

Saratov Fall Meeting - SFM'12



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



September 25 – 28, 2012
Saratov, Russia

SCIENTIFIC PROGRAM



WORKSHOPS:

Russian-Chinese Workshop

Optical Technologies in Biophysics & Medicine XIV

Laser Physics and Photonics XIV

Spectroscopy and Molecular Modeling XIII

Modern Optics XI

English as a Communicative Tool in the Scientific Community XI

Management of High Technologies Commercialization and Regional Innovation Systems IX

Nanobiophotonics VIII

History, Methodology and Philosophy of the Optical Education V

Microscopic and Low-Coherence Methods in Biomedical and Non-Biomedical Applications V

Internet Biophotonics V

Nonlinear Dynamics and Computational Biophysics III

Low-Dimensional Structures II



Special events during the Meeting:

U.M.N.I.K.: Special session on student reports on Optics, Laser Physics and Biophotonics, awarded by the Russian Foundation on Innovations



SHORT COURSES OSA / SPIE



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

Organized by

Saratov State University named after N.G. Chernyshevsky (SSU)

Institute of Precise Mechanics and Control, Russian Academy of Sciences

Research-Educational Institute of Optics and Biophotonics, SSU

Research-Educational Center of Nonlinear Dynamics & Biophysics (REC-006) of CRDF and Ministry of Education and Science of RF, SSU

International Research-Educational Center of Optical Technologies for Industry and Medicine "Photonics", SSU

Volga Region Center of New Information Technologies, SSU

Saratov State Medical University named after V.I. Razumovsky (SSMU)

Biomedical Photonics Committee of Chinese Optical Society

In cooperation with

Academy of Natural Sciences, Saratov Regional Division

Russian Society for Photobiology

Saratov Science Center of the Russian Academy of Sciences

Photonics4Life Consortium of EC FP7: Network of Excellence for Biophotonics

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SPIE – The International Society of Photo-Optical Instrumentation Engineers

SPIE Student Chapter

OSA Student Chapter

SPE "Nanostructured Glass Technology" Ltd., Saratov

SPE Delta 21 vek, Saratov

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Valery V. Tuchin, Saratov State University

Conference Secretary

Elina A. Genina, Saratov State University

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Vladimir P. Ryabukho, Saratov State University, Institute of Precise Mechanics and Control RAS

Alexander M. Sergeev, Institute of Applied Physics RAS

Sergey N. Shtykov, Saratov State University

Yulia S. Skibina, Saratov State University, SPE "Nanostructured Glass Technology" Ltd.

Valery V. Tuchin, Saratov State University, Institute of Precise Mechanics and Control RAS, University of Oulu

Dmitry A. Zimnyakov, Saratov State Technical University, Institute of Precise Mechanics and Control RAS

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Maria V. Storozhenko, Saratov State University

Yana V. Tarakanchikova, Saratov State University

Maxim A. Vilensky, Saratov State University

Internet group

Co-chairs

Dmitry A. Agafonov, Saratov State University

Ivan V. Fedosov, Saratov State University

Members

Georgy V. Simonenko, Saratov State University

Mikhail M. Stolnitz, Saratov State University

Alexey V. Shabunin, Saratov State University

Andrey V. Slepnev, Saratov State University

Schedule for SFM'12

September 25, Tuesday

September 25, Tuesday				
9.30-13.00	OSA SHORT COURSE Optical elastography: Prospects in medicine for micro-imaging of tissue mechanical properties David D. Sampson, The University of Western Australia, Australia			<i>Building 10, Hall 503</i>
9.00-14.00	Registration			<i>Building 3, Foyer</i>
13.00-14.00	Lunch			
14.00-14.10	Opening of Saratov Fall Meeting 2012 Valery V. Tuchin, Conference Chair, Saratov State University, Russia			<i>Building 10 Main Conference Hall</i>
14.10-16.10	PLENARY SESSION Chair: Valery V. Tuchin, Saratov State University, Russia			<i>Building 10 Main Conference Hall</i>
16.10-16.40	Coffee break			
16.40-19.00	LECTURE/ORAL SESSION BIOPHYSICS I Chair: Vladislav Toronov, Ryerson University, Canada	<i>Building 10, Hall 503</i>	ORAL SESSION SPECTROSCOPY Co-chairs: Valentin I. Berezin, and Lev M. Babkov, Saratov State University, Russia	<i>Building 3, Room 34</i>
19.30-21.00	Welcome Party			<i>University campus</i>

September 26, Wednesday

RUSSIAN-CHINESE WORKSHOP: BIOPHOTONICS AND BIOMEDICAL OPTICS Co-chairs: Qingming Luo , Britton Chance Center for Biomedical Photonics, HUST, P.R. China, Valery V. Tuchin , Saratov State University, Russia								<i>Building 10 Main Conference Hall</i>
9.00-9.10	Opening of Russian-Chinese Workshop Valery V. Tuchin , Saratov State University, Russia Lin Lin , Huazhong University of Science and Technology, P.R. China							
9.10-10.20	PLENARY SESSION Co-chairs: Alexander V. Priezhev , Moscow State University, Russia, Hui Ma , Tsinghua University, Shenzhen, P.R. China							<i>Building 10 Main Conference Hall</i>
10.20-10.40	Coffee break							
10.40-11.40	INVITED LECTURE SESSION I RUSSIAN-CHINESE WORKSHOP Co-chairs: Da Xing , South China Normal University, P.R. China and Alexander P. Savitsky , A.N. Bach Institute of Biochemistry, Russia	<i>Building 10 Main Conference Hall</i>	10.50-13.00	ORAL SESSION LOW-DIMENSIONAL STRUCTURES Chair: Olga Glukhova , Saratov State University, Russia	<i>Building 10, Hall 503</i>	ORAL SESSION ENGLISH Chair: Svetlana V. Eremina , Saratov State University, Russia	<i>Scientific Library Conference Hall</i>	
11.40-12.40	INVITED LECTURE SESSION II RUSSIAN-CHINESE WORKSHOP Co-chairs: Co-chairs: Valery Tuchin Saratov State University, Saratov, Russia and Zhihong Zhan , Huazhong Univ. of Science and Technology, P.R. China							
12.40-13.00	Photo of Russian and Chinese Delegations together	<i>Building 10 Entrance</i>						
13.00-14.00	Lunch							
15.00-17.00	Social program (Volga boat trip)							

September 27, Thursday

9.30-13.00	SPIE SHORT COURSE Tutorial: Optical Coherence Tomography – based imaging and sensing of tissues and cells Kirill Larin, University of Houston, USA			Building 10, Hall 503		
9.00-10.30	ORAL SESSION PHOTONICS I Chair: Vladimir L. Derbov , Saratov State University, Russia	Building 10 Main Conference Hall	ORAL SESSION EDUCATION I Co-chairs: Boris A. Medvedev and Vladimir P. Ryabukho , Saratov State University, Russia	Scientific Library Conference Hall		
10.30-11.00	Coffee break					
11.00-13.00	ORAL SESSION PHOTONICS II Chair: Vladimir L. Derbov , Saratov State University, Russia	Building 10 Main Conference Hall	ROUND-TABLE DISCUSSION EDUCATION II Co-chairs: Boris A. Medvedev and Vladimir P. Ryabukho , Saratov State University, Russia	Scientific Library Conference Hall		
13.00-14.00	Lunch					
14.00-15.40	RUSSIAN-CHINESE WORKSHOP INVITED LECTURE SESSION III Co-chairs: Dan Zhu , Huazhong Univ. of Science and Technology, P.R. China and Alexander V. Priezzhev , Moscow State University, Moscow, Russia	Building 10 Main Conference Hall	MICROSCOPY AND LOW-COHERENCE METHODS Chair: Kirill V. Larin , University of Houston, USA	Building 10, Hall 503	LECTURE SESSION MODERN OPTICS Chair: Vladimir P. Ryabukho , Saratov State University, Russia	Building 3, Big Physical Hall
15.40-16.40	RUSSIAN-CHINESE WORKSHOP ORAL SESSION Co-chairs: Valery P. Zakharov , Samara State Aerospace University Russia and Linhong Deng , Changzou University, P.R. China		NONLINEAR DYNAMICS AND COMPUTATIONAL BIOPHYSICS Chair: Vadim S. Anishchenko , Saratov State University, Russia			
16.40-17.10	Coffee break					
17.10-18.30	JOINT PLENARY SESSION INTERNET BIOPHOTONICS AND RUSSIAN-CHINESE WORKSHOP Co-chair: Valery V. Tuchin , Saratov State University, Russia and Dan Zhu , Huazhong University of Science and Technology, P.R. China			Building 3, Big Physical Hall		
18.30-19.00	Coffee break					
18.30-21.00	JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION Moderators: Dmitry Agafonov , Ivan V. Fedosov , Saratov State University, Russia, and Xiaoquan Yang , HUST, P.R. China			Building 3, 3 ^d floor Hall		

September 28, Friday

9.00-11.00	<p>ORAL SESSION BIOPHYSICS II Chair: Ivan V. Fedosov, Saratov State University, Russia</p>	<p><i>Building 10 Main Conference Hall</i></p>	<p>ORAL SESSION MANAGEMENT I U.M.N.I.K.: Special session on student reports on Optics, Laser Physics and Biophotonics Co-chairs: Valery V. Tuchin and Julia S. Skibina, Saratov State University, SPE "Nanostructured Glass Technology" Ltd., Russia</p>	<p><i>Building 10, Hall 503</i></p>		
<p>11.00-11.30 Coffee break</p>						
11.30-13.30	<p>ORAL SESSION NANOBIOPHOTONICS Chair: Nikolai G. Khlebtsov, IBPPM RAS, Saratov State University, Russia</p>	<p><i>Building 10 Main Conference Hall</i></p>	<p>ORAL SESSION TELEMEDICINE Co-chairs: Elena V. Karchenova, ISfTeH and Saratov Alfa-Health-centre, and Valery V. Bakutkin, Saratov Research Institute of Hygiene, Russia</p>	<p><i>Saratov Alfa- Health centre</i></p>	<p>ORAL SESSION MANAGEMENT II U.M.N.I.K.: Special session on student reports on Optics, Laser Physics and Biophotonics Co-chairs: Valery V. Tuchin and Julia S. Skibina, Saratov State University, SPE "Nanostructured Glass Technology" Ltd., Russia</p>	<p><i>Building 10, Hall 503</i></p>
14.00-17.00	<p>Round-table discussions and closing of the Conference</p>					

PLENARY LECTURES

September 25, Tuesday

PLENARY SESSION SARATOV FALL MEETING

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

14.10-14.40

Plasmon resonance coupling in biomedical applications: from molecular imaging in cells to functional imaging *in vivo*

Konstantin Sokolov, The University of Texas at Austin, UT M.D. Anderson Cancer Center, USA

14.40-15.10

Optical diagnostic techniques for dermatology and cardiology: from lab to clinic

Janis Spigulis, University of Latvia, Latvia

15.10-15.40

Optical applications in brain research

Vladislav Toronov, Ryerson University, Canada

15.40-16.10

Overview of the applications of biodegradable polymers for drug delivery and tissue engineering within the Interfaculty Research Center on Biomaterials (CEIB)

Christian Grandfils, University of Liege, Belgium

September 26, Wednesday

PLENARY SESSION RUSSIAN-CHINESE WORKSHOP

Co-chairs: **Alexander V. Priezzhev**, Moscow State University, Russia, **Hui Ma**, Tsinghua University, Shenzhen, P.R. China

9.10-9.45

Progress in optical clearing of tissue *in vivo*

Dan Zhu, Huazhong University of Science and Technology, P.R. China

9.45-10.20

Fluorescence molecular imaging in drug design and screening

Alexander P. Savitsky, A.N. Bach Institute of Biochemistry, Russia

September 27, Thursday

JOINT PLENARY SESSION INTERNET BIOPHOTONICS AND RUSSIAN-CHINESE WORKSHOP

Co-chair: **Valery V. Tuchin**, Saratov State University, Russia and **Dan Zhu**, Huazhong University of Science and Technology, P.R. China

17.10-18.30

1. Optical, optoacoustic, and ultrasound techniques for noninvasive diagnostics and therapy

Rinat O. Esenaliev, University of Texas Medical Branch, USA

2. Microcirculation imaging

Martin Leahy, School of Physics, National University of Ireland, Galway, Ireland

3. Fluorescence detection and photosensitization of malignant brain tumors

Herbert Stepp, Laser Research Laboratory, LIFE Center, University Hospital of Munich, Germany

4. Multi-modality molecular imaging for nanomedicine and cancer research

Qiushi Ren, Department of Biomedical Engineering, Peking University, P.R. China

5. Optical Coherence Tomography

Peter E. Andersen, Sebastian Marschall, Technical University of Denmark, Department of Photonics Engineering, Roskilde, Denmark

