I. Welcome letter

Dear respected colleagues,

welcome to the 27th International Conference on Advanced Laser Technologies (ALT'19). It is our great honor and pleasure to organize this important scientific event in the very heart of Europe - Prague, Czech Republic.
The ALT'19 aims to bring together presentations on fundamental as well as engineering aspects of innovative laser technologies along with their scientific and hi-tech industrial applications including smart laser processing for surface modification and functionalization, high-power & high-efficiency pulsed lasers operating in the kW regime, biomedical applications of lasers and laser-tissue interactions, etc. In particular, ALT'19 will be an open forum for the discussion of technological bottlenecks, enabling concepts, original ideas, and networking.

ALT'19 will cover the following topics:

- LASER-MATTER INTERACTION
- ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS
- LASER SYSTEMS AND MATERIALS
- LASER DIAGNOSTICS AND SPECTROSCOPY
- PHOTONICS: FUNDAMENTALS, APPLICATIONS AND INTEGRATION
- BIOPHOTONICS
- THz PHOTONICS
- HIGH AVERAGE POWER LASER TECHNOLOGIES FOR INDUSTRIAL APPLICATIONS

Besides the scientific activities we will offer you some social events to learn more about Prague, "The City of a Hundred Spires" on the Vltava River, which is known to people from all over the world and ranks among the most beautiful cities in Europe. Let the bohemian allure and fairytale features of Prague inspire you, just as it inspired many significant artists and scientists in the past...
Let me also thank the C-IN company for providing professional conference organization as well as all the sponsors for their kind support.
We wish you to fully enjoy the rich scientific program and discussions with your fellow colleagues.

Welcome to ALT'19 and have a great time in Prague!

Dr. Tomáš Mocek
Programme-Committee Co-Chair
HiLASE Centre, Institute of Physics of the Czech Academy of Sciences

II. Organisers and Sponsors

Prokhorov General Physics Institute of the Russian Academy of Sciences (GPI RAS)

Institute of Physics of the Czech Academy of Sciences

Center for Laser Technology and Material Science

HiLASE: New lasers for industry and research

Lomonosov Moscow State University

International Laser Center of Lomonosov Moscow State University

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

Physics of Wave Phenomena journal

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III. Committees

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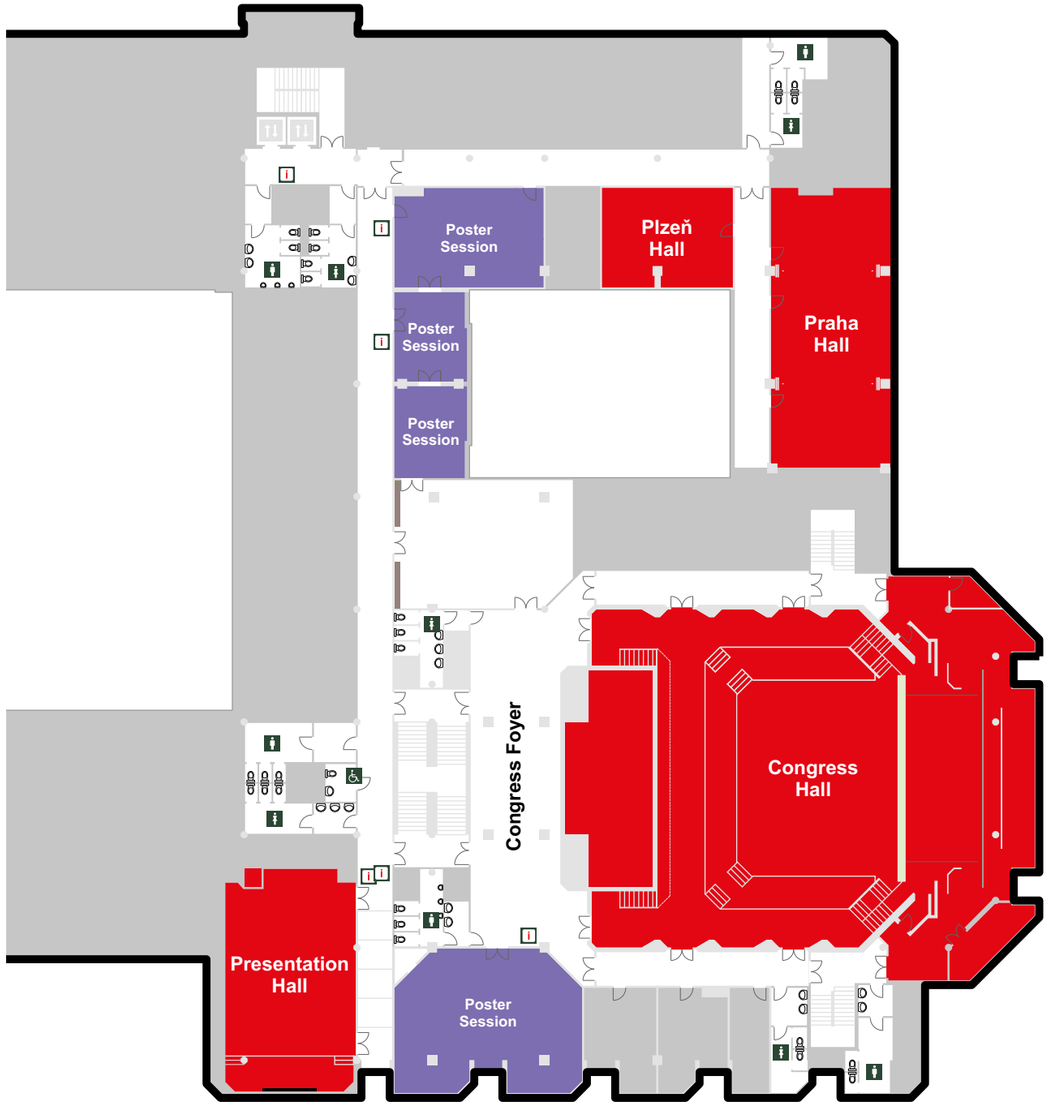
ALT INTERNATIONAL CONFERENCE
Advanced Laser Technologies

IV. Conference floorplan



SOCIAL PROGRAMME

Guided tour – Karlštejn Castle

Wednesday, 18 September 2019

Time: The buses departure from the hotel at 13:00

Tickets: Included in the registration fee

Discover the 14th century Karlštejn Castle, one of the most impressive and most visited Gothic castles in the Czech Republic. Learn how Karlštejn Castle was founded by the Holy Roman Emperor Charles IV.
Transfer (buses) will be provided from the conference venue to the castle and back. The guided tour will last approximately 5-6 hours including transportation.

Conference Dinner – Pavilon Grébovka

Thursday, 19 September 2019
Time: 19:00
Tickets: Included in the registration fee

Address:
Pavilon Grébovka – Caffe Garden
Havlíčkovy sady 2188
12000, Prague 2

Pavilon Grébovka is in the heart of Prague in the Havlíčkovy sady garden. Enjoy the last evening of the conference while catching up with your colleagues and share your experiences alongside a served buffet and variety of drinks.

V. Plenary speakers

«Laser optics to uncover mysteries of early development»

Irina Larina

« Molecular Physiology and Biophysics,
Baylor College of Medicine, Houston, Texas, USA

Dr. Irina V. Larina is an Associate Professor at the Department of Molecular Physiology and Biophysics and a co-Director of the Optical Imaging and Vital Microscopy Core at the Baylor College of Medicine, Houston, USA. Dr. Larina's research focuses on development of novel methods for intravital, optical imaging in mouse models to understand normal development and the nature of congenital defects and reproductive disorders in humans. She received Masters Degree in Physics from the Saratov State University, Russia, in 1996, PhD degree in Physiology and Biophysics and Bioengineering from the University of Texas Medical Branch at Galveston in 2005, and completed postdoctoral training at the Baylor College of Medicine in Houston. She is a recipient of Arthur V. Simmang Academic Scholarship for Excellence in Academic Achievement, Ralph and Mary Spence Centennial Scholarship for Superior Academic Performance, High Personal and Professional Ethics, Values and Standards, Katherina Siebert Award for Excellence in Oncologic Research, Louis C. Sheppard Award, fellowship from the American Heart Association named in honor of Paula McCann-Harris, and a finalist for the Burrows Wellcome Fund Award at Scientific Interface. Dr. Larina is an author of over 50 peer-reviewed publications and 11 book chapters, and her research activities are funded by multiple grants from the National Institutes of Health

Over the last decades, developments in laser-based technologies significantly contributed to multiple areas of biomedicine; however, their application in developmental biology still has a lot of area for exploration. Early mammalian development is of very dynamic and dramatic structural changes, happening on different spatial scales, these ranging from subcellular to the whole organism. Because embryonic development happens deep within the female body, our current understanding of its dynamics is derived from static histological analysis, low-resolution visualizations, and studies of invertebrate models (e.g. sea urchin) and, as a result, do not necessarily represent what really happens. In our pursuit of building a comprehensive understanding of mammalian developmental dynamics in vivo, we took advantage of multiple laser-based technologies and developed a series of imaging methods and protocols combining functional optical coherence tomography (OCT), vital fluorescence reporters, optogenetic control, non-linear microscopy, intravital imaging approaches and mouse models of human developmental defects. We established functional OCT imaging methods providing information about transferring of oocytes/embryos, the contraction of the oviduct muscle, distribution of the frequency of cilia beat, as well as sperm behavior in the ampulla. These new observations revealed never-before-seen dynamic events which contradicted current views in scientific community and suggesting a role for cilia dynamics in the regulation of sperm movements. We are also investigating biomechanical regulation of cardiovascular development and cardiodynamics in live culture. We developed techniques for volumetric heard imaging at cellular resolution, blood flow analysis and 4-D angiography in the heart. These methods were applied to analysis of the pumping mechanism of early hearts and characterization of mutant phenotypes mimicking human congenital heart defects, suggesting regulatory role of heart contractions in cardiogenesis. We are now developing optogenetics to non-invasively manipulate cardiodynamics and second harmonic generation analysis of collagen to define the role of cardiac forces in maintaining mechanical homeostasis. Laser-based technologies have great potential to answer many important biological questions, leading to a better understanding, prevention, and treatment of congenital defects and embryonic failures in humans. Additionally, highly dynamic and diverse developmental processes with variety of challenging and exciting questions provide a great platform for laser physicists and optical engineers to develop new imaging and manipulation methods, pushing forward technological developments in optical engineering.

«New prospects in multiphysics modeling and simulations of matter dynamics of laser induced solid-to-plasma phase transitions»

Vasilis Dimitriou

« Institute of Plasma Physics & Lasers - IPPL,
Hellenic Mediterranean University, Greece

Vasilis Dimitriou is an Associate Professor of the Hellenic Mediterranean University in Greece, with specialization in Finite Elements in Engineering and Optoacoustic Applications. He is currently the Head of the Simulations Machining & Manufacturing Laboratory that since 2015 is a part of the statutory research infrastructure Institute of Plasma Physics & Lasers (IPPL). IPPL is one of the access points of the National Research Infrastructure "ELI - LASERLAB Europe Synergy, HiPER & IPERION-CH.gr". He is responsible of the computational team of IPPL and his current research interests include multiphysics modeling & simulations of laser-matter interactions and matter dynamics in solid-to-plasma phase transitions.

Femtosecond and nanosecond laser pulses are used for matter excitation. The common numerical approximation schemes, for the simulation of the excited mater dynamics, are analyzed and presented. Emphasis is given on their multiphysics character and their ability to include the phase transitions. The differences of the approximations of laser induced energy on solid targets by ns and fs laser pulses, are discussed. The cases of interest, where a global numerical scheme is able to monitor the matter dynamics, from ultrashort to nanoscale time ranges, are highlighted. The new prospects in multiphysics modeling and simulations of matter dynamics, of laser induced solid-to-plasma phase transitions, are discussed, focused on combinatorial models, able to simulate the spatiotemporal scales of interest. Representative models lying on various numerical approximation schemes, combined with macroscopic models, based on the Finite Element Method (FEM), are presented. The FEM models may offer clear insights into the volume and on the boundaries of the target, and realistically represent the dynamic response mechanisms that follow ultrashort laser irradiation. Representative applications, that may be used to monitor and detect the structural and mechanical characteristics of solids, are demonstrated.

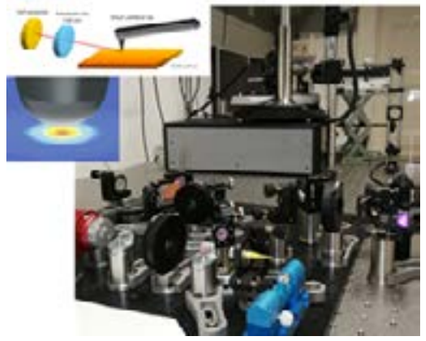
«Laser-induced processes on condensed matter»

Wolfgang Kautek

« University of Vienna, Department of Physical Chemistry, Vienna, Austria

Wolfgang Kautek holds a diploma in chemical engineering from the Vienna University of Technology, Austria, and a doctoral degree from the University of Technology Berlin, Germany. He served as a research scientist at the University of Kentucky, USA, at the Fritz-Haber-Institute of the Max-Planck-Society, Berlin, at the IBM San Jose Research Laboratory, California, and the Siemens Research Center, Erlangen, Germany. From 1988, he was head of the Laboratory for Thin Film Technology of the Federal Institute for Materials Research and Testing, Berlin, and Adjunct Professor at the Free University Berlin, Germany. Since 2004, he is full professor at the Department of Physical Chemistry of the University of Vienna. Recently, he also served as Russell Severance Springer Professor at the Department of Mechanical Engineering of the University of California, Berkeley. He authored more than 230 scientific publications and 4 patents. He is researching in the area of nanotechnology and laser processing of interfaces.

Fundamentals and recent research in the laser-driven physical chemistry at condensed matter interfaces will be presented [1,2]. This will include nanosecond pulse work in respect to 3D depth profiling by laser-induced breakdown spectroscopy [3-5] and the laser generation of colloidal nanoparticles for medical applications [6-8]. Femtosecond investigations with bandwidth-limited, temporally shaped pulses, are reviewed. Recent examples are the laser-driven synthesis of graphene nanosheets, the deterministic nanostructuring of solids generating e.g. nanojets in the far field [9], and nanolithography in the apertureless femtosecond scanning near-field (Figure) [10,11]. An outlook for new projects and applications will be presented.



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«Pioneering pulsed laser synthesis of colloids»

Anton Fojtik

« NRNU MEPhI - Institut of Engineering Physics for Biomedicine, Russia & Czech Technical University in Prague

Prof. Anton Fojtik holds positions at Czech Technical University in Prague, Czech Republic and at National Research Nuclear University, Institute of Engineering Physics for Biomedicine in Moscow, Russia. His research interests include physical and chemical properties of quantum nanostructures of semiconductors, metals, and organic materials; preparation and spatial modeling of such structures; transfer and localization of electric charges on nanoparticles; application of nanostructures in biology and medicine. Prof. Fojtik is a member of New York Academy of Science and American Association for the Advancement of Science. He received quite a number of scientific and professional awards (e.g. for several times the prize of the Academy of Sciences of Czechoslovak Republic). He is the author and co-author of more than 100 scientific publications and 5 patents. Prof. Fojtik is being quoted as the very first researcher who started with experimental studies of nanostructures in the Czech Republic.

In June 2018, the new international award called Fojtik Henglein Prize for the outstanding, recent scientific breakthrough in the field of laser synthesis and processing of colloids in liquids nanotechnology research has been awarded (at Lyon, France) to the first laureate. The prize reflects the pioneering work of Prof. Anton Fojtik and Prof. Arnim Henglein (Germany) in the field of nanoparticle and nanostructure preparation using laser technology. The prize will be awarded every two years.

In the year 1991 it has been assumed, that all substantial facts and technologies regarding nanoparticles were already known.We have been using all available methods. What more was left ? Could lasers be put to a good use? Attempts were made, but without any particular breakthrough... At that time, we aimed to new type of nanostructures and we really had not expected that usage of lasers could bring us something revolutionary. But there was a surprize waiting around the corner... We hoped that by an absorption of intense laser beam by a solid state material, producing temperature of plasma of many thousands kelvins (similar like in sonochemistry, where several thousand kelvins are reached in oscillating gas bubbles in a liquids [1]), similar effects could be reached. Nothing more, nothing less. Initiating plasma by a focused laser beam (694nm Ruby laser flash) to thin film of solid state material thus creates conditions similar to a plasma discharge and cause ablation condition. When some liquid surrounds „hot plasma spot“, evaporated products are very quickly cooled down and very small nanoparticles can be produced. We hoped that maybe under these conditions new colloidal particles and clusters could be produced. Perhaps even some new form of nanostructures. All was working. What we had learnt from this experiment? We concluded that smaller particles are formed with increasing laser energy. Relatively broad size distribution was found in all experiments at laser synthesis of colloids. (At that time we did not expect that this idea would have such an enthusiastic following) Presently, situation for such a field of research, i.e., „Nanoparticle Generation by Lasers in Liquids“, is becoming a much hotter topic due to availability of picosecond and femtosecond lasers. Where are we now and what’s next? Open the research mainly for biomedical and biomedicine applications. For example, only this way can be prepare Fe /Ag magnetic nanoparticles, with high purity, which are at top interest for research against HIV virus and strategically defence against gram-positive batteries like anthrax (our attempt). See the lecture....

