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SFM'18

6th International Symposium “Optics and Biophotonics”
22nd International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

Organized by

Saratov State University (SSU)

Research-Educational Institute of Optics and Biophotonics of SSU

International Research-Educational Center of Optical Technologies for Industry and Medicine “Photonics” ofSSU

Institute of Biochemistry & Physiology of Plants & Microorganisms of the RAS

Institute of Precision Mechanics and Control of theRAS (IPMC RAS)

Saratov State Medical University n.a. V.I. Razumovsky

Volga Region Center of New Information Technologies ofSSU

Tomsk State University

ITMO University

Bauman Moscow State Technical University (BMSTU)

Institute of Solid State Physics of theRAS

Prokhorov Institute of General Physics of the RAS

Research Center of Biotechnology of the RAS

Biomedical Photonics Committee of Chinese Optical Society, China

SPIE Student Chapter of SSU

SPIEStudent Chapter ofBauman Moscow State Technical University

SPIE Student Chapter of Institute of Solid State Physics of the RAS

SPIE Student Chapter of Samara University

OSA Student Chapter of SSU

OSA Student Chapter of (BMSTU)

In cooperation with

Academy of Natural Sciences, Saratov Regional Division

Russian Society for Photobiology

Saratov Science Center oftheRAS

Biophotonics4Life Worldwide Consortium (**BP4L**)

EPIC – European Photonics Industry Consortium

Co-sponsored by

RFBR – Russian Foundation for Basic Research

RAS – Russian Academy of Sciences

SPIE – The International Society of Photo-Optical Instrumentation Engineers

OSA –Optical Society of America

IEEE - Institute of Electrical and Electronics Engineers

Russian Technology Platform “The Medicine of the Future”

Russian Technology Platform **“Photonics”**

Russian Technology Platform “Photonics”

European Technology Platform “Photonics21”

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Jürgen Lademann, Charité-Universitätsmedizin Berlin, Germany
Kirill V. Larin,University of Houston, USA, Saratov State University, Tomsk State University
Martin Leahy, National University of Ireland, Galway, Ireland
Juergen Popp, Institute of Photonic Technology, Jena, Germany
Dmitry E. Postnov, Saratov State University
Alexander B. Pravdin, Saratov State University
Alexander V. Priezzhev, International Laser Center, Moscow State University
Igor V. Reshetov, Sechenov First Moscow State Medical University, Russia
Oxana V. Semyachkina-Glushkovskaya, Saratov State University, Russia
Alexander Savitsky, Bach Institute of Biochemistry, Research Center of Biotechnology of RAS
Alexander M. Sergeev, Institute of Applied Physics RAS
Ilya V. Turchin, Insitute of Applied Physics of RAS, Nizhny Novgorod, Russia
Elena V. Zagaynova, Privolzhsky Research Medical University, Nizhny Novgorod, Russia
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Schedule of ADFLIM / SFM-18
3rd School on Advanced Fluorescence Imaging Methods
6th International Symposium "Optics and Biophotonics"
22nd International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

September 24, Monday		
9.00-14.00	**Registration**	*Building 10, Foyer*
10.20-10.30	**Introduction to ADFLIM/SFM Educational Program** **Alexander Savitsky**, Research Center of Biotechnology of the RAS, **Valery V. Tuchin,** Saratov State University, Russia	*Building 10 Main Conference Hall*
10.30-11.50	**ADFLIM/SFM PLENARY SESSION I** Chairs: **Valery V. Tuchin,** Saratov State University **Alexander P. Savitsky**, Research Center of Biotechnology of the RAS, Russia **Quantifying Stability in Deterministic and Stochastic Complex Systems,** **Jürgen Kurths**, Humboldt University, Physics Department and Potsdam Institute for Climate Impact Research, Potsdam, Germany **Optical Study of Molecular and Microrheologic Mechanisms of Interaction and Alteration of Blood Components in the Microcirculatory System** **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State University	*Building 10 Main Conference Hall*
11.50-12.20	**Coffee break**	*Building 10*
12.20-13.00	**ADFLIM/SFM PLENARY SESSION II** Chair: **Alexander P. Savitsky**, Research Center of Biotechnology of the RAS, Russia **Biological Tissue Optics and Optical Clearing,** **Valery Tuchin**, Saratov State University, Russia	*Building 10 Main Conference Hall*
13.00-14.00	**Lunch**	

14.00-15.00	**SPIE SHORT COURSE** **Fluorescence Guided Procedures and Photodynamic Therapy in Neurosurgery** **Ronald Sroka**, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany	*Building 10 Hall 503*
15.00-15.30	**Coffee break**	*Building 10*
15.30-16.30	**SPIE SHORT COURSE** **Fluorescence Guided Procedures and Photodynamic Therapy in Neurosurgery** **Ronald Sroka**, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany	*Building 10 Hall 503*
16.40-17.20	**ADFLIM/SFM PLENARY SESSION III** Chairs: **Alexander P.Savitsky**, Research Center of Biotechnology of the RAS **Valery V. Tuchin,** Saratov State University, Russia **Plasmonic SERS Tags with Embedded Raman Molecules for Bioimaging and Sensing Applications,** **Nikolai G. Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS, Saratov State University, Russia	*Building 10 Main Conference Hall*
17.20-17.40	**Coffee break**	*Building 10*
17.40-19.00	**ADFLIM/SFM PLENARY SESSION IV** Chairs: **Valery V. Tuchin,** Saratov State University **Alexander P.Savitsky**, Research Center of Biotechnology of the RAS, Russia **Optical Dosimetry of Extraoral Photobiomodulation Therapy of Oropharyngeal Mucositis in Pediatric Patients Undergoing Hematopoietic Cell Transplantation,** **Anna N. Yaroslavsky**, Advanced Biophotonics Laboratory at the Department of Physics, University of Massachusetts, Lowell, USA **Approaches of the molecular imaging and machine learning for medical applications** **Yury V. Kistenev et al.**, Tomsk State University, Siberian State Medical University, Russia	*Building 10 Main Conference Hall*

September 25, Tuesday		
9.00-14.00	**Registration**	*Building 10, Foyer*
10.00-11.00	**OSA SHORT COURSE** **Diffuse Laser Speckles and their Statistics for Non-Invasive, Deep Tissue Blood Flow Measurements** **Turgut Durduran**, ICREA Professor at ICFO -The Institute of Photonic Sciences, Barcelona, Spain	*Building 10, Hall 503*
11.00-11.30	**Coffee break, Exibition**	*Building 10*
11.30-12.30	**OSA SHORT COURSE** **Diffuse Laser Speckles and their Statistics for Non-Invasive, Deep Tissue Blood Flow Measurements** **Turgut Durduran**, ICREA Professor at ICFO -The Institute of Photonic Sciences, Barcelona, Spain	*Building 10, Hall 503*
12.30-14.00	**Lunch**	
14.00-14.20	**Opening of SFM and ADFLIM** **Valery V. Tuchin**, Saratov State University, **Alexander P. Savitsky**, Research Center of Biotechnology of the RAS, and **Wolfgang Becker,** Becker&Hickl GmbH, Berlin, Germany	*Building 10 Main Conference Hall*
14.20-15.40	**ADFLIM/SFM PLENARY SESSION V** Chair: **Wolfgang Becker,** Becker&Hickl GmbH, Berlin, Germany **How to Measure Tissue Blood Flow Non-Invasively with Light And What are The Current Trends?** **Turgut Durduran**, ICFO-The Institute of Photonic Sciences, Barcelona, Spain **Advanced Technologies for Brain** **Metin Akay**, University of Houston, USA	*Building 10 Main Conference Hall*
15.40-16.10	**Coffee break, Exibition**	*Building 10*

16.10-18.10	**ADFLIM/SFM PLENARY SESSION VI** Chair: **Turgut Durduran**, ICFO-The Institute of Photonic Sciences, Barcelona, Spain **Microscopy of the Brain on the Basis of Generation of Optical Harmonics: in Search of Optimum,** **Ilya V. Fedotov,** M.V. Lomonosov Moscow State University, Russia **Photonic and Magnetic Nanoparticles for Health, Energy, and Biosensing** **T. Randall Lee,** University of Houston, USA **Superconducting Thin Film Nanostructures as Terahertz and Infrared Heterodyne and Direct Detectors** **Grigory N. Goltsman**, Moscow State Pedagogical University, Russia	*Building 10 Main Conference Hall*
18.10-18.40	**SFM SPECIAL EVENT** Chair: **Valery V. Tuchin,** Saratov State University **Time-Resolved Single Photon Detection for Ultrafast Lifetime Imaging and Enhanced Superresolution STED Imaging** **Mathias Bayer, Sales and Application Specialist for Microscopy,** Picoquant (**Technoinfo**), Germany	
19.00-22.00	**Welcome Party**	*Univ.camp.*

September 26, Wednesday								
9.00-10.00	**SPIE SHORT COURSE** **Optical Dosimetry of Clinical Light Treatments** **Anna N. Yaroslavsky**, Advanced Biophotonics Laboratory at the Department of Physics, University of Massachusetts, Lowell, USA							*Building 10, Hall 503*
10.00-10.30	**Coffee break, Exibition**							*Building 10*
10.30-11.30	**SPIE SHORT COURSE** **Optical Dosimetry of Clinical Light Treatments** **Anna N. Yaroslavsky**, Advanced Biophotonics Laboratory at the Department of Physics, University of Massachusetts, Lowell, USA							*Building 10, Hall 503*
11.40-13.00	**SFM PLENARY SESSION VII** Chair: **Kirill Larin**, University of Houston, USA **Stone Fragmentation in Urology** **Ronald Sroka,** LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany **Imaging Below the Diffraction Limit by Spectroscopic Signal Separation Using Quantum Dots** **Andrei Sapelkin**, Queen Mary University of London, UK			*Building 10 Main Conference Hall*	**ADFLIM LECTURE SESSION I** Chair: **Francesco S. Pavone**, European Lab. for Non-linear Spectroscopy, Florence, Italy			*Building 10, Hall 503*
13.00-14.00	**Lunch**							
14.00-16.30	**JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS I/MICROSCOPY AND LOW-COHERENCE METHODS** Chair: **Metin Akay**, University of Houston, USA	*Building 10 Main Conference Hall*	**ORAL SESSION PHOTONICS I** Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 3, Hall 34*	**LECTURE/ ORAL SESSION EDUCATION I** Chairs: **Boris A. Medvedev** and **Vladimir P. Ryabukho,** Saratov State University, Russia	*Scientific Library Conference Hall*	**ADFLIM LECTURE SESSION II** Chair: **Vladislav Shcheslavskiy**, Becker&Hickl GmbH, Berlin, Germany	*Building 10, Hall 503*

	ORAL SESSION BIOCOMPUTING I Chairs: **Dmitry E. Postnov**, **Eugene B. Postnikov**, Saratov State University, Kursk State University, Russia	*Building 8, Conference Hall*	**ORAL SESSION BIOMEDICAL SPECTROSCOPY I** Chair: **Alexander B. Pravdin**, Saratov State University, Russia	*Building 10, Hall 108*				
16.30-17.00	**Coffee break, Exibition**							*Building 10*
17.00-19.15	**INVITED LECTURE/ORAL SESSION BIOPHYSICS II** Chair: **Valery P. Zakharov**, Samara University, Russia	*Building 10 Main Conference Hall*	**ORAL SESSION LASER PHYSICS & PHOTONICS I** Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 3, Hall 34*	**ORAL SESSION BIOMEDICAL SPECTROSCOPY II** Chair: **Alexander Pravdin**, State University, Russia	*Building 10, Hall 108*	**ADFLIM LECTURE SESSION III** Chair: **Alexey Feofanov, Faculty of Biology, Moscow State Universtiy**, Russia	*Building 10, Hall 503*
	ORAL SESSION BIOCOMPUTING II Chair: **Dmitry E. Postnov**, Saratov State University, Russia	*Building 8, Conference Hall*	**ORAL SESSION EDUCATION II** Chairs: **B. Medvedev** and **V. Ryabukho,** Saratov State University, Russia	*Scientific Library Conference Hall*	**ORAL SESSION SPECTROSCOPY I** Chair: **Lev M. Babkov,** Saratov State University, Russia	*Building 8, Hall 85*		
20.00-22.00	**Social program (Volga boat tour)**							

September 27, Thursday						
9.00-11.00	**SFM PLENARY SESSION VIII** Chair: **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State University, Russia **Prospects for Malignancy Diagnosis by Using Terahertz Spectroscopy and Imaging** **Kirill I. Zaytsev** et al., Bauman Moscow State Technical University, Prokhorov General Physics Institute of the RAS, Russia **Optical Detection of Clinical Pathologies by Image and Spectroscopic Analysis** **Francesco S. Pavone**, European Lab. for Non-linear Spectroscopy, Florence, Italy **In Vivo Flow Cytometry for Detection of Silent Circulating Tumor Cells in Melanoma** **Ekaterina I. Galanzha**, University of Arkansas Medical Science, USA; Saratov State University, Russia	*Building 10, Main Conference Hall*	**ADFLIM SESSION IV** Chair: **Wolfgang Becker,** Becker&Hickl GmbH, Berlin, Germany			*Building 10, Hall 503*
11.00-11.30	**Coffee break, Exibition**					*Building 10*
11.30-13.30	**INVITED LECTURE/ORAL SESSION BIOPHYSICS III** Chair: **Walter Blondel**, University of Lorraine, CNRS, CRAN, France	*Building 10, Main Conference Hall*	**ORAL SESSION LASER PHYSICS & PHOTONICS II** Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 8, Conference Hall*	**ADFLIM SESSION V** Chair: **Vladislav Shcheslavskiy**, Becker&Hickl GmbH, Berlin, Germany	*Building 10, Hall 503*
13.30-14.30	**Lunch**					
14.00-15.30	**PUBLIC LECTURE SESSION MODERN OPTICS** Chairs: **Georgy V. Simonenko,Alexander B. Pravdin**, Saratov State University, Russia **How Does the Brain Works? The Worldwide Initiatives** **Francesco S. Pavone**, European Lab. for Non-linear Spectroscopy, Florence, Italy **Shining Light on Biology with Optogenetics**, Andrew L. Lopez III, Department of Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, Texas, USA **Show "Exciting Light", Ivan V. Fedosov**, Saratov State University, Russia					*Building 3, Big Physical Hall*

14.30-16.30	**ORAL SESSION TERAHERTZ OPTICS AND BIOTECHNOLOGY** Chair: **Valeriy E. Karasik**, Bauman Moscow State Technical University, Russia	*Building 10, Main Conference Hall*	**ORAL SESSION NONLINEAR DYNAMICS** Chair: **Vadim S. Anishchenko**, Saratov State University, Russia	*Building 3, Room 38*
	ORAL SESSION NANOBIOPHOTONICS I Chair: **Nikolai G. Khlebtsov**, IBPPM RAS, Saratov State University, Russia	*Building 9, Conference Hall*	**LOW-DIMENSIONAL STRUCTURES** Chair: **Olga Glukhova,** Saratov State University, Russia	*Building 8, Room 82*
	ORAL SESSION LASER PHYSICS & PHOTONICS III Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 8, Conference Hall 3*	**ROUND-TABLE DISCUSSION EDUCATION** Chairs: **Boris A. Medvedev** and **Vladimir P. Ryabukho,** Saratov State University, Russia	*Scientific Library Conference Hall*
16.30-17.00	**Coffee break, Exibition**			*Building 3*
17.00-18.30	**SFM INTERNET PLENARY SESSION IX** Chair: **Valery V. Tuchin**, Saratov State University **Ubiquitous THz Photonics From Ultra-High Bit-Rate Communications To Super-Resolution Non-Destructive Imaging** **Maksim Skorobogatiy,** Polytechnique Montreal, Canada **Non-Invasive Optical Imaging of Tissue Microstructure and Microcirculations in Vivo** **Ruikang K. Wang**, University of Washington, USA **Biomedical Applications of Terahertz - Applications, Opportunities and Challenges** **Vincent P. Wallace**, University of Western Australia, Australia			*Building 3, Big Physical Hall*
18.30-19.30	**JOINT POSTER/INTERNET SESSION. COMPETITION FOR THE BEST STUDENT POSTER AWARD** Chairs: **Ivan V. Fedosov** and **Anton Dyachenko**, Saratov State University, Russia			*Building 3, 1-3rd floor,BPH*

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Chair: Kirill I. Zaytsev, Prokhorov Institute of General Physics of the RAS, Bauman Moscow State Technical University, Russia
Recent advances in Embryonic Imaging and Tissue Elastography
Kirill Larin, University of Houston, USA
Photodiagnostics of Stress-Induced Gastrointestinal Neoplasia
Ekaterina Borisova et al., Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria, Saratov State University, Russia
Nanosattelite Biomedical Experiments in Space
Valery P. Zakharov, Samara University, Russia, Russia</td><td>Building 10 Main Conference Hall</td><td colspan="2">ADFLIM/ SESSION VI
Vladislav Shcheslavskiy, Becker&Hickl GmbH, Berlin, Germany</td><td>Building 10 Hall 503</td></tr>
<tr><td>11.00-11.30</td><td colspan="4">Coffee break, Exibition</td><td>Building 10</td></tr>
<tr><td rowspan="4">11.30-13.00</td><td>ADVANCED MATERIALS FOR OPTICS AND BIOPHOTONICS I
Chair: Vladimir N. Kurlov, Bauman Moscow State Technical University, Russia</td><td>Building 10 Main Conference Hall</td><td colspan="2" rowspan="2">ADFLIM SESSION VII
ADFLIM CLOSING// WINNERS AWARD
Chair: Alexander P. Savitsky, Research Center of Biotechnology of the RAS, Russia</td><td rowspan="2">Building 10, Hall 503</td></tr>
<tr><td>ORAL SESSION NANOBIOPHOTONICS II
Chair: Nikolai G. Khlebtsov, IBPPM RAS, SSU, Russia</td><td>Building 9, Conference Hall</td></tr>
<tr><td>ORAL SESSION ELECTROMAGNETICS
Chair: Michael V. Davidovich, Saratov State University, Russia</td><td>Building 8, Room 82</td><td colspan="2">ORAL SESSION ENGLISH
Chair: Alexander Pravdin, Saratov State University, Russia</td><td>Scientific Library Conference Hall</td></tr>
<tr><td>ORAL SESSION POLARIZATION
Chair: Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia</td><td>Building 1, Room 459, SSTU</td><td colspan="2">ORAL SESSION SPECTROSCOPY II
Chair: Kirill V. Berezin, Saratov State University, Russia</td><td>Building 3, Room 34</td></tr>
<tr><td colspan="4">ORAL SESSION TELEMEDICINE
Chairs: Valery V. Bakutkin, Saratov Research Institute of Rural Hygiene and Sergey R. Utz, Clinics of Skin and Veneral Diseases, SSMU, Russia</td><td>Clinics of Skin and Venereal Diseases, SSMU</td></tr>
<tr><td>14.00-18.00</td><td colspan="4">Round-table discussions and closing of the School. The Best Student Poster Award Ceremony</td><td>Open Air Meeting</td></tr>
</table>

PLENARY LECTURES

September 24, Monday

ADFLIM/PLENARY SESSION I

(*Building 10,* *Main Conference Hall*)
Chairs: **Valery V. Tuchin,** Saratov State University
Alexander P.Savitsky, Research Center of Biotechnology of the RAS

10.30-11.10

Quantifying stability in deterministic and stochastic complex systems
Jürgen Kurths, Humboldt University, Physics Department and Potsdam Institute for Climate Impact Research, Potsdam, Germany

11.10-11.50

Optical study of molecular and microrheologic mechanisms of interaction and alteration of blood components in the microcirculatory system
Alexander V. Priezzhev, M.V. Lomonosov Moscow State University, Russia

ADFLIM/PLENARY SESSION II

(*Building 10,* *Main Conference Hall*)
Chair: **Alexander P.Savitsky**, Research Center of Biotechnology of the RAS

12.20- 13.00

Biological tissue optics and optical clearing
Valery Tuchin, Saratov State University, Russia

ADFLIM/PLENARY SESSION III

(*Building 10,* *Main Conference Hall*)
Chairs: **Valery V. Tuchin,** Saratov State University
Alexander P.Savitsky, Research Center of Biotechnology of the RAS

16.40-17.20

Plasmonic SERS tags with embedded Raman molecules for bioimaging and sensing applications
Nikolai G. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS, Saratov State University, Russia

ADFLIM/PLENARY SESSION IV

(*Building 10,* *Main Conference Hall*)
Chairs: **Valery V. Tuchin,** Saratov State University
Alexander P.Savitsky, Research Center of Biotechnology of the RAS

17.40-18.20

Optical dosimetry of extraoral photobiomodulation therapy of oropharyngeal mucositis in pediatric patients undergoing hematopoietic cell transplantation
Anna N. Yaroslavsky, Advanced Biophotonics Laboratory at the Department of Physics, University of Massachusetts, Lowell, US

18.20-19.00

Approaches of the molecular imaging and machine learning for medical applications
Yury V. Kistenev,[1,2] Alexey V. Borisov[1,2], Viktor V. Nikolaev,[1] Denis A.Vrazhnov[1], Anastasya I.Knyazkova[1], [1]Tomsk State University; [2]Siberian State Medical University, Russia

September 25, Tuesday

ADFLIM/SFM PLENARY SESSION V

(*Building 10, Main Conference Hall*)

Chair: **Wolfgang Becker**, Becker&Hickl GmbH, Berlin, Germany

14.20-15.00

How to measure tissue blood flow non-invasively with light and what are the current trends?
Turgut Durduran, ICFO-The Institute of Photonic Sciences, Barcelona, Spain

15.00-15.40

Advanced technologies for brain
Metin Akay, University of Houston, USA

ADFLIM/SFM PLENARY SESSION VI

(*Building 10, Main Conference Hall*)

Chair: **Turgut Durduran**, ICFO-The Institute of Photonic Sciences, Barcelona, Spain

16.10-16.50

Microscopy of the brain on the basis of generation of optical harmonics: in search of optimum
Ilya V. Fedotov, M.V. Lomonosov Moscow State University, Russia

16.50-17.30

Photonic and magnetic nanoparticles for health, energy, and biosensing
T. Randall Lee, University of Houston, USA

17.30-18.10

Superconducting thin film nanostructures as terahertz and infrared heterodyne and direct detectors
Grigory N. Goltsman, Moscow State Pedagogical University, Russia

September 26, Wednesday

SFM PLENARY SESSION VII

(*Building 10, Main Conference Hall*)

Chair: **Kirill Larin**, University of Houston, USA

11.40-12.20

Stone fragmentation in urology
Ronald Sroka, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany

12.20-13.00

Imaging below the diffraction limit by spectroscopic signal separation using quantum dots
Andrei Sapelkin, Queen Mary University of London, UK

September 27, Thursday

PLENARY SESSION VIII
(*Building 10, Main Conference Hall*)
Chair: **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State University, Russia

9.00-9.40

Prospects for Malignancy Diagnosis by Using Terahertz Spectroscopy and Imaging
Kirill I. Zaytsev,[1,2] Valery E. Karasik,[1] Vladimir N. Kurlov,[3] Valery V. Tuchin,[4] Igor V. Reshetov[5], [1]Bauman Moscow State Technical University, [2]Prokhorov General Physics Institute of the RAS, [3]Institute of Solid State Physics of the RAS, [4]Saratov State University, [5]Sechenov University, Russia

9.40-10.20

Optical detection of clinical pathologies by image and spectroscopic analysis
Francesco S. Pavone, European Lab. for Non-linear Spectroscopy, Florence, Italy

