ANNUAL REPORT
Activities of Chapter in educational, scientific and social areas.
May 2015 – May 2016

http://www.vortex.crimea.edu/

by:

Adviser: Prof. Alexander Volyar volyar@crimea.edu

Current SPIE Student Chapter Officers:
President: Anna Pogrebnya kurioza.9@gmail.com
Vice President: Dmitry Poletaev dm1try@mail.ru
Secretary: Bogdan Sokolenko simplexx.87@gmail.com
Treasurer: Maksym Ivanov maks.ivannov@gmail.com
## Member Roster

Total Student Members: 10

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of expiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrey Borisov</td>
<td>15 February 2017</td>
</tr>
<tr>
<td>Khrystyna Borysova</td>
<td>12 February 2017</td>
</tr>
<tr>
<td>Maksym Ivanov</td>
<td>19 February 2017</td>
</tr>
<tr>
<td>Viktor Konovalenko</td>
<td>18 February 2017</td>
</tr>
<tr>
<td>Anastasiya Krivtsova</td>
<td>16 February 2017</td>
</tr>
<tr>
<td>Maria Nesterova</td>
<td>15 February 2017</td>
</tr>
<tr>
<td>Anna Pogrebnaya</td>
<td>8 March 2017</td>
</tr>
<tr>
<td>Dmitry Poletaev</td>
<td>8 March 2017</td>
</tr>
<tr>
<td>Bohdan Sokolenko</td>
<td>12 February 2017</td>
</tr>
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TNU SPIE CHAPTER’S ACTIVITY:

Each year different meetings and workshops are organized by our chapter for its members and guests, especially for the young researchers, college, university and high-school students. The Chapter members conducted the workshops that demonstrate basic principles of optics and other branches of physics, which are connected with photonics.

May 2015.

Annual meeting of Student Construction Bureau (SCB) of Physical Faculty of the university.

Members of the SPIE chapter actively participate in the student projects. B. Sokolenko (behind the scene) is one of the chief members and co-organizer of the SCB. Students and the chapter members have possibility to implement their engineering ideas in Optics and Photonics into the real-life projects. Applications of light based devises are being actively developed for a years. The head of SCB is D. Poletaev.

All SPIE members have attended this Event and took part in the discussion of the physical principles and of the optical methods for the construction of laser scanning modules and equipment for distant analysis.
June 2015: Reports about Achievements in Optics by our Professors and researches

Prof. A.V. Volyar – advisor of our Chapter had talk about modern aspects of stochastic methods in Optics research and development of Theory of fractals and statistical Chaos. Dr. V.I. Shostka had made interesting reports for students and guests about photovoltaic phenomena in Optics and practical implementation of novel laser technologies.

August 2015

SPIE Chapter officers participated in practical conference-workshop “Educational and Research Grants: theory and practice”. Staff of our university told how to apply Professional Research Grants, supported by government and private foundations.
August - September 2015: Recruitment Event

The members of TNU SPIE&OSA Chapter participated in annual Recruitment Event, which organized by Physics department and implies recruiting of new students and Chapter members.

During the event, Chapter Benefits and realised activities was presented via interactive stand.

September - October 2015: THE DAYS OF SCIENCE

The purpose of the Festival is to provide the discussions of novel approaches and advances in the field of Optics and Photonics, optical devices based on transformation of angular momentum of light, high-technology applications based on singular optics and vortices, optical fiber networks, etc. The techniques of singular optics (including fiber and nonlinear optics and their applications) contribute into promising and rapidly developing area of optical information technology. Such techniques serve for solving
diverse applied problems ranging from industrial quality control to modern and advance telecommunications, and life sciences.

During the Festival few Events was organized by SPIE&OSA Chapter members: "Optics: be in focus", Workshop-Contest of the best student-research work “UMNIQUE” and Engineering Exhibition of students and young researches.

