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Optical Technologies in Biophysics and Medicine XVIII

Elina A. Genina
Valery V. Tuchin
Editors

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5 Plenary Session V
Kirill V. Larin, University of Houston (United States)

Introduction

The 4th International Symposium on Optics and Biophotonics (Saratov Fall Meeting SFM16) was held in Saratov, Russian Federation, 27–30 September 2016 with over 500 participants from the Russian Federation, United States, Canada, Europe, Asia, and South Pacific countries. It covered a wide range of modern problems of fundamental and applied optics, laser physics, photonics, and biomedical optics.

This volume includes selected papers of the following conferences and workshops organized in the framework of the symposium:

Optical Technologies in Biophysics and Medicine XVIII
Elina A. Genina, Igor Meglinski, and Valery V. Tuchin (Chairs)

Spectroscopy and Molecular Modeling XVII
Lev M. Babkov and Kirill V. Berezin (Chairs)

Nanobiophotonics XII
Nikolai G. Khlebtsov (Chair)

Microscopic and Low-Coherence Methods in Biomedical and Non-Biomedical Applications IX
Kirill V. Larin (Chair)

Internet Biophotonics IX
Alexey N. Bashkatov, Ivan V. Fedosov, and Valery V. Tuchin (Chairs)

Low-dimensional Structures VI
Olga Glukhova (Chair)

Biomedical Spectroscopy III
Vyacheslav I. Kochubey and Alexander B. Pravdin (Chairs)

Advanced Polarization Technologies in Biomedicine and Material Science III
Igor V. Meglinski and Dmitry A. Zimnyakov (Chairs)

The main attention was paid to the discussion of fundamentals and general approaches of description of coherent, low-coherent, polarized, spatially and temporally modulated light interactions with inhomogeneous absorbing media, low-dimensional structures, tissues, and tissue phantoms. Optical properties of various tissues measured *in-vitro*, *ex-vivo*, and *in-vivo* as well as optical biopsy techniques were under consideration. Static and dynamic light scattering in

tissues, Doppler, photo-acoustic and photo-thermal laser-tissue interactions, light-induced mechanical stress, and photodynamic effects also were 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.

SFM16 was organized into morning plenary sessions, afternoon lectures and oral sessions, and then evening poster presentations and Internet discussion. The attendees with a great interest to plenary lectures delivered by leading experts in urgent fields of optical and laser life, and were discussed by the audience.

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

In the framework of the symposium, a competition for the Best Student Poster Award was organized supported by the SPIE FOCUS Program. Two of the winning papers are included in this volume, 1033603 and 1033604.

The traditional specific feature of Saratov Fall Meetings was the Internet Session and one-day online discussion. In 2016, this Internet session included 5 plenary lectures, 10 invited lectures, and 29 oral presentations.

A full list of the papers by the Internet session participants (who hailed from the United States, the Russian Federation, Denmark, Germany, Netherland, Ireland, Italy, Finland, Poland, Israel, China, and others), located at the meeting website: http://sfm.eventry.org/symposium2016/internet, were available during the meeting and will be available for a whole year until the next meeting.

It was great pleasure and privilege for the editors to thank all authors for their contributions to the symposium. Special thanks to the plenary, invited, and Internet lecturers for their exciting presentations.

The organizers of SFM16 are grateful to all the sponsoring organizations and programs that efficiently supported this meeting, especially to:

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A full list of conference organizers can be found on page *xv* of this Front Matter.

Elina A. Genina
Valery V. Tuchin

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