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Dedicated to the 110th Anniversary of Saratov State University

SFM'19

7th International Symposium "Optics and Biophotonics"
23d International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics
4th School on Advanced Fluorescence Imaging Methods

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 ofSSU

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 ofSSU

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

Sponsors and Partners

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Valery V. Tuchin, Saratov State University, Institute of Precision Mechanics and Control of the RAS, Tomsk State University

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Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov; Institute of Precision Mechanics and Control of the RAS

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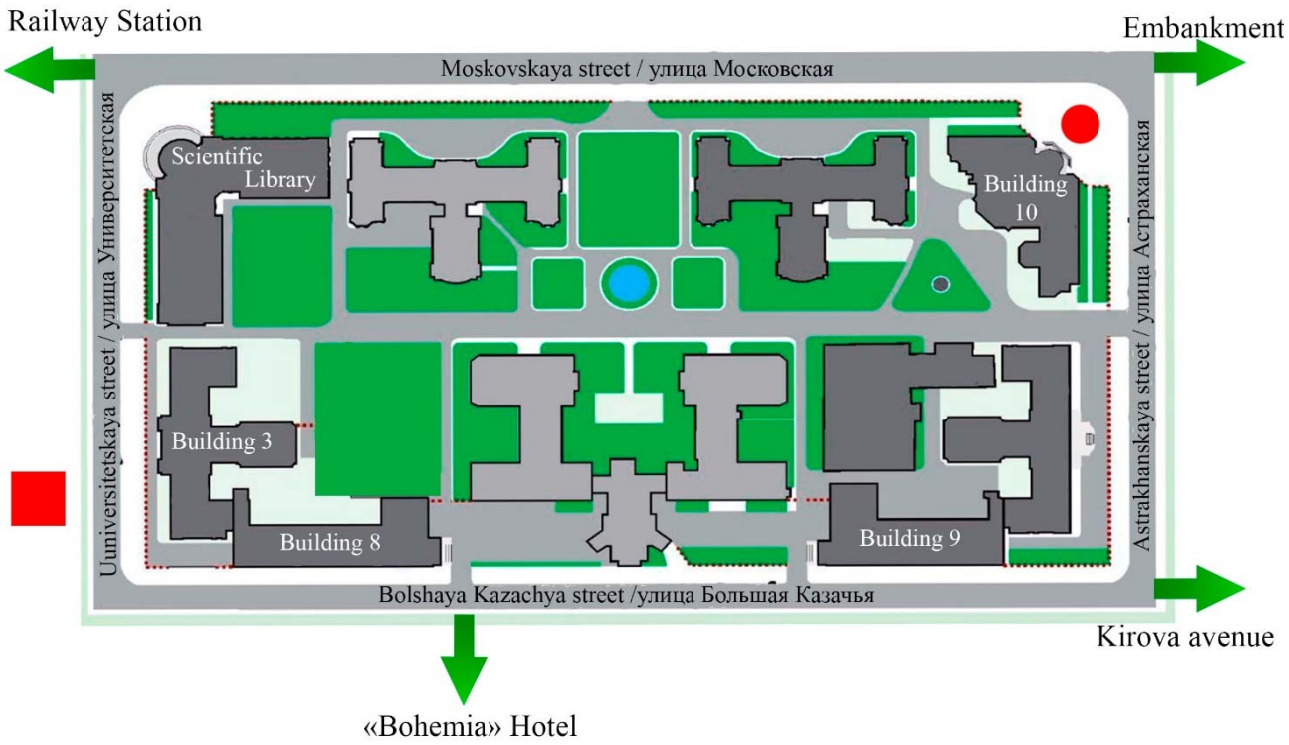

Place to board a bus to go to Volga Boat Tour and Open Air Meeting

Welcome Party Place «Poliglot»

Saratov Fall Meeting
(http://sfm.eventry.org/2019/)

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

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

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

Schedule of SFM-19/ADFLIM
7th International Symposium "Optics and Biophotonics"
23d International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics
4th School on Advanced Fluorescence Imaging Methods

September 23, Monday		
12.00-14.00	**Registration**	*Building 3, Foyer*
14.00-15.00	**OSA SHORT COURSE** **Functional Optical Imaging of Developmental Dynamics in vivo** **Irina V. Larina**, Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, USA	*Building 10 Hall 503*
15.00-15.30	**Coffeebreak**	*Building 10*
15.30-16.30	**OSA SHORT COURSE** **Functional Optical Imaging of Developmental Dynamics in vivo** **Irina V. Larina**, Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, USA	*Building 10 Hall 503*

September 24, Tuesday		
9.00-14.00	**Registration**	*Building 10, Foyer*
10.00-11.00	**SPIE SHORT COURSE** **Optical Guidance in Surgery & Radiation Therapy** **Brian Pogue**, Engineering Science & Medical Physics, Dartmouth College, Hanover, New Hampshire, USA	*Building 10, Hall 503*
11.00-11.30	**Coffeebreak**	*Building 10*
11.30-12.30	**SPIE SHORT COURSE** **Optical Guidance in Surgery & Radiation Therapy** **Brian Pogue**, Engineering Science & Medical Physics, Dartmouth College, Hanover, New Hampshire, USA	*Building 10, Hall 503*
12.30-14.00	**Lunch**	
14.00-14.05	**Introduction to SFM/ADFLIM Program** **Valery V. Tuchin,** Saratov State University, Russia; **Alexander Savitsky**, Research Center of Biotechnology of the RAS	*Building 10, Main Conference Hall*
14.05-15.50	**SFM/ADFLIM PLENARY SESSION I** Chairs: **Valery V. Tuchin,** Saratov State University, Russia **Rinat O. Esenaliev,** University of Texas Medical Branch, Galveston, Texas, USA **LAB-Medical Devices for Porphyria-Screening, Fe-Deficiency and Beyond** **Ronald Sroka**, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany **Plasmonic Layers Mediated Cell Optoporation System for Effective Intracellular Delivery of Biomolecules: Challenges and Perspectives** **Timofey E. Pylaev,** Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS **Metabolic Imaging by Simultaneous FLIM of NAD(P)H and FAD** Wolfgang Becker, Becker & Hickl GmbH, Berlin, Germany	
15.50-16.20	**Coffee break, Exhibition**	*Building 10*

16.20-18.05	**SFM/ADFLIM PLENARY SESSION II** Chair: **Valery V. Tuchin,** Saratov State University, Russia **Biomedical Optoacoustics: A New Theranostic Modality** **Rinat O. Esenaliev,** University of Texas Medical Branch, Galveston, Texas, USA **Optical Coherence Tomography and Optogenetics for Investigation of Early Mammalian Embryonic Development** **Irina V. Larina,** Baylor College of Medicine, Houston, USA **Quantum Cascade Lasers for MID-Infrared and Terahertz Range** **Grigorii Sokolovskii,** A.F. Ioffe Physico-Technical Institute of the RAS, St. Petersburg, Russia	*Building 10, Main Conference Hall*
18.05-19.05	**SFM SPECIAL EVENT: SPONSOR SESSION** Chair: **Valery V. Tuchin,** Saratov State University **Modern Semiconductor Lasers Manufactured by INJECT RME LLC And Prospects For Their Application** **Sergey Sokolov**, INJECT, Saratov, Russia **Fiber optic solutions for broad spectral range 0.3-16 um** **Olga Bibikova & Viacheslav Artyushenko**, art photonics GmbH, Germany **Application of femtosecond lasers in biophysics and physical medicine: a review** **Dmitry Chernykh**, Avesta Ltd., Russia	
19.15-22.00	**Welcome Party**	*Cafe "Poliglot"*

September 25, Wednesday

9.00-10.00	**SHORT COURSE** **Near-infrared Spectroscopy in Cardiac Arrest and Cardiac Surgery** **Vladislav Toronov**, Department of Physics, Ryerson University, Toronto, Canada	*Building 10, Hall 503*
10.00-10.30	**Coffee break, Exhibition**	*Building 10*
10.30-11.30	**SHORT COURSE** **Near-infrared Spectroscopy in Cardiac Arrest and Cardiac Surgery** **Vladislav Toronov**, Department of Physics, Ryerson University, Toronto, Canada	*Building 10, Hall 503*
11.40-13.00	**SFM/ADFLIM PLENARY SESSION III** Chairs: **Kirill Larin**, University of Houston, USA **Peter S. Timashev,**Institute for Regenerative Medicine, Sechenov University **Quantum Optical Technologies for Communications and Information Processing** **Alexei K. Fedorov**, Russian Quantum Center, Skolkovo, Russia **Porous Oxide 3D Nanostructures and Nanocomposites as New Functional Materials: Prospects of The Applications for Information Transfer Devices, in Optics and Photovoltaics** **Anatoly N. Khodan**, Frumkin Institute of Physical Chemistry and Electrochemistry of the RAS, Moscow, Russia **Neoplasm Raman spectroscopy** **Valery P. Zakharov**, Samara National Research University, Russia	*Building 10, Main Conference Hall*
13.00-14.00	**Lunch**	

14.00-16.30	**JOINT INVITED LECTURE/ORAL SESSION** **BIOPHYSICS I/MICROSCOPY AND LOW-COHERENCE METHODS** Chair: **Vladislav Toronov**, Department of Physics, Ryerson University, Toronto, Canada	*Building 10, Main Conference Hall (or Building 3, Big Physical Hall)*	**ORAL SESSION BIOCOMPUTING I** Chairs: **Dmitry E. Postnov**, Saratov State University, Russia	*Building 3, Conference Hall 64*	**ADVANCED MATERIALS FOR OPTICS AND BIOPHOTONICS** Chair: **Rustam A. Khabibullin**, IUHFSE RAS	*Building 10, Hall 503*
			ORAL SESSION BIOMEDICAL SPECTROSCOPY I Chair: **Alexander B. Pravdin**, Saratov	*Building 10, Hall 108*	**LECTURE/ORAL SESSION EDUCATION I** Chairs: **Boris A. Medvedev,** Saratov State University, Russia	*Scientific Library Conference Hall*

16.30-17.00	**Coffee break, Exhibition**							*Building 10*
17.00-19.15	**INVITED LECTURE/ORAL SESSION BIOPHYSICS II** Chair: **Valery P. Zakharov**, SamaraUniversity, Russia	*Building 10, Main Conference Hall (or Building 3, Big Physical Hall)*	**ORAL SESSION LASER PHYSICS & PHOTONICS I** Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 3, Conference Hall 64*	**ORAL SESSION BIOMEDICAL SPECTROSCOPY II** Chair: **Alexander Pravdin**, State University, Russia	*Building 10,Hall 108*	**ADVANCED MATERIALS FOR OPTICS AND BIOPHOTONICS II** Chair: **Rustam A. Khabibullin**, IUHFSE RAS, Moscow, Russia	*Building 10, Hall 503*
			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 3, Room 34*		
20.00-22.00	**Social program (Volga boat tour)**							

September 26, Thursday

9.00-11.00	**SFM/ADFLIM SESSION IV** Chairs: **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA; Research Center of Biotechnology of the RAS and Moscow State University, Moscow, Russia **Alexei K. Fedorov,** Russian Quantum Center, Skolkovo, Russia **Speckle Dynamics – from Diffuse Correlation Spectroscopy through Laser Speckle Contrast Imaging to Ultrasound Velocimeter** **David Boas**, Boston University, Boston, USA **Biological Atomic-Force Microscopy: Is It Worth It?** **Peter S. Timashev,** Institute for Regenerative Medicine, Sechenov University **Neuro Monitoring with Diffuse Correlation Spectroscopy** **Maria Angela Franceschini,** Optics at Martinos Center, Massachusetts General Hospital and Harvard Medical School, Charlestown, Massachusetts, USA **Colloids in Rotating Electric Fields: Tunable Interactions, Self-Assembly, and Phase Transitions** **Stanislav O. Yurchenko,** Bauman Moscow State Technical University, Moscow, Russia					*Building 10, Main Conference Hall*
11.00-11.30	**Coffee break, Exhibition**					*Building 10*
11.30-13.00	**INVITED LECTURE/ORAL SESSION BIOPHYSICS III** Chair: **Ronald Sroka**, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany	*Building 10, Main Conference Hall (or Building 3, Big Physical Hall)*	**ORAL SESSION LASER PHYSICS &PHOTONICS II** Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 3, Conference Hall 64*	**TERAHERTZ OPTICS AND BIOPHOTONICS** Chair: **Dr. Vladimir A. Lazarev,** BMSTU, Moscow, Russia	*Building 10, Hall 503*
13.00-14.00	**Lunch**					
14.00-15.30	**PUBLIC LECTURE SESSION MODERN OPTICS** Chairs: **Georgy V. Simonenko,Alexander B. Pravdin**, Saratov State University, Russia **Shining Light on the Miracle of Life** **Irina V. Larina**, Molecular Physiology and Biophysics, Baylor College of Medicine Houston, USA **Quantum Technology: Bite Size Particles for Global Tasks** **Alexey K. Fedorov,** Russian Quantum Center, Skolkovo, Russia **Show "Exciting Light" presented by OSA and SPIE student Chapters of SSU**					*Building 3, Big Physical Hall*

14.00-16.30	**ROUND-TABLE DISCUSSION** **EDUCATION** Chairs: **Boris A. Medvedev,**Saratov State University, Russia			*Scientific Library Conference Hall*
	ORAL SESSION LASER PHYSICS&PHOTONICS III Chair: **Vladimir L. Derbov**, Saratov State University, Russia	*Building 3, Conference Hall 64*	**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** **NONLINEAR DYNAMICS** Chair: **Vadim S. Anishchenko**, Saratov State University, Russia	*Building 3, Room 38*
16.30-17.00	**Coffeebreak**			*Building 3*
17.00-18.00	**SFM/ADFLIM INTERNET PLENARY SESSION** Chair: **Valery V. Tuchin**, Saratov State University **Through Tissue Non-Invasive Sensing and Imaging** **Zeev Zalevsky,** Bar Ilan University, Tel Aviv, Israel **Upconverting Nanoparticles Applied in Tissue Imaging** **Stefan Andersson-Engels,** Irish Photonic Integration Centre (IPIC), Tyndall National Institute and Department of Physics, University College Cork, Ireland			*Building 3, Big Physical Hall*
18.00-19.30	**JOINT POSTER/INTERNET SESSION. COMPETITION FOR THE BEST STUDENT POSTER AWARD** Chairs: **Ivan V. Fedosov**,**Oleg Grishin**, and **Arkady Abdurashitov**, Saratov State University, Russia			*Building 3*

September 27, Friday

9.00-10.00	**SFM/ADFLIM PLENARY SESSION V** Chair: **Valery V. Tuchin**, Saratov State University, Russia **Molecular Sensors for Imaging Inflammation-Specific Biomarkers** **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA; Research Center of Biotechnology of the RAS and Moscow State University, Moscow, Russia **Exogenous Fluorescence Diagnostics of Gastrointestinal Tumours** **Ekaterina Borisova,** Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria, Saratov State University, Saratov, Russia	*Building 10, Main Conference Hall*
10.00-10.45	**SFM SPECIAL EVENT: Journal session - Club of Editors-in-Chief** Chair: **Valery V. Tuchin,** Saratov State University **Journal of Biomedical Optics** **Brian Pogue**, Engineering Science & Medical Physics, Dartmouth College, Hanover, New Hampshire, USA **Neurophotonics** **David Boas**, Boston University, Boston, USA **Translational Biophotonics** **Ronald Sroka**, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany **Journal of Biomedical Photonics & Engineering** **Valery P. Zakharov**, Samara University, **Valery V. Tuchin,** Saratov State University	
10.45-11.00	**BEST STUDENT POSTER WINNERS AWARD SESSION** Chair: Valery V. Tuchin, Saratov State University	
11.00-11.30	**Coffee break, Exhibition**	*Building 10*
11.30-13.00	**ORAL SESSIONBIOPHYSICS IV** Chair: **Ekaterina Borisova,** Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria, Saratov State University, Saratov, Russia	*Building 10, Hall 503*
	ORAL SESSION NANOBIOPHOTONICS II Chair: **Nikolai G. Khlebtsov**, IBPPM RAS, SSU, Russia	*Building 9, Conference Hall*
	ORAL SESSION BIOCOMPUTING I Chairs: **Dmitry E. Postnov**, Saratov State University, Russia	*Building 3, Conference Hall 64*
	ORAL SESSION ELECTROMAGNETICS Chair: **Michael V. Davidovich**, Saratov State University, Russia	*Building 8, Room 82*
	ORAL SESSION ENGLISH Chair: **Alexander Pravdin**, Saratov State University, Russia	*Building 18, Room 105*
	ORAL SESSION POLARIZATION Chair: **Dmitry A. Zimnyakov**, Yuri Gagarin State Technical University of Saratov, Russia	*Building 1, Room 459, SSTU*
	ORAL SESSION SPECTROSCOPY II Chair: **Kirill V. Berezin,** Saratov State University, Russia	*Building 3, Room 34*
14.00-18.00	**Round-table discussions and closing of the School**	*Open Air Meeting*

PLENARY LECTURES

September 24, Tuesday

ADFLIM/SFM PLENARY SESSION I

Building 10, Main Conference Hall

Chairs: **Alexander P. Savitsky**, Research Center of Biotechnology of the RAS
Valery V. Tuchin, Saratov State University, Russia

14.05-14.40

LAB-Medical Devices for Porphyria-Screening, Fe-Deficiency and Beyond
Ronald Sroka, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany

14.40-15.15

Plasmonic Layers Mediated Cell Optoporation System for Effective Intracellular Delivery of Biomolecules: Challenges and Perspectives
Timofey E. Pylaev, Institute of Biochemistry and Physiology of Plants and Microorganisms of the RAS

15.15-15.50

Metabolic Imaging by Simultaneous FLIM of NAD(P)H and FAD
Wolfgang Becker, Becker & Hickl GmbH, Berlin, Germany

ADFLIM/SFM PLENARY SESSION II

Building 10, Main Conference Hall

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

16.20-16.55

Biomedical Optoacoustics: A New Theranostic Modality
Rinat O. Esenaliev, University of Texas Medical Branch, Galveston, Texas, USA

16.55-17.30

Optical Coherence Tomography and Optogenetics for Investigation of Early Mammalian Embryonic Development
Irina V. Larina, Baylor College of Medicine, Houston, USA

17.30-18.05

Quantum Cascade Lasers for MID-Infrared and Terahertz Range
Grigorii Sokolovskii, A.F. Ioffe Physico-Technical Institute of the RAS, St. Petersburg, Russia

September 25, Wednesday

SFM PLENARY SESSION III

Building 10, Main Conference Hall

Chairs: **Kirill Larin**, University of Houston, USA
Peter S. Timashev, Institute for Regenerative Medicine, Sechenov University

11.40-12.10

Quantum Optical Technologies for Communications and Information Processing
Alexei K. Fedorov, Russian Quantum Center, Skolkovo, Russia

12.10-12.40

Porous Oxide 3D Nanostructures and Nanocomposites as New Functional Materials: Prospects of the Applications for Information Transfer Devices, in Optics and Photovoltaics
Anatoly N. Khodan, Frumkin Institute of Physical Chemistry and Electrochemistry of the RAS, Moscow, Russia

12.40-13.10

Neoplasm Raman spectroscopy
Valery P. Zakharov, Samara National Research University, Russia

September 26, Thursday

PLENARY SESSION IV

Building 10, Main Conference Hall

Chairs: **Alexei A. Bogdanov Jr.,** University of Massachusetts Medical School, Worcester MA, USA; Research Center of Biotechnology of the RAS and Moscow State University, Moscow, Russia
Alexei K. Fedorov, Russian Quantum Center, Skolkovo, Russia

9.00-9.30

Biological Atomic-Force Microscopy: Is It Worth It?
Peter S. Timashev, Institute for Regenerative Medicine, Sechenov University

9.30-10.00

Colloids in Rotating Electric Fields: Tunable Interactions, Self-Assembly, and Phase Transitions
Stanislav O. Yurchenko, Bauman Moscow State Technical University, Moscow, Russia

10.00-10.30

Neuro Monitoring with Diffuse Correlation Spectroscopy
Maria Angela Franceschini, Optics at Martinos Center, Massachusetts General Hospital and Harvard Medical School, Charlestown, Massachusetts, USA

10.30-11.00

Speckle Dynamics – from Diffuse Correlation Spectroscopy through Laser Speckle Contrast Imaging to Ultrasound Velocimeter
David Boas, Boston University, Boston, USA

PLENARY SESSION V
INTERNET BIOPHOTONICS

Building 3, Big Physical Hall

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

17.00-17.30

Through Tissue Non-Invasive Sensing and Imaging
Zeev Zalevsky, Bar Ilan University, Tel Aviv, Israel

17.30-18.00

Upconverting Nanoparticles Applied in Tissue Imaging
Stefan Andersson-Engels, Irish Photonic Integration Centre (IPIC), Tyndall National Institute and Department of Physics, University College Cork, Ireland

September 27, Friday

PLENARY SESSION VI

Building 10, Main Conference Hall

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

9.00-9.30

Molecular Sensors for Imaging Inflammation-Specific Biomarkers

Alexei A. Bogdanov Jr., University of Massachusetts Medical School, Worcester MA, USA; Research Center of Biotechnology of the RAS and Moscow State University, Moscow, Russia

9.30–10.00

Exogenous Fluorescence Diagnostics of Gastrointestinal Tumours

Ekaterina Borisova, Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria, Saratov State University, Saratov, Russia

SFMSPECIAL EVENTS

September 26, Thursday

SPONSOR SESSION
Building 10, Main Conference Hall
Chair: **Valery V. Tuchin,** Saratov State University

17.50-18.50

Modern Semiconductor Lasers Manufactured by INJECT RME LLC And Prospects For Their Application
Sergey Sokolov, INJECT, Saratov, Russia

Fiber optic solutions for broad spectral range 0.3-16 um
Olga Bibikova & Viacheslav Artyushenko, art photonics GmbH, Germany

