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Conferences:
24–27 April 2017

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25–26 April 2017

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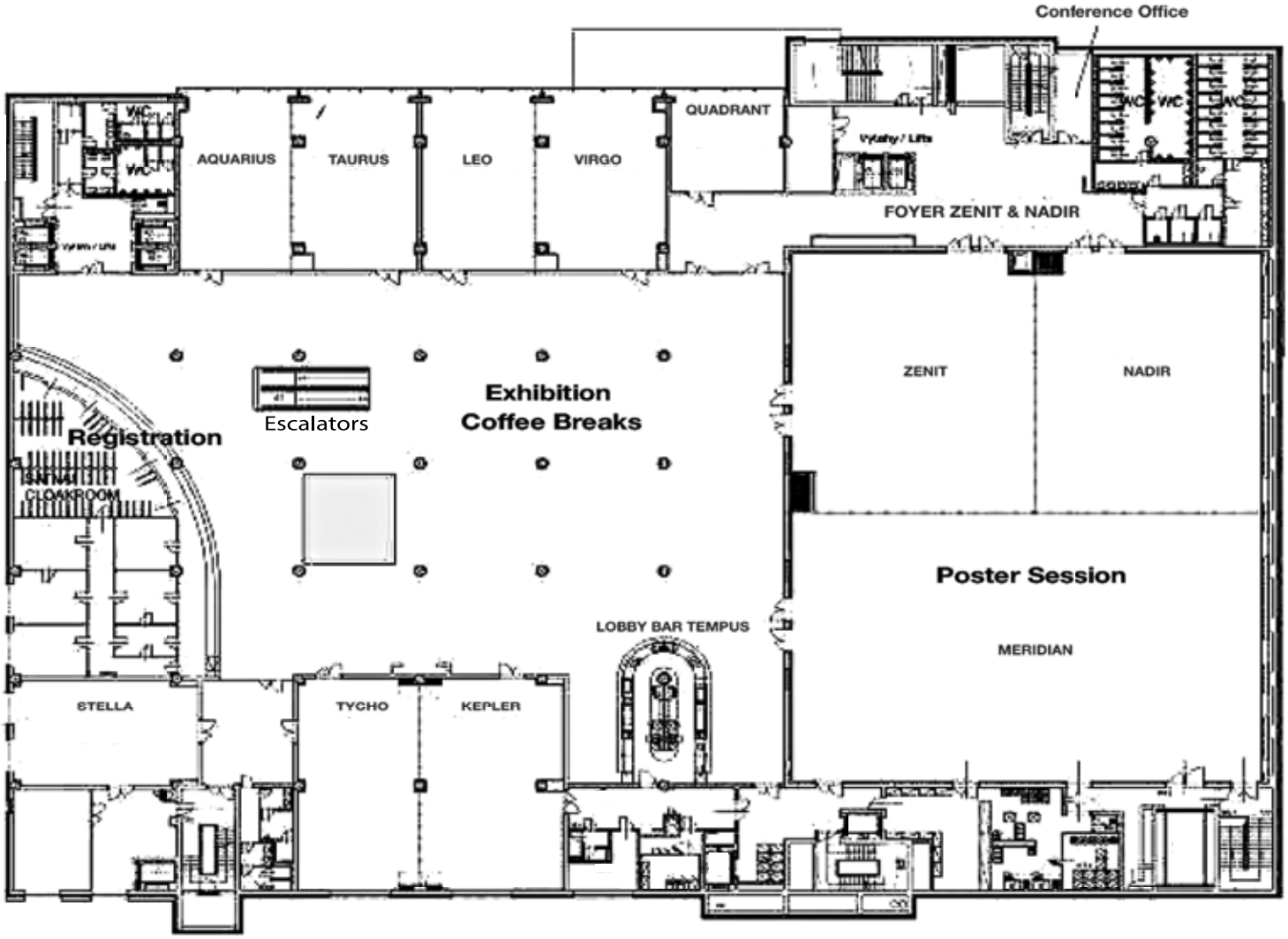
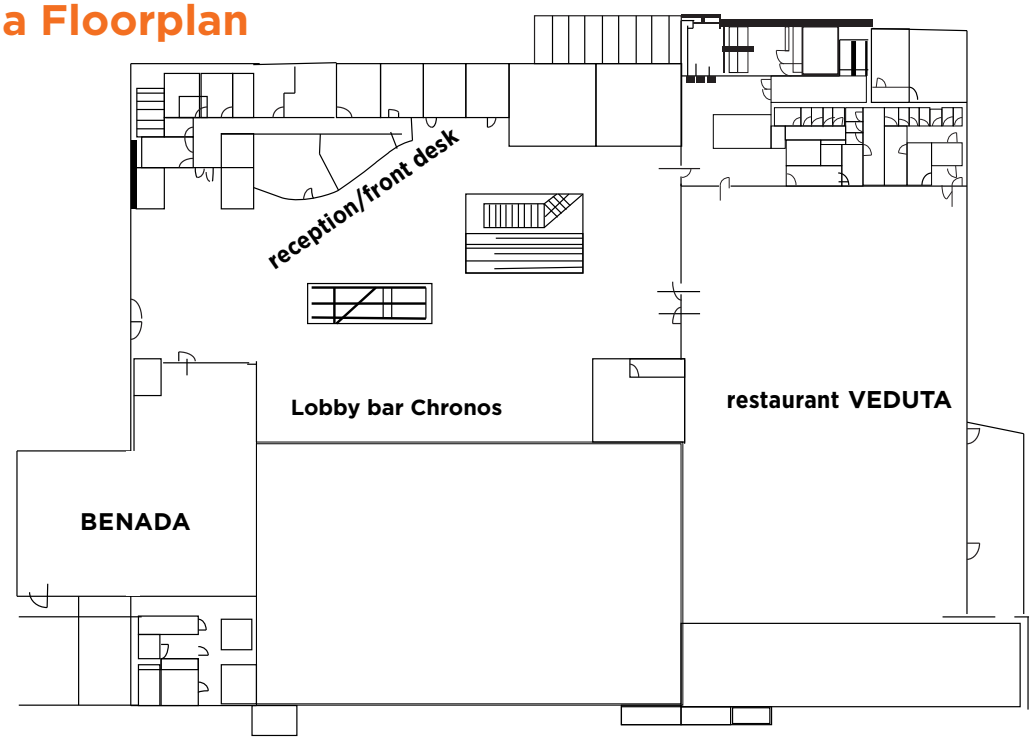


Benada Floorplan



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18 Conferences

Plenary Sessions
p. 6-9

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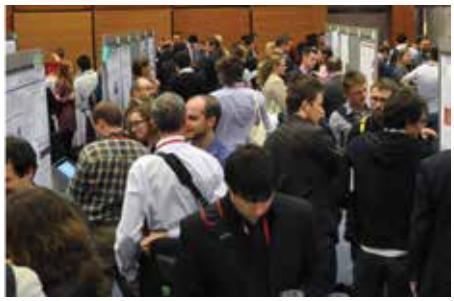

Special Events
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Join your colleagues at these relaxed events, including the Welcome Reception and Interactive Poster Session.

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Welcome!

It is our pleasure to welcome your attendance at SPIE's 2017 International Symposium on Optics & Optoelectronics. An excellent technical programme has been prepared, focusing on cutting edge topics, recent advances in petawatt photonics, high-power and high-repetition rate systems, diode-pumped laser systems, FELs and X-ray lasers, along with the latest research in optical sensing, holography, X-ray optics, metamaterials, nonlinear and quantum optics.

Nearly 750 presentations prove that this event is recognized as an important forum for science, government, and industry to access and share information on optical technologies. The event focuses specifically on the research aspects of optics and optoelectronics science and technology, with a special emphasis on the existing and upcoming European and international laser infrastructures.

The symposium features specialty plenary sessions, seventeen conferences and a workshop on Intense, High Average Power Lasers, each incorporating oral and poster presentations. The program promises an exciting week, with excellent science and technology in a setting conducive to international interchange, networking, and exchanging ideas.

We invite you to share the most recent developments and applications at SPIE Optics + Optoelectronics 2017. Join us for this exciting meeting in the beautiful city of Prague!

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DAILY EVENT SCHEDULE

24 APRIL	25 APRIL	26 APRIL	27 APRIL
MONDAY	TUESDAY	WEDNESDAY	THURSDAY

CONFERENCES

Conf. 10228: **Nonlinear Optics and Applications** *(Bertolotti, Haus, Zheltikov) p. 22*

Conf. 10227: **Metamaterials** *(Kuzmiak,Markos, Szoplik)* p. 20

Conf. 10229: **Photon Counting Applications** *(James, Prochazka, Sobolewski) p. 25*

Conf. 10230: **Quantum Optics and Quantum Information Transfer and Processing** *(Banaszek, Silberhorn) p. 27*

Conf. 10231: **Optical Sensors** *(Baldini, Homola, Lieberman) p. 28*

Conf. 10233: **Holography: Advances and Modern Trends** *(Hrabovský,Sheridan, Fimia) p. 34*

Conf. 10232: **Micro-structured and Specialty Optical Fibres** *(Kalli, Kanka, Mendez, Peterka)* p. 32

Conf. 10235: **EUV and X-ray Optics: Synergy between Laboratory and Space** *(Pina, Hudec) p. 40*

Conf. 10236: **Damage to VUV, EUV, and X-ray Optics (XDam6)** *(Juha, Bajt, Soufli) p. 42*

Conf. 10234: **Relativistic Plasma Waves and Particle Beams as Coherent and Incoherent Radiation Sources** *(Jaroszynski) p. 38*

Conf. 10239: **Generated Beams of Particles: Review of Progress and Strategies for the Future** *(Ledingham. Spohr, McKenna, Bolton, Giulietti) p. 51*

Conf. 10237: **X-Ray Free-Electron Lasers: Advances in Source Development and Instrumentation** *(Tschentscher/Patthey) p. 45*

Conf. 10238: **High-Power, High-Energy, and High-Intensity Laser Technology** *(Hein) p. 48*

Conf. 10240: **Laser Acceleration of Electrons, Protons and Ioins** *(Esarey, Schroeder, Grüner) p. 53*

Conf. 10241: **Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers** *(Silva, Korn) p. 56*

Conf. 10242: **Integrated Optics: Physics and Simulations** *(Cheben, Ctyroky, Molina-Fernandez) p. 59*

WS100: Technology and Applications of Intense, High Average Power Lasers Workshop *(Mocek, Allott, Edwards),* p. 61

Conf. 10243: **X-Ray Lasers and Coherent X-Ray Sources: Development and Applications** *(Klisnick; Menoni)* p. 61

SPECIAL EVENTS

Plenary Session I 16:00 to 17:55	**Plenary Session II** 9:00 to 9:50		**Plenary Session III** 13:30 to 15:15
Welcome Reception 18.30 to 21.30			**Poster Session and Reception** 17.45 to 19.30
	Exhibiton		

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PLENARY SESSION I

Monday, 24 April, 16:00 to 17:55 • Location: NADIR

16.00 to 16.20

Opening Remarks

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

Welcome Address

Eva Zažímalová, President of the Czech Academy of Sciences, Czech Republic

SPIE Welcome and Presentation of SPIE Fellowship

to

Nigel Johnson, Univ of Glasgow, United Kingdom

For his achievements in photonic crystals and metamaterials.

and

Inmaculada Pascual, Univ de Alicante, Spain

For her achievements in holographic materials, optical storage diffractive optics and visual optics.

In Memoriam of Wolfgang Sandner

2011 Symposium Chair, Member of the Symposium Steering Committee and 20011-2015 Steering Committee Member

Tribute presented by **Carlo Rizzuto**, Director General of the Extreme Light Infrastructure Delivery Consortium International, Belgium

16.20 to 16.25

Introduction to Hot Topics

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

16:25 to 17:10

Next generation of lasers generating 100-PW and beyond peak power: prospects and challenges

Jonathan D. Zuegel, Univ. of Rochester, Laboratory for Laser Energetics, United States

Optical parametric chirped-pulse amplification (OPCPA) pumped by multikilojoule, Nd:glass lasers is a promising approach to produce ultra-intense pulses (<1023 W/cm2) that can be used to study ultrarelativistic phenomena. Scalable technologies are being developed and demonstrated to prepare for a future upgrade of the OMEGA EP Laser System to pump an optical parametric amplifier line (EP OPAL) and realize a high-energy, 100-PW-class system. The goal is a system capable of achieving ultrahigh intensities (1.5 kJ, 20 fs, 75 PW, ~1024 W/cm2) for experiments that can also integrate picosecond infrared and/or nanosecond ultraviolet laser pulses from OMEGA EP beamlines. OPAL technology development is underway that will: demonstrate an ultra-broadband seed source with ultrahigh temporal contrast, develop nanosecond-pumped OPCPA amplifiers that can be scaled to kilojoule pulse energies; and prove optical and diagnostic systems for transporting, compressing, focusing, and measuring pulses to achieve nearly transform-limited and diffraction-limited performance with the required damage thresholds. These efforts are being accomplished in a mid-scale OPCPA system (7.5 J, 15 fs) that will serve as a prototype front end for EP OPAL. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944, the University of Rochester, and the New York State Energy Research and Development Authority. The support of DOE does not constitute an endorsement by DOE of the views expressed in this article.

Biography: **Dr. Jonathan D. Zuegel** is Laser Development and Engineering Division Director and a Senior Scientist at the University of Rochester's Laboratory for Laser Energetics. He joined LLE in 1996 after receiving his Ph.D. in Optics from The Institute of Optics at the University of Rochester. He received his B.S. (1983) and Masters of Engineering (1984) in Electrical Engineering from Cornell University and served in the U.S. Navy in the Department of Energy Division of Naval Reactors. Dr. Zuegel is an author of more than 100 publications.and a Fellow of the Optical Society of America.

17.10 to 17.55

Advanced optical manipulation exploiting materials science

Kishan Dholakia, School of Physics and Astronomy, Univ. of St. Andrews, United Kingdom

In science fiction, one is quite familiar with the idea of moving objects using laser beams, evoking concepts such as a "tractor beam". In the laboratory science fiction turns into science fact: a powerful technique known as "optical tweezers" (OT) shows that micrometre-sized particles (and even biological material and atoms) can be grabbed, moved and generally manipulated without any physical contact using optical forces. This is a powerful demonstration of the optical dipole or gradient force in action. Such "optical tweezers", based primarily on Newton's laws and fundamental optics have enabled unprecedented insight about biological molecules such as DNA and molecular motors. In the microscopic world of optical tweezers, researchers are now harnessing these systems to study a host of science: this includes advanced colloidal interactions, dynamics of particles in various potentials (with strong analogues to atomic systems), insights into superconductivity, optically bound matter, studies of the optical angular momentum of light, magnetic flux line pinning, thermodynamics, microfluidics and motor protein transport. The list is ever growing. This talk will give a perspective of emergent studies in manipulation using materials science. This includes the use of particles with specific properties for new studies. This can include the rotation of particles in liquid and vacuum using vaterite [1] and nanovaterite particles [2]. These particles exhibit a birefringence that allows them to spin when using circularly polarised trapping beams. Such studies can lead to very high rotation rates and exhibit new features that link to optomechanical cooling of the particle motion and potential future studies of quantum friction. This work may be extended to study the rotation of two particles in vacuum in co- and counter-rotating geometries [3]. The use of these latter types of particles can lead to new studies in optomechanics [4].

[1] Y. Arita, M. Mazilu, and K. Dholakia, Nat Commun 4, 2374 (2013)

[2] Yoshihiko Arita, Joseph M. Richards, Michael Mazilu, Gabriel C. Spalding, Susan E. Skelton Spesyvtseva, Derek Craig, and Kishan Dholakia, ACS Nano, 2016, 10 (12), 11505 (2016)

[3] Yoshihiko Arita, Michael Mazilu, Tom Vettenburg, Ewan M. Wright, and Kishan Dholakia, Optics Letters 40(20), 4751-4754 (2015).

[4] Susan E. Skelton Spesyvtseva and Kishan Dholakia, ACS Photonics 3(5), 719-736 (2016)

Biography: **Kishan Dholakia** is Professor at the University of St Andrews, Scotland and an honorary adjunct Professor at the Centre for Optical Sciences at the University of Arizona, USA and at Chiba University, Japan. He works on advanced imaging, beam shaping and optical manipulation. He has published over 275 journal papers. His work is cited in the Guinness book of Records 2015 for the fastest man-made rotation. He is a Fellow of the Royal Society of Edinburgh, OSA and SPIE. In 2008 he was awarded a Wolfson Merit Award from the Royal Society. In 2016 he won the R.W. Wood Prize of the Optical Society.

PLENARY SESSION II

Tuesday, 25 April, 9:00 - 9:05 • Location: NADIR

9:00 to 9:05

Introduction

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

Presentation of Yuri Denisyuk Medal

to

Miroslav Miler, Institute of Photonics and Electronics of the CAS, v.v.i., Czech Republic

For his achievements in the field of holography.

The medal is awarded on behalf of the Rozhdestvensky Optical Society

9:05 to 9:50

Optical systems implemented with multimode fibers

Demetri Psaltis, Ecole polytechnique fédérale de Lausanne, Optics Laboratory, Switzerland

Holography and phase conjugation were proposed in the middle 1960's for correcting the distortions in imaging systems due to aberrating or scattering media. These early methods have been revisited in recent years and successful experimental demonstrations have been reported with digital holographic methods in which the recording and reconstruction of the hologram is done with the help of a digital computer. The digital holographic methods offer a lot more flexibility and control compared to the all-optical methods of the past making holographic imaging much more practical. In addition, adaptive wavefront shaping techniques have been recently developed providing a set of related and synergistic methods for imaging in complex media. In this presentation we will focus on the application of the modern tools of holography to light transmission through multi-mode fibers (MMF's) [1]. The modal dispersion that severely scrambles images propagating through MMF's can be compensated allowing us to exploit the many degrees of freedom available for imaging and sensing. A wide variety of functionalities that are usually implemented with lenses have been demonstrated with MMF's combined with wavefront shaping. These include focusing and scanning light through a MMF, leading to novel endoscopes. Projection of arbitrary images through a MMF has been demonstrated with potential applications in display and structured illumination. The demonstration of ultrashort transmission of laser pulses through MMF's allows multi-photon excitation with potential applications in imaging, ablation and photopolymerisation. The main advantage of MMF's compared to lenses is that the MMF is a digitally controlled endoscope and is therefore able to reach places that are difficult to access with lenses. The advantage of MMF's over other endoscopes is the large number of spatial and temporal degrees of freedom which can be digitally controlled leading to high resolution in a very compact implementation. The main disadvantage of MMF's is their sensitivity to bending and therefore currently they only work as rigid probes. However, there are interesting new results that show promise for the future implementation of flexible MMF endoscopes.

[1] Imaging with Multimode Fibers Demetri Psaltis and Christophe Moser Optics & Photonics News, vol 27, January 2016

Biography: **Demetri Psaltis** is professor of optics and the director of the Optics Laboratory at the Ecole Polytechnique Federale de Lausanne (EPFL). He was educated at Carnegie-Mellon University where he received the Bachelor of Science in Electrical Engineering and Economics in 1974, the Master's in 1975, and the PhD in Electrical Engineering in 1977. In 1980, he joined the faculty at the California Institute of Technology, in Pasadena, California where he held the Thomas G. Myers Chair in Electrical Engineering. He served as Executive Officer for the Computation and Neural Systems department from 1992-1996. From 1996 until 1999 he was the Director of the National Science Foundation research center on Neuromorphic Systems Engineering at Caltech. In 2004 he established at Caltech the Center for Optofluidic Integration and he served as the director until he moved to EPFL in 2006 where he established his research lab and served as dean of the engineering school for 10 years. His research interests are imaging, holography, biophotonics, nonlinear optics, and optofluidics. He has over 400 publications in these areas. Dr. Psaltis is a fellow of the IEEE, the Optical Society of America, the European Optical Society and the Society for Photo-optical Systems Engineering (SPIE). He received the International Commission of Optics Prize, the Humboldt Award, the Leith Medal, the Gabor Prize and the Joseph Fraunhofer Award/ Robert M. Burley Prize .

PLENARY SESSION III

Wednesday, 26 April, 13:30 - 15:15 • Location: NADIR

13:30 to 13:35

Introduction

Bedrich Rus, ELI Beamlines, Institute of Physics, CAS v.v.i., Czech Republic

13:35 to 14:05

New opportunities for science and applications using x-ray laser radiation provided by European XFEL

Robert Feidenhans'l, European XFEL GmbH, Germany

The European X-ray Free Electron Laser is being commissioned in the spring of 2017 and will start first user operation in the fall. It will be the world's first hard X-ray laser facility based on superconducting accelerator technology and will deliver an unprecedented X-ray beam to the user community with a high repetition rate. First users are expected to come in the fall of 2017 on the FXE instrument for ultra-fast x-ray spectroscopy and x-ray scattering and on the SPB/SFX instrument for diffractive imaging and structural determination for single particles, clusters and biomolecules. In 2018 four more instruments will be taken into operation covering a wide range of scientific fields. In the talk a full description of the facility will be given including a report of the status of the commissioning.

Biography: **Prof. Robert Feidenhans'l** is the Chairman of the Management Board of the European XFEL GmbH. Until 2016 Prof. Feidenhans'l held the position of the head of the Niels Bohr Institute at the University of Copenhagen, Denmark. He is also a member of the European XFEL Council, the supreme organ of the company, for which he served as a chairman from 2010 to 2014.

Robert Feidenhans'l studied at Aarhus University and holds a Ph.D. in surface physics, a field which has since evolved into nanophysics. Starting in 1983, he worked at the Risø National Laboratory in different scientific and leading positions, until joining the Niels Bohr Institute in 2005. As a researcher, he is an expert in new groundbreaking X-ray technologies and research at large-scale X-ray synchrotron research facilities, such as ESRF in France, PSI in Switzerland, and DESY in Hamburg.

14:05 to 14:35

High average power, diode pumped Petawatt laser systems: a new generation of lasers enabling precision science and commercial applications

Constantin L. Haefner, NIF and Photon Science Directorate, Lawrence Livermore Lab., United States

High peak power laser systems with intensities exceeding 1018W/cm2 allow for driving compact and versatile secondary sources such as particle beam generation and coherent and incoherent x-ray sources. Previous drive lasers have primarily relied on flashlamp technology, and therefore have been constrained to access industrial applications that require average power levels of typically kilowatt and beyond, or exploratory research that requires highest pulse fidelity and repeatability. A new generation of diode pumped, high intensity laser systems with innovative technologies for thermal management, new optical materials and pulse compressor gratings have recently been demonstrated. In particular, the High-repetition-rate Advanced Petawatt Laser System (HAPLS) recently completed a momentous milestone of delivering continuously laser pulses with energy exceeding 15 J, pulse duration 28 fs, at 3.3 Hz – equivalent to a peak power of ~0.5 PetaWatt/pulse delivered at high rep rate. When complete and ramped to its final design performance HAPLS will be the world's highest average power Petawatt laser system. Next generation high intensity laser systems such as HAPLS open the door for transforming today's proof-of-principle experiments into viable real-world applications.

Biography: **Dr. Constantin L. Haefner** is the Program Director for Advanced Photon Technologies (APT) in the NIF & Photon Science Directorate at Lawrence Livermore National Laboratory. He received his Diploma degree in Physics from the University Of Constance, Germany in 1999, and his Ph.D. in 2003 from the University of Heidelberg. Dr. Haefner then joined the University of Nevada Reno's Nevada Terawatt Facility as Research Assistant Professor and Chief Laser Scientist performing laser systems design and research for high energy density physics experiments. In 2004, Dr. Haefner joined Lawrence Livermore National Laboratory and has since led the research and development of high peak power laser technologies. In 2010 he was appointed Chief Scientist on the kilojoule-Petawatt NIF Advanced Radiographic Capability laser system and in 2013 became the Program Director for APT. Key mission areas of APT are the research and development of laser systems relevant to scientific research and commercial applications, as well as laser technology advancement for laser fusion drivers. One of the main focus areas is the transformation of single-shot, high peak power laser systems into high average power, high repetition rate laser drivers that enable today's proof-of-principle experiments to be pushed towards real-world applications such as laser based accelerators or intense x-ray sources for temporally resolved, high resolution imaging in industry, medicine and many other areas.

14:35 to 15:15

PANEL DISCUSSION

Prospects of new generation of high-repetition high-peak power laser systems: implications to research and industrial applications

Moderator:
Ric Allott, The Association of Industrial Laser Users (AILU) (United Kingdom)

Panel Members:
Robert Feidenhans'l, European XFEL GmbH, Germany
Constantin L. Haefner, NIF and Photon Science Directorate, Lawrence Livermore Lab., United States
Dave MacLellan, The Association of Industrial Laser Users, United Kingdom
Tomáš Mocek, HiLASE Ctr., Institute of Physics ASCR, v.v.i, Czech Republic

The peak power of a laser defines the science that can be performed or enables a particular industrial process, whereas the average power determines the time it takes to perform the particular task. Recent developments in laser technology now allow the combination of high peak power and high average power for the first time. This opens up a whole new world of science and industrial applications with far reaching benefits for society. This panel discussion will express and debate some of these exciting new opportunities and provide a catalyst for new ideas and concepts.

To introduce the technology and set the context a short introductory talk "**Combining high peak power with high average power-opening a whole world of science and applications from materials hardening to space debris**" will precede the panel discussion.

SPECIAL EVENTS

Welcome Reception

Monday, 24 April, 18:30 to 21:00
Location: Kaiserštejnský Palác (Kaiserstein Palace)

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

LAB TOUR

Optical Fibre Technology at the Institute of Photonics and Electronics

Tuesday 25 April
Bus 1 departure: 17:30 hrs. Bus 2 departure: 18:30 hrs

ÚFE Institute of Photonics and Electronics
The Czech Academy of Sciences

Registered attendees are invited to visit the laboratory for fabrication of specialty optical fibres for fibre lasers and optical fibre sensors. The laboratory is part of the Institute of Photonics and Electronics (ÚFE) of the Czech Academy of Sciences. Shuttle bus will be provided.

If space is available, registration for the tour maybe completed onsite at the SPIE registration desk. Two separate tour groups will be organized. The projected time of the shuttle departure is 17:30 and 18:30 hrs on Tuesday from the conference venue. Information about the departure location and any departure time updates will be available at the SPIE registration desk. Tour duration: 2.5 hours (including travel). Number of participants is limited.

LAB TOUR

HiLASE Laser Centre and ELI Beamlines

Friday 28 April, 9:00 to 13:00 hrs
Bus departure: 9:00 hrs

eli beamlines hilase Power of light

Registered attendees are invited to visit the recently inaugurated HiLASE Laser Centre and ELI Beamlines in nearby Dolni Brezany. Shuttle bus will be provided.

The HiLASE project focuses on development high-repetition lasers and laser systems that will find use in industry, in small- and medium-scale research laboratories and in the future European large-scale facilities that will be part of the European Research Area (ERA). The project will specifically focus on diode pumped solid state laser systems (DPSSLs) and on the development of associated technologies.

ELI Beamlines will create a new generation of secondary sources for interdisciplinary applications in physics, medicine, biology and material sciences. It will enable research projects covering the interaction of light with matter at intensity being 10 times higher than currently achievable values. ELI will provide ultra-short laser pulses of a few femtoseconds (10-100 fs) duration and give performance up to 10 PW.

If space is available, registration for the tour may be completed onsite at the SPIE Registration desk. Information about the departure location and any departure time updates will be available at the SPIE registration desk. Tour duration: 2-3 hours (excludes travel time). Please note that number of participants is limited.

PANEL DISCUSSION

Conference 10239, Medical Applications of Laser-Generated Beams of Particles: Review of Progress and Strategies for the Future

Open Discussion on Importance of Hadrons in Cancer Therapy

Tuesday 25 April, 10:15 to 12:30 pm

A small international team of experts from multiple research communities will examine the following questions:

- Is hadron therapy better than existing therapies and for which tumours?
- Is it cost effective?
- Could laser driven hadron beams compete potentially with accelerator beams in cost and size?

PANEL DISCUSSION

Conference 10236, Damage to VUV, EUV, and X-ray Optics (XDam6)

Round Table Discussion on Damage Mechanisms:Theory and Experiments

Tuesday 25 April, 14:55 to 15:35

Co-organized by the Czech Academy of Sciences within its Strategy 21 Program, the session “Damage Mechanisms: Theory and Experiments” will be focused on further development of the theory and computer simulations of processes responsible for transient and irreversible changes in irradiated solids to get a good agreement with experimental results obtained and to help in planning prospective experiments at new facilities, esp. European XFEL. The session will incorporate invited contributions and a round-table discussion.

PANEL DISCUSSION

Conference 10236, Damage to VUV, EUV, and X-ray Optics (XDam6)

Round Table Discussion: XUV/X-ray Lasers in Radiation Chemistry and Radiobiology

Tuesday 25 April, 16:00 to 17:50

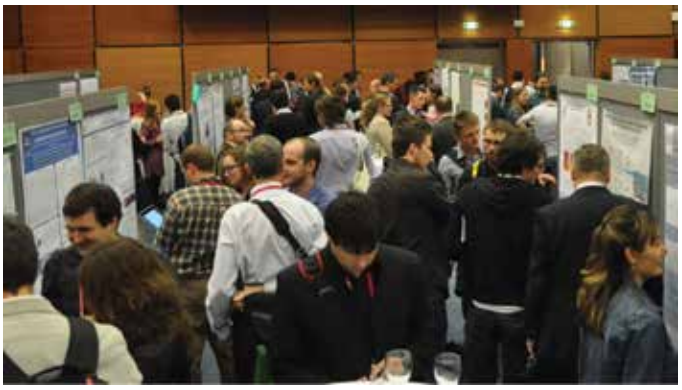
Co-organized by the Czech Academy of Sciences within its Strategy 21 Program, the session will be dealing with a prospective utilization of new short-wavelength lasers in radiation sciences, esp. radiation chemistry and radiobiology. The session will incorporate invited contributions and a round-table discussion.

PLENARY PANEL DISCUSSION

Prospects of new generation of high-repetition high-peak power laser systems: implications to research and industrial applications

Wednesday, 26 April, 14:35 to 15:15

The peak power of a laser defines the science that can be performed or enables a particular industrial process, whereas the average power determines the time it takes to perform the particular task. Recent developments in laser technology now allow the combination of high peak power and high average power for the first time. This opens up a whole new world of science and industrial applications with far reaching benefits for society. This panel discussion will express and debate some of these exciting new opportunities and provide a catalyst for new ideas and concepts.



Poster Session

Wednesday 26 April, 17.45 to 19:30
Location: Meridian Hall

All symposium attendees are invited to attend 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.

Poster presenters may post their poster papers starting at 10:00 hrs on Tuesday. 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 19:30 hrs to answer questions from attendees. Attendees are requested to wear their conference registration badges to the poster sessions.

WORKSHOP

Technology and Applications of Intense, High Average Power Lasers Workshop (WS100)

Thursday, 27 April • 8:50 to 17:00

This workshop will discuss recent advances in the laser technology, emerging applications, enablers, the performance and economic system requirements necessary to exploit that technology within industry and the new scientific opportunities available from facilities offering this new capability to users. For full program, please see p. 64

IN MEMORIAM

Wolfgang Sandner
ELI-DC Director and Laser Scientist

The 2017 Symposium will be dedicated to honoring Wolfgang Sandner, 2011 Optics + Optoelectronics symposium chair and the symposium steering committee member.

Through his involvement, Wolfgang made considerable contributions to the success of the event. We will greatly miss our dear friend and colleague.

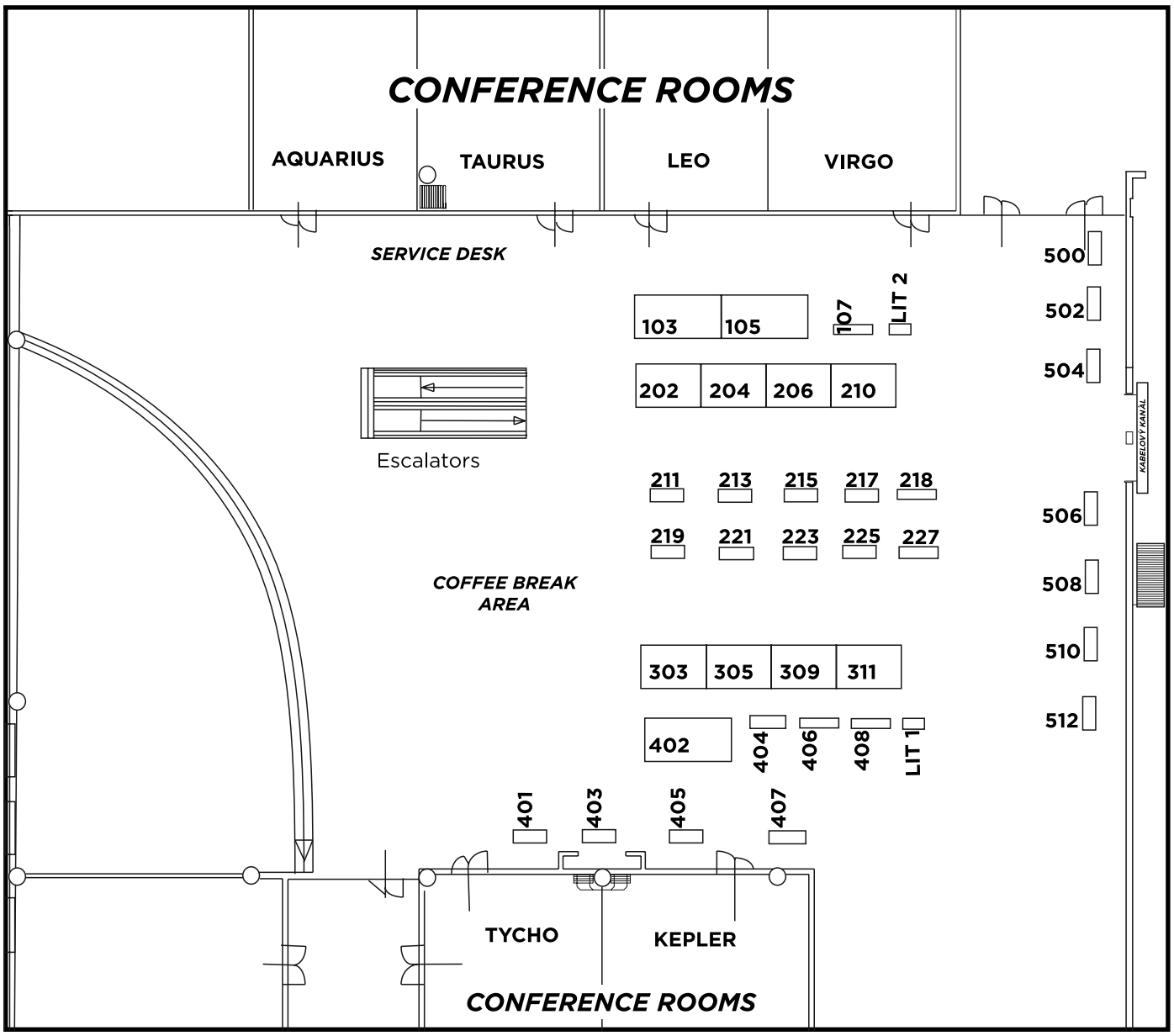
Best Student Paper Awards

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.

SPIE Optics + Optoelectronics Exhibition Directory

SPIE Optics + Optoelectronics 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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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, vadimus@adloptica.com

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info@ailu.org.uk; www.ailu.org.uk/

AILU, the Association of Industrial Laser Users, is a non-profit organisation founded in 1995, run by and for the laser community, with 250 members.

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LASER+PHOTONICS is the best-of-collection of technical articles from the magazine PHOTONIK reprinted in English and thus offers a broad range of worldwide up-to-date knowledge in the area of optical technologies. Reports on latest technology trends around the world and relevant industry news complete the editorial spectrum of this issue.

CO-OPERATING ORGANISATION

Central Laser Facility (STFC Rutherford Appleton Laboratory) #402

SPIE Corporate Member

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www.clf.stfc.ac.uk

The Science and Technology Facilities Council (STFC) operates and develops large scale research infrastructures for use by UK university scientists and their international collaborators. Within STFC, the Central Laser Facility (CLF) provides state of the art laser capabilities to a broadly based user community for studies in extreme states of matter, life sciences and novel industrial applications.

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390 Qinghe Road, Jiading Shanghai, 201800 China
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prjournal@siom.ac.cn; opticsjournal.net/Columns/CLP.html

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Czech Technical University in Prague Chapter #107

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The Company is ISO 9001:2008 certified. Contact: Daugirdas Kuzma, Director, marketing, d.kuzma@eksmaoptics.com; Romas Remeika, Program Manager, r.remeika@eksmaoptics.com

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Featured Product: Electro Optics

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The European Cluster of Advanced Laser Light Sources (EUCALL) is an EU-funded project which generates collaboration and synergy between large scale sources of laser-driven and accelerator-driven X-ray radiation. The majority of the work is devoted to the development of new software for simulation and processing of advanced radiation experiments, as well as for new hardware for standardised sample delivery and beam diagnostics for ultra-fast laser experiments.

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CO-OPERATING ORGANISATION

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STANDA Ltd. #502

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Standa Ltd. was founded in Vilnius, Lithuania in 1987 and now has more than 150 employees working at the company. Standa has it's own industrial base that includes CNC turning, milling, grinding machines. Standa's design department, while developing standard products presented in Standa's catalogue (such as motorized and manual translation and rotation stages, motion controllers, optical tables, vibration isolation systems, optical mounts and holders, optics, dpss lasers and etc.) also develops the equipment for OEM customers

THALES SESO #500

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info.tseso@fr.thalesgroup.com; www.seso.com

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CONFERENCE 10227

LOCATION: TAURUS

Wednesday–Thursday 26–27 April 2017 • Proceedings of SPIE Vol. 10227

Metamaterials

*Conference Chairs: V***ladimír Kuzmiak,** Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Peter Markos,** Comenius Univ. in Bratislava (Slovakia); **Tomasz Szoplik,** Univ. of Warsaw (Poland)

Programme Committee: **Che Ting Chan,** Hong Kong Univ. of Science and Technology (Hong Kong, China); **Jirí Ctyroky,** Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Nigel P. Johnson,** Univ. of Glasgow (United Kingdom); **Maria Kafesaki,** Foundation for Research and Technology-Hellas (Greece); **Yuri S. Kivshar,** The Australian National Univ. (Australia); **Rafal Kotynski,** Univ. of Warsaw (Poland); **Andrei V. Lavrinenko,** DTU Fotonik (Denmark); **Concita Sibilia,** Univ. degli Studi di Roma La Sapienza (Italy); **Constantin R. Simovski,** Aalto Univ. School of Electrical Engineering (Finland); **Costas M. Soukoulis,** Iowa State Univ. (United States); **Martin Wegener,** Karlsruher Institut für Technologie (Germany);
Nikolay I. Zheludev, Optoelectronics Research Ctr. (United Kingdom); **Richard W. Ziolkowski,** The Univ. of Arizona (United States)

WEDNESDAY 26 APRIL

OPENING REMARKS

ROOM: TAURUS . . . . . 8:45 TO 8:50

SESSION 1

ROOM: TAURUS . . . . . WED 8:50 TO 10:20

Metasurfaces

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

8:50: **All-dielectric resonant nanophotonics and high-efficient metasurfaces** *(Invited Paper)*, Yuri S. Kivshar, Australian National Univ (Australia). . . . [10227-1]

9:20: **Tunable spin-directional coupling for surface localized waves with anisotropic metasurface**, Oleh Y. Yermakov, Andrey A. Bogdanov, Ivan V. Lorsh, ITMO Univ. (Russian Federation); Konstantin Y. Bliokh, RIKEN Ctr. for Emergent Matter Science (Japan); Yuri S. Kivshar, ITMO Univ. (Russian Federation) and The Australian National Univ. (Australia) . . . . . [10227-2]

9:40: **Dynamical pixel manipulation of metasurfaces**, Jin-Qian Zhong, National Tsing Hua Univ. (Taiwan). . . . . [10227-3]

10:00: **Plasmon-induced transparency-like behavior at terahertz region via dipole oscillation detuning in a hybrid planar metamaterial**, Zhenyu Zhao, Shanghai Normal Univ. (China) . . . . . [10227-5]

Coffee Break . . . . . Wed 10:20 to 10:50

SESSION 2

ROOM: TAURUS . . . . . WED 10:50 TO 12:40

Metamaterials Theory

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

10:50: **Light-matter interaction in planar plasmonic and metamaterial systems: equilibrium and non-equilibrium effects** *(Invited Paper)*, Kurt Busch, Humboldt University Berlin (Germany) . . . . . [10227-6]

11:20: **Hyperbolic waveguide for long-range heat transport**, Svend-Age Biehs, Carl von Ossietzky Univ. Oldenburg (Germany); Philippe Ben-Abdallah, Lab. Charles Fabry (France) and Ctr. National de la Recherche Scientifique (France) and Univ. Paris-Saclay (France) . . . . . [10227-7]

11:40: **On-chip near-wavelength diffraction gratings for surface electromagnetic waves**, Evgeni A. Bezus, Vladimir V. Podlipnov, Andrey A. Morozov, Leonid L. Doskolovich, Image Processing Systems Institute (Russian Federation) and Samara Univ. (Russian Federation). . . . . [10227-8]

12:00: **On-chip phase-shifted Bragg gratings and their application for spatiotemporal transformation of Bloch surface waves**, Leonid L. Doskolovich, Image Processing Systems Institute (Russian Federation) and Samara National Research Univ. (Russian Federation); Evgeni A. Bezus, Dmitrii A. Bykov, Nikita V. Golovastikov, Image Processing Systems Institute (Russian Federation) and Samara Univ. (Russian Federation). . . . . [10227-9]

12:20: **Enhanced fluorescence emission using bound states in continuum in a photonic crystal membrane**, Silvia Romano, Istituto per la Microelecttronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); Gianluigi Zito, Stefano Managò, Anna Chiara De Luca, Istituto di Biochimica delle Proteine, Consiglio Nazionale delle Ricerche (Italy); Stefano Cabrini, The Molecular Foundry (United States); Vito Mocella, Istituto per la Microelecttronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10227-10]

Lunch/Exhibition Break . . . . . Wed 12:40 to 13:30

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 3

ROOM: TAURUS . . . . . WED 15:40 TO 17:40

Hyperbolic Metamaterials

Session Chair: **Kurt Busch,** Humboldt-Univ. zu Berlin (Germany)

15:40: **New pathways for solitons and rogue waves in double negative and hyperbolic metamaterials** *(Invited Paper)*, Allan D. Boardman, Univ. of Salford (United Kingdom); Jim McNiff, Original Perspectives Ltd. (United Kingdom) . . . . . [10227-11]

16:10: **PT-axisymmetric VCSELS** *(Invited Paper)*, Muriel Botey, Univ. Politècnica de Catalunya (Spain); Waqas Ahmed, Politècnica de Catalunya (Spain); Ramon Herrero, Univ. Politècnica de Catalunya (Spain); Kestutis Staliunas, , Institució Catalana de Reserca i Estudis Avançats (ICREA) (Spain) . . . . . [10227-12]

16:40: **Experimental demonstration of the surface state and optical topological phase transition of one dimensional hyperbolic metamaterial in Otto configuration**, Chih Chung Wei, Leng-Wai Un, Ta-Jen Yen, National Tsing Hua Univ. (Taiwan). . . . . [10227-14]

17:00: **Quasimode computation in structures including several dispersive materials**, Guillaume Demésy, Mauricio Garcia-Vergara, Frédéric Zolla, André Nicolet, Institut Fresnel (France) . . . . . [10227-15]

17:20: **Spectral features of the Borrmann effect in 1D photonic crystals in the Laue geometry**, Vladimir B. Novikov, Boris I. Mantsyzov, Tatiana V. Murzina, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10227-16]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Plasmonic scattering nanostructures for efficient light trapping in flat CZTS solar cells, Omar A. M. Abdelraouf, The American Univ. in Cairo (Egypt); Mohamed Ismail Abdelrahaman, Aix-Marseille Univ. (France); Nageh K. Allam, The American Univ. in Cairo (Egypt) . . . . . [10227-36]

Ferroelectric lithographic microscale assembly of a noble metal nanoparticles applied as a single molecule sensor, Rusul Alshammari, Nebras E. Al-Attar, Univ. College Dublin (Ireland); Michele Manzo, Katia Gallo, KTH Royal Institute of Technology (Sweden); Brian J. Rodriguez, James H. Rice, Univ. College Dublin (Ireland) . . . . . [10227-37]

Photonic band gap and defect states calculation of 2D octagonal structures, Gulsen Kosoglu, Mehmet Naci Inci, Bogazici Univ (Turkey) . . . . . [10227-38]

