

The International School on Photonics and Optical Informational Technologies 2015

12-16 October 2015, St. Petersburg, Russia

Address: 3B Kadetskaya liniya, Red House, room 23 (floor 2)

The Schedule of School on Photonics and Optical Information Technologies 2015

10/12/15 Monday	10/13/15 Tuesday	10/14/15 Wednesday	10/15/15 Thursday	10/16/15 Friday
<ul style="list-style-type: none"> ➤ 09:00-10:00 Registration on the School ➤ 10:00-11:00 Opening speech ➤ 11:00-12:30 International Chapters Meeting SPIE/OSA/IEEE ➤ 12:30-13:30 Travel Grants ➤ 13:30-14:30 Lunch ➤ 15:00-17:15 Conference Opening Ceremony. Plenary meeting (Hall A)* ➤ 17:15-19:00 Optical Societies Student Chapters Meeting (Hall A)* 	<ul style="list-style-type: none"> ➤ 09:00-09:45 Optical Materials and Metamaterials. Prof. Otsuji T. ➤ 09:45-10:30 <i>Section 1.1</i> Optical Materials and Metamaterials ➤ 11:00-12:30 <i>Section 1.2</i> Optical Materials and Metamaterials ➤ 12:30-13:30 Lunch ➤ 13:30-15:00 <i>Section 2.1</i> Quantum Informatics ➤ 15:15-16:00 <i>Section 2.2</i> Quantum Informatics ➤ 16:15-17:00 Master class Femtosecond Optics ➤ 17:15-18:00 Master class Quantum Cryptography ➤ 18:15-19:00 Master class Terahertz Spectroscopy 	<ul style="list-style-type: none"> ➤ 09:00-09:45 Computational Photonics. Prof. Quarles G. ➤ 09:45-10:30 Computational Photonics. Prof. Cheng C.-J. ➤ 11:00-12:30 <i>Section 2.1</i> Computational Photonics ➤ 12:30-13:30 Lunch ➤ 13:30-14:45 <i>Section 2.2</i> Computational Photonics ➤ 15:00-16:00 <i>Section 2.3</i> Computational Photonics ➤ 16:30-19:00 Master class Numerical Simulation CST/COMSOL Multiphysics 	<ul style="list-style-type: none"> ➤ 09:00-09:45 Medicine of Future. Prof. Blagosklonny M. ➤ 09:45-10:30 Medicine of Future. Prof. Popov A. ➤ 11:00-11:45 Medicine of Future. Prof. Nagahara L. ➤ 11:45-12:30 Medicine of Future. Prof. Frolov A. ➤ 12:30-13:30 Lunch ➤ 13:30-15:00 <i>Section 3.1</i> Medicine of Future ➤ 15:15-16:15 <i>Section 3.2</i> Medicine of Future ➤ 16:30-18:00 Business Photonics. Part 1 ➤ 18:15-19:45 Business Photonics. Part 2 ➤ 20:00-20:45 Business Photonics. Round Table ➤ 20:45-21:30 Supper 	<ul style="list-style-type: none"> ➤ 09:00-10:30 Master class Chinese for Engineers. Part 1 ➤ 10:45-12:30 Master class Chinese for Engineers. Part 2 ➤ 12:30-13:30 Lunch ➤ 13:30-15:15 Excursion to TYDEX ➤ 15:15-18:30 St. Petersburg Excursion ➤ 18:30 School Closing. Banquet.

* Hall A - Congress Hall (floor 4), ITMO University, 49 Kronverksky Pr.

2015-10-12 Monday

REGISTRATION OF THE SCHOOL PARTICIPANTS 09.00-10.00

The registration of the school participants will be at Red House, 3B Kadetskaya liniya

- 10:00 – 10:30 School Opening by **Prof. Kozlov S.A.**, Dean of the Photonics and Optical Information Technologies Department.
- 10:30 – 11:00 Optical Student Chapter (OSC) presentation by **Gurvitz E.A.**, President of the OSC.

