



NEWSLETTER
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It seems that we just held the New Year celebration, but 2016 is already in full swing and Skoltech has plenty of interesting news! In this year's first newsletter we will introduce you to school's new president, academician Alexander Kuleshov, and other excellent professors and researchers that had joined our team. You will read about the "mission to Mars," which was undertaken by the institute's students in Utah. The students who spent the last semester in Canada, Switzerland, Denmark and the US, had shared their impressions of other schools and their plans for the future with us.

At the very end of 2015, we celebrated the official opening of Skoltech's Robotics Lab headed by professor Dmity Tsetserukou and we are happy to share this story with you. In the first half of February our team took part in the first four meetings of the all-Russian Startup Tour, which started in Siberia this year and will move from the east to the west of Russia. You will find the reports from Irkutsk, Vladivostok, Novosibirsk and Chelyabinsk inside.

Another exciting read is the story of the three-week Independent Study Period. This short January semester is a distinctive part of the academic curriculum, a time, when the students draw their own syllabus and can even become the instructors of their own three-week courses.

We are always happy to share the news of Skoltech's Translational Research and Innovation Program, which helps the scientists turn their ideas into commercial products. The Program is proud to celebrate the fact that one of its mentee teams is ready to become the residents of the Skolkovo Foundation and inside you'll find an interview with the team leader and the story of their research.

All this and more. Enjoy your reading!

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News@Skoltech

Academician Alexander Kuleshov, a world-renowned mathematician and director of the Kharkevich Institute of Information Transmission Problems, has been a part of Skoltech's Board of Trustees since the very inception of the institute. In December 2015 the General Assembly of the founders of the Skolkovo Institute of Science and Technology approved the recommendation of the Board of Trustees for the appointment of Alexander Kuleshov as the new president of Skoltech.

On February 4, 2015, academician Kuleshov spoke at the Vladivostok stage of the Startup Tour and his speech at the Far Eastern Federal University turned into a keynote address, in substance if not in form. Skoltech's new president began his conversation with the attendees with a question about the meaning of success. Not in its worldly meaning, but when it comes to technological entrepreneurship. Kuleshov believes that the crucial component for innovation is, what he calls, the "infrastructure of success."



The academician has plenty of personal experience in "playing all kinds of roles in the innovative process: as a person who was given money for some project and as a person who allocated money for other projects," which allows him to speak knowledgeably on this topic. And because the scientist has plenty of experience in establishing startups, the first warning he gave to his audience was to have no illusions. Everyone knows about Bill Gates and Steve Jobs and how wildly successful they were, but nobody likes to talk about "the number of bones and graves left on this road [to success]." It is a dif-

ficult path to take, and even though the chances to overcome all the hardships are there, you have to step onto the road fully recognizing the difficulties ahead. "All around the world, but in Russia especially, the person who decides to do something innovative has to understand: he's coming up against an almost unsurmountable force," shared his vision of the situation Alexander Kuleshov. At the same time the mathematician believes that innovations are not a panacea that should be administered everywhere. He says that the only place for innovations are the areas "with a very competitive environment: if there's no competition, you don't need innovation."

But the difficulties on the road to success are not the only thing that the future technological entrepreneur has to see clearly. The "power of positive example" is very important. In his address, the new president of Skoltech shared the example of the Institute of Information Transmission Problems that he heads. This academic organization is known not just for its great scientific potential, but also for a number of successful startups that were launched there. One of such companies started out as a joint venture with Airbus. As of today, the Russian co-founders had bought out the Airbus share of the firm. In Russia, the company's products based on in-depth mathematics are little known, but in the West they are bought by the largest corporations. There are successful companies in Russia, but very few people know about them, because there is still no "infrastructure of success" that was mentioned by Kuleshov in the beginning of his speech.

What's necessary for success? The most important thing is to have professional knowledge and skills. The popular story of Bill Gates leaving Harvard after just one year has led people to believe that a top class business such as Microsoft can be created without the requisite academic knowledge. But Gates was a National Merit Scholar in high school and in his freshman year at Harvard demonstrated serious mathematical talents and skills that helped him later.

