

PETER THE GREAT  
ST. PETERSBURG  
POLYTECHNIC UNIVERSITY



POLYTECH



AUTUMN, 2020

INTERNATIONAL  
SPbPU  
REVIEW

BEST  
PRACTICES

Rector of Peter the Great  
St. Petersburg Polytechnic  
University, Academician of the  
Russian Academy of Sciences  
**Andrei RUDSKOI**



Russian universities are currently actively developing the positions on the international arena in the world scientific and educational space. Due to COVID-19 pandemic, 2020 has set fundamentally new conditions for the functioning and development for the entire world community and for universities, in particular, SPbPU managed to successfully overcome all the difficulties and, moreover, to show significant positive results. Such positive outcomes are presented in international rankings.

This year, Peter the Great St. Petersburg Polytechnic University showed a significant breakthrough by 200 positions in Times Higher Education ranking due to the systematic and cohesive work of SPbPU team. And these achievements are not accidental, because the university is undergoing modernization, it is turning into a higher educational institution of a new type - a leader in multidisciplinary research, supra-industry technologies and world-class science-intensive innovations. On behalf of Peter the Great St. Petersburg Polytechnic University, we congratulate all our Russian and international partners, students, colleagues and university leaders on the beginning of the new academic year 2020/2021!



Vice-Rector  
for International Affairs  
**Dmitry ARSENIYEV**

The academic year 2020-2021 begins in the new realities of our times. We have new rules and new formats for teaching and organizing the educational and research process in universities in Russia, as well as around the world. The university is not losing ground due to the objective difficulties caused by the pandemic, but on the contrary, it is mastering online learning technologies, organizing an online admissions campaign. As well SPbPU has started the new academic year with renewed vigor. And, of course, our work and our development is impossible without cooperation with our partners and close friends, without sharing experience with our colleagues around the world and developing internationalization processes.

We are glad to share the most relevant news from the Polytechnic University, tell about new achievements and best practices of our university in the current situation. In this issue you will get familiar with the key SPbPU achievements in the development of international partnership, strategic partnership with TU Berlin; find important information about the implementation of projects and grant programs with the participation of SPbPU, scientific competitions and projects; about news in educational activities - new SPbPU English-language courses launched on the Coursera, the organization of the admissions campaign in an online mode and about many other up-to-date news.

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## POLYTECHNIC UNIVERSITY AND TU BERLIN WON THE OPEN RUSSIAN-GERMAN CALL “RUSSIA AND GERMANY: SCIENTIFIC AND EDUCATIONAL BRIDGES”



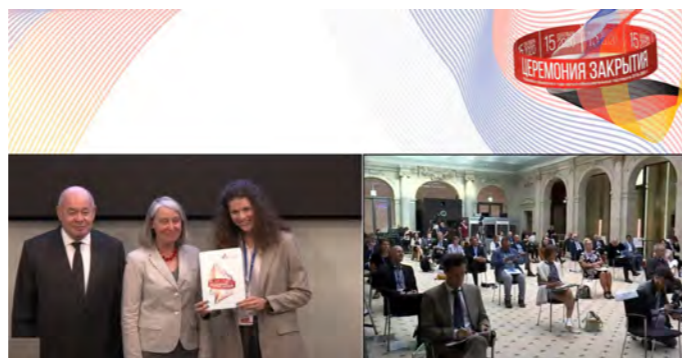
**DARIA MOKHOVA,**  
SPbPU Regional coordinator: Germany  
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Peter the Great St. Petersburg Polytechnic University and its strategic partner – Technische Universität Berlin – have won the Open Russian-German Call “Russia and Germany: Scientific and Educational Bridges.” The joint application, which the international offices of SPbPU and TU Berlin had submitted, was recognized one of the best in the category “cooperation between institutions of higher education”.

The results of the open competition were announced on September 15, 2020 within the closing ceremony of the Russian-German Year of Scientific and Educational Partnerships 2018–2020 (hereinafter referred to as the Cross Year).

The competition was organized by the Ministry of Foreign Affairs of the Russian Federation and the Federal Ministry of Foreign Affairs of the Federal Republic of Germany in the framework of the Cross Year with the support of the Ministry of Science and Higher Education of Russian Federation, as well as the Cross Year coordinators – the National University of Science and Technology MISIS (NUST MISIS) (from the Russian side) and the German Academic Exchange Service (DAAD) and the German Centre for Research and Innovation (DWIH) in Moscow (from the German side).

» **Strategic partnership SPbPU - TU Berlin**  
– one of the most successful projects  
in German-Russian cooperation



Closing ceremony of the Russian-German Year of Scientific and Educational Partnerships 2018–2020

**Polytechnic University and TU Berlin presented the project “Sustainable Development as a Basis for Strategic Partnership”. The universities covered the key milestones of cooperation development, outlined the goals of the strategic partnership, and demonstrated the results of complex interaction in various scientific areas.**

In particular, the universities conduct joint research and implement different projects in mechanics, computer and information technologies, space technologies, welding technologies, business and economics, modern languages and other fields.

SPbPU and TU Berlin launched in 2015 joint master’s degree program „Innovative Entrepreneurship” and signed a doctoral agreement, on a regular basis the universities organize joint summer schools, e.g. “Smart Manufacturing and Digital Future”; “Modern problems of Mechanics-2019” and hold various educational and scientific events such as big international conferences, forums, workshops etc.

Our universities have strong cooperation in the field of academic mobility, student exchange, faculty and administrative staff mobility. For example, over 120 students participated in the German-Russian Tandem-Project only. The project includes meetings in Berlin and St. Petersburg with intensive Russian and German language study and intense culture and history program. SPbPU and TU Berlin cooperate in the framework of major international associations, such as World Class Universities Network (WC2), Top Industrial Managers for Europe (T.I.M.E.), etc. Within the WC2 universities develop projects and implement their ideas in two areas: Transport and Eco-campus.

On February 7, 2020 at TU Berlin “SPbPU – TU Berlin Strategic Partnership Forum” that was held. At the Forum joint research groups presented their results and outlined further research plans, and the SPbPU Rector, Professor Andrei Rudskoi, and President of TU Berlin,



Professor Christian Thomsen extended the strategic partnership agreement for a further five years.

The universities became strategic partners since 2013, but the first agreement on cooperation was signed in 2007. Now for more than 10 years SPbPU and TU Berlin are close partners and friends. Cooperation in various fields reveals the diverse nature of this strategic partnership. The next five years will make a contribution to extending our strategic partnership and creating new ideas and projects between our universities.

The live broadcast of the closing ceremony took place from two cities: Moscow and Berlin. In the Moscow’s studio Mikhail SHVYDKOY, the Special Representative of Russian President on International Cultural Cooperation, and Beate GZYESKI, Chargé d’affaires of the German Embassy in Russia announced the winners. In the Berlin’s studio, the winners were congratulated by Andreas GÖRGEN, the Head of the Department of Culture and Communication at the Ministry of Foreign Affairs of Germany and Sergey NECHAEV, the Ambassador Extraordinary and Plenipotentiary of the Russian Federation to Germany.



Strategic Partnership Forum SPbPU – TU Berlin, Berlin, February 7, 2020



**CHRISTIAN THOMSEN,**  
President of TU Berlin,  
Professor  
Germany

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Peter the Great St. Petersburg Polytechnic University is one of the main partner universities of the Technische Universität Berlin. As a national research university that integrates its scientific and research activities into the educational process, not only it plays an important role in the educational and scientific development of the country but is also a precious partner for TU Berlin. Our cooperation is established in many areas: joint educational programs, various contacts between scientists, intensive academic exchange. Our international services work closely together. Success in the “Russia-Germany: Scientific and Educational Bridges” competition is another expression of our positive relationship, of which I am very proud. For further cooperation, I look positively into the future.



- » 8 Joint research areas
- » 200+ student mobility exchange
- » 100+ staff exchange
- » 53 joint publications in Scopus
- » Visiting professors
- » Research internships
- » RFBR-DFG and RSF-DFG scientific projects
- » Erasmus+ projects
- » Joint Summer Schools TU Berlin-SPbPU
- » DD MSc Program



## PETER THE GREAT ST. PETERSBURG POLYTECHNIC UNIVERSITY HAS BECOME THE COORDINATOR OF THE WORLD-CLASS RESEARCH CENTER FOR ADVANCED DIGITAL TECHNOLOGIES



**ALEXEY BOROVKOV,**

Vice-Rector for Innovative Projects of Peter the Great St. Petersburg Polytechnic University, Head of the SPbPU National Technology Initiative Excellence Center for Advanced Manufacturing Technologies  
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On August 28, 2020, there was a meeting of the Council for State Support for the Creation and Development of World-Class Research Centers (WCRC), carrying out research and development on the priority topics of scientific and technological development. The Deputy Prime Minister of the Russian Federation Tatyana Golikova was the Chairman at the meeting.

The meeting participants were as well the Minister of Science and Higher Education of the Russian Federation Valery Falkov, the Rector of Lomonosov Moscow State University Victor Sadovnichy, President of the Russian Academy of Sciences Alexander Sergeev, Rector of Peter the Great St. Petersburg University Academician of the Russian Academy of Sciences Andrei Rudskoi and other members of the Council.

World-Class Research Centers are being set up in the format of consortia within the framework of the Russian national project "Science". According to the federal project "Development of scientific and scientific-industrial cooperation" at least 9 world level research centers are to be established in Russia to carry out research and development in the priority areas of the Strategy for scientific and technological development of the Russian Federation. The financial support for all WCRCs for the period 2020-2024 is 15.46 billion rubles.

Based on the results of the Council meeting considering 60 applications on the competitive basis, a list of 10 WCRCs in 6 priority areas was approved.

- advanced digital technologies and artificial intelligence, robotic systems, new generation materials;
- environmentally friendly energy, efficient regional use of subsoil and biological resources;
- personalized medicine, high-tech healthcare technologies;
- highly productive and environmentally friendly agriculture and aquaculture; high-quality and functional food;
- intelligent transport and telecommunication systems, exploration and effective development of the Earth's geosphere and the surrounding Universe;
- humanities and social studies of the interaction of man and nature.

The main criteria for the competition were the following: research experience in the center's activities, a world-class research program, human resources, research infrastructure, innovations, integration into international research activities, the number of publications made by researchers, the relevance of planned research and the prospects for the further implementation of key priorities of the Strategy for Scientific and Technological Development of the Russian Federation.

**The World-Class Research Center for Advanced Digital Technologies status was granted to a consortium comprising 4 organizations: Peter the Great St. Petersburg Polytechnic University (consortium coordinator), St. Petersburg State Marine Technical University, Tyumen State University, A.A.Smorodintsev Research Institute of Influenza.**

SPbPU Rector, Academician of the RAS Andrei Rudskoi presented the World-Class Research Center for Advanced Digital Technologies program as part of the competitive selection procedure. He as well underlined that Since May 2015 SPbPU has been the leader of the cross-



» **World-Class Research Center at SPbPU:**  
 4 organizations, 30 foreign partners  
 and 35+ research topics

industry and cross-market direction of the National Technological Initiative, dedicated to the development of end-to-end technologies.

**Key areas of the World-Class Research Center for Advanced Digital Technologies:**

- **Advanced digital technologies:** CAD/CAM/CAE, mathematical modelling, supercomputing, Smart Design, Smart Manufacturing
- **Artificial Intelligence**
- **Robotic systems**
- **New generation materials and additive technologies**

Each scientific direction implies not only research, but as well the process of carrying out young scientists and engineers. Already, 57 new scientific and educational programs on the topics of the WCRC have been launched. The quantity and quality of the programs will constantly grow and improve. The development of human resources and cross-sectoral transfer of competencies are highlighted among the goals of creating the WCRC, therefore the results of the Center's activities will be promptly presented in the materials of the curriculum of SPbPU and the consortium universities. 880 researchers will be involved in the WCRC activities, 51% of them will be young researchers. At SPbPU, in particular, at the Institute of Advanced Manufacturing Technologies, the educational model "University 4.0" has successfully been used. This means that the training of world-class engineers is carried out as well by means of students' participation in real market projects of the university. In accordance with this model, undergraduates will be involved in the solution of research problems of the WCRC.

The Center's program provides for cooperation with leading world universities: University College London, Munich University of Applied Sciences, Berlin Technical University, Polytechnic University of Milan, Shanghai Institute of Technical Physics of the Chinese Academy of Sciences and others.

The WCRC consortium brings together the competencies, resources and experience of 4 organizations, each having a wide partner network in Russia and abroad. Tyumen State University is the base institution for the West Siberian Interregional Scientific and Educational Center, St. Petersburg State Marine Technical University and A.A.Smorodintsev Research Institute of Influenza are backbone organizations in the corresponding fields. Since 2018, SPbPU has been effectively operating the SPbPU National Technology Initiative Excellence Center for Advanced Manufacturing Technologies in cooperation with the largest consortium of 76 universities, research organizations, innovative companies and corporations.

The planned performance of the WCRC for Advanced Digital Technologies is due to the high scientometric indicators of the consortium members (in particular, more than 660 articles Q1 or Q2 Scopus for the period of 2017-2019) and the unique experience of real design work in



**ANDREI RUDSKOI,**  
 SPbPU Rector, Academician of the  
 Russian Academy of Sciences

*The main goal of the Center's program is to ensure a scientific and technological breakthrough on the basis of fundamental and applied world-class research, to create conditions for the transition to a fundamentally new level of application of science-intensive technologies and the efficiency of modern digital manufacturing.*



cooperation with high-tech industry both in Russia and abroad. For over 30 years, SPbPU specialists have been conducting research and implementing advanced digital technologies in various industries, including the following: automotive, engine building, nuclear and oil and gas power engineering, aircraft construction, rocket and space industries, railway transport, shipbuilding, metallurgy etc. The project work of the WCRC has already begun, including the work on projects of global importance:

- Development of digital modeling and forecasting technologies in biomedical systems is already underway. This research will make a contribution to the development of modeling and forecasting the spread of COVID-19. The results of such research are in demand among the heads of 10 regions of Russia. Researchers at WCRC are using bioinformatics approaches to create an innovative vaccine platform based on self-replicating RNA technology. A COVID-19 candidate vaccine is currently being developed. The project is being implemented within the framework of international partnership with the University of Maryland (USA) and A.A.Smorodintsev Research Institute of Influenza.

- It is worth mentioning that the participation of the WCRC in the large-scale project "Northern Sea Transit Corridor" to create an integrated transport and logistics system for international transit sea cargo transportation on the Asia-Europe route through the Northern Sea Route.



## 5th FORUM OF UNIVERSITY RECTORS OF THE RUSSIAN FEDERATION AND THE ISLAMIC REPUBLIC OF IRAN



The 5th Forum of university rectors of the Russian Federation and the Islamic Republic of Iran took place online in July, 2020. Heads of 14 Russian and Iranian higher educational institutions took part. The Polytechnic University was represented by SPbPU Rector, Academician of the Russian Academy of Sciences Andrei RUDSKOI. Session moderators were the following: the President of the Russian Union of Rectors, Rector of Lomonosov MSU Viktor SADOVNICHYI and President of the Summit of Rectors of Leading Universities of Iran, Rector of Tehran University Mahmoud Nili Ahmadabadi. They commented on the unusual format of the event and emphasized that, despite all the difficulties associated with the coronavirus pandemic in the world, international cooperation between the two countries is actively developing.

» **International cooperation between Russia and Iran is actively developing despite the pandemic**

The Rector of Lomonosov MSU said that universities quickly adapted to changes and continue to interact at different levels; he specifically pointed out the time projects that have been particularly successful in online: e.g. the International Polytechnic Summer School of Peter the Great St. Petersburg Polytechnic University. Rector of Tehran University Mahmoud Nili AHMADABADI supported his Russian colleague and noted that the coronavirus pandemic, although it had made its own adjustments to many social processes, did not significantly affect international collaborations.

