The chapter was established in August 2004 at University of Latvia, Raina Blvd. 19, Riga, LV-1586, Latvia.

Chapter advisor: Professor Janis Spigulis, director of Biophotonics Laboratory, Institute of Atomic Physics and Spectroscopy, janispi@latnet.lv

List of current members:

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
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<tr>
<td>1</td>
<td>Artis Brasovs</td>
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<tr>
<td>2</td>
<td>Inga Brice</td>
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<td>3</td>
<td>Raitis Grzibovskis</td>
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<td>5</td>
<td>Marta Lange</td>
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<td>6</td>
<td>Nellija Liepina</td>
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<td>7</td>
<td>Vanesa Lukinsone</td>
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<td>8</td>
<td>Karola Panke</td>
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<td>9</td>
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<td>Tatjana Pladere</td>
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<td>11</td>
<td>Emilija Plorina</td>
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<td>Mārtiņš Zeidaks</td>
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<td>Kārlis Zuters</td>
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<td>Ilze Ošīna</td>
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<td>17</td>
<td>Matīss Lācis</td>
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</tr>
<tr>
<td>18</td>
<td>Lāsma Asare</td>
<td>Renewal in progress</td>
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Officers:

President: Matiss Lacis (SPIE ID: 3680222, matiiss.lacis@gmail.com);
Vice-President: Marta Lange (SPIE ID: 3512348, marta.lange.rtu@gmail.com);
Secretary: Emilija Plorina (SPIE ID: 4010343, evplorina@gmail.com);
Treasurer: Ilze Ošīna (SPIE ID: 3680218, osina.ilze@gmail.com).

Anton Sdobnov from Pulu, Finland (in middle) visiting our chapter in Riga.
Chapter activities: 

International Conference: “Developments in Optics and Communications 2017”

One of the biggest events in Latvian photonics and optics research life successfully took place in the beginning of April, 2017. Yes, we are talking about the 13th international young scientist conference “Developments in Optics and Communications 2017” (DOC Riga 2017). This conference was jointly organized by the University of Latvia SPIE student chapter and OSA Latvian student chapter hand in hand by more than 15 active organizers.

During those two conference days students and young scientists working experimentally and theoretically in the fields of optics and photonics gathered to share and exchange new ideas, and to establish contacts for future collaboration. In DOC Riga conferences, the organizers make sure that not only the academic skills are being improved, but also a soft skill workshop and a nice social event programme is being offered.

Traditionally, the best poster and the best oral presentations receive an award. This year, the best speech award was given to Inga Brice (Latvia) for her talk “Acetone and benzene detection using CRDS” and the best poster was presented by Anton Sdobnov from Finland (“Intralipid thawing observation by Laser Speckle Contrast Imaging”). Learn more about the scientific researches presented by the conference participants in the online abstract book.
Organizers were excited to welcome here participants and invited speakers from **10 different countries**: Poland, Belarus, Nigeria, India, Finland, Russia, Latvia, Ukraine, Greece and the Netherlands. Therefore, we made a great opportunity to get to know each other and all the cultures, countries represented in the conference - possibly, one of the most interesting social activities was the international evening for the international PARTYcipants. In order to take full advantage of the great capital city of Latvia, all the participants were kindly invited to take a part in the tour to Old Riga.

Also, participants had a great chance to join an activity to learn more about how to manage an effective conversation. A **workshop on soft skills** was conveyed by our long-term UL SPIE member Tatjana Pladere.

Here are some reflections from the conference participants. Let’s see what **Abraham Eno** from Nigeria thinks about his first experience in Latvia:

“A multi-talented platform for young scientists and students to exchange ideas, as well as research experience on topical issues with practical relevance. I really enjoyed every part of the conference, it was very well organised. Presentations were so engaging and very beneficial. It was really a very good experience for me personally. The conference is over but I’m yet to recover from the positive impact it had on me. DOCRIGA 2017 was Da Bomb.”
Also, PhD student **Dhananjay Patel** from India has shared his memories about the conference:

“I have attended and organized several conferences in India, but this was my first conference outside my country. The conference was well organized and conducted. The quality of research work presented was astonishing. The keynote speakers did their best for delivering even the minute details of their research work. Besides technical studies, the workshop conducted by Tatjana Pladere about soft skills was quite innovative and refreshing. The city of Riga being so beautiful have surely added colors to the conference. We had a great sightseeing there. The last program of the conference “The International Evening” gave us a blast. I am definitely gonna take some lovely memories back to my country In the end, I would like to thank the organizers, especially Matiss, Marta and Brigita for their support and teamwork. This is not the time to say DASVIDANYA, but it’s a start of a new beginning.”

