Dedicated to the 75th Anniversary of the Physics Department of Saratov State University

Saratov Fall Meeting SFM'20

8th International Symposium “Optics and Biophotonics”

24th International School for Junior Scientists and Students on Optics, Laser Physics &Biophotonics

Towards Optical and Multimodality Translational Imaging TOMTI-20

Chinese-Russian Workshop on Biophotonics and Biomedical Optics ChRW-2020

Schedule of SFM-20/TOMTI-20/ChRW-20

September 28, Monday (China time UTC+8; Saratov time UTC+4)					
8.40-8.50 (China time: 12.40-12.50)	**Introduction to ChRW Program** **Valery V. Tuchin,** Saratov State University, Russia; **Dan Zhu**, Huazhong University of Science and Technology, China				*Zoom*
8.50-12.30 (12.50-16.30)	**ON-LINE ChRW INVITED LECTURE SESSION I** Chairs: **Dan Zhu**, Huazhong Univ. of Science and Technology, China **Valery V. Tuchin,** Saratov State Univ., Russia				*Zoom*
12.30-12.50 (16.30-16.50)	**Coffeebreakfor own**				
12.50-15.50 (16.50-19.50)	**ON-LINE ChRW INVITED LECTURE SESSION II** Chairs: **Hui Ma,** Tsinghua Univ., China **Mikhail Yu. Kirillin,** Inst. of Applied Physics RAS, Russia	*Zoom Building 10, Hall 511*	14.00-15.00	**OSA SHORT COURSE** **Fluorescence Imaging with Endogenous Contrast for Biomedical Diagnostics** **Evgeny A. Shirshin**, Faculty of Physics, M.V. Lomonosov Moscow State University, Russia	*Zoom Building 10, Main Conference Hall*
15.50-16.10 (19.50-20.10)	**Coffeebreakfor own**		15.00-15.30	**Coffee break**	*Building 10*
16.10-17.50 (20.10-21.50)	**ON-LINE ChRW INVITED/ORAL LECTURE SESSION III** Chairs: **Gang Liu,** Xiamen Univ., China **Oxana V. Semyachkina-Glushkovskaya,** Saratov State Univ., Russia	*Zoom Building 10, Hall 511*	15.30-16.30	**OSA SHORT COURSE** **Fluorescence Imaging with Endogenous Contrast for Biomedical Diagnostics** **Evgeny A. Shirshin**, Faculty of Physics, M.V. Lomonosov Moscow State University, Russia	*Zoom Building 10, Main Conference Hall*

September 29, Tuesday (Saratov time UTC+4)					
8.50-12.30 (13.50-16.30)	**ON-LINE ChRW INVITED/ORAL LECTURE SESSION IV** Chairs: **Buhong Li**, Fujian Normal Univ., Fuzhou, China **Dmitry E. Postnov,** Saratov State Univ., Russia	*Zoom Building 10, Hall 511*	10.00-11.00	**SPIE SHORT COURSE** **Combination of Photonics Tools with Nanostructured Particles for Biomedical Applications** **Dmitry A. Gorin**, Center for Photonics and Quantum Materials, Skolkovo Institute of Science and Technology, Moscow, Russia	*Zoom Building 10, Main Conference Hall*
12.30-12.50 (16.30-16.50)	**Coffeebreak for own**		11.00-11.30	**Coffeebreak**	*Building 10*
12.50-13.30 (16.50-17.30)	**ON-LINE ChRW INVITED/ORAL LECTURE SESSION V** Chairs: **Junle Qu,** Shenzhen Univ., China **Valery V. Tuchin,** Saratov State Univ., Russia	*Zoom Building 10, Hall 511*	11.30-12.30	**SPIE SHORT COURSE** **Combination of Photonics Tools with Nanostructured Particles for Biomedical Applications** **Dmitry A. Gorin**, Center for Photonics and Quantum Materials, Skolkovo Institute of Science and Technology, Moscow, Russia	*Zoom Building 10, Main Conference Hall*
13.30-13.40 (17.30-17.40)	**Closing of the ChRW** **Dan Zhu,** Huazhong Univ. of Science and Technology, China **Valery V Tuchin**, Saratov State Univ., Russia				*Zoom Building 10, Hall 511*
13.55-14.00	**Introduction to SFM/TOMTI/ChRW Program** **Valery V. Tuchin,** Saratov State University, Russia				*Zoom Building 10, Hall 511*
ON-LINE SFM/TOMTI/ChRW PLENARY SESSION I Chairs: **Valery V. Tuchin,** Saratov State University, Russia **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA					
14.00-14.40 (Local time: 12.00-12.40)	**Mechanisms of Recovery Functions of Sleep: The Role of the Meningeal Lymphatic System** **Thomas Penzel**, Interdisciplinary Center of Sleep Medicine in Charité – Universitätsmedizin Berlin, Germany				
14.40-15.20 (12.40-13.20)	**Nonlinear Analysis of Electrical Activity of Sleep Brain: Photostimulation of the Meningeal Lymphatic System** **Juergen Kurths**, Physics Department, Humboldt University, Berlin; Potsdam Institute for Climate Impact Research, Potsdam, Germany				
15.20-16.00 (15.20-16.00)	**Multimodal Optical Diagnostics of Cancer** **Valery P. Zakharov**, Samara National Research University, Samara, Russia				

16.00-16.40 (14.00-14.40)	**Adapting to a Pandemic & An International Clinical Trial with Diffuse Optics** **Marco Pagliazzi**, **Lorenzo Cortese**, **Umut Karadeniz**, ICFO; **JaumeMesquida**, Hospital de Sabadell, InstitutUniversitari Parc Taulí; **Turgut Durduran**, ICFO-The Institute of Photonic Sciences, Barcelona, Spain, Inst.Catalana de RecercaiEstudisAvançats (ICREA)			
16.40-17.20 (14.40-15.20)	**Clinical Biophotonics - From Bench to Bedside** **Juergen Popp**, Leibniz Institute of Photonic Technology, Jena, Germany			
14.00-17.20 (13.00-16.20)	**ON-LINE INVITED/ORAL TERAHERTZ OPTICS AND BIOPHOTONICS** Chair:**Nikita V. Chernomyrdin**, GPI RAS, Russia	*Zoom*	**ON-LINE INVITED/ORAL ADVANCED MATERIALS FOR OPTICS AND BIOPHOTONICS** Chair:**Gleb M. Katyba**, ISSP RAS, Russia	*Zoom*
17.20-17.30	**Coffee break for own**			
ON-LINE SFM/TOMTI/ChRW PLENARY SESSION II Chairs: **Valery V. Tuchin,** Saratov State University, Russia **Valery P. Zakharov**, Samara National Research University, Samara, Russia				
17.30-18.00 (09.30-10.00)	**Magnetic Resonance Imaging and Optical Clearing** **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA; A.N. Bakh Institute of Biochemistry, Federal Research Center "Fundamentals of Biotechnology" of the Russian Academy of Sciences and Moscow State University, Moscow, Russia			
18.00-18.20 (17.00-17.20)	**Aspect Imaging Compact Preclinical Permanent Magnets: Technology and Applications** **Kobi Katsobashvili,** Aspect Imaging Ltd., Shoam, Israel			*Zoom* *Building 10 Hall 511*
18.20-19.00 (10.20-11.00)	**Modeling of Speckle Contrast and Dynamics in the Single and Few Scattering Region** **David Boas,** Boston University, Boston, USA			
19.00-19.15 (17.00-17.15)	**FLIM and FCS Microscopy in Biophysics and Biochemistry PicoQuant** **Mathias Bayer**, PicoQuant GmbH, Berlin, Germany			
19.15-19.55 (11.15-11.55)	**Ubiquitous Terahertz Photonics** **Maksim Skorobogatiy**, Department of Engineering Physics, Polytechnique Montreal, Canada			
19.55-20.35 (10.55-11-35)	**Optoacoustics: Emerging Imaging and Theranostic Modality** **Rinat O. Esenaliev**, University of Texas Medical Branch, Galveston, Texas, USA			

September 30, Wednesday (Saratov time UTC+4)		
ON-LINE SFM/TOMTI/ChRW PLENARY SESSION III Chairs: **Valery V. Tuchin,** Saratov State University, Russia **Peter S. Timashev**, Institute for Regenerative Medicine, Sechenov University		
9.00-9.40 (22.00-22.40)	**Development of Sub-Millimeter Multifunction Optical Endoscopes** **Jennifer Barton**, University of Arizona, Tucson, Arizona, USA	*Zoom* *Building 10, Hall 511*
9.40-10.20 (14.40-15.20)	**Whole-Body/Organ Imaging with Single-Cell Resolution by CUBIC** **Hiroki R. Ueda**, The University of Tokyo/RIKEN BDR, Tokyo, Japan	
10.20-11.00 (9.20-10.00)	**Design of Tunable Colloidal Interactions in External Rotating Electric and Magnetic Fields** **Stanislav O. Yurchenko**, Bauman Moscow State Technical University, Moscow, Russia	
11.00-11.40 (11.00-11.40)	**Nucleic Acid & Au Nanoparticles-Based Advanced Functional Biomaterials** **Timofey E. Pylaev**, Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Saratov, Russia	
11.40-12.00	**Coffee break for own**	
ON-LINE SFM/TOMTI/ChRW PLENARY SESSION IV Chairs: **Valery V. Tuchin,** Saratov State University, Russia **Timofey E. Pylaev**, Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Saratov, Russia		
12.00-12.40 (11.00-11.40)	**Quantum Computing with High-Dimensional Systems** **Alexei K. Fedorov**, Russian Quantum Center, Skolkovo, Moscow Institute of Physics and Technology, Russia	*Zoom* *Building 10, Hall 511*
12.40-13.20 (11.40-12.20)	**Decellularized Materials in Regenerative Medicine Through the Prism of Biophotonics** **Peter S. Timashev**, Institute for Regenerative Medicine, Sechenov University, Department of Polymers and Composites, N.N. Semenov Institute of Chemical Physics of RAS, Institute of Photonic Technologies, Research Center "Crystallography and Photonics" of RAS, Russia	
13.20-13.50 (11.20-11.50)	**Fiber Photonics for Life: News & Dreams** **Viacheslav Artyushenko,** art photonics GmbH, Berlin, Germany	

SFM Registration and coffee breaks take place at sessions of each conference separately						
10.20-12.30	**ON-LINE ORAL LOW-DIMENSIONAL STRUCTURES** Chair: **Olga Glukhova,** Saratov State Univ., Russia		*Google Meet*	13.30-15.50	**ORAL SESSION BIOCOMPUTING I** Chairs: **Dmitry E. Postnov**, Saratov State Univ., Russia	*Building 5, Hall 72*
13.50-15.00	**Lunch for own**					
15-00-19.30	**JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS I/ NANOBIOPHOTONICS I** Chair: **Yury Kistenev,** Tomsk State Univ., Russia	*Building 10, Main Conference Hall*	**ON-LINE INVITED LECTURE/ORAL SESSION NANOBIOPHOTONICS II** Chair: **Nikolai G. Khlebtsov**, IBPPM RAS, Saratov State Univ., Russia	*Zoom*	**ORAL SESSION SPECTROSCOPY I** Chair: **Lev M. Babkov,** Saratov State Univ., Russia	*Building 3, Room 34*
	ON-LINE JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS II & BIOMEDICAL SPECTROSCOPY I Chair: **Ekaterina Borisova**, Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria Moderator: **Isabella Serebryakova**, Saratov State Univ., Russia	*Zoom*	**ON-LINE ORAL SESSION LASER PHYSICS&PHOTONICS** Chair: **Vladimir L. Derbov**, Saratov State Univ., Russia	*Zoom*	**LECTURE/ORAL SESSION EDUCATION I** Chairs: **Boris A. Medvedev,** Saratov State Univ., Russia	*Building 3, Hall 51*
14-45-15.00 (13.45-14.00)	**TOMTI OPENING** **Alexander G. Gabibov,** IBCh RAS, Moscow, Russia					*Zoom*
15-00-18.00 (14.00-17.00)	**TOMTI ON-LINE INVITED LECTURE SESSION I** Chairs: **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA **Victoria Zherdeva**, Federal State Institution «Federal Research Centre «Fundamentals of Biotechnology» of the Russian Academy of Sciences», Moscow, Russia					*Zoom*

October 1, Thursday (Saratov time UTC+4)		
10.00-13.00	**JOINT INVITED/ORAL SESSION** **BIOPHYSICS III, MICROSCOPY& BIOMEDICAL SPECTROSCOPY** Chair: **Vladimir Y. Zaitsev**, Inst. of Applied Physics of the RAS, Russia	*Building 10, Main Conference Hall*
10.00-10.30 (9.00-9.30)	**TOMTI ON-LINE INVITED LECTURE SESSION II** Chairs: **Alexei A. Bogdanov Jr.**, University of Massachusetts Medical School, Worcester MA, USA **Victoria Zherdeva**,Federal State Institution «Federal Research Centre «Fundamentals of Biotechnology» of the Russian Academy of Sciences», Moscow, Russia	*Zoom*
10.30-13.10 9.30-12.10)	**TOMTI ON-LINE INTERNET REPORT/POSTER SESSIONS** Chairs: **Alexei A. Bogdanov Jr.**, University of Massachusetts Medical Scohol, Worcester MA, USA **Victoria Zherdeva,**Federal State Institution «Federal Research Centre «Fundamentals of Biotechnology» of the Russian Academy of Sciences», Moscow, Russia	*Zoom*
14.00-14.40	**PUBLIC LECTURE SESSION MODERN OPTICS** Chair: **Irina Yu. Yanina**, Saratov State University **A journey into the microcosmos: where does optics meet acoustics?** **Dmitry A. Gorin**, Center for Photonics and Quantum Materials, Skolkovo Institute of Science and Technology, Moscow, Russia **Photonics in Medicine in 2020: What's New?** **Evgeny A. Shirshin**, Faculty of Physics, M.V. Lomonosov Moscow State University, Russia	*Zoom*
ON-LINE SFM/TOMTI/ChRW PLENARY SESSION V Chairs: **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA **Valery V. Tuchin,** Saratov State University, Russia		*Zoom*
15.00-15.25 (14.00-14.25)	**Visualization of Histone Epigenetics: A New Way to Track Single-Cell Physiology** **Konstantin A. Lukyanov,** Center of Life Sciences, Skolkovo Institute of Science and Technology, Moscow, Russia	
15.25- 15.40(14.25- 14.40)	**Super-relolution with very low laser power, ideal for long term imaging** **Peter Drent,** Confocal.nl, Amsterdam, The Netherlands	
15.40-16.20 (6.40-7.20)	**Live Biophotonic Analysis of Early Mammalian Embryonic Processes** **Irina V. Larina,** Baylor College of Medicine, Houston, USA	

16.20-17.00 (8.20-9.00)	**Image-Guided Precision Nanomedicine for Cancer Therapy** **Anna Moore,** Departments of Radiology and Physiology, Precision Health Program, College of Human Medicine, Michigan State University, East Lansing, USA			
17.00-17.40 (9.00-9.40)	**Molecular Imaging Using Time Domain Fluorescence** **Anand T.N. Kumar,** Harvard Medical School, Optical Molecular Imaging Laboratory, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Boston, USA			
17.40-18.00 (15.40-16.00)	**Preclinical & Multimodality Imaging MR SOLUTIONS** **Fabrice Chaumard,** MR Solutions Ltd, Ares, France			
15.30-17.45	**LECTURE/ORAL SESSION II** Chair: **Boris A. Medvedev,** Saratov State Univ., Russia			*Building 3, Hall 51*
18.00-20.00	**JOINT POSTER/INTERNET SESSION** Chairs: **Ivan V. Fedosov**, **Oleg Grishin**, Saratov State Univ., Russia Moderators: **Ivan V. Fedosov, Michael M. Slepchenkov, Vasily B. Ageev, Alexander I. Dubrovsky,** Saratov State Univ., Russia			*Building 3*
October 2, Friday (Saratov time UTC+4)				
10.00-18.00	**ORAL SESSION** **BIOCOMPUTING II** Chair: **Dmitry E. Postnov**, Saratov State Univ., Russia	*Building 5, Hall 72*	**ROUND-TABLE DISCUSSION** **EDUCATION** Chair: **Boris A. Medvedev,** Saratov State Univ., Russia	*Building 3, Hall 51*
	ORAL SESSION **NONLINEAR DYNAMICS** Chair: **Vadim S. Anishchenko**, Saratov State Univ., Russia			*Building 3, Room 38; Zoom*

8th International Symposium on Optics and Biophotonics

Conference on Optical Technologies in Biophysics & Medicine XXII

Co-chairs: **Elina A. Genina,** Saratov State University; National Research Tomsk State University**, Valery V. Tuchin,** Saratov State University, Institute of Precision Mechanics and Control RAS, National Research Tomsk State University

Secretary: **Polina A. Dyachenko(Timoshina),** Saratov State University, National ResearchTomsk State University

International Program Committee: Alexey N. Bashkatov, Saratov State Univ., **Walter Blondel**, Univ. of Lorraine (France), **Wei Chen**, Univ. of Central Oklahoma (USA); **Kishan Dholakia**, Univ. of St. Andrews (UK); **Maria Farsari**, FORTH-IESL (Greece), **Paul M.W. French**, Imperial College of Sci., Technol. & Med. (UK);**James G. Fujimoto**, MIT (USA);**Steven L. Jacques**, Univ. of Washington (USA); **Vyacheslav Kalchenko,** Weizmann Institute of Science (Israel)**, Sean J. Kirkpatrick**, Michigan Technological Univ. (USA); **Kirill V. Larin**, Univ. of Houston (USA), Saratov State Univ.; **Jürgen M. Lademann**, CharitéUniversitätsmedizin Berlin (Germany); **Martin Leahy**, National Univ. of Ireland, Galway and RCSI (Ireland); **Qingming Luo**, Hainan University (China); **Francesco S. Pavone**, University of Florence (Italy); **Juergen Popp**, Leibniz Inst. of Photonic Technol., Jena (Germany); **Alexey P. Popov**, VTT, Oulu (Finland), **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State Univ. (Russia);**Lihong Wang**, Caltech(USA); **Ruikang K. Wang**, Univ. of Washington (USA); **Dan Zhu**, Huazhong Univ. of Sci. and Technol. (China)

September 30, Wednesday

JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS I&NANOBIOPHOTONICS I

(Building 10, Main Conference Hall)

Chair: **Yury Kistenev,** Tomsk State University, Russia

15.00-15.20
Invited
Laser-Ablated Silicon Nanoparticles for Optical Bioimaging
Stanislav V. Zabotnov[1], Leonid A. Golovan[1], Daria A. Kurakina[2], Aleksandr V. Khilov[2], Fedor V. Kashaev[1], Olga I. Sokolovskaya[1], Pavel K. Kashkarov[1], Ekaterina A. Sergeeva[1,2], Mikhail Yu. Kirillin[2]; [1]M.V. Lomonosov Moscow State University, Faculty of Physics, Moscow; [2]Institute of Applied Physics RAS, Nizhny Novgorod, Russia

15.20-15.40
Invited
Relaxation and Osmotic-Induced Slow Strain Mapping in Biological Tissues by Optical Coherence Elastography
Yulia A. Alexandrovskaya[1], O.I. Baum[1], A.A. Sovetskiy[2], A.L. Matveyev[2], L.A. Matveev[2], V.Yu. Zaitsev[2]; [1]Institute of Photon Technologies, Federal Scientific Research Center "Crystallography and Photonics", RAS, Troitsk, Moscow; [2]Institute of Applied Physics RAS, Nizhny Novgorod, Russia

15.40-16.00
Invited
Combined Usage of OCT-Elastography and OCT-Angiography for Quantitative In Vivo Assessment of Functional and Morphological Alterations in Model Tumors Treated by PDT and Chemotherapy
Marina A. Sirotkina[1], E.V. Gubarkova[1], A.A. Plekhanov[1], A.A. Sovetsky[2], V.V. Elagin[1], A.L. Matveyev[1], L.A., Matveev[1], S.S. Kuznetsov[3], E.V. Zagaynova[1], N.D. Gladkova[1], Vladimir Y. Zaitsev[2]; [1]Privolzhsky Research Medical University; [2]Institute of Applied Physics RAS; [3]N.A. Semashko Nizhny Novgorod Regional Clinical Hospital, Nizhny Novgorod, Russia

16.00-16.15
Machine Learning Applications for Spectral Analysis of Human Exhaled Air for Early Diagnosis of Diseases
Igor S. Golyak, D.R. Anfimov, E.R. Kareva, P.P. Demkin, A.N. Morozov, I.L. Fufurin, A.V. Scherbakova; Bauman Moscow State Technical University, Moscow, Russia

16.15-16.30
Advances in Physicochemical Methods for Early Diagnosis of Diseases Based on the Analysis of Human Exhaled Breath
A.N. Morozov[1], I.L. Fufurin[1], Olga A. Nebritova[1]; [1]Bauman Moscow State Technical University, Moscow, Russia

ON-LINE JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS II & BIOMEDICAL SPECTROSCOPY I

(Building 10, Hall 511, Zoom link:
https://osachapter.zoom.us/j/98300886300)

Chair: **Ekaterina Borisova**, Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria

Moderator: **Isabella Serebryakova**, Saratov State University, Russia

17.00-17.20 (Local time: 16.00-16.20)
Invited
Optical Bioimaging of Connective Tissue in Norm and Lichen Sclerosus
Marina A. Sirotkina, A.L. Potapov, V.V. Dudenkova, A.A. Moiseev, M.M. Karabut, I.A. Kuznetsova, N.D.Gladkova; Privolzhsky Research Medical University, Nizhny Novgorod, Russia

17.20-17.40 (15.20-15.40)
Invited
Interstitial PDT of Glioblastoma – Status and Perspectives
Adrian Rühm and Ronald Sroka, Laser-Forschungslabor, LIFE Center, Department of Urology, University Hospital, LMU Munich, Munich, Germany

17.40-18.00 (15.40-16.00)
Invited
Skin Reflectance: How Long the Photons Travel until Remission
Janis Spigulis, Vanesa Lukinsone, Anna Maslobojeva, UldisRubins, Maris KuzminskisBiophotonics Laboratory, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga

18.00-18.20 (10.00-10.20)
Invited
Dynamic Imaging of the Lymphatic Drainage from the Eye in Mice by Multispectral Photoacoustic Tomography
Vladislav Toronov[1,2], Balal Mian[1], Yeni Yucel[1,2,3], Xun Zhou[3];[1]Ryerson University;[2]The Institute for Biomedical Engineering, Science & Technology (iBEST) St. Michael's Hospital;[3]Keenan Research Centre for Biomedical Science of St. Michael's Hospital, Toronto, Canada

18.20-18.40 (9.20-9.40)
Invited
Optical Coherence Tomography of Preimplantation Embryonic Development In Vivo
Irina V. Larina Baylor College of Medicine. Houston, USA

18.40-19.00 (17.40-18.00)
Invited
Fluorescence diagnostics of soft tissues neoplasia
Ekaterina Borisova[1], Tsanislava Genova[1], Petranka Troyanova[2], Elmira Pavlova[3], Borislav Vladimirov[2]; [1]Institute of Electronics, Bulgarian Academy of Sciences; [2]University Hospital "Tzaritza Yoanna – ISUL"; [3]"St. Panteleimon" General Hospita, Sofia, Bulgaria

19.00-19.15 (18.00-18.15)
Influence of Active Er-laser Delivery on the Optical Properties of Drug
A.V. Belikov, S.N. Smirnov, Anastasia D. Tavalinskaya, ITMO University, S.-Peterburg, Russia

October 1, Thursday

JOINT INVITED/ORAL SESSION BIOPHYSICS III, MICROSCOPY, & BIOMEDICAL SPECTROSCOPY II

(Building 10, Main Conference Hall)

Chair: **Vladimir Y. Zaitsev**, Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia

10.00-10.15

Assessment of Changes in the Viscosity Properties of Tumor Cell Membranes under the Influence of Chemotherapeutic Agents

Liubov Shimolina[1,2], Marina Shirmanova[1], Marina Kuimova[3], Maria. Lukina[1], Irina Druzhkova[1], Elena Zagaynova[1]; [1]Privolzhsky Research Medical University, Nizhny Novgorod; [2]Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia; [3]Imperial College London, South Kensington, London, United Kingdom

10.15-10.30

Experimental Setup and Method for Human Breath Analysis for the Primary Diagnosis of Diseases

Anastasia V. Scherbakova, D.R. Anfimov, I.S. Golyak, E.R. Kareva, A.N. Morozov, P.P. Demkin, I.L. Fufurin; Bauman Moscow State Technical University, Moscow, Russia

10.30-10.45

In-vivo Holographic Laser Speckle Contrast Imaging of Brain Tissues with Pathological Vascular Conditions

Arkady Abdurashitov[1], Natalia Shushunova[2], Olga Sindeeva[1,2], Oxana Semyachkina-Glushkovskaya[2], Valery Tuchin[2,3,4,1];[1]Skolkovo Institute of Science and Technology, Skolkovo Innovation Center;[2]Saratov State University; [3]Tomsk State University; [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