Many SPbPU partners from leading Iranian universities joined the 5th Forum of Rectors of Russia and Iran: Tehran University, Sharif University of Technology, Amir Kabir University of Technology, Shahid Beheshti University, Alame Tabatabai University, and the Islamic University of Azad. Building long-term cooperation with

the universities of the Islamic Republic has traditionally been in the focus of attention of SPbPU and partnerships have been fruitfully developing over the years in the field of academic mobility, visiting professors programs etc. Iranian students are consistently showing significant interest in both undergraduate and graduate programs, for example, the largest in Russia International Polytechnic Summer School. The cooperation between teachers of St. Petersburg Polytechnic University and universities of Iran is also quite intensive: in 2019, 11 teachers from Iran worked as invited professors at Polytechnic University.

SPbPU Rector Andrei RUDSKOI emphasized that partnerships should be based on national interests of both countries, while goals must be set in regards of interstate development, with the use of the accumulated experience and attracting additional resources to support joint activities.



**VALERY FALKOV,**  
Professor, The Minister of Science  
and Higher Education  
of the Russian Federation  
Russia

*Recently, cooperation between Russia and Iran has been developing particularly effectively, and I must say that this is largely*

*due to the atmosphere of mutual understanding and trust in relations with our Iranian colleagues.*



**MANSOUR GOLAMI,**  
Professor, The Minister of Science,  
Research and Technology of the  
Islamic Republic of Iran  
Iran

*We express great interest in cooperation in the field of joint publications and joint projects, as well as in the establishment of*

*new points of interaction. The current situation, despite the fact that it is quite difficult, makes it possible to elaborate on the aspects that previously had not been paid enough attention to.*

## ONLINE CONFERENCES DEVOTED TO THE 100th ANNIVERSARY OF RUSSIAN-TURKISH DIPLOMATIC RELATIONS

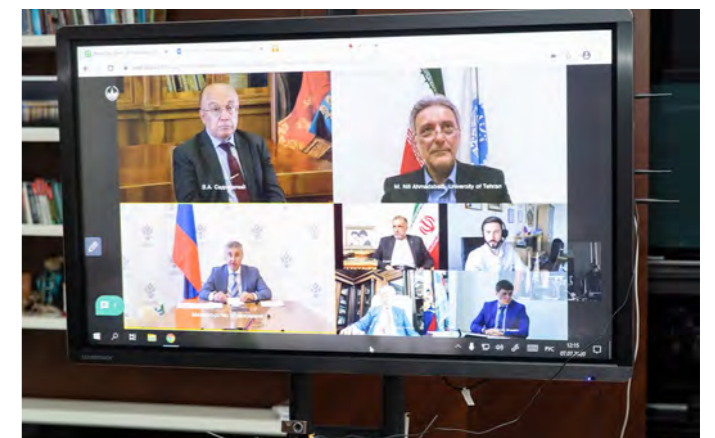
June 2020 marks 100 years since the establishment of diplomatic relations between Russia and Turkey. To celebrate the anniversary, the Committee on Education and Science of the Russian-Turkish Public Forum held an online conference. SPbPU Rector, President of the Society of Friendship with Turkey, Academician of the Russian Academy of Sciences Andrei RUDSKOI took part in the conference.

**Andrei RUDSKOI:** *“Turkey and Russia are two big countries in the Eurasian region with a rich history having a lot in common; they have played a significant role in the cultural and socio-political life of Europe. In May 1992, the foundation was laid for the successful development of Russian-Turkish cooperation, namely, the Agreement on the Basics of Relations between the Russian Federation and the Republic of Turkey was signed. Today these relations are confidently developing, as well as cooperation in the field of science and education via mutually beneficial projects of cooperation and partnership”.*

During the conference, important issues of academic cooperation between the two countries were discussed, the speakers made specific proposals for its strengthening and development.

SPbPU Rector Andrei RUDSKOI said that the Polytech partnership with Turkish universities has been fruitfully developing over the years and it is now at a high level of mutual respect and trust. In 2014, a full-scale agreement on complex research and development cooperation was signed with Istanbul University. In March this year, a visit of SPbPU delegation to Ankara University was planned in order to sign a cooperation agreement, but due to the pandemic it had to be postponed.

» **Russia – Turkey:  
a hundred years of cooperation,  
friendship and brotherhood.**



About 50 students from Turkey were trained under the Akkuyu Nuclear Energy Specialist Training Program, which the Polytech implements together with Rosatom Corporation. The Polytechnic University proposes to use this experience and initiate a project to create a national center for training specialists in the field of nuclear energy for Russia and foreign countries.

In cooperation with Turkish partners, the Polytechnic University participates in nine European mobility projects: dozens of students and teachers have the opportunity to come for training, internships and short-term programs, deliver lectures and take part in joint research.



**Prof. ERKAN İBIŞ,**  
The Co-chairman of the Committee  
on Education and Science of the  
Russian-Turkish Public Forum,  
President of the Society of  
Friendship with Russia, Rector  
of the Ankara University  
Turkey

*Our countries have a hundred-year history of diplomatic relations, a hundred years of friendship and brotherhood. During this time, relations between Russia and Turkey in all areas have reached a high level, as well in the field of education and science. Our Forum has existed for seven years, and we have achieved significant success in our work.*

## ONLINE CONFERENCE ON GRAVITATION, COSMOLOGY AND ASTROPHYSICS (RUSGRAV-17)

The XVII Russian Gravitational Conference - the international Conference on Gravitation, Cosmology and Astrophysics "RUSGRAV-17" was held online at SPbPU in the end of June beginning of July, 2020.

International conferences on gravitation, cosmology and astrophysics are held by the Russian Gravitational Society regularly every three years with participation of scientists from the leading world universities.

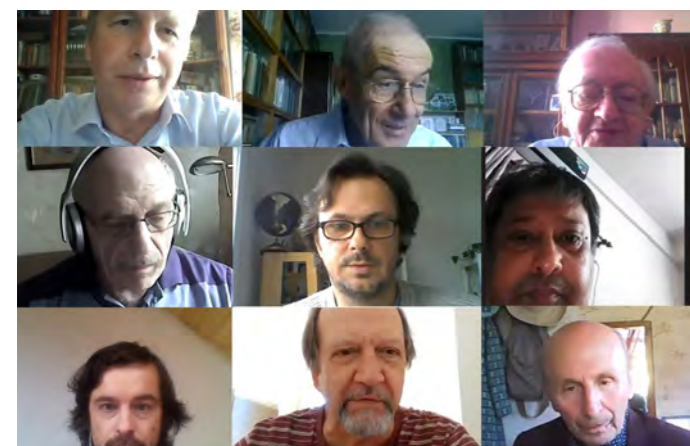
Among the participants of RUSGRAV-17 – there are scientists and researchers from the USA, Canada, Germany, Portugal, Spain, Poland, Romania, Brazil, Australia, South Korea, India, Pakistan etc. The objective of the meeting was to promote contacts between leading researchers working in the field of gravitation, cosmology, astrophysics and related fields. It is well known that these research areas are becoming more and more prospective not only for fundamental science but for numerous technical applications as well .

The main topics being discussed at SPbPU this year were the following: classical gravity; theoretical astrophysics, dark matter and dark energy; gravitational theory with extra dimensions; quantum gravity; geometrical aspects of gravitational theory; quantum effects in curved space-time; observational and theoretical cosmology etc.

» This year the RUSGRAV-17 conference held by SPbPU gathered 130 participants from Russia and 18 foreign countries

Many talks, including the Plenary talk by SPbPU Profs. V. M. Mostepanenko and G. K Klimchitskaya "The state of the art in constraining axions and non-Newtonian gravity from laboratory experiments" and sectional talks in astrophysics by the PhD students and young researches, were presented by the SPbPU scientists.

Based on the results of the work of "RUSGRAV-17", the special Commission appointed by the Organizing



Committee selected the best talk presented by the young scientist. The author of this talk was awarded by the special Certificate and received a prize established due to a financial support of the International Journal "Physics". The Conference was also partially supported by the International Journal "Symmetry".

The conference participants are working on articles based on the materials of their reports. These articles are being published at the moment in a special issue of the International scientific Journal "Universe", Q2, which is published in Switzerland and included in the Web of Science and Scopus databases. It has the IMPACT FACTOR 2.165. An important advantage of this Journal is that it provides an opportunity for full presentation of scientific results reported at the Conference do not imposing limits on the maximum number of manuscript pages.

Chair of the International Scientific Committee, President of the Russian Gravitational Society, Chief Researcher at Landau Institute of Theoretical Physics, Academician of the Russian Academy of Sciences A. A. STAROBINSKY underlined: "The work of the conference has been extremely fruitful and made a significant contribution to the development of topical problems of gravitational physics, as well as to the strengthening and emergence of new scientific ties."

EMILIO ELIZALDE,  
Professor, the Institute for Space Science  
Spain

I am very grateful to the members of the local organizing committee and Peter the Great St. Petersburg Polytechnic University for the brilliant organization and comfortable conditions of our work at the conference, despite the inability to come to St. Petersburg. I hope to visit your university in person next time.

AROONKUMAR BEESHAM  
University of Zululand, KwaZulu-Natal  
South Africa

I have already taken part in several Russian gravity conferences, and they always gather many participants from all over the world. This is due to the high scientific level, warm hospitality of the organizers and fruitful scientific discussions. This conference was no exception. In addition, we learned a lot about Peter the Great St. Petersburg Polytechnic University, which hosted this conference.

## INTERNATIONAL SCIENTIFIC CONFERENCE "GLOBAL CHALLENGES OF DIGITAL TRANSFORMATION OF MARKETS-2020"

On September 24-25, Peter the Great St. Petersburg Polytechnic University held the international scientific conference "GDTM-2020: Global Challenges of Digital Transformation of Markets". Graduate School of Service and Trade, Institute of Industrial Management, Economics and Trade was the main organizer of the conference.

Despite the COVID-19 the conference was held in an online format, and the geography was very wide. The scientific results were presented by participants from 20 countries: Germany, Great Britain, USA, China, Thailand, South Korea, Israel, Czech Republic, Poland, Denmark, Monaco, Bulgaria, Georgia, Armenia, Kazakhstan, Belarus, Ukraine, Moldova and Russia.

At the opening of the conference during the plenary session, SPbPU Vice-Rector for Research Vitaliy SERGEEV underlined the following: "This event is aimed at establishing new and strengthening existing ties among the conference participants, as well as creating conditions for effective interaction between the educational, scientific and industrial spheres".

The reports of the plenary and track sessions were united by an important topic – global challenges of digital transformation of world markets. The problems of global challenges have been important for the scientists for quite a long time. Over the past 20 years, the United Nations and the World Bank have published a large number of studies on global problems of humanity. However, against the background of existing threats, new global challenges arise, which are the result of the accelerated digital transformation of society and the economy of most countries of the world. Among the new threats there are the following: problems of "digital inequality" of countries; development of unfriendly artificial intelligence; global man – made disasters; drastic changes in the labor market and accelerated growth of unemployment; development of "electronic crime", manipulation of personal data of citizens; threat to the digital sovereignty of countries and other problems were discussed in the reports of the conference members.

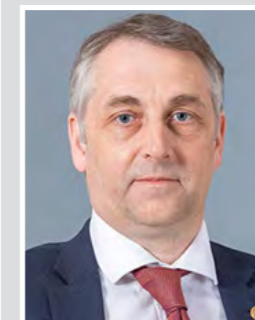
More than 100 participants were on the plenary session, including honorary guests of the conference: Sergey FANDEEV, Vice Consul of the Russian Federation, Director of the Russian Center for Science and Culture, Mumbai, India; Professor Monica HANNA, Director of K J Somaiya Institute of Management (SIMSR), Mumbai, India; Professor Andreas ZECHETNER, Vice President International Affairs of the University of Applied Sciences Upper Austria, Steyer, Austria. The key speakers

were from the United States (Toronto), India (Mumbai), Germany (Wiesbaden) and Russia (Moscow).



VLADIMIR SHCHEPININ,  
Director of the SPbPU Institute of Industrial Management,  
Economics and Trade  
Russia

The conference will make a great contribution not only to the dissemination of innovative scientific ideas, but also to the development of cooperation between representatives of various social institutions in different countries. I wish the participants of the conference fruitful discussions, new professional and scientific relations, projects and achievements.



VITALIY SERGEEV,  
SPbPU Vice-Rector for Research  
Russia

This event is aimed at establishing new and strengthening existing ties among the conference participants, as well as creating conditions for effective interaction between the educational, scientific and industrial spheres.

» Integrating science, education and production will increase the competitiveness of the economy



## NEW CHALLENGES: STUDENTS ADMISSION 2020/21 - ONLINE FOR THE FIRST TIME



**ELENA M. RAZINKINA**  
Vice-Rector for Academic Affairs  
[vicerector.educ@spbstu.ru](mailto:vicerector.educ@spbstu.ru)

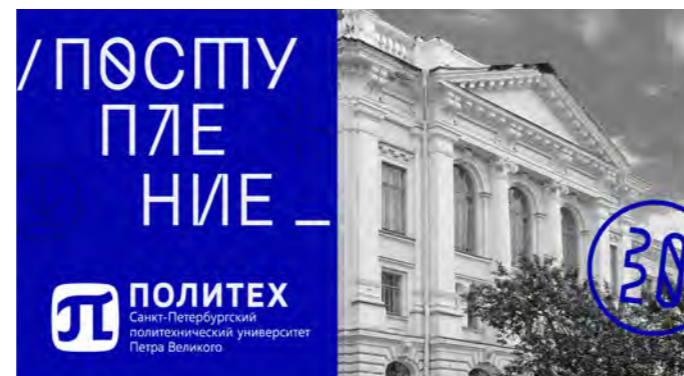
Peter the Great St. Petersburg Polytechnic University annually enrolls more than 8,000 students, including about 5,000 in government-funded programs. Today, the educational system of the whole world has been in extremely new conditions in view of the COVID-19 pandemic. One of the challenges for universities in different countries has become the need to conduct an online admissions campaign. Polytechnic University achieved a very positive result because this situation did not in any way affect the success of the 2020 admissions campaign.

Due to the fact that since 2015, the university leadership has been focused on the digital transformation of the university, during the period of the coronavirus epidemic, Polytech was among the first universities in the country to switch to distance learning, and as well was prepared in a timely manner for the online admission campaign. Polytech applied and adapted in the context of the situation the principles of working with applicants. Digital services have been modernized for the submission of incoming documents and admission to the university online (via the SPbPU applicant profile or using the super service "Enter the university online"). A special section dedicated to the admissions campaign has been created on the university website, and all information and all useful resources are collected and posted online - a virtual detailed acquaintance with the available educational programs, information about the necessary documents, answers to popular questions of applicants,

» **"Generation 4.0"** - The key words of the Polytech 2020 admission campaign.

information about dormitories, scholarships etc. For the admissions campaign, an online chat was created with representatives of the admissions committee, specialized groups in social networks, webinars and live broadcasts with detailed instructions regarding the admission process were held and made publicly available.

Polytech holds high positions in the universities ranking, being one of the best technical universities in Russia. To enter the university, you need to get some of the highest scores in Russia within the framework of the Unified State Exam (an exam held centrally in the Russian Federation in secondary educational institutions - schools, lyceums), while the minimum standard score is growing from year to year. For several years in a row, the Institute of Computer Science and Technology, the Institute of Applied Mathematics and Mechanics, the Institute of Industrial Management, Economics and Trade, and the Institute of Humanities show the highest necessary score for being admitted to the university.