Complex dielectric films acting as external diffractive 3D photonic crystals to improve Blue OLEDs, Michal Mruczkiewicz, Univ. Bordeaux 1, Lab. Ondes et Matière d'Aquitaine (France); Frederic Dumur, Aix-Marseille Univ. (France); Mathias Perrin, Univ. Bordeaux 1 (France); Arthur Bertrand, IPREM-CNRS UMR (France); Stéphane Reculusa, Ctr. de Recherche Paul-Pascal (France); Christine Dagron-Lartigau, Antoine Bousquet, Univ. de Pau et des Pays de l'Adour (France); Lurence Vignau, École Nationale Supérieure de Chimie et de Physique de Bordeaux (France); Laurent Billon, Univ. de Pau et des Pays de l'Adour (France); Sophie Fasquel, Univ. Bordeaux 1 (France) . . . . . [10227-40]

Analytical description of the interaction between light and plasmons: the corrected quasi-normal mode expansion, Mathias Perrin, Univ. Bordeaux 1 (France) . . . . . [10227-41]

THURSDAY 27 APRIL

SESSION 4

ROOM: TAURUS . . . . . THU 8:30 TO 10:20

Metamaterials

Session Chair: **Nigel P. Johnson,** Univ. of Glasgow (United Kingdom)

8:30: **Zero index metamaterial for enhanced transmission and beaming** *(Invited Paper)*, Humeyra Caglayan, Hodjat Hajian, Ekmel Ozbay, Bilkent Univ. (Turkey) . . . . . [10227-17]

9:00: **Magnetic Fano-response in toroidal metamaterials**, Maria V. Kozhokar, Alexey A. Basharin, National Univ. of Science and Technology "MISiS" (Russian Federation) . . . . . [10227-18]

9:20: **Planar toroidal metamaterials: the role of losses, tunability and applications**, Nikita Volsky, National Univ. of Science and Technology "MISiS" (Russian Federation); Vitaly Chuguevsky, National Univ. of Science and Technology "MISiS" (Russian Federation) and Voronezh State Technical Univ. (Russian Federation); Kristina Schegoleva, Alexey A. Basharin, National Univ. of Science and Technology "MISiS" (Russian Federation) . . . . . [10227-19]

9:40: **All-dielectric perforated metamaterials with toroidal dipolar response**, Ivan Stenishchev, Alexey A. Basharin, National Univ. of Science and Technology "MISiS" (Russian Federation) . . . . . [10227-20]

10:00: **Optical meta-films of alumina nanowire arrays for solar evaporation and optoelectronic devices**, Kyoungsik Kim, Kyuyoung Bae, Gumin Kang, Seunghwa Baek, Yonsei Univ. (Korea, Republic of) . . . . . [10227-21]

Coffee Break . . . . . Thu 10:20 to 10:50

SESSION 5

ROOM: TAURUS . . . . . THU 10:50 TO 12:40

Plasmonics

Session Chair: **Kestutis Staliunas,**
Institució Catalana de Reserca i Estudis Avançats (ICREA) (Spain)

10:50: **Liquid-like 2D plasmonic waves** *(Invited Paper)*, Baile Zhang, Nanyang Technological University (Singapore) . . . . . [10227-22]

11:20: **Collective dynamics of atoms embedded into negative index materials**, Fang Wei, Gao X. Li, Central China Normal Univ. (China); Zbigniew Ficek, King Abdulaziz City for Science and Technology (Saudi Arabia) [10227-23]

11:40: **Nonlocal resonances in nanoplasmonics: analysis and simulations**, Milan Burda, Pavel Kwiecien, Jan Fiala, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10227-24]

12:00: **Hybrid metal-organic conductive network with plasmonic nanoparticles and fluorene**, Laura Fontana, Ilaria Fratoddi, Roberto Matassa, Giuseppe Familiari, Iole Venditti, Sapienza Univ. di Roma (Italy); Chiara Batocchio, Univ. degli Studi di Roma Tre (Italy); Elena Magnano, Silvia Nappini, Istituto Officina dei Materiali (Italy); Grigore Leahu, Alessandro Belardini, Roberto Li Voti, Concita Sibilia, Sapienza Univ. di Roma (Italy) . . . . . [10227-25]

12:20: **General rules for incorporating noble metal nanoparticles in organic solar cells**, Arkadiusz S. Ciesielski, Dominika Switlik, Tomasz Szoplik, Univ. of Warsaw (Poland) . . . . . [10227-26]

Lunch Break . . . . . Thu 12:40 to 13:50

SESSION 6

ROOM: TAURUS . . . . . THU 13:50 TO 15:40

Nanolasers

Session Chair: **Baile Zhang,** Nanyang Technological Univ. (Singapore)

13:50: **Photonic crystal microchip laser** *(Invited Paper)*, Kestutis Staliunas, Institució Catalana de Reserca i Estudis Avançats (ICREA) (Spain); Darius Gailevicius, Vytautas Purlys, Martynas Peckus, Vilnius Univ. (Lithuania); Volodymyr Koliadenko, Victor B. Taranenko, Institute of Applied Optics, NAS of Ukraine (Ukraine) . . . . . [10227-27]

14:20: **All-dielectric slow light nanolaser based on metamaterials**, Yu-Hung Hsieh, Shih Yu Fu, Tsung-Yu Huang, Ta-Jen Yen, National Tsing Hua Univ. (Taiwan) . . . . . [10227-28]

14:40: **Dielectric-only nanolaser induced by Mie resonance**, Shih Yu Fu, Yu-Hung Hsieh, Tsung-Yu Huang, Ta-Jen Yen, National Tsing Hua Univ. (Taiwan) . . . . . [10227-29]

15:00: **Plasma phase separation in bismuth and antimony chalcogenide crystals**, Nadezhda P. Netesova, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10227-30]

15:20: **Study of resonant processes in plasmonic nanostructures for sensor applications**, Jiří Pirunčík, Pavel Kwiecien, Jan Fiala, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10227-31]

Coffee Break . . . . . Thu 15:40 to 16:00

SESSION 7

ROOM: TAURUS . . . . . THU 16:00 TO 17:50

Applications of Metamaterials

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

16:00: **Magnetic terahertz metamaterials based on dielectric microspheres** *(Invited Paper)*, Christelle Kadlec, Michal Sindler, Filip Dominec, Hynek Němec, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Catherine Elissalde, Institut de Chimie de la Matière Condensée de Bordeaux (France); Patrick Mounaix, Univ. Bordeaux 1 (France); Petr Kuzel, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10227-32]

16:30: **Detection of terahertz radiation in metamaterials: giant plasmonic ratchet effect**, Sergey Rudin, Greg Rupper, U.S. Army Research Lab. (United States); Valentin Kachorovski, Ioffe Institute (Russian Federation); Michael S. Shur, Rensselaer Polytechnic Institute (United States) . . . . . [10227-33]

16:50: **Deposition of organic molecules on gold nanoantennas for sensing**, Jharna Paul, Univ of Glasgow (United Kingdom); Scott G McMeekin, Caledonian University (United Kingdom); Richard M De La Rue, Nigel P Johnson, Univ of Glasgow (United Kingdom) . . . . . [10227-34]

17:10: **Polarization-controlled high-efficiency color filters using Si nanoantennas**, Vishal Vashistha, Adam Mickiewicz Univ. (Poland); Andriy E. Serebryannikov, Adam Michiewicz Univ. (Poland); Maciej Krawczyk, Adam Mickiewicz Univ. (Poland) . . . . . [10227-35]

17:30: **The coupled NCs based metamaterial for ultra-broadband perfect absorber**, Soo-Jung Kim, Heon Lee, Korea Univ. (Korea, Republic of); Sung Hoon Hong, ETRI (Korea, Republic of) . . . . . [10227-39]

CONFERENCE 10228

LOCATION: LEO

Monday–Tuesday 24–25 April 2017 • Proceedings of SPIE Vol. 10228

Nonlinear Optics and Applications

Conference Chairs: **Mario Bertolotti,** Univ. degli Studi di Roma La Sapienza (Italy); **Joseph W. Haus,** Univ. of Dayton (United States); **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. (United States); **Anatoly V. Zayats,** King's College London (United Kingdom)

MONDAY 24 APRIL

OPENING REMARKS

ROOM: LEO . . . . . 8:55 TO 9:00

SESSION 1

ROOM: LEO . . . . . MON 9:00 TO 10:30

Nonlinear Materials

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

9:00: **Integration of nonlinear and switchable metamaterials with fiber technology** *(Invited Paper)*, Nikolay I. Zheludev, Optoelectronics Research Ctr. (United Kingdom) and Nanyang Technological Univ. (Singapore); Eric Plum, Optoelectronics Research Ctr. (United Kingdom); Kevin F. MacDonald, Univ. of Southampton (United Kingdom) . . . . . [10228-1]

9:30: **Co-sputtered amorphous Ge-Sb-Se thin films: optical properties and structure**, Tomás Halenkovič, Petr Němec, Jan Gutwirth, Emeline Baudet, Univ. Pardubice (Czech Republic); Marion Specht, Yann Gueguen, Jean-Christophe Sangleboeuf, Virginie Nazabal, Université de Rennes 1 (France) . . . . . [10228-2]

9:50: **Determination of Kerr and two-photon absorption coefficients of indandione derivatives**, Arturs Bundulis, Igors Mihailovs, Edgars Nitiss, Institute of Solid State Physics, Univ. of Latvia (Latvia); Janis Busenbergs, Institute of Solid State Physics (Latvia); Martins A. Rutkis, Institute of Solid State Physics, Univ. of Latvia (Latvia) . . . . . [10228-3]

10:10: **Investigating nonlinear distortion in the photopolymer materials**, Ra'ed A. Malallah, Inbarasan Muniraj, Derek J. Cassidy, Liang Zhao, James Ryle, John Sheridan, Univ. College Dublin (Ireland) . . . . . [10228-4]

Coffee Break . . . . . Mon 10:30 to 11:00

SESSION 2

ROOM: LEO . . . . . MON 11:00 TO 12:50

Nonlinearities at Femtosecond I

Session Chair: **Eric Plum,** Optoelectronics Research Ctr. (United Kingdom)

11:00: **Nonlinear optics in the mid-infrared: new filamentation physics** *(Invited Paper)*, Dmitri A. Sidorov-Biryukov, M.V. Lomonosov Moscow SU (Russian Federation); Alexander V. Mitrofanov, P.N. Lebedev Physical Institute (Russian Federation); A. A. Voronin, National Research Tomsk Polytechnic Univ. (Russian Federation); Alexandr Lanin, M.V. Lomonosov Moscow SU (Russian Federation); Audrius Pugzlys, Technische Univ. Wien (Austria); Eugene V. Stepanov, A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation); Andrei B. Fedotov, M.V. Lomonosov Moscow SU (Russian Federation); Andrius Baltuska, Technische Univ. Wien (Austria); Alexei M. Zheltikov, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10228-5]

11:30: **Nonlinearly enhanced linear absorption under filamentation in mid-infrared**, Daniil Shipilo, Nicolay Panov, Vera Andreeva, Olga G. Kosareva, Alexander M. Saletski, M.V. Lomonosov Moscow SU (Russian Federation); Huai-Liang Xu, Jilin Univ. (China); Pavel Polynkin, The Univ. of Arizona (United States) . . . . . [10228-6]

11:50: **Optical harmonic generation enhanced due to ultrafast intensity fluctuations**, Denis A. Kopylov, M.V. Lomonosov Moscow SU (Russian Federation); Kirill Y. Spasibko, Max-Planck-Institut für die Physik des Lichts (Germany) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Viktor L. Krutyanskiy, Tatiana V. Murzina, M.V. Lomonosov Moscow SU (Russian Federation); Gerd Leuchs, Max-Planck-Institut für die Physik des Lichts (Germany) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Maria V. Chekhova, Max-Planck-Institut für die Physik des Lichts (Germany) and M.V. Lomonosov Moscow SU (Germany) and M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10228-7]

12:10: **Forming of supercontinuum in the visible upon filamentation of a femtosecond pulse in the air**, Valery F. Losev, Nikolay G. Ivanov, Vladimir E. Prokopiev, Kirill A. Sitnik, Dmitry Lubenko Sr., Institute of High Current Electronics (Russian Federation) . . . . . [10228-8]

12:30: **Self-trapping of intensities changing under SHG and SWG for high intensive femtosecond laser pulse**, Vyacheslav A. Trofimov, Dmitry M. Kharitonov, Mikhail V. Fedotov, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10228-9]

Lunch Break . . . . . Mon 12:50 to 14:00

SESSION 3

ROOM: LEO . . . . . MON 14:00 TO 15:40

Nonlinearities at Femtosecond II

Session Chair: **Dmitri A. Sidorov-Biryukov,** M.V. Lomonosov Moscow SU (Russian Federation)

14:00: **Analysis of THG modes for femtosecond laser pulse**, Vyacheslav A. Trofimov, Pavel S. Sidorov, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10228-10]

14:20: **Nonlinear effects during interaction of femtosecond doughnut-shaped laser pulses with glasses: overcoming intensity clumping**, Nadezhda M. Bulgakova, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Thermophysics, SB RAS (Russian Federation); Vladimir P. Zhukov, Institute of Computational Technologies, SB RAS (Russian Federation) and Novosibirsk State Technical Univ., RAS (Russian Federation); Mikhail P. Fedoruk, Institute of Computational Technologies SB RAS (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Alexander M. Rubenchik, Lawrence Livermore National Lab. (United States) . . . . . [10228-11]

14:40: **Asymmetry of light absorption upon propagation of focused femtosecond laser pulses with spatiotemporal coupling through glass materials**, Vladimir P. Zhukov, Institute of Computational Technologies, SB RAS (Russian Federation) and Novosibirsk State Technical Univ. (Russian Federation); Nadezhda M. Bulgakova, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Thermophysics, SB RAS (Russian Federation); Yagiz Morova, Selcuk Akturk, Istanbul Technical Univ. (Turkey) . . . . . [10228-12]

15:00: **Modeling the ultrafast electron dynamics upon femtosecond laser-irradiation silicon: transient plasmonics, current generation, and subsequent matter modification**, Thibault J. Y. Derrien, HiLASE Ctr. (Czech Republic); Nadezhda M. Bulgakova, HiLASE Ctr. (Czech Republic) and Institute of Thermophysics, SB RAS (Russian Federation) . . . . . [10228-13]

15:20: **Spectral narrowing in gases using femtosecond laser pulses**, Tanvi Karpate, Manipal Univ. (India); Aditya K. Dharmadhikari, Tata Institute of Fundamental Research (India); Jayashree A. Dharmadhikari, Tata Institute of Fundamental Research (India) and Manipal Univ. (India); Deepak Mathur, Tata Institute of Fundamental Research (India) . . . . . [10228-14]

Coffee Break . . . . . Mon 15:40 to 16:00

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 4

ROOM: LEO . . . . . TUE 10:10 TO 12:40

Nano-optics and Plasmonics

10:10: **Multimodal nonlinear nanophotonics** *(Invited Paper)*, Yuri S. Kivshar, Australian National Univ. (Australia) . . . . . [10228-15]

10:40: **Highly directional second-harmonic generation from AlGaAs nanoparticles**, Maria del Rocio Camacho Morales, Mohsen Rahmani, Sergey S. Kruk, Lei Wang, The Australian National Univ. (Australia); Lei Xu, The Australian National Univ. (Australia) and Nankai Univ. (China); Daria A. Smirnova, Alexander S. Solntsev, Andrey E. Miroshnichenko, Hark Hoe Tan, Fouad Karouta, Shagufta Naureen, Kaushal D. Vora, The Australian National Univ. (Australia); Luca Carletti, Costantino De Angelis, Univ. degli Studi di Brescia (Italy); Chennupati Jagadish, Yuri S. Kivshar, Dragomir N. Neshev, The Australian National Univ. (Australia). . . . . [10228-16]

11:00: **Low power symmetry breaking and improved figure of merit for metamaterial nonlinear plasmonic waveguides**, Gilles Renversez, Mahmoud M. R. Elsawy, Institut Fresnel (France) and Aix-Marseille Univ. (France)[10228-17]

11:20: **Nonlinear optical effects in organic microstructures**, Vladimir B. Novikov, Evgeniy A. Mamonov, Irina A. Kolmychek, Denis A. Kopylov, Tatiana V. Murzina, M.V. Lomonosov Moscow SU (Russian Federation); Dasari Venkatakrishnarao, YSLV Narayana, Rajadurai Chandrasekar, Univ. of Hyderabad (India) . . . . . [10228-18]

11:40: **All-optically tunable EIT-like dielectric metasurfaces hybridized with thin-phase change material layers**, Emilija Petronijevic, Concita Sibilia, Sapienza Univ. di Roma (Italy). . . . . [10228-19]

12:00: **Second harmonic generation on self-assembled GaAs/Au nanowires with thickness gradient**, Alessandro Belardini, Grigore Leahu, Marco Centini, Roberto Li Voti, Eugenio Fazio, Concita Sibilia, Sapienza Univ. di Roma (Italy); Diego Repetto, Francesco Buatier de Mongeot, Univ. degli Studi di Genova (Italy) . . . . . [10228-20]

12:20: **Ultrafast hyperspectral absorption spectroscopy of 2D crystals**, Felice Gesuele, Carlo Altucci, Maddalena Pasquale, Univ. degli Studi di Napoli Federico II (Italy) . . . . . [10228-21]

Lunch/Exhibition Break . . . . . Tue 12:40 to 13:40

SESSION 5

ROOM: LEO . . . . . TUE 13:40 TO 15:00

Fibres

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

13:40: **Thermal optical nonlinearity in photonic crystal fibers filled with nematic liquid crystals doped with gold nanoparticles**, Piotr Lesiak, Daniel Budaszewski, Karolina Bednarska, Piotr Sobotka M.D., Milosz S. Chychlowski, Tomasz R. Woliński, Warsaw Univ. of Technology (Poland). . . . . [10228-22]

14:20: **Bright-dark rogue wave in mode-locked fibre laser**, Hani Kbashi, Aston Univ. (United Kingdom); Stanislav A. Kolpakov, Amós Martinez, Aston Institute for Photonics Technologies, Aston Univ. (United Kingdom); Chengbo Mou, Shanghai Univ. (China); Sergey V. Sergeyev, Aston Institute for Photonics Technologies, Aston Univ. (United Kingdom) . . . . . [10228-24]

14:40: **Rogue waves driven by polarization instabilities in a long ring fiber oscillator**, Stanislav A. Kolpakov, Hani Kbashi, Sergeye V. Sergeyev, Aston Univ. (United Kingdom) . . . . . [10228-25]

Coffee Break . . . . . Tue 15:00 to 15:30

SESSION 6

ROOM: LEO . . . . . TUE 15:30 TO 17:30

Applications

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

15:30: **Photoinduced $\chi^{(2)}$ for second harmonic generation in stoichiometric silicon nitride waveguides**, Marco A. G. Porcel, Univ. Twente (Netherlands); Jörn P. Epping, Marcel Hoekman, Arne Leinse, René G. Heideman, LioniX BV (Netherlands); Chris J. Lee II, Peter J. M. van der Slot, Klaus-Jochen Boller, Univ. Twente (Netherlands) . . . . . [10228-26]

15:50: **Implementation of stimulated Raman scattering microscopy for single cell analysis**, Annalisa D'Arco, Maria Antonietta Ferrara, Maurizio Indolfi, Vitaliano Tufano, Luigi Sirleto, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10228-27]

16:10: **Laser-induced periodic surface structure formation: investigation of the effect of nonlinear absorption of laser energy in different materials**, Yoann Levy, Thibault J. Y. Derrien, HiLASE Ctr. (Czech Republic); Nadezhda M. Bulgakova, HiLASE Ctr. (Czech Republic) and Institute of Thermophysics, SB RAS (Russian Federation); Evgeny L. Gurevich, Ruhr-Univ. Bochum (Germany); Tomás Mocek, HiLASE Ctr. (Czech Republic) . . . . . [10228-28]

16:30: **Parametric Raman anti-Stokes laser at 503 nm with phase-matched collinear beam interaction of orthogonally polarized Raman components in calcite under 532 nm 20 ps laser pumping**, Sergei Smetanin, A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation); Michal Jelínek Jr., Václav Kubeček, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10228-30]

16:50: **Numerical simulation and comparison of nonlinear self-focusing based on iteration and ray tracing**, Xiaotong Li, Weiwei Wang, Zhaofeng Cen, Zhejiang Univ. (China) . . . . . [10228-31]

17:10: **Graphene quantum dots with nitrogen-doped content dependence for highly efficient dual-modality photodynamic antimicrobial therapy and bioimaging**, Wen-Shuo Kuo, China Medical Univ. (Taiwan). . . . . [10228-32]

WEDNESDAY 26 APRIL

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

All-optical variablAll-optical variable-length packet router with contention resolution based on wavelength conversione-length packet router with contention resolution based on wavelength conversion, Rim Farhat, Amel Farhat, Ecole Supérieure des Communications de Tunis (Tunisia); Mourad Menif, SUP'COM (Tunisia) . . . . . [10228-33]

Significant improvement in the thermal annealing process of optical resonators, Patrice Salzenstein, FEMTO-ST (France) and Ctr. National de la Recherche Scientifique (France); Mikhail Zarubin, Navtelsat, Ltd. (Russian Federation) and FEMTO-ST, Ctr. National de la Recherche Scientifique (France) . . . . . [10228-34]

Multi-objective optimization of coupled device based on optical fiber with crystalline and integrated resonators, David Bassir, Guangzhou Industrial Technology Research Institute of Chinese Academy of Sciences (China) and Univ. de Technologie de Belfort-Montbéliard (France); Patrice Salzenstein, FEMTO-ST (France) and Ctr. National de la Recherche Scientifique (France) . . . . . [10228-35]

2W@318.6nm single-frequency cw UV laser system via single-pass SFG followed by cavity-enhanced SHG, Jieying Wang, Jiandong Bai, Jun He, Junmin Wang, Shanxi Univ. (China) . . . . . [10228-36]

Tunneling current emission spectrum of biased impurity in the presence of electron-phonon interaction, Vladimir N. Mantsevich, Natalya Maslova, M.V. Lomonosov Moscow SU (Russian Federation); Petr Arsevey, P.N. Lebedev Physical Institute (Russian Federation) . . . . . [10228-37]

Dynamic photonic crystals dimensionality tuning by laser beams polarization changing, Vladimir N. Mantsevich, Alexander M. Smirnov, Yana V. Valchuk, Yulia V. Stebakova, Ivan V. Tikhonov, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10228-38]

Interplay between convection and bistability in a pattern forming system, Nicolas Marsal, Lionel Weicker, Delphine Wolfersberger, Marc Sciamanna, CentraleSupélec (France) . . . . . [10228-39]

Conference 10228 continued

Smooth spectral broadening in single-mode fiber, Viktor Pajer, ELI-HU Nonprofit Kft. (Hungary); Ester Smygel, Benjamin Perseille, Ctr. Lasers Intenses et Applications (France); Jean-Christophe Delagnes, Eric Cormier, Ctr. Lasers Intenses et Applications, Univ. Bordeaux 1 (France) . . . . . [10228-40]

Photo-induced nonlinear absorption in carbon nanostructures, Rimma S. Zatrudina, Vladislav Y. Gribkov, Volgograd State Univ. (Russian Federation) . . . . . [10228-41]

Poling dynamics of an EO active material using parallel-plate electrodes, Elza Linina, Edgars Nitiss, Martins A. Rutkis, Institute of Solid State Physics, Univ. of Latvia (Latvia) . . . . . [10228-42]

Measuring dispersion in nonlinear crystals beyond detectors' spectral range, Marta Misiaszek, Andrzej Gajewski, Piotr L. Kolenderski, Nicolaus Copernicus Univ. (Poland) . . . . . [10228-43]

Generation of intensive surface plasmon polariton pulses due to the induced modulation instability effect, Sergey Moiseev, Ulyanovsk State Univ. (Russian Federation) and Institute of Radio Engineering and Electronics (Russian Federation); Dmitry A. Korobko, Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation); Andrei Fotiadi, Ulyanovsk State Univ. (Russian Federation) and Univ. de Mons (Belgium) . . . . . [10228-44]

Generation of wide spectrum and pedestal-free pulse compression in highly nonlinear dispersion increasing fiber, Dmitry A. Korobko, Ulyanovsk State Univ. (Russian Federation); Andrei Fotiadi, Ulyanovsk State Univ. (Russian Federation) and Univ. of Mons (Belgium); Dmitrii A. Stoliarov, Ulyanovsk State Univ. (Russian Federation); Alex A. Sysoliatin, Ulyanovsk State Univ. (Russian Federation) and A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation); Igor O. Zolotovskii, Ulyanovsk State Univ. (Russian Federation) . . . . . [10228-45]

Modulation instability of wave packets propagating in inhomogeneous nonlinear fiber, Vicktor A. Lapin, Ulyanovsk State Univ. (Russian Federation); Andrei Fotiadi, Ulyanovsk State Univ. (Russian Federation) and Univ. de Mons (Belgium) . . . . . [10228-46]

The impact of dispersion of the ultrashort light pulses on the THz radiation formation from asymmetric air plasmas, Roland Flender, Univ. of Szeged (Hungary); Krisztina Sárosi, ELI-ALPS Research Institute (Hungary); Ádám Börzsönyi, ELI-ALPS Research Institute (Hungary) and Univ. of Szeged (Hungary); Viktor Chikan, ELI-ALPS Research Institute (Hungary) and Kansas State Univ. (United States) . . . . . [10228-47]

Creation technique and nonlinear optics of dynamic one-dimensional photonic crystals in colloidal solution of quantum dots, Alexander M. Smirnov, Anastasiya D. Golinskaya, M.V. Lomonosov Moscow SU (Russian Federation); Kseniia V. Ezhova, ITMO Univ. (Russian Federation); Yuliya V. Stebakova, Maria V. Kozlova, Yana V. Valchuk, Vladimir N. Mantsevich, Vladimir S. Dneprovskii, M.V. Lomonosov Moscow SU (Russian Federation) . . [10228-48]

Automatic method for features extraction for images achieved by stimulated Raman scattering microscopy, Nadia Brancati, ICAR CNR (Italy); Annalisa D'Arco, Maria Antonietta Ferrara, Maurizio Indolfi, Vitaliano Tufano, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); Luigi Zeni, Seconda Univ. degli Studi di Napoli (Italy); Luigi Sirleto, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); Maria Frucci, ICAR CNR (Italy) . . . . . [10228-49]

TiN Nanoparticles for enhanced THz generation from LT-GaAs-based photoconductive antennas, Oday Abdulmunem, Khaleel Hassoon, Philipps-Univ. Marburg (Germany); Mahmoud Gaafar, Technische Univ. Hamburg-Harburg (Germany); Arash Rahimi-Iman, Jan C. Balzer, Philipps-Univ. Marburg (Germany) . . . . . [10228-50]

CONFERENCE 10229

LOCATION: STELLA

Monday - Tuesday 24–25 April 2017 • Proceedings of SPIE Vol. 10229

Photon Counting Applications

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

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

Valery Zwiller, KTH Royal Institute of Technology (Sweden)

MONDAY 24 APRIL

OPENING REMARKS

ROOM: STELLA . . . . . 10:30 TO 10:40

SESSION 1

ROOM: STELLA . . . . . MON 10:40 TO 12:30

Superconducting Photon Counting I

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

10:40: **Energy-efficient superconducting single flux quantum technology for integration with optical circuits** *(Invited Paper)*, Oleg A. Mukhanov, HYPRES, Inc. (United States) . . . . . [10229-1]

11:10: **Superconducting nanowire single-photon detectors: recent advances** *(Invited Paper)*, Xiaolong Hu, Chao Gu, Yuhao Cheng, Zuzeng Lin, Haiyi Liu, Qianli Liu, Hao Wu, Kun Yin, Xiaotian Zhu, Tianjin Univ. (China) . . . . . [10229-2]

11:40: **SNSPD with parallel nanowires** *(Invited Paper)*, Mikkel Ejrnaes, CNR-SPIN (Italy); Loredana Parlato, CNR-SPIN (Italy) and Univ. degli Studi di Napoli Federico II (Italy); Alessandro Gaggero, Francesco Mattioli, Roberto Leoni, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Giampiero Pepe, CNR-SPIN (Italy) and Univ. degli Studi di Napoli Federico II (Italy); Roberto Cristiano, CNR-SPIN (Italy) . . . . . [10229-3]

12:10: **Amplitude distributions of dark counts and photon counts in NbN superconducting single-photon detectors integrated with the HEMT readout.**, Wojtek Slysz, Institute of Electron Technology (Poland); Jennifer Kitaygorsky, Univ. of Rochester (United States) and Technische Univ. Delft (Netherlands); Raymond N. Schouten, Sander N. Dorenbos, Elisabeth Reiger, Valery Zwiller, Technische Univ. Delft (Netherlands); Roman Sobolewski, Univ. of Rochester (United States) . . . . . [10229-4]

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

SESSION 2

ROOM: STELLA . . . . . MON 14:00 TO 15:30

X-ray Photon Detection

Session Chair: **Ralph B. James,** Savannah River National Lab. (United States)

14:00: **Position-sensitive CdZnTe detectors with virtual Frisch-grid design for X- and gamma-ray sensors** *(Invited Paper)*, Aleksey E. Bolotnikov, Giuseppe S. Camarda, Brookhaven National Lab. (United States); Soren Chang, NYU Tandon School of Engineering (United States); Carly Cherches, Yonggang Cui, Rubi Gul, Gianluigi De Geronimo, Jack Fried, Brookhaven National Lab. (United States); Deidra Hodges, The Univ. of Texas at El Paso (United States); Anwar Hossain, Brookhaven National Lab. (United States); Anna McGilloway, The City College of New York (United States); Matthew Petryk, Binghamton Univ. (United States); Madisen Siegel, Brookhaven National Lab. (United States); Luis Ocampo, The Pennsylvania State Univ. (United States) and Brookhaven National Lab. (United States); Ge Yang, Emerson Vernon, Brookhaven National Lab. (United States); Vallery Vidal, The Univ. of Texas at El Paso (United States); Ralph B. James, Savannah River National Lab. (United States) . . . . . [10229-5]

14:30: **Achieving subpixel resolution with time-correlated transient signals in pixelated CdZnTe gamma-ray sensors using a focused laser beam**, Luis A. Ocampo Giraldo, The Pennsylvania State Univ. (United States); Aleksey E. Bolotnikov, Giuseppe S. Camarda, Yonggang Cui, Gianluigi De Geronimo, Rubi Gul, Jack Fried, Anwar Hossain, Brookhaven National Lab. (United States); Kenan Unlu, The Pennsylvania State Univ. (United States); Emerson Vernon, Ge Yang, Brookhaven National Lab. (United States); Ralph B. James, Savannah River National Lab. (United States) . . . . . [10229-6]

14:50: **(Cd,Mg)Te and (Cd,Mn)Te single crystals for time-resolved detection of x-ray photons**, John Serafini, Univ. of Rochester (United States); Sudhir B. Trivedi, Brimrose Corp. of America (United States); Dominika Kochanowska, Marta Witkowska-Baran, Andrzej Mycielski, The Institute of Physics (Poland); James P. Knauer, Roman Sobolewski, Univ. of Rochester (United States) . . . . . [10229-7]

15:10: **Correlation between electrical field distribution and defect levels of CdZnTe and CdZnTeSe radiation detectors**, Ge Yang, Aleksey E. Bolotnikov, Yonggang Cui, Giuseppe S. Camarda, Anwar Hossain, Utpal N. Roy, Brookhaven National Lab. (United States); Ralph B. James, Savannah River National Lab. (United States). . . . . [10229-8]

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

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 3

ROOM: STELLA . . . . . TUE 10:10 TO 12:00

Solid State Photon Counting and Its Applications I

Session Chair: **Ivan Prochazka,** Czech Technical Univ. in Prague (Czech Republic)

10:10: **High-performance integrated pick-up circuit for SPAD arrays in time-correlated single photon counting** *(Invited Paper)*, Giulia Acconcia, Alessandro Cominelli, Pietro Peronio, Ivan Rech, Massimo Ghioni, Politecnico di Milano (Italy) . . . . . [10229-9]

10:40: **High-efficiency dynamic routing architecture for the readout of single photon avalanche diode arrays in time-correlated measurements**, Alessandro Cominelli, Giulia Acconcia, Pietro Peronio, Ivan Rech, Massimo Ghioni, Politecnico di Milano (Italy) . . . . . [10229-10]

11:00: **Photon counting detector package optimized for laser time transfer with sub-picosecond limiting precision and stability**, Ivan Prochazka, Josef Blazej, Czech Technical Univ. in Prague (Czech Republic); Jan Kodet, Czech Technical Univ. in Prague (Czech Republic) and Technische Univ. München (Germany) . . . . . [10229-11]

11:20: **Development of a high-performance multichannel system for time-correlated single photon counting**, Pietro Peronio, Alessandro Cominelli, Giulia Acconcia, Ivan Rech, Massimo Ghioni, Politecnico di Milano (Italy). . . [10229-12]

11:40: **Development and characterization of an 8x8 SPAD-array module for gigacount per second applications**, Francesco Ceccarelli, Angelo Gulinatti, Ivan Labanca, Ivan Rech, Massimo Ghioni, Politecnico di Milano (Italy)[10229-13]

Lunch/Exhibition Break . . . . . Tue 12:00 to 13:20

SESSION 4

ROOM: STELLA . . . . . TUE 13:20 TO 15:00

Superconducting Photon Counting II

Session Chair: **Oleg A. Mukhanov,** HYPRES, Inc. (United States)

13:20: **High performance single photon detectors: where is the limit?** *(Invited Paper)*, Valery Zwiller, Technische Univ. Delft (Netherlands); Iman Esmaeil Zadeh, Gabriele Bulgarini, Niels Loos, Sergiy Dobrovolskiy, Single Quantum (Netherlands); Julien R. Zichi, KTH Royal Insitute of Technology (Sweden); Sander Dorenbos, Single Quantum (Netherlands) . . . . . [10229-14]

13:50: **Superconducting nanowire single photon detector for coherent detection of weak signals** *(Invited Paper)*, Gregory N. Goltsman, Mikhail Shcherbatenko, Yury V. Lobanov, Vadim V. Kovalyuk, Alexander A. Korneev, Moscow State Pedagogical Univ. (Russian Federation); Oliver Kahl, Karlsruher Institut für Technologie (Germany); Simone Ferrari, Wolfram H. P. Pernice, Karlsruher Institut für Technologie (Germany) and Fachhochschule Münster (Germany) . . . . . [10229-15]

14:20: **Superconducting order parameter fluctuations in NbN/NiCu and NbTiN/NiCu bilayer nanostripes for photon detection**, Wolfgang Lang, Bernd Aichner, Georg Zechner, Florian Jausner, Univ. Wien (Austria); Andrii Klimov, Institute of Electron Technology (Poland); Roman Puźniak, The Institute of Physics (Poland); Wojciech Słysz, Marek Guziewicz, Renata Kruszka, Maciej Węgrzecki, Institute of Electron Technology (Poland); Roman Sobolewski, Univ. of Rochester (United States) . . . . . [10229-16]

14:40: **Investigation of dark counts in innovative materials for superconducting nanowire single photon detector applications**, Loredana Parlato, CNR-SPIN (Italy) and Univ. degli Studi di Napoli Federico II (Italy); Mikkel Ejrnaes, CNR-SPIN (Italy); Riccardo Arpaia, Chalmers Univ. of Technology (Sweden); U. Nasti, Glasgow University (United Kingdom); Tohru Taino, Saitama Univ. (Japan); Thilo Bauch, Chalmers Univ. of Technology (Sweden); Hiroaki Myoren, Saitama Univ. (Japan); R. Sobolewski, Rochester University (United States); Francesco Tafuri, Univ. degli Studi di Napoli Federico II (Italy) and CNR-SPIN (Italy); Floriana Lombardi, Chalmers Univ. of Technology (Sweden); Roberto Cristiano, CNR-SPIN (Italy); Giampero P. Pepe, Istituto SPIN - CNR (Italy) and Univ. degli Studi di Napoli Federico II (Italy) . . . . . [10229-17]

Coffee Break . . . . . Tue 15:00 to 15:30

SESSION 5

ROOM: STELLA . . . . . TUE 15:30 TO 17:20

Solid State Photon Counting and Its Applications II

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

15:30: **Satellite laser ranging in the near-infrared regime** *(Invited Paper)*, Johann Eckl, Bundesamt für Kartographie und Geodäsie (Germany); K. Ulrich Schreiber, Technische Univ. München (Germany); Torben Schüler, Bundesamt für Kartographie und Geodäsie (Germany) . . . . . [10229-18]

16:00: **Satellite and Lunar laser ranging in infrared**, Clement Courde, Jean-Marie Torre, Observatoire de la Côte d'Azur (France). . . . . [10229-19]

16:20: **Evaluation of performance of silicon photomultipliers in lidar applications**, Sergey L. Vinogradov, PN Lebedev Physical Institute (Russian Federation) . . . . . [10229-20]

16:40: **Quantum state characterization by photon-number-resolving detectors**, Maria Bondani, Consiglio Nazionale delle Ricerche (Italy); Alessia Allevi, Univ. degli Studi dell'Insubria (Italy) . . . . . [10229-21]

17:00: **Ultrahigh optical responsivity of semiconducting asymmetric nanochannel diodes for photon detection**, Roman Sobolewski, Yunus E. Akbas, Gary W. Wicks, Univ. of Rochester (United States); Tomas Plecenik, Pawel Durina, Andrej Plecenik, Comenius Univ. in Bratislava (Slovakia) . . . . . [10229-22]

WEDNESDAY 26 APRIL

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Route to high-energy dissipative soliton resonance pulse in a dual amplifier figure-of-eight fiber laser, Mohamed Salhi, Georges Semaan, Univ. d'Angers (France); Fatma Ben Braham, Univ. d'Angers (France) and Univ. of Carthage (Tunisia); Jorel Fourmont, Univ. d'Angers (France); Faouzi Bahloul, Univ. of Carthage (Tunisia); François Sanchez, Univ. d'Angers (France) . . . . . [10228-23]

An ultra-fast thermoelectric sensor for single-photon detection in a wide range of the electromagnetic spectrum, Astghik A. Kuzanyan, Armen S. Kuzanyan, Vahan R. Nikoghosyan, Institute for Physical Research (Armenia) . . . . . [10229-24]

Tracks detection from high-orbit space objects, Yury P. Shumilov, V. G. Vygon, Evgeniy A. Grishin, Victor D. Shargorodskii, A. O. Konoplev, O. P. Semichev, Precision Systems and Instruments Corp. (Russian Federation) . . . . . [10229-25]

Short-range energy budget simulator of single photon lidar demonstrator, Mark Murtazin, Josef Blazej, Ivan Prochazka, Czech Technical Univ. in Prague (Czech Republic); Sergey M. Pershin, A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation) . . . . . [10229-26]

Time transfer capability of standard small form factor pluggable laser modules based on photon counting approach, Pavel Trojanek, Ivan Prochazka, Josef Blazej, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10229-27]

Authentication performance of the double-random-phase-encoding method with photon counting technique, Samaneh Gholami, Inkyu Moon, Keyvan Jaferzadeh, Chosun Univ. (Korea, Republic of) . . . . . [10229-23]

Front-end ASIC for virtual Frisch-grid cadmium zinc telluride detectors, Emerson Vernon, Gianluigi De Geronimo, Aleksey E. Bolotnikov, Jack Fried, Kim Ackley, Brookhaven National Lab. (United States) . . . . . [10229-28]

CONFERENCE 10230

LOCATION: QUADRANT

Thursday 27–27 April 2017 • Proceedings of SPIE Vol. 10230

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,** Palacky Univ. Olomouc (Czech Republic); **Jens S. Eisert,** Freie Univ. Berlin (Germany); **Alexander I. Lvovsky,** Univ. of Calgary (Canada); **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)

THURSDAY 27 APRIL

OPENING REMARKS

ROOM: QUADRANT . . . . . 8:45 TO 8:50

SESSION 1

ROOM: QUADRANT . . . . . THU 8:50 TO 10:30

Quantum Communication Systems and Components

Session Chair: **Konrad Banaszek,** Univ. of Warsaw (Poland)

8:50: **Recent experimental progress towards global quantum communication** *(Invited Paper)*, Qiang Zhang, USTC (China) . . . . . [10230-1]

9:20: **Quantum relays using semiconductor entangled light sources** *(Invited Paper)*, Jan Huwer, Toshiba Research Europe Ltd (United Kingdom); Martin Felle, Toshiba Research Europe Ltd (United Kingdom) and Electrical Division, Department of Engineering, University of Cambridge (United Kingdom); Mark Stevenson, Joanna Skiba-Szymanska, Martin B. Ward, Toshiba Research Europe Ltd (United Kingdom); Ian Farrer, Cavendish Laboratory, University of Cambridge (United Kingdom); Richard V. Penty, Electrical Division, Department of Engineering, University of Cambridge (United Kingdom); David A. Ritchie, Cavendish Laboratory, University of Cambridge (United Kingdom); Andrew J. Shields, Toshiba Research Europe Ltd (United Kingdom) . . . . . [10230-2]

9:50: **Spectroscopy of non-interfering photons through nonlinear integrated optics Mach-Zehnder interferometer**, Marco Chiarini, Gian Giuseppe Bentini, Agostino Desalvo, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10230-3]

10:10: **Reducing detection noise of a photon pair in a dispersive medium by controlling its spectral entanglement**, Mikolaj Lasota, Karolina Sedziak, Piotr L. Kolenderski, Nicolaus Copernicus Univ. (Poland). . . . . [10230-4]

Coffee Break . . . . . Thu 10:30 to 11:00

SESSION 2

ROOM: QUADRANT . . . . . THU 11:00 TO 12:40

Quantum Communication Protocols

Session Chair: **Jan Huwer,** Toshiba Research Ltd. (United Kingdom)

11:00: **Quantum digital signatures in optical fiber networks** *(Invited Paper)*, Robert J. Collins, Ross J. Donaldson, Ryan Amiri, Erika Andersson, Heriot-Watt Univ. (United Kingdom); Mikio Fujiwara, Masahiro Takeoka, Masahide Sasaki, National Institute of Information and Communications Technology (Japan); Gerald S. Buller, Heriot-Watt Univ. (United Kingdom) . . . . . [10230-5]

11:30: **Device-independent quantum key distribution with single-photon sources** *(Invited Paper)*, Alejandro Mattar, Dani Cavalcanti, Jan Kolodynski, ICFO - Institut de Ciències Fotòniques (Spain); Paul Skrzypczyk, Univ. of Bristol (United Kingdom); Antonio Acin, ICFO - Institut de Ciències Fotòniques (Spain); Konrad Banaszek, Univ. of Warsaw (Poland) . . . . . [10230-6]

12:00: **High fidelity spin-orbit transduction of an entangled photonic qubit in vortex fibers**, Brian T. Kirby, Michael Brodsky, U.S. Army Research Lab. (United States); Nenad Bozinovic, Boston Univ. (United States) and Berkeley Lights, Inc. (United States); Siddharth Ramachandran, Boston Univ. (United States)[10230-7]

12:20: **Quantum fingerprinting without a shared phase reference**, Michal Lipka, Michal Jachura, Marcin Jarzyna, Konrad Banaszek, Univ. of Warsaw (Poland) . . . . . [10230-9]

Lunch Break . . . . . Thu 12:40 to 13:40

SESSION 3

ROOM: QUADRANT . . . . . THU 13:40 TO 15:00

Quantum Technologies with Atomic and Solid State Systems

Session Chair: **Jan Kolodynski,** Univ. of Warsaw (Poland)

13:40: **Violation of Bell inequalities in a many-body system of massive particles** *(Invited Paper)*, Tomasz Wasak, Univ. of Warsaw (Poland); Augusto Smerzi, Univ. degli Studi di Trento (Italy); Jan Chwedenczuk, Univ. of Warsaw (Poland) . . . . . [10230-14]

14:10: **Highly-stable optical frequency generation based on laser cooled and trapped ions** *(Invited Paper)*, Ondrej Cip, Minh Tuan Pham, Adam Lešundák, Václav Hucl, Martin Cizek, Petr Jedlička, Jan Hrabina, Simon Rerucha, Josef Lazar, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic); Petr Obšil, Palacký Univ. Olomouc (Czech Republic); Radim Filip, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic) and Palacký Univ. Olomouc (Czech Republic); Lukáš Slodička, Palacký Univ. Olomouc (Czech Republic) . . . . . [10230-10]

