# LALS 2020: DETAILED SCIENTIFIC PROGRAM

LALS 2020
NANCY, FRANCE
APRIL 3RD TO 5TH, 2020

## SCIENTIFIC SESSIONS OF THE CONGRESS

## PRESENTATION INSTRUCTIONS

### For all oral conferences

- Your presentation must be **in English.**
- Your presentation support must be saved as PowerPoint or PDF format on a USB key.
- If you want to use **particular formats such as video**, sending your presentation in advance is highly recommended. Using a local file is preferred rather than reading an online file.
- We invite you to load your presentation before the beginning of your session, **half a day before your presentation on the computer of your conference room.**
- To avoid any technical bug and too long installation time, it is better to **use only the computer at your disposal.** We ask that you do not use your personal computer (unless otherwise indicated).
- A remote control with laser pointer will be at your disposal.

### Keynote

You will have **25 minutes** to realize your presentation
(20 minutes of presentation + 5 minutes of question).

### Invited speaker

You will have **15 minutes** to realize your presentation
(12 minutes of presentation + 3 minutes of question).

### Regular talk

You will have **15 minutes** to realize your presentation
(12 minutes of presentation + 3 minutes of question).

### Poster

- Your poster should **be printed in A0 format** (84.1 cm x 118.9 cm)
- With a **portrait orientation** (in English).
- The posters will be displayed on grids and fixed with clips, they will be given to you upon your arrival.
- It is not possible to print your poster on site.
- Thank you for **hanging your poster** the first morning of the conference, Friday April 3rd.
- Please **pick up your poster** on the last day of the conference, Sunday April 5th, the remaining posters will not be retained.

**For any request, please send an email to lals2020@progepi.fr**

PL PLENARY LECTURES — Schedule of these four days of conference

| Schedule | About the speakers | |
|---|---|---|
| **Friday April 3rd**<br><br>**Auditorium 1**<br>**8:15 AM – 8:55 AM** | 40” | **Claude Boccara,**<br>Emeritus Professor Institut Langevin, ESPCI Paris, CNRS, PSL University<br>*Plenary talk topic: «Static and dynamic full field oct: from tissues to cells»* |
| **Friday April 3rd**<br><br>**Auditorium 1**<br>**1:50 PM - 2:30 PM** | 40” | **Elena Zagaynova,**<br>Professor, Director of the Institute of Biomedical Technologies, Privolzhsky Research Medical University<br>*Plenary talk topic: «FLIM metabolic imaging from cells to patients»* |
| **Saturday April 4th**<br><br>**Auditorium 1**<br>**2:00 PM - 2:40 PM** | 40” | **Jürgen Popp,**<br>Scientific Director of the Leibniz Institute of Photonic Technology Jena, Germany,<br>Recipient of the 2016 Pittsburgh Spectroscopy Award,<br>Fellow of the American Institute for Medical and Biological Engineering (AIMBE) and of the International Society for Optical Engineering (SPIE),<br>Editor-in-Chief of the Journal of Biophotonics<br>*Plenary talk topic: «Photonics for medical diagnosis and therapy».* |
| **Sunday April 5th**<br><br>**Auditorium 1**<br>**8:30 AM - 9:10 AM** | 40” | **Sergio Fantini,**<br>Professor, Department of Biomedical Engineering, Tufts University, Medford, MA, USA.<br>Fellow of the International Society for Optical Engineering (SPIE), of the Optical Society of America (OSA) and of the the American Institute for Medical and Biological Engineeeing (AIMBE)<br>*Plenary talk topic: «Quantitative studies of cerebral hemodynamics with near-infrared spectroscopy»* |

## S1 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 1: Diffuse Optical Imaging

CHAIRS: ***Sylvain Gioux**, Université de Strasbourg, France (**coordinator**)*

***Zeev Zalevsky**, Bar-Ilan University, Israel, **Turgut Durduran**, Institute of Photonic Sciences ICFO Barcelona, Spain, **Hamid Dehghani**, University of Birmingham, UK, **Adam Gibson**, University College London, UK, **Ori Katz**, Hebrew University of Jerusalem, Israel, **Brian Pogue**, Dartmouth College, USA, **Demetri Psaltis**, EPFL, Switzerland, **Paula Taroni**, Politechnico di Milano, Italy*

AUDUTORIUM 2

| S.1 - part 1 | Friday April 3rd (9:00 AM – 10:25 AM) | |
|---|---|---|
| **Keynote 1** | 25” | **Brian Pogue,**<br>Thayer school of Engineering at Dartmouth, USA<br>*Successes in Optical Imaging of Medicine* |
| **Invited 1** | 15” | **Hamid Dehghani,**<br>MI-LAB, University of Birmingham, England<br>*Applications of diffuse optics for detection and characterisation of disease: Thyroid cancer and Rheumatoid Arthritis* |
| **Invited 2** | 15” | **Antonio Pifferi,**<br>Department of Physics, Politecnico di Milano, Milano, Italy<br>*Advancing Clinical Translation in Biophotonics through multi-laboratory initiatives on Performance Assessment and Standardization* |
| **Regular talk 1** | 15” | **Edoardo Ferocino**<br>Politecnico di Milano, Dipartimento di Fisica, Italy<br>*The SOLUS system: a multimodal imaging device based on innovative photonic modules to improve the diagnosis of breast cancer* |
| **Regular talk 2** | 15” | **George Rowley**<br>School of Computer Science -Birmingham, United Kingdom<br>*Development of a cost-effective optical imaging system for monitoring of Rheumatoid Arthritis* |

