siegfried Graf, Mark Fretz, Roman Arnet**, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland)

12999-33 • 11:30 AM - 11:50 AM

**Mach-Zehnder Interferometer Biosensors for Food Allergen Detection**

*Author(s):* **Ali Kheir Aldine, Hippolyte Durand, Guillaume Nonglaton, Charlotte Parent, Myriam Cubizolles, Patricia Laurent, Loïc Laplatine**, Univ. Grenoble Alpes (France), CEA-LETI (France)

12999-34 • 11:50 AM - 12:10 PM

**Photonic Sensors-assisted ML pipeline for Precise Control of Curing Process in Advanced Thermosetting Composite Manufacturing**

*Author(s):* **Evrydiki Kyriazi**, National Technical Univ. of Athens (Greece); **George Petsinis**, Talos Analytics (Greece); **Ioannis Pouloupoulos, Georgios Syriopoulos, Thenia Prousalidi**, National Technical Univ. of Athens (Greece); **Geoffrey Neale, Mehdi Asareh**, Cranfield Univ. (Greece); **Panagiotis Toumasis**, National Technical Univ. of Athens (Greece); **Charalampos Zervos**, National Technical Univ. of Athens (Greece); **Alex Skordos**, Cranfield Univ. (Greece); **Hercules Avramopoulos**, National Technical Univ. of Athens (Greece)

12999-35 • 12:10 PM - 12:30 PM

**Integrated photonic interrogators for fiber-optic sensing applications**

*Author(s):* **Aleksandra Bieniek-Kaczorek**, Warsaw Univ. of Technology (Poland); **Stanislaw Stopinski, Krzysztof Anders**, Warsaw Univ. of Technology (Poland), VIGO Photonics S.A. (Poland), LightHouse Sp. z o.o. (Poland); **Anna Jusza**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland); **Mateusz Słowikowski**, Warsaw Univ. of Technology (Poland); **Ryszard Piramidowicz**, Warsaw Univ. of Technology (Poland), VIGO Photonics S.A. (Poland), LightHouse Sp. z o.o. (Poland)

12999-36 • 12:30 PM - 12:50 PM

**Photonic circuits based on Mach Zehnder interferometer (MZI): A paradigm shift in solar irradiance studies**

*Author(s):* **Adriany Rodrigues Barbosa, Franciele Carlesso**, Instituto Nacional de Pesquisas Espaciais (Brazil); **Igor Yamamoto Abe**, Univ. de São Paulo (Brazil); **Marco Isaías Alayo**, Escola Politécnica da Univ. de São Paulo (Brazil); **Luís Eduardo Antunes Vieira**, Instituto Nacional de Pesquisas Espaciais (Brazil)

**Lunch/Exhibition Break 12:50 PM - 02:00 PM**

## SESSION 8: INTEGRATED, LAB-ON-CHIP AND RESONANCE-BASED SENSORS II

09 April 2024 • 02:00 PM - 04:00 PM | Schuman, Niveau/Level 1

*Session Chair(s):* **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

12999-37 • 02:00 PM - 02:20 PM

**Biosensing with optically coupled 4D microresonators**

*Author(s):* **Anton V. Saetchnikov, Andreas Ostendorf**, Ruhr-Univ. Bochum (Germany)

12999-38 • 02:20 PM - 02:40 PM

**Optical sensing with disordered photonic crystal waveguides**

*Author(s):* **Oliver Trojak, Tom Crane**, Univ. of Southampton (United Kingdom); **Luca Sapientza**, Univ. of Cambridge (United Kingdom)

12999-39 • 02:40 PM - 03:00 PM

**On-chip comb-cavity coupling for enhanced spectroscopy**

*Author(s):* **Andrei Diakonov, Liron Stern**, The Hebrew Univ. of Jerusalem (Israel)

12999-40 • 03:00 PM - 03:20 PM

**Effects of surface roughness and top layer thickness on the performance of Fabry-Perot cavities and open resonators based on distributed Bragg reflectors**

*Author(s):* **Konstantinos Papatryfonos, Edson Rafael Cardozo de Oliveira, Norberto Daniel Lanzillotti-Kimura**, Ctr. de Nanosciences et de Nanotechnologies (France)

12999-41 • 03:20 PM - 03:40 PM

**Waveguide scattering microscopy towards antibody biosensing**

*Author(s):* **Jéssica Eliza Silva Fonsaca**, Univ. Presbiteriana Mackenzie (Brazil); **Wanderson S. R. Teixeira**, Univ. Estadual Paulista "Júlio de Mesquita Filho" (Brazil); **Mohd Rehan, Bianca Tieppo**, Univ. Presbiteriana Mackenzie (Brazil); **Daniella L. Vale**, Univ. Federal do Rio de Janeiro (Brazil); **Lúcia A. M. Saito**, Univ. Presbiteriana Mackenzie (Brazil); **Daniel Grasseschi**, Univ. Federal do Rio de Janeiro (Brazil); **Christiano J. S. de Matos**, Univ. Presbiteriana Mackenzie (Brazil)

12999-54 • 03:40 PM - 04:00 PM

**Photoluminescence of graphitic Carbon Nitride (g-C3N4) as a probe for gas detection**

Author(s): **Argyro Klini**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); **Spyros Kokkotos**, Univ. of Crete (Greece); **Evangelia Vasilaki**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece), Univ. of Crete (Greece); **Maria Vamvakaki**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece)

**Coffee Break 04:00 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

**Wednesday 10 April 2024**

**SESSION 9: SPECTROSCOPY I**

10 April 2024 • 09:00 AM - 10:20 AM | Schuman, Niveau/Level 1

Session Chair(s): **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

12999-42 • 09:00 AM - 09:20 AM

**Broadband diffuse reflection spectroscopy and Linear Discriminant Analysis enabling a non-destructive milk identification**

Author(s): **Indy Magnus**, **Tarique Hasan**, **Hugo Thienpont**, **Lien Smeesters**, Vrije Univ. Brussel (Belgium)

12999-43 • 09:20 AM - 09:40 AM

**Glass consumption in post-Medieval Flanders: the validation of a new spectroscopic tool.**

Author(s): **Wendy Meulebroeck**, **Mathilde Patin**, **Karin Nys**, **Hugo Thienpont**, Vrije Univ. Brussel (Belgium)

12999-44 • 09:40 AM - 10:00 AM

**A sensor network for non-invasive identification of semiconductors**

Author(s): **Andréa de Lima Ribeiro**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Christian Röder**, Technische Univ. Bergakademie Freiberg (Germany); **Margret Fuchs**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Johannes Heitmann**, Technische Univ. Bergakademie Freiberg (Germany); **Richard Gloaguen**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany)

12999-46 • 10:00 AM - 10:20 AM

**Two-photon excitation as a selective tool to characterize black carbon nanoparticles in the environment**

Author(s): **Maria Luiza Ferreira Vicente**, Univ. de São Paulo (Brazil), Univ. de Toulon (France); **Francisco Eduardo Gontijo Guimarães**, **Sebastião Pratavieira**, **Mariana Matera Veras**, **Paulo Saldiva**, Univ. de São Paulo (Brazil); **Hajjoul Houssam**, Univ. de Toulon (France)

**Coffee Break 10:20 AM - 10:50 AM**

**SESSION 10: SPECTROSCOPY II**

10 April 2024 • 10:50 AM - 12:30 PM | Schuman, Niveau/Level 1

Session Chair(s): **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece)

12999-47 • 10:50 AM - 11:10 AM

**LIBS imaging as a process control tool in the cork industry**

*Author(s):* **Miguel F. S. Ferreira**, INESC TEC (Portugal); **Rafaela Oliveira**, EGITRON (Portugal); **Diana Capela, Tomás Lopes**, INESC TEC (Portugal); **José Marrafa, Pedro Meneses, Armindo Oliveira**, EGITRON (Portugal); **Carlos Baptista, Tiago Gomes**, Azevedos Indústria (Portugal); **Sérgio Moutinho, José Coelho, Raquel Nunes da Silva**, Centro Tecnológico da Cortiça (Portugal); **Diana F. Guimarães, Nuno A. Silva**, INESC TEC (Portugal); **Pedro A. S. da Silva Jorge**, INESC TEC (Portugal), Univ. do Porto (Portugal)

12999-48 • 11:10 AM - 11:30 AM

**Laser-induced breakdown spectroscopy for quantitative lithium monitoring in geothermal brines for lithium extraction**

*Author(s):* **Evangelia Kardamaki, Carl Basler**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); **Rebekka Reich**, Karlsruher Institut für Technologie (Germany); **Andre Wilhelms**, Karlsruhe Institute of Technology, Institute of Applied Geosciences (Germany), Laboratory for Environmental and Raw Materials Analysis, Institute of Applied Geosciences (Germany); **Ingo Breunig**, University of Freiburg, Department of Microsystems Engineering-IMTEK (Germany), Fraunhofer Institute for Physical Measurement Techniques IPM (Germany); **Elisabeth Eiche, Jochen Kolb**, Karlsruhe Institute of Technology, Institute of Applied Geosciences (Germany), Laboratory for Environmental and Raw Materials Analysis (Germany); **Daniel Carl**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany)

12999-49 • 11:30 AM - 11:50 AM

**An optical measurement system for monitoring of concrete curing**

*Author(s):* **Jannik Schmid, Valentin Vierhub-Lorenz**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); **Alexander Reiterer**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany), Albert-Ludwigs-Univ. Freiburg (Germany)

12999-50 • 11:50 AM - 12:10 PM

**Digital twin for a task-driven multispectral camera design**

*Author(s):* **Wenzhi Liao**, Flanders Make (Belgium), Univ. Gent (Belgium); **Gerardo José Mora Jimena**, KU Leuven (Belgium); **Lukas De Greve, Abdellatif Bey-Temsamani**, Flanders Make (Belgium); **Bart De Ketelaere**, KU Leuven (Belgium)

12999-51 • 12:10 PM - 12:30 PM

**Multimodal Knowledge Distillation in Spectral Imaging**

*Author(s):* **Tomás J. Moreira Lopes, Diana Capela, Miguel F. S. Ferreira, Joana Teixeira**, Univ. do Porto (Portugal), INESC TEC (Portugal); **Catarina Silva, Diana F. Guimarães**, INESC TEC (Portugal); **Pedro A. S. da Silva Jorge**, Univ. do Porto (Portugal), INESC TEC (Portugal); **Nuno A. Silva**, INESC TEC (Portugal)

**Lunch/Exhibition Break 12:30 PM - 02:00 PM**

**SESSION 11: SPECTROSCOPY III**

10 April 2024 • 02:00 PM - 03:20 PM | Schuman, Niveau/Level 1

*Session Chair(s):* **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

12999-52 • 02:00 PM - 02:20 PM

**Dynamic lighting using spread spectrum technique to eliminate ambient light effects for EEM measurements**

*Author(s):* **Kota Sadamoto**, Mitsubishi Electric Corp. (Japan), Toyohashi Univ. of Technology (Japan); **Shigeki Nakauchi**, Toyohashi Univ. of Technology (Japan)

12999-53 • 02:20 PM - 02:40 PM

**Machine Learning-Enhanced Fluorescence Spectroscopy for the Quality Assessment of Extra Virgin Olive Oil during Ageing**

*Author(s):* **Francesca Venturini, Silvan Fluri**, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland); **Manas Mejari**, Istituto Dalle Molle di Studi sull'Intelligenza Artificiale (Switzerland); **Michael Baumgartner**, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland); **Dario Piga**, Istituto Dalle Molle di Studi sull'Intelligenza Artificiale (Switzerland); **Umberto Michelucci**, TOELT GmbH (Switzerland)

12999-55 • 02:40 PM - 03:00 PM

**Complementing UV-Vis-NIR absorption spectroscopy with portable X-ray fluorescence spectrometry (p-XRF) for 16th-century window-glass studies**

*Author(s):* **Mathilde Patin, Karin Nys, Hugo Thienpont, Wendy Meulebroeck**, Vrije Univ. Brussel (Belgium)

12999-56 • 03:00 PM - 03:20 PM

**Improvement of the signal to noise ratio in dual comb spectrometry through time multiplexing**

*Author(s):* **Debanuj Chatterjee**, Lab. de Physique des Lasers, Atomes et Molécules, CNRS (France); **Eve-Line Bancel**, Lab. de Physique des Lasers, Atomes et Molécules, CNRS (France), ONERA (France); **Siddharth Sivankutty**, Lab. de Physique des Lasers, Atomes et Molécules, CNRS (France); **Herve Rigneault**, Institut Fresnel (France), Turing Ctr. for Living Systems (France), Aix-Marseille Univ., CNRS (France); **Steven Cundiff**, Univ. of Michigan (United States); **Arnaud Mussot**, Lab. de Physique des Lasers, Atomes et Molécules, CNRS (France), Univ. de Lille (France)

## Coffee Break 03:20 PM - 03:50 PM

## SESSION 12: SPECTROSCOPY IV

10 April 2024 • 03:50 PM - 05:40 PM | Schuman, Niveau/Level 1

Session Chair(s): **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

12999-57 • 03:50 PM - 04:20 PM

**Detection of SARS-CoV-2 in patient specimens by surface enhanced Raman spectroscopy and deep learning** (*Invited Paper*)Author(s): **Yanjun Yang**, The Univ. of Georgia (United States); **Hao Li**, Chongqing Univ. (China); **Dan Luo**, **Jiaheng Cui**, **Amit Kumar**, **Leslie Jones**, **Jackelyn Crabtree**, **Hemant Naikare**, **Yung-Yi Mosley**, **Teddy Spikes**, The Univ. of Georgia (United States); **Hülck Hülck**, Tec5USA (United States); **Xianyan Chen**, **Ralph Tripp**, The Univ. of Georgia (United States); **Bin Ai**, Chongqing Univ. (China); **Yiping Zhao**, The Univ. of Georgia (United States)

12999-58 • 04:20 PM - 04:40 PM

**Two-Photon Polymerized nanopillars for Surface-Enhanced Raman spectroscopy**Author(s): **Tatevik Chalyan**, **Mehdi Feizpour**, **Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

12999-59 • 04:40 PM - 05:00 PM

**2D periodic metal nanostructure for multimodal sensing with application for explosives detection using SERS**Author(s): **Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel); **Anand Shrivastav**, SRM Institute of Science and Technology (India); **Mohammad Abutoama**, Technical Univ. of Denmark (Denmark)

12999-60 • 05:00 PM - 05:20 PM

**Fabrication of SERS Sensor Chips on a Large-Area for Chemical and Biological Sensing**Author(s): **Umang Chaturvedi**, **Merbin John**, **Kamal Kumar**, **Mohd Asif**, **Anuj Dhawan**, **Vaibhav Chaturvedi**, Indian Institute of Technology Delhi (India)

12999-61 • 05:20 PM - 05:40 PM

**Ultra-trace detection of biomarker employing Au-gratings as highly sensitive SERS -active-substrate**Author(s): **Sibashish Chakraborty**, **Richa Goel**, **Vimarsh Awasthi**, Indian Institute of Technology Delhi (India); **Gaurav Jayaswal**, Semi-Conductor Lab. (India); **Satish Dubey**, Indian Institute of Technology Delhi (India)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrsPoster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

12999-17 • 05:45 PM - 07:45 PM

**SPR-based optical fiber sensor for hydrogen detection using Pd thin films**Author(s): **Miguel A. S. Almeida**, **João P. M. Carvalho**, INESC TEC (Portugal), Univ. do Porto (Portugal); **José M. M. de Almeida**, INESC TEC (Portugal), Univ. de Trás-os-Montes e Alto Douro (Portugal); **Luís C. C. Coelho**, INESC TEC (Portugal), Univ. do Porto (Portugal)

12999-76 • 05:45 PM - 07:45 PM

**EGFR expression levels measurement of optically trapped single cells using a capacitance sensor**Author(s): **Tae Young Kang**, **Kyujung Kim**, Pusan National Univ. (Korea, Republic of)

12999-77 • 05:45 PM - 07:45 PM

**Highly sensitive refractive index measurement using speckle patterns in perfluorinated polymer optical fiber sensors**Author(s): **Antreas Theodosiou**, Lumoscribe Ltd. (Cyprus)

12999-78 • 05:45 PM - 07:45 PM

**Experimental demonstration of highly sensitive visible detection with polymer microresonator transducers based-on porous silica cladding**Author(s): **Pauline Girault**, Univ. de Bordeaux (France); **Théo Rouanet**, Lab. Nanotechnologies Nanosystemes, Univ. de Sherbrooke (Canada), Univ. de Bordeaux (France); **Laurent Oyhenart**, Lab. d'Intégration du Matériau au Système, Univ. de Bordeaux (France); **Guillaume Beaudin**, Lab. Nanotechnologies Nanosystemes, Univ. de Sherbrooke (Canada); **Simon Joly**, **Bernard Plano**, Lab. d'Intégration du Matériau au Système, Univ. de Bordeaux (France); **Michael Canva**, **Paul G. Charette**, Lab. Nanotechnologies Nanosystemes, Univ. de Sherbrooke (Canada); **Laurent Béchou**, Lab. d'Intégration du Matériau au Système, Univ. de Bordeaux (France)

12999-79 • 05:45 PM - 07:45 PM

**Decoupling internal safety parameters during Li-ion pouch cell operation by high-birefringent optical fiber sensors**

*Author(s):* **Micael S. Nascimento, Lucca Matuck**, Univ. de Aveiro (Portugal); **Sylvie Genies**, CEA-LITEN (France), LAP (France); **Romain Franchi, Marco Ranieri**, CEA-LITEN (France), Lab. d'électrotechnique et d'électronique de puissance de Lille (France); **Pierre Balfet, Olivier Raccurt**, CEA-LITEN (France), LAP (France); **João L. Pinto**, Univ. de Aveiro (Portugal)

12999-80 • 05:45 PM - 07:45 PM

**Detection of the orbital angular momentum state of light using sinusoidally-shaped phase grating**

*Author(s):* **Ali Mardan Dezfouli, Denis Abramović, Mario Rakić, Hrvoje Skenderović**, Institute of Physics (Croatia)

12999-81 • 05:45 PM - 07:45 PM

**Design of a metal hydride-coated tilted fibre Bragg grating (TFBG) based hydrogen sensor**

*Author(s):* **Kasun Prabuddha Wasantha Dissanayake, H. Sandra Dewi, Herman Schreuders, Lars J. Bannenberg, Roger M. Groves**, Technische Univ. Delft (Netherlands)

12999-82 • 05:45 PM - 07:45 PM

**Unlocking traffic efficiency: visible light communication for urban intersection optimization**

*Author(s):* **Manuel Augusto Vieira, Manuela P. Vieira, Gonçalo Galvão**, Instituto Superior de Engenharia de Lisboa (Portugal); **Mario A Véstias**, ISEL (Portugal); **Pedro Vieira, Paula Louro**, Instituto Superior de Engenharia de Lisboa (Portugal)

12999-83 • 05:45 PM - 07:45 PM

**ZnO layer coated optical fiber sensor for volatile organic compound biomarker detection**

*Author(s):* **Kankan Swargiary, Pannathorn Jitpratak, Nuntaporn Kongsawang, Charusluk Viphavakit**, Chulalongkorn Univ. (Thailand)

12999-84 • 05:45 PM - 07:45 PM

**Fiber-optic sensor empowered by machine learning: a promising integration for C-reactive protein sensing in human urine samples**

*Author(s):* **Malgorzata Szczerska**, Gdansk Univ. of Technology (Poland); **Monika Kosowska**, Bydgoszcz Univ. of Science and Technology (Poland); **Kacper Cierpiak**, Gdansk Univ. of Technology (Poland); **Pawel Wityk**, Medical Univ. of Gdansk (Poland)

12999-85 • 05:45 PM - 07:45 PM

**Optical method supported by machine learning for urinary tract infections discrimination and bladder cancer detection.**

*Author(s):* **Patryk Sokolowski**, Gdansk Univ. of Technology (Poland); **Pawel Wityk**, Medical Univ. of Gdansk (Poland); **Kacper Cierpiak**, Gdansk Univ. of Technology (Poland); **Maria Babińska, Witold Graczyk**, GUT Optica Student Chapter (Poland); **Beata Krawczyk**, Gdansk Univ. of Technology (Poland); **Michal Markuszewski**, Medical Univ. of Gdansk (Poland); **Malgorzata Szczerska**, Gdansk Univ. of Technology (Poland)

12999-86 • 05:45 PM - 07:45 PM

**Optical fiber distributed temperature measurement method for fire safety analysis of wooden buildings**

*Author(s):* **Jan Skapa, Marcel Fajkus, Daniel Krizan, Radek Martinek, Miroslav Pinka, Martin Stolarik, Jan Nedoma**, VŠB-Technical Univ. of Ostrava (Czech Republic)

12999-88 • 05:45 PM - 07:45 PM

**Novel instruments for absolute vapor pressure measurements**

*Author(s):* **Mohsen Salimi, Robin V. Nielsen, Henrik B. Pedersen, Aurélien R. Dantan**, Aarhus Univ. (Denmark)

12999-89 • 05:45 PM - 07:45 PM

**Real time screening of bioreactor cultivation process, based on Raman spectroscopy.**

*Author(s):* **Marianneza Chatzipetrou, Maria Karnachoriti, Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

12999-90 • 05:45 PM - 07:45 PM

**Non-invasive fiber-optic wrist sensor for monitoring heart rate of the human body**

*Author(s):* **Daniel Krizan, Jan Nedoma, Michael Fridrich, Jiri Stipal, Marcel Fajkus, Radek Martinek**, VŠB-Technical Univ. of Ostrava (Czech Republic); **Daniela Lo Presti**, University Campus Bio-Medico of Rome (Italy); **Carlos Marques**, University of Aveiro (Portugal)

12999-91 • 05:45 PM - 07:45 PM

**Investigation in determining fluctuations that could demonstrate the possible presence of particles interacting with photons**

*Author(s):* **Patrice Salzenstein**, FEMTO-ST (France); **Mahmoud Addouche**, FEMTO-ST CNRS (France); **Frédéric Lefebvre**, Oscilloquartz, Adtron company (Switzerland)

12999-92 • 05:45 PM - 07:45 PM

**Gold-coated multicore fiber interferometer for biosensing**

*Author(s):* **Tianbo Zhu, Christophe Caucheteur**, Univ. de Mons (Belgium); **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara" (Italy); **Joel Villatoro**, Univ. del País Vasco (Spain); **Karima Chah**, Univ. de Mons (Belgium)

12999-93 • 05:45 PM - 07:45 PM

**UV-glue-assisted cascaded Fabry-Perot fiber sensor for temperature and force measurement**

*Author(s):* **Xuehao Hu**, Univ. de Mons (Belgium); **Hongyu Fu, Pengcheng Li, Hang Qu**, Shantou Univ. (China); **Médéric Loyez, Christophe Caucheteur**, Univ. de Mons (Belgium)

12999-94 • 05:45 PM - 07:45 PM

**Plasmonic Nanostructures on Plasmonic Thin Films for Enhanced Localized and Bulk Sensing**

*Author(s):* **Mohd Asif, Umang Chaturvedi, Vaibhav Chaturvedi, Anuj Dhawan**, Indian Institute of Technology Delhi (India)

12999-95 • 05:45 PM - 07:45 PM

**Spectral sensing in the near-infrared and chemometrics for flour quality multi-analysis**

*Author(s):* **Leonardo Ciaccheri, Anna Grazia Mignani, Andrea Azelio Mencaglia, Barbara Adinolfi**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

12999-96 • 05:45 PM - 07:45 PM

**Development of a polymer-based miniaturized spectrometer for the optical wavelength range**

*Author(s):* **Sebastian Smarzyk, Katharina Strathmann, Matthias Haupt**, Jade Hochschule (Germany)

12999-98 • 05:45 PM - 07:45 PM

**Molecular imprinted polymer-coated optical fiber sensor for the quantification of 2-propanol**

*Author(s):* **João M. Leça**, Institute of Nanostructures, Nanomodelling and Nanofabrication (Portugal), Univ. de Aveiro (Portugal); **Mariana C. Oliveira**, Univ. de Aveiro (Portugal); **Marta S. Ferreira**, Institute of Nanostructures, Nanomodelling and Nanofabrication (Portugal), Univ. de Aveiro (Portugal)

12999-99 • 05:45 PM - 07:45 PM

**Improving optical properties of GeSn microstructures by annealing**

*Author(s):* **Eric Kroemer, Clément Cardoux**, CEA-LETI (France); **Nicolas Pauc, Vincent Calvo**, CEA-DRF (France); **Valentina Bonino, Jaime Segura-Ruiz**, ESRF - The European Synchrotron (France); **Jean-Michel Hartmann, Alexei Tchelnokov, Vincent Reboud**, CEA-LETI (France)

12999-100 • 05:45 PM - 07:45 PM

**Development of optical spectroscopic methods for water and wastewater monitoring systems**

*Author(s):* **Anna Jusza**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland); **Jerzy Kalwas**, VIGO Photonics S.A. (Poland); **Krzysztof Anders, Stanislaw Stopinski**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland), VIGO Photonics S.A. (Poland); **Aleksandra Bieniek-Kaczorek, Pawel Bortnowski, Lukasz Kozlowski**, Warsaw Univ. of Technology (Poland); **Ryszard Piramidowicz**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland), VIGO Photonics S.A. (Poland)

12999-101 • 05:45 PM - 07:45 PM

**Ultra-sensitive fiber Fabry-Perot sensor operating in the non-linear regime near the Exceptional Point**

*Author(s):* **Faiza Iftikhar**, Lahore College for Women Univ. (Pakistan), Lahore Univ. of Management Sciences (Pakistan); **Imran Cheema**, Lahore Univ. of Management Sciences (Pakistan)

12999-102 • 05:45 PM - 07:45 PM

**Vectorizing Urban Road Markings from Mobile Laser Scanning Point Clouds**

*Author(s):* **Etienne Barcon**, TT Géomètres-Experts (France), Univ. de Strasbourg, Institut National des Sciences Appliquées de Strasbourg (France), Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie, CNRS (France); **Tania Landes, Pierre Grussenmeyer**, INSA Strasbourg (France); **Arthur Picard**, TT Géomètres-Experts (France)

12999-103 • 05:45 PM - 07:45 PM

**Standard single-mode fiber and hollow-core fiber sensitivity to acoustic vibrations in audible spectrum**

*Author(s):* **Petr Dejdar, Pavel Zaviska, Adrian Tomasov, Tomas Horvath, Petr Munster**, Brno Univ. of Technology (Czech Republic)

12999-104 • 05:45 PM - 07:45 PM

**Repeatability of FBG-based damage detection on bearings**

*Author(s):* **Sidney Goossens, Damilare Ojo**, Vrije Univ. Brussel (Belgium); **Panagiotis Mantas**, KU Leuven (Belgium); **Alexandre Mauricio, Konstantinos Gryllias**, KU Leuven (Belgium); **Francis Berghmans**, Vrije Univ. Brussel (Belgium)

12999-105 • 05:45 PM - 07:45 PM

**Temperature measurement with optical fiber Mach-Zehnder interferometer combined with Vernier effect**

*Author(s):* **Patrícia Flor, Ana Freitas**, Univ. de Aveiro (Portugal); **Jörg Bierlich**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Paulo Antunes, Marta S. Ferreira**, Univ. de Aveiro (Portugal)

12999-106 • 05:45 PM - 07:45 PM

**High-sensitivity refractive index multimode fibre sensor based on a silica capillary**

*Author(s):* **Ana Isabel Freitas**, Univ. da Madeira (Portugal); **Jörg Bierlich**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Marta S. Ferreira**, Univ. de Aveiro (Portugal)



12999-107 • 05:45 PM - 07:45 PM

**Reservoir computing assisted single-pixel high-throughput object classification**

Author(s): **Yuanli Yue, Shouju Liu, Chao Wang**, Univ. of Kent (United Kingdom)

12999-108 • 05:45 PM - 07:45 PM

**Analysing Heavy Metal Contaminants in Wood Wastes using Laser-Induced Breakdown Spectroscopy (LIBS)**

Author(s): **Diana Capela, Tomás Lopes, Miguel F. S. Ferreira**, INESC TEC (Portugal), Univ. do Porto (Portugal); **Paulo Magalhães**, Sonae Arauco Portugal, S.A. (Portugal); **Pedro A. S. da Silva Jorge, Nuno A. Silva, Diana F. Guimarães**, INESC TEC (Portugal), Univ. do Porto (Portugal)

12999-110 • 05:45 PM - 07:45 PM

**A novelty compact fiber Bragg grating accelerometer based on flexible spring design**

Author(s): **Yun Wang Minghui Lu, Yutang Dai**, Wuhan Univ. of Technology (China)

12999-111 • 05:45 PM - 07:45 PM

**Roasted Coffee Beans Inspection System Using Hyperspectral Imaging**

Author(s): **Shih-Yu Chen**, National Yunlin Univ. of Science and Technology (Taiwan)

12999-112 • 05:45 PM - 07:45 PM

**Two-dimensional thin and porous membranes for gas molecules sensing**

Author(s): **Anastasiia Efimova, Pavel Alekseevskiy, Maria Timofeeva**, ITMO Univ. (Russian Federation); **Valentin Milichko**, ITMO Univ. (Russian Federation), Univ. de Lorraine (France)

12999-115 • 05:45 PM - 07:45 PM

**FOCAL: fiber optics sensors as a platform for cancer diagnosis and in vitro model testing**

Author(s): **Francesco Chiavaioli**, Istituto di Fisica Applicata "Nello Carrara", CNR (Italy); **Giorgia Montalbano**, Politecnico di Torino (Italy)

12999-116 • 05:45 PM - 07:45 PM

**Measuring the optical response of self-written waveguides within polymer sensors**

Author(s): **Derek J. Cassidy, John Healy, John Sheridan**, Univ. College Dublin (Ireland)

12999-117 • 05:45 PM - 07:45 PM

**Enhanced biomedical sensing in the near-infrared using carbon nanotubes**

Author(s): **Jan Stegemann**, Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme IMS (Germany); **Krisztian Neutsch**, Ruhr-Univ. Bochum (Germany); **Justus T. Metternich**, Ruhr-Univ. Bochum (Germany), Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme IMS (Germany); **Juliana Gretz, Linda Sistemich, Sebastian Kruss**, Ruhr-Univ. Bochum (Germany)

12999-118 • 05:45 PM - 07:45 PM

**Research on frequency measurement of the uncooled infrared MEMS resonance sensor**

Author(s): **Xia Zhang**, Communication Univ. of China (China); **Dacheng Zhang**, Peking Univ. (China)

12999-119 • 05:45 PM - 07:45 PM

**Application of Machine Learning and Deep Learning Techniques to Analyze the Displacement of the Kshetrapal Landslide in Chamoli, Uttarakhand, in the Himalayas Region**

Author(s): **Ashok Anand, Alok Bhardwaj**, Indian Institute of Technology Roorkee (India)

12999-121 • 05:45 PM - 07:45 PM

**Methane emission monitoring in landfills from hyperspectral satellite images using deep learning**

Author(s): **Wei Yao**, The Hong Kong Polytechnic Univ. (Hong Kong, China)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

#### SESSION 13: VISIBLE LIGHT COMMUNICATIONS, NAVIGATION AND MAPPING

11 April 2024 • 11:00 AM - 12:40 PM | Schuman, Niveau/Level 1

Session Chair(s): **Filimon Zacharatos**, National Technical Univ. of Athens (Greece)

12999-62 • 11:00 AM - 11:20 AM

**Enhancing Indoor Navigation in Multi-Terminal Airports through Visible Light Communication Signals**

Author(s): **Manuela P. Vieira**, **Manuel Augusto Vieira**, **Gonçalo Galvão**, Instituto Superior de Engenharia de Lisboa (Portugal); **Paula Louro**, UNINOVA (Portugal), Instituto Superior de Engenharia de Lisboa (Portugal); **Pedro Vieira**, Instituto Superior de Engenharia de Lisboa (Portugal); **Alessandro Fantoni**, UNINOVA (Portugal), Instituto Superior de Engenharia de Lisboa (Portugal)

12999-63 • 11:20 AM - 11:40 AM

**Management of AGV movement in Large Indoor Spaces using Visible Light Communication**

Author(s): **Paula Louro**, Instituto Superior de Engenharia de Lisboa (Portugal), UNINOVA (Portugal), LASI (Portugal); **Gonçalo Galvão**, Instituto Superior de Engenharia de Lisboa (Portugal); **Manuela P. Vieira**, Instituto Superior de Engenharia de Lisboa (Portugal), UNINOVA (Portugal), LASI (Portugal); **Manuel Augusto Vieira**, UNINOVA (Portugal), LASI (Portugal)

12999-64 • 11:40 AM - 12:00 PM

**Autonomous measurement robotics for advanced mapping and inspection tasks in complex environments**

Author(s): **Dominik Merkle**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); **Georg Villinger**, Univ. of Freiburg (Germany); **Jannis Gangelhoff**, **Valentin Vierhub-Lorenz**, **Philipp von Olshausen**, **Benedikt Rombach**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany); **Alexander Reiterer**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany), Univ. of Freiburg (Germany)

12999-65 • 12:00 PM - 12:20 PM

**Optically assisted absolute positioning of robots in a working cell utilizing optimization algorithms**

Author(s): **Tobias Roß**, **Klaus Lutter**, **Thorsten Uphues**, ISAT – Institut für Sensor- und Aktortechnik (Germany), Hochschule für angewandte Wissenschaften Coburg (Germany); **Christian Ennes**, Brose Fahrzeugteile SE & Co. Kommanditgesellschaft (Germany)

12999-66 • 12:20 PM - 12:40 PM

**Semantic segmentation of fused mobile mapping data**

Author(s): **Georg Villinger**, **Annette Schmitt**, **Alexander Reiterer**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany), Albert-Ludwigs-Univ. Freiburg (Germany)

### Lunch Break 12:40 PM - 01:40 PM

#### SESSION 14: DETECTOR TECHNOLOGIES I

11 April 2024 • 01:40 PM - 03:20 PM | Schuman, Niveau/Level 1

Session Chair(s): **Filimon Zacharatos**, National Technical Univ. of Athens (Greece)

12999-67 • 01:40 PM - 02:00 PM

**Thermoelectric Single-Photon Detection Pixel Suitable for Use in Large Arrays**

Author(s): **Astghik A. Kuzanyan**, **Vahan Nikoghosyan**, **Armen Kuzanyan**, Institute for Physical Research, NAS RA (Armenia)

12999-68 • 02:00 PM - 02:20 PM

**Development and Characterization of an EUV/soft X-ray Single-Photon Sensitive sCMOS Camera**

Author(s): **Nursulton Abdurakhimov**, **Conrad Friedrich**, greateyes GmbH (Germany)

12999-69 • 02:20 PM - 02:40 PM

**Indium Arsenide Electron Avalanche Photodiodes for Femtowatt Level Infrared Detection**

Author(s): **Tarick Blain**, **Chee Hing Tan**, **Jo Shien Ng**, **George Basta**, The Univ. of Sheffield (United Kingdom)

12999-70 • 02:40 PM - 03:00 PM

**Extremely low noise InAs and AlGaAsSb avalanche photodiodes for low photon detection in infrared wavelengths**

Author(s): **Chee Hing Tan**, **Tarick Blain**, **Jo Shien Ng**, **Jonathan Taylor-Mew**, The Univ. of Sheffield (United Kingdom); **Benjamin White**, Phlux Technology Ltd. (United Kingdom); **Ye Cao**, The Univ. of Sheffield (United Kingdom); **Xiao Collins**, Phlux Technology Ltd. (United Kingdom); **John David**, The Univ. of Sheffield (United Kingdom)

12999-71 • 03:00 PM - 03:20 PM

**Enhancement of SPAD-camera sensitivity by molded microlens arrays**

*Author(s):* **Robert Leitel, Peter Dannberg, Robert Brüning**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Simon Grosse, Manuel Ligges**, Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme IMS (Germany)

**Coffee Break 03:20 PM - 03:40 PM**

**SESSION 15: DETECTOR TECHNOLOGIES II**

11 April 2024 • 03:40 PM - 05:00 PM | Schuman, Niveau/Level 1

*Session Chair(s):* **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

12999-72 • 03:40 PM - 04:00 PM

**Optical metrology with wide field of view for 3D mapping of tissues**

*Author(s):* **Christos Katopodis, Ioanna Zergioti**, National Technical Univ. of Athens (Greece); **Dimitrios Papazoglou**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece)

12999-73 • 04:00 PM - 04:20 PM

**Laser IR Countermeasures & Assessment of Laser Dazzling Effects on FPA Sensor Arrays**

*Author(s):* **Olivier Muller, Lionel Merlat, Célia Bruder**, Institut Franco-Allemand de Recherches de Saint-Louis (France)

12999-74 • 04:20 PM - 04:40 PM

**The designing of a far-field laser facula measurement system based on detector array**

*Author(s):* **Rongguo Fu, zhongchen wang, zexuan li, xiang yu, MINGZHU HUANG, Jianpo Gao, Huanan Zhang**, Nanjing Univ. of Science and Technology (China); **peng wang**, jiangsu shuguang opto-electronics co.,Ltd (China)

12999-75 • 04:40 PM - 05:00 PM

**Research on Modeling and Detection Algorithm of Weak Feature Space Infrared Small Target**

*Author(s):* **Lei Liu, Lei Guo, Rongguo Fu**, Nanjing Univ. of Science and Technology (China)

**DIGITAL POSTERS**

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

12999-113

**Labyrinth Models for Remote Sensing Application**

*Author(s):* **Maretta Kazaryan**, North Ossetian State Medical Academy (Russian Federation); **Andrei Rihter**, Research Institute of Aerospace Monitoring "AEROCOSMOS" (Russian Federation); **Evgeny A. Semenishchev**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12999-114

**Stochastic Filtering of Unmanned Objects Parameters in Conditions of Uncertainty**

*Author(s):* **Sergei Sokolov**, Moscow Technical University of Communications and Informatics (Russian Federation); **Irina Reshetnikova**, Don State Technical Univ. (Russian Federation); **Dmitrii Marshakov**, Moscow Technical University of Communications and Informatics (Russian Federation); **Nikolay Gapon**, Don State Technical Univ. (Russian Federation); **Evgeny A. Semenishchev**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

12999-109

**Smart indoor organic photovoltaic cells for controlling health monitoring sensors: Harnessing sustainable energy solutions for efficient sensing systems**

*Author(s):* **Fatima Mohsin Zakai**, Hamdard Univ. (Pakistan); **Sumbel Ijaz**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan); **Muhammad Faisal Khan**, Hamdard University, Department of Electrical Engineering, Madinat al-Hikmah, Hakim Mohammed Said Roa (Pakistan)

# CONFERENCE 13000

## Real-time Processing of Image, Depth and Video Information 2024

CONFERENCE CO-SPONSOR

THE IMAGINGSOURCE  
TECHNOLOGY BASED ON STANDARDS

08 - 09 April 2024 | Stuttgart/Salon 15, Niveau/Level 1

**Conference Chair(s):** **Matthias F. Carlsohn**, Computer Vision and Bildkommunikation at Bremen (Germany)

**Conference Co-Chair(s):** **Gian Domenico Licciardo**, Univ. degli Studi di Salerno (Italy); **Viktor J. Schneider**, Leibniz Univ. Hannover (Germany)

**Program Committee:** **Miguel Bordallo Lopez**, Univ. of Oulu (Finland); **Ellen Daly**, The Open Univ. (United Kingdom); **Abdelhafid El Ouardi**, Univ. Paris-Saclay (France); **Sepehr Elahi**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Chiou-Shann Fuh**, National Taiwan Univ. (Taiwan); **Dominique Ginhac**, Univ. de Bourgogne (France); **Gwanggil Jeon**, Incheon National Univ. (Korea, Republic of); **Sergio R. Goma**, Qualcomm Inc. (United States); **M. Hassaballah**, South Valley Univ. (Egypt); **Koorosh Khodabandehloo**, Univ. of Southern Queensland (Australia); **Antonio Sanz Montemayor**, Univ. Rey Juan Carlos (Spain); **Amos Omondi**, SUNY Korea (Korea, Republic of); **Luis Salgado**, Univ. Politécnica de Madrid (Spain); **Sergio Saponara**, Univ. di Pisa (Italy); **Leonel Sousa**, Instituto Superior Técnico (Portugal); **Stephan C. Stilkerich**, Infineon Technologies AG (Germany)

### INFORMATION

#### Best Paper Award

The SPIE Photonics Europe conference on Real-time Processing of Image, Depth and Video Information will offer a Best Paper Award. Eligibility is extended to all speakers who are present to deliver their research work in person at the conference. Papers will be judged based on clarity of presentation, scientific merit, and potential innovative impact. The Best Paper Award will include a cash reward and an award certificate.

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: DIGITAL TWINS

08 April 2024 • 11:30 AM - 12:40 PM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Matthias F. Carlsohn**, Computer Vision & Bildkommunikation (Germany)

13000-1 • 11:30 AM - 12:00 PM

**Road Intersection Analysis: Integrating Image Processing into Digital Twin Technologies** (Invited Paper)

Author(s): **Francisco C. Vázquez-Donaire, Alejandra Abalo-García, Antonio S. Montemayor, Juan Jose Pantrigo**, Univ. Rey Juan Carlos (Spain)

13000-2 • 12:00 PM - 12:20 PM

**Digital twin of the technological process for grinding helical flutes of a cutting tool based on real-time image processing of the to re-create product**

Author(s): **Alexey B. Nadykto, Petr M. Pivkin, Lydmila A. Uvarova**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

13000-3 • 12:20 PM - 12:40 PM

**Advancing Green Computer Vision: Principles and Practices for Sustainable Development for Real-time Computer Vision Applications**

Author(s): **Mark A. M. Kramer, Peter M. Roth**, Veterinaermedizinische Univ. Wien (Austria)

**Lunch Break 12:40 PM - 02:00 PM**

## SESSION 2: EMBEDDED SYSTEMS

08 April 2024 • 02:00 PM - 03:20 PM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Viktor J. Schneider**, Leibniz Univ. Hannover (Germany)

13000-4 • 02:00 PM - 02:20 PM

**A Real-time Demonstrator for Image Classification using FPGA-Based Logic Neural Networks**

Author(s): **David Concha, Francisco Jose Garcia-Espinosa, Ivan Ramirez, Luis Alberto Aranda**, Univ. Rey Juan Carlos (Spain)

13000-5 • 02:20 PM - 02:40 PM

**Energy-efficient Real-time Computer Vision Applications in Practice**

Author(s): **Mark A. M. Kramer, Peter M. Roth**, Veterinaermedizinische Univ. Wien (Austria)

13000-6 • 02:40 PM - 03:00 PM

**Self-adapting reconfigurable multiply-accumulator for real-time image processing in embedded systems**

Author(s): **Andrea Fasolino, Paola Vitolo, Rosalba Liguori, Luigi Di Benedetto, Alfredo Rubino, Gian Domenico Licciardo**, Univ. degli Studi di Salerno (Italy)

13000-7 • 03:00 PM - 03:20 PM

**Implementation of the image super-resolution DWT based algorithm on Raspberry Pi platform for real-time applications**

Author(s): **Rogelio Reyes-Reyes, Raul J. Osorno-Ortiz, Volodymyr I. Ponomaryov, Clara Cruz-Ramos, Beatriz Paulina Garcia-Salgado**, Instituto Politécnico Nacional (Mexico); **Sergiy Sadovnychiy**, Instituto Mexicano del Petróleo (Mexico)

**Coffee Break 03:20 PM - 03:50 PM**

## SESSION 3: NEURAL NETS AND DEEP LEARNING

08 April 2024 • 03:50 PM - 05:30 PM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Volodymyr I. Ponomaryov**, Instituto Politécnico Nacional (Mexico)

13000-9 • 03:50 PM - 04:10 PM

**Deep Learning Approach for a Machine-Human interface based on optical real-time Gesture Recognition for Automated Guided Vehicles**

Author(s): **Stephan H. Hussmann**, Fachhochschule Westküste (Germany); **Kiran Krishnakumar**, Fachhochschule Westküste (Germany), REINHOLZ Technologies GmbH (Germany); **Laura Gersmeier**, REINHOLZ Technologies GmbH (Germany); **Leif Ole Harders**, Fachhochschule Westküste (Germany)

13000-10 • 04:10 PM - 04:30 PM

**Optimizing Urban Intersection Management: A Visible Light Communication Approach for Cooperative Trajectories and Traffic Signals**

Author(s): **Gonçalo Galvão, Manuel Augusto Vieira, Manuela P. Vieira, Mário Véstias, Paula A. Louro, Pedro A. Vieira**, Instituto Superior de Engenharia de Lisboa (Portugal)

13000-11 • 04:30 PM - 04:50 PM

**A Novel Lightweight Multi-Attentive General Ship Detection model for Detection of Ships in Optical and SAR Satellite Imagery**

*Author(s):* **Shovakar Bhattacharjee, Palaniswamy Shanmugam, Sukhendu Das**, Indian Institute of Technology Madras (India)

13000-12 • 04:50 PM - 05:10 PM

**WTT: Combining wavelet transform with Transformer for remote sensing image super-resolution**

*Author(s):* **Jingyi Liu**, College of Electronics and Information Engineering, Sichuan Univ. (China), College of Intelligent Systems Science and Engineering, Hubei Minzu Univ. (China); **Xiaomin Yang**, College of Electronics and Information Engineering, Sichuan Univ. (China); **Gwanggil Jeon**, Incheon National Univ. (Korea, Republic of)

13000-13 • 05:10 PM - 05:30 PM

**HCRNN: A Novel Hybrid Convolutional-Recursive Approach for Real-time Remote Sensing Image Data Analysis**

*Author(s):* **Akansha Singh**, Bennett Univ. (India); **Krishna Kant Singh**, Delhi Technical Univ. (India)

## Tuesday 9 April 2024

### SESSION 4: OPTICAL IMAGE PROCESSING

09 April 2024 • 08:40 AM - 10:00 AM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Gian Domenico Licciardo**, Univ. degli Studi di Salerno (Italy)

13000-14 • 08:40 AM - 09:00 AM

**Immersive Hybrid Real-time Video communication using Mixed Camera Setups**

*Author(s):* **Marcus Zepp, Decai Chen, Oliver Schreer, Ingo Feldmann**, Fraunhofer-Institut für Nachrichtentechnik, Heinrich-Hertz-Institut, HHI (Germany); **Ralf Schäfer, Anna Hilsmann, Peter Eisert**, Fraunhofer-Institut für Nachrichtentechnik (Germany); **Karin Prebeck**, Fraunhofer Institute for Integrated Circuits (IIS) (Germany)

13000-15 • 09:00 AM - 09:20 AM

**High-speed Doppler holography of the retina: real-time image rendering from uninterrupted raw interferogram acquisition at 10 gigabytes per second using a streaming camera**

*Author(s):* **Marius Dubosc, Jules Guillou, Paul Duhot, Thomas Xu, Oscar Morand, Edgar Delaporte, Samuel Goncalves**, Ctr. Hospitalier National d'Ophthalmologie des Quinze-Vingts (France); **Michael Atlan**, Institut Langevin (France)

13000-16 • 09:20 AM - 09:40 AM

**Real-Time Machine Learning-Based Chirped-Pulse Speckle Imaging**

*Author(s):* **Sepehr Elahi**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Fatemeh Kalantarifard, Parviz Elahi**, Bogaziçi Üniv. (Turkey)

13000-17 • 09:40 AM - 10:00 AM

**Lithium-niobate photonic integrated circuits for GHz, sub-picojoule/bit optical image processing**

*Author(s):* **Julian Rasmus Bankwitz, Jelle Dijkstra, Liam McRae, Ravi Pradip**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Francesco Lenzini**, Univ. Münster (Germany); **Wolfram H. P. Pernice**, Ruprecht-Karls-Univ. Heidelberg (Germany)

### Coffee Break 10:00 AM - 10:40 AM

### SESSION 5: REAL-TIME IMPLEMENTATIONS

09 April 2024 • 10:40 AM - 12:20 PM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Sepehr Elahi**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13000-19 • 10:40 AM - 11:00 AM

**Multiple GPU parallel real time segmentation on breast lesions for ultrasound videos**

*Author(s):* **Oscar Garcia-Avila, Volodymyr I. Ponomaryov, Jose Agustin Almaraz-Damian, Beatriz Paulina Garcia-Salgado, Rogelio Reyes-Reyes, Clara Cruz-Ramos**, Instituto Politécnico Nacional (Mexico)

13000-20 • 11:00 AM - 11:20 AM

**Multithreading approach for white blood cell segmentation implementation**

*Author(s):* **Beatriz Paulina Garcia-Salgado, Volodymyr I. Ponomaryov, Jose Luis Diaz-Resendiz, Jose Agustin Almaraz-Damian, Rogelio Reyes-Reyes, Yeredith G. Mora-Martinez**, Instituto Politécnico Nacional (Mexico); **Sergiy Sadovnychiy**, Instituto Mexicano del Petróleo (Mexico)

13000-21 • 11:20 AM - 11:40 AM

**Real-time on-board satellite cloud cover detection hardware architecture using spaceborne remote sensing imagery**

*Author(s):* **Paola Vitolo, Andrea Fasolino, Rosalba Liguori, Luigi Di Benedetto, Alfredo Rubino, Gian Domenico Licciardo**, Univ. degli Studi di Salerno (Italy)

13000-22 • 11:40 AM - 12:00 PM

**Considerations on the search of a fast non-iterative inverse discrete Radon Transform**

*Author(s):* **Óscar Gómez-Cárdenes, José Gil Marichal-Hernández, Fernando Luis Rosa-González**, Univ. de La Laguna (Spain); **Jung-Young Son**, Konyang Univ. (Korea, Republic of); **Rafael Perez-Jimenez**, Univ. de Las Palmas de Gran Canaria (Spain)

13000-23 • 12:00 PM - 12:20 PM

**Real-time stroke detection using deep learning and federated learning**

*Author(s):* **Abdussalam Elhanashi, Pierpaolo Dini, Sergio Saponara**, Univ. di Pisa (Italy); **Qinghe Zheng**, Shandong Management Univ. (China); **Ibrahim Alsharif**, Jordan Univ. of Science & Technology (Jordan)

### POSTER SLAM: REAL-TIME PROCESSING OF IMAGE, DEPTH AND VIDEO INFORMATION

09 April 2024 • 12:20 PM - 12:25 PM | Galerie Schweitezer, Niveau/Level 0

Join the poster presenters of the Real-time Processing of Image, Depth and Video Information conference for their three-minute oral slams. Each poster author is invited to give a brief (five-minute) preview of their research.

The posters will be available for viewing at the Poster Session 17:45 to 19:45 hrs on Tuesday.

### HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)  
*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Franco**, Univ. Politècnica de València (Spain)

### POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13000-28 • 06:10 PM - 08:00 PM

**Smart autonomous crack detection in concrete structures**

*Author(s):* **Arya Prakash Padhi, Ashok Anand**, Indian Institute of Technology Roorkee (India)

### DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13000-24

**Enhancing dental bitewing radiograph datasets: a preprocessing approach for AI detection and diagnoses**

*Author(s):* **Wafaa Al Nassan, Talal Bonny, Mohammad Al-Shabi**, Univ. of Sharjah (United Arab Emirates)

13000-29

**Eye tracking system for controlling home devices**

*Author(s):* **Abdulaziz Alfahl, Abdullah Al-Amodi, Abderrahman Boudiaf, Talal Bonny, Wafaa Al Nassan**, Univ. of Sharjah (United Arab Emirates)

# CONFERENCE 13001

## Specialty Optical Fibres VIII

09 - 10 April 2024 | Adenauer, Niveau/Level 1

CONFERENCE CO-SPONSOR



**Conference Chair(s):** **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus); **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Christian-Alexander Bunge**, Hochschule für Telekommunikation Leipzig (Germany)

**Program Committee:** **Ryszard Buczynski**, Institute of Electronic Materials Technology (Poland); **Jean-Luc Adam**, Univ. de Rennes 1 (France); **Jean-Louis Auguste**, XLIM Institut de Recherche (France); **Ole Bang**, Technical Univ. of Denmark (Denmark); **Neil G. R. Broderick**, The Univ. of Auckland (New Zealand); **Adrian L. Carter**, Nufern (United States); **Liang Dong**, Ctr. for Optical Materials Science + Engineering Technologies (United States); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland); **Henry H. Du**, Stevens Institute of Technology (United States); **Sebastien Fevrier**, XLIM Institut de Recherche (France); **Karl-Friedrich Klein**, Technische Hochschule Mittelhessen (Germany); **Jonathan C. Knight**, Univ. of Bath (United Kingdom); **Michael Komodromos**, Frederick Univ. (Cyprus); **Walter Margulis**, Acreo Swedish ICT AB (Sweden); **Carlos F. Marques**, Univ. de Aveiro (Portugal); **Chengbo Mou**, Shanghai Univ. (China); **Saeed Rehman**, Fibercore Ltd. (United Kingdom); **Valerio Romano**, Bern Univ. of Applied Sciences (Switzerland); **Kunimasa Saitoh**, Hokkaido Univ. (Japan); **Radan Slavik**, Univ. of Southampton (United Kingdom); **Hwa-Yaw Tam**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Antreas Theodosiou**, Lumoscribe Ltd. (Cyprus); **Waclaw Urbanczyk**, Wroclaw Univ. of Technology (Poland); **David J. Webb**, Aston Univ. (United Kingdom); **Katrin Wondraczek**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

### INFORMATION

#### Best Paper Award

SPIE Photonics Europe conference on Specialty Optical Fibres will offer a Best Paper Award. Eligibility is extended to all speakers who are present to deliver their research work in person at the conference. Papers will be judged based on clarity of presentation, scientific merit, and potential innovative impact. The Best Paper Award will include a cash reward and an award certificate.

Tuesday 9 April 2024

#### SESSION 1: JOINT SESSION: TWO-MICRON FIBER SOURCES

09 April 2024 • 08:30 AM - 10:15 AM | Amsterdam/Salon 6, Niveau/Level 0

*Session Chair(s):* **Katrin Wondraczek**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

Joint Session between Conference 13001 (Specialty Optical Fibres) and Conference 13003 (Fiber Lasers and Glass Photonics: Materials through Applications)

13003-16 • 08:30 AM - 08:45 AM

##### Monolithic femtosecond Holmium fiber MOPA system at 2050 nm

*Author(s):* **Lea Schlotmann**, Laser Zentrum Hannover e.V. (Germany); **Moritz Hinkelmann**, Exzellenzcluster PhoenixD, Laser Zentrum Hannover e.V. (Germany); **Frithjof Haxsen**, Laser Zentrum Hannover e.V. (Germany); **Jörg Neumann**, **Dietmar Kracht**, Exzellenzcluster PhoenixD, Laser Zentrum Hannover e.V. (Germany)

13001-1 • 08:45 AM - 09:00 AM

##### 2- $\mu$ m laser beam quality improved by matched pedestal passive and active fibers

*Author(s):* **Christophe Louot**, **Arnaud Motard**, **Nicolas Dalloz**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Thierry Robin**, **Laurent Lablonde**, **Benoît Cadier**, Exail SAS (France); **Thierry Ibach**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Inka Manek-Hönniger**, Ctr. Lasers Intenses et Applications, Univ. de Bordeaux, CNRS (France), CEA (France); **Félix Sanson**, Institut Franco-Allemand de Recherches de Saint-Louis (France), Univ. de Bordeaux (France); **Anne Dhollande**, Institut Franco-Allemand de Recherches de Saint-Louis (France)



13003-17 • 09:00 AM - 09:15 AM

**30W all-fiber continuous wave tunable laser amplifier around 1850 nm**

Author(s): **Kentin Poncelet**, Lab. Photonique, Numérique et Nanosciences (France), TOPTICA Photonics SAS (France); **Giorgio Santarelli**, **Adèle Hilico**, Lab. Photonique, Numérique et Nanosciences (France); **Germain Guiraud**, **Nick Traynor**, TOPTICA Photonics SAS (France)

13003-18 • 09:15 AM - 09:30 AM

**Power scaling of a 2.1 μm Ho<sup>3+</sup>-doped fiber laser integrating a 1.9 μm triple clad fiber pump combiner**

Author(s): **Nicolas Dalloz**, **Christophe Louot**, **Thierry Ibach**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Julien Le Gouet**, **François Gustave**, ONERA (France); **Thierry Robin**, **Benoît Cadier**, Exail SAS (France); **Anne Hildenbrand-Dhollande**, Institut Franco-Allemand de Recherches de Saint-Louis (France)

13001-2 • 09:30 AM - 09:45 AM

**Nanoparticle doping method for highly thulium-doped optical fibers for efficient, eye-safe fiber lasers – A fluorescence lifetime study**

Author(s): **Petr Varák**, **Michal Kamradek**, **Jan Aubrecht**, **Ondrej Podrazký**, **Ivo Barton**, **Ivan Kašík**, **Pavel Peterka**, **Pavel Honzátko**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13001-3 • 09:45 AM - 10:00 AM

**Analytical model of CW holmium-doped fiber laser**

Author(s): **Jan Pokorný**, **Jan Aubrecht**, **Martin Grábner**, **Michal Kamrádek**, **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13003-19 • 10:00 AM - 10:15 AM

**Continuous wave 184 W thulium-doped fiber laser emitting at 1.95 μm in compact efficient package**

Author(s): **Denis Philippovskiy**, **Giuseppe Scurria**, **Jawaher Alameri**, **Taif Alhmoudi**, **Aesha Alteneiji**, **Guillaume Matras**, **Chaouki Kasmi**, Technology Innovation Institute (United Arab Emirates)

**Coffee Break 10:15 AM - 10:50 AM**

**SESSION 2: SPECIALTY FIBERS FOR FIBER LASERS**

09 April 2024 • 10:50 AM - 12:40 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Michael H. Frosz**, Max-Planck-Institut für die Physik des Lichts (Germany)

13001-4 • 10:50 AM - 11:20 AM

**Ultra-stable laser frequency stabilisation and distribution using hollow-core fibres (Invited Paper)**

Author(s): **Zitong Feng**, Optoelectronics Research Ctr. (United Kingdom), National Physical Lab. (United Kingdom); **Giuseppe Marra**, National Physical Lab. (United Kingdom); **Francesco Poletti**, **Radan Slavík**, Optoelectronics Research Ctr. (United Kingdom)

13001-5 • 11:20 AM - 11:40 AM

**Controlling the transmission bandwidth of anti-resonant hollow-core fibers**

Author(s): **Stephanos Yerolatsitis**, Cyprus Univ. of Technology (Cyprus), CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); **Robbie Mears**, **Jaiya Keohane**, **Sanjana Vinta**, **Kerriane Harrington**, Univ. of Bath (United Kingdom); **Robert J. A. Francis-Jones**, ORCA Computing (United Kingdom), Univ. of Bath (United Kingdom); **Kristina Rusimova**, Univ. of Bath (United Kingdom)

13001-6 • 11:40 AM - 12:00 PM

**Static and dynamic mode interaction in high-average power polarization maintaining fibers**

Author(s): **Gonzalo Palma-Vega**, **Denny Hässner**, **Friedrich Möller**, **Stefan Kuhn**, **Johannes Nold**, **Nicoletta Haarlammert**, **Thomas Schreiber**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13001-7 • 12:00 PM - 12:20 PM

**An investigation on thermal splicing of ZBLAN optical fiber**

Author(s): **Antreas Theodosiou**, Lumoscribe Ltd. (Cyprus), Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Yauhen Baravets**, **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13001-8 • 12:20 PM - 12:40 PM

**Multiring rare earth-doped silica optical fibers for broadband and laser emission in the eye-safe spectral range**

Author(s): **Piotr Miluski**, **Marcin Kochanowicz**, **Krzysztof Markowski**, Białystok Univ. of Technology (Poland); **Marek Lodzinski**, AGH Univ. of Science and Technology (Poland); **Wojciech A. Pisarski**, **Joanna Pisarska**, **Marta Kuwik**, Univ. of Silesia (Poland); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland); **Jacek Zmojda**, **Jan Dorosz**, Białystok Univ. of Technology (Poland); **Maria Michalska**, **Jacek Świdorski**, Military University of Technology (Poland); **Magdalena Leśniak**, AGH Univ. of Science and Technology (Poland)

**Lunch/Exhibition Break 12:40 PM - 01:50 PM**

## SESSION 3: PHOTONIC CRYSTAL FIBERS AND HOLLOW-CORE FIBERS

09 April 2024 • 01:50 PM - 03:40 PM | Adenauer, Niveau/Level 1

Session Chair(s): **Stephanos Yerolatsitis**, Cyprus Univ. of Technology (Cyprus)

13001-9 • 01:50 PM - 02:20 PM

**Towards practical all-fiber laser gas sensors using anti-resonant hollow-core fibers** (*Invited Paper*)

Author(s): **Grzegorz Gomólka**, Wrocław Univ. of Science and Technology (Poland); **Dariusz Pysz**, Lukaszewicz Research Network - Institute of Microelectronics and Photonics (Poland); **Ryszard Buczyński**, Lukaszewicz Research Network - Institute of Microelectronics and Photonics (Poland), Univ. of Warsaw (Poland); **Michał Nikodem**, Wrocław Univ. of Science and Technology (Poland)

13001-10 • 02:20 PM - 02:40 PM

**Non-destructive real-time characterization of anti-resonant hollow-core fibres using Fabry-Pérot interferometry**

Author(s): **Michael H. Frosz**, **Michael Bergler**, Max-Planck-Institut für die Physik des Lichts (Germany); **Patrick Uebel**, ASML (Germany)

13001-11 • 02:40 PM - 03:00 PM

**Light transmission through a hollow core fiber bundle**

Author(s): **Md Abu Sufian**, Univ. of Central Florida (United States); **Erwan Baleine**, **Jeffrey Geldmeier**, Lockheed Martin Corp. (United States); **Ameen Alhalemi**, **Jose Enrique Antonio-Lopez**, **Rodrigo Amezcua-Correa**, **Axel Schülzgen**, Univ. of Central Florida (United States)

13001-12 • 03:00 PM - 03:20 PM

**Enhancing birefringence in anti-resonant hollow-core fibers**

Author(s): **Stephanos Yerolatsitis**, Cyprus Univ. of Technology (Cyprus), CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); **Jose Enrique Antonio-Lopez**, **Rodrigo Amezcua-Correa**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus)

13001-13 • 03:20 PM - 03:40 PM

**Distributed measurement of gas pressure dynamics in as-drawn hollow-core fibres**

Author(s): **Elizaveta Elistratova**, **Thomas W. Kelly**, **Ian A. Davidson**, **Jaroslav Rzegocki**, **Ghafour Amouzad Mahdiraji**, **Somarpita Pradhan**, **Austin Taranta**, **Francesco Poletti**, **Radan Slavik**, **Peter Horak**, **Natalie V. Wheeler**, Univ. of Southampton (United Kingdom)

**Coffee Break 04:00 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13001-34 • 06:10 PM - 08:00 PM

**Broadband thulium fiber amplifier for spectral region located beyond the L-band**

Author(s): **Jan Aubrecht**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Jan Pokorný**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic); **Michal Kamrádek**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Bára Švejkarová**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic); **Matej Komanec**, Czech Technical Univ. in Prague (Czech Republic); **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13001-35 • 06:10 PM - 08:00 PM

**Unidirectional mode coupling in non-Hermitian waveguides**

Author(s): **Mohammad Nayeem Akhter**, **Ramon Herrero**, **Muriel Botey**, Univ. Politècnica de Catalunya (Spain); **Kestutis Staliunas**, Univ. Politècnica de Catalunya (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain), Vilnius Univ. (Lithuania)

13001-36 • 06:10 PM - 08:00 PM

**Design and measurement of fiber optic VLC transmitter based on POF**

Author(s): **Stanislav Hejduk**, **Ales Vanderka**, **Lukas Hajek**, **Jan Nedoma**, **Jan Látal**, **Petr Siska**, **Daniel Krizan**, **Jakub Cubik**, VŠB-Technical Univ. of Ostrava (Czech Republic); **Carlos A F Marques**, Aveiro Institute of Materials/University of Aveiro (Portugal)

13001-37 • 06:10 PM - 08:00 PM

**New Approach for Speed and Direction Measurement by Fiber Optic Sensor**

Author(s): **Jakub Cubik**, **Jan Nedoma**, **Marcel Fajkus**, **Stanislav Hejduk**, **Daniel Krizan**, VŠB-Technical Univ. of Ostrava (Czech Republic); **Carlos Marques**, CICECO & Physics Department, University of Aveiro (Portugal), VŠB-Technical Univ. of Ostrava (Czech Republic)

13001-38 • 06:10 PM - 08:00 PM

**A novel protocol to assess calcium phosphate glass optical fiber's in vitro dissolution behavior**

Author(s): **Sharon Russo**, Politecnico di Torino (Italy); **Jawad T. Pandayil**, Politecnico di Torino (Italy), Fondazione Links (Italy); **Davide Luca Janner**, Politecnico di Torino (Italy); **Nadia G. Boetti**, Fondazione Links (Italy)

13001-40 • 06:10 PM - 08:00 PM

**Breaking the Trade-off between DMD and Cross-talk in SDM through Graded-Index FMF**

Author(s): **Komal Ojha**, Indian Institute of Technology Bombay (India); **Darpan Mishra**, Tyndall National Institute (Ireland); **Kumar Appaiah**, Indian Institute of Technology Bombay (India); **Deepak Jain**, Indian Institute of Technology Delhi (India)

13001-44 • 06:10 PM - 08:00 PM

**Research on the polymeric Fiber-Tip Fabry-Perot cavity with high reflective mirror manufactured by the Two-Photon Polymerization method**

Author(s): **Joanna Korec-Kosturek**, **Monika M. Halendy**, **Slawomir Ertman**, **Piotr Lesiak**, Warsaw University of Technology (Poland)

13001-45 • 06:10 PM - 08:00 PM

**Experimental Investigation of Optical Fiber Fabry-Perot Resonators: Resonance Enhancement through Reflective Coatings and Concave Mirrors**

Author(s): **Monika M Halendy**, **Joanna Korec-Kosturek**, **Slawomir Ertman**, **Tomasz R Wolinski**, **Piotr Lesiak**, Warsaw University of Technology (Poland)

## Wednesday 10 April 2024

### SESSION 4: SENSORS AND TELECOMMUNICATION DEVICES BASED ON OPTICAL FIBERS

10 April 2024 • 08:30 AM - 10:30 AM | Adenauer, Niveau/Level 1

Session Chair(s): **Christian-Alexander Bunge**, Hochschule für Technik, Wirtschaft und Kultur Leipzig (Germany)

13001-14 • 08:30 AM - 09:00 AM

**Distributed fiber optic sensing for monitoring of underground facilities** *(Invited Paper)*

Author(s): **Xin Lu**, **Katerina Krebber**, Bundesanstalt für Materialforschung und -prüfung (Germany)

13001-15 • 09:00 AM - 09:30 AM

**High-temperature fibers for data transmission and sensing** *(Invited Paper)*

Author(s): **Christian Schulze**, **Doreen Keil**, **Falk Wirth**, j-fiber GmbH (Germany)

13001-16 • 09:30 AM - 09:50 AM

**Lab-around-fiber for biomarkers detection of antimicrobial resistance**

Author(s): **Marine Poret**, CEA-Paris-Saclay (France), CEA-LIST (France); **Fatima Flores Galicia**, **Camille Frangville**, CEA-Paris-Saclay (France); **Alexandre Lerner**, CEA-LIST (France); **Karla Perez Toralla**, CEA-Paris-Saclay (France); **Guillaume Laffont**, CEA-LIST (France)

13001-17 • 09:50 AM - 10:10 AM

**Environmental sensor based on optical-resonance-enhancement in a MoS<sub>2</sub> printed D-shaped single-mode fiber**

*Author(s):* **Amar Nath Ghosh**, Univ. of Southampton (United Kingdom); **Mingfei Xiao**, Univ. of Cambridge (United Kingdom); **Meng Huang**, Univ. of Southampton (United Kingdom); **Jinrui Chen**, Univ. of Cambridge (United Kingdom); **Noel Healy**, Newcastle Univ. (United Kingdom); **Tawfique Hasan**, Univ. of Cambridge (United Kingdom); **Anna C. Peacock**, Univ. of Southampton (United Kingdom)

13001-18 • 10:10 AM - 10:30 AM

**All-fiber spectrometer based on coreless fiber**

*Author(s):* **Chunying Guan**, **Zhenyu Duan**, **Hongzhou Chen**, **Peng Ye**, **Jinhui Shi**, Harbin Engineering Univ. (China); **Libo Yuan**, Guilin Univ. of Electronic Technology (China)

**Coffee Break 10:30 AM - 11:00 AM**

**SESSION 5: FIBER GRATINGS AND OPTICAL FIBER COMPONENTS**

10 April 2024 • 11:00 AM - 12:50 PM | Adenauer, Niveau/Level 1

*Session Chair(s):* **Antreas Theodosiou**, Lumoscribe Ltd. (Cyprus)

13001-19 • 11:00 AM - 11:30 AM

**Latest achievements on polymer optical fiber sensors and NP-doped optical fibers** (*Invited Paper*)

*Author(s):* **Arnaldo Leal-Junior**, Univ. Federal do Espírito Santo (Brazil); **Eduarda Silva**, **Carlos Castellani**, Univ. Federal do Espírito Santo (Brazil); **Wilfried Blanc**, Universite Cote d'Azur, INPHYNI (France)

13001-20 • 11:30 AM - 11:50 AM

**Hybrid optical fibre grating for label-free biodetection**

*Author(s):* **Jiaying Sun**, Nottingham Trent Univ. (United Kingdom); **Luis Poveda-Wong**, Univ. de Costa Rica (Costa Rica); **Hanlin Jiang**, Nottingham Trent Univ. (United Kingdom); **Jaime Cascante-Vindas**, Univ. de Costa Rica (Costa Rica); **José L. Cruz**, **Miguel V. Andrés**, Univ. de València (Spain); **Xianfeng Chen**, Nottingham Trent Univ. (United Kingdom)

13001-21 • 11:50 AM - 12:10 PM

**Corrugated long-period grating for strain, displacement and temperature sensor applications**

*Author(s):* **Nuno Valente**, Instituto de Telecomunicações (Portugal); **Flávio Figueira**, Universidade de Aveiro (Portugal); **Lúcia Bilro**, **Ricardo Oliveira**, Instituto de Telecomunicações (Portugal)

13001-22 • 12:10 PM - 12:30 PM

**Development and characterization of tailored monocrystalline fibers for integral field units (IFU) in solar spectropolarimeters**

*Author(s):* **Franciele Carlesso**, Instituto Nacional de Pesquisas Espaciais (Brazil); **Marianne Cochez**, Lab. Matériaux Optiques, Photonique et Systèmes, CentraleSupélec, Univ. de Lorraine (France); **Ana Maria do Espírito Santo**, **Edvaldo Antônio de Almeida**, Univ. Federal de São Paulo (Brazil); **Adriany Rodrigues Barbosa**, **Luis Eduardo Antunes Vieira**, Instituto Nacional de Pesquisas Espaciais (Brazil)

13001-23 • 12:30 PM - 12:50 PM

**FBG inscription and interrogation in polypropylene coreless waveguides**

*Author(s):* **Ivan Chapalo**, **Vasilis Sarakatsianos**, **Maria Konstantaki**, Foundation for Research and Technology-Hellas (Greece); **Theodoros Manouras**, **Maria Vamvakaki**, Foundation for Research and Technology-Hellas (Greece), Univ. of Crete (Greece); **Stavros Pissadakis**, Foundation for Research and Technology-Hellas (Greece)

**Lunch/Exhibition Break 12:50 PM - 02:00 PM**

**SESSION 6: MODELLING AND TESTING OF SPECIALTY FIBERS AND COMPONENTS**

10 April 2024 • 02:00 PM - 04:30 PM | Adenauer, Niveau/Level 1

*Session Chair(s):* **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13001-24 • 02:00 PM - 02:30 PM

**Opto-mechanical sensors of media outside the fiber** (*Invited Paper*)

*Author(s):* **Avinoam Zadok**, Bar-Ilan Univ. (Israel)

13001-25 • 02:30 PM - 03:00 PM

**Teaching stellar interferometry with highly multimode optical fibers.** (*Invited Paper*)

*Author(s):* **Joseba Zubia Zaballa**, **M. A. Illarramendi**, **Jagoba Barata**, **Jon Grandes**, **Eneko Arrospide**, **Gorka Zubia**, Univ. del País Vasco (Spain)

Coffee Break • 03:00 PM - 03:30 PM

13001-26 • 03:30 PM - 03:50 PM

**Particle manipulation using optical nanofibers**

*Author(s):* **Pramitha Praveen Kamath, Souvik Sil, Viet Giang Truong, Sile Nic Chormaic**, Okinawa Institute of Science and Technology Graduate Univ. (Japan)

13001-27 • 03:50 PM - 04:10 PM

**Characterization and modelling of multimode fibers using holographic transmission matrix measurements**

*Author(s):* **Dennis Pohle**, TU Dresden (Germany); **Paolo Carniello, Norbert Hanik**, Technische Univ. München (Germany); **Jürgen Czarske**, TU Dresden (Germany)

13001-28 • 04:10 PM - 04:30 PM

**Highly efficient mode calculation approach for micro-structured optical fiber designs.**

*Author(s):* **Sravya Rao, Yonatan Sivan**, Ben-Gurion Univ. of the Negev (Israel)

## SESSION 7: OPICAL FIBERS FOR BIOMEDICAL APPLICATIONS

10 April 2024 • 04:30 PM - 06:20 PM | Adenauer, Niveau/Level 1

*Session Chair(s):* **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus)

13001-29 • 04:30 PM - 05:00 PM

**Highly Sensitive Plasmonic Sensors and Biosensors realized via modified Specialty Optical Fibers** (*Invited Paper*)

*Author(s):* **Francesco Arcadio, Luigi Zeni, Nunzio Cennamo**, Univ. degli Studi della Campania Luigi Vanvitelli (Italy)

13001-30 • 05:00 PM - 05:20 PM

**OFDR-based navigation system for minimally invasive cochlear implantation**

*Author(s):* **Jingxian Cui, Chern Yang Leong, Linyue Lu**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Xin Cheng**, The Hong Kong Polytechnic University (Hong Kong, China); **Denny Oetomo**, The Univ. of Melbourne (Australia); **Stephen O'Leary**, Royal Victorian Eye and Ear Hospital, The Univ. of Melbourne (Australia); **Chao Lu, Hwa-Yaw Tam**, The Hong Kong Polytechnic Univ. (Hong Kong, China)

13001-31 • 05:20 PM - 05:40 PM

**Integration of plasmonic structures on multimode optical fibers for advanced endoscopic systems: fabrication, characterization, and spatially resolved SERS**

*Author(s):* **Linda Piscopo**, Istituto Italiano di Tecnologia (Italy), Univ. del Salento (Italy); **Liam Collard**, Istituto Italiano di Tecnologia (Italy), RAISE Ecosystem (Italy); **Di Zheng**, Istituto Italiano di Tecnologia (Italy); **Filippo Pisano**, Istituto Italiano di Tecnologia (Italy), Univ. degli Studi di Padova (Italy); **Antonio Balena, Muhammad Fayyaz Kashif**, Istituto Italiano di Tecnologia (Italy); **Marco Pisanello**, OptogeniX S.r.l. (Italy); **Massimo De Vittorio**, Istituto Italiano di Tecnologia (Italy), Univ. del Salento (Italy), RAISE Ecosystem (Italy); **Ferruccio Pisanello**, Istituto Italiano di Tecnologia (Italy), RAISE Ecosystem (Italy)

13001-32 • 05:40 PM - 06:00 PM

**Fiber optic pH sensors for in-situ planetary exploration**

*Author(s):* **Patricia Mesonero Santos, Raquel López Heredero, Tomas Belenguer**, INTA Instituto Nacional de Técnica Aeroespacial (Spain)

13001-33 • 06:00 PM - 06:20 PM

**Fiber-System-Integration of Liquid-Core Fibers for Enhanced Nonlinear Optics and Signal Processing**

*Author(s):* **Mario Chemnitz**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Institut für Angewandte Optik und Biophysik, Friedrich-Schiller-Univ. Jena (Germany); **Nicolas Perron**, Institut National de la Recherche Scientifique (Canada); **Saher Junaid**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Roberto Morandotti**, Institut National de la Recherche Scientifique (Canada); **Markus Schmidt**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Otto-Schott-Institut für Materialforschung, Friedrich-Schiller-Univ. Jena (Germany)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13001-41

**Raman lasing in multimode graded-index fiber with mode-selective dielectric mirror on its end face**

*Author(s):* **Sergey A. Babin, Alexey G. Kuznetsov, Vadim S. Terentyev, Ilya N. Nemov, Victor A. Simonov, Kirill A. Bronnikov, Semen A. Gladkikh, Alexandr V. Dostovalov, Hiba Rizk**, Institute of Automation and Electrometry (Russian Federation)

# CONFERENCE 13002

## Semiconductor Lasers and Laser Dynamics XI

09 - 11 April 2024 | Dresde/Salon 13, Niveau/Level 1

**Conference Chair(s):** **Marc Sciamanna**, CentraleSupélec (France); **Fan-Yi Lin**, National Tsing Hua Univ. (Taiwan); **Jesper Mørk**, Technical Univ. of Denmark (Denmark)

**Program Committee:** **Erwin A.J.M. Bente**, Technische Univ. Eindhoven (Netherlands); **Weng W. Chow**, Sandia National Labs. (United States); **Kent D. Choquette**, Univ. of Illinois at Urbana-Champaign (United States); **Gadi Eisenstein**, Technion-Israel Institute of Technology (Israel); **Frédéric Grillot**, École Nationale Supérieure des Télécommunications (France); **Massimo Giudici**, Univ. Côte d'Azur (France); **Antonio Hurtado**, Univ. of Strathclyde (United Kingdom); **Yiannis Kominis**, National Technical Univ. of Athens (Greece); **Fumio Koyama**, Tokyo Institute of Technology (Japan); **Michael Kneissl**, Technische Univ. Berlin (Germany); **Anders G. Larsson**, Chalmers Univ. of Technology (Sweden); **Cristina Masoller**, Univ. Politècnica de Catalunya (Spain); **Luke J. Mawst**, Univ. of Wisconsin-Madison (United States); **Rainer Michalzik**, Univ. Ulm (Germany); **Johann Peter Reithmaier**, Univ. Kassel (Germany); **Carlo Sirtori**, Univ. Paris 7-Denis Diderot (France); **Peter M. Smowton**, Cardiff Univ. (United Kingdom); **Miguel C. Soriano**, Univ. of the Balearic Islands (Spain)

### Tuesday 9 April 2024

#### SESSION 1: SEMICONDUCTOR LASER NONLINEAR DYNAMICS

09 April 2024 • 02:00 PM - 03:50 PM | Dresde/Salon 13, Niveau/Level 1

Session Chair(s): **Marc Sciamanna**, CentraleSupélec (France)

13002-1 • 02:00 PM - 02:30 PM

**Photonic Spiking Neurons and Spiking Neural Networks** (*Invited Paper*)

Author(s): **Dafydd Owen-Newns**, **Andrew Adair**, **Dylan Black**, **Giovanni Donati**, **Joshua Robertson**, **Antonio Hurtado**, Univ. of Strathclyde (United Kingdom)

13002-2 • 02:30 PM - 02:50 PM

**Optimizing semiconductor laser chaos with precise control of double optical feedback**

Author(s): **Robbe de Mey**, Vrije Univ. Brussel (Belgium); **Spencer W. Jolly**, Univ. Libre de Bruxelles (Belgium); **Alexandre Locquet**, Georgia Tech-Lorraine (France); **Martin Virte**, Vrije Univ. Brussel (Belgium)

13002-35 • 02:50 PM - 03:10 PM

**Unveiling the optical injection-induced nonlinear dynamics of VCSEL-based frequency combs**

Author(s): **Daniel Plaza-Vas**, Vrije Univ. Brussel (Belgium), Univ. de Cantabria (Spain); **Angel Valle**, Univ. de Cantabria (Spain); **Nathalie Vermeulen**, Vrije Univ. Brussel (Belgium); **Ana Quirce**, Univ. de Cantabria (Spain), Vrije Univ. Brussel (Belgium)

13002-4 • 03:10 PM - 03:30 PM

**Reservoir computing for the prediction of semiconductor laser dynamics**

Author(s): **Mirko Goldmann**, Instituto de Física Interdisciplinar y Sistemas Complejos (Spain); **Alejandro Cunillera**, Technische Univ. Delft (Netherlands); **Claudio R. Mirasso**, **Ingo Fischer**, **Miguel C. Soriano**, Instituto de Física Interdisciplinar y Sistemas Complejos (Spain)

13002-5 • 03:30 PM - 03:50 PM

**Chaos injection and synchronization in cascade experiments**

Author(s): **Jules Mercadier**, **Stefan Bittner**, **Marc Sciamanna**, **Yaya Doumbia**, CentraleSupélec (France)

**Coffee Break 03:50 PM - 04:30 PM**

#### HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## Wednesday 10 April 2024

### SESSION 2: OPTICAL FREQUENCY COMBS AND MODE LOCKING

10 April 2024 • 08:30 AM - 10:30 AM | Dresde/Salon 13, Niveau/Level 1

Session Chair(s): **Fan-Yi Lin**, National Tsing Hua Univ. (Taiwan)

13002-6 • 08:30 AM - 09:00 AM

**Frequency combs in photonic crystal microresonators** (Invited Paper)

Author(s): **Tobias Herr**, Deutsches Elektronen-Synchrotron (Germany), Univ. Hamburg (Germany)

13002-7 • 09:00 AM - 09:30 AM

**Highly tunable frequency combs in pulse-modulated optically injected lasers** (Invited Paper)

Author(s): **Georgia Himona**, **Yannis Kominis**, National Technical Univ. of Athens (Greece)

13002-8 • 09:30 AM - 09:50 AM

**Multimode Dynamics of a monolithically integrated, tunable, bidirectional gain switched optical comb source.**

Author(s): **Odhran Liston**, **John McCarthy**, Tyndall National Institute (Ireland), Univ. College Cork (Ireland); **Diarmuid O'Sullivan**, Univ. College Cork (Ireland), Tyndall National Institute (Ireland); **Mohamad Dernaika**, Sicoya GmbH (Germany); **Frank Peters**, **Bryan Kelleher**, Univ. College Cork (Ireland), Tyndall National Institute (Ireland)

13002-9 • 09:50 AM - 10:10 AM

**Cascaded injection of semiconductor lasers for optical frequency comb generation**

Author(s): **Hsu-Ting Tang**, **Yu-Han Hung**, National Sun Yat-sen Univ. (Taiwan)

13002-10 • 10:10 AM - 10:30 AM

**Spontaneous phase-locking of transverse modes in a broad-area laser**

Author(s): **Stefan Bittner**, **Marc Sciamanna**, CentraleSupélec (France)

### Coffee Break 10:30 AM - 11:00 AM

### SESSION 3: NANOLASER AND SPIN LASER

10 April 2024 • 11:00 AM - 12:50 PM | Dresde/Salon 13, Niveau/Level 1

Session Chair(s): **Jesper Mørk**, Technical Univ. of Denmark (Denmark)

13002-11 • 11:00 AM - 11:30 AM

**Statistics and dynamics in micro- and nanolasers** (Invited Paper)

Author(s): **Gian Luca Lippi**, Univ. Côte d'Azur (France); **Tao Wang**, Xidian Univ. (China); **Gian Piero Puccioni**, Consiglio Nazionale delle Ricerche (Italy)

13002-12 • 11:30 AM - 12:00 PM

**Exceptional point bifurcations in coupled nanocavity arrays** (Invited Paper)

Author(s): **Alejandro M. Giacomotti**, Ctr. de Nanosciences et de Nanotechnologies (France)

13002-13 • 12:00 PM - 12:30 PM

**Ultrafast Modulation of Spin and Polarization in Anisotropic Spin-Lasers** (Invited Paper)

Author(s): **Nils C. Gerhardt**, **Natalie Jung**, **Markus Lindemann**, **Martin R. Hofmann**, Ruhr-Univ. Bochum (Germany)

13002-14 • 12:30 PM - 12:50 PM

**Two-particle quantum correlations in nano- and macro- single-mode lasers**

Author(s): **Gian Luca Lippi**, Univ. Côte d'Azur (France); **Giampaolo D'Alessandro**, Univ. of Southampton (United Kingdom); **Gian-Luca Oppo**, **Francesco Papoff**, Univ. of Strathclyde (United Kingdom)

**Lunch/Exhibition Break 12:50 PM - 02:00 PM****SESSION 4: NOVEL LASER STRUCTURES**

10 April 2024 • 02:00 PM - 03:40 PM | Dresde/Salon 13, Niveau/Level 1

13002-15 • 02:00 PM - 02:20 PM

**Strain-engineered GeSn microlasers with lithographically adjustable emission wavelengths**

*Author(s):* **Melvina Chen, Hyo-Jun Joo**, Nanyang Technological Univ. (Singapore); **Eng-Huat Toh, Elgin Quek**, Global Device Engineering, GlobalFoundries Singapore (Singapore); **Zoran Ikonic**, School of Electronic and Electrical Engineering, University of Leeds (United Kingdom); **Wei Du, Shui-Qing Yu**, Department of Electrical Engineering, University of Arkansas (United States), Institute for Nanoscience and Engineering, University of Arkansas (United States); **Donguk Nam**, Nanyang Technological University, Singapore (Singapore)

13002-16 • 02:20 PM - 02:40 PM

**Enhancing Plasmonic Nanolaser Performance using MoS<sub>2</sub>-Insulator-Metal Structures and ZnO Nanowires**

*Author(s):* **Chun Hsiang Wang, Lih Juann Chen**, National Tsing Hua Univ. (Taiwan)

13002-17 • 02:40 PM - 03:00 PM

**Fano-structure as output coupling mirror of microchip laser doubles its brightness**

*Author(s):* **Matas Plukys**, Vilnius Univ. (Lithuania); **Kestutis Staliunas**, Vilnius Univ. (Lithuania), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain), Univ. Politècnica de Catalunya (Spain); **Darius Gailevicius**, Vilnius Univ. (Lithuania); **Lina Grineviciute**, Ctr. for Physical Sciences and Technology (Lithuania)

13002-18 • 03:00 PM - 03:20 PM

**Multi-channel transmitters for free-space optical communication systems**

*Author(s):* **Aleksandra Pasnikowska**, Warsaw Univ. of Technology (Poland); **Stanislaw Stopinski**, Warsaw Univ. of Technology (Poland), VIGO Photonics (Poland), LightHouse Ltd. (Poland); **Anna Jusza**, Warsaw Univ. of Technology (Poland), LightHouse Ltd. (Poland); **Krzysztof Anders**, Warsaw Univ. of Technology (Poland), VIGO Photonics (Poland), LightHouse Ltd. (Poland); **Łukasz Kustosz, Mariusz Rojewski**, Warsaw Univ. of Technology (Poland); **Ryszard Piramidowicz**, Warsaw Univ. of Technology (Poland), VIGO Photonics (Poland), LightHouse Ltd. (Poland)

13002-19 • 03:20 PM - 03:40 PM

**Toward Electrically Pumped Perovskite Lasing**

*Author(s):* **Qiming Peng**, Nanjing Univ. of Technology (China)

**Coffee Break 03:40 PM - 04:10 PM****SESSION 5: INTEGRATED PHOTONICS**

10 April 2024 • 04:10 PM - 05:30 PM | Dresde/Salon 13, Niveau/Level 1

*Session Chair(s):* **Tobias Herr**, Ctr. for Free-Electron Laser Science (Germany)

13002-22 • 04:10 PM - 04:30 PM

**Frequency response of an on-chip multi-wavelength laser subject to optical injection with single sideband modulation**

*Author(s):* **Mohammadshahab Abdollahi, Pablo Marin-Palomo, Martin Virte**, Vrije Univ. Brussel (Belgium)

13002-21 • 04:30 PM - 04:50 PM

**Heterogeneous III-V/Silicon laser characterization for Analog Radio over Fiber application**

*Author(s):* **Akeem Olalekan Safiriyu, Catherine Algani, Anne-Laure Billabert, Salim Faci**, Univ. Gustave Eiffel (France); **Joan M. Ramirez**, III-V Lab. (France)

