



**Saratov State University,
Institute of Physics,
International Research-
Educational Center of
Optical Technologies for
Industry and Medicine
“Photonics,” and Science
Medical Center**

Saratov Fall Meeting SFM'23

**XXVII International School for
Junior Scientists and Students on
Optics, Laser Physics &
Biophotonics**

**September 25–29, 2023
Saratov, Russia**

Chair

Valery V. Tuchin, Saratov State University;

Institute of Precision Mechanics and Control,
FRC “Saratov Scientific Centre of the RAS”;
Tomsk State University (Russia)

Secretary

Irina Yu. Yanina, Saratov State University;
Tomsk State University (Russia)

Workshops and Round Tables:

- Workshop on Modern Optics XXII
(Georgy V. Simonenko)
- Workshop on English as a
Communicative Tool in the Scientific
Community XXII (Alexander B.
Pravdin, Svetlana V. Eremina)
- Round Table on Management of High
Technologies Commercialization and
Regional Innovation Systems XVII
(Julia S. Skibina, Andrey Shuvalov,
Sergey Sokolov, Daniil N. Bratashov,
Andrey P. Rytik)
- Round Table on History, Methodology
and Philosophy of the Optical Education
XVI (Alexander A. Skaptsov, Boris A.
Medvedev)

Co-located with:

International Symposium on Optics and
Biophotonics XI of Saratov Fall Meeting
SFM'23, September 26 -29, 2023

Workshop: Modern Optics XXII

Lectures on Optics for University Students, Postgraduate Students and High School Students

Chair

Georgy V. Simonenko, Saratov State University

Secretary

Ekaterina N. Lazareva, Saratov State University;
Tomsk State University

Program Committee:

Anton A. Dyachenko, Lyceum Boarding School
64

Ivan V. Fedosov, Saratov State University

Sergey I. Kireev, Saratov State University

Alexander B. Pravdin, Saratov State University

Lyudmila V. Pravdina, Physico-Technical High
School # 1, Saratov

Alexander V. Priezhev, Moscow State University

Vladimir P. Ryabukho, Saratov State University

Valery V. Tuchin, Saratov State University

Sergey B. Venig, Saratov State University

The main goal of the Workshop is promotion of

achievements in optics, a rapidly developing field of physics, among schoolchildren and high school students.

One of the leading scientific schools of optics in Russia, which is a recognized authority in other countries formed in Saratov to date. Conferences, seminars and scientific schools are one of the effective ways to attract talented young people to scientific work, particularly in the area of optical research. Widening the circle of young people, the inclusion of students in high schools and colleges, including the physical, technical and other natural sciences field are one of the main tasks of scientific-methodical workshop on "Modern Optics".

Organized in cooperation with

Saratov Physics and Technical Lyceum

Lyceums No. 2, 4 and 15

Lyceum boarding school 64

Secondary schools No. 45, 51, 54, 67 and 77

Gymnasium No. 5

Ministry of Education of the Saratov Region

Workshop program

The program of the Workshop "Modern Optics" consists of poster session "Science incubator for school children and students on Photonics", lectures and demonstration parts and seminars on selected topics. One lecture day with thematic sections supposed to hold the afternoon. Section sessions supposed to hold for 3-4 favorites, the most interesting topics for teachers, which posts students and pupils on the results of independent work is supposed to hear and discuss also.

Popular science lecture for schoolchildren and

high school students:

"What is "nanoscopy," or how to see a single molecule"

Andrey V. Naumov, corresponding member of the Russian Academy of Sciences, Institute of Spectroscopy of the RAS; Moscow Pedagogical State University; Lebedev Physical Institute of the RAS, Moscow, Russia



This popular science lecture is devoted to one of the most topical areas of modern optics - optical microscopy of ultrahigh spatial resolution. It tells how individual molecules can be "examined" using a conventional optical microscope, as well as how these technologies can be applied in biophysics, nanotechnology, medicine, and quantum informatics.

Workshop

English as a Communicative Tool in the Scientific Community XXII

Chairs:

Alexander B. Pravdin, Svetlana V. Eremina,
Saratov State University

Secretary:

Ksenia O. Merkulova, Saratov State University

International Program Committee

Vladimir L. Derbov, Saratov State University

Kirill V. Larin, University of Houston, USA

Alexander V. Priezzhev, M.V. Lomonosov
Moscow State University

Dmitry A. Zimnyakov, Saratov State Technical
University

The main goal of the Workshop is to introduce young researchers and students to the international community of scientists dealing with development and application of laser and optical technologies in medicine and biology. Joining this fast-developing field of research is impossible without active English, the language that has become an international communicative tool of modern science. The communicative problem that most of the beginner scientists face is well expressed in the maxim "If you want your voice to be heard in the present-day world, it should sound in English"

Most of the modern publications necessary

for the work of a graduate student, postgraduate or young scientists is in English. Therefore, the skill of scanning large amounts of English text with selecting informationally valuable fragments will be one of the leading topics of the sessions and round-table discussions. The level of discussions will be intended for graduate students.