**ELENA M. RAZINKINA: "SPbPU is a traditional center of attraction for talented students from Russia and all over the world. We will start the new academic year being stronger and more prepared!"**

Over the years, the Polytech has been allocated the largest number of budget-funded places from the Ministry of Education and Science of Russia; for the 2021-2022 academic year, 446 additional budget-funded places have been provided. This measure will help gifted applicants to get an education at the expense of the state in a situation where income has decreased for many families due to the coronavirus pandemic. SPbPU received additional places in the areas of training that demonstrate a high level of efficiency in the implementation of educational programs.

Polytech is actively improving the quality of students admission by attracting talented applicants through the Olympiad system. In an online admission mode, the system based on the results of the Olympiads gave especially



significant results and allowed talented children to enter the university without exams. This year, based on the results of the Olympiads and competitions from the list approved by the Russian Ministry of Science and Higher Education, 86 people became the first official Bachelor students of the Polytechnic University. As well, the winners in the All-Russian Olympiad "I am a professional", 31 people got the opportunity to enter SPbPU Master's program without exams.

This year, instead of the crowded first-year students meeting devoted to the beginning of the new academic year, an online teleconference was held at the Polytech. The organization of such a big event was possible due to the fact that at the beginning of this year the Polytech opened its own TV studio, equipped with the latest technology. At 10 a.m. all the participants joined the Polytech group on social networking site VK or used YouTube. And they learned how the university lived during isolation and quarantine, how it has been working with the difficulties, what contribution it makes to the fight against the pandemic, how it has adapted and is developing in new conditions.

The academic year began traditionally on September 1. Education process is mainly held in a mixed format (traditional full-time classroom training and education with the use of e-learning and online technologies). Some educational programs have only the online format. This measure is aimed at minimizing the number of students, at the university campus and, ultimately, to keep the health of students, employees and their families.



**VITALY DROBCHIK,**  
Executive Secretary of SPbPU Admissions Committee

Since the admission took place online, it was especially important for us to establish prompt and effective communication with applicants. So, in addition to traditional communication and answering questions on social networks, by mail and phone, we have created chats for each area of training. ... - thus, the admissions committees of the institutes had the opportunity to look into practically every question of applicants individually.



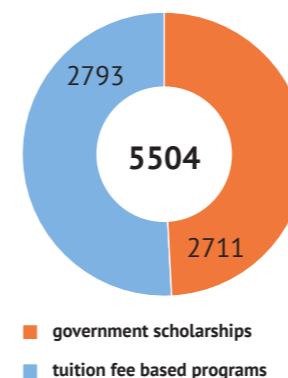
**DMITRY TIKHONOV,**  
Director of SPbPU Center for Career Guidance and Pre-University Training, Associate Professor of the SPbPU Graduate School of Business and Management

This year traditionally participants of competitions and olympiads, such as the Winter Masters School, the Gazprom Olympiad, the All-Russian Student Olympiad "I am a professional", as well as talented students from other regions and universities are more than welcome to take the Master's Degree programs.

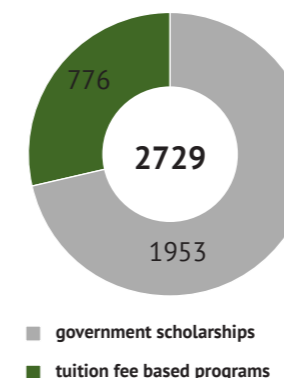
### Admission results:

total of 8478 prospective students were enrolled and became the 1st year of higher education programs in 2020

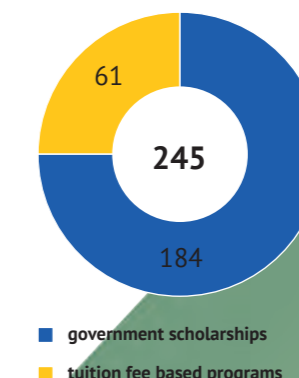
**Bachelor's Degree and Specialist's Degree**



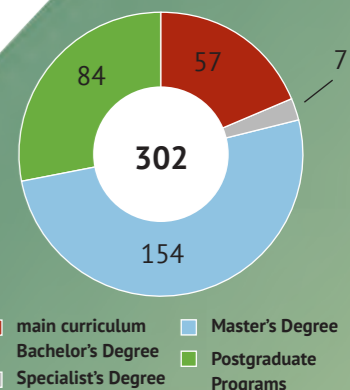
**Master's Degree**



**Postgraduate Programs (PhD Degree Programs) in Russian**



**Educational programs**





## ENGLISH-LANGUAGE COURSES ON THE INTERNATIONAL COURSERA PLATFORM



**SVETLANA KALMYKOVA**  
Director of the Center for Open Education



In summer 2020 SPbPU launched two new English-language courses on Coursera platform. SPbPU courses are traditionally popular among the students all over the world. In particular, international students demonstrated extreme interest in the previously launched courses Introduction to Biomedical Engineering and Enterprise Architecture.

Today's education is faced with an unprecedented situation associated with the need to develop various resources that will enhance the role of educational materials available online and increase the share of distance learning technologies.

The current situation of the pandemic did not become an obstacle for the development of international education programs and for the attraction of international students. In particular, SPbPU prepares and develops English-language courses for placement on the international platform Coursera.

**An English-language course "Basic Skills in Constructive Communication" is aimed at raising participants' awareness about constructive and effective communication with others.** The author and the lecturer of the course is SPbPU visiting professor Olaf HAUER.



### The course will help to:

- Improve interaction with people around
- Learn to formulate and communicate your thoughts and ideas more clearly, be heard
- Accelerate routine processes
- Improve personal relationships
- Improve atmosphere of the team environment
- Improve negotiation skills

Communication is at the heart of everything: professional relationships, negotiations, interpersonal relationships, everyday situations. To communicate effectively, you need to learn how to approach this process competently and be ready to change yourself and your behavior. Insufficiently developed constructive communication skills lead to misunderstandings and conflicts between employees and managers. As a result, the efficiency of business processes, design work, and quality of services are reduced. This applies to any team and organization, and in the broad sense, to society as a whole.

This course is suitable for people who have a professional and personal need to learn the skills of constructive and effective communication with others. It is a useful school for those who appreciate the opportunity not to waste time on offline meetings.

**English-language course "Technology Leadership and Entrepreneurship" was launched on the Coursera platform in July.** The course will help students understand what Technology Entrepreneurship is and what its features are. Based on the best competencies of the course partners from Germany, Russia and Korea, the student will not only be able to go through all stages of technology entrepreneurship development on their own but will also feel the peculiarities of the global project development in accordance with national approaches.



### The course provides students with basic skills in the following:

- technological entrepreneurship development,
- knowledge and ability to assess the technological backbone of business ideas,
- strategy and business model of technological business projects, etc.

The course is unique in that it combines international expertise in the development of technological ideas of projects, structuring an innovative organization, identifying the opportunities for technology market penetration, development strategy, leadership and communicative efficiency, understanding of breakthrough technologies, the financial component of the technological project and business modeling of the technological project, which is so difficult to find for a novice entrepreneur, and especially in the interests of technological startups.

### SPbPU on the global platforms for online education:

Since 2015, the Polytechnic University has chosen a focus on the development of online education. Thus, we were quite prepared for the situation with switching to an online format. We invite foreign partners to join – students from all over the world can take our courses.

The most popular are the courses on computer technology and the ones related to end-to-end technologies. Among them, the course "Digital Manufacturing Technologies" that is designed for all areas of training, in order to form a basic understanding of modern digital technologies that form the foundation for the digital transformation of industry as a key process in the world economy.

As well extremely popular have become the engineering courses: "Experimental methods in biomedicine", "Computational mathematics", "Factories of the Future" Technology, and "Project Management".

19 courses	67 courses	35 courses
35 000+ students	500 000+ students	40 000+ students



**OLAF HAUER,**  
Professor  
SPbPU visiting professor, co-founder and managing partner of iNTG, licensed trainer of the BMW and DISC International Training Academy, BMW International Master Coach (2005 - 2009), Berufsverband licensed coach, Deutscher Psychologinnen und Psychologen e.V. (BDP), affiliated coach of top management of PAO Vympelcom

*Insufficiently developed skills in constructive communication lead to misunderstandings and conflicts between employees and managers. As a result, effectiveness of business processes, project work and the quality of services are reduced. This applies to any team and organization, and in a broad sense - to society as a whole.*



**KLAUS SAILER,**  
Professor  
SPbPU visiting professor, professor for Entrepreneurship at the Munich University of Applied Sciences and CEO of the Strascheg Center for Entrepreneurship (SCE)

*The program has three main objectives: 1) it can serve as a bridge between the topics innovation, entrepreneurship and technology. It shows the participants new possibilities for the future to use technology successfully, to create impact in society and also to build up a successful existence for themselves; 2) provides important tools and approaches in the field of innovation and entrepreneurship, which help or even are necessary in the concrete implementation of innovative projects, or the process of starting up a business; 3) shows that entrepreneurship is global. Through the different international speakers the participants get different perspectives on the relevant topics and show that an international way of thinking and that networking is necessary in the future to be successful in a global world.*

» Two new English-language courses launched on Coursera platform



## INTERNATIONAL OLYMPIAD “OPENDOORS: ” A UNIQUE CHANCE TO WIN RUSSIAN MASTER’S AND PHD SCHOLARSHIPS AT POLYTECH



Russia’s Graduate  
Scholarship  
Project

Registration  
is now open



» 10-fold

the number of Polytechnic University students enrolled by outcomes of the OpenDoors Olympiad has increased

The International Open Doors Olympiad is the first project in Russia to attract talented foreign students from nearly all countries of the world to study at top Russian universities. The event is supported by the Ministry of Science and Higher Education of the Russian Federation and Rossotrudnichestvo. The organizer of the project is the Global Universities Association within the frame of the “Export of Education” federal project.

Polytechnic University has been active in the international educational market for many decades and traditionally supports initiatives to attract talented foreign youth to Russian universities. That is why the university was among the first to become a member of the Global Universities Association and a co-organizer of the International Open Doors Olympiad.

At the end of 2020, there is an increase in the number of students-winners of the Open Doors Olympiad who have chosen Polytechnic University. If 4 years ago, at the start of the Olympiad, only two foreign students entered Polytechnic University, then in 2020, already 29 people from the USA, Ecuador, India, Egypt, Yemen, Iran, Benin, Nigeria, and other countries chose our university for their further education.

The Olympiad is held **online in Russian and English** on two tracks: the Master’s degree track and the Postgraduate study track. There are 2 stages for the **Master’s degree track**, and **3 stages for the postgraduate track**.

- At the first stage, participants need to provide a portfolio through an information platform specifically developed on the Olympiad website.
- At the second stage, they must complete the Olympiad tasks, which are conducted in the mode of participant identification and online control.
- The third stage of the Olympiad involves the selection and interview with a potential scientific advisor of the participants of the postgraduate course. The first two stages on both tracks of the Olympiad are held simultaneously.

On September 15, 2020, a new qualifying stage of the Open Doors International Olympiad took start, namely the Russian Scholarship project. The winners of the intellectual competition, i.e. the future foreign Master’s degree and postgraduate students, will have the opportunity to study at the expense of the budget of the Russian Federation at Polytechnic University and other foremost universities of the country. This also applies to foreign students who will graduate from SPbPU undergraduate and graduate programs in 2021. In case of victory in the Olympiad, they will have the opportunity to study in the Master’s degree program of Polytechnic University based on the education quota of the Government of the Russian Federation, as well as additional opportunities offered by the university.

The following groups of people are eligible to take part in the Olympiad; foreign nationals; stateless persons; compatriots; persons living abroad; holders of a Bachelor’s degree for a master’s track or a Master’s (Specialist’s) degree for a postgraduate track; foreign students who graduate from undergraduate or graduate (specialty) programs in 2021.

Among the proposed area of studies are physics, mathematics, computer science, economics, etc. To



participate in the competition, you can choose several areas at once. Winners and prize-winners of the competition have the opportunity to choose educational programs in Russian and English. If the level of Russian language proficiency is not good enough, it is possible to study at the preparatory faculty of the university for a year. For that same time, the guaranteed place in the master’s or postgraduate course program is kept for the winner, who will be able to study on the chosen earlier program for all two years for free.

The winners and prize-winners of the Olympiad are the participants who, based on the results of their participation in two stages, gained the number of points, which allows them to rank in the top 25% of the participants.

The Open Doors International Olympiad is a new promising area of attracting foreign students to Polytechnic University; it is one of the priority lines in the complex of university recruitment activities.

Polytechnic University traditionally holds a primary position among Russian universities in terms of the number of foreign students: in the 2019/2020 academic year, 8,500 foreign students were trained at SPbPU.

Polytechnic University is proud of its students and alumni and invites foreign applicants to join the Polytechnic community!



**NINA KOLOSOVA,**  
Open Doors Olympiad Winner  
Uzbekistan

*I learned about the Olympiad here, at Polytechnic University, when I was considering a Master’s degree after 4 years in Bachelor’s degree program here. It is quite simple to take part in the Olympiad: you need to apply through the website, attach your education certificate, fill out a questionnaire, and attach various diplomas, certificates, scientific publications, etc. In the second round, participants perform tasks on specialized subjects; examples of tasks are available on the website; one can view them and practice. I was a little worried about this part, but everything went well. When I participated in the Olympiad, few people knew about it. Participation in the Open Doors Olympiad is absolutely cool! I told all my friends and acquaintances about this Olympiad, and now even more people will learn about it through interviews. Of course, it’s a little scary to decide to participate. But why not give it a try? Sample tasks are on the website of the Olympiad; it is quite easy to prepare. This year, the organizers have added the possibility for postgraduate students to enter the Olympiad, as well as many new programs. You can enter almost any speciality and area of studies.*



**SEBBAGGALA TONNY  
MAYAMBALA**  
Open Doors Olympiad Winner  
Uganda

*I have been studying at Polytechnic University for 6 years now, and after my Bachelor’s degree in the Design and Technology Support of Mechanical Facilities, I started thinking about a Master’s degree. That is when I saw a poster about the Open Doors Olympiad. After 4 years of studying mechanical engineering, I really wanted to study something connected to economics, so I just felt: if there is an opportunity, why not? Besides the exam, everything in participation was just fine, because I have a lot of achievements and activities in my CV. The exam was a bit hard for me because I have never done theoretical economics, although I practice it, so I could relate to most things. All students should participate in the Olympiad! First of all, the specialists of the Open Doors are great, they are cooperative and open to communication; if you have any questions, they will answer you in details. The website [Opendoors.spbstu.ru](http://Opendoors.spbstu.ru) is really understandable and user-friendly. And there is a lot of universities to choose! So I’m sure that the Open Doors is a great opportunity for people who want to study in Russia and enjoy the benefits of different universities.*



# CONGRATULATIONS



## AWARDING OF SPbPU HONORARY DOCTOR TITLE

Warmest congratulations to our new awarded SPbPU Honorary Doctors! We are happy to announce that in 2020 the SPbPU Academic Council awarded the title of SPbPU Honorary Doctor to the great personalities: Dr. Christoph Leitl, the President of the Association of European Chambers of Commerce and the Eurochambres Industry and Co-chairman of the Russian-Austrian Public Forum “Sochi Dialogue”, and Prof. Harald Kainz, Rector of Graz University of Technology.



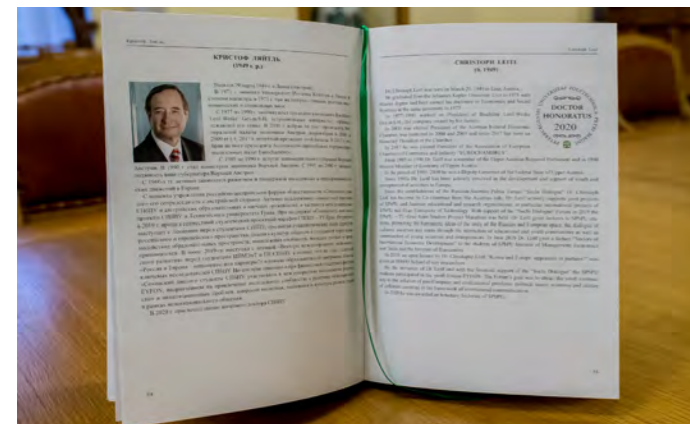
**Dr. Christoph Leitl,**  
President of The Association of European Chambers of Commerce and the Eurochambres Industry and Co-chairman of the Russian-Austrian Public Forum “Sochi Dialogue”

Since 1960s Dr. Christoph Leitl has been actively involved in the development and support of youth and entrepreneurial activities in Europe.