AUDUTORIUM 2

| S.1 - part 2 | Friday April 3rd (10:55 AM – 12:25 AM) | |
|---|---|---|
| **Invited 3** | 15” | **Dimitris Gorpas,**<br>Institute of Biological and Medical Imaging, Helmholtz Zentrum München, Germany<br>*Standardization of intraoperative fluorescence molecular imaging systems and data referencing* |
| **Invited 4** | 15” | **Alwin Kienle,**<br>Ulm University, Germany<br>*Spatial frequency domain imaging: theory, phantom experiments and applications* |
| **Invited 5** | 15” | **Olga Conde,**<br>Photonics Engineering Group, Universidad de Cantabria, Cantabria, Spain<br>*Machine learning fusion of hyperspectral and OCT imaging for tissue diagnosis and assessment* |
| **Regular talk 3** | 15” | **Pranav Lanka,**<br>Dipartimento di Fisica-Politecnico di Milano, Italy<br>*Broadband time domain diffuse optical spectroscopic monitoring of thermal treatment in biological tissue.* |

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|---|---|---|
| **Regular talk 4** | 15” | **Alexander Bentley,**<br>School of Computer Science [Birmingham] (United Kingdom)<br>*A Cost Effective and Low Footprint Hyperspectral Bioluminescent Tomography System Based on Compressive Sensing* |
| **Regular talk 5** | 15” | **Enagnon Aguenounon,**<br>University of Strasbourg, ICube Laboratory (France)<br>*Real-time processing and visualization of functional and structural parameters of living tissue* |

## S2 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 2: Light Propagation in Tissues, Modelling & optical phantoms

CHAIRS: ***Valery Tuchin**, Saratov State University, Saratov, Russia, **Luis Oliveira**, Polytechnic of Porto - School of Engineering, Porto, Portugal (**coordinators**)*

***Alexey Popov**, University of Oulu, Finland, **Walter Blondel**, University of Lorraine, Nancy, France, **Tatiana Novikova**, Ecole polytechnique, Palaiseau, France, **Anne Planat-Chrétien**, CEA-Leti, Grenoble, France, **Gal Shafirstein**, Roswell Park Comprehensive Cancer Center, Buffalo, USA*

**AUDUTORIUM 3**

| **S.2 - part 1** | **Friday April 3rd (9:00 AM – 10:25 AM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Steven Jacques,**<br>University of Washington, Seattle, USA<br>*The use of subdiffusive light scattering as a contrast mechanism for imaging superficial tissue layers* |
| **Invited 1** | 15” | **Mikhail Kirillin,**<br>Institute of Applied Physics RAS, Nizhny Novgorod, Russia<br>*Dual-wavelength fluorescence monitoring for photodynamic therapy: numerical simulations, phantom and in vivo studies* |
| **Invited 2** | 15” | **Tanja Tarvainen,**<br>University of Eastern Finland, Finland<br>*Utilizing approximative models in optical imaging and modelling of errors* |
| **Invited 3** | 15” | **Alexander Bykov,**<br>University of Oulu, Finland<br>*Advanced biotissue phantoms for microcirculation and NIRS studies* |
| **Regular talk 1** | 15” | **Sydney Grant,**<br>Roswell Park Comprehensive Cancer Center, United States<br>*Dosie Finite Element and Monte Carlo Simulations are in Close Agreement with Measurements of Light Propagation in Tissue Mimicking Phantoms* |

| **S.2 - part 2** | **Friday April 3rd (10:55 AM – 12:35 AM)** | |
|---|---|---|
| **Keynote 2** | 25” | **Dan Zhu,**<br>Wuhan National Laboratory for Optoelectronics, Huazhong university of Science and Technology, China<br>*Optical clearing skull window for imaging and controlling cortical blood vessels* |
| **Invited 4** | 15” | **Luis Oliveira,**<br>Polytechnic of Porto - School of Engineering, Porto, Portugal<br>*Measurement of optical properties from human kidney from the UV to NIR* |
| **Invited 5** | 15” | **Tymish Ohulchanskyy,**<br>College of Physics and Optoelectronic Engineering, Shenzhen University, China<br>*Optical bioimaging in short-wave infrared region: endogenous contrasts and exogenous probes* |

AUDUTORIUM 3

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|---|---|---|
| **Invited 6** | 15” | **Viacheslav Artyushenko,**<br>Art Photonics GmbH, Berlin, Germany<br>*Advanced Fiber Solutions in 0.3/16 um range for Biomedical Applications* |
| **Regular talk 2** | 15” | **Igor Meglinski,**<br>Universty of Oulu (Finland),<br>*Sensing Freshness of Meat with Visible and Near-Infrared Spectroscopy* |
| **Regular talk 3** | 15” | **Emily Oakley,**<br>Roswell Park Comprehensive Cancer Center (United States)<br>*Treatment Planning for Interstitial Phototherapies of Locally Advanced Cancers* |

## S3 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 3: Image-guided therapy, Lasers & PDT for treatment and diagnosis

CHAIRS: ***Elena Zagaynova**, Privolzhsky research medical University, Nizhny Novgorod, Russia (coordinator)*

***Georges Wagnières**, EPFL, Lausanne, Switzerland, **Céline Frochot**, University of Lorraine, Nancy, France, **Christine Vever-Bizet**, Université Pierre et Marie Curie, France, **Serge Mordon**, University of Lille, France*

AUDUTORIUM 2

| **S.3 - part 1** | **Friday April 3rd (2:55PM – 4:35 PM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Angelika Rück,**<br>University of Ulm, Germany<br>*Metabolic FLIM and oxygen PLIM in new theranostic PDT procedures* |
| **Invited 1** | 15” | **Anastasiya Ryabova,**<br>Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia<br>*The use of fluorescence lifetime imaging microscopy to assess the interaction of photosensitizers with tumor tissues* |
| **Invited 2** | 15” | **Antje Neubauer,**<br>Becker&Hickl GmbH, Berlin, Germany<br>*In vivo study of metabolic and oxygen states in tumors with fiber-based fluorescence/phosphorescnece lifetime spectroscopy* |
| **Regular talk 1** | 15” | **Adrian Ruehm,**<br>LIFE-Zentrum, Urologische Klinik und Poliklinik, Klinikum der Universität München, Germany (Germany),<br>*Optical Tissue Phantoms for 2-Photon Fluorescence Lifetime Imaging Systems* |
| **Regular talk 2** | 15” | **Ana Batista,**<br>Department of Biophotonics and Laser Technology, Saarland University, Germany (Germany)<br>*Corneal collagen crosslinking assessment using two-photon imaging* |
| **Regular talk 3** | 15” | **Patricia Ana**<br>Universidade Federal do ABC (Brazil),<br>*Effects of Q-switched Nd:YAG and Biosilicate® on dentin demineralization* |