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«Terahertz photonics of multiphase thermodynamic systems: from gas to liquid»

Alexander Shkurinov

« Department of physics and International Laser Center,
Lomonosov Moscow State University, Russia

Prof. Alexander Shkurinov is a head of Laboratory of Ultrafast Processes in Biology in Lomonosov Moscow State University. The research interests of Alexander Shkurinov are mainly centered on the development and application of femtosecond laser techniques, time-resolved spectroscopy of molecules in liquid phase, nonlinear optics and THz techniques and spectroscopy. Throughout his career Alexander Shkurinov has been participating and been part of advisory boards, organizing and program committees of numerous international conferences. In 2008 The Russian Optical Society awarded Alexander Shkurinov with the Medal in honor of Prof. Rozhdestvensky for his contribution into the development of optical science and technology. He is a member of the Optical society of America (OSA), the international society for optics and photonics (SPIE), The European Optical Society (EOS) and the Russian Foundation of Basic Research Consulate (RFBR).

A spark was the first source of man-made electromagnetic radiation (EMR) obtained by Hertz [1], later by Bose [2], Lebedev [3] and others . While the initial experiments used electric breakdown in air, the later ones [4] switched to the use of liquid, namely oil. This resulted in the increase in stability and intensity of radiation, although its physical mechanism was not studied at the time. The study of the source of THz EMR on the basis of a laser spark follows the same pattern - from air [5] to liquid [6]. In this papers an experiment in which a liquid, namely, water was used for the conversion of femtosecond radiation into the THz one. Being a polar liquid, water has considerable absorption in the THz frequency range and the authors of previously published works had to use very thin water films of a few hundred micrometer thickness in their experiments. The source of electromagnetic radiation in the THz band on the basis of laser spark was firstly presented earlier. Laser an experiment was carried out in which a liquid, namely, water was used for the conversion of femtosecond radiation into the THz. Water is a polar liquid which has high absorption in the THz frequency range and the authors of previously published works have to use for the experiments the very thin water films. Unlike water, considerable absorption both in THz and NIR ranges is absent in liquid nitrogen.

We describes broadband generation of THz radiation first obtained in liquefied gas. In comparison with THz radiation in air plasma, THz radiation from LN reacts in a very different way to the change in the length of the pulse and the intensity of laser radiation. We demonstrated that both the ionization of the medium and its nonlinear susceptibility play a considerable role in the generation of THz radiation in LN. We assumed that the mobility of ions and electrons in liquid can play an essential role, forming quasi-static electric field by means of ambipolar diffusion mechanism. This quasi-stationary field can be an additional factor which could increase the effectiveness of transformation of optical radiation into the THz one. NLO susceptibility of the third order, which is much higher in nitrogen compared to air, enables us to carry out polarization control of THz radiation with the help of polarization parameters of femtosecond lasers.

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«Laser Synthesis of Colloidal Metal and Alloy Colloids - Fundamentals, Scalability and Alloy Phase Structure»

Stephan Barcikowski

« Technical Chemistry I, Center for Nanointegration Duisburg-Essen (CENIDE)
University of Duisburg-Essen

Stephan Barcikowski studied chemistry in Braunschweig and Hannover, and made his PhD in Mechanical Engineering (Materials). At the Laser Zentrum Hannover, Barcikowski built up the Nanomaterials group, and later led the institute’s Materials Processing Department. In 2010, he co-founded the company Particular GmbH. Since 2011, he chairs the Institute of Technical Chemistry I at the University of Duisburg-Essen and he is scientific director of the Center for Nanointegration Duisburg-Essen CENIDE since 2015. Stephan Barcikowski has more than 700 scientific publications on nanomaterials and laser processing, including more than 170 reviewed papers and patent files. Recently, he launched the scientific video channel ‚nanofunction‘ on youtube with more than 11,000 annual visits. He serves editing the Journals Applied Surface Science and Scientific Reports.

Integration of the “nano-function” into products is still limited due to drawbacks of gas phase and chemical synthesis methods regarding particle aggregation and contamination by adsorbates causing deactivation of the building blocks´ surface. In addition, thermodynamically-controlled synthesis methods naturally face limited access to alloy nanoparticle systems with miscibility gaps. As an alternative synthesis route, nanoparticle generation by pulsed laser ablation in liquids has proven its capability to generate ligand-free colloidal nanoparticles with high purity for a variety of materials [1,2]. Good reproducibility and significant up-scaling of nanoparticle generation were achieved recently by a continuous flow synthesis using a high-power ultrafast laser system leading to productivities of 4 g/h (equivalent to > 15 l/h) colloidal nanoparticles [3]. The transferability of this synthesis route to a variety of materials and liquids further enabled high-throughput screening of molar fraction series of e.g. water oxidation catalysts [4]. Alloy nanoparticles series (i.e., AgAu, NiMo, AuFe, AgNi, FeNi) were synthesized and their phase structure as well as their application potential will be discussed. Interestingly, on the one hand, phase diagram seems to play a role in ruling the nanoparticles crystal structure and phase segregation, but at the same time, unusual structures difficult to access by conventional synthesis methods are yielded, indicating kinetic control [5]. In this talk, laser synthesis of colloids will be introduced at the example of metal and alloy nanoparticles, including the resulting material properties. Application of these laser-generated nanoparticles by supporting them on carrier structures for heterogeneous catalysis 2, or in biomedicine 6 will be demonstrated.

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VI. Scientific programme

››› 16. 9. 2019

CONGRESS HALL

09:00 - 09:45

Session Title [P-I] PLENARY SESSION I
Session Chair V. I. Konov

P-I
[Plenary] Laser optics to uncover mysteries of early development
I. V. Larina[1]
[1] Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, Texas, USA

09:45 - 10:30

Session Title [P-II] PLENARY SESSION II
Session Chair V. I. Konov

P-II
[Plenary] New prospects in multiphysics modeling and simulations of matter dynamics of laser induced solid-to-plasma phase transitions
V. Dimitriou[1]
[1] Hellenic Mediterranean University- Greece, Institute of Plasma Physics & Lasers - IPPL, Rethymnon, Greece

CONGRESS HALL

11:00 - 12:15

Session Title [LMI-I] LASER-MATTER INTERACTION I
Session Chair N. M. Bulgakova

11:00

LMI-I-1
[Invited] On the role of plasma phase during Pulsed Laser Ablation in liquid for nanoparticles production
A. De Giacomo[1], V. Motto-Ros[2], F. Pelascini[3], I. Gornushkin[4], M. Dell'Aglio[5]
[1]University of Bari, Department of Chemistry, Bari, Italy
[2]Université Lyon 1, Institut Lumière Matière UMR 5306, Lyon, France
[3]Cetim Grand Est, Cetim Grand Est, Schiltigheim, France
[4]BAM Federal Institute for Material Research and Testing, BAM Federal Institute for Material Research and Testing, Berlin, Germany
[5]Consiglio Nazionale delle Recirche-CNR, Instiuto di Nanotecnologie- CNR-NANOTEC, Bari, Italy

11:20

LMI-I-2
[Invited] Comparative study of the electron photoemission from dielectrics, semiconductors, and metals induced by femtosecond laser pulses
G. Duchateau[1], N. Fedorov[2], B. Chimier[1], H. Jouin[3], P. Martin[3]
[1]CELIA- Universite de Bordeaux, IFCIA, Talence, France
[2]CELIA- Universite de Bordeaux, golf, Talence, France
[3]CELIA- Universite de Bordeaux, xuv, Talence, France

11:40

LMI-I-3
[Invited] Internal structuring of silicon using ultrafast lasers
D. Grojo[1]
[1]CNRS / Aix-Marseille Univ., LP3, Marseille, France

12:00

LMI-O-2
[Oral] Time-resolved pump-probe microscopy of the complete ablation dynamics in ultrashort laser pulse irradiated aluminum and stainless steel
J. Winter[1,2], S. Rapp1, M. Spellauge[1], M. Schmidt[2], H.P. Huber[1]
[1]Lasercenter Munich University of Applied Sciences, Department of Applied Sciences and Mechatronics, Munich, Germany
[2]Friedrich-Alexander University Erlangen-Nürnberg- Erlangen- Germany, Institute of Photonic Technologies, Erlangen, Germany

PRESENTATION HALL

11:00 - 12:35

Session Title [LS-I] LASER SYSTEMS AND MATERIALS I
Session Chairs V.Petrov and C.Romero

11:00

LS-I-1
[Invited] Femtosecond-laser-written 2-μm waveguide lasers
X. Mateos[1], E. Kifle[1], P. Loiko[2], C. Romero[3], J. R. Vázquez de Aldana[3], U. Griebner[4], V. Petrov[4], M. Aguiló[1], F. Díaz[1]
[1]Universitat Rovira i Virgili, Inorganic and Physical Chemistry, Tarragona, Spain
[2]Université de Caen Normandie, Centre de recherche sur les Ions- les Matériaux et la Photonique, Caen, France
[3]University of Salamanca, Aplicaciones del Láser y Fotónica, Salamanca, Spain
[4]Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, na, Berlin, Germany

11:20

LS-I-2
[Invited] Sub-100 fs OPA in the 6-10 μm range pumped by a 100 kHz Yb laser, and its application to vibrational spectroscopy
Z. Heiner[1]
[1]Humboldt Universität zu Berlin, School of Analytical Sciences Adlershof SALSA, Berlin, Germany

11:40

LS-I-3
[Invited] OPOs for standoff gas sensing
A. Godard[1], G. Walter[1], T. Hamoudi[1,2], Q. Berthomé[1,3], J.B. Dherbecourt[1], J.M. Melkonian[1], R. Santagata[1], M. Raybaut[1]
[1]DPHY- ONERA- Université Paris-Saclay, Physics Instrumentation Environment Space Department, Palaiseau, France
[2]Laboratoire Charles Fabry- Institut d'Optique Graduate School- CNRS- Université Paris-Saclay, Lasers group, Palaiseau, France
[3]Teem Photonics, Research & Development Department, Meylan, France

12:00

LS-I-4
[Invited] Millijoule level, sub 8 cycle, 7 μm OPCPA on a tabletop: design, applications and routes for future development.
L. Maidment[1], U. Elu[1], D. Sánchez[1], T. Steinle[1], K. Zawilski[2], P. Schunemann[2], G. Matras[3], C. Simon-Boisson[3], J. Biegert[1,4]

[1]ICFO - Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology, 08860 Castelldefels- Barcelona, Spain
[2]BAE Systems, MER15-1813- P.O. Box 868, Nashua- New Hampshire 03061, USA
[3]THALES Optronique S.A.S, Laser Solutions Unit- 2 avenue Gay-Lussac, 78995 Elancourt Cedex, France
[4]ICREA, Pg. Lluis Companys 23, 08010 Barcelona, Spain

12:20

LS-O-1
[Oral] All-Solid-State Fe:ZnSe Mid-IR Femtosecond Laser operating at 4.4 µm for Driving Extreme Nonlinear Optics
F. Potemkin[1]
[1]M.V.Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation

PRAHA HALL

11:00 - 12:35

Session Title [B-I] BIOPHOTONICS I
Session Chairs H.Schneckenburger

11:00

B-I-1
[Keynote] Shedding light on radiotherapy: optical coherence angiography (OCA) to assess tissue functional response to radiation
A. Vitkin[1]
[1]University of Toronto / Princess Margaret Cancer Centre, Toronto, Ontario, Canada

11:25

B-I-2
[Invited] Translational dynamic optical coherence elastography
K. Larin[1]
[1]University of Houston, Biomedical Engineering, Houston, USA

11:45

B-I-3
[Invited] Fluorescence lifetime spectroscopy and imaging in medical diagnosis
L. Marcu[1]
[1]Department of Biomedical Engineering, University of California at Davis, USA, CA 96516

12:05

B-O-1
[Oral] Modeling of a photosensitizer fluorescence response during accumulation and photobleaching in biotissue
E. Sergeeva[1], D. Kurakina[1], A. Khilov[1], M. Kirillin[1]
[1]Institute of Applied Physics RAS, Laboratory of Biophotonics, Nizhny Novgorod, Russian Federation

12:20

B-O-2
[Oral] Optical coherence microscopy combined with optical tweezers for cellular mechanics research
M. Sirotin[1], M. Romodina[1], E. Lyubin[1], I. Soboleva[1], A. Fedyanin[1]
[1]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation

CONGRESS HALL

14:00 - 16:00

Session Title [LMI-II] LASER-MATTER INTERACTION II
Session Chairs A. Vogel and D. Grojo

14:00

LMI-I-4
[Invited] Maxwell+TDDFT multiscale method for light-propagation in solids
M. Uemoto[1], A. Yamada[1], K. Yabana[1]
[1]University of Tsukuba, Center for Computational Sciences, Tsukuba, Japan

14:20

LMI-I-5
[Invited] Simulations of the energy spectrum of conduction band electrons for a better understanding of free-electron-mediated modifications of biomolecules, and fs laser materials processing
X.X. Liang[1,2], Z.X. Zhang[2], A. Vogel[1]
[1]University of Luebeck, Institute of Biomedical Optics, Luebeck, Germany
[2]Xi'an Jiaotong University, Institute of Biomedical Analytical Technology and Instrumentation, Xi'an, China

14:40

LMI-I-6
[Invited] Multistep phase transitions in X-ray free-electron-laser irradiated solids
N. Medvedev[1]
[1]Institute of Physics- Czech Academy of Sciences, Department of Radiation and Chemical Physics, Prague, Czech Republic

15:00

LMI-I-7
[Invited] Investigating energy deposition of ultrashort lasers at the surface of solids at the femtosecond scale
O. Uteza[1], T. Genieys[1], C. Pasquier[1], M. Sentis[1], N. Sanner[1]
[1]LP3 - CNRS - AMU, LP3, Marseille, France

15:20

LMI-I-8
[Invited] Wavelength dependent energy transfer to semiconductors and dielectrics irradiated by ultrashort laser pulses
T. Apostolova[1,2]
[1]Institute for Nuclear Research and Nuclear Energy, Cyclotron physics, Sofia, Bulgaria
[2]Institute for Advanced Physical Studies, New Bulgarian University, Sofia, Bulgaria

15:40

LMI-I-9
[Invited] High-Speed surface functionalization using interference-based laser processes - From prediction to technological applications
T. Kunze[1], T. Steege[1], S. Alamri[1], B. Krupop[1], A. Madelung[1], A. Aguilar-Morales[1], F. Schell[1], F. Hundertmark[1], V. Lang[1,2], A.F. Lasagni[1,2]
[1]Fraunhofer IWS Dresden, Microtechnology, Dresden, Germany
[2]Technische Universität Dresden, Institute for Manufacturing Technology, Dresden, Germany

PRESENTATION HALL

Session Title [LS-II] LASER SYSTEMS AND MATERIALS II
Session Chairs B.Denker, C. Saraceno

14:00 - 16:00

14:00

LS-I-5
[Invited] Nonlinear conversion of broadband mid-IR laser radiation into the wavelength range of ~2 - 20 micron
A. Ionin[1], I. Kinyaevskiy[1], Y. Klimachev[1], A. Kotkov[1], A. Kozlov[1], A. Sagitova[1], D. Sinitsyn[1], L. Seleznev[1]
[1]P.N. Lebedev Physical Institute of the Russian Academy of Sciences, Division of Quantum Radiophysics, Moscow, Russian Federation

14:20

LS-I-6
[Invited] Progress in high-power, 100 kHz mid-infrared OPCPA's
M. Mero[1]
[1]Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, A3 Ultrafast Lasers and Nonlinear Optics, Berlin, Germany

14:40

LS-I-7
[Invited] Spectroscopic and laser properties of Fe^{2+} ions in several AIIBVI crystals of solid solutions like $Zn_{1-x}Mn_xSe$, $Zn_{1-x}Mg_xSe$, $Zn_{1-x}Mn_xTe$ and $Cd_{1-x}Mn_xTe$
M. Doroshenko[1]
[1]A.M. Prokhorov General Physics Institute Russian Academy of Sciences, Laser Materials and Photonics, Moscow, Russian Federation

15:00

LS-I-8
[Invited] Large-aperture quasi-phase-matching stacks of multiple GaAs plates fabricated with the room-temperature bonding for high-power wavelength conversion in mid-IR region
I. Shoji[1]
[1]Chuo University, Department of Electrical- Electronic- and Communication Engineering, Tokyo, Japan

15:20

LS-I-9
[Invited] Advances in 2 micron lasers for non-linear conversion into the Mid-IR
M. Eichhorn[1], P. Forster[2], C. Romano[2], C. Kieleck[2], S. Güntert[2], B. Luwe[2], M. Gross[2]
[1]Fraunhofer IOSB, Divisional Director, Ettlingen, Germany
[2]Fraunhofer IOSB, LASer Technology LAS, Ettlingen, Germany

15:40

LS-I-10
[Invited] Stimulated Brillouin scattering phase conjugate mirror (SBS-PCM) using the fused silica for the high average power laser
H.J. Kong[1], S. Cha[1]
[1]KAIST, Department of Physics, Daejeon, Republic of Korea

PRAHA HALL

Session Title [B-II] BIOPHOTONICS II
Session Chairs A. Vitkin and M. Kirillin

14:00 - 15:50

14:00

B-I-4
[Invited] Laser speckle techniques for accessing biological function
P. Li[1], J. Lu[1], J. Hong[1], X. Chen[1]
[1]Huazhong University of Science and Technology, Wuhan National Laboratory for Optoelectronics, Wuhan, China

