

Saratov Fall Meeting 2016

Optical Technologies in Biophysics and Medicine XVIII

Elina A. Genina
Valery V. Tuchin
Editors

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Contents

vii	<i>Authors</i>
ix	<i>Conference Committee</i>
xi	<i>Introduction</i>
xv	<i>Organizers</i>

INVITED PAPER SESSION

10336 02	Synchronous fluorescence spectroscopy of colon neoplasia (Invited Paper) [10336-92]
----------	--

BEST STUDENT PAPER AWARD WINNERS

10336 03	The depending of Langmuir monolayers of quantum dots and fatty acid mixture properties from their components ration (Best Student Paper Award) [10336-87]
10336 04	Non-invasive control of influence of polyethylene glycol on transport function of fluorescent colored liposomal nanoparticles (Best Student Paper Award) [10336-90]

OPTICAL TECHNOLOGIES IN BIOPHYSICS AND MEDICINE

10336 05	Optical tweezers for measuring the interaction of the two single red blood cells in flow condition [10336-118]
10336 06	Gamma globulins-induced interaction between two red blood cells: forces measurement with optical tweezers [10336-119]
10336 07	Evaluation of blood microcirculation parameters by combined use of laser Doppler flowmetry and videocapillaroscopy methods [10336-47]
10336 08	The influence of local pressure on evaluation parameters of skin blood perfusion and fluorescence [10336-49]
10336 09	The application of digital image analysis for blood typing: the comparison of anti-A and anti-B monoclonal antibodies activity with standard hemagglutinating sera [10336-62]
10336 0A	The counting of native blood cells by digital microscopy [10336-68]
10336 0B	In vitro destruction of anterior human lens capsule by submicrosecond pulses of Yb,Er:Glass laser [10336-72]

- 10336 OC **Temperature dynamics of soft tissues during diode laser cutting by different types of fiber opto-thermal converters** [10336-73]
- 10336 OD **Using of methods of speckle optics for *Chlamydia trachomatis* typing** [10336-116]
- 10336 OE **Optical methods for the evaluation of film-forming ability of UPEC on the surface of medical devices** [10336-18]
- 10336 OF **Influence of red laser irradiation and photosensitizers Photoditazine and Dimegin on the growth of methicillin-resistant strain of *Staphylococcus aureus*** [10336-21]
- 10336 OG **Different reaction of the core histones H2A and H2B to red laser irradiation** [10336-42]

SPECTROSCOPY AND MOLECULAR MODELING

- 10336 OH **Interaction of fullereneol with metals: the research by laser correlation spectroscopy** [10336-96]
- 10336 OI **FT-IR and DFT study of lemon peel** [10336-54]
- 10336 OJ **Studying the mechanism of tissue optical clearing using the method of molecular dynamics** [10336-56]
- 10336 OK **Diamond-like nanoparticles influence on flavonoids transport: molecular modelling** [10336-24]

NANOBIOPHOTONICS AND LOW-DIMENSIONAL STRUCTURES

- 10336 OL **Cell culture surfaces with immobilized gold nanostars: a new approach for laser-induced plasmonic cell optoporation** [10336-114]
- 10336 OM **Synthesis of SERS-nanotags and their investigation inside photonic crystal fiber** [10336-79]
- 10336 ON **The optical properties of quantum dots integrated in a hollow core photon crystal fiber** [10336-89]
- 10336 OO **Synthesis of high luminescent carbon nanoparticles** [10336-77]
- 10336 OP **Bovine serum albumin nanoparticles loaded with Photosens photosensitizer for effective photodynamic therapy** [10336-78]
- 10336 OQ **The assesment of effectiveness of plasmonic resonance photothermal therapy in tumor-bearing rats after multiple intravenous administration of gold nanorods** [10336-59]
- 10336 OR **Fabrication, size control and functionalization of silver nanoparticles by pulsed laser ablation synthesis in liquid** [10336-32]
- 10336 OS **The application of laser pointers for demonstration experiments in nanotechnology lessons at secondary school level** [10336-80]

10336 0T **Modification of the internal surface of photonic crystal fibers with Ag and Au nanoparticles for application as sensor elements** [10336-85]

MICROSCOPIC AND LOW-COHERENCE METHODS IN BIOMEDICAL AND NON-BIOMEDICAL APPLICATIONS

10336 0U **Stiffness of RBC optical confinement affected by optical clearing** [10336-38]

10336 0V **Fluorescent angiography of chicken embryo and photobleaching velocimetry** [10336-41]

INTERNET BIOPHOTONICS

10336 0W **Adaptive μ PIV for visualization of capillary network microcirculation using Niblack local binarization** [10336-69]

10336 0X **Investigation of flavonoid influence on peroxidation processes intensity in the blood** [10336-60]

10336 0Y **Specific features of movement of the photon density normalized maximum in highly scattering media with tissue-like optical properties** [10336-86]

10336 0Z **Monte-Carlo simulation of OCT structural images of human skin using experimental B-scans and voxel based approach to optical properties distribution** [10336-94]

10336 10 **Laser speckle contrast imaging of cerebral blood flow of newborn mice at optical clearing** [10336-61]

