ALT'18

Tarragona, Spain
September 9-14 · 2018

PROGRAM BOOK

ALT INTERNATIONAL CONFERENCE
Advanced Laser Technologies

UNIVERSITAT ROVIRA i VIRGILI · GPI RAS · CLTM · FiCMA · Lomonosov Moscow State University · FYLA WE LASER THE NEW INDUSTRY · ILC MSU · MEPhI · SECPhO Light Technologies Cluster

ALT'18

The 26th International Conference on Advanced Laser Technologies

September 09-14, 2018 / Tarragona, Spain

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I. Welcome Letter

Welcome to the 26th Advanced Laser Technologies (ALT) international conference. It is our honor and pleasure to organize the 26th ALT in Spain in the city of Tarragona from September 9th to 14th, 2018 (ALT'18). We are excited that you have decided to share your latest research results, and to discuss within the scientific community.

ALT'18 aims to bring together presentations on fundamental and engineering aspects of laser technologies along with their applications in many areas (materials processing, laser medicine, photonic devices, systems for process control, etc.). ALT'18 will be a unique mixture of specialists and thus a possibility of making new personal contacts and exchanging scientific and technological data and ideas between different scientific schools.

ALT'18 will cover the following topics in different sessions:

- Laser-Matter Interaction
- Laser Systems and Materials
- Biophotonics
- Laser diagnostics and spectroscopy
- Nonlinear Optics and Photonics
- THz sources and applications

Besides the scientific activity we will offer you some social events to learn more about the city of Tarragona as well as the region.

Let me thank the University Rovira i Virgili for providing the conference location as well as all the sponsors for making possible the organization of the conference.

We hope you enjoy all the events and take full advantage of the scientific sessions and networking opportunities waiting for you.

Welcome to ALT'18 and welcome to Tarragona

Dr. Xavier MATEOS

Program-Committee Co-Chair
University Rovira i Virgili, URV

II. Organizers and Sponsors

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

Universitat Rovira i Virgili | the Public University of Tarragona
www.urv.cat/en

Center for Laser Technology and Material Science

Research group FiCMA, URV
www.urv.cat/dquimfi/ficma/en

Lomonosov Moscow State University

International Laser Center of Lomonosov Moscow State University

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

SECPhO - Southern European Cluster in Photonics and Optics
www.secpho.org

Diputació de Tarragona

Centre Tecnologic de Catalunya
www.eurecat.cat

Fyla Company
www.fyla.com

III. Committees

- **Conference Chairman :** Ivan SHCHERBAKOV (Russia)

- **Program Committee Co-Chairs** : Vitaly KONOV (Russia)
  Xavier MATEOS FERRÉ (Spain)

- **Organizing Committee Co-Chairs** : Vladimir PUSTOVOY (Russia)
  Francesc DÍAZ (Spain)

- **International Program Committee** :

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Ekaterina BORISOVA (Bulgaria)
Nadezhda BULGAKOVA (Czech Republic)
Zhongping CHEN (USA)
J.-L. COUTAZ (France)
Aladar CZITROVSKY (Hungary)
Boris DENKER (Russia)
Dan DUMITRAS (Romania)
Mikhail GLYAVIN (Russia)
Thomas GRAF (Germany)
Sergey GARNOV (Russia)
Leonid GOLOVAN (Russia)
Lili HU (China)
Pavel KASHKAROV (Russia)
Sergey KLIMENTOV (Russia)
Yuri KULCHIN (Russia)
Sunao KURIMURA (Japan)
Yong Feng LU (USA)
Vladimir MAKAROV (Russia)
Tomas MOCEK (Czech Republic)
Ion MIHAILESCU(Romania)
Tadao NAGATSUMA (Japan)
Beat NEUENSCHWANDER (Switzerland)
Kyung Hyun PARK (Korea)
Valentin PETROV (Germany)
Alexander PRIEZZHEV (Russia)
Junle QU (China)
Philippe DELAPORTE (France)
Marc SENTIS (France)
Alexander SHKURINOV (Russia)
Valery TUCHIN (Russia)
Vadim VEIKO (Russia)
Haohai YU (China)
Victor ZADKOV (Russia)
Irina ZAVESTOVSKAYA (Russia)

- **International Organizing Committee**

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Maria Cinta PUJOL (Spain)
Gemma SÁNCHEZ (Spain)
Josep Maria SERRES (Spain)
Anton SIZIKOV (Russia)
Rosa Maria SOLÉ (Spain)

IV. Conference Information

Venue

The ALT Conference will take place at the Rovira i Virgili University, which is situated in the city of Tarragona, in the south of Catalonia.

Address: Universitat Rovira i Virgili Campus Catalunya, Avinguda Catalunya 35, Tarragona. Sessions will take place in buildings D1 and A2:

General information:

- Conference Language

The official language of the conference is English.

- Currency

The Euro is the official currency in Spain. Major credit cards (VISA, Mastercard/Eurocard, American Express, Diners) are generally accepted in airports, train stations, hotels, shops, restaurants, and transportation including taxis.

- Electricity

Electricity in Spain is the standard European system 230 V/50 Hz. Round and flat European style plugs are used. Appliances designed to operate on 110/120 Volts need a voltage converter and a plug adapter.

- Time Zone

Central European Time zone; Greenwich (GMT) +1 hour;
Daylight Saving Time: GMT +2 hours from last Sunday in March to last Sunday in October.

- Taxis number:

Agrupació Radio Taxi Tarragona (+34) 977 221 414
Taxis Tarragona (+34) 977 221 414

Wi-Fi

Free Wi-Fi is available for ALT'18 participants.

- Network: ALT_2018
- Password: alt2018urv

V. Plenary Speakers

Prof. Luis Roso

Spanish Center for Pulsed Lasers, CLPU, Villamayor, Salamanca, Spain

Title: High Repetition Rate Petawatt Lasers: technological challenges and solutions

Abstract

Chirped Pulse Amplification allowed a very relevant increase of the laser peak power of sub-picosecond lasers. Now terawatt lasers are relatively common, petawatt (PW) lasers are operative in a number of laboratories around the world, and 10 PW lasers are under construction. The present world record of laser peak power is above 4 PW.

Arriving to the PW or to 10 PW is possible thanks to the solution of a number of bottlenecks during the last decade: Those include, high optical quality large crystal growing, pumping lasers, large diffraction gratings, pulse contrast enhancement, reduction of amplified spontaneous emission, and many others. Most of the initial PW laser systems were able to fire at single shot, with minutes or hours to cool down the amplifiers and the pumps between shot and shot. Technology evolves increasing the peak power, and increasing the repetition rate. At present, there are only three PW lasers operative in the word able to fire at one shot per second: BELLA (at Berkeley, California), DRACO (at Dresden, Germany) and VEGA (at CLPU, Salamanca, Spain), and there are a few multi-PW lasers at this or higher repetition rates under construction (mainly in relation to the Extreme Light Infrastructure, ELI).

PW level experiments at high repetition rate (one shot per second or more) present a lot of challenges. Some of the challenges come from the laser operation, and some other challenges are related to the focusing systems and targeting.

PW lasers are considered as the future particle accelerators. A PW can accelerate electrons to GeV energies or protons to ten MeV, and acceleration occurs just in a few mm. While arriving to those limits on single shot regime is quite straightforward now, arriving at one shot per second is still quite demanding. In the present talk, the state of the art of sub-picosecond PW and multi PW laser technology is going to be reviewed, as well as the possibilities to perform experiments at high repetition rate. This talk pretends to answer (briefly) two questions: what are the difficulties and limits of high repetition rate PW lasers; and how is it possible to design useful experiments (or useful accelerators) that use the full power and the full repetition rate.

Biography

Prof. Luis Roso was born in Barcelona, Catalonia in December 1955. In 1977, he was double graduated in Physics and Mathematics (simultaneously), at the University of Barcelona, and in 1981, he received the PhD in Physics at the Autonomous University of Barcelona (Advisor Ramón Corbalán).

Prof. Roso was Fulbright Scholar at the University of Rochester, NY, USA, on leave from the Autonomous University of Barcelona. He currently is Catedrático Numerario (Full Professor with Tenure) at the Applied Physics Department of the University of Salamanca from 1992. He established, from

scratch, a stable recognized research group on ultraintense lasers starting from the first Spanish terawatt laser, in 2003, to the first Spanish petawatt laser, in 2016.

He recently received the Maria De Maeztu Price of Research Excellence, Given by the University of Salamanca.

Since 2008, Prof. Roso is the Director of CLPU, and promoter of its creation. The Center for Pulsed Lasers (Centro de Láseres Pulsados, CLPU) is a national facility specialized in femtosecond laser pulses with high peak powers. CLPU main laser system is VEGA, the Spanish PW (30J/30fs at one shot per second) opened now to the domestic and international scientific community though competitive access. This is a join appointment with the Professorship.

He is author of more than 200 publications in Scientific Journals on quantum optics, strong laser fields, high harmonic generation, ultrafast laser technology, laboratory astrophysics, nuclear fusion, etc., with more than 100 invited talks in international meetings and 5 patents related to laser technology.

Besides scientific production, Prof. Roso has been devoted to introduce in Spain ultraintense laser technology, the technology he learned about during the Fulbright fellowship at Rochester. Now Spain is in the ultraintense lasers World Map.

It is worth to say that the main scientific contribution of Prof. Roso is not in papers or talks. He was the promoter and is the director now of CLPU. Designing and building such a system, particularly in Spain, is a master challenge. Although the laser itself was made by Amplitude Technologies, Prof. Roso lead the design of the laser architecture (the three arms of VEGA are unique), the laser bay, the laser target area, the experimental chambers, the beam transport, and many more things. This is a time consuming task of a very high scientific level, designed for users.

Prof. Petr Nikitin

Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russia

Title: Ultrasensitive optical monitoring of interactions between biomolecules and nanoparticles: applications for advanced biosensors

Abstract

Several original highly sensitive optical methods are introduced for advanced biosensing. These include the phase surface plasmon resonance (SPR), the spectral-correlation interferometry(SCI) and spectral-phase interferometry (SPI), combined SPR and SERS chemical sensing on optoelectronic Au-Si grating microstructures, localized SPR on gold nanoparticles interacting with other type of particles, etc. We have shown that using phase peculiarities of light reflected under the SPR can improve sensitivity by 2 orders of magnitude compared to the traditional techniques that detect a shift of intensity minimum. The sensitivity of label-free SCI and SPI based on functionalized glass slips employed as affordable single-use sensor chips is sufficient for many biomedical applications, food safety monitoring, e.g.,detection of protein disease markers, mycotoxins, metabolite products of pyrethroids, for studies of smart polymers and mechanisms of drug action, etc. Besides, the sensitivities of these methods can be further increased by 3 orders of magnitude by nanoparticles to fit the clinical ranges of modern cardio and cancer diagnostics.