Application of femtosecond lasers in biophysics and physical medicine: a review
Dmitry Chernykh, Avesta Ltd., Russia

SPIE FOCUSSESSION I
Building 3

18.00-19.30

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

September 27, Friday

JOURNAL SESSION - Club of Editors-in-Chief
Building 10, Main Conference Hall
Chair: **Valery V. Tuchin,** Saratov State University

10.00-10.45

Journal of Biomedical Optics
Brian Pogue, Engineering Science & Medical Physics, Dartmouth College, Hanover, New Hampshire, USA

Neurophotonics
David Boas, Boston University, Boston, USA

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

Journal of Biomedical Photonics & Engineering
Valery P. Zakharov, Samara University, **Valery V. Tuchin,** Saratov State University

SPIE FOCUSSESSIONII
Building 10, Main Conference Hall
Chair: **Valery V. Tuchin,** Saratov State University, Russia

10.45-11.00

Competition for the Best Student Poster Award. Awarding of Winners

7th International Symposium Optics and Biophotonics

Conference on Optical Technologies in Biophysics & Medicine XXI

*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. Dyachenko(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**, Hainan University (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 25, Wednesday

JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS I/MICROSCOPY AND LOW-COHERENCE METHODS

Building 10, Main Conference Hall (or Building 3, Big Physical Hall)

Chair: **Vladislav Toronov**, Department of Physics, Ryerson University, Toronto, Canada

14.00-14.20
Invited
Quasistatic elasto-spectroscopy for histology-like morphological segmentation of biological tissues based on compressional optical coherence elastography
Vladimir Zaitsev[1], Anton Plekhanov[2], Marina Sirotkina[2], Alexander Sovetsky[1], Ekaterina Gubarkova[2], Sergei Kuznetsov[2], Alexander Matveyev[1], Lev Matveev[1], Elena Zagaynova[2], Natalia Gladkova[2], [1]Institute of Applied Physics RAS, Russia; [2]Privolzhsky Research Medical University, Nizhny Novgorod, Russia

14.20-14.40
Invited
OCT-based real-time strain mapping and compressional elastography in applications to cornea and cartilages
Lev A. Matveev[1], Alexander A. Sovetsky[1], Alexander L. Matveyev[1], Dmitry V. Shabanov[1], Sergey Y. Ksenofontov[1], Grigory V. Gelikonov[1], Olga I. Baum[1,2], Yulia M. Alexandrovskaya[12], Alexander I Omelchenko[1,2], Alexey V. Yuzhakov[1,2], Emil N. Sobol[3], Vladimir Y. Zaitsev[1], [1]Institute of Applied Physics RAS, N.-Novgorod; [2]Institute of Photon Technologies, Centre "Crystallography and Photonics", RAS, Moscow,Russia; [3]IPG Medical Corporation, Marlborough, USA

14.40-15.00
Invited
Optical clearing in the UV – in search for new diagnostic protocols
Isa Carneiro[1,2], Sónia Carvalho[1], Rui Henrique[1], Luis Oliveira[2],Valery V. Tuchin[3,4], [1]Portuguese Oncology Institute of Porto, Department of Pathology and Cancer Biology and Epigenetics Group-Research Centre, Porto, Portugal, [2]Polytechnic of Porto – School of Engineering, CIETI/Physics Department, Portugal, [3]Research-Educational Institute of Optics and Biophotonics of Saratov State University and Laboratory of Laser Diagnostics of Technical and Living Systems of Institute of Precision Mechanics and Control of the

Russian Academy of Sciences, Saratov, Russia, [4]Interdisciplinary Laboratory of Biophotonics of Tomsk State University, Tomsk, Russia

15.00-15.20

Invited

Nanostructured materials and photonic tools for theranostics

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

15.20-15.40

Invited

Time-resolved near-infrared optical tomography of neonatal brain

Alexander Kalyanov**,** University of Zurich, Zurich, Switzerland

15.40-16.00

Invited

Safety in Raman investigations of living samples: Mammalian embryos

Artashes Karmenyan[1], Elena V. Perevedentseva[1,2], Alexander S. Krivokharchenko[3], Eviyona L. Barus[1], Micahella N. Sarmiento[1], Victor A. Nadtochenko[3], Chia-Liang Cheng[1], [1]National Dong Hwa University, Hualien, Taiwan; [2]P.N. Lebedev Physical Institute RAS; [3]N.N. Semenov Institute of the Chemical Physics, RAS, Russia

16.00-16.15

Conjugation of Zn(II) phthalocyanine with polymeric brushes for improved drug release for photodiagnosis and photodynamic therapy of gastric tumours

Ekaterina Borisova[1], A. Yakimansky[2] V. Mantareva, I. Angelov[3] Al. Khorovodov[4], I. Agramovich[4], M. Klimova[4], O. Semyachkina – Glushkovskaya[4], [1]Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria;[2]Institute of Macromolecular Compounds, Russian Academy of Sciences, Russia; [3]Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, Acad. G. Bonchev, Sofia, Bulgaria; [4]Saratov State University, Saratov, Russia

16.15-16.30

Medical applications of molecular imaging and machine learning

Yury V.Kistenev[1,3,4], Valery V. Tuchin[1,2,3] Alexey V. Borisov[1,3,4], Ekaterina N. Lazareva[1,2], Viktor V.Nikolaev[1,4], Daria K. Tuchina[1,2], Denis A. Vrazhnov[1,4], Irina Yu. Yanina[1,2], [1]Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia; [2]Department of Optics and Biophotonics, Saratov State University, Saratov, Russia; [3]Institute of Precision Mechanics and Control of the RAS, Saratov, Russia, [4]Siberian State Medical University, Tomsk, Russia,eInstitute of Strength Physics and Materials Science of Siberian Branch of the RAS, Tomsk, Russia

INVITED LECTURE/ORAL SESSION BIOPHYSICS II

***Building 10, Main Conference Hall (or Building 3, Big Physical Hall*)**

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

17.00-17.20

Invited

Separate reconstruction of fluorophore absorption and fluorescence lifetime using early arriving photons

Alexander B. Konovalov, Vitaly V. Vlasov, Russian Federal Nuclear Center - Zababakhin Institute of Apllied Physics, Russia

17.20-17.40

Invited

Low-cost measurement of the dermal beta-carotene in the context of optical clearing

Mohammad Ali Ansari[1], Armin Morovati[1], Valery V Tuchin[2,3], [1]Laser and plasma research institute, Shahid Beheshti University, Iran; [2]Research-Educational Institute of Optics and Biophotonics of Saratov State University and Laboratory of Laser Diagnostics of Technical and Living Systems of Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia, [3]Interdisciplinary Laboratory of Biophotonics of Tomsk State University, Tomsk, Russia

17.40-17.55

Ultrasonic optoacoustical sensors

Vladimir Petrov, Sararov State University, Russia

17.55-18.10

OCT in diagnostics of the ear diseases

Aleksei Novozhilov[1], Pavel Shilyagin[2], Andrei Shakhov[3], [1]VDMC FMBA Russia, Russia; [2]IAP RAS, Russia; [3]FSBEI HE PRMU MOH, Russia

18.10-18.25

Research Interests and Projects of NEWTEC Holding

Victor Petrunin, Newtec Engineering A/S, Denmark

18.25-18.50
Application of 980nm fractional laser treatment for oral mucosa regeneration
Elena Sergeeva[1], Andrey Belikov[2], Luidmila Ermolaeva[1], Yulia Semyashkina[2],Denis Fedotov[1], [1]St. Petersburg State University, Russia;[2]ITMO University, Russia

18.50 -19.05
Light-induced dynamics of the chlorine-e6 based photosensitizer absorption spectrum
Yulia V. Semyashkina[1], Andrey V. Belikov[1], Mark L. Gelfond[2], [1]ITMO University, Russia; [2]Scientific Research Institute of Oncology named after Petrov, Russia

19.05-19.15
A novel approach to visualizing functioning capillaries by rigid endoscope.
Valery Zaytsev[1], Kamshin A.A.[1], Machikhin A.S.[2], Khokhlov D.D.[2], Margaryants N.B.[1], Russia Sidorov I.S.[1], [1]ITMO University, Russia, [2]Scientific and Technological Center of Unique Instrumentation, Russian Academy of Sciences, Russia

September 26, Thursday

INVITED LECTURE/ORAL SESSION
BIOPHYSICS III
Building 10, Main Conference Hall
***(or Building 3, Big Physical Hall*)**
Chair: **Ronald Sroka**, LIFE-Center at Department of Urology at Hospital of University of Munich, Munich, Germany

11.30-11.50
Invited
Applying the near-infrared laser for cancer treatment: tumor growth suppression and its cellular mechanisms
Sergei G. Sokolovski[1], Oxana V. Semyachkina-Glushkovskaya[2], Edik U. Rafailov[1], [1]OBP Group, AIPT, School of Engineering Applied Physics, Aston University, Birmingham, UK; [2]Department of Physiology of Human and Animals, Saratov State University Saratov, RF

11.50-12.10
Invited
Near-infrared monitoring of cerebral perfusion and metabolism in cardiac arrest
Vladislav Toronov[1,2] Thu Nga Nguyen[1], Reyhaneh Nosrati[1], Steve Lin[2,3], Rohit Mohindra[3], Andrew Ramadeen[3], Paul Dorian[3]; [1]Ryerson University, Faculty of Science, Department of Physics; [2]Institute for Biomedical Engineering, Science and Technology; [3]University of Toronto, Department of Medicine, Toronto, Ontario, Canada

12.10-12.30
Invited
Optical Elastography – an Emerging Techniques to Assess Tissue Health
Kirill V. Larin, Department of Biomedical Engineering, University of Houston, USA

12.30-12.45
UV-B induced oxidation is a source of endogenous NIR-fluorescence in keratinocytes
Alexey Semenov[1], B.P.Yakimov[1], A.A.Rubekina[1], A.N.Velikanov [1], M.V.Novoselova[2], D.A.Gorin [2], V.P.Drachev[2], A.V.Priezzhev[1], E.A.Shirshin[1], [1]M.V. Lomonosov Moscow State University; [2]Skolkovo Institute of Science and Technology, Russia

12.45-13.00
Algorithm for temperature feedback coefficients selecting during laser welding of biological tissues
Dmitrii Ryabkin[1], Nadezhda Taricyna[1], Alexander Gerasimenko[1,2], , [1]National Research University MIET; [2]I.M. SechenovFirst Moscow State Medical University, Russia

POSTERSESSION BIOPHYSICS
(Building 3, 3rd floor Hall)

Chair (B):**Oleg Grishin**, and **Arkady Abdurashitov**, Saratov State University. Russia

18.00-19.30

1B. **Application of the combined effect of laser and ehf-irradiation of "matrix" on the patients with gingivitis and periodontitis** Natalia V. Bulkina, Susanna V. Parfenova, Lyudmila V. Arinina, Julia A. Kobzeva, Saratov State Medical University, Russia

2B. **Changes in young's modulus of blood lymphocytes in alloxan-induced diabetic rats** Rinat Bakhtiyarov, Olga Stolbovskaya, Ulyanovsk State University, Russia

3B. **Raman spectroscopy to evaluate dentin blocks** Elena Timchenko[1], Pavel Timchenko[1], Maksim Zybin[2], Oleg Frolov[1], Arina Agaeva[1], Russia Gleb Dolgushov[2], [1]Samara University, Samara, Russia; [2]Dental clinic "DIAMANT", Samara, Russia

4B. **Spectral estimation of spongy bone tissue in the simulation of ovariectomy** Elena Timchenko[1], Pavel Timchenko[1], Elena Pisareva[1], Larisa Volova[2], Yana Fedorova[1], Anastasia Subatovich[1], [1]Samara University, Samara, Russia; [2]Samara Medical State University, Samara, Russia

5B. **Optical methods for diagnosis periodontitis** Elena Timchenko[1], Pavel Timchenko[1], Maksim Zybin[2], Oleg Frolov[1], Mikhail Ivliev[1], Russia Gleb Dolgushov[2], [1]Samara University, Samara, Russia; [2]Dental clinic "DIAMANT", Samara, Russia

6B. **Microscopic analysis of aquatic plants under exposure to detergents** Elena Timchenko[1], Alisa Timchenko[2], Tatyana Melnikova[2], [1]Samara University, Samara, Russia; [2]Lyceum "Technical", Samara, Russia

7B. **Rapid assessment of component composition of bioimplants for the treatment of gingival recession using raman spectroscopy** Pavel Timchenko[1], Elena Timchenko[1], Larisa Volova[2], Oleg Frolov[1], Elena Yagofarova[1], [1]Samara University, Samara, Russia; [2]Samara Medical State University, Samara, Russia

8B. **Spectral analysis of organic components of demineralized bone BIO-implants** Pavel Timchenko[1], Elena Timchenko[1], Larisa Volova[2], Oleg Frolov[1], [1]Samara University, Samara, Russia; [2]Samara Medical State University, Samara, Russia

9B. **Lactate dehydrogenase: the role of minor metabolic components in conformational changes** F.N.Gilmiyarova[1], N.A.Kolotieva[1], V.I. Kuzmicheva[1,2], E.A.Ryskina[3], V.V.Remizov[1], [1]Samara State Medical University, [2]Samara University, Samara, [3]Peoples' Friendship University of Russia

10B. **Spectral analysis of the surface of the newly formed regenerates after implementation of chondroplasty using platelet-rich plasma** Pavel Timchenko[1], Elena Timchenko[1], Dmitriy Dolgushkin[2], Larisa Volova[2], Maria Markova[1], Vladimir Lazarev[2], Alexsandr Povelihin[2], Alexsandra Lomkina[1], [1]Samara University, Samara, Russia; [2]Samara Medical State University, Samara, Russia

11B. **Active laser delivery of pdt photosensitizers for onychomycosis treatment and investigation of its absorption spectrum changes** Anastasia D. Tavalinskaya, Andrey V. Belikov, Sergei N. Smirnov, ITMO University, Russia

12B. **Modeling of optothermal fiber converters interaction with vein during endovenous laser coagulation** Andrey V. Belikov, Do Thanh Tung, Alexei V. Skrypnik, Yulia V. Semyashkina, ITMO University, Russia

13B. **Skin microcirculation in patients with a history of cardiovascular events** P.A. Glazkova[1], D.A.Kulikov[1], S.A.Terpigorev[1], G.G.Shekhyan[1], A.A.Glazkova[1], A.V.Kulikov[2], M.B.Makmatov-Rys[1], T.A.Charaeva[11]Moscow Regional Research and Clinical Institute ("MONIKI"), [2]Institute of Theoretical and Experimental Biophysics of RAS

14B. **Assessment of human breast cancer margins by compressional optical coherence elastography** E.V. Gubarkova[1], A.A. Sovetsky[2], V.Yu. Zaitsev[2], L.A. Matveev[2], A.L. Matveyev[2], D.A. Vorontsov[3], A.A. Plekhanov[1], S.S. Kuznetsov[1], M.A. Sirotkina[1], A.Yu. Vorontsov[3], N.D. Gladkova[1], [1]Privolzhsky Research Medical University, Russia; [2]Institute of Applied Physics RAS, Russia; [3]Nizhny Novgorod Regional Oncologic Hospital, Russia

15B. ***In vivo* study of vaterite particle biodistribution and pharmacokinetics of fluorescent dye adsorbed on it after instillation to mice lungs** Olga Gusliakova[1], Olga Sindeeva[1], Sergey Pinyaev[2], Nikolay Pyataev[2], Gleb Sukhorukov[3], Dmitry Gorin[4], Elena Atochina-Vasserman[5], Andrew J. Gow[6], [1]Saratov State University, Saratov, Russia; [2]National Research Ogarev Mordovia State University, Saransk, Russia; [3]School of Engineering and Materials Science, Queen Mary University of London, London, United Kingdom; [4]SkoltechCenter for Photonics and Quantum Materials**,** Skolkovo Institute of Science and Technology, Skolkovo Innovation Center, Moscow, Russia; [5]Department of Infectious Diseases University of Pennsylvania, Perelman School of Medicine, Philadelphia, USA; [6]Pharmacology and Toxicology, Rutgers University, Piscataway, USA

16B. **Raman analysis of biofluids for assesment of human body state** Lyudmila A. Bratchenko, Ivan A. Bratchenko, Dmitry N. Artemyev, Oleg O. Myakinin, Julia V. Starikova, Elena N. Tupicova, Igor A. Platonov, Samara University, Russia

Alexander A. Moryatov, Sergey V. Kozlov, Samara State Medical University, Russia Valery P. Zakharov, Samara University, Russia

17B. **Effect of red led light on the cell cycle of synchronized cells of normal and tumor cultures *in vitro*** Olga Stolbovskaya, Ulyanovsk State University, Russia

18B. **Imaging photoplethysmography reveals responses of cerebral blood microcirculation on painful stimuli** Maxim A. Volynsky[1], Olga A. Lyubashina[2,3], Oleg V. Mamontov[1,3,4], Valery V. Zaytsev[1], Alexei A. Kamshilin[1], [1]ITMO University, [2]Pavlov Institute of Physiology, RAS, Saint Petersburg, Russia; [3]Pavlov first Saint Petersburg State Medical University; [4]Almazov National Medical Research Centre, Saint Petersburg, Russia

19B. **Determination of the morphological structures stiffness values of tumor tissue by optical coherence elastography** A.A. Plekhanov[1], V.Y. Zaitsev[2], M.A. Sirotkina[1], A.A. Sovetsky[1], E.V. Gubarkova[1], L.A. Matveev[2], A.L. Matveyev[2], S.S. Kuznetsov[3], N.D. Gladkova[1], [1]Privolzhsky Research Medical University, Russia; [2]Institute of Applied Physics RAS, Russia; [3]Nizhny Novgorod Regional Oncologic Hospital, Russia

20B. **OCT-lymphangiography emergence for clinical applications** M.A. Sirotkina[1], N.N. Vagapova[2], I.K. Safonov[1], D.A. Karashtin[3], L.A. Matveev[3], A.A. Moiseev[3], I.A. Kuznetsova[1], N.D. Gladkova[1], [1]Privolzhsky Research Medical University, Russia;[2] Nizhny Novgorod Regional Oncologic Hospital, Russia [3]Institute of Applied Physics RAS, Russia

21B. **On the dependence of aggregation parameters of human red blood cells on their deformability: *in vitro* study by optical techniques** A.I. Maslyanitsina[1], P.B. Ermolinskiy[1], A.E. Lugovtsov[1,2], A.V. Priezzhev[1,2]; [1]Department of Physics of M.V. Lomonosov Moscow State University, Moscow, Russia [2]International Laser Center of M.V. Lomonosov Moscow State University, Moscow, Russia

22B. **Numerical simulation for magnetic nanoparticle drug delivery and laser photothermal therapy** Samia Salem[1], Valery Tuchin[2,3], [1]Department of Optics and Biophotonics, Saratov State University, Saratov, Russia; [2]Research-Educational Institute of Optics and Biophotonics of Saratov State University and Laboratory of Laser Diagnostics of Technical and Living Systems of Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia, [3]Interdisciplinary Laboratory of Biophotonics of Tomsk State University, Tomsk, Russia

23B. **Assessment of the signal level during digital diaphanoscopy of the maxillary sinuses by the monte-carlo method** E.O. Bryanskaya, R.Yu. Gneushev, I.N. Makovik, V.V. Dremin, Orel State University named after I.S. Turgenev, Orel, Russia A.G. Bukin, Institute of Engineering Physics, Serpukhov, Russia O.A. Bibikova, Art photonics GmbH, Berlin, Germany B.M. Shuraev, Diagnostic Medical Center “MediScan“, Orel, Russia O. Minet, U. Zabarylo, Charité – Universitätsklinikum Berlin, Berlin, Germany A.V. Dunaev, Orel State University named after I.S. Turgenev, Orel, Russia V.G. Artyushenko, Art photonics GmbH, Rudower Chaussee 46, Berlin, Germany

24B. **Pilot study of glycerol diffusion in skin comparing alloxan and streptozotocin diabetes models** Daria K. Tuchina[1,2], Alla B. Bucharskaya[3], Valery V. Tuchin[1,2,4] [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Saratov State Medical University, Saratov, Russia; [4]Institute of Precision Mechanics and Control RAS, Saratov, Russia

25B. **The detail analysis of surface of regenerates after the chondroplasty using enriched platelet plasma in rabbits** Pavel E. Timchenko, E.V. Timchenko, M.D. Markova, Samara National Research University, Russia

26B. **Research of raman scattering at various modeling of the reflector of LOC** Taisiya Slivkova, D.N.Artemyev,I.A. Bratchenko, Samara National Research University, Russia

27B. ***Ex vivo* detection of hepatocellular carcinoma by polyrized light utilizing mouse model** Viktor Dremin[1,2], Alexander Bykov[2], Alexander Alekseyev[1], Igor Meglinski[2,3], [1]Orel State University, Orel, Russia; [2]University of Oulu, Oulu, Finland; [3]Aston University, Birmingham, UK

28B. **Optical testing of microrheologic properties of human red bood cells incubated in vitro with TIO2 nanoparticles** Anton Neznanov, Physics Department of Lomonosov Moscow State University, Moscow, Russia

29B. **Studying beta-2-adrenergic receptors stimulations effects on blood cells membrane fluidity using florescence recovery after photobleaching (FRAP)** Alexey Semenov[1], Evgeny A. Shirshin[1], Sergey Rodionov[2], Alexey V. Kovalev[2], Alexei V. Muravyov[3], Alexander V. Priezzhev[1], [1]M.V. Lomonosov Moscow State University, Moscow, Russia; [2]N.N. Priorov Central Institute of Traumatology and Orthopedics, Moscow, Russia[3]K.D. Ushinskiy Yaroslavl State Pedagogical University, Yaroslavl, Russia

30B. **Verification of fine needle optical probe sensitivity to changes in NADH and fad fluorescence** Ksenia Kandurova, Evgeniya Seryogina, Evgeny Zherebtsov[1,2], Elena Potapova[1], Viktor Dremin[1,2], Andrey Vinokurov[1], Andrian Mamoshin[1,3], Alexey