The main attention will be paid to training the active English as an international communicative tool without which it is impossible to present one's own research results to the scientific community. Traditionally in Russia the language education of specialists in natural sciences was oriented at passive English. We believe that introducing the students and young researchers to the technology of scientific presentations and Internet sites, to the style and grammar peculiarities of a scientific article, etc., will stimulate the progress in their language education and help to overcome the psychological barrier impeding the active use of English.

The Workshop will include lecture sessions with oral presentations. The subjects touched upon during these sessions will be extended and developed in round-table discussions.

We expect active participation of the leading English instructors of Saratov National Research State University, the School professors that have considerable experience in English scientific presentations, the members of Editorial Boards and referees of international journals. At least 3-4 foreign scientists including those from English-speaking countries are supposed to take part in the Workshop.

In the framework of the Workshop an Internet session will be organized in which the participants will be introduced to the facilities of remote language acquisition and consult with instructors.

Topics

The education program will include but is not restricted to the following topic areas:

- The style of a modern scientific publication
- Cursory reading as a means to extract maximal information basing on minimal vocabulary
- Submitting a paper to an International Journal: language requirements
- Russian-English terminology system in biomedical optics

Round Table on High Technologies Commercialization and Regional Innovation Systems XVII

Moderators

Julia S. Skibina, LLC SPE

“Nanostructured Glass Technology”

Andrey Shuvalov, LLC SPE

“Nanostructured Glass Technology”

Sergey N. Sokolov,

RME “INJECT” LLC, Saratov, Russia

Daniil N. Bratashov, SSU

Andrey P. Rytik, SSU

Secretary

Anastasiya A. Zanishevskaya,

LLC SPE “Nanostructured Glass Technology”

International Program Committee

Gregory B. Altshuler,

IPG Inc., USA

Robert Breault,

Breault Research Organization, Arizona Optics

Industry Association, USA

Leonid E. Dolotov, Saratov State University

Yury V. Kistenev, Tomsk State University,

Russian Technology Platform “The Medicine of the Future”

Boris Reznik, BioRASI, Inc., USA

Natalya V. Romanova, Saratov State University

StoyanTanev, University of Southern Denmark, Denmark

Andreas Thoss, THOSS Media GmbH, Berlin, Germany and Laser Focus World Magazine

The Round Table discussions will include the following **topics**:

- High technology commercialization, innovation management, high technologies and business, technologies of opening of the innovative companies, innovative business, transfer of technologies, financing of innovative activity, management of innovation risks, venture financing, education in the field of management in biophotonics and biotechnologies
- Development and monitoring of branch "road maps" as the basis for planning of regional branch clusters and innovation zones
- Actual priorities of the regional innovation policy
- Experience of IP commercialization and actual problems of Academy of Sciences, high schools, chambers of commerce and regional industrial company interaction

Round Table on History, Methodology and Philosophy of the Optical EducationXVI

Co-chairs:

Alexander A. Skaptsov, Saratov State University

Boris A. Medvedev, Saratov State University

Secretary:

Alexey V. Markin, Saratov State University

Program Committee

Vladimir L. Derbov, Saratov State University

Boris A. Medvedev, Saratov State University

Vladimir P. Ryabukho,Saratov State University

Alexander V. Priezhev, M.V. Lomonosov
Moscow State University

Alexander V. Gorokhov, Samara State University

Valery V. Tuchin, Saratov State University

The goalsof the Round Table are the development of the optical education, the actualization of the interdisciplinary investigation using optical conceptions and tools, the expansion of European educational field of optical physics and biophysics and the increase of creative resources and potential of bachelor, master's degree, post-graduate training in Optics and Biophotonics.

Topics

There are three main discussing topics.

History of discoveries in optics:

- Founders of optical physics
- History of optical scientific schools
- Optical discoveries on chronicles of the world culture
- Historical aspects of optical investigations for life science

Methodology problems of the optical education:

- Lecture demonstrations of optics
- University optical training
- Methodology of teaching optics in the general course of physics at a natural-science department
- Principles of optical mathematical simulation

Teaching optics in the light of the interdisciplinary education and scientific knowledge integration:

- Problems of teaching optics at medical colleges and universities
- Optical physics in the course “The modern natural scientific conception” at humanitarian departments
- Minimum program of biology, biophysics, biochemistry, andbiomedicine for student specialized in optics