



EUROPEAN CONFERENCES ON

# BIOMEDICAL OPTICS.

TECHNICAL  
PROGRAMME

Conferences: 21–25 June 2015

ICM—International Congress Center  
Munich, Germany

22nd International Congress on Photonics in Europe  
Collocated with LASER 2015 World of PHOTONICS

**WORLD<sup>OF</sup> PHOTONICS CONGRESS**





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**SPIE.** | EUROPEAN CONFERENCES ON  
**OSA** | **BIOMEDICAL OPTICS**

Conferences: 21–25 June 2015  
ICM—International Congress Center  
Munich, Germany

**THE LATEST  
TECHNOLOGY ADVANCES  
IN BIOMEDICAL OPTICS.**

## **PRESENTATIONS ON:**

- Advanced Microscopy Techniques
- Clinical and Biomedical Spectroscopy and Imaging
- Diffuse Optical Imaging
- Optoacoustic Methods and Applications
- Novel Biophotonic Techniques and Applications
- Optical Coherence Imaging Techniques and Imaging in Scattering Media
- Medical Laser Applications and Laser-Tissue Interactions
- Neurophotonics

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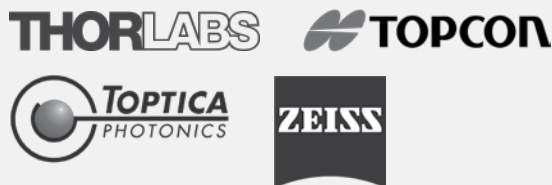
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SPIE/OSA would like to express deepest appreciation to the symposium chairs, conference chairs, programme committees, session chairs, and authors who have so generously given their time and advice to make this symposium possible.

The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members. This programme is based on commitments received up to the time of publication and is subject to change without notice.

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# Welcome to Munich and the European Conferences on Biomedical Optics.



The European Conferences on Biomedical Optics (ECBO) has become the largest event in Europe for researchers, scientists, engineers and clinicians who are developing applications of optical science and photonic technologies to problems in biomedical science and medicine.

This meeting provides a forum to span the gap between basic research and instrumentation engineering, all the way to clinical translation research and mature clinical trials. The common theme of the conferences is that they all are employing optics as a tool or solution in biology, medicine, or clinical work. This meeting is biennial and jointly sponsored by the Optical Society and SPIE and is co-located with Laser Munich 2015-World of Photonics, as well as numerous other society meetings organized by WLT, EOS, OSA, CLEO-Europe, IEEE/LEOS, and EPS.

## General Chairs:



**Andreas Hielscher**  
Columbia Univ. (USA)



**Jürgen Popp**  
Leibniz-Institut für  
Photonische Technologien  
eV (Germany)

## Programme Chairs:



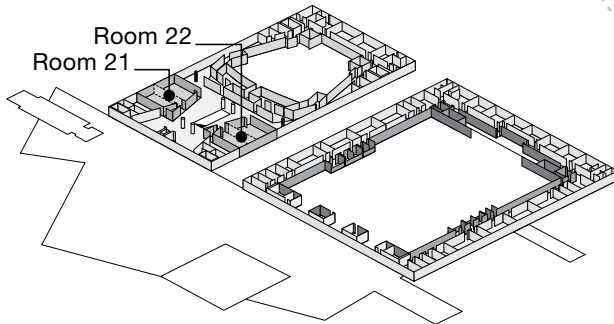
**Rainer Leitgeb**  
Medizinische Univ. Wien  
(Austria)



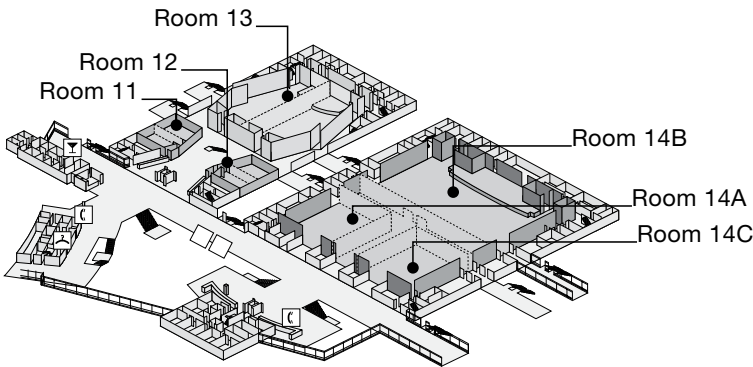
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# FACILITY FLOORPLANS

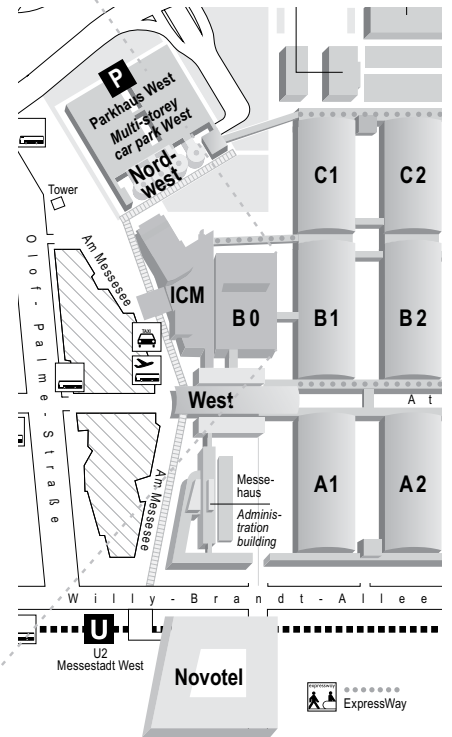
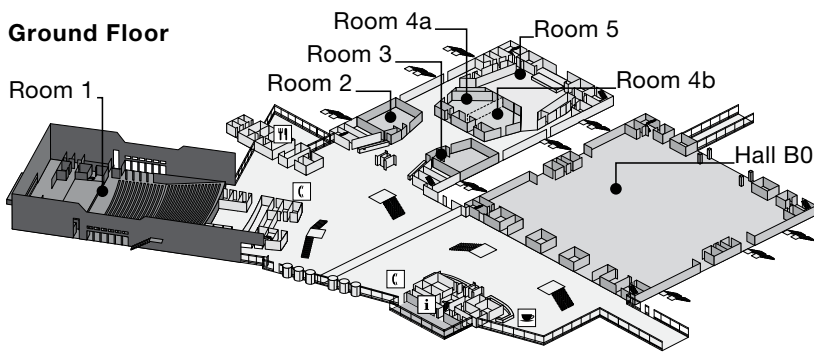
**Second Floor**

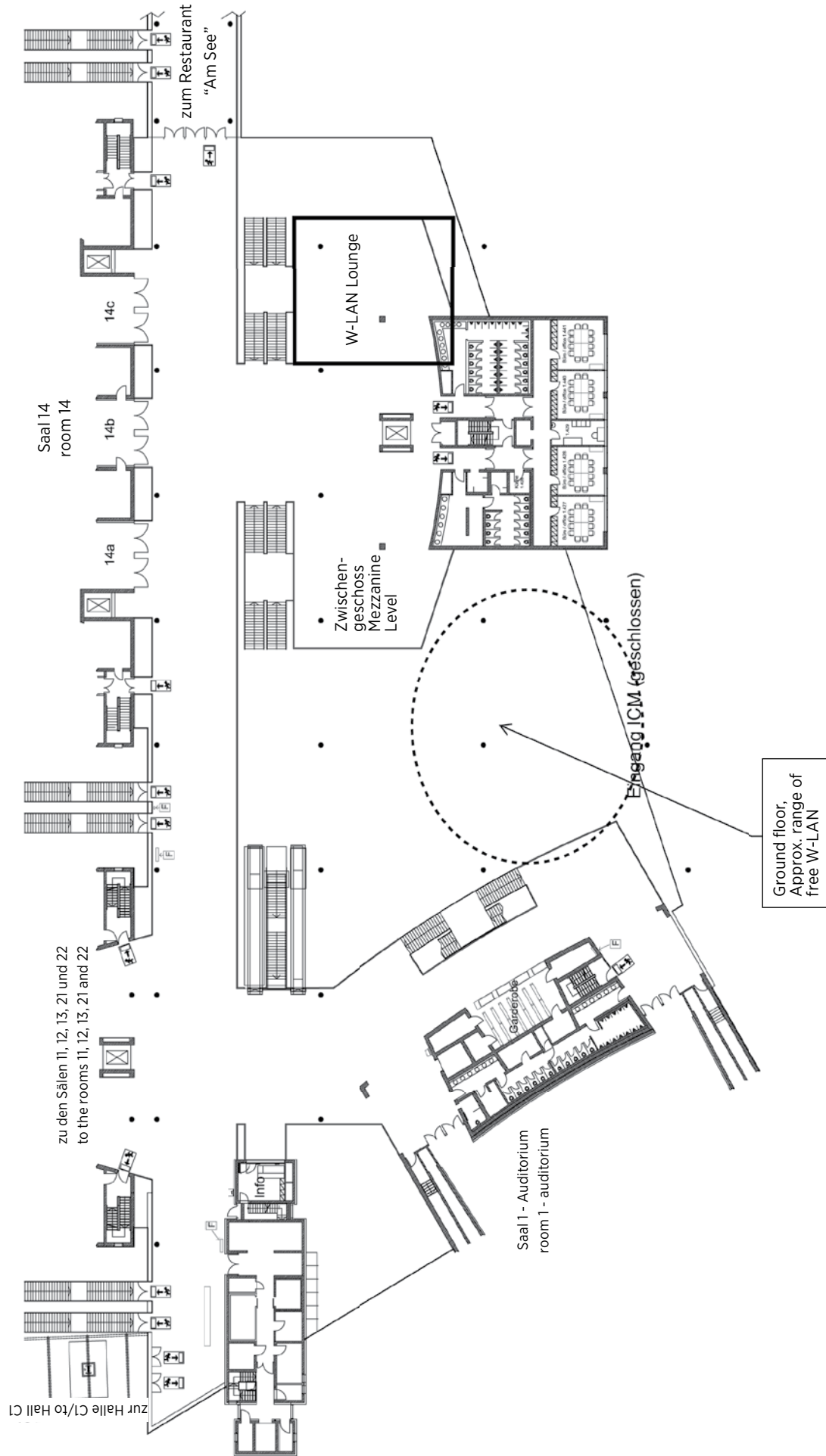


**First Floor**



**Ground Floor**





# SPECIAL EVENTS

## Hot Topics: Light for Life

Sunday 21 June 2015 · 15:00 - 16:30

Location: Room 5

In celebration of the UNESCO International Year of Light, the European Conferences on Biomedical Optics will include a special Hot Topics session. This session, entitled Light for Life, will feature internationally renowned experts discussing the current status of their fields, emerging developments, and how these technologies are poised to improve the human condition.

*Moderator:*

**Katarina Svanberg**, Lund Univ. Hospital (Sweden)

15:00 to 15:10: Welcome

*Speakers:*

15:10 to 15:20: **Endoscopic OCT: what a long, strange trip it's been, Brett Bouma**, Wellman Ctr. for Photomedicine, Harvard Univ. (USA)

15:20 to 15:30: **Light at the cutting edge: towards a brighter future in surgical oncology, J. Quincy Brown**, Tulane Univ. (USA)

15:30 to 15:40: **Diffuse optical imaging: the future is bright, Hamid Deghani**, The Univ. of Birmingham (United Kingdom)

15:40 to 15:50: **Imaging under a new light: real time multispectral optoacoustic mesoscopy, Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

15:50 to 16:00: **Multiscale optical brain imaging, Francesco Pavone**, European Lab. for Non-linear Spectroscopy (Italy)

16:00 to 16:10: **Linear and nonlinear wide field coherent microscopic imaging, Peter So**, Massachusetts Institute of Technology (USA)

16:10 to 16:20: **Hot optics in clinical light application, Ronald Sroka**, Laser-Forschungslabor (Germany)

16:20 to 16:30: **Photon mayhem: novel polarized light methods for accurate tissue assessment, Alex Vitkin**, Ontario Cancer Institute (Canada)

## International Year of Light Plenary Session

Sunday 21 June 2015 · 17:15 - 18:45

Location: Room 1

### NOBEL LAUREATE SPEAKERS

Attendees are invited to hear two of the scientists who shared the 2014 Nobel Prize in Chemistry and to celebrate their groundbreaking work that has brought optical microscopy into the nano dimension and allowed scientists to visualize the pathways of individual molecules inside living cells.



**Stefan W. Hell**

Max Planck Institute Göttingen  
2014 Nobel Laureate in Chemistry



**Eric Betzig**

Janelia Research Campus, Howard Hughes  
Medical Institute  
2014 Nobel Laureate in Chemistry

## World of Photonics Opening Plenary

Monday 22 June 2015 · 9:00 - 11:00

Location: Room 1

The World of Photonics Opening will include a celebration of the International Year of Light followed by a plenary talk by



**Federico Capasso**

Harvard Univ.

## ECBO Post-Deadline Session

Monday 22 June 2015 · 16:30 - 18:00

Location: Room 5

The post-deadline session contains a select group of post-deadline papers that represent late-breaking developments.

*Moderator:*

**Rainer Leitgeb**, Medizinische Univ. Wien (Austria)

16:30 to 16:45: **Quantitative evaluation of lipid concentration in atherosclerotic plaque phantom by near-infrared multispectral angioscope at wavelengths around 1200 nm** Paper 9537-83 Author(s): Daichi Matsui, Katsunori Ishii, Kunio Awazu, Osaka university (Japan)

16:45 to 17:00: **Parallel and flexible imaging using multiphoton RESOLFT microscopy with spatial light modulator (SLM) control** Paper 9536-48 Author(s): Yi Xue, Christopher James Rowlands, Peter T. So, Massachusetts Institute of Technology (United States)

17:00 to 17:15: **High resolution 3D volumetric imaging of live tumor spheroids using Selective Plane Illumination Microscopy (SPIM)** Paper 9536-47 Author(s): Stylianos Psycharakis, Athanasios Zacharopoulos, Joseph Papamatheakis, Foundation for Research and Technology-Hellas (Greece); Jorge Ripoll, Universidad Carlos III de Madrid (Spain); Giannis Zacharakis, Foundation for Research and Technology-Hellas (Greece)

17:15 to 17:30: **Whole-head functional brain imaging of neonates at cot-side using time-resolved diffuse optical tomography** Paper 9538-53 Author(s): Laura A. Dempsey, Robert J. Cooper, Samuel Powell, Nick Everdell, Adam P. Gibson, University College London (United Kingdom); Topun Austin, Cambridge University Hospitals NHS Foundation Trust (United Kingdom); Jeremy C. Hebden, University College London (United Kingdom)

17:30 to 17:45: **Interventional nerve visualization via the intrinsic anisotropic optical properties of the nerves** Paper 9540-33 Author(s): Patrick Chin, UU (Netherlands)

17:45 to 18:00: **Ultrafast laser ablation for targeted atherosclerotic plaque removal** Paper 9542-44 Author(s): Donald B. Conkey, Laurent Descloux, Demetri Psaltis, EPFL (Switzerland)

## Poster Sessions

Tuesday and Wednesday · 12.30 to 14.00

Location: ICM Foyer Ground Floor/BO

Posters will be featured on Tuesday and Wednesday. Each day represents a different set of posters. The lunch break/poster session, with authors present, will be held from 12.30 to 14.00. To see which posters are included each day, please see the individual conference programmes.

Poster authors: Please set up posters on the morning of your session before or during the morning coffee break. Plan to stand by your poster to discuss it with session attendees on the day of your session from 12.30 to 14.00. Please remove your poster following the poster session, as posters left on the boards will be discarded.

## ECBO Welcome Reception

Tuesday 23 June 2015 · 7:30 PM - 9:00 PM

Add To My Schedule Registered attendees of ECBO are invited to participate in this reception at the Paulaner Brewery in Munich. Tickets for guests of registered attendees may be purchased online during registration process or on site at the registration desk. Price is €50 (space available).

Directions from ICM: By public transport: Take local train to Marienplatz, then change into U3/U6 in direction of Fuerstenried West or Klinikum Grosshadern. Get off at stop "Goetheplatz". From there walk through Häberlstrasse; 2 mins on foot.

By car: Go towards city centre, railway station, middle ring, Sendlinger-Tor-Platz, Lindwurmstrasse to Goetheplatz, turn left into Häberlstrasse.



**ECBO PLENARY SESSION**

Tuesday 23 June 2015 · 14:00 to 15:30 · Location: Room 5

Moderator: **Rainer Leitgeb**, Medizinische Univ. Wien (Austria)

14.00 to 14.15

**Welcome and Student Award Presentations**

**BEST STUDENT POSTER PAPER AWARDS**

Sponsored by:



**BEST STUDENT ORAL PAPER AWARDS**

Sponsored by:



14.15 to 14.50

**Shifting the Paradigm in Modern Light Microscopy: Light Sheet-based Fluorescence Microscopy (LSFM, SPIM, DSLM)**



**Ernst H. K. Stelzer**

Johann Wolfgang Goethe Univ. Frankfurt am Main (Germany)

Abstract: In contrast to epi-fluorescence microscopy, azimuthally arranged light sheet-based fluorescence microscopy (LSFM) uses at least two independently operated lenses for illumination and detection.

A single/selective plane illumination microscope (SPIM) employs a cylindrical lens to generate a static light sheet while beam scanning LSFM (DSLIM) move a laser beam vertically that overlaps with the focal plane of the detection lens. Optical sectioning and no photo-toxic damage or photo-bleaching outside a small volume close to the focal plane are intrinsic properties of LSFM. It takes full advantage of fast and sensitive camera technologies. Applications include developmental, three-dimensional and plant biology.

Biography: Formerly at EMBL and now a Professor in Frankfurt since 2011, Stelzer contributed to conventional, confocal, 4Pi- and theta-microscopy fluorescence microscopy, optical tweezers and levitation, laser ablation and light sheet-based fluorescence microscopy. He published +220 papers and several patents securing the IP of at least three commercially available optical instruments.

14.50 to 15.25

**Laser Spectroscopy Applied to Medicine, Ecology, and the Environment**



**Sune Svanberg**

Lund University (Sweden) and South China Normal University (China)

Biography: Dr. Svanberg has supervised a large number of graduate students to their PhD in Physics. He is the co-author of more than 600 scientific papers and over 30 patents and patent applications, has had scientific collaboration with

major international companies and helped in the formation of several spin-off companies. He arranged several workshops for physicists in developing countries, where realistic experimental set-ups based on diode lasers and light emitting diodes were integrated for applications at their home universities within the fields of medicine, environment and agriculture. Dr. Svanberg has been the recipient of numerous honors and awards. He is a member of the Royal Academy of Sciences (and during 10 years a member of its Nobel Committee for Physics; two years as chairman), the Royal Academy of Engineering Sciences; and is a Fellow of several professional societies, including OSA and SPIE.

15.25 to 15.30

**Final Discussion**

# SPECIAL EVENTS

## ECBO/CLEO Joint Session 1: Bioimaging

Wednesday 24 June 2015 · 8:30 to 10:00

Location: Room 13B

Session Chair: **Monika Ritsch-Martel**, Biomedical Physics, Innsbruck (Austria)

8:30 to 9:30: **TUTORIAL: Optical coherence tomography: a novel diagnostic standard?**, Wolfgang Drexler, Center for Medical Physics and Biomedical Engineering, Medical University, Vienna (Austria)

In the last 25 years optical coherence tomography has advanced to be one of the most innovative and most successful translational optical imaging techniques, achieving substantial economic impact as well as clinical acceptance.

9:30 to 9:45: **In vivo single cell labeling in zebrafish using three-photon activation**, I. Tekeli, IBEC (Spain), et al.

Three-photon activation with 4D resolution for permanent labeling internal tissues in vivo at the single cell level. The resulting modification (GFP-labeled cardiomyocytes) is permanent and transmitted to daughter cells upon division.

9:45 to 10:00: **Digital holographic microscopy in morphometric analysis of three-dimensional cell cultures**, T. Pitkaaho, Maynooth Univ. (Ireland) and Univ. of Oulu (Finland), et al.

Digital holographic microscopy is used for imaging three-dimensional cysts of epithelial cells. Several segmentation techniques are compared. We find statistical differences in the reconstructed phase from normal and genetically transformed cysts.

## ECBO/CLEO Joint Session 2: Optical Manipulation of Biomatter

Wednesday 24 June 2015 · 10:30 to 12:00

Location: Room 13B

Session Chair: **Thomas Huser**, Bielefeld Univ. (Germany)

10:30 to 11:00: **Twice around is more: the benefits of spatial phase modulation larger than  $2\pi$  for imaging and trapping** (*Invited*), M. Ritsch-Martel, Biomedical Physics, Innsbruck (Austria)

High resolution liquid crystal SLMs can achieve a phase modulation pitch of more than  $2\pi$ . We show how this may be exploited to hugely expand the range of applications for LC-SLMs in imaging and trapping.

11:00 to 11:15: **Acoustophoretic 2D-prefocusing in a glass microfluidic chip for optical-stretching**, G. Nava, Univ. di Pavia and Univ. di Milano (Italy), et al.

Acoustophoretic forces are used to focus the flow in a microfluidic channel of an optical stretcher chip. Waveguides are integrated in the microfluidic chip by femtosecond laser writing and acoustic prefocusing is obtained with a piezoelectric crystal.

11:15 to 11:30: **Femtosecond laser nanostructuring for high-topological charge vortex tweezers with continuously tunable orbital angular momentum**, R. Drevinskis, Univ. of Southampton (United Kingdom), et al.

Femtosecond laser fabricated polarization converters for a high-topological charge optical vortices with tunable orbital angular momentum are demonstrated. The continuous control of torque without altering the intensity distribution was implemented in optical trapping.

11:30 to 12:00: **Accelerating progress in biomedical imaging**, K. Dholakia, Univ. of St. Andrews (United Kingdom)

We describe the use of propagation invariant light fields for use in light sheet imaging. Studies in particular using Airy light beams including generation of such beams in compact systems will be discussed.



## Students Networking Luncheon

Wednesday 24 June 2015 · 12:30 to 14:00  
Location: Restaurant Seeblick, 1st Floor, above registration

**Students: Advance sign-up required onsite; seating is limited.**

Student conference attendees and SPIE Fellows are invited to this engaging networking opportunity. This event gives students an opportunity to network with SPIE Fellows who will share their insights into career paths in optics and photonics. Lunch is complimentary but students must sign up at the ECBO registration desk onsite.



LIGHT2015 is an outreach project to promote the importance of photonics to young people, entrepreneurs and the general public in Europe during the International Year of Light 2015. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 644964.

## Career Choices Panel Discussion

Wednesday 24 June 2015 · 15:00 to 16:00  
Location: Hall 2, Exhibition Floor Forum

What are the critical career choices and decisions that face new graduates in optics and photonics? What are some strategies for navigating the transition from student to professional? This event will feature a talk from Prof. John Dudley and a panel with professionals from a variety of fields in optics and photonics.

### **SURVIVING IN SCIENCE: WHAT THEY DON'T TELL YOU ABOUT CAREERS IN RESEARCH!**



**Prof. John Dudley**  
FEMTO-ST

Obtaining a PhD is an important and significant achievement in your life, but it is really only the start! A successful career in research requires not only a PhD but also many other skills in multiple areas: from writing and communication, to management and leadership. When starting out, the breadth of this required expertise can seem daunting, but the aim of this presentation will be to try to provide simple and practical advice to help early-career researchers build and enjoy a long-term career in photonics, whether in academia or industry.



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## IYL Happy Hour

Wednesday 24 June 2015 · 18:00 to 19:00  
Location: ICM Foyer

Sponsored by **EPS, epl, SPIE, and Natural Science**



# DAILY SESSION SCHEDULE

	CONF. 9536A Advanced Microscopy Techniques IV	CONF. 9536B Neurophotonics II	CONF. 9537 Clinical and Biomedical Spectroscopy and Imaging IV	CONF. 9538 Diffuse Optical Imaging V
<b>SUNDAY</b>				
<b>MONDAY</b>				
11:15			Session 1 <b>Biospectroscopy and POC Diagnostics</b>	
14:30			Session 2 <b>Clinical and Preclinical Diagnostics I</b>	
16:30			<b>Post-Deadline Session</b>	
<b>TUESDAY</b>				
8:30			<b>Poster Previews</b>	
10:30			Session 3 <b>Clinical and Preclinical Diagnostics II</b>	
12:30	<b>TUESDAY POSTERS</b>			
14:00			<b>Plenary Session</b>	
16:00			Session 4 <b>Clinical and Preclinical Tissue Characterization I</b>	Session 1 <b>Brain Monitoring and Imaging I</b>
<b>WEDNESDAY</b>				
8:15			Session 5 <b>Clinical and Preclinical Tissue Characterization II</b>	Session 2 <b>Advances in instrumentation and Technology I</b>
10:30		Session 5 <b>Neurophotonics I</b>	Session 6 <b>Minimally Invasive Diagnostics / Laboratory Medicine I</b>	Session 3 <b>Theory, Algorithms and Modeling</b>
12:15	<b>WEDNESDAY POSTERS</b>			
14:00		Session 6 <b>Neurophotonics II</b>	Session 7 <b>Minimally Invasive Diagnostics / Laboratory Medicine II</b>	Session 4 <b>Clinical and Preclinical Applications of Diffuse Optics I</b>
16:00	Session 1 <b>Nonlinear Microscopy</b>		Session 8 <b>Novel Techniques in Diagnosis, Therapy, and Monitoring</b>	Session 5 <b>Advances in instrumentation and Technology II</b>
<b>THURSDAY</b>				
8:15	Session 2 <b>Wavefront Control, Super- Resolution, Light-Sheet</b>			Session 6 <b>Clinical and Preclinical Applications of Diffuse Optics II</b>
10:30	Session 3 <b>Phase and Interference Techniques</b>			Session 7 <b>Breast Cancer Imaging and Risk Assessment</b>
14:00	Session 4 <b>FLIM, FCS</b>			Session 8 <b>Brain Monitoring and Imaging II</b>

# DAILY SESSION SCHEDULE

	<b>CONF. 9539</b> Opto-Acoustic Methods and Applications in Biophotonics II	<b>CONF. 9540</b> Novel Biophotonics Techniques and Applications III	<b>CONF. 9541</b> Optical Coherence Imaging Techniques and Imaging in Scattering Media	<b>CONF. 9542</b> Medical Laser Applications and Laser- Tissue Interactions VII
<b>SUNDAY</b>				
8:30			Session 1 <b>Doppler and Angiographic Coherence Imaging</b>	Session 1 <b>Photosensitizer and Nanoparticle mediated PDT</b>
10:30			Session 2 <b>Optical Coherence Imaging With Wavefront Control</b>	Session 2 <b>Lasers and Light in the Brain</b>
<b>MONDAY</b>				
11:15	Session 1 <b>Technology Innovation I</b>		Session 3 <b>Optical Coherence Imaging Techniques in Microscopy</b>	Session 3 <b>Application of Laser in Soft Tissue</b>
14:00	Session 2 <b>Clinical Application</b>		Session 4 <b>Control of Coherent Light in Scattering Media</b>	Session 4 <b>Laser Treatment Monitoring and Feedback Control</b>
15:00			Session 5 <b>Optical Coherence Techniques in Animal Eye Imaging</b>	
16:00			<b>Post-Deadline Session</b>	<b>Post-Deadline Session</b>
<b>TUESDAY</b>				
8:15	Session 3 <b>Technology Innovation II</b>		Session 6 <b>Medical applications of Optical Coherence Tomography</b>	Session 5 <b>Application of Lasers in Hard Tissues</b>
10:30	Session 4 <b>Theory and Prototyping I</b>		Session 7 <b>Optical Coherence Techniques in Eye Imaging</b>	Session 6 <b>Lasers in Ophthalmology</b>
12:30	<b>TUESDAY POSTERS</b>			
14:00	<b>Plenary Session</b>		<b>Plenary Session</b>	
16:00	Session 5 <b>Theory and Prototyping II</b>		Session 8 <b>Advances in OCT Technology</b>	
<b>WEDNESDAY</b>				
8:30			<b>Poster Previews</b>	
12:15	<b>WEDNESDAY POSTERS</b>			
14:00		Session 1 <b>Novel Point of Care Technologies</b>		
16:00		Session 2 <b>Novel Tissue Assessments I</b>		
<b>THURSDAY</b>				
8:15		Session 3 <b>Novel Tissue Assessments II</b>		
10:30		Session 4 <b>Shedding Light on Cells</b>		
14:00		Session 5 <b>Novel Tissue Assessments III</b>		

