Dedicated to 300th Anniversary of the Russian Academy of Sciences

THE XXVI SARATOV FALL MEETING 2022

X SYMPOSIUM ON OPTICS & BIOPHOTONICS

XXVI INTERNATIONAL SCHOOL FOR JUNIOR SCIENTISTS AND STUDENTS ON OPTICS, LASER PHYSICS & BIOPHOTONICS

SEPTEMBER 26 – 30, 2022, SARATOV, RUSSIA

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

SFM'22 General Secretary

Elina A. Genina, Saratov State University, Tomsk State University

Organized by

Saratov State University (SSU)

Department of Physical Sciences of the RAS

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

Science Medical Center, SSU

Institute of Biochemistry and Physiology of Plants and Microorganisms, FRC "Saratov Scientific Centre of the Russian Academy of Sciences" (IBPPM RAS)

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Volga Region Center of New Information Technologies, SSU

Tomsk State University (TSU)

ITMO University

Bauman Moscow State Technical University (BMSTU)

Institute of Solid State Physics of the RAS (ISSP RAS)

Prokhorov General Physics Institute of the RAS (GPI RAS)

A.N. Bach Institute of Biochemistry, FRC “Biotechnology of the Russian Academy of Sciences”

Sechenov First Moscow State Medical University (Sechenov University)

Institute of Ultra High-Frequency Semiconductor Electronics of the RAS (IUHFSE RAS)

Biomedical Photonics Committee of Chinese Optical Society, China

SPIE Student Chapters of SSU, BMSTU, ISSP RAS, and Samara University

OPTICA Student Chapters of SSU and BMSTU

In cooperation with

Russian Society for Photobiology

Biophotonics.World - The Worldwide Consortium Biophotonics4Life

EPIC – European Photonics Industry Consortium

Co-sponsored by

Ministry of Science and Higher Education of the Russian Federation

Saratov State University

RAS – Russian Academy of Sciences

SPIE – The International Society for Optics and Photonics

OPTICA – The International Optical Society

IEEE – Institute of Electrical and Electronics Engineers

Russian Technology Platform “The Medicine of the Future”

Russian Technology Platform “Photonics”

European Technology Platform “Photonics21”

Samara University

Tomsk State University, RF Governmental grant No. 075-15-2021-615

INJECT RME LLC, Saratov, Russia

SPE Nanostructed Glass Technology, Saratov, Russia

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The main goal of SFM'22 is to present and discuss recent developments and applications of optical and laser technologies in biology and medicine, precise mechanics and control of tissues and cells, coherent optics of random and ordered media, material and environmental sciences, nonlinear dynamics of laser systems, laser physics, spectroscopy, and molecular modeling, nanophotonics, and nanobiophotonics.

Specific problems of imaging and engineering of eukaryotic genomes, laser femtosecond optoporation of cells and tissues for transfection of cells in situ, remote controllable nanostructured systems for site-specific delivery and diagnostics, development of technologies for optical 'disruption' of the blood-brain barrier, and personalized treatment of aggressive forms of glial tumors, combined thermographic and terahertz imaging of tissues in the diagnosis of skin and mucous membranes, photoacoustic technologies for early theranostics of metastatic tumors, the discovery of fundamental sleep mechanisms for breakthrough technologies of neurorehabilitation medicine, and development of methods for screening-wise non-invasive diagnostics of viral and bacterial respiratory infections using laser spectroscopy and machine learning will be discussed.

The main attention will be paid to basic research of interactions of coherent, low-coherent, polarized, spatially- and temporally-modulated electromagnetic radiation within the broad wavelength range from x-rays to terahertz with inhomogeneous scattering media and biological tissues and cells. Elastic, inelastic (Raman, SERS, and CARS) and dynamic light scattering, Doppler, photoacoustic, photothermal, and nonlinear interactions, tissue and cell mechanics, and photobiological effects will be considered.

On this basis, the variety of laser and optical technologies for medical diagnostics, therapy, surgery, and light dosimetry, as well as for diagnostics and imaging of random and ordered media will be presented. Studies on lasers, fibers, and microstructured waveguides will be discussed. Optogenetics, plasmonics, and biosensing also will be the key features of the meeting.

The official languages of the meeting are English and Russian.

Culture program Visits to Conservatoire, Theaters, and Museums, 2-hour Volga-tour.

Visa application support

To apply for visa to Russian Consulate you need an official invitation letter. The following information about you and accompany persons is needed:

1. Passport (valid up to six months after October 1, 2022) number:_____ dates of issue:___ and of expiry:_____ (copy of passport page with photo)

2. Date of birth:___, place of birth:____

3. Living address:_____

4. Working position:_____

5. Working address:_____

6. Name of town, where you are going to apply for visa (Russian consulate)

Please, send this information to the general secretary of the SFM'22 **Elina A. Genina**: eagenina@yandex.ru

Conference papers will be published as:

Conference Proceedings (in Russian and English) under the title "*Optical Physics and Biophotonics*",

SPIE Proceedings (3 volumes),

Journal of Biomedical Photonics & Engineering,

Quantum Electronics (Russian/English),

Optics and Spectroscopy (Russian/English),

Nonlinear Applied Physics (Russian/English),

Journal of Biomedical Optics,

Optical Engineering,

MDPI Materials,

MDPI Diagnostics,

MDPI Applied Sciences

All papers will be subjected to the normal refereeing process for the journals. For a special issue of *Quantum Electronics* manuscripts should be submitted not later than August 31, 2021; for *SPIE Proceedings*, *Optics and Spectroscopy*, Proceedings "*Optical Physics and Biophotonics*", *Nonlinear Applied Physics*, *Journal of Biomedical Optics*, *Optical Engineering*, *MDPI Materials*, *MDPI Diagnostics*, *MDPI Applied Sciences* – not later than November 30, 2022.