AUDUTORIUM 2

| S.3 - part 2 | Friday April 3rd (5:00 PM – 6:30 PM) | |
|---|---|---|
| **Invited 3** | 15” | **Gal Shafirstein,**<br>Roswell Park Comprehensive Cancer Center, USA<br>*Image-Based Dosimetry Guided Interstitial Photodynamic Therapy for Locally Advanced Cancer* |
| **Invited 4** | 15” | **Xiaolong Liu,**<br>Mengchao Hepatobiliary Hospital of Fujian Medical University, China<br>*Smart strategies for Synergistic Antitumor Therapy: against hypoxia microenvironment aggravated by phototherapy* |
| **Invited 5** | 15” | **Zvi Malik,**<br>Bar Ilan University, Israel<br>*Applications of endogenous Protoporphyrin in photo-diagnosis and photo-therapy of cancer* |
| **Invited 6** | 15” | **Kristian Berg,**<br>Oslo University Hospital, Norway<br>*Photochemical internalization (PCI) as an intracellular drug delivery technology for treatment of solid tumors* |
| **Regular talk 4** | 15” | **Siwen Li,**<br>*A Modification Biogenic System for Phototherapy and Immunotherapy Against Tumor* |
| **Regular talk 5** | 15” | **Mickaël Gries,**<br>Universite de Lorraine, CRAN CNRS UMR 7039 (France),<br>*Multifunctional AGuIX® theranostic nanoparticles for vascular-targeted interstitial photodynamic therapy of glioblastoma* |

AUDUTORIUM 2

| S.3 - part 3 | Saturday April 4th (8:15 AM – 9:30 AM) | |
|---|---|---|
| **Invited 7** | 15” | **Brian Pogue,**<br>Thayer school of Engineering at Dartmouth, USA<br>*Optical guidance for radiation therapy* |
| **Invited 8** | 15” | **Xunbin Wei,**<br>School of Biomedical Engineering, Shanghai Jiao Tong University, China<br>*Near infrared light therapy for treating Alzheimer’s disease* |
| **Invited 9** | 15” | **Valery Tuchin,**<br>Research State Saratov University, Russia<br>*Molecular diffusivity of normal and pathological tissues at immersion optical clearing* |
| **Invited 10** | 15” | **Alex Vitkin,**<br>Medical Biophysics, University of Toronto, Canada<br>*Shedding light on radiobiology with functional optical coherence tomography* |
| **Regular talk 6** | 15” | **Mickael Nehlig**<br>University-Hospital Munich-Grosshadern [München] (Germany),<br>*Optical Fibers in Medical Technology Holmium and Thulium Lasers Make Keyhole Surgery Possible* |

## S4 KEYNOTES, INVITED SPEAKER REGULAR TALK

## SESSION 4: Optical Microscopy & Laser-cell-tissue interactions

CHAIRS: ***Hideaki Kano**, University of Tsukuba, Japan (**coordinator**)*

***Evgeny Shirshin**, M. V. Lomonosov State University, Moscow, Russia, **Andrei Lugovtsov**, M. V. Lomonosov State University, Moscow, Russia, **Dominique Dumas**, University of Lorraine, Nancy, France, **Karsten Koenig**, Saarland University, Germany, **Herbert Schneckenburger**, Aalen University, Germany, **Alexander Priezzhev**, M. V. Lomonosov State University, Moscow, Russia*

**AUDUTORIUM 1**

| **S.4 - part 1** | **Friday April 3rd (9:00 AM – 10:25 AM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Christoph Cremer,**<br>Institute of Molecular Biology; University of Mainz, Germany<br>*Lens free super-resolution microscopy at large working distances - Implications for genome nanostructure analysis* |
| **Invited 1** | 15” | **Philippe Leproux,**<br>Limoges University, France<br>*Recent advances in cell imaging by multiplex CARS microspectroscopy* |
| **Invited 2** | 15” | **Evgeny Shirshin,**<br>Lomonosov Moscow State University, Moscow, Russia<br>*Label-free molecular imaging: investigation of photophysical processes and applications for biomedical diagnostics* |
| **Regular talk 1** | 15” | **Andrei Fedotov**<br>M. V. Lomonosov Moscow State University (Russia)<br>*Stain-free subcellular-resolution astrocyte visualization by means of third-harmonic generation microscopy* |
| **Regular talk 2** | 15” | **Maxim Darvin**<br>Charite - University Medicine Berlin (Germany)<br>*Two-photon excited fluorescence lifetime imaging for non-invasive in vivo visualization of mast cells in the human skin* |

**AUDUTORIUM 1**

| **S.4 - part 2** | **Friday April 3rd (10:55 AM – 12:35 AM)** | |
|---|---|---|
| **Invited 3** | 15” | **Liwei Liu,**<br>Shenzhen university, China<br>*Tumor microenvironment monitoring based on FLIM* |
| **Invited 4** | 15” | **Tongsheng Chen,**<br>College of Biophotonics, South China Normal University, China<br>*Stoichiometry and regulation network of Bcl-2 family complexes quantified by live-cell FRET assay* |
| **Invited 5** | 15” | **Herbert Schneckenburger,**<br>Aalen University, Germany<br>*Deep View Microscopy of Cells and Tissues* |
| **Regular talk 3** | 15” | **Boris Yakimov,**<br>Department of Physics of M.V. Lomonosov Moscow State University, Moscow, Russia<br>*M*echanisms of formation of endogenous near infrared fluorescence in biological tissues |