As a Co-chairman of the Sochi Dialogue Christoph Leitl actively supports joint projects of SPbPU and Austrian educational and research organizations, in particular international projects of SPbPU and Graz University of Technology. With the support of the Sochi Dialogue in 2019 the SPbPU - TU Graz Joint Student Project Marathon was held.

Dr. Christoph Leitl regularly delivers lectures to SPbPU students, promoting the humanistic ideas of the unity of the Russian and European space, the dialogue of cultures, societies and states through the interaction of educational and youth communities as well as communities of young scientists and entrepreneurs.

At the invitation of Dr. Leitl and with the financial support of the Forum Sochi Dialogue SPbPU students participated in the youth Forum EYFON in mid-September 2019 in the Austrian Forchtenstein Castle. The Forum was aimed at attracting the youth community to the solution of pan-European and civilizational problems, political issues, economy and culture of different countries in the framework of international communication.



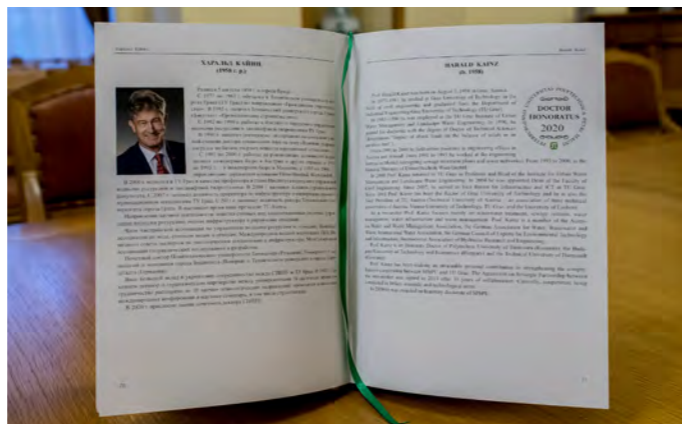
**Prof. Harald Kainz,**  
Rector of Graz University of Technology

© Lunghammer – TU Graz

Since 2011, Prof. Harald Kainz has been the Rector of Graz University of Technology. The academic experience of Harald Kainz played an important role in the process of Graz University of Technology becoming one of the leading universities in Austria.

Professor Kainz has been making an invaluable personal contribution to strengthening the comprehensive cooperation between SPbPU and TU Graz. Due to this fact an Agreement on Strategic Partnership between the universities was signed in 2013. Our universities have been cooperating for 35 years. Currently, cooperation is conducted in 10 key scientific and technological areas. As well, under the agreement, joint international conferences and scientific seminars are held.

During Professor Harald Kainz leadership, TU Graz began to play a key role among the strategic partners of SPbPU. Joint student projects got a particular development and support. Among the significant results, the successful launch and implementation of the first joint student project marathon between SPbPU and TU Graz held in 2019 should be mentioned. This experience is unique and was developed in cooperation with several more SPbPU strategic partners.



### ANDREI RUDSKOI

Professor, SPbPU Rector,  
Academician of the Russian Academy of Sciences



Dear Dr. Christoph Leitl,  
Dear Prof. Harald Kainz,  
On behalf of Peter the Great St. Petersburg Polytechnic University I would like to express our appreciation and gratitude for your commitment, support and outstanding contribution to the development of international cooperation and partnership relations between Austria and Russia.

You are always very welcome at Polytechnic University. I look forward to meeting you personally as soon as the situation in the world allows to organize a meeting and solemn ceremonies of awarding the Honorary Doctor diplomas. Mantles are waiting for you!



### HARALD KAINZ

Professor, Rector of Graz University of Technology

It is a special honor for me to receive the title of such an esteemed university, Peter the Great St. Petersburg Polytechnic University. For me, this is also an essential sign of good and friendly relations that unite our universities. In this time of crisis, we all clearly understand how important and valuable long-term partnerships are. Despite the fact that in the current circumstances it is not possible to meet in person, it is a pleasure to underline that the cooperation between the universities does not stop and is conducted quite effectively. Collaboration can continue in digital format, as it already has a solid base.



Rector of the University of Stuttgart – Strategic Partner of SPbPU, SPbPU Honorary Doctor Prof. WOLFRAM RESSEL celebrated his 60th birthday at the end of July.

## OUR CONGRATULATIONS ON 60th BIRTHDAY!

SPbPU Rector, Academician of the Russian Academy of Sciences Prof. Andrei Rudskoi:

“I would like to express my cordial congratulations on your 60th birthday and wish you prosperity, happiness and health!

We are extremely happy and grateful for our friendship and being able to work in close cooperation. Under your wise guidance and support our partnership has achieved fruitful results.

I would like once again to express our appreciation for your commitment and wish you all the best in work and personal relationships.

I am looking forward to meeting you in person and developing our great cooperation!”



The history of cooperation between Peter the Great St. Petersburg Polytechnic University and the University of Stuttgart has lasted for over 25 years. Within the framework of strategic partnership, the faculty and researchers from both universities cooperate in a number of scientific areas, and students take an active part in exchange programs.

Rector of the University of Stuttgart, Prof. Wolfram Ressel pays much attention to joint projects, academic mobility, educational and scientific processes. Prof. Wolfram Ressel was awarded the title of SPbPU Honorary Doctor in 2015 for his significant contribution to research activities and the development of multilateral cooperation between universities.



## UNESCO CHAIRS COLLABORATION FOR STRATEGIC PLANNING AND SUSTAINABLE DEVELOPMENT

In June 2020 SPbPU UNESCO Chair “Management of education quality for sustainable development” organized the online conference “UNESCO Chairs collaboration for strategic planning and sustainable development”. More than 70 participants from more than 40 cities of Russia took part in this conference.

Within the framework of the online conference, the participants presented the experience, best practices and positive outcomes of the organization of training in the framework of UNESCO Chairs and leading Russian universities. One of the up-to-date topics was the idea of implementing educational programs using distance technologies. In addition, reports were presented on the experience of organizing distance learning of UNESCO Associated Schools, priority areas, challenges and prospects for cooperation between UNESCO Chairs in view of sustainable development and other aims.

Head of the SPbPU UNESCO Chair, Academician of the Russian Academy of Sciences Vladimir OKREPILOV made a report on improving the quality of education as a strategic basis for sustainable development. Professor of the UNESCO Chair at St. Petersburg Polytechnic University, Director of the Center for Monitoring Science and Education Yuri KLOCHKOV spoke about the impact of the Polytechnic University on the sustainable development of global society.

**SPbPU Rector, Academician of the Russian Academy of Sciences Andrei RUDSKOI: “The large-scale activity of the Polytechnic University in terms of implementing the UN goals for sustainable development was recognized in the universities ranking THE University Impact Rankings 2020. Peter the Great St. Petersburg Polytechnic University has been ranked 37th in the world ranking and the first among**

**Russian universities. The ranking evaluated the impact of the university on several areas of public life, in particular, sustainable cities - 30th position in the world, partnership for sustainable development - 89th, significant work and economic growth - 28th position, clean energy - fifth position in the world!**

*The university aims at interacting with high-tech industry, leading industrial corporations. Participation in national projects is a priority. First of all, it is a national technology initiative and a digital economy. The Polytechnic University has been implementing several major national projects. For example, participation in regional scientific and educational as well as scientific and technological developments. This is the digital Ob Irtysh basin, the Research Educational Center (REC) of the Samara region, the REC of Tyumen, and the REC of Perm. The development strategy of the Arctic zone, the creation of transport of the future, the development of digital twins and unique equipment and technical systems. The largest project to create a Technopolis Polytech is being implemented, supported by President of the Russian Federation Vladimir Putin. Great efforts for its implementation are made by the leadership of the Ministry of Science and Higher Education of the Russian Federation. The project provides for the creation of a research and educational complex in cooperation with leading national corporations such as Rosneft, Gazprom Rosatom, Rostec, Russian Helicopters, Kamaz, Severstal and many, many others – in total, more than a hundred leading enterprises in Russia.”*

**Vladimir GLUKHOV, Head of SPbPU Rector’s Office, Professor of UNESCO Chair underlined: “The Polytechnic University is already carrying out major projects. Technopolis includes a project to create a world-class student campus with living conditions meeting the standards of the 21st century.”**



»» **The Commission of the Russian Federation for UNESCO is ready to consider Peter the Great St. Petersburg Polytechnic University (SPbPU) as one of the venues for the UNESCO World Heritage Committee session in 2022.**



17 goals and 169 tasks set up by UNESCO will determine the activities of mankind for the next 15 years. A special place in the implementation of the sustainable development strategy is given to Higher Education and UNESCO Chairs of leading universities, their activities and their interactions.

At the moment, the network of UNESCO Chairs in the world unites 835 chairs from 110 countries. In Russia there are 67 UNESCO Chairs.

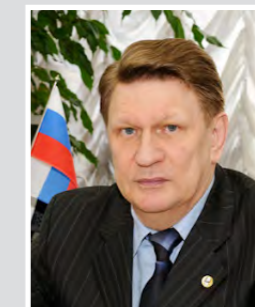


**GRIGORY ORDZHONIKIDZE,**  
Executive Secretary of the Commission of the Russian Federation for UNESCO Russia

*Peter the Great St. Petersburg Polytechnic University has been an active participant in the UniTwin program, the UNESCO Chair, UNESCO’s flagship project and one of the organization’s most successful educational initiatives, for several years now.*

*To date, the network brings together 835 departments from 110 countries. Russia has 67 departments and takes the second place in the world in the scale of their network. UNESCO Chair of the Polytechnic University exemplarily demonstrates how the work within the UNITWIN network should be planned and implemented. This event was organized in close collaboration between the three UNESCO Chairs of St. Petersburg.*

*In Russia there are 67 UNESCO Chairs and I am sure that the Russian network of UNESCO Chairs will grow, partner networks will develop, as well as cooperation will develop with UNESCO Chairs from other countries. It is such an active position that will allow UNESCO chairs to become the conductor of the best practices that exists in Russian education and research, and to expand Russian expert participation at the UNESCO site.*



**VLADIMIR OKREPILOV,**  
Head of the SPbPU UNESCO Chair, Academician of the Russian Academy of Sciences

*As an expert in the field of quality, I would like to emphasize that the modernization of the economy and sustainable development, which is so necessary for us in the current complicated foreign policy and financial conditions, cannot be carried out without the priority use of quality tools, primarily in the educational process.*





## WORLD UNIVERSITY RANKINGS

In June and September 2020 two main university ranking agencies have published their annual World University Rankings.



On **June 10, 2020**, British QS Quacquarelli Symonds Limited has published its **“QS World University Rankings 2021”**. This year ranking reveals the top 1000 universities from around the world, covering 80 different locations. There are 47 new entrants in top 1000 while over 5000 universities were evaluated and considered for inclusion.

Peter the Great St. Petersburg Polytechnic University climbed 38 points and got into the TOP 34% of the world's best universities in terms of growth. Since the first entry in 2014, **Polytechnic University** has risen by 50 positions and **ranked 401** in 2020. This improvement was made by academic reputation and internationalization process in our university. In conjunction with QS Subject Rankings that were published in February 2020 and where SPbPU manage to acquire positions in **two Subject Areas and eight Subjects**, our university can assess itself as well positioned among both Russian and world universities.



On **September 02, 2020**, the British Agency Times Higher Education has published **“THE World University Rankings 2021”**, which is based on in-depth analysis of teaching, research and innovation activities of more than 1500 universities worldwide.

Peter the Great St. Petersburg Polytechnic University has shown significant growth in this institutional international ranking compared to last year – ranked in a 301-350 pull, having moved from the TOP650 group to the TOP350. Among all Russian universities Polytech is ranked 4th.

The positive dynamics of Polytechnic University in the final ranking was made at the account of wide range of **international activities**, industry cooperation activities (innovations and knowledge transfer) and publication activities. All these result in aggregate score of Polytechnic University, which increased by 10 points in comparison with the previous year.



In **June 2020 Shanghai Ranking Consultancy** has released its latest Academic Ranking of World Universities (ARWU) by subject, known as the **Global Ranking of Academic Subjects**. This year's league table includes 15 Russian universities. Peter the Great St. Petersburg Polytechnic University represented in two subjects:

- » **Instruments Science & Technology** – ranked **201-300** in the world (1-2 in Russia)
- » **Physics** – ranked **301-400** in the world (5th in Russia)



On **September 8, 2020**, RUR Ranking Agency together with the **Clarivate Analytics** company have published the **Reputation World University Ranking**. Since present reality is the world of brands, their struggle for minds and talents, the issue of assessing the impact of brands naturally arises. It is for this purpose that a separate reputational RUR ranking was developed. This ranking is based on two indicators: the reputation of the university in the field of teaching and research. Peter the Great St. Petersburg Polytechnic University **ranked 273** in the RUE reputational ranking, getting +50 positions as compared to 2019.

» **SPbPU ranked in a TOP350 pull in THE WUR 2021, having moved from the TOP650 in 2020**

Peter the Great St. Petersburg Polytechnic University ranked in **TOP15** according to the results of the 11th annual **National University Ranking** published by the International Information Group Interfax in **August 2020**. SPbPU ranked within the assessment of the activities of 337 leading Russian universities. The ranking includes 29 national research universities, 10 federal universities, 33 flagship universities, as well as 21 universities participating in 5-100 Project.

“**National recognition**” ranking – is the evaluation on all national state accredited universities. In 2020 the experts have evaluated 639 Russian universities based on the scientific achievements of university's faculty: scientific work, patents, research reports, etc. This year Peter the Great St. Petersburg Polytechnic University was **rank #2** among all Russian **technical universities** and **#8** among all national universities.

» **RANK #2 among all Russian Technical Universities**



**ANDREI RUDSKOI**,  
SPbPU Rector, Academician of the  
Russian Academy of Sciences

*SPbPU has boosted its position up to 301-350 in THE Times Higher Education World University Rankings 2021 among 1,527 of the world's universities. Such impressive growth confirms the status of Polytech being a driver of Russian engineering education. Active position of our polytechnics, youth inclusion into scientific and CDIO activities of the university as well as the synergetic effect of increased interaction with the academic community and industrial partners at the national and global scale contribute to our international positioning and to global competitiveness of the Russian Federation Higher Education System as a whole.*



Peter the Great St Petersburg Polytechnic University  
**RANKED 4<sup>th</sup>**  
IN RUSSIAN FEDERATION



[www.thewur.com](http://www.thewur.com)



## OPENING OF THE FIRST JOINT UNIVERSITY FOUNDATION PROGRAM IN CHINA



**VICTOR KRASNOSHCHKEKOV,**  
Director of Higher School of International Educational Programs  
[krasno\\_vv@spbstu.ru](mailto:krasno_vv@spbstu.ru)

the Chinese students will learn the Russian language and courses in Russian related to their future major. The courses will be taught by the Chinese teachers, and the study process will involve using SPbPU's methodological materials.

Polytechnic University has provided Qingdao Hengxing University of Science and Technology with all the tutorials and textbooks designed by our teachers, free of charge. Those materials accumulated 55-years of SPbPU experience in successful organization of the University Foundation programs, they can be used for teaching the courses such as Russian Language, Introduction to Mathematics, Physics, Social Sciences, Geography and History of Russia. Apart from that, the SPbPU teachers will be conducting weekly online classes on Russian language and chosen academic disciplines. In the end of the academic year, the teachers will arrive to Qingdao to conduct in-person final examinations.