10.45-11.00

Red Blood Cell in the Field of the Laser Beam of Optical Tweezers

Petr Ermolinskiy[1], Andrei Lugovtsov[1,2], Pavel Kokhanchik[3], Alexander Priezzhev[1,2];[1]Physics Department, Lomonosov Moscow State University;[2]International Laser Center, Lomonosov Moscow State University;[3]Skolkovo Institute of Science and Technology, Russia

11.00-11.20

Invited

In Vivo Multimodal Optical Imaging of Equivocal Melanocytic Skin Lesions

Vadim Elagin[1], E. Gubarkova[1], O. Garanina[1], D. Davydova[1], N. Orlinskaya[1], L. Matveev[2], I. Klemenova[1], I. Shlivko[1], E. Zagaynova[1];[1]Privolzhsky Research Medical University;[2]Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia

11.20-11.35

Optical properties of functionally relevant human brain areas

Ksenia Achkasova[1], Alexander Moiseev[2], Konstantin Yashin[1], Elena Kiseleva[1], Eugenia Bederina[1], Anna Epishkina[1], Natalia Gladkova[1]; [1]Privolzhsky Research Medical University; [2]Institute of Applied Physics Russian Academy of Science, Nizhny Novgorod, Russia

11.35-11.50

Surface Photoluminescence of Nanodiamonds: Dependence on pH

A. V. Lachko, A. M**.** Vervald, K. A. Kozhushnyi, T. A. Dolenko, Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia

POSTER SESSION BIOPHYSICS

(Building 3, 3rd floor Hall)

Chairs (B): **Ivan V. Fedosov**, **Oleg Grishin**, Saratov State Univ., Russia

18.00-20.00

1B. **One-Step Synthesis of Biotinylated Gold Nanoparticles for Application in Immunoassay** Alina A. Kokorina, Irina Yu. Goryacheva, Saratov State University, Saratov, Russia

2B. **Quantitative Benign and Malignant Human Breast Tumors Assessment Using Cross-Polarization Optical Coherence Tomography** Ekaterina V. Gubarkova[1], Alexander A. Moiseev[2], Elena B. Kiseleva[1], Dmitry A. Vorontsov, Sergey S. Kuznetsov[1], Alexey Y. Vorontsov, Grigory V. Gelikonov[2], Elena V. Zagaynova[1], Marina A. Sirotkina[1], Natalia D. Gladkova[1]; [1]Privolzhsky Research Medical University; [2]Institute of Applied Physics RAS, Nizhny Novgorod, Russia

3B. **Possibilities of Optical Coherence Elastography for Determining of Changes in Tumor Tissue Stiffness Value Post Neoadjuvant Chemotherapy** Anton A. Plekhanov[1], Marina A. Sirotkina[1], Sergey S. Kuznetsov[1], Alexander A. Sovetsky[2], Ekaterina V. Gubarkova[1], Vladimir Y. Zaitsev[2], Natalia D. Gladkova[1]; [1]Privolzhsky Research Medical University;[2]Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia

4B. **Metabolism of Stem Cell Grown on Heterogeneous Tissue-Engineered Scaffolds** Vadim Elagin[1], S. Rodimova[1,2], N.V. Minaev[3], A.I. Shpichka[4], E.V. Zagaynova[1,2], P.S. Timashev[3,4], D.S. Kuznetsova[1];[1]Privolzhsky Research Medical University;[2]Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod;[3]Shubnikov Institute of Crystallography, Federal Scientific Research Centre "Crystallography and Photonics" RAS, Moscow;[4]Institute for Regenerative Medicine, Sechenov First Moscow State Medical University, Moscow, Russia

5B. **The Influence of Various Anatomical and Physiological Parameters of the Small Intestine on Its Trans-Serosal Multimodal OCT Imaging** Elena B. Kiseleva[1,2], Maxim G. Ryabkov[1], Evgenia L.Bederina[1], Mikhail A.Sizov[3], Alexander N.Vorobyov[3], Alexander A.Moiseev[4], Natalia D. Gladkova[1,2];[1]Privolzhsky Research Medical University;[2]Institute of Experimental Oncology and Biomedical Technologies;[3]Nizhny Novgorod State Budgetary Healthcare Institution "City Clinical Hospital No. 30";[4]Institute of Applied Physics of the RAS, Nizhniy Novgorod, Russia

6B. **Determination of the Binary Diffusion Coefficient of an Iodine-Glycerol Preparation (Lugol) in the Dentin of a Human Tooth** Alexey A. Selifonov[1,2], V.V. Tuchin[1,3,4,5,];[1]Saratov State University;[2]Saratov State Medical University;[3]National Research Tomsk State University;[4]Institute of Precision Mechanics and Control of the RAS, Saratov; [5]A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the RASnces, Moscow Russia

7B. **Tissue Optical Clearing in the Ultraviolet for Clinical Use in Dentistry to Optimize the Treatment of Chronic Recurrent Aphthous Stomatitis**Alexey A. Selifonov[1,2], V.V. Tuchin[1,3,4,5]; [1]Saratov State University;[2]Saratov State Medical University;[3]National Research Tomsk State University;[4]Institute of Precision Mechanics and Control of the RAS, Saratov; [5]A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the RASnces, Moscow, Russia

8B. **Recent advances in the laser radiation transport through the head tissues of humans and animals (review)** Alaa Sabeeh Shanshool[1], Valery Tuchin[1,2,3]; [1]Saratov State University; [2]National Research Tomsk State University; [3]Institute of Precision Mechanics and Control of the RAS, Saratov, Russia

9B. **Urethral Pain Syndrome: Role of Cross-Polarization OCT in the Study of the Disease Pathogenesis** Olga S. Streltsova[1], Anton S. Kuyarov[1], Alexander A.Moiseev[2], Muhammat A. Molvi[1], Elena B.Kiseleva[1,3], [1]Privolzhsky Research Medical University, Department of urology named after E.V. Shakhov;[2]Institute of Applied Physics RAS;[3]Institute of Experimental Oncology and Biomedical Technologies, Nizhniy Novgorod, Russia

10B. **Determination of Male Reproductive Function Using Microstructural Waveguides** Pavel A. Lepilin[1,2,3]; Gennady T. Sukhih[4], Julia S. Skibina[2,3], Anastasia A. Zanishevskaya[2,3], Andrey A. Shuvalov[2,3], Natalia O. Yanchuk[3], Aleksey Yu. Gryaznov[2,3], Anastasia Sysoeva[4], Nataliya P. Makarova[4], Elena A. Kalinina[4];[1]Saratov State University; [2]LLC SPE "Nanostructed Glass Technology"; [3]International Research and Education Center "Structural Nanobiophotonics", Saratov; [4]Research Center for Obstetrics, Gynecology and Perinatology, Moscow, Russia

11B. **Hormone Sensor Based On Microstructural Waveguides** Daria Shumarina[1], J.S. Skibina[2], A.A. Zanishevskaya[2],A.U Gryaznov[2];[1]Saratov State University; [2]SPE LLC Nanostructural Glass Technology, Saratov Russia

12B. **Use of a Tilted Diffractive Lens with an Increased Depth of Field in Decision-Making Systems Based on Computer Vision** Alexey Dzyuba[1], Pavel Serafimovich[2], Svetlana Khonina[2,3], Sergei Popov[2,3]; [1]ITMO University, S.-Petersburg;[2]Image Processing Systems Institute;[3]Samara National Research University, Russia

13B. **Diagnostics of Coupling between Autonomous Regulation of Heart Rate Variability and Respiration In Different Phases of Sleep, Taking into Account the Age of the Subjects** Alexey N. Hramkov[1], E.I. Borovkova[1,2,3], A.S. Karavaev[1,2,3]; [1]Saratov State University; [2]Saratov State Medical University named after V. I. Razumovsky;[3]Saratov branch of the IRE named after V. A. Kotelnikov RAS, Saratov, Russia

14B. **Effect of Low-Intensity Electromagnetic Field on Dehydration Self-Assembly of Core Histones H3.2 and H4** Anna V. Egorova[1], Grigory E. Brill[2], Olga V. Ushakova[3]; [1]Russian National Research Medical University n.a. N.I. Pirogova, Moscow; [2]Saratov State Medical University n.a. V.I. Razumovsky; [3]Yuri Gagarin State Technical University of Saratov, Saratov, Russia

15B. **Comparative OCT Study of Optical Clearing of Human Skin In Vivo with Phototypes II and VI** Isabella A. Serebryakova[1], Yury I. Surkov[1], Elina A. Genina[1,2], Alexey N. Bashkatov[1,2], Valery V. Tuchin[1,2,3], Vladimir Zharov[4];[1]Saratov State

University;[2]Tomsk State University;[3]Institute of Precision Mechanics and Control of the RAS, Saratov, Russia;[4]Arkansas Nanomedicine Center, University of Arkansas for Medical Sciences, Little Rock, AR USA

16B. **Effect of Ex Vivo Skin Drying on Collimated Transmittance Spectra Kinetics** Sergey Zaytsev[1,2], Alexey N. Bashkatov[1,3], Walter Blondel[2], Marine Amouroux[2], Valery V. Tuchin[1,3,4], Elina A. Genina[1,3]; [1]Saratov State University, Russia; [2]Université de Lorrain, Nancy, France; [3]Tomsk State University; [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

17B. **OCT Analysis of In Vivo Human Skin Optical Clearing Combined with Physical and Chemical Permeation Enhancers** Sergey Zaytsev[1,2], Victoria Charykova[1], Munira Uysupova[1], Alexey N. Bashkatov[1,3], Valery V. Tuchin[1,3,4], Elina A. Genina[1,3]; [1]Saratov State University, Russia; [2]Université de Lorraine, Nancy, France; [3]Tomsk State University; [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

18B. **Detection of Melanoma Tumor Cells In Vivo and In Vitro** O.Avramets[1], Ekaterina Dmitrienko[2], E. Kurochkina[2], E. Osintsev[2], O. Inozemtseva[3], A. Fedonnikov[2], D. Bratashov[3], G.A. Afanasieva[2];[1]Smolensk State Medical University; [2]Saratov State Medical University. V.I. Razumovsky; [3]Saratov State University, Russia

19B. **On the Possibility of Intensifying the Photochemical Stage of Scleral Collagen Riboflavin/UV Crosslinking by Tissue Optical Clearing** Marina E. Shvachkina[1], Alexander B. Pravdin[1], Yury V. Kistenev[2], Dmitry A. Yakovlev[1]; [1]Saratov State University, Saratov;[2]Tomsk State University, Tomsk, Russia

20B. **Effect of Silicon Nanoparticles on Microrheologic Parameters of Red Blood Cells** Arseniy Kapkov[1], Petr Ermolinskiy[1],Alexey Popov[3], Andrei Lugovtsov[1,2], Alexander Priezzhev[1,2]; [1]Physics Department, Lomonosov Moscow State University; [2]International Laser Centre, Lomonosov Moscow State University, Russia; [3]Opto-Electronics and Measurement Techniques, University of Oulu, Oulu, Finland

21B. **The Process of Erythrocytes Grouping by Ultrasound Standing Wave** Valery A. Doubrovski[1], Sergey V. Markov[1,2], S. O. Torbin[1]; [1]Saratov State Medical University;[2]Saratov State University, Saratov,Russia

22B. **A Photoacoustic Monitoring of Circulating Tumor Cells in Mice with Melanoma** Oleg Grishin[1], Arkadii Abdurashitov[2], Nataliya Shushunova[1], Roman Verkhovskii[1], Evgenii Shashkov[3], Daniil Bratashov[1], Vladimir P. Zharov[4], Olga Inozemtseva[1];[1]Saratov State University, Saratov;[2]Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Moscow;[3]Prokhorov General Physics Institute of RAS, Moscow, Russia;[4]University of Arkansas for Medical Sciences, Little Rock, AR, USA

Workshop on
Laser Physics and Photonics XXII

Workshop Chair: **Vladimir L. Derbov,** Saratov State University (Russia)

*Secretary:***Anna V. Novoselova,** Saratov State University (Russia)

International Program Committee **Vladimir L. Derbov** (Chair), Saratov State University (Russia), **Alexander V. Gorokhov**, Samara State University (Russia), **Bogos B. Joulakian**, University of Metz (France), **Alexander P. Kuznetsov**, Institute of Radio-Engineering of RAS (Russia), **Marian Marciniak**, National Institute of Telecommunications (Poland), **Leonid A. Melnikov**, Saratov State Technical University (Russia), **Yuri V. Popov**, Lomonosov Moscow State University (Russia), **Vladimir P. Ryabukho**, Saratov State University, IPM&C RAS (Russia), **Alexander P. Nizovtsev**, Institute of Physics of NASB (Belarus), **Sergue I. Vinitsky**, Joint Institute for Nuclear Research (Russia), **Aleksey M. Zheltikov**, Lomonosov Moscow State University (Russia)

September 30, Wednesday

ORAL SESSION PHOTONICS
(Zoom link:
https://us02web.zoom.us/j/89528697709
Conference ID: 895 2869 7709

Chair: **Vladimir L. Derbov**, Saratov State University, Russia

15.00-15.20
Study of local optical nonlinear response using time-resolved inline digital holography
Belashov A.V., ITMO University,Ioffe Institute, St. Petersburg, Russia; Shevkunov I.A., ITMO University, St. Petersburg, Russia, Tampere University, Tampere, Finland; Nalegaev S.S., Putilin S.E., Petrov N.V., ITMO University, St. Petersburg, Russia; Cheng C.J., National Taiwan Normal University, Taipei, Taiwan

15.20-15.40
Airy beams for laser manipulation of airborne light-absorbing particles.
Alexey Porfirev, Image Processing Systems Institute of RAS—Branch of the FSRC “Crystallography and Photonics” RAS

15.40-16.00
Influence of temperature on the shape of Ramsey resonances detected in an optically dense medium.
Voloshin G.V., Barantsev K.A., Litvinov A.N. Peter the Great St.Petersburg Polytechnic University

16.00-16.20
Tunneling of wave packets through photonic band-gap structures
M.V. Davidovich, Saratov State University, Saratov, Russia

16.20-16.40
Coffee Break

14.40-17.00
Investigation of entangled States of two interacting qubits in the fields of the laser and thermostat by integrating along paths.
Shleenkov Mark, Biryukov Alexander, Samara National Research University, Samara, Russia

17.00-17.20
Electromagnetically induced transparency of powerful probe pulses.
Parshkov Oleg M, Makoveichuk Alexander A. Yuri Gagarin State Technical University of Saratov

17.20-17.40
Laser Monitor Application for Study of Aluminum Nanopowder Ignition and Combustion
Fedor A. Gubarev, Iuliia D. Liushnevskaya, National Research Tomsk Polytechnic University, Tomsk, Russia; Lin Li, Liaoning Technical University, Huludao, China; Andrei V. Mostovshchikov, National Research Tomsk Polytechnic University, Tomsk, Russia Alexander P. Ilyin, National Research Tomsk Polytechnic University, Tomsk, Russia, Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

17.40-18.00
Optical multi-band detection of unmanned aerial vehicles with YOLO v4 convolutional neural network
Anfimov D.R., Golyak Ig.S., Morozov A.N., Nazolin A.L., Scherbakova A.V. and Fufurin I.L.Bauman Moscow State Technical University, Moscow, Russia

October 1, Thursday

INTERNET SESSION

Chair (P): **Alexander S. Plastun,** Saratov State University, Russia

INTERNET REPORTS

1. **Calculations of output power of the graphene-based terahertz laser.** Kozina O.N., Kotel'nikov Institute of Radio-Engineering and Electronics of Russian Academy of Science, Saratov Branch, Saratov, Russia, Melnikov L.A., Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Nefedov I.S., Peoples' Friendship University of Russia (RUDN University), Moscow, Russia
2. **Reflection matrices for plane waves composing a beam.** Moiseeva N.M. Volgograd State University, Volgograd, Russia
3. **Methods of production of carbon nanoparticles by laser reduction of graphene oxide**. Sergey Svyakhovskiy, Lomonosov Moscow State University, Russia Lev G. Kuznetsov, Lomonosov Moscow State University, Russia Nikolay I. Pyshkov, Lomonosov Moscow State University, Russia
4. **Photoreflectance spectroscopy of the mesoporous silicon structures.**Lev P. Avakyants, Lomonosov Moscow State University, Russia Sergey E. Svyakhovskiy, Lomonosov Moscow State University, Russia Artem E. Aslanyan, Lomonosov Moscow State University, Russia Anatoliy V. Chervyakov, Lomonosov Moscow State University, Russia
5. **Coherent states and molecular rotation control.** Alexander V. Gorokhov, Samara National Research University named after academician S.P. Korolev, Samara, Russian Federation

INTERNET POSTERS

1P. **Change in the polarization of laser radiation upon reflection from an anisotropic plate**. Yatsyshen Valeriy, Volgograd State University, Volgograd, Russia

2P. **Excitation of polaritons near resonance by a nanocomposite plate**. Yatsyshen Valeriy, Potapova Irina, Verevkina Kseniya, Volgograd State University, Volgograd, Russia

3P. **Single-mode waveguide propagation of light in a smoothly irregular integrated-optical waveguide.** Divakov D.V., RUDN University, Lovetskiy K.P., RUDN University, Sevastianov L.A., RUDN University& BLTP JINR, Russia

4P. **Volumetric anisotropic microlattices in compound materials.** Liubov I. Vostrikova, Vitaly A. Smirnov, Rzhanov Institute of Semiconductor Physics SB RAS, Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia

5P. **Extension of the geometrized Maxwell theory using torsion.** Kulyabov D. S., RUDN University & LIT JINR, Russia, Korolkova A. V., RUDN University, Gevorkyan M. N., RUDN University, Demidova A. V., RUDN University, Apreutesey A. M. Yu., RUDN University

6P. **Extension of geometrized Maxwell theory based on nonmetricity.** Kulyabov D. S., RUDN University & LIT JINR, Russia, Korolkova A. V., RUDN University, Sevastianov L. A., RUDN University & BLTP JINR, Russia, Velieva T. R., Plekhanov Russian University of Economics & RUDN University, Fedorov A. V., RUDN University

7P. **Entanglement in Tavis-Cummings model with Kerr nonlinearity induced by a thermal noise.** Eugene K. Bashkirov, Samara National Research University, Samara, Russia

8P. **Chalcogenide fiber based microresonators as sensing elements of spectroscopic sensors.** Irina Belonozhkina, Daniil Zhivotkov, Elena Romanova, Saratov State University, Saratov, Russia

9P. **Dynamics of entanglement of two qubits interacting with two resonators**. Mikhail M. Evseev, Eugene K. Bashkirov, Samara National Research University, Samara, Russia

10P. **Suppression of modulation instability in broad-area semiconductor lasers by injection of external optical radiation.** E.A. Yarunova, A. A. Krents, N. E. Molevich, Samara National Research University, Samara, Russia; Lebedev Physical Institute, Samara, Russia

11P. **Entanglement in two-atom two-photon Tavis-Cummings model induced by a thermal field.** Rodion K. Zakharov, Marya O. Guslyannikova, Eugene K. Bashkirov, Samara National Research University, Samara, Russia

12P. **Propagation and focusing of optical vortex beams generated by generalized spiral phase plates.** Mikhail Kirilenko, Samara National Research University; Svetlana Khonina, Image Processing Systems Institute of RAS—Branch of the FSRC "Crystallography and Photonics" RAS; Andrey Ustinov, Image Processing Systems Institute of RAS—Branch of the FSRC "Crystallography and Photonics" RAS; Pavel Khorin, Samara National Research University; Alexey Porfirev, Image Processing Systems Institute of RAS—Branch of the FSRC "Crystallography and Photonics" RAS

13P. **Modeling diffraction of a polarized light by three-dimensional nonlinear spiral phase in the near zone.** Alexey Porfirev Samara National Research University, IPSI RAS - branch of the

FSRC «Crystallography and Photonics» RAS

14P. **Dynamical symmetry of two qubits in external fields with dipole – dipole interaction.** Alexander V. Gorokhov, Samara National Research University, Samara, Russia, George I. Eremenko, Samara National Research University, Samara, Russia

15P. **Fabrication and study of a coplanar waveguide transmission structure made by magnetron sputtering and laser ablation for microwave flexible electronics.** Starodubov A.V., Kozhevnikov I.S., Serdobintsev A. A., Saratov State University, Saratov, Russia.

16P. **Polarization dynamics of vertical cavity semiconductor laser with external light injection.** E.V. Ushakova, S.S. Volchkov Yuri Gagarin Technical University of Saratov, Russia.

17P. **Numerical investigation of spatio-temporal dynamics of semiconductor disk laser.** L.A. Kochkurov, Yuri Gagarin Technical University of Saratov, Saratov,Russia

18P. **Optical rectification of polarization modulated signal based on injection-locking single-mode VCSEL**. Leonid Kochkurov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

19P. **Impact of rare-earth doping upon micro-periodical anisotropy.** V.A. Smirnov, L.I. Vostrikova, Rzhanov Institute of Semiconductor Physics SB RAS, Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Russia

20P. **Study the ablation regimes of thin copper films on dielectric substrates by nanoseconds laser pulses.** Rasulov I.I., Kozhevnikov I.O., Serdobintzev A.A., Starodubov A.V., Saratov State University, Saratov, Russia.

21P. **Research of the influence of the longitudinal displacement of the laser beam focusing on the laser perforation process**. Atamanyuk Ramez G., Khramov Vladimir N., Ril' Ivan A., Volgograd State University, Vogograd, Russia.

