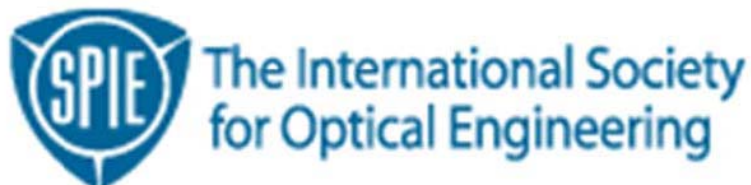


**SAINT-PETERSBURG STATE UNIVERSITY OF INFORMATION  
TECHNOLOGIES, MECHANICS AND OPTICS**



## **Student Chapter Annual Report**

### **Names and e-mail addresses of chapter officers:**

President: *Alexander Alekseev*, [alekseev@ysa.ifmo.ru](mailto:alekseev@ysa.ifmo.ru)

Vice-president: *Elizaveta Yankovskaya*, [e.raag@mail.ru](mailto:e.raag@mail.ru)

Secretary: *Olga Mokhnatova*, [o.mokhnatova@mail.ru](mailto:o.mokhnatova@mail.ru)

Treasurer: *Elizaveta Buyanovskaya*, [bu.eliz.m@mail.ru](mailto:bu.eliz.m@mail.ru)

Chapter Scientific Adviser: *Sergey A. Kozlov*, [kozlov@mail.ifmo.ru](mailto:kozlov@mail.ifmo.ru)

### **List of current Student Chapter members:**

- |                           |                           |
|---------------------------|---------------------------|
| 1. Abdusalamov Arsen      | 11. Kiselev Andrei        |
| 2. Alekseev Alexander     | 12. Lashkin Daniil        |
| 3. Antonov Oleg           | 13. Lesnichiy Vasilii     |
| 4. Buyanovskaya Elizaveta | 14. Mokhnatova Olga       |
| 5. Chernov Ilya           | 15. Novoselov Evgeny      |
| 6. Tsipkin Anton          | 16. Pantas' Yaroslav      |
| 7. Tsygankova Ekaterina   | 17. Sidtikov Vladimir     |
| 8. Fyodorov Fyodor        | 18. Volinskiy Maxim       |
| 9. Kaplanov Vadim         | 19. Yankovskaya Elizaveta |
| 10. Kiselev Alexei        | 20. Zlatov Andrei         |

## **Chapter activities since last report:**

This year our members worked for extending their study to the following directions:

- Investigation of holographic technologies for artificial intelligence creation;
- Optical solitons in optoinformatics;
- Analytical study and numerical modeling of the femtosecond supercontinuum generation;
- Analytical study and numerical modeling of few-cycle pulses propagation and reflection;
- Investigation of few-cycle pulses collision in waveguides and possibilities of received effects' use in ultrafast optoinformatics;
- Modeling of light propagation along rows of nanospheres and nanocylinders;
- Investigation of structures of permitted and forbidden zones in periodical system of intensifying an isotropic layers;
- Modeling of nanotubes growth;

Great part of our Chapter took part in XXXVI Scientific and Education Conference of St. Petersburg State University ITMO, "Achievements of scientists, post-graduate students and students of SPb SU ITMO in science and education ", 31 January – 3 February, 2007, in IV Interuniversity Conference of Young Scientists of St. Petersburg State University ITMO, 10-13 April, 2007. Also few members of our Chapter had participated in the All-Russia school - seminar « Waves 2007 », 22-26 May, 2007, Moscow, and in International Conference on Coherent and Nonlinear Optics / International Conference on Lasers, Applications, and Technologies, May 28 - June 1, 2007, Minsk, Belarus

In this year we received office for our Chapter. Members of our branch prepared excursion for Dr. Richard Hoover throughout the Scientific Research Institute «Optoinformatics» of Saint-Petersburg State University of Information Technologies, Mechanics and Optics.

## **Publications:**

- Alekseev A.M., Konstantinov A.M., Pavlov A.V. Integration of logical and imaginative thinking by Fourier holography techniques: Implementation in nonmonotonic reasoning. – Bulletin of the Russian Academy of Sciences: Physics, Volume 71, Number 2, February, 2007, p.43-47
- Volynsky M.A., Gurov I.P., Zakharov A.S. Nonlinear stochastic signals filtering in interferometers with low coherence illumination. – In materials of the XXXVI Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 2007.
- Volynsky M.A., Zakharov A.S. Analysis of low coherence interferometric signals based on linear and nonlinear models of stochastic filtering. – In materials of the IV Interuniversity Conference of Young Scientists, 2007.
- Tsygankova E., Ignatiev A., Nikonorov N., Tsekhomsky V. Photosensitivity of photo-thermo-refractive glasses. – In materials of the XXXVI Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 2007
- Zlatov A.S. Spectral properties of high-concentration ytterbium-erbium-doped metaphosphate glass for micro lasers. – In materials of the IV Interuniversity Conference of Young Scientists, 2007.

