



אוניברסיטת בר-אילן
Bar-Ilan University



The 15th international
conference in Israel
18 – 20 Nov. 2018
Faculty of Engineering
Bar-Ilan University

LALS

Laser Applications in Life Sciences



Day 1			
Time	Track A: Fundamentals, hybridization and future approaches	Track B: Sensing	Track C: Treatment
08:00-09:00	Arrival and registration		
09:00-09:30	Opening words and greetings		
09:30-10:30	Plenary 1		
10:30-11:00	Coffee break		
11:00-11:45	Keynote A1	Keynote B1	Keynote C1
11:45-12:15	Invited A1	Invited B1	Invited C1
12:15-12:45	Invited A2	Invited B2	Invited C2
12:45-14:00	Lunch break		
14:00-14:15	Oral A1	Oral B1	Oral C1
14:15-14:30	Oral A2	Oral B2	Oral C2
14:30-14:45	Oral A3	Oral B3	Oral C3
14:45-15:00	Oral A4	Oral B4	Oral C4
15:00-15:45	Posters presents give short oral overview on their poster		
15:45-16:15	Coffee break		
16:15-16:45	Invited A3	Invited B3	Invited C3
16:45-17:00	Oral A5	Oral B5	Oral C5
17:00-18:30	Posters presentations and exhibition		
18:30-20:00	Gala dinner		
Day 2			
Time	Track A: Fundamentals, hybridization and future approaches	Track B: Sensing	Track C: Treatment
08:50-09:00	Dr. Andrey Broisman- Ministry of Science and Technology		
09:00-10:00	Plenary 2		
10:00-10:45	Keynote A2	Keynote B2	Keynote C2
10:45-11:15	Invited A4	Invited B4	Invited C4
11:15-11:45	Coffee break		
11:45-12:15	Invited A5	Invited B5	Invited C5
12:15-12:45	Invited A6	Invited B6	Invited C6
12:45-13:15	Invited A7	Invited B7	Invited C7
13:15-14:15	Lunch break		
14:15-14:45	Invited A8	Invited B8	Invited C8
14:45-15:15	Invited A9	Invited B9	Invited C9
15:15-15:30	Oral A6	Oral B6	Oral C6
15:30-15:45	Oral A7	Oral B7	Oral C7
15:45-16:00	Oral A8	Oral B8	Oral C8
16:00-16:15	Oral A9	Oral B9	Oral C9
16:15-16:45	Coffee break		
16:45-17:15	Invited A10	Invited B10	Invited C10
17:15-17:30	Oral A10	Oral B10	Oral C10
17:30-17:45	Oral A11	Oral B11	Oral C11
17:45-18:00	Oral A12	Oral B12	Oral C12
18:00-18:15	Oral A13	Oral B13	Oral C13
18:15-18:30	Oral A14	Oral B14- 1 (invited)	Oral C14
18:30-18:45		Oral B14- 2	
Day 3			
Time	Track A: Fundamentals, hybridization and future approaches	Track B: Sensing	Track C: Treatment
09:00-09:45	Keynote A3	Keynote B3	Keynote C3
09:45-10:15	Invited A11	Invited B11	Invited C11
10:15-10:45	Invited A12	Invited B12	Invited C12
10:45-11:15	Invited A13	Invited B13	Invited C13
11:15-11:45	Coffee break		
11:45-12:15	Invited A14	Invited B14	Invited C14
12:15-12:30			Oral C15
12:30-12:45	Invited A15	Invited B15	Oral C16
12:45-13:00	Oral A15	Oral B15	Oral C17
13:00-14:15	Lunch break		
14:15-14:30			Oral C18
14:30-14:45	Invited A16	Invited B16	Oral C19
14:45-15:15	Invited A17	Invited B17	Invited C15
15:15-15:30	Oral A16		Oral C20
15:30-15:45	Oral A17	Invited B18	Oral C21
15:45-16:15	Coffee break		
16:15-17:30	IET travel around the world young lecturer competition		
17:30-17:45	Closing words		
Day 4-Touring Israel (Jerusalem and the Dead sea)			

PLENARY 1:

- **Wider, Faster, Deeper: New Directions for Imaging at Depth**, Kishan Dholakia, University of St Andrews, UK

PLENARY 2:

- **Tissue optical clearing as a platform for in vivo optical imaging and treatment of hidden pathologies: from UV to terahertz**, Valery V. Tuchin, Saratov National Research State Univ., Russia

