

SPIE. OPTICS+
OPTOELECTRONICS



INTERNATIONAL
YEAR OF LIGHT
2015



OPTICS + OPTOELECTRONICS.

TECHNICAL
PROGRAMME

WWW.SPIE.ORG/OO

Conferences:
13-16 April 2015

Exhibition:
14-15 April 2015

Clarion Congress Hotel Prague
Prague, Czech Republic



WELCOME TO SPIE OPTICS+ OPTOELECTRONICS

The latest advances and integration of optics and optoelectronic devices and technologies.

SPIE. OPTICS+
OPTOELECTRONICS

Clarion Congress Hotel Prague
Prague, Czech Republic

Conferences: 13-16 April 2015
Exhibition: 14-15 April 2015

COOPERATING ORGANISATIONS

EOS European Optical Society



eli





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SPIE would like to express its 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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IN MEMORIAM



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2009 Optics + Optoelectronics Symposium Chair

Member of the Symposium Steering Committee

2007–2013 Programme Committee Member of the EUV and X-ray Optics: Synergy between Laboratory and Space Conference

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Thomas Tschentscher, European XFEL GmbH (Germany)

Alexei M. Zheltikov, Lomonosov Moscow State Univ. (Russian Federation)



INTERNATIONAL
YEAR OF LIGHT
2015

Welcome

It is our pleasure to welcome your attendance at the SPIE 2015 International Symposium on Optics + Optoelectronics. An excellent technical programme has been prepared, focusing on recent advances in petawatt photonics, high-power and high-repetition rate systems, diode-pumped laser systems, and FELs, along with the latest research in optical sensing, holography, x-ray optics, metamaterials, and nonlinear and quantum optics.

Close to 700 presentations prove that this event is recognised as an important forum for science, government, and industry to access and share information on optical technologies. The event's focus is especially on the research aspects of optics and optoelectronics, with a concentration on European and international science and technology.

The symposium features a special plenary session, and seventeen conferences including a special Workshop on Laser Energy, each incorporating oral and poster presentations. The programme promises an exciting week, with excellent science and technology in a setting conducive to international interchange, networking, and exchanging ideas.

Lastly, join us in celebrating the International Year of Light and Light-based Technologies in Prague in 2015!

2015 Symposium Chairs:



Jiri Homola
Institute of Photonics
and Electronics of the
ASCR, Czech Republic



Chris Edwards
Central Laser Facility, Science
and Technology Facilities
Council, United Kingdom



Mike Dunne
SLAC National Accelerator
Lab./Linac Coherent
Light Source, (USA)



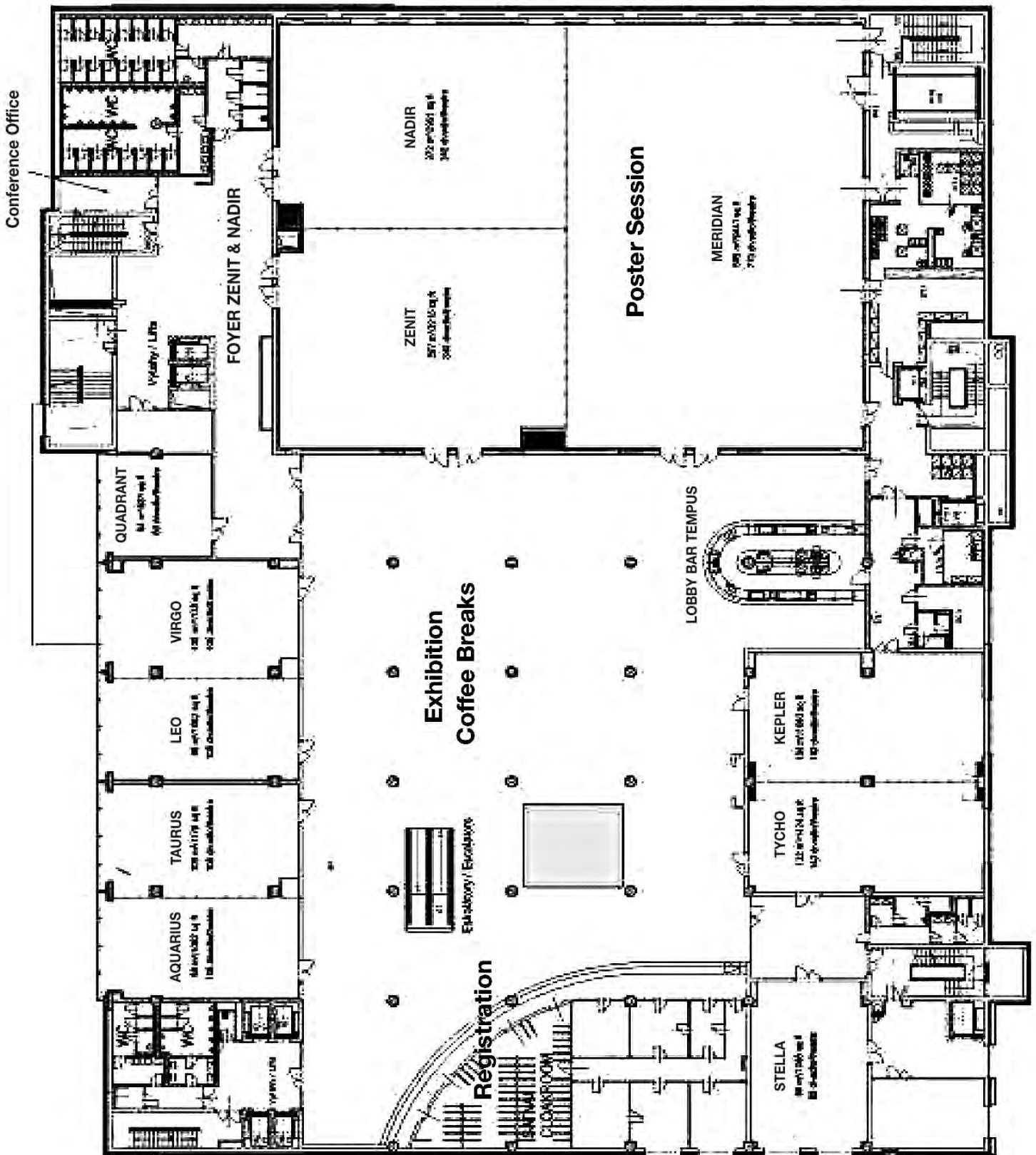
Ivo Rendina
CNR/Istituto per la
Microelettronica e
Microsistemi, Italy

Honorary Chair:



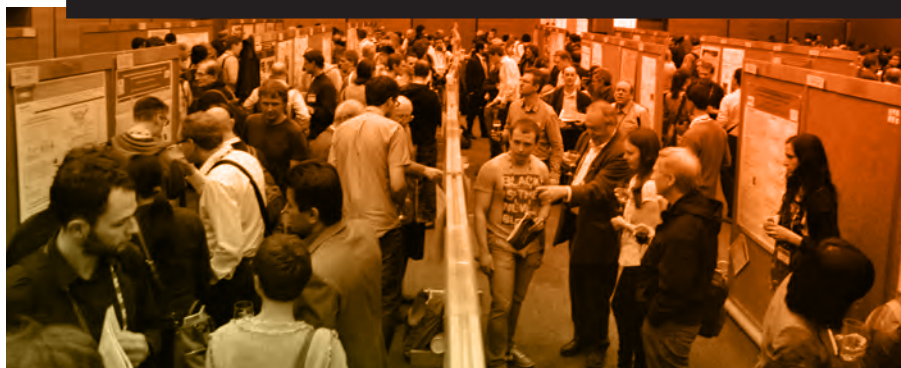
Miroslav Miler
Institute of Photonics
and Electronics of the
ASCR, Czech Republic

CLARION CONGRESS HOTEL FLOORPLAN



DAILY SCHEDULE

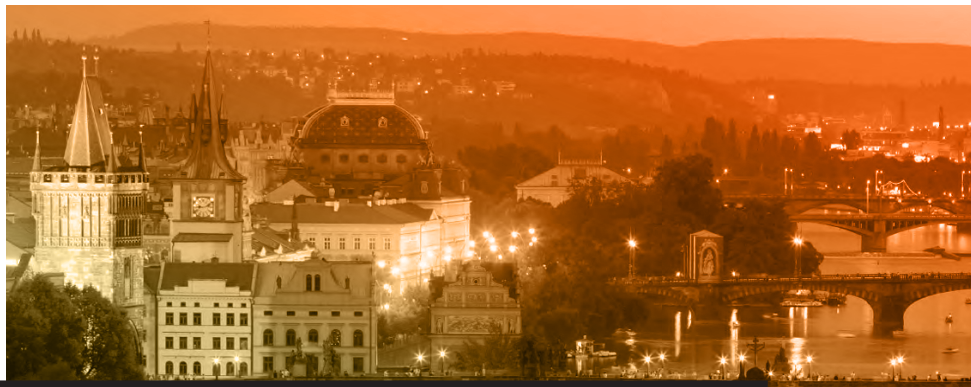
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<p>Opening Remarks and Welcome, 16:00 to 16:25, p. 6</p> <p>PLENARY SESSION: Next Generation Femtosecond and Attosecond Technology, (<i>Krausz</i>), 16:25 to 17:10, p. 6</p> <p>PLENARY SESSION: Engineering metallic nanostructures for plasmonics and optoelectronics, (<i>Oh</i>), 17:10 to 17:55, p. 7</p> <p>Welcome Reception, 18:30 to 20:30, p. 8</p>	<p>PLENARY SESSION: On the Complexity Limits of Photonic Integrated Circuits, (<i>Melloni</i>), 9:00 to 9:50, p. 7</p> <p>EXHIBITION, p. 9-12 10:00 to 17:00</p>	<p>PLENARY SESSION: Ultra High-Peak-Power Laser Systems, (<i>Moulton</i>), 9:00 to 9:50, p. 7</p> <p>WORKSHOP: Laser Energy (<i>Dunne, Edwards, Amiranoff</i>), p. 13</p> <p>Poster Session, 17:45 to 19:15, p. 8</p> <p>EXHIBITION, p. 9-12 10:00 to 16:00</p>	
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PLENARY SESSION

Monday 13 April

16:00 to 17:55 · Location: Nadir



HOT TOPICS PLENARY SESSION I

16.00 to 16.10

OPENING REMARKS

Jiří Homola, Institute of Photonics and Electronics of the ASCR, v.v.i., Czech Republic

Chris Edwards, Central Laser Facility, Science and Technology Facilities Council, United Kingdom

Ivo Rendina, CNR/Istituto per la Microelettronica e Microsistemi, Italy

IN MEMORIAM OF ALAN MICHETTE

2009 Symposium Chair, Member of the Symposium Steering Committee and 2007-2013 Programme Committee Member

16:10 to 16:15

WELCOME AND INTRODUCTION

Robert A. Lieberman, SPIE President-elect, Lumoptix, LLC, United States

PRESENTATION OF THE EARLY CAREER ACHIEVEMENT AWARD

to **Miriam Serena Vitiello**, NEST, CNR Nanoscience Institute and Scuola Normale, Italy

in recognition of her outstanding results in research on semiconductor laser sources and electronic high frequency nanodetectors which have opened new frontiers in the Terahertz photonics and optoelectronics fields.

This is the inaugural presentation of the Early Career Achievement Award - Academic focus.

16:15 to 16:25

WELCOME ADDRESS



Jiří Drahoš,

President of the Academy of Sciences of the Czech Republic

16:25 to 17:10

NEXT GENERATION FEMTOSECOND AND ATTOSECOND TECHNOLOGY



Ferenc Krausz

Director, Max-Planck-Institute of Quantum Optics and Chair, Experimental Physics at the Ludwig-Maximilians-Universität, Germany

Recent advances in laser science have opened the door to watching and controlling the fastest dynamics in nature (outside the atomic core), the motion of electrons. Key tools include waveform-controlled few-cycle laser light and attosecond pulses of extreme ultraviolet and soft-X-ray light. They provide a force capable of steering electrons inside and between atoms as well as means of tracking their motion. Next-generation femtosecond technology will dramatically advance these tools and push the frontiers of exploring and controlling the microcosm.

They provide a force capable of steering electrons inside and between atoms as well as means of tracking their motion. Next-generation femtosecond technology will dramatically advance these tools and push the frontiers of exploring and controlling the microcosm.

Biography: **Ferenc Krausz** studied electrical engineering at the Budapest University of Technology and theoretical physics at the Eötvös-Loránd University in Budapest. In 1991 he received his doctoral degree in Quantum Electronics at the Vienna University of Technology. In 1998 he was appointed full professor at the Vienna University of Technology and in 2000 he became director at the centre for "Advanced Light Sources". In 2003 Dr. Krausz was offered the position of director at the Max-Planck-Institute of Quantum Optics, where he leads the "Attosecond Physics" Division. In 2004, he took over a Chair of Experimental Physics at the LMU Munich; in 2006 he was appointed a Director of the Munich-Centre for Advanced Photonics.

Professor Krausz' research is focused on ultrashort-pulse lasers, ultrafast spectroscopy, high-field physics, attosecond physics: control and real-time observation of atomic-scale motion of electrons, development of compact laser-driven sources of brilliant X-ray and particle beams for medical applications..

Professor Krausz has been the recipient of numerous scientific awards and prizes and is a member of many scientific societies and academies such as the Austrian and Hungarian Academy of Sciences and the European Academy of Sciences and Arts in Salzburg (Austria).

17:10 to 17:55

ENGINEERING METALLIC NANOSTRUCTURES FOR PLASMONICS AND OPTOELECTRONICS



Sang-Hyun Oh

Univ. of Minnesota, (USA)

Recent technological advances by many researchers have enabled investigations of ultra-strong light-matter interactions at the nanometer or even sub-nanometer regime. Modeling and fabrication of optical nanostructures are challenging partly because of the vastly different length scales involved. For example, a recent

experiment demonstrated that a metallic waveguide as narrow as 1 nm in width can interact resonantly with an incident beam with the wavelength as long as 1 millimeter. Such enormous mismatch in length scales (5-6 orders of magnitude) push the limits of computational electromagnetics as well as nanofabrication.

This presentation will describe new approaches to overcome such multi-scale challenges and manufacture plasmonic waveguides and modulators with Angstrom-scale critical dimension control and wafer-scale throughput. The resulting ultra-flat and ultra-small optical nanostructures can boost the interactions of visible, infrared, and even millimeter waves with molecules and 2D materials in unprecedented ways.

Biography: Sang-Hyun Oh obtained his B.S. in Physics from KAIST, Korea, and Ph.D. in Applied Physics from Stanford University, in 1996 and 2001, respectively. After postdoctoral research at Bell Laboratories and the University of California at Santa Barbara, he joined the ECE department at the University of Minnesota, Twin Cities in 2006. He is currently an Associate Professor of ECE and runs a lab focused on plasmonics, nanofabrication, and optical biosensing. He is a recipient of young faculty awards from DARPA, U.S. Office of Naval Research, NSF CAREER, American Chemical Society, and 3M. He is a visiting professor at Imperial College London and ETH Zurich.

Tuesday, 14 April

9:00 to 9:50 · Location: Nadir

HOT TOPICS PLENARY SESSION II

9:00 to 9:05

INTRODUCTION

Jiří Homola, Institute of Photonics and Electronics of the ASCR, v.v.i., Czech Republic

9:05 to 9:50

ON THE COMPLEXITY LIMITS OF PHOTONIC INTEGRATED CIRCUITS



Andrea Melloni

Politecnico di Milano, Italy

Photonic technologies enable today to generate, manipulate and detect photons by means of miniaturized optical devices integrated onto the same optical chip. However, compared to electronics, the Achilles' heel of photonics is the lack of essential tools enabling the aggregation of hundreds of optical functional elements into

large-scale circuits. The talk focuses on the complexity limits and how to boost the photonic architectures. Non-perturbative probes, algorithmic intelligence, switching materials and techniques are the way to turn photonic devices into controllable systems.

Biography: Andrea Melloni, is Full Professor at Politecnico di Milano, where he leads the group of Photonic Devices. With a background in microwaves, his field of research is in the analysis, design, characterization and exploitation of passive integrated optical devices for telecom and sensing. He has been one of the pioneers of the slow light concept and its exploitation in the linear and nonlinear domain. He is currently contributing to define the new schemes of generic photonic foundries in Europe. In 2008 he founded the company Filarete, for the development and commercialization of the first circuit simulator for integrated optical circuits, ASPIC (<http://www.aspicdesign.com>). He holds 13 international patents in the field of integrated optics and components and he is author of over 70 publications on the major international journals. <http://home.dei.polimi.it/melloni/Research>

Coffee Break: 9:50 to 10:10

Wednesday, 15 April

9:00 to 9:50 · Location: Nadir

HOT TOPICS PLENARY SESSION III

9:00 to 9:05

INTRODUCTION

Jiří Homola, Institute of Photonics and Electronics of the ASCR, v.v.i., Czech Republic

9:05 to 9:50

ULTRA HIGH-PEAK-POWER LASER SYSTEMS



Peter Moulton

Principal Research Scientist, Q-Peak, (USA)

We consider some of the fundamental materials issues in the development of ultra-high-peak-power laser systems that utilize relatively moderate energies combined with ultrashort pulses to generate peak powers capable of producing highly nonlinear effects. Included is a comparison of the architectures of all-solid-state vs. hybrid solid-state/OPCPAs where we consider limits to the operation of both.

Biography: **Peter F. Moulton** has worked for more than 35 years to develop and commercialize solid state laser and nonlinear optical devices. In 1982, while at MIT Lincoln Laboratory, he invented the Titanium sapphire tunable solid state laser, which revolutionized the field of ultrafast lasers and helped enable a number of significant scientific and engineering advances. These continue, notably in the area of high-harmonic and attosecond-pulse generation. He helped found what evolved into Q-Peak, Incorporated, in Bedford, Massachusetts, and he led a team of researchers that has transitioned many novel materials and devices out of the laboratory for use in a wide variety of applications, including science, medicine, and defense. His efforts in the development of high-power visible-wavelength sources led to a VC-funded spin-out company, Laser Light Engines, now working to enable large-screen, laser-based digital projectors. Peter continues to innovate, concentrating now on high-power, fiber lasers and ultrafast, mid-infrared laser systems.

An IEEE Life Fellow, OSA Fellow and member of the U.S. National Academy of Engineering, Peter recently retired as the vice-president and chief technology officer of Q-Peak, and remains there as a Principal Scientist. In 1997, he was awarded OSA's R.W. Wood Prize and the IEEE William Streifer Scientific Achievement Award.

Coffee Break: 9:50 to 10:10

SPECIAL EVENTS

Welcome Reception

Monday 13 April 2015, 18:45 to 21:00

Location: Kaiserštejnský Palác (Kaiserstein Palace)

All attendees are invited to relax, socialise, and enjoy light refreshments. Please remember to wear your conference registration badges. Dress is casual.

Directions: Take metro B from VYSOCANSKA (station is located just at the Clarion Congress Hotel) and go eight stops to NARODNI TRIDA (Metro line B in direction Zlicin). Transfer (~4 min. walk) to tram No. 22 (direction Bila Hora) and go four stops to the station MALOSTRANSKE NAMESTI. (Kaiserstein Palace is right across the street from Starbucks Coffee.)

Time required: 30 minutes

Poster Session

Wednesday 15 April 2015, 17:45 to 19:15

Location: Meridian Room

All symposium attendees are invited to attend the Wednesday poster session provided as an opportunity to enjoy networking and refreshments while reviewing poster papers. The poster sessions are designed to promote opportunities for networking with colleagues in your field. Attendees are encouraged to review the high-quality papers that are presented in this alternate format and to interact with the poster authors.

Poster presenters may post their poster papers starting at 10:00 hrs on Wednesday in the Meridian Room. Any papers left on the boards following the end time of the poster session will be considered unwanted and will be discarded. SPIE assumes no responsibility for posters left up after the end of the poster session. Poster authors should be at their papers from 17:45 to 19:15 hrs to answer questions from attendees. Attendees are requested to wear their conference registration badges to the poster sessions.

Laser Energy Workshop

Wednesday - Thursday

Location: Kepler

Laser Energy, based on repetitively pulsed fusion of inertially confined D-T fuel capsules is one of the few potential solutions to closing the gap between global energy demand and supply. Along with magnetic fusion energy (MFE) and advanced "Gen IV" fission reactors, laser energy avoids damaging environment and provides long term security of energy supply, addressing the need for substantial increase in baseload capacity.

The mission of the HiPER project is to enable Europe to respond to the Laser Energy opportunity. HiPER completed its Preparatory Phase Project in 2013 and has now commenced a programme of technology development, experiments, and simulations on the physics of ignition.

The workshop will include invited and contributed presentations from HiPER and from the wider Laser Energy community. It will include updates on recent progress towards ignition at the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory in the U.S., the latest experimental and computational results from the community, and news of the opportunities for experimental campaigns at Laser Megajoule (LMJ) in Bordeaux.

Detailed programme can be viewed on page 13.

Best Student Paper Awards

As a committed supporter of excellence in student research, SPIE supports Best Student Paper Awards at SPIE conferences across the globe. In addition to cash prizes and award certificates, winners receive SPIE Digital Library downloads and complimentary SPIE Student Membership.

The awards are designed to encourage and acknowledge excellence in oral and poster student paper presentations. Best student papers will be recognized within each of the Optics + Optoelectronics conferences.

E EXHIBITION



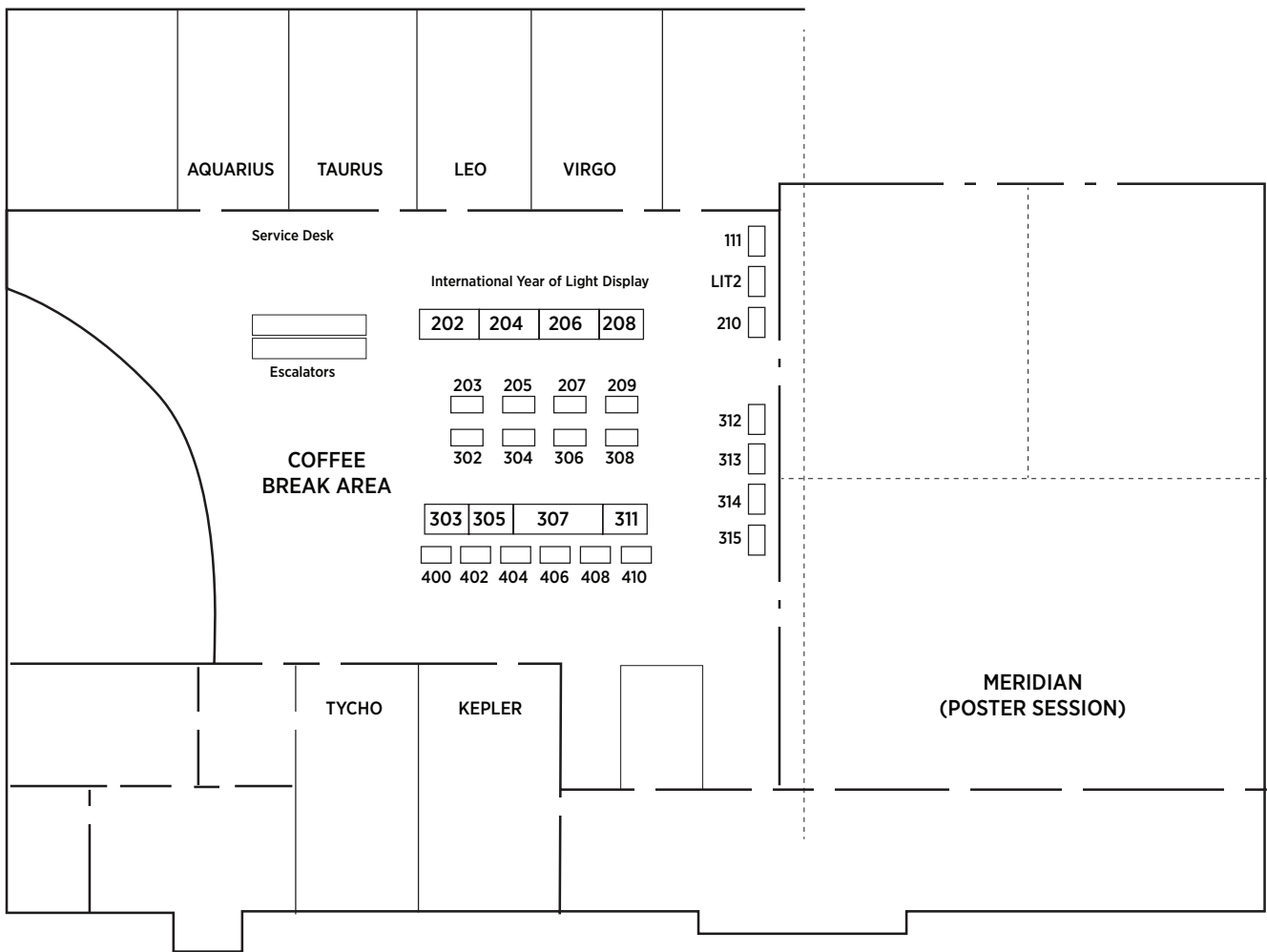
SPIE. OPTICS+ OPTOELECTRONICS

EXHIBITION HOURS

Tuesday 14 April, 10:00 to 17:00 hrs.

Wednesday 15 April, 10:00 to 16:00 hrs.

Exhibitors are listed in alphabetical order with details about products or services each is exhibiting. Companies are additionally cross-indexed by technology areas. The address of each exhibitor is also listed, making this Exhibition Guide an excellent reference tool to take back to your office and share with your colleagues.



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 210 STFC Rutherford Appleton Lab.
 203 Thorlabs GmbH
 308 Vilnius University

EXHIBITOR DIRECTORY

AdlOptica Optical Systems GmbH

#205

SPIE Corporate Member

Rudower Chaussee 29, Berlin, 12489 Germany
+49 30 565 908880; fax +49 30 565 908881
info@adloptica.com; www.piShaper.com

Featured Product: Collimating beam shaper piShaper® for fiber and fiber-coupled lasers

AdlOptica works in field of Laser Beam Shaping Optics transforming Gaussian to flattop beams and finding numerous industrial and scientific applications. Multi year developments are realized in family of piShaper systems, > 50 models: almost 100% efficiency, spectrum from UV to IR, power from mW to kW, CW or pulse lasers, achromatic design, variety of flattop spot sizes, low sensitivity to misalignment. AdlOptica is locating in Adlershof, Berlin, Germany's leading science and technology park. Contact: Alexander Laskin, Project Manager, alex@adloptica.com; Vadim Laskin, General Manager, info@adloptica.com

Agilent Technologies

#208

Hewlett-Packard-Str 8, Waldbronn, 76337 Germany
0800-603 1000; fax +49 69 953 07 919
CustomerCare_Germany@agilent.com; www.agilent.com

Featured Product: Agilent Cary 7000 Universal Measurement Spectrophotometer (UMS)

Agilent is a leader in life sciences, diagnostics and applied chemical markets. The company provides laboratories worldwide with instruments, services, consumables, applications and expertise, enabling customers to gain the insights they seek. Agilent's expertise and trusted collaboration give them the highest confidence in our solutions. www.agilent.com/chem. Learn more about the Agilent Cary 7000 Universal Measurement Spectrophotometer (UMS): www.agilent.com/chem/cary7000UMS

Amplitude Technologies

#302

2-4 rue du Bois Chaland CE 2926, Evry Cedex, 91029 France
+33 169 11 27 90; fax +33 164 97 58 17
info@amplitude-technologies.com; www.amplitude-technologies.com

Featured Product: High Peak Power Ti:Sa laser system

Amplitude Technologies is the leading company in the field of ultra-high energy Ti:Sapphire ultrafast lasers. Amplitude Technologies provides the only commercial system with peak power in excess of 200 TW, with guaranteed specifications. The modular design of the laser, the variety of diagnostic tools, and the sophisticated engineering ensures that the user will concentrate on the experiment. Contact: Julie Siv, Sales engineer, jsiv@amplitude-technologies.com

AT-Fachverlag GmbH

#314

Wilhelm-Pfizer-Str 28, Fellbach, 70736 Germany
+49 711 95 29 51 0; fax +49 711 95 29 51 99
at@at-fachverlag.de; www.at-fachverlag.de

Chinese Laser Press

#304

390 Qinghe Road, Jiading Shanghai, Shanghai, 201800 China
+86 21 69918428; fax +86 21 69918705
col@siom.ac.cn; opticsjournal.net/Columns/CLP.html

Featured Product: Chinese Optics Letters (COL), High Power Laser Science and Engineering(HPL), Photonics Research(PR)

Chinese Laser Press (CLP) was established by Shanghai Institute of Optics and Fine Mechanics (SIOM), Chinese Academy of Sciences (CAS), and Chinese Optical Society in 2009, with the key business of publishing journals in both traditional and digital models. Currently CLP publishes six journals and a magazine, which enjoy high reputation and impact in the optics community. Contact: Jie Ding, Editor, dingjie@siom.ac.cn; Ran Zhang, Editor, zhangran@siom.ac.cn

CRYTUR spol s.r.o.

#313

Palackeho 175, Turnov, 511 01 Czech Republic
+420 481 319 511; fax +420 481 322 323
crytur@crytur.cz; www.crytur.cz/

Featured Product: Compact q-switched laser resonator

Traditional European producer of precise scintillators, detection unit for electron microscopy, laser rods, laser components, crystal based precise optics, sapphire profiles and other sophisticated crystal based solutions with proprietary research and development and respectable know-how. With over 70 years long tradition of crystal processing, Crytur is the reliable partner for your project.

DILAS Diodenlaser GmbH

#400

SPIE Corporate Member

Galileo Galilei-Str 10, Mainz-Hechtsheim, 55129 Germany
+49 6131 9226 0; fax +49 6131 9226 257
sales@dilas.de; www.dilas.de

General Sponsor

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With an increasing global focus on the energy challenge facing mankind, controlled fusion offers a long term, safe solution with low environmental impact. The HiPER "Laser Energy Workshop" will discuss the latest progress towards ignition at the National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory in the U.S., opportunities for fusion physics experiments at the Laser Megajoule facility being commissioned in France and recent developments in the underpinning technology of inertially driven fusion energy; lasers, fuel capsule manufacture and fusion chamber design. A dedicated session will focus on the physics of ignition, the latest numerical simulations and recent experiments on the large European laser facilities. Contact: Dr Chris Edwards, HiPER Project Director, chris.edwards@stfc.ac.uk

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Laser Energy Workshop



Program Committee: **Mike Dunne**, SLAC National Accelerator Lab./Linac Coherent Light Source (USA); **Chris Edwards**, Science and Technology Facilities Council (United Kingdom); **François Amiranoff**, Ecole Polytechnique (France)

WEDNESDAY 15 APRIL

LOCATION: KEPLER 14:00 TO 14:00

Welcome and Introduction

Chris Edwards, Central Laser Facility, Science and Technology Council (United Kingdom)

SESSION 1

LOCATION: KEPLER WED 2:00 TO 3:20

Laser Energy Overview

Session Chair: **Chris Edwards**, Science and Technology Facilities Council (United Kingdom)

2:00: **Status of HiPER**, Chris Edwards, Science and Technology Facilities Council (United Kingdom) [WS100-1]

2:20: **Beamtime opportunities at LMJ/PETAL** (*Invited Paper*), Thierry Massard, Commissariat à l'Énergie Atomique (France) [WS100-2]

2:50: **Latest results from the National Ignition Facility** (*Invited Paper*), John Edwards, Lawrence Livermore National Lab. (USA) [WS100-3]

Coffee Break Wed 15:20 to 15:40

SESSION 2

LOCATION: KEPLER WED 15:40 TO 17:40

Fusion Physics: Theory and Experiments

Session Chair: **Stefano Atzeni**, Sapienza Univ. di Roma (Italy)

15:40: **Towards predictive inertial fusion fluid simulations with application to shock ignition**, Stefano Atzeni, Sapienza Univ. di Roma (Italy) [WS100-4]

16:00: **Collisionless shock acceleration of ions for fast ignition**, Robert Bingham, STFC Rutherford Appleton Lab. (United Kingdom) [WS100-5]

16:20: **Influence of lattice structure on fast electron transport in layered solid targets**, Rachel J. Dance, Ross J. Gray, David A. MacLellan, Nicholas M. H. Butler, Univ. of Strathclyde (United Kingdom); Dean R. Rusby, Graeme G. Scott, David Neely, Alex P. L. Robinson, Central Laser Facility (United Kingdom); Bernhard Zielbauer, Vincent Bagnoud, GSI Helmholtzzentrum für Schwerionenforschung GmbH (Germany); Paul McKenna, Univ. of Strathclyde (United Kingdom) [WS100-6]

16:40: **Integrated simulation approach for laser-driven fast ignition and its application**, Wei-Min Wang, Paul Gibbon, Forschungszentrum Jülich GmbH (Germany) [WS100-7]

17:00: **Laser plasma interactions and shock wave generation**, Leonida A. Gizzi, Consiglio Nazionale delle Ricerche (Italy) [WS100-8]

17:20: **Studying the initial stages of plasma generation using ns pulses**, Vasilis Dimitriou, Technological Educational Institute of Crete (Greece) [WS100-9]

THURSDAY 16 APRIL

SESSION 3

LOCATION: KEPLER THU 9:00 TO 10:00

Laser Technology I

Session Chair: **Jean-Christophe Francis Chanteloup**, Ecole Polytechnique (France)

9:00: **Laser technology overview and progress with the Lucia system**, Jean-Christophe Francis Chanteloup, Ecole Polytechnique (France) [WS100-10]

9:20: **Progress with DPSSL laser technology at the Central Laser Facility**, Chris Edwards, Science and Technology Facilities Council (United Kingdom) [WS100-11]

9:40: **Orion: laser and diagnostic development during the first two years of operations**, Colin N. Danson, AWE plc (United Kingdom) [WS100-12]

Coffee Break Thu 10:00 to 10:20

SESSION 4

LOCATION: KEPLER THU 10:20 TO 12:00

Laser Technology II

Session Chair: **Jean-Christophe Francis Chanteloup**, Ecole Polytechnique (France)

10:20: **Development of new laser materials for fusion drivers**, Jindrich Houžvicka, CRYTUR spol s.r.o. (Czech Republic); Michal Kosejka, Bedrich Rus, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [WS100-13]

10:40: **Thermo-optical performance of kJ-class laser fusion systems for HiLASE**, Ondrej Slezák, Antonio Lucianetti, Magdalena Sawicka-Chyla, Martin Divoky, Tomáš Mocek, HiLASE Ctr. (Czech Republic) [WS100-14]

11:00: **PETAL diagnostics and system commissioning**, Jean-Luc Miquel, Commissariat à l'Énergie Atomique (France) [WS100-15]

11:20: **Repetition rate laser technologies in ELI-Beamlines relevant to fusion applications**, Pavel Bakule, Bedrich Rus, Daniel Kramer, Jack A. Naylon, Jiri Thoma, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jonathan T. Green, ELI Beamlines (Czech Republic); Roman Antipenkov, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Martin Fibrich, Czech Technical Univ. in Prague (Czech Republic); Jakub Novák, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Michal Kosejka, ELI Beamlines (Czech Republic) [WS100-16]

11:40 **HiLASE thin disc laser programme**, Akira Endo, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [WS100-17]

Lunch Break Thu 12:00 to 13:00

SESSION 5

Fusion Chamber Materials and Systems

LOCATION: KEPLER THU 13:00 TO 14:25

13:00: **Laser fusion materials: bottlenecks and solutions**, Antonio Rivera, Univ. Politécnica de Madrid (Spain) [WS100-18]

13:20: **Final focussing components for a laser fusion power plant**, Angel Rodríguez-Páramo, Univ. Politécnica de Madrid (Spain) [WS100-19]

13:40: **Simulation of ion radiation in optical materials**, Alejandro Prada, Univ. Politécnica de Madrid (Spain) [WS100-20]

14:00: **Role of tungsten nanostructure on pulsed helium irradiation-induced defects**, Gonzalo Vallés, Univ. Politécnica de Madrid (Spain) [WS100-21]

14:20: **Hydrogen diffusion in irradiated nanostructured tungsten**, Miguel Panizo, Univ. Politécnica de Madrid (Spain) [WS100-22]

SESSION 6

Targets for Inertial Fusion Energy

LOCATION: KEPLER THU 14:40 TO 16:00

Session Chair: **Bedrich Rus**, Institute of Physics of the ASCR, v.v.i. (Czech Republic)

14:40: **Development of target injector and repetition rate fusion chamber systems for HiPER**, Bedrich Rus, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [WS100-23]

15:00: **Microtargetry for inertial fusion energy**, Martin Tolley, STFC Rutherford Appleton Lab. (United Kingdom) [WS100-24]

15:20: **Inertial fusion energy target shell production**, David Barrow, Cardiff Univ. (United Kingdom) [WS100-25]

15:40: **Free-standing target supply system for IFE**, Elena R. Koresheva, P.N. Lebedev Physical Institute (Russian Federation) [WS100-26]

LOCATION: KEPLER 16:00 TO 16:30

Workshop Wrap-up and Closing Remarks

Chris Edwards, Central Laser Facility, Science and Technology Council (United Kingdom)

Metamaterials

Conference Chairs: **Vladimír Kuzmiak**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Peter Markos**, Slovenska Technicka Univ. (Slovakia); **Tomasz Szoplik**, Univ. of Warsaw (Poland)

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WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

LOCATION: VIRGO 10:10 TO 10:10

Opening Remarks

SESSION 1

LOCATION: VIRGO WED 10:10 TO 11:55

Hyperbolic and Dielectric Metamaterials

Session Chair: **Vladimír Kuzmiak**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic)

10:10: **Hyperbolic plasmonic metamaterials: engineering nonlinearities and spontaneous emission** (*Invited Paper*), Wayne Dickson, Greg A. Wurtz, Anatoly V. Zayats, King's College London (United Kingdom) [9502-1]

10:45: **All-dielectric nanophotonics and metamaterials** (*Invited Paper*), Yuri S. Kivshar, The Australian National Univ. (Australia) [9502-2]

11:20: **PT-symmetry related functionalities in metamaterials and plasmonics structures** (*Invited Paper*), Anatole Lupu, Institut d'Électronique Fondamentale (France); Henri Benisty, Institut d'Optique Graduate School (France); Aloyse Degiron, Institut d'Électronique Fondamentale (France) [9502-3]

Lunch/Exhibition Break Wed 11:55 to 13:10

SESSION 2

LOCATION: VIRGO WED 13:10 TO 15:20

Plasmonics: Fundamentals and Applications I

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

13:10: **Nanoplasmonics suggests the existence of a new fundamental scale** (*Invited Paper*), Alexander Figotin, Anatoli Babin, Univ. of California, Irvine (USA) [9502-5]

13:40: **Symmetry breaking in the second harmonic field of self assembled metallic nanostructures** (*Invited Paper*), Alessandro Belardini, Alessio Benedetti, Marco Centini, Eugenio Fazio, Mario Bertolotti, Concita Sibilia, Univ. degli Studi di Roma La Sapienza (Italy); Joseph W. Haus, Andrew M. Sarangan, Univ. of Dayton (USA) [9502-6]

14:10: **Resonant nanostructures in graphene for terahertz metamaterials** (*Invited Paper*), Philippe Tassin, Chalmers University (Sweden); Nian-Hai Shen, Thomas Koschny, Iowa State University (USA); Maria Kafesaki, University of Crete (Greece); Costas Soukoulis, Iowa State University (USA) [9502-7]

14:40: **Bright solitons in optical cavities with internal resonances**, Vladimír Kuzmiak, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Alex V. Yulin, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9502-8]

15:00: **Cherenkov radiation generated in transformation-optical metamaterials**, Vincent Ginis, Jan Danckaert, Irina Veretennicoff, Vrije Universiteit Brussel (Belgium); Philippe Tassin, Chalmers University (Sweden) [9502-19]

Coffee Break Wed 15:20 to 15:50

SESSION 3

LOCATION: VIRGO WED 15:50 TO 17:20

Plasmonics for Energy Conversion

Session Chair: **Alexandre Dmitriev**, Chalmers Univ. of Technology (Sweden)

15:50: **Near-field thermal memory device** (*Invited Paper*), Min Qiu, Zhejiang Univ. (China); Sergey A. Dyakov, Jin Dai, Min Yan, KTH Royal Institute of Technology (Sweden) [9502-9]

16:20: **Hot electron photoemission from plasmonic nanoantennas: photoelectric metamaterials and giant photogalvanic effect**, Alexander V. Uskov, Igor E. Protsenko, P.N. Lebedev Physical Institute (Russian Federation) and Advanced Energy Technologies Ltd. (Russian Federation); Igor V. Smetanin, P.N. Lebedev Physical Institute (Russian Federation); Renat S. Ikhsanov, The State Atomic Energy Corp. ROSATOM (Russian Federation); Sergei V. Zhukovsky, DTU Fotonik (Denmark) and National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Andrey B. Evlyukhin, Laser Zentrum Hannover e.V. (Germany); Viktoriia E. Babicheva, Purdue Univ. (USA); Andrei V. Lavrinenko, DTU Fotonik (Denmark); Michael E. Guzhva, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) and Saint-Petersburg State Polytechnical Univ. (Russian Federation) [9502-10]

16:40: **Enhancement of light absorption in polyazomethines due to plasmon excitation on randomly distributed metal nanoparticles**, Piotr Wróbel, Tomasz J. Antosiewicz, Tomasz Stefaniuk, Arkadiusz Ciesielski, Univ. of Warsaw (Poland); Agnieszka Iwan, Institute of Electrical Engineering (Poland); Aleksandra A. Wronkowska, Andrzej Wronkowski, Univ. of Technology and Life Sciences in Bydgoszcz (Poland); Tomasz Szoplik, Univ. of Warsaw (Poland) [9502-11]

17:00: **Optical activity of catalytic elements of hetero-metallic nanostructures**, Tomasz J. Antosiewicz, Univ. of Warsaw (Poland) and Chalmers Univ. of Technology (Sweden); S. Peter Apell, Carl Wadell, Christoph Langhammer, Chalmers Univ. of Technology (Sweden) [9502-12]

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8.