AUDUTORIUM 1

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|---|---|---|
| **Regular talk 4** | 15” | **Elissaveta Zvetkova,**<br>IM -BAS (Bulgaria)<br>*The phenomenon of natural (proper) fluorescence of calcified dermal layers in amphibia (150 years history)* |
| **Regular talk 5** | 15” | **Zhiyi Liu**<br>Zhejiang University (China)<br>*Assessing three-dimensional orientation and organization of microtubules during cell migration based on super-resolution images* |

AUDUTORIUM 3

| **S.4 - part 3** | **Saturday April 4th (8:15 AM – 9:40 AM)** | |
|---|---|---|
| **Keynote 2** | 25” | **Junle Qu,**<br>Shenzhen university, China<br>*Super-resolution imaging for living cell* |
| **Invited 6** | 15” | **Alexander Priezzhev,**<br>M. V. Lomonosov State University, Moscow, Russia<br>*Laser applications in hemorheologic research* |
| **Invited 7** | 15” | **Christian Wagner,**<br>Saarland University, Germany<br>*Red Blood Cell aggregation: An optical tweezers and a confocal holographical approach* |
| **Regular talk 6** | 15” | **Ekaterina Iastrebova,**<br>Laboratory of Cytometry and Biokinetics (Russia),<br>*Influence of Red Blood Cells on the development of atherosclerotic plaque by Scanning flow cytometry* |
| **Regular talk 7** | 15” | **Hans Georg Breunig,**<br>Department of Biophotonics and Laser Technology, Saarland University, Germany (Germany), JenLab GmbH, Germany (Germany)<br>*Combined microfluidic and optoporation setup for laser-assisted cell transfection* |

AUDUTORIUM 3

| **S.4 - part 4** | **Saturday April 4th (10:10 AM – 11:10 AM)** | |
|---|---|---|
| **Invited 8** | 15” | **Ling Fu,**<br>Wuhan National Laboratory for Optoelectronics, Huazhong university of Science and Technology, China<br>*Deep brain Calcium recording in behaving mice* |
| **Invited 9** | 15” | **Daniel Claus,**<br>ILM Ulm, Germany<br>*Chromatic confocal scanning interferometry* |
| **Invited 10** | 15” | **Alexander Savitsky,**<br>A.N. Bakh Institute of Biochemitry, Russian Academy of Sciences, Moscow, Russia<br>*Femtosecond kinetic of the kindling fluorescent protein KFP. Proton transfer as the result of cis-trans isomerization of chromophore* |
| **Regular talk 8** | 15” | **Irina Semenova,**<br>Ioffe Institute (Russia)<br>*Patient-specific cellular response to photodynamic treatment in vitro* |

CHAIRS: ***Dan Zhu**, Huazhong University of Science and Technology, Wuhan, China, **Walter Blondel**, University of Lorraine, Nancy, France (**coordinators**)*

***Ekaterina Borisova**, Bulgarian Academy of Sciences, Sofia, Bulgaria, **Elena Zagaynova**, Privolzhsky research medical University, Nizhny Novgorod, Russia, **Dick Sterenborg**, Netherlands Cancer Institute and Amsterdam University Medical Center, Amsterdam, The Netherlands, **Irving Bigio**, Boston University, USA*

AUDUTORIUM 3

| S.5 - part 1 | Friday April 3rd (2:55 PM – 4:35 PM) | |
|---|---|---|
| **Keynote 1** | 25” | **Francesco Pavone,**<br>LENS & Department of Physics, University of Florence, Italy<br>*Human brain optical mapping* |
| **Invited 1** | 15” | **Tatiana Savelieva,**<br>Russian Academy of Sciences, Prokhorov General Physics Institute, Moscow, Russia<br>*Multi-modal techniques of optical spectroscopy for in vivo demarcation of intracranial tumors* |
| **Invited 2** | 15” | **Benjamin Castaneda Aphan,**<br>Pontificia Universidad Católica del Perú, Lima, Peru<br>*Multimodal imaging for skin ulcers* |
| **Regular talk 1** | 15” | **Silvère Ségaud,**<br>ICube Laboratory (France),<br>*Novel multimodal imaging platform for image-guided surgery* |
| **Regular talk 2** | 15” | **Kevin Contreras,**<br>Ingénierie Moléculaire et Physiopathologie Articulaire (France)<br>*Analytical design of a multimode optical imaging based on structured illumination and CARS technique* |
| **Regular talk 3** | 15” | **Antje Neubauer,**<br>Becker&Hickl GmbH (Germany)<br>*In Vivo Study of Metabolic and Oxygen States in Tumors with Fiber-based Fluorescence/Phosphorescence Lifetime Spectroscopy* |

AUDUTORIUM 3

| S.5 - part 2 | Friday April 3rd (5:00 PM – 6:30 pM) | |
|---|---|---|
| **Invited 3** | 15” | **Irving Bigio,**<br>Boston University, USA<br>*Quantitative measurement of fibrosis in chronic kidney disease (and transplant organ viability) with elastic-scattering spectroscopy* |
| **Invited 4** | 15” | **Dick Sterenborg,**<br>Netherlands Cancer Institute and Amsterdam University Medical Center, Amsterdam, The Netherlands<br>*Diffuse reflection spectroscopy and imaging for assessment of resection margins during cancer surgery* |
| **Invited 5** | 15” | **James Tunnell,**<br>The University of Texas at Austin, USA<br>*Raman spectroscopy for surgical guidance of skin cancer resections* |
| **Regular talk 4** | 15” | **Mindaugas Tamosiunas,**<br>Biophotonics Laboratory, Institute of Atomic Physics and Spectroscopy, University of Latvia, Latvia<br>*Tri-modal spectral characterization of melanoma and non-melanoma cells for improved diagnostic applications* |

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| **Regular talk 5** | 15” | **Boris Majaron,**<br>Jozef Stefan Institute [Ljubljana] (Slovenia),<br>*Noninvasive characterization of tattoos in human skin using diffuse reflectance spectroscopy and pulsed photothermal radiometry* |
| **Regular talk 6** | 15” | **Luca Baratelli,**<br>University of Strasbourg, ICube Laboratory (France)<br>*Design and validation of a diffuse optical characterization platform for tissue mimicking phantoms* |