The students, who successfully complete this University Foundation program and receive Certificates, will be given priority in enrollment to the SPbPU Bachelor degree programs.

### » SPbPU opened its first University Foundation program abroad

**Therefore, for the first time in the national practice of organizing the distance learning University Foundation programs Polytech implemented the idea of blended education (on-site and online), which is one of the most demanded trends of world education.**

Opening of the program caused a significant resonance in the Russian and Chinese media. The SPbPU Vice-rector for International Affairs Dmitry Arsenev expressed his sincere gratitude to everyone who contributed to launching the program. The Director of Higher School of International Educational Programs Victor Krasnoshchekov in his video message congratulated the students and teachers on the official start of the program and emphasized its high importance for improving the qualitative level of prospective Chinese students.

If the situation connected with the global COVID-19 outbreak allows it, in the Spring semester the Chinese students will be able to arrive to St.Petersburg and study on-site at HS IEP SPbPU.

To recruit the candidates for the joint University Foundation program, the Share Company took part in a



number of educational fairs in Shandong province. The photos demonstrate an overall extent of the events in Jining, Lianyi, Jinan and Heze, as well as the high interest of the Chinese prospective students and their parents towards the opportunities presented by Polytech.

In the future SPbPU plans to open a range of joint University Foundation programs in China together with our Chinese partners, owing to the developed cooperation network with the largest Universities and schools of China, as well as to the fact that Polytech has its official Representative Office in China. Today SPbPU is actively working on establishing the University Foundation centers in Shanghai, Xian, Qinhuangdao negotiating with the key schools and Universities of China.



Educational fairs in Shandong province (Summer 2020)



**SHEN LEYI,**  
Head of Consultation Center for the students from China

*The state-defined direction of collaboration between China and Russia under the "One Belt One Road" initiative involves increase in interest towards learning the Russian language in China. Consequently, for the Chinese prospective students Russia becomes a more attractive destination for obtaining higher education. Nevertheless, successful recruitment of Chinese students to the Russian Universities requires constant advancement of the marketing tools and improvement of the quality of prospective Chinese students training. One of the new forms is establishment of the University Foundation programs in China. This is precisely what Polytech with the help of our company put into practice by opening its first distance mode preparatory program abroad at Qingdao Hengxing University of Science and Technology.*



**DMITRY ARSENEV,**  
SPbPU Vice-rector for International Affairs

*We highly value partners those take active positions from the beginning of cooperation, and immediately move on to specific plans and actions. SPbPU and Qingdao HengXing University of Science and Technology have been cooperating for about three years. In this short time, we have gone from initial acquaintance to creation of joint educational program for training entrants of our university.*



## SPBPU BEGINS TO IMPLEMENT A NEW INTERNATIONAL ERASMUS+ PROJECT



NIKITA LUKASHEVICH

PhD, Associate Professor, Deputy Head for International Affairs, Project Coordinator, Institute of Industrial Management, Economics and Trade  
lukashevich@spbstu.ru

was (and remains) the landfills; yet the situation had drastically changed during the past decade, and now the waste per person is close to the EU level. This indicates systemic problems in creation of waste management infrastructure, including lack of specialists who can deal with the increasing and overwhelming amount of waste using holistic approach.

Project's wider objective is to influence current situation by development engineering focused Waste management curricula on master level and raising awareness on circular economy by means of higher education institutions new curricula development. This project would enhance practical oriented learning to ensure parallel development of soft skills (teamwork, communication, management, decision-making) and hard skills (engineering waste management), along with providing future employers student record on problem solving. In general the target groups of the project include university students who are interested in enrollment within master programmes that aim to develop specific skills in the most relevant areas of contemporary management; industry partners who lack specialists in the area of waste management, which is most relevant to high-waste industry of Russia; university authorities which are interested in development of new master curricula addressing highly demanded labor market needs; government structures which would witness raised awareness on waste management and which could also recruit specialists in waste management to governmental agencies that are being developed.

The project would also allow Russian higher educational institutions to become actively involved in creation of green economy by means of providing highly demanded specialists to the market. Finally, development of international recognition guidelines would provide an input for programmes sustainability in post-project period as it would allow Russian universities to offer master studies that match international quality level.

**“Despite the current pandemic situation in the world, the Institute continues to develop cooperation with partners and implement international projects in a new online format and with the support of international services. Particular attention is paid to cooperation with universities of applied sciences, including in Germany, which make a significant contribution to the development of international educational programs and the search for new international projects. The third project will be implemented with Wismar. This fact is indisputably the result of many years of sustainable collaboration.”**

At the end of August, it became known that one more large-scale project was won within the framework of the Erasmus + Capacity Building program, with Wismar University of Applied Sciences, on the topic “Advancing circular economy in partner countries by development and implementation of Master programme “Waste management“ (UnWaste)”.

This is the third project to be implemented by a consortium led by the Wismar University of Applied Sciences. Polytechnic University and Wismar University of Applied Sciences implemented a joint project in the field of green logistics, and are now working on the second joint project in the field of developing entrepreneurial competencies among engineering students.

Russia is the country which, on one hand, boast huge territory, and, on the other hand, had experienced relatively small household waste during Soviet times (due to much smaller household consumption). As a result, the main way to handle waste in the country

»» **“Advancing circular economy and Waste Management”**

one more large-scale project won by SPbPU together with Wismar University of Applied Sciences.

### PROJECT CONSORTIUM:

- Wismar University of Applied Sciences (Germany) – Grantholder
- Tallinn University of Technology (TalTech) (Estonia)
- EKA University of Applied Sciences (Latvia)
- Rostov State University of Economics (Russia)
- Peter the Great St. Petersburg Polytechnic University (Russia)
- The University of Management “TISBI” (Russia)
- Kostanay State University A. Baitursynov (Kazakhstan)
- Sh. Ualikhanov Kokshetau State University (Kazakhstan)
- Seifullin Kazakh Agro Technical University (Kazakhstan)



Prof. Dr. GUNNAR KLAUS PRAUSE,  
UnWaste Project Director,  
Professor at Wismar University of Applied Sciences Germany

Joint international projects are of great importance for sustainable partnership. For any cooperation, trust is the main currency. All difficulties can be dealt with, and the success of cooperation does not depend on them.





## SPBPU VISITING PROFESSOR LUIS CONDE FROM THE UNIVERSIDAD POLITÉCNICA DE MADRID - ABOUT PLASMA PHYSICS AND THE POPULARIZATION OF SCIENCE

Visiting professors program has already been implemented at the Polytechnic University for years. Despite the coronavirus pandemic, the work has been organized at SPbPU to attract visiting professors to work at the university, of course, taking into account the organization of their activities in remote format and with the development of all the necessary regulatory documents.

The most active institutes and schools in terms of attracting visiting professors are traditionally the following:

- Institute of Energy
- Institute of Applied Mathematics and Mechanics
- Institute of Physics, Nanotechnology and Telecommunications
- Institute of Machinery, Materials and Transport
- Institute of Industrial Management, Economics and Trade

SPbPU institutes traditionally attract professors with a high Hirsch index (20-25 and higher). About 70 foreign teachers have been delivering lectures and classes at the Polytechnic University for a number of years in a row and have already become the valuable members of the university team.



➤ **Currently over 220 visiting professors are working at SPbPU in the 2020/21 academic year.**

Professor Luis CONDE of the Universidad Politécnica de Madrid has been lecturing for many years on space technology and plasma physics. And, although in 2020 educational activities are taking place in a remote format, Professor CONDE claims that his heart and soul are in St. Petersburg. Read about how learning has changed with the transition to online format, the popularization of science, and the importance of staying connected in our interview.

- Professor CONDE, it's so good to see you again! Do share your impressions on how quickly you could adapt to teaching in a new format?

- I absolutely liked that guys from different countries got together in the group. It was fascinating to teach them. But, unfortunately, in videoconferencing mode the time of lectures and communication is quite limited, and it is not easy to evaluate how students assimilate the material. In spite of everything, I tried to keep the format of the dialogue: I asked students questions and answered their questions. Of course, live communication is no adequate substitute for anything. But I understand that the situation of the kind is now all over Europe, and online learning is the best solution for all of us.

- What did you tell students about as part of your course?

- We talked about plasma physics and its role in space engineering; in particular, in the construction of satellites and spacecrafts. Every year I prepare something new for my students: it is unthinkable to tell the same things all the time! Especially true this is in my subject, plasma physics. Scientists always have new ideas, so it is essential to regularly update their knowledge.

- Have you had any students on the course who had not previously studied plasma physics?

- I noticed quite a while ago that at the Summer Schools students have entirely different attitudes towards learning. Here they are more open to new knowledge. Therefore, the guys who mastered a completely different area of studies before my course are not at all uncommon. I believe that a teacher should be open to such students. Our role is to keep them interested in our subject: chances are good that they will study it in more detail in the future.

Another essential point is that St. Petersburg is the cultural capital. Your city attracts many young professionals from different specialties and from different countries. It may well be that a mechanical engineer wants to work in the electronics industry. Therefore, it is important for the teacher not only to give material on the subject, but for the students to study their specific subject. Both of them should be open to other new areas and activities. In this regard, the Summer School is doing an excellent and important job.

- What do you think about popularizing of science?

- This is an extremely important process! As scientists, we often rely on the support of non-governmental foundations of our work, which are based on private voluntary contributions. They are usually more meager than government assistance. So it is very important to speak and write about the achievements of science in an interesting and understandable form for ordinary people. This is our opportunity to increase the budget for research and scientific activities.

On the other hand, the more we talk about science and the practical application of research results, the more we attract concerned people. It is not enough to have a well-equipped laboratory: it must have employees educated in our particular field! To ensure that interest in science does not vanish and young people choose the path of a scientist, it is vital to speak about complex processes in easy language and show how scientific research can improve our lives.

- From the university side, what can we do to popularize science?

- It is not that easy and depends on the situation in a particular country. For example, the situation in the United States is quite different from that in Germany. Personally, I am well aware only of the situation in Spain. But generally speaking, I am confident that universities should take the lead and direct the process of popularizing science.

- In this complicated time, when we are all sitting in front of our computers and cannot meet in person, what would you wish your colleagues and students?

- I cannot express in words how great the importance of live communication is. But we shouldn't complain, because computers make things easier. We must stay connected: the coronavirus pandemic will end, and in science there is nothing worse than losing contact when you are alone in your field and work alone. Video conferencing is quite a good solution!

Many thanks to scientists and biologists who are now working in laboratories on a vaccine! I hope that their efforts will be appreciated and multiplied by the state, which will provide laboratories and people. Today it is more important than ever!



**DR. LUIS CONDE LÓPEZ**

*Visiting Professor from the Universidad Politécnica de Madrid, The School of Aeronautical and Space Engineering Spain*





## PROFESSOR HOLM ALTENBACH: MECHANICS, THE INFLUENCE OF THE WIND TURBINES ON THE EARTH CLIMATE AND THE IMPORTANCE OF THE FOREIGN CONTACTS



ALENA KANINA  
Gazpromneft – Polytech CEC PR manager  
Peter the Great St. Petersburg Polytechnic University  
kanina@spbstu.ru

**P**rofessor Holm ALTENBACH, Otto von Guericke University Magdeburg (Germany) is a frequent visitor to the Polytechnic University since it is his alma mater. In 80-ies he graduated from PhysMech (now - SPbPU Institute of Applied Mathematics and Mechanics). Nowadays Professor ALTENBACH is an expert in mechanics of materials and structures and an author of more than 240 scientific works, possessing h-index 27. Furthermore, he is an Editor-in-Chief of the scientific journals, which are indexed in SCOPUS and WoS; he also became a foreign member of Russian Academy of Sciences in the end of 2019.

We had a talk with Holm ALTENBACH when he, invited by Higher School of Theoretical Mechanics, once again came to Polytech to give seminars for the students. Professor told us about his career path, why he supposes ecological energy sources can turn Germany into a wasteland, and how the students from different countries vary.

- Professor Altenbach, at your lectures in Polytech a lot of foreign students are often present, and at your student time you were one of them. How did you get to the Soviet university?

- I was born and raised in the East Germany, but I had an opportunity to study at any university, including those ones in the USSR, since my father was a professor. At first, I enrolled EnergoMash (now Institute of Energy – editor's note), but after the first semester I realized studying there had really left me cold. Then, my father looked through the list of all the qualifications given in Polytechnic University. However, as soon as he could not read in Russian, he didn't understand a thing, but he noticed Lurie surname in the list. Father was a professor too, therefore he advised to transfer to PhysMech. A that time I begged: "Anything but not mechanics!" (He laughs).

Nevertheless, such is the destiny sometimes, and some things are inevitable. While studying, I attempted to take up management, but I couldn't make it out – it turned out that mechanics absorbed me absolutely.

- Was your immersion such total you decided to dedicate yourself to science?

- After I graduated cum laude in the Olympic year 1980, I departed home. I thought I would never return, but came back after three days – to St. Petersburg and took up a postgraduate course. I had two scientific advisors: Pavel Andreevich Zhilin (Head of Department of Theoretical Mechanics, 1989-2005 – editor's note) and Vladimir Aleksandrovich Palmov (Head of Department of Mechanics and Control, 1976-2013 – editor's note). It was great delight, because they both were so unlike each other and they taught me so much! I defended a doctoral thesis in 1987.

- Polytech captivates still you, doesn't it? You keep coming back with the lectures several times a year. What do you teach your students?

- I teach the same both to the students from Polytech and from my university. My department is related to so called theoretical mechanics – it is a blend of fundamental mechanics and strength of materials. Indeed, that's so typical of German science. Students learn statics, strength of materials, dynamics, structure mechanics, theory of plates, solid mechanics, mechanics of composite materials, fracture mechanics. Not only do I try to give some new information, I want to convey the idea, when I give seminars in other universities.

- You give such courses in some other countries, apart from Russia: in Australia, Vietnam, Poland, China. To what extent do students from around the world differ from one another?

- They are absolutely different – they speak so many languages (He laughs). Seriously talking, they all have diversely leveled skills. Earlier East German students were very similar to Russian ones, but there were more physical and mathematical schools, so that in those disciplines Russian students are stronger. The education in the East doesn't tend to be focused on natural science. Supposing I instruct Australian students to carry out a project, they will choose the one to be in charge, work out an excellent presentation and defend it brilliantly, but their calculating will be problematic. In Poland yet, it's very common that there are intelligent students and those who are unintelligent at all, and nobody in between.

- I am aware of you working in Ethiopia...

- That's true. I teach postgraduates in Ethiopia. There is a large number of universities and yet no scientific staff, so that my purpose is to educate them according to our high standards. It is vital to create such conditions, that graduates wouldn't run away from Africa to other, more developed countries. The first step is to introduce science: to provide people with the decent education, so that they would evolve the economics.

- To your way of thinking, which scientific areas are more relevant and demanded nowadays?

- Those ones which are connected with healthcare, environment protection and climate change. There is an influx of budding scientists and funds coming to these areas, however, it will end up as a crisis, I'm afraid. That's because the outcome is still slight. Everything with any to some degree significant results is not very invested. For instance, we are working on creep mechanics, where the major problems are related to engines and turbines, things which are currently not in the limelight. Though, turbines and internal combustion engines are to be developed to achieve a reduce in emission.

- To your opinion, how effective is "green" engineering today?

Emotionally I comprehend the importance of alternative energy, but rationally... Being an engineer, I have faith

in such things as laws of thermodynamics, yet I have no faith in practicability of the fact that you can generate energy with no side effects. The wind, for example, the usage of wind turbines transforms the climate, the weather and the landscape. Wind farms decrease the velocity of the global wind, alter the air temperature and the trajectory of the rain clouds. It might lead to the North of Germany, which is a verdant region now, turning into a wasteland. Generally speaking, you have to think more in the engineer manner. And obey the Second law of thermodynamics (He smiles).