13002-23 • 04:50 PM - 05:10 PM

**Monolithically integrated optical computing component for photonic matrix multiplication based on electro-optically modulated vertical-cavity surface-emitting lasers**

*Author(s):* **Nikolay Ledentsov**, VI Systems GmbH (Germany); **Jelle Dijkstra**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Oleg Y. Makarov, Vitaly A. Shchukin**, VI Systems GmbH (Germany); **Wolfram H. P. Pernice**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Nikolay N. Ledentsov, Lukasz Chorchos, Joerg R. Kropp**, VI Systems GmbH (Germany)

13002-24 • 05:10 PM - 05:30 PM

**Enhancing stability in neuromorphic systems: exploring a III-V-on-SOI Laser under simultaneous optoelectronic and optical feedback**

*Author(s):* **Amin Souleiman**, Télécom SudParis (France), III-V Lab. (France); **Nickson Mwamsojo**, Télécom SudParis, Institut Polytechnique de Paris (France); **Delphine Neel, Claire Besancon, Nicolas I. Vaissiere**, III-V Lab. (France); **Valentin Ramez, Stéphane Malhouître, Karim Hassan**, Univ. Grenoble Alpes, CEA-LETI (France); **Jean Decobert, David Bitauld**, III-V Lab. (France); **Badr-Eddine Benkelfat**, Télécom SudParis (France); **Joan M. Ramirez**, III-V Lab. (France); **Kamel Merghem**, Télécom SudParis (France)



## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13002-36 • 05:45 PM - 07:45 PM

**Dynamical behaviors of vertical-cavity surface-emitting lasers with an embedded saturable absorber subjected to an on-off keying (OOK) current modulation**

*Author(s):* **Paul Woafu, Ioannis Pavel Gauss Temgoua**, Univ. de Yaoundé 1 (Cameroon); **Jimmi H. Talla Mbé**, Univ. de Dschang (Cameroon)

13002-37 • 05:45 PM - 07:45 PM

**Dynamics of vertical-cavity surface-emitting lasers under AM and FM current modulations**

*Author(s):* **Ioannis Pavel Gauss Temgoua, Paul Woafu**, Univ. de Yaoundé 1 (Cameroon); **Jimmi H. Talla Mbé**, Univ. de Dschang (Cameroon)

13002-38 • 05:45 PM - 07:45 PM

**Modes and Airy distributions of a Fabry-Pérot resonator with random grating**

*Author(s):* **Anirban Sarkar**, National Institute of Technology, Calicut (India)

13002-39 • 05:45 PM - 07:45 PM

**Littrow configuration tunable external cavity diode laser with narrowband emission at 448 nm**

*Author(s):* **Khaled Gasmî, Abdulaziz M. Aljalal, Watheq Al-Basheer**, King Fahd Univ. of Petroleum & Minerals (Saudi Arabia)

13002-40 • 05:45 PM - 07:45 PM

**Optically injected semiconductor lasers operating several orders of magnitude below the Schawlow-Townes linewidth limit**

*Author(s):* **Amith Karuvath, Thidsanu Apiphatnaphakul, Sabarinath Sunil, Pascal Besnard**, Fonctions Optiques pour les Technologies de l'information (France)

13002-41 • 05:45 PM - 07:45 PM

**DFB laser injection-locked to PM fiber ring cavity with 75-Hz Lorentzian linewidth**

*Author(s):* **Ivan Panyaev, Pavel Itrin, Dmitry A. Korobko, Igor Yavtushenko**, Ulyanovsk State Univ. (Russian Federation); **Patrice Mégret, Andrei A. Fotiadi**, Univ. de Mons (Belgium)

13002-42 • 05:45 PM - 07:45 PM

**Stable and ultrafast blue cavity-enhanced superfluorescence in mixed halide perovskites**

*Author(s):* **Linqi Chen, Hongxing Dong, Long Zhang**, Shanghai Institute of Optics and Fine Mechanics (China)

13002-43 • 05:45 PM - 07:45 PM

**High-precision chaos lidar using broad bandwidth detector**

*Author(s):* **Ching Kang Chen, Fan Yi Lin**, National Tsing Hua Univ. (Taiwan)

13002-44 • 05:45 PM - 07:45 PM

**Nanolaser potential in communications and data handling**

*Author(s):* **Gian Luca Lippi**, Univ. Côte d'Azur (France); **Tao Wang**, Xidian Univ. (China); **Gian Piero Puccioni**, Istituto dei Sistemi Complessi (Italy)

13002-47 • 05:45 PM - 07:45 PM

**Strained GeSn-on-insulator quantum well laser for the extended-NIR silicon photonics**

*Author(s):* **Antoine Meyer, Maria-Alejandra Mendez, Antonin Macquart**, Univ. Paris-Saclay (France); **Omar Concepción, Dan Buca**, Forschungszentrum Jülich GmbH (Germany); **Moustafa El-Kurdi**, Univ. Paris-Saclay (France)

13002-48 • 05:45 PM - 07:45 PM

**New design of electrically pumped GeSnOI laser integrated on a Si-photonics platform**

*Author(s):* **Maria Alejandra MENDEZ RINCON**, C2N- Centre for Nanoscience and Nanotechnology (France); **Omar Concepción, Dan Buca**, Institute of Semiconductor Nanoelectronics, Peter Grünberg Institute 9 (PGI 9) and JARA-Fundamentals (Germany); **Moustafa El-Kurdi**, C2N- Centre for Nanoscience and Nanotechnology (France)

## Thursday 11 April 2024

## HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)Author(s): **Martin Wegener**, Karlsruhe Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)**Coffee Break 10:35 AM - 11:00 AM**

## SESSION 6: QUANTUM CASCADE LASERS

11 April 2024 • 11:00 AM - 12:30 PM | Dresde/Salon 13, Niveau/Level 1

Session Chair(s): **Frédéric Grillot**, Télécom Paris (France)

13002-25 • 11:00 AM - 11:30 AM

**Quantum cascade lasers in circular cavities: from solitons to quantum walk combs** (Invited Paper)Author(s): **Giacomo Scalari**, **Paolo Micheletti**, **Alexander Dikopoltsev**, **Mathieu Bertrand**, **Urban Senica**, **Mattias Beck**, **Jérôme Faist**, **Ina Heckelmann**, ETH Zurich (Switzerland)

13002-26 • 11:30 AM - 11:50 AM

**High-power quantum cascade lasers for 8 um spectral range**Author(s): **Vladislav V. Dudelev**, **Evgeniia Cherotchenko**, **Ivan Vrabel**, **Dmitriy Mikhailov**, **Dmitrii Chistyakov**, **Valentin Y. Mylnikov**, **Sergey N. Losev**, Ioffe Institute (Russian Federation); **Andrey V. Babichev**, ITMO Univ. (Russian Federation); **Andrey V. Lutetskiy**, **Sergey O. Slipchenko**, **Nikita Pikhtin**, Ioffe Institute (Russian Federation); **Andrey G. Gladyshev**, Connector Optics LLC (Russian Federation); **Denis Papylev**, ITMO Univ. (Russian Federation); **Konstantin Podgaetskiy**, POLYUS Research Institute of M. F. Stelmakh JSC (Russian Federation); **Vladimir I. Kuchinskii**, Ioffe Institute (Russian Federation); **Irina V. Yarotskaya**, **Maxim A. Ladugin**, **Aleksandr A. Marmalyuk**, **Andrey Y. Andreev**, POLYUS Research Institute of M. F. Stelmakh JSC (Russian Federation); **Innokenty I. Novikov**, **Leonid Y. Karachinsky**, Connector Optics LLC (Russian Federation), ITMO Univ. (Russian Federation); **Anton Y. Egorov**, Connector Optics LLC (Russian Federation), St. Petersburg Academic Univ. (Russian Federation); **Grigori S. Sokolovskii**, Ioffe Institute (Russian Federation)

13002-27 • 11:50 AM - 12:10 PM

**Maxwell-Bloch-based dynamic modeling of quantum walk optical frequency combs**Author(s): **Michael A. Schreiber**, **Lukas Seitner**, **Johannes Stowasser**, Technische Univ. München (Germany); **Ina Heckelmann**, ETH Zurich (Switzerland); **Michael Haider**, Technische Univ. München (Germany); **Jérôme Faist**, ETH Zurich (Switzerland); **Christian Jirauschek**, Technische Univ. München (Germany)

13002-28 • 12:10 PM - 12:30 PM

**The build-up time temperature dependence of the QCL emitting in 8µm wavelength range**Author(s): **Evgeniia Cherotchenko**, **Ivan Vrabel**, **Vladislav V. Dudelev**, **Dmitriy Mikhailov**, **Dmitrii Chistyakov**, **Valentin Y. Mylnikov**, **Sergey N. Losev**, **Andrey V. Babichev**, **Andrey V. Lutetskiy**, **Sergey O. Slipchenko**, **Nikita Pikhtin**, Ioffe Institute (Russian Federation); **Andrey G. Gladyshev**, Connector Optics LLC (Russian Federation); **Denis Papylev**, ITMO University, Russian Federation (Russian Federation); **Konstantin Podgaetskiy**, **Andrey Y. Andreev**, **Irina V. Yarotskaya**, **Maxim A. Ladugin**, **Aleksandr A. Marmalyuk**, POLYUS Research Institute of M. F. Stelmakh JSC (Russian Federation); **Innokenty I. Novikov**, Connector Optics LLC (Russian Federation), ITMO Univ. (Russian Federation); **Vladimir I. Kuchinskii**, Ioffe Institute (Russian Federation); **Leonid Y. Karachinsky**, Connector Optics LLC (Russian Federation), ITMO Univ. (Russian Federation); **Anton Y. Egorov**, Connector Optics LLC (Russian Federation), St. Petersburg Academic Univ. (Russian Federation); **Grigori S. Sokolovskii**, Ioffe Institute (Russian Federation)**Lunch Break 12:30 PM - 01:40 PM**

## SESSION 7: HIGH-PERFORMANCE SEMICONDUCTOR LASERS

11 April 2024 • 01:40 PM - 03:20 PM | Dresde/Salon 13, Niveau/Level 1

Session Chair(s): **Bryan Kelleher**, Univ. College Cork (Ireland)

13002-29 • 01:40 PM - 02:00 PM

**High Resolution and Metrologically Traceable Characterization of Semiconductor Lasers at SWIR Wavelength with InGaAs Sensors**

Author(s): **Amir Sharghi**, **Carles Monasterio Balcells**, **Thomas Limmer**, Instrument Systems GmbH (Germany)

13002-30 • 02:00 PM - 02:20 PM

**High-power 2  $\mu\text{m}$  GaSb-based VCSEL with an absolute wavelength stability below 1 MHz**

Author(s): **Steffen Adler**, **Peter Holl**, **Elke Diwo-Emmer**, **Andreas Bächle**, Fraunhofer-Institut für Angewandte Festkörperphysik IAF (Germany); **Maximilian Bradler**, **Milad Yahyapour**, **Ronald Holzwarth**, Menlo Systems GmbH (Germany); **Marcel Rattunde**, Fraunhofer-Institut für Angewandte Festkörperphysik IAF (Germany)

13002-31 • 02:20 PM - 02:40 PM

**NIR photopolymerization self-writing process for fiber-to fiber and VCSEL-to-fiber single mode coupling**

Author(s): **Nessim Jebali**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Céline Molinaro**, **Julie Jermann**, Institut de Sciences des Matériaux de Mulhouse (France); **Julien Roul**, **Jean-Baptiste Doucet**, **Vincent Raimbault**, **Pierre-François Calmon**, **Benjamin Reig**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Olivier Soppera**, Institut de Sciences des Matériaux de Mulhouse (France); **Veronique Bardinal**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France)

13002-32 • 02:40 PM - 03:00 PM

**High coherence broadly tunable semiconductor laser: inhibited versus strong non-linear light matter interaction**

Author(s): **Arnaud Garnache**, **Baptiste Chomet**, **Adrian Bartolo**, **Mohamed Nadrani**, Institut d'Électronique et des Systèmes (France); **Grégoire Beaudoin**, **Konstantinos Pantzas**, **Isabelle Sagnes**, Ctr. de Nanosciences et de Nanotechnologies (France); **Stéphane Blin**, Institut d'Électronique et des Systèmes (France)

13002-45 • 03:00 PM - 03:20 PM

**Study on laser spot size measurement by scanning-slit method based on back-injection interferometry**

Author(s): **Yuanfu Tan**, The Chinese Univ. of Hong Kong (Hong Kong, China); **Wei-hsin Liao**, The Chinese Univ. of Hong Kong (China); **Hay Wong**, Univ. of Liverpool (United Kingdom)

**Coffee Break 03:20 PM - 03:40 PM**

## SESSION 8: MULTIMODE LASER DYNAMICS

11 April 2024 • 03:40 PM - 05:00 PM | Dresde/Salon 13, Niveau/Level 1

Session Chair(s): **Marc Sciamanna**, CentraleSupélec (France)

13002-33 • 03:40 PM - 04:00 PM

**Experimental study of strain-induced wavelength tuning in 1550nm VCSEL chips**

Author(s): **Salah Eddine Guessoum**, Vrije Univ. Brussel (Belgium); **Athanasios Kyriazis**, Univ. Gent (Belgium); **Jürgen Van Erps**, Vrije Univ. Brussel (Belgium); **Geert Van Steenberge**, Univ. Gent (Belgium); **Martin Virte**, Vrije Univ. Brussel (Belgium)

13002-34 • 04:00 PM - 04:20 PM

**Requirements to achieve wavelength switching in optical feedback phase-controlled semiconductor multi-wavelength lasers**

Author(s): **Mathieu Ladouce**, **Pablo Marin-Palomo**, **Martin Virte**, VUB B-PHOTONICS (Belgium)

13002-3 • 04:20 PM - 04:40 PM

**Coherent approaches on chaotic semiconductor lasers for dimensional enhancement**

Author(s): **Sze-Chun Chan**, **Jingya Ruan**, **Luan Zhang**, City Univ. of Hong Kong (Hong Kong, China)

13002-46 • 04:40 PM - 05:00 PM

**Spatiotemporally reconfigurable light in degenerate laser cavities**

Author(s): **Mathias Marconi**, Univ. Côte d'Azur (France)

# CONFERENCE 13003

## Fiber Lasers and Glass Photonics: Materials through Applications IV

08 - 11 April 2024 | Amsterdam/Salon 6, Niveau/Level 0

**Conference Chair(s):** **Stefano Taccheo**, Politecnico di Torino (Italy); **Maria Rita Cicconi**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Matthias L. Jäger**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

**Program Committee:** **Lidia Armelao**, CNR-DSCTM (Italy); **Rolindes Balda**, Univ. del País Vasco (Spain); **John M. Ballato**, Clemson Univ. (United States); **Wilfried Blanc**, Lab. de physique de la matière condensée (France); **Patrice Camy**, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); **Amol Choudhary**, Indian Institute of Technology Delhi (India); **Cosimo D'Andrea**, Politecnico di Milano (Italy); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland); **Miroslav Dramićanin**, Vinca Institute of Nuclear Sciences (Serbia); **Marc Eichhorn**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany); **Maurizio Ferrari**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Shibin Jiang**, AdValue Photonics, Inc. (United States); **Matthieu Lancry**, Univ. Paris-Saclay (France); **Anna Lukowiak**, Institute of Low Temperature and Structure Research PAN (Poland); **Christos Markos**, Technical Univ. of Denmark (Denmark); **Virginie Nazabal**, Univ. de Rennes 1 (France); **Laetitia C. Petit**, Tampere Univ. (Finland); **Nasser N. Peyghambarian**, College of Optical Sciences, The Univ. of Arizona (United States); **Francesco Prudenzano**, Politecnico di Bari (Italy); **Alexander Quandt**, Univ. of the Witwatersrand (South Africa); **Gediminas Račiukaitis**, Ctr. for Physical Sciences and Technology (Lithuania); **Mariola O. Ramirez**, Univ. Autónoma de Madrid (Spain); **Thomas Schreiber**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Roberto Scotti**, Univ. degli Studi di Milano-Bicocca (Italy); **Angela B. Seddon**, The Univ. of Nottingham (United Kingdom); **Lukasz Sojka**, Wroclaw Univ. of Science and Technology (Poland); **Irina T. Sorokina**, Norwegian Univ. of Science and Technology (Norway)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: PULSED FIBER AND WAVEGUIDE INFRARED SOURCES

08 April 2024 • 11:30 AM - 12:30 PM | Amsterdam/Salon 6, Niveau/Level 0

*Session Chair(s):* **Stefano Taccheo**, Politecnico di Torino (Italy)

13003-1 • 11:30 AM - 11:45 AM

**Development of a passively Q-switched eye-safe microchip laser for pulsed laser range-finding**

Author(s): **Peter Seidl, Benedikt Schloder, Raimund Förg, Jens Ebbecke**, Technische Hochschule Deggendorf (Germany)

13003-2 • 11:45 AM - 12:00 PM

**Frequency-shifted-feedback mode-locked fiber laser operating at different repetition rates**

Author(s): **Jean-Bernard Lecourt, Simon Boivinet, Yves Hernandez**, Multitel A.S.B.L. (Belgium)

13003-3 • 12:00 PM - 12:15 PM

**Optimizing graphene oxide saturable absorbers for short pulse generation in fiber lasers: characterization and aging assessment**

Author(s): **Catarina S. Monteiro**, INESC TEC (Portugal); **Rosa Ana Perez-Herrera**, Univ. Pública de Navarra (Spain); **Nuno A. Silva, Susana O. Silva, Orlando Frazão**, INESC TEC (Portugal)

13003-69 • 12:15 PM - 12:30 PM

**Studying and exploiting solid state dewetting of semiconductor thin films for flexible photonics**

Author(s): **Sonia Freddi**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Nicoletta Granchi**, LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy), Univ. degli Studi di Firenze (Italy); **Michele Gherardi**, Politecnico di Milano (Italy); **Arianna Brescia**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Benedetta Squeo, Mariacecilia Pasini**, Istituto di Scienze e Tecnologie Chimiche 'Giulio Natta' (Italy); **Andrea Chiappini**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Laura Pasquardini**, Indivenire Srl (Italy); **Alexey Fedorov**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Maria A. Vincenti**, Univ. degli Studi di Brescia (Italy); **Francesca Intonti**, LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy), Univ. degli Studi di Firenze (Italy); **Monica Bollani**, CNR-Istituto di Fotonica e Nanotecnologie (Italy)

**Lunch Break 12:30 PM - 01:50 PM**

**SESSION 2: NOVEL LASERS AND LUMINESCENCE MATERIALS**

08 April 2024 • 01:50 PM - 03:05 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Maria Rita Cicconi**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13003-6 • 01:50 PM - 02:20 PM

**Broadband NIR emission in glasses and multicore optical fibers co-doped with Ni<sup>2+</sup>/Cr<sup>3+</sup>/Bi<sup>3+</sup> and rare-earth ions (Invited Paper)**

Author(s): **Marcin Kochanowicz, Jakub Markiewicz, Piotr Miluski, Jacek M. Zmojda**, Bialystok Univ. of Technology (Poland); **Marta Kuwik**, Univ. of Silesia (Poland); **Magdalena Lesniak**, AGH Univ. of Science and Technology (Poland); **Joanna Pisarska, Wojciech A. Pisarski**, Univ. of Silesia (Poland); **Jan Dorosz**, Bialystok Univ. of Technology (Poland); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland)

13003-7 • 02:20 PM - 02:50 PM

**Solid state random laser emission dynamics (Invited Paper)**

Author(s): **Joaquín Fernández**, Donostia International Physics Ctr. (Spain); **Iñaki Iparraguirre, Jon Azkargorta**, Univ. del País Vasco (Spain); **Rolindes B. Balda**, Centro de Física de Materiales, Univ. del País Vasco (Spain); **Rolindes B. Balda**, Centro de Física de Materiales, Univ. del País Vasco (Spain); **Sara García-Revilla**, Univ. del País Vasco (Spain)

13003-8 • 02:50 PM - 03:05 PM

**Investigating nonlinear unidirectional operation in a fiber ring laser**

Author(s): **Alexander Hartung, Muhammad A. Arshad, Matthias L. Jäger**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

**Coffee Break 03:05 PM - 03:45 PM**

**SESSION 3: KEYNOTE SESSION**

08 April 2024 • 03:45 PM - 04:30 PM | Amsterdam/Salon 6, Niveau/Level 0

13003-55 • 03:45 PM - 04:30 PM

**Hybrid glass devices for silicon photonic integrated circuits (Keynote Presentation)**

Author(s): **Jonathan Bradley**, McMaster Univ. (Canada)

**SESSION 4: EARLY STAGE RESEARCHERS**

08 April 2024 • 04:30 PM - 06:00 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Antonella Maria Loconsole**, Politecnico di Bari (Italy)

13003-11 • 04:30 PM - 05:00 PM

**Glass for photonics: insight in the glass properties obtained under laser fs writing via point defects analysis** (*Invited Paper*)

*Author(s):* **Ollier Nadège**, CEA (France); **Fouad Alassani, Yannick G. Petit, Thierry Cardinal**, Institut de Chimie de la Matière Condensée de Bordeaux (France); **Vinod Parmar, Yves Bellouard**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13003-12 • 05:00 PM - 05:15 PM

**50W UV nanosecond laser with high beam quality by conversion of high-power IR fiber amplifier based on an innovative rod-type fiber**

*Author(s):* **Amelie Chervet, Baptiste Leconte**, Bloom Lasers (France); **Romain Dauliat**, XLIM (France); **Arnaud Guillossou, Julien Didierjean**, Bloom Lasers (France); **Katrin Wondraczek**, IPHT (Germany); **Philippe Roy, Raphaël Jamier**, XLIM (France)

13003-13 • 05:15 PM - 05:30 PM

**Yb:Er:Tm:Ho co-doped germanate glass: comparison between model and experimental data**

*Author(s):* **Ricardo Ballarini**, Politecnico di Torino (Italy); **Marcin Kochanowicz**, Bialystok Univ. of Technology (Poland); **Antonella Maria Loconsole**, Politecnico di Bari (Italy); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland); **Francesco Prudenzano**, Politecnico di Bari (Italy); **Stefano Taccheo**, Politecnico di Torino (Italy)

13003-14 • 05:30 PM - 05:45 PM

**Design of In-band Pumped Dysprosium-doped ZBLAN Fiber Amplifier for Mid-IR Wavelength Range**

*Author(s):* **Andrea Annunziato, Antonella Maria Loconsole, Vito Vincenzo Francione, Francesco Anelli, Luigi Ressa**, Politecnico di Bari (Italy); **Fedele Pisani**, Politecnico di Milano (Italy); **Gianluca Galzerano**, Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche (Italy); **Francesco Prudenzano**, Politecnico di Bari (Italy)

13003-15 • 05:45 PM - 06:00 PM

**Eu-doped 2D molybdenum oxide nanocrystals for integration in photonic components**

*Author(s):* **Eva Nieto-Pinero, Andrés Caño**, Instituto de Óptica "Daza de Valdés" (Spain); **Emrick Briand, Ian Vickridge**, Institut des nanosciences de Paris (France); **Rosalía Serna**, Instituto de Óptica "Daza de Valdés" (Spain)

## Tuesday 9 April 2024

### SESSION 5: JOINT SESSION: TWO-MICRON FIBER SOURCES

09 April 2024 • 08:30 AM - 10:15 AM | Amsterdam/Salon 6, Niveau/Level 0

*Session Chair(s):* **Katrin Wondraczek**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

Joint Session between Conference 13001 (Specialty Optical Fibres) and Conference 13003 (Fiber Lasers and Glass Photonics: Materials through Applications)

13003-16 • 08:30 AM - 08:45 AM

**Monolithic femtosecond Holmium fiber MOPA system at 2050 nm**

*Author(s):* **Lea Schlotmann**, Laser Zentrum Hannover e.V. (Germany); **Moritz Hinkelmann**, Exzellenzcluster PhoenixD, Laser Zentrum Hannover e.V. (Germany); **Frithjof Haxsen**, Laser Zentrum Hannover e.V. (Germany); **Jörg Neumann, Dietmar Kracht**, Exzellenzcluster PhoenixD, Laser Zentrum Hannover e.V. (Germany)

13001-1 • 08:45 AM - 09:00 AM

**2- $\mu$ m laser beam quality improved by matched pedestal passive and active fibers**

*Author(s):* **Christophe Louot, Arnaud Motard, Nicolas Dalloz**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Thierry Robin, Laurent Lablonde, Benoît Cadier**, Exail SAS (France); **Thierry Ibach**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Inka Manek-Hönninger**, Ctr. Lasers Intenses et Applications, Univ. de Bordeaux, CNRS (France), CEA (France); **Félix Sanson**, Institut Franco-Allemand de Recherches de Saint-Louis (France), Univ. de Bordeaux (France); **Anne Dhollande**, Institut Franco-Allemand de Recherches de Saint-Louis (France)

13003-17 • 09:00 AM - 09:15 AM

**30W all-fiber continuous wave tunable laser amplifier around 1850 nm**

*Author(s):* **Kentin Poncelet**, Lab. Photonique, Numérique et Nanosciences (France), TOPTICA Photonics SAS (France); **Giorgio Santarelli, Adèle Hilico**, Lab. Photonique, Numérique et Nanosciences (France); **Germain Guiraud, Nick Traynor**, TOPTICA Photonics SAS (France)

13003-18 • 09:15 AM - 09:30 AM

**Power scaling of a 2.1  $\mu$ m Ho<sup>3+</sup>-doped fiber laser integrating a 1.9  $\mu$ m triple clad fiber pump combiner**

*Author(s):* **Nicolas Dalloz, Christophe Louot, Thierry Ibach**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Julien Le Gouet, François Gustave**, ONERA (France); **Thierry Robin, Benoît Cadier**, Exail SAS (France); **Anne Hildenbrand-Dhollande**, Institut Franco-Allemand de Recherches de Saint-Louis (France)

13001-2 • 09:30 AM - 09:45 AM

**Nanoparticle doping method for highly thulium-doped optical fibers for efficient, eye-safe fiber lasers – A fluorescence lifetime study**

*Author(s):* Petr Varák, Michal Kamradek, Jan Aubrecht, Ondrej Podrazký, Ivo Barton, Ivan Kašík, Pavel Peterka, Pavel Honzátko, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13001-3 • 09:45 AM - 10:00 AM

**Analytical model of CW holmium-doped fiber laser**

*Author(s):* Jan Pokorný, Jan Aubrecht, Martin Grábner, Michal Kamrádek, Pavel Peterka, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13003-19 • 10:00 AM - 10:15 AM

**Continuous wave 184 W thulium-doped fiber laser emitting at 1.95  $\mu\text{m}$  in compact efficient package**

*Author(s):* Denis Philippovskiy, Giuseppe Scurria, Jawaher Alameri, Taif Alhmoudi, Aesha Alteneiji, Guillaume Matras, Chaouki Ksmi, Technology Innovation Institute (United Arab Emirates)

**Coffee Break 10:15 AM - 10:45 AM**

**SESSION 6: FIBERS AND WAVEGUIDE SOURCES VISIBLE LASERS**

09 April 2024 • 10:45 AM - 12:15 PM | Amsterdam/Salon 6, Niveau/Level 0

*Session Chair(s):* Matthias L. Jäger, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13003-20 • 10:45 AM - 11:15 AM

**Recent progress in visible double-clad fluoride fiber lasers (Invited Paper)**

*Author(s):* Pavel A. Loiko, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique, UMR 6252 CEA-CNRS-ENSICAEN (France); Esrom Kifle, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); Thibaud Berthelot, Thiphaine Rault, Laurine Bodin, Le Verre Fluoré (France); Florence Pau, Gilles Recoque, Thierry Georges, Oxsius SA (France); Patrice Camy, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique, UMR 6252 CEA-CNRS-ENSICAEN (France)

13003-21 • 11:15 AM - 11:30 AM

**Influence of FBG quality on yellow Dy-doped ZBLAN fiber lasers performance**

*Author(s):* Michelangelo Federico, Federica Poli, Univ. degli Studi di Parma (Italy)

13003-22 • 11:30 AM - 11:45 AM

**Visible Pr<sup>3+</sup>-doped fluoride glass fiber laser**

*Author(s):* Martin Leich, Alexander Hartung, Anka Schwuchow, Tina Eschrich, Kay Schaarschmidt, Matthias L. Jäger, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13003-23 • 11:45 AM - 12:00 PM

**Analyzing the impact of numerical and experimental parameters on Dy-doped yellow fiber lasers for the treatment of eye diseases.**

*Author(s):* Wahida Chowdhury, Forough Khozaymeh, Annamaria Cucinotta, Seyyedhossein Mckee, Univ. degli Studi di Parma (Italy)

13003-24 • 12:00 PM - 12:15 PM

**Fiber length impact on MIR cascade lasing in yellow Dy-doped ZBLAN fiber lasers**

*Author(s):* Michelangelo Federico, Federica Poli, Univ. degli Studi di Parma (Italy)

**Lunch/Exhibition Break 12:15 PM - 01:50 PM**

**SESSION 7: MID-INFRARED LASER SOURCES**

09 April 2024 • 01:50 PM - 03:55 PM | Amsterdam/Salon 6, Niveau/Level 0

*Session Chair(s):* Maria Chernysheva, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13003-25 • 01:50 PM - 02:20 PM

**All-fiber mid-infrared laser sources (Invited Paper)**

*Author(s):* Alexander Fürbach, Thuy Trong Ha, Toney Teddy Fernandez, Macquarie Univ. (Australia)

13003-26 • 02:20 PM - 02:50 PM

**Fluoride glass fibers: a breakthrough in the medical field (Invited Paper)**

*Author(s):* Samuel Poulain, Le Verre Fluoré (France)

13003-27 • 02:50 PM - 03:05 PM

**Design of a Mid-IR Optical Fiber Amplifier based on a Pr<sup>3+</sup>:InF<sub>3</sub> Glass**

Author(s): **Antonella Maria Loconsole, Vito Vincenzo Francione, Andrea Annunziato, Francesco Anelli, Md. Imran Khan**, Politecnico di Bari (Italy); **Stefano Taccheo**, Politecnico di Torino (Italy); **Francesco Prudenzano**, Politecnico di Bari (Italy)

13003-28 • 03:05 PM - 03:20 PM

**Fuseless Hybrid Silica-Fluoride Side-polished Fiber Pump Combiner**

Author(s): **Boris Perminov, Maria Chernysheva**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13003-29 • 03:20 PM - 03:35 PM

**Single-Mode Fluoroindate Coupler for Mid-IR Applications**

Author(s): **Andrea Annunziato, Francesco Anelli, Antonella Maria Loconsole, Vito Vincenzo Francione**, Politecnico di Bari (Italy); **Solenn Cozic, Sébastien Venck, Samuel Poulain**, Le Verre Fluoré (France); **Francesco Prudenzano**, Politecnico di Bari (Italy)

Open Discussion • 03:35 PM - 03:55 PM

**Coffee Break 03:55 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)  
2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

**Wednesday 10 April 2024**

**SESSION 8: HIGH-POWER FIBER SOURCES**

10 April 2024 • 08:45 AM - 10:30 AM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Thomas Schreiber**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13003-30 • 08:45 AM - 09:15 AM

**Standard STRS versus TMI effects in high power fibre amplifiers** (Invited Paper)

Author(s): **Michalis N. Zervas**, Optoelectronics Research Ctr. (United Kingdom)

13003-31 • 09:15 AM - 09:45 AM

**Limitations and perspectives in power scaling of fiber lasers** (Invited Paper)

Author(s): **Till Walbaum, Maximilian Strecker, Marco Plötner, Friedrich Möller, Gonzalo Palma-Vega, Steffen Trautmann, Carolin Rothhardt, Stefan Kuhn, Nicoletta Haarlammert, Thomas Schreiber**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13003-32 • 09:45 AM - 10:15 AM

**Active tapered fiber amplifiers as a robust solution for compact high-power laser systems** (Invited Paper)

Author(s): **Regina V. Gumenyuk**, Tampere Univ. (Finland)

13003-33 • 10:15 AM - 10:30 AM

**Cladding light handling in thulium-doped fiber amplifiers for kW-class spectral beam combination**

Author(s): **Tilman Lühder, Yannik Atzbach, Denny Hoh, Tobias Koch, Friedrich Möller, Till Walbaum, Steffen Böhme, Thomas Schreiber**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

**Coffee Break 10:30 AM - 11:00 AM**



## SESSION 9: MATERIALS AND COMPONENTS I: OXIDE

10 April 2024 • 11:00 AM - 12:30 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland)

13003-34 • 11:00 AM - 11:30 AM

**Recent advances in fabrication of large volume doped fiber preform materials** (*Invited Paper*)

Author(s): **Katrin Wondraczek**, **Roman Sajzew**, **Florian Lindner**, **Martin Leich**, **Joerg Bierlich**, **Robert Müller**, **Michael Duparre**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Lothar Wondraczek**, Friedrich-Schiller-Univ. Jena (Germany); **Matthias L. Jaeger**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13003-35 • 11:30 AM - 12:00 PM

**Structured-core thulium-doped fibers for 2  $\mu\text{m}$  fiber lasers** (*Invited Paper*)

Author(s): **Pavel Peterka**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Ryszard Buczynski**, Lukaszewicz Research Network - Institute of Microelectronics and Photonics (Poland), Univ. of Warsaw (Poland); **Dariusz Pysz**, Lukaszewicz Research Network - Institute of Microelectronics and Photonics (Poland); **Ivan Kašik**, **Ondrej Podrazký**, **Michal Kamradek**, **Martin Grábner**, **Jan Aubrecht**, **Jan Pokorný**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic); **Bára Švejkarová**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic); **Pavel Honzátko**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13003-36 • 12:00 PM - 12:15 PM

**Optical properties of Tm-doped glasses for laser fibres**

Author(s): **Martin Leich**, **Sonja Unger**, **Anka Schwuchow**, **Martin Lorenz**, **Arni Pratiwi**, **Robert Müller**, **Jan Dellith**, **Adrian Lorenz**, **Matthias L. Jäger**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13003-37 • 12:15 PM - 12:30 PM

**Unlocking the potential of extreme hyperchromats - pushing the limits of axial color splitting**

Author(s): **Lukas Werner**, **Erik Förster**, Ernst-Abbe-Hochschule Jena (Germany); **Hartmut H. Hillmer**, Univ. Kassel (Germany); **Robert Brunner**, Ernst-Abbe-Hochschule Jena (Germany)

**Lunch/Exhibition Break 12:30 PM - 01:40 PM**

## SESSION 10: MATERIALS AND COMPONENTS II: NOT OXIDE

10 April 2024 • 01:40 PM - 03:10 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Maria Rita Cicconi**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13003-38 • 01:40 PM - 02:10 PM

**Innovative architectures and materials assemblies for optical fibers devoted to infrared sources and applications** (*Invited Paper*)

Author(s): **Frédéric Smektala**, Lab. Interdisciplinaire Carnot de Bourgogne (France)

13003-39 • 02:10 PM - 02:25 PM

**A Temperature Sensor based on All-Fiber Mach-Zender Interferometer with Indium Fluoride Glass**

Author(s): **Francesco Anelli**, **Andrea Annunziato**, **Antonella Maria Loconsole**, **Vito Vincenzo Francione**, Politecnico di Bari (Italy); **Solenn Cozic**, **Samuel Poulain**, Le Verre Fluoré (France); **Francesco Prudeniano**, Politecnico di Bari (Italy)

13003-40 • 02:25 PM - 02:40 PM

**Development of large mode area chalcogenide optical fibres for mid-infrared high optical power capability.**

Author(s): **Florian Calzavara**, **David Furniss**, **Daniel Bradley**, **Emma Barney**, **Shweta Chahal**, **Sendy Phang**, The Univ. of Nottingham (United Kingdom); **Mark C. Farries**, University of Nottingham (United Kingdom); **Nikolaos Kalfagiannis**, **Koutsogeorgis Demosthenes**, Nottingham Trent Univ. (United Kingdom); **Angela B. Seddon**, The Univ. of Nottingham (United Kingdom)

13003-41 • 02:40 PM - 02:55 PM

**Spectroscopy of Erbium-doped LiYF<sub>4</sub> crystalline layers grown by Liquid Phase Epitaxy**

Author(s): **Simone Normani**, **Pavel A. Loiko**, **Liza Basyrova**, **Gurvan Brasse**, **Abdelmjid Benayad**, **Alain Braud**, **Patrice Camy**, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France)

13003-42 • 02:55 PM - 03:10 PM

**Thermal properties of fibre Bragg gratings inscribed in fluoride-based optical fibres**

Author(s): **Kirill Grebnev**, **Maria Chernysheva**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

**Coffee Break 03:10 PM - 03:40 PM**

**SESSION 11: ROUND TABLE: SO MANY DIFFERENT OPTICAL FIBERS-WHICH ONE TO CHOOSE?**

10 April 2024 • 03:40 PM - 05:40 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Stefano Taccheo**, Politecnico di Torino (Italy)

13003-43 • 03:40 PM - 04:00 PM

**If you can use silica, use silica** (Invited Paper)Author(s): **John M. Ballato**, Clemson Univ. (United States)

13003-44 • 04:00 PM - 04:20 PM

**Nanoparticles in optical fibers, when light scattering is an opportunity** (Invited Paper)Author(s): **Wilfried Blanc**, Institut de Physique de Nice (France)

13003-45 • 04:20 PM - 04:40 PM

**Present and future of fluoride glass** (Invited Paper)Author(s): **Samuel Poulain**, Le Verre Fluoré (France)

13003-47 • 04:40 PM - 05:00 PM

**Applications of hollow core fibers** (Invited Paper)Author(s): **Francesco Poletti**, Optoelectronics Research Ctr. (United Kingdom); **Austin Taranta**, Univ. of Southampton (United Kingdom)

Discussion • 05:00 PM - 05:40 PM

**POSTERS-WEDNESDAY**

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrsPoster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13003-4 • 05:45 PM - 07:45 PM

**Polarization maintaining fiber laser harmonically mode-locked due to SESAM with supermode noise suppression through continuous wave injection**Author(s): **Dmitry A. Korobko**, **Pavel A. Itrin**, **Maxim Pribylov**, **Valeria A. Ribenek**, Ulyanovsk State Univ. (Russian Federation); **Andrei A. Fotiadi**, Univ. de Mons (Belgium); **Ivan Panyae**, Ulyanovsk State Univ. (Russian Federation)

13003-60 • 05:45 PM - 07:45 PM

**RF magnetron co-sputtered amorphous Ge-Bi-Se chalcogenide films for photonics application**Author(s): **Anupama Viswanathan**, **Jan Gutwirth**, Univ. Pardubice (Czech Republic); **Youssef Ghandaoui**, **Abdelali Hammouti**, Univ. de Rennes 1 (France); **Stanislav Slang**, **Martin Pavlista**, Univ. Pardubice (Czech Republic); **Stanislav Pechev**, Institut de Chimie de la Matière Condensée de Bordeaux (France); **Jean-Pierre Guin**, **Loïc Bodiou**, **Mehdi Alouini**, **Joël Charrier**, Univ. de Rennes 1 (France); **Petr Nemec**, Univ. Pardubice (Czech Republic); **Virginie Nazabal**, Univ. de Rennes 1 (France), Univ. Pardubice (Czech Republic)

13003-61 • 05:45 PM - 07:45 PM

**Investigation of excitability in all-fibre laser systems**Author(s): **Hammad Khalid**, **Neil Broderick**, **Robert Otupiri**, The Univ. of Auckland (New Zealand)

13003-63 • 05:45 PM - 07:45 PM

**Tm<sup>3+</sup> and Tm<sup>3+</sup>+Yb<sup>3+</sup> doped low phonon glasses and nanocrystals – comparative characterization of luminescent features from UV to IR.**Author(s): **Pawel Bortnowski**, Warsaw Univ. of Technology (Poland); **Anna Jusza**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland); **Krzysztof Anders**, Warsaw Univ. of Technology (Poland), VIGO Photonics S.A. (Poland), LightHouse Sp. z o.o. (Poland); **Pawel Mergo**, Maria Curie-Skłodowska Univ. (Poland); **Ryszard Piramidowicz**, Warsaw Univ. of Technology (Poland), VIGO Photonics S.A. (Poland), LightHouse Sp. z o.o. (Poland)

13003-64 • 05:45 PM - 07:45 PM

**Investigating uncertainty estimation on phase noise for a compact optical delay line optoelectronic oscillator**Author(s): **Ekaterina Pavlyuchenko**, CNRS (France); **Patrice Salzenstein**, FEMTO-ST, CNRS (France)

13003-65 • 05:45 PM - 07:45 PM

**Polymer-based composite materials doped with Er<sup>3+</sup> activated oxide and fluoride nanocrystals – results and challenges**Author(s): **Krzysztof Anders**, **Anna Jusza**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland); **Pawel Mergo**, **Renata Lyszczyk**, Maria Curie-Skłodowska Univ. (Poland); **Ryszard Piramidowicz**, Warsaw Univ. of Technology (Poland)

13003-66 • 05:45 PM - 07:45 PM

**Femtosecond laser irradiation of Er3+ doped tellurite-phosphate glass for waveguide applications**

Author(s): **Magdalena Lesniak**, AGH Univ. of Science and Technology (Poland); **Bartłomiej Starzyk**, AGH University of Science and Technology (Poland); **Patryk Zajac**, AGH Univ. of Science and Technology (Poland); **Wojciech Talik**, Jagiellonian Univ. in Krakow (Poland); **Gloria Lesly Jimenez**, AGH Univ. of Science and Technology (Poland); **Marcin Kochanowicz**, **Piotr Miluski**, Bialystok Univ. of Technology (Poland); **Magdalena Ziabka**, AGH Univ. of Science and Technology (Poland); **Witold Zawadzki**, **Krzysztof Dzierzega**, Jagiellonian Univ. in Krakow (Poland); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland)

13003-67 • 05:45 PM - 07:45 PM

**Quasi-CW Tm-doped fiber laser with 600 W peak power for laser lithotripsy**

Author(s): **Sungmok Kim**, **JuYong Shin**, Korea Institute of Industrial Technology (Korea, Republic of); **Eunkyoung Park**, **Inchul Park**, **Yejin Oh**, **Jiwon Kim**, Hanyang Univ. (Korea, Republic of); **Hoon Jeong**, Korea Institute of Industrial Technology (Korea, Republic of)

13003-68 • 05:45 PM - 07:45 PM

**Slope efficiency improvement of a core-pumped thulium-doped fibre laser**

Author(s): **Dieter Panitzek**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany), Karlsruher Institut für Technologie (Germany); **Clement Romano**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany); **Marc Eichhorn**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany), Karlsruher Institut für Technologie (Germany); **Christelle Kieleck**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxixius (France)

*2024 Symposium Chair*

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

## SESSION 12: MATERIALS AND COMPONENTS III: FLEXIBLE MATERIALS

11 April 2024 • 11:00 AM - 12:30 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Pier J. A. Sazio**, Univ. of Southampton (United Kingdom)

13003-48 • 11:00 AM - 11:30 AM

**Flexible Photonics: New Intelligent Sensing within High-Value Composite Structures** (*Invited Paper*)

Author(s): **Christopher Holmes**, Univ. of Southampton (United Kingdom)

13003-49 • 11:30 AM - 12:00 PM

**1D photonic crystals fabricated by rf-sputtering** (*Invited Paper*)

Author(s): **Giacomo Zanetti**, IFN-CNR, FBK Photonics Unit (Italy), Department of Industrial Engineering, University of Trento (Italy); **Alice Carlotto**, IFN-CNR, CSMFO Lab and FBK Photonics Unit (Italy), IFN-CNR, Milano (Italy); **Thi Ngoc Lam Tran**, IFN-CNR, CSMFO Lab and FBK Photonics Unit (Italy), Dept. of Physics, Politecnico di Milano (Italy), Dept. of Materials Technology, Faculty of Applied Sciences (Vietnam); **Anna Szczurek**, IFN-CNR, CSMFO Lab and FBK Photonics Unit (Italy); **Bartosz Babiarczuk**, Dept. of Mechanics, Materials and Biomedical Engineering (Poland); **Sayginer Osman**, Department of Mechanical Engineering, Temple University (United States); **Stefano Varas**, **Andrea Vinante**, IFN-CNR, CSMFO Lab and FBK Photonics Unit (Italy); **Justyna Krzak**, Dept. of Mechanics, Materials and Biomedical Engineering (Poland); **Oreste S. Bursi**, **Daniele Zonta**, DICAM, University of Trento (Italy), IFN-CNR, CSMFO Lab and FBK Photonics Unit (Italy); **Anna Lukowiak**, ILTSR PAS (Poland); **Giancarlo C. Righini**, IFAC-CNR, MiPLab (Italy); **Vincenzo Sglavo**, Department of Industrial Engineering, University of Trento (Italy); **Matteo Bonomo**, **Simone Galliano**, **Caludia Barolo**, Department of Chemistry, NIS Interdepartmental Centre and INSTM Reference Centre, University of Turin (Italy); **Silvia M Pietralunga**, IFN-CNR, Milano (Italy); **Alessandro Chiasera**, Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche (Italy)

13003-50 • 12:00 PM - 12:30 PM

**Scalable hyperuniform and flexible photonic devices based on dielectric antennas realized by solid state dewetting** (*Invited Paper*)

Author(s): **Monica Bollani**, Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche (Italy)

**Lunch Break 12:30 PM - 01:40 PM**

### SESSION 13: MATERIALS AND COMPONENTS IV: GLASS CERAMICS

11 April 2024 • 01:40 PM - 03:10 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Maurizio Ferrari**, CNR-Istituto di Fotonica e Nanotecnologie (Italy)

13003-51 • 01:40 PM - 02:10 PM

**Nanocomposite optical fibers for photonic applications** (*Invited Paper*)

Author(s): **Jacek M. Zmojda**, **Karol Czajkowski**, **Karolina Sadowska**, **Tomasz Ragin**, Bialystok Univ. of Technology (Poland); **Magdalena Lesniak**, **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland); **Jan Dorosz**, **Piotr Miluski**, **Marcin Kochanowicz**, Bialystok Univ. of Technology (Poland)

13003-52 • 02:10 PM - 02:40 PM

**Influence of silver on the luminescence of Nd<sup>3+</sup>-doped LaF<sub>3</sub> glass-ceramics** (*Invited Paper*)

Author(s): **Rolindes B. Balda**, Univ. del País Vasco (Spain), Ctr. de Física de Materiales (Spain); **Mercedes Sedano**, Instituto de Cerámica y Vidrio (Spain); **Giulio Gorni**, Instituto de Óptica "Daza de Valdés" (Spain); **Glenn Mather**, Instituto de Cerámica y Vidrio (Spain); **Joaquin Fernandez**, Donostia International Physics Ctr. (Spain); **Alicia Durán**, **Maria Jesus Pascual**, Instituto de Cerámica y Vidrio (Spain)

13003-53 • 02:40 PM - 02:55 PM

**Ultra-small upconversion nanoparticles for optical fiber application**

Author(s): **Gloria Lesly Jimenez**, AGH Univ. of Science and Technology (Poland); **Carlos Vazquez-Lopez**, Ctr. de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (Mexico); **Isela Padilla-Rosales**, Institute of Applied Sciences and Technology of UNAM, Circuito Exterior S/N, C.U., 04510 (Mexico); **Magdalena Lesniak**, **Patryk Szymczak**, AGH University of Krakow (Poland); **Tomasz Ragin**, **Jacek M. Zmojda**, **Piotr Miluski**, **Marcin Kochanowicz**, Bialystok Univ. of Technology (Poland); **Dominik Dorosz**, AGH Univ. of Science and Technology (Poland)

13003-54 • 02:55 PM - 03:10 PM

**Femtosecond laser tuning of nanoparticles in optical fibers**

Author(s): **Léo Colliard**, **Geoffroy Aubry**, Institut de Physique de Nice (France); **Martiane Cabié**, Aix-Marseille Univ., CNRS (France), Fédération Sciences Chimiques Marseille (France); **Thomas Neisius**, Aix-Marseille Univ., CNRS (France), Fédération Sciences Chimiques Marseille (France); **Franck Pigeonneau**, Ctr. de mise en forme des matériaux, MINES ParisTech (France), Univ. PSL (France); **Réal Vallée**, **Martin Bernier**, Ctr. d'optique, photonique et laser, Univ. Laval (Canada); **Matthieu Bellec**, **Wilfried Blanc**, Institut de Physique de Nice (France)

**Coffee Break 03:10 PM - 03:40 PM**

### SESSION 14: NOVEL GLASSES AND PHOTONICS MATERIALS FOR INTEGRATED DEVICES

11 April 2024 • 03:40 PM - 05:40 PM | Amsterdam/Salon 6, Niveau/Level 0

Session Chair(s): **Matthieu Lancry**, Institut de Chimie Moléculaire et des Matériaux d'Orsay (France)

13003-9 • 03:40 PM - 04:10 PM

**Nd<sup>3+</sup> and Yb<sup>3+</sup> simultaneous laser operation coupled by energy transfer in Nd<sup>3+</sup>, Yb<sup>3+</sup>, Gd<sup>3+</sup>:CaF<sub>2</sub> crystals** (*Invited Paper*)

Author(s): **Simone Normani**, **Cesare Meroni**, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France); **Cédric Maunier**, **Sébastien Montant**, CEA-Cesta (France); **Patrice Camy**, **Alain Braud**, Ctr. de Recherche sur les Ions, les Matériaux et la Photonique (France)

13003-56 • 04:10 PM - 04:40 PM

**Functional integration through femtosecond laser-induced nano-structuration of glass** (*Invited Paper*)

Author(s): **Yves Bellouard**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13003-57 • 04:40 PM - 05:10 PM

**Managing Efficient Second-Order Optical Nonlinearity in Optical glasses by micro-poling methods** (*Invited Paper*)

Author(s): **Marc Dussauze**, Univ. de Bordeaux (France)

13003-58 • 05:10 PM - 05:25 PM

**Monolithic integration of 2D materials, plasmonics and solid-state platforms for pulsed laser operation at the nanoscale**

Author(s): **David Hernández Pinilla**, **Pablo Molina**, **Guillermo López Polín**, **Jinan Hussein A. Al Shuhaib**, **Fabrice Leardini**, Univ. Autónoma de Madrid (Spain); **Manish Chhowalla**, Univ. of Cambridge (United Kingdom); **Pablo Ares**, **Julio Gómez Herrero**, **Mariola O. Ramirez**, **Luisa E. Bausá**, Univ. Autónoma de Madrid (Spain)

13003-59 • 05:25 PM - 05:40 PM

**Large angle light scattering on fibre Bragg gratings in multimode fibres**

*Author(s):* **Aaron Reupert**, Otto-Schott-Institut für Materialforschung, Friedrich-Schiller-Univ. Jena (Germany); **Maria Chernysheva**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Lothar Wondraczek**, Otto-Schott-Institut für Materialforschung, Friedrich-Schiller-Univ. Jena (Germany)

# CONFERENCE 13004

## Nonlinear Optics and its Applications 2024

08 - 10 April 2024 | Churchill, Niveau/Level 1

**Conference Chair(s):** **John M. Dudley**, Institut Franche-Comte Electronique Mecanique Thermique et Optique (France); **Anna C. Peacock**, Univ. of Southampton (United Kingdom); **Birgit Stiller**, Max-Planck-Institut für die Physik des Lichts (Germany); **Giovanna Tissoni**, Institut de Physique de Nice (France)

**Program Committee:** **Fabio Biancalana**, Heriot-Watt Univ. (United Kingdom); **Andrea Blanco-Redondo**, Nokia Bell Labs. (United States); **Zhigang Chen**, Nankai Univ. (China); **Maria Chernysheva**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Moti Fridman**, Bar-Ilan Univ. (Israel); **Goëry Genty**, Tampere Univ. of Technology (Finland); **Nicolas Y. Joly**, Max-Planck-Institut für die Physik des Lichts (Germany); **Mariusz Klimczak**, Univ. of Warsaw (Poland); **Marco Liscidini**, Univ. degli Studi di Pavia (Italy); **Kathy Lüdge**, Technische Univ. Berlin (Germany); **Arnaud Mussot**, Lab de Physique des Lasers, Atomes et Molécules (France); **Antoine F. J. Runge**, The Univ. of Sydney (Australia); **Michelle Y. Sander**, Boston Univ. (United States); **Daria A. Smirnova**, The Australian National Univ. (Australia); **Dawn T. H. Tan**, Singapore Univ. of Technology & Design (Singapore)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: COMPLEXITY, SCATTERING AND RELATED PROCESSES

08 April 2024 • 11:30 AM - 12:50 PM | Churchill, Niveau/Level 1

*Session Chair(s):* **Anna C. Peacock**, Univ. of Southampton (United Kingdom)

13004-1 • 11:30 AM - 12:00 PM

**The concept of Fisher information in scattering problems and neural networks** (*Invited Paper*)

*Author(s):* **Stefan Rotter**, Technische Univ. Wien (Austria)

13004-2 • 12:00 PM - 12:20 PM

**Separation estimation of two incoherent point sources using sum frequency generation.**

*Author(s):* **Maxime Mertens**, Thales Research & Technology (France); **Ilya Karuseichyk**, Lab. Kastler Brossel (France); **Romain Demur, Luc**

Leviandier, Arnaud Grisard, Thales Research & Technology (France); Nicolas Treps, Lab. Kastler Brossel (France)

13004-35 • 12:20 PM - 12:50 PM

**Structured light: From singular and quantum optics to nanophotonics** (*Invited Paper*)

*Author(s):* Eileen Otte, Nicholas A. Guesken, Alexander D. White, Hyounghan Kwon, Stanford Univ. (United States); Hossein Taghinejad, Univ. of California, Berkeley (United States); William A. Jarrett, Jelena Vuckovic, Mark L. Brongersma, Stanford Univ. (United States)

### Lunch Break 12:50 PM - 01:50 PM

#### SESSION 2: PHOTONIC MACHINE LEARNING

08 April 2024 • 01:50 PM - 03:20 PM | Churchill, Niveau/Level 1

*Session Chair(s):* Krzysztof Tyszka, Univ. of Warsaw (Poland)

13004-4 • 01:50 PM - 02:20 PM

**Smart Photonics: Characterization and control of modulation instability processes in nonlinear fiber optics** (*Invited Paper*)

*Author(s):* Lynn Sader, Yassin Boussafa, Van-Thuy Hoang, XLIM, CNRS (France); Surajit Bose, Anahita Khodadad Kashi, Raktim Haldar, Leibniz Univ. Hannover (Germany); Bruno P. Chaves, Alexis Bougaud, Marc Fabert, Vincent Kermène, Alessandro Tonello, Vincent Couderc, XLIM, CNRS (France); Michael Kues, Leibniz Univ. Hannover (Germany); Benjamin Wetzel, XLIM, CNRS (France)

13004-5 • 02:20 PM - 02:40 PM

**Machine-aided Near-Transform-Limited Pulse Compression in Fully Fiber-interconnected Systems for Efficient Spectral Broadening**

*Author(s):* Bennet Fischer, Mehmet Müftüoğlu, Mario Chemnitz, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13004-6 • 02:40 PM - 03:00 PM

**Optical deep learning with multimode signals**

*Author(s):* Yuval Tamir, Moti Fridman, Bar-Ilan Univ. (Israel)

13004-7 • 03:00 PM - 03:20 PM

**Identifying dominant physical interactions in nonlinear fibre optics using machine learning**

*Author(s):* Andrei V. Ermolaev, FEMTO-ST, Univ. de Franche-Comté, CNRS (France); Christophe Finot, Lab. Interdisciplinaire Carnot de Bourgogne, Univ. de Bourgogne, CNRS (France); Goëry Genty, Tampere Univ. (Finland); John M. Dudley, FEMTO-ST, Univ. de Franche-Comté, CNRS (France)

### Coffee Break 03:20 PM - 03:50 PM

#### SESSION 3: INTERDISCIPLINARY CONCEPTS AND NEW APPLICATIONS

08 April 2024 • 03:50 PM - 05:50 PM | Churchill, Niveau/Level 1

*Session Chair(s):* Stefan Rotter, Technische Univ. Wien (Austria)

13004-8 • 03:50 PM - 04:30 PM

**Guiding Trojan optical beams using Lagrange points** (Keynote Presentation)

*Author(s):* Mercedeh Khajavikhan, The Univ. of Southern California (United States)

13004-9 • 04:30 PM - 04:50 PM

**Temporal Aharonov-Bohm effect in correlated photons**

*Author(s):* Moti Fridman, Bar-Ilan Univ. (Israel)

13004-10 • 04:50 PM - 05:10 PM

**High-speed coherent photonic random-access memory in long-lasting sound waves**

*Author(s):* Steven Becker, Andreas Geilen, Birgit Stiller, Max-Planck-Institut für die Physik des Lichts (Germany), Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13004-11 • 05:10 PM - 05:30 PM

**All-optical networks based on the nonlinear propagation of Bessel beams in a photorefractive crystal**

*Author(s):* Yue Chai, Nicolas Marsal, Delphine Wolfersberger, CentraleSupélec (France)

13004-12 • 05:30 PM - 05:50 PM

**Magnetospirillum bacteria sensing using a microbubble WGM resonator.**

*Author(s):* Amal Jose, Ramgopal Madugani, Rajkumar S Kalra, Síle Nic Chormaic, Okinawa Institute of Science and Technology Graduate Univ. (Japan)

## Tuesday 9 April 2024

## SESSION 4: NONLINEAR DYNAMICS AND APPLICATIONS

09 April 2024 • 08:30 AM - 10:20 AM | Churchill, Niveau/Level 1

Session Chair(s): **Benjamin Wetzel**, XLIM (France)

13004-13 • 08:30 AM - 09:00 AM

**Exciton-polariton condensates for photonic spiking neurons** (*Invited Paper*)Author(s): **Barbara Pietka, Krzysztof Tyszka, Magdalena Furman, Andrzej Opala, Rafal Mirek, Mateusz Król, Jan Suffczynski, Wojciech Pacuski, Jacek Szczytko**, Univ. of Warsaw (Poland); **Michal Matuszewski**, Ctr. for Theoretical Physics (Poland)

13004-14 • 09:00 AM - 09:20 AM

**Non-linear dynamics in sideband unresolved one-dimensional optomechanical cavities.**Author(s): **David Alonso Tomás**, Univ. de Barcelona (Spain); **Nestor E. Capuj**, Univ. de La Laguna (Spain); **Laura Mercadé, Amadeu Griol, Alejandro Martínez**, Ctr. de Tecnología Nanofotónica de Valencia (Spain); **Daniel Navarro Urrios**, Univ. de Barcelona (Spain)

13004-15 • 09:20 AM - 09:40 AM

**Chaotic switching oscillation in a ring resonator with counter-propagating light**Author(s): **Rodrigues D. Dikande Bitha**, The Univ. of Auckland (New Zealand); **Andrus Giraldo**, Korea Institute for Advanced Study (Korea, Republic of); **Neil G. R. Broderick, Bernd Krauskopf**, The Univ. of Auckland (New Zealand)

13004-16 • 09:40 AM - 10:00 AM

**Photorefractive slow light at 1310 nm**Author(s): **Nacera Bouldja**, CentraleSupélec (France); **Alexander A. Alexander Grabar**, Uzhgorod National Univ. (Ukraine); **Marc Sciamanna, Delphine Wolfersberger**, CentraleSupélec (France)

13004-17 • 10:00 AM - 10:20 AM

**Intra-envelope four-wave mixing in optical fibers**Author(s): **Arnaud Mussot**, Univ. de Lille (France); **Eve Bancel**, Univ. de Lille (France), ONERA (France); **Rosa Santagata**, ONERA (France); **Matteo Conforti**, Univ. de Lille (France)**Coffee Break 10:20 AM - 10:50 AM**

## SESSION 5: NONLINEAR MATERIALS AND STRUCTURES I

09 April 2024 • 10:50 AM - 12:40 PM | Churchill, Niveau/Level 1

Session Chair(s): **Thibaut Sylvestre**, FEMTO-ST (France)

13004-18 • 10:50 AM - 11:20 AM

**Integrated optical phased arrays for augmented reality, biophotonics, 3D printing, and beyond** (*Invited Paper*)Author(s): **Jelena Notaros**, Massachusetts Institute of Technology (United States)

13004-19 • 11:20 AM - 11:40 AM

**Travelling-Wave Optical Parametric Amplification in Gallium Phosphide Integrated Waveguides**Author(s): **Nikolai Kuznetsov**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Alberto Nardi**, Ecole Polytechnique Fédérale de Lausanne (Switzerland), IBM Research - Zürich (Switzerland); **Alisa Davydova, Mikhail Churaev, Johann Riemensberger**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Paul Seidler**, IBM Research - Zürich (Switzerland); **Tobias J. Kippenberg**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13004-20 • 11:40 AM - 12:00 PM

**Advanced Microscale Patterning of Strong Second-Order Optical Nonlinearity in Sodo-Niobate Amorphous Thin Films through Imprinting Thermo-Electrical Poling Process**Author(s): **Lara Karam, Frédéric Adamietz**, Institut des Sciences Moléculaires, Univ. de Bordeaux, CNRS (France); **Sirawit Boonsit**, Optoelectronics Research Ctr., Univ. of Southampton (United Kingdom); **Vasileios Mourgelas, Milos Nedeljkovic**, Optoelectronics Research Ctr. (United Kingdom); **Nadege Courjal**, FEMTO-ST, Univ. Bourgogne Franche-Comté (France); **Ganapathy Senthil Murugan**, Optoelectronics Research Ctr. (United Kingdom); **Marc Dussauze**, Institut des Sciences Moléculaires, Univ. de Bordeaux, CNRS (France)

13004-21 • 12:00 PM - 12:20 PM

**Suppression of filamentation by photonic crystals**Author(s): **Edvinas Aleksandravicius, Darius Gailevicius, Audrius Dubietis**, Vilnius Univ. (Lithuania); **Kestutis Staliunas**, Vilnius Univ. (Lithuania), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain), Univ. Politècnica de Catalunya (Spain)



13004-22 • 12:20 PM - 12:40 PM

**Tunable exciton-polaritons in band-gap engineered hexagonal boron nitride**

*Author(s):* **Pedro Ninhos, Christos Tserkezis, N. Asger Mortensen**, Univ. of Southern Denmark (Denmark); **Nuno M. M. R. Peres**, Univ. do Minho (Portugal), Univ. of Southern Denmark (Denmark)

**Lunch/Exhibition Break 12:40 PM - 02:00 PM**

**SESSION 6: NONLINEAR EFFECTS IN FIBRES**

09 April 2024 • 02:00 PM - 04:00 PM | Churchill, Niveau/Level 1

*Session Chair(s):* **Arnaud Mussot**, Lab. de Physique des Lasers, Atomes et Molécules (France)

13004-23 • 02:00 PM - 02:20 PM

**Manipulation of solitons in optical fiber experiments.**

*Author(s):* **Alexandre Mucci**, Lab. de Physique des Lasers, Atomes et Molécules (France); **Andrey Gelash**, Univ. de Bourgogne, CNRS (France); **Stephane Randoux, Pierre Suret, Francois Copie**, Lab. de Physique des Lasers, Atomes et Molécules (France)

13004-24 • 02:20 PM - 02:40 PM

**Dissipative temporal solitons in a fast laser with a saturable absorber**

*Author(s):* **Franco Prati**, Univ. degli Studi dell'Insubria (Italy); **Massimo Brambilla**, Politecnico di Bari (Italy); **Lorenzo L. Colombo**, Politecnico di Torino (Italy); **Luigi A. Lugiato**, Univ. degli Studi dell'Insubria (Italy)

13004-25 • 02:40 PM - 03:00 PM

**Characterization of supercontinuum generation along a silica tapered optical fiber using a confocal micro-spectrometer**

*Author(s):* **Gil Fanjoux, Yosri Haddad, Thibaut Sylvestre, Jean-Charles Beugnot, Samuel Margueron**, FEMTO-ST, Univ. Bourgogne Franche-Comté (France)

13004-26 • 03:00 PM - 03:20 PM

**Prediction of the period-4 modulation instability in ring fibre cavities**

*Author(s):* **Minji Shi**, Aston Univ. (United Kingdom); **Matteo Conforti, Arnaud Mussot**, Univ. de Lille (France); **Auro M. Perego**, Aston Univ. (United Kingdom)

13004-27 • 03:20 PM - 03:40 PM

**Gain-Managed Nonlinear Amplification of ultra-low repetition rate mode-locked pulse.**

*Author(s):* **Dmitrii A. Stoliarov, Egor S. Manuylovich, Edik U. Rafailov**, Aston Univ. (United Kingdom)

13004-28 • 03:40 PM - 04:00 PM

**Theory of passive-driven nonlinear dual-core fibre cavities**

*Author(s):* **Negar Shaabani Shishavan, Minji Shi**, Aston Univ. (United Kingdom); **Arnaud Mussot, Matteo Conforti**, Univ. de Lille (France); **Auro M. Perego**, Aston Univ. (United Kingdom)

**Coffee Break 04:00 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13004-50 • 06:10 PM - 08:00 PM

**MoS<sub>2</sub> quantum dots synthesized via solvothermal method as stable optical limiters**

*Author(s): Sugandh Sirohi, Shruti Narayanan, Prem B. Bisht*, Indian Institute of Technology Madras (India)

13004-52 • 06:10 PM - 08:00 PM

**Optical Nonlinearity Enhancement of Frenkel Excitons in the Strong Coupling Regime**

*Author(s): Kuidong Wang*, Xi'an Jiaotong Univ. (China)

13004-53 • 06:10 PM - 08:00 PM

**Experimental study of Nonlinear-Optical Loop Mirror (NOLM) with strict polarization controlled to clean amplified optical signals.**

*Author(s): Jose Luis de la Cruz Gonzalez, Jorge Luis Flores Nuñez, Héctor Santiago Hernández, Azael de Jesús Mora Nuñez, Manuel Salvador Beethoven Bravo Medina, Anuar Benjamin Beltran González*, Univ. de Guadalajara (Mexico); *Olivier J. M. Pottiez*, Centro de Investigaciones en Óptica, A.C. (Mexico)

13004-54 • 06:10 PM - 08:00 PM

**Power spectrum analysis of time-delayed optoelectronic oscillators with wide and narrow band nonlinear filters**

*Author(s): René Mboyo Kouayep, Paul Woafu*, Univ. de Yaoundé 1 (Cameroon); *Jimmi H. Talla Mbé*, Univ. de Dschang (Cameroon)

13004-55 • 06:10 PM - 08:00 PM

**Bursting oscillations in Colpitts oscillator and application in optoelectronics for the generation of complex optical signals**

*Author(s): René Mboyo Kouayep, Paul Woafu*, Univ. de Yaoundé 1 (Cameroon); *Jimmi H. Talla Mbé*, Univ. de Dschang (Cameroon)

13004-56 • 06:10 PM - 08:00 PM

**Anomalous excitonic shift under near-resonant excitation in Cu-doped CsPbI<sub>3</sub> nanocrystals.**

*Author(s): Ankit Sharma*, Indian Institute of Science Education and Research Bhopal (India); *Shaona Bose, Samit Kumar Ray*, Indian Institute of Technology Kharagpur (India); *K. V. Adarsh*, Indian Institute of Science Education and Research Bhopal (India)

13004-58 • 06:10 PM - 08:00 PM

**Determining molar extinction coefficient by high-accuracy optical saturation measurements**

*Author(s): Meelis-Mait Sildoja, Juri Pahapill, Charles W. Stark, Aleks K. Rebane*, National Institute of Chemical Physics and Biophysics (Estonia)

13004-59 • 06:10 PM - 08:00 PM

**Third-order nonlinear optical properties of novel glass forming organic materials**

*Author(s): Anete Berzina, Arturs Bundulis*, Institute of Solid State Physics, Univ. of Latvia (Latvia)

13004-60 • 06:10 PM - 08:00 PM

**Spatio-temporal characterization of ultrashort light pulses with structured illumination and compressing sensing**

*Author(s): Mitzi Ordoñez-Pérez, Luis Ordóñez, Erick Ipus, Pedro J. Clemente-Pesudo, Gladys Mínguez-Vega, Enrique Tajahuerce, Armin J. M. Lenz*, Univ. Jaume I (Spain)

13004-61 • 06:10 PM - 08:00 PM

**Efficient quantitative modeling of Herzberg-Teller vibronic two-photon absorption spectra of organic fluorophores: enhancement of parity-forbidden transitions**

*Author(s): Aleksander Trummal, Merle Uudsemaa, Charles W. Stark, Meelis-Mait Sildoja, Juri Pahapill, Aleks K. Rebane*, National Institute of Chemical Physics and Biophysics (Estonia)

13004-62 • 06:10 PM - 08:00 PM

**Exploring new phenomena in analogue physical simulations through an optical feedback loop in paraxial light fluids**

*Author(s): Tiago D. Ferreira, Ariel Guerreiro*, Univ. do Porto (Portugal), INESC TEC (Portugal); *Nuno A. Silva*, INESC TEC (Portugal), Univ. do Porto (Portugal)

13004-63 • 06:10 PM - 08:00 PM

**Kerr frequency comb generation in normal dispersion fiber Fabry-Perot resonators via switching waves excitation**

*Author(s):* **Thomas Bunel**, Lab. de Physique des Lasers, Atomes et Molécules, Univ. de Lille, CNRS (France); **Matteo Conforti, Zoheir Ziani**, Univ. de Lille (France); **Julien Lumeau**, Institut Fresnel, Ecole Centrale de Marseille, Aix-Marseille Univ., CNRS (France); **Antonin Moreau**, Aix-Marseille Univ. (France); **Arnaud Fernandez**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS, Univ. de Toulouse, CNRS (France); **Olivier Llopis, Germain Bourcier**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Arnaud Mussot**, Univ. de Lille (France)

13004-64 • 06:10 PM - 08:00 PM

**Optimization of Pockels effect in poled amorphous waveguides for efficient electro-optic modulation**

*Author(s):* **Sirawit Boonsit, Vasileios Mourgelas**, Univ. of Southampton (United Kingdom); **Lara Karam**, Univ. de Bordeaux (France); **Milos Nedeljkovic**, Univ. of Southampton (United Kingdom); **Nadege Courjal**, FEMTO-ST (France); **Marc Dussauze**, Univ. de Bordeaux (France); **Ganapathy Senthil Murugan**, Univ. of Southampton (United Kingdom)

13004-65 • 06:10 PM - 08:00 PM

**Two-photon absorption reveals low-energy excited states of a 2,5,8-triamino-heptazine chromophore**

*Author(s):* **Charles W. Stark, Johanna Arak, Aleksander Trummal, Merle Uudsemaa, Meelis-Mait Sildoja, Juri Pahapill**, National Institute of Chemical Physics and Biophysics (Estonia); **Aleks K. Rebane**, Montana State Univ. (United States), National Institute of Chemical Physics and Biophysics (Estonia)

13004-66 • 06:10 PM - 08:00 PM

**Brillouin interaction between individual optical modes excited in multimode fibers**

*Author(s):* **Andrei A. Fotiadi**, Univ. de Mons (Belgium), Univ. of Oulu (Finland); **Edik U. Rafailov**, Aston Univ. (United Kingdom); **Dmitry A. Korobko, Aleksey V. Tregubov**, Ulyanovsk State Univ. (Russian Federation); **Patrice Mégret**, Univ. de Mons (Belgium); **Alexander V. Bykov**, Univ. of Oulu (Finland); **Igor V. Meglinski**, Aston Univ. (United Kingdom), Univ. of Oulu (Finland)

13004-67 • 06:10 PM - 08:00 PM

**On the sub-50 nanosecond luminescence rise in Tb-DPA complexes**

*Author(s):* **Cristina Consani, Christoph Leithold, Wolfgang Lakata, Andreas Tortschanoff, Gerald Auböck**, Silicon Austria Labs. GmbH (Austria)

13004-69 • 06:10 PM - 08:00 PM

**Broadband coherent anti-Stokes Raman spectroscopy for small scale microplastic detection**

*Author(s):* **Bryan M. Hennelly, Syed Baryalay, Ryan Muddiman, Timothy McNamara**, National Univ. of Ireland, Maynooth (Ireland); **Sarah Byrne**, National Univ. of Ireland (Ireland)

13004-70 • 06:10 PM - 08:00 PM

**Kerr comb sideband injection locking**

*Author(s):* **Thibault Wildi, Alexander Ulanov**, Deutsches Elektronen-Synchrotron (Germany); **Nicolas Englebert**, Univ. Libre de Bruxelles (Belgium); **Thibault Voumard, Tobias Herr**, Deutsches Elektronen-Synchrotron (Germany)

13004-71 • 06:10 PM - 08:00 PM

**Discrete bistable optical system with controlled non reciprocal coupling**

*Author(s):* **Pedro Aguilera-Rojas, Marcel Clerc, Manuel Diaz-Zuñiga**, Univ. de Chile (Chile)

13004-73 • 06:10 PM - 08:00 PM

**Amplified Spontaneous Emission Through Electron-Hole Liquid in Metal Halide Perovskites Nanocrystals**

*Author(s):* **Naresh Aggarwal**, Indian Institute of Science Education and Research Bhopal (India); **Dimitry N. Dirin, Maksym V. Kovalenko**, ETH Zurich (Switzerland); **K. V. Adarsh**, Indian Institute of Science Education and Research Bhopal (India)

13004-77 • 06:10 PM - 08:00 PM

**Control of the number of solitons in the fiber laser cavity due to continuous wave injection.**

*Author(s):* **Dmitry A. Korobko, Pavel A. Itrin, Valeria A. Ribenek**, Ulyanovsk State Univ. (Russian Federation); **Andrei A. Fotiadi**, Univ. de Mons (Belgium); **Maxim Pribylov, Ivan Panyaev**, Ulyanovsk State Univ. (Russian Federation)

13004-78 • 06:10 PM - 08:00 PM

**Hybrid frequency combs in non-Hermitian Kerr Cavities.**

*Author(s):* **Salim Benadouda Ivars**, Univ Politècnica de Catalunya (Spain); **Carles Milian**, Universitat Politècnica de València (Spain); **Muriel Botey, Kestutis Staliunas, Ramon Herrero**, Univ Politècnica de Catalunya (Spain)

**Wednesday 10 April 2024****SESSION 7: NONLINEAR MATERIALS AND STRUCTURES II**

10 April 2024 • 08:30 AM - 10:20 AM | Churchill, Niveau/Level 1

*Session Chair(s):* **Maria V. Chekhova**, Max-Planck-Institut für die Physik des Lichts (Germany)

13004-30 • 08:30 AM - 09:00 AM

**Nonlinear-optical material developments since 2000: characterization, data tables, and best practices** (*Invited Paper*)

*Author(s):* **Nathalie Vermeulen**, Vrije Univ. Brussel (Belgium); **Daniel H. G. Espinosa**, Univ. of Ottawa (Canada); **Adam Ball**, Virginia Commonwealth Univ. (United States); **John Ballato**, Clemson Univ. (United States); **Philippe Boucaud**, Univ. Côte d'Azur (France); **Georges Boudebs**, Univ. d'Angers (France); **Cecilia L. A. V. Campos**, Univ. Federal de Pernambuco (Brazil); **Peter D. Dragic**, Univ. of Illinois (United States); **Anderson S. L. Gomes**, Univ. Federal de Pernambuco (Brazil); **Mikko J. Huttunen**, Tampere Univ. (Finland); **Nathaniel Kinsey**, Virginia Commonwealth Univ. (United States); **Rich P. Mildren**, Macquarie Univ. (Australia); **Dragomir N. Neshev**, The Australian National Univ. (Australia); **Lazaro A. Padilha**, Univ. of Campinas (Brazil); **Minhao Pu**, Technical Univ. of Denmark (Denmark); **Ray Secondo**, Virginia Commonwealth Univ. (United States); **Eiji Tokunaga**, Tokyo Univ. of Science (Japan); **Dmitry Turchinovich**, Univ. Bielefeld (Germany); **Jingshi Yan**, The Australian National Univ. (Australia); **Kresten Yvind**, Technical Univ. of Denmark (Denmark); **Ksenia Dolgaleva**, Univ. of Ottawa (Canada); **Eric W. Van Stryland**, Univ. of Central Florida (United States)

13004-31 • 09:00 AM - 09:20 AM

**Nonlinear optical properties of polycrystalline silicon-germanium core fibers from telecom wavelengths into the mid-infrared spectral region**

*Author(s):* **Amar Nath Ghosh**, **Meng Huang**, Univ. of Southampton (United Kingdom); **John Ballato**, Clemson Univ. (United States); **Ursula J. Gibson**, Dartmouth College (United States); **Anna C. Peacock**, Univ. of Southampton (United Kingdom)

13004-32 • 09:20 AM - 09:40 AM

**Nonlinear ultrashort-pulse damage of laser mirrors from the UV to the infrared**

*Author(s):* **Adam Inger**, **Viktória Csajbók**, **Péter Rácz**, **Péter Dombi**, HUN-REN Wigner Research Ctr. for Physics (Hungary)

13004-33 • 09:40 AM - 10:00 AM

**Broadband Second harmonic generation by birefringent phase matching in an X-cut LiNbO<sub>3</sub> thin film membrane**

*Author(s):* **Aiman Zinaoui**, **Lucas Grosjean**, **Martin Khouri**, **Antoine Coste**, **Miguel Angel Suarez**, **Samuel Queste**, **Ludovic Gauthier-Manuel**, **Laurent Robert**, **Mathieu Chauvet**, **Nadège Courjal**, FEMTO-ST (France)

13004-34 • 10:00 AM - 10:20 AM

**Raman scattering and supercontinuum generation in high-index doped silica chip waveguides**

*Author(s):* **Charbel Khallouf**, FEMTO-ST, Univ. de Franche-Comté, CNRS (France); **Van Thuy Hoang**, XLIM, Univ. de Limoges, CNRS (France); **Gil Fanjoux**, FEMTO-ST, Univ. de Franche-Comté, CNRS (France); **Brent Little**, QXP Technologies Inc. (China); **Sait Chu**, City Univ. of Hong Kong (Hong Kong, China); **Dave J. Moss**, Swinburne Univ. of Technology (Australia); **Roberto Morandotti**, Institut National de la Recherche Scientifique (Canada); **John M. Dudley**, FEMTO-ST, Univ. de Franche-Comté, CNRS (France); **Benjamin Wetzel**, XLIM, Univ. de Limoges, CNRS (France); **Thibaut Sylvestre**, FEMTO-ST, Univ. de Franche-Comté, CNRS (France)

**Coffee Break 10:20 AM - 10:50 AM****SESSION 8: STRUCTURED LIGHT AND MULTIMODE EFFECTS**

10 April 2024 • 10:50 AM - 12:10 PM | Churchill, Niveau/Level 1

*Session Chair(s):* **Thibaut Sylvestre**, FEMTO-ST (France)

13004-36 • 10:50 AM - 11:10 AM

**Spatio-temporal initial conditions for multi-mode nonlinear optics**

*Author(s):* **Spencer W. Jolly**, **Julien Dechanxhe**, **Pascal Kockaert**, Univ. Libre de Bruxelles (Belgium)

13004-37 • 11:10 AM - 11:30 AM

**Multimode dispersive waves**

*Author(s):* **Yuval Tamir**, **Moti Fridman**, Bar-Ilan Univ. (Israel)

13004-38 • 11:30 AM - 11:50 AM

**Frequency comb in optically poled multimode graded-index fibers**

*Author(s):* **Yago Arosa**, XLIM (France), Univ. de Santiago de Compostela (Spain); **Maxime Jonard**, XLIM (France); **Tigran Mansuryan**, XLIM, Univ. de Limoges (France); **Maggy Colas**, **Julie Cornette**, **Jean-René Duclère**, Institut de Recherche sur les Céramiques, Univ. de Limoges (France); **Claire Lefort**, **Alessandro Tonello**, **Vincent Couderc**, XLIM (France)

13004-3 • 11:50 AM - 12:10 PM

**Dimensionality crossover of radial discrete diffraction in optically induced Mathieu photonic lattices**

*Author(s):* **Jadranka M. Vasiljevic**, Institute of Physics Belgrade (Serbia); **Vladimir P. Jovanovic**, **Aleksandar Ž. Tomovic**, **Dejan V. Timotijevic**, **Radomir Žikic**, Univ. of Belgrade (Serbia); **Milivoj R. Belic**, Texas A&M Univ. at Qatar (Qatar); **Dragana M. Jovic Savic**, Institute of Physics Belgrade (Serbia)

**Lunch/Exhibition Break 12:10 PM - 01:30 PM**

## SESSION 9: QUANTUM NONLINEAR PHOTONICS

10 April 2024 • 01:30 PM - 03:20 PM | Churchill, Niveau/Level 1

Session Chair(s): **John M. Dudley**, FEMTO-ST (France)

13004-39 • 01:30 PM - 02:00 PM

**Spontaneous parametric down-conversion in ultrathin samples** (*Invited Paper*)Author(s): **Maria V. Chekhova**, Max-Planck-Institut für die Physik des Lichts (Germany)

13004-40 • 02:00 PM - 02:20 PM

**Quantum correlated twin beams in cascaded optical parametric oscillator**Author(s): **Salvatore Castrignano**, **Iolanda Ricciardi**, **Pasquale Maddaloni**, **Paolo De Natale**, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy); **Stefan Wabnitz**, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy), Sapienza Univ. di Roma (Italy); **Maurizio De Rosa**, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy)

13004-41 • 02:20 PM - 02:40 PM

**Ultrafast temporal quantum interferometer**Author(s): **Sara Meir**, **Eliahu Cohen**, **Moti Fridman**, Bar-Ilan Univ. (Israel)

13004-42 • 02:40 PM - 03:00 PM

**Biphoton Polarization Bell states from an InGaP nonlinear metasurface**Author(s): **Jinyong Ma**, **Tongmiao Fan**, **Tuomas Haggren**, **Jihua Zhang**, **Hark Hoe H. Tan**, **Chennupati Jagadish**, **Dragomir N. Neshev**, **Andrey A. Sukhorukov**, The Australian National Univ. (Australia)

13004-43 • 03:00 PM - 03:20 PM

**Third-order parametric down-conversion in tapered optical fibers: An exact theoretical treatment of conversion efficiency**Author(s): **Carla M. Brunner**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Max-Planck-Institut für die Physik des Lichts (Germany); **Maria V. Chekhova**, Max-Planck-Institut für die Physik des Lichts (Germany), Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Nicolas Y. Joly**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany), Max-Planck-Institut für die Physik des Lichts (Germany)**Coffee Break 03:20 PM - 03:50 PM**

## SESSION 10: FREQUENCY COMBS AND MICRORESONATOR DEVICES

10 April 2024 • 03:50 PM - 05:50 PM | Churchill, Niveau/Level 1

Session Chair(s): **Nathalie Vermeulen**, Vrije Univ. Brussel (Belgium)

13004-44 • 03:50 PM - 04:10 PM

**Astronomical spectrograph calibration with ultraviolet astrocombs**Author(s): **Furkan Ayhan**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Markus Ludwig**, Deutsches Elektronen-Synchrotron (Germany); **Tobias M. Schmidt**, Observatoire de Genève, Univ. de Genève (Switzerland); **Thibault Wildi**, **Thibault Voumard**, Deutsches Elektronen-Synchrotron (Germany); **Roman Blum**, CSEM SA (Switzerland); **Zhichao Ye**, **Fuchuan Lei**, Chalmers Univ. of Technology (Sweden); **François Wildi**, **Francesco Pepe**, Observatoire de Genève, Univ. de Genève (Switzerland); **Mahmoud A. A. Gaafar**, Deutsches Elektronen-Synchrotron (Germany); **Ewelina Obrzud**, **Davide Grassani**, CSEM SA (Switzerland); **François Moreau**, Observatoire de Haute-Provence, Aix-Marseille Univ., CNRS (France); **Bruno Chazelas**, Observatoire de Genève, Univ. de Genève (Switzerland); **Rico Sottile**, Observatoire de Haute-Provence, Aix-Marseille Univ., CNRS (France); **Victor Torres-Company**, Chalmers Univ. of Technology (Sweden); **Victor Brasch**, Q.ANT GmbH (Germany); **Luis G. Villanueva**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **François Bouchy**, Observatoire de Genève, Univ. de Genève (Switzerland); **Tobias Herr**, Deutsches Elektronen-Synchrotron (Germany)

13004-45 • 04:10 PM - 04:30 PM

**Increasing Kerr-comb efficiency through pump recycling in a chip-integrated gain medium**Author(s): **Bastian Ruhnke**, **Mahmoud A. A. Gaafar**, **Thibault Wildi**, **Markus Ludwig**, **Alexander Ulanov**, **Thibault Voumard**, Deutsches Elektronen-Synchrotron (Germany); **Kai Wang**, Univ. Twente (Netherlands); **Milan Sinobad**, **Jan Lorenzen**, Deutsches Elektronen-Synchrotron (Germany); **Henry Francis**, **Jose Carreira**, **Michael Geiselmann**, LiGenTec SA (Switzerland); **Neetesh Singh**, **Franz X. Kärtner**, Deutsches Elektronen-Synchrotron (Germany); **Sonia M. Garcia-Blanco**, Univ. Twente (Netherlands); **Tobias Herr**, Deutsches Elektronen-Synchrotron (Germany)

13004-46 • 04:30 PM - 04:50 PM

**28 THz soliton frequency comb in a continuous-wave pumped fiber Fabry-Pérot resonator**Author(s): **Thomas Bunel**, Lab. de Physique des Lasers, Atomes et Molécules, Univ. de Lille, CNRS (France); **Matteo Conforti**, **Zoheir Ziani**, Univ. de Lille (France); **Antonin Moreau**, Aix-Marseille Univ. (France); **Arnaud Fernandez**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Julien Lumeau**, Aix-Marseille Univ. (France); **Olivier Llopis**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS, Univ. de Toulouse (France); **Germain Bourcier**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Arnaud Mussot**, Univ. de Lille (France)

13004-48 • 04:50 PM - 05:10 PM

**Amplifier enhanced gain-through-filtering instability in a hybrid Kerr cavity**

*Author(s):* **Minji Shi**, Aston Univ. (United Kingdom); **Stefano Negrini**, Univ. de Lille (France); **Nicolas Englebert**, California Institute of Technology (United States); **François Leo**, Université libre de Bruxelles (Belgium); **Matteo Conforti**, **Arnaud Mussot**, Univ. de Lille (France); **Auro M. Perego**, Aston Univ. (United Kingdom)

13004-49 • 05:10 PM - 05:30 PM

**Complete phase stabilization of self-injection locked microcomb**

*Author(s):* **Alexander Ulanov**, **Thibault Wildi**, **Bastian Ruhnke**, Deutsches Elektronen-Synchrotron (Germany); **Tobias Herr**, Deutsches Elektronen-Synchrotron (Germany), Univ. Hamburg (Germany)

13004-47 • 05:30 PM - 05:50 PM

**Coherence control of spectrally multiplied frequency combs using an integrated multi-mode DBR laser**

*Author(s):* **Mohammadshahab Abdollahi**, **Pablo Marin-Palomo**, **Martin Virte**, Vrije Univ. Brussel (Belgium)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13004-29

**Examining nonlinear behaviors in optical communication systems using Gaussian mixture model**

*Author(s):* **Egor Sedov**, **David Saad**, **Sergei K. Turitsyn**, **Felippe A. Pereira**, Aston Univ. (United Kingdom)

13004-68

**Next-generation signal processing using windowed Nonlinear Fourier Transform**

*Author(s):* **Egor Sedov**, Aston Univ. (United Kingdom); **Igor Chekhovskoy**, Novosibirsk State Univ. (Russian Federation)

13004-76

**Supermode noise suppression of the harmonically mode-locked fiber laser through continuous wave injection: experiment and numerical simulations**

*Author(s):* **Dmitry A. Korobko**, **Valeria A. Ribenek**, **Pavel A. Itrin**, Ulyanovsk State Univ. (Russian Federation); **Andrei A. Fotiadi**, Univ. de Mons (Belgium); **Pavel Mironov**, **Ivan Panyaev**, Ulyanovsk State Univ. (Russian Federation)

