

2021 SPIE Student Chapter Annual Report



SPIE & OPTICA
STUDENT CHAPTERS

Prepared by:

SPIE. STUDENT
CHAPTER
SECHENOV UNIV.

Andrei Galistov
President

Arina Rudnitskaia
Vice-President

Mariia Obelchakova
Treasurer

Anastasiia Grechina
Secretary

Moscow, 2021

Executive Summary

The Sechenov University Chapter was established in August 30, 2021. It includes student members of SPIE international society. Currently, our chapter brings together future doctors, engineers, and biotechnologists.

The Sechenov University Chapter is founded to promote the knowledge in the field of optics, photonics and light-based technologies to the wider community by attracting students in research and innovation activities, thereby training more qualified specialists and broadening the range of research at the intersection of different fields: medicine, photonics, biology, etc. Our Chapter organized scientific seminars with students to discuss our research and plans for Academic Activities, Professional Development Activities, Outreach Activities, Social Activities and give each other pieces of advice. Moreover, we held workshops to teach students the basics of research work: data processing, working with scientific databases, etc. In addition to theoretical training, our students also had the opportunity to gain practical skills by learning from their older colleagues.

This year our Chapter participated in such major events as International Day of Light (despite the fact that **we were created on August 30, 2021**, as student members of the SPIE we have already begun our activities, so a number of events were held earlier in 2021), Sechenov International Biomedical Summit (SIBS) 2021. Since our Chapter was founded this year we are still at the beginning of our journey, but even in this short time we have already accomplished a lot!

Contact Information

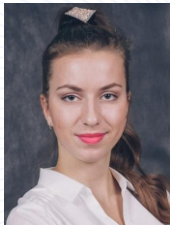
We are always happy to share our work and our achievements with others. Feel free to contact us! For general questions about our chapter, please email our officers, our chapter advisor, our chapter mail at spie-optica@staff.sechenov.ru. If you want to know more about our Chapter, visit our website or subscribe to our social networks accounts.



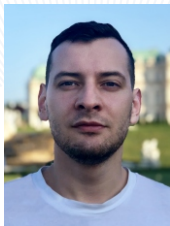
2021 Officer Listing



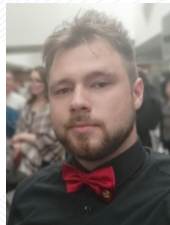
Anastasiia Grechina
Secretary
anastasia.grechina@gmail.com



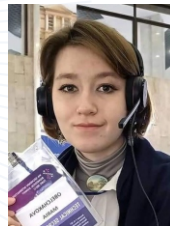
Arina Rudnitskaia
Vice-President
ardycoms@mail.ru



Dr. Gennadii Piavchenko
Chapter Advisor
gennadii.piavchenko@staff.sechenov.ru



Andrei Galiastov
President
pivd3060@ist.ru



Mariia Obelchakova
Treasurer
mariabelchakova@gmail.com

Student and Community Membership

№	Name	Email	Expected Grad Month/Year	Membership Expiration Date
1	Pavel Barkhatov	dj-barhatt@yandex.ru	August 2026	16 May 2022
2	Sergey Burenchev	jackvorobej2002@gmail.com	August 2026	16 May 2022
3	Lala Faradzheva	lafish15@rambler.ru	August 2026	12 May 2022
4	Gevorg Galechian	galgevorg@mail.ru	August 2023	14 May 2022
5	Andrei Galiastov	pivd3060@list.ru	July 2023	30 January 2022
6	Anastasiia Grechina	anastasia.grechina@gmail.com	August 2022	28 January 2022
7	Eliza Gudratova	lizagudratova55@gmail.com	July 2024	25 October 2022
8	Iakov Kindzerskiy	yakovkindzerskiy@yandex.ru	August 2025	16 May 2022
9	Tatiana Koryashkina	koryashkina.tg@gmail.com	August 2026	1 February 2022
10	Varvara Kudryavtseva	kudryavtseva_v_a@student.sechenov.ru	August 2026	12 May 2022
11	Egor Kuzmin	eg.ku@yandex.ru	August 2026	12 May 2022
12	Maxim Logushin	mlogushin@gmail.com	August 2026	21 June 2022
13	Yulia Martyukhina	juliamorc9@gmail.com	August 2026	23 February 2022
14	Olga Morozova	contact.morozova@gmail.com	August 2025	3 February 2022
15	Mariia Obelchakova	mariaobelchakova@gmail.com	August 2026	9 March 2022
16	Vsevolod Pyzhyanov	vpyzhyanov@inbox.ru	August 2024	12 May 2022
17	Ekaterina Retiunskaya	katrin2004retiunskaya@gmail.com	August 2027	17 November 2022
18	Arina Rudnitskaia	ardycoms@mail.ru	August 2026	30 April 2022
19	Dmitry Sadovnikov	regenerationsad@gmail.com	August 2026	14 May 2022
20	Polina Sinitsyna	pollyhansson@yandex.ru	August 2026	9 March 2022
21	Yulia Ukhorskaya	julia.ukhorskaya@gmail.com	August 2025	31 October 2022
22	Artem Venediktov	venediktov.artem.andreevich@gmail.com	June 2025	30 January 2022
23	Marianna Zhiganova	zhiganova_marianna@yandex.ru	August 2025	12 May 2022