International Chapters Meeting SPIE/OSA/IEEE

- 11:00 – 11:30 **Prof. Quarles G.** about OSA
- 11:30 – 12:00 **Prof. Otsuji T.** about IEEE
- 12:00 – 12:30 **Prof. Popov A.** about SPIE
- 12:30 – 13:30 Documents preparation for the Travel Grants reimbursement
- 13:30 – 14:30 **Lunch**

**Hall A, Congress Hall (floor 4),
ITMO University, 49 Kronverksky Pr.**

Plenary meeting

Chair of Plenary meeting: *Aleksandrov E.B., corresponding member of RAS*

- 15:15 – 15:55 Quarles G.A.
Historical overview of 20 years of ceramic lasers enabled by nanotechnology
Open Photonics Inc., Orlando, FL, USA
- 15:55 – 16:35 Otsuji T.
Graphene-based 2-dimensional materials for terahertz device applications
Research Institute of Electrical Communication, Tohoku University, Sendai, Japan
- 16:35 – 17:15 Kilin S.Ya.
Quantum information technologies
B. I. Stepanov Institute of Physics, NASB, Minsk, Belorussia
- 17:15 – 19:00 **Optical Societies Student Chapters Meeting**

2015-10-13 Tuesday

Optical Materials and Metamaterials

- 09:00 – 09:45 Otsuji T.
Graphene-based 2-dimensional materials for terahertz device applications
Research Institute of Electrical Communication, Tohoku University, Sendai, Japan
- 09:45 – 10:00 Barabashko M.S., Ponomarev A.N.*
Vibrations and lattice excitations of fullerenes C₆₀
B. Verkin Institute for Low Temperature Physics and Engineering of NASU, Kharkov, Ukraine
**Institute of Strength Physics and Materials Science of SB RAS, Tomsk, Russia*
- 10:00 – 10:15 Demchenko P.S., Denisultanov A.Kh., Balbekin N.S., Gusev S.I., Sedykh E.A., Azbite S.E., Onushchenko P.A.*, Onushchenko A.A.***, Khodzitsky M.K.
Control of the optical properties of phosphate glass with CdSe quantum dots in terahertz frequency range
ITMO University, Saint-Petersburg, Russia
**Institute of Silicate Chemistry of RAS, Saint-Petersburg, Russia*
***NITIOM of S.I. Vavilov State Optical Institute, Saint-Petersburg, Russia*
- 10:15 – 10:30 Ostatochnikov V.A., Moiseev S.G., Sementcov D.I.
Influence of size dependence optical characteristics of nanoparticles on spectra of 1-D photonic crystals with composite defect
Ulyanovsk State University, Ulyanovsk, Russian Federation
- 10:30 – 11:00 **Coffee-break**
- 11:00 – 11:15 Gareev G.Z., Gareev K.G., Korolev D.V.*, Luchinin V.V., Panov M.F., Smolyanskaya O.A.**
The study of sub-THz and IR optical spectra of Fe_mO_n-SiO₂ and KBr composites
Saint Petersburg Electrotechnical University "LETI", Saint-Petersburg, Russia
**Institute of Experimental Medicine, Federal North-West Medical Research Centre, Saint-Petersburg, Russia*
***University ITMO, Saint-Petersburg, Russia*
- 11:15 – 11:30 Katyba G.M., Zaytsev K.I., Kurlov V.N.*, Shikunova I.A.*
Terahertz waveguide based on multichannel sapphire shaped crystals
Bauman Moscow State Technical University, Moscow, Russia
**Institute of Solid State Physics of Russian Academy of Sciences, Chernogolovka, Russia*
- 11:30 – 11:45 Gorelik V.S., Kudryavtseva A.D., Tareeva M.V., Tcherniega N.V.
Stimulated low-frequency raman scattering in 3D synthetic opals
P.N. Lebedev Physical Institute of the Russian Academy of Science, Moscow, Russia

- 11:45 – 12:00 Gomon D.A., Khodzitsky M.K., Assassa T., Gurvitz E.A., Zaicev K.I.*
Modeling and experimental demonstration of terahertz frequency tunable metamaterial absorber
ITMO University, Saint-Petersburg, Russia
**Bauman Moscow State Technical University, Moscow, Russia*
- 12:00 – 12:15 Bakunov M.I., Mashkovich E.A., Svinkina E.V.
Asymmetric Cherenkov radiation of terahertz waves by an ultrashort laser pulse in a lithium niobate crystal
Nizhny Novgorod - Lobachevsky State University, Nizhny Novgorod, Russia
- 12:15 – 12:30 Andronaki S., Khodzitsky M., Vozianova A.
Definition of optimal material for the production of subwavelength beams in the terahertz frequency range by isotropic artificial dielectric
ITMO University, Saint-Petersburg, Russia
- 12:30 – 13:30 **Lunch**