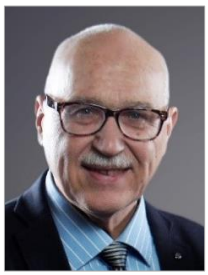
The designed optical sensing systems were also used as effective auxiliary tools for development of ultrasensitive electronic biosensors based on magnetic nanolabels, e.g., for optimization of dry-reagent immunomagnetic (DRIM) biosensing platform for rapid high-precision quantitative analyses of complex mediums. The platform utilizes a highly sensitive method of magnetic particle quantification that provides record detection limit up to 39 pg of magnetic nanolabels and extremely wide linear dynamic range of 7 orders. The DRIM platform permits detection in human serum of as low as 25 pg/ml of total prostate specific antigen within 30 min. Besides, multiplex biosensing platforms were developed to measure very low concentrations of botulinum neurotoxins, staphylococcal enterotoxins, free thyroxine, thyroid-stimulating hormone, cardiac troponin and DNA.

In addition, the mentioned optical methods have demonstrated high efficiency in developments of intelligent biosensing nanoagents that can employ molecular interactions to perform any Boolean logic function, of smart materials based on self-assembly and disassembly of nanoparticles, for creation of new logic-gated nanosensors capable of autonomous processing of multiple biochemical cues according to the Boolean logic rules and perform a biomedical action depending of the computation results. Such intelligent multifunctional nanoagents are promising for targeted drug delivery based on multiplex *in vivo* biosensing to be used in potential nanorobotics applications.

Biography

Petr I. Nikitin was born in 1956. He received his MS with Honors and Ph.D. from the renowned Moscow Institute of Physics and Technology in 1979 and 1983, respectively. Over the years, he has been the Head of Biophotonics Laboratory at the Prokhorov General Physics Institute, RAS. Dr. P. Nikitin has developed several highly sensitive optical methods for direct monitoring of molecular interactions with compact instruments, the phase surface plasmon resonance (SPR) for optical chemo- and biosensors, optoelectronic sensors based on the SPR and SERS on Au-Si grating structures, the methods of spectral-correlation and spectral-phase interferometry, several pioneering nanotechnology-

based biosensors for medical diagnostics, food control, environmental monitoring and detection of biological weapons. Discovered new phenomena such as ferromagnetic liquid nano-droplets, reversible interaction of gold films with electroactive gases, investigated magnetic and electric fields generated by laser plasma. He also invented the ultrasensitive method of magnetic particle quantification (MPQ) based on non-linear magnetization of nanoparticles and applied it for in vitro diagnostics and in vivo biomedical studies. The biocomputing nanoparticles for theranostics is another breakthrough development featured on the cover page of the Nature Nanotechnology journal. The author of more than 150 papers in high-ranking journals, 350 conference papers and 30 granted patents. He was awarded the Kapitza Fellowship from the Royal Society (Great Britain, 1995). Dr. Nikitin has successfully directed research projects supported by EC, INTAS, ISTC, the Royal Society of Great Britain, the Swiss National Science Foundation, RSF and RFBR. Member of International Advisory Committees of several major conferences: Europt(r)ode, EMSA, etc.



Prof. Valery Tuchin

Saratov State University, Tomsk State University, ITMO University, Institute of Precision Mechanics and Control RAS, Russia

Title: Optical clearing as a promising technology for in vivo laser diagnostics and treatment of hidden pathologies

Abstract

Many laser spectroscopic and imaging technologies applied in a wide wavelength range from UV to terahertz suffer from a low penetration depth of a probing beam and blurring of images caused by light scattering and absorption. One of the robust ways to overcome these problems is to use a so-called optical clearing (OC) technology based on tissue or cell impregnation by a biocompatible OC agent (OCA). In this lecture, OC methods aimed the enhancement of laser spectroscopy, imaging and treatment of living tissues and cells in a broad range of wavelengths from UV to terahertz will be presented. OC approach is based on controllable and reversible modification of optical properties of tissue or cell by their impregnation with an OCA.

The OC method explores three major concepts: refractive index matching of scatterers and surrounding medium, reversible dehydration caused by OCA osmolarity, and reduction of hydrodynamic radius of scattering particles at their interaction with OCA molecules. As OCAs a variety of hyperosmotic, cryogenic and x-ray contrast liquids, such as glycerol, PEG, glucose, fructose, sucrose, mannitol, dextrans, propylene glycol, ethylene glycol, Omnipaque™ and some others, are considered and tested. Water transport and modification of tissue mechanical properties under OCA action such as reversible dehydration and shrinkage, balance of free and bound water are of great importance for successful application of such technology and thus will be analyzed in detail.

A significant probing depth and image contrast increase at application of OCAs to different human and animal tissues, such as skin, fat, eye sclera, muscle, cerebral membrane, digestive tract tissue, cartilage, bone, blood vessels, and blood, will be demonstrated using spectrophotometry, OCT, photoacoustic microscopy, linear and nonlinear fluorescence, SHG and Raman microscopies, polarization and speckle imaging. The technologies for effective OCA delivery due to hidden free diffusion, local heating, enforced tissue permeability (physical and chemical), OCA encapsulation, and blood and lymph vessel networking will be described. Impact of OCAs on tissue structure, free/bound water balance and blood microcirculation will be quantified. Experimental data on diffusivity and permeability of glucose, glycerol, PEG, Omnipaque™ and other OCAs for normal and pathological tissues will be presented.

Biography

Valery V. Tuchin is a Professor and holds the Chair/Institute of Optics and Biophotonics of Saratov State University (National Research University of Russia). He is also a Head of Laboratory on Laser Diagnostics of Technical and Living Systems, Institute of Precision Mechanics and Control, RAS, a supervisor of Interdisciplinary Laboratory on Biophotonics of Tomsk State University (National Research University of Russia) and Laboratory of Femtomedicine at ITMO University, Guest Professor of HUST (Wuhan) and Tianjin Universities of China, and Adjunct Professor of the Limerick University (Ireland) and National University of Ireland (Galway). His research interests include biophotonics, tissue optics, laser medicine, tissue optical clearing, and nanobiophotonics. He has published more than 700 papers

(Web of Science), 27 monographs and textbooks, and 58 book chapters. Prof. Tuchin is also a holder of more than 50 patents. His h-index is 64 with 19096 total citations (Google Scholar).

He is a fellow of SPIE and OSA, has been awarded Honored Science Worker of the Russia, Honored Professor of Saratov University, SPIE Educator Award, Finnish Distinguished Professor - FiDiPro (Finland), Chime Bell Prize of Hubei Province (China), and Joseph W. Goodman Book Writing Award (OSA/SPIE). Prof. Tuchin is the recipient of the 2016 NanQiang Life Science Series Lectures Award of Xiamen University, China.

Prof. Klaus Sokolowski-Tinten

Faculty of Physics and Center for Nanointegration (CENIDE), University of Duisburg-Essen, Duisburg, Germany

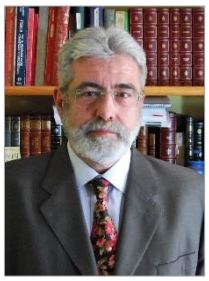
Title: Non-equilibrium structural dynamics in laser-driven materials

Abstract

Ultrafast laser excitation of solids creates highly non-equilibrium states of materials which subsequently may lead to very rapid structural changes. Time-resolved diffraction using modern high brightness femtosecond X-ray or electron sources allows to directly follow these processes with atomic scale spatial and temporal resolution even under excitation conditions where the irradiated sample is irreversibly modified. In this contribution I will discuss some examples of our work in this field carried out at X-ray free electron laser as well as using ultrashort electron pulses:
(1) We have carried out time-resolved transmission electron diffraction experiments at the MeV Ultrafast Electron Diffraction (UED) at SLAC National Accelerator Laboratory to study non-equilibrium energy relaxation and transport in nanoscale materials after fs laser excitation. Precise measurements of the transient Debye-Waller-effect in different metal-insulator and metal-metal-heterostructures highlight the importance of interface effects and reveal the competition between local relaxation and transport. At stronger excitation levels phase transitions may occur. Experiments on Au give direct evidence for a transition from heterogeneous melting at lower fluences to a homogeneous process at higher fluences.
(2) Chalkogenide-based phase change materials (PCMs) exhibit rapid and reversible phase transitions between an amorphous and a crystalline state, which can be triggered by short light or electrical pulses. Since the structural changes are associated with large differences in the electronic of the two phases, PCMs are used for non-volatile electronic memory applications. Single pulse time-resolved X-ray scattering at the LCLS free electron laser has been used to study the phase transition dynamics in different laser-excited PCMs, providing a complete picture of the structural changes during switching at an atomic level and on the relevant time-scales. The response was found to be similar for all investigated materials involving fast melting on sub-ps to ps time-scales, resolidification into an intermediate amorphous-like state within a few ns, eventually followed by the formation of the final amorphous or crystalline state on a tens of ns to µsscale. These time-scales imply purely thermal mechanisms despite the high degree of electronic excitation initially created by fs laser irradiation. Our data suggest that a liquid-liquid structural phase transition in the deeply undercooled state enables fast and long-term data storage in PCMs.

Biography

Klaus Sokolowski-Tinten is a Senior Staff Scientist and Adjunct Professor at the Department of Physics of the University of Duisburg-Essen. His main interests are in the field of ultrafast laser-material interactions with particular emphasis on the investigation of the structural dynamics under strongly non-equilibrium conditions using advanced time-resolved scattering techniques with femtosecond X-ray and electron pulses.



Prof. Javier Solis

Laser Processing Group, Instituto de Óptica, IO-CSIC, Madrid, Spain

Title: Coherent scatter-controlled phase change grating structures in silicon: Femtosecond-resolved imaging during laser structuring

Abstract

Laser-induced periodic surface structures (LIPSS) are a universal phenomenon observed in dielectrics, semiconductors and metals irradiated with short laser pulses. They appear in the form of a variety of sub-wavelength periodic surface structures with features that depend on the processing parameters. Their formation typically involves material ablation, often leading to an unwanted increase of surface roughness. In this presentation we describe a different type of LIPSS in silicon, based on melting and rapid solidification, combined with self-organization, and leading to the formation of nanograting structures in the form of alternating amorphous and crystalline lines. By controlling the processing parameters, the size of a single fringe can be tuned over the three spatial dimensions over a wide range of values. The fabrication strategy can also be extended into one and two dimensions by scanning the laser beam over the sample surface

We will additionally present a time-resolved experimental technique, namely moving-spot femtosecond microscopy, which is capable to spatially and temporally resolve the birth and growth of individual fringes. By means of the analysis of the images recorded upon laser excitation and comparison to a single pulse reference experiment, the different phase changes locally taking place in the sample can be monitored. We will show that the formation process is initiated by free electron generation, leading to thermal and non-thermal melting, liquid phase overheating and rapid solidification into the amorphous phase

Biography

Javier Solis is Research Professor at the Institute of Optics (IO) of the National Research Council of Spain (CSIC) where he is presently Head of the Department of Non-linear, Ultrafast and Nano-scale Photonics. He has also been Director ((2003-2008) and Deputy Director (2000-2003) of the IO. Since 1992 he is responsible of the Ultrashort Laser Pulse Laboratory of the Laser Processing Group at IO. At present his research interests include: laser-matter interaction, laser processing for optical applications, ultrafast laser micro-and nano-structuring of materials, ultrafast dynamics and non-linear optics. Prof. Solis has published more than 170 research papers in international research journals in these topics. He is Senior Member of the OSA, among other research societies.