14:20

B-I-5
[Invited] Optical Micromechanics using Laser Speckle Approaches
S. Nadkarni[1]
[1]Harvard Medical School, Wellman Center for Photomedicine, Boston, USA

14:40

B-I-6
[Invited] Optical imaging for development and advancement of photodynamic therapy protocols
M. Kirillin[1], D. Kurakina[1], A. Khilov[1], A. Orlova[1], E. Sergeeva[1], M. Shakhova[2], A. Mironycheva[3], A. Malygina[3], I. Shlivko[3], N. Orlinskaya[4]
[1]Institute of Applied Physics RAS, Laboratory of Biophotonics, Nizhny Novgorod, Russian Federation
[2]Privolzhsky Research Medical University, ENT Department, Nizhny Novgorod, Russian Federation
[3]Privolzhsky Research Medical University, Skin Diseases Department, Nizhny Novgorod, Russian Federation
[4]Privolzhsky Research Medical University, Pathomorphology Department, Nizhny Novgorod, Russian Federation

15:00

B-I-7
[Invited] Live cell optical microscopy from the millimeter to the nanometer range
H. Schneckenburger[1], V. Richter[1], P. Weber[1], M. Wagner[1]
[1]Aalen University, Institute of Applied Research, Aalen, Germany

15:20

B-O-3
[Oral] Classification of label-free cancerous cells in blood sample during flow based on interferometric phase microscopy (IPM)
N. Nissim[1], N. Tzvi Shaked[1]
[1]Tel-Aviv University, Biomedical Engineering, Tel-Aviv, Israel

15:35

B-O-4
[Oral] One-step phase reconstruction using deep learning in off-axis holography
G. Dardikman-Yoffe[1], N. Shaked[1]
[1]Tel Aviv University, Biomedical Engineering, Tel Aviv, Israel

CONGRESS HALL

Session Title [LMI-III] LASER-MATTER INTERACTION III
Session Chairs G. G. Duchateau and A. Husakou

16:30 - 18:45

16:30

LMI-I-10
[Invited] Energetic-beam induced regular surface structuring: Comparison of ultra-short laser pulses vs. ion beams
J. Reif[1]
[1]BTU Cottbus-Senftenberg, Fak 1, Cottbus, Germany

16:50

LMI-I-11
[Invited] Modelling of the ultrafast dynamics and surface plasmon properties of silicon upon irradiation with mid-IR femtosecond laser pulses
G. Tsibidis[1]
[1]FORTH, Insitute of Electronic Structure and Laser, Heraklion, Greece

17:10

LMI-I-12
[Invited] Femtosecond laser-induced periodic surface structures: from light localization to applications
J. Bonse[1], C. Florian[1], S.V. Kirner[1], J. Krüger[1]
[1]Bundesanstalt für Materialforschung und -prüfung BAM, 6.4 Nanomaterial Technologies, Berlin, Germany

17:30

LMI-I-13
[Invited] Ultrafast-Laser generated nanoacoustic waves and their applications on material diagnosis
N. Papadogiannis[1]
[1]Hellenic Mediterranean University, Institute for Plasma Physics and Lasers, Rethymnon, Greece

17:50

LMI-I-14
[Invited] Laser made random and solitary surface structures
N. Inogamov[1,2], V. Zhakhovsky[1], S. Anisimov[2], Y. Petrov[2], V. Khokhlov[2]
[1]The Dukhov Research Institute of Automatics, The Centre for Fundamental and Applied Research, Moscow, Russian Federation
[2]Landau Institute for Theoretical Physics of the Russian Academy of Sciences, Lasers and Plasma, Chernogolovka- Moscow region, Russian Federation

18:10

LMI-I-15
[Invited] Production of wear resistant surface zones with high power laser technologies
M. Seifert[1], S. Kuehn[1], M. Barbosa[2], S. Nowotny[2], C. Leyens[3]
[1]Fraunhofer IWS Dresden, Heat Treatment and Plating, Dresden, Germany
[2]Fraunhofer IWS Dresden, Thermal Coating, Dresden, Germany
[3]Fraunhofer IWS Dresden, Director, Dresden, Germany

18:30

LMI-O-3
[Oral] Effect of the ablation plume pre-formed by ASE on the characteristics of intense femtosecond laser--plasma interactions
V. Tcheremiskine[1,2], O. Ranjbar[3], A. Volkov[3]
[1]Aix-Marseille Univeersity - CNRS, LP Laboratory, Marseille, France
[2]Lebedev Physics Institute, Photochemical Processes Laboratory, Moscow, Russian Federation
[3]University of Alabama, Department of Mechanical Engineering, Tuscaloosa, USA

PRESENTATION HALL

Session Title [LS-III] LASER SYSTEMS AND MATERIALS III
Session Chairs X. Mateos, H. Yu

16:30 - 19:10

16:30

LS-I-11
[Invited] New strategies for the fabrication of photonic devices by direct inscription with femtosecond laser pulses
C. Romero[1], J. G. Ajates[2], X. Mateos[3], A. Ródenas[4,5], P. Moreno[1], F. Cheng[6], J. R. Vázquez de Aldana[1]
[1]Universidad de Salamanca, Aplicaciones del láser y fotónica, Salamanca, Spain
[2]Spanish Center for Pulsed Lasers, Technical Division, Villamayor, Spain
[3]Universitat Rovira i Virgili- Departament Química Física i Inorgànica, Física i Cristal·lografia de Materials i Nanomaterials FiCMA-FiCNA-EMaS, Tarragona, Spain
[4]Universidad de La Laguna, Departamento de Física, Santa Cruz de Tenerife, Spain
[5]Universidad de La Laguna, Instituto Universitario de Estudios avanzados en Atómica- Molecular y Fotónica IUDEA, Santa Cruz de Tenerife, Spain
[6]School of Physics, Shandong University, Jinan, China

16:50

LS-I-12
[Invited] Cobalt-doped transparent ceramics and glass-ceramics for saturable absorbers of Erbium lasers
P. Loiko[1], O. Dymshits[2], A. Belyaev[3], I. Alekseeva[2], M. Tsenter[2], V. Vitkin[4], D. Shemchuk[2], A. Zhilin[2]
[1]ITMO University, Center for Physics of Nanostructures, Saint-Petersburg, Russian Federation
[2]S.I. Vavilov State Optical Institute, Laboratory of Optical Glass-ceramics, Saint-Petersburg, Russian Federation
[3]G.G. Devyatykh Institute of Chemistry of High-Purity Substances IHPS of the Russian Academy of Sciences, Laboratory of High-purity Oxygen-free Glasses, Nizhny Novgorod, Russian Federation
[4]ITMO University, Faculty of Laser Photonics and Optoelectronics, Saint-Petersburg, Russian Federation

17:10

LS-I-13
[Invited] Direct generation of vortex beam from a Er:Y_2O_3 ceramic laser at 2.7 μm
Y. Zhao[1], M. Ding[2], Y. Chen[2], D. Shen[2]
[1]Shandong University, State Key Laboratory of Crystal Materials and Institute of Crystal Materials, Jinan, China
[2]Jiangsu Normal University, Jiangsu Key Laboratory of Advanced Laser Materials and Devices, XuZhou, China

17:30

LS-I-14
[Invited] Generation of doughnut beam from self-Raman laser with or without optical vortex
W. Chen[1], G. Zhang[1]
[1]Fujian Institute of Research on the Structure of Matter- Chinese Academy of Sciences, Crystal and laser physics, Fuzhou, China

17:50

LS-I-15
[Invited] Hollow-core fibers destruction under high power laser radiation
I. Bufetov[1], A. Kolyadin[1], A. Kosolapov[1]
[1]*Fiber Optics Research Center of RAS, HCF Lab, Moscow, Russian Federation*

18:10

LS-O-2
[Oral] Modulational instability at normal dispersion in microresonators with backscattering
N. Kondratiev[1], V. Lobanov1, D. Skryabin[1,2]
[1]*Russian Quantum Center, Coherent Microoptics and Ragiophotonics, Moscow, Russian Federation*
[2]*University of Bath, Department of Physics, Bath, United Kingdom*

18:25

LS-O-3
[Oral] Progress on Self-frequency-doubled Nd:$Ca_4GdO(BO_3)_3$ and Yb:$Ca_4YO(BO_3)_3$ crystal
H. Yu[1], H. Zhang[1], J. Wang[1], Z. Hu[2]
[1]*Shandong University, State Key Laboratory of Crystal Materials and Institute of Crystal Materials, Jinan, China*
[2]*Tianjin University of Technology, Institute of Functional Crystal Materials, Tianjin, China*

18:40

LS-O-4
[Oral] Diode pumped Cryogenic Yb:Lu_2O_3 ceramic laser
S. Paul David[1], V. Jambunathan[1], F. Yue[1], B. J Le Garrec[2], A. Lucianetti[1], T. Mocek[1]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Unité Mixte n° 7605 CNRS - CEA - Ecole Polytechnique - UPMC, Laboratoire pour l'Utilisation des Lasers Intenses LULI-, Saclay, France*

18:55

LS-O-5
[Oral] 2.3 µm and 4.4 µm Lasing in Cr,Fe:$Zn_{1-x}Mn_xSe$ (x=0.3) Single Crystal Pumped by Q-switched Er:YLF Laser at 1.73 µm
A. Říha[1], M.E. Doroshenko[2], H. Jelínková[1], M. Němec[1], M. Jelínek[1], M. Čech[1], D. Vyhlídal[1], N.O. Kovalenko[3], A.S. Gerasi-emenko[3]
[1]*Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Břehová 7, 115 19 Prague, Czech Republic*
[2]*Laser Materials and Technology Research Center, General Physics Institute, Vavilov Str. 38, 119991 Moscow, Russian Federation*
[3]*Institute for Single Crystals, National Academy of Sciences of Ukraine, 60 Lenin Ave., Kharkiv, Ukraine*

PRAHA HALL

16:30 - 19:10

Session Title **[B-III] BIOPHOTONICS III**
Session Chairs T. Durduran and I. Turchin

16:30

B-I-8
[Invited] Guidance for deep brain surgery with optical fibres
D. Depaoli[1], C. Leo[2], P. Martin[3], D. Côté[1]
[1]*CERVO Brain Research Center, Physics, Quebec CIty, Canada*
[2]*Hospital Enfant Jesus, Neurochirurgie, Quebec City, Canada*
[3]*CERVO Brain Research Center, Neuroscience, Quebec City, Canada*

16:50

B-I-9
[Invited] Non-invasive measurement of cerebral blood flow as a biomarker injury, therapy and recovery
T. Durduran[1]
[1]*ICFO-The Institute of Photonic Sciences, Medical Optics, Barcelona, Spain*

17:10

B-I-10
[Invited] Fiber-based methods for deep brain Calcium recording in behaving mice
L. Fu[1]
[1]*Huazhong University of Science and Technology, wnlo, wuhan, China*

17:30

B-I-11
[Invited] Plasmonic gap-enhanced Raman tags for biomedical applications
N. Khlebtsov[1]
[1]*Institute of Biochemistry and Physiology of Plants and Microorganisms- RAS, Lab of Nanobiotechnology, Saratov, Russian Federation*

17:50

B-I-12
[Invited] Complementary approach to monitoring of photodynamic therapy with target nanoconstructs by fluorescence and optoacoustic imaging
I. Turchin[1], M. Kirillin[1], D. Kurakina[1], V. Perekatova[1], A. Orlova[1], E. Sergeeva[1], V. Plekhanov[1], P. Subochev[1], S. Mallidi[2], T. Hasan[2]
[1]*Institute of Applied Physics of the Russian Academy of Sciences, Radiophysical methods in medicine, Nizhny Novgorod, Russian Federation*
[2]*Massachusetts General Hospital- Harvard Medical School, Wellman Center for Photomedicine, Boston, USA*

18:10

B-I-13
[Invited] FDISCO: advanced solvent-based clearing method for imaging whole organs
D. Zhu[1]
[1]*Huazhong University of Science and Technology, Wuhan National Laboratory for Optoelectronics, Wuhan, China*

18:30

B-I-14
[Invited] Integrated effects on skin immersion optical clearing in vivo
E. Genina[1,2], A. Bashkatov[1,2], V. Tuchin[1,2,3], V. Zharov[4]
[1]*Saratov State University, Optics and Biophotonics, Saratov, Russian Federation*
[2]*Tomsk State University, Interdisciplinary Laboratory of Biophotonics, Tomsk, Russian Federation*
[3]*Institute of Precision Mechanics and Control RAS, Laboratory of laser diagnostics of technical and living systems, Saratov, Russian Federation*
[4]*University of Arkansas for Medical Sciences, Arkansas Nanomedicine Center, Little Rock, USA*

18:50

B-I-15

[Invited] OCT and laser speckle imaging for quantification of diffusivity and impact on blood flow of diabetic tissues and organs

D.K. Tuchina[1,2,3,4], P.A. Timoshina[1,2], V.V. Tuchin[1,2,3,5]

[1]Saratov State University, Astrakhanskaya str. 83, 410012 Saratov, Russia

[2]Tomsk State University, Lenin's av. 36, 634050 Tomsk, Russia

[3]Laboratory of Molecular Imaging, Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow 119071, Russia

[4]Prokhorov General Physics Institute of the Russian Academy of Sciences, 38 Vavilova str., Moscow 119991, Russia

[5]Institute of Precision Mechanics and Control RAS, Rabochaya str. 24, 410028 Saratov, Russia

››› 17. 9. 2019

CONGRESS HALL

9:00 - 9:45

Session Title [P-III] PLENARY SESSION III
Session Chair N. M. Bulgakova

P-III

[Plenary] Laser-induced processes on condensed matter

W. Kautek[1]

[1]University of Vienna, Department of Physical Chemistry, Vienna, Austria

CONGRESS HALL

9:45 - 10:30

Session Title [P-IV] PLENARY SESSION IV
Session Chair N. M. Bulgakova

P-IV

[Plenary] Pioneering pulsed laser synthesis of colloids

A. Fojtik[1]

[1]NRNU MEPhI - Institut of Engineering Physics for Biomedicine, Russia & Czech Technical University in Prague, Czech Republic

CONGRESS HALL

11:00 - 12:30

Session Title [LMI-IV] LASER-MATTER INTERACTION IV
Session Chair I. Zavestovskaya

11:00

LMI-I-16

[Invited] Prospects for the application of vortex beams of mid- and far-infrared ranges in surface plasmonics

B. Knyazev[1], Y. Choporova[1], O. Kameshkov[2], A. Nikitin[3], N. Osintseva[1], V. Pavelyev[4]

[1]Budker Instutute of Nuclear Physics SB RAS, Free electron laser, Novosibirsk, Russian Federation

[2]Novosibirsk State University, Physics, Novosibirsk, Russian Federation

[3]Scientific and Technology Center of Unique Instrumentation, Terahertz Laboratoty, Moscow, Russian Federation

[4]Samara University, Nanotechnology, Samara, Russian Federation

11:20

LMI-I-17

[Invited] Ionization-event harmonics: basic mechanisms and characterization of ionization dynamics

A. Husakou[1], P. Jurgens[2], B. Liewehr[3], B. Kruse[3], C. Peltz[3], W. Engel[4], M. Ivanov[1], M. Vrakking[2], T. Fennel[3], A. Mermillod-Blondin[2]

[1]Max Born Institute, Division T, Berlin, Germany

[2]Max Born Institute, Department A, Berlin, Germany

[3]University Rostock, Institute of Physics, Rostock, Germany

[4]Max Born Institute, Department B, Berlin, Germany

11:40

PH-I-10
[Invited] Laser ablation of halide perovskites for nanophotonic applications
S. Makarov[1]
[1]ITMO University, Department of Nanophotonics and Metamaterials, Saint Petersburg, Russian Federation

12:00

LMI-O-4
[Oral] Dynamic optical response of gold to ultrafast laser action: modeling of damage threshold and comparison with experiment
S.A. Lizunov[1,2], I. Mirza[1], M. Stehlík[1], N.M. Bulgakova[1,2], A.V. Bulgakov[1,2]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]S.S. Kutateladze Institute of Thermophysics, Siberian Branch of RAS, Novosibirsk, Russian Federation

12:15

LMI-O-5
[Oral] Conversions of optical angular momentum in the processes of sum-frequency and second-harmonic generation from the surface of the isotropic chiral medium with nonlocal nonlinear response.
K. Grigoriev[1], V. Makarov[1]
[1]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation

PRESENTATION HALL

11:00 - 12:30

Session Title **[HILASE-I] HILASE WORKSHOP I**
Session Chair T. Mocek

11:00

HiLASE-I-1
[Invited] Two-dimensional material printing via blister-based laser-induced forward-transfer
N. Goodfriend[1], N. M. Bulgakova[1], E.E.B. Campbell[2], O. Nerushev[2], T. Mocek[1], R. Kitaura[3], T. Hotta[3]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic [2]University of Edinburgh, School of Chemistry, Edinburgh, United Kingdom
[3]Nagoya University, Department of Chemistry, Nagoya, Japan

11:20

HiLASE-I-2
[Invited] Numerical study of thermal dynamics and stress build-up in laser-induced periodic surface structures formation on metals and dielectrics
Y. Levy[1], E.L. Gurevich[2], N.M. Bulgakova[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]Ruhr-Universität Bochum, Applied Laser Technologies, Bochum, Germany