Activities Report

Celebration of the International Day of Light 2021

Organizer: Rudnitskaya A., Koryashkina T.

Participants: 12 (Chapter members)

Date/Location: 05/16/2021 at Burevestnik Stadium, I.M. Sechenov First Moscow State Medical University, Moscow, Russia

We held a flash mob, for which a large logo of the International Day of Light was made. Each detail of the logo was made by hand, and the assembly process itself formed the basis of a music video, which the students also filmed and edited by themselves. The video was posted on our social networks <https://youtu.be/btZR3KXzxc>. It is very symbolic to us, because knowledge is light and each one of us is its ray. It is worth noting that we organised this event as student members of the SPIE, even before the opening of the Chapter.



Activities Report

Outdoor picnic

Organizer: Sechenov University Chapter

Participants: 16 (Chapter members)

Date/Location: 09/07/2021 at Kolomenskoye, Andropova Ave, 39, Moscow, Russia, 115487

Outdoor picnic with songs and sports games for chapter members brought a lot of positive moments and memories for us!



Activities Report

Chapter Advisor Birthday Congratulation

Organizer: Sechenov University Chapter

Participants: 10 (Chapter members)

Date/Location: 09/03/2021 at Mokhovaya St, 11c10, Moscow, Russia

SPIE Chapter members celebrated our Chapter Advisor's birthday. It was the birthday of our Chapter Advisor and we all decided together to give him a little surprise. Choosing a gift took a lot of time; we discussed for a long time what kind of gift to choose, because our Advisor is not only a senior colleague ready to share his experience, but also a person who is close and respected by us, so we wanted everything to be perfect. In the end, we settled on a really necessary and useful gift – a chromakey.



Activities Report

Every month meetings of SPIE student Chapter

Organizer: Sechenov University Chapter

Participants: 22 (Chapter members)

Date/Location: 09/24/2021, 10/22/2021, 11/26/2021 at Mokhovaya St, 11c10, Moscow, Russia

Monthly meetings, held on the basis of the Histology, Cytology and Embryology Department of Sechenov University, with the announcement of the results of the work done, presentation of the results of the research of scientific groups, active discussion and setting of new problems.



Activities Report

Every month meetings “Woman in science”

Organizer: Sechenov University Chapter

Participants: 12 (Chapter members)

Date/Location: 09/28/2021, 10/26/2021, 23/11/2021 at Mokhovaya St, 11c10, Moscow, Russia

Monthly women's team meetings to discuss the role of women in science. We discussed harassment, women's rights in science, women's leadership.

Nowadays, the importance of women in the world is very high and we think it would be unfair to leave out women in science, so every month our female students organise "Women in Science" meetings. Our students meet every month to discuss topics such as harassment, women's leadership, and women's rights in science.

We think it is important to do this because it encourages them to move forward and also because it gives each of our students the opportunity to express themselves and get advice.

Activities Report

Volunteering at Vth Sechenov International Biomedical Summit (SIBS) 2021

Organizer: Sechenov University Chapter & I.M. Sechenov First Moscow State Medical University

Participants: A. Grechina, G. Galechyan, M. Obelchakova, E. Kuzmin, E. Gudratova, V. Kudryavtseva

Date/Location: 11/9/2021-11/11/2021, Biomedical Science & Technology Park, I.M. Sechenov First Moscow State Medical University, Russia

Sechenov University SPIE Chapter co-organized a biomedical summit devoted to biodesign, digital oncology, multiomics, medical elementology in cardiology and oncology, digital cardiology, microfluidics and mathematical modeling, molecular oncology and targeted drug delivery.

