

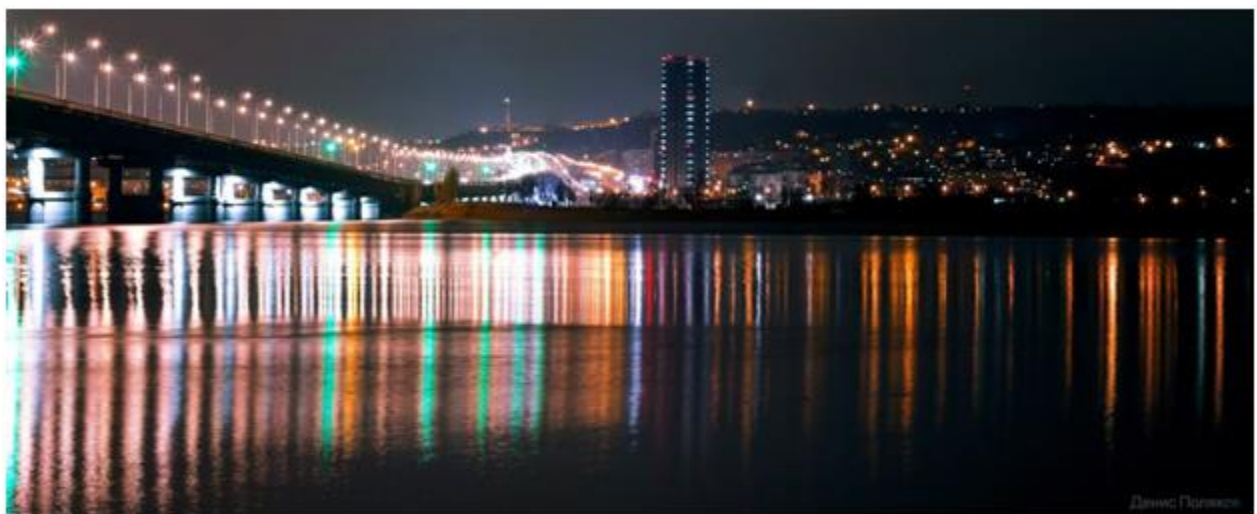
Saratov Fall Meeting SFM'25

**13th International Symposium “Optics and
Biophotonics”**

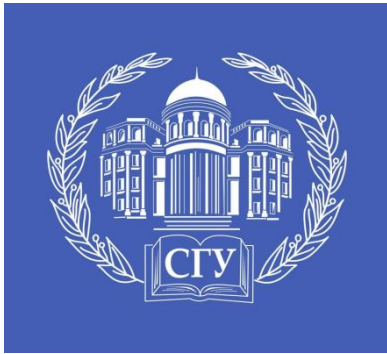
**29th International School for Junior Scientists
and Students on Optics, Laser Physics
&Biophotonics**

**Chinese-Russian Workshop on Biophotonics
and Biomedical Optics-2025**

BRICS Workshop on Biophotonics IV – 2025



CONFERENCE SPONSORS



Saratov National Research State University named after N.G. Chernyshevsky (SSU) is a leading educational and scientific center integrated into the global academic space, ready to integrate education, science and the industrial sector. **SSU** is a successfully developing community of experienced, well-known scientists and young researchers, outstanding teachers, promising graduate students, inquisitive and bright students. It plays a consolidating role in the scientific and pedagogical space of the Saratov region, being the center not only of scientific and educational activities, but also of cultural and socio-economic life. [СГУ](http://sgu.ru)



SOLAR LS CJSC (Belarus) is one of the largest international companies in the field of development and production of laser systems, spectral devices and medical equipment. More than 3,000 users from 25 countries successfully use the company's products. The product line includes: nsec Nd:YAG lasers, FSEC and PSEC DPSS lasers, wavelength tunable laser systems, monochromators, spectrometers, wavelength meters, etc. www.solar-laser.com



BioVitrum company has been operating in the Russian market of medical and laboratory equipment since 2001. Currently, company is a representative of the world's leading manufacturers of diagnostic equipment and consumables. To create and introduce the best quality and technology products, services, and solutions that help physicians, laboratory technicians, and health care administrators provide reliable diagnosis and effective disease treatment. <https://biovitrum.ru>



The Active Photonics company was founded in 2022 as an innovative project to create a modern production site for the development and production of scientific and technological equipment. In four years, we have become leaders in the field of Raman spectroscopy: our equipment provides competitive technical characteristics and meets high international standards. <https://active-photon.com>



Scientific and Production Enterprise "Nanostructured Glass Technology" LLC is open to cooperation with anyone who is interested in conducting research in the field of micro- and nanostructured glass. Various options for cooperation are possible, from the manufacture of custom-made products to joint research and subsequent commercialization of products. [NGT website](http://ngt-nt.ru)



ИИЖЕКТ
РОСАТОМ

INSCIENCE
PHOTONICS TOOLS • LASERS • OPTIC TABLES

Scientific and Production Enterprise "Inject" LLC

is one of the leading Russian enterprises that conducts research and development of critical microelectronic laser technologies and mass-produces high—tech products of world technical level - semiconductor lasers, superluminescent diodes, photodiodes, ultra-bright light-emitting diodes of red and blue glow, etc., as well as original optoelectronic devices based on based on them. The "Inject" company has a full technological cycle of manufacturing laser semiconductor emitters, starting with the manufacture of semiconductor substrates from epitaxial growth of layers of semiconductor structures to planar, assembly, measuring and testing lines, using domestic materials in production.

[НПП "ИИЖЕКТ"](#)

INSCIENCE is your reliable partner in the Russian scientific market. We specialise in supplying high-tech optical, optomechanical, laser and spectrometric equipment, combining advanced technologies with a deep understanding of the needs of the research community and an individual approach to each project. We actively develop cooperation with manufacturers who are interested in entering or expanding their presence in the Russian market. Thanks to our experience, established relationships with scientific institutions, and local knowledge, we can effectively promote and provide technical support for our partners' products. We offer a reliable partnership for entering the Russian market, undertaking the distribution, technical servicing and promotion of products among leading scientific institutions. We invite manufacturers of scientific equipment to collaborate with us to implement innovative solutions and support the progress of Russian science. <https://inscience.ru>

Schedule of SFM-25/CRW-25/BRICS-25

September 29, Monday

Saratov time UTC+4		
11.00-14.00	REGISTRATION OF THE PARTICIPANTS OF SFM-25/CRW-25/BRICS-25/ OPTICAL CHEMO- AND BIOSENSORS	Building 3, 1 st floor
13.30-14.00	Coffee break	Building 3, 1 st floor
14.00-18.00	INVITED LECTURE/ ORAL SESSION OPTICAL CHEMO- AND BIOSENSORS I Chairs: Irina Yu. Goryacheva, Tatiana Yu. Rusanova, Saratov State Univ., Russia	Building 1, Main Conf Hall

September 30, Tuesday

09.00-13.00	INVITED LECTURE/ ORAL SESSION OPTICAL CHEMO- AND BIOSENSORS II Chairs: Irina Yu. Goryacheva, Tatiana Yu. Rusanova, Saratov State Univ., Russia	Building 1, Main Conf Hall
9.30-13.00	REGISTRATION OF THE PARTICIPANTS OF SFM-25/CRW-25/BRICS-25/ OPTICAL CHEMO- AND BIOSENSORS	Building 3, 1 st floor
9.20-9.40	WORDS OF WELCOME TO THE PARTICIPANTS OF CRW-25 Valery V. Tuchin, Saratov State Univ., Russia; Dan Zhu, Huazhong Univ. of Science and Technology, China https://onlinessu.ktalk.ru/v4p1rves4d6o	Online
9.40-12.40	ON-LINE CHINESE-RUSSIAN INVITED LECTURE SESSION I Chairs: Valery V. Tuchin, Saratov State Univ., Russia; Dan Zhu, Huazhong Univ. of Science and Technology, China	Building 3, Room 8 Online
13.50-18.30	PLENARY SESSION I Chairs: Valery V. Tuchin, Saratov State Univ.; Alexander V. Priezzhev, Lomonosov Moscow State Univ., Russia; Dan Zhu, Huazhong Univ. of Science and Technology, China https://onlinessu.ktalk.ru/v4p1rves4d6o	Building 3, Big Physical Hall/Onlin e
13.50-14.00	WORDS OF WELCOME TO THE PARTICIPANTS OF SFM-25 / CRW-25/BRICS-25 Valery V. Tuchin, Saratov State Univ.	
14.00-14.40	TISSUE OPTICAL CLEARING FOR IMAGING BRAIN Dan Zhu, Huazhong University of Science and Technology, China	

14.40-15.20	IN VIVO OPTICAL MICROSCOPY AND ITS BIOMEDICAL APPLICATIONS Ling Fu , Hainan University, China		
15.20-16.00	LOOKING BACK AT 35 YEARS OF SINGLE-MOLECULE OPTICS Michel Orrit , Leiden University, Netherlands		
16.00-16.30	Coffee break		<i>Building 3, 2nd floor</i>
16.30-17.10	LUMINESCENCE LIFETIME IMAGING: FROM FUNDAMENTALS TO APPLICATIONS AND CLINICAL RELEVANCE Vladislav Shcheslavskiy , Institute of Experimental Oncology and Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, Russia, Becker&Hickl GmbH, Berlin, Germany		<i>Building 3, Big Physical Hall/Online</i>
17.10-17.50	SEEING LIFE IN A NEW LIGHT: FROM SIMPLE CLASSICAL PHYSICS TO QUANTUM-ENHANCED IMAGING , Vladislav V. Yakovlev , TAMU, USA	9.10-9.50 Texas time	
17.50-18.30	PHOTOACOUSTIC, LIGHT-SPEED, AND QUANTUM IMAGING Lihong V. Wang , Caltech, USA	6.50-7.30 California time	
18.30-18.50	SPONSOR SESSION I https://onlinessu.ktalk.ru/v4p1rves4d6o		
18.30-18.50	MODERN INSTRUMENTS AND METHODS FOR NON-DESTRUCTIVE SURFACE INSPECTION AND LOCAL CHEMICAL ANALYSIS USING SCANNING PROB MICROSCOPY AND OPTICAL SPECTROSCOPY Leonid R. Yusupov , LLC "ACTIVE PHOTONICS", Moscow, Zelenograd, Russia		
19.00-22.00	WELCOME PARTY		<i>Building 11</i>
October 1, Wednesday			
10.00-12.00	SFM PLENARY SESSION II Chairs: Valery V. Tuchin , Saratov State Univ.; Vladislav Shcheslavskiy , Institute of Experimental Oncology and Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, Russia, Becker&Hickl GmbH, Berlin, Germany https://onlinessu.ktalk.ru/v4p1rves4d6o		<i>Building 10,</i>
10.00-10.40	PHOTONICS WORKS TOGETHER WITH NANO- AND MICROSTRUCTURED MATERIALS FOR BIOMEDICAL APPLICATIONS Dmitry A. Gorin , Skolkovo Institute of Science and Technology, Skoltech, Moscow, Russia		
10.40-11.20	PHOTOTHERMAL SPECTROSCOPY IN ANALYTICAL AND APPLIED CHEMISTRY Mikhail A. Proskurnin , Lomonosov Moscow State University, Russia		
11.20-12.00	A NEW PARADIGM IN QUANTUM BIOPHOTONICS: PRESERVING ORBITAL ANGULAR MOMENTUM IN SCATTERING TISSUES Igor V. Meglinski , Aston University, UK		

12.00-13.00	SPONSOR SESSION II https://onlinessu.ktalk.ru/v4p1rves4d6o			Main Hall
12.00-12.20	EXPANDING THE POSSIBILITIES OF CONFOCAL MICROSCOPY: CRESTOPTICS EXPERIENCE" Igor I. Kireev , A.N. Belozersky Research Institute of Physicochemical Biology and LLC "BioVitrum", Moscow, St. Petersburg, Russia			
12.20-12.40	LASER SYSTEMS AND ANALYTICAL EQUIPMENT FOR SCIENTIFIC RESEARCH Eugene Belousov , "SOLAR LS" ZAO, Minsk, Belarus			
12.40-13.00	ANALYSIS SYSTEMS IN BIOPHOTONICS USING THE EXAMPLE OF REAL RESEARCH Anton Kiian , LLC INSCIENCE SOLUTIONS, St.Petersburg, Russia			
13.00-14.00	LUNCH			
14.00-19.00	INVITED LECTURE/ORAL SESSION NANOBIPHOTONICS I Chair: Nikolai G. Khlebtsov , IBPPM RAS, Saratov State Univ., Russia	<i>Building 9, Conf. Hall</i>	INVITED LECTURE/ ORAL SESSION MACHINE LEARNING I Chairs: Igor K. Lednev , Univ. at Albany, USA, Yury V.Kistenev , Tomsk State Univ., Russian Federation	<i>Online</i>
10.00-16.00	ON-LINE / ORAL SESSION LOW-DIMENSIONAL STRUCTURES I Chair: Olga Glukhova , Saratov State Univ., Russia	<i>Building 8, Room 318</i>	INVITED LECTURE/ORAL SESSION ROUND TABLE OF HIGH TECHNOLOGIES COMMERCIALIZATION Chairs: Daniil Bratashov, Andrey Rytik , Saratov State Univ., Russia	<i>Building 6, Room 204</i>
16.30-18.20	ON-LINE INVITED LECTURE/ORAL SESSION ENDOGENOUS BIOPHOTONICS Chairs: Ilya V. Volodyaev , Moscow State Univ., European Medical Center, Elena V. Naumova , Rzhannov Inst. of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Russia		ON-LINE INVITED LECTURE/ORAL SESSION QUANTUM SCIENCE AND TECHNOLOGIES Chairs: Aleksey K. Fedorov, and Evgeniy O. Kiktenko , Russian Quantum Center, Russia; National University of Science and Technology "MISIS" (Russia)	<i>Online</i>
14.00-16.00	INVITED LECTURE/ORAL/ON-LINE SESSION BIOPHYSICS I / INTERNET BIOPHOTONICS I / BRICS WORKSHOP I Chair: Alexander V. Priezzhev, Andrei E. Lugovtsov , M.V. Lomonosov Moscow State University, Russia https://onlinessu.ktalk.ru/v4p1rves4d6o			Building 10, Main Hall
14.00-19.00	ROUND-TABLE DISCUSSION EDUCATION Chair: Boris A. Medvedev , Saratov State Univ., Russia			<i>Scientific Library Conf. Hall</i>
14.00-19.30	INVITED LECTURE/ORAL/ON-LINE SESSION LASER PHYSICS AND PHOTONICS Chair: Vladimir L. Derbov , Saratov State Univ., Russia	<i>Building 10, Hall 503</i>	INVITED LECTURE/ ORAL SESSION MACHINE LEARNING II Chairs: Igor K. Lednev , Univ. at Albany, USA, Yury V.Kistenev , Tomsk State Univ., Russian Federation	<i>Online</i>

14.00-15.30	POSTER SESSION OPTICAL CHEMO- AND BIOSENSORS Chairs: Irina Yu. Goryacheva, Tatiana Yu. Rusanova, Saratov State Univ., Russia	<i>Building 1, Main Conf Hall</i>
15.30-18.00	INVITED LECTURE/ORAL ON-LINE SESSION OPTICAL CHEMO- AND BIOSENSORS III Chairs: Irina Yu. Goryacheva, Tatiana Yu. Rusanova, Saratov State Univ., Russia	<i>Building 1, Main Conf Hall</i>
16.00-16.30	Coffee break	<i>Building 10, 2nd floor</i>
16.30-19.00	INVITED LECTURE/ORAL/ON-LINE SESSION BIOPHYSICS II / INTERNET BIOPHOTONICS II/BRICS WORKSHOP II Chair: Elina Genina, Saratov State Univ., Russia https://onlinessu.ktalk.ru/v4p1rves4d6o	<i>Building 10, Main Hall</i>
18.00-19.00	ON-LINE ROUND TABLE DICUSSION ENDOGENOUS BIOPHOTONICS Chairs: Ilya V. Volodyaev, Moscow State Univ., European Medical Center, Elena V. Naumova, Rzhannov Inst. of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Russia https://us06web.zoom.us/j/89624952112?pwd=taAbN5zl5gciDrmhX1GiQ4Aisd2wmx.1	<i>Online</i>
15.00-18.30	ON-LINE INVITED LECTURE /ORAL SESSION SPECTROSCOPY AND MOLECULAR MODELING I Chair: Lev M. Babkov, Saratov State Univ., Russia	<i>Building 8, Room 216</i>
19.00-19.30	Coffee break	<i>In Boat trip</i>
20.00-23.00	EVENING BOAT TRIP - THE LIGHTS OF SARATOV	
October 2, Thursday		
9.00-13.00	INVITED LECTURE/ ORAL SESSIONS BIOPHYSICS III/ BRICS WORKSHOP III Chairs: Valery V. Tuchin, Polina A. Timoshina, Saratov State Univ., Russia, Li Dongyu, Huazhong Univ. of Science and Technology, Wuhan, China https://onlinessu.ktalk.ru/v4p1rves4d6o	<i>Building 10, Main Hall</i>
9.00-20.00	INVITED LECTURE/ ORAL SESSION OPTICAL CHEMO- AND BIOSENSORS IV Chairs: Irina Yu. Goryacheva, Tatiana Yu. Rusanova, Saratov State Univ., Russia	<i>Building 1, Bottom audience/ Rooms 13, 21,29,40,43</i>

12.00-17.30	INVITED LECTURE/ORAL SESSION NANOBIPHOTONICS II Chair: Nikolai G. Khlebtsov , IBPPM RAS, Saratov State Univ., Russia			<i>Building 9, Conf. Hall</i>
10.00-18.00	ON-LINE INVITED LECTURE/ORAL SESSION QUANTUM SCIENCE AND TECHNOLOGIES Chairs: Aleksey K. Fedorov , and Evgeniy O. Kiktenko , Russian Quantum Center, Russia; National University of Science and Technology "MISIS" (Russia)			<i>Online</i>
11.30-12.00	Coffee break			Building 10, 2nd floor
11.30-17.30	ON-LINE / ORAL SESSION LOW-DIMENSIONAL STRUCTURES / ORAL SESSION ELECTROMAGNETICS Chair: Olga Glukhova , Saratov State Univ., Russia / Michael V. Davidovich , Saratov State University, Russia			<i>Building 8, Room 318</i>
10.00-15.00	INVITED LECTURE/ORAL SESSIONS TERAHERTZ OPTICS & BIOPHOTONICS/ ADVANCED MATERIALS Chairs: Kirill I. Zaytsev , Arsenii A. Gavdush , Nikita V. Chernomyrdin , Prokhorov General Physics Institute of RAS, Bauman Moscow State Technical Univ., Russia			<i>Online</i>
10.00-18.10	ON-LINE INVITED LECTURE/ORAL SESSION ENDOGENOUS BIOPHOTONICS Chairs: Andrey V. Budagovsky , Michurin Federal Research Center, Vladimir L. Voeikov , Lomonosov Moscow State University, Faculty of Biology, Ilya V. Volodyaev , Lomonosov Moscow State University, European Medical Center, Elena V. Naumova , Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Pushchino, Institute of Cell Biophysics RAS https://us06web.zoom.us/j/89624952112?pwd=taAbN5zl5gciDrmhX1GiQ4Aisd2wmx.1			<i>Online</i>
13.00-14.00	LUNCH			
14.00-15.00	PUBLIC LECTURE SESSION MODERN OPTICS Chair: Georgy V. Simonenko , Saratov State Univ.			<i>Building 3, Big Physical Hall</i>
14.00-19.00	ROUND-TABLE DISCUSSION EDUCATION Chair: Boris A. Medvedev , Saratov State Univ., Russia			<i>Scientific Library Conf. Hall</i>
15.00-18.00	ON-LINE INVITED LECTURE /ORAL SESSION SPECTROSCOPY AND MOLECULAR MODELING I Chair: Lev M. Babkov , Saratov State Univ., Russia	<i>Building 8, Room 216</i>	INVITED LECTURE/ ORAL SESSIONS BIOPHYSICS IV/ BRICS WORKSHOP IV Chairs: Igor Fufurin , Igor Golyak , Bauman Moscow State Technical Univ., Russia https://onlinessu.ktalk.ru/v4p1rves4d6o	Building 10, Main Hall

15.00-18.00	INVITED LECTURE/ORAL SESSIONS TERAHERTZ OPTICS & BIOPHOTONICS/ ADVANCED MATERIALS Chairs: Kirill I. Zaytsev, Arsenii A. Gavdush, Nikita V. Chernomyrdin, Prokhorov General Physics Institute of RAS, Bauman Moscow State Technical Univ., Russia	Online
14.00-16.00	ORAL SESSION NONLINEAR DYNAMICS Chairs: Galina I. Strelkova, Andrei V. Slepnev, Saratov State Univ., Russia	Building 3, Room 38
18.10-20.00	ROUND-TABLE ENDOGENOUS BIOPHOTONICS Chairs: Ilya V. Volodyaev, Moscow State Univ., European Medical Center, Elena V. Naumova, Rzhhanov Inst. of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Russia https://us06web.zoom.us/j/89624952112?pwd=taAbN5zl5gciDrmhX1GiQ4Aisd2wmx.1	Online
18.00-18.30	Coffee break	Building 3, 2nd floor
18.15-20.30	JOINT POSTER/INTERNET SESSION Chairs: Ivan V. Fedosov, Daria K. Tuchina, Saratov State Univ., Russia Moderators: Ivan V. Fedosov, Michael M. Slepchenkov, Alexander I. Dubrovsky, Saratov State Univ., Russia	Building 3
October 3, Friday		
9.30-12.30	INVITED LECTURE/ ORAL SESSIONS BIOPHYSICS V Chairs: Valery V. Tuchin, Elina Genina, Saratov State Univ., Russia https://onlinessu.ktalk.ru/v4p1rves4d6o	Building 3, Big Physical Hall
10.00-13.00	INVITED LECTURE/ORAL SESSIONS TERAHERTZ OPTICS & BIOPHOTONICS/ ADVANCED MATERIALS Chair: Kirill I. Zaytsev, Arsenii A. Gavdush, Nikita V. Chernomyrdin, Prokhorov General Physics Institute of RAS, Bauman Moscow State Technical Univ., Russia	Online
10.00-16.00	PRACTICAL WORKSHOP IN THE FRAME OF ENDOGENOUS BIOPHOTONICS Chairs: Andrey V. Budagovsky, Michurinsk State Agrarian University and Michurin Federal Scientific Center, Michurinsk, Tambov Region, Russia, Yury A. Nikolaev, The Federal Research Centre “Fundamentals of Biotechnology” of the Russian Academy of Sciences, Moscow, Russia	Pushchino, Institute of Cell Biophysics RAS
14.00-18.00	OUTDOOR ROUND-TABLE DISCUSSIONS AND THE CONCLUSION OF SFM-25	Open Air Meeting



Chinese-Russian Workshop on Biophotonics and Biomedical Optics-2025

Chairs: **Dan Zhu**, Ph.D, Professor, SPIE/OPTICA Fellow, Deputy Director of Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China

Valery V. Tuchin, Corr.-member of the RAS, Doc. of Sci., Professor, SPIE/OPTICA Fellow, Head of Optics and Biophotonics Department and Science Medical Center, Saratov State University; Head of Laboratory of Laser Diagnostics of Technical and Living Systems, Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the Russian Academy of Sciences"; Supervisor of Lab. of Biophotonics, Tomsk State University, Tomsk, Russia

Secretaries: **Tingting Yu**, Ph.D, Associate Professor, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China

Polina A. Timoshina, Ph.D, Associate Professor, Optics and Biophotonics Department, Saratov State University, Saratov, Russia

Saratov time/China time

September 30, Tuesday

ON-LINE INVITED/ORAL LECTURES

Conference Hall 8, Building 3

Link to connect in Kontur Talk:

<https://onlinessu.ktalk.ru/v4p1rves4d6o>



Chairs: **Valery V. Tuchin**, Saratov State University, Russia; **Dan Zhu**, Huazhong University of Science and Technology, China

9:20-9:30/13:20-13:30

Welcome speech from the chairs of the Chinese-Russian Workshop on Biophotonics and Biomedical Optics-2025

Dan Zhu, Huazhong University of Science and Technology, Wuhan, China

Valery V. Tuchin, Saratov State University, Russia

9:30-9:50/13:30-13:50

Internet Invited

3D surface laser speckle imaging of blood flow
Pengcheng LI, School of Biomedical Engineering, Hainan University, China

9:50-10:10/13:50-14:10

Internet Invited

Optical assessment of blood microrheology and microcirculation alterations in the cardiovascular system at age-associated diseases

Alexander V. Priezzhev¹, Danila A. Umerenkov¹, Alexei V. Muravyov², Irina A. Tikhomirova², Andrey E. Lugovtsov¹, Larisa I. Dyachuk³, Yuri I. Gurfinkel²

¹Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia¹, Ushinsky Yaroslavl State Pedagogical University, Yaroslavl, Russia,
³Medical Scientific and Educational Institute, Lomonosov Moscow State University, Moscow, Russia