11:40

HiLASE-I-3
[Invited] Nonlinear excitation of solids and transient band gap dynamics upon femtosecond laser irradiation of semiconductors: insights from first principles simulations
T. Derrien[1,2], N. Tancogne-Dejean[2], V. Zhukov[1,3,4], H. Appel[2], A. Rubio[2], N.M. Bulgakova[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic

[2]Max Planck Institute for Structure and Dynamics of Matter, Theory Department, Hamburg, Germany
[3]Novosibirsk State Technical University, Physical-Technical Faculty, Novosibirsk, Russian Federation
[4]Institute of Computational Technologies, Siberian Branch of the RAS, Novosibirsk, Russian Federation

12:00

HiLASE-O-1
[Oral] Effect of phase shift, polarisation vector orientation and incident angle shift on multiple beam interference pattern.
D. Jochcová[1,2], J. Kaufman[1,2], P. Hauschwitz[1,2], J. Vanda[1], J. Brajer[1], D. Rostohar[1], T. Mocek[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Prague, Czech Republic

12:15

HiLASE-O-2
[Oral] Two-step nanosecond laser processing for dual-scale micro- and nanostructure fabrication of superhydrophobic stainless steel surface.
P. Hauschwitz[1,2], J. Radhakrishnan[1], R. Bicistova[1], D. Jochcova[1,2], J. Brajer[1], D. Rostohar[1], T. Mocek[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Prague, Czech Republic

PRAHA HALL

11:00 - 12:40

Session Title **[LS-IV] LASER SYSTEMS AND MATERIALS IV**
Session Chairs I.Bufetov, Y. Zhao

11:00

LS-I-16
[Keynote] Opportunities in Terahertz science open by state-of-the-art high-power ultrafast disk lasers
C. Saraceno
[1]Ruhr University Bochum, Germany

11:25

LS-I-17
[Invited] Photosensitivity of composite heavily erbium-doped phosphosilicate fibers
A. Rybaltovsky[1], O. Egorova[2], S. Vasiliev[3], S. Zhuravlev[1], O. Butov[4], S. Semjonov[5], B. Galagan[6], S. Sverchkov[6], B. Denker[6]
[1]Fiber Optics Research Center of Russian Academy of Sciences, Laboratory of Optical Fibers Technology, Moscow, Russian Federation
[2]Natural Sciences Center at Prokhorov General Physics Institute of the Russian Academy of Sciences, Force Fiber Optics Laboratory, Moscow, Russian Federation
[3]Fiber Optics Research Center of Russian Academy of Sciences, Laboratory of Fiber Optics, Moscow, Russian Federation
[4]Kotelnikov Institute of Radio Engineering and Electronics of Russian Academy of Sciences, Laboratory of Fiber Optic Technology, Moscow, Russian Federation
[5]Fiber Optics Research Center of Russian Academy of Sciences, Laboratory of Optical Fiber Technology, Moscow, Russian Federation
[6]Prokhorov General Physics Institute of the Russian Academy of Sciences, Laboratory of Concentrated Laser Materials, Moscow, Russian Federation

11:45

LS-I-18
[Invited] 100Hz repeatable power laser
J. Kawanaka[1], S. Tokita[1], J. Ogino[1], K. Matsumoto[1], H. Yoshida[1], K. Tsubakimoto[1], K. Fujioka[1], Z. Li[1], N. Morio[1], S. Motokoshi[2]
[1]Osaka University, Institute of Laser Engineering, Osaka, Japan
[2]Institute for Laser Technology, Laser Technology Development, Osaka, Japan

12:05

LS-I-19
[Invited] One-Joule, 500 Hz cryogenic composite-disk laser amplifier
L.E. Zapata[1,2,3], S. Schweisthal[1], J. Thesinga[1], C. Zapata[2], M. Schust[1], M. Pergament[1], F.X. Kaertner[1]
[1]Deutsches Elektronen Synchrotron, Center for Free-Electron Laser Science-, Hamburg, Germany
[2]MAGiC Laser Technologies- LLC, Lasers, Palatka- Florida, USA
[3]Lumitron Technologies, High Power Lasers, Irvine- California, USA

12:25

LS-O-6
[Oral] 307 W high power 1018 nm monolithic tandem pump fiber source with effective thermal management
X. Chen[1], Y. Yang[1], B. He[1]
[1]Shanghai Institute of Optics and Fine Mechanics- Chinese Academy of Sciences, Shanghai Key Laboratory of All Solid-State Laser and Applied Techniques- Research Center of Space Laser Information Technology, Shanghai, China

CONGRESS HALL

14:00 - 16:00

Session Title [LMI-V] LASER-MATTER INTERACTION V
Session Chairs R. Stoian and O. Uteza

14:00

LMI-I-19
[Invited] Free-electron-mediated effects of single femtosecond pulses and pulse series in the (irradiance/fluence) parameter space
A. Vogel[1], X.X. Liang[1], S. Freidank[1], N. Linz[1]
[1]University of Luebeck, Institute of Biomedical Optics, Luebeck, Germany

14:20

LMI-I-20
[Invited] Dynamics of water ionization under intensive femtosecond irradiation
V. Konov[1], V. Kononenko[1], V. Gololobov[1]
[1]General Physics Institute, Natural Sciences Center, Moscow, Russian Federation

14:40

LMI-I-21
[Invited] Nuclear nanomedicine: laser ablated nanoparticles in new generation radiopharmaceuticals
I.N. Zavestovskaya[1], A. Kabashin[2], V. Petriev[3]
[1]MEPHI, BHSPh, Moscow, Russian Federation
[2]Aix-Marseille Univ- CNRS, Laser Lab, Marseille, France
[3]National Medical Research Centre of radiology of the Ministry of Health of the Russian Federation, Nuclear Medicine, Obninsk, Russian Federation

15:00

LMI-I-22
[Invited] Damage effects in metals induced by short and ultrashort laser pulses: Comparison of air and water environments
A.V. Bulgakov[1,2], S.V. Starinskiy[2], M. Stehlík[1,3], I. Mirza[1], Y.G. Shukhov[2], C. Liberatore[1], N.M. Bulgakova[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]S.S. Kutateladze Institute of Thermophysics, Siberian Branch of RAS, Novosibirsk, Russian Federation
[3]FNSPE, Czech Technical University in Prague, Prague, Czech Republic

15:20

LMI-I-23
[Invited] Ionization-field instabilities and nanograting formation in optical breakdown processes
V. Gildenburg[1,2], I. Pavlichenko[1,2]
[1]Institute of Applied Physics RAS, Plasma physics department, Nizhny Novgorod, Russian Federation
[2]University of Nizhny Novgorod, Radiophysics department, Nizhny Novgorod, Russian Federation

15:40

LMI-I-24
[Invited] High-precision simulations of interaction of ultrashort laser pulses with bulk bandgap materials
V. P. Zhukov[1,2,3], N.M. Bulgakova[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]Institute of Computational Technologies, Siberian Branch RAS, Novosibirsk, Russian Federation
[3]Novosibirsk State Technical University, Physical-Technical Faculty, Novosibirsk, Russian Federation

PRESENTATION HALL

14:00 - 16:00

Session Title [LD-I] LASER DIAGNOSTIC AND SPECTROSCOPY I
Session Chairs I.Sychugov, L. Golovan

14:00

LD-I-1
[Invited] Interaction of strong optical fields with diamond - towards ultrafast control of electronic excitations
M. Kozák[1]
[1]Charles University- Faculty of Mathematics and Physics, Department of Chemical Physics and Optics, Prague, Czech Republic

14:20

LD-I-2
[Invited] Pump-probe Magneto-optical Studies of Thin-film Ferromagnets and Antiferromagnets
P. Nemec[1]
[1]Charles University, Faculty of Mathematics and Physics, Prague 2, Czech Republic

14:40

LD-I-3
[Invited] Carbon Nanotubes-Localized Surface Plasmon fibre optic sensors for CO2 gas detection
A. Rozhin[1], T. Allsop[1], R. Arif[1], D. Webb[1], R. Neal[2]
[1]Aston University, Electrical Engineering, Birmingham, United Kingdom
[2]University of Plymouth, Communications and Electronics, Plymouth, United Kingdom

15:00

LD-I-4
[Invited] Laser methods in aerosol science
D.A. Czitrovszky[1], A. Nagy[1], M. Veres[1], S. Kugler[1], I. Kreisz[2]
[1]Wigner Research Centre for Physics of the Hungarian Academy of Sciences, Applied and Nonlinear Optics, Budapest, Hungary
[2]Lasram Engineering Ltd., R&D Management, Budapest, Hungary

15:20

LD-I-5
[Invited] Stimulated Raman spectroscopy with femtosecond laser and spectral focusing detection
M. Veres[1], A. Czitovszky[1], L. Himics[1], R. Holomb[1], A. Nagy[1], I. Rigo[1], T. Vaczi[1]
[1]Wigner Research Centre for Physics, Department of Applied and Non-linear Optics, Budapest, Hungary

15:40

LD-I-6
[Invited] Characterization of the emission of laser deposition additive manufacturing process
A. Nagy[1], S. Kugler[1], I. Kreisz[2], M. Veres[1], A. Czitrovszky[1]
[1]H.A.S. Wigner Research Centre for Physics, Applied and Nonlinear Optics, Budapest, Hungary
[2]Lasram Engineering Ltd., R&D Management, Budapest, Hungary

PRAHA HALL

14:00 - 16:00

Session Title [B-IV] BIOPHOTONICS IV
Session Chairs K. Larin and A. Lugovtsov

14:00

B-I-16
[Invited] Advances in confocal Mueller matrix polarimetry
J. Ramella-Roman[1], I. Saytashev[2], S. Sudipta[3]
[1]Florida International University, Biomedical Engineering and Herbert Wertheim College of Medicine, Miami, USA
[2]Florida International University, Herbert Wertheim College of Medicine, Miami, USA
[3]Florida International University, Physics, Miami, USA

14:20

B-I-17
[Invited] Optical properties of human normal and pathological colorectal tissues from 200 to 1000 nm
I. Carneiro[1], S. Carvalho[1], R. Henrique[1], L. Oliveira[2], V. Tuchin[3]
[1]Portuguese Oncology Institute of Porto, Department of Pathology and Cancer Biology and Epigenetics Group-Research Centre, Porto, Portugal
[2]Polytechnic of Porto - School of Engineering, Physics Department, Porto, Portugal
[3]Saratov state University, Research-Educational Institute of Optics and Biophotonics, Saratov, Russian Federation

14:40

B-I-18
[Invited] Laser measurements of erythrocyte aggregation in patients suffering from arterial hypertension
A. Lugovtsov[1], L. Dyachuk[2], P. Ermolinskiy[3], A. Maslyanitsina[3], A. Priezzhev[1]
[1]M.V. Lomonosov Moscow State University, Department of Physics and International Laser Center, Moscow, Russian Federation
[2]M.V. Lomonosov Moscow State University, Medical Research and Education Center, Moscow, Russian Federation
[3]M.V. Lomonosov Moscow State University, Department of Physics, Moscow, Russian Federation

15:00

B-I-19
[Invited] Correlations between the blood microrheologic and microcirculation parameters in cardiological patients as determined by laser-optic methods
Y. Gurfinkel[1], A. Priezzhev[2], A. Lugovtsov[2], P. Ermolinskiy[2], L. Dyachuk[3]
[1]Lomonosov Moscow State University, Medical Research and Educational Center, MOSCOW, Russian Federation
[2]Lomonosov Moscow State University, Department of Physics and International Laser Center, Moscow, Russian Federation
[3]Lomonosov Moscow State University, Medical Research and Education Center, Moscow, Russian Federation

15:20

B-I-20
[Invited] Lymphedema tissue analysis using optical imaging and machine learning
Y. Kistenev[1], A. Borisov[1], V. Nikolaev[1], D. Vrazhnov[1,2], A. Knyazkova[1], N. Kryvova[1], E. Sandykova[3]
[1]Tomsk State Unuversity, Physics, Tomsk, Russian Federation
[2]Institute of Strength Physics and Materials Science of Siberian Branch of the RAS- Tomsk- Russia, Lab. of phoacoustics, Tomsk, Russian Federation
[3]Siberian State Medical University, Phesics, Tomsk, Russian Federation

15:40

B-I-21
[Invited] Femtosecond laser micro- and nanotexturing of dental implants: wettability and stem cell behavior
T. Itina[1], X. Sedao[2], I.S. Omeje[1], C. Donnet[1], A. Klos[3], V. Dumas[3], A. Guignandon[4], A. Rave[5], N. Shchedrina[5], G. Odintsova[5]
[1]LabHC- UMR CNRS 5516/UJM/Univ. Lyon, Optics and Photonics, SAINT-ETIENNE, France
[2]LabHC- UMR CNRS 5516/UJM/Univ. Lyon and GIE Manutech-USD, Optics and Photonics, Saint-Etienne, France
[3]ENISE- Univ. Lyon- UMR 5513 CNRS, Laboratoire de Tribologie et Dynamique des Systèmes, Saint-Etienne, France
[4]Laboratoire SAnté Ingénierie BIOlogie- UJM/Univ. Lyon, Sainbiose, Saint-Etienne, France
[5]ITMO University, Megaphotonics, Saint Petersburg, France

CONGRESS HALL

16:30 - 17:05

Session Title [LMI-VI] LASER-MATTER INTERACTION VI
Session Chairs R. Stoian and O. Uteza

16:30

LMI-I-25
[Invited] Laser technologies in the diagnostics of heterogeneous substances with supercritical fluidic components
D. Zimnyakov[1], S. Yuvchenko[1]
[1]Yury Gagarin State Technical University of Saratov, Physics, Saratov, Russian Federation

16:50

LMI-O-6
[Oral] Fragmentation of a liquid tin droplet by a short laser pulse
S. Grigoryev[1], V. Zhakhovsky[1], S. Dyachkov[1], B. Lakatosh[2], V. Medvedev[3]
[1]All-Russia Research Institute of Automatics VNIIA, Center for Fundamental and Applied Research, Moscow, Russian Federation
[2]Moscow Institute of Physics and Technology, Moscow Institute of Physics and Technology, Moscow, Russian Federation
[3]Institute for Spectroscopy- RAS, Institute for Spectroscopy- RAS, Troitsk, Russian Federation

PRESENTATION HALL

Session Title [LD-II] LASER DIAGNOSTICS AND SPECTROSCOPY II
Session Chair A. Nagy

16:30 - 17:30

16:30

LD-I-7
[Invited] Raman spectroscopy and spectrophotometry studies of silicon nanoparticles for biophotonics
S. Zabotnov[1], A. Kolchin[1], A. Pavlikov[1], F. Kashaev[1], D. Kurakina[2], A. Khilov[2], P. Agrba[3], M. Kirillin[2], L. Golovan[1], P. Kashkarov[1]
[1]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation
[2]Institute of Applied Physics RAS, Laboratory of Biophotonics, Nizhny Novgorod, Russian Federation
[3]Lobachevsky State University of Nizhny Novgorod, Faculty of Radiophysics, Nizhny Novgorod, Russian Federation

16:50

LD-I-8
[Invited] Label-based and label-free optical nanoscopy of pathogenic bacterial species
M. Lucidi[1], S.G. Stanciu[2], D.E. Tranca[2], R. Hristu[2], A.M. Holban[3], L. Nchele[1], G.A. Stanciu[2], G. Cincotti[1]
[1]University Roma Tre, Engineering, Rome, Italy
[2]University Politehnica of Bucharest, Center for Microscopy-Microanalysis and Information Processing, Bucharest, Romania
[3]University of Bucharest, Faculty of Biology- Microbiology and Immunology Department, Bucharest, Romania

17:10

LD-I-9
[Invited] Laser photoacoustic detection of ethylene emission during germination and early seedling development of tomato seeds stimulated by non-thermal plasma
C.E. Matei[1], M. Monica[2]
[1]National Institute for Laser- Plasma and Radiation Physics, Laser Department, Magurele, Romania
[2]National Institute for Laser- Plasma and Radiation Physics, Department of Plasma Physics and Nuclear Fusion, Magurele, Romania

PRAHA HALL

Session Title [B-V] BIOPHOTONICS V
Session Chairs V. Tuchin and L. Oliveira

16:30 - 17:30

16:30

B-I-22
[Invited] Intraoperative diagnosis of human brain gliomas using THz spectroscopy and imaging: a pilot study
O. Cherkasova[1,2], A. Gavdush[2,3], N. Chernomyrdin[2,3], S.I. Beshplav[2,4], I. Dolganova[3,5], I. Reshetov[6], G. Komandin[2], A. Potapov[4], V. Tuchin[7,8], K. Zaytsev[2,3]
[1]Institute of Laser Physics of the Siberian Branch of the Russian Academy of Sciences, Biophysics Laboratory, Novosibirsk, Russian Federation
[2]Prokhorov General Physics Institute of the Russian Academy of Sciences, Laboratory of Submillimeter Dielectric Spectroscopy-, Moscow, Russian Federation
[3]Bauman Moscow State Technical University, Researcher at Laboratory of Terahertz Technology, Moscow, Russian Federation
[4]Burdenko Neurosurgery Institute, Burdenko Neurosurgery Institute, Moscow, Russian Federation
[5]Institute of Solid State Physics of the Russian Academy of Sciences, Institute of Solid State Physics of the Russian Academy of Sciences, Chernogolovka, Russian Federation
[6]Institute of Regenerative Medicine- Sechenov First Moscow State Medical University, Institute of Regenerative Medicine, Moscow, Russian Federation
[7]Saratov State University, Department of Optics and Biophotonics, Saratov, Russian Federation
[8]Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Laboratory, Saratov, Russian Federation