## S6 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 6: Nano-biophotonics for cancer

CHAIRS: ***Alexander Priezzhev**, M. V. Lomonosov State University, Moscow, Russia, **Victor Loschenov**, Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia, (**coordinators**)*

***Alexey Popov**, University of Oulu, Finland, **Muriel Barberi-Heyob**,University of Lorraine, France, **Victor Zadkov**, M. V. Lomonosov State University, Moscow, Russia*

**AUDUTORIUM 2**

| **S.6 - part 1** | **Saturday April 4th (10:10 AM – 11:20 AM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Nikolai Khlebtsov,**<br>Saratov State University, Saratov, Russia<br>*Gold nanoparticles in bioanalytical applications* |
| **Invited 1** | 15” | **Yuqing Gu,**<br>Dept. of Biomedical Engineering, China Pharmaceutical University, China<br>*Biological Detection of Reactive Oxygen Species Based On Upconversion Nanomaterials* |
| **Invited 2** | 15” | **Daria Pominova,**<br>RAS - Prokhorov General Physics Institute of RAS, Moscow, Russia<br>*Upconversion nanoparticles as multifunctional biomarkers and biosensors* |
| **Regular talk 1** | 15” | **Dina Farrakhova,**<br>Prokhorov General Physics Institute of the Russsian Academy of Science (Russia),<br>*Comparative analysis of the indocyanine green intracellular distribution in the molecular form and nanoform on the various tumor models in vitro and in vivo.* |

**AUDUTORIUM 2**

| **S.6 - part 2** | **Saturday April 4th (2:45 PM – 3:45 PM)** | |
|---|---|---|
| **Invited 3** | 15” | **Chia-Liang Cheng,**<br>National Dong-Hwa University, Hualien, Taiwan<br>*A 3D Co-cultured model for evaluation of nanoparticle facilitated drug delivery* |
| **Invited 4** | 15” | **Nirmalya Ghosh,**<br>IISER – Kolkata, India<br>*Probing nano scale tissue multifractal anisotropy for pre-cancer detection* |
| **Invited 5** | 15” | **Yao He,**<br>Soochow University, China<br>*Silicon-based optical bioimaging and sensing* |
| **Invited 5** | 15” | **Elina Genina,**<br>Saratov State University, Saratov, Russia<br>*Advanced Approaches to Skin In Vivo Optical Clearing* |

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| **Regular talk 2** | 15” | **Ana Gomez,**<br>International Iberian Nanotechnology Laboratory (Portugal), 2 - 2Department of Applied Physics, University of Santiago de Compostela (Spain),<br>*Assessment of cationic liposome-DNA complex formation through dual color Fluorescence Cross Correlation Spectroscopy* |

**AUDUTORIUM 2**

| **S.6 - part 3** | **Saturday April 4th (4:40 PM – 5:25 PM)** | |
|---|---|---|
| **Invited 6** | 15” | **Yuri Ryabchikov,**<br>HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Czech Republic<br>*Ultrapure laser-synthesized single and multi-component nanoparticles for biomedical applications* |
| **Invited 7** | 15” | **Vladimir Makarov,**<br>RAS - Prokhorov General Physics Institute of RAS, Moscow, Russia<br>*Phthalocyanine aluminum crystalline nanoparticles spectral properties and the possibility of their use in biophotonics* |
| **Invited 8** | 15” | **Andrei Lugovtsov,**<br>M. V. Lomonosov State University, Moscow, Russia<br>*Evaluation by laser-optic techniques of nanoparticles safety for theranostic applications: interaction with blood components and effect on blood microrheology* |

## S7 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 7: OCT, Elastography, Photoacoustic, Polarization Imaging

CHAIRS: ***Zeev Zalevsky**, Bar-Ilan University, Israel (**coordinator**)*

***Anabela Da Silva**, Institut Fresnel, France, **Igor Meglinski**, University of Oulu, Finland, **Ma Hui**, Tsinghua University, China, **Tatiana Novikova**, Ecole polytechnique, Palaiseau, France, **Jessica Ramella-Roman;** Florida International University, Miami, USA, **Arnaud Dubois**, Institut d'Optique Graduate School, Palaiseau, France, **Emmanuel Bossy**, Physics Interdisciplinary Laboratory, France, **Amos Danieli**, Faculty of Engineering, Bar Ilan University, Israel*

**AUDUTORIUM 1**

| **S.7 - part 1** | **Friday April 3rd (2:55 PM – 4:35 PM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Dan Elson,**<br>Imperial College London, London, UK<br>*Polarization endoscopy* |
| **Invited 1** | 15” | **Damien Gasteau,**<br>Biomedical Photonic Imaging group, University of Twente, The Netherlands<br>*Combining photoacoustics and laser-induced ultrasound for tomographic imaging* |
| **Invited 2** | 15” | **Zeev Zalevsky,**<br>Bar-Ilan University, Israel<br>*Super resolved and localized photoacoustic sensing* |
| **Invited 3** | 15” | **Vladimir Zaitsev,**<br>Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia<br>*OCE-study of Slow Processes in Cartilaginous Samples: Mechanical Relaxations after Later-Assisted Reshaping and Osmotic Phenomena Accompanying Optical Clearing* |
| **Regular talk 1** | 15” | **Kirill Larin,**<br>University of Houston (United States)<br>*Optical Elastography - an Emerging Techniques to Assess Ocular Health* |

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|---|---|---|
| **Regular talk 2** | 15” | **Sihua Yang**<br>South China Normal University (China)<br>*Photoacoustic endomicroscopy* |