Observation of terahertz radiation absorption in CdSe quantum dots, Petr Onushchenko, Institute of Silicate Chemistry (Russian Federation); Mikhail K. Khodzitsky, Alaudi K. Denisultanov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Aleksei Onushchenko, S.I. Vavilov State Optical Institute (Russian Federation) [9502-13]

Effective medium approximation of anisotropic materials with radiative correction, Jiri Slavicek, Petr Otipka, Michal Lesnák, VŠB-Technical Univ. of Ostrava (Czech Republic); Ivo Vávra, Institute of Electrical Engineering (Slovakia) [9502-31]

Synthesis, shaping and functionalization of plasmonic gold octahedra, Cheng-An J. Lin, Hans B. Lao, Chen-Li Yang, Tzu-Yun Huang, Tzh-Yin Hou, Chung Yuan Christian Univ. (Taiwan) [9502-32]

Localized surface plasmon resonance with Pt nanorings fabricated by nanosphere lithography, Hee Woong Shin, Tae Hoon Park, Min Ju Kim, Tae-Ho Lee, Byeong Ryong Lee, Kyeong Heon Kim, Tae Geun Kim, Korea Univ. (Korea, Republic of) [9502-33]

Low-loss negative index metamaterials for X, Ku and K microwave bands, David Lee, The MITRE Corp. (USA); James Vedral, Univ. of Colorado at Colorado Springs (USA); Randall Musselman, U.S. Air Force Academy (USA); Anatoly O. Pinchuk, Univ. of Colorado at Colorado Springs (USA) [9502-35]

Three-dimensional frequency selective surfaces consisting of double circular ring elements, Baris Akaoglu, Fulya Bagci, Sultan Can, Asim E. Yilmaz, Ankara Univ. (Turkey) [9502-36]

2D acoustic metamaterial for potential invisible using, Zhenda Lei, Rongxiang Cao, Hongwei Sun, Jiangsu Automation Research Institute (China) [9502-37]

Surface plasmon-enhanced light harvesting in bulk-heterojunction organic solar cells, Hamid Keshmiri, Jakub Dostálek, AIT Austrian Institute of Technology GmbH (Austria) [9502-38]

Photonic structures in photoresist and PDMS surface patterned by AFM lithography, Jana Durišová, Univ. of Žilina (Slovakia) [9502-40]

Optimization of dipole structures for detection of organic compounds, Henrique Vilhena, Scott McMeekin, A. Sheila Holmes-Smith, Glasgow Caledonian Univ. (United Kingdom); Nigel P. Johnson, Univ. of Glasgow (United Kingdom) [9502-41]

Design of plasmonic circular grating with broadband absorption enhancements, Nan-Fu Chiu, National Taiwan Normal Univ. (Taiwan) . [9502-42]

Surface doping by functional graphene nanostructures for organic solar cell applications, Chi-Chu Chen, Nan-Fu Chiu, National Taiwan Normal Univ. (Taiwan) [9502-43]

Double-layer gold gratings as refractive index sensors and unidirectional couplers for surface plasmon polariton, Chongjun Jin, Sun Yat-Sen Univ (China) [9502-44]

Thermal self-oscillations in radiative heat exchange, Sergey A. Dyakov, Jin Dai, Min Yan, Min Qiu, KTH Royal Institute of Technology (Sweden) . . . [9502-45]

THURSDAY 16 APRIL

SESSION 4

LOCATION: VIRGO THU 9:00 TO 10:30

Plasmonics: Fundamentals and Applications II

Session Chair: **Peter Markos**, Slovenska Technicka Univ. (Slovakia)

9:00: **Computing the optical properties of plasmonic nanostructures** (*Invited Paper*), Kurt Busch, Humboldt-Univ. zu Berlin (Germany) [9502-14]

9:30: **Perfectly matched layer based multilayer absorbers**, Marcin Stolarek, Piotr Wróbel, Tomasz Stefaniuk, Tomasz J. Antosiewicz, Bartosz Wiecech, Rafal Kotynski, Univ. of Warsaw (Poland) [9502-15]

9:50: **Plasmonic nanoantennas for spatial and spectral emissivity engineering**, Mathilde Makhsyan, ONERA (France) and Lab. de Photonique et de Nanostructures (France); Julien Jaeck, Patrick Bouchon, ONERA (France); Fabrice Pardo, Lab. de Photonique et de Nanostructures (France); Jean-Jacques Greffet, Institut d'Optique Graduate School (France); Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France); Riad Haidar, ONERA (France) [9502-34]

10:10: **Revealing plasmonic interaction in both isolated and arrayed dimers and trimers with analytical and numerical approaches**, Jan Fiala, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic) [9502-17]

Coffee Break Thu 10:30 to 11:00

SESSION 5

LOCATION: VIRGO THU 11:00 TO 12:30

Plasmonics: Fundamentals and Applications III

Session Chair: **Tomasz Szoplík**, Univ. of Warsaw (Poland)

11:00: **Reduction of plasmon losses in thin Ag silver films** (*Invited Paper*), Tomasz Stefaniuk, Univ. of Warsaw (Poland) [9502-18]

11:30: **The effect of geometry on the quality factor of resonance peak from asymmetric nano-antennas at mid-infrared wavelengths**, Ifeoma G. Mbomson, Univ. of Glasgow (United Kingdom); Scott McMeekin, Glasgow Caledonian Univ. (United Kingdom); Richard De La Rue, Nigel P. Johnson, Univ. of Glasgow (United Kingdom) [9502-39]

11:50: **Dielectric negative index metamaterial as plasmonics devices**, Vito Mocella, Istituto per la Microelettronica e Microsistemi (Italy); Silvia Romano, Consiglio Nazionale delle Ricerche (Italy) [9502-20]

12:10: **Negative index microwave metamaterials for antenna applications**, Anatoliy O. Pinchuk, Univ. of Colorado at Colorado Springs (USA) . . . [9502-21]

Lunch/Exhibition Break Thu 12:30 to 13:40

SESSION 6

LOCATION: VIRGO THU 13:40 TO 15:00

Nanomagnets and Magnetic Field of Light

Session Chair: **Yuri S. Kivshar**, The Australian National Univ. (Australia)

13:40: **Magnetoplasmonics for active control of light** (*Invited Paper*), Alexandre Dmitriev, Chalmers Univ. of Technology (Sweden) [9502-22]

14:10: **Meta-atoms with tunable response** (*Invited Paper*), Carsten Rockstuhl, Stefan Nanz, Rasoul Alaei, Ivan Fernandez-Corbaton, Karlsruher Institut für Technologie (Germany); Mohammad Albooyeh, Aalto Univ. (Finland); Constantin R. Simovski, Aalto Univ. School of Electrical Engineering (Finland) . . . [9502-23]

14:40: **Light polarization control on the femtosecond scale using gyrotropic photonic crystals**, Margarita I. Sharipova, Alexander I. Musorin, Tatyana V. Dolgova, Andrey A. Fedyanin, Lomonosov Moscow State Univ. (Russian Federation) [9502-24]

Coffee Break Thu 15:00 to 15:30

SESSION 7

LOCATION: VIRGO THU 15:30 TO 17:30

Metasurfaces and Sub-wavelength Plasmonic DOE

Session Chair: **Rafal Kotynski**, Univ. of Warsaw (Poland)

Session is organized in cooperation with EU FP7 - REGPOT Project PhoQuS@UW



15:30: **Theoretical analysis of optical and plasmonic metasurfaces**, Roman Antos, Charles Univ. in Prague (Czech Republic) and Nagaoka Univ. of Technology (Japan); Martin Veis, Lukas Beran, Charles Univ. in Prague (Czech Republic); Jan Mistrik, Miroslav Vlcek, Univ. Pardubice (Czech Republic); Takayuki Ishibashi, Nagaoka Univ. of Technology (Japan) [9502-25]

15:50: **Circular dichroism induced by Fano resonances in planar chiral oligomers**, Ben Hopkins, The Australian National Univ. (Australia); Alexander N. Poddubny, Ioffe Physical-Technical Institute (Russian Federation) and National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Andrey E. Miroshnichenko, The Australian National Univ. (Australia); Yuri S. Kivshar, The Australian National Univ. (Australia) and National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9502-26]

16:10: **Asymmetric and symmetric coupling of surface plasmons on periodically patterned slanted silver columnar thin films**, Jhuma Dutta, Subramaniam Anantha Ramakrishna, Indian Institute of Technology Kanpur (India); Akhlesh Lakhtakia, The Pennsylvania State Univ. (USA) [9502-27]

16:30: **High-field enhancement factor in dielectric photonic structure**, Silvia Romano, Consiglio Nazionale delle Ricerche (Italy); Carlos A. Pina-Hernandez, abeam Technologies, Inc. (USA); Stefano Cabrini, The Molecular Foundry (USA) and Lawrence Berkeley National Lab. (USA); Ivo Rendina, Vito Mocella, Istituto per la Microelettronica e Microsistemi (Italy) [9502-28]

16:50: **Plasmonic planar antenna for spectral and spatial manipulation of the polarization**, Mathilde Makhsyan, Quentin Lévesque, ONERA (France) and Lab. de Photonique et de Nanostructures (France); Patrick Bouchon, ONERA (France); Fabrice Pardo, Lab. de Photonique et de Nanostructures (France); Julien Jaeck, Riad Haidar, ONERA (France); Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France) [9502-29]

17:10: **Generation of red color and near infrared bandpass filters using nano-scale plasmonic structures**, Ahmed Sokar, Franz X. Hutter, Joachim N. Burghartz, Institut für Mikroelektronik Stuttgart (Germany) [9502-30]

CONFERENCE 9503 · LOCATION: LEO

Monday–Tuesday 13–14 April 2015 • Proceedings of SPIE Vol. 9503

Nonlinear Optics and Applications

Conference Chairs: **Mario Bertolotti**, Univ. degli Studi di Roma La Sapienza (Italy); **Joseph W. Haus**, Univ. of Dayton (USA); **Alexei M. Zheltikov**, Lomonosov Moscow State Univ. (Russian Federation)

Programme Committee: **Javier Aizpurua**, Centro de Fisica de Materiales (Spain); **Kiyoshi Asakawa**, Univ. of Tsukuba (Japan); **Bruno Crosignani**, Univ. dell'Aquila (Italy); **Reinhard Kienberger**, Max-Planck-Institut für Quantenoptik (Germany); **Yuri S. Kivshar**, The Australian National Univ. (Australia); **Jan Perina**, Palacky Univ. (Czech Republic); **Mark I. Stockman**, Georgia State Univ. (USA); **Anatoly V. Zayats**, King's College London (United Kingdom)

MONDAY 13 APRIL

LOCATION: LEO 8:55 TO 9:00

Opening Remarks

SESSION 1

LOCATION: LEO MON 9:00 TO 10:30

Nonlinearities in Semiconductors and Nanostructures

Session Chair: **Mario Bertolotti**, Univ. degli Studi di Roma La Sapienza (Italy)

9:00: **Novel mechanisms of optical harmonic generation on excitons in semiconductors** (*Invited Paper*), Dmitri R. Yakovlev, Technische Univ. Dortmund (Germany) [9503-1]

9:30: **Modal method for second-harmonic generation in nanostructures**, Sébastien Héron, ONERA (France); Fabrice Pardo, Lab. de Photonique et de Nanostructures (France); Patrick Bouchon, ONERA (France); Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France); Riad Haidar, ONERA (France) [9503-2]

9:50: **Degenerate four-wave mixing and two-photon induced gratings in colloidal quantum dots CdSe/ZnS**, Alexander M. Smirnov, Maria V. Kozlova, Vladimir S. Dneprovskii, Lomonosov Moscow State Univ. (Russian Federation) [9503-3]

10:10: **The analytical approach to optimization of active region structure and efficiency of quantum dot laser**, Vladimir V. Korenev, Artem V. Savelyev, St. Petersburg Academic Univ. (Russian Federation); Alexey E. Zhukov, St. Petersburg Academic Univ. (Russian Federation) and Ioffe Physical-Technical Institute (Russian Federation); Mikhail V. Maximov, Ioffe Physical-Technical Institute (Russian Federation) and St. Petersburg Academic Univ. (Russian Federation); Alexander V. Omelchenko, St. Petersburg Academic Univ. (Russian Federation) [9503-4]

Coffee Break Mon 10:30 to 11:00

SESSION 2

LOCATION: LEO MON 11:00 TO 12:50

Nonlinearities in Composite Structures

Session Chair: **Dmitri R. Yakovlev**, Technische Univ. Dortmund (Germany)

11:00: **SHG from artificial metasurfaces** (*Invited Paper*), Concita Sibilìa, Univ. degli Studi di Roma La Sapienza (Italy) [9503-5]

11:30: **Three wave mixing enhancement in metal-insulator-metal resonators**, Sébastien Héron, Patrick Bouchon, ONERA (France); Fabrice Pardo, Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France); Riad Haidar, ONERA (France) [9503-6]

11:50: **Integrated ring grating nanoprism structure for efficient coupling of propagating and localized surface plasmons**, Nancy Rahbany, Wei Geng, Rafael Salas-Montiel, Sylvain Blaize, Renaud J. B. Bachelot, Univ. de Technologie Troyes (France); Christophe Couteau, Univ. de Technologie Troyes (France) and Nanyang Technological Univ. (Singapore) [9503-7]

12:10: **Nonlinear Kerr-type coupled ring resonators with effect of loss**, Yasa Eksioğlu Ozok, Jiri Petráček, Brno Univ. of Technology (Czech Republic) [9503-8]

12:30: **Organic-inorganic planar hybrid materials for spasers**, Nikita A. Toropov, Aisylu N. Kamaliev, Tigran A. Vartanyan, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9503-9]

Lunch Break Mon 12:50 to 14:00

SESSION 3

LOCATION: LEO MON 14:00 TO 15:10

Nonlinear Processes

Session Chair: **Concita Sibilìa**, Univ. degli Studi di Roma La Sapienza (Italy)

14:00: **Nonlinear interaction between single photons** (*Invited Paper*), Bruno Sanguinetti, Univ. de Genève (Switzerland) [9503-10]

14:30: **Slow and fast light switching in ruby**, Rajitha P. Rajan, Hans Riesen, UNSW Canberra (Australia) [9503-11]

14:50: **Optical nanofiber facilitated nonlinear optics effects in cold atoms**, Vandna Gokhroo, Ravi Kumar, Sile G. Nic Chormaic, OIST Graduate Univ. (Japan) [9503-12]

Coffee Break Mon 15:10 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 6–7.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 6–7.

SESSION 4

LOCATION: LEO TUE 10:20 TO 11:50

Plasmonics

Session Chair: **Bruno Sanguinetti**, id Quantique SA (Switzerland)

10:20: **Enhanced nonlinear optics in plasmonic and dielectric nanostructures with magnetic response** (*Invited Paper*), Andrey A. Fedyanin, Lomonosov Moscow State Univ. (Russian Federation) [9503-14]

10:50: **Waves in nonlinear plasmonic slot waveguides: stationary states, bifurcation, stability and temporal evolution**, Wiktor Walasik, Institut Fresnel (France); Fangwei Ye, Shanghai Jiao Tong Univ. (China); Alejandro W. Rodriguez, Princeton Univ. (USA); Gilles Renversez, Institut Fresnel (France) and Aix-Marseille Univ. (France) [9503-15]

11:10: **Highly nonlinear sub-micro silicon nitride trench waveguide coated with gold nanoparticles**, Yuewang Huang, Qiancheng Zhao, Nicholas Sharac, Regina Ragan, Ozdal Boyraz, Univ. of California, Irvine (USA) [9503-16]

11:30: **Second harmonic generation from self-organized ZnO-ZnWO₄ eutectic composite**, Alessandro Belardini, Grigore Leahu, Marco Centini, Alessio Benedetti, Emilija Petronijevic, Eugenio Fazio, Concita Sibilìa, Univ. degli Studi di Roma La Sapienza (Italy); Pawel Osewski, Institute of Electronic Materials Technology (Poland); Dorota A. Pawlak, Institute of Electronic Materials Technology (Poland) and Univ. of Warsaw (Poland) [9503-18]

Lunch/Exhibition Break Tue 11:50 to 13:10

SESSION 5

LOCATION: LEO TUE 13:10 TO 15:10

Devices and Applications

Session Chair: **Andrey A. Fedyanin**, Lomonosov Moscow State Univ. (Russian Federation)13:10: **Coherent nonlinear optical microscopy for acquiring structural information of cell cytoskeleton**, Hyungsik Lim, Hunter College (USA) [9503-20]13:30: **Selective multiphoton excitation by parametrically shaped laser pulses**, Albrecht Lindinger, Freie Univ. Berlin (Germany) [9503-21]13:50: **Experimental mapping of nonlinear dynamics in synchronized coupled semiconductor laser networks**, Apostolos Argyris, Michail Bourmpos, Dimitris Syvridis, National and Kapodistrian Univ. of Athens (Greece) . . . [9503-17]14:10: **All-optical nonlinear information reconstructing via stochastic resonance in image processing**, Hongjun Liu, Qibing Sun, Nan Huang, Xi'an Institute of Optics and Precision Mechanics (China) [9503-22]14:30: **Cavity-enhancement realization of the second-harmonic laser at 780nm and the third-harmonic laser at 520nm from a 1560nm EDFA-boosted diode laser with periodically-poled bulk crystals**, Junmin Wang, Shanlong Guo, Yulong Ge, Kong Zhang, Jun He, Shanxi Univ. (China) . [9503-23]14:50: **Complex dynamics of QD light emitting diode with optoelectronic feedback**, Kais A. Al Naimee, Istituto Nazionale di Ottica (Italy); Hussein Al Hussein, Univ. of Baghdad (Iraq); Sora F. Abdalah, Istituto Nazionale di Ottica (Italy); Amin Al Khursan, Thi-Qar Univ. (Iraq); Ali H. Khider, Univ. of Baghdad (Iraq); Riccardo Meucci, F. Tito Arcucci, Istituto Nazionale di Ottica (Italy) [9503-24]

Coffee Break Tue 15:10 to 15:40

SESSION 6

LOCATION: LEO TUE 15:40 TO 18:00

Theory and Modelling

Session Chair: **Mario Bertolotti**, Univ. degli Studi di Roma La Sapienza (Italy)15:40: **Nonlinear scattering of ultrashort laser pulses on two-level system**, Sergey V. Sakhno, Valerie A. Astapenko, Moscow Institute of Physics and Technology (Russian Federation) [9503-25]16:00: **Explicit solution of FWM problem under the interaction of co-propagating laser beams in medium with cubic nonlinear response**, Vyacheslav A. Trofimov, Igor E. Kuchik, Lomonosov Moscow State Univ. (Russian Federation) [9503-26]16:20: **Propagation of femtosecond pulse with self-similar shape in medium with nonlinear absorption**, Vyacheslav A. Trofimov, Irina G. Zakharova, Lomonosov Moscow State Univ. (Russian Federation); Swapan Konar, Birla Institute of Technology (India) [9503-27]16:40: **The time response of nonlinear chalcogenide fiber Bragg gratings**, Lubomír Scholtz, Libor Ladanyi, Jarmila Müllerová, Univ. of Žilina (Slovakia) [9503-28]17:00: **Optical nonlinearities induced by electric fields in nematic liquid crystals**, Emil Petrescu, Cristina C. Cirtoaje, Victor Stoian, Cornelia Motoc, Univ. Politehnica of Bucharest (Romania) [9503-29]17:20: **The accuracy of the DDA (Discrete Dipole Approximation) method in determining the optical properties of black carbon fractal-like aggregates**, Krzysztof Skorupski, Wrocław Univ. of Technology (Poland) [9503-30]17:40: **Optical and thermoluminescence properties of lithium potassium borate glasses doped with Eu³⁺ ions**, Yasser Alajerami, Al Azhar Univ. (Palestinian Territory, Occupied) [9503-31]

WEDNESDAY 15 APRIL

Poster Session

MERIDIAN HALL..... WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Continuous-wave seeded mid-IR parametric system pumped by the high-average-power picosecond Yb:YAG thin-disk laser, Ondrej Novák, Martin Smrz, Taisuke Miura, Hana Turcicova, Akira Endo, Tomás Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9503-19]

Investigations on growth, structure, optical properties and laser damage threshold of organic nonlinear optical crystals of Guanidinium L-Ascorbate, Ravi K. Saripalli, Sanath Kumar, Indian Institute of Science (India); H. L. Bhat, Indian Institute of Science (India) and Ctr. for Nano and Soft Matter Sciences (India); Suja Elizabeth, Indian Institute of Science (India) [9503-32]

Measurement of nonlinear refractive index based on multiple configuration of FBG in generating multiwavelength, Mohd Nizam Abdullah, Sahbudin B. H. Shaari, Abang Anuar Ehsan, P. Suthitha Menon, Univ. Kebangsaan Malaysia (Malaysia) [9503-33]

Infrared optical parametric oscillator based on MgO: PPLN crystal and synchronously pumped by femtosecond Yb:KGW laser, Ieva Pipinyte, Karolina Stankeviciute, Rimantas Grigonis, Mangirdas Malinauskas, Valdas Sirutkaitis, Vilnius Univ. (Lithuania) [9503-34]

High-quality factor optical resonators for optoelectronics, Patrice Salzenstein, FEMTO-ST (France) [9503-35]

Temperature controlled optical resonator process for optoelectronics oscillator application, Mikhail Zarubin, Patrice Salzenstein, FEMTO-ST (France) [9503-36]

Synchronously pumped femtosecond optical parametric oscillator with broad band chirped mirrors, Karolina Stankeviciute, Vilnius Univ. (Lithuania); Simas Melnikas, Vilnius Univ. (Lithuania) and Ctr. for Physical Sciences and Technology (Lithuania); Simonas Kicas, Ctr. for Physical Sciences and Technology (Lithuania); Mikas Vengris, Mangirdas Malinauskas, Valdas Sirutkaitis, Vilnius Univ. (Lithuania) [9503-37]

Laser thermal recording on non-homogeneous medium, Ivan V. Gorbov, Anatoly S. Lapchuk, Andriy A. Kryuchyn, Yuriy O. Borodin, Institute for Information Recording (Ukraine) [9503-39]

Analysis of the optoelectronic properties in 1,3-benzoxazole molecule under the effect of electro-acceptor substituent (OH and O₂N) and electro-donor (CH₃ and NH₂) in the ground state and gas phase, Ronal A. Pérez Jimenez, Dairo J. Hernández Páez, Univ. de La Guajira (Colombia); Rafael Jose Carrasquilla Orozco, Oscar Leon Neira Bueno, Maria C. Calderon, Univ. Popular del Cesar (Colombia) [9503-40]

Modeling of self-diffraction from the induced aperture in colloidal quantum dots, Kseniia Ezhova, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Alexander M. Smirnov, Lomonosov Moscow State Univ. (Russian Federation) [9503-41]

DFT study of the electronic structure of 1,3-benzoxazole and derivatives in their neutral, anion and cation forms, Dairo J. Hernández Páez, Samuel E. Zambrano, Rafael Jose Carrasquilla Orozco, Univ. de La Guajira (Colombia); Oscar Leon Neira Bueno, Univ. Popular del Cesar (Colombia) [9503-42]

DFT study of optical and electronic properties of molecule 1,3-benzoxazole under the influence of acceptor substituent (CHO and NO₂H₂₂) and donor (NO₂H₂ and CHO) neutral gas phase and first excited state, Rosa M. Barliza P., Dairo J. Hernández Páez, Martha Kammerer, Univ. de La Guajira (Colombia); Rafael Jose Carrasquilla Orozco, Univ. Popular del Cesar (Colombia); Ronal A. Pérez Jimenez, Univ. de La Guajira (Colombia) [9503-43]

Theoretical study of the solvent effect on the optical absorption and emission properties benzoxazole molecule from the perspective of quantum computational chemistry, Julio Deluque C., Univ. de La Guajira (Colombia); Maria C. Calderon, Univ. Popular del Cesar (Colombia); Dairo J. Hernández Páez, Ronal A. Pérez Jimenez, Univ. de La Guajira (Colombia) [9503-44]

Effect of ambient gases on the characteristics of (Zn,Ga)-doped In₂O₃ (IZGO) thin films for organic light emitting diodes, KyuMann Lee, Korea Univ. of Technology and Education (Korea, Republic of) [9503-45]

CONFERENCE 9504 · LOCATION: STELLA

Monday–Tuesday 13–14 April 2015 · Proceedings of SPIE Vol. 9504

Photon Counting Applications

Conference Chairs: **Ivan Prochazka**, Czech Technical Univ. in Prague (Czech Republic); **Roman Sobolewski**, Univ. of Rochester (USA); **Ralph B. James**, Brookhaven National Lab. (USA)

Programme Committee: **Josef Blazej**, Czech Technical Univ. in Prague (Czech Republic); **Ulrich Schreiber**, Technische Univ. München (Germany); **Valery Zwiller**, Technische Univ. Delft (Netherlands)

MONDAY 13 APRIL

LOCATION: STELLA 10:20 TO 10:30

Opening Remarks

SESSION 1

LOCATION: STELLA MON 10:30 TO 12:30

Superconducting Photon Counting I

Session Chair: **Roman Sobolewski**, Univ. of Rochester (USA)

10:30: **Real-time single-photon imaging with a 64-pixel WSi superconducting nanowire camera** (*Invited Paper*), Varun B. Verma, Michael S. Allman, Martin J. Stevens, Robert D. Horansky, National Institute of Standards and Technology (USA); Francesco Marsili, Matthew D. Shaw, Andrew D. Beyer, Jet Propulsion Lab. (USA); Richard P. Mirin, Sae Woo Nam, National Institute of Standards and Technology (USA) [9504-1]

11:00: **Near-field single photon detection in a scattering NSOM**, Qiang Wang, Jelmer Renema, Leiden Univ. (Netherlands); Andreas Engel, Univ. of Zürich (Switzerland); Martin P. van Exter, Michiel J. A. de Dood, Leiden Univ. (Netherlands) [9504-2]

11:20: **Dark counts in superconducting single-photon NbN/NiCu detectors**, Loredana Parlato, Umberto Nasti, Univ. degli Studi di Napoli Federico II (Italy); Mikkel Ejrnaes, CNR-SPIN (Italy); Roberto Cristiano, CNR-SPIN (Italy); Hiroaki Myoren, Saitama Univ. (Japan); Roman Sobolewski, Univ. of Rochester (USA); Giovanni Piero Pepe, Univ. degli Studi di Napoli Federico II (Italy) and CNR SPIN UOS Naples (Italy) [9504-3]

11:40: **Superconducting and ferromagnetic properties of NbN/NiCu and NbTiN/NiCu bilayer nanostructures for photon detection**, Andrii Klimov, Institute of Electron Technology (Poland); Roman Puzniak, Institute of Physics (Poland); Enno Joon, Raivo Stern, National Institute of Chemical Physics and Biophysics (Estonia); Wojtek Slys, Marek Guziewicz, Marcin Juchniewicz, Institute of Electron Technology (Poland); Jaroslaw Z. Domagala, Institute of Physics (Poland); Michal A. Borysiewicz, Renata Kruszka, Maciej Wegrzecki, Adam Laszcz, Andrzej Czerwinski, Piotr Dziawa, Institute of Electron Technology (Poland); Roman Sobolewski, Univ. of Rochester (USA) [9504-4]

12:00: **YBCO nanowires for optical-photon detection** (*Invited Paper*), Loredana Parlato, Univ. degli Studi di Napoli Federico II (Italy); Giovanni Piero Pepe, Univ. degli Studi di Napoli Federico II (Italy) and CNR-SPIN UOS Naples (Italy); Mikkel Ejrnaes, CNR-SPIN (Italy); Roberto Cristiano, CNR-SPIN (Italy); Riccardo Arpaia, Floriana Lombardi, Chalmers Univ. of Technology (Sweden); Francesco Tafuri, CNR-SPIN (Italy); Roman Sobolewski, Univ. of Rochester (USA) [9504-5]

Lunch Break Mon 12:30 to 14:10

SESSION 2

LOCATION: STELLA MON 14:10 TO 15:00

Superconducting Photon Counting II

Session Chair: **Roman Sobolewski**, Univ. of Rochester (USA)

14:10: **Single photon imaging with superconducting nanowire single photon detectors** (*Invited Paper*), Robert H. Hadfield, Nathan Gemmell, Univ. of Glasgow (United Kingdom) [9504-6]

14:40: **The ultrafast SSPD coupled to single-mode fiber**, Maria Sidorova, Moscow State Pedagogical Univ. (Russian Federation); Alexander Divochiy, CJSC Superconducting Nanotechnology "SCONTEL" (Russian Federation); Yuri B. Vakhtomin, Moscow State Pedagogical Univ. (Russian Federation) and CJSC Superconducting Nanotechnology "SCONTEL" (Russian Federation); Konstantin Smirnov, Moscow State Pedagogical Univ. (Russian Federation) [9504-7]

Coffee Break Mon 15:00 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 7–8.

SESSION 3

LOCATION: STELLA TUE 10:10 TO 12:00

Solid State Photon Counting

Session Chair: **Josef Blazej**, Czech Technical Univ. in Prague (Czech Republic)

10:10: **Active quenching and gating circuit of the photon counting detector for laser time transfer with improved timing resolution and stability** (*Invited Paper*), Ivan Prochazka, Josef Blazej, Jan Kodet, Vojtech Michalek, Czech Technical Univ. in Prague (Czech Republic) [9504-8]

10:40: **High-performance timing electronics for single photon avalanche diode arrays**, Giulia Acconcia, Matteo Crotti, Ivan Rech, Massimo Ghioni, Politecnico di Milano (Italy) [9504-9]

11:00: **Single photon time transfer link model for GNSS satellites**, Michael Vacek, Vojtech Michalek, Marek Peca, Czech Technical Univ. in Prague (Czech Republic) and SERENUM, a.s. (Czech Republic); Ivan Prochazka, Josef Blazej, Czech Technical Univ. in Prague (Czech Republic) [9504-10]

11:20: **Aqueye plus: a new ultrafast single photon counter for optical high time resolution astrophysics**, Luca Zampieri, INAF - Osservatorio Astronomico di Padova (Italy); Cesare Barbieri, Univ. degli Studi di Padova (Italy); Mauro Barbieri, INAF - Osservatorio Astronomico di Padova (Italy); Giampiero Nalletto, Enrico Verroi, Univ. degli Studi di Padova (Italy) [9504-11]

11:40: **Single-photon level responsivity of asymmetric nanochannel diodes**, Yunus E. Akbas, Univ. of Rochester (USA); L. Q. Zhang, Y. Alimi, Aimin M. Song, The Univ. of Manchester (United Kingdom); I. Ifiguez-de-la-Torre, Javier Mateos, Tomás González, Univ. de Salamanca (Spain); Gary W. Wicks, Roman Sobolewski, Univ. of Rochester (USA) [9504-12]

Lunch/Exhibition Break Tue 12:00 to 13:10

SESSION 4

LOCATION: STELLA TUE 13:10 TO 15:00

X-ray Photon Detection

Session Chair: **Nathan Gemmell**, Univ. of Glasgow (United Kingdom)

13:10: **Detectors for counting X- and gamma-rays based on compound semiconductors** (*Invited Paper*), Ralph B. James, Aleksey E. Bolotnikov, Giuseppe S. Camarda, Yonggang Cui, Anwar Hossain, Utpal N. Roy, Ge Yang, Rubi Gul, Brookhaven National Lab. (USA); Wonho Lee, Korea Univ. (Korea, Republic of) [9504-13]

13:40: **Large-volume virtual Frisch-grid CdZnTe detectors for X- and gamma-ray sensors**, Aleksey E. Bolotnikov, Kim Ackley, Giuseppe S. Camarda, Carly Cherches, Yonggang Cui, Gianluigi De Geronimo, Jack Fried, Anwar Hossain, Brookhaven National Lab. (USA); Wonho Lee, Korea Univ. (Korea, Republic of); George Mahler, Maxwell Maritato, Brookhaven National Lab. (USA); Matthew Petryk, Binghamton Univ. (USA); Utpal N. Roy, Cynthia Salwen, Ge Yang, Emerson Vernon, Ralph B. James, Brookhaven National Lab. (USA) [9504-14]

14:00: **Study of post-growth annealing of CdMnTe X-ray and gamma-ray detectors in Cd-rich atmosphere**, Stephen U. Egarievwe, Alabama A&M Univ. (USA); Utpal N. Roy, Brookhaven National Lab. (USA); David K. Kithinji, Julius O. Jow, John O. Mwach, Alabama A&M Univ. (USA); Ge Yang, Ralph B. James, Brookhaven National Lab. (USA) [9504-15]

14:20: **Defect level analysis of CdZnTe crystals and the related thermal annealing studies**, Ge Yang, Aleksey E. Bolotnikov, Yonggang Cui, Giuseppe S. Camarda, Anwar Hossain, Utpal N. Roy, Ralph B. James, Brookhaven National Lab. (USA) [9504-16]

14:40: **Comparative study of the effects of chemo-mechanical polishing and chemical etching on CdZnTe nuclear radiation detectors**, Stephen U. Egarievwe, Alabama A&M Univ. (USA); Anwar Hossain, Brookhaven National Lab. (USA); Julius O. Jow, Alabama A&M Univ. (USA); Utpal N. Roy, Ralph B. James, Brookhaven National Lab. (USA) [9504-17]

Coffee Break Tue 15:00 to 15:30

SESSION 5

LOCATION: STELLA TUE 15:30 TO 17:20

Photon Counting Applications

Session Chair: **Ralph B. James**, Brookhaven National Lab. (USA)

15:30: **Enhancing the fill-factor of CMOS SPAD arrays using microlens integration** (*Invited Paper*), Giuseppe Intermite, Ryan E. Warburton, Aongus McCarthy, Ximing Ren, Heriot-Watt Univ. (United Kingdom); Federica A. Villa, Politecnico di Milano (Italy); Andrew J. Waddie, Mohammad R. Taghizadeh, Heriot-Watt Univ. (United Kingdom); Franco Zappa, Alberto Tosi, Politecnico di Milano (Italy); Gerald S. Buller, Heriot-Watt Univ. (United Kingdom) . . . [9504-18]

16:00: **A conducted laboratory experiment and analysis of mutual interference between LIDAR scanners**, Gunzung Kim, Jeongsook Eom, Seonghyeon Park, Yongwan Park, Yeungnam Univ. (Korea, Republic of) [9504-19]

16:20: **Effects of cytosine methylation on DNA thermal stability: a fluorescence study**, Marco Lamperti, Univ. degli Studi dell'Insubria (Italy); Luca Nardo, Univ. degli Studi di Milano Bicocca (Italy); Domenico Salerno, Valeria Cassina, Univ. degli Studi di Milano-Bicocca (Italy); Maria Bondani, Consiglio Nazionale delle Ricerche (Italy); Francesco Mantegazza, Univ. degli Studi di Milano-Bicocca (Italy) [9504-20]

WEDNESDAY 15 APRIL

Poster Session

MERIDIAN HALL..... WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Research and experiment of satellite laser ranging with 1064nm wavelength, Meng Wendong, Tang Kai, Deng Huarong, Li Pu. Zhang Haifeng, Zhang Zhongping, Shanghai Astronomical Observatory (China); Ivan Prochazka, Czech Technical Univ. in Prague (Czech Republic); Zhu Nenghong, Shanghai Astronomical Observatory (China). [9504-22]

Characterization of thin scintillators for ultrafast hard X-ray imaging, Zhehui Wang, Cris W. Barnes, Jon S. Kapustinsky, Chris L. Morris, Ron O. Nelson, Los Alamos National Lab. (USA); Ren-Yuan Zhu, Liyuan Zhang, Fan Yang, California Institute of Technology (USA) [9504-23]

Modeling of kinetic processes in thermoelectric single photon detectors, Astghik A. Kuzanyan, Institute for Physical Research (Armenia). [9504-24]

Simultaneous detection of tissue autofluorescence decay distribution and time-gated photo-bleaching rates, Alexey P. Lihachev, Inesa Ferulova, Univ. of Latvia (Latvia); Mindaugas Tamosiunas, Vytautas Magnus Univ. (Lithuania); Janis Spigulis, Univ. of Latvia (Latvia) [9504-25]

Evaluating the effectiveness of the method extrafocal images when observing low-orbiting space objects, Yury P. Shumilov, V. G. Vygon, Evgeniy A. Grishin, Victor D. Shargorodskii, Precision Systems and Instruments Corp. (Russian Federation) [9504-26]

Single photon detectors based on superconducting NbTiN nanostructures, Wojtek Slys, Marek Guziewicz, Andrii Klimov, Marcin Juchniewicz, Renata Kruszka, Institute of Electron Technology (Poland); Jaroslaw Z. Domagala, Valery Kolkovskiy, Institute of Physics (Poland); Maciej Wegrzecki, Jan Bar, Adam Laszcz, Andrzej Czerwinski, Institute of Electron Technology (Poland); Roman Sobolewski, Univ. of Rochester (USA) [9504-27]



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CONFERENCE 9505 · LOCATION: QUADRANT

Wednesday–Thursday 15–16 April 2015 • Proceedings of SPIE Vol. 9505

Quantum Optics and Quantum Information Transfer and Processing

Conference Chairs: **Konrad Banaszek**, Univ. of Warsaw (Poland); **Christine Silberhorn**, Univ. Paderborn (Germany)

Programme Committee: **Ulrik Lund Andersen**, Technical Univ. of Denmark (Denmark); **Marco Bellini**, Istituto Nazionale di Ottica (Italy); **Nicolas J. Cerf**, Univ. Libre de Bruxelles (Belgium); **Miloslav Dusek**, Palacký Univ. Olomouc (Czech Republic); **Jens S. Eisert**, Freie Univ. Berlin (Germany); **Alexander I. Lvovsky**, Univ. of Calgary (Canada); **Jeremy L. O'Brien**, Univ. of Bristol (United Kingdom); **Fabio Sciarrino**, Univ. degli Studi di Roma La Sapienza (Italy); **Andrew J. Shields**, Toshiba Research Europe Ltd. (United Kingdom); **Juan P. Torres**, ICFO - Institut de Ciències Fotòniques (Spain)