10:10-10:30/14:10-14:30

Internet Invited

Dual-wavelength laser feedback system for the treatment of vascular skin diseases

Viktor Chuchin^{1,2}, Andrey Belikov¹ ¹Institute of Laser Technologies, ITMO University, Russia
²"NPP VOLO" LLC, Russia

10:30-10:50/14:30-14:50

Internet Invited

High-throughput live-cell super-resolution imaging

Haoyu LI, School of Instrumentation Science and Engineering, Harbin Institute of Technology, Harbin, China

10:50-11:10/14:50-15:10

Internet Invited

Ultrafast filtered back-projection for photoacoustic computed tomography

Chao TIAN, School of Engineering Science, University of Science and Technology of China, Hefei, China

11:10-11:30/15:10-15:30

Internet Invited

Effect of optical clearing agents on blood microrheology

Andrei E. Lugovtsov¹, Pavel A. Moldon¹, Matvey K. Maksimov¹, Jiachi Hong², Yuri I. Gurfinkel¹, Pengcheng Li², Alexander V. Priezzhev¹; ¹ M.V. Lomonosov Moscow State University; ²Huazhong University of Science and Technology, Wuhan, China

11:30-11:50/15:30-15:50

Internet Invited

Structured illuminations in biomedical microscopy with diffractive optics

Jingjing Zhao, Institute of Medical Equipment Science and Engineering, Huazhong University of Science and Technology, Wuhan, China

11:50-12:10/15:50-16:10

Internet Invited

Fast volumetric imaging of two-photon microscopy

Wei Zheng, Shenzhen Institutes of Advanced Technology Chinese Academy of Sciences, Shenzhen, China

12:10-12:30/16:10-16:30

Internet Invited

Early detection of Alzheimer's disease based on plasma markers

Haiming LUO, School of Biomedical Engineering, Hainan University, China

12:30-12:50/16:30-16:50

Internet Invited

Diffuse reflectance spectroscopy for collagen quantification in tumors extracellular matrix

Ryabova A.V.^{1,2}, Romanishkin I.D.¹, Vasilieva D.2, Savelieva T.A.^{1,2}, Pominova D.V.^{1,2} ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ²Institute of Engineering Physics for Biomedicine, National Research Nuclear University MEPhI, Moscow, Russia

12:50-13:05/16:50-17:05

Internet oral report

Wearable optical devices for investigation of the reaction of cosmonauts microcirculatory-issue systems to the effects of simulated spaceflight factors

Loktionova Yu.I.¹, Kireev K.S.^{1,2}, Zharkikh E.V.¹, Lutsevich D.N.², Yanusnin V.S.¹, Sidorov V.V.³, Dunaev A.V.¹; ¹ Orel State University named after I.S. Turgenev, Orel, Russia; ² State Organization "Gagarin Research and Test Cosmonaut Training Center", Zvyozdny gorodok, Russia; ³ SPE "LAZMA" Ltd., Moscow, Russia

13:05-13:20/17:05-17:20

Internet oral report

Monitoring refractive index kinetics of optical clearing agents in synthetic opal phantoms

Arsenii P. Fashchevskii¹, Yuriy I. Surkov¹, Isabella A. Serebryakova¹, Arsen K. Zotov², Anna S. Kycheryavenko³, Gleb M. Katyba³, Valery V. Tuchin^{1,4,5,1} ¹Saratov State University, Saratov, Russia, ²Prokhorov General Physics Institute RAS, Moscow, Russia, ³Osipyan Institute of Solid State Physics RAS, Chernogolovka, Russia, ⁴Tomsk State University, Tomsk, Russia, ⁵Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the RAS," Saratov, Russia

Conference on Optical Technologies in Biophysics & Medicine XXVII

Chairs: **Valery V. Tuchin**, Saratov State University, Institute of Precision Mechanics and Control of FRC “Saratov Scientific Centre of the RAS”, Tomsk State University, **Polina A. Timoshina**, **Elina A. Genina**, Saratov State University; Tomsk State University (Russia)

Secretary: **Isabella A. Serebryakova**, Saratov State University (Russia)

International Program Committee: **Heidi Abrahamse**, University of Johannesburg (RSA); **Mohammad Ali Ansari**, Shahid Beheshti University, Tehran (Iran); **Vanderlei Salvador Bagnato**, University of São Paulo (Brazil); **Walter Blondel**, University of Lorraine (France); **Ivan A. Bratchenko**, Samara University (Russia); **Wei Chen**, University of Central Oklahoma (USA); **Santhosh Chidangil**, Manipal Academy of Higher Education (India); **Kishan Dholakia**, University of St. Andrews (UK); **Maria Farsari**, FORTH-IESL (Greece); **Paul M.W. French**, Imperial College of Science, Technology and Medicine (UK); **Elina A. Genina**, Saratov State University (Russia); **Mikhail Yu. Kirillin**, Institute of Applied Physics RAS, Nizhny Novgorod (Russia); **Yury V. Kistenev**, Tomsk State University (Russia); **Kirill V. Larin**, University of Houston (USA); **Ekaterina N. Lazareva**, Saratov State University (Russia); **Qingming Luo**, Hainan University (China); **Luís M. Oliveira**, Polytechnic of Porto – School of Engineering (Porto, Portugal); **Roberto Pini**, National Research Council of Italy (CNR) (Italy); **Juergen Popp**, Inst. of Photonic Technology, Jena (Germany); **Alexander V. Priezhev**, Moscow State University (Russia); **Vladislav Shcheslavskiy**, Privolzhsky Research Medical University, Nizhny Novgorod (Russia), Becker&Hickl GmbH (Germany); **Evgeny A. Shirshin**, Research and Educational School “Photonic and Quantum Technologies. Digital Medicine,” Lomonosov Moscow State University (Russia); **Lihong Wang**, Caltech (USA); **Ruikang K. Wang**, University of Washington (USA); **Vladimir Yu. Zaitsev**, FRC A.V. Gaponov-Grekhov Institute of Applied Physics of the RAS, Nizhny Novgorod (Russia); **Valery P. Zakharov**, Samara State University (Russia); **Zeev Zalevsky**, Bar Ilan University, Tel Aviv (Israel).

BRICS Workshop on Biophotonics

Chairs: **Heidi Abrahamse**, University of Johannesburg (RSA); **Vanderlei Salvador Bagnato**, University of São Paulo (Brazil); **Santhosh Chidangil**, Manipal Academy of Higher Education (India); **Qingming Luo**, Hainan University (China); **Valery V. Tuchin**, Saratov State University, Institute of Precision Mechanics and Control of FRC “Saratov Scientific Centre of the RAS”, Tomsk State University (Russia)

Secretaries: **Li Dongyu**, MOE Key Laboratory for Biomedical Photonics, Wuhan National Laboratory for Optoelectronics - Advanced Biomedical Imaging Facility, Huazhong University of Science and Technology, School of Optical Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei (China); **Natalia M. Inada**, University of São Paulo, Brazil; **Jijo Lukose**, MAHE, Manipal, India; **Sathish Kumar**, University of Johannesburg, RSA; **Polina A. Timoshina**, Saratov State University; Tomsk State University (Russia).

International Program Committee: **Dan Zhu**, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan (China); **Elina A. Genina** (SSU, Russia); **Cristina Kurachi** (Univ. of São Paulo, Brazil); **Nirmalya Gosh** (Indian Inst. of Sci., Edu. and Research, Kolkata, India); and **Michael Hamblin** (Univ. of Johannesburg, RSA); **Daria K. Tuchina** (SSU, Russia); **Dmitry A. Gorin** (Skoltech, Russia); **Qian Liu** (Hainan University, China); **Qingyu Lin** (Sichuan University, China); **Sebastião Pratavieira**, **Fernanda Alves**, **Lilian Moriyama** (University of São Paulo, Brazil); **Nirmal Mazunder**, **Jijo Lukose** (MAHE, Manipal, India).

October 1, Wednesday

INVITED LECTURE/ORAL/ ON-LINE SESSION BIOPHYSICS I

(Building 10, Main Hall)

Link to connect in Kontur Talk:

<https://onlinessu.ktalk.ru/v4p1rves4d6o>



Chairs: Alexander V. Priezzhev, Andrei E. Lugovtsov, M.V. Lomonosov Moscow State University, Russia

Moderator: Isabella Serebryakova, Saratov State University, Russia

Saratov time/Moscow time/

14:00-14:20/13:00-13:20

Invited

Optical methods of exhaled air analysis for the diagnosis of human diseases

Igor Fufurin¹, Andrey Morozov¹, Alexander Apolonski², ¹Bauman Moscow State Technical University, ²Institute of Automation and Electrometry of the Siberian Branch of the Russian Academy of Sciences, Russia

14:20-14:40/13:20-13:40

Invited

Surgery guidance with biophotonics and its clinical translation

Evgeny Shirshin, Lomonosov Moscow State University, Russia

14:40-15:00/13:40-14:00

Invited

Label-free optical imaging of tissue metabolism
Viktor Dremin, Orel State University, Orel, Russia;
Aston University, Birmingham, UK

15:00-15:20/14:00-14:20

Invited

Monitoring Microcirculatory Changes During Photodynamic Therapy

Anastasia Guryleva¹, Alexander S. Machikhin¹, Tatiana G. Grishacheva², Nikolay N. Petrishchev²
¹Scientific and Technological Centre of Unique Instrumentation of RAS, Moscow, Russia ²Pavlov First Saint Petersburg State Medical University, Saint Petersburg, Russia

15:20-15:40/14:20-14:40

Invited

Hybrid nanomaterials for optical heating and temperature monitoring in biological objects

Elena Gerasimova, Mikhail Zyuzin, ITMO University, St. Petersburg, Russia

15:40-16:00/14:40-15:00

Invited

Refining Interpretability Accuracy in Machine Learning Models for Infrared Spectroscopy

Igor Golyak, A.S. Safayan, Bauman Moscow State Technical University, Moscow, Russia

16:00-16:30/15:00-15:30

Coffee break

INVITED LECTURE/ORAL/ ON-LINE SESSION BIOPHYSICS II/

INTERNET BIOPHOTONICS/ BRICS I

(Building 10, Main Hall)

Link to connect in Kontur Talk:

<https://onlinessu.ktalk.ru/v4p1rves4d6o>



Chair: Elina Genina, Saratov State University,
Moderator: Isabella Serebryakova, Saratov State University, Russia

16:30-16:50/15:30-15:50

Invited

Metabolic imaging of patients' lymphocytes for personalized assessment of immunotherapy efficiency

Diana V Yuzhakova¹, Daria A. Sachkova^{1,2}, Anna V. Izosimova¹, Konstantin S. Yashin^{1,3}, Varvara V. Dudenkova¹, Vadim V. Elagin¹, Vladislav I Shcheslavskiy^{1,4}, Irina S. Shumskaya⁵, Sergey V. Gamayunov⁵, Marina V. Shirmanova^{1,1} ¹Institute of Experimental Oncology and Biomedical Technologies, Privolzhsky Research Medical University; ²Institute of Biology and Biomedicine, Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia; ³Department of Neurosurgery, Privolzhsky Research Medical University; ⁴R&D Department, Becker&Hickl GmbH, Berlin, Germany; ⁵Nizhny Novgorod Regional Oncology Dispensary, Nizhny Novgorod, Russia

16:50-17:10/15:50-16:10/18:20-18:40 (Indian time)

BRICS

Invited

Storage effect on human blood components probed by Raman tweezers spectroscopy

Santhosh Chidangil, Centre of Excellence for Biophotonics, Manipal Institute of Applied Physics, Manipal Academy of Higher Education, Manipal, India

17:10-17.30/16:10-16:30

BRICS

Invited

Optical techniques to quantitatively assess changes in blood supply during surgery

Alexei Kamshilin, Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia

17:30-17.50/16:30-16:50

Invited

IN VIVO measurement strategy for NIR noninvasive glucose detection

Han Tongshuai, School of Precision Instrument and Optoelectronics Engineering, Tianjin University, China

17:50-18.10/16:50-17:10/19:20-19:40 (Indian time)

BRICS

Online Invited

Advanced in multimodal nonlinear optical microscopy for biomedical research advanced in multimodal nonlinear optical microscopy for biomedical research

Nirmal Mazumder, Department of Biophysics, Manipal School of Life Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, India

18:10-18.30/16:50-17:10/19:40-20:00 (Indian time)

BRICS

Online Invited

Polarized optical pathways towards next generation optical techniques for biomedical imaging and diagnosis

Nirmalya Ghosh, Indian Institute of Science Education and Research Kolkata, India

18:30-18.40/16:50-17:10/11:30-11:45 (Brazilian time)

BRICS

Online Oral

SVM-Assisted FTIR Spectroscopic Analysis of Ampicillin and Amoxicillin under Degradation Conditions

Vinicius Anjos¹, Daniella Pereira¹, Rafael De Góes², Denise Zzell¹; ¹University of São Paulo, São Paulo, Brazil; Federal University of Technology - Paraná, Curitiba, Brazil.

18:40-18.50/17:40-17:50/20:10-20:20 (Indian time)

BRICS

Online Oral

Enhancing endometriosis classification: feature selection strategy with Fourier transform infrared spectroscopy and high-performance liquid chromatography of blood plasma data

Sanoop Pavithran M¹, Rekha Upadhy², Anjali M³, Santhosh Chidangil¹, ¹Manipal Institute of Applied Physics, Manipal Academy of Higher Education, Manipal, Karnataka, India, ²Department of Obstetrics & Gynaecology, Kasturba medical college-Manipal, Manipal Academy of Higher Education, Karnataka, India ³Department of Reproductive Medicine, Kasturba medical college-Manipal, Manipal Academy of Higher Education, Karnataka, India

October 2, Thursday

INVITED LECTURE/ ORAL REPORT SESSIONS BIOPHYSICS III/ **BRICS II**

(Building 10, Main Hall)

Link to connect in Kontur Talk:

<https://onlinessu.ktalk.ru/v4p1rves4d6o>



Chairs: Valery V. Tuchin, Saratov State Univ., Russia; Li Dongyu, Huazhong Univ. of Science and Technology, Wuhan, China

Moderator: Isabella Serebryakova, Saratov State University, Russia

09:00-09:20/08:00-08:20/13:00-13:20

BRICS

Invited

Impact of diabetes mellitus duration on urokinase thrombolytic efficacy in ischemic stroke

Li Dongyu, MOE Key Laboratory for Biomedical Photonics, Wuhan National Laboratory for Optoelectronics - Advanced Biomedical Imaging Facility, Huazhong University of Science and Technology, School of Optical Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei, China

09:20-09:40/08:20-08:40/13:20-13:40(Chinese time)

BRICS

Online Invited

Fast segmentation and multiplexing imaging of organelles in live cells

Li Meiqi, School of Life Science, Peking University, China

09:40-10:00/08:40-09:00/13:40-14:00(Chinese time)

BRICS

Online Invited

High axial resolution and imaging speeds three-dimensional live cell imaging

Huang Xiaoshuai, Institute of Advanced Clinical Medicine, Peking University, Beijing, China

10:00-10:20/09:00-09:20/14:00-14:20 (Chinese time)

BRICS

Online Invited

Super-resolution imaging cross scales

Weisong Zhao, Harbin Institute of Technology, China

10:20-10:40/09:20-09:40/11:50-12:10 (Indian time)

BRICS

Online Invited

Nano-Biophotonics for the management of Alzheimer's Disease

Jayasree R S, Sree Chitra Thirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala, India

10:40-11:00/09:40-10:00

Invited

Ultrawideband high density polymer-based spherical array for real-time functional optoacoustic micro-angiography

Pavel V. Subochev, Institute of Applied Physics RAS, Nizhny Novgorod, Russia

11:00-11:15/10:00-10:15

Oral Report

PVDF-TrFE ring-shaped piezopolymer detector for optical-resolution optoacoustic microscopy with extended imaging depth and enhanced sensitivity

Alexey A. Kurnikov¹, Maxim B. Prudnikov¹, Daria A. Voitovich¹, Anna M. Glyavina¹, Anna G. Orlova¹, Marina A. Sirotkina², Wei Liu³, Daniel Razansky^{4,5}, Pavel V. Subochev^{1,2}; ¹Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia; ²Institute of Experimental Oncology and Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, Russia; ³Optical Imaging Laboratory, Harbin Institute of Technology, China; ⁴Institute for Biomedical Engineering and Institute of Pharmacology and Toxicology, Faculty of Medicine, UZH Zurich, Switzerland; ⁵Institute for Biomedical Engineering, Department of Information Technology and Electrical Engineering, ETH Zurich, Switzerland

11:15-11:30/10:15-10:30

Oral Report

Local laser fluence estimation model in optical resolution optoacoustic microscopy

Daria Voitovich^{1,2}, Alexey Kurnikov¹, Anna Orlova^{1,2}, Liubov Shimolina², Anastasia Komarova², Marina Shirmanova², Yu-Hang Liu^{3,4}, Daniel Razansky^{3,4} Pavel Subochev^{1,2} ¹Institute of Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia, ²Institute of Experimental Oncology and Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, Russia, ³ Institute for Biomedical Engineering and Institute of Pharmacology and Toxicology, Faculty of Medicine, Zurich, Switzerland, ⁴Institute for Biomedical Engineering, Department of Information Technology and Electrical Engineering, Zurich, Switzerland

11.30-12.00
Coffee break

12:00-12:15/11:00-11:15

Oral Report

In Vivo Optoacoustic Angiography of Normal and Diseased Superficial Tissues

Anna G. Orlova¹, Ksinia G. Akhmedzhanova^{1,2}, Aleksey A. Kurnikov¹, Anna M. Glyavina^{1,2}, Dmitry A. Khochenkov³, Yulia A. Khochenkova³, Anna V. Maslennikova^{1,2,4}, Svetlana V. Nemirova^{1,4}, Ilya V. Turchin¹, Pavel V. Subochev¹; ¹A.V. Gaponov-Grekhov Institute of Applied Physics of RAS, Russia; ²N.I. Lobachevsky State University of Nizhny Novgorod, Russia; ³N.N. Blokhin National Medical Research Center of Oncology, Russia; ⁴Privolzhsky Research Medical University, Russia

12:15-12:30/11:15-11:30

Oral Report

The prospects of optical coherence tomography angiography for monitoring microcirculatory disorders in critically ill patients

Anton A. Plekhanov¹, Elena B. Kiseleva¹, Sergey V. Panfilov², Alexander A. Moiseev³, Natalia V. Zarechnova², Marina A. Sirotkina¹, Sergey V. Gamayunov², Grigory V. Gelikonov³, Evgeniy V. Grigoryev⁴, Natalia D. Gladkova¹; ¹Privolzhsky Research Medical University, Nizhny Novgorod, Russia; ²Nizhny Novgorod Regional Oncological Hospital, Nizhny Novgorod, Russia; ³A.V. Gaponov-Grekhov Institute of Applied Physics RAS, Nizhny Novgorod, Russia; ⁴Research Institute for Complex Issues of Cardiovascular Diseases, Kemerovo, Russia

INVITED LECTURE/ ORAL REPORT SESSIONS BIOPHYSICS IV/ **BRICS III**

12:30-12:45/11:30-11:45

Oral Report

Ex vivo autofluorescence analysis of gliomas and brain tissues of patients using macroscopic time-resolved fluorescence imaging

Daria A. Sachkova¹, Marina V. Shirmanova¹, Elena B. Kiseleva¹, Ludmila S. Kuhnina², Artem S. Grishin³, Ilya D. Shchechkin¹, Vladislav I. Shcheslavskiy¹, Konstantin S. Yashin² ¹Institute of Experimental Oncology and Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, Russia ²Department of Neurosurgery, Privolzhsky Research Medical University, Nizhny Novgorod, Russia ³Department of Pathology, Privolzhsky Research Medical University, Nizhny Novgorod, Russia

12:45-13:00/11:45-12:00

Oral Report

New Markers of Thermoregulation in the Human Body Assessed Using Imaging Photoplethysmography

Natalia P. Podolyan¹, Irina A. Mizeva², Anastasiia V. Sakovskaia³, Maria E. Vasilieva⁴, Oleg V. Mamontov⁵, Viktor A. Kashchenko⁴, Roman V. Romashko¹ and Aleksey A. Kamshilin¹; ¹Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia; ²Institute of Continuous Media Mechanics, Perm, Russia; ³Institute of Therapy and Instrumental Diagnostics, Pacific State Medical University, Vladivostok, Russia; ⁴North-Western District Scientific and Clinical Center Named After L.G. Sokolov, FMBA, Saint Petersburg, Russia; ⁵Pavlov First Saint Petersburg State Medical University, Saint Petersburg, Russia

13:00-13:15/12:00-12:15

Oral Report

Circular Polarization Filtering in Imaging Photoplethysmography to Reduce the Influence of Specular Reflections

M.A. Asalkhanova, N.P. Podolyan, V.V. Zaytsev, T.A. Efimov, R.V. Romashko, A.A. Kamshilin Institute of Automation and Control Processes FEB RAS, Vladivostok, Russia

(Building 10, Main Hall)

Link to connect in Kontur Talk:

<https://onlinesu.ktalk.ru/v4p1rves4d6o>



Chairs: Igor Fufurin, Igor Golyak, Bauman Moscow State Technical Univ., Russia
Moderator: Isabella Serebryakova, Saratov State University, Russia

15:00-15:20/14:00-14:20 (Abu Dhabi time 15:00-15:20)

BRICS

Online Invited

Light-based Smart Technologies: From Laser Surgery to Enhanced Biosensing

Azhar Zam^{1,2}, ¹Engineering Division, New York University Abu Dhabi, Abu Dhabi, UAE; ²NYU Tandon School of Engineering, New York, USA

15:20-15:40/14:20-14:40/13:20-13:40 (Munich time)

Online Invited

Clinical investigations using hyperspectral imaging

Ronald Sroka, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany

15:40-16:00/14:40-15:00

Invited

Multidisciplinary study of gene therapy-induced adipocyte reprogramming

Boychenko S.S.¹, Yunin M.A.¹, Elagin, V.V.², Muravyev G.S.¹, Dudenkova V.V.², Shcheslavskiy V.I.², **Egorov Alexander**¹, ¹Research Center for Translational Medicine, Sirius University of Science and Technology, Sirius, Russia, ²Laboratory of Optical Spectroscopy and Microscopy, Institute of Experimental Oncology and Biomedicine, Privolzhsky Research Medical University, Nizhny Novgorod, Russia

16:00-16.15/15:00-15:15

Oral Report

Laser-Based Infrared Spectroscopy of Human Breath for Non-Invasive Detection of Metabolic Disorders

Olga A. Nebritova, Andrey N. Morozov, Igor L. Fufurin, Bauman Moscow State Technical University, Moscow, Russia

16:15-16:30/15:15-15:30

Oral Report

Non-antibiotic bactericidal titanium surface via laser oxidation

Yulia Yu. Karlagina, Valery V. Khmelevsky, Nikita A. Afanasiev, Svetlana A. Ulasevich, Galina V. Romanova¹ and Vadim P. Veiko; ITMO University, Saint-Petersburg, Russia

16:30-16:45/15:30-15:45

Oral Report

Surface plasmon resonance on laser-modified titanium for optical sensors

Michael S. Kuritskij, Anna V. Tsibulnikova, Ivan I. Lyatun, Andrey Y. Zyubin, Alena A. Kostrina, Ilia G. Samusev; Immanuel Kant Baltic Federal University, Kaliningrad, Russia

16:45-17:00/15:45-16:00

Oral Report

Optical properties of polymer-dispersed liquid crystal films as basic elements of imitation measures for calibration of photoplethysmographic devices

Denis G. Lapitan, Andrey P. Tarasov, Lev S. Kapustin, Dmitry A. Rogatkin; Moscow Regional Research and Clinical Institute ("MONIKI"), Moscow, Russia

17:00-17:15/16:00-16:15

Oral Report

Infrared and visible range FLIM/PLIM system combined with Superconducting Single Photon Detector

V. Andreev^{1,2}, P. Morozov¹, G. Goltsman^{1,2}
¹Moscow Pedagogical State University, Moscow, Russia, ²National Research University Higher School of Economics, Moscow, Russia

17:15-17:30/16:15-16:30

Oral Report

Evaluation of Photoplethysmogram Responses to Occlusion and Local Thermal Tests in Diabetes Patients with Micro- and Macrovascular Dysfunction

Alexey A. Glazkov¹, Denis G. Lapitan¹, Xiaoman Xing^{2,3}, Ksenya A. Krasulina¹, Yulia A. Kovaleva¹, Roman N. Larkov¹, Sergey S. Zagarov¹, Dmitry A. Rogatkin¹
¹Moscow Regional Research and Clinical Institute ("MONIKI"), Moscow, Russia; ²School of Biomedical Engineering (Suzhou), Division of Life Sciences and Medicine, University of Science and Technology of China, Suzhou, China; ³Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences, Suzhou, China

17:30-17:40/16:30-16:40

BRICS

Online Oral

New Fluorescent Labels for Controlled Optical Activation of Platelets

Naumenko M.B.¹, Panfilov M.A.^{1,2}, Vorobyev A.Yu.^{1,2}, Moskalenksy A.E.¹
¹Novosibirsk State University, Novosibirsk, Russia; ²Vorozhtsov Institute of Organic Chemistry, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia

17:40-17:50/16:40-16:50

BRICS

Online Oral

Local infrared neural stimulation of non-anesthetized primate brain through a fiber-optic laser-brain interface

Alexey Harauzov¹, Boris Nyushkov², Igor Korel², Liubov Ivanova¹, Daria Podvigina¹, Yuri Shelepin¹; ¹Pavlov Institute of Physiology, Russian academy of sciences, Saint Petersburg, Russia; ²Novosibirsk State Technical University, Novosibirsk, Russia

17:50-18:00/16:50-17:05

Online Oral

Optical indication of the stages of collagen denaturation during local pulsed laser heating of the biological tissues

Natalia Y. Ignatieva¹, Olga L. Zakharkina², **Yulia K. Sedova**², Alexander P. Sviridov²
¹M. V. Lomonosov Moscow State University, Moscow, Russia ²Institute of Photon Technologies Kurchatov Complex of Crystallography and Photonics NRC "Kurchatov Institute", Troitsk, Moscow, Russia

18:00-18:10/17:00-17:10

Online Oral

Study of the effect of photodynamic therapy on the optical properties of mouse tumor models

Inessa V. Markova^{1,2}, Daria V. Pominova^{1,2}, Alexey S. Skobeltsin^{1,2}, Igor D. Romanishkin¹, Anastasia V. Ryabova^{1,2}; ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ²Institute of Engineering Physics for Biomedicine, National Research Nuclear University MEPhI, Moscow, Russia

18:10-18:20/17:10-17:20

Online Oral

Application of diffuse scattering spectroscopy for intraoperative assessment of blood supply to the gastric tissues

Anna A. Krivetskaya^{1,2}, Daniil M. Kustov¹, Vladimir V. Levkin³, Sergey S. Kharnas³, and Tatiana A. Savelieva^{1,2}
¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia ²Institute of Engineering Physics for Biomedicine, National Research Nuclear University MEPhI, Moscow, Russia ³Department of Faculty Surgery No. 1, I.M. Sechenov First Moscow State Medical University, Moscow, Russia

BRICS

Invited recorded

AI-based 3D Realtime Cardiac Magnetic Resonance Imaging and Its Novel Applications
Fumin GUO, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China

<https://disk.yandex.ru/d/P8zH-enfcsikMA>

BRICS

Invited recorded

Towards mesoscopic all-optical closed-loop neuroscience research in deep brain

Biqin Dong, College of Biomedical Engineering, Fudan University, China

BRICS

Invited recorded

High-throughput volumetric imaging of synaptic transmission and microcirculations in the brain

Wei Chen, Huazhong University of Science and Technology, China

<https://disk.yandex.ru/i/gxWqMsV1cAvJcA>

BRICS

Invited recorded

Fluorescent imaging of genomic DNA with high specificity in live cells

Shiqi Mao, School of Optical Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei, China, Department of Biomedical Engineering, College of Future Technology, Peking University, Beijing, China

<https://disk.yandex.ru/i/hCUR-stmldFv7w>

JOINT INTERNET/POSTER SESSION BIOPHYSICS (B)

(Building 3, 3rd floor Hall)

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

18:00-20:00

- 1B. Prevention and early diagnosis of diabetic skin complications using optical and biophotonic imaging in Niger** Adamou Soli Idrissa¹, Mahamane Sani M. Aminou^{1,4}, Moussa Issoufou Djibrillou^{1,2}, Mamane Barga Aboubacar^{1,4}, Salissou Laouali^{2,3}, Ali Ada⁵; ¹Radio-isotopes Institute, Abdou Moumouni University, Niamey, Niger; ²Faculty of Health Sciences, Abdou Moumouni University, Niamey, Niger; ³National Hospital of Niamey, Niamey, Niger; ⁴Reference General Hospital of Niamey, Niamey, Niger; ⁵Magori Polyclinic of Niamey, Niamey, Niger

- 2B. Investigation of the vascular bed of tumors under the combined effects of antiangiogenic and radiation therapy** A.M. Glyavina^{1,2}, D.A. Voytovich¹, A.A. Kurnikov¹, Y.A. Khochenkova³, D.A. Khochenkov³, A.V. Maslennikova^{1,2}, I.V. Turchin¹, P.V. Subochev¹, A.G. Orlova¹; ¹Federal Research Center A.V. Gaponov-Grekhov Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS), Nizhny Novgorod, Russia; ²Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia; ³National Medical Research Center of Oncology named after N.N. Blokhin, Moscow, Russia
- 3B. Detection of breast cancer metastatic lymph nodes by fluorescence lifetime macro-imaging** A.A. Plekhanov¹, M.V. Shirmanova¹, A. Gaier², V.V. Dudenkova¹, A.L. Potapov¹, A.Yu. Vorontsov³, E.A. Shirshin⁴, W. Becker⁵, R. Cicchi⁶, J.L. Lagarto⁷, V.V. Yakovlev⁸, S.V. Gamayunov³, V.I. Shcheslavskiy^{1,5}; ¹Privolzhsky Research Medical University, Nizhny Novgorod, Russia; ²École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; ³Nizhny Novgorod Regional Oncological Hospital, Nizhny Novgorod, Russia; ⁴M.V. Lomonosov Moscow State University, Moscow, Russia; ⁵Becker & Hickl GmbH, Berlin, Germany; ⁶National Institute of Optics (CNR-INO), Florence, Italy; ⁷Champalimaud Foundation, Biophotonics Platform, Lisbon, Portugal; ⁸Texas A&M University, College Station, Texas, USA
- 4B. Fiber-optic temperature sensor based on Fabry-Perot interferometer** M.A. Chesnokova, D.I. Nurmukhametov, R.S. Ponomarev; Laboratory of Integral Photonics, Perm State University, Russia
- 5B. Assessment of corneal burn severity by analyzing spatially-resolved maps of optical attenuation extracted from images of ophthalmic optical coherence tomography** Peter A. Chizhov¹, Alexander A. Sovetsky¹, Alexander L. Matveyev¹, Lev A. Matveev¹, Nadezhda A. Pozdeeva², Irina N. Grigoryeva², Maxim G. Ryabkov³, Vladimir Y. Zaitsev¹; ¹A.V. Gaponov-Grekhov Institute of Applied Physics, Nizhny Novgorod, Russia; ²S.N. Fyodorov Eye Microsurgery Federal State Institution, Cheboksary, Russia; ³Privolzhsky Research Medical University, Nizhny Novgorod, Russia

- 6B. Study of the interaction of optical clearing agents with tissue phantoms based on synthetic opals** A.P. Fashchevskii¹, Yu.I. Surkov¹, I.A. Serebryakova¹, A.K. Zotov², A.S. Kycheryavenko³, G.M. Katyba³, V.V. Tuchin^{1,4,5}; ¹Saratov State University, Saratov, Russia; ²Prokhorov General Physics Institute, Moscow, Russia; ³Osipyan Institute of Solid State Physics RAS, Chernogolovka, Russia; ⁴Tomsk State University, Tomsk, Russia; ⁵Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the RAS", Saratov, Russia
- 7B. Morphometric characterization of red blood cells in healthy and tumor-affected rats: toward quantitative markers of systemic pathology** Arsenii P. Fashchevskii¹, Irina Y. Yanina¹, Ekaterina N. Lazareva¹; ¹Saratov State University, Saratov, Russia
- 8B. Machine Learning–Driven Recognition of Basal Cell Carcinoma via Multimodal Ultrasound and Optical Imaging** Isabella A. Serebryakova¹, Yuri I. Surkov¹, Elina A. Genina¹, Yana K. Kuzinova³, Olga M. Konopatskova³, Valery V. Tuchin^{1,2,4}; ¹Saratov State University, Saratov, Russia; ²Tomsk State University, Tomsk, Russia; ³Saratov State Medical University, Saratov, Russia; ⁴FRC "Saratov Scientific Centre of the Russian Academy of Sciences", Saratov, Russia
- 9B. PCA-LSCT: Software-Implemented Laser Speckle Contrast Tomography** Yuriy I. Surkov¹, Isabella A. Serebryakova¹, Arseniy P. Fashchevskiy¹, Polina A. Timoshina¹, Elina A. Genina¹, Valery V. Tuchin¹; ¹Saratov State University, Saratov, Russia
- 10B. Optical Clearing of Biological Tissue Phantoms by Tartrazine Solutions** Vasillii M. Kovalenko, Roman V. Sheptitsky, Isabella A. Serebryakova, Yuriy I. Surkov, Elina A. Genina; Saratov State University, Saratov, Russia
- 11B. Diffusion coefficient measurements in ex vivo murine brain tissue via fluorescence recovery after photobleaching** A.I. Dubrovsky¹, A.V. Dmitrenko², I.V. Fedosov¹, O.V. Semyachkina-Glushkovskaya², S.B. Venig¹; ¹Institute of Physics, Saratov State University, Saratov, Russia; ²Department of Biology, Saratov State University, Saratov, Russia
- 12B. In vivo study of statistics of polarization laser speckle fields from human skin during immersion optical clearing with glucose solutions** Anton A. Kharchenko¹, Polina A. Timoshina^{1,2}, Valery V. Tuchin^{1,2,3}; ¹Saratov State University, Saratov, Russia; ²Tomsk State University, Tomsk, Russia; ³Institute of Precision Mechanics and Control, FRC "Saratov Scientific Center of the Russian Academy of Sciences", Saratov, Russia
- 13B. RGB analysis in optical clearing of muscle tissue** Yakov Razumov¹, Anton A. Kharchenko¹, Valery V. Tuchin^{1,2,3}; ¹Saratov State University, Saratov, Russia; ²Tomsk State University, Tomsk, Russia; ³Institute of Precision Mechanics and Control RAS, Saratov, Russia
- 14B. Analysis of the effectiveness of magnetic resonance and X-ray contrast agents in reducing skin scattering under pathological development** Alexander D. Kovalev¹, Yuri I. Surkov¹, Mikhail V. Syrov¹, Polina A. Timoshina¹, Valery V. Tuchin^{1,2,3}; ¹Saratov State University, Saratov, Russia; ²Tomsk State University, Tomsk, Russia; ³Institute of Precision Mechanics and Control RAS, Saratov, Russia
- 15B. Speckle contrast imaging of the vascular system in the context of the development of an experimental model of type 1 diabetes** Mikhail V. Syrov¹, Alexander D. Kovalev¹, Polina A. Timoshina^{1,2}, Valery V. Tuchin^{1,2,3}; ¹Saratov State University, Saratov, Russia; ²Tomsk State University, Tomsk, Russia; ³Institute of Precision Mechanics and Control RAS, Saratov, Russia
- 16B. A Compact Device for Non-Invasive Sleep Monitoring** Aleksandr O. Kashichkin, Ivan V. Fedosov; Saratov State University, Saratov, Russia
- 17B. Antioxidant defence system dynamics in human fibroblast spheroids after continuous wave 1265 nm laser** Anna Khokhlova¹, Irina Kolodii¹, Valeria Ribenek¹, Yury Saenko¹, Elena Yurova¹, Aigul Gilmudinova¹, Sergei Sokolovski², Edik Rafailov², Dmitrii Stoliarov², Dmitriy Korobko¹, Andrei Fotiadi^{1,3}; ¹S.P. Kapitsa Scientific Technological Research Institute, Ulyanovsk State University, Ulyanovsk, Russia; ²Optoelectronics and Biomedical Photonics Group, School of Engineering and Applied Science, Aston University, Birmingham, UK; ³Electromagnetism and Telecommunication Department, University of Mons, Mons, Belgium

- 18B. Determination of arterial vascular resistance by the slope angle of photoplethysmograms** D.G. Verkhov, S.Yu. Dobdin, A.V. Antonov, A.A. Sagaidachny, A.V. Skripal; Saratov State University, Saratov, Russia
- 19B. Analysis of optical properties of the skin in the context of the development of an experimental model of melanoma** Maksim A. Stepanov¹, Maksim A. Volkov¹, Polina E. Timoshina^{1,2}, Valery V. Tuchin^{1,2,3}; ¹Saratov State University, Saratov, Russia; ²Tomsk State University, Tomsk, Russia; ³Institute of Precision Mechanics and Control RAS, Saratov, Russia
- 20B. Investigation of the effect of upconversion nanoparticles on the optical properties of tumor tissue. Prospects for PDT** Victoriia A. Kovalenko¹, Nikita A. Navolokin², Artyom M. Mylnikov², Irina Yu. Yanina¹; ¹Saratov State University, Saratov, Russia; ²Saratov State Medical University named after V.I. Razumovsky, Saratov, Russia
- 21B. Study of the influence of tumor tissue development on blood flow using Dopplerography and microscopy methods** E.N. Lazareva¹, A.P. Fashchevskii¹, A.M. Mylnikov², N.A. Navolokin^{1,2,3}, I.Yu. Yanina^{1,4}; ¹Saratov State University, Saratov, Russia; ²V.I. Razumovsky Saratov State Medical University, Saratov, Russia; ³Yu.Ya. Gordeev Saratov City Clinical Hospital No. 1, Saratov, Russia; ⁴Tomsk State University, Tomsk, Russia
- 22B. Experimental validation of innovative optical clearing agents for in vivo optical coherence tomography** Pavel A. Moldon¹, Danila A. Umerenkov¹, Polina A. Timoshina², Yuri I. Surkov², Andrei E. Lugovtsov¹, Aleksandr V. Priezzhev¹; ¹Lomonosov Moscow State University, Moscow, Russia; ²Saratov State University, Saratov, Russia
- 23B. Machine learning implementation for identifying microhemorheological biomarkers in cardiovascular pathology** Danila A. Umerenkov¹, Matvei K. Maksimov¹, Pavel A. Moldon¹, Andrei E. Lugovtsov¹, Aleksandr V. Priezzhev¹; ¹Lomonosov Moscow State University, Moscow, Russia
- 24B. Brain photobiomodulation device designed for MRI compatibility** Sergey V. Popov¹, Egor V. Ilyukov¹, Ivan V. Fedosov¹, Oksana V. Semyachkina-Glushkovskaya²; ¹Institute of Physics, Saratov State University, Saratov, Russia; ²Department of Biology, Saratov State University, Saratov, Russia
- 25B. Computer-guided optical clearing for transcranial laser speckle imaging of cortical blood flow through synergistic tartrazine-induced cranial bone transparency** I.A. Uvakin¹, Yu.I. Surkov¹, P.A. Timoshina¹, N.V. Shushunova¹, A.V. Kononov^{2,3}, I.S. Kozlov², G.A. Piavchenko², D.E. Telyshev^{2,4}, I.V. Meglinski^{2,5}, S.A. Kuznetsov², E.A. Genina¹, V.V. Tuchin^{1,6}; ¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia; ³Burdenko Neurosurgery Institute, Moscow, Russia; ⁴National Research University of Electronic Technology, Zelenograd, Moscow, Russia; ⁵Aston University, Birmingham, UK; ⁶Tomsk State University, Tomsk, Russia
- 26B. Sleep improves the photo-therapeutic effects on ageing brain** V.V. Adushkina¹, D.A. Zlatogorskaya¹, A.S. Evsyukova¹, A.A. Shirokov², O.V. Semyachkina-Glushkovskaya¹; ¹Saratov State University, Saratov, Russia; ²Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov, Russia
- 27B. The effectiveness of photobiomodulation of the brain decreases with age** Andrey V. Terskov¹, Alexander A. Shirokov^{1,2}, Inna A. Blokhina¹, Daria A. Zlatogorskaya¹, Viktoria V. Adushkina¹, Anastasiia I. Semyachkina-Glushkovskaya¹, Ivan V. Fedosov¹, Arina S. Evsyukova¹, Oxana V. Semyachkina-Glushkovskaya¹; ¹Saratov State University, Saratov, Russia; ²Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Saratov, Russia
- 28B. Novel calibration method for biomedical spectral systems** Eugene O. Raskin¹, Alexander V. Ilinskiy¹, Nadezhda K. Maltseva¹; ¹ITMO University, Saint Petersburg, Russia
- 29B. Optimization of metal-enhanced fluorescence of self-similar colloidal nanoantennas for single molecule detection** Sergey V. Zarkov^{1,2}, Yuri A. Avetisyan¹, Garif G. Akchurin^{1,3}, Alexander N. Yakunin¹, Valery V. Tuchin^{1,3,4}; ¹Institute of Precision Mechanics and Control, Federal Research Centre "Saratov Scientific Centre of the Russian Academy of Sciences", Saratov, Russia; ²Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Saratov, Russia; ³Department of Optics and Biophotonics and Science Medical Center, Saratov State University, Saratov, Russia; ⁴Laboratory of Laser Molecular Imaging and Machine Learning, Tomsk State University, Tomsk, Russia

- 30B. Investigation of the possibility of using SERS for therapeutic drug monitoring**
 Elizaveta A. Demishkevich¹, Svetlana A. Stefanova¹, Andrey Y. Zyubin¹, Vladimir V. Rafalskiy¹, Aleksandr S. Zozulya¹, Denis O. Evtifeev¹, Ilia G. Samusev¹; ¹Immanuel Kant Baltic Federal University, Kaliningrad, Russia
- 31B. Development of a protocol for simultaneous study of tumor metabolism and oxygenation in vivo using FLIM and PLIM microscopy,**
 Anastasia D. Komarova^{1,2}, Leonid N. Bochkarev³, Vladislav I. Shcheslavskiy^{1,4}, Marina V. Shirmanova¹; ¹Privolzhskiy Research Medical University, Nizhny Novgorod, Russia, ²Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia ³G.A. Razuvaev Institute of Organometallic Chemistry of the Russian Academy of Sciences, Nizhny Novgorod, Russia ⁴Becker & Hickl GmbH, Berlin, Germany

October 3, Friday

**INVITED LECTURE/ ORAL REPORT
 SESSIONS BIOPHYSICS V/ BRICS IV**

(Building 3, Big Physical Hall)

Link to connect in Kontur Talk:

<https://onlinessu.ktalk.ru/v4p1rves4d6o>



Chairs: **Ekaterina Lazareva, Elina Genina**,
 Saratov State Univ., Russia

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

09:45-10:00/8:45-09:00

Oral Report

Creation of a differential diagnosis system in the class of non-Hodgkin's lymphomas through the construction and implementation of pattern recognition algorithms

Matvey V. Sedykh, Julia A. Brodskaya; Gagarin's State Technical University of Saratov, Saratov; Russia

10.00-10.15/09:00-09:15

Oral Report

Tissue differentiation based on analysis of changes in attenuation coefficient under mechanical stress estimated with optical coherence tomography

Evgeny P. Sherstnev, Alexander A. Moiseev, Grigory V. Gelikonov; Institute of Applied Physics of the Russian Academy of Sciences, Nizhny Novgorod, Russia

10.15-10.30/09:15-09:30

Oral Report

Application of neural network methods for blood smear analysis

Nikita V. Nakleskin¹, Evgeniy G. Tsybrov¹, Sergey Yu. Nikitin²; ¹Lomonosov Moscow State University Faculty of Computational Mathematics and Cybernetics, Moscow, Russia; ²Lomonosov Moscow State University, Faculty of Physics

10:30-10:45/09:30-09:46

Oral Report

Optical parameters of blood flow measured by optical coherence tomography to assess the microcirculatory changes in urethral tissues

Elena B. Kiseleva¹, Olga S. Streltsova^{1,2}, Alexander A. Sovetsky³, Anton S. Kuyarov^{1,2}, Svetlana Yu. Zubova², Vladimir Y. Zaitsev³, Peter A. Chizhov³, Grigory V. Gelikonov³, Natalia A. Konova^{1,4}, Natalia D. Gladkova¹; ¹Privolzhskiy Research Medical University, Nizhny Novgorod, Russia; ²Nizhny Novgorod Regional Clinical Hospital named after N.A. Semashko, Nizhny Novgorod, Russia; ³Institute of Applied Physics of the RAS, Nizhny Novgorod, Russia; ⁴Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

10:45-11:00/09:45-10:00

Oral Report

Shear wave optical coherence elastography with modulation-division multiplexing of sensing probes

Zoya A. Erovenko, Aleksandr A. Markvart, Ulyana A. Makarenko, Maksim S. Makarenko, Leonid B. Liokumovich, **Nikolai A. Ushakov**; Peter the Great St. Petersburg Polytechnic University, Saint-Petersburg, Russia

11:00-11:15/10:00-10:15

Oral Report

Characterization of Tumor Progression and Vascular Remodeling in an Orthotopic Model of Renal Cell Carcinoma

Elizaveta Petrova¹, Alexandra Y. Sain¹, Oleg A. Kulikov², Gleb B. Sukhorukov^{1,3}, Olga A. Sindeeva¹; ¹Skolkovo Institute of Science and Technology, Moscow, Russia; ²N.P. Ogarev National Research Mordovia State University, Saransk, Russia; ³LIFT Center LLC, Moscow, Russia

11:15-11:30/10:15-10:30

Oral Report

Imaging Photoplethysmography in Real-time: Development of a Hardware-Software Complex for Vital Signs Monitoring

Valeriy V. Zaytsev¹, Serguei V. Miridonov², Victor A. Kashchenko^{3,4,5}, Alexei A. Kamshilin¹; ¹Institute of Automation and Control Processes Russian Federation; ²Optics Department, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, Mexico; ³North-Western District Scientific and Clinical Center Named After L.G. Sokolov, FMBA, Saint Petersburg, Russia; ⁴Saint Petersburg State University, Saint Petersburg, Russian Federation; ⁵Beloostrov Clinic, Vsevolozhsk District, Leningrad Region, Russian Federation;

11:30-11:45/10:30-10:45

Oral Report

Model and method for optimizing metal-enhanced fluorescence of TagRFP fluorophore molecules taking into account their spectral properties

Sergey V. Zarkov¹, Yuri A. Avetisyan¹, Garif G. Akchurin^{1,2}, Alexander N. Yakunin¹, Valery V. Tuchin^{1,2,3}; ¹Institute of Precision Mechanics and Control, Federal Research Centre "Saratov Scientific Centre of the Russian Academy of Sciences", Saratov, Russia; ²Department of Optics and Biophotonics and Science Medical Center, Saratov State University, Saratov, Russia; ³Laboratory of Laser Molecular Imaging and Machine Learning, Tomsk State University, Tomsk, Russia

11:45-12:00/10:45-11:00

Oral Report

Effect of riboflavin and blue laser radiation on cell death of melanoma cells B16F10

Aigul Gilmutdinova, Elena Yurova, Anna Khokhlova, Dmitriy Sugak, Yury Saenko; S.P. Ulyanovsk State University, Ulyanovsk, Russia

12:00-12:15/11:00-11:15

Oral Report

Comparative photobiological effects of laser radiation in 2D and 3D cell cultures

Anna Khokhlova¹, Irina Kolodii¹, Valeria Ribenek¹, Yury Saenko¹, Aigul Gilmutdinova¹, Sergei Sokolovski², Edik Rafailov², Dmitrii Stoliarov², Dmitriy Korobko¹, and Andrei Fotiadi^{1,3}; ¹S.P. Kapitsa Scientific Technological Research Institute, Ulyanovsk State University, Ulyanovsk, Russia; ²Optoelectronics and Biomedical Photonics Group, School of Engineering and Applied Science, Aston University, UK; ³Electromagnetism and Telecommunication Department, University of Mons, B-7000 Mons, Belgium

12:15-12:30/11:15-11:30

Oral Report

The development of an advanced hydroxyapatite biomaterial with antibacterial properties for regenerative medicine application

Anastasia A. Kabanova^{1,2}, Anastasia E. Rezvanova³, Boris S. Kudryashov³, Ekaterina A. Nosova⁴, Olga Y. Kochetkova⁵; ¹Samara State Medical University, Samara, Russia, ²Samara State Technical University, Samara, Russia, ³Institute of Strength Physics and Materials Science of the Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia, ⁴Samara University, Samara, Russia, ⁵Institute of Theoretical and Experimental Biophysics, Russian Academy of Sciences, Pushchino, Russia.