14:40: **Dynamics of entanglement near periodic plasmonic nanostructures**, Nikos Iliopoulos, Andreas F. Terzis, Univ. of Patras (Greece); Vassilios Yannopapas, National Technical Univ. of Athens (Greece); Emmanuel Paspalakis, Univ. of Patras (Greece). . . . . [10230-11]

CONFERENCE 10231

LOCATION: AQUARIUS

Monday - Thursday 24–27 April 2017 • Proceedings of SPIE Vol. 10231

Optical Sensors

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

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); **Stefania Campopiano,** Univ. degli Studi di Napoli Parthenope (Italy); **Artur Dybko,** Warsaw Univ. of Technology (Poland); **Günter G. Gauglitz,** Eberhard Karls Univ. Tübingen (Germany); **Pedro Jorge,** INESC Porto (Portugal); **Aleksandra Lobnik,** Univ. of Maribor (Slovenia); **Ramaier Narayanaswamy,** The Univ. of Manchester (United Kingdom); **Claudia Preininger,** AIT Austrian Institute of Technology GmbH (Austria); **Terro Soukka,** Univ. of Turku (Finland); **Reinhardt Willsch,** Institut für Photonische Technologien e.V. (Germany)

MONDAY 24 APRIL

OPENING REMARKS

ROOM: AQUARIUS . . . . . .9:15 TO 9:20

SESSION 1

ROOM: AQUARIUS . . . . . MON 9:20 TO 10:30

Raman Spectroscopy

9:20: **Tip-enhanced Raman spectroscopy for nanoscale chemical analysis and imaging** *(Invited Paper)*, Renato Zenobi, ETH Zürich (Switzerland) [10231-1]

9:50: **SERS substrates for in-situ biosensing**, Priyamvada Venugopalan, Austrian Institute of Technology GmbH (Austria); Nestor Quilis, Dostalek Jakub, Knoll Wolfgang, AIT Austrian Institute of Technology GmbH (Austria) . . [10231-2]

10:10: **SERS investigations and electrical recording of neuronal networks with three-dimensional plasmonic nanoantennas**, Francesco De Angelis, Istituto Italiano di Tecnologia (Italy) . . . . . [10231-3]

Coffee Break . . . . . .Mon 10:30 to 11:00

SESSION 2

ROOM: AQUARIUS . . . . . .MON 11:00 TO 12:30

Plasmonic Sensing I

11:00: **Parallelization of single nanoparticle biosensors** *(Invited Paper)*, Wolfgang Fritzsche, David Zopf, Jacqueline Jatschka, André Dathe, Andrea Csaki, Matthias Thiele, Gabriele Schmidl, Guangrui Li, Ondrej Stranik, Sophie Thamm, Leibniz-Institut für Photonische Technologien e.V. (Germany) . [10231-4]

11:30: **Silicon-based high-index contrast sensing surface**, Muhammad Umar Khan, John Justice, Pierre P. Lovera, Brian Corbett, Tyndall National Institute (Ireland) . . . . . [10231-5]

11:50: **Plasmonically enhanced fluorescence biosensor with aptamer ligand**, Khulan Sergelen, Daria Kotlarek, Jakub Dostálek, AIT Austrian Institute of Technology GmbH (Austria) . . . . . [10231-6]

12:10: **Wide-field surface plasmon microscopy of nano- and microparticles: features, benchmarking, limitations, and bioanalytical applications**, Shavkat Nizamov, Vitali Scherbahn, Vladimir M. Mirsky, Brandenburgische Technische Univ. Cottbus (Germany) . . . . . [10231-7]

Lunch Break . . . . . .Mon 12:30 to 13:50

SESSION 3

ROOM: AQUARIUS . . . . . .MON 13:50 TO 15:30

Plasmonic Sensing II

13:50: **Nanostructure-enhanced surface plasmon resonance imaging**, Barbora Špašková, Nicholas Scott Lynn Jr., Jiří Slabý, Markéta Bocková, Jirí Homola, Institute of Photonics and Electronics (Czech Republic) . . . . . [10231-8]

14:10: **Fabrication of plasmonic nanopore for next generation nanobio sensor device**, Seong Soo Choi, Sun Moon Univ. (Korea, Republic of) and Sungkyunkwan Univ. (Korea, Republic of); Myoung Jin Park, Chul Hee Han, Sae-Joong Oh, Sun Moon Univ. (Korea, Republic of); Yong-Sang Kim, Sungkyunkwan Univ. (Korea, Republic of); Doo Jae Park, Hallym Univ. (Korea, Republic of); Nam Kyou Park, Seoul National Univ. (Korea, Republic of); Soo Bong Choi, Inchon National University (Korea, Republic of) . . . . . [10231-9]

14:30: **Au-based thin film metallic glasses for plasmonic sensor applications**, Cheng Wang, Li-Wei Nien, Yi-Chen Lai, Hsin-Chia Ho, Chun-Hway Hsueh, National Taiwan Univ. (Taiwan) . . . . . [10231-10]

14:50: **Investigation of plasmonic transmission in UT shaped graphene arrays**, Yasa Eksioglu Ozok, Istanbul Kemerburgaz Univ. (Turkey); Arif E. Cetin, Massachusetts Institute of Technology (United States) . . . . . [10231-11]

15:10: **Control of plasmonic properties in thermally oxidized gallium nanoparticles for biosensing**, Sergio Catalán Gómez, Andrés Redondo-Cubero, Univ. Autónoma de Madrid (Spain); Emilio Nogales Díaz, Univ. Complutense de Madrid (Spain); Luis Vázquez Burgos, Javier Palomares, Instituto de Ciencia de Materiales de Madrid (Spain); José Luis Pau, Univ. Autónoma de Madrid (Spain). . . . . [10231-12]

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

PLENARY SESSION I

ROOM: NADIR . . . . . .MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . .TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:20

SESSION 4

ROOM: AQUARIUS . . . . . TUE 10:20 TO 12:00

Components, Subsystems, Data Processing I

10:20: **A new concept for noninvasive optical sensing: random lasing**, Federico Tommasi, Emilio Ignesti, Lorenzo Fini, Fabrizio Martelli, Stefano Cavalieri, Univ. degli Studi di Firenze (Italy) . . . . . [10231-13]

10:40: **Use of VLC for indoors navigation with RGB LEDs and a-SiC:H photodetector**, Paula Louro, Instituto Superior de Engenharia de Lisboa (Portugal) and Ctr. of Technology and Systems, UNINOVA (Portugal); J. Costa, Manuel Augusto Vieira, Manuela Vieira, Instituto Superior de Engenharia de Lisboa (Portugal) and Ctr. of Technology and Systems, UNINOVA (Portugal); Y. Vygranenko, Instituto Superior de Engenharia de Lisboa (Portugal). . . [10231-14]

11:00: **Coupled data transmission and indoor positioning by using transmitting trichromatic white LEDs and a SiC optical MUX/DEMUX mobile receiver**, Manuela Vieira, Instituto Superior de Engenharia de Lisboa (Portugal); Manuel Augusto Vieira, Ctr. of Technology and Systems, UNINOVA (Portugal); Pedro Vieira, Instituto de Telecomunicações, Instituto Superior Técnico (Portugal); Paula Louro, Ctr. of Technology and Systems, UNINOVA (Portugal) . . . . . [10231-15]

11:20: **Interrogation of super-structured FBG sensors based on discrete prolate spheroidal sequences**, Cristian Andres Triana Infante, Univ. Politècnica de València (Spain) and Univ. Nacional de Colombia (Colombia); Daniel Pastor, Univ. Politècnica de València (Spain) . . . . . [10231-16]

11:40: **Smart image selection algorithm in analysis plane of the optical-electronic angle measuring sensor**, Anton A. Nogin, Igor A. Konyakhin, ITMO Univ. (Russian Federation). . . . . [10231-17]

Lunch/Exhibition Break . . . . . Tue 12:00 to 13:40

SESSION 5

ROOM: AQUARIUS . . . . . TUE 13:40 TO 15:00

Components, Subsystems, Data Processing II

13:40: **GeSn/Ge quantum well photodetectors for short-wave infrared photodetection: experiments and modeling**, Chia-Ho Tsai, Guo-En Chang, National Chung Cheng Univ. (Taiwan). . . . . [10231-18]

14:00: **Compressive spectroscopy by spectral modulation**, Yaniv Oiknine, Isaac Y. August, Adrian Stern, Ben-Gurion Univ. of the Negev (Israel). [10231-19]

14:20: **Speckle tracking approaches in speckle sensing**, Thomas O. H. Charrett, Cranfield Univ. (United Kingdom); Krzysztof Kotowski, Cranfield Univ. (United Kingdom) and Silesian Univ. of Technology (Poland); Ralph P. Tatam, Cranfield Univ. (United Kingdom) . . . . . [10231-20]

14:40: **Laser imaging through turbid media via speckle correlation**, Guowei Li, Dayan Li, Guohai Situ, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences (China) . . . . . [10231-22]

WEDNESDAY 26 APRIL

SESSION 6

ROOM: AQUARIUS . . . . . WED 9:00 TO 10:20

Chemical Sensors I

9:00: **Analysis of mineral composition by infrared spectral imaging using quantum dot focal plane array sensor**, Chenhui Huang, Tomo Tanaka, NEC Corp. (Japan); Sota Kagami, NEC Corp. (Japan) and Institute for Nano Quantum Information Electronics, The Univ. of Tokyo (Japan); Yoshiki Ninomiya, National Institute of Advanced Industrial Science and Technology (Japan); Masahiro Kakuda, Institute for Nano Quantum Information Electronics, The Univ. of Tokyo (Japan); Katsuyuki Watanabe, Institute of Industrial Science, The Univ. of Tokyo (Japan); Sei Inoue, Kenji Nanba, NEC Corp. (Japan); Yuichi Igarashi, NEC Corp. (Japan) and Institute for Nano Quantum Information Electronics, The Univ. of Tokyo (Japan); Masahiro Tanomura, NEC Corp. (Japan); Tsuyoshi Yamamoto, Akinobu Shibuya, NEC Corp. (Japan) and Institute for Nano Quantum Information Electronics, The Univ. of Tokyo (Japan); Kentaro Nakahara, NEC Corp. (Japan); Shin-ichi Yorozu, NEC Corp. (Japan) and Institute for Nano Quantum Information Electronics, The Univ. of Tokyo (Japan); Yasuhiko Arakawa, Institute for Nano Quantum Information Electronics, The Univ. of Tokyo (Japan) and Institute of Industrial Science, The Univ. of Tokyo (Japan) [10231-23]

9:20: **Analysis of nanoparticles with an optical sensor based on carbon nanotubes**, Julia Stäb, Dominik Furin, Eberhard Karls Univ. Tübingen (Germany); Peter Fechner, Günther Proll, Biametrics GmbH (Germany); M. Laura Soriano Dotor, Celia Ruiz-Palomero, Miguel Valcárcel, Univ. de Córdoba (Spain); Günter Gauglitz, Eberhard Karls Univ. Tübingen (Germany). . . . . [10231-24]

9:40: **Oxygen sensing with an absolute optical sensor based on biluminescence**, Caterin Salas Redondo, Sebastian Reineke, TU Dresden (Germany) . . . . . [10231-25]

10:00: **Long-period grating sensor-based detection of kerosene for monitoring of water contamination: a novel approach**, Siddharth Kaushik, Central Scientific Instrumentation Organisation (India); Umesh K. Tiwari, Rajesh Rajesh, Central Scientific Instruments Organisation (India); Ashok K. Paul, DAV Univ. (India); Ravindra K. Sinha, Central Scientific Instruments Organisation (India). . . . . [10231-26]

Coffee Break . . . . . Wed 10:20 to 10:50

SESSION 7

ROOM: AQUARIUS . . . . . WED 10:50 TO 12:10

Chemical Sensors II

10:50: **Discrimination of trace nitroaromatics using linear discriminant analysis on aerosol jet printed fluorescent sensor arrays**, Nico Bolse, Karlsruher Institut für Technologie (Germany); Ralph Eckstein, Karlsruher Institut für Technologie (Germany) and InnovationLab (Germany); Martin Schend, Anne Habermehl, Karlsruher Institut für Technologie (Germany); Gerardo Hernandez-Sosa, Carsten Eschenbaum, Uli Lemmer, Karlsruher Institut für Technologie (Germany) and InnovationLab GmbH (Germany) . . . . . [10231-27]

11:10: **Infrared sensor for water pollution detection and monitoring**, Emeline Baudet, Univ. Pardubice (Czech Republic); Aldo Gutierrez-Arrovo, FOTON, UMR CNRS 6082, Enssat, University of Rennes 1 (France); Marion Bailleul, ISCR, UMR-CNRS 6226, Glass & Ceramics Lab, University of Rennes 1 (France); Emmanuel Rinnert, Ifremer, Laboratoire Détection, Capteurs et Mesures, Dpt. Recherches et Développements Technologiqu (France); Petr Nemec, Dpt. of Graphics Arts and Photophysics, Faculty of Chem. Techn., University of Pardubice (Czech Republic); Joel Charrier, Loic Bodiou, FOTON, UMR CNRS 6082, Enssat, University of Rennes 1 (France); Florent Colas, Chantal Compère, Ifremer, Laboratoire Détection, Capteurs et Mesures, Dpt. Recherches et Développements Technologiqu (France); Catherine Boussard, Bruno Bureau, ISCR, UMR-CNRS 6226, Glass & Ceramics Lab, University of Rennes 1 (France); Karine Michel, BRGM, Direction Eau, Environnement et Ecotechnologies, Unité Bio-Géochimie environnementale et qual (France); Virginie Nazabal, ISCR, UMR-CNRS 6226, Glass & Ceramics Lab, University of Rennes 1 (France) . [10231-28]

11:30: **A robust and reliable optical trace oxygen sensor**, Gary R. McDowell, A. Sheila Holmes-Smith, Mahesh Uttamlal, Glasgow Caledonian Univ. (United Kingdom); Craig Mitchell, Patrick H. Shannon, SST Sensing Ltd (United Kingdom) . . . . . [10231-29]

11:50: **Pocket size pH reader system using smart phone and fluorescent indicator array**, Raúl Gotor, Knut Rurack, Ashokummar Pichandi, Bundesanstalt für Materialforschung und -prüfung (Germany). . . . . [10231-30]

Lunch/Exhibition Break . . . . . Wed 12:10 to 13:30

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 8

ROOM: AQUARIUS . . . . . WED 15:40 TO 17:30

Physical Sensors

15:40: **Active optical remote sensing (AORS) sensors/instrumentations for NASA's future Earth science missions** *(Invited Paper)*, Upendra N. Singh, NASA Langley Research Ctr. (United States) . . . . . [10231-31]

16:10: **Monolithically integrated arrays of 3D microtubular vertical ring resonators on photonic waveguides for optofluidic applications**, Abbas Madani, Stefan M. Harazim, Vladimir Bolanos, IFW Dresden (Germany); Mortiz Kleinert, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Andreas Finn, TU Dresden (Germany); Ehsan Saei Gharehnaz, Libo Ma, Oliver G. Schmidt, IFW Dresden (Germany). . . . . [10231-32]

16:30: **Black silicon n-type photodiodes with high response over wide spectral range**, Mikko A. Juntunen, Ville Vähänissi, Päivikki Repo, Juha Heinonen, Timo Dönsberg, Hele I. Savin, Aalto Univ. (Finland) . . . . . [10231-33]

16:50: **Low-temperature oxidation in air of iron thin films monitored with long-period fiber gratings**, Luís Coelho, INESC Porto (Portugal); José Luís Campos Oliveira Santos, INESC TEC (Portugal) and Univ. do Porto (Portugal); Pedro Alberto da Silva Jorge, INESC TEC (Portugal); José Manuel Marques Martins de Almeida, INESC TEC (Portugal) and Univ. de Trás-os-Montes e Alto Douro (Portugal) . . . . . [10231-35]

17:10: **Surface plasmon resonance prism coupler for enhanced circular dichrosim/birefringence sensing**, Quoc-Hung Phan, Yu-Lung Lo, National Cheng Kung Univ. (Taiwan). . . . . [10231-36]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . .WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

The research of the possibility of the dispersion method sensitivity increase for the air tract vertical temperature gradient determination by analyzing the diffraction pattern, Ivan S. Nekrylov, ITMO Univ. (Russian Federation); Alexander N Timofeev, Maksim A Kleshchenok, Univ of ITMO (Russian Federation) . . . . . [10231-21]

Acoustic waves in tilted fiber Bragg gratings for sensing applications, Carlos A. F. Marques, Instituto de Telecomunicações (Portugal) and Univ. de Aveiro (Portugal); Nélia J. Alberto, Instituto de Telecomunicações (Portugal); Paulo Antunes, Instituto de Telecomunicações (Portugal) and Univ. de Aveiro (Portugal); Cátia J. Leitão, Univ. de Aveiro (Portugal); Fátima Fonseca Domingues, Instituto de Telecomunicações (Portugal) and Univ. de Aveiro (Portugal); João Lemos Pinto, Univ. de Aveiro (Portugal); Paulo S. André, Instituto de Telecomunicações (Portugal) . . . . . [10231-34]

Vacuum temperature field simulation and experiments of four-mode differential laser gyroscope, Xudong Yu, National Univ. of Defense Technology (China); Guangfeng Lu, College of Optoelectronic Science and Engineering, National Univ. of Defense Technology (China); Luo Hui, National Univ. of Defense Technology (China) . . . . . [10231-44]

Analysis of the Impact of the Deposition Optical Fibers on the Deformation Measurement with a Distributed System BOTDR, Jan Nedoma, Marcel Fajkus, VŠB-Technical Univ. of Ostrava (Czech Republic); Radek Martinek, VŠB Technical Univ of Ostrava (Czech Republic); Jan Jargus, Karel Witas, Vladimír Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic) . . . . . [10231-45]

Analysis of the detection materials as resonant pads for attaching the measuring arm of the interferometer when sensing mechanical vibrations, Jan Nedoma, Marcel Fajkus, VŠB-Technical Univ. of Ostrava (Czech Republic); Radek Martinek, Ondrej Zboril, VŠB Technical Univ of Ostrava (Czech Republic); Lukas Bednarek, VŠB-Technical Univ. of Ostrava (Czech Republic); Martin Novak, Karel Witas, VŠB Technical Univ of Ostrava (Czech Republic); Vladimír Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic) . . . . . [10231-46]

Analysis encapsulation of fiber Bragg gratings into polydimethylsiloxane for the needs of dynamic weighing, Marcel Fajkus, Jan Nedoma, VŠB-Technical Univ. of Ostrava (Czech Republic); Radek Martinek, VŠB Technical Univ of Ostrava (Czech Republic); Martin Novak, VŠB-Technical Univ. of Ostrava (Czech Republic); Jan Jargus, VŠB Technical Univ of Ostrava (Czech Republic); Vladimír Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic) . . . . . [10231-47]

Photovoltaic optical sensors for high-power conversion and information transmission, Viktor Emelyanov, Evgeny Filimonov, Svetlana Kozhuhovskaya, Maxim Z. Shvarts, Ioffe Institute (Russian Federation) . . . . . [10231-48]

Autocollimation sensor to control the angular deformation with increased measurement range, Aiganym Sakhariyanova, Igor A. Konyakhin, Renpu Li, ITMO Univ. (Russian Federation). . . . . [10231-49]

Rydberg atom-based RF field measurements: spectroscopy of cesium Rydberg atoms in strong radio-frequency fields, Jianming Zhao, Suotang Jia, Shanxi Univ. (China) . . . . . [10231-50]

Detection of trace amount of NO_2 gas using tunable blue laser diode, Abdulaziz Aljalal, Sameh Altanany, Khaled Gasmi, Watheq Al-Basheer, Morad Hamad, King Fahd Univ. of Petroleum & Minerals (Saudi Arabia) . . . . [10231-51]

A high resolution hand-held focused beam profiler, Jennyfer Zapata, Univ. Nacional Autónoma de México (Mexico); Jesús Garduño-Mejía, Martha Rosete-Aguilar, Gabriel Ascanio, Carlos J. Román-Moreno, Ctr. de Ciencias Aplicadas y Desarrollo Tecnológico (Mexico). . . . . [10231-53]

Simulation and research of the gamma-ray detectors based on CsI crystals and silicon photomultipliers, Galina E. Romanova, Andrey V. Radilov, ITMO Univ. (Russian Federation); Viktor M. Denisov, Flagman Geo Ltd (Russian Federation); Aleksander B. Titov, Peter the Great St.Petersburg Polytechnic Univ. (Russian Federation); Ilya O. Bokaty, ITMO Univ. (Russian Federation) . . . . . [10231-54]

Evaluating inner surface roughness of inline/picoliter fiber optic spectrometer fabricated by an NUV femtosecond laser drilling, Masahiko Shiraishi, Shoichi Kubodera, Kazuhiro Watanabe, Soka Univ. (Japan). [10231-55]

Autocollimation sensor for measuring the angular deformations with the pyramidal prismatic reflector, Phong Hoang, Igor A. Konyakhin, ITMO Univ. (Russian Federation) . . . . . [10231-56]

Multiagent robotic systems' ambient light sensor, Radda A. Iureva, Oleg S. Maslennikov, Igor I. Komarov, ITMO Univ. (Russian Federation) . . . . . [10231-57]

Optical choppers with rotational elements: modeling, design and prototypes, Virgil-Florin Duma, Aurel Vlaicu Univ. of Arad (Romania) and Politehnica Univ. of Timisoara (Romania); Dorin Demian, Octavian Cira, Aurel Vlaicu Univ. of Arad (Romania) . . . . . [10231-58]

Optical Signal Processing for a Smart Vehicle Lighting System using a-SiCH Technology, Manuel Augusto Vieira, Ctr. of Technology and Systems, UNINOVA (Portugal); Manuela Vieira, Instituto Superior de Engenharia de Lisboa (Portugal); Pedro Vieira, Instituto de Telecomunicações, Instituto Superior Técnico (Portugal); Paula Louro, Ctr. of Technology and Systems, UNINOVA (Portugal) . . . . . [10231-59]

Refractive index sensor based on multimode plastic optical fiber with long period grating, Chuanxin Teng, Fangda Yu, Yue Ding, Jie Zheng, Jilin Univ. (China) . . . . . [10231-60]

Novel techniques for optical sensor using single core multilayer structures for electric field detection, Amir R. Ali, Mohamed A. Kamel, The German Univ. in Cairo (Egypt) . . . . . [10231-61]

Green upconversion fluorescence temperature sensor based on erbium-doped phosphor, Edwin Pun, City Univ. of Hong Kong (Hong Kong, China) . . . . . [10231-64]

Construction, laboratory test of the fiber optic rotational seismograph FOSREM for rotational seismology area of interest, Anna Kurzych, Leszek R. Jaroszewicz, Zbigniew Krajewski, Military Univ. of Technology (Poland); Jerzy K. Kowalski, m-Soft Sp. Z oo (Poland) . . . . . [10231-65]

CO_2 sensing at atmospheric pressure using fiber Fabry-Perot interferometer, Wenwen Ma, Yelu He, Shilei Shen, Yangfan Zhao, Ruohui Wang, Xueguang Qiao, Northwest Univ. (China). . . . . [10231-66]

Measuring the modulation-transfer function of radiation-tolerant machine-vision system using the sum of harmonic components of different frequency, Oleg A. Perezyabov, Nadezhda K. Maltceva, ITMO Univ. (Russian Federation); Aleksandr V. Ilinski, S.I. Vavilov State Optical Institute (Russian Federation) . . . . . [10231-67]

Nematic liquid crystal device based on biconical optical fiber taper, Joanna Moś, Leszek R. Jaroszewicz, Karol A. Stasiewicz, Katarzyna Garbat, Noureddine Bennis, Mariusz Florek, Military Univ. of Technology (Poland) . . . . . [10231-68]

Experimental study of laser-trimmed surface acoustic wave delay line topologies, Dmitry P. Lukyanov, Sergey Y. Shevchenko, Alexander S. Kukaev, Daniil V. Safronov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) . . . . . [10231-69]

The influence of the whispering gallery modes resonators shape on their sensitivity to the movement, Yuriy V. Filatov, Alexander S. Kukaev, Egor V. Shalymov, Vladimir Y. Venediktov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) . . . . . [10231-70]

Design of an optical sun sensor for a space application: a reliable passive sun tracking device for the SOLAR/SOLSPEC instrument, Nuno Pereira, David Bolsée, Alice M. Michel, Belgian Institute for Space Aeronomy (Belgium); Mustapha Meftah, Abdenour Irbah, Luc Damé, LATMOS (France) and Ctr. National de la Recherche Scientifique (France) . . . . . [10231-71]

Temperature sensing setup based on an aluminum coated Mach-Zehnder Interferometer, Eliana I. Pacheco, Univ. de Guanajuato (Mexico). . . . [10231-72]

Shack-Hartmann wavefront sensor using a Raspberry Pi embedded system, Ramiro Contreras-Martinez, Jesús Garduño-Mejía, Martha Rosete-Aguilar, Carlos J. Román-Moreno, Ctr. de Ciencias Aplicadas y Desarrollo Tecnológico (Mexico). . . . . [10231-73]

Splicing and shaping of the special optical fibers, Michal Jelínek, Vaclav Hlavaty, Jan Hrabina, Bretislav Mikel, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic) . . . . . [10231-74]

Optical fiber sensors preparation, Bretislav Mikel, Michal Jelinek, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic); Radek Helan, Network Group, s.r.o. (Czech Republic); Vladimir Kolarik, Ondřej Číp, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic) . . . . . [10231-75]

Plasmonically-enhanced fluorescence for biosensor applications, Stefan Fossati, Simone Hageneder, AIT Austrian Institute of Technology GmbH (Austria); Jiří Slabý, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Jakub Dostalek, AIT Austrian Institute of Technology GmbH (Austria) . . . . . [10231-77]

Overview of field gamma spectrometries based on Si-photomultiplier, Maksim A. Kleshchenok, ITMO Univ. (Russian Federation); Victor M. Denisov, Flagman-geo Ltd. (Russian Federation); Valery V. Korotaev, ITMO Univ. (Russian Federation); Aleksandr B. Titov, Geomash Inzhiniring Ltd. (Russian Federation) . . . . . [10231-78]

An experimental sample of the field gamma-spectrometer based on solid state Si-photomultiplier, Maksim A. Kleshchenok, Valery V. Korotaev, ITMO Univ. (Russian Federation); Victor M. Denisov, Flagman-geo Ltd. (Russian Federation); Aleksandr B. Titov, Geomash Inzhiniring Ltd. (Russian Federation) . . . . . [10231-79]

Improved vibration sensor based on a biconical tapered singlemode fiber, using in-fiber Mach-Zehnder interferometer, Renata Wonko, Joanna Ewa Moś, Karol Antonii Stasiewicz, Leszek Roman Jaroszewicz, Military Univ. of Technology (Poland) . . . . . [10231-80]

Development of an algorithm of the decision of the inverse ellipsometry problem for multilayer structure of the matrix receiver of optical radiation, Anastasiya Lobanova, Valery V. Korotaev, Victoria A. Ryzhova, ITMO Univ. (Russian Federation); Victor M. Denisov, Flagman-geo Ltd. (Russian Federation) . . . . . [10231-81]

Pure and Au nanoparticles doped higher alkanes for an optical fiber temperature threshold sensor, Natalia Przybysz, Institute of Technical Physics (Poland); Paweł Marć, Leszek R. Jaroszewicz, Military Univ. of Technology (Poland); Emilia Tomaszewska, Jarosław Grobelny, Univ. of Lodz (Poland) . . . . . [10231-82]

Optical features of zinc selenide, silver iodide and its two-phase composite nanostructures, Alexander M. Smirnov, M.V. Lomonosov Moscow SU (Russian Federation); Vladimir V. Tomaev, Saint Petersburg State Univ. (Russian Federation) and Saint Petersburg Mining Univ. (Russian Federation); Anastasiia D. Golinskaya, Lomonosov Moscow State University (Russian Federation); Maria V. Kozlova, Julia Stebakova, Jana V. Valchuk, M.V. Lomonosov Moscow SU (Russian Federation); Vladimir A. Polischuk, ITMO Univ. (Russian Federation); Evgenii Borisov, Saint Petersburg State Univ. (Russian Federation) . . [10231-84]

Gallium nanoparticles colloids synthesis for UV bio-optical sensors, Flavio Nucciarelli, Encarnación Lorenzo, Iria Bravo, José Luis Pau Vizcaíno, Univ. Autónoma de Madrid (Spain). . . . . [10231-85]

Luminance Compensation for AMOLED displays using integrated MIS sensors, Yuri Vygranenko, Ctr. of Technology and Systems (Portugal); Miguel Fernandes, Manuela Vieira, Instituto Superior de Engenharia de Lisboa (Portugal) . . . . . [10231-86]

New fiber laser design for application in phase sensitive optical time domain reflectometry, José Luis Bueno Escobedo, Ctr. de Investigación en Materiales Avanzados, S.C. (Mexico); Vasily V. Spirin, Ctr. de Investigación Científica y de Educación Superior de Ensenada B.C. (Mexico) and Institute of Problems of Mechanical Engineering (Russian Federation); Cesar A. López-Mercado, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico); A. M. Lucero, Ctr. de Investigación Científica y de Educación Superior de Ensenada B.C. (Mexico); Patrice Megret, Univ. de Mons (Belgium); I. O. Zolotovskiy, Ulyanovsk State Univ. (Russian Federation); Andrei A. Fotiadi, Univ. de Mons (Belgium) and Ioffe Institute (Russian Federation) and Ulyanovsk State Univ. (Russian Federation). . . . . [10231-87]

Simultaneous transmission of standard data, precise time, stable frequency and sensing signals and their possible interaction, Petr Münster, Brno Univ. of Technology (Czech Republic) and CESNET, a. l. e. (Czech Republic); Jan Radil, Ondrej Havlis, Josef Vojtech, Tomás Horváth, Martin Slapak, Pavel Skoda, Miloslav Hula, Radek Velc, CESNET, a. l. e. (Czech Republic) . . . . . [10231-88]

Continuous palladium-based thin films for hydrogen detection, Marco Angiola, Enrico Tessarolo, Consiglio Nazionale delle Ricerche (Italy); Alessandro Martucci, Univ. degli Studi di Padova (Italy); Alain J. Corso, Maria Guglielmina Pelizzo, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10231-89]

Tiny incident light angle sensor, Dennis Mitrenga, Martin Schädel, Andreas T. Winzer, Jan Freitag, Stefan Völlmeke, Klaus -D. Preuß, CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH (Germany) . . . . . [10231-90]

Miniature optical components for a small inline polarimeter, Andreas T. Winzer, Martin Schädel, Dennis Mitrenga, Thomas Frank, Jan Freitag, Kristin Neckermann, CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH (Germany) . . . . . [10231-91]

Interaction of Amyloid-B peptides with lipid bilayer investigated by supercritical angle fluorescence, Valentin Dubois, Univ. Zürich (Switzerland); Diana Serrano Garcia, Univ. of Zürich (Switzerland); Stefan Seeger, Univ. Zürich (Switzerland) . . . . . [10231-92]

Advanced wide-field surface plasmon microscopy of single adsorbing nanoparticles, Shavkat Nizamov, Brandenburgische Technische Univ. Cottbus (Germany); Vladimir M. Mirsky, Univ. Regensburg (Germany); Vitali Scherbahn, Brandenburgische Technische Univ. Cottbus (Germany). . . . . [10231-93]

Development of optical planar waveguide biosensor for detection of mycotoxins, Ali Madlool Al-Jawdah, Sheffield Hallam Univ. (United Kingdom) . . . . . [10231-94]

Preparation of Mach-Zehnder interferometric photonic biosensors by inkjet printing technology, Florian Strasser, Eva Melnik, Paul Muellner, AIT Austrian Institute of Technology GmbH (Austria); Pilar Jimenez Meneses, Universitat Politècnica de València, Inst. for Molecular Recognition and Technological Development (Spain); Magdalena Nechvile, AIT Austrian Institute of Technology GmbH (Austria); Jochen Kraft, ams AG (Austria); Peter Lieberzeit, Univ. Wien (Austria); Michael Laemmerhofer, University of Tuebingen, Inst. of Pharmaceutical Sciences (Germany); Rudolf Heer, AIT Austrian Institute of Technology GmbH (Austria); Rainer Hainberger, AIT Austrian Institute of Technology GesmbH (Austria). . . . . [10231-95]

Plasmonic absorber for selective photofunctionalization, Piotr Wróbel, The Czech Academy of Sciences (Czech Republic); Jirí Slabý, Jirí Homola, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) . . . [10231-96]

Optical sensors based on photonic crystals: a new route, Silvia Romano, Stefania Torino, Consiglio Nazionale delle Ricerche (Italy); Giuseppe Coppola, Istituto per la Microelettronica e Microsistemi (Italy); Stefano Cabrini, The Molecular Foundry (United States); Vito Mocella, Istituto per la Microelettronica e Microsistemi (Italy). . . . . [10231-97]

Real-time temperature monitoring during radiofrequency treatments on ex-vivo animal model by Fiber Bragg Grating sensors, Giovanna Palumbo, Univ. degli Studi di Napoli Parthenope (Italy); Daniele Tosi, Nazarbayev Univ. (Kazakhstan); Emiliano Schena, Carlo Massaroni, Univ. Campus Bio-Medico (Italy); Juliet Ippolito, Paolo Verze, Nicola Carlomagno, Vincenzo Tammaro, Univ. degli Studi di Napoli Federico II (Italy); Agostino Iadicicco, Stefania Campopiano, Univ. degli Studi di Napoli Parthenope (Italy) . . . . . [10231-98]

Development of an optical biosensor for the detection of antibiotics in the environment, Patricia Weber, Julian Vogler, Günter Gauglitz, Eberhard Karls Univ. Tübingen (Germany). . . . . [10231-100]

Revisiting the biosensing potential of a plasmonic metamaterial supporting a guided mode, Barbora Spackova, Nicholas S. Lynn Jr., Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Pavel Kwiecien, Ivan Richter, Czech Technical Univ. in Prague (Czech Republic); Jirí Homola, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic) . . [10231-101]

Fabrication of arc-induced long-period gratings in different silica fibers, Rajeev Ranjan, Flavio Esposito, Stefania Campopiano, Agostino Iadicicco, Univ degli Studi di Napoli Parthenope (Italy). . . . . [10231-102]

Effects of thermal and mechanical loads on the star sensor baffle, Javad Haghshenas, Behzad Mohasel Afshari, Satellite Research Institute (Iran, Islamic Republic of) . . . . . [10231-103]

Surface functionalization for extreme localization of biological events and sub-protein tracking, Antonio García Marín, Institute of Photonics and Electronics (Czech Republic); Kristýna Holanová, Lukasz Bujak, Institute of Photonics and Electronics (Czech Republic); Marek Piliarik, Institute of Photonics and Electronics (Czech Republic) . . . . . [10231-104]

Onboard TDI stage estimation and calibration using SNR analysis, Javad Haghshenas, Satellite Research Institute (Iran, Islamic Republic of) . [10231-105]

Strain-based multicore fiber optic temperature sensor, Belkis Gökbulut, Mehmet Naci Inci, Bogazici Univ (Turkey). . . . . [10231-106]

Heat transfer measurements with a four-core optical fiber, Sema Güvenç, Mehmet Naci Inci, Bogazici Univ (Turkey). . . . . [10231-107]

Correlation of optical crosstalk performance of proximity-sensing device to the module's absolute package height, Jefferson Abrenica, ams AG (Philippines) . . . . . [10231-108]

Optical sensors of bulk refractive index using optical fiber resonators, Mustafa Eryurek, Yasin Karadag, Moeen Ghafoor, Nima Bavili, Koç Univ. (Turkey); Kenan Cicek, Iğdır Univ. (Turkey); Alper Kiraz, Koç Univ. (Turkey) . . . . . [10231-109]

High-resolution investigation of longitudinal modes of a GaN-based blue laser diode, Watheq Al-Basheer, Abdulaziz Aljalal, Khaled Gasmi, Taofeek O. Adigun, King Fahd Univ. of Petroleum & Minerals (Saudi Arabia). . . . [10231-110]

Monitoring of tissue spectral reflectance during laser coagulation, A. Lihachev, I. Lihacova, Univ. of Latvia (Latvia); M. Wehner, Fraunhofer-Institut fur Lasertechnik – ILT (Germany); T. Trebst, LifePhotonics GmbH (Germany); J. Spigulis, Univ. of Latvia (Latvia) . . . . . [10231-111]

THURSDAY 27 APRIL

SESSION 9

ROOM: AQUARIUS . . . . . THU 8:50 TO 10:50

Biosensors I

8:50: **Remote detection of buried explosives by fluorescent and bioluminescent microbial bioreporters** *(Invited Paper)*, Shimshon Belkin, Sharon Yagur-Kroll, Cheinat Zohar, Zahi Rabinovitz, Amos Nussinovitch, Yossi Kabessa, Aharon J. Agranat, The Hebrew Univ. of Jerusalem (Israel) . [10231-37]

9:20: **A POCT platform for sepsis biomarkers**, Francesco Baldini, Barbara Adinolfi, Simone Berneschi, Istituto di Fisica Applicata "Nello Carrara" (Italy); Romeo Bernini, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy); Ambra Giannetti, Istituto di Fisica Applicata "Nello Carrara" (Italy); Immacolata Angelica Grimaldi, Gianluca Persichetti, Genni Testa, Istituto per il rilevamento elettromagnetico dell'ambiente (Italy); Sara Tombelli, Cosimo Trono, Istituto di Fisica Applicata "Nello Carrara" (Italy) . . . . . [10231-38]

9:40: **Advanced bio/sensors: molecules, materials and light** *(Invited Paper)*, Sabato D'Auria, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10231-41]

10:10: **U-bent plastic optical fiber-based plasmonic biosensor for Nucleic acid detection**, Gowri Annasamy, V. V. Raghavendra Sai, Indian Institute of Technology Madras (India) . . . . . [10231-42]

10:30: **Study of inertial hydrodynamic focusing in sheath-driven flows for lab-on-a-chip flow cytometry**, Nishtha Panwar, Peiyi Song, Ken-Tye Yong, Swee Chuan Tjin, Nanyang Technological Univ. (Singapore) . . . . . [10231-43]

CONFERENCE 10232

LOCATION: STELLA

Wednesday - Thursday 26–27 April 2017 • Proceedings of SPIE Vol. 10232

Micro-structured and Specialty Optical Fibres

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

*Programme Committee: J*ean-Luc Adam, Univ. de Rennes 1 (France); **John Ballato,** Clemson Univ. (United States); **Ole Bang,** DTU Fotonik (Denmark); **Hartmut Bartelt,** Institut für Photonische Technologien e.V. (Germany); **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,** Fibercore Ltd. (United Kingdom); **Valerio Romano,** Berner Fachhochschule Technik und Informatik (Switzerland); **Kay Schuster,** Institut für Photonische Technologien e.V. (Germany); **Waclaw Urbanczyk,** Wroclaw Univ. of Technology (Poland); **David J. Webb,** Aston Univ. (United Kingdom); **Alexei M. Zheltikov,** Lomonosov Moscow State Univ. (Russian Federation)

WEDNESDAY 26 APRIL

OPENING REMARKS

ROOM: STELLA . . . . . 10:25 TO 10:30

SESSION 1

ROOM: STELLA . . . . . WED 10:30 TO 12:20

Mid-Infrared and Infrared Fibres and Coherent Sources

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

10:30: **Diffraction limited mid infrared spectromicroscopy with a supercontinuum laser source** *(Invited Paper)*, Laure Lavoute, Univ of Bath (United Kingdom); Christophe L. Sandt, Univ de Reims Champagne-Ardenn (France); Ferenc Borondics, Lawrence Berkeley National Lab. (United States); Ammar A. Hideur, CORIA (France); Nicolas Ducros, NOVAE (France); Sébastien Février, XLIM Institut de Recherche (France) . . . . . [10232-1]

11:00: **Mid-IR supercontinuum in a step index tellurite fibre operating between 1 and 5 µm**, Paul Froidevaux, Clément Strutynski, Arnaud Lemière, Bertrand Kibler, Frédéric Désévédavy, Jean-Charles Jules, Pierre Mathey, Pierre Béjot, Franck Billard, Olivier Faucher, Frédéric Smektala, Univ. de Bourgogne (France) . . . . . [10232-2]

11:20: **Development and characterization of highly-nonlinear multicomponent glass photonic crystal fibers for mid-infrared applications.**, Tomas Nemecek, Matej Komanec, Dmytro Suslov, Czech Technical Univ. in Prague (Czech Republic); Pavel Peterka, Institute of Photonics and Electronics of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic); Dariusz Pysz, Institute of Electronic Materials Technology (Poland); Ryszard Buczyński, Univ. of Warsaw (Poland); Bryan L. Nelsen, Westsächsische Hochschule Zwickau (Germany) . . . . . [10232-3]

11:40: **Spectral properties of thulium and holmium doped optical fibers for fiber lasers around 2 micrometers**, Michal Kamradek, Jan Aubrecht, Pavel Peterka, Ondrej Podrazký, Pavel Honzátko, Jakub Cajzl, Jan Mrázek, Ivan Kasik, Institute of Photonics and Electronics of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic); Vaclav Kubecek, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague (Czech Republic) . . . . . [10232-4]

12:00: **Fe^{2+}:ZnSe saturable absorber mirror passively Q-switched fluoride fiber laser at 2.8 µm**, Tao Zhang, Guoying Feng, Bin Lan, Sichuan Univ. (China); Shouhuan Zhou, Sichuan Univ. (China) and North China Research Institute of Electro-optics (China) . . . . . [10232-5]

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

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 2

ROOM: STELLA . . . . . WED 15:40 TO 17:10

Fiber Bragg Gratings and Polymer Optical Fibres

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

15:40: **Fiber Bragg filters for laser and multicore fibers** *(Invited Paper)*, Martin Becker, Manfred Rothhardt, Tino Elsmann, Adrian Lorenz, Leibniz-Institut für Photonische Technologien e.V. (Germany) . . . . . [10232-6]

16:10: **Reflectivity of superimposed transient gratings in self-swept fiber lasers**, Pavel Peterka, Pavel Koška, Jirí Ctyroky, Institute of Photonics and Electronics of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic) . . . . . [10232-7]

16:30: **Bandpass transmission filters based on phase shifted fiber Bragg gratings in microstructured polymer optical fibers**, Beatriz Ortega, Univ. Politécnica de Valencia (Spain); Rui Min, David Sáez-Rodríguez, Yang Mi, Univ. Politècnica de València (Spain); Kristian Nielsen, Ole Bang, DTU Fotonik (Denmark) . . . . . [10232-8]

16:50: **Impact of thermal pretreatment on preforms for fast Bragg gratings inscription using undoped PMMA POFs**, Carlos A. F. Marques, Aston Univ. (United Kingdom) and Instituto de Telecomunicações (Portugal); Andreas Pospori, Aston Univ. (United Kingdom); Pawel Mergo, Univ. of Maria Curie-Sklodowska (Poland); Paulo S. André, Instituto de Telecomunicações (Portugal) and Instituto Superior Técnico, Univ. Técnica de Lisboa (Portugal); David J. Webb, Aston Univ. (United Kingdom) . . . . . [10232-9]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Chirped polymer optical fiber Bragg grating sensors, Carlos A. F. Marques, Instituto de Telecomunicações (Portugal) and Univ. de Aveiro (Portugal); Paulo Antunes, Instituto de Telecomunicações (Portugal); Pawel Mergo, Univ. of Maria Curie-Sklodowska (Poland); David J. Webb, Aston Univ. (United Kingdom); João Lemos Pinto, Instituto de Telecomunicações (Portugal) and Univ. de Aveiro (Portugal); Paulo S. André, Instituto de Telecomunicações (Portugal) and Instituto Superior Técnico, Univ. Técnica de Lisboa (Portugal) . . . . . [10232-10]

Analysis of optical properties of special fibers of polydimethylsiloxane (PDMS) depending on the different methods of mixing PDMS and curing agent, Martin Novak, Jan Nedoma, Marcel Fajkus, Jan Jargus, Vladimír Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic) . . . . . [10232-13]

Making compact bundle fiber for laser-assisted surgery, Seungsik Ham, JaeSung Park, Ho Lee, Richard M. Boutilier, Kyungpook National Univ. (Korea, Republic of) . . . . . [10232-15]

Advances of the granulated silica method for fiber production: oxides vs. sol-gel approach, Sönke Pilz, Hossein Najafi, David Kummer, Berner Fachhochschule Technik und Informatik (Switzerland); Ali F. El Sayed, Berner Fachhochschule Technik und Informatik (Switzerland) and Univ. of Bern (Switzerland); Jonas Scheuner, Manuel Ryser, Univ. Bern (Switzerland); Stefan Berger, ReseaChem GmbH (Switzerland); Georgios Karametaxas, SolSens GmbH (Switzerland); Valerio Romano, Berner Fachhochschule Technik und Informatik (Switzerland) and Univ. of Bern (Switzerland) . . . . . [10232-22]