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

LOCATION: QUADRANT 10:20 TO 10:30

Opening Remarks

SESSION 1

LOCATION: QUADRANT WED 10:30 TO 11:50

Quantum Cryptography

Session Chair: **Eleni Diamanti**, Télécom ParisTech (France)

10:30: **A protocol of quantum key distribution without relying on information-disturbance trade off** (*Invited Paper*), Masato KOASHI, Univ. of Tokyo (Japan) [9505-5]

11:00: **Quantum key distribution in optical access networks** (*Invited Paper*), Bernd Fröhlich, James F. Dynes, Marco Lucamarini, Andrew W. Sharpe, Simon W. B. Tam, Zhiliang L. Yuan, Andrew J. Shields, Toshiba Research Europe Ltd. (United Kingdom) [9505-6]

11:30: **Faked state attack on realistic round robin DPS quantum key distribution systems and countermeasure**, Takehisa Iwakoshi, Tamagawa Univ. (Japan) [9505-7]

Lunch/Exhibition Break Wed 11:50 to 13:30

SESSION 2

LOCATION: QUADRANT WED 13:30 TO 15:30

Quantum Optics

Session Chair: **Jaromír Fiurásek**, Palacký Univ. Olomouc (Czech Republic)

13:30: **Giant twin-beam generation along the pump energy propagation** (*Invited Paper*), Maria V Chekhova, Max-Planck Institute for the Science of Light (Germany) and M.V. Lomonosov Moscow State University (Russian Federation) [9505-9]

14:00: **Breaking the mirror symmetry of spontaneous emission via spin-orbit interaction of light** (*Invited Paper*), Arno Rauschenbeutel, Vienna University of Technology (Austria) [9505-10]

14:30: **Quantum detector tomography on superconducting single photon detectors**, Jelmer Renema, Leiden Univ. (Netherlands); Rosalinda Gaudio, Technische Univ. Eindhoven (Netherlands); Qiang Wang, Leiden Univ. (Netherlands); Zili Zhou, Technische Univ. Eindhoven (Netherlands); Andreas Engel, Univ. of Zürich (Switzerland); Andrea Fiore, Technische Univ. Eindhoven (Netherlands); Martin P. van Exter, Michiel J. A. de Dood, Leiden Univ. (Netherlands) [9505-11]

14:50: **Effects of pump depletion on spatial and spectral properties of parametric down-conversion**, Alessia Allevi, Marco Lamperti, Univ. degli Studi dell'Insubria (Italy); Radek Machulka, Palacký Univ. Olomouc (Czech Republic); Ottavia Jedrkiewicz, Consiglio Nazionale delle Ricerche (Italy); Enrico Brambilla, Univ. degli Studi dell'Insubria (Italy); Alessandra Gatti, Consiglio Nazionale delle Ricerche (Italy); Jan Perina Jr., Ondrej Haderka, Palacký Univ. Olomouc (Czech Republic); Maria Bondani, Consiglio Nazionale delle Ricerche (Italy) . . . [9505-12]

15:10: **Generation of discrete spatial entanglement in multimode nonlinear waveguides**, Michal Jachura, Univ. of Warsaw (Poland); Michal Karpinski, Univ. of Oxford (United Kingdom); Jasleen Lugani, Divya Bharadwaj, Krishna Thyagarajan, Indian Institute of Technology Delhi (India); Konrad Banaszek, Univ. of Warsaw (Poland) [9505-13]

Coffee Break Wed 15:30 to 16:00

SESSION 3

LOCATION: QUADRANT WED 16:00 TO 17:20

Quantum Memories

Session Chair: **Bernd Fröhlich**, Toshiba Research Europe Ltd. (United Kingdom)

16:00: **Quantum memories with cold neutral atoms: from free-space to all-fibered implementations** (*Invited Paper*), Julien Laurat, Laboratoire Kastler Brossel (France) [9505-14]

16:30: **Restoring broken entanglement by separable correlations** (*Invited Paper*), Gaetana Spedalieri, Stefano Pirandola, The Univ. of York (United Kingdom) [9505-15]

17:00: **Building a room temperature quantum processor**, Eden Figueroa, Stony Brook Univ. (USA) [9505-17]

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Spatial resolution dependence on light polarization in direct laser writing 3D lithography, Sima Rekštyte, Tomas Jonavicius, Mangirdas Malinauskas, Vilnius Univ. (Lithuania) [9505-26]

Design of 1.2m telescope for space-to-ground quantum communication, Bo Qi, Institute of Optics and Electronics (China) [9505-27]

Spectral coherence of twin beams by single-shot measurements with a fiber spectrometer, Alessia Allevi, Univ. degli Studi dell'Insubria (Italy); Justinas Galinis, Vilnius Univ. (Lithuania); Marco Lamperti, Univ. degli Studi dell'Insubria (Italy); Radek Machulka, Jan Perina Jr., Ondrej Haderka, Palacký Univ. Olomouc (Czech Republic); Maria Bondani, Consiglio Nazionale delle Ricerche (Italy) [9505-28]

Evolution of spatio-spectral coherence properties of twin beam states in the high-gain regime, Alessia Allevi, Univ. degli Studi dell'Insubria (Italy); Ottavia Jedrkiewicz, Consiglio Nazionale delle Ricerche (Italy); Ondrej Haderka, Jan Perina Jr., Palacký Univ. Olomouc (Czech Republic); Maria Bondani, Consiglio Nazionale delle Ricerche (Italy) [9505-29]

Coupling of spin and orbital degrees of freedom in tunable Hong-Ou-Mandel interference involving photons in distinguishable and indistinguishable hybrid spin-orbit modes, Cody C. Leary, Maggie Lankford, Deepika Sundarraman, The College of Wooster (USA) [9505-30]

Surface ligands and solvent effects on photostability of quantum dots under pulsed laser irradiation, Victor A. Krivenkov, Pavel S. Samokhvalov, Sergey D. Prokhorov, Alexander A. Chistyakov, National Research Nuclear Univ. MEPhI (Russian Federation); Igor R. Nabiev, National Research Nuclear Univ. MEPhI (Russian Federation) and Univ. de Reims Champagne-Ardenne (France); Igor L. Martynov, National Research Nuclear Univ. MEPhI (Russian Federation) [9505-31]

Creating Sagnac-type source of entangled photons: technical aspects, Alexander P. Shurupov, Miloslav Dušek, Palacký Univ. Olomouc (Czech Republic) [9505-32]

Theoretical description of spatial multiphoton correlations in bright squeezed vacuum states of light, Polina R. Sharapova, O. V. Tikhonova, Lomonosov Moscow State Univ. (Russian Federation); Angela Marcela Perez Castaneda, Max-Planck-Institut für die Physik des Lichts (Germany); Maria V. Chekhova, Lomonosov Moscow State Univ. (Russian Federation); Gerd Leuchs, Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany) [9505-33]

Experimental observation of transition between strong and weak non-Markovianity, Nadja K. Bernardes, Univ. Federal de Minas Gerais (Brazil); Alvaro Cuevas, Adeline Orioux, Sapienza Univ. di Roma (Italy); Carlos H. Monken Univ. Federal de Minas Gerais (Brazil); Paolo Mataloni, Fabio Sciarrino, Sapienza Univ. di Roma (Italy); Marcelo F. Santos, Univ. Federal de Minas Gerais (Brazil) [9505-34]

THURSDAY 16 APRIL

SESSION 4

LOCATION: QUADRANT THU 8:50 TO 10:30

Quantum Information ProcessingSession Chair: **Stefano Pirandola**, The Univ. of York (United Kingdom)8:50: **New directions in quantum processing with optical systems** (*Invited Paper*), Timothy C Ralph, Univ of Queensland (Australia) [9505-1]9:20: **Optimal entanglement-assisted discrimination of quantum measurements** (*Invited Paper*), Jaromír Fiurásek, Martina Mikova, Michal Sedlák, Ivo Straka, Michal Micuda, Palacký Univ. Olomouc (Czech Republic); Mario Ziman, Slovak Academy of Sciences (Slovakia) and Masaryk Univ. (Czech Republic); Miloslav Dušek, Miroslav Ježek, Palacký Univ. Olomouc (Czech Republic) [9505-2]9:50: **Discrete time quantum walks with adjustable coin and step operation**, Fabian Katzschmann, Sonja Barkhofen, Thomas Nitsche, Univ. Paderborn (Germany); Jaroslav Novotny, Czech Technical Univ. Prague (Czech Republic); Aurél Gábris, Igor Jex, Czech Technical Univ. in Prague (Czech Republic); Christine Silberhorn, Univ. Paderborn (Germany) [9505-3]10:10: **Pulse-controlled quantum gate sequences on a strongly coupled qubit chain**, Holger Frydrych, Technische Univ. Darmstadt (Germany); Michael Marthaler, Karlsruher Institut für Technologie (Germany); Gernot Alber, Technische Univ. Darmstadt (Germany) [9505-4]

Coffee Break Thu 10:30 to 11:00

SESSION 5

LOCATION: QUADRANT THU 11:00 TO 12:40

Quantum CommunicationSession Chair: **Timothy C. Ralph**, The Univ. of Queensland (Australia)11:00: **Gaussian optimization conjectures: new results and proofs** (*Invited Paper*), Vittorio Giovannetti, Scuola Normale Superiore (USA) [9505-18]11:30: **Path entangled quantum networks** (*Invited Paper*), Rob Thew, Univ. de Genève (Switzerland) [9505-19]12:00: **Real-time phase-reference monitoring in a quasi-optimal coherent-state receiver**, Alessia Allevi, Univ. degli Studi dell'Insubria (Italy); Matteo Bina, Univ. degli Studi di Milano (Italy); Maria Bondani, Consiglio Nazionale delle Ricerche (Italy); Stefano Olivares, Univ. degli Studi di Milano (Italy) . . . [9505-20]12:20: **Incoherent on-off keying with classical and nonclassical light**, Marcin Jarzyna, Piotr Kuszał, Konrad Banaszek, Univ. of Warsaw (Poland) . . . [9505-21]

Lunch Break Thu 12:40 to 14:00

SESSION 6

LOCATION: QUADRANT THU 14:00 TO 15:40

Continuous VariablesSession Chair: **Rob Thew**, Univ. de Genève (Switzerland)14:00: **Practical secure quantum communications** (*Invited Paper*), Eleni Diamanti, Télécom ParisTech (France) [9505-22]14:30: **Coherent spectral manipulation of nonclassical light** (*Invited Paper*), Michal Karpinski, Laura Wright, Alex O. C. Davis, Brian J. Smith, Univ. of Oxford (United Kingdom) [9505-23]15:00: **Temporal shaping of single photon pulses**, Gaston Hornecker, Emanuel Peinke, Institut NÉEL (France); Julien Claudon, Jean-Michel Gérard, Commissariat à l'Énergie Atomique (France); Alexia Auffèves, Institut NÉEL (France) [9505-24]15:20: **Spatial-mode-selective quantum frequency conversion in nonlinear waveguides**, Michael Vasilyev, Young Bong Kwon, The Univ. of Texas at Arlington (USA) [9505-25]

CONFERENCE 9506 · LOCATION: AQUARIUS

Monday–Thursday 13–16 April 2015 · Proceedings of SPIE Vol. 9506

Optical Sensors

Conference Chairs: **Francesco Baldini**, Istituto di Fisica Applicata Nello Carrara (Italy); **Jiri Homola**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Robert A. Lieberman**, Lumoptix, LLC (USA)

Programme Committee: **Loïc J. Blum**, Univ. Claude Bernard Lyon 1 (France); **Eduard Brynda**, Institute of Macromolecular Chemistry of the ASCR, v.v.i. (Czech Republic); **Artur Dybko**, Warsaw Univ. of Technology (Poland); **Günter G. Gauglitz**, Eberhard Karls Univ. Tübingen (Germany); **Bo Liedberg**, Linköping Univ. (Sweden); **Aleksandra Lobnik**, Univ. of Maribor (Slovenia); **Ramaier Narayanaswamy**, The Univ. of Manchester (United Kingdom); **Claudia Preininger**, AIT Austrian Institute of Technology GmbH (Austria); **Reinhardt Willsch**, Institut für Photonische Technologien e.V. (Germany)

MONDAY 13 APRIL

LOCATION: AQUARIUS 11:05 TO 11:10

Opening Remarks

SESSION 1

LOCATION: AQUARIUS MON 11:10 TO 12:30

Components, Subsystems, Data Processing I

- 11:10: **Dilute nitride resonant cavity enhanced photodetector with internal gain for operation at $\lambda=1.286\ \mu\text{m}$** , Naci Balkan, Univ. of Essex (United Kingdom); Ayse Erol, Fahrettin Sarcan, Istanbul Univ. (Turkey); Mohammad S. B. Nordin, Leena F. F. Al-Ghuraibawi, Univ. of Essex (United Kingdom) . . . [9506-1]
- 11:30: **Modeling of CMOS image sensors for time-of-flight applications**, Adrian Driewer, Bedrich J. Hosticka, Andreas Spickermann, Holger Vogt, Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme (Germany) [9506-3]
- 11:50: **Radiometric calibration of digital cameras using gaussian processes**, Martin Schall, Michael Grunwald, Matthias O. Franz, Hochschule Konstanz (Germany) [9506-4]
- 12:10: **Hyperspectral light field imaging**, Raimund Leitner, Andreas Kenda, Andreas Tortschanoff, Carinthian Tech Research AG (Austria); Josef Atzler, Molecular Devices LLC (Austria) [9506-5]
- Lunch Break Mon 12:30 to 14:00

SESSION 2

LOCATION: AQUARIUS MON 14:00 TO 15:20

Components, Subsystems, Data Processing II

- 14:00: **Φ -OTDR signal amplification**, Petr Münster, Brno Univ. of Technology (Czech Republic); Josef Vojtěch, CESNET z.s.p.o. (Czech Republic); Petr Sysel, Radim Sifta, Vít Novotný, Tomáš Horváth, Brno Univ. of Technology (Czech Republic); Stanislav Sima, CESNET z.s.p.o. (Czech Republic); Milošlav Filka, Brno Univ. of Technology (Czech Republic) [9506-6]
- 14:20: **Real time polarization sensor image processing on an embedded FPGA/multi-core DSP system**, Marcus Bednara, Katarzyna Chuchacz-Kowalczyk, Fraunhofer-Institut für Integrierte Schaltungen (IIS) (Germany) [9506-7]
- 14:40: **Integrated optics on Lithium Niobate for sensing applications**, Cinzia Sada, Annamaria Zaltron, Giacomo Bettella, Univ. degli Studi di Padova (Italy); Gianluca Pozza, Univ degli Studi di Padova (Italy); Michael Esseling, Sebastian Kroesen, Cornelia Denz, Westfälische Wilhelms-Univ. Münster (Germany) [9506-8]
- 15:00: **Infrared moving target detection algorithm based on multiscale codebook model**, Lei Liu, Yayun Zhou, Nanjing Univ. of Science and Technology (China) [9506-11]
- Coffee Break Mon 15:20 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 7–8.

SESSION 3

LOCATION: AQUARIUS TUE 10:20 TO 12:10

Physical Sensors I

- 10:20: **A suite of optical fibre sensors for structural condition monitoring (Invited Paper)**, Tong Sun, City Univ. London (United Kingdom) [9506-12]
- 10:50: **Photoluminescent temperature sensor based on borate and phosphate glasses doped with copper clusters**, Anastasiia N. Babkina, Pavel S. Shirshnev, Nikolay V. Nikonorov, Aleksandr I. Sidorov, Elena V. Kolobkova, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9506-13]
- 11:10: **FBG-based novel sensor with low-cost interrogation for high-temperature measurement**, Venkata Reddy Mamidi, Srimannarayana Kamineni, R. L. N. Sai Prasad, Venkatappa Rao Thumu, Vengal Rao Pachava, National Institute of Technology, Warangal (India) [9506-14]
- 11:30: **Polarimetric and fiber Bragg grating reflective hybrid sensor for simultaneous measurement of strain and temperature in composite material**, Marcin S. Bieda, Piotr Lesiak, Mateusz Szeląg, Michał Kuczkowski, Andrzej W. Domański, Tomasz R. Woliński, Warsaw Univ. of Technology (Poland); Gerald Farrell, Dublin Institute of Technology (Ireland) [9506-15]
- 11:50: **Reflection-type compact photonic displacement sensor tapping into a projected beam**, Yong-Geon Lee, Hak-Soon Lee, Sang-Shin Lee, Kwangwoon Univ. (Korea, Republic of) [9506-16]
- Lunch/Exhibition Break Tue 12:10 to 13:20

SESSION 4

LOCATION: AQUARIUS TUE 13:20 TO 15:00

Physical Sensors II

- 13:20: **Compact optical displacement sensing by detection of microwave signals generated from a monolithic passively mode-locked laser under feedback**, Christos Simos, Technological Educational Institute of Lamia (Sterea Ellada) (Greece) and National and Kapodistrian Univ. of Athens (Greece); Hercules A. Simos, Technological Educational Institute of Piraeus (Greece) and National and Kapodistrian Univ. of Athens (Greece); Thomas Nikas, Dimitris Syvridis, National and Kapodistrian Univ. of Athens (Greece) [9506-17]
- 13:40: **A compact semiconductor digital interferometer and its applications**, Ivan V. Gorbov, Oleksander I. Britsky, Viacheslav V. Petrov, Institute for Information Recording (Ukraine); Iryna V. Balagura, Institute for Information Recording of NAS of Ukraine (Ukraine) [9506-18]

14:20: **Effective application of optical sensing technology for sustainable liquid level sensing and rainfall measurement**, Muhammad Hassan Bin Afzal, Univ. of Dhaka (Bangladesh) [9506-20]

14:40: **Microstructure encryption and decryption techniques in optical variable and invariable devices in printed documents for security and forensic applications**, Radhakrishna Prabhu, The Robert Gordon Univ. (United Kingdom); Sajjan Ambadiyil, Jayan K. G., Ctr. For Development of Imaging Technology (India); Vellara Pappukutty Mahadevan Pillai, Univ. of Kerala (India) [9506-21]

Coffee Break Tue 15:00 to 15:30

SESSION 5

LOCATION: AQUARIUS TUE 15:30 TO 17:00

Materials and Functionalizations

15:30: **Advanced materials for optical gas and biosensing application by using propagating and localized plasmonic and magneto-plasmonic transduction** (*Invited Paper*), Roberto Rella, Istituto per la Microelettronica e Microsistemi (Italy) [9506-22]

16:00: **Label-free optical affinity biosensors for medical applications: fouling problems**, Eduard Brynda, Cesar Rodriguez-Emmenegger, Andrés de los Santos Pereira, Tomas Riedel, Institute of Macromolecular Chemistry of the ASCR, v.v.i. (Czech Republic) [9506-23]

16:20: **Diameter control of carbon nanotubes using argon-acetylene mixture and their application as IR sensor**, Rana A. Afzal, Umair Manzoor, King Saud Univ. (Saudi Arabia); Arshad S. Bhatti, COMSATS Institute of Information Technology (Pakistan); Abdulrahman A. Alazba, Muhammad T. Amin, King Saud Univ. (Saudi Arabia) [9506-24]

16:40: **UV sensors based on Mg doped ZnO nanoparticles synthesized by water-based chemical method**, Mirza S. Alam, COMSATS Institute of Information Technology (Pakistan); Umair Manzoor, Abdulrahman A. Alazba, King Saud Univ. (Saudi Arabia) [9506-25]

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

SESSION 6

LOCATION: AQUARIUS WED 10:10 TO 12:00

Plasmonic Sensing I

10:10: **Plasmonic amplification for fluorescence assays** (*Invited Paper*), Jakub Dostalek, AIT Austrian Institute of Technology GmbH (Austria) [9506-26]

10:40: **Morphological studies of resonances in plasmonic metasurfaces for SPR sensing**, Jakub Lelek, Pavel Kwiecien, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic); Jiri Homola, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) [9506-27]

11:00: **Novel plasmonic sensors using particle-film interactions**, Alexander W. Powell, Univ. of Oxford (United Kingdom) [9506-28]

11:20: **Optical biosensor based on a propagating mode supported by a sparse array of metal nanoparticles**, Barbora Spackova, Maria Lara Ermini, Jiří Slabý, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Pavel Kwiecien, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic); Jiri Homola, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) [9506-29]

11:40: **The development of a multi incident angles and multi points measurement phase image interrogation surface plasmon resonance system**, Jyun Liao, Shu-Sheng Lee, National Taiwan Ocean Univ. (Taiwan) [9506-30]

Lunch/Exhibition Break Wed 12:00 to 13:10

SESSION 7

LOCATION: AQUARIUS WED 13:10 TO 14:50

Plasmonic Sensing II

13:10: **Nano slot-antenna array refractive index sensors: exceeding the conventional theoretical limit of the figure of merit**, Michal Eitan-Wiener, Tel Aviv Univ. (Israel); Zeev Iluz, CST AG (Germany); Yuval Yifat, Yael Hanein, Amir Boag, Jacob Scheuer, Tel Aviv Univ. (Israel) [9506-31]

13:30: **Multiple beam interference lithography for preparation of periodic plasmonic arrays**, Milan Vala, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) [9506-32]

13:50: **Ultrasensitive graphene coated SPR sensor for biosensing applications**, Radhakrishna Prabhu, Kaushalkumar Bhavsar, Patricia M. Pollard, The Robert Gordon Univ. (United Kingdom) [9506-33]

14:10: **New biosensing platform combining label-free and labelled analysis using Bloch surface-waves**, Norbert Danz, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Riccardo Rizzo, Univ. degli Studi di Roma La Sapienza (Italy); Peter Munzert, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Frank Sonntag, Stefan Schmieder, Fraunhofer IWS Dresden (Germany); Alberto Sinibaldi, Oleksiy Anopchenko, Francesco Michelotti, Univ. degli Studi di Roma La Sapienza (Italy) [9506-34]

14:30: **Quantitative detection of bovine and porcine gelatin difference using surface plasmon resonance based biosensor**, Devy P. Wardani, Kamsul Abraha, Univ. Gadjah Mada (Indonesia) [9506-35]

Poster Session

MERIDIAN HALL. WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Monitorization of high refractive index edible oils using coated long period fibre grating sensors, Luis Coelho, Diana Viegas, INESC Porto (Portugal); José Luís Campos Oliveira Santos, Univ. do Porto (Portugal); Jose Manuel M. M. de Almeida, Univ. de Trás-os-Montes e Alto Douro (Portugal) and Univ. do Porto (Portugal) [9506-19]

A new method to measure low-order aberrations based on wavefront slope, Qiong Zhou, Wenguang Liu, Zongfu Jiang, National Univ. of Defense Technology (China) [9506-50]

Plasmonic nanostructures for affinity biosensing and SERS, Jiří Slabý, Jiri Homola, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) [9506-52]

Flexible SPR system able to switch between Kretschmann and SPRI, Alain J. Corso, Univ. degli Studi di Padova (Italy); Sara Zuccon, Paola Zuppella, Maria G. Pelizzo, IFN-CNR LUXOR Lab. (Italy) [9506-53]

PDMS based micro-optics and microchannels for lab-on-a-chip application, Mária Pardelová, Dušan Pudiš, Daniel Jandura, Peter Gašo, Univ. of Žilina (Slovakia) [9506-55]

Development of fast FBG interrogator with wavelength-swept laser, Tatsuya Yamaguchi, Yukitaka Shinoda, Nihon Univ. (Japan) [9506-56]

Modeling and simulation with systematic technical error based on image replication spectral imaging technology, Yangyang Liu, Qunbo Lv, Linlin Pei, Jianwei Wang, Academy of Opto-Electronics (China) [9506-57]

Evaluation of an affinity-amplified immunoassay of graphene oxide using surface plasmon resonance biosensors, Nan-Fu Chiu, National Taiwan Normal Univ. (Taiwan) [9506-58]

Highly birefringent fiber-based temperature sensor utilizing the wavelength interrogation, Jan Miličty, Miroslava Kadulová, Dalibor Ciprian, Petr Hlubina, VŠB-Technical Univ. of Ostrava (Czech Republic) [9506-59]

Fiber Bragg grating sensors as a tool to evaluate the influence of filler on shrinkage of geopolymer matrices, Stefania Campopiano, Agostino Iadicicco, Francesco Messina, Claudio Ferone, Raffaele Cioffi, Univ. degli Studi di Napoli Parthenope (Italy) [9506-60]

FBG based novel sensor design for low vacuum measurement with high sensitivity, Vengal Rao Pachava, Srimannarayana Kamineni, Sai Shankar Madhuvarasu, Venkata Reddy Mamidi, National Institute of Technology, Warangal (India) [9506-61]

- Strain measurements of a multilayer panel via fiber Bragg gratings as novel approach for deflection monitoring of tracking particle detectors**, Agostino Iadicicco, Univ. degli Studi di Napoli Parthenope (Italy); Massimo Della Pietra, Univ. degli Studi di Napoli Parthenope (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Gabriella Gaudioc, Istituto Nazionale di Fisica Nucleare (Italy); Stefania Campopiano, Univ. degli Studi di Napoli Parthenope (Italy) . . . [9506-62]
- Magnetic field measurement using a fiber laser sensor in ring arrangement**, Ivo M. Nascimento, INESC Porto (Portugal); José M. Baptista, INESC Porto (Portugal) and Univ. da Madeira (Portugal); Pedro A. S. Jorge, INESC Porto (Portugal); José L. Cruz Muñoz, Univ. of Valencia (Spain); Miguel V. Andrés, Univ. de València (Spain) . . . [9506-63]
- Quantum noise limit of phase microoptical gyro sensitivity**, Vladimir Y. Venediktov, Yuri V. Filatov, Egor V. Shalymov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) . . . [9506-64]
- Automatic recognition system of aquatic organisms by classical and fluorescence microscopy**, Mathieu Lauffer, Frédéric Genty, Samuel Margueron, Lab. Matériaux Optiques, Photonique et Systèmes (LMOPS) (France); Jean-Paul Collette, IMS Supélec (France); J. C. Pihan, BioCapTech (France) . . . [9506-65]
- Gold and aluminum based surface plasmon resonance biosensors: sensitivity enhancement**, Mykola Biednov, National Taras Shevchenko Univ. of Kyiv (Ukraine) and Univ. of Hamburg (Germany); Tatyana Lebedeva, Pavel Shpilovuy, Glushkov Institute of Cybernetics (Ukraine) . . . [9506-66]
- Optical sensing of rainbow for non-contact gauging of diameter and refractive index of an axisymmetric transparent fiber**, Grzegorz Swirniak, Wrocław Univ. of Technology (Poland) . . . [9506-67]
- PDIF-CN₂ modified porous silicon optical and electrical transducer for biochemical sensing**, Alessandro Calio, Consiglio Nazionale delle Ricerche (Italy); Antonio Cassinese, Univ. degli Studi di Napoli Federico II (Italy); Maurizio Casalino, Consiglio Nazionale delle Ricerche (Italy); Jane Politi, Mario Barra, Luca De Stefano, Univ. degli Studi di Napoli Federico II (Italy) . . . [9506-68]
- TDLAS at 2.05 μm for the CO₂ concentration measurement**, Alina Pranovich, Martin Divoky, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Ivan Prochazka, Czech Technical Univ. in Prague (Czech Republic); Tomáš Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . [9506-69]
- A silicon-based peptide biosensor for label-free detection of cancer cells**, Nicola M. Martucci, Univ. degli Studi di Napoli Federico II (Italy); Ilaria Rea, Istituto per la Microelettronica e Microsistemi (Italy); Immacolata Ruggiero, Univ. degli Studi di Napoli Federico II (Italy); Monica Terracciano, Luca De Stefano, Istituto per la Microelettronica e Microsistemi (Italy); Nunzia Migliaccio, Paolo Arcari, Univ. degli Studi di Napoli Federico II (Italy); Ivo Rendina, Istituto per la Microelettronica e Microsistemi (Italy); Annalisa Lamberti, Univ. degli Studi di Napoli Federico II (Italy) . . . [9506-71]
- 3D imaging of translucent media with a plenoptic sensor based on phase space optics**, Xuanzhe Zhang, Bohong Shu, National Univ. of Defense Technology (China); Shaojun Du, National Univ of Defense Technology (China) . . . [9506-72]
- Experimental results for characterization of a tapered plastic optical fiber sensor based on SPR**, Nunzio Cennamo, Luigi Zeni, Seconda Univ. degli Studi di Napoli (Italy) . . . [9506-73]
- Magneto-plasmonic response as a perspective tool to magnetic field sensing**, Petr Otípká, Jaroslav Vlček, Michal Lesňák, VŠB-Technical Univ. of Ostrava (Czech Republic); Jaroslav Sobota, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic) . . . [9506-74]
- Graphene-like coatings for biosensors devices**, Paola Zuppella, Francesca Gerlin, Sara Zuccon, Alain J. Corso, IFN-CNR LUXOR Lab. (Italy); Enrico Tassarolo, Marco Nardello, Davide Bacco, Univ. degli Studi di Padova (Italy); Maria G. Pelizzo, IFN-CNR LUXOR Lab. (Italy) . . . [9506-75]
- Single particle UV sensor and effect of subsequent heat treatment on the morphology and optical properties of unique ZnO nanorod**, Umair Manzoor, King Saud Univ. (Saudi Arabia); Do K. Kim, KAIST (Korea, Republic of); Abdulrahman A. Alazba, Muhammad T. Amin, King Saud Univ. (Saudi Arabia); Arshad S. Bhatti, COMSATS Institute of Information Technology (Pakistan) . . . [9506-76]
- Photoluminescence characterization of ZnO nanowires functionalization**, Jane Politi, Univ. degli Studi di Napoli Federico II (Italy); Mariano Gioffre, Ilaria Rea, Luca De Stefano, Istituto per la Microelettronica e Microsistemi (Italy) . . . [9506-78]
- Optical sensors based on the molecular condensation nuclei detector**, Vladimir D. Kuptsov, Saint-Petersburg State Polytechnical Univ. (Russian Federation); Vadim Katerlevskii, Neorganika (Russian Federation); Vladimir P. Valyukhov, Saint-Petersburg State Polytechnical Univ. (Russian Federation) . . . [9506-79]
- Engineered metallic nanogap structures for plasmonic biosensing and surface-enhanced spectroscopy**, Xiaoshu Chen, Univ. of Minnesota, Twin Cities (USA); Daehan Yoo, Hyeong-Ryeol Park, Shailabh Kumar, Avijit Barik, Jonah Shaver, Daniel Mohr, The Univ. of Minnesota, Twin Cities (USA); Sang-Hyun Oh, Univ. of Minnesota, Twin Cities (USA) . . . [9506-80]
- Research on optical fiber microphone array based on Sagnac interferometer**, Hongyan Wu, Jian Wang, Bo Jia, Fudan Univ. (China) [9506-81]
- Skin melanoma detection with a multispectral imaging equipment**, Ilze Lihacova, Uldis Rubins, Univ. of Latvia (Latvia); Aleksandrs D. Derjabo, Latvian Oncology Ctr. (Latvia); Janis Spigulis, Univ. of Latvia (Latvia) . . . [9506-82]
- Determination of plume temperature distribution based on the ratios of the radiation intensities of multiple CO₂ lines**, Sławomir Cięższyk, Politechnika Lubelska (Poland) . . . [9506-83]
- Application research in nonuniformity correction algorithm of IRFPA for infrared measuring system**, Yi Yang, Baihong Shu, Shaojun Du, National Univ. of Defense Technology (China) . . . [9506-84]
- Aeronautical fibre optic fuel gauging sensor**, Giovanni Onorato, Gianluca Persichetti, Immacolata A. Grimaldi, Genni Testa, Romeo Bernini, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy); Carlo A. M. Rens, Floris H. Overwater, National Aerospace Lab. NLR (Netherlands) . . . [9506-85]
- Remote optoelectronic sensors for monitoring of nonlinear surfaces**, Andrey Petrochenko, Igor Konyakhin, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) . . . [9506-86]
- Method of simultaneous measurement of bending forces and temperature using Bragg gratings**, Piotr A. Kisala, Politechnika Lubelska (Poland) . [9506-87]
- Investigating temperature effects on the spectral lines of blue laser diodes for monitoring NO₂ gas pollution**, Khaled Gasmi, Watheq Al-Basheer, Abdulaziz Aljalal, King Fahd Univ. of Petroleum and Minerals (Saudi Arabia) . . . [9506-88]
- Evolution of blue laser diode spectral lines with applied current in the range 446-448 nm**, Watheq Al-Basheer, Abdulaziz Aljalal, Khaled Gasmi, King Fahd Univ. of Petroleum and Minerals (Saudi Arabia) . . . [9506-89]
- Active differential optical absorption spectroscopy for NO₂ gas pollution using blue light emitting diodes**, Abdulaziz Aljalal, Khaled Gasmi, Watheq Al-Basheer, King Fahd Univ. of Petroleum and Minerals (Saudi Arabia) . . [9506-90]
- Volume holographic gratings as optical sensor**, Gaetano Bianco, CGS S.p.A. (Italy); Maria Antonietta Ferrara, Istituto per la Microelettronica e Microsistemi (Italy); Fabio Borbone, Federica Zuppari, Antonio Roviello, Univ. degli Studi di Napoli Federico II (Italy); Valerio Striano, Consorzio Antares S. c. a. r. l. (Italy); Giuseppe Coppola, Istituto per la Microelettronica e Microsistemi (Italy) [9506-91]
- Cable television monitoring system based on fiber laser and FBG sensor**, Peng-Chun Peng, Jun-Han Huang, National Taipei Univ. of Technology (Taiwan); Shin-Shian Wu, National Chi Nan Univ. (Taiwan); Wei-Yuan Yang, Po-Tso Shen, National Taipei Univ. of Technology (Taiwan) . . . [9506-92]
- Fast correction algorithm for lens array distortion**, Chao Li, Qian Chen, Mao Chen, Tian Man, Ajun Shao, Nanjing Univ. of Science and Technology (China) . . . [9506-93]
- Magneto-plasmonic nanomaterials for biosensing applications**, Maria Grazia Manera, Istituto per la Microelettronica e Microsistemi (Italy); Pierpaolo Lupo, Franca Albertini, Consiglio Nazionale delle Ricerche (Italy); Cesar de Julián Fernández, Istituto dei Materiali per l'Elettronica ed il Magnetismo (Italy); Adriano Colombelli, Roberto Rella, Istituto per la Microelettronica e Microsistemi (Italy) . . . [9506-94]
- Forest of silica nanowires decorated with plasmonic nanoparticles for biosensing applications**, Maria Grazia Manera, Adriano Colombelli, Annalisa Convertino, Antonietta Taurino, Roberto Rella, Istituto per la Microelettronica e Microsistemi (Italy) . . . [9506-95]
- Standard turn-around point and sol-gel coated long period fiber gratings as optical platforms for label-free biosensing: a comparative study**, Francesco Chiavaioli, Istituto di Fisica Applicata Nello Carrara (Italy); Palas Biswas, Central Glass and Ceramic Research Institute (India); Cosimo Trono, Ambra Giannetti, Sara Tombelli, Istituto di Fisica Applicata Nello Carrara (Italy); Somnath Bandyopadhyay, Sumimal Jana, Susanta Bera, Aparajita Mallick, Central Glass and Ceramic Research Institute (India); Riccardo Falciai, Francesco Baldini, Istituto di Fisica Applicata Nello Carrara (Italy) . . . [9506-96]
- A novel 'Gold on Gold' biosensing scheme for an on-fiber immunoassay**, Nirmal S. Punjabi, Indian Institute of Technology Bombay (India); Jitendra Satija, Vellore Institute of Technology (India); Soumyo Mukherji, Indian Institute of Technology Bombay (India) . . . [9506-98]

THURSDAY 16 APRIL

SESSION 8

LOCATION: AQUARIUS THU 9:00 TO 10:10

Raman Spectroscopy

9:00: **Raman fiber probes for biophotonics** (*Invited Paper*), Juergen Popp, Leibniz-Institut für Photonische Technologien e.V. (Germany) [9506-36]

9:30: **Optofluidic jet waveguide approach for Raman spectroscopy**, Gianluca Persichetti, Genni Testa, Romeo Bernini, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy) [9506-37]

9:50: **Discrimination and classification of acute lymphoblastic leukemia cells by Raman spectroscopy**, Stefano Managò, National Research Council (Italy); Carmen Valente, Institute of Protein Biochemistry (Italy); Peppino Mirabelli, SDN, Istituto di Ricerca Diagnostica e Nucleare (Italy); Anna Chiara De Luca, Consiglio Nazionale delle Ricerche (Italy) [9506-38]

Coffee Break Thu 10:10 to 10:40

SESSION 9

LOCATION: AQUARIUS THU 10:40 TO 12:10

Chemical Sensors and Biosensors I

10:40: **Hydrophilic upconversion nanoparticles for use in biosensing and bioimaging** (*Invited Paper*), Otto S. Wolfbeis, Univ. Regensburg (Germany) [9506-39]

11:10: **Fibre tip pH sensor for tumor detection during surgery**, Matthew R. Henderson, Erik P. Schartner, David F. Callen, P. Grantley Gill, Tanya M. Monro, The Univ. of Adelaide (Australia) [9506-40]

11:30: **Fiber-optic pH sensing system with microscopic resolution**, Ondrej Podrazky, Ivan Kasík, Jan Mrázek, Soňa Vytykáčová, Jana Probošťová, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) ... [9506-41]

11:50: **Study of the grafting of dyes for the design of a pH-optode**, Mathias Fages, Denis M. G. Doizi, Guy Deniau, Commissariat à l'Energie Atomique (France) [9506-42]

Lunch Break Thu 12:10 to 13:20

SESSION 10

LOCATION: AQUARIUS THU 13:20 TO 15:20

Chemical Sensors and Biosensors II

13:20: **Localised hydrogen peroxide sensing for reproductive health**, Malcolm S. Purdey, Erik P. Schartner, The Univ. of Adelaide (Australia) and ARC Ctr. of Excellence for Nanoscale BioPhotonics (Australia); Melanie Sutton-McDowall, Leslie Ritter, The Univ. of Adelaide (Australia); Jeremy Thompson, The Univ. of Adelaide (Australia) and ARC Ctr. of Excellence for Nanoscale BioPhotonics (Australia); Tanya M. Monro, The Univ. of Adelaide (Australia) and ARC Ctr. of Excellence for Nanoscale BioPhotonics (Australia) and Univ. of South Australia (Australia); Andrew D. Abell, The Univ. of Adelaide (Australia) and ARC Ctr. of Excellence for Nanoscale BioPhotonics (Australia) [9506-43]

13:40: **Cancer-cells on a chip for label-free optic detection of secreted molecules**, Ophélie I. Berthuy, Loïc J. Blum, Christophe A. Marquette, Univ. Claude Bernard Lyon 1 (France) [9506-44]

14:00: **Studies of excitation of whispering gallery modes in a polymer coated silica cylindrical microresonator**, Vishnu Kavungal, Qiang Wu, Gerald Farrell, Yuliya Semenova, Dublin Institute of Technology (Ireland) ... [9506-45]

14:20: **Optical micro-bubble resonators as promising biosensors**, Ambra Giannetti, Andrea Barucci, Simone Berneschi, Alessandro Cosci, Franco Cosi, Daniele Farnesi, Gualtiero Nunzi Conti, Istituto di Fisica Applicata Nello Carrara (Italy); Stefano Pelli, Istituto di Fisica Applicata Nello Carrara (Italy) and Ctr. Studi e Ricerche "E. Fermi" (Italy); Silvia Soria Huguet, Sara Tombelli, Cosimo Trono, Istituto di Fisica Applicata Nello Carrara (Italy); Giancarlo C. Righini, Museo Storico della Fisica e Centro Studi e Ricerche Enrico Fermi (Italy) and Istituto di Fisica Applicata Nello Carrara (Italy); Francesco Baldini, Istituto di Fisica Applicata Nello Carrara (Italy) [9506-46]