10.20-11.00
In vivo flow cytometry for detection of silent circulating tumor cells in melanoma
Ekaterina I. Galanzha, University of Arkansas Medical Science, USA; Saratov State University, Russia

PLENARY SESSION IX
INTERNET BIOPHOTONICS
(*Building 3, Big Physical Hall*)
Chair: **Valery V. Tuchin**, Saratov State University, Russia

17.00-17.30

Ubiquitous THz photonics from ultra-high bit-rate communications to super-resolution non-destructive imaging
Maksim Skorobogatiy, Polytechnique Montreal, Canada

17.30-18.00

Non-invasive optical imaging of tissue microstructure and microcirculations in vivo
Ruikang K. Wang, University of Washington, USA

September 28, Friday

PLENARY SESSION X

(*Building 10, Main Conference Hall*)

Chair: **Kirill I. Zaytsev**, Prokhorov Institute of General Physics of the RAS, Bauman Moscow State Technical University, Russia

9.00-9.40

Recent advances in embryonic imaging and tissue elastography
Kirill Larin, University of Houston, USA

9.40–10.20

Photodiagnostics of stress-induced gastrointestinal neoplasia
Ekaterina Borisova et al., Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria; Saratov State University, Russia

10.20–11.00

Nanosattelite Biomedical Experiments in Space
Valery P. Zakharov, Samara University, Russia

SPIE FOCUS EVENTS
THE BEST STUDENT POSTER AWARD

September 27, Thursday

SPECIAL EVENT I
(Building 3, 3rd floor Hall)

18.30-19.30
Competition for the Best Student Poster Award
Jury of experts appointed by the Organizing Committee

September 28, Friday

SPECIAL EVENT II

In frames of Round-table discussions and closing of the School and Symposium

15.00-15.30

Competition for the Best Student Poster Award. Awarding of Winners

Valery V. Tuchin, Anton A. Dyachenko, Saratov State University, Russia

6th International Symposium Optics and Biophotonics

Conference on Optical Technologies in Biophysics & Medicine XX

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

Secretary: **Polina A. Timoshina,** Saratov State University, Tomsk State University

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

September 26, Wednesday

INVITED LECTURE/ORAL SESSION BIOPHYSICS I

(Building 10, Main Conference Hall)

Chair: **Metin Akay**, University of Houston, USA

14.20-14.40

Invited

Laser speckle dynamics in flow imaging - beyond the contrast,

Dmitry Postnov[1,2], Evren Erdener[1], Jianbo Tang[1], David Boas[1], [1]Neurophotonics Center, Boston University, Boston, USA; [2]Faculty of Health and Medical Sciences, Copenhagen University, Copenhagen, Denmark

14.40-15.00

Invited

Optical properties of skin as predictors of chronic diseases

Ivan Bratchenko[1], Lyudmila Shamina[1], Dmitry Artemyev[1], Oleg Myakinin[1], Yulia Khristoforova[1], Dmitriy Kornilin[1], Vladimir Grishanov[1], Valery Zakharov[1], Peter Lebedev[1], Larisa Rogozina[2], Daria Pimenova[2], Alexander Moryatov[2], Sergey Kozlov, [1]Samara University; [2]Samara State Medical University, Russia

15.00-15.20

Invited

OCT in ENT: Otitis media with effusion diagnosing

Pavel Shilyagin, Dmitry Terpelov, Valery Gelikonova, Alexey Novozhilov, Timur Abubakirov, Grigory Gelikonov, Andrey Shakhov, Valentin Gelikonov, Institute of Applied Physics RAS, N.-Novgorod, Russia

15.20-15.35

Erbium laser perforation and active delivery of photodynamic agent in PDT therapy of onychomycosis

Anastasia Tavalinskaya, A.V. Belikov, S.N. Smirnov, ITMO University, Saint Petersburg, Russia

15.35-15.50

Conventional Raman and SERS of body fluids for cancer detection

Lyudmila Shamina[1], Ivan Bratchenko[1], Dmitry Artemyev[1], Oleg Myakinin[1], Julia Starikova[1], Elena Tupicova[1], Igor Platonov[1], Alexander Moryatov[2], Sergey Kozlov[2], Valery Zakharov[1], [1]Samara University; [2]Samara State Medical University, Russia

15.50-16.05

Spatial speckle-correlometry and polarimetry technique for nondestructive investigation of biological objects

Ekaterina Korneeva, Maria Putintseva, Peter the Great St.Petersburg Polytechnic University, Russia

16.05-16.20

Study of microvascular reaction on the application of capsicum plaster by imaging photoplethysmography

Maxim Volynsky[1], Oleg Mamontov[1,2,3], Rashid Giniatullin[1,4,5], and Alexei Kamshilin[1], [1]ITMO University; [2]Pavlov First Saint Petersburg State Medical University; [3]Almazov National Medical Research Centre, Saint Petersburg; [4]Kazan Federal

University, Russia; [5]University of Eastern Finland, Kuopio, Finland

INVITED LECTURE/ORAL SESSION
BIOPHYSICS II

(Building 10, Main Conference Hall)

Chair: **Valery P. Zakharov**, Samara University, Russia

17.00-17.20
Invited
Estimation of skin optical properties modified by an optical clearing agent and measured using bimodal tissue spectroscopy
P. Rakotomanga[1], C. Soussen[1], G. Khairallah[1,3], M. Amouroux[1], F. Marchal[1,4], A. Delconte[1], H. Chen[1], W. Feng[5,6], D. Zhu[5,6] and Walter Blondel[1], [1]University of Lorraine, CNRS, CRAN, Vandœuvre-lès-Nancy; [2]L2S, CentraleSupélec, CNRS, Université Paris-Sud; [3]Regional Hospital CHR Metz-Thionville; [4]Cancer Institute of Lorraine, Nancy, France; [5]Wuhan National Laboratory for Optoelectronics-Huazhong University of Science and Technology (HUST), Wuhan; [6]Britton Chance Center and MOE Key Laboratory for Biomedical Photonics, School of Engineering Sciences, HUST, Wuhan, China

17.20-17.40
Invited
Impact of standardization of autofluorescence and diffuse reflectance spectra on diagnosis accuracy of optical spectroscopy used for skin carcinomas diagnosis
G. Khairallah[1,2], W. Blondel[1], P. Rakotomanga[1], C. Soussen[3], A. Delconte[1], F. Plénat[1],F. Marchal[1,4], Marine Amouroux[1], [1]Université de Lorraine, CNRS, CRAN Vandœuvre-lès-Nancy; [2]CHR Metz-Thionville, Service de Chirurgie plastique, Metz; [3]L2S, CentraleSupélec, CNRS, Université Paris Sud; [4]Institut de Cancérologie de Lorraine, Vandœuvre-lès-Nancy, France

17.40-18.00
Invited
OCT-lymphangiography based on speckle statistics evaluation
Lev Matveev[1], Valentin Demidov[2], Marina Sirotkina[3], Dmitry Karashtin[1], Alexander Moiseev[1], Alexander Sovetsky[1], Alexander Matveyev[1], Grigory Gelikonov[1], Elena Zagaynova[3], Natalia Gladkova[3], Vladimir Zaitsev[1], Alex Vitkin[2], [1]Institute of Applied Physics RAS, Russia, [2]University of Toronto, Canada, [3]Privolzhsky Research Medical University, Russia

18.00-18.20
Invited
Manually-operated compressional optical coherence elastography using robust strain mapping in phase-sensitive OCT
Vladimir Y. Zaitsev[1], A.L. Matveyev[1], A.A. Sovetsky[1], L.A. Matveev[1], D.V. Shabanov[1], S.Y. Ksenofontov, G.V. Gelikonov[1] 1 Institute of Applied Physics RAS, Nizhny Novgorod, Russia

18.20-18.30
In vitro Yb,Er:Glass laser hydroacoustic processing of human cataract eye lens: influence of pulse structure on removal efficiency
Andrey Belikov[1], Sergey Gagarsky[1], Andrey Sergeev[1], Sergey Smirnov[1], Alexey Zagorulko[2], [1]ITMO University, Russia, [2]St. Petersburg Branch of the S. Fyodorov Eye Microsurgery Federal State Institution, Russia

18.30-18.40
Assessment of meat freshness with visible and near-infrared spectroscopy utilizing two conventionally used experimental approaches
Motahareh Peyvasteh, A. Popov, A. Bykov, I.V. Meglinski, University of Oulu, Finland

18.40 -18.50
Blood coagulation estimation using the method of laser-speckle correlation,
Lin Li[1], Iuliia D. Sytnik[1], Yakov S, Pekker[1,2], Fedor A. Gubarev[1],[1]National Research Tomsk Polytechnic University, Tomsk, [2]Siberian State Medical University, Tomsk, Russia

18.50-19.00
Optical and morphological investigation of oral cavity mucous regeneration, after the fractional treatment by radiation of 980 nm diode laser
Elena Sergeeva[1], Andrey Belikov[2], Luidmila Ermolaeva[1], Dmitrii Korzhevskyi[3], Yulia Semyashkina[2], Maria Antropova[2], Denis Fedotov[1], [1]St. Petersburg State University, Russia, [2]ITMO University, St. Petersburg, Russia, [3]FSBSI "IEM"

September 27, Thursday

INVITED LECTURE/ORAL SESSION BIOPHYSICS II

(Building 10, Main Conference Hall)

Chair: **Walter Blondel**, University of Lorraine, CNRS, CRAN, France

11.30-11.50

Invited

Optical coherence tomography of malignant brain tumors ex vivo

Irina Dolganova[1,2,3], P. Aleksandrova[3], K. Zaytsev[2,3,4], A. Kosyrkova[5], S.-I. Beshplav[5], I. Reshetov[2], A. Potapov[5], V. Tuchin[6], [1]Institute of Solid State Physics of RAS, Chernogolovka; [2]Sechenov First Moscow State Medical University, Moscow; [3]Bauman Moscow State Technical University; [4]Prokhorov General Physics Institute of RAS, [5]Burdenko Neurosurgery Institute, Moscow; [6]Saratov State University, Saratov, Russia

11.50-12.10

Invited

Fiber optics probes as optical bridges between spectroscopy and medicine

Olga Bibikova[1,2], Urszula Zabarylo[3], Anastasya Melenteva[4], Valeria Belikova[4], Iskander Usenov[1], Tatiana Sakharova[1], Olaf Minet[3], Viacheslav Artyushenko[1], [1]art photonics GmbH, Germany,[2]Research-Educational Institute of Optics and Biophotonics, Saratov State University, Russia, [3]Center for Radiology C6, Medical Physics and Optical Diagnostics, CBF, Charité-Universitätsmedizin, Germany, [4]Samara University, Russia

12.10-12.30

Invited

Towards the monitoring of cardiovascular and neurohydrodynamics to assess glymphatic function,

Teemu Myllylä, University of Oulu, Finland

12.30-12.45

Low–coherence optical fiber sensors using diamond structures

Daria Majchrowicz, M. Jędrzejewska-Szczerska, Gdańsk University of Technology, Gdańsk, 11/12 Gabriela Narutowicza Street, Poland

12.45-13.00

Fluorescent indices of Tradescantia leaves under various lighting conditions, Olesya Kalmatskaya,V.A. Karavaev, A.N. Tikhonov, Lomonosov Moscow State University, Faculty of Physics, Russia

13.00-13.15

Reaction of the cardiovascular system on the cold-stress test assessed by camera-based photoplethysmography

Valery Zaytsev[1], Oleg Mamontov[2], Alexei Kamshilin[1],[1] ITMO University, Saint Petersburg, Russia,[2] Almazov National Medical Research Centre, Saint Petersburg, Russia

POSTERSESSION BIOPHYSICS

(Building 3, 3rd floor Hall)

Chair (B): **Anton Dyachenko**, Saratov State University (Russia)

18.30-19.30

1B. **Investigation of blood microcirculation parameters in patients with rheumatic diseases by videocapillaroscopy and laser Doppler flowmetry during cold pressor test** Dmitry Stavtsev[1], Mikhail Volkov[2], Nikita Margaryants[2], Andrey Potemkin[2], Viktor Dremin[1], Igor Kozlov[1], Irina Makovik[1], Evgeny Zherebtsov[3], Andrey Dunaev[1], [1]Research and Development Center of Biomedical Photonics, Orel State University named after I.S. Turgenev, Orel, Russia, [2]Computer Photonics and Videomatics Department, Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint Petersburg, Russia, [3]Aston Institute of Photonic Technologies, Aston University, Birmingham, UK

2B. **Influence of local pressure on the oscillations of cutaneous blood flow** Mikhail Mezentcev[1], Elena Potapova[1], Valerii Shupletsov[1], Irina Mizeva[2] ,[1]Orel State University named after I.S. Turgenev, Orel, Russia, [2]Institute of continuous media mechanics, Ural Branch of RAS, Perm

3B. **Refractive index sensor based on double hybrid plasmonic waveguide** Muhammad Ali Butt, Samara National Research University, Russia

4B. **Vasodilatation rate under local heating test in controls and patients with diabetes mellitus** Elena Zharkikh, Orel State University, Russia

5B. **Optical needle system for blood vessels detection during stereotactic biopsy of brain tumors,** Elena Kiseleva, Privolzhskiy Research Medical University, Research Institute of Biomedical Technologies, Russia

6B. **New technique for determination of electrophoretic mobility of colloidal system** Ekaterina Savchenko, Peter the Great Saint-Petersburg Polytechnic University, Russia

7B. **Pilot studies of the synchronization in skin blood flow oscillations in contralateral limbs** Yulia I. Loktionova[1], S.A. Bryanskaya[1], I.O. Kozlov[1], E.V. Zharkikh[1], E.A. Zherebtsov[2], A.I. Zherebtsova[1], V.V.Sidorov[3],

S.S. Sokolovski[2], A.V. Dunaev[1], E.U. Rafailov[2], [2]Aston Institute of Photonic Technologies, Aston University, Aston Triangle, Birmingham, UK, [3]SPE "LAZMA" Ltd, Moscow, Russia

8B. **Laser speckle contrast imaging of abdominal organs in rat model** Evgenia Seryogina[1], Viktor Dremin[1], Anton Sdobnov[2], Igor Kozlov[1], Mikhail Mezentsev[1], Andrian Mamoshin[1], Alexander Alyanov[1], Andrey Dunaev[1], [1]Orel State University named after I.S. Turgenev, Russia, [2]Faculty of Information Technology and Electrical Engineering, University of Oulu, Oulu, Finland

9B. **Influence of local pressure on the oscillations of cutaneous blood flow** Mikhail Mezentseva[1], Elena Potapova[1], Valerii Shupletsov[1], Irina Mizeva[2],[1]Orel State University named after I.S. Turgenev, Orel, Russia, [2]Institute of continuous media mechanics, Ural Branch of RAS, Perm, Russia

10B. **Spectral analysis of dural implants using chemometric analysis** Timchenko P.E.[1], Timchenko E.V.[1], Volova L.V.[2], Kiyko Nikita[1], [1]Samara University,[2] Samara State Medical University, Russia

11B. **Chemometric analysis of raman spectra to assess the suitability of bone tissue in the production of bioimplants** Timchenko P.E.[1], Timchenko E.V.[1], Oleg Frolov[1], M.D. Markova[1], [1]Samara University, Russia

12B. **OCT based three-dimensional strain mapping for elastography and relaxography** Alexander Sovetsky[1], Alexander Matveyev[1], Ekaterina Gubarkova[2], Lev Matveev[1], Anton Plekhanov[2], Grigory Gelikonov[1], Dmitry Shabanov[1], Elena Zagaynova[2], Natalia Gladkova[2], Vladimir Zaitsev[1], [1]Institute of Applied Physics RAS, Russia, [2]Privolzhsky Research Medical University, Russia

13B. **Seminal works on mitogenetic radiation from experiments with onion to "cancer quencher"** I.V. Volodyaev[1], E.V. Naumova[2], D.A. Isaev[3], A.E. Naumova[4], [1]Biological faculty of M.V. Lomonosov Moscow State University, Moscow, Russia, [2]Rzhanov Institute of Semiconductor Physics, Novosibirsk, Russia, [3]All-Russia Research and Development Institute of Irrigation Fishery, Moscow, Russia, [4]Saratov State University, Saratov, Russia

14B. **The mirror artifact elemination in SD-OCT** Pavel Shilyagin, Dmitry Terpelov, Valentin Gelikonov, Grigory Gelikonov, Institute of Applied Physics RAS, Russia

15B. **Improvement of photodiagnosis using 5-ALA/PpIX, ZnPc and GalZnPc photosensitizers in combination with vaso-dilatation drugs** Alexandr Khorovodov[1], Ekaterina Borisova[2], Ilana Agranovich[1], Anastasia Shintenkova[1], Veronika Shimanova[1], Matvey Kanevsky[1], Nikita Navolokin[3], Tsanislava Genova – Hristova[2], Ivan Angelov[4] , Vanya Mantareva[4], Oxana Semyachkina-Glushkovskaya[1], [1]Saratov State University, Russia, [2]Institute of Electronics-Bulgarian Academy of Sciences,Sofia, Bulgaria, [3]Saratov State Medical University, Russia, [4]Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences,Sofia, Bulgaria

16B. **Estimation of color characteristics by spectral data under photobleaching of glycated dentine** Natalia Kazadaeva, Tatiana Kashina, Alexandr Pravdin, Leonid E. Dolotov, Saratov State University, Russia

17B. **Myocardium laser welding with infrared radiation** L. Frolov[1], A.E. Moskalensky[1], S.G. Sokolovski[2], [1]Laboratory of Optics and Dynamics of Biological Systems Department of Physics NSU, Russia, [2]AIPT, School of Engineering and Applied Sciences, Aston University, Birmingham, UK

18B. **Automatic malignant melanoma recognition using a dermatoscopy imaging tool** Semyon Konovalov[1], Oleg A. Melsitov[1], Oleg O. Myakinin[1], Ivan A. Bratchenko[1], Alexander Moryatov[2], Sergey Kozlov[2], Valery Zakharov[1], [1]Samara University, Russia, [2]Samara State Medical University, Russia

19B. **Modeling of a local temperature field photoinduced in a medium with plasmon nanoparticles** Sergey Zarkov[1], Avetisyan Yuriy[1], Yakunin Alexander[1], Akchurin Georgy[1,2], Akchurin Garif[1,2], Tuchin Valery[1,2,3], [1]Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia; [2]Saratov State University, Russia; [3]Tomsk State University, Russia

20B. **Thermooptics of structures based on ordered arrays of plasmon nanoparticles and their applications** Yakunin Alexander[1], Avetisyan Yuriy[1], Sergey Zarkov[1], Akchurin Georgy[1,2], Akchurin Garif[1,2], Tuchin Valery[1,2,3], [1]Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia; [2]Saratov State University, Russia; [3]Tomsk State University, Russia

21B. **Regularities of local heating in laser irradiation of biotissues doped by gold nanostars** Akchurin Garif[1,2], Avetisyan Yuriy[1], Sergey Zarkov[1], Akchurin Georgy[1,2], Yakunin Alexander[1], Tuchin Valery[1,2,3], [1]Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia; [2]Saratov State University, Russia; [3]Tomsk State University, Russia

22B. **Orientational invariance of the integral absorption of laser radiation by plasmon-**

resonant nanostars Avetisyan Yuriy[1], Sergey Zarkov[1], Yakunin Alexander[1], Akchurin Garif[1,2], Akchurin Georgy[1,2], Tuchin Valery[1,2,3], [1]Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia; [2]Saratov State University, Russia; [3]Tomsk State University, Russia

23B. **Single molecule detection and manipulation by optical trapping and fluorescence microscopy** Olga Kuznetsova, Tashtimirova Dilara, Peter the Great St. Petersburg Polytechnic University, Russia

24B. **Application of the method of combination scattering spectroscopy for estimation of quality of honoplastic in experiment on rabbits** P.E.Timchenko, E.V. Timchenko, M.D.Markova, L.T. Volova[2], D.A. Dolgyshkin[2], Anna Tyumchinkova[1], Maria Markova[1], Galina Tikhomirova[1], [1]SamaraUniversity, Samara, Russia, [2]Samara State Medical University, Samara, Russia

25B. **Colour characteristics definition from spectral data of glycated dentin during photobleaching,** Natalia Kasadaeva, Saratov State University, Russia

26B. **Optical properties of water solutions of glycerol and hyaluronic acid in the visible and near-IR regions** Ekaterina N. Lazareva[1,2], E.A. Genina[1,2], A.N. Bashkatov[1,2], V.I. Kochubey[1,2], V.V. Tuchin[1,2,3],[1]Saratov State University, Saratov, [2]Tomsk State University, [3]Institute of Precision Mechanics and Control RAS, Saratov, Russia

27B. **Study of the optical and structural properties of glycated and non-glycated hemoglobin by refractometric, fluorescent and Raman spectroscopy** Ekaterina Lazareva[1,2,3], Andrey. Y. Zyubin[1,4], Ilya G. Samusev[1,4] Vasily A. Slezhkin[4,5] Vyacheslav I. Kochubey[2,3], Valery V. Tuchin[2,3,6],[1]Center for Functionalized Magnetic Materials (FunMagMa), Immanuel Kant Baltic Federal University, Russia, [2]Saratov State University, Saratov, Russia, [3]Tomsk State University, Russia, [4]Immanuel Kant Baltic Federal University, , Kaliningrad, [5]Kaliningrad State Technical University, [6]Institute of Precision Mechanics and Control of RAS,Saratov, Russia

28B. **Role of different plasma constitutes in human erythrocytes interaction** Alexey Semenov, Andrey Lugovtsov, Alexander Hlutkin[2],Victor Zinchuk[2], Sehyun Shin[3], Alexander Priezzhev[1], [1]Moscow State University, Russia, [2]Grodno State Medical University, Belarus [3]Korea University, Republic of Korea

29B. **Non-invasive blood microcirculation sensor** Olga Golovan, Peter the Great St. Petersburg Polytechnic University, Russia

30B. **Optical and thermophysical modelling of the processes occurring in the mucous membrane of oral cavity as a result of fractional exposure of diode laser radiation with the wavelength of 980 nm** Maria Antropova, Andrey Belikov, ITMO University, Russia.