Measurement of spectral characteristics and CCT mixture of PDMS and the luminophore depending on the geometric parameters and the concentration of the samples of the special optical fibers, Jan Jargus, Jan Nedoma, Marcel Fajkus, Martin Novak, Lukas Bednarek, Vladimír Vašínek, VŠB-Technical Univ. of Ostrava (Czech Republic) . . . . . [10232-26]

Enhanced linear photonic nanojet generated by core-shell optical microfibers, Cheng-Yang Liu, Tzu-Ping Yen, Chien-Wen Chen, Tamkang Univ. (Taiwan) . . . . . [10232-27]

Realization of optical multimode TSV waveguides for Si-Interposer in 3D-chip-stacks, Sebastian Killge, Institut für Halbleiter-und Mikrosystemtechnik, TU Dresden (Germany); Sujay Charania, Karola Richter, Niels Neumann, Zaid Al-Husseini, Dirk Plettemeier, Johann W. Bartha, TU Dresden (Germany) . . . . . [10232-28]

All-polymeric photonic waveguides and ring resonators for optical integrated circuits system, Abbas Madani, Fraunhofer IWS Dresden (Germany) . . . . . [10232-29]

Numerical simulation analysis of gain and noise figure using various pumping direction in single- and multiple stage EDFA systems, Ufuk Parali, Adnan Menderes University (Turkey). . . . . [10232-30]

Anti-reflection and polarizing photonic structures for high power fiber applications, Martin Vanek, Yauhen Baravets, Filip Todorov, Jiří Čtyroký, Pavel Honzátko, Jan Vanis, Institute of Photonics and Electronics of the CAS (Czech Republic) . . . . . [10232-31]

Microsensors of liquid based on capillary self-assembly micropillar fabricated by femtosecond laser printing, Zhaoxin Lao, Yanlei Hu, Dong Wu, University of Science and Technology of China (China) . . . . . [10232-32]

THURSDAY 27 APRIL

SESSION 3

ROOM: STELLA . . . . . THU 9:00 TO 10:00

Sensors and Devices Based on Specialty Fibres

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

9:00: **Realisation of optically resilient fiber tip 3D microoptics**, Linas Jonušauskas, Vilnius Univ. (Lithuania) and Femtika (Lithuania); Mangirdas Malinauskas, Vilnius Univ. (Lithuania) . . . . . [10232-11]

9:20: **Optical fiber-based frequency references**, Jan Hrabina, Břetislav Mikel, Institute of Scientific Instruments of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic); Michal Jelínek, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic); Miroslava Holá, Josef Lazar, Ondřej Číp, Institute of Scientific Instruments of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic) . . . . . [10232-12]

9:40: **Fabrication of long linear arrays of plastic optical fibers with squared ends for the use of code mark printing lithography**, Toshiyuki Horiuchi, Jun Watanabe, Jun-ya Iwasaki, Yuta Suzuki, Tokyo Denki Univ. (Japan) . . [10232-14]

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

SESSION 4

ROOM: STELLA . . . . . THU 10:30 TO 12:20

Modelling and Analysis of Specialty Fibres and Components

Session Chair: **Sébastien Février,** XLIM Institut de Recherche (France)

10:30: **Enhancement of pump absorption efficiency by bending and twisting of double clad rare earth doped fibers** *(Invited Paper)*, Pavel Koška, Pavel Peterka, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Valérie Doya, Univ. de Nice Sophia Antipolis (France); Jan Aubrecht, Ivan Kasik, Ondřej Podrazký, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic). . . . . [10232-16]

11:00: **An 8-channel wavelength demultiplexer based on photonic crystal fiber**, Dror Malka, Holon Institute of Technology (Israel) . . . . . [10232-17]

11:20: **Moving chirped soliton under laser pulse interaction with gold nanorods**, Vyacheslav A. Trofimov, Tatiana M. Lysak, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10232-18]

11:40: **Three-dimensional light bullets in anisotropic microdispersive media**, Sergey Sazonov, National Research Center Kurchatov Institute (Russian Federation); Alexander Bugay, Joint Institute for Nuclear Research (Russian Federation); Maria Komissarova, Irina Zakharova, Lomonosov Moscow State University (Russian Federation). . . . . [10232-19]

12:00: **Engineering ultra-flattened normal dispersion photonic crystal fiber with silica material**, Mohamed Lamine Ferhat, Lynda A. Cherbi, Lyes Bahloul, Hariz Abdelhafid, Univ. des Sciences et de la Technologie Houari Boumediene (Algeria) . . . . . [10232-20]

Lunch Break . . . . . Thu 12:20 to 13:40

SESSION 5

ROOM: STELLA . . . . . THU 13:40 TO 15:00

Fibre Design, Fabrication and Measurement

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

13:40: **Spectroscopic studies of the influence of the aluminum concentration in heated Yb-doped optical fibers**, Christoph Bacher, Jonas Scheuner, University of Bern (Switzerland); Sönke Pilz, Bern University of Applied Sciences (Switzerland); Manuel Ryser, University of Bern (Switzerland); Valerio Romano, University of Bern (Switzerland) and Bern University of Applied Sciences (Switzerland) . . . . . [10232-21]

14:00: **Comparative investigation of methods to determine the group velocity dispersion of an endlessly single-mode photonic crystal fiber**, Tobias Baselt, Westsächsische Hochschule Zwickau (Germany) and Fraunhofer IWS Dresden (Germany); Tobias Popp, Bryan L. Nelsen, Westsächsische Hochschule Zwickau (Germany); Andrés Fabián Lasagni, TU Dresden (Germany); Peter Hartmann, Fraunhofer IWS Dresden (Germany) and Westsächsische Hochschule Zwickau (Germany) . . . . . [10232-23]

14:20: **Unique method to determine the differential mode delay of specialty multimode fibers**, Marcus Wittig, Westsächsische Hochschule Zwickau (Germany); Tobias Baselt, Westsächsische Hochschule Zwickau (Germany) and Fraunhofer IWS Dresden (Germany) . . . . . [10232-24]

14:40: **Toward investigation of Brillouin scattering in multimode polymer and silica optical fibers**, Aleksander Wosniok, Andy Schreier, Bundesanstalt für Materialforschung und -prüfung (Germany) . . . . . [10232-25]

CONFERENCE 10233

ROOM: BENADA

Monday - Thursday 24–27 April 2017 • Proceedings of SPIE Vol. 10233

Holography: Advances and Modern Trends

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

Programme Committee: **Augusto Beléndez,** Univ. de Alicante (Spain); **Andrea Bianco,** INAF - Osservatorio Astronomico di Brera (Italy); **Hans I. Bjelkhagen,** HANSHOLO (United Kingdom); **Friedrich-Karl Bruder,** Covestro AG (Germany); **Christiane Carre,** Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France), CNRS FOTON {France), Univ. de Rennes 1 {France); **Radim Chmelík,** Brno Univ. of Technology (Czech Republic); **Daniel Claus,** Univ. Stuttgart (Germany); **Claas Falldorf,** Bremer Institut für angewandte Strahltechnik GmbH (Germany); **Martin Fally,** Univ. Wien (Austria); **Tigran Galstian,** Ctr. d'Optique, Photonique et Laser, Univ. Laval (Canada); **Unnikrishnan Gopinathan,** Instruments Research & Development Establishment (India); **John J. Healy,** Univ. College Dublin (Ireland); **Bryan M. Hennelly,** National Univ. of Ireland, Maynooth (Ireland); **Ken Yuh Hsu,** National Chiao Tung Univ. (Taiwan); **Damien P. Kelly,** Oryx Consulting (Germany); **Milos Kopecky,** Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Raymond K. Kostuk,** The Univ. of Arizona (United States); **Libor Kotacka,** Optaglio s.r.o. (Czech Republic); **Malgorzata Kujawinska,** Warsaw Univ. of Technology (Poland); **Jacques Lalevée,** Univ. de Haute Alsace (France); **Robert R. McLeod,** Univ. of Colorado Boulder (United States); **Miroslav Miler,** Academy of Sciences of the Czech Republic (Czech Republic); **David Samuel Monaghan,** Trininty College Dublin (Ireland); **Christoph Neipp,** Univ. de Alicante (Spain); **Takanori Nomura,** Wakayama Univ. (Japan); **Inmaculada Pascual,** Univ. de Alicante (Spain); **Rainer Riesenberg,** Leibniz-Institut für Photonische Technologien e.V. (Germany); **Dagmar Senderáková,** Comenius Univ. in Bratislava (Slovakia); **Guohai Situ,** Shanghai Institute of Optics and Fine Mechanics (China); **Mitsuo Takeda,** Utsunomiya Univ. (Japan); **Yasuo Tomita,** The Univ. of Electro-Communications (Japan); **Vladimir Y. Venediktov,** Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); **Przemyslaw W. Wachulak,** Military Univ. of Technology (Poland); **Dayong Wang,** Beijing Univ. of Technology (China); **Günther K. G. Wernicke,** Humboldt-Univ. zu Berlin (Germany); **Stanislovas J. Zacharovas,** Geola Digital uab (Lithuania)

MONDAY 24 APRIL

ROOM: BENADA . . . . . 12:55 TO 13:00

Welcome and Introduction

SESSION 1

ROOM: BENADA . . . . . MON 13:00 TO 15:30

Holography Overview

Session Chairs: **John T. Sheridan,** Univ. College Dublin (Ireland); **Miroslav Hrabovský,** Palacky Univ. Olomouc (Czech Republic)

13:00: **Analysis of higher order harmonics with holographic reflection gratings**, Pedro Mas-Abellán, Roque F. Madrigal, Antonio Fimia, Univ. Miguel Hernández de Elche (Spain) . . . . . [10233-1]

13:20: **Holographic recording in two-stage networks**, Robert R. McLeod, Univ. of Colorado Boulder (United States); Haiyan Peng, Guangzhou Institute of Advanced Technology, Chinese Academy of Sciences (China); Devatha P. Nair, Univ. of Colorado at Denver and Health Sciences Ctr. (United States); Benjamin A. Kowalski, Christopher N. Bowman, Univ. of Colorado Boulder (United States) . . . . . [10233-2]

13:40: **Museum applications of ultra-realistic imaging and OptoClones™** *(Invited Paper)*, Hans I. Bjelkhagen, Hansholo Consulting Ltd. (United Kingdom) . . . . . [10233-3]

14:10: **Holographic optical elements as solar concentrators for space applications fabrication and thermal-optical characterization**, Gaetano Bianco, Maria Antonietta Ferrara, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); Fabio Borbone, Roberto Centore, Univ. degli Studi di Napoli Federico II (Italy); Valerio Striano, CGS S.p.A. Compagnia Generale per lo Spazio (Italy); Giuseppe Coppola, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10233-4]

14:30: **Double-blind digital inline holography from multiple near-field intensities**, Lars Lötgering, Heinrich Froese, David Treffer, Thomas Wilhein, Hochschule Koblenz Univ. of Applied Sciences (Germany) . . . . . [10233-5]

14:50: **Improvement of spectral and axial resolutions in modified coded aperture correlation holography (COACH) imaging system**, Anand Vijayakumar, Joseph Rosen, Ben-Gurion Univ. of the Negev (Israel) . . . [10233-6]

15:10: **Quality inspection of security holograms considering the influence of diffraction grating relief distortions**, Vasily V. Kolyuchkin, Sergey B. Odinokov, Ivan K. Tsyganov, Bauman Moscow State Technical Univ. (Russian Federation) . [10233-7]

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

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 2

ROOM: BENADA . . . . . TUE 10:10 TO 12:20

Holographic Materials I

Session Chairs: **Hans I. Bjelkhagen,** Glyndwr Univ. (United Kingdom); **Takeo Sasaki,** Tokyo Univ. of Science (Japan)

10:10: **Nanocomposite volume holographic gratings incorporated with ultrahigh refractive index hyperbranched polymer for diffractive optical elements** *(Invited Paper)*, Yasuo Tomita, Satoko Oyaizu, The Univ. of Electro-Communications (Japan); Naoya Nishimura, Keisuke Odoi, Nissan Chemical Industries, Ltd. (Japan) . . . . . [10233-8]

10:40: **Holographic analysis of photopolymers**, Amy C. Sullivan, Marvin D. Alim, David J. Glugla, Robert R. McLeod, Univ. of Colorado Boulder (United States) . . . . . [10233-9]

11:00: **Shrinkage measurament for holographic recording materials**, Sergi Gallego, Roberto Fernández, Andrés Márquez, Jorge Francés, Víctor Navarro-Fuster, Cristian Neipp, Manuel Ortuño, Inmaculada Pascual, Augusto Beléndez, Univ. de Alicante (Spain) . . . . . [10233-10]

11:20: **Thermal effects of the functionalities of chain transfer agent on photopolymer holographic volume gratings**, Jinxin Guo, Beijing Univ. of Technology (China); Yasuo Tomita, The Univ. of Electro-Communications (Japan); Xinping Zhang, Beijing Univ. of Technology (China) . . . . . [10233-11]

11:40: **Holographic properties of new chloride photo-thermo-refractive glasses**, Sergei A. Ivanov, Nikolay V. Nikonorov, Viktor Dubrovin, Viktoria Krykova, ITMO Univ. (Russian Federation) . . . . . [10233-12]

12:00: **Development of holographic media based on organic carbazole polymers**, Stefan Robu, Arcadi Chirita, Galina Dragalina, Moldova State Univ. (Moldova); Tigran Galstian, Ctr. d'Optique, Photonique et Laser (Canada); A. Ivancic, Igor Vitalie Dementiev, Moldova State Univ. (Moldova) . . . . . [10233-13]

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

SESSION 3

ROOM: BENADA . . . . . TUE 13:20 TO 15:20

Holographic Materials II

Session Chairs: **Robert R. McLeod,** Univ. of Colorado Boulder (United States); **Martin Fally,** Univ. Wien (Austria)

13:20: **Performance optimization in mass production of volume holographic optical elements (vHOEs) using Bayfol® HX photopolymer film** *(Invited Paper)*, Friedrich-Karl Bruder, Thomas Fäcke, Fabian Grote, Rainer Hagen, Dennis Hoenel, Eberhard Koch, Christian Rewitz, Guenther Walze, Brita Wewer, Covestro AG (Germany) . . . . . [10233-14]

13:50: **Light amplification by photorefractive ferroelectric liquid crystal blends containing quarter-thiophene photoconductive chiral dopant** *(Invited Paper)*, Takeo Sasaki, Takuya Hara, Yuuta Yamamoto, Yumiko Naka, Khoa V. Le, Tokyo Univ. of Science (Japan) . . . . . [10233-40]

14:20: **Analysis of holographic photopolymers for integrated optical systems via quantitative phase microscopy**, David J. Glugla, Marvin D. Alim, Univ. of Colorado Boulder (United States); Madeline B. Chosy, Carleton College (United States); Amy C. Sullivan, Robert R. McLeod, Univ. of Colorado Boulder (United States) . . . . . [10233-16]

14:40: **Optimisation and coupling of high-performance photocyclic initiating systems for efficient holographic materials**, Christian Ley, Univ. de Haute Alsace (France); Christian Carré, Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France); Ahmad Ibrahim, Xavier Allonas, Univ. de Haute Alsace (France) . . . . . [10233-17]

15:00: **Synthetic holograms based on photochromic diarylethenes**, Giorgio Pariani, Luca Oggioni, Letizia Colella, INAF - Osservatorio Astronomico di Brera (Italy); Chiara Bertarelli, Politecnico di Milano (Italy); Andrea Bianco, INAF - Osservatorio Astronomico di Brera (Italy); Romain Alata, Patrick Lanzoni, Frédéric Zamkotsian, Lab. d'Astrophysique de Marseille (France) . . . . [10233-18]

Coffee Break . . . . . Tue 15:20 to 15:50

SESSION 4

ROOM: BENADA . . . . . TUE 15:50 TO 17:40

Holographic Materials III

Session Chairs: **Yasuo Tomita,** The Univ. of Electro-Communications (Japan); **Friedrich-Karl Bruder,** Covestro AG (Germany)

15:50: **New photosensitive systems for volume phase holography** *(Invited Paper)*, Andrea Bianco, Letizia Colella, INAF - Osservatorio Astronomico di Brera (Italy); Paola Galli, Politecnico di Milano (Italy); Alessio Zanutta, INAF - Osservatorio Astronomico di Brera (Italy); Chiara Bertarelli, Politecnico di Milano (Italy) . . . . . [10233-19]

16:20: **Novel gratings for next-generation instruments of astronomical observations**, Noboru Ebizuka, RIKEN (Japan) . . . . . [10233-20]

16:40: **Predictive modeling of two-component holographic photopolymers**, Benjamin A. Kowalski, Air Force Research Lab. (United States); Amy C. Sullivan, Marvin D. Alim, Robert R. McLeod, Univ. of Colorado Boulder (United States) . . . . . [10233-21]

17:00: **Mechanical response of holographic photopolymers**, Amy C. Sullivan, Shankar Lalitha Sridhar, Amy E. Resman, David J. Glugla, Marvin D. Alim, Franck J. Vernerey, Robert R. McLeod, Univ. of Colorado Boulder (United States) . . . . . [10233-22]

17:20: **Effect of rare-earth-dopants on Bragg gratings recording in PTR glasses**, Nikolay V. Nikonorov, Sergei A. Ivanov, Darya Kozlova, Iliya Pichugin, ITMO Univ. (Russian Federation) . . . . . [10233-23]

WEDNESDAY 26 APRIL

SESSION 5

ROOM: BENADA . . . . . WED 8:30 TO 10:20

Digital Holography and Signal Processing I

Session Chairs: **Andrea Bianco,** INAF - Osservatorio Astronomico di Brera (Italy); **John T. Sheridan,** Univ. College Dublin (Ireland)

8:30: **Holographic 3D imaging through diffuse media by compressive sampling of the mutual intensity** *(Invited Paper)*, Claas Falldorf, Thorsten Klein, Bremer Institut für angewandte Strahltechnik GmbH (Germany); Mostafa Agour, Bremer Institut für angewandte Strahltechnik GmbH (Germany) and Aswan Univ. (Egypt); Ralf B. Bergmann, Bremer Institut für angewandte Strahltechnik GmbH (Germany) and Univ. Bremen (Germany) . . . . . [10233-24]

9:00: **Speckle noise reduction in single-shot holographic two-wavelength contouring**, Mostafa Agour, Reiner Klattenhoff, Claas Falldorf, Ralf B. Bergmann, Bremer Institut für angewandte Strahltechnik GmbH (Germany) . . . . . [10233-25]

9:20: **Reflective-type digital holographic microscopy using induced self-pumped phase conjugation technique**, Yang Kun Chew, Univ. of Southampton (United Kingdom); Huang-Tian Chan, MingDao Univ. (Taiwan); Ming-Tzung Shiu, National Defense Univ. (Taiwan); Chia-Hao Wu, Chi-Ching Chang, MingDao Univ. (Taiwan) . . . . . [10233-26]

9:40: **Sparse based terahertz reflective off-axis digital holography**, Min Wan, Beijing Univ. of Technology (China); Inbarasan Muniraj, James P. Ryle, Univ. College Dublin (Ireland); Lu Rong, Beijing Univ. of Technology (China); John J. Healy, Univ. College Dublin (Ireland); Dayong Wang, Beijing Univ. of Technology (China); John T. Sheridan, Univ. College Dublin (Ireland) . . . . . [10233-27]

10:00: **Terahertz inline digital holographic multiplane imaging method**, Haochong Huang, Dayong Wang, Lu Rong, Beijing Univ. of Technology (China); Weihua Li, China Academy of Engineering Physics (China); Yunxin Wang, Beijing Univ. of Technology (China) . . . . . [10233-28]

Coffee Break . . . . . Wed 10:20 to 10:50

SESSION 6

ROOM: BENADA . . . . . WED 10:50 TO 12:30

Digital Holography and Signal Processing II

Session Chairs: **Dayong Wang,** Beijing Univ. of Technology (China); **Inmaculada Pascual,** Univ. de Alicante (Spain)

10:50: **Analysis of data recorder optical scheme impact on quality of computer generated Fourier holograms in holographic memory system**, Sergey S. Donchenko, Sergey B. Odinokov, Nina M. Verenikina, Bauman Moscow State Technical Univ. (Russian Federation); Evgenie Y. Zlokazov, National Research Nuclear Univ. MEPhI (Russian Federation); Alexandr U. Betin, Pavel Hanevich, Bauman Moscow State Technical Univ. (Russian Federation); Sergey Semishko, Bauman Moscow State Technical Univ (Russian Federation) . . . . . [10233-29]

11:10: **Algorithms used for read-out optical system pointing to multiplexed computer generated 1D-Fourier holograms and decoding the encrypted information**, Sergey S. Donchenko, Sergey B. Odinokov, Bauman Moscow State Technical Univ. (Russian Federation); Evgenie Y. Zlokazov, National Research Nuclear Univ. MEPhI (Russian Federation); Sergey Semishko, Pavel Hanevich, Bauman Moscow State Technical Univ. (Russian Federation) . . . . . [10233-30]

11:30: **Comparison of two methods for equalising the diffraction efficiency of different spatial frequency components of holographic optical elements**, Sanjay K. Keshri, Kevin Murphy, Vincent Toal, Izabela Naydenova, Suzanne M. Martin, The Ctr. for Industrial and Engineering Optics, Dublin Institute of Technology (Ireland) . . . . . [10233-31]

11:50: **Hybridization of phase retrieval and off-axis digital holography for high-resolution imaging of complex shape objects**, Fengpeng Wang, Gannan Normal Univ. (China); Dayong Wang, Lu Rong, Yunxin Wang, Jie Zhao, Beijing Univ. of Technology (China) . . . . . [10233-32]

12:10: **Advanced holographic wavefront sensors**, Vladimir Y. Venediktov, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation); Sergey B. Odinokov, Bauman Moscow State Technical Univ. (Russian Federation) . . . . . [10233-33]

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

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 7

ROOM: BENADA . . . . . WED 15:40 TO 17:50

Digital Holography and Signal Processing III

Session Chairs: **Claas Falldorf,** Bremer Institut für angewandte Strahltechnik GmbH (Germany); **Jinxin Guo,** The Univ. of Electro-Communications (Japan)

15:40: **Properties of diffraction gratings holographically recorded in poly(ethylene glycol)dimethacrylate-ionic liquid composites** *(Invited Paper)*, Martin Fally, Univ. Wien (Austria); Mostafa Ellabban, Tanta Univ. (Egypt) and Taibah Univ. (Saudi Arabia); Gasper Glavan, Univ. of Ljubljana (Slovenia); Jürgen Klepp, Univ. Wien (Austria) . . . . . [10233-34]

16:10: **Inline quality control of micro-parts using digital holography**, Aleksandar Simic, Bremer Institut für angewandte Strahltechnik GmbH (Germany); Hendrik Freiheit, Univ. Bremen (Germany); Mostafa Agour, Claas Falldorf, Bremer Institut für angewandte Strahltechnik GmbH (Germany); Ralf B. Bergmann, Bremer Institut für angewandte Strahltechnik GmbH (Germany) and MAPEX, Univ. Bremen (Germany) . . . . . [10233-35]

16:30: **Hologram calculation technique for viewing-zone scanning holographic display employing MEMS SLM**, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) . . . . . [10233-36]

16:50: **Stereo-hologram in discrete depth of field**, Kwang-hoon Lee, Korea Photonics Technology Institute (Korea, Republic of); Min-Chul Park, Korea Institute of Science and Technology (Korea, Republic of) . . . . . [10233-37]

17:10: **Comparison of the different approaches to generate holograms from data acquired with a Kinect sensor**, Ji-Hoon Kang, Korea Institute of Science and Technology (Korea, Republic of) and Korea Univ. (Korea, Republic of); Thibault Leportier, Min-Chul Park, Korea Institute of Science and Technology (Korea, Republic of) and Univ. of Science & Technology (Korea, Republic of); Byeong-Kwon Ju, Korea Univ. (Korea, Republic of); Kwang-hoon Lee, Korea Photonics Technology Institute (Korea, Republic of) . . . . . [10233-38]

17:30: **Transformation of Rozhdestvensky Hooks in digital holographic interferometer**, Dmitriy V. Venediktov, Sergey A. Pul'kin, Vladimir Y. Venediktov, Saint Petersburg State Univ. (Russian Federation) . . . . . [10233-39]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

The schemes and methods for producing of the visual security features used in the color hologram stereography, Dmitrii S. Lushnikov, Alexsander Y. Zherdev, Sergey B. Odinokov, Vladimir V. Markin, Bauman Moscow State Technical Univ. (Russian Federation); Andrey V. Smirnov, Krypten (Russian Federation) . . . . . [10233-53]

Design and optimization of a dispersive unit based on cascaded volume phase holographic gratings, Eduard R. Muslimov, Aix-Marseille Univ. (France) and Kazan National Research Technical Univ. named after A.N. Tupolev (Russian Federation); Gennady G. Valyvin, Sergey N. Fabrika, Special Astrophysical Observatory (Russian Federation); Nadezhda K. Pavlycheva, Kazan National Research Technical Univ. named after A.N. Tupolev (Russian Federation) . . . . . [10233-55]

Use of a freeform-shaped holographic grating in a scheme of multislit astronomic spectrograph, Eduard R. Muslimov, Aix-Marseille Univ. (France) and Kazan National Research Technical Univ. named after A.N. Tupolev (Russian Federation); Emmanuel Hugot, Aix-Marseille Univ. (France). . . . . [10233-56]

Holography from Venus de Milo to cultural performance, science and technology, Patrice Salzenstein, FEMTO-ST (France). . . . . [10233-57]

Multiplexed holograms recorded in a low toxicity Biophotopol photopolymer, Víctor Navarro-Fuster, Manuel Ortuño, Sergi Gallego, Roberto Fernández, Francisco J. Martínez-Guardiola, Andrés Márquez, Inmaculada Pascual, Univ. de Alicante (Spain). . . . . [10233-58]

Diffractive axicon with tunable fill factor for focal ring splitting, Svetlana N. Khonina, Alexey P. Porfirev, Andrew V. Ustinov, Samara Univ. (Russian Federation) . . . . . [10233-59]

Characterization of a photopolymer holographic recording material for concentrator and space applications, Gaetano Bianco, Maria Antonietta Ferrara, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); Fabio Borbone, Roberto Centore, Univ. degli Studi di Napoli Federico II (Italy); Valerio Striano, CGS S.p.A. Compagnia Generale per lo Spazio (Italy); Izabela Naydenova, Dublin Institute of Technology (Ireland); Giuseppe Coppola, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10233-60]

Photopolymer film-based holographic optical element for modification of LED radiation pattern, Norbert Tarjányi, Lubos Šušlik, Daniel Kacik, Univ. of Žilina (Slovakia) . . . . . [10233-61]

Optical-electronic device based on diffraction optical element for control of special protective tags executed from luminophor, Mikhail Poliakov, Bauman Moscow State Technical Univ. (Russian Federation) and KBSP (Russian Federation); Sergey B. Odinokov, Bauman Moscow State Technical Univ. (Russian Federation) . . . . . [10233-62]

Observation of neutron pendellösung-interference in holographic nanostructures, Juergen Klepp, Univ. Wien (Austria); Christian Pruner, Univ. Salzburg (Austria); Yasuo Tomita, The Univ. of Electro-Communications (Japan); Peter W. Geltenbort, Institut Laue-Langevin (France); Martin Fally, Univ. Wien (Austria) . . . . . [10233-63]

True colour Denisyuk-type hologram recording in Bayfol HX self-developing photopolymer, Irene Vázquez-Martín, Marina Gómez-Climente, Univ. de Zaragoza (Spain); Julia Marín-Sáez, Univ. de Lleida (Spain); M. Victoria Collados, Jesús Atencia, Univ. de Zaragoza (Spain). . . . . [10233-64]

Constraints to solve parallelogram grid problems in 2D nonseparable linear canonical transform, Liang T. Zhao, John J. Healy, Inbarasan Muniraj, John T. Sheridan, Univ. College Dublin (Ireland) . . . . . [10233-65]

A digital holographic approach for the analysis of phase patterns in photochromic polyurethanes, Giuseppe Coppola, Maria Antonietta Ferrara, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); Giorgio Pariani, INAF - Osservatorio Astronomico di Brera (Italy); Chiara Bertarelli, Politecnico di Milano (Italy); Andrea Bianco, INAF - Osservatorio Astronomico di Brera (Italy). . . . . [10233-66]

Study of interference of optical coherence functions by using coherence holographic interferometry, Juan Zhao, Heriot-Watt Univ. (United Kingdom) and SuperD Co., Ltd. (China); Wei Wang, Heriot-Watt Univ. (United Kingdom). . . . . [10233-67]

Optical recording in functional polymer nanocomposites by multibeam interference holography, Julia A. Burunkova, Dmitrij Zhuk, Viacheslav Kalabin, ITMO Univ. (Russian Federation); Istvan Csarnovics, Sandor J. Kokenyesi, The Univ. of Debrecen (Hungary). . . . . [10233-68]

THURSDAY 27 APRIL

SESSION 8

ROOM: BENADA . . . . . THU 8:40 TO 10:20

Holographic Applications I

Session Chairs: **Sergi Gallego,** Univ. de Alicante (Spain); **Vladimir Y. Venediktov,** Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation)

8:40: **Photopolymers for Holographic Optical Elements in astronomy**, Alessio Zanutta, Andrea Bianco, INAF - Osservatorio Astronomico di Brera (Italy); Enrico Orselli, Thomas Fäcke, Covestro AG (Germany). . . . . [10233-15]

9:00: **Energy analysis of holographic lenses for solar concentration**, Julia Marín-Sáez, Univ. de Lleida (Spain); M. Victoria Collados, Univ. de Zaragoza (Spain); Daniel Chemisana, Univ. de Lleida (Spain); Jesús Atencia, Univ. de Zaragoza (Spain) . . . . . [10233-41]

9:20: **Full-color large-scaled computer-generated holograms for physical and nonphysical objects**, Kyoji Matsushima, Yasuhiro Tsuchiyama, Noriaki Sonobe, Masaya Masuji, Kansai Univ. (Japan); Masahiro Yamaguchi, Tokyo Institute of Technology (Japan); Yuji Sakamoto, Hokkaido Univ. (Japan). . . . . [10233-42]

9:40: **High quality digital holographic reconstruction on analog film**, Bryan L. Nelsen, Westsächsische Hochschule Zwickau (Germany); Peter Hartmann, Westsächsische Hochschule Zwickau (Germany) and Fraunhofer IWS Dresden (Germany) . . . . . [10233-43]

10:00: **Information recovery in propagation-based diffraction imaging with decoherence effects**, Heinrich Froese, Lars Lötgering, Thomas Wilhein, Hochschule Koblenz Univ. of Applied Sciences (Germany) . . . . . [10233-44]

Coffee Break . . . . . Thu 10:20 to 10:50

SESSION 9

ROOM: BENADA . . . . . THU 10:50 TO 12:30

Holographic Applications II

Session Chairs: **Antonio Fimia,** Univ. Miguel Hernández de Elche (Spain); **Miroslav Hrabovský,** Palacky Univ. Olomouc (Czech Republic)

10:50: **2D nonseparable linear canonical transform (2D-NS-LCT)-based cryptography**, Liang T. Zhao, Inbarasan Muniraj, John J. Healy, John T. Sheridan, Univ. College Dublin (Ireland) . . . . . [10233-45]

11:10: **Test of VPHGS in SHSG for use at cryogenic temperatures**, Maider Insausti Mugica, Instituto de Astrofísica de Canarias (Spain); Pedro Mas-Abellán, Antonio Fimia, Roque F. Madrigal, Univ. Miguel Hernández de Elche (Spain); Francisco Garzón López, Instituto de Astrofísica de Canarias (Spain) . [10233-46]

11:30: **Enhancing performance of LCoS-SLM as adaptive optics by using computer-generated holograms modulation software**, Chun-Wei Tsai, Bohan Lyu, Cheng-Chieh Hung, Jasper Display Corp. (Taiwan) . . . . . [10233-47]

11:50: **Clustering of red blood cells using digital holographic microscopy**, Keyvan Jaferzadeh, Inkyu Moon, Ezat Ahmadzadeh, Samaneh gholami, Chosun Univ. (Korea, Republic of) . . . . . [10233-48]

12:10: **Terahertz-computed tomography in 3D using a pyroelectric array detector**, Bin Li, Dayong Wang, Beijing Univ. of Technology (China); Xun Zhou, China Academy of Engineering Physics (China); Lu Rong, Haochong Huang, Yunxin Wang, MIN WAN, Beijing Univ. of Technology (China) . . . . . [10233-49]

Lunch Break . . . . . Thu 12:30 to 13:40

SESSION 10

ROOM: BENADA . . . . . THU 13:40 TO 15:00

Digital Holographic Applications

Session Chairs: **Miroslav Hrabovský,** Palacky Univ. Olomouc (Czech Republic); **John T. Sheridan,** Univ. College Dublin (Ireland)

13:40: **Phyllotactic arrangements of optical elements**, Miroslav Horacek, Petr Meluzin, Stanislav Kratky, Milan Matejka, Vladimir Kolarik, Institute of Scientific Instruments of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic) . . . . . [10233-50]

14:00: **Fast calculation of computer-generated spherical hologram by spherical harmonic transform**, Yusuke Sando, Technology Research Institute of Osaka Prefecture (Japan); Daisuke Barada, Boaz J. Jackin, Toyohiko Yatagai, Utsunomiya Univ. (Japan) . . . . . [10233-51]

14:20: **Optical position encoder based on four-section diffraction grating**, Alexander Y. Zherdev, Sergey B. Odinokov, Dmitrii S. Lushnikov, Vladimir V. Markin, Oleg A. Gurylev, Maria V. Shishova, Bauman Moscow State Technical Univ. (Russian Federation). . . . . [10233-52]

14:40: **Compressive self-interference Fresnel digital holography with faithful reconstruction**, Yuhong Wan, Tianlong Man, Ying Han, Hongqiang Zhou, Dayong Wang, Beijing Univ. of Technology (China) . . . . . [10233-54]

CONFERENCE 10234

LOCATION: VIRGO

Thursday 27–27 April 2017 • Proceedings of SPIE Vol. 10234

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 Irvine {United States); **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)

THURSDAY 27 APRIL

OPENING REMARKS

ROOM: VIRGO ..... 8:25 TO 8:30

SESSION 1

ROOM: VIRGO ..... THU 8:30 TO 11:30

Betatron Radiation and Ion Channel Lasers

Session Chair: **Adam Noble,** Univ. of Strathclyde (United Kingdom)

8:30: **Betatron x-ray radiation in the self-modulated regime of laser-wakefield acceleration**, Felicie Albert, Lawrence Livermore National Lab. (United States). . . . . [10234-1]

9:00: **Investigation of electron dynamics in a ionization-injection laser-wakefield accelerator via betatron radiation**, Alexander Koehler, Jurjen P. Couperus, Omid Zarini, Richard Pausch, Jakob M. Krämer, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany); Alexander Debus, Michael Bussmann, Arie Irman, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany) . . . . . [10234-2]

9:30: **Generation of stable and polarized x-rays for application to femtosecond spectroscopy**, Benoît Mahieu, Andreas S. Döpp, Agustin Lifschitz, Antoine Doche, Cédric Thaury, Sébastien Corde, Julien Gautier, Emilien Guillaume, Victor Malka, Antoine Rousse, Lab. d'Optique Appliquée, Ecole Nationale Supérieure de Techniques Avancées (France); Noémie Jourdain, Ludovic Lecherbourg, Commissariat à l'Énergie Atomique (France); Fabien Dorchies, Ctr. Lasers Intenses et Applications, Univ. Bordeaux 1 (France); Kim Ta Phuoc, Lab. d'Optique Appliquée, Ecole Nationale Supérieure de Techniques Avancées (France). . . . . [10234-3]

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

10:30: **Experimental measurements of x-ray radiation due to betatron oscillations in a laser wakefield accelerator**, Lewis R Reid, Enrico Brunetti, Gregory Vieux, Gregor H Welsh, Samuel M Wiggins, Bernhard Ersfeld, Matthew P Tooley, Samuel R Yoffe, Adam Noble, Dino A Jaroszynski, University of Strathclyde (United Kingdom) . . . . . [10234-4]

11:00: **Spatio-temporal description of the ion channel free-electron laser**, Bernhard Ersfeld, Univ. of Strathclyde (United Kingdom) and Scottish Univ. Physics Alliance (United Kingdom); Sijia Chen, Univ. of Strathclyde (United Kingdom); Adam Noble, Samuel R. Yoffe, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) and Scottish Univ. Physics Alliance (United Kingdom) . . . . . [10234-5]

SESSION 2

ROOM: VIRGO ..... THU 11:30 TO 13:00

Thomson, Compton, and Raman Scattering

Session Chair: **MinSup Hur,** Ulsan National Institute of Science and Technology (Korea, Republic of)

11:30: **An ultrahigh gain amplifier based on Raman amplification in plasma**, Gregory Vieux, Univ. of Strathclyde (United Kingdom) and Institute of Physics of the ASCR, v.v.i. (Czech Republic) and ELI Beamlines (Czech Republic); Silvia Cipiccia, Univ. of Strathclyde (United Kingdom); Nuno R. C. Lemos, Lawrence Livermore National Lab. (United States); Cristian Ciocarlan, Peter A. Grant, David W. Grant, Bernhard Ersfeld, Univ. of Strathclyde (United Kingdom); MinSup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of); Panagiotis Lepipas, Grace Manahan, David Reboredo Gil, Anna Subiel, Gregor H. Welsh, S. Mark Wiggins, Samuel R. Yoffe, Univ. of Strathclyde (United Kingdom); John P. Farmer, Heinrich-Heine-Univ. Düsseldorf (Germany); Constantin Aniculaesei, Enrico Brunetti, Xue Yang, Univ. of Strathclyde (United Kingdom); Robert Heathcote, STFC Rutherford Appleton Lab. (United Kingdom); Gagik Nersisyan, Ciaran L. S. Lewis, Queen's Univ. Belfast (United Kingdom); Alexander Pukhov, Heinrich-Heine-Univ. Düsseldorf (Germany); João Mendanha Dias, Instituto Superior Técnico (Portugal); Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) . . . . . [10234-6]

12:00: **Redshift and harmonic radiation of nonlinear Laser-Thomson scattered X-rays**, Jakob M. Krämer, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany) and Danfysik A/S (Denmark); Arie Irman, Axel Jochmann, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Richard Pausch, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany); Alexander Debus, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Jurjen P. Couperus, Alexander Köhler, Omid Zarini, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany); Michael Kuntzsch, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Michael Budde, Danfysik A/S (Denmark); Ulf Lehnert, Andreas Wagner, Michael Bussmann, Thomas E. Cowan, Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany). . . . . [10234-7]

12:30: **Scaling EUV and X-ray Thomson sources to optical free-electron laser operation with traveling-wave Thomson scattering**, Klaus Steiniger, Daniel Albach, Alexander Debus, Markus Löser, Richard Pausch, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Fabian Röser, TOPTICA Photonics AG (Germany); Ulrich Schramm, Matthias Siebold, Michael Bussmann, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) . [10234-8]

Lunch Break . . . . . Thu 13:00 to 14:00

SESSION 3

ROOM: VIRGO . . . . . THU 14:00 TO 15:00

Terahertz Radiation

Session Chair: **David A. Burton,** Lancaster Univ. (United Kingdom)

14:00: **A new method to obtain narrowband emission from a broadband current using increased impedance of plasma-like media**, Min Sup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of); Bernhard Ersfeld, Adam Noble, Univ. of Strathclyde (United Kingdom) and Scottish Univ. Physics Alliance (United Kingdom); Hyyong Suk, Gwangju Institute of Science and Technology (Korea, Republic of); Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) and Scottish Univ. Physics Alliance (United Kingdom). . . . . [10234-9]

14:30: **High-power terahertz radiation from laser-produced plasmas**, Zheng-Ming Sheng, Univ. of Strathclyde (United Kingdom). . . . . [10234-10]

SESSION 4

ROOM: VIRGO . . . . . THU 15:00 TO 18:00

High Field Physics

Session Chair: **Zheng-Ming Sheng,** Univ. of Strathclyde (United Kingdom)

15:00: **Plasma-based wakefield acceleration in strong fields**, David A. Burton, Lancaster Univ. (United Kingdom) . . . . . [10234-11]

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

16:00: **Modelling electron and photon dynamics in intense laser pulses**, Adam Noble, Samuel R. Yoffe, Alexander J. Macleod, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) . . . . . [10234-12]

16:30: **Electron beam cooling in intense focussed laser pulses**, Samuel R. Yoffe, Adam Noble, Alexander J. Macleod, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) . . . . . [10234-13]

17:00: **On the momentum of light and the quantum vacuum**, Alexander J Macleod, Adam Noble, Dino A Jaroszynski, University of Strathclyde (United Kingdom) . . . . . [10234-14]

17:30: **Observations on the ponderomotive force**, David A. Burton, Lancaster Univ. (United Kingdom); Robert A. Cairns, Lancaster Univ. (United Kingdom); Bernhard Ersfeld, Adam Noble, Dino A. Jaroszynski, Sam Yoffe, Univ. of Strathclyde (United Kingdom) . . . . . [10234-15]

CONFERENCE 10235

LOCATION: LEO

Wednesday - Thursday 26–27 April 2017 • Proceedings of SPIE Vol. 10235

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 (United States); **Henryk Fiedorowicz,** Military Univ. of Technology (Poland); **René Hudec,** Czech Technical Univ. in Prague (Czech Republic); **Ali M. Khounsary,** X-ray Optics, Inc. (United States); **Randall L. McEntaffer,** The Univ. of Iowa (United States); **Stephen L. O'Dell,** NASA Marshall Space Flight Ctr. (United States); **Giovanni Pareschi,** INAF - Osservatorio Astronomico di Brera (Italy); **Ladislav Pina,** Czech Technical Univ. in Prague (Czech Republic); **Yuriy Ya Platonov,** Rigaku Innovative Technologies, Inc. (United States); **Paul B. Reid,** Harvard-Smithsonian Ctr. for Astrophysics (United States); **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. (United States); **Melville P. Ulmer,** Northwestern Univ. (United States); **David L. Windt,** Reflective X-Ray Optics LLC (United States); **William W. Zhang,** NASA Goddard Space Flight Ctr. (United States)

WEDNESDAY 26 APRIL

OPENING REMARKS

ROOM: LEO ..... 10:25 TO 10:30

SESSION 1

ROOM: LEO ..... WED 10:30 TO 12:20

Astronomical X-ray Optics I

Session Chair: **René Hudec,** Astronomical Institute of the ASCR, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic)

10:30: **Lobster eye optics on suborbital rockets** *(Invited Paper)*, James H. Tutt, The Univ. of Iowa (United States) . . . . . [10235-1]

11:00: **X-ray Lobster Eye all-sky monitor for rocket experiment**, Vladimír Dániel, VZLÚ, a.s. (Czech Republic); Ladislav Pína, Czech Technical Univ. in Prague (Czech Republic); Adolf J. Inneman, Rigaku Innovative Technologies Europe (Czech Republic); Vojtěch Zadražil, VZLÚ, a.s. (Czech Republic); Tomás Báča, Veronika Stehlíková, Ondrej Nentvich, Martin Urban, Czech Technical Univ. in Prague (Czech Republic); Randall L. McEntaffer, James H. Tutt, The Univ. of Iowa (United States); Timothy J. Schulz, Pennsylvania State Univ. (United States). . . . . [10235-36]

11:20: **Prototyping iridium coated mirrors for X-ray astronomy**, Thorsten Döhring, Anne-Catherine Probst, Manfred Stollenwerk, Florian Emmerich, Hochschule Aschaffenburg (Germany); Veronika Stehlíková, Adolf J. Inneman, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10235-3]

11:40: **Study of lobster eye optics with iridium coated X-ray mirrors for a rocket experiment**, Veronika Stehlíková, Martin Urban, Ondrej Nentvich, Adolf J. Inneman, Czech Technical Univ. in Prague (Czech Republic); Thorsten Döhring, Anne-Catherine Probst, Hochschule Aschaffenburg (Germany)[10235-4]

12:00: **Recent advances in reflective optics for EUV/X-ray sources at Thales SESO**, Monique Ide, Thales SESO S.A.S. (France); Luca Peverini, ESRF - The European Synchrotron (France); Denis Fappani, Thales SESO S.A.S. (France) . . . . . [10235-5]

