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Elina A. Genina
Valery V. Tuchin
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Introduction

The Sixth International Symposium on Optics and Biophotonics (Saratov Fall Meeting; SFM18) was held in Saratov, Russian Federation, 24–28 September 2018 with over 500 participants from the Russian Federation, the United States, Canada, Europe, Asia, and Pacific Ocean 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 & Medicine XX
Elina A. Genina and **Valery V. Tuchin** (*Chairs*)
Microscopic and Low-Coherence Methods in Biomedical and Non-Biomedical Applications XI
Kirill Larin and **Metin Akay** (*Chairs*)
Internet Biophotonics XI
Alexey N. Bashkatov, **Ivan V. Fedosov**, and **Valery V. Tuchin** (*Chairs*)
Biomedical Spectroscopy V
Vyacheslav I. Kochubey and **Alexander B. Pravdin** (*Chairs*)
Advanced Materials for Optics and Biophotonics
Vladimir N. Kurlov (*Chair*)

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 in a wide spectral range from x-ray to terahertz. 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, including nanoparticle doped tissues and cells, light induced mechanical stress, 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.

SFM18 was organized as the morning plenary sessions, afternoon lectures and oral sessions, evening poster presentations and Internet discussion. Plenary lectures delivered by leading experts in urgent fields of optical and laser life sciences were listened by the attendees with a great interest, and discussed by the audience.

Plenary and invited lectures, as well as oral and poster presentations covered a

wide area of tissue optics, spectroscopy and imaging, controlling of optical properties of tissues, problems of interaction of terahertz radiation with tissues and tissue-like materials, as well as biophysical and photochemical 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. Some papers from the winners are included in this volume.

The traditional specific feature of Saratov Fall Meetings is the Internet Session and one-day online discussion. In 2018, this Internet session included 3 plenary lectures, 20 invited lectures and 28 reports.

The papers by the participants from the United States, the Russian Federation , Denmark, Germany, Netherland, Ireland, Italy, Finland, Poland, Israel, China, and more, located at the meeting website: http://sfm.eventry.org/symposium2018/IBP11/preliminary, 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 editors to thank all of the authors for their contributions to the Symposium, especially to the plenary, invited, and Internet lecturers for their exciting presentations.

The organizers of SFM18 are grateful to all the sponsoring organizations and programs that efficiently supported this meeting, especially to: Russian Foundation for Basic Research (Russian Federation); the Russian Academy of Sciences (Russian Federation); SPIE; OSA; IEEE - Institute of Electrical and Electronics Engineers; Russian Technology Platforms "The Medicine of the Future" and "Photonics" (Russian Federation); Government of the Russian Federation; European Technology Platform "Photonics21"; EPIC – European Photonics Industry Consortium; LLC SPE "Nanostructed Glass Technology" (Russian Federation); and RME "INJECT" LLC (Russian Federation); TechnoInfo Ltd. (Germany); BioVitrum Ltd. (Russian Federation); and LLC SPE OESSP (Russian Federation).

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