14:40: **Cell internalization of theranostic agents using polymethyl-methacrylate nanoparticles**, Ambra Giannetti, Barbara Adinolfi, Istituto di Fisica Applicata Nello Carrara (Italy); Mario Pellegrino, Univ. di Pisa (Italy); Giovanna Sotgiu, Consiglio Nazionale delle Ricerche (Italy); Sara Tombelli, Cosimo Trono, Istituto di Fisica Applicata Nello Carrara (Italy); Greta Varchi, Istituto per la Sintesi Organica e la Fotoreattività (Italy); Francesco Baldini, Istituto di Fisica Applicata Nello Carrara (Italy) [9506-47]

15:00: **Solid-surface fluorescence of polycyclic aromatic hydrocarbons on polysaccharide fiber matrices**, Svetlana M. Rogacheva, Anna V. Strashko, Tamara I. Gubina, Yuri Gagarin State Technical Univ. of Saratov (Russian Federation); Anna Shipovskaya, Yuri Gagarin State Technical Univ. of Saratov (Russian Federation) and N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Elena V. Volkova, Andrey G. Melnikov, Yuri Gagarin State Technical Univ. of Saratov (Russian Federation) [9506-49]

CONFERENCE 9507 · LOCATION: STELLA

Wednesday–Thursday 15–16 April 2015 • Proceedings of SPIE Vol. 9507

Micro-structured and Specialty Optical Fibres

Conference Chairs: **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus); **Jiri Kanka**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Alexis Mendez**, MCH Engineering LLC (USA)

Programme Committee: **Jean-Luc Adam**, Univ. de Rennes 1 (France); **John Ballato**, Clemson Univ. (USA); **Ole Bang**, DTU Fotonik (Denmark); **Hartmut Bartelt**, Institut für Photonische Technologien e.V. (Germany); **Aurélien Bergonzo**, Fibercore Ltd. (United Kingdom); **Neil G. R. Broderick**, The Univ. of Auckland (New Zealand); **Benjamin J. Eggleton**, The Univ. of Sydney (Australia); **Christopher Emslie**, Fibercore Ltd. (United Kingdom); **Sebastien Fevrier**, XLIM Institut de Recherche (France); **Karl-Friedrich Klein**, Technische Hochschule Mittelhessen (Germany); **Jonathan C. Knight**, Univ. of Bath (United Kingdom); **Michael Komodromos**, Frederick Univ. (Cyprus); **Hanne Ludvigsen**, Aalto Univ. School of Science and Technology (Finland); **Walter Margulis**, Acreo Swedish ICT AB (Sweden); **Saeed Rehman**, Fibertronix AB (Sweden); **Valerio Romano**, Berner Fachhochschule Technik und Informatik (Switzerland); **Kay Schuster**, Institut für Photonische Technologien e.V. (Germany); **Waclaw Urbanczyk**, Wrocław Univ. of Technology (Poland); **David J. Webb**, Aston Univ. (United Kingdom); **Alexei M. Zheltikov**, Lomonosov Moscow State Univ. (Russian Federation)

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

LOCATION: STELLA 13:25 TO 13:30

Opening Remarks

SESSION 1

LOCATION: STELLA WED 13:30 TO 15:20

Fibres Tailored for Applications

Session Chair: **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus)

13:30: **Chalcogenide glass fiber for mid-infrared sensing: state of the art and recent achievements** (*Invited Paper*), Bruno Bureau, Johann Troles, Catherine Boussard-Plédel, Virginie Nazabal, Univ. de Rennes 1 (France); Laurent Brilland, PERFOS (France); Jacques Lucas, Jean Luc Adam, Univ. de Rennes 1 (France) [9507-1]

14:00: **Fiber-lasers doped by nanocrystalline holmium-yttrium titanates ($\text{Ho}_x\text{Y}_{1-x}\text{Ti}_2\text{O}_7$)**, Jan Mrázek, Ivan Kašík, Jan Bohacek, Jana Probošтова, Jan Aubrecht, Pavel Honzátko, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) [9507-2]

14:20: **Spectral broadening in low OH content and dispersion-managed tellurite fiber for compact mid-IR sources**, Clement Strutynski, Jeremy Picot-Clemente, Foued Amrani, Oussama Mouawad, Frederic Désévéday, Jean-Charles Jules, Gregory Gadret, Bertrand Kibler, Lab. Interdisciplinaire Carnot de Bourgogne (France); Yasutake Ohishi, Toyota Technological Institute (Japan); Frédéric Smektala, Lab. Interdisciplinaire Carnot de Bourgogne (France) [9507-3]

14:40: **Silica optical fibers with high oxygen excess in the core: a new type of radiation-resistant fiber**, Pavel F. Kashaykin, Fiber Optics Research Ctr. (Russian Federation) and Ogarev Mordovia State Univ. (Russian Federation); Aleksander L. Tomashuk, Fiber Optics Research Ctr. (Russian Federation) and Ulyanovsk State Univ. (Russian Federation); Mikhail Y. Salgansky, Institute of Chemistry of High-Purity Substances of the Russian Academy of Sciences (Russian Federation); Alexey N. Abramov, Institute of Chemistry of High-Purity Substances of the Russian Academy of Sciences (Russian Federation) and N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Konstantin N. Nishchev, Ogarev Mordovia State Univ. (Russian Federation); Alexey N. Gurynov, Institute of Chemistry of High-Purity Substances of the Russian Academy of Sciences (Russian Federation); Eugeny M. Dianov, Fiber Optics Research Ctr. (Russian Federation) [9507-4]

14:40: **Hollow core negative curvature fiber with layers of photoaligned optically anisotropic material**, Denis Bogdanovich, Irkutsk State Technical Univ. (Russian Federation); Abhishek K. Srivastava, Hong Kong Univ. of Science and Technology (Hong Kong, China); Andrey D. Pryamikov, Fiber Optics Research Ctr. (Russian Federation); Alexander S. Biryukov, A. M. Prokhorov General Physics Institute (Russian Federation); Vladimir G. Chigrinov, Hong Kong Univ. of Science and Technology (Hong Kong, China) [9507-5]

15:00: **Low-bending loss square-core optical fiber for optical communication**, P. F. Liu, Jiun-Yu Sung, Chi-Wai Chow, National Chiao Tung Univ. (Taiwan); Chien-Hung Yeh, Feng Chia Univ. (Taiwan); Gary Chou, Prime Optical Fiber Corp. (Taiwan); Ci-Ling Pan, National Tsing Hua Univ. (Taiwan) [9507-6]

Coffee Break Wed 15:20 to 15:50

SESSION 2

LOCATION: STELLA WED 15:50 TO 17:40

Modelling and Analysis of Speciality Fibre and Components

Session Chair: **Jiri Kanka**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic)

15:50: **Highly nonlinear chalcogenide suspended-core fibers for applications in the mid-infrared** (*Invited Paper*), Enrico Coscelli, Federica Poli, Univ. degli Studi di Parma (Italy); Jianfeng Li, Aston Univ. (United Kingdom); Annamaria Cucinotta, Stefano Selleri, Univ. degli Studi di Parma (Italy) [9507-7]

16:20: **Microfluidic flows and heat transfer and their influence upon optical modes in microstructure fibres**, Edward M. Davies, Imperial College London (United Kingdom); Paul Christodoulides, George Florides, Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus) [9507-8]

16:40: **Large mode area aperiodic fiber designs for robust singlemode emission under high thermal load**, Romain Dauliat, Leibniz-Institut für Photonische Technologien e.V. (Germany) and XLIM Institut de Recherche (France); Enrico Coscelli, Federica Poli, Univ. degli Studi di Parma (Italy); Aurélien Benoit, XLIM Institut de Recherche (France) and EOLITE Systems (France); Dia Darwich, Raphaël Jamier, XLIM Institut de Recherche (France); Kay Schuster, Stephan Grimm, Leibniz-Institut für Photonische Technologien e.V. (Germany); Annamaria Cucinotta, Stefano Selleri, Univ. degli Studi di Parma (Italy); François Salin, EOLITE Systems (France); Philippe Roy, XLIM Institut de Recherche (France) [9507-9]

17:00: **Investigation of optical thin films printed on the surface of facets of photonic crystal fibers**, Michal Lucki, Stanislav Kraus, Richard Zelený, Czech Technical Univ. in Prague (Czech Republic); Dana Seyringer, Johann Zehetner, FH Vorarlberg (Austria); Jan Látal, VSB-Technical Univ. of Ostrava (Czech Republic) [9507-10]

17:20: **Propagation of laser pulse with a few cycles in layered medium with time-dependent dielectric permittivity**, Vyacheslav A. Trofimov, Eugeny V. Pedan, Lomonosov Moscow State Univ. (Russian Federation) [9507-11]

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Highly birefringent dispersion compensating quasi-photonic crystal fiber, Soeun Kim, Yong Soo Lee, Chul-Sik Kee, Gwangju Institute of Science and Technology (Korea, Republic of); Chung Ghiu Lee, Chosun Univ. (Korea, Republic of) [9507-29]

Nanoimprint lithography using TiO_2 - SiO_2 ultraviolet curable materials, Satoshi Takei, Toyama Prefectural Univ. (Japan) [9507-31]

THURSDAY 16 APRIL

SESSION 3

LOCATION: STELLA THU 9:00 TO 10:30

**Sensors and Devices based on Speciality
Fibres**Session Chair: **David J. Webb**, Aston Univ. (United Kingdom)9:00: **Speciality optical fibres for astronomy** (*Invited Paper*), Simon C. Ellis, Australian Astronomical Observatory (Australia); Joss Bland-Hawthorn, The Univ. of Sydney (Australia) [9507-12]9:30: **Birefringent optical fiber with dispersive polarization axes for sensing applications**, Karol Tarnowski, Alicja Anuszkiewicz, Wroclaw Univ. of Technology (Poland); Krzysztof Poturaj, Pawel Mergo, Univ. of Maria Curie-Skłodowska (Poland); Wacław Urbanczyk, Wroclaw Univ. of Technology (Poland) [9507-13]9:50: **Nanostructured tapered optical fibers for particle trapping**, Mark Daly, Viet Giang Truong, Sile G. Nic Chormaic, OIST Graduate Univ. (Japan) [9507-14]10:10: **Specialty fibers for high power lasers and amplifiers** (*Invited Paper*), Jayanta K. Sahu, Univ. of Southampton (United Kingdom) [9507-15]

Coffee Break Thu 10:30 to 11:00

SESSION 4

LOCATION: STELLA THU 11:00 TO 12:30

Fibre Design, Processing and FabricationSession Chair: **Valerio Romano**, Berner Fachhochschule Technik und Informatik (Switzerland)11:00: **Soft glass photonic crystal fibers and their applications** (*Invited Paper*), Ryszard Buczynski, Mariusz Klimczak, Dariusz Pysz, Grzegorz Stepniowski, Institute of Electronic Materials Technology (Poland); Bartłomiej Siwicki, Warsaw Univ. of Technology (Poland); Jarosław Cimek, Ireneusz Kujawa, Institute of Electronic Materials Technology (Poland); Bernard Piechal, Univ. of Warsaw (Poland); Ryszard Stepien, Institute of Electronic Materials Technology (Poland) [9507-16]11:30: **Progress in the fabrication of optical fibers by the sol-gel granulated silica method**, Jonas Scheuner, Dereje Etissa, Univ. Bern (Switzerland); Sönke Pilz, Berner Fachhochschule Technik und Informatik (Switzerland); Manuel Ryser, Univ. Bern (Switzerland); Hossein Najafi, Berner Fachhochschule Technik und Informatik (Switzerland); Woojin Shin, Gwangju Institute of Science and Technology (Korea, Republic of); Valerio Romano, Univ. Bern (Switzerland) and Berner Fachhochschule Technik und Informatik (Switzerland) [9507-17]11:50: **The fabrication and characterization of the microfiber coated with colloidal crystal**, Ying Luo, Jie Ma, Zhe Chen, Yongchun Zhong, Jinan Univ. (China) [9507-18]12:10: **Investigation of passive and active silica-tin oxide nanostructured optical fibers fabricated by "inverse dip-coating" and "powder in tube" method based on the chemical sol-gel process and laser emission**, Geoffroy Granger, Univ. Stuttgart (Germany); Christine Restoin, Philippe Roy, Raphaël Jamier, Sébastien Rougier, XLIM Institut de Recherche (France); Jean-René Duclere, Univ. de Limoges (France); Andre Lecomte, SPCTS (France); Romain Dauliat, Leibniz-Institut für Photonische Technologien e.V. (Germany); Jean-Marc Blondy, XLIM Institut de Recherche (France) [9507-19]

Lunch Break Thu 12:30 to 13:40

SESSION 5

LOCATION: STELLA THU 13:40 TO 15:00

**Polymer Optical Fibre Based Sensors and
Devices**Session Chair: **Alexis Mendez**, MCH Engineering LLC (USA)13:40: **Fibre Bragg gratings inscribed in low loss CYTOP polymer optical fiber using a femtosecond laser**, A. Lacraz, M. Polis, A. Theodosiou, Charalambos Koutsides, Kyriacos Kalli, Cyprus Univ. of Technology (Cyprus) [9507-20]14:00: **Experimental investigation of Bragg gratings growth dynamics in polymer fibers of different types**, Gabriela Statkiewicz-Barabach, Dominik Kowal, Wroclaw Univ. of Technology (Poland); Pawel Mergo, Univ. of Maria Curie-Skłodowska (Poland); Wacław Urbanczyk, Wroclaw Univ. of Technology (Poland) [9507-21]14:20: **Optimisation of polymer optical fibre based interferometric sensors**, Andreas Pospori, David J. Webb, Aston Univ. (United Kingdom) [9507-22]14:40: **High performance liquid level monitoring system based on polymer fiber Bragg gratings embedded in silicone rubber diaphragm**, Carlos A. F. Marques, Aston Institute for Photonics Technologies (United Kingdom); Gang-Ding Peng, The Univ. of New South Wales (Australia); David J. Webb, Aston Univ. (United Kingdom) [9507-23]

Coffee Break Thu 15:00 to 15:30

SESSION 6

LOCATION: STELLA THU 15:30 TO 17:20

**Testing and Characterisation Methods
Applied to Special Fibre Types**Session Chair: **Kyriacos Kalli**, Cyprus Univ. of Technology (Cyprus)15:30: **High-precision confocal reflection measurement for two dimensional refractive index mapping of optical fibers** (*Invited Paper*), Philippe R. Raisin, Jonas Scheuner, Univ. Bern (Switzerland); Valerio Romano, Univ. Bern (Switzerland) and Berner Fachhochschule Technik und Informatik (Switzerland); Manuel Ryser, Univ. Bern (Switzerland) [9507-24]16:00: **Characterization of double-clad thulium-doped fiber with increased quantum conversion efficiency**, Jan Aubrecht, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jakub Cajzl, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) and Institute of Chemical Technology (Czech Republic); Pavel Peterka, Pavel Honzátko, Ondrej Podrazký, Filip Todorov, Ivan Kašík, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) [9507-25]16:20: **Transmission of red-laser radiation by using Bragg fibers**, Vlastimil Matejec, Ondrej Podrazký, Ivan Kašík, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Milan Frank, Michal Jelínek M.D., Václav Kubeček, Czech Technical Univ. in Prague (Czech Republic) [9507-26]16:40: **Light-guidance in step-index fibers with rectangular shaped core**, Jan C. Heimann, P. Raithel, Tim Tobisch, Technische Hochschule Mittelhessen (Germany); Mathias Belz, TransMIT GmbH (Germany); Karl-Friedrich Klein, Technische Hochschule Mittelhessen (Germany) [9507-27]17:00: **Mode field distribution and measuring method of microstructured fiber**, Guoying Feng, Sichuan Univ. (China) [9507-28]

Holography: Advances and Modern Trends

Conference Chairs: **Miroslav Hrabovský**, Palacký Univ. Olomouc (Czech Republic); **John T. Sheridan**, Univ. College Dublin (Ireland); **Antonio Fimia**, Univ. Miguel Hernández de Elche (Spain)

Programme Committee: **Radim Chmelík**, Brno Univ. of Technology (Czech Republic); **Milos Kopecky**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Libor Kotacka**, Optaglio s.r.o. (Czech Republic); **Miroslav Miler**, Academy of Sciences of the Czech Republic (Czech Republic); **Dagmar Senderáková**, Comenius Univ. in Bratislava (Slovakia); **Mitsuo Takeda**, Utsunomiya Univ. (Japan); **Vladimir Y. Venediktov**, Saint Petersburg Electrotechnical Univ. “LETI” (Russian Federation); **Przemyslaw W. Wachulak**, Military Univ. of Technology (Poland); **Günther K. G. Wernicke**, Humboldt-Univ. zu Berlin (Germany)

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

LOCATION: TAURUS 13:45 TO 13:50

Opening Remarks

SESSION 1

LOCATION: TAURUS WED 13:50 TO 15:00

Digital Holography

Session Chair: **Miroslav Hrabovský**, Palacký Univ. Olomouc (Czech Republic)

13:50: **Sparse approximations of phase and amplitude for wave field reconstruction from noisy data** (*Invited Paper*), Vladimir Y. Katkovnik, Tampere Univ. of Technology (Finland); Igor A. Shevkunov, Nikolay V. Petrov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Karen Egiazarian, Tampere Univ. of Technology (Finland) .. [9508-1]

14:20: **Real-time characterization of the neuronal response to osmotic shock by digital holographic microscopy**, Maria Gomariz, Cristina Soto-Sánchez, Isabel Garcia, Gema Martinez-Navarrete, Eduardo Fernández, Antonio Fimia, Univ. Miguel Hernández de Elche (Spain) [9508-2]

14:40: **Fluorescence digital holographic adaptive optics microscopy**, Tianlong Man, Yuhong Wan, Dayong Wang, Beijing Univ. of Technology (China) [9508-4]

SESSION 2

LOCATION: TAURUS WED 15:00 TO 15:40

Holographic Security

Session Chair: **John T. Sheridan**, Univ. College Dublin (Ireland)

15:00: **Plasmonic spectral filters based on diffraction gratings**, Alexander Y. Zherdev, Sergey B. Odinokov, Dmitry Lushnikov, Maria Ruchkina, Bauman Moscow State Technical Univ. (Russian Federation); Alexey V. Zablotskiy, Artur Azatovich Kuzin, Moscow Institute of Physics and Technology (Russian Federation); Andrey V. Smirnov, Krypten (Russian Federation) [9508-6]

15:20: **Security hologram foil labels with a design facilitating authenticity testing: effects of mechanical bending of the holograms**, Ivo Aubrecht, Police presidium CR (Czech Republic) [9508-7]

Coffee Break Wed 15:40 to 16:00

SESSION 3

LOCATION: TAURUS WED 16:00 TO 17:50

Holographic Materials and Data Storage

Session Chair: **Antonio Fimia**, Univ. Miguel Hernández de Elche (Spain)

16:00: **Volume holographic gratings: fabrication and characterization** (*Invited Paper*), Gaetano Bianco, CGS S.p.A (Italy); Maria Antonietta Ferrara, Istituto per la Microelettronica e Microsistemi (Italy); Fabio Borbone, Antonio Roviello, Univ. degli Studi di Napoli Federico II (Italy); Vito Pagliarulo, Simonetta Grilli, Pietro Ferraro, Consiglio Nazionale delle Ricerche (Italy); Valerio Striano, ANTARES S.c.a.r.l. (Italy); Giuseppe Coppola, Istituto per la Microelettronica e Microsistemi (Italy) [9508-8]

16:30: **Theoretical analysis of diffraction characteristics for peristrophic multiplexing with spherical reference wave**, Shuhei Yoshida, Jun Mori, Manabu Yamamoto, Tokyo Univ. of Science (Japan) [9508-9]

16:50: **Humidity and temperature response of photopolymer-based holographic gratings**, Tatsiana Mikulchyk, Dublin Institute of Technology (Ireland) and Centre for Industrial and Engineering Optics (Ireland); James Walshe, Dublin Institute of Technology (Ireland); Dervil Cody, Focas Research Institute, DIT (Ireland); Suzanne Martin, Izabela Naydenova, Dublin Institute of Technology (Ireland) and Centre for Industrial and Engineering Optics (Ireland) [9508-10]

17:10: **Read-out optical schemes for holographic memory system based on multiplexed computer generated 1D Fourier holograms**, Sergey S. Donchenko, Sergey B. Odinokov, Vladimir I. Bobrinev, Alexandr Y. Betin, Evgenie Y. Zlokazov, Bauman Moscow State Technical Univ. (Russian Federation) [9508-11]

17:30: **Image fusion using bi-directional similarity**, Chunshan Bai, Xiaoyan Luo, BeiHang Univ. (China) [9508-12]

Poster Session

MERIDIAN HALL..... WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Comparison of digital holographic interferometry and constant current anemometry for measurement of temperature field in fluid, Roman Doleček, Pavel Psota, Vít Lédl, Tomáš Vít, Václav Kopecký, Technical Univ. of Liberec (Czech Republic) [9508-3]

Design and experiments of combined diffractive optical element for virtual displays and indicators, Artem Solomashenko, Sergey B. Odinokov, Alexander Y. Zherdev, Maria Ruchkina, Gaik Sagatelyan, Bauman Moscow State Technical Univ. (Russian Federation) [9508-27]

Coping with diffraction effects in protein-based volumetric memories: a possible solution for the case of completely random data, Dragos Trinca, Piretus Prod S.R.L. (Romania); Sanguthevar Rajasekaran, Univ. of Connecticut (USA) [9508-28]

Tomographic microscopic imaging with enhanced axial resolution by compressive holography, Yuhong Wan, Fan Wu, Tianlong Man, Xiaole Guo, Beijing Univ. of Technology (China) [9508-29]

Modeling of effect of LC SLM phase fluctuations on kinoforms optical reconstruction quality, Vitaly V. Krasnov, Pavel A. Cheremkhin, Nikolay N. Evtikhiev, Vladislav G. Rodin, Sergey N. Starikov, National Research Nuclear Univ. MEPhI (Russian Federation) [9508-30]

- Retractions of the gingival margins evaluated by holographic methods,** Cosmin Sinescu M.D., Meda Lavinia Negrutiu M.D., Univ. of Medicine and Pharmacy Victor Babes Timisoara (Romania); Virgil-Florin Duma, Aurel Vlaicu Univ. of Arad (Romania) and Politehnica Univ. of Timisoara (Romania) and Univ. of West Timisoara (Romania) [9508-31]
- Potorefractive phase-conjugation digital holographic microscopy,** Chi-Ching Chang, Huang-Tian Chan, Min-Tzung Shiu, Yang-Kun Chew, MingDao Univ. (Taiwan) [9508-32]
- Estimation of objects transverse parameters in off-axis and in-line Fresnel digital holography,** Pavel A. Cheremkhin, Nikolay N. Evtikhiev, Vitaly V. Krasnov, Vladislav G. Rodin, Sergey N. Starikov, National Research Nuclear Univ. MEPhI (Russian Federation) [9508-33]
- Study of transparent particles in the volume of optical medium using digital holography and singular-optics approach,** Tatiana Y. Nikolaeva, Nikolay V. Petrov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9508-34]
- Application of fractal masks with spiral phase distribution for the determination phase discontinuities in transparent objects,** Alexander A. Zinchik, Yana B. Muzychenko, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9508-35]
- Spectral analysis in overmodulated holographic reflection gratings recorded with BB640 ultrafine grain emulsion,** Pedro Mas-Abellán, Roque Madrigal, Antonio Fimia, Univ. Miguel Hernández de Elche (Spain) [9508-36]
- Amplitude-phase type fractal screens and their application in phase-retrieval method,** Yana B. Muzychenko, Alexander A. Zinchik, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9508-37]
- Synthesis of Fourier holograms for recognition of radiation sources with continuous spectra by dispersive correlators,** Dmitriy Y. Molodtsov, Sergey N. Starikov, Vladislav G. Rodin, National Research Nuclear Univ. MEPhI (Russian Federation) [9508-38]
- Direct real-time measurement of shrinkage in photopolymer materials during recording of reflection gratings,** Petr Vojtíšek, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Milan Květoň, Czech Technical Univ. in Prague (Czech Republic) [9508-39]

THURSDAY 16 APRIL

SESSION 4

LOCATION: TAURUS THU 9:00 TO 10:30

Holographic Materials and Modelling

Session Chair: **Miroslav Hrabovský**, Palacký Univ. Olomouc (Czech Republic)

- 9:00: 3-dimensional nonlocal photo-polymerization driven diffusion model of hologram formation in photopolymer materials** (*Invited Paper*), Haoyu Li, Yue Qi, Ra'ed Malallah, John T. Sheridan, Univ. College Dublin (Ireland) [9508-13]
- 9:30: Photorefractive amplification of dynamic light signals using photoconductive ferroelectric liquid crystals,** Takeo Sasaki, Tokyo Univ. of Science (Japan) [9508-14]
- 9:50: Formation of dissipative structures at hologram recording in CaF₂ crystals with color centers,** Alexander Shcheulin, Aleksandr Angervaks, Andrey Veniaminov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Pavel P. Fedorov, Sergey Kuznetsov, A. M. Prokhorov General Physics Institute (Russian Federation); Alexander I. Ryskin, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9508-15]
- 10:10: Advances in photo-thermo-refractive glass composition modifications,** Sergey A. Ivanov, Nikolay V. Nikonorov, Alexandr Ignatiev, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) [9508-16]
- Coffee Break Thu 10:30 to 10:50

SESSION 5

LOCATION: TAURUS THU 10:50 TO 12:40

Holographic Imaging, Fabrication, and Materials I

Session Chair: **John T. Sheridan**, Univ. College Dublin (Ireland)

- 10:50: Self-written waveguide in AA/PVA photopolymer material** (*Invited Paper*), Haoyu Li, Yue Qi, Ra'ed Malallah, Univ. College Dublin (Ireland); James P. Ryle, National Univ. of Ireland, Maynooth (Ireland); John T. Sheridan, Univ. College Dublin (Ireland) [9508-17]
- 11:20: 2nd harmonics HOE recording in Bayfol® HX,** Christian Rewitz, Friedrich-Karl Bruder, Thomas Fäcke, Rainer Hagen, Dennis Hönel, Enrico Orselli, Thomas Rölle, Günther Walze, Brita Wewer, Bayer MaterialScience AG (Germany) [9508-18]
- 11:40: Lab-level and low-cost fabrication technique of polymer based micro-optical elements and holographic structures,** Maik Rahlves, Maher Rezem, Christian Kelb, Kristian Boroz, Dina Goedeke, Sebastian Schlangen, Eduard Reithmeier, Bernhard Roth, Leibniz Univ. Hannover (Germany). [9508-19]
- 12:00: Comparison of erythrosin B with a new photosensitizer for use in a photopolymer,** Yue Qi, Haoyu Li, Univ. College Dublin (Ireland); Jean-Pierre Fouassier, Jacques Lalevée, Univ. de Haute Alsace (France); John T. Sheridan, Univ. College Dublin (Ireland) [9508-20]
- 12:20: Diffractive optical elements with an increased angular and wavelength range of operation for application in solar collectors,** Hoda Akbari, Izabela Naydenova, Suzanne M. Martin, Dublin Institute of Technology (Ireland) [9508-23]
- Lunch Break Thu 12:40 to 13:50

SESSION 6

LOCATION: TAURUS THU 13:50 TO 15:40

Holographic Imaging, Fabrication, and Materials II

Session Chairs: **Antonio Fimia**, Univ. Miguel Hernández de Elche (Spain); **John T. Sheridan**, Univ. College Dublin (Ireland); **Miroslav Hrabovský**, Palacký Univ. Olomouc (Czech Republic)

- 13:50: Holographic wavefront sensors: state-of-the-art and prospects** (*Invited Paper*), Vladimir Y. Venediktov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) [9508-22]
- 14:20: Incoherent holography with the use of Shack-Hartmann wavefront sensor,** Vladimir Y. Venediktov, Alexander A. Sevryugin, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) [9508-21]
- 14:40: Challenges in holographic measurement of aspheric and freeform optical components shape,** Vít Lédl, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Pavel Psota, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Petr Vojtíšek, Roman Doleček, Pavel Mokry, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) [9508-24]
- 15:00: Advanced time average holographic method for measurement in extensive vibration amplitude range with quantitative single-pixel analysis,** Pavel Psota, Vít Lédl, Technical Univ. of Liberec (Czech Republic); Petr Vojtíšek, TOPTEC (Czech Republic); Jan Václavík, Roman Doleček, Pavel Mokry, Technical Univ. of Liberec (Czech Republic) [9508-25]
- 15:20: All-optically controlled light valve assembled by photorefractive crystal and PDLC hybrid structure,** Vera Marinova Gospodinova, Ren Chung Liu, Shiuan-Huei Lin, Yi-Hsin Lin, Ken-Yuh Hsu, National Chiao Tung Univ. (Taiwan) [9508-26]

Relativistic Plasma Waves and Particle Beams as Coherent and Incoherent Radiation Sources

Conference Chair: **Dino A. Jaroszynski**, Univ. of Strathclyde (United Kingdom)

Programme Committee: **Christoph H. Keitel**, Max-Planck-Institut für Kernphysik (Germany); **Alexander Pukhov**, Heinrich-Heine-Univ. Düsseldorf (Germany); **Antoine Rousse**, Ecole Nationale Supérieure de Techniques Avancées (France); **Zheng-Ming Sheng**, Shanghai Jiao Tong Univ. (China); **Luis O. Silva**, Univ. Técnica de Lisboa (Portugal); **Toshiki Tajima**, Japan Atomic Energy Research Institute (Japan), Univ. of California Irwine (USA); **Mark Wiggins**, Univ. of Strathclyde (United Kingdom); **Victor Zamfir**, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania); **Matthew Zepf**, Queen's Univ. Belfast (United Kingdom)

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

LOCATION: LEO 13:00 TO 13:05

Opening Remarks

SESSION 1

LOCATION: LEO WED 13:05 TO 15:10

Radiation Reaction, Electron Beam Manipulation, and Detection

Session Chair: **Jean-Claude Kieffer**, Institut National de la Recherche Scientifique (Canada)

13:05: **Radiation emission in the transition to the radiation cooling regime** (*Invited Paper*), Joana L. Martins, Marija Vranic, Thomas Grismayer, Ricardo A. Fonseca, Luis O. Silva, Univ. de Lisboa (Portugal) [9509-1]

13:30: **Femtosecond substructured electron bunches in the laser-plasma wakefield accelerator** (*Invited Paper*), Mohammad R. Islam, Enrico Brunetti, Bernhard Ersfeld, Riju C. Issac, Silvia Cipiccia, Gregor H. Welsh, S. Mark Wiggins, Adam Noble, Univ. of Strathclyde (United Kingdom); Robert A. Cairns, Univ. of St. Andrews (United Kingdom); Gaurav Raj, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-2]

13:55: **Positron and electron acceleration in the wake of ultraintense exotic laser pulses** (*Invited Paper*), Jorge M. Vieira, José T. Mendonça, Luis O. Silva, Univ. Técnica de Lisboa (Portugal) [9509-3]

14:20: **Cooling of relativistic electron beams in intense laser pulses** (*Invited Paper*), Samuel R. Yoffe, Adam Noble, Univ. of Strathclyde (United Kingdom); Yevgen Kravets, Ecole Polytechnique (France); Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-4]

14:45: **Control of self-injection in LWFA using a tailored density profile** (*Invited Paper*), Matthew P. Tooley, Dino A. Jaroszynski, Bernhard Ersfeld, Zheng-Ming Sheng, Univ. of Strathclyde (United Kingdom) [9509-5]

Coffee Break Wed 15:10 to 15:35

SESSION 2

LOCATION: LEO WED 15:35 TO 17:40

Thomson and Compton Scattering for Imaging

Session Chair: **Silvia Cipiccia**, Univ. of Strathclyde (United Kingdom)

15:35: **Characterization of the in-line X-ray phase contrast imaging beam line developed at ALLS and based on laser-driven betatron radiation** (*Invited Paper*), Jean-Claude Kieffer, Sylvain Fourmaux, Steve MacLean, Institut National de la Recherche Scientifique (Canada); Emil L. Hallin, Canadian Light Source Inc. (Canada); Andrzej Krol, SUNY Upstate Medical Univ. (USA) [9509-7]

16:00: **High-energy gamma-ray beams from nonlinear Thomson and Compton scattering in the ultra-intense regime** (*Invited Paper*), Christopher N. Harvey, Mattias Marklund, Chalmers Univ. of Technology (Sweden); Erik Wallin, Umeå Univ. (Sweden) [9509-8]

16:25: **Nonlinear effects in relativistic all-optical Thomson-backscattering** (*Invited Paper*), Stefan Karsch, Konstantin Khrennikov, Johannes Wenz, Ludwig-Maximilians-Univ. München (Germany); Alexander Buck, Jiancai Xu, Laszlo Veisz, Max-Planck-Institut für Quantenoptik (Germany) [9509-9]

16:50: **Narrowbandwidth and tunable hard X-rays from an all-laser-driven Thomson light source** (*Invited Paper*), Donald P. Umstadter, Sudeep Banerjee, Shouyuan Chen, Baozhen Zhao, Cheng Liu, Grigory Golovin, Jun Zhang, Univ. of Nebraska-Lincoln (USA); Nathan Powers, KLA-Tencor Corp. (USA); Shaun Clarke, Sara A. Pozzi, Univ. of Michigan (USA) [9509-10]

17:15: **Laser-plasma undulator for an ultracompact synchrotron radiation source** (*Invited Paper*), Igor A. Andriyash, Remi Lehe, Agustin Lifshitz, Cédric Thauray, Jean-Marcel Rax, Ecole Nationale Supérieure de Techniques Avancées (France); Karl M. Krushelnick, Univ. of Michigan (USA); Victor Malka, Ecole Nationale Supérieure de Techniques Avancées (France) [9509-11]

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

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Single photon spectrometry of laser-plasma x-ray sources, using a Timepix detector (*Invited Paper*), Karel Bohacek, Antonin Fajstavr, Miroslav Krus, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9509-6]

THURSDAY 16 APRIL

SESSION 3

LOCATION: LEO THU 9:00 TO 10:40

Betatron Radiation and High Harmonic Generation in Plasma

Session Chair: **Stefan Karsch**, Ludwig-Maximilians-Univ. München (Germany)

9:00: **Betatron radiation from density tailored plasma** (*Invited Paper*), Kim Ta Phuoc, Andreas Dopp, Cédric Thauray, Emilien Guillaume, Julien Gautier, Pascal Rousseau, Jean-Philippe Goddet, Fabien Tissandier, Amar Tafzi, Antoine Rousse, Ecole Nationale Supérieure de Techniques Avancées (France) [9509-12]

9:25: **Laser-wakefield betatron radiation for biological imaging** (*Invited Paper*), Nelson C. Lopes, Imperial College London (United Kingdom) and Univ. Técnica de Lisboa (Portugal) [9509-13]

9:50: **Resonant betatron radiation in bubble regime** (*Invited Paper*), Silvia Cipiccia, Bernhard Ersfeld, Mohammad R. Islam, Enrico Brunetti, Gregor H. Welsh, Gregory Vieux, Xue Yang, S. Mark Wiggins, David Reboledo-Gil, Peter A. Grant, David W. Grant, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-14]

10:15: **High harmonic generation from relativistic plasma surfaces in ultrasteep plasma density gradients** (*Invited Paper*), Christian Roedel, Friedrich-Schiller-Univ. Jena (Germany) and SLAC National Accelerator Lab. (USA); Erich Eckner, Friedrich-Schiller-Univ. Jena (Germany); Jana Bierbach, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany); Mark Yeung, Helmholtz Institute Jena (Germany); Brendan H. Dromey, Queen's Univ. Belfast (United Kingdom); Thomas Hahn, Dirk Hemmers, Georg Pretzler, Heinrich-Heine-Univ. Düsseldorf (Germany); Matthew Zepf, Helmholtz Institute Jena (Germany) and Queen's Univ. Belfast (United Kingdom); Gerhard G. Paulus, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany) [9509-15]

Coffee Break Thu 10:40 to 11:00

SESSION 4

LOCATION: LEO THU 11:00 TO 12:15

Raman Amplification in PlasmaSession Chair: **Min Sup Hur**, Ulsan National Institute of Science and Technology (Korea, Republic of)11:00: **High intensity regimes for resonant Raman compression** (*Invited Paper*), Nathaniel J. Fisch, Vladimir M. Malkin, Princeton Univ. (USA); Zeev Toroker, Technion-Israel Institute of Technology (Israel) [9509-16]11:25: **Raman amplification in the strong wavebreaking regime** (*Invited Paper*), John P. Farmer, Alexander Pukhov, Heinrich-Heine-Univ. Düsseldorf (Germany); Min Sup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of); Riju C. Issac, Mar Athanasius College (India); Gaurav Raj, S. Mark Wiggins, Gregor H. Welsh, Samuel R. Yoffe, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-17]11:50: **Study of saturation mechanisms in short laser pulse amplification by stimulated Raman backscattering in warm plasma** (*Invited Paper*), Gregory Vieux, Xue Yang, Enrico Brunetti, Bernhard Ersfeld, Univ. of Strathclyde (United Kingdom); John P. Farmer, Heinrich-Heine-Univ. Düsseldorf (Germany); Min Sup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of); Riju C. Issac, Mar Athanasius College (India); Gaurav Raj, S. Mark Wiggins, Gregor H. Welsh, Samuel R. Yoffe, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-19]

Lunch Break Thu 12:15 to 13:40

SESSION 5

LOCATION: LEO THU 13:40 TO 15:20

Coherent Emission from Laser-driven PlasmaSession Chair: **Donald P. Umstadter**, Univ. of Nebraska-Lincoln (USA)13:40: **A realizable optical free-electron laser with Traveling-wave Thomson-scattering** (*Invited Paper*), Klaus Steiniger, Richard Pausch, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and Technische Univ. Dresden (Germany); Alexander Debus, Fabian Röser, Michael Bussmann, Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) .. [9509-20]14:05: **Undulator radiation driven by laser-wakefield accelerator electron beams** (*Invited Paper*), S. Mark Wiggins, David W. Grant, Maria Pia Anania, Gregor H. Welsh, Enrico Brunetti, Silvia Cipiccia, Peter A. Grant, David Reboledo-Gil, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-21]14:30: **Practical considerations for the ion channel free-electron laser** (*Invited Paper*), Bernhard Ersfeld, Sijia Chen, Rodolfo Bonifacio, Mohammad R. Islam, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) and Scottish Univ. Physics Alliance (United Kingdom) [9509-22]14:55: **TBA** (*Invited Paper*), Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-23]

Coffee Break Thu 15:20 to 15:40

SESSION 6

LOCATION: LEO THU 15:40 TO 17:45

Transition and Cherenkov Emission from PlasmaSession Chair: **S. Mark Wiggins**, Univ. of Strathclyde (United Kingdom)15:40: **Quasi-continuous, high-power terahertz emission from colliding laser pulses in a magnetized plasma** (*Invited Paper*), Min Sup Hur, Myung-Hoon Cho, Young-Kuk Kim, Ulsan National Institute of Science and Technology (Korea, Republic of); Hyyong Suk, Gwangju Institute of Science and Technology (Korea, Republic of); Bernhard Ersfeld, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9509-24]16:05: **The SPARC LAB high intensity THz radiation source: different methods of generation and applications**, Flavio Giorgianni, Istituto Nazionale di Fisica Nucleare (Italy) and Univ. degli Studi di Roma La Sapienza (Italy); Enrica Chiadroni, Istituto Nazionale di Fisica Nucleare (Italy); Stefano Lupi, Univ. degli Studi di Roma La Sapienza (Italy); Alessandro Cianchi, Riccardo Pompili, Fabio Villa, Domenico Di Giovenale, Marco Bellaveglia, Massimo Ferrario, Istituto Nazionale di Fisica Nucleare (Italy) [9509-25]16:25: **New opportunities for strong-field LPI studies in mid-IR spectral domain**, Igor V. Pogorelsky, Ilan Ben-Zvi, John Skaritka, Markus Babzien, Mikhail N. Polyanskiy, Brookhaven National Lab. (USA) [9509-26]16:45: **Coherent effects in backward EUV and X-Ray transition radiation of a bunch of electrons from thin wires**, Alexey Tishchenko, Daria Sergeeva, Mikhail Strikhanov, National Research Nuclear Univ. MEPhI (Russian Federation) [9509-27]17:05: **XUV Cherenkov and diffraction radiation from femtosecond electron bunch**, Daria Sergeeva, Alexey Tishchenko, Mikhail Strikhanov, National Research Nuclear Univ. MEPhI (Russian Federation) [9509-28]17:25: **X-ray transition, parametric and Cherenkov radiation sources driven by ultrashort laser pulses**, Alexey Tishchenko, National Research Nuclear Univ. MEPhI (Russian Federation); Karo Ispirian, Yerevan Research Institute (Armenia) [9509-29]