The Event "Optics: be in focus" is an interactive show, to introduce different aspects of optics and photonics to high school students. The show is divided in different modules, each covering a different subject, like lasers, singular optics, optical fibers, solar energy, crystals, polarization, etc. This Event take place once per year and number of participants has reached more than 300 students and schoolchildren this year. The chapter members, together with Physics faculty and Physical-Technical Institute engineers, teachers and scientist, helped in every aspect of the Meeting in building of experiments and actual presentations.
Interesting talks was given by prominent scientists and Professors of St. Petersburg State University:

Zhores Alferov  Michael Dubina  Alexey Zhukov

On the Photo: Director of Physical Institute M.Glumova is meeting the guests.

The Chapter members conducted workshops demonstrating basic principles of optics. The participants have the great opportunity to get know how the image is created on retina of a human eye. Using the optics outreach kit we can easy make the demonstrations of wonderful phenomenon of light and Photonics.
The young scientists improved their skills on experimental research on Optics participating on Exhibition of scientific achievements under the supervision of prominent scientists and experts.

SPIE&OSA Chapter Officer Bohdan Sokolenko became an expert on Research and Engineering Exhibition.

Chapter member Dmitry Poletaev - the chief of Student Construction Bureau had participated in Exhibition with personal exhibits and inventions.
B. Sokolenko and D. Poletaev participated in PRO-Region Contest, Sevastopol.

The Contest of the best student-research work “Unique”. On the photo SPIE student member Dmitry Poletaev gave his speech on the topic “Electronic wheel field calculations in application to the E-bike”. He took the first prize in nomination “Young Inventors”!

The next part of this Event was a presentation of SPIE Chapter Benefits for new members and students of Physics Department.
October - November 2015: **THE YEAR OF LIGHT** at St. Petersburg ITMO University

The official opening of the International Year of Light and Light-Based Technologies have took place on Jan.19 and 20 at the UNESCO headquarters in Paris. After that, events dedicated to the science of light will take part during the whole year: conferences, symposia, exhibitions, competitions, lectures, seminars, and others. Their goal is to attract public attention, to combine the efforts of scientists, representatives of universities, industrial companies, all who are interested in new technologies development and implementation. ITMO University, as one of the leading Russian scientific and educational centers in the field of optics and lighting technology, has been actively involved in large-scale international events. As a part of the Year of Light in St. Petersburg the Optics-2015 and Lighting design-2015 conferences, the International Symposium of Display Holography and **International Optical Workshop** was held.

**Opening Ceremony: the talk of Prof. Gregory J. Quarles**

**TNU SPIE Student Chapter Team attended The International School on Photonics**
October of 2015: the ITMO University in conjunction with Taurida National V.I. Vernadsky University SPIE Chapter (Crimean Federal University), with the participation of the Optical Society of America (OSA), the International Society for Optical Engineering and the International Society of Radio Engineers (IEEE Photonics Society), have held the IX Optics-2015 International Conference of Young Scientists and Specialists. The event has been held in the northern capital since 1956. Students, masters, graduate students, young scientists will be able to discuss topical issues and challenges in the field of optical and related sciences.

TNU SPIE Chapter was represented by D. Poletaev, B. Sokolenko and A. Pogrebnaya
During the School sessions, speakers also presented their papers for the participants. For example, Taiichi Otsuji, Tohoku University professor, made a report on application of graphene-based materials in terahertz research. Chau-Jern Cheng, professor of National Taiwan University, shared ultrafine resolution technique for digital holographic microscopy and tomography on October, 14. School participants also visited a presentation made by Gregory Kvarles, president of “Optical Society of America,” who made a report on laser technologies development survey.

TNU SPIE Chapter Officer Bohdan Sokolenko and Anna Pogrebnaya presented their reports about Optical singularities behavior in anisotropic media.

Also they visited ITMO Optical Labs and “Tydex” Research and Industrial Facility.
During the half of week at St. Petersburg, we were meeting new friends around the World.
Thank you, ITMO!
We took hundreds of joint photos and selfie, happy smiles and good humor accompanied us all the time. Thank you, SPIE!
December 2015

SPIE-Lab tutorial for the students of the physical faculty and Minor Academy of Science. Laboratory Staff showed students different kinds of magneto-optical films. The members of our Chapter show different physical installations and experimental tricks for the Young generation of future Scientists.

