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Saratov Fall Meeting 2015

Third International Symposium on Optics and Biophotonics; and Seventh Finnish-Russian Photonics and Laser Symposium (PALS)

Elina A. Genina
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Igor V. Meglinski
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Editors

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Introduction

The Third International Symposium on Optics and Biophotonics (Saratov Fall Meeting, or SFM15) and Seventh Finnish-Russian Photonics and Laser Symposium (PALS15) was held in Saratov, Russian Federation, 22-25 September 2015 with over 500 participants from the Russian Federation, United States, Canada, Europe, as well as Asian and Pacific Ocean countries. It covered a wide range of modern problems of fundamental and applied optics, laser physics, photonics, and biomedical optics.

In the framework of the Symposium, the Conferences and Workshops were organized as followed:

Optical Technologies in Biophysics & Medicine XVII
Elina A. Genina, Igor Meglinski, and Valery V. Tuchin, *Chairs*
Laser Physics and Photonics XVII
Vladimir L. Derbov, *Chair*
Spectroscopy and Molecular Modeling XVI
Lev M. Babkov and Kirill V. Berezin, *Chairs*
Nanobiophotonics XI
Nikolai G. Khlebtsov, *Chair*
Microscopic and Low-Coherence Methods in Biomedical and Non-Biomedical Applications VIII
Kirill Larin, *Chair*
Internet Biophotonics VIII
Alexey N. Bashkatov, Ivan V. Fedosov, and Valery V. Tuchin, *Chairs*
Nonlinear Dynamics VI
Vadim S. Anishchenko, *Chair*
Low-Dimensional Structures V
Olga Glukhova, *Chair*
Biomedical Spectroscopy II
Vyacheslav I. Kochubey and Alexander B. Pravdin, *Chairs*
Advanced Polarization Technologies in Biomedicine and Material Science II
Igor V. Meglinski and Dmitry A. Zimnyakov, *Chairs*
Computational Biophysics and Analysis of Biomedical Data II
Dmitry E. Postnov, *Chair*

PALS15 was an important event that attracted leading researchers in the field of photonics and laser physics from Finland and the Russian Federation. The invited lectures and oral and poster presentations were distributed in six major modules:

Fundamental Aspects of the Light-Matter Interaction
Nano- and Microoptics
Biophotonics
Plasmonics
Nonlinear Optical Spectroscopy
Advanced Sensing

The main focus was the discussion of fundamentals and general approaches and descriptions of coherent, low-coherent, polarized, spatially and temporally modulated light interactions with inhomogeneous absorbing media, photonic crystals, optical biopsy, tissue phantoms, and optical properties of various tissues both *in vitro* and *in vivo*. Static and dynamic light scattering in tissues, Doppler, photo-acoustic and photo-thermal laser-tissue interactions, light induced mechanical stress, and photodynamic effects were also considered. On this basis the variety of laser and optical technologies for medical diagnostics, therapy, surgery, and light dosimetry, as well as for spectroscopy of random and ordered media were presented. New fundamental phenomena in quantum optics together with novel laser and fiber-optical technologies were discussed, as well as photonics of micro- and nanostructures. Since the use of almost every measurement method or imaging technique present computational issues, the relevant state-of-the-art approaches were discussed in the framework of a newly introduced conference on computational biophysics and data analysis.

SFM15 and PALS15 were organized in the following manner: morning plenary sessions, afternoon lectures and oral sessions, and then evening poster presentations and internet discussion. Attendees listened with great interest to the plenary lectures delivered by leading experts in urgent fields of optical and laser science, and then they engaged in discussions afterwards.

Plenary and invited lectures, oral, and poster presentations covered a wide area of tissue optics, spectroscopy and imaging, controlling of optical properties of tissues, and the biophysical and photo-chemical aspects of photo- and laser therapy.

The special features traditional of Saratov Fall Meetings are the Internet Sessions and one-day online discussions. In 2015, this Internet session included 2 plenary lectures, 24 invited lectures and 24 reports.

The papers by the participants from the United States, Russian Federation, Denmark, Germany, Netherland, Ireland, Italy, Finland, Poland, Israel, China, etc. (located at the meeting website: http://sfm.eventry.org/symposium2015/internet) were available during the meeting and will be available for a whole year until the next meeting.

It is a great pleasure and privilege for the editors to thank all of the authors for their contributions to the symposiums, especially to the Internet lecturers for their exciting presentations.

The organizers of SFM15 are grateful to all the sponsoring organizations and programs that efficiently supported this meeting, especially to:

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