RUSSIAN-CHINESE WORKSHOP

Co-chairs: **Qingming Luo**, Britton Chance Center for Biomedical Photonics, HUST, P.R. China, and **Valery V. Tuchin**, Saratov State University

September 26, Wednesday

9.00-9.10

Opening of the Workshop

Valery Tuchin, Saratov State University, Russia and **Lin Lin**, Huazhong University of Science and Technology, P.R. China

PLENARY SESSION

Co-chairs: **Alexander V. Priezzhev**, Moscow State University, Russia, **Hui Ma**, Tsinghua University, Shenzhen, P.R. China

9.10-9.45

Progress in optical clearing of tissue in vivo

Dan Zhu, Huazhong University of Science and Technology, P.R. China

9.45-10.20

Fluorescence molecular imaging in drug design and screening

Alexander P. Savitsky, A.N. Bach Institute of Biochemistry, Russia

10.20-10.40

Coffee break

INVITED LECTURE SESSION I

Co-chairs: **Da Xing**, South China Normal University, Guangzhou, P.R. China and **Alexander P. Savitsky**, A.N. Bach Institute of Biochemistry, Moscow, Russia

10.40-11.00

Real-time monitoring of rare circulating liver cancer cells in an orthotopic model by in vivo flow cytometry assesses resection on metastasis

Xunbin Wei, Shanghai Jiaotong University, Shanghai, P.R. China

11.00-11.20

Laser nanotechnologies for diagnosis and therapy of cancer and infections

Valery Tuchin, Saratov State University, Saratov, Russia

11.20-11.40

Peptide-based nanoparticles for the targeted delivery of cancer diagnostic and therapeutic agents

Zhihong Zhang, Huazhong University of Science and Technology, Wuhan, Hubei, P.R. China

INVITED LECTURE SESSION II

Co-chairs: **Valery Tuchin** Saratov State University, Saratov, Russia and **Zhihong Zhan**, Huazhong Univ. of Science and Technology, P.R. China

11.40-12.00

In vivo multi-scale photoacoustic imaging for biomedical applications

Da Xing, South China Normal University, Guangzhou, P.R. China

12.00-12.20

Optical assessment of biocompatibility and biosafety issues in interaction of nanoparticles with blood

Alexander V. Priezzhev, Moscow State University, Moscow, Russia

12.20-12.40

Photobiomodulation-mediated pathway diagnostics

Timon Cheng-Yi Liu, South China Normal University, Guangzhou, P.R. China

September 27, Thursday

INVITED LECTURE SESSION III

Co-chairs: Dan Zhu, Huazhong Univ. of Science and Technology, P.R. China and **Alexander V. Priezzhev**, Moscow State University, Moscow, Russia

14.00-14.20

Polarization imaging: techniques, applications and the physics insights

Hui Ma, Tsinghua University, Shenzhen, P.R. China

14.20-14.40

Spectroscopy analyses and detection of skin cancer

Valery P. Zakharov, Samara State Aerospace University, Russia

14.40-15.00

Imaging-based quantification of glottic opening by fiber optical nasopharyngoscopy in healthy and asthmatic subjects

Linhong Deng, Changzou University, Changzhou, P.R. China

15.00-15.20

Low-dimensional structures: sparse coding for neural activity

Xin Tian, Tianjin Medical University, Tianjin, P.R. China

15.20-15.40

Dynamic investigation of breast tumor response to the targeted therapy by using gold nanoparticle based molecular beacons

Yueqing Gu, China Pharmaceutical University, P.R. China

ORAL SESSION

Co-chairs: Valery P. Zakharov, Samara State Aerospace University, Russia and **Linhong Deng**, Changzou University, Changzhou, P.R. China

15.40-15.55

Microwave-induced thermoacoustic tomography for biomedical applications

Sihua Yang, South China Normal University, Guangzhou, P.R. China

15.55-16.10

Laser diffraction analysis of shear deformability of human red blood cells incubated with nanodiamonds

Andrei E. Lugovtsov, Moscow State University, Moscow, Russia

16.10-16.25

Molecular imaging of small animals using combined system of fluorescence molecular imaging and micro-CT

Xiaoquan Yang, Huazhong University of Science and Technology, Wuhan, Hubei, P.R. China

16.25-16.40

Application of confocal laser microscopy for mesh explants control

Ivan A. Bratchenko, Samara State Aerospace University, Russia

16.40-17.10

Coffee break

JOINT PLENARY SESSION INTERNET BIOPHOTONICS AND RUSSIAN-CHINESE WORKSHOP

Co-chair: **Valery V. Tuchin**, Saratov State University, Russia and **Dan Zhu**, Huazhong University of Science and Technology, P.R. China

17.10-18.30

Multi-Modality Molecular Imaging for Nanomedicine and Cancer Research Qiushi Ren, Department of Biomedical Engineering Scholar, College of Engineering, Peking University, P.R. China

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

Moderators: **Dmitry Agafonov**, **Ivan V. Fedosov**, Saratov State University, Russia, and **Xiaoquan Yang**, HUST, P.R. China

18.30-21.00

- The role of water in human tissue with certain compression: Studied with reflectance spectroscopy** Jingying Jiang, College of Precision Instrument and Optic Electronic Engineering, Tianjin University, Tianjin, P.R. China
- Second-harmonic generation imaging of elastic cartilage repair in a rabbit ear model** Xiaoqin Zhu, Fujian Normal University, Fujian, P.R. China
- Establishment of visible animal metastasis models for human nasopharyngeal carcinoma based on a far-red fluorescent protein** Min Chen, Hospital of Huazhong University of Science & Technology, Wuhan, P.R. China
- Noise reduction methods for OCT images** Oleg O. Myakinin, D.V. Kornilin, I.A.

Bratchenko, V.P. Zakharov, A.G. Khramov, Samara State Aerospace University and Image Processing Systems Institute, Samara, Russia

5. **The non-linear dynamic study on epilepsy ictal EEG** Tao Huaying, Xin Tian, Lab of Neurophysiology, Tianjin Medical University General Hospital, Tianjin, P.R. China
6. **Microwave therapy via bronchoscopes for severe tracheal stenosis** Liu Wei Min, Dai Li, and Lin Yu Hui, Respiratory Department of Zhongnan Hospital, Wuhan University, Wuhan, P.R. China
7. **Evaluation of the red blood cells shape parameter variance from the data of laser ektacytometry** Sergey Yu. Nikitin, Maria A. Kormacheva, Alexander V. Priezzhev, and Andrey E. Lugovtsov, Lomonosov Moscow State University, Moscow, Russia
8. **In vitro OCT study of alterations of adipose tissue structure induced by PDT treatment** Irina Yu. Yanina, Natalia A. Trunina, and Valery V. Tuchin, Saratov State University, Saratov State Medical University, and Institute of Precise Mechanics and Control RAS, Russia; University of Oulu, Finland
9. **Skin optical clearing by glucose and quantification of glucose diffusivity at its impact on skin tissues** Daria K. Tuchina, Alexey N. Bashkatov, Elina A. Genina, Vyacheslav I. Kochubey, and Valery V. Tuchin, Saratov State University and Institute of Precise Mechanics and Control RAS, Russia; University of Oulu, Finland
10. **TiO₂ and ZnO nanoparticles as disinfection compounds** Natalia A. Trunina, Alexey P. Popov, Jürgen Lademann, Valery V. Tuchin, Risto Myllylä, and Maxim E. Darvin, Saratov State University and Institute of Precise Mechanics and Control RAS, Russia; University of Oulu, Finland; Charité – Universitätsmedizin Berlin, Germany
11. **Relationship between the inflection point of anaerobic threshold and muscle oxygenation measured by NIRS during incremental exercises** Li Zhang, Wuhan Institute of Physical Education, P.R. China
12. **Reveal of using artificial sweetener in the process of natural juices and other drinks manufacturing** Anton Malinin, Anastasia Zanishevskaya, Julia Skibina, Valery Tuchin, and Igor Silokhin, Saratov State University, LLC SPE Nanostructured Glass Technology, and Institute of Precise Mechanics and Control RAS, Russia; University of Oulu, Finland
13. **Full field laser speckle contrast imaging technique application for visualization of rat's pancreas micro capillary blood flow** Polina A. Timoshina, Maxim A. Vilensky, Denis A. Alexandrov, Valery V. Tuchin, and Victor A.

Kuleshov, Saratov State University, Saratov State Medical University, and Institute of Precise Mechanics and Control RAS, Russia; University of Oulu, Finland

14. **Optical properties of the human nasal polyps in the spectral range from 300 to 2500 nm** Ekaterina A. Kolesnikova, Alia A. Muldasheva, Julia P. Ireneva, Darya N. Zmeeva, Alexey N. Bashkatov, Elina A. Genina, Vyacheslav I. Kochubey, Anatoly B. Knyazev, and Valery V. Tuchin, Saratov State University, Saratov State Medical University, and Institute of Precise Mechanics and Control RAS, Saratov, Russia; University of Oulu, Oulu, Finland

INTERNET INVITED REPORTS

1. **Newly developed NIR contrast agents for cancer targeted imaging** Chunmeng Shi, Institute of Combined Injury, State Key Laboratory of Trauma, Burns and Combined Injury, Department of Preventive Medicine, Third Military Medical University, Chongqing, P.R. China
2. **Singlet oxygen dosimetry for photodynamic therapy** Buhong Li, Key Laboratory of OptoElectronic Science and Technology for Medicine of Ministry of Education, Fujian Provincial Key Laboratory for Photonics Technology, Fujian Normal University, Fuzhou, Fujian, P.R. China
3. **Investigation of red blood cells aggregation in plasma and in proteins solutions by optical trapping** Kisung Lee, A.V. Priezzhev, A.Yu. Maclygin, I.O. Obolenskii, M. Kinnunen, R. Myllylä, Lomonosov Moscow State University, Moscow, Russia; University of Oulu, Oulu, Finland

INTERNET REPORTS

Optical properties of the human nasal polyps in the spectral range from 300 to 2500 nm* Ekaterina A. Kolesnikova, Alia A. Muldasheva, Julia P. Ireneva, Darya N. Zmeeva, Alexey N. Bashkatov, Elina A. Genina, Vyacheslav I. Kochubey, Anatoly B. Knyazev, and Valery V. Tuchin, Saratov State University, Saratov State Medical University, and Institute of Precise Mechanics and Control RAS, Saratov, Russia; University of Oulu, Oulu, Finland

Skin optical clearing by glucose and quantification of glucose diffusivity at its impact on skin tissues* Daria K. Tuchina, Alexey N. Bashkatov, Elina A. Genina, Vyacheslav I. Kochubey, and Valery V. Tuchin, Saratov State University and Institute of Precise Mechanics and Control RAS, Russia; University of Oulu, Finland

*Report is also presented in a Poster session

Workshop on Optical Technologies in Biophysics & Medicine XIV

Workshop Co-chairs: **Valery V. Tuchin**, Saratov State University, Institute of Precise Mechanics and Control RAS (Russia), University of Oulu (Finland) and **Elina A. Genina**, Saratov State University (Russia)

Secretary: **Maxim A. Vilensky**, Saratov State University (Russia)

International Program Committee **Victor N. Bagratashvili**, Inst. of Laser & Inform. Technol. RAS (Russia); **Alexey N. Bashkatov**, Saratov State Univ. (Russia); **Wei Chen**, Univ. of Central Oklahoma (USA); **Kishan Dholakia**, Univ. of St. Andrews (UK); **Paul M.W. French**, Imperial College of Sci., Technol. & Med. (UK); **James G. Fujimoto**, MIT (USA); **Steven L. Jacques**, Oregon Medical Laser Ctr. (USA); **Sean J. Kirkpatrick**, Michigan Technological Univ. (USA); **Kirill V. Larin**, Univ. of Houston (USA), Saratov State Univ.; **Jürgen M. Lademann**, Charité Universitätsmedizin Berlin (Germany); **Martin Leahy**, National Univ. of Ireland, Galway and RCSI (Ireland); **Qingming Luo**, Huazhong Univ. of Sci. & Technol. (China); **Igor V. Meglinsky**, Otago Univ. (New Zealand); **Risto Myllylä**, Univ. of Oulu (Finland); **Theodore G. Papazoglou**, FORTH-IESL (Greece); **Juergen Popp**, Inst. of Photonic Technol., Jena (Germany); **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State Univ. (Russia); **Lihong Wang**, Washington Univ. in St. Louis (USA); **Ruikang K. Wang**, Univ. of Washington (USA); **Dan Zhu**, Huazhong Univ. of Sci. and Technol. (China)