16:50

B-O-5
[Oral] The new methods for modeling of costal cartilage implants for laryngotracheal defect treatment
O. Baum[1], Y. Alexandrovskaya[1], V. Svistushkin[2], E. Sobol[3]
[1]Federal Scientific Research Centre 'Crystallography and Photonics' of Russian Academy of Sciences, Institute of Photon Technologies, Troitsk- Moscow, Russian Federation
[2]I.M.Sechenov First Moscow State Medical University, I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation
[3]Arcuo Medical Inc, Arcuo Medical Inc, Incline Village, USA

17:05

B-O-6
[Oral] Antibacterial silicon-based laser-fabricated nanocoatings
A. Ionin[1], S. Kudryashov[1], A. Nastulyavichus[1], I. Saraeva[1], N. Smirnov[1], A. Rudenko[1], E. Tolordava[2], D. Zayarny[1], S. Gonchukov[3], Y. Romanova[2]
[1]P. N. Lebedev Physics Institute of Russian Academy of Science, Quantum Radiophysics, Moscow, Russian Federation
[2]N.F. Gamaleya Federal Research Centre of Epidemiology and Microbiology, Laboratory of gene engineering of pathogenic microorganisms, Moscow, Russian Federation
[3]National research nuclear university MEPhI Moscow Engineering Physics Institute, Laser Plasma, Moscow, Russian Federation

››› 18. 9. 2019

CONGRESS HALL

Session Title [LMI-VII] LASER-MATTER INTERACTION VII
Session Chair N.A. Inogamov

9:00 - 10:35

9:00

LMI-I-26
[Invited] Self-organization and laser structuring beyond diffraction limit
R. Stoian[1], J.P. Colombier[1], A. Rudenko[1], A. Aguilar[1], C. Mauclair[1]
[1]*CNRS Université Lyon, Laboratoire Hubert Curien, St. Etienne, France*

9:20

LMI-I-27
[Invited] Intrapulse dynamics of plasma formation in fs-laser irradiated dielectrics
A. Mermillod-Blondin[1], P. Jürgens[1], B. Liewehr[2], C. Peltz[2], B. Kruse[2], T. Fennel[2], A. Husakou[1], M.J.J. Vrakking[1]
[1]*Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, A: Attosecond Physics, Berlin, Germany*
[2]*University of Rostock, Institute of Physics, Rostock, Germany*

9:40

LMI-I-28
[Invited] New insights to femtosecond excitation of solids with mid-IR laser fields
F. Potemkin[1]
[1]*M.V. Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation*

10:00

LMI-O-8
[Oral] Angular momentum of elliptically polarized cnoidal waves and breathers in a nonlinear gyrotropic medium with frequency dispersion
K. Grigoriev[1,2], V. Petnikova[1], V. Makarov[1,2]
[1]*Lomonosov Moscow State University, Faculty of physics, Moscow, Russian Federation*
[2]*Lomonosov Moscow State University, International Laser Center, Moscow, Russian Federation*

10:15

LMI-I-29
[Invited] Periodically poled crystals for nonlinear optical conversions and controlling of coherent light
V. Shur[1], A. Akhmatkhanov[1], A. Esin[1], V. Pavelyev[2]
[1]*Ural Federal University, Institute of Natural Sciences and Mathematics, Ekaterinburg, Russian Federation*
[2]*Samara University, Department of Nanoengineering, Samara, Russian Federation*

PRESENTATION HALL

Session Title [LP-I] ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS I
Session Chair A. Bulgakov

9:00 - 10:20

9:00

LP-I-1
[Keynote] Effect of plasma parameters modification on the properties of pulsed laser deposited thin films
J.G. Quiñones-Galvan[1], E. Camps[2], M.A. Santana Aranda[1], A. Perez Centeno[1], G. Gomez Rosas[1], A. Chavez Chavez[1], S. Saracho Gonzalez[3], A. Estrada Lopez[4], J.A. Guerrero de Leon[4], L.P. Rivera[1]
[1]*Universidad de Guadalajara, Physics, GUADALAJARA, Mexico*
[2]*Instituto Nacional de Investigaciones Nucleares, Physics, Ocoyoacac, Mexico*
[3]*Instituto Tecnologico y de Estudios Superiores de Occidente, Mathematics and Physics, Guadalajara, Mexico*
[4]*Universidad de Guadalajara, Projects Engeneering, Guadalajara, Mexico*

9:25

LP-I-2
[Invited] Laser-induced forward transfer for paper electronics applications
P. Serra[1], P. Sopeña[1], J.M. Fernández-Pradas[1], J. Sieiro[2], J.M. López-Villegas[2]
[1]*Universitat de Barcelona, Applied Physics, Barcelona, Spain*
[2]*Universitat de Barcelona, Electronic and Biomedical Engineering, Barcelona, Spain*

9:45

LP-I-3
[Invited] Direct Laser Synthesis of Two-Dimensional Transition Metal Dichalcogenides in ambient conditions
S. Mailis[1], O. Abbas[2], A.H. Lewis[2], N. Aspiotis[2], C.C. Huang[2], I. Zeimpekis[2], D. Hewak[2], P. Sazio[2]
[1]*Skolkovo Institute of Science and Technology, Photonics and Quantum Materials, Moscow, Russian Federation*
[2]*University of Southampton, Optoelectronics Research Centre, Southampton, United Kingdom*

10:05

LP-O-1
[Oral] Time-resolved shadowgraphy imaging of LIFT ejections, induced by pico- and nanosecond UV laser pulses
J. Miksys[1], G. Arutinov[2], G.W. Römer[1]
[1]*University of Twente- Chair of Laser Processing, Department of Mechanics of Solids- Surfaces & Systems, Enschede, Netherlands*
[2]*TNO, Holst Centre, Eindhoven, Netherlands*

PRAHA HALL

Session Title [LD-III] LASER DIAGNOSTICS AND SPECTROSCOPY III
Session Chairs A.Czitrovsky, M. Kozak

9:00 - 10:30

9:00

LD-I-10
[Invited] Spectral and Temporal Characteristics of Silicon Quantum Dot Luminescence and their Application in Light Conversion
I. Sychugov[1]
[1]*KTH Royal Institute of Technology, Applied Physics, Stockholm, Sweden*

9:20

LD-I-11
[Invited] Atomically-thin colloidal CdTe and CdSe nanosheets: effect of spontaneous folding and its impact on optical properties
R. Vasiliev[1,2], D. Kurtina[2], L. Kozina[2], A. Garshev[1,2], V. Zaytsev[3], I. Vasil'eva[4], V. Shubin[4], A. Gaskov[2]
[1]*Lomonosov Moscow State University, Department of Materials Science, Moscow, Russian Federation*
[2]*Lomonosov Moscow State University, Department of Chemistry, Moscow, Russian Federation*
[3]*Lomonosov Moscow State University, Department of Physics, Moscow, Russian Federation*
[4]*Research Center of Biotechnology of the Russian Academy of Sciences, Bach Institute of Biochemistry, Moscow, Russian Federation*

9:40

LD-I-12
[Invited] Plasmon-enhanced optical spectroscopies of semiconductor nanostructures
A. Milekhin[1], M. Rahaman[2], T. Duda[1], E. Rodyakina[3], R. Vasiliev[4], K. Anikin[1], V. Dzhagan[5], A. Latyshev[3], D. Zahn[2]
[1]*A.V. Rzhanov Institute of Semiconductor Physics, Laboratory of near-field optical spectroscopy and nanosensorics, Novosibirsk, Russian Federation*
[2]*Chemnitz University of Technology, Semiconductor Physics, Chemnitz, Germany*
[3]*A.V. Rzhanov Institute of Semiconductor Physics, Laboratory of Nanodiagnostics and Nanolithography, Novosibirsk, Russian Federation*
[4]*Moscow State University, Department of Material Science, Moscow, Russian Federation*
[5]*V.E. Lashkaryov Institute of Semiconductor Physics, Department of Optics and Spectroscopy of Semiconductor and Dielectric Materials, Kiev, Ukraine*

10:00

LD-O-1
[Oral] Photoluminescence and up-conversion in CdSe quantum dots in liquid-crystal polymer matrix
L. Golovan[1], A. Elopov[1], V. Zaytsev[1], S. Zabotnov[1], D. Zhigunov[2], O. Karpov[3], G. Shandryuk[3], A. Merekalov[3]
[1]*M.V.Lomonosov Moscow State University, Physics Department, Moscow, Russian Federation*
[2]*Skolkovo Institute of Science & Technology, Center for Photonics and Quantum Materials, Moscow, Russian Federation*
[3]*A.V.Topchiev Institute of Petrochemical Synthesis RAS, Laboratory 21 „Polymer Modification" named after N.A.Platé, Moscow, Russian Federation*

10:15

LD-O-2
[Oral] Laser cleaning of historical paper with pulsed and cw radiation
I. Balakhnina[1], N. Brandt[1], A. Chikishev[1], Y. Juma[2]
[1]*Moscow State University, Physical Department and International Laser Center, Moscow, Russian Federation*
[2]*Moscow Chemical Lyceum, none, Moscow, Russian Federation*

››› 19. 9. 2019

CONGRESS HALL

9:00 - 9:45

Session Title **P-V] PLENARY SESSION V**
Session Chair T. Mocek

P-V
[Plenary] Terahertz photonics of multiphase thermodynamic systems: from gas to liquid
A. Shkurinov[1]
[1]*Department of physics and International Laser Center, Lomonosov Moscow State University, Russia*

CONGRESS HALL

9:45 - 10:30

Session Title **[P-VI] PLENARY SESSION VI**
Session Chair T. Mocek

P-VI
[Plenary] Laser Synthesis of Colloidal Metal and Alloy Colloids – Fundamentals, Scalability and Alloy Phase Structure
S. Barcikowski[1]
[1]*Technical Chemistry I and Center for Nanointegration Duisburg-Essen (CENIDE) University of Duisburg-Essen, Germany*

CONGRESS HALL

11:00 - 12:30

Session Title **[LP-II] ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS II**
Session Chair P. Serra

11:00

LP-I-4
[Invited] Laser-ablative synthesis of novel functional nanoformulations for biomedical applications
A. Kabashin[1,2]
[1]*Aix-Marseille Univ.- CNRS, LP3, Marseille, France*
[2]*MEPHI, Institute of Engineering Physics for Biomedicine PhysBio, Moscow, Russian Federation*

11:20

LP-I-5
[Invited] Synthesis by pulsed laser ablation in liquid of noble metal-based colloids to detect anti-epileptic drugs
E. Fazio[1]
[1]*Università di Messina, Dipartimento di Scienze Matematiche ed Informatiche- Scienze Fisiche e Scienze della Terra MIFT, Messina, Italy*

11:40

LP-I-6
[Invited] Nanohybrids for Multphotons Excitation. PLA synthesis and properties.
W. Marine[1]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

12:00

LP-O-2
[Oral] Laser processing of antimicrobial peptides releasing thin films for the inhibition of microbial attachment and biofilms formation on medical implants
R. Cristescu[1], I. Negut[1], A. Visan[1], D. Istrati[2], D.E. Mihaiescu[2], M. Popa[3], M.C. Chifiriuc[3], R.J. Narayan[4], D.B. Chrisey[5]
[1]*National Institute for Lasers- Plasma and Radiation Physics, Lasers Department, Bucharest-Magurele, Romania*
[2]*Politehnica University of Bucharest, Faculty of Applied Chemistry and Materials Science, Bucharest, Romania*
[3]*Faculty of Biology- Research Institute of the University of Bucharest - ICUB, Microbiology Immunology Department, Bucharest, Romania*
[4]*University of North Carolina, Department of Biomedical Engineering, Chapel Hill, USA*
[5]*Tulane University, Department of Physics and Engineering Physics, New Orleans, USA*

12:15

LP-O-3
[Oral] Fabrication of plasmonic titanium nitride nanoparticles by femtosecond laser ablation in water and organic solvents
A. Popov[1], G. Tselikov[2], A. Al-Kattan[2], N. Dumas[3], C. Berard[3,4], J. Nicola[5], A. Da Silva[6], D. Braguer[3,4], M.A. Esteve[3,4], A. Kabashin[1,2]
[1]*MEPhI, Institute of Engineering Physics for Biomedicine PhysBio- Bio- nanophotonics Laboratory, Moscow, Russian Federation*
[2]*Aix-Marseille University, CNRS- LP3 laboratory, Marseille, France*
[3]*Aix-Marseille University, CNRS- INP- Inst Neurophysiopathol, Marseille, France*
[4]*Assistance Publique – Hôpitaux de Marseille, Hôpital Timone, Marseille, France*
[5]*Aix Marseille University, CNRS- Centrale Marseille- LMA, Marseille, France*
[6]*Aix-Marseille University, CNRS- Centrale Marseille- Institut Fresnel, Marseille, France*

PRESENTATION HALL

11:00 - 12:20

Session Title [HILASE-II] HILASE WORKSHOP II
Session Chair D. Rostohar

11:00

HiLASE-I-4
[Invited] Qualification of laser optics for high-power LIDAR space missions
N. Bartels[1], P. Allenspacher[1], W. Riede[1]
[1]*DLR, Insitute of Technical Physics, Stuttgart, Germany*

11:20

HiLASE-I-5
[Invited] Laser-induced damage threshold - coating materials and pulse durations
H. Kessler[1]
[1]*Manx Precision Optics Ltd., Sales, Ballasalla, Isle of Man*

11:40

HiLASE-I-6
[Invited] A summary on the limitations in measuring a well-defined laserinduced\rdamage threshold
I. Balasa[1], S. Paschel[1], L. Jensen[1]
[1]*Laser Zentrum Hannover e.V., Laser Components, Hannover, Germany*

12:00

HiLASE-I-7
[Invited] Process monitoring for metal additive manufacturing by Laser Metal Deposition
C. Prieto[1], M. Diez[1], S. Carracelas[1], C. Gonzalez[2], P. Rey[1], J. Arias[1]
[1]*AIMEN, Advanced Manufacturing, O Porriño, Spain*
[2]*AIMEN, Robotics & Control, O Porriño, Spain*

PRAHA HALL

11:00 - 12:40

Session Title [PH-I] PHOTONICS: FUNDAMENTALS, APPLICATIONS AND INTEGRATION I
Session Chair T. J.-Y. Derrien

11:00

PH-I-1
[Invited] Femtosecond, sub-nm-sensitivity probing of plasmonic near-field dynamics
P. Dombi[1]
[1]*Wigner Research Centre for Physics, Ultrafast Nanooptics Group, Budapest, Hungary*

11:20

PH-I-2
[Invited] Linear and nonlinear optical responses of plasmonic metasurface with sub-nm gaps
T. Takeuchi[1], M. Noda[1], K. Yabana[1]
[1]*University of Tsukuba, Center for Computational Sciences, Tsukuba, Japan*

11:40

PH-I-3
[Invited] Role of higher-order dispersion in second harmonic generation of ultra-short laser pulses in nonlinear photonic crystals
U. Sapaev[1]
[1]*Tashkent State Technical University named after Islam Karimov, Faculty of Electronics and Automation, Tashkent, Uzbekistan*
[2]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

12:00

PH-I-4
[Invited] Strong-field interaction and high-harmonic generation in solids
N. Tancogne-Dejean[1]
[1]*Max Planck Insitute for Structure and Dynamics of Matter, Theory, Hamburg, Germany*

12:20

PH-I-5
[Invited] 4D-Laser Technology in nanocluster physics: macroscopic quantum states in thin films on solid surface (modelling and experiment)
S. Arakelian[1], I. Chestnov[1], A. Istratov[1], T. Khudaiberganov[1], A. Kucherik[1], S. Kutrovskaya[1], A. Osipov[1], D. Buharov[1], O. Butkovskiy[1]
[1]*Vladimir State University, Department of Physics and Applied Mathematics, Vladimir, Russian Federation*

PLZEŇ HALL

Session Title [THZ-I] THZ PHOTONICS I
Session Chair J.Hebling

11:00 - 12:45

11:00

THz-I-1
[Keynote] Charge carrier transport in nanomaterials probed in the THz range
P. Kuzel[1], H. Nemec[1]
[1]Institute of Physics of the Czech Academy of Sciences, THz spectroscopy group, Prague, Czech Republic

11:25

THz-I-2
[Invited] Time and spectrally resolved gain dynamics in THz quantum cascade lasers
J. Darmo[1], G. Derntl[1], D. Theiner[1], G. Scalari[2], M. Beck[2], J. Faist[2], K. Unterrainer[1]
[1]Photonics Institute, TU Wien, Campus Gusshausstrasse, 1040 Vienna, Austria
[2]Institute of Quantum Electronics, ETH Zürich, Auguste-Piccard-Hof 1, Zurich, 8093, Switzerland

11:45

THz-I-3
[Invited] THz Quantum Cascade Lasers: Materials Evaluation and Optimization
H. Detz
[1]TU Wien, Center for Micro- and Nanostructures, Wien, Austria
[2]Brno University of Technology, Central European Institute of Technology, Brno, Czechia