PLEASE REFER TO CONFERENCE DESCRIPTIONS FOR EXACT TIMES

# DAILY SCHEDULE

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>SPECIAL EVENTS</b>				
<b>Hot Topics: Light for Life</b> , ( <i>Svanberg</i> ), 15:00 - 16:30, p. 7	<b>World of Photonics Opening Plenary</b> , 9:00 - 11:00, p. 7	<b>Posters Tuesday</b> , 12:30 - 14:00, p. 7	<b>ECBO/CLEO Joint Session 1: Bioimaging</b> , ( <i>Ritsch-Marte</i> ), 8:30 - 10:00, p. 8	
<b>International Year of Light Plenary Session</b> , ( <i>Hell, Betzig</i> ), 17:15 - 18:45, p. 7	<b>ECBO Post-Deadline Session</b> , 16:30 - 18:00, p. 7	<b>ECBO Plenary Session, Shifting the Paradigm in Modern Light Microscopy: Light Sheet-based Fluorescence Microscopy (LSFM, SPIM, DSLM)</b> , ( <i>Stelzer</i> ); and <b>Laser Spectroscopy Applied to Medicine, Ecology, and the Environment</b> , ( <i>Svanberg</i> ), 14:00 - 15:30, p. 6	<b>ECBO/CLEO Joint Session 2: Optical Manipulation of Biomatter</b> , ( <i>Huser</i> ), 10:30 - 12:00, p. 8	
			<b>Posters Wednesday</b> , 12:15 - 14:00, p. 7	
			<b>Students Networking Luncheon</b> , 12:30 - 14:00, p. 9	
			<b>Career Choices Panel Discussion: Surviving in Science: what they don't tell you about careers in research!</b> , ( <i>Dudley</i> ), 15:00 - 16:00, p. 9	
<b>TECHNICAL CONFERENCES</b>				
			<b>Conf. 9536A Advanced Microscopy Techniques</b> , ( <i>Beaurepaire, So</i> ), p. 14-36	
			<b>Conf. 9536B Neurophotonics</b> , ( <i>Pavone, Hillman</i> ), p. 14-32	
			<b>Conf. 9537 Clinical and Biomedical Spectroscopy and Imaging IV</b> ( <i>Brown, Deckert</i> ), p. 14-33	
			<b>Conf. 9538 Diffuse Optical Imaging</b> ( <i>Dehghani, Taroni</i> ), p. 14-36	
			<b>Conf. 9539 Opto-Acoustic Methods and Applications</b> ( <i>Ntziachristos, Zemp</i> ), p. 15-27	
			<b>Conf. 9541 Optical Coherence Imaging Techniques and Imaging in Scattering Media</b> ( <i>Bouma, Wojtkowski</i> ), p. 15-28	
			<b>Conf. 9542 Medical Laser Applications and Laser-Tissue Interactions VII</b> ( <i>Lilge, Sroka</i> ), p. 15-23	
			<b>Conf. 9540 Novel Biophotonics Techniques and Applications</b> ( <i>Amelink, Vitkin</i> ), p. 15-36	

## ADVANCED MICROSCOPY TECHNIQUES IV

- 9536-1 **Shot noise limited detection in stimulated Raman scattering microscopy**, Miriam Moester, Vrije Univ. Amsterdam (Netherlands)
- 9536-2 **In situ determination of collagen fibrils size via absolute measurements of second harmonic generation signals**, Marie-Claire Schanne-Klein, Lab. d'Optique et Biosciences (France)
- 9536-6 **Subnuclear foci quantification using high-throughput 3D image cytometry**, Dushan Wadduwage, National Univ. of Singapore (Singapore)
- 9536-12 **Multimodal CARS-based nonlinear optical microscopy and optical coherence tomography**, Angelika Unterhuber, Medizinische Univ. Wien (Austria)

## CLINICAL AND BIOMEDICAL SPECTROSCOPY AND IMAGING IV

- 9537-1 **Strategies for isolation and enrichment of bacteria for subsequent Raman spectroscopic identification**, Susanne Pahlow, Friedrich-Schiller-Univ. Jena (Germany)
- 9537-7 **Minimally invasive translation of targeted fluorescence guidance in gastrointestinal endoscopy**, Pilar Beatriz Garcia-Allende, Technische Univ. München (Germany)
- 9537-12 **Detection of hypercholesterolemia using hyperspectral imaging of human skin**, Matija Milanic, Norwegian Univ. of Science and Technology (Norway)
- 9537-18 **Tissue classification and diagnostics using a fiber probe for combined Raman and fluorescence spectroscopy**, Riccardo Cicchi, Istituto Nazionale di Ottica (Italy)
- 9537-24 **Raman spectroscopic characterization and discrimination of inflammatory bowel disease**, IsaacPence, Vanderbilt Univ. (USA)
- 9537-30 **Lab-on-a-chip SERS towards clinical application: detection of levofloxacin in simulated body fluid**, Izabella Hidi, Friedrich Schiller University Jena (Germany)
- 9537-36 **Registration of intracellular pH in cancer cells with genetically encoded ratiometric sensor**, Irina Druzhkova, Nizhny Novgorod State Medical Academy (Russian Federation)
- 9537-42 **3d imaging of apoptosis by FRET and light sheet fluorescence microscopy**, Herbert Schneckenburger, Hochschule Aalen (Germany)

## DIFFUSE OPTICAL IMAGING V

- 9538-1 **Non-contact scanning time-domain functional imaging of the adult human brain**, Heidrun Wabnitz, Physikalisches-Technische Bundesanstalt (Germany)
- 9538-19 **Deep tissue blood flow imaging with speckle contrast optical tomography**, Tanja Dragojevic, ICFO - Institut de Ciències Fotòniques (Spain)
- 9538-26 **Broadband time-resolved diffuse optical spectrometer for clinical diagnostics: characterization and in-vivo measurements in the 600-1350 nm spectral range**, Sanathana Konugolu Venkata Sekar, Politecnico di Milano (Italy)
- 9538-36 **Combined dynamic and static optical tomography for prediction of treatment outcome in breast cancer patients**, Jacqueline Gunther, Columbia Univ. (USA)
- 9538-37 **Optical study on the dependence of breast tissue composition and structure on subject anamnesis**, Paola Taroni, Politecnico di Milano (Italy)
- 9538-40 **Hemodynamic response patterns during sleep: a concurrent time-domain fNIRS/EEG study in adults**, Sophie Piper, Charité Universitätsmedizin Berlin (Germany)

## OPTO-ACOUSTIC METHODS AND APPLICATIONS IN BIOPHOTONICS II

- 9539-1 **Transmission matrix approach to photoacoustic imaging**, Sylvain Gigan, Lab. Kastler Brossel (France)
- 9539-16 **Directed Evolution of Chromoproteins for Photoacoustic FRET Imaging of Protein-Protein Interactions**, Roger Zemp, Univ. of Alberta (Canada)

## NEUROPHOTONICS II

- 9536-33 **Molecular and cellular degeneration of myelin in the spinal cord**, Daniel Cote, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada)
- 9536-39 **Cellular interactions in disease: nonlinear optics for in vivo studies**, Nozomi Nishimura, Cornell Univ. (USA)

## NOVEL BIOPHOTONICS TECHNIQUES AND APPLICATIONS III

- 9540-1 **Optical blood coagulation sensing in patients**, Seemantini Nadkarni, Harvard Medical School (USA)
- 9540-6 **Non-mydratric video ophthalmoscope to measure fast temporal changes of the human retina**, Ralf-Peter Tornow, Universitätsklinikum Erlangen (Germany)
- 9540-11 **Optical clearing of articular cartilage: a comparison of clearing agents**, Alexander Bykov, Univ. of Oulu (Finland)
- 9540-16 **Optical measurement of temperature in biological cells under infrared laser light exposure ( $\lambda=800$  nm)**, David Moreau, XLIM Institut de Recherche (France)
- 9540-22 **Wavefront shaping based on three-dimensional optoacoustic feedback**, Xosé Deán-Ben, Helmholtz Zentrum München GmbH (Germany)

## OPTICAL COHERENCE IMAGING TECHNIQUES AND IMAGING IN SCATTERING MEDIA

- 9541-14 **Time-encoded Raman scattering (TICO-Raman) with Fourier domain mode locked (FDML) lasers**, Sebastian Karpf, Ludwig-Maximilians-Univ. München (Germany)
- 9541-39 **Heartbeat optical coherence tomography**, Tianshi Wang, Erasmus MC (Netherlands)

## MEDICAL LASER APPLICATIONS AND LASER-TISSUE INTERACTIONS VII

- 9542-1 **Plasmonic photoionization for nanometric-scale radiation therapy**, Dvir Yelin, Technion-Israel Institute of Technology (Israel)
- 9542-6 **Optical properties of rabbit brain in the red and NIR: Changes observed under in-vivo, post-mortem, frozen and formalin-fixed conditions**, Georges Wagnières, Ecole Polytechnique Fédérale de Lausanne, Switzerland
- 9542-11 **Thulium fiber laser damage to the ureter**, Nathaniel Fried, The Univ. of North Carolina at Charlotte (USA)
- 9542-17 **Towards advanced OCT clinical applications**, Mikhail Kirillin, Institute of Applied Physics (Russian Federation)
- 9542-23 **Differentiation of tissue and kidney stones for laser lithotripsy using different spectroscopic approaches**, Birgit Lange, Medizinisches Laserzentrum Lübeck GmbH (Germany)
- 9542-27 **IR and UV vortex-beams for ultraprecise plasma-mediated eye surgery**, Alfred Vogel, Univ. zu Lübeck (Germany)

## ECBO/CLEO JOINT SESSION 1: BIOIMAGING

- Optical coherence tomography: a novel diagnostic standard?** (Tutorial), Wolfgang Drexler, Center for Medical Physics and Biomedical Engineering, Medical University, Vienna (Austria)

## ECBO/CLEO JOINT SESSION 2: OPTICAL MANIPULATION OF BIOMATTER

- Twice around is more: the benefits of spatial phase modulation larger than  $2\pi$  for imaging and trapping**, M. Ritsch-Marte, Medizinische Univ. Innsbruck (Austria)
- Accelerating progress in biomedical imaging**, K. Dholakia, Univ. of St. Andrews (United Kingdom)

# TECHNICAL CONFERENCES

## CONFERENCE 9536A

Wednesday–Thursday  
24–25 June 2015  
Proceedings of SPIE  
Vol. 9536A

### Advanced Microscopy Techniques IV

*Conference Chairs:* **Emmanuel Beaurepaire**, Ecole Polytechnique (France); **Peter T. C. So**, Massachusetts Institute of Technology (USA)

*Programme Committee:* **Adela Ben-Yakar**, The Univ. of Texas at Austin (USA); **Claude Boccara**, Institut Langevin (France); **Paul J. Campagnola**, Univ. of Wisconsin-Madison (USA); **Kishan Dholakia**, Univ. of St. Andrews (United Kingdom); **Chen-Yuan Dong**, National Taiwan Univ. (Taiwan); **Paul M. W. French**, Imperial College London (United Kingdom); **Irene Georgakoudi**, Tufts Univ. (USA); **Rainer Heintzmann**, Institut für Photonische Technologien e.V. (Germany); **Jan Huiskens**, Max-Planck-Institut für molekulare Zellbiologie und Genetik (Germany); **Charles P. Lin**, Wellman Ctr. for Photomedicine (USA); **Suliana Manley**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Jerome Mertz**, Boston Univ. (USA); **Francesco Pavone**, European Lab. for Non-linear Spectroscopy (Italy); **Yaron Silberberg**, Weizmann Institute of Science (Israel); **Ernst H. K. Stelzer**, Johann Wolfgang Goethe-Univ. Frankfurt am Main (Germany); **Vinod Subramaniam**, Univ. Twente (Netherlands)

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## CONFERENCE 9536B

Wednesday  
24 June 2015  
Proceedings of SPIE  
Vol. 9536B

### Neurophotonic II

*Conference Chairs:* **Francesco Pavone**, European Lab. for Non-linear Spectroscopy (Italy); **Elizabeth M. Hillman**, Columbia Univ. (USA)

*Programme Committee:* **Jason Berwick**, The Univ. of Sheffield (United Kingdom); **Michael Häusser**, Univ. College London (United Kingdom); **Vincent R. Daria**, The Australian National Univ. (Australia); **Shy Shoham**, Technion-Israel Institute of Technology (Israel); **Andrew K. Dunn**, The Univ. of Texas at Austin (USA); **Keith D. Paulsen**, Thayer School of Engineering at Dartmouth (USA); **Nozomi Nishimura**, Cornell Univ. (USA); **Pablo Blinder**, Tel Aviv Univ. (Israel); **Turgut Durduran**, ICFO - Institut de Ciències Fotòniques (Spain); **Ilias Tachtsidis**, Univ. College London (United Kingdom); **Katrin Amunts**, Forschungszentrum Jülich GmbH (Germany); **Kazuto Masamoto**, The Univ. of Electro-Communications (Japan); **Sava Sakadzic**, Massachusetts General Hospital (USA); **Daniel Côté**, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada); **Thomas Knöpfel**, Imperial College London (United Kingdom); **Ivo Vanzetta**, Institut de Neurosciences de la Timone (France)

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## CONFERENCE 9537

Monday–Wednesday  
22–24 June 2015  
Proceedings of SPIE  
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### Clinical and Biomedical Spectroscopy and Imaging IV

*Conference Chairs:* **J. Quincy Brown**, Tulane Univ. (USA); **Volker Deckert**, Institut für Photonische Technologien e.V. (Germany)

*Programme Committee:* **Yu Chen**, Univ. of Maryland, College Park (USA); **Darren M. Roblyer**, Boston Univ. (USA); **Kristen C. Maitland**, Texas A&M Univ. (USA); **Melissa C. Skala**, Vanderbilt Univ. (USA); **Jonathan T. C. Liu**, Univ. of Washington (USA); **Quan Liu**, Nanyang Technological Univ. (Singapore); **Niels Bendsoe M.D.**, Lund Univ. Hospital (Sweden); **Thomas G. Mayerhöfer**, Institut für Photonische Technologien e.V. (Germany); **Lise Lyngsnes Randeberg**, Norwegian Univ. of Science and Technology (Norway); **Kishan Dholakia**, Univ. of St. Andrews (United Kingdom); **Alastair J. M. Watson M.D.**, Royal Liverpool and Broadgreen Univ. Hospitals NHS Trust (United Kingdom); **Francesco Pavone**, European Lab. for Non-linear Spectroscopy (Italy); **James W. Tunnell**, The Univ. of Texas at Austin (USA)

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## CONFERENCE 9538

Tuesday–Thursday  
23–25 June 2015  
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### Diffuse Optical Imaging V

*Conference Chairs:* **Hamid Dehghani**, The Univ. of Birmingham (United Kingdom); **Paola Taroni**, Politecnico di Milano (Italy)

*Programme Committee:* **Jean-Marc Dinten**, MINATEC (France); **Turgut Durduran**, ICFO - Institut de Ciències Fotòniques (Spain); **Adam T. Eggebrecht**, Washington Univ. School of Medicine in St. Louis (USA); **Sergio Fantini**, Tufts Univ. (USA); **Dirk Grosenick**, Physikalisch-Technische Bundesanstalt (Germany); **Adam Liebert**, Institute of Biocybernetics and Biomedical Engineering (Poland); **Eiji Okada**, Keio Univ. (Japan); **Jens M. Steinbrink**, Charité Universitätsmedizin Berlin (Germany); **Iain B. Styles**, The Univ. of Birmingham (United Kingdom)

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## CONFERENCE 9539

Monday–Tuesday  
22–23 June 2015  
Proceedings of SPIE  
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### Opto-Acoustic Methods and Applications in Biophotonics II

*Conference Chairs:* **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany); **Roger Zemp**, Univ. of Alberta (Canada)

*Programme Committee:*

**Emmanuel Bossy**, Ecole Supérieure de Physique et de Chimie Industrielles (France); **Stanislav Y. Emelianov**, The Univ. of Texas at Austin (USA); **Jan Grimm**, Memorial Sloan-Kettering Cancer Ctr. (USA); **Fabian Kiessling**, Univ. Hospital Aachen (Germany); **Michael C. Kolios**, Ryerson Univ. (Canada); **Srirang Manohar**, Univ. Twente (Netherlands); **Matthew O'Donnell**, Univ. of Washington (USA); **Alexander A. Oraevsky**, TomoWave Laboratories, Inc. (USA); **Guenther Paltauf**, Karl-Franzens-Univ. Graz (Austria); **Amir Rosenthal**, Helmholtz Zentrum München GmbH (Germany); **Lihong V. Wang**, Washington Univ. in St. Louis (USA); **Vladimir P. Zharov**, Univ. of Arkansas for Medical Sciences (USA)

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## CONFERENCE 9540

Wednesday –Thursday  
24 June 2015  
Proceedings of SPIE  
Vol. 9540

### Novel Biophotonics Techniques and Applications III

*Conference Chairs:* **Arjen Amelink**, Netherlands Organization for Applied Scientific Research TNO (Netherlands); **I. Alex Vitkin**, Ontario Cancer Institute (Canada)

*Programme Committee:*

**Vanderlei Salvador Bagnato**, Univ. de São Paulo (Brazil); **Paul C. Beard**, Univ. College London (United Kingdom); **Daniel Côté**, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada); **Stanislav Y. Emelianov**, The Univ. of Texas at Austin (USA); **Dirk J. Faber**, Academisch Medisch Ctr. (Netherlands); **Venkataraman Krishnaswamy**, Thayer School of Engineering at Dartmouth (USA); **Steen J. Madsen**, Univ. of Nevada, Las Vegas (USA); **Igor V. Meglinski**, Univ. of Otago (New Zealand); **Seemantini K. Nadkarni**, Harvard Medical School (USA); **Guenther Paltauf**, Karl-Franzens-Univ. Graz (Austria); **Gijs van Soest**, Erasmus MC (Netherlands); **Chris Xu**, Cornell Univ. (USA)

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## CONFERENCE 9541

Sunday–Wednesday  
21–24 June 2015  
Proceedings of SPIE  
Vol. 9541

### Optical Coherence Imaging Techniques and Imaging in Scattering Media

*Conference Chairs:* **Brett**

**E. Bouma**, Wellman Ctr. for Photomedicine (USA); **Maciej Wojtkowski**, Nicolaus Copernicus Univ. (Poland)

*Programme Committee:* **Peter**

**E. Andersen**, Technical Univ. of Denmark (Denmark); **Stephen A. Boppart M.D.**, Univ. of Illinois at Urbana-Champaign (USA); **Johannes F. de Boer**, Vrije Univ. Amsterdam (Netherlands); **James G. Fujimoto**, Massachusetts Institute of Technology (USA); **Valentin M. Gelikonov**, Institute of Applied Physics (Russian Federation); **Sylvain Gigan**, Institut Langevin (France); **Robert A. Huber**, Univ. zu Lübeck (Germany); **Allard Mosk**, Univ. Twente (Netherlands); **Wang-Yuhl Oh**, KAIST (Korea, Republic of); **Michael Pircher**, Medizinische Univ. Wien (Austria); **David D. Sampson**, The Univ. of Western Australia (Australia); **Yaron Silberberg**, Weizmann Institute of Science (Israel); **Gijs van Soest**, Erasmus MC (Netherlands); **Yoshiaki Yasuno**, Univ. of Tsukuba (Japan); **Dvir Yelin**, Technion-Israel Institute of Technology (Israel)

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## CONFERENCE 9542

Sunday–Tuesday  
21–23 June 2015  
Proceedings of SPIE  
Vol. 9542

### Medical Laser Applications and Laser-Tissue Interactions VII

*Conference Chairs:* **Lothar D. Lilje**, Princess Margaret Hospital (Canada); **Ronald Sroka**, Laser-Forschungslabor (Germany)

*Programme Committee:* **Stefan**

**Andersson-Engels**, Lund Univ. (Sweden); **Wolfgang Bäuml**, Univ. Hospital Regensburg (Germany); **Nacim Betrouni**, INSERM (France); **Natalia N. Bulgakova**, A. M. Prokhorov General Physics Institute (Russian Federation); **Ralf Brinkmann**, Univ. zu Lübeck (Germany); **Santiago Camacho Lopez**, Ctr. de Investigación Científica y de Educación Superior de Ensenada B.C. (Mexico); **Martin Frenz**, Univ. Bern (Switzerland); **Nathaniel M. Fried**, The Univ. of North Carolina at Charlotte (USA); **Raimund Hibst**, Univ. Ulm (Germany); **Mikhail Y. Kirillin**, Institute of Applied Physics (Russian Federation); **Serge R. Mordon**, INSERM (France); **Carsten M. Philipp**, Elisabeth Klinik (Germany); **Daniel Razansky**, Helmholtz Zentrum München GmbH (Germany); **David D. Sampson**, The Univ. of Western Australia (Australia); **Herbert Stepp**, Univ. Hospital Munich (Germany); **Alfred Vogel**, Univ. zu Lübeck (Germany); **Georges Wagnières**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Xiu-li Wang**, Shanghai Skin Diseases and STD Hospital (China); **Gang Zheng**, Univ. of Toronto (Canada)

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CONFERENCE 9541

LOCATION: ROOM 11

Optical Coherence  
Imaging Techniques and  
Imaging in Scattering  
Media

CONFERENCE 9542

LOCATION: ROOM 2

Medical Laser  
Applications and Laser-  
Tissue Interactions VII

SESSION 1

LOCATION: ROOM 11  
SUN 8:30 TO 10:00

Doppler and Angiographic  
Coherence Imaging

Session Chair: **Brett E. Bouma**,  
Wellman Ctr. for Photomedicine  
(USA)

- 8:30: **Optimal processing of Doppler signals in OCT**, Julia Walther, Lars Kirsten, Edmund Koch, Technische Univ. Dresden (Germany) . . . . [9541-1]
- 8:45: **Improved axial and transverse flow measurements in optical coherence tomography using resolution and dispersion diversity**, Néstor Uribe-Patarroyo, Wellman Ctr. for Photomedicine (USA); Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) and Harvard-MIT Health Sciences and Technology (USA) . . . . . [9541-2]
- 9:00: **Quantitative flow estimation in Doppler optical coherence tomography of the human retina**, Maximilian G. O. Gräfe, Leah S. Wilk, Vrije Univ. Amsterdam (Netherlands) and Rotterdam Ophthalmic Institute (Netherlands); Boy Braaf, Vrije Univ. Amsterdam (Netherlands); Jan H. de Jong, Jelena Novosel, Koenraad A. Vermeer, Johannes F. de Boer, Rotterdam Ophthalmic Institute (Netherlands) . . . . . [9541-3]
- 9:15: **Quantitative blood flow imaging of functional hyperaemia in the mouse cortex using extended-focus optical coherence microscopy**, Paul J. Marchand, Arno Bouwens, Daniel Szlag, Tristan Bolmont, Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9541-4]
- 9:30: **An approach to OCT-based microvascular imaging using reference-free processing of complex-valued B-scans**, Vladimir Y. Zaitsev, Lev A. Matveev, Grigory V. Gelikonov, Alexander L. Matveyev, Institute of Applied Physics (Russian Federation) and Nizhny Novgorod State Medical Academy (Russian Federation); Alexander A. Moiseev, Sergey Y. Ksenofontov, Valentin M. Gelikonov, Institute of Applied Physics (Russian Federation); Valentin Demidov, Univ. of Toronto (Canada); I. Alex Vitkin, Ontario Cancer Institute (Canada) and Nizhny Novgorod State Medical Academy (Russian Federation) . . . . . [9541-5]
- 9:45: **Flow rate estimation by optical coherence tomography using contrast dilution approach**, Petra Štohanzlová, Radim Kolar, Brno Univ. of Technology (Czech Republic) and International Clinical Research Ctr. (Czech Republic) . . . . . [9541-6]
- Coffee Break . . . . Sun 10:00 to 10:30

SESSION 1

LOCATION: ROOM 2  
SUN 8:30 TO 10:00

Photosensitizer and  
Nanoparticle mediated  
PDT

Session Chair: **Georges A. Wagnières**, Ecole Polytechnique  
Fédérale de Lausanne  
(Switzerland)

- 8:30: **Plasmonic photoionization for nanometric-scale radiation therapy (Invited Paper)**, Dvir Yelin, Limor Minai, Adel Zeidan, Daniella Yeheskely-Hayon, Technion-Israel Institute of Technology (Israel) . . . . . [9542-1]
- 9:00: **Delivery of molecules in ex vivo corneal endothelium by femtosecond laser activated carbon nanoparticles**, Clotilde Jumelle, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France); Cyril Mauclair, Lab. Hubert Curien (France) and GIE Manutech-USD (France); Aurélien Bernard, Zhiguo He, Simone Piselli, Chantal Perrache, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France); Grégory Egaud, Julien Granier, GIE Manutech-USD (France); Philippe Gain, Gilles Thuret, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France) and Hôpital Nord (France) . . . . . [9542-2]
- 9:15: **Photodynamic effects of gold nanoparticles in a breast cancer cell line (MCF-7) in vitro**, Ivan I. S. Mfouo-Tynga, Univ. of Johannesburg (South Africa) . . . . . [9542-3]
- 9:30: **Metal nanoparticles of different shapes influence on optical properties of multilayered biological tissues**, Maria N. Kholodtsova, A. M. Prokhorov General Physics Institute (Russian Federation) and Univ. de Lorraine (France) and Ctr. de Recherche en Automatique de Nancy (France); Luliia S. Samsonova, A. M. Prokhorov General Physics Institute (Russian Federation); Walter C. P. M. Blondel, Univ. de Lorraine (France) and Ctr. de Recherche en Automatique de Nancy (France); Victor B. Loschenov, A. M. Prokhorov General Physics Institute (Russian Federation) . . . . . [9542-4]
- 9:45: **Review of dermatology use of 5-aminolevulinic acid photodynamic therapy in China from 1997 to 2013**, Peiru Wang, Guolong Zhang, Shanghai Skin Disease Hospital (China); Xiuli Wang, Shanghai Skin Diseases and STD Hospital (China) . . . . . [9542-5]
- Coffee Break . . . . Sun 10:00 to 10:30

**CONFERENCE 9541**  
 LOCATION: ROOM 11  
 Optical Coherence  
 Imaging Techniques and  
 Imaging in Scattering  
 Media

**CONFERENCE 9542**  
 LOCATION: ROOM 2  
 Medical Laser  
 Applications and Laser-  
 Tissue Interactions VII

**SESSION 2**

LOCATION: ROOM 11  
 SUN 10:30 TO 12:30

**Optical Coherence  
 Imaging With Wavefront  
 Control**

Session Chair: **Sylvain Gigan**,  
 Lab. Kastler Brossel (France)

10:30: **Transmission matrix approach to light control in complex media (Topcon Invited)** (*Invited Paper*), Sylvain Gigan, Lab. Kastler Brossel (France) ..... [9541-7]

11:00: **Wavefront shaping for nonlinear microscopy: second-harmonic generation imaging enhancement through scattering media**, Hilton Barbosa de Aguiar, Institut Fresnel (France); Sylvain Gigan, Lab. Kastler Brossel (France); Sophie Brasselet, Institut Fresnel (France) ..... [9541-8]

11:15: **Scanning-free and bend-insensitive imaging through a single fiber**, Sylwia Kolenderska, Nicolaus Copernicus Univ. (Poland); Ori Katz, Institut Langevin (France) and Univ. Pierre et Marie Curie (France); Sylvain Gigan, Univ. Pierre et Marie Curie (France); Mathias Fink, Institut Langevin (France) ..... [9541-9]

11:30: **Transillumination imaging through biological tissue by single-pixel detection**, Vicente Durán, Chalmers Univ. of Technology (Sweden); Fernando Soldevila Torres, Esther Irlas, Pedro J. Clemente Pesudo, Enrique Tajahuerce, Univ. Jaume I (Spain); Pedro Andrés Bou, Univ. de València (Spain); Jesús S. Lancis, Univ. Jaume I (Spain) ..... [9541-10]

11:45: **High-speed single-shot multiwavelength lensless phase contrast microscopy**, Dirk E. Boonzajer Flaes, Daniel W. E. Noom, Elias Labordus, Kjeld S. E. Eikema, Johannes F. de Boer, Stefan M. Witte, Vrije Univ. Amsterdam (Netherlands) ..... [9541-11]

12:00: **Speckle noise reduction by spatio-temporal optical coherence modulation**, Maciej Nowakowski, Dawid Borycki, Sylwia Kolenderska, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) .. [9541-12]

12:15: **Enhanced adaptive focusing through ultra-thin scattering media**, Diego Di Battista, Giannis Zacharakis, Foundation for Research and Technology-Hellas (Greece); Marco Leonetti, Istituto Italiano di Tecnologia (Italy) ..... [9541-13]

Lunch Break ..... Sun 12:30 to 14:00

**SESSION 2**

LOCATION: ROOM 2  
 SUN 10:30 TO 12:00

**Lasers and Light in the Brain**

Session Chairs: **David D. Sampson**, The Univ. of Western Australia (Australia); **Herbert Stepp**, Klinikum der Univ. München (Germany)

10:30: **Optical properties of rabbit brain in the red and NIR: Changes observed under in-vivo, post-mortem, frozen and formalin-fixed conditions** (*Invited Paper*), Andreas Pitzschke, Blaise Lovisa, Olivier Seydoux, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Matthias Haenggi, Markus Oertel, Inselspital Bern (Switzerland); Matthieu Zellweger, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Yanik Tardy, Medos International Sàrl (Switzerland); Georges A. Wagnières, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [9542-6]

11:00: **Optical spectroscopy for stereotactic biopsy of brain tumors**, Niklas Markwardt, Anna von Berg, Sebastian Fiedler, Klinikum der Univ. München (Germany); Marcus H. Goetz, MRC Systems GmbH (Germany); Neda Haj-Hosseini, Linköping Univ. (Sweden); Christoph Polzer, Herbert Stepp, Klinikum der Univ. München (Germany); Petr Zelenkov, N.N. Burdenko Neurosurgical Institute (Russian Federation); Adrian Rühm, Klinikum der Univ. München (Germany) ..... [9542-7]

11:15: **Spectral monitoring of stereotactic interstitial PDT of glioblastoma**, Adrian Rühm, Herbert Stepp, Wolfgang Beyer, Maurice Hermwille, Julian Rudrof, Ronald Sroka, Friedrich-Wilhelm Kreth, Klinikum der Univ. München (Germany) ..... [9542-8]

11:30: **Increasing the therapeutic index of PDT for glioma with hypothermia**, Carl J. Fisher, Univ. of Toronto (Canada); Carolyn Niu, Princess Margaret Cancer Ctr. (Canada); Warren Foltz, Univ. Health Network (Canada); Yonghong Chen, Princess Margaret Cancer Ctr. (Canada); Lothar D. Lilge, Princess Margaret Cancer Ctr. (Canada) and Univ. of Toronto (Canada) ..... [9542-9]

11:45: **In vitro study for photodynamic therapy using Fotolon® in glioma treatment**, Sara Mohamed, The German Univ. in Cairo (Egypt); Wolfgang Zimmermann, Ludwig-Maximilians-Univ. München (Germany); Dirk Hüttenberger, APOCARE Pharma GmbH (Germany); Rainer Wittig, Ulm Univ. (Germany); Mahmoud H. Abdelkader, The German Univ. in Cairo (Egypt); Herbert Stepp, Klinikum der Univ. München (Germany) ..... [9542-10]

Lunch Break ..... Sun 12:00 to 14:00

**Resumes Monday in Room B32**

LOCATION: ROOM 5 ..... SUN 15:00 TO 16:30

**Hot Topics: Light for Life**

LOCATION: ROOM 1 ..... SUN 17:15 TO 18:30

**International Year of Light Plenary Session**

**CONFERENCE 9537**

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

**CONFERENCE 9539**

LOCATION: ROOM B21

Opto-Acoustic Methods and Applications in Biophotonics II

**CONFERENCE 9541**

LOCATION: ROOM 11

Optical Coherence Imaging Techniques and Imaging in Scattering Media

**CONFERENCE 9542**

LOCATION: ROOM B32

Medical Laser Applications and Laser-Tissue Interactions VII

LOCATION: ROOM 1 ..... MON 9:00 TO 11:00

**World of Photonics Opening and Plenary Session**

Speaker: **Federico Capasso**, Harvard Univ.