September 25, Tuesday

LECTURE/ORAL SESSION I

Chair: **Vladislav Toronov**, Ryerson University, Canada

16.40-17.00

Invited

Long term transcranial Doppler ultrasound monitoring of middle cerebral artery blood flow – opportunity and challenge

Bill Beck, PhysioSonics Inc, USA

17.00-17.20

Invited

Optical biopsy clinical tool for initial diagnosis and therapeutic monitoring of cutaneous tumors

Ekaterina G. Borisova¹, E. Pavlova², P. Troyanova², B. Nikolova³, I. Tsoneva³ ¹Institute of Electronics, Bulgarian Academy of Sciences; ²University hospital “Queen Giovanna-ISUL”; ³Institute of Biophysics and Biomedical Engineering, Bulgarian Academy of Sciences, Sofia, Bulgaria

17.20-17.40

Invited

A wireless, self-calibrating sensor for fNIRS studies in preterm infants

Marcin Pastewski^{1,2}, S. Kleiser^{1,2}, A. Metz^{1,2}, M. Wolf¹, ¹Biomedical Optics Research Lab (BORL), Division of Neonatology, University Hospital; ²Institute for Biomedical Engineering, ETHZ, Zurich, Switzerland

17.40-17.55

Stem cell compartment of hair follicle as a model for choice of targets for laser therapy of skin cancers

Boris V. Popov, Institute of Cytology RAS, St. Petersburg, Russia

17.55-18.10

Linear in-wavenumber optical spectral sampling for SD OCT

Pavel Shilyagin, Valentin M. Gelikonov, Grigory V. Gelikonov, Institute of Applied Physics RAS, Nizhny Novgorod, Russia

18.10-18.25

Monitoring of deformation and temperature dynamics of human skin by optical coherence tomography

Pavel Agrba¹, E.A. Bakshaeva¹, M.Yu. Kirillin², ¹Lobachevsky State University of Nizhny Novgorod; ²Institute of Applied Physics RAS, Nizhny Novgorod, Russia

18.25-18.40

Indigenous development of static laser light scattering (SLS) spectrometer

David Joseph, Amit Kumar, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India

September 27, Thursday

**JOINT POSTER/INTERNET SESSION AND
INTERNET DISCUSSION**

Co-chairs (B): **Georgy Akchurin, Alexander Kalyanov**
Saratov State University (Russia)

18.30-21.00

- 1B. **Elicitation of spatially distributed rhythms in speckle-data using GPU-based parallel computing** Dmitry A. Bagaev, Dmitry D. Postnov, Dmitry E. Postnov, Saratov State University, Saratov, Russia
- 2B. **Biodistribution of gold nanoparticles in the mesenteric lymph nodes after oral administration** Olga V. Zlobina¹, Svetlana S. Pakhomy¹, Alla B. Bucharskaya¹, Irina O. Bugaeva¹, Galina N. Maslyakova¹, Boris N. Khlebtsov², Nicolay G. Khlebtsov², Vladimir A. Bogatyrev², ¹Saratov State Medical University, ²IBPPM RAS, Saratov, Russia
- 3B. **Potential for quantitative micro-elastography using a multi-channel optical coherence method** Eli Elyas¹, Janine Erler², Thomas Cox², Simon Robinson¹, Daniel Woods³, Peter Clowes¹, Jeffrey Bamber¹, ¹The Institute of Cancer Research, United Kingdom; ²Biotech Research and Innovation Centre (BRIC), University of Copenhagen, Denmark; ³Michelson Diagnostics Ltd. United Kingdom
- 4B. **PCF-based analyzer for separate sugar determination** Anton Malinin^{1,2}, Anastasia Zanishevskaya¹, Julia Skibina^{1,2}, Valery Tuchin^{1,3,4}, Igor Silokhin², ¹Saratov State University; ²LLC SPE Nanostructured Glass Technology; ³Institute of Precise Mechanics and Control RAS, Saratov, Russia; ⁴University of Oulu
- 5B. **Atomic force microscopy utilization for lipoproteins and arterial intima interaction study** O.E. Glukhova¹, I.V. Kirillova¹, G.N. Maslyakova², E.L. Kossovich¹, D.A. Zayarsky¹, Alexander A. Fadeev¹, ¹Saratov State University; ²Saratov State Medical University, Saratov, Russia
- 6B. **Elicitation and analysis of geometrical structures in facies of biological fluids** Alena A. Taran, K.E. Savich, D.E. Postnov, Saratov State University, Saratov, Russia
- 7B. **XRD study of calcium-phosphate crystal formation on dentine surface** Nadezhda Bessudnova, Alexander Skaptsov, Sergey Venig, Andrey Gribov, Vsevolod Atkin, Saratov State University, Saratov, Russia
- 8B. **Mathematical modeling of pathological skin formations control by optical methods** Julia Khristoforova, Valery P. Zakharov, Ivan A. Bratchenko, Samara State Aerospace University, Samara, Russia
- 9B. **A low-cost frequency domain photon migration arrangement for measurement of optical properties of biological phantoms** Mohsen Erfanzadeh, Mohsen Shojaeifar, M.A. Ansari, E. Mohajerani, Shahid Beheshti University, Iran
- 10B. **Spectral analysis of R-450 cytochrom isoforms under IR radiation of microsoms, extracted from animals liver with toxic hepatitis** Sh. Khojiev¹, S. Guriev², A. Komarin², S. Sayfullaev², Kh. Pulatov², ¹Institute Ion-Plasma and Laser technologies; ²Tashkent State Medical Academy, Tashkent, Uzbekistan
- 11B. **Color contrast of red blood cells on solid surface** F. Eshonkhodjaev, A. Paiziev, Institute of Ion-Plasma and Laser Technologies, Tashkent, Uzbekistan
- 12B. **Nanoparticles as contrasting agents in diffuse optical spectroscopy** A. Krajnov, A. Mokeeva, E. Sergeeva, M. Kirillin, Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- 13B. **Restoration of finger blood flow oscillations by means of temperature data processing and dispersive properties of a skin** Andrey Sagaidachnyi, D.A. Usanov, A.V. Skripal, A.V. Fomin, Saratov State University, Russia
- 14B. **Studying of pathological tissue boundaries using the differential backscattering method** E.V. Timchenko, P.E. Timchenko, L.A. Taskina, V.P. Zakharov, A.A. Morytov, S.V. Kozlov, Samara State Airspace University, Russia
- 15B. **Two-scale algorithm for calculation of photo-induced temperature fields in a medium with the embedded nanoparticles** Yu.A. Avetisyan¹, A.N. Yakunin^{1,2}, V.V. Tuchin^{1,3,4}, ¹Institute of Precise Mechanics and Control RAS; ²Saratov State Technical University; ³Saratov State University, Saratov, Russia; ⁴Optoelectronics and Measurement Techniques Laboratory, University of Oulu, Oulu, Finland
- 16B. **Laser-induced temporal alteration of optical properties of fat tissue specimens sensitized by indocyanine green** Irina Yu. Yanina^{1,2}, V.A. Doubrovski¹, V.V. Tuchin^{2,3,4}, ¹Saratov State Medical University; ²Saratov State

University; ³Institute of Precise Mechanics and Control RAS; ⁴University of Oulu, Finland

- 17B. **TiO₂-, ZnO- and silicone-based tissue-mimicking phantoms with controllable optical parameters with an embedded capillary network** Alexey P. Popov¹, A.V. Bykov¹, K. Rapo¹, E. Krystian², R. Myllylä¹, V.V. Tuchin^{1,3}, ¹Optoelectronics and Measurement Techniques Laboratory, University of Oulu, Oulu, Finland; ²Department of Telecommunication Electronics and Informatics, Gdansk University of Technology, Gdansk, Poland; ³Institute of Optics and Biophotonics, Saratov State University, Saratov, Russia
- 18B. **The optical diagnostics of cancer cells at different development stage of pathology** Svetlana Shkolnikova, Valeriya Maryakhina, Orenburg State University, Russia
- 19B. **Development of digital holography methods for biomedical applications** Valentin Gelikonov, Grigoriy Gelikonov, Dmitriy Shabanov, Pavel Shilagin, Vasiliy Matkivskiy, Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- 20B. **Potential capabilities of diagnostic of eye grounds with cataract using 3D OCT technology** Igor B. Soloveychik¹, V.Yu. Maximov¹, Georgy Akchurin^{2,3}, Garif Akchurin^{2,3}, ¹Regional Eye Hospital; ²Institute of Precision Mechanics and Control RAS; ³Saratov State University, Saratov, Russia
- 21B. **Arterial pulse wave shape measurement using a self-mixing interferometer** Evgenii Kashchavtcev, Dmitry Usanov, Anatoliy Skripal, Saratov State University, Russia
- 22B. **Diffusing wave spectroscopy in application to measurements of transport properties of random media** Anna Isaeva, Dmitry A. Zimnyakov, Saratov State Technical University, Russia
- 23B. **Measurements of refractive indices of turbid and absorbing media by image analysis** Leonid E. Dolotov¹, Alexander V. Bykov², Alexey P. Popov², Risto Myllylä², Valery V. Tuchin^{1,2}, ²University of Oulu, Finland; ¹Saratov State University, Russia
- 24B. **Particle image velocimetry for blood microcirculate studies** Maksim Kurochkin, SSU, Russia Ivan Fedosov, SSU, Russia Valery Tuchin, SSU, Russia
- 25B. **Determination of red blood cells agglutinates sizes by means of flow method on the base of RGB decomposition of their digital images** Yulia A. Ganilova, V.A. Doubrovski, I.V. Zabenkov, Saratov State Medical University, Russia
- 26B. **Selective light absorption as a method of erythrocytes' agglutinates registration using digital photography** A.A. Dolmashkin, V.A. Doubrovski, I.V. Zabenkov, S.O. Torbin, Saratov State Medical University, Russia
- 27B. **Elastic light scattering and absorption phenomena in turbidimetric analysis of RBCs' and their agglutinates' sedimentation on the base of digital imaging** V.A. Doubrovski, I.V. Zabenkov, A.A. Dolmashkin, Saratov State Medical University, Russia
- 28B. **Geometrical sizes of platelets aggregates determination in vitro by means of digital microscopy method** S.O. Torbin, V.A. Doubrovski, I.V. Zabenkov, V.I. Eremin, O.E. Tsareva, Saratov State Medical University, Russia
- 29B. **RBC agglutinates registration on the base of digital microscopy** I.V. Zabenkov, V.A. Doubrovski, S.O. Torbin, Saratov State Medical University, Russia
- 30B. **Experimental investigation of platelets' aggregation in vitro by means of turbidimetric and digital microscopy methods** S.O. Torbin, V.A. Doubrovski, I.V. Zabenkov, V.I. Eremin, O.E. Tsareva, Saratov State Medical University, Russia
- 31B. **Variation of singlet-singlet energy transfer between tryptophanyl and eosin under the action of surfactant on HSA in solution** Irina V. Alonova¹, Andrey G. Melnikov², Vyacheslav I. Kochubey¹, Alexander B. Pravdin¹, ¹Saratov State University; ²Saratov State Technical University
- 32B. **Active laser thermography as a probe of microvascular blood flow in living tissue and mass transfer in porous media** Sergey A. Yuvchenko, Dmitry A. Zimnyakov, Saratov State Technical University, Russia
- 33B. **Use of fractional laser microablation of skin for improvement of its immersion clearing** Anastasia Znamenskaya, Ekaterina Kolesnikova, Daria Tuchina, Elina A. Genina, Leonid E. Dolotov, Alexey N. Bashkatov, Valery V. Tuchin, Saratov State University, Russia
- 34B. **Ocular drugs influence on the structure of human corneal tissue** Angelika S. Orlova¹, Tatyana G. Kamenskikh¹, Igor O. Kolbenev¹, Alexey N. Bashkatov², Elina A. Genina², Valery V. Tuchin², ¹Saratov State Medical University; ²Saratov State University, Russia
- 35B. **Control of a form of RBC by methods of interferometric microscopy** Yana V. Tarakanchikova, Natali