31B. **Photodynamic therapy of onychomycosis by high-intensive LED light of wavelength 660 ± 10 nm** Yulia Semyashkina[1], Andrey Belikov[1], Mark Gelfond[2], Elena Sergeeva[1], Mikhail A. Modin[1], [1]ITMO University, [2]Scientific Research Institute of Oncology named after Petrov, Russia

32B. **Intravital molecular tagging velocimetry of lymph flow using Evans Blue** Anton Namykin, Saratov State University, Saratov, Russia

33B. **Multispectral and autofluorescence RGB imaging for skin cancer diagnostics** Vanesa Lukinsone[1], R.Veilande[1], E.V.Plorina[1], I.Kuzmina[1], D.Bliznuks[2], K.Bolochko[2], A.Derjabo[3], I.Lihacova[1], J.Spigulis[1], [1]Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, Latvia, [2]Faculty of Computer Science and Information Technology, Riga Technical University, Riga, Latvia, [3]Oncology Centre of Latvia, Riga Eastern University Hospital, Riga, Latvia

34B. **Application of light scattering methods for measuring the red blood cells microrheologic properties in vitro** Anastasia Maslyanitsina, Lomonosov Moscow State University, Department of Physics, Russia

35B. **Characterization of carbor nanoparticles influence on red blood cell membrane tension by AFM method,** Doronkina Anna, Saratov State University, Russia

36B. **In vivo study of skin cancers by using hyperspectral imaging** Violetta Sherendak, Samara University, Russia

37B. **Fluorescent properties of fluroquinolone in the presence of silver nanoparticles** Tatyana Danilina, Natalya Levina, Anastasia Bryshkina, Tatyana Smirnova, Saratov State University, Russia

38B. **Optical coherent elastography as a new method for estimation of chemotherapy efficacy on triple-negative breast cancer in the experiment** Anton Plekhanov[1], A. Sovetsky[2], E.B. Kiseleva[1], E.V. Gubarkova[1], M.A. Sirotkina[1], V.Yu. Zaitsev[2], L.A. Matveev[2], A.L. Matveev[2], S.S. Kuznetsov[1], N.D. Gladkova[1], [1]Institute of Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod, [2] Institute of Applied Physics RAS, Nizhny Novgorod, Russia

39B. **Study of regional differences in blood microcirculation in normal and pathological conditions** Svetlana Bryanskaya, Orel State University, Russia

40B. **Determination of salt solutions in Microstructured Optical Fiber** Pavel Pidenko[1], Andrey Shuvalov[2], Alexey Horev[3], Natalia Burmistrova[1], [1]Saratov State University, Russia, [2]SPC Nanostructured Glass Technology Ltd, Russia, [3]Saratov State Medical University, Russia

41B. **Registration and modeling of the sedimentation process for erythrocytes and their aggregates in vitro** V.A. Doubrovski,[1] K.N. Dvoretski[1], Sergey V. Markov[2], E.P. Karpocheva[3], V.V. Tuchin[2], [1]Saratov State Medical University, [2]Saratov State University, [3]Saratov Regional Blood Transfusion Station, Russia

42B. **Raman spectra analysis of venous and capillary blood using the projection on latent structure method** Anastasya Lykina[1], D. Artemyev[1], [1]Samara University, Russia

43B. **Study of early stages of lymphedema using multiphoton and THz microscopy** Ekaterina Sandykova[1], Daria Tuchina[2], Polina Timoshina[2] , Anastasya Knyazkova[3], [1]SSMU, Russia [2]SSU, [3]TSU, Russia

44B. **Computational recognition technique for histological micro-photo analysis of rat bone tissue in the scaffold implantation region** I.A. Norkin[1], Igor V. Zabenkov[2], I.O. Bugaeva[2], D.A. Gorin[3], A.N. Ivanov[1], M.O. Kurtukova[2], P.V. Ryabukho[4], M.S. Saveleva[4], V.Y. Ulyanov[1], [1]Scientific Research Institute of Traumatology, Orthopedics and Neurosurgery of Razumovsky Saratov State Medical University,[2]Razumovsky Saratov State Medical University, [3]SKOLKOVO Institute of Science and Technology, [4]Saratov State University, Russia

45B. **Ultrasonic standing wave action upon the sedimentation process of human erythrocytes** V.A. Doubrovski[1], Sergey V. Markov[2], S.O. Torbin[1], E.P. Karpocheva[3], [1]Saratov State Medical University, [2]Saratov State University,[3]Saratov Regional Blood Transfusion Station, Russia

46B. **Infrared imaging of sweat glands activity of fingers during the post-occlusive reactive hyperemia test** Andrey A. Sagaidachnyi, A.V. Fomin, D.I. Mayskov, D.A. Usanov, A.V. Skripal, Saratov State University, Russia

47B. **Antibacterial composites based on a glauconite** Ekaterina I. Selifonova, S. B. Venig, R. K. Chernova, V. G. Serzhantov, A. N. Mikerov, O. G. Shapoval, V. P. Splyukhin, A. A. Selifonov, G. N. Naumova, N. N. Scherbakova, Saratov State University, Russia

48B. **Effect of different macromolecules on viscous and microrheologic properties of blood at various temperatures** Petr Ermolinkiy[1], Alexei Semenov[1], Andrei Lugovtsov[1,2], Maria Fehringer[3], Ursula Windberger[3], Alexander V. Priezzhev[1,2], [1]Department of Physics of M.V. Lomonosov Moscow State University, Moscow, [2]International Laser Center of M.V. Lomonosov Moscow State University, Moscow, [3]Medical University of Vienna, Center for Biomedical Research, Vienna, Austria

49B. **Application of light scattering methods for measuring the red blood cells microrheologic properties in vitro** Anastasia I. Maslyanitsina[1], P.B. Ermolinskiy[1], A.E. Lugovtsov[1,2], L.I. Dyachuk[3], A.V. Priezzhev[1,2], [1]Department of Physics of M.V. Lomonosov Moscow State University, Moscow, [2]International Laser Center of M.V. Lomonosov Moscow State University, Moscow, [3]Medical Research and Education Center of M.V. Lomonosov Moscow State University, Moscow, Russia

50B. **Monitoring changes in sclera during UV/riboflavin crosslinking process by fluorescence lifetime measurements** Marina Shvachkina[1], Anastasia Knyazkova[2], Yury Kistenev[2], Alexander Pravdin[1], Dmitry Yakovlev[1], Saratov State University, [2]Tomsk State University, Russia

51B. **The role of meningeal lymphatics in brain clearing after opening of blood-brain barrier** Oxana Semyachkina-Glushkovskaya[1], Alexander Khorovodov[1], Alexander Shirokov[2], Nikita Navolokin[3], Andrey Terskov[1], Maria Klimova[1], Aysel Mamedova[1], Juergen Kurths[1,4], [1]Saratov State University, Russia [2]Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, [3]Saratov State Medical University, Russia, [4]Potsdam Institute for Climate Impact Research, Humboldt University, Germany

52B. **Photodiagnostics of stress-induced stomach neoplasia using direct and indirect photosensitization**, Aleksandr Khorovodov[1], Ilana Agranovich[1], Anastasia Shintenkova[1], Veronika Shimanova[1], Matvei Kanevsky[1], Oxana Semyachkina-Glushkovskaya[1], Tsanislava Genova[2], Alexander Gisbrecht[2], Ivan Angelov[3], Vanya Mantareva[3], Ekaterina Borisova[2], [1]Saratov State University, Russia; [2]Institute of Electronics-Bulgarian Academy of Science; [3]Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences, Sofia, Bulgaria

53B. **How the brain cleans from the blood after stroke?** Alexander Khorovodov[2], Alexander Shirokov[4], Nikita Navolokin[1],Andrey Terskov[2],

Maria Klimova[2],Olga Sindeeva[2], Aysel Mamedova[2], Sergey Sokolovsky[3], Edik Rafailov[3], Oxana Semyachkina-Glushkovskaya, [1]Saratov State Medical University,[2]Saratov State University, Russia, [3]Optoelectronics and Biomedical Photonics Group, Aston University, Birmingham, UK, [4]Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Russia

54B. **The changes of the blood-braim barrier during formation of glioma** Olga Pavlova[1], Alexander Khorovodov[1], Alexander Shirokov[2], Nikita Navolokin[3], Andrey Terskov[1], Maria Klimova[1], Aysel Mamedova[1], [1]Saratov State University, [2]Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, [3]Saratov State Medical University, Russia

55B. **Optical monitoring of brain clearing after opening of blood-brain barrier** Nikita Navolokin[1], Maria Klimova[2], Arkady Abdurashitov[2,3], Oxana Semyachkina-Glushkovskaya,[1] Valery Tuchin[2,3], [1]Saratov State Medical University, Russia [2]Saratov State University, [3]Tomsk State University, Russia

56B. **Investigation of the possibilities of locating fluorescent layers in biotissues using immersion optical clearing** Marina Shvachkina, Dmitry Yakovlev, Alexander Pravdin, Saratov State University, Russia

57B. **A refractometric OCT-technique for monitoring the collagen fiber composition during immersion clearing process** Marina Shvachkina, Ekaterina Lazareva, Dmitry Yakovlev, Alexander Pravdin, Dmitry Yakovlev, Saratov State University, Saratov, Russia

58B. **Application of multi-wavelength laser speckle contrast imaging for skin perfusion assessment,** Anton Sdobnov[1], A. Bykov[1], A. Popov[1], A. Grabovski[2], J. Spigulis[2], I. Meglinski[1,3], [1]Opto-Electronics and Measurement Techniques Research Unit, University of Oulu, Finland, [2]Biophotonics Laboratory, Institute of Atomic Physics and Spectroscopy University of Latvia, Riga, Latvia, [3]Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia

59B. **Study of skin permeability for glycerol in alloxan diabetes** Daria K. Tuchina[1,2,3], Alexey N. Bashkatov[1,2], Alla B. Bucharskaya[4], Valery V. Tuchin[1,2,5 1]Saratov State University, Saratov, Russia, [2]Tomsk State University, Tomsk, Russia, [3]Prokhorov General Physics Institute of RAS, Moscow, Russia [4]Saratov State Medical University, Saratov, Russia, [5]Institute of Precision Mechanics and Control RAS, Saratov, Russia

60B. **Utilization of VIS-NIR diffuse reflectance spectroscopy in differentiation of biosamples** Lucas Surazynski[1],Aleksandra Zienkiewicz,[2] Anton Sdobnov,[1] Teemu Myllyla,[1] Motahareh Peyvasteh,[11]University of Oulu, Oulu, Finland; [2]Orel State University, Orel, Russia

61B. **Comparative evaluation of the elastic properties of the biological tissues in various pathological states using optical coherence elastography**, Gubarkova Ekaterina, Privolzhsky Research Medical University, Nizhny Novgorod, Russia

62B. **The influence of local pressure on evaluation parameters of skin blood perfusion and fluorescence** Ksenia Kandurova[1], V. Dremin[1], E. Zherebtsov[1,2], E. Potapova[1], A. Dunaev[2],A. Mamoshin[1] , A. Alyanov[1],Muradyan[4], [1]Orel State University, Orel, Russia,[2]Aston Institute of Photonic Technologies, Aston University, Birmingham, UK, [4]Orel Regional Clinical Hospital, Orel, Russia

63B. **Optical coherence microscopy combined with optical tweezers for cellular mechanics research,** Maxim Sirotin, Faculty of Physics, Lomonosov Moscow State University, Russia

64B. **Skin optical clearing in vivo in humans using oleic acid** Elina Genina,[1,2] Albina Kazina,[1] Yury Surkov,[1] Isabella Serebryakova,[1] Alexey Bashkatov,[1,2] Valery Tuchin,[1,2,3] Vladimir Zharov,[1,4] [1]Saratov State University; [2]Tomsk State University; [3]Institute of Precise Mechanics and Control of RAS, Russia; [4]University of Arkansas Medical Science, USA

65B. **Fiber-optic sensor with nitrogen-doped diamond film,** Monika Kosowska, Daria Majchrowicz, Małgorzata Jędrzejewska-Szczerska, Gdańsk University of Technology, Gdańsk, 11/12 Gabriela Narutowicza Street, Poland

66B. **Investigation of the effect of immersion agents on the optical depth of OCT probing of skin ex vivo** Sergey Zaytsev[1,2], Alexey Bashkatov[1,3], Valery Tuchin[1,3,4], Yulia Svenskaya[1], Ekaterina Lengert[1], Elina Genina[1,3], [1]Saratov State University, [2]Université de Lorraine, [3]Tomsk State University, [4]Institute of Precision Mechanics and Control, RAS, Saratov, Russia

67B. **Optical coherence tomography of *ex vivo* brain gliomas of different grades**, Polina Aleksandrova[1], I.N. Dolganova[1,2,3], K.I. Zaytsev[2,3,4], P.V. Nikitin[5], S.-I.T. Beshplav[5], I.V. Reshetov[2], A.A. Potapov[5], and V.V. Tuchin[6], [1]Bauman Moscow State Technical University,[2]Sechenov First Moscow State Medical University, Moscow, [3]Institute of Solid State Physics of RAS, Chernogolovka,

[4]Prokhorov General Physics Institute of RAS, Moscow, [5]Burdenko Neurosurgery Institute, Moscow, [6]Saratov State University, Saratov, Russia

68B. **Borderline's reconstruction of absorbing and scattering inhomogeneity in biological tissue using time-resolved diffuse optical tomography** Anton Yu. Potlov, S.V. Frolov, S.G. Proskurin, Tambov State Technical University

69B. **Investigation of ex vivo skin geometrical parameters kinetics at the skin optical clearing by glycerol solutions with different concentrations** Vadim Genin, Alexey Bashkatov, Elina Genina, Valery Tuchin, Saratov State University, Russia

70B. **Models of optical parameters dynamics of collagenous tissues placed in glycerol** Mikhail Stolnitz, Saratov State University, Russia

71B. **The biotissue dehydration under external mechanical compressio,** Olga Zyuryukina, Yuriy P. Sinichkin, Saratov state University, Russia

72B. **Stroke induces nuclear shuttling of histone deacetylase 4 in the early post-stroke recovery period** Svetlana Demyanenko, Elena Berezhnaya, Maria Neginskaya, Viktor Nikul, SFedU, Russia

73B. **Expression of HDAC1, HDAC2 and HDAC4 in acute phase after photothrombotic stroke in the rat brain**, Svetlana Demyanenko, Valentina Dzreyan, Valeria Guzenko, SFedU, Russia

74B. **Towards screening of brain malformations with circularly polarized light?** Mariia Borovkova[1,2], Alexey Popov[2], Alexander Bykov[2], Jens Pahnke[3], Mikhail Khodzitsky[1], Igor Meglinski[1], [1]ITMO University, Russia; [2]University of Oulu, Finland; [3]University of Oslo, Norway

75B. **Laser Doppler anemometer with liquid crystal modulator for blood flow velocity measurements**, Maria Borozdova, Fedosov Ivan, Tuchin Valery,Saratov State University, Russia

76B. **Comparison of elastic properties of tissue samples in various pathological states using optical coherence elastography**, Ekaterina Gubarkova[1], A.A. Sovetsky[2], V.Yu. Zaitsev[2], L.A. Matveev[2], A.L. Matveev[2], D.A. Vorontsov[3], L.B. Timofeeva[1], E.B. Kiseleva[1], A.Yu. Vorontsov[3], I.A. Kuznetsova[4], N.D. Gladkova[1], [1]Privolzhsky Research Medical University; [2]Institute of Applied Physics RAS; [3]Nizhny Novgorod Regional Oncologic Hospital; [4]N.A. Semashko Nizhny Novgorod Regional Clinical Hospital, Russia

77B. **Optical coherence elastography as a new method for estimation of chemotherapy efficacy on triple-negative breast cancer in the experiment**, Anton A. Plekhanov[1], A.A. Sovetsky[2], E.B. Kiseleva[1], E.V. Gubarkova[1], M.A. Sirotkina[1], V.Yu. Zaitsev[2], L.A. Matveev[2], A.L. Matveev[2], S.S. Kuznetsov[1], N.D. Gladkova[1], [1]Institute of Biomedical Technologies, Privolzhsky Research Medical University, Nizhny Novgorod; [2]Institute of Applied Physics RAS, Nizhny Novgorod, Russia

78B. **Biophotonics for advanced diagnosis of thrombosis in human diseases** Galina Afanasieva[1], E.I. Galanzha[2,3] and V.P. Zharov[2,3] [1]V.I. Razumovsky Saratov State Medical University, Russia; [2]University of Arkansas for Medical Sciences, Little Rock, AR, USA; [3]Saratov State University, Russia

79B. **Transmission mode THz time-domain spectroscopy (THz-TDS) for blood plasma investigation** N.Yu. Ekimova[1], Yu.K. Aksenova[1], Ya.V. Grachev[1], M.L. Gelfond[2], E.N. Slugin[2], L.V. Plotnikova[3], V.V. Tuchin[1,4], O.A Smolyanskaya[2] [1]ITMO University; [2]N.N. Petrov National Medical Research Center of Oncology; [3]Saint Petersburg State University; [4]Saratov State University, Russia

80B. **Application of the digital holographic microscopy for visualization of optoporated cell membranes by a femtosecond laser irradiation** A.O. Georgieva[1,2], N.V. Petrov[1], B.V. Popov[2], S.E. Putilin[1], A.N. Tsypkin[1], O.A. Smolyanskaya[1] and V.V. Tuchin[3,4] [1]ITMO University; [2]Institute of Cytology of the RAS, Saint-Petersburg; [3]Saratov State University, [4]Institute of Precision Mechanics and Control of the RAS, Saratov, Russia

81B. **The changes of the blood-brain barrier during formation of glioma** Olga Pavlova[1], Alexander Khorovodov[1], Alexander Shirokov[2], Nikita Navolokin[1], Andrey Terskov[1], Maria Klimova[1], Aysel Mamedova[1], [1]Saratov State University; [2]Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Russia

82B. **Quantitative laser speckle contrast imaging for blood flow imaging and it's application in microfluidics,** Amir Asadollahifanabonab, Shahid Beheshti University, Tehran, Iran

83B. **Optical diagnostics of bile duct tissues state with tumor compression,** Ksenia Kandurova[1], Victor Dremin[1], Evgeny Zherebtsov[1,2], Elena Potapova[1], Andrey Dunaev[1], Andrian Mamoshin[1,3], Alexander Alyanov[1,3], Vadim Muradyan[3], [1]Research and Development Center of Biomedical Photonics, Orel State University named after I.S. Turgenev, Orel, Russia; [2]Aston Institute of Photonic Technologies, Aston University, Birmingham, UK; [3]Orel Regional Clinical Hospital, Orel, Russia

84B. **Effect of low frequency fluctuations of arterial blood pressure on NIRS signals** Aleksandra Zienkiewicz[1], Hany Ferdinando[2], Erkki Vihriälä[1], Vesa Korhonen[2,3], Teemu Myllyläa[2], [1]Optoelectronics and Measurement Techniques Unit, University of Oulu; [2]Research Unit of Medical Imaging, Physics and Technology, University of Oulu; [3]Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland

85B. **Optical and thermal modeling of Ti-doped optothermal fiber converter for laser surgery** Andrey Belikov, Alexei Skrypnik, Irina Salogubova, ITMO University, Russia

86B. **Photodynamic influence of red (662 nm) radiation on Staphylococcus Aureus processed by photosensitize** Aleksey A. Selifonov[1], Olga G. Shapoval[2], Sergey A. Yuvchenko[3], Dmitry A. Zimnyakov[3], Anatoly N. Mikerov[2], Valery V. Tuchin[1], [1]Saratov State University; [2]Saratov Medical University; [3]Saratov State Technical University, Russia

Workshop on
Laser Physics and Photonics XX

Workshop Chair: **Vladimir L. Derbov,** SaratovStateUniversity (Russia)

*Secretary:***Andreyl. Konyukhov,** SaratovStateUniversity (Russia)

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

September 26, Wednesday

ORAL SESSION PHOTONICS I
(Building 3,Conference Hall 34)

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

15.30-15.45
On rotational-vibrational spectrum of a diatomic beryllium molecule
Sergue I. Vinitsky, JINR, Dubna, Russia; A.A. Gusev, JINR, Dubna, Russia; O. Chuluunbaatar, JINR, Dubna, Russia; V.L. Derbov,Saratov State University, Saratov, Russia; P.M. Krassovitskiy, Institute of NuclearPhysics, Almaty, Kazakhstan

15.45-16.00
New numerical model of ultrashort optical pulse dynamics in bidirectional ringe fibre cavity Vadim Razukov, Yuri Gagarin State Technical University of Saratov, Russia

16.00-16.15
Nonlinear dynamics of intracavity difference-frequencygenerator pumped by a dual-wavelength semiconductor disk laser: Model of single-mode optical fields with strong time-delay feedback.
Yury A. Morozov, Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia

16.15-16.30
Numerical analysis of eikonal equation
T.R. Velieva, Dmitry S. Kulyabov, A.V. Korolkova, M. N. Gevorkyan, Peoples' Friendship University of Russia (RUDN University) & Laboratory of Information Technologies, Moscow, Russia

ORAL SESSION PHOTONICS I
(Building 3,Conference Hall 34)

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

17.00-17.15
Nonmonotonic entropy growth at the field induced phase transitions in grapheme
Konstantin Kravtcov, S. Smolyansky, V. Dmitriev, A. Panfyorov, Saratov State University, Russia

17.15-17.30
Quasiresonant elliptic polarized normal modes of electromagnetically induced transparency
Oleg M. Parshkov, Yuri Gagarin State Technical Univesity of Saratov, Russia

17.30-17.45
Quantum fluctuations in short-pulse fiber lasers
Leonid A. Melnikov, Yuri Gagarin State Technical Univesity of Saratov, Russia

17.45-18.00
Numerical simulation of the THz lasing in the cavity with graphene-based hyperbolic medium
Olga N. Kozina, Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia

September 27, Thursday

ORAL SESSION PHOTONICS II
(Building 8, Conference Hall 3)

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

11.30-11.45
Suppression of transverse spatio-temporal instabilities in broad-area lasers emission by external optical injection
Anton A. Krents, Samara State Univesity, Russia

12.00-12.15
Optical rogue waves in the laser with positive optoelectronic feedback
Anton A. Krents, Samara State Univesity, Russia

12.15-12.30
Symmetry, coherent states and control of quantum dynamics
Alexander V. Gorokhov, Samara National Research University, Russia

12.30-12.45
Influence of detuning and dipole-dipole interaction on the entanglement of a Jaynes-Cummings atom and an isolated atom
Eugene K. Bashkirov, Samara National Research University, Russia

12.45-13.00
Entanglement in double Jaynes-Cummings model induced by thermal noise
Eugene K. Bashkirov, Samara National Research University, Russia

ORAL SESSION PHOTONICS III
(Building 8, Conference Hall 3)

Chair: **Vladimir L. Derbov**, SaratovState University, Russia

14.30-14.45
Autodyne interferometry of distance by injected current modulation of semiconductor laser Anatoly V. Skripal, Dmitry Usanov, Sergey Dobdin, Aleksey Dzhafarov, Saratov State University, Russia

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

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

17.30-19.30

1P. **Advantages and limitations of the matrix record of the Wentzel-Kramers-Brillouin solution in the problem of the distribution of electromagnetic waves in planar structures** Natalya M. Moiseeva, Anton V. Moiseev, Volgograd State University, Russia
2P. **Numerical simulation of modes of planar open waveguides** D.V. Divakov, RUDN University, Moscow, Russia
3P. **Numerical simulation of the propagation of waveguide modes in a thin film waveguide Luneberg lens,** D.V. Divakov, RUDN University, Moscow, Russia
4P. **Laser recording resolution increasing of binary photomasks in thin chromium films by magnetron sputtering modes optimization** Sergey A. Fomchenkov, Samara University, Russia

14.45-15.00
Waveguide diffraction at the joint of planar waveguides
Dmitry V. Divakov, RUDN University, Moscow, Russia

15.00-15.15
Exact dynamics of two-level quantum systems
Vitalii Semin, Samara National Research University, Russia

15.15-15.30
Plasmonic terahertz photoconductive antennas for spectroscopy and imaging systems
Dmitry S. Ponomarev, Institute of ultra high frequency semiconductor electronics of RAS, Russia

15.30-15.45
THz quantum cascade lasers with gold- and silver based double metal waveguide
Rustam A. Khabibullin, Institute of ultra high frequency semiconductor electronics of RAS, Russia

15.45-16.00
Femtosecond thulium-doped ring fiber laser as a perspective source in mid-IR region for breath analysis
Alexander Donodin, BMSTU, Russia