10336 11 **Tissue sensing by structured illumination in optical diffuse reflectometry** [10336-95]

BIOMEDICAL SPECTROSCOPY

10336 12 **Optical properties of human nails in THz frequency range** [10336-67]

10336 13 **Detection of rhodamine 6G in blood and urine using combination of surface-enhanced Raman spectroscopy and liquid-liquid extraction** [10336-75]

10336 14 **Influence of excitation power density on temperature dependencies of NaYF₄: Yb, Er nanoparticles luminescence spectra** [10336-82]

10336 15 **Synthesis and investigation of rosin nanoparticles** [10336-84]

10336 16 **Fabrication of tissue phantoms with embedded CdSe/ZnS quantum dots, gold and upconversion nanoparticles** [10336-91]

ADVANCED POLARIZATION TECHNOLOGIES IN BIOMEDICINE AND MATERIAL SCIENCE

- 10336 17 **Comparative characteristics of the information content of biochemical and electrical parameters of biotissues in the modeling of the induced development of precancerous abnormalities of the gastrointestinal tract in rats** [10336-58]
- 10336 18 **Tissue structure characterization of biotissue phantom by use of the speckle-correlometric technique** [10336-34]
- 10336 19 **Dielectric function of TiO₂ nanoparticles under laser pumping** [10336-31]
- 10336 1A **Dynamic light scattering probes of structure instabilities in foamed substances** [10336-40]
- 10336 1B **Scenarios of the disorder increase in the polarization states of partial contributions to the multiple scattered light fields** [10336-71]
- 10336 1C **Statistical properties of speckled fluorescence in dye-doped coarse-grained random media** [10336-2]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Afanasyeva, G. A., 0X
Agandeeva, Ksenia E., 0K, 0X
Agapova, Y. V., 18
Aksenov, Evgenij, 0H
Al-Bayati, Basim M., 0E
Alonova, M. V., 1B
Asharchuk, I. M., 1C
Atkin, Vsevolod S., 15
Avramov, Latchezar, 02
Baranov, M. S., 0R
Bashkatov, Alexey N., 0Q
Belikov, Andrey V., 0B, 0C
Berezin, K. V., 0I, 0J
Bespalova, Natalia V., 0E
Bogatyrev, Vladimir, 0L
Bokarev, Andrey N., 0K
Bondarenko, Sergei D., 0N
Borisova, Ekaterina, 02
Borsukov, A., 04
Borzov, Victor M., 0T
Brill, G. E., 0F, 0G
Buharskaya, Alla B., 0Q, 0X
Bugaeva, I. O., 0F, 0G
Burmistrova, Natalia A., 0N
Bykov, A., 04
Chernavina, M. L., 0I, 0J
Chibrova, Anastasiya A., 0N
Demchenko, Petr S., 12
Dobrovski, Valery A., 09, 0A
Dremin, V. V., 07, 08
Dunaev, A. V., 04, 07, 08
Dvoretzkiy, K. N., 0J
Egorova, Anna V., 0E, 0F, 0G
Eilks, Ingo, 0S
Erofeev, N. P., 07
Fedosov, Ivan V., 0U, 0V, 0W
Fedyanin, Andrey, 06
Feodorova, Valentina A., 0D
Fiks, I. I., 11
Frolov, S. V., 0Y, 0Z
Gagarsky, Sergey V., 0B
Galitskaya, Anna A., 17
Galushka, Victor V., 0M, 13
Genina, Elina A., 0Q
Genova, Tsanislava, 02
Glinskaya, Elena V., 0E
Glukhovskoy, Evgeny G., 03
Golubev, Alexander, 0L
Gorbachev, Ilya A., 03
Gorshkov, A. V., 11
Goryacheva, Irina Yu., 0M, 0N, 0O, 0T, 13
Grechukhina, O. N., 0J
Grishin, Oleg V., 0U
Gurov, I. P., 07
Gusev, Sviatoslav I., 12
Guseva, Victoria A., 12
Gvozdyuk, Alina A., 0O
Isaeva, A. A., 18, 1A
Isaeva, E. A., 18, 1A
Ivlichev, A. V., 0X
Kandurova, K. Y., 08
Kanevskiy, Matvey V., 17
Khanadeev, Vitaly, 0P
Khaydukov, E. V., 0R
Khlebtsov, Boris N., 0L, 0P, 0Q
Khlebtsov, Nikolai G., 0L, 0P, 0Q
Khodzitsky, Mikhail K., 12
Khramov, V. N., 0R
Kirillin, M. Yu., 11
Kochubey, Vyacheslav I., 14, 16
Konnova, Svetlana A., 17
Kostrova, D. A., 07
Kozlov, I. O., 07, 08
Kozlova, Ekaterina A., 14, 15, 16
Kurochkin, Maxim A., 0W
Kuznetsova, E., 04
Lee, Kisung, 05, 06
Likhter, A. M., 0I, 0J
Loginova, D. A., 11
Lotin, A. A., 0R
Lyubin, Eugeny, 06
Macheyev, M. A., 18
Mamoshin, A., 04
Margaryants, N. B., 07
Markin, Alexey V., 0M, 0S, 13, 15
Markina, Natalia E., 0M, 0S, 13
Markova, N. S., 19
Maslyakova, Galina N., 0Q, 0X
Medvedeva, Maria F., 09
Meglinski, I., 04, 08
Mironova, Irina K., 17
Mohammed, Ammar H. M., 14
Morozov, O. A., 0F
Mudrak, D. A., 0X
Muravyov, Alexei, 05, 06
Namykin, Anton A., 0V
Navolokin, Nikita A., 0Q, 0X
Nechaev, V. V., 0J