Borsukov[4], Vadim Muradyan[3], Andrey Dunaev[1], [1]Research and Development Center of Biomedical Photonics, Orel State University, Russia; [2]University of Oulu, Oulu, Finland; [3]Orel Regional Clinical Hospital, Russia; [4]Problem Research Laboratory "Diagnostic Researches and Mini-invasive Technologies", Smolensk State Medical University, Russia

31B. **Semi-analytical full-wave model of oct-scan formation by a focused beam in application to elastographic imaging and numerical beam refocusing** Alexander A. Matveyev, Lev A. Matveev, Alexander A. Moiseev, Alexander A. Sovetsky, Grigory V. Gelikonov, Vladimir Y. Zaitsev, Institute of Applied Physics RAS, Russia

32B. **Analysis of experimental surgical lighting parameters in organs *in vivo*** Andrian Mamoshin[1,2], Evgeniya Seryogina[2], Anastasia Krasova[2], Elena Potapova[2], Valery Shupletsov[2], Andrey Dunaev[2], Andrey Aladov[3], Anton Chernyakov[1,3], [1]Orel Regional Clinical Hospital, Russia, [2]Orel State University named after I.S. Turgenev, Russia; [3]Submicron Heterostructures for Microelectronics Research & Engineering Center, RAS, Saint-Petersburg, Russia

33B. **Optical imaging of glioma cells migration and progression** Oxana Semyachkina-Glushkovskaya, Alexander Khorovodov, Alexander Shirokov, Nikita Navolokin, Ilana Agranivich, Maria Klimova, Adrey Terskov, Aysel Mamedova, Ivan Fedosov, Anton Namykin, Valery Tuchin, Saratov State University, Russia

34B. **Optical monitoring of meningeal lymphatic drainge function** Oxana Semyachkina-Glushkovskaya[1], Maria Klimova[1], Adrey Terskov[1], Arkady Abdurashitov, Alexander Dunrovsky, Alexander Shirokov, Nikita Navolokin, Valery Tuchin[1,2,3], Juergen Kurths[4], [1]Saratov State University, Russia; [2]Tomsk State University, Laboratory of Biophotonics, Russia; [3]Institute of Precision Mechanics and Control of RAS, Russia [4]Humboldt University, Germany; Potsdam Institute for Climate Impact Research, Germany

35B. **Optical clearance of blood from the brain via the meningeal lymphatic system** Oxana Semyachkina-Glushkovskaya[1], Maria Klimova[1], Andrey Terskov[1], Arkady Abdurashitov, Alexander Dunrovsky, Alexander Shirokov, Nikita Navolokin, Valery Tuchin[1,2,3], Juergen Kurths[4], [1]Saratov State University, Russia; [2]Tomsk State University, Laboratory of Biophotonics, Russia; [3]Institute of Precision Mechanics and Control of RAS, Russia [4]Humboldt University, Germany; Potsdam Institute for Climate Impact Research, Germany

36B. **Portable laser speckle contrast imaging system for cortical blood flow monitoring via a smartphone** Amir Asadollahi, Hamed Ghazvini, Mehdi Gholami, Ali Rezaei, Hamid Latifi, Laser and Plasma Research Institute, Shahid Beheshti University, Iran

37B. **Design and construction of optical and acoustic resolution photoacoustic microscopy system in single setup** Amir Asadollahi, Ali Rezaei, Hamed Ghazvini, Hamid Latifi, Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran

38B. **Flexible neuroplasmonic sensor based on patterned two dimensional structure** Seyedeh Mehri Hamidi, Foozieh Sohrabi, Mohammad Ali Ansari, Mohammad Hossein Ghazimoradi, Shrin Farivar, Laser and Plasma Research Institute, Shahid Beheshti University, Iran

39B. **Evaluation of parameters of microcirculatory blood flow structure by wearable perfusion sensors** Yulia I. Loktionova[1], Elena V. Zharkikh[1], Evgeny A. Zherebtsov[1,2], Igor O. Kozlov[1], Viktor V. Sidorov[3], Angelina Zherebtsova[1], Sergei Sokolovski[4], Andrey V. Dunaev[1], Edik Rafailov[4,5],[1]Research and Development Center of Biomedical Photonics, Orel State University named after I.S. Turgenev, Orel, Russia; [2]University of Oulu, Oulu, Finland; [3]SPE "LAZMA" Ltd, Moscow, Russia; [4]Aston Institute of Photonic Technologies, Aston University, Birmingham, UK; [5]International Center of Critical Technologies in Medicine, Saratov State University, Saratov, Russia

40B. **The investigation of microvasculature in plaque psoriasis during therapy videocapillaroscopy and laser doppler flowmetry methods** Dmitry Stavtsev[1], Mariya Mikhailova[1], Anna Koroleva[1], Elena Potapova[1], Nadezhda Malaya[1,2], Natalia Yakushkina[2], [1]Orel State University named after I.S. Turgenev, Russia, [2]Orel Regional Dermatovenereological Dispensary, Russia

41B. **Temperature dependences on the aggregation properties of RBCS in dextran solutions** Petr B. Ermolinkiy[1], Anastasiya I. Maslyanitsina[1], Andrei E. Lugovtsov[1,2], Alexander V. Priezzhev[1,2], [1]Department of Physics and [2]International Laser Center of M.V. Lomonosov Moscow State University, Moscow, Russia

42B. **Effect of silicon nanoparticles on interaction and aggregation of human red blood cells in vitro retrieved by diffuse light scattering and laser tweezers techniques** A.A. Kapkov[1], A.V.Priezzhev[1,2], A.E.Lugovtsov[1,2],A.P. Popov[1], P.B.Ermolinskiy[1],A.I. Maslyanitsina[1], I.M.Kadanova[1],A.I. Neznanov[1]1Department of Physics, [2]International Laser Center of M.V. Lomonosov Moscow State University, Moscow, Russia

43B. **Tissue-mimicking phantoms for fluorescence imaging** V.V. Shupletsov[1], D.D.Stavcev[1], A.N.Stolbov[1], E.V.Potapova[1], V.V.Dremin[1], A.Y. Vinokurov [1],A.V. Dunaev[1],

[1]Research and Development Center of Biomedical Photonics, Orel State University named after I.S. Turgenev, Orel, Russia

44B. **Study of the effect of a proteasome inhibitor on actin cytoskeleton remodeling in the nerve cells by fluorescence imaging** Vladimir Pershin[1], Natalia Maximova, Privolzhsky Research Medical University, Russia Murat Gainullin[2], Irina Mukhina[1], Tatiana Kovaleva[1],[1]Privolzhsky Research Medical University, Russia;[2]Oslo University Hospital Rikshospitalet, Oslo, Norway

45B. **On a spectrometer influence to the in-depth fall of signal in spectral-domain optical coherence tomography** Evgeniy Sherstniov[1], Pavel Shilyagin[2], Grigory Gelikonov[2], [1]Lobachevsky University of Nizhny Novgorod, Russia; [2]Institute of Applied Physics RAS, Russia

46B. **Optical clearing of biological tissues and calculation of diffusion coefficient** Arseniy Elizarov, Pavel Lepilin, Viacheslav Leshchev, Saratov State University, Russia

47B. **Transcranial laser speckle contrast imaging of mice brain vasculature under the broken ergodicity conditions** Anton Y. Sdobnov[1,2], Vyacheslav Kalchenko, Alexander Bykov[1], Alexey Popov[1], Guillaume Molodij[3], Igor Meglinski[1], [1]Univ. of Oulu (Finland); [2]Saratov State University (Russian Federation); [3]Weizmann Institute of Science , Israel

48B. **Intraoperative usage of multimodal optical coherence tomography in ischaemic bowel disease: pilot study** Maxim G. Ryabkov[1], Mikhail S. Baleev[1], Alexander N. Vorobyov[2], Alexander A. Moiseev[3], Grigory V. Gelikonov[3], Ekaterina V. Gubarkova[1], Natalia D. Gladkova[1], Elena B. Kiseleva[11]Privolzhsky Research Medical University, Nizhny Novgorod, Russia; [2]City clinical hospital № 30, Nizhny Novgorod, Russia; [3]Institute of Applied Physics RAS, Nizhny Novgorod, Russia

49B. **Experimental estimates of the average refractive index of the collagen bundle as a function of water content** Marina E. Shvachkina, Dmitry D. Yakovlev, Russia Alexander B. Pravdin, Dmitry A. Yakovlev, Saratov State University, Russia

50B. **Conditions of stabilization of a contracted state after riboflavin/uv cross-linking of collagenous tissue in a partially dehydrated state** Marina E. Shvachkina, Alexander B. Pravdin, Dmitry A. Yakovlev, Saratov State University, Russia

51B. **Lens microstructures at the end of multimode fiber to form a laser radiation profile for biomedical applications** Dmitry N. Artemyev[1], Taisiya V. Slivkova[1], Anastasia A. Shatskaya[1], Ivan A. Karptsov[2], Alexander S. Evtushenko[2], Anton V. Bourdine[2],[1]Samara University, Russia; [2]PSUTI, Russia

52B. **Monitoring of skin dehydration using optical clearing agents by refractometric and spectral methods** Anna Rusanova[1], E.S. Kashtanov[1], N.D. Zavodilkin[1], E.N. Lazareva[1,2], A.N. Bashkatov[1,2], V.V. Tuchin[1,2,3,4],[1]Research Educational Institute of Optics & Biophotonics, 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 Precision Mechanics and Control RAS, Russia;[4]Laboratory of Femtomedicine, ITMO University,St. Petersburg, Russia

53B. **Investigation of *ex vivo* skin weight and geometric parameters kinetics at the skin optical clearing by glycerol solutions with concentrations of 20-100%** Vadim D. Genin, Natalia V. Teslina, Elina A. Genina, Valery V. Tuchin, Alexey N. Bashkatov, Saratov State University,Russia

54B. **The physical basis of speckle pattern formation** Nataliya D. Kozintseva[1], Arkady S. Abdurashitov[2], Valery V. Tuchin[1,2,3,4], [1]Research Educational Institute of Optics & Biophotonics, 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 Precision Mechanics and Control RAS, Russia; [4]Laboratory of Femtomedicine, ITMO University,St. Petersburg, Russia

55B. **Laser doppler flowmetry in assessing the distant stimulating effect of autotransplantation of skin flap on microcirculation** E.B.Popyhova, T.V.Stepanova, E.V.Gladkova,I.V. Babushkina, D.D.Lagutina,A.N. Ivanov, Saratov State Medical University n.a. V.I. Razumovsky, Saratov, Russia

56B. **Microstructured optical fibers in simultaneous analysis of proteins** Pavel Pidenko[1], Andrey Shuvalov[2], Natalia Burmistrova[1], [1]Saratov State University, Russia; [2]SPE LLC Nanostructured Glass Technology, Russia

57B. **Application of optical techniques for studying aggregation of erythrocytes in blood samples from patients with cardiovascular diseases** I.M. Kadanova[1], A.I.Neznanov[1], A.I.Maslyanitsina[1],P.B. Ermolinskiy[1],A.E. Lugovtsov[1,2], A.V.Priezzhev[1,2] ,[1]Department of Physics of M.V. Lomonosov Moscow State University, Moscow, Russia, [2]International Laser Center of M.V. Lomonosov Moscow State University, Moscow, Russia

58B. **Speckle-contrast imaging of pathological tissue microhemodynamics in the development of various diabetes models** Polina Timoshina[1,3], Denis A. Alexandrov[2], Alla B. Bucharskaya[2], Valery V. Tuchin[1,3,4],[1]Research-Educational Institute of Optics and Biophotonics, Saratov State University, Saratov, Russia; [2]Saratov State

Medical University, Saratov Russia; [3]Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia; [4]Laboratory of Laser Diagnostics of Technical and Living Systems, Institute of Precision Mechanics and Control RAS, Russia

59B. **Optical clearing of dark human skin studied in vivo by using reflectance spectroscopy and OCT** Adam A. Yussuf[1], E.N. Lazareva[1], E.A. Genina[1,2], A.N. Bashkatov[1,2], V.V. Tuchin[1,2,3], V.P. Zharov[1,4], [1]Saratov State University, Saratov, Russia;[2]Tomsk State University, Tomsk, Russia; [3]Institute of Precision Mechanics and Control RAS, Saratov, Russia;[4]University of Arkansas for Medical Sciences, Little Rock, AR, USA

60B. **Kinetics of optical probing depth at the enhancer-assisted optical clearing of human skin *in vivo*** Isabella A. Serebryakova[1], Yury I. Surkov[1], Elina A. Genina[1,2], Adam A. Yussuf[1], Alexey N. Bashkatov[1,2], Valery V. Tuchin[1,2,3], and Vladimir Zharov[4];[1]Saratov State University, Saratov, Russia [2]Tomsk State University, Tomsk, Russia [3]Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia [4] Arkansas Nanomedicine Center, University of Arkansas for Medical Sciences, Little Rock, AR USA

61B. **The study of skin dehydration and compression impact on a change in spectroscopic signal** Sergey Zaytsev[1,2], Walter Blondel[2], Marine Amouroux[2], Elina A. Genina[1], Valery V. Tuchin[1], [1]Saratov State University, Russia; [2]University of Lorraine, France

62B. **Photodynamic treatment of stem cells cultivated from glioblastoma tumour** Ekaterina Borisova[1], Alexander Gisbrecht[1], Tsanislava Genova[1] Dobroslav Kyurkchiev[2], Kalina Tumangelova-Yuzeir[2], Ekaterina Ivanova-Todorova[2] Ivan Evstatiev Ivan Angelov, Oxana Semyachkina-Glushkovskaya[4] Peter Karazapryanov[5], Krassimir Minkin[51]Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria; [2]Laboratory of Clinical immunology, University Hospital " St. Ivan Rilski", Department of clinical laboratory and clinical immunology, Medical University - Sofia, [3]Institute of Organic Chemistry with Center on Phytochemistry, Bulgarian Academy of Sciences, Bulgaria; [4]Biology Department, Saratov State University, Saratov, Russia; [5]Neurosurgery Department, University Hospital " St. Ivan Rilski", 15, Acad. Ivan Evstatiev Geshov Blvd., 1431 Sofia, Bulgaria

63B. **Sapphire shaped crystals for optically-controlled cryodestruction of biological tissues** Arsen Zotov[1] I.N. Dolganova[2] I.A. Shikunova[1] A.A. Kuznetsov[1] K.I. Zaytsev[2] V.N. Kurlov[11]Institute of Solid State Physics of the Russian Academy of Sciences, Chernogolovka, Russia; [2]Bauman Moscow State Technical University, Moscow, Russia

64B. **Optical and physiological properties dynamics of skin and muscle tissues under the external mechanical compression** Olga Zyuryukina, Yury P. Sinichkin, Saratov State University, Russia

65B. **Identification of red blood cells of native human donor blood by digital optical microscopy using spectrally filtered light**I.V. Zabenkov[1], V.A.Doubrovski[1], S.O. Torbin[1], E.P.Karpocheva[2], [1]Saratov State Medical University n. a. V.I. Razumovsky;[2]Saratov Regional Blood Transfusion Station, Russia

66B. **Red blood cells and their aggregates sedimentation mechanical model - experiment and mathematical description of the process** Valeri Doubrovski[1], Sergey Markov[2], Dmitry Kovalev[1], [1]Saratov State Medical University; [2]Saratov State University, Russia

67B. **Investigation of the optically induced antiviral activity mechanism of perylene based compounds** A.A. Rubekina[1], A.A. Chistov[2], V.A. Korshun[2], E.A. Shirshin[1,3], [1]Department of Physics of M.V.Lomonosov Moscow State University; [2]Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry; [3]Institute of Spectroscopy of the Russian Academy of Sciences, Moscow, Russia

68B. **Comparative analysis of the viability of the rat glioma cell line (C6) when exposed to electromagnetic radiation of ultra-high frequency range** A.S Fomin[1], A.A Shirokov[1], A.P. Rytik[2], N.A. Babkina[2], O.V. Semyachkina-Glushkovskaya[2], [1]Institute of Biochemistry and Physiology of Plants and Microorganisms Russian Academy of Sciences, [2]Saratov State University, Saratov, Russia

September 27, Friday

ORAL SESSION BIOPHYSICS IV

(Building 10, Hall 503)

Chair: **Ekaterina Borisova,** Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria;Saratov State University, Saratov, Russia

11.30-11.45

Interplay among temperature, thermal-stress and strain fields in laser-assisted modification of collagenous tissues studied by speckle-contrast technique and optical coherence elastography

Vladimir Zaitsev[1], Olga I. Baum[2], Alexey V. Yuzhakov[2], Alexander P. Sviridov[2], Maria L. Novikova[2], Alexander L. Matveyev[1], Lev A. Matveev[1], Alexander A. Sovetsky[1], Emil N. Sobol[3];[1]Institute of Applied Physics RAS, N.-Novgorod; [2]Institute of Photon Technologies, FSRC "Crystallography and Photonics", RAS, Moscow, Russia; [3]IPG Medical Corporation, Marlborough, USA

11.45-12.00

Simulating the effects of blood vessel depth on photoacoustic signal generation using a 3D monte carlo method

MohammadAli Ansari[1], Amirmohammad Hasanzadeh[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

12.00-12.15

Research of the cellular response of leukocytes triggered by arachidonic acid using photo-labile analogs

Daria N. Chernova[1], Alexander E. Moskalensky[1], Alexei Yu. Vorob'ev[1], Sergei G.Sokolovski[2], [1]Novosibirsk State University, Novosibirsk, Russia; [2]Aston University, Birmingham, UK

12.15-12.30

Synthesis and characterization of light-activatable nitric oxide donors

Alexander Moskalensky, Eduard Pisarev, Tatyana Dranova, Alexey Vorob'ev, Novosibirsk State University, Russia

12.30-12.45

Device for investigation of blood rheological properties on the basis of registration of erythrocyte aggregation process

Alexander A. Aristov, Ekaterina V. Nosova, Julia A. Rosenbaum, Tomsk Polytechnic University, Russia

12.45-13.00

Blood perfusion oscillation analysis in frequency sub-bands of doppler-broadened laser radiation spectrum

Igor O. Kozlov[1], Evgeny A. Zherebtsov[2], Angelina I. Zherebtsova[1], Elena V. Zharkikh[1], Yulia I. Loktionova[1], Valery V. Shupletsov[1], Andrey V. Dunaev[1], [1]Research and Development Center of Biomedical Photonics, Orel State University named after I.S. Turgenev, Orel, Russia; Optoelectronics and Measurement Techniques, University of Oulu, Oulu, Finland

Workshop on
Laser Physics and Photonics XXI

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

*Secretary:***Anna V. Novoselova,** SaratovStateUniversity (Russia)

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

September 25,Wednesday

ORAL SESSION PHOTONICS I
(Building 3, Conference Hall 64)
Chair: **Vladimir L. Derbov**, Saratov State University, Russia

17.00-17.30
THz wave emission by hyperbolic graphene-multilayer metamaterials
Olga Kozina, Saratov Branch of the Kotel'nikov Institute of Radio Engineering and Electronics of RAS, Russia Leonid Melnikov, Yuri Gagarin State Technical University of Saratov, Russia

17.30-18.00
Phase modulation effects in the case of electromagnetically induced transparency
Oleg Parshkov, Alexey Dmitriev, Yuri Gagarin State Technical Univesity of Saratov, Russia

18.00-18.30
Photoionization of fullerenes C20, C28 and C60: a classical approach
Michael Davidovich, Saratov State University, Russia

18.30-19.00
Laboratory system for obtaining images of semitransparent objects using optical tomography
Petr Antipov, Andrey Batranin, Fedor Gubarev, Tomsk Politechnic University, Russia.