Prof. Valentin Petrov

Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany

Title: Progress in the generation of ultrashort light pulses in the 2-micron spectral range by passive mode-locking of Tm and Ho bulk solid-state lasers

Abstract

Mode-locked lasers emitting ultrashort pulses in the 2-μm spectral range at high (~100 MHz) repetition rates are important for time-resolved molecular spectroscopy in this molecular fingerprint region but are also of particular interest as pump sources for synchronously-pumped optical parametric oscillators operating in the mid-IR above 5 μm, including frequency comb generators, as seeders of near-degenerate chirped-pulse optical parametric amplifiers pumped at ~1 μm for highorder harmonic and soft-X-ray generation, for seeding of regenerative amplifirers to boost the pulse energy at lower repetition rates, as well as for IR supercontinuum and THz generation.

Passively mode-locked lasers based on Tm3+- and Ho3+-doped bulk solid-state materials that can be diode-pumped have been under development at the Max Born Institute in Berlin for about a decade. In 2009 we demonstrated for the first time steady-state operation of such a Tm:KLu(WO4)2 laser using a single-walled carbon nanotube (SWCNT) saturable absorber (SA) which generated ~10-ps pulses at 1.95 μm. In 2012 it produced for the first time femtosecond (~140 fs) pulses at 2.037 μm through shifting of the wavelength by a selective outcoupler. In the last year, the study of numerous active media with different SAs resulted in the first generation of sub-100-fs pulses (< 10 optical cycles). Materials with broad and smooth spectral gain profile were selected, naturally emitting above 2 μm to avoid the water vapor absorption/dispersion effect. Few approaches were employed, including anisotropic materials, strong crystal-field distortion in hosts that do not contain rare-earths to be substituted, crystals with structural or compositional (i.e. mixed compounds) disorder that exhibit inhomogeneous line broadening, mixed laser ceramics, and Tm,Ho-codoped crystals.

Desirable properties of SAs include broadband absorption, fast recovery, optimum saturable and low non-saturable losses. A broad absorption band in semiconducting SWCNTs spans from 1.6 to 2.1 μm whereas the absorption of graphene extends into the mid-IR and scales for multilayers, increasing the modulation depth. In both cases the saturation mechanism is related to the filling of states. Apart from the high optical damage threshold and much broader spectral range, the main advantages of the carbon nanostructures over GaSb-based semiconductor SA mirrors (SESAMs) are related to the simple and inexpensive fabrication methods. Chirped mirors were implemented for group-velocity dispersion compensation, to generate the shortest pulses.

Biography

Valentin Petrov received the M.Sc. degree in nuclear physics in 1983, and the Ph.D. degree in optical physics, for work on mode-locked dye lasers, from the Friedrich-Schiller-University, Jena, Germany, in 1988. He worked as an Assistant Professor at the Quantum Electronics Department, Faculty of Physics, University of Sofia, Bulgaria, from 1988 to 1991. After a one year Post. Doc. research visit to the University of Regensburg, Germany, he joined the Max-Born-Institute for Nonlinear Optics and Ultrafast Spectroscopy (MBI) in Berlin, Germany, in 1992. Further research stays abroad include a JRDC STA fellowship at RIKEN (Japan) in 1996-1997 and a visiting professorship to the Université Joseph Fourier (Grenoble, France) in 2014. His research interests include ultrashort light pulses, laser

physics, nonlinear optics, and optical materials. He has co-authored about 500 papers in peer-reviewed scientific journals and about 520 conference presentations. His h-index is 58 with 11150 total citations (Google Scholar). Among the international projects coordinated, he has led two EU consortia within the 6th and 7th Framework Programmes, www.dt-crys.net and www.mirsurg.eu.

Dr. Petrov is a member of the Optical Society of America. He served on the committees of few major international conferences, incl. CLEO, ASSL-ASSP, Europhoton, and Ultrafast Optics, is a regular reviewer for several international optical journals and topical editor (Lasers) in Optics Letters.

Program ALT`18

	September 10, Monday	September 11, Tuesday
07:30	Registration	
08:45-09:00	**Opening**	
09:00-10:30	**Plenary session P-I**	**Plenary session P-II**
10:30-11:00	Coffee break	
11:00-13:00	**Laser-Matter Interaction LM-I** **Laser System and Materials LS-I**	**Biophotonics B-II** **Laser diagnostics and spectroscopy LD-I** **Laser System and Materials LS-III**
13:00-14:30	Lunch	
14:30-16:30	**Laser-Matter Interaction LM-II** **Laser System and Materials LS-II**	**Biophotonics B-II** **Laser diagnostics and spectroscopy LD-II**
16:30-17:00	Coffee break	
17:00-18:30		**Poster session**
19:00	**Welcome Party**	**Program Committee**

	September 12, Wednesday	September 13, Thursday	September 14, Friday
	Excursion		
09:00-10:30		**Plenary session P-III**	09:00-10:30 **Nonlinear Optics and Photonics NL-I** **THz sources and applications THz-I**
10:30-11:00		Coffee break	
11:00-13:00		**Laser-Matter Interaction LM-III** **Laser System and Materials LS-IV** **Biophotonics B-II**	11:00-11:40 **Nonlinear Optics and Photonics NL-I** **THz sources and applications THz-I**
13:00-14:30		Lunch	**11:45 Closing ceremony**
14:30-16:30		**Laser-Matter Interaction LM-IV** **Laser System and Materials LS-V** **Biophotonics B-II**	
16:15-16:30			
16:30-17:00		Coffee break	
19:00		**Conference dinner**	

VI. Scientific Programs

Date and Time	September 10 (Monday) / 09:00-10:30
Place	Room A
Session Title	[P-I] Plenary session I
Session Chair	Vitaly Konov *(Russia)*

P-1 09:00-09:45

[Plenary] High Repetition Rate Petawatt Lasers: technological challenges and solutions

Luis Roso

Spanish Center for Pulsed Lasers, CLPU, Villamayor, Salamanca, Spain

P-2 09:45-10:30

[Plenary] Ultrasensitive optical monitoring of interactions between biomolecules and nanoparticles: applications for advanced biosensors

Petr Nikitin

Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russia

Date and Time	September 10 (Monday) / 11:00-13:00
Place	Room A
Session Title	[LM-I] Laser-Matter Interaction I
Session Chairs	Nadejda Bulgakova (*Czech Republic*), Razvan Stoyan (*France)*

LM-I-1 11:00-11:20

[Invited] Laser matter interaction in the relativistic regime to produce a high photon flux Kα Mo x-ray source

Y. Azamoum, R. Clady, A. Ferré, O. Utéza and M. Sentis

Aix –Marseille Univ, CNRS, LP3, Marseille, France

LM-I-2 11:20-11:40

[Invited] Optoelectronic Applications of Vanadium Dioxide

N. Charipar, R.J. Suess, H. Kim, K. Charipar, S. Mathews, R.C.Y Auyeung, A. Piqué

Naval Research Laboratory, Washington, USA

LM-I-3 11:40-12:00

[Invited] Evidence of non collisional femtosecond laser electron heating in dielectric materials

G. Duchateau, B. Chimier, S. Coudert, E. Smetanina, L. Barilleau, N. Fedorov, P. Martin, G. Geoffroy, and V.T. Tikhonchuk

Universite de Bordeaux-CNRS-CEA, Centre Lasers Intenses et Applications, France

LM-I-4 12:00-12:20

[Invited] Femtosecond ablation of optical crystals featured by long electron lifetime: experimental methods and contributing phenomena

Sergey Klimentov, Stéphane Guizard, Nikita Fedorov, Allan Bildé, Alexandros Mouskeftraras

National Research Nuclear University "MEPhI", General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

LM-I-5 12:20-12:40

[Invited] Experimental investigations of fundamental mechanisms involved in femtosecond laser modification of dielectric materials

Stéphane Guizard, Allan Bildé, Sergei Klimentov, Andrius Melninkaitis, Julius Vaicenavicius, Balys Momgaudis, Nikita Fedorov

CEA/CNRS, Université Paris-Saclay, Ecole Polytechnique, 91128 Palaiseau, France

LM-I-6 12:40-13:00

[Invited] Laser-ablative synthesis of nanophotonic materials for biomedical applications

Irina N. Zavestovskaya

NRNU "MEPhI", Institute of Engineering Physics for Biomedicine (PhysBio), Moscow, Russia

Date and Time	September 10 (Monday) / 11:00-13:00
Place	Room B
Session Title	[LS-I] Laser Systems and Materials I
Session Chair	Boris Denker (*Russia*), Valdas Pasiskevichus *(Sweden)*

LS-I-1 11:00-11:20

[Invited] Photonic Engineered Crystals: Laser Crystals with Embedded Sub-Wavelength Nanophotonics

Airan Rodenas and R. Osellame
Istituto di Fotonica e Nanotecnologie (IFN) - Consiglio Nazionale delle Ricerche (CNR), Milano, Italy

LS-I-2 11:20-11:40

[Invited] Nonlinear optical properties of Langasite crystals

Haohai Yu
Shandong University, Jinan, China

LS-I-3 11:40-12:00

[Invited] Monoclinic monotungstates - novel efficient laser materials

P. Loiko, L. Zhang, H. Lin, G. Zhang, J.M. Serres, E. Kifle, Y. Wang, J. R. Vázquez de Aldana, Carolina Romero, M. Aguiló, F. Díaz, V. Petrov, U. Griebner, Z. Lin, W. Chen, and X. Mateos
Universitat Rovira i Virgili, Tarragona, Spain; ITMO University, St. Petersburg, Russia

LS-I-4 12:00-12:20

[Invited] High-power, narrow-linewidth DUV laser source for advanced semiconductor inspection

Kentaro Miyata, Mizuki Mohara, Kei Shimura, Akihiro Tanabashi, Louis Desbiens, Vincent Roy, Taillon Yves, Shinichi Nakayama, and Satoshi Wada
RIKEN Center for Advanced Photonics, Japan

LS-I-5 12:20-12:40

[Invited] Spectroscopy and laser operation of Yb doped materials at cryogenic temperatures

V. Jambunathan, P. Navratil, S.P. David, F. Yue, A. Lucianetti, T. Mocek
HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Czech Republic

LS-I-6 12:40-13:00

[Invited] Few-cycle, Millijoule, 5 µm Optical Parametric Chirped-Pulse Amplifier at a 1 kHz Repetition Rate

U. Griebner, L. von Grafenstein, M. Bock, D. Ueberschär and T. Elsaesser
Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany

Date and Time	September 10 (Monday) / 14:30-16:30
Place	Room A
Session Title	[LMI-II] Laser-Matter Interaction II
Session Chair	Mark Sentis (*France*), Sergey Klimentov (*Russia)*

LM-I-7 14:30-14:50

[Invited] Effects of spatiotemporal coupling in ultrashort laser pulses upon volumetric modification of transparent dielectrics

Nadezhda M. Bulgakova, Vladimir P. Zhukov, Selçuk Aktürk,
Institute of Physics of the ASCR, Czech Republic

LM-I-8 14:50-15:10

[Invited] Nanoscale processing using ultrafast laser engineered beams

Razvan Stoian
Université Jean Monnet – CNRS, France

LM-I-9 15:10-15:30

[Invited] Laser microstructuring of titanium surface to improve implants biocompatibility

V. P. Veiko, Y. Y. Karlagina, G. V. Odintsova, V. V. Romanov, R. M. Yatsuk, D. S. Kuznetsova
ITMO University, St. Petersburg, Russia

LM-O-1 15:30-15:45

[Oral] Laser control of metal surfaces optical properties due to structural colors formation

G. V. Odintsova, Ya. M. Andreeva, E. I. Ageev, V.C. Luong, M. K. Moskvin and V. P. Veiko
ITMO University, St. Petersburg, Russia

LM-O-2 15:45-16:00

Ultrafast Laser Texturing on Si with Burst-mode Picosecond Laser Pulses

Iaroslav Gnilitskyi, Leonardo Orazi, Tommi White and Vitaly Gruzdev
NoviNano Inc., Lviv, Ukraine, UNIMORE, Modena, Italy

LM-O-3 16:00-16:15

Ion Chamber Array Detector for Laser Accelerated Charged Particle Characterization - Prototype, Measurements and FLUKA Simulation Results

C.E. Matei, R. Vasilache, M.A. Popovici, M. Straticiuc, L. Craciun, D. Stroe5, D. Dumitras
National Institute for Laser, Plasma and Radiation Physics, Romania

LM-I-10 16:15-16:35

[Invited] Nanostructured plasmonic metamaterials for ultrasensitive optical biosensing

Andrei Kabashin
Aix Marseille Univ, CNRS, LP3, Marseille, France

Date and Time	September 10 (Monday) / 14:30-16:30
Place	Room B
Session Title	[LS-II] Laser Systems And Materials II
Session Chair	Valentin Petrov *(Germany)*, Fabian Rotermund *(Korea)*

LS-I-7 14:30-14:50

[Invited] New Nonlinear Crystals for Advanced Mid-IR Laser Sources

Peter Schunemann
BAE Systems, Inc., Nashua, USA

LS-I-8 14:50-15:10

[Invited] Advances in backward-wave optical parametric oscillators

V. Pasiskevicius, A. Zukauskas, A.–L. Viotti, R. S. Coetzee, C. Canalias
Royal Institute of Technology, Stockholm, Sweden

LS-I-9 15:10-15:30

[Invited] Robust optical vortex beam generation from diode-side-pumped solid-state lasers

Weidong Chen, Wenbin Fang, Ruxue Bai, Haifeng Lin and Ge Zhang
Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, China

LS-O-1 15:30-15:45

Transverse optical pumping of e-beam excited high-pressure He/Ar mixture with a laser diode array

A.A. Ionin, A.E.Drakin, I.V. Kholin, A.Yu. L'dov, N.N. Ustinovskii and D.A. Zayarnyi
P.N.Lebedev Physical Institute of Russian Academy of Sciences, Moscow, Russia

LS-O-2 15:45-16:00

Laser Technologies for Manufacturing and Reworking of Marine Engineering Parts

Valeriy M. Levshakov, Natalia A. Steshenkova, Nikolay A. Nosyrev, Artem G. Zhmurenkov
JSC "Shipbuilding & Shiprepair Technology Center", St. Petersburg, Russia

LS-O-3 16:00-16:15

High-precision Measurement Using the Frequency Modulated Continuous Wave Ladar At Long Distance

Hao Pan, Xinghua Qu, Fumin Zhang
Tianjin University, China

LS-O-4 16:15-16:30

Intracavity optical parametric oscillator pumped by a semiconductor disk laser: A numerical modeling of a time-delay system

Yu. A. Morozov, M. I. Balakin, L. A. Kochkurov, A. I. Konukhov
Kotelnikov Institute of RadioEngineering & Electronics, RAS, Saratov, Russia

Date and Time	September 11 (Tuesday) / 09:00-10:30
Place	Room A
Session Title	[P-I] Plenary session I
Session Chair	Xavier Mateos Ferré *(Spain)*

P-3 09:00-09:45

[Plenary] Optical clearing as a promising technology for in vivo laser diagnostics and treatment of hidden pathologies

Valery Tuchin

Saratov State University, Tomsk State University, ITMO University, Institute of Precision Mechanics and Control RAS, Russia

P-4 09:45-10:30

[Plenary] Non-equilibrium structural dynamics in laser-driven materials

Klaus Sokolowski-Tinten

Faculty of Physics and Center for Nanointegration (CENIDE), University of Duisburg-Essen, Duisburg, Germany

Date and Time	September 11 (Tuesday) / 11:00-13:00
Place	Room A
Session Title	[LS-III] Laser Systems and Materials III
Session Chair	Uwe Griebner *(Germany),* Kentaro Miyata *(Japan)*

LS-I-10 11:00-11:20

[Invited] Plasmon-induced narrowband emission and multiline operation from a solid-state nanolaser

D. Hernández-Pinilla, J. Cuerda, P. Molina, M.O. Ramнrez, and L.E. Bausa

Universidad Autónoma de Madrid, Spain

LS-I-11 11:20-11:40

[Invited] Ridge waveguide laser of Nd doped KGd(WO4)2 on SiO2 platform using saw dicing

Marc Medina, Airán Rodenas , Ginés Lifante, Eugenio Cantelar, Christian E. Rüter, Jaume Masons, Detlef Kip, Maria Cinta Pujol, Magdalena Aguiló and Francesc Díaz

Universidad Autónoma de Madrid, Spain

LS-I-12 11:40-12:00

[Invited] All-optical associative memory

Byoung S. Ham

Gwangju Institute of Science and Technology, Korea

LS-O-5 12:00-12:15

Effect of IR, visible, UV and gamma irradiation on optical properties of bismuth doped fibers

A. V. Kharakhordin, S. V. Alyshev, K. E. Riumkin, S. V. Firstov, V. F. Khopin, M. A. Melkumov, A. N. Guryanov, E. M. Dianov

Fiber Optics Research Center, Russian Academy of Sciences, Moscow, Russia

LS-O-6 12:15-12:30

Chromium Doped Forsterite Cr:Mg2SiO4 Laser Crystals Grown from Non-Stoichiometric Melts and Annealed at High-Temperature

V.V.Sanina, K.A.Subbotin, D.A.Lis, V.V.Voronov, E.V.Zharikov

Prokhorov General Physics Institute of Russian Academy of Sciences, Vavilova str. 38, Moscow, Russia

LS-O-7 12:30-12:45

100 kHz, dual-beam, KTA-based noncollinear OPA delivering angular dispersion compensated 50 fs, CEP-stable idler pulses at 3.1 µm

M. Mero, V. Petrov, M. J. J. Vrakking, Z. Heiner

Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany

LS-O-8 12:45-13:00

Passive Q-switching of fs-Laser-Written Thulium Waveguide Lasers by Graphene and MoS2

E. Kifle, J. R. Vázquez de Aldana, C. Romero, A. Ródenas, P. Loiko, H. Yu, H. Zhang, Y. Chen, M. Aguiló1, F. Díaz, U. Griebner, V. Petrov and X. Mateos

Universitat Rovira i Virgili, Tarragona, Spain

Date and Time	September 11 (Tuesday) / 11:00-13:00
Place	Room B
Session Title	[LD-I] Laser Diagnostics and Spectroscopy I
Session Chair	Alexander Milekhin *(Russia)*, Aladar Czitrovszky *(Hungary)*

LD-I-1 11:00-11:20

[Invited] In Vivo Study of Intracellular Processes in Animal Embryo with Stimulated Raman Imaging

M. Veres, L. Himics, I. Rigó, S. Tóth, P. Baranyai, A. Czitrovszky, T. Váczi

Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary

LD-I-2 11:20-11:40

[Invited] Measurements of surgical smoke using optical methods

A. Czitrovszky, A. Nagy,M. Veres,Sz. Kugler,I kreisz, I. Vass, I. Rigó

Wigner Research Centre for Physics of the Hungarian Academy of Sciences, Institute for Solid State Physics and Optics, Budapest, Hungary

LD-I-3 11:40-12:00

[Invited] Characterization of the aerosol plume released during laser tissue interactions

A. Nagy, A. Czitrovszky, M. Veres, Sz. Kugler, I kreisz, I. Vass2, I. Rigo

Wigner Research Centre for Physics of the Hungarian Academy of Sciences, Institute for Solid State Physics and Optics, Budapest, Hungary

LD-I-4 12:00-12:20

[Invited] Optical Spectroscopy and Kinetics of Photoinduced Carriers of 2D Transition Metal Dichalcogenides

S.D. Lavrov, A.P. Shestakova, A.V.Kudryavtsev, L.Q.K. Pham, N.A. Ilyin, E.D. Mishina

MIREA-Russian Technological University, Moscow, Russia

LD-I-5 12:20-12:40

[Invited] Effect of Polymer on Photoluminescence of CdSe Quantum Dots in Amorphous and Liquid-Crystal Matrices

A.V. Elopov, V.B. Zaytsev, D.M. Zhigunov, G.A. Shandryuk, A.A. Ezhov, A.S. Merekalov, L.A. Golovan

Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia

Date and Time	September 11 (Tuesday) / 11:00-13:00
Place	Room C
Session Title	[B-I] Biophotonics I
Session Chairs	Alexander Priezzhev *(Russia),* Herbert Schneckenburger *(Germany)*

B-I-1 11:00-11:20

[Invited] Photodynamic opening of blood-brain barrier: non-invasive approaches and age differences

O.Semyachkina-Glushkovskaya, E. Vodovosova, E. Borisova, A. Khorovodov, A. Terskov, I. Agranovich, A. Mamedova, M. Klimova, C. Zhang, W. Feng, Yu. Li, T. Yu, D. Zhu, V. Tuchin

Saratov State University, Saratov, Russia

B-I-2 11:20-11:40

[Invited] Optical 3D microscopy for visualizing a chemotherapeutic agent

Herbert Schneckenburger, Verena Richter, Petra Weber, and Michael Wagner

Institute of Applied Research, Aalen University, Aalen, Germany

B-I-3 11:40-12:00

[Invited] 25 Years of Biomedical Optoacoustics: From Idea to Optoacoustic Theranostics

Rinat Esenaliev

University of Texas Medical Branch, Galveston, Texas, USA

B-I-4 12:00-12:20

[Invited] Spectral distortion measuring and correction in SD-OCT

Grigory Gelikonov

Institute of Applied Physics Russian Academy of Sciences, Nizhny Novgorod, Russia

B-I-5 12:20-12:40

[Invited] Perspectives of dual-wavelength photodynamic therapy controlled by optical monitoring

Mikhail Kirillin, A.V. Khilov, D.A. Loginova, E.A. Sergeeva, V.V. Perekatova, M.A. Shakhova, A.E. Meller, D.A. Sapunov, A.V. Shakhov, N.Yu. Orlinskaya, and I.V. Turchin

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

B-O-1 12:40-12:55

Quantitative techniques for extraction of blood oxygenation from multispectral optoacoustic measurements

V. Perekatova, M. Kirillin, D. Loginova, A. Orlova, I. Turchin, P. Subochev

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

B-O-2 12:55-13:10

Is it possible to combine phtodynanic therapy and application of dinitrosyl iron complexes in the wound treatment?