Quantum Informatics

- 13:30 – 14:15 Moiseev S.A.
Quantum memory based on photon echo
Kazan National Research Technological University, Kazan, Russia
- 14:15 – 14:30 Gubaidullina K.V., Chivilikhin S.A.
Theoretical research of the distortion of quantum circuit in Grover's algorithm
ITMO University, Saint-Petersburg, Russia
- 14:30 – 14:45 Chistyakov V.V., Smirnov S.V., Nazarov Yu.V., Kynev S.M., Gleim A.V.
Providing high visibility in subcarrier wave quantum key distribution system
ITMO University, Saint-Petersburg, Russia
- 14:45 – 15:00 Ivanova A.E., Chivilikhin S.A., Gleim A.V.
Using of optical splitters in quantum random number generators based on fluctuations of vacuum
ITMO University, Saint-Petersburg, Russia
- 15:00 – 15:15 **Coffee-break**
- 15:15 – 15:30 Kozubov A.V., Chivilikhin S.A.
Theoretical investigation of the correlation between perturbations of linear optical CNOT gate parameters and its performance
ITMO University, Saint-Petersburg, Russia

OPTICAL STUDENT CHAPTER



- 15:30 – 15:45 Gaidash A.A., Egorov V.I., Gleim A.V.
Revealing of photon-number splitting attack on quantum key distribution system by photon-number resolving devices
ITMO University, Saint-Petersburg, Russia
- 15:45 – 16:00 Cherkas A.V.
Quantum adder of classical numbers
ITMO University, Saint-Petersburg, Russia
- 16:00 – 16:15 **Coffee-break**

Master classes

- 16:15 – 17:00 Master class **Femtosecond Optics**, room 113
- 17:00 – 17:15 **Coffee-break**
- 17:15 – 18:00 Master class **Quantum Cryptography**, room 224
- 18:00 – 18:15 **Coffee-break**
- 18:15 – 19:00 Master class **Terahertz Spectroscopy**, room 111

2015-10-14 Wednesday

Computational Photonics

- 09:00 – 09:45 Quarles G.
A historical overview of 20 years of ceramic lasers enabled by nanotechnology
Open Photonics Inc., Orlando, FL, USA
- 09:45 – 10:30 Cheng C.-J.
**Superresolution imaging in digital holographic microscopy and tomography—
explore the spatial distribution of refractive index**
*Institute of Electro-Optical Science and Technology, National Taiwan Normal University,
Taipei, Taiwan*
- 10:30 – 11:00 **Coffee-break**
- 11:00 – 11:15 Andreeva V.A., Shipilo D.E., Panov N.A., Kosareva O.G.
**Contribution of free and bound electrons to far infrared and terahertz spectrum
emitted by a filament in a gas**
Lomonosov Moscow State University, Moscow, Russia
- 11:15 – 11:30 Halilov S.I., Pogrebnaya A.O., Rubass A.F.
**Experimental research of the demultiplexing process of signal beam shifting
optical vortices after going through low-mode fiber**
*Physico-Technical Institute "Crimean Federal University V.I. Vernadsky "Simferopol,
Republic of. Crimea, Russian Federation*
- 11:30 – 11:45 Dolganova I.N., Zaytsev K.I., Metelkina A.A., Yurchenko S.O.
The active-passive continuous-wave terahertz imaging system
Bauman Moscow State Technical University, Moscow, Russia
- 11:45 – 12:00 Zaytsev K.I., Nosov P.A., Kudrin K.G., Yurchenko S.O.
**Methods for solving the inverse ill-posed problems of terahertz pulsed
spectroscopy**
Bauman Moscow State Technical University, Moscow, Russia
- 12:00 – 12:15 Nogin A.A., Konyakhin I. A.
The problems of image processing in two-axis autocollimator
ITMO University, Saint-Petersburg, Russia
- 12:30 – 13:30 **Lunch**
- 13:30 – 13:45 Fatkhullina D.G., Zhukova E.V., Margaryants N.B.
**Investigation of inhomogeneous distribution of dye in a paper surface by ATR
spectroscopy method**
ITMO University, Saint-Petersburg, Russia