**SESSION 1**

LOCATION: ROOM 5  
MON 11:15 TO 13:00

**Biospectroscopy and POC diagnostics**

Session Chair: **J. Quincy Brown**, Tulane Univ. (USA)

11:15: **Strategies for isolation and enrichment of bacteria for subsequent Raman spectroscopic identification** (*Invited Paper*), Susanne Pahlow, Stephan Stöckel, Friedrich-Schiller-Univ. Jena (Germany); Uwe Hübner, Leibniz-Institut für Photonische Technologien e.V. (Germany); Dana Ciialla-May, Karina Weber, Juergen Popp, Friedrich-Schiller-Univ. Jena (Germany) and Leibniz-Institut für Photonische Technologien e.V. (Germany) ..... [9537-1]

11:45: **Time-course study of microorganisms exposed to antimicrobial agents and stress factors by Raman spectroscopy**, Ota Samek, Silvie Bernatová, Jan Ježek, Zdeněk Pilát, Vladislav Krzyzaneck, Martin Šiler, Pavel Zemanek, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic); Katarina Mlynariková, Filip Ruzicka, St. Anne's Univ. Hospital Brno (Czech Republic); Andrea Haronikova, Stanislav Obruca, Brno Univ. of Technology (Czech Republic) ..... [9537-2]

12:00: **Lipid distribution imaging in zebrafish with stimulated Raman scattering microscopy**, Miriam J. B. Moester, Renate Kopp, Vrije Univ. Amsterdam (Netherlands); Freek Ariese, Vrije Univ. Amsterdam (Netherlands) and Indian Institute of Science (India); Juliette Legler, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands) ..... [9537-3]

12:15: **Raman and fluorescence microscopy to study the internalization and dissolution of photosensitizer nanoparticles into living cells**, Claudia Scalfi-Happ, Rudolf W. Steiner, Rainer Wittig, Univ. Ulm (Germany); Susanna Gräfe, biolitec AG (Germany); Anastasia Ryabova, Victor B. Loschenov, BioSpec (Russian Federation) and A. M. Prokhorov General Physics Institute (Russian Federation) ..... [9537-4]

12:30: **Rapid screening test for porphyria diagnosis using fluorescence spectroscopy**, Alexander Lang, Herbert Stepp, Christian Homann, Georg Hennig, Laser-Forschungslabor (Germany); Gary M. Brittenham, Columbia Univ. (USA); Michael Vogeser, Klinikum der Univ. München (Germany) ... [9537-5]

**SESSION 1**

LOCATION: ROOM B21  
MON 11:15 TO 13:15

**Technology Innovation I**

Session Chair: **Roger J. Zemp**, Univ. of Alberta (Canada)

11:15: **Transmission matrix approach to photoacoustic imaging** (*Invited Paper*), Sylvain Gigan, Lab. Kastler Brossel (France) ..... [9539-1]

11:45: **Common Path Optical-Resolution Photoacoustic Remote Sensing Microscopy**, Parsin Haji Reza, Roger J. Zemp, Univ. of Alberta (Canada) ..... [9539-2]

12:00: **Holographic non-contact photoacoustic tomography**, Jens Horstmann, Medizinisches Laserzentrum Lübeck GmbH (Germany); Christian Bui, Michael Münter, Univ. zu Lübeck (Germany); Ralf Brinkmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) ..... [9539-3]

12:15: **Forward-viewing multi-element photoacoustic probe for 3D endoscopy**, Rehman Ansari, Edward Z. Zhang, Sunish J. Mathews, Adrien E. Desjardins, Paul C. Beard, Univ. College London (United Kingdom) ..... [9539-4]

12:30: **Optical-resolution photoacoustic endoscopy through thick tissue with a fluid-filled capillary**, Olivier Simandoux, Institut Langevin (France) and Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France) and INSERM (France); Nicolino Stasio, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Jérôme Gateau, Institut Langevin (France) and Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France) and INSERM (France); Florian Poisson, Institut Langevin (France); Jean-Pierre Huignard, Jphopto (France); Christophe Moser, Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Emmanuel Bossy, Institut Langevin (France) and Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France) and INSERM (France) [9539-5]

12:45: **Polymer Optical Fibre Sensors for Endoscopic Opto-Acoustic Imaging**, Christian F. B. Broadway, Daniel C. Gallego, Univ. Carlos III de Madrid (Spain); Getinet T. Woyessa, Technical Univ. of Denmark (Denmark); Andreas Pospori, Aston Univ. (United Kingdom); Ole Bang, DTU Fotonik (Denmark); David J. Webb, Aston Univ. (United Kingdom); Guillermo Carpintero del Barrio, Horacio R. Lamela Rivera, Univ. Carlos III de Madrid (Spain) ..... [9539-6]

**SESSION 3**

LOCATION: ROOM 11  
MON 11:15 TO 12:45

**Optical Coherence Imaging Techniques in Microscopy**

Session Chair: **Dvir Yelin**, Technion-Israel Institute of Technology (Israel)

11:15: **Time-encoded Raman scattering (TICO-Raman) with Fourier domain mode locked (FDML) lasers** (*Invited Paper*), Sebastian N. Karpf, Ludwig-Maximilians-Univ. München (Germany); Matthias Eibl, Ludwig-Maximilians-Univ. München (Germany) and Univ. zu Lübeck (Germany); Wolfgang Wieser, Thomas Klein, Ludwig-Maximilians-Univ. München (Germany); Robert A. Huber, Univ. zu Lübeck (Germany) and Ludwig-Maximilians-Univ. München (Germany) ..... [9541-14]

11:45: **Extended-focus optical coherence microscopy in the visible wavelength range for live cell imaging**, Paul J. Marchand, Arno Bouwens, Séverine Coquoz, Miguel Sison, Jerome Extermann, Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [9541-15]

12:00: **Functional optical coherence imaging (FOCI) a novel, label-free approach for longitudinal, 3D visualization of autoimmune diabetes**, Daniel Szlag, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Nicolaus Copernicus Univ. (Poland); Corinne Berclaz, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Anja Schmidt-Christensen, Lund Univ. (Sweden); Jerome Extermann, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Fachhochschule NordWestschweiz (Switzerland); Lisbeth Hansen, Lund Univ. (Sweden); Martin Villiger, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Joan Gouley, Swiss Institute for Experimental Cancer Research (Switzerland); Frans Schuit, Katholieke Univ. Leuven (Belgium); Anne Grapin-Botton, Swiss Institute for Experimental Cancer Research (Switzerland); Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Dan Holmberg, Lund Univ. (Sweden) ..... [9541-16]

12:15: **Performance of coherence-based imaging systems with rapidly tunable lens**, Ireneusz Grulkowski, Krzysztof Szulczycki, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) ..... [9541-17]

**SESSION 3**

LOCATION: ROOM 2 (SUNDAY), ROOM B32 (MONDAY-TUESDAY)  
MON 11:15 TO 13:00

**Application of Laser in Soft Tissue**

Session Chair: **Ralf Brinkmann**, Medizinisches Laserzentrum Lübeck GmbH (Germany)

11:15: **Thulium fiber laser damage to the ureter** (*Invited Paper*), Christopher R. Wilson, Luke A. Hardy, The Univ. of North Carolina at Charlotte (USA); Pierce B. Irby M.D., Carolinas Medical Ctr. (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) . . [9542-11]

11:45: **Endovenous laser therapy for occlusion of incompetent saphenous veins using 1940nm**, Ronald Sroka, Thomas Pongratz, Laser-Forschungslabor (Germany); Anna Espiova, Slobodan Dikic, Sahit Demhasaj, Florin Comsa, Evang. Diakoniewerk Schwäbisch Hall eV (Germany); Claus-Georg Schmedt, Ludwig-Maximilians-Univ. München (Germany) . . [9542-12]

12:00: **Impact of terahertz radiation on the epithelialization rate of scarified cornea**, Olga A. Smolyanskaya, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Irina A. Geiko, FSBI Academy S.N. Fyodorov (Russian Federation); Maxim I. Sulatsky, Egor A. Sedych, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Mikhail K Khodzitsky, ITMO University (Russian Federation); Evgeniy L. Odlyanitskiy, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Sergey E. Parakhuda, National Mineral Resources Univ. (Russian Federation); Aleksander G. Zabolotniy, FSBI Academy S.N. Fyodorov (Russian Federation) ..... [9542-13]

12:15: **Healing process study in murine skin superficial wounds treated with the blue LED photoocoagulator EMOLED**, Francesca P. Rossi, Istituto di Fisica Applicata Nello Carrara (Italy); Riccardo Cicchi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Francesca Tatini, Istituto di Fisica Applicata Nello Carrara (Italy); Stefano Bacci, Univ. degli Studi di Firenze (Italy); Domenico Alfieri, Light4Tech Firenze S.r.l. (Italy); Gaetano De Siena, Istituto di Fisica Applicata Nello Carrara (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Univ. degli Studi di Firenze (Italy) and Istituto Nazionale di Ottica (Italy); Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy) ..... [9542-14]

**CONFERENCE 9537**

LOCATION: ROOM 5

**Clinical and Biomedical Spectroscopy and Imaging IV**

12:45: **Multi-spectral interrogation for surface plasmon resonance sensing in complex media**, Alexandra Sereda, Institut d'Optique Graduate School (France) and HORIBA Scientific (France); Julien Moreau, Marine Boulade, Institut d'Optique Graduate School (France); Aurore Olivéro, Institut d'Optique Graduate School (France) and HORIBA Scientific (France); Michael T. Canva, Institut d'Optique Graduate School (France); Emmanuel Maillart, HORIBA Scientific (France) . . . . . [9537-6]  
Lunch Break . . . . . Mon 13:00 to 14:30

**SESSION 2**

LOCATION: ROOM 5  
MON 14:30 TO 15:45

**Clinical and Preclinical Diagnostics I**

Session Chair: **Volker Deckert**, Leibniz-Institut für Photonische Technologien e.V. (Germany)

14:30: **Minimally invasive translation of targeted fluorescence guidance in gastrointestinal endoscopy** (*Invited Paper*), Pilar Beatriz Garcia-Allende, Technische Univ. München (Germany); Jolien J. J. Tjalma, Univ. Medical Ctr. Groningen (Netherlands); Maximilian W. Koch, Technische Univ. München (Germany); Elmiere Hartmans, Univ. Medical Ctr. Groningen (Netherlands); Jürgen Glatz, Technische Univ. München (Germany); Anton G. T. Tervisscha van Scheltinga, Wouter B. Nagengast, Univ. Medical Ctr. Groningen (Netherlands); Vasilis Ntziachristos, Technische Univ. München (Germany); Helmholtz Zentrum München GmbH (Germany) . . . . . [9537-7]

15:00: **Development of a time-gated fluorescence lifetime microscope for in vivo corneal metabolic imaging**, Susana F. Silva, Univ. de Coimbra (Portugal); Ana Batista, Univ. de Coimbra (Portugal) and Univ. des Saarlandes (Germany); Olga C. Castejón, Univ. Politècnica de Catalunya (Spain); Maria João Quadrado M.D., José Paulo Domingues, Univ. de Coimbra (Portugal) and Ctr. Hospitalar e Univ. de Coimbra (Portugal); António Miguel Morgado, Univ. de Coimbra (Portugal) . . . . . [9537-8]

**CONFERENCE 9539**

LOCATION: ROOM B21

**Opto-Acoustic Methods and Applications in Biophotonics II**

13:00: **Hybrid label-free multiphoton and optoacoustic microscopy (MPOM)**, Dominik Soliman, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany); George J. Tservelakis, Murad Omar, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany) . . . . . [9539-7]  
Lunch Break . . . . . Mon 13:15 to 14:30

**SESSION 2**

LOCATION: ROOM B21  
MON 14:30 TO 16:15

**Clinical Application**

Session Chair: **Srirang Manohar**, Univ. Twente (Netherlands)

14:30: **Intravascular lipid photoacoustic imaging: acoustic and optical spectroscopy**, Varya Daeichin, Min Wu, Erasmus MC (Netherlands); Antonius F. W. van der Steen, Erasmus MC (Netherlands) and Shenzhen Institutes of Advanced Technology (China) and Technische Univ. Delft (Netherlands); Gijs van Soest, Erasmus MC (Netherlands) . . . . . [9539-8]

14:45: **A handheld raster scan optoacoustic mesoscopy system for skin imaging**, Juan Aguirre Bueno, Technische Univ. München (Germany) and Helmholtz Zentrum München GmbH (Germany); Mathias Schwarz, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany); Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany) . . . . . [9539-10]

15:00: **The potential of photoacoustic microscopy as a tool to characterize the in vivo degradation of surgical sutures**, Jordi Morales-Dalmau, Juan Aguirre Bueno, ICFO - Institut de Ciències Fotòniques (Spain); Lutz Funk, Pau Turon, Francesc Jara, B. Braun Avitum (Spain); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [9539-11]

**CONFERENCE 9541**

LOCATION: ROOM 11

**Optical Coherence Imaging Techniques and Imaging in Scattering Media**

12:30: **Improved cancer diagnostics by different image processing techniques on OCT images**, Rajesh V. Kanawade, Benjamin Lengenfelder, Tassiana Marini Menezes, Martin Hohmann, Stefan Kopfinger, Florian Klämpfl, Jean Gonzales Menezes, Maximilian Waldner, Michael Schmidt, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Tim Hohmann, Urszula Grabiec, Martin-Luther Univ. Halle-Wittenberg (Germany) . [9541-18]  
Lunch Break . . . . . Mon 12:45 to 14:00

**SESSION 4**

LOCATION: ROOM 11  
MON 14:00 TO 15:00

**Control of Coherent Light in Scattering Media**

Session Chair: **David D.**

**Sampson**, The Univ. of Western Australia (Australia)

14:00: **Scattered light microscopy (Topcon Invited)** (*Invited Paper*), Ivo M. Vellekoop, Univ. Twente (Netherlands) . . . . . [9541-19]

14:30: **Effect on optical coherence tomography image quality of turbid tissue scattering using Gaussian or Bessel beams**, Andrea Curatolo, Peter R. T. Munro, Parvathy Sreekumar, The Univ. of Western Australia (Australia); Christian C. Singe, The Univ. of Western Sydney (Australia); Brendan F. Kennedy, Dirk Lorenser, David D. Sampson, The Univ. of Western Australia (Australia) . . . . . [9541-20]

14:45: **OCT model of discrete random media links optical properties to micro-scale sample organization**, Mitra Almasian, Nienke Bosschaart, Ton G. Van Leeuwen, Dirk J. Faber, Academisch Medisch Centrum (Netherlands) . . . . . [9541-21]

**SESSION 5**

LOCATION: ROOM 11  
MON 15:00 TO 16:00

**Optical Coherence Techniques in Animal Eye Imaging**

Session Chair: **Maciej**

**Wojtkowski**, Nicolaus Copernicus Univ. (Poland)

15:00: **Multimodal mouse retinal imaging system with ocular aberration correction by wavefront sensorless adaptive optics**, Robert J. Zawadzki, UC Davis Medical Ctr. (USA); Pengfei Zhang, Azhar Zam, Univ. of California, Davis (USA); Yifan Jian, Marinko V. Sarunic, Simon Fraser Univ. (Canada); Stefano Bonora, IFN-CNR LUXOR Lab. (Italy); Edward N. Pugh Jr., UC Davis Medical Ctr. (USA) [9541-22]

**CONFERENCE 9542**

LOCATION: ROOM B32

**Medical Laser Applications and Laser-Tissue Interactions VII**

12:30: **Comparison of four lasers ( $\lambda = 650, 808, 980, \text{ and } 1075 \text{ nm}$ ) for noninvasive creation of deep subsurface lesions in tissue**, Chun-Hung Chang, Univ. of North Carolina at Charlotte (USA); Christopher R. Wilson, Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) . . [9542-15]

12:45: **Anisotropy factor of biological tissue phantom and the effect to scattering coefficient in a strongly absorbing wavelength**, Katsunori Ishii, Daichi Fukutomi, Kunio Awazu, Osaka Univ. (Japan) . . . . . [9542-16]  
Lunch Break . . . . . Mon 13:00 to 14:15

**SESSION 4**

LOCATION: ROOM 2 (SUNDAY),  
ROOM B32 (MONDAY-TUESDAY)  
MON 14:15 TO 16:00

**Laser treatment Monitoring and Feedback Control**

Session Chairs: **Mikhail Y. Kirillin**, Institute of Applied Physics (Russian Federation); **Daniel Razansky**, Helmholtz Zentrum München GmbH (Germany)

14:15: **Towards advanced OCT clinical applications** (*Invited Paper*), Mikhail Y. Kirillin, Institute of Applied Physics (Russian Federation); Olga G. Panteleeva, Nizhny Novgorod Clinical Hospital/Russian Railways (Russian Federation); Pavel D. Agrba, Institute of Applied Physics (Russian Federation) and N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Mikhail Pasukhin, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Ekaterina A. Sergeeva, Institute of Applied Physics (Russian Federation); Elena Plankina, Varvara Dudenkova, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Ekaterina Gubarkova, Elena B. Kiseleva, Natalia Gladkova, Nizhny Novgorod State Medical Academy (Russian Federation); Natalia M. Shakhova, Institute of Applied Physics (Russian Federation); I. Alex Vitkin, Ontario Cancer Institute (Canada) . . . . . [9542-17]

14:45: **980 nm diode laser with automatic power control mode for dermatological applications**, Andrei V. Belicov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Mark L. Gelfond, N. N. Petrov Research Institute of Oncology (Russian Federation); Ksenia V. Shatilova, Svetlana A. Sosenkova, Anastasia A. Lazareva, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) . . . . . [9542-18]

15:00: **Analysis of radiation parameters to control the effects of Nd:YAG laser surgery on gastric malignancies**, María Luisa Pelayo-Fernández, Félix Fanjul-Vélez, Irene Salas-García, Alberto Hernández-González, José Luis Arce-Diego, Univ. de Cantabria (Spain) . . . . . [9542-19]



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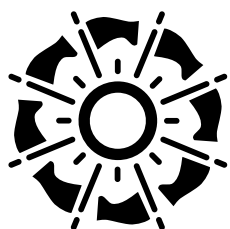
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**INTERNATIONAL  
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# MONDAY - 22 JUNE 2015

## CONFERENCE 9537

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

## CONFERENCE 9539

LOCATION: ROOM B21

Opto-Acoustic Methods and Applications in Biophotonics II

## CONFERENCE 9541

LOCATION: ROOM 11

Optical Coherence Imaging Techniques and Imaging in Scattering Media

## CONFERENCE 9542

LOCATION: ROOM B32

Medical Laser Applications and Laser-Tissue Interactions VII

15:15: **Rapid diagnostic imaging and pathologic evaluation of whole core biopsies at the point-of-care using structured illumination microscopy**, Mei Wang, Hillary Z. Kimbrell, David B. Tulman, Joyce Ward, J. Quincy Brown, Tulane Univ. (USA) . . . . . [9537-9]

15:30: **TERS tracking of head-deuterated lipids and invasomes in human stratum corneum**, Lucas Langelüddecke, Mukul Ashtikar, Alfred Fahr, Friedrich-Schiller-Univ. Jena (Germany); Volker Deckert, Friedrich-Schiller-Univ. Jena (Germany) and Leibniz-Institut für Photonische Technologien e.V. (Germany) [9537-11]  
Coffee Break . . . . Mon 16:00 to 16:30

15:15: **Photoacoustic CT in healthy and inflamed interphalangeal joints**, Peter van Es, Erwin Hondebrink, Johan C. G. van Hespren, Univ. Twente (Netherlands); Hein B. J. Moens M.D., Hospital Group Twente (Netherlands); Wiendelt Steenbergen, Srirang Manohar, Univ. Twente (Netherlands) . . . . . [9539-12]

15:30: **An interventional multispectral photoacoustic imaging platform for the guidance of minimally invasive procedures**, Wenfeng Xia, Daniil I. Nikitichev, Jean Martial Mari, Simeon West, Sébastien Ourselin, Paul C. Beard, Adrien E. Desjardins, Univ. College London (United Kingdom) . . . . . [9539-13]

15:45: **Virtual Intraoperative Surgical Photoacoustic Microscopy**, Chulhong Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [9539-14]

16:00: **Optoacoustic endoscopy using a miniaturized detector array**, Andreas Buehler, Hailong He, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [9539-15]

15:15: **In vivo imaging of retinal and choroidal vasculature in the rodent eye using optical coherence tomography**, Marco Augustin, Stanislava Fialová, Roberto Plasenzotti, Michael Pircher, Christoph K. Hitzenberger, Bernhard Baumann, Medizinische Univ. Wien (Austria) . . . . . [9541-23]

15:30: **Comparison of the polarization properties in the retinas of different rodents using high resolution polarization sensitive OCT**, Stanislava Fialová, Marco Augustin, Roberto Plasenzotti, Sabine Rauscher, Marion Gröger, Michael Pircher, Christoph K. Hitzenberger, Bernhard Baumann, Medizinische Univ. Wien (Austria) . . . . . [9541-24]

15:45: **Real-time optical coherence tomography observation of retinal tissue damage during laser photocoagulation therapy on ex-vivo porcine samples**, Patrick Steiner, Univ. Bern (Switzerland) and Berner Fachhochschule (Switzerland); Boris Povazay, Markus Stoller, Patrik Morgenthaler, Dominik Inniger, Patrik Arnold, Berner Fachhochschule (Switzerland); Raphael Sznitman, Univ. Bern (Switzerland); Christoph Meier, Berner Fachhochschule (Switzerland) . . . . . [9541-25]  
Coffee Break . . . . Mon 16:00 to 16:30

15:15: **Investigation of the potential of optical coherence tomography (OCT) as a non-invasive diagnostic tool in reproductive medicine**, Christian Homann, Matthias Trottmann, Regina Leeb, Daniel Doering, Julia O. Kuznetsova, Sven Reese, Christian G. Stief, Klinikum der Univ. München (Germany); Sabine Koelle, Univ. College Dublin (Ireland); Ronald Sroka, Klinikum der Univ. München (Germany) . . . . . [9542-20]

15:30: **Investigation of the optical properties of normal fibroblasts and fibroblasts cultured with cancer cells in terahertz frequency range**, Evgenii A. Strepitov, Evgenii P. Liakhov, Mikhail K. Khodzitsky, Olga A. Smolyanskaya, Nikolay S. Balbekin, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Maria K. Serebryakova, Andrei S. Trulyov, Saint Petersburg State Univ. (Russian Federation) . . . . . [9542-21]

15:45: **Terahertz pulsed imaging study of dental caries**, Burcu Karagoz, Hakan Altan, Middle East Technical Univ. (Turkey); Kivanç Kamburoglu, Ankara Univ. (Turkey) . . . . . [9542-22]  
Coffee Break . . . . Mon 16:00 to 16:30

## ECBO POST-DEADLINE SESSION

LOCATION: ROOM 5 . . . . . MON 16:30 TO 18:00

Session Chair: **Rainer Leitgeb**, Medizinische Univ. Wien (Austria)

*This session will feature select late-breaking research developments submitted to the post-deadline session.*

16:30: **Quantitative evaluation of lipid concentration in atherosclerotic plaque phantom by near-infrared multispectral angioscope at wavelengths around 1200 nm**, Daichi Matsui, Katsunori Ishii, Kunio Awazu, Osaka university (Japan) . . . . . [9537-83]

16:45: **Parallel and flexible imaging using multiphoton RESOLFT microscopy with spatial light modulator (SLM) control**, Yi Xue, Christopher James Rowlands, Peter T So, Massachusetts Institute of Technology (USA) [9536-48]

17:00: **High resolution 3D volumetric imaging of live tumor spheroids using Selective Plane Illumination Microscopy (SPIM)**, Stylianos Psycharakis, Evangelos Liapis, Ilias Kyparissidis-Kokkinidis, Athanasios Zacharopoulos, Joseph Papamatheakis, Foundation for Research and Technology-Hellas (Greece); Jorge Ripoll, Universidad Carlos III de Madrid (Spain); Giannis Zacharakis, Foundation for Research and Technology-Hellas (Greece) . . . . . [9536-47]

17:15: **Whole-head functional brain imaging of neonates at cot-side using time-resolved diffuse optical tomography**, Laura A Dempsey, Robert J Cooper, Samuel Powell, University College London (United Kingdom); Andrea Edwards, Chuen-Wai Lee, Cambridge University Hospitals NHS Foundation Trust (United Kingdom); Sabrina Brigadoi, Nick Everdell, Adam P Gibson, University College London (United Kingdom); Topun Austin, Cambridge University Hospitals NHS Foundation Trust (United Kingdom); Jeremy C Hebden, University College London (United Kingdom) . . . . . [9538-53]

17:30: **Interventional nerve visualization via the intrinsic anisotropic optical properties of the nerves**, Patrick Chin, UU (Netherlands); Kenneth Chin, University of Amsterdam (Netherlands); Andries Meierink, UU (Netherlands) . . . . . [9540-33]

17:45: **Ultrafast laser ablation for targeted atherosclerotic plaque removal**, Thomas Lanvin, Donald B Conkey, Laurent Descloux, EPFL (Switzerland); Aurelien Frobert, Jeremy Valentin, Jean-Jacques Goy, Stephane Cook, Marie-Noelle Giraud, University of Fribourg (Switzerland); Demetri Psaltis, EPFL (Switzerland) . . . . . [9542-44]

## CONFERENCE 9537

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

## CONFERENCE 9539

LOCATION: ROOM B21

Opto-Acoustic Methods and Applications in Biophotonics II

## CONFERENCE 9541

LOCATION: ROOM 11

Optical Coherence Imaging Techniques and Imaging in Scattering Media

## CONFERENCE 9542

LOCATION: ROOM B32

Medical Laser Applications and Laser-Tissue Interactions VII

### POSTER PREVIEWS

LOCATION: ROOM 5  
TUE 8:30 TO 10:00

### SESSION 3

LOCATION: ROOM B21  
TUE 8:30 TO 10:00

#### Technology Innovation II

Session Chair: **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

8:30: **Directed Evolution of Chromoproteins for Photoacoustic FRET Imaging of Protein-Protein Interactions** (*Invited Paper*), Alexander Forbrich, Yan Li, Robert E. Campbell, Roger J. Zemp, Univ. of Alberta (Canada) . . . . . [9539-16]

9:00: **High spatiotemporal resolution 4D optoacoustic imaging of the live mouse heart and methods for determination of cardiac function and perfusion**, Steven J. Ford, Xosé Luis Deán-Ben, Helmholtz Zentrum München GmbH (Germany); Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany) . . . . . [9539-17]

9:15: **Photoacoustic imaging of subcutaneous tumor in mice and its vascular response to photodynamic effect using indocyanine green-labeled biodegradable nanocarrier**, Yasuyuki Tsunoi, Keio Univ. (Japan); Shunichi Sato, National Defense Medical College (Japan); Ryota Watanabe, Keio Univ. (Japan); Satoko Kawauchi, Yoshihiro Miyagawa, Daisuke Mizokami, Nobuaki Tanaka, Koji Araki, Akihiro Shiotani, National Defense Medical College (Japan); Eiichi Ozeki, Isao Hara, Shimadzu Corp. (Japan); Toshiya Takemura, National Defense Medical College (Japan); Mitsuhiko Terakawa, Keio Univ. (Japan) . . . . . [9539-18]

9:30: **Visualization of the microcirculatory network in skin by high frequency optoacoustic mesoscopy**, Mathias Schwarz, Juan Aguirre Bueno, Andreas Buehler, Helmholtz Zentrum München GmbH (Germany); Murad Omar, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany) . . . . . [9539-19]

9:45: **Fiber Optic Photoacoustic Probe with Ultrasonic Tracking for Guiding Minimally Invasive Procedures**, Wenfeng Xia, Charles A. Mosse, Richard Colchester, Jean Martial Mari, Daniil I. Nikitichev, Simeon West, Sébastien Ourselin, Paul C. Beard, Adrien E. Desjardins, Univ. College London (United Kingdom) . . . . . [9539-20]

Coffee Break . . . . . Tue 10:00 to 10:30

### SESSION 6

LOCATION: ROOM 11  
TUE 8:30 TO 10:00

#### Medical Applications of Optical Coherence Tomography

Session Chair: **Maciej Wojtkowski**, Nicolaus Copernicus Univ. (Poland)