5P. **Calculation of the shape of optical pulses when reflected by a planar cholesteric cell** Anton V. Moiseev, Volgograd State University, Russia
6P. **Analysis of steady-state stability and quasi periodic oscillations in intracavity optical parametric oscillator pumped by semiconductor disk laser,**Leonid Kochkurov, M. I. Balakin, Yu. A. Morozov, M. Yu. Morozov,A. I. Konukhov, V. V. Dedova, Yuri Gagarin State Technical University of Saratov, Russia, Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia, Saratov State University, Russia.
7P. **Complex dynamics of coupled VCSELs with optical phase-locking,**Leonid Kochkurov, M. I. Balakin, Yu. A. Morozov, M. Yu. Morozov,A. I. Konukhov, V. V. Dedova, Yuri Gagarin State Technical University of Saratov, Russia, Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia, Saratov State University, Russia.
8P. **Amplitude zone plate with aluminium rings,** Elena S. Kozlova, Image Processing Systems Institute of RAS, Samara, Russia

9P. **Formation of an optical vortex in the near field of a spiral microaxicon** Sergey S. Stafeev, Image Processing Systems Institute of RAS – Branch of the FSRC "Crystallography and Photonics" RAS, Samara, Russia

10P. **Finslerian representation of the geometrized Maxwell equations** Dmitry S. Kulyabov, A.V. Korolkova, T. R. Velieva, A.V. Demidova Peoples' Friendship University of Russia (RUDN University) & Laboratory of Information Technologies, Moscow, Russia

11P. **Hamiltonian approach to the geometrized Maxwell theory** A.V. Korolkova**,** Dmitry S. Kulyabov, L.A. Sevastianov, M.N. Gevorkyan, Peoples' Friendship University of Russia (RUDN University) & Laboratory of Information Technologies, Moscow, Russia

12P. **Modeling of the laser pulse in a waveguide with a Bragg grating**Stanislav. Krasnov, Samara University, Russia

13P. **The propagation of ultrashort laser pulses in phototropic media**Vladislav Yu. Gribkov, Rimma S. Zatrudina, Volgograd State University, Russia

14P. **The propagation of ultrashort laser pulses in phototropic media**Vladislav Yu. Gribkov, Rimma S. Zatrudina, Volgograd State University, Russia

15P. **Modelling of distribution of circular beams of Airy in parabolic fiber** Evgeny O. Monin, Samara National Research University, Russia

16P. **Dispersion and evanescent properties of multimode chalcogenide fiber modes** Elena Vinogradova, E.A. Romanova, Saratov State University, Russia

17P. **Modern polarization technologies in biomedicine and materials science,** Natalya Moiseeva, Volgograd State University, Russia

18P. **Investigation of the optophysical properties of self-organized thin films of biomacro molecules** Alexandra P. Alexeenko, Peter the Great St.Petersburg Polytechnic University, Russia

19P. **Subwavelength grating polarizer for cylindrical vector beams creation** Sergey A. Degtyarev, Samara National Research University, Russia

20P. **Soliton dynamics in ring bidirectional fibre microcavity**Vadim Razukov, Yuri Gagarin State Technical University of Saratov, Russia

21P. **Dynamics of quantum discordand entanglement in double Jaynes-Cummings model with dipole-dipole interaction**Mikhail Evseev, Eugene Bashkirov, Samara National Research University, Russia

22P. **Dynamics of atom-field entanglement in nonlinear Tavis-Cummings models** Marya O. Guslyannikova, Samara National Research University, Russia

23P. **Atom-field entanglement for multi-photon Tavis-Cummings model** Eugene Bashkirov,Marya O. Guslyannikova, Samara National Research University, Russia

24P. **Dynamics of atomic entanglement for artificial atoms non-resonantly interacting with quantum field of lossless cavity**, Anatoly M. Vorobiev, Eugene Bashkirov, Samara National Research University, Russia

25P. **Entanglement in Tavis-Cummings models induced by a thermal noise** Eugene K. Bashkirov, Mikhail Evseev, Samara National Research University, Russia

26P. **Diffraction misaligned vortex beams on a binary axicon in the near field** Dmitry Savelyev, Samara National Research University, Russia

27P. **Numerical and experimental selection of optimal parameters in the interferometric method of measuring the thickness of the cornea** Anton A. Adamov, M.S. Baranov, V.N. Khramov, Volgograd State University, Russia

28P. **Optical and morphological properties of Al_2O_3 layer deposited by E-beam evaporation for optical waveguide applications**Andra Naresh Kumar Reddy, M.A. Butt, S.N. Khonina, Samara University, Russia

29P. **Parametric generation in optical fibers with variable dispersion.** A. Konyukhov, Alexander I. Rap, Saratov State University, Russia

30P. **Dispersive wave generation in variable-diameter optical fibers.** A. Konyukhov, E. Schurkin, Saratov State University, Russia

31P. **Transient dynamics of Kerr-lens mode locking in vertical external cavity semiconductor laser.** A. Konyukhov, Yu A. Morozov, Saratov State University, Russia, Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia

32P. **Soliton fission due to stepwise change of dispersion coefficient in model of nolinear Schrödinger equation** Andrey I. Konyukhov, P. Mavrin, Saratov State University, Russia

33P. **Collision of Airy pulses in nonlinear optical fibers** Andrey I. Konyukhov, V. Baranovsky, Saratov State University, Russia

34P. **Research of the configuration of optical fibers and filter systems based on optical fibers for effective registration of Raman scattering**Yuliya Litvinova, D.N. Artemyev, I.A. Bratchenko Samara University, Russia

35P. **Research of the configuration of a resonantdielectric grating used as the basis of a sensor for changing the refractive index of a medium**S.A. Syomik, L.L. Doskolovich, Samara University, Russia

36P. **Modeling of speckle structures in partially coherent optical wave field with wide frequency and angular spectra**Vladimir Ryabukho, Ludmila Maksimova, Natalia Mysina, Dmitry Lyakin, Petr Ryabukho, Saratov State

University, Institute of Precision Mechanics and Control Russian Academy of Sciences, Russia

37P. **Digital speckle photography based on correlation analysis of spatial spectra of speckle patterns**, Ludmila Maksimova, Natalia Mysina, Petr Ryabukho, Dmitry Lyakin, Vladimir Ryabukho, Saratov State University, Institute of Precision Mechanics and Control Russian Academy of Sciences, Russia

38P. **Formation of interference fringes in thin layer in the light of a quasi-monochromatic extended source and a source with wide frequency and angular spectra**Ludmila Maksimova, Natalia Mysina, Petr Ryabukho, Anton Dyachenko, Dmitry Lyakin, Vladimir Ryabukho, Saratov State University, Institute of Precision Mechanics and Control Russian Academy of Sciences, Russia

39P. **Optimization of parameters in a modified laser triangulation method.** A. A. Adamov, M. S. Baranov, V. N. Khramov, Volgograd State University, Russia

40P. **The conditions for the propagation of soliton-like pulses in nonlinear media with reverse saturable absorption** Rimma Zatrudina, Vladislav Gribkov, VolSU, Russia

41P. **Development of laser-induced holographic images on the stainless steel AISI 304** M.K. Moskvin, G.V. Odintsova, V.V. Romanov, R.M. Yatsuk, ITMO University, Russia

42P. **Modeling of reflectors and microfluidic systems for efficient collection of raman scattering** Taisiya Slivkova, D.N. Artemyev, I.A. Bratchenko Samara National Research University n.a. academician S.P. Korolev, Russia

43P. **Entangled solitons via soliton fission in dispersion variable fibers**Yulia Mazhirina, Yuri Gagarin State Technical Univesity of Saratov, Russia

44P. **Coherent states of qubits and photons and their superpositions** Alexander Gorokhov, Samara National Research University, Russia

45P. **Development of a technology for manufacturing radio antennas and retarding structures based on the laser ablation method**Peter V. Ryabukho, Victor V. Galushka, Alexey A. Serdobintsev, Andrey V. Starodubov, Anton M. Pavlov, Educational-Scientific Institute of Nanostructures and Biosystems, Saratov State University, Russia

46P. **The lifetime of the entangled states of interacting qubits in external fields and the thermostat calculated by path integral approach**A.Biryukov, M. Shleenkov, Samara National Research University, Russia

47P. **Description of multiphoton ionization of an atom by path integral approach** A. Biryukov, Ya. Degtyareva, Samara University, Russia

48P. **Laser optical systems for manipulating microobjects,** M.L. Galkin, M.A. Vinogradov, M.S. Kovalev, and P.A. Nosov, Bauman Moscow State Technical University, Moscow, Russia

49P. **Laser optical systems for the formation of Bessel beams**, Vinogradov M.A., Galkin M.L., Krasin G.K., Kovalev M.S., Nosov P.A., Bauman Moscow State Technical University, Moscow, Russia

50P. **High efficiency infrared reflector based on a multilayer structure** Sergey A. Fomchenkov, Samara University, Russia

INTERNET REPORTS

1. **Light squeezing in two- and three atom Jaynes-Cummings models.** Alexander Korotchenko, Anatoly Vorobiev, Anna Gorchakova, Eugene Bashkirov, Samara University, Russia
2. **Rare-earth elements action upon small-periodical microstructures.** L.I. Vostrikova, V.A. Smirnov, Rzhanov Institute of Semiconductor Physics SB of RAS and Faculties of Mathematics and Nature Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia
3. **Long-lived micro- and nanostructures of nonlinear polarizability in amorphous media.** L.I. Vostrikova, V.A. Smirnov, Rzhanov Institute of Semiconductor Physics SB of RAS and Faculties of Mathematics and Nature Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia
4. **Reversibility of temperature influence on all-optical poling.** L.I. Vostrikova, V.A. Smirnov, Rzhanov Institute of Semiconductor Physics SB of RAS and Faculties of Mathematics and Nature Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia
5. **Analysis of harmonic's generation in susceptibility gratings.** Vitaly Smirnov, Liubov Vostrikova, Rzhanov Institute of Semiconductor Physics SB of RAS and Faculties of Mathematics and Nature Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia
6. **Phase-matched conditions for waves interactions on photo-induced susceptibility gratings.** Vitaly Smirnov, LiubovVostrikova, Rzhanov Institute of Semiconductor Physics SB of RAS and Faculties of Mathematics and Nature Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia
7. **Impact of heating on photo-induced susceptibility gratings.** Vitaly Smirnov, LiubovVostrikova, Rzhanov Institute of Semiconductor Physics SB of RAS and Faculties of Mathematics and Nature Sciences and Informational Technologies of NSUEM, Novosibirsk, Russia
8. **Reflection of light by a planar inhomogeneous gyrotropic layer with torsion.** Natalya Moiseeva, VolSU, Russia,Anton Moiseev, VolSU, Russia

Conference on Spectroscopy and Molecular Modeling XIX

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

Secretaries **Galina N. Ten** *Saratov State University (Russia)*

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

September 26, Wednesday

ORAL SESSION
SPECTROSCOPY I
(Building 8, Hall85)
Chair: **Lev M. Babkov,**
Saratov State University,Russia

17.00–17.15
Luminescence of europium complexes: the influence of the ligand structure, substituent and counterion type on photophysical properties
Anastasiia V. Kharcheva[1], Svetlana V. Patsaeva[1], Nataliya E. Borisova[2], Alexey V. Ivanov[2], [1]Faculty of Physics, Lomonosov Moscow State University, Moscow, Russia, [2]Faculty of Chemistry, Lomonosov Moscow State University, Moscow, Russia

17.15 – 17.30
Molecular modeling of the process of optical clearing of human skin under the action of aqueous solutions of some mono saccharides
Konstantin Dvoretskiy,Saratov State Medical University, Russia

17.30–17.45
IR spectrum and molecular model of honey
Ekaterina Antonova, Astrakhan State University, Russia

17.45–18.00
Application of raman spectroscopy and quantum chemistry to determine the relative content of tri-glycerides of oleic and linoleic acids in olive and sunflower oil mixture
Kirill Berezin. Saratov State University, Russia

18.00 – 18.15
Manifestation of vibronic interactions in chlorophyll absorption spectra (a)
Vladimir Nechaev, Yuri Gagarin State Technical University of Saratov, Russia

18.15 – 18.30
FT-IR spectrum and molecular model of quercetin
Ilmira Shagautdinova, Astrakhan State University, Russia

18.30 – 18.45
Interpretation of vibrational spectra of fullerene derivatives with glycine
G.N. Ten[1], N.E. Scherbakova[2], V.I. Baranov[3], [1]Saratov State University, Russia, [2]Russian Scientific Research Institute for Plague Control "Microbe", Saratov, Russia, [3]Institute of Geochemistry and Analytical Chemistry, RAS, Moscow, Russia

18.45 – 19.00
Vibrational spectra of arginine and lysine in aqueous solution at different pH
G.N. Ten[1], N.E. Scherbakova[2], V.I. Baranov[3], [1]Saratov State University, Russia, [2]Russian Scientific Research Institute for Plague Control "Microbe", Saratov, Russia, [3]Institute of Geochemistry and Analytical Chemistry, RAS, Moscow, Russia

19.00–19.50
Intermolecular interaction and energy of hydrogen bonds in aqueous suspensions of nanodiamonds with different surface functionalization: molecular modeling and experiment
Inna Plastun[1], Andrey Bokarev[1], Kirill Laptinskiy[2], Tatiana Dolenko[2],
[1]Yuri Gagarin State Technical University of Saratov, Russia,
[2]Lomonosov Moscow State University, Russia

September 27, Thursday

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

Co-chairs: **Kirill V. Berezin, Lev M. Babkov,**
Saratov State University, Russia

18.30-19.30

1S. **Possibility of targeted drug delivery due to hydrogen bonds formation in nanodiamonds and anticancer drugs: molecular modeling**Andrey Bokarev, Inna Plastun, Yuri Gagarin State Technical University of Saratov, Russia

2S. **IR spectrum of arginine: experimental investigation and molecular modeling**Maria Kornaukhova,Kutsenko Svetlana Anatolievna,Volgograd State University, Russia

3S.**Molecular modeling of electron spectra of ascorbic acid in polar solvents**Yuliya Danyaeva, Kutsenko Svetlana Anatolievna, Sitnikova Svetlana Vladimirovna, Volgograd State University, Russia

4S.**Spectroscopic analysis supported by chemometric tools for qualification of plant-based and animal-based matrixes**Olga Krivets, Saratov State University, Russia

5S.**Luminescent characteristics of water-soluble Europium(III) complexes**Anastasiia Kharcheva, Nataliya Borisova, Oleg Farat, Mikhail Freidkin, Mariya Kapitonova, Svetlana Patsaeva, Aleksandra Son, Roman Zorin, Lomonosov Moscow State University, Moscow, Russia

6S. **Monte Carlo modeling of Raman scattering in a multi-layered tissue**Irine A. Matveeva, Oleg O.Myakinin, Ivan A. Bratchenko, Valeriy P. Zakharov, Samara University, Samara, Russia

7S.**Determination of the structure of components of isomeric mixtures heterocyclic compounds by spectral methods** Maxim Ivonin, N.O. Vasilkova, A.S. Kalugina, V.V. Sorokin, A.P. Kriven'ko, Saratov State University, Russia

8S. **Optical study of associates of rhodamine 6g molecules adsorbed on the surface silver island films with silver nanoparticles** Konstantinova E.I. et al. Immanuel Kant Baltic Federal University, Russia

INTERNET REPORTS

1. **SEM of the cutting edge of oxide cutters** Ivan Egorov, Aleksandr Fomin, Yuri Gagarin State Technical University of Saratov, Russia, Andrey Zakharevich, Saratov State University, Russia, Igor Rodionov, Yuri Gagarin State Technical University of Saratov, Russia

September 28, Friday

ORAL SESSION
SPECTROSCOPY II
(Building 3, Room 34)

Chair: **Kirill V. Berezin,**
Saratov State University, Russia

11.30 – 11.45

The influence of hydration on the vibrational spectra d-riboze 5-phosphate
Anna Novoselova, Saratov State University, Russia

11.45 – 12.00

Conformational analysis of ethylene glycol in aqueous solution
Maria Chernavina, Saratov State University, Russia

12.00–12.15

Intermolecular interaction in halogen-substituded benzophenone
V.A. Boykov[1], L.M. Babkov[1], N.A. Davydova[2]
[1]Saratov National Research State University, Russia, [2]Institute of Physics of the National Academy of Sciences of Ukraine, Kiev

12.15-12.30

IRspectra and structure of some compounds with h-bonds
I.V. Ivlieva-Peretokina[1], L.M. Babkov[1], N.A. Davydova[2], [1]Saratov National Research State University, Russia, [2]Institute of Physics of the National Academy of Sciences of Ukraine, Kiev

12.30-12.45

Molecular modeling, structure and ir spectra of some organic polyconyugated semiconductors
M.V. Kinder[1], L.M. Babkov[1], T.V.Bezrodna[2], T.A. Gavrilko[2]
[1]Saratov National Research State University, Russia, [2]Institute of Physics of the National Academy of Sciences of Ukraine, Kiev

12.45-13.00

Influence of intermolecular interaction on the structure and IR spectrum of behenic acid
S.N. Firsunin[1], L.M. Babkov[1], T.V.Bezrodna[2], T.A. Gavrilko[21]Saratov State University, Russia, [2]Institute of Physics of the National Academy of Sciences of Ukraine, Kiev

Conference on Nanobiophotonics XIV

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

Secretary: **Timofey E. Pylaev,** Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS

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

September 24, Monday

ADFLIM/SFM PLENARY SESSION III

(*Building 10, Hall 503*)
Chairs: **Alexander P. Savitsky**, Research Center of Biotechnology of the RAS
Valery V. Tuchin, Saratov State University

16.40 – 17.20
Plasmonic SERS tags with embedded Raman molecules for bioimaging and sensing applications Nikolai G. Khlebtsov IBPPM RAS, Saratov State University

September 27, Thursday

ORAL SESSION NANOBIOPHOTONICS I

(Building 9, Conference Hall)
Chair: **Nikolai G. Khlebtsov,** IBPPM RAS, Saratov State University, Russia

14.30 – 14.45
Integration of plasmonic particles into multifunctional devices Fulvio Ratto, Inst. Applied Physics, Nat'l Research Council, Florence, Italy

14.45 – 15.00
Gold nanorods for photoacoustic theranostics Lucia Cavigli**,** Inst. Applied Physics, Nat'l Research Council, Florence, Italy

15.00 – 15.15
Background-suppressed laser-scanning microscopy of upconversion nanoparticles in cell culture Alexey B. Kostyuk, Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

15.15 – 15.30
Conductive coatings on nonwoven electrospun mats by vacuum magnetron sputtering for nerve stimulation *in vivo* Peter Ryabukho, Saratov State University

15.30 – 15.45
Optical properties of polydopamine coated Au nanoparticles Boris N. Khlebtsov, IBPPM RAS, Saratov, Russia

15.45 – 16.05
Red infrared quantum dots for rapid test imagining and bioanalysis Olga Goryacheva**,** Saratov State University, Russia

16.05 – 16.20
Study of ultra-small gold nanoparticles toxicity towards microalga *Dunaliella salina* and animal cells Daniil S. Chumakov, IBPPM RAS, Saratov, Russia

16.20 – 16.35
Synthesis of high luminescent fluorophore from citric acid and ethylenediamine Alina Kokorina, Saratov State University, Russia

16.35 – 16.50
Formation and study of the properties of copper nanoparticles monolayers at the gas-liquid and «gas-solid state» phase interfaces Nadejda Begletsova, Saratov State University, Russia

September 28, Friday

ORAL SESSION NANOBIOPHOTONICS II

(Building 9, Conference Hall)
Chair: **Nikolai G. Khlebtsov,** IBPPM RAS, Saratov State University, Russia

11.00 – 11.15
Nanoscale luminescent labels of organic and inorganic nature Irina Yu. Goryacheva,Sararov State University

11.15-11.30
Microcontainers on the basis of nano-titania and polyelectrolyte layers Polina A. Demina, Sararov State University

11.30 – 11.45
Cytotoxic effect of copper particles on the human dermal fibroblasts cells culture Roman A. Verkhovskii, Sararov State University

11.45 – 12.00
Polyelectrolyte submicrocapsules, functionalized by magnetite nanoparticles for MR contrast control Anastasia A. Kozlova

12.00 – 12.15
Development of system for Raman spectra analysis and recognition Daniil N. Bratashov, Saratov State University

12.15 – 12.30
Porous biodegradable submicron particles for non-invasive transdermal drug delivery Yulia I. Svenskaya, Saratov State University

12.30 – 12.45
Functional hybrid materials based on mineralized polymeric scaffolds for bone tissue regeneration Maria Saveleva, Saratov State University

12.30 – 12.45
Study of protein corona formation on the surface of upconversion nanoparticles in situ by fluorescence correlation spectroscopy Artem Vorotnov, Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

September 27, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, 3rd floor Hall)
Chair (N): **Timofey E. Pylaev**, IBPPM RAS, Saratov, Russia

18.30 – 19.30

1N. **Synthesis and SERS properties of gold@gold and gold@silver nanomatryoshkas with embedded reporters** Vitaly A. Khanadeev, IBPPM RAS, Saratov, Russia, Boris N. Khlebtsov and Nikolai G. Khlebtsov IBPPM RAS, Saratov, Russia, Saratov State University
2N. **A novel highly-tunable universal approach for plasmonic nanoparticles layering on 2-D surfaces** Timofey E. Pylaev, Elena S. Avdeeva and Boris N. Khlebtsov, IBPPM RAS, Saratov, Russia
3N. **Synthesis of monodisperse and uniform gold nanospheres by seed-mediated growth** Andrey M. Burov, IBPPM RAS, Saratov, Russia, Boris N. Khlebtsov and Nikolai G. Khlebtsov, IBPPM RAS, Saratov, Russia, Saratov State University
4N. **Cytotoxicity of NaYF4:Er:Yb/SiO2 nanoparticles in vivo** Nikita A. Navolokin, Saratov State University, Saratov State Medical University, Irina Yu. Yanina, Saratov State University, Tomsk State University, Elena K. Volkova, Saratov State University, Tomsk State University, Elena A. Sagaydachnaya, Saratov State University, Dmitry A. Mudrak, Saratov State Medical University, Andrey M. Zakharevich, Saratov State University, Vyacheslav I. Kochubey Saratov State University, Tomsk State University, and Valery V. Tuchin,Saratov State University, Tomsk State University, Institute of Precision Mechanics and Control of the RAS
5N. **Optical properties of biomolecular complexes** Elina Nepomnyashchaya, Elmira Valiulina, Peter the Great Saint-Petersburg Polytechnic University, Saint-Petersburg, Russia
6N. **Submicron Mesoporous Vaterite Particles for Transdermal Delivery of Antimycotic Drug Griseofulvin**Ekaterina Lengert, Mariia Saveleva, R.A. Verkhovsky, Yu. I. Svenskaya Saratov State University
7N. **Immobilization of antifungal agent "Naftifine" in porous calcium carbonate particles** Olga I. Gusliakova**,** Sararov State University
8N. **Surface modification of carbon nanoparticles**Alina Kokorina, Saratov State University

9N. **The study of the effect of acids and alkalis on the optical characteristics of carbon nanoparticles on the base of biopolymers**Anastasiya Mitrofanova, Saratov State University

10N. **Synthesis of CDSeZnS/ZnS quantum dots with blue fluorescence**Aleksandr Sobolev, Saratov State University

11N. **Comparative study of hydrothermal treatment effect on the optical properties of polyelectrolyte microcapsules**Daria Shpuntova, Saratov State University

12N. **Factors influencing the fluorescent properties of structures based on citric acid and ethylenediamine**Ekaterina Mordovina,

13N. **Optical properties citric acid and ethylenediamine based carbon nanoparticles**Artem Bakal, Saratov State University