22P. **Development of the creating diffractive optical elements with a large depth of plasma-chemical etching method for the infrared wavelength range.** S.A. Fomchenkov Image Processing Systems Institute – branch of the Federal Scientific Research Centre "Crystallography and Photonics" of Russian Academy of Sciences, Samara, Russia

23P. **Melting and welding of glass capillaries by picosecond laser radiation (1064 nm).** D.A. Bessonov, T.N. Sokolova, E.L. Surmenko,Yuri Gagarin State Technical University of Saratov, Saratov, Russia

24P. **Theoretical and experimental study of signal identification in wireless data transmission with using light beams with fractional orbital angular momentum**. Alexey A. Kovalev, Image Processing Systems Institute of the RAS – Branch of FSRC "Crystallography & Photonics" of the RAS, Alexey P. Porfirev Samara University

25P. **Computer models of laser speckle-interferometer of lateral micro displacement of scattering object.** Ludmila A. Maksimova, Natalia Yu. Mysina, Institute of Precision Mechanics and Control Russian Academy of Sciences, Russia; Bogdan A. Grizbil, Saratov State University, Russia; Vladimir P. Ryabukho, Saratov State University, Institute of Precision Mechanics and Control Russian Academy of Sciences, Russia

26P. **Control of rogue waves in laser with opto-electronic feedback**. A. A. Krents, N. E. Molevich, Yarunova E. A. department of Physics, Samara National Research University, Samara; department of Theoretical Physics, Lebedev Physical Institute, Samara, Russia

27P. **Calculations of metastable and scattering states of beryllium dimer.** Vladimir L. Derbov, Saratov State University, Saratov, Russia; Galmandakh Chuluunbaatar, Joint Institute for Nuclear Research, Dubna, Russia, RUDN University, Moscow, Russia; Alexander A. Gusev, Joint Institute for Nuclear Research, Dubna, Russia; Ochbadrakh Chuluunbaatar, Joint Institute for Nuclear Research, Dubna, Russia, Institute of Mathematics, National University of Mongolia, Ulaanbaatar, Mongolia; Sergue I. Vinitsky, Joint Institute for Nuclear Research, Dubna, Russia, RUDN University, Moscow, Russia; Alexander V. Mitin, Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Region, Russia, Chemistry Department, Lomonosov Moscow State University, Moscow, Russia, Joint Institute for High Temperatures of RAS, Moscow, Russia

Conference on Spectroscopy and Molecular Modeling XXI

*Workshop Chairs:***Lev M. Babkov, Kirill V. Berezin,**Saratov State University (Russia)

Secretary: **Inna l. Plastun,**Saratov State TechnicalUniversity (Russia)

International Program Committee: **Lev M. Babkov**, Saratov State University (Russia), **Lev A. Gribov**, Institute named by V. I. Vernadskyi RAS (Moscow, Russia), **Dmitry S. Umreiko**, Belarus State University (Minsk, Belorussia), **Nadezda A. Davydova**, Institute of Physics, NAS of Ukraine, **Tatiana G. Bourova**, Saratov State Pedagogical Institute (Russia), **Alexander V. Burenin**, Institute of Applied Physics RAS (Moscow, Russia), **Victor L. Furer**, Kazan Civil Engineer Academy (Russia), **Alexander V. Gorohov**, Samara State University (Russia)

September 30, Wednesday

ORAL SESSION SPECTROSCOPY

(Building 3, Room 34)

Chair: **Lev M. Babkov,**
Saratov State University, Russia

15.35-15.50
OPTICAL CLEARING OF HUMAN SKIN USING SOME DISACCHARIDES
K.V. Berezin[1], K.N. Dvoretskiy[2], A.M. Likhter[3], I.T. Shagautdinova[3]
[1]Saratov State University, Saratov, Russia;
[2] Saratov State Medical University, Saratov, Russia;
[3]Astrahan State University, Astrahan, Russia

15.50- 16.05
MOLECULAR DYNAMICS SIMULATION OF DIFFUSION COEFFICIENTS AND STRUCTURAL PROPERTIES OF MONO- AND POLLYETHYLENE GLYCOLS
K.N. Dvoretskiy[1], K.V. Berezin[2], A.M. Likhter[3], I.T. Shagautdinova[3]
[1]Saratov State Medical University,
[2]Saratov State University, Saratov,Russia;
[3]Astrahan State University, Astrahan, Russia

16.05–16.20
COMPARISON OF SIGNAL CALIBRATION METHOD IN PROBLEM OF RAMAN SPECTROSCOPY *interne*t
N. Trifonov[1,2], A. Efitorov[1], S. Burikov[1,2], T. Dolenko[1,2], K. Laptinsky[1] and S.Dolenko[1].
[1]D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Moscow, Russia;
[2]Physical Department, M.V. Lomonosov Moscow State University, Moscow, Russia

16.20–16.35
MECHANISM OF THE INTERACTION OF CARBON DOTS WITH ENVIRONMENTAL MOLECULES IN AQUEOUS SUSPENSIONS *interne*t
G. Chugreeva[1], K.A. Laptinsky[1,2], S.A. Burikov[1,2], A.E. Tomskaya[3], T.A. Dolenko[1,2]
[1]Faculty of Physics, Lomonosov Moscow State University, Russia;
[2]Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Russia;
[3]North-Eastern Federal University, Yakutsk, Russia

16.35– 16.50
MOLECULAR MECHANISMS OF METAL NANOPARTICLES FORMATION BY BACTERIAL SYNTHESIS
I.L. Plastun, A. A. Zakharov, A. A. Naumov Saratov State Technical University, Saratov, Russia

16.50– 17.05
MOLECULAR MODELING OF METAL SALTS AND FLAGELLIN INTERACTION DURING THE FORMATION OF SILVER SULPHIDE NANOPARTICLES
A. Zakharov, I. Plastun, A. Naumov A. Bokarev Saratov State Technical University, Saratov, Russia

17.05– 17.20
STUDY OF RESILIENCE OF NEURALNETWORK SOLUTION OF INVERSE PROBLEM BASED ON INTEGRATION OF OPTICAL SPECTROSCOPIC METHODS TO NOISE IN DATA *interne*t
I.Isaev[1], O.Sarmanova[1,2], S.Burikov[1,2], T.Dolenko[1,2], K. Laptinskiy[1], N. Trifonov[1,2], S. Dolenko[1]
[1]D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Russia;
[2]Faculty of Physics, Moscow State University, Russia

17.20–17.35
MICROENVIRONMENTAL EFFECT ON NADH POLARIZED FLUORESCENCE STUDIED BY ULTRAFAST SPECTROSCOPY *interne*t
I.A.Gorbunova[1], M.E.Sasin[1], J. Rubayo-Soneirad[2], O. S. Vasyutinskii[1]
[1]Ioffe Institute, Saint-Petersburg, Russia;
[2]InSTEC, University of Havana, Havana, Cuba

17.35– 17.50
CALCULATION OF THE INTERNAL CONVERSION RATE OF PORPHINE ELECTRONIC EXCITATION IN THE FIRST ELECTRON- EXCITED STATE
V.V. Nechaev[1], K.N. Dvoretskiy[2], K.V. Berezin[3]
[1]Saratov State Technical University, Saratov, Russia;
[2] Saratov State Medical University, Saratov, Russia;
[3]Saratov State University, Saratov, Russia

17.50 – 18.05
DETERMINATION OF CONFOMATIONAL COMPOSITION OF PHENYLALANINE IN THE GAS PHASE
G. N. Ten[1], N.E. Scherbakova[2]
[1]Saratov State University, Saratov, Russia;
[2]Russian Research Anti-Plague Institute "Microbe", Saratov, Russia

18.05 – 18.20
MODELING OF IR SPECTRA OF POLYETHYLENETEREPHTALATE
G.N. Ten[1], A.Yu. Gerasimenko[2], M.S. Savelyev[2], N.E. Scherbakova[3]
[1]Saratov State University, Saratov,Russia;
[2]Institute of Biomedical Systems, National Research University of Electronic Technology; Institute of Bionic Technologies and Engineering, I.M. Sechenov First Moscow State Medical University, Moscow, Russia;
[3] Russian Research Anti-Plague Institute "Microbe", Saratov, Russia

18.20 -18.35
INTERPRETATION OF IR SPECTRA OF TRIPHENYLPHOSPHITE BASED IN MOLECULAR MODELING
I. Ivlieva-Peretokina[1], L.Babkov[1], N. Davydova[2],
[1]Saratov State University, Russia;
[2]Institute of Physics NAS of Ukraine, Kyiv, Ukraine

18.35 -18.50
IR SPECTRA AND STRUCTURE OF SUPRAMOLECULAR COMPLEXES OF DIAMOND-LIKE NANOPARTICLES WITH DRUGS AND BIOMOLECULES
A. Bokarev, I. Plastun
Saratov State Technical University, Saratov, Russia

October 1, Thursday

JOINT POSTER/INTERNET SESSION
(Building 3, 3rd floor Hall)
Co-chairs: **Kirill V. Berezin, Lev M. Babkov,**
Saratov State University, Russia
Internet presentations opened from 30.09.2020, 11:00

18.00-20.00

1S. **DETERMINATION OF CRITICAL CONCENTRATIONS OF SELF-ORGANIZATION OF SODIUM OCTANOATE IN AQUEOUS SOLUTIONS USING RAMAN SPECTROSCOPY**
I.V. Plastinin, S.A. Burikov, T.A. DolenkoMoscow State University, Moscow, Russia

2S. **MOLECULAR MODELING OF PROTEIN STRUCTURES AND METAL SALTS INTERACTION**
A. Naumov, I.Plastun, A. Bokarev, A. Zakharov
Saratov State Technical University, Saratov, Russia

3S. **DETERMINATION OF MALE REPRODUCTIVE FUNCTION USING MICROSTRUCTURAL WAVEGUIDES**
P.A. Lepilin[1], G.T. Sukhih[2], J.S. Skibina[1],
A.A. Zanishevskaya[1], A.A. Shuvalov[1],
N.O. Yanchuk[1], A.Yu. Gryaznov[1], A. Sysoeva[3],N.P Makarova[3], E.A. Kalinina[3]
[1]International Research and Education Center “Structural Nanobiophotonics”, Saratov, Russia;
[2] Research Center for Obstetrics, Gynecology and Perinatology, Moscow, Russia;
[3]ART Department, Research Center for Obstetrics, Gynecology and Perinatology, Ministry of Health of the Russian Federation,Moscow, Russia

4S. **RAMAN SPECTRA OF SOME FLUOROQUINOLONES: A THEORETICAL STUDI**
A.V. Markin
Saratov State University, Saratov, Russia

5S. **LUMINESCENCE QUENCHING OF UO2(II)ION BY ON 2,2'-BIPYRIDILDICARBOXYLIC AMIDE**
A. Kupaeva, A. Kharcheva, N. Borisova, A. Ivanov, S. Patsaeva
Lomonosov Moscow State University, Moscow, Russia

6S**.LUMINESCENT PROPERTIES OF EUROPIUM AND TERBIUM COMPLEXES: THE INFLUENCE OF SOLVENTS AND pH**

Z.A., Charyshnikova, A.V. Kharcheva, A.V.Ivanov, O.K. Farat, N.E. Borisova, S.V. Patsaeva
Lomonosov Moscow State University, Moscow, Russia

7S. **THE EFFECT OF TEMPERATURE ON LUMINESCENT PROPERTIES OF EUROPIUM COMPLEXES WITH N-HETEROCYCLIC LIGANDS**
D.A. Kharitonov, A.V. Kharcheva, N.E. Borisova, O.K. Farat, S.V. Patsaeva
Lomonosov Moscow State University, Moscow, Russia

8S. **ELECTROSPECTRAL SYSTEMS BASED ON SURFACE-ENHANCED RAMAN SPECTROSCOPY FOR BIOANALYSIS: A LITERATURE OVERVIEV**
A.I. Danchuk, A. V. Markin
Saratov State University, Saratov, Russia

9S**. NMR SPECTROSCOPY IN STRUCTURE DETERMINATION OF A NUMBER OF POLYSUBSTITUTED PYRIDINES AND THIAZOLOPYRIMIDINES**
A.A. Meshcheryakova, N.O. Vasilkova, E.S.Vasil'yeva, V.V. Sorokin, A.P. Kriven'ko
Saratov State University, Saratov, Russia

10S.**VISUALISATION OF DETONATION NANODIAMONDS USING COHERENT ANTI-STOKES LIGHT SCATTERING SPECTROSCOPY**
K.A. Laptinsky[1,2], S.A. Burikov[1,2], O.A. Shenderova[3], T.A. Dolenko[1,2]
[1]Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Russia;
[2]Faculty of Physics, Lomonosov Moscow State University, Russia;
[3]Adamas Nanotechnologies, Inc, Raleigh, NC, USA

11S.**DISSOLVED HUMIC SUBSTANCES AND FUNGAL METABOLITES CAN EXHIBIT SIMILAR FLUORESCENCE PROPERDIS**
E. Fedoseeva, S. Patsaeva,
D. Khundzhua, E. Prudnikova, V.Terekhova
Pirogov Medical University, Moskow, Russia

12S. **MODELING OF STRUCTURE AND IR SPECTRA OF DIHYDROXYBENZOIC ACID ISOMERS**
D.S. Finashkin, L.M. Babkov
Saratov State University, Saratov, Russia

13S. **TWO-DIMENSIONALSPECTROSCOPY IN THEANALYSIS OF THE REACTION PRODUCTS OF 1,3-DIPOLAR CICLOADDITION OF SOME ZOMETHINE YLIDES AND 3-PHENYL-1-(PYRROL-2-YL)PROPEN-2-ONESA**
S.V. Borisova, E.U. Kiseleva, V.V.Sorokin, I.N. Klochkova
Saratov State University, Saratov, Russia

14S. **STRUCTUREAND VIBRATIONAL SPECTRUM OF URIDINE**
V.V. Nechaev[1], K.N. Dvoretskiy[2], K.V. Berezin[3]
[1]Saratov State Technical University, Saratov, Russia;
[2]Saratov State Medical University, Saratov, Russia;
[3]Saratov State University, Saratov, Russia

15S. **INTERMOLECULAR NTERACTION AND IR SPECTRA OF BEHENIC ACID**
S.N. Firsunin[1], L.M. Babkov[1], T.V. Bezrodna[2], T.A. Gavrilko[2], J. Baran[3]
[1]Saratov State University, Saratov, Russia,
[2]Institute of Physics, NAS of Ukraine, Kyiv, Ukraine
[3]Institute of Low Temperatures and Structure Research, PAN, Wroclaw, Poland

16S. **THE INFLUENCE OF THE STRUCTURE OF N-GETEROCYCLIC REAGENTS ON THE STABILITY CONSTANT OF F-ELEMETS COMPLEXES**
T.Sumyanova, N.E. Borisova, A. Ivanjv, G. Zakirova
Faculty of Chemistry, Lomonosov Moscow State University, Moscow, Russia

INTERNET SESSION

1SI. **APPLICATION FTIR SPECTROSCOPY FOR IDENTIFYING SYNTETIC AZODYES**
N.B. Shestopalova, Yu.A. Fomina
Saratov State Medical University, Saratov, Russia

2SI. **STUDY OF COMPLEXATION REACTIONS BETWEEN SUBSTITUTED 1,10-PHENANTROLINE-2,9-DICARBOXAMIDE AND LANTHANIDE NITRATES**
D. Volkova, Ts. Sumyanova, N Borisova
Faculty of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russia

Conference on Nanobiophotonics XVI

Chair: **Nikolai G. Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS, Saratov State University

Secretary: **Timofey E. Pylaev,** Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS, Saratov State Medical University, Agricultural Research Institute of South-East Region

International Program Committee: **Boris N. Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS; **Dmitry Gorin**, SCOLTECH, Saratov State University; **Valery Tuchin**, Saratov State University; **Lev Dykman**, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS; **Vladimir Bogatyrev**, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS

September 30, Wednesday

NANOBIOPHOTONICS JOINT INVITED/PLENARY SESSION

11.00 – 11.40 (plenary)

Nucleic acid & Au nanoparticle-based advanced functional biomaterials
Timofey E. Pylaev IBPPM RAS, Saratov State Medical University, Agricultural Research Institute of South-East Region

September 30, Wednesday

ORAL/INVITED SESSION NANOBIOPHOTONICS

(*Zoom link:*
https://us02web.zoom.us/j/5920866414?pwd=czFTc2Q4Mkh0VkRPTnI0ZXZpZDQvdz09
***Conference ID: 592 086 6414*)**

Chair: **Nikolai G. Khlebtsov,** IBPPM RAS, Saratov State University, Russia

15.00 – 15.20 (Invited)

Plasmonic particles for integration in functional materials and devices
Fulvio Ratto[1], Sonia Centi[1], Lucia Cavigli[1], Boris Khlebtsov[2], Claudio Sangregorio[3], Nikolai Khlebtsov[2], Roberto Pini[1], [1]Istituto di Fisica Applicata Nello Carrara, Consiglio Nazionale delle Ricerche, Fiorentino, Italy, [2]IBPPM RAS, Saratov, Russia [3]Istituto di Chimica dei Composti Organo Metallici, Consiglio Nazionale delle Ricerche, Fiorentino, Italy

15.20 – 15.35

Petal-like Gap-enhanced Raman Tags with a Controllable Structure
Boris Khlebtsov, IBPPM RAS Andrey Burov, IBPPM RAS Daniil Bratashov, Saratov State University Roman Tumskiy, IBPPM RAS Nikolai Khlebtsov, IBPPM RAS, Saratov State University

15.35 – 15.50

Influence of interactions of lanthanide-based nanocomplexes with surrounding molecules on the luminescent properties of nanoparticles in suspensions
Fedyanina[1], S. Burikov[1], O. Sarmanova[1], S.V. Kuznetsov[2], T. Dolenko[1], [1]Moscow State University, Department of Physics, Moscow, Russia (2) - Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

15.50 – 16.05

Preparation Cd-free quantum dots and their optical properties
Tatiana S. Ponomaryova, Anastasiya S. Novikova, Irina Yu. Goryacheva, Saratov State University, Saratov, Russia

16.05 – 16.20

Excitation of localized graphene plasmons by aperiodic self-assembled arrays of metallic antennas
V. Kaydashev[1], B. Khlebtsov[2], A. Miakonkikh[3], E. Zhukova[1], S. Zhukov[1], D. Mylnikov[1], I. Domaratskiy[1] and D. Svintsov[1]. [1]Center for Photonics and 2D Materials, Moscow Institute of Physics and Technology (MIPT), Russia, [2]IBPPM RAS, Saratov, Russia, [3]Valiev Institute of Physics and Technology RAS, Moscow, Russia

16.20 – 16.35

Fluorescent Nanosensor for pH and Temperature Measurements Based on Carbon Dots
M.Yu. Khmeleva1, O.E. Sarmanova1,2, K.A. Laptinskiy1,2, S.A. Burikov1,2, S.A. Dolenko2, A.E. Tomskaya3, T.A. Dolenko1,2 1 Faculty of Physics, Lomonosov Moscow State University, Russia 2 Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Russia 3 North-Eastern Federal University, Yakutsk, Russia

16.35 – 16.50

Ultrasensitive cardiac Troponin-T Sensing by a single molecules counting method

Pavel N. Melentiev,†,‡; Lina V. Son,⊥,#; Denis S. Kudryavtsev,⊥; Igor E. Kasheverov,⊥; Victor I. Tsetlin,⊥; Rinat O. Esenaliev,§; Victor I. Balykin†,‡; †Institute of Spectroscopy RAS, Moscow Russia ‡National Research University, Higher School of Economics, Moscow, Russia ⊥Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry of the RAS, Moscow, Russia # Moscow Institute of Physics and Technology, Dolgoprudny, Russia §The University of Texas Medical Branch, USA

16.50 – 17.05

Diatoms: where photoacoustics meets fluorescence

Julijana Cvjetinovic[1], Dmitry Gorin[1], Alexey Salimon[1], Alexander Korsunsky[2], Marina Novoselova[1], Philipp Sapozhnikov[3], Olga Kalinina[4], Evgeny Shirshin[1,4], Alexey Yashchenok[1], [1]Skolkovo Institute of Science and Technology, Moscow, Russia, [2]Department of Engineering Science, University of Oxford, Oxford, United Kingdom, [3]Shirshov Institute of Oceanology of Russian Academy of Sciences, Moscow, Russia, [4]Lomonosov Moscow State University, Moscow, Russia

17.05 – 17.20

Functionalized Microstructured Optical Fibers in Biophotonics

Timur Ermatov, Skoltech Julia S. Skibina, SPE LLC Nanostructured Glass Technology Roman E. Noskov, Tel Aviv University Valery V. Tuchin, Saratov State University, Tomsk State University, Institute of Precision Mechanics and Control of the Russian Academy of Sciences Dmitry A. Gorin, Skoltech

17.20 – 17.35

Bimodal fluorescence and optoacoustic contrast agent based on the self-quenching of indocyanine green

Maksim D. Mokrousov, Skolkovo Institute of Science and Technology Marina V. Novoselova, Skolkovo Institute of Science and Technology Jackie Nolan, University of Arkansas for Medical Sciences Walter Harrington, University of Arkansas for Medical Sciences Polina Rudakovskaya, Skolkovo Institute of Science and Technology Daniil N. Bratashov, Saratov State University Ekaterina I. Galanzha, University of Arkansas for Medical Sciences, Saratov State University Juan Pablo Fuenzalida-Werner, Institute of Biological and Medical Imaging (IBMI) Boris P. Yakimov, Lomonosov Moscow State University Gleb Nazarikov, Skolkovo Institute of Science and Technology Vladimir P. Drachev, Skolkovo Institute of Science and Technology, University of North Texas Evgeny A. Shirshin, Lomonosov Moscow State University, Institute of Spectroscopy of the Russian Academy of Sciences Vasilis Ntziachristos, Institute of Biological and Medical Imaging (IBMI), Chair of Biological Imaging and Center for Translational Cancer Research (TranslaTUM) Andre C. Stiel, Institute of Biological and Medical Imaging (IBMI) Vladimir P. Zharov, University of Arkansas for Medical Sciences, Saratov State University Dmitry A. Gorin, Skolkovo Institute of Science and Technology

17.35 – 17.50

Getting things back from the bloodflow: flow cytometer and magnetic sorter foe detection and extraction of objects from undiluted blood.

D.N. Bratashov[1], R.A. Verkhovskii[1], O.A. Sindeeva[1,2], A.A. Kozlova[1], I.O. Kozhevnikov[1], E.S. Prikhozhdenko[1], O.A. Mayorova[1], O.V. Grishin[1], M.A. Makarkin[1], A.V. Ermakov[1], A.S. Abdurashitov[2], [1]Saratov State University, Saratov, Russia, [2]Skolkovo Institute of Science and Technology, Moscow, Russia

17.50 – 18.05

In vitro study of exosome secretion rate by nanoparticle tracking analysis

A.Merdalimova, V.Chernyshev, R. Chuprov-Netochin, D.Gorin, Skolkovo Institute of Science and Technology, Moscow, Russia

18.05 – 18.20

Effectivity and safety studying of microcapsules intra-arterial delivery in the kidney by the optical monitoring of hemodynamic

Olga A. Sindeeva‡,†, Arkady S. Abdurashitov‡, Ekaterina S. Prikhozhdenko†, Oksana A. Mayorova†, Olga I. Gusliakova†, Natalia A. Shushunova†, Valentina O. Plastun†, Valery V. Tuchin† and Gleb B. Sukhorukov‡,# ‡Skolkovo Institute of Science and Technology, Russia. †Saratov State University, Russia. #School of Engineering and Materials Science, Queen Mary University of London, United Kingdom.

18.20 – 18.35

Visualization of mechanisms of kidney cancer A498 cell death under the influence of combined therapy of *Gratīola officinālis* extract and cyclophosphamide using the effect of fluorescence of ultrastructural cell components

A.M. Mylnikov, N.A. Navoloki, D.A. Mudrak, N.V. Polukonova, G.N. Maslyakova, Saratov State Medical University n.a. V.I. Razumosky

September 26, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3, 3rd floor Hall)

Chair (N): **Timofey E. Pylaev**, IBPPM RAS, Saratov, Russia

18.00 – 20.00

1. Synthesis of luminescent gold nanoclusters Regina O. Rashchevskaya, Alina A. Kokorina and Irina Yu. Goryacheva

2. Enhanced photo- and thermo stability of Au nanorods conjugated with small thiols Sonia Centi, Istituto di Fisica Applicata `Nello Carrara', Italy Lucia Cavigli, Istituto di Fisica Applicata `Nello Carrara', Italy Claudia Borri, Istituto di Fisica Applicata `Nello Carrara', Italy Alessio Milanesi, Istituto di Fisica Applicata `Nello Carrara', Italy Martina Banchelli, Istituto di Fisica Applicata `Nello Carrara', Italy Sofia Chioccioli, Universita degli Studi di Firenze, Italy Boris Khlebtsov, IBPPM RAS Nikolai G. Khlebtsov, IBPPM RAS, Saratov State University Paolo Matteini, Istituto di Fisica Applicata `Nello Carrara', Italy Patrizia Bogani, Istituto di Fisica Applicata `Nello Carrara', Italy Fulvio Ratto, Istituto di Fisica Applicata `Nello Carrara', Italy Roberto Pini, Istituto di Fisica Applicata `Nello Carrara', Italy

3. Synthesis of fluorescent nanonstructures based on L-aspartic acid with various additives Vera V. Olomskaya, Saratov State University (Russia); Ekaterina A. Mordovina, Saratov State University (Russia); Irina Yu. Goryacheva, Saratov State University (Russia)

4. Glauconite-based antibacterial composites with copper nanoparticles Selifonova E.I., Chernova R.K., Rusanova T.Yu., Serzhantov V.G., Naumova G.N., Cherdakova E.N., Venig S.B. Saratov State University, Russia

5. The potential of gold nanoparticles for coronavirus diagnosis, treatment and prophylaxis L.A. Dykman, S.A. Staroverov, A.S. Fomin, K.P. Gabalov, IBPPM RAS, Saratov, Russia

6. Core type as a factor of gap-enhanced Raman tags SERS response Andrey M. Burov, Boris N. Khlebtsov, Nikolai G. Khlebtsov, IBPPM RAS, Saratov, Russia

7. Is it possible to reuse CTAB growth solution of gold nanorods? Yuliya D. Gudova, Alexander A. Skaptsov Saratov State University, Saratov, Russia

8. Antioxidant albumin-based nanocomposites containing sulforaphane drug and superoxide dismutase plasmid Vitaly Khanadeev, IBPPM RAS, Saratov, Russia, Saba Naqvi, National Institute of Pharmaceutical Education and Research, Raebareli, U.P India; Indian Institute of Technology Roorkee, Roorkee, India; Boris N. Khlebtsov, IBPPM RAS, Saratov, Russia Nikolai G. Khlebtsov, IBPPM RAS, Saratov, Russia; Gopinath Packirisamy, National Institute of Pharmaceutical Education and Research, Raebareli, U.P India; Indian Institute of Technology Roorkee, Roorkee, India

9. Photothermal properties of strongly coupled Au nanopillars P. Timoshenko[1], V. Kaydashev[2] [1]Southern Federal University, Rostov-on-Don, Russia [2]Moscow Institute of Physics and Technology (MIPT), Dolgoprudny, Russia

10. Prospective strategies for enhanced intra- and transdermal delivery of antifungal drugs Ekaterina V. Lengert, Saratov State University, Saratov Russia Ekaterina E. Talnikova, Saratov State Medical University, Saratov Russia, Roman A. Verkhovskii, Saratov State University, Saratov Russia Mariia S. Saveleva, Saratov State University, Saratov, Russia Valery V. Tuchin, Saratov State University, Saratov, Russia; Tomsk State University, Tomsk, Russia; Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia Yulia I. Svenskaya Saratov State University, Saratov, Russia

11. Mesoporous $CaCO_3$ vaterite microparticles with polyelectrolyte coatings for transdermal drug delivery Mariia Saveleva, Ekaterina Lengert, Roman Verkhovskii, Anton Pavlov, and Yulia Svenskaya Saratov State University, Saratov, Russia

12. A novel technology for conductive scaffolds Ekaterina V. Lengert, Ilya O. Kozhevnikov, Alexey A. Serdobintcsev, Anton M. Pavlov Saratov State University, Saratov, Russia

13. In vivo MRI imaging of submicron polyelectrolyte capsules loaded with magnetite nanoparticles under magnetic navigation Yulia Svenskaya, Sararov State University, Russia Anastasiia Kozlova, Saratov State University, Russia Francesca Garello, University of Turin, Italy Ekaterina Lengert, Sararov State University, Russia Enzo Terreno, University of Turin, Italy Dmitry Gorin, Skolkovo Institute of Science and Technology, Russia

14. Particulate System for Efficient Non-Invasive Transdermal Drug Delivery Yulia Svenskaya[1], Ekaterina Lengert[1], Ekaterina Talnikova[2], Mariia Saveleva[1], Roman Verkhovskii[1], Georgy Terentyuk[1], Elina Genina1, Valery Tuchin[1], [1]Sararov State University, Russia, [2]Saratov State Medical University, Russia

15. Some steps in the development of an immunochromatographic test to quantify cortisol in human salivary fluid. Elizaveta V. Panfilova, IBPPM RAS, Saratov, Russia

16. Freezing-induced loading of inorganic nanoparticles into porous mineral matrices P.A. Demina Saratov State University, Saratov, Russia, T.V. Bukreeva Shubnikov Institute of Crystallography of Federal Scientific Research Centre "Crystallography and Photonics" RAS, Moscow, Russia National Research Center "Kurchatov Institute", Moscow, Russia M.V. Lomova Saratov State University, Saratov Russia

17. Preferential accumulation of carriers in the target organ after delivery via the renal artery Ekaterina S. Prikhozhdenko (Saratov State University, 83 Astrakhanskaya str., Saratov 410012, Russia) Olga I. Gusliakova (Saratov State University, 83 Astrakhanskaya str., Saratov 410012, Russia) Oksana A. Mayorova (Saratov State University, 83 Astrakhanskaya str., Saratov 410012, Russia) Natalia A. Shushunova (Saratov State University, 83 Astrakhanskaya str., Saratov 410012, Russia) Arkady S. Abdurashitov (Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Building 3, Moscow, 143026, Russia) Dmitry A. Gorin (Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Building 3, Moscow, 143026, Russia) Gleb B. Sukhorukov (Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Building 3, Moscow, 143026, Russia; School of Engineering and Materials Science, Queen Mary University of London, Mile End, Eng, 215, London E1 4NS, United Kingdom) Olga A. Sindeeva (Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Building 3, Moscow, 143026, Russia; Saratov State University, 83 Astrakhanskaya str., Saratov 410012, Russia)

18. Synthesis of molecularly imprinted polymers for enzymes Presnyakov K. U. (Saratov State University, Institute of Chemistry) Pidenko P.S. (Saratov State University, Institute of Chemistry) Burmistrova N.A. (Saratov State University, Institute of Chemistry)

19. MRI contrast control of submicron carriers loaded with magnetite nanoparticles Anastasiia A. Kozlova 1, Sergey V. German 2,3, Vsevolod S. Atkin 1, Victor V. Zyev 4, Maxwell Astle 5, Daniil N. Bratashov 1, Yulia I. Svenskaya 1 and Dmitry A. Gorin 3 1 Saratov State University, Saratov, Russia 2 Institute of Spectroscopy of the Russian Academy of Sciences (ISAN), Troitsk, Russia 3 Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Moscow, Russia 4 Saratov State Medical University, Saratov, Russia 5 School of Chemistry, University of Nottingham, University Park, NG7 2RD, UK

20. Impact of new formulation on mechanical functions of the lungs and their interaction with cells of the immune system after intrapulmonary administration Olga I. Gusliakova†, Elena N. Atochina-Vasserman‡, Elena Abramova#, Andrew J. Gow# †Saratov State University, Saratov, Russia. ‡ University of Pennsylvania, Philadelphia, United States of America. # Rutgers University, Piscataway, New Jersey, United States of America.