Tkachenko, Olga A. Perepelitsina, Saratov State University, Russia

- 36B. **Multimodal monitoring of psoriasis treatment using optical coherence tomography, reflectance spectroscopy and full-field speckle correlation technique: a pilot study** Maria A. Reznikova¹, Natalia A. Trunina², Alexey N. Bashkatov², Maxim A. Vilensky², Elina A. Genina², Natalia A. Slesarenko¹, Sergey R. Utz¹, Valery V. Tuchin², Mikhail M. Stolnitz², ¹Saratov State Medical University, ²Saratov State University, Russia
- 37B. **Monitoring of liquids penetration through dental tissues by optical coherence tomography: mathematical model development and experimental results** Mikhail M. Stolnitz¹, Vladimir L. Derbov¹, Dmitry E. Suetenkov², Natalia A. Trunina¹, Valery V. Tuchin¹, Maxim A. Vilensky¹, ¹Saratov State University; ²Saratov State Medical University, Russia
- 38B. **Effect of external mechanical compression on optical properties of the human skin *in vivo*** Inara Nakhaeva, Yury P. Sinichkin, Saratov State University, Russia
- 39B. **Analysis of the absorption spectra of gas emission of patients with lung cancer and chronic obstructive pulmonary disease by laser optoacoustic spectroscopy** Ekaterina B. Bukreeva¹, Anna A. Bulanova¹, Yurii V. Kistenev¹, Dmitry A. Kuzmin², Sergei A. Tuzikov³, Evgenii L. Yumov³, ¹SSMU; ²IAO SB of RAS; ³Tomsk Cancer Research Institute, Russia
- 40B. **Effect of media scattering parameter on signal value at acousto-optic tomography** A.P. Soloviev, O.V. Zurukina, M.I. Perchenko, Saratov State University, Russia
- 41B. **The set of optical phantoms for validation of fluorescent spectra correction techniques** Tatiana N. Shepeleva, Svetlana P. Chernova, Alexander B. Pravdin, Saratov State University, Russia
- 42B. **Monte Carlo simulation of optical diffuse reflectometry for brain sensing** Mikhail Kirillin¹, Anton Gorshkov^{1,2}, Ekaterina Sergeeva¹ ¹Institute of Applied Physics, RAS; ²Lobachevsky State University of Nizhny Novgorod, Russia
- 43B. **Monte Carlo evaluation of differential pathlength factor for optical brain sensing** Mikhail S. Zhukov¹, Ekaterina A. Sergeeva², Mikhail Yu. Kirillin², Vladimir G. Gavrilenko¹, ¹Nizhny Novgorod State University; ²Institute of Applied Physics, RAS, Nizhny Novgorod, Russia
- 44B. **Possible applications of slit CO₂ laser in bone surgery** Dmitriy Bessonov, Tatiana Sokolova, SSTU, Saratov, Russia
- 45B. **Acoustic output management of trans-cranial Doppler ultrasound monitoring systems** Dane Beck, PhysioSonics, USA

September 28, Friday

ORAL SESSION II

Chair: **Ivan V. Fedosov**, Saratov State University,
Russia

9.00-9.15

Identification of specific peculiarities of THz reflection spectra of abnormal human tissues

Anna Ezerskaya, Igor Prozheev, Evgeniy Strepitov, Olga Smolyanskaya, SPbSU ITMO, St.-Petersburg, Russia

9.15-9.30

Numerically effective resampling in spectral domain optical coherence tomography

Alexander Moiseev, Grigory Gelikonov, Pavel Shilyagin, Valentine Gelikonov, Institute of Applied Physics RAS, Nizhny Novgorod, Russia

9.30-9.45

Thermal influence of infrared laser tweezers ($\lambda=1064$ nm) on single red blood cell

Ilya Krasnikov¹, Alexey Seteykin¹, Ingolf Bernhardt²,
¹Amur State University, Russia; ²University of Saarland, Germany

9.45-10.00

Fluorescent probes immobilization kinetics into ferment molecules

Valeriya Maryakhina, Orenburg State University, Russia

10.00-10.15

Autofluorescence spectral features of normal skin – basis for comparison with cutaneous pathologies

Ekaterina G. Borisova Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria

10.15-10.30

Single mode ER-lasers treatment of hard tooth tissues

A.V. Belikov, Ksenia V. Shatilova, A.V. Skrypnik, St. Petersburg National Research University of Information Technologies, Mechanics and Optics, Russia

10.30-10.45

Study of interaction of chlorine and phtalocyanine photosensitizers with human normal and cancer cells *in vitro*

Lyubov Dubasova¹, E.I. Sergeeva¹, A.A. Brilkina¹, I.V. Balalaeva¹, E.A. Sergeeva², N.M. Shakhova², ¹Lobachevsky State University of Nizhny Novgorod; ²Institute of Applied Physics, RAS, Nizhny Novgorod, Russia

Workshop on Laser Physics and Photonics XIV

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

Secretary: **Andrey I. Konukhov**, Saratov State University (Russia)

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

September 27, Thursday

ORAL SESSION PHOTONICS I

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

09.00-09.15

Two-centre electron interference in single-photon double ionization of molecular hydrogen

Vladislav Serov, Saratov State University, Russia; I. A. Ivanov, The Australian National University, Canberra, Australia; A. S. Kheifets, The Australian National University, Canberra, Australia

09.15-09.30

Sub-10 fs noncolinear OPCPA

Daniel Nuerenberg, Jiaan Zheng, Wataru Kobayashi, Thomas Hamann, Helmut Zacharias, Westfaelische Wilhelms-Universitaet Muenster, Germany

09.30-09.45

Nonlinear optical properties of rare earth crystal studied by Z-scan method

David Joseph, Kiran Chahal, Optical Engineering section, Dept of Applied Physics, Guru Jambheshwar University of Science and Technology, Hisar, India

09.45-10.00

Beer-Lambert law in photonic crystal fiber spectroscopic study

Alexander Plastun, Andrey Konyukhov, Saratov State University, Russia

10.00-10.15

Optical absorption in indefinite media

Igor S. Nefedov, Aalto University, Department of Radio Science and Engineering, Finland; Seed M. Hasnemi, Iran University of Science and Technology, Department of Electrical Engineering; Evgeny I. Nefedov, Research-Production Enterprise "Almaz", Saratov, Russia

10.15-10.30

Analytical and numerical calculations of spectral and optical characteristics of quantum dots

V.L. Derbov, A.S. Klombotskaya, V.V. Serov, Saratov State University, Saratov, Russia; A.A. Gusev, L.L. Hai, O. Chuluunbaatar, S.I. Vinitsky, Joint Institute for Nuclear Research, Dubna, Russia; K.G. Dvovyan, H.A. Sarkisyan, Russian-Armenian (Slavonic) University, Yerevan, Armenia

10.30-11.00

Coffee break

ORAL SESSION PHOTONICS II

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

11.00-11.15

Modeling of the TM modes propagation in non-linear high-contrast planar waveguides by the finite-difference method

Evgenii Borisov, Elena Romanova, Saratov State University, Russia

11.15-11.30

On the "dressed" atomic state approximation in the model of superradiant reflection of laser light from a Bose-Einstein condensate

Yuri Avetisyan, Institute of Precise Mechanics and Control, RAS, Russia

11.30-11.45

The display of nonadiabaticity in electromagnetically induced transparency

Nikita O. Gavrilets, Ekaterina R. Govorenko, Oleg M. Parshkov, Saratov State Technical University

11.45-12.00

Time-dependent coherent effects in the frequency-modulated CW laser beams

Artyom Misyurin, Inna Plastun, Saratov State Technical University, Russia

12.00-12.15

Chaos and entanglement in atomic systems interacting with photons

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

12.12-12.30

Intracavity generation of mid-infrared radiation in a semiconductor dual-wavelength vertical external cavity surface-emitting laser

Mikhail Yu. Morozov, Yuri A. Morozov, Kotelnikov Institute of Radio Engineering and Electronics (Saratov Branch), RAS; Irina V. Krasnikova, Saratov State Technical University, Russia

12.30-12.45

Entanglement for atoms with degenerate two-photon transitions successively passing the thermal cavity

Eugene K. Bashkirov, Yulia Nikiforova, Samara State University, Russia

12.45-13.00

Computer modeling of energy deposition into a glass sample by an ultrashort laser pulse

Alexander V. Melnikov, E.A. Romanova, A.I. Konyukhov, Saratov State University, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

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

18.30-21.00

1 P. **Slot waveguide as a device to control dispersion** Vladimir Vinogradov, Elena Romanova, Saratov State University, Russia.

2 P. **Conversion of optical pulse spectrum in a race-track resonator**, Daniil Zhivotkov, Elena Romanova, Saratov State University, Russia.

3 P. **Nonstationary dynamics near cut-off frequency in nonlinear Bragg grating**, Alexander Sadovnikov, Andrew Rozhnev, Saratov State University, Russia

4 P. **Method for determination of the object's acceleration at the micro- and nano- displacements with a self-mixing interferometer, taking into account the influence of external optical feedback** Evgenii Kashchavtcev, Dmitry Usanov, Anatoliy Skripal, Sergey Dobdin, Saratov State University, Russia

5 P. **Experimental and theoretical investigation of evolution of longitudinal coherence length of optical field with broad angular spectrum in the image space** Sergey Klykov, Saratov State University, Russia; Dmitry Lyakin, Institute of Precise Mechanics and Control RAS, Russia

6 P. **Exciplex electroluminescence spectra in the new zinc complexes with sulphanylaminosubstituted benzothiazoles and quinolines** S.S. Krasnikova, M.G. Kaplunov, I.K. Yakushchenko, IPCP RAS Chernogolovka, Russia

7 P. **Manifestations of nonlinear interference effects in frequency-modulated laser beams** Alexander Orudzev, Inna Plastun, SSTU, Russia

8 P. **Laser-assisted electron momentum spectroscopy: potential and perspectives** Andrey Bulychev, Joint Institute For Nuclear Research, Dubna; Konstantin Kouzakov, Lomonosov Moscow State University; Yuri Popov, Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow, Russia; Masahiko Takahashi, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

9 P. **Entanglement in the Tavis-Cummings model** Mikhail Mastugin, Samara State University, Russia

10 P. **Peculiarities of femtosecond spectral supercontinuum generation in anisotropic crystal media with quadratic nonlinearity** S.S. Nalegaev, S.E. Putilin, V.G. Bespalov., National Research University of Information Technologies, Mechanics and Optics, Saint-Petersburg, Russia

11 P. **Superradiant scattering of laser light from a Bose-Einstein condensate: red-blue detuning assymetry analysis** Yuri Avetisyan, Institute of Precise Mechanics and Control RAS, Russia

12 P. **Feasibility of the laser acceleration of channeled light**

particles in periodically modulated crystal
Tatiana Sergeeva, Vladislav Serov, Saratov State University, Russia

- 13 P. **Ultrasonic device for measuring of gas consumption** Arseny Petrov, Saratov State University, Russia
- 14 P. **Digital holographic microscope for biomedical applications** Alexander Y. Abramov, Sergey A. Savonin, Saratov State University; Vladimir P. Ryabukho, Saratov State University, Institute of Precise Mechanics and Control, RAS, Saratov, Russia
- 15 P. **The limits of microdeformations of the object by digital holographic interferometry** Olga Izotova, Saratov State University, Russia
- 16 P. **Research of the features of statistical distribution of phase difference in speckle field with the help of digital modeling** Vladimir P. Ryabukho, Saratov State University; Ludmila A. Maksimova, Institute of Precise Mechanics and Control, RAS; Boris B. Gorbatenko, Saratov State Technical University; Natalia Ju. Mysina, Saratov State University, Russia
- 17 P. **Digital correlation speckle-interferometry for measurements of lateral microdisplacement of scattering object** Natalia Ju. Mysina, Saratov State University; Ludmila Maksimova, Institute of Precise Mechanics and Control, RAS, Russia
- 18 P. **Modeling of the longitudinal speckles** Ludmila A. Maksimova, Institute of Precise Mechanics and Control, RAS; Natalia Ju. Mysina, Saratov State University; Vladimir P. Ryabukho, Saratov State University, Russia
- 19 P. **The pressure of the plane monochromatic light wave in a right-handed and left-handed media** Michael Davidovich, Saratov State University, Russia
- 20 P. **Self-mixing interferometer with wavelength modulation for nano-vibrations amplitudes measurement of remote reflector** Elisey Astakhov, Dmitry Usanov, Anatoliy Skripal, Saratov State University, Russia.
- 21 P. **Influence on output of a fiber-optic gyroscope from using low coherent light source** G.G. Akchurin, Saratov State University; D. V. Obuhovich, V.G. Ponomarev, V.E. Prilutskii, Research & Production Company "Optolink"; A.D. Turygin, Saratov State University, Russia
- 22 P. **Research of technological application of femtosecond lasers for treatment of ceramics and glass** I.A. Popov, T.N. Sokolova, E.L.