8:30: **Imaging the tympanic membrane oscillation ex vivo with Doppler optical coherence tomography during simulated Eustachian catarrh**, Lars Kirsten, Technische Univ. Dresden (Germany); Anke Burkhardt, Jonas Golde, Julia Walther, Univ. Carl Gustav Carus Dresden (Germany); Thomas Stoppe, Technische Univ. Dresden (Germany); Matthias Bornitz, Max Kemper, Thomas Zahnert, Univ. Carl Gustav Carus Dresden (Germany); Edmund Koch, Technische Univ. Dresden (Germany) . . . . . [9541-26]

8:45: **Real-time thermal therapy monitoring using dynamic OCT measurements**, William Lo, Harvard Medical School (USA) and Wellman Ctr. for Photomedicine (USA); Néstor Uribe-Patarroyo, Ahhyun S. Nam, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA); Benjamin J. Vakoc, Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) and Harvard-MIT Health Sciences and Technology (USA) . . . . . [9541-27]

9:00: **Investigating exogenous modulators of mucociliary clearance using optical coherence tomography: effect of temperature and hyperoxia on cilia-driven flow velocity**, Ute A. Gamm, Brendan K. Huang, Mansoor Syed, Vineet Bhandari, Michael A. Choma, Yale School of Medicine (USA) . . . . . [9541-28]

9:15: **Clinical validation of optical coherence tomography derived index of plaque attenuation**, Muthukaruppan Gnanadesigan, Erasmus MC (Netherlands); Takeyoshi Kameyama, Tohoku Univ. (Japan); Antonius F. W. van der Steen, Antonios Karanasos, Nienke Ditzhuijzen, Karen Witberg, Jurgen Lighthart, Evelyn Regar M.D., Gijs van Soest, Erasmus MC (Netherlands) . . . . . [9541-29]

9:30: **4D optical coherence tomography of aortic valve dynamics in a murine mouse model ex vivo**, Christian Schnabel, Anett Jannasch, Saskia Faak, Thomas Waldow, Edmund Koch, Technische Univ. Dresden (Germany) . . . . . [9541-30]

9:45: **Identification of parathyroid glands by using optical coherence tomography**, Norah Al Arabi, Klinikum der Univ. München (Germany) [9541-31]  
Coffee Break . . . . . Tue 10:00 to 10:30

### SESSION 5

LOCATION: ROOM 2 (SUNDAY),  
ROOM B32 (MONDAY-TUESDAY)  
TUE 8:45 TO 10:00

#### Application of Lasers in Hard Tissues

Session Chairs: **Raimund Hibst**, Univ. Ulm (Germany); **Nathaniel M. Fried**, The Univ. of North Carolina at Charlotte (USA)

8:45: **Differentiation of tissue and kidney stones for laser lithotripsy using different spectroscopic approaches** (*Invited Paper*), Birgit Lange, Medizinisches Laserzentrum Lübeck GmbH (Germany); Jens Cordes, Universitätsklinikum Schleswig-Holstein (Germany); Ralf Brinkmann, Univ. zu Lübeck (Germany) . . . . . [9542-23]

9:15: **Fast and automatic depth control of iterative bone ablation based on optical coherence tomography data**, Alexander Fuchs, Steffen Pengel, Jan N. Bergmeier, Lüder A. Kahrs, Tobias Ortmaier, Leibniz Univ. Hannover (Germany) . . . . . [9542-24]

9:30: **Investigations of the damage mechanisms during ultra short pulse laser ablation of dental tissue**, Matthias Domke, FH Vorarlberg (Austria); Sebastian Wick, Hochschule für Angewandte Wissenschaften München (Germany); Maike Wahler, Klinikum der Univ. München (Germany); Stephan Rapp, Hochschule für Angewandte Wissenschaften München (Germany); Julia Kutnesova, LIFÉ-Zentrum, Klinikum der Universität München (Germany); Christian Homann, Klinikum der Univ. München (Germany); Heinz P. Huber, Hochschule für Angewandte Wissenschaften München (Germany); Ronald Sroka, Klinikum der Univ. München (Germany) . . . . . [9542-25]

9:45: **Impact of pulse duration on Ho:YAG Laser induced lithotripsy**, Ronald Sroka, Thomas Pongratz, Gabriel Scheib, Laser-Forschungslabor (Germany); Wael Khoder, Markus J. Bader, Klinikum der Univ. München (Germany) . . . . . [9542-26]

Coffee Break . . . . . Tue 10:00 to 10:30



**CONFERENCE 9537**

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

**SESSION 3**

LOCATION: ROOM 5  
TUE 10:30 TO 12:15

Clinical and Preclinical Diagnostics II

Session Chair: **Matija Milanic**, Norwegian Univ. of Science and Technology (Norway)

10:30: **Detection of hypercholesterolemia using hyperspectral imaging of human skin** (*Invited Paper*), Matija Milanic, Asgeir Bjorgan, Norwegian Univ. of Science and Technology (Norway); Marcus Larsson, Tomas Strömberg, Linköping Univ. (Sweden); Lise L. Randeberg, Norwegian Univ. of Science and Technology (Norway) . . . . . [9537-12]

11:00: **In vivo estimation of epidermal thickness, melanin and hemoglobin concentrations, oxygen saturation, and scattering using diffuse reflectance spectroscopy**, Ricky Hennessy, Will Goth, The Univ. of Texas at Austin (USA); Mia K. Markey, The Univ. of Texas at Austin (USA) and The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); James W. Tunnell, The Univ. of Texas at Austin (USA) . . . . . [9537-13]

11:15: **Accessing deep optical properties of skin using diffuse reflectance spectroscopy**, Anne Koenig, Commissariat à l'Énergie Atomique (France); Blandine Roig, CEA-LETI (France); Jimmy Le Digabel, Gwendal Josse, Pierre Fabre Dermo-Cosmétique (France); Jean-Marc Dinten, MINATEC (France) . . . . . [9537-14]

11:30: **Multidimensional spectroscopic data fusion improves precancerous tissue discrimination based on spatially resolved autofluorescence and diffuse reflectance spectroscopy**, Faiza Abdat, Marine Amouroux, Ctr. de Recherche en Automatique de Nancy (France); Yann Guermeur, LORIA (France); Walter C. P. M. Blondel, Ctr. de Recherche en Automatique de Nancy (France) . . . . . [9537-15]

11:45: **Towards the application of diffuse optics in the management of hematological malignancies: can diffuse optics probe the bone marrow?**, Parisa Farzam, Claus Lindner, ICFO - Institut de Ciències Fotòniques (Spain); Udo M. Weigel, Hemophotonics S.L. (Spain); Maria L. Suarez, Alvaro Urbano, Univ. de Barcelona (Spain) . . . . . [9537-16]

12:00: **Diffuse optical characterization of the human thyroid**, Claus Lindner, ICFO - Institut de Ciències Fotòniques (Spain); Mireia Mora, Institut d'Investigacions Biomèdiques Agustí Pi Sunyer (Spain); Parisa Farzam, ICFO - Institut de Ciències Fotòniques (Spain); Mattia Squarcia, Univ. de Barcelona (Spain); Johannes D. Johansson, ICFO - Institut de Ciències Fotòniques (Spain); Udo M. Weigel, Hemophotonics S.L. (Spain); Irene Halperin, Felicia Hanzu, Institut d'Investigacions Biomèdiques Agustí Pi Sunyer (Spain); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [9537-17]

**CONFERENCE 9539**

LOCATION: ROOM B21

Opto-Acoustic Methods and Applications in Biophotonics II

**SESSION 4**

LOCATION: ROOM B21  
TUE 10:30 TO 12:30

Theory and Prototyping I  
Session Chair: **Daniel Razansky**, Helmholtz Zentrum München GmbH (Germany)

10:45: **Fluence compensation for quantitative optoacoustic imaging using near-infrared imaging and Monte Carlo simulations**, Tigran Petrosyan, Gerrit Held, H. Günhan Akarçay, Univ. Bern (Switzerland); Linda Ahnen, ETH Zürich (Switzerland); Michael Jaeger, Martin Frenz, Univ. Bern (Switzerland) . . . . . [9539-21]

11:00: **Laser diode based photoacoustic setup to analyze Grüneisen relaxation-effect induced signal enhancement**, Maxim N. Cherkashin, Martin R. Hofmann, Ruhr-Universität Bochum (Germany) . . . . . [9539-22]

11:15: **Absorption characterization of a nanoparticle solution by using a multi-wavelength high power laser diode excitation in an optoacoustic setup**, Luca Leggio, Omar E. de Varona, Guillermo Carpintero del Barrio, Horacio R. Lamela Rivera, Univ. Carlos III de Madrid (Spain) . . . . . [9539-23]

11:30: **Theoretical investigation of thermal-based nonlinear photoacoustic generation from silica-coated gold nanospheres**, Florian Poisson, Amaury Prost, Emmanuel Bossy, Institut Langevin (France) and Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France) and INSERM (France) [9539-24]

11:45: **Analytical calibration of linear transducer arrays for photoacoustic tomography**, Milan Oeri, Wolfgang Bost, Marc Fournelle, Fraunhofer-Institut für Biomedizinische Technik (Germany) . . . . . [9539-25]

12:00: **PhotoAcoustic-guided Focused UltraSound imaging (PAFUSion) for reducing reflection artifacts in photoacoustic imaging**, Mithun K. A. Singh, Wiendelt Steenbergen, Univ. Twente (Netherlands) . . . . . [9539-26]

12:15: **Photoacoustic-guided wavefront shaping: towards deep tissue photoacoustic imaging and light focusing**, Thomas Chaigne, Jérôme Gateau, Ori Katz, Emmanuel Bossy, Institut Langevin (France) and Univ. Pierre et Marie Curie (France) and Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France); Sylvain Gigan, Univ. Pierre et Marie Curie (France) . . . . . [9539-27]

Lunch/Exhibition

Break . . . . . Tue 12:30 to 14:00

**CONFERENCE 9541**

LOCATION: ROOM 11

Optical Coherence Imaging Techniques and Imaging in Scattering Media

**SESSION 7**

LOCATION: ROOM 11  
TUE 10:30 TO 12:30

Optical Coherence Techniques in Eye Imaging

Session Chair: **Johannes F. de Boer**, Vrije Univ. Amsterdam (Netherlands)

10:30: **Non-confocal ophthalmic imaging of the photoreceptors, retinal vasculature and inner retina pathology (Topcon Invited)** (*Invited Paper*), Alfredo Dubra, Medical College of Wisconsin (USA) . . . . . [9541-32]

11:00: **High-speed, digitally refocused retinal imaging with line-field parallel swept source OCT**, Daniel J. Fehchtig, Abhishek Kumar, Medizinische Univ. Wien (Austria) and Christian Doppler Forschungsgesellschaft (Austria); Tilman Schmoll, Carl Zeiss Meditec, Inc. (USA); Cedric Blatter, Medizinische Univ. Wien (Austria); Rainer A. Leitgeb, Medizinische Univ. Wien (Austria) and Christian Doppler Forschungsgesellschaft (Austria) . . . . . [9541-33]

11:15: **High definition in vivo retinal volumetric video rate OCT at 0.6 Giga-voxels per second**, Jan Philip Kolb, Univ. zu Lübeck (Germany) and Ludwig-Maximilians-Univ. München (Germany); Thomas Klein, Wolfgang Wieser, Wolfgang Draxinger, Ludwig-Maximilians-Univ. München (Germany); Robert A. Huber, Univ. zu Lübeck (Germany) . . . . . [9541-34]

11:30: **Long-term follow up studies of retinal lesions in age-related macular degeneration by polarization sensitive OCT**, Christoph K. Hitzberger, Philipp Roberts, Ferdinand Schlanitz, Christopher Schütze, Magdalena Baratsits, Bernhard Baumann, Michael Pircher, Ursula Schmidt-Erfurth, Medizinische Univ. Wien (Austria) . . . . . [9541-35]

11:45: **3-beam Doppler optical coherence tomography for total retinal blood flow measurement**, Richard Haindl, Wolfgang Trasischker, Bernhard Baumann, Andreas Wartak, Michael Pircher, Christoph K. Hitzberger, Medizinische Univ. Wien (Austria) . . . . . [9541-36]

12:00: **En face projection imaging of the human choroidal layers with tracking SLO: swept source OCT system and OCT angiography methods**, Iwona M. Gorczynska, Justin V. Migacz, Robert J. Zawadzki, Narendran Sudheendran, UC Davis Medical Ctr. (USA); Yifan Jian, Simon Fraser Univ. (Canada); Pavan Tiruveedhula, Austin Roorda, Univ. of California, Berkeley (USA); John S. Werner, UC Davis Medical Ctr. (USA) . . . . . [9541-37]

12:15: **1050nm handheld optical frequency domain imaging system for pediatric retinoblastoma patients: optical design and clinical study**, Oleg Nadiarnykh, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands); Annette C. Moll, Vrije Univ. Medical Ctr. (Netherlands) . . . . . [9541-38]

**CONFERENCE 9542**

LOCATION: ROOM B32

Medical Laser Applications and Laser-Tissue Interactions VII

**SESSION 6**

LOCATION: ROOM 2 (SUNDAY), ROOM B32 (MONDAY-TUESDAY)  
TUE 10:30 TO 12:30

Lasers in Ophthalmology

Session Chairs: **Alfred Vogel**, Univ. zu Lübeck (Germany); **Martin Frenz**, Univ. Bern (Switzerland)

10:30: **IR and UV vortex-beams for ultraprecise plasma-mediated eye surgery** (*Invited Paper*), Alfred Vogel, Sebastian Freidank, Norbert Linz, Univ. zu Lübeck (Germany) . . . . . [9542-27]

11:00: **Ultrafast laser machining of porcine sclera**, Wojciech S. Góra, Richard M. Carter, Heriot-Watt Univ. (United Kingdom); Baljean Dhillon, The Univ. of Edinburgh (United Kingdom); Duncan P. Hand, Jonathan D. Shephard, Heriot-Watt Univ. (United Kingdom) . . . . . [9542-28]

11:15: **Optical and acoustical feedback techniques for selective retina treatment (SRT): a clinical evaluation**, Eric Seifert, Medizinisches Laserzentrum Lübeck GmbH (Germany); Young-Jung Roh, Yeouido St. Mary's Hospital (Korea, Republic of); Dirk Theisen-Kunde, Ralf Brinkmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) . . . . . [9542-29]

11:30: **Intraocular pressure from the laser induced cavitation bubbles dynamics**, Luis F. Devia-Cruz, Santiago Camacho-López, Ctr. de Investigación Científica y de Educación Superior de Ensenada B.C. (Mexico) . . . . . [9542-30]

11:45: **Pore size assessment during corneal endothelial cells permeabilization by femtosecond laser activated carbon nanoparticles**, Clotilde Jumelle, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France); Cyril Maucclair, Lab. Hubert Curien (France) and GIE Manutech-USD (France); Julien Houzet, Hubert Curien laboratory (France) and GIE Manutech-USD (France); Aurélien Bernard, Zhiguo He, Simone Piselli, Chantal Perrache, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France); Grégory Egaud, Emmanuel Baubeau, GIE Manutech-USD (France); Philippe Gain, Gilles Thuret, Biologie, Ingénierie et Imagerie de la Greffe de Cornée (France) and Hôpital Nord (France) . . . . . [9542-31]

12:00: **Speckle-based monitored photocoagulation**, Katharina Bliedtner, Eric Seifert, Ralf Brinkmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) . . . . . [9542-32]

12:15: **Anti-oxidant and anti-angiogenic potentials of laser-induced sublethal hyperthermia on retinal pigment epithelial cells**, Yoko Miura, Katharina Kern, Joachim Pruessner, Daniel Weng, Stephanie Adler, Ralf Brinkmann, Univ. zu Lübeck (Germany) . . . . . [9542-33]

Conference End.

# POSTER SESSION · ICM FOYER GROUND FLOOR/BO 12:30 TO 14:00 · TUESDAY 23 JUNE 2015

Posters for this conference will be featured on Tuesday. Posters will be available during the lunch/poster session break, and the poster session, with authors present, will be held from 12.30 to 14.00.

## CONFERENCE 9537

### Clinical and Biomedical Spectroscopy and Imaging IV

**Non-invasive skin fluorescent spectroscopy: effect of blood saturation in evaluating main metabolic biomarkers**, Sergei G. Sokolovski, Aston Univ. (United Kingdom); Karina S. Litvinova, Victor V. Sidorov, SPE LAZMA Ltd. (Russian Federation); Edik U. Rafailov, Aston Univ. (United Kingdom). . . . . [9537-48]

**Detection of early caries by laser-induced breakdown spectroscopy**, Shuhei Sasazawa, Tohoku Univ. (Japan); Satoko Kakino, Tokyo Medical and Dental Univ. (Japan); Yuji Matsuura, Tohoku Univ. (Japan) . . . . . [9537-49]

**Self-controlled zeptomolar detection of cancer marker using nano ELISA-assisted plasmonic biosensor**, Yong-Beom Shin, Korea Research Institute of Bioscience and Biotechnology (Korea, Republic of); Na Rae Jo, Univ. of Science & Technology (Korea, Republic of) . . . . . [9537-50]

**The influence of silver nanoparticles and ions on light-scattering properties of bacteria cells**, Desulfuromonas acetoxidans, Oleksandr I. Bilyy, Ivan O. Bordun, Taras Z. Grechukh, Olga D. Maslovska, Ivan Franko National Univ. of L'viv (Ukraine) . . . . . [9537-51]

**Wet chemical synthesis of quantum dots for medical applications**, Elisa I. Cepeda-Pérez, Tzarara López-Luke, Leonardo Pérez-Mayen, Ctr. de Investigaciones en Óptica, A.C. (Mexico); Alberto Hidalgo-Bravo, Instituto Nacional de Rehabilitación (Mexico); Elder De La Rosa Cruz, Ctr. de Investigaciones en Óptica, A.C. (Mexico); Alejandro Torres-Castro, Univ. Autónoma de Nuevo León (Mexico); Andrea Ceja-Fdez, Ctr. de Investigaciones en Óptica, A.C. (Mexico); Juan L. Vivero-E Escoto, The Univ. of North Carolina at Charlotte (USA); Ana L. Gonzalez-Yebra, Univ. de Guanajuato (Mexico). . . . . [9537-52]

**Assessment of mango fruit ripening using fluorescence spectroscopy**, Rahat Ullah, National Institute of Lasers & Optronics (Pakistan) . . . . . [9537-54]

**Two dimensional spectral camera development for cartilage monitoring**, Artur Kuehn, Alexander Graf, Ulla Wenzel, Sascha Prinz, Hubert Mantz, Martin Hessling, Hochschule Ulm (Germany) . . . . . [9537-55]

**Synthesis and study of bio-conjugated GaO(OH) nanoparticles : a potential candidate for usage in modern medical imaging techniques**, Vivek Verma, Indian Institute of Science Education and Research Pune (India); Debanuj Chatterjee, Indian Institute of Science Education and Research Kolkata (India); Bichitra Nandi Ganguly, Saha Institute of Nuclear Physics (India). . . . . [9537-57]

**Terahertz time-domain spectra of biological tissues**, Wei Liu, Capital Normal Univ. (China); Ping Sun, Beijing Normal Univ. (China). . . . . [9537-58]

**Optical methods for monitoring of the demineralization process of bone grafts during their manufacture**, Elena V. Timchenko, Pavel E. Timchenko, Larisa A. Taskina, Samara State Aerospace Univ. (Russian Federation); Larisa T. Volova, Julia V. Ponomareva, Samara State Medical Univ. (Russian Federation) . . . . . [9537-59]

**Combined analysis of whole human blood parameters by Raman spectroscopy and spectral-domain low-coherence interferometry**, Marcin Gnyba, Maciej S. Wróbel, Katarzyna Karpienko, Daria Milewska, Małgorzata Jedrzejewska-Szczerska, Gdansk Univ. of Technology (Poland) . . . . . [9537-60]

**Contrast enhancement based on entropy and reflectance analysis for surgical lighting**, Junfei Shen, Zhenrong Zheng, Zhejiang Univ. (China) [9537-61]

**Luminescence monitoring of particle delivery into rat skin in vivo**, Elena K. Volkova, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Irina Y. Yanina, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Saratov State Medical Univ. (Russian Federation); Marina D. Kozintseva, Alexey N. Bashkatov, Leonid E. Dolotov, Elina A. Genina, Vyacheslav I. Kochubey, Julia G. Konyukhova, Vadim D. Genin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Alla B. Bucharskaya, Nikita A. Navolokin, Saratov State Medical Univ. (Russian Federation); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Institute of Precise Mechanics and Control (Russian Federation); Irina Goryacheva, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Alexey P. Popov, Univ. of Oulu (Finland); Elena Speranskaya, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [9537-62]

**Development of a movable diffuse reflectance spectroscopy system for clinical study of esophageal precancer**, Yi-Hsien Hsiao, Gen-Hao Tien, Min-Jie Chuang, Kung-Bin Sung, Fang-Wei Hsu, Hong-po Hsieh, National Taiwan Univ. (Taiwan). . . . . [9537-63]

**Fluorescence ratiometric classifier for the detection of skin pathologies**, Suresh Anand, European Lab. for Non-linear Spectroscopy (Italy); Riccardo Cicchi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Alessandro Cosci, European Lab. for Non-linear Spectroscopy (Italy); Susanna Rossari M.D., Univ. degli Studi di Firenze (Italy); Dimitrios Kapsokalyvas, Enrico Baria, European Lab. for Non-linear Spectroscopy (Italy); Daniela Massi, Vincenzo De Giorgi, Nicola Pimpinelli, Univ. degli Studi di Firenze (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Istituto Nazionale di Ottica (Italy) and Univ. degli Studi di Firenze (Italy) . . . . . [9537-64]

**Estimating the relative concentrations of nicotine amide adenine dinucleotide and flavin adenine dinucleotide in urothelial carcinoma using multivariate curve resolution**, Suresh Anand, European Lab. for Non-linear Spectroscopy (Italy); Riccardo Cicchi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Alfonso Crisci, Gabriela Nesi, Marco Carini, Univ. degli Studi di Firenze (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Istituto Nazionale di Ottica (Italy) and Univ. degli Studi di Firenze (Italy) . . . . . [9537-65]

**Lensless imaging platform for visualization of subsurface pattern: design, and phantom experiments**, Irina Schelkanova, Aditya Pandya, Hannan Babar, Ryerson Univ. (Canada); Alexandre Douplik, Ryerson Univ. (Canada) and St. Michael's Hospital (Canada) and EFriedrich-Alexander- Univ Erlangen-Nürnberg (Germany) . . . . . [9537-66]

**Metabolites of Fusarium oxysporum cause structural and Raman scattering changes in immunocompetent rats**, Luzmarina Hernandez, Marcelo H. Correia, Mariana U. Zapater, Katia S. Melo, Mauro L. Baesso, Francielle Sato, Univ. Estadual de Maringá (Brazil) . . . . . [9537-67]

**Binding of cationic porphyrins to zeolite nanoparticles**, Anna G. Gyulkhandanyan, Institute of Biochemistry (Armenia); Robert K. Ghazaryan, Yerevan State Medical Univ. (Armenia); Hakob O. Sargsyan, Anna A. Zakoyan, Aram G. Gyulkhandanyan, Institute of Biochemistry (Armenia); Marina H. Paronyan, Scientific and Production Ctr. Armibiotechnology (Armenia); Grigor V. Gyulkhandanyan, Institute of Biochemistry (Armenia) . . . . . [9537-68]

**Scale-selective analysis of myocardium polarization images in problems of diagnostic of necrotic changes**, Yuriy A. Ushenko, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine) . . . . . [9537-69]

**System of polarization correlometry of polycrystalline layers of bile in the differentiation of systemic pathologies**, Olexander V. Dubolazov, Yuriy A. Ushenko, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine) . . . . . [9537-70]

**System of multivariate laser polarimetry of phase and amplitude anisotropy of biological layers**, Olexander V. Dubolazov, Yuriy A. Ushenko, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine) . . . . . [9537-71]

**Morphological and physicochemical analysis of spleen of Swiss mice infected with Paracoccidioides brasiliensis**, Francielle Sato, Elaine S. B. Mansano, Gutierrez R. Morais, Antonio Medina Neto, Mauro L. Baesso, Edilaine M. Moratto, Terezinha I. E. Svidzinski, Luzmarina Hernandez, Univ. Estadual de Maringá (Brazil) . . . . . [9537-72]

**Spectral fiber sensors for cancer diagnostics in-vivo**, Viacheslav Artyushenko, art photonics GmbH (Germany); Hans-Peter Berlien, Carsten M. Philipp, Elisabeth Klinik (Germany); Franziska Schulte, Iskander Usenov, art photonics GmbH (Germany). [9537-73]

**Spectroscopic fluorescence measurements as an intraoperative tool for glioma resection**, Laure Alston, Laurent Mahieu-Williams, CREATIS (France); Xavier Armoiry, Ctr. Hospitalier Univ. de Lyon (France); David Meyronet, HCL-Ctr. de Pathologie et Neuropathologie Est (France); Mathieu Hébert, Lab. Hubert Curien (France); David Rousseau, CREATIS (France); Jacques Guyotat, Ctr. Hospitalier Univ. de Lyon (France); Bruno Montcel, CREATIS (France) . . . . . [9537-74]

**Reproducible high-resolution Multispectral Image Acquisition in Dermatology**, Alexandru O. Duliu, José Gardiazabal, Tobias Lasser, Nassir Navab, Technische Univ. München (Germany) . . . . . [9537-76]

**Raman spectral library of prominent biomolecules towards identifying/digital staining of diseased regions by monitoring disease specific marker molecules**, Aditya Pandya, J. Carl Kumaradas, Ryerson Univ. (Canada); Alexandre Douplik, Ryerson Univ. (Canada) and St. Michael's Hospital (Canada) and Friedrich-Alexander- Univ Erlangen-Nürnberg (Germany) . . . . . [9537-77]

**Temperature dependence of the fluorescence spectrum of ZnCdS nanoparticles introduced into subcutaneous adipose tissue in vitro**, Irina Y. Yanina, Elena K. Volkova, Vyacheslav I. Kochubey, Alexander A. Skaptsov, Julia G. Konyukhova, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Institute of Precise Mechanics and Control (Russian Federation); Alexey Popov, University of Oulu (Finland) . . . . . [9537-78]

**Paper-based surfaced enhanced Raman spectroscopy for drug level testing with tear fluid**, Moe Yokoyama, Osaka Univ. (Japan). . . . . [9537-79]

**Hyperspectral imaging applied to microbial categorization in an automated microbiology workflow**, Denis F. Leroux, Rony Midahuen, Guillaume Perrin, Jermie Pescatore, Pierre Imbaud, bioMérieux SA (France) . . . . . [9537-80]

**Common-path spectral-domain optical coherence microscopy for real-time 3D image cytometry**, Cheng-Kuang Lee, Chang Gung Univ. (Taiwan); Chih-Hao Chiu, Chang Gung Memorial Hospital (Taiwan) and Chang Gung Univ. College of Medicine (Taiwan) . . . . . [9537-81]

# POSTER SESSION · ICM FOYER GROUND FLOOR/BO

## 12:30 TO 14:00 · TUESDAY 23 JUNE 2015

Poster authors: Please set up posters on the morning of your session before or during the morning coffee break. Plan to stand by your poster to discuss it with session attendees on the day of your session from 12.30 to 14.00. Please remove your poster following the poster session, as posters left on the boards will be discarded.