As well as, **Egor Gurvitz** from Russia was positively satisfied about conference attendance:

“In addition to writing formulas for the development of science, not less important is the development of scientific communication, inspiration of young scientists for new creative achievements and success during workshops and conferences. That was 100% done by the University of Latvia SPIE/OSA Student chapter during the international conference DOC Riga 2017 in Riga. Lots of young students from several countries took a part in the conference, I was really impressed by the high level of conference organization, number of conference topics and cordiality, as well as hospitality of the hosts. They are making a great contribution to the development of optics and photonics in the best traditions of SPIE and OSA, and I would like to thank them for their great job. Also, I would like to thank to all the organizers for their passion and other participants for their attendance - it was an excellent meeting!”

The conference “Developments in Optics and Communications” would not be possible without the **members** of the SPIE and OSA student chapters from the University of Latvia. The volunteering work by organizing this event is not only a great chance to prove themselves in scientific event managing, but also a wonderful example for others. We would like to note the **conference chair Matiss Lacis**, who successfully leaded the organizers team.
We were supported by organizations SPIE and OSA, as well as the local sponsors: “OPTEK”, and the University of Latvia for their financial support. Thanks to Cannelle Bakery, Gemoss and Zelta Rieksts for their delicious refreshments. The organizing committee is grateful to Harilaos Ginis (Greece) and Johannes de Boer (Netherlands) for coming to Latvia and giving their wonderful talks about latest advancements in optics and photonics. Thanks to the local scientists Marcis Auzins, Dmitrijs Bliznuks, Anatolijs Sarakovskis, as well as Maris Ozolins for insights in their scientific research topics.

Visit to Summer School on Optics & Photonics in Oulu, Finland

SPIE Chapter members Emilija and Marta visited Finland earlier in June, 2017 to present their research in Biophotonics. Emilija went to Oulu and Marta - to Tampere.

Oulu - studying optics in the cold of summer

Emilija's experience: In the beginning of this year’s summer I traveled to the northernmost SPIE Student Chapter in University of Oulu, Finland to attend the Summer School on Optics & Photonics. It was organized as a joint effort between the Optoelectronics and Measurement Techniques (OPEM) Laboratory, Oulu BioImaging (OBI) Network, University of Oulu and ITMO University. The main areas covered were photonics, optics, optoelectronics and bioimaging.

Members of our Student Chapter were kindly invited by the Oulu Student Chapter to visit as well as have the chance to present their latest research and I took them up on the offer by presenting a poster titled “Non-invasive evaluation of skin pathologies by RGB autofluorescence imaging” at the conference.”
The summer school events lasted 3 days from June 1st to 3rd. The first day coincided with another University of Oulu based event - Oulu Bioimaging Day, organized by the Oulu BioImaging Network. It is part of a larger nationwide and Europe-wide network which consists of many research facilities and medical centers. The goal of it is to coordinate transition of advancements in research into the medical field. For this reason most of the lectures of the first day were around medical imaging.

**Visit to EMBEC and NBC 2017 in Tampere, Finland**

In the mid-june one of SPIE University of Latvia Student Chapter member Marta Lange had the chance to attend and present her research at a conference for biomedical engineers and healthcare professionals: EMBEC and NBC 2017 in Tampere, Finland. What is more, she successfully participated in Young Investigators Competition.

This was a joint conference of the European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC). In grand meetings like this one, there is a wonderful chance to network and to meet other scientists who are passionate, talented and good at what they’re doing.

Marta is a PhD student in Biophotonics Lab in the University of Latvia, her research field is non-invasive skin diagnostics methods with various biophotonics techniques. In this conference she presented the recent study on how to evaluate regional anesthesia effectiveness by using optical methods, for instance, remote photoplethysmography (rPPG). The study was done in a clinical setting in Hospital of Traumatology and Orthopedics.