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

PLENARY SESSION III

ROOM: NADIR ..... WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 2

ROOM: LEO ..... WED 15:40 TO 17:50

Astronomical X-ray Optics II

Session Chair: **Ladislav Pina,** Czech Technical Univ. in Prague (Czech Republic)

15:40: **The future of high resolution X-ray optics for astronomy** *(Invited Paper)*, Paul Gorenstein, Harvard-Smithsonian Ctr. for Astrophysics (United States) . . . . . [10235-6]

16:10: **Current developments and tests of small X-ray optical systems for space applications**, Ladislav Pína, Czech Technical Univ. in Prague (Czech Republic); Adolf J. Inneman, T. Baca, Rigaku Innovative Technologies Europe (Czech Republic); Ladislav Sieger, Czech Technical Univ. in Prague (Czech Republic); Veronika Marsikova, Rigaku Innovative Technologies Europe (Czech Republic); Veronika Stehlíková, Daniela Doubravová, Czech Technical Univ. in Prague (Czech Republic); Vladimír Dániel, VZLÚ, a.s. (Czech Republic); René Hudec, Astronomical Institute of the ASCR, v.v.i. (Czech Republic) . . . [10235-7]

16:30: **Application of biomimetics in X-ray optics**, René Hudec, Astronomical Institute of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Katerina Remisova, Astronomical Institute of the ASCR, v.v.i., The Czech Academy of Sciences (Czech Republic) and Charles Univ. in Prague (Czech Republic) . . . . . [10235-8]

16:50: **Optimization of microroughness of replicated X-ray optics**, Lenka Mikulicková, TTS s.r.o. (Czech Republic) and Institute of Chemical Technology in Prague, Univ. of Chemistry and Technology, Prague (Czech Republic); Ladislav Pína, Adolf J. Inneman, Czech Technical Univ. in Prague (Czech Republic) and Rigaku Innovative Technologies Europe (Czech Republic); Veronika Stehlíková, Ondrej Nentvich, Ladislav Sieger, Martin Urban, Czech Technical Univ. in Prague (Czech Republic); Daniela Doubravová, Czech Technical Univ. in Prague (Czech Republic) and Rigaku Innovative Technologies Europe (Czech Republic); Jaromír Mirovský, TTS, s.r.o. (Czech Republic) . . . . . [10235-9]

17:10: **Joint observations of solar corona in space projects ARKA and KORTES**, Eugene A. Vishnyakov, Sergey A. Bogachev, Alexey S. Kirichenko, Anton A. Reva, Ivan P. Loboda, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation); Ilya V. Malyshev, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation); Artem S. Ulyanov, Sergey Y. Dyatkov, Nataliya F. Erkhova, Sergey V. Kuzin, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation); Alexander E. Shakhanov, Lavochkin Association (Russian Federation) . . . . . [10235-10]

17:30: **Deformation-free rim for the primary mirror of telescope having sub-second resolution**, Ilya Malyshev, Nikolay I. Chkhalo, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation); Mikhail N. Toropov, Nikolay N. Salashchenko, Institute of Applied Physics of the Russian Academy of Sciences (Russian Federation); Alexey E. Pestov, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation); Sergey V. Kuzin, P.N. Lebedev Physical Institute (Russian Federation); Vladimir N. Polkovnikov, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation) . . . . . [10235-11]

POSTERS SESSION

ROOM: MERIDIAN HALL . . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Data processing from lobster eye type optics, Ondrej Nentvich, Martin Urban, Veronika Stehlíková, Martin Blazek, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10235-24]

New design of spectrometer for X-ray astrophysics, Martin Urban, Ondrej Nentvich, Veronika Stehlíková, Ladislav Sieger, Czech Technical Univ. in Prague (Czech Republic); Jan Jakubek, Advacam s.r.o. (Czech Republic) . . . [10235-25]

Development and demonstration of a water-window soft X-ray microscope using a Z-pinching capillary discharge source, Muhammad Fahad Nawaz, Alexandr Jancarek, Michal Nevrkla, Ladislav Pína, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10235-26]

Diffraction/refraction optics for hard x-ray radiation: from 10 keV to 100 keV, Alexander Firsov, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Anatoly Firsov, Institute of Microelectronics Technology and High Purity Materials, Russian Academy of Sciences (Russian Federation); Heike Löchel, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Alexander D. Svintsov, Yana Shabelnikova, Sergey I. Zaitsev, Institute of Microelectronics Technology and High Purity Materials, Russian Academy of Sciences (Russian Federation); Alexei Erko, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) . . . . . [10235-27]

Development of laboratory metrology for X-ray refractive lenses, Dmitrii Zverev, Anton Narikovich, Ivan Lyatun, Immanuel Kant Baltic Federal Univ. (Russian Federation); Irina Snigireva, ESRF - The European Synchrotron (France); Anatoly Snigirev, Immanuel Kant Baltic Federal Univ. (Russian Federation) . . . . . [10235-28]

The influence of internal beryllium microstructure on the optical properties of compound refractive lenses, Ivan Lyatun, Peter Ershov, Anatoly Snigirev, Immanuel Kant Baltic Federal Univ. (Russian Federation); Irina Snigireva, ESRF - The European Synchrotron (France) . . . . . [10235-29]

High-resolution x-ray computed tomography as a diagnostic method of compound refractive lenses, Anton Narikovich, Petr Ershov, Dmitriy Zverev, Immanuel Kant Baltic Federal Univ. (Russian Federation); Irina Snigireva, ESRF - The European Synchrotron (France); Anatoly Snigirev, Immanuel Kant Baltic Federal Univ. (Russian Federation) . . . . . [10235-30]

Pd/Y multilayer mirrors with a Mo barrier, Mingqi Cui, Institute of High Energy Physics, Chinese Academy of Sciences (China); Dechao Xu, Qiushi Huang, Zhanshan Wang, Tongji Univ. (China) . . . . . [10235-31]

Development of lidar for remote sensing of the Martian surface, Leonid Smirnov, Victoria A. Ryzhova, Alexsandr S. Grishkanich, ITMO Univ. (Russian Federation) . . . . . [10235-32]

High-aperture monochromator-reflectometer and its usefulness for CCD calibration, Eugene A. Vishnyakov, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation); Alexander V. Shcherbakov, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation); Andrei A. Pertsov, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation); Vladimir N. Polkovnikov, Alexey E. Pestov, Dmitry E. Pariev, Nikolay I. Chkhalo, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation) . [10235-33]

Optical performances of aluminum based phase retarder in EUV and FUV range, Ahmed E. H. Gaballah, Paola Zuppella, Alain J. Corso, Piergiorgio Nicolosi, Univ. degli Studi di Padova (Italy) . . . . . [10235-34]

THURSDAY 27 APRIL

SESSION 3

ROOM: LEO . . . . . THU 8:50 TO 9:30

Active X-ray Optics and X-ray Microscopes

Session Chair: **René Hudec,** Astronomical Institute of the ASCR, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic)

8:50: **Reflective optics for effective collection of X-ray and EUV radiation: use for creation of photoionized plasmas and detection of weak signals**, Andrzej S. Bartnik, Wojciech Skrzeczanowski, Przemyslaw W. Wachulak, Ismail Saber, Henryk Fiedorowicz, Tomasz Fok, Lukasz Wegrzynski, Military Univ. of Technology (Poland) . . . . . [10235-12]

9:10: **Micro-X-ray fluorescence spectrometer with X-ray single bounce metallic capillary optics for light element analysis**, Robert Mroczka, Grzegorz Żukociński, Rafał Łopucki, The John Paul II Catholic Univ. of Lublin (Poland) . . . . . [10235-13]

SESSION 4

ROOM: LEO . . . . . THU 9:30 TO 10:30

Multilayer and Refractive X-ray Optics

Session Chair: **René Hudec,** Astronomical Institute of the ASCR, v.v.i. (Czech Republic), Czech Technical Univ. in Prague (Czech Republic)

9:30: **Study of Pd/Y based multilayers using high energy photoemission spectroscopy combined with x-ray standing waves**, Meiyi Wu, Vita Ilakovac, Jean-Michel André, Karine Le Guen, Univ. Pierre et Marie Curie (France) and Ctr. National de la Recherche Scientifique (France); Angelo Giglia, Istituto Officina dei Materiali, Consiglio Nazionale delle Ricerche (Italy) and Consiglio Nazionale delle Ricerche (Italy); Jean-Pascal Rueff, Synchrotron SOLEIL (France); Qiushi Huang, Zhanshan Wang, Tongji Univ. (China); Philippe Jonnard, Univ. Pierre et Marie Curie (France) and Ctr. National de la Recherche Scientifique (France)[10235-15]

9:50: **Development of depth-graded W/Si multilayer mirrors for X-ray focusing telescope application**, Runze Qi, Qiushi Huang, Yang Yang, Zhong Zhang, Zhanshan Wang, Tongji Univ. (China) . . . . . [10235-17]

10:10: **Spectral X-ray glitches in monocrystalline diamond refractive lenses**, Maxim Polikarpov, Nataliya Klimova, Immanuel Kant Baltic Federal Univ. (Russian Federation); Irina Snigireva, Hermann Emerich, ESRF - The European Synchrotron (France); Anatoly Snigirev, Immanuel Kant Baltic Federal Univ. (Russian Federation) . . . . . [10235-23]

Coffee Break . . . . . Thu 10:30 to 11:00

SESSION 5

ROOM: LEO . . . . . THU 11:00 TO 11:40

Coherent Radiation/Lasers

Session Chair: **Ladislav Pina,** Czech Technical Univ. in Prague (Czech Republic)

11:00: **Lens-coupled tunable Young's double pinhole system for hard x-ray spatial coherence characterization**, Mikhail Lyubomirskiy, Deutsches Elektronen-Synchrotron (Germany); Anatoly Snigirev, Immanuel Kant Baltic Federal Univ. (Russian Federation); Irina Snigireva, ESRF - The European Synchrotron (France) . . . . . [10235-18]

11:20: **Metrology studies of soft X-ray and EUV grazing incidence optics using compact laser plasma light sources**, Henryk Fiedorowicz, Andrzej S. Bartnik, Przemyslaw W. Wachulak, Military Univ. of Technology (Poland) . . . . . [10235-19]

SESSION 6

ROOM: LEO . . . . . THU 11:40 TO 12:40

Integrated and Other Various Devices

Session Chair: **Ladislav Pina,** Czech Technical Univ. in Prague (Czech Republic)

11:40: **Polarizers tuned at key far-UV spectral lines for space instrumentation**, Juan I. Larruquert, Consejo Superior de Investigaciones Científicas (Spain); A. Marco Malvezzi, Univ. degli Studi di Pavia (Italy); Angelo Giglia, Istituto Officina dei Materiali, Consiglio Nazionale delle Ricerche (Italy) and Consiglio Nazionale delle Ricerche (Italy); Luis Rodríguez-de Marcos, Nuria Gutiérrez-Luna, Lucía Espinosa-Yáñez, Carlos Honrado-Benítez, José A. Aznárez, Consejo Superior de Investigaciones Científicas (Spain); Giuseppe Massone, Gerardo Capobianco, Silvano Fineschi, INAF - Osservatorio Astrofisico di Torino (Italy); Stefano Nannarone, Istituto Officina dei Materiali, Consiglio Nazionale delle Ricerche (Italy) and Consiglio Nazionale delle Ricerche (Italy) . . . . . [10235-20]

12:00: **Flat-field VLS spectrometers for laboratory applications**, Evgeny N. Ragozin, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation); Aleksei Belokopytov, State Institute of Applied Optics (Russian Federation); Alexei O. Kolesnikov, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation); Eduard Muslimov, Aix Marseille Univ, CNRS, LAM, Laboratoire d'Astrophysique de Marseille (France) and Kazan National Research Technical University named after A.N. Tupolev – KAI (Russian Federation); Alexey N. Shatokhin, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation) and Moscow Institute of Physics and Technology (Russian Federation); Eugene A. Vishnyakov, P.N. Lebedev Physical Institute, Russian Academy of Sciences (Russian Federation) . . . . . [10235-21]

12:20: **Effect of ion beam etching on the surface roughness of bare and silicon covered beryllium**, Alexey E. Pestov, Nikolay I. Chkhalo, Mikhail S. Mikhaylenko, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation); Nikolay N. Tsybin, Institute of Applied Physics of the Russian Academy of Sciences (Russian Federation); Igor L. Strulea, OAO "Kompozit" (Russian Federation); Maria V. Zorina, Sergei Y. Zuev, Institute of Applied Physics of the Russian Academy of Sciences (Russian Federation); Vladimir N Polkovnikov, Institute for Physics of Microstructures Russian Academy of Sciences (Russian Federation) . . . . . [10235-22]

CONFERENCE 10236

LOCATION: VIRGO

Monday - Tuesday 24–25 April 2017 • Proceedings of SPIE Vol. 10236

Damage to VUV, EUV, and X-ray Optics (XDam6)

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

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. (United States); **Klaus Mann,** Laser-Lab. Göttingen e.V. (Germany); **Tomás 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. (United States); **Michael Störmer,** Helmholtz-Zentrum Geesthacht (Germany); **Philippe Zeitoun,** Ecole Nationale Supérieure de Techniques Avancées (France); **Beata Ziaja-Motyka,** Deutsches Elektronen-Synchrotron (Germany)

MONDAY 24 APRIL

WELCOME AND INTRODUCTION

ROOM: VIRGO . . . . . 8:30 TO 8:40

SESSION 1

ROOM: VIRGO . . . . . MON 8:40 TO 10:10

Damage to Optics I

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

8:40: **Single-shot damage of Ru thin film induced by XUV FEL fs pulses** *(Invited Paper)*, Igor Milov, Igor A. Makhotkin, MESA+ Institute for Nanotechnology, Univ. Twente (Netherlands); Ryszard Sobierajski, The Institute of Physics (Poland); Hartmut Enkisch, Carl Zeiss SMT GmbH (Germany); Jaromir Chalupský, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Kai Tiedtke, Deutsches Elektronen-Synchrotron (Germany); Gosse C. de Vries, ASML Netherlands B.V. (Netherlands); Michael Störmer, Helmholtz-Zentrum Geesthacht (Germany); Frank Scholze, Physikalisch-Technische Bundesanstalt (Germany); Frank Siewet, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Robbert W. E. van de Kruijs, Rico Keim, MESA+ Institute for Nanotechnology, Univ. Twente (Netherlands); Henk van Wolferen, MESA+ Institute for Nanotechnology, Univ. of Twente (Netherlands); Eric Louis, MESA+ Institute for Nanotechnology, Univ. Twente (Netherlands); Ivanna Yatsyna, Marek Jurek, The Institute of Physics (Poland); Libor Juha, Vera Hájková, Vojtech Vozda, Tomás Burian, Karel Saksl, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Bart Faatz, Barbara Keitel, Elke Plönjes-Palm, Siegfried Schreiber, Sven Toleikis, Rolf A. Loch, Deutsches Elektronen-Synchrotron (Germany); Martin Hermann, Sebastian Strobel, Carl Zeiss SMT GmbH (Germany); Han-Kwang Nienhuys, ASML Netherlands B.V. (Netherlands); Grzegorz Gwalt, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Tobias Mey, Klaus Man, Laser-Lab. Göttingen e.V. (Germany); Fred Bijkerk, MESA+ Institute for Nanotechnology, Univ. of Twente (Netherlands) . . . . . [10236-1]

9:10: **Irradiation of EUV-mirrors with multiple FEL pulses below the single shot damage threshold**, Igor A. Makhotkin, Univ. Twente (Netherlands); Ryszard Sobierajski, The Institute of Physics (Poland); Jaromir Chalupsky, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Kai Tiedtke, Deutsches Elektronen-Synchrotron (Germany); Gosse C. de Vries, ASML Netherlands B.V. (Netherlands); Michael Störmer, Helmholtz-Zentrum Geesthacht (Germany); Frank Scholze, Physikalisch-Technische Bundesanstalt (Germany); Frank Siewet, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Klaus Mann, Laser-Lab. Göttingen e.V. (Germany); Robbert W. E. van de Kruijs, Igor Milov, Eric Louis, MESA+ Institute for Nanotechnology (Netherlands); Ivanna Yatsyna, The Institute of Physics, Polish Academy of Sciences (Poland); Marek Jurek, Dorota Klinger, Institute of Physics, Polish Academy of Sciences (Poland); Vera Hájková, Tomás Burian, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Vojtech Vozda, Institute of Physics of the ASCR, v.v.i (Czech Republic); Karel Saksl, Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Bart Faatz, Barbara Keitel, Elke Plönjes-Palm, Siegfried Schreiber, Sven Toleikis, Deutsches Elektronen-Synchrotron (Germany); Rolf A. Loch, Deutsches Elektronen-Synchrotron (Germany); Martin Hermann, Sebastian Strobel, Carl Zeiss SMT GmbH (Germany); Han-Kwang Nienhuys, ASML Netherlands B.V. (Netherlands); Grzegorz Gwalt, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Tobias Mey, Laser-Lab. Göttingen e.V. (Germany); Hartmut Enkisch, Carl Zeiss SMT GmbH (Germany). . . [10236-2]

9:30: **Accumulative damage of ruthenium coated silicon exposed to multiple XUV pulses at 250 kHz-1 MHz repetition rate**, Ryszard Sobierajski, The Institute of Physics (Poland); Igor A. Makhotkin, MESA+ Institute for Nanotechnology, Univ. Twente (Netherlands); Igor Milov, MESA+ Institute for Nanotechnology, Univ. of Twente (Netherlands); Dorota Klinger, Ivanna Jacyna, The Institute of Physics (Poland); Jaromir Chalupský, Vera Hájková, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Enrico G. Keim, Henk A.G. M. van Wolferen, Mark Smithers, MESA+ Institute for Nanotechnology, Univ. Twente (Netherlands); Tomás Burian, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Rilpho Donker, ASML Netherlands B.V. (Netherlands); Hartmut Enkisch, Carl Zeiss SMT GmbH (Germany); Bart Faatz, Deutsches Elektronen-Synchrotron (Germany); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Marek Jurek, The Institute of Physics (Poland); Robbert W. E. van de Kruijs, MESA+ Institute for Nanotechnology, Univ. Twente (Netherlands); Eric Louis, MESA+ Institute for Nanotechnology, Univ. of Twente (Netherlands); Karel Saksl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Materials Research SAS (Slovakia); Siegfried Schreiber, Deutsches Elektronen-Synchrotron (Germany); Frank Scholze, Physikalisch-Technische Bundesanstalt (Germany); Frank Siewert, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Kai Tiedke, Sven Toleikis, Deutsches Elektronen-Synchrotron (Germany); Gosse C. de Vries, ASML Netherlands B.V. (Netherlands) . . . . . [10236-3]

9:50: **FEM approach to x-ray optics design**, Vito Mocella, Istituto per la Microelettronica e Microsistemi (Italy); Ari-Pekka Honkanen, Univ. of Helsinki (Finland); Claudio Ferrero, Jean-Pierre Guigay, ESRF - The European Synchrotron (France). . . . . [10236-4]

Coffee Break . . . . . Mon 10:10 to 10:40

SESSION 2

ROOM: VIRGO . . . . . MON 10:40 TO 12:15

Laser-Matter Interaction

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

10:40: **Ultrafast laser-induced confined microexplosion: a new way to create new material phases** *(Invited Paper)*, Andrei V. Rode, Australian National Univ. (Australia); Ludovic Rapp, FEMTO-ST (France); Eugene G. Gamaly, Australian National Univ. (Australia); Remo Giust, Luca Furfaro, Pierre-Ambroise Lacourt, John M. Dudley, FEMTO-ST (France); Saulius Juodkazis, Swinburne Univ. of Technology (Australia); François Courvoisier, FEMTO-ST (France) . . . . . [10236-5]

11:15: **Ultrafast breakdown of dielectrics: new insight from double pump-probe experiments**, Stéphane Guizard, Commissariat à l'Énergie Atomique (France); Alexandros Mouskeftaras, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Allan Bildé, Commissariat à l'Énergie Atomique (France); Sergey M. Klimentov, A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation); Nikita Fedorov, Ctr. Lasers Intenses et Applications (France). . . . . [10236-6]

11:35: **Development of a low-debris laser driven tape drive soft x-ray source**, Radhwan Alnaimi, Roland A. Smith, Imperial College London (United Kingdom) . . . . . [10236-7]

11:55: **Surface modification of BaF_2 induced by focused 46.9-nm laser beam**, Huaiyu Cui, Harbin Institute of Technology (China) and Institute of Physics of the ASCR, v.v.i. (Czech Republic); Yequan Zhao, Siqi Zhang, Wei Zhang, Wenhui Li, Harbin Institute of Technology (China); Vera Hájková, Tomás Burian, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Karel Kolacek, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10236-9]

Lunch Break . . . . . Mon 12:15 to 13:50

SESSION 3

ROOM: VIRGO . . . . . MON 13:50 TO 15:30

Damage to Samples

Session Chair: **Marie Davídková,** Nuclear Physics Institute of the ASCR, v.v.i. (Czech Republic)

13:50: **Multiscale modelling of radiation chemistry: from picosecond processes to observable endpoints** *(Invited Paper)*, Gregory P. Horne, California State Univ., Long Beach (United States); Thomas A. Donoclift, The Univ. of Manchester (United Kingdom); Jay A. LaVerne, Univ. of Notre Dame (United States); Stephen P. Mezyk, California State Univ., Long Beach (United States); Simon Pimblott, The Univ. of Manchester (United Kingdom) . [10236-10]

14:35: **Investigating laser-induced damage process in nanoparticles using femtosecond XFEL pulses** *(Invited Paper)*, Changyong Song, POSTECH (Korea, Republic of). . . . . [10236-11]

15:10: **Is there any dose-rate effect in breaking DNA strands by short pulses of extreme ultraviolet and soft x-ray radiation?**, Ludek Vyšín, Tomás Burian, Egor Ukraintsev, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Marie Davídková, Nuclear Physics Institute of the ASCR, v.v.i. (Czech Republic); Libor Juha, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Michael E. Grisham, Stable Laser Systems (United States); Scott C. Heinbuch, Jorge J. Rocca, Colorado State Univ. (United States) . . . . . [10236-12]

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

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 4

ROOM: VIRGO . . . . . TUE 10:15 TO 12:00

Damage to Optics II

Session Chair: **Igor A. Makhotkin,** Univ. Twente (Netherlands)

10:15: **Growth of nanodots on the grazing incidence mirror surface under FEL irradiation** *(Invited Paper)*, Igor V. Kozhevnikov, AV Shubnikov Institute of Crystallography (Russian Federation); Harald Sinn, Liubov Samoylova, European XFEL, GmbH (Germany); Aleksey Buzmakov, AV Shubnikov Institute of Crystallography (Russian Federation); Frank Siewert, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Kai Tiedtke, Deutsches Elektronen-Synchrotron DESY (Germany) . . . . . [10236-13]

10:45: **Low-pressure RF remote plasma cleaning of carbon-contaminated B4C-coated optics**, Harol Moreno Fernandez, CELLS - ALBA (Spain); Muriel Thomasset, Synchrotron SOLEIL (France); Guillaume Sauthier, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain); Daniela Rogler, Reiner Dietsch, AXO DRESDEN GmbH (Germany); Raymond Barrett, ESRF - The European Synchrotron (France); Vincent L. Carlino, ibss Group, Inc. (United States); Eric J. Pellegrin, CELLS - ALBA (Spain). . . . . [10236-14]

11:10: **Study of performance loss of Lyman alpha filters due to chemical contamination**, Delphine Faye, Ctr. National d'Études Spatiales (France); Xueyan Zhang, Institut d'Astrophysique Spatiale (France); Pierre Etcheto, Ctr. National d'Études Spatiales (France); Frédéric Auchère, Institut d'Astrophysique Spatiale (France) . . . . . [10236-15]

11:35: **Non-thermal damage to lead tungstate induced by intense short-wavelength laser radiation**, Vojtech Vozda, Charles Univ. in Prague (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic); Pavel Boháček, Tomás Burian, Jaromir Chalupský, Vera Hájková, Libor Juha, Ludek Vyšín, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jérôme Gaudin, European XFEL GmbH (Germany); Philip A. Heimann, Lawrence Berkeley National Lab. (United States); Stefan P. Hau-Riege, Lawrence Livermore National Lab. (United States); Marek Jurek, Dorota Klinger, The Institute of Physics (Poland); Jacek Krzywinski, Marc Messerschmidt, Stefan P. Moeller, Robert Nagler, SLAC National Accelerator Lab. (United States); Jerzy B. Pelka, The Institute of Physics (Poland); Michael Rowen, William F. Schlotter, Michele L. Swiggers, SLAC National Accelerator Lab. (United States); Harald Sinn, European XFEL GmbH (Germany); Ryszard Sobierajski, The Institute of Physics (Poland); Kai Tiedtke, Sven Toleikis, Deutsches Elektronen-Synchrotron (Germany); Thomas Tschentscher, European XFEL GmbH (Germany); Joshua J. Turner, SLAC National Accelerator Lab. (United States); Hubertus Wabnitz, Deutsches Elektronen-Synchrotron (Germany); Art J. Nelson, Lawrence Livermore National Lab. (United States); Maria V. Kozlova, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Sam M. Vinko, Thomas Whitcher, Univ. of Oxford (United Kingdom); Thomas Dzelzainis, Queen's Univ. Belfast (United Kingdom); Oldrich Renner, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Karel Saksl, Institute of Materials Research SAS (Slovakia); Roland R. Fäustlin, Deutsches Elektronen-Synchrotron (Germany); Ali R. Khorsand, FOM-Institute for Plasmy Physics Rijnhuizen (Netherlands); Marta Fajardo, Instituto de Plasmas e Fusão Nuclear (Portugal); Bianca S. Iwan, Jakob Andreasson, Janos Hajdu, Nicusor Timneanu, Uppsala Univ. (Sweden); Justin S. Wark, Univ. of Oxford (United Kingdom); David Riley, Queen's Univ. Belfast (United Kingdom); Richard W. Lee, Lawrence Livermore National Lab. (United States); Mitsuru Nagasono, Makina Yabashi, RIKEN Harima Branch (Japan) . . . . . [10236-17]

Lunch/Exhibition Break . . . . . Tue 12:00 to 13:30

SESSION 5

ROOM: VIRGO . . . . . TUE 13:30 TO 14:55

Theory of Damage

Session Chair: **Stéphane Guizard,** Commissariat à l'Énergie Atomique (France)

13:30: **Thermalization of x-ray-generated electron cascades in diamond and LiF** *(Invited Paper)*, Vladimir P. Lipp, Beata Ziaja-Motyka, DESY (Germany) . . . . . [10236-18]

14:15: **Influence of model parameters on a simulation of x-ray irradiated materials: example of XTANT code**, Nikita A. Medvedev, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Vladimir Lipp, Center for Free-Electron Laser Science, DESY (Germany) . . . . . [10236-19]

PANEL DISCUSSION

ROOM: VIRGO . . . . . 14:55 TO 15:35

Round Table Discussion: Damage Mechanisms-Theory and Experiments

Session Chair: **Nikita A. Medvedev,** Institute of Physics of the ASCR, v.v.i. (Czech Republic)

Co-organized by the Czech Academy of Sciences within its Strategy 21 Program, the session "Damage Mechanisms: Theory and Experiments" will be focused on further development of the theory and computer simulations of processes responsible for transient and irreversible changes in irradiated solids to get a good agreement with experimental results obtained and to help in planning prospective experiments at new facilities, esp. European XFEL. The session will incorporate invited contributions and a round-table discussion.

Coffee Break . . . . . Tue 15:35 to 16:00

PANEL DISCUSSION

ROOM: VIRGO . . . . . .16:00 TO 17:50

Round Table Discussion: XUV/X-ray Lasers in Radiation Chemistry and Radiobiology

Session Chairs: **Simon Pimblott; Libor Juha,** Institute of Physics of the ASCR, v.v.i. (Czech Republic)

Co-organized by the Czech Academy of Sciences within its Strategy 21 Program, the session will be dealing with a prospective utilization of new short-wavelength lasers in radiation sciences, esp. radiation chemistry and radiobiology. The session will incorporate invited contributions and a round-table discussion.

WEDNESDAY 26 APRIL

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . .WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Formation of periodic relief at Sc/Si multilayer surface under EUV laser irradiation, Yuriy P. Pershyn, Kharkiv Polytechnical Institute (Ukraine); Andriy Y. Zolotaryov, NXP Semiconductors GmbH (Germany); Jorge J. Rocca, Colorado State Univ. (United States); Aleksander Y. Devizenko, Valeriy V. Kondratenko, Kharkiv Polytechnical Institute (Ukraine); Igor A. Artyukov, Alexander V. Vinogradov, P.N. Lebedev Physical Institute (Russian Federation) . . . . [10236-8]

Optical and structural characterization of Nb, Zr, Nb/Zr thin films on Si3N4 membranes windows, Kety M. Jimenez Tejeda, Univ. degli Studi di Padova (Italy); Piergiorgio Nicolosi, Univ. degli Studi di Padova (Italy) and LUXOR-CNR-IFN (Italy); Paola Zuppella, CNR-IFN UoS Padova (Italy); Ahmed Eid Hamed Gaballah, Mewael G. Sertsu, Univ. degli Studi di Padova (Italy). . . . . [10236-16]

CONFERENCE 10237

LOCATION: ZENIT

Tuesday - Thursday 25–27 April 2017 • Proceedings of SPIE Vol. 10237

X-Ray Free-Electron Lasers: Advances in Source Development and Instrumentation

Conference Chairs: **Thomas Tschentscher,** European XFEL GmbH (Germany); **Luc Patthey,** Paul Scherrer Institut (Switzerland)

Programme Committee: **Robert Aymeric,** SLAC National Accelerator Lab. (United States); **Sven Reiche,** Paul Scherrer Institut (Switzerland); **Rolf Treusch,** Deutsches Elektronen-Synchrotron (Germany); **Makina Yabashi,** Japan Synchrotron Radiation Research Institute (JASRI) (Japan); **Mikhail V. Yurkov,** Deutsches Elektronen-Synchrotron (Germany); **Marco Zangrando,** Elettra-Sincrotrone Trieste S.C.p.A. (Italy); **Philippe Zeitoun,** Lab. d'Optique Appliquée (France)

TUESDAY 25 APRIL

JOINT SESSION 1

ROOM: ZENIT . . . . . TUE 13:10 TO 15:20

Scientific Applications of Laser- and Accelerator-based X-ray Sources

Session Chair: **Thomas Tschentscher,** European XFEL GmbH (Germany)

Joint Session with Conferences 10237 and 10243

13:10: **X-ray absorption spectroscopy of warm dense matter with betatron x-ray radiation** *(Invited Paper)*, Felicie Albert, Lawrence Livermore National Lab (United States). . . . . [10243-18]

13:40: **Investigating pathways of biological specimen on fs to µs timescales** *(Invited Paper)*, Richard Neutze, Göteborgs Univ. (Sweden). . . . . [10237-1]

14:10: **Nonlinear X-ray spectroscopy: needs and prospects** *(Invited Paper)*, Nina Rohringer, DESY (Germany) . . . . . [10237-2]

14:40: **Time-resolved X-ray spectroscopy for X-ray-induced phenomena**, Antonio Picón, Argonne National Lab. (United States) . . . . . [10243-19]

15:00: **The EIS beamline at the seeded free-electron laser FERMI**, Alberto Simoncig, Riccardo Mincigrucci, Emiliano Principi, Filippo Bencivenga, Laura Foglia, Andrea Calvi, Claudio Masciovecchio, Gabor Kurdi, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Alessia Matruglio, Simone Dal Zilio, Valentina Masciotti, Istituto Officina dei Materiali (Italy) . . . . . [10243-20]

Coffee Break . . . . . Tue 15:20 to 15:40

JOINT SESSION 2

ROOM: ZENIT . . . . . TUE 15:40 TO 17:30

Temporal, Spatial and Coherence Diagnostics of Ultrashort X-ray Pulses

Session Chair: **Carmen S. Menoni,** Colorado State Univ. (United States)

Joint Session with Conferences 10237 and 10243

15:40: **Advanced time-domain diagnostics using photoelectrons** *(Invited Paper)*, Wolfram Helml, Technische Univ. München (Germany); Nick Hartmann, SLAC National Accelerator Lab. (United States); Rupert Heider, Martin S. Wagner, Technische Univ. München (Germany); Gregor Hartmann, Deutsches Elektronen-Synchrotron (Germany); Markus Ilchen, European XFEL GmbH (Germany); Jens Buck, Deutsches Elektronen-Synchrotron (Germany); Anton O. Lindahl, Qamcom Research & Technology AB (Sweden); Craig Benko, JILA (United States); Jan Grünert, European XFEL GmbH (Germany); Jacek Krzywinski, SLAC National Accelerator Lab. (United States); Jia Liu, European XFEL GmbH (Germany); Alberto Lutman, Agostino Marinelli, Timothy J. Maxwell, Alireza A. Miahnahri, Stefan P. Moeller, SLAC National Accelerator Lab. (United States); Marc Planas, European XFEL GmbH (Germany); Joseph S. Robinson, SLAC National Accelerator Lab. (United States); Jens Viefhaus, Deutsches Elektronen-Synchrotron (Germany); Thomas Feurer, Univ. Bern (Switzerland); Reinhard Kienberger, Technische Univ. München (Germany); Ryan N. Coffee, SLAC National Accelerator Lab. (United States). . . . . [10237-3]

16:10: **Temporal diagnostics from photons: the experience with the PALM** *(Invited Paper)*, Pavle Juranic, Ishkhan Gorgisyan, Christian Erny, Rasmus Ischebeck, Luc Patthey, Claude Pradervand, Christopher J. Milne, H. Lemke, Paul Scherrer Institut (Switzerland); Andreas Dax, Yale Univ. (United States); Milan Radovic, Christoph P. Hauri, Paul Scherrer Institut (Switzerland); Shigeki Owada, Tadashi Togashi, Tsukasa Katayama, Makina Yabashi, RIKEN Harima Branch (Japan) . . . . . [10237-4]

16:40: **Single-shot linear autocorrelation of partially coherent XUV laser pulses**, Andréa Le Marec, Institut des Sciences Moléculaires d'Orsay (France); Olivier A. Guilbaud, Moana Pittman, Elsa Baynard, Univ. Paris-Sud 11 (France); Julien Demailly, Olivier Neveu, Lab. de Physique des Gaz et des Plasmas (France); Sophie Kazamias, Univ. Paris-Sud 11 (France); Bruno Lucas, Fabrice Sanson, Lab. de Physique des Gaz et des Plasmas (France); David Ros, Annie Klisnick, Univ. Paris-Sud 11 (France) . . . . . [10243-21]

17:00: **Nanofabrication of diffractive X-ray optics for synchrotrons and XFELs** *(Invited Paper)*, Christian David, Paul Scherrer Institut (Switzerland) . . . . . [10243-22]

WEDNESDAY 26 APRIL

OPENING REMARKS

ROOM: ZENIT . . . . . 8:25 TO 8:30

SESSION 1

ROOM: ZENIT . . . . . WED 8:30 TO 12:20

Status and Development Plans of Planned and Operational VUV, EUV, Soft X-ray and X-ray FEL Facilities

Session Chair: **Rolf Treusch,** Deutsches Elektronen-Synchrotron (Germany)

8:30: **Overview of optics, photon diagnostics and experimental instruments at SACLA: development, operation and scientific applications** *(Invited Paper)*, Kensuke Tono, Japan Synchrotron Radiation Research Institute (Japan); Tadashi Togashi, Yuichi Inubushi, Tetsuo Katayama, Japan Synchrotron Radiation Research Institute (Japan) and RIKEN SPring-8 Center (Japan); Shigeki Owada, Toshinori Yabuuchi, RIKEN SPring-8 Center (Japan); Akira Kon, Japan Synchrotron Radiation Research Institute (Japan); Ichiro Inoue, Taito Osaka, RIKEN SPring-8 Center (Japan); Hirokatsu Yumoto, Takahisa Koyama, Haruhiko Ohashi, Japan Synchrotron Radiation Research Institute (Japan) and RIKEN SPring-8 Center (Japan); Makina Yabashi, RIKEN SPring-8 Center (Japan) and Japan Synchrotron Radiation Research Institute (Japan). . . . . [10237-5]

9:00: **Opportunities and challenges for photon diagnostics at the soft X-ray FEL FLASH in simultaneous operation mode** *(Invited Paper)*, Marion Kuhlmann, Rolf Treusch, Elke Plönjes-Palm, Bart Faatz, Kai Tiedtke, Markus Braune, Barbara Keitel, Deutsches Elektronen-Synchrotron (Germany) [10237-6]

9:30: **Commissioning for the European XFEL facitiliy** *(Invited Paper)*, Dirk Nölle, DESY (Germany) . . . . . [10237-7]

10:00: **Starting up Swiss FEL** *(Invited Paper)*, Luc Patthey, Paul Scherrer Institut (Switzerland) . . . . . [10237-8]

Coffee Break . . . . . Wed 10:30 to 11:00

11:00: **Commissioning results of PAL-XFEL**, Heung-Sik Kang, Hoon Heo, Chang-Ki Min, Changbum Kim, Haeryong Yang, Gyujin Kim, Pohang Accelerator Lab. (Korea, Republic of). . . . . [10237-9]

11:20: **Attosecond Interferometry at FLASH** *(Invited Paper)*, Tim Laarmann, DESY (Germany) and The Hamburg Centre for Ultrafast Imaging CUI (Germany) . . . . . [10237-10]

11:50: **Four-wave-mixing experiments and beyond: the TIMER/mini-TIMER setups at FERMI** *(Invited Paper)*, Laura Foglia, Filippo Bencivenga, Riccardo Mincigrucci, Alberto Simoncig, Andrea Calvi, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Riccardo Cucini, Istituto Officina dei Materiali (Italy); Emiliano Principi, Emanuele Pedersoli, Flavio Capotondi, Maya Kiskinova, Claudio Masciovecchio, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) . . . . . [10237-11]

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

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

JOINT SESSION 3

ROOM: ZENIT . . . . . WED 15:40 TO 17:30

High Brightness and Ultrashort X-ray and EUV Sources

Session Chair: **Annie Klisnick,** Univ. Paris-Sud 11 (France)

Joint Session with Conferences 10237 and 10243

15:40: **Development of free-electron laser at 30nm based on laser wake field accelerators** *(Invited Paper)*, Ruxin Li, Wentao Wang, Jiansheng Liu, Yuxin Leng, Zhizhan Xu, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [10237-12]

16:10: **X-ray production schemes from laser driven plasmas at the PALS and ELI Beamlines**, Michaela Kozlová, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10243-31]

16:30: **Towards sub-femtosecond X-ray FEL pulses** *(Invited Paper)*, Agostino Marinelli, SLAC National Accelerator Lab. (United States) . . . . . [10237-13]

17:00: **High-quality electron beams for high-quality FEL** *(Invited Paper)*, Enrico M. Allaria, Elettra-Sincrotrone Trieste (Italy) . . . . . [10237-14]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Magnetic force study for the helical afterburner for the European XFEL, Peng Li, Tao Wei, Yuhui Li, Joachim Pflüger, European XFEL GmbH (Germany) . . . . . [10237-34]

Frequency doubler and two-color mode of operation at free electron laser FLASH2, Mikhail V. Yurkov, Marion Kuhlmann, Evgeny A. Schneidmiller, Deutsches Elektronen-Synchrotron (Germany) . . . . . [10237-35]

Application of statistical techniques for characterization of SASE FEL radiation, Mikhail V. Yurkov, Evgeny A. Schneidmiller, Deutsches Elektronen-Synchrotron (Germany) . . . . . [10237-36]

A soft x-ray split-and-delay unit for FLASH II, Sebastian Roling, Matthias Rollnik, Westfälische Wilhelms-Univ. Münster (Germany); Marion Kuhlmann, Elke Plönjes-Palm, Deutsches Elektronen-Synchrotron (Germany); Frank Wahlert, Helmut Zacharias, Westfälische Wilhelms-Univ. Münster (Germany) . . [10237-37]

A hard x-ray split-and-delay unit for the HED Instrument at the European XFEL, Victor Kaercher, Westfälische Wilhelms-Univ. Münster (Germany); Liubov Samoylova, Karen Appel, European XFEL GmbH (Germany); Stefan Braun, Peter Gawlitza, Fraunhofer IWS Dresden (Germany); Frank Siewert, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Ulf Zastrau, European XFEL GmbH (Germany); Matthias Rollnik, Frank Wahlert, Helmut Zacharias, Westfälische Wilhelms-Univ. Münster (Germany) . . . . . [10237-38]

Duty-cycledependence of the filamentation effect in gas devices for high-repetition rate pulsed X-ray FELs, Yiping Feng, SLAC National Accelerator Lab. (United States) . . . . . [10237-39]

High-repetition rate experiments at the European XFEL, Thomas Tschentscher, European XFEL GmbH (Germany) . . . . . [10237-40]

Grating monochromator with ultrafast response for FLASH2 at DESY, Günter Brenner, Deutsches Elektronen-Synchrotron (Germany); Fabio Frassetto, CNR-IFN UoS Padova (Italy); Marion Kuhlmann, Elke Plönjes-Palm, Deutsches Elektronen-Synchrotron (Germany); Luca Poletto, CNR-IFN Padova (Italy) . . . . . [10237-41]

THURSDAY 27 APRIL

SESSION 2

ROOM: ZENIT . . . . . THU 8:30 TO 10:00

FEL Schemes and Characterization of Electron Beam and FEL Radiation

Session Chair: **Luc Patthey,** Paul Scherrer Institut (Switzerland)

8:30: **Innovative FEL schemes using variable gap undulators** *(Invited Paper)*, Evgeny A. Schneidmiller, Mikhail V. Yurkov, Deutsches Elektronen Synchrotron (Germany) . . . . . [10237-15]

9:00: **Statistical characterization of an X-ray FEL in the spectral domain**, Alberto Lutman, Yiping Feng, Zhirong Huang, Jacek Krzywinski, Juhao Wu, Diling Zhu, SLAC (United States) . . . . . [10237-16]

9:20: **Transverse coherence and pointing stability of the radiation from x-ray free electron lasers**, Mikhail V. Yurkov, Evgeny A. Schneidmiller, Deutsches Elektronen-Synchrotron (Germany) . . . . . [10237-17]

9:40: **radiation properties of the SASE3 afterburner for European XFEL**, Tao Wei, Peng Li, Yuhui Li, Joachim Pflüger, European XFEL GmbH (Germany) . . . . . [10237-18]

Coffee Break . . . . . Thu 10:00 to 10:20

SESSION 3

ROOM: ZENIT . . . . . THU 10:20 TO 11:50

Characterization of FEL Radiation

Session Chair: **Mikhail V. Yurkov,** Deutsches Elektronen-Synchrotron (Germany)

10:20: **Hard X-ray wavefront diagnostics at X-FEL** *(Invited Paper)*, Sebastien Berujon, Eric Ziegler, Elena-Ruxandra T. Cojocaru, Thierry Martin, ESRF - The European Synchrotron (France) . . . . . [10237-19]

10:50: **Laser power meters as x-ray intensity monitors for LCLS-II**, Philip A. Heimann, Stefan P. Moeller, Sergio Carbajo Garcia, Sanghoon Song, Yiping Feng, James M. Glownia, David M. Fritz, SLAC National Accelerator Lab. (United States) . . . . . [10237-20]

11:10: **Single-shot beam intensity and position diagnostics for x-ray FEL's using gas fluorescence**, Yiping Feng, Clemence Weninger, Matthieu Chollet, Diling Zhu, SLAC National Accelerator Lab. (United States) . . . . . [10237-21]

11:30: **Diagnosis of the nanosecond two-bunch mode for x-ray correlation spectroscopy experiments**, Yanwen Sun, Diling Zhu, Sanghoon Song, SLAC National Accelerator Lab. (United States); Mark Sutton, McGill Univ. (Canada); Stephan O. Hruszkewycz, Argonne National Lab. (United States); Karl Ludwig, Boston Univ. (United States); Wojciech Roseker, Gerhard Grübel, Deutsches Elektronen-Synchrotron (Germany); Robert Aymeric, SLAC National Accelerator Lab. (United States); Brian Stephenson, Paul H. Fuoss, Argonne National Lab. (United States); Franz-Josef Decker, SLAC National Accelerator Lab. (United States) . . . . . [10237-22]

SESSION 4

ROOM: ZENIT . . . . . THU 11:50 TO 12:50

X-ray Optics and Beam Transport Issues Including Propagation of Coherent X-ray FEL Radiation and Simulation of X-ray FEL I

Session Chair: **Luc Patthey,** Paul Scherrer Institut (Switzerland)