**Non-contact high resolution Bessel beam probe for diagnostic imaging of corneal and trabecular mesh work region in eye,** Vadakke Matham Murukeshan, Vengalathunadakkal K. Shinoj, Jesmond Hong, Nanyang Technological Univ. (Singapore); Mani Baskaran, Singapore Eye Research Institute (Singapore); Aung Tin, Singapore Eye Research Institute (SERI) & Singapore National Eye Center (SNEC), (Singapore) and National Univ. of Singapore (Singapore) . . . . . [9537-82]

**Optical biopsy during thyroid and parathyroid surgery,** Neda Haj-Hosseini, Department of Biomedical Engineering, Linköping University (Sweden); Niklas Markwardt, Laser-Research Laboratory, LIFE Center, Ludwig Maximilians University Munich (Germany); Ivan Shabo, Department of Clinical and Experimental Medicine, Linköping University (Sweden); Oliver Gimm, Department of Surgery and Department of Clinical and Experimental Medicine, Linköping University, (Sweden); Herbert Stepp, Laser-Research Laboratory, LIFE Center, Ludwig Maximilians University Munich (Germany). . . . . [9537-84]

**Blood optical properties at various glucose level values in THz frequency range,** Sviatoslav I Gusev, Mariia A Borovkova, Evgeniy A Strepitov, Mikhail K Khodzitsky, ITMO University (Russian Federation) . . . . . [9537-85]

**Cartilage analysis by reflection spectroscopy,** Tobias Laun, Manuel Muenzer, Ulla Wenzel, Sascha Princz, Martin Hessling, Hochschule Ulm (Germany) . . . . . [9537-86]

**Energy transfer efficiency in quantum dot/chlorin e6 complexes,** Anastasia K. Vishneratina, Irina V. Martynenko, Anna O. Orlova, Vladimir G. Maslov, Alexander V. Baranov, Anatoly V. Fedorov, ITMO University (Russian Federation) . . . . . [9537-87]

**Detail enhancement in microscopy of human papillary thyroid carcinoma by acousto-optic spatial filtering,** Konstantin B. Yushkov, Vladimir Ya. Molchanov, National University of Science and Technology MISiS (Russian Federation); Alexander Yu. Abrosimov, Endocrinology Research Center (Russian Federation); Pavel V. Belousov, Lomonosov Moscow State University, Faculty of Biology (Russian Federation) [9537-88]

**Quantum dot-tetrapyrrole complexes as photodynamic therapy agents,** Irina V. Martynenko, Anastasia K. Vishneratina, Vera A. Kuznetsova, Anna O. Orlova, Vladimir G. Maslov, Anatoly V. Fedorov, Alexander V. Baranov, ITMO University (Russian Federation) . . . . . [9537-89]

**Optical spectroscopy of cancerous tissues,** Fatemeh Ghasemi, Amirakbar University of Technology (Iran, Islamic Republic of) . . . . . [9537-90]

**Classification of neoplastic and pre-neoplastic lesions in the central bronchial tree using in vivo Raman spectroscopy,** Hanna C Pawluk, BC Cancer Research Centre (Canada) and University of British Columbia (Interdisciplinary Oncology Program) (Canada); Michael A Short, Annette McWilliams M.D., Tawimas Shaipanich M.D., BC Cancer Research Centre (Canada); Diana N Ionescu M.D., BC Cancer Research Centre (Canada) and University of British Columbia (Department of Pathology and Laboratory Medicine) (Canada); Jianhua Zhao, BC Cancer Research Centre (Canada) and University of British Columbia (Department of Dermatology) (Canada); Wenbo Wang, Guannan Chen, BC Cancer Research Centre (Canada); Stephen Lam M.D., BC Cancer Research Centre (Canada) and University of British Columbia (Interdisciplinary Oncology Program) (Canada) and University of British Columbia (Department of Medicine) (Canada); Haishan Zeng, BC Cancer Research Centre (Canada) and University of British Columbia (Interdisciplinary Oncology Program) (Canada) and University of British Columbia (Department of Dermatology) (Canada) . . . . . [9537-91]

**Combined autofluorescence and Raman spectroscopy method for skin tumor detection in visible and near infrared regions,** Dmitry N Artemyev, Valery P Zakharov, Ivan A Bratchenko, Oleg O Myakinin, Samara State Aerospace University (Russian Federation); Sergey V Kozlov, Alexander A Moryatov, Samara State Medical University (Russian Federation) . . . . . [9537-92]

**Paper-based surfaced enhanced Raman spectroscopy for drug level testing with tear fluid,** Kenji Yamada, Moe Yokoyama, Takahiro Nishimura, Osaka Univ (Japan) . . . . . [9537-93]

### CONFERENCE 9541

#### Optical Coherence Imaging Techniques and Imaging in Scattering Media

**Detection system characterization and performance of spectral optical coherence tomography based on modulation transfer function,** Daniel Szig, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Nicolaus Copernicus Univ. (Poland); Arno Bouwens, Jerome Extermann, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Maciej Szkulmowski, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland); Marcel Leutenegger, Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9541-44]

**Iterative Otsu's method for OCT improved delineation in the aorta wall,** Daniel Alonso, Eusebio Real, Univ. de Cantabria (Spain); Jose F. Val-Bernal, Univ. Hospital Marques de Valdecilla (Spain) and Univ. de Cantabria (Spain); José M. Revuelta, Univ. de Cantabria (Spain); Alejandro Ponton, Marta Calvo, Univ. Hospital Marques de Valdecilla (Spain); Marta Mayorga, Univ. Hospital Marques de Valdecilla (Spain) and Univ. of Cantabria (Spain); José Miguel López-Higuera, Olga M. Conde, Univ. de Cantabria (Spain) . . . . . [9541-45]

**Versatile long coherence length swept source for optical coherence tomography applications,** Bastian Braeuer, Norman Lippok, Stuart G. Murdoch, Frédérique Vanholsbeeck, The Univ. of Auckland (New Zealand) . . . . . [9541-46]

**Frequency sweep jitter and wander of a Vernier-Tuned Distributed Bragg Reflector (VT-DBR) laser at 1550 nm in OCT applications,** Roric C. Martens Biersach, Dennis J. Derickson, California Polytechnic State Univ., San Luis Obispo (USA); Jason R. Ensher, Insight Photonic Solutions, Inc. (USA) . . . . . [9541-47]

**Spectral domain optical coherence tomography for ex vivo brain tumor analysis,** Marcel Lenz, Ruhr-Univ. Bochum (Germany); Robin Krug, Univ. Knappschaftskrankenhaus Bochum GmbH (Germany); Volker Jaedicke, Ruhr-Univ. Bochum (Germany); Ralf Stroop, St. Barbara-Klinik Hamm GmbH (Germany); Kirsten Schmieder, Univ. Knappschaftskrankenhaus Bochum GmbH (Germany); Martin R. Hofmann, Ruhr-Univ. Bochum (Germany) . . . . . [9541-48]

**Optical wavefront aberrations in optical coherence tomography,** Hans R. G. W. Verstraete, Technische Univ. Delft (Netherlands); Barry Cense, Utsunomiya Univ. (Japan); Rolf Bilderbeek, Michel Verhaegen, Jeroen Kalkman, Technische Univ. Delft (Netherlands) . . . . . [9541-49]

**An algorithm for simulating image formation in optical coherence tomography for cylinder scattering,** Thomas Brenner, Dominik Reitzle, Alwin Kienle, Univ. Ulm (Germany) . . . . . [9541-50]

**Optimal integration time in OCT imaging,** Lorenz Martin, Christoph Meier, Stephan Gräub, Berner Fachhochschule Technik und Informatik (Switzerland) . . . . . [9541-51]

**Motion artefacts simulation in the imaging of the ocular media,** Pavel Zakharov, Mark S. Talary, Daniel Boss, IROC Science AG (Switzerland); Michael C. Mrochen, IROC AG (Switzerland) . . . . . [9541-52]

**Investigation of changes in fractal dimension from layered retinal structures of healthy and diabetic eyes with optical coherence tomography,** Wei Gao, Valery P. Zakharov, Oleg O. Myakinin, Ivan A. Bratchenko, Dmitry N. Artemyev, Samara State Aerospace Univ. (Russian Federation); Dmitry V Kornilov, Samara State Aerospace University (Russian Federation) . . . . . [9541-53]

**Combining optical coherence tomography with single fiber reflectance spectroscopy to determine the scattering anisotropy of turbid media,** Anouk L. Post, Xu Zhang, Nienke Bosschaart, Abel Swaan, Ton G. Van Leeuwen, Henricus J. C. M. Sterenborg, Dirk J Faber, Academisch Medisch Centrum (Netherlands) . . . . . [9541-54]

**Speckle reduction process based on digital filtering and wavelet compounding in optical coherence tomography for dermatology,** Juan José Gómez Valverde, Juan Enrique Ortuño Fisac, Univ. Politécnica de Madrid (Spain); Pedro Guerra Guiterrez, Univ. Politécnica Madrid (Spain); Boris Hermann, Behrooz Zabihian, Medizinische Univ. Wien (Austria); Jose L. Rubio-Guivernau, MedLumics S.L. (Spain); Andrés Santos, Univ. Politécnica de Madrid (Spain); Wolfgang Drexler, Medizinische Univ. Wien (Austria); Maria J. Ledesma-Carbayo, Univ. Politécnica de Madrid (Spain) . . . . . [9541-55]

**Azimuthally-invariant Muller-matrix mapping of optically anisotropic networks of biological crystals,** Olexander V. Dubolazov, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine) . . . . . [9541-56]

**Autofluorescence polarimetry of blood plasma in differentiating of liver pathology,** Yuriy A. Ushenko, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine) . . . . . [9541-57]

**Nonlinear amplification and detection for swept-source optical coherence tomography,** Yuye Ling, Xinwen Yao, Christine P. Hendon, Columbia Univ. (USA) . . . . . [9541-58]

**Enhanced spectral and time domain OCT in dependence on transverse velocity and SNR,** Julia Walther, Edmund Koch, Univ Carl Gustav Carus Dresden (Germany) . . . . . [9541-59]

# POSTER SESSION · ICM FOYER GROUND FLOOR/BO 12:30 TO 14:00 · TUESDAY 23 JUNE 2015

Posters for this conference will be featured on Tuesday. Posters will be available during the lunch/poster session break, and the poster session, with authors present, will be held from 12.30 to 14.00.

Poster authors: Please set up posters on the morning of your session before or during the morning coffee break. Plan to stand by your poster to discuss it with session attendees on the day of your session from 12.30 to 14.00. Please remove your poster following the poster session, as posters left on the boards will be discarded.

## CONFERENCE 9542

### Medical Laser Applications and Laser- Tissue Interactions VII

**Synchronous autofluorescence spectroscopy of gastrointestinal tumours – tool for endogenous fluorophores evaluation.** Ekaterina G. Borisova, Tsanislava I. Genova, Liliya P. Angelova, Aleksandra Zh. Zhelyazkova, Institute of Electronics (Bulgaria); Momchil D. Keremedchiev M.D., Nikolay Penkov M.D., Univ. Hospital “Tsaritsa Yoanna – ISUL” (Bulgaria); Oksana Semyachkina-Glushkovskaya, cBiology Department, Saratov State University (Russian Federation); Borislav G. Vladimirov M.D., Univ. Hospital “Tsaritsa Yoanna – ISUL” (Bulgaria); Latchezar A. Avramov, Institute of Electronics (Bulgaria) . . . . . [9542-34]

**Using the method of intracavity laser spectroscopy to study the optical characteristics of an optically thin layer of biological tissue with the small-scale inhomogeneities.** Kirill G. Kulikov, Saint-Petersburg State Polytechnical Univ. (Russian Federation); Tatiana Koshlan M.D., Saint-Petersburg State Univ. (Russian Federation) . . . . . [9542-35]

**Laser induced healing treatment for heart block removal.** Mohammad M. Anwar, Asiatic Society of Bangladesh (Bangladesh) . . . . . [9542-36]

**Assesment of the effective attenuation coefficient of scattering media illuminated by a led array: effect of the beam size.** Jean-Yves Le Pommellec, Vianney M. Piron, Ecole Nationale Supérieure d'Arts et Métiers (France); Mohamed Lamine Askoura, Groupe ESA (France); Jean-Pierre M. L'Huillier, Ecole Nationale Supérieure d'Arts et Métiers (France) . . . . . [9542-37]

**Dynamics of accumulation of chlorin e6 photosensitizer in the mouse organs at lymphotropic administration.** Julia O. Kuznetsova, National Research Nuclear Univ. MEPhI (Russian Federation); Nina Kalyagina, A. M. Prokhorov General Physics Institute (Russian Federation); Ayubdzhon Saidov, Administrative Dept of the President of the RF (Russian Federation); Daniel Yagudaev, Teaching and Research Medical Ctr. (Russian Federation) and City Clinical Hospital No. 51 (Russian Federation) . . . . . [9542-38]

**Biological response and spectral characteristics of nerve cells in the frequency range 0.1 - 2 THz.** Mariia V. Duka, Maxim I. Sulatsky, Olga A. Smolyanskaya, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) . . . . . [9542-39]

**Histological study of subcutaneous fat at NIR laser treatment of the rat skin in vivo.** Irina Y. Yanina, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Saratov State Univ. (Russian Federation) and Saratov State Medical Univ. (Russian Federation); Yulia I. Svenskaya, Saratov State Univ. (Russian Federation); Nikita A. Navolokin, Saratov State Medical Univ. (Russian Federation) and Saratov State Univ. (Russian Federation); Alla B. Bucharskaya, Galina N. Maslyakova, Saratov State Medical Univ. (Russian Federation); Dmitry A. Gorin, Saratov State Univ. (Russian Federation); Gleb B. Sukhorukov, Queen Mary, Univ. of London (United Kingdom); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [9542-40]

**Electrical stimulation vs. pulsed and continuous-wave optical stimulation of the rat prostate cavernous nerves, in vivo.** William C. Perkins, The Univ. of North Carolina at Charlotte (USA); Gwen A. Lagoda, Arthur L. Burnett M.D., The Johns Hopkins Hospital (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) . . . . . [9542-41]

**Experimental investigation on light propagation through apple tissue structures.** Mohamed Lamine Askoura, Groupe ESA (France); Vianney M. Piron, Fabrice Vaudelle, Jean-Pierre M. L'Huillier, Ecole Nationale Supérieure d'Arts et Métiers (France); Emmanuel Madieta, Emira Mehinagic, Groupe ESA (France) . . . . . [9542-42]

**Improved photoporation efficiency by fluorescence two-photon absorption.** Diogenes S. Moura, Renato E. de Araujo, Univ. Federal de Pernambuco (Brazil) . . . . . [9542-43]

**Miniature LED endoilluminators for vitreoretinal surgery.** Martin Hessling, Hochschule Ulm (Germany); P. S. Koelbl, Ulm Univ. (Germany); C. Lingenfelder, alamedics GmbH & Co. KG (Germany); F. Koch, Goethe Univ. (Germany) . . . . . [9542-45]

**Precision machining of pig intestine using ultrafast laser pulses.** Rainer J Beck, Wojciech S Gora, Richard M Carter, Heriot-Watt University (United Kingdom); Sonny Gunadi, David G Jayne, University of Leeds (United Kingdom); Duncan P Hand, Jonathon D Shephard, Heriot-Watt University (United Kingdom) . . . . . [9542-46]

**Low level laser therapy improves necrosis area after transverse resection of the rectus abdominis myocutaneous flap surgery in rats.** Nathali C Pinto, Vanessa A Bezerra M.D., Bruna Oliveira M.D., Kelly Ferreira M.D., Nelida Fujinohara M.D., Ivone Duarte, Maria Cristina Chavantes M.D., University Nove de Julho (Brazil) . . . . . [9542-47]

**Pulse mode irradiation at Radachlorin PDT shifted cell death to apoptosis in vitro.** Vladimir V. Klimenko, Alexey A. Bogdanov, Nickolay A. Knyazev, Michael V. Dubina, St Petersburg Academic University (Russian Federation) . . . . . [9542-48]

**CONFERENCE 9537**

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

**CONFERENCE 9538**

LOCATION: ROOM B32

Diffuse Optical Imaging V

**CONFERENCE 9539**

LOCATION: ROOM B21

Opto-Acoustic Methods and Applications in Biophotonics II

**CONFERENCE 9541**

LOCATION: ROOM 11

Optical Coherence Imaging Techniques and Imaging in Scattering Media

**PLENARY SESSION**

LOCATION: ROOM 5 ..... TUE 14:00 TO 15:30

**SESSION 4**

LOCATION: ROOM 5  
TUE 16:00 TO 17:45

Clinical and Preclinical Tissue Characterization I

Session Chair: **Pilar Beatriz García-Allende**, Technische Univ. München (Germany)

16:00: **Tissue classification and diagnostics using a fiber probe for combined Raman and fluorescence spectroscopy** (*Invited Paper*), Riccardo Cicchi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Suresh Anand, European Lab. for Non-linear Spectroscopy (Italy); Alfonso Crisci, Univ. degli Studi di Firenze (Italy); Flavio Giordano, Azienda Ospedaliera Univ. Anna Meyer (Italy); Susanna Rossari M.D., Vincenzo De Giorgi, Vincenza Maio, Daniela Massi, Gabriella Nesi, Anna Maria Buccoliero, Marco Carini, Univ. degli Studi di Firenze (Italy); Renzo Guerrini, Azienda Ospedaliera Univ. Anna Meyer (Italy); Nicola Pimpinelli, Univ. degli Studi di Firenze (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Univ. degli Studi di Firenze (Italy) ..... [9537-18]

16:30: **Early diagnosis of tongue malignancy using laser induced fluorescence spectroscopy technique**, Santhosh Chidangil, Ajeetkumar Patil, Unnikrishnan V. Kolaprath, Ravikiran Ongole, Keerthilatha M. Pai, Vasudevan B. Kartha, Manipal Univ. (India) [9537-19]

16:45: **Topical fluorescent analogue for virtual hematoxylin and eosin histology in point-of-care ex vivo microscopy**, Katherine N. Elfer, Tulane Univ. (USA); Hillary Z. Kimbrell, Tulane Univ. School of Medicine (USA); Christopher Miller, J. Quincy Brown, Tulane Univ. (USA) ..... [9537-20]

17:00: **Autofluorescence spectroscopy for multimodal tissues characterization in colitis-associated cancer murine model**, Hugo Dorez, Raphael Sablong, CREATIS (France); Laurence Canaple, Institut de Génétique Fonctionnelle de Lyon (France); Hervé Saint-Jalmes, Univ. de Rennes 1 (France) and Ctr. Régional de Lutte Contre le Cancer (France); Sophie Gaillard, CREATIS (France); Driffa Moussata, Regional Univ. Hospital of Tours (France); Olivier Beuf, Univ. Claude Bernard Lyon 1 (France) ..... [9537-21]

17:15: **Influence of structural length-scale variations on azimuth-resolved light scattering patterns of inhomogeneous cell models**, Dizem Arifler, Middle East Technical Univ., Northern Cyprus Campus (Cyprus); Martial Guillaud, The BC Cancer Agency Research Ctr. (Canada) ..... [9537-22]

17:30: **Feasibility trial of using NIR reflectance spectrum method to monitor tumor microwave ablation**, Jinzhe Zhao, Zhiyu Qian, Nanjing Univ. of Aeronautics and Astronautics (China); Jia Liu, Hunan Province Tumor Hospital (China); Wei Tao Li, Nanjing Univ. of Aeronautics and Astronautics (China) ..... [9537-23]

**SESSION 1**

LOCATION: ROOM B32  
TUE 16:00 TO 17:30

Brain Monitoring and Imaging I

Session Chair: **Adam Liebert**, Nalecz Institute of Biocybernetics and Biomedical Engineering PAS (Poland)

16:00: **Non-contact scanning time-domain functional imaging of the adult human brain** (*Invited Paper*), Heidrun Wabnitz, Physikalisch-Technische Bundesanstalt (Germany); Mikhail Mazurenka, Physikalisch-Technische Bundesanstalt (Germany) and Hannoversches Zentrum für Optische Technologien (Germany); Katja Fuchs, Physikalisch-Technische Bundesanstalt (Germany); Laura Di Sieno, Gianluca Boso, Davide Contini, Alberto Dalla Mora, Alberto Tosi, Politecnico di Milano (Italy); Yoko Hoshi M.D., The Tokyo Metropolitan Institute of Medical Science (Japan); Antonio Pifferi, Politecnico di Milano (Italy); Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany) ..... [9538-1]

16:30: **Imaging brain function in children with autism spectrum disorder with diffuse optical tomography**, Adam T. Eggebrecht, Bradley L. Schlaggar, John N. Constantino, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) ..... [9538-2]

16:45: **Efficient method for near real-time diffuse optical tomography of the human brain**, Xue Wu, The Univ. of Birmingham (United Kingdom); Adam T. Eggebrecht, Washington Univ. School of Medicine in St. Louis (USA); Silvina L. Ferradal, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) and Washington Univ. in St. Louis (USA); Hamid Dehghani, The Univ. of Birmingham (United Kingdom) [9538-3]

17:00: **Cerebral autoregulation during pediatric extracorporeal membrane oxygenation therapy**, David R. Busch, The Children's Hospital of Philadelphia (USA); Ann L. McCarthy, Temple Univ. School of Medicine (USA); Madeline E. Winters, John J. Newland, The Children's Hospital of Philadelphia (USA); Tiffany Ko, Jennifer M. Lynch, Univ. of Pennsylvania (USA); Constantine Mavroudis, Hospital of the Univ. of Pennsylvania (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA); Maryam Y. Naim, Daniel J. Licht, The Children's Hospital of Philadelphia (USA) ..... [9538-4]

17:15: **Time Resolved optical detection for white matter lesion detection: preclinical tests on macaque brains and MRI co-registration**, Anne Planat-Chrétien, Michel Berger, Lionel Hervé, CEA-LETI (France); Laurent Watroba, Joanna Demilly, Julien Flament, Lev Stimmer, INSERM (France); Patrick Aubourg, INSERM (France) and Assistance Publique-Hôpitaux de Paris (France); Jean-Marc Dinten, CEA-LETI (France) ..... [9538-5]

**SESSION 5**

LOCATION: ROOM B21  
TUE 16:00 TO 18:00

Theory and Prototyping II

Session Chair: **Benjamin T. Cox**, Univ. College London (United Kingdom)

16:00: **Fast photoacoustic imaging with a line scanning optical-acoustical resolution photoacoustic microscope (LS-OAR-PAM)**, Robert Nuster, Guenther Paltauf, Karl-Franzens-Univ. Graz (Austria) ..... [9539-28]

16:15: **Optoacoustic measurements of optical effective attenuation for multi-wavelength fluence compensation**, Gerrit Held, Univ. Bern (Switzerland); Tigran Petrosyan, Univ. Bern (Switzerland); H. Günhan Akarçay, Univ. Bern (Switzerland); Linda Ahnen, ETH Zürich (Switzerland) and Univ. Hospital Zurich (Switzerland); Michael Jaeger, Martin Frenz, Univ. Bern (Switzerland) ..... [9539-29]

16:30: **High-resolution epi-illumination raster-scan optoacoustic mesoscopy for imaging of model organisms and microvessels**, Murad Omar, Dominik Soliman, Technische Univ. München (Germany); Jérôme Gateau, Institut Langevin (France) and Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France) and INSERM (France); Vasilis Ntziachristos, Technische Univ. München (Germany) ... [9539-30]

16:45: **Adding the third modality to simultaneous photoacoustic and optically-mediated ultrasound microscopy: co-registration of backscattered optical fluence by ultrasonic detector.**, Pavel V. Subochev, Anna S. Postnikova, Ilya I. Fiks, Ilya V. Turchin, Institute of Applied Physics (Russian Federation) ..... [9539-31]

17:00: **Combined real-time ultrasound plane wave compounding and linear array optoacoustics**, Marc Fournelle, Wolfgang Bost, Steffen Tretbar, Fraunhofer-Institut für Biomedizinische Technik (Germany) ..... [9539-32]

17:15: **Nanodroplets as a platform for multi-modality imaging and drug delivery**, Robert J. Paproski, John D. Lewis, Roger J. Zemp, Univ. of Alberta (Canada) ..... [9539-33]

17:30: **Scattering and Absorption Characterization of Nanoparticles Using Optoacoustic Spectroscopy in the Near-IR Regime**, Herve K. Nguendon, Daniel C. Gallego, Univ. Carlos III de Madrid (Spain); Leisha M. Armijo, Yekaterina I. Brandt, Marek Osirski, The Univ. of New Mexico (USA); Horacio R. Lamela Rivera, Univ. Carlos III de Madrid (Spain) ..... [9539-34]

17:45: **Light fluence correction for quantitative determination of tissue absorption coefficient using Multispectral Optoacoustic Tomography**, Frederic M. Brochu, Univ. of Cambridge (United Kingdom); Sarah E. Bohndiek, James Joseph, Michal Tomaszewski, Univ. of Cambridge (United Kingdom) and Cancer Research UK (United Kingdom) ..... [9539-35]

**SESSION 8**

LOCATION: ROOM 11  
TUE 16:00 TO 17:30

Advances in OCT Technology

Session Chair: **Robert A. Huber**, Univ. zu Lübeck (Germany)

16:00: **Heartbeat optical coherence tomography** (*Invited Paper*), Tianshi Wang, Erasmus MC (Netherlands); Tom Pfeiffer, Ludwig-Maximilians-Univ. München (Germany); Evelyn Regar M.D., Erasmus MC (Netherlands); Wolfgang Wieser, Ludwig-Maximilians-Univ. München (Germany); Heleen M. M. van Beusekom, Charles T. Lancee, Geert Springeling, Ilona Peters, Antonius F. W. van der Steen, Erasmus MC (Netherlands); Robert A. Huber, Univ. zu Lübeck (Germany); Gijs van Soest, Erasmus MC (Netherlands) ..... [9541-39]

16:30: **Single input state, single-mode fiber-based polarization sensitive OFDI by eigenpolarization referencing**, Norman Lippok, Martin Villiger, Jun Chang-Su, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA); Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) and Harvard-MIT Health Sciences and Technology (USA) ..... [9541-40]

16:45: **Fully automated 1.5 MHz FDML laser with more than 100mW output power at 1310 nm**, Wolfgang Wieser, Thomas Klein, Wolfgang Draxinger, Optores GmbH (Germany) and Ludwig-Maximilians-Univ. München (Germany); Robert A. Huber, Univ. zu Lübeck (Germany) . . . [9541-41]

17:00: **Optical palpation: replicating the sense of touch at high resolution using OCT and a compliant stress sensor**, Brendan F. Kennedy, Kelsey M. Kennedy, Shaghayegh Es'haghian, Lixin Chin, David D. Sampson, The Univ. of Western Australia (Australia) ..... [9541-42]

17:15: **Rotational distortion correction in catheter-based optical coherence tomography using speckle decorrelation**, Néstor Uribe-Patarroyo, Wellman Ctr. for Photomedicine (USA); David A. Vader, NinePoint Medical (USA); Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) and Harvard-MIT Health Sciences and Technology (USA) ..... [9541-43]

Conference End.

## CONFERENCE 9537

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

## CONFERENCE 9538

LOCATION: ROOM B32

Diffuse Optical Imaging V

## CONFERENCE 9541

LOCATION: ROOM 11

Optical Coherence Imaging Techniques and Imaging in Scattering Media

### SESSION 5

LOCATION: ROOM 5  
WED 8:15 TO 10:00

#### Clinical and Preclinical Tissue Characterization II

Session Chair: **Riccardo Cicchi**, Istituto Nazionale di Ottica (Italy)

8:15: **Raman spectroscopic characterization and discrimination of inflammatory bowel disease** (*Invited Paper*), Isaac J. Pence, Anita Mahadevan-Jansen, Vanderbilt Univ. (USA) . . . . . [9537-24]

8:45: **Video-rate structured illumination microscopy (VR-SIM) for rapid assessment of fresh surgical margins**, David B. Tulman, Mei Wang, Hillary Z. Kimbrell, Tyler Schlichenmeyer, Sree Mandava, Benjamin R. Lee, J. Quincy Brown, Tulane Univ. (USA) . . . . . [9537-25]

9:00: **Morphological changes in the internal organs in rats with transplanted liver cancer PC-1 at intravenous injection of citrate stabilized iron nanoparticles**, Nikita A. Navolokin, Alla B. Bucharskaya, Olga S. Bessonova, Saratov State Medical Univ. (Russian Federation); Sergey V. German, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Viktor V. Zuev, Saratov State Medical Univ. (Russian Federation); Georgy S. Terentyuk, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Saratov State Medical Univ. (Russian Federation); Galina N. Maslyakova, Saratov State Medical Univ. (Russian Federation); Dmitry A. Gorin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [9537-26]

9:15: **Comparison of the simplified laterally uniform and geometrically realistic optical fiber probe-tissue interface in terms of Monte Carlo simulated diffuse reflectance**, Peter Naglic, Franjo Pernuš, Boštjan Likar, Miran Bürmen, Univ. of Ljubljana (Slovenia) . . . . . [9537-27]

9:30: **Fiber-optic technologies for advanced thermo-therapy applied ex vivo to liver tumors**, Daniele Tosi, Nazarbayev Univ. (Kazakhstan) and Univ. of Limerick (Ireland); Guido Perrone, Alberto Vallan, Andrea Braglia, Yu Liu, Politecnico di Torino (Italy); Edoardo G. Macchi, Giovanni Braschi, Mario Gallati, Univ. degli Studi di Pavia (Italy); Alfredo Cigada, Politecnico di Milano (Italy); Sven Poeggel, Dinesh Babu Duraibabu, Gabriel Leen, Elfed Lewis, Univ. of Limerick (Ireland) . . . . . [9537-28]

9:45: **Pressure effects on optical properties measured by Single Fiber Reflectance spectroscopy**, Xu Zhang, Anouk L. Post, Abel Swaan, Dirk J. Faber, Ton G. Van Leeuwen, Henricus J. C. M. Sterenberg, Academisch Medisch Centrum (Netherlands) . . . . . [9537-29]

Coffee Break . . . . . Wed 10:00 to 10:30

### SESSION 2

LOCATION: ROOM B32  
WED 8:30 TO 10:00

#### Advances in instrumentation and Technology I

Session Chair: **Turgut Durduran**, ICFO - Institut de Ciències Fotòniques (Spain)

8:30: **Non-contact, scanning hyperspectral diffuse optical spectroscopy and diffuse correlation spectroscopy system**, Miguel A. Mireles, Johannes D. Johansson, Parisa Farzam, Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain)[9538-6]

8:45: **Single shot multi-exposure laser speckle contrast imaging with a novel single photon avalanche diode (SPAD) array**, Tanja Dragojevic, ICFO - Institut de Ciències Fotòniques (Spain); Danilo Bronzi, Politecnico di Milano (Italy); Hari M. Varma, Claudia P. Valdes, ICFO - Institut de Ciències Fotòniques (Spain); Clara Castellvi, Institut d'Investigacions Biomèdiques Agustí Pi Sunyer (Spain); Alberto Tosi, Politecnico di Milano (Italy); Carles Justicia, Institut d'Investigacions Biomèdiques Agustí Pi Sunyer (Spain); Franco Zappa, Politecnico di Milano (Italy); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . [9538-7]

9:00: **Can we measure blood flow and optical properties of tissue by diffuse correlation spectroscopy?**, Parisa Farzam, Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain)[9538-8]

9:15: **Time-domain diffuse optics: towards next generation devices**, Davide Contini, Alberto Dalla Mora, Politecnico di Milano (Italy); Simon R. Arridge, Univ. College London (United Kingdom); Fabrizio Martelli, Univ. degli Studi di Firenze (Italy); Alberto Tosi, Gianluca Boso, Politecnico di Milano (Italy); Andrea Farina, Consiglio Nazionale delle Ricerche (Italy); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Edoardo Martinenghi, Alessandro Torricelli, Antonio Pifferi, Politecnico di Milano (Italy) . . . . . [9538-9]

9:30: **Novel information extraction methods and high-speed instrumentation in spatial frequency domain imaging**, Kyle P. Nadeau, Michael T. Ghijsen, Tyler B. Rice, Elliott Kwan, Anthony J. Durkin, Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) . . . . . [9538-10]

9:45: **In-depth quantification by using multispectral time-resolved diffuse optical tomography**, Judy Zouaoui, CEA-LETI (France) and MINATEC (France); Lionel Hervé, MINATEC (France) and CEA-LETI (France); Laura Di Sieno, Politecnico di Milano (Italy); Anne Planat-Chrétien, Michel Berger, CEA-LETI (France) and MINATEC (France); Alberto Dalla Mora, Antonio Pifferi, Politecnico di Milano (Italy); Jacques Derouard, Univ. Grenoble Alpes (France) and Lab. Interdisciplinaire de Physique (France); Jean-Marc Dinten, CEA-LETI (France) and MINATEC (France) . . . . . [9538-11]

Coffee Break . . . . . Wed 10:00 to 10:30

### POSTER PREVIEWS

LOCATION: ROOM 11  
WED 8:30 TO 10:00

Conference End.