14N. **Water-soluble in-based quantum dots for application as biolabels**Anastasiya Novikova, Saratov State University

15N. **Comparison between ligand exchange methods for quantum dots hydrophilization**Daniil Drozd, Saratov State University

16N. **Photodynamic aspects of antimicrobic action of nanoparticles of silver on Staphylococcus aureus strains** Tatiana A. Shulgina[1,3], Olga V. Nechaeva[2], Natalya V.Bespalova[2],Anna S. Torgashova[3], [1]Institute of Traumatology and Orthopedics, [2]Yuri Gagarin State Technical University of Saratov, [3]V.I. Razumovsky Saratov State Medical University, Russia

17N. **Luminescence properties of upconversion nanoparticles with rare-earth elements for biomedicine** Sergey Burikov Moscow M.V. Lomonosov State University, Department of Physics, Moscow, Russia

18N. **Fluorescence quenching of bioactive molecules by nanodiamonds** Alexey Vervald Faculty of Physics, MSU, Moscow, Russia

19N. **Determination of some cephalosporins with SERS platforms based on gold and silver nanoparticles** Snezhana Kushneruk Saratov State University

20N. **Antioxidants loaded nanocarriers for potential application in copd therapy**Vinay Kumar, Indian Institute of Technology Roorkee, India, Mehak Passi, Indian Institute of Technology Roorkee, India, P.Gopinath, Indian Insitute of Technology Roorkee, India

21N. **Synthesis and characterization of graphene quantum dots from citric acid for biosensing applications**Ashish, Indian Institute of Technology Roorkee, India, Rangadhar Pradhan, Indian Institute of Technology Roorkee, India, P. Gopinath, Indian Institute of Technology Roorkee, India

22N. **Intermolecular interaction and energy of hydrogen bonds in aqueous suspensions of nanodiamonds with different surface functionalization: molecular modeling and experiment**Inna Plastun, Yuri Gagarin State Technical University of Saratov, Andrey Bokarev, Yuri Gagarin State Technical University of Saratov, Kirill Laptinskiy, Tatiana Dolenko, Lomonosov Moscow State University, Russia

23N. **SERS-platforms based on electrospun nanofibers with embedded silver nanoparticles** Nadezhda Komova, Saratov State University, Russia

INTERNET REPORTS

1. **Strategies to enhance the sensitivity of NAGDF4:YB-TM based nanothermometers** Daria Pominova Prokhorov General Physics Institute of the Russian Academy of Sciences

Workshop on Microscopy and Low-Coherence Methods XI

Co-chairs:**Kirill Larin** and**Metin Akay**, University of Houston, USA

*Secretary:***Georgy G. Akchurin,** Saratov State University, Institute of Precise Mechanics and Control of the RAS

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

September 26, Wednesday

ORAL SESSION MICROSCOPY AND LOW-COHERENCE METHODS XI

Chair: **Metin Akay**, University of Houston, USA

14.00-14.20

High-Speed Visualization of Aluminum Nanopowder Combustion in Air
Fedor A. Gubarev, Andrei V. Mostovshchikov, Alexander P. Il'in, Lin Li, Tomsk Polytechnic University, Tomsk, Russia

September 27, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

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

18.30-19.30

1M. **Line field swept source optical coherence tomography system with compensation of chromatic aberrations** Igor P. Gurov, Aleksei Yu. Pimenov, Pavel S. Skakov, ITMO University, Russia

2M. **High resolving low-coherence microscopy method for 3D analysis of biological tissues internal micro structure** Maxim A. Volynsky Igor P. Gurov,Nikita B. Margaryants ITMO University, Russia

3M. **Partially coherent illumination in digital holographic microscopy** Daria M. Klychkova, Vladimir P. Ryabukho Saratov State University; Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia

4M. **Hyperspectral interference microscopy with spatial filtration in reference field** Olga Izotova, Saratov State University, Russia**,** Vladimir P. Ryabukho, Saratov State University, Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia

5M. **Influence of the color model of image representation on the accuracy of measurement the optical thickness of thin-layered objects in interference microscopy** Anton Dyachenko Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov State University, Russia**,** Vladimir P. Ryabukho Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov State University, Russia

6M. **Electrochemical introduction of the porous coating of medico-technical products** Elena Poshivalova, Yuri Gagarin State Technical University of Saratov, Russia

7M. **Multi-spectral amplitude and phase distribution measurement using acousto-optic image filtration innear-common-path interferometer**, Ludmila I. Burmak, A.S. Machikhin, L.A. Zykova, Scientific and Technological Center of Unique Instrumentation of the RAS (STC UI RAS), Russia

INTERNET REPORTS

1.SEM of the cutting edge of oxide cutters
Aleksandr Fomin, Ivan Egorov, Andrey Zakharevich, Igor Rodionov, Yuri Gagarin State Technical University of Saratov, Russia

2.Morphology and hardness of zirconium coatings obtained on tool steel by the electrospark alloying
Aleksandr Fomin, Maksim Fedoseev, Yuri Gagarin State Technical University of Saratov, Russia

Conference on Internet Biophotonics XI

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

Secretary: **Daria K. Tuchina,** Saratov State University, Tomsk State University, Bauman Moscow State Technical University

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

September 27, Thursday

PLENARY SESSION

(Building 3, Big Physical Hall)

Chair: **Valery V. Tuchin**, Saratov State University

17.00-18.30

1. Ubiquitous THz photonics from ultra-high bit-rate communications to super-resolution non-destructive imaging, Maksim Skorobogatiy, Polytechnique Montreal, Canada

2. Non-invasive optical imaging of tissue microstructure and microcirculations *in vivo,* Ruikang K. Wang, University of Washington, USA

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, Big Physical Hall, Room 43)

Moderators: **Maxim Malovetsky, Ivan V. Fedosov,** Saratov State University

17.00-19.30

INVITED INTERNET LECTURES

1. Optical properties of human liver from 400 to 1000 nm Isa Carneiro[1], Sonia Carvalho[1], Rui Henrique[1,2], Luís Oliveira[3,4], Valery V. Tuchin[5,6,7], [1]Portuguese Oncology Institute of Porto, [2]Institue of Biomedical Sciences Abel Salazar – University of Porto, [4]Centre of Innovation in Engineering and Industrial Technology, Porto, Portugal, [5]Saratov State University, [6]Institute of Precision Mechanics and Control Institute of the Russian Academy of Sciences, Saratov, Russia, [7]Samara University, Samara, Russia

2. Mapping viscoelasticity of biological tissue by using laser speckle contrast imaging Xiao Cheng, Jinling Lu and Pengcheng Li, Britton Chance Center for Biomedical Photonics, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology

3. Investigation of the reversible permeability of neuron membrane induced by terahertz radiation A.S. Ratushniak[1], T.A. Zapara[1], A.L. Proskura[1], A.S.Kozlov[2], D.S. Serdyukov[3], Olga Cherkasova[3], [1]Institute of Computational Technologies of SB RAS, Novosibirsk, Russia, [2]Institute of Chemical Kinetics and Combustion of SB RAS, Novosibirsk, Russia, [3]Institute of Laser Physics of SB RAS, Novosibirsk, Russia

4. Skull optical clearing for cortical vascular imaging Dan Zhu, Britton Chance Center for Biomedical Photonics, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology

5. Novel protocols for PDT treatment under optical monitoring M.Yu. Kirillin[1], A.V. Khilov[1], D.A. Loginova[1], E.A. Sergeeva[1], V.V. Perekatova[1], M.A. Shakhova[1,2], A.E. Meller[1,2], D.A. Sapunov[1,2], A.V. Shakhov[1,2], N.Yu. Orlinskaya[1,2], and I.V. Turchin[1], [1]Institute of Applied Physics RAS, Nizhny Novgorod, Russia, [2]Privolzhsky Research Medical University, Nizhny Novgorod, Russia

6. Optical study of the possibilities to affect RBC aggregation by inhibition of fibrinogen adsorption on the cell membrane integrin glycoproteins A.E. Lugovtsov[1], A.N. Semenov[1], K. Lee[2], A.V. Myravyev[3], A.V. Priezzhev[1], [1]Physics Departments and International Laser Center, M.V. Lomonosov Moscow State University, Moscow, Russia, [2]Ulsan National Institute of Science and Technology, Institute of Basic Science, Center for Soft and Living Matter, Ulsan, Korea, [3]Ushinskiy Yaroslavl State Pedagogical University, Yaroslavl, Russia

7. Confocal Raman imaging of the skin containing hair follicles Johannes Schleusener[1], Victor Carrer[1,2], Alexa Patzelt[1], Shuxia Guo[3,4], Thomas Bocklitz[3,4], Jürgen Lademann[1], Maxim E. Darvin[1], [1]Charité -

Universitätsmedizin Berlin, Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Berlin, Germany, [2]Institute of Advanced Chemistry of Catalonia, Department of Chemical and Surfactants Technology, Barcelona, Spain, [3]Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich Schiller University of Jena, Jena, Germany, [4]Leibniz Institute of Photonic Technology, Member of Leibniz Research Alliance 'Health Technologies', Jena, Germany

8. Applications of cw and pulsed lasers for in-vivo skin diagnostics: some recent results J. Spigulis, University of Latvia, Latvia

9. Celebrating 25-year anniversary of biomedical optoacoustics: From basic science to FDA-compliant optoacoustic systems Rinat O. Esenaliev, University of Texas Medical Branch, USA

10. Numerical processing in multiphoton fluorescence microscopy for breast cancer detection E.A. Sergeeva[1], M.Yu. Kirillin[1], V.V. Dudenkova[2], N.Yu. Orlinskaya[2], N.M. Shakhova[1], [1]Institute of Applied Physics RAS, Russia, [2]Privolzhsky Research Medical University, Nizhny Novgorod, Russia

11. NIR-Photosensitizers as a tool of head and neck cancers investigation Yu.S. Maklygina[1], I.D. Romanishkin[1], A.V. Ryabova[1], M. Millard[2], I. Yakavets[2,3], H.P. Lassalle[2], L. Bolotine[2], V.B. Loschenov[1], [1]GPI RAS, Moscow, Russia, [2]CRAN, Université de Lorraine, Nancy, France, [3]BSU, Minsk, Belarus

12. Spatial distribution of optical characteristics of paraffin block embedded malignant tumor tissues Irina Yanina[1,2], Nikita A. Navolokin[3], Viktor V. Nikolaev[2], Daria K. Tuchina[1,2,4], Anastasia I. Knyazkova[2], Yuri V. Kistenev[2], Valery V. Tuchin[1,2,5], [1]Saratov State University, Saratov, Russia, [2]Tomsk State University (National Research University), Tomsk, Russia, [3]Saratov State Medical University, Saratov, Russia, [4]Prokhorov General Physics Institute of RAS, Moscow, Russia, [5]Institute of Precision Mechanics and Control RAS, Russia

13. Investigation of changes in hydrogen bound water profiles of porcine skin under optical clearing Anton Yu. Sdobnov[1], Maxim E. Darvin[2], Johannes Schleusener[2], Jürgen Lademann[2], Valery V. Tuchin[3], [1]University of Oulu, Oulu, Finland, [2]Center of Experimental and Applied Cutaneous Physiology, Charité – Universitätsmedizin Berlin, Corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, Berlin Institute of Health, Berlin, Germany, [3]Research-Educational Institute of Optics and Biophotonics, Saratov State University

14. Application of multiphoton microscopy in research of biotissue Yu. Kistenev[1], N. Mazumder[2], Sh. Prasada[2], K. Satyamoorthy[2], K.K. Mahato[3], N. Krivova[1], O. Cherkasova[3], I. Yanina[1,4], V.V. Nikolaev[1], E.E. Ilyasova[1], [1]Tomsk State University, Tomsk, Russia; [2]Manipal Academy of Higher Education, Manipal, India; [3]Institute of Laser Physics, Siberian Branch of Russian Academy of Science, Novosibirsk, Russia; [4]Saratov State University

15. Optical studies of topically delivered optical clearing agents and cosmetic preparations through the skin components: from ex vivo to in vivo Anton Sdobnov[1], Ekaterina Lazareva[2], Alexey N. Bashkatov[2,3], Elina A. Genina[2,3], Vyacheslav I. Kochubey[2,3], Irina Yu. Yanina[2,3], Santhosh Chidangil[4], Srinivas Mutalik[4], Sathish Pai Ballambat[5], V.K Unnikrishnan[4], Aseefhali Bankapur[4], Jijo Lukose[4], Valery V. Tuchin[2,3], Maxim E. Darvin[61]Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland; [2]Research-Educational Institute of Optics and Biophotonics, Saratov State University, Saratov, Russian Federation; [3]Tomsk State University, Tomsk, Russia; [4]Manipal Academy of Higher Education, Karnataka, India; [5]Manipal College of Pharmaceutical sciences, India; [6]Center of Experimental and Applied Cutaneous Physiology, Charité – Universitätsmedizin Berlin, Germany

16. Pioneer: SPAD camera based TR NIROT system for preterm brain imaging Alexander Kalyanov[1], Jinging Jiang[1], Scott Lindner[1,2], Linda Ahnen[1], Aldo Di Costanzo Mata[1], Juan Mata Pavia[1], Salvador Sanchez Majos[1], Chao Zhang[3], Martin Wolf[1], Eduardo Charbon[2], [1]University of Zurich; [2]EPFL Lausanne; [3]Delft University of Technology

17. Super resolved and focal depth extended ophthalmology Zeev Zalevsky, Bar Ilan University, Israel

18. SPR biochip with immobilized myoglobin and hemoglobin E. Belina[1], H. Kisov[1], G. Dyankov[1], E. Borisova[2,3], E. Pavlova[4], [1]Institute of Optical Materials and Technologies, Sofia, Bulgaria; [2]Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria; [3]Biology Department, Saratov State University, Saratov, Russia; [4]Faculty of Physics, Sofia University "St. Kl. Ohridski" Sofia

19. Comprehensive in vivo analysis of keratin in the human stratum corneum using confocal Raman microscopy Maxim Darvin[1], Johannes Schleusener[1], Chunsik Choe[1,2], Jürgen Lademann[1], [1]Charite-Universitaetsmedizin Berlin, Germany; [2]Kim Il Sung University, Ryongnam-Dong, Pyongyang, DPR Korea

20. Interferometric fiber-optic sensors for medical application Małgorzata Jędrzejewska-Szczerska, Gdańsk University of Technology, Poland

21. Research and development of effective optical technologies for diagnostics in dermatology Elina Genina[1], Alexander Pravdin[1], Darya Tuchina[1], Viktor Nikolaev[1], Ekaterina Lazareva[1], Dmitry Yakovlev[1], Irina

Yanina[1], Marine Amouroux[2], Alexey Bashkatov[1], Vyacheslav Kochubey[1], Walter Blondel[2], Valery Tuchin[1], [1]Saratov State University, Russia; [2]University of Lorraine, France

INTERNET REPORTS

1. Dual-wavelength fluorescence monitoring of PDT with chlorin e6 photosensitizer A.V. Khilov, D.A. Loginova, I.V. Turchin. M.Yu. Kirillin, Institute of Applied Physics RAS, Nizhny Novgorod, Russia

2. Effect of irradiation wavelength in PDT with chlorine-based photosensitizers: Monte Carlo simulations and experimental study D.A. Kurakina[1], A.V. Khilov[1], E.A. Sergeeva[1], A.E. Meller[2], D.A. Sapunov[2], M.A. Shakhova[2], I.V. Turchin[1], N.Yu. Orlinskaya[2], M.Yu. Kirillin[1], [1]Institute of Applied Physics RAS, Nizhny Novgorod, Russia; [2]Privolzhsky Research Medical University, Nizhny Novgorod, Russia

3. Functional and morphological changes in the mother-fetus system in chronic hypoxia (experimental study) Tatyana V. Palatova[1], Galyna N. Maslyakova[1], Marina L. Chekhonatskaya[1], Alla B. Bucharskaya[1], Elina A. Genina[2,3], Alexey N. Bashkatov[2,3], [1]Saratov State Medical University n.a. V.I. Razumovsky, [2]Saratov State University, Saratov, [3]Tomsk State University, Tomsk, Russia

4. Investigation of Ce6 accumulation and distribution in cell cultures of head and neck cancers D.S. Farrakhova[1], Yu.S. Maklygina[1], I.D. Romanishkin[1], A.V.Ryabova[1], I.V. Yakavets[2], M. Millard[2], L. Bolotine[2], V.B. Loschenov[1], [1]GPI RAS, Russia, [2]CRAN, France

5. Thermal fields in biotissues during controlled thermolysis Irina Yanina[1,2], Elena Volkova[1], Elena Sagaidachnaya[1], Irina Vidyasheva[1], Aleksander Skaptsov[1], Vyacheslav Kochubey[1,2], [1]Saratov State University, Saratov, Russia, [2]Tomsk State University, Russia

6. Photodynamic effect of red diode laser radiation (662 nm) on *Staphylococcus Aureus* stained by Methylene Blue A.A.Selifonov[1], O.G. Shapoval[2], S.A. Yuvchenko[1], D.A. Zimnyakov[3], A.N. Mikerov[2], V.V. Tuchin[1], [1]Saratov State University, [2]Saratov Medical University, [3]Saratov State Technical University, Saratov, Russia

7. Application of laser tweezers for studying the interaction parameters of two red blood cells in blood plasma during reversible aggregation *in vitro* Petr B. Ermolinkiy[1], Anastasiya I. Maslyanitsina[1], Andrei E. Lugovtsov[1,2], Alexei N. Semenov[1], Alexander V. Priezzhev[1,2], [1]Department of Physics and [2]International Laser Center of M.V. Lomonosov Moscow State University, Russia

8. An algorithm for speckle noise reduction in endoscopic optical coherence tomography structural imaging A.Yu. Potlov, S.V. Frolov, S.G. Proskurin, Tambov State Technical University

9. Young's modulus evaluation for blood vessel equivalent phantoms using optical coherence elastography A.Yu. Potlov, S.V. Frolov, S.G. Proskurin, Tambov State Technical University

10. Neuroimaging technique using time-resolved diffuse optical tomography and inhomogeneity localization algorithm A.Yu. Potlov, S.V. Frolov, S.G. Proskurin, Tambov State Technical University

11. Detection of pathology of development of chicken embryo, infected by Chlamydia Trachomatis cells by methods of Doppler diagnostics I.A. Subbotina[1,2], O.V. Ulianova[1], S.S. Zaytsev[1], Yu.V. Saltykov[1], N. Filonova[1], A.M. Lyapina[1], S.S. Ulyanov[1,2], An.V. Skripal'[2], S. Yu. Dobdin[2], O.S. Larionova[1], V.A. Feodorova[1,3], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology; [2]Saratov State University; [3]Saratov State Agrarian University, Russia

12. The simulation of optoacoustic signals from human vein Mohammad Ali Ansari[1], Amir Mohammad Hasanzade[1], Zahra Akbari[2], [1]Laser and Plasma Research Institute, Shahid Beheshti University, Iran; [2]Laser Application in Medical Sciences Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

13. Estimation of statement of blood microcirculation of chicken embryo using s-LASCA technique and laser ovoscopy with application of new techniques of optical clearing N. Filonova[1,2], O.V. Ulianova[1], Yu.V. Saltykov[1], I.A. Subbotina[1,3], S.S. Zaytsev[1], A.A. Kolosova[1], S.S. Ulyanov[1,3], V.A. Feodorova[1,2], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology; [2]Saratov State Agrarian University ; [3]Saratov State University, Russia

14. *In-vivo* pulse wave diagnostics of chicken embryo using high-frequency modulation of intensity of illuminating laser light O.V. Ulianova[1], I.A. Subbotina[1,2], N. Filonova[1], S.S. Zaytsev[1], Yu.V. Saltykov[1], S.S. Ulyanov[1,2], A.M. Lyapina[1], An.V. Skripal'[2], S.Yu. Dobdin[2], O.S. Larionova[3], V.A. Feodorova[1,3] [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology; [2]Saratov State University; [3]Saratov State Agrarian University, Russia

15. Amplification of output signal of laser scanning speckle-microscope using gold nanoparticles: detection of single chlamydial cell in a clinical sample O.V. Ulianova[1], N.N. Filonova[2,3], S.S. Ulyanov[1,3], L.A. Dykman[3], S.S. Zaytsev[1], Yu.V. Saltykov[1], I.A. Subbotina[1,3], O.S. Larionova[1,2], V.A. Feodorova[1,2], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and

Microbiology; [2]Saratov State Agrarian University; [3]Saratov State University, Russia; [4]Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences (IBPPM RAS), Russia

16. Study of statistical properties of GB-speckles, generated on nucleotide sequences of omp1 gene of Chlamydia Trachomatis, simulated using different algorithms of re-coding O.V. Ulianova[1], S.S. Zaytsev[1], Yu.V. Saltykov[1], S.S. Ulyanov[1,2], V.A. Feodorova[1,3], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology, Russia; [2]Saratov State University, Russia; [3]Saratov State Agrarian University, Russia

17. Statistics of GB-speckles, coding sequences of nucleotide sequences of omp1 gen of Chlamydia Trachomatis, processed by s-LASCA technique S.S. Ulyanov[1,2], O.V. Ulianova[1], S.S. Zaytsev[1], Yu.V. Saltykov[1], V.A. Feodorova[1,3], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology; [2]Saratov State University; [3]Saratov State Agrarian University, Russia

18. Investigation of statistical characteristics of GB-speckles, coding nucleotide sequences of the gene GPCR of lumpy skin disease virus Yu.V. Saltykov[1], O.V. Ulianova[1], S.S. Zaytsev[1], S.S. Ulyanov[1,2], V.A. Feodorova[1,3], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology; [2]Saratov State University; [3]Saratov State Agrarian University, Russia

19. Study of statistical properties of GB-speckles, coding nucleotide sequences of the target genes of avian influenza virus S.S. Zaytsev[1], O.V. Ulianova[1], Yu.V. Saltykov[1], S.S. Ulyanov[1,2], V.A. Feodorova[1,3], [1]Saratov Research Veterinary Institute – Branch of Federal Research Center for Virology and Microbiology; [2]Saratov State University; [3]Saratov State Agrarian University, Russia

20. Laser speckle contrast imaging of pancreas Polina Timoshina[1,2], Denis Alexandrov[3] Valery Tuchin[1,2,4], [1]Saratov State University; [2]Tomsk State University; [3]Saratov State Medical University; [4]Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia

21. Complementary optoacoustic and fluorescence monitoring of glioblastoma for photodynamic therapy with target nanostructures: numerical simulations V.V. Perekatova[1], M.Yu. Kirillin[1], D.A. Kurakina[1], A.G. Orlova[1], E.A. Sergeeva[1], A.V. Khilov[1], P.V. Subochev[1], I.V. Turchin[1], S. Mallidi[2],T. Hasan[2], [1]Institute of Applied Physics RAS, Nizhny Novgorod, Russia, [2]Wellman Center for Photomedicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA 02114, USA

22. The effect of light on the species composition of fungi in the system of the parasite (Aulacidea hieracii Bouche, 1834) – superparasite (Eurytoma cynipsea Boheman, 1836) E.V. Glinskaya[1], V.V. Anikin[1], M.I. Nikelshparg[2], [1]Saratov State University, Saratov, Russia; [2]Saratov High School N 3, Saratov, Russia

23. The computer algorithm for the synthesis of dermatoscopic RGB phantoms Malica B. Iralieva, Oleg O. Myakinin, Ivan A. Bratchenko, Valery P. Zakharov, Samara University, Russia