AUDUTORIUM 1

| **S.7 - part 2** | **Friday April 3rd (5:00 PM – 6:30 PM)** | |
|---|---|---|
| **Invited 4** | 15” | **Zhihua Ding,**<br>Zhejiang University, China<br>*Structural and Functional Optical Coherence Tomography, Technology and Applications* |
| **Invited 5** | 15” | **Igor Meglinski,**<br>Oulu University, Finland, Aston University, Birmingham, UK<br>*Optical Angular Momentum in Tissue Diagnosis* |
| **Invited 6** | 15” | **Ping Xue,**<br>Department of Physics,Tsinghua University, China<br>*Dispersion-mediated conjugate suppression for high speed optical computing OCT imaging* |
| **Regular talk 3** | 15” | **Jonas Ogien**<br>DAMAE medical (France),<br>*Line-field confocal optical coherence tomography: a new tool for three dimensional imaging of human skin in vivo at cellular resolution* |
| **Regular talk 4** | 15” | **Anderson Gomes**<br>University Federal of Pernambuco (Brazil),<br>*Application of Photoacoustic Tomography Technique for Dental Caries Diagnosis: Influence of Laser Wavelength* |
| **Regular talk 5** | 15” | **Fatmir Asllanaj**<br>Laboratoire d’énergétique et de Mécanique Théorique Appliquée (France)<br>*Optical properties reconstruction method for Quantitative Photoacoustic Tomography* |

AUDUTORIUM 1

| **S.7 - part 3** | **Saturday April 4th (8:25 AM – 9:30 AM)** | |
|---|---|---|
| **Keynote 2** | 25” | **Jessica Ramella-Roman,**<br>Florida International University, Miami, USA<br>*Image polarimetry clinical and pre-clinical directions* |
| **Invited 7** | 15” | **Tatiana Novikova,**<br>Ecole polytechnique, Palaiseau, France<br>*Multi-modal imaging of thin tissue cuts for biomedical diagnostic* |
| **Invited 8** | 15” | **Edik Rafailov,**<br>Aston Institute of Photonics Technology, Aston University, Birmingham, United Kingdom<br>*Novel compact laser sources for biomedical photonics applications* |
| **Regular talk 6** | 15” | **Peter Brecht**<br>PhotoSound Technologies, Inc. (United States),<br>*Biomedical Imaging Technology using Tunable Laser Systems and Compact, Modular Data Acquisition Units Connected in Parallel for Extremely High Channel Counts* |
| **Regular talk 7** | 15” | **Irina Larina**<br>Baylor College of Medecine (United States)<br>*Live optical imaging and manipulation of cardiodynamics in mouse embryos for biomechanical analysis* |

CHAIRS: ***Alexander Shkurinov**, M. V. Lomonosov State University, Russia (**coordinator**)*

***Kirill Zaytsev,** Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia, **Olga Cherkasova**, Institute of Laser Physics of SB RAS, Novosibirsk, Russia, **Irina Dolganova**, Bauman Moscow State Technical University, Moscow, Russia, **Daria Tuchina**, Saratov State University, Saratov, Russia*

AUDUTORIUM 1

| S.8 - part 1 | Saturday April 4th (4:40 PM – 5:35 PM) | |
|---|---|---|
| **Keynote 1** | 25” | **Joo-Huik Son,**<br>Department of Physics, University of Seoul, South Korea<br>*Manipulation of biological molecules and cells using terahertz radiation for potential cancer treatment* |
| **Invited 1** | 15” | **Zhiyu Qian,**<br>Dept. of Biomedical Engineering, Nanjing University of Aeronautics and Astronautics, China<br>*Real time assessment of microwave ablation on tumors by NIR spectra techniques* |
| **Invited 2** | 15” | **Patrick Mounaix,**<br>Université Bordeaux, France<br>*Tissue malignancy assessment by terahertz refractive index thresholding for breast cancer demarcation* |

AUDUTORIUM 1

| S.8 - part 2 | Sunday April 5th (9:20 AM – 10:45 PM) | |
|---|---|---|
| **Keynote 2** | 25” | **Emma Pickwell MacPherson,**<br>Department of Physics, Warwick University, Coventry, England<br>*Advancements for biomedical THz imaging* |
| **Invited 3** | 15” | **Gun-Sik Park,**<br>Seoul National University, South Korea<br>*Nanoscale confined water dynamics studied by dielectric relaxation* |
| **Invited 4** | 15” | **Kirill Zaytsev,**<br>Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia<br>*THz imaging of soft biological tissues with the spatial resolution beyond the Abbe limit* |
| **Invited 5** | 15” | **Yan Peng,**<br>Terahertz Technology Innovation Research Institute, University of Shanghai for Science and Technology, China<br>*Application of Terahertz Precision Spectrum in Biophotonics* |
| **Regular talk 1** | 15” | **Jaakko Hakala**<br>Optoelectronics and Measurement Techniques Research Unit, Department of Electrical Engineering, University of Oulu, Finland (Finland)<br>*Non-invasive sensing of human brain water - An experimental comparison between microwave and near-infrared spectroscopy based techniques* |

| S.8 - part 3 | Sunday April 5th (11:15 AM – 12:30 AM) | |
|---|---|---|
| **Invited 6** | 15” | **Olga Smolyanskaya,**<br>ITMO University, Saint-Petersburg, Russia<br>*Pulse terahertz holographic reconstruction of optical parameters for blood plasma pellets* |
| **Invited 7** | 15” | **Guilhem Gallot,**<br>Laboratory for Optics and Biosciences, Ecole polytechnique, Palaiseau, France<br>*Sensing the cytosol dynamics of living cells by terahertz attenuated total reflection* |
| **Invited 8** | 15” | **Olga Cherkasova,**<br>Institute of Laser Physic of the Siberian Branch of the Russian Academy of Sciences, Russia<br>*Cellular effects of terahertz waves* |
| **Regular talk 3** | 15” | **Anna Mankova,**<br>Lomonosov Moscow State University (Russia),<br>*Laser Raman and FTIR spectroscopic study of the elements of structural hierarchy of protein molecules* |
| **Regular talk 4** | 15” | **Petre-Catalin Logofatu,**<br>National Institute for Lasers, Plasma, and Radiation Physics - INFLPR (ROMANIA) (Romania),<br>*Investigation of microorganisms using THz hyperspectroscopy - correlation to colorimetric imaging* |