INTERNET POSTERS

- 1. Raman spectroscopy for the diagnosis of the state of the compact substance of the femoral bone in phlegmon** E.S. Semibratova¹, E.V. Timchenko^{1,2}, P.E. Timchenko¹, D.G. Glubokov², I.V. Bazhutova²; ¹Samara National Research University, Samara, Russia; ²Samara State Medical University, Samara, Russia
- 2. Application of optical methods for studying the composition of fruit puree mixtures for baby food** P.I. Pyataeva¹, E.V. Timchenko¹; ¹Samara National Research University, Samara, Russia
- 3. Raman spectroscopy for assessing the composition of water used in biotechnical laboratories** P.E. Timchenko¹, A.D. Volov², E.V. Timchenko^{1,3}, L.T. Volova³, A.A. Chernukhin¹; ¹Samara State Aerospace University, Samara, Russia; ²Samara State Technical University, Samara, Russia; ³Samara State Medical University, Samara, Russia
- 4. Raman spectroscopy for evaluation of decellularized grafts in burn injury treatment** Yu.D. Ityaksov¹, E.V. Timchenko¹, P.E. Timchenko¹, O.O. Frolov¹, I.V. Novikov², E.S. Milyudin², L.T. Volova²; ¹Samara National Research University named after Academician S.P. Korolev, Samara, Russia; ²Samara State Medical University, Samara, Russia
- 5. Selection of the optimal dataset to improve the efficiency of skin Raman spectra identification** K.E. Tomnikova, I.A. Matveeva; Samara University, Samara, Russia
- 6. Comparison of Inceptionv3, DenseNet201 and ResNet50 convolutional neural networks for skin lesion classification** N.K. Zakharov, I.A. Matveeva; Samara University, Samara, Russia

7. **Integration of Raman scattering and machine learning methods for improving the sensitivity of chronic heart failure stage diagnosis** Mikhail Dolzhenko¹, Yulia Khristoforova¹, Maria Skuratova², Petr Lebedev³, Ivan Bratchenko¹; ¹Samara National Research University, Samara, Russia; ²Samara City Clinical Hospital No. 1 named after N.I. Pirogov, Samara, Russia; ³Samara State Medical University, Samara, Russia
8. **Automation of chronic heart failure diagnosis using Raman spectroscopy and machine learning methods** Irina A. Pimenova, Irina A. Matveeva; Samara University, Samara, Russia
9. **Application of infrared spectroscopy to the study of biopsies of patients with glial brain tumors** Vera E. Sitnikova¹, Shokhzoda A. Tukhtaeva², Sergey V. Voloshin^{3,4}, Dmitry A. Petrenko⁵, Liudmila V. Plotnikova⁶; ¹ITMO University, Saint Petersburg, Russia; ²Tashkent Medical Academy, Tashkent, Uzbekistan; ³Kirov Military Medical Academy, Saint Petersburg, Russia; ⁴Leningrad Regional Clinical Hospital, Saint Petersburg, Russia; ⁵Saint Petersburg Mining University, Saint Petersburg, Russia; ⁶St. Petersburg State University, St. Petersburg, Russia
10. **LED-based compact illuminator design for effective photodynamic therapy** Alexandra Yu. Sain¹, Arkady S. Abdurashitov^{1,2}, Pavel I. Proshin^{1,2}, Daria A. Terentyeva^{1,3}, Gleb B. Sukhorukov^{1,2}, and Olga A. Sindeeva¹; ¹ Vladimir Zelman Center for Neurobiology for Brain Rehabilitation, Skolkovo Institute of Science and Technology, Moscow Russia; ² Life Improvement by Future Technologies (LIFT) Center, Moscow, Russia; ³ Center for Photonic Science and Engineering, Skolkovo Institute of Science and Technology, Moscow, Russia

Conference on Internet Biophotonics XVIII

Chairs: Daria K. Tuchina, Ivan V. Fedosov, Saratov State University, Saratov, Russia.

Secretary: Ksenia O. Merkulova, Saratov State University, Saratov, Russia.

International Program Committee: Heidi Abrahamse, University of Johannesburg (RSA), Vanderlei Salvador Bagnato, University of São Paulo (Brazil), Walter Blondel, University of Lorraine (France), Wei Chen, University of Central Oklahoma (USA), Santhosh Chidangil, Manipal Academy of Higher Education (India), Cornelia Denz, Physikalisch-Technische Bundesanstalt (PTB) (Germany), Kishan Dholakia, University of St. Andrews (UK), Maria Farsari, FORTH-IESL (Greece), Paul M.W. French, Imperial College of Science, Technology and Medicine (UK), Elina A. Genina, Saratov State University (Russia), Mikhail Yu. Kirillin, Institute of Applied Physics RAS, Nizhny Novgorod (Russia), Yury V. Kistenev, Tomsk State University (Russia), Kirill V. Larin, University of Houston (USA), Andrew L. Lopez, III, University of Houston (USA), Qingyu Lin, Sichuan University (China); Qingming Luo, Hainan University (China), Luís M. Oliveira, Polytechnic of Porto – School of Engineering (Porto, Portugal), Roberto Pini, National Research Council of Italy (CNR) (Italy), Juergen Popp, Inst. of Photonic Technology, Jena (Germany), Alexander V. Priezzhev, Moscow State Univ. (Russia), Edik Rafailov, Aston University (UK), Valery V. Tuchin, Saratov State University; Institute of Precision Mechanics and Control, FRC SSC RAS; Tomsk State University (Russia), Lihong Wang, Caltech (USA), Ruikang K. Wang, University of Washington (USA), Valery P. Zakharov, Samara State University (Russia), Zeev Zalevsky, Bar Ilan University, Tel Aviv (Israel).

INTERNET INVITED LECTURES

Ultraviolet transparency window created by bonding tartrazine molecules to tissue proteins

Ana R. Guerra^{1,2}, Luís R. Oliveira^{1,2}, Gonçalo O. Rodrigues^{2,3}, Maria R. Pinheiro^{2,4}, Maria I. Carvalho^{2,4}, Valery V. Tuchin^{5,6,7}, Luís M. Oliveira^{2,3}; ¹Polytechnic Institute of Porto – School of Health, Porto, Portugal, ²Institute for Systems and Computer Engineering, Technology and Science (INESC TEC), Porto, Portugal, ³Polytechnic Institute of Porto – School of Engineering, Porto, Portugal, ⁴Faculty of Engineering – Porto University, Porto, Portugal ⁵Institute of Physics and Science Medical Center, Saratov State University, Saratov, Russia, ⁶Tomsk State University, Tomsk, Russia, ⁷Institute of Precision Mechanics and Control, FRS “Saratov Scientific Centre of the RAS”, Saratov, Russia.

https://sfmconference.org/sfm25/conferences_workshops/internet-biophotonics-xviii/preliminary/3242

Detection of human clear cell renal cell carcinoma through spectral optical properties

Maria R. Pinheiro^{1,2}, Maria I. Carvalho^{1,2}, Valery V. Tuchin^{3,4,5}, Luís M. Oliveira^{1,6}; ¹Institute for Systems and Computer Engineering, Technology and Science (INESC TEC), Porto, Portugal, ²Faculty of Engineering – Porto University, Porto, Portugal, ³Institute of Physics and Science Medical Center, Saratov State University, Saratov, Russia, ⁴Tomsk State University, Tomsk, Russia, ⁵Institute of Precision Mechanics and Control, FRS “Saratov Scientific Centre of the RAS”, Saratov, Russia, ⁶Polytechnic Institute of Porto – School of Engineering, Porto, Portugal.

https://sfmconference.org/sfm25/conferences_workshops/internet-biophotonics-xviii/preliminary/3243

INTERNET REPORT

Electrically conductive hybrid carbon nanomaterials for biointerfaces

Uliana E. Kurilova^{1,2}, Denis T. Murashko², Victoria V. Suchkova^{1,2}, Irina A. Suetina³, Marina V. Mezentseva³, Leonid I. Russu³, Alexander Yu. Gerasimenko^{1,2}; ¹Sechenov First Moscow State Medical University, Moscow, Russia; ²National Research University of Electronic Technology MIET, Zelenograd, Moscow, Russia; ³National Research Center for Epidemiology and Microbiology Named after the Honorary Academician N.F. Gamaleya, Moscow, Russia.

https://sfmconference.org/sfm25/conferences_workshops/internet-biophotonics-xviii/preliminary/3376/

Fluorescence imaging method for diagnosis of oral mucosa pathologies

Ekaterina O. Bryanskaya, Vitalina D. Zakrzhevskaya, Andrey Y. Vinokurov, Andrey V. Dunaev; Research and Development Center of Biomedical Photonics, Orel State University, Orel, Russia.

https://sfmconference.org/sfm25/conferences_workshops/internet-biophotonics-xviii/preliminary/3452/

INTERNET POSTERS

(Available during the conference via your own laptop, smartphone or computer)

Link:

https://sfmconference.org/sfm25/conferences_workshops/internet-biophotonics-xviii/preliminary

1. The photodynamic therapy of transplanted colorectal carcinoma in normal and immunodeficient mice

Alla B. Bucharskaya^{1,2}, Nikita N. Navolokin^{1,2}, Vadim D. Genin², Galina N. Maslyakova¹, Natalya A. Shushunova^{1,2}, Olga I. Guslyakova², Olga A. Inozemtseva², Elina A. Genina², Valey V. Tuchin^{2,3,4}; ¹Saratov State Medical University, Saratov, Russia, ²Saratov State University, Saratov, Russia, ³Institute of Precision Mechanics and Control RAS, Saratov, Russia, ⁴Tomsk State University, Tomsk, Russia.

2. Detection of veterinary antibiotics in water and soil using spectral approaches

Anastasia P. Kiryushina¹, Konstantin P. Serikov^{1,2}, Yulia G. Sokolovskaya², Vera A. Terekhova², Svetlana V. Patsaeva²; ¹Institute of Ecology and Evolution Problems, Russian Academy of Sciences, Moscow, Russia; ²Lomonosov Moscow State University, Moscow, Russia.

3. Spectral properties of CDOM in a stratified reservoir with redox potential varying with depth

Yulia G. Sokolovskaya¹, Elena D. Krasnova¹, Dmitry A. Voronov², Sergey A. Burikov¹, Tatiana A. Dolenko¹, Svetlana V. Patsaeva¹; ¹Lomonosov Moscow State University, Moscow, Russia; ²Kharkevich Institute for Information Transmission Problems, Russian Academy of Sciences, Moscow, Russia.

4. On the influence of size factors and spectral properties of plasmonic nanorods for hot electron generation in optically modulated current sources

Alexander N. Yakunin¹, Sergey V. Zarkov¹, Yuri A. Avetisyan¹, Garif G. Akchurin^{1,2}, Valery V. Tuchin^{1,2,3}; ¹Institute of Precision Mechanics and Control, FRS "Saratov Scientific Centre of the RAS", Saratov, Russia, ²Institute of Physics and Science Medical Center, Saratov State University, Saratov, Russia; ³Tomsk State University, Tomsk, Russia

5. Optical clearing of skin using enhancers of tissue permeability in a wide spectral range

Daria K. Tuchina¹, Valery V. Tuchin^{1,2,3}; ¹Institute of Physics and Science Medical Center, Saratov State University, Saratov, Russia, ²Tomsk State

University, Tomsk, Russia, ³Institute of Precision Mechanics and Control, FRS "Saratov Scientific Centre of the RAS", Saratov, Russia.

6. The effect of the dose of nanocomplexes administered on morphological changes in the internal organs of white laboratory mice

Artyom M. Mylnikov¹, Nikita A. Navolokin¹, Irina Yu. Yanina²; ¹Saratov State Medical University, Saratov, Russia; ²Saratov State University, Saratov, Russia.

7. Photosensitizer-functionalized silver nanoparticles as potential agents for antibacterial photodynamic therapy

Anastasiya O. Dushina^{1,2,3}, Anna M. Kolchenko³, Polina A. Demina^{2,3,4}, Maxim E. Stepanov³, Tatiana V. Egorova³, Evgeniy V. Khaydukov^{3,4}, Alla N. Generalova^{1,2}; ¹National Research Nuclear University MEPhI, Moscow, Russia; ²Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry RAS, Moscow, Russia; ³Moscow State Pedagogical University, Moscow, Russia; ⁴National Research Center "Kurchatov Institute", Moscow, Russia

8. Spectrophotometric determination of the distribution of phototrophic microorganisms in meromictic reservoirs of the White Sea in 2025

Yulia G. Sokolovskaya¹, Daria A. Ivanova¹, Elena A. Labunskaya¹, Elena D. Krasnova¹, Dmitry A. Voronov², Svetlana V. Patsaeva¹; ¹Lomonosov Moscow State University, Leninskie Gory, Moscow, Russia; ²Kharkevich Institute for Information Transmission Problems, Russian Academy of Sciences, Moscow, Russia

9. Spectral analysis of the limitation of different taxonomic groups of phototrophic organisms in the semi-isolated lake Skurcha on the Black Sea Coast

Anastasiia S. Nagaeva¹, Elena A. Labunskaya¹, Irina G. Radchenko¹, Elena D. Krasnova¹, Dmitry A. Voronov², Valentin I. Lobyshev¹, Sevastiana S. Soloveva¹, Aleksandr N. Vasilenko¹; ¹Lomonosov Moscow State University, Leninskie Gory, Moscow, Russia; ²Kharkevich Institute for Information Transmission Problems, Russian Academy of Sciences, Moscow, Russia

Workshop on Laser Physics and Photonics XXVII

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

Secretary: **Svetlana V. Churochkina**, Saratov State University (Russia)

International Program Committee **Vladimir L. Derbov** (Chair), Saratov State University (Russia), **Alexander V. Gorokhov**, Samara 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**, Yuri Gagarin State Technical University of Saratov (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), **Ivan A. Shcherbakov**, Prokhorov General Physics Institute of RAS (Russia), **Dmitry V. Churochkin**, Saratov State University (Russia)

October 1, Wednesday

**INVITED LECTURE / ORAL SESSION
PHOTONICS / ONLINE ORAL REPORT**

Link to connect in Kontur Talk:

<https://sgulive.ktalk.ru/mtxm3qiuw1fx?pinCode=8157>

157

**Pin code: 8157
(Building 10, Hall 503)**



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

14.00-14.20 / 13.00-13.20

Electromagnetically induced transparency of picosecond probe laser pulses

Oleg M. Parshkov; Yuri Gagarin State Technical University of Saratov, Saratov, Russia

14.20-14.40 / 13.20-13.40

Effect of band gap on high-frequency harmonic generation during interaction of laser pulses with structural analogs of graphene

Anatolii D. Panferov; Saratov State University, Saratov, Russia

14.40-15.00 / 13.40-14.00

Femtosecond laser synthesis of composite magnetic nanoparticles based on iron in liquid

Anton S. Chernikov, Dmitriy A. Kochuev, Maria A. Dzhus, Ruslan V. Chkalov, Elena I. Shingareva, Kirill S. Khorkov; Vladimir State University named after Alexander and Nicolay Stoletovs, Vladimir, Russia

15.00-15.20 / 14.00-14.20

Method of calculation of the wave propagation characteristics in the anisotropic two-components slab with hyperbolic type of dispersion

Olga N. Kozina¹, Leonid A. Melnikov²; ¹Kotel'nikov Institute of Radio-Engineering and Electronics of Russian Academy of Science, Saratov Branch, Saratov, Russia; ²Yuri Gagarin State Technical University of Saratov, Saratov, Russia

15.20-15.40 / 14.20-14.40

Controll of secondary instabilities in broad-area lasers by external influence

Anton A. Krents^{1,2}, Nonna E. Molevich^{1,2}, Elizaveta A. Yarovna^{1,2}; ¹Samara University, Samara, Russia; ²Levedev Physical Institute, Samara, Russia

15.40-16.00 / 14.40-15.00

Control of photon-number correlations in squeezed vector optical solitons

Andrey I. Konyukhov; Saratov State University, Saratov, Russia

16.00-16.30 / 15.00-15.30

Coffee Break

ONLINE ORAL REPORT

Link to connect in Kontur Talk:

<https://sgulive.ktalk.ru/mtxm3qiuw1fx?pinCode=8>

157

Pin code: 8157

(Building 10, Hall 503)



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

16.30-16.50 / 15.30-15.50

Online Oral Report

Laser therapy for cognitive diseases: Prospects for optical clearing technology of head tissue (review)

Alaa Sabeeh Shanshool^{1,2}, Asmaa Hadi Mohammed¹, Ekaterina N. Lazareva^{2,3}, Polina A. Timoshina^{2,3}, Valery V. Tuchin^{2,3,4}; ¹College of Science, Al-Nahrain University, Baghdad, Iraq; ²Saratov State University, Saratov, Russia; ³Tomsk State University, Tomsk, Russia; ⁴Institute of Precision Mechanics and Control, FRC "Saratov Scientific Center of the Russian Academy of Sciences", Saratov, Russia

16.50-17.10 / 15.50-16.10

Online Oral Report

Electric field control of ultrashort pulse dynamics in polymer-carbon nanotube composites

Natalia N. Konobeeva; Volgograd State University, Volgograd, Russia

17.10-17.30 / 16.10-16.30

Online Oral Report

Stationary pulse generation due to self-gain modulation in rare-earth-doped fiber lasers

Boris N. Nyushkov¹, Maksim D. Radchenko^{1,2}, Igor I. Korel^{1,2}; ¹Novosibirsk State Technical University, Novosibirsk, Russia; ²Institute of Laser Physics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia

October 2, Thursday

JOINT POSTER/INTERNET SESSION

Chair (P): **Elina D. Nikolaeva**, Saratov State University, Russia

18.15-20.30 / 17.15-19.30

INTERNET POSTERS

- 1P. **Optical frequency doubling in bulk glass patterns** Liubov I. Vostrikova^{1,2}; ¹Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia; ²Novosibirsk State University of Economics and Management, Novosibirsk, Russia
- 2P. **Thermal entanglement in three-qubit Tavis-Cummings model with manyphoton transitions** Alexander R. Bagrov, Eugene K. Bashkirov; Samara University, Samara, Russia
- 3P. **Entanglement between two multiphoton Tavis-Cummings qubits and isolated qubit** Eugene K. Bashkirov, Alexander R. Bagrov; Samara University, Samara, Russia
- 4P. **Longitudinal spatial and spatiotemporal coherence of a light wave field with wide angular and frequency spectra: mathematical simulation** Lyudmila A. Maksimova, Natalya Yu. Mysina, Vladimir P. Ryabukho; IPTMU RAS - Separate structural subdivision of FRC "Saratov Scientific Center of the Russian Academy of Sciences", Saratov, Russia
- 5P. **Distribution in channels for frequency doubling of laser radiation upon volumetric optical poling** Igor A. Kartashev¹, Liubov I. Vostrikova^{1,2}; ¹Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia; ²Novosibirsk State University of Economics and Management, Novosibirsk, Russia
- 6P. **Dynamics of manylevel atoms in nonideal cavities** Alexander V. Gorokhov, Samara University, Samara, Russia
- 7P. **Influence of initial qubits coherence and Izing coupling on the dynamics of Tavis-Cummings model** Ali Othman; Samara University, Samara, Russia
- 8P. **Formation of miniature converters on all-optically inserted nonlinear modification** Liubov I. Vostrikova^{1,2}; ¹Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia; ²Novosibirsk State University of Economics and Management, Novosibirsk, Russia

POSTER SESSION
(Building 3, 3rd floor Hall)

- 1P. **Quasiclassical and quantum radiation from the graphene** Vladislav A. Tserypa, Stanislav A. Smolyansky, Vadim V. Dmitriev, Dmitriy V. Churochkin; Saratov State University, Saratov, Russia
- 2P. **Non-destructive testing of tableted medicinal products using digital colorimetry and near IR spectroscopy** Oleg E. Emelianov, Vasilii G. Amelin; Vladimir State University named after Alexander and Nicolay Stoletovs, Vladimir, Russia
- 3P. **Femtosecond laser synthesis of nonstoichiometric molybdenum oxide nanoparticles** Anton S. Chernikov, Dmitriy A. Kochuev, Maria A. Dzus, Ruslan V. Chkalov, Elena I. Shingareva, Kirill S. Khorkov; Vladimir State University named after Alexander and Nicolay Stoletovs, Vladimir, Russia
- 4P. **Nonreciprocal propagation of spin waves in a bilayer ferrite-garnet structure** Andrey S. Ptashenko, Alexander V. Sadovnikov; Saratov State University, Saratov, Russia
- 5P. **Modeling the shape of a laser autodyne signal in pressure pulse wave measurements of resistive vessels** Maksim G. Inkin, Sergey Yu. Dobdin, Anatoly V. Skripal; Saratov State University, Saratov, Russia
- 6P. **Determination of geometrical thickness or refractive index of microobjects using a laser interferometer with sharply focused beams** Artem A. Gres¹, Dmitry V. Lyakin², Vladimir V. Derbov¹; ¹Saratov State University, Saratov, Russia; ²Institute of Precision Mechanics and Control, Saratov Federal Scientific Centre of the RAS, Saratov, Russia
- 7P. **Development of the scanning laser Doppler microscope with structured illumination** Victoria P. Fomicheva, Ivan V. Fedosov; Saratov State University, Saratov, Russia
- 8P. **Visualization model of spatial distributions waves in a dispersive system based on the Monte Carlo method and Jones formalism** Anna A. Isaeva¹, Elena A. Isaeva¹, Dmitry A. Zimnyakov^{1,2}; ¹Yuri Gagarin State Technical University of Saratov, Saratov, Russia; ²Institute of Precise Mechanics and Control RAS, Saratov, Russia
- 9P. **Speckle correlometry and acoustic approach for the diagnostic of non-stationary foam-like structure** Elena A. Isaeva¹, Anna A. Isaeva¹, Dmitry A. Zimnyakov^{1,2}; ¹Yuri Gagarin State Technical University of Saratov, Saratov, Russia; ²Institute of Precise Mechanics and Control RAS, Saratov, Russia
- 10P. **Observation of radiation-controlled linewidth narrowing in disordered TiO₂: Dye media** Leonid A. Kochkurov¹, Dmitry A. Zimnyakov^{1,2}; ¹Yuri Gagarin State Technical University of Saratov, Saratov, Russia; ²Precision Mechanics and Control Institute of Russian Academy of Sciences, Saratov, Russia
- 11P. **Intrinsic limitations of fluorescence emission in laser-pumped random media** Irina A. Plekhanova¹, Dmitry A. Zimnyakov^{1,2,3}; ¹Yuri Gagarin State Technical University of Saratov, Saratov, Russia; ²Precision Mechanics and Control Institute of Russian Academy of Sciences, Saratov, Russia; ³Saratov State University, Saratov, Russia
- 12P. **Synthesis and optical properties of highly reflective coatings based on hydroxyapatite composites** Dmitry A. Vereshagin¹, Alexander V. Pivovarov², Sergey Ya. Pichkhidze², Dmitry A. Zimnyakov^{1,2,3}; ¹Saratov State University, Saratov, Russia; ²Yuri Gagarin State Technical University of Saratov, Saratov, Russia; ³Precision Mechanics and Control Institute of Russian Academy of Sciences, Saratov, Russia

Conference on Low-Dimensional Structures XIV

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

Secretaries: **Pavel V. Barkov**, Saratov State University (Russia), **Dmitry A. 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

October 1, Wednesday

ORAL SESSION/INTERNET REPORTS

(Building 8, Room 318)

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

Link to connect in Kontur Talk:

<https://dpf8bfnc.ktalk.ru/f4oy5v41g5om>



10.00-10.15

Electrophysical properties of all-carbon films

Mikhail M. Slepchenkov¹, Olga E. Glukhova^{1,2};
¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Russia

10.15-10.30

Fabrication of electrode arrays with nanoscale direct laser writing: first results

Sergey D. Poletayev^{1,2}; ¹Image Processing Systems Institute, NRC "Kurchatov Institute" Samara, Russia, ²Samara National Research University, Samara, Russia

10.30-10.45

Nanocellulose-stabilized Pickering emulsions for microencapsulation of phase-change materials

Nina E. Zaytseva¹, Alexandra S. Vishnevich¹, Egor M. Smirnov¹, Denis V. Voronin¹: ¹National University of Oil and Gas «Gubkin University», Moscow, Russia

10.45-11.00

Quasiclassical and quantum radiation in the graphene under the action of t-step field

Vladislav A. Tseryupa¹, Vadim V. Dmitriev¹, Dmitry V. Churochkin¹, Stanislav A. Smolyansky¹; ¹Saratov State University, Saratov, Russia

11.00-11.15

Effect of laser power on the time dependence of the sample self-assembly process under the action of radiation

Mikhail S. Savelyev^{1,2}, Pavel N. Vasilevsky¹, Ekaterina P. Otsupko¹, Alexander Yu. Gerasimenko^{1,2}; ¹National Research University of Electronic Technology, MIET, Zelenograd, Moscow, Russia; ²I.M. Sechenov First Moscow State Medical University, Sechenov University, Moscow, Russia

11.15-11.30

Graphene-Modified LiCoO₂ Cathodes: A DFT Study of Carbon Content Effects

Vladislav V. Shunaev¹, Alexandr A. Petrunin¹, Semyon G. Levitsky¹, Olga E. Glukhova^{1,2};
¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University

11.30-11.45

Room-Temperature Hybrid Gas Sensor Based on InAs Nanowires and SWCNT Film

Dmitry M. Mitin¹, Alexander Pavlov¹, Fedor S. Fedorov², Alexander Vorobyev¹, Alexey Mozharov¹, Albert G. Nasibulin², Ivan Mukhin¹
¹Alferov University (St. Petersburg Academic University), St. Petersburg, Russia; ²Skolkovo Institute of Science and Technology, Moscow, Russia

11.45-12.00

Chiral and non-chiral boron nanotubes: investigation of electronic properties

Dmitry A. Kolosov¹, Olga E. Glukhova^{1,2};
¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia

12.00-12.15

Development of the Slater-Koster parameterization for Cu-X (X = Cu, O, C, H) within the SCC-DFTB method to improve the accuracy of in-silico investigations of electronic properties

Olga E. Glukhova^{1,2}, Pavel A. Kolesnichenko¹;
¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Russia