24. Using OpenFoam to numerical simulation of diffusion processes in tissues Oksana M. Romakina[1], Yury A. Blinkov[1], Elina A. Genina[1,2], Alexey N. Bashkatov[1,2], [1]Saratov State University; [2]Tomsk State University, Russia

25. Study of early stages of lymphedema using multiphoton and THz microscopy Yury V. Kistenev[1,2], Alexey V. Borisov[1,2], Ekaterina Sandykova[1,2], Daria Tuchina[3], Polina Timoshina[3], Anastasya Knyazkova[1], [1]TSU, [2]Siberian State Medical University, [3]SSU, Russia

26. New photosensitizer for photodynamic inactivation of gram-positive and gram-negative planktonic bacteria and bacterial biofilms G.A. Meerovich[1,2], E.V. Akhlyustina[2], I.G. Tiganova[3], E.A. Makarova[4], N.I. Philipova[3], N.I. Philipova[3], E.A. Lukyanets[4], Yu.M. Romanova[3], V.B. Loschenov[1,2], [1]Prokhorov General Physics Institute of the Russian Academy of Sciences; [2]National Research Nuclear University "MEPHI"; [3]N.F. Gamaleya National Research Center of Epidemiology and Microbiology; [4]Organic Intermediates and Dyes Institute, Russia

27. Combined video analysis of ICG and 5-ALA induced protoporphyrin IX fluorescence and hemoglobin oxygen saturation for neurosurgery T.A. Savelieva[1,2], P.V. Grachev[1], V.I. Makarov[1], U.S. Maclygina[1], G.V Pavlova[3], S.A. Goryajnov[4], A.A. Potapov[4], V.B. Loschenov[1,2], [1]Prokhorov General Physics Institute of the Russian Academy of Sciences; [2]National Research Nuclear University "MEPHI"; [3]Institute of Gene Biology, Russian Academy of Sciences; [4]N.N. Burdenko National Scientific and Practical Center for Neurosurgery, Russia

28. Neurosurgical suction tube with embedded video fluorescence control in bio-tissue transparency range Maxim Loshchenov[1], Tatyana Savelieva[1,2], Kirill Linkov[1], Viktor Loshchenov[1,2], [1]Prokhorov General Physics Institute of the Russian Academy of Sciences; [2]National Research Nuclear University "MEPHI"

Conference on Low-Dimensional Structures VIII

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

Secretaries: **Vladislav V. Shunaev,** Saratov State University (Russia), **Michael M. Slepchenkov,** Saratov State University (Russia)

International Program Committee: **Ming-Fa Lin,** National Cheng Kung University, Tainan (Taiwan), **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), **Nikolay I. Sinitsyn**, Institute of Radioengineering and Electronics (IRE) of RAS, Saratov (Russia), **Gennadiy V. Torgashov,** Institute of Radioengineering and Electronics (IRE) of RAS, Saratov (Russia)

September 27, Thursday

ORAL SESSION
(Building 8, Room 82)
Chair: **Olga E. Glukhova**,
SaratovStateUniversity
Russia

14.30-14.50
Formation of Low Resistance Pd-Ge-Au Ohmic Contact to n-GaAs
D.M. Mitin, Ioffe Physical Technical Institute, Russia

14.50-15.05
The construction algorithm of full-atomic models of seamless junctions between single-walled carbon nanotubes G. Savostyanov, O.E. Glukhova, Saratov State University, Russia

15.05-15.25
Two-dimensional colloidal suspensions in rotatingelectric fields: particle-resolved studies
S.O. Yurchenko, E.V.Yakovlev, N.P. Kryuchkov, K.I. Komarov, K.I. Zaytsev, P.V. Ovcharov, Bauman Moscow State Technical University (BMSTU), Russia

15.25-15.40
Polyelectrolyte submicrocapsules, functionalized by magnetite nanoparticles for MR contrast controlA.A. Kozlova, Saratov State University, Russia

15.40-16.00
Electrical conductivity and emission properties of pillared grapheme D.S. Shmygin, Olga E. Glukhova, Sararov State University, Russia

16.00-16.15
Exact dynamics of two-level quantum systemsV. Semin,Samara National Research University, Russia

16.15-16.30
Formation and study of the properties of copper nanoparticles monolayers at the «gas-liquid» and «gas-solid state» phase interfacesN.N. Begletsova,Saratov State University, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3, 3d floor Hall)
Chair (L): **Olga E. Glukhova**, Saratov State UniversityRussia

18.30-19.30

1L. **Seamless nanotube connections for flexible and transparent electronics**K.R. Asanov, O.E. Glukhova, Saratov State University, Russia
2L. **Electronic structure and electrical properties of mono- and bi-layer graphen-nanotube films**
M.M. Slepchenkov, O.E. Glukhova, Saratov State University, Russia
3L. **High density hydrogen storage in 2D-matrix from graphenenanoblisters**P. Barkov, O.E. Glukhova, Saratov State University, Russia
4L. **Investigation of structures based on CNT @ γ-Fe2O3 for lithium ion batteries of new generation**D.A. Kolosov, O.E. Glukhova, Saratov State University, Russia
5L. **Electronic structure and electrical properties of mono- and bilayer graphen-nanotube films**
V.V. Mitrofanov, O.E. Glukhova, Saratov State University, Russia
6L. **Calculation of the electronic properties of graphene/CNTs 2D-composites**D.S. Shmygin, Olga E. Glukhova, Sararov State University, Russia
7L. **Emission properties of pillared graphene in presence of potassium atoms**D.S. Shmygin, Olga E. Glukhova, Sararov State University, Russia

8L. **The technique of reducing the time required to calculate the transmission of planar nanostructures**D.S. Shmygin, Olga E. Glukhova, Sararov State University, Russia

9L. **Conductive properties of three-layered graphene-graphane structure**V.V. Shunaev, O.E. Glukhova, Saratov State University, Russia

10L. **Colloidal suspension in external rotating electric field with tunable interactions**E.V. Yakovlev,Kryuchkov N.P., K.I. Komarov, K.I. Zaytsev, P.V. Ovcharov, S.O. Yurchenko, Bauman Moscow State Technical University (BMSTU), Russia

11L. **Creation of concave reticulate electrodes from annealed pyrolytic graphite with ultrashort pulsed laser radiation technological cutting process**D.A. Bessonov, T.N.Sokolova, I.A.Popov, E.L.Surmenko, S.D.Zhuravlev, Yuri Gagarin State Technical University of Saratov, Russia

12L. **Creation of hafnium field emission cathodes with ultrashort pulsed laser radiation technological milling process**D.A. Bessonov, T.N.Sokolova, I.A.Popov, E.L.Surmenko, Yuri Gagarin State Technical University of Saratov, Russia

13L. **Preparation of indium antimonide nanoparticles by liquid chemical etching in isopropyl alcohol**N.Yu. Yashina, O.Yu. Tsvetkova, Saratov State University, Russia

14L. **Formation of metallic nanoparticles under Langmuir monolayers**A.S. Chumakov, Saratov State University, Russia

15L. **Structuring the glass by picosecond laser RAPID 06 (1064 nm)**I.A. Popov, RPF "Pribor-T" Gagarin SSTU

16L. **Electromagnetic properties of self-assembled protein films**M.A. Baranov, Peter the Great Saint-Petersburg Polytechnic University, Russia

17L. **Methodology for analyzing the A_3B_5 semiconductor nanoparticles parameters by tunnel CVC method**M.V. Gavrikov, Saratov State University, Russia

18L. **Studying the self-assembly of quantum dots Langmuir monolayer**AL-AlwaniAmmarJaberKadhim, Saratov State University, Russia

19L. **Investigation of the behavior of aromatics at the interface**O.A. Shinkarenko, Saratov State University, Russia

20L. **Optical and morphological properties of Al_2O_3 layer deposited by E-beam evaporation for optical waveguide applications**Andra Naresh Kumar Reddy, M.A. Butt, S.N. Khonina,Saratov State University, Russia

21L. **Exploration of the molecular interaction of the liposome and phospholipid bilayer**K.A. Minenkov,O.E. Glukhova, Saratov State University, Russia

22L. **Citrate stabilized copper nanoparticles for preparation of SERS nanolabels**A.V. Markin, N.E. Markina, A.M. Zakharevich, Saratov State University, Russia

23L. **Imprinted proteins synthesis in microstructured optical fiber**P. Pidenko,Saratov State University, Russia

24L. **Investigation of nonlinear and resonance optical properties of small structures based on molybdenum silicide**S. Volchkov,Saratov State University, Russia

25L. **The influence of modifying additives on the optic-luminescent properties of a phosphor, based on Y2O2S:EU** T. Ponomaryova, Saratov State University, Russia

26L. **An electrochemical nano-scale boron-doped diamond surface biosensor for influenza virus detection**, D. Nidzworski[1,2], K. Siuzdak[3], P. Niedziałkowski[4], R. Bogdanowicz[5]*, M. Rycewicz[5], M. Sobaszek[5], P. Weiher[1], M. Sawczak[4], E. Wnuk[4], W. A. Goddard[6], A. Jaramillo-Botero[6], and T. Ossowski[4,1] Institute of Biotechnology and Molecular Medicine, [2] SensDx Ltd, [3]Polish Academy of Sciences, Szewalski Institute of Fluid-Flow Machinery,[4] Faculty of Chemistry, University of Gdansk, [5]Faculty of Electronics, Gdansk University of Technology, Poland, [7]California Institute of Technology, USA

INTERNET REPORTS

1. **Simulation of the temperature fields of titanium discs at high-temperature treatment with high frequency currents** A.A. Fomin,Yuri Gagarin State Technical University of Saratov, Russia

2. **Analysis of (ti, zr, ta)-(o, c, n) systems for obtaining metal-ceramic coatings of the required composition at high-temperature treatment with high frequency currents**A.A. Fomin,Yuri Gagarin State Technical University of Saratov, Russia

3. **Induction heat treatment of ti-6al-4v titanium alloy and increase of its mechanical properties**A.A. Fomin,Yuri Gagarin State Technical University of Saratov, Russia

4. **Electrospark alloying of zirconium and subsequent induction heat treatment**A.A. Fomin,Yuri Gagarin State Technical University of Saratov, Russia

Conference on Biomedical Spectroscopy V

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

Secretaries: **Elena K. Volkova, Natalia Kazadaeva,** Saratov State University (Russia)

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

September 26, Wednesday

ORAL SESSION I
(Building 10, Hall 108)

Chair: **Vyacheslav I. Kochubey,**
Saratov State University, Russia

15.30-16.00
Invited lecture
Non-invasivein vivo visualization of collagen III in human papillary dermis using two-photon tomography with fluorescence lifetime imaging. Evgeny Shirshin[1,2], Maxim E. Darvin[1],Juergen Lademann[1], [1]Charité – Universitätsmedizin Berlin, corporate member of FreieUniversität Berlin, Humboldt-Universitätzu Berlin, and Berlin Institute of Health, Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Berlin, Germany, [2]Lomonosov Moscow State University, Moscow, Russia

16.00-16.15
Identification of M.tuberculosis cell components forclinical strains using Raman spectroscopy Andrey Zyubin[1], Anastasia Lavrova[2]; Olga Manicheva[2]; Marine Dogonadze[2], [1]Immanuel Kant Baltic Federal University, Russia, [2]Saint-Petersburg State Research Institute of Phthisiopulmonology, Russia

16.15-16.30
Determination of luminescent characteristics of proteins at sorbtion on contact lenses Asiya Hairusheva, Andrei Melnikov, Gennady Melnikov, Yuri Gagarin State Technical University of Saratov, Russia

16.30-17.00
Coffee break

ORAL SESSION II
(Building 10, Hall 108)

Chair: **Alexander B. Pravdin**,
Saratov State University, Russia

17.00-17.15
Optical device for controlled laser thermolysis. S.O. Ustalkov[1], A.A. Skaptsov[1], I.Yu. Yanina[1,2], Kozyrev A.A.[3], [1]Saratov State University, Saratov, Russia, [2]Tomsk State University, Russian, [3]National Research Nuclear University MEPhI, Moscow, Russia

17.15-17.30
Fluorescence detection of 5-ALA/PpIX and Zn-Pc distribution in the body of experimental animals with stomach neoplasia I. Agranovich[1], E. Borisova[1, 2], Al. Khorovodov[1], M. Kanevsky[1], N. Navolokin[3], L. Avramov[2], I. Angelov[4], V. Mantareva[4], O. Semyachkina-Glushkovskaya[1], [1]Saratov State University, Russian Federation [2]Institute of Electronics-Bulgarian Academy of Sciences, Bulgaria, [3]Saratov State Medical University, Russian Federation [4]Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences, Bulgaria

17.30-17.45
Fluorescent indices of Tradescantia leaves under various lighting conditions Olesya Kalmatskaya, Vladimir Karavaev, Alexander Tikhonov, Faculty of Physics, Lomonosov MSU, Russia

September 27, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3, 1st-3rd floor Halls)

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

18.30-19.30

1BS. **Fluorescence spectroscopy approach with blood influence compensation** Valerii Shupletsov[1], Victor Dremin[1], Evgeny Zherebtsov[1, 2], Mikhail Mezentsev.[1], Igor Kozlov[1], Elena Potapova[1], Andrey Dunaev[1, 1]Research and Development Center of Biomedical Photonics, Orel State University, Orel, Russia;[2]Optoelectronics and Biomedical Photonics Group, Aston Institute of Photonic Technologies, Aston University, Birmingham, UK

2BS. **Detection of malignant skin tumors with Raman and fluorescence spectroscopy** Yulia Khristoforova[1], Ivan Bratchenko[1], Dmitry Artemyev[1], Oleg Myakinin[1], Oleg Kaganov[2], Alexandr Moryatov[2], Sergey Kozlov[2], Valery Zakharov[1], [1]Samara University, Russia, [2]Samara State Medical University, Russia,

3BS. **Optical analysis of joints pathology**. Elena F. Yagofarova, Samara National Research University, Samara, Russia

4BS. **Effect of ethanol on the transport of methylene blue through rat skin *ex vivo*** Elizaveta Basko[1], M. Klementeva[1], A. N. Bashkatov[1,2], E. A. Genina[1,2], V. V. Tuchin[1-3],[1]Saratov State University, Saratov, Russia, [2]Tomsk State University, Tomsk, [3]Institute of Precise Mechanics and Control RAS, Saratov, Russia

5BS. **Optical methods for evaluating the protocols for decellellization of cardiac aortic valve implants in their manufacture**. Denis S. Trapeznikov, Samara University, Samara, Russia

6BS. **Singlet oxygen quenching estimation for mice tissues *in vivo* determined by delayed fluorescence of sensitizer** Azamat Ishemgulov, Sergey Letuta, Sergey Pashkevich, Orenburg State University, Orenburg, Russia

7BS. **Capabilities of optical spectroscopy for diagnostics of fibrotic skin changes.** Irina A. Raznitsyna[1,2], [1]Moscow Regional Research & Clinical Institute "MONIKI",[2]National Nuclear Research University "MEPhI", Moscow, Russia

8BS. **Study of models of osteoporosis in rats and evaluation of the effectiveness of its treatment with Raman spectroscopy.**Anna S. Tyumchenkova, Samara University,Samara, Russia

9BS. **Assessment of biological tissue temperature using $NaYF_4:Yb^{3+}$, Er^{3+}@SiO_2upconversion nanoparticles** Elena Volkova[1], Irina Yanina[1,2], Elena Sagaidachnaia.[1], Julia Konyukhova [1], Vyacheslav Kochubey [1,2], Valery Tuchin.[1,2,3], [1]Saratov State University,Saratov, Russia,[2]Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia, [3]Laboratory of Laser Diagnostics of Technical and Living Systems, Institute of Precise Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia

10BS. **Increase the efficiency of upconversion of $NaYF_4$:Er,Yb particles at SiO_2 coating and annealing** Elena Sagaidachnaya[1], Elena Volkova[1], I. Yu. Yanina[1,2], Vyacheslav Kochubey[1,2], [1]Saratov State University, Russian Federation, [2]Tomsk State University, Russian

11BS. **Changes in the spectral characteristics of preparations containing ascorbic acid during the addition of stabilizers** Yuliya Danyaeva, Svetlana A. Kutsenko, Natalya A. Kudrya, Volgograd State University, Russian Federation

12BS. **The effect of characteristics solutions of antiseptic-photosensitizers on their fluorescent properties.** Svetlana Anatolievna Kutsenko, Maria A. Kornaukhova, Mikhail S. Baranov, Anton A. Adamov, Volgograd State University, Volgograd, Russia

13BS. **Alumina based composite with incorporated copper nanoparticles for SERS detection of some drugs** Alexey V. Markin, Natalia E. Markina, Andrey M. Zakharevich, Saratov State University, Russia

14BS. **Creatinine SERS detection using molecularly imprinted silica gel** Natalia E. Markina, Alexey V. Markin, Andrey M. Zakharevich, Saratov State University, Russia

15BS. **Nanodiamond based complexes for prolonged dexamethasone release** Kirill Laptinskiy[1,2], H. Kettiger[3], O. Shenderova[4], S. Burikov[2], J.M.Rosenholm[3], T. Dolenko[2],[1]Skobeltsyn Institute of Nuclear Physics, Moscow State University, Moscow, Russia, [2]Phaculty of Physics, Moscow State University, Russia,[3]Pharmaceutical Sciences Laboratory, Faculty of Science and Engineering, Åbo Akademi University, Turku, Finland, [4]Adámas Nanotechnologies, Inc., Raleigh, North Carolina, United States

16BS. **Dynamics of skin physiological parameters under external compression** Olga Zyuryukina, Yuriy P. Sinichkin, Saratov State University, Russia

17BS. **SAW based method to study photothermal response of plasmonic coupled nanosystems** Vladimir Kaydashev, Southern Federal University, Russia

19BS. **Study of ATP and chlorine-ion concentration changes in the cytosol of individual cultured neurons during glutamate-induced deregulation of calcium homeostasis** R.R. Sharipov[1], A.V. Galachova[2], I. Akutin[3], I.A. Krasilnikova[2], D.P. Boyarkin[2], L.R. Gorbacheva[3], A.M. Surin[1,2], V.G. Pinelis[2], [1]Institute of General Pathology and Pathophysiology; [2]National Medical Research Center for Children's Health, Russian Ministry of Health; [3]Lomonosov Moscow State University, Moscow, Russia

20BS. **Synthesis and characterization $CuInS_2$ nanoparticles** Ekaterina Kozlova[1], Vyacheslav Kochubey[1,2], [1]Saratov State University; [2]Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Russia

Conference on Computation Biophysics and Analysis ofBiomedical Data V

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

*Secretary:***Elena S. Stiukhina**, Saratov State University

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

September 26, Wednesday

ORAL SESSION I
(Building 8, Conference Hall)
Chair: **Dmitry E. Postnov**, **Eugene B. Postnikov**, Saratov State University; Kursk State University, Russia

14.00-14.10
Opening remarks
Dmitry E. Postnov,Saratov State University, Russia

14:10-14:30
Spectrophotometric and colorimetric analysis of Mycobacterium tuberculosispopulation growth curves in resazurin assay: implications from data analysis
Eugene B. Postnikov[1], A.I. Lavrova[2.3], A.A. Khalin[1], M.Z. Dogonadze[2], O.A. Manicheva[2], [1]Kursk State University; [2]Saint-Petersburg State Research Institute of Phthisiopulmonology; [3]Saint-Petersburg State University, Russia

14.30-14.50
Recurument of the meningeal lymphatics by the brain barriers
Oxana V. Semyachkina-Glushkovskaya, N. Navolokin[1,2], A. Shirokov[1,3], A. Abdurashitov[1], A. Namikin[1], A. Khorovodov[1], A. Terskon[1], M. Klimova[1], A. Mamedova[1], A. Dubrovskiy[1], A. Bodrova[1], E. Saranceva[1], I. Fedosov[1], V. Tuchin[1,4,5], Ju. Kurths[1,6,7], [1]Saratov State University; [2]Saratov State Medical University; [3]Institute of Biochemistry and Physiology of Plants and Microorganisms RAS; [4]Tomsk State University; [5]Institute of Precision Mechanics and Control of RAS, Russia; [6]Humboldt University; [7]Potsdam Institute for Climate Impact Research, Germany

14.50-15.10
Occlusion-triggered flow redistribution in adaptive vascular networks: the modeling study
Dmitry E. Postnov, E.S. Stiukhina, Saratov State University, Russia

15.10-15.30
Characterization of cerebral blood flow dynamics with complexity measures
Alexey N. Pavlov[1], O.N. Pavlova[2], O.V. Semyachkina-Glushkovskaya[2],[1] Yuri Gagarin State Technical University of Saratov; [2] Saratov State University, Russia

15.30-15.50
Biomechanical analysis of the embryonic mouse heart by OCT and optogenetic control
Andrew L. Lopez III, Sh. Wang, I. Larina,Baylor College of Medicine, USA

15.50-16.10
Phase synchronization of human cardiovascular oscillations using photopletismography and laser Doppler flowmetry techniques Arina V. Tankanag, A.A. Grinevich, I.V. Tikhonova, N.K. Chemeris, Institute of Cell Biophysics RAS, Russia

16.10-16.30
Multiscale topology of the links between the brain regions during visual perception
Vladimir A. Maksimenko, V.O. Nedayvozov, A.N. Pisarchik, Yuri Gagarin State Technical University of Saratov, Russia

16.30-17.00
Coffee break

ORAL SESSION II
(Building 8, Conference Hall)
Chair: **Dmitry E. Postnov**, Saratov State University, Russia

17.00-17.20
Modeling and analysis of pacemakers in a neural network

Andrey Yu. Verisokin[1], D.V. Verveyko[1], E.A. Kuryshova[2], D.E. Postnov[2],[1]Kursk State University;[2]Saratov State University, Russia

17.20-17.40

Analysis of physiological processes with extreme data loss

Olga N. Pavlova[1], A.S. Abdurashitov[1], O.V. Semyachkina-Glushkovskaya[1], A.N. Pavlov[2], [1]Saratov State University; [2]Yuri Gagarin State Technical University of Saratov, Russia

17.40-18.00

Detection of EEG patterns related to real and imaginary arm movements with fluctuation analysis

Daria S. Grishina[1], A.E. Runnova[2], V.A. Maksimenko[2], O.N. Pavlova[1], A.N. Pavlov[2], A.E. Hramov[2], [1]Saratov State University; [2]Yuri Gagarin State Technical University of Saratov, Russia

18.00-19.00

The Batch of 1-minute poster advertisement by

Evgeniya A. Kozlova, Kristina V. Rogatina, Yuri N. Avtomonov, Dmitry Raupov, Anastasia Ustinova, Anastasia A.Shatskaya, Elena N. Rimskaya, Irina A. Mizeva, Maksim O. Zhuravlev, Vladimir A. Maksimenko, Vyacheslav Yu. Musatov, Semen A. Kurkin, Nikita S. Frolov, E.N.Pitsik, Victoria V. Skazkina, Yuri M. Ishbulatov,Igor B. Isupov, Julia A. Shatyr, Alexander V. Mulik, Margarita V. Postnova, Oleg A. Melsitov, Vadim V. Grubov, Leyla Mohammadzade, Alexandr V. Dol, Daniil V. Kirsanov, Anastasia E. Runnova, Pavel Protasov, Daria V. Verveyko

September 27, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, 1-3rd floor Hall)

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

18.30-19.30

1BC. **Laser mediated lymphangeon activity in rat mesentery**Evgeniya A. Kozlova[1],N.I. Lvov[2], E.S. Stiukhina[1], G.E. Brill[2], D.E. Postnov[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