12:05

THz-I-4
[Invited] Advanced control of complex matter by high-field terahertz pulses
F. Giorgianni[1]
[1]Paul Scherrer Institut, Research with Neutrons and Muons, Villigen PSI, Switzerland

12:25

THz-I-5
[Invited] Long wavelength stimulated emission in HgTe/CdHgTe quantum well heterostructures
A. Dubinov[1,2], V. Gavrilenko[1,3], V. Rumyantsev[1,3], M. Fadeev[1,4], V. Utochkin[1], V. Aleshkin[1,3], N. Mikhailov[5,6], S. Morozov[1,2], Z. Krasilnik[1,2], C. Sirtori[7]
[1]Institute for Physics of Microstructures RAS, Semiconductor physics department, Nizhny Novgorod, Russian Federation
[2]Lobachevsky State University, Radiophysics department, Nizhny Novgorod, Russian Federation
[3]Lobachevsky State University, Advanced School of General and Applied Physics, Nizhny Novgorod, Russian Federation
[4]L2C- UMR CNRS 5221- Montpellier University, Terahertz Spectroscopy Group, Montpellier, France
[5]A.V. Rzhanov Institute of Semiconductor Physics- Siberian Branch of Russian Academy of Sciences, Lab #15, Novosibirsk, Russian Federation
[6]Novosibirsk State University, Physics department, Novosibirsk, Russian Federation
[7]Laboratoire de Physique de l'Ecole Normale Supérieure, Physique Quantique et Dispositifs QUAD, Paris, France

CONGRESS HALL

Session Title [LP-III] ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS III
Session Chairs A. Kabashin, E. Gurevich

14:00 - 16:00

14:00

LP-I-7
[Invited] Selective ablation of nano-layer thin films by single-pulse femtosecond laser irradiation
B. Gakovic[1], S. Petrovic[1], S. Kudryashov[2], P. Danilov[2], E. Skoulas[3], G. Tsibidis[3], A. Ionin[2], E. Stratakis[3]
[1]Vinča Institute of Nuclear Sciences- University of Belgrade, Atomic Physics Department, Belgrade, Serbia
[2]Lebedev Physical Institute, Basov Quantum Electronics Department, Moscow, Russian Federation
[3]Foundation for Research and Technology-Hellas FORTH, Institute of Electronic Structure and Laser, Heraklion, Greece

14:20

LP-I-8
[Invited] Generation of nanoparticles of unique morphologies by laser ablation in liquids
G. Shafeev[1]
[1]Prokhorov General Physics Institute of RAS, Wave Research Center, Moscow, Russian Federation

14:40

LP-I-9
[Invited] Photoinduced formation of inorganic nanoparticles in polymer matrix: mechanisms and laser structuring
N. Bityurin[1], A.A. Smirnov[1], A. Afanasiev[1], A. Pikulin[1]
[1]Institute of Applied Physics RAS, Nonlinear dynamics and optics, Nizhny Novgorod, Russian Federation

15:00

LP-I-10
[Invited] Laser micro- and nanostructuring of solids by sub-nanosecond laser pulses
E. V. Barmina [1]
[1]Prokhorov General Physics Institute of the Russian Academy of Sciences, Wave Research Center, Moscow, Russian Federation

15:20

LP-I-11
[Invited] Nanosecond laser treatment and fluoropolymer deposition for control of silicon surface wettability
S. Starinskiy[1,2], A. Safonov[1], E. Gatapova[1], N. Miskiv[1], E. Bochkareva[1], V. Sulyeva[3], A. Rodionov[1,2], Y. Shukhov[1], A. Bulgakov[1,4]
[1]Institute of Thermophysics, Sb RAS, Novosibirsk, Russian Federation
[2]Novosibirsk State University, Physical Department, Novosibirsk, Russian Federation
[3]Institute of Inorganic Chemistry, Sb RAS, Novosibirsk, Russian Federation
[4]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic

15:40

LP-I-12
[Invited] Laser modification of silicon for creation of light emitting structures with dislocations related luminescence
D. Polyakov[1], V. Veiko[1], N. Sobolev[2], A. Kalyadin[2], V. Vdovin[3]
[1]*ITMO University, Faculty of Laser Photonics and Optoelectronics, Saint-Peterburg, Russian Federation*
[2]*Ioffe Institute, Laboratory of Physics of Semiconductor Devices, Saint-Petersburg, Russian Federation*
[3]*Rzhanov Institute of Semiconductor Physics, Laboratory of Nano-diagnostic and Nanolithography, Novosibirsk, Russian Federation*

PRESENTATION HALL

14:00 - 16:05

Session Title [HILASE-III] HILASE WORKSHOP III
Session Chair W. Kautek

14:00

HiLASE-I-8
[Keynote] High speed Laser Induced Forward Transfer for flexible electronics applications
I. Zergioti[1]
[1]*National Technical University of Athens, Physics Department, Athens, Greece*

14:25

HiLASE-I-9
[Invited] Modeling of femtosecond laser induced out of equilibrium electron transport in metals
S. Coudert[1], G. Duchateau[1], P. Lalanne[2], S. Dilhaire[3]
[1]*CELIA- Universite de Bordeaux, ifcia, Talence, France*
[2]*LP2N-Universite de Bordeaux, plasmonics, Talence, France*
[3]*LOMA - Universite de Bordeaux, Laser, Talence, France*

14:45

HiLASE-I-10
[Invited] Nano-ablation by femtosecond laser-metal interactions
S. Sakabe[1,2], M. Hashida[1,2], S. Inoue[1,2]
[1]*Kyoto University, Institute for Chemical Research- Advanced Research Center for Beamc Science, Uji- Kyoto, Japan*
[2]*Kyoto University, Graduate School of Science- Department of Physics, Kyoto, Japan*

15:05

HiLASE-I-11
[Invited] Laser Ablation Mass Spectrometry for in-vivo detection of cancer: the SPIDERMASS project
C. Focsa[1], M. Ziskind[1], B. Fatou[2], I. Fournier[3], M. Salzet[3]
[1]*University of Lille, PhLAM - Physics of Lasers- Atoms and Molecules, Villeneuve d Ascq, France*
[2]*Harvard Medical School, Boston Children's Hospital, Boston, USA*
[3]*University of Lille, PRISM - Proteomics- Inflammatory Response- Mass Spectrometry, Villeneuve d Ascq, France*

15:25

HiLASE-I-12
[Invited] High speed laser surface texturing and time-resolved temperature measurement
J. Martan[1], D. Moskal1, M. Kučera1, L. Prokešová1, M. Honner1
[1]*University of West Bohemia, New Technologies - Research Centre, Plzen, Czech Republic*

15:45

HiLASE-I-13
[Invited] Femtosecond laser inscription of fiber Bragg gratings for laser and sensing applications
A. Dostovalov[1,2], A. Wolf[1,2], E. Evmenova[1], M. Skvortsov[1,2], S. Abdullina[1], K. Bronnikov[1,2], S. Yakushin[2], A. Kuznetsov[1], S. Kablukov[1], S. Babin[1,2]
[1]*Institute of Automation and Electrometry SB RAS, Fiber optics lab, Novosibirsk, Russian Federation*
[2]*Novosibirsk State University, The Department of Physics, Novosibirsk, Russian Federation*

PRAHA HALL

14:00 - 15:55

Session Title [B-VI] BIOPHOTONICS VI
Session Chairs Yu. Kistenev and J. Spigulis

14:00

B-I-23
[Invited] Triple Modality Transmission-Reflection Optoacoustic Ultrasound (TROPUS) Computed Tomography of Small Animals
E. Merčep[1], X.L. Deán-Ben[2,3], D. Razansky[2,3]
[1]*iThera Medical GmbH, Munich, Germany*
[2]*Faculty of Medicine and Institute of Pharmacology and Toxicology, University of Zurich, Switzerland*
[3]*Institute for Biomedical Engineering and Department of Information Technology and Electrical Engineering, ETH Zurich, Switzerland*

14:20

B-I-24
[Invited] Lasers for skin diagnostics - chromophore mapping and photon path length estimation
J. Spigulis[1]
[1]*Institute of Atomic Physics and Spectroscopy, Biophotonics Laboratory, Riga, Latvia*

14:40

B-O-7
[Oral] Laser-induced hydrodynamic effects in urological operation.
V. Minaev[1], N. Minaev[2], V. Yusupov[2], A. Dymov[3], N. Sorokin[3], V. Lekarev[3], A. Vinarov[3], L. Rapoport[3]
[1]*NTO „IRE-Polus", medical applications department, Fryazino, Russian Federation*
[2]*Federal Scientific Research Centre "Crystallography and Photonics" of Russian Academy of Sciences, Institute of Photon Technologies, Moscow- Troitsk, Russian Federation*
[3]*I.M.Sechenov First Moscow State Medical University, Institute of Urology and Reproductive Health, Moscow, Russian Federation*

14:55

B-O-8
[Oral] Sapphire shaped crystals as a prospcective material platform for novel modalities of medical diagnosis and therapy
I. Dolganova[1,2], G. Katyba[1,3], I. Shikunova[1], I. Reshetov[4], M. Schcedrina[4], K. Zaytsev[2,3], V. Tuchin[5,6], V. Kurlov[1]
[1]*Institute of Solid State Physics of the Russian Academy of Sciencies, Laboratory of Shaped Crystals, Chernogolovka, Russi-*

an Federation
[2]Bauman Moscow State Technical University, Laboratory of Terahertz Technology, Moscow, Russian Federation
[3]Prokhorov General Physics Institute of the Russian Academy of Sciences, Laboratory of Submillimeter-Wave Dielectric Spectroscopy, Moscow, Russian Federation
[4]Sechenov First Moscow State Medical University, Department of Oncology- Radiotherapy and Plastic Surgery, Moscow, Russian Federation
[5]Saratov State University, Chair of Optics and Biomedical Physics, Saratov, Russian Federation
[6]Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Laboratory of laser diagnostics of technical and living systems, Saratov, Russian Federation

15:10

B-O-9
[Oral] The OCE-assisted monitoring of slow strains in laser-reshaped cartilage implants
Y. Alexandrovskaya[1,2], O. Baum[1,2], V. Zaitsev[1]
[1]Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russian Federation
[2]Federal Scientific Research Centre 'Crystallography and Photonics' of Russian Academy of Sciences, Biophotonics laboratory, Troitsk- Moscow, Russian Federation

15:25

B-O-10
[Oral] Endovenous laser coagulation using two-micron laser radiation: mathematical modeling and in vivo experiments
S. Artemov[1], A. Belyaev[2], O. Bushukina[3], S. Khrushchalina[1], S. Kostin[2], A. Lyapin[1], P. Ryabochkina[1], A. Taratynova[1]
[1]National Research Mordovia State University, Physics and chemistry Institute, Saransk, Russian Federation
[2]National Research Mordovia State University, Medicine Institute, Saransk, Russian Federation
[3]National Research Mordovia State University, Agriculture Institute, Saransk, Russian Federation

15:40

B-O-12
[Oral] The phenomenon of electromechanical properties of cartilage tissue during cooling and heating from -10°C to 40°C
E. Kasianenko[1], A. Omelchenko[1]
[1]Federal Scientific Research Centre "Crystallography and photonics" of Russian Academy of Sciences, Institute of Photon Technologies, Moscow, Russian Federation

PLZEŇ HALL

14:00 - 16:00

Session Title [THZ-II] THZ PHOTONICS II
Session Chai H.Detz

14:00

THz-I-6
[Invited] THz Gyrotrons And Beyond
A. Fokin[1], M. Glyavin[1]
[1]IAP RAS, Plasma physics and High power electronics, Nizhny Novgorod, Russian Federation

14:20

THz-I-7
[Invited] The nonlinearity of the refractive index of optical media in the terahertz spectral range
S.A. Kozlov[1], M.V. Melnik[1], ZhukovaM.O.[1], O. Vorontosova[1], S.E. Putilin[1], A.N. Tcypkin, Xi-Cheng Zhang[1,2]
[1]International Laboratory of Femtosecond Optics and Femtotechnologies, ITMO University, St. Petersburg, 197101, Russia, kozlov@mail.ifmo.ru
[2]The Institute of Optics, University of Rochester, Rochester, NY 14627, USA

14:40

THz-I-8
[Invited] Mapping ultrafast ionization of atoms and clusters with terahertz field driven streak-camera
M. Krikunova[1]
[1]ELI Beamlines, Institute of Physics Academy of Sciences of the Czech Republic, Dolní Břežany, Czech Republic

15:00

THz-I-9
[Invited] Generation of the second harmonic of optical radiation in the presence of a strong terahertz field
A. Stepanov[1]
[1]Institute of applied physics, -, Nizhny Novgorod, Russian Federation

15:20

THz-I-10
[Invited] On the way to generation and application of extremely high field THz pulses
J. Hebling[1,2,3], T. György[1], Nugraha P. S.[2,3], L. Pálfalvi[1], A. András Fülöp[2,3], Krizsán G.[1,3], L. Tokodi[1], Z. Tibai[1], G. Almási[1,3]
[1]Institute of Physics, University of Pécs, Ifjúság ú. 6. Pécs 7624, Hungary
[2]MTA-PTE High-Field Terahertz Research Group, Ifjúság ú. 6, Pécs 7624, Hungar
[3]Szentágothai Research Centre, University of Pécs, Ifjúság ú. 20, Pécs 7624, Hungary

15:40

THz-I-11
[Invited] Consistent description of the THz radiation generation in gases
S. Stremoukhov[1,2]
[1]NRC „Kurchatov Institute", -, Moscow, Russian Federation
[2]Lomonosov Moscow State University, Faculty of Physics, Moscow, Russian Federation

CONGRESS HALL

16:30 - 18:00

Session Title [LP-IV] ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS IV
Session Chairs E. Barmina, G. Shafeev

16:30

LP-I-13
[Invited] Optical response of metals to ultrashort laser pulses: A puzzle for optical models
N. M. Bulgakova[1], S.A. Lizunov[1,2], V.P. Zhukov[1,3,4], A.V. Bulgakov[1,2]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]S.S. Kutateladze Institute of Thermophysics, Siberian Branch of RAS, Novosibirsk, Russian Federation
[3]Institute of Computational Technologies, Siberian Branch of RAS, Novosibirsk, Russian Federation
[4]Novosibirsk State Technical University, Physical-Technical Faculty, Novosibirsk, Russian Federation

16:50

LP-I-14
[Invited] Three-step model of the laser-induced periodic surface structures (LIPSS) formation on metal surfaces
E. Gurevich[1], S. Maragkaki[2], Y. Levy[3], T. Derrien[3], N. M. Bulgakova[3]
[1]Ruhr-University Bochum, Applied Laser Technologies, Bochum, Germany
[2]IESL-FORTH, Ultrafast Laser Micro and Nano Processing, Heraklion, Greece
[3]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic

17:10

LP-I-15

[Invited] Thermochemical laser-induced periodic structures formation on metals and semiconductors surfaces

A. Dostovalov[1,2], K. Bronnikov[1,2], K. Okotrub[3], V. Terentyev[1], T.J.Y. Derrien[4], S. Lizunov[4], T. Mocek[4], V. Korolkov[5], N. M. Bulgakova[4], S. Babin[1,2]

[1]*Institute of Automation and Electrometry SB RAS, Fiber optics lab, Novosibirsk, Russian Federation*

[2]*Novosibirsk State University, The Department of Physics, Novosibirsk, Russian Federation*

[3]*Institute of Automation and Electrometry SB RAS, Laboratory of Condensed Matter Spectroscopy, Novosibirsk, Russian Federation*

[4]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

[5]*Institute of Automation and Electrometry SB RAS, Laboratory of Diffraction Optics, Novosibirsk, Russian Federation*

17:30

LP-O-4

[Oral] Wurzite CdTe thin films deposited by PLD under different atmosphere gas and pressures

M.Á. Santana-Aranda[1], S. Saracho-González[2], A. Pérez-Centeno[1], G. Gómez-Rosas[1], A. Chávez-Chávez[1], E. Camps[3], J.G. Quiñones-Galván[1]

[1]*Centro Universitario de Ciencia Exactas e Ingenierías- Universidad de Guadalajara, Departamento de Física, Guadalajara, Mexico*

[2]*ITESO- Universidad Jesuita de Guadalajara, Departamento de Matemáticas y Física, San Pedro Tlaquepaque, Mexico*

[3]*Instituto Nacional de Investigaciones Nucleares, Departamento de Física, Ciudad de MéxicoMexico, Mexico*

17:45

LP-O-5

[Oral] Pulsed laser deposition under low background gas pressure

M. Kostejn[1], R. Fajgar[1], V. Drinek[1], V. Jandova[1], M. Klementova[2], S. Bakardijeva[3]

[1]*Institute of Chemical Process Fundamentals of the CAS- v. v. i., Department of laser chemistry, Prague, Czech Republic*

[2]*Institute of Physics CAS, Department of Material Analysis, Prague, Czech Republic*

[3]*Institute of Inorganic Chemistry CAS, Centre of Instrumental Techniques, Husinec-Řež, Czech Republic*

PRESENTATION HALL

16:30 - 18:00

Session Title **[HILASE-IV] HILASE WORKSHOP IV**

Session Chair A. Lucianetti

16:30

HiLASE-I-14

[Invited] High power mid-IR DPSSLs

J. Hein[1], J. Körner[1], J. Reiter[2], M. Kaluza[1]

[1]*Friedrich-Schiller University Jena, Institute for Optics and Quantum Electronics, Jena, Germany*