During the summit, our students acted as volunteers to register participants, upload and display their presentations and moderate online conferences.

The work of the Sechenov University Chapter was awarded with a letter of gratitude from the rector of Sechenov University.



Activities Report

“Big Week of Blood Donation”

Organizer: Dmitry Rogachev National Medical Research Center of Pediatric Hematology, Oncology and Immunology
Participants: Rudnitskaya Arina

Date/Location: 10/15/2021, Dmitry Rogachev National Medical Research Center of Pediatric Hematology, Oncology and Immunology, Moscow, Russia

The Vice-President of our Chapter Arina Rudnitskaya has already donated blood many times at Dmitry Rogachev National Medical Research Center of Pediatric Hematology, Oncology and Immunology. She took part in the “Big Week of Blood Donation”.

Arina told us why she decided to become a regular blood donor: “There were a huge number of reflections before it, I read a lot about donors and blood donating and finally decided to do it after weighing all the pros and cons. I really wanted to do it! Any pack of my blood could help three kids at once!” It is amazing that our chapter’s members participate in such events which are typical for people of scientific mode of action. The science is also a charity and it requires to be devoted to it completely.



Activities Report

Climbing the peaks

Organizer: I.M. Sechenov First Moscow State Medical University

Participants: Sergey Burenchev

Date/Location: 07/22/2021-07/30/2021, Aragats, Armenia and Elbrus, Russia

Sergey Burenchev, a member of the Sechenov University SPIE Chapter, conquered four peaks of the Aragats mountain range and the highest peak in Europe - Elbrus. On each peak he hoisted our flag. “Climbing the mountains under the rays of sunlight is like climbing to the peaks of science, and sunlight is the illumination of the joys of scientific knowledge. In addition, let us not forget that the main mission of our society is to advance knowledge of light science!”



Activities Report

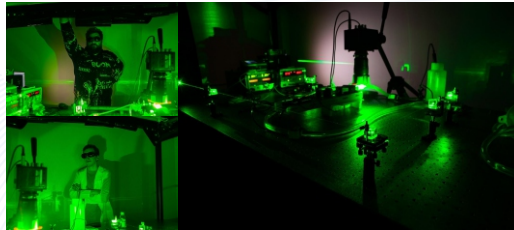
The excursion to the Institute of Bionic Technologies and Engineering.

Organizer: Sechenov University Chapter & Institute for Bionic Technologies and Engineering Sechenov University

Participants: 10 (Chapter members)

Date/Location: 11/19/2021, Trubetskaya Ulitsa, 8c2, Institute for Bionic Technologies and Engineering,
I.M. Sechenov First Moscow State Medical University, Moscow, Russia

Participants of Sechenov University Chapter were invited to the excursion to the Institute of Bionic Technologies and Engineering. Students were acquainted with modern methods of scientific research in the field of development of artificial organs and bionic prostheses, hemocompatible anticoagulant coatings, tissue engineering. The staff conducted the master classes on a confocal microscope and a laser.



Activities Report

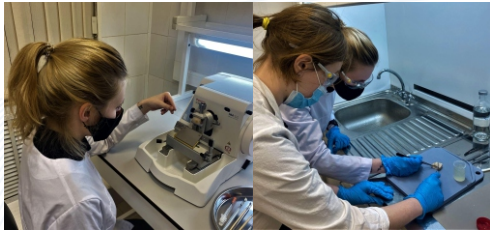
The excursion to the laboratory of the Department of Histology, Cytology and Embryology

Organizer: Sechenov University Chapter & Department of Histology, Cytology and Embryology

Participants: 15 (Chapter members)

Date/Location: 11/19/2021, Mokhovaya St, 11c10, I.M. Sechenov First Moscow State Medical University, Moscow, Russia

Participants of SPIE Sechenov University Chapter were invited to the excursion to the laboratory of the Department of Histology, Cytology and Embryology. Students were acquainted with modern methods of scientific research in the field of histology and histophotonics. The staff conducted demonstration master classes on microtomes, optical and fluorescent microscopes.