Surmenko, A.V. Konyushin, Saratov State Technical University

- 23 P. **Application of Fresnel holograms in digital holographic microscopy** Olga A. Perepelitsina, Saratov State University, Russia.
- 24 P. **Photon matrix switch for optical networks** Yury N. Perepelitsyn, Saratov Department of V.A. Kotelnikov Institute of Radio Engineering and Electronics of RAS, Russia
- 25 P. **Speckle correlation diagnostics of dispersive supercritical systems** Sergey Chekmasov, Dmitriy Zimnyakov, Saratov State Technical University, Russia
- 26 P. **Dynamics of short-cavity short-pulse standing-wave lasers** Yulia Mazhirina, Leonid Melnikov Saratov State Technical University, Russia.
- 27 P. **Collision of optical solitons in dispersion oscillation fiber** Marta Dorokhova, Andrey Konyukhov, Leonid Melnikov, Saratov State Technical University; Saratov State University, Russia
- 28 P. **Numerical model of long cavity lasers with counter propagating pulses** E.I. Romanova, L.A. Melnikov, Yu.A. Mazhirina, Saratov State Technical University; Saratov State University, Russia
- 29 P. **Atom-field entanglement in two-atom Jaynes-Cummings model with nondegenerate two-photon transitions** Eugene Bashkirov, Elena Sochkova, Samara State University, Russia

INTERNET REPORTS

1. **Photo-integrated volumetric nonlinear structures for micro-optics** Vitaly A. Smirnov, Liubov I. Vostrikova, Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia
2. **Light-induced photorefraction in volume of glass** Vitaly A. Smirnov, Liubov I. Vostrikova, Rzhanov Institute of Semiconductor Physics SB RAS, Novosibirsk, Russia

Workshop on Spectroscopy and Molecular Modeling XIII

Workshop Chairs **Valentin I. Berezin, Lev M. Babkov, Michael D. Elkin** *Saratov State University (Russia)*

Secretaries **Kirill V. Berezin, Galina N. Ten** *Saratov State University, (Russia)*

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

September 25, Tuesday

ORAL SESSION

Chair **Valentin I. Berezin**, *Saratov State University, Saratov, Russia*

16.40-17.00

Single NV centers in nanostructured diamond for quantum informatics and quantum magnetometry

A.P. Nizovtsev, B.I. Stepanov *Institute of Physics, NASB, Minsk, Belarus*; A.L. Pushkarchuk, *Institute of Physical Organic Chemistry, NASB, Minsk, Belarus*; V.A. Pushkarchuk, *BSUIR, Minsk, Belarus*; S.Ya. Kilin, B.I. Stepanov *Institute of Physics NASB, Minsk, Belarus*

17.00 -17.20

Methodical aspects of molecular modeling

P.M. Elkin, G.P. Stefanova, I.A. Krutova, V.I. Kolomin *Astrakhan State University, Saratov State University, Russia*

17.20-17.40

Modeling of adiabatic potential for dopamine and adrenaline

O.M. Alykova, A.R. Gaysina, O.V. Pulin, M.D. Elkin *Astrakhan State University Saratov State Technical University, Russia*

17.40-18.00

DFT study of van der Waals dimers of benzene

Oleg V Kozlov., Kirill V. Berezin, *Saratov State University, Russia*; Vladimir V. Nechaev, *Saratov State Technical University, Russia*

18.00-18.20

Simulation of the vibrational spectra of 1,3,5,7-tetramethylporphin. Identification of the vibrational modes of methyl substituents

Vladimir V. Nechaev, *Saratov State Technical University*; Kirill V. Berezin, *Melnikova Veronika S., Saratov State University, Russia*

18.20-18.40

Hydrogen bonding and polymorphism and their appearance in vibrational spectra of cyclohexanol

E.A. Moiseikina, L.M. Babkov, *Saratov State University, Russia*; N.A. Davydova, *Institute of Physics of National Academy of Sciences of Ukraine, Kiev, Ukraine*

September 27, Thursday

**JOINT POSTER/INTERNET SESSION AND
INTERNET DISCUSSION**

Co-chairs (S): **Valentin I. Berezin, Lev M. Babkov,
Michael D. Elkin** Saratov State University (Russia)

18.30-21.00

1S. Precision calculations to the fine shift of s levels in the hydrogen-like atoms

Svetlana Churochkina, Saratov State University, Russia

2S. Modeling of structure and dynamics for conformers of chrysin

E.A. Djalmuhambetova, D.M. Nuralieva, I.T. Shigautdinova, Astrakhan State University; M.D. Elkin Saratov State University, Russia

3S. Interpretation of vibrational spectra for apegenin

P.M. Elkin, Saratov State Technical University; I.T. Shigautdinova, Astrakhan State University; O.V. Pulin, A.R. Gaysina, Saratov State Technical University, Russia

4S. Structural-dynamic models of dihydroxyflavones

M.A. Erman, E.I. Kondratenko, O.N. Grechuhina, E.A. Djalmuhambetova, Astrakhan State University, Russia

5S. Structural-dynamics models and vibration spectra for dimers of flavone

E.A. Erman, V.V. Smirnov, A.O. Litinski, E.I. Kondratenko, Astrakhan State University; Volgograd State Technical University, Russia

6S. Modeling of structure and spectra for phenotiasine

P.M. Elkin, E.Yu. Stepanovich, V.F. Pulin, O.N. Grechuhina, Saratov State Technical University; Astrakhan State University, Russia

7S. Spectral identification of 2-thiouracil in condensed state

N.A. Ravcheeva, A.A. Popov, V.M. Kartashov, M.D. Elkin, Astrakhan State University; Saratov State University, Russia

8S. Vibrational spectra of 5-halogencytosines in condensed state

M.D. Elkin, N.A. Ravcheeva, V.F. Pulin, Saratov State University; O.M. Alykova, Astrakhan State University, Russia

9S. Interpretation of the vibrational spectra of selenocysteine in the isolated state

Igor Alekseev, Galina Nikolaevna Ten, Saratov State University, Russia

10S. The interpretation of the vibrational spectrum of absorption of tryptophan in water solution

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

11S. IR spectrum, structure and normal mode analysis of protoporphyrin IX

K.N. Dvoretzky, Saratov State Medical University; V.V. Nechaev, Saratov State Technical University; K.V. Berezin, Saratov State University, Russia

12S. Second order perturbation theory of anharmonic Raman intensities

V.V. Nechaev, Saratov State Technical University; V.I. Berezin, E.A. Piskunova, K.V. Berezin, Saratov State University, Russia

13S. High-precision calculations of two-electron ions in explicitly correlated wave functions of new type

V.V. Neches, A.A. Sipco, Saratov State Technical University, Russia

14S. The influence of the h-bonding at IR spectrum and structure of 2,3-di-o-nitro-methyl- β -d-glucopyranoside

L.M. Babkov, I.V. Ivlieva, Saratov State University, Russia; M.V. Korolevich, Institute of Physics of National Academy of Sciences of Belarus, Minsk, Belarus

15S. Theoretical study of resonance Raman spectrum of 1,2,3,4,5,6,7,8-octamethylporphin

O.D. Ziganshina, Saratov State Technical University; M.K. Berezin, Saratov State University; V.V. Nechaev, Saratov State Technical University; K.V. Berezin, Saratov State University, Russia

16S. The relative quasipotential of two particle system

Nataliya Boykova, Saratov State University, Russia

INTERNET REPORT

Effect of perturbations of vibrational states at intramolecular and spectroscopic parameters

S.P. Gavva, M.A. Tokareva, Saratov State Technical University, Saratov, Russia

Workshop on Modern Optics XI

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

Workshop Chair: Vladimir P. Ryabukho, Saratov State University and Institute of Precision Mechanics and Control RAS (Russia)

Secretary: Olga A. Perepelitsina, Vladislav V. Lychagov, Alexander Kal'yanov, Il'ya Smirnov Saratov State University (Russia)

International Program Committee: Valery V. Tuchin, Saratov State University (Russia), Vladimir P. Ryabukho, Saratov State University (Russia), Vladimir L. Derbov, Saratov State University (Russia), Leonid A. Melnikov, Saratov State Technical University (Russia), Alexander B. Pravdin, Saratov State University (Russia) Boris A. Medvedev, Saratov State University (Russia), Lyudmila V. Pravdina, Saratov Physics and Technical Lyceum, Alexander V. Priezzhev, Moscow State University (Russia), Vladimir N. Shevtsov, Saratov State University (Russia), Mikhail A. Starshov, Saratov State University (Russia), Boris B. Gorbatenko, Saratov State Technical University (Russia)

Thursday September 27

ORAL SESSION

Chair: **Vladimir P. Ryabukho**, Saratov State University,
Institute of Precise Mechanics and Control RAS, Russia

14.00-15.40

Display Technologies: Modern State and Prospects of Development

Prof. **Vladimir V. Petrov**, Saratov State University, Russia

Workshop English as a Communicative Tool in the Scientific Community XI

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 A. Trunina**, Saratov State University (Russia)

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

September 26, Wednesday

ORAL SESSION

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

10.55-11.25

Keys to successful autonomous learning: making the most of your university English course

Natalia S. Karpova, Saratov State University, English Language Teachers' Support Center "Littera", Saratov, Russia

11.25-11.40

English for dental professionals: corpus-based research findings

Nadezhda Bessudnova, Saratov State University, Saratov, Russia

11.40-11.55

Some pitfalls of person-to-person communication in auditory and lobby

Arina O. Shelyugina, Saratov State University, Saratov, Russia

11.55-12.05

Assessment of oral presentation skills

Svetlana V. Eremina, Saratov State University, Saratov, Russia

12.05-12.15

On the local diagnostics of vascular tone dynamics

Maria O. Tsoy, Saratov State University, Saratov, Russia

12.15-12.25

Reabsorption-based correction of fluorescence spectra of strongly scattering media

Tat'yana Shepeleva, Saratov State University, Saratov, Russia

12.25-12.35

The study of excitation energy transfer from human serum albumin to Eosin Y

Irina V. Alonova, Saratov State University, Saratov, Russia

12.35-12.45

On the photowhitening of dentine

Natalia I. Kazadaeva, Saratov State University, Saratov, Russia

12.45-13.00

CRDF Summer Camp 2012

Nadezhda I. Biryukova, Yaroslav I. Boev, Marina D. Kozintseva, Saratov State University, Saratov, Russia

Workshop on Management of High Technologies Commercialization and Regional Innovation Systems IX

Workshop Co-Chairs: **Valery V. Tuchin** and **Julia S. Skibina**, Saratov State University (Russia), SPE "Nanostructured Glass Technology" Ltd.

Secretary: **Anton V. Malinin**, Saratov State University (Russia), SPE "Nanostructured Glass Technology" Ltd.

International Program Committee: **Gregory B. Altshuler**, Palomar Medical Technologies Inc. (USA), **Robert Breault**, Breault Research Organization, Arizona Optics Industry Association (USA), **Boris Reznik**, BioRASI, Inc. (USA), **Natalya V. Romanova**, Saratov State University (Russia), **Sergey N. Sokolov**, INJECT Enterprise (Russia), **Stoyan Tanev**, University of Southern Denmark, (Denmark), **Andreas Thoss**, THOSS Media GmbH, Berlin, Germany)

September 27, Thursday

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

INVITED INTERNET LECTURE

18.30-21.00

Creativity in the adoption of new technological products – an activity theory approach Stoyan Tanev, Institute of Technology Innovation, University of Southern Denmark, Denmark

September 28, Friday

ORAL SESSION

Co-Chairs: **Valery V. Tuchin** and **Julia S. Skibina**, Saratov State University, SPE "Nanostructured Glass Technology" Ltd. (Russia)

9.00-9.15

Actual problems of strategic planning of high-tech enterprises within "Photonics" technological platform

Sergei N. Sokolov, OJSC "RME "INJECT", Saratov, Russia

9.15-9.30

Industrial forecasting centre "Devices for Medicine": organization and pilot research

Leonid E. Dolotov, Maria M. Sherman, Valery V. Tuchin, Elena K. Volkova, Saratov State University, Russia

9.30-9.45

System of scientific and technological prediction of foreground areas in "Life science"

Ilya P. Kaminsky, Ludmila M. Ogorodova, Siberian State Medical University, Russia

9.45-10.00

Concept of strategic research program development in a framework of "Medicine of future" technological platform

Yurii Kistenev, Tomsk State Medical University, Russia

10.00-10.15

Development of immunochemical multianalyte multilabelled immunoassay based on quantum dots and inorganic nano – carriers

Valentina Gofman, Yu. Goryacheva, Saratov State University, Russia

10.15-10.30

The use of gold nanoparticles in the development of gene diagnostic test-systems

T.E. Pylaev, V.A. Bogatyrev, N.G. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Saratov, Russia

10.30-10.45

Multifunctional nanocapsules based on the modified liposomes – new containers for targeted drug delivery

Vitaly Kim, A.V. Ermakov, E.G. Glukhovskoy, Saratov State University, Russia; G.B. Khomutov, Moscow State University, Russia