There was a pitching event for students called “Young Investigators Competition” where each of the 10 finalists had to go on a stage and in only 4 minutes describe their research to the conference attendees on a coffee break. Basically, like an idea pitching where you have to sell your idea to investors. Marta got Third Prize in this competition presenting her solution for operation rooms in hospitals: an optical remote system for regional anesthesia effectiveness evaluation.

**Visit to OPTICS+PHOTONICS 2017**

The annual conference OPTICS+PHOTONICS organized by SPIE was attended by our ULSPIE members Matiss Lacis and Nellija Liepina on beginning of August 2017. This year we found out more about importance of team, what defines a true leader and how to plan your time.
As every year, one of the main student events is the Outreach Workshop where we saw so many new and interesting ideas to use for teaching optics and photonics to children and students in our country. We really enjoyed disappearing colours and self-made spectrometers.

Of course, the exhibition couldn’t be missed as well. We saw so many new innovation in optical industry along with amazing chapter posters where we even found ourselves in other chapter photos. It was a nice feeling to see ourselves in featured events of other active and friendly SPIE student chapters.
We did manage to participate in many other activities including wonderful Jean-luc Doumont workshops and seminars for improving the presentation skills and joyful networking events along the conference days. This was amazing experience every chapter member should enjoy.

**European Researchers’ Night 2017 in Riga**

During this year’s European Researchers’ Night members of the UL SPIE Student chapter showed demonstrations of optical phenomena in several University of Latvia locations across Riga.

In the Department of Optometry and Vision Science building students offered to both watch demonstrations of optical illusions, as well as provided information about the process of eye examinations where with the use of biomicroscopy it is possible to observe the frontal parts of the eye in optical sectioning and maximum magnification of x40. In the above image UL SPIE member Karola Panke, a doctoral student and an employee of University of Latvia: “This was a captivating Researchers’ Night during which around a hundred eye irises were photographed. The interest of visitors about vision and visual perception was tremendous. While children were most amused by optical illusions, their parents wanted to find out more about the clinical side of optometry - vision correction, reading glasses, contact lens use and so on.”

At the same time an extensive number of demonstrations were also taking place in the Institute of Atomic Physics and Spectroscopy.
There were several of them utilizing computer vision. In the image above you can see a demonstration of blood perfusion in the palm using rPPG principle and back-projected image on the actual hand in real time. This was achieved using a near-infrared and a thermal camera to capture the temperature and positioning of the palm.

UL SPIE Chapter members Marta and Matīss exploring the effects of various image components captured by a computer webcam: same image displayed in regular three-color image, G (green component), B (blue) and R (red) in order to show the combinations, effects and possibilities of each color channel.
Here visitors could see how a computer recognized faces in a video as well as get their pulse measured using just a web camera and a specially written computer program. This technology is called non-contact photoplethysmography. It counts small color changes in the skin caused by a person’s heartbeat which are not visible to the naked human eye.

Above are some optical illusions that were demonstrated by UL SPIE members Andra Pirkina and Inga Brice. On the left - moving picture illusions. Visitors were very interested in how to make such images themselves. On the right - infinite chocolate illusion. Inga pointed out that almost everyone had heard of this illusion but hardly anyone knew how it worked and the most often asked question was - “Is the chocolate real?”
Last, but not least, also UL SPIE Chapter prepared a fun photo-booth called “Shine like a Photon” where each visitor could observe types of luminescence: photoluminescence and phosphorescence - trying out the effect of UV radiation on different materials, fabrics and colors in real and fun way.

Visit to the International OSA Network of Students (IONS)
KOALA 2017 conference

UL SPIE member Marta Lange participated in the international young scientists’ conference “IONS KOALA2017” in Brisbane, Australia. IONS KOALA is the Conference on Optics, Atoms and Laser Applications (KOALA) held annually in Australia and New Zealand as well as an International OSA Network of Students (IONS) conference sponsored by The Optical Society (OSA).
During the student talks Marta presented her research results about remote photo plethysmography methods of evaluating the effectiveness of regional anesthesia, this work is a part from her PhD studies in Biomedical Physics at Biophotoics Lab, University of Latvia.