21. Theoretical model of magnetic nanoparticles under the influence of the magnetic field Samia Salem1, 2, Valery Tuchin1, 3, 4, 5 1Department of Optics and Biophotonics, Saratov State University, Saratov 410012, Russia 2Department of Physics, Faculty of Science, Benha University, Egypt 3Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk 634050, Russia 4Laboratory of Molecular Imaging, Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow 119071, Russia 5Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov 410028, Russia

Workshop on Microscopy and Low-Coherence Methods XIII

Co-chairs: **Kirill V. Larin**, Department of Biomedical Engineering, University of Houston, Houston, USA

*Secretary:***Georgy G. Akchurin,** Saratov State University (Russia), Institute of PrecisionMechanics and Control RAS

*International Program Committee:***Shoude Chang**, National Research Council (Canada); **Mary Dickinson**, Baylor College of Medicine (USA); **Christoph K. Hitzenberger**, University of Vienna (Austria); **Igor V. Meglinski**, University of Oulu (Finland), Saratov State University (Russia); **Valery V. Tuchin**, Saratov State University (Russia).

October 1, Thursday

JOINT POSTER/INTERNET SESSION

Chair (M): **Georgy G. Akchurin**; Saratov State University (Russia),Institute of Precision Mechanics and Control RAS

18.30-20.00

1M. **Towards open platform for laser scanning confocal microscopy**
Vasiliy B. Ageev, Ivan V. FedosovDepartment of optics and biophotonics, Saratov State University,Saratov, Russia

2M. **Instantaneous interference images and the manifestation of the spatial coherence of light with wide frequency and angular spectra in an interference experiment**
Ludmila A. Maksimova,Natalia Yu. Mysina, Vladimir P. Ryabukho State University, Institute of Precision Mechanics and Control Russian Academy of Sciences, Russia

3M.**Influence of ultrasound parameters of the therapeutic frequency range on the optical and thermophysical properties of human skin and on the efficiency of immersion optical clearing in vivo**
Yuriy I. Surkov, Isabella A. Serebryakova, Aleksey N. Bashkatov, Valery V. Tuchin, Vladimir Zharov and Elina A. Genina Saratov National Research State University, Saratov, Russia, National Research Tomsk State University, Tomsk, Russia, Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia, Arkansas Nanomedicine Center, University of Arkansas for Medical Sciences, Little Rock, AR USA

4M.Longitudinal coherence in interference microscopy
Klychkova Daria, Vladimir P. Ryabukho, Saratov State University;Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia

5M. Information capacity and energetic efficiency of high-speed time-domain full-field optical coherence tomography system
Igor P. Gurov, Maxim A. Volynsky, Nikita B. Margaryants, Aleksei PimenovITMO University, Saint Petersburg, Russia

6M.Microstructure of titanium films formed by induction PVD on alumina ceramics
Marina A Fomina. Alexander Aman,Andrey M. Zakharevich, Vladimir A. Koshuro Yuri Gagarin State Technical University of Saratov, Russia, Otto Vollmann GmbH & Co. KG, Germany,Saratov State University, Russia,

7M.Researching of the structural and morphological characteristics of coatings based on metal-containing calcium phosphates
Olga A. Markelova, Vladimir M.Taran, Sergey Ya. Pichkhidze Yuri Gagarin State Technical University of Saratov, Department of Materials Science and Biomedical Engineering

8M.Evaluation of low-coherence interference fringe parameters by the adaptive wiener filtering method
Igor P. Gurov, Vlada O. Kapranova, Pavel S. Skakov, ITMO University, Saint Petersburg, Russia

INTERNET REPORTS

1.Mechanical changes in cataract lenses assessed with optical coherence elastography
Honggiu Zhang, Chen Wu, Manmohan Singh, SalavatR. Aglyamov, Kirill V. LarinUniversity of Houston, USA

2.Heartbeat Optical Coherence Elastography: Utilizing Heartbeat to Measure Corneal Biomechanical Properties
Achuth Nair, Manmohan Singh, Salavat R. Aglyamov, and Kirill V. LarinUniversity of Houston, USA

3. Optical coherence angiography to evaluate concurrent changes in the fetal brain and maternal extremities due to maternal ethanol exposure
Raksha Raghunathan, Chih-Hao Liu, Manmohan Singh, Rajesh C. Miranda, Kirill V. Larin University of Houston, USA

4. Optical Coherence Elastography with Needle-based Piezoelectric-driven Probe
Harshdeep Singh Chawla, Justin Rippy, Fernando Zvietcovich, Salavat R. Aglyamov and Kirill V. Larin Department of Biomedical Engineering, University of Houston, USA

5. Ocular tissue biomechanics using Brillouin microscopy and optical coherence elastography
Yogeshwari S Ambekar, Manmohan Singh, Jitao Zhang, Achuth NairSalavat Aglyamov, Giuliano Scarcelli, Kirill V Larin, Fischell Department of Biomedical Engineering, University of Houston, USA, Department of Bioengineering, University of Maryland, College park, MD, USA

6. Response of malignant tumor cells to photodynamic treatment assessed by means of digital holographic microscopy
Anna A. Zhikhoreva, Andrey V. Belashov, Natalya A. Avdonkina, Irina A. Baldueva, Anna B. Danilova, Mark L. Gelfond, Tatyana L. Nekhaeva, Irina V. Semenova and Oleg S. Vasyutinskii Ioffe Institute, Russian Academy of Sciences, St. Petersburg, Russia, N.N. Petrov National Medical Research Center, Ministry of Health of Russia, St. Petersburg, Russia

7.
Invited
Numerical simulation in optical coherence tomography as a tool for development of emerging oct-moda
Lev A. Matveev, Alexander L. Matveyev, Alexander A. Moiseev, Alexander A. Sovetsky, Alexey A. ZykovInstitute of Applied Physics of the Russian Academy of Sciences, Russia

8. Aberration determination in OCT imaging using phase gradient autofocus technique
Vasily Matkivsky, Alexander Moiseev, Pavel Shilyagin, Alexander Rodionov, Grigory Gelikonov Institute of Applied Physics of the Russian Academy of Sciences, Nizhny Novgorod, Russia

9.Low-coherence interferometry system and its application for contactless profilometry and optical coherence tomography
Maxim A. Volynsky,Igor P. Gurov, Nikita B. Margaryants ITMO University, Saint Petersburg, Russia

10. Non-invasive assessment of fluid retention in tissues by direct measurements of capillary parameters using optical microscopy
Denis A. Davydov, Boris P. Yakimov, Gleb S. Budylin, Victor V. Fadeev, Yury I. Gurfinkel, Evgeniy A. ShirshinDepartment of Physics of M.V. Lomonosov Moscow State University, Institute of spectroscopy of the Russian Academy of Science, Moscow, Russia

INVITED INTERNET LECTURE

Optical coherence elastography and brilluioin spetrocopy for biomechaniocal mapping of tissues
Kirill V. Larin Department of Biomedical Engineering, University of Houston, Houston, USA

Conference on Internet Biophotonics XIII

Chairs: **Alexey N. Bashkatov**, Saratov State University, Saratov, Russia; National Research Tomsk State University, Tomsk, Russia; **Ivan V. Fedosov**, Saratov State University, Saratov, Russia; and **Valery V. Tuchin,** Saratov State University, Saratov, Russia; National Research Tomsk State University, Tomsk, Russia; Institute of Precision Mechanics and Control of the RAS, Russia

Secretary: **Daria K. Tuchina,** Saratov State University, Saratov, Russia; National Research Tomsk State University, Tomsk, Russia

International Program Committee: **Wei Chen**, University of Central Oklahoma (USA); **Cornelia Denz**, University of Münster (Germany); **Kishan Dholakia,** University of St. Andrews (UK); **Paul M.W. French**, Imperial College of Science, Technology and Medicine (UK); **Elina A. Genina**, Saratov State University (Russia); **Kirill V. Larin**, University of Houston (USA), Saratov State University (Russia); **Martin Leahy**, National University of Ireland, Galway; **Qingming Luo**, Hainan University (China); **Roberto Pini**, Inst. di Fisica Applicata, Sesto Fiorentino (Italy); **Juergen Popp**, Inst. of Photonic Technology, Jena (Germany); **Alexander V. Priezzhev**, Moscow State University (Russia); **Lihong Wang**, Caltech,Pasadena (USA); **Ruikang K. Wang**, University of Washington (USA); **Mikhail Yu. Kirillin**, Institute of Applied Physics RAS, Nizhny Novgorod (Russia), **Valery P. Zakharov,** Samara State University (Russia), **Edik Rafailov**, Aston University (UK).

October 1, Thursday

INTERNET SESSION

Chairs: **Ivan V. Fedosov, Alexey N. Bashkatov, Valery V. Tuchin,** Saratov State University, Russia

Moderators: **Michael M. Slepchenkov, Vasily B. Ageev, Alexander I. Dubrovsky,** Saratov State University, Russia

18.00 – 20.00

INVITED INTERNET LECTURES

1. Determination of the water profile in the stratum corneum of the oil-treated skin using in vivo confocal Raman microscopy Maxim E. Darvin[1], Chunsik Choe[2], Sehyok Choe[2], Johannes Schleusener[1], Jürgen Lademann[1], [1]Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Charité Universitätsmedizin Berlin, Berlin, Germany; [2]Biomedical Materials Division, Faculty of Material Science, Kim Il Sung University, Pyongyang, DPR Korea

2. Biophotonic analysis of embryonic cardiodynamics Andrew L. Lopez[1], Shang Wang[2], Irina Larina[1], [1]Baylor College of Medicine, Houston, USA; [2]Institute of Technology, Hoboken, NJ, USA

3. The efficiency of the refractive index matching mechanism in various biological tissues – a comparative study between the ultraviolet and the visible-NIR regions Nelma M. Gomes[1], Luís M. Oliveira[1], Valery V. Tuchin[2-5], [1]Polytechnic of Porto – School of Engineering, Porto, Portugal; [2]Saratov State University, Saratov, Russia; [3]Tomsk State University, Tomsk, Russia; [4]Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia; [5]A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia

4. Ultrasonic modes to improve the optical clearing of the skin *ex vivo* Daria K. Tuchina[1,2], Alexey N. Bashkatov[1,2], Nikita A. Navolokin,[3] Valery V. Tuchin[1,2,4], [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Saratov State Medical University, Saratov, Russia; [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

5. The assessment of tumor vascularization degree for predicting the effectiveness of plasmon photothermal and photodynamic therapy Alla Bucharskaya[1], Galina Maslyakova[1], Marina Chekhonatskaya[1], Pakhomy Svetlana[1], Mudrak Dmitry[1], Nikita Navolokin[1], Georgy Terentyuk[1,2], Ekaterina Borisova[3], Boris Khlebtsov[4], Nikolai Khlebtsov[4], Vadim Genin[2], Alexey Bashkatov[2], Elina Genina[2], Valery Tuchin[2], [1]Saratov State Medical University , Russia; [2]Saratov State University; [2]Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria; [4]Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Russia

6. Time-domain near-infrared optical tomography of neonatal brain Alexander Kalyanov, Jingjing Jiang, Aldo Di Costanzo Mata, Martin Wolf, University of Zurich, Zurich, Switzerland

7. 5-ALA/PpIX fluorescence signal of glioblastoma cells in correlation with early and late photodynamic-induced apoptosis Ekaterina Borisova[1], Dobroslav Kyurkchiev[2], Kalina Tumangelova-Yuseir[2], Ekaterina Ivanova-Todorova[2], Ivan Angelov[1], Lidia Zaharieva[1],

Peter Karazapryanov[2], Krassimir MInkin[2], [1]Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria; [2]University Hospital "St. Ivan Rilski", Medical University, Sofia, Bulgaria

8. A unified Monte Carlo platform for light transport simulation D. Kurakina[1], A. Getmanskaya[1,2], A. Gorshkov[1,3], A. Khilov[1], V. Perekatova[1], E. Sergeeva[1], M. Kirillin[1], [1]Institute of Applied Physics RAS, Nizhny Novgorod, Russia; [2]N.I. Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia; [3]Intel Corp., Nizhny Novgorod office, Russia

9. Comparison of two image reconstruction algorithms for early-photon fluorescence molecular tomography Alexander B. Konovalov[1,2], Vitaly V. Vlasov[1,2], Alexander S. Uglov[1], [1]Federal State Unitary Enterprise "Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics," Snezhinsk, Russia; [2]Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia

10. Use of imaging photoplethysmography for assessing intracranial blood flow in response to trigemino-vascular activation in a rat migraine model Anastasija V. Osipchuk[1], Maxim A. Volynsky[2], Alexey Y. Sokolov[1,3], Alexei A. Kamshilin[2], [1]Valdman Institute of Pharmacology, Pavlov First Saint Petersburg State Medical University, Saint Petersburg, Russia; [2]ITMO University, Saint Petersburg, Russia; [3]Pavlov Institute of Physiology of the Russian Academy of Sciences, Saint Petersburg, Russia

11. Development of patient-derived ortotopic glioblastoma model in nude mice D.V. Yuzhakova[1], E.B Kiseleva[1], M.M. Lukina[1], V.V. Dudenkova[1], G.M. Yusubalieva[2], A.I. Gavrina[1], V.P. Baklaushev[2], M.V. Shirmanova[1], [1]Privolzhsky Research Medical University, Nizhny Novgorod, Russia; [2]Federal Research and Clinical Center, Federal Medical and Biological Agency, Moscow, Russia

12. Application of LIBS technology for the biotissue diagnosis A.V. Belikov, S.N. Smirnov, A.D. Tavalinskaya, ITMO University, Russian Federation

13. Nanodiamond phantom mimicking human tissue Małgorzata Szczerska, Gdańsk University of Technology, Poland

14. Developing novel photodynamic therapy protocols with assistance of optical monitoringM. Kirillin[1], D. Kurakina[1], A. Khilov[1], M. Shakhova[1,2], A. Orlova[1], E. Sergeeva[1], A. Meller[1,2], Yu. Ivanova[3], K. Pavlova[3], and N. Orlinskaya[1,2], [1]Institute of Applied Physics RAS, 603950, Ulyanov St., 46, Nizhny Novgorod, Russia, [2]Privolzhsky Research Medical University, Nizhny Novgorod, Russia, [3]N.I. Lobachevsky State University of Nizhny Novgorod, Russia

INTERNET REPORTS

1. Evaluation of the Shear modulus for the blood vessel wall using intravascular optical coherence tomography raw data A.Yu. Potlov, S.V. Frolov, T.A. Frolova, S.G. Proskurin, Tambov State Technical University, Russia

2. Evaluation of geometric characteristics and internal structure of atherosclerotic plaques on the walls of the blood vessels and their phantoms using intravascular optical coherence tomography A.Yu. Potlov, S.V. Frolov, S.G. Proskurin Tambov State Technical University, Russia

3. Spectral assessment of the state of dental tissues with periodontal disease E.V. Timchenko[1], P.E. Timchenko[1], M.A. Zybin[2], L.T. Volova[3], O.O. Frolov[1], Yu.D. Ityaksov[1], [1]Samara National Research University named after academician S.P. Korolev; [2]Dental clinic "Diamant"; [3]Samara State Medical University, Samara)

4. Ultra-weak photon emission of biological objects in UV-range: early researches of physical properties and up-to-date possibilities of their verification Elena V. Naumova, Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Science, Novosibirsk, Russia

5. Ultra-weak UV-chemiluminescence of blood and its quenching in cancer diseases (an overview of experimental and clinical data and prospects of verification) E.V. Naumova Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Science, Novosibirsk, Russia

6. Raman spectroscopy method for bone analysis during osteoresorption E.V. Timchenko, P.E. Timchenko, E.V. Pisareva, M.Y. Vlasov, L. T. Volova, O.O. Frolov, Ya.V. Fedorova, G.P. Tikhomirova, D.A. Romanova, Samara National Research University named after academician S.P. Koroleva

7. Dose-dependent dynamics of tumor growth under the influence of Chlamydia psittaci AMK-16 specific ornithosis antigen Anna Lyapina[1], Maxim Lavrukhin[1], Larisa Padilo[1], Maria Khizhnyakova[1], Nadegda Filonova[1], Onega Ulianova[2], Galina Maslyakova[3], Alla Bucharskaya[3], Nikita Navolokin[3], Sergey Dobdin[2], Anatoly Skripal[2], Vitaly Evstifeev[4], Sergey Ulyanov[1,2], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Russia; [2]Saratov State University, Russia; [3]Saratov State Medical University n.a. V.I. Razumovsky, Russia; [4]Federal Center for Toxicological, Radiation and Biological Safety, Kazan, Russia

8. Differentiation of Highly Pathogenic Avian Influenza Virus (HPAIV) A strains using of GB-speckles, coding the nucleotide sequences of the neuraminidase gene Maria Khizhnyakova[1], Sergey Zaitsev[1], Yuriy Saltykov[1], Onega Ulianova[2], Sergey Ulyanov[1,2], Alexander Ulyanov[3], Nadezhda Filonova[1], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Russia; [2]Saratov State University, Saratov, Russia; [3]Rocolabs, New York, USA

9. The GB-speckles generated for the gene pgp4 as the promising model towards to differentiation some Chlamydia spp Maria Khizhnyakova[1], Sergey Zaitsev[1], Yuriy Saltykov[1], Onega Ulianova[2], Sergey Ulyanov[1,2], Alexander Ulyanov[3], Nadezhda Filonova[1], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Russia; [2]Saratov State University, Saratov, Russia; [3]Rocolabs, New York, USA

10. Comparison of structural and statistical characteristics of interfering GB speckles, coding nucleotide sequences of the gene GPCR of Lumpy Skin Disease Virus and Sheeppox Virus Yuri Saltykov[1], Onega Ulianova[2], Sergey Ulyanov[1,2], Sergey Zaytsev[1], Alexander Ulyanov[3], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology Branch in Saratov, Russia; [2]Saratov State University, Saratov, Russia; [3]Rocolabs, New York, USA

11. Study of statistical properties of GB-speckles, generated on nucleotide sequences of the SARS–CoV-2 gene «S» Sergey Zaitsev[1], Maria Khizhnyakova[1], Yuriy Saltykov[1], Onega Ulianova[2], Sergey Ulyanov[1,2], Alexander Ulyanov[3], Nadezhda Filonova[1], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Russia; [2]Saratov State University, Saratov, Russia; [3]Rocolabs, New York, USA

12. Optical properties of liver tumor tissues in the spectral range of 350-2000 nm in laser photothermolysis treatment Vadim D. Genin[1,2], Alla B. Bucharskaya[3], Elina A. Genina[1,2], Georgy S. Terentyuk[4], Nikolay G. Khlebtsov[1,5], Valery V. Tuchin[1,2,6], Alexey N. Bashkatov[1,2], [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Saratov State Medical University, Saratov, Russia; [4]Saratov First Veterinary Clinic, Saratov, Russia; [5]Institute of Biochemistry and Physiology of Plants and Microorganisms RAS, Saratov, Russia; [6]Institute of Precision Mechanics and Control RAS, Saratov, Russia

13. Multivariate analysis of the Raman and NIR fluorescence spectra for optical biopsy of skin cancer Yulia A. Khristoforova[1], Ivan A. Bratchenko[1], Dmitry N. Artemyev[1], Oleg O. Myakinin[1], Alexander A. Moryatov[2], Sergey V. Kozlov[2], Valery P. Zakharov[1], [1]Samara University, Russia; [2]Samara State Medical University, Russia

14. Determination of changes in skin tissue during the development of malignant neoplasms by Monte Carlo simulation and Multivariate Curve Resolution – Alternating Least Squares Irina Matveeva, Oleg Myakinin, Yulia Khristoforova, Samara University, Russia

15. Water migration in skin after optical clearing Anton Yu. Sdobnov,[1] Johannes Schleusener,[2] Jürgen Lademann, [2] Valery V. Tuchin,[3-6] Maxim E. Darvin[21]University of Oulu, Oulu, Finland; [2]Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin, Corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, Berlin Institute of Health, Berlin, Germany; [3]Saratov State University, Saratov, Russian Federation; [4]Institute of Precision Mechanics and Control of the RAS, Saratov, Russian Federation; [5]Bach Institute of Biochemistry, Research Center of Biotechnology of the RAS, Moscow, Russian Federation; [6]Tomsk State University, Tomsk, Russian Federation

16. Development of remote optical methods for diagnostics and monitoring of the state of the visual organ V.V. Bakutkin, I.V. Bakutkin, V.A. Zelenov International Academy of consulting, audit and education, Saratov, Russia

17. Biophysical approaches to tooth restoration selection: new direction formation in restorative dentistry Nadezda Bessudnova, Sergey B. Venig, Vladimir Senkin , SSU, Saratov, Russia

18. Laser-ablated silicon nanoparticles in tumor treatment via hyperthermia: numerical calculations O. I. Sokolovskaya[1], S.V. Zabotnov[1], L.A. Golovan[1], D.A. Kurakina[2], E.A. Sergeeva[1,2], M.Yu. Kirillin[2], [1]Lomonosov Moscow State University, Moscow, Russia; [2]Institute of Applied Physics RAS, Nizhniy Novgorod, Russia