10.45-11.00

Installation for monolayers researching

Y.A. Gorbachev, E.G. Glukhovskoy, Saratov State University, Russia

11.00-11.30
Coffee break

11.30-11.45

Diffraction phase module for commercial microscopes

Natalya Talaykova, Saratov State University, Russia

11.45-12.00

Prototype of digital holographic device for retina investigation

Vasiliy Matkivskiy, IAP RAS, N. Novgorod, Russia

12.00-12.15

Formation of organized structures based on core/shell particles

Alena Sergeeva, Saratov State University, Russia

12.15-12.30

Sensitive elements of fiber detectors for remote MID-IR spectroscopy

Yu. Kuzyutkina, E. Romanova, Saratov State University, Russia; V. Shiryayev, Institute of Chemistry of High-Purity Substances RAS; Angela B. Seddon, Trevor M. Benson, University of Nottingham, UK

12.30-12.45

Development of a new type of semiconductor generators in middle and far infrared range

M. Morozov, Yu. Morozov, Saratov Branch of IRE RAS; I. Krasnikova, Saratov State Technical University, Russia

12.45-13.00

Brillouin light scattering studies of periodical ferromagnetic structures

A. Sadovnikov, Saratov State University, Russia

13.00-13.15

Development of technology to measure internal temperature fields during laser photothermolysis of biological tissues using fluorescent nanothermometers

A. Skaptsov, Saratov State University, Russia

Workshop on Nanobiophotonics VIII

Workshop Chair: **Nikolai G. Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms of RAS, Saratov State University (Russia),

Secretary: **Boris N. Khlebtsov**, Institute of Biochemistry and Physiology of Plants and Microorganisms of RAS, Russia

International Program Committee: **Dmitry Gorin**, Saratov State University; **Valery Tuchin**, Saratov State University (Russia); **Lev Dykman**, Institute of Biochemistry and Physiology of Plants and Microorganisms of RAS; **Vladimir Bogatyrev**, Institute of Biochemistry and Physiology of Plants and Microorganisms of RAS

September 28, Friday

LECTURE/ORAL SESSION

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

11.30 – 11.45

Nanosized luminescent labels for biochemical research

I. Yu. Goryacheva Saratov State University, Saratov, Russia

11.45-12.00

Hydrophilization of semiconductor quantum dots with amphiphilic polymer

Elena Speranskaya, Saratov State University, Russia
I. Yu. Goryacheva, Saratov State University, Russia

12.00-12.15

Preparation of nanocomposite films with different number of iron oxide nanoparticle layer

Sergei German, A.V. Markin, Saratov State University, Russia; I. Dincer, O. Tozkoparan, O. Yildirim, Ankara University, Turkey; G. B. Khomutov, M.V. Lomonosov Moscow State University, Moscow, Russia; S.B. Venig, Saratov State University, Russia; Y. Elerman, Ankara University, Turkey; D.A. Gorin, Saratov State University, Russia

12.15-12.30

Surface enhancement by magnetic nanoparticles of the liquid crystal material Raman scattering

Daniil Bratashov, Saratov State University, Russia; Alexey Yaschenok, Saratov State University, Russia; Max Planck Institute of Colloids and Interfaces, Germany; Yulia Svenskaya, Dmitry Gorin, Saratov State University, Russia

12.30-12.45

Gold nanoparticles with variable morphology and surface functionalization penetrate into animal cells

O.A. Bibikova, Saratov State University; A.Y. Prilepsky, T.E. Pylaev, S.A. Staroverov, M.K. Sokolova, L.A. Dykman, V.A. Bogatyrev, IBPPM RAS, Saratov, Russia

12.45-13.00

Universal strategy for fabrication of biocompatible plasmonic nanopowders

Khanadeev V.A., Khlebtsov B.N., Panfilova E.V., Bibikova O.A., Khlebtsov N.G. IBPPM RAS, Saratov, Russia

13.00-13.15

Preparation of hydroxyapatite microparticles using calcium carbonate cores as templates

H. Abdul Fattah, O.A. Inozemtseva, Y.I. Svenskaya, V.S. Atkin, A. M. Zaharevich, A.A. Skoptsov, B. V. Parakhonskiy, D.A. Gorin, S.B. Wenig Saratov State University; Shubnikov Institute of Crystallography RAS, Moscow Russia; BIOtech center University of Trento, Trento, Italy

13.15-13.30

Moving of nanostructured SERS sensors using optical tweezers

I.Y. Stetsyura, O.A. Inozemtseva, Saratov State University; E.V. Lyubin, Moscow State University; M.G. Drozdova, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, RAS; A.N. Ponomarev, Science & Technical Center of Applied Researches; A.V. Yakimansky, Institute of Macromolecular Compounds RAS; E.A. Markvichova, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, RAS; B.N. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS A.A.; Fedyanin, Moscow State University; D.A. Gorin, Saratov State University, Russia

September 27, Thursday

**JOINT POSTER/INTERNET SESSION AND
INTERNET DISCUSSION**

Chair (N): **Boris N. Khlebtsov**, IBPPM RAS, Russia

18.30 – 21.00

- 1N. **Supramolecular RET-based sensor for monitoring phospholipase A2 activity in blood serum.** Anna S. Alekseeva, Alexandra A. Korotaeva*, Elena L. Vodovozova, Ivan A. Boldyrev, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, RAS; *Cardiology Research Center, Moscow, Russia
- 2N. **Toxic effect of CTAB-capped gold nanoparticles.** A.Y. Prilepsky, O.A. Bibikova, T.E. Pylaev, M.K. Sokolova, N.Y. Selivanov, L. A. Dykman, V. A. Bogatyrev; IBPPM RAS, Saratov, Russia
- 3N. **Protonation state of the chromophore controls photoactivatable properties of fluorescent proteins.** Alexey A. Pakhomov, Vladimir I. Martynov, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry RAS, Russia
- 4N. **Gold nanorods as platforms for SERS analytics** E.V. Panfilova, B. N. Khlebtsov, V. A. Khanadeev, S. A. Minaeva, M. Yu. Tsvetkov, V. N. Bagratashvili, N. G. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms, RAS, Saratov; Saratov State University; Institute of Laser and Information Technologies, RAS, Advanced Laser Technologies Division, Russia
- 5N. **Fluorescent DNA detection: investigation the mechanisms of interaction between colloidal gold nanoparticles and Rhodamine B** T.E. Pylaev, IBPPM RAS, Saratov; E.K. Volkova, V.I. Kochubey, Saratov State University; V.A. Bogatyrev, N.G. Khlebtsov, IBPPM RAS; Saratov State University, Saratov, Russia
- 6N. **Correction of excitation spectra of the nanoparticles Gold nanorods as platforms for SERS analytics** Vyacheslav I. Kochubey, Elena K. Volkova, Saratov State University; Igor V. Zabenkov, Saratov State Medical University; Yulia G Konyukhova, Saratov State University, Saratov, Russia
- 7N. **Sensitivity of two *S. aureus* strains (meticillin-susceptible and meticillin-resistance) to combined action of LED (405; 625 nm) light and TiO₂ nanoparticles** Elena S. Tuchina, Pavel O. Petrov, Saratov State University, Russia

INTERNET REPORT

1. **Simulation of thermal processes at pulse laser optoporation of cells doped by plasmon nanoparticles** Y.A. Avetisyan, Institute of Precise Mechanics and Control, RAS; V.V. Tuchin, Saratov State University, Russia

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

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

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

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 27, Thursday

LECTURE/ORAL SESSION

Co-chairs: **Boris A. Medvedev, Vladimir P. Ryabukho**, Saratov State University, Russia

09.00-09.10

The paradoxes of elementary optics

Mikhail Starshov, Saratov State University, Saratov, Russia

09.10-09.16

Ancient optical experiment

Ksenia Letyushova, Saratov State University, Saratov, Russia

09.16-09.22

Physical phenomena in historical mysteries

Vadim Genin, Saratov State University, Saratov, Russia

09.22-09.28

Laboratory's inductor for magnetic fluid hyperthermia researches

Tatiana Spiridonova, T.V. Bochkareva, Boris Medvedev, Saratov State University, Saratov, Russia

09.28-09.40

Coherence in wave optics

Vladimir Ryabukho, Saratov State University; Institute of Precision Mechanics and Control of Russian Academy of Sciences, Saratov, Russia

09.40-09.50

Localization of energy flow at the two beam interference

Valery Tsoy, Saratov State University, Saratov, Russia

09.50-10.02

Photoinduced sputtering of a semiconductor-dielectric structure

Alexander Rokakh, Saratov State University, Saratov, Russia

10.02-10.08

Estimation of an illumination power for realization of the secondary-ion photoeffect

Maxim Matasov, Alexander Rokakh, Saratov State University, Saratov, Russia

10.08- 10.14

Secondary-ion photoeffect on a phototransistor structure

V. Alexandrov, M. Shishkin, A. Serdobintsev, A. Rokakh, Saratov State University, Saratov, Russia

10.14-10.24

Waves, colors, life... and Erwin Schrödinger

Mikhail Stolz, Saratov State University, Saratov, Russia

10.24-10.30

Holographic principle as the basis of the universe

Sergey Savonin, Saratov State University, Saratov, Russia

10.30-11.00

Coffee break

ROUND TABLE

Man and light in natural and art treatment of the Universe V

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

Panel members:

Valery V. Tuchin¹, Vladimir P. Ryabukho¹, Vladimir L. Derbov¹, Victor V. Rozen¹, Oleg V. Shimelfenig¹, Alexander G. Rokakh¹, Lev M. Babkov¹, Vyacheslav I. Kochubey¹, Svetlana P. Pozdneva¹, Alexander V. Gorokhov², Dmitry A. Zimnyakov³, Leonid A. Melnikov³, Dmitry V. Mikhel³, Julia M. Duplinskay³, Evgeniya V. Listvina¹, Oleg M. Parshkov³, Alexander V. Priezzhev⁴

¹Saratov State University, Saratov, Russia

²Samara State University, Samara, Russia

³Saratov State Technical University, Saratov, Russia

⁴M.V. Lomonosov Moscow State University, Moscow, Russia

11.00-11.05

Opening work of the Round Table

Associate Prof. Boris Medvedev, Saratov State University, Russia

11.05-11.17

English gentlemen at the origins of modern science

Prof. Dmitry Mikhel, Saratov State Technical University, Russia

11.17-11.29

Precise physical experiments and models of world

Prof. Leonid Melnikov, Saratov State Technical University, Russia

11.29-11.41

Microcosm "against" macrocosm or an unusual into the habitual

Prof. Aleksander Rokakh, Saratov State University, Russia

11.41-11.53

Vibrational spectroscopy, structure and properties of compounds. Conformational mobility of molecules

Prof. Lev Babkov, Saratov State University, Russia

11.53-12.05

Refocusing gaze or an optical experiment with reality

Prof. Juliya Duplinskay, Saratov State Technical University, Russia

12.05-12.17

The image light in literature. Cultural aspect

Prof. Evgeniya Listvina, Saratov State University, Russia

12.17-12.29

Knowledge: God light or rational deduction?

Prof. Victor Rozen, Saratov State University, Russia

12.29-12.41

Education without the light of spirituality?

Associate Prof. Oleg Shimelfenig¹, Dr. Liya Solodovnichenko², ¹Saratov State University; ²Foundation for Scientific and Cultural Initiatives Interfaith Cooperation, Saratov, Russia

12.41-12.53

Science and the sensation

Prof. Oleg Parshkov, Saratov State Technical University, Russia

12.53-13.00

Light and consciousness architectonics

Associate Prof. Boris Medvedev, Saratov State University, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

INTERNET REPORT

Global problems

Yuriy Zayko, P.A. Stolypin's Volga Regional Institute of Control, Saratov, Russia

Workshop on Microscopy and Low-Coherence Methods in Biomedical and Non-Biomedical Applications V

Co-chairs: Kirill V. Larin, University of Houston, USA and Anton Grebenyuk, Saratov State University, Russia

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

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 Otago (New Zealand), Saratov State University (Russia); Valery V. Tuchin, Saratov State University (Russia).