CONFERENCE 9536B

LOCATION: ROOM 11

Neurophotronics II

CONFERENCE 9537

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

CONFERENCE 9538

LOCATION: ROOM B32

Diffuse Optical Imaging V

SESSION 5

LOCATION: ROOM 11  
WED 10:30 TO 12:15

Neurophotronics I

Session Chair: **Francesco S. Pavone**, European Lab. for Non-linear Spectroscopy (Italy)

10:30: **Molecular and cellular degeneration of myelin in the spinal cord** (*Invited Paper*), Daniel Cote, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada) . . . . . [9536-33]

11:00: **Monitoring brain response with diffuse optical systems during focal brain injury in intact mouse head**, David Abookasis, Ariel Shochat, Boris Volkov, Ariel Univ. (Israel) . . . . . [9536-34]

11:15: **A hyperspectral time resolved DOT system to monitor physiological changes of the human brain activity**, Frédéric Lange, Françoise Peyrin, Bruno Montcel, CREATIS (France) . . . . . [9536-35]

11:30: **Characterization of cerebral hemodynamics during obstructive sleep apnea**, Clara Gregori Pla, Peyman Zirak, Igor Blanco, Pau Bramon Mora, ICFO - Institut de Ciències Fotòniques (Spain); Ana G. Fortuna M.D., Gianluca Cotto, Anna Mola M.D., Hospital de la Santa Creu i Sant Pau (Spain); Mercedes Mayos, Hospital de Sant Pau i de la Santa Creu (Spain); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [9536-36]

11:45: **Investigation of dendritic spines by STED Nanoscopy**, Nathan Curry, Pierre Mahou, Dorothea Pinotsi, Gabriele S. Kaminski Schierle, Clemens F. Kaminski, Univ. of Cambridge (United Kingdom) . . . . . [9536-37]

12:00: **Optical mapping of neuronal activity with cellular resolution on a brain-wide scale**, Ludovico Silvestri, Istituto Nazionale di Ottica (Italy) and Univ. degli Studi di Firenze (Italy); Nikita Rudinskiy, Massachusetts General Hospital (USA); Marco Paciscopi, M. Caroline Müllenbroich, Irene Costantini, Univ. degli Studi di Firenze (Italy); Leonardo Sacconi, Istituto Nazionale di Ottica (Italy); Paolo Frasconi, Univ. degli Studi di Firenze (Italy); Bradley T. Hyman, Massachusetts General Hospital (USA); Francesco S. Pavone, Univ. degli Studi di Firenze (Italy) . . . . . [9536-38]

SESSION 6

LOCATION: ROOM 5  
WED 10:30 TO 12:15

Minimally Invasive Diagnostics / Laboratory Medicine I

Session Chair: **Gal Shafirstein**, Roswell Park Cancer Institute (USA)

10:30: **Lab-on-a-chip SERS towards clinical application: detection of levofloxacin in simulated body fluid** (*Invited Paper*), Izabella J. Hidi, Karina Weber, Dana Cialla-May, Juergen Popp, Friedrich-Schiller-Univ. Jena (Germany) and Leibniz-Institut für Photonische Technologien e.V. (Germany) . . . . . [9537-30]

11:00: **Surface enhanced Raman spectroscopy for the detection of environmental harmful biomedical substances**, Sophie Patze, Friedrich-Schiller-Univ. Jena (Germany) and Leibniz-Institut für Photonische Technologien e.V. (Germany); Uwe Hübner, Leibniz-Institut für Photonische Technologien e.V. (Germany); Karina Weber, Dana Cialla-May, Juergen Popp, Friedrich-Schiller-Univ. Jena (Germany) and Leibniz-Institut für Photonische Technologien e.V. (Germany) . . . . . [9537-31]

11:15: **Fiber enhanced Raman spectroscopy of biogenic gases**, Torsten Frosch, Stefan Hanf, Tímea Boegoezi, Di Yan, Juergen Popp, Leibniz-Institut für Photonische Technologien e.V. (Germany) [9537-32]

11:30: **Raman spectroscopy of stored red blood cells: evaluating clinically-relevant biochemical markers in donated blood**, Chad G. Atkins, Kevin Buckley, Deborah Chen, Hans G. Schulze, Dana Devine, Michael W. Blades, Robin F. B. Turner, The Univ. of British Columbia (Canada) . . [9537-33]

11:45: **A method to create a universal calibration data set for Raman reconstruction based on Wiener estimation**, Shuo Chen, Quan Liu, Nanyang Technological Univ. (Singapore) . . . . . [9537-34]

12:00: **Detection of propofol concentrations in blood by Raman spectroscopy**, Maciej S. Wróbel, Marcin Gnyba, Gdansk Univ. of Technology (Poland); Rafał D Urniaż, Medical Univ. of Lublin (Poland); Teemu S. Myllylä, Univ. of Oulu (Finland); Malgorzata Jedrzejewska-Szczerska, Gdansk Univ. of Technology (Poland) . . . . . [9537-35]

Lunch/Exhibition  
Break. . . . . Wed 12:15 to 13:45

SESSION 3

LOCATION: ROOM B32  
WED 10:30 TO 12:00

Theory, Algorithms and Modeling

Session Chair: **Hamid Dehghani**, The Univ. of Birmingham (United Kingdom)

10:30: **Analytical solutions of the radiative transport equation for the reflectance and fluorescence from layered media illuminated by a finite beam**, André Liemert, Alwin Kienle, Univ. Ulm (Germany) . . . . . [9538-12]

10:45: **Near infrared topography using low-resolution image reconstruction**, Ryohei Tsuyuki, Kazuki Kurihara, Eiji Okada, Keio Univ. (Japan) . . . . . [9538-13]

11:00: **Determining optical properties of epithelial tissues with an obliquely incident beam**, Shelley B. Rohde, Metropolitan State College of Denver (USA); Arnold D. Kim, Univ. of California, Merced (USA) . . . [9538-14]

11:15: **Light propagation through weakly scattering media. A study of Monte Carlo vs. Diffusion theory with application to neuroimaging**, Daniele Ancora, Athanasios Zacharopoulos, Foundation for Research and Technology-Hellas (Greece); Jorge Ripoll, Univ. Carlos III de Madrid (Spain); Giannis Zacharakis, Foundation for Research and Technology-Hellas (Greece) . . . . . [9538-15]

11:30: **Analytical solution of the simplified spherical harmonics equations for spherical media**, Ehsan Edjlali, Univ. de Sherbrooke (Canada) . . . . . [9538-16]

11:45: **Simulation of light propagation in biological tissue using a modified finite volume method applied to three-dimensional radiative transport equation**, Fatmir Asllanaj, Lab. d'Energétique et de Mécanique Théorique et Appliquée (France) and CNRS, LEMTA UMR (France) and Univ. de Lorraine (France); Sylvain Contassot-Vivier, Univ. de Lorraine (France); André Liemert, Alwin Kienle, Univ. Ulm (Germany) . . . . . [9538-17]

# POSTER SESSION · ICM FOYER GROUND FLOOR/BO 12:30 TO 14:00 · WEDNESDAY 24 JUNE 2015

Posters for this conference will be featured on Wednesday. Posters will be available during the lunch/poster session break, and the poster session, with authors present, will be held from 12.30 to 14.00.

## CONFERENCE 9536A

### Advanced Microscopy Techniques IV

**A three-dimensional particle tracking strategy using temporal focusing multiphoton microscopy and astigmatism imaging.** Fan-Ching Chien, National Central Univ. (Taiwan) . . . . . [9536-5]

**Non-linear imaging techniques visualize the lipid profile of *C. elegans*.** Meropi Mari, Foundation for Research and Technology-Hellas (Greece); Barbara Petanidou, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece); Konstantinos Palikaras, Foundation for Research and Technology-Hellas (Greece); Costas Fotakis, Nektarios Tavernarakis, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece); George Filippidis, Foundation for Research and Technology-Hellas (Greece) . [9536-24]

**Third Harmonic Generation microscopy as a diagnostic tool for the investigation of microglia BV-2 and breast cancer cells activation.** Evangelia Gavgiotiaki, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece); George Filippidis, Sotiris Psilodimitrakopoulos, Foundation for Research and Technology-Hellas (Greece); Haris Markomanolaki, Maria Kalognomou, Sofia Agelaki, Vasilios Georgoulas, Irene Athanassakis, Univ. of Crete (Greece) . . . . . [9536-25]

**Multiphoton microscopic imaging for cancer analysis in a microengineered 3D cell culture platform.** Ki-Hwan Nam, Korea Basic Science Institute (Korea, Republic of); Weichuan Gao, College of Optical Sciences, The Univ. of Arizona (USA); Ji Yong Bae, Kye-Sung Lee, Geon-Hee Kim, Korea Basic Science Institute (Korea, Republic of); Thomas D. Milster, Young-Sik Kim, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [9536-26]

**Nanosecond Two-photon excitation fluorescence imaging with a multi color fiber MOPA laser.** Sebastian Karpf, Ludwig-Maximilians-Univ. München (Germany); Matthias Eibl, Ludwig-Maximilians-Univ. München (Germany) and Univ. zu Lübeck (Germany); Robert A. Huber, Univ. zu Lübeck (Germany) and Ludwig-Maximilians-Univ. München (Germany) . . . . . [9536-27]

**Multimodal microscopy analysis of photonic structured layers of chitin-protein in squid internal shell.** Vitor B. Pelegati, Instituto de Física "Gleb Wataghin" (Brazil); Rafaela Rosa-Ribeiro, Univ. Estadual de Campinas (Brazil); Mariana O. Baratti, INFABiC - National Institute of Science and Technology on Photonics Applied to Cell Biology (Brazil); Hernandes F. Carvalho, Carlos L. César, Univ. Estadual de Campinas (Brazil) and INFABiC - National Institute of Science and Technology on Photonics Applied to Cell Biology (Brazil) . . . . . [9536-28]

**The influence of sample fixation on Collagen SHG at 1060 nm to 1300 nm excitation.** Benjamin Sauer, Salah A. Mohammed, Mario Pieper, Gereon Hüttmann, Detlev Schult-Badusche, Peter König, Univ. zu Lübeck (Germany) . . . . . [9536-29]

**How an oncogene alters the morphology of an immature hematopoietic cell: a diffraction phase microscopy study.** Cristina E. Martínez-Torres, Ecole Normale Supérieure de Lyon (France); Bastien Laperrousaz, Ecole Normale Supérieure de Lyon (France) and Ctr. de Recherche en Cancérologie de Lyon (France); Lotfi Berguiga, Ecole Normale Supérieure de Lyon (France); Veronique Maguer-Satta, Ctr. de Recherche en Cancérologie de Lyon (France); Alain Arneodo, Françoise Argoul, Ecole Normale Supérieure de Lyon (France) . . . . . [9536-30]

**In vivo characterization of early stage ionizing radiation-induced skin injuries in a mouse model using two-photon microscopy.** Won Hyuk Jang, Pohang Univ. of Science and Technology (Korea, Republic of); Sehwan Shim, Won-Suk Jang, Sunhoo Park, Korea Institute of Radiological & Medical Sciences (Korea, Republic of); Ki Hean Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [9536-31]

**An automated tool for 3d tracking of single molecules in living cells.** Lucia Gardini, Marco Capitanio, European Lab. for Non-linear Spectroscopy (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Istituto Nazionale di Ottica (Italy) . . . . . [9536-32]

**Visual evoked potential and  $\gamma$  band information flow of stereoscopic vision in brain networks.** Lidong Xing, Xiao Wang, Zhiyu Qian, Desheng Fang, Nanjing University of Aeronautics and Astronautics (China) . . . . . [9536-49]

**Atomic force microscopy enhanced with fluorescence lifetime imaging.** Vladislav I Shcheslavskiy, Becker & Hickl GmbH (Germany); Artem Shelaev, NT-MDT (Russian Federation); Wolfgang Becker, Becker & Hickl GmbH (Germany); Pavel Dorozhkin, NT-MDT (Russian Federation) . . . . . [9536-50]

**New frontiers in polarized light microscopy for live cell imaging.** Rudolf Oldenbourg, Marine Biological Laboratory (USA) . . . . . [9536-51]

**Comparison of 3D printed and regular lens performances on laser scanning confocal microscope.** Firat Sansal, Bogaziçi Ünv (Turkey); Yigit Daghan Gokdel, Istanbul Bilgi University (Turkey) . . . . . [9536-52]

## CONFERENCE 9536B

### Neurophotonics II

**In vivo investigating the correlation between the reduced scattering coefficient and intracranial pressure by using near-infrared spectrum.** Wei Tao Li, Zhiyu Qian, Li Dong Xing, Ling Tao, Ningkun Deng, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [9536-44]

**Novel near infrared sensors for hybrid BCI applications.** Rand Kasim M. Almajidy, Univ. of Freiburg (Germany) and Univ. zu Lübeck (Germany) and Univ. of Diyala (Iraq); Khang S. Le, Univ. of Kentucky (USA); Ulrich G. Hofmann, Univ. of Freiburg (Germany) . . . . . [9536-45]

**Optical Neural Stimulation Modeling on Degenerative Neocortical Neural Networks.** Mihail Zverev, Félix Fanjul-Vélez, Irene Salas-García, José L. Arce-Diego, Univ. de Cantabria (Spain) . . . . . [9536-46]

**Modified Beer-Lambert law for blood flow.** Wesley B. Baker, David R. Busch, Ashwin B. Parthasarathy, Tiffany Ko, Rickson C. Mesquita, Kenneth Abramson, Univ. of Pennsylvania (USA); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Joel H. Greenberg, The Univ. of Pennsylvania Health System (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA) . [9536-53]

## CONFERENCE 9538

### Diffuse Optical Imaging V

**Methodology of manufacturing of solid tissue-like phantoms with absorption spectra of oxy- and deoxy-hemoglobin.** Przemyslaw Pulawski, Marcin Botwicz, Stanislaw Wojtkiewicz, Piotr Sawosz, Michal Kacprzak, Adam Liebert, Nalecz Institute of Biocybernetics and Biomedical Engineering PAS (Poland) . . . . . [9538-43]

**Surface layering effect of diluted Intralipid.** Florian Foschum, Nico Bodenschatz, Philipp Krauter, Steffen Nothelfer, André Liemert, Emanuel C. Simon, Sabrina Kröner, Alwin Kienle, Univ. Ulm (Germany) . . . . . [9538-44]

**A new volume scanner.** John L. Holdsworth, Galiya Sharafutdinova, Levi Tegg, The Univ. of Newcastle (Australia); Ivan A. Lazarte, Univ. of Santo Tomas (Philippines); Elham Vafa, Stefan Andersson-Engels, Lund Univ. (Sweden) . . . . . [9538-45]

**Monitoring the injured brain: registered, patient specific atlas models to improve accuracy of recovered brain saturation values.** Michael T. Clancy, Antonio Belli, David Davies, Samuel J. E. Lucas, Zhangjie Su, Hamid Dehghani, The Univ. of Birmingham (United Kingdom) . . . . . [9538-46]

**Cortical model including the structure of the blood vessels for optical intrinsic signal imaging.** Yu Yoshimori, Takahiro Kikuchi, Keio Univ. (Japan); Hiroyuki Takawa, Hiroshi Kawaguchi, Hiroshi Ito, National Institute of Radiological Sciences (Japan); Eiji Okada, Keio Univ. (Japan) . . . . . [9538-47]

**CW fluorescence imaging of tissue like media in reflectance geometry.** Nicolás A. Carbone, Daniela I. Iriarte, Juan A. Pomarico, Univ. Nacional del Centro de la Provincia de Buenos Aires (Argentina); Dirk Grosenick, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany) . . . [9538-48]

**Assessment of contrast-to-noise for the statistical moments of distributions of times of flight of photons obtained at different source-detector separations: a Monte Carlo study.** Dariusz Janusek, Daniel Milej, Stanislaw Wojtkiewicz, Adam Liebert, Nalecz Institute of Biocybernetics and Biomedical Engineering PAS (Poland) . . [9538-49]

**Determination of the optical properties of multilayered phantoms by time-resolved reflectance measurements.** Héctor A. García, Daniela I. Iriarte, Juan A. Pomarico, Univ. Nacional del Centro de la Provincia de Buenos Aires (Argentina); Dirk Grosenick, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [9538-50]

**Time-resolved transmittance: a comparison of the diffusion model approach with Monte Carlo simulations.** Ramona Rothfischer, Dirk Grosenick, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [9538-51]

**Assessment of tissue optical parameters in a spherical geometry using three different optical spectroscopy methods: comparison based on a theoretical approach.** Fabrice Vaudelle, L'Univ. Nantes Angers Le Mans (France) and Ecole Nationale Supérieure d'Arts et Métiers (France); Mohamed Lamine Askoura, Groupe ESA (France) and Ecole Nationale Supérieure d'Arts et Métiers (France); Jean-Pierre M. L'Huillier, Ecole Nationale Supérieure d'Arts et Métiers (France) and L'Univ. Nantes Angers Le Mans (France) . . . [9538-52]

**Fiber-based hybrid probe for non-invasive cerebral monitoring in neonatology.** Matthias Rehberger, Fraunhofer Institute for Production Technology IPT (Germany); Martina Giovannella, Marco Pagliuzzi, ICFO - Institut de Ciències Fotòniques (Spain); Udo Weigel, HemoPhotonics S.L. (Spain); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Davide Contini, Politecnico di Milano (Italy); Lorenzo Spinelli, Istituto di Fotonica e Nanotecnologie CNR (Italy); Antonio Pifferi, Alessandro Torricelli, Politecnico di Milano (Italy); Robert Schmitt, Fraunhofer Institute for Production Technology IPT (Germany) . . [9538-54]



# POSTER SESSION · ICM FOYER GROUND FLOOR/BO

## 12:30 TO 14:00 · WEDNESDAY 24 JUNE 2015

Poster authors: Please set up posters on the morning of your session before or during the morning coffee break. Plan to stand by your poster to discuss it with session attendees on the day of your session from 12.30 to 14.00. Please remove your poster following the poster session, as posters left on the boards will be discarded.

**Enhancing fluorescence diffuse optical tomography (fDOT) system by creating prior information by means of elastically deformed generic mouse atlases**, Athanasios Zacharopoulos, Foundation for Research and Technology-Hellas (Greece); Martin Schweiger, University College London, Department of Computer Science (United Kingdom); Giannis Zacharakis, Foundation for Research and Technology-Hellas (Greece); Jorge Ripoll, Department of Bioengineering and Aerospace Engineering, Universidad Carlos III of Madrid, (Spain) . . . . . [9538-55]

### CONFERENCE 9539

#### Opto-Acoustic Methods and Applications in Biophotonics II

**Portable, high-speed photoacoustic microscopy scanner for in vivo deep imaging of skin**, Taiichiro Ida, Yasushi Kawaguchi, Advantest Corp. (Japan); Shunichi Sato, National Defense Medical College (Japan) . . . . . [9539-36]

**Characterisation of a PVCP based tissue-mimicking phantom for Quantitative Photoacoustic Imaging**, Martina B. Fonseca, Univ. College London (United Kingdom); Bajram Zeqiri, National Physical Lab. (United Kingdom); Paul C. Beard, Benjamin T. Cox, Univ. College London (United Kingdom) . . . . . [9539-37]

**Improved synthetic aperture focusing technique in optoacoustic imaging**, Jake Turner, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany); Héctor Estrada, Helmholtz Zentrum München GmbH (Germany); Moritz Kneipp, Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany) . . . . . [9539-38]

**Geometrical super-resolution for planer optoacoustic imaging**, Hailong He, Helmholtz Zentrum München GmbH (Germany) and Technische Univ. München (Germany); Subhamoy Mandal, Andreas Buehler, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [9539-39]

**Sensitivity analysis of a non-contact holographic photoacoustic tomography approach**, Christian Buj, Univ. zu Lübeck (Germany); Jens Horstmann, Medizinisches Laserzentrum Lübeck GmbH (Germany); Ralf Brinkmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Univ. zu Lübeck (Germany) . . . . . [9539-40]

**A system analysis and image reconstruction tool for optoacoustic imaging with finite-aperture detectors**, Yiyong Han, HMGU (Germany); Vasilis Ntziachristos, Amir Rosenthal, Helmholtz Zentrum München GmbH (Germany) . . . . . [9539-41]

**Real-time monitoring of indocyanine green perfusion in human finger vasculature by means of optoacoustic tomography**, Christian Lutzweiler, Helmholtz Zentrum München GmbH (Germany); Reinhard Meier, Ernst J. Rummeny M.D., Klinikum Rechts der Isar (Germany); Vasilis Ntziachristos, Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) . . . . . [9539-42]

**Speed-of-sound correction for photoacoustic and laser-ultrasound imaging with an integrating cylindrical detector**, Guenther Paltauf, Gerhild Wurzing, Robert Nuster, Karl-Franzens-Univ. Graz (Austria) . . . . . [9539-43]

**Error estimates for universal backprojection based photoacoustic tomography**, Prabodh K. Pandey, Naren Naik, Prabhat Munshi, Asima Pradhan, Indian Institute of Technology Kanpur (India) . . . . . [9539-44]

**Image reconstruction in cross-sectional optoacoustic tomography based on non-negative constrained model-based inversion**, Lu Ding, Xosé Luis Deán-Ben, Christian Lutzweiler, Daniel Razansky, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [9539-45]

**Light excitation methods for five dimensional optoacoustic imaging**, Xosé Luis Deán-Ben, Thomas Felix Fehm, Sven Gottschalk, Erwin Bay, Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) . . . . . [9539-46]

### CONFERENCE 9540

#### Novel Biophotonics Techniques and Applications III

**Optical properties of the chemotherapy drugs used in the central nervous system lymphoma therapy: monitoring drug delivery**, Teemu S. Myllylä, Alexey P. Popov, Lukasz Surazynski, J. Oinas, Olga Bibikova, Alexander V. Bykov, Univ. of Oulu (Finland); Maciej S. Wróbel, Marcin Gnyba, Małgorzata Jedrzejewska-Szczerska, Gdansk Univ. of Technology (Poland); Outi Kuittinen M.D., Univ. I Oslo (Finland) . . . . . [9540-23]

**Effect LED extracorporeal blood irradiation on the dynamics of the immune status of primary inoperable lung cancer patients**, Lena Sheiko M.D., Lena Zlatnic D.D.S., Alla Shikhlyarova M.D., Rostov Research Oncological Institute (Russian Federation) . . . . . [9540-28]

**Tip enhanced Raman scattering of bacillus subtilis spores**, Giulia Rusciano, Univ. degli Studi di Napoli Federico II (Italy); Gianluigi Zito, Università di Napoli (Italy); Giuseppe Pesce, Antonio Sasso, università Federico II (Italy); Rachele Istitico, Università di Napoli (Italy); Ezio Ricca, Univ. degli Studi di Napoli Federico II (Italy) . . . . . [9540-29]

**Visible optical radiation generates bactericidal effect applicable for inactivation of health care associated germs demonstrated by inactivation of E. coli and B. subtilis using 405 nm and 460 nm light emitting diodes**, Katharina Hoenes, Felix Stangl, Michael Sift, Martin Hessling, Hochschule Ulm (Germany) . . . . . [9540-30]

**Quantitatively index imaging of tissue slices with scanning focused refractive index microscopy**, Qing Ye, Tengqian Sun, Xiaowan Wang, Jin Wang, Zhi-Chao Deng, Jian-Chun Mei, Wen-Yuan Zhou, Chun-Ping Zhang, Jianguo Tian, Nankai Univ. (China) . . . . . [9540-31]

**Epithelial cancers and photon migration: Monte Carlo simulations and diffuse reflectance measurements**, Jerome Tubiana, Ecole Normale Supérieure (France) and MobileOCT (Israel); David Levitz, MobileOCT (Israel) . . . . . [9540-32]

**Diagnosis of uterine cervix cancer using Müller polarimetry: a comparison with histopathology**, Jean Rehbinder, Stanislas Deby, Huda Haddad, LPICM, Ecole polytechnique, CNRS (France); Benjamin Teig, Service d'anatomie pathologique, CHU de Bicêtre (France); André Nazac, Service de Gynécologie Obstétrique, CHU de Bicêtre AP-HP (France); Angelo Pierangelo, François Moreau, LPICM, Ecole polytechnique, CNRS (France) . . . . . [9540-34]

**Anticancer photodynamic therapy based on the use of a microsystem**, Elzbieta Jastrzebska, Natalia Bulka, Kamil Zukowski, Michal Chudy, Zbigniew Brzozka, Artur Dybko, Warsaw Univ of Technology (Poland) . . . . . [9540-35]

**Second harmonic generation (SHG) and two-photon fluorescence (TPF) contrast imaging in biomaterial analysis**, Xuye Lang, UCR (USA); Julia G Lyubovitsky, Univ of California Riverside (USA) . . . . . [9540-36]

# WEDNESDAY - 24 JUNE 2015

## CONFERENCE 9536B

LOCATION: ROOM 11

### Neurophotronics II

#### SESSION 6

LOCATION: ROOM 11  
WED 14:00 TO 15:30

### Neurophotronics II

Session Chair: **Francesco S. Pavone**, European Lab. for Non-linear Spectroscopy (Italy)

14:00: **Cellular interactions in disease: nonlinear optics for in vivo studies** (*Invited Paper*), Nozomi Nishimura, Cornell Univ. (USA) . . . . . [9536-39]

14:30: **Adaptive aberration correction for whole brain imaging**, M. Caroline Müllenbroich, Univ. degli Studi di Firenze (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Ludovico Silvestri, Leonardo Sacconi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Francesco S. Pavone, Univ. degli Studi di Firenze (Italy) and European Lab. for Non-linear Spectroscopy (Italy) and International Ctr. for Computational Neurophotronics (Italy) . . . . . [9536-40]

14:45: **A versatile new technique to clear mouse and human brain**, Irene Costantini, Antonino Paolo Di Giovanna, Univ. degli Studi di Firenze (Italy); Anna Letizia Allegra Mascaro, European Lab. for Non-linear Spectroscopy (Italy); Ludovico Silvestri, European Lab. for Non-linear Spectroscopy (Italy); M. Caroline Müllenbroich, Univ. degli Studi di Firenze (Italy); Leonardo Sacconi, European Lab. for Non-linear Spectroscopy (Italy) and Istituto Nazionale di Ottica (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Istituto Nazionale di Ottica (Italy) and Univ. degli Studi di Firenze (Italy) . . . . . [9536-41]

15:00: **Raman-based imaging uncovers the effects of alginate hydrogel implants in spinal cord injury**, Roberta Galli, Sandra Tamosaityte, Maria Koch, Technische Univ. Dresden (Germany); Kerim H. Sitoci-Ficici, Robert Later, Ortrud Uckermann, Univ. Carl Gustav Carus Dresden (Germany); Rudolf Beiermeister, Michael Gelinsky, Technische Univ. Dresden (Germany); Gabriele Schackert, Matthias Kirsch, Univ. Carl Gustav Carus Dresden (Germany); Edmund Koch, Gerald Steiner, Technische Univ. Dresden (Germany) . . . . . [9536-42]

15:15: **Visualization of hemodynamics and light scattering in exposed brain of rat using multispectral image reconstruction based on Wiener estimation method**, Izumi Nishidate, Tomohiro Ishizuka, Keiichi Yoshida, Tokyo Univ. of Agriculture and Technology (Japan); Satoko Kawachi, Shunichi Sato, National Defense Medical College (Japan); Manabu Sato, Yamagata Univ. (Japan) . . . . . [9536-43]

Conference End.