TRACK A

Fundamentals, hybridization and future approaches



- **KEYNOTE A1: Laser assessment of red blood cells intrinsic properties and interactions**, Alexander Priezzhev et al., Russia
- **KEYNOTE A2: Retinal prosthesis for restoration of sight – current and future technologies**, Yossi Mandel, Israel
- **KEYNOTE A3: Perspectives of application of circularly polarized light and optical angular momentum for diagnostic screening of biological tissues**, Igor Meglinski et al., Finland
- **INVITED A1: Liposomes and Exosome for Drug Targeting Applications: The current challenges and the need for improved imaging technologies**, Sophia G. Antimisiaris, Greece
- **INVITED A2: A short abstract of selected quantitative phase imaging techniques and their medical applications**, Daniel Claus et al., Germany
- **INVITED A3: Miniaturized photonic modules for biosensing and diagnostics**, Ibrahim Abdulhalim, Israel
- **INVITED A4: SERS and TERS recognition of neuropathogenic proteins**, Roberto Pini et al., Italy
- **INVITED A5: Hyperspectral imaging for functional characterization of skin and vascular system**, Alexander Bykov et al., Finland
- **INVITED A6: Super-Resolution Light Microscopy of cellular Nanostructures**, Christoph Cremer, Germany
- **INVITED A7: A new achievement in multimodal microscopy imaging**, George A. Stanciu et al., Romania
- **INVITED A8: Laser-based spectroscopic methods as a versatile tools in investigating alive mammalian oocytes and embryos**, A.V. Karmenyan et al., Taiwan
- **INVITED A9: Biomedical applications at lab on Chip scale by advanced label-free coherent imaging**, Pietro Ferraro, Italy
- **INVITED A10: Light propagation in biological media: microscopic, mesoscopic and macroscopic views**, Alwin Kienle et al., Germany
- **INVITED A11: Histology of tissue with Mueller microscopy**, Tatiana Novikova et al., France
- **INVITED A12: Plasmonic Gap-Enhanced Raman Tags: Fabrication, Properties, and Applications**, N. G. Khlebtsov et al., Russia
- **INVITED A13: Lumpectomy margin assessment using hybrid optical and mass spectrometry technology**, Alex Vitkin et al., Canada
- **INVITED A14: High Dynamical Range Laser Imaging of Brain**, Francesco S. Pavone, Italy

- **INVITED A15: Optical coherence elastography as a tool to improve tumour margin assessment**, Brendan Kennedy, USA
- **INVITED A16: Functional optical imaging of biological tissue using laser speckle**, Pengcheng Li, China
- **INVITED A17: Noninvasive monitoring of nanoparticle clearance and aggregation in blood circulation by *in vivo* flow cytometry**, Xunbin Wei et al., China

- **ORAL A1: The role of the meningeal lymphatic system in the brain drainage: *in vivo* visualization**, M. Klimova et al., Russia
- **ORAL A2: Laser techniques for studying the adenylyl cyclase activity in regulation of human erythrocytes deformability**, A.N. Semenov et al., Russia
- **ORAL A3: Dynamic Optical Coherence Elastography of Soft Tissues**, Kirill V. Larin, USA
- **ORAL A4: Volumetric (3D) Ultrasound Medical Imaging Supported by Laser Micromachining**, E. Avnear Wiener, Israel
- **ORAL A5: Remote Monitoring of Blood Pulsation with Infra-Red Illumination Compared to Electrocardiography**, Matan Benyamin et al., Israel
- **ORAL A6: Interaction-Free Ghost-Imaging of Structured Objects**, Eliahu Cohen et al., Israel
- **ORAL A7: Real-time nuclear diagnosis using high-resolution coherence phase-interference microscopy**, Irina Vasilenko et al., Russia
- **ORAL A8: *In vivo* real time assessment of water content in the human dermis using diffuse reflectance spectroscopy**, G.S. Budylin et al., Russia
- **ORAL A9: Fiber photonics for broad spectra biomed applications**, Olga Bibikova and Viacheslav Artyushenko, Germany
- **ORAL A10: Three-level approximated helical phase with a carrier wave for beam delivery for optical trapping applications**, Mani Ratnam Rai et al., Israel
- **ORAL A11: Wideband optoacoustic detectors for multi-scale characterization of the vasculature**, P.Subochev et al., Russia
- **ORAL A12: The theory behind the full scattering profile**, Idit Feder et al., Israel
- **ORAL A13: Development of histomorphometry using multiple sequential polychrome-labeling and confocal laser scanning microscopy for quantitatively estimation of new bone formation rate in repaired defects**, Shuliang Cui et al., China
- **ORAL A14: Quantitative detection and staging of cancer tissues using label-free Mueller matrix microscope**, Honghui He, China
- **ORAL A15: Automated Analysis of Sperm for *In Vitro* Fertilization**, Simcha Mirsky et al., Israel
- **ORAL A16: Singlet oxygen phosphorescence *in vivo***, S. Hackbarth et al., Germany
- **ORAL A17: Fluorescence time-resolved macro-imaging**, Vladislav I. Shcheslavskiy et al., Germany