[2]*Helmholtz-Institute Jena, Relativistic Laser Physics, Jena, Germany*

16:50

HiLASE-I-15

[Invited] Highly efficient frequency conversion scalable from 10 J at 10 Hz to 100 J 10 Hz using DPSSL laser technology

P. Phillips[1], S. Banerjee[2], P. Mason[2], K. Ertel[2], D. Martin[3], J. Pillar[3], A. Lucianetti[3], M. De Vido[2], T. Butcher[3], E. Chris[2]

[1]*stfc, CLF, Chilton- Didcot, United Kingdom*

[2]*STFC, Central Laser Facility, Chilton- Didcot, United Kingdom*

[3]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

17:10

HiLASE-I-16

[Invited] Unstable cavity lasers for compact short pulse high energy lasers

J. Hein[1], J. Körner[1], M.C. Kaluza[1], D. Rostohar[2], A. Lucianetti[2], M. Tomas[2], S. Zulic[2]

[1]*Friedrich-Schiller University Jena, Institute of Optics and Quantum Electronics, Jena, Germany*

[2]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

17:30

HiLASE-O-3

[Oral] 100W industrial thin disk regenerative amplifier

H. Zhou[1], M. Chyla[1], J. Horacek[1], P. Crha[1], J. Muzik[1], O. Novak[1], M. Smrz[1], T. Mocek[1]

[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

17:45

HiLASE-O-4

[Oral] Single-shot laser beam parameters measurement for near infrared laser beams

S. Nagisetty[1], T. Miura[1], M. Chyla[1], M. Smrz[1], T. Mocek[1]

[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

PRAHA HALL

16:30 - 17:45

Session Title **[PH-II] PHOTONICS: FUNDAMENTALS, APPLICATIONS AND INTEGRATION II**

Session Chairs A. Kucherik and Y. Ryabchikov

16:30

PH-I-6

[Invited] The laser synthesis of nanostructured carbon for photonics

A. Kucherik[1], A. Osipov[1], V. Samyshkin[1], S. Arakelian[1], M. Portnoi[2], S. Kutrovskaya[3]

[1]*Stoletov Vladimir State University, Physics and applied mathematics, Vladimir, Russian Federation*

[2]*University of Exeter, School of Physics, Exeter, United Kingdom*

[3]*Westlake University, Institute of Natural Sciences- Westlake Institute for Advanced Study, Westlake, China*

16:50

PH-I-7

[Invited] Laser-induced engineering and characterization of multimodal silicon-based nanoparticles

Y. Ryabchikov[1,2]

[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*

[2]*P.N. Lebedev Physical Institute of the Russian Academy of Sciences, Department of Solid State Physics, Moscow, Russian Federation*

17:10

PH-I-8

[Invited] Direct laser writing technique for creating non-enzymatic sensors

V. Andrianov[1], E. Khairullina1, A. Smikhovskaia[1], V. Mironov[1], M. Panov[1], M. Mizoshiri[2], I. Tumkin[1]

[1]*Saint Peterburg State University, Institute of Chemistry, Saint Petersburg, Russian Federation*

[2]*Nagaoka University of Technology, Dept. of Mechanical Engineering, Nagaoka, Japan*

17:30

PH-O-1
[Oral] Bruggeman approximation and nanostructures agglomeration two-scale model
V. Krasovskii[1], L. Apresyan[1], T. Vlasova[1], S. Rasmagin[1], V. Kryshtob[1], V. Pustovoy[1]
[1]Prokhorov General physics institute- Russan Academy of Sciences, Laser physics, Moscow, Russian Federation

PLZEŇ HALL

16:30 - 17:50

Session Title [THZ-III] THZ PHOTONICS III
Session Chair S. Stremoukhov

16:30

THz-I-12
[Invited] Terahertz spectroscopy of spin-phonon excitations in multiferroics
F. Kadlec[1], S. Kamba[1], C. Kadlec[1], J. Vít[1], V. Goian[1]
[1]Institute of Physics- Czech Academy of Sciences, Dielectrics, Praha 8, Czech Republic

16:50

THz-O-1
[Oral] THz emission spectra produced by filamentation of single-color IR and UV laser pulses
A. Ionin[1], O. Kosareva[1,2], Y. Mityagin[3], D. Mokrousova[1], N. Panov[1,2], G. Rizaev[1], S. Savinov[3], L. Seleznev[1], D. Shipilo[1,2]
[1]P. N. Lebedev Physical Institute of the Russian Academy of Sciences, Division of Quantum Radiophysics, Moscow, Russian Federation
[2]Lomonosov Moscow State University, Faculty of Physics and International Laser Center, Moscow, Russian Federation
[3]P. N. Lebedev Physical Institute of the Russian Academy of Sciences, Division of Solid State Physics, Moscow, Russian Federation

17:05

THz-O-2
[Oral] Properties of backward terahertz emission from two-color laser induced microplasma
A. Ushakov[1], P. Chizhov[1], N. Panov[2], S. Daniil[2], V. Bukin[1], A. Savel'ev[2], O. Kosareva[2], S. Garnov[1]
[1]Prokhorov General Physics Institute of the Russian Academy of Sciences, Oscillation, Moscow, Russian Federation
[2]Lomonosov Moscow State University, Physics, Moscow, Russian Federation

17:20

THz-O-3
[Oral] Control of terahertz emission from long two-color filaments
P. Chizhov[1], A. Ushakov[1], V. Bukin[1], S. Garnov[1]
[1]Prokhorov General Physics Institute of the Russian Academy of Sciences, Oscillations department, Moscow, Russian Federation

17:35

THz-O-4
[Oral] High-power far-IR generation from seeded KTP off-axis THz parametric oscillator
Y.C. Huang[1], M.H. Wu[1], W.C. Tsai[1], Y.C. Chiu[1]
[1]NTHU, ipt, Hsinchu, Taiwan Province of China

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20. 9. 2019

CONGRESS HALL

9:00 - 10:30

Session Title [LP-V] ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS V
Session Chairs R. Cristescu, S. Starinskiy

9:00

LP-I-16
[Invited] Laser-induced crystallization of titanium dioxide nanotubular layers for photocatalytic applications
I. Mirza[1], H. Sopha[2], J.M. Macák[2], A.V. Bulgakov[1], N.M. Bulgakova[1], O. Novák[1], H. Turčičová[1], A. Endo[3], T. Mocek[1]
[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic
[2]Centre of Materials and Nanotechnologies, Faculty of Chemical Technology- University of Pardubice, Pardubice, Czech Republic
[3]Faculty of Science and Engineering, Waseda University- Shinjuku-ku, Tokyo, Japan

9:20

LP-I-17
[Invited] New super-resolution method of direct laser writing on Zr films
V. Korolkov[1], S. Mikerin[2], R. Kuts[1], A. Malyshev[1]
[1]Institute of Automation and Electrometry SB RAS, Diffractive optics laboratory, Novosibirsk, Russian Federation
[2]Institute of Automation and Electrometry SB RAS, Laboratory of laser physics, Novosibirsk, Russian Federation

9:40

LP-I-18
[Invited] Laser interactions with low density porous matter - experiment and modelling
J. Limpouch[1]
[1]Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Praha 8, Czech Republic

10:00

LP-O-6
[Oral] Direct writing in transparent materials using ultra short laser pulses: towards functionalization by controlling the induced phase shift
B. Ancelot[1], L. Gemini[1], M. Faucon[1], R. Kling[1]
[1]ALPhANOV, Laser Processing, Talence, France

10:15

LP-O-7
[Oral] High-performance perforation of thin titanium plates with fiber laser
A. Lyukhter[1], T. Kononenko[2], K. Skvortsov[1], V. Konov[2], V. Vermel[3]
[1]Vladimir State University named after Alexander Grigorievich and Nikolai Grigorievich Stoletovs, Scientific and educational center for the introduction of laser technology, Vladimir, Russian Federation
[2]Natural Sciences Center, General Physics Institute, Moscow, Russian Federation
[3]Central Aerohydrodynamic Institute, Research and production complex, Zhukovsky, Russian Federation

PRESENTATION HALL

Session Title [HILASE-V] HILASE WORKSHOP V
Session Chairs D. Rostohar

9:00 - 10:35

9:00

HiLASE-I-17
[Invited] Quarter century development of laser shock peening and expansion of applications with novel palmtop lasers
Y. Sano[1]
[1]Institute for Molecular Science, Division of Research Innovation and Collaboration, Okazaki, Japan

9:20

HiLASE-I-18
[Invited] Microstructural Issues of Materials Properties After Laser Shock Peening
V. Vasudevan[1]
[1]University of Cincinnati, Mechancialand Materials Engineering, Cincinnati, USA

9:40

HiLASE-I-19
[Invited] Laser peen forming of large scale specimen with complex shape
M. Luo[1], Y. Hu[1]
[1]Shanghai Jiao Tong University, Mechanical Engineering, Shanghai, China

10:00

HiLASE-I-20
[Invited] Mechanisms of residual stress generation using Laser Shock Peening
N. Smyth[1], M. Leering[1], M. Fitzpatrick[1]
[1]Coventry University, Faculty of Engineering- Environment & Computing, Coventry, United Kingdom

10:20

HiLASE-O-5
[Oral] Effect of Laser shock peening on the microstructure, residual Stress, hardness, and fatigue behavior of additive manufactured CoCrMo alloy
M. Kattoura[1], B.T. Donkor[1], J. Song[1], J. Kaufman[2], S.R. Mannava[1], V.K. Vasudevan[1]
[1]University of Cincinnati, Mechanical and Materials Engineering, Cincinnati, USA
[2]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic

PRAHA HALL

Session Title [THZ-IV] THZ PHOTONICS IV
Session Chairs M.Konnikova

9:00 - 10:30

9:00

THz-I-13
[Invited] Sub-wavelength-resolution terahertz imaging of soft biological tissues
K. Zaytsev[1], N. Chernomyrdiin[1], I. Dolganova[2], G. Katyba[2], I. Spektor[1], V. Karasik[3], I. Reshetov[4], V. Tuchin[5]
[1]Prokhorov General Physics Institute of the Russian Academy of Sciences, Laboratory of Submillimeter Dielectric Spectroscopy, Moscow, Russian Federation
[2]Insitute of Solid State Physics of the Russian Academy of Sciences, Laboratory of Shaped Crystals, Chernogolovka, Russian Federation
[3]Bauman Moscow State Technical University, Research and Educational Center of Photonics, Moscow, Russian Federation
[4]Sechenov First Moscow State Medical University, Department if Plastic Surgery, Moscow, Russian Federation
[5]Saratov State University, Department of Optics and Biophotonics, Saratov, Russian Federation

9:20

THz-I-14
[Invited] Radiation sources based on semiconductor devices for multichannel THz-IR spectroscopy
V. Vaks[1], V. Anvertev[1], M. Chernyaeva[1], E. Domracheva[1], S. Pripolzin[1]
[1]Institute for Physics of Microstructures RAS, Terahertz spectrometry, Nizhny Novgorod, Russian Federation

9:40

THz-I-15
[Invited] Terahertz Continuous Wave Systems for Sensing Applications
I.M. Lee[1], E.S. Lee[1], H.S. Kim[1], D.W. Park[1], M.G. Kim[1], K. Moon[1], D.H. Choi[1], J.H. Shin[1], K.H. Park[1]
[1]ETRI Electronics and Telecommunications Research Institute, Terahertz Research Section, Daejeon, Korea Republic of

10:00

THz-O-5
[Oral] Reconfigurable terahertz optics made of thin films with phase transition
P. Solyankin[1], A. Shkurinov[2], B. Knyazev[3], O. Kameshkov[3]
[1]ILIT RAS – Branch of the FSRC «Crystallography and Photonics» RAS, -, Shatura, Russian Federation
[2]Lomonosov Moscow State University, Faculty of Physics and International Laser Center, Moscow, Russian Federation
[3]Budker Institute of Nuclear Physics of the Siberian Branch of RAS, n/a, Novosibirsk, Russian Federation

10:15

THz-O-6
[Oral] Study of the spectrum of bound water in 0.07-2.6 THz range
M. Konnikova[1], M. Nazarov[2], O. Cherkasova[3,4], A. Shkurinov[1,5]
[1]M.V.Lomonosov Moscow State University, Department of Physics and International Laser Center, Moscow, Russian Federation
[2]Kurchatov Institute National Research Center, Photonics and additive technologies, Moscow, Russian Federation
[3]Institute of Laser Physics of SB RAS, Biophysics Laboratory, Novosibirsk, Russian Federation
[4]Tomsk State University, laboratory of Biophotonics, Tomsk, Russian Federation
[5]FSRC «Crystallography and Photonics» RAS, Crystallography and Photonics, Shatura, Russian Federation

CONGRESS HALL

11:00 - 11:50

Session Title **[LP-VI] ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS VI**

Session Chair A. Bulgakov

11:00

LP-O-8

[Oral] Nonlinear femtosecond optical lithography for the micro- and nano-structuring

N. Minaev[1], M. Tarchov[2]

[1]Federal Scientific Research Centre "Crystallography and Photonics" of Russian Academy of Sciences, Institute of Photon Technologies, Moscow- Troitsk, Russian Federation

[2]Institute of Nanotechnologies of Microelectronics of the Russian Academy of Sciences, Department of development and research of micro- and nanosystems, Moscow, Russian Federation

11:15

LP-O-9

[Oral] Structuring of Kapton surface with ultrashort laser pulses

J. Hrabovsky[1,2,3], C. Liberatore[1], I. Mirza[1], J. Sladek[1], J. Beranek[1], V. Hajkova[4], A.V. Bulgakov[1], N.M. Bulgakova[1]

[1]HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic

[2]Faculty of Mathematics and Physics, Charles University in Prague, Prague, Czech Republic

[3]Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic

[4]Czech Technical Univerzity in Prague, Faculty of Nuclear Sciences and Physical Engineering, Prague, Czech Republic

11:30

LP-I-19

[Invited] Modeling of thermodynamic properties and phase transitions of refractory metals under conditions of intense pulsed influences

K.V. Khishchenko[1]

[1]Joint Institute for High Temperatures RAS, Moscow, Russia

PRESENTATION HALL

11:00 - 11:55

Session Title **[PH-III] PHOTONICS: FUNDAMENTALS, APPLICATIONS AND INTEGRATION III**

Session Chair Y. Levy

11:00

PH-I-9

[Invited] Laser optoacoustics of micro- and nanostructures

O. Romanov[1,2]

[1]Belarusian State University, Department of Computer Simulations / Faculty of Physics, Minsk, Belarus

[2]HiLASE Centre, Fyzikalni ustav AV CR- v.v.i., Dolni Brezany, Czech Republic

11:20

LMI-I-18

[Invited] Frequency conversion in nanocomposites

O. Fedotova[1], O. Khasanov[1], R. Rusetski[1], T. Smirnova[2]

[1]Scientific-Practical Materials Research Centre NAS Belarus, Laboratory of Theory of Solids, Minsk, Belarus

[2]International Sakharov Environmental Institute BSU, Department of Environmental Information Systems, Minsk, Belarus

11:40

PH-O-2

[Oral] Photodiodes for detection of IR radiation from WGM lasers

E. Kunitsyna[1], I. Andreev[1], G. Konovalov[1], Y. Yakovlev[1], Y. Lebiadok[2], M. Ahmetoglu /Afrailov/[3], B. Kirezli[3]

[1]Ioffe Institute, Laboratory of Mid-Infrared Optoelectronics, St. Petersburg, Russian Federation

[2]SSPA „Optics- Optoelectronics & Laser Technology"- NAS of Belarus, Optoelectronics Laboratory, Minsk, Belarus

[3]Uludag University, Department of Physics, Bursa, Turkey

PRAHA HALL

11:00 - 11:30

Session Title **[THz-V] Thz Photonics V**

Session Chair S.Kozlov

11:00

THz-O-7

[Oral] Terahertz response of silicon surface with nanoscale gold particles

A. Sinko[1,2], K. Moldosanov[3], P. Solyankin[2], I. Ozheredov[1,2], A. Shkurinov[1,2]

[1]MSU, Faculty of Physics, Moscow, Russian Federation

[2]ILIT RAS — Branch of FSRC "Crystallography and Photonics" RAS, n/a, Shatura, Russian Federation

[3]Kyrgyz Russian Slavic University, Department of Natural and Technical Sciences, Bishkek, Kyrgyzstan

11:15

THz-O-8

[Oral] Angular distribution of THz radiation from clustered plasma and enhancing of THz emission intensity

N. Kuzechkin[1,2], A. Balakin[1,2], M. Dzhidzhoev[1], V. Gordienko[1], I. Ivanov[1], T. Semenov[3], A. Shkurinov[1,2]

[1]Lomonosov Moscow State University, Faculty of Physics & International Laser Centre, Moscow, Russian Federation

[2]Russian Academy of Sciences, Institute on Laser and Information Technologies - Branch of the FSRC "Crystallography and Photonics", Shatura, Russian Federation

[3]Russian Academy of Sciences, FSRC "Crystallography and Photonics", Moscow, Russian Federation

VII. Posters

POSTER SESSION CHAIRS T. MOCEK, A. LUCIANETTI, N. M. BULGAKOVA

Poster session LASER-MATTER INTERACTION

LM-PS-1
Numerical simulations of energy relaxation in molybdenum thin films upon irradiation by femtosecond and picosecond laser pulses
K. Hlinomaz[1,2], Y. Levy[1], T.J.Y. Derrien[1], N.M. Bulgakova[1]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Faculty of Nuclear Sciences and Physical Engineering- Czech Technical University in Prague, Department of Physical Electronics, Praha, Czech Republic*