## CONFERENCE 13005

# Lasers and Photonics for Advanced Manufacturing



08 - 11 April 2024 | Curie A, Niveau/Level 1

**Conference Chair(s):** **François Courvoisier**, FEMTO-ST (France); **Sylvain Lecler**, ICube (France); **Wilhelm Pfleging**, Karlsruher Institut für Technologie (Germany)

**Program Committee:** **Stefan Dimov**, Univ. of Birmingham (United Kingdom); **Alexander Heisterkamp**, Leibniz Univ. Hannover (Germany); **Anming Hu**, The Univ. of Tennessee Knoxville (United States); **Rainer Kling**, ALPhANOV (France); **John Lopez**, Ctr. Lasers Intenses et Applications (France); **Yongfeng Lu**, Univ. of Nebraska-Lincoln (United States); **Roberto Osellame**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Gert-Willem Römer**, Univ. Twente (Netherlands)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: ADVANCED LASERS FOR HIGH-THROUGHPUT MANUFACTURING

08 April 2024 • 11:30 AM - 01:00 PM | Curie A, Niveau/Level 1

*Session Chair(s):* **Sylvain Lecler**, ICube (France)

13005-1 • 11:30 AM - 12:00 PM

**Advances in 2.1 $\mu$ m ultrafast Holmium lasers** (*Invited Paper*)

*Author(s):* **Clara J. Saraceno**, Ruhr-Univ. Bochum (Germany)

13005-2 • 12:00 PM - 12:20 PM

**High power femtosecond laser : from micro to macro fs laser processing**

*Author(s):* **Eric Audouard**, **Martin Delaigue**, **Julien Pouysegur**, **Clemens Hönninger**, Amplitude (France)

13005-3 • 12:20 PM - 12:40 PM

**Highly flexible, kilowatt-class thin-disk multipass amplifier and its applications in material processing**

Author(s): **Marwan Abdou Ahmed, André Löscher, Florian Bienert, Thomas Graf**, Univ. Stuttgart (Germany)

13005-4 • 12:40 PM - 01:00 PM

**High throughput precision laser milling for arbitrary 3D structures in silicon**

Author(s): **Mawuli Ametowobla**, Robert Bosch GmbH (Germany); **Gerhard Kunz**, Robert Bosch LLC (United States); **Sven Doering, Martin Kraus**, Robert Bosch Manufacturing Solutions GmbH (Germany)

**Lunch Break 01:00 PM - 02:10 PM**

**SESSION 2: GHZ BURST ULTRAFAST LASER PROCESSING**

08 April 2024 • 02:10 PM - 03:30 PM | Curie A, Niveau/Level 1

Session Chair(s): **Koji Sugioka**, RIKEN Ctr. for Advanced Photonics (Japan)

13005-5 • 02:10 PM - 02:30 PM

**Ultrafast laser drilling of through vias in gap materials using GHz-burst mode operation**

Author(s): **Pierre Balage**, Ctr. Lasers Intenses et Applications (France); **Manon Lafargue**, Amplitude (France), Ctr. Lasers Intenses et Applications (France); **Théo Guilberteau**, ALPhANOV (France), Ctr. Lasers Intenses et Applications (France); **Guillaume Bonamis, Clemens Hönninger**, Amplitude (France); **John Lopez, Inka B. Manek-Hönninger**, Ctr. Lasers Intenses et Applications (France)

13005-6 • 02:30 PM - 02:50 PM

**Comparison of picosecond and femtosecond pulses in burst mode for realization of printed electronics circuits**

Author(s): **Julien Dupuy, Alexandre Miazek, Simon Boivinnet, Yves Hernandez**, Multitel A.S.B.L. (Belgium); **Philippe Guaino, Krishnamoorthy Muthukaruppasamy**, CRM (Belgium); **David Bruneel, Céline Petit**, LASEA SA (Belgium); **Mariia Arseenko**, CRM (Belgium)

13005-7 • 02:50 PM - 03:10 PM

**Ultrafast Laser Processing of Silicon with GHz Long Burst: Comparison between Infrared and Visible Wavelengths**

Author(s): **Marie Fleureau**, Amplitude (France)

13005-8 • 03:10 PM - 03:30 PM

**Low energy and high-speed laser-induced breakdown spectroscopy**

Author(s): **Emre Hasar, Parviz Elahi**, Bogaziçi Üniv. (Turkey)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 3: BEAM SHAPING FOR ADVANCED LASER PROCESSING**

08 April 2024 • 04:00 PM - 06:00 PM | Curie A, Niveau/Level 1

Session Chair(s): **François Courvoisier**, FEMTO-ST (France)

13005-9 • 04:00 PM - 04:20 PM

**Enhancing laser materials processing efficiency: dynamic beam shaping and parallelization strategies**

Author(s): **Nicole Grubert**, RWTH Aachen Univ. (Germany); **Felix Lange**, SCANLAB GmbH (Germany), RWTH Aachen University - Chair for Technology of Optical Systems TOS (Germany); **Jochen Stollenwerk**, Fraunhofer Institute for Laser Technology ILT (Germany), RWTH Aachen University - Chair for Technology of Optical Systems TOS (Germany); **Carlo Holly**, RWTH Aachen University - Chair for Technology of Optical Systems TOS (Germany), Fraunhofer Institute for Laser Technology ILT (Germany)

13005-10 • 04:20 PM - 04:40 PM

**Beam shaping of high power multimode lasers by multi-spot optics**

Author(s): **Alexander V. Laskin**, AdlOptica Optical Systems GmbH (Germany); **Joerg Volpp**, Lulea Univ. of Technology (Sweden); **Vadim Laskin**, AdlOptica Optical Systems GmbH (Germany); **Takuji Nara**, Profitet (Japan); **SeongRyol Jung**, ShinHoTek (Korea, Republic of)

13005-11 • 04:40 PM - 05:00 PM

**Precision Nanofabrication with Femtosecond UV Laser Interference: Compact Interferometer**

Author(s): **Darius Gailevicius, Dominyka Stonyte, Tadas Latvys, Domas Paipulas**, Vilnius Univ. (Lithuania)

13005-12 • 05:00 PM - 05:20 PM

**Characterizing focusing units for micromachining with ultrashort laser pulses**

Author(s): **Dario Mekle**, TRUMPF Laser- und Systemtechnik GmbH (Germany), Friedrich-Schiller-Univ. Jena (Germany), Abbe Ctr. of Photonics (Germany); **Daniel Flamm**, TRUMPF Laser- und Systemtechnik GmbH (Germany); **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany), Abbe Ctr. of Photonics (Germany), Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)



13005-13 • 05:20 PM - 05:40 PM

**Introducing Fibered Laser Shock Peening (FLASP) with Record-breaking Laser Energy Transmission through Optical Fiber**

*Author(s):* **Fahem Boudries, Camille Godel**, Imagine Optic SA (France); **Donato Gallitelli, Benoît CAILLAULT**, Europe Technologies (France); **Samuel Bucourt, Xavier LEVECQ**, Imagine Optic SA (France)

13005-14 • 05:40 PM - 06:00 PM

**Spatial and temporal stabilization of holographically-shaped beam with the Fourier space intensity measurement**

*Author(s):* **Yoshio Hayasaki, Satoshi Hasegawa**, Utsunomiya Univ. (Japan)

## Tuesday 9 April 2024

### SESSION 4: ULTRAFAST LASER PROCESSING

09 April 2024 • 08:35 AM - 10:00 AM | Curie A, Niveau/Level 1

*Session Chair(s):* **Maria Farsari**, Foundation for Research and Technology-Hellas (Greece)

13005-17 • 08:55 AM - 09:15 AM

**Why use ultrashort pulsed lasers for laser microwelding of dissimilar materials**

*Author(s):* **Dimitris Karnakis, Etienne Pelletier**, Oxford Lasers Ltd. (United Kingdom)

13005-15 • 09:15 AM - 10:00 AM

**Ultrafast laser 3D processing of transparent materials for chemical and biological applications** (Keynote Presentation)

*Author(s):* **Koji Sugioka**, RIKEN Ctr. for Advanced Photonics (Japan)

### Coffee Break 10:00 AM - 10:30 AM

### SESSION 5: LASER PROCESSING FOR BATTERIES AND SUPERCAPACITIES

09 April 2024 • 10:30 AM - 12:00 PM | Curie A, Niveau/Level 1

*Session Chair(s):* **Wilhelm Pflöging**, Karlsruher Institut für Technologie (Germany)

13005-18 • 10:30 AM - 11:00 AM

**Laser-driven conversion of sustainable materials for electrical applications** (*Invited Paper*)

*Author(s):* **Mitsuhiro Terakawa**, Keio Univ. (Japan)

13005-19 • 11:00 AM - 11:20 AM

**Ultrafast laser ablation of high-voltage cathodes for next generation 3D lithium-ion batteries**

*Author(s):* **Carolyn Reinhold, Wilhelm Pflöging**, Karlsruher Institut für Technologie (Germany)

13005-20 • 11:20 AM - 11:40 AM

**Hierarchical structuring of cathodes and anodes for lithium-ion batteries**

*Author(s):* **Niclas Straßburger, Penghui Zhu, Wilhelm Pflöging**, Karlsruher Institut für Technologie (Germany)

13005-21 • 11:40 AM - 12:00 PM

**Formation of laser-induced porous graphitic carbon structures for high capacitance supercapacitors**

*Author(s):* **Mari Kato, Yosuke Kondo, Yuma Hattori, Rei Funayama**, Keio Univ. (Japan); **Shuichiro Hayashi**, Princeton Univ. (United States); **Mitsuhiro Terakawa**, Keio Univ. (Japan)

### Lunch/Exhibition Break 12:00 PM - 01:30 PM

### SESSION 6: JOINT SESSION: 3D LASER ADDITIVE MANUFACTURING

09 April 2024 • 01:30 PM - 04:10 PM | Curie A, Niveau/Level 1

*Session Chair(s):* **Rainer Kling**, Berner Fachhochschule (Switzerland)

**Joint Session between conferences 12995 (3D Printed Optics and Additive Photonic Manufacturing) and 13005 (Lasers and Photonics for Advanced Manufacturing)**

13005-23 • 01:30 PM - 01:50 PM

**Laser Induced Forward Transfer of metallic interconnections for photonic applications**

*Author(s):* **Marina Makrygianni, Kostas Andritsos**, National Technical Univ. of Athens (Greece); **Sohrab Kamyar, Erik Schreuder, Ronald Dekker**, Lionix International BV (Netherlands); **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

13005-24 • 01:50 PM - 02:10 PM

**Ultrasonic levitation as containerless handling for In-Space Manufacturing**

Author(s): **Böhm Torben, Jan Düsing**, Laser Zentrum Hannover e.V. (Germany); **Lotz Christoph**, Hannover Institute of Technology, Leibniz Univ. Hannover (Germany); **Bapat Salil**, Purdue Univ. (United States); **Peter Jäschke, Stefan Kaierle**, Laser Zentrum Hannover e.V. (Germany); **Malshe P. Ajay**, Purdue Univ. (United States); **Ludger Overmeyer**, Institute of Transport and Automation Technology, Leibniz Univ. Hannover (Germany)

13005-25 • 02:10 PM - 02:40 PM

**3D nanoprinting** (Invited Paper)

Author(s): **Maria Farsari**, Foundation for Research and Technology-Hellas (Greece)

13005-26 • 02:40 PM - 03:00 PM

**Proof of feasibility of optical fiber embedding in a metal structure using the DED-CLAD® process**

Author(s): **Samuel Berthe**, ICube, Univ. de Strasbourg (France), Icam, site de Strasbourg-Europe (France); **Pierre Pfeiffer**, ICube, Univ. de Strasbourg (France); **Nathan Meyer**, IREPA LASER (France); **Grégoire Chabrol**, ICube, Univ. de Strasbourg (France), Icam, site de Strasbourg-Europe (France); **Massamaesso Bilasse**, ICube (France), Icam, site de Strasbourg-Europe (France); **Nadia Bahlouli**, ICube, Univ. de Strasbourg (France); **Didier Boisselier**, IREPA LASER (France); **Sylvain Lecler**, ICube, Univ. de Strasbourg (France), Institut National des Sciences Appliquées de Strasbourg (France)

12995-24 • 03:00 PM - 03:30 PM

**Photonics at the heart of additive manufacturing of large metal parts** (Invited Paper)

Author(s): **Didier Boisselier, Jérôme Wursthorn, Nathan Mayer**, IREPA LASER (France)

12995-25 • 03:30 PM - 03:50 PM

**Comparative study about the properties of in-situ synthesized TiN/Ti6Al4V sandwich structure materials by selective laser melting and laser directed energy deposition**

Author(s): **Vyacheslav A. Trofimov, Zhiheng Tai, Di Wang, Yunmian Xiao, Jiale Lv, Yongqiang Yang**, South China Univ. of Technology (China)

12995-26 • 03:50 PM - 04:10 PM

**Formation mechanism for ultra-thin wall thickness of additively manufactured tungsten grids via selective laser melting**

Author(s): **Vyacheslav A. Trofimov, Meng Wang, Changjun Han, Yongqiang Yang, Menglong Jiang, Chao Yang, Yongwei Feng**, South China Univ. of Technology (China); **Ming Yan**, Southern University of Science and Technology (China); **Di Wang**, South China Univ. of Technology (China)

**Coffee Break 04:10 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

**POSTERS-TUESDAY**

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>

13005-53 • 06:10 PM - 08:00 PM

**Comparison between three scanning systems for laser cutting of airbag materials**

*Author(s): Nicolae Dogaru, Autoliv Romania SRL (Romania), Univ. Politehnica Timisoara (Romania); Virgil-Florin Duma, Univ. "Aurel Vlaicu" din Arad (Romania), Univ. Politehnica Timisoara (Romania)*

13005-54 • 06:10 PM - 08:00 PM

**Low-power structural color laser printing enabled by controllable oxidation and deformation of self-assembled AL-PS nanosphere arrays.**

*Author(s): Maxim Elizarov, Ning Li, Fei Xiang, Andrea Fratolocchi, King Abdullah Univ. of Science and Technology (Saudi Arabia)*

13005-55 • 06:10 PM - 08:00 PM

**Study on additive and Subtractive manufacturing using picosecond laser micromachining**

*Author(s): Vyacheslav A. Trofimov, Boyuan Zheng, Di Wang, Yongqiang Yang Meng Wang, Zhiheng Tai, Zhongwei Yan, Yan Wang, South China Univ. of Technology (China)*

13005-56 • 06:10 PM - 08:00 PM

**Control of processing effects under high-frequency femtosecond laser irradiation on three commercial polymers with different thermal properties**

*Author(s): Andrés Pérez Bernabeu, Guillem Nájjar, Jaume Colomina-Martínez, Sergi Gallego, Daniel Puerto, Augusto Beléndez, Univ. de Alicante (Spain)*

13005-57 • 06:10 PM - 08:00 PM

**Towards the preparation of nuclear fuel ceramic samples with ultrafast laser micromachining**

*Author(s): Carlos Esteban Cifuentes Quintal, IRESNE, CEA (France), Institut Fresnel, Aix-Marseille Univ., CNRS (France); Thomas Doualle, Yves Pontillon, IRESNE, CEA (France); Laurent Gallais, Institut Fresnel, Aix-Marseille Univ., CNRS (France)*

13005-58 • 06:10 PM - 08:00 PM

**4.5 W 120 fs pulses directly from a 1.2 GHz single-mode Er-doped fiber**

*Author(s): Melih Kayra Kadioğlu, Koç Univ. (Turkey); Parviz Elahi, Bogaziçi Üniv. (Turkey)*

13005-59 • 06:10 PM - 08:00 PM

**Simultaneous femtosecond inscription of two wavelength-separated fiber Bragg gratings at the same spot**

*Author(s): Aviran Halstuch, Amiel A. Ishaaya, Ben-Gurion Univ. of the Negev (Israel)*

13005-60 • 06:10 PM - 08:00 PM

**Mapping high-density nano-plasmas through wave-turning measurements**

*Author(s): Mostafa Hassan, Remo Giust, Luca Furfaro, François Courvoisier, FEMTO-ST (France)*

13005-61 • 06:10 PM - 08:00 PM

**Polarimetric properties of imperfect laser-induced periodic surface structures on stainless steel**

*Author(s): Mahmoud H. Elshorbagy, Joaquin Andres-Porras, Angela Soria-Garcia, Jesus del Hoyo, Luis Miguel Sanchez-Brea, Javier Alda, Univ. Complutense de Madrid (Spain)*

13005-62 • 06:10 PM - 08:00 PM

**Beam shaping phase DOEs engraved with femtosecond laser**

*Author(s): Angela Soria-Garcia, Univ. Complutense de Madrid (Spain); Jorge Fantova, CEIT-BRTA (Spain); Luis Miguel Sanchez-Brea, Jesus del Hoyo, Joaquin Andres-Porras, Univ. Complutense de Madrid (Spain); Santiago M. Olaizola, CEIT-BRTA (Spain)*

13005-63 • 06:10 PM - 08:00 PM

**A novel method for laser micro drilling of holes with a higher geometrical accuracy**

*Author(s): Tahseen Jwad, Vahid Nasrollahi, Aurimas Turkus, Univ. of Birmingham (United Kingdom); Ali Gökhan Demir, Politecnico di Milano (Italy); Stefan Dimov, Univ. of Birmingham (United Kingdom)*

13005-64 • 06:10 PM - 08:00 PM

**Precise laser bioprinting of cells inside 3D extracellular matrices towards engineered structures**

*Author(s): Stavroula Elezoglou, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece); Antonis Hatziaepostolou, Univ. of West Attica (Greece); Chrysoula Chandrinou, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece); Apostolos Klinakis, Biomedical Research Foundation, Academy of Athens (Greece), PhosPrint (Greece); Ioanna Zergioti, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece), PhosPrint (Greece)*

13005-65 • 06:10 PM - 08:00 PM

**Innovative laser manufacturing processes at nano scale within the NewSkin Open Innovation Test Bed**

*Author(s): Rubye Zehani, Isabelle Toven-Pecault, ALPHA-RLH (France); Girolamo Mincuzzi, ALPhANOV (France); Abhijit Cholkar, Suman Chatterjee, David Kinahan, Dermot Brabazon, Dublin City University (Ireland)*

13005-66 • 06:10 PM - 08:00 PM

**Femtosecond laser induced direct patterning for liquid-metal repellent surface**

*Author(s):* **Chaerin Yu, Jun Hee Jo, Won Seok Chang**, Korea Institute of Machinery & Materials (Korea, Republic of)

13005-67 • 06:10 PM - 08:00 PM

**Advancing micro/nanoscale high-resolution digital patterning: a combined with two-photon polymerization (TPP) and digital micro mirror device (DMD)**

*Author(s):* **Hyunmin Cho, Won Seok Chang, Won-Sup Lee**, Korea Institute of Machinery & Materials (Korea, Republic of)

13005-69 • 06:10 PM - 08:00 PM

**Chemical and topographical analyses of ps-laser generated high spatial frequency LIPSS on titanium alloy**

*Author(s):* **Jörn Bonse, Xenia Knigge, Kai Müller, Francesca Mirabella, Mario Sahre, Matthias Weise, Heike Voss, Andreas Hertwig, Karsten Wasmuth, Marek Mezera, Jörg Krüger, Jörg Radnik, Vasile-Dan D. Hodoroaba**, Bundesanstalt für Materialforschung und -prüfung (Germany)

13005-70 • 06:10 PM - 08:00 PM

**Laser induced periodic surface structures (LIPSS) on laser powder bed fusion AlSi10Mg alloy with temporally shaped fs laser pulses**

*Author(s):* **Florian Fiedler, Bastian Zielinski**, Instituts für Werkstofftechnik, Univ. Kassel (Germany), Institut für Physik, Univ Kassel (Germany); **Thomas Wegener, Thomas Niendorf**, Instituts für Werkstofftechnik, Univ. Kassel (Germany); **Camilo Florian**, Instituts für Werkstofftechnik, Univ. Kassel (Germany), Institut für Physik, Univ Kassel (Germany)

13005-71 • 06:10 PM - 08:00 PM

**Efficient Plane-by-Plane Femtosecond Laser Writing of Fiber Bragg Gratings at 532 nm Wavelength with Ultra-Low Birefringence and Polarization-Dependent Loss**

*Author(s):* **Maritza Londoño Velásquez**, B-Phot, Vrije Univ. Brussel (Belgium); **Ben Cloostermans**, B-Phot Vrije University of Brussels (Belgium); **Francis Berghmans, Hugo Thienpont, Tigran Baghdasaryan**, B-Phot, Vrije Univ. Brussel (Belgium)

13005-72 • 06:10 PM - 08:00 PM

**Advanced synchronization of optical and mechanical axis for laser engraving of complex design**

*Author(s):* **Abel Gil Villalba, Paul Hervier, Marc Décultot**, Lasea (Belgium); **Robert Braunschweig**, LASEA, Inc. (United States); **Thomas Rai**, Lasea (Belgium)

13005-73 • 06:10 PM - 08:00 PM

**Enhanced ablation and dicing process on silicon wafer using experimental passive Q-switch two-micron laser.**

*Author(s):* **Asher Perez**, Sami Shamoon College of Engineering (Israel); **Tomer Kotzero**, Jerusalem College of Technology (Israel); **Irit Juwiler**, Sami Shamoon College of Engineering (Israel); **Salman Noach, Vlad Ariel Sherbina**, Jerusalem College of Technology (Israel); **Dor Yeroshalmy**, Sami Shamoon College of Engineering (Israel)

13005-74 • 06:10 PM - 08:00 PM

**Label-free super-resolved polarimetry on nanomaterials**

*Author(s):* **Jose-Alberto Aguilar Mora, Duc-Minh Ta**, XLIM (France); **Jean-Baptiste Marceau**, Lab. Photonique, Numérique et Nanosciences (France); **Javier Prada Rodrigo**, Lab. Hubert Curien (France); **Sedao Xxx**, Lab. Hubert Curien (France), Univ. de Lyon, Univ. Jean Monnet Saint-Etienne (France), GIE Manutech-USD (France); **Etienne Gaufrès**, Lab. Photonique, Numérique et Nanosciences (France); **Cyril Mauclair**, Lab. Hubert Curien (France), GIE Manutech-USD (France); **Pierre Bon**, XLIM (France)

13005-75 • 06:10 PM - 08:00 PM

**Laser-induced forward transfer of complex cell structures to study the interaction between tumor cells and lymph nodes in organ-on-chips.**

*Author(s):* **Maria Chliara, Stavroula Elezoglou**, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece); **Maria Dimadi**, PhosPrint P.C. (Greece); **Marianneza Chatzipetrou**, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece); **Katerina Tsilingiri, Apostolos Klinakis**, Biomedical Research Foundation, Academy of Athens (Greece); **Ioanna Zergioti**, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece)

13005-76 • 06:10 PM - 08:00 PM

**Low-cost laser-induced graphene foam interdigitated sensors on flexible substrate for smart applications**

*Author(s):* **Shital Devinder, Shereena Joseph, Saurabh Pandey, Joby Joseph**, Indian Institute of Technology Delhi (India)

13005-78 • 06:10 PM - 08:00 PM

**Physical and technological aspects of formation of metal matrix composites by laser-powder bed fusion**

*Author(s):* **Petr M. Pivkin, Andrey V. Gusarov, Roman Khmyrov, Pavel A. Podrabinnik, Nikolay Babushkin, Pavel Peretyagin, Sergey N. Grigoriev, Igor A. Yadroitsev**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

13005-79 • 06:10 PM - 08:00 PM

**Research on Measurement Method of Incision Ablated by Femtosecond Laser on Biological Soft Tissue Surface**

*Author(s):* **Wanqin Zhao, Bin Liu, Wenjun Wang, Jianlei Cui, Zhengjie Fan**, Xi'an Jiaotong Univ. (China)

13005-80 • 06:10 PM - 08:00 PM

**Method for detecting defects in direct metal deposition using a neural network**

Author(s): **Petr M. Pivkin**, Moscow State Univ of Technology "STANKIN" (Russian Federation); **Nikolay Khodanovich**, **Sergey N. Grigoriev**, **Pavel Peretyagin**, Moscow State Univ. of Technology "STANKIN" (Russian Federation)

13005-82 • 06:10 PM - 08:00 PM

**Laser-Induced Crystallization: Enhanced predictability of urea crystallization by an optimized laser repetition rate**

Author(s): **Leon Geiger**, **Ian Howard**, **Neil MacKinnon**, Karlsruhe Institut für Technologie (Germany); **Andrew Forbes**, Univ. of the Witwatersrand, Johannesburg (South Africa); **Jan Korvink**, Karlsruhe Institut für Technologie (Germany)

13005-83 • 06:10 PM - 08:00 PM

**Refining metal ablation and polishing with high-power femtosecond fiber laser**

Author(s): **Bogusz D. Stępał**, **Natalia Grudzień**, **Rafał Smolin**, **Yuriy Stepanenko**, **Michał Nejbauer**, Fluence (Poland)

13005-84 • 06:10 PM - 08:00 PM

**Combined multiexposure laser interference lithography concept for NOEMS and diffractive optics fabrication**

Author(s): **Manuel J. L. F. F. Rodrigues**, **Patrícia C. Sousa**, **Joana D. Santos**, **Rosana A Dias**, **Filipe S. Alves**, **Diogo E. Aguiam**, INL - International Iberian Nanotechnology Laboratory (Portugal)

**Wednesday 10 April 2024****SESSION 7: FUNDAMENTALS OF LASER-MATTER INTERACTION**

10 April 2024 • 08:30 AM - 10:20 AM | Curie A, Niveau/Level 1

Session Chair(s): **Jörn Bonse**, Bundesanstalt für Materialforschung und -prüfung (Germany)

13005-27 • 08:30 AM - 09:00 AM

**Advancing Laser-Induced Nanoscale Surface Self-Organization with Machine Learning Guidance (Invited Paper)**

Author(s): **Jean-Philippe Colombier**, Univ. Jean Monnet Saint-Etienne (France)

13005-28 • 09:00 AM - 09:20 AM

**Control of the plasmonic contribution in the generation of LIPSS with a single laser pulse on pre-structured fused silica surfaces**

Author(s): **Bastian Zielinski**, **Cristian Sarpe**, **Ramela Elena Ciobotea**, **Arne Senftleben**, **Thomas Baumert**, **Camilo Florian**, Univ. Kassel (Germany)

13005-29 • 09:20 AM - 09:40 AM

**Impact of Antireflection Silicon coatings on the damage threshold of SiO<sub>2</sub> substrates upon irradiation with Mid-IR femtosecond laser pulses**

Author(s): **George Tsididis**, **Emmanuel Stratakis**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece)

13005-30 • 09:40 AM - 10:00 AM

**Femtosecond laser inscription of near-IR laser-gain medium based on laser-induced hydride donor/acceptor complexes**

Author(s): **Yannick G. Petit**, **Fouad Alassani**, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France); **Guillaume Raffy**, Institut des Sciences Moléculaires, Univ. de Bordeaux (France); **Mathis Carpentier**, **Joëlle Harb**, **Véronique Jubéra**, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France); **André Del Guerzo**, Institut des Sciences Moléculaires, Univ. de Bordeaux (France); **Lionel Canioni**, **Thierry Cardinal**, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France)

13005-31 • 10:00 AM - 10:20 AM

**Modeling ionization dynamics during Bessel beam propagation with a Particle-In-Cell code**

Author(s): **Pierre-Jean Charpin**, **Remo Giust**, **François Courvoisier**, FEMTO-ST (France)

**Coffee Break 10:20 AM - 10:45 AM****SESSION 8: AI AND MACHINE LEARNING IN LASER PROCESSING**

10 April 2024 • 10:45 AM - 12:15 PM | Curie A, Niveau/Level 1

Session Chair(s): **Stefan Dimov**, Univ. of Birmingham (United Kingdom)

13005-32 • 10:45 AM - 11:15 AM

**Stable LIPSS Formation on Transparent Materials by Data-Driven Ultrashort Pulse Laser Processing (Invited Paper)**

Author(s): **Aiko Narazaki**, National Institute of Advanced Industrial Science and Technology (Japan); **Takemichi Miyoshi**, National Institute of Advanced Industrial Science and Technology (Japan), Tokyo Univ. of Agriculture and Technology (Japan); **Hideyuki Takada**, **Dai Yoshitomi**, National Institute of Advanced Industrial Science and Technology (Japan); **Godai Miyaji**, Tokyo Univ. of Agriculture and Technology (Japan)

13005-33 • 11:15 AM - 11:35 AM

**Scatterometry-based inline monitoring system for high-quality laser surface texturing**

*Author(s):* **Tahseen Jwad**, Univ. of Birmingham (United Kingdom); **Abhilash Puthanveetil Madathil**, University of Strathclyde (United Kingdom); **Anvesh Gaddam, Pavel Penchev**, Univ. of Birmingham (United Kingdom); **Xichun Luo**, University of Strathclyde (United Kingdom); **Stefan Dimov**, Univ. of Birmingham (United Kingdom)

13005-34 • 11:35 AM - 11:55 AM

**Optical field reconstruction of high-power ultrashort laser using deep learning and phase diversity**

*Author(s):* **Jikai Wang**, TRUMPF Laser- und Systemtechnik GmbH (Germany), Institut für Angewandte Physik, Friedrich-Schiller-Univ. Jena (Germany), Abbe Ctr. of Photonics (Germany); **Sonam Smitha Ravi**, Leibniz Univ. Hannover (Germany); **Benjamin Dannecker, Michael Scharun, Dominik Bauer**, TRUMPF Laser GmbH (Germany); **Daniel Flamm**, TRUMPF Laser- und Systemtechnik GmbH (Germany); **Stefen Nolte**, Institut für Angewandte Physik, Friedrich-Schiller-Univ. Jena (Germany), Abbe Ctr. of Photonics (Germany)

13005-35 • 11:55 AM - 12:15 PM

**Artificial Intelligence Regressors to predict the weld penetration in metal laser welding**

*Author(s):* **Victor Hayot**, Icam, site de Strasbourg-Europe (France), IREPA LASER (France), ICube (France); **Andre Alves Ferreira**, IREPA LASER (France); **Sylvain Lecler**, Institut National des Sciences Appliquées de Strasbourg (France), ICube (France); **Grégoire Chabrol**, Icam, site de Strasbourg-Europe (France), ICube (France)

**Lunch/Exhibition Break 12:15 PM - 01:25 PM**

**SESSION 9: SURFACE FUNCTIONALIZATION I**

10 April 2024 • 01:25 PM - 03:30 PM | Curie A, Niveau/Level 1

*Session Chair(s):* **Wilhelm Pfleging**, Karlsruher Institut für Technologie (Germany)

13005-36 • 01:25 PM - 02:10 PM

**Advances in ultrafast laser manufacturing: nanostructures, thin films, and scaling perspectives** (Keynote Presentation)

*Author(s):* **Jörn Bonse, Jörg Krüger**, Bundesanstalt für Materialforschung und -prüfung (Germany); **Camilo Florian**, Univ. Kassel (Germany); **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany); **Stephan Gräf**, Friedrich-Schiller-Univ. Jena (Germany)

13005-37 • 02:10 PM - 02:30 PM

**Femtosecond laser-enabled surface treatment for scalable fabrication of disposable high-performance SERS substrates**

*Author(s):* **Anvesh Gaddam**, Univ. of Birmingham (United Kingdom); **Himani Sharma**, Univ. of Notre Dame (United States); **Stefan Dimov**, Univ. of Birmingham (United Kingdom)

13005-38 • 02:30 PM - 02:50 PM

**Laser induced periodic surface structures (LIPSS) on steel with high repetition rate femtosecond lasers: implications on pulse accumulation and debris redeposition.**

*Author(s):* **Camilo Florian**, Institut für Werkstofftechnik, Univ. Kassel (Germany), Institut für Physik, Univ. Kassel (Germany), Instituto de Óptica "Daza de Valdés," Consejo Superior de Investigaciones Científicas (Spain); **Yasser Fuentes-Edfuf**, Instituto de Óptica "Daza de Valdés," Consejo Superior de Investigaciones Científicas (Spain); **Evangelos Skoulas, Emmanuel Stratakis**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); **Santiago Sanchez-Cortes**, Instituto de Estructura de la Materia, Consejo Superior de Investigaciones Científicas (Spain); **Javier Solis, Jan Siegel**, Instituto de Óptica "Daza de Valdés," Consejo Superior de Investigaciones Científicas (Spain)

13005-39 • 02:50 PM - 03:10 PM

**Icing performance of superhydrophobic aluminum surfaces by ultrashort laser pulses**

*Author(s):* **Eva Rodríguez Vidal, Julen Molinuevo, Vanesa Alonso, Ainara Lopez**, Tekniker (Spain); **Yoana Zuazo, Javier Arrabal**, Aernnova (Spain)

13005-81 • 03:10 PM - 03:30 PM

**On the benefit of external pulse compression below 100fs for micromachining applications**

*Author(s):* **Rainer Kling**, Berner Fachhochschule (Switzerland); **Beat Neuenschwander**, Bern University of Applied Science (Switzerland)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 10: SURFACE FUNCTIONALIZATION II**

10 April 2024 • 04:00 PM - 05:40 PM | Curie A, Niveau/Level 1

*Session Chair(s):* **Mitsuhiro Terakawa**, Keio Univ. (Japan)

13005-40 • 04:00 PM - 04:20 PM

**Post treatment of plasma enhanced atomic layer deposited MoS<sub>2</sub> via ultra short pulse laser to increase the crystallinity.**

Author(s): **Malte Becher, Leander Willeke, Claudia Bock, Andreas Ostendorf**, Ruhr-Univ. Bochum (Germany)

13005-41 • 04:20 PM - 04:40 PM

**Study of thermal accumulation in glass welding using ultrafast laser at high repetition rate**

Author(s): **Baptiste De Azevedo**, ICube (France), Institut National des Sciences Appliquées de Strasbourg (France); **David Pallarés-Aldeiturriaga**, IREPA LASER (France); **Frédéric Antoni**, ICube (France); **Armel Bahouka**, IREPA LASER (France); **Sylvain Lecler**, ICube (France), Institut National des Sciences Appliquées de Strasbourg (France)

13005-42 • 04:40 PM - 05:00 PM

**flexible graphene FETs fabricated by laser induced forward transfer**

Author(s): **Ilias Cheliotis, Adamantia Logotheti, Kostas Andritsos, Filimon Zacharatos**, National Technical Univ. of Athens (Greece); **Amaia Pesquera, Amaia Zurutuza**, Graphenea S.A. (Spain); **Ioanna Zergioti**, National Technical Univ. of Athens (Greece)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

### SESSION 11: PROCESSING WITH ULTRAFAST BESSEL BEAMS

11 April 2024 • 11:00 AM - 12:30 PM | Curie A, Niveau/Level 1

Session Chair(s): **John Lopez**, Ctr. Lasers Intenses et Applications (France)

13005-45 • 11:00 AM - 11:30 AM

**Fabrication of conductive graphitic wires in diamond by Bessel beam micromachining: highlighting the role of the crystallographic orientation and of the burst mode laser writing** (*Invited Paper*)

Author(s): **Ottavia Jedrkiewicz**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Akhil Kuriakose**, Univ. degli Studi dell'Insubria (Italy); **Francesco Paolo Mezzapesa, Caterina Gaudiuso**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Antonio Ancona**, Univ. degli Studi di Bari Aldo Moro (Italy); **Andrea Chiappini**, CNR-Istituto di Fotonica e Nanotecnologie (Italy); **Pietro Aprà, Federico Picollo**, Univ. degli Studi di Torino (Italy)

13005-46 • 11:30 AM - 11:50 AM

**Axicon-lens-doublet focusing for the fabrication of ultra-high-aspect-ratio structures through silicon with infrared ultrafast lasers**

Author(s): **Niladri Ganguly**, Aix-Marseille Univ., CNRS (France); **Pol Sopeña, David Grojo**, Aix-Marseille Univ. (France)

13005-47 • 11:50 AM - 12:10 PM

**High aspect ratio nanopillars in single shot from femtosecond higher-order Bessel beams**

Author(s): **Valeria V. Belloni Mostafa Hassan, Luca Furfaro, Lilian Francois, Remo Giust, François Courvoisier**, FEMTO-ST (France)

13005-48 • 12:10 PM - 12:30 PM

**dynamics of ultrafast laser nanostructuring in bulk sapphire in non-diffractive mode: a micro-explosion in slow motion**

Author(s): **Rajeev Dwivedi, Huu Dat Nguyen, Thirunaukarasu Kuppan, Ciro d'Amico, Razvan Stoian**, Lab. Hubert Curien, Univ. Jean Monnet Saint-Etienne, CNRS (France)

### Lunch Break 12:30 PM - 01:40 PM

## SESSION 12: ULTRAFast LASER PROCESSING OF TRANSPARENT MATERIALS

11 April 2024 • 01:40 PM - 03:10 PM | Curie A, Niveau/Level 1

Session Chair(s): **François Courvoisier**, FEMTO-ST (France)

13005-49 • 01:40 PM - 02:10 PM

**Ultrafast laser processing for optical fibre sensing** (*Invited Paper*)

Author(s): **Martynas Beresna**, **Przemyslaw L. Falak**, **Timothy Lee**, **Christopher Holmes**, **Ali Masoudi**, Univ. of Southampton (United Kingdom); **David Phillips**, Univ. of Exeter (United Kingdom); **Tom Vettenburg**, Univ. of Dundee (United Kingdom); **Gilberto Brambilla**, Univ. of Southampton (United Kingdom)

13005-50 • 02:10 PM - 02:30 PM

**Towards high-throughput Type-A Volume Bragg gratings inscribed with femtosecond laser for industrial applications.**

Author(s): **Joelle Harb**, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France); **Lauris Talbot**, Univ. Laval (Canada); **Yannick G. Petit**, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France); **Martin Bernier**, Univ. Laval (Canada); **Lionel Canioni**, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France)

13005-51 • 02:30 PM - 02:50 PM

**Fabrication of Bragg Gratings in Flat Silica Substrates Using the Femtoprint Device and Use for Sensing**

Author(s): **Mateo Tunon de Lara**, Univ. de Mons (Belgium), Univ. Libre de Bruxelles (Belgium); **Loic Amez-Droz**, Univ. Libre de Bruxelles (Belgium), Liège Univ. (Belgium); **Karima Chah**, Univ. de Mons (Belgium); **Pierre Lambert**, Univ. Libre de Bruxelles (Belgium); **Christophe Collette**, Liège Univ. (Belgium), Univ. Libre de Bruxelles (Belgium); **Christophe Caucheteur**, Univ. de Mons (Belgium)

13005-52 • 02:50 PM - 03:10 PM

**High temperature behavior of femtosecond laser photo-inscribed micro-voids.**

Author(s): **Matilde Sosa**, Univ. Paris-Saclay (France), CEA-LIST (France), Institut de Chimie Moléculaire et des Matériaux d'Orsay, Univ. Paris-Saclay (France); **Maxime Cavillon**, Institut de Chimie Moléculaire et des Matériaux d'Orsay, Univ. Paris-Saclay (France); **Thomas Blanchet**, **Romain Cotillard**, **Guillaume Laffont**, CEA-LIST (France), Univ. Paris-Saclay (France); **Matthieu Lancry**, Institut de Chimie Moléculaire et des Matériaux d'Orsay, Univ. Paris-Saclay (France)



# CONFERENCE 13006

## Biomedical Spectroscopy, Microscopy, and Imaging III

08 - 11 April 2024 | Etoile B, Niveau/Level 1

**Conference Chair(s):** Jürgen Popp, Leibniz-Institut für Photonische Technologien e.V. (Germany); Csilla Gergely, Lab. Charles Coulomb (France)

**Program Committee:** Peter E. Andersen, Technical Univ. of Denmark (Denmark); James M. Brewer, Univ. of Glasgow (United Kingdom); Arthur E. T. Chiou, National Yang-Ming Univ. (Taiwan); Jürgen W. Czarske, TU Dresden (Germany); Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands); Kishan Dholakia, Univ. of St. Andrews (United Kingdom); Dror Fixler, Bar-Ilan Univ. (Israel); Sylvain Gioux, Univ. de Strasbourg (France); Kirill V. Larin, Univ. of Houston (United States); Qingming Luo, Hainan Univ. (China); Thomas G. Mayerhöfer, Leibniz-Institut für Photonische Technologien e.V. (Germany); Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany); David D. Sampson, The Univ. of Western Australia (Australia); Ernst H. K. Stelzer, Johann Wolfgang Goethe-Univ. Frankfurt am Main (Germany); Hugo Thienpont, Vrije Univ. Brussel (Belgium); Siva Umopathy, Indian Institute of Science (India); I. Alex Vitkin, Ontario Cancer Institute (Canada); Gert von Bally, Ctr. for Biomedical Optics and Photonics (Germany)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:20 AM**

#### SESSION 1: VIBRATIONAL SPECTROSCOPY AND IMAGING I

08 April 2024 • 11:20 AM - 12:30 PM | Etoile B, Niveau/Level 1

*Session Chair(s):* **Jürgen Popp**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13006-1 • 11:20 AM - 11:50 AM

**On-the-fly Raman microscopy guaranteeing the accuracy of discrimination** (*Invited Paper*)

*Author(s):* **Tamiki Komatsuzaki**, Hokkaido Univ. (Japan)

13006-2 • 11:50 AM - 12:10 PM

**Early detection of liver fibrosis through hepatic stellate cell activation monitoring using Raman spectroscopy and machine learning**

*Author(s):* **Margot Vandermotten**, VUB B-PHOTONICS, Vrije Univ. Brussel (Belgium); **Elisabeth Knetemann**, Vrije Univ. Brussel, Liver Cell

Biology Research Group (Belgium); **Tatevik Chalyan, Wendy Meulebroeck**, VUB B-PHOTONICS, Vrije Univ. Brussel (Belgium); **Leo A. van Grunsvan**, Vrije Univ. Brussel (Belgium); **Heidi Ottevaere**, VUB B-PHOTONICS, Vrije Univ. Brussel (Belgium)

13006-3 • 12:10 PM - 12:30 PM

**Advancing Hemoglobinopathy Screening with Raman Spectroscopy and Machine Learning**

*Author(s):* **Sara Abbasi, Mehdi Feizpour**, Vrije Univ. Brussel (Belgium); **Ilse Weets**, Univ. Ziekenhuis Brussel (Belgium); **Qing Liu, Hugo Thienpont, Francesco Ferranti, Heidi Ottevaere**, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium)

**Lunch Break 12:30 PM - 01:30 PM**

**SESSION 2: VIBRATIONAL SPECTROSCOPY AND IMAGING II**

08 April 2024 • 01:30 PM - 03:00 PM | Etoile B, Niveau/Level 1

*Session Chair(s):* **Tamiki Komatsuzaki**, Hokkaido Univ. (Japan)

13006-4 • 01:30 PM - 02:00 PM

**Raman and FRD-PVOH monitoring of the skin-blood compartment during hemodialysis and after oral administration of Furosemide. (Invited Paper)**

*Author(s):* **Joseph Chaiken**, Syracuse Univ. (United States); **Bin Deng**, Athinoula A. Martinos Ctr. for Biomedical Imaging (United States); **Paul W. Dent**, Syracuse Univ. (United States); **Isabel Szablewski**, Columbia Univ. (United States); **Sriram Narsipur**, SUNY Upstate Medical Univ. (United States); **Charles Peterson**, Syracuse Univ. (United States)

13006-5 • 02:00 PM - 02:20 PM

**Biomedical CARS system free of external delay line**

*Author(s):* **Tigran Mansuryan**, XLIM, Univ. de Limoges (France); **Alessandro Tonello**, XLIM (France); **Katarzyna Krupa**, Institute of Physical Chemistry (Poland); **Alexis Desmoulière, Mark Arthur Ndong Ntoutoume, Vincent Sol**, Univ. de Limoges (France); **Claire Lefort**, XLIM, Univ. de Limoges (France); **Mario Zitelli, Mario Ferraro**, Sapienza Univ. di Roma (Italy); **Fabio Mangini**, Univ. degli Studi di Brescia (Italy); **Yifan Sun**, Sapienza Univ. di Roma (Italy); **Yago Arosa**, XLIM (France), Univ. de Santiago de Compostela (Spain); **Benjamin Wetzel**, XLIM (France); **Stefan Wabnitz**, Sapienza Univ. di Roma (Italy), Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy); **Vincent Couderc**, XLIM (France)

13006-7 • 02:20 PM - 02:40 PM

**Towards a quantitative approach for the accurate analysis of blended microplastics based on 3-D micro-Raman spectroscopy**

*Author(s):* **Mehrdad Lotfi Choobbari**, Vrije Univ. Brussel (Belgium); **Jennifer Ferguson**, Renishaw plc, New Mills, Wotton-under-Edge, Gloucestershire GL12 8JR, UK (United Kingdom); **Niko Van den Brand**, Department of Materials and Chemistry, Vrije Universiteit Brussel (Belgium); **Tim Smith**, Renishaw plc (United Kingdom); **Tatevik Chalyan, Wendy Meulebroeck, Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

13006-8 • 02:40 PM - 03:00 PM

**Data driven approaches to Raman imaging through a multimode optical fiber**

*Author(s):* **Liam Collard, Mohammadrahim Kazemzadeh, Linda Piscopo, Filippo Pisano, Massimo De Vittorio, Ferruccio Pisanello**, Istituto Italiano di Tecnologia (Italy)

**Coffee Break 03:00 PM - 03:30 PM**

**SESSION 3: VIBRATIONAL SPECTROSCOPY AND IMAGING III**

08 April 2024 • 03:30 PM - 06:00 PM | Etoile B, Niveau/Level 1

*Session Chair(s):* **Joseph Chaiken**, Syracuse Univ. (United States)

13006-9 • 03:30 PM - 04:00 PM

**subcellular organelle metabolic correlation with super-resolution chemical imaging (Invited Paper)**

*Author(s):* **Hongje Jang, Zhi Li, Yajuan Li, Yu Ping, Lingyan Shi**, Univ. of California, San Diego (United States)

13006-10 • 04:00 PM - 04:20 PM

**Measuring chemical changes during aging in vivo with stimulated Raman scattering microscopy**

*Author(s):* **Bryce Manifold, Bowen Yang, Denis Titov, Aaron Streets**, Univ. of California, Berkeley (United States)

13006-11 • 04:20 PM - 04:40 PM

**Noninvasive discrimination of prostate healthy and cancer cells by quantitative phase and Raman imaging**

Author(s): **Hossein Khadem**, Istituto per l'endocrinologia e l'oncologica sperimentale "Gaetano Salvatore", Consiglio Nazionale delle Ricerche (Italy); **Maria Antonietta Ferrara**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy); **Maria Mangini, Alberto Luini**, Istituto per l'endocrinologia e l'oncologica sperimentale "Gaetano Salvatore", Consiglio Nazionale delle Ricerche (Italy); **Giuseppe Coppola**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy); **Anna Chiara De Luca**, Istituto per l'endocrinologia e l'oncologica sperimentale "Gaetano Salvatore", Consiglio Nazionale delle Ricerche (Italy)

13006-12 • 04:40 PM - 05:00 PM

**Characterisation and differentiation of oral bacteria using ATR-FTIR spectroscopy**

Author(s): **Katharina Frings**, Leibniz Univ. Hannover (Germany); **Nils Heine**, Medizinische Hochschule Hannover (Germany); **Nicolas Debener, Thomas Scheper**, Leibniz Univ. Hannover (Germany); **Janina Bahnemann**, Univ. Augsburg (Germany); **Katharina Nikutta**, Medizinische Hochschule Hannover (Germany); **Maria Leilani Torres-Mapa, Alexander Heisterkamp**, Leibniz Univ. Hannover (Germany)

13006-13 • 05:00 PM - 05:20 PM

**Label-free 3D NIR-SWIR "Spectromics" mapping of human hip cartilage for diagnosis of osteoarthritis**

Author(s): **Hiroki Cook, Anna Crisford**, Univ. of Southampton (United Kingdom); **Jitendra Nath Acharyya**, Institut d'Optique Graduate School, Univ. de Bordeaux (France), Indian Institute of Technology Delhi (India); **Konstantinos N. Bourdakos, Janos Kanczler, Douglas Dunlop, Richard O. C. Oreffo, Sumeet Mahajan**, Univ. of Southampton (United Kingdom)

13006-14 • 05:20 PM - 05:40 PM

**Exploring cardiorenal syndrome in rats: insights from vibrational spectroscopy techniques**

Author(s): **Sara Stefani, Paola Sassi**, Univ. degli Studi di Perugia (Italy); **Alessandro Cataliotti, Reza Parvan**, Institute for Experimental Medical Research, Oslo Univ. Hospital (Norway); **Martina Alunni Cardinali, Marco Paolantoni**, Univ. degli Studi di Perugia (Italy); **Gustavo Jose Justo da Silva**, Institute for Experimental Medical Research, Oslo Univ. Hospital (Norway)

13006-15 • 05:40 PM - 06:00 PM

**SERS and LSRP sensors for rapid, qualitative and quantitative SARS-CoV-2 virus detection**

Author(s): **Sebastian Huelck**, tec5USA, Inc. (United States)

**Tuesday 9 April 2024****SESSION 4: VIBRATIONAL SPECTROSCOPY AND IMAGING IV**

09 April 2024 • 08:30 AM - 10:30 AM | Etoile B, Niveau/Level 1

Session Chair(s): **Hongje Jang**, Univ. of California, San Diego (United States)

13006-16 • 08:30 AM - 09:00 AM

**Cardiorenal damage in heart failure with preserved ejection fraction: a spectroscopic study (Invited Paper)**

Author(s): **Leonardo Pioppi**, Department of Chemistry, Biology and Biotechnology, University of Perugia (Italy); **Gustavo Jose Justo Silva, Reza Parvan**, Institute for Experimental Medical Research, Oslo University Hospital and University of Oslo (Norway); **Marco Paolantoni**, Department of Chemistry, Biology and Biotechnology, University of Perugia (Italy); **Alessandro Cataliotti**, Institute for Experimental Medical Research, Oslo University Hospital and University of Oslo (Norway); **Paola Sassi**, Univ. degli Studi di Perugia (Italy)

13006-17 • 09:00 AM - 09:20 AM

**A multi-spectroscopic approach based on Brillouin and Raman microspectroscopy and ATR-FTIR spectroscopy to investigated Staphylococcus aureus – induced osteomyelitis and periprosthetic joint infections.**

Author(s): **Martina Alunni Cardinali**, Univ. degli Studi di Perugia (Italy); **Marco Govoni**, Reconstructive Orthopaedic Surgery and Innovative Techniques – Musculoskeletal Tissue Bank, IRCCS (Italy); **Sara Stefani**, Univ. degli Studi di Perugia (Italy); **Alessandra Maso**, IRCCS, Istituto Ortopedico Rizzoli (Italy); **Elisa Storni**, IRCCS, Istituto Ortopedico Rizzoli (Italy); **Dante Dallari**, Reconstructive Orthopaedic Surgery and Innovative Techniques – Musculoskeletal Tissue Bank, IRCCS (Italy); **Daniele Fioretto, Paola Sassi**, Univ. degli Studi di Perugia (Italy)

13006-18 • 09:20 AM - 09:40 AM

**Non-Invasive portable confocal Raman spectroscopy for comparative biochemical analysis of Atopic Dermatitis and Psoriasis skin**

Author(s): **Keertana Vinod Ram, U.S. Dinish**, A\*STAR Skin Research Labs., A\*STAR Agency for Science, Technology and Research (Singapore); **Yik Weng Yew**, National Skin Ctr. Pte. Ltd. (Singapore); **Renzhe Bi**, A\*STAR Skin Research Labs., A\*STAR Agency for Science, Technology and Research (Singapore); **Amalina Binte Ebrahim Attia**, Biomedical Research Council, A\*STAR Agency for Science, Technology and Research (Singapore); **Valerie Teo Xinhui Poongkulali Rajarahn**, A\*STAR Skin Research Labs., A\*STAR Agency for Science, Technology and Research (Singapore); **Hazel H. Oon**, National Skin Ctr. Pte. Ltd. (Singapore), A\*STAR Agency for Science, Technology and Research (Singapore); **Steven Tien Guan Thng**, National Skin Ctr. Pte. Ltd. (Singapore); **Malini C. Olivo**, A\*STAR Skin Research Labs., A\*STAR Agency for Science, Technology and Research (Singapore)

13006-19 • 09:40 AM - 10:00 AM

**Label-free Cancer Cell Death Monitoring by Stimulated Raman Microscopy**

*Author(s):* **Maximilian Brinkmann**, **Maryam Rezaei**, **Ramon Droop**, Refined Laser Systems GmbH (Germany); **Kai M. Eder**, Biomedizinisches Technologiezentrum (Germany); **Felix Neumann**, Refined Laser Systems GmbH (Germany); **Björn Kemper**, Biomedizinisches Technologiezentrum (Germany); **Christoph Engwer**, Refined Laser Systems GmbH (Germany); **Jürgen Schnekenburger**, Biomedizinisches Technologiezentrum (Germany); **Tim Hellwig**, Refined Laser Systems GmbH (Germany)

13006-20 • 10:00 AM - 10:30 AM

**Towards Video-Rate Compressive Spontaneous Raman Imaging Using Single-Photon Avalanche Diode Arrays** (*Invited Paper*)

*Author(s):* **Clémence Gentner**, Lab. Kastler Brossel (France); **Samuel Burri**, **Edoardo Charbon**, **Claudio E. Bruschini**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Hilton Barbosa de Aguiar**, Lab. Kastler Brossel (France)

**Coffee Break 10:30 AM - 10:50 AM****SESSION 5: ADVANCED IMAGING AND SPECTROSCOPY I**

09 April 2024 • 10:50 AM - 01:00 PM | Etoile B, Niveau/Level 1

*Session Chair(s):* **Hilton Barbosa de Aguiar**, Lab. Kastler Brossel (France)

13006-21 • 10:50 AM - 11:20 AM

**Development of reflection removal methods for automated bacterial colony counting using computer vision technologies** (*Invited Paper*)

*Author(s):* **Artjoms Suponenkovs**, **Dmitrijs Bliznuks**, Riga Technical Univ. (Latvia); **Roberts Tarvids**, Loughborough Univ. (United Kingdom); **Alexey Lihachev**, Univ. of Latvia (Latvia)

13006-22 • 11:20 AM - 11:40 AM

**Creation of evanescent patterns at micron resolution by scanning an evanescent spot**

*Author(s):* **Marc Grosjean**, **Irene Wang**, Lab. Interdisciplinaire de Physique (France); **Olivier Destaing**, **Alexei Grichine**, **Mylène Pezet**, Institut pour l'Avancée des Biosciences (France)

13006-23 • 11:40 AM - 12:00 PM

**Computational Scattered Light Imaging for Label-Free Visualization of Fiber Architecture in Tumor Tissues**

*Author(s):* **Hamed Abbasi**, Technische Univ. Delft (Netherlands), Erasmus MC (Netherlands); **Loes Ettema**, Technische Univ. Delft (Netherlands); **Michail Doukas**, **Sjors A. Koppes**, **Stijn Keereweer**, Erasmus MC (Netherlands); **Miriam Menzel**, Technische Univ. Delft (Netherlands)

13006-24 • 12:00 PM - 12:20 PM

**Near infrared laser provoques focus variation in a confocal microscope**

*Author(s):* **Remy Avila**, **Melissa Matrecitos-Avila**, **Reinher Pimentel-Domínguez**, Univ. Nacional Autónoma de México (Mexico); **Elisa Tamariz**, Univ. Veracruzana (Mexico); **Pablo Loza-Alvarez**, ICFO - Institut de Ciències Fotòniques (Spain); **Edén J. Parra-Fuentes**, Univ. Nacional Autónoma de México (Mexico)

13006-25 • 12:20 PM - 12:40 PM

**Automated Plant Disease Analysis (APDA) using Transfer learning technique on pre-trained CNN model**

*Author(s):* **Vijay Prabhakar**, **Sunita Bhatt**, **Satish K. Dubey**, Indian Institute of Technology Delhi (India)

13006-118 • 12:40 PM - 01:00 PM

**A new architecture for flexible and broadband frequency-modulation stimulated Raman microscopy**

*Author(s):* **Carlo Liberale**, King Abdullah Univ of Science and Technology (Saudi Arabia); **Luca Genchi**, King Abdullah Univ of Science and Technology (Saudi Arabia), Aix Marseille University, CNRS, Centrale Marseille, Institut Fresnel (France); **Sergey P. Laptinok**, King Abdullah Univ of Science and Technology (Saudi Arabia)

**Lunch/Exhibition Break 01:00 PM - 02:00 PM****SESSION 6: PHOTOACOUSTICS**

09 April 2024 • 02:00 PM - 04:10 PM | Etoile B, Niveau/Level 1

*Session Chair(s):* **Gregory Baethge**, Ansys Canada Ltd. (United Kingdom)

13006-27 • 02:00 PM - 02:30 PM

**Overview of camera based ultrasound detection and its application in photoacoustic imaging** (*Invited Paper*)

*Author(s):* **Robert Nuster**, **Guenter Paltauf**, Karl-Franzens-Univ. Graz (Austria)

13006-28 • 02:30 PM - 02:50 PM

**Deep learning assisted photoacoustic image enhancement using in vivo ground truths based on photoacoustic fluctuation imaging***Author(s): Ivana Falco, Guillaume Godefroy, Bastien Arnal, Emmanuel Bossy, Lab. Interdisciplinaire de Physique, Univ. Grenoble Alpes, CNRS (France)*

13006-29 • 02:50 PM - 03:10 PM

**Optical ultrasound field mapping using camera-based parallelized detection***Author(s): Jan Sievers, Martin-Luther-Univ. Halle-Wittenberg (Germany); Claus Villringer, Technische Hochschule Wildau (Germany); Werner Lebek, Taravat Gilani, Jan Laufer, Martin-Luther-Univ. Halle-Wittenberg (Germany)*

13006-30 • 03:10 PM - 03:30 PM

**A 3D photoacoustic forward model for accurate characterization of contrast agents in molecular PA imaging***Author(s): Marzieh Ezzatpour, Farzin Ghane Golmohamadi, Jan Laufer, Martin-Luther-Univ. Halle-Wittenberg (Germany)*

13006-31 • 03:30 PM - 03:50 PM

**Evaluation of image reconstruction algorithms for quantitative photoacoustic tomography based on limited view data***Author(s): Guo Tang, Martin-Luther-Univ. Halle-Wittenberg (Germany); Jiaqi Zhu, Univ. College London (United Kingdom); Felix F. Lucka, Ctr. Wiskunde & Informatica (Netherlands); Teemu Sahlström, Univ. of Eastern Finland (Finland); Ben T. Cox, Univ. College London (United Kingdom); Jan Laufer, Martin-Luther-Univ. Halle-Wittenberg (Germany)*

13006-32 • 03:50 PM - 04:10 PM

**PVDF-TrFE/BSTO composite polymer based transducers for high resolution ultrasound and photoacoustic imaging***Author(s): Nagendra Singh, Shivam Rakhoulia, Samir K. Biswas, Indian Institute of Science Education and Research Mohali (India)***Coffee Break 04:10 PM - 04:30 PM****HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks****Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)*Author(s): Kathy Lüdge, Technische Univ. Ilmenau (Germany)*

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)*Author(s): José Capmany Francoy, Univ. Politècnica de València (Spain)***POSTERS-TUESDAY**

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrsPoster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13006-6 • 06:10 PM - 08:00 PM

**Raman spectroscopic phenotyping for the detection of infection-associated cell activation**

*Author(s): Hulya Yilmaz, Anuradha Ramoji, Leibniz-Institut für Photonische Technologien e.V. (Germany), Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); Anja Silge, Leibniz-Institut für Photonische Technologien e.V. (Germany), Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Forschungscampus InfectoGnostics (Germany); Aikaterini Pistiki, Leibniz-Institut für Photonische Technologien e.V. (Germany); Karina Weber, Oleg Ryabchykov, Leibniz-Institut für Photonische Technologien e.V. (Germany), Forschungscampus InfectoGnostics (Germany); David Vasquez Pinzon, Iwan W. Schie, Leibniz-Institut für Photonische Technologien e.V. (Germany); Franziska Hornung, Stefanie Deinhardt-Emmer, Bettina Löffler, Universitätsklinikum Jena (Germany); Jürgen Popp, Leibniz-Institut für Photonische Technologien e.V. (Germany), Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Forschungscampus InfectoGnostics (Germany)*

13006-70 • 06:10 PM - 08:00 PM

**Adaptive fiber optic fluorescence analysis for cancer tissues via collagen detection**

*Author(s):* **Antreas Theodosiou**, Lumoscribe Ltd. (Cyprus); **Andreas Stylianou**, European Research Ctr. Cyprus (Cyprus)

13006-71 • 06:10 PM - 08:00 PM

**Exploring multiplexed near infrared fluorescence lifetime imaging in turbid media**

*Author(s):* **Meital Harel**, Ariel Univ. (Israel)

13006-72 • 06:10 PM - 08:00 PM

**Particle sizing using wavenumber-dependent DLS-OCT**

*Author(s):* **Konstantine Cheishvili**, Technische Univ. Delft (Netherlands)

13006-73 • 06:10 PM - 08:00 PM

**Novel tissue-mimicking phantoms to assess image formation in optical elastography**

*Author(s):* **Rowan W. Sanderson**, **Kai L. Metzner**, **Harrison T Caddy**, **Hina M Ismail**, **Ken Y Foo**, **Lachlan J Kelsey**, **Devina D Lakhiani**, **Peijun Gong**, The Univ. of Western Australia (Australia); **Chris Yeomans**, **Benjamin F Dessauvagie**, PathWest, Fiona Stanley Hospital (Australia); **Christobel M Saunders**, University of Melbourne (Australia); **Barry J Doyle**, The Univ. of Western Australia (Australia); **Brendan F. Kennedy**, The Univ. of Western Australia (Australia), Nicolaus Copernicus Univ. (Poland)

13006-74 • 06:10 PM - 08:00 PM

**Experimental validation of a theoretical model for photoacoustic pump probe spectroscopy**

*Author(s):* **Farzin Ghane Golmohamadi**, **Franz-Josef Schmitt**, **Amna Mehmood**, **Hoang Phan**, **Patrick Galert**, **Jan Laufer**, Martin-Luther- Univ. Halle-Wittenberg (Germany)

13006-75 • 06:10 PM - 08:00 PM

**Comparison of broadband-cars and spontaneous Raman scattering for blood cell analysis**

*Author(s):* **Ryan Muddiman**, **Timothy McNamara**, National Univ. of Ireland, Maynooth (Ireland); **Sarah Harkin**, **Marion Butler**, **Bryan Hennelly**, National Univ. of Ireland (Ireland)

13006-76 • 06:10 PM - 08:00 PM

**Frequency conversion in fiber lasers for coherent Raman microscopy**

*Author(s):* **MohammadSadeqh Vafaiezhad**, **Carl Messerschmidt**, **Matteo Calvarese**, **Parijat Barman**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Denis Akimov**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Tobias Meyer-Zedler**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Anna Mühlig**, **Orlando Guntinas-Lichius**, Universitätsklinikum Jena (Germany); **Michael Schmitt**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); **Juergen Popp**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany)

13006-77 • 06:10 PM - 08:00 PM

**Diatom microalgae as sustainable sources of high-quality photonic crystals with tailored emission properties**

*Author(s):* **Pedro Braga-Fernandes**, **Vera Cardoso**, INL - International Iberian Nanotechnology Lab. (Portugal), Univ. de Aveiro (Portugal); **Christian Maibohm**, **Jana B. Nieder**, INL - International Iberian Nanotechnology Lab. (Portugal); **Johannes W. Goessling**, Univ. de Aveiro (Portugal); **Martin Lopez-Garcia**, INL - International Iberian Nanotechnology Lab. (Portugal)

13006-78 • 06:10 PM - 08:00 PM

**High resolution and fast chemical imaging using widefield optical photothermal infrared microscope**

*Author(s):* **Subham Adak**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Anooj Thayyil Raveendran**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Jürgen Popp**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Christoph Krafft**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13006-79 • 06:10 PM - 08:00 PM

**Rapid measurement of epidermal thickness with a 1.6 MHz FDML OCT system**

*Author(s):* **Rui Yuan**, **Robert A. Byers**, **Dmitry G. Revin**, **Stephen J. Matcher**, The Univ. of Sheffield (United Kingdom)

13006-80 • 06:10 PM - 08:00 PM

**Exploring the impact of nanostructured substrates on rat cortical astrocyte morphology with quantitative phase imaging**

*Author(s):* **Pooja Anantha**, Johns Hopkins Univ. (United States); **Annalisa Convertino**, Institute for Microelectronics and Microsystems, National Research Council of Italy (Italy); **Emanuela Saracino**, Institute for Organic Synthesis and Photoreactivity, National Research Council of Italy (Italy); **Joo Ho Kim**, **Luo Gu**, **Ishan Barman**, Johns Hopkins Univ. (United States)

13006-81 • 06:10 PM - 08:00 PM

**Determination of operating parameters of fungal growth signals analyzed by laser speckle contrast imaging**

*Author(s):* **Ilya Balmages**, Riga Technical Univ. (Latvia); **Aigars Reinis**, Pauls Stradiņš Clinical Univ. Hospital (Latvia), Riga Stradiņš Univ. (Latvia); **Svjatoslavs Kistkins**, Pauls Stradiņš Clinical Univ. Hospital (Latvia); **Janis Liepins**, **Maksym Pogorielov**, **Viktorija Korniienko**, **Kateryna Diedkova**, Univ. of Latvia (Latvia); **Dmitrijs Bliznuks**, Riga Technical Univ. (Latvia); **Alexey Lihachev**, **Ilze Lihacova**, Univ. of Latvia (Latvia)

13006-82 • 06:10 PM - 08:00 PM

**Revelation of tooth structural integrity at the microcrack site using multi-modal imaging**

*Author(s):* **Irma Dumbryte, Donatas Narbutis**, Vilnius Univ. (Lithuania); **Maria Androulidaki**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); **Elena Jasiuniene**, Kaunas Univ. of Technology (Lithuania); **Arturas Vailionis**, Stanford Univ. (United States); **Saulius Juodkazis**, Swinburne Univ. of Technology (Australia); **Mangirdas Malinauskas**, Vilnius Univ. (Lithuania)

13006-83 • 06:10 PM - 08:00 PM

**Deconvolution-based image enhancement for optical coherence tomography**

*Author(s):* **Damian Mendroch, Niklas Bauer, David Harings**, Technische Hochschule Köln (Germany); **Alexander Heisterkamp**, Leibniz Univ. Hannover (Germany)

13006-84 • 06:10 PM - 08:00 PM

**Development of a linear optical coherence tomography low-cost system for ophthalmic applications**

*Author(s):* **Niklas Bauer, Damian Mendroch, David Harings, Jan Matrisch**, Technische Hochschule Köln (Germany); **Alexander Heisterkamp**, Leibniz Univ. Hannover (Germany); **Uwe Oberheide**, Technische Hochschule Köln (Germany)

13006-85 • 06:10 PM - 08:00 PM

**Noncontact automatic inhibition zones measurement in the disk-diffusion susceptibility test**

*Author(s):* **Artjoms Suponenkovs, Dmitrijs Bliznuks**, Riga Technical Univ. (Latvia); **Ilze Lihacova**, Univ. of Latvia (Latvia)

13006-86 • 06:10 PM - 08:00 PM

**Edge-preserving denoising and super-resolution in OCT imagery using deep shifted steered mixture of experts (S-SMoE) gating networks**

*Author(s):* **Aytac Ozkan**, Technische Univ. Berlin (Germany); **Violeta Madjarova**, Institute of Optical Materials and Technologies (Bulgaria); **Thomas Sikora**, Technische Univ. Berlin (Germany); **Elena V. Stoykova**, Institute of Optical Materials and Technologies (Bulgaria)

13006-87 • 06:10 PM - 08:00 PM

**Photoacoustic, OCT, and Fluorescence Molecular Imaging Utilizing Gold Nanochains with Enhanced Renal Excretion**

*Author(s):* **Van Phuc Nguyen**, Univ. of Michigan Kellogg Eye Ctr. (United States); **Xueding Wang**, Univ. of Michigan (United States); **Yannis M. Paulus**, Univ. of Michigan Kellogg Eye Ctr. (United States)

13006-88 • 06:10 PM - 08:00 PM

**Linear and non-linear microspectroscopy: a powerful tool to study polymer-based nanoparticles in fibrotic liver cells.**

*Author(s):* **Julian Plitzko**, Friedrich-Schiller-Univ. Jena (Germany)

13006-89 • 06:10 PM - 08:00 PM

**Real-time video funduscopy with continuously moving fixation target**

*Author(s):* **David Harings, Niklas Bauer, Damian Mendroch**, Technische Hochschule Köln (Germany); **Holger Lubatschowski**, Leibniz Univ. Hannover (Germany); **Uwe Oberheide**, Technische Hochschule Köln (Germany)

13006-90 • 06:10 PM - 08:00 PM

**OCT investigations of dental biofilm**

*Author(s):* **Mihai-Stefan M. Duma, Ralph-Alexandru Erdelyi**, Univ. Politehnica Timisoara (Romania); **Anne-Marie Heredea, Rodica Heredea**, Univ. de Medicina si Farmacie "Victor Babes" din Timisoara (Romania); **Virgil-Florin Duma**, Univ. "Aurel Vlaicu" din Arad (Romania), Univ. Politehnica Timisoara (Romania); **Cosmin G. Sinescu**, Univ. de Medicina si Farmacie "Victor Babes" din Timisoara (Romania)

13006-91 • 06:10 PM - 08:00 PM

**Enhancing the sensitivity of small particle detection in flow cytometry via optical coherence tomography**

*Author(s):* **Kirill Buiankin, Edwin van der Pol, Ton G. van Leeuwen**, Amsterdam UMC (Netherlands)

13006-92 • 06:10 PM - 08:00 PM

**Nonlinear multimodal imaging towards endoscopic applications**

*Author(s):* **Hyeonsoo Bae**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); **Matteo Calvarese, Tobias Meyer-Zedler**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Anna Muehlig**, Universitätsklinikum Jena (Germany); **Chenting Lai, Karl Reichwald, Bernhard Messerschmidt**, Grintech GmbH (Germany); **Orlando Guntinas-Lichius**, Universitätsklinikum Jena (Germany); **Michael Schmitt**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); **Juergen Popp**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany)

13006-93 • 06:10 PM - 08:00 PM

**Spectroscopic platform for the characterization of bacterial blood stream infections**

*Author(s):* **Richard Grohs, Anja Silge**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Forschungscampus InfectoGnostics (Germany); **Uwe Glaser**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Karina Weber**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Forschungscampus InfectoGnostics (Germany); **Oleg Ryabchykov**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Forschungscampus InfectoGnostics (Germany), Biophotonics Diagnostics GmbH (Germany); **Franziska Hornung, Stefanie Deinhardt-Emmer, Bettina Löffler**, Universitätsklinikum Jena (Germany); **Jürgen Popp**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Forschungscampus InfectoGnostics (Germany), Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany)

13006-94 • 06:10 PM - 08:00 PM

**Biomedical applications of metabolic two-photon excited fluorescence lifetime microscopy**

*Author(s):* **Stella Greiner**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); **Tobias Meyer-Zedler, Marko Rodewald**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Michael Schmitt**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany); **Ute Neugebauer**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Orlando Guntinas-Lichius**, Universitätsklinikum Jena (Germany); **Franziska Hornung, Stefanie Deinhardt-Emmer**, Friedrich-Schiller-Univ. Jena (Germany); **Juergen Popp**, Abbe Ctr. of Photonics, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Bettina Loeffler**, Institut für Medizinische Mikrobiologie, Universitätsklinikum Jena (Germany)

13006-95 • 06:10 PM - 08:00 PM

**Uropathogens identification by multispectral imaging of urine clinical samples using a low-cost device: an intermediate-technology solution.**

*Author(s):* **Denis F. Leroux, Régis Montvernay, Corinne Davenas, Yann LeBihan, Corine Fulchiron**, bioMérieux SA (France)

13006-96 • 06:10 PM - 08:00 PM

**In vivo analysis of endogenous hyaluronic acid in the dermis by confocal Raman spectroscopy after application of a dermocosmetic**

*Author(s):* **Lázaro P. Medeiros Neto**, DermoPROBES (Brazil), Fundação de Amparo à Pesquisa do Estado de São Paulo (Brazil); **Felipe Bachion de Santana**, Jhonstown Castle Research Centre (Ireland); **Ritiane Modesto de Almeida**, DermoPROBES (Brazil); **Wagner Vidal Magalhães**, R&D Department - Chemyunion (Brazil); **Hery Mitsutake, Miguel Brito Barbosa, Airton Abrahao Martin**, DermoPROBES (Brazil)

13006-97 • 06:10 PM - 08:00 PM

**Gray and white matter discrimination in ex-vivo cow brain tissue through polarimetric-based pseudocoloration methods**

*Author(s):* **Mónica Canabal-Carbia, Irene Estévez, Ivan Montes-González, Juan Campos, Angel Lizana**, Univ. Autònoma de Barcelona (Spain)

13006-100 • 06:10 PM - 08:00 PM

**Lensless holographic microscopy for analysis of pollens relevant to veterinary medicine**

*Author(s):* **Blaž Cugmas**, Univ. of Latvia (Latvia), Vetamplify SIA (Latvia); **Eva Štruc**, Vetamplify SIA (Latvia); **Inese Berzina, Mindaugas Tamosiunas**, Univ. of Latvia (Latvia); **Thierry Olivry**, Nextmune AB (Sweden); **Miran Bürmen, Peter Naglic**, Univ. of Ljubljana (Slovenia)

13006-101 • 06:10 PM - 08:00 PM

**Monitoring antibiotic susceptibility of Escherichia coli through analysis of fluorescence**

*Author(s):* **Kiran Philip Isaac, Sujatha Narayanan Unni**, Indian Institute of Technology Madras (India)

13006-102 • 06:10 PM - 08:00 PM

**Raman glycoprobes for the detection of pathogenic fungi**

*Author(s):* **Bryan M. Hennelly, Keela Kessie, Ryan Muddiman, Rachel Dillon, Kevin Kavanagh, Trinidad Velasco-Torrijos, Timothy McNamara**, National Univ. of Ireland, Maynooth (Ireland)

13006-103 • 06:10 PM - 08:00 PM

**Broadband Coherent anti-Stokes Raman Spectroscopy for single cell hyperspectral imaging**

*Author(s):* **Bryan M. Hennelly, Timothy J. McNamara, Ryan Muddiman**, National Univ. of Ireland, Maynooth (Ireland)

13006-104 • 06:10 PM - 08:00 PM

**Revolutionizing medical imaging: a comprehensive review of optical coherence tomography (OCT)**

*Author(s):* **Minnu Varghese**, Technische Univ. München (Germany); **Sony Varghese, Preethi Senthil Pandian**, Sathyabama Institute of Science and Technology (India)



13006-111 • 06:10 PM - 08:00 PM

**Introduction about understanding interaction light - biological surfaces: possibility for new electronic materials and devices (PhoBioS)**

*Author(s):* **Dror Fixler**, Bar-Ilan Univ. (Israel); **Vladimir Katanaev**, University of Geneva (Switzerland); **Martin Lopez Garcia**, Instituto de Óptica (Spain); **Maria Godinho**, Universidade NOVA de Lisbon (Portugal); **Nicolina Pop**, Politehnica University of Timisoara (Romania); **Jelena Radovanovic**, Univerzitet u Beogradu (Serbia); **Maurizio Dabbicco**, Università di Bari (Italy); **George A. Mousdis**, University of Athens (Greece); **Ahu Gumrah Parry**, University of Manchester (United Kingdom); **Panagiotis E. Keivanidis**, Cyprus University of Technology (Cyprus); **Dragan Indjin**, University of Leeds (United Kingdom); **Ana Almeida**, Universidade NOVA de Lisboa (Portugal); **Paweł Wityk**, **Małgorzata Szczerska**, Gdansk University of Technology (Poland)

13006-122 • 06:10 PM - 08:00 PM

**Quantitative analysis of tumor microvascular growth process using full three-dimensional optoacoustic microscopy**

*Author(s):* **Thanh Dat Le**, Chonnam National Univ. (Vietnam); **Mansik Jeon**, Kyungpook National Univ. (Korea, Republic of); **Changho Lee**, Chonnam National Univ. (Korea, Republic of)

13006-119 • 06:10 PM - 08:00 PM

**IR and Raman spectroscopy – monitoring immobilization of some anticancer organotin(IV) compounds on mesoporous silica**

*Author(s):* **Vladimir Ivanovski**, Ss. Cyril and Methodius University, Faculty of Natural Sciences and Mathematics, Institute of Chemistry (North Macedonia, Republic of); **Til Becker**, **Ivana Predarska**, University of Applied Sciences Merseburg, Department of Engineering and Natural Sciences (Germany); **Evamarie Hey-Hawkins**, Leipzig University, Faculty of Chemistry and Mineralogy, Institute of Inorganic Chemistry (Germany); **Goran N Kaluđerović**, University of Applied Sciences Merseburg, Department of Engineering and Natural Sciences (Germany)

13006-121 • 06:10 PM - 08:00 PM

**Integrating light sheet microscopy and multispectral imaging for the analysis of autofluorescent tissues**

*Author(s):* **Roberto Fernández**, Univ de Alicante (Spain); **Sara Bentahar**, Universidad Carlos III (Spain); **Juan Carlos Bravo**, Univ de Alicante (Spain); **Manuel Desco**, **Jorge Ripoll**, Universidad Carlos III (Spain)

**Wednesday 10 April 2024****SESSION 7: OPTICAL COHERENCE TOMOGRAPHY I**

10 April 2024 • 08:30 AM - 10:20 AM | Etoile B, Niveau/Level 1

*Session Chair(s):* **Shau Poh Chong**, National Univ. of Singapore (Singapore)

13006-33 • 08:30 AM - 09:00 AM

**Micro-scale assessment of breast cancer elasticity using optical coherence elastography (Invited Paper)**

*Author(s):* **Rowan W. Sanderson**, **Ken Y. Foo**, **Renate Zilkens**, **Imogen Boman**, The Univ. of Western Australia (Australia), Harry Perkins Institute of Medical Research (Australia); **Lee Jackson**, **Jose Cid Fernandez**, Fiona Stanley Hospital (Australia); **Benjamin F. Dessauvague**, PathWest Lab. Medicine WA, Fiona Stanley Hospital (Australia), The Univ. of Western Australia (Australia), Clinipath Pathology (Australia); **Chris Yeomans**, **Anmol Rijhumal**, PathWest Lab. Medicine WA, Fiona Stanley Hospital (Australia); **Saud Hamza**, Fiona Stanley Hospital (Australia); **Christobel M. Saunders**, The Univ. of Melbourne (Australia), The Univ. of Western Australia (Australia); **Brendan F. Kennedy**, The Univ. of Western Australia (Australia), Harry Perkins Institute of Medical Research (Australia), Nicolaus Copernicus Univ. (Poland)

13006-34 • 09:00 AM - 09:20 AM

**Precision and bias in dynamic light scattering optical coherence tomography measurements of diffusion and flow**

*Author(s):* **Konstantine Cheishvili**, Technische Univ. Delft (Netherlands)

13006-35 • 09:20 AM - 09:40 AM

**A 1600 nm optical coherence tomography platform for the assessment of skin inflammation caused by atopic dermatitis**

*Author(s):* **Junaid Ahmad**, **Niraj K. Soni**, **Dmitry G. Revin**, **Stephen J. Matcher**, The Univ. of Sheffield (United Kingdom)

13006-36 • 09:40 AM - 10:00 AM

**Towards cutaneous blood flow velocity estimation using VISTA processing on a 1.6 MHz FDML OCT system**

*Author(s):* **Rui Yuan**, **Dmitry G. Revin**, **Robert A. Byers**, **Stephen J. Matcher**, The Univ. of Sheffield (United Kingdom)

13006-37 • 10:00 AM - 10:20 AM

**Fractal-based contrast correction for defocus in full-field optical coherence tomography**

*Author(s):* **Yue Zhu**, **Zhenyan Guo**, Nanjing Univ. of Science and Technology (China); **Xiaoyang Liu**, Beijing Institute of Space Mechanics and Electricity (China); **Yuan Zhou**, Zhejiang University School of Medicine (China)

**Coffee Break 10:20 AM - 10:40 AM**

## SESSION 8: OPTICAL COHERENCE TOMOGRAPHY II

10 April 2024 • 10:40 AM - 12:10 PM | Etoile B, Niveau/Level 1

Session Chair(s): **Rowan W. Sanderson**, The Univ. of Western Australia (Australia)

13006-38 • 10:40 AM - 11:10 AM

**Order-specific removal of nonlinearity from Optical Coherence Tomography signals** (*Invited Paper*)Author(s): **Krzysztof A. Maliszewski**, **Varvara Vetrova**, Univ. of Canterbury (New Zealand); **Sylvia M. Kolenderska**, Nicolaus Copernicus Univ. (Poland), Univ. of Canterbury (New Zealand)

13006-39 • 11:10 AM - 11:30 AM

**Optical Coherence Tomography Investigation on Morphological Phenotypes of Pannexin 1 in Zebrafish Eye**Author(s): **Nima Tabatabaei**, **Shiva Sabour**, **Sarah Houshang-Tabrizi**, **Christiane Zoidl**, **Georg R. Zoidl**, York Univ. (Canada)

13006-40 • 11:30 AM - 11:50 AM

**Learning-based optical diffraction tomography for label-free 3D cell imaging**Author(s): **Bin Yang**, **Jiawei Sun**, **Nektarios Koukourakis**, **Jürgen W. Czarske**, TU Dresden (Germany)

13006-41 • 11:50 AM - 12:10 PM

**Advances in Tissue Differentiation: Combining Optical Coherence Tomography and Diffuse Reflectance Spectroscopy**Author(s): **Arsham Hamidi**, **Alvaro Gonzalez-Jimenez**, **Alexander A. Navarini**, **Philippe C. Cattin**, **Ferda Canbaz**, Univ. Basel (Switzerland)**Lunch/Exhibition Break 12:10 PM - 01:10 PM**

## SESSION 9: OPTICAL COHERENCE TOMOGRAPHY III

10 April 2024 • 01:10 PM - 03:10 PM | Etoile B, Niveau/Level 1

Session Chair(s): **Gianni Nteroli**, Univ. of Kent (United Kingdom)**Session 9 runs concurrently with Session 10 (Advanced Imaging and Spectroscopy II)**

13006-42 • 01:10 PM - 01:40 PM

**Development of a combined multi-spectral optoacoustic microscopy and optical coherence tomography imaging instrument for mapping multiple chromophores in biological tissues** (*Invited Paper*)Author(s): **Gianni Nteroli**, Univ. of Kent (United Kingdom); **Manoj Dasa**, NKT Photonics A/S (Denmark); **Giulia Messa**, Institut du Cerveau et de la Moelle Épineière (France); **Stella Koutsikou**, Univ. of Kent (United Kingdom); **Magalie M. Bondu**, **Peter M. Moselund**, NKT Photonics A/S (Denmark); **Christos Markos**, Technical Univ. of Denmark (Denmark); **Adrian G. H. Podoleanu**, Univ. of Kent (United Kingdom); **Ole Bang**, Technical Univ. of Denmark (Denmark); **Adrian Bradu**, Univ. of Kent (United Kingdom)

13006-43 • 01:40 PM - 02:00 PM

**Comparison of soft tissue handling protocols for optical properties and morphology**Author(s): **Freja Høier**, **Gavrielle R. Untracht**, Technical Univ. of Denmark (Denmark); **Amanda Øster Andersen**, Rigshospitalet (Denmark); **Karina Stræde**, Univ. of Copenhagen (Denmark); **Andreas Kjær**, Rigshospitalet (Denmark), Univ. of Copenhagen (Denmark); **Peter E. Andersen**, Technical Univ. of Denmark (Denmark)

13006-44 • 02:00 PM - 02:20 PM

**The potential application of visible light optical coherence tomography in skin barrier research**Author(s): **Mengqiu Duan**, **Dmitry G. Revin**, **Stephen J. Matcher**, The Univ. of Sheffield (United Kingdom)

13006-45 • 02:20 PM - 02:50 PM

**Ultrabroadband VIS-NIR spectrometer for mouse retinal OCT** (*Invited Paper*)Author(s): **Shau Poh Chong**, **Peter Török**, Singapore Ctr. for Environmental Life Sciences Engineering (Singapore)

13006-46 • 02:50 PM - 03:10 PM

**Optical coherence phase microscopy with refractive index measurement of Leydig cell using negative axicon probe**Author(s): **Pooja Gupta**, CSIR - Central Scientific Instruments Organisation (India); **Manish Rohilla**, Postgraduate Institute of Medical Education & Research, Chandigarh (India); **Samir K. Mondal**, CSIR - Central Scientific Instruments Organisation (India)

## SESSION 10: ADVANCED IMAGING AND SPECTROSCOPY II

10 April 2024 • 01:20 PM - 03:00 PM | Londres 1/Salon 8, Niveau/Level 0

Session Chair(s): **Dror Fixler**, Bar-Ilan Univ. (Israel)**Session 10 runs concurrently with Session 9 (OCT III)**

13006-106 • 01:20 PM - 01:40 PM

**Designing Biomimetic Surfaces as Facilitator for a Cleaner Environment**Author(s): **Hendrik Hölscher**, Karlsruher Institut für Technologie (Germany)

13006-107 • 01:40 PM - 02:00 PM

**Fast and accurate skin parameter estimation from hyperspectral images using random Fourier features**

Author(s): **Matija Milanic**, University of Ljubljana, Faculty of mathematics and physics (Slovenia), Jozef Stefan Institute (Slovenia); **Teo Manojlovic**, Faculty of Engineering, University of Rijeka (Croatia); **Tadej Tomanic**, University of Ljubljana (Slovenia); **Ivan Stajduhar**, Faculty of Engineering (Croatia)

13006-108 • 02:00 PM - 02:20 PM

**Sensing forces in cells using fluorescence FRET microscopy and optical tweezers**

Author(s): **Camille Dubois**, Institut d'Optique Graduate School, Université Paris-Saclay, CNRS, Laboratoire Charles Fabry, Palaiseau, France (France); **Nathalie Westbrook**, Institut d'Optique Graduate School, Université Paris-Saclay, CNRS, Laboratoire Charles Fabry (France); **Nada Boustany**, Rutgers University, Department of Biomedical Engineering, Piscataway, New Jersey, United States (United States); **Marie Erard**, Institut de Chimie Physique, Université Paris-Saclay, CNRS, Orsay, France (France); **Ludivine Houel-Renault**, Institut des Sciences Moléculaires d'Orsay, Université Paris-Saclay, CNRS, Orsay, France (France)

13006-109 • 02:20 PM - 02:40 PM

**Extending two photon scanning microscopy for imaging on novel species. Brain-wide in-vivo imaging in Xenopus tadpoles**

Author(s): **Filip Janiak**, **Carola Yovanovich**, **Michael Forsthofer**, University of Sussex (United Kingdom); **David Vijatovic**, **Lora Sweeney**, IST Austria (Austria); **Tom Baden**, University of Sussex (United Kingdom)

13006-110 • 02:40 PM - 03:00 PM

**Orbital angular momentum in structured vortex beams: bridging the gap in biomedical imaging and diagnosis**

Author(s): **Igor V. Meglinski**, Aston Univ. (United Kingdom); **Ivan Lopushenko**, **Anton Sdobnov**, **Alexander Bykov**, Univ. of Oulu (Finland)

**Coffee Break 03:10 PM - 03:30 PM****SESSION 11: FLUORESCENCE IMAGING**

10 April 2024 • 03:30 PM - 06:00 PM | Etoile B, Niveau/Level 1

Session Chair(s): **Csilla Gergely**, Lab. Charles Coulomb (France)

Session 11 runs concurrently with Session 12 (Advanced Imaging & Spectroscopy IV)