Academic knowledge is necessary, but insufficient in itself. However skilled and professional might be the person, he's doomed to make entrepreneurial mistakes if he's not taught innovations beforehand. Skoltech already has such a unique course, which is known as Innovation Workshop, and the institute, along with its new president, wants to share this know-how with other Russian universities, particularly in the regions.

News@Skoltech

Another component of success is good fortune. "Everyone has a lucky break, but not everyone is able to see and recognize it, - says academician Kuleshov. - I like trap-shooting. Obviously, the bullet has to be in the chamber and the gun should always be ready. But it's important to catch the moment when the target flies out."

In conclusion, Alexander Kuleshov shared his vision of "success algorithm" with the audience.

One — the idea. Nothing can happen without an idea.

Two — the team. "The team is the most important thing, - stresses Alexander Kuleshov. - Real investors don't put money in projects, they put money in people, people with a drive."

And the third prerequisite is the investor, especially the very first one. Many companies or people with money don't want to take the hard road of due diligence and project evaluation before making investments. If somebody else took pains to evaluate the quality of the team, the next investor will have an easier time risking his money.

The last but not least is the character. "Technological entrepreneur needs to have a character. Not least because the first success is usually followed by disagreements with the partners. Although in Russia the disagreements often come even before the first success," concluded the academician to applause and laughter from the audience.

Just a few days later academician Kuleshov had a new opportunity to give a keynote address, this time during the roundtable discussion "Image of Russian science abroad," which took place on February 8, on the Day of the Russian Science, at TASS news agency.



Thinking aloud about the image of the Russian science, the new president of Skoltech stressed that external image is the result of internal one. He noted that in the Soviet Union science was the most promising career track for young people. In 1960s, the world scientific community had to learn the Russian language in order to read untranslated mathe-



Kuleshov at the roundtable discussion «Image of Russian science abroad»

tical articles that were published in the Soviet academic magazines. Today the scientists' mobility has increased greatly and they translate their articles to English in the very least. Kuleshov promised to the audience: "We will try to become the hosts of the International Congress of Mathematicians of 2022, and this will be an important step toward promotion of Russian science abroad."

Education@Skoltech

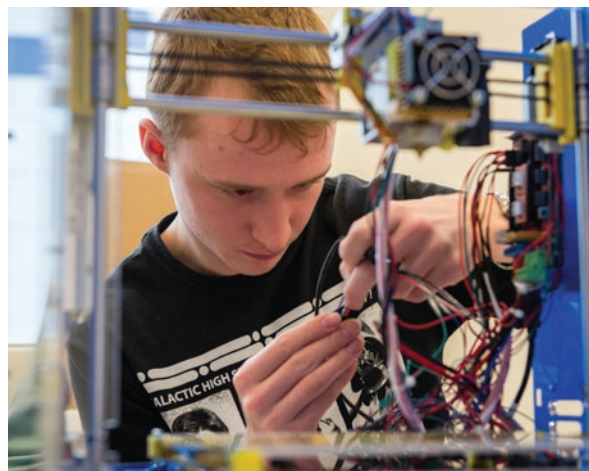
Independent Study Period

While in other Russian universities January is the time of first semester exams and subsequent vacation, for Skoltech students it's the time of the three-week Independent Study Period. Over the course of these three weeks (this year the ISP was held on January 11-29), both the students and the instructors are freed from the routine of their familiar syllabus in favour of the flexible educational process, research activities and independent studies.

All of the students, graduates, faculty and staff members, as well as guest lecturers and industry experts are invited to develop all sorts of courses, seminars, hands-on workshops and master classes to share their professional experience or personal interests. Very often the ISP courses offered by instructors have no connection with their everyday activities at Skoltech.

This year the study program was really diverse and eventful. The students were offered a wealth of interesting events, from culinary master classes, language courses and Moscow tours to practical exercises in toy design, lectures on informational and graphic design in scientific communications, "build-your-own-3d-printer" workshops and much else.