19. Blood flow visualization by means of laser speckle-contrast measurements under the conditions of nonergodicityA. Yu. Sdobnov[1], V. V. Kalchenko[2], A. V. Bykov[1], A. P. Popov[3], G. Molodij[2], I. V. Meglinski[1, 4-6], [1]University of Oulu, , Oulu, Finland; [2]Weizmann Institute of Science, Rehovot, Israel; [3]VTT Technical Research Centre of Finland, Oulu, Finland; [4]Tomsk State University, Tomsk, Russia; [5]Institute of Engineering Physics for Biomedicine (PhysBio), National Research Nuclear University (MEPhI), Moscow, Russia; [6]College of Engineering and Physical Sciences, Aston University, Birmingham, UK

INTERNET POSTERS

1. Long-term spectroscopic observations on water samples with phototrophic microorganisms from the supralittoral zone of the Alaid Volcano, the Kuril Islands A.A. Zhiltsova[1], L.P. Anikin[2], V.A. Rashidov[2,3], S.V. Patsaeva[1], [1]Lomonosov Moscow State University, Moscow, Russia; [2]Institute of Volcanology and Seismology of Far Eastern Branch of the Russisn Acadamy of Sciences, Petropavlovsk-Kamchatsky, Russia; [3]Far Eastern Geological Institute of Far Eastern Branch of RAS, Petropavlovsk-Kamchatsky, Vladivostok, Russia

2. Fluorescence and absorbance indices for chromophoric dissolved organic matter (CDOM) occurring in the stratified lakes at the coast of the White Sea A.A. Zhiltsova[1], D.A. Voronov[2,3], E.D. Krasnova[1], S.V. Patsaeva[1], [1]Moscow State University, Moscow, Russia; [2]Kharkevich Institute for Information Transmission Problems, Russian Academy of Sciences; [3]Belozersky Institute of Physico-Chemical Biology, Moscow State University, Moscow, Russia

3. Fluorescence of chlorosomal extracts bacteriochlorophylls (Bchl d and Bchl e) green sulfur bacteria V.V. Rymar, A.A. Zhiltsova, E.D. Krasnova [2], D.A. Voronov [3], S.V. Patsaeva, Moscow State University, Moscow, Russia

4. Analysis of the interaction of antibiotics and organic matter in natural water: spectral studies A. Paramonova[1,2], V. Terekhova[1,2], S. Patsaeva[1], [1]M.V. Lomonosov Moscow State University, Moscow, Russia; [2]A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia

5. Luminescence indicators of bean leaves at different times of treatment with sodium fluoride O.A. Kalmatskaya, V.A. Karavaev, Lomonosov Moscow State University, Moscow, Russia

6. Study of dental tissues at apical periodontitis by Raman spectroscopy E.V. Timchenko[1], P.E. Timchenko[1], M.A. Zybin[2], K.B. Chernyy-Tkach[1], O.O. Frolov[1], [1]Samara National Research University; [2]Dental Clinic "Diamant"

7. Cerebrovascular reactivity assessment with systemic use of carbonic anhydrase inhibitor for rats: capabilities of imaging photoplethysmography Oleg V. Mamontov[1,2], Alexey Y. Sokolov[1,3], Maxim A. Volynsky[4], Anastasija V. Osipchuk[1], Alexei A. Kamshilin[4], [1]Pavlov First Saint Petersburg State Medical University, Saint Petersburg, Russia; [2]Almazov National Medical Research Centre, Saint Petersburg, Russia; [3]Pavlov Institute of Physiology, RAS, Saint Petersburg, Russia; [4]ITMO University, Saint Petersburg, Russia

8. Detection of masked hypertension based on laser Doppler flowmeter measurements Yulia I. Loktionova[1], Maria A. Mikhailova[1,2], Andrey I. Korolev[2], Valida A. Dadaeva[2], Alexandr Yu. Gorshkov[2], Elena V. Zharkikh[1], Andrey V. Dunaev[1], Andrey A. Fedorovich[2], Evgeny A. Zherebtsov[1, 3], [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]National Medical Research Center for Therapy and Preventive Medicine of the Ministry of Healthcare of the Russian Federation; [3]University of Oulu, Oulu, Finland

9. Characterising hepatocellular carcinoma inoculated in mice by fluorescence lifetime measurements Ksenia Kandurova[1], Valery Shupletsov[1], Elena Potapova[1], Evgeny Zherebtsov[1,2], [1]Orel State University, Russia; [2]University of Oulu, Finland.

10. Polyacrylamide-based fluorescence phantom for calibration measurements of the FAD content in human skin V.V. Shupletsov[1], E.A. Zherebtsov[1,2], V.V. Dremin[1,3], A.P. Popov[4], A.V. Bykov[1], E.V. Potapova[1], A.V. Dunaev[1], I.V. Meglinski[2,3], [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]University of Oulu, Oulu, Finland; [3]School of Engineering and Applied Science, Aston University, Birmingham, UK; [4]VTT Technical Research Centre of Finland, Oulu, Finland

11. Urethral pain syndrome: role of cross-polarization OCT in the study of the disease pathogenesis Olga S. Streltsova [1], Anton S.Kuyarov [1], Alexander A.Moiseev [2], Muhammat A.Molvi [1], Elena B. Kiseleva [1], [1]Privolzhsky Research Medical University, Nizhniy Novgorod, Russia; [2]Institute of Applied Physics Russian Academy of Sciences, Nizhniy Novgorod, Russia

12. Changes in the functional activity of platelets in experimental light desynchronosis Vyacheslav F. Kirichuk, Olga V. Zlobina, Alexey N. Ivanov, Olga N. Antipova, Svetlana S. Pakhomy, Alena Yu. Karetnikova, Elena S. Terekhina, Nikita V. Shlyapnikov, Irina O. Bugaeva, Saratov State Medical University n.a. V.I. Razumovsky, Saratov, Russia

13. Light effect on the microvasculature of the skin according to the data of laser Doppler flowmetry in the experiment Olga V. Zlobina, Alexey N. Ivanov, Olga N. Antipova, Svetlana S. Pakhomy, Artyom A. Dolgov, Taisiya V. Milashevskaya, Ekaterina V. Smolina, Irina O. Bugaeva, Saratov State Medical University n.a. V.I. Razumovsky, Saratov, Russia

14. THz spectroscopy of emanation from the skin of patients with different diseases Zasedatel Viacheslav Tomsk State University, Tomsk, Russia

15. Effect of titanium dioxide nanoparticles on human red blood cells microrheologic properties: in vitro studies by laser techniques A.I. Neznanov[1], I.M. Kadanova[1], A.E. Lugovtsov[1], A.V. Priezzhev[1], A.P. Popov[2], [1]Lomonosov Moscow State University, Russia; [2]VTT Technical Research Centre of Finland, Oulu, Finland

16. The investigation of the dependence of the registered patterns of scattering light on changes in the optical power of probing radiation in digital diaphanoscopy E.O. Bryanskaya[1], I.N. Makovik[1], V.V. Dremin[1,2], O.A. Bibikova[3], B.M. Shuraev[4], A.V. Dunaev[1], V.G. Artyushenko[3], [1]Orel State University named after I.S. Turgenev, Orel, Russia; [2]Aston Institute of Photonic Technologies, School of Engineering & Applied Science, Aston University, Birmingham, UK; [3]Art photonics GmbH, Berlin, Germany; [4]Diagnostic Medical Center "MediScan", Orel, Russia

17. Cathodoluminescence as a powerful tool for visual diagnostics of hard tooth tissues - polymer material adhesive interfaces Sergey B. Venig, SSU Nadezda O. Bessudnova, SSU

18. Cyclic tissue clearing Nataliya Kozintseva[1], Arkady S. Abdurashitov[2,3], Valery V. Tuchin[2-5], [1]MEPHI, Moscow, Russia; [2]Saratov State University, Saratov, Russia; [3]Tomsk State University, Tomsk, Russia; [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia; [5]ITMO University, St. Petersburg, Russia

19. Optimization of 980nm laser radiation parameters for fractional therapy of oral mucosa Yulia.V. Semyashkina, Andrey.V. Belikov, ITMO University

20. Optics and thermodynamics of titanium-containing optothermal fiber converter and vein wall during endovasal laser coagulation Do Thanh Tung, Yulia V. Semyashkina, Andrey V. Belikov, ITMO University, Russia

21. 980nm fractional laser treatment of McCall festoon and Stillman's cleft Elena S. Sergeeva[1], Luidmila A. Ermolaeva[1], Denis Y. Fedotov[1], Yulia V. Semyashkina[2], Andrey V. Belikov[2], [1]St. Petersburg State University, Russia; [2]ITMO University, Russia

22. PDT with a genetically-encoded photosensitizer miniSOG by continuous wave or pulsed laser irradiation on tumor spheroid model D.V. Yuzhakova[1]; M.V. Shirmanova[1]; M.M. Lukina[1]; A.I. Gavrina[1]; A.I. Izosimova[1,2]; V.A. Kamensky[3], [1]Privolzhsky Research Medical University, Nizhny Novgorod, Russia; [2]Lobachevsky State University of Nizhny Novgorod; [3]Institute of Applied Physics RAS, Nizhny Novgorod, Russia

23. Chemometric analysis of Raman spectra for evaluating hard palate implants E.V. Timchenko[1], P.E. Timchenko[1], Volova L.T. [2], O.O. Frolov[1], E.F. Yagofarova[1], [1]Samara National Research University; [2]Samara State Medical University, Samara, Russia

24. Confocal Raman microspectroscopy of porcine skin *ex vivo* using laser excitation at 633 nm and optical clearing with glycerol/water/DMSO solution Ali J. Sadeq,[1,2,3] Malik H. Mahmood,[1,2,4] R. Holomb,[1] L. Himics,[1] V. V. Tuchin,[5,6,7] M Veres,[11]Institute for Solid State Physics and Optics, Wigner Research Center for Physics, Budapest, Hungary; [2]Institute of Physics, University of Szeged, Szeged, Hungary; [3]Ministry of Higher Education and Scientific Research, Baghdad, Iraq; [4]College of Medicine, University of Misan, Al-Amarah, Misan, Iraq; [5]Saratov State University, Saratov, Russia; [6]Precision Mechanics and Control Institute of the Russian Academy of Sciences, Saratov, Russia; [7]National Research Tomsk State University, Tomsk, Russia

25. Effect of ex vivo skin drying on collimated transmittance spectra kinetics Sergey Zaytsev[1,2], Alexey N. Bashkatov[1,3], Walter Blondel[2], Marine Amouroux[2], Valery V. Tuchin[1,3,4], Elina A. Genina[1,3]; [1]Saratov State University, Russia; [2]Université de Lorrain, Nancy, France; [3]Tomsk State University; [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

26. OCT analysis of in vivo human skin optical clearing combined with physical and chemical permeation enhancers Sergey Zaytsev[1,2], Victoria Charykova[1], Munira Uysupova[1], Alexey N. Bashkatov[1,3], Valery V. Tuchin[1,3,4], Elina A. Genina[1,3]; [1]Saratov State University, Russia; [2]Université de Lorraine, Nancy, France; [3]Tomsk State University; [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

27. Study of the interaction between collagen and collagenase molecules by Dynamic Light Scattering in the presence of various modifiers A.V. Petrova, I.A. Sergeeva, G.P. Petrova, Lomonosov Moscow State University, Moscow, Russia

28. Study of wound healing on healthy and lymphedema tissues using Multiphoton Microscopy HalaZuhayri[1], A.I.Knyazkova[1,2], V.V.Nikolaev[1,2], A.V.Borisov[1,3], Yu.V.Kistenev[1,3], P.A.Dyachenko[1,4], V.V.Tuchin[1,4], [1]Tomsk State University; [2]Institute of Strength Physics and Materials Science SB RAS; [3]Siberian State Medical University, Tomsk, Russia; [4]Saratov State University, Saratov, Russia

29. Application of Digital Speckle Patterns Correlation for Blood Clotting Time Evaluation Iuliia D. Liushnevskaya, Fedor A. Gubarev, National Research Tomsk Polytechnic University, Russia

Conference on Low-Dimensional Structures X

Workshop Chair: **Olga E. Glukhova***,* Saratov State University (Russia)

Secretaries: **Pavel V. Barkov,** Saratov State University (Russia), **DmitryA. Kolosov,** Saratov State University (Russia)

International Program Committee: **Ming-Fa Lin**, National Cheng Kung University, Tainan, Taiwan,**Albert G. Nasibulin**, Skolkovo Institute of Science and Technology, Russia, **Zhang Gang**, Institute of High Performance Computing, Agency for Science, Technology and Research, Singapore, **Tatiana R. Prytkova**, Cloud Pharmaceuticals, USA, **Irina V. Zaporotskova**, Volgograd State University, Volgograd, Russia, **Galina N. Maslyakova**, Saratov State Medical University named after V.I. Razumovsky, Saratov, Russia, **Igor S. Nefedov**, Aalto University, Espoo, Finland

September 30, Wednesday

ORAL SESSION
(Google Meet link:
https://meet.google.com/ehh-dsoh-mzh***)***
Chair: **Olga E. Glukhova**,
SaratovStateUniversity
Russia

10.00-10.15
Anisotropy and regularity of quantum electron transport and electrical conductivity of graphene nanomesh with circular holes
P.V. Barkov, O.E. Glukhova,Saratov State University, Saratov,Russia

10.15-10.30
Formation of porphyrin derivatives monolayers using Langmuir-Blodgett technique
N.N. Begletsova[1], V.N. Mironyuk[1], A.I. Smirnova[2], N.V. Usol'tseva[2], E.G. Glukhovskoy[1], [1]Saratov State University, Saratov, Russia, [2]Ivanovo State University, Ivanovo, Russia

10.30-10.45
Ab initio study of non-common graphane polymorphs
K.P. Katin[1,2], K.S. Grishakov[1,2], V.S. Prudkovskiy[2,3], M.M. Maslov[1,2], [1]National Research Nuclear University MEPhI, Moscow, Russia, [2]Research Institute for the Development of Scientific and Educational Potential of Youth, Moscow, Russia, [3]Georgia Institute of Technology, Atlanta, United States

10.45-11.00
Magnon-phonon interaction in antiferromagnetic two-dimensional MXenes
Ke Wang[1,2], Hai Wang[1], Gang Zhang[2], [1]Xidian University, No. 2 Taibai Road, Xi'an, Shaanxi Province, China, [2]A*STAR, Singapore

11.00-11.15
Framework of phenomenological models: quasiparticle properties
M. F. Lin, C. Y. Lin,NCKU, Taiwan

11.15-11.30
A Direct Z-Scheme PtS2/Arsenene van der Waals Heterostructure with High Photocatalytic Water Splitting Efficiency
Kai Ren[1], Wencheng Tang[1], Minglei Sun[1], Yongqing Cai[2], Yuan Cheng[3], Gang Zhang[3], [1]Southeast University, Nanjing, Jiangsu, China, [2]University of Macau, Taipa, Macau, China, [3]A*STAR, Singapore

11.30-11.45
Dehydrogenation process of crumpled graphene using the Airebo and ReakhFF potentials: molecular dynamics
K.A. Krylova, J.A. Baimova, Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia, Bashkir State University, Ufa, Russia

11.45-12.00
Hole-matrixed carbonylated graphene: synthesis, properties, and highly-selective ammonia gas sensing
M.K. Rabchinskii[1], A.S. Varezhnikov[2], V.V. Sysoev[2], M.A. Solomatin[2], D.A. Kirilenko[1], V.V. Shnitov[1], S.A. Ryzhkov[3], D.Yu. Stolyarova[4], P.N. Brunkov[1], [1]Ioffe Institute, [2]Yuri Gagarin State Technical University of Saratov,[3]ITMO University, [4]NRC "Kurchatov Institute"

12.15-12.30
Shock waves in graphene and boron nitride
I.A. Shepelev[1], S.V. Dmitriev[2], E.A. Korznikova[2], [1]Saratov State University, Saratov,Russia,[2]Ufa Federal Research Centre of Russian Academy of Sciences, Ufa, Russia

October 1, Thursday

INTERNET REPORTS

1L. **Biopolymer structures with a single-walled carbon nanotubes framework for the restoration of heart tissue**
A.Yu. Gerasimenko[1,2], U.E. Kurilova[1], O.E. Glukhova[2,3], [1]National Research University of Electronic Technology MIET, Zelenograd, Moscow, Russia,[2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia,[3]Saratov State University, Saratov, Russia

2L. **Formation of electrically conductive nanocomposites with three-dimensional networks of carbon nanotubes for bioelectronics**
N.A. Demidenko[1], A.Yu. Gerasimenko[1,2],[1]National Research University of Electronic Technology, Zelenograd, Moscow, Russia, [2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

3L. **Relationship between the capacitive characteristics of a flat capacitor and the amount of surfactant in a Langmuir monolayer formed between its plates**
V.N. Mironyuk, V.F. Kabanov, A.I. Mikhailov, N.N. Begletsova, E.G. Glukhovskoy, Saratov State University, Saratov, Russia

4L. **Electrophysical and morphological characteristics of vertically aligned carbon nanotubes array after laser and barium nitrate structuring**
E.P. Kitsyuk[1,2,3], Yu.P. Shaman[2], A.Yu. Gerasimenko[1,4], [1]National Research University of Electronic Technology (MIET), Zelenograd, Moscow, Russia,[2]Scientific-manufacturing company "Technological Centre", [3]Institute of Nanotechnology of Microelectronics of the RAS, [4]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

5L. **Formation and research of Langmuir monolayers based on an asymmetrically substituted porphyrin derivatives and arachidic acid**
V.N. Mironyuk[1], N.N. Begletsova[1], A.J. Al-Alwani[1], A.I. Smirnova[2], N.V. Usoltseva[2], E.G. Glukhovskoy[1], [1]Saratov State University, Saratov, Russia, [2]Ivanovo State University, Ivanovo, Russia

6L. **Numerical calculation of laser welds nanocomposite formation parameters using solders based on proteins and carbon nanotubes**
D.I. Ryabkin[1,2], N.A. Taricyna[1], E.A. Morozova[2], A.Yu. Gerasimenko[1,2],[1]National Research University of Electronic Technology, Zelenograd, Moscow, Russia,[2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

7L. **Studying of graphene-nickel composite by molecular dynamics method**
L.R. Safina[1],J.A. Baimova[2,3],[1]Ufa State Petroleum Technological University, Ufa, Russia, [2]Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia, [3]Bashkir State University, Ufa, Russia

8L. **Casimir-Lifshitz force between two graphene shits: classical electromagnetic Green's functions approach**
M.V. Davidovich, Saratov State University, Saratov, Russia

9L. **Quasi-2D-nanoflakes of Co3O4: synthesis and chemoresistive response to vapors of compound studies**
M.A. Solomatin[1], F.S. Fedorov[1], A.S. Varezhnikov[1], D.A. Kolosov[3], O.E. Glukhova[3], A.G. Nasibulin[2], V.V. Sysoev[2],[1]Yury Gagarin State Technical University of Saratov, Saratov, Russia, [2]Skolkovo Institute of Science and Technology, Moscow, Russia, [3]Saratov State University, Saratov, Russia

POSTER SESSION
(Building 3, 3d floor Hall)
Chair (L): **Olga E. Glukhova**, Saratov State University, Russia

18.30-19.30

1. **Sensory properties of layered phospholipid-graphene films**
M.M. Slepchenkov, O.E. Glukhova, Saratov State University, Saratov, Russia

2. **Synthesis Photovoltaic properties of graphene-nanotube composite films**
V.V. Mitrofanov, O.E. Glukhova, M.M. Slepchenkov, Saratov State University, Saratov, Russia

3. **Electronic and optical properties of vertical heterostructures based on monolayers of 2D materials**
O.E. Glukhova, M.M. Slepchenkov, D.A. Kolosov, K.R. Asanov, Saratov State University,Saratov, Russia

4. **Multilayer formation of nematic liquid crystal on the surface of a subphase with copper nanoparticles**
   N.N. Begletsova, E.G. Glukhovskoy, Saratov State University,Saratov, Russia

5. **Quantum capacity of CNT decorated with iron particles**
   V.V. Shunaev, A.V. Ushakov, O.E. Glukhova, Saratov State University,Saratov, Russia

6. **Doping of graphene with pyrolytic nitrogen. Energy and electronic properties**
   S.A. Toom, V.V. Shunaev, Saratov State University,Saratov, Russia

7. **Administration of Reactive Oxygen Species via Polymeric Microcontainers for Selective Photodynamic Therapy**
   A.V. Ermakov, Saratov State University,Saratov, Russia

8. **Studying of formation process and optoelectrical properties of langmuir monolayers and langmuir-blodgett films of iron phthalocyanine**
   I.A. Gorbachev, A.V. Smirnov, V.V.Kashin, V.V.Kolesov, I.E.Kuznetsova,Kotel'nikov institute of Radio Engineering and Electronics of RAS, Moscow, Russia

9. **Solution of j-type dimeric magnesium phthalocyanine complex for switches of optoelectronic medical systems and vision protection**
   M.S. Savelyev[1,2], A.Yu. Gerasimenko[1,2],P.N. Vasilevsky[1],A.Yu.Tolbin[3],[1]National Research University of Electronic Technology, MIET, Zelenograd, Moscow, Russia,[2]I.M. Sechenov First Moscow State Medical University,cMoscow, Russia,[3]Institute of Physiologically Active Compounds, Russian Academy of Sciences, IPAC RAS

10. **Study of the stability of monolayers based on porphyrin derivatives**
    A.J. Al-Alwani, N.N. Begletsova, V.F. Kabanov, V.N. Mironyuk, A.I. Mikhailov, E.G. Glukhovskoy, Saratov State University, Saratov, Russia

11. **Effect of temperature on hydrogen sorption of crumpled graphene with structural elements different sizes**
    N.G. Apkadirova[1], K.A. Krylova[1,2],[1]Bashkir State University, Ufa, Russia,[2]Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

12. **Study of Modified Layered Graphene Composites from the Position of Application as Electrodes lithium ion batteries**
    D.A. Kolosov, O.E. Glukhova, Saratov State University, Saratov, Russia

INTERNET POSTERS

13. **Modified Nanostructured layers of zirconium and tantalum formed on titanium by induction PVD**
    M.E. Fedoseev[1], A.M. Zakharevich[2], A.A. Fomin[1], [1]Yuri Gagarin State Technical University of Saratov, Saratov, Russia,[2]Saratov State University, Saratov, Russia

14. **LayeredFormation of a strain sensor prototype under the action of laser radiation in layers of biocomposite nanomaterial**
    L. Ichkitidze[1,2], A. Gerasimenko[1,2], D. Telyshev[1,2], A. Kuksin[1], V. Petukhov[1], S. Selishchev[1], [1]National Research University of Electronic Technology “MIET”, Moscow, Russia,[2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

15. **Graphene Optical Density Changes of Aqueous Dispersion for Biological Materials and Carbon Nanotubes with Action Gradient Magnetic Field**
    L. Ichkitidze[1,2], A. Markov[1], A. Gerasimenko[1,2], D. Telyshev[1,2], S. Selishchev[1],[1]National Research University of Electronic Technology “MIET”, Moscow, Russia, [2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

16. **Composites Field emission from indium antimonide quantum dots**
    M.V. Gavrikov, V.F. Kabanov, Saratov State University, Saratov, Russia

17. **The mechanical characteristics of solid and flexible structures based on single-walled carbon nanotubes and biopolymers**
    D.T. Murashko[1], A.Yu. Gerasimenko[1,2],[1]National Research University of Electronic Technology MIET, Zelenograd, Moscow, Russia,[2]I.M. Sechenov First Moscow State Medical University, Moscow, Russia

18. **Halloysite nanotubes as natural containers for freezing-induced loading**
    Dr. D. Voronin[1,2], Dr. K. Cherednichenko[1], P. Demina[2], Dr. A. Abramova[2], Prof. V.