October 2, Thursday

ORAL SESSION/INTERNET REPORTS

(Building 8, Room 318)

Chair: Olga E. Glukhova,
Saratov State University
Russia

Link to connect in Kontur Talk:

<https://dpf8bfnc.ktalk.ru/f4oy5v41g5om>



11.30-12.00

Laser-induced hybrids of carbon nanomaterials for the formation of wearable and implantable electronic biointerfaces

Alexander Yu. Gerasimenko^{1,2}; ¹National Research University of Electronic Technology (MIET), Zelenograd, Moscow, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia

12.00-12.15

Dry electrodes based on hybrid nanostructures of carbon nanotubes and reduced graphene oxide for ECG monitoring

A.V. Kuksin¹, A.S. Morozova¹, A.Yu. Gerasimenko^{1,2}; ¹National Research University of Electronic Technology MIET, Shokin Square 1, 124498 Zelenograd, Moscow, Russia; ²I.M. Sechenov First Moscow State Medical University, Bolshaya Pirogovskaya street 2-4, 119991 Moscow, Russia

12.15-12.30

Formation of multiscale structures based on organic and inorganic nanomaterials for creating passive and active implantable devices stimulating nerve tissues

Denis T. Murashko¹, Evgeny P. Kitsyuk², Mikhail A. Saurov², Alexander Yu. Gerasimenko^{1,3};
¹National Research University of Electronic Technology MIET, Shokin Square 1, 124498 Zelenograd, Moscow, Russia; ²Scientific-Manufacturing Complex "Technological Centre", Shokin Square 1, Zelenograd, 124498 Moscow, Russia; ³I.M. Sechenov First Moscow State Medical University, Bolshaya Pirogovskaya street 2-4, 119991 Moscow, Russia

12.30-12.45

A theoretical investigation of the decoration of the fullerene C60 with iron oxides

Anton R. El Zanin¹, Sergey V. Boroznin¹;
¹Volgograd State University, Volgograd, Russia

12.45-13.00

Investigation of the sorption of gases onto a carbon nanotube with substituted nitrogen atoms-title

Aleksander D. Grigoriev¹, Irina V. Zaporotskova¹, Sergei V. Boroznin¹; ¹Volgograd State University, Volgograd, Russia

13.00-13.15

Thin films formation of electrically conductive carbon nanostructures with laser modification for hypersensitive biocompatible strain sensors to register obstructive sleep apnea syndrome

Anastasia S. Morozova¹, Alexander Yu. Gerasimenko^{1,2}; ¹National Research University of Electronic Technology, Moscow, Zelenograd, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia

13.15-13.30

Functionalization of carbon nanotubes by copper and nickel atoms: a theoretical study

Dmitry F. Sergeev^{1,2}, Natalia P. Boroznina¹, Sergey V. Boroznin¹, Irina V. Zaporotskova¹;
¹Volgograd State University, Volgograd, Russia; ²Vniikhteftekhimoborudovanie JSC, Volgograd, Russia

13.30-13.45

Optimizing Carbon Nanotube Dispersions for High-Performance Neural Interface Electrodes

Kristina D. Popovich^{1,2}, Evgenia A. Kuznetsova¹, Pavel N. Vasilevsky¹, Alexander Yu. Gerasimenko^{1,2}; ¹Institute of Biomedical Systems National Research University of Electronic Technology Zelenograd, Moscow, Russia; ²Institute for Bionic Technologies and Engineering I.M. Sechenov First Moscow State Medical University, Moscow, Russia

13.45-14.00

Torsional Deformation and COOH Concentration Effects on HIF-1 α Release from N-MWCNTs

Nadezda G. Bobenko¹, Vladislav V. Shunaev², Tatiana A. Sapezhinskaya¹, Olga E. Glukhova^{1,2,3}; ¹Institute of Strength Physics and Materials Science SB RAS, Akademicheskoy Ave. 2/4, Tomsk, Russia; ²Saratov State University named after N.G. Chernyshevsky, Astrakhanskaya St. 83, Saratov, Russia; ³First Moscow State Medical University named after I.M. Sechenov, Trubetskaya St. 8, Bldg. 2, Moscow, Russia

14.00-14.15

Electronic transport properties of low-dimensional carbon materials with structural short-range order

Anna A. Belosludtseva Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

JOINT POSTER

(Building 3, 3d floor Hall)

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

18.00-20.00

1L. Study of Morphology and Piezoelectric Properties of Polyvinylidene Fluoride Langmuir-Blodgett Films Using Piezoresponse Force Microscopy

Gorbachev Ilya A.¹, Kolesov Vladimir V.¹; ¹IRE Kotelnikova RAS

2L. Optics and photonics of quasicrystals

Vitaliy A. Danilin¹, Leonid A. Chernozatonskii¹; ¹Emanuel Institute of Biochemical Physics of Russian Academy of Sciences

3L. Spin Wave Propagation in Three-Dimensional Irregular Ferromagnetic Structures

Aleksandr A. Martyshkin¹, Alexandr A. Sadovnikov¹; ¹Saratov State University, Saratov, Russia

4L. Two-dimensional Monolayer from Organic Molecules F4-TCNQ via DFT Calculations

Anastasia V. Korovina¹, Dmitry G. Kvashnin¹; ¹IBCP RAS

5L. First-Principles Investigation of Electronic and Electrical Properties of C=O Groups Decorated Graphene Nanomesh

Pavel V. Barkov¹, Mikhail M. Slepchenkov¹, Olga E. Glukhova^{1,2}; ¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Russia

6L. Influence of geometric parameters on the electronic and optical properties of perforated graphene

Pavel V. Barkov¹, Mikhail M. Slepchenkov¹, Olga E. Glukhova^{1,2}; ¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Russia

7L. Electronic properties of composite materials based on borophene and boron nanotubes

Dmitry A. Kolosov¹, Olga E. Glukhova^{1,2}; ¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia

8L. Chemoresistive response of SnO₂ thin films to dissociative adsorption of alcohols and ketones

Alexander A. Petrunin¹, Olga E. Glukhova^{1,2}; ¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia

9L. Electronic and energy characteristics of graphene-nanotube quasi-2D films containing point defects

E.A. Prudnikova, M.M. Slepchenkov Saratov State University, Saratov, Russia

INTERNET SESSION AND INTERNET DISCUSSION

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

1L. Composite polymer materials doped with carbon nanotubes for use in regenerative medicine

Lusine S. Elbakyan¹, Irina V. Zaporotskova¹, Mariia F. Chesheva¹; ¹Volgograd State University, Volgograd, Russia

2L. Mechanical properties of graphynes under uniaxial tension

Angelina Kh. Akhunova, Julia A. Baimova; Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Ufa, Russia

3L. **The influence of point defects on the electronic properties of graphene-nanotube hybrid films**

Vitaliya A. Tretyak, Michael M. Slepchenkov, Olga E. Glukhova; Saratov State University, Saratov, Russia

4L. **Features of photoelectric characteristics of CdS:Fe samples obtained using various technologies**

Svetlana V. Stetsyura, Polina G. Kharitonova, Saratov State University, Saratov, Russia

5L. **Influence of Liquid Crystal Ligands on the Optical and Monolayer Properties of CdSe Quantum Dots**

A. . Al-Alwani¹, E. G. Glukhovskoy²; ¹Al-Furat Al-Awsat Technical University, ²Saratov State University

6L. **The influence of metal oxide nanoparticles on the energy and electrophysical characteristics of quasi-2D graphene-nanotube film**

Michael M. Slepchenkov¹, Vladislav V. Shunaev¹, Pavel V. Barkov¹, Semyon G. Levitsky¹, Olga E. Glukhova^{1,2}; ¹Saratov State University, Saratov, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia

Workshop on Nonlinear Dynamics XVI

Workshop Co-Chairs: Galina I. Strelkova, Saratov State University (Russia), Andrei V. Slepnev, Saratov State University (Russia)

Secretary: Andrei V. Slepnev, Saratov State University (Russia), Elena V. Rybalova, Saratov State University (Russia)

International Program Committee: Jürgen Kurths, Humboldt University, Berlin, Germany; Alexander Neiman, Ohio University, USA; Igor Khovanov, Warwick University, UK; Olga Sosnovtseva, University of Copenhagen, Denmark; Alexey N. Pavlov, Saratov State University, Russia; Tatiana E. Vadivasova, Saratov State University, Russia; Alexey V. Shabunin, Saratov State University, Russia; Dmitry E. Postnov, Saratov State University, Russia

October 2, Thursday

ORAL SESSION NONLINEAR DYNAMICS XVI (Building 3, Room 38)

Chairs: Galina I. Strelkova, Andrei V. Slepnev, Saratov State Univ., Russia

Saratov time/Moscow time

14:00-14:15/13:00-13:15

Oral Report

Neural Network Adaptations during Sleep in Apnea: Between Change and Constancy

Konstantin Sergeev¹, Maxim Zhuravlev^{1,2}, Anastasiya Runnova^{1,3}; ¹Saratov State University, Saratov, Russia; ²National Medical Research Center for Therapy and Preventive Medicine, Moscow, Russia; ³Saratov State Medical University, Saratov, Russia

14:15-14:30/13:15-13:30

Oral Report

Control of wavefront propagation in bistable delayed-feedback oscillators

Vladimir V. Semenov; Saratov State University, Saratov, Russia

14:30-14:45/13:30-13:45

Oral Report

Age-related aspects in coordination among brain rhythms during sleep-wake cycles

German A. Guyo, Alexey N. Pavlov; Saratov State University, Saratov, Russia

14:45-15:00/13:45-14:00

Oral Report

Applying nonlocal coupling for coherence resonance control

Aleksey A. Ryabov, Elena V. Rybalova, Andrei V. Bukh, Tatiana E. Vadivasova, Vladimir V. Semenov; Institute of Physics, Saratov State University, Saratov, Russia

15:00-15:15/14:00-14:15

Oral Report

The influence of heterogeneous interlayer couplings on the dynamics of a two-layer network of FitzHugh–Nagumo neuron rings

Natalia N. Nikishina, Elena V. Rybalova, Tatiana E. Vadivasova; Saratov State University, Saratov, Russia

15:15-15:30/14:15-14:30

Oral Report

The impact of internal noise on the performance and training of hardware artificial neural networks. Prospects for hardware spiking networks

Nadezhda I. Semenova, Ivan D. Kolesnikov, Daniil A. Maksimov; ¹Saratov State University, Saratov, Russia

15:30-15:45/14:30-14:45

Oral Report

Noise-induced extreme events in the ring of FitzHugh–Nagumo neurons

Andrei Bukh, Nataliya Nikishina; Saratov State University, Russia

JOINT INTERNET/POSTER SESSION NONLINEAR DYNAMICS (ND) (Building 3)

Chairs: Andrei V. Slepnev, Saratov State Univ., Russia

18.15-20.30

1ND.The Minimal Circuitry for FitzHugh–Nagumo neuron model with a Low Power Consumption and Optical I/O Interface

Alexey O. Manturov¹, Olga V. Drogaitseva²; ¹Russian Presidential Academy of National Economy and Public Administration; ²Saratov State Technical University

2ND. Modeling and evaluation of noise effects on the performance of hardware neural networks

I.D. Kolesnikov, N.I. Semenova; Saratov State University, Saratov, Russia

3ND. Changes in EEG and ECG signal connectivity during tilt-table testing in healthy males

Mikhail Yu. Novikov¹, Maxim O. Zhuravlev^{1,2}, Anton R. Kiselev¹; ¹National Medical Research Center for Therapy and Preventive Medicine, Moscow, Russia; ²Saratov State University, Saratov, Russia

4ND. Analysis of electrophysiological ECG/PPG recordings in a six-minute walk test in older adults

Anastasiya E. Runnova¹; Maxim O. Zhuravlev^{2,1}; Natalya S. Akimova¹; Larisa E. Konshina¹; Elizaveta P. Emelyanova^{1,2}; ¹Saratov State Medical University, Saratov, Russia; ²Saratov State University, Saratov, Russia

5ND. Wavelet detection of continuous heart rate in elderly patients with some types of arrhythmias

Natalya S. Akimova¹; Maxim O. Zhuravlev^{2,1}; Larisa E. Konshina¹; Elizaveta P. Emelyanova^{1,2}; ¹Saratov State Medical University, Saratov, Russia; ²Saratov State University, Saratov, Russia

6ND. Quantitative indices for monitoring mental fatigue based on heart rate variability analysis methods

Sergey E. Burmistrov, Elena V. Navrotskaya, Aleksandr V. Kurbako, Borys P. Bezruchko; Saratov State University, Saratov, Russia

Conference on Nanobiophotonics XXI

Workshop Chair: Nikolai G. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov Scientific Centre of the Russian Academy of Sciences (IBPPM RAS); Saratov State University

Secretary: Vitaly A. Khanadeev, Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov Scientific Centre of the Russian Academy of Sciences (IBPPM RAS); Saratov State University of Genetics, Biotechnology, and Engineering named after N. I. Vavilov

International Program Committee: Roberto Pini, Institute of Applied Physics (IFAC-CNR) National Research Council of Italy; **Jian Ye**, School of Biomedical Engineering & Med-X Research Institute Shanghai Jiao Tong University, China; **Boris Khlebtsov**, Saratov Scientific Centre of the Russian Academy of Sciences, Director (Russia); **Dmitry Gorin**, Scoltech, Saratov State University (Russia); **Irina Goryacheva**, Saratov State University (Russia); **Lev Dykman**, Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov Scientific Centre of the Russian Academy of Sciences (IBPPM RAS, Russia); **Alexey Kononov**, Department of Molecular Biophysics and Polymer Physics, Saint Petersburg State University (Russia);

October 1, Wednesday

**ORAL/INVITED SESSION
NANOBIOPHOTONICS**

(Building 9, Conference Hall)

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

Link to connect in Yandex Telemost:
<https://telemost.yandex.ru/j/12336616765999>



14.00 – 14.20

Invited

Template synthesis of plasmonic nanoparticles in solution and in 2D ensembles

Olga V. Dement'eva, Frumkin Institute of Physical Chemistry and Electrochemistry of Russian Academy of Sciences, Moscow, Russia

14.20 – 14.40

Invited

Sensing mechanisms of luminescent metal nanoclusters

Alexei I. Kononov, Saint Petersburg State University, Saint Petersburg, Russia

14.40 – 15.00

Invited

Nanobiointerfaces: Composition and functionality of complexes between nanoparticles and bioreceptors

Anatoly V. Zherdev, A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia

15.00 – 15.20

Invited

New features in the theoretical description of the optical properties of plasmon-exciton nanostructures

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

15.20 – 15.35

Oral

Plasmonic nanostructures core/shell/fluorophore: how to control optical properties

Dmitriy M. Kravchinskiy¹, Maria E. Kartseva¹; ¹A.N. Frumkin Institute of Physical Chemistry and Electrochemistry of the Russian Academy of Sciences, Moscow, Russia

15.35 – 15.50

Oral

Fluorescent gold nanoclusters (AuNCs) as powerful tools for microbial diagnostics

Daniil S. Chumakov¹, Stella S. Evstigneeva^{1,2,3}, Nikolai G. Khlebtsov^{1,2}; ¹Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov Scientific Centre of the Russian Academy of Sciences (IBPPM RAS), Saratov, Russia; ²Saratov State University, Saratov, Russia; ³Saratov State Medical University of V.I. Razumovsky, Ministry of Health of the Russian Federation, Saratov, Russia

16.00–16.30

Coffee break

16.30 – 16.45

Oral

Application of nanoluminophores based on NaYF₄:Yb³⁺/Tm³⁺ complexes as temperature sensors

Kirill A. Buzanov¹, Kirill A. Laptinskiy^{1,2}, Tatiana A. Dolenko¹, Sergey A. Burikov¹; ¹Lomonosov Moscow State University, Moscow, Russia; ²Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow, Russia

16.45 – 17.00

Oral

Biodegradable carriers for the delivery of glucocorticoids into hair follicles

Yulia I. Svenskaya, Mariia S. Saveleva, Polina A. Demina, Yury I. Surkov, Isabella A. Serebryakova, Roman A. Verkhovskii, Roman Anisimov, Elina A. Genina, Valery V. Tuchin, Saratov State University, Saratov, Russia

17.00 – 17.15

Oral

Machine Learning-Enhanced Glucose Sensing via Dual-Synthesis AgNP SERS Substrates: From High-Throughput Fabrication to Clinical Detection

Ekaterina Prikhodzhenko¹, Viktoriia Bakal², Olga Gusliakova², Anastasia Kartashova², Mariia Saveleva², Valentina Plastun², Polina Demina², Ilya Kozhevnikov², Evgenii Ryabov², Daniil Bratashov^{1,2}, Alexey Serdobintsev²; ¹Moscow Institute of Physics and Technology, Dolgoprudny, Moscow region, Russia; ²Saratov State University, Saratov, Russia

17.15 – 17.30

Oral

Quenching luminescence of CdZnSeS/ZnS quantum dots with doxorubicin: an insight into quenching

Danila A. Kornilov, Daria V. Tsyupka, Daniil D. Drozd, Irina Yu. Goryacheva; Saratov State University, Russia

17.30 – 17.45

Oral

Minimally Invasive Endovascular Delivery of PLGA Nanoparticles to the Different Organs and Tissues

Olga A. Sindeeva¹, Lyubov I. Kazakova², Aleksandra Sain¹, Olga I. Gusliakova^{1,3}, Oleg A. Kulikov⁴, Daria Terenteva¹, Irina A. Gololobova⁴, Gleb B. Sukhorukov^{1,2}; ¹Skolkovo Institute of Science and Technology, Moscow, Russia; ²Life Improvement by Future Technologies Center, Moscow, Russia; ³Saratov State University, Saratov, Russia; ⁴National Research Ogarev Mordovia State University, Saransk, Russia

17.45 – 18.00

Oral

Strategies for Enhancing Nanozyme-Based Colorimetric Immunoassays

Pavel Khramtsov¹; ¹Institute of Ecology and Genetics of Microorganisms, Perm Federal Research Center, Ural Branch of RAS, Perm, Russia

18.00 – 18.15

Oral

Strategies for Synthesizing and Tuning Properties of Gold Nanorods for Specific Biomedical Applications

Vitaly A. Khanadeev^{1,2}, Andrey V. Simonenko^{1,3}, Andrey M. Burov¹, Boris N. Khlebtsov¹, Nikolai G. Khlebtsov¹; ¹IBPPM RAS, Saratov, Russia; ²Saratov State University of Genetics, Biotechnology and Engineering Named after N. I. Vavilov, Saratov, Russia; ³Saratov State University, Saratov, Russia;

18.15 – 18.30

Online Oral

Development of Carbon Nanotube-Based Nanocomposite Materials for Seamless Vascular Repair

Victoria V. Suchkova^{1,2}, Kristina D. Popovich^{1,2}, Dmitry I. Ryabkin^{1,2}, Ilya N. Sorokvasha³, Ekaterina V. Blinova^{2,3}, Dmitry V. Telyshev^{1,2}, Sergey V. Selishchev¹, Alexander Yu. Gerasimenko^{1,2}; ¹National Research University of Electronic Technology (MIET), Moscow, Russia; ²I.M. Sechenov First Moscow State Medical University, Moscow, Russia; ³National Research Nuclear University MEPhI, Moscow, Russia

18.30 – 18.45

Online Oral

Structure and physico-mechanical properties of ceramic composite material hydroxyapatite-multi-walled carbon nanotubes

A.E. Rezvanova¹, B.S. Kudryashov¹, V.Y. Pogudin^{1,2}; ¹Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia; ²Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

October 2, Thursday

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

Chair (N): **Vitaly A. Khanadeev**, IBPPM RAS;
Saratov State University of Genetics,
Biotechnology, and Engineering named after N.I.
Vavilov

18.15-20.30

1NB. Optical control of gradient sedimentation fractionation of anisotropic plasmon resonance nanoparticles

Daniil A. Puzanov¹, Vladimir A. Bogatyrev^{1,2}, ¹Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences (IBPPM RAS), Saratov, Russia; ²Saratov State University, Saratov, Russia

2NB. The therapeutic effect of intrafollicular delivery of vaterite carriers loaded with a glucocorticoid in a psoriasis-like dermatitis in rats in vivo

Mariia S. Saveleva¹, Yury I. Surkov¹, Polina A. Demina¹, Mikhail E. Lobanov¹, Isabella A. Serebryakova¹, Yulia I. Svenskaya¹; ¹Saratov State University, Saratov, Russia

3NB. Statistical Experimental Planning Methods in Quantum Dots Spectral Range Tuning

Artyom K. Skvortsov, Victoria D. Gorlo, Danila A. Kornilov, Daniil D. Drozd, Irina Yu. Goryacheva; Saratov State University,

4NB. Hydrophobic ligand Influence on optical properties and hydrophilization process of core-shell quantum dots

Ivan S. Matlakhov¹, Svetlana A. Meshcheryakova¹, Danila A. Kornilov¹, Daniil D. Drozd¹; ¹Saratov State University, Saratov, Russia

Conference on Spectroscopy and Molecular Modeling XXVI

Workshop Chairs: Lev M. Babkov, Kirill V. Berezin, Alexander B. Pravdin, Saratov State University (Russia), Inna L. Plastun, Saratov State Technical University (Russia).

Secretary: Anna A. Doronkina, Saratov State University (Russia)

International Program Committee: Lev M. Babkov, Saratov State University (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)

October 1, Wednesday ON-LINE INVITED LECTURE/ORAL SESSION I

Link to connect in Yandex Telemost:
<https://telemost.yandex.ru/j/92850429240792>
(Building 8, Room 216)



Co-chairs: Lev M. Babkov¹, Kirill V. Berezin¹,
Alexander B. Pravdin¹, Inna L. Plastun²
¹Saratov State University, Russia
²Saratov State Technical University

14.30-14.45

Oral

Modelling of the Raman spectra drug-target interaction for human platelet P2Y12 receptor and COX-1 enzyme

Andrey Y. Zyubin, Anna A. Kundalevich, Anastasiya I. Kapitonova, Ilia G. Samusev; Immanuel Kant Baltic Federal University, Kaliningrad, Russia.

14.45 - 15.00

Oral

Hydrogen bonding in monohydrates of saturated triglycerides: MD and DFT modeling

K. V. Berezin¹, E. Yu. Stepanovich², K. N. Dvoretzky³, E. M. Antonova⁴, A. M. Likhter², I. Yu. Yanina^{1,5}; ¹Saratov State National Research University named after N.G. Chernyshevsky, Saratov, Russia, ²Astrakhan State University named after V.N. Tatishchev, Astrakhan, Russia, ³Saratov State Medical University named after V.I. Razumovsky, Saratov, Russia, ⁴Astrakhan State Medical University, Astrakhan, Russia, ⁵National Research Tomsk State University, Tomsk, Russia.

15.00 - 15.15

Oral

Immersion skin clearing with aqueous urea solution: OCT data and molecular modeling

E. Yu. Stepanovich¹, K. V. Berezin², A. M. Likhter¹, K. N. Dvoretzky³, E. V. Grabarchuk¹, I. Yu. Yanina^{2,4}, V. V. Tuchin^{2,4,5}; ¹Astrakhan State University, Astrakhan, Russia, ²Saratov State National Research University, Saratov, Russia, ³Saratov State Medical University, Saratov, Russia, ⁴National Research Tomsk State University, Tomsk, Russia, ⁵Institute of Precision Mechanics and Control, Federal Research Center "Saratov Scientific Center of the Russian Academy of Sciences," Saratov, Russia.

15.15 - 15.30

Oral

Comparison of dimensionality reduction algorithms for solving the inverse problem of fluorescence spectroscopy using machine learning methods

Ivan S. Abramov¹, I. V. Isaev², S. A. Dolenko²; ¹M. V. Lomonosov Moscow State University Moscow, Russia, ²D. V. Skobeltsyn Institute of Nuclear Physics, M. V. Lomonosov Moscow State University, Moscow, Russia.

15.30 - 15.45

Oral

Development of a Spectral Method for Qualitative and Quantitative Determination of the Surface Group Composition of Carbon

Kirill A. Kozhushnyy, A.M.Vervald, T.A.Dolenko; Lomonosov Moscow State University, Moscow, Russia.

15.45 - 16.00

Oral

Electronic spectra of non-canonical DNA bases

Galina N. Ten, Saratov State University, Saratov, Russia.

16.00 - 16.15

Oral

Changes in Raman spectra of bone tissue as an indicator for absolute dating.