Anna B. Solovieva, Anatoly F. Vanin, S.F.Timashev

N.N.Semenov Institute of Chemical Physics, Russia

Date and Time	September 11 (Tuesday) / 14:30-16:30
Place	Room C
Session Title	[B-II] Biophotonics II
Session Chair	Valery Tuchin *(Russia)*, Rinat Esenaliev *(USA)*

B-I-6 14:30-14:50

[Invited] Biophotonics at Small Scales using Structure-mediated Light Robotics

Jesper Glückstad

DTU Fotonik, Dept. Photonics Engineering, Techn. University Denmark

B-I-7 14:50-15:10

[Invited] A potential of optical coherence tomography and terahertz pulsed spectroscopy for intraoperative diagnosis of brain tumors

Kirill I. Zaytsev, I.N. Dolganova, N.V. Chernomyrdin, G.A. Komandin, M.A. Schcedrina3, S.-I.T. Beshplav, S.A. Goryaynov, I.V. Reshetov, A.A. Potapov, and V.V. Tuchin

Prokhorov General Physics Institute of RAS, Moscow, Russia

B-I-8 15:10-15:30

Medical Applications of THz and IR Imaging and Machine Learning

Yury Kistenev, A.Borisov, V.Nikolaev, D.Vrazhnov, N.Krivova, A.Knyazkova, E.Sandykova

Tomsk State University, Siberian State Medical University, Tomsk, Russia

B-O-3 15:30-15:45

Imaging through reconnectable fiberscopes for in vivo deep-brain endoscopy

M.S. Pochechuev, I.V. Fedotov, O.I. Ivashkina, A.B. Fedotov, K.V. Anokhin and A.M. Zheltikov

Kurchatov Institute National Research Center, Moscow, Russia

B-O-4 15:45-16:00

Thyroid nodule capsules: structural characterization with texture analysis of second harmonic generation images

R. Hristu, B. Paun, L. Eftimie, S.G. Stanciu, G. A. Stanciu

University Politehnica of Bucharest, Bucharest, Romania

B-O-5 16:00-16:15

Nonlinear Microscopy Imaging of Stroma Reorganization in Breast Lesions

E.Sergeeva, V.Dudenkova, M.Kirillin, S.Kuznetsov, M.Pavlov, N.Orlinskaya, and N.Shakhova

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

B-O-6 16:15-16:30

Monte Carlo-based dual-wavelength PDT planning

D.A. Loginova, A.V. Khilov, E.A. Sergeeva, M.Yu. Kirillin

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

Date and Time	September 11 (Tuesday) / 14:30-16:30
Place	Room B
Session Title	[LD-I] Laser Diagnostics and Spectroscopy II
Session Chair	Leonid Golovan *(Russia)*, Miklos Veres

LD-I-6 14:30-14:50

[Invited] TERS spectroscopy of CdSe nanocrystals on Au nanostructured surfaces

A.G. Milekhin, M. Rahaman, K.V. Anikin, I.A. Milekhin, T.A. Duda, E.E. Rodyakina, V.M. Dzhagan, A.V. Latyshev, D.R.T. Zahn

A.V. Rzhanov Institute of Semiconductor Physics, Novosibirsk State University, Novosibirsk,, Russia

LD-I-7 14:50-15:10

[Invited] Laser spectroscopy of III-V nanostructures for optoelectronic applications

N. Ben Sedrine, J. Cardoso, J. Rodrigues, J.P. Teixeira, A. Alves, R. Ribeiro-Andrade, A. Gustafsson, J. Bourgard, P.M.P. Salomé, J.C. Gonzàlez, D.Nd. Faye, M. Belloeil, B. Daudin, M. Bockowski, V. Hoffmann, M. Weyers, E. Alves, K. Lorenz, A.J. Neves, J.P. Leitão, M.R. Correia, and T. Monteiro

Departamento de Física & I3N, Universidade de Aveiro, Portugal

LD-O-1 15:10-15:30

Anisotropy of light scattering by liquid foams

D. Zimnyakov, O. Ushakova, S. Yuvchenko

Yury Gagarin State Technical University of Saratov, Russia

LD-O-2 15:30-15:45

Speckle-correlometry techniques in diagnostics of the functional and structural properties of multi-phase systems

E.A. Isaeva, A.A. Isaeva, D.A. Zimnyakov

Yuri Gagarin Saratov State Technical University, Institute of Precision Mechanics and Control RAS, Saratov, Russia

LD-O-3 15:45-16:00

Sum frequencies of multi-line CO laser for gas analysis applications

A.A. Ionin, I.O. Kinyaevskiy, Yu.M. Klimachev, A.A. Kotkov, Yu.M. Andreev

P.N. Lebedev Physical Institute of the Russian Academy of Sciences, Moscow, Russia

Date and Time	September 11 (Tuesday) / 17:00-18:30
Place	Room
Session Title	**Poster session**
Session Chair	

Date and Time	September 13 (Thursday) / 09:00-10:30
Place	Room A
Session Title	[P-III] Plenary session III
Session Chair	Xermán De la Fuente *(Spain)*

P-5 09:00-09:45

[Plenary] Coherent scatter-controlled phase change grating structures in silicon: Femtosecond-resolved imaging during laser structuring

Javier Solis

Laser Processing Group, Instituto de Óptica, IO-CSIC, Madrid, Spain

P-6 09:45-10:30

[Plenary] Progress in the generation of ultrashort light pulses in the 2-micron spectral range by passive mode-locking of Tm and Ho bulk solid-state lasers

Valentin Petrov

Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany

Date and Time	September 13 (Thursday) / 11:00-13:05
Place	Room A
Session Title	[LM-II] Laser-Matter Interaction III
Session Chair	Andrey Kabashin *(France)*, Stephane Guizard *(France)*

LM-I-11 11:00-11:20

[Invited] 3D Microfluidic SERS Chips Fabricated by All-Femtosecond-Laser-Processing

K. Sugioka, S. Bai, and A. Hu
RIKEN Center for Advanced Photonics, Japan

LM-I-12 11:20-11:40

[Invited] High-Throughput Microfabrication by Ultrashort Laser Pulses

A. Ionin, S. Kudryashov, P. Danilov, N. Smirnov, E. Ageev, A. Samokhvalov, T. Itina, V. Veiko, A. Porfirev, S. Khonina
Lebedev Physical Institute, Moscow, Russia

LM-I-13 11:40-12:00

[Invited] Laser-pumping-based control of dielectric properties of dispersive nanosystems in the optical range

Dmitry A. Zimnyakov, Sergey A. Yuvchenko, Sergey S. Volchkov
Gagarin State Technical University of Saratov, Russia

LM-I-14 12:00-12:20

[Invited] Improved laser glass cutting by spatio-temporal control of energy deposition using bursts of femtosecond pulses

John Lopez
Centre Lasers Intenses et Applications (CELIA CNRS), University of Bordeaux, France

LM-O-4 12:20-12:35

Deep investigation of picosecond laser micromachining of silicon for electron microscopy sample preparation

A. Sikora, D. Grojo, G. Coustillier, T. Sarnet, M. Sentis
Aix Marseille Université, CNRS, LP3 UMR 7341, 13288, Marseille, France

LM-O-5 12:35-12:50

Modeling of optical response of metals to ultrafast laser irradiation: Comparison with experiment

Sergei A. Lizunov, Nadezhda M. Bulgakova, Vladimir P. Zhukov, Ranran Fang, Anatoliy Y. Vorobyev, Chunlei Guo
Institute of Physics of the Czech Academy of Sciences, Czech Republic
Institute of Thermophysics SB RAS, Novosibirsk, Russia

LM-I-15 12:50-13:10

Laser synthesis of 2D structures with variable band gap for thermo-photo sensors with high sensitivity received in the reaction of chromium atoms with methane molecules

S.A. Mulenko, N.A.Skoryk, N. Stefan, I.N. Mihailescu, V. M. Popov, N.T. Gorbachuk
G.V. Kurdyumov Institute for Metal Physics, NAS of Ukraine

Date and Time	September 13 (Thursday) / 11:00-13:05
Place	Room B
Session Title	[LS-IV] Laser Systems and Materials IV
Session Chair	Patrice Camy *(France)*, Xavier Mateos Ferre *(Spain)*

LS-I-13 11:00-11:20

[Invited] High resolution and sensitivity broadband vibrational sum-frequency generation spectrometer at 100 kHz and its bioapplications

F. Yesudas, M. Mero, J. Kneipp, Z. Heiner

School of Analytical Sciences Adlershof, Humboldt Univerzität zu Berlin, Germany

LS-I-14 11:20-11:40

[Invited] High-power slab laser systems with diode pumping

I.A. Shcherbakov, V.B. Tsvetkov

Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

LS-I-15 11:40-12:00

[Invited] Prospective mid-IR solid-state laser sources for technical and medical applications

M.K. Tarabrin, S.M. Tomilov, A.A. Bushunov, D. V. Ustinov, V.A. Lazarev, Yu.V. Korostelin, M. P. Frolov, Ya.K. Skasyrsky, V.I. Kozlovsky

Bauman Moscow State Technical University, Moscow, Russia

LS-I-16 12:00-12:20

[Invited] Recent studies on new nonlinear crystals generating mid-infrared parametric light

Patricia Segonds and Benoit Boulanger

Universitŭ Grenoble Alpes/ CNRS, Institut Nŭel, France

LS-O-9 12:20-12:35

Comparing the different Yb+ doped host crystal for their suitability for high power laser amplification

M. Schmid, E. Wyss, A. El-Sayed, Y. Zhang, V. Romano

Bern University of Applied Science, Switzerland

LS-O-10 12:35-12:50

Compact optical frequency comb source based on microresonators and semiconductor laser diodes

A. S. Voloshin, S. E. Agafonova, A. S. Gorodnitskiy, R. R. Galiev, G. V. Lihachev, N. M. Kondratiev, M. L. Gorodetsky

Russian Quantum Center, Moscow, Russia

LS-O-11 12:50-13:05

Temperature-wavelength dependence of the Verdet constant of dysprosium sesquioxide ceramics (Dy2O3)