Vinokurov[1],[1]National University of Oil and Gas «Gubkin University», Moscow, Russia,[2]Saratov State University, Saratov, Russia

19. **Photo-conductance of thin nanostructured WO3 films in the vicinity of the edge of fundamental absorption band**
L.A. Kochkurov[1],E.V. Ushakova[1], D.A. Zimnyakov[1,2],[1]Yury Gagarin State Technical University of Saratov, Saratov, Russia,[2]Institute for Problems of Precision Mechanics and Control RAS, Saratov, Russia

Conference on Biomedical Spectroscopy VII

Conference Chairs: **Vyacheslav I. Kochubey**, **Alexander B. Pravdin**, Saratov State University (Russia)

Secretaries: **Natalia I. Kazadaeva,** Saratov State University (Russia)

International Program Committee: **Ekaterina G. Borisova**, Institute of Electronics, BAS (Bulgaria), **Dmitry A. Gorin**, Saratov State University (Russia), **Gennady V. Melnikov**, Yuri Gagarin State Technical University of Saratov (Russia), **Alexander M. Saletsky**, Lomonosov Moscow State University (Russia), **DzmitryShcharbin**, Institute of Biophysics and Cell Engineering of NASB (Belarus), **Andre Skirtach**, Ghent University (Belgium)

September 30, Wednesday

ON-LINE JOINT INVITED LECTURE/ORAL SESSION
BIOPHYSICS II & BIOMEDICAL SPECTROSCOPY I
(Building 10, Hall 511,
Zoom link:
https://osachapter.zoom.us/j/98300886300)
Chair: **Ekaterina Borisova**, Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria
Moderator: **Isabella Serebryakova**, Saratov State University, Russia

17.00-17.20 (Local time: 16.00-16.20)
Invited
Optical Bioimaging of Connective Tissue in Norm and Lichen Sclerosus
Marina A. Sirotkina, A.L. Potapov, V.V. Dudenkova, A.A. Moiseev, M.M. Karabut, I.A. Kuznetsova, N.D.Gladkova; Privolzhsky Research Medical University, Nizhny Novgorod, Russia

17.20-17.40 (15.20-15.40)
Invited
Interstitial PDT of Glioblastoma – Status and Perspectives
Adrian Rühm and Ronald Sroka, Laser-Forschungslabor, LIFE Center, Department of Urology, University Hospital, LMU Munich, Munich, Germany

17.40-18.00 (15.40-16.00)
Invited
Skin Reflectance: How Long the Photons Travel until Remission
Janis Spigulis, Vanesa Lukinsone, Anna Maslobojeva, UldisRubins, Maris KuzminskisBiophotonics Laboratory, Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga

18.00-18.20 (10.00-10.20)
Invited
Dynamic Imaging of the Lymphatic Drainage from the Eye in Mice by Multispectral Photoacoustic Tomography
Vladislav Toronov[1,2], Balal Mian[1], Yeni Yucel[1,2,3], Xun Zhou[3];[1]Ryerson University;[2]The Institute for Biomedical Engineering, Science & Technology (iBEST) St. Michael's Hospital;[3]Keenan Research Centre for Biomedical Science of St. Michael's Hospital, Toronto, Canada

18.20-18.40 (9.20-9.40)
Invited
Optical Coherence Tomography of Preimplantation Embryonic Development In Vivo
Irina V. Larina Baylor College of Medicine. Houston, USA

18.40-19.00 (17.40-18.00)
Invited
Fluorescence diagnostics of soft tissues neoplasia
Ekaterina Borisova[1], Tsanislava Genova[1], Petranka Troyanova[2], Elmira Pavlova[3], Borislav Vladimirov[2]; [1]Institute of Electronics, Bulgarian Academy of Sciences; [2]University Hospital "Tzaritza Yoanna – ISUL"; [3]"St. Panteleimon" General Hospita, Sofia, Bulgaria

19.00-19.15 (18.00-18.15)
Influence of Active Er-laser Delivery on the Optical Properties of Drug
A.V. Belikov, S.N. Smirnov, Anastasia D. Tavalinskaya, ITMO University, S.-Peterburg, Russia

October 1, Thursday

JOINT INVITED/ORAL SESSION BIOPHYSICS III, MICROSCOPY, & BIOMEDICAL SPECTROSCOPY II

(Building 10, Main Conference Hall)

Chair: **Vladimir Y. Zaitsev**, Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia

10.00-10.15

Assessment of Changes in the Viscosity Properties of Tumor Cell Membranes under the Influence of Chemotherapeutic Agents

Liubov Shimolina[1,2], Marina Shirmanova[1], Marina Kuimova[3], Maria. Lukina[1], Irina Druzhkova[1], Elena Zagaynova[1]; [1]Privolzhsky Research Medical University, Nizhny Novgorod; [2]Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia; [3]Imperial College London, South Kensington, London, United Kingdom

10.15-10.30

Experimental Setup and Method for Human Breath Analysis for the Primary Diagnosis of Diseases

Anastasia V. Scherbakova, D.R. Anfimov, I.S. Golyak, E.R. Kareva, A.N. Morozov, P.P. Demkin, I.L. Fufurin; Bauman Moscow State Technical University, Moscow, Russia

10.30-10.45

In-vivo Holographic Laser Speckle Contrast Imaging of Brain Tissues with Pathological Vascular Conditions

Arkady Abdurashitov[1], Natalia Shushunova[2], Olga Sindeeva[1,2], Oxana Semyachkina-Glushkovskaya[2], Valery Tuchin[2,3,4];[1]Skolkovo Institute of Science and Technology, Skolkovo Innovation Center;[2]Saratov State University; [3]Tomsk State University; [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

10.45-11.00

Red Blood Cell in the Field of the Laser Beam of Optical Tweezers

Petr Ermolinskiy[1], Andrei Lugovtsov[1,2], Pavel Kokhanchik[3], Alexander Priezzhev[1,2];[1]Physics Department, Lomonosov Moscow State University;[2]International Laser Center, Lomonosov Moscow State University;[3]Skolkovo Institute of Science and Technology, Russia

11.00-11.20

Invited

In Vivo Multimodal Optical Imaging of Equivocal Melanocytic Skin Lesions

Vadim Elagin[1], E. Gubarkova[1], O. Garanina[1], D. Davydova[1], N. Orlinskaya[1], L. Matveev[2], I. Klemenova[1], I. Shlivko[1], E. Zagaynova[1];[1]Privolzhsky Research Medical University;[2]Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia

11.20-11.35

Application of Digital Speckle Patterns Correlation for Blood Clotting Time Evaluation

Iuliia D. Liushnevskaya, Fedor A. Gubarev, National Research Tomsk Polytechnic University, Russia

11.35-11.50

Surface Photoluminescence of Nanodiamonds: Dependence on pH

A. V. Lachko, A. M**.** Vervald, K. A. Kozhushnyi, T. A. Dolenko, Faculty of Physics, M.V. Lomonosov Moscow State University, Moscow, Russia

JOINT INTERNET/POSTER SESSION

(Building 3, 3rd floor Hall)

Chair (BS): **Natalia Kazadaeva,** Saratov State University, Russia

18.00 – 20.00

1BS Study of ovalbumin coagulation dynamics by using upconversion luminescence of NaYF4:Yb,Er nanoparticles Ustalkov S.O., Saratov, State University, Mohammed A.H.M., Saratov State University, Zakharevich A.M., Saratov State University, Kozyrev, A.A., National Research Nuclear University "MEPhI",Sagaidachnaya E.A., Saratov State University,Kochubey V.I., Saratov State University, Tomsk State University**,** Skaptsov A.A. Saratov State University

2BS Spectral studies of the interaction of luminescent probes with glycated proteins Melnikov A.G.,Saratov State Technical University named after Yu.A.Gagarin, Melnikov G.V., Saratov State Technical University named after Yu.A.Gagarin,Kochubey V.I., Saratov State University,Tomsk State University**,** Pravdin A.B,Saratov State University, Kukushkina A.A.,Saratov State University

3BS SERS signal of human blood plasma Natalia E. Markina, Saratov State

University, Alexey V. Markin, Saratov State University

4BS Laser pump power density as a factor controlling up-conversion luminescence quantum yieldof lanthanide nanocomplexesO.E. Sarmanova, Moscow State University, Department of Physics, Moscow, Russia, S.A. Burikov, Moscow State University, Department of Physics, Moscow, Russia, T.A. Dolenko, Moscow State University, Department of Physics, Moscow, Russia

5BS Spectral analysis of biological tissue with embedded nanoparticles Kozlova Ekaterina, Saratov State University, Kochubei Vyacheslav, Saratov State University, Tomsk State University

INVITED INTERNET REPORTS

1. **Application of Raman spectroscopy and machine learning for studying of blood serum of rats with liver cancer**O. P. Cherkasova, Institute of Laser Physics SB RAS, Russia, Institute on Laser and Information Technologies - Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of RAS, Russia, A. A. Mankova, Lomonosov Moscow State University, Russia, E. N. Lazareva, Tomsk State University, Russia, Saratov State University, Russia, Y.V. Kistenev, Institute of Strength Physics and Materials Science of Siberian Branch of the RAS, Russia, D. A. Vrazhnov, Tomsk State University, Russia, Institute of Strength Physics and Materials Science of Siberian Branch of the RAS, Russia, V.V. Tuchin Tomsk State University, Russia, Saratov State University, Russia, A.P. Shkurinov, Institute on Laser and Information Technologies - Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of RAS, Russia, Lomonosov Moscow State University, Russia

2. **Fiber optic solutions for biomedicine**O. Bibikova, art photonics GmbH, Berlin, Germany, V. Belikova, Samara State University, Samara, Russia, I. Usenov, art photonics GmbH, Berlin, Germany, T. Sakharova, art photonics GmbH, Berlin, Germany, V. Artyushenko, art photonics GmbH, Berlin, Germany

3. **Unraveling molecular profiles in skin in vivo using Raman microspectroscopy and non-negative matrix factorization**B.P. Yakimov M.V. Lomonosov Moscow State University, Moscow, Russia, A.V. Venets M.V. Lomonosov Moscow State University, Moscow, Russia J. Schleusener, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Germany, V.V. Fadeev, M.V. Lomonosov Moscow State University, Moscow, Russia, M.E. Darvin, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Germany, E.A. Shirshin M.V. Lomonosov Moscow State University, Moscow, Russia,Institute of Spectroscopy of the Russian Academy of Sciences, Troitsk, Moscow, Russia

INTERNET REPORT

The dispersive element based on porous silicon photonic crystal for ultra-compact optical spectrometers Sergey E. Svyakhovskiy, Lomonosov Moscow State University, Russia

INTERNET POSTERS

1. **Ph-dependent photoluminescence of nanodiamonds and carbon dots: similarities and differences**Vervald A. M., Faculty of Physics, M. V. Lomonosov Moscow State University, Moscow, Russia, Salekhov A. D., Faculty of Physics, M. V. Lomonosov Moscow State University, Moscow, Russia Shenderova O. A., Adamas Nanotechnologies, Inc., 8100 Brownleigh Dr, Suit 120, Raleigh, NC 27617, USA, Dolenko T. A., Faculty of Physics, M. V. Lomonosov Moscow State University, Moscow, Russia

2. **The Determination of Polarized Fluorescence Parameters of FAD in Water-Methanol Solutions,** M.K. Krasnopevtceva,Ioffe Institute, St. Petersburg, Russia, V.P. Belik, Ioffe Institute, St. Petersburg, Russia, I.V. Semenova, Ioffe Institute, St. Petersburg, Russia, A.G. Smolin, Ioffe Institute, St. Petersburg, Russia, O.S. Vasyutinskii, Ioffe Institute, St. Petersburg, Russia

3. **Quality control of tablets "Papazol" by spectrophotometry using chemometrics,** Shestopalova N.B. Saratov State Medical University named after V. I. Razumovsky, Fomina Yu.A. Saratov State Medical University named after V. I. Razumovsky, Rusanova T.Yu. Saratov State University, Burmistrova N.A. Saratov State University

4. **Advanced spectral analysis of dentinal materials for dentistry during their manufacture,** Frolov O.O., Samara National Research University, Samara, Russia, Timchenko P.E., Samara National Research University, Samara, Russia, Timchenko E.V., Samara National Research University, Samara, Russia, Volova L.T., Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia, Zybin M.A., Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia

Conference on Computation Biophysics and Analysis of Biomedical Data VII

*Workshop Chair:***Dmitry E. Postnov**, Saratov State University (Russia)

*Secretary:***Elena S. Litvinenko**, Saratov State University (Russia)

International Program Committee: **Alexaner B. Neiman,** Ohio University, USA, **Olga V. Sosnovtseva,** University of Copenhagen, Denmark, **Oxana V. Semyachkina-Glushkovskaya,** Saratov State University, Russia, **Anatoly V. Skripal,** Saratov State University, Russia, **Boris P. Bezruchko,** Saratov State University, Russia

September 30, Wednesday

ORAL SESSION I
(Building 5, Hall 72)
Chair: **Dmitry E. Postnov**, Saratov State University, Russia

13:30-13:50
Absence epileptiform activity simulation using a nonautonomous network of neural-like radioengineering circuits
Nikita N. Egorov, V.I. Ponomarenko, I.V. Sysoev, M.V. Sysoeva, Saratov Branch of Kotelnikov IRE of RAS; Saratov State University, Russia

13:50-14:10
Internet
A topological classification of population bursts in spiking neural network
Sergey A. Lobov[1,2], A.I. Zharinov[1], O. Semenova[1], V.B. Kazantsev[1,2], [1]Lobachevsky State University; [2]Innopolis University, Russia

14:10-14:30
Internet
Local and collective IP3-mediated calcium dynamics in astrocyte network
Darya V. Verveyko[1], A.Yu. Verisokin[1], A.R. Brazhe[2], D.E. Postnov[3], [1]Kursk State University, [2]Moscow State University; [3]Saratov State University, Russia

14:30-14:50
Internet
Computational realization of non-linear diffusion generalizing Barenblatt-Pattle's approach on the case of flows' simulations in elastic microvessels
Eugene B. Postnikov[1], A.I. Lavrova[2,3], [1]Kursk State University; [2]Saint-Petersburg State Research Institute of Phthisiopulmonology; [3]Saint-Petersburg State University, Russia

14:50-15:10
Internet
Formation, dynamics and properties of stable moving patterns in a simple model of neural tissue
Andrey Yu. Verisokin[1], D.V. Verveyko[1], D.E. Postnov[2], [1]Kursk State University; [2]Saratov State University, Russia

15:10-15:30
Extended detrended fluctuation analysis of EEG signals during sleep and the opening of the blood-brain barrier
Alexey N. Pavlov[1], A.I. Dubrovsky[1], A.A. Koronovskii Jr.[1], O.N. Pavlova[1], O.V. Semyachkina-Glushkovskaya[1], J. Kurths[2], [1]Saratov State University, Russia; [2]Potsdam Institute for Climate Impact Research, Germany

15:30-15:50
Mathematical modeling of the phenomenon Spontaneous Internal Desynchrony (SID)
Ksenia O. Merkulova, D.E. Postnov, Saratov State University, Russia

October 1, Thursday

JOINT INTERNET POSTER SESSION AND INTERNET DISCUSSION

Chair (BC): **Dmitry E. Postnov,** Saratov State University, Russia

Opened from 10-00 30.10.2020

1BC. **Spectral analysis of signals of the regulatory system of blood circulation in patients with Covid-19** Viktoria V. Skazkina[1], N.S. Krasikova[2], A.S. Karavaev[1-3], E.I. Borovkova[1,2], A.V. Kuligin[2], Y.M. Ishbulatov[1-3], R.S. Prokhorov[2], A.G. Kudryavzev[4], A.R. Kiselev[1,2], [1]Saratov State University; [2]Saratov State Medical University; [3]Saratov Branch of Kotelnikov IRE of RAS; [4]Saratov City Clinical Hospital No. 10, Russia

2BC. **Modeling spike-wave discharge initiation in the brain thalamocortical system by small networks of neurooscillators** Anton A. Kapustnikov, M.V. Sysoeva, I.V. Sysoev, Saratov Branch of Kotelnikov IRE of RAS, Russia

3BC. **fNIRS-based classification of hand-related motor activity and motor imagery** A.E. Hramov, Vadim V. Grubov, A. Badarin, Innopolis University, Russia

4BC. **Artificial neural network predicts inter-areal functional connectivity** Elena Pitsik, N.S. Frolov, Innopolis University, Russia

5BC. **Age-related Changes In The Brain Functional Connectivity During Motor Initiation** Nikita S. Frolov, E. Pitsik, A.E. Hramov, Innopolis University, Russia

6BC. **Influence of the sensory information complexity on the features of low-frequency rhythms of human EEG** Alexander Kuc, Yuri Gagarin State Technical University of Saratov, Russia

7BC. **Study of the phase synchronization of low-frequency oscillations of the processes of autonomous regulation of blood circulation** Anton D. Martynov[1], E.I. Borovkova[1-3], [1]Saratov State University; [2]Saratov State Medical University named after V. I. Razumovsky; [3]Saratov Branch of Kotelnikov IRE of RAS, Russia

8BC. **Approach to collaborative BCI for enhancing human-to-human interaction in shared visual task** Vadim V. Grubov, V. Maksimenko, Innopolis University, Russia

9BC. **Peculiarities of brain sources reconstructed by MEG signals during imaginary movements** Semen A. Kurkin[1], P. Chholak[2], A. Pisarchik[2], A.E. Hramov[1], [1]Innopolis University, Russia; [2]Technical University of Madrid, Spain

10BC. **A Model for particle transport in a branched blood vessel under the influence of magnetic field** Samia F. Salem[1, 2], V.V. Tuchin[1, 3-5], [1]Saratov State University, Russia; [2]Benha University, Egypt; [3]Tomsk State University; [4]Research Center of Biotechnology of the RAS; [5]Institute of Precision Mechanics and Control of the RAS, Russia

11BC. **Extended detrended fluctuation analysis and its applications** Alexander A. Koronovskii Jr., A.N. Pavlov, Saratov State University, Russia

12BC. **Method of assessing the complexity in the brain spatial electrical activity** Evgeniy N. Egorov[1], K.S Samatova[2], O.M. Posnenkova[2], A.S. Kiselev[1,2], [1]Saratov State University; [2]Saratov State Medical University, Russia

13BC. **The pilot study of weak changes in the spatial EEG activity of healthy test subjects in a passive wakefulness with odors impacts** Kamila Samatova[1], A. Titova[1], A. Runnova[1,2], A. Varegnikov[3], [1]Saratov State Medical University; [2]Saratov State University; [3]Yuri Gagarin State Technical University of Saratov, Russia

14BC. **A study of synchronization between rats ECoG channels under the anesthesia** Maksim Zhuravlev[1,2], S. Kustodov[1], E. Egorov[1], A. Dubrovskii[1], O. Semyachkina-Glushkovskaya[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

15BC. **Method for the automatic diagnosis of states of wakefulness, sleep, and epileptic activity by rats invasive ECoG signals** Ekaterina Kryakvina[1], R.V. Ukolov[2], A.R. Kiselev[1], E.Yu. Sitnikova[3], [1]Saratov State Medical University; [2]Saratov State University; [3]Institute of Higher Nervous Activity and Neurophysiology of RAS, Russia

16BC. **The study of the generation of alpha rhythm in patients with chronic headaches** Michail Novikov[1], R. Parsamyan[1], V. Romanenko[1], A. Runnova[1,2], [1]Saratov State Medical University; [2]Saratov State University, Russia

17BC. **Synchronization in the brain EEG-activity in modified Multiple Sleep Latency Test** Elena Martirosyan[1], O. Posnenkova[1], R. Parsamyan[1], M. Zhuravlev[2,1], [1]Saratov State Medical University; [2]Saratov State University, Russia

18BC. **The study of changes in EEG activity in spatial tasks in disabilities children in primary school** Margarita A. Popova[1, 2],

R.V. Ukolov[1], E.S. Grinina[1], R.M. Shamionov[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

19BC. **Spectral characteristics of photoplethysmographic indicators of human peripheral vascular tone** Igor B. Isupov, R.Sh. Zatrudina, V.Yu. Gribkov, VolSU, Russia

20BC. **Detection of special points in a photoplethysmogram** V.Yu. Gribkov, I.B. Isupov, R.Sh. Zatrudina, VolSU, Russia

21BC. **Synchronization in the inhibitory coupled Hodgkin-Huxley neural networks** Andrey V. Andreev, V.A. Maksimenko, Innopolis University, Russia

22BC. **External stimulus classification by Hodgkin-Huxley neural network** Andrey V. Andreev, A.N. Pisarchik, A.E. Hramov, Innopolis University, Russia

23BC. **Biomarkers of brain activity in the process of solving cognitive tasks** Artem A. Badarin, S.A. Kurkin, V.V. Grubov, Innopolis University, Russia

24BC. **Analysis of the hemodynamic response of various movements type** Artem A. Badarin, S.A. Kurkin, V.V. Grubov, E.N. Pitsik, Innopolis University, Russia

25BC. **Analysis of the muscle activation pattern during equilibrium seeking activity** Vladimir S. Khorev, V.V. Grubov, A.A. Badarin, V.A. Maksimenko, S.A. Kurkin, Innopolis University, Russia

26BC. **Mathematical model of Covid-19 pandemic based on retarded differential equation** F.M. Pen'kov[1], S.I. Vinitsky[2,3], Vladimir L. Derbov[4], A.A. Gusev[2], P.M. Krassovitskiy[2,5], Joint Institute for Nuclear Research, Dubna, Russia; [1]Al-Farabi Kazakh National University, Kazakhstan; [2]Joint Institute for Nuclear Research; [3]Peoples' Friendship University of Russia; [4]Saratov State University, Russia; [5]Institute of Nuclear Physics, Kazakhstan

27BC. **Spectral analysis of signals of the regulatory system of blood circulation in patients with Covid-19** Viktoria V. Skazkina[1], N.S. Krasikova[2], A.S. Karavaev[1-3], E.I. Borovkova[1,2], A.V. Kuligin[2], Y.M. Ishbulatov[1-3], R.S. Prokhorov[2], A.G. Kudryavzev[4], A.R. Kiselev[1,2], [1]Saratov State University; [2]Saratov State Medical University; [3]Saratov Branch of Kotelnikov IRE of RAS; [4]Saratov City Clinical Hospital No. 10, Russia

28BC. **Component analysis and informative feature selection for Raman spectral data** Y.V. Kistenev[1], Denis A. Vrazhnov[1,2], O. P. Cherkasova[3,4], A. A. Mankova[5], A.V. Karmenyan[6], E.V. Perevedentseva[6,7], A.S. Krivokharchenko[8], M.N. Sarmiento[6], E.L. Barus[6], C.-L. Cheng[6], [1]Tomsk State University; [2]Institute of Strength Physics and Materials Science of Siberian Branch of the RAS; [3]Institute of Laser Physics SB RAS; [4]Institute on Laser and Information Technologies - Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of RAS; [5]Lomonosov Moscow State University, Russia; [6]National Dong Hwa University, Hualien, Taiwan; [7]P.N. Lebedev Physics Institute of RAS; [8]N. N. Semenov Institute of the Chemical Physics, RAS, Russia

29BC. **Automated system for diagnosing fungal diseases** Ali V. Mukshaev[1], O.V. Ushakova[1], O.V. Nechaeva[1], A.V. Egorova[2], N.V. Bespalova[1], D.A. Schnaider[3], S.V. Nechaev[4], [1]Yury Gagarin State Technical University of Saratov; [2]Russian National Research Medical University n.a. N.I. Pirogova; [3]Saratov Regional Dermatovenerological Dispensary; [4]ITMO University, Russia

30BC. **Improving low-resolution gas-mixture absorption spectra using neural networks** Viktor E. Skiba[1], D.A. Vrazhnov[1,2], V.V. Prischepa[1], M.B. Miroshnichenko[2], [1]National Research Tomsk State University; [2]Institute of Strength Physics and Materials Science of SB RAS, Russia

31BC. **Impact of the integrity of surrounding teeth on tooth restoration selection: numerical simulation and clinucal observation** Vladimir S. Senkin[1], N.O. Bessudnova[1], N.O. Bessudnova[1], S.B. Venig[1], D.Yu. Serov[2], [1]Saratov State University; [2]Yury Gagarin State Technical University of Saratov, Russia

32BC. **Mathematical modeling of impact endothelial mechanism in the regulating vascular tone** Elena S. Litvinenko, D.E. Postnov, Saratov State University, Russia

October 2, Friday

ORAL SESSION II
(Building 5, Hall 72)
Chair: **Dmitry E. Postnov, Saratov State University, Russia**

10.00-10.10
Opening remarks
Dmitry E. Postnov,Saratov State University, Russia

10:10-10:30
Label-free vascular network imaging using adaptive Niblack analysis and PIV
Maxim A. Kurochkin[1,2], I.V. Fedosov[2], D.E. Postnov[2], [1]Skolkovo institute of science and technology; [2]Saratov State University, Russia

10:30-10:50
Variability of retrograde and antegrade waves after occlusion recorded by ultrasound dopplerography
Anatoly V. Skripal, A. S. Bakhmetyev, S. Yu. Dobdin, A. A. Sagaidachny, R. T. Baatyrov, A.D. Usanov, V. A. Klochkov, A. S. Tikhonova, Saratov State University, Russia

10:50-11:10
Internet
Using adaptive window wavelet neural network to solve a spectroscopy inverse problem
Alexander Efitorov[1,2], V. Shiroky[1,2], S. Dolenko[1,2], [1]D.V.Skobeltsyn Institute of Nuclear Physics; [2]M.V.Lomonosov Moscow State University, Russia

10:50-11:10
Detection of oscillational patterns with changes in frequency and amplitude characteristics in complex non-stationary signals
Rodion Ukolov[1], A. Krutyakov[2], M. Simonyan[2], M. Zhuravlev[1,2], [1]Saratov State University; [2]Saratov State Medical University, Russia

11:10-11:30
Internet
Mathematical and computational modeling of host-pathogen interaction in the lung lesion development due to Mycobacterium tuberculosis in humans
Anastasia I. Lavrova[1,2], [1]Saint-Petersburg State University; E.B. Postnikov[3], D. Esmedlyaeva[2], [2]Saint-Petersburg State Research Institute of Phthisiopulmonology; [3]Kursk State University, Russia