- **KEYNOTE B1: Parametric approaches to optical coherence tomography and their applications**, David Sampson, University of Surrey, UK
- **KEYNOTE B2: High Throughput, Wide-Field Multiphoton Microscopy for Deep Structural Imaging of Neuronal Synapse Remodeling**, Peter T. C. So, USA
- **KEYNOTE B3: Multi-channel optical coherence tomography**, Christoph K. Hitzenberger, Austria

- **INVITED B1: 3D imaging of thick specimens using Gradient Light Interference Microscopy (GLIM)**, Gabriel Popescu, USA
- **INVITED B2: Increasing Resolution in 3D Live Cell Microscopy**, Herbert Schneckenburger et al., Germany
- **INVITED B3: Label-free differentiation of floating cells by polarized photon scattering**, Hui Ma, China
- **INVITED B4: Metabolic imaging, cells and proteins assessment in the human papillary dermis in vivo**, Eavgeny A. Shirshin et al., Russia
- **INVITED B5: Nanolayers – new possibilities in fiber-optic biosensors technology**, Małgorzata Jędrzejewska-Szczerska, Poland
- **INVITED B6: Autofluorescence and diffuse-reflectance spectroscopy for skin cancer diagnosis**, Ekaterina Borisova et al., Bulgaria
- **INVITED B7: The Road to Real Time 3D Optical Coherence Tomography**, Ping Xue, China
- **INVITED B8: No Fourier Transform Optical Coherence Tomography**, Adrian Podoleanu et al., UK
- **INVITED B9: Robust strain mapping in phase-sensitive optical coherence tomography: applications to compressional elastography and beyond**, Vladimir Y. Zaitsev, Russia
- **INVITED B10: High speed OCT for in-vivo cellular resolution imaging of the structure, function and blood perfusion of biological tissue**, Kostadinka Bizheva, Canada
- **INVITED B11: Optical clearing skull window for imaging cortical neural and vascular**, Dan Zhu, China
- **INVITED B12: In vivo optical coherence tomography of mouse reproductive processes**, Irina V. Larina, USA
- **INVITED B13: Dynamic range improvement and contrast enhancement in swept source optical coherence tomography**, Jun Zhang, China
- **INVITED B14: An electrochemical biosensor for sensitive detection of microRNAs based on target-recycled non-enzymatic amplification**, Yueqing Gu et al., China
- **INVITED B15: A microfluidic assaying device for RBC aggregating force with analysis of backscattering light**, Sehyun Shin, Korea
- **INVITED B16: Computational Imaging and Sensing Systems**, Aydogan Ozcan et al., USA
- **INVITED B17: Fiber-based methods for deep brain Calcium recording in behaving mice**, Ling Fu, China
- **INVITED B18: State-of-the-art Clinical Multiphoton Tomography (MPT)**, Karsten König, Germany

- **ORAL B1: Cross-polarization optical coherence tomography for tissue type differentiation and blood vessels detection during brain cancer surgery**, E.B. Kiselava et al, Russia
- **ORAL B2: The study of the lymphatic system dynamics by using optical coherence tomography and gold nanorod contrasting of the deep cervical lymph nodes**, A. Dubrovskiy et al, Russia
- **ORAL B3: Remote optical sensing in otolaryngology**, Nisan Ozana et al., Israel