September 26, Thursday

ORAL SESSION PHOTONICS II
(Building 3, Conference Hall 64)
Chair: **Vladimir L. Derbov**, SaratovState University, Russia

11.30-12.00
Description of entangled kubits in a thermostat by the method of functional influence
Alexander Biryukov, Mark Shleenkov, Samara State University, Russia

12.00-12.30
3Dabove threshold modelling of MIR quantum cascade laser with high index photonic crystal contrast structure
Dmitry V. Vysotsky, SRC RF TRINITI, Russia

12.30-13.00
Modelling light self-action and circular polarization filtering in artificial 3D chiral metallic material
Igor Perezhogin, Nikolay Potravkin, Kirill Grigoriev, Vladimir Makarov, International Laser Center of Lomonosov Moscow State University, Russia

ORAL SESSION PHOTONICS III
(Building 3, Conference Hall 64)
Chair: **Vladimir L. Derbov**, Saratov State University, Russia

14.00-14.30
Interaction of rydberg atoms with twisted light
Alexander Gorokhov, Samara National Research University, Russia

14.30-15.00

Acceleration measurement by spectrum of interference signal of self-mixing laser

Anatoly Skripal, Sergey Dobdin,Alexey Dzafarov, Karina Sadchikova, Saratov State University, Russia

15.00-15.30

Photophoresis-based laser manipulation of air-borne particles using structured laser beams

Alexey Porfirev, Image Processing Systems Institute— Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of the Russian Academy of Sciences, Samara, Russia, Anna Dubman, Samara National Research University, Samara, Russia

15.30-16.00

Calculations of metastable and rydberg states of atomic and molecular systems

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

16.00-16.30

Charging titanium microparticles with femto and nanosecond laser pulses

Anatoly Boreysho, Stanislav Ivakin, Vladimir Sementin, Andrey Sergeev, Baltic State Technical University VOENMEKH, Russia, Pavel Serdobintsev, Resource Center, St. Petersburg State Universitynamed after D.F.Ustinov, Russia

16.30-17.00

Frequency stabilization of Nd:YAG laser with phase-conjugation by intracavity reflective Bragg grating

E.E. Popov, I.S. Khakhalin, A.A. Sergeev, A.P. Pogoda, A.S. Boreysho, Baltic State Technical University VOENMEKHnamed after D.F.Ustinov, Russia,

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, 3rd floor Hall)

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

18.00-19.30

1P. **Entanglement in a double jaynes-cummings model induced by a thermal noise**. Eugene Bashkirov, Samara University, Russia

2P. **The propagation of a special shape optical pulse in an anisotropic inhomogeneous medium with dispersion**. Natalya Moiseeva, VolSU, Russia, Anton Moiseev, VolSU, Russia

3P. **The use of elastic light scattering for Raman scattering efficiency control in suspensions**. Olga Sokolovskaya, Nikita Tkachenko, Faculty of Physics, Lomonosov Moscow State University, Russia

4P. **Multi-mode manipulation of microscopic objects using acousto-optical deflector**. Anastasiya Yablokova, Grigoriy Martynov, Alexey Kozlov, Russia, Alexander Machihin, STC UI RAS, Russia

5P. **Transformation of reflection and transmission matrices when changing the basis of two orthogonal polarizations**. Natalya Moiseeva, VolSU, Russia

6P. **Self-organized periodic structures on the surface of tungsten spikes formed under picosecond laser pulses**. Ivan Popov, T.N. Sokolova, E.L. Surmenko, D.A. Bessonov, Gagarin Saratov State Technical University, RPF "Pribor-T" Russia

7P. **Generation of terahertz radiation in a system of coupled semiconductor lasers**. Leonid Kochkurov, Yulia Mazhirina, YuriGagarinStateTechnicalUniversity of Saratov, Russia

8P. **Influences of detuning on atom-atom entanglement in double two-photon jaynes-cummings system**. Marya Guslyannikova, Rodion Zakharov, Eugene Bashkirov, Samara University, Russia

9P. **The experimental estimation of temporal and power parameters of the near-surface laser plasma forming**. Vladislav Baydachenko, Vladimir Khramov, Dmitry Sin'ko, Volgograd State University, Russia

10P. **Ellipsometry of biological objects in the mode of attenuated total reflection (atr) using a circularly polarized laser light**. Valeriy Yatsishen, Yuliya Amelchenko, Volgograd State University, Russia

11P. **Imaging systems based on generalized lenses**. Sofiya Ganchevskaya, Image Processing Systems Institute of the RAS – Branch of the FSRC "Crystallography and Photonics" RAS, Samara, Russia Vadim Vasilev, Samara National Research University, Samara, Russia

12P. **Extension of the geometrized maxwell theory using torsion**. Dmitry Kulyabov, RUDN University & LIT JINR, Russia Korolkova A. V., Gevorkyan M. N., Demidova A. V., Apreutesey A.-M. Yu., RUDN University, Moscow, Russia

13P. **Quantum mechanics with non-negative distribution function and measurement**. Alexander Zorin, Leonid Sevastyanov, RUDN University, Moscow, Russia Nikolai Tretyakov, RANEPA, RSSU, RUDN University, Moscow, Russia

14P. **Extension of the geometrized maxwell theory based on nonmetricity**. Dmitry Kulyabov, RUDN University & LIT JINR, Russia, Korolkova A.V., Sevastianov L. A., Velieva T. R., RUDN University, Moscow, Russia

15P. **Digital holographic module based on common-path interferometer**. Liudmila Burmak, Alexander Machikhin, Lidiya Zykova, STC UI RAS, Russia

16P. **The influence of a pulse shape on speed of its propagation in a three-level nonlinear absorbing medium**. Rimma Zatrudina, Vladislav Gribkov, VolSU, Russia

17P. **Stabilization of broad-area lasers by temporal pump modulation**. Dmitry Anchikov, Anton Krents, Nonna Molevich, Elizaveta Yarunova, Samara State University, Russia

18P. **Dynamics of vcsel under triangular current modulation**. Elizaveta Yarunova, Anton Krents, Nonna Molevich, Dmitry Anchikov, Samara State University, Russia

19P. **Experimental investigation of non-linear spiral phase plates**. Valentin Logachev, Samara National Research University, Samara, Russia Svetlana Khonina, Alexey Porfirev, Image Processing Systems Institute—Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of the Russian Academy of Sciences, Samara, Russia

20P. **Research and development of visible range optical filters manufacturing process based on high transmittance metal/dielectric subwavelength gratings**. Sergey Fomchenkov, Image Processing Systems Institute - Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of the RAS, Samara, Russia

21P. **New thermostable polymers for precision 3D printing.** D.S. Dudova, Federal Research Center "Crystallography and Photonics" RAS, D.V. Ganin, Physical Instrumentation Center of the Institute of General Physics named after A.M. Prokhorov RAS, Korkunova OS, Baikal Institute of Nature Management SB RAS, Shavkut B.S. ., Federal Research Center "Crystallography and Photonics" RAS, Russia

22P. **Study of an original approach based on laser ablation for fabrication of flexible planar antennas with coplanar feeding structure**Andrei Starodubov, Saratov State University, IRE RAS - Saratov branch, Russia Alexey Serdobintsev, Viktor Galushka, Ilya Kozhevnikov, Anton Pavlov, Saratov State University, Russia

23P. **Thematical aspects of speckle structure formation** Nataliya D. Kozintseva, Arkady S. Abdurashitov, Saratov State University, Russia Valery V. Tuchin, Saratov State University, Institute of Precision Mechanics and Control RAS, Tomsk State University, Russia.

INTERNET REPORTS

1. **Comparison of second-harmonic generation in bulk glasses**. Liubov I. Vostrikova, Vitaly A. Smirnov Rzhanov Institute of Semiconductor Physics SB RAS, Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Russia
2. **Effect of lead oxide concentration on the generation of light harmonics in glass media.** V.A. Smirnov, L.I. Vostrikova, Rzhanov Institute of Semiconductor Physics SB RAS, Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Russia
3. **Light stimulated anomalous self-blocking of all-optical poling**. V.A. Smirnov, L.I. Vostrikova, Rzhanov Institute of Semiconductor Physics SB RAS, Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Russia
4. **Highly anisotropic tunable photonic crystals based on porous silicon filled with azobenzene-containing copolymer**.Sergey E. Svyakhovskiy, Alexey Yu. Bobrovsky, Valery P. Shibaev Lomonosov Moscow State University, Russia
5. **Red-light action on photo-induced susceptibility gratings**. Liubov I. Vostrikova, Vitaly A. Smirnov Rzhanov Institute of Semiconductor Physics SB RAS, Departments of Mathematics and Natural Sciences and Informational Technologies of NSUEM, Russia
6. **Dynamics of anapole mode in dielectric particles**.Sergey E. Svyakhovskiy, Vladimir V. Ternovski, Michael I. Tribelsky, Lomonosov Moscow State University, Russia

Conference on Spectroscopy and Molecular Modeling XX

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

Secretary **Sergey N. Firsunin,** *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 University (Russia), ***Nikolai V. Burenin***, Institute of Applied Physics RAS (Nizhny Novgorod, Russia), ***Victor L. Furer***, Kazan Civil Engineer Academy (Russia),***Alexander V. Gorohov***, Samara University (Russia)

September 25, Wednesday

ORAL SESSION
SPECTROSCOPY I
(Building 3, Room 34)
Chair: **Lev M. Babkov,**
Saratov State University, Russia

17.00–17.15
DFT analysis of the structure and raman spectra of carotenoid isomers
Vasiliy Novikov, Sergey Prokhorov, Sergey Kuznetsov, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia,

17.15– 17.30
Raman signatures of conjugated carbon bond stretching vibrations in polyenes: combined DFT and experimental study
Kuznetsov Sergey M., Sagitova Elena A., Prokhorov Kirill A.Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia; Patrice Donfack, Arnulf Materny, Jacobs University Bremen, Bremen, Germany

17.30–17.45
Raman analysis of polyethylene glycols: experiment and DFT calculations
Vasiliy Novikov, Vladimir Kuzmin, Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russia

17.45–18.00
Interpretation of vibrational spectra of chitosan and its succinate molecular fragments
G. N. Ten[1], A. Yu. Gerasimenko[2], M.S. Savelyev[2], N.E. Scherbakova[3] , [1]Saratov State University, Saratov, Russia, [2]National Research University of Electronic Technology MIET, Moscow, Russia, [3]Russian Scientific Research Institute for Plague Control "Microbe", Saratov, Russia

18.00 – 18.15
Interpretation of vibrational spectra of proline isomers
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

18.15– 18.30
The influence of the structure of phosphorus-based ligands on the stability of europium complexes using spectrophotometric titration
Tsagana Sumyanova, Nataliya E. Borisova, Gladis G. Zakirova, Leonid A. Korotkov, Faculty of Chemistry, Lomonosov Moscow State University, Moscow, Russia

17.30 – 17.45
Molecular mechanisms of plant extracts antioxidant activity on example sedum maximum (l.) hoffm. and sedum telephium l.
Inna Plastun[1], Andrey Bokarev[1], Valentina Plastun[2], Anatoly Naumov[1], Alexandr Zaharov[1]; [1] Saratov State Technical University, Russia;[2] Saratov State Medical University

17.45– 19.00
Joint application of Raman and optical absorption spectroscopy to determine concentrations of heavy metal ions in water using artificial neural networks
Igor Isaev[1], Olga Sarmanova[2], Sergey Burikov[2], Tatiana Dolenko[2], Kirill Laptinskiy[1], Sergey Dolenko[1]; [1] D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Russia; [2] Faculty of Physics, Moscow State University, Russia

19.00–19.15
Detonation nanodiamond – water interactions: spectroscopic experimental and theoretical study
Kirill Laptinskiy[1], Sergey Burikov[1], Andrey Bokarev[2], Alexandr Zakharov[2], Inna Plastun[2], Tatiana Dolenko[1]; [1] Lomonosov Moscow State University, Russia; [2] Yuri Gagarin State Technical University of Saratov, Saratov, Russia

September 26, Thursday

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

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

18.00-19.30

1S.**Determination of the structure of regioisomers and tautomers polyfunctional heterocyclic of a number of hydroquinolines, hydrochromenes, pyridopyrimidines**
Ivonin M., Nikulin A, Kriven'ko A., Vasil'kova N., Sorokin V., Mescherekova A, Tyl'kina I.,
Saratov State University, Russia

2S.**On a fine structure constant and particles mass ratio logarithmic contributions to a fine shift of s energy levels of hydrogen-like atoms**
Svetlana Churochkina,
Saratov State University, Russia

3S.**Determination of MFR hyperspectrometer based on the diffraction lens**
Veronica Blank,
Samara University, Russia

4S. **The temperature effect on the luminescent properties of europium(III) complexes with various substituents**
Dmitrii A.Kharitonov[1], Anastasiia V. Kharcheva[1], Oleg K. Farat[2], Nataliya E. Borisova[2], Svetlana V. Patsaeva[1]
[1] Faculty of Physics, Lomonosov Moscow State University, Russia
[2] Faculty of Chemistry, Lomonosov Moscow State University, Moscow, Russia

5S.**Molecular modeling of buffer solution elements interaction in process of single-molecular DNA sequencing based on PHI29 DNA polymerase**
Alexander Zakharov, Inna Plastun, Anatoly Naumov
Yuri Gagarin Saratov State Technical University, Russia

6S. **Influence of water on electronic spectra of tyrosine**
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

7S. **Thermodynamic parameters of the transformation of the uncharged conformers of glycine in the zwitterionic-ionic forms**
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

8S. **The effect of intermolecular nteraction in ir spectra of behenic acid crystal**
S.N. Firsunin[1]*, L.M. Babkov[1], T.V. Bezrodna[2], T.A. Gavrilko[2], J. Baran[3]
[1]Saratov State University, Saratov, Russia, [2]Institute of Physics, NAS of Ukraine, Kyiv, Ukraine
[3]Institute of Low Temperatures and Structure Research, PAN, Wroclaw, Poland

9S. **Optical properties of hybrid association of rhodamine 6G molecules on the surface island silver films with small silver nanoparticles**
E. I. Konstantinova[1], V. A. Slezhkin[1], A. U. Zyubin[2], V. V. Bryukhanov[2], I. G. Samusev[2],
[1]Kaliningrad State Technical University, Russia
[2]Immanuel Kant Baltic Federal University, Russia

10S. **Luminescent complexes of rare-earth elements as viscosity probes**
Charyshnikova Z.A., Kharcheva A.V., Ivanov A.V., Farat O.K., Borisova N.E., Patsaeva S.V., Lomonosov Moscow State University, Moscow, Russia

11S. **The structural-dynamic model of rubrene molecule and its IR spectrum**
M.M. Kinder[1], S.N. Firsunin[1]*, L.M. Babkov[1], T.V. Bezrodna[2], L.V. Viduta[2], T.A. Gavrilko[2], J. Baran[31]Saratov State University, Saratov, Russia, [2]Institute of Physics, NAS of Ukraine, Kyiv, Ukraine
[3]Institute of Low Temperatures and Structure Research, PAN, Wroclaw, Poland

12S. The modeling of the structure and IR spectra of 2-benzylphenol by DFT method
S.N. Firsunin[1]*, L.M. Babkov[1], N. A. Davydova[21]Saratov State University, Saratov, Russia, [2]Institute of Physics, NAS of Ukraine, Kyiv, Ukraine

13S. **Molecular modeling of graphene oxide supramolecular interaction with drugs and biomolecules**
Anatoly Naumov, Inna Plastun, Andrey Bokarev, Alexander Zakharov; Yuri Gagarin Saratov State Technical Universityf, Saratov Russia

14S. **Analysis of sedum maximum (l.) HOFFM. and sedum telephium l. flavonoid-containing extracts antioxidant activity based on in vivo experiment and molecular modeling**
Plastun V.O.[1], Plastun I.L.[2], Bokarev A.N.[2], Naumov A.A.[2], Zaharov A.A.[2], Durnova N.A.[1],

[1] V. I. Razumovsky Saratov State Medical University
[2] Yuri Gagarin Saratov State Technical University

15S. **Manifestation of fermi resonance in raman spectra of micellar aqueous solutions of sodium salts of monobasic carboxylic acids**
I. V. Plastinin[1], S. A. Burikov[1,2], T. A. Dolenko[1,2], O. E. Sarmanova[1], S. A. Dolenko[2]
[1]Moscow State University, Moscow
[2]Skobeltsyn Institute of Nuclear Physics, Moscow State University, Moscow

INTERNET SESSION

1S. **Spectrophotometric study and determination of starch and its fraction products**
R.V. Abrazheev D.A. Babarina
NNSU them. N.I. Lobachevsky, Russia

September 27, Friday

ORAL SESSION
SPECTROSCOPY II
(Building 3, Room 34)
Chair: **Kirill V. Berezin,**
Saratov State University, Russia

11.30 – 11.45
Optical clearing of skin tissue using some PEGs
Konstantin Dvoretskiy[1], Berezin Kirill[2], Anna Novoselova[2], Vladimir Nechaev[3], Anatolij Likhter[4], Ilmira Shagautdinova[4], Ekaterina Antonova[4], Aleksej Rybakov[4], Nikolaj Vybornov[4], Nadezhda Emel'yanova[4], Vladimir Smirnov[4], Valery Tuchin[2]
[1]Saratov State Medical University, Russia,
[2]Saratov National Research State University, Russia,
[3]Yuri Gagarin Saratov State Technical University
[4] Astrakhan State University, Russia

11.45 – 12.00
The interprenation of IR spectra of triphenyl phosphite by molecular modeling

Irina Ivlieva-Peretorina[1], Lev Babkov[1], Nadezda Davydova[2],
[1]Saratov State University, Russia
[2]Institute of Physics, of Ukraine, Kyiv, Ukraine

12.00–12.15
RRS spectroscopy of methylsubstituted porphyrins
Vladimir Nechaev[1], Kirill Berezin[2] , Konstantin Dvoretskiy[3], , Anna Novoselova[2], Anatolij Likhter[4],
[1]Saratov State Technical University of, Russia
[2]Saratov State University, Russia,
[3]Saratov State Medical University, Russia
[4]Astrakhan State University, Russia,

12.15-12.30
Application of IR spectroscopy and the method of the density functional theory for estimating the relative content of oleic and linoic acid triglicerides in a mixture of olive oil and sunflower seed oil
Berezin Kirill[1], Konstantin Dvoretskiy[2], Anna Novoselova[1], Vladimir Nechaev[3], Anatolij Likhter[4],
Ilmira Shagautdinova[4], Ekaterina Antonova[4], Aleksej Rybakov[4], Oksana Grechuhina[4], Vladimir Smirnov[4], Ravil Arykbaev[4],
[1]Saratov State University, Russia,
[2]Saratov State Medical University, Russia
[3]Saratov State Technical University of, Russia
[4]Astrakhan State University, Russia

12.30-12.45
Optical clearing of skin tissue using iohexol (omnipaque)
Berezin Kirill[1], Konstantin Dvoretskiy[2], Anna Novoselova[1], Vladimir Nechaev[3], Anatolij Likhter[4], Ilmira Shagautdinova[4], Ekaterina Antonova[4], Aleksej Rybakov[4], Nikolaj Vybornov[4], Nadezhda Emel'yanova[4], Vladimir Smirnov[4] Valery Tuchin[1]
[1]Saratov State University, Russia,
[2]Saratov State Medical University, Russia
[3]Saratov State Technical University of, Russia
[4]Astrakhan State University, Russia

12.45 - 13.00
Blological appliation of laser-induced breakdown FND Raman spectroscopy
Qingyu Lin
Sichuan University, China

Conference on Nanobiophotonics XV

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 26, Thursday

ORAL SESSION NANOBIOPHOTONICS
(Building 9, Conference Hall)

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

14.30 – 14.45
Nonlinear optical bleaching of a monolayer of Au plasmonic coupled nanoparticles and percolation-like films with nanoslits
Vladimir Kaydashev, Moscow Institute of Physics and Technology, Russia Piero Ferrari, KULeuven, Belgium Pavel Timoshenko, Southern Federal University, Russia Mikhail Shestakov, KULeuven, Belgium Ewald Janssens, KULeuven, Belgium Peter Lievens, KULeuven, Belgium Evgeni Kaidashev, Southern Federal University, Russia

14.45 – 15.00
Surface-enhanced Raman scattering from gold nanorods as a function of aspect ratio and shape
Boris N. Khlebtsov,IBPPM RAS,Saratov, Russia

15.00 – 15.15
The approbation of boron-doped nanodiamonds as an agent for local hyperthermia in bio tissue
A.M. Vervald, Moscow State University, Moscow, Russia, S. A. Burikov, Moscow State University, Moscow, Russia I.I. Vlasov, A.M.Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russia E. A. Ekimov, Institute for High Pressure Physics, Russian Academy of Sciences, Moscow, Troitsk, Russia O.A. Shenderova, Adámas Nanotechnologies, Inc., , NC, US, T.A. Dolenko Moscow State University, Moscow,

15.15 – 15.30
Gold nanoparticles in stress research
Elizaveta Panfilova, IBPPM RAS,Saratov, Russia

15.30 – 15.45
Efficient non-invasive transdermal drug delivery with the use of biodegradable particles
Yulia Svenskaya, Sararov State University, Russia, Ekaterina Lengert, Sararov State University, Russia Mariia Saveleva, Sararov State University, Russia Dmitry Gorin, Skolkovo Institute of Science and Technology, Russia, Valery Tuchin, Sararov State University, Russia, Gleb Sukhorukov, Queen Mary University of London, UK

15.45 – 16.05
Au@RM@Au tags with different thickness of the metallic shell: synthesis and SERS properties
Andrey M. Burov, IBPPM RAS, Saratov, Russia Boris N. Khlebtsov, IBPPM RAS, Saratov, Russia Nikolai G. Khlebtsov, IBPPM RAS, Saratov State University, Saratov, Russia

16.05 – 16.20
Quantifying the color intensity in the test zone of lateral flow immunoassay strips as functionof gold nanoparticle size and concentration
Roman Tumskiy, IBPPM RAS, Russia Boris Khlebtsov, IBPPM RAS, Russia Andrey Burov, IBPPM RAS, Russia Timofey Pylaev, IBPPM RAS, Russia Nikolai Khlebtsov, IBPPM RAS, Saratov State University, Russia

16.20 – 16.35
Dual-mode core-shell microbeads for photoacoustic imaging and SERS detection
Daniil Nozdriukhin, Skoltech, Russia Nadezhda Besedina, SPBAU, Russia Vasiliy Chernyshev, Skoltech, Russia Olga Efimova, Skoltech, Russia Polina Rudakovskaya, Skoltech, Russia Dmitry Gorin, Skoltech, Russia Alexey Yashchenok, Skoltech, Russia

16.35 – 16.50
Microstructured optical waveguide-based endoscopic probe coated with silica submicron particles
Timur Ermatov, Skoltech Sergei V. German, Skoltech Anastasia A. Zanishevskaya, SPE LLC Nanostructured Glass Technology Andrey A. Shuvalov, SPE LLC Nanostructured Glass Technology Vsevolod Atkin, Saratov State University Andrey Zakharevich, Saratov State University Boris N. Khlebtsov, Saratov State University, Institute of Biochemistry and Physiology of Plants and Microorganisms Julia S. Skibina, SPE LLC Nanostructured Glass Technology Pavel

Ginzburg, Tel Aviv University Roman E. Noskov, Tel Aviv University Valery V. Tuchin, Saratov State University, Tomsk State University, Institute of Precision Mechanics and Control of the Russian Academy of Sciences Dmitry A. Gorin, Skoltech