Dmitrii V. Abramov¹, Oleg V. Danilov², Viktoriya A. Bykova^{1,2}, Kristina M. Stankevich¹, Kirill S. Khorkov¹; ¹Vladimir State University, Vladimir, Russia; ²State Center for the Conservation, Use and Restoration of Cultural Objects and Cultural Heritage, Vladimir, Russia

16.15 - 16.30

Oral

Spectral Manifestations of Chromium Picolinate under Polymorphic Modification

Pavel D. Filin¹, Pavel A. Zhulidin¹, Inna L. Plastun¹, Ruslan Y. Yakovlev²; ¹Yuri Gagarin State Technical University of Saratov, Saratov, Russia, ²OOO "NC RTA", Moscow, Russia

16.30 - 16.45

Oral

The Role of Synthetic Data Proportion in Improving Spectroscopy-Based Determination of Ion Concentrations

Anastasia S. Mushchina^{1,2}, Isaev I.V.¹, Sarmanova O.E.¹, Dolenko T.A.^{1,2}, Dolenko S.A.¹; ¹D.V.Skobeltsyn Institute of Nuclear Physics, M.V.Lomonosov Moscow State University, ²Faculty of Physics, M.V.Lomonosov Moscow State University

20.30-23.00

Evening boat trip - the lights of Saratov

October 2, Thursday

ORAL SESSION SPECTROSCOPY II

Link to connect in Yandex Telemost:

<https://telemost.yandex.ru/j/92850429240792>

(Building 8, Room 216)



Co-chairs: **Lev M. Babkov**¹, **Kirill V. Berezin**¹,
Alexander B. Pravdin¹, **Inna L. Plastun**²

¹Saratov State University, Russia

²Saratov State Technical University

14.30-14.45

Oral

Investigation of intermolecular interaction affecting the flavonoids antioxidant activity

Inna L. Plastun, Pavel A. Zhulidin, Pavel D. Filin; Yuri Gagarin State Technical University of Saratov, Saratov, Russia.

14.45 -15.00

Oral

Investigation of intermolecular interactions in the amino acid chains of the tumor necrosis factor receptor (TNFb)

Egor V. Nazarev, Inna L. Plastun; Saratov State Technical University, Saratov, Russia.

15.00 -15.15

Oral

Modeling of the intermolecular interactions of the TNF ligand amino acid sequence

Bogdan A. Mishunin, Inna L. Plastun; Yuri Gagarin State Technical University of Saratov, Saratov, Russia.

15.15 -15.30

Oral

Evolution of Raman spectra in the 2700-3100 1/cm region following the thermal degradation of omega-3 dietary supplements

Dmitry D. Vasimov^{1,2}, S.M. Kuznetsov¹, V.S. Novikov¹, E.A. Sagitova¹; ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ²Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Region, Russia.

15.30 -15.45

Oral

Raman study of lactide oligomer structure: molecular architecture, arm length and number, enantiomeric composition, crystallinity degree

Alena N. Bortsova^{1,2}, L.Yu. Kozlova², S.O. Liubimovskii², A.A. Puchkov^{3,4}, K.T. Kalinin^{3,4}, V.S. Novikov², S.M. Kuznetsov²; ¹Mendeleev University of Chemical Technology of Russia, Moscow, Russia; ²Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ³National Research Center «Kurchatov Institute»; ⁴N.S. Enikolopov Institute of Synthetic Polymeric Materials of the Russian Academy of Sciences, Moscow, Russia.

15.45 - 16.00

Oral

Conformational features of D-xylose and their influence on the interpretation of vibrational spectra

Artem. S. Filatov¹, K. V. Berezin¹, V.V. Nechaev²; ¹Saratov State National Research University named after N.G. Chernyshevsky, Saratov, Russia; ²Saratov State Technical University named after Yuri Gagarin, Saratov, Russia.

**16.00–16.30
Coffee break**

16.30–16.45

Oral

Spectral manifestations of the HAEE tetrapeptide with aliphatic and aromatic amino acids

Kirill A. Bryksin¹, Inna L. Plastun¹, Ruslan Yu. Yakovlev², Sergey A. Kozin²; ¹Saratov State Technical University, Saratov, Russia; ²Proteonics LLC, Moscow, Russia.

16.45–17.00

Oral

Molecular modeling of triacetone interaction with aqueous environment by the DFT method: IR bands of O-H vibrational hydrogen-bonded water molecules

Kirill V. Berezin¹, E. Yu. Stepanovich¹, K. N. Dvoretzky³, E. M. Antonova⁴, A. M. Likhter², I. Yu. Yanina^{1,5}, V.V. Nechaev⁶

¹N.G. Chernyshevsky Saratov State National Research University, Saratov, Russia; ²V.N. Tatishchev Astrakhan State University, Astrakhan, Russia; ³V.I. Razumovsky Saratov State Medical University, Saratov, Russia; ⁴Astrakhan State Medical University, Astrakhan, Russia; ⁵National Research Tomsk State University, Tomsk, Russia; ⁶Saratov State Technical University named after Yuri Gagarin, Saratov, Russia.

17.00–17.15

Online Oral Report

Study of the effect of methylene blue on tumor cell metabolism in vitro

Daria V. Pominova^{1,2}, Anastasia V. Ryabova^{1,2}, Inessa V. Markova^{1,2}, Igor D. Romanishkin¹; ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ²Institute of Engineering Physics for Biomedicine, National Research Nuclear University MEPhI, Moscow, Russia.

17.15–17.30

Online Oral Report

Raman spectroscopy for estimating collagen content in tumor extracellular matrix

Elena D. Antipova¹, Igor D. Romanishkin², Tatiana A. Savelieva^{1,2}, Anastasia V. Ryabova^{1,2}; ¹NRNU MEPhI, Moscow, Russia; ²Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia.

October 2, Thursday

JOINT POSTER/INTERNET SESSION SPECTROSCOPY (S)

(Building 3, 3rd floor Hall)

Co-chairs: **Lev M. Babkov**¹, **Kirill V. Berezin**¹,
Alexander B. Pravdin¹, **Inna L. Plastun**²

¹Saratov State University, Russia

²Saratov State Technical University

18.00-20.00

1S Spectral methods in the study of the structure of chromocarbonitriles, spiroindolinpyrrolizidinecarbonitriles and their transformation products

Andrey S. Kochukov¹, Anna A. Meshcheryakova¹, Alexander V. Nikulin¹, Anna E. Sklyar¹, Ekaterina A. Konstantinova², K.-J. Ayena¹, Nikolay I. Davydov¹, Nikita A. Plotnikov¹, Dmitry P. Vozyagin¹, Nikita V. Oprishchenko¹, Svetlana V. Borisova³, Adel P. Krivenko¹, Vitaly V. Sorokin¹; ¹Saratov State University, Saratov, Russia; ²Institute of Biochemistry and Physiology of Plants and Microorganisms Russian Academy of Sciences, Saratov, Russia; ³Saratov State Medical University named after V.I. Razumovsky, Saratov, Russia.

2S Conformational cis- and trans- transitions in the ir spectra of behenic acid

Mikhail D. Moskvitin¹, Lev M. Babkov², Alexey V. Larionov²; ¹Yuri Gagarin Saratov State University, Saratov, Russia; ²Nikolay Chernyshevsky Saratov State University, Saratov, Russia.

3S Influence of Hydrogen Bonding in the IR Spectra of Cresol Lev M. Babkov¹, Nadezda. A. Davydova², Irina V. Ivlieva-Peretokina¹; ¹Saratov State University, Saratov, Russia, ²National Academy of Science, Kiev, Ukraine.

4S IR Spectrum and Geometrical Structure of Chromenopyrimidines Lev M. Babkov, Irina V. Ivlieva-Peretokina, Anna A. Metcheryakova, Vitaly V. Sokokin; Saratov State University, Saratov, Russia.

5S Molecular modeling of fatty acid triglyceride dimers and their aqueous complexes by DFT: thermodynamic association analysis Ekaterina Yu. Stepanovich¹, K. V. Berezin², K. N. Dvoretzky³, E. M. Antonova⁴, A. M. Likhter¹, I. Yu. Yanina^{2,5}; ¹Astrakhan State University named after V.N. Tatishchev, Astrakhan, Russia, ²Saratov State National Research University named after N.G. Chernyshevsky, Saratov, Russia, ³Saratov State Medical University named after V.I. Razumovsky, Saratov, Russia, ⁴Astrakhan State Medical University, Astrakhan, Russia, ⁵National Research Tomsk State University, Tomsk, Russia.

6S Improving the diagnostics of male fertility through Raman spectroscopy of seminal plasma Elena Rimskaya^{1,2}, Alexey Gorevoy¹, Aleksandra Yakimova², Natalia Makarova²; ¹Lebedev Physical Institute, Moscow, Russia; ²National Medical Research Center for Obstetrics, Gynecology and Perinatology named after Academician V.I. Kulakov, Moscow, Russia.

7S Spectral identification features of flavone I. V. Pulin, Saratov State Technical University, Saratov, Russia, E.V. Ryzhova, Saratov State Agricultural University, Saratov, Russia, T.Yu. Surinskaya, Saratov State Agricultural University, Saratov, Russia, O.V. Pulin, P.M. Elkin, Saratov State Technical University, Saratov, Russia.

8S Structural-dynamic models and spectral identification of dihydroxytoluene I.F. Pulin, Saratov State Technical University, Saratov, Russia, E.V. Ryzhova, Saratov State Agricultural University, Saratov, Russia, T.Yu. Surinskaya, Saratov State Agricultural University, Saratov, Russia, O.V. Pulin, Saratov State Technical University, Saratov, Russia, P.M. Elkin, Saratov State Technical University, Saratov, Russia

9S Using optical physics methods in environmental monitoring of s-trinitrotriazine I.F. Pulin, Saratov State Technical University, Saratov, Russia, E.V. Ryzhova, Saratov State Agricultural University, Saratov, Russia, T.Yu. Surinskaya, Saratov State Agricultural University, Saratov, Russia, O.V. Pulin, Saratov State Technical University, Saratov, Russia, P.M. Elkin, Saratov State Technical University, Saratov, Russia

10S Electron excitation energy transfer spectroscopy in the study of structural changes in glycosylated transport proteins Alexander R. Milkin², Alexander B. Pravdin¹, Andrey G. Melnikov²; ¹Saratov State University, Saratov, Russia, ²Yuri Gagarin State Technical University of Saratov

INTERNET POSTERS

1 FEM Solver Coulomb Two Center Problem A.I. Muratova¹, A.A. Gusev², O. Chuluunbaatar², S.I. Vinitsky², V. L. Derbov³, L. L. Hai⁴; ¹Tver State University, Tver, Russia; ²Joint Institute for Nuclear Research, Dubna, Moscow Region, Russia; ³Saratov State University, Saratov, Russia; ⁴Ho Chi Minh city University of Education, Ho Chi Minh City, 72711, Viet Nam.

2 Identification of collagen-containing gel in mesh endoprostheses using Raman spectroscopy P.V. Shulepov¹, L.T. Volova¹, N.A. Ryabov^{2,1}, P.E. Timchenko^{1,2}, E.V. Timchenko^{1,2}, S.S. Ivanov^{1,2}; ¹Samara State Medical University, Institute of Experimental Medicine and Biotechnology, Samara, Russia, ²Samara National Research University named after Academician S.P. Korolev, Samara, Russia.

Workshop on Electromagnetics of Microwaves, Submillimeter and Optical Waves XXV

Workshop Chair: Michael V. Davidovich, Saratov State University

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

International Program Committee:

Nikita M. Ryskin, Kotelnikov Institute of Radio-Engineering of RAS (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); **Alexander M. Lerer**, South Federal University, Rostov-Don (Russia), **Vyacheslav V. Popov**, Kotelnikov Institute of Radio-Engineering of RAS (Russia)

Thursday, October 2

Online Oral Report Session

(Building 8, 3rd floor, Room 318, SSU)

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

Link:

<https://dpf8bfnc.ktalk.ru/f4oy5v41g5om>

15.00–15.15

Diffraction of monochromatic waves and ultrashort pulses on magnetized graphene lattices

Lerer A.M.¹, Makeeva G.S.², Ivanova I.N.¹, Kravchenko V.I.¹. ¹Southern Federal University, Rostov-on-Don, Russia, ²Penza State University, Penza, Russia

15.15–15.30

Modeling and electrodynamic analysis of a tunable microwave filter with high attenuation in the attenuation band

Konoplev A., Nathin I.¹, Serdyuk V. Southern Federal University, Rostov-on-Don, Russia

15.30–15.45

Волноводный полосно-пропускающий фильтр с подавлением гармоник на прямоугольном волноводе

Епишева О.К., Крутиев С.В.. Южный федеральный университет, Ростов-на-Дону, Россия

15.45–16.00

Миниатюрный HMSIW-фильтр с высокой избирательностью и широкой полосой заграждения

Bukin S.P., Krutiev S.V.. Southern Federal University, Rostov-on-Don, Russia

16.00–16.15

Квазиэллиптический волноводный фильтр со сложной структурой связи

Крутиев С.В., Корж В.Н. ЮФУ, Ростов-на-Дону.

16.15–16.30

Метод расчета электрически длинной антенной решетки оптического диапазона на основе слабоконтрастных материалов

Moshichenko S.D., Kleshnikov A.B. Southern Federal University, Rostov-on-Don, Russia

ORAL SESSION ELECTROMAGNETICS

(Building 8, 3rd floor, Room 318, SSU)

Chair: Michael V. Davidovich, Saratov State University, Russia

16.30–16.50

Bandpass Filters Based on Dual-Mode Modified Cylindrical Resonators

Kats B.M., Sayapin K.A.^{1,2}, Golubtsov M.E.¹.

¹Waveguide-based Systems LLC, Dmitrov, Russia;

²Saratov State University, Saratov, Russia

16.50–17.10

Van Kampen's approach for the Casimir force in multilayer structures

Davidovich M.V., Saratov State University, Saratov, Russia

17.10–17.30

Nonlinear electromagnetic response of graphene in tight-binding model

Davidovich M.V., Saratov State University, Saratov, Russia

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

Chairs: **Ivan V. Fedosov, Daria K. Tuchina,**
Saratov State Univ., Russia

Moderators: Ivan V. Fedosov, Michael M. Slepchenkov, Alexander I. Dubrovsky,
Saratov State Univ., Russia

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

Thursday September 26
18.-00–20.-00

1. **Directional spin-wave coupling in an orthogonal magnetic waveguide system**
Andrey A. Grachev, Fedor E. Garanin, Alexandr V. Sadovnikov; Saratov State University, Saratov, Russia
2. **Study of the dynamics of a sheet electron beam in miniature W-band TWT with permanent magnet focusing systems**
Alina D. Tolstykh^{1,2}, Roman A. Torgashov^{1,2}; ¹Saratov Branch Kotelnikov Institute of Radioengineering and Electronics RAS, Russia; ²Saratov State University
3. **STUDY OF FILTRATION MODES IN A CROSS-SHAPED MICROWAVEGUIDE BASED ON A YIG FILM WITH MAGNETITE NANOPARTICLES**
Fedor E. Garanin¹, Alexander V. Sadovnikov¹, Maria V. Lomova¹; ¹Saratov State University, Saratov, Russia
4. **PHASE RESOLUTION OF SPIN WAVE PROPAGATION IN YIG FILM WITH LINEARLY VARYING WIDTH.**
V.A. Gubanov¹, F.E. Garanin¹, A.V. Sadovnikov¹; ¹Saratov State University, Saratov, Russia
5. **Development of electron gun for miniaturized millimeter-band traveling-wave tube**
Dmitry A. Nozhkin^{1,2}, Roman A. Torgashov^{1,2}, Dmitry A. Bessonov^{1,3}, Igor A. Navrotsky^{1,3}, Nikita M. Ryskin^{1,2}; ¹Saratov Branch, Institute of Radio-Engineering of RAS, Saratov, Russia; ²Saratov State University, Saratov, Russia; ³ RPE "Almaz", Saratov, Russia
6. **Gap solitons in magnonic crystals with loads**
V.A. Ochkina¹, M.A. Morozova¹; ¹Saratov State University, Saratov, Russia
7. **Пространственно-частотная селекция сигналов в ЖИГ-структуре с крестообразной конфигурацией волноводов и центральным кольцевым резонатором**
Anna A. Manyшева¹, Karina E. Zhumabekova¹, Nikita Y. Yasnev¹, Alexandr V. Sadovnikov¹; ¹Saratov State University, Saratov, Russia

8. **Design of a K-band Waveguide Bandpass Filter with Cross-Coupling**
Kirill A. Sayapin; Saratov State University, Saratov, Russia; Waveguide-based Systems LLC, Dmitrov, Russia
9. **Promising design of an inline filter for multiplexing systems**
Nikita M. Gerasimov¹, Nikita A. Shkunov¹, Kirill A. Sayapin^{1,2}, Boris M. Kats¹; ¹Waveguide-based Systems LLC, Saratov, Russia; ²Saratov State University, Saratov, Russia
10. **C-Band Compline Bandpass Filter with Enhanced Selectivity: Implementation and Analysis of Complex Coupling Schemes**
Nikita A. Shkunov¹, Nikita M. Gerasimov¹, Boris M. Kats¹, Kirill A. Sayapin^{1,2}; ¹Waveguide-based Systems LLC, Dmitrov, Russia; ²Saratov State University, Saratov, Russia
11. **Features of Spin Wave Propagation in a Ring YIG Microresonator with Non-Uniform Internal Magnetic Field Distribution**
N.Yu. Yasnev¹, A. A. Manyшева¹, K.E. Zhumabekova¹, A. V. Sadovnikov¹; ¹Saratov National Research State University named after N.G. Chernyshevsky
12. **Study of the effect of the width of a ZIG microwave guide on the spectra of surface and inverse bulk spin waves**
Karina E. Zhumabekova, Pavel A. Zhironkin, Anna A. Manyшева, Aleksandr V. Sadovnikov. Saratov State University, Saratov, Russia
13. **Spatial-frequency signal selection based on spin-wave propagation effects in a YIG structure with intersecting waveguides and resonators**
Alexey. A. Solyanov, Pavel A. Zhironkin, Vladislav D. Klusov, Alexandr V. Sadovnikov. Saratov State University, Saratov, Russia

Conference on Endogenous Biophotonics: Ultra-Weak Luminescence from Biological Systems IV

Chairs: **Ilya V. Volodyaev**, Lomonosov Moscow State University, European Medical Center, Moscow, Russia, **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia.

Secretary: **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia

International Program Committee:

Yury A. Vladimirov, Honourable Member of the Program Committee, Lomonosov Moscow State University, Pirogov Russian National Research Medical University, Moscow, Russia); **Andrey V. Budagovsky**, Michurinsk State Agrarian University, Michurin Federal Scientific Center, Michurinsk, Tambov Region, (Russia); **Cristiano de Mello Gallep**, University of Campinas, Campinas, (Brazil); **Alexander A. Krasnovsky**, Federal Research Center of Biotechnology, Bach Institute of Biochemistry RAS, (Russia); **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk Akademgorodok, (Russia); **Vitaly Yu. Plavskii**, B.I. Stepanov Institute of Physics of the National Academy of Sciences of Belarus, Minsk, Belarus; **Felix Scholkmann**, University of Zurich, Zurich, (Switzerland); **Kharlampy P. Tiras**, Institute of Theoretical and Experimental Biophysics RAS, Pushchino, Moscow Region, (Russia); **Aleksei V. Trofimov**, Emanuele Institute of Biochemical Physics RAS, Moscow, (Russia); **Raif G. Vasilov**, Kurchatov Complex of NBICS-Technologies, National Research Center «Kurchatov Institute», Moscow, (Russia); **Vladimir L. Voeikov**, Lomonosov Moscow State University, (Russia);

Ilya V. Volodyaev, Lomonosov Moscow State University, European Medical Centre, Moscow, Russia

October 1, Wednesday

**INVITED/ ON-LINE INVITED/ ORAL/
ON-LINE ORAL REPORT SESSION
ENDOGENOUS BIOPHOTONICS I**

(Pushchino, Institute of Cell Biophysics RAS)

Link to connect in Zoom:

<https://us06web.zoom.us/j/89624952112?pwd=aAbN5zl5qciDrmhX1GiQ4Aisd2wmX.1>

ID: 896 2495 2112

Code: 942245



Chairs: **Ilya V. Volodyaev**, Moscow State University, European Medical Center, Moscow, Russia; **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics, SB RAS, Novosibirsk, Russia

Moderator: **Alexey B. Petrov**, Institute of Theoretical and Experimental Biophysics RAS, Pushchino, Moscow region, Russia

Saratov time/Moscow time

14:30-14:35/13:30-13:35

Welcome words by Ilya V. Volodyaev and Elena V. Naumova

14:35-15:20/13:35-14:20

Online Invited

Cancer and cellular electromagnetic field /In memory of Jiří Pokorný

Jan Pokorný, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic

15:20-15:40/14:20-14:40

Oral Report

Luminescent properties of blood in oncological diseases: searching for the first tumour marker

Elena V. Naumova¹, Ilya V. Volodyaev²; ¹Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia; ²Moscow State University, Moscow, Russia

15:40-16:10/14:40-15:10

Invited

The development of cancer and metastases The role of A. Gurwitsch's concepts of mitogenetic radiation in tumor nodes in these processes

Victor A. Ovsyannikov, Russia

16:10-16:25/15:10-15:25

Coffee break

16:25-16:55/15:25-15:55

Online Invited

Ultraweak photon emission and the role of DNA: experiments and interpretations

József Bódis^{1,2,3}, József Berke^{1,4}, István Gulyás¹, Ilya V. Volodyaev⁵; ¹National Laboratory on Human Reproduction, University of Pécs, Pécs, Hungary; ²HUN-REN-PTE Human Reproduction Scientific Research Group, Pécs, Hungary; ³Department of Obstetrics and Gynecology, Medical Scholl, University of Pecs, Pécs, Hungary; ⁴Dennis Gabor University, Department of Drone Technology and Image Processing, Budapest, Hungary; ⁵Moscow State University, Moscow, Russia

16:55-17:20/15:55-16:20

Online Oral

Modeling DNA Resonance

Max Myakishev-Rempel; DNA Resonance Research Foundation, San Diego, CA, USA

17:20-17:40/16:20-16:40

Oral

Radiofrequency emission from water solutions prepared using gradual technology is modulated by a magnetic field

German O. Stepanov¹, Natalya N. Rodionova¹, Anastasia O. Petrova¹, Vadim V. Novikov², Elena V. Yablokova², Dmitry Yu. Chernikov³, Andrey V. Minakov³, Elena M. Dobychina⁴, Mihail V. Snastin⁴; ¹OOO "NPF "MATERIA MEDICA HOLDING"; ²Institute of Cell Biophysics of the Russian Academy of Sciences; ³Siberian Federal University; ⁴Moscow Aviation Institute (National Research University)

October 2, Thursday

INVITED/ ON-LINE INVITED/ ORAL/
ON-LINE ORAL REPORT SESSION
ENDOGENOUS BIOPHOTONICS II

(in Russian and English)

(Pushchino, Institute of Cell Biophysics RAS)

Link to connect in Zoom:

https://us06web.zoom.us/j/89624952112?pwd=t_aAbN5zl5gciDrmhX1GiQ4Aisd2wmx.1

ID: 896 2495 2112

Code: 942245



Chair: Andrey V. Budagovsky, Michurin Federal Research Center, Michurinsk, Russia; Michurinsk State Agrarian University, Michurinsk, Russia

Moderator: Ilya V. Volodyaev; Moscow State University, Moscow, Russia

Saratov time/Moscow time

09:00-09:30/10:00-10:30

Invited (In Russian)

Non-chemical distant interactions of biological objects at different levels of organization

Alexandr B. Burlakov, Olga V. Burlakova; Dep. of Embryology, Faculty of Biology, Lomonosov Moscow State University, Moscow, Russia

09:30-09:50/10:30-10:50

Oral Report (In Russian)

Challenges of evidence and reproducibility in experiments on distant biological interactions

Ilya V. Volodyaev¹, Elena V. Naumova²;

¹Moscow State University, European Medical Center, Moscow, Russia; ²Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia

09:50-10:20/10:50-11:20

Invited (In Russian)

Experimental study of the effects of biogenic electromagnetic and acoustic radiation on seed germination: interpretation of the mitogenetic effect through statistical physics and information theory

Yuriy M. Gorovoy, Yaroslavl State Technical University, Yaroslavl, Russia

10:20-10:40/11:20-11:40

Oral Report (In Russian)

Study of an effect of photo bio modulation on human gut microbiota in vitro under normal conditions and after cryopreservation

Robert N. Khramov¹, Liubov V. Zalomova², Eugeny E. Fesenko (Jr.)²; Institute of Biophysics PSCBR RAS, Pushchino, Moscow region; ²Institute of Theoretical and Experimental Biophysics RAS, Pushchino, Moscow region L.V. Zalomova², E.E. Fesenko (Jr.)²; ¹Institute of Biophysics PSCBR RAS, Pushchino, Moscow region; ²Institute of Theoretical and Experimental Biophysics RAS, Pushchino, Moscow region, Russia

10:40-11:15/11:40-12:15

Invited (In Russian)

On the way from exogenous photoregulation to endogenous biophotonics

Andrey V. Budagovsky^{1,2}, Olga N. Budagovskaya^{1,2}, Ivan A. Budagovsky³, Natalya V. Solovykh¹; ¹Michurin Federal Research Center, Michurinsk, Russia; ²Michurinsk State Agrarian University, Michurinsk, Russia; ³P.N. Lebedev Physics Institute, Moscow, Russia

11:15-11:30/12:15-12:30

Coffee break

Chair: **Victor D. Lakhno**, Institute of Mathematical Problems of Biology RAS – the Branch of Keldysh Institute of Applied Mathematics of Russian Academy of Sciences

Moderator: **Elena V. Naumova**, Rzhanov Institute of Semiconductor Physics, SB RAS, Novosibirsk, Russia

11:30-12:00/12:30-13:00

Invited (In Russian)

Quantum bioinformatics based on DNA and quadruplexes

Victor D. Lakhno, Institute of Mathematical Problems of Biology RAS – the Branch of Keldysh Institute of Applied Mathematics of Russian Academy of Sciences

12:00-12:20/13:00-13:20

Online Invited (In Russian)

Highly sensitive low-noise vacuum photodetectors and prospects of their application in studies of ultra-weak luminescence of biological objects and (bio-) chemical systems

Oleg E. Tereshchenko¹, Heinrich E. Scheibler¹, Kirill V. Merkulin¹, Vasily V. Bakin¹, Stanislav A. Rozhkov¹, Vadim S. Rusetsky^{1,2}, Vladimir A. Golyashov¹, Danil A. Kustov¹, Elena V. Naumova¹, Alexander Y. Demin²; ¹A.V. Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, ²CJSC EKRAN-FEP, Novosibirsk, Russia

12:20-12:40/13:20-13:40

Online Oral Report (In Russian)

Localization of acupuncture points by optical method and results of experiments

Leonid G. Navrotsky¹, Liliya I. Lisitsyna², Svetlana V. Belavskaya², Alexander A. Blokhin²; ¹Institute of Laser Physics SB RAS, Novosibirsk, Russia; ²Novosibirsk State Technical University, Novosibirsk Russia

12:40-13:10/13:40-14:10

Invited (In English)

Electrodynamic Contribution to Chemiluminescence Enhancement by Metallic Nanoparticles

Gleb R. Simonenko¹, Igor Yu. Nikitin¹, Lubov N. Borodina¹, Nikita S. Petrov¹, Alena V. Palekhova¹, Danila V. Kononov¹, Daler R. Dadadzanov¹, Nikita B. Leonov¹, Anton S. Bukatin^{2,3}, N.A. Filatov^{1,3}, Sargis Pinamyan⁴, Andrey V. Veniaminov¹, Tigran A. Vartanyan¹; ¹IR&EC PhysNano, ITMO University, St. Petersburg, Russia; ²Institute for Analytical Instrumentation of the Russian Academy of Sciences, Saint-Petersburg, Russia; ³Alferov University, St. Petersburg, Russia; ⁴4ZAO "Geokosmos", Erevan, Armenia

13:10-13:40/14:10-14:40

Online Invited (In English)

Stochastic focusing from 3D to 2D reveals ultra-weak luminescence

Ibtissame Khaoua^{1,2}, Guillaume Graciani^{1,3}, Francois Amblard^{1,4}; ¹Institute for Basic Science-Center for Soft and Living Matter, Ulsan, South Korea, ²Centre hospitalier régional universitaire de Lille, France, ³Institut Polytechnique de Paris, Telecom SudParis, France, ⁴Department of Physics, Ulsan National Institute of Science and Technology, Ulsan, South Korea.