13006-48 • 03:30 PM - 03:50 PM

**Effect of molecular dynamics and internal water contact on the photophysical properties of red pH sensitive proteins**

Author(s): **Franz-Josef Schmitt**, **Amna Shah Mehmood**, **Christian Tüting**, Martin-Luther-Univ. Halle-Wittenberg (Germany); **Hoang Trong Phan**, Leibniz-Institut für Neue Materialien gGmbH (Germany); **Fabian Rieder**, **Farzin Ghane Golmohamadi**, **Jan Laufer**, Martin-Luther-Univ. Halle-Wittenberg (Germany)

13006-49 • 03:50 PM - 04:10 PM

**Small SPAD-arrays for confocal fluorescence lifetime imaging**

Author(s): **Max Tillmann**, **Felix Koberling**, **Tino Roehlicke**, **Michael Wahl**, PicoQuant GmbH (Germany); **Ivan Michel Antolovic**, Pi Imaging Technology SA (Switzerland); **Rainer Erdmann**, **Maryam Sadeghi**, PicoQuant GmbH (Germany)

13006-50 • 04:10 PM - 04:30 PM

**84dB dynamic range high-sensitivity InGaAs line-array image sensor for new generations of spectroscopy**

Author(s): **Sassi Ben Aziza**, **Patrick J. Merken**, **Luiz Carlos Paiva Gouveia**, **Rosa Maria Vinella**, **Raf Schoofs**, **Dieter Croux**, **Vincent Vervenne**, Xenics NV (Belgium)

13006-51 • 04:30 PM - 04:50 PM

**Green chemistry - induced carbon nanoparticles with antioxidant and antibacterial assay**

Author(s): **Parul Singh**, **Hemant Singh**, **Stuti Upadhyay**, **Aniruddha Dan**, **Prasanna Kumari B.**, **Mukesh Dhanka**, **Jhuma Saha**, Indian Institute of Technology Gandhinagar (India)

13006-52 • 04:50 PM - 05:10 PM

**Cervical Pre-Cancer Detection Through Wavelet Denoising and Random Forest Classification**

Author(s): **Gyana Ranjan Sahoo**, Cornell Univ. (United States); **Amar Nath Sah**, Indian Institute of Technology Kanpur (India); **Madhur Srivastava**, Cornell Univ. (United States); **Asima Pradhan**, Indian Institute of Technology Kanpur (India)

13006-53 • 05:10 PM - 05:40 PM

**Near infrared imaging and detection of pathogens with multiplexed nanosensors (Invited Paper)**

Author(s): **Sebastian Kruss**, Ruhr-Univ. Bochum (Germany)

13006-117 • 05:40 PM - 06:00 PM

**High-resolution miniaturized fluorescence microscopy through well calibrated and continuous space-varying deconvolution**

Author(s): **Liangtao Gu**, **Xinyi Zhu**, **Liang Chen**, **Wuwei Ren**, ShanghaiTech Univ. (China)

## SESSION 12: ADVANCED IMAGING AND SPECTROSCOPY III

10 April 2024 • 03:30 PM - 05:30 PM | Londres 1/Salon 8, Niveau/Level 0

Session Chair(s): **Dror Fixler**, Bar-Ilan Univ. (Israel)

Session 12 runs concurrently with Session 11 (Fluorescence Imaging)

13006-123 • 03:30 PM - 03:50 PM

**How nature can help to design and elaborate new photonics materials and devices**

Author(s): **Dror Fixler**, Bar-Ilan Univ. (Israel); **Malgosia Szczerska**, Gdansk University of Technology (Poland); **Vladimir Katanaev**, University of Geneva (Switzerland); **Martin Lopez Garcia**, Instituto de Óptica (Spain); **Maria Godinho**, Universidade NOVA de Lisboa (Portugal); **Nicolina Pop**, Politehnica University of Timisoara (Romania); **Jelena Radovanovic**, Univerzitet u Beogradu (Serbia); **Maurizio Dabbicco**, Università di Bari (Italy); **George A. Mousdis**, University of Athens (Greece); **Ahu Gumrah Parry**, University of Manchester (United Kingdom); **Panagiotis E. Keivanidis**, Cyprus University of Technology (Cyprus); **Dragan Indjin**, University of Leeds (United Kingdom); **Ana Almeida**, Universidade NOVA de Lisbon (Portugal); **Paweł Wityk**, Gdansk University of Technology (Poland)

13006-112 • 03:50 PM - 04:10 PM

**OCT-based beneath-the-surface investigations in ceramics sintering: modeling for the most relevant characteristic parameter**

Author(s): **Virgil-Florin Duma**, Univ. "Aurel Vlaicu" din Arad (Romania); **Cosmin G. Sinescu**, Univ. de Medicina si Farmacie "Victor Babes" din Timisoara (Romania); **Adrian Bradu**, Univ. of Kent (United Kingdom); **Adrian G. H. Podoleanu**, Univ. of Kent (Romania)

13006-113 • 04:10 PM - 04:30 PM

**Towards a label free coherent detectorless imaging module in photonic integrated circuits**

Author(s): **Maurizio Dabbicco**, Università degli Studi di Bari "Aldo Moro" (Italy); **Başak Ersöz**, **Paolo Bardella**, **Lorenzo Luigi Columbo**, Politecnico di Torino, Corso Duca degli Abruzzi 24, Torino (Italy) (Italy); **Massimo Brambilla**, Politecnico di Bari, Dipartimento Interateneo di Fisica (Italy)

13006-114 • 04:30 PM - 04:50 PM

**Thermally irreversible photoinduced shift of selective light reflection in 1D cholesteric photonic structure**

Author(s): **Martin Cigl**, **Vera Hamplova**, **Vladimira Novotna**, FZU - Institute of Physics of the Czech Academy of Sciences (Czech Republic)

13006-115 • 04:50 PM - 05:10 PM

**Comparative analysis of photoacoustic signals of immune cells in the context of drug treatment**

Author(s): **Özgür Özdemir**, **Ceren Ciraci**, **Elif Yaprak Sarac**, **Zulal Celik**, **Sila Koksall**, **Ali Can Sahin**, **Berkay Mutlu**, Istanbul Technical Univ (Turkey)

13006-116 • 05:10 PM - 05:30 PM

**Understanding interaction light-biological surfaces: self-calibrated biosensor for measuring multiple physiological parameters**

Author(s): **Dror Fixler**, Bar-Ilan Univ. (Israel); **Michal Katan**, Bar-Ilan Univ (Israel); **Hamootal Duadi**, Bar-Ilan Univ. (Israel)

## Thursday 11 April 2024

## HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

**Coffee Break 10:35 AM - 10:50 AM**

## SESSION 13: ADVANCED IMAGING AND SPECTROSCOPY IV

11 April 2024 • 10:50 AM - 12:10 PM | Etoile B, Niveau/Level 1

Session Chair(s): **Sebastian Kruss**, Ruhr-Univ. Bochum (Germany)

13006-55 • 10:50 AM - 11:10 AM

**Rolling-Shutter Laser Speckle Analysis in Bio-Photonics**

Author(s): **Sammy Apsel, Vika Tarle, Zeev Zalevsky, Nisan Ozana, Michal Yemini**, Bar-Ilan Univ. (Israel)

13006-56 • 11:10 AM - 11:30 AM

**Temperature-controlled laser hyperthermia using a custom designed 808-nm diode laser system integrated with an infrared array sensor**

Author(s): **Batuhan Dizman, Mustafa Kemal Ruhi**, Bogaziçi Üniv. (Turkey)

13006-57 • 11:30 AM - 11:50 AM

**Assessment of formation of Escherichia coli biofilm on solid substrates using Laser Speckle Imaging parameters**

Author(s): **Priya Krishnamurthy, Sujatha N. Unni**, Indian Institute of Technology Madras (India); **Krupakar Parthasarathy, Sudha Narayani Rao**, Sathyabama Institute of Science and Technology (India)

13006-99 • 11:50 AM - 12:10 PM

**Resorbable optical fibers for monitoring physiological signals; a proof-of-concept validation.**

Author(s): **Jawad Talekkara Pandayil**, Politecnico di Torino (Italy), Fondazione Links (Italy); **Nadia G. Boetti**, Fondazione Links (Italy); **Lorenzo Cortese**, ICFO - Institut de Ciències Fotòniques (Spain); **Davide Janner**, Politecnico di Torino (Italy); **Turgut Durduran**, ICFO - Institut de Ciències Fotòniques (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain)

**Lunch Break 12:10 PM - 01:20 PM**

**SESSION 14: ADVANCED IMAGING AND SPECTROSCOPY V**

11 April 2024 • 01:20 PM - 03:00 PM | Etoile B, Niveau/Level 1

Session Chair(s): **Artjoms Suponenkovs**, Riga Technical Univ. (Latvia)

13006-58 • 01:20 PM - 01:40 PM

**Towards label-free liquid biopsy: combining machine learning and tomographic phase imaging flow cytometry for the identification of tumor cells**

Author(s): **Daniele Pirone**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy); **Annalaura Montella**, CEINGE-Biotecnologie Avanzate (Italy); **Beatrice Cavina**, Univ. degli Studi di Bologna (Italy); **Giusy Giugliano, Michela Schiavo**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy); **Martina Mugnano**, Univ. degli Studi di Napoli Federico II (Italy); **Vincenza Carbone, Giulia Scalia**, CEINGE-Biotecnologie Avanzate (Italy); **Anna Maria Porcelli, Giuseppe Gasparre, Ivana Kurelac**, Univ. degli Studi di Bologna (Italy); **Vittorio Bianco, Lisa Miccio**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy); **Mario Capasso, Achille Iolascon, Pier Luca Maffettone**, Univ. degli Studi di Napoli Federico II (Italy); **Pasquale Memmolo, Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy)

13006-59 • 01:40 PM - 02:00 PM

**Dual-Comb based perturbation localization in a highly dispersive media: towards DC-fNIRS.**

Author(s): **Roberto Barreiro Marcos, Frank Sanabria-Macias**, Arquimea Research Ctr. (Spain); **Pedro Martin-Mateos**, Univ. Carlos III de Madrid (Spain); **Julio E. Posada-Roman**, Arquimea Research Ctr. (Spain); **Jose Luis Gonzalez-Mora**, Univ. de La Laguna (Spain); **Cristina de Dios**, Arquimea Research Ctr. (Spain), Univ. Carlos III de Madrid (Spain)

13006-60 • 02:00 PM - 02:20 PM

**Investigating the efficient light coupling into a microdisk in presence and absence of a polymer coating**

Author(s): **Brahim Bessif, Mandana Jalali, Daniel Erni**, Univ. Duisburg-Essen (Germany)

13006-61 • 02:20 PM - 02:40 PM

**Algorithm for 10-fold faster flow cytometry light scattering measurements of extracellular vesicles**

Author(s): **Mona Shahsavari, Arjan Wiskerke, Mendel Engelaer, Ton G. van Leeuwen, Edwin van der Pol**, Amsterdam UMC (Netherlands)

13006-62 • 02:40 PM - 03:00 PM

**Longitudinal Multimodal Imaging for Tracking Stem Cells in the Retina**

Author(s): **Van Phuc Nguyen**, Univ. of Michigan Kellogg Eye Ctr. (United States); **Xueding Wang**, Univ. of Michigan (United States); **Yannis M. Paulus**, Univ. of Michigan Kellogg Eye Ctr. (United States)

**Coffee Break 03:00 PM - 03:20 PM**

**SESSION 15: MICROSCOPY**

11 April 2024 • 03:20 PM - 05:30 PM | Etoile B, Niveau/Level 1

Session Chair(s): **Krzysztof A. Maliszewski**, Univ. of Canterbury (New Zealand)

13006-63 • 03:20 PM - 03:50 PM

**Fiber endoscope design utilizing metalens for illumination and collection** (*Invited Paper*)

*Author(s):* **Gregory Baethge**, ANSYS France SAS (France); **Csilla Timar-Fulep**, Ansys UK Ltd. (United Kingdom); **Stefan Thoene**, ANSYS Germany GmbH (Germany); **Shin-Sung Kim**, Ansys UK Ltd. (United Kingdom); **Charly Meyer**, ANSYS France SAS (France)

13006-64 • 03:50 PM - 04:10 PM

**Metasurface Assisted Light Field Microscopy for Snapshot Volumetric (3D) Imaging**

*Author(s):* **Haobijam Johnson Singh**, **Anil Atalay Appak**, **Jani Mäkinen**, **Sanni Erämies**, **Erdem Sahin**, **Teemu Ihalainen**, **Atanas P. Gotchev**, **Humeyra Caglayan**, Tampere Univ. (Finland)

13006-65 • 04:10 PM - 04:30 PM

**Oil immersed single objective light sheet microscope**

*Author(s):* **Quentin Bécar**, **Paul C. Montgomery**, **Amir Nahas**, **Vincent Maioli**, ICube, Univ. de Strasbourg (France)

13006-66 • 04:30 PM - 04:50 PM

**Analysing histology hyperspectral images: does tissue thickness matter?**

*Author(s):* **Javier Santana-Nunez**, **Laura Quintana-Quintana**, Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain); **Himar Fabelo**, Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain), Fundación Canaria Instituto de Investigación Sanitaria de Canarias (Spain); **Samuel Ortega**, Nofima (Norway), Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain); **Esther Sauras-Colón**, Hospital de Tortosa Verge de la Cinta, Institut Català de la Salut, Institut d'Investigació Sanitària Pere Virgili (Spain), Univ. Rovira i Virgili (Spain); **Noèlia Gallardo-Borràs**, Univ. Rovira i Virgili (Spain), Hospital de Tortosa Verge de la Cinta, Institut Català de la Salut, Institut d'Investigació Sanitària Pere Virgili (Spain); **Daniel Mata-Cano**, Hospital de Tortosa Verge de la Cinta, Institut Català de la Salut, Institut d'Investigació Sanitària Pere Virgili (Spain); **Carlos López-Pablo**, Hospital de Tortosa Verge de la Cinta, Institut Català de la Salut, Institut d'Investigació Sanitària Pere Virgili (Spain), Univ. Rovira i Virgili (Spain); **Gustavo M. Callico**, Instituto Univ. de Microelectrónica Aplicada, Univ. de Las Palmas de Gran Canaria (Spain)

13006-105 • 04:50 PM - 05:10 PM

**IN2SIGHT: a microstructured window for label-free non-linear imaging in vivo.**

*Author(s):* **Giuseppe Chirico**, **Laura Sironi**, **Davide Panzeri**, Univ. degli Studi di Milano-Bicocca (Italy); **Claudio Conci**, Politecnico di Milano (Italy); **Donato Inverso**, I.R.C.C.S. Ospedale San Raffaele (Italy); **Emanuela Jacchetti**, Politecnico di Milano (Italy); **Rebeca Martínez Vázquez**, **Roberto Osellame**, Istituto di Fotonica e Nanotecnologie, Consiglio Nazionale delle Ricerche (Italy), Politecnico di Milano (Italy); **Maddalena Collini**, Univ. degli Studi di Milano-Bicocca (Italy); **Giulio Cerullo**, **Manuela Teresa Raimondi**, Politecnico di Milano (Italy)

13006-68 • 05:10 PM - 05:30 PM

**Adaptive Image Quantization for Discrimination of Cervical Pre-Cancer**

*Author(s):* **Gyana Ranjan Sahoo**, Cornell Univ. (United States); **Jaidip M. Jagtap**, Mayo Clinic (United States); **Prasanta K. Panigrahi**, Indian Institute of Science Education and Research Kolkata (India); **Asima Pradhan**, Indian Institute of Technology Kanpur (India); **Madhur Srivastava**, Cornell Univ. (United States)

13006-69 • 05:30 PM - 05:50 PM

**Data augmentation using CGAN for multimode fiber imaging**

*Author(s):* **Jawaria Maqbool**, **Syed Talal Hassan**, **M. Imran Cheema**, Lahore Univ. of Management Sciences (Pakistan)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13006-26

**Prediction of abnormal embryonic cell development based on structural similarity coefficient**

*Author(s):* **Ruipeng Wang**, **Yaowei Liu**, **Qili Zhao**, **Mingzhu Sun**, **Xin Zhao**, **Yue Du**, Nankai Univ. (China)

13006-98

**AI-enabled smart LSCI system for early diagnosis of diabetic foot ulcers**

*Author(s):* **Aqeel Ur-Rehman**, **Sadia Noureen**, Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Hafiz Saad Khaliq**, School of Electronic and Electrical Engineering, Kyungpook National University (KNU), (Korea, Republic of); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan); **Muhammad Zubair**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# CONFERENCE 13007

## Neurophotonics II

08 April 2024 | Boston/Salon 11, Niveau/Level 1

**Conference Chair(s):** **Tomáš Čížmár**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Tommaso Fellin**, Istituto Italiano di Tecnologia (Italy)

**Program Committee:** **Laurent Bourdieu**, Ecole Normale Supérieure (France); **Laurent Cognet**, Univ. de Bordeaux (France); **Jürgen W. Czarske**, TU Dresden (Germany); **Janelle M. P. Papan**, Otto-von-Guericke-Univ. Magdeburg (Germany); **Eirini I. Papagiakoumou**, Institut de la Vision (France); **Francesco Saverio Pavone**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); **Nicolas C. Pégard**, The Univ. of North Carolina at Chapel Hill (United States); **Robert Prevedel**, EMBL Heidelberg (Germany); **Hana Uhlířová**, Institute of Scientific Instruments of the CAS, v.v.i. (Czech Republic)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)  
*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* **Malte C. Gather**, Univ. zu Köln (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

#### SESSION 1: FIBER OPTICS NEUROPHOTONICS

08 April 2024 • 11:30 AM - 01:00 PM | Boston/Salon 11, Niveau/Level 1

*Session Chair(s):* **Tomáš Čížmár**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13007-1 • 11:30 AM - 12:00 PM

**Light delivery using a tapered optical fiber for optogenetic stimulation in mouse auditory midbrain** (*Invited Paper*)

*Author(s):* **Meike Rogalla**, Carl von Ossietzky Univ. Oldenburg (Germany), Exzellenzcluster Hearing4all (Germany); **Michael Tomanek**, Leibniz Univ. Hannover (Germany), Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung (Germany), Exzellenzcluster Hearing4all (Germany); **Gunnar Quass**, Univ. of Michigan (United States); **Sabri Deniz Ünlü**, **Alexander Heisterkamp**, **Maria L. Torres-Mapa**, Leibniz Univ. Hannover (Germany), Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung (Germany), Exzellenzcluster Hearing4all (Germany)

13007-2 • 12:00 PM - 12:20 PM

**STED microscopy at the tip of a holographic multimode fibre endoscope**

*Author(s):* **André D. Gomes**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Miroslav Stibůrek**, Institute of Scientific Instruments of the CAS, v.v.i. (Czech Republic); **Sergey Turtaev**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Katharina Reglinski**, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany), Universitätsklinikum Jena

(Germany); **Christian Eggeling**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Jena Ctr. of Soft Matter, Friedrich-Schiller-Univ. Jena (Germany); **Tomáš Čížmár**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Institute of Scientific Instruments of the CAS, v.v.i. (Czech Republic), Friedrich-Schiller-Univ. Jena (Germany)

13007-3 • 12:20 PM - 12:40 PM

**How to image anywhere in the brain through 100um thin fibre**

Author(s):

13007-4 • 12:40 PM - 01:00 PM

**Plug-and-play fibre-optic sensors based on engineered cells for real-time neurochemical monitoring at high specificity in freely moving animals**

Author(s): **Lingjie Kong, Bingqian Zhou**, Tsinghua Univ. (China)

**Lunch Break 01:00 PM - 02:00 PM**

## SESSION 2: NOVEL METHODS FOR BRAIN ACTIVITY SENSING

08 April 2024 • 02:00 PM - 03:30 PM | Boston/Salon 11, Niveau/Level 1

Session Chair(s): **Tommaso Fellin**, Istituto Italiano di Tecnologia (Italy)

13007-5 • 02:00 PM - 02:30 PM

**Imaging intracellular neurotransmitters with vibrational microscopy using isotopologues** (Invited Paper)

Author(s): **Gabriel F. Dorlhiac**, SLAC National Accelerator Lab. (United States); **Bryce Manifold, Markita Landry, Aaron M. Streets**, Univ. of California, Berkeley (United States)

13007-6 • 02:30 PM - 02:50 PM

**Towards brain-wide single-neuron-resolved functional imaging in-vivo**

Author(s): **Hongbo Jia**, Leibniz-Institut für Neurobiologie Magdeburg (Germany)

13007-7 • 02:50 PM - 03:10 PM

**Extended field-of-view imaging in miniature two-photon microscopes through aberration corrected GRIN lenses**

Author(s): **Chiara Nardin, Andrea Sattin, Laura Maddalena, Sebastiano Curreli, Tommaso Fellin**, Istituto Italiano di Tecnologia (Italy)

13007-8 • 03:10 PM - 03:30 PM

**Near Infrared Fluorescence Imaging of Dopamine Signaling**

Author(s): **Sebastian Kruss**, Ruhr-Univ. Bochum (Germany)

**Coffee Break 03:30 PM - 04:00 PM**

## SESSION 3: EMERGING TRENDS IN MONITORING AND STIMULATING BRAIN FUNCTION

08 April 2024 • 04:00 PM - 05:50 PM | Boston/Salon 11, Niveau/Level 1

Session Chair(s): **Maria L. Torres-Mapa**, Leibniz Univ. Hannover (Germany)

13007-9 • 04:00 PM - 04:30 PM

**Towards Surface-Correction of Deep-Tissue Blood Flow Dynamics with Massively Parallelized Diffuse Correlation Spectroscopy** (Invited Paper)

Author(s): **Lucas A. Kreiss, Melissa Wu**, Duke Univ. (United States); **Michael A. Wayne**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Shiqi Xu, Paul McKee, Derrick Dwamena**, Duke Univ. (United States); **Kyle Cowdrick, Erin M. Buckley**, Georgia Institute of Technology (United States), Emory Univ. (United States); **Claudio E. Bruschini, Edoardo Charbon**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Scott Huettel, Roarke W. Horstmeyer**, Duke Univ. (United States)

13007-10 • 04:30 PM - 04:50 PM

**An optogenetic approach to study memory in vitro**

Author(s): **Clara Zaccaria, Asiye Malkoç**, Univ. degli Studi di Trento (Italy)

13007-11 • 04:50 PM - 05:10 PM

**Non-invasive optogenetics: aspirational dream or approaching feasibility**

Author(s): **Diana I. Galiakhmetova, Viktor V. Dremin, Aleksandr S. Koviarov, Dmitrii A. Stoliarov**, Aston Univ. (United Kingdom); **Neville Ngum, Rheinallt Parri**, Aston University (United Kingdom); **Andrei A. Gorodetsky**, Univ. of Birmingham (United Kingdom); **Marios Maimaris**, Imperial College London (United Kingdom); **Daria M. Shcherbakova, Mikhail Baloban, Vladislav V. Verkhusha**, Albert Einstein College of Medicine (United States); **Sergei G. Sokolovsky, Edik U. Rafailov**, Aston Univ. (United Kingdom)



13007-12 • 05:10 PM - 05:30 PM

**Functional Cerebral Blood Flow Monitoring using Multichannel Speckle Contrast Analysis**

*Author(s):* **Vika Tarle, Shani Sela**, Bar-Ilan Univ. (Israel); **Yumie Ono**, Meiji Univ. (Japan); **Nisan Ozana**, Bar-Ilan Univ. (Israel)

13007-13 • 05:30 PM - 05:50 PM

**Wireless, battery-free, fully implantable optoelectronic devices and systems for tissue oxygen sensing**

*Author(s):* **He Ding, Zhao Xue**, Beijing Institute of Technology (China); **Xue Cai, Xing Sheng**, Tsinghua Univ. (China)

## Tuesday 9 April 2024

### POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13007-14 • 06:10 PM - 08:00 PM

**Hyperscanning real-world interactions via distributed functional near-infrared spectroscopy imaging system**

*Author(s):* **Dongyuan Liu, Zhiyong Li, Yuke Wang, Wenrui Zhu**, Tianjin Univ. (China); **Wenrui Zhu, Feng Gao**, Tianjin Univ. (China)

13007-15 • 06:10 PM - 08:00 PM

**Assessing hypercapnia and hypocapnia induced hemodynamic response measured by continuous wave and time domain diffuse correlation spectroscopy**

*Author(s):* **Neda Mogharari, Michal Kacprzak**, Nalecz Institute of Biocybernetics and Biomedical Engineering PAN (Poland)

13007-16 • 06:10 PM - 08:00 PM

**Fluorescence enhancement of fluorophores in live cells using metallic nanoparticles**

*Author(s):* **Marco Locarno, Qiangrui Dong, Xin Meng, Cristiano Glessi**, Technische Univ. Delft (Netherlands); **Daan Brinks**, Technische Univ. Delft (Netherlands), Erasmus MC (Netherlands)

13007-18 • 06:10 PM - 08:00 PM

**Simultaneous dual-region two-photon imaging of neuronal activities in vivo spanning over 9 mm**

*Author(s):* **Lingjie Kong, Chi Liu**, Tsinghua Univ. (China)

13007-19 • 06:10 PM - 08:00 PM

**Mid-infrared photoacoustic microscopy by gas-filled hollow-core fiber laser**

*Author(s):* **Cuiling Zhang, Kunyang Sui, Marcello Meneghetti**, Technical Univ. of Denmark (Denmark); **Jose E. Antonio-Lopez**, Univ. of Central Florida (Denmark); **Manoj K. Dasa**, NKT Photonics A/S (Denmark); **Rune W. Berg**, Univ. of Copenhagen (Denmark); **Rodrigo Amezcua-Correa**, Univ. of Central Florida (United States); **Yazhou Wang, Christos Markos**, Technical Univ. of Denmark (Denmark)

13007-20 • 06:10 PM - 08:00 PM

**Optofluidic device for low-cost and rapid light sheet screening of neuronal degenerations in larval and adult *C. elegans***

*Author(s):* **Faraz Rahimpouresfahani, Pouya Rezai, Nima Tabatabaei**, York Univ. (Canada)

# CONFERENCE 13008

## Biophotonics in Point-of-Care III

10 - 11 April 2024 | Leicester/Salon 12, Niveau/Level 1

**Conference Chair(s):** Michael T. Canva, CNRS (France); Ambra Giannetti, Istituto di Fisica Applicata "Nello Carrara"-CNR (Italy); Hatice Altug, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Julien Moreau, Institut d'Optique Graduate School (France)

**Program Committee:** Jakub Dostálek, AIT Austrian Institute of Technology GmbH (Austria); Thierry Livache, Aryballe Technologies (France); Boris Mizaikoff, Univ. Ulm (Germany); Genni Testa, IREA-CNR (Italy); Nathalie Vermeulen, Vrije Univ. Brussel (Belgium); Bruno Wacogne, Femto-st (France)

### Wednesday 10 April 2024

#### SESSION 1: APPLICATIONS OF POCT

10 April 2024 • 08:40 AM - 10:30 AM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): Julien Moreau, Institut d'Optique Graduate School (France)

13008-1 • 08:40 AM - 09:10 AM

**Fluorescence spectroscopy enhancing aflatoxin detection in solid food products: from laboratory setup towards handheld sensing units** (*Invited Paper*)

Author(s): Lien Smeesters, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium)

13008-2 • 09:10 AM - 09:30 AM

**Development and Field Validation of an End-User Photo-Thermal Device for Accurate Detection and Quantification of Analytes in Fluidic Samples**

Author(s): Derek Hayden, Baseer Yousufzai, Nima Tabatabaei, York Univ. (Canada)

13008-3 • 09:30 AM - 09:50 AM

**Smartphone Based Colorimetry Analysis for Estimation of Albumin Concentration**

Author(s): Sunita Bhatt, Sandeep Kumar Singh, Indian Institute of Technology Delhi (India); Sudip Kumar Datta, All India Institute of Medical Sciences, New Delhi (India); Satish Kumar Dubey, Indian Institute of Technology Delhi (India)

13008-4 • 09:50 AM - 10:10 AM

**Fast and reliable micro bioassay techniques based on biospeckle for swift water assessment using Plankton**

Author(s): Arti Devi, Hirofumi Kadono, Saitama Univ. (Japan); Uma Maheswari Rajagopalan, Shibaura Institute of Technology (Japan)

13008-41 • 10:10 AM - 10:30 AM

**Design, fabrication and testing of a smartphone-based bimodal device for oral precancer diagnosis**

Author(s): Shivam Shukla, Nemi Chand, Amar Nath Sah, Chaitanya Vishwakarma, Subrata Mishra, Indian Institute of Technology Kanpur (India); Rachna Rath, SCB Medical College (India); Asima Pradhan, Indian Institute of Technology Kanpur (India)

**Coffee Break 10:30 AM - 11:00 AM**

#### SESSION 2: PHOTONIC AND NANOPHOTONIC SENSING MEANS I

10 April 2024 • 11:00 AM - 12:30 PM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): Michael T. Canva, Univ. de Sherbrooke (Canada)

13008-5 • 11:00 AM - 11:30 AM

**Plasmonic detection of oncogenic DNA in liquid biopsy samples from cancer patients** (*Invited Paper*)

Author(s): Giuseppe Spoto, Roberta D'Agata, Noemi Bellassai, Univ. degli Studi di Catania (Italy); Roberto Corradini, Univ. degli Studi di Parma (Italy); Patrizio Giacomini, Istituto Nazionale Tumori Regina Elena di Roma, Istituto di Ricovero e Cura a Carattere Scientifico (Italy)

13008-6 • 11:30 AM - 11:50 AM

**Detecting malaria with surface plasmon microscope**

Author(s): Ipsita Chakraborty, Justus Bednar, Andreas Offenhäusser, Forschungszentrum Jülich GmbH (Germany)

13008-7 • 11:50 AM - 12:10 PM

**Biocompatible hydrogel-based plasmonic sensor for glucose sensing**

Author(s): **Ammar Ahmed**, Leibniz Univ. Hannover (Germany), Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung (Germany); **Thore Amend**, **Christina Wenck**, Institut für Quantenoptik, Leibniz Univ. Hannover (Germany), Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung (Germany), Exzellenzcluster PhoenixD (Germany); **Mitsuhiro Terakawa**, Keio Univ. (Japan); **Maria L. Torres-Mapa**, **Alexander Heisterkamp**, Institut für Quantenoptik, Leibniz Univ. Hannover (Germany), Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung (Germany), Exzellenzcluster PhoenixD (Germany)

13008-8 • 12:10 PM - 12:30 PM

**Improved detection of cancer biomarkers through Metasurface-assisted Lab-on-Fiber probes enabling Point-of-Care biosensing**

Author(s): **Patrizio Vaiano**, Univ. degli Studi del Sannio (Italy); **Sarassunta Ucci**, CeRICT srl (Italy); **Giuseppe Quero**, Univ. degli Studi del Molise (Italy), Univ. degli Studi del Sannio (Italy); **Gaia Maria Berruti**, Univ. degli Studi del Sannio (Italy); **Sara Spaziani**, **Angela Maria Cusano**, CeRICT srl (Italy); **Maria Principe**, Univ. degli Studi del Sannio (Italy); **Alberto Micco**, CeRICT srl (Italy); **Marco Consales**, **Andrea Cusano**, Univ. degli Studi del Sannio (Italy), CeRICT srl (Italy)

**Lunch/Exhibition Break 12:30 PM - 01:40 PM**

**SESSION 3: PHOTONIC AND NANOPHOTONIC SENSING MEANS II**

10 April 2024 • 01:40 PM - 03:20 PM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): **Hatice Altug**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13008-9 • 01:40 PM - 02:10 PM

**Surface plasmon resonance in polymer optical fibers for Point of Care Analysis (Invited Paper)**

Author(s): **Luigi Zeni**, Univ. degli Studi della Campania Luigi Vanvitelli (Italy)

13008-10 • 02:10 PM - 02:30 PM

**Engineering SERS-active substrates: design and characterization of advanced structures**

Author(s): **Maria Alessandra Cutolo**, Univ. degli Studi di Napoli Federico II (Italy); **Francesco Galeotti**, Istituto di Scienze e Tecnologie Chimiche 'Giulio Natta', Consiglio Nazionale delle Ricerche (Italy); **Sara Spaziani**, Univ. degli Studi del Sannio (Italy); **Giuseppe Quero**, Univ. degli Studi del Molise (Italy); **Vincenzo Calcagno**, Univ. degli Studi del Sannio (Italy); **Alberto Micco**, CeRICT srl (Italy); **Andrea Irace**, **Giovanni Breglio**, Univ. degli Studi di Napoli Federico II (Italy); **Andrea Cusano**, **Marco Pisco**, Univ. degli Studi del Sannio (Italy)

13008-11 • 02:30 PM - 02:50 PM

**SERS biosensor for ultrasensitive detection of human Thyroglobulin**

Author(s): **Sara Spaziani**, Univ. degli Studi del Sannio (Italy), CeRICT S.C.r.l. (Italy); **Giuseppe Quero**, Univ. degli Studi del Sannio (Italy), Univ. degli Studi del Molise (Italy); **Stefano Managò**, Istituto per l'endocrinologia e l'oncologica sperimentale "Gaetano Salvatore" (Italy); **Gianluigi Zito**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy); **Daniela Terracciano**, **Paolo E. Macchia**, Univ. degli Studi di Napoli Federico II (Italy); **Francesco Galeotti**, Istituto di Scienze e Tecnologie Chimiche 'Giulio Natta', Consiglio Nazionale delle Ricerche (Italy); **Marco Pisco**, Univ. degli Studi del Sannio (Italy), CeRICT S.C.r.l. (Italy); **Anna Chiara De Luca**, Istituto per l'endocrinologia e l'oncologica sperimentale "Gaetano Salvatore" (Italy); **Andrea Cusano**, Univ. degli Studi del Sannio (Italy), CeRICT S.C.r.l. (Italy)

13008-12 • 02:50 PM - 03:20 PM

**SERS-based detection of biomolecules in complex biological matrices (Invited Paper)**

Author(s): **Dana Cialla-May**, **Juergen Popp**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

**Coffee Break 03:20 PM - 03:50 PM**

**SESSION 4: PHOTONIC AND NANOPHOTONIC SENSING MEANS III**

10 April 2024 • 03:50 PM - 05:20 PM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): **Ambra Giannetti**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

13008-13 • 03:50 PM - 04:20 PM

**Label-free interferometric scattering microscopy and spectroscopy with single-molecule sensitivity (Invited Paper)**

Author(s): **Marek Piliarik**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)

13008-14 • 04:20 PM - 04:40 PM

**Tunable plasmonic properties in metal nanohole arrays for SERS single-molecule detection**

Author(s): **Maria Grazia Manera**, **Adriano Colombelli**, **Daniela Lospinoso**, **Roberto Rella**, Istituto per la Microelettronica e Microsistemi (Italy)

13008-15 • 04:40 PM - 05:00 PM

**Surface Plasmon Resonance Imaging signal amplification for the detection of micro-RNAs in the context of organ donation**

*Author(s):* **Coline Beltrami**, Univ. de Sherbrooke (Canada), Lab. Charles Fabry, Institut d'Optique Graduate School, Univ. Paris-Saclay (France); **Julien Moreau**, Lab. Charles Fabry, Institut d'Optique Graduate School, Univ. Paris-Saclay (France); **Laurence Convert**, **Jean-François Bryche**, **Paul G. Charette**, **Michael Canva**, Univ. de Sherbrooke (Canada)

13008-16 • 05:00 PM - 05:20 PM

**Optimization of a silicon nitride based micro-ring resonator platform towards pinnacle sensitivity in chemical- and biosensing**

*Author(s):* **Jakob W. Hinum-Wagner**, Technische Univ. Graz (Austria), ams-OSRAM AG (Austria); **Samuel M. Hoermann**, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria), ams-OSRAM AG (Austria); **Christoph Schmidt**, **Gandolf Feigl**, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria); **Jochen Kraft**, ams-OSRAM AG (Austria); **Alexander Bergmann**, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13008-20 • 05:45 PM - 07:45 PM

**Plasmonic Nanoparticle Synthesis and characterization: Harnessing Enhanced Visible Absorption for Dye Molecule Applications**

*Author(s):* **Amina Badir**, Moroccan Foundation for Advanced Science, Innovation and Research, Mohammed VI Polytechnic Univ. (Morocco), Univ. Mohammed V de Rabat (Morocco); **Siham Refki**, Optics and Photonics Ctr., Moroccan Foundation for Advanced Science, Innovation and Research (Morocco); **Zouheir Sekkat**, Optics and Photonics Ctr., Moroccan Foundation for Advanced Science, Innovation and Research (Morocco), Univ. Mohammed V de Rabat (Morocco)

13008-31 • 05:45 PM - 07:45 PM

**Non-invasive zinc protoporphyrin screening offers opportunities for secondary prevention of iron deficiency in blood donors**

*Author(s):* **Ronald Sroka**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany); **Anne Schliemann**, **Max Eisel**, Klinikum der Univ. München (Germany); **Herbert Stepp**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany); **Michael Vogeser**, Klinikum der Univ. München (Germany); **Ernst-Markus Quenzel**, Blutspendedienst des Bayerischen Roten Kreuzes gemeinnützige GmbH (Germany); **Christian Homann**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany)

13008-32 • 05:45 PM - 07:45 PM

**Biomarker identification and point-of-care assessment in urosepsis supported by machine learning**

*Author(s):* **Pawel Wityk**, Medical Univ. of Gdansk (Poland); **Kacper Cierpiak**, Gdansk Univ. of Technology (Poland); **Joanna Raczak-Gutknecht**, Medical Univ. of Gdansk (Poland); **Mariusz Siemiński**, **Jacek Szypenbejl**, University Clinical Centre (Poland); **Michał Markuszewski**, **Malgorzata Szczerska**, Medical Univ. of Gdansk (Poland); **Beata Krawczyk**, Gdansk Univ. of Technology (Poland)

13008-33 • 05:45 PM - 07:45 PM

**Use of laser micromachining for enhancing colorimetric multiplex lateral flow assay signal sensitivity**

*Author(s):* **Gazy Albedry**, **Mohamed Ahmed Baba**, **Tomas Tamulevicius**, Kaunas Univ. of Technology (Lithuania)

13008-34 • 05:45 PM - 07:45 PM

**Design and application of a low-cost camera-based spectrometer**

*Author(s):* **Gireesh Kumar J.**, **Arnab Ghosh**, Indian Institute of Technology Bombay (India); **Sirsendu Ghosh**, Field Hospital, Himachal Pradesh (India); **Rohit Srivastava**, Indian Institute of Technology Bombay (India)

13008-35 • 05:45 PM - 07:45 PM

**Pollen analysis and identification by quantitative phase imaging**

*Author(s):* **Anand Kumar**, Indian Institute of Technology Delhi (India)

13008-36 • 05:45 PM - 07:45 PM

**Modulation of Surface Plasmon Resonance Energy Using Graphene Quantum Dots on Biosensors Application**

*Author(s):* **Nan-Fu Chiu**, National Taiwan Normal Univ. (Taiwan)

13008-37 • 05:45 PM - 07:45 PM

**Fundamental studies of graphene oxide quantum dots for plasmonic properties and microRNAs in sensing mechanism**

*Author(s):*

13008-39 • 05:45 PM - 07:45 PM

**DNA-nanomachine-based chemiluminescent assay for pathogen detection in food borne infections**

Author(s): **Daria A. Gorbenko, Pavel V. Filatov, Tigran A. Vartanyan**, ITMO Univ. (Russian Federation); **Mikhail Viskov**, ITMO University (Russian Federation)

13008-42 • 05:45 PM - 07:45 PM

**Portable multimodal NIR spectroscopy**

Author(s): **Krisztian Neusch, Asra Mafakheribashmogh**, Ruhr-Univ. Bochum (Germany); **Jan Stegemann**, Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme IMS (Germany); **Sebastian Kruss**, Ruhr-Univ. Bochum (Germany), Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme IMS (Germany)

13008-43 • 05:45 PM - 07:45 PM

**Cell counting platform for life science applications**

Author(s): **Meryem Beyza Avci**, Izmir Biomedicine and Genome Ctr (Turkey); **S. Deniz Yasar, Fatma Kurul, Arif E. Cetin**, Izmir Biomedicine and Genome Ctr. (Turkey)

13008-44 • 05:45 PM - 07:45 PM

**Portable Optofluidic Device for Dynamic Binding Analysis in Field-Settings**

Author(s): **Fatma Kurul, Meryem Beyza Avci**, Izmir Biomedicine and Genome Ctr. (Turkey); **Sena Yaman**, Stanford Univ. (United States); **Seda Nur Topkaya**, Izmir Katip Celebi Univ. (Turkey); **Arif Engin Çetin**, Izmir Biomedicine and Genome Ctr. (Turkey)

**Thursday 11 April 2024****HOT TOPICS III**

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxsius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

**Coffee Break 10:35 AM - 11:00 AM****SESSION 5: PHOTONIC AND NANOPHOTONIC SENSING MEANS IV**

11 April 2024 • 11:00 AM - 12:10 PM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): **Michael T. Canva**, Univ. de Sherbrooke (Canada)

13008-17 • 11:00 AM - 11:30 AM

**Advanced nanoplasmonic biochemical sensors for next generation of ultra-high performance environmental monitoring tools***(Invited Paper)*

Author(s): **Shuwen Zeng**, Lab. Lumière, nanomatériaux et nanotechnologies, Univ. de Technologie Troyes, CNRS (France)

13008-18 • 11:30 AM - 11:50 AM

**Innovative pyroelectric biosensor for detecting picogram level of neurodegeneration protein biomarkers**

Author(s): **Concetta Di Natale**, Univ. degli Studi di Napoli Federico II (Italy); **Sara Coppola, Veronica Vespini, Volodymyr Tkachenko**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Simone Russo, Giuseppe Vitiello, Giuseppina Luciani, Daniela Marasco, Sara La Manna**, Univ. degli Studi di Napoli Federico II (Italy); **Francesca Ferranti, Silvia Mari**, Agenzia Spaziale Italiana (Italy); **Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy); **Pier Luca Maffettone**, Univ. degli Studi di Napoli Federico II (Italy); **Simonetta Grilli**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy)

13008-19 • 11:50 AM - 12:10 PM

**Insulin detection using plasmonic optical fiber chips: a benchmark**

Author(s): **Médéric Loyez, Hadrien Fasseaux, Ruddy Wattiez, Christophe Caucheteur**, Univ. de Mons (Belgium)

**Lunch Break 12:10 PM - 01:20 PM****SESSION 6: ENABLING TECHNOLOGIES FOR INSTRUMENTATION AND LAB ON A CHIP I**

11 April 2024 • 01:20 PM - 03:10 PM | Leicester/Salon 12, Niveau/Level 1

*Session Chair(s):* **Julien Moreau**, Institut d'Optique Graduate School (France)

13008-21 • 01:20 PM - 01:50 PM

**Automation of optical tweezers: an enabler for single cell analysis and diagnostic.** (*Invited Paper*)*Author(s):* **Pedro Jorge**, INESC TEC (Portugal), Univ. do Porto (Portugal); **Joana Teixeira**, **Vicente Rocha**, INESC TEC (Portugal); **José A. Ribeiro**, Univ. do Porto (Portugal); **Nuno Silva**, INESC TEC (Portugal)

13008-22 • 01:50 PM - 02:10 PM

**Single cell analysis by holographic microscopy and Flow Cytometry: an high-throughput and label-free approach***Author(s):* **Giusy Giugliano**, **Michela Schiavo**, **Daniele Pirone**, **Vittorio Bianco**, **Pasquale Memmolo**, **Lisa Miccio**, **Pietro Ferraro**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello" (Italy)

13008-23 • 02:10 PM - 02:30 PM

**Towards label-free flow cytometry for automated cell identification using diffuse reflectance spectroscopy***Author(s):* **Aaron F. Watson**, **Nora Haanaes**, **Rachel Chambers**, **Elena Monfort Sanchez**, **Mark Runciman**, **Alex J. Thompson**, Imperial College London (United Kingdom)

13008-24 • 02:30 PM - 02:50 PM

**Trapping of biological objects on SOI optical photonic crystal micro-resonators***Author(s):* **Khouloud Arfaoui**, Lab. des Technologies de la Microélectronique (France); **Nicolas Villa**, **Enrico Tartari**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Simon Glicenstein**, **Emmanuel Picard**, CEA (France); **Grégory Resch**, Lab. of bacteriophages and phage therapy, CRISP (Switzerland); **Emmanuel Hadji**, **Pierre R. Marcoux**, CEA (France); **Romuald Houdré**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Valérie Stambouli**, Lab. des Matériaux et du Génie Physique (France); **Marc Zelsmann**, Lab. des Technologies de la Microélectronique (France)

13008-25 • 02:50 PM - 03:10 PM

**High performance all-polymeric optofluidic Fabry Perot microcavity for sensing applications***Author(s):* **Genni Testa**, **Gianluca Persichetti**, **Romeo Bernini**, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, Consiglio Nazionale delle Ricerche (Italy)**Coffee Break 03:10 PM - 03:40 PM****SESSION 7: ENABLING TECHNOLOGIES FOR INSTRUMENTATION AND LAB ON A CHIP II**

11 April 2024 • 03:40 PM - 05:20 PM | Leicester/Salon 12, Niveau/Level 1

*Session Chair(s):* **Ambra Giannetti**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

13008-26 • 03:40 PM - 04:00 PM

**The LUMINA setup for a light-based urine monitoring and analysis***Author(s):* **Alessandro Fantoni**, **Miguel Fernandes**, **Jorge Fidalgo**, Instituto Superior de Engenharia de Lisboa (Portugal); **Miriam K. Soto**, Ctr. Hospitalar De Setúbal, E.P.E. (Portugal); **Sofia A. Pereira**, Univ. Nova de Lisboa (Portugal); **Ana Moreno**, **Catarina Domingos**, **Ana R. Correia**, **Manuela Vieira**, Instituto Superior de Engenharia de Lisboa (Portugal)

13008-27 • 04:00 PM - 04:20 PM

**Analysis of infusion solutions using a multisensory approach consisting of Raman spectroscopy, refractometry, and UV/Vis spectroscopy to prevent medication errors***Author(s):* **Florian Wieduwilt**, **Jan Geweke**, **Fabian Merker-Müller**, **Georgios Ctistis**, **Hainer Wackerbarth**, Institut für Nanophotonik Göttingen e.V. (Germany)

13008-28 • 04:20 PM - 04:40 PM

**Precision Point-Of-Care in Drug Delivery: Empowering Innovations with Optical Fiber assisted by Microfluidics***Author(s):* **Tania Mariastella Caputo**, **Anna Aliberti**, Univ. degli Studi del Sannio (Italy); **Angela Maria Cusano**, CeRICT srl (Italy); **Chiara Mulè**, Univ. degli Studi del Sannio (Italy); **Alberto Micco**, CeRICT srl (Italy); **Andrea Cusano**, Univ. degli Studi del Sannio (Italy)

13008-29 • 04:40 PM - 05:00 PM

**Development and Applications of Flexible Plasmonic Devices for Biochemical Application***Author(s):* **Federica Granata**, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo Caianiello", Consiglio Nazionale delle Ricerche (Italy)

13008-30 • 05:00 PM - 05:20 PM

**Fused silica microfluidic chip platform for dynamic light scattering and particle size calculation**

*Author(s):* **Wouter Van Lysebettens**, **Geert Van Steenberge**, Univ. Gent (Belgium); **Léa Chaccour**, Center for microsystems technology (CMST), imec research group at Ghent University (Belgium); **Jeroen Missinne**, Univ. Gent (Belgium)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13008-38

**A highly sensitive narrowband metasurface absorber in the Terahertz regime for early detection of cancer cells**

*Author(s):* **Muhammad Ali**, **Isma Javed**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

13008-40

**Conjugates of DNA and plasmonic nanoparticles for the development of an SPR sensor for nucleic acids**

*Author(s):* **Maria Berezovskaya**, **Pavel V. Filatov**, **Polina Luganskaja**, **Alexandra Afanasjeva**, **Daler R. Dadadzhanov**, **Daria Gorbenko**, **Tigran Vartanyan**, **Maria Rubel**, ITMO Univ. (Russian Federation)

# CONFERENCE 13009

## Clinical Biophotonics III

07 - 09 April 2024 | Rome/Salon 5, Niveau/Level 0

**Conference Chair(s):** Daniel S. Elson, Imperial College London (United Kingdom); Sylvain Gioux, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Brian W. Pogue, Univ. of Wisconsin-Madison (United States)

**Program Committee:** Arjen Amelink, TNO (Netherlands); Albert Claude Boccara, Institut Langevin Ondes et Images (France); Irving J. Bigio, Boston Univ. (United States); Olga M. Conde, Univ. de Cantabria (Spain); Gooitzen M. van Dam, Univ. Medical Ctr. Groningen (Netherlands); Hamid Dehghani, The Univ. of Birmingham (United Kingdom); Michele Diana, L'Institut hospitalo-universitaire de Strasbourg (France); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Michalina J. Gora, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); Frédéric Leblond, Polytechnique Montréal (Canada); Vasilis Ntziachristos, Technische Univ. München (Germany); Antonio Pifferi, Politecnico di Milano (Italy); David D. Sampson, Univ. of Surrey (United Kingdom); Paola Taroni, Politecnico di Milano (Italy); Ton G. van Leeuwen, Amsterdam UMC (Netherlands); Alexander L. Vahrmeijer, Leiden Univ. Medical Ctr. (Netherlands)

### Sunday 7 April 2024

#### SESSION 1: EXTERNAL/SKIN APPLICATIONS

07 April 2024 • 01:10 PM - 03:10 PM | Rome/Salon 5, Niveau/Level 0

**Session Chair(s):** Olga M. Conde, Univ. de Cantabria (Spain); Sylvain Gioux, Intuitive Surgical (Switzerland)

13009-1 • 01:10 PM - 01:40 PM

**The new thermometry with light: fiber optic sensors and novel imaging technologies for monitoring thermal-based therapies for localized tumors** (*Invited Paper*)

**Author(s):** Paola Saccomandi, Politecnico di Milano (Italy)

13009-2 • 01:40 PM - 02:10 PM

**Multiphoton Skin Biopsy** (*Invited Paper*)

**Author(s):** Karsten König, JenLab GmbH (Germany)

13009-3 • 02:10 PM - 02:30 PM

**Bimodal spectroscopy for skin carcinomas and actinic keratoses diagnostic assistance**

**Author(s):** Valentin Kupriyanov, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France), National Research Tomsk State Univ. (Russian Federation); Walter Blondel, Christian Daul, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France); Grégoire Khairallah, Hospitalier Régional de Metz-Thionville (France); Clement Fauvel, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France); Yury Kistenev, National Research Tomsk State Univ. (Russian Federation); Marine Amouroux, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France)

13009-4 • 02:30 PM - 02:50 PM

**Non-Invasive objective assessment of vulva skin health using diffuse reflectance spectroscopy**

**Author(s):** Keertana Vinod Ram, Dinish U.S., A\*STAR Agency for Science, Technology and Research (Singapore); Susan Logan, National Health Service (United Kingdom); Ghayathri Balasundaram, Valerie Xinhui Teo Ruochong Zhang, Renzhe Bi, A\*STAR Agency for Science, Technology and Research (Singapore); Steffie Silvani, Cheng Kee Hua, Xia Xu, Giap Hean Goh, National Univ. Hospital (Singapore); Mahesh Choolani, Yong Loo Lin School of Medicine, National Univ. of Singapore (Singapore); Malini Olivo, A\*STAR Agency for Science, Technology and Research (Singapore)

13009-42 • 02:50 PM - 03:10 PM

**Visible red photobiomodulation (660 nm) modulates protein expression of the canonical WNT/ $\beta$ -catenin pathway in diabetic wounded fibroblast cells in vitro.**

**Author(s):** Sandy Jere, Univ. of Johannesburg (South Africa)

**Coffee Break 03:10 PM - 03:40 PM**

#### SESSION 2: CLINICAL IMAGING

07 April 2024 • 03:40 PM - 05:50 PM | Rome/Salon 5, Niveau/Level 0



Session Chair(s): **Paola Saccomandi**, Politecnico di Milano (Italy); **Daniel S. Elson**, Imperial College London (United Kingdom)

13009-44 • 03:40 PM - 04:10 PM

**Surgical optomics** (*Invited Paper*)

Author(s): **Michele Diana**, ICube (France)

13009-6 • 04:10 PM - 04:30 PM

**At-home multispectral imager for the monitoring of blood oxygenation in people at risk of diabetic foot ulcers**

Author(s): **Keely Shand**, Univ. of Strathclyde (United Kingdom); **Jamie Thomson**, IDCP Scotland Ltd. (United Kingdom); **Sam Philip**, JJR MacLeod Ctr. for Diabetes, Endocrinology & Metabolism, NHS Grampian Diabetes Ctr. (United Kingdom); **Jan Boers**, RetinaScope BV (Netherlands); **Craig Robertson**, **Mario E. Giardini**, Univ. of Strathclyde (United Kingdom)

13009-7 • 04:30 PM - 04:50 PM

**Optical Coherence Tomography as a tool for interrogating pathologies of the tympanic membrane and middle ear**

Author(s): **Marcela Moran**, **Zihan Yang**, **Wihan Kim**, **Ryan Long**, **John S. Oghalai**, **Brian E. Applegate**, The Univ. of Southern California (United States)

13009-8 • 04:50 PM - 05:10 PM

**Quantitative estimation of blood volume rate in retinal arteries by Doppler holography**

Author(s): **Yohan Blazy**, **Olivier Martinache**, **Zofia Bratasz**, **Michael Atlan**, Institut Langevin (France)

13009-9 • 05:10 PM - 05:30 PM

**Macroscale fluorescence lifetime imaging with novel time-gated camera complemented with high-resolution color image registration**

Author(s): **Sevada Sahakian**, Vrije Univ. Brussel (Belgium); **Simone Janssen**, Vrije Univ. Brussel (Belgium), Univ. Gent (Belgium); **Thomas Van den Dries**, **Thomas Lapauw**, **Marcus Stroet**, **Théo Lepoutte**, **Pooria Iranian**, **Maarten Kuijk**, **Sophie Hernot**, **Hans Ingelberts**, Vrije Univ. Brussel (Belgium)

13009-10 • 05:30 PM - 05:50 PM

**an optical/acoustic guided auxiliary system for ventricle puncture**

Author(s): **Zhuojun Xie**, **Lingfeng Li**, **Jiaxi Zhang**, **Runxiang Liu**, **Kuan Peng**, **Jiaying Xiao**, Central South Univ. (China)

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Koln (Germany)

### Coffee Break 11:00 AM - 11:30 AM

## SESSION 3: PHOTOTHERAPEUTICS

08 April 2024 • 11:30 AM - 12:40 PM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **Andrey S. Klymchenko**, Univ. de Strasbourg (France); **Brian W. Pogue**, Univ. of Wisconsin-Madison (United States)

13009-11 • 11:30 AM - 12:00 PM

**Porphysome Nanotechnology: Beyond Lab, Beyond Light and Beyond Cancer** (*Invited Paper*)

Author(s): **Gang Zheng**, Univ. Health Network (Canada)

13009-12 • 12:00 PM - 12:20 PM

**Improving cancer photoimmunotherapy: Integrating targeted nanotechnology, a clinical laser microendoscopy, and fluorescence-guided intervention**

*Author(s):* **Huang-Chiao Huang, Barry Liang, Sumiao Pang**, Univ. of Maryland, College Park (United States); **Robert Perttila**, Modulight Corp. (Finland); **Chen-Hua Ma, Payal Srivastava, Brandon Gaitan, Aaron Sorrin, Nada Fadul, Idrisa Rahmana**, Univ. of Maryland, College Park (United States); **Zoe Ylöniemi**, Modulight Corp. (Finland); **Dana Roque**, Univ. of Maryland School of Medicine (United States); **Tayyaba Hasan**, Harvard Medical School (United States); **Petteri Uusimaa**, Modulight Corp. (Finland)

13009-13 • 12:20 PM - 12:40 PM

**Interstitial photodynamic therapy of malignant gliomas: survival and follow-up analysis**

*Author(s):* **Maximilian Aumiller**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany), Klinikum der Univ. München (Germany); **Marco Foglar**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany); **Stefanie Quach**, Ludwig-Maximilians- Univ. München (Germany); **Katja Bochmann**, Klinikum der Univ. München (Germany), Max-Planck-Institut für Psychiatrie (Germany); **Alexander Buchner**, Klinikum der Univ. München (Germany); **Mohamed El Fahim**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany); **Herbert Stepp, Ronald Sroka**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany), Klinikum der Univ. München (Germany); **Niklas Thon, Robert Forbrig**, Klinikum der Univ. München (Germany); **Adrian Rühm**, Laser- und Immunologie-Forschungs-Einrichtungen Zentrum (Germany), Klinikum der Univ. München (Germany)

**Lunch Break 12:40 PM - 01:50 PM**

**SESSION 4: COMPUTATIONAL ANALYSIS**

08 April 2024 • 01:50 PM - 03:20 PM | Rome/Salon 5, Niveau/Level 0

*Session Chair(s):* **Michele Diana**, iCube (France); **Sylvain Gioux**, Intuitive Surgical (Switzerland)

13009-14 • 01:50 PM - 02:20 PM

**Deep surgical spectral imaging** *(Invited Paper)*

*Author(s):* **Lena Maier-Hein**, Deutsches Krebsforschungszentrum (Germany)

13009-15 • 02:20 PM - 02:40 PM

**Vascular feature identification in actinic keratosis grades I-III using optical coherence tomography angiography with automated, quantitative analysis**

*Author(s):* **Gabriella Fredman**, Copenhagen Univ. Hospital, Bispebjerg (Denmark); **Merete Haedersdal**, Bispebjerg Hospital (Denmark); **Gavrielle R. Untracht**, Technical Univ of Denmark (Denmark), Copenhagen Univ. Hospital (Denmark)

13009-16 • 02:40 PM - 03:00 PM

**In-Vivo Classification of Stomach and Oesophageal Tissues During Upper Gastrointestinal Cancer Surgery Using Diffuse Reflectance Spectroscopy**

*Author(s):* **Ioannis Gkouzionis, Scarlet Nazarian, Maxime Giot, Ara Darzi, Nisha Patel, Christopher J. Peters, Daniel S. Elson**, Imperial College London (United Kingdom)

13009-17 • 03:00 PM - 03:20 PM

**Fast analysis of multiple exposure speckle data to provide relative blood flow maps using convolutional neural networks**

*Author(s):* **Chao-Yueh Yu**, Chang Gung Univ. (Taiwan); **Marc Chammas**, Univ. Paris-Saclay (France), Lab. Charles Fabry (France); **Hirac Gurden**, Univ. Paris Diderot (France); **Hsin-Hon Lin**, Chang Gung Univ. (Taiwan); **Frédéric Pain**, Univ. Paris-Saclay (France), Lab. Charles Fabry (France)

**Coffee Break 03:20 PM - 03:50 PM**

**SESSION 5: OPTICAL PROBES**

08 April 2024 • 03:50 PM - 06:10 PM | Rome/Salon 5, Niveau/Level 0

*Session Chair(s):* **Gang Zheng**, Univ. Health Network (Canada); **Daniel S. Elson**, Imperial College London (United Kingdom)

13009-18 • 03:50 PM - 04:20 PM

**Fluorescent organic materials for diagnostics and guided surgery applications** *(Invited Paper)*

*Author(s):* **Andrey S. Klymchenko**, Univ. de Strasbourg (France)

13009-19 • 04:20 PM - 04:50 PM

**Update on Cherenkov Imaging in Radiotherapy: Single photon based remote dose imaging** *(Invited Paper)*

*Author(s):* **Brian W. Pogue**, Univ. of Wisconsin-Madison (United States)

13009-20 • 04:50 PM - 05:10 PM

**Evaluation of liver viability for transplantation by fluorescence spectroscopy**

Author(s): **Antoine Uzel**, CREATIS (France); **Olivier Lopez**, Hôpital de la Timone (France); **Arthur Gautheron**, CREATIS (France); **Guillaume Rossignol**, Ctr. Hospitalier Univ. de Lyon, Hôpital Femme Mère Enfant (France); **Xavier Muller**, Ctr. Hospitalier Univ. de Lyon, Hôpital de la Croix-Rousse (France); **Michaël Sdika**, **Bruno Montcel**, CREATIS (France)

13009-21 • 05:10 PM - 05:30 PM

**Robust estimation of 5-ALA-induced PpIX contributions in multiple-wavelength excitation fluorescence spectroscopy to improve intraoperative glioma detection: application on clinical data**

Author(s): **Arthur Gautheron**, Univ. Jean Monnet Saint-Etienne (France), CREATIS (France); **Michaël Sdika**, **Jacques Guyotat**, **Antoine Uzel**, CREATIS (France); **David Meyronet**, Hospices Civils de Lyon (France); **Thiébaud Picart**, Hospices Civils de Lyon (France), Univ. Claude Bernard Lyon I (France); **Bruno Montcel**, CREATIS (France)

13009-22 • 05:30 PM - 05:50 PM

**Improved intraoperative identification of close margins in oral squamous cell carcinoma resections using a dual aperture fluorescence ratio (dAFR) approach: first in-human results**

Author(s): **Cody C. Rounds**, Illinois Institute of Technology (United States); **Jaron G. de Wit**, **Jasper Vonk**, Univ. Medical Ctr. Groningen (Netherlands); **Jennifer Vorjohan**, **Sophia Nelson**, **Allyson Trang**, **Brooke Villinski**, Illinois Institute of Technology (United States); **Kimberley S. Samkoe**, Dartmouth College (United States); **Jovan G. Brankov**, Illinois Institute of Technology (United States); **Floris J. Voskuil**, **Max J. H. Witjes**, Univ. Medical Ctr. Groningen (Netherlands); **Kenneth M. Tichauer**, Illinois Institute of Technology (United States)

13009-23 • 05:50 PM - 06:10 PM

**First Clinical Application of Paired-Agent Imaging to Intraoperatively Detect Cancer Spread in Excised Sentinel Lymph Nodes from Patients with Head and Neck Cancer.**

Author(s): **Anjalika Sharma**, Illinois Institute of Technology (United States); **Thomas Nijboer**, Univ. Medical Ctr. Groningen (Netherlands); **Cody C. Rounds**, **Jovan G. Brankov**, Illinois Institute of Technology (United States); **Floris Voskuil**, **Max J. H. Witjes**, Univ. Medical Ctr. Groningen (Netherlands); **Kenneth M. Tichauer**, Illinois Institute of Technology (United States)

## Tuesday 9 April 2024

### SESSION 6: CLINICAL IMAGING AND SPECTROSCOPY I

09 April 2024 • 08:50 AM - 10:20 AM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **I. Alex Vitkin**, Princess Margaret Cancer Ctr. (Canada); **Sylvain Gioux**, Intuitive Surgical (Switzerland)

13009-24 • 08:50 AM - 09:20 AM

**Breaking barriers with biophotonics: new horizons in clinical diagnosis and therapy (Invited Paper)**

Author(s): **Jürgen Popp**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13009-26 • 09:20 AM - 09:40 AM

**Autofluorescence imaging of sporadic basal cell carcinoma and basal cell nevus syndrome lesions**

Author(s): **Emilija V. Plorina**, **Alexey Lihachev**, Univ. of Latvia (Latvia); **Norbert Kiss**, Semmelweis Univ. (Hungary); **Dmitrijs Bliznuks**, Riga Technical Univ. (Latvia); **Ilze Lihacova**, Univ. of Latvia (Latvia)

13009-27 • 09:40 AM - 10:00 AM

**Diagnostic spectral imaging of skin and nasal mucosa by RGB laser-based prototype devices**

Author(s): **Janis Spigulis**, **Uldis Rubins**, **Edgars Kviesis-Kipge**, **Inga Saknite**, **Ilze Oshina**, Univ. of Latvia (Latvia); **Egija Vasilisina**, University of Latvia (Latvia); **Agate K. Krievina**, Univ. of Latvia (Latvia)

13009-28 • 10:00 AM - 10:20 AM

**Comparison of tissue parameters extracted by inverse adding-doubling and tissue indices in hyperspectral imaging**

Author(s): **Crt Keber**, **Tadej Tomanic**, Univ. of Ljubljana (Slovenia); **Jošt Stergar**, Jožef Stefan Institute (Slovenia), Univ. of Ljubljana (Slovenia); **Tim Božic**, **Simona Kranjc Brezar**, **Boštjan Markelc**, **Gregor Serša**, Institute of Oncology Ljubljana (Slovenia), Univ. of Ljubljana (Slovenia); **Matija Milanic**, Univ. of Ljubljana (Slovenia), Jožef Stefan Institute (Slovenia)

### Coffee Break 10:20 AM - 10:50 AM

### SESSION 7: CLINICAL IMAGING AND SPECTROSCOPY II

09 April 2024 • 10:50 AM - 12:40 PM | Rome/Salon 5, Niveau/Level 0

Session Chair(s): **Ton G. van Leeuwen**, Amsterdam UMC (Netherlands); **Brian W. Pogue**, Univ. of Wisconsin-Madison (United States)

13009-29 • 10:50 AM - 11:20 AM

**Wreaking havoc with polarized light: assessing tissue anisotropy, heterogeneity, and correlations with clinical outcomes (Invited Paper)**

Author(s): **I. Alex Vitkin**, Univ. Health Network (Canada)

13009-30 • 11:20 AM - 11:40 AM

**Master-slave enhanced optical coherence microscopy for real-time optical biopsy imaging**

*Author(s):* **Gianni Nteroli, Adrian Podoleanu, Adrian Bradu**, Univ. of Kent (United Kingdom)

13009-31 • 11:40 AM - 12:00 PM

**Machine learning in combined multi-separation diffuse reflectance and intrinsic fluorescence spectroscopy diagnostics of breast tumours**

*Author(s):* **Vadzim Chalau, Dhurka Shanthakumar, Ioannis Gkouzionis, Yufeng Shi, Maria Leiloglou**, Imperial College London (United Kingdom); **Anna Silvano**, Imperial College Healthcare NHS Trust (United Kingdom); **Daniel R. Leff, Daniel S. Elson**, Imperial College London (United Kingdom)

13009-32 • 12:00 PM - 12:20 PM

**Evaluation of cardiovascular pathologies in human aortas with hyperspectral imaging and optical coherence tomography**

*Author(s):* **José A. Gutiérrez Gutiérrez, Verónica Mieites**, Univ. de Cantabria (Spain); **Alejandro Pontón, Inmaculada García Montesinos**, Univ. Hospital Marques de Valdecilla (Spain); **José M. López Higuera, Olga M. Conde**, Univ. de Cantabria (Spain)

13009-33 • 12:20 PM - 12:40 PM

**Clinical-compatible stimulated Raman imaging device for intraoperative histology of fresh tissue samples**

*Author(s):* **Maximilian Brinkmann, Maryam Rezaei, Ramon Droop, Christoph Engwer, Felix Neumann, Niklas Lüpken, Sven Dopner, Tim Hellwig**, Refined Laser Systems GmbH (Germany)

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:20 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13009-34 • 06:10 PM - 08:20 PM

**Classification of healthy and cancerous colon cells by FTIR and Raman spectroscopy**

*Author(s):* **Giuseppe Perna, Vito Capozzi, Maria Lasalvia**, Univ. degli Studi di Foggia (Italy)

13009-35 • 06:10 PM - 08:20 PM

**Pixel-wise and real-time estimation of optical mean path length using deep learning: application for intraoperative functional brain mapping**

*Author(s):* **Charly Caredda**, CREATIS (France); **Ivan Ezhov**, Technische Univ. München (Germany); **Michaël Sdika**, CREATIS (France); **Frédéric Lange**, Univ. College London (United Kingdom); **Luca Giannoni**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); **Ilias Tachtsidis**, Univ. College London (United Kingdom); **Bruno Montcel**, CREATIS (France)

13009-36 • 06:10 PM - 08:20 PM

**Objective free sensing of brain metastasis biomarkers at clinical limits using metamaterial antennas**

*Author(s):* **Serap Aksu**, Koç Univ. (Turkey)

13009-37 • 06:10 PM - 08:20 PM

**Towards real-time hyperspectral imaging in neurosurgery**

*Author(s):* **Alfie Roddan, Ziyang Yu, Maria Leiloglou, Vadzim Chalau, Giulio Anichini, Stamatia Giannarou, Daniel S. Elson**, Imperial College London (United Kingdom)

13009-38 • 06:10 PM - 08:20 PM

**Instrumented eyewear with regular design: a new tool for continuous real-life measurement of visible light arriving at the ocular surface**

*Author(s):* **Alexandre Gourraud, Cédric Gilbert, Camille Ehrismann, Eléonore Pic, Ludovic Jouard, Alexis Raposo, Dominick Hubacz, Khalil Ben Ghorbel**, Essilor International (France)

13009-39 • 06:10 PM - 08:20 PM

**Theoretical study of the conditions for acoustic nucleation and cavitation in biological tissue for its application in sonophotodynamic therapy**

*Author(s):* **Camila Aparecida Antunes, Johan S. D. Tovar, Sebastião Pratavieira**, Instituto de Física de São Carlos (Brazil)

13009-40 • 06:10 PM - 08:20 PM

**Machine learning based diagnostics of colon tumours by multi-separation diffuse reflectance spectroscopy**

*Author(s):* **Vadzim Chalau, Yufeng Shi, Ioannis Gkouziosis, Lauren L. Ford, Dhurka Shanthakumar, Maria Leiloglou, James M. Kinross, Daniel S. Elson**, Imperial College London (United Kingdom)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13009-41

**Modern age of pathological sciences: fluorescence microscopy for proficient treatment**

*Author(s):* **Azhar Javed Satti**, Information Technology Univ. of the Punjab (Pakistan); **Isma Javed**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy), Department of Electrical Engineering, Information Technology University of the Punjab (ITU) (Pakistan); **Muhammad Zubair**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

# CONFERENCE 13010

## Tissue Optics and Photonics III

09 - 11 April 2024 | Auditorium Erasme, Niveau/Level 0

**Conference Chair(s):** **Valery V. Tuchin**, Saratov State Univ. (Russian Federation); **Walter C. P. M. Blondel**, Ctr. de recherche en automatique de Nancy (France); **Zeev Zalevsky**, Bar-Ilan Univ. (Israel)

**Program Committee:** **Marine Amouroux**, Univ. de Lorraine (France); **Stefan Andersson-Engels**, Irish Photonic Integration Ctr. (IPIC) (Ireland); **Anabela Da Silva**, Institut Fresnel (France); **Elina A. Genina**, Saratov State Univ. (Russian Federation); **Steven L. Jacques**, Univ. of Washington (United States); **Malgorzata Jedrzejewska-Szczerska**, Gdansk Univ. of Technology (Poland); **Alwin Kienle**, Institut für Lasertechnologien in der Medizin und Messtechnik (Germany); **Irina V. Larina**, Baylor College of Medicine (United States); **Kirill V. Larin**, Univ. of Houston (United States); **Hui Ma**, Tsinghua Univ. (China); **Teemu S. Myllylä**, Univ. of Oulu (Finland); **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces (France); **Luís Oliveira**, Instituto Superior de Engenharia do Porto (Portugal); **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State Univ. (Russian Federation); **Natan T. Shaked**, Tel Aviv Univ. (Israel); **Jian Ye**, Shanghai Jiao Tong Univ. (China); **Kirill I. Zaytsev**, A. M. Prokhorov General Physics Institute of the RAS (Russian Federation); **Haishan Zeng**, BC Cancer Research Ctr. (Canada); **Dan Zhu**, Huazhong Univ. of Science and Technology (China)

Tuesday 9 April 2024

### SESSION 1: MULTIMODAL APPROACHES FOR QUANTIFICATION OF NORMAL AND PATHOLOGICAL TISSUE OPTICAL PROPERTIES

09 April 2024 • 08:30 AM - 10:20 AM | Auditorium Erasme, Niveau/Level 0

*Session Chair(s):* **Marine Amouroux**, Univ. de Lorraine (France)

13010-1 • 08:30 AM - 09:00 AM

**Multimodal characterization of optical properties of urinary stones ex vivo by machine-learning classification methods based on autofluorescence and integrating sphere measurements data: feasibility study and preliminary results** (*Invited Paper*)

*Author(s):* **Marine Amouroux**, Univ. de Lorraine (France); **Clarice Perrin-Mozet**, Univ. de Lorraine (France), CNRS (France); **Marie-Julie Camonin**, **Léa Roy**, **Mélanie Meneglier**, Univ. de Lorraine (France); **Haolian Shi**, Georgia Institute of Technology (United States); **Alexandre Locquet**, Georgia Tech - CNRS, Georgia Tech-Lorraine (France); **Arnaud Marotel**, ENSG, Univ. de Lorraine (France); **Victor Colas**, **Christian Daul**, Univ. de Lorraine (France); **Béatrice Caillierez**, **Jacques Hubert**, Ctr. Hospitalier Univ. de Nancy (France); **Walter Blondel**, Univ. de Lorraine (France)

13010-2 • 09:00 AM - 09:20 AM

**Simultaneous auto-fluorescence and quantitative phase microscopy using transport of intensity equation: a label-free approach for cancer diagnosis**

*Author(s):* **Himanshu Joshi**, **Pramila Thapa**, Indian Institute of Technology Delhi (India); **Varun Surya**, All India Institute of Medical Sciences, New Delhi (India); **Krishna Agarwal**, UiT The Arctic Univ. of Norway (Norway); **Dalip S. Mehta**, Indian Institute of Technology Delhi (India)

13010-3 • 09:20 AM - 09:40 AM

**Bimodal optical and ultrasound acquisition bench for pulse wave monitoring**

*Author(s):* **Augustin Vernay**, **Guillaume Blanquer**, **Rémi Gerbelot**, **Elodie Cao**, **Laurent Gerfault**, **Pierre Blandin**, **Mathieu Perriollat**, CEA-LETI, Univ. Grenoble Alpes (France)

13010-4 • 09:40 AM - 10:00 AM

**Terahertz Time-Domain Spectroscopy Imaging of Pancreatic Ductal Adenocarcinoma Tissues**

*Author(s):* **Debamitra Chakraborty**, **Bradley N. Mills**, **Jing Cheng**, **Ivan Komissarov**, **Scott Gerber**, **Roman Sobolewski**, Univ. of Rochester (United States)

13010-5 • 10:00 AM - 10:20 AM

**Advancing breast tissue imaging with an ultrasound optical tomography (UOT) approach**

*Author(s):* **Maria Ruchkina**, Deep Light Vision AB (Sweden), Lund Univ. (Sweden); **Akvile Zabaliute-Karaliune**, Lund Univ. (Sweden); **Egle Bukarte**, **Adam Kinosh**, Deep Light Vision AB (Sweden), Lund Univ. (Sweden); **David Hill**, **Alexander Bengtsson**, **Kevin Shortiss**, **Nina Reistad**, **Lars Rippe**, Lund Univ. (Sweden); **Johannes Swartling**, Deep Light Vision AB (Sweden); **Sophia Zackrisson**, **Predrag R. Bakic**, Lund Univ. (Sweden); **Laszlo Kovacs**, **Zsolt Kis**, **Zsuzsanna Szaller**, **Krisztian Lengyel**, Wigner Research Ctr. for Physics (Hungary); **Charles Thiel**, Montana State Univ. (United States); **Stefan Kröll**, Lund Univ. (Sweden)

**Coffee Break 10:20 AM - 10:50 AM**

**SESSION 2: VIBRATIONAL SPECTROSCOPY AND SPECTROSCOPIC PROBING METHODS**

09 April 2024 • 10:50 AM - 12:40 PM | Auditorium Erasme, Niveau/Level 0

*Session Chair(s):* **Ali Jaafar**, Wigner Research Ctr. for Physics (Hungary)

13010-6 • 10:50 AM - 11:20 AM

**Impact of e-cigarette liquid on porcine lung tissue – ex vivo confocal Raman micro-spectroscopy study** (*Invited Paper*)

*Author(s):* **Ali Jaafar**, Institute of Solid State Physics and Optics, Wigner Research Ctr. for Physics (Hungary); **Abbas Albarazanchi**, **Firas S. Mohammed**, **Ahmed Al-Haddad**, Mustansiriyah Univ. (Iraq); **Maxim E. Darvin**, Independent Researcher (Germany); **Tamás Vácz**, Institute of Solid State Physics and Optics, Wigner Research Ctr. for Physics (Hungary); **Valery V. Tuchin**, Institute of Physics and Science Medical Ctr., Saratov State Univ. (Russian Federation); **Miklós Veres**, Institute of Solid State Physics and Optics, Wigner Research Ctr. for Physics (Hungary)

13010-7 • 11:20 AM - 11:40 AM

**Quantitative assessment of thin tumor depth and thickness in multi-layered Silicone phantoms using low-resolution Raman spectroscopy**

*Author(s):* **Subitcha Jayasankar**, **Sujatha Narayanan Unni**, Indian Institute of Technology Madras (India)

13010-8 • 11:40 AM - 12:00 PM

**Fat quantification in fatty liver disease with near infrared diffuse reflectance spectroscopy**

*Author(s):* **Antoine Uzel**, CREATIS, Univ. Claude Bernard Lyon 1 (France); **Olivier Lopez**, Hôpital l'Archet 2 (France); **Sophie Chopinet**, Hôpital de la Timone (France); **Michaël Sdika**, **Bruno Montcel**, CREATIS, Univ. Claude Bernard Lyon 1 (France)

13010-9 • 12:00 PM - 12:20 PM

**Comparative studies on UVA and femtosecond corneal crosslinking characterized using Brillouin microscopy**

*Author(s):* **Christian Alejandro Iriarte Valdez**, **Johannes Wenzel**, **Maria Leilani Torres-Mapa**, **Alexander Heisterkamp**, Leibniz Univ. Hannover (Germany); **Oliver Stachs**, **Colette Leyh**, Universitätsmedizin Rostock (Germany); **Emilie Baron**, **Alexandra Claus**, Leibniz Univ. Hannover (Germany)

13010-10 • 12:20 PM - 12:40 PM

**Viscoelastic properties of human colorectal cancer cells with different migration activity**

*Author(s):* **Liubov E. Shimolina**, Privozhzsky Research Medical Univ. (Russian Federation)

**Lunch/Exhibition Break 12:40 PM - 02:00 PM**

**SESSION 3: LASER AND PHOTOTHERMAL THERAPIES, DRUG DELIVERY**

09 April 2024 • 02:00 PM - 04:00 PM | Auditorium Erasme, Niveau/Level 0

*Session Chair(s):* **Lilian T. Moriyama**, Instituto de Física de São Carlos (Brazil); **Elena Gerasimova**, ITMO Univ. (Russian Federation)

13010-11 • 02:00 PM - 02:30 PM

**The Impact of Photobiomodulation Light Probe Design on Light Propagation in Tissues** (*Invited Paper*)

*Author(s):* **Thereza C. Fortunato**, Bright Photomedicine (Brazil); **Otavio P. Palamonj**, **Victor P. G. Lima**, Instituto de Física de São Carlos, Univ. de São Paulo (Brazil); **Sofia M. B. Santos**, Univ. Estadual Paulista "Júlio de Mesquita Filho" (Brazil); **Lilian T. Moriyama**, Instituto de Física de São Carlos, Univ. de São Paulo (Brazil)

13010-12 • 02:30 PM - 03:00 PM

**Hybrid silicon-gold nanoparticles for optical heating and simultaneous temperature monitoring in cells** (*Invited Paper*)

*Author(s):* **Elena Gerasimova**, **Egor Uvarov**, **Vitaly Yaroshenko**, **Lev Logunov**, ITMO Univ. (Russian Federation); **Sergey Makarov**, ITMO Univ. (Russian Federation), Harbin Engineering Univ. (China); **Mikhail Zyuzin**, ITMO Univ. (Russian Federation)

13010-13 • 03:00 PM - 03:20 PM

**Thermo-plasmonic optical fiber probe for biomedical applications**

*Author(s):* **Muhammad Fayyaz Kashif, Di Zheng**, Istituto Italiano di Tecnologia (Italy); **Linda Piscopo**, Istituto Italiano di Tecnologia (Italy), Univ. del Salento (Italy); **Liam Collard**, Istituto Italiano di Tecnologia (Italy); **Massimo De Vittorio**, Istituto Italiano di Tecnologia (Italy), Univ. del Salento (Italy); **Ferruccio Pisanello**, Istituto Italiano di Tecnologia (Italy)

13010-14 • 03:20 PM - 03:40 PM

**Simulated thermal retinal damage thresholds for coherent optical sources forming asymmetrical retinal images in the eye**

*Author(s):* **Marc Herbst**, Robert Bosch GmbH (Germany), Karlsruher Institut für Technologie (Germany); **Sebastian Kotzur, Annette Frederiksen**, Robert Bosch GmbH (Germany); **Wilhelm Stork**, Karlsruher Institut für Technologie (Germany)

13010-16 • 03:40 PM - 04:00 PM

**Synthesis of green-fluorescent carbon nanoparticles from catharanthus roseus**

*Author(s):* **Parul Singh, Ancelina Jose, Sreelakshmi Nair, Jhuma Saha**, Indian Institute of Technology Gandhinagar (India)

**Coffee Break 04:00 PM - 04:30 PM**

**HOT TOPICS II**

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)  
*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

**POSTERS-TUESDAY**

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13010-28 • 06:10 PM - 08:00 PM

**Estimation of skin age and phototype using bimodal spectroscopy and machine learning**

*Author(s):* **Valentin Kupriyanov**, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France), National Research Tomsk State Univ. (Russian Federation); **Marine Amouroux, Christian Daul**, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France); **Grégoire Khairallah**, Hospitalier Régional de Metz-Thionville (France); **Clement Fauvel**, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France); **Yury Kistenev**, National Research Tomsk State Univ. (Russian Federation); **Walter Blondel**, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine (France)

13010-47 • 06:10 PM - 08:00 PM

**Wide-field illumination diffuse optical tomography within a framework of single-pixel time-resolved spatial frequency domain imaging**

*Author(s):* **Wenxing Bai, Feng Gao, Yihan Dong, Yaru Zhang, Dongyuan Liu**, Tianjin Univ. (China)

13010-48 • 06:10 PM - 08:00 PM

**Probing carotenoids in the skin using resonant Raman spectroscopy**

*Author(s):* **Marco Mathys, Pit Gebbers, Francesca Venturini**, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland)



13010-49 • 06:10 PM - 08:00 PM

**The Utilization of Lens Thickness Parameter in the Diagnosis of Cataracts**

*Author(s):* **Zane Jansone-Langina**, Univ. of Latvia (Latvia); **Andrei Solomatina, Maksims Solomatins**, The Dr. Solomatina Eye Ctr. (Latvia); **Igor Solomatins**, Univ. of Latvia (Latvia)

13010-50 • 06:10 PM - 08:00 PM

**In vivo laser thermal therapy real-time surveillance and classification using multifunctional optical coherence tomography**

*Author(s):* **Tai-Ang Wang Yin-Shen Cheng, Hsiang-Chieh Lee**, National Taiwan Univ. (Taiwan); **Meng-Tsan Tsai**, Chang Gung Univ. (Taiwan)

13010-51 • 06:10 PM - 08:00 PM

**Development of a standardised manufacturing process for broadband optical phantoms**

*Author(s):* **Markus Wagner, Florian Foschum, Oliver Fugger, Alwin Kienle**, Institut für Lasertechnologien in der Medizin und Meßtechnik an der Univ. Ulm (Germany)

13010-52 • 06:10 PM - 08:00 PM

**Design and applications of a modular mouse optical phantom with interchangeable organ blocks of confirmed properties**

*Author(s):* **Oleksii Sieryi, Evgenii Zhrebtsov, Anton Sdobnov, Alexander V. Bykov**, Univ. of Oulu (Finland); **Igor Meglinski**, Aston Univ. (United Kingdom)

13010-57 • 06:10 PM - 08:00 PM

**Optical System Design and Analysis of 405 nm Light Source for Food Preservation**

*Author(s):* **Kubra Cerit**, Beko Global, Arçelik A.S. (Turkey)

13010-58 • 06:10 PM - 08:00 PM

**Simulation of ultrasound optical tomography (UOT) for characterizing breast tumors**

*Author(s):* **Adam Kinos**, Deep Light Vision AB (Sweden); **David Hill, Magnus Dustler, Sophia Zackrisson, Lars Rippe, Predrag R. Bakic**, Lund Univ. (Sweden); **Johannes Swartling**, Deep Light Vision AB (Sweden); **Stefan Kröll**, Lund Univ. (Sweden)

13010-59 • 06:10 PM - 08:00 PM

**Light guiding with photoacoustically generated ultrasound**

*Author(s):* **Mateu Colom, Pietro Ricci, Blanca Mestre, Martí Duocastella**, Univ. de Barcelona (Spain)

### Wednesday 10 April 2024

#### SESSION 4: LASER AND PHOTOTHERMAL THERAPIES, MULTIMODAL APPROACHES

10 April 2024 • 08:30 AM - 10:30 AM | Auditorium Erasme, Niveau/Level 0

*Session Chair(s):* **Teemu S. Myllylä**, Univ. of Oulu (Finland); **Sergey V. Sokolovskiy**, National Ctr. for Atmospheric Research (United States)

13010-17 • 08:30 AM - 09:00 AM

**Effects of laser-induced singlet oxygen on the bioenergetics of insulin-producing cells** (*Invited Paper*)

*Author(s):* **Irina Makovik, Lubov Eratova, Andrey Vinokurov, Andrey Dunaev**, Orel State Univ. named after I.S. Turgenev (Russian Federation); **Edik Rafailov**, Aston Univ. (United Kingdom); **Viktor Dremin**, Aston Univ. (United Kingdom), Orel State Univ. named after I.S. Turgenev (Russian Federation)

13010-18 • 09:00 AM - 09:30 AM

**Continuous transcranial LED illumination alters human brain haemodynamics and oxygenation assessed by near-infrared spectroscopy** (*Invited Paper*)

*Author(s):* **Nagesh C. Shanbhag**, ProNeuroLIGHT LLC (United States); **Jari Paunonen, Hany Ferdinando, Sadegh Moradi**, Univ. of Oulu (Finland); **Joseph DiDuro**, ProNeuroLIGHT LLC (United States); **Teemu Myllylä**, Univ. of Oulu (Finland)

13010-19 • 09:30 AM - 09:50 AM

**Radiometric calibration of a fast diffuse reflectance spectroscopy bench for quantitative photoplethysmography**

*Author(s):* **Augustin Vernay, Guillaume Blanquer, Rémi Gerbelot, Pierre Blandin, Mathieu Perriolat**, CEA-LETI, Univ. Grenoble Alpes (France)

13010-20 • 09:50 AM - 10:10 AM

**Precise ablation of soft biological tissue using deep ultraviolet femtosecond laser pulses**

*Author(s):* **Tatiana Malikova**, Heriot-Watt Univ. (United Kingdom); **Syam Mohan P. C. Mohanan**, The Univ. of Edinburgh (United Kingdom); **Rainer J. Beck, Robert R. Thomson, Jonathan D. Shephard**, Heriot-Watt Univ. (United Kingdom)

13010-21 • 10:10 AM - 10:30 AM

**Microbeads accelerate gellation in 3D collagen hydrogels**

*Author(s):* **Remy Avila, Laura Rodríguez-Mandujano, Reinher Pimentel-Domínguez**, Univ. Nacional Autónoma de México (Mexico); **Elisa Tamariz**, Instituto de Ciencias de la Salud, Univ. Veracruzana (Mexico); **Astrid L. Giraldo-Betancur**, Ctr. de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (Mexico), Consejo Nacional de Humanidades, Ciencias y Tecnologías (Mexico); **Edgar Campos-Puente**, Univ. Nacional Autónoma de México (Mexico)

**Coffee Break 10:30 AM - 11:00 AM****SESSION 5: POLARIZATION**

10 April 2024 • 11:00 AM - 12:30 PM | Auditorium Erasme, Niveau/Level 0

Session Chair(s): **Viktor Dremin**, Aston Univ. (United Kingdom)