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

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

18.00 – 19.30

1N. **Nanoparticles fabricated by pulsed laser ablation of porous silicon in liquids for bioimaging applications** A.V. Kolchin, Lomonosov MSU, Physics Department, Russia A.V. Skobelkina, Lomonosov MSU, Physics Department, Russia F.V. Kashaev, Lomonosov MSU, Physics Department, Russia S.V. Zabotnov, Lomonosov MSU, Physics Department, Russia P.D. Agrba, Lobachevsky State University of Nizhny Novgorod,Nizhny Novgorod, Russia; Lomonosov MSU, Physics Department, Russia D.A. Kurakina, Institute of Applied Physics RAS, Nizhny Novgorod, Russia E.A. Sergeeva, Institute of Applied Physics RAS, Nizhny Novgorod, Russia; Lomonosov MSU, Physics Department, Russia M.Yu. Kirillin, Institute of Applied Physics RAS, Nizhny Novgorod, Russia L.A. Golovan, Lomonosov Moscow State University, Moscow, Russia P.K. Kashkarov, Lomonosov Moscow State University, Moscow, Russia

2N. **Nanoplasmonic methods in angular spectroscopy of nanoscale biological objects** Valeriy Yatsishen, Volgograd State University, Russia Kseniya Verevkina, Volgograd State University, Russia

3N. **Langmuir layer of arachinic acid with polydispersed copper particles in an electric field** Nadejda Begletsova, Saratov State University, Russia Evgeny Glukhovskoy, Saratov State University, Russia

4N. **Cytological assay of the complex effects on the Fleh-104 cell line *in vitro*** Irina V. Vidyasheva Saratov State University; Vyacheslav I. Kochubey Saratov State University, Tomsk State University; Irina Yu. Yanina Saratov State University, Tomsk State University

5N. **Synthesis of the alloyed CdZnSeS/ZnS quantum dots** Pavel Strokin, Saratov State University, Russia Daniil Drozd, Saratov State University, Russia Irina Goryacheva, Saratov State University, Russia

6N. **Color of polydispersion mixtures of gold nanorods** Yuliya D. Gudova, Alexander A. Skaptsov, Saratov State University, Russia

7N. **Surface-enhanced Raman spectroscopy of organoluminophores adsorbed on quartz surfaces modified by hydrosols of silver and gold nanoparticles** Andrey Zyubin, Immanuel Kant Baltic Federal University, Russia Karina Matveeva, Immanuel Kant Baltic Federal University, Russia Ilia Samusev, Immanuel Kant Baltic Federal University, Russia

8N. **Estimation of resonance characteristics of surface plasmon modes in planar sensing structures by FANO approximation** Roman Pavelkin, Samara University, Russia Dmitry Nesterenko, Samara University, Russia

9N. **Surface acoustic waves to study IR photothermal response of plasmonic metamaterials** Vladimir Kaydashev, Moscow Institute of Physics and Technology, Russia Pavel Timoshenko, Southern Federal University, Russia Tigran Minasyan, Southern Federal University, Russia Maxim Kutepov, Southern Federal University, Russia Gevork Karapetyan, Southern Federal University, Russia Roman Kirtaev, Moscow Institute of Physics and Technology, Russia Evgeni Kaidashev, Southern Federal University, Russia

10N. **Numerical simulation for magnetic nanoparticle in targeted drug delivery system through blood vessel** Samia Salem, Department of Optics and Biophotonics, Saratov State University, Saratov, Russia. Valery Tuchin, Department of Optics and Biophotonics, Saratov State University, Saratov, Russia & Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia. &Laboratory of Femto medicine, ITMO University, St. Petersburg, Russia. & Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia

11N. **Computational modeling for description magnetic nanoparticle drug delivery and laser photothermal therapy** Samia Salem, Department of Optics and Biophotonics, Saratov State University, Saratov, Russia. Valery Tuchin, Department of Optics and Biophotonics, Saratov State University, Saratov, Russia & Interdisciplinary Laboratory of Biophotonics, Tomsk State University, Tomsk, Russia. &Laboratory of Femto medicine, ITMO University, St. Petersburg, Russia. & Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia

12N. **Hydrothermal treatment of biotin molecule** Alina Kokorina, Saratov State University, Russia Regina Rashchevskaya, Saratov State University, Russia Yulia Podkolodnaya,

Saratov State University, Russia Gleb Sukhorukov, Queen Mary University, GB Andrei Sapelkin,Queen Mary University, GB Irina Goryacheva, Saratov State University, Russia

13N. **Fluorophore from citric acid and 1,2-ethylenediamine: synthesis and structure researching** Daria V. Shpuntova, Alina A. Kokorina, Anastasiya N. Mitrofanova, Gleb B.Sukhorukov and Irina Yu. Goryacheva Saratov State University, Saratov, Russia, Queen Mary University of London, UK

14N. **Functionalization of plasmon nanoparticles with biological molecules** Mitrofanova A.N., Saratov State University, Russia Vostrikova A.M., Saratov State University, Russia Shpuntova D.V., Saratov State University, Russia Bakal A.A., Saratov State University, Russia Tsyupka D.V., Saratov State University, Russia Stepuhovitch M.S., Saratov State University, Russia Sukhorukov G.B., Queen Mary University of London, United Kingdom Goryacheva I.Yu., Saratov State University, Russia

15N. **Polysaccharide-based carbon nanoparticles synthesis and modification by 1,2- ethylenediamine** Regina O. Rashchevskaya, Saratov State University, Russia, Yulia A. Podkolodnaya, Saratov State University, Russia, Alina A. Kokorina, Saratov State University, Russia, Irina Yu. Goryacheva, Saratov State University, Russia

16N. **Microwave-assisted synthesis of fluorescent carbon nanoparticles using spatial restrictions** Stepuhovitch M.S., National Research Saratov State University, Russia Vostrikova A.M., National Research Saratov State University, Russia Bakal A.A., National Research Saratov State University, Russia Tsyupka D.V., National Research Saratov State University, Russia Mordovina E.A, National Research Saratov State University, Russia

17N. **Surface-enhanced Raman spectroscopy of human platelets in normal and individuals with cardiovascular pathology** Karina Matveeva, Immanuel Kant Baltic Federal University, Russia Andrey Zyubin, Immanuel Kant Baltic Federal University, Russia Vladimir Rafalskiy, Immanuel Kant Baltic Federal University, Russia Ekaterina Moiseeva, Immanuel Kant Baltic Federal University, Russia Anna Tcibulnikova, Immanuel Kant Baltic Federal University, Russia Alina Tsapkova, Immanuel Kant Baltic Federal University, Russia Ilia Samusev, Immanuel Kant Baltic Federal University, Russia Valery Bryukhanov, Immanuel Kant Baltic Federal University, Russia

18N. **Au nanoparticles geometrical and optical properties as the key parameters towards the effective plasmonic layers mediated cell optoporation** Elena Avdeeva, Institute of Biochemistry and Physiology of Plants and Microorganisms Russian Academy of Sciences IBPPM RAS, Russia Timofey E. Pylaev, Institute of Biochemistry and Physiology of Plants and Microorganisms Russian Academy of Sciences IBPPM RAS, Russia Nikolai G. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms Russian Academy of Sciences IBPPM RAS, Saratov State University, Saratov, Russia

19N. **Cytotoxic properties of gold nanoparticles bioreduced by extracts of *Dunaliella salina*** Vladimir Bogatyrev, IBPPM RAS, Russia, Daniil Chumakov, IBPPM RAS, Russia, Timofey Pylaev, IBPPM RAS, Russia, Elena Avdeeva, IBPPM RAS, Russia, Lev Dykman, IBPPM RAS, Russia, Nikolai Khlebtsov, IBPPM RAS, SSU Russia

20N. **Obtaining and the specificity characterization of antibodies against the plant signaling peptide CLE41/44 by gold nanoparticle conjugates** Gennady Burygin, IBPPM RAS, Russia Maria Gancheva, St Petersburg University, Russia Irina Dodueva, St Petersburg University, Russia Lev Dykman, IBPPM RAS, Russia

21N. **Test model for luminescent protein-based label synthesis** Artem A. Bakal, Saratov State University, Saratov, Russia Alina A. Kokorina, Saratov State University, Saratov, Russia Anna S. Novoselova, Saratov State University, Saratov, Russia Larisa A. Nazaryan, Saratov State University, Saratov, Russia Angelina A. Shtanova, Saratov State University, Saratov, Russia Milena N. Gasparyan, Saratov State University, Saratov, Russia Irina Yu. Goryacheva, Saratov State University, Saratov, Russia

INTERNET REPORTS

1. **Temperature sensing in second and third biological transparency windows using rare-earth-doped $NaGdF_4$ nanoparticles** D.V. Pominova, Prokhorov General Physics Institute of the Russian Academy of Sciences V.Yu. Proydakova, Prokhorov General Physics Institute of the Russian Academy of Sciences I.D. Romanishkin, Prokhorov General Physics Institute of the Russian Academy of Sciences P.V. Grachev, Prokhorov General Physics Institute of the Russian Academy of Sciences S.V. Kuznetsov, Prokhorov General Physics Institute of the Russian Academy of Sciences A.V. Ryabova, Prokhorov General Physics Institute of the Russian Academy of Science

Conference on Microscopy and Low-Coherence Methods XII

Chair:**Kirill Larin**, 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 25, Wednesday

JOINT INVITED LECTURE/ORAL SESSION BIOPHYSICS I/MICROSCOPY AND LOW-COHERENCE METHODS

***Building 10, Main Conference Hall (or Building 3, Big Physical Hall*)**

Chair: **Vladislav Toronov**, Department of Physics, Ryerson University, Toronto, Canada

14.00-14.20
Invited
Interplay among temperature, thermal-stress and strain fields in laser-assisted modification of collagenous tissues studied by speckle-contrast technique and optical coherence elastography
Vladimir Zaitsev, Institute of Applied Physics RAS, Russia; Olga I. Baum, Alexey V. Yuzhakov, Alexander P. Sviridov, Maria L. Novikova, Institute of Photon Technologies, FSRC "Crystallography and Photonics", RAS, Moscow, Russia; Alexander L. Matveyev, Lev A. Matveev, Alexander A. Sovetsky, Institute of Applied Physics RAS, Russia; Emil N. Sobol, IPG Medical Corporation, Marlborough, Massachusetts, USA

September 26, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

(Building 3, 3rd floor Hall)

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

17.30-19.30

1M. **Coherence signal in interference microscopy of thin films with quasimonochromatic illumination**
Daria Klychkova, Saratov State University, Russia; Vladimir P. Ryabukho, Saratov State University; Institute of Precision Mechanics and Control, Russian Academy of Sciences, Russia

2M. **Application of the attenuated total reflection method with excitation of surface plasmons in the diagnosis of biological objects**
ValeriyYatsishen, Potapova I.I., Volgograd State University, Russia

3M.**Evaluation of human skin capillary blood flow velocity outside the nailfold**
Mikhail Volkov, Nikita Margaryants, Andrey Potemkin, ITMO University, Russia

4M.Evaluation of low-coherence interference fringes by the modified Teager-Kaiser algorithm
IgorGurov,VladaKapranova,ITMOUniversity, St. Petersburg. Russia.

5M.Influence of the numerical aperture of the illumination field on the frequency spectrum of the interference image of stratified object in optical microscopyA. Dyachenko[1,2], V. Ryabukho[1,2]; [1]Institute of Precision Mechanics and Control Russian Academy of Sciences; [2]Saratov State University. Russia

INTERNET REPORTS

1.Simulation of induction heating of a steel design with a titanium coating and experimental study of structural changes of this bimetallic system
AleksandrFomin, Ivan Egorov, Saratov State Technical University, Russia

2.Optical and thermal imaging analysis of the kinetics of one- and two-cycle induction treatment of equimass titanium products at normal air pressure
AleksandrFomin,Andrey Shchelkunov, Aleksey Voyko, Marina Fomina,Saratov State Technical University, Russia

Conference on Internet Biophotonics XII

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

Secretary: **Daria K. Tuchina,** Saratov State University, Saratov, Russia

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

September 26, Thursday

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

17.00-18.00

1. Through tissue non-invasive sensing and imaging, Zeev Zalevsky, Bar Ilan University, Tel Aviv, Israel

2. Upconverting nanoparticles applied in tissue imaging, Stefan Andersson-Engels, Irish Photonic Integration Centre (IPIC), Tyndall National Institute and Department of Physics, University College Cork, Ireland

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3, Big Physical Hall, Room 43)

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

18.00-19.30

INVITED INTERNET LECTURES

1. *In vivo* multiphoton microscopy and multiphoton photothermolysis therapy, Haishan Zeng, University of British Columbia, Vancouver, BC, Canada

2. New multimodal and biocompatible contrast agents for single cell diagnosis and therapy *in vivo*, Ekaterina I. Galanzha, University of Arkansas Medical Science, USA

3. Optics based assessment of brain stiffness, Hany Ferdinando, Teemu Myllylä, Research Unit of Medical Imaging, Physics and Technology, Faculty of Medicine, University of Oulu, Finland Optoelectronics and Measurement Techniques Research Unit, Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland

4. From millimeters to nanometers – reducing the scale in microscopy, Herbert Schneckenburger, Aalen University, Aalen, Germany

5. Modified normalization method in confocal Raman microscopic analysis of the stratum corneum *in vivo*, Maxim E. Darvin[1], Chunsik Choe[1,2], Sehyok Choe[2], Johannes Schleusener[1], Jürgen Lademann[1], [1]Charité – Universitätsmedizin Berlin, Department of Dermatology, Venerology and Allergology, Center of Experimental and Applied Cutaneous Physiology, Berlin, Germany, [2]Kim Il Sung University, Ryongnam-Dong, Pyongyang, DPR Korea

6. Interaction of red blood cells incubated with engineered nanoparticles assessed by optical tweezers and SEM imaging, Alexey P. Popov, University of Oulu, Finland

7. The new role of diamond in technology - fiber-optic sensors with diamond layers, Małgorzata Szczerska, Gdańsk University of Technology, Gdańsk, Poland

8. Analysis of skin intrinsic fluorophore contributions during optical clearing: source separation technique applied to spatially resolved multiply excited autofluorescence spectra, P. Rakotomanga[1], S. Zaytsev[1,2], M. Amouroux[1], C. Soussen[3], G. Khairallah[1,4], E. Genina[2,5], V. Tuchin[2,5,6] and W. Blondel[1], [1]Université de Lorraine, CNRS, CRAN, Vandoeuvre-Lès-Nancy, France; [2]Saratov State University, Saratov, Russia; [3]CentraleSupélec, CNRS, Université Paris-Sud, Gif-sur-Yvette,

France; [4]Metz-Thionville Regional Hospital, Department of Plastic, Aesthetic and Reconstructive Surgery, Ars-Laquenexy, France; [5]Tomsk State University, Tomsk, Russia; [6]Institute of Precision Mechanics and Control of the Russian Academy of Sciences, Saratov, Russia

9. Autofluorescence-based redox status as a differential diagnostic parameter of skin carcinomas, Marine Amouroux, Université de Lorraine, Nancy, France

10. Optical-spectroscopic properties of carbon nanostructures used for bioapplications, Elena Perevedentseva[1], Artashes Karmenyan[1], Yu-Chung Lin[1,3], Chia-Liang Cheng[1], [1]National Dong Hwa University, Taiwan; [2]P.N. Lebedev Physics Institute of Rus. Acad. Sci., Russia; [3]Institute of Physics, Academia Sinica, Taiwan

11. Spatio-angular filter (SAF) imaging device for improving the interrogation depth in highly scattering media, Alexandre Douplik, Irina Schelkanova, Aditya Pandya, Ryerson University, Toronto, Canada

12. Fluorescence spectroscopy and microscopy of colon benign and malignant lesions – comparative study, E. Borisova[1], T. Genova[1], D. Bratashov[2], M. Lomova[2], O. Semyachkina-Glushkovskaya[2], B. Vladimirov[3], [1]Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria; [2]Saratov State University, Saratov, Russia; [3]Ch. Valkov University Hospital "Tzaritza Yoanna – ISUL", Sofia, Bulgaria

13. Investigation of skin optical clearing using two-photon microscopy and Raman spectroscopy, Anton Yu. Sdobnov[1,2], Maxim E. Darvin[3], Johannes Schleusener[3], Jürgen Lademann[3], Valery V. Tuchin[2], [1]University of Oulu, Oulu, Finland; [2]Saratov State University, Saratov, Russia; [3]Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin, Berlin, Germany

14. The prognosis of the efficiency of antitumor plasmonic photothermal therapy, Alla Bucharskaya[1], Galina Maslyakova[1], Marina Chekhonatskaya[1], Georgy Terentyuk[1,2], Nikita Navolokin[1], Boris Khlebtsov[3], Nikolai Khlebtsov[3], Vadim Genin[2], Alexey Bashkatov[2], Elina Genina[2], Valery Tuchin[2], [1]Saratov State Medical University, Russia; [2]Saratov State University, Saratov, Russia; [3]Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Russia

15. Monte Carlo modeling in planning and monitoring of photodynamic therapy, D. Kurakina, A. Khilov, V. Plekhanov, E. Sergeeva, I. Turchin, M. Kirillin, Institute of Applied Physics RAS, Russia

16. Photodynamic treatment of cholangiocarcinoma with Zn-phthalocyanine and Galactose-Lu-phthalocyanine in laboratory animals Alla Bucharskaya[1], Nikita Navolokin[1], Vadim Genin[2,3], Elina Genina[2,3], Alexey Bashkatov[2,3], Ekaterina Borisova[4], Vania Mantareva[5], Ivan Angelov[5], [1]Saratov State Medical University, Russia; [2]Saratov State University, [3]Tomsk State University, Russia; [4]Institute of Electronics, Bulgarian Academy of Sciences, Bulgaria; [5]Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, Bulgaria

17. Enhancers for skin immersion optical clearing *in vivo*, Elina A. Genina[1,2], Alexey N. Bashkatov[1,2], Valery V. Tuchin,[1,2,3] Vladimir P. Zharov[1,4], [1]Saratov State University, Saratov, Russia; [2]Tomsk State University, Tomsk, Russia; [3]Institute of Precision Mechanics and Control RAS, Saratov, Russia; [4]Arkansas Nanomedicine Center, University of Arkansas for Medical Sciences, Little Rock, USA

18. THZ spectroscopy of exhaled air from diabetes mellitus patients, Yu.V. Kistenev,[1,2] Teteneva A.V.,[2] Sorokina T.V., [2] A. I. Knyazkova,[1,3] O.A. Zakharova[1,3], E.S. Sim,[1,2] A.V. Borisov,[1,2], [1]National Research Tomsk State University, Tomsk, Russia; [2]Siberian State Medical University, Tomsk, Russia; [3]Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia

19. Safety verification of nanoparticles forbiomedical application from the viewpoint of blood microrheology Andrew E. Lugovtsov[1], G. Barshtein[2], V.I. Kochubey[3], E.A Shirshin[1], V.V. Tuchin[3], aratov State University, Saratov, Russia C.L. Cheng[4], A.V. Priezzhev[1], [1]M.V. Lomonosov Moscow State University, Moscow, Russia; [2]The Hebrew University of Jerusalem, Jerusalem, Israel; [3]Saratov State University, Saratov, Russia; [4]National Dong Hwa University, Hualien, Taiwan

INTERNET REPORTS

1. Functional and morphological changes in the testicular tissue of rat newborns during chronic hypoxia (experimental study), T.V. Palatova[1], G.N. Maslyakova[1], A.B. Bucharskaya[1], E.A. Genina[2], A.N. Bashkatov[2], [1]Saratov State Medical University n.a. V.I. Razumovsky, Saratov, Russia; [2]Research-Educational Institute of Optics and Biophotonics, Saratov State University, Saratov, Russia

2. A mathematical model of epidermis regeneration after ultraviolet radiation-

induced damage,Mikhail Stolnitz, Saratov State University, Russia

3. Thermal denaturation of proteins under laser irradiation, Irina Yu. Yanina[1,2], Nikita A. Navolokin[3], Irina Vidyasheva[1], [1]Saratov State University; [2]National Research Tomsk State University (TSU);[3]Saratov State Medical University, Russia

4. Spectroscopic analysis of fluorescent proteins infiltrated into photonic crystals, N. Zhdanova[1], A. Pakhomov[2], N.N. Priorov[3], Yu. Strokova[1], S. Svyakhovskiy[1], A. Saletskii[1], [1]Moscow State University, Faculty of Physics, General Physics Division; [2]Russian Academy of Sciences, Shemyakin–Ovchinnikov Institute of Bioorganic Chemistry S. Rodionov; [3]Central Institute for Traumatology and Orthopedics, Russia

5. Luminescence monitoring of biotissues optical clearing according to the different section of specimen, Marina D. Kozintseva[1], Julia G. Konyukhova[1], Elena K. Volkova[1], Vyacheslav I. Kochubey[1,2], [1]Saratov State University, Saratov; [2]Tomsk State University, Tomsk, Russia

6. Coatings based on metal nanoparticles (Ag, Zn) in a silicon dioxide matrix as photodynamic agents for antimicrobial exposure, Elena S. Tuchina[1], German A. Gvozdev[2], Igor D. Kosobudsky[2], [1]Saratov State University; [2]Saratov State Technical University, Russia

7. Numerical simulation of optical coherence tomography interference signal occurring in the intravascular space under a layer of soft biological tissue, A.Yu. Potlov, S.V. Frolov, and S.G. Proskurin, Tambov State Technical University, Russia

8. High-precision evaluation of stress-related properties of blood vessel walls using intravascular optical coherence elastography with forward-view probe,A.Yu. Potlov, S.V. Frolov, T.A. Frolova and S.G. Proskurin,Tambov State Technical University, Russia

9. Phantoms of optical and stress-related properties of cerebral arteries with aneurysms for intravascular optical coherence tomography, A.Yu. Potlov, S.V. Frolov, T.A. Frolova and S.G. Proskurin, Tambov State Technical University, Russia

10. Tissue-mimicking phantoms of human retina with consideration to blood circulation for Doppler optical coherence tomography,A.Yu. Potlov, S.V. Frolov, S.G. Proskurin, Tambov State Technical University, Russia

11. Towards automated differential classification of chronic rhinitis based on optical coherence tomography inspection, Nikita Solovyev[1], Maria Shakhova[2,3], Alina Meller[2], Daria Kurakina[2], Mikhail Kirillin[2], [1]Lobachevsky State University of Nizhny Novgorod; [2]Institute of Applied Physics RAS; [3]Privolzhsky Research Medical University, Russia