## Conferences:

- Buyanovskaya E. M., Kozlov S. A. Interaction of counter-propagating femtosecond spectral supercontinua in nonlinear dielectric media. XXXVI scientific, educational and methodical conference of teaching and scientific staff of SPbSU IFMO, 30th of January-2nd of February 2007, Saint-Petersburg, Russia.
- Buyanovskaya E. M., Kozlov S. A. Dynamics of field of two counter-propagating few cycle light pulses in nonlinear dielectric media, ICONO/LAT, May 28-June 1 2007, Minsk, Belarus
- Mokhnatova O.A., Kozlov S.A. The reflection of femtosecond spectral supercontinuum from nonlinear dielectric media, XXXVI scientific, educational and methodical conference of teaching and scientific staff of SPbSU IFMO, 30th of January-2nd of February 2007, Saint-Petersburg, Russia,
- Mokhnatova O.A., Kozlov S.A. The nonlinear reflection of fields superposition of two few-cycle light pulses, ICONO/LAT, May 28-June 1 2007, Minsk, Belarus
- Volynsky M.A., Gurov I.P., Zakharov A.S., Nonlinear stochastic signals filtering in interferometers with low coherence illumination, XXXVI Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 30 January – 2 February, 2007, Saint Petersburg, Russia.
- Volynsky M.A., Zakharov A.S., Analysis of low coherence interferometric signals based on linear and nonlinear models of stochastic filtering, IV Interuniversity Conference of Young Scientists, Saint Petersburg State University ITMO, 10-13 April, 2007, Saint Petersburg, Russia.
- Gurov I., Volynsky M., Zakharov A., Evaluation of multilayer tissues in optical coherence tomography by the extended Kalman filtering method, ICONO/LAT, May 28-June 1 2007, Minsk, Belarus
- Tsygankova E., Ignatiev A., Nikonorov N., Tsekhomsky V. Photosensitivity of photo-thermo-refractive glasses; XXXVI Scientific and Education Conf. of University ITMO, February 2007, St. Petersburg, Russia.
- Tsygankova E., Ignatiev A., Tsekhomsky V. Stibium role in forming of silver nanoparticles in photosensitive glass; the 4th Conf. of Young Scientists of ITMO, April 2007, St-Petersburg, Russia.
- Alekseev A.M., Pavlov A.V. Logic and linguistic modeling by a method of Fourier - holography: realization of nonmonotonic reasonings // XXXVI Scientific and Education Conference of St. Petersburg State University ITMO, "Achievements of scientists, post-graduate students and students of SPb SU ITMO in science and education ", 31 January – 2 February, 2007, Saint-Petersburg, Russia
- Zlatov A.S. Spectral properties of high-concentration ytterbium-erbium-doped metaphosphate glass for micro lasers, the 4th Conf. of Young Scientists of ITMO, April 2007, St-Petersburg, Russia.
- Chernov I.A. Efimov A.M., Method of the dispersive analysis of spectra of glasses. A problem of calculation of integral of convolution. XXXVI Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 30 January – 2 February, 2007, Saint Petersburg, Russia.
- Chernov I.A. Method of the dispersive analysis of the spectrum of the glasses. The problem of calculation of integral of convolution and its realization in the program of calculation of the spectrum of complex dielectric permeability in the wide interval of frequencies, IV Interuniversity Conference of Young Scientists, Saint Petersburg State University ITMO, 10-13 April, 2007, Saint Petersburg, Russia.

## Grants:

- Alekseev A.M. SPIE Educational Scholarship in Optical Science and Engineering 2007
- Buyanovskaya E.M. SPIE Educational Scholarship in Optical Science and Engineering 2007
- Mokhnatova O.A. SPIE Educational Scholarship in Optical Science and Engineering 2007
- Tsygankova E.V. SPIE Educational Scholarship in Optical Science and Engineering 2007

## Planned activities:

We prepare for representation of our SPIE Chapter at International Conference SPIE Optics/Photonics, 26 - 30 August 2007, San Diego, California, USA.

In October 2007 we are planning to combine traditional VI SPIE Student Chapters Meeting (<http://ysa.ifmo.ru/spie/>) with V International Conference of Young Scientists and Specialists "Optics-2007" and to participate in work of Organizational committee of School for young scientists in the field of Photonics and Optoinformatics.

We are going to continue:

- Conducting our theoretical and scientific research;
- Attending conferences and SPIE Student Chapters Meetings;
- Increasing number of the Chapter's members;
- Developing our chapter's web page;
- Renovation of the Chapter's library.

**Photos:**



Dr. Richard Hoover visited The Scientific Research Institute «Optoinformatics» of Saint-Petersburg State University of Information Technologies, Mechanics and Optics.



Volinskiy M. International Conference on Coherent and Nonlinear Optics / International Conference on Lasers, Applications, and Technologies, May 28-June 1 2007, Minsk, Belarus