13010-22 • 11:00 AM - 11:30 AM

**Digital histopathology based on metasurface components for polarimetric imaging** (*Invited Paper*)

Author(s): **Alexander V. Bykov**, **Oleksii Sieryi**, Univ. of Oulu (Finland); **Chao Meng**, Univ. of Southern Denmark (Denmark); **Paul Thrane**, **Christopher Dirdal**, SINTEF (Norway); **Sergey Bozhevolyani**, Univ. of Southern Denmark (Denmark); **Igor Meglinski**, Univ. of Oulu (Finland), Aston Univ. (United Kingdom)

13010-23 • 11:30 AM - 11:50 AM

**Impact of histological processing on the polarimetric properties of healthy and neoplastic brain tissue**

Author(s): **Romane Gros**, Univ. Bern (Switzerland); **Omar Rodríguez-Núñez**, **Leonard Felger**, **Stefano Moriconi**, **Richard McKinley**, Inselspital, Univ. Bern (Switzerland); **Angelo Pierangelo**, **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces, Ecole Polytechnique, Institut Polytechnique de Paris, CNRS (France); **Erik Vassella**, Univ. Bern (Switzerland); **Philippe Schucht**, Inselspital, Univ. Bern (Switzerland); **Ekkehard Hewer**, Ctr. Hospitalier Univ. Vaudois, Univ. de Lausanne (Switzerland); **Theoni Maragkou**, Univ. Bern (Switzerland)

13010-24 • 11:50 AM - 12:10 PM

**Estimation of light penetration depth in human brain tissue using wide-field imaging Mueller polarimetry - ex vivo study in formalin-fixed human cerebral white and gray matter**

Author(s): **Omar Rodríguez-Núñez**, Inselspital (Switzerland); **Romane Gros**, Univ. Bern (Switzerland); **Stefano Moriconi**, **Leonard Felger**, Inselspital (Switzerland); **Ekkehard Hewer**, Ctr. Hospitalier Univ. Vaudois (Switzerland); **Theoni Maragkou**, Univ. Bern (Switzerland); **Richard McKinley**, Inselspital (Switzerland); **Angelo Pierangelo**, **Tatiana Novikova**, Lab. de Physique des Interfaces et des Couches Minces, Ecole Polytechnique, Institut Polytechnique de Paris, CNRS (France); **Philippe Schucht**, Inselspital (Switzerland)

13010-25 • 12:10 PM - 12:30 PM

**Multispectral Mueller matrix imaging: a potential tool to visualize white matter tracts**

Author(s): **Verónica Mieites**, Instituto de Investigación Marqués de Valdecilla, Univ. de Cantabria (Spain); **Giulio Anichini**, **Ji Qi**, **Kevin O'Neill**, Imperial College London (United Kingdom); **Olga M. Conde**, Univ. de Cantabria (Spain); **Daniel S. Elson**, Imperial College London (United Kingdom)

**Lunch/Exhibition Break 12:30 PM - 01:40 PM****SESSION 6: ARTIFICIAL INTELLIGENCE AND LIGHT-TISSUE INTERACTION MODELLING I**

10 April 2024 • 01:40 PM - 03:30 PM | Auditorium Erasme, Niveau/Level 0

Session Chair(s): **Martin Hohmann**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Walter C.P.M. Blonde**, Univ. de Lorraine (France)

13010-26 • 01:40 PM - 02:10 PM

**Automatic reconstruction and separation of each constituent's absorption and scattering properties using a customized autoencoder neural network** (*Invited Paper*)

Author(s): **Dongqin Ni**, **Niklas Karmann**, **Martin Hohmann**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

13010-27 • 02:10 PM - 02:30 PM

**Estimation of 5-ALA-induced PpIX concentration in fluorescence spectroscopy for Improving glioma classification using symbolic Monte-Carlo**

Author(s): **Elias Gabory**, CREATIS (France), Ctr. d'Énergétique et de Thermique de Lyon (France); **Arthur Gautheron**, Univ. Jean Monnet Saint-Etienne (France), CREATIS, Univ. Claude Bernard Lyon 1 (France); **Maxime Roger**, **Mathieu Galtier**, Ctr. d'Énergétique et de Thermique de Lyon (France); **Bruno Montcel**, CREATIS, Univ. Claude Bernard Lyon 1 (France)

13010-29 • 02:30 PM - 02:50 PM

**CNN-based fNIRS signal quality assessment using short-time Fourier transform with short segment signals**

Author(s): **Martti Ilvesmäki**, **Hany Ferdinando**, **Patricia-Elena Tone**, **Kai Noponen**, **Jari Paunonen**, **Tapio Seppänen**, **Teemu Myllylä**, Univ. of Oulu (Finland)

13010-53 • 02:50 PM - 03:10 PM

**Classification of healthy and cancerous colon tissues based on absorption coefficient spectra**

*Author(s):* **Valentin Kupriyanov**, Ctr. de recherche en automatique de Nancy, Univ. de Lorraine, CNRS (France), National Research Tomsk State Univ. (Russian Federation); **Maria R. Pinheiro**, INESC TEC (Portugal); **Sónia D. Carvalho**, IPO-PORTO (Portugal), Hospital Santa Luzia (Portugal); **Isa C. Carneiro**, IPO-PORTO (Portugal), Instituto Politécnico do Porto (Portugal); **Rui M. Henrique**, IPO-PORTO (Portugal), Instituto de Ciências Biomédicas Abel Salazar, Univ. do Porto (Portugal); **Valery V. Tuchin**, National Research Tomsk State Univ. (Russian Federation), Saratov State Univ. (Russian Federation), A.N. Bach Institute of Biochemistry (Russian Federation); **Luis M. Oliveira**, INESC TEC (Portugal), Instituto Superior de Engenharia do Porto (Portugal); **Marine Amouroux**, Univ. de Lorraine (France); **Yury Kistenev**, National Research Tomsk State Univ. (Russian Federation); **Walter Blondel**, Univ. de Lorraine (France)

13010-30 • 03:10 PM - 03:30 PM

**Multispectral neurosurgery image analysis: preliminary segmentation network evaluated on 47 patient cohort**

*Author(s):* **Zepeng Hu**, **Giulio Anichini**, **Kevin O'Neill**, **Daniel S. Elson**, Imperial College London (United Kingdom)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 7: ARTIFICIAL INTELLIGENCE AND LIGHT-TISSUE INTERACTION MODELLING II**

10 April 2024 • 04:00 PM - 05:40 PM | Auditorium Erasme, Niveau/Level 0

*Session Chair(s):* **Martin Hohmann**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Walter C.P.M. Blonde**, Univ. de Lorraine (France)

13010-31 • 04:00 PM - 04:20 PM

**Imaging light fluence distribution in blood vessels with combined Photoacoustic fluctuation imaging and Ultrasound Power Doppler**

*Author(s):* **Ivana Falco**, **Emmanuel Bossy**, **Bastien Arnal**, Lab. Interdisciplinaire de Physique, Univ. Grenoble Alpes, CNRS (France)

13010-32 • 04:20 PM - 04:40 PM

**A digital instrument simulator to optimize the development of hyperspectral systems for intraoperative brain mapping**

*Author(s):* **Charly Caredda**, CREATIS (France); **Frederic Lange**, Univ. College London (United Kingdom); **Luca Giannoni**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy); **Ivan Ezhov**, Technical University of Munich, Germany (Germany); **Ilias Tachtsidis**, Univ. College London (United Kingdom); **Bruno Montcel**, CREATIS (France)

13010-33 • 04:40 PM - 05:00 PM

**Effect of Transparent Layer on Light Propagation in Optical Skin Phantoms: A Monte Carlo Simulation Study**

*Author(s):* **Thereza C. Fortunato**, Bright Photomedicine (Brazil); **Otávio P. Palamoni**, **Victor P. G. Lima**, Instituto de Física de São Carlos (Brazil); **Sofia M. B. Santos**, Instituto de Física de São Carlos (Brazil), Univ. Estadual Paulista "Júlio de Mesquita Filho" (Brazil); **Lilian T. Moriyama**, Instituto de Física de São Carlos (Brazil)

13010-34 • 05:00 PM - 05:20 PM

**Optical simulation and dynamic skin model to disentangle the cardiovascular behaviors in photoplethysmographic signal**

*Author(s):* **Guillaume Blanquer**, CEA-LETI (France); **Clément Vasseur**, **Augustin Vernay**, CEA (France); **Pierre Blandin**, **Xavier Bednarek**, **Mathieu Perriollat**, CEA-LETI (France)

13010-61 • 05:20 PM - 05:40 PM

**Optimization of source-detector separation for enhanced spatially resolved fluorescence from epithelial layer**

*Author(s):* **Nemi Chand**, **Shivam Shukla**, Indian Institute of Technology Kanpur (India); **Pankaj Singh**, Allahabad Degree College (India); **Asima Pradhan**, Indian Institute of Technology Kanpur (India)

**Thursday 11 April 2024**

**HOT TOPICS III**

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

*Author(s):* **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

#### SESSION 8: LASER SPECKLE IMAGING TECHNIQUES

11 April 2024 • 11:00 AM - 12:10 PM | Auditorium Erasme, Niveau/Level 0

Session Chair(s): **Zeev Zalevsky**, Bar-Ilan Univ. (Israel)

13010-36 • 11:00 AM - 11:30 AM

**Noninvasive photonic methodology for glucose sensing** (*Invited Paper*)

Author(s): **Deep Pal**, **Sergey Agdarov**, **Yevgeny Beiderman**, **Yafim Beiderman**, **Zeev Zalevsky**, Bar-Ilan Univ. (Israel)

13010-37 • 11:30 AM - 11:50 AM

**Comparison of experimental vs simulated data to train neural networks for speckle imaging data analysis**

Author(s): **Chao-Yueh Yu**, Chang Gung Univ. (Taiwan); **Marc Chammas**, Lab. Charles Fabry (France); **Hsin-Hon Lin**, Chang Gung Univ. (Taiwan); **Frédéric Pain**, Lab. Charles Fabry, Institut d'Optique Graduate School, Univ. Paris-Saclay, CNRS (France)

13010-38 • 11:50 AM - 12:10 PM

**Non-invasive monitoring of 4T1 murine mammary carcinoma blood vessels after electroporation-based therapy using combined hyperspectral imaging and laser speckle contrast imaging**

Author(s): **Tadej Tomanič**, **Crt Keber**, Univ. of Ljubljana (Slovenia); **Tim Bozic**, **Bostjan Markelc**, Institute of Oncology Ljubljana (Slovenia); **Simona Kranjc Brezar**, **Gregor Sersa**, Institute of Oncology Ljubljana (Slovenia), Univ. of Ljubljana (Slovenia); **Jost Stergar**, **Jožef Stefan Institute** (Slovenia), Univ. of Ljubljana (Slovenia); **Matija Milanic**, Univ. of Ljubljana (Slovenia), Jožef Stefan Institute (Slovenia)

### Lunch Break 12:10 PM - 01:20 PM

#### SESSION 9: OPTICAL COHERENT TOMOGRAPHY AND TISSUE ELASTOGRAPHY I

11 April 2024 • 01:20 PM - 03:20 PM | Auditorium Erasme, Niveau/Level 0

Session Chair(s): **Jun Zhang**, Guilin Univ. of Electronic Technology (China); **Alexander V. Bykov**, Univ. of Oulu (Finland)

13010-40 • 01:20 PM - 01:50 PM

**Design of a linear-wavenumber spectrometer for ultrahigh-resolution spectral domain optical coherence tomography** (*Invited Paper*)

Author(s): **Jun Zhang**, Guilin Univ. of Electronic Technology (China), Sun Yat-Sen Univ. (China); **Yuanhai Cai**, **Wenqi Li**, Guilin Univ. of Electronic Technology (China); **Shanshan Liang**, National Innovation Ctr. for Advanced Medical Devices (China); **Zhuolun Li**, Guilin Univ. of Electronic Technology (China)

13010-41 • 01:50 PM - 02:10 PM

**Single-shot off-axis full-field optical coherence tomography (SO-FF-OCT) method for in-vivo tomographic imaging and shear wave elastography**

Author(s): **Emmanuel Martins Seromenho**, **Nina Dufour**, **Maud Legrand**, **Jesse Schiffler**, **Vincent Maioli**, **Sybillé Facca**, **Nadia Bahlouli**, **Amir Nahas**, ICube (France)

13010-42 • 02:10 PM - 02:30 PM

**Biospeckle Optical Coherence Tomography in visualizing the repetitive hot-cold response of skin age related difference**

Author(s): **Ryosuke Nakasako**, **Jun Yamada**, Shibaura Institute of Technology (Japan); **Takahiro Kono**, Tokyo Metropolitan Univ. (Japan); **Hirofumi Kadono**, Saitama Univ. (Japan); **Uma Maheswari Rajagopalan**, Shibaura Institute of Technology (Japan)

13010-43 • 02:30 PM - 02:50 PM

**Full field elastography using deep learning approach**

Author(s): **Maud Legrand**, **Nina Dufour**, **Emmanuel Martins Seromenho**, **Amir Nahas**, **Nadia Bahlouli**, ICube (France)

13010-60 • 02:50 PM - 03:20 PM

**Novel mechanical contrast in optical coherence elastography based on tissue heterogeneity** (*Invited Paper*)

Author(s): **Brendan F. Kennedy**, Harry Perkins Institute of Medical Research (Australia), The University of Western Australia (Australia), Nicolaus Copernicus University (Poland); **Jiayue Li**, **Ken Y Foo**, **Rowan W Sanderson**, **Renate Zilkens**, The University of Western Australia (Australia); **Anmol Rijhumal**, PathWest, Fiona Stanley Hospital (Australia); **Mireille Hardie**, PathWest (Australia); **Christobel M Saunders**, The University of Melbourne (Australia)

### Coffee Break 03:20 PM - 03:40 PM

**SESSION 10: OPTICAL COHERENT TOMOGRAPHY AND TISSUE ELASTOGRAPHY II**

11 April 2024 • 03:40 PM - 05:30 PM | Auditorium Erasme, Niveau/Level 0

*Session Chair(s):* **Alexander V. Bykov**, Univ. of Oulu (Finland); **Jun Zhang**, Guilin Univ. of Electronic Technology (China)

13010-44 • 03:40 PM - 04:10 PM

**Photonics technologies in constituting human 3D tissue models** (*Invited Paper*)

*Author(s):* **Sergei G. Sokolovski, Edik Rafailov**, Aston Univ. (United Kingdom)

13010-45 • 04:10 PM - 04:30 PM

**Biospeckle Optical Coherence Tomography (bOCT) reveals the size-dependent impacts of micro and nano metal oxide particles on Lentil Seed's internal activity.**

*Author(s):* **Lavista Tyagi, Hirofumi Kadono**, Saitama Univ. (Japan); **Uma Maheswari Rajagopalan**, Shibaura Institute of Technology (Japan)

13010-46 • 04:30 PM - 04:50 PM

**Noise correlation inspired elastography**

*Author(s):* **Nina Dufour, Maud Legrand, Emmanuel Martins Seromenho, Paul Montgomery, Simon Chatelin, Amir Nahas**, ICube (France)

13010-62 • 04:50 PM - 05:10 PM

**Fluorescence enhancement with transient ultrasound light waveguiding**

*Author(s):* **Maxim N. Cherkashin, Volodymyr Rohovets, Carsten Brenner, Georg Schmitz, Martin R Hofmann**, Ruhr-Univ Bochum (Germany)

13010-63 • 05:10 PM - 05:30 PM

**Depth estimation in turbid media from stack of epi-illuminated microscopy images, using deep learning**

*Author(s):* **Anindya Ghosh**, Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany), Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany); **Martin Hohmann, Florian Klämpfl, Michael Schmidt**, Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany), Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-Universität (Germany)

# CONFERENCE 13011

## Data Science for Photonics and Biophotonics

10 - 11 April 2024 | Bruxelles/Salon 10, Niveau/Level 0

**Conference Chair(s):** Thomas Bocklitz, Friedrich-Schiller-Univ. Jena (Germany)

**Program Committee:** **Rekha Gautam**, Tyndall National Institute (Ireland); **Shuxia Guo**, Leibniz-IPHT (Germany); **Peter B. Harrington**, Ohio Univ. (United States); **Martin A. B. Hedegaard**, Univ. of Southern Denmark (Denmark); **Tamiki Komatsuzaki**, Hokkaido Univ. (Japan); **Oleg Ryabchykov**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Cyril Ruckebusch**, Lab. de Spectrochimie Infrarouge et Raman (France); **Lei Wang**, Xiamen Univ. (China); **Tomasz P. Wrobel**, Jagiellonian Univ. (Poland)

### Wednesday 10 April 2024

#### SESSION 1: PREPROCESSING AND STANDARDIZATION OF SPECTRAL DATA AND ITS AUTOMATION

10 April 2024 • 01:10 PM - 03:00 PM | Bruxelles/Salon 10, Niveau/Level 0

**Session Chair(s):** Thomas Bocklitz, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13011-1 • 01:10 PM - 01:40 PM

**Correction for Extrinsic Background in Raman Hyperspectral Images: Suppression of Data Leakage** (*Invited Paper*)

**Author(s):** Tamiki Komatsuzaki, Hokkaido Univ. (Japan)

13011-2 • 01:40 PM - 02:00 PM

**Bayesian information criterion in spectral decomposition: enhancing precision in unmixing analysis**

**Author(s):** Aidan D. Meade, Technological Univ. Dublin (Ireland)

13011-3 • 02:00 PM - 02:20 PM

**Enhancing silicon nitride waveguide performance: Optimization of sidewall roughness for low-loss applications through resist reflowing via tree-based modeling of relevant processing parameters**

**Author(s):** Jakob W. Hinum-Wagner, Technische Univ. Graz (Austria), ams-OSRAM AG (Australia); Samuel M. Hoermann, Technische Univ. Graz (Austria), ams-OSRAM AG (Austria); Christoph Schmidt, Gandolf Feigl, Technische Univ. Graz (Austria); Jochen Kraft, ams-OSRAM AG (Austria); Alexander Bergmann, Technische Univ. Graz (Austria)

13011-4 • 02:20 PM - 02:40 PM

**Revealing surface refractive index dynamics in comb-like plasmonic optical fiber biosensors**

**Author(s):** Hadrien Fasseaux, Médéric Loyez, Evelyne Meurisse, Pierre Denis, Christophe Caucheteur, Univ. de Mons (Belgium)

13011-5 • 02:40 PM - 03:00 PM

**Spike detection algorithms for Raman spectroscopy: a comparative study**

**Author(s):** Georgi Georgiev, Bulgarian Academy of Sciences (Bulgaria); Raquel Portela, Miguel A. Bañares, Nicolas Coca-Lopez, Consejo Superior de Investigaciones Científicas (Spain)

**Coffee Break 03:00 PM - 03:30 PM**

#### SESSION 2: CHEMOMETRICS AND DATA PIPELINES FOR PHOTONIC DATA AND ITS APPLICATIONS

10 April 2024 • 03:30 PM - 05:30 PM | Bruxelles/Salon 10, Niveau/Level 0

**Session Chair(s):** Lei Wang, Xiamen Univ. (China)

13011-6 • 03:30 PM - 04:00 PM

**Sample-size planning tools for multivariate data** (*Invited Paper*)

**Author(s):** Oleg Ryabchykov, Shuxia Guo, Leibniz-Institut für Photonische Technologien e.V. (Germany); Ruihao Luo, Nairveen Ali, Thomas Bocklitz, Friedrich-Schiller-Univ. Jena (Germany)

13011-8 • 04:00 PM - 04:20 PM

**Automatic optimization of spectral classifiers' hyperparameters for pathogen identification through evolutionary techniques**

Author(s): **Mehdi Feizpour, Sara Abbasi**, Vrije Univ. Brussel (Belgium); **Thomas Demuyser**, Univ. Ziekenhuis Brussel (Belgium); **Qing Liu, Hugo Thienpont, Wendy Meulebroeck, Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

13011-9 • 04:20 PM - 04:40 PM

**Active learning concept for process optimization of non-fullerene organic photovoltaic using small datasets**

Author(s): **Majed Almalki**, Univ. de Strasbourg (France), ICube (France); **Yves André Chapuis, Nicolas Lachiche**, ICube (France)

13011-10 • 04:40 PM - 05:00 PM

**A comprehensive pipeline to integrate preprocessing and machine learning techniques for accurate classification in Raman spectroscopy**

Author(s): **Simone Innocente**, Tyndall National Institute (Ireland), Univ. College Cork (Ireland); **Siddra Maryam, Stefan Andersson-Engels, Katarzyna Komolibus, Rekha Gautam**, Tyndall National Institute (Ireland); **Andrea Visentin**, Univ. College Cork (Ireland)

13011-11 • 05:00 PM - 05:30 PM

**Fusion and integration pipelines for optical and chemical imaging data for clinical interpretation in ex-vivo diagnosis (Invited Paper)**

Author(s): **Aidan D. Meade**, Technological Univ. Dublin (Ireland)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13011-18 • 05:45 PM - 07:45 PM

**Comparative analysis of network, manifold and spectral techniques for chemical image segmentation and compression in diagnostic pathological workflows**

Author(s):

13011-24 • 05:45 PM - 07:45 PM

**Entropy-based spatial heterogeneity analysis in pathological images for diagnostic applications**

Author(s):

13011-25 • 05:45 PM - 07:45 PM

**Comparative performance of chemical imaging and standard digital pathology with deep-learning convolutional networks in cancer diagnostics**

Author(s):

13011-26 • 05:45 PM - 07:45 PM

**Using generative adversarial network and multi-scale optical coherence tomography to reconstruct high-resolution volumetric images**

Author(s): **Chuan-Bor Chueh, Zi-Cen Liu, Ting-Hao Chen, Yu-Yu Li**, National Taiwan Univ. (Taiwan); **Ming-Che Tu, Shih-Jung Cheng**, National Taiwan Univ. Hospital (Taiwan); **Cheng-Kuang Lee, Simon See**, NVIDIA Corp. (Taiwan); **Hsiang-Chieh Lee**, National Taiwan Univ. (Taiwan)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxixius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

#### SESSION 3: MACHINE LEARNING AND ITS APPLICATIONS IN PHOTONIC DATA

11 April 2024 • 11:00 AM - 12:30 PM | Bruxelles/Salon 10, Niveau/Level 0

Session Chair(s): **Tamiki Komatsuzaki**, Hokkaido Univ. (Japan)

13011-7 • 11:00 AM - 11:30 AM

**Transfer learning in Raman spectral analysis: the limit and solution** (Invited Paper)

Author(s): **Shuxia Guo**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Thomas Bocklitz**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Friedrich-Schiller-Univ. Jena (Germany), Univ. Bayreuth (Germany)

13011-12 • 11:30 AM - 11:50 AM

**Virtual staining on unlabeled tissue samples**

Author(s): **Katharina Schmidt**, **Ning Guo**, **Nektarios Koukourakis**, **Max von Witzleben**, **Michael Gelinsky**, **Juergen W. Czarne**, TU Dresden (Germany)

13011-13 • 11:50 AM - 12:10 PM

**Noninvasive in vivo monitoring of plasma volume and hematocrit using the FRD-PVOH device: from cozy to cold**

Author(s): **Daniel S. Porreca**, **Paul W. Dent**, **Charles M. Peterson**, **Joseph Chaiken**, Syracuse Univ. (United States)

13011-14 • 12:10 PM - 12:30 PM

**Machine learning feature extraction for predicting the ageing of olive oil**

Author(s): **Arnaud Gucciardi**, **Safouane El Ghazouali**, **Umberto Michelucci**, TOELT GmbH (Switzerland); **Francesca Venturini**, Zürcher Hochschule für Angewandte Wissenschaften (Switzerland)

### Lunch Break 12:30 PM - 01:40 PM

#### SESSION 4: PREPROCESSING AND QUALITY ENHANCEMENT OF IMAGING DATA

11 April 2024 • 01:40 PM - 02:50 PM | Bruxelles/Salon 10, Niveau/Level 0

Session Chair(s): **Shuxia Guo**, Friedrich-Schiller-Univ. Jena (Germany)

13011-15 • 01:40 PM - 02:10 PM

**A deep-learning-enhanced fast Raman imaging method for dynamic monitoring of cytochrome c during apoptosis** (Invited Paper)

Author(s): **Yun Gao**, Pen-Tung Sah Institute of Micro-Nano Science and Technology (China), Xiamen Univ. (China); **Hao He**, Southern Univ. of Science and Technology (China); **Lei Wang**, Xiamen Univ. (China)

13011-16 • 02:10 PM - 02:30 PM

**No-reference metrics for the characterization of experimental artifacts in fluorescence microscopy**

Author(s): **Elena Corbetta**, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Thomas Bocklitz**, Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany), Univ. Bayreuth (Germany)

13011-17 • 02:30 PM - 02:50 PM

**Quantitative phase imaging super-resolution using a generative deep learning network**

Author(s): **Lior Luria**, **Itay Barnea**, **Simcha K. Mirsky**, **Natan T. Shaked**, Tel Aviv Univ. (Israel)

### Coffee Break 02:50 PM - 03:20 PM

#### SESSION 5: INVERSE MODELLING OF PHOTONIC MEASUREMENT PROCESSES AND FAIR DATA MANAGEMENT OF PHOTONIC DATA

11 April 2024 • 03:20 PM - 05:10 PM | Bruxelles/Salon 10, Niveau/Level 0

Session Chair(s): **Oleg Ryabchykov**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13011-19 • 03:20 PM - 03:50 PM

**Data science for inverse modelling of photonic measurement processes and FAIR data management of photonic data** (Invited Paper)

Author(s): **Thomas Bocklitz**, Leibniz-Institut für Photonische Technologien e.V. (Germany)



13011-20 • 03:50 PM - 04:10 PM

**Spectral zones based SHAP for spectral data**

*Author(s):* **Jhonatan Contreras**, Abbe Ctr. of Photonics (Germany), Friedrich-Schiller-Univ. Jena (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany); **Thomas Bocklitz**, Abbe Ctr. of Photonics (Germany), Leibniz-Institut für Photonische Technologien e.V. (Germany), Univ. Bayreuth (Germany)

13011-21 • 04:10 PM - 04:30 PM

**Explainable machine learning for the multiclass classification of diffuse reflectance spectroscopy signals in orthopaedic applications**

*Author(s):* **Nicola Rossberg**, Univ. College Cork (Ireland); **Celina L. Li**, Tyndall National Institute (Ireland); **Stefan Andersson-Engels**, Tyndall National Institute (Ireland), Univ. College Cork (Ireland); **Barry J. O'Sullivan**, Univ. College Cork (Ireland); **Katarzyna Komolibus**, Tyndall National Institute (Ireland); **Andrea Visentin**, Univ. College Cork (Ireland)

13011-22 • 04:30 PM - 04:50 PM

**Advanced Holographical and Physics Inspired Deep Learning Approaches for Image Transmission through Multimode Optical Fiber**

*Author(s):* **Mohammadrahim Kazemzadeh**, Istituto Italiano di Tecnologia (Italy); **Liam Collard**, Istituto Italiano di Tecnologia (Italy), RAISE Ecosystem (Italy); **Linda Piscopoa**, Istituto Italiano di Tecnologia (Italy), Univ. del Salento (Italy); **Filippo Pisanoa**, Istituto Italiano di Tecnologia (Italy), Univ. degli Studi di Padova (Italy); **Cristian Ciraci**, Istituto Italiano di Tecnologia (Italy); **Ferruccio Pisanello**, Istituto Italiano di Tecnologia (Italy), RAISE Ecosystem (Italy); **Massimo De Vittorio**, Istituto Italiano di Tecnologia (Italy), Univ. del Salento (Italy), RAISE Ecosystem (Italy)

13011-23 • 04:50 PM - 05:10 PM

**Detection and analysis of protein compounds based on Raman scattering and machine learning**

*Author(s):* **Artem Shtumpf**, **Ekaterina Ponkratova**, **Landysh Fatkhutdinova**, ITMO Univ. (Russian Federation); **Gulia Bikbaeva**, Saint Petersburg State Univ. (Russian Federation); **Aleksey Y. Kokhanovskiy**, **Andrey A. Bogdanov**, ITMO Univ. (Russian Federation); **Alina Manshina**, Saint Petersburg State Univ. (Russian Federation); **Dmitry A. Zuev**, ITMO Univ. (Russian Federation)

# CONFERENCE 13012

## Integrated Photonics Platforms III

07 - 10 April 2024 | Bruxelles/Salon 10, Niveau/Level 0

**Conference Chair(s):** **Roel G. Baets**, Univ. Gent (Belgium); **Peter O'Brien**, Tyndall National Institute (Ireland); **Laurent Vivien**, Ctr. de Nanosciences et de Nanotechnologies (France)

**Program Committee:** **Frédéric Boeuf**, STMicroelectronics (France); **José Capmany Francoy**, Univ. Politècnica de Valencia (Spain); **Frederic Y. Gardes**, Univ. of Southampton (United Kingdom); **Jin Guo**, CUMEC (China); **Martijn J. R. Heck**, Aarhus Univ. (Denmark); **Takaaki Ishigure**, Keio Univ. (Japan); **Robert E. Mallard**, Canadian Microelectronics Corp. (Canada); **Lorenzo Pavesi**, Univ. degli Studi di Trento (Italy); **Stefan F. Preble**, Rochester Institute of Technology (United States); **Pol Van Dorpe**, IMEC (Belgium); **Kevin A. Williams**, Technische Univ. Eindhoven (Netherlands); **Jeremy Witzens**, RWTH Aachen Univ. (Germany); **Dan-Xia Xu**, National Research Council Canada (Canada); **Koji Yamada**, National Institute of Advanced Industrial Science and Technology (Japan); **Zhiping Zhou**, Peking Univ. (China)

### Sunday 7 April 2024

#### SESSION 1: QUANTUM PHOTONICS

07 April 2024 • 01:50 PM - 03:30 PM | Bruxelles/Salon 10, Niveau/Level 0

**Session Chair(s):** **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands)

13012-1 • 01:50 PM - 02:10 PM

**Integrated photonic cryptographic key generator using novel low-power MEMS-on-PIC technology**

**Author(s):** **Martin Blasl**, **Meysam Namdari**, **Maximilian Wagner**, **Jan Grahmann**, Fraunhofer-Institut für Photonische Mikrosysteme IPMS (Germany)

13012-2 • 02:10 PM - 02:30 PM

**Metallic nano-rings to control quantum emitters in integrated photonic devices**

**Author(s):** **Cori Haws**, Univ. of Cambridge (United Kingdom); **Edgar Perez**, **Marcelo I. Davanco**, National Institute of Standards and Technology (United States); **Jindong Song**, Korea Institute of Science and Technology (Korea, Republic of); **Kartik Srinivasan**, National Institute of Standards and Technology (United States); **Luca Sapienza**, Univ. of Cambridge (United Kingdom)

13012-3 • 02:30 PM - 02:50 PM

**Analysis of optical losses of GaAs waveguides for single-photon sources considering realistic waveguide roughness**

**Author(s):** **Miloš Ljubotina**, Univ. of Ljubljana (Slovenia); **Zhe Liu**, **Leonardo Midolo**, Niels Bohr Institute (Denmark); **Jasper De Witte**, **Dries Van Thourhout**, Univ. Gent (Belgium), imec (Belgium); **Marko Topič**, **Janez Krč**, Univ. of Ljubljana (Slovenia)

13012-70 • 02:50 PM - 03:10 PM

**Strained GeSn quantum well laser for the extended-NIR silicon photonics**

**Author(s):** **Antoine Meyer**, **Maria-Alejandra Mendez**, **Moustafa El-Kurdi**, Univ. Paris-Saclay (France); **Dan Buca**, **Omar Concepción**, Forschungszentrum Jülich GmbH (Germany)

13012-73 • 03:10 PM - 03:30 PM

**Optimization of edge couplers for low-loss photonic wire bonds on the thin film lithium niobate platform**

**Author(s):** **Mo Lu**, Vanguard Automation GmbH (Germany); **Homa Zarebidaki**, **Jacopo Leo**, **Ivan Prieto Gonzalez**, **Hamed Sattari**, Swiss Center for Electronics and Microtechnology (Switzerland); **Matthias Lauermann**, Vanguard Automation GmbH (Germany)

**Coffee Break 03:30 PM - 04:00 PM**

#### SESSION 2: INVERSE DESIGN/MODELLING

07 April 2024 • 04:00 PM - 05:20 PM | Bruxelles/Salon 10, Niveau/Level 0

**Session Chair(s):** **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland)

13012-5 • 04:00 PM - 04:20 PM

**An inversely designed computational spectrometer on SiN platform**

Author(s): **Ang Li, Feixia Bao, Chang Wang, Shilong Pan**, Nanjing Univ. of Aeronautics and Astronautics (China)

13012-6 • 04:20 PM - 04:40 PM

**High performance grating couplers for mid-infrared applications based on multiparameter optimization of geometry characteristics**

Author(s): **Theoni Prousalidi, Giannis Pouloupoulos, Evrydiki Kyriazi, Georgios Syriopoulos**, National Technical Univ. of Athens (Greece);

**Nour Negm, Stephan Suckow**, AMO GmbH (Germany); **Dimitrios Apostolopoulos**, National Technical Univ. of Athens (Greece);

**Charalampos Zervos**, National Technical Univ. of Athens (Greece), Talos Analytics (Greece); **Hercules Avramopoulos**, National Technical Univ. of Athens (Greece)

13012-7 • 04:40 PM - 05:00 PM

**Periodic topology optimization-based inverse design of slow-light in silicon nitride one-dimensional grating waveguides**

Author(s): **Ahmet Oguz Sakin, Beyza Akcay, Ahmet C. Songur, Mehmet Ünlü**, TOBB ETÜ (Turkey)

13012-8 • 05:00 PM - 05:20 PM

**Theoretical investigation of electric field induces second harmonic generation in silicon nitride waveguide structures.**

Author(s): **Abdou Shetewy, Mircea-Traian Catuneanu, Kambiz Jamshidi**, TU Dresden (Germany)

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

2024 Symposium Chair

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Köln (Germany)

### Coffee Break 11:00 AM - 11:30 AM

### SESSION 3: PHOTONIC INTEGRATED CIRCUITS

08 April 2024 • 11:30 AM - 01:00 PM | Bruxelles/Salon 10, Niveau/Level 0

Session Chair(s): **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G.**

**Baets**, Univ. Gent (Belgium)

13012-9 • 11:30 AM - 12:00 PM

**Silicon photonics markets and applications overview** (Invited Paper)

Author(s): **Eric Mounier**, Yole Développement SA (France)

13012-10 • 12:00 PM - 12:30 PM

**X-Fab's roadmap towards manufacturing infrastructure for integrated photonics** (Invited Paper)

Author(s): **Joni Mellin**, X-FAB Semiconductor Foundries AG (Germany)

13012-11 • 12:30 PM - 12:45 PM

**The Open Innovation Photonics Pilot Line for North-West Europe (OIP4NWE) and its service offering**

Author(s): **Jürgen Van Erps**, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium); **Alessia Senes, Luc Augustin**, SMART Photonics

(Netherlands); **Marc Rensing**, Tyndall National Institute (Ireland); **Michael Heuken, Anders Thorsten**, Aixtron SE (Germany); **Akanksha**

**Kapoor, Victor Dolores-Calzadilla**, Technische Univ. Eindhoven (Netherlands)

13012-12 • 12:45 PM - 01:00 PM

**Towards on polymer photonic platform**

*Author(s):* **Aivars Vembris, Arturs Bundulis, Sofija Grietena, Elina Laizane**, Institute of Solid State Physics, Univ. of Latvia (Latvia); **Janis Alnis**, Univ. of Latvia (Latvia); **Sandis Spolitis**, Riga Technical Univ. (Latvia)

**Lunch Break 01:00 PM - 02:15 PM**

**SESSION 4: LIGHT MODULATION**

08 April 2024 • 02:15 PM - 03:30 PM | Bruxelles/Salon 10, Niveau/Level 0

*Session Chair(s):* **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands)

13012-14 • 02:15 PM - 02:30 PM

**Bi-junction electro-optic phase shifters**

*Author(s):* **Mohamed Ashour**, Robert Bosch GmbH (Germany); **Eva M. Weig**, Technische Univ. München (Germany); **Jan N. Caspers**, Bosch Sensortec GmbH (Germany)

13012-15 • 02:30 PM - 02:45 PM

**Design and simulation of a graphene-on-silicon nitride electro-absorption dual-mode integrated waveguide modulator**

*Author(s):* **Fernando Martín-Romero, Víctor J. Gómez**, Nanophonics Technology Ctr, Univ. Politècnica de València (Spain)

13012-16 • 02:45 PM - 03:00 PM

**Integration of ferroelectric thin films on Si and SiN platforms via wet chemical deposition**

*Author(s):* **Jeroen Beeckman, Enes Lievens, Kobe De Geest, Ewout Picavet, Klaartje De Buysser, Dries Van Thourhout**, Univ. Gent (Belgium)

13012-13 • 03:00 PM - 03:30 PM

**Towards scalable heterogeneous integration of thin-film lithium niobate on silicon photonics using micro-transfer printing** (*Invited Paper*)

*Author(s):* **Tom Vanackere**, Univ. Gent (Belgium), imec (Belgium)

**Coffee Break 03:30 PM - 04:00 PM**

**SESSION 5: ADVANCED PACKAGING**

08 April 2024 • 04:00 PM - 06:00 PM | Bruxelles/Salon 10, Niveau/Level 0

*Session Chair(s):* **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland)

13012-17 • 04:00 PM - 04:30 PM

**Automated laser welding of optical fibers to micro-optics and photonic integrated circuits** (*Invited Paper*)

*Author(s):* **Henning Schröder, Alethea Vanessa Zamora**, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration IZM (Germany)

13012-18 • 04:30 PM - 05:00 PM

**Scale-up of silicon photonic packaging processes** (*Invited Paper*)

*Author(s):* **Joost van Kerkhof, Zerihun Gedeb Tegegne**, PHIX Photonics Assembly (Netherlands)

13012-19 • 05:00 PM - 05:30 PM

**Photonic-electronic co-packaging** (*Invited Paper*)

*Author(s):* **Conor O'Keeffe**, Intel Corp. (Ireland)

13012-20 • 05:30 PM - 06:00 PM

**PIC Packaging and CPO** (*Invited Paper*)

*Author(s):* **Jeremy Witzens**, RWTH Aachen Univ. (Germany)

**Tuesday 9 April 2024**

**SESSION 6: INTEGRATED LIGHT AMPLIFICATION AND EMISSION**

09 April 2024 • 08:30 AM - 10:15 AM | Bruxelles/Salon 10, Niveau/Level 0

*Session Chair(s):* **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G. Baets**, Univ. Gent (Belgium)

13012-21 • 08:30 AM - 09:00 AM

**GeSnOI platform for future development of extended-NIR silicon photonics** (*Invited Paper*)

Author(s): **Moustafa El Kurdi**, Ctr. de Nanosciences et de Nanotechnologies (France)

13012-22 • 09:00 AM - 09:15 AM

**Compact 1.31  $\mu\text{m}$ -emission In<sub>0.45</sub>Ga<sub>0.55</sub>As/ In<sub>0.25</sub>Ga<sub>0.75</sub>As photonic crystal nano-ridge laser monolithically grown on 300 mm silicon substrate**

Author(s): **Zhongtao Ouyang**, Univ. Gent (Belgium); **Davide Colucci**, imec (Belgium); **Eslam Mostafa Bakry Fahmy**, **Andualem Ali Yimam**, Univ. Gent (Belgium); **Bernadette Kunert**, **Joris Van Campenhout**, imec (Belgium); **Dries Van Thourhout**, Univ. Gent (Belgium)

13012-23 • 09:15 AM - 09:30 AM

**Data wavelength conversion over THz range using an optical-feedback-controlled InP multi-mode laser**

Author(s): **Pablo Marin-Palomo**, **Deeksha Dadhich**, **Shahab Abdollahi**, **Mathieu Ladouce**, **Martin Virte**, Vrije Univ. Brussel (Belgium)

13012-24 • 09:30 AM - 09:45 AM

**Ultrasoherent emission by orthogonal lasers**

Author(s): **Amit Shakya**, **Fan Cheng**, **Tal Carmon**, Tel Aviv Univ. (Israel)

13012-25 • 09:45 AM - 10:00 AM

**Nanosecond wavelength switching in integrated multi-wavelength lasers through feedback**

Author(s): **Mathieu Ladouce**, **Shahab Abdollahi**, **Pablo Marin-Palomo**, **Martin Virte**, VUB B-PHOTONICS (Belgium)

13012-26 • 10:00 AM - 10:15 AM

**Chip integrated ultrafast pulse amplification**

Author(s): **Mahmoud A. A. Gaafar**, Technische Univ. Hamburg-Harburg (Germany), Deutsches Elektronen-Synchrotron (Germany); **Markus Ludwig**, Deutsches Elektronen-Synchrotron (Germany); **Kai Wang**, Univ. Twente (Netherlands); **Thibault Wildi**, **Thibault Voumard**, **Milan Sinobad**, **Jan Lorenzen**, Deutsches Elektronen-Synchrotron (Germany); **Henry Francis**, LiGenTec SA (Switzerland); **Shuangyou Zhang**, **Toby Bi**, **Pascal Del'haye**, Max-Planck-Institut für die Physik des Lichts (Germany); **Michael Geiselmann**, LiGenTec SA (Switzerland); **Neetesh Singh**, **Franz X. Kärtner**, Deutsches Elektronen-Synchrotron (Germany); **Sonia M. García-Blanco**, Univ. Twente (Netherlands); **Tobias Herr**, Deutsches Elektronen-Synchrotron (Germany)

**Coffee Break 10:15 AM - 10:45 AM**

## SESSION 7: PHOTONIC PLATFORMS

09 April 2024 • 10:45 AM - 12:45 PM | Bruxelles/Salon 10, Niveau/Level 0

Session Chair(s): **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands)

13012-27 • 10:45 AM - 11:15 AM

**AlGaAs on Insulator photonics platform** (*Invited Paper*)

Author(s): **Minhao Pu**, Technical Univ. of Denmark (Denmark)

13012-28 • 11:15 AM - 11:45 AM

**Thin-film lithium niobate PICs: advancements and potential applications in telecom and beyond** (*Invited Paper*)

Author(s): **Hamed Sattari**, **Ivan Prieto**, **Homa Zarebidaki**, **Jacopo Leo**, **Gregory Choong**, **Fatemeh Arefi**, **Mattia Orvietani**, **Alberto Della Torre**, **Arno Mettraux**, **Florian Dubois**, **Dorian Herle**, **Yves Petremand**, **Michele Palmieri**, **Olivier Dubochet**, **Michel Despont**, CSEM SA (Switzerland)

13012-29 • 11:45 AM - 12:15 PM

**The Al<sub>2</sub>O<sub>3</sub>-on-insulator photonic integrated platform** (*Invited Paper*)

Author(s): **Sonia M. García-Blanco**, Univ. Twente (Netherlands)

13012-30 • 12:15 PM - 12:45 PM

**GeSbTeSeS alloys: a promising chalcogenide family for nonlinear optics and programmable photonics on silicon chips** (*Invited Paper*)

Author(s): **Benoît Cluzel**, Univ. Bourgogne Franche-Comté (France)

**Lunch/Exhibition Break 12:45 PM - 01:50 PM**

## SESSION 8: INTEGRATION AND ADVANCED FABRICATION AND DEVICES

09 April 2024 • 01:50 PM - 04:05 PM | Bruxelles/Salon 10, Niveau/Level 0

Session Chair(s): **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland)

13012-31 • 01:50 PM - 02:20 PM

**Silicon nitride photonic integration and routes towards active functionalities** (*Invited Paper*)

Author(s): **Pieter Wuytens**, LiGenTec SA (Switzerland)

13012-32 • 02:20 PM - 02:35 PM

**Biasing impact on illuminated SiGe heterojunction phototransistor static performances**

Author(s): **Valentin Thary**, STMicroelectronics N.V. (France); **Catherine Algani**, Lab. d'Electronique, Systèmes de Communications et Microsystèmes, CNRS (France); **Jean-Luc Polleux**, ICON Photonics (France); **Pascal Chevalier**, STMicroelectronics (France)

13012-33 • 02:35 PM - 02:50 PM

**Post-fabrication tuning of photonic integrated circuits via silicon ion implantation**

Author(s): **Venkata Sai Akhil Varri**, Univ. Münster (Germany); **Shabnam Taheriniya**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Frank Brückerhoff-Plückelmann**, Univ. Münster (Germany); **Wolfram H. P. Pernice**, Ruprecht-Karls-Univ. Heidelberg (Germany)

13012-34 • 02:50 PM - 03:05 PM

**Additive-CMOS compatible fabrication of 3D photonic circuits towards multi-chip integration of hybrid platforms**

Author(s): **Adrià Grabulosa i Vallmajó**, FEMTO-ST (France); **Xavier Porte**, Univ. of Strathclyde (United Kingdom); **Johnny Moughames**, FEMTO-ST (France); **Erik Jung**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Kanhaya Sharma**, **Daniel Brunner**, FEMTO-ST (France)

13012-35 • 03:05 PM - 03:20 PM

**Development of rare-earth doped alumina waveguides made by liftoff processing in pulsed laser deposited layers for light amplification on chip applications**

Author(s): **Antoine Bernard**, **Antonio Péreira**, Institut Lumière Matière (France); **Régis Orobtcouk**, **Marina Raevskaia**, **Christelle Monat**, **Christian Grillet**, Institut des Nanotechnologies de Lyon (France); **Etienne Cleyet-Merle**, Institut Lumière Matière (France); **Hai-Son Nguyen**, **Sebastien Cueff**, Institut des Nanotechnologies de Lyon (France); **Yannick Guyot**, **Alban Gassenq**, Institut Lumière Matière (France)

13012-36 • 03:20 PM - 03:35 PM

**MIRPIC – photonic integrated circuits for mid-IR spectral range**

Author(s): **Ryszard Piramidowicz**, **Stanislaw Stopinski**, **Krzysztof Anders**, Warsaw Univ. of Technology (Poland), VIGO Photonics S.A. (Poland), LightHouse Sp. z o.o. (Poland); **Anna Jusza**, Warsaw Univ. of Technology (Poland), LightHouse Sp. z o.o. (Poland); **Marcin Lelit**, Warsaw Univ. of Technology (Poland); **Andrzej Polatynski**, Warsaw Univ. of Technology (Poland), VPIphotonics GmbH (Germany); **Piotr Wiśniewski**, **Mateusz Slowikowski**, **Marcin Juchniewicz**, Warsaw Univ. of Technology (Poland); **Jaroslav Jureńczyk**, **Marek Liebert**, VIGO Photonics S.A. (Poland); **Kamil Pierscinski**, **Dorota Pierscinska**, Lukaszewicz Research Network - Institute of Microelectronics and Photonics (Poland)

13012-37 • 03:35 PM - 03:50 PM

**Monostatic FMCW LiDAR sensing in C-band using an integrated InP optical phased array**

Author(s): **Marco Gagino**, Technische Univ. Eindhoven (Netherlands); **Gilles A. Feugnet**, **Patrick Feneyrou**, Thales Research & Technology (France); **B.S. Vikram**, Technische Univ. Eindhoven (Netherlands); **Alonso Millan-Mejia**, SMART Photonics (Netherlands); **Erwin A. J. M. Bente**, **Victor Dolores-Calzadilla**, Technische Univ. Eindhoven (Netherlands)

13012-38 • 03:50 PM - 04:05 PM

**Large, deterministic and tunable thermo-optic shift for all photonic platforms**

Author(s): **Bruno Lopez-Rodriguez**, **Naresh Sharma**, **Zizheng Li**, **Roald van der Kolk**, **Jasper van der Boom**, **Thomas Scholte**, **Jin Chang**, **Silvania F. Pereira**, **Iman Esmaeil Zadeh**, Technische Univ. Delft (Netherlands)

**Coffee Break 04:05 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Franco**y, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13012-48 • 06:10 PM - 08:00 PM

**Comparative analysis of fabrication techniques for sensing windows on silicon nitride waveguide platforms**

Author(s): **Jakob W. Hinum-Wagner**, Technische Univ. Graz (Austria); **Samuel M. Hörmann**, Technische Univ. Graz (Austria), ams-OSRAM AG (Austria); **Christoph Schmidt, Gandolf Feigl**, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria); **Deborah Morecroft, Jochen Kraft**, ams-OSRAM AG (Austria); **Alexander Bergmann**, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria)

13012-49 • 06:10 PM - 08:00 PM

**Advancements in FDLW-fabricated Mach-Zehnder interferometers for the detection of physical parameters**

Author(s): **Luis A. Tapia-Licona, Gloria V. Vázquez, Erika Rodriguez Sevilla**, Centro de Investigaciones en Óptica, A.C. (Mexico); **Rubí Reséndiz-Ramírez**, Centro de Investigaciones en Óptica, A. C. (Mexico); **Roberto Ramírez-Alarcón**, Centro de Investigaciones en Óptica, A.C. (Mexico); **Rigoberto Castro-Beltran**, Univ. de Guanajuato (Mexico)

13012-50 • 06:10 PM - 08:00 PM

**Photonics-assisted high-bandwidth, high spectral efficiency signal aggregation from low-bandwidth components and lower spectral efficient signals**

Author(s): **Mohamed I. Hosni, Younus Mandalawi, Janosch Meier, Karanveer Singh, Paulomi Mandal**, Technische Univ. Braunschweig (Germany); **Ahmed H. Elghandour**, Military Technical College (Egypt); **Thomas Schneider**, Technische Univ. Braunschweig (Germany)

13012-51 • 06:10 PM - 08:00 PM

**Ultra-broadband multimode waveguide dispersion measurement**

Author(s): **Weichen Fan**, Deutsches Elektronen-Synchrotron (Germany); **Furkan Ayhan, Luis G. Villanueva**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Tobias Herr, Markus Ludwig**, Deutsches Elektronen-Synchrotron (Germany)

13012-53 • 06:10 PM - 08:00 PM

**Translation of optical device performance into e-beam lithography – a contribution to a better understanding**

Author(s): **Ulf Weidenmueller, Stefan Fasold, Eike Linn, Ines A. Stolberg**, Vistec Electron Beam GmbH (Germany)

13012-55 • 06:10 PM - 08:00 PM

**Scalable photonic tensor cores with out-of-plane phase change memory cell switching**

Author(s): **Erik Jung, Lennart Meyer, Wolfram Pernice, Dominik Ditz**, Ruprecht-Karls-Univ. Heidelberg (Germany)

13012-56 • 06:10 PM - 08:00 PM

**Fabrication of high-Q multimode microring resonators on a photonic silicon-on-insulator platform**

Author(s): **Mircea-Traian Catuneanu**, TU Dresden (Germany); **Ahmad Echresh, Rang Li, Saif Mohd Shaik**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Shiyao Fang**, TU Dresden (Germany); **Bhavana Siddaveeranna Umshaiah, Yordan Georgiev, Yonder Berencén, Artur Erbe, Shengqiang Zhou, Manfred Helm**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Kambiz Jamshidi**, TU Dresden (Germany)

13012-57 • 06:10 PM - 08:00 PM

**Diamond integrated photonics for quantum computing applications**

Author(s): **Mark Ulanov, Lin Jin**, Kirchhoff-Institut für Physik, Ruprecht-Karls-Univ. Heidelberg (Germany); **Wolfram H.P. Pernice**, Kirchhoff-Institut für Physik (Germany)

13012-58 • 06:10 PM - 08:00 PM

**Theoretical investigation of optical integration between quantum dot emission and silicon nitride waveguides.**

Author(s): **Pawaphat Jaturaphagorn, Papichaya Chaisakul**, Kasetsart Univ. (Thailand)

13012-59 • 06:10 PM - 08:00 PM

**Passive structures for sensing applications based on ring resonators on SiN platform.**

*Author(s):* **Łukasz Kozłowski, Muhammad Ali Butt**, Institute of Microelectronics and Optoelectronics, Warsaw Univ. of Technology (Poland); **Mateusz Slowikowski**, CEZAMAT PW Sp. z o.o., Warsaw Univ. of Technology (Poland), Institute of Microelectronics and Optoelectronics, Warsaw Univ. of Technology (Poland); **Ryszard Pyramidowicz**, Institute of Microelectronics and Optoelectronics, Warsaw Univ. of Technology (Poland), VIGO Photonics S.A. (Poland), VPIphotonics GmbH (Poland)

13012-71 • 06:10 PM - 08:00 PM

**New design of electrically pumped GeSnOI laser integrated on a Si-photonics platform.**

*Author(s):* **Maria Alejandra Mendez**, C2N- Centre for Nanoscience and Nanotechnology (France); **Omar Concepción, Dan Buca**, Institute of Semiconductor Nanoelectronics, Peter Grünberg Institute 9 (PGI 9) and JARA-Fundamentals (Germany); **Moustafa El-Kurdi**, C2N- Centre for Nanoscience and Nanotechnology (France)

13012-72 • 06:10 PM - 08:00 PM

**Towards high speed, low voltage electro-optical modulators in a foundry-process thin-film lithium niobate platform**

*Author(s):* **Alberto Della Torre, Ivan Prieto, Arno Mettraux, Jacopo Leo, Homa Zarebidaki, Olivier Dubochet, Michel Despont, Hamed Sattari**, Swiss Center for Electronics and Microtechnology (CSEM) (Switzerland)

13012-74 • 06:10 PM - 08:00 PM

**CMOS-compatible electro-optical SRAM cavity device based on negative differential resistance**

*Author(s):* **Rivka Gherabli**, The Hebrew Univ. of Jerusalem (Israel)

## Wednesday 10 April 2024

### SESSION 9: UV- AND VISIBLE INTEGRATED DEVICES

10 April 2024 • 08:45 AM - 10:00 AM | Bruxelles/Salon 10, Niveau/Level 0

*Session Chair(s):* **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G. Baets**, Univ. Gent (Belgium)

13012-39 • 08:45 AM - 09:15 AM

**Photonic integrated circuits for UV microscopy and spectroscopy** *(Invited Paper)*

*Author(s):* **Nicolas Le Thomas**, Univ. Gent (Belgium)

13012-40 • 09:15 AM - 09:45 AM

**Waveguide Raman sensors for in-situ, real-time bioprocess monitoring** *(Invited Paper)*

*Author(s):* **Ivan-Lazar Bundalo**, InSpek SAS (France)

13012-41 • 09:45 AM - 10:00 AM

**Active photonics integrated circuit for Visible spectrum**

*Author(s):* **Firehun Tsige Dullo, Zeljko Skokic, Frode Tyholdt, Christopher A. Dirdal**, SINTEF (Norway)

### Coffee Break 10:00 AM - 10:30 AM

### SESSION 10: EDUCATION AND SKILL BUILDING

10 April 2024 • 10:30 AM - 11:30 AM | Bruxelles/Salon 10, Niveau/Level 0

*Session Chair(s):* **Peter O'Brien**, Tyndall National Institute (Ireland); **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands)

13012-42 • 10:30 AM - 11:00 AM

**Student training programmes for integrated photonics (Europe)** *(Invited Paper)*

*Author(s):* **Abdul Rahim**, Univ. Gent (Belgium)

13012-43 • 11:00 AM - 11:30 AM

**Training programs for addressing the skill shortage in integrated photonics in USA** *(Invited Paper)*

*Author(s):* **Anuradha M. Agarwal**, Massachusetts Institute of Technology (United States)

### SESSION 11: ADVANCED NETWORK

10 April 2024 • 11:30 AM - 12:45 PM | Bruxelles/Salon 10, Niveau/Level 0

*Session Chair(s):* **Roel G. Baets**, Univ. Gent (Belgium); **Sylwester Latkowski**, Technische Univ. Eindhoven (Netherlands); **Peter O'Brien**, Tyndall National Institute (Ireland)



13012-44 • 11:30 AM - 12:00 PM

**Controlling Sb<sub>2</sub>S<sub>3</sub> phase transition for tunable nanophotonic applications** *(Invited Paper)*

*Author(s):* **Capucine Laprais, Clément Zrounba, Lotfi Berguiga, Guillaume Saint-Girons, Sébastien Cueff**, Institut des Nanotechnologies de Lyon (France)

13012-45 • 12:00 PM - 12:15 PM

**Non-volatile nanophotonic hybrid optical switch with integrated phase change material assisted with graphene-microheater**

*Author(s):* **Anna P. Ovyvan**, Ruprecht-Karls-Univ. Heidelberg (Germany), Univ. Münster (Germany); **Niklas Vollmar**, Univ. Münster (Germany); **Zhongyu Tang, Seongmin Jo**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Martin Salinga**, Univ. Münster (Germany); **Wolfram H. P. Pernice**, Ruprecht-Karls-Univ. Heidelberg (Germany), Univ. Münster (Germany)

13012-46 • 12:15 PM - 12:30 PM

**A photonic neural network for chromatic dispersion compensation in OFDM signals**

*Author(s):* **Emiliano Staffoli, Gianpietro Maddinelli**, Univ. degli Studi di Trento (Italy); **Pablo R. N. Marciano, Marcelo E. V. Segatto**, UFES (Brazil); **Lorenzo Pavesi**, Univ. degli Studi di Trento (Italy)

13012-47 • 12:30 PM - 12:45 PM

**three Coupled waveguides structures for photons routing in integrated photonics systems**

*Author(s):* **Salamat Ali**, Univ. degli Studi di Trento (Italy)

# CONFERENCE 13013

## Organic Electronics and Photonics: Fundamentals and Devices IV

09 - 11 April 2024 | Berlin/Salon 9, Niveau/Level 0

**Conference Chair(s):** Sebastian Reineke, TU Dresden (Germany); Koen Vandewal, Wouter Maes, Univ. Hasselt (Belgium)

**Program Committee:** Natalie Banerji, Univ. Bern (Switzerland); David Beljonne, Univ. de Mons (Belgium); Malte C. Gather, Univ. of St. Andrews (United Kingdom); Natalie Stingelin, Georgia Institute of Technology (United States); Eli Zysman-Colman, Univ. of St. Andrews (United Kingdom)

Tuesday 9 April 2024

### SESSION 1: ORGANIC LIGHT-EMITTING DIODES I

09 April 2024 • 08:40 AM - 10:10 AM | Berlin/Salon 9, Niveau/Level 0

**Session Chair(s):** Sebastian Schellhammer, TU Dresden (Germany)

13013-1 • 08:40 AM - 09:10 AM

**Probing the orientation distribution of emitters in OLED hosts by single molecule microscopy** (*Invited Paper*)

**Author(s):** Francisco Tenopala Carmona, Dirk Hertel, Sabina G. H. Hillebrandt, Andreas Mischok, Univ. zu Köln (Germany); Arko Graf, Univ. of St. Andrews (United Kingdom); Philipp Weitkamp, Klaus Meerholz, Malte C. Gather, Univ. zu Köln (Germany)

13013-2 • 09:10 AM - 09:30 AM

**ITO sputtering study for transparent OLED top electrode**

**Author(s):** Fiorita Nunziata, Univ. degli Studi di Salerno (Italy), MATERIAS s.r.l (Italy); Salvatore Aprano, ENEA (Italy); Rosalba Liguori, Univ. degli Studi di Salerno (Italy); Maria Grazia Maglione, Paolo Tassini, ENEA (Italy); Alfredo Rubino, Univ. degli Studi di Salerno (Italy)

13013-3 • 09:30 AM - 09:50 AM

**Exploring OLED performance enhancement with polaritonics: challenges and opportunities**

**Author(s):** Konstantinos Daskalakis, Univ. of Turku (Finland)

13013-4 • 09:50 AM - 10:10 AM

**Exciplex-based organic light-emitting diodes with deep blue emission**

**Author(s):** Houssein El Housseiny, Ghada Mbarki, David Buso, Marc E. Ternisien, Georges Zissis, Cédric Renaud, Lab. Plasma et Conversion d'Energie (France)

**Coffee Break 10:10 AM - 10:40 AM**

### SESSION 2: ORGANIC TRANSISTORS

09 April 2024 • 10:40 AM - 12:30 PM | Berlin/Salon 9, Niveau/Level 0

**Session Chair(s):** Wouter Maes, Univ. Hasselt (Belgium)

13013-5 • 10:40 AM - 11:10 AM

**Molecular-scale imaging for the direct characterisation of conjugated polymers** (*Invited Paper*)

**Author(s):** Stefania Moro, Giovanni Costantini, Univ. of Birmingham (United Kingdom)

13013-6 • 11:10 AM - 11:30 AM

**Investigation of the effects caused by removal of homocoupling defects in the OECT benchmark material pgBTTT**

**Author(s):** Lize Bynens, Jochen Vanderspikken, Univ. Hasselt (Belgium); Adam Marks, Stanford Univ. (United States); Arwin Goossens, Univ. Hasselt (Belgium); Tyler J. Quill, Garret Lecroy, Christina Cheng, Yeongmin Park, Stanford Univ. (United States); Laurence Lutsen, Univ. Hasselt (Belgium); Alberto Salleo, Stanford Univ. (United States); Koen Vandewal, Wouter Maes, Univ. Hasselt (Belgium)

13013-7 • 11:30 AM - 11:50 AM

**The effect of side chain engineering on the doping kinetics of conjugated polymers: a spectroscopic investigation**

**Author(s):** Julien Réhault, Priscila Cavassin, Isabelle Holzer, Natalie Banerji, Univ. Bern (Switzerland); Christian B. Nielsen, Raymundo

**Marcial Hernandez**, Queen Mary Univ. of London (United Kingdom); **Peter Gilhooly-Finn**, Univ. College London (United Kingdom)

13013-56 • 11:50 AM - 12:10 PM

**Enhancement of kinetics and volumetric capacitance in pgBTTT polymers through ethylene glycol side chain modification and blending techniques: a comprehensive study**

*Author(s):* **Kaishuai Zhang**, Univ. Bern (Switzerland); **Lize Bynens**, Univ. Hasselt (Belgium)

13013-9 • 12:10 PM - 12:30 PM

**Temperature-dependent triplet exciton readout in organic field-effect transistors**

*Author(s):* **Katelyn P. Goetz**, **Adam J. Biacchi**, **Chad D. Cruz**, **Sebastian Engmann**, **Curt A. Richter**, **Chad R. Snyder**, **Emily G. Bittle**, National Institute of Standards and Technology (United States)

## Lunch/Exhibition Break 12:30 PM - 02:00 PM

### SESSION 3: ORGANIC LUMINESCENCE I

09 April 2024 • 02:00 PM - 03:50 PM | Berlin/Salon 9, Niveau/Level 0

*Session Chair(s):* **Koen Vandewal**, Univ. Hasselt (Belgium)

13013-11 • 02:00 PM - 02:20 PM

**identity of T\* matters! improved krisc by modulating locally excited triplet state in TADF emitters**

*Author(s):* **Madalasa Mondal**, **Ratheesh K. Vijayaraghavan**, Indian Institute of Science Education and Research Kolkata (India)

13013-12 • 02:20 PM - 02:40 PM

**Photoinduced triplet depletion allowing higher-resolution afterglow**

*Author(s):* **Kikuya Hayashi**, **Shuzo Hirata**, The Univ. of Electro-Communications (Japan)

13013-13 • 02:40 PM - 03:00 PM

**Luminescent solar concentrators: A measurement technique for effective emitter screening**

*Author(s):* **Bernhard Siegmund**, **Sigurd Mertens**, **Koen Vandewal**, Univ. Hasselt (Belgium)

13013-14 • 03:00 PM - 03:20 PM

**Recent developments on programmable luminescent tags: Biodegradable minimalistic information storage**

*Author(s):* **Sebastian Schellhammer**, **Heidi Thomas**, **Tim Achenbach**, **Sebastian Kaiser**, **Sebastian Reineke**, TU Dresden (Germany)

13013-15 • 03:20 PM - 03:50 PM

**Challenge to improve the brightness of persistent room temperature phosphorescence for high-resolution autofluorescence-free imaging** (*Invited Paper*)

*Author(s):* **Shuzo Hirata**, The Univ. of Electro-Communications (Japan)

## Coffee Break 03:50 PM - 04:30 PM

### HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## Wednesday 10 April 2024

## SESSION 4: NEW DEVICES AND PHENOMENA

10 April 2024 • 08:50 AM - 10:30 AM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **David Beljonne**, Univ. de Mons (Belgium)

13013-16 • 08:50 AM - 09:10 AM

**Magneto-optical response of seesaw structure organic metal halide materials**

Author(s): **Zhiyuan Kuang**, Nanjing Tech Univ. (China)

13013-17 • 09:10 AM - 09:40 AM

**Record transport spin polarization across ferromagnetic metal/molecule interfaces** (Invited Paper)

Author(s): **Martin Bowen**, Institut de Physique et de Chimie des Matériaux de Strasbourg (France)

13013-43 • 09:40 AM - 10:00 AM

**Refractive index evaluation in active TDBC layers for photonics applications**

Author(s): **Komlan Segbéya Gadedjisso-Tossou**, Univ. Lomé (Togo); **Clémentine Symonds**, **Jean-Michel Benoit**, **Tessa Albaric**, **Adam Habouria**, **Deru Lian**, **Joël Bellessa**, **Alban Gassenq**, Univ. Claude Bernard Lyon 1 (France)

13013-19 • 10:00 AM - 10:30 AM

**TBA** (Invited Paper)

Author(s): **Sandrine Heutz**, London Ctr. for Nanotechnology (United Kingdom)

## Coffee Break 10:30 AM - 11:00 AM

## SESSION 5: ORGANIC PHOTOVOLTAICS I

10 April 2024 • 11:00 AM - 12:10 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Sylvain Chambon**, Lab. d'Intégration du Matériau au Système (France)

13013-24 • 11:00 AM - 11:30 AM

**Illuminating the dark side of triplet states** (Invited Paper)

Author(s): **Safa Shoaee**, Paul-Drude-Institut für Festkörperelektronik (Germany)

13013-25 • 11:30 AM - 11:50 AM

**The effect of polymer backbone fluorination on the light utilization efficiency of truly transparent organic photovoltaics**

Author(s): **Kaat Valkeneers**, Univ. Hasselt (Belgium); **Quan Liu**, **Bernhard Siegmund**, **Laurence Lutsen**, **Koen Vandewal**, **Wouter Maes**, IMO-IMOMECE, Univ. Hasselt (Belgium)

13013-26 • 11:50 AM - 12:10 PM

**Novel dicyanomethylene-functionalized s-indacene-tetraone-based materials as non-fullerene acceptors for ternary organic solar cells**

Author(s): **Raitis Grzibovskis**, **Arturs Aizstrauts**, Institute of Solid State Physics, Univ. of Latvia (Latvia); **Armands Ruduss**, **Kaspars Traskovskis**, Riga Technical Univ. (Latvia)

## Lunch/Exhibition Break 12:10 PM - 01:30 PM

## SESSION 6: ORGANIC LIGHT-EMITTING DIODES II

10 April 2024 • 01:30 PM - 03:00 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Malte C. Gather**, Univ. zu Köln (Germany)

13013-20 • 01:30 PM - 02:00 PM

**Light-emitting electrochemical cells: basic understanding for functional and sustainable devices** (Invited Paper)

Author(s): **Ludvig Edman**, Umeå Univ. (Sweden)

13013-21 • 02:00 PM - 02:20 PM

**On the way towards NIR-OLEDs: Efficient exciton harvesting using triplet-singlet Förster-resonance energy transfer**

Author(s): **Rongjuan Huang**, **Sebastian Schellhammer**, **Sebastian Reineke**, TU Dresden (Germany)

13013-22 • 02:20 PM - 02:40 PM

**Accurate experimental analysis and theoretical representation of OLED emission zone profiles**

*Author(s):* **Luis Paniagua Rodríguez**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany), Institut für Physik, Univ. Augsburg (Germany); **Dirk Michaelis**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Christof Pflumm**, Merck Electronics KGaA (Germany); **Wolfgang Brütting**, Institut für Physik, Univ. Augsburg (Germany); **Norbert Danz**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13013-23 • 02:40 PM - 03:00 PM

**Simulation-assisted experimental study of the mechanism of the efficiency roll-off due to triplet-polaron quenching in OLEDs**

*Author(s):* **Hiroki Tomita**, **Peter A. Bobbert**, **Christ H. L. Weijtens**, **Reinder Coehoorn**, Technische Univ. Eindhoven (Netherlands)

**Coffee Break 03:00 PM - 03:30 PM**

**SESSION 7: ORGANIC LUMINESCENCE II**

10 April 2024 • 03:30 PM - 05:40 PM | Berlin/Salon 9, Niveau/Level 0

*Session Chair(s):* **Koen Vandewal**, Univ. Hasselt (Belgium)

13013-27 • 03:30 PM - 04:00 PM

**Organic molecular radicals for light emission and quantum information science: Modelling insights** (*Invited Paper*)

*Author(s):* **David Beljonne**, Univ. de Mons (Belgium)

13013-28 • 04:00 PM - 04:20 PM

**Efficient doublet fluorescent OLEDs with high radiance and low efficiency roll-off**

*Author(s):* **Hwan-Hee Cho**, Univ. of Cambridge (United Kingdom)

13013-29 • 04:20 PM - 04:40 PM

**All solution-processed top-layer resonator organic lasers**

*Author(s):* **Alex Farrando-Pérez**, **Jose M. Villalvilla**, **Pedro G. Boj**, **Maria A. Diaz-Garcia**, Univ. de Alicante (Spain); **Maria A. Diaz-Garcia**, **José A. Quintana**, Univ. de Alicante (Spain)

13013-30 • 04:40 PM - 05:00 PM

**Organic chromophores for real-time multicolor RGB and IR lasing emission**

*Author(s):* **Jaroslaw Mysliwiec**, Wroclaw Univ. of Science and Technology (Poland)

13013-31 • 05:00 PM - 05:20 PM

**OLED-pumped Organic Laser**

*Author(s):* **Daan Lenstra**, Technische Univ. Eindhoven (Netherlands); **Alexis P. Fischer**, Lab. de Physique des Lasers, Univ. Sorbonne Paris Nord, CNRS (France); **Amani Ouirimi**, **Nixson Loganathan**, **Mahmoud Chakaroun**, Univ. Sorbonne Paris Nord (France)

13013-32 • 05:20 PM - 05:40 PM

**Design, synthesis and application of stable organic luminescent radicals**

*Author(s):* **Alim Abdurahman**, Jilin Univ. (China)

**POSTERS-WEDNESDAY**

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13013-44 • 05:45 PM - 07:45 PM

**Ellipsometrical characterization of poly-dopamine layers considered for technical applications**

*Author(s):* **Elena Ermilova**, **Andreas Hertwig**, Bundesanstalt für Materialforschung und -prüfung (Germany); **Thorsten Döhring**, **Eva Stanik**, Technische Hochschule Aschaffenburg (Germany); **Vincenzo Cotroneo**, INAF - Osservatorio Astronomico di Brera (Italy); **Eugenio Gibertini**, Politecnico di Milano (Italy)

13013-45 • 05:45 PM - 07:45 PM

**Decoupling excitonic static and dynamic disorder in organic semiconductors**

*Author(s):* **Siebe Frederix**, **Melissa Van Landeghem**, **Sigurd Mertens**, Univ. Hasselt (Belgium); **Samuele Giannini**, **David Beljonne**, Univ. de Mons (Belgium); **Koen Vandewal**, Univ. Hasselt (Belgium)

13013-46 • 05:45 PM - 07:45 PM

**On the orientation mechanism of non-polar dyes in light-emitting guest-host systems**

*Author(s):* **Binh Minh Nguyen, Markus Schmid, Johann Kirsch, Albin Cakaj, Wolfgang Brütting**, Institut für Physik, Univ. Augsburg (Germany)

13013-47 • 05:45 PM - 07:45 PM

**Unveiling molecular insights on conjugated polymer pBTTT-OR-R by scanning tunnelling microscopy**

*Author(s):* **Paola Mantegazza, Stefania Moro**, Univ. of Birmingham (United Kingdom); **Xiaocui Wu**, University of Warwick (United Kingdom); **Jochen Vanderspikken, Wouter Maes**, Institute for Materials Research, Univ. Hasselt (Belgium); **Giovanni Costantini**, Univ. of Birmingham (United Kingdom)

13013-48 • 05:45 PM - 07:45 PM

**BODIPYs with a twist – Introducing push-pull motifs toward dual-functioning near-infrared photosensitizers**

*Author(s):* **Nele Theysmans**, Univ. Hasselt (Belgium), imec (Belgium); **Mathias Fraiponts**, Univ. Hasselt (Belgium), imec (Belgium), Univ. de Namur (Belgium); **Lisa Reynders**, Univ. Hasselt (Belgium); **Jasper Deckers, Anitha Ethirajan**, Univ. Hasselt (Belgium), imec (Belgium); **Benoît Champagne**, Univ. de Namur (Belgium); **Wouter Maes**, Univ. Hasselt (Belgium), imec (Belgium)

13013-49 • 05:45 PM - 07:45 PM

**A novel synaptic transistor with cross-linked PVP gate insulator and ZnON channel for neuromorphic applications**

*Author(s):* **Su-Kyung Kim, Tae-Yeon Seong**, Korea Univ. (Korea, Republic of)

13013-50 • 05:45 PM - 07:45 PM

**Anti-Stokes photoluminescence mechanism in graphene quantum dots**

*Author(s):* **Hung-Yu Pan, Chia-Tse Chang**, Chung Yuan Christian Univ. (Taiwan); **Russel Cruz Sevilla, Ruth Jeane Soebroto, Hsiu-Ying Huang, Chi-Tsu Yuan**, Research Ctr. for Semiconductor Materials and Advanced Optics, Chung Yuan Christian Univ. (Taiwan)

13013-51 • 05:45 PM - 07:45 PM

**All-organic integrated photonics for third-order nonlinear optical applications**

*Author(s):* **Arturs Bundulis, Anete Berzina**, Institute of Solid State Physics, Univ. of Latvia (Latvia)

13013-52 • 05:45 PM - 07:45 PM

**Enhanced Phototransistor Performance through Multifunctional Cation Passivation in Metal Oxide/Perovskite Heterostructures**

*Author(s):* **Kwang Ro Yun, Tae-Yeon Seong**, Korea Univ. (Korea, Republic of)

13013-53 • 05:45 PM - 07:45 PM

**Impact of homocoupling defects on polymer transistor performance**

*Author(s):* **Arwin Goossens, Lize Bynens, Jochen Vanderspikken, Wouter Maes, Koen Vandewal**, Univ. Hasselt (Belgium)

13013-54 • 05:45 PM - 07:45 PM

**Confining light at nanoscale with organics: J-aggregate films supporting Surface Exciton Polaritons**

*Author(s):* **José Gama**, CINBIO, Univ. de Vigo (Spain); **Marina García-Prado**, Instituto de Óptica "Daza de Valdés", Consejo Superior de Investigaciones Científicas (Spain); **Carla Estévez-Varela, Paula Sanmartín-Rodríguez**, CINBIO, Univ. de Vigo (Spain); **Pedro Fernandes**, INL - International Iberian Nanotechnology Lab. (Portugal); **Rosalía Serna**, Instituto de Óptica "Daza de Valdés", Consejo Superior de Investigaciones Científicas (Spain); **Martín López-García**, INL - International Iberian Nanotechnology Lab. (Portugal); **Isabel Pastoriza-Santos**, CINBIO, Univ. de Vigo (Spain); **Sara Núñez-Sánchez**, Ctr. de Física das Univs. do Minho e do Porto (Portugal)

13013-55 • 05:45 PM - 07:45 PM

**Strategies for improving the efficiency and lifetime of blue OLEDs for a lab-on-chip sensor**

*Author(s):* **Luis Abraham Lozano-Hernández, Isabelle Seguy, Ludovic Salvagnac, Julien Roul**, Lab. d'Analyse et d'Architecture des Systèmes, Univ. de Toulouse, CNRS (France); **Fabien Lemarchand, Antonin Moreau, Julien Lumeau**, Aix-Marseille Univ. (France), Ecole Centrale de Marseille (France), Institut Fresnel, CNRS (France); **Veronique Bardinal**, Lab. d'Analyse et d'Architecture des Systèmes, Univ. de Toulouse, CNRS (France)

13013-57 • 05:45 PM - 07:45 PM

**Theoretical study of host-guest exciton-polaron quenching rates in phosphorescent OLEDs including beyond Förster-type interactions**

*Author(s):* **Clint van Hoesel, Reinder Coehoorn, Peter A. Bobbert**, Technische Univ. Eindhoven (Netherlands)

13013-58 • 05:45 PM - 07:45 PM

**Advancing organic electrochemical transistors: insights into ionic transport, electrochemical doping, and device stability**

*Author(s):* **Kaishuai Zhang**, Univ. Bern (Switzerland)

## Thursday 11 April 2024

## HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks****Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)Author(s): **Martin Wegener**, Karlsruhe Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)**Coffee Break 10:35 AM - 11:00 AM**

## SESSION 8: ORGANIC PHOTOVOLTAICS II

11 April 2024 • 11:00 AM - 12:10 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Safa Shoaee**, Univ. Potsdam (Germany)

13013-33 • 11:00 AM - 11:30 AM

**Green process for organic solar cells: water-based organic semiconductor nanoparticle dispersions** (Invited Paper)Author(s): **Hugo Laval**, Lab. d'Intégration du Matériau au Système, Univ. de Bordeaux, CNRS (France); **Alexandre Holmes**, Institut des Sciences Analytiques et de Physico-Chimie pour l'environnement et les Matériaux, Univ. de Pau et des Pays de l'Adour (France); **Gwenaël Bonfante**, Lab. for Integrated Micro-Mechatronic Systems, CNRS International Research Lab., Institute of Industrial Science, The Univ. of Tokyo (Japan); **Guillaume Wantz**, Lab. d'Intégration du Matériau au Système, Univ. de Bordeaux, CNRS (France); **Anthony Genot**, Lab. for Integrated Micro-Mechatronic Systems, CNRS International Research Lab., Institute of Industrial Science, The Univ. of Tokyo (Japan); **Christine Lartigau-Dagron**, Institut des Sciences Analytiques et de Physico-Chimie pour l'environnement et les Matériaux, Univ. de Pau et des Pays de l'Adour (France); **Natalie Holmes**, The Univ. of Sydney (Australia); **Antoine Bousquet**, Institut des Sciences Analytiques et de Physico-Chimie pour l'environnement et les Matériaux, Univ. de Pau et des Pays de l'Adour (France); **Sylvain Chambon**, Lab. d'Intégration du Matériau au Système, Univ. de Bordeaux, CNRS (France)

13013-34 • 11:30 AM - 11:50 AM

**Organic indoor PV: Vanishing surface recombination allows for robust device architecture**Author(s): **Xueshi Jiang**, **Bernhard Siegmund**, **Koen Vandewal**, IMO-IMOMECE, Univ. Hasselt (Belgium)

13013-35 • 11:50 AM - 12:10 PM

**Role of energetic offset in low-offset organic solar cells and its effect on loss pathways**Author(s): **Bowen Sun**, Univ. Potsdam (Germany)**Lunch Break 12:10 PM - 01:30 PM**

## SESSION 9: NEW MATERIALS, CONCEPTS, AND DEVICES I

11 April 2024 • 01:30 PM - 03:00 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Shuzo Hirata**, The Univ. of Electro-Communications (Japan)

13013-36 • 01:30 PM - 02:00 PM

**Simple and versatile platforms for manipulating light with matter: strong light-matter coupling in fully solution-processed optical microcavities** (Invited Paper)Author(s): **Natalie Stingelin**, Georgia Institute of Technology (United States)

13013-37 • 02:00 PM - 02:20 PM

**Carrier Transport in Single-Walled Carbon Nanotubes-Si Heterojunctions**Author(s): **Ivan V. Komissarov**, **Brendan Habert**, Univ. of Rochester (United States); **Lizaveta A. Dronina**, **Alexandr L. Danilyuk**, Belarusian State Univ. of Informatics and Radioelectronics (Belarus); **Matteo Salvato**, Univ. degli Studi di Roma "Tor Vergata" (Italy); **Serghej L.****Prischepa**, Belarusian State Univ. of Informatics and Radioelectronics (Belarus); **Roman Sobolewski**, Univ. of Rochester (United States)

13013-38 • 02:20 PM - 02:40 PM

**Accurate modelling and determination of structural properties of organic thermoelectric polymers**

*Author(s):* **Arne Meulemans, Daniel Escudero**, KU Leuven (Belgium)

13013-39 • 02:40 PM - 03:00 PM

**Organic Bolometers for Far Infrared Detection**

*Author(s):* **Bram Bijmens, Sam Gielen, Wouter Maes, Koen Vandewal**, Univ. Hasselt (Belgium)

**Coffee Break 03:00 PM - 03:30 PM**

## SESSION 10: NEW MATERIALS, CONCEPTS, AND DEVICES II

11 April 2024 • 03:30 PM - 04:30 PM | Berlin/Salon 9, Niveau/Level 0

*Session Chair(s):* **Sebastian Schellhammer**, TU Dresden (Germany)

13013-40 • 03:30 PM - 03:50 PM

**Ultralow threshold triplet fusion upconversion enabled by surface plasmon field enhancement**

*Author(s):* **Jesse A. Wisch, Kelvin A. Green, Amélie C. Lemay, Yiling Q. Li, Tersoo Upaa, Barry P. Rand**, Princeton Univ. (United States)

13013-41 • 03:50 PM - 04:10 PM

**Design of an optical sensor based on organic optoelectronics and nanoplasmonics for multiplex and multimodal detection**

*Author(s):* **Margherita Bolognesi, Emilia Benvenuti, Marco Natali, Salvatore Moschetto, Mario Prosa, Stefano Toffanin**, Istituto per lo Studio dei Materiali Nanostrutturati, Consiglio Nazionale delle Ricerche (Italy); **Marco Angelini**, Optics For Life (Italy); **Franco Marabelli**, Univ. degli Studi di Pavia (Italy); **Paola Pellacani**, Plasmore S.r.l. (Italy)

13013-42 • 04:10 PM - 04:30 PM

**Single-layer films of organic compounds studied by spectroscopic ellipsometry**

*Author(s):* **Patricija Paulsone, Ilze Aulika, Jelena Butikova, Adriana Maurucaite, Kitija Alise Štucere, Aivars Vembris**, Institute of Solid State Physics, Univ. of Latvia (Latvia)



# CONFERENCE 13014

## Photonics for Solar Energy Systems X

10 - 11 April 2024 | Madrid 1/Salon 3, Niveau/Level 0

**Conference Chair(s):** Alexander N. Sprafke, Martin-Luther Univ. Halle-Wittenberg (Germany); Jan Christoph Goldschmidt, Philipps-Univ. Marburg (Germany); Luana Mazzarella, Technische Univ. Delft (Netherlands)

**Program Committee:** Benedikt Bläsi, Fraunhofer-Institut für Solare Energiesysteme (Germany); Klaus Jäger, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Yajie Jiang, The Univ. of New South Wales (Australia); Ulrich Wilhelm Paetzold, Karlsruher Institut für Technologie (Germany); Rudi Santbergen, Technische Univ. Delft (Netherlands)

### Wednesday 10 April 2024

#### WELCOME AND INTRODUCTION

10 April 2024 • 01:00 PM - 01:10 PM | Madrid 1/Salon 3, Niveau/Level 0

**Alexander N. Sprafke**, Martin-Luther Univ. Halle-Wittenberg (Germany)

**Jan Christoph Goldschmidt**, Philipps-Univ. Marburg (Germany)

**Luana Mazzarella**, Technische Univ. Delft (Netherlands)

Conference Chairs

#### SESSION 1: OPTICS FOR PHOTOVOLTAICS AND TANDEM SOLAR CELLS

10 April 2024 • 01:10 PM - 03:30 PM | Madrid 1/Salon 3, Niveau/Level 0

*Session Chair(s):* Luana Mazzarella, Technische Univ. Delft (Netherlands)

13014-1 • 01:10 PM - 01:40 PM

**Optical challenges for terawatt-scale photovoltaics** (*Invited Paper*)

*Author(s):* **Christiane Becker**, Helmholtz-Zentrum Berlin (Germany); **Benedikt Bläsi**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany); **Sven Burger**, Zuse Institute Berlin (Germany); **Bruno Ehrler**, AMOLF (Netherlands); **Ivan Gordon**, imec (Belgium); **Olindo Isabella**, Technische Univ. Delft (Netherlands); **Klaus Jaeger**, Helmholtz-Zentrum Berlin (Germany); **Marko Jost**, Univ. of Ljubljana (Slovenia); **Phillip Manley**, JCMwave GmbH (Germany); **Delfina Muñoz**, Institut National de l'Energie Solaire (France); **Ulrich W. Paetzold**, Karlsruher Institut für Technologie (Germany); **Hitoshi Sai**, National Institute of Advanced Industrial Science and Technology (Japan); **Eli Yablonovitch**, Univ. of California, Berkeley (United States)

13014-2 • 01:40 PM - 02:00 PM

**Periodic Inverted Micropylamids for Optically Optimized Fully Textured Solution-Processed Perovskite Solar Cells**

*Author(s):* **Hanifa Winarto**, **Johannes Sutter**, **Philipp Tockhorn**, **Steve Albrecht**, **Christiane Becker**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

13014-3 • 02:00 PM - 02:30 PM

**Optical modelling and performance assessment of thin-film silicon/perovskite tandem solar cells** (*Invited Paper*)

*Author(s):* **Federica Saitta**, **Arno H. M. Smets**, Technische Univ. Delft (Netherlands); **Lana Kessels**, Technische Univ. Eindhoven (Netherlands); **Rudi Santbergen**, **Paula Perez Rodriguez**, Technische Univ. Delft (Netherlands); **René A. J. Janssen**, Technische Univ. Eindhoven (Netherlands)

13014-4 • 02:30 PM - 03:00 PM

**Textured all-perovskite tandem solar cells – a numerical study** (*Invited Paper*)

*Author(s):* **Klaus Jaeger**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany), Zuse Institute Berlin (Germany); **Sebastian Berwig**, **Philipp Tockhorn**, **Steve Albrecht**, **Christiane Becker**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

13014-5 • 03:00 PM - 03:30 PM

**Glass textures for photovoltaic modules – an overview** (*Invited Paper*)

*Author(s):* **Benedikt Bläsi**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany)

**Coffee Break 03:30 PM - 04:00 PM**

## SESSION 2: OPTICAL STRUCTURES FOR PHOTOVOLTAICS

10 April 2024 • 04:00 PM - 06:10 PM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Klaus Jaeger**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

13014-6 • 04:00 PM - 04:30 PM

**Hyperuniform Disordered Structures for Selective Solar and Solar-Thermal Absorbers** (Invited Paper)Author(s): **Marian Florescu**, Univ. of Surrey (United Kingdom)

13014-7 • 04:30 PM - 04:50 PM

**On aesthetical appearance of colored perovskite solar modules**Author(s): **Jonas Schaible**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany), Zuse Institute Berlin (Germany), Freie Univ. Berlin (Germany); **Danbi Yoo**, **Hanifa Winarto**, **Alexandra Miaskiewicz**, **Steve Albrecht**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); **Andreas Wessels**, **Benedikt Bläsi**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany); **Sven Burger**, Zuse Institute Berlin (Germany); **Klaus Jaeger**, **Christiane Becker**, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany)

13014-8 • 04:50 PM - 05:10 PM

**MorphoFlex: A Film Based Implementation of the MorphoColor Concept for Colored Photovoltaic Modules**Author(s): **Benedikt Bläsi**, **Martin Mattenheimer**, **Andreas Wessels**, **Oliver Höhn**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany); **Hubert Hauser**, **Jörg Mick**, temicon GmbH (Germany); **Thomas Kroyer**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany)

13014-9 • 05:10 PM - 05:30 PM

**Light Trapping by Nanotextured Back Contacts for Ultrathin CIGSe Solar Cells**Author(s): **Merve Demir**, Martin-Luther-Univ. Halle-Wittenberg (Germany)

13014-10 • 05:30 PM - 05:50 PM

**Anti-Reflective Graded-Index Metasurface with Correlated Disorder for Light Management in Planar Solar Cells**Author(s): **Prerak Dhawan**, **Carsten Rockstuhl**, Karlsruher Institut für Technologie (Germany); **Maria Gaudig**, **Peter M. Piechulla**, **Alexander N. Sprafke**, **Ralf B. Wehrspohn**, Institut für Physik, Martin-Luther-Univ. Halle-Wittenberg (Germany)

13014-11 • 05:50 PM - 06:10 PM

**Enhancement of quantum efficiency in perovskite solar cells through Whispering Gallery Modes from TiO<sub>2</sub> Micro-resonators**Author(s): **Ayusmin Panda**, Indian Institute of Technology Madras (India)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrsPoster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13014-25 • 05:45 PM - 07:45 PM

**Exploring Optimal Characteristics of CZTSSe Solar Cells for Enhanced Performance**Author(s): **Mahassen Elblbeisi**, **Mohammed Shabat**, Islamic Univ. of Gaza (Palestine, State of)

13014-26 • 05:45 PM - 07:45 PM

**Self-trapped exciton photoluminescence mechanism in gold-doped silver nanoclusters embedded in PVP matrix**Author(s): **Russel C. Sevilla**, Chung Yuan Christian Univ. (Taiwan), Research Ctr. of Semiconductor Materials and Advance Optics (Taiwan); **Ruth Jeane Soebroto**, Chung Yuan Christian University (Taiwan), Research Ctr. for Semiconductor Materials and Advanced Optics (Taiwan); **Hsiu-Ying Huang**, **Chi-Tsu Yuan**, Chung Yuan Christian Univ. (Taiwan), Research Ctr. for Semiconductor Materials and Advanced Optics (Taiwan)

13014-27 • 05:45 PM - 07:45 PM

**The synergistic effect of zinc porphyrin additive on the improvement of performance and stability of carbon-based planar perovskite solar cells**Author(s): **Nayerh Malek Mohammadi**, **Salar Mehdipournaei**, **Fatemeh Hosseini Alast**, **Nasser Safari**, Shahid Beheshti Univ. (Iran, Islamic Republic of)

13014-28 • 05:45 PM - 07:45 PM

**The Liquid Phase Epitaxial Growth of GaP on Si for Solar Cell Applications**Author(s): **Tinatun Laperashvili**, **David Laperashvili**, **Vladimer Mikelashvili**, **Orest Kvitsiani**, **Jano Markhulia**, **Revaz Kokhreidze**, Institute of Cybernetics of Georgian Technical Univ. (Georgia)

13014-29 • 05:45 PM - 07:45 PM

**Surface-plasmon-enhanced Perovskite light-emitting diodes**

Author(s): **Yingying Guan**, Northeast Petroleum Univ. (China)

13014-30 • 05:45 PM - 07:45 PM

**Design and characterization of innovative asymmetrical optics for high performance CPV/PV hybrid modules**

Author(s): **Franco Trespidi, Mario V Imperatore, Alessandro Minuto, Edoardo Celi, Gianluca Timò**, RSE - Ricerca sul Servizio Energetico (Italy)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

### SESSION 3: OPTICS PEROVSKITE SOLAR CELLS AND OTHER APPLICATIONS

11 April 2024 • 11:00 AM - 12:10 PM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Benedikt Bläsi**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany)

13014-12 • 11:00 AM - 11:30 AM

**method for bandgap interpolation of perovskite's spectral complex refractive index** (Invited Paper)

Author(s): **Youri Blom, Malte Ruben Vogt, Olindo Isabella, Rudi Santbergen**, Technische Univ. Delft (Netherlands)

13014-13 • 11:30 AM - 11:50 AM

**Photonic management for open-circuit voltage enhancement in perovskite solar cells**

Author(s): **Mariia Kramarenko, Catarina G. Ferreira, Jordi Martorell**, ICFO - Institut de Ciències Fotòniques (Spain)

13014-14 • 11:50 AM - 12:10 PM

**Dynamically evolved oxyhydroxides-alloy photoanodes with enhanced efficiency and stability for solar water splitting**

Author(s): **Fei Xiang, Ning Li, Arturo Burguete-Lopez, Zhao He, Maxim Elizarov, Andrea Fratallocchi**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

### Lunch Break 12:10 PM - 01:20 PM

### SESSION 4: LUMINESCENCE AND SOLAR CELLS

11 April 2024 • 01:20 PM - 03:00 PM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Jan Christoph Goldschmidt**, Philipps-Univ. Marburg (Germany)

13014-16 • 01:20 PM - 01:50 PM

**Effect of luminescence coupling on EQE measurements of high efficiency multi-junction solar cells** (Invited Paper)

Author(s): **Oliver Höhn, Patrick Schygulla, Ralph Müller, Michael Schachtner, David Chojniak, Gerald Siefer, David Lackner, Frank Dimroth**, Fraunhofer-Institut für Solare Energiesysteme ISE (Germany)

13014-17 • 01:50 PM - 02:20 PM

**modelling luminescent coupling in multijunction solar cells: Perovskite Silicon tandem case study** *(Invited Paper)*

*Author(s): Phillip Manley, Martin Hammerschmidt, Lin Zschiedrich, JCMwave GmbH (Germany), Zuse Institute Berlin (Germany); Klaus Jäger, Christiane Becker, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Sven Burger, JCMwave GmbH (Germany), Zuse Institute Berlin (Germany)*

13014-18 • 02:20 PM - 02:40 PM

**Enhancing the open-circuit voltage in organic solar cells through an optical route**

*Author(s): Francisco B. Texca, ICFO - Institut de Ciències Fotòniques (Spain); Mariia Kramarenko, Jordi Martorell, ICFO - Institut de Ciències Fotòniques (Spain), Univ. Politècnica de Catalunya (Spain)*

13014-19 • 02:40 PM - 03:00 PM

**Theoretical analysis of luminescent solar concentrators based on stacked doped fibres by means of Monte Carlo ray-tracing simulations**

*Author(s): Jagoba Barata, Jon Arrue, María Asunción Illarramendi, Joseba Andoni Zubia, Univ. del País Vasco (Spain)*

**Coffee Break 03:00 PM - 03:30 PM**

## SESSION 5: PEROVSKITE SOLAR CELLS AND MATERIAL OPTIMIZATION

11 April 2024 • 03:30 PM - 05:20 PM | Madrid 1/Salon 3, Niveau/Level 0

*Session Chair(s): Rudi Santbergen, Technische Univ. Delft (Netherlands)*

13014-20 • 03:30 PM - 04:00 PM

**The role of polymeric module packaging materials in the performance and reliability of photovoltaics** *(Invited Paper)*

*Author(s): Gernot Oreski, Polymer Competence Ctr. Leoben GmbH (Austria)*

13014-21 • 04:00 PM - 04:20 PM

**Enhanced Efficiency and Stability in Optoelectronic Devices through the Synergistic Interaction of Lead Halide Perovskites and Graphene**

*Author(s): Carmen Coya, Maria Vila, Javier Bartolomé, Univ. Rey Juan Carlos (Spain); Carlos Daniel Redondo, Alicia de Andrés, Instituto de Ciencia de Materiales de Madrid (Spain)*

13014-22 • 04:20 PM - 04:40 PM

**Microwave-assisted Hybrid Perovskite Single Crystal with Carbon Nanotube for Ultrafast Carrier Mobility**

*Author(s): Runkai Liu, The Univ. of Sydney (Australia)*

13014-23 • 04:40 PM - 05:00 PM

**Enhanced formation mechanism in microwave-assisted triple cation perovskites for stable ambient-fabricated perovskite transistors**

*Author(s): Denice Feria, Jia-Wen Su, Guo-Hong Wu, Yi-Tsz Zeng, Jan-Tian Lian, Tai-Yuan Lin, National Taiwan Ocean Univ. (Taiwan)*

13014-24 • 05:00 PM - 05:20 PM

**Conjugated polyelectrolytes as a multifunctional interlayer for perovskite optoelectronic devices**

*Author(s): Han Young Woo, Korea Univ. (Korea, Republic of)*

## CLOSING REMARKS

11 April 2024 • 05:20 PM - 05:25 PM | Madrid 1/Salon 3, Niveau/Level 0

# CONFERENCE 13015

## Photosensitive Materials and their Applications III

08 - 10 April 2024 | Madrid 1/Salon 3, Niveau/Level 0

**Conference Chair(s):** **Robert R. McLeod**, Univ. of Colorado Boulder (United States); **Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain); **Yasuo Tomita**, Univ. of Electro-Communications (Japan)

**Program Committee:** **Andrea Bianco**, Istituto Nazionale di Astrofisica (Italy); **Augusto Beléndez**, Univ. de Alicante (Spain); **Hans I. Bjelkhagen**, Glyndwr Univ. (United Kingdom); **Friedrich-Karl Bruder**, Covestro AG (Germany); **Ivan B. Divliansky**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States); **Antonio Fimia Gil**, Univ. Miguel Hernández (Spain); **Martin Fally**, Univ. Wien (Austria); **Sergi Gallego Rico**, Univ. de Alicante (Spain); **Jinxin Guo**, Beijing Univ. of Technology (China); **Yuan Luo**, National Taiwan Univ. (Taiwan); **Christian Ley**, Univ. de Haute Alsace (France); **Izabela Naydenova**, Dublin Institute of Technology (Ireland); **Nikolay V. Nikonorov**, ITMO Univ. (Russian Federation); **Sergey B. Odinokov**, Bauman Moscow State Technical Univ. (Russian Federation); **Tina Sabel**, Technische Univ. Berlin (Germany); **Oksana V. Sakhno**, Fraunhofer-Institut für Angewandte Polymerforschung IAP (Germany); **Takeo Sasaki**, Tokyo Univ. of Science (Japan); **Kalaichelvi Saravanamuttu**, McMaster Univ. (Canada); **Amy C. Sullivan**, Univ. of Colorado Boulder (United States); **Xiaodi Tan**, Fujian Normal Univ. (China)

### INFORMATION

#### In Memoriam

This year's conference is dedicated to the memory of [John \(Seán\) Sheridan](#), professor and vice-principal for Research and Innovation at the College of Engineering and Architecture and School of Electrical and Electronic Engineering at University College Dublin (Ireland).