## S9 KEYNOTES, INVITED SPEAKER REGULAR TALK

## SESSION 9: Microcirculation imaging, Laser Speckle Contrast Imaging

CHAIRS: ***Irina Larina**, Baylor College of medicine, Houston, USA (**coordinator**)*

***Valery Tuchin**, Saratov State University, Saratov, Russia, **Dan Zhu**, Huazhong University of Science and Technology, Wuhan, China, **Anne Humeau-Heurtier**, Université d’Angers, France*

**AUDUTORIUM 3**

| S.9 - part 1 | Sunday April 5th (9:20 AM – 10:30 PM) | |
|---|---|---|
| **Keynote 1** | 25” | **Wiendelt Steenbergen,**<br>University of Twente, The Netherlands<br>*Movement artefacts in handheld laser speckle contrast imaging* |
| **Invited 1** | 15” | **Pengcheng Li,**<br>Wuhan National Laboratory for Optoelectronics, Huazhong university of Science and Technology, China<br>*Statistics for mean-invariant estimation of blood flow using laser speckle* |
| **Invited 2** | 15” | **Anne Humeau-Heurtier,**<br>Université d’Angers, France<br>*Texture analysis of biomedical data: a powerful mean to extract physiological information, but are laser speckle contrast data eligible?* |
| **Regular talk 1** | 15” | **Ferenc Bari**<br>University of Szeged, Faculty of Medicine (Hungary)<br>*Multimodal imaging of neurovascular coupling in the cerebral cortex* |

AUDUTORIUM 3

| S.9 - part 2 | Sunday April 5th (11:30 AM – 12:30 AM) | |
|---|---|---|
| **Invited 3** | 15” | **Martin Leahy,**<br>National University of Ireland, Galway, Ireland<br>*Microcirculation imaging with light and sound* |
| **Invited 4** | 15” | **Gert Nilsson,**<br>Wheelsbridge AB, Linköping, Sweden<br>*TiVi technology and Laser Doppler Imaging* |
| **Invited 5** | 15” | **Tomas Strömberg,**<br>Linköping University, Sweden<br>*Title to be confirmed* |
| **Regular talk 2** | 15” | **Nicla Settembre**<br>Nancy University Hospital, University of Lorraine (France),<br>*Quantitative assessment of indocyanine green angiography in the follow-up of patients with critical limb ischaemia.* |

## S10 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 10: Machine Learning, Bioinformatics, Image and signal

CHAIRS: ***Christian Daul**, University of Lorraine, France (**coordinator**)*

***Yuri Kistenev**, Tomsk University, Russia, **July Galeano**, Instituto Tecnológico Metropolitano. Medellín, Colombia, **Franck Marzani**, Université de Bourgogne, France, **Walter Blondel**, University of Lorraine, France*

AUDUTORIUM 3

| S.10 - part 1 | Saturday April 4th (2:45 PM – 4:10 PM) | |
|---|---|---|
| **Keynote 1** | 25” | **Aydogan Ozcan,**<br>University of California, Los Angeles, USA<br>*Deep learning-enabled computational microscopy and sensing* |
| **Invited 1** | 15” | **Yury Kistenev,**<br>Tomsk University, Russia<br>*Molecular imaging and machine learning* |
| **Invited 2** | 15” | **Alexander Kel,**<br>GeneXplain GmbH, Germany<br>*Application of machine learning in Bioinformatics towards drug target discovery* |
| **Regular talk 1** | 15” | **Benjamin Brunel,**<br>Biospectroscopie Translationnelle - EA 7506 (France)<br>*Toward automated machine learning in spectral analysis: genetic algorithm for optimal pre-processing and regression of vibrational spectra* |
| **Regular talk 2** | 15” | **Maria C. Torres-Madronero,**<br>Instituto Tecnologico Metropolitano (Colombia),<br>*Spectral characterization of cutaneous ulcers caused by Leishmaniasis in an animal model for diagnosis and treatment follow-up* |

| S.10 - part 2 | Saturday April 4th (4:40 PM – 5:55 PM) | |
|---|---|---|
| **Invited 3** | 15” | **Yannick Benezeth,**<br>Université de Bourgogne, France<br>*Automated detection of stomach lesions by endoscopic imaging: comparison of NBI and multispectral images* |

AUDUTORIUM 3

| | | |
|---|---|---|
| **Invited 4** | 15” | **Thomas Mangeat,** CNRS - CBI (Center for Integrative Biology)<br>**Paul Sabatier University,** Toulouse III, France<br>*Super-resolved live imaging for a wide range of biological applications using Random Illumination Microscopy (RIM)* |
| **Regular talk 3** | 15” | **Binh Phan,**<br>Centre de Recherche en Automatique de Nancy (France),<br>*Visualization of extended epithelial tissue surfaces using dense optical flow and structure from motion* |
| **Regular talk 4** | 15” | **Ata Chizari,**<br>University of Twente [Netherlands] (Netherlands)<br>**A***n exploration of movement artefacts in a handheld laser speckle contrast imaging* |
| **Regular talk 5** | 15” | **Warda Boutegrabet,**<br>INSERM U1113, Fundamental and Applied Research in Cancer Research Interface (IRFAC) (France), EA7506, Translational Bio Spectroscopy (BioSpecT), Université de Reims (France),<br>*Automation of outlier removal for the improvement of IR spectral histology applied to human colon cancer samples* |

## S11 KEYNOTES, INVITED SPEAKER REGULAR TALK

## SESSION 11: Clinical transfer applied to Cancer Treatment and Diagnosis

CHAIRS: ***Ekaterina Borisova****, Bulgarian Academy of Sciences, Sofia, Bulgaria (**coordinator**)*

***Marine Amouroux****, University of Lorraine, Nancy France,* ***Geneviève Bourg-Heckly****, Université Pierre et Marie Curie, France,* ***Elena Zagaynova****, Privolzhsky research medical University, Nizhny Novgorod, Russia*