February 2016

Members of the chapter report results of their scientific research. On the photo vice-president of the chapter M. Nesterova present her work on the theme “Optical engineering and its application in medicine”.

March - April 2016

The Members of SPIE Chapter participated in Moscow international education fair – it is annual open forum, organized by the Ministry of education and science of Russian Federation as a platform for exchange of experience on challenging questions in the sphere of Russian and international education. Representatives of Russian and international professional community are among permanent participants of the Fair: teachers, directors of educational organizations, representatives of regional ministries and departments, non-profit and commercial organizations, and participants of the educational process – pupils, high school graduates, students and their parents.

Every year MIEF receives 40 thousand visitors, the business program of the Fair embraces 200 events with 500 speakers. Moscow international education fair is the main event in the sphere of Russian education, with more than 900 publications in mass-media.
B. Sokolenko and D. Poletaev represented Student’s research activities and Educational Programs “Potential of the Future” (Moscow, Russia), organized on Physical Institute. The Topical Report on Young Scientists and Officers meeting was about techniques and perspectives of Construction Bureau and Student Chapter’s management.
D. Poletaev on Youth Innovators Session
(Moscow, Russia)

B. Sokolenko and D. Poletaev in Moscow
State M. Lomonosov University
April 2016

SPIE&OSA Chapter members in collaboration with Student’s research Department of Crimean Federal University organized annual workshop “Innovator: from words to action” which gathered together students, young researches and their supervisors. The discussed themes have touched the issues of modern concepts of innovations in business and opened perspectives for overall Grant support to the researches by Foundations and Universities.

Day of the Physical Faculty. Members of the chapter and students of the faculty present humoristic performances.
Upcoming Events

**Optics: Be In Focus (October 2016)**

The event will be organized to support development and stimulate professional skills via the exchange of information and practical experience with the members of OSA and SPIE Student chapters, including visitors from other Universities by means of organization of Conference "Optics: Be in Focus" and thematic Workshops.

**Crimean Week of Light (November 2016)**

Within the framework of "Crimean Week of Light", our OSA&SPIE chapter will organize joint Event, which is intended to introduce school students to different aspects of optics and photonics. During this 3-Day Activity, interactive lectures, demonstrations and lab-tours will initiate the students and school-leavers with the basics of optics and photonics and will show how persuasive and important photonics technology has become. It will gather together hundreds of students around Crimean schools.

Annual propaganda among high-school students is planned as well as propaganda among first- and second-years students about benefits of becoming SPIE members. Open lectures for the students of university and high-school students are planed with aim of recruitment students, popularization of optics, optical engineering and introduction to contemporary optics.

**Chapter Recruitment Workshop (February 2017)**

Activity is aimed to help our students to interact and learn more from each other in realization of their scientific ideas; stimulate integrated development of all groups of competencies: professional knowledge and skills, personal qualities, values, awareness. Also, benefits of SPIE Chapter will be promoted to attract new members and elect new officers.
SPIE provides funding to our Student Chapter in 2015.

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Beginning Balance</td>
<td>$15</td>
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<tr>
<td><strong>Activity Grant Amount 2015</strong></td>
<td>$700</td>
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<tr>
<td>Printed materials: Notes/Meeting programs/Posters</td>
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<tr>
<td>Pens and Calendars with SPIE logo</td>
<td>$60</td>
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<tr>
<td>T-shirts for technical personal, and organizers</td>
<td>$40</td>
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<td>Bags and badges</td>
<td>$15</td>
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<tr>
<td>Coffee-brakes</td>
<td>$35</td>
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<tr>
<td>Purchase of demonstration materials and expendables (LED laser pointers, Lenses)</td>
<td>$110</td>
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<tr>
<td>Membership Dues</td>
<td>$100</td>
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<tr>
<td><strong>TOTAL expenses 2015 year</strong></td>
<td>$710</td>
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<tr>
<td><strong>Available Balance</strong></td>
<td>$5</td>
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