Seán's legacy extends far beyond his body of scientific discovery, but resides in the hearts and minds of all those lucky enough to have known him in any capacity.

Seán served as the 2020-2022 Chair of the SPIE conference on Photosensitive Materials and their Applications

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Kolnn (Germany)

**Coffee Break 11:00 AM - 11:30 AM**

## SESSION 1: IN MEMORIAM: A TRIBUTE TO PROF. JOHN T. SHERIDAN

08 April 2024 • 11:30 AM - 12:40 PM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Robert R. McLeod**, Univ. of Colorado Boulder (United States)

Memorial Session in honor of [John \(Seán\) Sheridan](#), professor and vice-principal for Research and Innovation at the College of Engineering and Architecture and School of Electrical and Electronic Engineering at University College Dublin (Ireland).

Seán was an outstanding researcher, inventor and educator. As a passionate educator, he took a great interest in his students and their welfare, supervising over twenty doctoral students, and teaching electromagnetics and optical engineering to generations of undergraduate engineers.

13015-50 • 11:30 AM - 12:00 PM

**Tribute to Prof. John T. Sheridan**

Author(s): **Robert R. McLeod**, Univ. of Colorado Boulder (United States); **Maria Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain);

**Yasuo Tomita**, The Univ. of Electro-Communications (Japan)

13015-2 • 12:00 PM - 12:20 PM

**Volumetric speckles – examination of the 3D form of speckles in free space and Fourier transforming systems.**

Author(s): **Damien P. Kelly**, Technische Univ. Ilmenau (Germany); **Moaz Rauf Nizami**, **Daniel Claus**, Institut für Lasertechnologien in der Medizin und Meßtechnik an der Univ. Ulm (Germany)

13015-3 • 12:20 PM - 12:40 PM

**Comparison of two photosensitive dyes, their optical properties and photosensitive response to SWW**

Author(s): **Derek J. Cassidy**, **John J. Healy**, **John T. Sheridan**, Univ. College Dublin (Ireland)

**Lunch Break 12:40 PM - 01:50 PM**

## SESSION 2: PHOTOPOLYMER MATERIALS AND APPLICATIONS I

08 April 2024 • 01:50 PM - 03:40 PM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Yasuo Tomita**, The Univ. of Electro-Communications (Japan)

13015-4 • 01:50 PM - 02:20 PM

**Vector Vortex Beam Generator Element by Polarization Sensitized Material** (*Invited Paper*)

Author(s): **Xiaodi Tan**, **Shujun Zheng**, **Junchao Jin**, **Jingyu Wang**, **Peiliang Qi**, **Xianmiao Xu**, **Shenghui Ke**, **Xinyi Yuan**, **Junhui Wu**, **Qingdong Li**, **Zeyi Zeng**, **Li Wang**, **Yi Yang**, **Xiao Lin**, **Yuhong Ren**, Fujian Normal Univ. (China)

13015-5 • 02:20 PM - 02:40 PM

**Shrinkage effects in holographic couplers for see-through applications**

Author(s): **Joan Josep Sirvent-Verdú**, **Juan Carlos Bravo Francés**, **Carla Piñol-Galera**, **Cristian Neipp**, **Sergi Gallego**, **Augusto Beléndez**, Univ. de Alicante (Spain)

13015-6 • 02:40 PM - 03:00 PM

**Recording high performance photopolymer holograms in the presence of shrinkage**

Author(s): **Robert R. McLeod**, **Andrew N. Sias**, Univ. of Colorado Boulder (United States)

13015-7 • 03:00 PM - 03:20 PM

**Sensitivity-enhancing modified photopolymer of PQ/PMMA**

Author(s): **Junhui Wu**, **Junchao Jin**, **Jinhong Li**, **Zeyi Zeng**, **Qingdong Li**, **Jie Liu**, **Mingyong Chen**, **Zuoyu Zhang**, **Li Wang**, **Xiao Lin**, **Xiaodi Tan**, Fujian Normal Univ. (China)

13015-8 • 03:20 PM - 03:40 PM

**A Standardized NIR Sensitized Bayfol® HX Film**

Author(s): **Friedrich-Karl Bruder**, Covestro AG (Germany); **Johannes K. Frank**, **Sven Hansen**, **Mira Holzheimer**, **Alexander Lorenz**, Covestro Deutschland AG (Germany); **Christel Manecke**, Covestro AG (Germany); **Jack Mills**, Covestro LLC (United States); **Lena Nault**, **Igor Pochorowski**, Covestro Deutschland AG (Germany); **Thomas Roelle**, Covestro AG (Germany)

**Coffee Break 03:40 PM - 04:10 PM**

## SESSION 3: AZOPOLYMER AND SOL-GEL MATERIALS

08 April 2024 • 04:10 PM - 05:50 PM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Maria Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain)

13015-9 • 04:10 PM - 04:30 PM

**Azo-functionalized copolymer films for vector holography applications**Author(s): **Boaz Jessie Jackin, Sumit Kumar Singh, Kenji Kinashi, Naoto Tsutsumi, Wataru Sakai**, Kyoto Institute of Technology (Japan)

13015-10 • 04:30 PM - 04:50 PM

**Evaluating the anisotropic properties of biological samples, a step towards the design and fabrication of bioinspired photonic structures**Author(s): **Javier Arguelles Lopez, Hender Lopez Silva, George Amarandei, Izabela Naydenova**, Technological Univ. Dublin (Ireland)

13015-11 • 04:50 PM - 05:10 PM

**Light-induced modulation of visco-elastic properties in azobenzene polymers**Author(s): **Stefano Chiodini**, Istituto Italiano di Tecnologia (Italy); **Fabio Borbone, Stefano L. Oscurato**, Univ. degli Studi di Napoli Federico II (Italy); **Pablo D. Garcia**, BYM-Ingema (Spain); **Antonio Ambrosio**, Istituto Italiano di Tecnologia (Italy)

13015-12 • 05:10 PM - 05:30 PM

**Investigation of the UV-resistance of photopolymerisable glass for space applications**Author(s): **Luca Sorridente, Tatsiana Mikulchyk, Izabela Naydenova, Kevin P. Murphy**, Technological Univ. Dublin (Ireland)

13015-13 • 05:30 PM - 05:50 PM

**Color effects based on resonant waveguide grating embedded in a luminescent sol-gel layer**Author(s): **Marie Traynar, Lea Marichez**, Lab. Hubert Curien (France), Institut de Chimie de Clermont-Ferrand (France); **Daniel Zambon**, Institut de Chimie de Clermont-Ferrand (France); **Francois Réveret**, Institut de Chimie de Clermont Ferrand (France); **Audrey Potdevin, Damien Boyer**, Institut de Chimie de Clermont-Ferrand (France); **Arnaud Valour, Isabelle Verrier, Nicolas N. Crespo-Monteiro**, Lab. Hubert Curien (France); **Geneviève Chadeyron**, Institut de Chimie de Clermont-Ferrand (France); **Yves Jourlin**, Lab. Hubert Curien (France)

## Tuesday 9 April 2024

## SESSION 4: METASURFACES AND NOVEL APPLICATIONS

09 April 2024 • 08:30 AM - 10:20 AM | Madrid 1/Salon 3, Niveau/Level 0

Session Chair(s): **Robert R. McLeod**, Univ. of Colorado Boulder (United States)

13015-14 • 08:30 AM - 09:00 AM

**Vanadium dioxide based active metasurfaces: a nanophotonics platform for manipulating light via control of Mie and quasi-bound states in the continuum resonances** (*Invited Paper*)Author(s): **Leonardo Menezes**, Ludwig-Maximilians-Univ. München (Germany)

13015-15 • 09:00 AM - 09:20 AM

**Hierarchical Metal-Organic Frameworks: A new Paradigm in Nonlinear Optics and Data Processing**Author(s): **Valentin A. Milichko**, Univ. de Lorraine (France)

13015-16 • 09:20 AM - 09:40 AM

**High-performance piezophototronic devices based on zinc oxide nanostructured thin films synthesized by physical vapour deposition.**Author(s): **Carlos Garcia Nunez, Michael McKinlay**, Univ. of Glasgow (United Kingdom); **Manuel Pelayo Garcia**, Univ. of the West of Scotland (United Kingdom); **Desmond R. Gibson**, Univ. of the West of Scotland (United Kingdom), AlbaSense Ltd. (United Kingdom)

13015-17 • 09:40 AM - 10:00 AM

**Hybrid oxide-chalcogenide thin film cavity for passive thermal adaptive radiation**Author(s): **Raymond Yu, Bo K. Shrewsbury, Claire Wu, Harish Kumarasubramanian, Mythili Surendran, Jayakanth Ravichandran, Michelle L. Povinelli**, The Univ. of Southern California (United States)

13015-18 • 10:00 AM - 10:20 AM

**Photochemical Bubble Generation on Polymer-Water Interface**Author(s): **Pranaya Ghate, Christopher J. Bardeen**, Univ. of California, Riverside (United States); **Rabih O. Al-Kaysi**, King Abdulaziz City for Science and Technology (Saudi Arabia)**Coffee Break 10:20 AM - 10:50 AM**

## SESSION 5: FLAT OPTICS AND IMAGING

09 April 2024 • 10:50 AM - 12:20 PM | Madrid 1/Salon 3, Niveau/Level 0

*Session Chair(s): Yasuo Tomita*, The Univ. of Electro-Communications (Japan)

13015-19 • 10:50 AM - 11:20 AM

**Advanced Optical Systems through Flat Optics for Biomedical Applications** (*Invited Paper*)*Author(s): Yuan Luo, Sunil Vyas*, National Taiwan Univ. (Taiwan)

13015-20 • 11:20 AM - 11:40 AM

**Reprogrammable flat optics from maskless photo-morphing of azopolymers***Author(s): Francesco Reda, Marcella Salvatore, Fabio Borbone, Pasqualino Maddalena, Stefano Luigi Oscurato*, Univ. degli Studi di Napoli Federico II (Italy)

13015-21 • 11:40 AM - 12:00 PM

**Advanced 3D imaging: A volume holography-based approach to multi-point laser scanning confocal microscopy***Author(s): Surag Suresh*, National Tsing Hua Univ. (Taiwan); *Sunil Vyas*, National Taiwan Univ. (Taiwan); *J. Andrew Yeh*, National Tsing Hua Univ. (Taiwan); *Yuan Luo*, National Taiwan Univ. (Taiwan)

13015-22 • 12:00 PM - 12:20 PM

**Additive manufacturing approach to 3D printed lenses***Author(s): Arlo Marquez-Grap, Gabriel T. Seymour, Robert R. McLeod*, Univ. of Colorado Boulder (United States)**Lunch/Exhibition Break 12:20 PM - 01:20 PM**

## SESSION 6: PHOTOPOLYMER MATERIALS AND APPLICATIONS II

09 April 2024 • 01:20 PM - 04:10 PM | Madrid 1/Salon 3, Niveau/Level 0

*Session Chair(s): Xiaodi Tan*, Fujian Normal Univ. (China)

13015-23 • 01:20 PM - 01:50 PM

**Photosensitive materials for neutron optics** (*Invited Paper*)*Author(s): Martin Fally, Juergen Klepp*, Univ. Wien (Austria); *Christian Pruner*, Univ. Salzburg (Austria); *Elhoucine Hadden*, Institut Laue-Langevin (France), Univ. Wien (Austria); *Andrea Bianco*, INAF - Osservatorio Astronomico di Brera (Italy); *Joachim Kohlbrecher*, Paul Scherrer Institut (Switzerland); *Hanno Filter, Tobias Jenke*, Institut Laue-Langevin (France); *Yasuo Tomita*, The Univ. of Electro-Communications (Japan)

13015-24 • 01:50 PM - 02:10 PM

**Developing Novel Holographic Structures for the detection of Volatile Organic Compounds***Author(s): Faolan R. McGovern, Catherine Grogan, George Amarandei, Izabela Naydenova*, Technological Univ. Dublin (Ireland)

13015-25 • 02:10 PM - 02:30 PM

**Towards Sustainable Solar Energy: Optimization of a Holographic Concentrator in a Green Photopolymer***Author(s): Tomás Lloret López, Marta Morales-Vidal*, Univ. de Alicante (Spain); *Eder Manuel Alfaro Alfaro*, Univ. de La Guajira (Colombia); *José Carlos García-Vázquez, Belén Nieto-Rodríguez, María Inmaculada Pascual Villalobos*, Univ. de Alicante (Spain)

13015-26 • 02:30 PM - 02:50 PM

**Optical fabrication of micro-patterned photopolymer surfaces for application in sensing***Author(s): Owen Kearney, Izabela Naydenova*, Technological Univ. Dublin (Ireland)

13015-27 • 02:50 PM - 03:10 PM

**Direct laser patterning of new cellulose based photopolymer***Author(s): Andrea Bianco, Luca Oggioni*, INAF - Osservatorio Astronomico di Brera (Italy); *Giuseppe Coppola, Antonella Ferrara*, Consiglio Nazionale delle Ricerche (Italy)

13015-28 • 03:10 PM - 03:30 PM

**Photopolymer Material Durability and Safety in Holographic Diffusers for Visual Applications***Author(s): Matthew Hellis, Suzanne Martin*, Technological Univ. Dublin (Ireland), FOCAS Research Institute, TU Dublin (Ireland); *Matthew T. Sheehan*, Technological Univ. Dublin (Ireland); *Edoardo Splendi*, Univ. degli Studi di Modena e Reggio Emilia (Italy), Technological Univ. Dublin (Ireland); *Alan C. Casey*, Technological Univ. Dublin (Ireland); *Kevin P. Murphy*, FOCAS Research Institute, TU Dublin (Ireland)

13015-29 • 03:30 PM - 03:50 PM

**Panchromatic recording of nanocomposite holographic gratings with large refractive index modulation amplitudes***Author(s): Yasuo Tomita Asako Narita, Shuma Hasegawa*, The Univ. of Electro-Communications (Japan)



13015-52 • 03:50 PM - 04:10 PM

**Thermal effects on the VOC-sensitive polydimethylsiloxane holographic gratings**

Author(s): **Aleksandra Hernik, Faolan Radford McGovern, Izabela Naydenova**, Technological Univ Dublin (Ireland)

**Coffee Break 04:10 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13015-39 • 06:10 PM - 08:00 PM

**Analysis of the recording of multifocal lenses in photopolymers for intraocular applications**

Author(s): **Juan Carlos Bravo Francés, Joan Josep Sirvent-Verdú, Jaume Colomina-Martínez, Roberto Fernández, Andrés Márquez Ruíz, Sergi Gallego**, Univ. de Alicante (Spain)

13015-40 • 06:10 PM - 08:00 PM

**Estimation of characteristic parameters of holographic volume gratings based on machine learning**

Author(s): **Jaume Colomina Martínez, Jorge Francés, Juan Carlos Bravo Francés, Joan Josep Sirvent-Verdú, Andrés Pérez-Bernabeu, Cristian Neipp, Mariela L. Alvarez**, Univ. de Alicante (Spain)

13015-41 • 06:10 PM - 08:00 PM

**Chromatic selectivity study in Bayfol HX200 multiplexed-reflection holograms in multilayer systems**

Author(s): **José Carlos García-Vázquez**, Univ. de Alicante (Spain); **Pedro Mas-Abellán**, The Singular Theory (Spain); **Manuel Gutiérrez Ramírez, Tomás Lloret López, Belén Nieto-Rodríguez, Manuel Francisco Ortuño Sanchez, María Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain)

13015-42 • 06:10 PM - 08:00 PM

**Study of the composition of the incubator solutions used for the storage of unslanted transmission holograms in photohydrogels**

Author(s): **Belén Nieto-Rodríguez, Manuel Gutiérrez Ramírez, Marta Morales-Vidal, Tomás Lloret López, José Carlos García-Vázquez**, Univ. de Alicante (Spain); **María Isabel Lucío**, Univ. Politècnica de Valencia, Spain (Spain); **María-José Bañuls, Ángel Maquieira**, Univ. Politècnica de Valencia (Spain); **María Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain)

13015-43 • 06:10 PM - 08:00 PM

**Evaluation of sunflower seed priming with gamma-aminobutyric acid-capped silver nanoparticles produced by the photoreduction method**

Author(s): **Isabela Santos Lopes**, Univ. Federal de São Paulo (Brazil); **Lilia Coronato Courrol**, UNIFESP (Brazil)

13015-44 • 06:10 PM - 08:00 PM

**Review of recording materials in holographic lenses for solar energy applications**

*Author(s):* **Eder Manuel Alfaro Alfaro, Juan Vilardy, Marlón Bastidas**, Univ. de La Guajira (Colombia); **Tomás Lloret López, Marta Morales-Vidal, Maria Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain); **Carlos Jesus Jimenez Ruiz**, Univ. de La Guajira (Colombia)

13015-45 • 06:10 PM - 08:00 PM

**Circular Airy Beam from Fourier phase mask**

*Author(s):* **Sunil Vyas, Cheng Hung Chu, Yuan Luo**, National Taiwan Univ. (Taiwan)

13015-46 • 06:10 PM - 08:00 PM

**Optical modulator based on 2D metal-organic framework single crystal with light-driven anisotropy**

*Author(s):* **Yuliya Kenzhebayeva**, ITMO Univ. (Russian Federation); **Valentin A. Milichko**, ITMO Univ. (Russian Federation), Institut Jean Lamour (France), Univ. de Lorraine (France); **Vladimir Shirobokov**, ITMO Univ. (Russian Federation)

13015-47 • 06:10 PM - 08:00 PM

**From grayscale towards multi-color laser printing inside non-linear metal-organic framework microcrystals**

*Author(s):* **Nikolai Zhestkij, Anastasia Efimova, Yuliya Kenzhebayeva, Pavel Alekseevskiy, Sergey Rzhhevskiy, Svyatoslav A. Povarov, Sergey Shipilovskikh, Valentin A. Milichko**, ITMO Univ. (Russian Federation)

## Wednesday 10 April 2024

### SESSION 7: LIQUID CRYSTALS AND PHOTOREFRACTIVE MATERIALS

10 April 2024 • 08:30 AM - 10:10 AM | Madrid 1/Salon 3, Niveau/Level 0

*Session Chair(s):* **Maria Inmaculada Pascual Villalobos**, Univ. de Alicante (Spain)

13015-30 • 08:30 AM - 09:00 AM

**Rigorous estimation of the LC director distribution and its influence on light propagation in LC-based optical devices** (*Invited Paper*)

*Author(s):* **Jorge Francés**, Univ. de Alicante (Spain)

13015-31 • 09:00 AM - 09:30 AM

**Preparation of fast-response photorefractive liquid crystals and their application to coaxial optical laser ultrasonics** (*Invited Paper*)

*Author(s):* **Takeo Sasaki, Miku Nagaoka, Junko Watanabe, Yoshikaze Umabayashi, Ryouta Machida, Ryoji Masuzawa, Yumiko Naka, Khoa V. Le**, Tokyo Univ. of Science (Japan)

13015-32 • 09:30 AM - 09:50 AM

**Analysis on the presence of out-of-plane LC components on PA-LCoS devices due to crosstalk and fringing fields**

*Author(s):* **Adriana R. Sánchez-Montes, Guillem Najar Francés, Adrian Moya, Emilio J. Mena, Jorge Francés, Andrés Márquez Ruíz, Augusto Beléndez**, Univ. de Alicante (Spain)

13015-33 • 09:50 AM - 10:10 AM

**Higher orders enhancement in gratings produced by a vertically aligned LCoS**

*Author(s):* **Guillem Najar Francés, Francisco J. Martínez Guardiola, Adriana R. Sánchez-Montes, Andrés Pérez-Bernabeu, Eva M. Calzado Estepa, Daniel Puerto Gracia, Andrés Márquez Ruíz**, Univ. de Alicante (Spain)

### Coffee Break 10:10 AM - 10:40 AM

### SESSION 8: GRAPHENES AND QUANTUM DOTS

10 April 2024 • 10:40 AM - 12:20 PM | Madrid 1/Salon 3, Niveau/Level 0

*Session Chair(s):* **Robert R. McLeod**, Univ. of Colorado Boulder (United States)

13015-34 • 10:40 AM - 11:00 AM

**An air tolerant route of synthesising InZnP/ZnS QDs and their application on cell imaging**

*Author(s):* **Yi Wang, Mark A. Green**, King's College London (United Kingdom)

13015-35 • 11:00 AM - 11:20 AM

**Surface Engineering of ZnO nanocrystals with conjugated polyelectrolytes tethering different counterions for inverted PeLEDs**

*Author(s):* **Fu-Bing Chiu, Sheng-Hsiung Yang**, National Yang Ming Chiao Tung Univ. (Taiwan)

13015-36 • 11:20 AM - 11:40 AM

**Up-conversion photoluminescence in graphene quantum dots**

*Author(s):* **Chia-Tse Chang, Hong-Yu Pan**, Chung Yuan Christian Univ. (Taiwan); **Ruth Jeane Soebroto, Russel Cruz Sevilla, Hsiu-Ying Huang, Chi-Tsu Yuan**, Chung Yuan Christian Univ. (Taiwan), Research Ctr. for Semiconductor Materials and Advanced Optics (Taiwan)

13015-37 • 11:40 AM - 12:00 PM

**Potential Broadband photodetector concept based on three-dimensional graphene foam.**

*Author(s):* **Emma Keel**, Univ. of the West of Scotland (United Kingdom); **Carlos Garcia Nunez**, Univ. of Glasgow (United Kingdom); **Marco Caffio**, Integrated Graphene Ltd. (United Kingdom); **Desmond R. Gibson**, Univ. of the West of Scotland (United Kingdom)

13015-38 • 12:00 PM - 12:20 PM

**Improvement of photoemission performance of graphene/metal van der Waals heterojunction photocathode**

*Author(s):* **Yijun Zhang, Song Tang, Yu Jiang, Zehao Tong, Shiman Li, Yunsheng Qian, Rongguo Fu**, Nanjing Univ. of Science and Technology (China); **Feng Shi, Gangcheng Jiao**, Science and Technology on Low-Light-Level Night Vision Laboratory (China)

# CONFERENCE 13016

## Liquid Crystals Optics and Photonic Devices

08 - 11 April 2024 | Luxembourg/Salon 2, Niveau/Level 0



**Conference Chair(s):** Ibrahim Abdulhalim, Ben-Gurion Univ. of the Negev (Israel); Camilla Parmeggiani, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy)

**Program Committee:** Antonio d'Alessandro, Sapienza Univ. di Roma (Italy); Alberta Ferrarini, Univ. degli Studi di Padova (Italy); Tigran Galstian, Univ. Laval (Canada); Helen F. Gleeson, Univ. of Leeds (United Kingdom); Maria Helena Godinho, CENIMAT-Ctr. de Investigacao em Materials (Portugal); Malgosia Kaczmarek, Univ. of Southampton (United Kingdom); Heinz S. Kitzerow, Univ. Paderborn (Germany); S. Krishna Prasad, Ctr. for Liquid Crystal Research (India); Satyendra Kumar, Univ. at Albany (United States); Michel Mitov, Univ. Côte d'Azur, CNRS (France); Wei Lee, National Yang Ming Chiao Tung Univ. (Taiwan); Danqing Liu, Technische Univ. Eindhoven (Netherlands); Kristiaan Neyts, Univ. Gent (Belgium); Janusz Parka, Wojskowa Akademia Techniczna im. Jaroslawa Dabrowskiego (Poland); Krishna Prasad, Ctr. for Liquid Crystal Research (India); Viktor Yu. Reshetnyak, Taras Shevchenko National Univ. of Kyiv (Ukraine); María Del Mar Sánchez-López, Univ. Miguel Hernández (Spain); Sofia I. Torgova, P. N. Lebedev Physical Institute of the RAS (Russian Federation); Yanlei Yu, Fudan Univ. (China)

### Best Paper Award

SPIE Photonics Europe conference on Liquid Crystals Optics and Photonic Devices will offer a Best Paper Award. The Best Paper Award will include a cash reward and an award certificate.

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

2024 Symposium Chair

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Köln (Germany)

### OPENING REMARKS

08 April 2024 • 01:25 PM - 01:30 PM | Luxembourg/Salon 2, Niveau/Level 0

**Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

**Camilla Parmeggiani**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy)

Conference Chairs

### SESSION 1: TUNABLE LIQUID CRYSTAL METAMATERIALS AND LASERS I

08 April 2024 • 01:30 PM - 03:20 PM | Luxembourg/Salon 2, Niveau/Level 0

Session Chair(s): **Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

13016-65 • 01:30 PM - 02:10 PM

**Introduction to photoresponsive LCNs: from photonics to biomedical applications** (Keynote Presentation)

Author(s): **Camilla Parmeggiani**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy)

13016-2 • 02:10 PM - 02:40 PM

**The effect of particle size and shape on blue phase liquid crystal nanocomposites** (Invited Paper)

Author(s): **Linda Reven, Amadeus Even, Aidan Farrow, Manlin Zhang, Jun Zhu**, McGill Univ. (Canada)

13016-3 • 02:40 PM - 03:00 PM

**Deep gratings filled with liquid crystal as a tunable photonic metamaterial**

Author(s): **Majd Abu Aisheh, Amaljith Chandroth Kalliyadan, Mohammad Abutoama, Marwan J. Abu Leil, Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

13016-61 • 03:00 PM - 03:20 PM

**Controlled Synthesis of Optoelectronic Nanocrystals by Liquid Crystalline Templates**

Author(s): **Youngki Kim, Jun-Hyung Im, Hyein Kim, Yong-Young Noh**, Pohang Univ. of Science and Technology (Korea, Republic of)

**Coffee Break 03:20 PM - 03:50 PM**

## SESSION 2: TUNABLE LIQUID CRYSTAL METAMATERIALS AND LASERS II

08 April 2024 • 03:50 PM - 06:00 PM | Luxembourg/Salon 2, Niveau/Level 0

Session Chair(s): **Slobodan Žumer**, Univ. of Ljubljana (Slovenia)

13016-4 • 03:50 PM - 04:20 PM

**Electro-optic tuning of Terahertz Yagi-Uda antenna arrays through liquid crystal reorientation** (Invited Paper)

Author(s): **Victor Y. Reshetnyak**, Taras Shevchenko National Univ. of Kyiv (Ukraine), Univ. of Leeds (United Kingdom); **Ivan I. Yakovkin**, Taras Shevchenko National Univ. of Kyiv (Ukraine); **Dean R. Evans, Timothy J. Bunning**, Air Force Research Lab. (United States)

13016-5 • 04:20 PM - 04:40 PM

**Hybrid smart windows for energy saving and visibility control utilizing liquid crystal tunable scattering effect with nanostructured thin films or nanoporous microparticles of VO<sub>2</sub>.**

Author(s): **Sofiia Barinova, Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel); **Saranya Bhupathi**, Nanyang Technological Univ. (Singapore); **Sheng-Hsiung Yang**, National Yang Ming Chiao Tung Univ. (Taiwan)

13016-6 • 04:40 PM - 05:10 PM

**Dye-doped liquid crystalline systems as sources of multicolor and white laser light.** (Invited Paper)

Author(s): **Jaroslav Mysliwiec**, Wroclaw Univ. of Science and Technology (Poland)

13016-7 • 05:10 PM - 05:40 PM

**Microlasers based on liquid crystal structures - from random lasers to topological lasing.** (Invited Paper)

Author(s): **Wiktor Piecek**, Wojskowa Akademia Techniczna im. Jaroslawa Dabrowskiego (Poland)

13016-42 • 05:40 PM - 06:00 PM

**Tunable liquid crystal Fabry-Perot as a spectral modulator for computational spectral imaging**

Author(s): **Doron Pasha, Majd Abu Aisheh**, Ben-Gurion Univ. of the Negev (Israel); **Issac August**, Sami Shamon College of Engineering (Israel); **Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

## Tuesday 9 April 2024

### SESSION 3: LIQUID CRYSTAL ELASTOMERIC AND POLYMERIC DEVICES

09 April 2024 • 08:30 AM - 10:20 AM | Luxembourg/Salon 2, Niveau/Level 0

Session Chair(s): **Stefania Residori**, HOASYS SAS (France)

13016-8 • 08:30 AM - 09:10 AM

**Motorized liquid crystals activate chirals performing work** (Keynote Presentation)

Author(s): **Dirk J. Broer, Danqing Liu**, Technische Univ. Eindhoven (Netherlands)

13016-9 • 09:10 AM - 09:40 AM

**Linear and nonlinear action of polymer-stabilized liquid crystals for advanced photonics and cryptography** (*Invited Paper*)

Author(s): **Sara Nocentini**, Istituto Nazionale di Ricerca Metrologica (Italy), LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy); **Daniele Martella**, Univ. degli Studi di Firenze (Italy); **Federico Massarelli**, LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy); **Camilla Parmeggiani**, Univ. degli Studi di Firenze (Italy), LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy); **Francesco Riboli**, LENS - Lab. Europeo di Spettroscopie Non-Lineari (Italy), Istituto Nazionale di Ottica (Italy); **Diederik S. Wiersma**, Univ. degli Studi di Firenze (Italy)

13016-10 • 09:40 AM - 10:00 AM

**Thermal Actuation of topological soliton embedded into liquid crystal coating.**

Author(s): **Jacques Peixoto**, Technische Univ. Eindhoven (Netherlands); **Darian Hall**, Univ. of California, Berkeley (United States); **Danqing Liu**, Technische Univ. Eindhoven (Netherlands); **Ivan Smalyukh**, Univ. of Colorado Boulder (United States); **Dirk J. Broer**, Technische Univ. Eindhoven (Netherlands)

13016-11 • 10:00 AM - 10:20 AM

**Polymer-grafted tricycloquinazoline-based mesogens: Quenching of shallow charge traps for efficient photodetection application**

Author(s): **Dharmendra Pratap Singh**, **Asmita Shah**, Univ. du Littoral Côte d'Opale (France); **Y. K. Kim**, Pohang Univ. of Science and Technology (Korea, Republic of); **A. K. Katiyar**, Yonsei Univ. (Korea, Republic of); **S. Kumar Kumar**, Nitte Meenakshi Institute of Technology (India), Raman Research Institute (India)

**Coffee Break 10:20 AM - 10:50 AM****SESSION 4: NOVEL APPLICATIONS OF LIQUID CRYSTALS I**

09 April 2024 • 10:50 AM - 12:40 PM | Luxembourg/Salon 2, Niveau/Level 0

Session Chair(s): **Dirk J. Broer**, Technische Univ. Eindhoven (Netherlands)

13016-12 • 10:50 AM - 11:20 AM

**Microwave liquid crystal phase shifter** (*Invited Paper*)Author(s): **Tsung-Hsien Lin**, National Sun Yat-sen Univ. (Taiwan)

13016-13 • 11:20 AM - 11:50 AM

**Development of Liquid crystal-based devices for optics, photonics, and energy harvesting applications** (*Invited Paper*)Author(s): **Aloka Sinha**, Indian Institute of Technology Delhi (India)

13016-14 • 11:50 AM - 12:10 PM

**Ferroelectric nematic liquid crystals for high-speed electro-optic applications**

Author(s): **Cory Pecinovsky**, **Jason Sickler**, Polaris Electro-Optics, Inc. (United States); **Xi Chen**, **Andrew Bradfield**, **Matthew A. Glaser**, **Noel A. Clark**, Univ. of Colorado Boulder (United States); **Chirag Patel**, Polaris Electro-Optics (United States); **Joseph E Maclellan**, Univ. of Colorado Boulder (United States)

13016-15 • 12:10 PM - 12:40 PM

**Digital histology of gastric tissue biopsies with liquid crystal-based Mueller microscope and machine learning approach** (*Invited Paper*)

Author(s): **Tatiana Novikova**, Ecole Polytechnique, Institut Polytechnique de Paris (France); **Myeongseop Kim**, **Hee Ryung Lee**, **Razvigor Ossikovski**, Ecole Polytechnique (France); **Aude Jobart-Malfait**, Univ.Paris-Saclay (France), Univ. de Versailles Saint-Quentin-en Yvelines (France); **Dominique Lamarque**, Univ. de Versailles Saint-Quentin-en Yvelines (France), Hôpital Ambroise-Paré (France)

**Lunch/Exhibition Break 12:40 PM - 01:50 PM****SESSION 5: NOVEL APPLICATIONS OF LIQUID CRYSTALS II**

09 April 2024 • 01:50 PM - 04:00 PM | Luxembourg/Salon 2, Niveau/Level 0

Session Chair(s): **Aloka Sinha**, Indian Institute of Technology Delhi (India)

13016-16 • 01:50 PM - 02:30 PM

**Pseudo-dielectric heating in liquid-crystal cells and its applications in liquid-crystal photonic devices** (Keynote Presentation)Author(s): **Guan-Fu Sung**, **Wei Lee**, National Yang Ming Chiao Tung Univ. (Taiwan)

13016-17 • 02:30 PM - 03:00 PM

**Optical engineering of domain walls in ferroelectric nematic liquid crystals** (*Invited Paper*)Author(s): **Liana Lucchetti**, Univ. Politecnica delle Marche (Italy)

13016-18 • 03:00 PM - 03:30 PM

**Out-of-equilibrium cellulose-based self-organized photonic structures** (*Invited Paper*)

*Author(s):* **Maria Helena Godinho, Susete N. Fernandes, Pedro Almeida, Rafaela da Rosa**, CENIMAT-Ctr. de Investigacao em Materials (Portugal)

13016-19 • 03:30 PM - 04:00 PM

**Cellulose-based nanocomposites for anti-counterfeiting applications** (*Invited Paper*)

*Author(s):* **Susete N. Fernandes**, CENIMAT-Ctr. de Investigacao em Materials (Portugal), Univ. Nova de Lisboa (Portugal); **Erica Fuoco**, Univ. della Calabria (Italy); **Pedro E. S. Silva**, Aalto Univ. (Finland); **Ricardo Chagas, Jorge M. P. Viana**, CENIMAT-Ctr. de Investigacao em Materials (Portugal); **Maria P. De Santo Ricardo C. Barberi**, Univ. della Calabria (Italy); **Maria H. Godinho**, CENIMAT-Ctr. de Investigacao em Materials (Italy)

**Coffee Break 04:00 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

*2024 Symposium Chair*

16:30 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)

*Author(s):* **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)

*Author(s):* **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## Wednesday 10 April 2024

### SESSION 6: LIGHT PROPAGATION AND INTERACTION WITH LIQUID CRYSTALS

10 April 2024 • 08:30 AM - 10:20 AM | Luxembourg/Salon 2, Niveau/Level 0

*Session Chair(s):* **Bahman Taheri**, AlphaMicron, Inc. (United States)

13016-20 • 08:30 AM - 09:10 AM

**Unwound chiral nematics as a playground for optical and topological solitons** (Keynote Presentation)

*Author(s):* **Guilhem Poy**, Univ. de Montpellier (France); **Slobodan Žumer**, Jožef Stefan Institute (Slovenia)

13016-21 • 09:10 AM - 09:40 AM

**Liquid crystal as material for highly efficient phase shifters in integrated photonics** (*Invited Paper*)

*Author(s):* **Jeroen Beeckman, Wim Bogaerts, Lukas Van Iseghem**, Univ. Gent (Belgium); **Javier Pereiro García**, Univ. Gent (Belgium), Univ. Politècnica de Madrid (Spain); **Jiayi Liu**, Univ. Gent (Belgium)

13016-22 • 09:40 AM - 10:00 AM

**Rewritable nonvolatile polar optical memory driven by the photon spin in chiral liquid crystals**

*Author(s):* **Nicolas Bruni, Charles Loussert, Mushegh Rafayelyan, Tetiana Orlova, Delphine Coursault, Etienne Brasselet**, Univ. de Bordeaux (France)

13016-23 • 10:00 AM - 10:20 AM

**Electrically switchable focus liquid crystal polarization hologram lens**

*Author(s):* **Veranika Y. Stanevich Anatoli A. Murauski, Daminiika Chepeleva**, The Institute of Chemistry of New Materials of the NAS of Belarus (Belarus); **Alexander A. Muravsky**, Private Research Unitary Enterprise 'MTLCD' (Belarus)

**Coffee Break 10:20 AM - 10:50 AM**

### SESSION 7: TUNABLE LIQUID CRYSTAL LENSES, FILTERS, MODULATORS, AND APPLICATIONS I

10 April 2024 • 10:50 AM - 12:20 PM | Luxembourg/Salon 2, Niveau/Level 0

*Session Chair(s):* **Victor Yu. Reshetnyak**, Taras Shevchenko National Univ. of Kyiv (Ukraine)

13016-24 • 10:50 AM - 11:20 AM

**Dynamic control of polarization oscillating Bessel beams through liquid-crystal anisotropic axicons** *(Invited Paper)*

*Author(s):* **María del Mar Sánchez-López, Ignacio Moreno**, Univ. Miguel Hernández (Spain); **Tomasz Jankowski, Noureddine Bennis, Anna Spadlo**, Wojskowa Akademia Techniczna im. Jaroslawa Dabrowskiego (Poland); **José Francisco Algorri**, Univ. de Cantabria (Spain)

13016-25 • 11:20 AM - 11:50 AM

**Diffraction optical elements based on photoaligned liquid crystals: reflective and transmissive devices with different functionalities** *(Invited Paper)*

*Author(s):* **Inge Nys, Miglé Stebryté, Rohan Sharma, Brecht Berteloot, Jeroen Beeckman**, Univ. Gent (Belgium); **Kristiaan Neyts**, Univ. Gent (Belgium), Hong Kong Univ. of Science and Technology (Hong Kong, China)

13016-26 • 11:50 AM - 12:20 PM

**Modal liquid crystal microlens array with tunable-multifocus and dual lens modes** *(Invited Paper)*

*Author(s):* **Che-Ju Hsu, Mareena Antony, Yu-Wu Wang, Chi-Yen Huang**, National Changhua Univ. of Education (Taiwan)

**Lunch/Exhibition Break 12:20 PM - 01:30 PM**

### SESSION 8: TUNABLE LIQUID CRYSTAL LENSES, FILTERS, MODULATORS, AND APPLICATIONS II

10 April 2024 • 01:30 PM - 03:10 PM | Luxembourg/Salon 2, Niveau/Level 0

*Session Chair(s):* **María Del Mar Sánchez-López**, Univ. Miguel Hernández (Spain)

13016-28 • 01:30 PM - 01:50 PM

**Recent progress in variafocal liquid crystal diffractive lens**

*Author(s):* **Xabier Quintana Arregui**, Univ. Politécnica de Madrid (Spain); **Javier Pereiro García**, Univ. Politécnica de Madrid (Spain); **Olga Blanco Fernández, Byron Ganazhapa, Morten A. Geday, José Manuel Otón Sánchez, Manuel Caño García**, Univ. Politécnica de Madrid (Spain)

13016-29 • 01:50 PM - 02:20 PM

**Dynamic and versatile controllability of chiral nematic photonic devices with sunlight-activatable chiral molecular motors** *(Invited Paper)*

*Author(s):* **Ching-Han Yang, Pei-Ru Song, Chia-Rong Lee**, National Cheng Kung Univ. (Taiwan)

13016-30 • 02:20 PM - 02:50 PM

**Optical coherent detection through multi-scattering media by wave-mixing cleaning effect in liquid-crystal OASLM** *(Invited Paper)*

*Author(s):* **Stefania Residori, Umberto Bortolozzo**, HOASYS SAS (France); **François Ramaz, Jean-Pierre Huignard**, Institut Langevin (France)

13016-62 • 02:50 PM - 03:10 PM

**Recent advances in spin-orbit photonic technologies**

*Author(s):* **Francesco Di Colandrea, Alessio D'Errico**, Univ. of Ottawa (Canada); **Ebrahim Karimi**, University of Ottawa (Canada)

**Coffee Break 03:10 PM - 03:40 PM**

### SESSION 9: TUNABLE LIQUID CRYSTAL LENSES, FILTERS, MODULATORS, AND APPLICATIONS III

10 April 2024 • 03:40 PM - 05:50 PM | Luxembourg/Salon 2, Niveau/Level 0

*Session Chair(s):* **Inge Nys**, Univ. Gent (Belgium)

13016-31 • 03:40 PM - 04:00 PM

**Harnessing Optical Vector-Matrix Multipliers for Quantum Algorithms: An Approach Employing Gaussian Modes**

*Author(s):* **Mwezi Koni, Hadrian Bezuidenhout, Andrew Forbes, Isaac Nape**, Univ. of the Witwatersrand, Johannesburg (South Africa)

13016-32 • 04:00 PM - 04:30 PM

**3D nanoprinted structured surfaces: a platform for anchoring and electro-optic switching of liquid crystals** *(Invited Paper)*

*Author(s):* **Markus A. Schmidt, Malte Pliedschun**, Leibniz-Institut für Photonische Technologien e.V. (Germany); **Bingru Zhang, Heinz Kitzerow**, Univ. Paderborn (Germany)

13016-33 • 04:30 PM - 04:50 PM

**Development and Characterization of a Hyperspectral LCTF-based Colposcopic System.**

*Author(s):* **Carlos Vega, Nerea Marquez-Suarez, Raquel Leon, Maria Castro-Fernandez, Guillermo V. Socorro-Marrero**, Univ. de Las Palmas de Gran Canaria (Spain); **Himar Fabelo**, Fundación Canaria Instituto de Investigación Sanitaria de Canarias (Spain), Univ. de Las Palmas de Gran Canaria (Spain); **Jorge Rial-Ferrario**, OPTOMIC España S.A. (Spain); **Gustavo M. Callico**, Univ. de Las Palmas de Gran Canaria (Spain)



13016-34 • 04:50 PM - 05:20 PM

**Photovoltaic spatial light modulators: material selection and processing to enhance device performance** (*Invited Paper*)

*Author(s):* **Thomas Heiser**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); **Yuhan Zhong**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France), Institut Charles Sadron (France); **Sadiara Fall**, P-Layer SAS (France); **Yaochen Lin**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France); **Martin Brinkmann**, Institut Charles Sadron (France); **Nicolas Brouckaert**, **Malgosia Kaczmarek**, Univ. of Southampton (United Kingdom); **Nicolas Leclerc**, Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé (France); **Elise Jouaiti**, **Thomas Ducatel**, Lab. des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (France)

13016-35 • 05:20 PM - 05:50 PM

**Guest-host liquid crystal shutters for AR/MR applications** (*Invited Paper*)

*Author(s):* **Bahman Taheri**, AlphaMicron, Inc. (United States)

**POSTERS-WEDNESDAY**

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13016-47 • 05:45 PM - 07:45 PM

**Detection of Ethanol gas in Cholesteric Liquid Crystal doped with TiO<sub>2</sub> Nanorods at ambient temperature**

*Author(s):* **Ramadevi Suguru Pathinti**, National Institute of Technology, Warangal (India); **Sunil Gavaskar Dasari**, Osmania Univ. (India); **Buchaiah Gollapelli**, National Institute of Technology, Warangal (India); **Ramana Reddy M. V.**, Osmania Univ. (India); **Sreedevi G.**, Siddhartha Institute of Engineering and Technology (India); **Jayalakshmi Vallamkondu**, National Institute of Technology, Warangal (India)

13016-48 • 05:45 PM - 07:45 PM

**IR transmittance characteristics of polymer dispersed liquid crystal devices combined with vanadium dioxide thin films**

*Author(s):* **Byeongdae Choi**, DGIST (Korea, Republic of); **Bunyod Allabergenov**, Urgench State Univ. (Uzbekistan)

13016-49 • 05:45 PM - 07:45 PM

**Optical control of ferroelectric droplets on ferroelectric solids**

*Author(s):* **Stefano Marni**, **Raouf Barboza**, Univ. Politecnica delle Marche (Italy); **Giovanni Nava**, **Tommaso Bellini**, Univ. degli Studi di Milano (Italy); **Liana Lucchetti**, Univ. Politecnica delle Marche (Italy)

13016-50 • 05:45 PM - 07:45 PM

**A pH-sensitive actuator using an eco-friendly biopolymer-based liquid crystal system.**

*Author(s):* **Krishnakanth Chithari**, **Ramadevi Suguru Pathinti**, **Saumya Ranjan Pradhan**, **Jayalakshmi Vallamkondu**, National Institute of Technology, Warangal (India)

13016-52 • 05:45 PM - 07:45 PM

**Smart window with reduced operating voltage and frequency by combining NMP-LC and EHDI scattering effects**

*Author(s):* **Niveen Huseen**, **Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

13016-53 • 05:45 PM - 07:45 PM

**Feasibility study of liquid-crystal spatial light modulators for displaying triplicator gratings at their spatial resolution limit**

*Author(s):* **Shang Gao**, **María del Mar Sánchez-López**, **Ignacio Moreno**, Univ. Miguel Hernández (Spain)

13016-55 • 05:45 PM - 07:45 PM

**Managing residual ions in photovoltaic spatial light modulators**

*Author(s):* **Thomas Ducatel**, ICube (France); **Yuhan Zhong**, ICube (France), Institut Charles Sadron (France); **Yaochen Lin**, ICube (France); **Sadiara Fall**, P-Layer SAS (France); **Thomas Heiser**, ICube (France)

13016-56 • 05:45 PM - 07:45 PM

**Faster narrowband multi-spectral liquid crystal-based imaging modules tailored to the specific application**

*Author(s):* **Doron Pasha**, **Majd Abu Aisheh**, **Marwan J. Abu Leil**, **Ibrahim Abdulhalim**, Ben-Gurion Univ. of the Negev (Israel)

13016-57 • 05:45 PM - 07:45 PM

**Dynamic behaviour in suspensions of magnetic nanoplatelets and their liquid crystalline hybrids**

*Author(s):* **Hajnalka Nádasi**, Otto-von-Guericke Univ. Magdeburg (Germany); **Melvin Küster**, **Frank Ludwig**, Technische Univ. Braunschweig (Germany); **Darja Lisjak**, **Patricija Boštjancic**, Jožef Stefan Institute (Slovenia); **Alexey Eremin**, Otto-von-Guericke Univ. Magdeburg (Germany)

13016-58 • 05:45 PM - 07:45 PM

**Chiral liquid crystal-based concave holographic spectrometer on a curved substrate**

Author(s): **Rohan Sharma, Brecht Berteloot, Inge Nys, Kristiaan Neyts**, Univ. Gent (Belgium)

13016-59 • 05:45 PM - 07:45 PM

**Laser generation in a Tamm plasmon structure controlled by a nematic liquid crystal**

Author(s): **Ivan I. Yakovkin, Mykhailo Ledney**, Taras Shevchenko National Univ. of Kyiv (Ukraine); **Victor Y. Reshetnyak**, Taras Shevchenko National Univ. of Kyiv (Ukraine), Univ. of Leeds (United Kingdom); **Ieva Pakamoryte, Philip Hands**, The Univ. of Edinburgh (United Kingdom)

13016-60 • 05:45 PM - 07:45 PM

**Optical torque on cholesteric liquid crystal droplets with radial defects**

Author(s): **Gregorio Gonzalez-Cortes**, Univ. de Bordeaux (France)

13016-63 • 05:45 PM - 07:45 PM

**Efficient diffractive optics based on patterned short pitch chiral liquid crystal**

Author(s): **Migle Stebryte, Inge Nys, Jeroen Beeckman**, Univ. Gent (Belgium); **Kristiaan Neyts**, Univ. Gent (Belgium), Hong Kong Univ. of Science and Technology (Hong Kong, China)

13016-64 • 05:45 PM - 07:45 PM

**Exploring the potential of cellulose liquid crystal devices: insights from nature's design**

Author(s): **Sérgio Almeida**, Univ. Nova de Lisboa (Portugal); **Pedro Almeida**, Instituto Superior de Engenharia de Lisboa (Portugal), CENIMAT-Ctr. de Investigacao em Materials (Portugal); **Maria Helena Godinho**, Univ. Nova de Lisboa (Portugal), CENIMAT-Ctr. de Investigacao em Materials (Portugal)

## Thursday 11 April 2024

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

### Coffee Break 10:35 AM - 11:00 AM

### SESSION 10: TUNABLE LIQUID CRYSTAL METAMATERIALS AND LASERS III

11 April 2024 • 11:00 AM - 12:50 PM | Luxembourg/Salon 2, Niveau/Level 0

Session Chair(s): **Wiktoria Piecsek**, Wojskowa Akademia Techniczna im. Jaroslawa Dabrowskiego (Poland)

13016-36 • 11:00 AM - 11:30 AM

**Beyond cellulose nanocrystals: photonic films fabricated from lyotropic liquid crystals** (Invited Paper)

Author(s): **Johanna R. Bruckner, Selina Itzigebl**, Univ. Stuttgart (Germany)

13016-37 • 11:30 AM - 12:00 PM

**Mechanics and fibre formation in ferroelectric nematics and their hybrids** (Invited Paper)

Author(s): **Alexey Eremin, Alexander Jarosik, Hajnalka Nádasí**, Otto-von-Guericke Univ. Magdeburg (Germany)

13016-38 • 12:00 PM - 12:30 PM

**Direct laser-written waveguides for integrated liquid crystal micro-photonics** (Invited Paper)

Author(s): **Igor Muševič, Mahendran Vellaichamy, Uros Jagodic, Jaka Pisljar, Andreja Jelen, Miha Skarabot**, Jožef Stefan Institute (Slovenia); **Andriy Nych**, Institute of Physics, NASU (Ukraine)

13016-39 • 12:30 PM - 12:50 PM

**New solution for broadband geometrical phase liquid crystal devices**

*Author(s):* **Alexander A. Muravsky**, Private Research Unitary Enterprise 'MTLCD' (Belarus); **Veranika Y. Stanevich**, **Anatoli A. Murauski**, The Institute of Chemistry of New Materials of the NAS of Belarus (Belarus)

**Lunch Break 12:50 PM - 02:00 PM**

**SESSION 11: NOVEL APPLICATIONS OF LIQUID CRYSTALS III**

11 April 2024 • 02:00 PM - 03:40 PM | Luxembourg/Salon 2, Niveau/Level 0

*Session Chair(s):* **Camilla Parmeggiani**, LENS - Lab. Europeo di Spettroscopia Non-Lineari (Italy)

13016-41 • 02:00 PM - 02:20 PM

**Liquid Crystalline Networks for multi-responsive microstructures**

*Author(s):* **Simone Donato**, LENS, Univ. of Florence (Italy); **Sara Nocentini**, **Daniele Martella**, **Camilla Parmeggiani**, **Diederik S. Wiersma**, Univ. degli Studi di Firenze (Italy); **Srikanth Kolagatla**, **Colm Delaney**, **Larisa Florea**, Trinity College Dublin (Ireland)

13016-43 • 02:20 PM - 02:40 PM

**Nonreciprocal nematicon propagation**

*Author(s):* **Enrique Calisto**, The Univ. of Edinburgh (United Kingdom); **Gaetano Assanto**, Univ. degli Studi di Roma Tre (Italy)

13016-44 • 02:40 PM - 03:00 PM

**Tunable orbital angular momentum vortex beam generation based on liquid crystal devices**

*Author(s):* **Javier Pereiro García**, **Pablo de la Rosa del Val**, **José Manuel Otón Sánchez**, **Xabier Quintana Arregui**, **Morten A. Geday**, Ctr. de Materiales y Dispositivos Avanzados para Tecnología de la Información y Comunicaciones (Spain); **Manuel Caño García**, Univ. de Granada (Spain)

13016-46 • 03:00 PM - 03:20 PM

**Development of label-free biosensor using liquid crystal droplets for detection of amyloid beta-42**

*Author(s):* **Saumya Ranjan Pradhan**, **Ramadevi Suguru Pathinti**, National Institute of Technology, Warangal (India); **Ramesh Kandimalla**, Kakatiya Medical College (India); **Madhava Rao Veeramalla N.**, Mahathma Gandhi Memorial Hospital (India); **Krishnakanth Chithari**, **Jayalakshmi Vallamkondu**, National Institute of Technology, Warangal (India)

13016-54 • 03:20 PM - 03:40 PM

**Tunable liquid crystal prism for differential interference contrast microscopy**

*Author(s):* **Alexander A. Muravsky**, Private Research Unitary Enterprise 'MTLCD' (Belarus); **Anatoli A. Murauski**, The Institute of Chemistry of New Materials of the NAS of Belarus (Belarus)

**CLOSING REMARKS**

11 April 2024 • 03:40 PM - 03:45 PM | Luxembourg/Salon 2, Niveau/Level 0

# CONFERENCE 13017

## Machine Learning in Photonics

08 - 11 April 2024 | Madrid 2/Salon 4, Niveau/Level 0

**Conference Chair(s):** Francesco Ferranti, Vrije Univ. Brussel (Belgium); Mehdi Keshavarz Hedayati, Durham Univ. (United Kingdom); Andrea Fratolocchi, King Abdullah Univ. of Science and Technology (Saudi Arabia)

**Program Committee:** Alexandra Boltasseva, Purdue Univ. (United States); Daniel Brunner, FEMTO-ST (France); Francesco Da Ros, DTU Fotonik (Denmark); Jonathan A. Fan, Stanford Univ. (United States); Ryan Hamerly, MIT (United States); Wei Ma, Zhejiang Univ. (China); Otto L. Muskens, Univ. of Southampton (United Kingdom); Tatsuhiro Onodera, Cornell Univ. (United States); Francesca Parmigiani, Microsoft Research (United Kingdom); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy); Junsuk Rho, Pohang Univ. of Science and Technology (Korea, Republic of); Bhavin J. Shastri, Queen's Univ. (Canada); Peter R. Wiecha, LAAS-CNRS (France); Nathan Youngblood, Univ. of Pittsburgh (United States)

### Monday 8 April 2024

#### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)

*2024 Symposium Chair*

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

*Author(s):* Stefanie Barz, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

*Author(s):* Malte C. Gather, Univ. zu Koln (Germany)

#### Coffee Break 11:00 AM - 11:30 AM

#### OPENING REMARKS

08 April 2024 • 11:30 AM - 11:40 AM | Madrid 2/Salon 4, Niveau/Level 0

**Francesco Ferranti**, Vrije Univ. Brussel (Belgium)

Conference Chair

#### SESSION 1: MACHINE LEARNING FOR PHOTONIC SYSTEMS I

08 April 2024 • 11:40 AM - 12:50 PM | Madrid 2/Salon 4, Niveau/Level 0

*Session Chair(s):* Francesco Ferranti, Vrije Univ. Brussel (Belgium)

13017-1 • 11:40 AM - 12:10 PM

**Machine learning techniques for inverse system design and control of photonic systems** (*Invited Paper*)

*Author(s):* Darko Zibar, Francesco Da Ros, DTU Electro (Denmark)

13017-2 • 12:10 PM - 12:30 PM

**Generative model for multiple-purpose inverse design and forward prediction of disordered waveguides in linear and nonlinear**

**regimes**

*Author(s):* **Ziheng Guo, Zhongliang Guo, Oggie Arandelovic, Andrea DiFalco**, Univ. of St. Andrews (United Kingdom)

13017-3 • 12:30 PM - 12:50 PM

**Non-destructive underground fiber Bragg grating sensing system with ResNet prediction for root phenotyping**

*Author(s):* **Steven Binder**, The Univ. of Georgia (United States); **Kabir Hossain, Alexander Bucksch**, The Univ. of Arizona (United States);

**Mable P. Folk**, The Univ. of Georgia (United States)

**Lunch Break 12:50 PM - 02:00 PM****SESSION 2: MACHINE LEARNING FOR PHOTONIC SYSTEMS II**

08 April 2024 • 02:00 PM - 03:20 PM | Madrid 2/Salon 4, Niveau/Level 0

*Session Chair(s):* **Francesco Da Ros**, DTU Electro (Denmark)

13017-4 • 02:00 PM - 02:30 PM

**Artificial discovery of coupled-mode circuits with desired scattering behaviour** *(Invited Paper)*

*Author(s):* **Vittorio Peano, Jonas Landgraf, Florian Marquardt**, Max-Planck-Institut für die Physik des Lichts (Germany)

13017-5 • 02:30 PM - 03:00 PM

**Machine learning applications to nonlinear fiber-optics systems** *(Invited Paper)*

*Author(s):* **Goëry Genty**, Tampere Univ. (Finland)

13017-11 • 03:00 PM - 03:20 PM

**Optoacoustic recurrent operator**

*Author(s):* **Steven Becker**, Max-Planck-Institut für die Physik des Lichts (Germany), Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany);

**Dirk Englund**, Massachusetts Institute of Technology (United States); **Birgit Stiller**, Max-Planck-Institut für die Physik des Lichts (Germany),

Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

**Coffee Break 03:20 PM - 03:50 PM****SESSION 3: MACHINE LEARNING FOR PHOTONIC SYSTEMS III**

08 April 2024 • 03:50 PM - 06:00 PM | Madrid 2/Salon 4, Niveau/Level 0

*Session Chair(s):* **Mehdi Keshavarz Hedayati**, Durham Univ. (United Kingdom)

13017-7 • 03:50 PM - 04:20 PM

**Exploiting machine learning to design nanophotonic scatterers** *(Invited Paper)*

*Author(s):* **Carsten Rockstuhl, Yannick Augenstein**, Karlsruher Institut für Technologie (Germany); **Sergei Gladyshev**, Karl-Franzens-Univ.

Graz (Austria); **Theodosios D. Karamanos**, Univ. PSL (France); **Lina Kuhn, Dominik Beutel**, Karlsruher Institut für Technologie (Germany);

**Thomas Weiss**, Karl-Franzens-Univ. Graz (Austria); **Andrey Bogdanov**, Harbin Engineering Univ. (China)

13017-8 • 04:20 PM - 04:40 PM

**Universal metrology camera via hardware implementation of artificial intelligence**

*Author(s):* **Arturo Burguete-Lopez, Maksim O. Makarenko, Qizhou Wang, Andrea Fratolocchi**, King Abdullah Univ. of Science and

Technology (Saudi Arabia)

13017-9 • 04:40 PM - 05:00 PM

**Hardware AI-empowered ultrasensitive detection**

*Author(s):* **Qizhou Wang, Ning Li, Zhao He, Arturo Burguete-Lopez, Maksim O. Makarenko, Fei Xiang, Andrea Fratolocchi**, King

Abdullah Univ. of Science and Technology (Saudi Arabia)

13017-10 • 05:00 PM - 05:20 PM

**Reference-free phase retrieval of multimode fibers enhanced by physics-driven neural network**

*Author(s):* **Yuan Sui, Qian Zhang**, TU Dresden (Germany); **Stefan Rothe**, Yale Univ. (United States); **Jürgen Czarske**, TU Dresden (Germany)

13017-6 • 05:20 PM - 05:40 PM

**AI-driven Free Space Quantum Communications in the third telecom window**

*Author(s):* **Sebastiano Cocchi**, Univ. degli Studi di Firenze (Italy), Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy);

**Alessandro Zavatta**, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy), QTI S.R.L. (Italy); **Tommaso Occhipinti**, QTI S.R.L.

(Italy); **Davide Bacco**, Univ. degli Studi di Firenze (Italy), QTI S.R.L. (Italy)

13017-78 • 05:40 PM - 06:00 PM

**Nonvolatile actuation of a slot microring resonator through photochromic molecular infiltration**

Author(s): **Simon Bilodeau, Eli A Doris, Jesse A Wisch, Manting Gui, Barry P Rand**, Princeton Univ. (United States); **Bhavin J Shastri**, Queen's University (Canada); **Paul R Prucnal**, Princeton Univ. (United States)

**Tuesday 9 April 2024**

**SESSION 4: INVERSE DESIGN I**

09 April 2024 • 08:40 AM - 10:30 AM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Francesco Ferranti**, Vrije Univ. Brussel (Belgium)

13017-12 • 08:40 AM - 09:00 AM

**Assessing near-field properties from the far-field characteristics of coupled nanostructures using deep learning**

Author(s): **Sofia Ponomareva**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France); **Juliette Jiménez Jaimes**, Lab. Collisions, Agrégats, Réactivité (France); **Peter Wiecha**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France)

13017-13 • 09:00 AM - 09:20 AM

**Deep-learning informed design of unitary operators in silicon photonics using programmable phase change materials.**

Author(s): **Thomas Radford**, Univ. of Southampton (United Kingdom); **Peter Wiecha**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS, Univ. de Toulouse (France); **Otto Muskens, Alberto Politi**, Univ. of Southampton (United Kingdom)

13017-14 • 09:20 AM - 09:40 AM

**Optimization by a genetic algorithm of nanopyrnidal broadband quasi-perfect absorbers with deeper insight into the stability of optimal solutions**

Author(s): **Alexandre Mayer, Olivier Deparis, Michaël Lobet**, Univ. de Namur (Belgium)

13017-15 • 09:40 AM - 10:00 AM

**Topology Optimization of Soft Matter Diffraction Gratings**

Author(s): **Peter Ropac, Miha Ravnik**, Univ. of Ljubljana (Slovenia)

13017-16 • 10:00 AM - 10:30 AM

**Contrastive, multimodal, and interpretable machine learning for photonics and beyond** *(Invited Paper)*

Author(s): **Thomas Christensen**, Technical Univ. of Denmark (Denmark); **Charlotte Loh, Viggo Moro, Andrew Ma, Rumen Dangovski, Marin Soljatic**, Massachusetts Institute of Technology (United States)

**Coffee Break 10:30 AM - 11:00 AM**

**SESSION 5: INVERSE DESIGN II**

09 April 2024 • 11:00 AM - 12:40 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Francesco Ferranti**, Vrije Univ. Brussel (Belgium)

13017-17 • 11:00 AM - 11:40 AM

**Deep Learning the Future of Metamaterials** (Keynote Presentation)

Author(s): **Willie J. Padilla**, Duke Univ. (United States)

13017-18 • 11:40 AM - 12:00 PM

**Inverse Design of Lateral Hybrid Metasurfaces: An AI approach**

Author(s): **Rui Fang, Amir Ghasemi, Dagou Zeze, Mehdi Keshavarz Hedayati**, Durham Univ. (United Kingdom)

13017-19 • 12:00 PM - 12:20 PM

**Deep Learning for inverse design of dielectric nanostructures with distinguishable RGB color signatures on dark-field microscopy.**

Author(s): **Juliette Jiménez Jaimes**, Lab. Collisions, Agrégats, Réactivité (France); **Sofia Ponomareva, Peter Wiecha**, Lab. d'Analyse et d'Architecture des Systèmes du CNRS (France)

13017-20 • 12:20 PM - 12:40 PM

**AI-based optical materials discovery**

Author(s): **Amir Ghasemi, Rui Fang, Dagou A. Zeze, Mehdi Keshavarz Hedayati**, Durham Univ. (United Kingdom)

**Lunch/Exhibition Break 12:40 PM - 01:50 PM**

## SESSION 6: INVERSE DESIGN III

09 April 2024 • 01:50 PM - 04:10 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Mehdi Keshavarz Hedayati**, Durham Univ. (Denmark)

13017-21 • 01:50 PM - 02:20 PM

**Machine learning enabled inverse design of structural colour** (*Invited Paper*)Author(s): **Peng Dai, Kai Sun, Otto Muskens, Kees de Groot, Ruomeng Huang**, Univ. of Southampton (United Kingdom)

13017-22 • 02:20 PM - 02:40 PM

**Inverse modeling in nanophotonics enhanced by transfer learning**Author(s): **Liang Cheng, Prashant Singh**, Uppsala Univ. (Sweden); **Francesco Ferranti**, Vrije Univ. Brussel (Belgium)

13017-23 • 02:40 PM - 03:00 PM

**Wavelength-dependent responses and machine learning in nanophotonics modeling**

Author(s):

13017-24 • 03:00 PM - 03:20 PM

**Inverse design of Bright, Dielectric Metasurfaces Color Filters Based on Back-Propagation and Multi-Valued Artificial Neural Networks**Author(s): **Arthur Clini de Souza**, Institut National de Recherche en Informatique et en Automatique, Univ. Côte d'Azur (France), Univ. of Campinas (Brazil), Solnil (France); **Stéphane Lanteri**, Institut National de Recherche en Informatique et en Automatique, Univ. Côte d'Azur (France); **Hugo Enrique Hernandez-Figueroa**, Univ. of Campinas (Brazil); **Marco Abbarchi, David Grosso**, Aix-Marseille Univ. (France), Solnil (France); **Badre Kerzabi**, Solnil (France); **Mahmoud Elsaywy**, Institut National de Recherche en Informatique et en Automatique, Univ. Côte d'Azur (France)

13017-25 • 03:20 PM - 03:40 PM

**Experimental Machine Learning for Aperiodic Wafer-Scale Photonics Inverse Design**Author(s): **Maksim O. Makarenko, Arturo Burguete-Lopez, Fedor Getman, Qizhou Wang, Andrea Fratlocchi**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

13017-26 • 03:40 PM - 04:10 PM

**Time-domain topology optimization for dispersive and broadband inverse design in nanophotonics** (*Invited Paper*)Author(s): **Johannes Gedeon**, Leibniz Univ. Hannover (Germany); **Emadeldeen Hassan**, Umeå University (Sweden); **Andrey B. Evlyukhin, Antonio Calà Lesina**, Leibniz Univ. Hannover (Germany)**Coffee Break 04:10 PM - 04:30 PM**

## HOT TOPICS II

09 April 2024 • 04:30 PM - 06:05 PM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Anna Mignani**, Istituto di Fisica Applicata "Nello Carrara" (Italy)

2024 Symposium Chair

16:30 hrs

**Welcome and Opening Remarks****Speaker Introduction**

13004-500 • 04:35 PM - 05:20 PM

**Nonlinearities, timescales and optical cavities: a toolbox for photonic reservoir computing** (Plenary Presentation)Author(s): **Kathy Lüdge**, Technische Univ. Ilmenau (Germany)

13012-500 • 05:20 PM - 06:05 PM

**General-purpose programmable integrated photonics processors: what things can you do with them?** (Plenary Presentation)Author(s): **José Capmany Francoy**, Univ. Politècnica de València (Spain)

## Wednesday 10 April 2024

## SESSION 7: NEUROMORPHIC COMPUTING

10 April 2024 • 08:30 AM - 10:20 AM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Bhavin J. Shastri**, Queen's Univ. (Canada)

13017-27 • 08:30 AM - 08:50 AM

**A photonic architecture for robust acceleration of arbitrary partial differential equations**

Author(s): **Alexander Tait**, Queen's Univ. (Canada)

13017-28 • 08:50 AM - 09:10 AM

**In situ training of classical and quantum photonic neural networks**

Author(s): **Bhavin J. Shastri**, Queen's Univ. (Canada)

13017-29 • 09:10 AM - 09:40 AM

**Real-time control with photonic neural networks** (*Invited Paper*)

Author(s): **Thomas Ferreira de Lima**, Princeton Univ. (United States); **Hugh Morison**, **Bhavin J. Shastri**, Queen's Univ. (Canada); **Paul R. Prucnal**, Princeton Univ. (United States)

13017-30 • 09:40 AM - 10:20 AM

**Photonics for Neuromorphic Computing** (Keynote Presentation)

Author(s):

## Coffee Break 10:20 AM - 10:50 AM

### SESSION 8: PHOTONIC NEURAL NETWORKS I

10 April 2024 • 10:50 AM - 12:50 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Daniel Brunner**, FEMTO-ST (France)

13017-31 • 10:50 AM - 11:30 AM

**Nonlinear computation with linear optics** (Keynote Presentation)

Author(s): **Demetri Psaltis**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13017-32 • 11:30 AM - 12:00 PM

**Towards reliable photonic neural networks through hardware-software co-optimization** (*Invited Paper*)

Author(s): **Chaoran Huang**, The Chinese Univ. of Hong Kong (Hong Kong, China)

13017-33 • 12:00 PM - 12:20 PM

**Link Loss Analysis of Integrated Linear Weight Bank within Silicon Photonic Neural Network**

Author(s): **Eric C. Blow**, NEC Labs. America, Inc. (United States); **Jiawei Zhang**, **Weipeng Zhang**, **Simon Bilodeau**, **Joshua Lederman**, Princeton Univ. (United States); **Bhavin J. Shastri**, Queen's Univ. (Canada); **Paul R. Prucnal**, Princeton Univ. (United States)

13017-34 • 12:20 PM - 12:50 PM

**Photonics and machine learning: A powerful partnership for sensing** (*Invited Paper*)

Author(s): **Mable P. Fok**, **Steven Binder**, **Md Asaduzzaman Jabin**, The Univ. of Georgia (United States)

## Lunch/Exhibition Break 12:50 PM - 02:00 PM

### SESSION 9: PHOTONIC NEURAL NETWORKS II

10 April 2024 • 02:00 PM - 03:20 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Bhavin J. Shastri**, Queen's Univ. (Canada)

13017-35 • 02:00 PM - 02:20 PM

**Coherent multi-frequency photonic activation function**

Author(s): **Grigorii Slinkov**, **Steven Becker**, Max-Planck-Institut für die Physik des Lichts (Germany); **Dirk Englund**, Research Lab. of Electronics, Massachusetts Institute of Technology (United States); **Birgit Stiller**, Max-Planck-Institut für die Physik des Lichts (Germany)

13017-36 • 02:20 PM - 02:40 PM

**Ultrafast all-optical nonlinear activator employing silicon/graphene hybrid integration**

Author(s): **Siqi Yan**, Huazhong Univ. of Science and Technology (China)

13017-37 • 02:40 PM - 03:00 PM

**Optical computing using nonlinear optical diffraction**

Author(s): **Alon Bahabad**, **Oded Katz**, **Gilad Barir**, **Barak Hadad**, **Daniel Marima**, Tel Aviv Univ. (Israel)

13017-38 • 03:00 PM - 03:20 PM

**Three-Dimensional Integrated Optical Neural Network**

Author(s): **Kanhaya Sharma**, **Adrià Grabulosa**, FEMTO-ST (France); **Erik Jung**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Daniel Brunner**, FEMTO-ST (France)



## Coffee Break 03:20 PM - 03:50 PM

## SESSION 10: PHOTONIC NEURAL NETWORKS III

10 April 2024 • 03:50 PM - 05:50 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Francesco Da Ros**, DTU Electro (Denmark)

13017-39 • 03:50 PM - 04:20 PM

**Optical artificial intelligence enabled by nanoscale holography** (Invited Paper)Author(s): **Min Gu**, Univ. of Shanghai for Science and Technology (China)

13017-40 • 04:20 PM - 04:50 PM

**Optical random projections for large scale machine learning** (Invited Paper)Author(s): **Sylvain Gigan**, Lab. Kastler Brossel (France)

13017-41 • 04:50 PM - 05:10 PM

**Fourier-domain optical convolutional neural networks for semantic segmentation**Author(s): **Min Gu, Simone Lamon, Yuchao Zhang, Qiming Zhang, Zeyu Ge**, Univ. of Shanghai for Science and Technology (China)

13017-42 • 05:10 PM - 05:30 PM

**Optical neural networks trained in situ with reinforcement learning**Author(s): **Oliver Neill, Daniele Faccio**, Univ. of Glasgow (United Kingdom)

13017-43 • 05:30 PM - 05:50 PM

**Arbitrarily programmable wave propagation on a photonic chip**Author(s): **Martin Stein**, Cornell Univ. (United States); **Tatsuhiko Onodera**, Cornell Univ. (United States), NTT Research, Inc. (United States);**Benjamin A. Ash, Mandar M. Sohoni, Melissa Bosch**, Cornell Univ. (United States); **Ryotatsu Yanagimoto**, Cornell Univ. (United States),NTT Research, Inc. (United States); **Marc Jankowski, Timothy P. McKenna**, NTT Research, Inc. (United States), Stanford Univ. (United States);**Tianyu Wang, Gennady Shvets**, Cornell Univ. (United States); **Maxim R. Shcherbakov**, Cornell Univ. (United States), Univ. of California,Irvine (United States); **Logan G. Wright**, Cornell Univ. (United States), Yale Univ. (United States); **Peter L. McMahon**, Cornell Univ. (United

States), Kavli Institute at Cornell for Nanoscale Science (United States)

## POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrsPoster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

13017-57 • 05:45 PM - 07:45 PM

**Deep learning-based macro-bending loss detection by plastic optical fiber specklegram analysis**Author(s): **Nikhil Vangety, Sourabh Roy**, National Institute of Technology, Warangal (India)

13017-58 • 05:45 PM - 07:45 PM

**Exploring metal-organic framework phase change materials via machine learning approach**Author(s): **Vladimir Shirobokov, Grigory Karsakov**, ITMO Univ. (Russian Federation); **Valentin Milichko**, ITMO Univ. (Russian Federation),

Institut Jean Lamour, Univ. de Lorraine (France)

13017-59 • 05:45 PM - 07:45 PM

**Machine learning-enhanced dual-task processor for next generation access networks**Author(s): **George Brestas, Giannis Kanakis, Maria Spyropoulou, Hercules Avramopoulos**, National Technical Univ. of Athens (Greece)

13017-60 • 05:45 PM - 07:45 PM

**Enhancing deep diffractive neural networks via nonlinear metasurfaces**Author(s): **Linzhi Yu, Atanas Gotchev, Humeyra Caglayan**, Tampere Univ. (Finland)

13017-61 • 05:45 PM - 07:45 PM

**Evaluation of action spaces for reinforcement learning in optical design**Author(s): **Cailing Fu, Dominik Onyszkiewicz, Marco Kemmerling, Jochen Stollenwerk, Carlo Holly**, RWTH Aachen Univ. (Germany)

13017-62 • 05:45 PM - 07:45 PM

**Design of classification-based photonic crystal sensor for chemical substance detection**Author(s): **Ezel Yagmur Zeydan Çelen**, Uludag Univ. (Turkey), Univ. Innsbruck (Austria); **Sait Eser Karlik**, Uludag Univ. (Turkey)

13017-63 • 05:45 PM - 07:45 PM

**Advanced machine learning-powered tunable optical signal processor for precise chromatic dispersion compensation in analog B5G/6G mobile fronthaul networks**

*Author(s):* Panagiotis Toumasis, George Brestas, Evrydiki Kyriazi, Konstantina Kanta, Giannis Pouloupoulos, Giannis Giannoulis, Dimitris Apostolopoulos, Hercules Avramopoulos, Institute of Communication and Computer Systems, National Technical Univ. of Athens (Greece)

13017-64 • 05:45 PM - 07:45 PM

**Four-wave mixing impact on WDM neuromorphic computing**

*Author(s):* Nickson Mwamsojo, Kamel Merghem, Frederic Lehmann, Amin Souleiman, Badr-Eddine Benkelfat, Télécom SudParis (France)

13017-65 • 05:45 PM - 07:45 PM

**Cascading photonic reservoirs with deep neural networks increases computational performance**

*Author(s):* Ian Bauwens, Guy Van der Sande, Vrije Univ. Brussel (Belgium); Peter Bienstman, Univ. Gent (Belgium); Guy Verschaffelt, Vrije Univ. Brussel (Belgium)

13017-66 • 05:45 PM - 07:45 PM

**efficient design of nanophotonic structures with deep neural network-enhanced binary optimization**

*Author(s):* Jaesung Lee, Kyung Hee Univ. (Korea, Republic of)

13017-67 • 05:45 PM - 07:45 PM

**Physics-informed machine learning for programmable photonic circuits**

*Author(s):* Isidora Teofilovic, Darko Zibar, Francesco Da Ros, Technical Univ. of Denmark (Denmark)

13017-68 • 05:45 PM - 07:45 PM

**Temporal simulations in a network of degenerate optical parametric oscillators for solving combinatorial optimization problems**

*Author(s):* Menglong He, Kambiz Jamshidi, TU Dresden (Germany)

13017-69 • 05:45 PM - 07:45 PM

**A machine learning based analysis of a reconfigurable 1x2 logic gate operated through an externally induced metamaterial**

*Author(s):* Alessandro Fantoni, Instituto Superior de Engenharia de Lisboa (Portugal); Paolo Di Giamberardino, Sapienza Univ. di Roma (Italy)

13017-70 • 05:45 PM - 07:45 PM

**All-optical output layer in photonic extreme learning machines**

*Author(s):* Vicente Rocha, Tiago Ferreira, Nuno A. Silva, INESC TEC (Portugal)

13017-71 • 05:45 PM - 07:45 PM

**Acoustic insights: advancing object classification in urban landscapes using distributed acoustic sensing and convolutional neural networks**

*Author(s):* Adrian Tomasov, Jan Bukovsky, Pavel Zaviska, Tomas Horvath, Michal Latal, Petr Munster, Brno Univ. of Technology (Czech Republic)

13017-73 • 05:45 PM - 07:45 PM

**Machine-learning driven design of metasurfaces: learn the physics and not the objective**

*Author(s):* Ivan Sekulic, Philipp-Immanuel Schneider, Martin Hammerschmidt, Sven Burger, JCMwave GmbH (Germany), Zuse Institute Berlin (Germany)

13017-74 • 05:45 PM - 07:45 PM

**Predicting laser energy absorption on nanostructured surfaces with deep learning**

*Author(s):* Fayad Ali Banna, Rémi Emonet, Lab. Hubert Curien (France); Anton Rudenko, Wyant College of Optical Sciences (United States), Lab. Hubert Curien (France); Marc Sebban, Jean-Philippe Colombier, Lab. Hubert Curien (France)

13017-75 • 05:45 PM - 07:45 PM

**Enabling optical extreme learning machines with nonlinear optics**

*Author(s):* Nuno A. Silva, Tiago Ferreira, Vicente Rocha, INESC TEC (Portugal)

13017-76 • 05:45 PM - 07:45 PM

**Increasing the nonlinear computational capacity of a spatial photonic reservoir computing system**

*Author(s):* Ian Bauwens, Krishan Harkhoe, Vrije Univ. Brussel (Belgium); Emmanuel Gooskens, Peter Bienstman, Univ. Gent (Belgium); Guy Verschaffelt, Guy Van der Sande, Vrije Univ. Brussel (Belgium)

13017-77 • 05:45 PM - 07:45 PM

**Random forest modelling as a tool for propagation and bend excess loss minimization on silicon nitride waveguide platforms**

*Author(s):* Jakob W. Hinum-Wagner, Samuel M. Hoermann, Technische Univ. Graz (Austria), ams-OSRAM AG (Austria); Gandolf Feigl, Christoph Schmidt, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria); Jochen Kraft, ams-OSRAM AG (Austria); Alexander Bergmann, Institut für Elektrische Messtechnik und Sensorik, Technische Univ. Graz (Austria)

13017-79 • 05:45 PM - 07:45 PM

**Parallel processing of spatial photonic Ising machines using spatial multiplexing**

Author(s): **Suguru Shimomura, Yusuke Ogura, Jun Tanida**, Osaka Univ. (Japan)

**Thursday 11 April 2024**

### HOT TOPICS III

11 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderator:

**Thierry Georges**, Oxxius (France)

2024 Symposium Chair

9:00 hrs

**Welcome and Opening Remarks**

**Speaker Introduction**

12995-501 • 09:05 AM - 09:50 AM

**3D laser nanoprinting** (Plenary Presentation)

Author(s): **Martin Wegener**, Karlsruher Institut für Technologie (Germany)

13006-501 • 09:50 AM - 10:35 AM

**Listening to light: going beyond optical imaging using optoacoustics** (Plenary Presentation)

Author(s): **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

**Coffee Break 10:35 AM - 11:00 AM**

### SESSION 11: PHOTONIC COMPUTING MACHINES

11 April 2024 • 11:00 AM - 12:30 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Francesco Da Ros**, DTU Electro (Denmark)

13017-44 • 11:00 AM - 11:30 AM

**Spatial photonic machines for large-scale computing and polarization imaging** (Invited Paper)

Author(s): **Davide Pierangeli**, Istituto dei Sistemi Complessi, Consiglio Nazionale delle Ricerche (Italy)

13017-45 • 11:30 AM - 11:50 AM

**Improving photonic Ising machines by way of a stability analysis of steady states**

Author(s): **Jacob Lamers, Guy Verschaffelt, Guy Van der Sande**, Vrije Univ. Brussel (Belgium)

13017-46 • 11:50 AM - 12:10 PM

**Understanding the influence of hardware resolution on the performance of photonic Ising machines**

Author(s): **Toon Sevenants, Guy Verschaffelt, Guy Van der Sande**, Vrije Univ. Brussel (Belgium)

13017-52 • 12:10 PM - 12:30 PM

**Inverse design and forward modelling in nanophotonics using deep-learning**

Author(s): **Junsuk Rho**, Pohang Univ. of Science and Technology (Korea, Republic of)

**Lunch Break 12:30 PM - 01:35 PM**

### SESSION 12: SUBSTRATES AND ALGORITHMS FOR LARGE PHOTONIC NEURAL NETWORKS

11 April 2024 • 01:35 PM - 03:25 PM | Madrid 2/Salon 4, Niveau/Level 0

Session Chair(s): **Daniel Brunner**, FEMTO-ST (France)

13017-47 • 01:35 PM - 02:05 PM

**Incoherent photonic neuromorphic computing** (Invited Paper)

Author(s): **Frank Brückerhoff-Plückelmann**, Univ. Münster (Germany); **Wolfram Pernice**, Ruprecht-Karls-Univ. Heidelberg (Germany)

13017-48 • 02:05 PM - 02:25 PM

**Investigation of optimal learning conditions in gain-controlled nonlinear wave reservoirs**

Author(s): **Giulia Marucci**, Univ. of Glasgow (United Kingdom); **Luana Olivieri, Juan Sebastian Toterogongora**, Loughborough Univ. (United Kingdom)

13017-49 • 02:25 PM - 02:45 PM

**Memory capacity analysis of time-delay reservoir computing based on silicon microring resonator nonlinearities.**

*Author(s):* **Bernard Jonathan Giron Castro**, Technical Univ. of Denmark (Denmark); **Christophe Peucheret**, Univ. de Rennes (France); **Francesco Da Ros**, Technical Univ. of Denmark (Denmark)

13017-50 • 02:45 PM - 03:05 PM

**Large-scale neural networks with passive silicon photonics for biologically plausible learning**

*Author(s):* **Alessio Lugnan**, **Stefano Biasi**, Univ. degli Studi di Trento (Italy); **Alessandro Foradori**, Photonics Research Group, Ghent University - imec (Belgium), University of Trento, Department of Physics (Italy); **Peter Bienstman**, Photonics Research Group, Univ. Gent, imec (Belgium); **Peter Bienstman**, Photonics Research Group, Univ. Gent, imec (Belgium); **Lorenzo Pavesi**, Univ. degli Studi di Trento (Italy)

13017-51 • 03:05 PM - 03:25 PM

**High compute density photonic tensor processor for convolution processing**

*Author(s):* **Ming Li**, **Nuannuan Shi**, **Xiangyan Meng**, **Junshen Li**, Institute of Semiconductors (China)

**Coffee Break 03:25 PM - 03:50 PM**

**SESSION 13: MACHINE LEARNING AND PHOTONICS: ACROSS DOMAINS**

11 April 2024 • 03:50 PM - 05:10 PM | Madrid 2/Salon 4, Niveau/Level 0

*Session Chair(s):* **Francesco Ferranti**, Vrije Univ. Brussel (Belgium)

13017-53 • 03:50 PM - 04:10 PM

**Performance Tradeoffs of General-Purpose Digital Hardware and Application-Specific Analog Hardware**

*Author(s):* **Carlos Natalino**, Chalmers Univ. of Technology (Sweden); **Dan Li**, KTH Royal Institute of Technology (Sweden); **Oskars Ozolins**, **Xiaodan Pang**, RISE Research Institutes of Sweden AB (Sweden); **Francesco Da Ros**, Technical Univ. of Denmark (Denmark)

13017-54 • 04:10 PM - 04:30 PM

**A high speed fully trainable laser-based neural network**

*Author(s):* **Anas Skalli**, FEMTO-ST, Univ. de Franche-Comté, CNRS (France); **Mirko Goldmann**, Instituto de Física Interdisciplinar y Sistemas Complejos (Spain); **Nasibeh Haghighi**, Institut für Festkörperphysik, Technische Univ. Berlin (Germany); **Marcin Gebski**, Institute of Physics, Lodz Univ. of Technology (Poland); **Stephan Reitzenstein**, Institut für Festkörperphysik, Technische Univ. Berlin (Germany); **Tomasz Czyszanowski**, Institute of Physics, Lodz Univ. of Technology (Poland); **James Lott**, Institut für Festkörperphysik, Technische Univ. Berlin (Germany); **Daniel Brunner**, FEMTO-ST, Univ. de Franche-Comté, CNRS (France)

13017-55 • 04:30 PM - 04:50 PM

**In-fiber inference capabilities of femtosecond pulse spectral broadening in diverse nonlinear regimes**

*Author(s):* **Mario Chemnitz**, Leibniz-Institut für Photonische Technologien e.V. (Germany), Institut für Angewandte Optik und Biophysik, Friedrich-Schiller-Univ. Jena (Germany); **Mohammad Sobhi Saeed**, **Mehmet Müftüoğlu**, **Bennet Fischer**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

13017-56 • 04:50 PM - 05:10 PM

**Driven semiconductor lasers for information processing**

*Author(s):* **Mirko Goldmann**, **Apostolos Argyris**, **Ingo Fischer**, **Miguel C. Soriano**, Instituto de Física Interdisciplinar y Sistemas Complejos (Spain)

**CLOSING REMARKS**

11 April 2024 • 05:10 PM - 05:15 PM | Madrid 2/Salon 4, Niveau/Level 0

**DIGITAL POSTERS**

The posters listed below are available exclusively for online viewing during the week of SPIE Photonics Europe 2024.