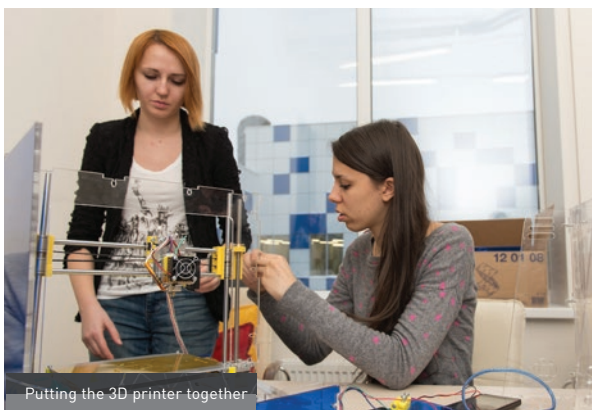
One of Skoltech's students, **Maria Goncharova**, organized just such a **"Build Your Own 3D Printer"** course for her classmates. Commenting on the course in January, Maria told us: "During the course people will learn to make their own 3D printers, find out what components and materials



are necessary, how to put it together and what software to install. Skoltech provided us with several 3D printers, and we are taking them apart, modifying them and replacing certain parts. As a result, the students will be able to put together a modified 3D printer on the basis of what we had. Last summer, four of us had an internship at the Center of Additive Technologies of Voronezhskselmash heavy machinery plant where we put together a photopolymer DLP printer, and now we're sharing our knowledge and skills with other Skoltech students."

Independent Study Period is a time to acquire new skills and learn about new ideas. It is also the time to team up and learn something new about your classmates, colleagues and professors. This time is specifically set aside to help students master the skills of organizing events and courses: they are expected to carry out the greater part of work that will make their idea a reality on their own.

Brandon Smith, who led the Toy Product Design course during the ISP, spoke about the way things are organized in the student workshop: "The first time we organized this course was at FabLab* of the National University of Science and Technology MISiS. The FabLab, headed by Vladimir Kuznetsov, became our partner for this course. The course itself is made up of lectures and hands-on workshops. First the students attend a lecture on games and toys and then they go to the lab and learn to operate a laser cutter. Then it's back for another lecture — this time on creativity and design, and then back to the lab to work with 3D printers and other hardware. This year we held a preliminary presentation of the toy prototypes created by the students and then organized a final presentation and invited some late development kids

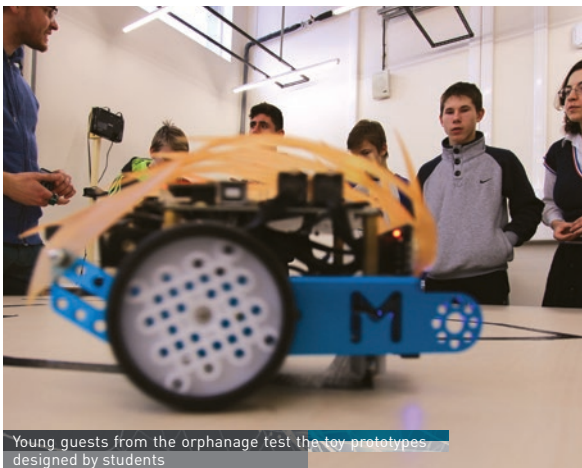


Putting the 3D printer together

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from the orphanage. It was very interesting and useful, both for the students of Skoltech and MISiS who worked together, and for our little guests who were given an opportunity to test the prototypes. After the testing it became clear to us that the best toys are actually very simple, and that the toys come to life when people actually play with them!”

* Fab Lab is a technological platform for digital fabrication and prototype creation. A fab lab is generally equipped with an array of flexible computer-controlled tools that allow the users to make “almost anything,” going from the draft table to prototype creation in a short period of time.



Young guests from the orphanage test the toy prototypes designed by students

The three-week January period is also meant to give students a chance to take active part in all kinds of Skoltech activities that are unavailable to them during regular semesters due to shortage of free time. There were both on-campus and off-campus events.

Alexandra Sveshnikova, a PhD student of the Energy Systems Department, organized an ISP course surprisingly titled “How to Get Lost in Moscow.” This is what she said about the course’s goals and results: “The goal of the course was to explore the interesting and hidden places of Moscow and to learn about their history too. Many Skoltech students lack much free time to explore the city and this course was designed to help them discover new places while learning about the Russian capital’s architecture and history. I’ve met many foreigners who had a somewhat wrong impression of our country, and I developed this course in order to shatter the common stereotypes and show the real beauty of Moscow!”