2BC. **Electrical communication of vascular cells: endothelial cells and smooth muscle cells** Kristina V. Rogatina, D.E. Postnov, Saratov State University, Russia

3BC. **Nonlinear wave regimes in the vessel model** Yuri N. Avtomonov, D.E. Postnov, Saratov State University, Russia

4BC. **Increasing diagnosis precision for skin cancer on multimodal data by machine&deep learning methods** Dmitry Raupov, O.O. Myakinin, I. A. Bratchenko, V. P. Zakharov, Samara University, Russia

5BC. **Mathematical modeling of skin multispectral autofluorescence**Anastasia Ustinova, D.N. Artemyev, I.A. Bratchenko, Samara University, Russia

6BC. **Mathematical modeling of optical fiber systems for efficient registration of skin fluorescence** Anastasia A.Shatskaya, D.N. Artemyev, I.A. Bratchenko, Samara University, Russia

7BC. **Development of an automated complex for early diagnostics of pig-mented skin lesions** Elena N. Rimskaya[1,2], I.A. Apollonova[1], A.P. Nikolaev[2], K.G. Kudrin[2], N.V. Chernomyrdin[1], I.V. Reshetov[2], K.I. Zaytsev[3], [1]Bauman Moscow State Technical University; [2]First Sechenov Moscow State Medical University; [3]Head of the Laboratory of the IOP RAS. A.M. Prokhorov, Russia

8BC. **Recovery of microcirculation system in patients with peripheral artery disease after conservative and surgery treatment** N. Zubareva[1], A. Parshakov[1], S. Podtaev[2], P. Frick[2],Irina A. Mizeva[2],[1]Perm Medical University;[2]Institute of continuous media mechanics, Russia

9BC. **The investigation of synchronization between different areas of the brain in locomotor activity** Maksim O. Zhuravlev, A.E. Runnova, Yu. Kryuchkov, Yuri Gagarin State Technical University of Saratov, Russia

10BC. **Methods of assessing the degree of synchronization of multichannel EEG recordings** Maksim O. Zhuravlev,A.E. Runnova, A.E. Hramov, Yuri Gagarin State Technical University of Saratov, Russia

11BC. **Technique for identifying patterns on myographic data in real time** Vladimir A. Maksimenko, M.O. Zhuravlev, A.E. Runnova, A.E. Hramov, Yuri Gagarin State Technical University of Saratov, Russia

12BC. **Use of artificial intelligence for study of the visual perception** Vladimir A. Maksimenko, M.O. Zhuravlev, Yuri Gagarin State Technical University of Saratov, Russia

13BC. **Control of the human attention via biological feedback** Vladimir A. Maksimenko, A.E. Runnova, A.E. Hramov, Yuri Gagarin State Technical University of Saratov, Russia

14BC. **The application of electromyograms data processing system for mechatronic device control** Vyacheslav Yu. Musatov, S.A. Kurkin, A.P. Niyazov, A.B. Ishanov, Yuri Gagarin State Technical University of Saratov, Russia

15BC. **Research of gender differences in EEG responses to real and imaginary operator movements using ANN** Vyacheslav Yu. Musatov, T.Yu Efremova, A.E. Runnova, S.A. Kurkin, Yuri Gagarin State Technical University of Saratov, Russia

16BC. **Artificial intelligence systems for classifying EEG responses to imaginary and real movements of operators** Semen A. Kurkin, E.N. Pitsik, V.Yu. Musatov, N.S. Frolov, V.V. Martynov, M.V. Brovkova, V.M. Brzhovsky, Yuri Gagarin State Technical University of Saratov, Russia

17BC. **Study of EEG characteristics during the observation of an educational material** Nikita S. Frolov, V.Yu. Makarov, V. Nedajvozov, V. Grubov, A. Runnova, R. Kulanin, Yuri Gagarin State Technical University of Saratov, Russia

18BC. **Multistablility of macroscopic behavior in multilayer multiplex network** Nikita S. Frolov, V. Zhukov, A.N. Pisarchik, A.E. Hramov, Yuri Gagarin State Technical University of Saratov, Russia

19BC. **Pattern formation in spatially-distributed networks via spatially-correlated preferential attachment** E.N. Pitsik[1], V. Makarov[1], S. Boccaletti[2], [1]Yuri Gagarin State Technical University of Saratov, Russia; [2]CNR-Institute of Complex Systems, Italy

20BC. **Comparison of the statistical properties of the phase synchronization index of the electrocardiogram and the photoplethysmogram signals from the ear and the finger by 2-hours time series** Victoria V. Skazkina[1], A.S. Karavaev[1,2], E.I. Borovkova[1], Yu.M. Ishbulatov[1,2], A.R. Kiselev[1,3,5], V.A. Shartz[4], V.P. Bezruchko[1], [1]Saratov State University; [2]Saratov Branch of the Institute of Radio Engineering and Electronics of RAS; [3]Saratov State Medical University; [4]Bakulev Scientific Center for Cardiovascular Surgery, Russia

21BC. **Synchronization of low-frequency processes in the regulation of blood circulation and spectral density estimation of heart rate variability in newborns** Victoria V. Skazkina[1], Yu.V. Chernenkov[2], O.S. Panina[2], A.S. Karavaev[1,3], A.R. Kiselev[1,2,4], E.I. Borovkova[1], V.I. Grindev[1], E.N. Mureeva[2], V.P. Bezruchko[1], [1]Saratov State University; [2]Saratov State Medical University; [3]Saratov Branch of the Institute of Radio Engineering and Electronics of RAS; [4]Bakulev Scientific Center for Cardiovascular Surgery, Russia

22BC. **Detection of 0.1 Hz rhythms of autonomous regulation of blood circulation from mathematical model of electrocardiogram** Yuri M. Ishbulatov[1,2], A.S. Karavaev[1,2], V.A. Shartz[3], S.A. Mironov[4], A.R. Kiselev[3,5], V.P. Bezruchco[1,2], [1]Saratov Branch of the Institute of Radio Engineering and Electronics of RAS; [2]Saratov State University; [3]Bakulev Scientific Center for Cardiovascular Surgery; [4]Central Clinical Military Hospital; [5]Saratov State Medical University, Russia

23BC. **Variational-statistical and spectral analysis of photoplethysmograms** Igor B. Isupov, R.Sh. Zatrudina, V.V. Bumagin, V. Gribkov, Volgograd State University, Russia

24BC. **Crystallography of oral fluid as an element of personalized evaluation of the functional state of the human organism** Julia A. Shatyr, V.V. Novochadov, M.V. Postnova, I.V. Ulesikova, A.B. Mulik, Volgograd State University, Russia

25BC. **The personalised diagnosis program of functional maladjustment of the human organism** Alexander V. Mulik, M.V. Postnova, V.O. Samarskaya, I.V. Ulesikova, U.A. Shatyr, Volgograd State University, Russia

26BC. **Molecular docking data preparation tool** Margarita V. Postnova, A. V. Kovalenko, G.A. Sroslova, A.A. Shiroky, V.O. Samarskaya, A.G. Serov, Volgograd State University, Russia

27BC. **The docking as a way to analyze biomedical data** Margarita V. Postnova, G.A. Sroslova, J. A. Zimina, A.V. Kovalenko, Volgograd State University, Russia

28BC. **Use of a neuron network for predicting the impact of chemical compounds on plant development** Margarita V. Postnova, A.V. Kovalenko, G.A. Sroslova, S.V. Safonov, J.A. Zimina, Volgograd State University, Russia

29BC. **Melanoma recognition system** Oleg A. Melsitov, Samara University, Russia

30BC. **Detection of EEG oscillatory patterns corresponding to human concentration of attention with help of perceptron-type artificial neural network** Vadim V. Grubov, N.S. Frolov, Yuri Gagarin State Technical University of Saratov, Russia

31BC. **Detection of pro epileptic activity patterns in EEG of WAG/Rij rats** Vadim V. Grubov, E.Yu Sitnikova, Yuri Gagarin State Technical University of Saratov, Russia

32BC. **Measuring the functional connectivity of rat's brain by using deconvolution method in optical intrinsic signal imaging** Leyla Mohammadzade, M. Mohammadi Balsini, A. Mohammadi Balsini, Shahid Beheshti University (SBU), Iran

33BC. **Atherosclerosis of carotid arteries as a factor in the formation of cerebral aneurysms** Alexandr V. Dol, Saratov State University, Russia

34BC. **Emergence of macroscopic chimera states in multilayer multiplex network** Daniil V. Kirsanov, Saratov State University, Russia

35BC. **The study of the correlation between EEG-EMG signals for the simple test ''fist-rib''/''palm-fist''** Anastasia E. Runnova, M.O. Zhuravlev, Yu. Kryuchkov, Yuri Gagarin State Technical University of Saratov, Russia

36BC. **The study of the spatial distribution of non-invasive electromyographic signals on the front surface of a human hand arm during movement in the elbow joint** Anastasia E. Runnova, M.O. Zhuravlev, Yu. Kryuchkov, Yuri Gagarin State Technical University of Saratov, Russia

37BC. **Structural properties of brain function network during Schulte table solving** Pavel Protasov, V. Makarov, M.O. Zhuravlev, A.E. Runnova Yuri Gagarin State Technical University of Saratov, Russia

38BC. **The study the individual characteristics of the functioning of the brain with the passage of psychological testing** Pavel Protasov, A.E. Runnova, M.O. Zhuravlev, Yuri Gagarin State Technical University of Saratov, Russia

39BC. **Simulation of muscle forces and joint moments by EMG signals using OpenSim Software** Daniil V. Kirsanov[1], P. Storozhev[2], A.E. Hramov[1], [1]Yuri Gagarin State Technical University of Saratov; [2]Research-and-production enterprise "Android Technics", Magnitigorsk, Russia

40BC. **Mathematical simulation of coherent resonance phenomenon in a network of Hodgkin-Huxley biological neurons** A.V. Andreev, Yuri Gagarin State Technical University of Saratov, Russia; Technical University of Madrid, Spain

41BC. **Calcium waves formation by the Na/Ca-exchangers in astrocyte** Daria V. Verveyko[1], A.R. Brazhe[2], A.Yu. Verisokin[1], D.E. Postnov[3], [1]Kursk State University; [2]Moscow State University. M.V. Lomonosov; [3]Saratov State University, Russia

42BC. **Theoretical study for the motion of blood in a tube in the presence of magnetic field produced by permanent magnet** Samia F. I. Salem, Maxim A. Kurochkin, and Valery V. Tuchin, Saratov State University, Russia

Workshop on Nonlinear Dynamics IX

Workshop Chair: **Vadim S. Anishchenko***,* Saratov State University (Russia)

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

September 27, Thursday

ORAL SESSION
(Building 3, Room 38)
Chair: **Vadim S. Anishchenko**, Saratov State University, Russia

14.30-14.50

Mechanism of appearance of solitary states and solitary state chimeras in ensembles of coupled oscillators
Vadim Anishchenko, Saratov State University, Russia;Elena Rybalova, Saratov State University, Russia;Galina Strelkova, Saratov State University, Russia

14.50-15.05

Looking for embedding dimension of the attractor of a distributed system employing methods of machine learning
Pavel Kuptsov, Yuri Gagarin State Technical University of Saratov, Russia;Anna Kuptsova, Yuri Gagarin State Technical University of Saratov, Russia

15.05-15.20

Coherence resonance in two-layer network with weak coupling
Nadezhda Semenova, Saratov State University, Russia

15.20-15.35

Investigation of the dynamics of 0.1 Hz rhythms and their synchronization in the finger photoplethysmogram signals during the tilt-test in healthy subjects
Sergey Mironov, Central Clinical Military Hospital, Moscow, Russia

15.35-15.45

Dissipative breathers in a chain of Rayleigh oscillators
Konstantin Sergeev, Saratov State University, Russia;Evgeniy Elizarov, Saratov State University, Russia; Alexandr Chetverikov, Saratov State University, Russia

15.45-16.00

Fermi-Pasta-Ulam phenomenon in model of nonlinear Schroedinger equation with variable coefficients
Andrey Konyuhov, Saratov State University, Russia

16.00-16.15

Retranslation of a chimeric structure by a network of many layers of nonlocally coupled chaotic maps with unidirectional interaction of layers
Tatiana Vadivasova, Saratov State University, Russia

16.15-16.30

Pattern formation in spatially-distributed networks via spatially-correlated preferential attachment
Vladimir Makarov, Yuri Gagarin State Technical University of Saratov, Russia; Daniil Kirsanov, Yuri Gagarin State Technical University of Saratov, Russia; Alexander Hramov, Yuri Gagarin State Technical University of Saratov, Russia

POSTER SESSION
(Building 3, 3rd floor Hall)
Chair (ND): **Andrei V. Slepnev**, Saratov State University, Russia

1ND. **Analysis of synchronous operation modes of a coupled oscillators of power grids**Pavel Arinushkin, Saratov State University, Russia

2ND. **Wavelet analysis of MEG data with imaginary movements**Anton Selskii, Yuri Gagarin State Technical University of Saratov, Russia

3ND. **Recurrence plots of MEG data with imaginary movements**Anton Selskii, Yuri Gagarin State Technical University of Saratov, Russia

4ND. **Impact of noise on intermittency between chimeras in an ensemble of nonlocally coupled logistic maps**Darya Klyushina, Saratov State University, Russia; Elena Rybalova, Saratov State University, Russia; Galina Strelkova, Saratov State University, Russia

5ND. **Analysis of a new type of chimera structure – a solitary state chimera**Elena Rybalova, Saratov State University, Russia; Vadim Anishchenko, Saratov State University, Russia

6ND. **Coherent resonance phenomenon in a network of Hodgkin-Huxley biological neurons**Andrey Andreev, Yuri Gagarin State Technical University of Saratov, Russia

7ND. **Spatiotemporal structures in a two-dimensional lattice of nonlocally coupled neuron maps**Andrei Bukh, Saratov State University, Russia; Galina Strelkova, Saratov State University, Russia; Vadim Anishchenko, Saratov State University, Russia

8ND. **Synchronization of periodic self-oscillators interacting via memristor-based coupling**Ivan Korneev, Saratov State University, Russia; Vladimir Semenov, Saratov State University, Russia; Tatiana Vadivasova, Saratov State University, Russia

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

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

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

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

Thursday September 28

INVITED LECTURE/ORAL SESSION

Chair: **Dmitry A. Zimnyakov**, Yuri Gagarin State Technical University of Saratov, Russia

11.30-11.50

Invited
Probing of biological tissues with polarized light,A.P. Sviridov, Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of Russian Academy of Sciences, Russia, 108840, Moscow, Troitsk, Pionerskaya, 2.

ORAL SESSION

(Building10, 503 room)

Chair: **Dmitry A. Zimnyakov**, Yuri Gagarin State Technical University of Saratov, Russia

11.50-12.00

Polarized photoluminescence of eye cornea ex vivo under internal mechanical loading, A.G. Shubnyy, Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of the RAS, A.P. Sviridov, Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of the RAS, S.Y. Petrov, Scientific Research Institute of Eye Diseases, Moscow, Russia.

12.00-12.10

Speckle-contrast method for diagnosis of thermal-stress fields in costal cartilage during laser reshaping, A.V. Yuzhakov, O.I. Baum, A.P. Sviridov, M.L. Novikova, E.N. Sobol, Federal Scientific Research Centre “Crystallography and Photonics” of the RAS, Moscow, Russia.

12.10-12.20

Spectral and polarization characteristics of a broadband vacuum photosensor with tunnel emission of a metal nanoscale blade
G.G. Akchurin, Institute of Precision Mechanics and Control, D.A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, N.P. Aban’shin, G.G. Akchurin, Yu.A. Avetisyan, Institute of Precision Mechanics and Control, A.P. Loginov, S.A. Yuvchenko, Yuri Gagarin State Technical University of Saratov, A.N. Yakunin, Institute of Precision Mechanics and Control, Saratov, Russia

12.20-12.30

Monitoring changes in fibril composition in collagen fibers subjected to dehydration, rehydration, and immersion clearing using birefringence measurements
Dmitry A. Yakovlev, Saratov State University, Russia, Marina E. Shvachkina , Saratov State University, Russia, Dmitry D. Yakovlev, Saratov State University, Russia

12.30-12.40

Angular distributions of orthogonally polarized components of light scattered by mosaic birefringent layers
Dmitry D. Yakovlev, Dmitry A. Yakovlev, Alexander B. Pravdin, Saratov State University, Russia

12.40-12.50

Optical diffusion technologies in characterization of supercritical fluidic systems: a brief review, D.A. Zimnyakov (1,2), V.N. Bagratashvili (3); (1)Yuri Gagarin State Technical University of Saratov, (2) Precision Mechanics and Control Institute of the RAS, (3)

Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of the RAS, Russia

12.50-13.00

Peculiarities of photoinduced charge transfer in nanostructured anatase, D.A. Zimnyakov (1,2), M. Yu. Vasilkov (1), S.A. Yuvchenko (1), S.S. Volchkov (1), A. S. Varezhnikov (1), V. V. Sysoev (1); (1)Yuri Gagarin State Technical University of Saratov, (2) Precision Mechanics and Control Institute of Russian Academy of Sciences, Saratov, Russia.

13.00-13.10

Signal detrending in low-coherence reflectometry: physical basis and simulation resultsE. Ushakova (1), D. Zimnyakov (1,2); (1)Yuri Gagarin State Technical University of Saratov, (2) Precision Mechanics and Control Institute of Russian Academy of Sciences, Saratov, Russia.

13.10-13.20

A hybrid approach in modeling of statistical characteristics of multiple scattered light, M.V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

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

September 27, Thursday

18.30-19.30

1P. **The long-term activation effect of a planar field emission cathode on the basis of a diamond-like carbon film under polarized pulsed irradiation,** G.G. Akchurin, Institute of Precision Mechanics and Control, D.A. Zimnykov, Yury Gagarin State Technical University of Sarartov, N.P. Aban’shin, Institute of Precision Mechanics and Control, G.G. Akchurin, Institute of Precision Mechanics and Control, Yu.A. Avetisyan, Institute of Precision Mechanics and Control, A.P. Loginov, S.A. Yuvchenko, Yury Gagarin Yuri Gagarin State Technical University of Saratov, A.N. Yakunin, Institute of Precision Mechanics and Control, Saratov, Russia

2P. **Determination of proteins lacrimal fluid - contact lenses interaction by the methods of polarization spectroscopy**Melnikov A. G., Khairusheva A. M., Melnikov G.V., Yuri Gagarin State Technical University of Saratov, Russia

3P. **Polarization of protein luminescence in application to human body aging determining** Melnikov A. G., Khairusheva A. M., Melnikov G.V., Yuri Gagarin State Technical University of Saratov, Russia

4P. **Monte Carlo simulation oftissue phantom in application of speckle-correlation and polarization analysis** Pantyukov Aleksey V., Isaeva Anna A., Isaeva Elena A., Yuri Gagarin State Technical University of Saratov, Russia

5P. **Study of temperature kinetics and structure of gel polymerization** Anna Isaeva, Elena Isaeva, Aleksej Pantyukov, Yuri Gagarin State Technical University of Saratov, Russia

6P. **Optical properties of foam-like structures** Elena A. Isaeva, Anna A. Isaeva, Dmitry A. Zimnyakov,Yuri Gagarin State Technical University of Saratov, Russia

7P. **Non-equilibrium equations of state of SCF-foamed polymer substances: phenomenoly and experiments** O.Slavnetskov, A. Kalacheva, Yuri Gagarin State Technical University of Saratov, S.A. Gavrilov, D.A. Tumachev, A.M. Likhter, Astrakhan State University, S.A. Yuvchenko, D.A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia

8P. **Effect «inversion» of aged foams in the wet-to-dry transition** Olga V. Ushakova, Dmitry A. Zimnyakov, Sergey A. Yuvchenko, Yuri Gagarin State Technical University of Saratov, Russia

9P. **Investigation of nonlinear and resonance optical properties of small structures based on molybdenum silicide**, Sergey S. Volchkov, Yuri Gagarin State Technical University of Saratov, Sergey A. Yuvchenko, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Institute of Precise Mechanics and Control of the RAS, Saratov, Russia

Workshop on Electromagnetics of Microwaves, Submillimeter and Optical Waves XVII

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

*Secretaries:***Alexander N. Savin**, Saratov State University (Russia), **Dmitry A. Kolosov**, Saratov State University (Russia), **Pavel A. Khmelnitsky,** Saratov State University (Russia)

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

September 27, Thursday

JOINT POSTER/INTERNET SESSION
(Building 3, 3rd floor Hall)
Chair (EM): **Michael V. Davidovich**, Saratov State University, Russia

18.-30-19.-30

1EM. **Amplification of terahertz plasmons in the active graphene screened by dielectric with high dielectric permittivity** Moiseenko Ilia,M. Yu. Morozov, V. V. Popov, Kotelnikov Institute of Radio Engineering and Electronics of RAS (Saratov Branch)

2EM. **Backward plasmon-polaritones in multilayered dissipative structures** Michael V. Davidovich, Saratov State University, Russia

3EM. **Integral equations and Green's functions for analysis of terahertz plasmonic structures**Pavel A. Khmelnitsky, Michael V. Davidovich, Saratov State University, Russia

4EM. **Design and Simulation of Folded-Waveguide Slow-Wave Structures for Millimeter-Band Traveling-Wave Tube**Artem G. Terentyuk, Saratov State University, Russia.

5EM. **Resistive thin-film coatings as an alternative to classical slow wave structures in millimeter-wave vacuum electronic devices** Andrey V. Starodubov, Stanislav A. Makarkin, Alexey A. Serdobintsev, Dmitriy M. Mitin, Anton M. Pavlov, Victor V. Galushka, Saratov State University, Russia.

6EM. **Modeling of electrom transpoort in a vacuum photosensor with a composite structurebased on a nanoscale DLC film**Alexander Yakunin, Institute of Precision Mechanics and Control of the RAS, Saratov, Russia

7EM. **On the localization of termal sources in an auto-emission planar nanostructure with a DLC film on a metal edge**Alexander Yakunin, Institute of Precision Mechanics and Control of the RAS, Saratov, Russia

INTERNET REPORTS

1. **Plasmon-Polaritons in Plan-Multilayered Structures: the Methods of Simulation and Properties** Michael V. Davidovich, Saratov State University, Saratov, Russia

September 28, Friday

ORAL SESSION
ELECTROMAGNETICS
(Building 8, Room 82, SSU)
Chair: **Michael V. Davidovich**, Saratov State University, Russia

11.00-11.15

Bent optical fiber as a sensing element for evanescent wave spectroscopy
Svetlana V. Korsakova,Elena Romanova, Andrei Rozhnev, Saratov State University, Alexander Velmuzhov, Tatiana Kotereva, Maxim Sukhanov, Vladimir Shiryaev, Institute of Chemistry of High

Purity Substances of the RAS, Nizhny Novgorod, Russia.