- 13:45 – 14:00 Ermolaev P.A., Volynsky M.A.
Dynamic estimation of parameters of interferometric signals by gradient descent method
ITMO University, Saint-Petersburg, Russia
- 14:00 – 14:15 Gill V.V., Vozianova A.V., Khodzitsky M.K.
Terahertz carpet cloak with different curvature of low boundary
ITMO University, Saint-Petersburg, Russia
- 14:15 – 14:30 Shipilo D., Andreeva V., Panov N., Kosareva O.
Overcome of the clamped intensity under super-filamentation and the efficient energy deposition into air
Faculty of Physics and International Laser Center, Lomonosov Moscow State University, Moscow, Russia
- 14:30 – 14:45 Chizhov P.A., Ushakov A.A.*, Bukin V.V., Garnov S.V.
Femtosecond laser plasma diagnostics by interferometric method
A.M. Prokhorov General Physics Institute Russian Academy of Sciences, Moscow, Russia
**Lomonosov Moscow State University, Moscow, Russia*
- 14:45 – 15:00 **Coffee-break**
- 15:00 – 15:15 Pogrebnaya A.O., Halilov S.I., Rubass A.F.
Conversion circularly polarized beam shifting optical vortices with a fractional topological charges in a uniaxial crystal
Physico-Technical Institute "Crimean Federal University V.I. Vernadsky", Simferopol, Republic of Crimea, Russian Federation
- 15:15 – 15:30 Sokolenko B.V., Poletaev D. A.
Phase structure conversion of singular beams in uniaxial crystals
V.I. Vernadsky Crimean Federal University, Crimea, Simferopol, Russia
- 15:30 – 15:45 Palodiya V., Raghuwanshi S. K.
Performance study of optical modulator based on electro-optic effect
Indian School of Mines, Dhanbad, India
- 15:45 – 16:00 Kuzanyan A.A., Gurin V.N.*, Volkov M.P.*, Kuzanyan A.S.
Thermoelectric single photon detectors on the bases of W/CeB6/W multilayer sensor
Institute for Physical Research, Ashtarak, Republic of Armenia
**Ioffe Physical-Technical Institute of the Russian Academy of Sciences, St. Petersburg, Russian Federation*
- 16:15 – 16:30 **Coffee-break**

Master classes

- 16:30 – 19:00 Master class Numerical Simulation CST/ COMSOL Multiphysics, room 110

2015-10-15 Thursday

Medicine of Future

- 09:00 – 09:45 Blagosklonny M.
Medicine in future
Buffalo University, Buffalo, NY, USA
ITMO University, Saint-Petersburg, Russia
- 09:45 – 10:30 Popov A.
Nanoparticles for applications in cosmetics and biophotonics
Oulu University, Oulu, Finland
ITMO University, Saint-Petersburg, Russia
- 10:30 – 11:00 **Coffee-break**
- 11:00 – 11:45 Nagahara L.
Nanotechnology, translation research, oncology
Johns Hopkins University, Baltimore, USA
- 11:45 – 12:30 Frolov A., Soboleva A., Didio A., Grishina T., Stefanov V.
Individual glycation sites in blood plasma proteins as the markers of type 2 diabetes mellitus
The Leibniz Institute of Plant Biochemistry, Halle, Germany
St. Petersburg State University, Saint-Petersburg, Russia
- 12:30 – 13:30 **Lunch**
- 13:30 – 13:45 Kreiß L., Kanawade R.*, Fanselow S.**, Klämpfl F., Peukert W.**, Schmidt M.*
Photodynamic therapy induced by silica coated, magnetic nanoparticles
Institute of Photonic Technologies, Friedrich-Alexander-University Erlangen-Nürnberg, Erlangen, Germany
**Clinical Photonics Lab, Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany*
***Institute of Particle Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany*
- 13:45 – 14:00 Chernomyrdin N.V., Zaytsev K.I., Kudrin K.G.*, Reshetov I.V.*, Babayants M.V.***, Korotkov O.V.***, Yurchenko S.O.
Hyper-spectral fluorescent imaging of biological objects based on tunable acousto-optical TeO₂-filter
Bauman Moscow State Technical University, Moscow, Russia
**Sechenov First Moscow State Medical University, Moscow, Russia*
***Moscow State Regional Institute for the Humanities, Orekhovo-Zyevo, Russia*