Scientific Activities

European Conferences on Biomedical Optics (ECBO 2021)

Organizer: SPIE & OPTICA

Participants: A. Grechina, A. Venediktov

Date/Location: 06/20/2021-06/24/2021, Munich, Germany (Online)

The Secretary of our Chapter presented an oral report “Digital histo-biophotonics: embossed topographic depolarization mapping of tissue samples” (co-authored with Mr. Artem Venediktov from our Chapter) at the European Conferences on Biomedical Optics (ECBO 2021) section “Microscopy”.

The oral presentation raised serious interest among the participants. After the presentation Anastasiia answered the questions about her report.

Materials & Methods

Optical scheme of a 3D Mueller matrix polarimetry setup

1 - laser, 2 - collimator, 3 - beam splitter, 4 - reflecting mirror, 5, 7, 10, 12, 13 - polarizers, 6, 11 - quarter-wave plates,
8 - investigated object, 9 - wave-free polarizer objective, 14 - digital camera, 15 - processing unit.

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Scientific Activities

47th ESAO Congress

Organizer: European Society for Artificial Organs

Participants: A. Galiastov

Date/Location: 09/08/2021-09/11/2021, 8 Waldegrave Road, Teddington, Middlesex, UK (Online)

The president of our chapter presented an oral report “Experimental analysis of the Total Pediatric Cavopulmonary Connection Hydraulic Characteristics” at the 47th ESAO Congress in the section “Heart”.

The screenshot shows a presentation slide with the following content:

- Title:** Experimental Analysis of the Total Pediatric Cavopulmonary Connection Hydraulic Characteristics
- Authors:** Galiastov A.A., Telyshev D.V.
- Abstract:** Understanding hemodynamics in the Total Cavopulmonary Connection (TCPC) can lead to improved surgical procedures that will result in a more efficient modified blood circulation. To conserve energy, the TCPC geometry optimization should be considered as one of the important surgical goals. The aim of this work is to perform an experimental study with these pediatric TCPC-models using the PIV method.
- Structure:**
 - 1 Idea and models:** Includes diagrams of TCPC models and a photograph of a physical model.
 - 2 Test workbench and experimental research:** Includes a photograph of a test bench and a schematic diagram of the experimental setup.
 - 3 Results:** Includes a 3D visualization of flow patterns, a graph showing flow characteristics, and a photograph of the presenter.
- Footer:** This study was supported by a grant from the Russian Science Foundation No. 20-09-0404. e-mail: galiastov@yandex.ru, telyshev@yandex.ru

Scientific Activities

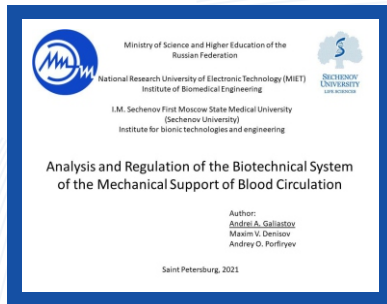
IEEE IV International Conference on Control in Technical Systems

Organizer: IEEE Russia North-West Section & Saint Petersburg Electrotechnical University "LETI"

Participants: A. Galiastov

Date/Location: 09/21/2021-09/23/2021, Saint Petersburg Electrotechnical University "LETI", Saint Petersburg, Russia (Online)

The president of our chapter presented an oral report “Analysis and Regulation of the Biotechnical System of the Mechanical Support of Blood Circulation” at IV International Conference on Control in Technical Systems in the section “Modeling of complex control systems”



Scientific Activities

5th International Scientific Conference on Information, Control, and Communication Technologies

Organizer: V.A. Trapeznikov Institute of Control Sciences of RAS & Astrakhan State Technical University

Participants: A. Galiastov

Date/Location: 10/04/2021-10/07/2021, Astrakhan State Technical University, Astrakhan, Russia

President of our SPIE Student Chapter Andrey Galiastov made a presentation on "Analysis and regulation of the cardiovascular system of univentricular heart with different configurations of the total cavopulmonary connection".