- What advice would you give to young scientists?

- To possess more acquaintances from abroad. In our job obtaining international skills always enriches yourself. We are no one in science, if we look only at ourselves, as we make one and the same mistakes that way, those mistakes of the people from our surrounding. For example, I had to visit you and cross the boundaries of the German traditional education institution in order to understand how to teach here mechanics as a comprehensive discipline. The most crucial is communicate with people from different science institutions – it inspires and leaves its trace.

- Professor Altenbach, thank you for a gripping interview! You are welcome once more to give lectures for our students in Polytech.



Professor Holm ALTENBACH,  
SPbPU Alumni (1980)  
Otto von Guericke University Magdeburg  
Germany



## DEVELOPMENT OF A NOVEL NANOPARTICLE FORMULATION FOR MRNA BASED THERAPEUTIC VACCINATION



IGOR RADCHENKO

PhD, Director of RASA Center at SPbPU  
radchenko\_il@spbstu.ru

When it enters the cell, the synthesis of the virus-specific protein (without the harmful parts responsible for destroying the cell) immediately begins, which greatly simplifies and accelerates the action of the vaccine. For this moment it is one of most perspective way of viral diseases therapy.

Our next step after creating the mRNA vaccine is development of a special carrier: a capsule into which our vaccine can be placed and then be simply injected into the body. Such carrier should protect mRNA from aggressive enzymes in immune cells and, at the same time be safe for the human organism as a whole: quickly degrade in biological media and not affect the functioning of organs. Nowadays there are many different approaches and delivery platforms to achieve this, but none of them have all needed characteristics. The nano- and microcapsules elaborated by our laboratory not only meet these requirements but also have an easy and quick synthesis method that allows one to get a large amount of product ready in just a few hours.

We already have experience in genetic material delivery. One of our previous work was aimed to present green fluorescent protein encoding mRNA to cells and visually demonstrate effectiveness of our capsules. Results demonstrated that delivery was successful and new protein was synthesized inside experimental cells.

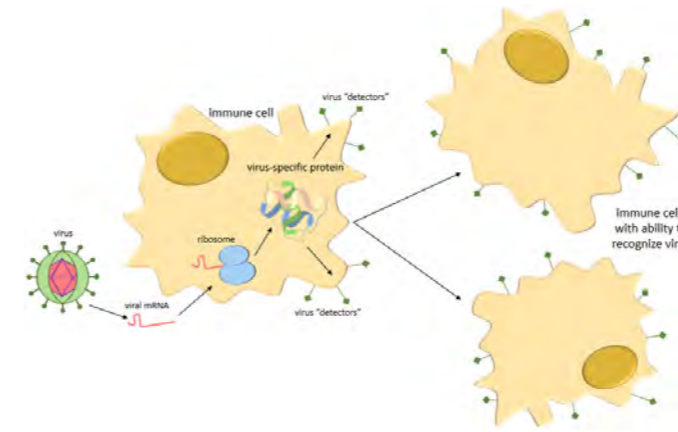
Based on the results of our research, an effective and non-expensive HIV treatment method will be obtained. We hope that our work will be helpful for world medicine and will make it possible for many people to cure from such danger disease. In general, we can say that the underlying concept of the treatment can be used in the fight against other diseases, including coronavirus.

### » Creation of therapeutic mRNA vaccine against HIV

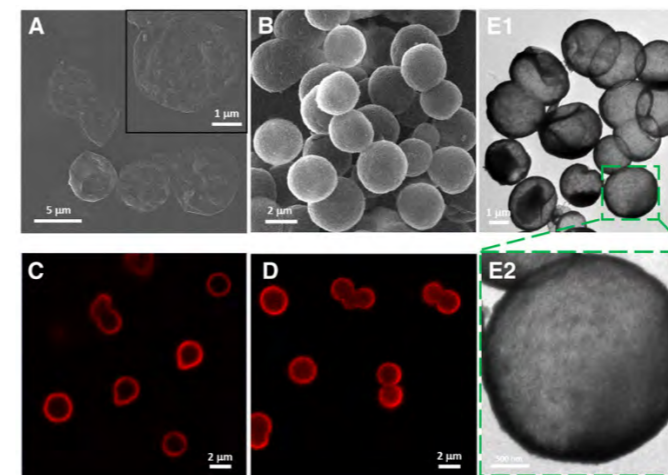
The solution to this problem is the use of mRNA vaccines: they present to immune cells not the whole virus, but a small modified copy of its genetic material - mRNA (messenger RNA).

At the beginning of 2020, the Laboratory of micro-encapsulation and controlled delivery of biologically active compounds of the RASA-center SPbPU won a joint grant with a professor Dr. Joeri L. Aerts from Neuro-Aging & Viro-Immunotherapy laboratory in Vrije Universiteit Brussel (VUB, Belgium). Our collaboration is aimed to create a therapeutic mRNA vaccine against HIV and develop a way to deliver it into target immune cells using nano- and microcapsules.

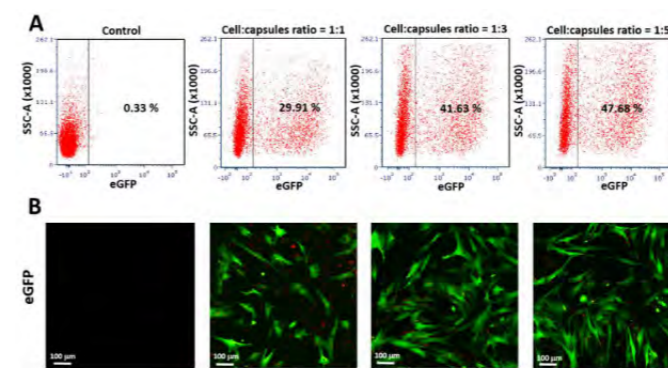
It is known that the main purpose of vaccines is to present a viral agent to immune cells before the onset of the disease. This can prepare the human body for a possible attack: immune cells learn to quickly recognize the disease and creates an "army" in advance to fight it. When real virus enters the human body, immune system will be able to fast and easily destruct it. However, in the case of HIV, this way of prevention is useless because the main targets of this virus are the immune cells themselves. This means that when we try to use a standard vaccine HIV enters an immune cell and immediately begins to harm it without giving any opportunity to transmit a signal to other cells.



Scheme of mRNA-vaccine work



Capsules synthesized in our laboratory: SEM images of PARG/DEXS (A) and SiO<sub>2</sub>-coated capsules (B); CLSM images of Rhodamine-loaded PARG/DEXS (C) and SiO<sub>2</sub>-coated capsules (D); TEM images of SiO<sub>2</sub>-coated capsules, demonstrating the hollow morphology (E,F).



(A) Determined using flow cytometry percentages of GFP-positive cells. (B) CLSM images demonstrate eGFP-expressing cells.



Dr. JOERI L. AERTS,  
Head of Neuro-Aging & Viro-Immunotherapy laboratory  
Vrije Universiteit Brussel (VUB),  
Belgium

My encounters with SPbPU have always been very positive, both on the professional and on the personal level. They are an enthusiastic team of professional and highly driven people who want to embrace the future and continuously strive to innovate and improve on all levels.





## RESEARCH GROUP FROM SPbPU TAKES PART IN DESIGN OF THE WORLD LARGEST TOKOMAKS



**VLADIMIR ROZHANSKY**  
Professor, Head of SPbPU Center for Theory and Modeling of Tokamak Plasma

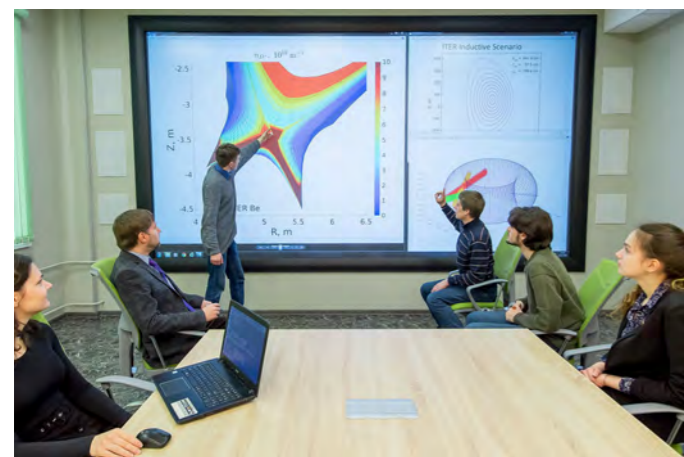
[v.rozhansky@spbstu.ru](mailto:v.rozhansky@spbstu.ru)

laboratories of the world, both experimentally and on the basis of modeling. However, it was the SPbPU group with the participation of European colleagues that managed to create the numerical code SOLPS-ITER, which allows modeling the main processes in the wall plasma of tokamaks.

This has become especially relevant recently in connection with the construction of the international thermonuclear reactor ITER in the south of France, which is to be launched in 2025. A controlled thermonuclear reaction with a positive energy yield is to be demonstrated ITER. The choice of the ITER operating modes is carried out on the basis of the simulation results obtained by the SPbPU group. Professor Rozhansky has the status of "Member of the ITER scientific team", and all calculations and selection of operating modes are carried out in close cooperation with the international ITER team. Employees of the Center for Theory and Modeling of Tokamak Plasma visit ITER several times a year, and the rest of the time the work takes place in the mode of videoconferences.

To verify these calculations experiments are being carried out at the world's largest JET tokamak in England. The latest experimental data from JET fully confirms the calculations of the SPbPU group. Now SPbPU is preparing a joint report in cooperation with JET team for International Atomic Energy Agency conference in 2021. Doctor Elizaveta Kaveeva (the only Russian scientist) also received an invited talk at the international conference "Plasma Surface Interaction" in 2021 in South Korea, where the results of JET modeling will be presented. Due to the reputation of Polytech researchers in the professional world, the scientific publishing house Nature Research has chosen the Polytechnic University as a venue for the international conference Advances and Applications in Plasma Physics. Within the frameworks of this conference experts from ITER, IAEA, Rosatom, Russian Academy of Sciences, as well as research institutes of Europe, Russia, China discussed issues of controlled thermonuclear fusion, space plasma, low-temperature plasma, laser-plasma interaction.

» Taking into account SPbPU team Chinese colleagues invited group of Professor Rozhansky to cooperate in frame of global project The Chinese Fusion Engineering Testing Reactor.



As the first step Peter the Great St. Petersburg Polytechnic University and Institute of Plasma Physics (Chinese Academy of Science) signed the Memorandum for Cooperation in Fusion Energy that stated the intention of the parties for long-term partnership. The MOU was signed in the presence of the President of the Russian Academy of Sciences Aleksander Sergeev and First Secretary of the Anhui Province CPC Committee Li Jingbin.

Later SPbPU signed an Agreement with the University of Science and Technology of China in Hefei that is one of the leading developers of The Chinese Fusion Engineering Testing Reactor. CFETR will be launched in 2030 as a tokamak reactor of the next generation after ITER.

The design of the divertor area of the tokamak and the modes of its operation should be selected on the basis of calculations to be made by a group of polytechnics and groups from various Chinese institutes. The first calculations have already been done under. **Now joint work is going on in frame of the project "Modeling an improved divertor of next-generation tokamak reactors" within the competition for the best projects of fundamental scientific research conducted jointly by the Russian Foundation for Basic Research and the State Natural Science Foundation of China.** Next in turn is the application for the Russia-China project of the Russian Science Foundation "Study of modes with a strong separation based on the Chinese Thermonuclear Engineering Experimental Reactor CFETR".



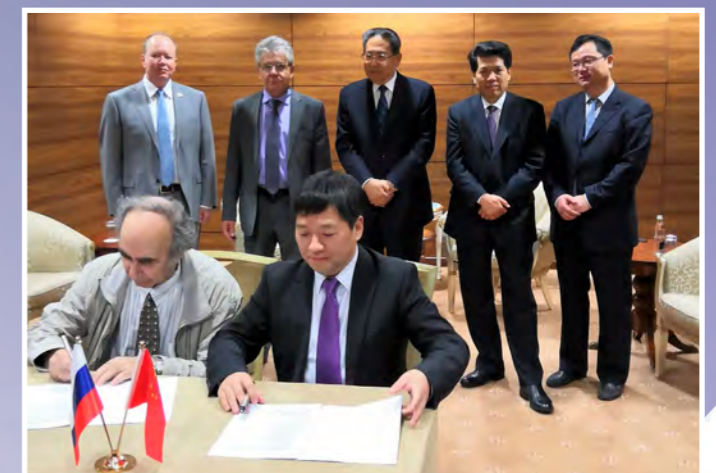
Dr. Elizaveta Kaveeva and Prof. Dr. Rozhanskiy (on the right) with colleagues from Germany, USA and Great Britain in ITER



**ANATOLIY KRASILNIKOV,**  
Director of Russian ITER Agency  
Russia



By combining the world's leading achievements in the field of plasma physics and controlled thermonuclear fusion, the conference "Achievements and Applications of Plasma Physics" of Polytechnic University entirely falls into the context of the currently actively discussed Russian national program on controlled thermonuclear fusion.



Signing the MOU between SPbPU and Institute of Plasma Physics (CAS). Prof. Dr. Vladimir Rozanskiy and Director of Institute of Plasma Physics Prof. Dr. Yuntao Song



## SIEMENS-POLYTECH: NEW PROJECTS AND HORIZONS



**DMITRY BASKAKOV**  
Director of International Research and Educational Center "Polytech-Siemens"  
[dmitry.e.baskakov@gmail.com](mailto:dmitry.e.baskakov@gmail.com)

very rapidly. In November 2019, the International Research and Educational Center "Polytech-Siemens" was established at the university. The agreement on the establishment of the center was signed by the President of Siemens in Russia Alexander LIBEROV and the Rector of SPbPU, Academician of the Russian Academy of Sciences Andrei Rudskoi. The new research site in SPbPU is designed for fundamental and applied research. Among research areas are issues related to data analysis and artificial intelligence, software and data processing systems, automation and digital twins, additive manufacturing. The creation of the International Research and Education Center "Polytech-Siemens" became part of the R&D investment program. It is planned to train engineers and scientists in the field of industrial automation and software development. The company will hold joint competitions with the university for the best solution and invention, seminars, conferences and forums. Graduate and postgraduate students who carry out research projects at the Polytech-Siemens center can apply for grants and special scholarships from the company.

Within the framework of the established International Scientific and Educational Center "Polytech-Siemens" in July, the university began to implement two major research projects for the company in the field of industrial systems of artificial intelligence and digitalization of industry.

With high competencies in machine learning and big data processing, SPbPU researchers will develop new concepts and algorithms for Siemens to work with data in real time using the most advanced methods and approaches. In the very near future this will allow business units of the company to use the results of the research project in promising industrial solutions.

In 2020, one of the world's largest high-tech corporations, SIEMENS and Peter the Great St. Petersburg Polytechnic University signed Framework agreement for performance of scientific research works to ensure an integrated approach to the company's interaction with various institutes and departments of SPbPU, and also launched a new project aimed at testing embedded devices for diagnosing smart meters.

Actually, Siemens and Polytech are long-standing strategic partners. The parties cooperate in a wide range of areas: from research projects and the development of innovative solutions for Russian and foreign enterprises to support programs for young scientists and students. Cooperation between Siemens and SPbPU is developing



# SIEMENS

Within the framework of the second project, employees of the SPbPU Institute of Energy will develop a system for monitoring and analyzing emergency situations at power facilities of any complexity for the company using both simulation modeling and the results of the latest scientific research of the Institute's colleagues.

The implementation of these projects will contribute to the development of the intellectual potential of Peter the Great St. Petersburg Polytechnic University and the increase of Siemens' competitiveness in Russia and in the world.