AUDUTORIUM 1

| **S.11 - part 1** | **Saturday April 4th (10:10 AM – 11:20 AM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Angelo Pierangelo,**<br>Ecole polytechnique, Paris, France<br>*Polarized light for cancer detection in vivo* |
| **Invited 1** | 15” | **Alexandra Walsh,**<br>Department of Biomedical Engineering, Texas A&M University, USA<br>*Label-free imaging of metabolic heterogeneity for functional assessment of anti-cancer therapy.* |
| **Invited 2** | 15” | **Victor Loschenov,**<br>Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia<br>*New methods and tools for fluorescence navigation and photodynamic therapy in the surgical clinic* |
| **Regular talk 1** | 15” | **Olivier Piot,**<br>EA 7506 BioSpecT (France)<br>*Diagnostic potential of mid-infrared spectral imaging on tissue sections: application to the scoring of tumour aggressiveness of lung carcinomas* |

AUDUTORIUM 1

| S.11 - part 2 | Saturday April 4th (2:45 PM – 4:00 PM) | |
|---|---|---|
| **Invited 3** | 15” | **Buhong Li,**<br>School of Photonics and Electronic Engineering, Fujian Normal University, China<br>*Enhanced photodynamic therapy for clinical applications* |
| **Invited 4** | 15” | **Yu. S. Maklygina,**<br>Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia<br>*New spectral-fluorescent methods for the deep brain tumors theranostics* |
| **Invited 5** | 15” | **Ronald Sroka,**<br>LIFE-Center of the Munich University Hospital, Munich, Germany<br>*Techniques for Photodiagnosis and Photodynamic in Neurosurgery* |
| **Invited 6** | *15”* | **Anne Planat-Chrétien,**<br>CEA-Leti, Grenoble, France<br>*Time-resolved reflectance spectroscopy for buried flaps monitoring* |
| **Regular talk 2** | 15” | **Ekaterina Borisova,**<br>IE-BAS (Bulgaria), SSU (Russia)<br>*Photodiagnostics of Stress-Induced Gastrointestinal Tract Tumours* |
| **Regular talk 3** | 15” | **Michael Ziskind,**<br>Laboratoire de Physique des Lasers, Atomes et Molécules - UMR 8523 (France)<br>*In-Vivo Real-Time Molecular Diagnosis of Tumors Using Remote IR Resonant Laser Ablation* |

## S12 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 12: Biophotonics devices for personalized diagnostics and wearables

CHAIRS: ***Evgeny Shirshin**, M. V. Lomonosov State University, Moscow, Russia (**coordinator**)*

AUDUTORIUM 2

| S.12 | Sunday April 5th (9:20 AM – 11:15 PM) | |
|---|---|---|
| **Keynote 1** | 25” | **Gerwin Puppels,**<br>Erasmus Medical Center and River Diagnostics company<br>*Raman applications for skin diagnostics* |
| **Invited 1** | 15” | **Maxim Darvin,**<br>Charité Universitätsmedizin, Berlin, Germany<br>*Non-invasive assessment of antioxidant status of human skin using spectroscopic methods* |
| **Invited 2** | 15” | **Sehyun Shin,**<br>Korea University, Seoul, South Korea<br>*Early detection of diabetic chronic kidney disease using microfluidic-based biophotonics* |
| **Invited 3** | 15” | **Vladislav Shcheslavskiy,**<br>Becker&Hickl GmbH, Germany<br>*Clinical FLIM: from micro to macroworld* |
| **Regular talk 1** | 15” | **Vivek Sivakumar,**<br>Department of Applied Mechanics, Indian Institute of Technology Madras (India)<br>*Laser Induced Breakdown spectroscopy (LIBS) based opto-microfluidic biosensor for the detection of pathogenic bacteria.* |
| **Regular talk 2** | 15” | **Janis Spigulis,**<br>University of Latvia (Latvia)<br>*Snapshot Multi-Spectral-Line Imaging Device for Skin Diagnostics* |

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|---|---|---|
| **Regular talk 2** | 15” | **Martin Hammer,**<br>University Hospital Jena (Germany)<br>*Ophthalmic Fluorescence Lifetime and Spectral Imaging for Age-Related Macular Degeneration - from Clinics to Histology and Back* |

## S13 KEYNOTES, INVITED SPEAKER REGULAR TALK — SESSION 13: Lasers in dermatology - Photodermatology

AUDUTORIUM 2

CHAIRS: ***Karsten Koenig****, Saarland University, Germany,* ***François Will****, Dermatologist, Laser Center Nord Alsace-Haguenau and Laser Center Strasbourg Rhin-Strasbourg, Vice-President French Laser Group,France (****coordinators****)*

***Ekaterina Borisova****, Bulgarian Academy of Sciences, Sofia, Bulgaria,* ***Marine Amouroux****, University of Lorraine, Nancy France*

| **S.13** | **Sunday April 5th (10:55 AM – 12:30PM)** | |
|---|---|---|
| **Keynote 1** | 25” | **Karsten Koenig,**<br>Saareland University, Germany<br>*Multiphoton applications* |
| **Keynote 2** | 25” | **Ana-Maria Pena,**<br>L'Oréal Research and Innovation<br>*Multiphoton imaging in cosmetics research* |
| **Invited 1** | 15” | **François Will,**<br>Laser Center Nord Alsace-Haguenau and Laser Center Strasbourg Rhin-Strasbourg, France<br>*Lasers and Basal Cell Carcinomas* |
| **Invited 2** | 15” | **Hans Laubach,**<br>Dermatologist at LaserMD Center in Strasbourg (France), Laser consulting at University Hospital in Geneva (Switzerland), President of the Europeen Society for Laser in Dermatology<br>*Real anti-aging using laser medicine* |
| **Regular talk 1** | 15” | **Denise Zezell,**<br>Instituto de Pesquisas Energeticas e Nucleares IPEN - CNEN/SP (Brazil),<br>*FTIR imaging on glass substrates evaluation of histological skin burn injuries specimens treated by femtosecond laser pulses* |