Andrey Galiastov received the award for the best presentation at the V International Conference Information Technologies and Control Engineering (ICCT-2021)



Scientific Activities

Vth Sechenov International Biomedical Summit (SIBS) 2021

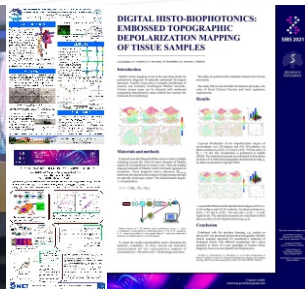
Organizer: Sechenov University Chapter & I.M. Sechenov First Moscow State Medical University

Participants: A. Grechina, A. Galiastov, G. Galechyan

Date/Location: 11/9/2021-11/11/2021, Biomedical Science & Technology Park, I.M. Sechenov First Moscow State Medical University, Moscow, Russia

Our students presented poster reports "Improvement of hemodynamics using a mechanical circulatory device in patients who have passed Fontan procedure" by A. Galiastov, "Magnetic nanoparticles in cancer hyperthermia" by G. Galechyan, "Digital histo-biophotonics: embossed topographic depolarisation mapping of tissue samples" by A. Grechina.

Report "Improvement of hemodynamics using a mechanical circulatory device in patients who have passed Fontan procedure" by our President, A. Galiastov was the winner of the poster session.



Details of planned activities for next year

Vith Sechenov International Biomedical Summit (SIBS) 2022

Organizer: Sechenov University Chapter & I.M. Sechenov First Moscow State Medical University

Participants: 23 (Chapter members) + about 600 visitors

Location: Biomedical Science & Technology Park, I.M. Sechenov First Moscow State Medical University, Moscow, Russia

We want to take part in organizing and holding the Biomedical Summit. We will organize our own scientific section.

Celebration of the International Day of Light 2022

Organizer: Sechenov University Chapter

Date/Location: 05/16/2022 at Mokhovaya St, 11c10, Moscow, Russia

Participants: 23 (Chapter members) + about 150 visitors

We will hold a big flash mob associated with the International Day of Light.

Visiting Speaker

Organizer: Sechenov University Chapter

Date/Location: summer 2022 at Mokhovaya St, 11c10, Moscow, Russia

Participants: 23 (Chapter members) + about 150 visitors

We would like to invite Professor Igor Meglinski (Aston University, UK) to give a lecture to our members.

Details of planned activities for next year

Every month meetings of SPIE student Chapter

Organizer: Sechenov University Chapter

Participants: 23 (Chapter members)

Location: Mokhovaya St, 11c10, Moscow, Russia

Monthly meetings, held on the basis of the Histology, Cytology and Embryology Department of Sechenov University, with the announcement of the results of the work done, presentation of the results of the research of scientific groups, active discussion and setting of new problems.

Workshop on effective making of presentations/reports and CV

Organizer: Sechenov University Chapter

Participants: 23 (Chapter members) + about 150 visitors

Location: Mokhovaya St, 11c10, Moscow, Russia

We plan to invite professional speaker in scientific presentations and CV who will give a workshop on "yes" and "no" 's in making beautiful and informative presentations for reports and nicely structuring the personal CV. He will give a lecture and make a practical workshop on how to make these documents to show the strong points of your report/CV and structure it to be clear and understandable.

We have great beginning, and even more grandiose plans for the next year! We will have more activity, more scientific meetings and conferences, more ideas!

Treasurer's Report

Date	Description	Notes	Credit (Income)	Debit (Expenses)	Total (RUB)	Total (USD)
08.30.2021	Previous Year's Funds	-	0	0	0	0
12.31.2021	Anticipated End of Year Balance	-	0	0	0	0

Conclusions and Recommendations

Even though we have only been established this year, we have achieved a lot in this short time, from celebrating the International Day of Light to volunteering at SIBS 2021. We are still at the beginning of our journey so it was necessary for the older members to share their experiences with the younger ones, which was of course beneficial not only for their professional development but also for the consolidation of our team, made up of professionals from different fields: from photonics to medicine. And next year we will be able to apply these skills to diversify our activities.

Summing up, we want to say that last year was rich in various interesting events and we worked fruitfully. But also, we are confident that next year will be more eventful and better than this one, as we have ahead of us many plans and goals that we need to achieve!

And of course, we will not forget our mission:

SPIE – Science Popularization is Important for Everybody.

2022 Officer Listing



Mariia Obelchakova
Secretary
mariaobelchakova@gmail.com



Andrei Galiastov
Vice-President
pivd3060@list.ru



Dr. Gennadii Piavchenko
Chapter Advisor
gennadii.piavchenko@staff.sechenov.ru



Anastasiia Grechina
President
anastasia.grechina@gmail.com



Lala Faradzheva
Treasurer
lafish15@rambler.ru



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Thank you, SPIE!