- **ORAL B4: In vivo imaging of leukocytes and platelets in humans using fluorescence microscopy**, B.P. Yakimov et al., Russia
- **ORAL B5: Doppler Imaging of tympanic membrane vibrations**, Matan Hamra et al., Israel
- **ORAL B6: Differential diagnosis of melanocytic lesions by in vivo label-free multimodal optical imaging**, V. Elagin et al., Russia
- **ORAL B7: Research on neurovascular coupling of mouse cerebral edema model by using photoelectric method**, Weitao Li et al., China
- **ORAL B8: Challenges in using time-resolved fluorescence anisotropy for the size determination of carbon dots**, Manoop Chenchiliyan et al., Israel
- **ORAL B9: Low-frequency laser Raman and FTIR spectroscopy in the study of structural elements of protein molecules**, A.A. Mankova et al., Russia
- **ORAL B10: Laser Raman and Infrared diagnostics of enzymatic reactions**, I.G. Shpachenko et al., Russia
- **ORAL B11: Laser IR and THz spectroscopy analysis of human skin and food surface Volatile organic compounds**, Yuri V.Kistenev et al., Russia
- **ORAL B12: Application of Fluorescence Lifetime Imaging in Skin Cancer Diagnosis**, Lixin Liu et al., China
- **ORAL B13: Quantitative phase microscopy of highly dynamic cells using flipping interferometer with doubled field of view as phase microscopy**, Noa Rotman-Nativ et al., Israel
- **ORAL B14: Raman microscopy for non-invasive determination of the skin barrier function in vivo**, M. E. Darvin et al., Germany
- **ORAL B15: Polarization imaging for dynamic monitoring of tissue clearing**, Nan Zeng et al., China



- **KEYNOTE C1: Optical Dosimetry in Radiation Therapy with Scintillation & Cherenkov Imaging**, Brian Pogue, USA
- **KEYNOTE C2: Clinical Biophotonics: Pushing the Technical Solutions into the Hospital**, Juergen Popp, Germany
- **KEYNOTE C3: Shedding New Light on Old Diseases**, Abraham Katzir, Israel

- **INVITED C1: ALA-mediated cancer photo-therapy and fluorescence-guided surgery**, Zvi Malik, Israel
- **INVITED C2: Multi-Photon Processes in Cancer Diagnostics and Therapy**, Ricardas Rotomskis, Lithuania
- **INVITED C3: The use of lasers in the treatment of soft and hard tissues in veterinary medicine**, Michal Wąsowicz, Poland
- **INVITED C4: Application of the laser techniques for in vitro and in vivo evaluation of the interaction of nanoparticles with blood components and their effect on blood microrheology**, A.E. Lugovtsov et al., Russia
- **INVITED C5: Digital capillaroscopy in scientific research and in clinical practice, new approaches**, Yury Gurfinkel et al., Russia
- **INVITED C6: Smart nanomaterials for synergistically enhancing photodynamic therapy efficiency**, Xiaolong Liu et al., China
- **INVITED C7: Event-related Activities in the Dorsolateral Prefrontal Cortex Associated with Playing A Multiplayer Online Battle Arena Game “League of Legends”**, Hao Lei et al., China
- **INVITED C8: Is the direct vHPC–mPFC information transfer requisite for spatial working memory? - An application of Optogenetic technology to inhibit vHPC–mPFC input in rat**, Xin Tian et al., China
- **INVITED C9: Interaction of red blood cells incubated with engineered nanoparticles assessed by optical tweezers and SEM imaging**, Alexey Popov et al., Finland
- **INVITED C10: Unconversional nanoparticle for deep tumor PDT**, Zhiyu Qian et al., China
- **INVITED C11: Multimodal monitoring of the brain, glymphatic and cardiovascular system**, Teemu Myllylä, Finland
- **INVITED C12: Thermo-Optical Nonlinearity of a Single Metallic Nanoparticle**, Yonatan Sivan et al., Israel
- **INVITED C13: Theranostic activity-based probes: Development and Applications**, Georgia Sotiropoulou, Greece
- **INVITED C14: Image-guided therapy**, Konstantin Sokolov, USA
- **INVITED C15: Novel developments and biomedical applications of multi-spectral optoacoustic tomography**, Daniel Razansky, Germany

- **ORAL C1: Optimization of photodynamic effects on the blood-brain barrier permeability**, A. Terskov et al., Russia
- **ORAL C2: Evanescent wave dynamic light scattering by proteins in mixed saliva under influence of electric field**, E. Savchenko, Russia
- **ORAL C3: Complementary bimodal approach to monitoring of photodynamic therapy with target nanoconstructs: numerical simulations and phantom study**, Ilya V. Turchin, Russia
- **ORAL C4: Interaction of nanostructured gold with light and bioapplications of gold- and gold-shell nanoparticles**, E. Perevedentseva et al., Taiwan
- **ORAL C5: Fiber optic solutions for laser delivery and spectroscopy in medical applications**, O. Bibikova et al., Germany