13:40-14:40/14:40-15:40

Lunch

Chair: **Vladimir L. Voeikov**, Lomonosov Moscow State University, Faculty of Biology, Moscow, Russia

Moderator: **Alexey B. Petrov**, Institute of Theoretical and Experimental Biophysics RAS, Pushchino, Moscow region, Russia

14:40-15:20/15:40-16:20

Invited (In Russian)

The emission of photons from aqueous systems, testifies to their stable presence in the electron-excited state, characteristic of living matter

Vladimir L. Voeikov, Ekaterina V. Buravleva; Lomonosov Moscow State University, Faculty of Biology, Moscow, Russia

15:20-15:50/16:20-16:50

Invited (In English)

Spectroscopy of intrinsic IR radiation. Adaptation of the method for studying living systems

Nikita V. Penkov, Nadezhda A. Penkova;
Pushchino Scientific Center for Biological Research
of the Russian Academy of Sciences

15:50-16:20/14:50-15:20

Invited (In English)

Regulatory lipidomics in cytochrome c-dependent mechanisms of cell death. The role of phosphatidic acid and hydroperoxides in the initiation and switching from pro-apoptotic processes to pro-ferroptotic reactions

**German O. Stepanov¹, Aitalina A. Struchkova¹,
Elizaveta D. Rumyantseva¹, Vitaly V. Volkov¹,
Arkady Yu. Makarov², Daria S. Nefedova¹,
Valentina I. Melikhova¹, Anatoly N. Osipov^{1,2};**

¹Department of General and Medical Biophysics,
Institute of Biomedicine, N.I. Pirogov Russian
National Research Medical University, Moscow,
Russia; ²Department of Medical Biophysics,
Institute of Prophylactic Medicine, N.I. Pirogov
Russian National Research Medical University,
Moscow, Russia

16:20-16:50/17:20-17:50

Internet Invited (In English)

Macro and micro enhancers of the 8-anilino-1-naphthalenesulfonate (ANS) fluorescence. Is ANS indeed a hydrophobic probe?

Yurii .B. Tsaplev, Maria G. Semenova, Aleksei V. Trofimov; Emanuel Institute of Biochemical
Physics RAS, Moscow, Russia

16:50-17:10/17:50-18:10

Oral Report (In Russian)

Planarians and ultraweak luminescence

Kharlampy P. Tiras, Institute of Theoretical and
Experimental Biophysics, Pushchino State Institute
of Natural Science

ROUND TABLE DISCUSSION ON ENDOGENOUS BIOPHOTONICS

(Pushchino, Institute of Cell Biophysics RAS)

Link to connect in Zoom:

[https://us06web.zoom.us/j/89624952112?pwd=t
aAbN5zl5gciDrmhX1GiQ4Aisd2wmx.1](https://us06web.zoom.us/j/89624952112?pwd=t
aAbN5zl5gciDrmhX1GiQ4Aisd2wmx.1)

ID: 896 2495 2112

Code: 942245



*Moderators: Ilya V. Volodyaev, Moscow State
University, European Medical Center, Moscow,
Russia; Elena V. Naumova, Rzhannov Institute of
Semiconductor Physics, SB RAS, Novosibirsk,
Russia*

Saratov time/Moscow time

17:10-19:00/18:10-20:00

Workshop on Medical Applications of Laser Molecular Imaging and Machine Learning

Co-chairs: Igor K. Lednev, University at Albany, USA; Tomsk State University, Russian Federation, Yury V. Kistenev, Tomsk State University, Russian Federation

Secretary: Tatiana B. Lepekhina, Tomsk State University, Tomsk, Russian Federation

International Program Committee: Arnaud Coussiet, Université du Littoral Côte d'Opale, France, Vladimir L. Vaks, Institute of Applied Physics of RAS, Nizhny Novgorod, Russian Federation, Olga P. Cherkasova, Institute of Laser Physics of SB of RAS, Russian Federation, Denis A. Vrazhnov, Tomsk State University, Russian Federation, Alexey V. Borisov, Tomsk State University, Russian Federation

October 1, Wednesday

ON-LINE INVITED LECTURE/ORAL SESSION MACHINE LEARNING I & INVITED LECTURE/ ORAL SESSION MACHINE LEARNING II (On-line)

<https://e-class.tsu.ru/#join:ta64f21f3-20e1-444a-b3ab-6e0d3314b413>



Chairs: Yury Kistenev, Denis Vrazhnov, Igor Lednev

Moderator: Denis A. Vrazhnov

14.00-14.20 (Tomsk time 17.00-17.20)

Online Invited Lecture

Quantitative and qualitative analysis of IR spectra for medical and ecological applications

Yury V. Kistenev¹, Denis A. Vrazhnov¹, Viktor V. Nikolaev¹, Akim A. Tretyakov¹, Georgy K. Raspopin¹, Didar R. Makashev¹, Alexey V. Borisov¹
¹LMIML Laboratory, Tomsk State University, Tomsk, Russia

14.20-14.40

Online Invited Lecture

Raman spectroscopy for the detection of non-infectious diseases

Ivan Bratchenko^{1,2}, Lyudmila Bratchenko^{1,2}, Alexander Zakharov³, Anna Neupokoeva³, Maria Skuratova⁴, Peter Lebedev³

¹Samara National Research University, Samara, Russia; ²Immanuel Kant Baltic Federal University, Kaliningrad, Russia; ³Samara State Medical University, Samara, Russia; ⁴Samara Clinics named after NI Pirogov, Samara, Russia

14.40-14.55

Online Oral Report

Avoiding overestimation in multivariate analysis of Raman spectra of biological objects: Interpretation with the SP-LIME algorithm

Lyudmila A. Bratchenko^{1,2}, Yulia A. Khristoforova¹, Maria A. Skuratova³, Petr A. Lebedev⁴, Ivan A. Bratchenko^{1,2}; ¹Samara University, Samara, Russia; ²Immanuel Kant Baltic Federal University, Kaliningrad, Russia; ³Samara City Clinical Hospital №1 named after N. I. Pirogov, Samara, Russia; ⁴Samara State Medical University, Samara, Russia

14.55-15.10 (Tomsk time 17.55-18.10)

Online Oral Report

Informative feature selection for machine learning predictive models based on THZ and IR data

Denis A. Vrazhnov¹, Alexey V. Borisov¹, Viktor V. Nikolaev¹, Georgy K. Raspopin¹, Didar R. Makashev¹, Yuri V. Kistenev¹; ¹Tomsk State University, Tomsk, Russia

15.10-15.25 (Tomsk time 18.10-18.25)

Online Oral Report

Modified high convergence genetic algorithm for numerical optimization tasks solving in the field of THZ-IR spectroscopy

Akim K. Tretyakov¹, Yury V. Kistenev^{1,2}, Viktor V. Nikolaev¹; ¹Tomsk State University, Tomsk, Russia; ²V.E. Zuev Institute of Atmospheric Optics of Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia

15.25-15.40 (Tomsk time 18.25-18.40)

Online Oral Report

Optical coherence tomography as a method for investigating porous materials made of titanium nickelide

Tatiana B. Lepekhina¹, Viktor V. Nikolaev¹, Georgii V. Malkin¹; ¹Tomsk State University, Tomsk, Russia

15.40-15.55 (Tomsk time 18.40-18.55)

Online Oral Report

Phasor Approach for identifying molecular concentration in gas absorption spectra

David A. Lopez Guardado¹, Viktor V. Nikolaev¹, Yury V. Kistenev¹; ¹Tomsk State University, Tomsk, Russia

INTERNET POSTERS

1. An Arduino based laser wavelength tuning system for TDLAS of carbon dioxide

Georgii K. Raspopin¹, Andrei A. Boyko², Oleg A. Romanovskii³, Olga V. Kharchenko³, Yury V. Kistenev¹

¹Tomsk State University, Tomsk, Russia

²Institute of Laser Physics SB RAS, Novosibirsk, Russia

³Institute of Atmospheric Optics SB RAS, Tomsk, Russia

Workshop on Quantum Science and Technologies VI

Co-Chairs: **Aleksey K. Fedorov**, Russian Quantum Center (Russia); National University of Science and Technology "MISIS" (Russia)

Secretary: **Alena S. Mastiukova**, Russian Quantum Center (Russia); National University of Science and Technology "MISIS" (Russia)
(a.mastiukova@rqc.ru, +7 (906) 747-72-29)

International Program Committee:

Vladimir L. Derbov, Saratov State University (Russia); **Igor V. Meglinski**, Aston University, Birmingham (UK), Sechenov University, Moscow (Russia); **Lingyan Shi**, University of California San Diego (USA); **Georgy Shlyapnikov**, LPTMS, University of Paris-Sud (France), University of Amsterdam (The Netherlands), Russian Quantum Center (Russia); **Lihong Wang**, Caltech, Pasadena (USA); **Aleksei M. Zheltikov**, Lomonosov Moscow State University, Russian Quantum Center (Russia), Texas A&M University (USA)

October 3, Friday

ORAL SESSION

Campus of the Skolkovo Institute of Science and Technology

Conference hall G7.300-B

Zoom Meeting

Идентификатор конференции: 823 4483 8746

Код доступа: 740583

<https://us06web.zoom.us/j/82344838746?pwd=qybyELDWkAQbsCTqcEXYTbGtPqatyn.1>



Chair: Evgeniy O. Kiktenko, Russian Quantum Center (Russia)

13:30 – 13:35

Aleksey Fedorov and Evgeniy O. Kiktenko, Opening Ceremony and Welcoming Words

13:40 – 14:00

Ivan V. Dyakonov, Single photon source based on SPDC process aided with time multiplexing

14:05 – 14:25

Евгений Киктенко, Ядерные методы в квантовом машинном обучении

14:30 – 14:50

Денис Дрожжин, Разложение унитарной матрицы в кудите с произвольными разрешенными переходами

14:55 – 15:15

Максим Гавреев, Квантовые сети Колмогорова-Арнольда

15:20 – 15:50
Coffee Break

15:50 – 16:10

Денис Куликов, Исследование вычислительной сложности различных модификаций алгоритма QAOA

16:15 – 16:35

Всеволод Яшин, Симуляция стабилизаторных схем методом переписывания в классические схемы

16:40 – 17:00

Александр Аверьянов, Транспилиция классических алгоритмов в квантовые оракулы

17:05 – 17:25

Olga A. Goryacheva, Approaches to the functionalization of cerium oxide nanoparticles (Zoom Oral Report)

29th International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

Workshop on Modern Optics XXIV

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

Chair: **Georgy V. Simonenko**, Saratov State University

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

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

International Program Committee: **Ivan V. Fedosov**, **Alexander B. Pravdin**, **Valery V. Tuchin**, **Sergey B. Venig**, Saratov State University, **Alexander V. Priezhev**, Moscow State University

September 29, Monday

PUBLIC LECTURE SESSION MODERN OPTICS

(Building 3, Big Physical Hall)

Chair: **Georgy V. Simonenko**, Saratov State University

14.00-15.00

Interaction of optical radiation with biological objects: learning from nature to help it

Dmitry A. Gorin, Skolkovo Institute of Science and Technology, Skoltech, Moscow, Russia

October 2, Thursday

PUBLIC LECTURE SESSION MODERN OPTICS

(Building 3, Big Physical Hall)

Chair: **Georgy V. Simonenko**, Saratov State University

14.00-14.40

Unvisible man – new in medicine

Valery V. Tuchin, Saratov State Univ., Russia

14.40-15.00

Light Detectives: How Polarized & Twisted Light Read Biological Tissues

Igor V. Meglinski, Light Polarization and Quantum Technologies, University of Aston, UK, Sechenov University, Russia (on-line)

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

Workshop Chairs: **Boris A. Medvedev**, **Irina Yu. Yanina**, Saratov State University, Russia

Secretary: **Anton A. Kharchenko**, 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;

October 1, Wednesday

ORAL SESSION /ROUND TABLE (Scientific Library, Conf. Hall)

Co-chairs: **Boris A. Medvedev**,
Irina Yu. Yanina,
Saratov State University, Russia

Saratov time

14:00-14:30

Zoom Oral Report

Theoretical Physics at Saratov University

Lev M. Babkov;
Saratov State University, Saratov, Russia

14:30-14:45

Oral Report

Episodes of the history of scientific research at Saratov State University

Valery M. Anikin;
Saratov State University, Saratov, Russia

14:45-15:00

Oral Report

Student of the SSU Physics Department Lev Pitaevsky

Svetlana V. Churochkina, Dmitry V. Churochkin,
Valery M. Anikin;
Saratov State University, Saratov, Russia

15:00-15:15

Oral Report

Paradoxes of special relativity

Nataliya A. Boykova, Bogdan S. Rezepov;
Saratov State University, Saratov, Russia

15:15-15:30

Zoom Oral Report

Site-specific insect fluorescence in courtship displays

Matvey I. Nikelshparg¹, Evelina I. Nikelshparg¹,
Vasily V. Anikin²;
¹Ben-Gurion University of the Negev, Beer Sheva,
Israel, ²Saratov State University, Saratov, Russia

15:30-15:45

Oral Report

Conic Sections and Optical Lens

Michael M. Stolnitz;
Saratov State University, Saratov, Russia

15:45-16:00

Oral Report

Study of statistics of laser speckle fields during immersive clearing of human skin with glucose solutions in polarized light

Anton A. Kharchenko¹, Polina A. Timoshina^{1,2},
Valery V. Tuchin^{1,2,3}

¹Saratov State University, Saratov, Russia

²Tomsk State University, Tomsk, Russia

³Institute of Precision Mechanics and Control, FRC
"Saratov Scientific Center of the Russian Academy
of Sciences", Saratov, Russia

16:00-16:15

Oral Report

Approaches to building an automated diagnostic system for diseases of the lower extremities using pattern recognition methods

Artem E. Radin, Julia A. Brodskaya; Gagarin's State
Technical University of Saratov, Saratov, Russia

16:15-16:30

Oral Report

Pattern recognition algorithms for the diagnosis of skin mycoses and onychomycosis

Andrey M. Alekseev, Julia A. Brodskaya; Gagarin's
State Technical University of Saratov, Saratov,
Russia

16:30-16:50

Coffee break

ROUND TABLE

Man and light in natural and art treatment of the Universe

Panel members:

Valery V. Tuchin^a, Vladimir L. Derbov, Victor V. Rozen^a, Oleg V. Shimelfenig^a, Lev M. Babkov^a, A. V. Gorokhov^b, Dmitry A.

Zimnyakov^c, Leonid A. Melnikov^c, Julia M. Duplinskay^c, Oleg M. Parshkov^c, A. V. Priezzhev^d,

^aSaratov State University, Saratov, Russia;

^bSamara University, Samara, Russia, ^cYuri Gagarin State Technical University of Saratov, Russia, ^dM.V. Lomonosov Moscow State University, Moscow, Russia

16:20-16:40

The phenomenon of immortality in artistic works through the lens of natural sciences

Vitaliy V. Sorokin¹, Vladimir V. Orlov²;

¹Saratov State University, Saratov, Russia;

²Saratov State Conservatory, Saratov, Russia

16:40-17:00

On the idea of the synthesis of arts in A. Scriabin's *Mysterium*

Vasily S. Igonin;

Saratov State Conservatory, Saratov, Russia

17:00-17:20

The Golden Ratio and other harmony options in academic music

Lev A. Brodsky¹, Julia A. Brodskaya²;

¹Lyceum of Mathematics and Computer Science, Saratov, Russia; ²Gagarin's State Technical University of Saratov, Saratov, Russia

17:20-17:40

On the 550th Anniversary of the Birth of Michelangelo Buonarroti

Boris A. Medvedev¹, Mariya I. Kharkovenko²;

¹Saratov State University, Saratov, Russia;

²The State Autonomous Cultural Institution of the Vladimir region. A.E. Markin Classical Music Center, Vladimir, Russia

October 2, Thursday

ROUND TABLE

Man and light in natural and art treatment of the Universe

(Scientific Library, Conf. Hall)

Co-chairs: Boris A. Medvedev,
Irina Yu. Yanina,

Saratov State University, Russia

Panel members:

Valery V. Tuchin^a, Vladimir L. Derbov, Victor V. Rozen^a, Oleg V. Shimelfenig^a, Lev M. Babkov^a, A. V. Gorokhov^b, Dmitry A.

Zimnyakov^c, Leonid A. Melnikov^c, Julia M. Duplinskay^c, Oleg M. Parshkov^c, A. V. Priezzhev^d,

^aSaratov State University, Saratov, Russia;

^bSamara University, Samara, Russia, ^cYuri Gagarin State Technical University of Saratov, Russia, ^dM.V. Lomonosov Moscow State University, Moscow, Russia

Saratov time

14:00-14:30

PLENARY LECTURE

Using metabarcoding in entomology

Vasily V. Anikin;

Saratov State University, Saratov, Russia

14:30-14:50

On the 140th anniversary of the birth of Niels Bohr (1885-1962). The light and life of a thinker

Boris A. Medvedev;

Saratov State University, Saratov, Russia

14:50-15:10

Some aspects of the phenomenon of mentoring: from Aristotle to A. Badiou

Natal'ya V. Dovgalenko;

Saratov State Technical University, Saratov, Russia

15:10-15:30

Infinity problems in mathematics and physics

Victor V. Rozen;

Saratov State University, Saratov, Russia

12:00-12:30

Number systems from the Nile to Setun

Boris L. Faifel;

Saratov State Technical University, Saratov, Russia

15:30-15:50

Coffee break

15:50-16:10

**Quantum Optics and Groundworks for Modern
Quantum Information Theory**

Alexander V. Gorokhov;
Samara State University, Saratov, Russia

16:10-16:30

**"Wave and Stone..." (On the 100th Anniversary of
the Creation of Quantum (Matrix) Mechanics)**

Michael M. Stolnitz;
Saratov State University, Saratov
Russia

16:30-16:50

**Top down education concept for hi-tech and
natural sciences**

Ivan V. Fedosov;
Saratov State University, Saratov, Russia

16:50-17:10

**The phenomenon of mathematical intuition: are
there "shortest paths" in cognition?**

Yuliya M. Duplinskaya;
Saratov State University, Saratov, Russia

17:10-17:30

Quantum transition time and photon coherence

Valery I. Tsoy;
Saratov State University, Saratov, Russia

17:30-17:50

**Do conflicts in Nature and society contradict the
principle of plot complementarity?**

Oleg V. Schimelfenig;
Saratov State University, Saratov, Russia

**JOINT POSTER/INTERNET SESSION AND
INTERNET DISCUSSION
(Online)**

**1H. Comparative optical analysis of the
composition of apples under different
processing conditions**

Elena V. Timchenko¹, Lidiia P. Timchenko², Anna P.
Kudrysheva²;

¹Samara University, Samara, Russia; ²MBOU
"Technical Lyceum", Samara, Russia

**2H. Search for neutrinos with energies above
200 TeV at the Baikal neutrino telescope**

Andrew D. Yankevich;
Moscow State University, Moscow, Russia

Joint session of Terahertz Optics and Biophotonics VIII & Advanced Materials for Optics and Biophotonics VIII

Chairs: **Nikita V. Chernomyrdin**, Prokhorov General Physics Institute RAS, Russian Federation; **Arseniy A. Gavdush**, Prokhorov General Physics Institute RAS (Russia); **Mariya V. Ponarina**, Prokhorov General Physics Institute RAS, (Russia); **Stanislav O. Yurchenko**, Bauman Moscow State Technical University (Russia); **Egor V. Yakovlev**, Bauman Moscow State Technical University (Russia); **Irina N. Dolganova**, Osipyan Institute of Solid State Physics RAS (Russia); **Vladimir N. Kurlov**, Osipyan Institute of Solid State Physics RAS (Russia); **Kirill I. Zaytsev**, Prokhorov General Physics Institute RAS (Russia)

Secretary: **Vladislav A. Zhelnov**, Prokhorov General Physics Institute RAS (Russia), E-mail: vleder.zel@mail.ru;
Polina V. Aleksandrova, Prokhorov General Physics Institute RAS (Russia), E-mail: aleksandrovapolina98@gmail.com

International Program Committee: **Maria G. Burdanova**, Moscow Institute of Physics and Technology (Russia); **Nikita V. Chernomyrdin**, Prokhorov General Physics Institute RAS (Russia); **Gleb M. Katyba**, Osipyan Institute of Solid State Physics RAS (Russia); **Arseniy A. Gavdush**, Prokhorov General Physics Institute RAS (Russia); **Sergey V. Garnov**, Prokhorov General Physics Institute RAS (Russia); **Gennady A. Komandin**, Prokhorov General Physics Institute RAS (Russia); **Olga P. Cherkasova**, Institute of Automation and Electrometry SB RAS, Institute of Laser Physics SB RAS (Russia); **Vladimir M. Masalov**, Osipyan Institute of Solid State Physics RAS (Russia); **Irina N. Dolganova**, Osipyan Institute of Solid State Physics RAS (Russia); **Vladimir N. Kurlov**, Osipyan Institute of Solid State Physics RAS (Russia); **Dmitry S. Ponomarev**, NRC "Kurchatov Institute" (Russia); **Igor V. Reshetov**, Sechenov University, Academy of Postgraduate Education FSCC FMBA (Russia); **Stanislav O. Yurchenko**, Bauman Moscow State Technical University (Russia); **Egor V. Yakovlev**, Bauman Moscow State Technical University (Russia)

September 29, Monday

INVITED LECTURE/ORAL/ ON-LINE SESSION

*(Cluster for Engineering for Life Sciences,
Centre for Soft Matter and Physics of Fluids,
BMSTU)*

Link to connect in Yandex Telemost:
<https://telemost.yandex.ru/j/13727231683664>



Chairs: **Arsenii A. Gavdush**, Prokhorov General Physics Institute RAS, Russia

Saratov time/Moscow time/

9:30-10:00 / 8:30-9:00
Welcome coffee break

10:00-10:45 / 9:00-9:45

Invited

Broadband spectroscopy of astrophysical ice analogues

Arsenii Gavdush, Prokhorov General Physics Institute RAS, Russia

10:45-11:00 / 9:45-10:00

Oral

THz pulsed solid immersion microscopy with subwavelength resolution

Vladislav Zhelnov¹, Demyan Rybnikov^{1,2}, Vladislav Ulitko³, Maksim Skorobogatiy³, Kirill Zaytsev¹ and Nikita Chernomyrdin¹; ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ²Bauman Moscow State Technical University, Moscow, Russia; ³Polytechnique Montreal, Montreal, Canada