11:30-11:50
Internet
Identification and analysis of key parameters for the ossification of cells on composites gellan gum hydrogels functionalized by Ca/Mg carbonates
Anatolii A. Abalymov[1,2], L. Van der Meeren[2], A.G. Skirtach[2], B.V. Parakhonskiy[1], [1]Saratov State University, Russia; [2]Ghent University, Belgium

11:50-12:10
Neuro-fuzzy stabilization of the rotating platform
R.S. Biryukov, Stepan M. Shulpin, Lobachevsky State University of Nizhny Novgorod, Russia

Workshop on Nonlinear DynamicsXI

Workshop Chair: **Vadim S. Anishchenko***,* Saratov State University (Russia)
*Secretary:***Andrei V. Slepnev,** Saratov State University (Russia)

October 2, Friday

ORAL SESSION
(Building 3, Room 38; Zoom link:
https://us02web.zoom.us/j/84239757588***)***
Chair: **Vadim S. Anishchenko**, Saratov State University, Russia

12.30-12.50
Oscillations and synchronization in SIRS models of epidemic propagations
Alexey Shabunin, Saratov State University, Saratov, Russia

12.50-13.00
Synchronization of complex dynamics in systems with nonlinear inertial coupling of the memristive type
Ivan Korneev, Saratov State University, Russia; Andrei Slepnev, Saratov State University, Russia; Vladimir Semenov, FEMTO-ST Institut, CNRS &Université Bourgogne Franche-Comté, France; Tatyana Vadivasova, Saratov State University, Russia

13.00-13.15
Quasiperiodicity and chaos in course of grinding: analysis of a model based on nonlinearly coupled Van der Pol-like oscillators
Pavel Kuptsov, Mechanical Engineering Research Institute of the Russian Academy of Sciences (IMASH RAN), Moscow, Russia

13.15-13.30
Modeling nonlinear dynamics using an artificial neural network
Pavel V. Kuptsov, Laboratory of topological methods in dynamics, National Research University Higher School of Economics, Nizhny Novgorod, Russia; Anna V. Kuptsova, Institute of Electronic Engineering and Instrumentation, Yuri Gagarin State Technical University of Saratov, Russia

13.30-13.40
Delocalized modes in 2D cuprate-like lattices
Alexander Chetverikov, Saratov State University, Russia

13.40-13.50
Modeling non-Gaussian diffusion processes
Valery M. Anikin, Saratov State University, Russia

13.50-14.00
Effects of synchronization in heterogeneous multiplex networks with sparse coupling between layers
Elena Rybalova, Saratov State University, Russia; Galina Strelkova, Saratov State University, Russia; Vadim Anishchenko, Saratov State University, Russia

14.00-14.10
Breather-like excitations in chains of oscillators and active particles with nonlinear coupling
K.S. Sergeev, Saratov State University, Russia; A.V. Slepnev, Saratov State University, Russia; E.M. Elizarov, Saratov State University, Russia; A.P. Chetverikov, Saratov State University, Russia

14.10-14.20
Bistable labyrinth-like structures and chimera states in a 2D lattice of van der Pol oscillators
I.A. Shepelev, Saratov State University, Russia; V.S. Anishchenko, Saratov State University, Russia

14.20-14.30
Dynamics of a 2D lattice of van der Pol oscillators with nonlinear repulsive coupling
I.A. Shepelev, Saratov State University, Russia; T.E. Vadivasova, Saratov State University, Russia

14.30-14.40
The dynamics of an ensemble of FitzHugh-Nagumo oscillators with memristive couplings
Ivan Korneev, Saratov State University, Russia; Andrei Slepnev, Saratov State University, Russia; Vladimir Semenov, FEMTO-ST Institut, CNRS &Université Bourgogne Franche-Comté, France; Tatyana Vadivasova, Saratov State University, Russia

14.40-14.50
Synchronization of 2D van der Pol lattices with different inter-layer coupling between them.
I.A. Shepelev, Saratov State University, Russia; A.V. Bukh, Saratov State University, Russia; T.E. Vadivasova, Saratov State University, Russia; V.S. Anishchenko, Saratov State University, Russia

14.50-15.00
Delocalized nonlinear vibrational modes of triangular lattices
E.A. Korznikova, Institute of Molecule and Crystal Physics, Ufa Federal Research Centre of Russian Academy of Sciences, Ufa, Russia; I.A. Shepelev, Saratov State University, Russia; D.S. Ryabov, Southern Federal University, Institute of Physics,

Rostov-on-Don, Russia; S.V. Dmitriev, Institute of Molecule and Crystal Physics, Ufa Federal Research Centre of Russian Academy of Sciences, Ufa, Russia

15.00-15.10

Supersonic voidions in 2D Morse lattice

E.A. Korznikova, Institute of Molecule and Crystal Physics, Ufa Federal Research Centre of Russian Academy of Sciences, Ufa, Russia; I.A. Shepelev, Saratov State University, Russia; D.S. Ryabov, Southern Federal University, Institute of Physics, Rostov-on-Don, Russia; S.V. Dmitriev, Institute of Molecule and Crystal Physics, Ufa Federal Research Centre of Russian Academy of Sciences, Ufa, Russia

JOINT POSTER/INTERNET SESSION (Online)

Chair (ND): **Andrei V. Slepnev**, Saratov State University, Russia

1ND. **The Impact of Interlayer Coupling Defects on Synchronisation in a Two-layer Network of Nonlocally Coupled Logistic Maps**

Tatiana R. Bogatenko, Saratov State University, Russia; Andrei V. Bukh, Saratov State University, Russia; Galina I. Strelkova, Saratov State University, Russia

2ND. **Investigation of the relationship between the energy of wavelet transformation in the range of the alpha-rhythm of EEG data with the performance of tasks for concentration**

Anton Selskii, Maksim Zhuravlev, Saratov State University, Saratov, Russia; Anastasiya Runnova, Saratov State Medical University, Saratov, Russia

3ND. **Calculation of evoked potential from EEG data using time delays**

Anton Selskii, Maksim Zhuravlev, Saratov State University, Saratov, Russia; Anastasiya Runnova, Saratov State Medical University, Saratov, Russia

4ND. **Inference of the cross-frequency coupling in a multiplex Kuramoto model via recurrence quantification analysis approach**

Nikita Frolov, Neuroscience and Cognitive Technology Laboratory, Center for Technologies in Robotics and Mechatronics Components, Innopolis University, Russia; Vladimir Maksimenko, Neuroscience and Cognitive Technology Laboratory, Center for Technologies in Robotics and Mechatronics Components, Innopolis University, Russia; Dibakar Ghosh, Physics and Applied Mathematics Unit, Indian Statistical Institute, India

5ND. **The application of the base simplest implementation of data processing technique in time-resolved inline digital holography measurements for study of noncollinear degenerate phase modulation**

S.S. Nalegaev, I.A. Shevkunov, S.E. Putilin, C.J. Cheng and N.V. Petrov

6ND. **Application of recurrent analysis to the determination of connections between EEG data channels**

Elizaveta Emelyanova, Anton Selskii, Maksim Zhuravlev, Saratov State University, Saratov, Russia; Anastasiya Runnova, Saratov State Medical University, Saratov, Russia

7ND. **Research of the dynamics of the ensemble average velocity in the "corrugated waveguide" system with an oscillating boundary**

A. Savin, Saratov State University, Russia; D. Lyubchenko, Saratov State University, Russia

8ND. **Relay synchronization in multiplex networks with different dynamics of layers**

Elena Rybalova, Saratov State University, Russia; Galina Strelkova, Saratov State University, Russia; Vadim Anishchenko, Saratov State University, Russia

9ND. **Two scenarios of adaptation during monotonous cognitive activity**

S. Kustodov, Saratov State Medical University, Russia; P. Protasov, Saratov State University, Russia; M. Popova, Saratov State Medical University, Saratov State University, Russia; A. Runnova, Saratov State Medical University, Saratov State University, Russia; M. Zhuravlev, Saratov State University, Saratov State Medical University, Russia R. Shamionov, Saratov State Medical University, Russia

10ND. **Collective dynamics of a 2D network of nonlocally coupled van der Pol oscillators.**

A.V. Bukh, Saratov State University, Russia; V.S. Anishchenko, Saratov State University, Russia

11ND. **The application of the base simplest implementation of data processing technique in time-resolved inline digital holography measurements for study of noncollinear degenerate phase modulation**

S.S. Nalegaev, I.A. Shevkunov, S.E. Putilin, C.J. Cheng and N.V. Petrov

12ND. **Studying a Single FitzHugh-Nagumo (FHN) Model Using "The Virtual Heart" Software**

D.Y. Klyushina, G.I. Strelkova, Saratov State University, Russia

Workshop on Advanced Polarization and Correlation Technologies in Biomedicine and Material Science VII

Workshop Co-chairs: Dmitry A. Zimnyakov, Yuri Gagarin Saratov State Technical University, Russia, Institute of Precise Mechanics and Control RAS, Russia

*Secretaries:***Elena A. Isaeva,Anna A. Isaeva***,* Yuri Gagarin Saratov State Technical University, Russia

International Program Committee:
Robert R. Alfano, CCNY, USA; **Stefan Andersson-Engels**, Tyndall National Institute, Cork, Ireland; **Oleg V. Angelsky**, Chernivtsi National University, Ukraine; **Victor N. Bagratashvili**, Inst. of Laser and Information Technologies RAS, Russia); **Claude Boccara**, ESPCI, France; **Alexander V. Bykov**, Univ. of Oulu, Finland; **Alexander V. Doronin**, Yale University, New Haven, CT, USA; **Steven L. Jacques**, Oregon Health Sciences Univ., USA ;**Alexey P. Popov**, Univ. of Oulu, Finland; **Alexander P. Sviridov**, Inst. of Laser and Information Technologies RAS, Russia; **Valery V. Tuchin**, Saratov National Research State University, Institute of Precision Mechanics and Control RAS, National Research Tomsk State University, Russia; **Olga V. Ushakova** Yuri Gagarin Saratov State Technical University of Saratov, Russia; **Alexander G. Ushenko** Chernivtsi National University, Ukraine; **Lihong Wang**, California Institute of Technology, CA, USA

JOINT POSTER/INTERNET SESSION

Chairs (P): **Dmitry A. Zimnyakov**, Yuri Gagarin Saratov State Technical, Russia

October 1, Thursday

18.00-20.00

1.Competition of electron transfer processes and the heavy atom effect in the dye-potassium polytitana
Andrei G. Melnikov, Viktoriya Efremova, Yuri Gagarin State Technical University of Saratov, Russia, Gorokhovsky A.V., Krugova E.A., Bykov D.A., Vikulova M.A., Yuri D.S, Melnikov G.V, Yuri Gagarin State Technical University of Saratov, Russia

2. Simulation of radiation transfer in dispersive multiphase systems
Elena Isaeva, Sararov State Technical University, Russia, Anna Isaeva, Sararov State Technical University, Russia, Dmitry Zimnyakov, Sararov State Technical University, Russia

3.The speckle spectroscopy of the randomly inhomogeneous medium-saturated by dyes under the noise conditions
Anna Isaeva, Sararov State Technical University, Russia, Elena Isaeva, Sararov State Technical University, Russia, Dmitry Zimnyakov, Sararov State Technical University, Russia

4. Videoreflectometry of nucleation process in plasticized polilactide
Marina V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia, Ekaterina V. Ushakova, Yuri Gagarin State Technical University of Saratov, Russia

5. Optical simulation and analysis of a circularly polarization imaging system
V. Dremin, Research & Development Center of Biomedical Photonics, Orel State University, Orel, Russia, E. Zharkikh, Research & Development Center of Biomedical Photonics, Orel State University, Orel, Russia, A. Bykov, Optoelectronics and Measurement Techniques Unit, University of Oulu, Oulu, Finland

6. Features of optical diffusion diagnostics in structure characterization of the foamed polymers
Olga V. Ushakova, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia

7. Non-coherent video-reflectometry of growing pores in plasticized polymers during supercritical fluid
E.V. Ushakova, Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Marina V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia,Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

8. Photo-conductance of MoSi2 nanoparticle layers in the near ultraviolet and visible spectral range
S.V. Dybrovsky, Sararov State Technical University, Russia, D.V. Tsypin, Yury Gagarin State Technical University of Saratov, Saratov,

Russia, S.S. Volchkov, Yury Gagarin State Technical University of Saratov, Saratov, Russia, D.A. Zimnyakov, Yury Gagarin State Technical University of Saratov, Saratov, Russia

9. Non-linear optical properties of nanostructured titanium nitride under high-power laser pumping in the fundamental absorption band

A.Sh. Gubanov**,** Yury Gagarin State Technical University of Saratov, Saratov, Russia, S. S. Volchkov, Yury Gagarin State Technical University of Saratov, Saratov, Russia, L.A. Kochkurov, Yury Gagarin State Technical University of Saratov, Saratov, Russia, D.A. Zimnyakov, Yury Gagarin State Technical University of Saratov, Saratov, Russia

10. A Visible and near-IR tunnel photosensor with a nanoscale metal and DLC film emitter in Strong electrostatic field

Georgy G. Akchurin, Saratov State University, Saratov, Russia, Garif G. Akchurina, Saratov State University, Saratov, Russia, Nikolay P. Aban'shin, Volga-Svet Co. Ltd, Saratov, Russia, Alexander P. Loginov, Volga-Svet Co. Ltd, Saratov, Russia, Yuri A. Avetisyan, Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, Russia,Sergey S. Volchkov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Sergey V. Zarkov, Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, Russia, Alexander N. Yakunin, Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, Russia

11. Experimental investigation of localization of field in blade structure based on nano-sized DLC film

A.N. Yakunin,Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, Russia, N.P. Aban'shin, Volga-Svet Co. Ltd, Saratov, Russia, D.V.Ponomarev, Saratov State University, Saratov, Russia, Yu.A. Avetisyan, Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, Russia, Ga.G. Akchurin, Saratov State University, Saratov, Russia

Workshop on Electromagnetics of Microwaves, Submillimeter and Optical Waves XX

Workshop Chair: Michael V. Davidovich, Saratov State University, Russia, Institute of Radio Engineering & Electronics RAS, Saratov Branch

*Secretaries:***Alexander N. Savin***,* Istok, Fryazino. (Russia), **Dmitry A. Kolosov**, Saratov State University (Russia), **Kirill A. Sayapin,** Saratov State University (Russia)

International Program Committee:
Alexander I. Nosich, Kharkov Institute of Radio-Engineering and Electronics, NAS Ukraine (Ukraine); **Nikita M. Ryskin,** Saratov State University (Russia); **Igor S. Nefedov,** Aalto University, Espoo (Finland); **Georgi N. Georgiev,** "Sts. Cyril and Methodius" University, Veliko Tirnovo, (Bulgaria);**Andrei D. Grigoriev,** St. Petersburg Electrotechnical University LETI (Russia); **Josef Modelsky,** Warsaw University of Technology (Poland); [**Dmitry I. Trubetskov**]**,** Saratov State University (Russia); **Alexander M. Lerer**, South Federal University, Rostov-Don (Russia)

October1, Thursday

JOINT POSTER/INTERNET SESSION

(Building 3, 3rd floor Hall)

Chair (EM): **Michael V. Davidovich**, Saratov State University, Russia

18.00-20.00

1EMFRACTAL RECTENNA FOR RADIO FREQUENCY ENERGY COLLECTION IN WI-FI RANGE A.V. Smirnov, I.A. Gorbachev, A.V. Gorbunova, V.V. Kolesov, I.E. Kuznetsova, Kotel'nikov institute of Radio Engineering and Electronics of RAS, Moscow, Russia

2EMA flexible CPW-fed antenna for ISM and cellular bands fabricated by laser ablation Starodubov A.V., Ozhogin I.S., Kozhevnikov I.O., Serdobintsev A.A., Saratov State University.

3EMThe effect of the external magnetic field on the higher harmonics formation in the output power spectrum of low-voltage vircator with nonlaminar electron beams Andrei Starodubov, Nikolay Kuznetsov, Viktor Galushka, Anton Pavlov, Yurii Kalinin, Saratov State University.

4EMThe effect of the external magnetic field on the higher harmonics formation in the output power spectrum of low-voltage vircator with nonlaminar electron beams Andrei Starodubov, Nikolay Kuznetsov, Viktor Galushka, Anton Pavlov, Yurii Kalinin, Saratov State University.

5EMPeculiarities of microfabrication the slow-wave structure for millimeter-band backward-wave oscillator based on the pseudospark-sourced electron gun Anton Pavlov, Andrey Starodubov, Roman Torgashov, Nikita Ryskin, Saratov State University, Saratov, Russia.

INTERNET REPORT

Reconfigurable Broadband Terahertz Perfect Absorbers and Generators Based on Multilayer Graphene Ribbon Plasmonic Structures Lerer A.M.,Southern Federal University, Makeeva G.S, Penza State University, Cherepanov V.V., Ivanova I.N., Southern Federal University.

INTERNET POSTER SESSION

Analysis of the effect of heating a container for chemical-thermal treatment of titanium in a carbon-containing environment, depending on the geometry and current strength of the inductor Voyko A.V., Yuri Gagarin State Technical University, Saratov, Russia.

Numerical simulation of induction PVD of titanium on steel plates Fomin A. A., Yuri Gagarin State Technical University, Saratov, Russia.

Influence of induction chemical-thermal treatment on the mechanical properties of high-speed steel grade HSS Kabanov D.S., Voyko A.V., Yuri Gagarin State Technical University, Saratov, Russia.

Carburizing the surface of tantalum in a sealed container using an induction machine Voyko A.V., Kabanov D.S., Yuri Gagarin State Technical University, Saratov, Russia.

Influence of induction treatment on the steel-titanium layered structure for the formation of

a highly hard working titanium-oxide surface Fomin A.A.,ShelkunovA.Yu., Yuri Gagarin State Technical University,Saratov, Russia.

Investigation of changes in the electrical parameters of induction heating of commercial titanium in the high-temperature range Shchelkunov A.Yu., Egorov I.S.., Fomin A. A., Yuri Gagarin State Technical University, Saratov, Russia.

Conference on
Terahertz Optics and Biophotonics III

Chairs: **Igor V. Reshetov**, Sechenov University (Russia); **Vladimir N. Kurlov**, ISSP RAS (Russia); **Petr S. Timashev**, Sechenov University (Russia); **Irina N. Dolganova**, ISSP RAS; **Kirill I. Zaytsev**, Prokhorov GPI RAS

Secretary: **Nikita V. Chernomyrdin,** GPI RAS (Russia)

International Program Committee: Igor V. Reshetov, Sechenov University (Russia); Alexei Ivlev, Max-Planck-InstitutfürExtraterrestrischePhysik (Germany); Maksim Skorobogatiy, Polytechnique Montréal (Canada); Dmitry S. Ponomarev, Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russian); Rustam A. Khabibullin, Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russia); Olga P. Cherkasova, Institute of Laser Physics of SB RAS (Russia); Gennady A. Komandin, Prokhorov General Physics Institute of RAS (Russia); Igor E. Spector, Prokhorov General Physics Institute of RAS (Russia)

September 29, Tuesday

ON-LINE INVITED/ORAL SESSION
(Zoom Link:
https://us02web.zoom.us/j/81951423348?pwd=QVplQmJlczdFVDZ2aVlDUzNYVGFEdz09
ID: 819 5142 3348; Passcode: 089)
Chair: **Nikita V. Chernomyrdin**, GPI RAS (Russia)

14.00-14.20 (13.00-13.20 Moscow local)
Invited
Reconfigurable broadband terahertzperfect absorbers and generatorsbased on multilayer graphene ribbonplasmonic structures
A.M. Lerer(Southern Federal University, Russia), G.S. Makeeva, V.V. Cherepanov, I.N. Ivanova

14.20-14.40 (13.20-13.40 Moscow local)
Invited
Photoconductive THz detector featuringan artificially strained InGaAs/InAlAssuperlattice
D.V. Lavrukhin, A.E. Yachmenev, R.A. Khabibullin, Yu.G. Goncharov, I.E. Spektor, K.I. Zaytsev, D.S. Ponomarev (Institute of Ultra High Frequency Semiconductor Electronics of RAS, Russian)

14.40-15.00 (13.40-14.00 Moscow local)
Invited
Diagnosis of glioma molecular markersby terahertz spectroscopy
O.P. Cherkasova (Institute of Laser Physics, Siberian Branch of the RAS, Russia)

15.00-15.20 (14.00-14.20 Moscow local)
Sapphire fiber metalens for THzphotoconductive devices
N.V. Zenchenko (Institute of Ultra High Frequency Semiconductor Electronics of RAS, Russia), I.A. Glinskiy, D.V. Lavrukhin, G.M. Katyba, E.V. Yakovlev, K.I. Zaytsev, D.S. Ponomarev

15.20-16.00 (14.20-15.00 Moscow local) – break

16.00-16.20 (15.00-15.20 Moscow local)
Dielectric properties of blood serumwith liver cancer in THz frequencyrange
Invited
M.R. Konnikova, M.M. Nazarov, O.P. Cherkasova (Institute of Laser Physics, Siberian Branch of the RAS, Russia), E.N. Lazareva, P.A. Dyachenko, V.V. Tuchin, A.P. Shkurinov

16.20-16.40 (15.20-15.40 Moscow local)
THz spectroscopy as a diagnosticmethod for thyroid cancer
M.R. Konnikova (Institute of Laser and Information Technologies– Branch of the Federal Scientific Research Centre «Crystallography and Photonics» of the RAS, Russia), O.P. Cherkasova, M.M. Nazarov, Y.V. Kistenev, D.A. Vrazhnov, A.P. Shkurinov

16.40-17.00 (15.40-16.00 Moscow local)
Development of pellets for studying thediabetic blood plasma in the THzfrequency range
A.A. Lykina (ITMO University, Russia), M.M. Nazarov, M.R. Konnikova, V.N. Trukhin, P.G. Gavrilova, V.L. Vaks, V.A. Anfertyev, E.G. Domracheva, M.B. Chernyaeva, Yu.V. Kistenev, D.A. Vrazhnov, V.V. Prischepa,Yu.A. Kononova, D.V. Korolev, Ya.G. Toropova, O.P. Cherkasova, A.P. Shkurinov, O.A. Smolyanskaya

17.00-17.20 (16.00-16.20 Moscow local)
Fast assessment of the opticalproperties of diabetic blood plasmausing the terahertz holographic imagingmethod
E.L. Odlyanitskiy (ITMO University, Russia), M.S. Kulya, Q. Cassar, I.A. Mustafin, V.N. Trukhin, D.V. Korolev, Y.V. Kononova, P. Mounaix, J.P. Guillet, N.V. Petrov, O.A. Smolyanskaya

Conference on Advanced Materials for Optics and Biophotonics III

Conference Chair: **Vladimir N. Kurlov**, ISSP RAS (Russia); **Igor V. Reshetov**, Sechenov University (Russia); **Petr S. Timashev**, Sechenov University (Russia); **Irina N. Dolganova**, ISSP RAS (Russia); **Kirill I. Zaytsev**, Prokhorov GPI RAS

*Secretary:***Gleb M. Katyba,** ISSP RAS (Russia)

International Program Committee: Maksim Skorobogatiy, Polytechnique Montréal (Canada); Marina A. Schcedrina, Sechenov University (Russia); Dmitry S. Ponomarev, Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russian); Valery E. Karasik, Bauman Moscow State Technical University (Russia); Irina A. Shikunova, Institute of Solid State Physics of RAS (Russia); Gennady A. Komandin, Prokhorov General Physics Institute of RAS (Russia); Igor E. Spector, Prokhorov General Physics Institute of RAS (Russia); Alexei K. Fedorov, Russian Quantum Center (Russia); Vladimir A. Lazarev, Bauman Moscow State technical University (Russia); Anastasia I. Shpichka, Sechenov University (Russia)

September 29, Tuesday

ON-LINE INVITED/ORAL SESSION and
(Zoom Link:
https://us02web.zoom.us/j/85970853230?pwd=TENCTFd0MU5VWG1TWTJGV1FSK05FQT09
ID: 859 7085 3230; Passcode: 711203)
Chair: **Gleb M. Katyba**, ISSP RAS (Russia)

14.00-14.20 (13.00-13.20 Moscow local) Invited

Whey protein isolate hydrogel-basedbiomaterials
Timothy Douglas,Engineering Dept., Lancaster UNiversity(UK)

14.20-14.40 (13.20-13.40 Moscow local) Invited

Exploring Next generation Few ModeAssisting Elliptical Ring Core Cladding Optical Fiber
D. Vigneswaran (Department of Physics, University College of Engineering, Anna University, Ramanathapuram, India), J.S. Skibina, M.S. Manirajan

14.40-15.00 (13.40-14.00 Moscow local) Invited

High-power mid-infrared quantum-cascade lasers
G.S. Sokolovskii, Ioffe Institute (Russia)

15.00-15.20 (14.00-14.20 Moscow local) Invited

HgCdTe-based quantum cascadelasers bridging the gap between THzand far-IR ranges
R.A. Khabibullin, IUHFSE RAS (Russia); D.V. Ushakov, A.A. Afonenko,
D.S. Ponomarev, S.V. Morozov, A.A. Dubinov