O. Slezak, R. Yasuhara, H. Furuse, D. Vojna, A. Lucianetti, T. Mocek and M.Cech

HiLASE Centre, Institute of Physics, Czech Academy of Sciences, Czech Repablic

Date and Time	September 13 (Thursday) / 11:00-13:05
Place	Room C
Session Title	[B-III] Biophotonics III
Session Chair	Yury Kistinev *(Russia)*, Roberto Pini *(Italy)*

B-I-9 11:00-11:20

[Invited] Quantitative Phase Microscopy Spatial Signatures of Cancer Cells (Invited)

Natan T. Shaked
Department of Biomedical Engineering, Tel Aviv University, Israel

B-I-10 11:20-11:40

[Invited] Detecting Structural Alterations in Cancer Progression with Label-Free Spectroscopy

L. Zhang, V. Turzhitsky, U. Khan, Y. Zakharov, E. Vitkin, D. K. Pleskow, T. M. Berzin, M. Sawhney, J. D. Goldsmith, E. Yee, K. Kantekure, I. Itzkan, L. Qiu, L. T. Perelman
Harvard University, USA

B-I-11 11:40-12:00

[Invited] Plasmon-enhanced Raman detection of neurodegenerative biomarkers

P. Matteini, C. D'Andrea, M. Cottat, M. Banchelli, M. De Angelis, R. Pini
Institute of Applied Physics, National Research Council of Italy (CNR), Florence, Italy

B-I-12 12:00-12:20

[Invited] Advanced Laser-Optic Techniques for the Study of Blood Structure and Dynamics

Alexander Priezzhev, Andrei Lugovtsov, Alexey Semenov, Kisung Lee, Sergey Nikitin, Vladislav Ustinov, Yuri Gurfinkel, Evgeny Shirshin
International Laser Center,Lomonosov Moscow State University,Lomonosov Moscow State University, Moscow, Russia

B-O-7 12:20-12:35

Acousto-optical laser beam shaping for design of an annular optical trap

K.B. Yushkov, V.Ya. Molchanov
National University of Science and Technology MISIS, Moscow, Russia

B-O-8 12:35-12:50

Self-assessed photothermal agents based on Ho,Tm:KLu(WO4)2 nanocrystals

Albenc Nexha, Joan J. Carvajal, Maria Cinta Pujol, Francesc Díaz, Magdalena Aguiló
Universitat Rovira i Virgili, Tarragona, Spain

B-O-9 12:50-13:05

Diffuse optical spectroscopy monitoring of experimental tumor oxygenation during growth and under treatment

A.G. Orlova, A.V. Maslennikova, G.Yu. Golubiatnikov, M.Yu. Kirillin, M.S. Kleshnin, Yu.P. Ivanova, and I.V. Turchin
Institute of Applied Physics RAS, Nizhny Novgorod, Russia

Date and Time	September 13 (Thursday) / 14:30-16:30
Place	Room A
Session Title	[LM-IV] Laser-Matter Interaction IV
Session Chair	Koji Sugioka *(Japan)*, Andrey Ionin *(Russia)*

LM-I-16 14:30-14:50

[Invited] Improved laser microprocessing of diamond covered by thin absorbing films

T.V. Kononenko, P.A. Pivovarov, V.I. Konov

A.M. Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russia

LM-I-17 15:10-15:30

[Invited] Optical monitoring of Si nanoparticle evolution in aqueous media for biomedical applications

Viktor Yu. Timoshenko

Lomonosov Moscow State University, National Research Nuclear University "MEPhI", Moscow, Russia

LM-I-18 15:30-15:50

[Invited] Sub-ns Laser Surface Structuring of Metals

L.A.Angurel, G. F. de la Fuente, A. I. Borrás, A. R. González-Elipe, A. Agüero,J. Mora, P. García, J. A. Rojo, R. Navarro

ICMA (CSIC-Universidad de Zaragoza) c/María de Luna, Zaragoza, Spain

LM-O-6 15:50-16:05

Nonlinear stage of ionization-field instability in transparent dielectric

V.B. Gildenburg, I.A. Pavlichenko

Institute of Applied Physics RAS, University of Nizhny Novgorod, Nizhny Novgorod, Russia

LM-O-7 16:05-16:20

Femtosecond laser interactions with silicon surface: the coupling of surface ripples and the sub-surface modifications

Iaroslav Gnilitskyi, Vitaly Gruzdev, Xiaoqing He, Olga Sergaeva, Pengfei Ji, Tommi White4, and Yuwen Zhang

DISMI, University of Modena and Reggio Emilia (UNIMORE), Reggio Emilia, Italy

Date and Time	September 13 (Thursday) / 14:30-16:30
Place	Room B
Session Title	[LS-V] Laser Systems and Materials V
Session Chair	Vladimir Tsvetkov (Russia), Patrice Segonds (*France*)

LS-I-17 14:30-14:50

[Invited] Nanocarbon Q-switched and mode-locked compact solid-state lasers near 1 um

Fabian Rotermund

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

LS-I-18 14:50-15:10

[Invited] 2.3 µm laser emission in Tm-doped crystals

R. Soulard, P. Loiko, J. L. Doualan, A. Braud, A. Tyazhev, A. Hideur, F. Druon, L. Guillemot and P. Camy

Centre de recherche sur les Ions, les Matériaux et la Photonique (CIMAP), UMR 6252 CEA-CNRS-ENSICAEN, Normandie Université, France

LS-O-12 15:10-15:25

Growth, spectroscopy and laser operation of novel "mixed" Tm3+:Ca(Gd,Lu)AlO4 crystals for mode-locked lasers

Z. Pan, J. M. Serres, E. Kifle, P. Loiko, H. Yuan, X. Dai1, H. Cai1, Y. Wang2, Y. Zhao2,5, M. Aguiló3, F. Díaz3, U. Griebner2, V. Petrov2 and X. Mateos

ITMO University, St.-Petersburg, Russia

LS-O-13 15:25-15:40

Tm:GdVO4 laser Q-switched by a thin film Sb2Te3 saturable absorber

J. M. Serres, P. Loiko, J. Bogusławski, E. Kifle, M. Kowalczyk, J. Sotor, R. Zybała, K. Mars, A. Mikuła, K. Kaszyca, U. Griebner, V. Petrov, M. Aguiló, F. Díaz1and X. Mateos

Universitat Rovira i Virgili, Tarragona, Spain

LS-O-14 15:40-15:55

System for Continuous Laser-Induced Forward Transfer of Materials

I. Cornago, J. Morentin, S. Zabala, F. Varela

Cemitec /Naitec, Foundation for r+d on automotive and mechatronics, Pamplona, Spain

LS-O-15 15:55-16:10

2 W Cr:CdSe CW single mode laser

M.K. Tarabrin, D.V. Ustinov, S.M. Tomilov, V.A. Lazarev, Yu.V. Korostelin, M. P. Frolov, Ya.K. Skasyrsky, V.I. Kozlovsky

Bauman Moscow State Technical University, Lebedev Physical Institute of RAS, Moscow, Russia

Date and Time	September 13 ((Thursday) / 14:30-16:30
Place	Room C
Session Title	[B IV] Biophotonics IV
Session Chair	Mikhail Kirillin *(Russia),* Ekaterina Borisova *(Bulgaria)*

B-I-13 14:30-14:50

[Invited] Kinetics of optical properties of human colorectal tissues during optical clearing – a comparative study between normal and pathological tissues

I. Carneiro, S. Carvalho1, V. Silva, R. Henrique, L. Oliveira, V. V. Tuchin

Centre of Innovation in Engineering and Industrial Technology, ISEP, School of Engineering, Polytechnic of Porto, Porto, Portugal

B-I-14 14:50-15:10

[Invited] Photodetection of Stress-induced Gastrointestinal Neoplasia in Laboratorial Animals

E. Borisova, Ts. Genova, A. Khorovodov, I. Agranovich, I. Angelov, V. Mantareva, M. Kanevsky, N. Navolokin, O. Semyachkina-Glushkovskaya, L. Avramov

Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria

B-I-15 15:10-15:30

[Invited] Fluorescence imaging for stem cell research and tissue engineering

E. Zagaynova, A. Meleshina, D. Kuznetsova, O. Rogovaya, V. Dudenkova, S. Roddimova, M. Sirotkina, E. Vorotelyak

Privolzhsky Research Medical University, Nizhny Novgorod, Russia

B-I-16 15:30-15:50

[Invited] Optical properties of rat brain tissue in the normal state and at the different stages of glioma development

Elina A. Genina, Alexey N. Bashkatov, Daria K. Tuchina, Polina A. Timoshina, Oxana V. Semyachkina-Glushkovskaya, Valery V. Tuchin

Saratov State University, Tomsk State University, Russia

B-O-10 15:50-16:05

Estimation of photosensitizer penetration depth with dual-wavelength fluorescence imaging prior to PDT procedure with chlorin-based photosensitizers

A.V. Khilov, M.Yu. Kirillin, D.A. Loginova, and I.V. Turchin

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

B-O-11 16:05-16:20

Optical Spectroscopy of Rare Earth Vanadates for Temperature Sensors Based on Green Down and Up-conversion Emissions

N. Bhiri, M. Dammak, M. C. Pujol, J. J. Carvajal, M. Aguiló, F. Díaz

Universitat Rovira i Virgili, Tarragona, Spain

Date and Time	September 14 (Friday) / 09:00-11:40
Place	Room B
Session Title	[NL I] Nonlinear Optics and Photonics I
Session Chair	Igor Perezhigin *(Russia)*, Sunao Kurimura *(Japan)*

NL-I-1 09:00-09:20

[Invited] Broadband In-Line 2D Imaging With Different Data Processing

A. Ushakov, P.A. Chizhov, V.V. Bukin, A.B. Savel'ev, S.V. Garnov

M.V. Lomonosov Moscow State University, A.M. Prokhorov General Physics Institute RAS, Moscow, Russia

NL-I-2 09:20-09:40

[Invited] Generation and Control of Dissipative Kerr Solitons in Optical Microresonators by Pump Modulation

V.E. Lobanov, A.V. Cherenkov, A.E. Shitikov, N.M. Kondratiev, G.V. Lihachev, N.G. Pavlov, A.S. Gorodnitskiy, M.L. Gorodetsky

Russian Quantum Center, Skolkovo, Russia

NL-I-3 09:40-10:00

[Invited] Sum-frequency generation in isotropic chiral material in case of high conversion efficiency

I.A. Perezhogin, K.S. Grigoriev, N.N. Potravkin, V.A. Makarov

International Laser Center of M.V. Lomonosov Moscow State University, Russia

NL-O-1 10:00-10:15

Validation of the Angular Quasi-Phase-Matching theory for the biaxial optical class using PPRKTP