12. Novel approach in kidney diseases treatment by combination of polymeric capsules and their addressing using the endovascular method, Olga Gusliakova, Olga Sindeeva, Saratov State University, Russia

13. Safety assessment of targeted drug delivery systems accumulation in vessels of vital organs using optical methods, Olga A. Sindeeva, Roman A. Verkhovskii, Arkady S. Abdurashitov, Denis V. Voronin, Oksana A. Mayorova, Anastasiia A. Kozlova, Valery V. Tuchin, Daniil N. Bratashov, Saratov State University, Russia

14. Endovascular addressing as a way of efficiency improvement of drugs carrier delivery, Oksana Mayorova, Olga Gusliakova, Olga Sindeeva, Saratov State University, Russia

15. The study of spectral changes in THz range in normal and pathological skin in vitro and in vivo depending on the used dehydration methods, I.Yu. Yanina[1,2], V.V. Nikolaev[2,3], A.V.Borisov[2,4], A.I. Knyazkova[2,3], E.E. Buyko[4,5], V.I. Kochubey[1,2], V.V. Ivanov[4], Yu.V. Kistenev[2,4], V.V. Tuchin[1,2], [1]Saratov State University; [2]Tomsk State University, Tomsk; [3]Institute of Strength Physics and Materials Science SB RAS, Tomsk; [4]Siberian State Medical University, Tomsk; [5]Tomsk Polytechnic University, Tomsk, Russia

16. Histological analysis of changes in the tumor after upconversion particles administration *in vivo*, Nikita A. Navolokin[1], Vyacheslav I. Kochubey[2,3], Irina Yu. Yanina[2,3], [1]Saratov State Medical University; [2]Saratov State University; [3]Tomsk State University, Tomsk, Russia

17. Application of optical trap combined with micro-Raman spectroscopy: quality testing of intravenous fluids using red blood cell as the sensor, Jijo Lukose[1], Mithun N.[2], Ganesh Mohan[3], Shamee Shastry[3],Santhosh Chidangil[1], [1]Centre of Excellence for Biophotonics, Department of Atomic and Molecular Physics, Manipal Academy of Higher Education; [2]Department of Atomic and Molecular Physics, Manipal Academy of Higher Education; [3]Department of Immunohematology and Blood Transfusion, Kasturba Medical College, Manipal Academy of Higher Education, India

18. Processing of GB-speckles using of Matlab parallel computing toolbox: discrimination between nucleotide sequence of OMP1 gene for different strains of chlamydia trachomatis, Onega Ulianova[1], Sergey Zaytsev[1], Saratov; Alexander Ulyanov[2],

Yu. Saltykov[1], Sergey Ulyanov[3], Irina Grashkina[4], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Russia; [2]Archeads Inc., USA; [3]Saratov State University, Saratov, Russia; [4]Saratov State Medical University, Saratov, Russia

19. Can the infection caused by chlamydia trachomatis produce the stimulation of the growth of malignant tumor: studying by using of s-LASCA technique on laboratory animal, Irina Subbotina[1], Larisa Padilo[1], Onega Ulianova[1], Galina Maslyakova[2], Alla Bucharskaya[2], Sergey Dobdin[3], Anatoly Skripal[3], Olga Larionova[4], Sergey Ulyanov[3], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Saratov; [2]Saratov State Medical University, Saratov; [3]Saratov State University, Saratov; [4]Saratov State Agrarian University, Saratov, Russia

20. Using of statistical properties of GB-speckles coding the nucleotide sequences of genes of listeria monocytogenes for characterization of differences between ST7 and ST106 of clonal complex CC7, Onega Ulianova[1], Sergey Zaytsev[1], Alexander Ulyanov[2], Yu. Saltykov[1], Sergey Ulyanov[3], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Saratov, Russia; [2]Archeads Inc., USA; [3]Saratov State University, Saratov, Russia

21. Statistical properties of GB-speckles coding the nucleotide sequences of genes of high pathogen avian influenza a virus (HPAIV), Onega Ulianova[1], Sergey Zaytsev[1], Alexander Ulyanov[2], Yu. Saltykov[1], Sergey Ulyanov[3], Valentina Feodorova[1], [1]Federal Research Center for Virology and Microbiology, Branch in Saratov, Saratov, Russia; [2]Archeads Inc., USA; [3]Saratov State University, Saratov, Russia

22. New hybride structures based on graphene and aluminum phthalocyanine, Inna Klimenko[1], Elena Trusova[2], Anton Lobanov[1,3], [1]Institute of Biochemical Physics of RAS, Russia, [2]Institute of Metallurgy and Materials Science of RAS, Russia, [3]Institute of Chemical Physics of RAS, Russia

Combined approach for optical clearing of skin: FLIM and MRI I.G. Meerovich[1], N.I. Kazachkina[1], V.V. Zherdeva1, D.K. Tuchina[1,2], A. Bogdanov Jr.[1], V.V. Tuchin[1,2], A.P. Savitsky[1], [1]A.N. Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow; [2]Research-Educational Institute of Optics and Biophotonics, Saratov State University, Saratov, Russia

Conference on Low-Dimensional Structures IX

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

Secretaries: **Pavel V. Barkov,** Saratov State University (Russia), **KirillR. Asanov,** Saratov State University (Russia)

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

September 26, Thursday

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

14.30-14.50
GaAs solar cell with carbon nanotubes top contactD. Mitin,A. Bolshakov, A. Mozharov, S. Raudik, V. Fedorov, V. Neplokh, I. Mukhin, Saint Petersburg Academic University, Russia, P. Rajanna, A. Nasibulin, Skolkovo Institute of Science and Technology, Russia

14.50-15.05
Dynamic conductivity and photocurrent of films from X - shaped structures from carbon nanotubes of different chirality K.R. Asanov, O.E. Glukhova, Saratov State University, Russia

15.05-15.20
Current-voltage characteristics of composite graphene-nanotube films with irregular arrangement of nanotubesP.V. Barkov, O.E. Glukhova, M.M. Slepchenkov, Saratov State University, Russia

15.20-15.35
Theoretical study of X- and T-shaped seamless SWCNT junctions contact resistance G. Savostyanov, D. Shmygin, Saratov State University, Russia

15.35-15.50
Study of the band structure of columnar graphene based on nanotubes (20,0)A.A. Petrunin,O.E. Glukhova, Saratov State University, Russia

15.50-16.05
Optical and photovoltaic properties of graphene-based composite films and boropheneD.A. Kolosov, O.E. Glukhova, Saratov State University, Russia

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

18.00-19.30

1L. **Creation of tungsten autoemission cathodes with picosecond pulse laser radiation technological processes** D. Bessonov,T. Sokolova, I. Popov, E. Surmenko, SSTU, Russia

2L. **Synthesis of selenium nanoparticles from selenium-organic molecules**Ya.B. Drevko, S.A. Kalganov, S. V. Gorshunova, M.V. Osipova, S.V. Kozlov, B.I. Drevko, Saratov StateAgrarian University named after N.I. Vavilov, Russia

3L. **Quantum Capacity of Carbon Nanotubes Decorated with Maghemite** V.V. Shunaev, A.V. Ushakov, Saratov State University, Russia

4L. **Atomic structure and electronic properties of new 2D / 3D composite materials based on graphene monolayers and C60 fullerenes**M.M. Slepchenkov, O.E. Glukhova, P.V. Barkov, Saratov State University, Russia

5L. **Optical properties of graphene-nanotube composite films with an irregular arrangement of nanotubes** V.V. Mitrofanov, O.E. Glukhova, M.M. Slepchenkov, Saratov State University, Russia

6L. **Heterostructures based on graphene and monolayers of dielectric and semiconductor graphene-like materials: atomic structure and energy stability**M.M. Slepchenkov, O.E. Glukhova,D.A. Kolosov, Sararov State University, Russia

7L. **Electromechanical properties of mono- and bilayer graphene / carbon nanotube composite films**V.V. Mitrofanov,O.E. Glukhova,M.M. Slepchenkov, Saratov State University, Russia

8L. **A computational study of the effect of alcohols on the conductive properties of cobalt oxide**D.A. Kolosov, O.E. Glukhova, Saratov State University, Russia

Conference on Biomedical Spectroscopy VI

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

Secretaries: **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 and Cell Engineering of NASB (Belarus), **Andre Skirtach**, Ghent University (Belgium)

September 25, Wednesday

ORAL SESSION I
(Building 10, Hall 108)

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

15.30-16.00
Invited lecture
NIR fluorescence of skin: the role of oxidation processes Evgeny Shirshin, Moscow State University, Russia B.P. Yakimov, Moscow State University, Russia A.N. Semenov, Moscow State University, Russia M. Kroeger, Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany J. Schleusener, Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany J. Lademann, Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany V.V. Fadeev, Moscow State University, Russia G. Puppels, Center for Optical Diagnostics and Therapy, Department of Dermatology, Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands M.E. Darvin, Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany A.V. Priezzhev, Moscow State University, Russia

16.00-16.15
Spectroscopic researches of the behavior of the dyes of the fluorescein's family in the solutions of reverse micellesO.I.Volkova, A.A.Kuleshova, A.M.Saletsky, M.V. Lomonosov Moscow State University, Russia

16.15-16.30
Theinteractionofthefluorescentprobeeosinwithglycatedhumanserumalbumin Vyacheslav Kochubey, Saratov State University, Russia Alexander Pravdin, Saratov State University, Russia Andrei Melnikov, Saratov State Technical University, Russia Asya Hairusheva, Saratov State Technical University, Russia Gennady Melnikov, Saratov State Technical University, 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
Quantitative assessment of water content in the human skin and its dynamics using optical techniques B.P. Yakimov, Department of Physics of M.V. Lomonosov Moscow State University, Russia D.A.Davydov, Department of Physics of M.V. Lomonosov Moscow State University, Russia G.S. Budylin,Faculty of Physics of Higher School of Economics, Russia V.V. Fadeev, Department of Physics of M.V. Lomonosov Moscow State University E.A. Shirshin, Department of Physics of M.V. Lomonosov Moscow State University and Institute of spectroscopy of the Russian Academy of Sciences, Russia

17.15-17.30
Conventional Raman spectroscopy and autofluorescence analysis of human skin for advanced glycation end-products detection in patients with kidney failure Ivan Bratchenko, Samara University, Russia Lyudmila A. Bratchenko, Samara University, Russia Dmitry N. Artemyev, Samara University, Russia Oleg O. Myakinin, Samara University, Russia Vladimir N. Grishanov, Samara University, Russia Daria Y. Pimenova, Samara State Medical University, Russia Peter A. Lebedev, Samara State Medical University, Russia Valery P. Zakharov, Samara University, Russia

17.30-17.45
Comparative study of multivariative analysis methods of blood Raman spectra classification Lyudmila Bratchenko, Samara University, Russia Ivan A. Bratchenko, Samara University, Russia Marina V. Komarova, Samara University, Russia Dmitry N. Artemyev, Samara University, Russia Oleg O. Myakinin, Samara University, Russia Alexander A. Moryatov, Samara State Medical University, Russia Sergey V. Kozlov, Samara State Medical University, Russia Valery P. Zakharov, Samara University, Russia

17.45-18.00
Monte Carlo simulation of Raman light scattering in biological tissues Irina A. Matveeva, Samara National Research University, Russian Federation Oleg O. Myakinin, Samara National Research University, Russian Federation Ivan A. Bratchenko, Samara National Research University, Russian Federation Valery P. Zakharov, Samara National Research University, Russian Federation

September 26, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3)

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

18.00-19.30

1BS Study of carotenoids in gall-forming insects with the Raman spectroscopyM.I. Nikelsparg, Gymnasium 3, Saratov, Russia E.I. Nikelsparg, M.V. Lomonosov Moscow State University D.N. Bratashov, N.G. Chernyshevsky Saratov State National Research University V.V. Anikin, N.G. Chernyshevsky Saratov State National Research University

2BS Diagnostics of biological objects using surface plasmons at the gold-air boundary according to the Otto scheme Valeriy Yatsishen, Volgograd State University, RussiaPotapova Irina,Volgograd State University, Russia

3BS Prospects for using laser fluorescence spectroscopy and optical oximetry for an objective assessment of the minimal erythema doseM.B. Makmatov-Rys, MONIKI M. F. Vladimirskii Moscow Regional Scientific Research Institute, Moscow A.A. Glazkov, MONIKI M. F. Vladimirskii Moscow Regional Scientific Research Institute, Moscow D.A. Kulikov, MONIKI M. F. Vladimirskii Moscow Regional Scientific Research Institute, Moscow E.V. Kaznacheeva, Cosmetologic clinic Lemark, Voronezh A.V. Molochkov, MONIKI M. F. Vladimirskii Moscow Regional Scientific Research Institute, Moscow D.A. Rogatkin, MONIKI M. F. Vladimirskii Moscow Regional Scientific Research Institute, Moscow

4BS The change in the absorption spectra of ascorbic acid solutions, depending on their acidity Julia Danyaeva, Volgograd State University, Russian Federation Svetlana Kutsenko, Volgograd State University, Russian Federation Natalya Kudrya, Volgograd State University, Russian Federation

5BS Temperature dependences of the spectral characteristics of the skin Irina Yu. Yanina,[1,2] Alexander A. Skaptsov,[1] Julia G. Konyukhova,[1] Natalia I. Kazadaeva,[1] Elena A. Sagaidachnaya,[1] Anna A.Doronkina,[1] Alexander B. Pravdin,[1] Vyacheslav I. Kochubey[1,21]Saratov State University, Russia; [2]Tomsk State University, Russia

6BS Raman detection of skin cancer using portable spectroscopic system Yulia A. Khristoforova, Samara University, Russia Ivan A. Bratchenko, Samara University, Russia Alexander A. Moryatov, Samara State Medical University, Russia Sergey V. Kozlov, Samara State Medical University, Russia Andrey E. Orlov, Samara Regional

Clinical Oncology Dispensary Valery P. Zakharov, Samara University, Russia

7BS **Adsorption of biomacromolecules and drugs on carbon dots surface** Kirill Laptinskiy, Lomonosov Moscow State University, Russia Sergey Burikov, Lomonosov Moscow State University, Russia Tatiana Laptinskaya, Lomonosov Moscow State University, Russia Olga Shenderova, Adamas Nanotechnologies, USA Tatiana Dolenko, Lomonosov Moscow State University, Russia

8BS **Comparative study of methods of analysis of diffuse reflectance spectroscopy data to assess skin chromophores concentrations** B.P. Yakimov, Department of Physics of M.V. Lomonosov Moscow State University, Russia G.S. Budylin,Faculty of Physics of Higher School of Economics, Russia D.A.Davydov, Department of Physics of M.V. Lomonosov Moscow State University, Russia V.V. Fadeev, Department of Physics of M.V. Lomonosov Moscow State University E.A. Shirshin, Department of Physics of M.V. Lomonosov Moscow State University and Institute of spectroscopy of the Russian Academy of Sciences, Russia

9BS **Study of the optical parameters of human gingival and dentin tissues in the spectral range 200-800 nm** A.A. Selifonov, SSU; SSMU, Russia O.A. Zyuryukina, SSU, Russia V.V. Tuchin, SSU; University of ITMO; Precision Mechanics and Control Institute of the Russian Academy of Sciences, Russia

10BS **Application of $NaYF_4$ for nanothermometry of albumin thermolysis** S.O. Ustalkov, Saratov National Research State University, Russia Mohammed A.H.M., Saratov National Research State University, RussiaV.I. Kochubey,Saratov National Research State University and National Research Tomsk State University, RussiaA.A. Skaptsov, Saratov National Research State University, RussiaI.Yu. Yanina,Saratov National Research State University and National Research Tomsk State University, Russia

11BS **Effect of hydrothermal synthesis conditions on the characteristics of upconversion particles** E.A. Sagaidachnaya, Saratov State University, Russia I. Yu. Yanina,V. I. Kochubey,Saratov National Research State University and National Research Tomsk State University, Russia

12BS **Study of efficiency of upconversion luminescence of $NaYF_4:Er^{3+},Yb^{3+}$ nanoparticles obtained by different synthesis methods** E.A. Sagaidachnaya, J.G. Konyukhova, N.I. Kazadaeva, A.A. Doronkina, Saratov State University, I.Yu. Yanina, Saratov State University and National Research Tomsk State University, Russia A.A. Skaptsov, A.B. Pravdin, Saratov State University, V.I. Kochubey, Saratov State University and National Research Tomsk State University, Russia

Conference on Computation Biophysics and Analysis of Biomedical Data VI

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

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

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

September 25, Wednesday

ORAL SESSION I
(Building 3, Hall 64)
Chair:**Dmitry E. Postnov, Saratov State University, Russia**

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

14:10-14:30
Modeling of neurovascular coupling: stimulus-induced changes of intracellular and extracellular volumes
Robert Loshkarev[1], D.E. Postnov[2], [1]Atlas Biomed Group Limited; [2]Saratov State University, Russia

14.30-14.50
Network structure of children's brain during cognitive load
Alexander E. Hramov, V. Grubov, N. Frolov, E. Pitsik, V. Makarov, Innopolis University, Russia

14.50-15.10
Scaling features of intermittent dynamics characterized from data sets
Alexey N. Pavlov[1,2], O.N. Pavlova[1], [1]Saratov State University; [2]Saratov State Technical University, Russia

15.10-15.30
Features of phase synchronization of cardiovascular and respiratory oscillations in human
Arina V. Tankanag, A.A. Grinevich, I.V. Tikhonova, N.K. Chemeris, Institute of Cell Biophysics RAS, Russia

15.30-15.50
Mathematical modeling of low-frequency oscillations induced by modulated noise in human microvasculature
Andrey Grinevich, A. Tankanag, N. Chemeris, Institute of Cell Biophysics RAS, Russia

15.50-16.10
Maintaining attention state of children during cognitive load
Vadim Grubov[1], V. Maksimenko[1], S. Kurkin, M. Khramova[2], A.E. Hramov[1], [1]Innopolis University; [2]Saratov State University, Russia

16.10-16.30
Studying of calcium signaling of single platelets using photolabile substances: computer processing methods
Daria V. Spireva, A.E. Moskalensky, A.Yu. Vorob'ev, Novosibirsk State University, Russia

September 26, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION
(Building 3, 1-3rd floor Hall)
Chair (BC): **Dmitry E. Postnov,** Saratov State University, Russia

18.00-19.30

1BC. **Inference of functional dependence in coupled chaotic systems using feed-forward neural network** Nikita S. Frolov, A.E. Hramov, Innopolis University, Russia

2BC. **Recognition of EEG patterns during mental intentions: a comparative study** Daria S. Grishina[1], N.M. Kupriyashkina[2], O.N. Pavlova[2], A.E. Runnova[3], A.N. Pavlov[1,2], A.E. Hramov[4], [1]Saratov State Technical University; [2]Saratov State University; [3]Saratov State Medical University; Innopolis University, Russia

3BC. **Studying of human's mental state during bistable visual stimuli processing with combined EEG and FNIRS** V.V. Grubov, ArtemBadarin, V.A. Maksimenko, A.E. Hramov, Innopolis University, Russia

4BC. **Analysis of real and imaginary motor activity with combined EEG and FNIRS** V.V. Grubov, ArtemBadarin, N.S. Frolov, E. Pitsik, Innopolis University, Russia

5BC. **Control of dynamics of bistable neural network by an external pulse** Andrey Andreev[1], N.S. Frolov[1], A.N. Pisarchik[2], [1]Innopolis University, Russia; [2]Technical University of Madrid, Spain

6BC. **Interaction of bistable neurons leading to the complex network dynamics** Andrey Andreev[1], N.S. Frolov[1], A.N. Pisarchik[2], [1]Innopolis University, Russia; [2]Technical University of Madrid, Spain

7BC. **Synchronization of cerebral and peripheral blood circulation: stress-induced changes** Olga N. Pavlova[1], A.S. Abdurashitov[1], O.V. Semyachkina-Glushkovskaya[1], A.N. Pavlov[1,2], [1]Saratov State University; [2]Saratov State Technical University, Russia

8BC. **Detection of early gastric cancer with wavelet tools** Olga N. Pavlova[1], E. Borisova[2], A.N. Pavlov[3], O.V. Semyachkina-Glushkovskaya[1], [1]Saratov State University, Russia; [2]Bulgarian Academy of Sciences, Bulgaria; [3]Saratov State Technical University, Russia

9BC. **Using artificial neural networks for classification of kinesthetic and visual imaginary movements by MEG data**
S.A. Kurkin[1], P. Chholak[2], G. Niso[2], V.A. Maksimenko[1], N.S. Frolov[1], Elena Pitsik[1], A.N. Pisarchik[1], [1]Innopolis University, Russia; [2]Technical University of Madrid, Spain

10BC. **The technique for detection the precursors to start of the limb movement using EMG signals** S.A. Kurkin, V. Khorev, E. Pitsik, V. Maksimenko, Innopolis University, Russia

11BC. **Cognitive interaction via a brain-to-brain interface**V.A. Maksimenko, Vadim V. Grubov, V. Nedaivozov, Innopolis University, Russia

12BC. **Spatio-temporal activity in cortical network during cognitive activity** Alexander Kuc[1], V. Maksimenko[2], [1]Saratov State Technical University; [2]Innopolis University, Russia

13BC. **Neural activity during maintaining a body balance** Vladimir Horev, V. Maksimenko, V. Grubov, Innopolis University, Russia

14BC. **Network analysis of electrical activity in brain motor cortex during motor execution and motor imagery** Elena Pitsik, N.S. Frolov, Innopolis University, Russia

15BC. **Features of motor-related brain activity revealed via recurrence quantification analysis** E.Pitsik, Nikita S. Frolov, Innopolis University, Russia