13017-72

**Data-driven intelligent design and optimization of chiral meta-devices**

*Author(s):* **Sadia Noureen**, **Sumbel Ijaz**, **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan); **Qammer H. Abbasi**, University of Glasgow, James Watt School of Engineering (United Kingdom); **Muhammad Zubair**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# CONFERENCE PE130

## Women in Renewable Energy (WiRE) 2024

07 - 08 April 2024 | Berlin/Salon 9, Niveau/Level 0

**Conference Chair(s):** Zakya H. Kafafi, Lehigh Univ. (United States)

**Conference Co-Chair(s):** Natalie Stingelin, Georgia Institute of Technology (United States); Natalie Banerji, Univ. Bern (Switzerland)

### INFORMATION

The theme of this conference forum is on key trends in renewable energy research developed and led by women scientists and engineers from around the world. Focus will center on novel concepts, materials, devices, and architectures for renewable energy with its transformative future global utilization, and applications in enabling technologies.

### Sunday 7 April 2024

#### WELCOME AND INTRODUCTION

07 April 2024 • 02:00 PM - 02:15 PM | Berlin/Salon 9, Niveau/Level 0

**Zakya H. Kafafi**, Lehigh Univ. (United States)

**Natalie Stingelin**, Georgia Institute of Technology (United States)

*Conference Chairs*

#### SESSION 1: POLYMERS AND 2D PEROVSKITES FOR ENERGY HARVESTING

07 April 2024 • 02:15 PM - 03:15 PM | Berlin/Salon 9, Niveau/Level 0

*Session Chair(s):* **Zakya H. Kafafi**, Lehigh Univ. (United States); **Natalie Stingelin**, Georgia Institute of Technology (United States)

PE130-1 • 02:15 PM - 02:45 PM

**Tilting the crystal growth of 2D Perovskites: a tool for breaking wide band gap perovskite solar cell efficiency** (*Invited Paper*)

*Author(s):* **Giulia Grancini**, Univ. degli Studi di Pavia (Italy)

PE130-2 • 02:45 PM - 03:15 PM

**Tailoring the structure of porous conducting polymers for energy harvesting** (*Invited Paper*)

*Author(s):* **Laure Biniek**, Institut Charles Sadron (France)

**Coffee Break 03:15 PM - 03:45 PM**

#### SESSION 2: NEW CONCEPTS AND MATERIALS FOR SOLAR CELLS

07 April 2024 • 03:45 PM - 04:35 PM | Berlin/Salon 9, Niveau/Level 0

*Session Chair(s):* **Zakya H. Kafafi**, Lehigh Univ. (United States); **Natalie Stingelin**, Georgia Institute of Technology (United States)

PE130-3 • 03:45 PM - 04:15 PM

**Designing solution-processed photonic light- and heat-management structures for solution-processable and printable solar cells** (*Invited Paper*)

*Author(s):* **Natalie Stingelin**, Georgia Institute of Technology (United States)

PE130-4 • 04:15 PM - 04:35 PM

**Metallophthalocyanines as outstanding hole transporting materials in perovskite solar cells**

*Author(s):* **Ángela Sastre-Santos**, Univ. Miguel Hernández de Elche (Spain)

## Monday 8 April 2024

### HOT TOPICS I

08 April 2024 • 09:00 AM - 11:00 AM | Auditorium Schweitzer, Niveau/Level 0

Session Moderators:

**Paul Montgomery**, Univ. of Strasbourg (France)  
2024 Symposium Chair

9:00 hrs: **Welcome and Opening Remarks**

9:10 hrs: **City of Strasbourg Welcome**

9:15 hrs: **Speaker Introduction**

12993-500 • 09:20 AM - 10:05 AM

**Photonic quantum technologies: from unravelling quantum foundations to advancing quantum integration and developing applications in quantum networks and computing** (Plenary Presentation)

Author(s): **Stefanie Barz**, Univ. Stuttgart (Germany)

13013-501 • 10:10 AM - 10:55 AM

**Organic photonics for biomedical research and next generation displays** (Plenary Presentation)

Author(s): **Malte C. Gather**, Univ. zu Kolnn (Germany)

### Coffee Break 11:00 AM - 11:30 AM

### SESSION 3: MATERIALS FOR THERMOELECTRICS AND WATER SPLITTING

08 April 2024 • 11:30 AM - 12:30 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Zakya H. Kafafi**, Lehigh Univ. (United States); **Natalie Stingelin**, Georgia Institute of Technology (United States)

PE130-6 • 11:30 AM - 12:00 PM

**Carrier transport in mixed ionic-electronic polymer films for wearable thermoelectrics** (Invited Paper)

Author(s): **Eunkyoung Kim**, Yonsei Univ. (Korea, Republic of)

PE130-7 • 12:00 PM - 12:30 PM

**Design and tracking of transition-metal based catalysts for water splitting** (Invited Paper)

Author(s): **Greta Patzke**, Univ. Zürich (Switzerland)

### Lunch Break 12:30 PM - 02:00 PM

### SESSION 4: MACHINE LEARNING FOR ENERGY HARVESTING MATERIALS

08 April 2024 • 02:00 PM - 03:00 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Zakya H. Kafafi**, Lehigh Univ. (United States); **Natalie Stingelin**, Georgia Institute of Technology (United States)

PE130-8 • 02:00 PM - 02:30 PM

**Materials processing of solution-processed solar cell materials and the power of machine learning** (Invited Paper)

Author(s): **Paulette Clancy**, Johns Hopkins Univ. (United States)

PE130-9 • 02:30 PM - 03:00 PM

**Solvent-driven helix-coil transitions in chiral conjugated polymers** (Invited Paper)

Author(s): **Linda A. Peteanu**, **Megan A. Rice**, **Erin T. Smith**, **Soren Westrey**, **Yuyang Shang**, **Seth Goldberg**, **Kevin J. T. Noonan**, Carnegie Mellon Univ. (United States); **Mircea Cotlet**, Brookhaven National Lab. (United States); **Tomasz A. Kowalewski**, Carnegie Mellon Univ. (United States)

### Coffee Break 03:00 PM - 03:30 PM

### SESSION 5: MATERIALS AND CONCEPTS FOR NOVEL DEVICES

08 April 2024 • 03:30 PM - 04:30 PM | Berlin/Salon 9, Niveau/Level 0

Session Chair(s): **Zakya H. Kafafi**, Lehigh Univ. (United States); **Natalie Stingelin**, Georgia Institute of Technology (United States)

PE130-10 • 03:30 PM - 04:00 PM

**All-printed multisource energy harvesters relying on novel materials and integration concepts** (*Invited Paper*)

Author(s): **Barbara Stadlober**, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria)

PE130-11 • 04:00 PM - 04:30 PM

**Mixed ionic-electronic transport in conducting polymers for actuating devices** (*Invited Paper*)

Author(s): **Sabine Ludwigs**, Univ. Stuttgart (Germany)

### THE ROLE OF WOMEN SCIENTISTS IN RENEWABLE ENERGY: ROUND TABLE DISCUSSION

08 April 2024 • 04:30 PM - 06:00 PM | Berlin/Salon 9, Niveau/Level 0

A round table with a group of panelists will discuss the role that female leadership has played in scientific research, education and innovation, especially in the field of renewable energy.

Round Table topics will include but are not limited to:

- Benefits of female leadership
- Women role models
- Balance between male and female responses to challenges and risks
- Making scientific research an inclusive world
- Male networking versus female solo-working
- The role of education and importance of leaning
- Mentoring and career development

**Moderators:**

**Zakya H. Kafafi**, Lehigh Univ. (United States)

**Natalie Stingelin**, Georgia Institute of Technology (United States)

**Panelists:**

**Paul Meredith**, National Research Chair and Professor, Swansea Univ. (United Kingdom)

**Sandrine Heutz**, Head of Department and Professor, Imperial College London (United Kingdom)

**Giulia Tregnago**, Senior Editor, Nature Publishing Group (United Kingdom)

**Olivier Bardagot**, Chargé de recherche, ICPEES/CNRS (France)

**Eunyoung Kim**, Professor, Yonsei Univ. (Korea, Republic of)

**Paulette Clancy**, Edward J. Schaefer Professor in Engineering, Johns Hopkins Univ. (United States)

## CONFERENCE WS201

# 11th annual Sino-French “Photonics and Optoelectronics” PHOTONET International Research Network Workshop

11 April 2024 | Churchill, Niveau/Level 01

**Conference Chair(s):** **Walter C. P. M. Blondel**, Ctr. de recherche en automatique de Nancy (France); **Boris Gralak**, Institut Fresnel (France); **Christophe Peucheret**, Fonctions Optiques pour les Technologies de l'information (France)

### Wednesday 10 April 2024

#### POSTERS-WEDNESDAY

10 April 2024 • 05:45 PM - 07:45 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Photonics Europe poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Wednesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EPE/poster-presentation-guidelines>.

WS201-12 • 05:45 PM - 07:45 PM

**NIR-II wide-field laminar fluorescence tomography via single-pixel time-domain spatial frequency domain imaging**

*Author(s):* **Feng Gao**, Tianjin Univ. (China)

WS201-13 • 05:45 PM - 07:45 PM

**Semi-infinite meta-structure with significantly anisotropic surface acoustic waves**

*Author(s):* **Hicham Mangach**, Institut Fresnel (France)

WS201-14 • 05:45 PM - 07:45 PM

**Imaging deep tissue with a time-gating confocal near infrared spectroscopy**

*Author(s):* **Feng Gao**, Tianjin Univ. (China)

### Thursday 11 April 2024

#### WELCOME AND INTRODUCTION

11 April 2024 • 08:45 AM - 09:00 AM | Churchill, Niveau/Level 01

**Blondel, Walter C. P. M.**, Ctr. de recherche en automatique de Nancy (France)

**Gralak, Boris**, Institut Fresnel

**Peucheret, Christophe**, Fonctions Optiques pour les Technologies de l'information

*Workshop Chairs*

#### SESSION 1: PHOTONET 1

11 April 2024 • 09:00 AM - 10:20 AM | Churchill, Niveau/Level 01

*Session Chair(s):* **Li Zhang**, Technical Univ. of Denmark (Denmark); **Boris Gralak**, Institut Fresnel (France)

WS201-1 • 09:00 AM - 09:20 AM

**Microcavity enhanced second harmonic generation in thin film lithium niobate**

*Author(s):* **DingShan Gao**, Huazhong Univ. of Science and Technology (China)



WS201-2 • 09:20 AM - 09:40 AM

**High-order absorbing boundary conditions for the computation of quasinormal modes of open electromagnetic structures**

Author(s): **Guillaume Demesy**, Institut Fresnel (France)

WS201-3 • 09:40 AM - 10:00 AM

**Electromagnetic model for microsphere assisted nanoscopy**

Author(s): **Sylvain Lecler**, ICube (France)

WS201-4 • 10:00 AM - 10:20 AM

**Nanostructured blazed gratings for high performance spectrographs**

Author(s): **Simon Ans**, Lab. d'Astrophysique de Marseille (France)

**Coffee Break 10:20 AM - 11:00 AM**

## SESSION 2: PHOTONET II

11 April 2024 • 11:00 AM - 12:00 PM | Churchill, Niveau/Level 01

Session Chair(s): **Jing Xu**, Huazhong Univ. of Science and Technology (China); **Walter C.P.M. Blondel**, Univ. de Lorraine (France)

WS201-5 • 11:00 AM - 11:20 AM

**Efficient prediction of gain profile and power evolution in Raman amplifiers using a neural-network based solver**

Author(s): **Li Zhang**, Technical Univ. of Denmark (Denmark)

WS201-6 • 11:20 AM - 11:40 AM

**Semiconductor optical amplifiers for future communication systems**

Author(s): **Shuqi Yu**, Huawei Paris Research Ctr. (France)

WS201-7 • 11:40 AM - 12:00 PM

**OCT-based estimation of human skin optical properties modifications under biocompatible optical clearing**

Author(s): **Sergey M. Zaytsev**, Univ. de Lorraine (France)

**Lunch Break 12:00 PM - 01:40 PM**

## SESSION 3: PHOTONET III

11 April 2024 • 01:40 PM - 03:00 PM | Churchill, Niveau/Level 01

Session Chair(s): **DingShan Gao**, Huazhong Univ. of Science and Technology (China); **Christophe Peucheret**, Fonctions Optiques pour les Technologies de l'information (France)

WS201-8 • 01:40 PM - 02:00 PM

**Parity time symmetry enabled all optical signal processing**

Author(s): **Jing Xu**, Huazhong Univ. of Science and Technology (China)

WS201-9 • 02:00 PM - 02:20 PM

**Electro-optic frequency combs and frequency chirping in silicon micro-ring modulators**

Author(s): **Erwan Weckenmann**, Institut Foton (France)

WS201-10 • 02:20 PM - 02:40 PM

**Controlling the flow of light in man-made materials for sensing and high-frequency tunneling applications**

Author(s): **Hicham Mangach**, Institut Fresnel (France)

WS201-11 • 02:40 PM - 03:00 PM

**Study of integrated photonic sensors based on chalcogenide layers for mid-infrared applications**

Author(s): **Abdelali Hammouti**, Fonctions Optiques pour les Technologies de l'information (France)

## CLOSING REMARKS

11 April 2024 • 03:00 PM - 03:10 PM | Churchill, Niveau/Level 01

**Blondel, Walter C. P. M.**, Ctr. de recherche en automatique de Nancy (France)

**Gralak, Boris**, Institut Fresnel

**Peucheret, Christophe**, Fonctions Optiques pour les Technologies de l'information

**Break 03:10 PM - 03:15 PM**

## ROUND TABLE DISCUSSION

11 April 2024 • 03:15 PM - 04:00 PM | Churchill, Niveau/Level 01

**Moderators:**

**Blondel, Walter C. P. M.**, Ctr. de recherche en automatique de Nancy (France)

**Gralak, Boris**, Institut Fresnel (France)

**Peucheret, Christophe**, Fonctions Optiques pour les Technologies de l'information (France)

# SPIE. OPTICAL SYSTEMS DESIGN

CONFERENCE 13019 ..... PAGES 266–275

## **Optical Design and Engineering IX**

Chairs: Thierry Lépine; James Babington; Herbert Gross

CONFERENCE 13020 ..... PAGES 276–285

## **Advances in Optical Thin Films VIII**

Chairs: Michel Lequime; Detlev Ristau

CONFERENCE 13021 ..... PAGES 286–290

## **Optical Fabrication and Testing VIII**

Chairs: Eric Ruch; Reinhard Völkel

CONFERENCE 13022 ..... PAGES 291–293

## **Illumination Optics VII**

Chairs: Tina E. Kidger; Stuart David; Thorsten Schupp

CONFERENCE 13023 ..... PAGES 294–299

## **Computational Optics 2024**

Chairs: Daniel G. Smith; Andreas Erdmann

CONFERENCE 13024 ..... PAGES 300–303

## **Optical Instrument Science, Technology, and Applications III**

Chairs: Holger Münz; Breann N. Sitarski; Richard N. Youngworth

# CONFERENCE 13019

## Optical Design and Engineering IX

08 - 11 April 2024 | Etoile A, Niveau/Level 1

**Conference Chair(s):** **Thierry Lépine**, Institut d'Optique (France); **James Babington**, Leonardo UK Ltd. (United Kingdom); **Herbert Gross**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

**Program Committee:** **Julien Archer**, Airbus Defence and Space (France); **Nathalie Blanchard**, INO (Canada); **Andrés Cifuentes**, ASE Optics Europe (Spain); **Andrew J. Court**, TNO (Netherlands); **Sandra Gely**, Ansys, Inc. (France); **Eric Herman**, Zygo Corporation (United States); **Demetrio Labate**, Leonardo (Italy); **Paolo Laporta**, Politecnico di Milano (Italy); **João Mendes-Lopes**, Ansys, Inc. (Spain); **Iain A. Neil**, ScotOptix (Switzerland); **Thomas Nobis**, Carl Zeiss AG (Germany); **Jérôme Primot**, ONERA (France); **Jannick P. Rolland**, Univ. of Rochester (United States); **Elisabetta Rugi Grond**, Thales Alenia Space Switzerland (Switzerland); **Alessio Taiti**, Leonardo (Italy); **Simon Thibault**, Univ. Laval (Canada); **Andrew P. Wood**, Qioptiq Ltd. (United Kingdom); **Richard N. Youngworth**, Riyo-LLC (United States); **María J. Yzuel**, Univ. Autònoma de Barcelona (Spain)

### Monday 8 April 2024

#### SESSION 1: OPTOMECHANICAL DESIGN I

08 April 2024 • 08:30 AM - 10:20 AM | Etoile A, Niveau/Level 1

*Session Chair(s):* **Thierry Lépine**, Institut d'Optique Graduate School (France)

13019-1 • 08:30 AM - 08:50 AM

**From design to manufacture: what could go wrong?**

*Author(s):* **François Riguet**, **Jacques F. Rodolfo**, **Caroline Baptista**, Safran Reosc (France)

13019-2 • 08:50 AM - 09:10 AM

**OptoMechanical Design and Analysis of Silicon Pore X-ray Optics for the NewAthena telescope**

*Author(s):* **James Harpur**, cosine Remote Sensing B.V. (Netherlands)

13019-3 • 09:10 AM - 09:30 AM

**STOP analysis for a low-orbit telescope with the STAR module in Ansys Zemax OpticStudio**

*Author(s):* **Flurin Herren**, ANSYS UK Ltd. (United Kingdom); **Sandra Gely**, Ansys, Inc. (France); **Esteban F. Carbajal**, **David Vega**, Ansys, Inc. (United States); **Christophe Weisse**, ANSYS France SAS (France)

13019-4 • 09:30 AM - 09:50 AM

**Design and development of optical systems for Lander Horizontal Velocity Camera and Navigation Camera in Chandrayaan-3**

*Author(s):* **Arunita Kumari**, **Sathyanarayana Raju K.**, **Bijoy Raha**, **Chetan Kumar**, **Pramod T. E.**, **Rama Subrahmanyam**, **Sreeramkumar U. V.**, **Venkateswaran Ramaswamy**, **Kuppuswamy Venkatesan Sriram**, Indian Space Research Organisation (India)

13019-5 • 09:50 AM - 10:20 AM

**Compact high-resolution LWIR optical system for the MORERA mission: final configuration** (*Invited Paper*)

*Author(s):* **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Luis Pascual**, Thales Alenia Space (Spain); **Paloma Matia-Hernando**, **Andrés Cifuentes**, **Thomas Siegel**, **Javier Martínez**, **Zaira M. Berdiñas**, ASE Optics Europe (Spain); **Tomás Belenguer Dávila**, **Miguel Sanz**, **Angeles Sierra**, **Luis Miguel González Fernández**, INTA Instituto Nacional de Técnica Aeroespacial (Spain); **Clément Chauré**, **José D. Meléndez**, **Jesus Aivar**, **Stefano Li Bassi**, **Javier Moreno**, LIDAX (Spain)

**Coffee Break 10:20 AM - 10:50 AM**

#### SESSION 2: MODELLING AND SIMULATION I

08 April 2024 • 10:50 AM - 12:20 PM | Etoile A, Niveau/Level 1

*Session Chair(s):* **Nathalie Blanchard**, INO (Canada)

13019-6 • 10:50 AM - 11:20 AM

**Fermat meets PanDao: cost-efficient lens design** (*Invited Paper*)

*Author(s):* **Fabian Duerr**, Vrije Univ. Brussel (Belgium), Fermat (Belgium); **Oliver Faehnle**, OST – Ostschweizer Fachhochschule (Switzerland), PanDao GmbH (Switzerland); **Eckhard Langenbach**, PanDao GmbH (Switzerland); **Hugo Thienpont**, Vrije Univ. Brussel (Belgium), Fermat

(Belgium)

13019-7 • 11:20 AM - 11:40 AM

**A new method for glass substitution in optical design based on sensitivity analysis.***Author(s):* **Aleksei S. Garshin**, Photonics Precision Engineering GmbH (Germany)

13019-8 • 11:40 AM - 12:00 PM

**MAVIS: optical distortions of the NGS WFS channel and their impact on the plate scale variation during tracking***Author(s):* **Oleksandra Rebrish, Davide Greggio**, INAF - Osservatorio Astronomico di Padova (Italy); **Giulia Carlà, Guido Agapito**, INAF - Osservatorio Astrofisico di Arcetri (Italy); **Jesse Cranney, Israel Vaughn**, The Australian National Univ. (Australia); **Valentina Viotto**, INAF - Osservatorio Astronomico di Padova (Italy); **François Rigaut**, The Australian National Univ. (Australia); **David Brodrick**, AITC, Research School of Astronomy and Astrophysics, Australian National Univ. (Australia), Astralis Instrument Consortium (Australia); **Dionne M. Haynes**, The Australian National Univ. (Australia); **Mohamed Yahia Bournane**, Independent Researcher (Italy)

13019-9 • 12:00 PM - 12:20 PM

**Design and virtual validation of CMOS image sensor camera***Author(s):* **Sandra Gely**, Ansys, Inc. (France); **Mina Nazari, TJ Gilleran**, Ansys, Inc. (United States); **Sebastien Noygues, Charly Meyer**, Ansys, Inc. (France); **Federico Duque Gomez, Taylor Robertson**, Ansys, Inc. (Canada); **Michael Cheng**, Ansys Japan K.K. (Japan); **David Vega, Angel Morales**, Ansys, Inc. (United States); **Chih-Hao Chen**, Ansys, Inc. (Taiwan); **Dong Sub Shin**, ANSYS Korea (Korea, Republic of); **Maxime Cailler**, Ansys, Inc. (France)**Lunch Break 12:20 PM - 01:30 PM****OPTICAL SYSTEMS DESIGN MONDAY PLENARY SESSION**

08 April 2024 • 01:30 PM - 03:15 PM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)13:30 - 13:45 hrs: **Welcome and Opening Remarks**

13019-500 • 01:45 PM - 02:30 PM

**Future of optical system and lens design in the AI era** (Plenary Presentation)*Author(s):* **Simon Thibault**, Univ. Laval (Canada)

13022-501 • 02:30 PM - 03:15 PM

**Freeform optics for illumination: past, present and future** (Plenary Presentation) (*Invited Paper*)*Author(s):* **Julius A. Muschaweck**, JMO GmbH (Germany)**Coffee Break 03:15 PM - 03:50 PM****SESSION 3: TOLERANCING + MANUFACTURE**

08 April 2024 • 03:50 PM - 05:40 PM | Etoile A, Niveau/Level 1

*Session Chair(s):* **James Babington**, Leonardo UK Ltd. (United Kingdom)

13019-10 • 03:50 PM - 04:20 PM

**Optical tolerances analysis methodology using realistic optomechanical models** (*Invited Paper*)*Author(s):* **Nathalie Blanchard, Frédéric Lamontagne, Michel Doucet**, INO (Canada)

13019-11 • 04:20 PM - 04:40 PM

**Comparison of tolerancing simulations and as-built optical performance in a precision optical system***Author(s):* **Lorenzo Calvano, Paloma Matia-Hernando, Adnan Parwez, Thomas Siegel, Marta C. de la Fuente**, ASE Optics Europe (Spain)

13019-12 • 04:40 PM - 05:00 PM

**Optical Design Progression of Earth Observing Telescope***Author(s):* **Michael K. Gregory**, Optimax Systems, Inc. (United States)

13019-13 • 05:00 PM - 05:20 PM

**Defining and tolerancing freeform surfaces for manufacturing***Author(s):*

13019-15 • 05:20 PM - 05:40 PM

**Pseudo random Monte Carlo tolerancing for correlated optical systems***Author(s):* **Elisabeth Siebert**, Dr. Türk Ingenieurbüro (Germany); **Markus Lipp**, HENSOLDT Optronics GmbH (Germany)

## Tuesday 9 April 2024

## OPTICAL SYSTEMS DESIGN TUESDAY PLENARY SESSION

09 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

9:00 - 9:05 hrs: **Welcome and Opening Remarks**

13023-600 • 09:05 AM - 09:50 AM

**Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?** (Plenary Presentation)

Author(s): **Julie L. Bentley**, The Institute of Optics, Univ. of Rochester (United States)

13021-601 • 09:50 AM - 10:35 AM

**Manufacturing ELT M1 segments: large optics in a smart factory** (Plenary Presentation)

Author(s): **Camille Frapolli**, Safran Reosc (France)

## Coffee Break 10:35 AM - 11:00 AM

## SESSION 4: STRAY LIGHT

09 April 2024 • 11:00 AM - 12:30 PM | Etoile A, Niveau/Level 1

Session Chair(s): **James Babington**, Leonardo UK Ltd. (United Kingdom)

13019-16 • 11:00 AM - 11:20 AM

**Simulation, Analysis and Mitigation of Ghost Reflections in a Multispectral Imaging System**

Author(s): **Kumar Rishav, Barkha Gupta**, Indian Space Research Organisation (India)

13019-17 • 11:20 AM - 11:40 AM

**Minimizing cost through component level stray light analysis.**

Author(s): **David Vega**, Zemax, LLC (United States); **Radu Miron**, Zemax Europe Ltd. (United Kingdom); **Pragati Shukla**, Zemax, LLC (India);

**Flurin Herren, Elham Sarbazi**, Zemax Europe Ltd. (United Kingdom)

13019-18 • 11:40 AM - 12:00 PM

**Automating system-level stray light analysis with Ansys Optics**

Author(s): **Tobias Lauinger**, ANSYS France SAS (France); **Stefan Thoene, Tino Dannenberg**, ANSYS Germany GmbH (Germany); **Mina**

**Nazari, Angel Morales**, Ansys, Inc. (United States); **Gernot Blobel**, ANSYS Germany GmbH (Germany); **Sandra Gely**, Ansys, Inc. (France);

**Mike Grove**, Ansys, Inc. (United States); **Etienne Lesage**, ANSYS France SAS (France); **Stavros Sklavenitis**, Ansys, Inc. (Greece); **Fabien**

**Bastide**, ANSYS France SAS (France)

13019-19 • 12:00 PM - 12:30 PM

**Methodology and results of straylight analysis for LSTM instrument** (Invited Paper)

Author(s): **Alice Robert**, Airbus Defence and Space (France)

## Lunch/Exhibition Break 12:30 PM - 01:40 PM

## SESSION 5: MODELLING AND SIMULATION II

09 April 2024 • 01:40 PM - 03:30 PM | Etoile A, Niveau/Level 1

Session Chair(s): **Nathalie Blanchard**, INO (Canada)

13019-20 • 01:40 PM - 02:10 PM

**Principal component analysis of refractive index spaces: a model-free approach to color analysis and color correction** (Invited Paper)

Author(s): **Holger Münz, Martin Peschka**, Carl Zeiss AG (Germany)

13019-21 • 02:10 PM - 02:30 PM

**The zone decomposition modelling approach to multi-order diffractive surfaces in lens design**

Author(s): **James Babington**, Leonardo UK Ltd. (United Kingdom)

13019-22 • 02:30 PM - 02:50 PM

**Design of maskless micro-optical automotive low-beam**

*Author(s):* **Leo Maximilian Wilhelm**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Dmitrii Stefanidi**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Peter Schreiber**, **Robert Leitel**, **Sylke Kleinle**, **Peter Dannberg**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13019-23 • 02:50 PM - 03:10 PM

**Simulation of the impact of propagation through optical fluids and turbulent flow on optical system performance**

*Author(s):* **Chris Normanshire**, **Steven La Cava**, **Craig Miller**, **Walter Schwarz**, **Felipe Mercado**, **Esteban F. Carbajal**, **David Vega**, **João Mendes-Lopes**, **Mohammed Kamel**, **Valerio Viti**, **Nick Herringer**, **Erin Elliott**, Ansys, Inc. (United States)

13019-91 • 03:10 PM - 03:30 PM

**A new approach to chromatic variations of Seidel coefficients**

*Author(s):* **Dennis Ochse**, JENOPTIK Optical Systems GmbH (Germany)

**Coffee Break 03:30 PM - 04:00 PM****SESSION 6: FREEFORM OPTICS I**

09 April 2024 • 04:00 PM - 05:50 PM | Etoile A, Niveau/Level 1

*Session Chair(s):* **Ziyao Tang**, Carl Zeiss AG (Germany)

13019-24 • 04:00 PM - 04:30 PM

**Optimization of a freeform TMA with a differential ray tracer with NURBS capabilities** *(Invited Paper)*

*Author(s):* **Clément Freslier**, **Guillaume Druart**, **Alice Fontbonne**, ONERA (France); **Thierry Lépine**, Univ. Jean Monnet Saint-Etienne (France), Institut d'Optique Graduate School (France), Lab. Hubert Curien, CNRS (France); **Fanny Keller**, European Space Research and Technology Ctr. (Netherlands); **Christophe Buisset**, **Tibor Agocs**, **Arnaud Hélière**, European Space Agency (Netherlands); **Jean-Baptiste Volatier**, ConstellR GmbH (Germany); **Stéphane Beaussier**, Valley Optics (Netherlands); **Paul Jougla**, Airbus Defence and Space (France)

13019-25 • 04:30 PM - 04:50 PM

**Apodized transparent photon sieves with bevelled holes for presbyopia correction**

*Author(s):* **Octave Kummer**, IMT Atlantique Bretagne-Pays de la Loire (France); **Fannie Castignoles**, CRISTALENS (France); **Jean-Louis de Bougrenet de la Tocnaye**, **Vincent Nourrit**, IMT Atlantique Bretagne-Pays de la Loire (France)

13019-90 • 04:50 PM - 05:10 PM

**Optical design of a freeform Offner spectrometer enabling a very large field of view**

*Author(s):* **Chiara Doria**, Univ. degli Studi di Padova (Italy), Leonardo S.p.A. (Italy); **Irene Guerri**, Leonardo S.p.A. (Italy); **Gabriele Cremonese**, INAF - Osservatorio Astronomico di Padova (Italy); **Giampiero Naletto**, Univ. degli Studi di Padova (Italy); **Gregorio Pekala**, **Alessio Taiti**, Leonardo S.p.A. (Italy)

13019-27 • 05:10 PM - 05:30 PM

**Cubesat multispectral space-based imaging spectrometer enhancing climate change monitoring**

*Author(s):* **Matéo Yerlès**, **Luca Schifano**, Vrije Univ. Brussel (Belgium); **Steven Dewitte**, Royal Observatory of Belgium (Belgium); **Hugo Thienpont**, **Lien Smeesters**, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium)

13019-28 • 05:30 PM - 05:50 PM

**Innovative space imaging system design combining freeform mirrors and freeform sensor**

*Author(s):* **Jiawei Liu**, **Emmanuel Hugot**, Lab. d'Astrophysique de Marseille (France); **Eduard R. Muslimov**, Lab. d'Astrophysique de Marseille (France)

**POSTERS-TUESDAY**

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Optical Systems Design poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EOD/poster-presentation-guidelines>.

13019-64 • 06:10 PM - 08:00 PM

**Tolerancing and design-for-manufacture in the catadioptric telescope for remote sensing instrument**

*Author(s):* **Sheng-Feng Lin**, **Li-Siang Shen**, **Hsing-Yu Wu**, Taiwan Space Agency (TASA) (Taiwan); **Shao-Rong Huang**, National Central University (Taiwan); **Ching-Ling Cheng**, Diopter Precision Taiwan Co., Ltd. (Taiwan); **Yung-Shin Sun**, **Jin-Cherng Hsu**, Fu Jen Catholic University (Taiwan)

13019-65 • 06:10 PM - 08:00 PM

**Experimental study of laser scanning heads with refractive polygons**

*Author(s):* **Maria-Alexandra Duma**, Univ. of Groningen (Netherlands); **Virgil-Florin Duma**, Univ. "Aurel Vlaicu" din Arad (Romania), Univ. Politehnica Timisoara (Romania)

13019-66 • 06:10 PM - 08:00 PM

**Structural design analysis of wind screen for Antarctic 2m-class optical telescope**

*Author(s):* **Zhimin Ren**, Nanjing Institute of Astronomical Optics & Technology (China)

13019-67 • 06:10 PM - 08:00 PM

**Multifocal binary Gabor zone plates**

*Author(s):* **Adrián Garmendía-Martínez**, Univ. Politècnica de València (Spain); **Walter D. Furlan**, Univ. de València (Spain); **Juan A. Monsoriu**, **Vicente Ferrando**, Univ. Politècnica de València (Spain)

13019-68 • 06:10 PM - 08:00 PM

**Design of a MWIR continuous zoom lens using high-definition detector and optimization for practical applications**

*Author(s):* **Van Dat Nguyen**, **Dat Vu**, **Du Dang**, **Thanh Nguyen**, Viettel High-Tech Industrial Corp. (Vietnam); **Manh Nguyen**, Viettel High Technology Industries Coporation (Vietnam)

13019-69 • 06:10 PM - 08:00 PM

**A novel dual direction polygon scanner for surface cleaning**

*Author(s):* **My Hoang Ha**, Korea Institute of Machinery & Materials (Korea, Republic of)

13019-71 • 06:10 PM - 08:00 PM

**Projection optics with wide field of view and large exit pupil for waveguide near-eye display**

*Author(s):* **Shuai Jiang**, **Juan Liu**, Beijing Institute of Technology (China)

13019-72 • 06:10 PM - 08:00 PM

**Stray Light analysis for the SurfCam**

*Author(s):* **Jihun Kim**, **Minsup Jeong**, **Min Bae Kim**, **Young-Jun Choi**, Korea Astronomy and Space Science Institute (Korea, Republic of); **Sungsoo S. Kim**, Kyung Hee Univ. (Korea, Republic of); **Dukhang Lee**, **Bongkon Moon**, **Dae-Hee Lee**, **Seonghwan Choi**, **Chae Kyung Sim**, **Mingyeong Lee**, **Jehyuck Shin**, **Seul-Min Baek**, Korea Astronomy and Space Science Institute (Korea, Republic of)

13019-73 • 06:10 PM - 08:00 PM

**Design, manufacturing and testing of a compact annular telescope**

*Author(s):* **Karine Mathieu**, **Jacques Berthon**, Ctr. National d'Études Spatiales (France); **Jean-Luc Vaville**, **Daniel Mouricaud**, **Benjamin Daire**, Savimex (France)

13019-74 • 06:10 PM - 08:00 PM

**Optical design of compact head-mounted display for enhanced field of view using an ellipso-toroidal combiner**

*Author(s):* **Debadutta Acharjya**, **Sonam Berwal**, **Neha Khatri**, CSIR - Central Scientific Instruments Organisation (India)

13019-77 • 06:10 PM - 08:00 PM

**Optical system design of solar ultra-violet imaging telescope (SUIT) for ADITYA-L1 mission**

*Author(s):* **Bijoy Raha**, **Rama Subrahmanyam**, **Nishchith Bhat**, **Mandeep Kiran**, **Venkateswaran Ramaswamy**, **Chetan Kumar**, **Pramod T. E.**, **Vishweshwar Rao B.**, **Kuppuswamy Venkatesan Sriram**, Lab. for Electro-Optics Systems (India)

13019-79 • 06:10 PM - 08:00 PM

**Miniaturized fluorescence measurement system with novel dichroic beam splitter cubes with 3 by 3 by 3 cubic millimeters and special optical direction-selective filters**

*Author(s):* **Ralf Müller**, CIS Forschungsinstitut für Mikrosensorik GmbH (Germany); **Thomas Siefke**, **Uwe Zeitner**, Friedrich-Schiller-Univ. Jena (Germany); **Kristin Neckermann**, **Michael Hintz**, CIS Forschungsinstitut für Mikrosensorik GmbH (Germany); **Marc Lappschies**, **Beatrix Ploss**, Optics Balzers Jena GmbH (Germany)

13019-80 • 06:10 PM - 08:00 PM

**Exploration of Phakic Intraocular Lenses in Human Eye: Detailed Design Case Studies**

*Author(s):* **Avijit Prakash**, **Arpit Gupta**, Indian Institute of Technology Delhi (India); **Vipin Agrawal**, Devine Meditech Pvt., Ltd. (India); **J.K.S. Parihar**, Ctr. for Sight (India); **Gufuran S. Khan**, Indian Institute of Technology Delhi (India)

13019-81 • 06:10 PM - 08:00 PM

**Image-based co-phasing method via an optimization procedure**

*Author(s):* **Kaiyuan Yang**, **Zongliang Xie**, **Haotong Ma**, Chinese Academy of Sciences (China); **Bo Qi**, Chinese Academy of Science (China)



13019-82 • 06:10 PM - 08:00 PM

**Optical magnetic field sensor for precise monitoring of Brushless DC Motor in GUCnoid 1.0 humanoid robot**

*Author(s): Amir Roushdy Ali, Ramy Mahmoud, Ahmed Elsherbiny, The German Univ. in Cairo (Egypt); Mohamed Ramadan, The German Univ. in Cairo (Egypt), German International Univ. (Germany)*

13019-83 • 06:10 PM - 08:00 PM

**Fast camera design options for a panoramic integral field spectrograph**

*Author(s): Eduard R. Muslimov, Univ. of Oxford (United Kingdom); Jiawei Liu, Emmanuel Hugot, Aix-Marseille Univ. (France), Ctr. National d'Études Spatiales (France), Lab. d'Astrophysique de Marseille (France); Fraser Clarke, Univ. of Oxford (United Kingdom)*

13019-84 • 06:10 PM - 08:00 PM

**Multiplexed grism spectrograph design for 6-m BTA telescope**

*Author(s): Eduard R. Muslimov, Univ. of Oxford (United Kingdom); Damir Akhmetov, Kazan National Research Technical Univ. named after A. N. Tupolev - KAI (Russian Federation); Gennady G. Valyavin, Special Astrophysical Observatory (Russian Federation)*

13019-85 • 06:10 PM - 08:00 PM

**System modelling of a photonics biosensor system: Integrating micro ring resonators, microfluidics, photodiodes, and CMOS evaluation for enhanced sensitivity**

*Author(s): Jakob W. Hinum-Wagner, Technische Univ. Graz (Austria), ams-OSRAM AG (Austria); Gandolf Feigl, Technische Univ. Graz (Austria); Thomas Klafuta, Christian Schoerner, Stephan Janka, ams-OSRAM International GmbH (Germany); Jochen Kraft, ams-OSRAM AG (Austria); Alexander Bergmann, Technische Univ. Graz (Austria)*

13019-86 • 06:10 PM - 08:00 PM

**Enhanced Large-Aperture Titanium 2D Micromirror Utilizing Cascaded Torsion Beams for LIDAR**

*Author(s): Behrad Ghazinouri, Siyuan He, Toronto Metropolitan Univ. (Canada)*

13019-87 • 06:10 PM - 08:00 PM

**Differentiable freeform lens design for irradiance tailoring on tilted target plane**

*Author(s): Haisong Tang, Zexin Feng, Beijing Institute of Technology (China); Yi Luo, Tsinghua University (China)*

13019-88 • 06:10 PM - 08:00 PM

**Design of a small fundus optical system based on aspherical and non-coaxial illumination**

*Author(s): Shuo Liu, Aiming Ge, Fudan Univ. (China)*

## Wednesday 10 April 2024

### SESSION 7: OPTOMECHANICAL DESIGN AND META-COMPONENTS

10 April 2024 • 09:00 AM - 10:20 AM | Etoile A, Niveau/Level 1

*Session Chair(s): James Babington, Leonardo UK Ltd. (United Kingdom)*

13019-29 • 09:00 AM - 09:20 AM

**Optical design of a compact spectrometer for space applications: depolarizers analysis**

*Author(s): Carmen Vázquez Pérez, Andrea García Moreno, Marianela Fernández Rodríguez, Luis Miguel González Fernández, Tomás Belenguer Dávila, INTA Instituto Nacional de Técnica Aeroespacial (Spain)*

13019-30 • 09:20 AM - 09:40 AM

**Design and characterization of Metasurfaces for LIDAR applications**

*Author(s): Maryvonne Chalony, Synopsys, Inc. (France); Clément Majorel, CRHEA (France); Patrice Genevet, Colorado School of Mines (United States); Amir Loucif, CRHEA (France); Quentin Kuperman, Synopsys, Inc. (France)*

13019-31 • 09:40 AM - 10:00 AM

**Optical-addressed dynamic meta-hologram**

*Author(s): Hui Gao, Huazhong Univ. of Science and Technology (China)*

13019-32 • 10:00 AM - 10:20 AM

**Optical system design and analysis for food recognition**

*Author(s): Kubra Cerit, Arçelik A.S. (Turkey)*

### Coffee Break 10:20 AM - 10:50 AM

## SESSION 8: TRIBUTE TO JAMES WYANT, JOHN GREIVENKAMP, AND JIM SCHWIEGERLING: IN MEMORIAM SESSION

10 April 2024 • 10:50 AM - 11:20 AM | Etoile A, Niveau/Level 1

Session Chair(s): **Thierry Lépine**, Institut d'Optique Graduate School (France)

Memorial Session in Honor of [Prof. James Wyant](#), [Prof. John Greivenkamp](#), and [Prof. Jim Schwiegerling](#)

James C. Wyant College of Optical Sciences, Univ. of Arizona (United States)

**James Wyant**, professor emeritus at the Univ. of Arizona, was a professor, dean, business leader and philanthropist. He is known as a giant in the field of optical sciences for his dedication to inspire through teaching, pioneering innovations in optics and photonics and his deeply generous philanthropy to enable education in optics. James Wyant served as SPIE President (1986), was a past member of SPIE Board of Directors, and a recipient of the SPIE Gold Medal (2003), the SPIE Chandra Vikram Award (2010), and the SPIE Visionary Award (2019).

**John Greivenkamp**, a dedicated and inspiring colleague, was a professor emeritus at the Univ. of Arizona's Wyant College of Optical Sciences (OSC). An SPIE Member for over 26 years, Prof. Greivenkamp became SPIE Fellow in 1996, and was the Society's President in 2020. He served on the SPIE Board of Directors and numerous SPIE committees; he was also the editor of the SPIE Field Guides series. John was the founder and curator of the Museum of Optics at OSC displaying an extensive collection of antique and historic optical pieces.

SPIE Fellow, **Jim Schwiegerling**, was a professor emeritus of optical sciences at the University of Arizona. Prof. Schwiegerling designed the implantable cataract replacement lenses for the eye and was named Inventor of the Year at the Southern Arizona Tech + Business Expo in Tucson and Innovation Leader of the Year — Academia at the Governor's Celebration of Innovation. An SPIE Member for more than 18 years, Jim published the *Optical Specification, Fabrication, and Testing*, and *Field Guide to Visual and Ophthalmic Optics* with SPIE Press,

13019-100 • 10:50 AM - 11:00 AM

### Tribute to Prof. John Greivenkamp

Author(s): **Blake Crowther**, Synopsys, Inc. (United States)

13019-101 • 11:00 AM - 11:10 AM

### Tribute to Prof. James Wyant

Author(s): **Tina E. Kidger**, Kidger Optics Associates (United States)

13019-102 • 11:10 AM - 11:20 AM

### Tribute to Prof. Jim Schwiegerling

Author(s): **Blake G. Crowther**, Synopsys, Inc. (United States)

## SESSION 9: INSTRUMENTATION

10 April 2024 • 11:20 AM - 12:00 PM | Etoile A, Niveau/Level 1

Session Chair(s): **Thierry Lépine**, Institut d'Optique Graduate School (France)

13019-62 • 11:20 AM - 11:40 AM

### Active optics bench for the co-alignment of LSTM VIS & NIR focal planes

Author(s): **Anouck Paoletti**, **Jeremie Dain**, **Claude Coantantiec**, **Paul Jougla**, Airbus France (France); **Marie Laslandes**, ALPAO S.A.S. (France)

13019-70 • 11:40 AM - 12:00 PM

### Recent developments and patents in infrared zoom lenses: a survey through the 2010s and beyond

Author(s): **Gokul Raju**, **Vladan Blahnik**, HENSOLDT Optronics GmbH (Germany)

## Lunch/Exhibition Break 12:00 PM - 01:30 PM

## SESSION 10: OPTICAL INSTRUMENTATION I

10 April 2024 • 01:30 PM - 03:20 PM | Etoile A, Niveau/Level 1

Session Chair(s): **Nathalie Blanchard**, INO (Canada)

13019-34 • 01:30 PM - 02:00 PM

### Curved freeform sensors for high-end scientific applications *(Invited Paper)*

Author(s): **Emmanuel Hugot**, **Manal Chebbo**, Lab. d'Astrophysique de Marseille (France); **Frédéric Chavane**, Aix-Marseille Univ. (France), Institut de Neurosciences de la Timone (France); **Christian Kintziger**, Ctr. Spatial de Liège (Belgium); **Pierre-Alain Duc**, Observatoire astronomique de Strasbourg (France); **Jiawei Liu**, Lab. d'Astrophysique de Marseille (France); **Eduard Muslimov**, Univ. of Oxford (United Kingdom), Lab. d'Astrophysique de Marseille (France); **Samuel Boissier**, Lab. d'Astrophysique de Marseille (France); **Indraneil Biswass**, European Space Agency (Germany); **Eloise Bernaud**, Lab. d'Astrophysique de Marseille (France); **Marc Ferrari**, Observatoire de Haute-Provence, Aix-Marseille Univ., CNRS (France)

13019-35 • 02:00 PM - 02:20 PM

**Mechanical Challenges, Design and Analyses of the HyperScout Spectral Imager for the Planetary Defence Mission Hera**

*Author(s):* **James Harpur**, cosine Remote Sensing B.V. (Netherlands)

13019-36 • 02:20 PM - 02:40 PM

**A miniaturized tuneable light source using a piezo-actuated Fabry-Pérot interferometer**

*Author(s):* **Astghik Chalyan**, Vrije Univ. Brussel (Belgium); **Willem Hoving**, Anteryon B.V. (Netherlands); **Wendy Meulebroeck, Heidi Ottevaere**, Vrije Univ. Brussel (Belgium)

13019-37 • 02:40 PM - 03:00 PM

**Sentinel 4: a geostationary imaging UVN spectrometer for air quality monitoring: optical alignment of the Instrument Flight Model 2**

*Author(s):* **Pierangelo Marenaci, Luis Esteras Ota**, Airbus Defence and Space (Germany)

13019-38 • 03:00 PM - 03:20 PM

**Optical software-assisted design and optimization of Bessel beam systems for applications to laser materials processing**

*Author(s):* **Luc Froehly**, Univ. de Franche-Comté (France), CNRS (France), FEMTO-ST (France); **Mostafa Hassan, Valeria Belloni, Rémi Meyer, Luca Furfaro, Remo Giust, François Courvoisier**, Univ. de Franche-Comté (France)

**Coffee Break 03:20 PM - 03:50 PM**

### SESSION 11: MODELLING AND SIMULATION III

10 April 2024 • 03:50 PM - 05:50 PM | Etoile A, Niveau/Level 1

*Session Chair(s):* **Fabian Duerr**, Vrije Univ. Brussel (Belgium)

13019-39 • 03:50 PM - 04:10 PM

**Realizing 'First Time Right' designs of imaging systems using off-the-shelf lenses**

*Author(s):* **Alejandro Madrid Sánchez**, Vrije Univ. Brussel (Belgium); **Hugo Thienpont, Fabian Duerr**, Vrije Univ. Brussel (Belgium), Fermat (Belgium)

13019-40 • 04:10 PM - 04:30 PM

**Focused Narcissus evaluation in a MWIR zoom system**

*Author(s):* **Patricia Rosales, Carlos Moreno Serrano**, Tecnobit (Spain)

13019-41 • 04:30 PM - 04:50 PM

**Towards integrated thermo-opto-mechanical analysis**

*Author(s):* **John Ponsy, Adrien Pavageau**, Airbus Defence and Space (France)

13019-42 • 04:50 PM - 05:10 PM

**Performing STOP analysis on high power lasers: understanding complex systems through a physics-based co-simulation workflow**

*Author(s):* **Maxime Cailler**, ANSYS France SAS (France); **Chris Normanshire, Felipe Mercado**, Ansys Inc (United States)

13019-43 • 05:10 PM - 05:30 PM

**Optical characterization of wood properties using the tracheid effect**

*Author(s):* **Juliette Boivin**, Ecole Nationale Supérieure d'Arts et Métiers (France); **Luc Froehly**, Univ. de Franche-Comté (France), CNRS (France), FEMTO-ST (France); **Damien Teyssieux**, Univ. de Franche-Comté (France), SUPMICROTECH, CNRS (France), FEMTO-ST (France); **Stephane Girardon, Louis Denaud**, Ecole Nationale Supérieure d'Arts et Métiers (France)

13019-44 • 05:30 PM - 05:50 PM

**MMX Infrared Spectrometer's optical architecture**

*Author(s):* **Matthieu Castelnaud**, Ctr. National d'Études Spatiales (France); **Pernelle Bernardi, Marion Bonafous**, LESIA (France); **Christian Imbert, Michel Le Du**, Ctr. National d'Études Spatiales (France); **Jean-Michel Reess**, LESIA (France); **Nicolas Théret**, Ctr. National d'Études Spatiales (France)

### Thursday 11 April 2024

### SESSION 12: OPTICAL INSTRUMENTATION II

11 April 2024 • 08:50 AM - 10:10 AM | Etoile A, Niveau/Level 1

*Session Chair(s):* **Thierry Lépine**, Institut d'Optique Graduate School (France)

13019-45 • 08:50 AM - 09:10 AM

**Journey through time: optics of yesterday and today through Charles Féry's spectrophotometer**

*Author(s):* **Lucas Dordor**, Lycée Victor Bérard (France); **Luc Froehly**, Univ. de Franche-Comté (France), CNRS (France), FEMTO-ST (France); **Maxime Jacquot, John Michael Dudley**, Univ. de Franche-Comté (France)

13019-46 • 09:10 AM - 09:30 AM

**Microscope objective lens design generation with reinforcement learning**

*Author(s):* **Ai Ping Yow**, Institute for Digital Molecular Analytics and Science (Singapore); **Yueqian Zhang, Christoph Menke**, Carl Zeiss AG (Germany); **Ralf Wolleschensky**, Carl Zeiss Microscopy GmbH (Germany); **Damon Wong**, Singapore Eye Research Institute (Singapore), Singapore National Eye Ctr. (Singapore); **Peter Török**, Institute for Digital Molecular Analytics and Science (Singapore)

13019-47 • 09:30 AM - 09:50 AM

**Exploring the unique chromatic properties of multi-material gradient-index optics**

*Author(s):* **Ankur X. Desai, Greg R. Schmidt**, Univ. of Rochester (United States); **Duncan T. Moore**, The Institute of Optics, Univ. of Rochester (United States)

13019-48 • 09:50 AM - 10:10 AM

**A multi-spectral optical retroreflection evaluation system**

*Author(s):* **Daniel Short**, U.S. Army Combat Capabilities Development Command (United States)

**Coffee Break 10:10 AM - 10:40 AM**

**SESSION 13: MODELLING AND SIMULATION IV**

11 April 2024 • 10:40 AM - 12:10 PM | Etoile A, Niveau/Level 1

*Session Chair(s):* **James Babington**, Leonardo UK Ltd. (United Kingdom)

13019-50 • 10:40 AM - 11:10 AM

**The Importance of Pupil Imaging for Distortion Correction in Zoom Lenses** (*Invited Paper*)

*Author(s):* **Jacob A. Sacks, Julie L. Bentley**, Univ. of Rochester (United States)

13019-52 • 11:10 AM - 11:30 AM

**The field gain factor in diffraction-limited systems with two power surfaces by reducing their axial separation**

*Author(s):* **Niamh M. Fitzgerald, Alexander V. Goncharov**, Univ. of Galway (Ireland)

13019-53 • 11:30 AM - 11:50 AM

**Stress birefringence in optical systems: simulation and analysis**

*Author(s):* **João Mendes-Lopes**, Ansys, Inc. (Spain); **Stefano Guazzotti**, ANSYS UK Ltd. (United Kingdom); **Michael Cheng**, Ansys Japan K.K. (Japan); **Matthias Schlich**, ANSYS Germany GmbH (Germany); **Chris Normanshire**, ANSYS UK Ltd. (United Kingdom); **Esteban F. Carbajal**, Ansys, Inc. (United States)

13019-54 • 11:50 AM - 12:10 PM

**Optical system design considering drift and jitter vibration impacts on performances**

*Author(s):* **Hui Chen**, Ansys, Inc. (United States); **Julia Zhang**, Ansys (China); **Mojtaba Falahati**, Ansys, Inc. (United States); **Christophe Weisse**, ANSYS France SAS (France)

**Lunch Break 12:10 PM - 01:20 PM**

**SESSION 14: FREEFORM OPTICS AND OPTICAL INSTRUMENTATION**

11 April 2024 • 01:20 PM - 03:20 PM | Etoile A, Niveau/Level 1

*Session Chair(s):* **Herbert Gross**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13019-55 • 01:20 PM - 01:40 PM

**Custom freeform optics for LiDAR applications: from design to fabrication**

*Author(s):* **Simone Sorgato, Lien Smeesters, Michael Vervaeke, Kurt Rochlitz, Dries Rosseel, Jef Verbaenen, Sergey Verlinski, Hugo Thienpont, Jürgen Van Erps**, Vrije Univ. Brussel (Belgium)

13019-56 • 01:40 PM - 02:00 PM

**Optimal freeform correctability for prism spectrometer system design with mixed ray-tracing method**

*Author(s):* **Ziyao Tang**, Carl Zeiss AG (Germany); **Herbert Gross**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13019-58 • 02:00 PM - 02:20 PM

**First order solution generation for reflective dual-conjugate zoom systems**

*Author(s):* **Doran S. Teverovsky, Kendall A Smith, Julie L. Bentley**, The Institute of Optics, Univ. of Rochester (United States)

13019-59 • 02:20 PM - 02:40 PM

**Design of a freeform, wide field of view, high angular resolution four-mirror system working in the visible and near-infrared spectrum**

*Author(s):* **Agnès Vinoy**, Safran Reosc (France), Lab. Charles Fabry (France); **Marie-Anne Burcklen**, Institut d'Optique Graduate School (France), Lab. Charles Fabry (France); **Yvan Sortais**, Institut d'Optique Graduate School (France); **François Riguet**, **Jacques F. Rodolfo**, Safran Reosc (France); **Thierry Lépine**, Institut d'Optique Graduate School (France), Lab. Hubert Curien (France); **Marc Ferrari**, **Emmanuel Hugot**, Lab. d'Astrophysique de Marseille (France); **Roland Geyl**, FO-RS (France)

13019-61 • 02:40 PM - 03:00 PM

**HARMONI at ELT: Pre-optics optical design at FDR**

*Author(s):* **Miguel A. Cagigas García**, **Begoña García-Lorenzo**, **Ángel Alonso-Sánchez**, Instituto de Astrofísica de Canarias (Spain)

13019-63 • 03:00 PM - 03:20 PM

**Optical design of compact high resolution Raman spectrometer for interplanetary mission**

*Author(s):* **Bijoy Raha**, **Rama Subrahmanyam**, **Adwaita Goswami**, **Venkateswaran Ramaswamy**, **Kuppuswamy Venkatesan Sriram**, Lab. for Electro-Optics Systems (India)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Optical Systems Design 2024.

13019-14

**Slide scanning stage: a modular, low-cost, portable, and precise solution for sample analysis in hematology**

*Author(s):* **Muhammad Bilal Hassan**, Information Technology Univ. of the Punjab (Pakistan); **Isma Javed**, Information Technology Univ. of the Punjab (Pakistan), MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Nasir Mahmood**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

13019-78

**Aberration-corrected lens design in the ultraviolet-visible regime**

*Author(s):* **Muhammad Danial Shafqat**, Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# CONFERENCE 13020

## Advances in Optical Thin Films VIII

08 - 11 April 2024 | Varsovie/Salon 1, Niveau/Level 0

**Conference Chair(s):** **Michel Lequime**, Institut Fresnel (France); **Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany)

**Program Committee:** **Claude Amra**, Institut Fresnel (France); **Xinbin Cheng**, Tongji Univ. (China); **Garrett D. Cole**, Thorlabs Crystalline Solutions (United States); **Franck Delmotte**, Institut d'Optique Graduate School (France); **Chang Kwon Hwangbo**, INHA Univ. (Korea, Republic of); **Lars O. Jensen**, TRUMPF SE + Co. KG (Germany); **Juan Ignacio Larruquert**, Consejo Superior de Investigaciones Científicas (Spain); **Cheng Chung Lee**, National Chung Hsing Univ. (Taiwan); **Xu Liu**, Zhejiang Univ. (China); **Julien Lumeau**, Institut Fresnel (France); **Ludvik Martinu**, Ecole Polytechnique de Montréal (Canada); **Angela M. Piegari**, AP Optical Consulting (Italy); **Francis Placido**, Univ. of the West of Scotland (United Kingdom); **Sven Schröder**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Weidong Shen**, Zhejiang Univ. (China); **Silvia Schwyn Thoeny**, Evatec AG (Switzerland); **Christopher J. Stolz**, Lawrence Livermore National Lab. (United States); **Alexander Tikhonravov**, Lomonosov Moscow State Univ. (Russian Federation); **Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany)

### Monday 8 April 2024

#### WELCOME AND INTRODUCTION

08 April 2024 • 08:30 AM - 08:40 AM | Varsovie/Salon 1, Niveau/Level 0

**Michel Lequime**, Institut Fresnel (France)

**Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany)

*Conference Chairs*

#### SESSION 1: INDUSTRIAL HIGHLIGHTS

08 April 2024 • 08:40 AM - 10:20 AM | Varsovie/Salon 1, Niveau/Level 0

*Session Chair(s):* **Michel Lequime**, Institut Fresnel (France)

13020-1 • 08:40 AM - 09:20 AM

**Challenges and accomplishments in optical coatings faced by industry today** (Keynote Presentation)

*Author(s):* **Markus K. Tilsch**, Viavi Solutions Inc. (United States)

13020-2 • 09:20 AM - 09:50 AM

**CILAS' recent achievements in astronomy and space** (Invited Paper)

*Author(s):* **Hélène T. Krol**, **Xavier Buet**, **Colin Bondet de la Bernardie**, **Didier Torricini**, **Grégory Chauveau**, CILAS (France)

13020-3 • 09:50 AM - 10:20 AM

**Applications of optical filters in telecommunications and satellite communications** (Invited Paper)

*Author(s):* **Graham Carlow**, Iridian Spectral Technologies Ltd. (Canada)

#### Coffee Break 10:20 AM - 10:50 AM

#### SESSION 2: DEPOSITION PROCESSES

08 April 2024 • 10:50 AM - 12:20 PM | Varsovie/Salon 1, Niveau/Level 0

*Session Chair(s):* **Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany)

13020-4 • 10:50 AM - 11:20 AM

**The choice of Deposition Equipment for challenging Interference Filter** (Invited Paper)

*Author(s):* **Harro Hagedorn**, Bühler Alzenau GmbH (Germany)

13020-5 • 11:20 AM - 11:40 AM

**Spatial atomic layer deposition: a new revolution in ultra-fast production of conformal oxide-based optical coatings**

*Author(s):* **John-Olof Rönn**, **Sauli Virtanen**, **Philipp Maydannik**, **Kalle Niiranen**, **Sami Sneck**, Beneq Oy (Finland)

13020-6 • 11:40 AM - 12:00 PM

**Deposition of thin films on hybrid-polymer 3D micro-optics using atomic layer deposition**

Author(s): **Darija Astrauskyte**, Ctr. for Physical Sciences and Technology (Lithuania); **Karolis Galvanauskas**, **Darius Gailevicius**, Vilnius Univ. (Lithuania); **Mantas Drazdys**, Ctr. for Physical Sciences and Technology (Lithuania); **Mangirdas Malinauskas**, Vilnius Univ. (Lithuania); **Lina Grineviciute**, Ctr. for Physical Sciences and Technology (Lithuania)

13020-7 • 12:00 PM - 12:20 PM

**High-precision volume manufacturing of optical interference filters on 300mm wafers**

Author(s): **Stephan Mingels**, **Martin Stapp**, **Torsten Schmauder**, **Navas Kutty**, **Harro Hagedorn**, Bühler Alzenau GmbH (Germany)

**Lunch Break 12:20 PM - 01:30 PM**

**OPTICAL SYSTEMS DESIGN MONDAY PLENARY SESSION**

08 April 2024 • 01:30 PM - 03:15 PM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

13:30 - 13:45 hrs: **Welcome and Opening Remarks**

13019-500 • 01:45 PM - 02:30 PM

**Future of optical system and lens design in the AI era** (Plenary Presentation)

Author(s): **Simon Thibault**, Univ. Laval (Canada)

13022-501 • 02:30 PM - 03:15 PM

**Freeform optics for illumination: past, present and future** (Plenary Presentation) (*Invited Paper*)

Author(s): **Julius A. Muschaweck**, JMO GmbH (Germany)

**Coffee Break 03:15 PM - 03:40 PM**

**SESSION 3: DESIGN OF OPTICAL COATINGS**

08 April 2024 • 03:40 PM - 05:50 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Tatiana V. Amotchkina** Max-Planck-Institut für Quantenoptik (Germany)

13020-8 • 03:40 PM - 04:10 PM

**Recent development of dispersive mirror** (*Invited Paper*)

Author(s): **Jinlong Zhang**, **Xiaochuan Ji**, **Hongfei Jiao**, **Xinbin Cheng**, **Zhanshan Wang**, Tongji Univ. (China)

13020-9 • 04:10 PM - 04:30 PM

**Transparent conductive nanostructures with low refractive index**

Author(s): **Astrid Bingel**, **Friedrich Rickelt**, **Peter Munzert**, **Ulrike Schulz**, **Sven Schröder**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13020-10 • 04:30 PM - 04:50 PM

**Thin film black coatings based on interference and absorption**

Author(s): **Peter Munzert**, **Stefan Schwinde**, **Robert Leitel**, **Sylke Kleinle**, **Svetlana Shestaeva**, **Ralph Schlegel**, **Tobias Herffurth**, **Sven Schroeder**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13020-11 • 04:50 PM - 05:10 PM

**Nearly-percolated Au films for interference-based sensing**

Author(s): **Elizabeth Hedl**, Zagreb Univ. of Applied Sciences (Croatia), Technische Univ. Graz (Austria), Ruder Boškovic Institute (Croatia); **Alexander Bergmann**, Technische Univ. Graz (Austria); **Željko Samec**, **Jordi Sancho-Parramon**, Ruder Boškovic Institute (Croatia)

13020-12 • 05:10 PM - 05:30 PM

**Optimizing thin-film material combinations for immersed narrow-bandpass filters in the VIS and NIR range**

Author(s): **Rico Benz**, **Maryam Nazari**, RhySearch (Switzerland); **Tatiana Amochkina**, OTF Studio GmbH (Germany); **Michael K. Trubetskov**, OTF Studio GmbH (Germany), Max-Planck-Institut für Quantenoptik (Germany)

13020-13 • 05:30 PM - 05:50 PM

**Ultra-Low Refractive Index Coating based on Nanoporous Silicon Dioxide Film and its applications**

Author(s): **Chenyang Yang**, **Han Wu**, Hangzhou Institute for Advanced Study, Univ. of Chinese Academy of Sciences (China); **Weidong Shen**, **Yueguang Zhang**, Zhejiang Univ. (China)

## Tuesday 9 April 2024

## OPTICAL SYSTEMS DESIGN TUESDAY PLENARY SESSION

09 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

9:00 - 9:05 hrs: **Welcome and Opening Remarks**

13023-600 • 09:05 AM - 09:50 AM

**Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?** (Plenary Presentation)

Author(s): **Julie L. Bentley**, The Institute of Optics, Univ. of Rochester (United States)

13021-601 • 09:50 AM - 10:35 AM

**Manufacturing ELT M1 segments: large optics in a smart factory** (Plenary Presentation)

Author(s): **Camille Frapolli**, Safran Reosc (France)

## Coffee Break 10:35 AM - 11:00 AM

## SESSION 4: NANOLAMINATES

09 April 2024 • 11:00 AM - 12:50 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Andrius Melninkaitis**, Vilnius Univ. (Lithuania)

13020-14 • 11:00 AM - 11:30 AM

**Quantized nanolaminates: investigation of a novel type of meta materials deposited by magnetron sputtering** (Invited Paper)

Author(s): **Silvia Schwyn Thoeny**, Evatec AG (Switzerland); **Manuel Bärtschi**, RhySearch (Switzerland); **Marietta Batzer**, **Manuel Baselgia**, **Rafael Gmuender**, Evatec AG (Switzerland); **Amit Sharma**, EMPA Thun (Switzerland); **Tijmen Vermeij**, EMPA (Switzerland); **Xavier Maeder**, EMPA Thun (Switzerland); **Stephan Waldner**, Evatec AG (Switzerland)

13020-15 • 11:30 AM - 11:50 AM

**Ellipsometric control of layer thickness during coating of nanolaminate layers**

Author(s): **Stefan Bruns**, **Thomas Melzig**, **Philipp Henning**, **Michael Vergöhl**, Fraunhofer-Institut für Schicht- und Oberflächentechnik IST (Germany)

13020-16 • 11:50 AM - 12:10 PM

**AR-Coatings based on quantized nanolaminates manufactured by Ion Beam Sputtering**

Author(s): **Sina Malobabic**, **Maximilian Machate**, Laser Components Germany GmbH (Germany)

13020-17 • 12:10 PM - 12:30 PM

**Stability and absorption of quantizing nanolaminates**

Author(s): **Sebastian Paschel**, **Joshua McCauley**, **Tarik Kellermann**, **Morten Steinecke**, Laser Zentrum Hannover e.V. (Germany); **Marco Jupé**, **Andreas Wienke**, **Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany)

13020-18 • 12:30 PM - 12:50 PM

**Determining the bandgap dependence of nonlinear absorption in optical quantum nanolaminate coatings**

Author(s): **Joshua McCauley**, **Felix Weiß**, **Kevin P. Jacob**, Laser Zentrum Hannover e.V. (Germany); **Xiaochuan Ji**, Tongji Univ. (China); **Marco Jupé**, Laser Zentrum Hannover e.V. (Germany), Cluster of Excellence PhoenixD (Germany); **Jinlong Zhang**, Tongji Univ. (China), MOE Key Lab. of Advanced Micro-Structured Materials (China); **Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany), Cluster of Excellence PhoenixD (Germany); **Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany)

## Lunch/Exhibition Break 12:50 PM - 01:50 PM

## SESSION 5: THERMAL PROPERTIES OF COATINGS

09 April 2024 • 01:50 PM - 03:40 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Ulrike Schulz**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13020-19 • 01:50 PM - 02:20 PM

**Structural modifications of amorphous oxide mixtures and nanolaminates** (Invited Paper)

Author(s): **Carmen S. Menoni**, Colorado State Univ. (United States)



13020-20 • 02:20 PM - 02:40 PM

**Modelization of photo-induced thermal processes in multilayer coatings with optical tools**

Author(s): **Paul Rouquette, Claude Amra**, Institut Fresnel (France); **François Thullier**, Institut Fresnel (France), CILAS (France); **Gabriel Soriano, Michel Lequime**, Institut Fresnel (France); **Hélène T. Krol**, CILAS (France); **Myriam Zerrad**, Institut Fresnel (France)

13020-21 • 02:40 PM - 03:00 PM

**Metrology of photo-induced thermal radiation in optical thin films**

Author(s): **François Thullier, Myriam Zerrad, Claude Amra**, Institut Fresnel (France); **Hélène T. Krol**, CILAS (France)

13020-22 • 03:00 PM - 03:20 PM

**Characterization of the thermal stability of IBS coated substrate free miniaturized filters**

Author(s): **Jonas N. Matthes**, Laser Zentrum Hannover e.V. (Germany); **Anna Karoline Rüsseler, Gerd-Albert Hoffmann, Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany)

13020-23 • 03:20 PM - 03:40 PM

**Absorption measurement and simulation of photo induced effects in thin-film optical filters**

Author(s): **Mathias Soulier, Julien Lumeau, Laurent Gallais**, Institut Fresnel (France); **Hélène T. Krol**, CILAS (France)

**Coffee Break 03:40 PM - 04:00 PM**

**SESSION 6: SOFT X-RAY, EUV AND VUV COATINGS**

09 April 2024 • 04:00 PM - 05:40 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Juan I. Larruquert**, Consejo Superior de Investigaciones Científicas (Spain)

13020-24 • 04:00 PM - 04:30 PM

**Narrowband mirrors based on fluorides tuned at vacuum ultraviolet wavelengths** (*Invited Paper*)

Author(s): **Paloma López-Reyes, Nuria Gutiérrez-Luna, Carlos Honrado-Benítez, Juan I. Larruquert Goicoechea**, Consejo Superior de Investigaciones Científicas (Spain)

13020-25 • 04:30 PM - 05:00 PM

**Reference-free combined X-ray reflectivity and grazing Incidence X-ray fluorescence analysis: metrological and technical aspects** (*Invited Paper*)

Author(s): **Yves Ménesguen, Marie-Christine Lépy**, CEA (France)

13020-26 • 05:00 PM - 05:20 PM

**Recent advance in development of Cr/Sc-based multilayer coatings for water window applications**

Author(s): **Evgueni Meltchakov**, Institut d'Optique Graduate School (France); **Blandine Capitanio**, Synchrotron SOLEIL (France); **Sébastien de Rossi, Eirini Papagiannouli**, Institut d'Optique Graduate School (France); **Pascal Mercere**, Synchrotron SOLEIL (France); **Franck Delmotte**, Institut d'Optique Graduate School (France)

13020-27 • 05:20 PM - 05:40 PM

**Properties of La1-xAlxF3 Nanocomposite Coatings Prepared by Co-evaporation Technique for 193 nm Mirrors.**

Author(s): **Xinshang Niu, Hongfei Jiao, Yingfu Li, Xiaochuan Ji, Jingjing Xia, Jinlong Zhang, Xinbin Cheng, Zhanshan Wang**, Tongji Univ. (China)

**POSTERS-TUESDAY**

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Optical Systems Design poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EOD/poster-presentation-guidelines>.