## CONFERENCE 9537

LOCATION: ROOM 5

### Clinical and Biomedical Spectroscopy and Imaging IV

#### SESSION 7

LOCATION: ROOM 5  
WED 13:45 TO 15:30

### Minimally Invasive Diagnostics / Laboratory Medicine II

Session Chair: **Quan Liu**, Nanyang Technological Univ. (Singapore)

13:45: **Registration of intracellular pH in cancer cells with genetically encoded ratiometric sensor** (*Invited Paper*), Irina Druzhkova, Marina V. Shirmanova, Maria Lukina, Nizhny Novgorod State Medical Academy (Russian Federation); Varvara V. Dudenkova, Nizhny Novgorod State Medical Academy (Russian Federation) and N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Tatyana Sergeeva, Nizhny Novgorod State Medical Academy (Russian Federation); Vsevolod V. Belousov, Nizhny Novgorod State Medical Academy (Russian Federation) and Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation); Sergey A. Lukyanov, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation) and Nizhny Novgorod State Medical Academy (Russian Federation); Elena V. Zagaynova M.D., Nizhny Novgorod State Medical Academy (Russian Federation) and N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation) . . . . . [9537-36]

14:15: **Aqueous glucose measurement using differential absorption based frequency domain optical coherence tomography at wavelengths of 1310 nm and 1625 nm**, Pauline John, Murali Manoj, Sujatha Narayanan Unni, Nilesh J. Vasa, Indian Institute of Technology Madras (India); Suresh R. Rao, Sri Ramachandra Medical College and Research Institute (India) . . . . . [9537-37]

14:30: **Towards real-time medical diagnostics using hyperspectral imaging technology**, Asgeir Bjorgan, Lise L. Randeberg, Norwegian Univ. of Science and Technology (Norway) . . . . . [9537-38]

14:45: **Mid-infrared spectroscopic characterisation of an ultra-broadband tunable EC-QCL system intended for biomedical applications**, Thorsten Vahlsing, Fachhochschule Südwestfalen (Germany); Harald Moser, Technische Univ. Wien (Austria); Markus Grafen, Konstantinos Nalpanitidis, Ruhr-Univ. Bochum (Germany); Markus Brandstetter, Research Ctr. for Non Destructive Testing GmbH (Austria); Herbert M. Heise, Fachhochschule Südwestfalen (Germany); Bernhard Lendl, Technische Univ. Wien (Austria); Dieter Ihrig, Fachhochschule Südwestfalen (Germany); Steffen Leonhardt, Helmholtz Institute for Biomedical Engineering, RWTH Aachen University (Germany); Andreas Ostendorf, Ruhr-Univ. Bochum (Germany) . . . . . [9537-39]

15:00: **Spectroscopic imaging of blood vessels only near the skin surface for non-invasive blood glucose measurement**, Masaru Fujiwara, Shun Sato, Pradeep K. Abeygunawardhana, Satoru Suzuki, Akira Nishiyama, Kenji Wada, Ichiro Ishimaru, Kagawa Univ. (Japan) . . . . . [9537-40]

15:15: **In-situ monitoring of blood glucose level for dialysis machine by AAA-battery-size ATR Fourier spectroscopy**, Satsuki Hosono, Shun Sato, Akane Ishida, Yo Suzuki, Daichi Inohara, Kosuke Nogo, Pradeep K. Abeygunawardhana, Satoru Suzuki, Akira Nishiyama, Kenji Wada, Ichiro Ishimaru, Kagawa Univ. (Japan) . . . . . [9537-41]

Coffee Break . . . . . Wed 15:30 to 16:00

## CONFERENCE 9538

LOCATION: ROOM B32

### Diffuse Optical Imaging V

#### SESSION 4

LOCATION: ROOM B32  
WED 14:00 TO 15:30

### Clinical and Preclinical Applications of Diffuse Optics I

Session Chair: **Paola Taroni**, Politecnico di Milano (Italy)

14:00: **Accounting for systematic errors in bioluminescence imaging to improve quantitative accuracy**, Shelley L. Taylor, Tracey Perry, Iain B. Styles, Mark Cobbold, Hamid Dehghani, The Univ. of Birmingham (United Kingdom) . . . . . [9538-18]

14:15: **Deep tissue blood flow imaging with speckle contrast optical tomography** (*Invited Paper*), Claudia P. Valdes, Hari M. Varma, Tanja Dragojevic, Anna K. Kristoffersen, ICFO - Institut de Ciències Fotòniques (Spain); Clara Castellvi, Carles Justicia, El Instituto de Investigaciones Biomédicas de Barcelona (Spain) and Consejo Superior de Investigaciones Científicas (Spain) and Institut d'Investigacions Biomèdiques Agustí Pi Sunyer (Spain); Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) and Washington Univ. in St. Louis (USA); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [9538-19]

14:45: **Monitoring hemodynamics and oxygenation of the kidney in rats by a combined near-infrared spectroscopy and invasive probe approach**, Dirk Grosenick, Physikalisch-Technische Bundesanstalt (Germany); Kathleen Cantow, Karen Arakelyan, Charité Universitätsmedizin Berlin (Germany); Heidrun Wabnitz, Physikalisch-Technische Bundesanstalt (Germany); Bert Flemming, Angela Skälweit, Mechthild Ladwig, Charité Universitätsmedizin Berlin (Germany); Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany); Thoralf Niendorf, Max-Delbrück-Ctr. für Molekulare Medizin Berlin-Buch (Germany); Erdmann Seeliger, Charité Universitätsmedizin Berlin (Germany) . . . . . [9538-20]

15:00: **Optical investigation of antiangiogenic therapy in renal cell carcinoma**, Johannes D. Johansson, Parisa Farzam, Miguel A. Mireles, ICFO - Institut de Ciències Fotòniques (Spain); Gabriela Jimenez Valerio, Maria del Mar Martinez Lozano, Oriol Casanova, Institut d'Investigació Biomèdica de Bellvitge (Spain); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [9538-21]

15:15: **Time-resolved diffuse optical tomography for non-invasive flap viability assessment: pre-clinical tests on rats**, Laura Di Sieno, Politecnico di Milano (Italy); Georges Bettge, CHU Grenoble (France) and INSERM (France) and Univ. Grenoble Alpes, (France); Michel Berger, CEA-LETI (France); Cynthia Hamou, CHU Grenoble (France) and INSERM (France) and Univ. Grenoble Alpes (France); Marion Aribert, INSERM (France) and Univ. Grenoble Alpes (France); Alberto Dalla Mora, Politecnico di Milano (Italy); Agathe Puszka, INSERM (France) and Univ. Grenoble Alpes (France) and CEA-LETI (France); Henri Grateau, CEA-LETI (France); Davide Contini, Politecnico di Milano (Italy); Lionel Hervé, CEA-LETI (France); Jean-Luc Coll, INSERM (France) and Univ. Grenoble Alpes (France); Jean-Marc Dinten, CEA-LETI (France); Antonio Pifferi, Politecnico di Milano (Italy); Anne Planat-Chrétien, CEA-LETI (France) [9538-22]

Coffee Break . . . . . Wed 15:30 to 16:00

## CONFERENCE 9540

LOCATION: ROOM B21

### Novel Biophotonics Techniques and Applications III

#### SESSION 1

LOCATION: ROOM B21  
WED 14:00 TO 15:15

### Novel Point of Care Technologies

Session Chair: **I. Alex Vitkin**, Ontario Cancer Institute (Canada)

14:00: **Optical blood coagulation sensing in patients** (*Invited Paper*), Seemantini K. Nadkarni, Markandey M. Tripathi, Harvard Medical School (USA) and Massachusetts General Hospital (USA); Diane M. Tshikudi, Massachusetts General Hospital (USA); Zeinab Hajjarin Kashany, Harvard Medical School (USA) and Massachusetts General Hospital (USA) . . . . . [9540-1]

14:30: **Organic optoelectronic sensors for biomedical applications**, Ashu K. Bansal, Shuoben Hou, Olena Kulyk, Eric M. Bowman, Ifor D. Samuel, Univ. of St. Andrews (United Kingdom) [9540-2]

14:45: **Near infrared surface plasmon resonance imaging system**, Aurore Olivéro, Alexandra Sereda, Lab. Charles Fabry (France) and HORIBA Scientific (France); Julien Moreau, Michael T. Canva, Lab. Charles Fabry (France) . . . . . [9540-4]

15:00: **Array sensor: plasmonic improved optical resonance methods and instrument for biomedical diagnostics**, Vladimir A. Saetchnikov, Elina A. Tcherniavskaia, Belarusian State Univ. (Belarus); Anton V. Saetchnikov, Belarusian State Univ. (Belarus) and Ruhr-Univ. Bochum (Germany); Gustav Schweiger, Andreas Ostendorf, Ruhr-Univ. Bochum (Germany) . . . . . [9540-5]

Coffee Break Wed 15:30 to 16:00

CONFERENCE 9536A

LOCATION: ROOM 11

Advanced Microscopy Techniques IV

CONFERENCE 9537

LOCATION: ROOM 5

Clinical and Biomedical Spectroscopy and Imaging IV

CONFERENCE 9538

LOCATION: ROOM B32

Diffuse Optical Imaging V

CONFERENCE 9540

LOCATION: ROOM B21

Novel Biophotonics Techniques and Applications III

SESSION 1

LOCATION: ROOM 11  
WED 16:00 TO 17:45

Nonlinear Microscopy  
Session Chair: **Peter T. C. So**, Massachusetts Institute of Technology (USA)

- 16:00: **Shot noise limited detection in stimulated Raman scattering microscopy** (*Invited Paper*), Miriam J. B. Moester, Renate Kopp, Freerk Ariese, Juliette Legler, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands).....[9536-1]
- 16:30: **In situ determination of collagen fibrils size via absolute measurements of second harmonic generation signals** (*Invited Paper*), Stéphane Bancelin, Ecole Polytechnique (France) and Ctr. National de la Recherche Scientifique (France) and INSERM (France); Carole Aimé, UPMC Sorbonne Univ. (France) and Univ. Pierre et Marie Curie (France) and Ctr. National de la Recherche Scientifique (France); Ivan Gusachenko, Ecole Polytechnique (France) and Ctr. National de la Recherche Scientifique (France) and INSERM (France); Gaël Latour, Ecole Polytechnique (France) and Ctr. National de la Recherche Scientifique (France) and INSERM (France); Thibaud Coradin, UPMC Sorbonne Univ. (France) and Univ. Pierre et Marie Curie (France) and Ctr. National de la Recherche Scientifique (France); Marie-Claire Schanne-Klein, Lab. d'Optique et Biosciences (France).....[9536-2]
- 17:00: **Hyperspectral stimulated Raman microscopy with two fiber laser sources**, Matthias Eibl, Univ. zu Lübeck (Germany); Sebastian Karpf, Wolfgang Wieser, Thomas Klein, Ludwig-Maximilians-Univ. München (Germany); Robert A. Huber, Univ. zu Lübeck (Germany).....[9536-3]
- 17:15: **Towards two-photon lensless endoscopes: inter-core group delay compensation in a multi-core fiber**, Esben R. Andresen, Institut Fresnel (France); Géraud Bouwmans, Olivier Vainvinq, Univ. des Sciences et Technologies de Lille (France); Serge Monneret, Laurent Gallais, Hervé Rigneault, Institut Fresnel (France).....[9536-4]
- 17:30: **Structural characterization of human cornea under inflation using polarization-resolved SHG microscopy**, Gaël Latour, Univ. Paris-Sud 11 (France) and Ecole Polytechnique (France); Aurelie Benoit, Ecole Polytechnique (France); Jean-Marc Allain, Marie-Claire Schanne-Klein, Ecole Polytechnique (France).....[9536-5]

SESSION 8

LOCATION: ROOM 5  
WED 16:00 TO 17:45

Novel Techniques in Diagnosis, Therapy, and Monitoring  
Session Chair: **Herbert Schneckenburger**, Hochschule Aalen (Germany)

- 16:00: **3d imaging of apoptosis by FRET, light sheet fluorescence and scattering microscopy** (*Invited Paper*), Herbert Schneckenburger, Petra Weber, Sarah Schickinger, Thomas Bruns, Michael Wagner, Verena Richter, Hochschule Aalen (Germany).....[9537-42]
- 16:30: **Imaging the spectral reflectance properties of bipolar radiofrequency-fused bowel tissue**, Neil T. Clancy, Shobhit Arya M.D., Imperial College London (United Kingdom); Danail Stoyanov, Univ. College London (United Kingdom); George B. Hanna M.D., Daniel S. Elson, Imperial College London (United Kingdom)[9537-43]
- 16:45: **Angular and spectrally resolved investigations of yeast cells by light scattering microscopy and goniometric measurements**, Julian Stark, Dennis Müller, Steffen Nothelfer, Alwin Kienle, Institut für Lasertechnologien (Germany).....[9537-44]
- 17:00: **Light scattering microscopy: an appropriate tool for probing apoptosis and tumor cell recognition?**, Herbert Schneckenburger, Verena Richter, Hochschule Aalen (Germany).....[9537-45]
- 17:15: **5-aminolevulinic acid for quantitative seek-and-treat of high-grade dysplasia in Barrett's esophagus cellular models**, Qiyin Fang M.D., Shu-Chi A. Yeh, Michael S. Patterson, David W. Andrews, David Armstrong, Kevin R. Diamond, Joseph E. Hayward, McMaster Univ. (Canada)[9537-46]
- 17:30: **Gold nanorods as photothermal agents and autofluorescence enhancer to track cell death during plasmonic photothermal therapy**, Ravi Kumar Kannadorai, Geraldine G. Y. Chiew, Kathy Qian Luo, Quan Liu, Nanyang Technological Univ. (Singapore).....[9537-47]

Conference End.

SESSION 5

LOCATION: ROOM B32  
WED 16:00 TO 18:15

Advances in instrumentation and Technology II  
Session Chair: **Jean-Marc Dinten**, MINATEC (France)

- 16:00: **Hybridization of Hamamatsu TRS20 time resolved near infrared spectroscopy and HemoPhotonics HemoFloMo diffuse correlation spectroscopy**, Martina Giovannella, ICFO - Institut de Ciències Fotòniques (Spain); Udo M. Weigel, Hemophotonics S.L. (Spain); Zbignevs Marcinkevics, Univ. of Latvia (Latvia); Clara Gregori Pla, Turgut Durdurun, ICFO - Institut de Ciències Fotòniques (Spain).....[9538-23]
- 16:15: **Multi-wavelength time-resolved measurements of diffuse reflectance: depth-resolved estimation of absorption changes during inflow of Indocyanine Green**, Anna Gerega, Daniel Milej, Nalecz Institute of Biocybernetics and Biomedical Engineering PAS (Poland); Wojciech Weigl M.D., Medical Univ. of Warsaw (Poland) and Uppsala Univ. (Sweden); Lukasz Dziuda, Military Institute of Aviation Medicine (Poland); Michal Kacprzak, Stanislaw Wojtkiewicz, Roman Maniewski, Adam Liebert, Nalecz Institute of Biocybernetics and Biomedical Engineering PAS (Poland).....[9538-24]
- 16:30: **Design and construction of a solid switchable phantom for diffuse optical imaging**, Antonio Pifferi, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Fabrizio Martelli, Univ. degli Studi di Firenze (Italy); Lorenzo Spinelli, Andrea Farina, Consiglio Nazionale delle Ricerche (Italy); Rebecca Re, Giovanna Quarto, Sanathana Konugolu Venkata Sekar, Alessandro Torricelli, Rinaldo Cubeddu, Politecnico di Milano (Italy); Mikhail Mazurenka, Hannoversches Zentrum für Optische Technologien (Germany) and Physikalisch-Technische Bundesanstalt (Germany); Rainer Macdonald, Heidrun Wabnitz, Physikalisch-Technische Bundesanstalt (Germany).....[9538-25]
- 16:45: **Broadband time-resolved diffuse optical spectrometer for clinical diagnostics: characterization and in-vivo measurements in the 600-1350 nm spectral range** (*Invited Paper*), Sanathana Konugolu Venkata Sekar, Andrea Farina, Edoardo Martinienghi, Alberto Dalla Mora, Paola Taroni, Antonio Pifferi, Politecnico di Milano (Italy); Turgut Durdurun, Marco Pagliuzzi, Claus Lindner, ICFO - Institut de Ciències Fotòniques (Spain); M. Mora, Institut d'Investigacions Biomèdiques Agustí Pi Sunyer (Spain); Mattia Squarcia, Alvaro Urbano-Ispizua, Univ. de Barcelona (Spain).....[9538-26]
- 17:15: **Characterization of turbid homogeneous phantoms for performance tests in diffuse optical imaging and spectroscopy**, Heidrun Wabnitz, Dieter Richard Taubert, Physikalisch-Technische Bundesanstalt (Germany); Tsukasa Funane, Masashi Kiguchi, Hitachi, Ltd. (Japan); Hideo Eda, The Graduate School for the Creation of New Photonics Industries (Japan); Antonio Pifferi, Alessandro Torricelli, Politecnico di Milano (Italy); Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany).....[9538-27]
- 17:30: **Adjusting sub-diffusive parameters in optical phantoms**, Philipp Krauter, Steffen Nothelfer, Nico Bodenschatz, Univ. Ulm (Germany); Emanuel Simon, Univ. Ulm (Germany); Florian Foschum, Alwin Kienle, Univ. Ulm (Germany).....[9538-28]
- 17:45: **Non-contact quantitative diffuse reflectance spectroscopy**, Veronica Sorgato, CEA-LETI (France); Geneviève Bourg-Heckly, Univ. Pierre et Marie Curie (France) and UPMC Sorbonne Univ. (France); Anne Planat-Chrétien, Michel Berger, Charlotte Emain, CEA-LETI (France); Christine Vever-Bizet, Univ. Pierre et Marie Curie (France) and UPMC Sorbonne Univ. (France); Jean-Marc Dinten, Blandine Roig, Anne Koenig, CEA-LETI (France).....[9538-29]
- 18:00: **Handheld NIR camera for fluorescence-guided sentinel lymph node mapping in gynecological malignancies**, Lukasz Szyk, Stefanie Bonifer, Dirk Grosenick, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany).....[9538-30]

SESSION 2

LOCATION: ROOM B21  
WED 16:00 TO 17:15

Novel Tissue Assessments I  
Session Chair: **Arjen Amelink**, TNO (Netherlands)

- 16:00: **Non-mydriatric video ophthalmoscope to measure fast temporal changes of the human retina** (*Invited Paper*), Ralf-Peter Tornow, Universitätsklinikum Erlangen (Germany); Radim Kolar, Jan Odstroiliik, Brno Univ. of Technology (Czech Republic) and St. Anne's Univ. Hospital Brno (Czech Republic) [9540-6]
- 16:30: **Laser speckle contrast analysis for pulse waveform extraction**, Pedro G. Vaz, Pedro Santos, Univ. de Coimbra (Portugal); Edite M. A. Figueiras, Tampere Univ. of Technology (Finland); Carlos M. B. A. Correia, Univ. de Coimbra (Portugal); Anne Humeau-Heurtier, Univ. d'Angers (France); João M. R. Cardoso, Univ. de Coimbra (Portugal) ... [9540-7]
- 16:45: **Laser speckle analysis synchronised with cardiac cycle**, Pavel Zakharov, Frank Scheffold, Univ. de Fribourg (Switzerland); Bruno Weber, Univ. of Zurich (Switzerland).....[9540-8]
- 17:00: **Spatially offset Raman spectroscopy for photon migration investigations in long bone**, Kay Sowoidnich, STFC Rutherford Appleton Lab. (United Kingdom) and Institute of Orthopaedics & Musculoskeletal Science (United Kingdom); John Churchwell, Institute of Orthopaedics & Musculoskeletal Science (United Kingdom); Kevin Buckley, STFC Rutherford Appleton Lab. (United Kingdom) and Institute of Orthopaedics & Musculoskeletal Science (United Kingdom); Gemma G. Kerns, Institute of Orthopaedics & Musculoskeletal Science (United Kingdom) and Lancaster Univ. (United Kingdom); Allen E. Goodship, Institute of Orthopaedics & Musculoskeletal Science (United Kingdom); Anthony W. Parker, Pavel Matousek, STFC Rutherford Appleton Lab. (United Kingdom) and Institute of Orthopaedics & Musculoskeletal Science (United Kingdom).....[9540-9]

## CONFERENCE 9536A

LOCATION: ROOM 11

### Advanced Microscopy Techniques IV

#### SESSION 2

LOCATION: ROOM 11  
THU 8:15 TO 10:00

#### Wavefront Control, Super-Resolution, Light-Sheet

Session Chair: **Marie-Claire Schanne-Klein**, Lab. d'Optique et Biosciences (France)

8:15: **Subnuclear foci quantification using high-throughput 3D image cytometry** (*Invited Paper*), Dushan N. Wadduwage, National Univ. of Singapore (Singapore); Marcus Parrish, MIT (USA); Heejin Choi, Bevin P. Engelward, Massachusetts Institute of Technology (USA); Paul T. Matsudaira, National Univ. of Singapore (Singapore); Peter T. C. So, Massachusetts Institute of Technology (USA) . . . . . [9536-6]

8:45: **High-throughput super-resolution imaging for mapping the whole mouse brain**, Christopher J. Rowlands, Edward S. Boyden, Peter T. C. So, Massachusetts Institute of Technology (USA) . . . . . [9536-7]

9:00: **Common fluorescent proteins for single-molecule localization microscopy**, Natalia V. Klementieva, Nizhny Novgorod State Medical Academy (Russian Federation); Nina G. Bozhanova, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation); Anton I. Pavlikov, Nizhny Novgorod State Medical Academy (Russian Federation); Natalie M. Mishina, Nizhny Novgorod State Medical Academy (Russian Federation) and Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation); Elena V. Zagaynova M.D., Nizhny Novgorod State Medical Academy (Russian Federation); Konstantin A. Lukyanov, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation) and Nizhny Novgorod State Medical Academy (Russian Federation); Alexander S. Mishin, Nizhny Novgorod State Medical Academy (Russian Federation) and Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation) . . . . . [9536-8]

9:15: **Uniquely identifying cell orientation and sarcomere length in the intact rodent heart with oblique plane remote focussing microscopy**, Alexander D. Corbett, Rebecca A. B. Burton, Gil Bub, Tony Wilson, Univ. of Oxford (United Kingdom) . . . . . [9536-9]

9:30: **Dual collection mode optical microscope with single-pixel detection**, Angel David Rodriguez Jimenez, Pedro J. Clemente Pseudo, Mercedes Fernández-Alonso, Enrique Tajahuerce, Jesús S. Lancis, Univ. Jaume I (Spain) . . . . . [9536-10]

9:45: **Recent developments in light sheet ultramicroscopy imaging techniques**, Saiedeh Saghafi, Klaus Becker, Nina Jaehrling, Christian Hahn, Hans-Ulrich Dodt, Technische Univ. Wien (Austria) . . . . . [9536-11]

Coffee Break . . . . . Thu 10:00 to 10:30

## CONFERENCE 9538

LOCATION: ROOM B32

### Diffuse Optical Imaging V

#### SESSION 6

LOCATION: ROOM B32  
THU 8:45 TO 10:00

#### Clinical and Preclinical Applications of Diffuse Optics II

Session Chair: **Dirk Grosenick**, Physikalisch-Technische Bundesanstalt (Germany)

8:45: **Vascular optical tomographic imaging of peripheral artery disease in diabetic and non-diabetic patients**, Michael A. Khalil, Jennifer W. Hoi, Columbia Univ. (USA); Hyun-Keol Kim, Columbia Univ. Medical Ctr. (USA); Alessandro Marone, Columbia Univ. (USA); Rajeev Dayal M.D., New York Hospital Queens (USA); Gautam Shrikhande M.D., Columbia Univ. Medical Ctr. (USA); Andreas H. Hielscher, Columbia Univ. (USA) and Columbia Univ. Medical Ctr. (USA) . . . . . [9538-31]

9:00: **Time-resolved diffused optical characterization of key tissue constituents of human bony prominence locations**, Sanathana Konugolu Venkata Sekar, Andrea Farina, Edoardo Martinenghi, Alberto Dalla Mora, Paola Taroni, Antonio Pifferi, Politecnico di Milano (Italy); Eugènia Negrodo, Jordi Puig, Roser Escrig, Fundació Lluita contra la Sida (Spain); Quim Rosales, Digest Ctr. Mèdic (Spain); Claus Lindner, ICFO - Institut de Ciències Fotòniques (Spain); Marco Pagliuzzi, ICFO - Institut de Ciències Fotòniques (Spain); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [9538-32]

9:15: **Validation of time domain near infrared spectroscopy in muscle measurements: effect of a superficial layer**, Rebecca Re, Davide Contini, Lucia M. G. Zucchelli, Alessandro Torricelli, Politecnico di Milano (Italy); Lorenzo Spinelli, Consiglio Nazionale delle Ricerche (Italy) . . [9538-33]

9:30: **Modeling of the blood flow in the lower extremities for dynamic diffuse optical tomography of peripheral artery disease**, Alessandro Marone, Jennifer W. Hoi, Michael A. Khalil, Hyun-Keol Kim, Columbia Univ. (USA); Gautam Shrikhande M.D., New York-Presbyterian Hospital (USA) and Columbia Univ. (USA); Rajeev Dayal M.D., New York Hospital Queens (USA); Andreas H. Hielscher, Columbia Univ. (USA) . . . . . [9538-34]

9:45: **Estimation of path length in blood vessels from two-dimensional image of exposed cortex**, Yuji Yamamoto, Takahiro Kikuchi, Yu Yoshimori, Keio Univ. (Japan); Hiroyuki Takuwa, Hiroshi Kawaguchi, Hiroshi Ito, National Institute of Radiological Sciences (Japan); Eiji Okada, Keio Univ. (Japan) . . . [9538-35]

Coffee Break . . . . . Thu 10:00 to 10:30

## CONFERENCE 9540

LOCATION: ROOM B21

### Novel Biophotonics Techniques and Applications III

#### SESSION 3

LOCATION: ROOM B21  
THU 8:30 TO 10:00

#### Novel Tissue Assessments II

Session Chair: **I. Alex Vitkin**, Ontario Cancer Institute (Canada)

8:30: **Optical clearing of articular cartilage: a comparison of clearing agents** (*Invited Paper*), Alexander V. Bykov, Tapio Hautala, Matti Kinnunen, Alexey P. Popov, Sakari Karhula, Simo Saarakkala, Miika T. Nieminen, Univ. of Oulu (Finland); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [9540-11]

9:00: **Enhancement of upconversion deep-tissue imaging using optical clearing**, Alexey P. Popov, Univ. of Oulu (Finland); Evgeny V. Khaydukov, Institute on Laser and Information Technologies (Russian Federation); Alexander V. Bykov, Univ. of Oulu (Finland); Vladimir Semchishen, Institute on Laser and Information Technologies (Russian Federation); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [9540-12]

9:15: **Comparative studies of fluorescence spectroscopy and optical coherence tomography for nonmelanoma skin cancer diagnosis**, Eleni A. Drakaki, Mersini I. Makropoulou-Loukogiannaki, Alexander-Panagiotis A. Serafetinides, Christos Evangelatos, National Technical Univ. of Athens (Greece); Ioannis Sianoudis, Elias Zois, Technological Educational Institute of Athens (Greece); Erieta Chistofidou, Alexandros J. Stratigos, Andreas D. Katsambas, National and Kapodistrian Univ. of Athens (Greece) and Andreas Syggros Hospital (Greece); Christina Antoniou, National and Kapodistrian Univ. of Athens (Greece) . . . [9540-24]

9:30: **Polarization-sensitive autofluorescence spectroscopy of cutaneous tissues**, Ekaterina G. Borisova, Aleksandra Zh. Zhelyazkova, Tsanislava I. Genova, Institute of Electronics (Bulgaria); Elmira P. Pavlova M.D., Univ. Hospital "Tsaritsa Yoanna - ISUL" (Bulgaria); Petranka P. Troyanova, Nikolay Penkov M.D., University hospital Tsaritsa Yoanna-ISUL (Bulgaria); Latchezar A. Avramov, Institute of Electronics (Bulgaria) . . . . . [9540-14]

9:45: **Experimental analysis of bruises in human volunteers using radiometric depth profiling and diffuse reflectance spectroscopy**, Luka Vidovič, Jožef Stefan Institut (Slovenia); Matija Milanič, Boris Majaron, Jožef Stefan Institute (Slovenia) . [9540-15]

Coffee Break . . . . . Thu 10:00 to 10:30

**CONFERENCE 9536A**

LOCATION: ROOM 11

Advanced Microscopy  
Techniques IV

**CONFERENCE 9538**

LOCATION: ROOM B32

Diffuse Optical Imaging V

**CONFERENCE 9540**

LOCATION: ROOM B21

Novel Biophotonics Techniques  
and Applications III

**SESSION 3**

LOCATION: ROOM 11  
THU 10:30 TO 12:45

Phase and Interference Techniques

Session Chair: **Johannes F. de Boer**, Vrije Univ. Amsterdam (Netherlands)

- 10:30: **Multimodal CARS-based nonlinear optical microscopy and optical coherence tomography** (*Invited Paper*), Angelika Unterhuber, Tschackad Kamali, Medizinische Univ. Wien (Austria); Sunil Kumar, Yaron Silberberg, Weizmann Institute of Science (Israel); Wolfgang Drexler, Medizinische Univ. Wien (Austria) . . . . . [9536-12]
- 11:00: **Identification of malaria infected red blood samples by digital holographic quantitative phase microscope**, Nimit R. Patel, Vani K. Chhaniwal, The Maharaja Sayajirao Univ. of Baroda (India); Bahram Javidi, Univ. of Connecticut (USA); Arun Anand, The Maharaja Sayajirao Univ. of Baroda (India) . . . . . [9536-13]
- 11:15: **Principles of orientation-independent DIC microscopy and its application for refractive index measurement**, Michael I. Shribak, Marine Biological Lab. (USA) . . . . . [9536-14]
- 11:30: **Shearing interference microscopy for tomography of living cells**, Gennady G. Levin, Gennady N. Vishnyakov, Vladimir L. Minaev, Mikhail I. Latushko, All-Russian Research Institute for Optical and Physical Measurement (Russian Federation); Valery V. Pickalov, Khristianovich Institute of Theoretical and Applied Mechanics (Russian Federation); Vladimir K. Belyakov, Evgeny P. Sukhenko, Andrey Demyanenko, West Trade LLC (Russian Federation) . . . . . [9536-15]
- 11:45: **Tomographic phase microscopy using optical tweezers**, Mor Habaza, Barak Gilboa, Yael Roichman, Natan T. Shaked, Tel Aviv Univ. (Israel) . . . . . [9536-16]
- 12:00: **Quantitative phase microscopy for the study of bacterial cell growth**, Séverine Coquoz, Marcel Leutenegger, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Jacques Schrenzel, Hôpitaux Univ. de Genève (Switzerland); Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9536-17]
- 12:15: **Lensfree video microscopy: high throughput monitoring and cell tracking of 2D cell cultures**, Cédric Allier, Srikanth Vinjimore, Olivier Cioni, Fabien Momey, Thomas Bordy, Lionel Hervé, MINATEC (France); Sophie Nhu An Morel, CEA-LETI (France); Fabrice P. Navarro Y Garcia, Mathilde Menneteau, MINATEC (France); Bernard Chalmond, Univ. de Cergy-Pontoise (France) and Ecole Normale Supérieure de Cachan (France); Delphine Freida, MINATEC (France) and INSERM (France) and Commissariat à l'Énergie Atomique (France); Eric Sulpice, MINATEC (France) and Commissariat à l'Énergie Atomique (France) and INSERM (France); Xavier Gidrol, MINATEC (France) and Commissariat à l'Énergie Atomique (France) and INSERM (France); Jean-Marc Dinten, MINATEC (France) . . . . [9536-18]
- 12:30: **Wide-field lensfree imaging of tissue slides**, Sophie Nhu An Morel, CEA-LETI (France); Antoine Delon, Univ. Joseph Fourier (France); Pierre Blandin, Thomas Bordy, Olivier Cioni, Lionel Hervé, CEA-LETI (France); Catherine Fromentin, LENS-Ctr. Hospitalier Dr. Schaffner (France); Jean-Marc Dinten, Cédric Allier, CEA-LETI (France) . . . . . [9536-19]
- Lunch/Exhibition Break. . . . . Thu 12:45 to 14:00