EUV and X-ray Optics: Synergy between Laboratory and Space

Conference Chairs: **René Hudec**, Astronomical Institute of the ASCR, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic); **Ladislav Pina**, Czech Technical Univ. in Prague (Czech Republic)

Programme Committee: **Webster Cash**, Univ. of Colorado at Boulder (USA); **Henryk Fiedorowicz**, Military Univ. of Technology (Poland); **René Hudec**, Czech Technical Univ. in Prague (Czech Republic); **Ali M. Khounsary**, X-ray Optics, Inc. (USA); **Randall L. McEntaffer**, The Univ. of Iowa (USA); **Stephen L. O'Dell**, NASA Marshall Space Flight Ctr. (USA); **Giovanni Pareschi**, INAF - Osservatorio Astronomico di Brera (Italy); **Ladislav Pina**, Czech Technical Univ. in Prague (Czech Republic); **Yuriy Ya Platonov**, Rigaku Innovative Technologies, Inc. (USA); **Paul B. Reid**, Harvard-Smithsonian Ctr. for Astrophysics (USA); **Bedřich Rus**, ELI Beamlines (Czech Republic), Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Anatoly Snigirev**, ESRF - The European Synchrotron (France); **Peter Z. Takacs**, Brookhaven National Lab. (USA); **Melville P. Ulmer**, Northwestern Univ. (USA); **David L. Windt**, Reflective X-Ray Optics LLC (USA); **William W. Zhang**, NASA Goddard Space Flight Ctr. (USA)

MONDAY 13 APRIL

LOCATION: QUADRANT 9:05 TO 9:10

Opening Remarks

SESSION 1

LOCATION: QUADRANT MON 9:10 TO 10:20

Astronomical X-ray Optics I

9:10: **Beyond Chandra: the future for high-resolution X-ray astronomy** (*Invited Paper*), Martin C. Weisskopf, Jessica A. Gaskin, NASA Marshall Space Flight Ctr. (USA); Harvey D. Tananbaum, Alexey A. Vikhlinin, Harvard-Smithsonian Ctr. for Astrophysics (USA) [9510-1]

9:40: **X-ray optics at NASA Marshall Space Flight Center**, Stephen L. O'Dell, NASA Marshall Space Flight Ctr. (USA); Carolyn Atkins, The Univ. of Alabama in Huntsville (USA); David M. Broadway, Ronald F. Elsner, Jessica A. Gaskin, Mikhail V. Gubarev, NASA Marshall Space Flight Ctr. (USA); Kiranmayee Kilaru, Universities Space Research Association (USA); Jeffery J. Kolodziejczak, Brian D. Ramsey, Jacqueline M. Roche, NASA Marshall Space Flight Ctr. (USA); Douglas A. Swartz, Universities Space Research Association (USA); Allyn F. Tennant, Martin C. Weisskopf, NASA Marshall Space Flight Ctr. (USA); Vyacheslav E. Zavlin, Universities Space Research Association (USA) .. [9510-2]

10:00: **Alternative technologies and arrangements for future space X-ray telescopes**, René Hudec, Astronomical Institute of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Ladislav Pina, Adolf J. Inneman, Czech Technical Univ. in Prague (Czech Republic) ... [9510-3]

Coffee Break Mon 10:20 to 10:50

SESSION 2

LOCATION: QUADRANT MON 10:50 TO 12:30

Astronomical X-ray Optics II

10:50: **X-ray monitoring for astrophysical applications on Cubesat**, Ladislav Pina, Czech Technical Univ. in Prague (Czech Republic); René Hudec, Astronomical Institute of the ASCR, v.v.i. (Czech Republic); Adolf J. Inneman, Rigaku Innovative Technologies Europe (Czech Republic); Jan Jakubek, V. Daniel, Czech Technical Univ. in Prague (Czech Republic); Daniela Cerna, Rigaku Innovative Technologies Europe (Czech Republic); L. Sieger, Czech Technical Univ. in Prague (Czech Republic) [9510-5]

11:10: **Curved crystals for hard X-ray astronomy**, Elisa Buffagni, Consiglio Nazionale delle Ricerche (Italy) and MIST E-R S.C.R.L. (Italy); Elisa Bonnini, Claudio Ferrari, Consiglio Nazionale delle Ricerche (Italy); Enrico Virgili, Filippo Frontera, Univ. degli Studi di Ferrara (Italy) [9510-6]

11:30: **ISS-Lobster: a low-cost wide-field X-ray transient detector on the ISS**, Jordan Camp, NASA Goddard Space Flight Ctr. (USA) [9510-7]

11:50: **Polarizers for a spectral range centered at 121.6 nm operating by reflectance or by transmittance**, Juan I. Larruquert, Consejo Superior de Investigaciones Científicas (Spain); A. Marco Malvezzi, Univ. degli Studi di Pavia (Italy); Angelo Giglia, Consiglio Nazionale delle Ricerche (Italy); José A. Aznárez, Luis Rodríguez-de Marcos, José A. Méndez, Consejo Superior de Investigaciones Científicas (Spain); Paolo Miotti, Fabio Frassetto, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Giuseppe Massone, Gerardo Capobianco, Silvano Fineschi, INAF - Osservatorio Astronomico di Torino (Italy); Stefano Nannarone, Consiglio Nazionale delle Ricerche (Italy) [9510-8]

12:10: **Transverse X-ray scattering on random rough surfaces**, Ping Zhao, Harvard-Smithsonian Ctr. for Astrophysics (USA) [9510-9]

Lunch Break Mon 12:30 to 13:30

SESSION 3

LOCATION: QUADRANT MON 13:30 TO 15:10

Astronomical X-ray Optics III

13:30: **Applications of lobster eye optics**, René Hudec, Astronomical Institute of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic) [9510-10]

13:50: **He+ ions damage on optical coatings for solar missions**, Sara Zuccon, IFN-CNR LUXOR Lab. (Italy); Enrico Napolitani, CNR - IMM (Italy); Enrico Tassarolo, Paola Zuppella, Alain J. Corso, Francesca Gerlin, Marco Nardello, Maria G. Pelizzo, IFN-CNR Padova (Italy) [9510-11]

14:10: **Mathematical modeling of multifoil optical systems**, Vladimír Tichý, Czech Technical Univ. in Prague (Czech Republic) [9510-12]

14:30: **Optical study of nanosatellite X-Ray monitor**, Vladimír Tichý, Czech Technical Univ. in Prague (Czech Republic); David N. Burrows, The Pennsylvania State Univ. (USA); René Hudec, Czech Technical Univ. in Prague (Czech Republic); Zachary R. Prieskorn, The Pennsylvania State Univ. (USA) .. [9510-13]

14:50: **Techniques for achieving zero stress in thin films of iridium, chromium, and nickel**, David M. Broadway, Stephen L. O'Dell, Brian D. Ramsey, NASA Marshall Space Flight Ctr. (USA); Jeffrey J. Weimer, The Univ. of Alabama in Huntsville (USA) [9510-28]

SESSION 4

LOCATION: QUADRANT MON 15:10 TO 15:30

Various and Integrated Devices and Systems

15:10: **Does X-ray flux data variation reciprocate to the H component and proportionate to D components of geomagnetism observed by airborne magneto-gram and characterize for the seismic event?**, Umesh P. Verma, Madhurendra N. Sinha, Patna Science College (India) [9510-15]

Coffee Break Mon 15:30 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7-8.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 7-8.

SESSION 5

LOCATION: QUADRANT TUE 10:10 TO 12:10

Diffraction and Refractive X-ray Optics

10:10: **Self standing curved crystals for gamma ray focusing**, Claudio Ferrari, Consiglio Nazionale delle Ricerche (Italy); Elisa Bonnini, Consiglio Nazionale delle Ricerche (Italy) and Univ. degli Studi di Parma (Italy); Elisa Buffagni, Consiglio Nazionale delle Ricerche (Italy); Stephen Doyle, Karlsruher Institut für Technologie (Germany) [9510-16]

10:30: **Dynamical diffraction approach of deformed crystals using FEM**, Vito Moella, Istituto per la Microelettronica e Microsistemi (Italy); Claudio Ferrero, Jean-Pierre Guigay, ESRF - The European Synchrotron (France) [9510-17]

10:50: **3-dimensional profiling for diffraction optical elements**, Anatoly Firsov, Alexander Firsov, Heike Loechel, Jürgen Probst, Panagiotis Loukas, Frank Siewert, Alexei Erko, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) [9510-18]

11:10: **Transmittance filters for the FUV range**, Luis Rodríguez-de Marcos, Juan I. Larruquert, José A. Méndez, José A. Aznárez, Consejo Superior de Investigaciones Científicas (Spain); Liping Fu, Ctr. for Space Science and Applied Research (China) [9510-19]

11:30: **Hard X-ray interferometer based on parallel micromirrors**, Mikhail Lyubomirskiy, Anatoly A. Snigirev, Irina Snigireva, ESRF - The European Synchrotron (France); Sergey Kuznetsov, Vyacheslav Yunkin, Institute of Microelectronics Technology and High Purity Materials (Russian Federation) [9510-20]

11:50: **Low-stress coatings for sputtered-sliced Fresnel zone plates and multilayer Laue lenses**, Stefan Braun, Adam Kubec, Maik Menzel, Peter Gawlitza, Andreas Leson, Fraunhofer IWS Dresden (Germany) [9510-21]

Lunch/Exhibition Break Tue 12:10 to 13:10

SESSION 6

LOCATION: QUADRANT TUE 13:10 TO 14:10

X-ray Microscopes and Active X-ray Optics

13:10: **A compact "water-window" microscope with 60nm spatial resolution based on a double stream gas-puff target and Fresnel zone plate optics**, Przemyslaw W. Wachulak, Alfio L. Torrisi, Andrzej S. Bartnik, Daniel Adjei, Jerzy Kostecki, Lukasz Wegrzynski, Tomasz Fok, Roman Jarocki, Mirosław Szczurek, Henryk Fiedorowicz, Military Univ. of Technology (Poland) [9510-22]

13:30: **Nanoscale imaging using a compact "water window" SXR microscope: signal to noise ratio measurements for optimization of acquisition parameters**, Alfio L. Torrisi, Przemyslaw W. Wachulak, Military Univ. of Technology (Poland); Muhammad Fahad Nawaz, Czech Technical Univ. in Prague (Czech Republic); Andrzej S. Bartnik, Daniel Adjei, Jerzy Kostecki, Lukasz Wegrzynski, Roman Jarocki, Mirosław Szczurek, Henryk Fiedorowicz, Military Univ. of Technology (Poland) [9510-23]

13:50: **Performance testing of a novel off-plane reflection grating and silicon pore optic spectrograph at Panter**, Hannah R. Marlowe, The Univ. of Iowa (USA); Ryan Allured, Harvard-Smithsonian Ctr. for Astrophysics (USA); Casey T. DeRoo, Benjamin D. Donovan, Drew M. Miles, James H. Tutt, The Univ. of Iowa (USA); Vadim Burwitz, Benedikt Menz, Gisela Hartner, Max-Planck-Institut für extraterrestrische Physik (Germany); Randall L. McEntaffer, The Univ. of Iowa (USA) [9510-37]

SESSION 7

LOCATION: QUADRANT TUE 14:10 TO 15:10

Coherent Radiation/Lasers

14:10: **Photoionized plasmas in laboratory: a connection to astrophysics and planetary sciences**, Andrzej S. Bartnik, Military Univ. of Technology (Poland); Tadeusz Pisarczyk, Institute of Plasma Physics and Laser Microfusion (Poland); Przemyslaw W. Wachulak, Military Univ. of Technology (Poland); Tomasz Chodukowski, Institute of Plasma Physics and Laser Microfusion (Poland); Tomasz Fok, Lukasz Wegrzynski, Military Univ. of Technology (Poland); Zofia Kalinowska, Institute of Plasma Physics and Laser Microfusion (Poland); Henryk Fiedorowicz, Roman Jarocki, Mirosław Szczurek, Military Univ. of Technology (Poland); Edward Krousky, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Mirosław Pfeifer, Jiri Skala, Institute of Physics (Czech Republic); Jiri Ullschmied, Jan Dostal, Roman Dudzak, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Jan Hřebíček, Tomas Medrik, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jakub Cikhardt, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Balzima Cikhardtova, Czech Technical Univ. in Prague (Czech Republic); Daniel Klir, Karel Rezac, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Ladislav Pina, Czech Technical Univ. in Prague (Czech Republic) [9510-24]

14:30: **Laser plasma sources of soft X-rays and extreme ultraviolet (EUV) for application in science and technology**, Henryk Fiedorowicz, Military Univ. of Technology (Poland) [9510-25]

14:50: **Problems and prospects of laboratory reflectometry in soft X-ray and EUV ranges**, Nikolay Chkhalo, Nikolay N. Salashchenko, Alexander Scherbakov, Sergei Y. Zuev, Institute for Physics of Microstructures (Russian Federation) [9510-26]

Coffee Break Tue 15:10 to 15:40

SESSION 8

LOCATION: QUADRANT TUE 15:40 TO 18:00

Multilayer X-ray Optics

15:40: **Diffraction gratings based on asymmetric-cut multilayers**, Mauro Prasciolu, Deutsches Elektronen-Synchrotron (Germany); Anton Haase, Victor Soltwisch, Physikalisch-Technische Bundesanstalt (Germany); Henry N. Chapman, Deutsches Elektronen-Synchrotron (Germany) and Univ. Hamburg (Germany); Saša Bajt, Deutsches Elektronen-Synchrotron (Germany) . . [9510-27]

16:00: **Optical and structural characterization of CeO₂/B₄C multilayers near the Boron absorption edge**, Mewael Giday Sertsu, Univ. degli Studi di Padova (Italy) and RWTH Aachen Univ. (Germany); Angelo Giglia, Consiglio Nazionale delle Ricerche (Italy); Sascha Brose, RWTH Aachen (Germany); Antonela Comisso, Univ. degli Studi di Padova (Italy); Zhanshan Wang, Tongji Univ. (China); Larissa Juschkin, RWTH Aachen Univ. (Germany); Piergiorgio Nicolosi, Univ. degli Studi di Padova (Italy) [9510-29]

16:20: **Combined EUV and X-ray analysis of periodic multilayer structures**, Igor A. Makhotkin, Konstantin Nikolaev, Univ. Twente (Netherlands); Sergey N. Yakunin, Russian Research Ctr. Kurchatov Institute (Russian Federation); Robbert W. E. van de Kruijs, Fred Bijkerk, Univ. Twente (Netherlands) . [9510-30]

16:40: **Overview of the multilayer-Fresnel zone plate and the kinoform lens development at MPI for intelligent systems**, Umut Tunca Sanli, Kahraman Keskinbora, Corinne Grevent, Gisela Schütz, Max-Planck Institut für Intelligente Systeme (Germany) [9510-38]

17:00: **Multilayer optical elements based on beryllium**, Vladimir N. Polkovnikov, Nikolay N. Salashchenko, Nikolay Chkhalo, Nikolay N. Tsybin, Sergei Y. Zuev, Institute for Physics of Microstructures (Russian Federation) [9510-31]

17:20: **Periodic Co/C, Cr/C, and CoCr/C soft X-ray multilayers prepared by N reactive sputtering**, Mingwu Wen, Li Jiang, Zhong Zhang, Qiushi Huang, Zhanshan Wang, Tongji Univ. (China); Mingqi Cui, Beijing Synchrotron Radiation Facility (China); Rongqing Yi, China Academy of Engineering Physics (China) [9510-32]

17:40: **Development of XUV multilayer gratings with high resolution and high efficiency**, Qiushi Huang, Xiaowei Yang, Tongji Univ. (China); Igor V. Kozhevnikov, A.V. Shubnikov Institute of Crystallography (Russian Federation); Zhanshan Wang, Tongji Univ. (China) [9510-33]

WEDNESDAY 15 APRIL

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Characterization of TiO₂ thin films in the EUV and soft X-ray region, Antonela Comisso, Piergiorgio Nicolosi, Univ. degli Studi di Padova (Italy) [9510-34]

Radiometric modelling of a space optical instrument: an example of application to PHEBUS, Alain J. Corso, Paola Zuppella, IFN-CNR LUXOR Lab. (Italy); Enrico Tassarolo, Univ. degli Studi di Padova (Italy) and IFN-CNR LUXOR Lab. (Italy); Francesca Gerlin, Sara Zuccon, IFN-CNR LUXOR Lab. (Italy); Davide Bacco, Marco Nardello, Univ. degli Studi di Padova (Italy) and IFN-CNR LUXOR Lab. (Italy); Piergiorgio Nicolosi, Univ. degli Studi di Padova (Italy); Jean Francois Mariscal, Nicolas Rouanet, Eric Quémerais, LATMOS (France); Maria G. Pelizzo, IFN-CNR LUXOR Lab. (Italy) [9510-35]

EUV ablation: a study of the process, Chiara Liberatore, HiLASE Ctr. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Andrzej S. Bartnik, Inam Ul Ahad, Military Univ. of Technology (Poland); Martina Toufarová, Irena Matulková, Vera Hájková, Ludek Vyšín, Tomáš Burian, Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Ladislav Pina, Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Tomás Mocek, HiLASE Ctr. (Czech Republic) [9510-36]

Cubesat Mission for Timepix X-ray detector with multifoil wide-field X-ray "Lobster eye" optics, Adolf J. Inneman, Czech Technical Univ. in Prague (Czech Republic) [9510-39]

Damage to VUV, EUV, and X-ray Optics V (XDam5)

Conference Chairs: **Libor Juha**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Saša Bajt**, Deutsches Elektronen-Synchrotron (Germany); **Richard London**, Lawrence Livermore National Lab. (USA)

Programme Committee: **Fred Bijkerk**, Univ. Twente (Netherlands); **Jaromír Chalupský**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Henryk Fiedorowicz**, Military Univ. of Technology (Poland); **Jacek Krzywinski**, SLAC National Accelerator Lab. (USA); **Klaus Mann**, Laser-Lab. Göttingen e.V. (Germany); **Tomáš Mocek**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Ladislav Pina**, Czech Technical Univ. in Prague (Czech Republic); **Jorge J. Rocca**, Colorado State Univ. (USA); **Harald Sinn**, European XFEL GmbH (Germany); **Michael Störmer**, Helmholtz-Zentrum Geesthacht (Germany); **Philippe Zeitoun**, Ecole Nationale Supérieure de Techniques Avancées (France); **Beata Ziaja-Motyka**, Deutsches Elektronen-Synchrotron (Germany)

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6-7.

LOCATION: TYCHO 15:15 TO 15:20

Opening Remarks

SESSION 1

LOCATION: AQUARIUS WED 15:20 TO 17:50

Facilities and their Optics

Session Chair: **Regina Soufli**, Lawrence Livermore National Lab. (USA)

15:20: The hard x-ray optics for the study on matter in extreme conditions at LCLS (Invited Paper), Hae Ja Lee, Robert Nagler, Eric C. Galtier, Eduardo Granados, Brice Arnold, SLAC National Accelerator Lab. (USA); R. Curiel, SLAC (USA); Justin A. Garofoli, Western Washington Univ. (USA); Jerome B. Hastings, Greg R. Hays, Philip A. Heimann, Richard W. Lee, Despina Milathianaki, Andreas Schropp, SLAC National Accelerator Lab. (USA); Franz Tavella, Deutsches Elektronen-Synchrotron (Germany); Marc Welch, Jing Yin, SLAC National Accelerator Lab. (USA); Ulf Zastrau, Friedrich-Schiller-Univ. Jena (Germany) [9511-1]

15:50: The PADReS optical transport and focusing system at FERMI: design, performance, applications, and multi-approach focal characterization (Invited Paper), Cristian Svetina, Nicola Mahne, Lorenzo Raimondi, Marco Zangrando, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9511-2]

16:20: Damage limitations to scientific experiments at the European XFEL (Invited Paper), Viktor Lyamayev, European XFEL GmbH (Germany) [9511-3]

16:50: ARAMIS beamline at SwissFEL: optics and photon diagnostics (Invited Paper), Luc Patthey, Uwe Flechsig, Rolf Follath, Pavle Juranic, Christian David, Milan Radovic, Claude Pradervand, Bruce D. Patterson, Rafael Abela, Paul Scherrer Institut (Switzerland) [9511-4]

17:20: Towards compact high-repetition free-electron lasers: basic principles, potential schemes, expected output parameters, and optics requirements (Invited Paper), Sandra G. Biedron, Colorado State Univ. (USA); Stephen V. Milton, Element Aero, LLC (USA) [9511-5]

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Material properties of lithium fluoride for predicting XUV laser ablation rate and threshold fluence, Tomáš Blejchař, Václav Nevrlý, VŠB-Technical Univ. of Ostrava (Czech Republic); Michal Dostál, VŠB-Technical Univ. of Ostrava (Czech Republic) and J. Heyrovský Institute of Physical Chemistry AS CR (Czech Republic); Michal Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic); Lukáš Pečinka, VŠB-Technical Univ. of Ostrava (Czech Republic) and J. Heyrovský Institute of Physical Chemistry of the ASCR, v.v.i. (Czech Republic); Jakub Dlabka, Martin Stachoň, VŠB-Technical Univ. of Ostrava (Czech Republic); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Petr Bítala, VŠB-Technical Univ. of Ostrava (Czech Republic); Zdeněk Zelinger, J. Heyrovský Institute of Physical Chemistry of the ASCR, v.v.i. (Czech Republic); Peter Pira, Charles Univ. in Prague (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jan Wild, Charles Univ. in Prague (Czech Republic) [9511-20]

Compact laser plasma soft X-ray source for contact microscopy experiments, Mesfin G. Ayele, Military Univ. of Technology (Poland) [9511-22]

X-ray-induced electron cascades in dielectrics modeled with XCASCADE code: effect of impact ionization cross sections, Nikita A. Medvedev, Ctr. for Free-Electron Laser Science (Germany) [9511-23]

X-ray free-electron laser induced ablation of lead iodide, Vera Hájková, Institute of Physics of the ASCR vvi (Czech Republic) [9511-24]

Responses of molecular and covalent carbonaceous solids to a single ultra-shot pulse of extreme ultraviolet and soft x-ray radiation, Martina Toufarova, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9511-25]

Irradiation of low energy ions damage analysis on multilayers, Mewael Giday Sertsu, Univ. degli Studi di Padova (Italy) and RWTH Aachen Univ. (Germany); Angelo Giglia, IOM - CNR (Italy); Larissa Juschkina, RWTH Aachen Univ. (Germany); Piergiorgio Nicolosi, Univ. degli Studi di Padova (Italy) [9511-19]

Development and preliminary application of a desktop laser-produced plasma soft X-ray to induce single- and double strand breaks in plasmid DNA irradiated in vacuum, Daniel Adjei, Military Univ. of Technology (Poland) and Ghana Atomic Energy Commission (Ghana); Mesfin G. Ayele, Military Univ. of Technology (Poland); Ludek Vyšín, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Przemysław W. Wachulak, Military Univ. of Technology (Poland); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Andrzej S. Bartnik, Henryk Fiedorowicz, Lukasz Wegrzynski, Military Univ. of Technology (Poland); Anna Wiechec, Janusz Lekki, Wojciech M. Kwiatek, Institute of Nuclear Physics (Poland); Marie Davidková, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9511-26]

THURSDAY 16 APRIL

SESSION 2

LOCATION: TYCHO THU 8:30 TO 10:20

PLEASE NOTE THE ROOM CHANGE

Damage to Materials I

Session Chair: **Martin Precek**, Institute of Physics of the ASCR, v.v.i. (Czech Republic)

8:30: Damage to inorganic materials illuminated by the focused beam of X-ray free-electron laser radiation (Invited Paper), Takahisa Koyama, Hirokatsu Yumoto, Kensuke Tono, Tadashi Togashi, Yuichi Inubushi, Tetsuo Katayama, Japan Synchrotron Radiation Research Institute (Japan); Jangwoo Kim, Satoshi Matsuyama, Osaka Univ. (Japan); Makina Yabashi, RIKEN (Japan); Kazuto Yamauchi, Osaka Univ. (Japan); Haruhiko Ohashi, Japan Synchrotron Radiation Research Institute (Japan) [9511-6]

9:00: Electronic energy transport in c-Si irradiated with X-ray beam under grazing incidence angles (Invited Paper), Ryszard Sobierajski, Institute of Physics (Poland); Andrew Aquila, European XFEL GmbH (Germany); Dorota Klinger, I. Jacyna, Piotr Dłuzewski, Marcin Klepka, The Institute of Physics (Poland); Tomáš Burian, Jaromír Chalupský, Vera Hájková, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Yuichi Inubushi, Japan Synchrotron Radiation Research Institute (Japan); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Adrian P. Mancuso, European XFEL GmbH (Germany); Haruhiko Ohashi, Japan Synchrotron Radiation Research Institute (Japan); Cigdem Ozkan, Harald Sinn, European XFEL GmbH (Germany); Takahisa Koyama, Kensuke Tono, Japan Synchrotron Radiation Research Institute (Japan); Kai Tiedtke, Sven Toleikis, Deutsches Elektronen-Synchrotron (Germany); Thomas Tschentscher, European XFEL GmbH (Germany); Makina Yabashi, RIKEN SPring-8 Ctr. (Japan); Jérôme Gaudin, European XFEL GmbH (Germany) [9511-7]

9:30: Mass spectra of ions emitted from monocrytalline lithium fluoride irradiated by focused 46.9-nm laser radiation, Tomáš Burian, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Ilya Kuznetsov, Carmen S. Menoni, Jorge J. Rocca, Colorado State Univ. (USA); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9511-8]

9:50: **Nanosecond pulse EUV irradiation of Pt/Co/Pt trilayers: structural, morphological and magnetic changes** (*Invited Paper*), Iosif Sveklo, Univ. of Bialystok (Poland); Andrzej S. Bartnik, Military Univ. of Technology (Poland); Ivanna Yatsyna, Dorota Klínger, Jerzy B. Pelka, Ryszard Sobierajski, Marcin Klepka, Piotr Dlużewski, Andrzej Wawro, Institute of Physics (Poland); Jan Kisielewski, Zbigniew Kurant, Andrzej Maziewski, Univ. of Bialystok (Poland) [9511-9]
 Coffee Break Thu 10:20 to 10:50

SESSION 3

LOCATION: TYCHO THU 10:50 TO 11:50

Damage to Materials II

Session Chair: **Libor Juha**, Institute of Physics of the ASCR, v.v.i. (Czech Republic)

10:50: **Response of polydimethylsiloxane (PDMS) to extreme ultraviolet light emitted from laser produced plasma** (*Invited Paper*), Tetsuya Makimura, Shuichi Torii, Univ. of Tsukuba (Japan); Daisuke Nakamura, Akihiko Takahashi, Kyushu Univ. (Japan); Hiroyuki Niino, National Institute of Advanced Industrial Science and Technology (Japan); Tatsuo Okada, Kyushu Univ. (Japan) [9511-10]

11:20: **Damage formation on fused silica illuminated with ultraviolet-infrared femtosecond pulse pairs** (*Invited Paper*), Xiaoming Yu, Kansas State Univ. (USA); Zenghu Chang, Univ. of Central Florida (USA); Paul B. Corkum, National Research Council Canada (Canada) and Univ. of Ottawa (Canada); Shuting Lei, Kansas State Univ. (USA) [9511-11]

SESSION 4

LOCATION: TYCHO THU 11:50 TO 12:40

Damage to Optics

Session Chair: **Ryszard Sobierajski**, Institute of Physics (Poland)

11:50: **Physics of corrosion-resistant Mg/SiC multilayer coatings for EUV sources** (*Invited Paper*), Regina Soufli, Lawrence Livermore National Lab. (USA); Monica Fernandez-Perea, Consejo Superior de Investigaciones Científicas (Spain); Christopher C. Walton, Lawrence Livermore National Lab. (USA); Manuela Vidal-Dasilva, Consejo Superior de Investigaciones Científicas (Spain); Jeffrey C. Robinson, Sherry L. Baker, Jennifer B. Alameda, Lawrence Livermore National Lab. (USA); Luis Rodríguez-de Marcos, José Antonio Méndez, Juan Ignacio Larruquert, Consejo Superior de Investigaciones Científicas (Spain); Eric M. Gullikson, Lawrence Berkeley National Lab. (USA) [9511-12]

12:20: **X-ray filter degradation by high-energy laser plasma target debris and shrapnel**, James E. Andrew, AWE plc (United Kingdom) [9511-13]
 Lunch Break Thu 12:40 to 13:40

SESSION 5

LOCATION: TYCHO THU 13:40 TO 15:00

Damage to Samples

Session Chair: **Saša Bajt**, Deutsches Elektronen-Synchrotron (Germany)

13:40: **Outrunning radiation damage with X-ray FEL pulses** (*Invited Paper*), Henry N. Chapman, Deutsches Elektronen-Synchrotron (Germany) ... [9511-14]

14:10: **The role of dose rate effects in fluorescence chemical dosimetry of aqueous solutions**, Martin Precek, Petr Kubelik, Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Ulrich Schmidhammer, Lab. de Chimie Physique (France); Jun Ma, Pierre Jeunesse, Alexandre Demarque, Jean-Philippe Larbre, Mehran Mostafavi, Univ. Paris-Sud 11 (France) [9511-15]

14:30: **Electronic damage effects at high intensity free-electron laser radiation** (*Invited Paper*), Lorenzo Galli, Ctr. for Free-Electron Laser Science (Germany) [9511-16]
 Coffee Break Thu 15:00 to 15:30

SESSION 6

LOCATION: TYCHO THU 15:30 TO 16:20

Theory of Damages

Session Chair: **Beata Ziája-Motyka**, Deutsches Elektronen-Synchrotron (Germany)

15:30: **Thermal and nonthermal melting of silicon exposed to femtosecond pulses of X-ray irradiation** (*Invited Paper*), Nikita A. Medvedev, Zheng Li, Ctr. for Free-Electron Laser Science (Germany); Beata Ziája, Ctr. for Free-Electron Laser Science (Germany) and Institute of Nuclear Physics (Poland) ... [9511-17]

16:00: **FEL excited plasmas**, Beata Ziája-Motyka, Ctr. for Free-Electron Laser Science (Germany) and Deutsches Elektronen-Synchrotron (Germany) [9511-18]
 Break Thu 16:20 to 16:30

SESSION 7

LOCATION: TYCHO THU 16:30 TO 18:50

COST Action Meeting: Damage to First Walls

Session Chair: **Libor Juha**, Institute of Physics of the ASCR, v.v.i. (Czech Republic)

The session "Damage to First Walls in Fusion Reactors" is co-organized by COST Actions MP1203 (Advanced X-ray Spatial and Temporal Metrology) and MP1208 (Developing the Physics and the Scientific Community for Inertial Confinement Fusion at the Time of NIF Ignition). The main goal of this meeting is to estimate a relevance of radiation damage data obtained during the study of behaviour of XUV/x-ray optics exposed to high fluxes of energetic photons for the durability assessments of materials suggested for the first walls of ICF reactors and optical elements exposed to intense XUV/x-ray radiation in a laser-plasma interaction chamber. The session will incorporate invited lectures and a round-table discussion.

CONFERENCE 9512 · LOCATION: ZENIT

Monday–Thursday 13–16 April 2015 · Proceedings of SPIE Vol. 9512

Advances in X-ray Free-Electron Lasers Instrumentation

Conference Chair: **Sandra G. Biedron**, Colorado State Univ. (USA)

Programme Committee: **John M. Byrd**, Lawrence Berkeley National Lab. (USA); **Carlo Callegari**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **Enrica Chiadroni**, Istituto Nazionale di Fisica Nucleare (Italy); **Marie-Emmanuelle Couprie**, Synchrotron SOLEIL (France); **Eugenio Ferrari**, Univ. degli Studi di Trieste (Italy); **Raffaella Geometrante**, Kyma s.r.l. (Italy); **Kirsten Hacker**, Deutsches Elektronen-Synchrotron (Germany); **Timothy J. Maxwell**, SLAC National Accelerator Lab. (USA); **Giuseppe Penco**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **Daniel F. Ratner**, SLAC National Accelerator Lab. (USA); **David A. Reis**, SLAC National Accelerator Lab. (USA); **Siegfried Schreiber**, Deutsches Elektronen-Synchrotron (Germany); **Pierpaolo Stabile**, CERN (Switzerland); **Alan M. M. Todd**, Advanced Energy/Tower Electronics (USA); **Zhentang Zhao**, Shanghai Institute of Applied Physics (China)

MONDAY 13 APRIL

LOCATION: ZENIT 8:00 TO 8:05

Opening Remarks

SESSION 1

LOCATION: ZENIT MON 8:05 TO 10:40

Magnets and Light Source Applications

Session Chairs: **Raffaella Geometrante**, Kyma S.r.l. (Italy); **Marie-Emmanuelle Couprie**, Synchrotron SOLEIL (France)

8:05: **Linear polarizing undulator and optical alignment system for a THz-FEL test facility**, Bin Qin, Kaifeng Liu, Lei Yang, Xiang Lei, Yangbing Wang, Xu Liu, Ping Tan, Yongqian Xiong, Huazhong Univ. of Science and Technology (China); Yuanji Pei, Univ. of Science and Technology of China (China) ... [9512-2]

8:25: **Segmented undulator operation at the SPARC-FEL test facility**, Franco Ciocci, ENEA (Italy) [9512-3]

8:45: **Cryogenic undulator (Invited Paper)**, Marie-Emmanuelle Couprie, Synchrotron SOLEIL (France) [9512-4]

9:05: **Construction of CHES Compact Undulator magnets at Kyma**, Alexander B. Temnykh, Aaron Lyndaker, Cornell Univ. (USA); Mirko Kokole, T. Milharic, J. Pockar, Kyma Tehnologija d.o.o. (Slovenia); Raffaella Geometrante, Kyma s.r.l. (Italy) [9512-5]

9:25: **Status of the PAL-XFEL undulator Programme (Invited Paper)**, Dong-Eon Kim, Ki-Hyeon Park, Heung-Sik Kang, In-Soo Ko, Moo Hyun Cho, Pohang Univ. of Science and Technology (Korea, Republic of) and Pohang Accelerator Lab. (Korea, Republic of); Joachim Pflueger, European XFEL GmbH (Germany) [9512-6]

9:45: **Advances in undulator design for free electron lasers (Invited Paper)**, Soren Prestemon, Lawrence Berkeley National Laboratory (USA) [9512-7]

10:10: **Recovering lost ancient literature: X-ray phase contrast tomography reveals the secrets of Herculaneum papyri (Invited Paper)**, Vito Mocella, Istituto per la Microelettronica e Microsistemi (Italy); Emmanuelle Brun, Claudio Ferrero, The European Synchrotron (France); Daniel Delattre, Institut de Recherche et d'Histoire des Textes/CNRS (France) [9512-71]

Coffee Break Mon 10:40 to 11:00

SESSION 2

LOCATION: ZENIT MON 11:00 TO 12:20

Novel Photon Beam Characterization Techniques

Session Chairs: **Raffaella Geometrante**, Kyma S.r.l. (Italy); **Marie-Emmanuelle Couprie**, Synchrotron SOLEIL (France)

11:00: **Characterization of partially coherent ultrashort XUV pulses**, Charles Bourassin-Bouchet, Marie-Emmanuelle Couprie, Synchrotron SOLEIL (France) [9512-8]

11:20: **Design and characterization of the ePix10k: a high dynamic range integrating pixel ASIC for LCLS detectors**, Pietro Caragiulo, Angelo Dragone, Bojan Markovic, Ryan Herbst, Kurtis Nishimura, Benjamin A. Reese, Sven C. Herrmann, Philip A. Hart, Gabriel Blaj, Julie Segal, Astrid Tomada, Jasmine Hasi, Gabriella A. Carini, Christopher J. Kenney, Gunther Haller, SLAC National Accelerator Lab. (USA) [9512-9]

11:40: **Measure of the transverse coherence of a self amplified spontaneous emission of a free electron laser with the heterodyne speckles method**, Marco Alberto Carlo Potenza, Univ. degli Studi di Milano (Italy) [9512-10]

12:00: **Comparing various techniques for characterization of focused FEL beams: wavefront sensors, knife-edge scanning, scintillators, ptychography, and desorption/ablation imprints**, Jaromír Chalupský, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9512-11]

Lunch Break Mon 12:20 to 13:40

SESSION 3

LOCATION: ZENIT MON 13:40 TO 15:15

Diagnostics, Controls, Timing and Synchronization I

Session Chairs: **Timothy J. Maxwell**, SLAC National Accelerator Lab. (USA); **John M. Byrd**, Lawrence Berkeley National Lab. (USA); **Pierpaolo Stabile**, CERN (Switzerland)

13:40: **The new design of the THz streak camera at PSI (Invited Paper)**, Ishkhan Gorgisyan, Paul Scherrer Institut (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Pavle Juranic, Rasmus Ischebeck, Andrey Stepanov, Volker Schlott, Claude Pradervand, Luc Patthey, Milan Radovic, Rafael Abela, Paul Scherrer Institut (Switzerland); Christoph P. Hauri, Paul Scherrer Institut (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Balazs Monoszlai, Paul Scherrer Institut (Switzerland) and Univ. of Pécs (Hungary); Rosen Ivanov, Peter Peier, Deutsches Elektronen-Synchrotron (Germany); Jia Liu, European XFEL GmbH (Germany); Tadashi Togashi, Japan Synchrotron Radiation Research Institute (Japan); Shigeki Owada, RIKEN (Japan); Kanade Ogawa, RIKEN (Japan); Makina Yabashi, RIKEN (Japan); Leonid Rivkin, Paul Scherrer Institut (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland) [9512-12]

14:05: **6D electron beam diagnostics at SPARC LAB (Invited Paper)**, Alessandro Cianchi, Univ. degli Studi di Roma "Tor Vergata" (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Maria Pia Anania, Marco Bellaveglia, Michele Castellano, Enrica Chiadroni, Domenico Di Giovenale, Giampiero Di Pirro, Massimo Ferrario, Istituto Nazionale di Fisica Nucleare (Italy); Flavio Giorgianni, Univ. degli Studi di Roma La Sapienza (Italy); Luca Innocenti, Univ. degli Studi di Roma "Tor Vergata" (Italy); Andrea Mostacci, Univ. degli Studi di Roma La Sapienza (Italy); Riccardo Pompili, Cristina Vaccarezza, Fabio Villa, Istituto Nazionale di Fisica Nucleare (Italy) [9512-13]

14:30: **Diagnostic for a high-repetition rate electron photo-gun and first measurements (Invited Paper)**, Daniele Filippetto, Fernando Sannibale, Lawrence R. Doolittle, Gang Huang, Houjun Qian, Lawrence Berkeley National Lab. (USA) [9512-14]

14:55: **Longitudinal diagnostics results and future challenges for FERMI**, Eugenio Ferrari, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) and Univ. degli Studi di Trieste (Italy); Marco Veronese, Enrico M. Allaria, Paolo Sigalotti, Paolo Cinquegrana, Luca Giannessi, Giuseppe Penco, Fabio Rossi, Mauro Predonzani, Mario Ferianis, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-16]