11.15-11.30

The behavior of the dispersion surface plasmons along a conducting film
Michael V. Davidovich, Saratov State University, Russia

11.30-11.45

Amplification of THz surface plasmons by electron beams
Michael V. Davidovich, Saratov State University, Russia

11.45-12.00

Frequency stabilization of a THz-band gyrotron by delayed reflection
Maria M. Melnikova, Alexandra V. Tyshkun, Saratov State University, Andrey G. Rozhnev, Nikita M. Ryskin, Saratov Branch, Institute of Radio Engineering & Electronics of the RAS, Saratov, Russia

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12.00-12.15

Excitation of plasmon resonances in periodic double-layer graphene-based PT system
O.V. Polischuk, V.V. Popov, Kotelnikov Institute of Radio Engineering and Electronics of RAS (Saratov Branch), I.M. Moiseenko, D.V. Fateev, Kotelnikov Institute of Radio Engineering and Electronics of RAS (Saratov Branch), Saratov State University Saratov, Russia

12.15-12.30

Experimental and numerical study of electromagnetic parameters of planar slow-wave structures for millimeter-wave vacuum electronic devices Andei V. Starodubov, Alexey A. Serdobintsev,Anton M. Pavlov, Victor V. Galushka, Peter V. Ryabukho, Saratov State University, Andrey G. Rozhnev, Roman A. Torgashov, Gennadiy V. Torgashov, Nikita M. Ryskin, Saratov Branch, V.A. Kotel'nikov Institute of Radio Engineering and Electronics RAS, Saratov, Russia

12.30-12.45

Trapping of terahertz plasma waves in tapered metal-insulator-graphene hetero structure Mikhail Yu. Morozov, Vyacheslav V. Popov, Saratov Branch, V.A. Kotel'nikov Institute of Radio Engineering and Electronics RAS, Saratov, Russia

Conference on
Advanced Materials for Optics and Biophotonics I

Conference Chair: **Vladimir N. Kurlov,** ISSP RAS (Russia)

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

International Program Committee **Vladimir N. Kurlov (Chair),**ISSP RAS (Russia), **Maksim Skorobogatiy,**Polytechnique Montréal (Canada),**Vyacheslav G. Artyushenko,**ART Photonics (Germany), **Vincent Patrick Wallace,**University of Western Australia(Australia), **Vladimir S. Gorelik,**Lebedev Physical Inctitute RAS (Russia), **Yusef D. Khesuani,** 3D Bioprinting Solutions (Russia), **Marina A. Schcedrina,**Sechenov MSMU (Russia), **Igor V. Minin,**SSAG (Russia), **Oleg V. Minin,**SSAG (Russia), **Vladimir A. Lazarev,**BMSTU (Russia), **Irina N. Dolganova,**ISSP RAS(Russia), **Gennady A. Komandin,**Prokhorov GPI RAS(Russia), **Igor E. Spector,**Prokhorov GPI RAS(Russia)

September 27, Friday

INVITED/ORAL SESSION ADVANCED MATERIALS I

(*Building 10, Main Conference Hall*)
Chair: **Vladimir N. Kurlov**, ISSP RAS Russia

11.30-11.50
Invited
Hybrid biomaterials in tissue engineering
Petr S. Timashev, Sechenov First MSMU (Russia)

11.50-12.10
Invited
Use of Nanosized Elements for THz Generation, Manipulation, and Detection Enhancement
Andrei Gorodetsky, ITMO University / Imperial CollegeLondon

12.10-12.20
Plasmonic terahertz photoconductiveantennas for spectroscopy and imagingsystems
A.E. Yachmenev, D.V. Lavrukhin, I.A. Glinskiy, R.A. Khabibullin, Yu.G. Goncharov, I.E. Spector, T. Otsuji, M. Shur, K.I. Zaytsev, andD.S. Ponomarev, Institute of Ultra High FrequencySemiconductor Electronics of RAS(Russia)

12.20-12.30
Sapphire shaped crystals for medicaldiagnosis, therapy and surgery
V.N. Kurlov, ISSP RAS (Russia) I.A. Shikunova, G.M. Katyba,K.I. Zaytsev, I.N. Dolganova, A.A. Potapov,I.V. Reshetov, and V.V. Tuchin

12.30-12.40
Sapphire cryosurgery tools providing withoptical diagnosis of ice-ball formation
I.A. Shikunova,ISSP RAS (Russia), I.N. Dolganova, N.V. Chernomyrdin, A.A. Kuznetsov, E.E. Mukhina, L.P. Safonova, A.I. Donodin, K.I. Zaytsev, and V.N. Kurlov

12.40-12.50
Modified fibrin gel as a flexible tool fortissue engineering
Anastasia Shpichka,Sechenov First MSMU

12.50-13.00
Terahertz high-temperature intrawaveguidespectroscopy and interferometry based onsapphire shaped crystals
G.M. Katyba,ISSP RAS (Russia), K.I. Zaytsev, M. Skorobogatiy,and V.N. Kurlov

Conference on Terahertz Optics and Biophotonicsl

Conference Chair: **ValeriyE. Karasik,** BaumanMoscow State Technical University (Russia)

*Secretary:***Nikita V. Chernomyrdin,** BMSTU (Russia)

International Program Committee **ValeriyE. Karasik (Chair),**BMSTU (Russia), **Stanislav O. Yurchenko,**BMSTU (Russia), **Vincent P. Wallace,**University of Western Australia (Australia), **Igor V. Reshetov,** Sechenov MSMU (Russia), **Alexei Ivlev,** Max-Planck-Institut für Extraterrestrische Physik (Germany), **Barbara M. Giuliano,** Max-Planck-Institut für Extraterrestrische Physik (Germany), **Victor I. Ryzhii,** BMSTU (Russia), **Igor V. Minin,**SSAG(Russia), **Oleg V. Minin,** SSAG (Russia), **Dmitry S. Ponomarev,**IUHFSE RAS(Russia), **Vladimir N. Kurlov,** ISSP RAS (Russia), **Olga P. Cherkasova**,ILP SB RAS(Russia), **Olga A. Smolyanskaya,**ITMO University (Russia)

September 27, Thursday

INVITED/ORAL SESSION THZ OPTICS & BIOPHOTONICS I

(Building 10,Main Conference Hall)
Chair: **Valeriy E. Karasik**, BMSTU Russia

14.30-14.50
Invited
Dielectric universities and transportphenomena in various bioorganic materials
Konstantin Motovilov,Moscow Institute of Physics and
Technology (Russia)

14.50-15.10
Invited
THz spectroscopy of solutions and tissues Maxim Nazarov, NRC "Kurchatov Institute" (Russia)

15.10-15.30
Invited
Nano-confined water: from incipientferroelectricity to relaxor behavior
Elena S. Zhukova, Moscow Institute of Physics andTechnology (Russia)

15.30-15.40
THz quantum cascade lasers with gold-andsilver based double metal waveguide
Rustam A. Khabibullin,Institute of Ultra High FrequencySemiconductor Electronics of RAS(Russia), N.V. Shchavruk,D.S. Ponomarev, D.V. Ushakov, A.A. Afonenko,O.Yu. Volkov, V.V. Pavlovskiy, and A.A. Dubinov

15.40-15.50
Using terahertz solid immersion microscopyfor sub-wavelength-resolution visualizationof soft objects and tissues
Nikita V. Chernomyrdin, Bauman Moscow State TechnicalUniversity (Russia), A.S. Kucheryavenko,G.S. Kolontaeva, E.N. Rimskaya,G.A. Komandin, V.E. Karasik, and K.I. Zaytsev

15.50-16.00
Terahertz Electro-Optic Sampling inBirefringent Crystals
Igor Ilyakov,IAP RAS

16.00-16.10
Terahertz and Infrared Spectroscopy ofWater in Protein Systems
Zarina Gagkaeva, Moscow Institute of Physics andTechnology (Russia)

16.10-16.20
Terahertz spectroscopy and imaging ofmalignant tissues
Kirill I. Zaytsev, Prokhorov General Physics Instituteof RAS, (Russia), N.V. Chernomyrdin, A.A.Gavdush, I.N. Dolganova, Sh.-I.T. Beshplav,K.M. Malakhov, M.A. Schcedrina, G.A. Komandin, A.A. Potapov, I.V. Reshetov, M.Skorobogatiy, and V.V. Tuchin

16.20-16.30
Terahertz and infrared dielectricspectroscopy of laboratory analogues ofcircumstellar and interstellar ices: Pilotmeasurements
Arsenii A. Gavdush, Bauman Moscow State TechnicalUniversity (Russia), A.A. Gavdush, B.M. Giuliano, B. Müller,E.A. Gorbunov, P.V. Ovcharov,G.A. Komandin, S.O. Yurchenko, K.I. Zaytsev,A.V. Ivlev, and P. Caselli

22nd International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

Workshop on Modern Optics XVI

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

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

Secretary: **Irina Yu. Yanina**, Saratov State University, Tomsk State University

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

September 27, Thursday

LECTURE SESSION:
(Building 3, Big Physical Hall)

Chair:**Georgy V. Simonenko** and**Alexander B. Pravdin**, Saratov State University

14.00-14.30

How Does the Brain Works? The Worldwide Initiatives
Francesco S. Pavone, European Lab. for Non-linear Spectroscopy, Florence, Italy

14.30-15.00
Shining Light on Biology with Optogenetics
Andrew L. Lopez III, Department of Molecular Physiology and Biophysics, Baylor College of Medicine,Houston, Texas, USA

15.00-15.30
Show "Exciting Light"
Presentation for for University Students, Postgraduate Students and High School Students

Ivan V. Fedosov, Saratov State University, Russia

Workshop on English as a Communicative Tool in the Scientific Community XVII

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

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

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

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

September 28, Friday

ORAL SESSION
(Scientific Library Conference Hall)

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

11.30-11.40

Definition to be Understood
Svetlana V. Eremina,Alexander B. Pravdin, Saratov State University, Saratov, Russia

11.40-11.50

Abstracts of Scientific Articles as They Are and as They Should Be Written
Dina Alexeeva, Saratov State University, Russia

11.50-12.00

Guidelines for Delivering an Oral Conference Presentation
Anna A. Sosnovskaya,Dina Alexeeva, SaratovStateUniversity, Saratov, Russia

12.00-12.10
Successful Academic Discussion at a Conference
Anna Smirnova, SaratovStateUniversity, Saratov, Russia

12.10-12.20

The Noun Chains Challenge in Translation
Darya N. Tselovalnikova, SaratovStateUniversity, Saratov, Russia

12.20-12.30

Lexico-grammatical features of a functional style on the example of chemical texts
Arina O. Shelyugina,SaratovStateUniversity, Saratov, Russia

12.30-12.40

Use of graphical structures of Chinese characters for more effective teaching of Chinese writing

Konstantin A. Grebenyuk, SaratovStateUniversity, Saratov, Russia

12.40-12.50

About Self-Similar Nature of Short Electromagnetic Pulses Generation in the Backward-Wave Tube
Alyona Rostuntsova, SaratovStateUniversity, Saratov, Russia

12.50-13.00

New Terminology Dictionary of Biophotonics: Introduction
Alexander B.Pravdin, Svetlana V. Eremina, Saratov State University, Saratov, Russia

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

Workshop Chairs:**Boris A. Medvedev**, **Vladimir P. Ryabukho,** Saratov State University, Russia

Secretary:**Alexander A. Skaptsov**, Saratov State University, Russia

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

September 26, Wednesday

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

14.00-14.13

Decoherence as the foundation of Macroscopic World
O.M. Parshkov, Yuri Gagarin State Technical University of Saratov, Russia

14.13-14.26

Applied and scientific importance of fundamental constants
N.A. Boykova, Saratov State University, Russia

14.26-14.39

The birth of Quantum Electrodynamics
S.O. Pirogov,Saratov State University, Russia

14.39-14.52

Theoretical simulation of the problem of an atom-surface noncontact friction
S. Churochkina, I. Demin, Saratov State University, Russia

14.52-15.05

Physics of free-electron lasers inSaratov State University
V.M. Anikin, V.I. Tsoy, Saratov State University, Russia

15.05-15.18

Delta-function: how to explain it to students?
K.A. Grebenyuk, Saratov State University, Russia

15.18-15.30

Complex methods of improving accuracy in computer modeling of small size fields
V.A. Malyarchuk, Saratov State University, Russia

15.30-15.42

Application of a heteromagnetic primary converter for detecting of Iron Oxide Nanoparticles
S.Zh. Zhusubaliyeva, B.A.Medvedev, A.V.Vasiliev, A.A.Ignatiev, V.I.Kochubey, Saratov State University, Russia

15.42-15.54

The observation of phenomenon of nonlinear resonance in the structures YIG
A.V. Vasilyev, A.A. Ignatiev,Saratov State University, Russia

15.54-16.06

Profiles of oxygen and sulfur under ion etching PbS film on light
D.M.Utkin, A.A.Serdobintsev, V.V.Galushka, M.I.Shishkin, A.G.Rokakh, Saratov State University, Russia

16.06-16.18

Development of spectroscopic techniques to study mitochondria
E. Nikelshparg, Lomonosov Moscow State University, Russia

16.18-16.30

Contrast in the physics, the technician and biology
M. Nikelshparg[1], E. Nikelshparg[2],
[1]Gimnasium №3 of Saratov, Russia,
[2]Lomonosov Moscow State University, Russia

16.30-17.00
Coffee break

17.00-17.13

Rene Descartes. «Discourse on the Method…»
D.M. Klychkova, Saratov State University, Russia

17.13-17.26

Experimental setting and method of sound velocity in air measurement
A.B. Kalinin, L.L. Strakhova, A.A. Ignatiev, Saratov State University, Russia

17.26-17.39

«Foolish question… good question… trivial question…» «Awkward questions» and evolution of scientific theories
M. Stolnitz, Saratov State University, Russia

17.39-17.52
Mind and feelings: emotions in decision-making
A. Y. Kochetkova, Yuri Gagarin State Technical University of Saratov, Russia

17.52-18.05

The scientific prose of Leonardo da Vinci
E.A. Kuryshova, Saratov State University, Russia

18.05-18.18

The polarized light in lecture demonstrations
M.A. Starshov, Saratov State University, Russia

18.18-18.32

Riddles of the elementary optical device
N. Lubimov, M. Starshov, Saratov State University, Russia

18.32-18.45

Stories and methodology of experience of Malus
J. Gudova, M.A. Starshov, Saratov State University, Russia

18.45-19.00

Contrast in the physics, the technician and biology
T. Kozlova, M. Starshov, Saratov State University, Russia

September 27, Thursday

ROUND TABLE

Man and light in natural and art treatment of the Universe
(Scientific Library, Conference Hall)
Moderator: **Boris A. Medvedev**, Saratov State University, Russia

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

14.30-14.37

Coherent states of photons and qubits and their superpositions
A. Gorokhov, Samara National Research University, Russia

14.37-14.44

Pure Quantum States of Macroscopic Parameters and Quantum Mechanics Capability to Describing of Macroscopic World
O. Parshkov, Yuri Gagarin State Technical University of Saratov, Russia

14.44-14.51

Reality as illusion, "nothing" as reality
Yu. Duplinskaya, Yuri Gagarin State Technical University of Saratov, Russia

14.51-14.58

On the principles of cognition on the swing of time
B. Medvedev, Saratov State University, Russia

14.58-15.05

The consonance between the physics of Lucretius and modern physics
V. Tsoy, Saratov State University, Russia

15.05-15.12

The doctrine of the light of Goethe in the light of the story-game paradigm
O. Shimelfenig, Saratov State University, Russia

15.12-15.19

Sounding Number: from Pythagoras to Gubaidulina
V. Genin, Saratov State University, Russia

15.19-15.26

Crisis of physics and the poetry of "the silver age"
A. Rokakh, Saratov State University, Russia

15.26-15.33

On the correlation of logic and intuition in the process of cognition of the world
V. Rozen, Saratov State University, Russia

15.33-15.40

The Legacy of Boltzmann: Entropy in Inanimate and Living Nature
B. Medvedev, O.A. Budko, Saratov State University, Russia

15.40-15.47

Pattern recognition in a visual art and the theoretical works of Vasili Kandinsky
J. Brodskaya, Saratov State University, Russia

15.47-15.54

Request for an integrative approach in higher education
N. Dovgalenko, Yuri Gagarin State Technical University of Saratov, Russia

15.54-16.01

Human capital in the post-industrial era
B. Faifel Yuri Gagarin State Technical University of Saratov, Russia

16.01-16.08

Stereochemistry lesson
V. Sorokin, Saratov State University, Russia

16.08-16.15

Artificial light sources - a disaster for the world of insects
V.V. Anikin, Saratov State University, Russia

16.15-16.22

The psychology of the artificial intelligence. Is it possible?
A. Rokakh, Saratov State University, Russia

16.22-16.30

On an creation attempt of the "physics of spirit"
A. Rokakh, Saratov State University, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, 3d floor Hall)

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

17.00-19.00

1H. **Laboratory model of the RS flip-flop for educational purposes**P.P. Nelyubov, Saratov State University, Russia

2H. **A Digital Chaotic Sequences Generator** V.S. Chesakov, L.S. Sotov, Saratov State University, Russia

3H. **Results of polygon tests of the magneto-inertial module**E. D. Shatalov, A.A. Ignatiev, Saratov State University, Russia

INTERNET REPORTS

(Building 3, 3d floor Hall)

1. **The Proof of the Riemann Hypothesis on a Relativistic Turing Machine**
   Y. Zayko, Stolypin Volga Region Management Institute, Russian Presidential Academy of National Economy and Public Administration, Russia

Workshop on
Telemedicine: Opportunities, Applications, Prospects XI

Chairs:**Valery V. Bakutkin**,Saratov Research Institute of Hygiene, Russia, and***Sergey R. Utz,*** Clinic of Skin and Venereal Diseases of Saratov Medical State University, Russia

International Program Committee

Marine Amouroux, Université de Lorraine – CRAN, France; **Frank Lievens**, ISfTeH (Belgium); **Malina Jordanova**, Solar-Terrestrial Influences Laboratory. Bulgarian Academy of Sciences (Bulgaria); **Anton V. Vladzimirsky**, Prezident of AfUTeHD (Ukrania); **Valery V. Tuchin** Saratov State University (Russia)

September 28, Friday

PLENARY SESSION V

(*Clinics of Skin and Venereal Diseases, SSMU*)

Chair**Valery V. Bakutkin**, Saratov Research Institute of Rural Hygiene and **Sergey R. Utz**, Clinics of Skin and Veneral Diseases, SSMU, Russia

ORAL SESSION TELEMEDICINE

(*Clinic of Skin and Venereal Diseases, SSMU*)

Co-chairs: **V. Bakutkin**, Saratov Research Institute of Rural Hygiene, Russia

11.30-11.40

Telemedicine technologies of percutaneous electroneurostimulation of intraocular muscles of the human eye
Valery Bakutkin Saratov Research Institute of Hygiene; Ilya Bakutkin, Sartechinform, Russia

11.40-11.50

Telemedical monitoring of optical characteristics of long-wearing contact lenses
Anastasia Bakutkina, Saratov State University, Russia; Valery Bakutkin, Saratov Research Institute of Hygiene, Russia

11.50-12.00

Methods for constructing high-speed algorithms for recognizing the anterior part of the eye and pupillary reactions of a person for their autonomous use on mobile devices
Valery Bakutkin, Saratov Research Institute of Hygiene; Ilya Bakutkin, Sartechinform, Russia

12.00-12.10

Remote analysis of colorimetry parameters of the iris of the eye.
Nailya Nugaeva, Saratov State Medical University; Valery Bakutkin, Saratov Research Institute of Hygiene, Russia

12.10-12.20

Fetal heart auscultation and its telemedicine applications
Marine Gevorgyan, Saratov State Medical University; Leonid Melnikov, Yuri Gagarin State Technical University of Saratov, Russia

12.20-12.30

Elements of telemedicine for orthodontic clinic
O.V. Popkova, R.K. Nasrullaev, R.S. Anisimov, Saratov State Medical University, Russia

12.30-12.40

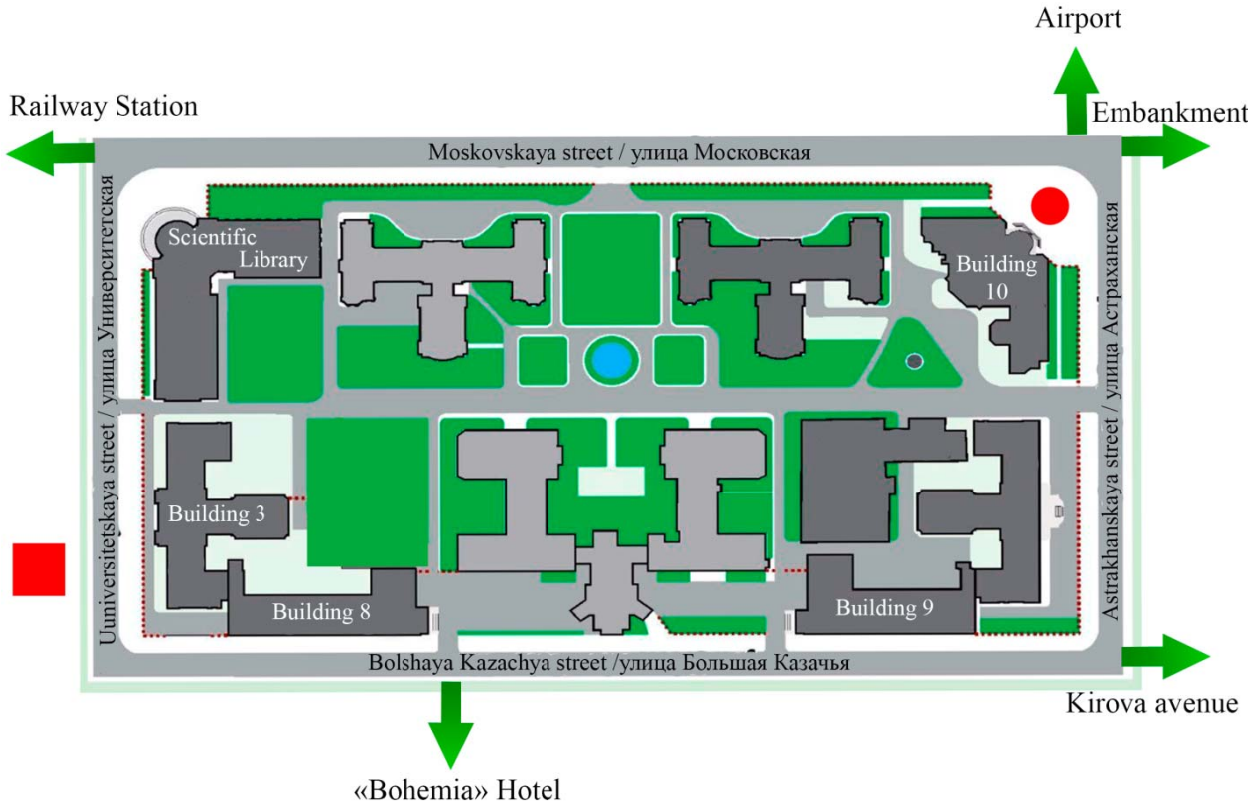
IRIS's stereoscopic image visualization
Tatyana Danilova, Alexey Tebyakin, Yuri Gagarin State Technical University of Saratov, Russia

12.50-13.00

Distance learning methods of ophthalmoscopy
Oleg Chichev, Yuri Gagarin State Technical University of Saratov, Russia

13.00-13.10
Hardware-software complex for determining the volume of stereoscopy and its possible use in telemedicine
Elena Perechodzeva,Yuri Gagarin State Technical University of Saratov, Russia

MAP OF THE SSU CAMPUS



Place to board a bus to go to Volga Boat Tour and Open Air Meeting

Welcome Party Place «Poliglot»

Saratov Fall Meeting
(http://sfm.eventry.org/2018/)

Saratov State University
(https://www.sgu.ru/structure/fiz/saratov-fall-meeting)

Facebook
(https://www.facebook.com/groups/saratovfallmeeting/)

Vkontakte
(https://vk.com/saratovfallmeeting)