September 27, Thursday

ORAL SESSION

Chair: Kirill V. Larin, University of Houston, USA

14.00-14.25

The effects of longitudinal coherence in interference microscopy of layered media

Dmitry Lyakin, Anton Grebenyuk, Sergey Klykov, Vladimir Ryabukho, Saratov State University; Institute of Precise Mechanics and Control, RAS, Russia

14.25-14.50

Normal and abnormal fetal development

Kirill V. Larin, Department of Biomedical Engineering, University of Houston; Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, USA; Institute of Optics and Biophotonics, Saratov State University, Russia

14.50-15.10

A new X-ray adhesive system with embedded nano-particulate silver markers for dental applications

Nadezhda Bessudnova, David Bilenko, Sergey Venig, Vsevolod Atkin, Andrey Zakharevich, Saratov State University, Russia

15.10-15.25

Numerical focusing in parabolic approximation in digital holographic microscopy

Anton Grebenyuk, Saratov State University, Russia

15.25-15.40

How to reconstruct the object image obtained by acoustical microscopy methods

Nikolai Kosicin, Vladimir Petrov, Saratov State University, Russia

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

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

18.30-21.00

- 1M. **Biophoton emission from plant cells** E. Elkundiev, A. Paiziev, Institute of Ion-Plasma and Laser Technologies, Uzbekistan
- 2M. **3D visualization of calcium-phosphate crystals observed on dentine surface** Nadezhda Bessudnova, David Bilenko, Sergey Venig, Vsevolod Atkin, Andrey Zakharevich, Saratov State University, Russia
- 3M. **The nature of crystal formations grown on dentine surface** Nadezhda Bessudnova, David Bilenko, Sergey Venig, Vsevolod Atkin, Andrey Zakharevich, Saratov State University, Russia
- 4M. **The interference system for simultaneous determination of the geometrical thickness and refractive index of the layered microobject** Sdobnov Anton, Saratov State University, Russia, Lyakin Dmitriy, Institute of Precise Mechanics and Control, RAS, Saratov, Russia
- 5M. **Study of roughness of emery papers using speckle interferometry** David Joseph, Prateek Kumar, Optical Engineering section, Dept. of Applied Physics, Guru Jambheshwar University of Science and Technology, Hisar, India
- 6M. **Digital holographic interferometry of microdeformations of elastic surface in field of contact with the solid ball** Peter Ryabukho, Vladimir Ryabukho, Saratov State University; Institute of Precise

Mechanics and Control, RAS; Peter Plotnikov,
Saratov State University, Russia

7M. **Investigation of red blood cells by diffraction phase microscope with low-coherence light**

Natalya Talaykova, Alexander Kalyanov, Vladislav Lychagov, Saratov State University, Russia, Vladimir P. Ryabukho, Saratov State University, Institute of Precise Mechanics and Control, RAS, Saratov, Russia

8M. **A system for microscopic polarization mapping of inhomogeneous birefringent objects**

Dmitry D. Yakovlev, Maria M. Sherman, Dmitry A. Yakovlev, Saratov State University, Russia

INTERNET REPORTS

1. **Image compression in optical coherence tomography** K.E.S. Ghaleb, A.Yu. Potlov, S. N. Abdulkareem, S.G. Proskurin, TSTU, Russia

2. **Light microscopy for real-time characterization of colloids and nanoparticles** Ivan V. Fedosov, Saratov State University; Boris N. Khlebtsov, Institute of Biochemistry and Physiology of Plants and Microorganisms of RAS; Valery V. Tuchin, Saratov State University, Russia

3. **Full field white light OCT resolution improvement by color balance correction** Alexander Kalyanov, Saratov State University, Russia

Workshop on Internet Biophotonics V

Workshop Chair **Valery V. Tuchin**, Saratov State University, Institute of Precise Mechanics and Control RAS (Russia), University of Oulu (Finland)

Secretary **Ivan V. Fedosov**, Saratov State University (Russia)

International Program Committee **Victor N. Bagratashvili**, Inst. of Laser & Inform. Technol. RAS (Russia), **Wei Chen**, Univ. of Central Oklahoma (USA), **Kishan Dholakia**, Univ. of St. Andrews (UK); **Paul M.W. French**, Imperial College of Sci., Technol. & Med. (UK), **James G. Fujimoto**, MIT (USA), **Christoph K. Hitzenberger**, Univ. of Vienna (Austria), **Steven L. Jacques**, Oregon Medical Laser Ctr. (USA), **Sean J. Kirkpatrick**, Michigan Technological Univ. (USA), **Jürgen M. Lademann**, Charité Universitätsmedizin Berlin (Germany), **Martin Leahy**, National Univ. of Ireland, Galway and RCSI (Ireland); **Qingming Luo**, Huazhong Univ. of Sci. & Technol. (China), **Igor V. Meglinsky**, Otago Univ. (New Zealand), **Risto Myllylä**, Univ. of Oulu (Finland), **Theodore G. Papazoglou**, FORTH-IESL (Greece), **Juergen Popp**, Inst. of Photonic Technol., Jena (Germany); **Alexander V. Priezzhev**, M.V. Lomonosov Moscow State Univ. (Russia), **Lihong Wang**, Washington Univ. in St. Louis (USA), **Ruikang K. Wang**, Univ. of Washington (USA), **Dmitry A. Zimnyakov**, Saratov State Technical Univ. (Russia)

September 27, Thursday

JOINT PLENARY SESSION INTERNET BIOPHOTONICS AND RUSSIAN-CHINESE WORKSHOP

Co-chair: **Valery V. Tuchin**, Saratov State University, Russia and **Dan Zhu**, Huazhong University of Science and Technology, P.R. China

17.00-18.30

1. Optical, optoacoustic, and ultrasound techniques for noninvasive diagnostics and therapy

Rinat O. Esenaliev, University of Texas Medical Branch, USA

2. Microcirculation imaging

Martin Leahy, School of Physics, National University of Ireland, Galway, Ireland

3. Fluorescence detection and photosensitization of malignant brain tumors

Herbert Stepp, Laser Research Laboratory, LIFE Center, University Hospital of Munich, Germany

4. Multi-modality molecular imaging for nanomedicine and cancer research

Qiushi Ren, Department of Biomedical Engineering, Peking University, P.R. China

5. Optical Coherence Tomography

Peter E Andersen, **Sebastian Marschall**, Technical University of Denmark, Department of Photonics Engineering, Roskilde, Denmark

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

Moderators: **Dmitry Agafonov**, **Ivan V. Fedosov**, Saratov State University, Russia, and **Xiaoquan Yang**, HUST, P.R. China

18.30-21.00

INVITED INTERNET LECTURES

1. *In vivo* kinetics of dermal carotenoids in dairy cows – results of reflectance spectroscopic measurements

Maxim E. Darwin¹, Julia Klein², Kerstin E. Müller², Jürgen Lademann¹ ¹Center of Experimental and Applied Cutaneous Physiology, Department of Dermatology, Venerology and Allergology, Charité – Universitätsmedizin Berlin; ²Clinic for Ruminants and Swine, Faculty of Veterinary Medicine, Freie Universität Berlin, Germany

2. Mueller matrix polarimetry of plasmon resonant silver nano-rods: biomedical prospects

Sayantana Ghosh, Jalpa Soni, Sudipta K. Bera, Ayan Banerjee, Nirmalya Ghosh, IISER - Kolkata, Mohanpur Campus, India

3. Light scattering by rough skin surface of a person. I. Radiance factors

Vladimir V. Barun, Arkady P. Ivanov, Institute of Physics, Minsk, Belarus

4. Light scattering by rough skin surface of a person. II. Spectral diffuse reflectance

Vladimir Barun, Arkady P. Ivanov, Institute of Physics, Minsk, Belarus

5. On the feasibility of magneto-thermo-acoustic imaging using magnetic nanoparticles and alternating magnetic field
Daqing Piao, Oklahoma State University, USA

6. Fluorescence spectroscopy study of bioluminescent insects
M. Uherek¹, J. Fischnerova², D. Chorvat jr.^{1,2}
¹International Laser Centre, Bratislava, Slovakia ²Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovakia

7. Case study of ECG signal used as a reference signal in optical pulse transit time measurement of blood flow - the effect of different electrode placements on pulse transmit time
Teemu Myllylä¹, Erkki Vihriälä¹, Vesa Korhonen², Hannu Sorvoja¹, ¹University of Oulu; ²Oulu University Hospital, Finland

8. Investigation of red blood cells aggregation in plasma and in proteins solutions by optical trapping
Kisung Lee¹, A.V. Priezhev¹, A.Yu. Maclygin¹, I.O. Obolenskii¹, M. Kinnunen², R. Myllylä², ¹Department of Physics, Moscow State University, Russia; ²Optoelectronics and Measurement Techniques Laboratory, University of Oulu, Finland

9. Assessment of wave propagation in mice cornea in situ using phase stabilized swept source OCT
Ravi Kiran Manapuram¹, Floredes M Menodiado¹, Salavat Aglyamov², Maleeha Mashiatulla¹, Shang Wang¹, Stanislav Emelianov², Kirill V Larin^{1,3}, ¹University of Houston, USA; ²University of Texas at Austin, USA; ³Saratov State University, Russia

Subhasri Chatterjee¹, Nandan Das¹, Satish Kumar¹, Asima Pradhan², Prasanta K.Panigrahi¹, Nirmalya Ghosh¹, ¹IISER - Kolkata, Mohanpur Campus; ²IIT Kanpur, Kanpur, India

3. Simulation of speckle patterns of light scattered by multi-layered skin tissue
N. D. Abramovich, V. V. Barun, S. K. Dick, A. S. Terekh, Belarus State University of Informatics and Radioelectronics, Minsk, Belarus

4. Optical measurements of rat muscle samples under treatment with ethylene glycol and glucose
Luis Oliveira¹, Maria Inês Carvalho², Elisabete Nogueira¹, Valery V. Tuchin^{3,4}, ¹DFI – Polytechnic of Porto, School of Engineering, Portugal; ²DEEC/FEUP and INESC TEC, University of Porto, Porto, Portugal; ³Research-Educational Institute of Optics and Biophotonics, Saratov State University, Russia; ⁴Optoelectronics and Measurement Techniques Laboratory, University of Oulu, Finland

5. Comparison between optical measurements made from natural and frozen samples at optical clearing
Luis Oliveira¹, Maria Inês Carvalho², Elisabete Nogueira¹, Valery V. Tuchin^{3,4}, ¹DFI – Polytechnic of Porto, School of Engineering, Portugal; ²DEEC/FEUP and INESC TEC, University of Porto, Porto, Portugal; ³Research-Educational Institute of Optics and Biophotonics, Saratov State University, Russia; ⁴Optoelectronics and Measurement Techniques Laboratory, University of Oulu, Finland

6. Inhomogeneity detection in diffuse optical tomography using late arriving photons
A.Yu. Potlov, S.N. Abdulkareem, K.E.S. Ghaleb, S.V. Frolov, S.G. Proskurin, TSTU, Russia

7. A low-cost frequency domain photon migration arrangement for measurement of optical properties of biological phantoms
Mohsen Erfanzadeh, Mohsen Shojaeifar, M.A Ansari, E. Mohajerani, Shahid Beheshti University, Iran

8. Optical properties of human tonsils in the spectral range from 350 to 2500 nm
Ekaterina A. Kolesnikova¹, Aliya A. Muldasheva², Julia P. Ireneva², Darya N. Zmeeva¹, Alexey N. Bashkatov¹, Elina A. Genina¹, Vyacheslav I. Kochubey¹, Anatoly B. Knyazev², Valery V. Tuchin^{1,3,4}, ¹Saratov State University; ²Saratov State Medical University; ³Institute of Precise Mechanics and Control RAS, Saratov, Russia; ⁴University of Oulu, Oulu, Finland

INTERNET REPORTS

1. Quantitative spectral light scattering polarimetry for monitoring fractal growth pattern of bacillus thuringiensis bacterial colonies
Paromita Banerjee, Jalpa Soni, Nirmalya Ghosh, Tapas K. Sengupta, IISER- Kolkata, Mohanpur Campus, India

2. Probing multi-scale self similarity of tissue structures using light scattering spectroscopy: prospects in pre-cancer detection