Coffee Break Mon 15:15 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

TUESDAY 14 APRIL

SESSION 4

LOCATION: ZENIT TUE 8:10 TO 9:50

FEL Instrumentation and Novel Experimental Techniques ISession Chairs: **Carlo Callegari**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **David A. Reis**, SLAC National Accelerator Lab. (USA)8:10: **Temporal property of XFEL for X-ray nonlinear optics**, Kenji Tamasaku, RIKEN (Japan) [9512-18]8:30: **Optically induced Fe magnetization reversal in Fe/MnAs/GaAs(001)**, Carlo Spezzani, Laboratoire de Physique des Solides (France) [9512-19]8:50: **Current status of SACLA and applications to high energy density science**, Yuichi Inubushi, Kensuke Tono, Tadashi Togashi, Tetsuo Katayama, Japan Synchrotron Radiation Research Institute (Japan); Shigeki Owada, Makina Yabashi, RIKEN (Japan) [9512-20]9:10: **The hard X-ray instrument for matter in extreme conditions studies at LCLS**, Hae Ja Lee, SLAC National Accelerator Lab. (USA) [9512-21]9:30: **Covariance mapping of multiply-ionized atoms and molecules exposed to strong X-radiation fields**, Raimund A. Feifel, M. Mucke, V. Zhaunerchyk, Uppsala Univ. (Sweden); Leszek J. Frasinski, Imperial College (United Kingdom); Richard Squibb, Uppsala Univ. (Sweden); Mirko Siano, Imperial College (United Kingdom); John H. D. Eland, Univ. of Oxford (United Kingdom); M. Kaminska, The Institute of Physics (Poland); J. Salen, P. van der Meulen, P. Linusson, R. D. Thomas, Mats Larsson, Stockholm Univ. (Sweden); Timur Osipov, Li Fang, Brendan Murphy, Nora Berrah, Western Michigan Univ. (USA); Lutz Foucar, Max-Planck-Arbeitsgruppen für strukturelle Molekularbiologie (Germany); J. Ullrich, Max-Planck-Institut für Kernphysik (Germany); Kosaku Motomura, S. Mondal, Kiyoshi Ueda, Tohoku Univ. (Japan); James M. Glowina, James P. Cryan, Ryan N. Coffee, Christoph Bostedt, John Bozek, Sebastian Schorb, Marc Messerschmidt, Brian K. McFarland, Markus Koch, Jakob Grillj, Emily Sistrunk, M. Gühr, SLAC National Accelerator Lab. (USA); Hiromitsu Takahashi, S. Wada, Hiroshima Univ. (Japan); M. N. Piancastelli, Uppsala Univ. (Sweden); Robert Richter, Kevin C. Prince, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-22]

Coffee Break Tue 9:50 to 10:10

SESSION 5

LOCATION: ZENIT TUE 10:10 TO 12:15

Status of Operational and Planned FEL Facilities ISession Chairs: **Giuseppe Penco**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **Zhentang Zhao**, Shanghai Institute of Applied Physics (China)10:10: **Instrumentation challenges for the European XFEL** (*Invited Paper*), Thomas Tschentscher, European XFEL GmbH (Germany) [9512-23]10:35: **FLASH: the first soft x-ray FEL operating two undulator beamlines simultaneously** (*Invited Paper*), Katja Honkavaara, Deutsches Elektronen-Synchrotron (Germany) [9512-24]11:00: **Present status of SACLA** (*Invited Paper*), Tetsuya Ishikawa, RIKEN (Japan) [9512-25]11:25: **Status of PAL-XFEL** (*Invited Paper*), In Soo Ko, Pohang Univ. of Science and Technology (Korea, Republic of) [9512-26]11:50: **Status of operational and planned FEL facilities** (*Invited Paper*), Dong Wang, Shanghai Institute of Applied Physics (China) [9512-27]

Lunch/Exhibition Break Tue 12:15 to 13:15

SESSION 6

LOCATION: ZENIT TUE 13:15 TO 14:20

Status of Operational and Planned FEL Facilities IISession Chairs: **Giuseppe Penco**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **Zhentang Zhao**, Shanghai Institute of Applied Physics (China)13:15: **Status of SwissFEL, the X-ray free electron laser at PSI** (*Invited Paper*), Marco Pedrozzi, Paul Scherrer Institut (Switzerland) [9512-28]13:40: **Operation of FERMI FELs for users**, Michele Svandrlik, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-29]14:00: **Seeded FEL with two energy level electron beam distribution at SPARC-LAB**, Fabio Villa, David Alesini, Maria Pia Anania, Marco Bellaveglia, Michele Castellano, Enrica Chiadroni, Domenico Di Giovenale, Giampiero Di Pirro, Massimo Ferrario, Alessandro Gallo, Giancarlo Gatti, Riccardo Pompili, Stefano Romeo, Vladimir Shpakov, Cristina Vaccarezza, Istituto Nazionale di Fisica Nucleare (Italy); Mariano Carpanese, Franco Ciocci, Giuseppe Dattoli, Emanuele Di Palma, Luca Giannessi, Alberto Petralia, Elio Sabia, Ivan P. Spassovsky, Marcello Artoli, ENEA (Italy); Alessandro Cianchi, Francesco Filippi, Anna Giribono, Istituto Nazionale di Fisica Nucleare (Italy); Julietta V. Rau, Istituto di Struttura della Materia (Italy); Alberto Bacci, Andrea Renato Rossi, Istituto Nazionale di Fisica Nucleare (Italy); Najmeh Sada Mirian, Istituto Nazionale di Fisica Nucleare (Italy) and Univ. degli Studi di Milano (Italy); Vittoria Petrillo, Univ. degli Studi di Milano (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Andrea Mostacci, Univ. degli Studi di Roma La Sapienza (Italy); Luca Innocenti, Univ. degli Studi di Roma "Tor Vergata" (Italy) [9512-30]

SESSION 7

LOCATION: ZENIT TUE 14:20 TO 15:35

Diagnostics, Controls, Timing and Synchronization IISession Chairs: **John M. Byrd**, Lawrence Berkeley National Lab. (USA); **Pierpaolo Stabile**, CERN (Switzerland); **Timothy J. Maxwell**, SLAC National Accelerator Lab. (USA)14:20: **A single-shot, high-repetition rate scheme for electro-optic detection of short pulses** (*Invited Paper*), Eléonore Roussel, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) and Univ. des Sciences et Technologies de Lille (France) and Ctr. d'Etudes et de Recherches Lasers et Applications (France); Clément Evain, Univ. des Sciences et Technologies de Lille (France) and Ctr. d'Etudes et de Recherches Lasers et Applications (France); Marc Le Parquier, Ctr. d'Etudes et de Recherches Lasers et Applications (France); Christophe Szwaj, Univ. des Sciences et Technologies de Lille (France) and Ctr. d'Etudes et de Recherches Lasers et Applications (France); Laurent Manceron, Jean-Blaise Brubach, Marie-Agnès Tordeux, Jean-Paul Ricaud, Lodovico Cassinari, Marie Labat, Marie-Emmanuelle Couprie, Pascale Roy, Synchrotron SOLEIL (France); Serge Bielawski, Univ. des Sciences et Technologies de Lille (France) and Ctr. d'Etudes et de Recherches Lasers et Applications (France) [9512-31]14:45: **The SPARC-LAB femtosecond synchronization for electron and photon pulsed beams** (*Invited Paper*), Marco Bellaveglia, Alessandro Gallo, Istituto Nazionale di Fisica Nucleare (Italy); Luca Piersanti, Istituto Nazionale di Fisica Nucleare (Italy) and Univ. degli Studi di Roma La Sapienza (Italy); Riccardo Pompili, Giancarlo Gatti, Maria Pia Anania, Massimo Petrarca, Fabio Villa, Enrica Chiadroni, Istituto Nazionale di Fisica Nucleare (Italy) [9512-32]15:10: **Optical diagnostics for femtosecond electron pulses** (*Invited Paper*), Rasmus Ischebeck, Paul Scherrer Institut (Switzerland) [9512-37]

Coffee Break Tue 15:10 to 15:30

SESSION 8

LOCATION: ZENIT TUE 16:00 TO 18:30

FEL Instrumentation and Novel Experimental Techniques IISession Chairs: **Carlo Callegari**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **David A. Reis**, SLAC National Accelerator Lab. (USA)16:00: **Atomic, molecular, and cluster science at SCSS and SACLA** (*Invited Paper*), Kiyoshi Ueda, Hironobu Fukuzawa, Tohoku Univ. (Japan) [9512-33]16:25: **Investigation of the ultrafast light induced dynamics in clusters and droplets with short wavelength free-electron laser** (*Invited Paper*), Yevheniy Ovcharenko, Thomas Möller, Technische Univ. Berlin (Germany) [9512-34]

CONFERENCE 9512 · LOCATION: ZENIT

16:50: **DiProl, the coherent diffraction imaging end-station at FERMI@ Elettra FEL user facility: present status and future research opportunities**, Flavio Capotondi, Emanuele Pedersoli, F. Casolari, Michele Manfreda, Maya Kiskinova, Lorenzo Raimondi, Marco Zangrando, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Enrico M. Allaria, Istituto Nazionale di Ottica (Italy); Filippo Bencivenza, Claudio Masciovecchio, Miltcho B. Danailov, D. Fausti, Luca Giannessi, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Saša Bajt, Miriam Barthelmeß, Holger Fleckenstein, Richard A. Kirian, Deutsches Elektronen-Synchrotron (Germany); Chun Hong Yoon, Joachim Schulz, European XFEL GmbH (Germany); Henry N. Chapman, Ctr. for Free-Electron Laser Science (Germany); Carsten Nils Gutt, Heidelberg School of Medicine (Germany); Lutz Müller, Gerhard Grübel, Deutsches Elektronen-Synchrotron (Germany); B. Pfau, Univ. Pierre et Marie Curie (France); C. von Korff Schmising, Stefan Eisebitt, Technische Univ. Berlin (Germany); Boris Vodungbo, Lab. d'Optique Appliquée (France); J. Luning, Univ. Pierre et Marie Curie (France); Janos Hajdu, Uppsala Univ. (Sweden) [9512-35]

17:10: **Beam diagnostics based on atomic physics methods at the low-density matter beamline of FERMI**, Paola Finetti, Carlo Callegari, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Marcello Coreno, Consiglio Nazionale delle Ricerche (Italy); Riccardo Cucini, Miltcho B. Danailov, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Raimund A. Feifel, Univ. of Gothenburg (Sweden); Michele Di Fraia, Luca Giannessi, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Antti Kivimäki, Istituto Officina dei Materiali (Italy); Tommaso Mazza, Michael Meyer, European XFEL GmbH (Germany); Oksana Plekan, Kevin C. Prince, Robert Richter, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Richard Squibb, Univ. of Gothenburg (Sweden); Stefano Stranges, Univ. degli Studi di Roma La Sapienza (Italy); Kiyoshi Ueda, Tohoku Univ. (Japan); Marco Zangrando, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-36]

17:30: **Grating-based pulse compressor for applications to FEL sources**, Luca Poletto, Fabio Frassetto, Paolo Miotti, CNR-IFN UoS Padova (Italy); David Gauthier, Univ. of Nova Gorica (Slovenia) and Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Benoit Mahieu, Univ. of Nova Gorica (Slovenia) and Elettra-Sincrotrone Trieste S.C.p.A. (Italy) and Commissariat à l'Énergie Atomique (France); Marta Fajardo, Instituto de Plasmas e Fusão Nuclear (Portugal); Marco Zangrando, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Philippe Zeitoun, Ecole Nationale Supérieure de Techniques Avancées (France); Giovanni De Ninno, Univ. of Nova Gorica (Slovenia) and Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-38]

17:50: **Atomic photoionization dynamics in combined XUV and NIR radiation fields**, Michael Meyer, Tommaso Mazza, European XFEL GmbH (Germany); Markus Ilchen, European XFEL GmbH (Germany) and SLAC National Accelerator Lab. (USA); Carlo Callegari, Paola Finetti, Oksana Plekan, Kevin C. Prince, Marcello Coreno, Robert Richter, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Patrick O'Keefe, Lorenzo Aвали, Paola Bolognesi, Istituto di Struttura della Materia (Italy); Kiyoshi Ueda, Tohoku Univ. (Japan); John T. Costello, Dublin City Univ. (Ireland); Elena V. Gryzlova, Alexei N. Grum-Grzhimailo, Lomonosov Moscow State Univ. (Russian Federation); Andrey K. Kazansky, Donostia International Physics Ctr. (Spain); Nikolay M. Kabachnik, European XFEL GmbH (Germany) [9512-39]

18:10: **FEL-based transient grating spectroscopy**, Filippo Bencivenza, Riccardo Cucini, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-40]

11:00: **Using a transverse gradient undulator to improve the FEL performance in a laser plasma accelerator**, Zhirong Huang, SLAC National Accelerator Lab. (USA) [9512-44]

11:20: **Experimental characterization of the FERMI laser heater and its impact on the FEL operations**, Eugenio Ferrari, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) and Univ. degli Studi di Trieste (Italy); Enrico M. Allaria, Luca Giannessi, Giovanni De Ninno, Giuseppe Penco, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Simone Spampinati, Univ. of Liverpool (United Kingdom); Simone Di Mitri, William M. Fawley, Alexander A. Demidovich, Miltcho B. Danailov, Silvano Bassanese, Laura Badano, Mauro Trovò, Marco Veronese, Bruno Diviacco, Carlo Spezzani, Davide Castronovo, Giulio Gaio, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Lars Froehlich, Deutsches Elektronen-Synchrotron (Germany) [9512-45]

11:40: **Circular polarization control in X-ray FELs by reverse undulator tapering**, Evgeny A. Schneidmiller, Mikhail V. Yurkov, Deutsches Elektronen-Synchrotron (Germany) [9512-46]

12:00: **The universal method for optimization of undulator tapering in FEL amplifiers**, Mikhail V. Yurkov, Evgeny A. Schneidmiller, Deutsches Elektronen-Synchrotron (Germany) [9512-47]

Lunch/Exhibition Break Wed 12:20 to 13:30

SESSION 10

LOCATION: ZENIT WED 13:30 TO 15:20

Novel Source Developments I

Session Chairs: **Enrica Chiadroni**, Istituto Nazionale di Fisica Nucleare (Italy); **Daniel F. Ratner**, SLAC National Accelerator Lab. (USA)

13:30: **Gamma-ray production from resonant betatron oscillations of accelerated electrons in a plasma wake** (*Invited Paper*), Silvia Cipiccia, Mohammad R. Islam, Bernhard Ersfeld, Gregor H. Welsh, Enrico Brunetti, Gregory Vieux, Xue Yang, S. Mark Wiggins, Peter A. Grant, David Reboledo-Gil, David W. Grant, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9512-48]

13:55: **Generation of femtosecond to sub-femtosecond x-ray pulses in free-electron lasers** (*Invited Paper*), Yuantao Ding, SLAC National Accelerator Lab. (USA) [9512-49]

14:20: **Crossed-planar undulators technique for free-electron laser polarization switching**, Haixiao Deng, Shanghai Institute of Applied Physics (China) [9512-50]

14:40: **Longitudinal space charge assisted echo seeding**, Kirsten Hacker, Deutsches Elektronen-Synchrotron (Germany) [9512-51]

15:00: **Dual color x rays from Thomson or Compton sources**, Vittoria Petrillo, Univ. degli Studi di Milano (Italy) [9512-52]

Coffee Break Wed 15:20 to 15:50

SESSION 11

LOCATION: ZENIT WED 15:50 TO 17:30

Novel Source Developments II

Session Chairs: **Enrica Chiadroni**, Istituto Nazionale di Fisica Nucleare (Italy); **Daniel F. Ratner**, SLAC National Accelerator Lab. (USA)

15:50: **Super-radiant high-field THz sources operating at quasi-cw rep rates**, Michael Gensch, Sergey Kovalev, Bertram Green, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) [9512-53]

16:10: **Experiment preparation towards a demonstration of laser plasma-based free electron laser amplification**, Alexandre Loulergue, Synchrotron SOLEIL (France) [9512-54]

16:30: **A free-electron laser design for four-wave mixing experiments with soft x-ray pulses**, George Marcus, Stanford Univ. (USA); Gregory Penn, Alexander A. Zholents, Lawrence Berkeley National Lab. (USA) [9512-55]

16:50: **An XUV source using a femtosecond enhancement cavity for photoemission spectroscopy**, David J. Jones, The Univ. of British Columbia (Canada) [9512-57]

17:10: **Optical klystron SASE at FERMI**, Giuseppe Penco, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-58]

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

Coffee Break 9:50 to 10:20

SESSION 9

LOCATION: ZENIT WED 10:20 TO 12:20

Electron Beam Effects on FEL Emission Including Emission Efficiency

Session Chairs: **Kirsten Hacker**, Deutsches Elektronen-Synchrotron (Germany); **Eugenio Ferrari**, Elettra-Sincrotrone Trieste S.C.p.A. (Italy)

10:20: **Applications of the transverse gradient undulators on high-gain FELs in China**, Bo Liu, Tong Zhang, Haixiao Deng, Chao Feng, Wei Zhang, Dong Wang, Zhentang Zhao, Shanghai Institute of Applied Physics (China) [9512-41]

10:40: **Measurement of the seed laser to electron bunch time jitter at the FERMI free electron laser**, Paolo Sigalotti, Enrico M. Allaria, Paolo Cinquegrana, Miltcho B. Danailov, Alexander A. Demidovich, Eugenio Ferrari, Gabor Kurdi, Ivaylo P. Nikolov, Fabio Rossi, Marco Veronese, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-42]

Poster Session

MERIDIAN HALL WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

Pulsed wire measurement for insertion devices, Alex D'Audney, Colorado State Univ. (USA) [9512-1]

Laser arrival measurement tools for SwissFEL, Marta Csatari Divall, Albert Romann, Patrick Mutter, Stephan G. Hunziker, Paul Scherrer Institut (Switzerland); Christoph P. Hauri, Paul Scherrer Institut (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland) [9512-67]

Construction status of CXI beamline at PAL-XFEL, Jaehyun Park, Ki Hyun Nam, Sangsoo Kim, Bongsoo Kim, In Soo Ko, Moo Hyun Cho, Pohang Accelerator Lab. (Korea, Republic of) [9512-68]

Towards a novel THz-based monitor for sub-picosecond electron bunches working at MHz repetition rates and low bunch charges, Sergey Kovalev, Bertram Green, Michael Gensch, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) [9512-69]

High-efficiency bispectral laser for EUV, Aleksandr S Grishkanich, National Research Univ ITMO (Russian Federation) [9512-70]

THURSDAY 16 APRIL

SESSION 12

LOCATION: ZENIT THU 9:00 TO 12:10

Accelerator Hardware and FEL Operational Experiences

Session Chairs: **Alan M. M. Todd**, Advanced Energy Systems, Inc. (USA); **Siegfried Schreiber**, Deutsches Elektronen-Synchrotron (Germany)

9:00: **Operational experiences of the free-electron laser FLASH** (*Invited Paper*), Siegfried Schreiber, Deutsches Elektronen-Synchrotron (Germany) [9512-59]

9:25: **The new IR and THz FEL facility at the Fritz-Haber-Institut in Berlin** (*Invited Paper*), Wieland Schöllkopf, Sandy Gewinner, Gert von Helden, Alexander Paarmann, Heinz Junkes, Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany); Alan M. M. Todd, Hans P. Bluem, Advanced Energy Systems, Inc. (USA) [9512-60]

9:50: **Operational experience at ELBE**, Peter Michel, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) [9512-61]

10:10: **Tests of photocathodes for high repetition rate x-ray FELs at the APEX facility at LBNL**, Fernando Sannibale, Daniele Filippetto, Houjun Qian, Christos Papadopoulos, Lawrence Berkeley National Lab. (USA); Ruixuan Huang, Univ. of Science and Technology of China (China); Max Zolotarev, John W. Staples, Lawrence Berkeley National Lab. (USA) [9512-62]

Coffee Break Thu 10:30 to 10:50

10:50: **Optimization of high average power FEL beam for EUV lithography source**, Akira Endo, Institute of Physics of the ASCR, v.v.i. (Czech Republic) .. [9512-63]

11:10: **FERMI magnet power supplies: design strategies and five years of operational experience**, Roberto Visintini, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) [9512-64]

11:30: **Operational experience on the generation and control of high brightness electron bunch trains at SPARC-LAB**, Andrea Mostacci, Univ. degli Studi di Roma La Sapienza (Italy); David Alesini, Maria Pia Anania, Alberto Bacci, Marco Bellaveglia, Michele Castellano, Enrica Chiadroni, Istituto Nazionale di Fisica Nucleare (Italy); Alessandro Cianchi, Univ. degli Studi di Roma "Tor Vergata" (Italy); Domenico Di Giovenale, Giampiero Di Pirro, Massimo Ferrario, Istituto Nazionale di Fisica Nucleare (Italy); Francesco Filippi, Univ. degli Studi di Roma La Sapienza (Italy); Alessandro Gallo, Giancarlo Gatti, Istituto Nazionale di Fisica Nucleare (Italy); Anna Giribono, Univ. degli Studi di Roma La Sapienza (Italy); Riccardo Pompili, Stefano Romeo, Andrea Renato Rossi, Cristina Vaccarezza, Fabio Villa, Istituto Nazionale di Fisica Nucleare (Italy) [9512-65]

11:50: **Design and initial characterisation of X-ray beam diagnostic imagers for the European XFEL**, Andreas Koch, Wolfgang Freund, Jan Grünert, Marc Planas, European XFEL GmbH (Germany) [9512-66]

CONFERENCE 9513 · LOCATION: NADIR

Tuesday-Wednesday 14-15 April 2015 • Proceedings of SPIE Vol. 9513

High-Power, High-Energy, and High-Intensity Laser Technology

Conference Chair: **Joachim Hein**, Friedrich-Schiller-Univ. Jena (Germany)

Programme Committee: **Jean-Christophe Francis Chanteloup**, Ecole Polytechnique (France); **Leonida A. Gizzi**, Consiglio Nazionale delle Ricerche (Italy); **Marc Hanna**, Lab. Charles Fabry (France); **Bruno J. Le Garrec**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Jens Limpert**, Friedrich-Schiller-Univ. Jena (Germany); **Antonio Lucianetti**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Paul D. Mason**, Rutherford Appleton Lab. (United Kingdom); **Mathias Siebold**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany)

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 6-7.

LOCATION: NADIR 10:15 TO 10:20

Opening Remarks

SESSION 1

LOCATION: NADIR TUE 10:20 TO 12:10

High-Energy and High-Power DPSSL

Session Chair: **Joachim Hein**, Friedrich-Schiller-Univ. Jena (Germany)

10:20: **DiPOLE100: A 100 J, 10 Hz DPSSL using cryogenic gas cooled Yb:YAG multi slab amplifier technology** (*Invited Paper*), Paul D. Mason, Saumyabrata Banerjee, Klaus G. Ertel, Jonathan Phillips, Thomas J. Butcher, Jodie M. Smith, Mariastefania De Vido, Stephanie Tomlinson, Oleg V. Chekhlov, Waseem Shaikh, Cristina Hernandez-Gomez, Justin Greenhalgh, John L. Collier, STFC Rutherford Appleton Lab. (United Kingdom). [9513-1]

10:50: **High-energy picosecond hybrid fiber/crystal laser for thin films solar cells micromachining**, Jean-Bernard Lecourt, Anthony Bertrand, Didier Lekime, Yves Hernandez, Multitel A.S.B.L. (Belgium). [9513-2]

11:10: **Amplification of picosecond pulses to 100 W by an Yb:YAG thin disk with CVBG compressor**, Martin Smrz, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Michal Chyla, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Ondrej Novák, Taisuke Miura, Akira Endo, Tomás Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic). [9513-3]

11:30: **High average power picosecond and nanosecond laser operating at 1342nm**, Aleksej M. Rodin, Ctr. for Physical Sciences and Technology (Lithuania); Mikhail Grishin, Andrejus Michailovas, Ctr. for Physical Sciences and Technology (Lithuania) and EKSPALA UAB (Lithuania). [9513-4]

11:50: **Design and experiment research of a helium gas cooled Yb:YAG laser**, Xin-ying Jiang, China Academy of Engineering Physics (China). [9513-5]

Lunch/Exhibition Break Tue 12:10 to 13:20

SESSION 2

LOCATION: NADIR TUE 13:20 TO 15:10

Short-Pulse and High-Peak Power Lasers

Session Chair: **Paul D. Mason**, STFC Rutherford Appleton Lab. (United Kingdom)

13:20: **Full ASE characterisation of high-power laser-systems with various laser materials: a comparative study** (*Invited Paper*), Sebastian Keppler, Jörg Körner, Alexander Sävert, Marco Hornung, Hartmut Liebetrau, Joachim Hein, Malte C. Kaluza, Friedrich-Schiller-Univ. Jena (Germany). [9513-6]

13:50: **Alignment method of a four-grating compressor for the petawatt-class PEARL-X laser system**, Ivan V. Yakovlev, Institute of Applied Physics (Russian Federation). [9513-7]

14:10: **Current status of the PENELOPE-project**, Markus Loeser, Daniel Albach, Fabian Röser, Mathias Siebold, Harald Nehring, Gunter Harzendorf, Igor Tysbin, Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany). [9513-8]

14:30: **Multi PW laser design for the SHENGUANG II laser facility**, Xinglong Xie, Jianqiang Zhu, Qingwei Yang, Haidong Zhu, Jun Kang, Ailin Guo, Ping Zhu, Shanghai Institute of Optics and Fine Mechanics (China). [9513-9]

14:50: **Timing jitter measurement and stabilization of mode-locked ytterbium fiber laser**, Jakub Mesicek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jens Linnemann, Martin Smrz, Taisuke Miura, Akira Endo, Tomás Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic). [9513-10]

Coffee Break Tue 15:10 to 15:40

SESSION 3

LOCATION: NADIR TUE 15:40 TO 17:50

Front Ends, Devices, Pump Sources

Session Chair: **Sebastian Keppler**, Friedrich-Schiller-Univ. Jena (Germany)

15:40: **Industrial mJ-class all-fiber front end with spatially coherent top-hat beam output used as seeder for high-power laser** (*Invited Paper*), Jean-François Gleyze, Pierre Calvet, Pierre Gouriou, Florent Scol, Commissariat à l'Énergie Atomique (France); Constance Valentin, Géraud Bouwmans, Univ. des Sciences et Technologies de Lille (France); Emmanuel Hugonnot, Commissariat à l'Énergie Atomique (France). [9513-11]

16:10: **Ultrahigh contrast seed pulses for a petawatt-scale diode-pumped solid state laser**, Hartmut Liebetrau, Marco Hornung, Andreas Seidel, Sebastian Keppler, Joachim Hein, Malte C. Kaluza, Friedrich-Schiller-Univ. Jena (Germany). [9513-12]

16:30: **Reliable pump sources for high-energy class lasers**, Martin Wölz, Agnieszka Pietrzak, JENOPTIK Diode Lab GmbH (Germany); Alex Kindsvater, Jürgen Wolf, Jens Meusel, Jenoptik Laser GmbH (Germany); Ralf Hülsewede, Jürgen Sebastian, JENOPTIK Diode Lab GmbH (Germany). [9513-13]

16:50: **Multifunctional lens arrays for beam shaping and pump sources**, Thomas Mitra, Udo Fornahl, Manfred Jarczyński, Jens Meinschien, Lutz Aschke, LIMO Lissotschenko Mikrooptik GmbH (Germany). [9513-14]

17:10: **AlGaIn laser diode bar & array technology for high power and individual addressable applications**, Stephen P. Najda, Piotr Perlin, TopGaN Ltd. (Poland); Tadek Suski, Institute of High Pressure Physics (Poland); Lucja Marona, Michal Bockowski, Mike Leszczyński, Piotr Wisniewski, Robert Czerniecki, Robert Kucharski, Grzegorz Targowski, TopGaN Ltd. (Poland). [9513-15]

17:30: **AOM optimization with ultra stable high power CO₂ lasers for fast laser engraving**, Markus Bohrer, Dr. Bohrer Lasertec GmbH (Austria). [9513-16]

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6-7.

SESSION 4

LOCATION: NADIR WED 10:10 TO 12:20

Large Aperture Optics and Thermal Problems

Session Chair: **Jean-François Gleyze**, Commissariat à l'Énergie Atomique (France)

10:10: **Large aperture adaptive optics for intense lasers** (*Invited Paper*), Laurent Ropert, François Deneuille, Paul Sauvageot, Sébastien Theis, ISP System (France). [9513-17]

10:40: **Alignment system for high-power large aperture laser systems**, Roberto Ziano, Institute of Physics of the ASCR, v.v.i. (Czech Republic). [9513-18]

11:00: **High reflective diffraction grating for ultrafast pulse compression**, Galina Kalinchenko, Stepan Vyhlička, Daniel Kramer, ELI Beamlines (Czech Republic); Alexander Lerer, Southern Federal Univ. (Russian Federation); Bedrich Rus, ELI Beamlines (Czech Republic) [9513-45]

11:20: **Thermally induced depolarization in the optical elements of the transition configuration**, Aleksey V. Starobor, Oleg V. Palashov, Institute of Applied Physics (Russian Federation) [9513-20]

11:40: **A new method of optical transmittance and birefringence uniformity measurement with coherent heterodyne detection**, Jie Miao, Shanghai Institute of Optics and Fine Mechanics (China); Dongxian Chen, Pengqian Yang, Shanghai Institute of Optics and Fine Mechanics (China); Yaling Yang, Shanghai Institute of Optics and Fine Mechanics Club (China); Jie Zhang, Baoqiang Zhu, Dean Liu, Jianqiang Zhu, Shanghai Institute of Optics and Fine Mechanics (China) [9513-48]

12:00: **Isolation of the amplifier cavity from retro-reflected laser pulse by the target for XG-III PW beamline**, Jun Zhang, Jian-Gang Zheng, Xiong-jun Zhang, Jingqin Su, Wanguo Zheng, China Academy of Engineering Physics (China) [9513-47]

Lunch/Exhibition Break Wed 12:20 to 13:30

SESSION 5

LOCATION: NADIR WED 13:30 TO 15:30

Novel Laser Materials

Session Chair: **Laurent Ropert**, ISP System (France)

13:30: **Yb:Lu₂SiO₅ crystal : characterization of the laser emission along the three optical axes**, Guido Toci, Istituto Nazionale di Ottica (Italy); Angela Pirri, Istituto di Fisica Applicata Nello Carrara (Italy); Martin Nikl, Alena Beitlerová, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Yasuhiro Shoji, Akira Yoshikawa, Tohoku Univ. (Japan); Matteo Vannini, Istituto Nazionale di Ottica (Italy) [9513-22]

13:50: **Tb:CaF₂: new promising medium for multikilowatt-class high power Faraday isolators**, Dmitry S. Zheleznov, Aleksey V. Starobor, Oleg V. Palashov, Institute of Applied Physics (Russian Federation) [9513-23]

14:10: **Calcium fluoride, a low n2 material for high aperture windows in high-power laser systems**, Gordon von der Goenna, Thomas Toepfer, Hellma Materials GmbH (Germany) [9513-24]

14:30: **Graded Yb:YAG ceramic structures: design, fabrication and characterization of the laser performances**, Guido Toci, Antonio Lapucci, Marco Ciofini, Istituto Nazionale di Ottica (Italy); Laura Esposito, Consiglio Nazionale delle Ricerche (Italy); Jan Hostaša, Consiglio Nazionale delle Ricerche (Italy) and Institute of Chemical Technology (Czech Republic); Leonida A. Gizzi, Luca Labate, Paolo Ferrara, Istituto Nazionale di Ottica (Italy); Angela Pirri, Istituto di Fisica Applicata Nello Carrara (Italy); Matteo Vannini, Istituto Nazionale di Ottica (Italy) [9513-25]

14:50: **Investigation of Yb³⁺-doped aluminosilicate glasses for high energy class diode-pumped solid state lasers**, Jörg Körner, Joachim Hein, Mirko Tiegel, Stefan Kuhn, Joachim Buldt, Fangxin Yue, Reinhard Seifert, Andreas Herrmann, Christian Ruessel, Malte C. Kaluza, Friedrich-Schiller-Univ. Jena (Germany) [9513-26]

15:10: **A new-old laser crystal Nd:Y:CaF₂ for IFE driver**, Jian-Gang Zheng, China Academy of Engineering Physics (China); Liang-Bi Su, Shanghai Institute of Ceramics (China); Xin-ying Jiang, Zhenguo Wang, Xiongwei Yan, Jun Zhang, China Academy of Engineering Physics (China) [9513-27]

Coffee Break Wed 15:30 to 16:00

SESSION 6

LOCATION: NADIR WED 16:00 TO 17:10

Frequency Conversion

Session Chair: **Magdalena Sawicka-Chyla**, HILASE Ctr. (Czech Republic)

16:00: **Multi-mJ, kHz picosecond deep UV source based on a frequency-quadrupled cryogenic Yb:YAG laser (Invited Paper)**, Kyung-Han Hong, Chun-Lin L. Chang, Peter Krogen, Houkun Liang, Gregory J. Stein, Jeffrey Moses, Chien-Jen Lai, Massachusetts Institute of Technology (USA); Franz X. Kärtner, Massachusetts Institute of Technology (USA) and Ctr. for Free-Electron Laser Science (Germany) and Univ. Hamburg (Germany) [9513-28]

16:30: **Picosecond pulses in deep ultraviolet produced by a 100-kHz solid-state thin disk laser**, Hana Turcicova, Ondrej Novák, Martin Smrz, Taisuke Miura, Akira Endo, Tomáš Moček, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9513-29]

16:50: **Large-aperture and noncritically phase-matched fourth harmonic generation experiments**, Fang Wang, Fuquan Li, Wei Wang, Bin Feng, Wei Han, China Academy of Engineering Physics (China) [9513-30]

Poster Session

MERIDIAN HALL. WED. 17:45 TO 19:15

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Experimental benchmarking of the code for Yb:YAG multislabs gas-cooled laser system operating at cryogenic temperatures, Magdalena Sawicka-Chyla, Martin Divoky, Antonio Lucianetti, Martin Fibrich, Bedrich Rus, Tomáš Moček, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9513-19]

Thermal distortion real-time detection and correction of a high-power Laser beam-splitter mirror based on double Shack-Hartmann wavefront sensors, Yu Ning, Quan Sun, Hongyan Wang, Wuming Wu, Shaojun Du, Xiaojun Xu, National Univ. of Defense Technology (China) [9513-31]

Wavelength-tunable Erbium-doped fiber laser using silicon-on-insulator (SOI) based microring with narrow laser linewidth, Ling-Gang Yang, Chi-Wai Chow, National Chiao Tung Univ. (Taiwan); Chien-Hung Yeh, Feng Chia Univ. (Taiwan); Hon Tsang, The Chinese Univ. of Hong Kong (Hong Kong, China) [9513-32]

Active mode control of solid state laser using an intra-cavity beam shaper, Wenguang Liu, Qiong Zhou, Baozhu Yan, Zongfu Jiang, National Univ. of Defense Technology (China) [9513-33]

Temperature dependent absorption measurement of various transition metal doped laser materials, Lucie Horackova, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jan Šulc, Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Venkatesan Jambunathan, Antonio Lucianetti, Tomáš Moček, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9513-34]

Development of a mode-locked fiber laser system for a high finesse enhancement cavity, Rika Suzuki, Takamari Kobayashi, Kazuyuki Sakae, Masakazu Washio, Akira Endo, Waseda Univ. (Japan) [9513-36]

Demonstration of an optical enhancement cavity with 10 micron wavelength, Kazuyuki Sakae, Masakazu Washio, Akira Endo, Waseda Univ. (Japan) [9513-37]

Multiple pulses and harmonic mode locking from passive mode-locked Ytterbium doped fiber in anomalous dispersion region, Ja-Hon Lin, Hung-Yi Lee, National Taipei Univ. of Technology (Taiwan) [9513-38]

Thermal effects of liquid direct cooled split disk laser, Huomu Yang, Guoying Feng, Shouhuan Zhou, Sichuan Univ. (China) [9513-39]

Sub-picosecond laser induced damage test facility for petawatt reflective optical components characterizations, Martin Sozet, Jérôme Néauport, Nadja Roquin, Commissariat à l'Énergie Atomique (France); Laurent Gallais, Institut Fresnel (France); Laurent Lemaître, Commissariat à l'Énergie Atomique (France) [9513-40]

Generation of 1.6 ns Q-switched pulses based on Yb:YAG/Cr:YAG microchip laser, Jan Šulc, Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Karel Nejezchleb, Vaclav Skoda, CRYTUR spol s.r.o. (Czech Republic) [9513-41]

Research on thermal effects of beam-splitter mirror in high-power laser system, Quan Sun, Yu Ning, Zongfu Jiang, Jun Shao Du, National Univ. of Defense Technology (China) [9513-42]

Different mode-locking methods in high-energy all-normal dispersion Yb femtosecond fiber lasers, Jan A. Szczepanek, Univ. of Warsaw (Poland); Maria Michalska, Military Univ. of Technology (Poland); Yuriy Stepanenko, Univ. of Warsaw (Poland) and Institute of Physical Chemistry (Poland) [9513-44]

An intra-cavity device with a discharge-driven CW DF chemical laser, Baozhu Yan, Wenguang Liu, Qiong Zhou, Shengfu Yuan, QiSheng Lu, National Univ. of Defense Technology (China) [9513-46]

CONFERENCE 9514A · LOCATION: KEPLER

Monday–Wednesday 13–15 April 2015 · Proceedings of SPIE Vol. 9514

Laser Acceleration of Electrons, Protons, and Ions

Conference Chairs: **Eric Esarey**, Lawrence Berkeley National Lab. (USA); **Carl B. Schroeder**, Lawrence Berkeley National Lab. (USA); **Florian J. Grüner**, Ludwig-Maximilians-Univ. München (Germany)

Programme Committee: **Sergei V. Bulanov**, Japan Atomic Energy Agency (Japan); **Min Chen**, Shanghai Jiao Tong Univ. (China); **Thomas E. Cowan**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Brigitte Cros**, Univ. Paris-Sud 11 (France); **Antonio Giulietti**, Consiglio Nazionale delle Ricerche (Italy); **Florian J. Grüner**, Ludwig-Maximilians-Univ. München (Germany); **Björn Manuel Hegelich**, Los Alamos National Lab. (USA); **Simon M. Hooker**, Univ. of Oxford (United Kingdom); **Stefan Karsch**, Max-Planck-Institut für Quantenoptik (Germany); **Karl M. Krushelnick**, Univ. of Michigan (USA); **Wim Leemans**, Lawrence Berkeley National Lab. (USA); **Victor Malka**, Ecole Nationale Supérieure de Techniques Avancées (France); **Zulfikar Najmudin**, Imperial College London (United Kingdom); **Zheng-Ming Sheng**, Shanghai Jiao Tong Univ. (China); **Luis O. Silva**, Univ. Técnica de Lisboa (Portugal); **Vladimir T. Tikhonchuk**, Univ. Bordeaux 1 (France); **Antonio C. Ting**, U.S. Naval Research Lab. (USA); **Claes-Goran Wahlström**, Lund Univ. (Sweden); **Matthew Zepf**, Queen's Univ. Belfast (United Kingdom)

MONDAY 13 APRIL

LOCATION: KEPLER 8:55 TO 9:00

Opening Remarks

SESSION 1

LOCATION: KEPLER MON 9:00 TO 10:30

Electron Acceleration I

Session Chair: **Carl B. Schroeder**, Lawrence Berkeley National Lab. (USA)

9:00: **Injector-booster scheme in laser wakefield acceleration: towards practical accelerators** (*Invited Paper*), Tomonao Hosokai, Osaka Univ. (Japan) [9514-1]

9:30: **Direct measurement of the electron dephasing in laser wakefield acceleration**, Daniel E. Cardenas, Shaoh-wei Chou, Laszlo Veisz, Max-Planck-Institut für Quantenoptik (Germany) [9514-2]

9:50: **Observation of collective deceleration of electrons from laser wakefield acceleration**, Shao-wei Chou, Max-Planck-Institut für Quantenoptik (Germany) and Ludwig-Maximilians-Univ. München (Germany); Jiancai Xu, Shanghai Institute of Optics and Fine Mechanics (China); Konstantin Khrennikov, Ludwig-Maximilians-Univ. München (Germany); Daniel E. Cardenas, Laszlo Veisz, Max-Planck-Institut für Quantenoptik (Germany); Stefan Karsch, Ludwig-Maximilians-Univ. München (Germany) [9514-3]

10:10: **Independent control of laser wakefield-accelerated electron-beam parameters**, Donald P. Umstadter, Grigory Golovin, Shouyuan Chen, Univ. of Nebraska-Lincoln (USA); Nathan Powers, KLA-Tencor Corp. (USA); Cheng Liu, Sudeep Banerjee, Jun Zhang, Baozhen Zhao, Kevin Brown, Jared B. Mills, Univ. of Nebraska-Lincoln (USA); Chad Petersen, Univ. of Nebraska-Lincoln (USA); Ming Zeng, Zheng-Ming Sheng, Shanghai Jiao Tong Univ. (China) [9514-4]

Coffee Break Mon 10:30 to 10:50

SESSION 2

LOCATION: KEPLER MON 10:50 TO 12:30

Electron Acceleration II

Session Chair: **Eric H. Esarey**, Lawrence Berkeley National Lab. (USA)

10:50: **Staging of laser-plasma accelerators** (*Invited Paper*), Sven Steinke, Jeroen van Tilborg, Nicholas H. Matlis, Brian H. Shaw, Cameron C. G. R. Geddes, Anthony J. Gonsalves, Kei Nakamura, Daniel E. Mittelberger, Joost Daniels, Lawrence Berkeley National Lab. (USA); Andrew D. Roberts, Minnesota State Univ. (USA); Jean-Luc Vay, Eric H. Esarey, Carl B. Schroeder, Carlo Benedetti, Csaba Toth, Wim P. Leemans, Lawrence Berkeley National Lab. (USA) [9514-5]

11:20: **Divergence reduction by adiabatic matching in laser plasma accelerators** (*Invited Paper*), Irene Dornmair, Univ. Hamburg (Germany); Klaus Floettmann, Deutsches Elektronen-Synchrotron (Germany); Andreas R. Maier, Univ. Hamburg (Germany) [9514-6]

11:50: **Thermal emittance from laser ionization-induced trapping in plasma accelerators**, Carl B. Schroeder, Jean-Luc Vay, Eric Esarey, Stepan Bulanov, Carlo Benedetti, Lawrence Berkeley National Lab. (USA); Lule Yu, Min Chen, Shanghai Jiao Tong Univ. (China); Cameron C. G. R. Geddes, Wim P. Leemans, Lawrence Berkeley National Lab. (USA) [9514-7]

12:10: **TBA**

Lunch Break Mon 12:30 to 13:40

SESSION 3

LOCATION: KEPLER MON 13:40 TO 15:40

Ion Acceleration I

Session Chair: **Anatoly M. Maksimchuk**, Univ. of Michigan (USA)

13:40: **Laser accelerated ions from near critical gaseous targets** (*Invited Paper*), Michael Helle, Daniel Gordon, Dmitri Kaganovich, U.S. Naval Research Lab. (USA); Yu-hsin Chen, Anthony Zingale, Research Support Instruments, Inc. (USA); Antonio Ting, U.S. Naval Research Lab. (USA) [9514-9]

14:10: **Laser ion acceleration in underdense plasmas** (*Invited Paper*), Alessandro Flacco, Lab. d'Optique Appliquée (France) [9514-10]

14:40: **Longitudinal laser ion acceleration in gas jets: experimental optimization on the Titan laser facility and numerical investigation of the ultrahigh intensity limit**, Emmanuel d'Humières, Univ. Bordeaux 1 (France); Sophia N. Chen, Ecole Polytechnique (France); Patrizio Antici, INRS Univ. (Canada); Mathieu Bailly-Grandvaux, Univ. Bordeaux 1 (France); Thomas Gangolf, Ecole Polytechnique (France); Mathieu Lobet, Commissariat à l'Énergie Atomique (France); Guilhem Revet, Ecole Polytechnique (France); Joao J. Santos, Univ. Bordeaux 1 (France); Anna-Marie Schroer, Heinrich-Heine-Universität Düsseldorf (Germany); Vladimir T. Tikhonchuk, Univ. Bordeaux 1 (France); Henri Pepin, Institut National de la Recherche Scientifique (Canada); Julien Fuchs, Ecole Polytechnique (France) [9514-11]

15:00: **Observation of monoenergetic protons from a near-critical gas target tailored by a hydrodynamic shock**, Yu-hsin Chen, Research Support Instruments, Inc. (USA); Michael Helle, Antonio Ting, Daniel Gordon, U.S. Naval Research Lab. (USA); Mikhail Polyanskiy, Igor Pogorelsky, Marcus Babzien, Brookhaven National Lab. (USA); Zulfikar Najmudin, Imperial College London (United Kingdom) [9514-12]

15:20: **Laser propagation effects on ion acceleration in near-critical density plasma**, Martin King, Haydn W. Powell, Ross J. Gray, David A. MacLellan, Bruno Gonzalez-Izquierdo, Univ. of Strathclyde (United Kingdom); Luca C. Stockhausen, Univ. de Salamanca (Spain); George Hicks, Nicholas P. Dover, Imperial College London (United Kingdom); Dean R. Rusby, Univ. of Strathclyde (United Kingdom) and STFC Rutherford Appleton Lab. (United Kingdom); David C. Carroll, STFC Rutherford Appleton Lab. (United Kingdom); Ricardo Torres, Univ. de Salamanca (Spain); Satyabrata Kar, Queen's Univ. Belfast (United Kingdom); Zulfikar Najmudin, Imperial College London (United Kingdom); Marco Borghesi, Queen's Univ. Belfast (United Kingdom); David Neely, STFC Rutherford Appleton Lab. (United Kingdom); Paul McKenna, Univ. of Strathclyde (United Kingdom) [9514-13]

Coffee Break Mon 15:40 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 7-8.