Dazhi Lu, A. Peña, P. Segonds, J. Debray, S. Joly, A. Zukauskas, F. Laurell, V. Pasiskevicius, H. Yu, H. Zhang, J. Wang, C. Canalias, B. Boulanger

Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, France, Inst. Crystal Materials, Shandong Univ., Jinan, China

NL-O-2 10:15-10:30

Numerical modelling of WGM microresonator Kerr frequency combs in self-injection locking regime

N.M. Kondratiev, V.E. Lobanov1, R.R. Galiev, N.G. Pavlov, M.L. Gorodetsky

Russian Quantum Center, Skolkovo, Russia

NL-I-4 11:00-11:20

[Invited] Nonlinear optical waveguides: its performance and applications

Sunao Kurimura

National Inst. for Materials Science, Tsukuba, Japan

NL-I-5 11:20-11:40

Structure of polarization singularity lines in the near-field of golden spheroidal nanoparticle irradiated by a monochromatic plane wave

N. Yu. Kuznetsov, I.A. Perezhogin, K. S. Grigoriev, V. A. Makarov

M.V. Lomonosov Moscow State University, Russia

Date and Time	September 14 (Friday) / 09:00-11:40
Place	Room C
Session Title	[THz-I] THz Sources and Application I
Session Chair	Vladimir Vaks *(Russia)*, Il-Min Lee *(Korea)*

THz-I-1 09:00-09:20

[Invited] Beams with non-zero projection of the orbital angular momentum in the terahertz range: a review

Boris Knyazev

Budker Institute of Nuclear Physics SB RAS, Novosibirsk State University, Novosibirsk, Russia

THz-I-2 09:20-09:40

[Invited] Recent progress in continuous-wave-based terahertz technologies for industrial applications

Il-Min Lee, E.S. Lee, K. Moon, H.-S. Kim, D.W. Park, J.-W. Park, J.-H. Shin, H.C. Ryu, K.H. Park

THz Creative Basic Research Section, Electronics and Telecommunications Research Institute, Daejeon, South Korea

THz-I-3 09:40-10:00

[Invited] Remote gas sensing using long distance THz pulses propagation in the atmosphere

Tae-In Jeon

Korea Maritime and Ocean University, Busan, South Korea

THz-O-1 10:00-10:15

Gyrotrons as advanced instrumentation for modern THz applications

G.Denisov, A. Fokin, A. Fedotov, M. Glyavin, G. Golubiatnikov, M. Koshelev, M.Morozkin, R. Rozental, A. Sedov, A. Tsvetkov, I. Zotova

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

THz-O-2 10:15-10:30

New nonlinear crystals for the generation of THz light from optical rectification

Patricia Segonds

NEEL Institute CNRS / University Grenoble Alpes UGA, France

THz-I-4 11:00-11:20

[Invited] High resolution THz spectroscopy based on semiconductor superlattices and quantum cascade lasersin the atmosphere

Vladimir Vaks

Institute for physics of microstructures RAS, Nizhny Novgorod, Russia

THz-I-5 11:20-11:40

[Invited] Generation of terahertz and X-ray radiation from gas clusters and dynamics of the cluster formation process in Ar super-sonic jet

A. Balakin, M. Dzhidzhoev, V. Gordienko, I. Zhvanya, I. Kotelnikov, I. Ivanov, N.Kuzechkin, P. Solyankin, A. Shkurinov

M.V. Lomonosov Moscow State University, Institute on Laser and Information Technologies of RAS, Branch of the FSRC "Crystallography and Photonics", Moscow, Russia

Date and Time	September 11 (Tuesday) / 17:00-18:30
Place	Room
Session Title	**Poster session**
Session Chair	Pavel Loiko *(Russia)*

Section LASER-MATTER INTERACTION

LM-P-1

Numerical simulations of the electromagnetic field shielding in petawatt regime using Finite-Difference Time-Domain method

L. Ionel, A. Marcul
National Institute for Laser, Plasma and Radiation Physics, Magurele-Bucharest, Romania

LM-P-2

Theoretical and experimental study of laser crystallization of thin amorphous layers of silicon under continuous and pulsed irradiation

Jiří Beránek, Ozan Aktas, Stuart MacFarquhar, Yohann Franz, Sakellaris Mailis, Nadezhda M. Bulgakova, Anna C. Peacock
HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Czech Republic

LM-P-3

Femtosecond laser modification of amorphous silicon films: control of structural anisotropy

D.V.Shuleiko, S.V.Zabotnov, D.E.Presnov, F.V.Potemkin, I.A.Romanov, I.N.Parhomenko, P.K.Kashkarov, L.A.Golovan
Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia

LM-P-4

Enhancement of luminescence intensity and absorptivity in silicon via its structuring by ns pulses of Yb fiber laser

D.S.Polyakov, V.P. Veiko, A.E. Kalyadin, N.A. Sobolev, S.V. Ponomar, N.M. Salnikov
ITMO University, St.-Petersburg, Russia

LM-P-5

Laser synthesis of the WO3 thin films

O. Novodvorsky, L. Parshina, O. Khramova, A. Lotin, V. Mikhalevsky, P. Shchur
ILIT RAS, Branch of the Federal Scientific Research Center «Crystallography and Photonics» of Russian Academy of Sciences, Shatura, Russia

LM-P-6

Modeling of the dynamics of processes in a laser-plasma plume during the ablation of a metal target in a gas

V.I.Mazhukin, A.V.Shapranov, M.M.Demin
Keldysh Institute of Applied Mathematics of RAS, National Research Nuclear University "MEPhI", Moscow, Russia

LM-P-7

Recoil pressure behavior in nanosecond laser ablation: theory and experiment

A.A. Samokhin, E.V. Shashkov, N.S.Vorob'ev, A.E. Zubko

Prokhorov General Physics Instituteof the Russian Academy of Science, Moscow, Russia

LM-P-8

On critical parameters manifestations during nanosecond laser ablation of metals

A.A. Samokhin, V.I. Mazhukin, M.M. Demin, A.V. Shapranov, A.E. Zubko

Prokhorov General Physics Institute of the Russian Academy of Science, Moscow, Russia

LM-P-9

High intensity pulsed coils for the investigation of laser-plasma interaction with ambient magnetic field

A. Luchinin, V. Malyshev, M. Morozkin, M. Starodubtsev, M. Proyavin, A. Fokin, T. Krapivnitskaia and M. Glyavin

Institute of Applied Physics, Nizhny Novgorod, Russia

LM-P-10

Influence of carrier degeneracy and the band gap on the melting of silicon and its thermophysical properties

O.N. Koroleva, A.V. Mazhukin

Keldysh Institute of Applied Mathematics of RAS, National Research Nuclear University MEPhI, Russia, Moscow

LM-P-11

Percolation thresholds in the composites with the cermet topology in the Bruggeman approximation

L. Apresyan, S. Rasmagin, V. Krasovskii, V. Kryshtob, V. Pustovoy

Prokhorov General Physics Institute of Russian Academy of Sciencest, Moscow, Russia

LM-P-12

Application of Effective Medium Approximations for Multicomponent Composites Description

L. Apresyan, S. Rasmagin, V. Krasovskii, V. Kryshtob, V. Pustovoy

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

Section LASER SYSTEMS AND MATERIALS

LS-P-1

Nanocrystals of CsYb(WO4)2: polymorphism with temperature and temperature dependence of its photoluminescence

J. M. Gómez-Fernández, M. C. Pujol, J. J. Carvajal, F. Díaz and M. Aguiló
Universitat Rovira i Virgili, Tarragona, Spain

LS-P-2

Femtosecond Tm,Ho:CNGG laser at 2081 nm using a SWCNT-SA

Z. Pan, Y. Wang, Y. Zhao, M. Kowalczyk, H. Yuan, H. Cai, J.E. Bae, S. Y. Choi, F. Rotermund, P. Loiko, J.M.Serres, X. Mateos, U. Griebner, and V. Petrov
Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany

LS-P-3

Single crystal growth and spectroscopic characterization of cerium and praseodymium single doped type III KGd(PO3)4

I. Adell, R. Solé, M. C. Pujol, M. Aguiló, F. Díaz
Universitat Rovira i Virgili, FiCMA-FiCNA, Tarragona, Spain

LS-P-4

Epitaxial porous GaN layer grown by CVD characterized by optical means

J. Mena, J. J. Carvajal, F. Díaz, M. Aguiló1, O. Martínez, J. Jiménez, V. Z. Zubialevich, P. J. Parbrook
Física I Cristal•lografia de Materials I Nanomaterials (FiCMA-FiCNA) and EMaS, Universitat Rovira I Virgili (URV), Tarragona, Spain

LS-P-5

High-concentration Er3+ composite fiber for compact all-fiber devises

B.I.Denker, O.N.Egorova, B.I.Galagan, V.A.Kamynin, A.A.Ponosova, S.E.Sverchkov, S.L.Semjonov, V.B.Tsvetkov, I.V. Zhluktova
Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russia

LS-P-6

Temperature effect on the performance of diode pumped Nd- Yag solid state laser system

M. Atta Khedr, E.Salam, G. E. Khalil, A. M. Abou-Elmagd
National Institute of Laser Enhanced Science (NILES) Cairo University Giza, Egypt

LS-P-7

Photoluminescence study on the effect of Ga3+ in Yb:YAG at cryogenic temperatures

S.P. David, F. Yue, V. Jambunathan, M. Mika, A. Lucianetti, T. Mocek
HiLASE Centre, Institute of Physics CAS, Czech Republic

LS-P-8

Exploration of Langasite family in Mid-infrared Applications

Haichao Lan, Haohai Yu, Huaijin Zhang, Jiyang Wang
State Key Laboratory of Crystal Materials and Institute of crystal Materials, Shandong University, China

LS-P-9

Ca3TaGa3Si2O14 single crystals and their optical characterization

O. Buzanov, A. Kozlova, N. Kozlova, D.Spassky, E. Zabelina

National University of Science and Technology "MISiS", Moscow, Russia

LS-P-10

Ca3(VO4)2:Tm3+/Ho3+, New Crystalline Medium for Lasers of 2μm Spectral Range

Ivleva L.I., Doroshenko M.E., Voronina I.S., Dunaeva E.E., A.G.Papashvili

Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

LS-P-11

Radiation hardness of Yb:LaSc3(BO3)4 and Yb:LuYSiO5 laser crystals

S.A. Kutovoi, Yu.D. Zavartsev, A.I. Zagumennyi, Yu.L. Kalachev, V.A. Mikhailov, V.A. Kozlov, M.V. Zavertyaev, I.A. Shcherbakov

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LS-P-12

Fabrication and characterization of KLu(WO4)2/SiO2 taper waveguide platform for sensing applications

Marc Medina, C. Haunhorst, M.C. Pujol, D. Kip, J. Masons, A. Rodenas, M. Aguiló, F. Díaz

Física i Cristal·lografia de Materials i Nanomaterials (FiCMA-FiCNA-EMaS), Universitat Rovira i Virgili (URV), Tarragona, Spain