Participants of the «How to Get Lost in Moscow» course

Organization and participation in ISP courses is not the only thing available to students during this three-week period. They can also set their own syllabus, work on individual projects and collaborate with their professors. The instructors are encouraged to try out new teaching methods and educational process formats and to introduce innovative educational experiments as part of the ISP.

Ivan Konstantinov, the founder of Visual Science company and instructor of the Information and Graphic Design in Scientific Communications course, also shared his impressions of the successfully completed study period: “Our team has been engaged in scientific visualisations, design and communications for seven years. We know that even the most basic of skills necessary for designing illustrations, presentations and posters can do a lot towards advancing the communication process. It doesn’t matter whether the scientist is in communication with other scientists, with a wider audience or with investors. The goal of our course was to provide the students and researchers of Skoltech with an understanding of how to use basic graphic design skills to help with their most pressing tasks — creation of graphs for articles and reviews, compilation of presentations and posters for scientific conferences. We had worked with professor Konstantin Severinov who heads Skoltech’s Center for Data-Intensive Biomedicine and Biotechnology on several projects and he suggested that we organize a special course for Skoltech audiences. The most important thing is that the students and researchers gave us high marks, and confirmed our hopes that the course would be useful, interesting and beneficial for them.”

Education @ Skoltech

Fedor Chervinsky

Major at Skoltech: Information technology with focus on machine learning and data analysis. I work with Skoltech Computer Vision Group and professor Victor Lempitsky.

First impressions of Skoltech: My first impressions of Skoltech are from March 2014, when I came to my first Selection Weekend, as an applicant. I was deeply impressed, it seemed like it all was happening in some other country, in another world. I was shocked by Skoltech leadership's attitude towards education, towards opportunities, towards the students, which was completely different from anything I've seen.

Study abroad: Massachusetts Institute of Technology (MIT), USA

My experience abroad: I've spent 4 months at MIT and can say with confidence that the knowledge and skills I gained there were definitely worth the effort, time and financial resources. I took three courses at MIT — Advances In Computer Vision, Statistical Learning and Applications and Computational Cognitive Science. The two latter courses were taught by the Cognitive Science Department, so I made another step towards my dream - to combine state-of-the-art technologies and advancements of both the computer and cognitive science in my work.

All three courses had no final exams, but in the end of the semester students were expected to hand in a completed research project. The projects were interesting, and I'm using some of the results in my current research and in my thesis preparation. For the Computer Vision course I worked together with another Skoltech MSc candidate Sergey Muratov on training artificial neural networks to recognize locations by photo, and for Cognitive Science I improved face recognition system using an approach from probability theory, that are used for modelling human cognition.

In addition to all these formal things, MIT students had shown me an example of great productivity and Boston residents inspired me to live healthier. I learned to recycle and to keep an eye on the dollar exchange rate, mastered the American traffic laws and trained to operate a small sailboat (at the MIT sailing club)

Biggest achievement to date: I would say that my biggest achievement to date is that some time ago I understood what it is that I want to dedicate my professional life to, what interests me the most and which principles I want to follow while doing this. Since that moment, I am constantly moving in that direction.

Goals for the next 3 years: My goal is to find 3-years-older myself as far from present myself as I am now from myself 3 years ago. Or even further. I plan to gain professional skills, as in the field that work in (deep learning and artificial neural networks) there is an opportunity to become a unique and invaluable specialist. I've already started to work in industry and I can tell, that the market for this kind of technologies is almost infinite, and opportunities as well as threats are yet unexplored. And it depends in particular on me personally, how the Artificial Intelligence is going to be used in the future - for the common good or not.



Education @Skoltech

Elena Gromova

Major at Skoltech: Energy Science and Technology;
Hydrocarbon Recovery

First impressions of Skoltech: I remember those mixed feelings very well. I discovered the opportunity to apply to this mysterious technical institute quite by accident, from one of the emails that I usually considered spam. Although the deadline for the application was almost over, a month later I was in Moscow for the Selection Weekend. I felt very emotional, a bit scared and unsure of what I was doing here, and actually I still feel this way sometimes (just joking). The most surprising thing was the degree of freedom allowed here compared with conventional Russian universities. All the students were so different, smart and interesting — and later I discovered that all people here are like that! It's possible that such educational system is better suited to unlock the intellectual and creative potential of students.