11:50: **Ultrahigh performance mirrors for diffraction limited light sources** *(Invited Paper)*, Maurizio Vannoni, Idoia Freijo Martín, Harald Sinn, European XFEL GmbH (Germany) . . . . . [10237-23]

12:20: **Soft x-ray optics for FEL applications** *(Invited Paper)*, Saša Bajt, Deutsches Elektronen-Synchrotron (Germany) . . . . . [10237-24]

Lunch Break . . . . . Thu 12:50 to 14:00

SESSION 5

ROOM: ZENIT . . . . . THU 14:00 TO 15:40

X-ray Optics and Beam Transport Issues Including Propagation of Coherent X-ray FEL Radiation and Simulation of X-ray FEL II

Session Chair: **Luc Patthey,** Paul Scherrer Institut (Switzerland)

14:00: **A hard x-ray split-and-delay optics with wavefront dividing crystals at SACLA** *(Invited Paper)*, Taito Osaka, RIKEN SPring-8 Center (Japan) and Osaka University (Japan) . . . . . [10237-25]

14:30: **Hard X-ray split-delay development at the Linac Coherent Light Source**, Diling Zhu, Donald W. Schafer, SLAC National Accelerator Lab. (United States); Yanwen Sun, SLAC National Accelerator Lab. (United States) and Stanford Univ. (United States); Shi Hongliang, Justin H. James, Karl L. Gumerlock, Ted O. Osier, Randy Whitney, Josep Nicolas, Lin Zhang, Andrew H. Barada, Robert Aymeric, Brian Smith, SLAC National Accelerator Lab. (United States) . . . . . [10237-26]

14:50: **Simulations of ultrafast x-ray laser experiments** *(Invited Paper)*, Carsten Fortmann-Grote, European XFEL GmbH (Germany); Alexander A. Andreev, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) and ELI-ALPS Research Institute (Hungary); Karen Appel, European XFEL GmbH (Germany); Richard Briggs, ESRF - The European Synchrotron (France); Michael Bussmann, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Alexey V. Buzmakov, FSRC “Crystallography and Photonics”, Russian Academy of Sciences (Russian Federation); Marco Garten, Alexander Grund, Axel Hübl, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Zoltan Jurek, Ctr. for Free-Electron Laser Science (Germany) and The Hamburg Ctr. for Ultrafast Imaging (Germany); Ne-Te D. Loh, National Univ. of Singapore (Singapore); Motoaki Nakatsutsumi, Liubov Samoylova, European XFEL GmbH (Germany); Robin Santra, Ctr. for Free-Electron Laser Science (Germany) and The Hamburg Ctr. for Ultrafast Imaging (Germany) and Univ. Hamburg (Germany); Evgeny A. Schneidmiller, Deutsches Elektronen-Synchrotron (Germany); Ashutosh Sharma, ELI-ALPS Research Institute (Hungary); Thomas Tschentscher, European XFEL GmbH (Germany); Sergey Yakubov, Deutsches Elektronen-Synchrotron (Germany); Chun Hong Yoon, SLAC National Accelerator Lab. (United States); Michael V. Yurkov, Deutsches Elektronen-Synchrotron (Germany); Ulf Zastrau, European XFEL GmbH (Germany); Beata Ziaja, Ctr. for Free-Electron Laser Science (Germany) and The Hamburg Ctr. for Ultrafast Imaging (Germany) and Institute of Nuclear Physics, Polish Academy of Sciences (Poland); Adrian P. Mancuso, European XFEL GmbH (Germany) . . . . . [10237-27]

15:20: **Design of compressors for free-electron-laser pulses using deformable gratings**, Stefano Bonora, Nicola Fabris, Fabio Frassetto, Ennio Giovine, Paolo Miotti, CNR-Istituto di Fotonica e Nanotecnologie (Italy); Martino Quintavalla, Luca Poletto, CNR-IFN Padova (Italy) . . . . . [10237-28]

Coffee Break . . . . . Thu 15:40 to 16:00

SESSION 6

ROOM: ZENIT . . . . . THU 16:00 TO 18:20

Advanced Instrumentation for FEL Experiments in the Areas of Special X-ray Techniques, Sample Environment, Detectors and Lasers

Session Chair: **Thomas Tschentscher,** European XFEL GmbH (Germany)

16:00: **Fast refreshing target delivery systems for new generation light sources** *(Invited Paper)*, Daniele Margarone, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10237-29]

16:30: **Detectors for intense, femtosecond X-ray sources** *(Invited Paper)*, Bernd Schmitt, Paul Scherrer Institut (Switzerland) . . . . . [10237-30]

17:00: **Detector sustainability improvements at LCLS**, Philip A. Hart, SLAC National Accelerator Lab. (United States) . . . . . [10237-31]

17:20: **Bringing PW-class lasers to FELs** *(Invited Paper)*, Hiromitsu Tomizawa, The Institute of Physical and Chemical Research (RIKEN Harima/SPring-8) (Japan) . . . . . [10237-32]

17:50: **Integrating high-repetition rate high-energy/high-intensity laser to FEL experiments** *(Invited Paper)*, Motoaki Nakatsutsumi, Gerd Priebe, Karen Appel, European XFEL GmbH (Germany); Carsten Baehtz, Helmholtz-Zentrum Dresden-Rossendorf e.V. (Germany); Thomas E. Cowan, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Sebastian Goede, Zuzana Konopkova, Max J. Lederer, European XFEL GmbH (Germany); Alexander Pelka, Toma Toncian, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Thomas Tschentscher, Ulf Zastrau, European XFEL GmbH (Germany); Bolun Chen, China Academy of Engineering Physics (China) . . . . . [10237-33]

CONFERENCE 10238

LOCATION: TYCHO

Wednesday - Thursday 26–27 April 2017 • Proceedings of SPIE Vol. 10238

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); **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)

WEDNESDAY 26 APRIL

OPENING REMARKS

ROOM: TYCHO . . . . . 8:25 TO 8:30

SESSION 1

ROOM: TYCHO . . . . . WED 8:30 TO 10:40

High Energy Lasers

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

8:30: **A 100 J-level nanosecond DPSSL for high-energy density experiments** *(Invited Paper)*, Thomas J. Butcher, Paul D. Mason, Saumyabrata Banerjee, Klaus G. Ertel, P. Jonathan Phillips, Jodie M. Smith, Mariastefania De Vido, Oleg V. Chekhlov, STFC Rutherford Appleton Lab. (United Kingdom); Martin Divoky, Jan Pilar, HiLASE Ctr. (Czech Republic); Waseem Shaikh, Chris J. Hooker, STFC Rutherford Appleton Lab. (United Kingdom); Gerd Priebe, European XFEL GmbH (Germany); Toma Toncian, Helmholtz-Zentrum Dresden-Rossendorf e.V. (Germany); Antonio Lucianetti, HiLASE Ctr. (Czech Republic); Cristina Hernandez-Gomez, STFC Rutherford Appleton Lab. (United Kingdom); Tomás Mocek, HiLASE Ctr. (Czech Republic); Chris Edwards, John L. Collier, STFC Rutherford Appleton Lab. (United Kingdom). . . . . [10238-1]

9:00: **Performance results and design criteria of the power amplifiers in the L4 laser system**, Axel Jochmann, Gilles Chériaux, Michael E. Donovan, Gavin Friedman, Erhard Gaul, Doug Hammond, James T. Heisler, Matt Kepler, National Energetics (United States); Daniel Kramer, Bedrich Rus, ELI Beamlines (Czech Republic); Todd Ditmire, National Energetics (United States). . . . . [10238-2]

9:20: **Solution for testing large high-power laser lenses having long focal length**, Denis Fappani, Monique IDE, Thales SESO (France). . . . . [10238-3]

9:40: **All diode-pumped 4 Joule 527nm Nd: YLF laser for pumping Ti:Sapphire lasers**, Faming Xu, Christopher J. Briggs, Jay Doster, Ryan Feeler, Edward F. Stephens, Northrop Grumman Cutting Edge Optronics (United States) . . . . . [10238-4]

10:00: **A novel "gain chip" concept for high-power lasers**, Min Li, Mingzhong Li, Zhenguo Wang, Xiongwei Yan, Xinying Jiang, Jiangang Zheng, Xudong Cui, Xiaomin Zhang, China Academy of Engineering Physics (China) . . . . . [10238-5]

10:20: **10J water-cooled DPSSL system based on Yb:YAG crystal edge-cladded by Cr:YAG ceramics**, Jian-Gang Zheng, China Academy of Engineering Physics (China) and Shanghai Jiao Tong Univ. (China); Xiongwei Yan, Xinying Jiang, Zhenguo Wang, Mingzhong Li, Jun Zhang, China Academy of Engineering Physics (China); Qihua Zhu, Wanguo Zheng, China Academy of Engineering Physics (China) and Shanghai Jiao Tong Univ. (China). . . . [10238-6]

Coffee Break . . . . . Wed 10:40 to 11:10

SESSION 2

ROOM: TYCHO . . . . . WED 11:10 TO 12:20

Ultrashort Pulses and High Peak Power I

Session Chair: **Mikhail P. Kalashnikov,** Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

11:10: **5 Hz high-energy, ultrahigh contrast OPCPA frontend for the L4 laser system** *(Invited Paper)*, Gilles Chériaux, National Energetics (United States); Roman Antipenkov, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Teddy Borger, The Univ. of Texas at Austin (United States); Gavin Friedman, National Energetics (United States); Jonathan T. Green, ELI Beamlines (Czech Republic); Doug Hammond, James T. Heisler, Axel Jochmann, Nirmala Kandalai, Matt Kepler, National Energetics (United States); Daniel Kramer, Bedrich Rus, ELI Beamlines (Czech Republic); Erhard Gaul, Todd Ditmire, National Energetics (United States). . . . . [10238-7]

11:40: **Active spectral pre-shaping with polarization encoded amplifiers**, Huabao Cao, ELI-ALPS Research Institute (Hungary); Mikhail P. Kalashnikov, ELI-ALPS Research Institute (Hungary) and Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Károly Osvay, ELI-ALPS Research Institute (Hungary); Nikita Khodakovskiy, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Roland S. Nagymihály, Vladimir V. Chvykov, ELI-ALPS Research Institute (Hungary). . . . . [10238-8]

12:00: **Dispersion measurement on chirped mirrors at arbitrary incidence angle and polarization state**, Máté Kovács, ELI-HU Nonprofit Kft. (Hungary); Tamas Somoskoi, Imre Seres, Univ. of Szeged (Hungary); Ádám Börzsönyi, ELI-ALPS Research Institute (Hungary); Áron Sipos, Biological Research Ctr. (Hungary); Károly Osvay, ELI-HU Nonprofit Kft. (Hungary). . . . . [10238-9]

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

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 3

ROOM: TYCHO . . . . . WED 15:40 TO 17:30

Ti:Sapphire Lasers and OPCPA

Session Chair: **Thomas J. Butcher,** STFC Rutherford Appleton Lab. (United Kingdom)

15:40: **Picosecond temporal contrast of Ti:Sapphire lasers** *(Invited Paper)*, Mikhail P. Kalashnikov, Nikita Khodakovskiy, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany). . . . . [10238-10]

16:10: **Thin Disk Ti:Sapphire amplifiers for Joule-class ultrashort pulses with high repetition rate**, Roland S. Nagymihály, Huabao Cao, ELI-ALPS Research Institute (Hungary); Mikhail P. Kalashnikov, ELI-ALPS Research Institute (Hungary) and Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Nikita Khodakovskiy, Lutz Ehrentraut, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Károly Osvay, ELI-HU Nonprofit Kft. (Hungary); Vladimir V. Chvykov, ELI-ALPS Research Institute (Hungary) . . . . . [10238-11]

16:30: **Measurement of spectral phase noise in a cryogenically cooled Ti:Sa amplifier**, Roland S. Nagymihály, ELI-ALPS Research Institute (Hungary); Péter Jójárt, Ádám Börzsönyi, ELI-HU Nonprofit Kft. (Hungary); Károly Osvay, ELI-ALPS Research Institute (Hungary) . . . . . [10238-12]

16:50: **Femtosecond optical parametric amplification in BBO and KTA driven by a Ti:Sapphire laser for LIDT testing and diagnostic development**, Alexander R. Meadows, Josef Cupal, Petr Hříbek, Michal Ďurák, Daniel Kramer, Bedrich Rus, ELI Beamlines (Czech Republic) . . . . . [10238-13]

17:10: **Theoretical and experimental study of 808nm OPCPA amplifier by using a DKDP crystal**, Xinglong Xie, Jianqiang Zhu, Meizhi Sun, Xiao Liang, Jun Kang, Qingwei Yang, Haidong Zhu, Ailin Guo, Qi Gao, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [10238-14]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Influence of resonator length on catastrophic optical damage in high-power AlGaInP broad-area lasers, Marwan Bou Sanayeh, Notre Dame Univ., Louaize (Lebanon). . . . . [10238-35]

Development of few cycle Ti:Sapphire and NOPA amplifiers at 80MHz repetition rate, Attila Andrásik, Univ. of Szeged (Hungary); Szabolcs Toth, Roland S. Nagymihály, Péter Jójárt, ELI-HU Nonprofit Kft. (Hungary) and Univ. of Szeged (Hungary); Roland Flender, Univ. of Szeged (Hungary); Ádám Börzsönyi, Károly Osvay, ELI-HU Nonprofit Kft. (Hungary) and Univ. of Szeged (Hungary). . . . . [10238-36]

Temperature influence on diode pumped Yb:GGAG laser, Karel Veselský, Czech Technical Univ. in Prague (Czech Republic); Pavel Boháček, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jan Šulc, Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Bohumil Trunda, Lubomír Havlák, Karel Jurek, Martin Nikl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10238-37]

Interferometric phase noise measurement of water-cooled mirrors for high average-power femtosecond lasers, Péter Jójárt, János Csontos, ELI-HU Nonprofit Kft. (Hungary); Ádám Börzsönyi, ELI-HU Nonprofit Kft. (Hungary) and Univ. of Szeged (Hungary); Roland S. Nagymihály, ELI-HU Nonprofit Kft. (Hungary); Tino Eidam, Active Fiber Systems GmbH (Germany); Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Martin Smrž, Michal Chyla, Tomás Mocek, HiLASE Ctr. (Czech Republic); Károly Osvay, ELI-HU Nonprofit Kft. (Hungary) . . . . . [10238-38]

6 kW peak power of quasi-CW Yb-doped fiber laser, Hoon Jeong, Minjee Jeon, Yeji Jeong, Korea Institute of Industrial Technology (Korea, Republic of); Hong Seok Seo, Electronics and Telecommunications Research Institute (Korea, Republic of); Ji Won Kim, Hanyang Univ. (Korea, Republic of). . . . . [10238-39]

Diode-side-pumped monolithic Nd:YAG slab laser, Jan Šulc, Michal Jelínek Jr., Václav Kubecek, Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Karel Nejezchleb, Vaclav Škoda, CRYTUR spol s.r.o. (Czech Republic) . . . . . [10238-40]

Development of 2.7 µm Er:Y2O$_3$ ceramic laser operated at room temperature, Jiří Mužik, HiLASE Ctr. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Ryo Yasuhara, National Institute for Fusion Science (Japan); Martin Smrž, HiLASE Ctr. (Czech Republic); Michal Jelínek Jr., Václav Kubecek, Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Tomás Mocek, HiLASE Ctr. (Czech Republic) . . . . . [10238-41]

Preliminary simulation results of the ESA QOMA II project: A new DPSS conductively cooled, passively Q-Switched laser source suitable for space applications, George Tsaknakis, National Technical Univ. of Athens (Greece); Dimitrios N. Papadopoulos, Ecole Nationale Supérieure de Techniques Avancées (France); Alexandros D. Papayannis, National Technical Univ. of Athens (Greece); Giorgos Avdikos, Christos Evangelatos, Raymetrics S.A. (Greece); Georgios D. Tzeremes, European Space Agency (Netherlands). . . . . [10238-42]

LIDT test station for optical elements testing under cryogenic conditions, Jindrich Oulehla, Josef Lazar, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic). . . . . [10238-43]

Room temperature CW and QCW operation of Ho:CaF$_2$ laser pumped by Tm:fiber laser, Michal Jelínek Jr., Vaclav Kubeček, Czech Technical Univ. in Prague (Czech Republic); Beibei Zhao, Weiwei Ma, Dapeng Jiang, Liangbi Su, Shanghai Institute of Ceramics, Chinese Academy of Sciences (China)[10238-44]

Precision control of mirror-grating phasing for a laser pulse compressor, Stepan Vyhlídka, Pavel Trojek, Daniel Kramer, David Snopek, Martin Šolc, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Matt Kepler, Erhard Gaul, National Energetics (United States); Bedrich Rus, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10238-45]

THURSDAY 27 APRIL

SESSION 4

ROOM: TYCHO . . . . . THU 8:25 TO 10:30

New Amplifier Approaches

Session Chair: **Fedor V. Potemkin,** M.V. Lomonosov Moscow SU (Russian Federation)

8:25: **High-beam quality, all-solid-state 1000 W nanosecond Nd:YAG laser system** *(Invited Paper)*, Xiongxin Tang, Academy of Opto-Electronics, CAS (China) . . . . . [10238-47]

8:50: **Intracavity stretcher for high-power chirped-pulse amplification** *(Invited Paper)*, Hartmut Liebetrau, Friedrich-Schiller-Univ. Jena (Germany); Marco Hornung, Helmholtz Institute Jena (Germany); Sebastian Keppler, Marco Hellwing, Friedrich-Schiller-Univ. Jena (Germany); Franke Schorcht, Alexander Kessler, Helmholtz Institute Jena (Germany); Joachim Hein, Malte C. Kaluza, Friedrich-Schiller-Univ. Jena (Germany) . . . . . [10238-15]

9:20: **Commissioning of a kW-class nanosecond pulsed DPSSL operating at 105 J, 10 Hz** *(Invited Paper)*, Paul D. Mason, STFC Rutherford Appleton Lab. (United Kingdom); Martin Divoky, HiLASE Ctr. (Czech Republic); Thomas J. Butcher, STFC Rutherford Appleton Lab. (United Kingdom); Jan Pilar, HiLASE Ctr. (Czech Republic); Klaus G. Ertel, STFC Rutherford Appleton Lab. (United Kingdom); Martin Hanus, HiLASE Ctr. (Czech Republic); Mariastefania De Vido, Saumyabrata Banerjee, P. Jonathan Phillips, Jodie M. Smith, Ian Hollingham, STFC Rutherford Appleton Lab. (United Kingdom); Mihai-George Muresan, HiLASE Ctr. (Czech Republic); Brian Landowski, Jorge E. Suarez-Merchan, Mark S. Dominey, Adrian Thomas, Luke Benson, Andrew Lintern, Billy Costello, Stephanie Tomlinson, Steve P. Blake, Michael Tyldesley, STFC Rutherford Appleton Lab. (United Kingdom); Antonio Lucianetti, HiLASE Ctr. (Czech Republic); Cristina Hernandez-Gomez, Chris Edwards, Tomás Mocek, John L. Collier, STFC Rutherford Appleton Lab. (United Kingdom). . . . . [10238-16]

9:50: **Active cavity stabilization for high-energy thin disk regenerative amplifier**, Robert Boge, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jakub Horáček, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Technical Univ. of Liberec (Czech Republic); Petr Mazurek, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jakub Novák, Frantisek Batysta, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Roman Antipenkov, Jonathan T. Green, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Zbyněk Hubka, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jack A. Naylon, Pavel Bakule, Bedrich Rus, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10238-17]

10:10: **Latest developments on fibered MOPA in mJ range with hollow-core fiber beam delivery and fiber beam shaping used as seeder for large scale laser facilities**, Jean-François Gleyze, Florent Scol, Arnaud Perrin, Pierre Gouriou, Commissariat à l'Énergie Atomique (France); Constance Valentin, Géraud Bouwmans, Lab. de Physique des Lasers, Atomes et Molécules (France); Emmanuel Hugonnot, Commissariat à l'Énergie Atomique (France) . . . . . [10238-18]

Coffee Break . . . . . Thu 10:30 to 11:00

SESSION 5

ROOM: TYCHO . . . . . THU 11:00 TO 12:50

Mid-IR Lasers, Laser Materials and Thermal Effects in Amplifiers

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

11:00: **Gigawatt mid-IR (4-5 µm) femtosecond amplifier of OPA seed pulse in monocrystalline Fe^{2+}:ZnSe optically pumped by solid-state 3 µm laser** *(Invited Paper)*, Fedor Potemkin, Ekaterina Migal, Andrew Pushkin, M.V. Lomonosov Moscow SU (Russian Federation); Anatoly A. Sirotkin, A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation); Vladimir I. Kozlovsky, Yuri V. Korostelin, Yurii P. Podmar'kov, P.N. Lebedev Physical Institute (Russian Federation); Vladimir V. Firsov, Skobeltsyn Institute of Nuclear Physics (Russian Federation) and M.V. Lomonosov Moscow SU (Russian Federation); Mikhail P. Frolov, P.N. Lebedev Physical Institute (Russian Federation); Vyacheslav M. Gordienko, M.V. Lomonosov Moscow SU (Russian Federation) . . . . . [10238-19]

11:30: **Temperature dependent spectroscopic characterization of Tm:YAG and Tm:YAP crystals as potential laser media for pulsed high-energy laser amplifiers**, Jörg Körner, Friedrich-Schiller-Univ. Jena (Germany) and HiLASE Ctr. (Czech Republic); Joachim Hein, Jürgen Reiter, Tilman Lühder, Friedrich-Schiller-Univ. Jena (Germany); Venkatesan Jambunathan, Antonio Lucianetti, Tomás Mocek, HiLASE Ctr. (Czech Republic); Malte C. Kaluza, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany)[10238-20]

11:50: **Pump-induced phase aberrations in Yb^{3+}-doped materials**, Sebastian Keppler, Issa Tamer, Friedrich-Schiller-Univ. Jena (Germany); Marco Hornung, Helmholtz Institute Jena (Germany) and Friedrich-Schiller-Univ. Jena (Germany); Jörg Körner, Hartmut Liebetrau, Friedrich-Schiller-Univ. Jena (Germany); Joachim Hein, Malte C. Kaluza, Helmholtz Institute Jena (Germany) and Friedrich-Schiller-Univ. Jena (Germany) . . . . . [10238-21]

12:10: **Wavefront aberration measurement in a cryogenically cooled Yb:YAG slab using a wavefront sensor**, Pawel Sikocinski, HiLASE Ctr. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Ondřej Novák, Martin Smrž, HiLASE Ctr. (Czech Republic); Jan Pilar, HiLASE Ctr. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Antonio Lucianetti, HiLASE Ctr. (Czech Republic); Tomás Mocek, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10238-22]

12:30: **Investigation and modelling of pump saturation effect on thermal load of Yb:YAG thin disk pumped at various wavelengths**, Patricie Severová, HiLASE Ctr. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Martin Smrž, Michal Chyla, Taisuke Miura, Akira Endo, Tomás Mocek, HiLASE Ctr. (Czech Republic) . . . . . [10238-23]

Lunch Break . . . . . Thu 12:50 to 14:00

SESSION 6

ROOM: TYCHO . . . . . THU 14:00 TO 15:30

Ultrashort Pulses and High Peak Power II

Session Chair: **Mikhail P. Kalashnikov,** Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

14:00: **Design update and recent results of the Apollon 10 PW facility** *(Invited Paper)*, Bruno J. Le Garrec, Ecole Polytechnique (France) . . . . . [10238-24]

14:30: **TW-class hollow-fiber compressor with tunable pulse duration**, Frederik Böhle, Aline Vernier, Lab. d'Optique Appliquée (France); Martin Kretschmar, Leibniz Univ. Hannover (Germany); Aurélie Jullien, Ecole Nationale Supérieure de Techniques Avancées (France); Máté Kovács, ELI-ALPS Research Institute (Hungary); Rosa M. Romero, Sphere UltraFast Photonics (Portugal) and Univ. do Porto (Portugal); Helder M. Crespo, Univ. do Porto (Portugal); Peter Simon, Laser-Lab. Göttingen e.V. (Germany); Tamás Nagy, Laser-Lab. Göttingen e.V. (Germany) and Leibniz Univ. Hannover (Germany); Rodrigo López-Martens, Ecole Polytechnique (France) and Ecole Nationale Supérieure de Techniques Avancées (France) and Ctr. National de la Recherche Scientifique (France) . . . . . [10238-25]

14:50: **Performance tests of the 5 TW, 1 kHz, passively CEP-stabilized ELI-ALPS SYLOS few-cycle laser system**, Tomas Stanislauskas, Rimantas Budriunas, Gediminas Veitas, Darius Gadonas, Light Conversion Ltd. (Lithuania); Jonas Adamonis, Aidas Aleknavičius, Gžegož Masian, Zenonas Kuprionis, EKSPLA uab (Lithuania); Dominik Hoff, Gerhard G. Paulus, Friedrich-Schiller-Univ. Jena (Germany); Ádám Börzsönyi, Szabolcs Toth, Máté Kovács, János Csontos, ELI-HU Nonprofit Kft. (Hungary); Rodrigo López-Martens, ELI-HU Nonprofit Kft. (Hungary) and Ecole Nationale Supérieure de Techniques Avancées (France); Károly Osvay, ELI-HU Nonprofit Kft. (Hungary). . . [10238-26]

15:10: **The optimization of a grating pulse stretcher for a 150 fs 10PW laser system**, Stepan Vyhlídka, Daniel Kramer, Institute of Physics of the ASCR vvi (Czech Republic); Matt Kepler, Erhard Gaul, National Energetics (United States); Bedrich Rus, Institute of Physics of the ASCR vvi (Czech Republic) . . [10238-27]

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

SESSION 7

ROOM: TYCHO . . . . . THU 16:00 TO 18:00

Large Aperture and Special Laser Equipment

Session Chair: **Hartmut Liebetrau,** Friedrich-Schiller-Univ. Jena (Germany)

16:00: **Measurements of the optical anisotropy parameter in Yb:CaF_2 crystals**, Alexey Yakovlev, Ilya Snetkov, Oleg Palashov, Institute of Applied Physics of RAS (Russian Federation) . . . . . [10238-28]

16:20: **Effect of cryogenic temperature on spectroscopic and laser properties of Er, Yb-doped potassium-lanthanum phosphate glass**, Richard Švejkar, Jan Šulc, Michal Němec, Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Karel Nitsch, Antonín Cihlár, Robert Král, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Karel Nejezchleb, CRYTUR spol s.r.o. (Czech Republic); Martin Nikl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10238-29]

16:40: **AlGaInN laser diode bars for high-power, optical integration and quantum technologies**, Stephen P. Najda, TopGaN Ltd. (Poland); Piotr Perlin, Tadek Suski, Lucja Marona, Szymon Stanczyk, Przemek Wisniewski, Robert Czernecki, Institute of High Pressure Physics (Poland); Dario Schiavon, Mike Leszczyński, TopGaN Ltd. (Poland) . . . . . [10238-30]

17:00: **Watt-level yellow emitting lasers by frequency doubling of high power diode lasers**, Roland Bege, Daniel Jedrzejczyk, Julian Hofmann, Gunnar Blume, David Feise, Frank Bugge, Katrin Paschke, Günther Tränkle, Ferdinand-Braun-Institut (Germany) . . . . . [10238-31]

17:20: **Design of precise assembly equipment of large aperture optics**, Guoqing Pei, Xu Xu, Zhao Xiong, Han Yan, Tinghai Qin, Hai Zhou, Xiaodong Yuan, China Academy of Engineering Physics (China) . . . . . [10238-32]

17:40: **Power scaling of adaptive beam profiles in a dual-cavity configuration**, Ji Won Kim, Seong Hyun Noh, Dong Joon Kim, Hanyang Univ. (Korea, Republic of) . . . . . [10238-33]

CONFERENCE 10239

LOCATION: TYCHO

Monday - Tuesday 24–25 April 2017 • Proceedings of SPIE Vol. 10239

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

Conference Chair: **Kenneth W. D. Ledingham,** Univ. of Strathclyde (United Kingdom)

Conference Co-Chairs: **Paul R. Bolton,** Ludwig-Maximilians-Univ. München (Germany); **Antonio Giulietti,** Consiglio Nazionale delle Ricerche (Italy); **Paul McKenna,** Univ. of Strathclyde (United Kingdom); **Klaus Spohr,** Univ. of the West of Scotland (United Kingdom)

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. (United States); **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 24 APRIL

SESSION 1

ROOM: TYCHO . . . . . MON 8:30 TO 10:20

Have Lasers a Part to Play in Proton Therapy?

Session Chair: **Kenneth W. D. Ledingham,** Univ. of Strathclyde (United Kingdom)

8:30: **Accelerator development for hadron therapy**, Simon Jolly, Univ. College London (United Kingdom) . . . . . [10239-1]

8:50: **Proton therapy accelerator research in the UK**, Hywel Owen, Univ. of Manchester (United Kingdom). . . . . [10239-2]

9:10: **Laser-driven particle acceleration for radiobiology and radiotherapy: where we are and where we are going**, Antonio Giulietti, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10239-3]

9:30: **The integrated laser-driven ion accelerator system and laser-driven ion beam radiotherapy**, Paul R. Bolton, Ludwig-Maximilians-Univ. München (United States); Jörg Schreiber, Katia Parodi, Ludwig-Maximilians-Univ. München (Germany) . . . . . [10239-4]

9:50: **Recent progress in laser-driven proton acceleration from ultrathin foils**, Paul McKenna, Univ of Strathclyde (United Kingdom) . . . . . [10239-5]

Coffee Break . . . . . Mon 10:20 to 10:50

SESSION 2

ROOM: TYCHO . . . . . MON 10:50 TO 12:50

Medical Applications of Laser-Generated Beams of Particles I

Session Chair: **Paul R. Bolton,** Ludwig-Maximilians-Univ. München (Germany)

10:50: **Applications of laser-wakefield-based x-ray sources: from bio-medical to global food security**, Jean-Claude Kieffer, Sylvain Fourmaux, Institut National de la Recherche Scientifique (Canada); Emil Hallin, Global Institute for Food Security, Univ. of Saskatchewan (Canada). . . . . [10239-6]

11:10: **Nanomedical science and laser-driven particle acceleration: promising approaches in the prethermal regime**, Yann A. Gauduel, Ecole Nationale Supérieure de Techniques Avancées (France) . . . . . [10239-7]

11:30: **A comparative study of the biological effectiveness of MeV energy laser-driven electron bunches**, Luca Labate, Consiglio Nazionale delle Ricerche (Italy); Maria Grazia Andreassi, Istituto di Fisiologia Clinica, Consiglio Nazionale delle Ricerche (Italy); Federica Baffigi, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy); Andrea Borghini, Monica Cresci, Istituto di Fisiologia Clinica, Consiglio Nazionale delle Ricerche (Italy); Fabio Di Martino, Azienda Ospedaliero-Univ. Pisana (Italy); Lorenzo Fulgentini, Antonio Giulietti, Petra Koester, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy); Debora Lamia, Istituto di Bioimmagini e Fisiologia Molecolare, Consiglio Nazionale delle Ricerche (Italy); Daniele Panetta, Silvia Pulignani, Istituto di Fisiologia Clinica, Consiglio Nazionale delle Ricerche (Italy); Giorgio Russo, Istituto di Bioimmagini e Fisiologia Molecolare, Consiglio Nazionale delle Ricerche (Italy); Claudio Traino, Azienda Ospedaliero-Univ. Pisana (Italy); Maria Tripodi, Cecilia Vecoli, Istituto di Fisiologia Clinica, Consiglio Nazionale delle Ricerche (Italy); Leonida A. Gizzi, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) . . . . . [10239-8]

11:50: **Homogenous depth dose profile experiments with laser-accelerated protons and pulsed high-field magnets for volumetric tumour irradiation studies**, Florian-Emanuel Brack, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany); Karl Zeil, Florian Kroll, Stephan D. Kraft, Josefine Metzkes, Hans-Peter Schlenvoigt, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Lieselotte Obst, Martin Rehwald, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany); Elke Beyreuther, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Leonhard Karsch, Michael Schürer, OncoRay - National Ctr. for Radiation Research in Oncology (Germany); Jörg Pawelke, OncoRay - National Ctr. for Radiation Research in Oncology (Germany) and Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Thomas E. Cowan, Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) and TU Dresden (Germany). . . . . [10239-9]

12:10: **New approaches in clinical application of laser driven ionizing radiation (LDIR)**, Katalin Hideghéty, Univ. of Szeged (Hungary); Robert Polanek, Tünde Tokés, Rita Emilia Szabó, Zoltán Szabó, ELI-ALPS Research Institute (Hungary) . . . . . [10239-10]

12:30: **On the potential of laser driven PET isotope production at ELI-NP**, Andi S. Cucoanes, ELI-NP (Romania); Dimiter Balabanski, ELI-NP, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania); Federico Canova, ELI-DC International Association AISBL (France); Pham Cuong, Florin Negoita, ELI-NP, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania); Kazuo A. Tanaka, ELI-NP, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania) and Osaka Univ. (Japan) [10239-21]

Lunch Break . . . . . Mon 12:50 to 14:10

SESSION 3

ROOM: TYCHO . . . . . MON 14:10 TO 15:30

Medical Applications of Laser-Generated Beams of Particles II

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

14:10: **Raman spectroscopy for oral cancer: a new diagnostic tool**, Luís Felipe Chagas e Silva Carvalho D.D.S., Airton Abrahão Martin, Univ. do Vale do Paraíba (Brazil). . . . . [10239-11]

14:30: **Ion acceleration with kJ, multi-ps laser pulses on LFEX**, Akifumi Yogo, Osaka Univ. (Japan) . . . . . [10239-12]

14:50: **Guided post-acceleration of laser driven protons for medical applications**, Satyabrata Kar, Queen's Univ. Belfast (United Kingdom) . . . . . [10239-13]

15:10: **Strongly focused very high energy electrons (VHEEs) as a new radiotherapy modality for delivering highly localised dose within a voxel volume**, Karolina Kokurewicz, Enrico Brunetti, Gregor H. Welsh, S. Mark Wiggins, Univ. of Strathclyde (United Kingdom); M. Boyd, Anette Sorensen, Strathclyde Institute of Pharmacy and Biomedical Sciences (United Kingdom); Anthony Chalmers, Institute of Cancer Sciences/Wolfson Wohl Cancer Research Ctr. (United Kingdom); Giuseppe Schettino, National Physical Lab. (United Kingdom); Anna Subiel, Univ. of Strathclyde (United Kingdom); Colleen DesRosiers, Indiana Univ. School of Medicine (United States); Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) . . . . . [10239-14]

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

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PANEL DISCUSSION

ROOM: TYCHO . . . . . TUE 10:15 TO 12:30

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

Open Discussion on Importance of Hadrons in Cancer Therapy

10:15 to 11:00: **Evolution of technology for proton and ion beam therapy**
Jose Alonso, Director Emeritus, Sanford Underground Research Facility (United States)

11:00 to 11:30: **Technology review, assessment, and comments**
Ken Ledingham, Univ. of Strathclyde (United Kingdom)

11:30 to 12:30: **Panel Discussion**
A small international team of experts from multiple research communities will examine the following questions:

- Is hadron therapy better than existing therapies and for which tumours?
- Is it cost effective?
- Could laser driven hadron beams compete potentially with accelerator beams in cost and size?

WEDNESDAY 26 APRIL

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Autofluorescence diagnosis method in endoscopy for investigation mucosal structure in gastrointestinal tract, Dmitrii Abramov, Larisa Varlamova, Arsenii Golovin, Ekaterina Seledkina, ITMO Univ. (Russian Federation) . . . . . [10239-15]

The study of efficiency laser parameter for nondamaged biostimulation, Byeong Kwon Kim, Seong-Seon Shin, Soo Ho Choi, Kyungpook National Univ. (Korea, Republic of); Hyun-Deok Kim, Kyungpook National University (Korea, Republic of); Ji-Sun Kim, Jae-Hoon Jun, Konkuk Univ. (Korea, Republic of); Gu-In Jung, Kyungpook National Univ. (Korea, Republic of) . . . . . [10239-16]

Simulation of the skin temperature changes induced by 809 nm laser irradiation, Seong-Seon Shin, Byeong Kwon Kim, Jun-Ho Hwang, Kyungpook National Univ. (Korea, Republic of); Hyun-Deok Kim, Kyungpook National Univ (Korea, Republic of); Ji-Sun Kim, Jae-Hoon Jun, Konkuk Univ. (Korea, Republic of); Gu-In Jung, Kyungpook National Univ. (Korea, Republic of) . . . . . [10239-17]

Modeling of the laser device for the stress therapy, Nikolai V. Matveev, Sergey A. Shcheglov, Galina E. Romanova, Tatiana A. Koneva, ITMO Univ. (Russian Federation) . . . . . [10239-18]

The meat product quality control by a polarimetric method, Anastasia A. Blokhina, Victoria A. Ryzhova, ITMO Univ. (Russian Federation) . . . . . [10239-19]

Study of biological effects of femtosecond IR laser beam filamentation for cancer therapy, Robert Polanek, Emilia Szabó, Tünde Tokés, Zoltán Szabó, Máté Kovács, ELI-ALPS Research Institute (Hungary); Roland Flender, Univ. of Szeged (Hungary); Bálint Kiss, Bettina Ughy, Ádám Börzsönyi, ELI-ALPS Research Institute (Hungary); Emese Huszár, Varinia Kürti, Univ. of Szeged (Hungary); Katalin Hideghéty, Károly Osvay, ELI-ALPS Research Institute (Hungary) . . . . . [10239-20]

CONFERENCE 10240

LOCATION: KEPLER

Monday - Wednesday 24–26 April 2017 • Proceedings of SPIE Vol. 10240

Laser Acceleration of Electrons, Protons, and Ions

Conference Chairs: **Eric Esarey,** Lawrence Berkeley National Lab. (United States); **Carl B. Schroeder,** Lawrence Berkeley National Lab. (United States); **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); **Leonida A. Gizzi,** Consiglio Nazionale delle Ricerche (Italy); **Björn Manuel Hegelich,** Los Alamos National Lab. (United States); **Simon M. Hooker,** Univ. of Oxford (United Kingdom); **Stefan Karsch,** Max-Planck-Institut für Quantenoptik (Germany); **Karl M. Krushelnick,** Univ. of Michigan (United States); **Wim Leemans,** Lawrence Berkeley National Lab. (United States); **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. (United States); **Claes-Goran Wahlström,** Lund Univ. (Sweden); **Matthew Zepf,** Queen's Univ. Belfast (United Kingdom)

MONDAY 24 APRIL

OPENING REMARKS

ROOM: KEPLER . . . . . 8:25 TO 8:30

SESSION 1

ROOM: KEPLER . . . . . MON 8:30 TO 10:20

Ion Acceleration I

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

8:30: **Generation of monoenergetic ion beams via ionization dynamics** *(Invited Paper)*, Chen Lin, Peking Univ. (China); I. Jong Kim, Korea Basic Science Institute (Korea, Republic of) and Advanced Photonics Research Institute, Gwangju Institute of Science and Technology (Korea, Republic of); Jinqing Yu, Peking Univ. (China); Il Woo Choi, Gwangju Institute of Science and Technology (Korea, Republic of); Wenjun Ma, Xueqing Yan, Peking Univ. (China); Chang Hee Nam, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [10240-1]

9:00: **Laser proton acceleration from liquid crystal films of different thicknesses with ultrahigh laser contrast**, Lieselotte Obst, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Patrick Poole, The Ohio State Univ. (United States); Karl Zeil, Josefine Metzkes, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Ginevra Cochran, The Ohio State Univ. (United States); Thomas Kluge, Hans-Peter Schlenvoigt, Stephan D. Kraft, Irene Prencipe, Martin Rehwald, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Douglass W. Schumacher, The Ohio State Univ. (United States) . . . . . [10240-2]

9:20: **High-contrast laser-proton acceleration from a condensed hydrogen jet**, Martin Rehwald, Karl Zeil, Lieselotte Obst, Hans-Peter Schlenvoigt, Florian-Emanuel Brack, Josefine Metzkes, Thomas Kluge, Stephan D. Kraft, Philipp Sommer, Markus Löser, Tim Ziegler, Ulrich Schramm, Thomas E. Cowan, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); Sebastian Goede, European XFEL GmbH (Germany); Lev Kazak, Steffen Wolter, Univ. Rostock (Germany); Maxence Gauthier, Chandra Curry, Michael MacDonald, William Schumaker, Christian Roedel, Siegfried H. Glenzer, SLAC National Accelerator Lab. (United States). . . . . [10240-3]

9:40: **Ion wave breaking acceleration**, Bin Liu, Ludwig-Maximilians-Univ. München (Germany); Juergen Meyer-ter-Vehn, Max-Planck-Institut für Quantenoptik (Germany); Hartmut Ruhl, Karl-Ulrich Bamberg, Ludwig-Maximilians-Univ. München (Germany). . . . . [10240-4]

10:00: **Energetic ion bunches produced in under-dense plasmas by an intense laser pulse**, Julien Guillaume Moreau, Emmanuel d'Humières, Rachel Nuter, Vladimir T. Tikhonchuk, Ctr. Lasers Intenses et Applications (France) . . . . . [10240-5]

Coffee Break . . . . . Mon 10:20 to 10:50

SESSION 2

ROOM: KEPLER . . . . . MON 10:50 TO 12:30

Ion Acceleration II

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

10:50: **Intense Ion, neutron and hard X-ray beams from relativistic laser-matter interaction**, Markus Roth, Annika Kleinschmidt, Oliver Deppert, Gabriel N. Schaumann, Alexandra Tebartz, Victor A. Schanz, Technische Univ. Darmstadt (Germany); Juan Carlos Fernández, Sven Vogel, Andrea Favalli, Donald C. Gautier, Randall P. Johnson, Michael Mocko, Glen Anthony Wurden, Los Alamos National Lab. (United States); Katerina Falk, ELI Beamlines (Czech Republic); Ishay Pomerantz, Tel Aviv Univ. (Israel) . . . . . [10240-6]

11:10: **Laser-based fast-neutron spectroscopy**, Ishay Pomerantz, Itay Kishon, Tel Aviv Univ. (Israel); Annika Kleinschmidt, Victor A. Schanz, Alexandra Tebartz, Technische Univ. Darmstadt (Germany); Juan Carlos Fernández, Donald C. Gautier, Randall P. Johnson, Tsutomu Shimada, Glen Anthony Wurden, Los Alamos National Lab. (United States); Markus Roth, Technische Univ. Darmstadt (Germany) . . . . . [10240-7]

11:30: **Laser-driven proton acceleration with nanostructured targets**, Simon Vallières, Institut National de la Recherche Scientifique (Canada); Antonia Morabito, ELI-ALPS Research Institute (Hungary); Simona Veltri, Massimiliano Scisciò, Marianna Barberio, Patrizio Antici, Institut National de la Recherche Scientifique (Canada) . . . . . [10240-8]

11:50: **Isochoric heating of solid gold targets with the PW-laser-driven ion beams**, Sven Steinke, Qing Ji, Stepan S. Bulanov, Lawrence Berkeley National Lab. (United States); John Barnard, Lawrence Livermore National Lab. (United States); Henri Vincenti, Thomas Schenkel, Eric H. Esarey, Wim P. Leemans, Lawrence Berkeley National Lab. (United States). . . . . [10240-9]

12:10: **Controlling laser-ion acceleration through pulse chirping**, Felix Mackenroth, Max-Planck-Institut für Physik komplexer Systeme (Germany); Arkady A. Gonoskov, Mattias Marklund, Chalmers Univ. of Technology (Sweden) . . . . . [10240-10]

Lunch Break . . . . . Mon 12:30 to 13:40

SESSION 3

ROOM: KEPLER . . . . . MON 13:40 TO 15:40

Ion Acceleration III

Session Chair: **Markus Roth,** Technische Univ. Darmstadt (Germany)

13:40: **Collective electron and ion dynamics in ultrathin foils undergoing relativistic self-induced transparency**, Paul McKenna, Univ. of Strathclyde (United Kingdom). . . . . [10240-11]

14:00: **Characterisation of collimated, high-density jets of multi-MeV electrons from near critical density targets**, Nicholas M. H. Butler, Ross J. Gray, Martin King, Rachel J. Dance, Adam Higginson, Samuel Williamson, Univ. of Strathclyde (United Kingdom); Chris Armstrong, Univ. of Strathclyde (United Kingdom) and STFC Rutherford Appleton Lab. (United Kingdom); David Neely, STFC Rutherford Appleton Lab. (United Kingdom); Paul McKenna, Univ. of Strathclyde (United Kingdom) . . . . . [10240-12]

14:20: **Relativistic transmittance of a circularly polarized laser pulse in over-dense plasmas during hole-boring process**, Teyoun Kang, Young-Kuk Kim, Min Sup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . . [10240-13]