16BC. **The recurrence plot analysis in the processing of experimental biomedical data** Anton O. Selskii[1], M.O. Zhuravlev[1], A.E. Runnova[2], E.P. Emelyanova, E.I. Selskaya[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

17BC. **The recurrence plot analysis for processing MEG data** Anton O. Selskii[1], M.O. Zhuravlev[1], A.E. Runnova[2], E.P. Emelyanova[1], E.I. Selskaya[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

18BC. **The recurrence plot analysis for processing EEG data** Anton O. Selskii[1], E.P. Emelyanova[1], M.O. Zhuravlev[1], A.E. Runnova[2], E.I. Selskaya[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

19BC. **The study of the EEG response of the brain to the repeated effects of odors of different nature** Anastasiya E. Runnova[1], A.S. Varezhnikov[2], M.O. Zhuravlev[3], R.R Parsamyan[1], [1]Saratov State Medical University; [2]Yuri Gagarin State Technical University; [3]Saratov State University, Russia

20BC. **The experimental study of the integrative activity processes in the brain in states of artificial cognitive fatigue** Anastasiya E. Runnova[1], A.S. Fedonnikov[1], A.R. Kiselev[1], M.O. Zhuravlev[2], [1]Saratov State Medical University; [2]Saratov State University, Russia

21BC. **The study of the brain activity EEG characteristics in a post-stroke patients in the acute phase with standard physiological samples of open/closed eyes** Anastasiya E. Runnova[1], A.S. Fedonnikov[1], V.I. Gridnev[1], M.O. Zhuravlev[2], [1]Saratov State Medical University; [2]Saratov State University, Russia

22BC. **Study of the EEG activity of the brain with arbitrary compression of the hand into a fist** Anastasiya E. Runnova[1], A.R. Kiselev[1], V.Yu. Romanenko[1], M.O. Zhuravlev[2], [1]Saratov State Medical University; [2]Saratov State University, Russia

23BC. **Characteristics of post-stroke patients brain activity with real and imagined movements in the BCI - rehabilitation process**
Maksim O. Zhuravlev[1], A.E. Runnova[2], A.R. Kiselev[2], N.V. Schukovsky[2], A.O. Selskii[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

24BC. **New methods for processing spatial human electroencephalography based on modified wavelet analysis** Maksim O. Zhuravlev[1], O.M. Posnenkova[2], A.O. Selskii[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

25BC. **The typical dynamic of various frequency patterns in recordings of post-stroke patients in acute period**

Maksim O. Zhuravlev[1], V.I. Gridnev[2], N.V. Schukovsky[2], A.O. Selskii[1], [1]Saratov State University; [2]Saratov State Medical University, Russia

26BC. **The space-time skeleton method for analyzing EEG data** Maksim O. Zhuravlev[1], A.E. Runnova[2], R.R. Parsamyan[2], [1]Saratov State University; [2]Saratov State Medical University, Russia

27BC. **Biomarkers detection of age-related changes in human cognitive functions based on EEG studying** Maksim O. Zhuravlev[1], A.E. Runnova[2], R.R Parsamyan[2], A.R. Kiselev[2], [1]Saratov State University; [2]Saratov State Medical University, Russia

28BC. **Restoration of endodontically treated teeth: biophysical approaches, computational simulation, and clinical observation** Vladimir S. Senkin, N.O. Bessudnova, S.B. Venig, Saratov State University, Russia

29BC. **Detecting best lag of embedding for modeling spike-wave discharges from experimental data** A.A. Grishchenko[1,2], M.V. Sysoeva[2,3], I.V. Sysoev[1,2], [1]Saratov State University; [2]Saratov Branch of Kotel'nokov's Institute of Radioengineering and Electronics of RAS; [3]*Saratov State Technical University,* Russia

30BC. **Deep learning tool for skin tumors images and spectra classification** Dmitry S. Raupov, O.O. Myakinin, I.A. Bratchenko, V.P. Zakharov, Samara National Research University, Russia

31BC. **Mobile system for early diagnostics the parameters of pigmented skin lesions** Elena N. Rimskaya[1,2], A.N. Briko[1], V.A. Zhelnov[1], P.U. Berezhnoy[3], I.A. Deshin[1], I.A. Apollonova[1], A.P. Nikolaev[1], K.G. Kudrin[4], I.V. Reshetov[2], K.I. Zaytsev[5], V.V. Tuchin[6], [1]Bauman Moscow State Technical University; [2]Sechenov Moscow State Medical University; [3]Plekhanov Russian University of Economics; [4]Institute for Advanced Studies of the Federal Medical Biological Agency of Russia; [5]Prokhorov General Physics Institute of the Russian Academy of Sciences; [6]Saratov State University, Russia

32BC. **Monte Carlo simulation of the fiber probe coupled with lens for depth-resolved fluorescence spectroscopy of skin tissue** Anastasia A. Shatskaya, D.N. Artemyev, I.A. Bratchenko, Samara National Research University, Russia

33BC. **Low-frequency oscillations in photoplethysmographic waveform variability and heart rate variability in a patient with recent heart transplantation** Ekaterina I. Borovkova[1,2], V.A. Shvartz[3], A.S. Karavaev[1,2,4], S.A. Mironov[3], O.L. Bockeria[3], A.R. Kiselev[1,2,3], [1]Saratov State Medical University; [2]Saratov State University; [3]Bakulev National Medical Research Center for Cardiovascular Surgery; [4]Saratov Branch of the Institute of Radio Engineering and Electronics of RAS, Russia

34BC. **Assessment of coupling of the autonomic regulatory circuits of the cardiovascular system is normal, with arterial coronary diseases and after coronary artery bypass surgery** Viktoriia V. Skazkina[1], Yu.M. Ishbulatov[1,2], V.A. Shvartz[3], A.S. Karavaev[1,2,4], E.I. Borovkova[1,2], O.L. Bockeria[3], A.R. Kiselev[2,1], [1]Saratov State University; [2]Saratov State Medical University; [3]Bakulev Scientific Center for Cardiovascular Surgery; [4]Saratov Branch of the Institute of RadioEngineering and Electronics of RAS, Russia

35BC. **Synchronization and coherence of the low-frequency components of the signals of the cardiovascular system in newborns** Viktoriia V. Skazkina[1], A.S. Karavaev[1,2,3], J.V. Popova[3], E.N. Mureeva[3], O.S. Panina[3], V.S. Khorev[1], T.A. Galushko[1], A.R. Kiselev[3,1], Yu.V. Chernenkov[3], [1]Saratov State University; [2]Saratov Branch of the Institute of RadioEngineering and Electronics of RAS; [3]Saratov State Medical University, Russia

36BC. **Calcium waves in a sponge astrocyte network modulated by the sodium-calcium exchangers** Darya V. Verveyko[1], A.R. Brazhe[2], A.Yu. Verisokin[1], D.E. Postnov[3], [1]Kursk State University; [2]Moscow State University; [3]Saratov State University, Russia

37BC. **Hyperspectral imaging and classification of skin structural elements in case of urticaria**O.V. Polschikova[1], A.S. Machikhin[1,2], S.V. Shirokov[1], Ekaterina D. Lovchikova[1,3], I.V. Danilycheva[4], M.V. Danilychev[5], A.M. Borbat[6], O.R. Katunina[6], [1]Scientific and Technological Center of Unique Instrumentation of the RAS; [2]Moscow Power Engineering Institute; [3]Bauman Moscow State Technical University; [4]Institute of Immunology of Federal Medical Biological Agency; [5]Institute of Radio-engineering and Electronics of the RAS; [6]Burnasyan Federal Medical Biophysical Center of Federal Medical Biological Agency, Russia

38BC. **Dynamical volume changes in a neurovascular unit** Robert Loshkarev[1], D.E. Postnov[2], [1]Atlas Biomed Group Limited; [2]Saratov State University, Russia

39BC. **Tracing the dynamical changes of the lymphatic vessel diameter** Ksenia Merkulova[1], N.I. Lvov[2], I.V. Fedosov[1], G.E. Brill[2], D.E. Postnov[1],[1]Saratov State University; [2]Saratov State Medical University, Russia

40BC. **Spatial correlation of pulse signals: does it matter where to measure?** Maria O. Tsoy[1], V.A. Klochkov[2], D.E. Postnov[1], [1]Saratov State University; [2]Saratov Scientific Research Institute of Cardiology, Russia

41BC. **On a method for increasing the accuracy of determining the degree of oxygenation of arterial blood** Igor Isupov, V. Gribkov, I. Kalinina, R. Zatrudina, Volgograd State University, Russia

42BC. **Quantification of flow balance in Y-bifurcation of blood vessels: issues and the solution** Maria A. Borozdova, I.V. Fedosov, M.A. Kurochkin, P.A. Dyachenko, D.E. Postnov, Saratov State University, Russia

43BC. **Numerical simulation of blood flow using two-element Windkessel model** A.Skripal, Mikhail Kalinkin, R. Baatyrov, M.Ilicheva, Saratov State University, Russia

44BC. **Digital methods of processing speckle images to characterize the flow of objects**Nataliya D. Kozintseva[1], A.S. Abdurashitov[1], V.V. Tuchin[1,2,3],[1]Saratov State University; [2]Institute of Precision Mechanics and Control RAS; [3]National Research Tomsk State University, Russia

45BC. **Analysis and modeling of speckle patterns using the Fourier transform** Nataliya D. Kozintseva[1], A.S. Abdurashitov[1], V.V. Tuchin[1,2,3], [1]Saratov State University; [2]Institute of Precision Mechanics and Control RAS; [3]National Research Tomsk State University, Russia

September 27, Friday

ORAL SESSION II
(Building 3, Hall 64)
Chair: **Dmitry E. Postnov**, Saratov State University, Russia

11.00-11.20
Identification of the most informative wavelengths for non-invasive melanoma diagnostics in spectral region from 450 to 950 nm
Dmitrijs Bliznuks[1], Yu. Chizhov[1], A. Bondarenko[2], D. Uteshev[2], A. Lihachev[3], I. Lihacova[3], [1]Riga Technical University; [2]C.T.Co. LTD; [3]University of Latvia, Latvia

11.20-11.40
Determination and correction of aberrations in full field OCT by phase gradient autofocus technique
Vasily Matkivsky[1], A. Moiseev[1], P. Shilyagin[1], A. Rodionov[1], G. Gelikonov[1], H. Spahr[2], C. Pfäffle[2], G. Hüttmann[2], D. Hillmann[2], [1]Institute of Applied Physics RAS, Russia; [2]Institute of Biomedical Optics, University of Lübeck, Germany

11.40-12.00
The study of the synchronization of the contour of regulation of the blood pressure and respiration in an active experiment
Elena Chernets[1], E. Borovkova[2,3,1], Yu. Ishbulatov[2,3,1], A. Karavaev[2,3,1], [1]Saratov State University; [2]Saratov Branch of the Institute of RadioEngineering and Electronics RAS; [3]Saratov State Medical University, Russia

12.00-12.20
Embedded neural network system for microorganisms growth analysis
Dmitrijs Bliznuks[1], Yu. Chizhov[1], A. Bondarenko[2], D. Uteshev[2], I. Lihacova[3], A. Lihachev[3], [1]Riga Technical University; [2]C.T.Co. LTD; [3]University of Latvia, Latvia

12.20-12.40
Spreading vascular reactions in a branched blood vessel model
Andrey Yu. Verisokin[1], K.V. Rogatina[2], D.V. Verveyko[1], D.E. Postnov[2], [1]Kursk State University; [2]Saratov State University, Russia

12.40-13.00
Lattice advection-diffusion model of molecular transport in brain tissue: effects of cell swelling
Dmitry E. Postnov[1], E.B. Postnikov[2], [1]Saratov State University; [2]Kursk State University, Russia

Workshop on Nonlinear DynamicsX

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

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

September 26, Thursday

ORAL SESSION

(Building 3, Room 38)

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

14.30-14.42

Chaos with two zero Lyapunov exponents in models of radio-physical oscillators

Nataliya Stankevich, Yuri Gagarin State Technical University of Saratov, Saratov, Russia; Elena Popova, Kotel'nikov's Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia; Alexey Kazakov, National Research University Higher School of Economics, Nizhniy Novgorod, Russia; Igor Sataev, Kotel'nikov's Institute of Radio-Engineering and Electronics of RAS, Saratov, Russia

14.42-14.54

Multistability of strange waves in a Vander Pol oscillators array

Alexey Shabunin, Saratov State University, Saratov, Russia

14.54-15.06

Nonlinear dynamics from positions of the modern economic physics

Mikhail B.Semenov, Penza State University of Russia, Penza, Russia; Sergey Yu.Roshchin, NRU «Higher School of Economics»,Moscow, Russia; Vladimir D.Krevchik, Penza State University of Russia, Penza, Russia; Feodor V.Kusmartsev, Loughborough University,Loughborough, United Kingdom; Alexey V.Shorokhov, NRU Mordovian State University named by N.P. Ogarev, Saransk, Russia

15.06-15.18

Application of cross-recurrent analysis to coupling detection in mathematical model of circulation autonomic control

YuriiIshbulatov, Saratov State Medical University, Saratov, Russia;Posnenkova Olga, Saratov State Medical University, Saratov, Russia; AnatolyKaravaev, Saratov State University, Saratov, Russia;YuliaPopova, Saratov State Medical University, Saratov, Russia; EkaterinaBorovkova, Saratov State University, Saratov, Russia; MargaritaSimonyan, Saratov State Medical University, Saratov, Russia; VladimirGridnev, Saratov State Medical University,Saratov, Russia; AntonKiselev, Saratov State Medical University, Saratov, Russia

15.18-15.30

Dynamics of Lyapunov exponent in mathematical model of circulation autonomic control during passive tilt test

YuriiIshbulatov, Saratov State Medical University, Saratov, Russia; VladimirShvartz, Bakulev Scientific Center for Cardiovascular Surgery, Moscow, Russia; AnatolyKaravaev, Saratov State University, Saratov, Russia; SergeiMironov, Bakulev Scientific Center for Cardiovascular Surgery, Moscow, Russia; VictoriaSkazkina, Saratov State University, Saratov, Russia; VladimirGridnev, Saratov State Medical University, Saratov, Russia; OlgaBokeria, Bakulev Scientific Center for Cardiovascular Surgery, Moscow, Russia; AntonKiselev, Saratov State Medical University, Saratov, Russia

15.30-15.42

Formation mechanisms of spiral and double-well chimeras in a 2D lattice of coupled bistableFitzHugh–Nagumo oscillators

Igor Shepelev, Saratov State University, Saratov, Russia; Tatyana Vadivasova, Saratov State University, Saratov, Russia

15.42-15.54

Architecture and training of an artificial neural network designed to be a universal model of nonlinear dynamical systems

Pavel Kuptsov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia; Anna Kuptsova, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

15.54-16.06

Investigation of energy exchange in 3-crowdion

I.A. Shepelev, Saratov State University, Saratov, Russia; A.P. Chetverikov, Saratov State University, Saratov, Russia; S.V. Dmitriev, Ufa Federal Research Centre of RAS, Ufa, Russia; E.A. Korznikova, Ufa Federal Research Centre of RAS, Ufa, Russia

16.06-16.18

Dynamics of Rayleigh oscillators chain with connections via Morse potential forces

Konstantin Sergeev, Saratov State University, Saratov, Russia; Evgeniy Elizarov, Saratov State

University, Saratov, Russia;AlexandrChetverikov, Saratov State University, Saratov, Russia

16.18-16.30
Propagation of shock waves in 2D materials
I.A. Shepelev, Saratov State University, Saratov, Russia; E.A. Sharapov, LLS "Bashneft Polus", Ufa, Russia; P.V. Zakharov, The Shukshin Altai State Humanitarian and Pedagogical University, Biysk, Russia; A.P. Chetverikov, Saratov State University, Saratov, Russia; S.V. Dmitriev,Ufa Federal Research Centre of RAS, Ufa, Russia; E.A. Korznikova,Ufa Federal Research Centre of RAS, Ufa, Russia

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

18.00-19.30

1ND. **Synchronization of spiral wave structures in coupled 2D lattices of discrete maps**
A. Bukh, Saratov State University, Saratov, Russia; E. Schöll, Technische Universität Berlin, Berlin, Germany; V. Anishchenko, Saratov State University, Saratov, Russia

2ND. **Solitary state chimera in neural networks**
Elena Rybalova, Saratov State University, Saratov, Russia; Vadim Anishchenko, Saratov State University, Saratov, Russia; Anna Zakharova, Technische Universität Berlin, Berlin, Germany

3ND. **Analysis of small molecules absorbtion on 2D pnictogens as investigated by density functional theory**
S.Kh.Khadiullin, Ufa State Aviation Technical University, Ufa, Russia; A.A.Kistanov Institute for Metals Superplasticity Problems of RAS, Ufa, Russia;E.A.Korznikova, Institute for Metals Superplasticity Problems of RAS, Ufa, Russia

4ND. **Energy localization through modulational instability of delocalized modes in nonlinear lattices**
1ND. Yuri V. Bebikhov, North-Eastern Federal University, Mirny, Sakha (Yakutia), Russia;Elena A. Korznikova, Ufa Federal Research Centre of the Russian Academy of Sciences, Ufa, Russia; Sergey V. Dmitriev, Ufa Federal Research Centre of the Russian Academy of Sciences, Ufa, Russia

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

Chair: 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 26

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

Chair (AP): **Dmitry A. Zimnyakov**, Yuri Gagarin Saratov State Technical, Russia

September 26, Thursday

18.00-19.30

1P. The Monte Carlo Method for analysis of the quasi-adiabatic expansion of the CO2-foamable polylactide
Olga V. Ushakova, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia, Sergey A. Yuvchenko , Yuri Gagarin State Technical University of Saratov, Russia

2P. Scattering registration scheme development for SNR increase in dynamic light scattering
Elina Nepomnyashchaya,Peter the Great Saint Petersburg Polytechnic University, Russia, Elena Velichko, Peter the Great Saint Petersburg Polytechnic University, Russia, Oleg Kotov, Peter the Great Saint Petersburg Polytechnic University, Russia

3P. Photoinduced disruption of the operation of anisotropic polarizing optical devices
Julia Danyaeva, Volgograd State University, Russian Federation, Svetlana Kutsenko, Volgograd State University, Russia, Alena Samoilenko, Volgograd State University, Russia, Peter Atman, Volgograd State University, Russia

4P. Polarization-optical study of the magneto-optical characteristics of petroleum products
Anton Moiseev, Volgograd State University, Russia, Svetlana Kutsenko, Volgograd State University, Russia, Ivan Bagrov, Volgograd State University, Russia, Dmitry Sipivy, Volgograd State University, Russia

5P. Correlation of laser-induced stresses in cartilage tissue with its electromechanical properties
Kasianenko E.M.,Lomonosov Moscow State University, Faculty of Physics, Chair of Medical Physics, Russia, Omelchenko A.I., Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of Russian Academy of Sciences, Russia

6P. Speckle-contrast method for the study of cartilage tissue under laser exposure in the infrared range
Yuzhakov A.V., Institute of Photon echnologies of Federal Scientific Research Centre Crystallography and Photonics” of Russian Academy of Sciences, Russia, Novikova M.L., Institute of Photon Technologies of Federal Scientific Research Centre “Crystallography and Photonics” of Russian Academy of Sciences, Russia

7P. Photoluminescent spectroscopy studies of cationic-substituted biohydroxyapatite
Vladimir Y. Kazakov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Alexander V.Pivovarov, Research Institute Biotechnology of Innovative Nanomaterials, Saratov, Russia, Sergey Y. Pichkhidze, Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Ilya O.Slavnetskov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Saratov, Russia

8P. Optical reflectometry in applications to dye-doped random medium Anna Isaeva, Sararov State Technical University, Russia, Elena Isaeva, Sararov State Technical University, Russia, Dmitry Zimnyakov, Sararov State Technical University, Russia

9P **Speckle correlation technique as applied to the monitoring of thedynamic and flows in the multiphase system** Elena Isaeva, Sararov State Technical University, Russia, Anna Isaeva, Sararov State Technical University, Russia, Marina V. Alonova, Yuri Gagarin State Technical University of Saratov, Russia, Dmitry Zimnyakov, Sararov State Technical University, Russia

10P. Benchtop techniques for optical and acoustical characterization of SCF-foamed polylactide matrices as the platforms for scaffold synthesis

Ilya O.Slavnetskov, Saratov State Technical University, Saratov, Russia, A. Kalacheva, Saratov State Technical University, Saratov, Russia, Nikita.V. Minaev,Federal Research Centre 'Crystallography and Photonics', Russian Academy of Sciences, Institute of Photonic Technologies, Moscow, Troitsk, Russia, D.A. Zimnyakov, Saratov State Technical University, Saratov, Russia, Klimov D.A., Saratov State Technical University, Saratov, Russia, Verechagin D.A., Saratov State Technical University, Saratov, Russia, Ulegin V.S., Saratov State Technical University, Saratov, Russia, Dubrovsky S.V., Saratov State Technical University, Saratov, Russia

11P. Speckle correlation analysis for the monitoring of blood flow

Ekaterina Savchenko,Peter the Great St.Petersburg Polytechnic University (SPbPU), St.Petersburg, Russia, Nikita Gudzlovenko, Peter the Great St.Petersburg Polytechnic University (SPbPU), St.Petersburg, Russia, Elena Velichko, Peter the Great St.Petersburg Polytechnic University (SPbPU), St.Petersburg, Russia

12P. Application of polarization-optical method for prediction of car engine cfankshaft failure

Ekaterina U. Gorshenina, Alisa V. Kozhinskaya, Saratov State Technical University, Saratov, Russia, Alexey V.Rybakov, Astrakhan State University,Astrakhan, Russia

Friday September 27

ORAL SESSION
(SSTU, Building 1, 459 room)

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

11.40-11.50

Study of the interaction of luminescent probes with particles of potassium polytitanate by polarization spectroscopy

Andrey G. Melnikov, Krugova E.A., Bykov D.A., Vikulova M.A., Yuri D.S, Gorokhovsky A.V., Melnikov G.V., Yuri Gagarin State Technical University of Saratov, Saratov, Russia

11.50-12.00

The development of OCT device for ENT investigations

Pavel Shilyagin, Aleksey Novozhilov, Timur Abubakirov, Dmitry Terpelov, Grigory Gelikonov, Andrey Shakhov, Institute of Applied Physics RAS, Russia

12.00-12.10

Speckle-correlation and low-coherence techniques for examination of structural properties of SCF-plasticized bioresorbable polymers

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

12.10-12.20

Characterization of the structure of mosaic birefringent layers using transmission microscopic polarization mapping

Dmitry D. Yakovlev, Saratov State University, Russia, Dmitry A. Yakovlev, Saratov State University, Russia

12.20-12.30

Statistical properties of partially coherent light fields in passive and active randomly inhomogeneous media

Ekaterina Ushakova, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia

12.30-12.40

A hybrid modeling of polarization and correlation characteristics of scattered by random media light

Marina V. Alonova, Dmitry A. Zimnyakov, Wil Baiburin, Yuri Gagarin State Technical University of Saratov, Russia

12.40-12.50

Referenceless low-coherence reflectometry of random media under the condition of low spectral selectivity of the detection system

Elena A. Isaeva, Anna A. Isaeva, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia

12.50-13.00

Photoconductance of dispersed nanostructured semiconductor nanosystems near the edge of the fundamental absorption band Sergey .S. Volchkov, Leonid A. Kochkurov, Dmitry A. Zimnyakov, Yuri Gagarin State Technical University of Saratov, Russia

Workshop on Electromagnetics of Microwaves, Submillimeter and Optical Waves IXX

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

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

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

ThursdaySeptember 26

JOINT POSTER/INTERNET SESSION

(Building 3, 3rd floor Hall)

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

18.00-19.30

1EM Amplification of terahertz plasmons by electron beem Michael V. Davidovich, Saratov State Universcity, Russia

2EM The velocity of tunneling of electromagnetic wave packet throut plasmic layer Kirill A. Sayapin, Michael V. Davidovich,Saratov State Universcity, Russia

3EM Design and simulation of microstrip wide-band phase-shifters with fixed phases Kirill A. Sayapin, Saratov State Universcity, Russia.