Study abroad: University of Calgary, Alberta, Canada

My experience abroad: When choosing a study destination many factors should be considered. It was not a random choice to study in Calgary. Usually, Olympic Games is the only thing that reminds people of this city, but for petroleum engineers it means much more. As soon as I learned about Skoltech's cooperation with the University of Calgary, I realized that this is my chance to reinforce the knowledge received in Skoltech and to do more practical work. This relatively new university has many well-equipped laboratory facilities. I got an invaluable experience: learned how to work with the special equipment and do experiments with core samples and oil. All petroleum engineers should have experienced it, to be able to explore the characteristics of reservoir fluids, reservoir simulation studies, reserve estimation and EOR (Enhanced Oil Recovery). Since my primary research interest lies in natural gas hydrates and I participated in the Floating University expedition on Lake Baikal, I chose the courses related to this topic in order to go deeper in gas learning.

Another important and great thing about studying abroad is the travel and ability to experience different cultures. I will always remember it as an unforgettable time. The nature around the city is the most incredible thing about Calgary, it has mountains, waterfalls, lakes, Chinook wind (which can raise winter temperature up to 20-30 degrees Celsius), and Aurora Borealis.

Biggest achievement to date: As part of my Masters' thesis I am working on industrial project for Gazohim Techno, member of the Skolkovo Energy Cluster. If this leads to the construction of experimental installation for



gas utilization that will be then put into operation on the fields with associated petroleum gas (APG) flares, I will consider it partly my personal achievement.

Goals for the next 3 years: The project I am currently working on is the most important thing for me. Development of a transportable installation for processing APG to methanol is both commercially viable and environmentally important. Even after finishing the Masters' program at Skoltech, I will continue to work on this project.

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First impressions of Skoltech: I was a part of Skoltech's first class and at that time Skoltech gave the students a unique opportunity to develop their academic projects under the tutelage of world-class scientists (it's actually still unique in this regard). Here, at Skolkovo Technopark, you can always find amazing people who will not only listen to your ideas, but will support you and help you develop them further. The educational process is very focused on students who get to decide what is really interesting to them. The lecturers and professors of practice are real professionals in their fields. Skoltech is a place where you want to work and where you enjoy yourself doing it.

Study abroad: University of Copenhagen, Denmark

My experience abroad: Another perk of studying at Skoltech is the opportunity for study abroad. I went to the University of Copenhagen in Denmark. It was an invaluable experience, because you have a unique opportunity to see how another university and other labs are set up, but also to have a different viewpoint of the problem, to learn new methods and new skills with new instruments, all the while working on your project. My colleagues from the Center for Bacterial Stress Response and Persistence are great specialists in the field of toxin and anti-toxin bacterial systems and development of persistence among the bacteria. I was working in both of these fields and supplemented my knowledge with new methods of research, including the pulse-chase analysis and work with high-resolution microscopes. I'm very grateful to Skoltech and Kenn Gerdes' lab for the time I spent there and the skills I acquired.

Biggest achievement to date: My biggest achievement is that I found the field of research, which really interests me. Every day I want to go to the lab, to come up with new experiments and to learn something new. It's very important to do what you love.

Goals for the next 3 years: In the near future I plan to focus on my project and my PhD thesis. I hope that the PhD status won't be the end of my academic career and I will continue to perfect my biomedical skills and knowledge.

Yulia Piskunova

Major at Skoltech: Biomedicine and biotechnology, molecular biology. Skoltech Center for Data-Intensive Biomedicine and Biotechnology



Education @Skoltech

Daria Stepanova

Major at Skoltech: Space science and technology



First impressions of Skoltech: My Skoltech experience began with the Innovation Workshop. From the very first day we were involved in teamwork, we generated ideas and got in touch with new technologies far outside of our fields of study. I really enjoyed the atmosphere and being around highly-motivated and interesting people. This course left me with only positive emotions, encouraged and inspired me for future work and studies. Now it's my last semester in the Master' program, but the atmosphere and people around remain the same and I really hope that Skoltech will preserve these qualities.