“I always try to make my presentations as clear and as fun as possible. In such advanced field as biomedical physics it is extremely important to show the physical principle and its practical application. I use visuals and real life examples rather than long sophisticated formulas in my slides. Behind every research project there must be a purpose and a need for society. I always try to make a story out of it.”

**ULSPIE member activities and achievements in 2017**

**Elza Linina:**
SPIE Optics + Optoelectronics 2017 in Prague, Czech Republic (24 - 27 April 2017) with a poster presentation “Poling dynamics of an EO active material using parallel-plate electrodes”

**Karola Panke:**
Portugal, III International Conference on Applications in Optics and Photonics (AOP 2017) 08/05/2017-12/05/2017 Usage of CISS and Conlon surveys in eye accommodation studies 2017, Panke, K., Švede, A., Jaschinski, W., Krumina, G. Latvia, LU 75. Zinātniskā konference Latvijas Universitāte 17/02/2017-19/02/2017 Presbiopijas terapijas iespējas izmantojot redzes terniņus Rīga 2017, Pikuļina, D., Panke, K., Švede, A. Latvia, LU 75. Zinātniskā konference Latvijas Universitāte 17/02/2017-19/02/2017 Presbiopijas radītās acs akomodācijas un biometrijas rādījumu izmaiņas Rīga 2017, Panke, K., Švede, A.

Public seminar “Ergonomics and vision” with seminar “Computer and your eyes”


Publication – Relationship Between Heterophoria and Accommodative Lag at Distances Closer Than 40cm / Karola Panke, Aiga Svede, Wolfgang Jaschinski, Gunta Krumina // Perception Vol. 45, N 6 (2017), Meeting Abstract: 15, p.704. ISSN 0301-0066

Marta Lange:  
13th International Young Scientist Conference “Developments in Optics and Communications 2017” on 6-7th of April, Riga, Latvia with oral presentation “The use of remote photoplethysmography system for regional anesthesia monitoring in operating room”.

Riga Stradins University Scientific Conference 2017 on 6-7th of April in Riga, Latvia with an oral presentation “Radiation safety evaluation of the surgical staff in the hybrid Operating Room during cardiovascular procedures”.

EMBEC & NBC 2017 on 11th-15th June in Tampere, Finland with an oral presentation “Simple and convenient remote photoplethysmography system for monitoring regional anesthesia effectiveness”.

The International OSA Network of Students (IONS) KOALA 2017 conference on 26 November – 1 December, 2017 in Brisbane, Australia with an oral presentation "Remote regional anesthesia monitoring with photoplethysmography system".


Emilija Vija Plorina  
Oulu, Finland, June 1-3, 2017, “Summer School on Optics&Photonics”  
Poster “Non-invasive evaluation of skin pathologies by RGB autofluorescence imaging”

Organizer of Young Physicists’ School lessons about military physics.

Ilze Ošīna  
Germany Munich, 25-29 June 2017, European Conferences on Biomedical Optics “Express RGB mapping of three to five skin chromophores”, I. Oshina, J. Spigulis, U. Rubins, E. Kviesis-Kipge, K. Lauberts

Sweden Ven, 10-19 June 2017, summer school “Biophotonics '17”, “Skin chromophore mapping and oxygen saturation measurements in human skin using polychromatic illumination,” I. Oshina


Organizer of Young Physicists’ School lessons about military physics.

Tatjana Pladere


Arturs Bundulis


Some activities may overlap with overall chapter featured activity in 2017. Some members did not send in their achievements in 2017, but we still want to thank them as well for their active work in advancing optics and photonics in Latvia and worldwide.

Planned activities for 2018

1. Organization of 15th International Young Scientist Conference “Developments in Optics and Communications 2018” in cooperation with University of Latvia OSA Student Chapter;
2. Organization of School for Young Physicists of Latvia;
3. Organization of International Day of Light 2018;
4. Outreach activities for school students and general public such as Science Night 2017;
5. Continued collaboration events with SPIE student chapters in Poland, Lithuania and Estonia;
6. Student chapter events for networking with other chapter members, as well as collaboration with University of Latvia OSA Student Chapter – lectures, seminars, meetings, organizing of the conference;

Financial Information

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