LS-P-13

Optical Cell Line Detection In Microfluidic Devices

Eric Pedrol, J. Martínez, M. Garcia-Algar, M. Nazarenus, L. Guerrini, E. Garcia-Rico, R.A. Álvarez-Puebla, M. Aguiló, F. Díaz, J. Massons

Universitat Rovira i Virgili, Física i Cristal·lografia de Materials i Nanomaterials (FiCMA-FiCNA) and EMaS, Tarragona, Spain

LS-P-14

Channels Multiplexing in Spectral Encoded White Light Interferometry

I. G. Likhachev, V. I. Pustovoy, V. V. Svetikov, N.P.Khakamova

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LS-P-15

Polarization Switching and Modulation in Graphene-Based Optical Waveguide Polarizer

Jin Tae Kim, Hongkyw Choi

Creative Future Research Laboratory, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea

LS-P-16

Synthesis of SiC nanoparticles using CO2 laser pyrolysis

L.Iskhakova, I.Ershov, V.Krasovskii, N.Novikov, V. Pustovoy

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LS-P-17

Synthesis and characterization of SiC nanoparticles using laser ablation of monocrystalline silicon in toluene

S.Rasmagin, L.Apresyan, V.Krasovskii, A.Khomich, N.Khakamova, V. Pustovoy

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

Section BIOPHOTONICS

B-P-1

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

A. Potlov, S. Frolov, S. Proskurin
Tambov State Technical University, Russia

B-P-2

Application of laser scanning confocal fluorescent microscopy for visualization microglia morphology in mouse local cerebral ischemia

Glyavina M.M., Loginov P.A., Dudenkova V.V., Shirokova O.M., Reunov D.G., Karpova A.O., Prodanets N.N., Korobkov N.A., Zhuchenko M.A., Mukhina I.V.
Central Research Laboratory of the Privolzhsky Research Medical University, Nizhny Novgorod, Russia

B-P-3

Upconversion luminescent nanoparticles for tumor visualization

I. Yanina, N. Navolokin, E. Sagaydachnaya, V. Kochubey, V. Tuchin
Saratov State University (National Research University), Research-Educational Institute of Optics and Biophotonics, Tomsk State University, Russia

B-P-4

Autofluorescence differentiation of lower gastrointestinal tract benign and malignant lesions using synchronous spectroscopy technique

Ts. Genova, E. Borisova, N. Penkov, B. Vladimirov, Al. Zhelyazkova, L. Avramov
Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria

B-P-5

Photoacoustic spectroscopy in human space application

C. Achim (Popa), M. Mogildea, G. Mogildea, A. M. Bratu, M. Petrus
National Institute for Laser, Plasma and Radiation Physics, Romania

B-P-6

Optical monitoring of fluorescent glioma progression and bloodbrain barrier permeability

A.Terskov, M.Klimova, A.Dubrovskij, A. Khorovodov, A.Mamedova, A.Namykin, N.Navolokin, A.Shirokov, O.Semyachkina-Glushkovskaya
Saratov State University, Russia

B-P-7

Optical monitoring of brain clearing via the meningeal lymphatics

M. Klimova, A. Abdurashitov, D. Bragin, O. Bragina, A. Dubrovsky, O. Semyachkina-Glushkovskaya
Saratov State University, Russia

B-P-8

The study of the lymphatic system using optical coherence tomography by means of analyzing the accumulation of gold nanorods in the deep lymph node of a laboratory mouse

Dubrovskiy A., Abdurashitov A., Shushunova N., Semyachkina-Glushkovskaya O.
Saratov Chernyshevsky State University, Russia

B-P-9

2-photon polymerization of the polylactide acrylate derivatives for preparation of 3D structures for regenerative medicine

N.A. Aksenova, V.T. Shashkova, I.A. Matveeva, N.N. Glagolev, N.V. Minaev, T.S. Zarkhina, P.S. Timashev, A.B. Solovieva

N.N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, Russia

Section LASER DIAGNOSTICS AND SPECTROSCOPY

LD-P-1

Speckle-based low-coherence reflectometry in applications to media structure characterization

A.A. Isaeva, E.A. Isaeva, S.A. Yuvchenko, D. A. Zimnyakov
Yuri Gagarin State Technical University of Saratov, Russia

LD-P-2

Calculations on Gold Coated Arrays for Surface Enhanced Raman Scattering

I. Rigó, M. Veres, O. Hakkel, P.R. Rigó, P. Fürjes
Institute for Solid State Physics and Optics, Wigner Research Centre for Physics, HAS, Budapest, Hungary

LD-P-3

Investigation of Raman scattering spectra of aqueous solutions of high dilution

I.A. Ershov, M.A. Kononov, V.I. Pustovoy, V.V. Svetikov
Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LD-P-4

Multi-Wavelengths Fluorescence and Raman Spectroscopic Study of The SiV Center Containing Diamond Nanostructures

L. Himics, M. Veres, M. Koós, S. Tóth, I. Rigó, P. Baranyai, T. Váczi, A. Czitrovszky, A. Nagy, R. Holomb, D. Oszetzky, N. Felgen, C.Popov
Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary

LD-P-5

Synthesis, reversible laser modification and structural characterization of As-S based functional media for ultrafast photonics

R. Holomb, M. Veres, O. Kondrat, I. Rigo, L. Himics, A. Czitrovszky, A. Csik, V. Takats, V. Mitsa
Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary

LD-P-6

Third-Harmonic Generation in Silicon Nanowire Arrays

A.S. Ustinov, L.A. Osminkina, A.I.Efimova, S.V. Zabotnov, L.A. Golovan
Physics Department, M.V. Lomonosov Moscow State University, Moscow, Russia

LD-P-7

Control of the Raman scattering efficiency by elastic scattering in suspensions

O.I. Sokolovskaya, N.B. Tkachenko, L.A. Golovan, V.V. Yakovlev
Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia

LD-P-8

Surface optical sensitization in the operation of sensors

S.I. Valyanskii, S.V. Vinogradov, M.A. Kononov, V.I. Pustovoy, V.V. Svetikov, V.V. Savranskii, V.V. Tishkov
Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LD-P-9

Investigation of the adsorption of copper phthalocyanine from aqueous solutions on the metal surface by the plasmon resonance method

M.A. Kononov, N.P. Khakamova, V.I. Pustovoy, V.V. Svetikov

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LD-P-10

Investigation of island films by surface plasmon spectroscopy method

M.A. Kononov, V.I. Pustovoy, V.V. Svetikov

Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia

LD-P-11

Spectroscopic Study of Breath Ethylene in People with Schizophrenia and Autism

A. Bratu, C. Popa, M. Petrus, D. C. Dumitras

National Institute for Lase, Plasma and Radiation Physics, Department of Lasers, Romania

LD-P-12

The effect of the lack of synchronisation between pMDI activation and inhalation on the lung deposition of aerosol drugs

Sz. Kugler, A. Kerekes, A. Nagy, A. Czitrovszky

Department of Applied and Nonlinear Optics, Institute for Solid State Physics and Optics, Wigner Research Centre for Physics of the H.A.S., Budapest, Hungary

LD-P-13

Spectral assessment of ultrasound process influence during production of the implants based on dura mater

P.E. Timchenko, E.V. Timchenko, L.T. Volova, O.O. Frolov

Samara National Research University, Samara, Russia

LD-P-14

Spectral analysis of the normal bone tissue, the tissue affected by experimental osteoporosis and its prevention using the biotechnology products

E.V. Timchenko, P.E. Timchenko, E.V. Pisareva, M.Y. Vlasov, L.T. Volova, A.S. Tyumchenkova, J.V. Fedorova

Samara National Research University, Samara, Russia

LD-P-15

Optical method of identification and certification of cell tissue graft components during their production

P.E. Timchenko, E.V. Timchenko, L.T. Volova, O.O. Frolov

Samara National Research University, Samara, Russia

Section NONLINEAR OPTICS AND PHOTONICS

NL-P-1

The third harmonic medium power W-band gyrorton for various applications

A.A. Bogdashov, A.P.Fokin, A.S. Sedov, A.S. Zuev
Federal Research Center Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS), Nizhny Novgorod, Russia

NL-P-2

Generation of Platicons on Demand

A.E. Shitikov, V.E. Lobanov, A.V. Cherenkov, I.A. Bilenko, M.L. Gorodetsky
Russian Quantum Center, Faculty of Physics, Moscow State University, Moscow, Russia

NL-P-3

Doped Scheelite-Like Double Molybdate Single Crystals as UV to IR Light Down-Converters

K.A.Subbotin, A.I.Titov, D.A.Lis, V.A.Smirnov, O.K.Alimov, E.V.Zharikov, I.A.Shcherbakov
Prokhorov General Physics Institute of RAS, Mendeleev University of Chemical Technology of Russia, Moscow, Russia

NL-P-4

A possible mechanical realization of a femtosecond SRS optical system with spectral slicing

T. Váczi, L. Himics, P. Schlosser, B. Schlosser
Wigner Research Center for Physics, Institute of Solid State Physics and Optics, Budapest, Hungary

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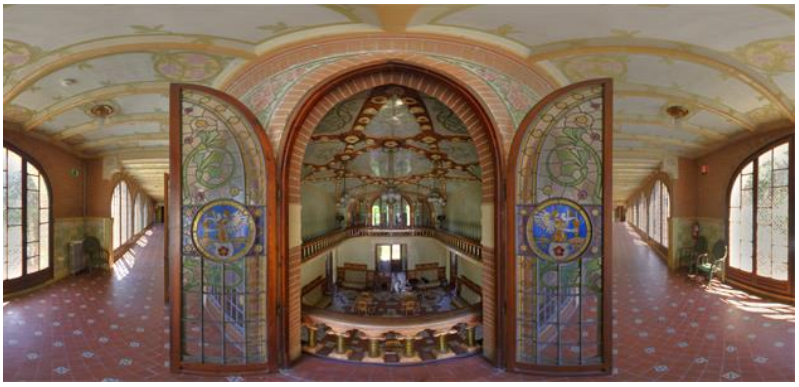
VII. Social Agenda

The conference will combine the scientific activities with few social events to enjoy the stay in Tarragona.

For this reason, on Monday, after the series of Invited and Oral presentations, a **welcome reception** will take place at 19.00 h. Before it, we will have a **guided tour** to the 2000-year old Roman Tarraco ruins.

On Wednesday, we will make an excursion. Wednesday morning will be **free** for everybody and the excursion will start at 16.00 h. We will visit a **Modernist Art Gallery in Reus** 10 Km far from Tarragona.



After this cultural activity, we will move to the **Priorat Mountains**, 25 Km far from Reus, where the vineyards dominate the landscape. Those vineyards produce the world-famous wine from Priorat. We will visit a cellar and will have the opportunity to taste some of the Priorat wines as well as grapes. After this visit we will have dinner at the cellar.

On Thursday, the **conference dinner** will take place in a beautiful garden in the city center of Tarragona.

VIII. Authors' list

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