Nechaeva, Olga V., 0E
 Nepomnyashchaya, Elina, 0H
 Novikova, Anastasia S., 16
 Novoselova, A. V., 0I
 Packirisamy, Gopinath, 0P
 Pantyukov, A. V., 18
 Penkov, Nikolay, 02
 Petrov, D. A., 0Z
 Petrova, Polina S., 0O
 Pidenko, Pavel S., 0N, 0T
 Pidenko, Sergei A., 0N
 Plastun, Inna L., 0K, 0X
 Plekhanov, V. I., 11
 Pleshakova, Ekaterina V., 17
 Polukonova, N. V., 0X
 Ponomaryov, G. V., 0F
 Postnov, Dmitry E., 0G, 0V
 Potlov, A. Yu., 0Y, 0Z
 Priezzhev, Alexander, 05, 06
 Prilepskii, Artur, 0L
 Proskurin, S. G., 0Y, 0Z
 Pylaev, Timofey, 0L
 Rusanova, Tatiana Yu., 0T
 Sagatova, Madina M., 10
 Saltykov, Yury V., 0D
 Samoilov, L. V., 1A
 Savchenko, Ekaterina, 0H
 Savenko, Olga A., 0T, 14, 16
 Sedykh, Egor A., 12
 Semenov, Alexei, 05, 06
 Semyachkina-Glushkovskaya, Oxana V., 02, 10,
 17
 Semyashkina, Yulia V., 0C
 Sergeev, Andrey N., 0B
 Sergeeva, E. A., 11
 Seryogina, E. S., 08
 Shagautdinova, I. T., 0I, 0J
 Shalabay, Victoria V., 13
 Shuvalov, Andrei A., 0N
 Skaptsov, Alexander A., 0T, 14, 15, 16
 Skibina, Yulia S., 0M, 0N, 0T
 Skrypnik, Alexei V., 0C
 Smirnov, Sergey N., 0B, 0C
 Snimshchikova, I., 04
 Stelmashchuk, O., 04
 Stepanovich, E. Yu., 0J
 Stiukhina, Elena S., 0V, 0W
 Sukhorukov, Gleb B., 0O
 Sviridov, A. P., 1C
 Terentyuk, Georgy S., 0Q
 Terziev, Ivan, 02
 Tikhomirova, Elena I., 0E
 Timoshina, Polina A., 10
 Torbin, S. O., 0A
 Tsareva, O. E., 0A
 Tuchin, Valery V., 0J, 0Q, 0U, 0V, 0W, 10
 Tuchina, Daria K., 10
 Tuchina, E. S., 0F
 Tychina, S. A., 0X
 Ulianova, Onega V., 0D
 Ulyanov, Sergey S., 0D
 Ulyanov, Vladimir Yu., 0E
 Ushakova, O. V., 0F, 0G, 1B
 Ustalkov, Sergey O., 14, 16
 Vakaraeva, Malika M., 0E
 Vanzha, Ekaterina, 0L
 Velichko, Elena, 0H
 Velikov, Vladimir A., 17
 Vinokurov, A., 04
 Vladimirov, Borislav, 02
 Volkov, M. V., 07
 Wagner, Christian, 05, 06
 Yuvchenko, S. A., 19
 Zabenkov, I. V., 0A
 Zakharevich, Andrey M., 0M, 13, 15
 Zayarsky, Dmitry A., 0E
 Zaytsev, Sergey S., 0D
 Zenkin, Nikita S., 0K
 Zharkikh, E. V., 07
 Zherebtsov, E. A., 04, 07, 08
 Zherebtsova, A. I., 04, 08
 Zimnyakov, D. A., 18, 19, 1A, 1B, 1C
 Zinchenko, Ekaterina M., 10

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- 2 Plenary Session II
Alexander V. Priezzhev, M.V. Lomonosov Moscow State University (Russian Federation)
- 3 Plenary Session III
Ekaterina I. Galanzha, University of Arkansas for Medical Science (United States)
- 4 Plenary Session Internet Biophotonics IV
Valery V. Tuchin, Saratov National Research State University (Russian Federation) and National Research Tomsk State University, (Russian Federation) and Institute of Precision Mechanics and Control, RAS (Russian Federation)
- 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:

The Optical Society;
Russian Foundation for Basic Research (grant №16-02-20591, 2016);
SPE "Nanostructured Glass Technology" Ltd. (Russian Federation);
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and “Photonics” (Russian Federation);
European Technology Platform “Photonics21” (Russian Federation);
and EPIC – European Photonics Industry Consortium.

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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