4EM Plasma waves deceleration in tapered heterostructure with graphene pump by optical plasmons Mikhail Yu. Morozov, Vyacheslav V. Popov,Saratov Branch, V.A. Kotel'nikovInstitute of Radio Engineering and Electronics RAS.

5EM Noise in heteromagnetic auto generators plasmons Maksim Inkin,Saratov State Universcity, Russia

6EM Study of resistive thin-film coatings for application in millimeter-band vacuum power amplifiers Andrei Starodubov,Saratov State Universcity, Russia, Saratov Branch, V.A. Kotel'nikov Institute of Radio Engineering and Electronics RAS, Alexey Serdobintsev, Anton Pavlov, Ilya Kozhevnikov, Viktor Galushka, Stanislav Makarkin, Saratov State University, Russia

INTERNET REPORTS

1. **Hyperbolic metamaterisls: the effects of restriction of hyperbolic dispersion** Michael V. Davidovich, Saratov State University, Saratov, Russia

Friday September 27

ORAL SESSION
ELECTROMAGNETICS
(Building 8, Room 82)

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

11.00-11.15
Modern miniaturized slow-wave system for submillimeter range. Roman A. Torgashov,Gennadiy V. Torgashov, Nikita M. Ryskin,Saratov Branch, V.A. Kotel'nikovInstitute of Radio Engineering and Electronics RAS.

11.15-11.30
The lines of the terahetz range.
Michael V. Davidovich, Saratov State University, Russia

11.30-11.45
Noise in heteromagnetic auto generators
Maksim Inkin, Saratov State University, Russia

11.45-12.00
Plasma waves deceleration in tapered heterostructure with graphene pump by optical plasmons
Mikhail Yu. Morozov, Vyacheslav V. Popov,Saratov Branch, V.A. Kotel'nikovInstitute of Radio Engineering and Electronics RAS.

12.00-12.15
Plasmon-polaritones along a layer of asymmetric hyperbolic metamaterial. Michael V. Davidovich, Saratov State University, Russia.
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12.15-12.30
Control of the generation spectrum of gyrotrons using phase locking Maria M. Melnikova,Saratov Branch, V.A. Kotel'nikov Institute of Radio Engineering and Electronics RAS,Asel B. Adilova, Saratov State University, Russia,Nikita M. Ryskin,Saratov Branch, V.A. Kotel'nikovInstitute of Radio Engineering and Electronics RAS.

Conference on
Advanced Materials for Optics and Biophotonics II

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), **Valery Nesvizhevsky,** Institut Laue-Langevin (Germany), **Marina A. Schcedrina,** Sechenov University (Russia), **Dmitry S. Ponomarev,** Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russian), **Valery E. Karasik,** Bauman Moscow State Technical University (Russia), **Irina A. Shikunova,** Institute of Solid State Physics of RAS (Russia), **Gennady A. Komandin,** Prokhorov General Physics Institute of RAS (Russia), **Igor E. Spector,** Prokhorov General Physics Institute of RAS (Russia), **Stanislav O. Yurchenko,** Bauman Moscow State Technical University (Russia), **Anatole N. Khodan,** Frumkin Institute of Physical Chemistry and Electrochemistry of RAS (Russia)

September 25, Wednesday

INVITED/ORAL SESSION ADVANCED MATERIALS II
(*Building 10, Hall 503*)
Chair: **Dr. Rustam A. Khabibullin**, IUHFSE RAS (Russia)

14.00-14.25
Invited
Sapphire fibers, waveguides and needles for sensing and medical treatment
I.N. Dolganova,ISSP RAS, BMSTU (Russia); G.M. Katyba, ISSP RAS, GPI RAS (Russia); I.A. Shikunova, ISSP RAS (Russia); K.I. Zaytsev GPI RAS, BMSTU (Russia); V.N. Kurlov, ISSP RAS (Russia).

14.25-14.50
Invited
Prospective mid-IR solid-state sources for technical and medical applications
V.A. Lazarev, BMSTU (Russia).

15.10-15.30
Strain-induced superlattices InGaAs/InAlAs for terahertz applications
D.V. Lavrukhin, IUHFSE RAS, BMSTU (Russia); A.E. Yachmenev, IUHFSE RAS, BMSTU (Russia); R.A. Khabibullin, IUHFSE RAS, BMSTU (Russia); D.I. Khusyainov, MIREA (Russia); A.M. Buryakov, MIREA (Russia); E.D. Mishina, MIREA (Russia); D.S. Ponomarev, IUHFSE RAS (Russia).

14.50-15.10
Engineering vascular niches: impact of biomaterials
A. Shpichka, Sechenov University (Russia); P. Timashev, Sechenov University (Russia).

15.30-15.50
Inducing regenerative repetition of tissues by photodynamic therapy with biopolymer composites
M.Y. Sinelnikov Sechenov University (Russia).

15.50-16.10
Hollow microchambers for targeted drug delivery functionalized by carbon nanodots
A. Ermakov, SSU, Sechenov University (Russia); A. Sapelkin, Queen Mary University of London (United Kingdom); I. Goryacheva, SSU (Russia); G. Sukhorukov, Queen Mary University of London (United Kingdom)

ThursdaySeptember 26

JOINT POSTER/INTERNET SESSION
(Building 3, 3rd floor Hall)
Chair (AM): **Gleb M. Katyba**, ISSP RAS,Russia

18.00-19.30

1AM **Sapphire shaped crystals for optically controlled cryodestruction of biological tissues**A.K. Zotov, ISSP RAS, Russia

2AM **Experimental glioblastoma 101.8 in rats: a new model for translational medicine**A.I. Alekseeva, RIHM, Russia

3AM **Mobile system for early diagnostics the parameters of pigmanted skin lesions**E.N. Rimskaya, BMSTU, Russia.

Conference on
Terahertz Optics and Biophotonics II

Conference Chair: **Valeriy E. Karasik,** BMSTU (Russia)

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

International Program Committee: **Valeriy E. Karasik (Chair),** BMSTU (Russia),**Igor V. Reshetov,** Sechenov University (Russia), **Alexei Ivlev,** Max-Planck-Institut für Extraterrestrische Physik (Germany), **Barbara Michela Giuliano,** Max-Planck-Institut für Extraterrestrische Physik (Germany), **Maksim Skorobogatiy,** Polytechnique Montréal (Canada), **Dmitry S. Ponomarev,** Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russian), **Rustam A. Khabibullin,** Institute of Ultra High Frequency Semiconductor Electronics of RAS (Russian), **Vladimir N. Kurlov,** Institute of Solid State Physics of RAS (Russia), **Olga P. Cherkasova,** Institute of Laser Physics of SB RAS (Russia), **Olga A. Smolyanskaya,** ITMO University (Russia), **Gennady A. Komandin,** Prokhorov General Physics Institute of RAS (Russia), **Igor E. Spector,** Prokhorov General Physics Institute of RAS (Russia), **Stanislav O. Yurchenko,** Bauman Moscow State Technical University (Russia), **Anatole N. Khodan,** Frumkin Institute of Physical Chemistry and Electrochemistry of RAS (Russia)

September 26, Thursday

INVITED/ORAL SESSION THZ OPTICS & BIOPHOTONICS II

(Building 10,Hall 503)

Chair: **Dr. Vladimir A. Lazarev**, BMSTU Russia

11.30-11.50
Invited
Light confinement in photoconductive antennas featuring plasmonic and dielectric structures
D. Ponomarev, IUHFSE RAS (Russia).

11.50-12.05
Sub-wavelength focusing of a fs-laser beam using dielectric particles
I.A. Glinskiy,IUHFSE RAS, GPI RAS (Russia); D.V. Lavrukhin, IUHFSE RAS, GPI RAS (Russia);A.E. Yachmenev,IUHFSE RAS, GPI RAS (Russia); R.A. Khabibullin, IUHFSE RAS, GPI RAS (Russia); N.V. Zenchenko, IUHFSE RAS, BMSTU (Russia); K.I. Zaytsev, GPI RAS, BMSTU (Russia); D.S. Ponomarev, IUHFSE RAS, GPI RAS (Russia).

12.05-12.25
Invited
Medical applications of THz imaging and machine learning
Y.V. Kistenev, Tomsk State University (Russia).

12.25-12.45
Invited
THz quantum cascade lasers based on novel designs and materials
R.A. Khabibullin, IUHFSE RAS (Russia); N.V. Shchavruk, IUHFSE RAS (Russia); D.S. Ponomarev, IUHFSE RAS (Russia); D.V. Ushakov, Belarusian State University(Belarus); A.A. Afonenko, Belarusian State University (Belarus); O.Yu. Volkov, Institute of Radio-Engineering and Electronics of RAS (Russia); V.V. Pavlovskiy,Institute of Radio-Engineering and Electronics of RAS (Russia); A.A. Dubinov, Institute for Physics of Microstructures of RAS (Russia).

12.45-13.00
Invited
THz imaging of soft biological tissues with spatial resolution beyond the Abbe limit
K.I. Zaytsev, GPI RAS, BMSTU(Russia); N.V. Chernomyrdin, GPI RAS, BMSTU(Russia);G.M. Katyba, ISSP RAS, GPI RAS (Russia);I.N. Dolganova, ISSP RAS, GPI RAS

ThursdaySeptember 26

JOINT POSTER/INTERNET SESSION

(Building 3, 3rd floor Hall)

Chair (TO): **Nikita V. Chernomyrdin**, GPI RAS, BMSTU, Russia

18.00-19.30

1TOTerahertz spectroscopy of human brain gliomas ex vivoG.R. Musina, GPI RA,S BMSTU, Russia

2TOTerahertz dielectric spectroscopy of nanoporous Al_2O_3 structures:A pilot studyV.E Ulitko, ISSP RAS, Russia

3TOOvercoming the diffraction limit in terahertz imaging of biological objects and tissuesN.V. Chernomyrdin, GPI RAS, BMSTU, Russia.

4TOTerahertz microscopy of spheroids: A prospect of THz technology in regenerative medicine and tissue bioprintingT.V. Frolov, BMSTU, Russia.

5TO Immersion optical clearing of tissues in the terahertz range: Choosing the optimal clearing agentN.A. Naumova, BMSTU, Russia.

6TO Photocatalytic activity of titanium dioxide nanoparticles with silver nanoparticles synthesized through green method using rhodiola rosea extractE.I. Konstantinova, Kaliningrad State Technical University, Russia.

7TO Superlens based on dielectric mesoscale cubic particle with blind nanohole arrayI.V. Minin, Tomsk State University, Tomsk Polytechnic University, Russia

INTERNET REPORTS

Terahertz pulsed spectroscopy of blood components for medical diagnos O.P. Cherkasova, Institute of Laser Physics SB RAS, Novosibirsk State Technical University, Russia

23d International School for Junior Scientists and Students on Optics, Laser Physics & Biophotonics

Workshop on Modern Optics XVIII

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

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

Secretaries: **Irina Yu. Yanina**, **Ekaterina N. Lazareva**, 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 26, Thursday

LECTURE SESSION:
(Building 3, Big Physical Hall)

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

14.00-14.30

Shining Light on the Miracle of Life
Irina V. Larina, Molecular Physiology and Biophysics, Baylor College of Medicine Houston, USA

14.30-15.00

Quantum Technology: Bite Size Particles for Global Tasks
Alexey K. Fedorov, Russian Quantum Center, Skolkovo, Russia

15.00-15.30

Show "Exciting Light" presented by OSA and SPIE student Chapters of SSU

Workshop English as a Communicative Tool in the Scientific Community XVIII

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

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

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

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

September 27, Friday

ORAL SESSION
(Building 18, Room 105)

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

11.30-11.40
Teaching Srudents with Different Level: How to Find a Balance
Anna Smirnova, Saratov State University, Saratov, Russia

11.40-11.50
How to Present Your Master Thesis to an English-Speaking Audience When Your Language Proficiency is A2
Dina Alexeeva, SaratovStateUniversity, Saratov, Russia

11.50-12.00
How to introduce Chinese pronunciation to English-speaking language learners
Jinyi Li, Saratov State University, Saratov, Russia

12.00-12.10
English-Russian-Chinese terminology relating to components of Chinese characters
Konstantin A. Grebenyuk, Saratov State University, Saratov, Russia

12.10-12.20
How to Construct a Scientific Article: Introductory Phrases, Transmissions and Adverbs
Arina O. Shelyugina, Saratov State University, Saratov, Russia

12.20-12.30
Grammar Peculiarities in Scientific Writing
Darya N. Tselovalnikova, Saratov State University, Saratov, Russia

12.30-12.40
Nomenclature of Biology
Svetlana V. Eremina, Antonina Dymnich, Natalia Zagnuhina, Saratov State University, Saratov, Russia

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

Chair:**Boris A. Medvedev,**Saratov State University, Russia

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

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

September 25, Wednesday

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

14.00-14.15
Sixth congress of Russian physicists and development of optical researches at the Saratov University
V.I. Tsoy, Valery M. Anikin, Saratov State University, Russia

14.15-14.28
James Frank and Gustav Herz: physics and life
P. Strokin, B. Medvedev, Saratov State University, Russia

14.28-14.40
Critical aspects of physics education
I. Fedosov, Saratov State University, Russia

14.40-14.52
Experience of applying a rating system for seminar lessons
A. Skaptsov, Saratov State University, Russia

14.52-15.04
Unrepeatable simple experiments
M.A. Starshov, Saratov State University, Russia

15.04-15.16
Effect of Zeeman vs Faraday's experiment
M.A. Starshov, J. Gudova, Saratov State University, Russia

15.16-15.28
Two demonstrations for a lecture on optics
M.A. Starshov, Saratov State University, Russia

15.28-15.40
Underestimated polar coordinate system
A. Skaptsov, Saratov State University, Russia

15.40-15.52
The principle of least action
D. Klychkova, Saratov State University, Russia

15.52-16.04
The mathematics of sampling
K. Grebenyuk, Saratov State University, Russia

16.04-16.16
Theory of image analysis for diagnosis of brain diseases
J.A. Brodskaya, A.V. Prokhorova, Saratov State University, Saratov, Russia

16.16-16.30
The application of metallic nanoparticles in nanomedicine: challenges and prospects
A. Bucharskaya, N. Navolokin, G. Maslyakova, Saratov State Medical University, Russia

16.30-17.00
Coffee break

17.00-17.11
Application of Raman spectroscopy for the study of carotenoids in living insects-gall formers
M. Nikelshparg[1], E. Nikelshparg[2], D.N. Bratashov[3], V.V. Anikin[3]
[1]Gimnasium №3 of Saratov, Saratov, Russia
[2]Lomonosov Moscow State University, Moscow, Russia
[3]Saratov State University, Saratov, Russia

17.11-17.22
Interference and entanglement of states
S. Churochkina, D. Churochkin, K. Maksimov, Saratov State University, Russia

17.22-17.33
Research of the muon atom amendments
Natalya Boykova, Saratov State University, Russia

17.33-17.44
Secondary-ion photoeffect of micro- and nanoparticles ofPbS
A. Serdobintsev, A. Rokakh, D. Postnov, Saratov State University, Russia

17.44-17.55
Excitons in micro- and nanoparticles of PbS
N. Trofimova, M. Shishkin, A. Rokakh, Saratov State University, Russia

17.55-18.06
Synthesis of bifunctional magnetic-luminescent nanoparticles
A.A. Bakal, A.A. Kozlova, A.S. Novoselova, I.Yu. Goryacheva, Saratov State University, Russia

18.06-18.17
Providing magnetic resonance imaging of hollow core microstructured optical fibers using a nanocomposite coating
T. Kochergin, Saratov State University, Russia

18.17-18.28
Error reduction method for computer simulation of small-sized magnetic fields
V. Malyarchuk, Saratov State University, Russia

18.28-18.39
Nonlinear model YIG resonator in the calculations of the magnetically sensitive devices
A. Vasiliev, A. Ignatiev, Saratov State University, Russia

18.39-18.50
Development of a magnetic system for an oscillator with a thin-film YIG resonator
A. Vasiliev, A. Ignatiev, S. Dobdin, N.G. Chernyshevsky Saratov State University, Russia

18.50-19.00
Measurement of phase noise level and threshold sensitivity of magnetic field sensor with YIG resonator
A. Vasiliev, A. Ignatiev, Saratov State University, Russia

September 26, 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. LomonosovMoscowStateUniversity, Moscow, Russia

14.30-14.36
Cosmological models of the universe
V. Rozen, Saratov State University, Russia

14.36-14.42
The role of optics and laser physics in basic research
A. Gorokhov, Samara National Research University, Russia

14.42-14.48
The wave function collapse and unity of universe
O. Parshkov, Yuri Gagarin State Technical University of Saratov, Russia

14.48-14.54
Causality and "principium rationis": from philosophy to science
N. Dovgalenko, Yuri Gagarin State Technical University of Saratov, Russia

14.54-15.00
Psychophysical problem in the context of Pauli and Jung correspondence
B. Medvedev, Saratov State University, Russia

15.00-15.06
On the trail of the correspondence by Pauli and Jung: the acausal connecting principle
B. Medvedev, Saratov State University, Russia

15.06-15.12
The arrow of time in particle and wave dynamics
V. Tsoy, Saratov State University, Russia

15.12-15.18
Black holes: good or evil?
O. Shimelfenig, Saratov State University, Russia

15.18-15.24
Some remarks to history of first triumph of general relativity theory
M. Stolnitz, Saratov State University, Russia

15.24-15.30
Quantum chemistry and alchemy
V. Sorokin, Saratov State University, Russia

15.30-15.36
Quantum dots and quantum computer

A. Rokakh, Saratov State University, Russia

15.36-15.42
Philosophy and psychology of virtual
A. Rokakh, Saratov State University, Russia

15.42-15.48
Structure of reality and problem of qualitative definiteness of bit (information unit)
Yu. Duplinskaya, Yuri Gagarin State Technical University of Saratov, Russia

15.48-15.54
Some features of machine arithmetic for physicists and engineeres
B.Faifel, Yuri Gagarin State Technical University of Saratov, Russia

15.54-16.00
Human brain vs Algorithmic processor vs Neural network: AlfaZero success story
A. Skaptsov, Saratov State University, Russia

16.00-16.06
Natural sciences and cultural sciences: correlation of knowledge and belief
R. Pskhu, Z. Murga, RUDN University, Moscow, Russia

16.06-16.12
Pattern recognition methods for attribution of the russian icon. Color and light in Rublev's icons
J. Brodskaya, Saratov State University, Russia

16.12-16.18
Grigory Ivanovich Fischer Von Waldheim – "Nestor of natural science" of the XIX century
Vasily Anikin, Saratov State University, Russia

16.18-16.24
“Testament” by J. W. Von Goethe and physics
A. Rokakh, Saratov State University, Russia

16.24-16.30
Reflection of scientific ideas in contemporary music
V.D. Genin, 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

1. **Microscopic analysis of aquatic plants under exposure to detergents**
   E. Timchenko[1], A. Timchenko[2], T. Melnikova[2]
   [1]Samara University, Samara, Russia
   [2]Lyceum "Technical", Samara, Russia

2. **The technique of synthesis and the theory of the generator of dynamic chaos in a computing environment sequential logic**
   V. Chesakov, L. Sotov, Saratov State University, Russia

3. **Application of excited-state intramolecular proton-transfer (ESIPT) in fluorescence sensors and imaging agents. 2-(2-hydroxyaryl)-cyclopenta[b]pyridines as potential esipt fluorophores**
   N. Pchelintseva, S. Batalin, M. Golikova, A. Khrustaleva, Saratov State University, Russia

INTERNET REPORTS

Calculation of the effective gravitational charge using the Newton- Schrödinger equations
Yuriy Zayko, Stolypin Volga Region Management Institute, Russian Presidential Academy of National Economy and Public Administration, Russia