14:40: **Simulation study of electrostatic shock formation by a circularly polarized laser pulse**, Young-Kuk Kim, Teyoun Kang, Min Sup Hur, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . [10240-14]

15:00: **Concerted manipulation of laser plasma dynamics and optimization with two laser pulses**, Julia Braenzel, Alexander A. Andreev, Lutz Ehrentraut, Matthias Schnuerer, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [10240-15]

15:20: **Accelerating gradient improvement using shape-tailor laser front in radiation pressure acceleration grogress**, Wenpeng Wang, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [10240-16]

Coffee Break . . . . . Mon 15:40 to 16:00

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 4

ROOM: KEPLER . . . . . TUE 10:10 TO 12:20

Electron Acceleration I

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

10:10: **Optimization of the electron beam properties from intense laser pulses interacting with structured gas jets** *(Invited Paper)*, Kelly Swanson, Hai En Tsai, Samuel K. Barber, Remi Lehe, Hann-Shin Mao, Sven Steinke, Jeroen van Tilborg, Kei Nakamura, Cameron C. G. R. Geddes, Carl B. Schroeder, Eric H. Esarey, Wim P. Leemans, Lawrence Berkeley National Lab. (United States) . . . . . [10240-17]

10:40: **Probing plasma wakefield using femtosecond relativistic electron bunches** *(Invited Paper)*, Wei Lu, Jianfei Hua, Tsinghua Univ. (China) . [10240-18]

11:10: **Innovative single-shot diagnostics for electrons accelerated through laser-plasma interaction at FLAME**, Fabrizio Bisesto, Istituto Nazionale di Fisica Nucleare (Italy) . . . . . [10240-19]

11:30: **High-quality electron beam generation and bright betatron radiation from a cascaded laser wakefield accelerator** *(Invited Paper)*, Jiansheng Liu, Wentao Wang, Wentao Li, Rong Qi, Zhijun Zhang, Changhai Yu, Cheng Wang, Jiaqi Liu, Zhiyong Qing, Fang Ming, Yi Xu, Yuxin Leng, Ruxin Li, Zhizhan Xu, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [10240-20]

12:00: **Energy spread minimization in a cascaded laser wakefield accelerator via velocity bunching**, Zhijun Zhang, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [10240-21]

Lunch/Exhibition Break . . . . . Tue 12:20 to 13:50

SESSION 5

ROOM: KEPLER . . . . . TUE 13:50 TO 15:00

Electron Acceleration II

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

13:50: **Application of a laser heater for enhanced guiding of tightly focused laser pulses at low densities** *(Invited Paper)*, Joost Daniels, Lawrence Berkeley National Lab. (United States) and Technische Univ. Eindhoven (Netherlands); Anthony J. Gonsalves, Lawrence Berkeley National Lab. (United States); Christopher V. Pieronek, Lawrence Berkeley National Lab. (United States) and Univ. of California, Berkeley (United States); Carlo Benedetti Jr., Carl B. Schroeder, Stepan S. Bulanov, Hann-Shin Mao, Kei Nakamura, Eric H. Esarey, Wim P. Leemans, Lawrence Berkeley National Lab. (United States) . . [10240-22]

14:20: **Nested Rogowski coils for measuring the electron densities of a laser driven plasma in a capillary**, Johannes Grunwald, Danila Khikhlukha, Dariusz Kocon, Lukas Pribyl, ELI Beamlines (Czech Republic) . . . . . [10240-23]

14:40: **Wide-angle electron beams from laser-wakefield accelerators**, Enrico Brunetti, Xue Yang, Feiyu Li, David Reboredo-Gil, Gregor H. Welsh, Silvia Cipiccia, Bernhard Ersfeld, David W. Grant, Peter A. Grant, Mohammad R. Islam, Mohammed Shahzad, Matthew P. Tooley, Gregory Vieux, S. Mark Wiggins, Zheng-Ming Sheng, Dino A. Jaroszynski, Univ. of Strathclyde (United Kingdom) . . . . . [10240-25]

Coffee Break . . . . . Tue 15:00 to 15:30

SESSION 6

ROOM: KEPLER . . . . . TUE 15:30 TO 17:20

Particle and Radiation Sources

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

15:30: **Acceleration of relativistic electrons with kiloHertz single-cycle laser pulses** *(Invited Paper)*, Jérôme Faure, Diego Guénot, Lab. d'Optique Appliquée (France); Dominykas Gustas, Lab. d'Optique Appliquée (France); Aline Vernier, Benoît Beaurepaire, Frederik Böhle, Lab. d'Optique Appliquée (France); Rodrigo López-Martens, Lab. d'Optique Appliquée (France); Agustin Lifschitz, Lab. d'Optique Appliquée (France) . . . . . [10240-26]

16:00: **Laser-driven electron beam generation for secondary photon sources with few terawatt laser pulses**, Karel Bohacek, ELI Beamlines (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Uddhab Chaulagain, ELI Beamlines (Czech Republic); Vojtěch Horný, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Michaela Kozlová, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Miroslav Krus, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jaroslav Nejdl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic). . . . . [10240-27]

16:20: **First experimental results from the LUX Beamline for plasma-driven undulator radiation**, Andreas R. Maier, Univ. Hamburg (Germany) . . [10240-28]

16:40: **High quality electron bunch production for high brilliance sources**, Paolo Tomassini, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy); Renato Fedele, Univ. degli Studi di Napoli Federico II (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Luca Labate, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Pasquale Londrillo, Istituto Nazionale di Fisica Nucleare (Italy); Davide Terzani, Univ. degli Studi di Napoli Federico II (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Leonida A. Gizzi, Istituto Nazionale di Ottica, Consiglio Nazionale delle Ricerche (Italy) and Istituto Nazionale di Fisica Nucleare (Italy). . . . . [10240-29]

17:00: **Laser high-harmonic generation in cavitated plasma wakefields**, Carl B. Schroeder, Carlo Benedetti Jr., Eric H. Esarey, Wim P. Leemans, Lawrence Berkeley National Lab. (United States) . . . . . [10240-30]

WEDNESDAY 26 APRIL

SESSION 7

ROOM: KEPLER . . . . . WED 9:00 TO 10:20

Plasma Acceleration

Session Chair: **Jorge M. Vieira,** Instituto Superior Técnico (Portugal)

9:00: **Direct laser acceleration of electrons from underdense plasma channeling using picosecond laser pulses** *(Invited Paper)*, Louise Willingale, Lancaster Univ. (United Kingdom); Alexey Arefiev, The Univ. of Texas at Austin (United States); Thomas G. Batson, Amina Hussein, Univ. of Michigan (United States); Philip M. Nilson, Lab. for Laser Energetics, Univ. of Rochester (United States); Hui Chen, Lawrence Livermore National Lab. (United States); Robert S. Craxton, T. Craig Sangster, Daniel Habergerger, Lab. for Laser Energetics, Univ. of Rochester (United States); Calvin A. Zulick, U.S. Naval Research Lab. (United States); Karl M. Krushelnick, Univ. of Michigan (United States) . . . . . [10240-31]

9:30: **Research towards hybrid accelerators** *(Invited Paper)*, Max F. Gilljohann, Hao Ding, Johannes Götzfried, Sabine Schindler, Ludwig-Maximilians-Univ. München (Germany); Johannes Wenz, Matthias Heigoldt, Konstantin Khrennikov, Ludwig-Maximilians-Univ. München (Germany) and Max-Planck-Institut für Quantenoptik (Germany); Simon M. Hooker, Univ. of Oxford (United Kingdom); Andreas S. Döpp, Ludwig-Maximilians-Univ. München (Germany); Stefan Karsch, Ludwig-Maximilians-Univ. München (Germany) and Max-Planck-Institut für Quantenoptik (Germany) . . . . . [10240-32]

10:00: **Plasma acceleration activities at SPARC_LAB.**, Maria Pia Anania, Istituto Nazionale di Fisica Nucleare (Italy) . . . . . [10240-33]

Coffee Break . . . . . Wed 10:20 to 10:50

SESSION 8

ROOM: KEPLER . . . . . WED 10:50 TO 12:40

Wakefield Excitation and Particle Dynamics

Session Chair: **Wei Lu,** Tsinghua Univ. (China)

10:50: **Ultra-intense lasers with high orbital angular momentum for structured wakefield excitation** *(Invited Paper)*, Jorge M. Vieira, Instituto Superior Técnico (Portugal). . . . . [10240-34]

11:20: **Dynamics of boundary layer electrons around a laser wakefield bubble**, Min Chen, Shanghai Jiao Tong Univ. (China) . . . . . [10240-35]

11:40: **High-brightness high-energy electron beams from a laser wakefield accelerator via energy chirp control**, Wentao Wang, Shanghai Institute of Optics and Fine Mechanics (China). . . . . [10240-36]

12:00: **Short energetic electron bunches from laser wakefield accelerator with orthogonally polarized perpendicularly crossed laser beams**, Vojtěch Horný, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. (Czech Republic); Václav Petržílka, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Miroslav Krus, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic); Ondrej Klimo, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jaroslav Nejdl, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic). . . . . [10240-37]

12:20: **Intrinsic elimination of the numerical Cherenkov instability in Lorentz-boosted frame simulations of plasma accelerators**, Manuel Kirchen, Univ. Hamburg (Germany). . . . . [10240-38]

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

The error analysis for laser wakefield acceleration simulations, Danila Khikhlukha, ELI Beamlines (Czech Republic); Niels Delbos, Ctr. for Free-Electron Laser Science (Germany); Vincent Leroux, Ctr. for Free-Electron Laser Science (Germany) and The Czech Academy of Sciences (Czech Republic); Lukas Pribyl, The Czech Academy of Sciences (Czech Republic); Andreas R. Maier, Ctr. for Free-Electron Laser Science (Germany) . . . . . [10240-39]

X-ray phase contrast imaging of biological samples using a pulsed X-ray generated in a compact laser wakefield accelerator, Uddhab Chaulagain, ELI Beamlines (Czech Republic); Karel Bohacek, ELI Beamlines (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Michaela Kozlová, ELI Beamlines (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Miroslav Krus, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Vojtěch Horný, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) and ELI Beamlines (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jaroslav Nejdl, ELI Beamlines (Czech Republic) and Institute of Plasma Physics ASCR, v.v.i. (Czech Republic); Kim Ta Phuoc, Lab. d'Optique Appliquée (France) and ELI Beamlines (Czech Republic); Benoît Mahieu, Lab. d'Optique Appliquée (France) . . . . . [10240-40]

Requirements on the LWFA electron beam for the user-oriented photon source, Alexander Molodozhentsev, Lukas Pribyl, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Andreas R. Maier, Deutsches Elektronen-Synchrotron (Germany); Paul Winkler, Ctr. for Free-Electron Laser Science (Germany) . . . . . [10240-41]

Toward 10-GeV laser electron acceleration using 4 PW laser pulses, Hyung Taek Kim, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Vishwa Bandhu Pathak, Institute for Basic Science (Korea, Republic of); Ki Hong Pae, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Constantin Aniculaesei, Jung Hun Shin, Institute for Basic Science (Korea, Republic of); Calin Hojbota, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Sanyasi Rao Bobbili, Institute for Basic Science (Korea, Republic of) and Raja Ramanna Ctr. for Advanced Technology (India); Seong Ku Lee, Institute for Basics Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Jae Hee Sung, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Hwang Woon Lee, Kazuhisa Nakajima, Institute for Basic Science (Korea, Republic of); Chang Hee Nam, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [10240-43]

Direct acceleration in intense laser fields used for bunch amplification of relativistic electrons, Julia Braenzel, Alexander A. Andreev, Lutz Ehrentraut, Matthias Schnuerer, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [10240-44]

Heavy ion acceleration by 10TW Ti:sapphire laser system at PALS, Petr Zakopal, Czech Technical Univ. in Prague (Czech Republic), Institute of Plasma Physicsof the ASCR, v.v.i. (Czech Republic); Miroslav Krus, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Michaela Kozlová, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10240-45]

CONFERENCE 10241

LOCATION: NADIR (MONDAY-WEDNESDAY) AND TYCHO (TUESDAY PM)

Monday - Wednesday 24–26 April 2017 • Proceedings of SPIE Vol. 10241

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); **Dimitrios Charalambidis,** Foundation for Research and Technology-Hellas (Greece); **Cristina Hernandez-Gomez,** Rutherford Appleton Lab. (United Kingdom); **Mattias Marklund,** Umeå Univ. (Sweden); **Matthew Zepf,** Queen's Univ. Belfast (United Kingdom); **Victor Zamfir,** Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania)

MONDAY 24 APRIL

WELCOME AND INTRODUCTION

ROOM: NADIR . . . . . 8:25 TO 8:30

SESSION 1

ROOM: NADIR . . . . . MON 8:30 TO 10:35

Special Session Honoring Prof. Wolfgang Sandner: Extreme Light Sources and Facilities I

In Memoriam of Prof. Wolfgang Sandner
ELI-DC director and laser scientist

Opening Remarks

Session Chair: **Carlo Rizzuto,** Director General of the Extreme Light Infrastructure Delivery Consortium International, Belgium

8:30: **The future action of ELI under the ERIC umbrella** *(Invited Paper)*, Carlo Rizzuto, Elettra-Sincrotrone Trieste S.C.p.A. (Italy) and Extreme Light Infrastructure Delivery Consortium International (Belgium). . . . . [10241-1]

8:55: **ELI Beamlines: status of user facility development** *(Invited Paper)*, Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . [10241-2]

9:20: **Status of ELI-ALPS implementation** *(Invited Paper)*, Károly Osvay, Dimitris Charalambidis, Patrizio Antici, Péter Dombi, Lajos J. Fulop, Franck Lepine, Gergo Mészáros, Giuseppe Sansone, Katalin G. Varju, ELI-HU Nonprofit Kft. (Hungary). . . . . [10241-3]

9:45: **Status of the construction of the 2x10PW laser system at ELI-NP** *(Invited Paper)*, Daniel Ursescu, National Institute for Laser, Plasma and Radiation Physics (Romania). . . . . [10241-4]

10:10: **Latest results from BELLA** *(Invited Paper)*, Wim P. Leemans, Lawrence Berkeley National Lab. (United States) . . . . . [10241-5]

Coffee Break . . . . . Mon 10:35 to 10:55

SESSION 2

ROOM: NADIR . . . . . MON 10:55 TO 12:45

High Field Physics and Simulations I

10:55: **Extreme Light: going beyond the horizon**, Jonathan Wheeler, École Polytechnique (France) . . . . . [10241-6]

11:15: **Ultraintense lasers and beams: plasmas at the extreme** *(Invited Paper)*, Luis O. Silva, Instituto Superior Técnico (Portugal) . . . . . [10241-7]

11:40: **Simulate what is measured: next steps towards predictive simulations** *(Invited Paper)*, Michael Bussmann, Thomas Kluge, Alexander Debus, Axel Hübl, Marco Garten, Malte Zacharias, Jan Vorberger, Richard Pausch, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany); René Widera, Helmholtz-Zentrum Dresden-Rossendorf e.V. (Germany); Ulrich Schramm, Thomas E. Cowan, Arie Irman, Karl Zeil, Dominik Kraus, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) . . . . . [10241-8]

12:05: **Electron-positron pair production from electron-laser scattering, the effect of the long pulse**, Marija Vranic, Ondrej Klimo, Georg Korn, Stefan Weber, ELI beamlines, Fyzikální ústav AV ČR, v. v. i. (Czech Republic) . [10241-9]

12:25: **Electrons in strong electromagnetic fields: spin effects and radiation reaction**, Heiko Bauke, Meng Wen, Christoph H. Keitel, Max-Planck-Institut für Kernphysik (Germany) . . . . . [10241-10]

Lunch Break . . . . . Mon 12:45 to 13:45

SESSION 3

ROOM: NADIR . . . . . MON 13:45 TO 15:35

Acceleration of Particles Using High Power PW Class Lasers I

13:45: **Key physical concepts for laser plasma accelerators** *(Invited Paper)*, Victor Malka, Ecole Nationale Supérieure de Techniques Avancées (France) . . . . . [10241-11]

14:10: **Design and development of the HELL User Station for multidisciplinary experiments**, Gabriele Maria Grittani, ELI Beamlines (Czech Republic); Tadzio Levato, Georg Korn, ELI Beamlines, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10241-12]

14:30: **Scaling of proton-boron nuclear fusion rate using high power lasers and advanced targets**, Lorenzo Giuffrida, Daniele Margarone, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Antonino Picciotto, Fondazione Bruno Kessler (Italy); Andriy Velyhan, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Valentina Scuderi, Pablo G. Cirrone, Istituto Nazionale di Fisica Nucleare (Italy); Josef Krasa, The Institute of Physics (Czech Republic); Jan Dostal, Jiří Ullschmied, Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Yasunobu Arikawa, Akifumi Yogo, Osaka Univ. (Japan); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10241-13]

14:50: **Ultra-stable pointing experiments in LWFA and expected performance in the HELL project**, Tadzio Levato, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Marcin Rosinski, Institute of Plasma Physics and Laser Microfusion (Poland); Gabriele Maria Grittani, ELI Beamlines (Czech Republic); Michal Nevrkla, Czech Technical Univ. in Prague (Czech Republic); Carlo Maria Lazzarini, Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10241-14]

15:10: **First Draco-PW particle acceleration results** *(Invited Paper)*, Ulrich Schramm, Helmholtz-Zentrum Dresden-Rossendorf e. V. (Germany) . [10241-15]

Coffee Break . . . . . Mon 15:35 to 16:00

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 4

ROOM: NADIR . . . . . TUE 10:10 TO 12:10

Extreme Light Sources and Facilities II

10:10: **Starting up European XFEL** *(Invited Paper)*, Thomas Tschentscher, European XFEL GmbH (Germany). . . . . [10241-16]

10:40: **ELI-Beamlines: next-generation short-pulse laser systems** *(Invited Paper)*, Bedrich Rus, ELI Beamlines (Czech Republic) . . . . . [10241-17]

11:10: **10 PW commissioning experiments plans at ELI-NP** *(Invited Paper)*, Dan Stutman, Extreme Light Infrastructure-Nuclear Physics (Romania)[10241-18]

11:40: **Status update of multi-kilojoule, multi-petawatt laser LFEX** *(Invited Paper)*, Junji Kawanaka, Osaka Univ. (Japan). . . . . [10241-20]

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

Please Note: Sessions 5 and 6 runs concurrently with Session 7

SESSION 5

ROOM: NADIR . . . . . TUE 13:20 TO 14:55

Extreme Light Sources and Facilities III

13:20: **Progress on the 10PW laser project SULF at Shanghai** *(Invited Paper)*, Xiaoyan Liang, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [10241-21]

13:45: **High contrast high intensity petawatt J-KAREN-P laser facility at QST** *(Invited Paper)*, Mamiko Nishiuchi, Japan Atomic Energy Agency (Japan); Hiromitsu Kiriyama, Alexander S. Pirozhkov, Kansai Photon Science Institute (Japan); Hironao Sakaki, Yuji Fukuda, Japan Atomic Energy Agency (Japan); Nicholas P. Dover, Imperial College London (United Kingdom); Keita Nishitani, Takumi Miyahara, Kansai Photon Science Institute (Japan); Akito Sagisaka, Japan Atomic Energy Agency (Japan); M. A. Alkhimova, Joint Institute for High Temperatures (Russian Federation); Tatiana A. Pikuz, Anatoly Ya. Faenov, Koichi Ogura, Japan Atomic Energy Agency (Japan); Kotaro Kondo, Kansai Photon Science Institute (Japan); Yousuke Watanabe, Kyushu Univ. (Japan); James K. Koga, Sergei V. Bulanov, Masaki Kando, Kiminori Kondo, Japan Atomic Energy Agency (Japan) . . . . . [10241-22]

14:10: **Models and simulations of capillary discharges** *(Invited Paper)*, Vladimir Gasilov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Pavel V. Sasorov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Gennadiy Bagdasarov, M. V. Keldysh Institute of Applied Mathematics (Russian Federation); Danila Khikhlukha, ELI Beamlines (Czech Republic). . . . [10241-23]

14:35: **Generation and characterization of laser matter interaction at intensity 1022 W/cm2**, Deepak Kumar, ELI Beamlines (Czech Republic) . . . . . [10241-24]

Coffee Break . . . . . Tue 14:55 to 15:30

SESSION 6

ROOM: NADIR . . . . . TUE 15:30 TO 17:20

High Power Intense Laser Sources with Enhanced Repetition Rates

15:30: **Progress toward rep-rated multi-PW lasers** *(Invited Paper)*, Todd Ditmire, National Energetics (United States) . . . . . [10241-25]

15:55: **Development of high-energy kW-class picosecond thin-disk laser systems** *(Invited Paper)*, Thomas Nubbemeyer, Ludwig-Maximilians-Univ. München (Germany) . . . . . [10241-26]

16:20: **New advanced characterization tools for PW-class lasers**, Fabien Quéré, Commissariat à l'Énergie Atomique (France) . . . . . [10241-27]

16:40: **Technology development for multi-PW CPA and OPCPA-based laser systems**, Ian Musgrave, Steve P. Blake, Alexis Boyle, Oleg V. Chekhlov, John L. Collier, STFC Rutherford Appleton Lab. (United Kingdom); R, J. Clark, Science and Technology Facilities Council (United Kingdom); Steve Hancock, Robert Heathcote, Cristina Hernandez-Gomez, Chris J. Hooker, Marco Galimberti, Pavel Matousek, David Neely, Peter A. Norreys, B. T. Parry, Rajeev Paramel Pattathil, Waseem Shaikh, Daniel R. Symes, Y. Tang, Trevor B. Winstone, Brian E. Wyborn, STFC Rutherford Appleton Lab. (United Kingdom) . . . . . [10241-28]

17:00: **Development of high energy, sub-15 fs OPCPA system operating at 1 kHz repetition rate for ELI-Beamlines facility**, Pavel Bakule, Roman Antipenkov, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Jonathan T. Green, Institute of Physics of the AVCR, v.v.i. (Czech Republic); Jakub Novák, František Batysta, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Bedrich Rus, Robert Boge, Zbynek Hubka, Institute of Physics of the AVCR, v.v.i. (Czech Republic); Jack A. Naylon, Martin Horácek, Jakub Horácek, Petr Strkula, David Snopek, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Lukáš Indra, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Boguslaw Tykalewicz, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10241-29]

SESSION 7

ROOM: TYCHO . . . . . TUE 13:40 TO 17:10

NOTE ROOM CHANGE

High Field Physics and Simulations II

13:40: **Modelling the effect of radiation reaction on the absorption of ultra-intense laser pulses in overdense targets**, Matthew Duff, Remi Capdessus, Martin King, Paul McKenna, Univ. of Strathclyde (United Kingdom) . . [10241-30]

14:00: **Study of L4 nanosecond pedestal effect on pre-plasma using nonlocal hydrodynamic simulations and consequences for high-field interaction**, Milan Holec, Jan Pšikal, Czech Technical Univ. in Prague (Czech Republic); Robert Liska, Technische Univ. Wien (Austria); Stefan A. Weber, Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic). [10241-31]

14:20: **3D simulation in the lambda-cube regime of the petawatt-class laser with plasma slab**, Natalia Naumova, Ecole Polytechnique (France) . . [10241-32]

14:40: **Evolution of relativistic electron vortices in laser plasmas**, Kirill V. Lezhnin, Princeton Plasma Physics Lab. (United States); Alexey R. Kniazev, Sergei V. Soloviev, Fedor F. Kamenets, Moscow Institute of Physics and Technology (Russian Federation); Stefan A. Weber, Georg Korn, ELI Beamlines (Czech Republic); Timur Z. Esirkepov, Japan Atomic Energy Agency (Japan); Sergei V. Bulanov, Japan Atomic Energy Agency (Japan) and A. M. Prokhorov General Physics Institute of the Russian Academy of Sciences (Russian Federation) . . . . . [10241-33]

15:00: **Gamma beams generation with high-intensity lasers for the study of two photon Breit-Wheeler pair production**, Emmanuel d'Humières, Xavier Ribeyre, Oliver Jansen, Univ. Bordeaux 1 (France); Alexey Arefiev, Toma Toncian, The Univ. of Texas at Austin (United States); Mathieu Lobet, Sophie Jequier, Sébastien Hulin, Univ. Bordeaux 1 (France); Yasuhiko Sentoku, Univ. of Nevada, Reno (United States); Vladimir T. Tikhonchuk, Univ. Bordeaux 1 (France) . . . . . [10241-34]

Coffee Break . . . . . Tue 15:20 to 15:50

15:50: **A kinetic model for the high energy synchrotron radiation in ultra-strong laser-matter interactions**, Remi Capdessus, Univ. of Strathclyde (United Kingdom). . . . . [10241-35]

16:10: **Emission of γ rays in laser-solid interactions**, Jirí Vyskocil, Czech Technical Univ. in Prague (Czech Republic); Ondrej Klimo, Stefan A. Weber, Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic). [10241-36]

16:30: **Particle dynamics and pair production in tightly focused standing wave**, Martin Jirka, Ondrej Klimo, IoP CAS, ELI Beamlines Project (Czech Republic); Marija Vranic, Instituto Superior Técnico (Portugal); Stefan A. Weber, Georg Korn, IoP CAS, ELI Beamlines Project (Czech Republic). . . . . [10241-37]

16:50: **On an impact of radiation reaction on plasma waves induced by ultra-intense laser pulse**, Evgeny G. Gelfer, Alexander M. Fedotov, National Research Nuclear Univ. MEPhI (Russian Federation); Nina V. Elkina, Ludwig-Maximilians-Univ. München (Germany). . . . . [10241-38]

SESSION 8

ROOM: NADIR . . . . . TUE 17:10 TO 18:10

Secondary Sources Generated by High Power Lasers I

17:10: **Extreme laser pulses for possible development of boron fusion power reactors for clean and lasting energy**, Heinrich Hora, The Univ. of New South Wales (Australia); Shalom Eliezer, SOREQ Res.Ctr. (Israel); Götz J. Kirchhoff, Mangement GmbH (Germany); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Paraskevas Lalousis, Foundation for Research and Technology-Hellas (Greece); George H. Miley, Univ. of Illinois at Urbana-Champaign (United States); Stavros D. Moustaizis, Technical Univ. of Crete (Greece) . . . . . [10241-40]

17:30: **Attosecond gamma-ray pulses and angle-resolved-stochastic photon emission in the quantum-radiation-dominated regime**, Jianxing Li, Karen Z. Hatsagortsyan, Christoph H. Keitel, Max-Planck-Institut für Kernphysik (Germany) . . . . . [10241-41]

17:50: **Tertiary particle physics with ELI: from challenge to chance**, Ladislav Drska, Czech Technical Univ in Prague (Czech Republic) . . . . . [10241-42]

WEDNESDAY 26 APRIL

SESSION 9

ROOM: NADIR . . . . . WED 8:30 TO 10:30

High Field Physics and Simulations III

8:30: **High-energy quantum processes in extremely intense laser pulses** *(Invited Paper)*, Christoph H. Keitel, Max-Planck-Institut für Kernphysik (Germany) . . . . . [10241-43]

8:55: **Aspects of QED in laser-matter interactions** *(Invited Paper)*, Mattias Marklund, Umeå Univ. (Sweden). . . . . [10241-44]

9:20: **QED cascades and vacuum birefringence with new PW-class lasers** *(Invited Paper)*, Thomas Grismayer, Instituto Superior Técnico (Portugal)[10241-45]

9:45: **Plasma physics and ultra-high intensity interaction at ELI-Beamlines** *(Invited Paper)*, Stefan A. Weber, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10241-46]

10:10: **New frontiers in numerical modeling of PW laser plasma interaction**, Ricardo A. Fonseca, Instituto Superior Técnico (Portugal) . . . . . [10241-47]

Coffee Break . . . . . Wed 10:30 to 10:55

SESSION 10

ROOM: NADIR . . . . . WED 10:55 TO 12:30

Acceleration of Particles Using High Power PW Class Lasers II

10:55: **Ion acceleration experiments employing PW-class systems** *(Invited Paper)*, Marco Borghesi, Queen's Univ. Belfast (United Kingdom). . . . [10241-48]

11:20: **Radiation reaction revisited** *(Invited Paper)*, Hartmut Ruhl, Ludwig-Maximilians-Univ. München (Germany). . . . . [10241-49]

11:45: **Controlled acceleration of cryogenic layered deuterium ion beams** *(Invited Paper)*, David Neely, STFC Rutherford Appleton Lab. (United Kingdom) . . . . . [10241-50]

12:10: **Plasma formation in noncircular capillary discharges**, Gennadiy Bagdasarov, Pavel Sasorov, Alexey Boldarev, Olga Olkhovskaya, Vladimir Gasilov, M. V. Keldysh Institute of Applied Mathematics, RAS (Russian Federation); Danila Khikhlukha, ELI Beamlines (Czech Republic); Daniele Margarone, Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Sergey V. Bulanov, National Institutes for Quantum and Radiological Science and Technology (Japan); Stepan S. Bulanov, Carlo Benedetti Jr., Anthony J. Gonsalves, Wim P. Leemans, Lawrence Berkeley National Lab. (United States). . . . . [10241-51]

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

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

SESSION 11

ROOM: NADIR . . . . . WED 15:40 TO 17:55

Secondary Sources Generated by High Power Lasers II

15:40: **GeV laser-plasma acceleration and betatron radiation** *(Invited Paper)*, Nelson C. Lopes, Instituto Superior Técnico (Portugal) . . . . . [10241-52]

16:05: **ELIMAIA: laser driven ion beamline for multidisciplinary applications at ELI** *(Invited Paper)*, Daniele Margarone, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Giuseppe A. P. Cirrone, Valentina Scuderi, Istituto Nazionale di Fisica Nucleare (Italy); Francesco Schillaci, Istituto Nazionale di Fisica Nucleare (Ireland); Francesco Paolo Romano, Istituto Nazionale di Fisica Nucleare (Italy); Lorenzo Giuffrida, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Giacomo Cuttone, Istituto Nazionale di Fisica Nucleare (Italy); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10241-53]

16:30: **Ion acceleration with radiation pressure in quantum electrodynamic regimes** *(Invited Paper)*, Dario Del Sorbo, David Blackman, Univ. of York (United Kingdom); Remi Capdessus, Univ. of Strathclyde (United Kingdom); Kristina Small, Cody Slade-Lowther, Christopher P. Ridgers, Univ. of York (United Kingdom) . . . . . [10241-54]

16:55: **Generation of attosecond electron pulses using petawatt lasers**, Katarzyna Krajewska, Felipe Cajiao Velez, Jerzy Z. Kaminski, Univ. of Warsaw (Poland) . . . . . [10241-55]

17:15: **Ultra-intense laser interaction with specially-designed targets as a source of energetic protons**, Jan Pšikal, Martin Matys, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10241-56]

17:35: **Numerical studies on alpha production from high-energy proton beam interaction with Boron**, Stavros D. Moustaizis, Technical Univ. of Crete (Greece); Paraskevas Lalousis, Foundation for Research and Technology-Hellas (Greece) and Institute of Electronic Structure and Laser (Greece); Heinrich Hora, The Univ. of New South Wales (Australia); Georg Korn, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and ELI Beamlines (Czech Republic) and Max-Planck-Institut für Quantenoptik (Germany) . . . . . [10241-57]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Multiparametric PIC simulations of electron vortices in laser plasma, Alexey R. Kniazev, Moscow Institute of Physics and Technology (Russian Federation) and P.N. Lebedev Physical Institute (Russian Federation); Kirill V. Lezhnin, Princeton Plasma Physics Lab. (United States); Sergei V. Soloviev, Moscow Institute of Physics and Technology (Russian Federation); Sergei V. Bulanov, National Institutes for Quantum and Radiological Science and Technology (Japan); Fedor F. Kamenets, Moscow Institute of Physics and Technology (Russian Federation); Timur Z. Esirkepov, National Institutes for Quantum and Radiological Science and Technology (Japan) . . . . . [10241-58]

CONFERENCE 10242

LOCATION: TAURUS

Monday–Tuesday 24–25 April 2017 • Proceedings of SPIE Vol. 10242

Integrated Optics: Physics and Simulations

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

Programme Committee: **Roel G. Baets,** Univ. Gent (Belgium); **Trevor Mark Benson,** The Univ. of Nottingham (United Kingdom); **Hung-Chun Chang,** National Taiwan Univ. (Taiwan); **Christopher R. Doerr,** Acacia Communications Inc. (United States); **Romuald Houdré,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Raman Kashyap,** Ecole Polytechnique de Montréal (Canada); **Christophe Kazmierski,** III-V Lab. (France); **Philippe Lalanne,** Institut d'Optique Graduate School (France); **Xaveer J. M. Leijtens,** Technische Univ. Eindhoven (Netherlands); **Goran Z. Mashanovich,** Univ. of Southampton (United Kingdom); **Andrea I. Melloni,** Politecnico di Milano (Italy); **Jarmila Müllerová,** Univ. of Žilina (Slovakia); **Martin Schell,** Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); **Laurent Vivien,** Institut d'Électronique Fondamentale (France); **Lech Wosinski,** KTH Royal Institute of Technology (Sweden); **Dan-Xia Xu,** National Research Council Canada (Canada)

MONDAY 24 APRIL

WELCOME AND INTRODUCTION

ROOM: TAURUS . . . . . 8:25 TO 8:30

SESSION 1

ROOM: TAURUS . . . . . MON 8:30 TO 10:30

Nano, Plasmonics, and Sensing

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

8:30: **Nanophotonics and hybrid plasmonics: different technologies and applications** *(Invited Paper)*, Lech Wosinski, KTH Royal Institute of Technology (Sweden) and JORCEP, The Joint Research Ctr. of Photonics (China); Xu Sun, KTH Royal Institute of Technology (Sweden); Lars Thylén, KTH Royal Institute of Technology (Sweden) and JORCEP, The Joint Research Ctr. of Photonics (China) . . . .[10242-1]

9:00: **Biosensing using long-range surface plasmon waveguides** *(Invited Paper)*, Oleksiy Krupin, Maryam Khodami, Hui Fan, Pierre Berini, Univ. of Ottawa (Canada) . . . . . [10242-2]

9:30: **Plasmonic integrated circuit comprising metal waveguides, multiplexer/demultiplexer, detectors, and logic circuits on a silicon substrate**, Mitsuo Fukuda, Masashi Ota, Asahi Sumimura, Shinya Okahisa, Motoki Ito, Yuya Ishii, Takeshi Ishiyama, Toyohashi Univ. of Technology (Japan). . . . . [10242-3]

9:50: **Gas sensing with a high-quality-factor photonic crystal ring resonator**, Reyhaneh Jannesary, Institute for Microelectronics and Microsensors, Johannes Kepler Univ. Linz (Austria); Thomas Grille, Infineon Technologies Austria AG (Austria); Bernhard Jakoby, Institute for Microelectronics and Microsensors, Johannes Kepler Univ. Linz (Austria). . . . . [10242-4]

10:10: **Temperature-drift-immune wavelength meter based on an integrated micro ring resonator**, Caterina Taballione, Univ. Twente (Netherlands); Temitope E. Agbana, Gleb V. Vdovin, Technische Univ. Delft (Netherlands); Marcel Hoekman, Lennart Wevers, LioniX BV (Netherlands); Jeroen Kalkman, Michel Verhaegen, Technische Univ. Delft (Netherlands); Peter J.M. van der Slot, Klaus-Jochen Boller, Univ. Twente (Netherlands). . . . . [10242-5]

Coffee Break . . . . . Mon 10:30 to 10:50

SESSION 2

ROOM: TAURUS . . . . . MON 10:50 TO 12:30

Reconfigurable Devices

Session Chair: **Laurent Vivien,** Ctr. de Nanosciences et de Nanotechnologies (France)

10:50: **Reconfigurable silicon photonics: devices and circuits** *(Invited Paper)*, Daoxin Dai, Haifeng Shan, Lijia Song, Shipeng Wang, Zhejiang Univ. (China) . [10242-6]

11:20: **Automated tuning, control and stabilization of photonic integrated circuits** *(Invited Paper)*, Douglas Oliveira De Aguiar, Andrea Annoni, Nicola Peserico, Emanuele Guglielmi, Marco Carminati, Giorgio Ferrari, Francesco Morichetti, Politecnico di Milano (Italy) . . . . . [10242-7]

11:50: **Intra-band indirect photonic transition in a silicon slow light photonic crystal waveguide**, Mahmoud Gaafar, Technische Univ. Hamburg-Harburg (Germany) and Menoufia Univ. (Egypt); Dirk Jalas, Technische Univ. Hamburg-Harburg (Germany); Liam O'Faolain, Univ. of St. Andrews (United Kingdom); Juntao Li, Sun Yat-Sen Univ. (China); Thomas F. Krauss, Univ. of York (United Kingdom); Alexander Yu. Petrov, Manfred Eich, Technische Univ. Hamburg-Harburg (Germany) . . . . . [10242-38]

12:10: **On-chip optical frequency comb generation using linear mode locked laser with intracavity phase modulators**, Mu-Chieh Lo, Robinson C. Guzmán Martínez, Muhsin Ali, Univ. Carlos III de Madrid (Spain); Rui Santos, Luc Augustin, SMART Photonics (Netherlands); Guillermo Carpintero, Univ. Carlos III de Madrid (Spain) . . . . . 10242-8]

Lunch Break . . . . . Mon 12:30 to 13:30

SESSION 3

ROOM: TAURUS . . . . . MON 13:30 TO 14:20

PT Symmetry

Session Chair: **Pierre Berini,** Univ. of Ottawa (Canada)

13:30: **Parity-time symmetry optics for modal selection in transverse and longitudinal waves** *(Invited Paper)*, Henri Benisty, Institut Optique Graduate School (France); Anatole Lupu, Centre de Nanosciences et de Nanotechnologies (France) and CNRS (France) and Paris-Saclay (France) . . . . . [10242-9]

14:00: **Active functional devices using parity-time symmetry optics**, Vincent Brac de la Perriere, Ctr. de Nanosciences et de Nanotechnologies (France); Henri Benisty, Lab. Charles Fabry (France); Abderrahim Ramdane, Anatole Lupu, Ctr. de Nanosciences et de Nanotechnologies (France). . . . . [10242-10]

SESSION 4

ROOM: TAURUS . . . . . MON 14:20 TO 15:30

Subwavelength Structures

Session Chair: **Pierre Berini,** Univ. of Ottawa (Canada)

14:20: **Design of optical metamaterial waveguide structures** *(Invited Paper)*, Alejandro Ortega-Moñux, Robert Halir, Alejandro Sánchez-Postigo, Univ. de Málaga (Spain); Jordi Soler-Penadés, Univ. of Southampton (United Kingdom); Jiří Čtyroký, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); José Manuel Luque-González, José Darío Sarmiento-Merenguel, Juan Gonzalo Wangüemert-Pérez, Univ. de Málaga (Spain); Jens H. Schmid, Dan-Xia Xu, Sigfried Janz, Jean Lapointe, National Research Council Canada (Canada); Iñigo Molina-Fernández, Univ. de Málaga (Spain); Milos Nedeljkovic, Goran Z. Mashanovich, Univ. of Southampton (United Kingdom); Pavel Cheben, National Research Council Canada (Canada) . . . . . [10242-11]

14:50: **Broadband high-efficiency zero-order surface grating coupler for the near- and mid-infrared wavelength ranges**, Alejandro Sánchez-Postigo, Juan Gonzalo Wangüemert-Pérez, José M. Luque-González, Iñigo Molina-Fernández, Univ. de Málaga (Spain); Pavel Cheben, National Research Council Canada (Canada); Carlos A. Alonso-Ramos, Univ. Paris-Sud (France) and Univ. Paris-Saclay (France); Robert Halir, Univ. de Málaga (Spain); Jens H. Schmid, National Research Council Canada (Canada); Alejandro Ortega-Moñux, Univ. de Málaga (Spain). . . . . [10242-12]

15:10: **Possibilities of Bragg filtering structures based on subwavelength grating guiding mechanism**, Pavel Kwiecien, Czech Technical Univ. in Prague (Czech Republic); Ján Litvik, University of Žilina, Faculty of Electrical Engineering (Slovakia); Ivan Richter, Czech Technical Univ. in Prague (Czech Republic); Jiří Čtyroký, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); Pavel Cheben, National Research Council Canada (Canada) . . . . . [10242-13]

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

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session II

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:10

SESSION 5

ROOM: TAURUS . . . . . TUE 10:10 TO 12:30

Nonlinear Devices and Modulators

Session Chair: **Francesco Morichetti,** Politecnico di Milano (Italy)

10:10: **Nonlinear dynamics of optical frequency combs** *(Invited Paper)*, Stefan Wabnitz, Univ. degli Studi di Brescia (Italy); Tobias Hansson, Institut National de la Recherche Scientifique (Canada); François Leo, Univ. Libre de Bruxelles (Belgium); Iolanda Ricciardi, Maurizio De Rosa, Istituto Nazionale di Ottica (Italy); Stephane Coen, Miro Erkintalo, The Univ. of Auckland (New Zealand) [10242-14]

10:40: **On-chip frequency combs for complex quantum state preparation** *(Invited Paper)*, Piotr Roztocki, Michael Kues, Christian Reimer, Benjamin Wetzel, Fabio Grazioso, Institut National de la Recherche Scientifique (Canada); Brent E. Little, Xi'an Institute of Optics and Precision Mechanics, CAS (China); Sai T. Chu, City Univ. of Hong Kong (Hong Kong, China); Tudor Wyatt Johnston, INRS-Energie et Materiaux (Canada); Yaron Bromberg, Yale Univ. (United States); Lucia Caspani, Heriot-Watt Univ. (United Kingdom); David J. Moss, Swinburne Univ. of Technology (Australia); Roberto Morandotti, Institut National de la Recherche Scientifique (Canada) . . . . . [10242-15]

11:10: **Simplified model enabling optimization of silicon modulators**, Diego Pérez-Galacho, Delphine Marris-Morini, Ctr. de Nanosciences et de Nanotechnologies (France); Remco Stoffer, PhoeniX B.V. (Netherlands); Eric Cassan, Ctr. de Nanosciences et de Nanotechnologies (France); Charles Baudot, STMicroelectronics (France); Twan Korthorst, PhoeniX B.V. (Netherlands); Frédéric Boeuf, STMicroelectronics (France); Laurent Vivien, Ctr. de Nanosciences et de Nanotechnologies (France) . . . . . [10242-16]

11:30: **Continuous-wave second and third harmonic generation in high-Q gallium nitride photonic crystal cavities on silicon** *(Invited Paper)*, Mohamed Sabry Mohamed, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Angelica Simbula, Univ. degli Studi di Pavia (Italy); Jean-François Carlin, Momchil Minkov, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Dario Gerace, Univ. degli Studi di Pavia (Italy); Vincenzo Savona, Nicolas Grandjean, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Matteo Galli, Univ. degli Studi di Pavia (Italy); Romuald Houdré, Ecole Polytechnique Fédérale de Lausanne (Switzerland)[10242-17]

12:00: **Silicon and germanium free carrier injection modulators for the mid-infrared** *(Invited Paper)*, Milos Nedeljkovic, Goran Z. Mashanovich, Univ. of Southampton (United Kingdom) . . . . . [10242-18]

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

SESSION 6

ROOM: TAURUS . . . . . TUE 13:30 TO 15:30

Novel Effects and Applications

Session Chair: **Henri Benisty,** Institut d'Optique Graduate School (France)

13:30: **Nanoantenna enhanced terahertz radiation: matter interaction** *(Invited Paper)*, Luca Razzari, Institut National de la Recherche Scientifique (Canada)[10242-19]

14:00: **Pockels effect in strained silicon photonics** *(Invited Paper)*, Laurent Vivien, Mathias Berciano, Pedro Damas, Guillaume Marcaud, Xavier Le Roux, Ctr. de Nanosciences et de Nanotechnologies (France); Paul Crozat, Ctr. for Nanosciences et de Nanotechnologies (France); Carlos A. Alonso-Ramos, Daniel Benedikovic, Delphine Marris-Morini, Eric Cassan, Ctr. de Nanosciences et de Nanotechnologies (France) . . . . . [10242-20]

14:30: **Functional oxides induced strain for silicon photonics applications**, Guillaume Marcaud, Sylvia Matzen, Carlos A. Alonso-Ramos, Xavier Le-Roux, Mathias Berciano, Valérie Pillard, Pedro Damas, Thomas Maroutian, Guillaume Agnus, Ludovic Largeau, Eric Cassan, Delphine Marris-Morini, Philippe Lecoeur, Laurent Vivien, Ctr. de Nanosciences et de Nanotechnologies (France)[10242-21]

14:50: **Astrophotonics: the application of photonic technology to astronomy**, Simon Ellis, Australian Astronomical Observatory (Australia) . . . . . [10242-22]