- 9. Optical properties of human large intestine in the spectral range from 350 to 2500 nm**
Alexey N. Bashkatov¹, Vladimir S. Rubtsov², Ekaterina A. Kolesnikova¹, Elina A. Genina¹, Vyacheslav I. Kochubey¹, Sergey V. Kapralov², Yuri V. Chalyk², Valery V. Tuchin¹, ¹Saratov State University; ²Saratov State Medical University, Russia
- 10. Dimethyl sulfoxide (DMSO) diffusion in skin tissue**
Marina D. Kozintseva Alexey N. Bashkatov, Elina A. Genina, Valery V. Tuchin, Saratov State University, Russia
- 11. Optical clearing of skin tissue by PEG-300**
Daria K. Tuchina, Alexey N. Bashkatov, Elina A. Genina, Valery V. Tuchin, Saratov State University, Russia
- 12. Correlation-stability approach in optical microelastography of tissues**
Lev A. Matveev, Vladimir Yu. Zaitsev, Alexander L. Matveyev, Grigory V. Gelikonov, Valentin M. Gelikonov, Institute of Applied Physics RAS, Nizhny Novgorod, Russia
- 13. Analysis of statistical properties of laser speckles, forming in mucosa of colon: application in laser surgery**
Vladimir Rubtsov¹, Sergey Kapralov¹, Yuri Chalyk¹, Sergey Ulyanov², ¹Saratov State Medical University; ²Saratov State University, Russia
- 14. Towards diagnostics of skin roughness. speckle pattern texture analysis method to measure surface roughness**
Ivan Kuznetsov¹, Alexander Doronin², Igor Meglinski², Anton Sadovoy³, ¹Institute of Applied Physics of the Russian Academy of Science, Nizhny Novgorod, Russia; ²Jack Dodd Center for Quantum Technologies, Department of Physics, University of Otago, New Zealand; ³Institute of Materials Research and Engineering, A*STAR, Singapore
- 15. Monitoring of liquids rising in porous medium (paper and dental tissue) using full field speckle-correlation technique**
Maxim Vilensky¹, Natalia A. Trunina¹, Dmitry E. Suetenkov², Valery V. Tuchin^{1,3,4}, ¹Saratov State University; ²Saratov State Medical University; ³Institute of Precision Mechanics and Control, RAS, Russia; ⁴University of Oulu, Finland
- 16. Monitoring of microcirculation by full field speckle-correlation technique in animal study**
Maxim Vilensky¹, Oxana V. Semyachkina-Glushkovskaya¹, Denis A. Alexandrov², Valery V. Tuchin^{1,3,4}, Polina A. Timoshina¹, Viktor A. Kuleshov², Igor A. Semyachkin-Glushkovsky¹, ¹Saratov State University; ²Saratov State Medical University; ³Institute of Precision Mechanics and Control, RAS, Russia; ⁴University of Oulu, Finland
- 17. System for determining the concentration and visualization of the spatial distribution of photosensitizers based on tetrapyrrole compounds in the tissues of the fundus**
Sergey Model, Tatyana Savelieva, Kirill Linkov, A.M. Prokhorov General Physics Institute RAS, Moscow, Russia
- 18. Fluorescence of nanocomposites in skin, inner organs, and transplanted tumors: ex vivo and in vivo study**
Elina A. Genina¹, Alexey N. Bashkatov¹, Georgy S. Terentyuk^{1,2}, Vyacheslav I. Kochubey¹, Elena K. Volkova¹, Daniil A. Chumakov¹, Artem G. Terentyuk¹, Valery V. Tuchin¹, Alla B. Bucharskaya², Galina N. Maslyakova², Nikita A. Navolokin², Boris N. Khlebtsov³, Nikolay G. Khlebtsov³, ¹Saratov State University; ²Saratov State Medical University; ³IBPPM RAS, Saratov, Russia
- 19. Photodynamic therapy of transplanted tumors with nanocomposites-photothermosensitizers: a pilot study**
Georgy S. Terentyuk¹, Elina A. Genina¹, Alexey N. Bashkatov¹, Daniil A. Chumakov¹, Artem G. Terentyuk¹, Vadim D. Genin¹, Valery V. Tuchin¹, Alla B. Bucharskaya², Galina N. Maslyakova², Nikita A. Navolokin², Boris N. Khlebtsov³, Nikolay G. Khlebtsov³, ¹Saratov State University; ²Saratov State Medical University; ³IBPPM RAS, Saratov, Russia
- 20. Photothermalmolysis of transplanted tumors with nanocomposites-photothermosensitizers: a pilot study**
Alexey N. Bashkatov¹, Georgy S. Terentyuk¹, Elina A. Genina¹, Daniil A. Chumakov¹, Artem G. Terentyuk¹, Vadim D. Genin¹, Valery V. Tuchin¹, Alla B. Bucharskaya², Galina N. Maslyakova², Nikita A. Navolokin², Boris N. Khlebtsov³, Nikolay G. Khlebtsov³, ¹Saratov State University; ²Saratov State Medical University; ³IBPPM RAS, Saratov, Russia
- 21. Photothermal and photodynamic effects at laser heating with gold nanoparticles and nanocomposites Au-SiO₂-Hp**
Georgy S. Terentyuk¹, Alla B. Bucharskaya¹, Andrey V. Ivanov², Elina A. Genina³, Alexey N. Bashkatov³, Irina L. Maksimova³, Valery V. Tuchin³, Boris N. Khlebtsov⁴, Nikolay G. Khlebtsov⁴, ¹Saratov State Medical University; ²RONC named after Blokhina; ³Saratov State University; ⁴IBPPM RAS, Saratov, Russia

Workshop on Nonlinear Dynamics and Computational Biophysics III

Co-chairs: **Vadim S. Anishchenko**, Saratov State University, Russia

Secretaries: **Galina I. Strelkova**, **Svetlana Yu. Malova**, Saratov State University (Russia)

International Program Committee: **Lutz Schimansky-Geier**, Humboldt University, Berlin (Germany); **Alexander Neiman**, Ohio University (USA); **Igor Khovanov**, Warwick University (UK); **Olga Sosnovtseva**, University of Copenhagen (Denmark); **Alexander P. Chetverikov**, **Alexey N. Pavlov**, **Tatjana E. Vadivasova**, **Alexey V. Shabunin**, **Dmitry E. Postnov**, Saratov State University (Russia)

September 27, Thursday

ORAL SESSION

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

15.40-16.00

Statistical properties of Poincaré recurrences and their applications

Vadim S. Anishchenko, Saratov State University, Russia

16.00-16.20

Afraimovich-Pesin dimension and the fractal dimension of attractors of dynamical and noisy systems

Sergey V. Astakhov, Vadim S. Anishchenko, Saratov State University, Russia

16.20-16.40

Dynamical features of spreading depression: self-terminating wave patterns and self-organized pacemakers near Dirichlet boundaries

Dmitry E. Postnov, Saratov State University, Russia; **Lutz Schimansky-Geier**, Humboldt-University at Berlin, Germany; **Dmitry Postnov Jr.**, Saratov State University, Russia; **Felix Müller**, Humboldt-University at Berlin, Germany

JOINT POSTER/INTERNET SESSION AND INTERNET DISCUSSION

Chair (D): **Alexander P. Chetverikov**, Saratov State University (Russia),

18.30-21.00

1D. **Phenomenological mathematical model of regenerative pulse transmission by endothelial cells** E. Styukhina, A. Neganova,

D. E. Postnov, Saratov State University, Russia

2D. **Biperiodic oscillations in head physiological tremor** Maria Molchanova, Saratov State University, Russia

3D. **On the local diagnostics of vascular tone dynamics** Maria Tsoi, D. E. Postnov, Saratov State University, Russia

4D. **Propagation of soliton-like waves in inhomogeneous chain of interacting particles** Anton Romanovskii, Saratov State University, Russia

5D. **Biomod: software for cross-disciplinary teaching and research in biology and physics of living systems, based on mathematical models and GSGPU technologies** Dmitry D. Postnov (Jr), Dmitry E. Postnov, Saratov State University, Russia

6D. **Model-based study of individuals' adaptation to night shift work** Dmitry D. Postnov (Jr), Saratov State University, Russia; P.A. Robinson, S. Postnova, University of Sydney, Australia

7D. **Secure communication by modulation of the main parameter of nonlinear chaotic system with dynamical noise** Vladimir Semenov, Tatyana Vadivasova, Vladimir Malyaev, Saratov State University, Russia

8D. **Mathematical modeling of endothelium-mediated spreading regenerative** A. Neganova, D.E. Postnov, Saratov State University, Russia

Workshop on Low-Dimensional Structures II

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

Secretaries: **Elena L. Kossovich**, Saratov State University (Russia), **Anna S. Kolesnikova**, Saratov State University (Russia), **Michael M. Slepchenkov**, Saratov State University (Russia).

International Program Committee: **Ming-Fa Lin**, National Cheng Kung University, Tainan (Taiwan), **Irina V. Zaporotskova**, Volgograd State University, Volgograd (Russia), **Galina N. Maslyakova**, Saratov State Medical University named after V.I. Razumovsky, Saratov (Russia), **Igor S. Nefedov**, Aalto University, Espoo (Finland), **Nikolay I. Sinitsyn**, Institute of Radioengineering and Electronics (IRE) of RAS, Saratov (Russia), **Gennadiy V. Torgashov**, Institute of Radioengineering and Electronics (IRE) of RAS, Saratov (Russia)

September 26, Wednesday

ORAL SESSION

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

11.00-11.10

Polymerization of tiny fullerenes in the cavity of nanotubes

O.E. Glukhova., A.S. Kolesnikova, Saratov State University, Saratov, Russia

11.10-11.20

The matrix field-emission structures based on carbon nanotubes for flat-panel displays

E.A. Tarasov, G.V. Torgashov, Y.A. Grigoriev, N.I. Sinitsyn, Saratov branch of IRE RAS, Saratov; N. P. Aban'shin, B. I. Gorfinkel', SRI «Volga», Saratov, Russia

11.20-11.35

Influence of composition for monolayer on nanoparticles, growing under them

E.G. Glukhovskoy, I.A. Gorbachev, V.P. Kim, A.V. Ermakov, A.S. Chumakov, Saratov State University, Saratov, Russia

11.35-11.50

Multifunctional nanocapsules based on the modified liposomes - new containers for targeted drug delivery

E.G. Glukhovskoy, A.V. Ermakov, I.A. Gorbachev, V.P. Kim, A.S. Chumakov, Saratov State University, Saratov, Russia

11.50-12.05

Study of lipoproteins and arterial intima interaction based on arterial endothelial cells real geometrical structure

O.E. Glukhova, I.V. Kirillova, E.L. Kossovish, D.A. Zajarsky, A.A. Fadeev, Saratov State University, Saratov; G.N. Maslyakova, Saratov State Medical University, Saratov, Russia

12.05-12.20

Explicit models of flexural edge wave propagation in multi-layer graphene plates with different types of layers stacking

O.E. Glukhova, E.L. Kossovich, Saratov State University, Saratov, Russia

12.20-12.35

Formation of the organized structures based on particle of core / shell

A.S. Sergeeva, Saratov State Technical University, Saratov, Russia

12.35-12.45

Investigation of the deflection of a graphene

O.E. Glukhova, V.V. Shunaev, Saratov State University, Saratov, Russia

12.45-12.55

Mechanical and electronic properties of the curved graphene

O.E. Glukhova, M.M. Slepchenkov, Saratov State University, Saratov, Russia

September 27, Thursday

**JOINT POSTER SESSION AND INTERNET
DISCUSSION**

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

18.30-21.00

- 1L. **Electronic properties of infinite graphene structures with added atoms of hydrogen**
O.E. Glukhova, D.S. Shmygin, Saratov State University, Saratov, Russia
- 2L. **Fabrication of nanocomposite coating with embedded hydrophobic magnetite nanoparticles on the surface of aluminum wires**
D.V. Voronin, D.A. Gorin, Saratov State University, Saratov, Russia, V. Belova, D. Borisova, Dmitry G. Shchukin, Max Planck Institute of Colloids and Interfaces, Germany
- 3L. **Multifunctional nanocapsules based on the modified liposomes - new containers for targeted drug delivery**
E.G. Glukhovskoy, A.V. Ermakov, I.A. Gorbachev, V.P. Kim, A.S. Chumakov, Saratov State University, Saratov, Russia
- 4L. **Resonance effects in absorption and scattering of electromagnetic radiation by titanate nanoplatelets**
E.A. Isaeva, Dmitry A. Zimnyakov, Saratov State Technical University, Saratov, Russia
- 5L. **The 3D Nano-structured Filamentary Materials in Regenerative Medicine and Dentistry**
L. German, Saratov State University, Saratov, Russia
- 6L. **Combined effect of ultrasound and photodynamic therapy on transplanted rat tumors at intratumoral introduction of CaCO₃ microcontainers containing photosens**
A. Bucharskaya, O. Matveeva, G.N. Maslyakova, G. Terentyuk, N. Navolokin, Saratov State Medical University; Y. Svenskaya, D.A. Gorin, Saratov State University; A. Zanina, Saratov State Agrarian University, Saratov

Post-Deadline Program

POSTERS

1. **The mechanisms underlying stress-induced brain hemorrhage assessed by optical coherence tomography** Oksana Semyachkina-Glushkovskaya, Vladislav Lychagov, Olga Bibikova, Sergey Sindeev, Yana Kuznetsova, Igor Semyachkin-Glushkovsky Ekaterina Zinchenko Valery Tuchin Saratov State University, Russia

INTERNET REPORTS

1. **Spectroscopic investigation of the up-conversion nanoparticles for biomedical applications** Daria Pominova, A.V. Ryabova, S.V. Kuznetsov, A.A. Luginina, A.M. Prokhorov General Physics Institute of RAS, Russia
2. **Specific interaction of albumin molecules in water solution, containing silicon nanoparticles at different net charge of protein** Ksenia A. Anenkova, Galina P. Petrova, Lubov A. Osminkina, Konstantin P. Tamarov, Moscow State University, Russia
3. **Optical properties measurements in tissue-like phantoms: the validity range of the diffusion models in time domain** Sergey A. Dolgushin, Sergey Titenok, MIET, Moscow, Zelenograd, Russia