SESSION 4

LOCATION: KEPLER TUE 10:10 TO 12:20

Ion Acceleration II

Session Chair: **Sven Steinke**, Lawrence Berkeley National Lab. (USA)

10:10: **Radiation pressure acceleration enhanced by carbon nanotube foams: the optimization problem in laser-ion acceleration** (*Invited Paper*), Jörg Schreiber, Ludwig-Maximilians-Univ. München (Germany) [9514-14]

10:40: **High-repetition laser-driven proton sources**, Thomas Sokollik, Noaman Haq, Feng Liu, Xulei Ge, Lule Yu, Shanghai Jiao Tong Univ. (China); Zheng-Ming Sheng, Shanghai Jiao Tong Univ. (China) and Univ. of Strathclyde (United Kingdom); Jie Zhang, Shanghai Jiao Tong Univ. (China) [9514-15]

11:00: **Maximum attainable ion energy in the radiation pressure acceleration regime**, Stepan Bulanov, Univ. of California, Berkeley (USA) and Lawrence Berkeley National Lab. (USA); Eric H. Esarey, Carl B. Schroeder, Lawrence Berkeley National Lab. (USA); Sergei V. Bulanov, Timur Z. Esirkepov, Masaki Kando, Japan Atomic Energy Agency (Japan); Francesco Pegoraro, Univ. di Pisa (Italy); Wim P. Leemans, Lawrence Berkeley National Lab. (USA) [9514-16]

11:20: **Influence of the strong self-generated magnetic field on ion acceleration during laser-solid target interaction**, Chengkun Huang, Sasikumar Palaniyappan, Juan C. Fernández, Los Alamos National Lab. (USA) [9514-17]

11:40: **Simultaneous focussing and post-acceleration of laser accelerated proton beams**, Hamad Ahmed, Stayabrata Kar, Queen's Univ. Belfast (United Kingdom); Stephanie Brauckmann, Heinrich-Heine-Univ. Düsseldorf (Germany); Giada Cantono, Queen's Univ. Belfast (United Kingdom); Anna L. Giesecke, Heinrich-Heine-Univ. Düsseldorf (Germany); Fiona M. Hanton, Ciaran L. S. Lewis, Queen's Univ. Belfast (United Kingdom); Andrea Macchi, Istituto Nazionale di Ottica (Italy); Kealan Naughton, Gagik Nersisyan, Queen's Univ. Belfast (United Kingdom); Alex P. L. Robinson, STFC Rutherford Appleton Lab. (United Kingdom); Oswald Willi, Heinrich-Heine-Univ. Düsseldorf (Germany); Matthew Zepf, Marco Borghesi, Queen's Univ. Belfast (United Kingdom) [9514-18]

12:00: **Optimisation of plasma mirror reflectivity and optical quality using double laser pulses**, Graeme G. Scott, Central Laser Facility (United Kingdom) [9514-19]

Lunch/Exhibition Break Tue 12:20 to 13:30

SESSION 5

LOCATION: KEPLER TUE 13:30 TO 15:40

Electron Acceleration III

Session Chair: **Florian J. Grüner**, Ludwig-Maximilians-Univ. München (Germany)

13:30: **Observing the dynamics of a laser-driven plasma electron accelerator** (*Invited Paper*), Malte C. Kaluza, Abbe School of Photonics (Germany) [9514-20]

14:00: **A laser-plasma lens for laser-plasma accelerators**, Cédric Thaury, Remi Lehe, Emilien Guillaume, Ecole Polytechnique (France); Andreas Döpp, Ecole Polytechnique (France) and Univ. de Salamanca (Spain); Kim Ta Phuoc, Ecole Polytechnique (France); Agustin Lifschitz, Victor Malka, Ecole Polytechnique (France) [9514-21]

14:20: **Experimental demonstration of a tapered laser-plasma accelerator**, Emilien Guillaume, Andreas Döpp, Cédric Thaury, Kim Ta Phuoc, Agustin Lifschitz, Julien Gautier, Victor Malka, Lab. d'Optique Appliquée (France) [9514-22]

14:40: **Plasma wakefields driven by an incoherent combination of laser pulses**, Eric H Esarey, Carlo Benedetti, Carl Schroeder, Wim Leemans, Lawrence Berkeley National Lab (USA) [9514-23]

15:00: **Positron acceleration in the doughnut blowout regime**, Jorge M. Vieira, José T. Mendonça, Luís O. Silva, Univ. Técnica de Lisboa (Portugal) [9514-24]

15:20: **Emission control of electron and positron beams in laser plasma accelerators**, Lule Yu, Shanghai Jiao Tong Univ. (China) and Lawrence Berkeley National Lab. (USA); Carl B. Schroeder, Eric H. Esarey, Jean-Luc Vay, Carlo Benedetti, Lawrence Berkeley National Lab. (USA); Feiyu Li, Min Chen, Suming Weng, Zheng-Ming Sheng, Shanghai Jiao Tong Univ. (China); Cameron C. G. R. Geddes, Wim P. Leemans, Lawrence Berkeley National Lab. (USA) ... [9514-25]

Coffee Break Tue 15:40 to 16:00

SESSION 6

LOCATION: KEPLER TUE 16:00 TO 18:10

Laser-driven Acceleration

Session Chair: **Michael Helle**, U.S. Naval Research Lab. (USA)

16:00: **Ultrashort pulsed neutron source** (*Invited Paper*), Ishay Pomerantz, Eddie McCary, Alexander R. Meadows, Alexey Arefiev, Aaron C. Bernstein, Clay Chester, Jose Cortez, Michael E. Donovan, Gilliss Dyer, Erhard W. Gaul, David Hamilton, Donghoon Kuk, Arantxa C. Lestrade, Chunhua Wang, Todd Ditmire, Björn M. Hegelich, The Univ. of Texas at Austin (USA) [9514-26]

16:30: **Laser-driven proton and electron acceleration in high-field plasmonic regime**, Tiberio Ceccotti, CEA-Ctr. de SACLAY (France); Andrea Macchi, Andrea Sgattoni, Luca Fedeli, Istituto Nazionale di Ottica (Italy); Giada Cantono, Fabrice Reau, David Garzella, CEA-Ctr. de SACLAY (France) [9514-27]

16:50: **Proton acceleration in high-intensity laser-plasma interactions from liquid hydrogen jets**, Christian Roedel, SLAC National Accelerator Lab. (USA) and Friedrich-Schiller-Univ. Jena (Germany); Sebastian Goede, Will Schumaker, Maxence Gauthier, Luke B. Fletcher, Alessandra Ravasio, Rohini Mishra, Philipp Sperling, SLAC National Accelerator Lab. (USA) and Stanford Institute for Materials and Energy Sciences (USA); Frederico Fiuza, Lawrence Livermore National Lab. (USA) and SLAC National Accelerator Lab. (USA); Siegfried H. Glenzer, SLAC National Accelerator Lab. (USA) and Stanford Institute for Materials and Energy Sciences (USA) [9514-28]

17:10: **Low-temperature resistivity effects on fast electron transport in solids**, Paul McKenna, David A. MacLellan, Univ. of Strathclyde (United Kingdom); David C. Carroll, STFC Rutherford Appleton Lab. (United Kingdom); Ross J. Gray, Univ. of Strathclyde (United Kingdom); Alex P. L. Robinson, STFC Rutherford Appleton Lab. (United Kingdom); Michael Desjarlais, Sandia National Labs. (USA); Haydn W. Powell, Univ. of Strathclyde (United Kingdom); Nicola Booth, Graeme G. Scott, STFC Rutherford Appleton Lab. (United Kingdom); Matthias Burza, Lund Univ. (Sweden); Xiaohui Yuan, Shanghai Jiao Tong Univ. (China); David Neely, STFC Rutherford Appleton Lab. (United Kingdom); Claes-Goran Wahlstrom, Lund Univ. (Sweden) [9514-29]

17:30: **Investigation of collective electron dynamics in relativistically transparent laser-foil interactions**, Ross J. Gray, David A. MacLellan, Bruno Gonzalez-Izquierdo, Haydn W. Powell, Univ. of Strathclyde (United Kingdom); David C. Carroll, Central Laser Facility (United Kingdom); Christopher D. Murphy, The Univ. of York (United Kingdom); Luca C. Stockhausen, The Ctr. for Ultrashort Ultraintense Pulsed Lasers (Spain); Dean R. Rusby, Graeme G. Scott, Central Laser Facility (United Kingdom); Robbie Wilson, Univ. of Strathclyde (United Kingdom); Nicola Booth, Daniel R. Symes, Steven J. Hawkes, Central Laser Facility (United Kingdom); Ricardo Torres, The Ctr. for Ultrashort Ultraintense Pulsed Lasers (Spain); Marco Borghesi, Queen's Univ. Belfast (United Kingdom); David Neely, STFC Rutherford Appleton Lab. (United Kingdom); Paul McKenna, Univ. of Strathclyde (United Kingdom) [9514-30]

17:50: **Analytical nonlinear model of the relativistic laser-ion acceleration**, Yongsheng Huang, China Institute of Atomic Energy (China) [9514-31]

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

SESSION 7

LOCATION: KEPLER WED 10:10 TO 12:30

Radiation and Particle Sources

Session Chair: Tomonao Hosokai, Osaka Univ. (Japan)

10:10: **ultrahigh brilliance multi-MeV gamma-ray beam from nonlinear Thomson scattering** (*Invited Paper*), Gianluca Sarri, Queen's Univ. Belfast (United Kingdom). [9514-32]

10:40: **Betatron radiation from laser-plasma accelerators** (*Invited Paper*), Felicie Albert, Lawrence Livermore National Lab. (USA). [9514-33]

11:10: **Laser wakefield acceleration of electrons for radiation generation**, Anatoly M. Maksimchuk, Zhen Zhao, Keegan Behm, Univ. of Michigan (USA); Jonathan J. Wood, Jason Cole, Imperial College London (United Kingdom); Vladimir V. Chvykov, Univ. of Michigan (USA); Stuart P. D. Mangles, Zulfikar Najmudin, Imperial College London (United Kingdom); Victor P. Yanovsky, Alexander G. R. Thomas, Karl M. Krushelnick, Univ. of Michigan (USA) [9514-34]

11:30: **Analysis of electron injection in LWFA using betatron emission in capillary tubes**, Frédéric G. Desforges, Bhooshan S. Paradkar, Univ. Paris-Sud 11 (France); Martin Hansson, Lund Univ. (Sweden); Jinchuan Ju, Univ. Paris-Sud 11 (France); Lovisa Senje, Lund Univ. (Sweden); Thomas L. Audet, Univ. Paris-Sud 11 (France); Anders Persson, Lund Univ. (Sweden); Sandrine Dobosz-Dufrénoy, CEA-Ctr. de SACLAY (France); Olle Lundh, Lund Univ. (Sweden); Gilles Maynard, Univ. Paris-Sud 11 (France); Pascal Monot, CEA-Ctr. de SACLAY (France); Jean-Luc Vay, Lawrence Berkeley National Lab. (USA); Claes-Göran Wahlström, Lund Univ. (Sweden); Brigitte Cros, Univ. Paris-Sud 11 (France) [9514-35]

11:50: **X-Ray imaging of ultrafast magnetic reconnection driven by relativistic electrons**, Anthony Raymond, Andrew McKelvey, Calvin A. Zulick, Victor Chykov, Anatoly M. Maksimchuk, Alexander G. R. Thomas, Louise Willingale, Univ. of Michigan (USA); Vladimir Yanovsky, Univ. of Szeged (Hungary); Karl M. Krushelnick, Univ. of Michigan (USA); Will Fox, Amitava Bhattacharjee, Princeton Plasma Physics Lab. (USA) [9514-36]

12:10: **Development of single-shot ultrafast electron diffraction system using laser wakefield accelerated electrons**, Nobuhiko Nakani, Tomonao Hosokai, Shinichi Masuda, Alexei G. Zhidkov, Osaka Univ. (Japan) and Japan Science and Technology Agency (Japan); Naveen Pathak, Kenta Iwasa, Naoki Takeguchi, Yoshio Mizuta, Hiroki Nakahara, Jin Zhan, Keiichi Sueda, Osaka Univ. (Japan); Michiaki Mori, Hideyuki Kotaki, Masaki Kando, Japan Atomic Energy Agency (Japan); Tomokazu Sano, Osaka Univ. (Japan); Kazuto Arakawa, Shimane Univ. (Japan); Ryosuke Kodama, Osaka Univ. (Japan) [9514-37]

Poster Session

MERIDIAN HALL. WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>

Comparison of plasmas of ruthenium, rhodium, palladium and molybdenum produced with nanosecond and picosecond laser pulses, Ragava Lokasani, Czech Technical Univ. in Prague (Czech Republic); Elaine Long, Univ. College Dublin (Ireland); Paul Sheridan, UCD (Ireland); Patrick B. Hayden, Fergal O'Reilly, Univ. College Dublin (Ireland); Pdraig Dunne, Univ. College Dublin (Ireland); Jiri Limpouch, Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Gerard D. O'Sullivan, Univ. College Dublin (Ireland) [9514-38]

Physics of laser-plasma electron acceleration in high-Z gases, Emilien Guillaume, Andreas Döpp, Agustin Lifschitz, Cédric Thauray, Kim Ta Phuoc, Francois Sylla, Victor Malka, Lab. d'Optique Appliquée (France). [9514-39]

Simulations of ion acceleration from ultrathin targets with the VEGA Petawatt laser, Luca C. Stockhausen, The Ctr. for Ultrashort Ultraintense Pulsed Lasers (Spain); Ricardo Torres, Enrique Conejero, Univ. de Salamanca (Spain) [9514-40]

Bunch modulation in LWFA blowout regime, Jiří Vyskočil, Czech Technical Univ. in Prague (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jorge M. Vieira, Luís O. Silva, Univ. Técnica de Lisboa (Portugal); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9514-41]

High-repetition rate relativistic electron beam generation from intense laser solid interactions, Thomas G. Batson, John A. Nees, Bixue X. Hou, Alexander G. R. Thomas, Karl M. Krushelnick, Univ. of Michigan (USA) [9514-42]

Generation of ultrafast X-ray pulses using 20 TW laser system at PALS Facility, Vojtech Horný, Czech Technical Univ. in Prague (Czech Republic); Jaroslav Nejd, Michaela Kozlova, Karel Bohacek, Miroslav Krus, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Ondrej Klimo, Czech Technical Univ. in Prague (Czech Republic) [9514-44]

Ultrashort pulse duration, high temporal contrast, high repetition rate multi-TW/PW laser systems development, Franck Falcoz, Amplitude Technologies (France); Stephane Branly, Thales Optronique S.A.S. (France); Pierre- Mary Paul, Luc M. Vigroux, Gilles Riboulet, Amplitude Technologies (France) [9514-45]

CONFERENCE 9514B · LOCATION: VIRGO

Monday 13–13 April 2015 • Proceedings of SPIE Vol. 9514

Medical Applications of Laser-Generated Beams of Particles: Review of Progress and Strategies for the Future

Conference Chairs: **Kenneth W. D. Ledingham**, Univ. of Strathclyde (United Kingdom); **Klaus Spohr**, Univ. of the West of Scotland (United Kingdom); **Paul McKenna**, Univ. of Strathclyde (United Kingdom); **Paul R. Bolton**, Japan Atomic Energy Agency (Japan)

Programme Committee: **Sergei V. Bulanov**, Japan Atomic Energy Agency (Japan); **Thomas E. Cowan**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Wolfgang Enghardt**, Technische Univ. Dresden (Germany); **Jean-Claude Kieffer**, Institut National de la Recherche Scientifique (Canada); **Chang-Ming C. Ma**, Fox Chase Cancer Ctr. (USA); **Victor Malka**, Ecole Nationale Supérieure de Techniques Avancées (France); **Franz Pfeiffer**, Technische Univ. München (Germany); **Markus Roth**, Kiepenheuer-Institut für Sonnenphysik (Germany); **Akifumi Yogo**, Japan Atomic Energy Agency (Japan)

MONDAY 13 APRIL

LOCATION: VIRGO 9:00 TO 9:05

Opening Remarks

SESSION 10

LOCATION: VIRGO MON 9:05 TO 10:30

Laser-driven Proton Acceleration I

Session Chair: **Paul McKenna**, Univ. of Strathclyde (United Kingdom)

9:05: **Solid hydrogen target for laser driven proton acceleration** (*Invited Paper*), Jean-Paul Perin, CEA Grenoble (France) [9514-50]

9:40: **Innovative beam transport solutions and dosimetry for laser-driven ion beams**, Pablo G. Cirrone, Istituto Nazionale di Fisica Nucleare (Italy); Valentina Scuderi, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Istituto Nazionale di Fisica Nucleare (Italy); Giacomo Cuttone, Francesco P. Romano, Istituto Nazionale di Fisica Nucleare (Italy); Marco Borghesi, Queen's Univ. Belfast (United Kingdom); Giacomo Candiano, Istituto Nazionale di Fisica Nucleare (Italy); Domenico Doria, Queen's Univ. Belfast (United Kingdom); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Dario Giove, Tiziana Licciardello, Mario Maggiore, Rosanna Manna, Istituto Nazionale di Fisica Nucleare (Italy); Lorenzo Manti, Univ. degli Studi di Napoli Federico II (Italy) and Complesso Univ. di Monte Sant'Angelo (Italy); Valentina Marchese, Istituto Nazionale di Fisica Nucleare (Italy); Daniele Margarone, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Giuliana Miluzzo, Agatino Musumarra, Istituto Nazionale di Fisica Nucleare (Italy); Francesca M. Perozziello, Istituto Nazionale di Fisica Nucleare (Italy) and Complesso Univ. di Monte Sant'Angelo (Italy); Pietro Pisciotta, Francesco Schillaci, Antonella Tramontana, Istituto Nazionale di Fisica Nucleare (Italy) [9514-51]

10:05: **DNA repair dynamics following irradiation using laser-driven ion beams with ultra-high dose rates**, Fiona M. Hanton, Domenico Doria, Deborah Gwynne, Clare Scullion, Kealan Naughton, Pankaj Chaudhary, Queen's Univ. Belfast (United Kingdom); Lorenzo Romagnani, Ecole Polytechnique (France); Satyabrata Kar, Queen's Univ. Belfast (United Kingdom); Giuseppe Schettino, National Physical Lab. (United Kingdom); Paul McKenna, Univ. of Strathclyde (United Kingdom); Kevin M. Prise, Marco Borghesi, Queen's Univ. Belfast (United Kingdom) [9514-52]

Coffee Break Mon 10:30 to 11:00

SESSION 11

LOCATION: VIRGO MON 11:00 TO 12:00

Laser-driven Proton Acceleration II

Session Chair: **Klaus Spohr**, Univ. of the West of Scotland (United Kingdom)

11:00: **Development of the pulse powered gantry system for laser driven proton therapy** (*Invited Paper*), Umar Masood, OncoRay - National Ctr. for Radiation Research in Oncology (Germany); Michael Bussmann, Thomas E. Cowan, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Wolfgang Enghardt, OncoRay - National Ctr. for Radiation Research in Oncology (Germany) and Technische Univ. Dresden (Germany) and Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Thomas Herrmannsdörfer, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Kerstin M. Hofmann, Technische Univ. München (Germany); Leonhard Karsch, OncoRay - National Ctr. for Radiation Research in Oncology (Germany) and Technische Univ. Dresden (Germany); Florian Kroll, Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Michael Schürer, OncoRay - National Ctr. for Radiation Research in Oncology (Germany) and Technische Univ. Dresden (Germany); Jan J. Wilkens, Technische Univ. München (Germany); Jörg Pawelke, OncoRay - National Ctr. for Radiation Research in Oncology (Germany) and Technische Univ. Dresden (Germany) [9514-53]

11:35: **Pulsed power magnets for laser-driven proton therapy gantry systems**, Leonhard Karsch, Technische Univ. Dresden (Germany) and OncoRay - National Ctr. for Radiation Research in Oncology (Germany); Michael Bussmann, Thomas E. Cowan, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Wolfgang Enghardt, OncoRay - National Ctr. for Radiation Research in Oncology (Germany); Thomas Herrmannsdörfer, Florian Kroll, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Umar Masood, Michael Schürer, OncoRay - National Ctr. for Radiation Research in Oncology (Germany); Jörg Pawelke, Technische Univ. Dresden (Germany) and OncoRay - National Ctr. for Radiation Research in Oncology (Germany); Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) [9514-54]

SESSION 12

LOCATION: VIRGO MON 12:00 TO 12:50

Laser Accelerators for Medical Imaging

Session Chair: **Klaus Spohr**, Univ. of the West of Scotland (United Kingdom)

12:00: **Laser-wakefield accelerators for medical phase contrast imaging: Monte Carlo simulations and experimental studies**, Silvia Cipiccia, David Reboredo-Gil, Univ. of Strathclyde (United Kingdom); Fabio A. Vittoria, Univ. College London (United Kingdom); Gregor H. Welsh, Peter A. Grant, David W. Grant, Enrico Brunetti, S. Mark Wiggins, Univ. of Strathclyde (United Kingdom); Alessandro Olivo, Univ. College London (United Kingdom); Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9514-55]

12:25: **Ion acceleration development towards medical applications: current status of the A-SAIL project**, M. Borghesi, Queen's Univ. Belfast (United Kingdom), Institute of Physics/ELI-Beamlines (Czech Republic); P. McKenna, Univ. of Strathclyde (United Kingdom); K. Prise, Queen's Univ. Belfast (United Kingdom); Z. Najmudin, Imperial College London (United Kingdom); D. Neely, STFC Rutherford Appleton Lab. (United Kingdom); S. Kar, Queen's Univ. Belfast (United Kingdom); M. Zepf, Queen's Univ. Belfast (United Kingdom) and Helmholtz Institute (Germany) [9514-59]

Lunch Break Mon 12:50 to 14:10

SESSION 13

LOCATION: VIRGO MON 14:10 TO 15:10

Laser Accelerated Electron Beams and Applications

Session Chair: **Paul R. Bolton**, Japan Atomic Energy Agency (Japan)

14:10: **Production (γ , np) of copper-62 medical radioisotope using monoenergetic electron beams from a laser-plasma wakefield accelerator** (*Invited Paper*), Panos Lepipas, Univ. of Strathclyde (United Kingdom) and Univ. of Glasgow (United Kingdom); Sally L. Pimlott, Univ. of Glasgow (United Kingdom) and NHS (United Kingdom); Silvia Cipiccia, S. Mark Wiggins, Peter A. Grant, David Reboredo-Gil, David W. Grant, Univ. of Strathclyde (United Kingdom); David O'Donnell, Univ. of Glasgow (United Kingdom); Gregor H. Welsh, Univ. of Strathclyde (United Kingdom); Dima Maneuski, Univ. of Glasgow (United Kingdom); Gregory Vieux, Enrico Brunetti, Univ. of Strathclyde (United Kingdom); David G. Ireland, David J. Wyper, Univ. of Glasgow (United Kingdom); Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) [9514-57]

14:45: **Methodology to improve resolution in multiple configuration sensors**, Hua Liu, Science and Technology on Electro-Optic Control Lab. (China) [9514-58]

SESSION 14

LOCATION: VIRGO MON 15:10 TO 15:30

Panel Discussion on Laser-driven Medical Applications

Moderator: **Ken Ledingham**, Univ. of Strathclyde (United Kingdom)

A small international team of experts from multiple research communities will promote and guide establishment of an international centre dedicated to advancing medical applications of laser-generated secondary sources.

On a convergent path toward this objective this special group would then highlight and help advance pivotal research in this exciting field at operating and developing laser facilities.

The Panel Discussion will address the key aspects and how to proceed with such a mission and team.

Coffee Break 15:30 to 16:00

LOCATION: VIRGO MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

CONFERENCE 9515 · LOCATION: TYCHO

Monday–Wednesday 13–15 April 2015 • Proceedings of SPIE Vol. 9515

Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers

Conference Chairs: **Georg Korn**, Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Luis O. Silva**, Univ. Técnica de Lisboa (Portugal)

Programme Committee: **Sergei V. Bulanov**, Japan Atomic Energy Agency (Japan); **Thomas E. Cowan**, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); **Todd Ditmire**, The Univ. of Texas at Austin (USA); **Dimitrios Charalambidis**, Foundation for Research and Technology-Hellas (Greece), ELI Alps (Hungary); **Cristina Hernandez-Gomez**, Rutherford Appleton Lab. (United Kingdom); **Nelson C. Lopes**, Univ. Técnica de Lisboa (Portugal); **Mattias Marklund**, Umeå Univ. (Sweden); **Nikolay Narozhny**, National Research Nuclear Univ. MEPhI (Russian Federation); **David Neely**, Rutherford Appleton Lab. (United Kingdom); **Johann Rafelski**, The Univ. of Arizona (USA); **Bedřich Rus**, Institute of Physics of the ASCR, v.v.i. (Czech Republic), ELI Beamlines (Czech Republic); **Stefan Weber**, ELI Beamlines (Czech Republic); **Matthew Zepf**, Queen's Univ. Belfast (United Kingdom); **Victor Zamfir**, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania)

MONDAY 13 APRIL

LOCATION: TYCHO 8:55 TO 9:00

Opening Remarks

SESSION 1

LOCATION: TYCHO MON 9:00 TO 10:10

Keynote Session

9:00: **The Nexawatt** (*Keynote Presentation*), Christopher Barty, Lawrence Livermore National Lab. (USA) [9515-1]

9:35: **Extreme light: the first steps towards zeptosecond and zettawatt science** (*Keynote Presentation*), Gérard A. Mourou, Ecole Polytechnique (France) [9515-2]

Coffee Break Mon 10:10 to 10:35

SESSION 2

LOCATION: TYCHO MON 10:35 TO 12:15

Extreme Light Sources and Facilities I

10:35: **ELI Beamlines: status of user facility development** (*Invited Paper*), Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . [9515-4]

11:00: **ELI ALPS status** (*Invited Paper*), Károly Osvay, ELI-HU Nonprofit Kft. (Hungary) [9515-5]

11:50: **Extreme Light Infrastructure-Nuclear Physics (ELI-NP): status and perspectives** (*Invited Paper*), Victor Zamfir, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania) [9515-6]

12:15: **Three to become one: ELI entering its era as one unified international user facility** (*Invited Paper*), Wolfgang Sandner, ELI Delivery Consortium International Association (AISBL) (Belgium) [9515-7]

Lunch Break Mon 12:15 to 13:15

SESSION 3

LOCATION: TYCHO MON 13:15 TO 15:35

Secondary Sources Generated by High Power Lasers

13:15: **Laser-based nuclear photonics** (*Invited Paper*), Christopher Barty, Lawrence Livermore National Lab. (USA) [9515-3]

13:40: **PW-class lasers as future drivers: from medical imaging to compact XFELs** (*Invited Paper*), Florian J. Grüner, Ludwig-Maximilians-Univ. München (Germany) [9515-8]

14:05: **Laser-wakefield betatron radiation for biological imaging** (*Invited Paper*), Nelson C. Lopes, Instituto Superior Técnico (Portugal) [9515-9]

14:30: **High field physics at ALLS: from electron acceleration to X-ray coherent imaging** (*Invited Paper*), Jean-Claude Kieffer, Institut National de la Recherche Scientifique (Canada) [9515-10]

14:55: **High order harmonics from relativistic laser plasmas**, Sergei V. Bulanov, Japan Atomic Energy Agency (Japan) [9515-11]

15:15: **Laser driven pulsed 'X-ray radar' for penetrative imaging**, Lucy A. Wilson, STFC Rutherford Appleton Lab. (United Kingdom); Robert M. Deas, Defence Science and Technology Lab. (United Kingdom); Dean R. Rusby, Univ. of Strathclyde (United Kingdom); Aaron Alejo, Queen's Univ. Belfast (United Kingdom); Peter P. Black, Sarah E. Black, Defence Science and Technology Lab. (United Kingdom); Marco Borghesi, Queen's Univ. Belfast (United Kingdom); Ceri M. Brenner, STFC Rutherford Appleton Lab. (United Kingdom); Jonathan Bryant, Imperial College London (United Kingdom); Robert J. Clarke, John L. Collier, Justin Greenhalgh, Cristina Hernandez-Gomez, STFC Rutherford Appleton Lab. (United Kingdom); Satyabrata Kar, Queen's Univ. Belfast (United Kingdom); David Lockley, Defence Science and Technology Lab. (United Kingdom); Robert M. Moss, Defence Science and Technology Lab. (United Kingdom) and Univ. College London (United Kingdom); Zulfikar Najmudin, Imperial College London (United Kingdom); Matt Whittle, Defence Science and Technology Lab. (United Kingdom); Jonathan J. Wood, Imperial College London (United Kingdom); Paul McKenna, Univ. of Strathclyde (United Kingdom); David Neely, STFC Rutherford Appleton Lab. (United Kingdom) and Univ. of Strathclyde (United Kingdom) [9515-12]

Coffee Break Mon 15:35 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 7–8.