15:10: **Distributed meandering waveguides for novel photonic circuits**, Ceren B. Dag, Univ. of Michigan (United States); Mehmet Ali Anil, Istanbul Technical Univ. (Turkey); Ali Serpengüzel, Koç Univ. (Turkey) . . . . . [10242-23]

Coffee Break . . . . . Tue 15:30 to 15:50

SESSION 7

ROOM: TAURUS . . . . . TUE 15:50 TO 18:20

Novel Technologies and Structures

Session Chair: **Alejandro Ortega-Moñux,** Univ. de Málaga (Spain)

15:50: **Trimming of ring resonators via ion implantation in silicon** *(Invited Paper)*, Graham T. Reed, Optoelectronics Research Ctr. (United Kingdom); Milan M. Milosevic, Xia Chen, Univ. of Southampton (United Kingdom); David J. Thomson, NOKIA Bell Labs (United States) . . . . . [10242-24]

16:20: **Polymer optical waveguide devices for mode-division-multiplexing applications** *(Invited Paper)*, Kin Seng Chiang, City Univ. of Hong Kong (Hong Kong, China) . . . . . [10242-25]

16:50: **Predicting the yield of photonic integrated circuits using statistical compact modeling** *(Invited Paper)*, James Pond, Jackson Klein, Jonas Flückiger, Xu Wang, Lumerical Solutions, Inc. (Canada); Zeqin Lu, Jaspreet Jhoja, Lukas Chrostowski, The Univ. of British Columbia (Canada). . . [10242-26]

17:20: **Polarization insensitive Ge-rich silicon germanium waveguides for optical interconnects on silicon**, Vladyslav Vakarin, Papichaya Chaisakul, Ctr. de Nanosciences et de Nanotechnologies (France); Jacopo Frigerio, Andrea Ballabio, Politecnico di Milano (Italy); Joan-Manel Ramirez, Xavier Le-Roux, Jean-René Coudevylle, Laurent Vivien, Ctr. de Nanosciences et de Nanotechnologies (France); Giovanni Isella, Politecnico di Milano (Italy); Delphine Marris-Morini, Ctr. de Nanosciences et de Nanotechnologies (France) . . . . . [10242-27]

17:40: **FDTD simulation of amorphous silicon waveguides for microphotonics applications**, Alessandro Fantoni, UNINOVA (Portugal) and Instituto Superior de Engenharia de Lisboa (Portugal); Paulo B. Lourenço, Instituto Superior de Engenharia de Lisboa (Portugal); Pedro Pinho, Instituto Superior Técnico (Portugal) and Instituto Superior de Engenharia de Lisboa (Portugal); Manuela Vieira, UNINOVA (Portugal) and Instituto Superior de Engenharia de Lisboa (Portugal) . . . . . [10242-28]

18:00: **Microstructured coupling elements for 3D silicon optical interposer**, Sujay Charania, Sebastian Lüngen, Zaid Al-Husseini, Sebastian Killge, Krzysztof Nieweglowski, Niels Neumann, Dirk Plettemeier, Karlheinz Bock, Johann W. Bartha, TU Dresden (Germany) . . . . . [10242-29]

WEDNESDAY 26 APRIL

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Localized photonic nanojets formed by core-shell diffraction gratings, Cheng-Yang Liu, Li-Jen Chang, Chung-Yi Wang, Tamkang Univ. (Taiwan) . . . . . [10242-30]

Determination of refractive index of submicron-thick films using resonance shift in a four-layer slab waveguide, Edgars Nitiss, Andrejs Tokmakovs, Univ. of Latvia (Latvia) . . . . . [10242-31]

Small-signal analysis of ultrahigh speed 30 GHz VCSELs using an advanced multimode approach, Wissam Hamad, Technische Univ. Berlin (Germany); Marwan Bou Sanayeh, Hassan Hamad, Mustapha Hamad, Semaan Georges, Notre Dame Univ., Louaize (Lebanon); Werner H. Hofmann, Technische Univ. Berlin (Germany) . . . . . [10242-32]

High transmittance and broaden bandwidth through the morphology of antirelfective layers on THz polarizer with Si substrate, Nai-Chen Chi, Ting-Yang Yu, Hsin-Cheng Tsai, National Chiao Tung Univ. (Taiwan); Shiang-Yu Wang, Institute of Astronomy and Astrophysics - Academia Sinica (Taiwan); Chih-Wei Luo, Kuan-Neng Chen, National Chiao Tung Univ. (Taiwan) . . . . . [10242-33]

Design of silicon electro-optic modulator based on the epsilon-near-zero effect of graphene, Jin Tae Kim, Electronics and Telecommunications Research Institute (Korea, Republic of) . . . . . [10242-35]

Self-assemble organic molecular micron-sized tubular structures for active and passive waveguiding regimes, Nebras E. Al-Attar, Univ. College Dublin (Ireland) and Univ. of Technology Baghdad (Iraq); Aisling Kerr, Rusul Al-Shammari, Univ. College Dublin (Ireland); Sivaramakrishnan Ramadurai, Dublin City Univ. (Ireland); Ronan Dorrepaal, Aoife A. Gowen, Brian J. Rodriguez, Univ. College Dublin (Ireland); Tia E. Keyes, Dublin City Univ. (Ireland); James H. Rice, Univ. College Dublin (Ireland) . . . . . [10242-37]

Experimental Analysis of Silicon Oxycarbide Thin Films and Waveguides, Faisal Ahmed Memon, Politecnico di Milano (Italy) and Mehran Univ. of Engineering & Technology (Pakistan); Francesco Morichetti, Claudio Somaschini, Giosue Iseni, Andrea I. Melloni, Politecnico di Milano (Italy). . . . . [10242-39]

CONFERENCE 10243

LOCATION: ZENIT

Monday - Wednesday 24–26 April 2017 • Proceedings of SPIE Vol. 10243

X-Ray Lasers and Coherent X-Ray Sources: Development and Applications

Conference Chairs: **Annie Klisnick,** CNRS, Univ. Paris-Sud 11 (France); **Carmen S. Menoni,** Colorado State Univ. (United States)

Programme Committee: **Jens Biegert,** ICFO - Institut de Ciències Fotòniques (Spain); **Hiroyuki Daido,** Japan Atomic Energy Agency (Japan); **Yasin Ekinci,** Paul Scherrer Institut (Switzerland); **Sylvie Jacquemot,** Ecole Polytechnique (France); **Do-Kyeong Ko,** Gwangju Institute of Science and Technology (Korea, Republic of); **Michaela Kozlova,** Institute of Physics of the ASCR, v.v.i. (Czech Republic); **Ciaran L. S. Lewis,** Queen's Univ. Belfast (United Kingdom); **Stefan P. Moeller,** SLAC National Accelerator Lab. (United States); **Peter Viktor Nickles,** Gwangju Institute of Science and Technology (Korea, Republic of); **Joseph Nilsen,** Lawrence Livermore National Lab. (United States); **Jorge J. Rocca,** Colorado State Univ. (United States); **Regina Soufli,** Lawrence Livermore National Lab. (United States); **Szymon Suckewer,** Princeton Univ. (United States); **Gregory J. Tallents,** The Univ. of York (United Kingdom); **Alexander Vladimirovich Vinogradov,** P.N. Lebedev Physical Institute (Russian Federation); **Marco Zangrando,** Sincrotrone Trieste S.C.p.A. (Italy)

MONDAY 24 APRIL

OPENING REMARKS

ROOM: ZENIT . . . . . 8:40 TO 8:45

SESSION 1

ROOM: ZENIT . . . . . MON 8:45 TO 10:25

Laboratory-scale Soft X-ray Lasers and Coherent X-ray Sources

Session Chair: **Jorge J. Rocca,** Colorado State Univ. (United States)

8:45: **Progress on ultra-intense soft X-ray lasers** *(Invited Paper)*, Stéphane Sebban, Lab. d'Optique Appliquée (France) . . . . . [10243-1]

9:15: **DAGON: a ·3D Maxwell-Bloch code**, Eduardo Oliva, Univ. Politécnica de Madrid (Spain) . . . . . [10243-2]

9:35: **Highly coherent lab-scale soft x-ray laser using multistage amplifier**, Thanh-Hung Dinh, Noboru Hasegawa, Maki Kishimoto, National Institutes for Quantum and Radiological Science and Technology (Japan); Shin-Ichi Namba, Hiroshima Univ. (Japan); Jozsef Seres, Technische Univ. Wien (Austria); Masaharu Nishikino, Tetsuya Kawachi, National Institutes for Quantum and Radiological Science and Technology (Japan) . . . . . [10243-3]

9:55: **Laser-driven coherent sources of short-wavelength radiation at PALS and ELI Beamlines** *(Invited Paper)*, Jaroslav Nejdl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Michaela Kozlová, Viktoria Nefedova, Martin Albrecht, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Julien Gautier, Stéphane Sebban, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Lab. d'Optique Appliquée (France) . . . . . [10243-4]

Coffee Break . . . . . Mon 10:25 to 10:50

SESSION 2

ROOM: ZENIT . . . . . MON 10:50 TO 12:30

Soft X-Ray Applications I

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

10:50: **High-spatial-resolution X-ray bio imaging with liquid-metal-jet sources** *(Invited Paper)*, Hans M. Hertz, KTH Royal Institute of Technology (Sweden) . . . . . [10243-5]

11:20: **Thomson scattering laser-electron X-ray source for reduction of patient radiation dose in interventional coronary angiography**, Igor A Artyukov, Nikolay Dyachkov, P.N. Lebedev Physical Institute (Russian Federation); Anastasiya V. Polunina, N.V. Sklifosovsky Science & Research Institute of Emergency Medicine (Russian Federation); Alexander V. Vinogradov, P.N. Lebedev Physical Institute (Russian Federation). . . . . [10243-6]

11:40: **Optimizing soft X-ray NEXAFS spectroscopy in the laboratory** , Ioanna Mantouvalou, Adrian Jonas, Katharina Witte, Technische Univ. Berlin (Germany); Robert Jung, Holger Stiel, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Birgit Kanngießer, Technische Univ. Berlin (Germany) . . . . . [10243-7]

12:00: **Soft X-ray nanoscale imaging using highly brilliant laboratory sources and new detector concepts** *(Invited Paper)*, Holger Stiel, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) and Berlin Lab. for Innovative X-ray Technologies (Germany); Julia Braenzel, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Aurélie Dehlinger, Robert Jung, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) and Berlin Lab. for Innovative X-ray Technologies (Germany); Andrea Luebcke, Matthias Schnuerer, Johannes F. Tümmler, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Martin Regehly, Sebastian Ritter, greateyes GmbH (Germany); Christian Seim, Berlin Laboratory for innovative X-ray technologies (Germany) and PTB (Germany) . . . . . [10243-8]

Lunch Break . . . . . Mon 12:30 to 13:50

SESSION 3

ROOM: ZENIT . . . . . MON 13:50 TO 15:40

New Concepts for High-Brightness X-ray Sources

Session Chair: **Gregory J. Tallents,** Univ. of York (United Kingdom)

13:50: **Development of ultrashort x-ray/gamma-ray sources using ultrahigh power lasers** *(Invited Paper)*, Hyung Taek Kim, Ctr. for Relativistic Laser Science at Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Kazuhisa Nakajima, Institute for Basic Science (Korea, Republic of); Calin Hojbota, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Jong Ho Jeon, Yong-Joo Rhee, Kyung Hwan Lee, Institute for Basic Science (Korea, Republic of); Seong Ku Lee, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Jae Hee Sung, Institute for Basics Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Hwang Woon Lee, Vishwa B. Pathak, Institute for Basic Science (Korea, Republic of); Ki Hong Pae, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of); Stéphane Sebban, Lab. d'Optique Appliquée (France); Fabien Tissandier, Lab. d'Optique Appliquée (France); Julien Gautier, Kim Ta Phuoc, Lab. d'Optique Appliquée (France); Victor Malka, Lab. d'Optique Appliquée (France) and Weizmann Institue of Science (Israel); Chang Hee Nam, Institute for Basic Science (Korea, Republic of) and Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [10243-9]

14:20: **Generation of intense attosecond soft x-ray pulses by IR-field dressed x-ray lasers**, Timur R. Akhmedzhanov, Texas A&M Univ. (United States); Vladimir A. Antonov, Institute of Applied Physics of the Russian Academy of Sciences (Russian Federation); Olga Kocharovskaya, Texas A&M Univ. (United States) . . . . . [10243-10]

14:40: **Using the XFEL to drive gain in L-shell systems using photoionization processes**, Joseph Nilsen, Lawrence Livermore National Lab. (United States) . . . . . [10243-11]

15:00: **Amplified spontaneous and stimulated Mg L emissions from MgO pumped by FEL pulses**, Philippe Jonnard, Jean-Michel André, Karine Le Guen, Meiyi Wu, Univ. Pierre et Marie Curie (France); Emiliano Principi, Alberto Simoncig, Alessandro Gessini, Riccardo Mincigrucci, Claudio Masciovecchio, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Olivier Peyrusse, Aix-Marseille Univ. (France) . . . . . [10243-12]

15:20: **Prospects of quantum X-ray lasers pumped by X-ray free electron lasers**, Karol A. Janulewicz, Institute of Optoelectronics, Military University of Technology (Poland) . . . . . [10243-13]

Coffee Break . . . . . Mon 15:40 to 16:00

PLENARY SESSION I

ROOM: NADIR . . . . . MON 16:00 TO 17:55

Optics + Optoelectronics 2017: Plenary Session I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

TUESDAY 25 APRIL

PLENARY SESSION II

ROOM: NADIR . . . . . TUE 9:00 TO 9:50

Optics + Optoelectronics 2017: Plenary Session I I

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Tue 9:50 to 10:20

SESSION 4

ROOM: ZENIT . . . . . TUE 10:20 TO 12:00

Laboratory-scale Soft X-ray Lasers and Applications

Session Chair: **Sylvie Jacquemot,** Lab. pour l'Utilisation des Lasers Intenses (France)

10:20: **High repetition rate and shorter wavelengths: progress in soft x-ray laser development and applications at Colorado State University** *(Invited Paper)*, Jorge J. Rocca, Brendan A. Reagan, Yong Wang, Cory M. Baumgarten, Alex Rockwood, Shoujun Wang, Michael A. Pedicone, Mark Berrill, Vyacheslav N. Shlyaptsev, Chan Kyaw, Liang Yin, Hanchen Wang, Mario C. Marconi, Carmen S. Menoni, Colorado State Univ. (United States) . . . . . [10243-14]

10:50: **Soft X-ray ablation mass spectrometry: enhanced mass range and sensitivity**, Ilya Kuznetsov, Tyler Green, Colorado State Univ. (United States); Weilun Chao, Lawrence Berkeley National Lab. (United States); Andrew M. Duffin, Pacific Northwest National Lab. (United States); Jorge J. Rocca, Carmen S. Menoni, Colorado State Univ. (United States) . . . . . [10243-15]

11:10: **Applications of an extreme ultraviolet capillary discharge laser**, Gregory J. Tallents, Univ. of York (United Kingdom) . . . . . [10243-16]

11:30: **Tabletop two-color soft X-ray laser by means of Ni-like plasmas** *(Invited Paper)*, Davide Bleiner, EMPA (Switzerland). . . . . [10243-17]

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

SESSION JS1

ROOM: ZENIT . . . . . TUE 13:10 TO 15:20

Joint Session with Conferences 10237 and 10243

Scientific Applications of Laser- and Accelerator-based X-ray Sources

Session Chair: **Thomas Tschentscher,** European XFEL GmbH (Germany)

13:10: **X-ray absorption spectroscopy of warm dense matter with betatron x-ray radiation** *(Invited Paper)*, Felicie Albert, Lawrence Livermore National Lab (United States). . . . . [10243-18]

13:40: **Investigating pathways of biological specimen on fs to µs timescales** *(Invited Paper)*, Richard Neutze, Göteborgs Univ. (Sweden). . . . . [10237-1]

14:10: **Nonlinear X-ray spectroscopy: needs and prospects** *(Invited Paper)*, Nina Rohringer, DESY (Germany) . . . . . [10237-2]

14:40: **Time-resolved X-ray spectroscopy for X-ray-induced phenomena**, Antonio Picón, Argonne National Lab. (United States) . . . . . [10243-19]

15:00: **The EIS beamline at the seeded free-electron laser FERMI**, Alberto Simoncig, Riccardo Mincigrucci, Emiliano Principi, Filippo Bencivenga, Laura Foglia, Andrea Calvi, Claudio Masciovecchio, Gabor Kurdi, Elettra-Sincrotrone Trieste S.C.p.A. (Italy); Alessia Matruglio, Simone Dal Zilio, Valentina Masciotti, Istituto Officina dei Materiali (Italy) . . . . . [10243-20]

Coffee Break . . . . . Tue 15:20 to 15:40

SESSION JS2

ROOM: ZENIT . . . . . TUE 15:40 TO 17:30

Joint Session with Conferences 10237 and 10243

Temporal, Spatial and Coherence Diagnostics of Ultrashort X-ray Pulses

Session Chair: **Carmen S. Menoni,** Colorado State Univ. (United States)

15:40: **Advanced time-domain diagnostics using photoelectrons** *(Invited Paper)*, Wolfram Helml, Technische Univ. München (Germany); Nick Hartmann, SLAC National Accelerator Lab. (United States); Rupert Heider, Martin S. Wagner, Technische Univ. München (Germany); Gregor Hartmann, Deutsches Elektronen-Synchrotron (Germany); Markus Ilchen, European XFEL GmbH (Germany); Jens Buck, Deutsches Elektronen-Synchrotron (Germany); Anton O. Lindahl, Qamcom Research & Technology AB (Sweden); Craig Benko, JILA (United States); Jan Grünert, European XFEL GmbH (Germany); Jacek Krzywinski, SLAC National Accelerator Lab. (United States); Jia Liu, European XFEL GmbH (Germany); Alberto Lutman, Agostino Marinelli, Timothy J. Maxwell, Alireza A. Miahnahri, Stefan P. Moeller, SLAC National Accelerator Lab. (United States); Marc Planas, European XFEL GmbH (Germany); Joseph S. Robinson, SLAC National Accelerator Lab. (United States); Jens Viefhaus, Deutsches Elektronen-Synchrotron (Germany); Thomas Feurer, Univ. Bern (Switzerland); Reinhard Kienberger, Technische Univ. München (Germany); Ryan N. Coffee, SLAC National Accelerator Lab. (United States). . . . . [10237-3]

16:10: **Temporal diagnostics from photons: the experience with the PALM** *(Invited Paper)*, Pavle Juranic, Ishkhan Gorgisyan, Christian Erny, Rasmus Ischebeck, Luc Patthey, Claude Pradervand, Christopher J. Milne, H. Lemke, Paul Scherrer Institut (Switzerland); Andreas Dax, Yale Univ. (United States); Milan Radovic, Christoph P. Hauri, Paul Scherrer Institut (Switzerland); Shigeki Owada, Tadashi Togashi, Tsukasa Katayama, Makina Yabashi, RIKEN Harima Branch (Japan) . . . . . [10237-4]

16:40: **Single-shot linear autocorrelation of partially coherent XUV laser pulses**, Andréa Le Marec, Institut des Sciences Moléculaires d'Orsay (France); Olivier A. Guilbaud, Moana Pittman, Elsa Baynard, Univ. Paris-Sud 11 (France); Julien Demailly, Olivier Neveu, Lab. de Physique des Gaz et des Plasmas (France); Sophie Kazamias, Univ. Paris-Sud 11 (France); Bruno Lucas, Fabrice Sanson, Lab. de Physique des Gaz et des Plasmas (France); David Ros, Annie Klisnick, Univ. Paris-Sud 11 (France) . . . . . [10243-21]

17:00: **Nanofabrication of diffractive X-ray optics for synchrotrons and XFELs** *(Invited Paper)*, Christian David, Paul Scherrer Institut (Switzerland) . . . . . [10243-22]

WEDNESDAY 26 APRIL

SESSION 5

ROOM: VIRGO . . . . . WED 8:30 TO 10:40

NOTE ROOM CHANGE

Soft X-Ray Applications II

Session Chair: **Hyung Taek Kim,** Gwangju Institute of Science and Technology (Korea, Republic of)

8:30: **Soft x-ray imaging with incoherent sources** *(Invited Paper)*, Przemyslaw W. Wachulak, Alfio L. Torrisi, Mesfin G. Ayele, Andrzej S. Bartnik, Joanna Czwartos, Lukasz Wegrzynski, Tomasz Fok, Military Univ. of Technology (Poland); Tomás Parkman, Sarka Vondrova, Jana Turňová, Czech Technical Univ. in Prague (Czech Republic); Michal Odstrcil, Paul Scherrer Institut (Switzerland); Henryk Fiedorowicz, Military Univ. of Technology (Poland) . . . . . [10243-23]

9:00: **X-ray absorption spectroscopy probing hydrogen in metals**, Andreas Borgschulte, EMPA (Switzerland) and Univ. Zürich (Switzerland); Olga Sambalova, Yunieski Arbelo Pena, Claudio Cirelli, Davide Bleiner, Bruce Patterson, EMPA (Switzerland); Renaud Delmelle, ZHAW (Switzerland); Francesco Barbato, EMPA (Switzerland) . . . . . [10243-24]

9:20: **Laser plasma soft X-ray source based on cryogenic target** *(Invited Paper)*, Sho Amano, Univ. of Hyogo (Japan). . . . . [10243-25]

9:50: **Observation of femtosecond laser spallative ablation dynamics by using soft x-ray laser probe**, Masaharu Nishikino, Noboru Hasegawa, Thanh-Hung Dinh, National Institutes for Quantum and Radiological Science and Technology (Japan); Atsushi M. Ito, National Institute for Fusion Science (Japan); Tohru Suemoto, Toyota Physical and Chemical Research Institute (Japan); Anatoly Y. Faenov, Osaka Univ. (Japan); Nail A. Inogamov, Russian Academy of Sciences (Russian Federation) . . . . . [10243-26]

10:10: **Soft x-ray laser ablation of metals and dielectrics** *(Invited Paper)*, Anatoly Y. Faenov, Tatiana A. Pikuz, Osaka Univ. (Japan); Masahiko Ishino, National Institutes for Quantum and Radiological Science and Technology (Japan); Nail A. Inogamov, L.D. Landau Institute for Theoretical Physics (Russian Federation); Vasiliy V. Zhakhovskiy, Dukhov All-Russia Research Institute of Automatics (Russian Federation); Sergei Starikov, Igor Skobelev, Joint Institute for High Temperatures (Russian Federation); Noboru Hasegawa, Masaharu Nishikino, Masaki Kando, National Institutes for Quantum and Radiological Science and Technology (Japan); Ryosuke Kodama, Osaka Univ. (Japan); Tetsuya Kawachi, National Institutes for Quantum and Radiological Science and Technology (Japan) . . . . . [10243-27]

Coffee Break . . . . . Wed 10:40 to 11:00

SESSION 6

ROOM: VIRGO . . . . . WED 11:00 TO 12:20

NOTE ROOM CHANGE

High-order Harmonics and Applications

Session Chair: **Joseph Nilsen,** Lawrence Livermore National Lab. (United States)

11:00: **Spectrally resolved lensless imaging with ultrabroadband high-harmonic generation sources** *(Invited Paper)*, Stefan Witte, Matthijs Jansen, Denis Rudolf, Lars Freisem, Kjeld S. E. Eikema, Advanced Research Ctr. for Nanolithography (Netherlands) . . . . . [10243-28]

11:30: **Ultrafast nanoscale imaging using high order harmonic generation** *(Invited Paper)*, Hamed Merdji, CEA (France) . . . . . [10243-29]

12:00: **Tunable orbital angular momentum beams in the extreme ultraviolet/ soft x-ray regimes**, Carlos Hernandez-Garcia, Laura Rego, Univ. de Salamanca (Spain); Alejandro Turpin, Univ. Autònoma de Barcelona (Spain); Antonio Picón, Julio San Román, Luis Plaja, Univ. de Salamanca (Spain) . . . . . [10243-30]

Lunch/Exhibition Break . . . . . Wed 12:10 to 13:30

PLENARY SESSION III

ROOM: NADIR . . . . . WED 13:30 TO 15:15

Optics + Optoelectronics 2017: Plenary Session III

For details, please see page 5-6 in the printed programme or visit http://spie.org/EOO/special-events/Plenary-Event

Coffee Break . . . . . Wed 15:15 to 15:40

JOINT SESSION 3

ROOM: ZENIT . . . . . WED 15:40 TO 17:30

Joint Session with Conferences 10237 and 10243

High Brightness and Ultrashort X-ray and EUV Sources

Session Chair: **Annie Klisnick,** Univ. Paris-Sud 11 (France)

15:40: **Development of free-electron laser at 30nm based on laser wake field accelerators** *(Invited Paper)*, Ruxin Li, Wentao Wang, Jiansheng Liu, Yuxin Leng, Zhizhan Xu, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [10237-12]

16:10: **X-ray production schemes from laser driven plasmas at the PALS and ELI Beamlines**, Michaela Kozlová, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10243-31]

16:30: **Towards sub-femtosecond X-ray FEL pulses** *(Invited Paper)*, Agostino Marinelli, SLAC National Accelerator Lab. (United States) . . . . . [10237-13]

17:00: **High-quality electron beams for high-quality FEL** *(Invited Paper)*, Enrico M. Allaria, Elettra-Sincrotrone Trieste (Italy) . . . . . [10237-14]

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

Resolution of X-ray Parabolic Compound Refractive Diamond Lens defined at the Home Laboratory, Sergey Zholudev, Technological Institute for Superhard and Novel Carbon Materials (Russian Federation); Sergey Gasilov, Karlsruher Institut für Technologie (Germany); Sergey Polyakov, Stepan Martyushov, Victor Denisov, Sergey A. Terentiev, Vladivir D. Blank, Technological Institute for Superhard and Novel Carbon Materials (Russian Federation) . . . . . [10243-32]

Evaluation of Laser-Electron X-ray Source and Related Optics for X-ray Diffractometry and Topography, Sergey Polyakov, Technological Institute for Superhard and Novel Carbon Materials (Russian Federation); Igor A. Artuykov, P.N. Lebedev Physical Institute (Russian Federation); Vladimir D. Blank, Sergey Zholudev, Technological Institute for Superhard and Novel Carbon Materials (Russian Federation); Ruslan M. Feshchenko, Nikolay L. Popov, P.N. Lebedev Physical Institute (Russian Federation); Sergey A. Terentiev, Alexey Yaroslavtsev, Technological Institute for Superhard and Novel Carbon Materials (Russian Federation); Alexander V. Vinogradov, P.N. Lebedev Physical Institute (Russian Federation) . . . . . [10243-33]

XUV-frequency control and the cut-off law for high harmonics generated using the optical gating, Jan Vábek, Univ. Bordeaux 1 (France) and Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Fabrice Catoire, Univ. Bordeaux 1 (France) [10243-34]

Radiation properties of Ni-like molybdenum X-ray laser at PALS, Martin Albrecht, ELI Beamlines (Czech Republic); Jaroslav Nejdl, Michaela Kozlová, ELI Beamlines (Czech Republic) and Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10243-35]

The approach to reflection X-ray microscopy below the critical angles, Nikolay L. Popov, Igor A. Artyukov, Alexander S. Busarov, Alexander V. Vinogradov, P.N. Lebedev Physical Institute (Russian Federation) . . . [10243-37]

Ultrafast x-ray fluorescence of LB line of selenium atoms for drug candidates screening, Jungu Kang, Il Woo Choi, Do Young Noh, Do-Kyeong Ko, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [10243-38]

Development of high-flux high-order harmonic generation at PALS and ELI-Beamlines, Viktoria Nefedova, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Jaroslav Nejdl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) and Institute of Plasma Physics of the ASCR, v.v.i. (Czech Republic); Martin Albrecht, ELI Beamlines (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic) . . . . . [10243-39]

Laser-driven liquid-metal-jet plasma system PXS for pump-probe spectroscopy and diffractive imaging, Dong-Du Mai, Institute of Physics v. v. i. / ELI Beamlines (Czech Republic); Klaus Giewekemeyer, Adrian P. Mancuso, European XFEL GmbH (Germany); Christoph G. Rose-Petruck, Research Instruments Corp. (United States); Jaroslav Nejdl, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [10243-40]

XUV generation from the interaction of pico- and nanosecond laser pulses with nanostructured targets, Ellie Floyd A. Barte, Ragava Lokasani, Czech Technical Univ. in Prague (Czech Republic) and Univ. College Dublin (Ireland); Jan Proška, Lucie Stolcova, Czech Technical Univ. in Prague (Czech Republic); Oisin Maguire, Univ. College Dublin (Ireland); Domagoj Kos, Univ. College Dublin (Ireland) and Czech Technical Univ. in Prague (Czech Republic); Paul Sheridan, Fergal O'Reilly, Emma J. Sokell, Thomas D. McCormack, Gerry D. O'Sullivan, Padraig Dunne, Univ. College Dublin (Ireland); Jiří Limpouch, Czech Technical Univ. in Prague (Czech Republic) . . . . . [10243-41]

WORKSHOP

LOCATION: KEPLER

Thursday 27 April 2017 • Proceedings of SPIE Vol. WS100

Technology and Applications of Intense, High Average Power Lasers Workshop

Conference Chairs: **Tomas Mocek,** HiLASE Ctr. (Czech Republic); **Ric M. Allott,** STFC Rutherford Appleton Lab. (United Kingdom); **Chris Edwards,** Science and Technology Facilities Council (United Kingdom)

WEDNESDAY 26 APRIL

POSTERS SESSION

ROOM: MERIDIAN HALL. . . . . WED 17:45 TO 19:30

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 7, and at http://spie.org/x30951.xml.

An all-reflective polarisation rotator, János Bohus, Mikhail P. Kalashnikov, ELI-ALPS Research Institute, ELI-HU Non-Profit Ltd. (Hungary); Károly Osvay, ELI-ALPS Research Institute, ELI-HU Non-Profit Ltd. (Hungary) and Univ. of Szeged (Hungary) . . . . . [WS100-18]

Pulse compression optimization of a picosecond high average power thin-disk laser, Michal Vyvlečka, HiLASE Ctr., Institute of Physics ASCR, v.v.i (Czech Republic) and Charles Univ. in Prague (Czech Republic); Jitka Černohorská, Jiří Mužik, HiLASE Ctr., Institute of Physics ASCR, v.v.i (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Ondřej Novák, Martin Smrž, Akira Endo, Tomás Mocek, HiLASE Ctr., Institute of Physics ASCR, v.v.i (Czech Republic) . . . . . [WS100-19]

Light hydraulic effect in laser nanodiamond synthesis, optimizing parameters for the output increase, Boris Zousman, Olga Levinson, Ray Techniques Ltd. (Israel); Stanislav A. Kolpakov, Sergey V. Sergeyev, Aston Univ. (United Kingdom). . . . . [WS100-20]

An approach to stabilization of a laser beam by using a modified Stewart platform, Yuri V. Fedosov, Maxim Y. Afanasev, ITMO Univ. (Russian Federation) . . . . . [WS100-21]

A design of an optical fiber delivery system for technological equipment, Yuri V. Fedosov, Maxim Y. Afanasev, Galina E. Romanova, ITMO Univ. (Russian Federation) . . . . . [WS100-22]

An application of genetic algorithm methods for optimization the moving trajectory during laser processing, Yuri V. Fedosov, Maxim Y. Afanasev, ITMO Univ. (Russian Federation); Sergey V. Akimov, The Bonch-Bruevich Saint-Petersburg State Univ. of Telecommunications (Russian Federation) [WS100-23]

Design of the compact temporal coherent beam combining module for high power femtosecond pulse laser, Ki-Nam Joo, Hee Won Jung, Chosun Univ. (Korea, Republic of). . . . . [WS100-24]

THURSDAY 27 APRIL

WELCOME AND INTRODUCTION

ROOM: KEPLER . . . . . 8:50 TO 9:00

SESSION 1

ROOM: KEPLER . . . . . THU 9:00 TO 10:40

Applications I

Session Chair: **Dave MacLellan,** The Association of Industrial Laser Users (United Kingdom)

9:00: **Laser-driven beams for nondestructive imaging and inspection in medicine, security and nuclear waste management**, Ceri M Brenner, STFC Central Laser Facility (United Kingdom) . . . . . [WS100-1]

9:20: **DUV high power lasers processing**, Masakazu Kobayashi, Kouji Kakizaki, Hiroaki Oizumi, Toshio Mimura, Junichi Fujimoto, Hakaru Mizoguchi, Gigaphoton Inc. (Japan) . . . . . [WS100-2]

9:40: **Characterising laser-plasma driven X-ray sources for industrial radiography applications**, Chris Armstrong, Univ. of Strathclyde (United Kingdom); Ceri M. Brenner, David Neely, STFC Rutherford Appleton Lab. (United Kingdom); Paul McKenna, Dean Rusby, Univ. of Strathclyde (United Kingdom) . . . . . [WS100-3]

10:00: **Industrial applications at HiLASE**, Michael Pisarik, HiLASE (Czech Republic) . . . . . [WS100-4]

Coffee Break . . . . . Thu 10:40 to 11:00

SESSION 2

ROOM: KEPLER . . . . . THU 11:00 TO 12:40

Applications II

Session Chair: **Nadezhda M. Bulgakova,** HiLASE Ctr. (Czech Republic)

11:00: **Space debris removal**, David Neely, STFC Rutherford Appleton Lab. (United Kingdom). . . . . [WS100-5]

11:20: **Periodic surface structures induced by single frequency-converted picosecond laser pulses**, Evgeny L. Gurevich, Stella Maragkaki, Ruhr-Univ. Bochum (Germany); Yoann Levy, Thibault J. Y. Derrien, Nadezhda M. Bulgakova, Tomás Mocek, HiLASE Ctr. (Czech Republic) . . . . . [WS100-6]

11:40: **The role of metastable state molecules in air ionization by high-peak-power laser pulses**, Inam Mirza, HiLASE Ctr. (Czech Republic); Alexander V. Bulgakov, Institute of Thermophysics, Siberian Branch of Russian Academy of Sciences (Russian Federation) and EaStCHEM, The Univ. of Edinburgh (United Kingdom); Nadezhda M. Bulgakova, HiLASE Ctr. (Czech Republic) and Institute of Thermophysics Siberian Branch of Russian Academy of Sciences (Russian Federation); Vladimir P. Zhukov, Institute of Computational Technologies SB RAS (Russian Federation) and Novosibirsk State Technical Univ. (Russian Federation); Radek Machulka, Joint Lab. of Optics of Palacký Univ. and Institute of Physics of the Czech Academyt of Sciences (Czech Republic); Ondřej Haderka, Joint Lab. of Optics of Palacký Univ. and Institute of Physics of the Czech Academyt of Sciences (Czech Republic) and Regional Ctr. of Advanced Technologies and Materials, Palacký Univ. Olomouc (Czech Republic); Eleanor E. B. Campbell, EaStCHEM, The Univ. of Edinburgh (United Kingdom); Tomás Mocek, HiLASE Ctr. (Czech Republic) . . . . . [WS100-7]

12:00: **Plasma physics of inertial fusion: a novel approach**, Robert Bingham, STFC Rutherford Appleton Lab. (United Kingdom). . . . . [WS100-8]

Lunch Break . . . . . Thu 12:40 to 13:50

SESSION 3

ROOM: KEPLER . . . . . THU 13:50 TO 15:30

Technology I

Session Chair: **Chris Edwards,**
STFC Rutherford Appleton Lab. (United Kingdom)

13:50: **4-mJ, 50-kHz picosecond pulses from PERLA C thin-disk laser platform**, Jiří Mužik, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Martin Smrž, Michal Chyla, HiLASE Ctr., Institute of Physics ASCR, v.v.i. (Czech Republic); Ondřej Novák, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic); Václav Kubeček, Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Tomás Mocek, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic) . . . . . [WS100-9]

14:10: **1 kW operation of the HiLASE slab laser system**, Thomas J. Butcher, STFC Rutherford Appleton Lab. (United Kingdom). . . . . [WS100-10]

14:30: **Extension of application potential of a picosecond 100 kHz high-average power Yb:YAG thin-disk laser by harmonic generation into VIS, UV, and DUV**, Hana Turcicova, Ondrej Novák, HiLASE Ctr. (Czech Republic); Lukas Roskot, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Martin Smrž, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic); Jiří Mužik, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Tomás Mocek, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic). . . . . [WS100-11]

14:50: **High-energy burst pulse amplification in PERLA B thin-disk laser platform**, Michal Chyla, Siva Sankar Nagisetty, Huang Zhou, Martin Smrž, Akira Endo, Tomás Mocek, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic) . . . . . [WS100-12]

15:10: **Targetry solutions for high-repetition rate lasers**, Martin Tolley, STFC Rutherford Appleton Lab. (United Kingdom). . . . . [WS100-13]

Coffee Break . . . . . Thu 15:30 to 15:50

SESSION 4

ROOM: KEPLER . . . . . THU 15:50 TO 17:50

Technology II

Session Chair: **Antonio Lucianetti,** HiLASE Ctr. (Czech Republic)

15:50: **Wavelength tunable parametric mid-IR source pumped by a high-power picosecond thin-disk laser**, Michal Vyvlečka, HiLASE Ctr., Institute of Physics ASCR, v.v.i (Czech Republic) and Charles Univ. in Prague (Czech Republic); Ondřej Novák, Martin Smrž, Akira Endo, Tomás Mocek, HiLASE Ctr., Institute of Physics ASCR, v.v.i (Czech Republic). . . . . [WS100-14]

16:10: **Design of a telescopic zoom system for electron acceleration**, Bruno J. Le Garrec, Ecole Polytechnique (France) . . . . . [WS100-15]

16:30: **High-repetition-rate few-cycle laser for attosecond pulse generation at ELI-ALPS**, Tino Eidam, Steffen Hädrich, Florian Just, Active Fiber Systems GmbH (Germany); Evgeny Shestaev, Nils Becker, Friedrich-Schiller-Univ. Jena (Germany); Arno Klenke, Marco Kienel, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany); Michael Müller, Friedrich-Schiller-Univ. Jena (Germany); Jan Rothhardt, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany); Thomas Gottschall, Friedrich-Schiller-Univ. Jena (Germany); Andras Drozdy, Péter Jójárt, Aron Szabo, ELI-HU Nonprofit Kft. (Hungary); Zoltan Varallyay, ELI-HU Non-Profit Ltd. (Hungary); Eric Cormier, ELI-HU Nonprofit Kft. (Hungary) and Univ. Bordeaux 1 (France); Károly Osvay, ELI-ALPS Research Institute (Hungary) and ELI-HU Non-Profit Ltd. (Hungary); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz Institute Jena (Germany) and Fraunhofer Institute für Angewandte Optik und Feinmechanik (Germany) . . . . . [WS100-16]

16:50: **100-W 1-MHz operating Yb-rod fiber front-end for seeding of a 1-kW thin-disk amplifier**, Alina Pranovich, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic) and Czech Technical Univ. in Prague (Czech Republic); Yasuhiro Kamba, Gigaphoton Inc. (Japan); Martin Smrž, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic); Michal Němec, Czech Technical Univ. in Prague (Czech Republic); Akira Endo, Tomás Mocek, HiLASE Ctr., Institute of Physics ASCR v.v.i. (Czech Republic). . . . . [WS100-17]

17:10: **Femtosecond damage resistance of novel multilayer and hybrid mirrors at MHz and kHz repetition rates**, Victória Csajbók, Benedek J. Nagy, Zsolt Bedőházi, Péter Dombi, Wigner Research Ctr. for Physics of the H.A.S. (Hungary) . . . . . [WS100-27]

Discussion and Wrap-up. . . . . Thu 17:30 to 17:50

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GENERAL INFORMATION

REGISTRATION

Onsite Registration and Badge Pick-up Hours

Conference Floor Foyer

Sunday 23 April . . . . . 15:00 to 17:00 hrs.
Monday 24 April. . . . . 07:45 to 17:00 hrs.
Tuesday 25 April . . . . . 07:45 to 17:00 hrs.
Wednesday 26 April . . . . . 08:00 to 17:00 hrs.
Thursday 27 April . . . . . 08:00 to 16:00 hrs.

Exhibition Hours

Tuesday, 25 April . . . . . 10:00 to 17:00 hrs
Wednesday, 26 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 online proceedings.

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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 Setup Instructions

Wednesday 26 April . . . . . 17:45 to 19:30

All symposium attendees are invited to attend 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.

Poster presenters may post their poster papers starting at 10:00 hrs on Tuesday. 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 19:30 hrs to answer questions from attendees. Attendees are requested to wear their conference registration badges to the poster sessions.

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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.

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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.

GENERAL INFORMATION

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Prague Airport **www.prg.aero/en**
For alternative travel, Prague is also connected by rail to a number of European cities

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**

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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 Ruzyne 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.

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SPIE Optics + Optoelectronics
Prague, Czech Republic
April 24-27, 2017

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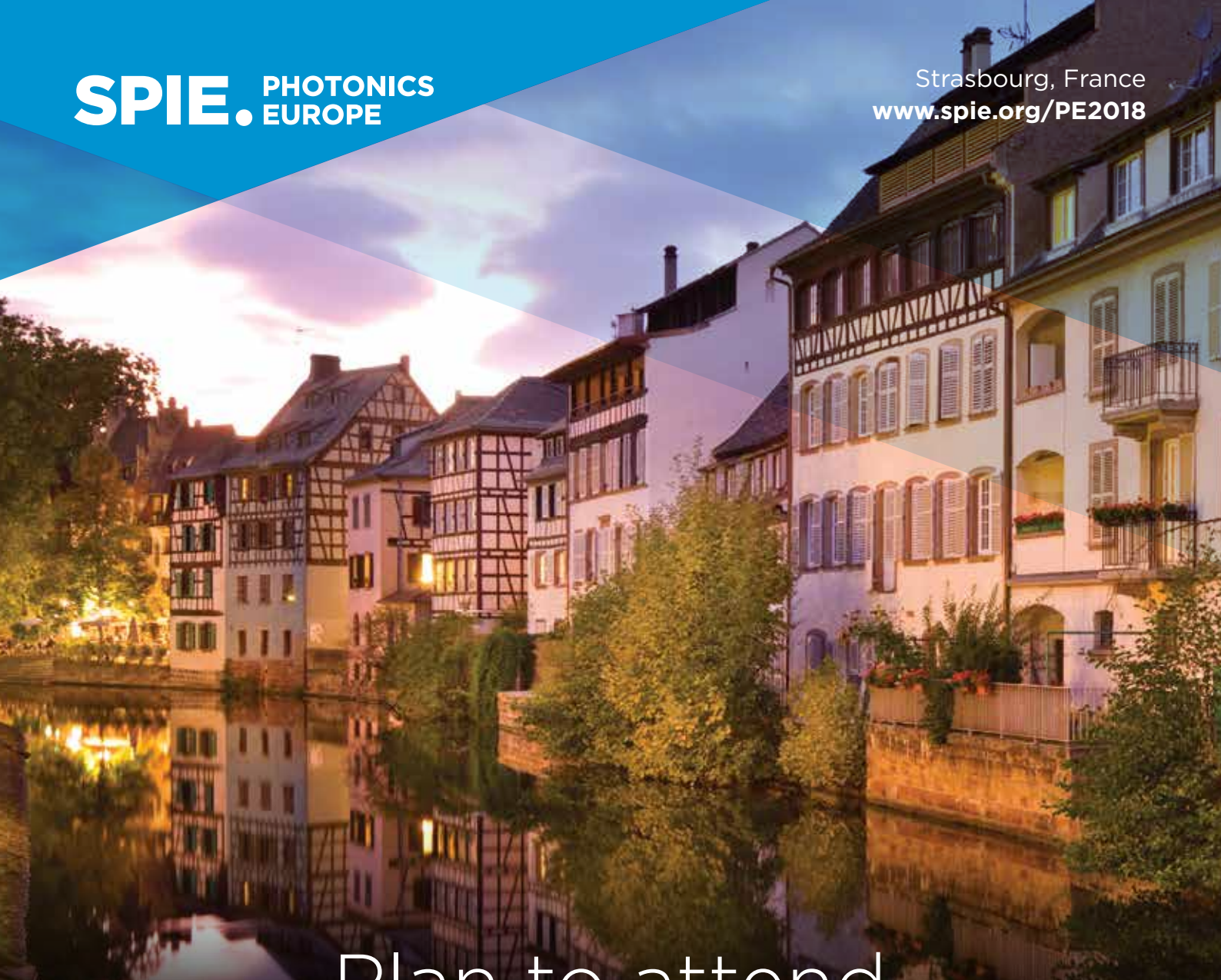

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