13020-65 • 06:10 PM - 08:00 PM

**Investigation of zero-angle polarizers based on periodically structured thin films**

Author(s): **Julianija Nikitina, Rytis Buzelis**, Ctr. for Physical Sciences and Technology (Lithuania); **Kestutis Staliunas**, ICREA - Institutió Catalana de Recerca i Estudis Avançats (Spain), Univ. Politècnica de Catalunya (Spain); **Lina Grineviciute**, Ctr. for Physical Sciences and Technology (Lithuania)

13020-66 • 06:10 PM - 08:00 PM

**Contamination driven laser-induced damage threshold of optical components in the 1 $\mu$ m wavelength regime**

*Author(s):* **Kevin Kiedrowski, Tasfia Kamal, Joshua McCauley, Morten Steinecke**, Laser Zentrum Hannover e.V. (Germany); **Marco Jupé, Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany), Cluster of Excellence PhoenixD (Germany)

13020-67 • 06:10 PM - 08:00 PM

**Study of interfaces in short-period multilayers for high-energy X-rays**

*Author(s):* **Corentin Nannini**, Univ. Paris-Saclay (France), Institut d'Optique Graduate School (France), Lab. Charles Fabry, CNRS (France); **Nolann Ravinet, Evgueni Meltchakov, Franck Delmotte**, Univ. Paris-Saclay (France)

13020-68 • 06:10 PM - 08:00 PM

**ELIAS – Extreme Light Infrastructure Advanced deposition System**

*Author(s):* **Tomas Tolenis**, ELI Beamlines (Czech Republic); **James B. Oliver, Robert D. Hand**, Vacuum Innovations, LLC (United States); **Daniel Kramer**, ELI Beamlines (Czech Republic)

13020-69 • 06:10 PM - 08:00 PM

**Comparison of techniques for characterizing the retardance of waveplate coatings fabricated with GLAD for high power laser applications**

*Author(s):* **Solène Bertet**, CEA-Cesta (France); **Marcela Mireles**, Univ. of Rochester (United States); **Marine Chorel, Eric G. Lavastre**, CEA-Cesta (France); **Sara MacNally**, Univ. of Rochester (United States); **Corinne Marcel**, CEA-Le Ripault (France); **Bruno Gallas**, Sorbonne Univ. (France), Institut des nanosciences de Paris, CNRS (France)

13020-70 • 06:10 PM - 08:00 PM

**Improved polychromatic optical monitoring strategies of thin-film optical filters**

*Author(s):* **Lucas Arzac, Fabien Lemarchand**, Institut Fresnel (France); **Detlef Arhilger, Harro Hagedorn**, Bühler Leybold Optics (Germany); **Janis Zideluns**, Aix Marseille Univ., CNRS, Centrale Marseille, Institut Fresnel (France); **Julien Lumeau**, Institut Fresnel (France)

13020-71 • 06:10 PM - 08:00 PM

**Optical design of a grazing incidence multilayer mirror for 400eV region**

*Author(s):* **Shuntaro Waki, Mitsunori Toyoda, Jun Chen**, Tokyo Polytechnic Univ. (Japan)

13020-74 • 06:10 PM - 08:00 PM

**Broad band mirrors using nanostructured thin films**

*Author(s):* **Lukas Ramalis, Adomas Strazdas**, Ctr. for Physical Sciences and Technology (Lithuania); **Tomas Tolenis**, ELI Beamlines (Czech Republic)

13020-75 • 06:10 PM - 08:00 PM

**Design and qualification of antireflection coatings for fusion reactor diagnostic windows**

*Author(s):* **Xavier Buet, Hélène T. Krol, Colin Bondet de la Bernardie, Didier Torricini, Grégory Chauveau**, CILAS (France)

13020-76 • 06:10 PM - 08:00 PM

**Functional optical coatings with quantum nanolaminates prepared by ion beam sputtering technology**

*Author(s):* **Raoul Middendorff**, Cutting Edge Coatings GmbH (Germany); **Felix Weiß**, Laser Zentrum Hannover e.V. (Germany); **Cassian Bergmann**, Bergmann Messgeräte Entwicklung KG (Germany); **Marco Jupé, Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany); **Kai Starke**, Cutting Edge Coatings GmbH (Germany)

13020-78 • 06:10 PM - 08:00 PM

**Pulsed DC sputter deposited hydrogenated carbon: an alternative durable infrared optical thin film material**

*Author(s):* **Sam Ahmadzadeh, Lewis S. Fleming, Des R. Gibson**, Univ. of the West of Scotland (United Kingdom)

13020-79 • 06:10 PM - 08:00 PM

**Optical and mechanical properties of PIAD deposited HfO<sub>2</sub> single layers**

*Author(s):* **Giedrius Abromavicius, Remigijus Juškenas**, Ctr. for Physical Sciences and Technology (Lithuania)

13020-80 • 06:10 PM - 08:00 PM

**Novel fabrication method for frequency tripling mirrors in ultrafast laser applications**

*Author(s):* **Sebastian Balendat, Holger Badorreck**, Laser Zentrum Hannover e.V. (Germany), Institut für Quantenoptik, Leibniz Univ. Hannover (Germany); **David Zuber**, Institut für Quantenoptik, Leibniz Univ. Hannover (Germany), Exzellenzcluster PhoenixD (Germany); **Uwe Morgner**, Institute of Quantum Optics, Leibniz Univ. Hannover (Germany), Laser Zentrum Hannover e.V. (Germany), Exzellenzcluster PhoenixD (Germany); **Andreas Wienke**, Laser Zentrum Hannover e.V. (Germany), Exzellenzcluster PhoenixD (Germany); **Detlev Ristau**, Institut für Quantenoptik, Leibniz Univ. Hannover (Germany), Laser Zentrum Hannover e.V. (Germany), Exzellenzcluster PhoenixD (Germany); **Marco Jupé**, Laser Zentrum Hannover e.V. (Germany), Exzellenzcluster PhoenixD (Germany)

13020-81 • 06:10 PM - 08:00 PM

**Reactive multitarget magnetron sputtering of Sr<sub>2</sub>FeMoO<sub>6</sub> films**

Author(s): **Ignas Bitinaitis**, Center for Physical Sciences and Technology (Lithuania), MB FEMTA (Lithuania); **Alexandr Belosludtsev**, Center for Physical Sciences and Technology (Lithuania); **Gunnar Suchanek**, **Sitao Wang**, **Gerald Gerlach**, Technische Universität Dresden, Institut für Festkörperelektronik (Germany); **Nikolai A. Sobolev**, Departamento de Física and i3N, Universidade de Aveiro (Portugal)

13020-83 • 06:10 PM - 08:00 PM

**Comprehensive interferometric characterization of optical devices for high performance applications**

Author(s): **Michel Lequime**, **Imran Khan**, **Myriam Zerrad**, **Claude Amra**, Institut Fresnel (France)

**Wednesday 10 April 2024****SESSION 7: NONLINEAR OPTICAL PROPERTIES OF COATINGS**

10 April 2024 • 08:30 AM - 10:20 AM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Carmen S. Menoni**, Colorado State Univ. (United States)

13020-29 • 08:30 AM - 09:00 AM

**Nonlinear optics in thin film coatings** (*Invited Paper*)

Author(s): **Morten Steinecke**, Laser Zentrum Hannover e.V. (Germany); **Sebastian Balendat**, **Holger Badorreck**, **Andreas Wienke**, **Detlev Ristau**, **Marco Jupé**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany)

13020-30 • 09:00 AM - 09:20 AM

**Tailoring the nonlinear optical response of high-entropy alloy thin films through compositional and structural modification**

Author(s): **Salah-Eddine Benrazzouq**, Institut Jean Lamour (France); **Ekaterina Gunina**, **Svyatoslav Povarov**, ITMO Univ. (Russian Federation); **Jaafar Ghanbaja**, **Sylvie Migot**, **Alexandre Nominé**, **Jean-François Pierson**, **Valentin Milichko**, Institut Jean Lamour (France)

13020-31 • 09:20 AM - 09:40 AM

**Integrable thin-film Fabry-Pérot type electro-optic modulator**

Author(s): **Anna Karoline Rüsseler**, **Philipp Gehrke**, Leibniz Univ. Hannover (Germany), Laser Zentrum Hannover e.V. (Germany); **Florens Kurth**, **Li Zhao**, Leibniz Univ. Hannover (Germany), Technische Univ. Braunschweig (Germany); **Sophie-Luise Hachmeister**, Technische Univ. Braunschweig (Germany); **Jonas N. Matthes**, Laser Zentrum Hannover e.V. (Germany); **Gerd-Albert Hoffmann**, **Marco Jupé**, Leibniz Univ. Hannover (Germany), Laser Zentrum Hannover e.V. (Germany); **Hans-Hermann Johannes**, **Wolfgang Kowalsky**, **Tasja Schwenke**, **Henning Menzel**, Leibniz Univ. Hannover (Germany), Technische Univ. Braunschweig (Germany); **Andreas Wienke**, **Detlev Ristau**, Leibniz Univ. Hannover (Germany), Laser Zentrum Hannover e.V. (Germany)

13020-32 • 09:40 AM - 10:00 AM

**Damage detection in thin films using second harmonic generation**

Author(s): **Jakub Lukeš**, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic), Technical Univ. of Liberec (Czech Republic); **Věra Hájková**, Department of Radiation and Chemical Physics, Institute of Physics, Czech Academy of Sciences (Czech Republic); **Vít Kanclíř**, Institute of Plasma Physics of the CAS (Czech Republic), Technical Univ. of Liberec (Czech Republic); **Martina Tauchmanová**, Institute of Plasma Physics of the CAS (Czech Republic); **Karel Židek**, Institute of Plasma Physics of the CAS, v.v.i. (Czech Republic)

13020-33 • 10:00 AM - 10:20 AM

**Optical thin film design optimization for nonlinear response**

Author(s): **Holger Badorreck**, **Sebastian Balendat**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany); **Morten Steinecke**, Laser Zentrum Hannover e.V. (Germany); **Andreas Wienke**, **Detlev Ristau**, **Marco Jupé**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany)

**Coffee Break 10:20 AM - 10:50 AM****SESSION 8: HIGH-POWER LASER APPLICATIONS**

10 April 2024 • 10:50 AM - 01:00 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Silvia Schwyn Thoeny**, Evatec AG (Switzerland)

13020-34 • 10:50 AM - 11:20 AM

**Recent Advancements in Standardization Effort for Laser-Induced Damage Threshold Testing** (*Invited Paper*)

Author(s): **Andrius Melninkaitis**, **Martynas Keršys**, Vilnius Univ. (Lithuania); **Linas Smalakys**, **Gintare Bataviciute**, **Egidijus Pupka**, **Justinas Galinis**, LIDARIS Ltd. (Lithuania); **Marco Jupé**, Laser Zentrum Hannover e.V. (Germany); **Clara Engesser**, DIN Deutsches Institut für Normung e. V. (Germany); **Laurent Lamagnère**, CEA-Cesta (France); **Detlev Ristau**, Leibniz Univ. Hannover (Germany), Laser Zentrum Hannover e.V. (Germany)

13020-35 • 11:20 AM - 11:40 AM

**Development of dielectric mirrors by magnetron sputtering for high power laser facilities.**

Author(s): **Océane Aubard**, CEA-Le Ripault (France); **Marine Chorel**, **Eric G. Lavastre**, CEA-Cesta (France); **Bruno Bousquet**, Univ. de Bordeaux (France), Institut de Chimie de la Matière Condensée de Bordeaux, CNRS (France); **Corinne Marcel**, CEA-Le Ripault (France)

13020-36 • 11:40 AM - 12:00 PM

**Influence of contaminates on the nanosecond laser-induced damage of multilayer dielectric gratings @1064 nm**

Author(s): **Jingjing Xia**, **Xinshang Niu**, **Xiaochuan Ji**, **Jinlong Zhang**, **Zhanshan Wang**, **Hongfei Jiao**, **Xinbin Cheng**, Tongji Univ. (China)

13020-37 • 12:00 PM - 12:20 PM

**Comprehensive study of microstructure and chemical composition of all-silica GLAD quarter-waveplate coatings for high power laser**

Author(s): **Solène Bertet**, **Marine Chorel**, **Eric G. Lavastre**, CEA-Cesta (France); **Sara MacNally**, Univ. of Rochester (United States); **Corinne Marcel**, CEA-Le Ripault (France); **Bruno Gallas**, Sorbonne Univ. (France), CNRS (France), Institut des nanosciences de Paris (France); **Marcela Mireles**, Univ. of Rochester (United States)

13020-38 • 12:20 PM - 12:40 PM

**Low Absorption Ion Beam Sputtered Coatings On Large Optics For High Energy Laser Systems**

Author(s): **Evyatar Kassis**, **Shay Joseph**, **Hadar Frankenstein Shefa**, **Nataly Lea Giat**, **Doron Yadlovker**, **Yarden Jaoui**, **Afik Shachar**, **Orian Keneth Sachyani**, Rafael Advanced Defense Systems Ltd. (Israel)

13020-39 • 12:40 PM - 01:00 PM

**Cavity enhanced reflection of a distributed Bragg reflector for high power laser applications**

Author(s): **Saina Farrokhpour Sani**, **Kursat Sendur**, Sabanci Univ. (Turkey)

**Lunch/Exhibition Break 01:00 PM - 02:10 PM**

## SESSION 9: NOBEL PRIZE SESSION

10 April 2024 • 02:10 PM - 03:10 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Markus K. Tilsch**, Viavi Solutions Inc. (United States)

13020-40 • 02:10 PM - 02:40 PM

**Extreme ultraviolet interference coatings for attosecond science** (Invited Paper)

Author(s): **Franck Delmotte**, **Sébastien de Rossi**, Univ. Paris-Saclay (France); **Evgueni Meltchakov**, Institut d'Optique Graduate School (France); **Charles Bourassin-Bouchet**, **Eirini Papagiannouli**, Univ. Paris-Saclay (France); **Arnaud Jérôme**, Institut d'Optique Graduate School (France)

13020-41 • 02:40 PM - 03:10 PM

**Dispersive optics is key element for femtosecond physics** (Invited Paper)

Author(s): **Vladimir Pervak**, Ludwig-Maximilians-Univ. München (Germany)

**Coffee Break 03:10 PM - 03:40 PM**

## SESSION 10: APPLICATIONS

10 April 2024 • 03:40 PM - 06:00 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Myriam Zerrad**, Institut Fresnel (France)

13020-42 • 03:40 PM - 04:00 PM

**Microwave plasma assisted sputtering of a combined Ta<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub> and a-Si:H/SiO<sub>2</sub> two stack optical coating design concept for gravitational wave detectors**

Author(s): **Connor Lindsay**, Univ. of the West of Scotland (United Kingdom); **Carlos García Nuñez**, Univ. of Glasgow (United Kingdom); **Lewis S. Fleming**, **Jonathan Pomfret**, Univ. of the West of Scotland (United Kingdom); **Kirstin Saunders**, Univ. of Glasgow (United Kingdom); **Sam Ahmadzadeh**, Univ. of the West of Scotland (United Kingdom); **Simon Tait**, Univ. of Glasgow (United Kingdom); **Stuart Reid**, Univ. of Strathclyde (United Kingdom); **Iain W. Martin**, Univ. of Glasgow (United Kingdom); **Des R. Gibson**, Univ. of the West of Scotland (United Kingdom)

13020-43 • 04:00 PM - 04:20 PM

**Antireflection coatings for an ultra-high vacuum quartz cell developed for quantum computing experiments**

Author(s): **Ulrike Schulz**, **Friedrich Rickelt**, **Nancy Gratzke**, **Lukas Schell**, **Anne Gärtner**, **Astrid Bingel**, **Sven Schröder**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13020-44 • 04:20 PM - 04:40 PM

**Sputtered optical coatings for the coaxial integration of sensors in adaptive automotive headlights**

Author(s): **Kerstin Täschner, Thomas Preußner, Jörg Neidhardt**, Fraunhofer-Institut für Organische Elektronik, Elektronenstrahl- und Plasmatechnik FEP (Germany)

13020-45 • 04:40 PM - 05:00 PM

**Design on the 14 narrow bandpass filters of VEM instrument for Envision and Veritas missions**

Author(s): **Hélène T. Krol, Xavier Buet, Nathalie Valette, Colin Bondet de la Bernardie, Didier Torricini, Grégory Chauveau**, CILAS (France)

13020-46 • 05:00 PM - 05:20 PM

**Optical coating facilities at the Instituto de Astrofísica de Canarias.**

Author(s): **Maider Insausti Múgica, Félix Gracia, José Luis Rasilla**, Instituto de Astrofísica de Canarias (Spain)

13020-47 • 05:20 PM - 05:40 PM

**Strongly thermochromic behavior of doped VO<sub>2</sub> switching at low temperature for spacecraft thermal control**

Author(s): **William Ravisy**, HEF Groupe (France), IREIS (France); **Thomas Pouit**, IREIS (France), HEF Groupe (France); **Bruno Bras, Szilvia Szmolka**, European Space Research and Technology Ctr. (Netherlands); **Philipp Hager**, European Space Research and Technology Ctr. (Netherlands), European Space Agency (France); **Laurent Dubost**, HEF Groupe (France), IREIS (France)

13020-48 • 05:40 PM - 06:00 PM

**Hard antireflective coatings in the visible band**

Author(s): **Yusi Wang, Weidong Shen, Chenying Yang, Tingting Zheng**, Zhejiang Univ. (China)

**Thursday 11 April 2024****SESSION 11: STRUCTURED COATINGS**

11 April 2024 • 08:30 AM - 10:10 AM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Franck Delmotte**, Institut d'Optique Graduate School (France)

13020-49 • 08:30 AM - 09:00 AM

**High-efficiency quasi-three-dimensional sub-wavelength structure devices (Invited Paper)**

Author(s): **Tao He, Jingyuan Zhu, Siyu Dong, Zeyong Wei, Zhanshan Wang, Xinbin Cheng**, Tongji Univ. (China)

13020-50 • 09:00 AM - 09:30 AM

**Periodically nanostructured coatings for spatial filtering and polarization control in microlasers (Invited Paper)**

Author(s): **Lina Grineviciute, Julianija Nikitina**, Ctr. for Physical Sciences and Technology (Lithuania); **Darius Gailevicius, Matas Plukys**, Vilnius Univ. (Lithuania); **Kestutis Staliunas**, ICREA - Institutió Catalana de Recerca i Estudis Avançats (Spain)

13020-51 • 09:30 AM - 09:50 AM

**2D nanopillars patterning of complex shape using multiple colloidal lithography illumination on photo-patternable TiO<sub>2</sub> and ZrO<sub>2</sub> based sol-gel layers**

Author(s): **Rosa Olloghe Mandoukou, Victor Vallejo Otero, Arnaud Valour, Marie Traynar, Maxime Royon, Isabelle Verrier**, Lab. Hubert Curien (France); **Olivier Lebaigue, Olivier Dellea**, CEA (France); **Nicolas N. Crespo-Monteiro, Yves Jourlin**, Lab. Hubert Curien (France)

13020-52 • 09:50 AM - 10:10 AM

**Micro-nanostructuring by optical-lithography and nitriding of photo-patternable ZrO<sub>2</sub> sol-gel to obtain micro-nanostructured ZrN**

Author(s): **Victor Vallejo Otero, Nicolas N. Crespo-Monteiro, Arnaud Valour, Christophe Donnet, Stéphanie Reynaud, Nadège Ollier**, Lab. Hubert Curien (France); **Marie-Françoise Blanc-Mignon, J. P. Chatelon**, Univ. Jean Monnet Saint-Etienne, CNRS, Institut d'Optique Graduate School, Lab. Hubert Curien (France); **Yannick Bleu, Emilie Gamet, Yves Jourlin**, Lab. Hubert Curien (France)

**Coffee Break 10:10 AM - 10:40 AM****SESSION 12: OPTICAL AND SCATTERING PROPERTIES**

11 April 2024 • 10:40 AM - 12:50 PM | Varsovie/Salon 1, Niveau/Level 0

Session Chair(s): **Lina Grineviciute**, Ctr. for Physical Sciences and Technology (Lithuania)

13020-53 • 10:40 AM - 11:10 AM

**Ultra-high dynamic broadband scatterometer for comprehensive characterization of optical interference coatings (Invited Paper)**

Author(s): **Myriam Zerrad, Michel Lequime, Alexandra Carrez, Claude Amra**, Institut Fresnel (France), Aix-Marseille Univ., Ecole Centrale de Marseille, CNRS (France)

13020-54 • 11:10 AM - 11:30 AM

**Finite element numerical investigation of light scattering impact in multilayered stacks**

*Author(s):* **Yousra Toumi Fabien Lemarchand**, Institut Fresnel (France); **Cyril Favard**, Institut de Recherche en Infectiologie de Montpellier (France); **Julien Lumeau, Guillaume Demésy, Aude L. Lereu**, Institut Fresnel (France)

13020-55 • 11:30 AM - 11:50 AM

**Advanced metrology for optical surfaces: spatially and angularly resolved scatterometry equipment for a quantitative characterization of scratches, digs and contamination**

*Author(s):* **Adrien Bolliand, Michel Lequime, Myriam Zerrad, Claude Amra**, Aix-Marseille Univ. (France), Institut Fresnel (France), CNRS (France)

13020-56 • 11:50 AM - 12:10 PM

**Reliable substrate characterization in the broadband range of 220-1700 nm based on spectral photometric data**

*Author(s):* **Tatiana Amochkina**, OTF Studio GmbH (Germany); **Vladislav Y. Matusevich**, VM-TIM GmbH (Germany); **Michael K. Trubetskov**, Max-Planck-Institut für Quantenoptik (Germany), OTF Studio GmbH (Germany)

13020-57 • 12:10 PM - 12:30 PM

**Accurate measurement and reduction of losses in ion beam sputtering coatings**

*Author(s):* **Alex Ribeaud, Jürgen Pistner, Isabel Vela-Perez**, Bühler Alzenau GmbH (Germany); **Julien Lumeau, Lauernt Gallais**, Institut Fresnel (France); **Rico Benz, Christoph Sturzenegger**, RhySearch (Switzerland); **Bernd Eiermann**, WZW-Optic AG (Switzerland); **Christian Mühlig**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13020-58 • 12:30 PM - 12:50 PM

**Post-production characterization of double-sided ZnS/YbF3 mid-infrared thin-film optical elements**

*Author(s):* **Tatiana Amochkina**, Max-Planck-Institut für Quantenoptik (Germany), OTF Studio GmbH (Germany); **Daniel Hahner**, Ludwig-Maximilians-Univ. München (Germany); **Michael K. Trubetskov**, Max-Planck-Institut für Quantenoptik (Germany), OTF Studio GmbH (Germany); **Vladimir Pervak**, Ludwig-Maximilians-Univ. München (Germany), Ultrafast Innovations (Germany); **Ferenc Krausz**, Max-Planck-Institut für Quantenoptik (Germany), Ludwig-Maximilians-Univ. München (Germany)

**Lunch Break 12:50 PM - 02:10 PM**

**SESSION 13: PROCESS MONITORING AND OPTIMIZATION I**

11 April 2024 • 02:10 PM - 03:10 PM | Varsovie/Salon 1, Niveau/Level 0

*Session Chair(s):* **Claude Amra**, Institut Fresnel (France)

13020-82 • 02:10 PM - 02:30 PM

**Surface and thin film characterization using angle resolved light scattering: from roughness and defect analysis to in-situ coating inspection**

*Author(s):* **Anne-Sophie Munser, Tobias Herffurth, Christian Mühlig, Thomas Gischkat, Sven Schröder**, Fraunhofer-IOF (Germany)

13020-60 • 02:30 PM - 02:50 PM

**Advances in direct monochromatic monitoring for the DUV range**

*Author(s):* **Detlef Arhilger, Harro Hagedorn, Alfons Zoeller**, Bühler Alzenau GmbH (Germany)

13020-61 • 02:50 PM - 03:10 PM

**Advanced characterization of IBAD deposited MgF2, Al2O3, Si, YF3, and Ge thin films in ultra-broadband spectral region of 300-5000 nm**

*Author(s):* **Tatiana Amochkina**, OTF Studio GmbH (Germany); **Veranika Shandarovich, Daniel Kisela**, I-Photonics UAB (Lithuania); **Michael K. Trubetskov**, Max-Planck-Institut für Quantenoptik (Germany), OTF Studio GmbH (Germany); **Aliaksandr Myslivets**, I-Photonics UAB (Lithuania)

**Coffee Break 03:10 PM - 03:40 PM**

**SESSION 14: PROCESS MONITORING AND OPTIMIZATION II**

11 April 2024 • 03:40 PM - 04:40 PM | Varsovie/Salon 1, Niveau/Level 0

*Session Chair(s):* **Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany)

13020-62 • 03:40 PM - 04:00 PM

**Characterisation of materials for infrared bandpass filters produced by microwave plasma assisted magnetron sputtering**

*Author(s):* **Jonathan Pomfret**, G&H Photonics (United Kingdom), Univ. of the West of Scotland (United Kingdom); **Peter McKay**, G&H Photonics (United Kingdom); **Lewis S. Fleming, Des R. Gibson**, Univ. of the West of Scotland (United Kingdom)

13020-63 • 04:00 PM - 04:20 PM

**Reliable post-production characterization of TiO<sub>2</sub>/SiO<sub>2</sub> electron-beam optical coatings based on multi-sample photometric and ellipsometric data**

*Author(s):* **Tatiana Amochkina**, OTF Studio GmbH (Germany); **Michael Trubetskov**, Max-Planck-Institut für Quantenoptik (Germany), OTF Studio GmbH (Germany); **Vesna Janicki**, **Jordi Sancho-Parramon**, Ruder Boškovic Institute (Croatia)

13020-64 • 04:20 PM - 04:40 PM

**Optical and structural properties of silicon nitride thin films deposited by plasma enhanced chemical vapor deposition for high reflectance optical mirrors**

*Author(s):* **Kirstin Saunders**, Univ. of Glasgow (United Kingdom); **Michał Mazur Mazur**, University of Wrocław, Institute of Experimental Physics (Poland); **Caspar C. Clark**, Helia Photonics Ltd. (United Kingdom); **Des R. Gibson**, Univ. of the West of Scotland (United Kingdom), AlbaSense Ltd. (United Kingdom); **Carlos García Nuñez**, Univ. of Glasgow (United Kingdom)

### CLOSING REMARKS

11 April 2024 • 04:40 PM - 04:50 PM | Varsovie/Salon 1, Niveau/Level 0

**Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany)

*Conference Chairs*

### DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Optical Systems Design 2024.

13020-72

**Dual-mode polarization-sensitive tunable metalens enabling bright-field and edge-enhanced imaging**

*Author(s):* **Aqib Raza Shah**, **Isma Javed**, **Azhar Javed Satti**, Information Technology Univ. of the Punjab (Pakistan); **Qammer H. Abbasi**, University of Glasgow, James Watt School of Engineering (United Kingdom); **Muhammad Zubair**, King Abdullah University of Science and Technology (KAUST) (Saudi Arabia), University of Glasgow, James Watt School of Engineering, Glasgow, G12 8QQ, UK (United Kingdom); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

13020-73

**Metalens-based optical coherence tomography for high-resolution biomedical imaging**

*Author(s):* **Abdul Jabbar**, Information Technology Univ. of the Punjab (Pakistan); **Isma Javed**, Information Technology Univ. of the Punjab (Pakistan), MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Azhar Javed Satti**, Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

# CONFERENCE 13021

## Optical Fabrication and Testing VIII

08 - 09 April 2024 | Leicester/Salon 12, Niveau/Level 1

**Conference Chair(s):** **Eric Ruch**, Safran Reosc (France); **Reinhard Völkel**, Focuslight Switzerland SA (Switzerland)

**Program Committee:** **Matthias Bischoff**, Berliner Glas KGaA Herbert Kubatz GmbH & Co. (Germany); **Xinbin Cheng**, Tongji Univ. (China); **Sead Doric**, Doric Lenses Inc. (Canada); **Yutaka Ezaki**, Mitsubishi Electric Corp. (Japan); **Oliver W. Föhnle**, OST Ostschweizer Fachhochschule (Switzerland); **Roland Geyl**, Safran Reosc (France); **Pierre Gloesener**, AMOS Ltd. (Belgium); **Philippe Godefroy**, Winlight System S.A. (France); **Caroline Gray**, Glyndwr Innovations Ltd. (United Kingdom); **James E. Harvey**, Photon Engineering LLC (United States); **François Houbre**, Savimex (France); **Shay Joseph**, Rafael Advanced Defense Systems Ltd. (Israel); **Sven R. Kiontke**, asphericon GmbH (Germany); **François Leprêtre**, Thales Angénieux S.A. (France); **Magnus Lindvall**, Microbas Precision AB (Sweden); **Carlos Miravet**, SENER Aeroespacial S.A. (Spain); **Jessica DeGroot Nelson**, Edmund Optics Inc. (United States); **Jérôme Néauport**, Commissariat à l'Énergie Atomique (France); **Manfred Prantl**, Alicona Imaging GmbH (Austria); **Sven Schröder**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Arkadiusz Swat**, CRW Telesystem-Mesko Sp. z o.o. (Poland); **Lingli Wang**, Jos. Schneider Optische Werke GmbH (Germany); **Alexander Yascovich**, Space Research Institute (Russian Federation)

### Monday 8 April 2024

#### SESSION 1: OPTICAL FABRICATION AND TESTING I

08 April 2024 • 08:40 AM - 10:20 AM | Leicester/Salon 12, Niveau/Level 1

*Session Chair(s):* **Eric Ruch**, Safran Reosc (France)

13021-1 • 08:40 AM - 09:00 AM

**Design and manufacturing of the CHIME spectrometer unit**

*Author(s):* **Vincent Moreau**, **Gregory Lousberg**, **Benoît Borguet**, **Etienne Renotte**, **Roberto Di Paola**, **Pierre Gloesener**, AMOS S.A. (Belgium)

13021-2 • 09:00 AM - 09:20 AM

**Manufacture and verification of M6C mirrors the pre-focal stations of the ESO-extremely large telescope**

*Author(s):* **Andrew Dickins**, **Paul Rees**, Glyndwr Innovations Ltd. (United Kingdom), Wrexham Univ. (United Kingdom)

13021-3 • 09:20 AM - 09:40 AM

**Fabrication of gratings on curved substrates using electron-beam lithography**

*Author(s):* **Fabien Grisé**, The Pennsylvania State Univ. (United States); **Casey DeRoo**, **Cecilia Fasano**, The Univ. of Iowa (United States); **Randall McEntaffer**, The Pennsylvania State Univ. (United States)

13021-4 • 09:40 AM - 10:00 AM

**Hyperpolished off-axis optics using nanoparticle slurries: concept and first results.**

*Author(s):* **Houda Bellahsene**, Institut de chimie moléculaire et des matériaux - Institut Charles Gerhardt Montpellier, CNRS (France); **Saad Sene**, Institut de chimie moléculaire et des matériaux - Institut Charles Gerhardt Montpellier, Univ. de Montpellier (France); **Michel Marcos**, **Manal Chebbo**, Lab. d'Astrophysique de Marseille (France); **Jouliia Larionova**, Institut de chimie moléculaire et des matériaux - Institut Charles Gerhardt Montpellier, Univ. de Montpellier (France); **Yannick Guari**, Institut de chimie moléculaire et des matériaux - Institut Charles Gerhardt Montpellier, CNRS (France); **Marc Ferrari**, Lab. d'Astrophysique de Marseille (France)

13021-5 • 10:00 AM - 10:20 AM

**Developments in robotic polishing and smoothing of optics**

*Author(s):* **Daniel R. Brooks**, **Jennifer Coniglio**, **Brittany D. Cox**, **Steve Murty**, **Brian Meyer**, Optimax Systems, Inc. (United States)

**Coffee Break 10:20 AM - 10:50 AM**

#### SESSION 2: OPTICAL FABRICATION AND TESTING II

08 April 2024 • 10:50 AM - 12:10 PM | Leicester/Salon 12, Niveau/Level 1

*Session Chair(s):* **Shay Joseph**, Rafael Advanced Defense Systems Ltd. (Israel)



13021-6 • 10:50 AM - 11:10 AM

**Design and manufacturing of a metallic telescope for ground-based quantum communication**

*Author(s):* **Markus Unger, Nils Heidler, Thomas Peschel, Christoph Damm, Robert Jende, Peter Weide, Knut Kleinbauer, Ralf Steinkopf**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Tatjana Porwol**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany), Friedrich-Schiller-Univ. Jena (Germany); **Sandra Müller, Mathias Rohde, Johannes Hartung, Christian Jäger, Svetlana Shestaeva, Ralph Schlegel, Stefan Schwinde, Matthias Goy, Fabian O. Steinlechner, Stefan Risse**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany)

13021-7 • 11:10 AM - 11:30 AM

**Active alignment technique of an off-axis beam expander**

*Author(s):* **Ziyan Huang, Chun Hao Delvin Poh, Wei Lin Puah, Mun Hong Loke, Yan Ying Cheah**, DSO National Labs. (Singapore)

13021-8 • 11:30 AM - 11:50 AM

**Design and fabrication of aspheric Fresnel-type lenses for solar energy by using a 3D printer**

*Author(s):* **Martín Jiménez-Rodríguez, Maximino A. Avendaño-Alejo, Osvaldo Ponce-Hernández, Ismael Velázquez-Gómez**, Univ. Nacional Autónoma de México (Mexico); **Rafael Izazaga-Pérez**, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico)

13021-9 • 11:50 AM - 12:10 PM

**Design and fabrication of an off-axis Fresnel-type reflector by using 3D printing**

*Author(s):* **Maximino A. Avendaño-Alejo, Martín Jiménez-Rodríguez, Ismael Velázquez-Gómez, Osvaldo Ponce-Hernández**, Univ. Nacional Autónoma de México (Mexico)

**Lunch Break 12:10 PM - 01:30 PM**

**OPTICAL SYSTEMS DESIGN MONDAY PLENARY SESSION**

08 April 2024 • 01:30 PM - 03:15 PM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

13:30 - 13:45 hrs: **Welcome and Opening Remarks**

13019-500 • 01:45 PM - 02:30 PM

**Future of optical system and lens design in the AI era** (Plenary Presentation)

*Author(s):* **Simon Thibault**, Univ. Laval (Canada)

13022-501 • 02:30 PM - 03:15 PM

**Freeform optics for illumination: past, present and future** (Plenary Presentation) (*Invited Paper*)

*Author(s):* **Julius A. Muschaweck**, JMO GmbH (Germany)

**Coffee Break 03:15 PM - 03:50 PM**

**SESSION 3: OPTICAL FABRICATION AND TESTING III**

08 April 2024 • 03:50 PM - 05:50 PM | Leicester/Salon 12, Niveau/Level 1

*Session Chair(s):* **Pierre Gloesener**, AMOS S.A. (Belgium)

13021-10 • 03:50 PM - 04:10 PM

**IBS 2000: Large area ion beam sputtering coating machine**

*Author(s):* **Tarik Kellermann**, Laser Zentrum Hannover e.V. (Germany); **Holger Badorreck**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany); **Morten Steinecke**, Laser Zentrum Hannover e.V. (Germany); **Marco Jupé, Andreas Wienke, Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany), Leibniz Univ. Hannover (Germany)

13021-11 • 04:10 PM - 04:30 PM

**Coating stress compensation and temporal evolution studies for ion beam sputtered thin films**

*Author(s):* **Mathias Mende, Matthias Knobl**, Edmund Optics GmbH (Germany); **Masatoshi Shibata, Kazuki Chiba**, Edmund Optics Japan Ltd. (Japan); **David Ahlstrand, Michael Middleton, Ian Stevenson, Nathan Carlie, Jessica DeGroote Nelson**, Edmund Optics Inc. (United States)

13021-12 • 04:30 PM - 04:50 PM

**Improving Augmented Reality: Ion Beam Processing of Slanted Surface Relief Gratings (SRG)**

*Author(s):* **Manuela Lötsch, Matthias Nestler, Marcel Demmler**, scia Systems GmbH (Germany)

13021-13 • 04:50 PM - 05:10 PM

**Effect of the skew ray error on corneal topography using a cone topographer**

*Author(s):* **Oliver Huerta-Carranza**, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); **Manuel Campos-García, Luis Ángel Pantoja-Arredondo**, Univ. Nacional Autónoma de México (Mexico); **Fermín Granados-Agustín**, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico)

13021-14 • 05:10 PM - 05:30 PM

**Design of a planar off-axis null-screen for characterization of a concave surface used in a seismic isolation device**

*Author(s):* **Manuel Campos-García, Francisco Javier Bautista-Clemente, Luis Ángel Pantoja-Arredondo, Ulises Edmundo Espinoza-Nava, Héctor Guerrero-Bobadilla, Oliver Huerta-Carranza**, Univ. Nacional Autónoma de México (Mexico)

13021-15 • 05:30 PM - 05:50 PM

**Different refracted wavefront approaches propagated through an achromat separated doublet**

*Author(s):* **Ismael Velázquez-Gómez, Maximino A. Avendaño-Alejo, Jesús DelOlmo-Márquez, Martín Jiménez-Rodríguez, Osvaldo Ponce-Hernández**, Univ. Nacional Autónoma de México (Mexico)

## Tuesday 9 April 2024

### OPTICAL SYSTEMS DESIGN TUESDAY PLENARY SESSION

09 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

9:00 - 9:05 hrs: **Welcome and Opening Remarks**

13023-600 • 09:05 AM - 09:50 AM

**Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?** (Plenary Presentation)

*Author(s):* **Julie L. Bentley**, The Institute of Optics, Univ. of Rochester (United States)

13021-601 • 09:50 AM - 10:35 AM

**Manufacturing ELT M1 segments: large optics in a smart factory** (Plenary Presentation)

*Author(s):* **Camille Frapolli**, Safran Reosc (France)

**Coffee Break 10:35 AM - 11:10 AM**

### SESSION 4: OPTICAL FABRICATION AND TESTING IV

09 April 2024 • 11:10 AM - 12:30 PM | Leicester/Salon 12, Niveau/Level 1

*Session Chair(s):* **Pierre Gloesener**, AMOS S.A. (Belgium)

13021-16 • 11:10 AM - 11:30 AM

**Optical testing of a high numerical aperture spherical mirror**

*Author(s):* **Hagyong Kihm, Ma. Angela Lourdes B. Lequiron, Jae-Hyuck Choi**, Korea Research Institute of Standards and Science (Korea, Republic of); **Ho-Soon Yang**, Korea Research Institute of Standards and Science Standards and Science (Korea, Republic of)

13021-17 • 11:30 AM - 11:50 AM

**Development of an interferometric test bench for the manufacturing of the ELT secondary mirror**

*Author(s):* **Renaud Mercier-Ythier, Hector Monin, Guillaume Foucaud, Charles Beudy, Nathan Lefeuvre, Philippe Wuillaume, Jean-Louis Carel, Marie-Charlotte Le-Clech, Caroline Baptista, Camille Frapolli, Justine Hatzigeorgopoulos**, Safran Reosc (France)

13021-18 • 11:50 AM - 12:10 PM

**Development of a 18 point active supporting tool for the metrology of the E-ELT M2 secondary mirror**

*Author(s):* **Renaud Mercier-Ythier, Hector Monin, Nathan Lefeuvre, Jean-Louis Carel, Lorrain Swyngedaaw, Charles Beudy, Caroline Baptista, Camille Frapolli, Justine Hatzigeorgopoulos**, Safran Reosc (France); **Jean Leteinturier**, Astek (France)

13021-19 • 12:10 PM - 12:30 PM

**Extension of an optical coordinate measurement machine with a tactile probe, for combined measurement of optical surfaces and mechanical reference features**

*Author(s):* **Rens Henselmans, Rogier Ellenbroek, Nanda Bloom, Giacomo Pezzali**, Dutch United Instruments (Netherlands)

**Lunch/Exhibition Break 12:30 PM - 02:00 PM**

## SESSION 5: OPTICAL FABRICATION AND TESTING V

09 April 2024 • 02:00 PM - 03:00 PM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): **Shay Joseph**, Rafael Advanced Defense Systems Ltd. (Israel)

13021-20 • 02:00 PM - 02:20 PM

**Design, Simulation and Verification of a radially supported 60 inch meniscus mirror in a horizontal line of sight.**

Author(s): **Saul Page**, Glyndwr Innovations Ltd. (United Kingdom), Wrexham Univ. (United Kingdom)

13021-21 • 02:20 PM - 02:40 PM

**Novel testing technique for coated plane parallel optics**

Author(s): **Rafael Porcar-Guezenc, Diego Ormaechea, Nicolas Lefaudeux, Xavier Levecq**, Imagine Optic SA (France)

13021-24 • 02:40 PM - 03:00 PM

**Deep ultraviolet spectral photometry investigation of optical components under vacuum and nitrogen purge conditions**

Author(s): **Puja Kadhoda, Prashanth Reddy Baddipaduga, Florian Carstens, Andreas Wienke, Detlev Ristau**, Laser Zentrum Hannover e.V. (Germany)

## Coffee Break 03:00 PM - 03:40 PM

## SESSION 6: OPTICAL FABRICATION AND TESTING VI

09 April 2024 • 03:40 PM - 05:20 PM | Leicester/Salon 12, Niveau/Level 1

Session Chair(s): **Eric Ruch**, Safran Reosc (France)

13021-25 • 03:40 PM - 04:00 PM

**Performance of UV-molded vs. injection molded maskless microlensarrays for multi-aperture projection**

Author(s): **Rohan Kundu, Dirk Michaelis, Dmitrii Stefanidi, Peter Schreiber, Anja Schoeneberg, Robert Leitel**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik IOF (Germany); **Frank Prass, Burkhard Schaller**, OPTOFLUX GmbH (Germany)

13021-26 • 04:00 PM - 04:20 PM

**Phase Retrieval for Optical System Characterization: Design, Performance Analysis, and Experimental Validation of a Convolutional Neural Network**

Author(s): **Noé Hirschauer, Gaelle Lucas-Leclin**, Institut d'Optique Graduate School (France)

13021-27 • 04:20 PM - 04:40 PM

**Enhancing the accuracy of laser-induced damage tests by measuring non-linear beam propagation in Laser MégaJoule optics: example of the study of the impact of beam polarization state on fused silica**

Author(s): **Sylvain Grosjean**, CEA-Cesta (France), Institut Fresnel (France); **Charles Bouyer, Martin Cormier, Jean-François Gleyze, Nadja Roquin**, CEA-Cesta (France); **Jean-Yves Natoli**, Institut Fresnel (France); **Laurent Lamaignère**, CEA-Cesta (France)

13021-28 • 04:40 PM - 05:00 PM

**Quarter-wave plate UV transmission grating for high power lasers**

Author(s): **Jérôme Néauport**, CEA-Cesta (France); **Pierre Brianceau**, CEA-LETI (France); **Jerome Daurios, Laurent Lamaignère**, CEA-Cesta (France); **Nicolas Bonod**, Institut Fresnel (France)

13021-29 • 05:00 PM - 05:20 PM

**Energy transfer examination of Er<sup>3+</sup>/Nd<sup>3+</sup> to produce a high-performance light conversion layer for enhancing the solar cells' efficiency**

Author(s): **Najla Almulhem**, King Faisal Univ. (Saudi Arabia)

## POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitezer, Niveau/Level 0

Conference attendees are invited to attend the Optical Systems Design poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EOD/poster-presentation-guidelines>.

13021-23 • 06:10 PM - 08:00 PM

**Fabrication of diffraction gratings using sol-gel method and imprinting method**

Author(s): **Itsunari Yamada**, Setsunan Univ. (Japan)

13021-31 • 06:10 PM - 08:00 PM

**Development of a long cone corneal topographer to evaluate corneas without symmetry of revolution**

*Author(s):* **Marco Montes-Valles**, Instituto de Ciencias Aplicadas y Tecnología, Univ. Nacional Autónoma de México (Mexico); **Adán Ayrton Rojas Liévanos**, **Manuel Campos García**, Univ. Nacional Autónoma de México (Mexico); **Christian Camargo-Fierro**, Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado, Coordinación de la En (Mexico); **Violeta Guadalupe Camargo-Fierro**, Escuela Nacional de Medicina y Homeopatía IPN (Mexico)

13021-32 • 06:10 PM - 08:00 PM

**Precision inspection of micro-components surfaces by moiré interferometry**

*Author(s):* **Said Meguellati**, Univ. Ferhat Abbas Sétif 1 (Algeria)

13021-33 • 06:10 PM - 08:00 PM

**Null-screen based corneal topography using a smartphone**

*Author(s):* **Adán Ayrton Rojas Liévanos**, Instituto de Ciencias Aplicadas y Tecnología, Univ. Nacional Autónoma de México (Mexico); **Manuel Campos-García**, **Marco Montes-Valles**, Univ. Nacional Autónoma de México (Mexico); **Christian Camargo-Fierro**, Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado. (Mexico); **Violeta Guadalupe Camargo-Fierro**, Escuela Nacional de Medicina y Homeopatía IPN (Mexico)

13021-34 • 06:10 PM - 08:00 PM

**MELBA: a laser designed for comprehensive studies of laser-induced damage parameters in the nanosecond regime at 351 nm**

*Author(s):* **Sylvain Grosjean**, CEA-Cesta (France), Institut Fresnel (France); **Charles Bouyer**, **Martin Cormier**, **Jean-François Gleyze**, **Nadja Roquin**, CEA-Cesta (France); **Jean-Yves Natoli**, Institut Fresnel (France); **Laurent Lamaignère**, CEA-Cesta (France)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Optical Systems Design 2024.

13021-35

**Realization of a cost-effective 3D-printed lens for aberration correction for visible spectrum imaging**

*Author(s):* **Muhammad Danial Shafqat**, Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# CONFERENCE 13022

## Illumination Optics VII

08 - 09 April 2024 | Ramat Gan/Salon 14, Niveau/Level 1

**Conference Chair(s):** **Tina E. Kidger**, Kidger Optics Associates (United Kingdom); **Stuart David**, Synopsys, Inc. (United States); **Thorsten Schupp**, Synopsys, Inc. (Germany)

**Program Committee:** **William Cassarly**, Synopsys, Inc. (United States); **Fabian Duerr**, Vrije Univ. Brussel (Belgium); **Florian R. Fournier**, Synopsys, Inc. (United States); **R. John Koshel**, College of Optical Sciences, The Univ. of Arizona (United States); **Monika Kroneberger**, Gerg Lighthouse GmbH (Germany); **Julius A. Muschaweck**, JMO GmbH (Germany); **Henning Rehn**, FISBA AG (Switzerland); **Steffen Reichel**, Pforzheim Univ. (Germany); **Jannick P. Rolland**, Univ. of Rochester (United States)

### Monday 8 April 2024

#### SESSION 1: NONIMAGING DESIGN

08 April 2024 • 08:30 AM - 10:20 AM | Ramat Gan/Salon 14, Niveau/Level 1

*Session Chair(s):* **William J. Cassarly**, Synopsys, Inc. (United States)

13022-1 • 08:30 AM - 08:50 AM

**Small-scale light homogenization of fiber-output using different optical configurations**

*Author(s):* **Indy Magnus**, Vrije Univ. Brussel (Belgium); **Rafael Souza Lima**, Aseptuva AG (Switzerland); **Hugo Thienpont**, **Wendy Meulebroeck**, Vrije Univ. Brussel (Belgium)

13022-2 • 08:50 AM - 09:10 AM

**Using secondary prismatic microarrays to refine the light distribution of automotive lightguide luminaires**

*Author(s):* **Thomas L. R. Davenport**, **Tobias Schmid**, Synopsys, Inc. (United States)

13022-3 • 09:10 AM - 09:30 AM

**Design and fabrication of polymer lightguides for optical sensing and illumination**

*Author(s):* **Simone Sorgato**, **Lien Smeesters**, **Michael Vervaeke**, **Kurt Rochlitz**, **Dries Rosseel**, **Jef Verbaenen**, **Sergey Verlinski**, **Hugo Thienpont**, **Jürgen Van Erps**, Vrije Univ. Brussel (Belgium)

13022-4 • 09:30 AM - 09:50 AM

**Broadband uniform illumination optics for industrial applications**

*Author(s):* **Lien Smeesters**, **Indy Magnus**, **Hugo Thienpont**, **Simone Sorgato**, Vrije Univ. Brussel (Belgium), Flanders Make (Belgium)

13022-5 • 09:50 AM - 10:20 AM

**Gemini North Adaptive Optics Bench optical design** (*Invited Paper*)

*Author(s):* **Andrew P. Rakich**, Mersenne Optical Consulting (New Zealand)

**Coffee Break 10:20 AM - 10:50 AM**

#### SESSION 2: LED SOURCES AND LED SYSTEM DESIGN

08 April 2024 • 10:50 AM - 12:00 PM | Ramat Gan/Salon 14, Niveau/Level 1

*Session Chair(s):* **Angelika Hofmann**, Hofmann Optikdesign und Simulation (Germany)

13022-6 • 10:50 AM - 11:20 AM

**Advancements in multi-projection system illumination and the challenges of coherent light sources** (*Invited Paper*)

*Author(s):* **Dirk H. Döring**, Carl Zeiss AG (Germany)

13022-7 • 11:20 AM - 11:40 AM

**How to fill a light tube**

*Author(s):* **Henning Rehn**, FISBA AG (Switzerland)

13022-8 • 11:40 AM - 12:00 PM

**Versatile illumination module for multispectral imaging with a conventional fundus camera**

Author(s): **Vincent Nourrit, François-Maël Robert**, IMT Atlantique Bretagne-Pays de la Loire (France)

### Lunch Break 12:00 PM - 01:30 PM

#### OPTICAL SYSTEMS DESIGN MONDAY PLENARY SESSION

08 April 2024 • 01:30 PM - 03:15 PM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

13:30 - 13:45 hrs: **Welcome and Opening Remarks**

13019-500 • 01:45 PM - 02:30 PM

**Future of optical system and lens design in the AI era** (Plenary Presentation)

Author(s): **Simon Thibault**, Univ. Laval (Canada)

13022-501 • 02:30 PM - 03:15 PM

**Freeform optics for illumination: past, present and future** (Plenary Presentation) (*Invited Paper*)

Author(s): **Julius A. Muschaweck**, JMO GmbH (Germany)

### Coffee Break 03:15 PM - 03:50 PM

#### SESSION 3: TRANSPORTATION SYSTEM DESIGN

08 April 2024 • 03:50 PM - 05:20 PM | Ramat Gan/Salon 14, Niveau/Level 1

Session Chair(s): **Henning Rehn**, FISBA AG (Switzerland)

13022-10 • 03:50 PM - 04:20 PM

**Freeform beam-shaping system design with Monge-Ampère equation method** (*Invited Paper*)

Author(s): **Haotian Sun, Linyue Fang, Rengmao Wu**, Zhejiang Univ. (China)

13022-11 • 04:20 PM - 04:40 PM

**Development of cost-efficient micro-optics for headlight systems: different loops of optimization leading to a glare-free and high range module**

Author(s): **Monika Kroneberger**, digitX GbR (Germany); **Peter Leinwand, Marco Tscherner**, GERG Lighthouse GmbH (Germany)

13022-12 • 04:40 PM - 05:00 PM

**Workflow for solar irradiance concentration analysis**

Author(s): **Thorsten Schupp**, Synopsys GmbH (Germany)

13022-13 • 05:00 PM - 05:20 PM

**Imaging tasks in automotive illumination systems and how they are intertwined with photometrics and non-imaging optics**

Author(s): **Andreas L. Timinger, Benno Spinger**, Lumileds Germany GmbH (Germany)

### Tuesday 9 April 2024

#### OPTICAL SYSTEMS DESIGN TUESDAY PLENARY SESSION

09 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

9:00 - 9:05 hrs: **Welcome and Opening Remarks**

13023-600 • 09:05 AM - 09:50 AM

**Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?** (Plenary Presentation)

Author(s): **Julie L. Bentley**, The Institute of Optics, Univ. of Rochester (United States)

13021-601 • 09:50 AM - 10:35 AM

**Manufacturing ELT M1 segments: large optics in a smart factory** (Plenary Presentation)

Author(s): **Camille Frapolli**, Safran Reosc (France)

### Coffee Break 10:35 AM - 11:05 AM

**SESSION 4: NONIMAGING FREEFORM DESIGN**

09 April 2024 • 11:10 AM - 12:20 PM | Ramat Gan/Salon 14, Niveau/Level 1

Session Chair(s): **Julius A. Muschaweck**, JMO GmbH (Germany)

13022-14 • 11:10 AM - 11:40 AM

**Freeform illumination lens design with a predefined exit surface** (*Invited Paper*)

Author(s): **Zexin Feng, Haoran Li, Haisong Tang**, Beijing Institute of Technology (China)

13022-15 • 11:40 AM - 12:00 PM

**Combining Illumination Optimization and Tolerancing**

Author(s): **William J. Cassarly**, Synopsys, Inc. (United States)

13022-16 • 12:00 PM - 12:20 PM

**Generating function formulation for inverse freeform design**

Author(s): **Jan ten Thije Boonkamp, Martijn Anthonissen, Pieter Braam**, Technische Univ. Eindhoven (Netherlands); **Wilbert IJzerman**, Signify N.V. (Netherlands), Technische Univ. Eindhoven (Netherlands)

**DIGITAL POSTERS**

The posters listed below are available exclusively for online viewing during the week of SPIE Optical Systems Design 2024.

13022-9

**Miniaturized and high efficient GaN-based blue micro-LEDs for future display applications**

Author(s): **Aqsa Javaid**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

CONFERENCE CO-SPONSORS



## CONFERENCE 13023

# Computational Optics 2024

10 - 11 April 2024 | Stuttgart/Salon 15, Niveau/Level 1

**Conference Chair(s):** Daniel G. Smith, Aeva Inc. (United States); Andreas Erdmann, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)

**Program Committee:** Miguel A. Alonso, Univ. of Rochester (United States); Gerardo Bottiglieri, ASML Netherlands B.V. (Netherlands); Sven Burger, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany); Donis G. Flagello, Nikon Research Corp. of America (United States); Ari T. Friberg, Univ. of Eastern Finland (Finland); Hans Peter Herzig, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Roarke Horstmeyer, Duke Univ. (United States); Olivier J. F. Martin, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Carsten Rockstuhl, Karlsruher Institut für Technologie (Germany); Nikolai P. Schmitt, Carl Zeiss SMT GmbH (Germany); H. Paul Urbach, Technische Univ. Delft (Netherlands); Wei Wang, Heriot-Watt Univ. (United Kingdom); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany); Zeev Zalevsky, Bar-Ilan Univ. (Israel)

### INFORMATION

#### Best Paper Award

SPIE Optical Systems Design conference on Computational Optics will offer a Best Paper Award. Eligibility is extended to all speakers who are present to deliver their research work in person at the conference. Papers will be judged based on clarity of presentation, scientific merit, and potential innovative impact. The Best Paper Award will include a cash reward and an award certificate.

## Tuesday 9 April 2024

### OPTICAL SYSTEMS DESIGN TUESDAY PLENARY SESSION

09 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: Marta C. de la Fuente, ASE Optics Europe (Spain); Tina Kidger, Kidger Optics Associates (United Kingdom); Thierry Lépine, Institut d'Optique & Hubert Curien Lab (France)

9:00 - 9:05 hrs: **Welcome and Opening Remarks**

13023-600 • 09:05 AM - 09:50 AM

**Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?** (Plenary Presentation)

Author(s): Julie L. Bentley, The Institute of Optics, Univ. of Rochester (United States)

13021-601 • 09:50 AM - 10:35 AM

**Manufacturing ELT M1 segments: large optics in a smart factory** (Plenary Presentation)

Author(s): Camille Frapolli, Safran Reosc (France)

### POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Optical Systems Design poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.



**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EOD/poster-presentation-guidelines>.

13023-29 • 06:10 PM - 08:00 PM

**Shifted coded aperture design for single pixel imaging systems**

*Author(s):* **Edson Fabián Mojica Rodríguez, Jorge Guaiquil**, Univ. de la Frontera (Chile); **Enrique Tajahuerce**, Univ. Jaume I (Spain); **Pablo Meza**, Univ. de la Frontera (Chile)

13023-30 • 06:10 PM - 08:00 PM

**Diffraction-based chromatic aberration correction of super multi-view 3D display**

*Author(s):* **Yutong Sun, Haowen Ma, Juan Liu**, Beijing Institute of Technology (China)

13023-32 • 06:10 PM - 08:00 PM

**A review of topological solitons in planar nonlinear dirac models with applications in photonic graphene.**

*Author(s):* **Realeboga Dikole**, Council for Scientific and Industrial Research (South Africa)

13023-33 • 06:10 PM - 08:00 PM

**Efficient gradient computation in optical system optimization**

*Author(s):* **Martin Pflaum**, RWTH Aachen Univ. (Germany)

13023-34 • 06:10 PM - 08:00 PM

**Coded aperture design for temporal compressive imaging in a color-polarized video**

*Author(s):* **Josefa Silva Riquelme**, Univ. de la Frontera (Chile); **Kareth León-López**, Institut de Recherche en Informatique de Toulouse (France); **Edson Fabián Mojica Rodríguez, Daniela Fritz, Pablo Meza**, Univ. de la Frontera (Chile)

13023-35 • 06:10 PM - 08:00 PM

**Proximity lithography simulation: from shadow printing to holographic lithography**

*Author(s):* **Yuyang Liu, Sikun Li, Dongchao Pang, Haolan Wang, Yipeng Jiang, Tao Zhang, Hongwei Huang**, Shanghai Institute of Optics and Fine Mechanics (China)

13023-36 • 06:10 PM - 08:00 PM

**Investigation of a high-quality factor plasmonic device with metal-2D nanomaterial-metal structure for dengue detection**

*Author(s):* **Deepika Panth, Sukriti Mathur, Pritham Raghunath, Sujan Yenuganti, Pankaj Arora**, Birla Institute of Technology and Science, Pilani (India)

## Wednesday 10 April 2024

### WELCOME AND INTRODUCTION

10 April 2024 • 08:50 AM - 09:00 AM | Stuttgart/Salon 15, Niveau/Level 1

**Daniel G. Smith**, Aeva Inc. (United States)

**Andreas Erdmann**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)

*Conference Chairs*

### SESSION 1: COMPUTATIONAL IMAGING AND STUDENT PRESENTATIONS

10 April 2024 • 09:00 AM - 10:30 AM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Andreas Erdmann**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Daniel G. Smith**, Aeva Inc. (United States)

13023-1 • 09:00 AM - 09:30 AM

**Computational imaging from infrared to extreme-ultraviolet wavelengths: from fundamental research to applications in nanolithography** (*Invited Paper*)

*Author(s):* **Stefan Witte**, Advanced Research Ctr. for Nanolithography (Netherlands); **Arie den Boef**, ASML Netherlands B.V. (Netherlands); **Antonios Pelekanidis, Fengling Zhang, Matthias Gouder, Augustas Karpavicius, Tamar Cromwijk, Kjeld S. E. Eikema, Mengqi Du**, Advanced Research Ctr. for Nanolithography (Netherlands)

13023-2 • 09:30 AM - 09:50 AM

**A multi-scale approach to simulate the nonlinear optical response of molecular nanomaterials in the bulk and from surfaces**

*Author(s):* **Marjan Krstic, Benedikt Zerulla, Alejandro Luna Díaz, Christof Holzer, Dominik Beutel, Ivan Fernandez-Corbaton, Carsten Rockstuhl**, Karlsruher Institut für Technologie (Germany)

13023-3 • 09:50 AM - 10:10 AM

**Impact of transmitter wavefront errors and pointing jitter on intersatellite free space optical communications**

*Author(s):* **Mario Badas, Jasper Bouwmeester, Pierre Piron, Jérôme Loïcq**, Technische Univ. Delft (Netherlands)

13023-4 • 10:10 AM - 10:30 AM

**Simulation of solid-state lasers with temperature and wavelength dependent absorption and emission**

*Author(s):* **Souryadeep Saha**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Jacob I. Mackenzie**, Univ. of Southampton (United Kingdom); **Christoph Pflaum**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

**Coffee Break 10:30 AM - 11:00 AM**

**SESSION 2: AI, OPTIMIZATION AND STUDENT PRESENTATIONS**

10 April 2024 • 11:00 AM - 12:30 PM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Carsten Rockstuhl**, Karlsruher Institut für Technologie (Germany); **Hans Peter Herzig**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13023-5 • 11:00 AM - 11:30 AM

**3D EUV mask simulator based on physics-informed neural networks: effects of polarization and illumination** (*Invited Paper*)

*Author(s):* **Vlad Medvedev**, **Andreas Erdmann**, **Andreas Roskopf**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)

13023-6 • 11:30 AM - 11:50 AM

**Characterization of scattering systems using multi-plane neural networks**

*Author(s):* **Suraj Goel**, Heriot-Watt Univ. (United Kingdom); **Claudio Conti**, Sapienza Univ. di Roma (Italy), Istituto dei Sistemi Complessi (Italy), Museo Storico della Fisica e Ctr. Studi e Ricerche "Enrico Fermi" (Italy); **Saroch Leedumrongwatthanakun**, **Mehul Malik**, Heriot-Watt Univ. (United Kingdom)

13023-7 • 11:50 AM - 12:10 PM

**Glass optimization for optical design : CMA-ES optimizer with integer handling**

*Author(s):* **Tristan Marty**, Thales Research & Technology (France), Institut National de Recherche en Informatique et en Automatique (France); **Sébastien Héron**, **Yann Semet**, Thales Research & Technology (France); **Anne Auger**, **Nikolaus Hansen**, Institut National de Recherche en Informatique et en Automatique (France)

13023-8 • 12:10 PM - 12:30 PM

**Optimizing the trajectories of freeform waveguides using a modal theory**

*Author(s):* **Maria Paszkiewicz-Idzik**, **Maria Sukhova**, **Willy Dörfler**, **Carsten Rockstuhl**, Karlsruher Institut für Technologie (Germany)

**Lunch/Exhibition Break 12:30 PM - 02:00 PM**

**SESSION 3: PTYCHOGRAPHY AND STUDENT PRESENTATIONS**

10 April 2024 • 02:00 PM - 03:10 PM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Miguel A. Alonso**, Univ. of Rochester (United States)

13023-9 • 02:00 PM - 02:30 PM

**Fourier ptychography and its extensions into 3D polarimetry** (*Invited Paper*)

*Author(s):* **Shiqi Xu**, **Amey Chaware**, Duke Univ. (United States); **Xiang Dai**, Univ. of California, San Diego (United States); **Kyung Chul Lee**, Yonsei Univ. (Korea, Republic of), Duke Univ. (United States); **Xi Yang**, **Lucas Kreiss**, Duke Univ. (United States); **Kevin Zhou**, Duke Univ. (United States), Univ. of California, Berkeley (United States); **Kanghyun Kim**, **Carolyn Glass**, Duke Univ. (United States); **Oliver Friedrich**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Seung Ah Lee**, Yonsei Univ. (Korea, Republic of); **Roarke Horstmeyer**, Duke Univ. (United States)

13023-10 • 02:30 PM - 02:50 PM

**Wavelength-resolved ptychographic imaging using high-harmonic generation pulse pairs**

*Author(s):* **Fengling Zhang**, **Matthias Gouder**, **Antonios Pelekanidis**, **Kjeld S. E. Eikema**, **Stefan Witte**, Advanced Research Ctr. for Nanolithography (Netherlands), Vrije Univ. Amsterdam (Netherlands)

13023-11 • 02:50 PM - 03:10 PM

**Optimizing multi-wavelength extreme ultraviolet ptychography through structured illumination**

*Author(s):* **Antonios Pelekanidis**, Advanced Research Ctr. for Nanolithography (Netherlands), Vrije Univ. Amsterdam (Netherlands); **Fengling Zhang**, **Matthias Gouder**, Advanced Research Ctr. for Nanolithography (Netherlands); **Kjeld S. E. Eikema**, **Stefan Witte**, Advanced Research Ctr. for Nanolithography (Netherlands), Vrije Univ. Amsterdam (Netherlands)

**Coffee Break 03:10 PM - 03:40 PM**

## SESSION 4: METASURFACES AND STUDENT PRESENTATIONS

10 April 2024 • 03:40 PM - 05:30 PM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Olivier J.F. Martin**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Gerardo Bottiglieri**, ASML Netherlands B.V. (Netherlands)

13023-13 • 03:40 PM - 04:10 PM

**Local full-wave methods for accurate modelling of large area meta-surfaces** (*Invited Paper*)

Author(s): **Bavo Robben**, **Chris Beckerleg**, **Lieven Penninck**, PlanOpSim (Belgium)

13023-14 • 04:10 PM - 04:30 PM

**Optical metasurfaces with two-photon lithography: design considerations for beam steering applications**

Author(s): **George Perrakis**, **Maria Kafesaki**, **Odysseas Tsilipakos**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece)

13023-15 • 04:30 PM - 04:50 PM

**Modeling of centimeter-scale metasurfaces in imaging systems**

Author(s): **Enzo Isnard**, Thales Research & Technology (France), Ctr. Inria d'Univ. Côte d'Azur (France); **Sébastien Héron**, Thales Research & Technology (France); **Mahmoud Elsayw**, **Stéphane Lanteri**, Ctr. Inria d'Univ. Côte d'Azur (France)

13023-16 • 04:50 PM - 05:10 PM

**Advances in modeling and optimization for two-photon lithography**

Author(s): **Valeriia Sedova**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Florie Ogor**, **Joël Rovera**, IMT Atlantique Bretagne-Pays de la Loire (France); **Odysseas Tsilipakos**, Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (Greece); **Kevin Heggarty**, IMT Atlantique Bretagne-Pays de la Loire (France); **Andreas Erdmann**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)

13023-17 • 05:10 PM - 05:30 PM

**Digital modelling of a massively parallelized multiphoton polymerization plot process**

Author(s): **Joël Rovera**, IMT Atlantique Bretagne-Pays de la Loire (France); **Valeriia Sedova**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Florie Ogor**, IMT Atlantique Bretagne-Pays de la Loire (France); **Andreas Erdmann**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany); **Kevin Heggarty**, IMT Atlantique Bretagne-Pays de la Loire (France)

## Thursday 11 April 2024

## SESSION 5: AI AND DESIGN

11 April 2024 • 09:00 AM - 10:30 AM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Frank Wyrowski**, LightTrans International GmbH (Germany); **Donis G. Flagello**, Nikon Research Corp. of America (United States)

13023-18 • 09:00 AM - 09:30 AM

**Generative AI for the design of optically-driven nano-motors** (*Invited Paper*)

Author(s): **Olivier J. F. Martin**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

13023-19 • 09:30 AM - 09:50 AM

**Enhancing three-dimensional beam shaping accuracy through cascaded spatial light modulators using diffractive neural networks**

Author(s): **Paul Buske**, **Fynn Janssen**, **Oskar Hofmann**, RWTH Aachen Univ. (Germany); **Jochen Stollenwerk**, **Carlo Holly**, RWTH Aachen Univ. (Germany), Fraunhofer-Institut für Lasertechnik ILT (Germany)

13023-21 • 09:50 AM - 10:10 AM

**Quality-diversity driven robust evolutionary optimization of optical designs**

Author(s): **Kirill Antonov**, Leiden Univ. (Netherlands); **Teus Tukker**, **Tiago Botari**, ASML Netherlands B.V. (Netherlands); **Thomas Bäck**, **Anna V. Kononova**, **Niki van Stein**, Leiden Univ. (Netherlands)

13023-40 • 10:10 AM - 10:30 AM

**Ptychographic imaging ellipsometry**

Author(s): **Matthias Gouder**, **Menqgi Du**, **Stefan Witte**, Advanced Research Ctr. for Nanolithography (Netherlands)

**Coffee Break 10:30 AM - 11:00 AM**

## SESSION 6: MODELLING TECHNIQUES I

11 April 2024 • 11:00 AM - 12:30 PM | Stuttgart/Salon 15, Niveau/Level 1

Session Chair(s): **Roarke W. Horstmeyer**, Duke Univ. (United States); **Hendrik Paul Urbach**, Technische Univ. Delft (Netherlands)

13023-22 • 11:00 AM - 11:30 AM

**Seamless transition to geometrical optics concepts in a fully physical optics framework** (*Invited Paper*)

*Author(s):* **Frank Wyrowski**, LightTrans GmbH (Germany)

13023-23 • 11:30 AM - 11:50 AM

**Ray-wave dual descriptions of classical light and birefringence: a path integral story**

*Author(s):* **James Babington**, Thales Optronics Ltd. (United Kingdom)

13023-24 • 11:50 AM - 12:10 PM

**Enabling large-scale nanostructure modeling by Fourier Modal Method in combination with distributed computing**

*Author(s):* **Benjamin Krüger, Christian Hellmann, Frank Wyrowski**, Wyrowski Photonics GmbH (Germany)

13023-25 • 12:10 PM - 12:30 PM

**Physical-optics modeling and design of curved surfaces**

*Author(s):* **Frank Wyrowski, Christian Hellmann**, LightTrans International GmbH (Germany)

**Lunch Break 12:30 PM - 01:35 PM**

### BEST STUDENT AWARDS ANNOUNCEMENT

11 April 2024 • 01:35 PM - 01:40 PM | Stuttgart/Salon 15, Niveau/Level 1

**Announcement of the 2024 Computational Optics conference best student presentation**

Moderators:

**Daniel G. Smith**, Aeva Inc. (United States)

**Andreas Erdmann**, Fraunhofer-Institut für Integrierte Systeme und Bauelementetechnologie IISB (Germany)

*Conference Chairs*

### SESSION 7: MODELLING TECHNIQUES II

11 April 2024 • 01:40 PM - 03:00 PM | Stuttgart/Salon 15, Niveau/Level 1

*Session Chair(s):* **Nikolai Schmitt**, Carl Zeiss SMT GmbH (Germany); **Wei Wang**, Heriot-Watt Univ. (United Kingdom)

13023-26 • 01:40 PM - 02:00 PM

**Analytical treatment of the field discontinuities within the Fourier space methods in the grating diffraction theory**

*Author(s):* **Sergey Spiridonov**, ITMO Univ. (Russian Federation); **Evgeny Levдик**, Univ. degli Studi di Siena (Italy); **Alexey A. Shcherbakov**, ITMO Univ. (Russian Federation)

13023-28 • 02:00 PM - 02:20 PM

**Fast modeling of volume gratings by Fourier Modal Method**

*Author(s):* **Benjamin Krüger, Frank Wyrowski**, Wyrowski Photonics GmbH (Germany)

13023-45 • 02:20 PM - 02:40 PM

**Chromatix: a high-performance differentiable wave optics simulation library**

*Author(s):* **Diptodip Deb, Gert-Jan Both**, HHMI Janelia Research Campus (United States); **Amey Chaware**, Duke University (United States); **Amit Kohli**, University of California Berkeley (United States); **Cédric Allier**, HHMI Janelia Research Campus (United States); **Changjia Cai**, University of North Carolina (United States); **Geneva Schlafly**, University of Chicago (United States); **Guanghan Meng**, University of California Berkeley (United States); **M. Hossein Eybposh**, University of North Carolina (United States); **Magdalena C Schneider, Rishi Athavale**, HHMI Janelia Research Campus (United States); **Xi Yang**, Duke University (United States); **Nicolas C Pégard**, University of North Carolina (United States); **Patrick J La Riviere**, University of Chicago (United States); **Roarke Horstmeyer**, Duke University (United States); **Srinivas C Turaga**, HHMI Janelia Research Campus (United States)

13023-46 • 02:40 PM - 03:00 PM

**Maximum-likelihood estimation in ptychography in the presence of Poisson-Gaussian noise statistics**

*Author(s):* **Jacob Seifert**, Advanced Research Center for Nanolithography (Netherlands); **Yifeng Shao**, TU Delft (Netherlands); **Rens van Dam**, Utrecht University (Netherlands); **Dorian Bouchet**, Université Grenoble Alpes (France); **Tristan van Leeuwen, Allard Mosk**, Utrecht University (Netherlands)

## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Optical Systems Design 2024.

13023-37

**A review: modeling and optimizing diffractive optical elements for enhanced pollutant detection in LiDAR systems**

*Author(s):* **Faizan Ramzan, Muhammad Ali, Muhammad Haseeb Raza**, Information Technology Univ. of the Punjab (Pakistan); **Muhammad Zubair**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

13023-38

**Innovating education: MLA-based AR/VR display for learning purpose**

*Author(s):* **Muhammad Fizan, Sadia Noureen**, Information Technology Univ. of the Punjab (Pakistan); **Hafiz Saad Khaliq**, School of Electronic and Electrical Engineering, Kyungpook National University (KNU) (Korea, Republic of); **Muhammad Zubair**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

13023-39

**Reviewing AI-enabled microscopes for diagnostic purposes**

*Author(s):* **Taha Afzal, Sadia Noureen**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah Univ. of Science and Technology (Saudi Arabia); **Tauseef Tauqeer, Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

13023-44

**Revolutionizing optical wireless communication with silicon-based spin-encoded metalens**

*Author(s):* **Ramna Khalid**, Information Technology Univ. of the Punjab (Pakistan); **Humberto Cabrera**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan); **Qammer H. Abbasi**, University of Glasgow, James Watt School of Engineering (United Kingdom); **Muhammad Zubair**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# CONFERENCE 13024

## Optical Instrument Science, Technology, and Applications III

10 April 2024 | Ramat Gan/Salon 14, Niveau/Level 1

**Conference Chair(s):** **Holger Münz**, Carl Zeiss AG (Germany); **Breann N. Sitarski**, NASA Goddard Space Flight Ctr. (United States); **Richard N. Youngworth**, Riyo LLC (United States)

**Program Committee:** **Nandini Bhattacharya**, Technische Univ. Delft (Netherlands); **Harald Bosse**, Physikalisch-Technische Bundesanstalt (Germany); **Markus Degünther**, Technische Hochschule Mittelhessen (Germany); **Simon Hall**, Colour Holographic Ltd. (United Kingdom); **Andrew R. Harvey**, Univ. of Glasgow (United Kingdom); **Nils Haverkamp**, Carl Zeiss Industrielle Messtechnik GmbH (Germany); **Keith J. Kasunic**, Optical Systems Group, LLC (United States); **Stefan Kück**, Physikalisch-Technische Bundesanstalt (Germany); **Michael Layh**, Hochschule Kempten (Germany); **Daniel Rotter**, Swarovski Optik KG (Austria); **Andrea Toulouse**, Institut für Technische Optik (Germany)

Tuesday 9 April 2024

### OPTICAL SYSTEMS DESIGN TUESDAY PLENARY SESSION

09 April 2024 • 09:00 AM - 10:35 AM | Auditorium Schweitzer, Niveau/Level 0

Plenary Moderators: **Marta C. de la Fuente**, ASE Optics Europe (Spain); **Tina Kidger**, Kidger Optics Associates (United Kingdom); **Thierry Lépine**, Institut d'Optique & Hubert Curien Lab (France)

9:00 - 9:05 hrs: **Welcome and Opening Remarks**

13023-600 • 09:05 AM - 09:50 AM

**Lessons in lens design from Rudolf Kingslake: in the modern computing era can we learn anything new from the past?** (Plenary Presentation)

Author(s): **Julie L. Bentley**, The Institute of Optics, Univ. of Rochester (United States)

13021-601 • 09:50 AM - 10:35 AM

**Manufacturing ELT M1 segments: large optics in a smart factory** (Plenary Presentation)

Author(s): **Camille Frapolli**, Safran Reosc (France)

### POSTERS-TUESDAY

09 April 2024 • 06:10 PM - 08:00 PM | Galerie Schweitzer, Niveau/Level 0

Conference attendees are invited to attend the Optical Systems Design poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

**Poster Setup:** Tuesday 10:00 - 17:30 hrs

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/EOD/poster-presentation-guidelines>.

13024-17 • 06:10 PM - 08:00 PM

**Spectral analysis and mapping of unregulated and regulated landfills in the Northeast region of Bulgaria**

Author(s): **Temenuzhka Spasova**, Bulgarian Academy of Sciences (Bulgaria), Space Research and Technology Institute (Bulgaria)

13024-18 • 06:10 PM - 08:00 PM

**OpenMIC: a DIY twelve slides scanner microscope with evolutive and multimodal capabilities**

Author(s): **Anthony Ain**, Lab. BIIO (France); **Youssef Mennane**, Univ. Jean Monnet Saint-Etienne (France); **Corantin Maurin**, Lab. BIIO (France); **Thierry Lépine**, Institut d'Optique Graduate School (France); **Philippe Gain**, **Gilles Thuret**, Lab. BIIO (France)

13024-19 • 06:10 PM - 08:00 PM

**Performance comparison of CNN-based deep learning models for maritime object identification using hyperspectral image**

Author(s): **Dongmin Seo**, Semyung Univ. (Korea, Republic of); **Sangwoo Oh**, **Sekil Park**, Korea Research Institute of Ships and Ocean Engineering (Korea, Republic of)

13024-20 • 06:10 PM - 08:00 PM

**Optical design of PHASONG, a next generation wavefront sensor**

Author(s): **François B. Hénault**, Institut de Planétologie et d'Astrophysique de Grenoble, CNRS (France); **Yan Feng, Jean-Jacques Correia**, Institut de Planétologie et d'Astrophysique de Grenoble (France); **Alain Spang**, Observatoire de la Côte d'Azur (France); **laura Schreiber**, Institut de Planétologie et d'Astrophysique de Grenoble, CNRS (France)

13024-22 • 06:10 PM - 08:00 PM

**GRANCAIN: the first light infrared camera for GTCOA: end-to-end optical design, integration, and verification**

Author(s): **Verónica Canto-Caño, José M. Delgado-Hernández, Eduardo D. Ganzález-Carretero, Roberto López-López, Ángel Mato-Martínez, Heidy Moreno-Arce, Afrodísio Vega-Moreno, Marcos Reyes García-Talavera, Jesús Patrón-Recio, José A. Acosta-Pulido, Víctor Jesús Sánchez Béjar, Miguel Angel Cagigas García**, Instituto de Astrofísica de Canarias (Spain)

13024-23 • 06:10 PM - 08:00 PM

**Developing parkour-style humanoid robot landings through Whispering Gallery Mode-enabled flywheel synchronization**

Author(s): **Amir Roushdy Ali**, The German Univ. in Cairo (Egypt); **Mostafa Khafagy**, The German Univ. in Cairo (Egypt), German International Univ. (Germany)

13024-25 • 06:10 PM - 08:00 PM

**Spectral measurements and life science experiments using extreme radiation exposures at high altitude**

Author(s): **Eva Stanik, Thorsten Döhring, Jan Pregler, Manfred Stollenwerk, Georg Hildenbrand**, Technische Hochschule Aschaffenburg (Germany)

13024-26 • 06:10 PM - 08:00 PM

**Design, assembly, and test of G-CLEF's exposure meter I: design trade-off and first conclusions**

Author(s): **Henrique Lupinari**, Univ. de São Paulo (Brazil); **Sagi Ben-Ami**, Weizmann Institute of Science (Israel); **Rafael Ribeiro, Claudia Mendes de Oliveira**, Univ. de São Paulo (Brazil); **Andrew Szentgyorgyi**, Ctr. for Astrophysics | Harvard & Smithsonian (United States)

13024-27 • 06:10 PM - 08:00 PM

**Single-shot AI-based point spread function method for an active camera alignment**

Author(s): **Jiri Thoma, Josef Cupal, Aimira Baitieva, Jakub Cerny, Jan Grundel**, Valeo autoklimatizace k.s. (Czech Republic)

## Wednesday 10 April 2024

### SESSION 1: PHASE AND POLARIZATION

10 April 2024 • 09:00 AM - 10:30 AM | Ramat Gan/Salon 14, Niveau/Level 1

Session Chair(s): **Nandini Bhattacharya**, Technische Univ. Delft (Netherlands)

13024-1 • 09:00 AM - 09:30 AM

**Ultimate measurement speed for flexible asphere and freeform metrology: TWISS (Invited Paper)**

Author(s): **Christian Schober**, Univ. Stuttgart (Germany); **Christof Pruss**, Institut für Technische Optik (Germany); **Stephan Reichelt**, Univ. Stuttgart (Germany)

13024-2 • 09:30 AM - 09:50 AM

**Development and characterization of a real-time phase camera system**

Author(s): **Ricardo Oliva-García**, Woptix, S.L. (Spain); **Carlos Cairós**, Univ. de La Laguna (Spain); **Miriam Velasco-Ocaña, Juan Manuel Trujillo-Sevilla, José Manuel Rodríguez-Ramos**, Woptix, S.L. (Spain)

13024-3 • 09:50 AM - 10:10 AM

**Measuring turbulence parameters with high precision through the smooth perturbation method**

Author(s): **Kristina Tolchkova, Christian Rembe**, Technische Univ. Clausthal (Germany)

13024-4 • 10:10 AM - 10:30 AM

**Extreme-ultraviolet vector-vortex beams with tunable topological charge and polarization distribution**

Author(s): **Alok Kumar Pandey**, Lab. de Physique des 2 Infinis Irène Joliot-Curie (France), Imagine Optic SA (France); **Alba De Las Heras Munoz, Julio San Roman, Francisco Javier Serrano Rodriguez**, Univ. de Salamanca (Spain); **Elsa Baynard**, Lab. de Physique des 2 Infinis Irène Joliot-Curie (France); **Guillaume Dovillaire**, Imagine Optic SA (France); **Moana Pittman**, Lab. de Physique des 2 Infinis Irène Joliot-Curie (France); **Charles G. Durfee**, Colorado School of Mines (United States); **Luis Plaja**, Univ. de Salamanca (Spain); **Sophie Kazamias**, Lab. de Physique des 2 Infinis Irène Joliot-Curie (France); **Carlos Hernández García**, Univ. de Salamanca (Spain); **Olivier Guilbaud**, Lab. de Physique des 2 Infinis Irène Joliot-Curie (France)

### Coffee Break 10:30 AM - 11:00 AM

## SESSION 2: SPECTRAL IMAGING AND APPLICATIONS

10 April 2024 • 11:00 AM - 12:20 PM | Ramat Gan/Salon 14, Niveau/Level 1

Session Chair(s): **Holger Münz**, Carl Zeiss AG (Germany)

13024-5 • 11:00 AM - 11:20 AM

**Validating spatial resolution measurement techniques in pushbroom hyperspectral cameras according to upcoming IEEE P4001 standard**

Author(s): **Mariia A. Borovkova, Kari Kataja, Hannu Holma**, Specim Spectral Imaging Ltd. (Finland)

13024-6 • 11:20 AM - 11:40 AM

**Utilizing multispectral imaging for improved weed and crop detection**

Author(s): **Benedikt Fischer**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung IOSB (Germany); **Pascal Gauweiler, Robin Gruna**, Fraunhofer IOSB (Germany); **Jürgen Beyerer**, Karlsruhe Institute of Technology (KIT) (Germany), Fraunhofer IOSB (Germany)

13024-7 • 11:40 AM - 12:00 PM

**Beam scanning coherent Fourier scatterometry**

Author(s): **Sarika Soman, Silvania F. Pereira**, Technische Univ. Delft (Netherlands)

13024-28 • 12:00 PM - 12:20 PM

**Methodology and apparatus for the benchmarking and calibration of visible and infra-red light target projectors**

Author(s): **Jiří Thoma, Matyáš Pribáň, Josef Cupal, Jan Gründel**, Valeo (Czech Republic)

**Lunch/Exhibition Break 12:20 PM - 02:00 PM**

## SESSION 3: EXPAND YOUR HORIZONS

10 April 2024 • 02:00 PM - 03:10 PM | Ramat Gan/Salon 14, Niveau/Level 1

Session Chair(s): **Andrea Toulouse**, Institut für Technische Optik (Germany)

13024-10 • 02:00 PM - 02:30 PM

**Aligned 2-photon lithography for photonic applications** (*Invited Paper*)

Author(s): **Mareike D. Trappen, Matthias Blaicher, Tobias Hoose, Nicole Lindenmann, Stephan Dottermusch, Andrea Bertocini, Philipp Rayling, Kai Sandfort, Roman Rainer, Fabian B. Niesler, Michael Thiel, Mana Taghdiri**, Nanoscribe GmbH & Co. KG (Germany)

13024-11 • 02:30 PM - 02:50 PM

**Capabilities and limits of synthetic images used for neural networks in optical scanners for the iron sand-cast industry**

Author(s): **Jonathan Zender, Alexander Murawa, Bernd Pinzer, Michael Layh**, Hochschule Kempten (Germany)

13024-12 • 02:50 PM - 03:10 PM

**Dynamic terrain response in jumping humanoid robots based on Whispering Gallery Optical Mode sensors**

Author(s): **Amir Roushdy Ali**, The German Univ. in Cairo (Egypt); **Yousef Almahdi**, The German Univ. in Cairo (Egypt), German International Univ. (Germany)

**Coffee Break 03:10 PM - 03:50 PM**

## SESSION 4: LIFE SCIENCES

10 April 2024 • 03:50 PM - 04:50 PM | Ramat Gan/Salon 14, Niveau/Level 1

Session Chair(s): **Holger Münz**, Carl Zeiss AG (Germany)

13024-14 • 03:50 PM - 04:10 PM

**Ultra-compact fluorescence microscope for life-sciences**

Author(s): **Sergio Moreno Martín, Anna Vilà**, Univ. de Barcelona (Spain); **Javier Ramón Azcón**, Institute for Bioengineering of Catalonia (Spain), ICREA - Institució Catalana de Recerca i Estudis Avançats (Spain); **Juan Daniel Prades, Angel Diéguez**, Univ. de Barcelona (Spain)

13024-15 • 04:10 PM - 04:30 PM

**Four-dimensional intraoperative OCT at megahertz rates: Potential applications in ophthalmic surgery**

Author(s): **Philipp Matten**, Carl Zeiss AG (Germany), Zeiss Innovation Hub @ KIT (Germany); **Jonas Nienhaus**, Medizinische Univ. Wien (Austria); **Hessam Roodaki**, Carl Zeiss Meditec AG (Germany); **Wolfgang Drexler, Rainer A. Leitgeb**, Medizinische Univ. Wien (Austria); **Tilman Schmoll**, Carl Zeiss Meditec, Inc. (United States), Medizinische Univ. Wien (Austria)

13024-16 • 04:30 PM - 04:50 PM

**Compact and portable scanning fiber-optic confocal microendoscopy system for reflectance and fluorescence imaging**

Author(s): **Susan Thomas, Shanti Bhattacharya**, Indian Institute of Technology Madras (India)



## DIGITAL POSTERS

The posters listed below are available exclusively for online viewing during the week of SPIE Optical Systems Design 2024.

13024-21

**Review: optimizing LiDAR technology for enhanced 3D remote sensing**

*Author(s):* **Aqsa Javaid**, Information Technology Univ. of the Punjab (Pakistan); **Nasir Mahmood**, King Abdullah University of Science and Technology (Saudi Arabia); **Muhammad Qasim Mehmood**, Information Technology Univ. of the Punjab (Pakistan)

13024-24

**Design and development of a portable compound microscope for interactive bioscience learning**

*Author(s):* **Malaika Waheed**, Information Technology Univ. of the Punjab (Pakistan); **Isma Javed**, MLab, STI Unit, The Abdus Salam International Centre for Theoretical Physics (Italy), Information Technology Univ. of the Punjab (Pakistan); **Muhammad Zubair**, King Abdullah Univ. of Science and Technology (Saudi Arabia)

# SPIE EVENT POLICIES

## Acceptance of policies and registration conditions

The following policies and conditions apply to all SPIE events, both online and in person. As a condition of registration, you will be required to acknowledge and accept the SPIE policies and conditions contained herein.

SPIE has established a confidential reporting system for all SPIE event participants to raise concerns about possible unethical or inappropriate behavior within our community. When at an SPIE event, you may contact any SPIE staff with concerns. If you feel that you are in immediate danger, please dial the local emergency number for police intervention.

### Agreement to hold harmless

Attendee agrees to release and hold harmless SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

### Be well agreement

You acknowledge that attending an event involves some risk of exposure to COVID-19 or other communicable diseases. You voluntarily assume this risk and agree not to hold SPIE or any of its affiliates liable for any illness you may contract. You also agree not to attend the event if you feel ill or have had recent exposure to a COVID-19 case.

SPIE will provide hand sanitizer locations and disposable face masks upon request.

### Anti-harassment policy

It is SPIE policy that all employees, volunteers, and participants are entitled to respectful treatment. Any form of bullying, discrimination, harassment, sexual or otherwise, is unacceptable and will not be tolerated. This policy applies to all locations and situations where SPIE business is conducted and to all SPIE-sponsored activities and events.

*Read complete policy:*

<https://spie.org/about-spie/the-society/policies-and-reporting>

### SPIE Conferences app messaging policy

The SPIE Conferences app supports attendee-to-attendee messaging to facilitate professional networking among meeting participants. This feature should not be used to push high-volume solicitations, and messaging will be disabled for attendees who exceed reasonable use or are in violation of other SPIE event policies. Attendees should report inappropriate use via the app reporting feature. SPIE will also monitor for high-volume patterns suggesting improper use.

### SPIE Conferences app connect feature

The connect feature in the SPIE Conferences app is a personal networking tool that allows individuals to share their contact information with other attendees via their phones while using the SPIE app. This tool should not be used for systematic scanning of badges for managing sales leads. Inappropriate use is a violation of event policy.

### SPIE Conferences app lead retrieval feature

The lead retrieval feature in the SPIE Conferences app is a lead generation tool that allows attendees to share their contact information with SPIE exhibitors. Exhibitor representatives using the lead retrieval app may scan attendee badges in the exhibition or supporting company events after receiving permission from an attendee. It should not be used in the technical Conference area. The lead retrieval feature will be disabled for exhibitor representatives who exceed reasonable use or are in violation of other SPIE event policies. Attendees should report inappropriate use by notifying staff or contacting support via the help link in the app.

### Attendee registration and admission policies

SPIE, or their officially designated event management, in their sole discretion, reserves the right to accept or decline an individual's registration for an event. Further, SPIE, or event management, reserves the right to prohibit entry of or to remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, whose conduct is not in keeping with the character and purpose of the event. Without limiting the foregoing, SPIE and event management reserve the right to remove or refuse entry to anyone who has registered or gained access under false pretenses, provided false information, or for any other reason whatsoever that they deem is cause under the circumstances.

### Capture and use of a person's image

By registering for an SPIE event, you grant full permission to SPIE to capture, store, use, and/or reproduce your image or likeness, including incidental capture of any individuals in your household or workplace, by any audio and/or visual recording technique and create derivative works of these images and recordings in any SPIE media now known or later developed, for any legitimate SPIE purpose. By registering for an SPIE event, you waive any right to inspect or approve the use of the images or recordings or of any written copy. You also waive any right to royalties or other compensation arising from or related to the use of the images, recordings, or materials. By registering, you release, defend, indemnify, and hold harmless SPIE from and against any claims, damages, or liability arising from or related to the use of the images, recordings, or materials, including but not limited to claims of defamation, invasion of privacy, or rights of publicity or copyright infringement, or any misuse, distortion, blurring, alteration, optical illusion, or use in composite form that may occur or be produced in taking, processing, reduction, or production of the finished product, its publication or distribution.

### Code of conduct

SPIE is committed to providing a harassment- and discrimination-free experience for everyone at our events, an experience that embraces the richness of diversity where participants may exchange ideas, learn, network, and socialize in the company of colleagues in an environment of mutual respect.

*Read complete code:*

<https://spie.org/about-spie/the-society/policies-and-reporting>

### Event and course cancellation by SPIE

If for some unforeseen reason, SPIE should have to cancel a course or an entire event, processed registration fees for the canceled activity will be refunded to registrants. Registrants will be responsible for the cancellation of travel arrangements or housing reservations and the applicable fees.

### Family-friendly policy

**CONFERENCE EVENTS:** all Conference technical and networking events require a badge for admission. Registered attendees may bring children with them if they have been issued a badge. Registration badges for children under 18 are free and available at the SPIE registration desk onsite. Children under 14 years of age must be accompanied by an adult at all times, and guardians are asked to help maintain a professional, disturbance-free Conference environment.

**EXHIBITION HALL:** everyone who attends the exhibition must be registered and have a badge. Badges for children are free and available onsite at the registration desk. Children under 14 years of age must be accompanied by an adult at all times. Guardians are asked to help maintain a professional, disturbance-free exhibition environment. Children under 18 are not allowed in the exhibition area during exhibition move-in and move-out.

### Identification requirement

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued photo identification at registration to collect registration materials. Individuals are not allowed to pick up badges for other attendees. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

For online events, SPIE requires individuals to register with their legal identity.

### Laser-pointer safety policy

SPIE events are subject to the applicable laser safety rules and regulations of the host location. SPIE supplies industry-standard Class 2 presentation laser pointers for all Conference and other meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers. The use of a personal laser pointer represents the user's acceptance of liability for any damage or injuries to the presenter or others.

### No smoking policy

Attendees will observe all non-smoking regulations that are publicly posted by the facilities used by the event.

### Online commenting policy

SPIE moderates all comments posted in an online event. We encourage robust discussion, the exchange of scientific ideas, and the sharing of multiple, diverse perspectives. We expect the discussion to be consistent with the norms of scholarly research community interactions at events. Online event participants should report any comments or content that falls short of those community norms. We will remove comments, content, or people that are considered inappropriate by SPIE standards or that:

- are defamatory, libelous, obscene, indecent, abusive, or threatening to others
- infringe the copyright, trademark, or other rights of a third party
- upload viruses or are a cybersecurity hazard
- are off-topic or inappropriately commercial in nature
- are in violation of any applicable laws or regulations

## Payment policy

Registrations must be fully paid before access to the Conference is allowed. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks, and wire transfers. Onsite registrations can also be paid with cash.

## Recording policy

**CONFERENCES AND POSTER SESSIONS:** audio and video recordings are prohibited without prior written consent of SPIE and the presenter. Consent forms are available at Speaker Check-in, SPIE Registration, or the Chair Services Desk. Individuals not complying with this policy will be asked to surrender their recording media and leave the Conference room. Refusal to comply with such requests is grounds for expulsion from the event. Please see the SPIE code of conduct.

**COURSES:** audio and video recordings are prohibited without explicit permission from SPIE and the instructor. Individuals not complying with this policy will be asked to surrender their recording media and leave the classroom. Refusal to comply with such requests is grounds for expulsion from the event.

**EXHIBITION:** attendees may not record interviews on the exhibition floor nor record or photograph exhibitor booth displays and/or products without explicit permission from SPIE and on-site company representatives. Consent forms are available at Exhibitor Assistance. Individuals not complying with this policy will be asked to surrender their recording media and leave the exhibition hall. Refusal to comply with such requests is grounds for expulsion from the event.

## Unauthorized solicitation

Unauthorized solicitation in the exhibition hall is prohibited. Any non-exhibiting organization observed to be distributing information or soliciting business in the aisles, or in another company's booth, will be asked to leave immediately.

## Unsecured items

Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. SPIE is not responsible for items left unattended.

## Wireless internet service

At most events, SPIE provides wireless access for attendees. Properly secure your computer before accessing the public wireless network. SPIE is not responsible for computer viruses or other kinds of computer damage.

## SPIE.

SPIE is the international society for optics and photonics. We bring together engineers, scientists, students, and industry leaders, strengthening the global optics and photonics community through conferences, publications, and professional development. Inspired by the transformative power of photonics to enhance life around the globe, over the past five years SPIE has contributed more than \$24 million to the international optics community.

SPIE is a registered trademark of the Society of Photo-Optical Instrumentation Engineers. All rights reserved.

### SPIE International Headquarters:

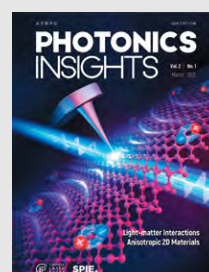
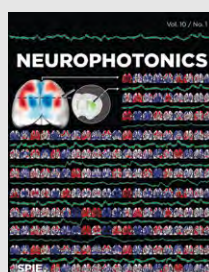
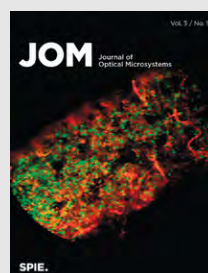
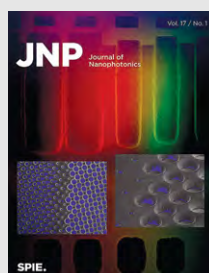
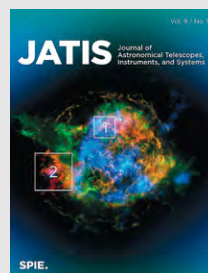
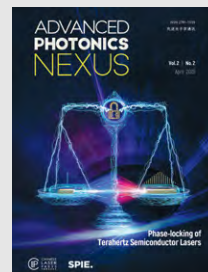
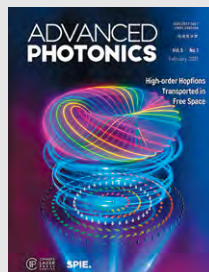
PO Box 10, Bellingham, WA 98227-0010 USA  
Tel: +1 360 676 3290 • help@spie.org • www.SPIE.org

### SPIE Europe Offices:

2 Alexandra Gate, Ffordd Pengam, Cardiff, CF24 2SA UK  
Tel: +44 29 2089 4747 • info@spieurope.org • www.SPIE.org

# SPIE Journals

Submit your next paper to an SPIE journal.  
Members get 25% off Open Access charges.



SPIE journals are part of the **SPIE Digital Library**,  
the world's largest collection of  
optics and photonics applied research.

**SPIEDigitalLibrary.org/journals**

2026 | mark your calendar

# **SPIE.** PHOTONICS EUROPE

12 - 16 April 2026  
Strasbourg, France

**THE PREMIER EUROPEAN OPTICS AND PHOTONICS  
RESEARCH AND DEVELOPMENT EVENT**

**Join the community as we gathering leaders and  
innovators in advancing optics and photonics  
technologies**

Join other leading researchers, engineers, and programme leaders at the only cross-disciplinary event highlighting compelling optics and photonics technologies—from digital optics to quantum technologies to optical imaging, sensing, and metrology. Additional topics include THz photonics, 3D printed optics, photonic glasses, photosensitive materials, and biophotonics.

**[spie.org/pe](https://spie.org/pe)**  
#SPIEPhotonicsEurope

**SPIE.**

## digitally connected...

It remains vitally important to stay fully connected with your customers.

As the leading online resource for professionals using photonics-based technologies, applications and for the diverse markets they serve, optics.org offers a comprehensive range of digital and print marketing solutions to support and drive your marketing strategies.

Contact our Sales team today to discuss how optics.org can help you create a targeted customer experience and put your brand and products in front of key decision makers.

**...socially undistanced.**



Visit us at

**Booth #128**

optics.org

e: [rob.fisher@optics.org](mailto:rob.fisher@optics.org)

t: +44 (0)117 905 5330

e: [dylan.byrne@optics.org](mailto:dylan.byrne@optics.org)

t: +44 (0)117 905 5351

# SPIE. DIGITAL LIBRARY

**The world's largest collection of optics and photonics applied research**

- » Aerospace & Defense Technologies
- » Biomedical Optics & Medical Imaging
- » Communications & Networks
- » Imaging & Display Technologies
- » Lasers & Applications
- » Nano/Micro Electronics & Materials
- » Optical Science & Engineering
- » Physics & Astronomy
- » Quantum Science & Technology
- » Remote & Environmental Sensing
- » Renewable Energy & Efficiency
- » Semiconductor Lithography & Patterning

[SPIDigitalLibrary.org](https://SPIDigitalLibrary.org)