- 14:00 – 14:15 Belarus A.O., Spivak Yu. M., Moshnikov V.A.
Investigation of the internal structure nanocontainers for local drug delivery based on powders porous silicon
Saint Petersburg Electrotechnical University "LETI", Saint-Petersburg, Russia
- 14:15 – 14:30 Gusev S. I., Balbekin N. S., Sedykh E. A., Khodzitsky M. K., Kononova Yu. A. *, Litvinenko E. V. *, Grineva E. N. *, Babenko A. Yu. *
Influence of bilirubin, creatinine and uric acid concentrations on blood optical properties of diabetics in THz frequency range
ITMO University, Saint-Petersburg, Russia
**Almazov North-West Federal Medical Research Centre, Saint Petersburg, Russia*
- 14:30 – 14:45 Smolyanskaya O.A., Lyakhov E.P., Balbekin N.S., Popov A.P. *, Khodzitsky M.K.
Creation and study of the characteristics of biological tissue phantoms in the terahertz frequency range
ITMO University, Saint-Petersburg, Russia
**Oulu University, Oulu, Finland*
- 14:45 – 15:00 Cherkasova O.P., Nazarov M.M. *, Berlovskaya E.E. **, Angeluts A.A. **, Makurenkov A.M. **, Shkurinov A.P.***.
Impact of high blood glucose concentrations on the optical properties of biological samples in the terahertz frequency range
Institute of Laser Physics of SB RAS, Novosibirsk, Russia
**Institute on Laser and Information Technologies of RAS, Shatura, Russia*
***Lomonosov Moscow State University, Moscow, Russia*
- 15:00 – 15:15 **Coffee-break**
- 15:15 – 15:30 Smolyanskaya O.A., Panchenko A.V. *, Sulatsky M.I., Bunina P.B., Balbekin N.S., Khodzitsky M.K.
The investigation of the cancer process using the optical properties of the blood in the terahertz frequency range
ITMO University, St-Petersburg, Russia
**N.N. Petrov Research Institute of Oncology, St-Petersburg, Russia*
- 15:30 – 15:45 Chirskaya V.V., Zhukova E.V., Margaryants N.B.
The study of plant tissue by optical coherent microscopy method
ITMO University, Saint-Petersburg, Russia
- 15:45 – 16:00 Goryachuk A.A., Trulioff A.S. *, Khodzitsky M.K.
The optical properties and spectral features of malignant skin melanocytes in the terahertz frequency range
ITMO University, Saint-Petersburg, Russia
**Federal State Budgetary Scientific Institution "Institute of Experimental Medicine" Saint-Petersburg, Russia*



16:00 – 16:15 Fedorov V.I.
Research of the biological effects of terahertz radiation as a prerequisite for development of diagnostic and therapeutic methods
Novosibirsk State Technical University, Novosibirsk, Russia

16:15 – 16:30 **Coffee-break**

BUSINESS PHOTONICS

16:30 – 16:45 **B.E. Meyers & Co., Inc. Company**
USA, <http://bemeyers.com/>

16:45 – 17:00 **Menlo Systems GmbH**
Germany, <http://www.menlosystems.com/>

17:00 – 17:15 **ID Quantique**
Switzerland, <http://www.idquantique.com/>

17:15 – 17:30 **Tydex**
Russia, <http://www.tydexoptics.com>

17:30 – 17:45 **Altechna**
Lithuania <http://altechna.com/>

17:45 – 18:00 **Rohde-Schwarz**
Germany www.rohde-schwarz.com/

18:00 – 18:15 **Coffee-break**

18:15 – 18:30 **Specpostavka**
Russia, <http://icspecpostavka.ru>

18:30 – 18:45 **Inversion Fiber Co.Ltd.**
Russia, <http://www.inversions.ru/index.php?lang=en>

18:45 – 19:00 **Quantum Communications**
Russia

19:00 – 19:15 **LED Microsensor NT, LLC**
Russia

19:15 – 19:30 **Inversion Sensor**
Russia, <http://i-sensor.ru/>

19:30 – 20:00 **Business Photonics. Round Table**

20:00 – 21:00 **Supper**

OPTICAL STUDENT CHAPTER



2015-10-16 Friday

Master classes

- 09:00 – 10:30 Master class **Chinese for Engineers**. Part 1
- 10:30 – 10:45 **Coffee-break**
- 10:45 – 12:30 Master class **Chinese for Engineers**. Part 2
- 12:30 – 13:30 **Lunch**

Excursions

- 13:30 – 15:15 Excursion to *TYDEX*
- 15:15 – 18:30 *St. Petersburg* Excursion
- 18:30 *School Closing. Banquet.*