**MARTIN GITSELS,**  
Doctor, Vice President Siemens in Russia, Head of Corporate Research and Technology

*In this difficult, "turbulent" time, it is important to have reliable contacts. And we believe that all our partners should have a certain level of development. In this regard, the Polytechnic University is a very good partner. It can be seen that this is a modern university and that we have many points of contact.*

*Signing of the Agreement on Cooperation aimed at Establishment of a Joint Center "Polytech-Siemens" (the President of Siemens in Russia Alexander LIBEROV, the Rector of SPbPU, Academician of the Russian Academy of Sciences Andrei Rudskoi)*





## FIRST MASTER'S DEGREE STUDENTS GRADUATED FROM THE SPbPU INTERNATIONAL EDUCATIONAL PROGRAM "TECHNOLOGY LEADERSHIP AND ENTREPRENEURSHIP"



VLADIMIR SHCHEGOLEV

Director of the Graduate School of Technology Entrepreneurship of Institute of Advanced Manufacturing Technologies (GSTE IAMT SPbPU)

At SPbPU first Master's Degree students graduated from the international educational program "Technology Leadership and Entrepreneurship" (in English) have defended their theses.

Seven master's degree students became the graduates of the first group of the GSTE IAMT SPbPU.

Topics of graduate qualification works of the GSTE students can be divided into three types: technology project planning, consulting and research projects.

### 1. Technology project planning

This includes the work of Valery Bogomolov "Commercialization of automated jet electrolyte-plasma polishing technology in high-tech markets" under the supervision of the Vice-rector for innovative projects of SPbPU, Prof., Alexey I. Borovkov.

### 2. Consulting projects

- Building a model of the international ecosystem based on the "eBridge" project to support the development of startups
- Creation of the center of technology entrepreneurship and innovation as part of an industrial group

- Developing an IT company strategy focused on creating spin-offs
- Development of a set of recommendations for the commercialization of Russian electric vehicles based on CML-Car in Latin America

The first three works are related to the real needs of innovative companies in St. Petersburg. The work of Guillermo Illescas, a student from Mexico, is devoted to the development of a set of recommendations for the commercialization of Russian electric vehicles in Latin America.

This work was noted by the State Examination Commission (SEC) as one of the best.

### 3. Research projects

- Developing recommendations for institutional support for female entrepreneurs in the industrial revolution 4.0.
- Research of perspective directions of internal entrepreneurship in the energy sector

The members of the SEC, representing well-known St. Petersburg companies, agreed that "this was a win-win situation: an interesting experience both for us as experts and for calibrating the development of entrepreneurial projects at our companies". By the way, Vitaly Sidorenko's project is directly connected with the development of the Center for Technology Entrepreneurship and Innovation of the Kirov Plant.

*"This is not the first time that I am present at the defense of the International Master's Degree Program of SPbPU and every time I am convinced that representatives of innovative business, present at such defenses, are quite interested in graduates who have both entrepreneurial competencies and knowledge of advanced technologies, as these are real talents, both from Russia and from abroad. We should jointly try to retain these graduates for the successful development of the domestic industry".*

The level of students' training under the "Technology Leadership and Entrepreneurship" program, according to Oleg Bochtarev, Chairman of the State Examination Committee, and all other members, meets the high requirements set by employers in the field of commercialization of innovative technological projects and development of organizational structures to support technology entrepreneurship.

And this is not accidental: during their training, students worked on a real case of the leading biotechnology



Dmitry Morozov, CEO of BIOCAD Company at the workshop for SPbPU GSTE students

company BIOCAD, visited the production of the leader in industrial 3D printing with metals and polymers EOS, took part in the Entrepreneurship and Digital Transformation event at the Strascheg Center for Entrepreneurship (Munich, Germany); visited one of the leading manufacturers and suppliers of telecommunication equipment, i.e., Ericsson Factory and Tallinn University of Technology (Estonia).

Besides this, world experts shared their experience with GSTE's master students, including CEO of BIOCAD Dmitry MOROZOV, CEO of SCE/MUAS Prof. Klaus Sailer, serial technology entrepreneur Alex KOSIK and well-known business angels and startup mentors of high-tech projects.

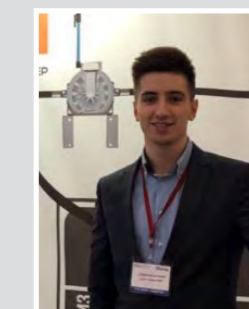
In 2021, some students of the "Technology Leadership and Entrepreneurship" master program will defend their own technology startups projects. New student of this master program Phillip Zhuchkov says: "During our first year on the program, we designed a "ScanFace" software, based on the machine learning and computer vision. It uses face image as a source of information and helps to understand a "psychological portrait" and the first impression that an individual makes on other people".

GSTE master's projects address the global arena and focus on sustainable development goals. In order to support the work on such master theses, an Expert Council is being established on the basis of the GSTE IAMT, which will include world leading experts in the field of technology entrepreneurship.



GUILLERMO ILLESCAS MARTINEZ, SPbPU GSTE student

*If you have the idea of a startup at least in the conception, the Technology Leadership and Entrepreneurship program will help turn it into a profitable business. You will establish foreign ties and will be able to bring the technological project to the international market. You will go all the way of a technological entrepreneur under the wing of strong mentors, and after graduation you will create projects yourself.*



VITALY SIDORENKO, SPbPU GSTE student

*If you want to develop startup projects, "Technology Leadership and Entrepreneurship" program is perfect for you to learn how to go all the way from an idea to project implementation, without giving up. After I finish the program, in the next few years I am planning to create my own startup and turn it into a business, learn Spanish, go on a trip around Europe and visit New Zealand.*



PHILLIP ZHUCHKOV, SPbPU GSTE student

*"Technology Leadership and Entrepreneurship" program is not for unsophisticated diligent students. It is for those who got involved in entrepreneurship back during their Bachelor studies. For those who have an entrepreneurial mindset, who do not like to stand still and always come up with something new. The program will help them to combine their talent with necessary knowledge, in order to commercialize their interesting ideas.*



» Meeting global challenges: Entrepreneurship (tech) and Intrapreneurship





## MEETING NEW CHALLENGES AND FACING NEW HORIZONS IN THE SUMMER 2020



ALEXANDRINA READ

Program Manager  
Department of International Educational Programs and Academic Mobility  
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Neither the pandemic nor the closed borders have become an obstacle to the implementation of the International Polytechnic Summer School. On the one hand, the largest international project of Polytechnic University has shown that scale does not affect the ability to adapt to external factors. On the other hand, it became a kind of experiment for the entire International Office and institutions of SPbPU. Will it work? Will there be interest from foreign students? And how would they do with no desired excursions and walks around St. Petersburg?

However, everything got solved. More than 300 international students from 45 countries have connected to the International Polytechnic Summer School online. They studied about 20 programs in seven areas: engineering and natural sciences, information and digital technologies, civil engineering, energy technology, business and economics, life science and, of course, Russian language and culture. The training took place in the format of webinars and project activities, and as a result of the successful completion of the course, the participants received international certificates with ECTS credits, which can be used at their home universities.

» Polytech Summer School 2020:  
300+ students from 45 countries  
studied 24 summer courses on-line

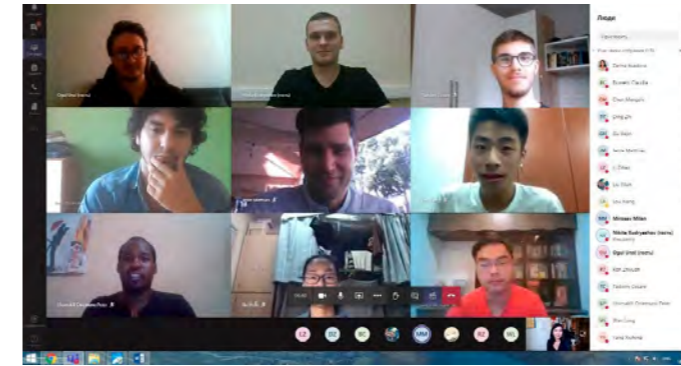
On the way of switching to the remote format Polytech have faced a large number of challenges to overcome. In the process of recruiting students, it was not completely clear in what format the training would take place. Until recently, there was a hope that the borders would open, but this did not happen. Nevertheless, **the SPbPU Summer School team has succeeded not only to preserve the traditionally high quality of education, but also found new opportunities for more effective interaction.**

Despite the situation in the world, several high-profile new summer projects were launched at the SPbPU. For the first time the International Graduate Summer School (IGSS) has opened its doors. It includes educational modules lasting 1-2 weeks. The target audience is graduate and postgraduate students. This year the IGSS has been focused on Polyphotonics and Mathematical Modeling. Polyphotonics program, which aims at acquiring skills in the design and development of modern optical devices, aroused great interest among foreign audiences from the first start: 14 young scientists from the USA, Ecuador, Iran, India, Algeria and Armenia took part in it. While the International Mathematic Modeling Week became one of the most significant events of the Polytech Summer. Under the guidance of experienced curators, the students of this program solved applied problems from uneven energy consumption by households to the exploration of Mars.

Another novelty of the season was the program on plasma physics and controlled thermonuclear fusion, which SPbPU and SOKENDAI University (Japan) implemented for the first time in cooperation with the International Atomic Energy Agency (IAEA). The participants studied the fundamentals of plasma physics, in particular the physics of high-temperature plasma and its use in controlled thermonuclear fusion. The experts of the IAEA became their professors together with SPbPU and Sokendai scientists.



The TV Channel 1 interviewed the lecturers of the IPSS



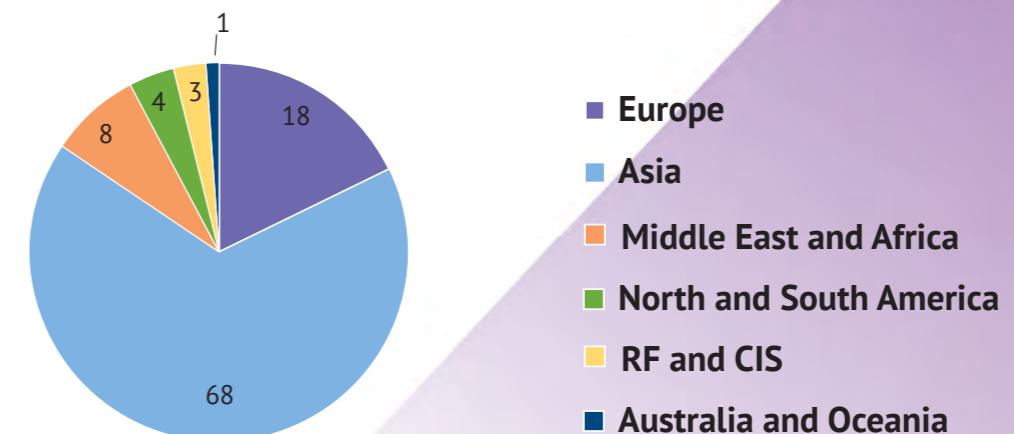
Course "Machine Learning: Theory and Application"

The traditionally high level of organization was retained by the energy cluster of the International Polytechnic Summer School, within the framework of which courses in electric power, nuclear energy, turbomachinery, oil and gas technologies, as well as a new program for the 2020 season entitled "Digitalization in the energy industry" were held. Within the framework of a large number of modules, virtual excursions to laboratories and enterprises were held: participants of the programs "Advanced materials processing technologies," "Smart production and digital future," "Space technologies," and many others took online visits to laboratories and scientific centers of SPbPU.

As every year, programs in the Russian language and culture remained a popular destination among foreign students: participants from China, Brazil and Colombia have joined the courses. Within the framework of distance programs, students got acquainted with the traditions and history of Russia, learned to sing national songs and went on virtual tours through the streets and main museums of the Northern Capital.

A rich cultural program awaited all participants with no exception. It is impossible to imagine a Polytechnic University summer school without a cultural part. This is an obligatory component that gives the whole school a special atmosphere. Despite the difficulties associated with the coronavirus pandemic, foreign students of the 2020 season did get to know St. Petersburg: a special virtual tour of the city was prepared for them, a ballet was broadcast, and also an online quiz was held, which allowed them to learn more about life in Russia and get to know each other.

### Summer School 2020: Distribution by region



Dr. DANAS RIDIKAS,  
IAEA Physics Section Head

The IAEA supports research and development activities for the peaceful use of nuclear applications, including fusion research and technology. Education and training events like summer schools are very important to us because they help to engage the young generation of scientists in global challenges such as realizing the potential of nuclear fusion as a future energy source. We have already cooperated with similar international schools relevant to fusion in Thailand, Costa Rica and now with St. Petersburg Polytechnic, a place with a remarkable history and outstanding achievements in science and technology. Today, young people from different countries gather here, and they all share an interest in the field of fusion research and technology. We are happy to cooperate and encourage all students to stay connected with the IAEA through our web portals and social media!

ALBERICO ANTIKO,  
student of University of Technology  
Sydney, Australia

I've long wanted to see how far automation of the industry can go. That's why we liked the lessons where we got practical experience of programming small robotic stations. With the teachers, we created a client service, exchanging messages like we were sitting at the same table. It was informative and fun!





## ECMI MODELING WEEK: FIRST TIME IN RUSSIA, FIRST TIME ON-LINE



SERGEY LUPULEAC

PhD, Head of SPbPU Virtual Simulating Modelling Lab  
Coordinator of ECMI Virtual Modelling Week 2020  
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OLGA EMELIANOVA

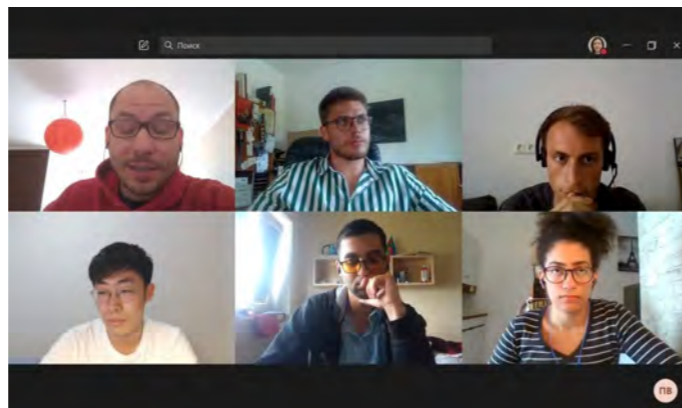
Head of the Department of International Educational Programs and Academic Mobility  
[emelianova\\_og@spbstu.ru](mailto:emelianova_og@spbstu.ru)

The European Consortium for Mathematics in Industry (ECMI) has been running annual Modelling Weeks for students since 1988. Usually, participants, about several dozens of students and ten instructors, come to a consortium member university from all over Europe to spend a week working in small multinational groups on problems which are based on real life problems. The main aim of the event is to train the students in Mathematical Modelling as applied to real life problems and stimulate their collaboration and communication skills in a multinational environment. The process has been organized this way for already over 30 years, but everything changed in 2020.

This year it has become a landmark event that the Virtual Modelling Week was held in Russia, in St. Petersburg, within the frameworks of the International Polytechnic Summer School. **This year the ECMI Modelling Week was supposed to be hosted in the premises of Peter the Great St. Petersburg Polytechnic University in the offline mode. The pandemic might have disrupted the plans, but thanks to modern technologies and online learning opportunities in July the First ECMI Virtual Modelling Week was held at SPbPU.**

In spite of rethinking the name of the course, the structure remained the same. There were four groups, each group was led by an ECMI instructor who introduced the problem – usually formulated in non-mathematical terms – on the first day and then helped to guide the students to a solution during the week. The students presented their results to the other groups on the last day and then wrote up their work as a report on a regular basis. The coordinators of the Virtual Modeling Week – the joint team of professors of the Institute of Applied Mathematics and Mechanics and managers of the IPSS - did their best to adjust the standard procedures to the new conditions.