LM-PS-2
Ultrashort laser heating and ablation by one and two pulses of donut-like spatial form
A. Fedotov[1,3], Y. Okrut[2], Y. Tsitavets[3], I. Gnilitskyi[4]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Belarusian State University, Energy Physics, Minsk, Belarus*
[3]*Belarusian State University, Computer Modelling, Minsk, Belarus*
[4]*University of Modena and Reggio Emilia, Department of Engineering Sciences and Methods, Modena, Italy*

LM-PS-3
Investigation of dynamics of plasmon resonance conditions at the interface of an aqueous solution of copper phthalocyanine - Ag film.
M. Kononov[1], V. Pustovoy[1], V. Svetikov[1]
[1]*Prokhorov General Physics Institute of the Russian Academy of Sciences, laser phisics, Moscow, Russian Federation*

LM-PS-4
Study of the dynamics of measuring plasmon resonance conditions at the water-film Ag-AgC-C interface.
M. Kononov[1], V. Pustovoy[1], V. Svetikov[1]
[1]*Prokhorov General Physics Institute of the Russian Academy of Sciences, laser phisics, Moscow, Russian Federation*

LM-PS-5
Study of the dynamics of plasmon resonance conditions at the water-film Ag interface.
M. Kononov[1], V. Pustovoy[2], V. Svetikov[1]
[1]*Prokhorov General Physics Institute of the Russian Academy of Sciences, laser phisics, Moscow, Russian Federation*
[2]*Prokhorov General Physics Institute of the Russian Academy of Sciences, Laser Physics, Moscow, Russian Federation*

LM-PS-6
An analysis of the nonequilibrium ionization of silicon vapor under the influence of pulsed laser radiation will be presented at ALT 2019 in Prague
O. Koroleva[1], V. Mazhukin[1], A. Mazhukin[1], E. Bykovskaya[1]
[1]*Keldysh Institute of Applied Mathematics of Russian Academy of Sciences KIAM RAS, Mathematical Modelling, Moscow, Russian Federation*

LM-PS-7
A report on mathematical modeling of dynamic metal fragmentation with ultrashort laser pulses will be presented at ALT 2019 in Prague
V. Mazhukin[1], A. Shapranov[1], M. Demin[1], A. Aleksashkina[1]
[1]*Keldysh Institute of Applied Mathematics of Russian Academy of Sciences KIAM RAS, Mathematical Modelling, Moscow, Russian Federation*

LM-PS-8
Femtosecond and picosecond laser-induced damage thresholds of semiconductors in air and water
M. Stehlík[1,2], C. Liberatore[1], I. Mirza[1], N.M. Bulgakova[1,3], A.V. Bulgakov[1,3]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Praha, Czech Republic*
[3]*Kuteteladze Institute of Thermophysics, Siberian Branch of RAS, Novosibirsk, Russian Federation*

LM-PS-9
Role of adsorbed water in fs laser nanoablation of diamond
V. Gololobov[1], V. Kononenko[1], V. Konov[1]
[1]*Prokhorov General Physics Institute of the Russian Academy of Sciences, Natural Scienses Center, Moscow, Russian Federation*

LM-PS-10
Multi-octave blue shift of Femtosecond Mid-IR Light Bullet
A. E. Dormidonov[1], V. Kandidov[2], S. Chekalin[3], V. Kompanets[3]
[1]*VNIIA, Research Center for Pulse Technique, Moscow, Russian Federation*
[2]*Moscow Lomonosov State University, Physics Department, Moscow, Russian Federation*
[3]*Institute of Spectroscopy RAS, Laser Spectroscopy, Moscow, Russian Federation*

LM-PS-11
Surface treatment by nanosecond laser for diffusion welding
S. Mikolutskiy[1], T. Malinskiy[2], V. Yamshchikov[3], Y. Khomich[2]
[1]*Institute for Electrophisics and Electric Power RAS, Laboratory 5, Saint Petersburg, Russian Federation*
[2]*Institute for Electrophisics and Electric Power RAS, Laboratory 3, Saint Petersburg, Russian Federation*
[3]*Institute for Electrophisics and Electric Power RAS, Branch of Institute for Electrophisics and Electric Power RAS, Saint Petersburg, Russian Federation*

LM-PS-12
Electron dynamic near silicon surface irradiated by ultrashort laser pulse
D. Polyakov[1], E. Yakovlev[1]
[1]*ITMO University, Faculty of Laser Photonics and Optoelectronics, Saint-Peterburg, Russian Federation*

LM-PS-13
Fabrication of samarium nanoparticles by femtosecond laser ablation in liquid
E. Popova-Kuznetsova[1], A. Popov[1], G. Tikhonovsky[1], S. Klimentov[1], V. Duflot[2], I. Zavestovskaya[1], A. Kabashin[1,3]
[1]*MEPhI- Institute of Engineering Physics for Biomedicine PhysBio, Bio-nanophotonics Laboratory, Moscow, Russian Federation*
[2]*Scientific-Research Physical Chemistry Institute, Branch of the L. Ya Karpov, Obninsk, Russian Federation*
[3]*Aix Marseille University- CNRS, LP3 laboratory, Marseille, France*

LM-PS-14
Hydrodynamic modelling and simulations of collisional shockwaves in gas targets for the optimisation of collisionless shock acceleration of ions
S. Passalidis[1,2], O. Ettlinger$_2$, G. Hicks[2], N. Dover[2,3], Z. Najmudin[2], E.P. Benis[4], E. Kaselouris[1], N.A. Papadogiannis[1], M. Tatarakis[1], V. Dimitriou[1]
[1]*Hellenic Mediterranean University, Institute of Plasma Physics & Lasers, Rethymno, Greece*
[2]*Imperial College, The John Adams Institute - The Blackett Laboratory, London, United Kingdom*
[3]*National Institutes for Quantum and Radiological Science and Technology (KPSI-QST), Kansai Photon Science Institute, Kyoto, Japan*
[4]*University of Ioannina, Department of Physics, Ioannina, Greece*

Poster session HiLASE WORKSHOP

HiLASE-PS-1
Development of 2 um fiber front-end for Ho:YAG thin disk amplifier
J. Huynh[1,2], J. Černohorská[1,2], M. Písařík[1], P. Peterka[3], M. Smrž[1], T. Mocek[1]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Czech Technical University in Prague- Faculty of Nuclear Sciences and Physical Engineering, Department of Physical Electronics, Praha, Czech Republic*
[3]*Institute of Photonics and Electronics ASCR- v.v.i, Fiber lasers and non-linear optics, Praha, Czech Republic*

HiLASE-PS-2
Robotic arm HMI for laser shock peening applications
M. Böhm[1,2], J. Kaufman[1], J. Brajer[1], T. Mocek[1]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague, Czech Republic*

HiLASE-PS-3
Method in vacuum to align and bond precision opto-mechanical components required for space applications
S. Priya[1], P. Ribes Pleguezuelo[1], T. Bolz[1], S. Wendt[1], M. Mohaupt[1], E. Beckert[1], E. Wille[2], M. Bavdaz[2], A. Tünnermann[1]
[1]*Fraunhofer Institute for Applied Optics and Precision Engineering IOF, Precision Engineering, Jena, Germany*
[2]*European Space Agency - ESA/ESTEC, Optics, Noordwijk, Netherlands*

Poster session PHOTONICS: FUNDAMENTALS, APPLICATIONS AND INTEGRATION

PH-PS-1
Nanoscale Profilometry Based on Spectrally Resolved White-Light Interferometry
I. Likhachev[1], V. Pustovoy[2]
[1]*General Physics Institute, Laser Physics, Moscow, Russian Federation*
[2]*General Physics Institute, Laser Physics Department, Moscow, Russian Federation*

PH-PS-2
Luminescent temperature control of up-conversion nanoparticles
V. Kochubey[1,2], A. Pravdin[1], Y. Konukhova[1], A. Skaptsov[1], E. Sagaidachnaya[1], I. Yanina[1,2], N. Kazadaeva[1], A. Doronkina[1], V. Tuchin[1,2,3], E. Genina
[1]*Saratov State University, Physical, Saratov, Russian Federation*
[2]*Tomsk State University, Interdisciplinary Laboratory of Biophotonics, Tomsk, Russian Federation*
[3]*Institute of Precision Mechanics and Control RAS, Laboratory of Laser Diagnostics of Technical and Living Systems, Saratov, Russian Federation*

Poster session ADVANCED LASER PROCESSING AND LASER SYNTHESIS OF MATERIALS

LP-PS-1
Determination of surface modification and nonlinear absorption thresholds of Si and Ge using mid-infrared ultrashort laser pulses
J. Sladek[1,2], I. Mirza[1], A.V. Bulgakov[1,3], Y. Levy[1], W. Marine[1], B. Csanaková[1,4], L. Roškot[1,4], O. Novák[1], N.M. Bulgakova[1], M. Smrž[1]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Faculty of Nuclear Sciences and Physical Engineering- Czech Technical University in Prague, Department of Solid State Engineering, Prague, Czech Republic*
[3]*Siberian Branch of Russian Academy of Sciences, S.S. Kutateladze Institute of Thermophysics, Novosibirsk, Russian Federation*
[4]*Faculty of Nuclear Sciences and Physical Engineering- Czech Technical University in Prague, Department of Physical Electronics, Prague, Czech Republic*

LP-PS-2
High removal rate laser machining of Zirconia with nanosecond pulsed laser
D. Panov[1], V.N. Perovskiy[1], D.V. Ushakov[1], A.S. Schekin[1], E.D. Ishkinyaev[1]
[1]*National Research Nuclear University MEPhI, Department of Laser Physics, Moscow, Russian Federation*

LP-PS-3
Hydrophobic surfaces obtained with nanosecond pulsed laser on stainless steel and dependence on its parameters
D. Panov[1], V.N. Petrovskiy[1], A.S. Schekin[1], M.P. Pashalov[1], E.D. Ishkinaev[1]
[1]*National Research Nuclear University MEPhI, Department of Laser Physics, Moscow, Russian Federation*

LP-PS-4
Laser synthesis of the LiCoO2 thin films
L. Parshina[1], O. Novodvorsky[1], O. Khramova[1]
[1]*ILIT RAS – Branch of the FSRC «Crystallography and Photonics» RAS, Laboratory of nanostructures and thin films, Shatura, Russian Federation*

LP-PS-5
Laser-assisted deposition of carbon nanocomposites
G. Shafeev[1], I. Rakov[1], N. Melnik[2]
[1]*Prokhorov General Physics Institute of RAS, Wave Research Center, Moscow, Russian Federation*
[2]*Lebedev Physical Institute, Solid state physics, Moscow, Russian Federation*

LP-PS-6
Modeling of laser crystallization of thin amorphous layers of silicon under experimental conditions of cw laser irradiation
J. Beránek[1], O. Aktas[2], S. MacFarquhar[2], Y. Franz[2], S. Mailis[3], N. M. Bulgakova[1], A. C. Peacock[2]
[1]*HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic*
[2]*Optoelectronic Research Centre, University of Southampton, Southampton, United Kingdom*
[3]*Skolkovo Institute of Science and Technology, Center for Photonics and Quantum Materials, Skolkovo, Russian Federation*

LP-PS-7
Novel polymers for selective laser sintering: a new approach to 3D printing
S. Minaeva[1], M. Syachina[1], A. Mironov[1], N. Minaev[1], E. Krumins[2], S. Howdle[2], V. Popov[1]
[1]*Institute of Photon Technologies of Federal Scientific Research Centre "Crystallography and Photonics" of Russian Academy of Sciences, Laboratory of Supercritical Fluid Technologies, Moscow, Russian Federation*
[2]*University of Nottingham, School of Chemistry, Nottingham, United Kingdom*

LP-PS-8
Photocatalytic activity of TiOxNy nanostructures prepared by pulsed laser ablation in water
A.M. Mezzasalma[1], S. Spadaro[1], F. Barreca[1], F. Neri[1], E. Fazio[1]
[1]*Università di Messina, Dipartimento di Scienze Matamatiche e Informatiche- Scienze Fisiche e Scienze della Terra, Messina, Italy*

LP-PS-9

Review of experimental results of laser shock processing in Al 6061-T6 samples in the last 15 years in Mexico

G. Gomez-Rosas[1], C. Rubio-González[2], M.Á. Santana-Aranda[1], J.G. Quiñones-Galván[1], G. Garcia-Torales[3], V. Granados--Alejo[2], E. Castañeda[4], C.A. Reynoso-García[4], S. Hereñú[5], J.L. Ocaña-Moreno[6]

[1]Centro Universitario de Ciencia Exactas e Ingenierías- Universidad de Guadalajara, Departamento de Física, Guadalajara, Mexico

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LP-PS-10

Simplified model for estimations of threshold fluences for laser melting and evaporation of nanoparticles

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LP-PS-11

Simulation of hole drilling in glass using ultrashort pulse laser in consideration of heat accumulation

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LP-PS-12

Surgical elimination of deformations of the facial skeleton using the method of computer virtual planning and laser stereolithography technology

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LP-PS-13

Deposition of oxide nanostructures by nanosecond laser ablation of silicon in oxygen-containing background gas

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LP-PS-14

Compressed laser-induced μ-plasma (CLIμP) for fused silica structuring: ps vs ns

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LP-PS-15

Laser printing of silver screen printing inks

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Poster session LASER SYSTEMS AND MATERIALS

LS-PS-1

Cation-deficient sodium-gadolinium molybdates: structure, modeling, energy transformation

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LS-PS-2

Verdet constant of rare-earth-sesquioxide-based magneto-active ceramics

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LS-PS-3

Structural features and optical properties of $Ca_3(VO_4)_2$:Mn laser crystals

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LS-PS-4

Laser operation of a novel Ho:GdYAP crystal under 1948-nm Tm-fiber laser pumping

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LS-PS-5

Diode pumped cryogenic Tm:Y_2O_3 ceramic laser

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LS-PS-6

Radiation hardness of Nd:$GdVO_4$ laser crystal

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LS-PS-7

Influence of electron and proton irradiations on the optical characteristics of $La_3Ga_{5,5}Ta_{0,5}O_{14}$ and $Ca_3TaGa_3Si_2O_{14}$

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LS-PS-8

High-Quality Factor crystalline Silicon WGM microresonators for near and mid-IR wavelengths

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LS-PS-9

Growth and polarization-resolved spectroscopy of monoclinic Yb^{3+}:$ZnWO_4$ crystals

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LS-PS-10

Domain kinetics and periodical poling in Rb:$KTiOPO_4$ and $KTiOAsO_4$ single crystals for laser light frequency conversion

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LS-PS-11

A kW-level small core diameter fiber pump system for Nd:YAG lasers

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LS-PS-12

Synchronously pumped crystalline Raman lasers with combined frequency shift

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LS-PS-13

Stimulated Brillouin scattering phase conjugate mirror (SBS-PCM) using purified liquid medium for high average input

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LS-PS-14

Generation and properties of dissipative Kerr solitons in optical microresonators with backscattering

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Poster session LASER DIAGNOSTIC AND SPECTROSCOPY

LD-PS-1

Using of laser irradiation for the diagnosis of polar state in dielectrics

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LD-PS-2

Nonlinear optical diagnostics of perovskite thin films of lead zirconate titanate

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LD-PS-3

Laser-induced modifications of optical properties in molybdenum disulfide covered by bismuth telluride

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LD-PS-4

Affect of phthalocyanine lutetium on the optical properties of silicon carbide nanoparticles

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LD-PS-5

Optical properties of polymer semiconductor

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Poster session THZ PHOTONICS

THz-PS-1

High-Sensitive Sensor based on a THz Asymmetric Split-Loop Resonator with an Outer Square Loop

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THz-PS-2

Determination of changes in the ratio of water / fat in adipose tissue when heated using terahertz technology

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THz-PS-3

Generation of tunable THz radiation at the difference frequency in a single crystal ZnGeP2 when pumped by two-frequency radiation at wavelengths ~ 2.12 μm

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Poster session BIOPHOTONICS

B-PS-1

Determination of stress-related characteristics of blood vessel walls using endoscopic optical coherence elastography

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B-PS-2

Numerical simulation of optical coherence tomography interference signal occurring in the intravascular space

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B-PS-3

Resting-state functional connectivity revealed by optical neural and hemodynamic signals

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B-PS-4

Optical clearing of human gingival mucosa: in vitro studies

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B-PS-5

Photothermal effect of gold nanoparticles in various modifications and infrared (808 nm) laser radiation on S. aureus

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B-PS-6

comparative study of multivariative analysis methods of blood raman spectra classification was performed

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B-PS-7

Laser additive formation of hybrid tissue-engineering matrices for the reconstruction of complex skeletal tissues

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B-PS-8

Probe-based confocal laser endomicroscopy for cellular imaging

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B-PS-9

Space-Selective Tailoring Of Porous Glass Matrx Density Via Femtosecond Laser Pulses

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B-PS-10

Numerical simulation for magnetic nanoparticles drug delivery with laser photothermal therapy

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B-PS-11

Spectral Features of Conventional Raman Spectroscopy and Autofluorescence Analysis of Human Skin in Patients With Kidney Failure Were Studied

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VIII. Notes

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