Study abroad: École polytechnique fédérale de Lausanne, Switzerland

My experience abroad: I had an opportunity to participate in the year abroad program and for my university I chose EPFL in Switzerland. In addition to the beautiful Swiss nature, EPFL has a very strong educational program with bright professors and fully equipped labs. At EPFL I had an opportunity to strengthen my knowledge in the fields of electronics, control and communications, and to use my new skills in various projects. I worked at the Swiss Space Center

and took part in Cube-ETH Cubesat development. I had to develop drivers to transmit information between different subsystems and to do a pcb design of 6-layers board.

Biggest achievement to date: I hope that result of my thesis project will be my biggest achievement. I'm currently involved with the MONSTER project (launching stratospheric balloons with optical communication payload) and I'm responsible for the pointing and tracking subsystem. In other words I have to provide stable communications between two balloons, factoring in all the interferences and errors. Thus my biggest achievement will become a reality at the end of April, when my work will be proved experimentally.

Goals for the next 3 years: First of all, to successfully graduate from Skoltech and to be accepted into the doctorate program. Speaking more generally, for the next 3 years I want to develop and grow as a space technology specialist, and to obtain as much experience as possible in the field of small satellite development. The fitting result of this work would be a participation in some satellite design project with its subsequent launch into space.

Education@Skoltech

DeepHack DemoDay Comes to Skoltech

On February 6 Skoltech hosted the DemoDay of the DeepHack Q&A international deep learning and machine intellect hackathon. The event was aimed at summarizing the results of the DeepHack Q&A hackathon, which took place on January 31 - February 5 at Moscow Institute of Physics and Technology (MIPT). Hackathon participants tried their hand at solving the fundamental scientific problem — finding intellectual answers to the questions about the surrounding world.



The event began with the presentation by **Alexei Sitnikov, Skoltech's Vice-President for Institutional and Resource Development**, who welcomed the experts and participants to the institute and then proceeded to tell the audience about Skoltech. "We make smart folks rich! We don't just teach them, we explain how to use this knowledge in practice, - Sitnikov stressed. - Any class that you take concludes with a practical application, with creation of a prototype, a project, something that you can touch and see to measure its effectiveness. This is one of the tenets of the innovative educational approach used at Skoltech."

The program of the final day featured an abundance of scientific lectures and presentations. One of the presenters was **Skoltech professor Victor Lempitsky** who talked about the Computer Vision group's projects and called on all of the hackathon's participants with interest in this field to apply to Skoltech. The address by **Evgeny Kuznetsov, Deputy General Director, Program Director and member of the Board of the Russian Venture Company (RVC)**, was especially memorable. He spoke about neuroscience, the way it will change the world, and opportunities to be a part of this process.



Alexei Sitnikov, Skoltech's Vice-President for Institutional and Resource Development

The main objective of the hackathon was to gather talented students, PhD candidates, young scientists and IT industry professionals for a big brainstorming session of a very difficult problem — the search for intellectual answers to questions using classical methods of work with natural language and deep learning algorithms. The results of recent research have demonstrated that the neural algorithms of deep learning significantly surpass the classical methods of working with natural language in tasks such as speech recognition, machine translation, recognition of tones in sentences and parts of speech. But there are still many unresolved problems in the field of dialogue and Q&A systems.



Victor Lempitsky, head of the Computer Vision group

"We realized that the fundamental problems that are being solved by our teams can be — as practice shows — rather quickly implemented as business products. And Skolkovo is precisely the place, which allows for establishment of a certain interface between academic research and final product, - says **Mikhail Burtsev, PhD, organizer of hackathon's science school** - And so we came together and decided to do a two-part hackathon. The first part is

Education @ Skoltech



The winners of Skolkovo Foundation prize at DeepHack DemoDay with Albert Efimov

all about research, while the final day is all about practice, when the participants can present their projects and receive evaluation and support from Skolkovo.” “However, the projects that were presented today, - Burtsev added, - were not related to the problem that the teams had been working on for the last week. These projects were created separately, but with the use of deep learning technology.”