Since its establishing the ECMI Modelling Week has been aimed at young scientists and it paid off in spades. A key feature of the course is that students' projects reflect actual needs and have every chance of practical application, which attracts plenty of highly motivated students from all over



» **First ECMI Virtual Modelling Week:**  
28 participants from 17 countries worked in small multinational groups to solve the real life problems which have every chance of practical application.

the world. In July 2020 they worked on solving four applied problems. One of them focused on optimizing the bolting process in aircraft assembly with the goal to design and implement an algorithm for minimization the number of the assembly operations. The second was the development of a hybrid storage system consisting of batteries, heaters and a water cylinder, which could potentially meet peak demand and uneven household energy consumption. In search of a solution to the third problem, the participants conducted a study of water absorption in wood, created a mathematical model of capillary moisture absorption and analysed the distribution of water content in the trunk. In the future, this could help to better understand the biomechanics of forests and make the world greener. And the last group of scientists considered the project of space elevator based on the short Science Fiction novel Jack and the Beanstalk by Richard A. Lovett.

This year ECMI Virtual Modelling Week became a part of a new trend in the frame of the IPSS – the International Graduate Summer School held at Polytech for the first time. It included educational modules lasting 1-2 weeks with the target audience of graduate and postgraduate students as well as of the young scientists. In contrast to the regular summer programs, targeted at a broad audience of students in a particular subject area, the IGSS's programs are science-oriented. Thanks to distance learning, this year the list of participants has been remarkably diverse, e.g. 28 young scientists from Germany, China, France, Portugal, Italy, Serbia, Pakistan and other countries joined the course. The final presentations of the teams were highly appreciated by the competent committee. The participants were excited and completely immersed into the course. Isidora Rapajic, a student of the University of Novi Sad, said: "It's very helpful to get an insight of mathematics in the industry and I had a chance to work on a subject where we had to research on our own and come up with a solution (unlike the homework). It seems to be a very useful."



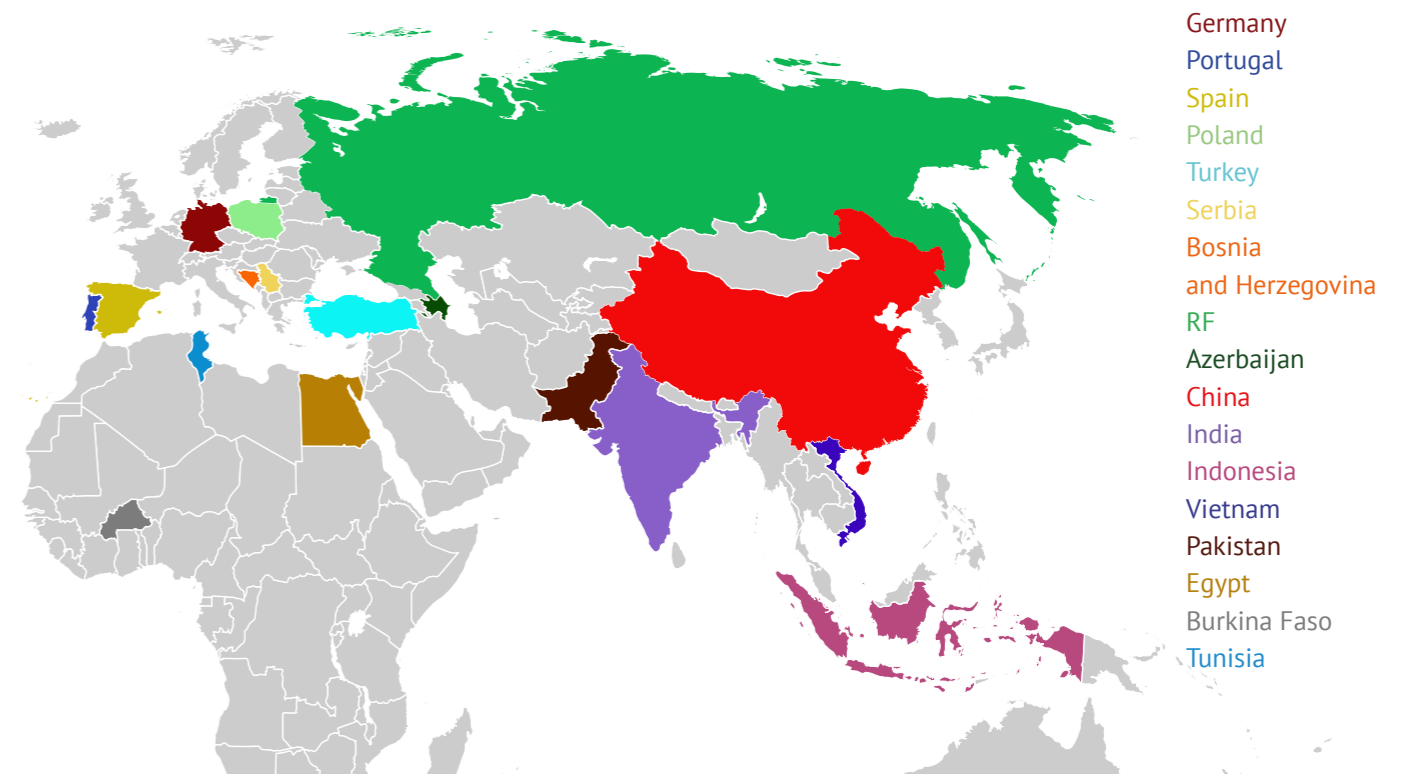
Aderito ARAUJO,  
ECMI President  
Professor of the University  
of Coimbra  
Portugal

*I would like to thank the organizers and teachers from the bottom of my heart for a job well done. The event was a great success. A high level of education has always been a hallmark of the Modelling Week, and I am glad that even in a virtual format we were able to preserve it.*



The first experience of holding the courses in a remote format was a success, but waiting for the next summer to host the ECMI Modelling Week 2021 at Polytech in off-line format and we really hope students will meet and enjoy our city as usual by walking and seeing by their own.

### ECMI VIRTUAL MODELLING WEEK: DISTRIBUTION OF PARTICIPANTS BY COUNTRIES





## POLYTECH NCM CAR IS THE MOST TECHNOLOGICALLY ADVANCED IN 2020 FORMULA STUDENT RUSSIA



**ARTYOM SEMENYUTA**  
Polytech North Capital Motorsport Chief Aerodynamicist

Polytech North Capital Motorsport (Polytech NCM) gained 3rd overall place in 2020 FS Russia, which took place on 17 – 20 September. This was made possible after showing an unsurpassed performance in the Design Report, where the team's car, named Tre (traditionally, cars built are named using ordinal numbers in Italian), was deemed to be the most technologically advanced among the other participants, and consequently was awarded 1st place by the Russian and European judges. This successful streak continued, as the team secured 2nd in Cost&Manufacturing and 3rd in Business Plan Presentation, resulting in the team's best achievement at a competition of that level so far.

The first Formula Student (or Formula SAE outside of Europe) event had been organised by the Society of Automotive Engineers in the US before it spread

widely around the world and attracted competitors from different universities. The teams are offered to design and build a Formula-style race car that would be fast, reliable and fuel-efficient, develop a business plan and consider economic aspect of the car manufacturing.

In 2014, Polytech North Capital Motorsport was established, becoming the first ever team from the Northwestern Federal District to participate in the international engineering design competition. Since its foundation, the team has taken part in six events in Hungary, Germany and Russia, where it was awarded third place twice, as well as collecting multiple awards in different disciplines. 2020 was supposed to be the most eventful year for the team, as Polytech NCM was aiming to participate in the Italian and Czech FS events, for which the team successfully qualified. However, only Russia was able to hold an FS competition this year after all the European races had been cancelled due to the global pandemic.

After taking part in 2020 FS Russia and having three cars built so far, **the team is now working on manufacturing the fourth car, which is going to be the next iteration of a time-tested concept, and effectively is a heavily refined and improved design, which will incorporate new features in every aspect.** The team is looking forward to present the new car at several European competitions next year as well as, in keeping with tradition, participating in the Russian event. Along with the manufacturing process, the work on the design of the fifth car has been started as well. This time, we have moved on and are working on a brand new, very bold concept which has many unique features, different to other teams' cars, however our basic philosophy is similar



## » Great university – great goals

to what the top European teams use – car design that relies on aerodynamics heavily. That said, to produce a highly top-level competitive design of aerodynamic surfaces of the car, a lot of computational power is required for performing computational fluid dynamics analysis. The Supercomputing Centre of Peter the Great St Petersburg Polytechnic University provides excellent facilities for undertaking all the necessary research and numerical experiments, which help to make use of the convergence of design, science and engineering.

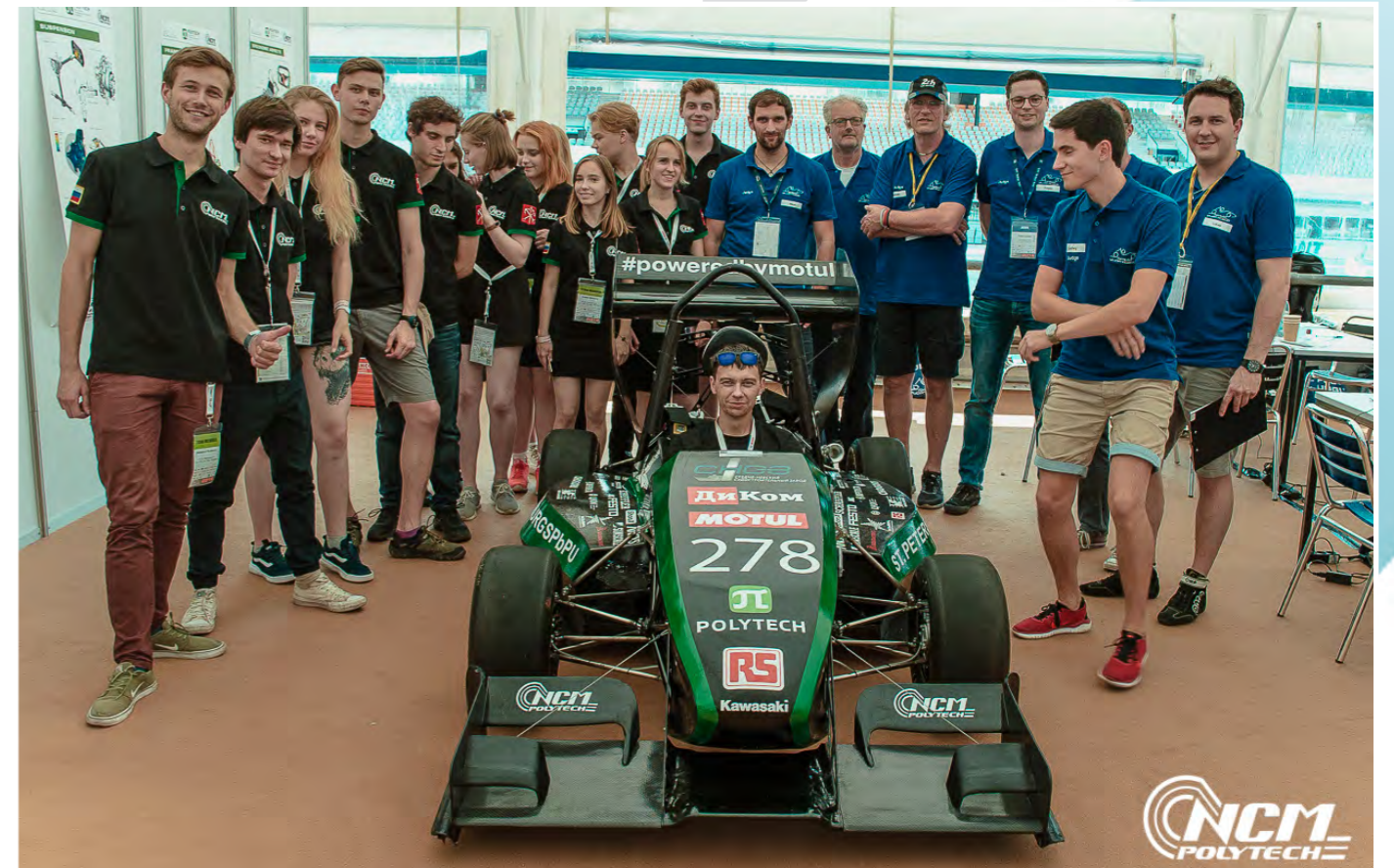
Besides the university's HPC-facilities, the help of our major sponsors is invaluable – Kawasaki who supply internal combustion engines to the team, Motul who provide fuels and lubricants and DiKom who help us with space frame manufacturing. Using this possibility, we want to say massive thank you to them and everyone else who helps us. Our team wouldn't be able to perform without you!

## POLYTECH NCM TEAM SPONSORED BY A LEADING WORLDWIDE COMPANIES



**DOROKHIN ANDREY,**  
DiKom, Deputy Director for Development Russia

*Our company DiKom supports PolytechNCM since it was founded in 2014. The first car was created on our base, then we helped the team with the second car and were closely involved in the production of third car as a chassis partner. As a matter of fact, it was me myself, who took part in designing and building the first car of the team. It is such a seizing opportunity, especially for those who are interested in motorsport. From the company, it is also a qualified personnel conveyor. Now together with the team we are looking forward to see the fourth car in front of us*





## II SEMANA HISPANO-RUSA DE LENGUA Y CULTURA

NOVEMBER 16-20, 2020

<https://fb.me/e/37f3wQ2Ss>

SPbPU in cooperation with the University of Cádiz (Spain) will hold II Semana Hispano-Rusa de Lengua y Cultura. Event will be held online. The key audience of the Week is students, teachers, employees of international offices of the universities and all those who love to study foreign languages and want to learn more about the culture and traditions of Russia and Spain.

Despite the virtual format II Semana Hispano-Rusa de Lengua y Cultura remains to be a platform for international meetings and communication. In the program of the Week we have prepared more than 20 events, so that everyone who is in love with the Russian and Spanish cultures will find something interesting. Leading Russian and Spanish experts in the field of regional studies, linguistics, cultural studies and pedagogy will share their unique experience and secrets online. Participants will have an opportunity to expand their horizons and acquire valuable ideas for future implementation.

*"During a global pandemic, the most important thing is not to stand still and keep in touch with foreign partners, colleagues and friends. II Semana Hispano-Rusa de Lengua y Cultura is more than an international event. It is an example of the fact that even in the face of new challenges there are a lot of opportunities for strengthening cooperation, gaining new knowledge and skills, and, of course for making friends from all over the world", - DMITRY ARSENEV, SPbPU Vice-Rector for International Affairs.*

*"The world needs support and solidarity more than ever. Each of us must be aware that despite dire external conditions, life goes on, and there must be a place for new achievements and discoveries in order to maintain hope for the future. II Semana Hispano-Rusa de Lengua y Cultura is a platform for like-minded people, which gives an opportunity to everyone to express themselves and acquire valuable insights, establish partnership and friendship and outline plans for the future," - RAFAEL JIMÉNEZ CASTAÑEDA, Vice-Rector for Internationalization of the Universidad de Cádiz.*

II Semana Hispano-Rusa de Lengua y Cultura is held in cooperation with the Universidad Politécnica de Madrid and HSE University and with the institutional support of the Embassy of the Russian Federation in Spain, the Embassy of Spain in the Russian Federation, Russian Center for Culture and Science in Madrid and Instituto Cervantes de Moscú, International Association of Teachers of Russian Language and Literature and Russian Society of Teachers of Russian Language and Literature, The Association of Hispanists of Russia and Asociación Española de Profesionales de Lengua y Cultura Rusas.



Program



Registration



16-20 de noviembre



## II SEMANA HISPANO-RUSA DE LENGUA Y CULTURA

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