11:00-11:15 / 10:00-10:15

Oral

Terahertz scattering in biological tissues: spherical and cylindrical scatterers

Anna Kucheryavenko^{1,2}, Irina Dolganova^{1,2}, Nikita Chernomyrdin¹ and Kirill Zaytsev¹; ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia; ²Osipyan Institute of Solid State Physics of the Russian Academy of Sciences, Russia

11:15-11:30 / 10:15-10:30

Oral

THz birefringence of different tissue types probed by polarization-sensitive THz solid immersion microscopy

Darya Il'enkova^{1,2}, Demyan Rybnikov^{1,2}, Anna Alekseeva³, Kirill Zaytsev¹ and Nikita Chernomyrdin¹; ¹Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ²Bauman Moscow State Technical University, Moscow, Russia; ³Research Institute of Human Morphology, Moscow, Russia

11:30-11:45 / 10:30-10:45

Oral

Features of the interaction of terahertz radiation with polymer models of diatom frustules

Maria Reshetova^{1,2}, Julijana Cvjetinovic¹, Gleb Katyba³, Arina Radivon⁴, Kirill Zaytsev⁵, Sergey Dyakov¹, Dmitry Gorin¹, Evgeniy Epifanov² and Nikita Minaev²; ¹Skolkovo Institute of Science and Technology, Moscow, Russia; ²Institute of Photon Technologies (Troitsk) Kurchatov Complex of Crystallography and Photonics NRC "Kurchatov Institute", Troitsk, Moscow, Russia; ³Institute of Solid State Physics of RAS, Chernogolovka, Russia; ⁴Moscow Institute of Physics and Technology, Dolgoprudny, Russia; ⁵Prokhorov General Physics Institute of RAS, Moscow, Russia

11:45-12:00 / 10:45-11:00

Coffee break

12:00-12:15 / 11:00-11:15

Oral

Optical pump-terahertz probe of smooth ultrathin gold films

Maksim Paukov¹, Dmitry Yakubovsky^{1,2}, Shuang Sun^{3,4}, Aleksandr Marakulin¹, Gennady Komandin⁵, Andrey Vyshnevyy^{1,2}, Kirill Zaitsev⁵ and Aleksey Arsenin², Yan Zhang^{3,4} and Maria Burdanova^{1,5,6}; ¹Center for Photonics and 2D Materials, MIPT, Phystech, Dolgoprudny, Russia; ²Emerging Technologies Research Center, XPANCEO, Dubai, United Arab Emirates; ³Beijing Key Laboratory for Metamaterials and Devices, Key Laboratory of Terahertz Optoelectronics, Ministry of Education of China, Beijing, China; ⁴Beijing Advanced Innovation Center for Imaging Technology, Department of Physics, Capital Normal University, Beijing, China; ⁵Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ⁶Osipyan Institute of Solid State Physics of the Russian Academy of Sciences, Chernogolovka, Russia

12:15-12:30 / 11:15-11:30

Oral

Stretching-tunable diffractive elements based on single-walled carbon nanotubes for the terahertz frequency range

Arina Radivon^{1,2,3}, Gleb Katyba^{2,3}, Nikita Raginov⁴, Aleksey Chernykh⁵, Maksim Paukov¹, Gennady Komandin², Kirill Zaytsev², Yuriy Gladush⁴, Nikolay Petrov^{5,6}, Albert Nasibulin⁴, Aleksey Arsenin¹, Dmitry Krasnikov⁴ and Maria Burdanova^{1,2}; ¹Center for Photonics and 2D Materials, Moscow Institute of Physics and Technology, Dolgoprudny, Russia; ²Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; ³Institute of Solid State Physics of the Russian Academy of Sciences, Chernogolovka, Russia; ⁴Skolkovo Institute of Science and Technology, Moscow, Russia; ⁵ITMO University, St. Petersburg, Russia; ⁶Qingdao Innovation and Development Center, Harbin Engineering University, Qingdao, China

12:30-12:45 / 11:30-11:45

Oral

Assessment of Orientational Order in Multilayer Aligned Carbon Nanotubes Using THz and Optical Spectroscopy

Egor Chepurov¹, Alexander Marakulin¹, Artur Ishteev², Oksana Shapovalova², Gennady Komandin³, Nikolay Pak¹ and Maria Burdanova¹; ¹Center for Photonics and 2D Materials, MIPT, Phystech; ²Semenov Federal Research Center for Chemical Physics of the Russian Academy of Sciences, Moscow, Russia; ³Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

12:45-13:00 / 11:45-12:00

Online Oral Report

Device based on surface acoustic waves to monitor an active THz diffraction grating based on VO₂

Maxim Ochukurov, Gevork Karapetyan and Vladimir Kaydashev; Laboratory of Nanomaterials, Southern Federal University, Rostov-on-Don, Russia

13:00-14:00 / 12:00-13:00

Coffee break

**INVITED LECTURE/ORAL/
ON-LINE SESSION**

*(Cluster for Engineering for Life Sciences,
Centre for Soft Matter and Physics of Fluids,
BMSTU)*

Link to connect in Yandex Telemost:
<https://telemost.yandex.ru/j/13727231683664>



*Chairs: Irina N. Dolganova, Osipyan Institute of
Solid State Physics RAS, Chernogolovka, Russia*

14:00-14:45 / 13:00-13:45

Invited

**Using amorphous microwire-based GMI
sensors to suppress fNIRS artifacts and
improve the reliability of cognitive
measurements**

Oleg Aksenov, Artem Fuks and Alexandr Aronin;
Osipyan Institute of Solid State Physics of the
Russian Academy of Sciences, Chernogolovka,
Russia

14:45-15:00 / 13:45-14:00

Oral

**Application of microsecond pulse laser
systems for ablation of biological tissues**

Polina Aleksandrova¹, Arsen Zotov¹, Anna
Alekseeva², Yuri Suchkov¹, David Kochiev¹ and
Irina Dolganova³; ¹Prokhorov General Physics
Institute of the Russian Academy of Sciences,
Moscow, Russia, ²Avtsyn Research Institute of
Human Morphology of Federal State Budgetary
Scientific Institution "Petrovsky National Research
Centre of Surgery", Moscow, Russia, ³Osipyan
Institute of Solid State Physics of the Russian
Academy of Science, Chernogolovka, Russia

15:00-15:15 / 14:00-14:15

Oral

**Cascading cavitation bubble, induced by
microsecond laser**

Oleg Pokhodyaev¹, Nikita Kryuchkov¹, Arsen
Zotov², Kseniya Feklisova², Kirill Zaytsev¹ and Egor
Yakovlev¹; ¹Bauman Moscow State Technical
University, Moscow, Russia, ²Prokhorov General
Physics Institute of the Russian Academy of
Sciences, Moscow, Russia

15:15-15:30 / 14:15-14:30

Oral

**Photosensitive analogs of epinephrine for
modulation of biological processes by light**

Alexander Moskalensky¹, Mikhail Panfilov^{1,2} and
Alexey Vorob'ev^{1,2}; ¹Novosibirsk State University,
Novosibirsk, Russia, ²Novosibirsk Institute of
Organic Chemistry, Novosibirsk, Russia

15:30-15:45 / 14:30-14:45

Oral

**Monitoring of tissue optical parameters using
compact sapphire probe based on diffuse
reflectance analysis**

Alina Platonova¹, David Kochiev¹, Yuri Suchkov¹,
Kirill Zaytsev¹, Vladimir Kurlov² and Irina
Dolganova²; ¹Prokhorov General Physics Institute
of the Russian Academy of Sciences, Moscow,
Russia, ²Osipyan Institute of Solid State Physics of
the Russian Academy of Science, Chernogolovka,
Russia

15:45-16:00 / 14:45-15:00

Oral

**Tissue-mimicking phantom of liver with tunable
optical properties for laser thermotherapy**

Sophia Mirzaeva¹, Polina Aleksandrova¹, Irina
Dolganova², Yuri Suchkov¹, David Kochiev¹ and
Arsen Zotov¹; ¹Prokhorov General Physics Institute
of the Russian Academy of Sciences, Moscow,
Russia, ²Osipyan Institute of Solid State Physics of
the Russian Academy of Science, Chernogolovka,
Russia

16:00-16:15 / 15:00-15:15
Coffee break

16:15-16:30 / 15:15-15:30

Oral

**Optical phantoms containing ICG and IJA
encapsulated in vaterites for optoacoustic and
fluorescence lifetime visualization**

Timothy Torokhov^{1,2}, Sergei Perkov¹, Maksim
Mokrousov¹, Ekaterina Prikhodzhenko³, Mikhail
Shlykov⁴, Eugene Maksimov⁵, Igor Sergeev¹,
Sergey Korchagin⁶, Egor Ershov⁶, Vladislav
Shcheslavskiy^{7,8} and Dmitry Gorin¹; ¹Center for
Photonic Science and Engineering, Skolkovo
Institute of Science and Technology, Moscow,
Russia, ²Prokhorov General Physics Institute,
Moscow, Russia, ³Science Medical Center, Saratov
State University, Saratov, Russia, ⁴Baikov Institute
of Metallurgy and Materials Science, Moscow,
Russia, ⁵Department of Biophysics, School of
Biology, Moscow State University, Moscow, Russia,
⁶Institute for Information Transmission Problems,
Moscow, Russia, ⁷Institute of Experimental
Oncology and Biomedical Technologies,
Privolzhsky Research Medical University, Nizhny
Novgorod, Russia, ⁸Becker&Hickl GmbH, Berlin,
Germany

16:30-16:45 / 15:30-15:45

Oral

Fabrication of hollow SiO₂ particles and artificial 3D lattice based on them

Aysiena-Ekaterina Protopopova, Nadezhda Sukhinina, Vladimir Masalov, Aleksei Kaledin, Vladimir Kurlov and Gleb Katyba; Osipyan Institute of Solid State Physics of the Russian Academy of Sciences, Chernogolovka, Russia

16:45-17:00 / 15:45-16:00

Oral

Efficient SERS sensor platforms based on novel composite materials

Olesya Kapitanova and Irina Veselova; Lomonosov Moscow State University, Moscow, Russia

17:00-17:15 / 16:00-16:15

Oral

Plasmon-enhanced photorelease of nitric oxide from light-sensitive donors on silver island films

Danil Shershnev^{1,2}, Natalia Virts¹, Igor Gladskikh³, Pavel Geydt², Mikhail Panfilov^{1,4}, Alexey Vorob'ev^{2,4} and **Alexander Moskalensky**^{1,2}; ¹Sirius University of Science and Technology, Sirius, Russia, ²Novosibirsk State University, Novosibirsk, Russia, ³ITMO University, St. Petersburg, Russia, ⁴N.N. Vorozhtsov Novosibirsk Institute of Organic Chemistry SB RAS, Novosibirsk, Russia

17:15-17:30 / 16:15-16:30

Oral

Effect of photodissolution of iron oxide nanoparticles on lipid droplet formation in diatoms

Anastasiia Ivleva, Dmitrii Tsiurko, Igor Sergeev, Maria Blindman, Ekaterina Moiseeva, Sergei German, Julijana Cvjetinovic and Dmitry Gorin; Center for Photonic Science and Engineering, Skolkovo Institute of Science and Technology, Moscow, Russia

17:30-17:45 / 16:30-16:45

Online Oral Report

Monitoring refractive index kinetics of optical clearing agents in synthetic opal phantoms

Arsenii Fashchevskii¹, Yuriy Surkov¹, Isabella Serebryakova¹, Arsen Zotov², Anna Kycheryavenko³, Gleb Katyba² and Valery Tuchin^{1,4,5}; ¹Saratov State University, Saratov, Russia, ²Prokhorov General Physics Institute, Moscow, Russia, ³Osipyan Institute of Solid State Physics of the Russian Academy of Science, Chernogolovka, Russia, ⁴Tomsk State University, Tomsk, Russia, ⁵Institute of Precision Mechanics and Control, FRC "Saratov Scientific Centre of the RAS," Saratov, Russia

September 30, Tuesday

INVITED LECTURE/ORAL/
ON-LINE SESSION

(Cluster for Engineering for Life Sciences,
Centre for Soft Matter and Physics of Fluids,
BMSTU)

Link to connect in Yandex Telemost:

<https://telemost.yandex.ru/j/13727231683664>



Chairs: **Alla B. Salmina**, Brain Science Institute, Research Center of Neurology, Moscow, Russia and

Vladimir V. Salmin, Moscow Institute of Physics and Technology, MIPT, Dolgoprudny, Russia

Saratov time/Moscow time/

10:00-10:45 / 9:00-9:45

Invited

Laser lithotripsy: current state of research and development

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

10:45-11:00 / 9:45-10:00

Oral

The resistance of brain microvascular endothelial cells to the development of reductive stress *in vitro*

Svetlana Novikova¹, Nataliya Kolotyeva¹, Arseny Berdnikov¹, Nataliya Rozanova¹, R. Mudarisova¹, Vladimir Makarov^{1,2}, Anastasia Ryabova² and Alla Salmina¹; ¹Brain Science Institute, Research Center of Neurology, Moscow, Russia, ²Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

11:00-11:15 / 10:00-10:15

Oral

Novel approach to the *in vivo* assessment of BBB integrity and brain tissue clearance with the optofiber photometry

Arseny Berdnikov¹, Alla Stavrovskaya¹, **Ilya Potapenko**¹, Victoria Zhdankina¹, Alexandra Lukyanchuk¹, Yulia Komleva¹, Vladimir Salmin² and Alla Salmina¹; ¹Russian Center of Neurology and Neuroscience, Moscow, Russia, ²Bauman Moscow State Technical University, Moscow, Russia

11:15-11:30 / 10:15-10:30

Oral

Machine learning for spectral data processing in biospectroscopy. Application to Parkinson's disease diagnostics

Nikita Bainaev-Mangilev¹, Vladimir Salmin^{1,2}, Viktor Loschenov^{3,4}, A. Ochirova³, Maxim Andreev⁵, Ekaterina Fedotova⁵, Alla Salmina⁵ and Sergei Illarioshkin⁵; ¹Moscow Institute of Physics and Technology (National Research University), Moscow, Russia, ²Bauman Moscow State Technical University (National Research University), ³National Research Nuclear University MEPhI, ⁴Federal Research Center A.M. Prokhorov General Physics Institute of the Russian Academy of Sciences, ⁵Federal State Budgetary Scientific Institution "Neurology Research Center"

11:30-11:45 / 10:30-10:45

Oral

Immunocytochemical and morphometric analysis of hiPSC-derived neurospheres and their conglomerates in Parkinson and Alzheimer disease

Anna Kopylova¹, Roman Shumilin¹, Daria Volegova¹, Elizaveta Pereplitsa², Anna Blagova², Ksenia Salina¹, Ilya Lanikin¹, Petr Kupriyanov¹, Anna Zubova², Marina Kapkaeva², Ivan Simkin¹, Alla Salmina^{1,2}, Stanislav Yurchenko¹ and Sergei Illarioshkin²; ¹Laboratory of Cellular Technologies and Tissue Engineering, Center "Soft Matter and Physics of Fluids," Bauman Moscow State Technical University, Moscow, Russia, ²Laboratory of Neurobiology and Tissue Engineering, Brain Science Institute, Research Center of Neurology, Moscow, Russia

11:45-12:00 / 10:45-11:00

Coffee break

12:00-12:15 / 11:00-11:15

Oral

Syneresis as a side process during gelation of cellulose nanocrystals and gelatin and its suppression

Anastasia Belyaeva, Ivan Kushnir, Stanislav Yurchenko and Sofia Morozova; Centre for Soft Matter and Physics of Fluids, Bauman Moscow State Technical University, Moscow, Russia

12:15-12:30 / 11:15-11:30

Oral

Problems of cell visualization in three-dimensional hydrogel matrices and ways to solve them

Ksenia Salina¹, Anastasia Belyaeva¹, Anna Kopylova¹, Daria Volegova¹, Anton Averchuk^{1,2}, Alla Salmina^{1,2}, Sofia Korsakova¹ and Stanislav Yurchenko¹; ¹Centre for Soft Matter and Physics of Fluids, Bauman Moscow State Technical University, Moscow, Russia, ²Russian Center of Neurology and Neurosciences, Moscow, Russia

12:30-12:45 / 11:30-11:45

Oral

Diffusion in Brain Parenchyma: A Physical Model of Molecular Transport

Leonid Polynkin¹, Pavel Libet¹, Nikita Kryuchkov¹, Alla Salmina^{1,2}, Pavel Tregub² and Stanislav Yurchenko¹; ¹Bauman Moscow State Technical University, Moscow, Russia, ²Brain Science Institute, Research Center of Neurology, Moscow, Russia

12:45-13:00 / 11:45-12:00

Oral

Investigation of method of aberrant protein potentiation using self-assembly of colloidal particles in external rotating fields

Anastasia Shirokova¹, Aksinya Bondareva¹, Ivan Kushnir¹, Viktoriya Zhdankina², Ekaterina Petrushko², Stanislav Yurchenko¹, Nataliya Kolotieva^{1,2} and Egor Yakovlev¹; ¹Bauman Moscow State Technical University, Moscow, Russia, ²Research center of neurology, Moscow, Russia

13:00-14:00 / 12:00-13:00

Coffee break

**INVITED LECTURE/ORAL/
ON-LINE SESSION**

*(Cluster for Engineering for Life Sciences,
Centre for Soft Matter and Physics of Fluids,
BMSTU)*

Link to connect in Yandex Telemost:

<https://telemost.yandex.ru/j/13727231683664>



*Chairs:-Stanislav O. Yurchenko, and
Egor V. Yakovlev, Bauman Moscow State
Technical University, Moscow, Russia*

14:00-14:45 / 13:00-13:45

Invited

Non-invasive diagnosis of physical urticaria by photoplethysmography-based techniques

Alexandr Machikhin; Scientific and Technological Centre of Unique Instrumentation of the Russian Academy of Sciences, Moscow, Russia

14:45-15:30 / 13:45-14:30

Online Invited

Studying the composition of urine thermal decomposition products of patients with prostate tumors (pilot study) by high-resolution terahertz gas spectroscopy

Vladimir Vaks^{1,2}; Vagif Atduev^{3,4}, Anna Maslennikova^{1,4}, Elena Domracheva^{1,2}, Maria Chernyaeva^{1,2}, Vladimir Anfertev², Kurban Atduev³, Mikhail Rodionov^{1,2}, Mauro Fernandes Pereira⁵; ¹Lobachevsky State University, Nizhny Novgorod, Russia; ²Institute for Physics of Microstructures of RAS, Nizhny Novgorod, Russia; ³Institute for Physics of Microstructures of RAS, Nizhny Novgorod, Russia; ⁴Privolzhsky District Medical Center of the Federal Medical and Biological Agency of Russia, Nizhny Novgorod, Russia; ⁵Privolzhsky Research Medical University, Nizhny Novgorod, Russia; ⁶Khalifa University of Science and Technology, Abu Dhabi, UAE

15:30-15:45 / 14:30-14:45

Oral

Electric field driven hierarchical self-assembly of polydisperse colloidal emulsion

Ivan Simkin¹, Ivan Kushnir¹, Anastasia Shirokova¹, Egor Yakovlev¹, Sofia Korsakova¹, Maria Lomova², Anton Shevtsov¹, Stanislav Yurchenko¹ and Nikita Kryuchkov¹; ¹Soft Matter and Physics of Fluids Centre, Bauman Moscow State Technical University, Moscow, Russia; ²Science Medical Centre, Saratov State University, Saratov, Russia

15:45-16:00 / 14:45-15:00

Oral

Self-assembly of polydisperse systems near the critical point

Raniya Nafikova, Nikita Kryuchkov, Ivan Simkin and Stanislav Yurchenko; Bauman Moscow State Technical University, Moscow, Russia

16:00-16:15 / 15:00-15:15

Oral

Time-dependent interactions for directed self-assembly of 2D colloidal crystals

Alina Krasina and Nikita Kryuchkov; Bauman Moscow State Technical University, Moscow, Russia

16:15-16:30 / 15:15-15:30

Oral

A novel regularity in transport phenomena: linear mobility of colloids from the triple to critical point

Ivan Kushnir, Daniil Bystrov, Egor Yakovlev, Sofia Korsakova, Nikita Kryuchkov and Stanislav Yurchenko; Bauman Moscow State Technical University, Moscow, Russia

16:30-16:45 / 15:30-15:45

Oral

Energy-entropy transition in defect distribution of melting colloidal monolayers with tunable interactions

Daniil Bystrov, Sofia Korsakova, Nikita Kryuchkov, Egor Yakovlev and Stanislav Yurchenko; Centre for Soft Matter and Physics of Fluids, Bauman Moscow State Technical University, Moscow, Russia

16:45-17:00 / 15:45-16:00

Coffee break

17:00-17:15 / 16:00-16:15

Oral

ML-based analysis of 3D colloidal self-assembly induced by rotating magnetic fields

Anton Shvetsov, Ivan Simkin, Anastasia Shirokova, Aksinya Bondareva, Maxim Dragun, Oleg Pokhodyaev, Aleksandra Kohanovskaya, Nikita Kryuchkov and Egor Yakovlev; Bauman Moscow State Technical University, Moscow, Russia

17:15-17:30 / 16:15-16:30

Oral

Dynamics of a 3D colloidal suspension in a conical magnetic field

Aksinya Bondareva, Anastasia Shirokova, Maxim Dragun, Oleg Pokhodyaev, Aleksandra Kohanovskaya, Egor Yakovlev, Anton Shvetsov and Ivan Simkin; Bauman Moscow State Technical University, Moscow, Russia

17:30-17:45 / 16:30-16:45

Oral

The system for controlling the dynamics of particles and cells using rotating conical electric fields

Aleksandra Kokhanovskaia, Maxim Dragun, Oleg Pokhodyaev and Egor Yakovlev; Bauman Moscow State Technical University, Moscow, Russia

17:45-18:00 / 16:45-17:00

Oral

Interpolation method for pair correlation function from two-dimensional crystals to three-dimensional liquids

Artur Nasyrov and Nikita Kryuchkov; Bauman Moscow State Technical University, Moscow, Russia

18:00-18:15 / 17:00-17:15

Oral

Dependence of the self-diffusion coefficient on the q-gap value in fluids

Konstantin Zhukov, Nikita Kryuchkov and Stanislav Yurchenko; Bauman Moscow State Technical University, Moscow, Russia

Round Table of High Technologies Commercialization and Regional Innovation Systems XIX

Workshop Chairs: **Julia S. Skibina** LLC SPE “Nanostructured Glass Technology”, Russia, **Andrey Shuvalov** LLC SPE “Nanostructured Glass Technology”, Russia, **Sergey N. Sokolov**, RME “Inject” LLC, Saratov, Russia, **Daniil N. Bratashov** MIPT and Saratov State University, Russia, **Andrey P. Rytik**, Saratov State University, Russia

October 1, Wednesday
ORAL SESSION /ROUND TABLE
(Building 6, Room 204)
Saratov State University, Russia

Saratov time

10:00-10:20

Oral Report

**Commercialization of High-Performance
Ultrasonic Antennas for Biomedical
Optoacoustics (Photoacoustics)**

Pavel V. Subochev;

BARI-NN Ltd, Nizhny Novgorod, Russia
(www.photoacoustics.ru)



10:20-10:40

Oral Report

**Wavelength-tunable near-infrared LiCAF:Cr
lasers for biochemistry and substance
detection**

Alexey S. Nizamutdinov¹, Radik D. Aglyamov¹,
Alexander K. Naumov¹, Alexey A. Shavelev¹, Oleg
A. Morozov^{1,2}, Andrey A. Sergeev³, Anastasiya P.
Pogoda³, Vadim V. Semashko^{1,2};

¹Kazan Federal University, Kazan, Russia;

²Kazan Scientific Center of RAS, Zavoisky
Physical-Technical Institute, Kazan, Russia

³Baltic State Technical University “VOENMEH”
named after D. F. Ustinov, Saint-Petersburg,
Russia

10:40-11:00

Oral Report

Drug-eluting coatings. From history to practice

Olga A. Sindeeva¹, Arkady S. Abdurashitov^{1,2},
Pavel I. Proshin², Gleb B. Sukhorukov^{1,2};

¹Skolkovo Institute of Science and Technology,
Moscow, Russia;

²Life Improvement by Future Technologies Center,
Moscow, Russia

11:00-11:20

Oral Report

**Optomed Aurora IQ handheld fundus camera in
medical practice**

Ivan O. Riasik. Private Laboratory of Medical
Biophysics

11:20-11:40

Oral Report

**Development of biomedical photoacoustics
devices for glucose sensing and circulating
tumor cells detection based on natural contrast**

Daniil N. Bratashov^{1,2};

¹Moscow institute of physics and technologies,
Dolgoprudnyi, Russia;

²Saratov state university, Saratov, Russia