Please Note: Session 4 runs concurrently with Session 5

SESSION 4

LOCATION: TYCHO TUE 10:10 TO 12:50

High-Power Intense Laser Sources with Enhanced Repetition Rates

10:10: **Technology development toward rep-rated, kJ-class, 10 PW lasers** (*Invited Paper*), Todd Ditmire, The Univ. of Texas at Austin (USA) [9515-13]10:35: **ELI-Beamlines: development of next generation short-pulse laser systems** (*Invited Paper*), Bedřich Rus, P. Bakule, D. Kramer, J. Naylor, J. Thoma, J.T. Green, R. Antipenkov, M. Fibrich, J. Novák, F. Batysta, T. Mazanec, M.A. Drouin, K. Kasl, R. Baše, D. Peceli, L. Koubíková, P. Trojek, R. Boge, J.C. Lagron, Š. Vyhřídka, J. Weiss, J. Cupal, J. Hřebíček, P. Hříbek, M. Důrák, J. Polan, M. Košelja, G. Korn, T. Havlíček, A. Honsa, P. Korouš, M. Laub, ELI-Beamlines Project, Institute of Physics ASCR, v.v.i. (Czech Republic); C. Haefner, A. Bayramian, T. Spinka, C. Marshall, G. Johnson, S. Telford, J. Horner, B. Deri, Lawrence Livermore National Lab. (USA); T. Metzger, M. Schultze, TRUMPF Scientific Lasers GmbH (Germany); P. Mason, K. Ertel, A. Lintern, J. Greenhalgh, C. Edwards, J. Collier, STFC Rutherford Appleton Laboratory (United Kingdom); T. Ditmire, E. Gaul, M. Martinez, D. Hammond, W. White, National Energetics (USA); J. Houžvička, Crytur s.r.o. (Czech Republic) [9515-14]11:00: **Scaling high energy petawatt laser systems to high repetition rate** (*Invited Paper*), Constantin L. Haefner, Lawrence Livermore National Lab. (USA) [9515-15]11:25: **High-field sciences explored with the upgraded J-KAREN-P: current status and perspective**, Masaki Kando, Sergei V. Bulanov, Timur Zh. Esirkepov, Yuji Fukuda, Yukio Hayashi, Masato Kanasaki, Hiromitsu Kiriyama, James K. Koga, Akira Kon, Kiminori Kondo, Hideyuki Kotaki, Yuji Mashiba, Michiaki Mori, Mamiko Nishiuchi, Koichi Ogura, Alexander S. Pirozhkov, Akito Sagisaka, Hironao Sakaki, Hirotsuka Tanaka, Japan Atomic Energy Agency (Japan) [9515-16]11:45: **Focal spot of femtosecond laser pulse under tight focusing condition**, Tae Moon Jeong, Gwangju Institute of Science and Technology (Korea, Republic of) and ELI Beamlines (Czech Republic); Stefan Weber, Bruno J. Le Garrec, Daniele Margarone, ELI Beamlines (Czech Republic); Tomáš Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Georg Korn, ELI Beamlines (Czech Republic) [9515-17]12:05: **Final edp Ti: sapphire amplifiers for ELI Project**, Vladimir Chvykov, ELI - ALPS (Hungary); Mikhail Kalashnikov, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Károly Osvay, ELI-HU Nonprofit Kft. (Hungary) [9515-18]12:25: **Technology development and prospects for multi-10PW OPCPA pumped by OMEGA EP** (*Invited Paper*), Jonathan D. Zuegel, Univ. of Rochester (USA) [9515-19]
Lunch/Exhibition Break Tue 12:50 to 13:50

SESSION 5

LOCATION: VIRGO TUE 10:10 TO 12:10

High-field Physics and Simulations I

10:10: **Spin dynamics in relativistic light-matter interaction**, Heiko Bauke, Max-Planck-Institut für Kernphysik (Germany); Sven Ahrens, Max-Planck-Institut für Kernphysik (Germany) and Illinois State Univ. (USA); Christoph H. Keitel, Max-Planck-Institut für Kernphysik (Germany); Rainer Grobe, Illinois State Univ. (USA) and Max-Planck-Institut für Kernphysik (Germany) [9515-20]10:30: **Gamma-ray generation in the interaction of two tightly focused laser pulses with a low-density target composed of electrons**, Martin Jirka, Ondrej Klimo, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Stefan Weber, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Sergei V. Bulanov, Timur Zh. Esirkepov, Japan Atomic Energy Agency (Japan); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-21]10:50: **Analytical solution of the strong-field Klein-Gordon equation in the presence of plasma**, Erez Raicher, The Hebrew Univ. of Jerusalem (Israel); Shalom Eliezer, Univ. Politécnica de Madrid (Spain) and Soreq Nuclear Research Ctr. (Israel); Arie Zigler, The Hebrew Univ. of Jerusalem (Israel) [9515-22]11:10: **Proposal for an LSW experiment (light shining through walls) at ELI-Beamlines**, Bruno J. Le Garrec, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-23]11:30: **Influence of the radiation reaction force on ultraintense laser driven ion acceleration in the classical radiation dominated regime**, Remi Capdessus, Paul McKenna, Univ. of Strathclyde (United Kingdom) [9515-24]11:50: **Optimized multibeam configuration for observation of QED cascades**, Evgeny G. Gelfer, Alexander M. Fedotov, Nikolay Narozhny, Arseny Mironov, National Research Nuclear Univ. MEPH (Russian Federation); Igor Kostyukov, Vladimir Bashmakov, Institute of Applied Physics (Russian Federation) [9515-25]

Lunch/Exhibition Break Tue 12:10 to 13:50

SESSION 6

LOCATION: TYCHO TUE 13:50 TO 15:30

Extreme Light Sources and Facilities II

13:50: **Status of European XFEL and plans for start of operation** (*Invited Paper*), Thomas Tschentscher, European XFEL GmbH (Germany) [9515-26]14:15: **World's largest high energy petawatt laser LFX as a users facility** (*Invited Paper*), Hiroshi Azechi, Hiroyuki Shiraga, Osaka Univ. (Japan) [9515-27]14:40: **Bella Laser: status update** (*Invited Paper*), Wim P. Leemans, Lawrence Berkeley National Lab. (USA) [9515-28]15:05: **Research activities on high-intensity laser and high-field physics at CoReLS** (*Invited Paper*), Tae Moon Jeong, Gwangju Institute of Science and Technology (Korea, Republic of) [9515-29]
Coffee Break Tue 15:30 to 15:55

SESSION 7

LOCATION: TYCHO TUE 15:55 TO 18:00

High-field Physics and Simulations II

15:55: **High-energy processes in extremely strong laser pulses** (*Invited Paper*), Christoph H. Keitel, Max-Planck-Institut für Kernphysik (Germany) [9515-30]16:20: **Robust signatures of quantum radiation reaction and ultrashort gamma-ray pulses with an electron beam in a focused laser pulse**, Jian Xing Li, Karen Z. Hatsagortsyan, Christoph H. Keitel, Max-Planck-Institut für Kernphysik (Germany) [9515-31]16:40: **High-energy recollision processes of laser-generated electron-positron pairs**, S. Meuren, Karen Z. Hatsagortsyan, Christoph H. Keitel, Antonino Di Piazza, Max-Planck-Institut für Kernphysik (Germany) [9515-32]

- 17:00: **Lepton plasma diagnostics and antimatter physics : challenges for PW-class facilities**, Ladislav Drska, Czech Technical Univ. in Prague (Czech Republic) [9515-34]
- 17:20: **Compton scattering: exploring the weakly quantum regime with 1-10 PW lasers**, Marija Vranic, Thomas Grismayer, Joana L. Martins, Instituto Superior Técnico (Portugal); Ricardo A. Fonseca, Instituto Superior Técnico (Portugal) and Univ. de Lisboa (Portugal); Luis O. Silva, Instituto Superior Técnico (Portugal) [9515-35]
- 17:40: **Motion of a charge in a superstrong electromagnetic standing wave**, Timur Zh. Esirkepov, Sergei V. Bulanov, Japan Atomic Energy Agency (Japan) [9515-36]

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

SESSION 8

LOCATION: TYCHO WED 10:10 TO 11:45

High-field Physics and Simulations III

- 10:10: **Extreme laser power from external enhancement in high finesse Fabry-Perot cavities: application to high-flux X- or γ -Ray production through Compton scattering** (*Invited Paper*), Eric Cormier, Univ. Bordeaux 1 (France) [9515-37]
- 10:35: **Seeded QED cascades in ultra-intense counter-propagating lasers: theory and multidimensional QED-PIC simulations** (*Invited Paper*), Thomas Grismayer, Marija Vranic, Joana L. Martins, Ricardo A. Fonseca, Luis O. Silva, Instituto Superior Técnico (Portugal) [9515-38]
- 11:00: **Interaction of photons traversing a slowly varying electromagnetic background: numerical simulation of vacuum self-emission** (*Invited Paper*), Ben King, Plymouth Univ. (United Kingdom); Patrick Boehl, Hartmut Ruhl, Ludwig-Maximilians-Univ. München (Germany) [9515-39]
- 11:25: **Steering laser plasma simulations towards reliable predictions: how to use accelerated computing for particle accelerators**, Michael Bussmann, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) [9515-40]
- Lunch/Exhibition Break Wed 11:45 to 12:50

SESSION 9

LOCATION: TYCHO WED 12:50 TO 15:10

Acceleration of Particles Using High-Power PW Class Lasers I

- 12:50: **Particle acceleration with the Dresden PW lasers** (*Invited Paper*), Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) [9515-41]
- 13:15: **Laser plasma accelerators for near-term applications** (*Invited Paper*), Victor Malka, Ecole Nationale Supérieure de Techniques Avancées (France); Cédric Thaury, Ecole Polytechnique (France); Emilien Guillaume, Lab. d'Optique Appliquée (France); Andreas Döpp, Ctr. de Lasers Pulsados (Spain); Remi Lehe, Ecole Nationale Supérieure de Techniques Avancées (France); Agustin Lifschitz, Ecole Polytechnique (France); L. Truong Phuoc, Ecole européenne de Chimie, Polymères et Matériaux (France) [9515-42]
- 13:40: **Recent development and future perspectives in laser-driven ion acceleration** (*Invited Paper*), Marco Borghesi, Queen's Univ. Belfast (United Kingdom) [9515-43]
- 14:05: **Petawatt laser pulses for proton-boron high gain fusion without problem of nuclear radiation** (*Invited Paper*), Heinrich Hora, The Univ. of New South Wales (Australia); Paraskevas Lalouis, Foundation for Research and Technology-Hellas (Greece); Lorenzo Giuffrida, Daniele Margarone, Georg Korn, Institute of Physics of the ASCR, v.v.i., ELI Beamlines (Czech Republic); Shalom Eliezer, Univ. Politécnica de Madrid (Spain) and Soreq REsearch Center, Yavne (Israel); George H Miley, Univ. of Illinois at Urbana-Champaign (USA); Stavros Moustazis, Technical Univ. of Crete (Greece); Gerard Mourou, Ecole Polytechnique (France) [9515-44]
- 14:30: **Design and development of the user station of HELL: beam transport, characterization and shielding**, Gabriele Maria Grittani, Alberto Fasso, Miroslav Krus, Tadzio Levato, Daniele Margarone, Martin Precek, Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and ELI Beamlines (Czech Republic) [9515-45]
- 14:50: **Stabilization of laser-driven accelerators and scaling to higher energies**, Victor Malka, Ecole Nationale Supérieure de Techniques Avancées (France) [9515-46]
- Coffee Break Wed 15:10 to 15:40

SESSION 10

LOCATION: TYCHO WED 15:40 TO 17:50

Acceleration of Particles Using High-Power PW Class Lasers II

- 15:40: **Plasmas at the extreme with ultraintense lasers and beams** (*Invited Paper*), Luis O. Silva, Univ. Técnica de Lisboa (Portugal) [9515-47]
- 16:05: **Photonuclear reactions and radiography with laser-accelerator-based Thomson X-rays** (*Invited Paper*), Donald P. Umstadter, Sudeep Banerjee, Grigory Golovin, Univ. of Nebraska-Lincoln (USA); Ping Zhang, Daniel Haden, Univ. of Nebraska-Lincoln (USA); Shouyuan Chen, Cheng Liu, Jun Zhang, Baozhen Zhao, Kevin Brown, Jared B. Mills, Univ. of Nebraska-Lincoln (USA); Chad Petersen, Cameron Miller, Univ. of Nebraska-Lincoln (USA); Shaun Clarke, Sara A. Pozzi, Univ. of Michigan (USA) [9515-48]
- 16:30: **Laser-driven multicharged heavy ion beam acceleration**, Mamiko Nishiuchi, Hironao Sakaki, Timur Zh. Esirkepov, Katsuhisa Nishio, Riccardo Orlandi, Tatiana A. Pikuz, Anatoly Y. Faenov, Hiroyuki Sako, Alexander S. Pirozhkov, Akito Sagisaka, Koichi Ogura, Akira Kon, Masato Kanasaki, Hiromitsu Kiriya, Yuji Fukuda, Hiroyuki Koura, Masaki Kando, Japan Atomic Energy Agency (Japan); Tomoya Yamauchi, Kobe Univ. (Japan); Yukinobu Watanabe, Kyushu Univ. (Japan); Sergei V. Bulanov, Kiminori Kondo, Kenichi Imai, Japan Atomic Energy Agency (Japan); Shoji Nagamiya, RIKEN (Japan) [9515-49]
- 16:50: **Numerical investigations on a compact magnetic fusion device for studying the effect of external applied magnetic field oscillations on the nuclear burning efficiency of D-T and p-11B fuels**, Stavros Moustazis, Technical Univ. of Crete (Greece); Paraskevas Lalouis, Foundation for Research and Technology-Hellas (Greece); Heinrich Hora, The Univ. of New South Wales (Australia); Jean Larour, Philippe Auvray, Ecole Polytechnique (France); Philippe Balcou, Jean-Eric Ducret, Univ. Bordeaux 1 (France); Philippe Martin, Commissariat à l'Énergie Atomique (France) [9515-50]
- 17:10: **Reduction of angular divergence of laser-driven ion beams during their acceleration and transport**, Martina Žáková, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jan Pšikal, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Daniele Margarone, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Mario Maggiore, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Istituto Nazionale di Fisica Nucleare (Italy) [9515-51]
- 17:30: **Enhanced ion acceleration by using femtosecond laser pulses at the third harmonic frequency**, Jan Pšikal, Ondrej Klimo, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Stefan Weber, Daniele Margarone, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jiri Limpouch, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-52]

Poster Session

MERIDIAN HALL..... WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>.

- Magnetic reconnection research with petawatt-class lasers**, Yanjun Gu, Ondrej Klimo, Deepak Kumar, Stefan Weber, Yue Liu, Sushil Singh, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Sergei V. Bulanov, Timur Zh. Esirkepov, Japan Atomic Energy Agency (Japan); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-53]
- Evolution of relativistic solitons in plasmas**, Yue Liu, Ondrej Klimo, Stefan Weber, Yanjun Gu, Deepak Kumar, Sushil Singh, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Sergei V. Bulanov, Timur Zh. Esirkepov, Japan Atomic Energy Agency (Japan); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-54]
- Radiochromic film diagnostics for laser-driven ion beams**, Jan Kaufman, Daniele Margarone, Jan Pšikal, Institute of Physics of the ASCR, v.v.i. (Czech Republic); I Jong Kim, Tae Moon Jeong, Gwangju Institute of Science and Technology (Korea, Republic of); Alberto Fasso, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Giacomo Candiano, Istituto Nazionale di Fisica Nucleare (Italy); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-55]
- Quadrupole lens free multiple profile monitor emittance measurement method**, Miroslav Krus, Institute of Physics of the ASCR, v.v.i. (Czech Republic) [9515-56]
- Towards the effect of transverse inhomogeneity of electromagnetic pulse on the process of ion acceleration in the RPDA regime**, Kirill V. Lezhnin, F. F. Kamenets, V. S. Beskin, Moscow Institute of Physics and Technology (Russian Federation); Masaki Kando, Timur Zh. Esirkepov, Sergei V. Bulanov, Japan Atomic Energy Agency (Japan) [9515-57]

Integrated Optics: Physics and Simulations

Conference Chairs: **Pavel Cheben**, National Research Council Canada (Canada); **Jiří Čtyroký**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Iñigo Molina-Fernández**, Univ. de Málaga (Spain)

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MONDAY 13 APRIL

LOCATION: TAURUS 8:40 TO 8:45

Opening Remarks

SESSION 1

LOCATION: TAURUS MON 8:45 TO 10:35

Photonic Integration

Session Chair: **Jiří Čtyroký**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic)

8:45: **Towards an automated design framework for large-scale photonic integrated circuits** (*Invited Paper*), Sergei Mingaleev, Eugene Sokolov, VPI Development Ctr. (Belarus); André Richter, VPI Photonics GmbH (Germany); Cristina Arellano, VPI Photonics GmbH (Germany) [9516-1]

9:15: **Passive and electro-optic polymer photonics and InP electronics integration** (*Invited Paper*), Ziyang Zhang, Alejandro Maese Novo, David de Felipe, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Vasilis Katopodis, Panos Groumas, National Technical Univ. of Athens (Greece); Agnieszka Konczykowska, Ill-V Lab. (France) and Thales Research and Technology (France) and CEA-LETI (France); Jean-Yves Dupuy, Ill-V Lab. (France) and Thales Research and Technology (France) and CEA-LETI (France); Antonio Beretta, Alberto Dede, LINKRA S.r.l. (Italy); Eric R. Miller, Raluca Dinu, Giulio Cangini, GigOptix, Inc. (USA); Antonello Vannucci, LINKRA S.r.l. (Italy); Norbert Keil, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Hercules Avramopoulos, Christos Kouloumentas, National Technical Univ. of Athens (Greece) [9516-2]

9:45: **Rethinking the surface of optical waveguides** (*Invited Paper*), Andrea I. Melloni, Politecnico di Milano (Italy) [9516-3]

10:15: **Simulation of self-organized waveguides for self-aligned coupling between micro- and nano-scale devices**, Tetsuzo Yoshimura, Tokyo Univ. of Technology (Japan) [9516-4]

Coffee Break Mon 10:35 to 11:00

SESSION 2

LOCATION: TAURUS MON 11:00 TO 12:20

Devices and Circuits I

Session Chair: **Daoxin Dai**, Zhejiang Univ. (China)

11:00: **New CMOS compatible platforms for integrated nonlinear optics** (*Invited Paper*), David J. Moss, RMIT Univ. (Australia) [9516-5]

11:30: **High-speed and low-power silicon-organic hybrid modulators for advanced modulation formats** (*Invited Paper*), Matthias Laueremann, Stefan Wolf, Robert Palmer, Sebastian Köber, Philipp C. Schindler, Karlsruhe Institut für Technologie (Germany); Thorsten Wahlbrink, Jens Bolten, Anna Lena Giesecke, AMO GmbH (Germany); Michael Koenigsmann, Matthias Kohler, Dimitri Malsam, Keysight Technologies Deutschland GmbH (Germany); Delwin L. Elder, Larry R. Dalton, Univ. of Washington (USA); Juerg Leuthold, Karlsruhe Institut für Technologie (Germany) and Swiss Federal Institute of Technology (Switzerland); Wolfgang Freude, Christian Koos, Karlsruhe Institut für Technologie (Germany) [9516-6]

12:00: **A numerical investigation of silicon-based optical sampling**, Mahmoud Jazayerifar, Daniel Bross, Technische Univ. Berlin (Germany); Kambiz Jamshidi, Technische Univ. Dresden (Germany) [9516-7]

Lunch Break Mon 12:20 to 13:30

SESSION 3

LOCATION: TAURUS MON 13:30 TO 15:30

Devices and Circuits II

Session Chair: **David J. Moss**, The Univ. of Sydney (Australia)

13:30: **Silicon nanophotonic integrated devices enabling multiplexed on-chip optical interconnects** (*Invited Paper*), Daoxin Dai, Jian Wang, Sitao Chen, Zhejiang Univ. (China) [9516-8]

14:00: **Optimized, constant-loss taper for mode conversion** (*Invited Paper*), Alexandre Horth, McGill Univ. (Canada); Raman Kashyap, Ecole Polytechnique de Montréal (Canada); Nathaniel Quitorian, McGill Univ. (Canada) [9516-9]

14:30: **Expanding sampling in a SWIFTS-Lippmann spectrometer using an electro-optic Mach-Zehnder modulator**, Fabrice Thomas, RESOLUTION Spectra Systems (France) and Institut de Planétologie et d'Astrophysique de Grenoble (France); Mikhaël de Mengin Poirier, Samuel Heidmann, Institut de Planétologie et d'Astrophysique de Grenoble (France); Alain Morand, Pierre Benech, IMEP-LAHC (France); Christophe Bonneville, Thierry Gonthiez, RESOLUTION Spectra Systems (France); Etienne P. Le Coarer, Guillermo Martin, Institut de Planétologie et d'Astrophysique de Grenoble (France) [9516-10]

14:50: **High-resolution TE&TM near-infrared compact spectrometer based on waveguide grating structures**, Guillermo Martin, Institut de Planétologie et d'Astrophysique de Grenoble (France); Fabrice Thomas, Samuel Heidmann, Institut de Planétologie et d'Astrophysique de Grenoble (France); Mikhaël de Mengin Poirier, Institut de Planétologie et d'Astrophysique de Grenoble (France); Nadège Courjal, Gwenn Ulliac, FEMTO-ST (France); Alain Morand, Pierre Benech, IMEP-LAHC (France); Pierre Kern, Etienne P. Le Coarer, Institut de Planétologie et d'Astrophysique de Grenoble (France) [9516-11]

15:10: **Photovoltaic maximum power point search method using a light sensor**, Mariusz Ostrowski, Wroclaw Univ. of Technology (Poland) ... [9516-12]

Coffee Break Mon 15:30 to 16:00

LOCATION: NADIR MON 16:00 TO 17:55

Plenary Session I

For details, please see pages 7–8.

TUESDAY 14 APRIL

LOCATION: NADIR TUE 9:00 TO 9:50

Plenary Session II

For details, please see pages 7–8.

SESSION 4

LOCATION: TAURUS TUE 10:20 TO 12:20

Photonic Crystals and Plasmonic Devices

Session Chair: **Andrea I. Melloni**, Politecnico di Milano (Italy)

10:20: **High-speed and compact photonic crystal modulators** (*Invited Paper*), Toshihiko Baba, Yosuke Terada, Yokohama National Univ. (Japan) ... [9516-13]

10:50: **All optical memories on a photonic crystal chip** (*Invited Paper*), Masaya Notomi, NTT Basic Research Labs. (Japan) [9516-14]

11:20: **Controlling silicon photonic devices all optically based on photothermal effects in plasmonics** (*Invited Paper*), Min Qiu, Xi Chen, KTH Royal Institute of Technology (Sweden); Yuechun Shi, KTH Royal Institute of Technology (Denmark); Fei Lou, Yiting Chen, Lech Wosinski, Min Yan, KTH Royal Institute of Technology (Sweden) [9516-15]

11:50: **Plasmonic nanoantenna switches** (*Invited Paper*), Otto L. Muskens, Univ. of Southampton (United Kingdom) [9516-16]

Lunch/Exhibition Break Tue 12:20 to 13:30

SESSION 5

LOCATION: TAURUSTUE 13:30 TO 15:10

Subwavelength Structures

Session Chair: **Marko Loncar**, Harvard School of Engineering and Applied Sciences (USA)

13:30: **High-efficiency fully etched fiber-chip grating couplers with subwavelength structures for datacom and telecom applications**, Daniel Benedikovic, Univ. of Žilina (Slovakia); Pavel Cheben, Jens H. Schmid, Dan-Xia Xu, Jean Lapointe, Siegfried Janz, National Research Council Canada (Canada); Robert Halir, Alejandro Ortega-Moñux, Univ. de Málaga (Spain); Milan Dado, Univ. of Žilina (Slovakia) [9516-17]

13:50: **High efficiency blazed fiber-chip grating coupler based on interleaved trenches**, Carlos A. Alonso Ramos, Univ. de Málaga (Spain), Univ. Paris-Sud 11 (France); Daniel Benedikovic, Univ. of Žilina (Slovakia); Pavel Cheben, Shurui Wang, National Research Council Canada (Canada); Robert Halir, Univ. de Málaga (Spain); Jean-Marc Fédéli, CEA-LETI (France); Alejandro Ortega-Moñux, Univ. de Málaga (Spain); Jens H. Schmid, Dan-Xia Xu, National Research Council Canada (Canada); Milan Dado, Univ. of Žilina (Slovakia); Iñigo Molina-Fernández, Univ. de Málaga (Spain) [9516-18]

14:10: **Highly efficient fiber-chip edge coupler with large mode size for silicon photonic wire waveguides**, Martin Papes, VŠB-Technical Univ. of Ostrava (Czech Republic); Pavel Cheben, National Research Council Canada (Canada); Winnie N. Ye, Carleton Univ. (Canada); Jens H. Schmid, Dan-Xia Xu, Siegfried Janz, National Research Council Canada (Canada); Daniel Benedikovic, Univ. of Žilina (Slovakia); Carlos A. Ramos, Robert Halir, Alejandro Ortega-Moñux, Univ. de Málaga (Spain); André Delâge, National Research Council Canada (Canada); Vladimír Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic) [9516-19]

14:30: **A subwavelength structured multimode interference coupler for the 3-4 μm mid-infrared band**, Alejandro Sánchez-Postigo, Juan Gonzalo Wangüemert-Pérez, Robert Halir, Alejandro Ortega-Moñux, Carlos A. Alonso Ramos, Iñigo Molina-Fernández, Univ. de Málaga (Spain); Jordi Soler Penadés, Univ. of Southampton (United Kingdom); Milos Nedeljkovic, Optoelectronics Research Ctr. (United Kingdom); Goran Z. Mashanovich, Univ. of Southampton (United Kingdom); Pavel Cheben, National Research Council Canada (Canada) [9516-20]

14:50: **Simulations of quasiperiodic subwavelength grating structures for filtering and other applications**, Pavel Kwiecien, Czech Technical Univ. in Prague (Czech Republic); Junjia Wang, McGill Univ. (Canada); Ivan Richter, Czech Technical Univ. in Prague (Czech Republic); Jiří Čtyroký, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Ivan Glesk, Univ. of Strathclyde (United Kingdom); Lawrence R. Chen, McGill Univ. (Canada) [9516-21]

Coffee Break Tue 15:10 to 15:40

SESSION 6

LOCATION: TAURUSTUE 15:40 TO 17:00

Theory, Simulation, and Design

Session Chair: **Min Qiu**, KTH Royal Institute of Technology (Sweden)

15:40: **Circuit modeling based optimization of high-speed carrier depletion silicon modulators**, Seyedreza Hosseini, Kambiz Jamshidi, Technische Univ. Dresden (Germany) [9516-22]

16:00: **Modeling of anisotropic grating structures with active dipole layers**, Kamil Postava, VŠB-Technical Univ. of Ostrava (Czech Republic); Tibor Fordos, Ecole Polytechnique (France) and Univ. Paris-Sud 11 (France) and VŠB-Technical Univ. of Ostrava (Czech Republic); Henri Jaffres, Unité Mixte de Physique CNRS/Thales (France) and Univ. Paris-Sud 11 (France); Lukas Halagacka, VŠB-Technical Univ. of Ostrava (Czech Republic); Henri-Jean Drouhin, Ecole Polytechnique (France); Jaromir Pistora, VŠB-Technical Univ. of Ostrava (Czech Republic) [9516-23]

16:20: **Nonlinear aperiodic rigorous coupled wave analysis: algorithm and applications**, Pavel Kwiecien, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic); Jiří Petráček, Brno Univ. of Technology (Czech Republic) [9516-24]

16:40: **Enhanced radiation amplitude by current-driven diffusing-growing mechanism of electromagnetic field near cutoff in a waveguide**, Min Sup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of) [9516-25]

WEDNESDAY 15 APRIL

LOCATION: NADIR WED 9:00 TO 9:50

Plenary Session III

For details, please see pages 6–7.

SESSION 7

LOCATION: TAURUS WED 10:10 TO 12:30

Materials and Fabrication

Session Chair: **Toshihiko Baba**, Yokohama National Univ. (Japan)

10:10: **Femtosecond laser 3D writing: from smart catheters to distributed lab-in-fibre sensing (Invited Paper)**, Peter R. Herman, Kevin A. J. Joseph, Moez Haque, Jason R. Grenier, Kenneth Kuei-Ching Lee, Univ. of Toronto (Canada) [9516-27]

10:40: **Diamond nanophotonics (Invited Paper)**, Marko Loncar, Harvard School of Engineering and Applied Sciences (USA) [9516-28]

11:10: **Epitaxially grown vertical junction phase shifters for improved modulation efficiency in Silicon depletion-type Mach-Zehnder modulators**, Saeed Sharif Azadeh, Sebastian Romero-García, Florian Merget, Alvaro Moscoso-Mártir, Jeremy Witzens, RWTH Aachen Univ. (Germany) [9516-29]

11:30: **Wavelength dependence of Pockels effect in strained silicon**, Pedro A. Damas, Xavier Le Roux, Eric Cassan, Delphine Marris-Morini, Laurent Vivien, Institut d'Électronique Fondamentale (France) [9516-30]

11:50: **Photoluminescence and NIR detection by graphene-like materials integrated with silicon substrates**, Maurizio Casalino, Ilaria Rea, Istituto per la Microelettronica e Microsistemi (Italy); Lucia Sansone, Institute for Polymers, Composites and Biomaterials (Italy); Monica Terracciano, Luca De Stefano, Giuseppe Coppola, Principia Dardano, Istituto per la Microelettronica e Microsistemi (Italy); Michele Giordano, Anna Borriello, Institute for Polymers, Composites and Biomaterials (Italy); U. Sassi, I. Goykhman, D. De Fazio, A. C. Ferrari, Univ. degli Studi di Napoli Federico II (Italy); Ivo Rendina, Istituto per la Microelettronica e Microsistemi (Italy) [9516-31]

12:10: **Pixel isolation in Type-II InAs/GaSb superlattice photodiodes by femtosecond laser annealing**, Sona Das, Utpal Das, Indian Institute of Technology Kanpur (India); Nutan Gautam, Sanjay Krishna, The Univ. of New Mexico (USA) [9516-32]

Poster Session

MERIDIAN HALL..... WED. 17:45 TO 19:15

Conference attendees are invited to attend the Optics + Optoelectronics Symposium Poster Session on Wednesday afternoon. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions on page 8, and at <http://spie.org/x30951.xml>

Algorithm applying a modified BRDF function in Λ -ridge concentrator solar radiation, Kamil Plachta, Wrocław Univ. of Technology (Poland) [9516-26]

Efficient ultrafast optical parametric amplification and wavelength conversion in silicon waveguides, Hongjun Liu, Qibing Sun, Nan Huang, Xi'an Institute of Optics and Precision Mechanics (China) [9516-35]

Optimization Design of pulse compression multilayer dielectric gratings, Shuwei Fan, Shenli Jia, Liang Bai, Xi'an Jiaotong Univ. (China) [9516-36]

Ultralong photonic nanojet formed by dielectric cubes, Cheng-Yang Liu, Li-Jen Chang, Tamkang Univ. (Taiwan) [9516-37]

Numerical calculation of DOS in nanograting layers using method of auxiliary sources, Vitali Ghoghoberidze, SoftMaster Co. Ltd. (Georgia); Sergey Petrosyan, Mikheil Mebonia, Iliia State Univ. (Georgia); D. Kakulia, Iv. Javakhishvili Tbilisi State Univ. (Georgia); Avto Tavkheldidze, Iliia State Univ. (Georgia) [9516-38]

Electrooptic 1*2 switch based on proton-exchanged channel waveguides in LiNbO₃, Sergey M. Kostritskii, Yuri N. Korkishko, Vyacheslav A. Fedorov, Optolink RPC (Russian Federation) [9516-40]

Surface photovoltage and field effect on lateral conductivity in structures with Ge-nanoclusters grown on Si (001) surface, Yurii Hryka, National Taras Shevchenko Univ. of Kyiv (Ukraine) [9516-41]

Estimation of the sinusoidal oscillation parameters in the adaptive optics system based on the example of the photovoltaic system, Dariusz Kania, Wrocław Univ. of Technology (Poland) [9516-42]

Terahertz material characterization for nonreciprocal integrated optics, Martin Mičica, VŠB-Technical Univ. of Ostrava (Czech Republic); Mathias Vanwolleghem, Institut d'Électronique de Microélectronique et de Nanotechnologie (France) and Univ. des Sciences et Technologies de Lille (France); Jamal Ben-Youssef, Univ. de Bretagne Occidentale (France); Tomáš Horák, Institut d'Électronique de Microélectronique et de Nanotechnologie (France) and Univ. des Sciences et Technologies de Lille (France); Jean-François Lampin, Univ. des Sciences et Technologies de Lille (France) and Institut d'Électronique de Microélectronique et de Nanotechnologie (France); Kamil Postava, Jaromír Pištorá, VŠB-Technical Univ. of Ostrava (Czech Republic) [9516-44]

Magnetoplasmonic waveguiding structure with nonreciprocal dispersion of guided TM modes, Lukáš Halagačka, Kamil Postava, VŠB-Technical Univ. of Ostrava (Czech Republic); Mathias Vanwolleghem, Beatrice Dagens, Institut d'Électronique Fondamentale (France); Jaromír Pištorá, VŠB-Technical Univ. of Ostrava (Czech Republic) [9516-45]

Light trap with reactive sun tracking for high-efficiency spectrum-splitting photovoltaic conversion, Harry N. Apostoleris, Matteo Chiesa, Masdar Institute of Science & Technology (United Arab Emirates); Marco Stefancich, Consiglio Nazionale delle Ricerche (Italy) [9516-46]

Transparent-reflective switching for light-trapping applications, Harry N. Apostoleris, Samuele Lilliu, Matteo Chiesa, Masdar Institute of Science & Technology (United Arab Emirates); Marco Stefancich, Consiglio Nazionale delle Ricerche (Italy) [9516-47]

Side band suppression for wide-band optical RoF systems, Hraghi Abir, SUP'COM (Tunisia); Samir Ben Abid, Ecole Nationale d'Ingénieurs de Tunis (Tunisia); Mourad Menif, SUP'COM (Tunisia) [9516-48]

Femtosecond writing of depressed cladding waveguides in strongly cumulative regime, Mikhail A. Bukharin, Moscow Institute of Physics and Technology (Russian Federation) and Physics Instrumentation Ctr. of the General Physics Institute (Russian Federation) and Optosystems Ltd. (Russian Federation); Dmitriy V. Khudyakov, Sergey K. Vartapetov, Physics Instrumentation Ctr. (Russian Federation) and Optosystems Ltd. (Russian Federation) [9516-49]

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GENERAL INFORMATION

REGISTRATION

ONSITE REGISTRATION AND BADGE PICK-UP HOURS

Conference Floor Foyer

Sunday 12 April, 16:00 to 18:00 hrs.

Monday 13 April, 07:45 to 17:30 hrs.

Tuesday 14 April, 07:45 to 17:00 hrs.

Wednesday 15 April, 08:00 to 17:00 hrs.

Thursday 16 April, 08:00 to 16:00 hrs.

EXHIBITION HOURS

Tuesday 14 April, 10:00 to 17:00 hrs.

Wednesday 15 April, 10:00 to 16:00 hrs.

CONFERENCE REGISTRATION

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

SPECIAL EVENT PRICING

Welcome Reception Guest Ticket (one guest per attendee)
EUR 30/ US \$40

EXHIBITION REGISTRATION

Exhibition-Only visitor registration is complimentary.

SPIE MEMBER, SPIE STUDENT MEMBER, AND STUDENT PRICING

- SPIE 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.

PRESS REGISTRATION

For credentialed press and media representatives only. Please email contact information, title, and organization to media@spie.org.

CASHIER SERVICES

Registration Area. Open during registration hours.

REGISTRATION PAYMENTS

If you are paying by cash or cheque as part of your onsite registration, wish to add a course, workshop, or special event requiring payment, or have questions regarding your registration, visit the SPIE 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 SPIE Cashier.

BADGE CORRECTIONS

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

REFUND INFORMATION

There is a €40 service charge for processing refunds. Requests for refunds must be received by 2 April 2015; all registration fees will be forfeited after this date. Membership dues, SPIE Digital Library subscriptions, or Special Events purchased are not refundable.

AUTHOR / PRESENTER INFORMATION

SPEAKER CHECK-IN

Monday through Thursday, 08:00 to 17:00 hrs.

All conference rooms have a computer workstation, projector, screen, lapel microphone, and laser pointer. All presenters are requested to come to their conference room during the breaks with their memory devices or laptops to confirm their presentation display settings.

POSTER SESSION

Location: Meridian Room

Wednesday 15 April 2015, 17:45 to 19:15

All symposium attendees are invited to attend the Wednesday poster session provided as an opportunity to enjoy networking and refreshments while reviewing poster papers. The poster sessions are designed to promote opportunities for networking with colleagues in your field. Attendees are encouraged to review the high-quality papers that are presented in this alternate format and to interact with the poster authors.

Poster presenters may post their poster papers starting at 10:00 hrs on Wednesday in the Meridian Room. Any papers left on the boards following the end time of the poster session will be considered unwanted and will be discarded. SPIE assumes no responsibility for posters left up after the end of the poster session. Poster authors should be at their papers from 17:45 to 19:15 hrs to answer questions from attendees. Attendees are requested to wear their conference registration badges to the poster sessions.

ONSITE SERVICES

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.

SPIE LITERATURE

Opposite the SPIE Registration Desk

MESSAGE CENTER

Messages for attendees can be left by calling the Clarion Hotel and Congress Centre and asking for the Conference Partners Conference and Registration Desk. Messages will be taken during registration hours Monday - Thursday. It is the attendees' responsibility to check the message boards on a daily basis.

FOOD AND BEVERAGE SERVICES

COFFEE BREAKS

Conference Foyer

Complimentary coffee will be served twice daily, at 10:00 and 15:00 hrs. Check individual conference listings for exact times and locations.

FOOD & REFRESHMENTS FOR PURCHASE

Food Court in Shopping Centre

There are a number of food outlets in the food court belonging to the adjacent shopping centre. Furthermore, the hotel restaurant will be open for lunch.

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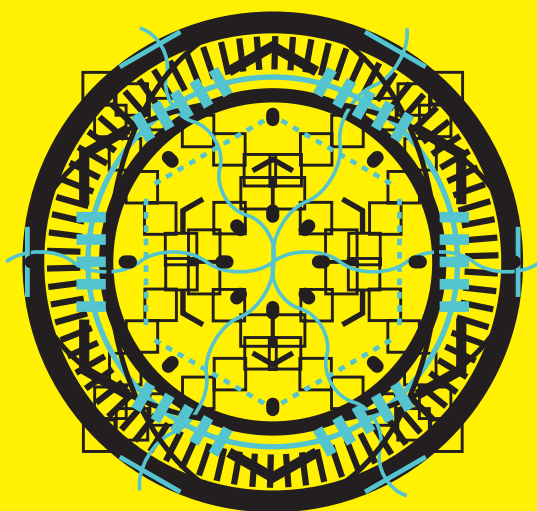


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HOTELS

The hotel reservation process is carried out by:

Conference Partners s.r.o.
K namesti 799/10, 182 00 Praha 8
Czech Republic

Email: accommodation@conference.cz

Phone: + 420 224 262 109

Fax: + 420 226 531 809

Website: <https://www.conference.cz/spieOO2015>

Reserve Online: Check availability and book online for the Clarion Congress Hotel. The hotel only accepts credit card bookings.

Please contact the Conference Partners directly for any of the following reasons:

- If payment is made by means other than credit card
- If you are having difficulty with the online form
- If you would prefer to stay at another hotel

Conference Partners will be pleased to assist you with these or any other problems. Hotel Deposits will only be guaranteed after receipt of the first night deposit.

SPIE EUROPE BLOCK ROOMS

SPIE Europe has made every effort to secure the best possible group nightly room rate(s) for you at this event. We recommend participants book before 15 March to avoid disappointment. Should the hotel rooms be sold out, please contact Conference Partners who will be able to help with accommodations in other hotels.

TRAVEL

All applicable travel links can be found at www.spie.org/oo on the Travel to Prague page.

AIR TRAVEL

Czech Airlines is the national carrier operating from many European and some international destinations to Prague. There are also many inexpensive direct flights operated by budget airlines such as EasyJet, Ryanair, SmartWings, Air Lingus, or Sky Europe. Further information on destinations can be found on the airport's website. For alternative travel, Prague is also connected by rail to a number of European cities.

Prague Airport www.prg.aero/en

PUBLIC TRANSPORT

Prague has a network of public transport routes including bus, tram and metro links. For further information on the network, please visit the website of the Prague Public Transport Company. <http://dpp.cz/en>

TRAVEL TO VENUE

BY BUS

The majority of travel links in the city terminate at the Florenc station, which is about 15 minutes away from the Clarion by metro. Board the metro at the Florenc station and get off at the Vysočanská stop (metro line B). (Fifth stop from Florenc). The Clarion Congress Hotel is located right atop Vysočanská stop. (Czech pronunciation: [ˈvisotchanska:])

BY TRAIN

Having once arrived at the Prague Main Railway Station (Hlavní Nádraží), take the metro from the Hlavní Nádraží stop, running in the direction of Letňany (metro line C), travel one stop to Florenc and then transfer to metro line B in the direction of Černý Most. Get off at the Vysočanská stop (fifth stop from Florenc). The Clarion Congress Hotel is located right atop the stop. For further information on the train network, please visit: <http://jizdnirady.idnes.cz/vlaky/spojeni>

PUBLIC TRANSPORT

For using public transportation from the Vaclav Havel International Airport in Prague (formerly known as the Ruzyně Airport) to the Clarion Congress Hotel Prague, please take bus number 100 located in front of the airport terminal directly to metro station Zličín (B line terminus), and then continue by metro to Vysočanská station. Clarion Congress Hotel is located directly atop the Vysočanská metro station. A shopping centre is adjacent to the hotel. Public transport tickets can be purchased from vending machines installed in Prague Airport or tobacco shops. Single journey public transport ticket (basic 90-minute fare) costs CZK 32,-. Other ticket options are also available depending on your travel needs.

PARKING

The venue has ample car parking facilities. Please follow the link on the Clarion Congress Hotel web site for more contact, travel directions and details.

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.

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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 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.

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 and the toll free hotline number is 1-888-818-6898.

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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> to 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:

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Online collections are not available for separate purchase.

Product Order Number		Collection Title/Included Volumes (See next page for volume titles and editors)	Price for CD separate purchase	
Symposium CD Collection	Symposium Online Collection		Meeting Attendees Only	
CDS572	DLC572	SPIE Optics and Optoelectronics 2015 9502, 9503, 9504, 9505, 9506, 9507, 9508, 9509, 9510, 9511, 9512, 9513, 9514, 9515, and 9516	€175	€130

Single Proceedings Volumes from SPIE Optics + Optoelectronics

Online proceedings volumes are not available for separate purchase.

Product Order Number		Volume Title/Volume Editors	Price for print volume separate purchase	
Printed Proceedings Volume	Online Proceedings Volume		Meeting Attendees Only	
9502	DL9502	Metamaterials X <i>Vladimir Kuzmiak, Peter Markos, Tomasz Szoplik</i>	\$70	€60
9503	DL9503	Nonlinear Optics and Applications IX <i>Mario Bertolotti, Joseph Haus, Alexei Zheltikov</i>	\$70	€60
9504	DL9504	Photon Counting Applications 2015 <i>Ivan Prochazka, Roman Sobolewski, Ralph James</i>	\$53	€45
9505	DL9505	Quantum Optics and Quantum Information Transfer and Processing 2015 <i>Konrad Banaszek, Christine Silberhorn</i>	\$60	€50
9506	DL9506	Optical Sensors 2015 <i>Jiri Homola, Francesco Baldini, Robert Lieberman</i>	\$120	€100
9507	DL9507	Micro-structured and Specialty Optical Fibres IV <i>Kyriacos Kalli, Jiri Kanka, Alexis Mendez</i>	\$60	€50
9508	DL9508	Holography: Advances and Modern Trends IV <i>Antonio Fimia, Miroslav Hrabovský, John Sheridan</i>	\$60	€50
9509	DL9509	Relativistic Plasma Waves and Particle Beams as Coherent and Incoherent Radiation Sources <i>Dino Jaroszynski</i>	\$53	€45
9510	DL9510	EUV and X-ray Optics: Synergy between Laboratory and Space IV <i>René Hudec, Ladislav Pina</i>	\$60	€50

Product Order Number		Volume Title/Volume Editors	Price for print volume separate purchase	
Printed Proceedings Volume	Online Proceedings Volume		Meeting Attendees Only	
9511	DL9511	Damage to VUV, EUV, and X-ray Optics V <i>Libor Juha, Saša Bajt, Richard Londono</i>	\$45	€40
9512	DL9512	Advances in X-ray Free-Electron Lasers Instrumentation III <i>Sandra G. Biedron</i>	\$90	€75
9513	DL9513	High-Power, High-Energy, and High-Intensity Laser Technology II <i>Joachim Hein</i>	\$80	€70
9514	DL9514	Laser Acceleration of Electrons, Protons, and Ions III; and Medical Applications of Laser-Generated Beams of Particles III <i>Eric Esarey, Carl Schroeder, Florian Grüner, Kenneth Ledingham, Klaus Spohr, Paul McKenna, Paul Bolton</i>	\$80	€70
9515	DL9515	Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers II <i>Georg Korn, Luis O. Silva</i>	\$80	€70
9516	DL9516	Integrated Optics: Physics and Simulations II <i>Pavel Cheben, Jiří Čtyrky, Iñigo Molina-Fernández</i>	\$80	€70

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