- **ORAL C6: Fractional laser treatment of soft oral tissues: in vivo and ex vivo study**, Karabut Maria et al., Russia
- **ORAL C7: Optical biopsy of abdominal tissues in mini-invasive surgery**, Viktor V. Dremin et al., Russia
- **ORAL C8: The effectiveness of interventional procedures in patients with tumor lesion of bile ducts**, Andrian V. Mamoshin et al., Russia
- **ORAL C9: Surface chemistry controls the uptake of Gold nanorods by macrophages**, Ruchira Chakraborty et al., Israel
- **ORAL C10: Comparative analysis of regimes in single and dual-wavelength photodynamic therapy assisted by optical monitoring**, Maria A. Shakhova et al., Russia
- **ORAL C11: He-Ne laser irradiation stimulates anabolism in cultured chondrocytes by enhancing subcellular ultrastructure and increasing extracellular matrix secretion**, Xiaohong Yang et al., China
- **ORAL C12: Watt-level Tunable Narrow bandwidth Tm:YAP laser using a pair of Etalons for a biomedical applications**, Salman Noach et al., Israel
- **ORAL C13: Cypate-mediated thermosensitive nanoliposome for tumor imaging and photothermal triggered drug release**, Yuxiang Ma et al., China
- **ORAL C14: Synchronised wearable blood perfusion sensor system for constant microcirculation monitoring**, E.A. Zherebtsov et al., UK
- **ORAL C15: Label-free, real-time ultrasensitive monitoring of non-small cell lung cancer cell interaction with drugs**, Hailang Dai et al., China
- **ORAL C16: Single-exposure measurement of sperm cell thickness and integral refractive index maps for in-vitro fertilization**, Lidor Karako et al., Israel
- **ORAL C17: Implementing biological logic gates using fluorescence lifetime imaging**, Eran Barnoy et al., Israel
- **ORAL C18: Leucocyte microscopy in patients**, Ariel Weigler et al., Israel
- **ORAL C19: In Depth Flow Inspection using Dynamic Laser Speckle spatial statistics**, Mark Golberg et al., Israel
- **ORAL C20: All-dielectric metasurface engineered absorption in near-infrared**, Pavel D. Terekhov et al., Israel
- **ORAL C21: Moving tissue optical clearing to the ultraviolet**, Luís Oliveira, Valery Tuchin et al., Portugal



- **POSTER 1: Red blood cells microrheologic and size distribution parameters in vascular diseases: evaluation by laser techniques**, A.N. Semenov et al., Russia
- **POSTER 2: Remote Optical Evaluation of Facial Nerve Degeneration**, H. Lupa et al., Israel
- **POSTER 3: Tissues viability and blood flow sensing based on a new nanophotonics method**, Inbar Yariv et al., Israel
- **POSTER 4: Optical configuration of skin hydration detection by temporal analysis of skin speckle patterns**, Yarden Sabari et al., Israel
- **POSTER 5: High Resolution Imaging Inside and Behind the Biological Scattering Medium by Focusing Light Using a Non-Invasive Optical Wavefront Shaping Technique**, Abhijit Sanjeev et al., Israel
- **POSTER 6: The microbiological analyzer based on coherent fluctuation nephelometry**, Aleksandr Gur'ev et al., Russia
- **POSTER 7: The study of the antitumor immunity mechanism induced by anti-CTLA-4 therapy on the B16 melanoma model in FoxP3EGFP transgenic mice**, Karabut Maria et al., Russia
- **POSTER 8: Partial Aperture Imaging with a Single Camera Shot**, Angika Bulbul et al. Israel
- **POSTER 9: Fiber-optic Fabry-Pérot sensor with nanodiamond film for determination of hemoglobin level**, M. Kosowska et al., Poland
- **POSTER 10: Imaging of Brain Vasculature by Laser Speckle Contrast Imaging under the Broken Ergodicity Conditions**, Anton Yu. Sdobnov et al., Finland
- **POSTER 11: Frequency domain fluorescence lifetime imaging microscopy system for detecting inflammatory cells**, Gilad Yahav et al., Israel
- **POSTER 12: Generation of reactive oxygen species during autofluorescence photobleaching in-vitro**, Alexey Lihachev et al., Latvia
- **POSTER 13: Interferometric Phase Microscopy of Biological Cells using New Phase Unwrapping Strategies**, Gili Dardikman et al., Israel
- **POSTER 14: Fabry-Perot Interferometric optical fiber sensors with diamond structures**, D. Majchrowicz et al., Poland
- **POSTER 15: Photodynamic diagnostics of stomach cancer**, I. Agranovich et al., Russia
- **POSTER 16: MRI contrast media as optical clearing agents: perspectives for tissue multimodal imaging**, D. K. Tuchina et al., Russia
- **POSTER 17: Raman spectroscopy of prebiotic compounds obtained after proton irradiation of formamide used as precursor of meteorite-catalyzed synthesis**, E. Borisova et al., Bulgaria and Russia