15.20-16.00 (14.20-15.00 Moscow local) – break

16.00-16.20 (15.00-15.20 Moscow local)

Metaelements formation via volumemicrostructuring of silicate glass usingfemtosecond laser radiation
M.S. Kovalev (BMSTU, Russia), N.G. Stsepuro, G.K. Krasin, S.I. Kudryashov

16.20-16.40 (15.20-15.40 Moscow local)

Screening and diagnosis of skinmelanoma using multiple imagingsystems
K.G. Kudrin (Academy of postgraduate education under FSBU FSCC of FMBA of Russia, Russia), E.N. Rimskaya, I.A. Apollonova, A.P. Nikolaev, N.V. Chernomyrdin,
D.S Sviatoslavov, D.V. Davydov,
I.V. Reshetov

16.40-17.00 (15.40-16.00 Moscow local)

Solid-state Cr2+:ZnSe laser for OCTimaging in the fourth near-infraredoptical window
M.K. Tarabrin (BMSTU, Russia), D.A. Nazarov, V.A. Lazarev

JOINT INTERNET POSTER SESSION

Terahertz Optics and Biophotonics III

Recent advances in terahertz solidimmersion microscopy of soft biologicaltissues
N.V. Chernomyrdin (GPI RAS, Russia), A.S. Kucheryavenko, V.A. Zhelnov, I.N. Dolganova, G.A. Katyba, I.V. Reshetov, V.V. Tuchin, K.I. Zaytsev

Study of interstellar and circumstellarice analogs using terahertz pulsedspectroscopy and Fourier-transform infrared spectroscopy
A.A. Gavdush (GPI RAS, Russia), B.M. Giuliano, B. Müller, G.A. Komandin, K.I. Zaytsev, A.V. Ivlev, and P. Caselli

Metasurfaces based on Au and VO2 forTHz applications
V. Kaydashev(MIPT, Russia), S. Zhukov, M. Kutepov, I. Domaratskiy, A. Slavich

THz and IR molecular imaging ofparaffin-embedded cancerous tissues
A.I. Knyazkova(Tomsk State University, Institute of Strength Physics and Materials Science SB RAS), A.A.Samarinova, A.V. Borisov,V.E. Skiba, Yu.V. Kistenev

Optimal agents for immersion opticalclearing of tissues at terahertzfrequencies
G.R. Musina (GPI RAS, Russia), A.A. Gavdush, N.V. Chernomyrdin, I.N. Dolganova, V.E. Ulitko, N.A. Naumova, G.A. Komandin, V.V. Tuchin,K.I. Zaytsev

Advanced Materials for Optics and Biophotonics III

Nanoporous SiO_2 based on annealedartificial opals as a favorable material platform for terahertz optics
V.E. Ulitko (ISSP RAS, Russia), A.K. Zotov, A.A. Gavdush, G.M. Katyba, G.A. Komandin, I.E. Spector, I.M. Shmytko, G.A. Emelchenko, I.N. Dolganova, M. Skorobogatiy, V.N. Kurlov, V.M. Masalov, K.I. Zaytsev

Step-index sapphire fiber and itsapplication in a terahertz near-field microscopy
G.M. Katyba (ISSP RAS, Russia), I.N. Dolganova, I.A. Shikunova, D.O. Strukov, N.V. Chernomyrdin, K.I. Zaytsev,and V.N. Kurlov

Optically-controledcryodestruction ofbiological tissues using sapphire applicators
A.K. Zotov (ISSP RAS, Russia), I.N. Dolganova, K.I. Zaytsev, I.A. Shikunova, N.A. Naumova, L.P. Safonova, P.V. Aleksandrova, and V.N. Kurlov

A potential of optical coherencetomography for the differentiation of intact brain tissue, human braingliomas of different WHO grades andglioma model 101.8
P.V. Aleksandrova (GPI RAS, Russia), I.N. Dolganova, P.V. Nikitin,A.I. Alekseeva, N.V. Chernomyrdin, N.A. Naumova, S.-I.T. Beshplav, I.V. Reshetov, A.A. Potapov, V.N. Kurlov, V.V. Tuchin, and K.I. Zaytsev

Features of the development of astandard for testing the system ofautomated morphometry of clinicalimages of pigmented skin neoplasms
E.N. Rimskaya (BMSTU, Russia), K.G. Kudrin, I.A. Apollonova, A. P. Nikolaev, N.V. Chernomyrdin, D.V. Davydov and I.V. Reshetov

Calculation of thermal conductivity andattenuation of pulsed laser radiation inthe eye tissue
N.A. Zelenina (ITMO University, Russia), V.V. Zalipaev, A.S. Izmailov, O.A. Smolyanskaya

Workshop on Brain Physics

Workshop Co-chairs: **Oxana V. Semyachkina-Glushkovskaya**,Saratov State University (Russia); **Jurgen Kurths**, Physics Department, Humboldt University and Potsdam Institute for Climate Impact Research (Germany); **Thomas Penzel**, Interdisciplinary Center of Sleep Medicine in Charité – Universitätsmedizin (Germany); **Valery V. Tuchin**, Saratov State University, Tomsk State University, Institute of Precision Mechanics and Control of the RAS (Russia)
Secretary: **Ekaterina Borisova**, Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria; Saratov State University, Russia; **Andrei V. Slepnev,** Saratov State University (Russia)

September 30, Wednesday

ORAL SESSION
(Building 5, Room 72;
Zoom link:
https://us02web.zoom.us/j/89959585323)
Chair: **Oxana V. Semyachkina-Glushkovskaya**,
Saratov State University, Russia

16.00-16.15
Optical properties of functionally relevant human brain areas
Ksenia Achkasova, Privolzhsky Research Medical University, Nizhny Novgorod, Russia; Alexander Moiseev, Institute of Applied Physics Russian Academy of Science, Nizhny Novgorod, Russia; Konstantin Yashin, Privolzhsky Research Medical University, Nizhny Novgorod, Russia; Elena Kiseleva, Privolzhsky Research Medical University, Nizhny Novgorod, Russia; Eugenia Bederina, Privolzhsky Research Medical University, Nizhny Novgorod, Russia; Anna Epishkina, Privolzhsky Research Medical University, Nizhny Novgorod, Russia; Natalia Gladkova, Privolzhsky Research Medical University, Nizhny Novgorod, Russia

16.15-16.30
Breakthrough strategies of stimulation of the cerebral lymphatics during sleep
Nikita Navolokin, Saratov State University, Russia; Alexander Shirokov, Saratov State University, Russia; Ivan Fedosov, Saratov State University, Russia; Maria Klimova, Saratov State University, Russia; Andrey Terskov, Saratov State University, Russia; AyselMamedova, Saratov State University, Russia; Inna Blokhina, Saratov State University, Russia; Nikita Lezhnev, Saratov State University, Russia; Ilana Agranovich, Saratov State University, Russia; OxanaSemyachkina-Glushkovskaya, Saratov State University, Russia

16.30-16.45
Compact device with smartphone control for estimation of cardiovascular autonomic control using only photoplethysmogram recorded from earlobe
Danil D. Kulminskiy, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Saratov State University, Russia; Alexander V. Kurbako, Saratov State University, Russia; Anatoly S. Karavaev, Saratov State University, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Saratov State Medical University, Russia; Dmitry M. Ezhov, Saratov State University, Russia; Mikhail D. Prokhorov, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Russia; Vladimir I. Ponomarenko, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Saratov State University, Russia; Boris B. Bezruchko, Saratov State University, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Russia

16.45-17.00
Diagnostics of synchronization between the systems of autonomic regulation of cardiovascular function using synchrogram analysis
E.I. Borovkova, Saratov State Medical University, Saratov State University, Russia; A.S. Karavaev, Saratov State Medical University, Saratov State University, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Russia; A.R. Kiselev, Saratov State Medical University, Saratov State University, Russia; V.I. Gridnev, Saratov State Medical University, Saratov State University, Russia; A.N. Khramkov, Saratov State University, Russia; E.P. Chernets, Saratov State University, Russia; E.V. Navrotskaya, Saratov State University, Russia; M.D. Prokhorov, Saratov State University, Saratov Branch of the Institute of RadioEngineering and Electronics of Russian Academy of Sciences, Russia; Bezruchko B.P., Saratov State University, Russia

JOINT POSTER/INTERNET SESSION (Online)
Chair (BP): **Oxana V. Semyachkina-Glushkovskaya**, Saratov State University, Russia

1BP. **NADH growth rate evaluation in different rat brain regions by fluorescence spectroscopy**
Alexander Palalov, Orel State University, Russian; Pavel Gorlin, Orel State University, Russia; Evgeniya Seryogina, Orel State University, Russia; Alexander Alekseev, Orel State University, Russia;

EvgenyZherebtsov, Orel State University, Russia, University of Oulu, Finland; Andrey Abramov, Orel State University, Russia, UCL Queen Square Institute of Neurology, London

2BP. **A comparative analysis of bioenergetic parameters of brain cells in acute slices and cell culture using fluorescence microscopy**
Angelina Dolgikh, Orel State University, Russia; Olga Stelmashchuk, Orel State University, Russia; Andrey Vinokurov, Orel State University, Russia; EvgenyZherebtsov, Orel State University, Russia, University of Oulu, Finland; Andrey Dunaev, Orel State University, Russia; Andrey Abramov, Orel State University, Russia, Queen Square Institute of Neurology, UK

3BP. **Photostimulation of permeability of blood-brain barrier for beta-amyloid**
Maria Klimova, Saratov State University, Russia; AyselMamedova, Saratov State University, Russia; Ilana Agranovich, Saratov State University, Russia; Inna Blokhina, Saratov State University, Russia; Tatiana Antonova, Saratov State University, Russia; Andrey Terskov, Saratov State University, Russia; Alexander Shirokov, Saratov State University, Russia; Nikita Navolkin, Saratov State University, Russia; Oxana Semyachkina-Glushkovskaya, Saratov State University, Russia

4BP. **Optimision of photodynamic opening of blood-brain barrier**
Maria Klimova, Alexander Dubrovsky, Alexander Shirokov, Alexander Fomin, Andrey Terskov, Ilana Agranovich, AyselMamedova, Aleksandr Khorovodov, Valeria Vinnik, Inna Blokhina, Nikita Lezhnev, Ali Esmat Sharif, Anna Kuzmina, Sergey Sokolovski, Valery Tuchin, EdikRafailov

5BP. **Direct measurements of rat intracranial pressure**
V.B. Ageev, Saratov State University, Russia; I.A. Blokhina, Saratov State University, Russia; I.V. Fedosov, Saratov State University, Russia; O.V. Semyachkina-Glushkovskaya, Saratov State University, Russia

6BP. **Machine learning approach in EEG-based determination of BBB state for rats**
K.S. Sergeev, Saratov State University, Russia; N.I. Semenova, FEMTO-ST Institut, Université Bourgogne Franche-Comté 15B avenue des MontbouconsBesançon Cedex, 25030, France; A.V. Slepnev, Saratov State University, Russia

7BP. **Optimal dose for photosensitizers-free PDT of glioma**
Aleksandr Khorovodov, Saratov State University, Russia; Inna Blokhina, Saratov State University, Russia; Nikita Lezhnev, Saratov State University, Russia; Nikita Navolokin, Saratov State Medical University, Russia; Alexander Shirokov, Institute of Bioorganic Chemistry, Russian Academy of Sciences, Russia; Andrey Terskov, Saratov State University, Russia; AyselMamedova, Saratov State University, Russia; ArynaEvsukova, Saratov State University, Russia; Maria Klimova, Saratov State University, Russia; Ilana Agranovich, Saratov State University, Russia; Oxana Semyachkina-Glushkovskaya, Saratov State University, Russia

24d International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

SHORT COURSES

September 28, Monday

OSA SHORT COURSE
Building 10, Main Conference Hall
Zoom link:
https://osachapter.zoom.us/j/94441799931***)***
Moderator: **Isabella A. Serebryakova**, Saratov State University, Russia

14.00-15.00
Fluorescence Imaging with Endogenous Contrast for Biomedical Diagnostics
Evgeny A. Shirshin, Faculty of Physics, M.V. Lomonosov Moscow State University, Russia

15.00-15.30
Coffee break

15.30-16.30
Fluorescence Imaging with Endogenous Contrast for Biomedical Diagnostics
Evgeny A. Shirshin, Faculty of Physics, M.V. Lomonosov Moscow State University, Russia

September 29, Tuesday

SPIE SHORT COURSE
Building 10, Main Conference Hall
Zoom link:
https://osachapter.zoom.us/j/94441799931***)***
Moderator: **Isabella A. Serebryakova**, Saratov State University, Russia

10.00-11.00
Combination of Photonics Tools with Nanostructured Particles for Biomedical Applications
Dmitry A. Gorin, Center for Photonics and Quantum Materials, Skolkovo Institute of Science and Technology, Moscow, Russia

11.00-11.30
Coffee break

11.30-12.30
Combination of Photonics Tools with Nanostructured Particles for Biomedical Applications
Dmitry A. Gorin, Center for Photonics and Quantum Materials, Skolkovo Institute of Science and Technology, Moscow, Russia

Workshop on Modern Optics XIX

Lectures on Optics for University Students, Postgraduate Students and High School Students

Chair: **Irina Yu. Yanina**, Saratov State University

Secretary: **Ekaterina N. Lazareva**, Saratov State University, Tomsk State University

Moderator: **Isabella Serebryakova**,Saratov State University

International Program Committee: **Valery V. Tuchin**, **Vladimir P. Ryabukho**, **Vladimir L. Derbov**, **Alexander B. Pravdin**,**Boris A. Medvedev**, **Mikhail A. Starshov**, Saratov State University, **Alexander V. Priezzhev**, Moscow State University

October 1, Thursday

PUBLIC LECTURE SESSION MODERN OPTICS
(Building 3, Big Physical Hall
Zoom link: https://osachapter.zoom.us/j/92367493556***)***

Chair: **Irina Yu. Yanina**, Saratov State University

14.00-14.20

A journey into the microcosmos: where does optics meet acoustics?
Dmitry A. Gorin, Center for Photonics and Quantum Materials, Skolkovo Institute of Science and Technology, Moscow, Russia

14.20-14.40

Photonics in Medicine in 2020: What's New?
Evgeny A. Shirshin, Faculty of Physics, M.V. Lomonosov Moscow State University, Russia

Workshop English as a Communicative Tool in the Scientific Community XIX

Co-chairs: **Svetlana V. Eremina,** Saratov State University (Russia)
Alexander B. Pravdin,Saratov State University (Russia)

Advising Chair: **Vladimir L. Derbov,** Saratov State University (Russia)

Secretary: **Natalia I. Kazadaeva,** Saratov State University (Russia)

Program Committee: **Vladimir L. Derbov,** Saratov State University (Russia), **Igor V. Meglinski**, University of Oulu, (Finland); Saratov State University(Russia), **Valery V. Tuchin**, Saratov State University (Russia), **Dmitry A. Zimnyakov,** Saratov State Technical University (Russia)

October1, Thursday

INTERNET SESSION

Co-chairs: **Svetlana V. Eremina, Alexander B. Pravdin**,Saratov State University (Russia)

1. **On-line English Language Resources: Use and Abuse** Svetlana V. Eremina, Alexander B. Pravdin, Saratov State University, Saratov, Russia

2. **Teaching Students How to Write an Effective CV**Dina Alexeeva, Saratov State University, Saratov, Russia

3. **Typical errors in students' scientific paper translating**Arina O. Shelyugina, Saratov State University, Saratov, Russia

4. **Translation theory for science students: Let's not reinvent the wheel** Darya N. Tselovalnikova, Saratov State University, Saratov, Russia

5. **Motivation in Distance Learning** Anna Smirnova, Saratov State University, Saratov, Russia

6. **Issues in Russian terminology relating to components of Chinese characters,**Konstantin A. Grebenyuk,Saratov State University, Russia

Workshop on History, Methodology and Philosophy of the Optical Education XIII

Workshop Chairs: **Boris A. Medvedev,** Saratov State University, Russia
Secretary: **Alexander A. Skaptsov**, Saratov State University, Russia

International Program Committee **Vladimir L. Derbov**, Saratov State University, Russia; **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State University, Russia; **Alexander V. Gorokhov**, Samara State University, Russia; **Valery V. Tuchin**, Saratov State University, Russia; **Alex Vitkin**, University of Toronto, Canada

September 30, Wednesday

LECTURE/ORAL SESSION I
(Building 3, Hall 51)
Co-chairs: **Boris A. Medvedev, Vladimir P. Ryabukho**,
Saratov State University, Russia

15.30-15.45
The Great Physical Auditorium as a scientific information center
Valery M. Anikin, Saratov State University, Saratov, Russia

15.45-16.00
Nonclassical light
D. Klychkova, Saratov State University, Saratov, Russia

16.00-16.15
Study of the distribution and composition of molecules in gall-forming insects at different stages of development by means of raman spectroscopy
M. Nikelshparg[1], E. Nikelshparg[2], D.N. Bratashov[3], V.V. Anikin[3]
[1]Gimnasium №3 of Saratov, Saratov, Russia
[2]Lomonosov Moscow State University, Moscow, Russia
[3]Saratov State University, Saratov, Russia

16.15-16.30
On 2D diffusion of seismic waves
D.V. Churochkin, S.V. Churochkina, E.S. Sirotina, Saratov State University, Saratov, Russia

16.30-16.45
Alexander Stoletov: a scientific feat or a myth?
J.D. Gudova, M.A. Starshov, Saratov State University, Saratov, Russia

16.45-17.00
Plasmonic photothermal or/and photodynamic therapy of tumors: designing therapies
A. Bucharskaya[1], N. Navolokin[1], G. Maslyakova[1], E. Borisova[2], B. Khlebtsov[3], N. Khlebtsov[3], A. Bashkatov[4], E. Genina[4], V. Tuchin[4]
[1]Saratov State Medical University, Saratov, Russia
[2]Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria
[3]Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Saratov, Russia
[4]Saratov State University, Saratov, Russia

17.00-17.15
Exciton series in film spectra based on PbS with different grain size
N.B. Trofimova, M.I. Shishkin, A.A. Serdobintsev, D.Yu. Postnov, A.G. Rokakh, Saratov State University, Saratov, Russia

17.15-17.30
Hydrophilization of CdZnSeS/ZnS alloyed quantum dots using mercaptoethanol
P. Strokin, D. Drozd, I. Goryacheva, Saratov State University, Saratov, Russia

17.30-17.45
An eco-friendly molecularly fluorescence composite structures based of carbon biomass based and their applications in chemical analysis
M.S. Stepukhovich, A.A. Bakal, A.M. Abramova, Saratov State University, Saratov, Russia

17.45-18.00
Synthesis and properties of silica nanoparticles modified with luminescent carbon nanostructures
Y.A. Podkolodnaya, A.A. Kokorina, I.Y. Goryacheva, Saratov State University, Saratov, Russia

October 1, Thursday

LECTURE/ORAL SESSION I
(Building 3, Hall 51)
Co-chairs: **Boris A. Medvedev, Vladimir P. Ryabukho**, Saratov State University, Russia

15.30-15.45
To the 95th anniversary of the discovery of the electron spin. Historical and philosophical aspect
B. Medvedev, Saratov State University, Saratov, Russia

15.45-16.00
Are You opposed to the «terrible remote learning»?! Sorry, You are thousands years late…
M.M. Stolnitz, Saratov State University, Saratov, Russia

16.00-16.15
Optical laboratory in the remote mode
Starshov, Saratov State University, Saratov, Russia

16.15-16.30
Experimenting with light at chemistry lessons with secondary school students
A.V. Markin, Saratov State University, Saratov, Russia

16.30-16.45
How to explain the essence of digital signal processing to students of physics
J K. Grebenyuk, Saratov State University, Saratov, Russia

16.45-17.00
Comparison of facial recognition algorithms
M. Repyev, Saratov State University, Saratov, Russia

17.00-17.15
Application of ternary number system and ternary logic for microprocessor systems
A.S. Dronkin, Saratov State University, Saratov, Russia

17.15-17.30
The price of naturalness or how to beat quick sort
B.L. Faifel, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

17.30-17.45
Methods for controlling errors in computer simulation of small magnetic fields
V. Malyarchuk, Saratov State University, Saratov, Russia

17.45-18.00
Nonlinear model YIG resonator in the calculations of the magnetically sensitive devices
A. Vasiliev, A. Ignatiev, Saratov State University, Saratov, Russia

18.00-18.15
Noise suppression effect in a heteromagnetic active oscillator
A. Ignatiev, M. Inkin**,** Saratov State University, Saratov, Russia

October 2, Friday

ROUND TABLE
Man and light in natural and art treatment of the Universe
(Building 3, Hall 51)
Moderator: **Boris A. Medvedev**, Saratov State University, Russia

Panel members:
Valery V. Tuchin[a], Vladimir P. Ryabukho[a], Vladimir L. Derbov[a], Victor V. Rozen[a], Oleg V. Shimelfenig[a], A. G. Rokakh[a], Lev M. Babkov[a], Vyacheslav I. Kochubey[a], Svetlana P. Pozdneva[a], A. V. Gorokhov[b], Dmitry A. Zimnyakov[c]**,** Leonid A. Melnikov[c], Dmitry V. Mikhel[c], Julia M. Duplinskay[c], Evgeniya V. Listvina[a], Oleg M. Parshkov[c], A. V. Priezzhev[d],
[a]Saratov State University, Saratov, Russia
[b]Samara University, Samara, Russia
[c]Yuri Gagarin State Technical University of Saratov, Russia
[d]M.V. Lomonosov Moscow State University, Moscow, Russia

14.00-14.20
Coherence in Classical and Quantum Physics
A.V. Gorokhov, Samara National Research University named after academician S.P. Korolev, Samara, Russia

14.20-14.35
Gravity: the force or the curvature of space
V. Rozen, Saratov State University, Russia

14.35-14.50
Macroscopic quantum phenomena - a bridge between two worlds
O.M. Parshkov, Yuri Gagarin State Technical University of Saratov, Russia

14.50-15.05
Principle of uncertainty in the knowledge of nature

B. Medvedev, Saratov State University, Saratov, Russia

15.05-15.20
Abnormal shielding of the electric field as a widely used but little known phenomenon
A. Rokakh, Saratov State University, Saratov, Russia

15.20-15.35
Optics, chemistry, philosophy (Background and history of photography from Aristotle to the present day)
V. Sorokin, Saratov State University, Saratov, Russia

15.35-15.50
Pattern recognition methods in pulmonology and phthisiology using the differential diagnosis of bronchopulmonary diseases as an example
J. Brodskaya, Saratov State University, Saratov, Russia

16.05-16.20
The wave process of distribution of invasive insect species in the Volga region in the XXI century
Vasily Anikin, Saratov State University, Saratov, Russia

16.20-16.35
On the features of teaching optics for students of geological areas of training and specialties
L.A. Romanchenko, Sergo Ordzhonikidze Russian State University for Geological Prospecting, Russia

16.35-16.50
Physics for the university's natural science: first-year teaching problems
S.V. Ovchinnikov, Saratov State University, Saratov, Russia

16.50-17.05
Stratification of physical reality in various systems of coding of information
Yu. Duplinskaya, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

17.05-17.20
The phenomenon of techno-science and its cultural environment
N. Dovgalenko, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

17.20-17.35
The darkness of the unconscious as the driving force of life
O. Shimelfenig, Saratov State University, Saratov, Russia

17.35-17.50
«Saint Isaac» Prophet. Apostle. Demiurge (A hundred years of Isaac Asimov)
M. Stolnitz, Saratov State University, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(On-line)

Chair (H): **A. Skaptsov**, Saratov State University, Saratov, Russia

1. **Optical parameters of plants grown under artificial lighting**
   E.V. Timchenko[1], A.P. Timchenko[2], T. Melnikova[2], T.V. Melnikova[2]
   [1]Samara University, Samara, Russia
   [2]Technical Lyceum named after S.P. Korolev, Samara, Russia

2. **Statistical characteristicof chaotic sequences generator based on counters**
   V. Chesakov, L. Sotov, Saratov State University, Saratov, Russia

3. **PWM controller as pulse oscillator**
   V.G. Andrianov, H.N. Kolesov, K.A. Vasin, Saratov State University, Saratov, Russia

4. **Computer simulation of powerful microwave amplifiers based on domestic bipolar transistors.**
   A. Kalinin, A. Khvalin, Saratov State University, Saratov, Russia

5. **Influence of transistor parametrers on fluctuations in a heteromagnetic active oscillator**
   M. Inkin**,** A. Ignatiev, Saratov State University, Saratov, Russia

6. **Measurement of phase noise level and threshold sensitivity of magnetic field sensor with YIG resonator**
   A. Vasiliev, A. Ignatiev, Saratov State University, Saratov, Russia

INTERNET REPORTS

(Building 3, 3d floor Hall)

1. **Riemann hypothesis from the physicist's point of view**
   Yuriy Zayko, Stolypin Volga Region Management Institute, Russian Presidential Academy of National Economy and Public Administration, Russia