**SESSION 7**

LOCATION: ROOM B32  
THU 10:30 TO 12:00

Breast Cancer Imaging and Risk  
Assessment

Session Chair: **Sergio Fantini**, Tufts Univ. (USA)

- 10:30: **Combined dynamic and static optical tomography for prediction of treatment outcome in breast cancer patients** (*Invited Paper*), Jacqueline E. Gunther, Emerson Lim, Hyun-Keol Kim, Molly L. Flexman, Columbia Univ. (USA); Lukas Zweck, Columbia Univ. (USA); Sindhiya Arora, Columbia Univ. (United Kingdom); Susan Refice, Mindy Brown, Herbert Irving Comprehensive Cancer Ctr. (USA); Kevin Kalinsky, Dawn L. Hershman, Herbert Irving Comprehensive Cancer Ctr. (USA) and Columbia Univ. (USA); Andreas H. Hielscher, Columbia Univ. (USA) . . . . . [9538-36]
- 11:00: **Optical study on the dependence of breast tissue composition and structure on subject anamnesis** (*Invited Paper*), Paola Taroni, Giovanna Quarto, Antonio Pifferi, Politecnico di Milano (Italy); Francesca Abbate, Nicola Balestreri, Simona Menna, Enrico Cassano, Istituto Europeo di Oncologia (Italy); Rinaldo Cubeddu, Politecnico di Milano (Italy) . . . . . [9538-37]
- 11:30: **Collagen content as a risk factor in breast cancer: a pilot clinical study**, Antonio Pifferi, Giovanna Quarto, Politecnico di Milano (Italy); Francesca Abbate, Nicola Balestreri, Simona Menna, Enrico Cassano, Istituto Europeo di Oncologia (Italy); Rinaldo Cubeddu, Paola Taroni, Politecnico di Milano (Italy) . . . . . [9538-38]
- 11:45: **Optical discrimination between malignant and benign breast lesions?**, Giovanna Quarto, Antonio Pifferi, Rinaldo Cubeddu, Politecnico di Milano (Italy); Francesca Ieva, Univ. degli Studi di Milano (Italy); Anna Maria Paganoni, Politecnico di Milano (Italy); Francesca Abbate, Enrico Cassano, Istituto Europeo di Oncologia (Italy); Paola Taroni, Politecnico di Milano (Italy) . . . . . [9538-39]
- Lunch/Exhibition Braek. . . . . Thu 12:00 to 14:00

**SESSION 4**

LOCATION: ROOM B21  
THU 10:30 TO 12:15

Shedding Light on Cells

Session Chair: **Arjen Amelink**, TNO (Netherlands)

- 10:30: **Optical measurement of temperature in biological cells under infrared laser light exposure ( $\lambda=800$  nm)** (*Invited Paper*), David Moreau, Claire Lefort, Philippe Leveque, Rodney O'Connor, XLIM Institut de Recherche (France) . . . . . [9540-16]
- 11:00: **Laser guidance-based multiple beam irregularly-shaped-cell patterning system**, Bruce Z. Gao, Clemson Univ. (USA) . . . . . [9540-17]
- 11:15: **Erythrocyte-derived optical nano-vesicles as theranostic agents**, Jenny M. Mac, Vicente Nunez, Baharak Bahmani, Yadir A. Guerrero, Jack C. W. Tang, Valentine I. Vullev, Bahman Anvari, Univ. of California, Riverside (USA) . . . . . [9540-18]
- 11:30: **Possibilities of holographic techniques in laser scanning microscopy**, Yuri N. Zakharov, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation) and Harvard Univ. (USA); Maria Muravyeva, Varvara V. Dudenkova, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Irina V. Mukhina, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation) and Nizhny Novgorod State Medical Academy (Russian Federation); Igor V. Meglinski, Univ. of Otago (New Zealand) and Univ. of Oulu (Finland) . . . . [9540-19]
- 11:45: **Digital holography for recovering 3D shape of red blood cells**, Pasquale Memmolo, Istituto di Cibernetica Eduardo Caianiello (Italy) and Istituto Italiano di Tecnologia (Italy); Lisa Miccio, Francesco Merola, Oriella Gennari, Istituto di Cibernetica Eduardo Caianiello (Italy); Paolo A. Netti, Istituto Italiano di Tecnologia (Italy); Pietro Ferraro, Istituto di Cibernetica Eduardo Caianiello (Italy) . . . . [9540-20]
- 12:00: **Full 3D morphology of diatoms flowing in a microfluidic channel by digital holographic microscopy**, Roberto Savoia, Istituto di Cibernetica Eduardo Caianiello (Italy); Pasquale Memmolo, Istituto Italiano di Tecnologia (Italy); Francesco Merola, Istituto di Cibernetica Eduardo Caianiello (Italy); Lisa Miccio, CNR-ISASI Institute of Applied Sciences & Intelligent Systems "E Caianiello" (Italy); Giuliana D'Ippolito, Angelo Fontana, Istituto di Chimica Biomolecolare (Italy); Pietro Ferraro, Istituto di Cibernetica Eduardo Caianiello (Italy) . . . [9540-21]
- Lunch/Exhibition Break. . . . . Thu 12:15 to 14:00

## CONFERENCE 9536A

LOCATION: ROOM 11

Advanced Microscopy  
Techniques IV

## CONFERENCE 9538

LOCATION: ROOM B32

Diffuse Optical Imaging V

## CONFERENCE 9540

LOCATION: ROOM B21

Novel Biophotonics Techniques  
and Applications III

### SESSION 4

LOCATION: ROOM 11  
THU 14:00 TO 15:00

#### FLIM, FCS

Session Chair: **Emmanuel Beaufrepaire**,  
Ecole Polytechnique (France)

14:00: **Increased metabolic activity detected by FLIM in human breast cancer cells with desmoplastic reaction: a pilot study**, Rodrigo de Andrade Natal, Vitor B. Pelegati, Caroline Bondarik, Guilherme R. A. de Mendonça, Sophie F. M. Derchain, Carmen S. P. Lima, Carlos L. César, Luís O. Z. Sarian, José Vassallo, Univ. Estadual de Campinas (Brazil) ..... [9536-20]

14:15: **Hardware-friendly bi-exponential fluorescence lifetime imaging algorithms and phasor approaches**, David D. Li, Yu Chen, Univ. of Strathclyde (United Kingdom) ..... [9536-21]

14:30: **Characterization of atherosclerotic arterial tissue using combined SHG and FLIM microscopy**, Riccardo Cicchi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Enrico Baria, European Lab. for Non-linear Spectroscopy (Italy); Christian Matthaues, Leibniz-Institut für Photonische Technologien e.V. (Germany); Marta Lange, Institute of Biomedical Engineering and Nanotechnology (Latvia); Annika Lattermann, Universitätsklinikum Jena (Germany); Bernhard R. Brehm, Herz-Neuro-Zentrum Bodensee (Switzerland); Jürgen Popp, Leibniz-Institut für Photonische Technologien e.V. (Germany) and Friedrich-Schiller-Univ. Jena (Germany); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) and Univ. degli Studi di Firenze (Italy) [9536-22]

14:45: **Quantitative confocal fluorescence microscopy of dynamic processes by multifocal fluorescence correlation spectroscopy**, Aleksandar J. Krmpot, Stanko N. Nikolic, Univ. of Belgrade (Serbia); Marco Vitali, OMICRON Energy Solutions GmbH (Germany); Dimitrios K. Papadopoulos, Max-Planck-Institut für molekulare Zellbiologie und Genetik (Germany); Sho Oasa, Faculty of Advanced Life Science, Hokkaido University (Japan); Per Thyberg, KTH Royal Institute of Technology (Sweden); Simone Tisa, Micro Photon Devices S.r.l. (Italy); Masataka Kinjo, Faculty of Advanced Life Science, Hokkaido University (Japan); Lennart Nilsson, Karolinska Institutet (Sweden); Walter J. Gehring, Univ. Basel (Switzerland); Lars Terenius, Rudolf Rigler, Vladana Vukojevic, Karolinska Institutet (Sweden) ..... [9536-23]

Conference End.

### SESSION 8

LOCATION: ROOM B32  
THU 14:00 TO 15:00

#### Brain Monitoring and Imaging II

Session Chair: **Adam T. Eggebrecht**,  
Washington Univ. School of Medicine in St.  
Louis (USA)

14:00: **Hemodynamic response patterns during sleep: a concurrent time-domain fNIRS/EEG study in adults (Invited Paper)**, Stefan P. Koch, Charité Universitätsmedizin Berlin (Germany); Alexander Jelzow, Physikalisch-Technische Bundesanstalt (Germany) and Becker & Hickl GmbH (Germany); Sophie K. Piper, Charité Universitätsmedizin Berlin (Germany); Hellmuth Obrig M.D., Max-Planck-Institut für Kognitions- und Neurowissenschaften (Germany); Renate Wehrle, Max-Planck-Institut für Psychiatrie (Germany); Heidrun Wabnitz, Physikalisch-Technische Bundesanstalt (Germany); Michael Czisch, Max-Planck-Institut für Psychiatrie (Germany); Jens M. Steinbrink, Charité Universitätsmedizin Berlin (Germany) ..... [9538-40]

14:30: **Depressed cerebral blood flow response to hypercapnia in children with obstructive sleep apnea syndrome**, David R. Busch, Madeline E. Winters, The Children's Hospital of Philadelphia (USA); Ann L. McCarthy, Temple Univ. (USA); Jennifer M. Lynch, Tiffany Ko, Univ. of Pennsylvania (USA); John J. Newland, Children's Hospital of Philadelphia (USA); Mary A. Cornaglia, The Children's Hospital of Philadelphia (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA); Carole L. Marcus, Daniel J. Licht, Rui Xiao, Ignacio E. Tapia, The Children's Hospital of Philadelphia (USA) ..... [9538-41]

14:45: **Comparison of neurological NIRS signals during standing Valsalva manoeuvres, pre and post vasoconstrictor injection**, Michael T. Clancy, Antonio Belli, David Davies, Samuel J. E. Lucas, Zhangjie Su, The Univ. of Birmingham (United Kingdom) ..... [9538-42]

Conference End.

### SESSION 5

LOCATION: ROOM B21  
THU 14:00 TO 15:15

#### Novel Tissue Assessments III

Session Chair: **I. Alex Vitkin**, Ontario Cancer  
Institute (Canada)

14:00: **Wavefront shaping based on three-dimensional optoacoustic feedback (Invited Paper)**, Xosé Luis Deán-Ben, Héctor Estrada, Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) ..... [9540-22]

14:30: **Non-invasive diagnosis of cancerous tissues with circularly polarized light**, Britt Kunnen, Callum M. Macdonald, Alexander Doronin, Michael Eccles, Igor V. Meglinski, Univ. of Otago (New Zealand) ..... [9540-13]

14:45: **Intraoperative model based identification of tissue properties using a multimodal and multiscale elastographic measurement approach**, Daniel Claus, Petra M. Schumacher, Univ. Stuttgart (Germany); Thomas Labitzke, Universität Stuttgart (Germany); Marijo Mlikota, Univ. Stuttgart (Germany); Ulrich Weber, Siegfried Schmauder, Universität Stuttgart (Germany); Nicolas Schierbaum, Eberhard Karls Univ. Tübingen (Germany); Tilman Schäffer, Eberhard Karls Universität Tübingen (Germany); Philipp Witmüss, Tanja Teutsch, Univ. Stuttgart (Germany); Christina Tarin, Universität Stuttgart (Germany); Sascha Hoffmann, Universität Stuttgart (Germany) and Eberhard Karls Universität Tübingen (Germany); Florin Andrei Taran, Sara Brucker, Eberhard Karls Universität Tübingen (Germany); Johannes Mischinger, Univ. Stuttgart (Germany) and Eberhard Karls Univ. Tübingen (Germany); Arnulf Stenzel, Eberhard Karls Universität Tübingen (Germany); Wolfgang Osten, Univ. Stuttgart (Germany) ..... [9540-25]

15:00: **Identification and collection of particles with optical fibers**, Sebastian F. Etcheverry, Aziza Sudirman, Walter Margulis, Acreo Swedish ICT AB (Sweden); Fredrik Laurell, KTH Royal Institute of Technology (Sweden) ..... [9540-26]

Conference End.

**A**

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Zhou, Wen-Yuan [9540-31] SPWed  
Zimmermann, Wolfgang [9542-10]  
S2  
Zirak, Peyman [9536-36] S5  
Zito, Gianluigi [9540-29] SPWed  
Zlatnic, Lena [9540-28] SPWed  
Zois, Elias [9540-24] S3  
**Zouaoui, Judy** [9538-11] S2  
Zucchelli, Lucia M. G. [9538-33] S6  
Zuev, Viktor V. [9537-26] S5  
Zverev, Mihail [9536-46] SPS  
Zweck, Lukas [9538-36] S7

## REGISTRATION

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### Onsite Registration and Badge Pick-Up Hours

ICM Foyer West

Sunday 21 June 2015 ..... 7:30 to 17:00  
Monday 22 June 2015 ..... 7:30 to 17:00  
Tuesday 23 June 2015 ..... 8:00 to 17:00  
Wednesday 24 June 2015 ..... 8:30 to 17:00  
Thursday 25 June 2015 ..... 8:30 to 16:00

### Conference Registration

Includes admission to all conference sessions, plenaries, panels, and poster sessions, admission to the World of Photonics Exhibition, Welcome Reception, coffee breaks, and a choice of Proceedings. Student pricing does not include proceedings.

### SPIE/OSA Member, SPIE/OSA Student Member, and Student Pricing

- SPIE/OSA Members receive conference registration discounts. Discounts are applied at the time of registration.
- Student registration rates are available only to undergraduate and graduate students who are enrolled full time and have not yet received their Ph.D. Post-docs may not register as students. A student ID number or proof of student status is required with your registration.

### ECBO Cashier

ICM Foyer West

Open during registration hours

### Registration Payments

If you are paying by cash or cheque as part of your onsite registration, or have questions regarding your registration, visit the ECBO Cashier.

### Receipts and Certificate of Attendance

Preregistered attendees who did not receive a receipt or attendees who need a Certificate of Attendance may obtain those from the ECBO Cashier.

### Badge Corrections

Badge corrections can be made by the ECBO Cashier. Please have your badge removed from the badge holder and marked with your changes before approaching the counter.

### Refund Information

There is a €50 service charge for processing refunds. Requests for refunds must be received by 20 May 2015; all registration fees will be forfeited after this date. Membership dues, SPIE Digital Library subscriptions or Special Events purchased are not refundable.

### U.S. Government Credit Cards

U.S. Government credit card users: have your purchasing officer contact the credit card company and get prior authorization before attempting to register. Advise your purchasing agent that SPIE is considered a 5968 company for authorization purposes.

## AUTHOR/PRESENTER INFORMATION

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### Speaker Check-In and Preview Station

ICM Foyer

Monday through Thursday, Open during registration hours

All conference rooms have a computer workstation, projector, screen, lapel microphone, and laser pointer. All presenters are asked to upload their presentations in Hall BO, where M-Events will be available to help with any questions during registration hours.

### Poster Set-up Instructions

Posters will be featured on Tuesday and Wednesday. Each day will represent a different set of posters. Posters will be available during the lunch/poster session break, and poster sessions, with authors present, will be held Tuesday and Wednesday from 12:30 to 14:00.

Tuesday 23 June 13:00 to 14:00

(Conferences 9537, 9541, 9542)

Wednesday 24 June 13:00 to 14:00

(Conferences 9536, 9538, 9539, 9540)

Poster authors: Please set up posters on the morning of your session before or during the morning coffee break. Plan to stand by your poster to discuss it with session attendees on the day of your session from 12:30 to 14:00. Please remove your poster following the poster session, as posters left on the boards will be discarded.

# GENERAL INFORMATION

## FOOD AND BEVERAGE SERVICES

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### Coffee Breaks

ICM Foyers / Novotel Foyer

Complimentary coffee will be served twice daily, in the Conference Foyer Areas at the times indicated in the programme. Please refer to the individual conference programmes for timings for coffee and lunch breaks.

### Food & Refreshments for Purchase

The ICM has three permanent food-service operations in the foyer area - the ICM Bistro, ICM Bar and ICM Café where guests can purchase food. There is also the "Am See" restaurant, located on the 1st floor above the registration area of the ICM. Lunch at the Novotel is also available to those who are not staying at the hotel.

There are also a number of bars and restaurants located in the "Riem Arkaden" shopping centre on the other side of the underground station for the ICM, "Messestadt West".

## ONSITE SERVICES

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### Internet Access

Complimentary Internet will be available. Connection speeds will depend on the number of users. Please read the SPIE Wireless Internet Service Policy.

### SPIE Conference App

Download the free SPIE Conference App, available for iPhone and Android phones. Search and browse the programme, special events, participants, exhibitors, and more.

### Luggage + Coat Check

Below the registration area in ICM West Entrance

Open during registration hours

Luggage, package, and coat storage are available against charge. Please note this service is only available during registration hours.

### Urgent Message Line

An urgent message line is available during registration hours. Attendees should check the message board in the registration area for any messages held for them.

### The Business Centre

ICM Foyer

Open during registration hours.

Use this service to print your boarding pass at a charge.

## CAR RENTAL

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Call the Hertz International Reservation Center at 1-800-654-3001 in the USA or your local Hertz Reservations Center to receive a special discount for SPIE. Reservations may also

be placed on-line at [www.hertz.com](http://www.hertz.com). You will receive 15% off qualifying Affordable rates at participating locations in Munich.

Be sure to identify yourself as a SPIE attendee. The PC#137480 must be on your advance reservation to receive this special offer. You must present this coupon at the time of rental in order to receive this discount. This special offer is available for rentals from June 15-30, 2015.

## TRAVEL

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### About Munich

Munich, "the city with a heart," is the capital of Bavaria, and has established itself as Germany's high-tech hub (Silicon Bavaria) and is one of the most important industrial and economic centers in the European community. It boasts of such high-tech corporations as BMW and Daimler-Chrysler Aerospace. In addition to being the country's leading university center and hub for insurance, banking, electronic, and mechanical engineering, Munich offers its visitors shopping, music, art, gourmet restaurants, beer gardens, outdoor cafes, ethnic restaurants, popular night-spots, grand cathedrals, and opulent palaces. For more information on Munich and the surrounding area, please refer to the official website for the city of Munich.

### Cross-Country Bus Transport

National cross-country bus services have operated in Germany since 2013. For more information on routes and tariffs, visit [www.FlixBus.com](http://www.FlixBus.com).

### Shuttles, Public Transportation & How to reach the Internationales Congress Center Munich

At Munich Central Station take the underground U2. The journey to the trade fair grounds takes about 17 minutes. [http://www.messe-muenchen.de/en/meta/anreise/anreise\\_2\\_contentmaster.php](http://www.messe-muenchen.de/en/meta/anreise/anreise_2_contentmaster.php).

### Driving Directions and Parking

Visit World of Photonics 2015 "arriving by car" [http://www.messe-muenchen.de/en/meta/anreise/anreise\\_2\\_contentmaster.php](http://www.messe-muenchen.de/en/meta/anreise/anreise_2_contentmaster.php).



# Acceptance of Policies and Registration Conditions

The following Policies and Conditions apply to all SPIE Events. As a condition of registration, you will be required to acknowledge and accept the SPIE Registration Policies and Conditions contained herein.

## Granting Attendee Registration and Admission

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 or remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, who in their sole opinion are not, or 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 any attendee, exhibitor, representative, or vendor 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.

## Misconduct Policy

SPIE is a professional, not-for-profit society committed to providing valuable conference and exhibition experiences. SPIE is dedicated to equal opportunity and treatment for all its members and meeting attendees. Attendees are expected to be respectful to other attendees, SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be asked to leave the event.

## Identification

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials.

Individuals are not allowed to pick up badges for attendees other than themselves. 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.

## Capture and Use of a Person's Image

By registering for an SPIE event, I grant full permission to SPIE to capture, store, use, and/or reproduce my image or likeness by any audio and/or visual recording technique (including electronic/digital photographs or videos), and create derivative works of these images and recordings in any SPIE media now known or later developed, for any legitimate SPIE marketing or promotional purpose.

By registering for an SPIE event, I waive any right to inspect or approve the use of the images or recordings or of any written copy. I also waive any right to royalties or other compensation arising from or related to the use of the images, recordings, or materials. By registering, I 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.

## Payment Method

Registrants for paid elements of the event, who do not provide a method of payment, will not be able to complete their registration. Individuals with incomplete registrations will not be able to attend the conference until payment has been made. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks and wire transfers. Onsite registrations can also pay with Cash.

## Authors/Coauthors

By submitting an abstract, you agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the author registration rate, attend the meeting, and make the presentation as scheduled.
- A full-length manuscript (minimum 6 pages) for any accepted oral or poster presentation will be submitted for publication in the SPIE Digital Library, printed conference Proceedings, and CD. (Some SPIE events have other requirements that the author is made aware of at the time of submission.)
- Only papers presented at the conference and received according to publication guidelines and timelines will be published in the conference Proceedings and SPIE Digital Library (or via the requirements of that event).

## Audio, Video, Digital Recording Policy

Conferences, courses, and poster sessions: For copyright reasons, recordings of any kind are prohibited without prior written consent of the presenter or instructor. Attendees may not capture or use the materials presented in any meeting/course room or in course notes on display without written permission. Consent forms are available at Speaker Check-In. Individuals not complying with this policy will be asked to leave a given session and/or asked to surrender their recording media.

**EXHIBITION HALL:** For security and courtesy reasons, recordings of any kind are prohibited unless one has explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their recording media and to leave the exhibition hall.

Your registration signifies your agreement to be photographed or videotaped by SPIE in the course of normal business. Such photos and video may be used in SPIE marketing materials or other SPIE promotional items.

## Laser Pointer Safety Information/Policy

SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers.

Use of a personal laser pointer represents user's acceptance of liability for use of a non-SPIE-supplied laser pointer. If you choose to use your own laser pointer, it must be tested to ensure <5 mW power output. Laser pointers in Class II and IIIa (<5mW) are eye safe if power output is correct, but output must be verified because manufacturer labeling may not match actual output. Come to Speaker Check-In and test your laser pointer on our power meter. You are required to sign a waiver releasing SPIE of any liability for use of potentially non-safe, personal laser pointers. Misuse of any laser pointer can lead to eye damage.

# SPIE EVENT POLICIES

## Access to Technical and Networking Events

Persons under the age of 18 including babies, carried or in strollers, and toddlers are not allowed in technical or networking events. Anyone 18 or older must register as an attendee. All technical and networking events require a valid conference badge for admission.

## Underage Persons on Exhibition Floor Policy

For safety and insurance reasons:

- No persons under the age of 18 will be allowed in the exhibition area during move-in and move-out.
- Children 14 and older, accompanied by an adult, will be allowed in the exhibition area during open exhibition hours only.
- All children younger than 14, including babies in strollers and toddlers, are not allowed in the exhibition area at any time.

## Unauthorized Solicitation Policy

Unauthorized solicitation in the Exhibition Hall is prohibited. Any non-exhibiting manufacturer or supplier 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 Policy

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 Policy

At SPIE events where wireless is included with your registration, SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

Excessive usage (e.g., streaming video, gaming, multiple devices) reduces bandwidth and increases cost for all attendees. No routers may be attached to the network. Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation. SPIE is not responsible for computer viruses or other computer damage.

## Mobile Phones and Related Devices Policy

Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

## Smoking

For the health and consideration of all attendees, smoking, including e-cigarettes, is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking and e-cigarettes in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

## 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.

## Event Cancellation

If for some unforeseen reason SPIE should have to cancel the event, registration fees processed will be refunded to registrants. Registrants will be responsible for cancellation of travel arrangements or housing reservations and the applicable fees.

## Confidential Reporting of Unethical or Inappropriate Behavior

SPIE is an organization with strong values of responsibility and integrity. Our Ethics Statement and Code of Professional Conduct contain general guidelines for conducting business with the highest standards of ethics. SPIE has established a confidential reporting system for staff & other stakeholders to raise concerns about possible unethical or inappropriate behavior within our community. Complaints may be filed by phone or through the website, and, if preferred, may be made anonymously. The web address is [www.SPIE.ethicspoint.com](http://www.SPIE.ethicspoint.com) and the toll free hotline number is 1-888-818-6898.

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## SPIE INTERNATIONAL HEADQUARTERS

PO Box 10  
Bellingham, WA 98227-0010 USA  
Tel: +1 360 676 3290  
Fax: +1 360 647 1445  
[help@spie.org](mailto:help@spie.org) • [www.SPIE.org](http://www.SPIE.org)

## SPIE EUROPE OFFICES

2 Alexandra Gate  
Ffordd Pengam, Cardiff, CF24 2SA UK  
Tel: +44 29 2089 4747  
Fax: +44 29 2089 4750  
[info@spieeurope.org](mailto:info@spieeurope.org) • [www.SPIE.org](http://www.SPIE.org)

# Proceedings.

Full paid registration includes your choice of Proceedings of SPIE (excluding student registrations). See the attached list for product order numbers for proceedings options from this meeting. You will need a product order number when you make your proceedings choice on the registration form.

## Available as part of registration:

**Symposium CD Collection**—a searchable CD of one or multiple proceedings volumes. Available within 8 weeks of the meeting.

**Symposium Online Collection**—online access to multiple related proceedings volumes via the SPIE Digital Library. Available as papers are published.

**Printed Proceedings Volume**—a printed book of a single proceedings volume. Available 6 weeks after the meeting.

**Online Proceedings Volume**—online access to a single proceedings volume via the SPIE Digital Library. Available as papers are published.

You may also purchase additional proceedings products beyond what you choose with your registration plan. (**Note: Online proceedings volumes not available for separate purchase.**) See below for pricing and product order numbers.

## Accessing Online Proceedings

Access to purchased online proceedings will be ongoing using your SPIE login credentials; papers are available as they are published.

To access your purchased proceedings:

- Go to <https://spiedigitallibrary.org> and sign in with your SPIE account credentials. If you do not have an SPIE account, create one using the email address you used to register for the conference.
- Once you have signed in, click the My Account link at the top of the page. You can access your proceedings in the My Conference Proceedings tab.

**Note:** If your organization subscribes to the SPIE Digital Library, you can also access this content via your organization's account when logging on through your institution's network.

Should you need any assistance, please contact SPIE:

**Email:** [SPIEDLsupport@spie.org](mailto:SPIEDLsupport@spie.org)

**Phone (North America):** +1 888 902 0894

**Phone (Rest of World):** +1 360 685 5580

## Proceedings Collections

Online collections are not available for separate purchase.

Product Order Number		Collection Title/Included Volumes (See below for volume titles and editors)	Price for CD separate purchase
Symposium CD Collection	Symposium Online Collection		Meeting Attendees Only
CDS576	DLC576	<b>European Conferences on Biomedical Optics</b> 9536, 9537, 9538, 9539, 9540, 9541, and 9542	\$145 € 125

Product Order Number		Volume Title/Volume Editors	Price for print volume separate purchase
Printed Proceedings Volume	Online Proceedings Volume		Meeting Attendees Only
9536	DL9536	<b>Advanced Microscopy Techniques IV; and Neurophotonics II</b> <i>Emmanuel Beaufepaire, Peter T. C. So, Francesco Pavone, Elizabeth M. Hillman</i>	\$70 € 65
9537	DL9537	<b>Clinical and Biomedical Spectroscopy and Imaging IV</b> <i>J. Quincy Brown, Volker Deckert</i>	\$105 € 100
9538	DL9538	<b>Diffuse Optical Imaging V</b> <i>Hamid Dehghani, Paola Taroni</i>	\$80 € 75
9539	DL9539	<b>Opto-Acoustic Methods and Applications in Biophotonics II</b> <i>Vasilis Ntziachristos, Roger Zemp</i>	\$70 € 65
9540	DL9540	<b>Novel Biophotonics Techniques and Applications III</b> <i>Arjen Amelink, I. Alex Vitkin</i>	\$60 € 55
9541	DL9541	<b>Optical Coherence Imaging Techniques and Imaging in Scattering Media</b> <i>Brett E. Bouma, Maciej Wojtkowski</i>	\$90 € 85
9542	DL9542	<b>Medical Laser Applications and Laser-Tissue Interactions VII</b> <i>Lothar D. Lilge, Ronald Sroka</i>	\$70 € 65



Thank you for attending  
the European Conferences  
on Biomedical Optics.

Conferences: 21–25 June 2015

ICM—International Congress Center  
Munich, Germany

22nd International Congress on Photonics in Europe  
Collocated with LASER 2015 World of PHOTONICS

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[www.photonics-congress.com](http://www.photonics-congress.com)