Fifty participants were selected for the hackathon and split into 12 teams. Their main task was to surpass the best global achievements in the field of Q&A systems to address The Allen AI Science Challenge — a pertinent science problem that was published by the Institute for Artificial Intelligence of Microsoft co-founder Paul Allen on Kaggle, an international competitive platform for machine learning. To this end, the participants worked on designing their own algorithm in order to produce software that would be capable of teaching itself to answer 8th grade-level questions. As

part of the hackathon’s science school, the world’s leading experts from Google Deepmind, Facebook AI Research, openAI, Skoltech and other research institutions delivered lectures on deep learning and its application to the problems of natural language processing. As a result, all 12 teams that took part in the hackathon made it to the top 50 of the 700 teams registered at Kaggle.

“I am grateful for the opportunity to participate in hackathon and to be here today, - **Rob Fergus, leading researcher at Facebook AI Research**, welcomed everyone. - It was very interesting to work with the teams, folks asked good questions and offered exceptional solutions to set tasks. We look forward to seeing these people on a summer internship at Facebook AI Research.”

Unique prizes were prepared for the winning teams — a trip to the international NVIDIA GTC 2016 science and technology conference, a mini-grant from the Skolkovo Foundation for the team with the most interesting business idea based on research, a chance for a summer internship at Facebook AI Research and much more.

“Deep learning of neural networks is the most important direction for the development of artificial intelligence technologies, which the field of robotics requires to a great extent. Therefore, it’s very important for us to identify all the people working on this topic. We will offer them new and interesting challenges that solve specific application problems, - said **Albert Efimov, Head of the Skolkovo Robotics Center**. - As a special prize from Skolkovo, we decided to give the winning team a 5 million ruble grant that will allow the team to focus on project’s development. Recognition by the expert community is an important step on the path to success.”

Generation Gap team were the winners of the hackathon who received an opportunity to go to the international NVIDIA GTC 2016 science and technology conference and the right to audition for the summer internship at Facebook AI Research. 5vision team were the runners-up. Special prize from the Skolkovo Foundation was granted to Ashmanov’s Neural Networks team for their puzzle.ru project.

Cooperation @Skoltech



Professor Alessandro Golkar makes a presentation about Concurrent Engineering and Design Lab

On February 8, while Russia celebrated the Science Day, the Skolkovo Institute of Science and Technology welcomed delegation from the Helmholtz Association, Germany's largest research organization. It's made up of 18 natural science, technology and biomedicine research centers staffed by almost 40,000 employees.

The delegation, headed by Dr. Otmar Wiestler, the president of Helmholtz Association, was received by the Honorary President Edward Crawley and academician Alexander Kuleshov, who assumed the office of the president on February 12. Speaking after the meeting, Dr. Wiestler said that the sides determined the promising fields of cooperation in biomedicine technologies, computational neurobiology and energy. Alexei Sitnikov, Skoltech's Vice-President for Institutional and Resource Development, believes that cooperation between the Skolkovo Institute of Science and Technology and Helmholtz Association will be beneficial for everyone — students, professors and business circles.

Skoltech was the first stop in the German scientists' three-day visit to Russia. Elena Eremenko who heads Association's Moscow office told us: "This is the first official visit to Russia

for the president of Helmholtz Association, and he asked us to organize a visit to Skoltech. He's heard a lot about this institute and wanted to visit it personally."



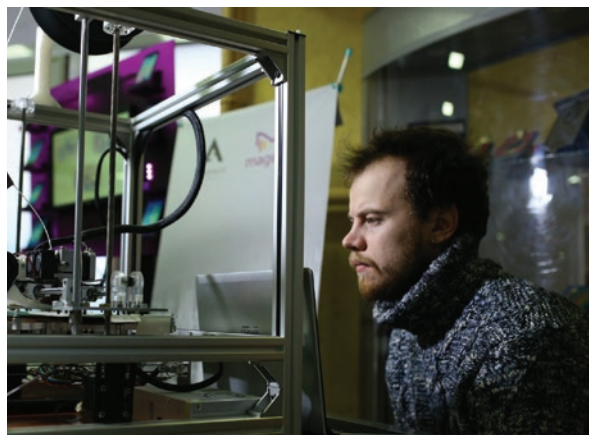
President of Helmholtz Association Otmar Wiestler and Skoltech President Edward Crawley

Otmar Wiestler called Skoltech a "fascinating new endeavour." "What I find particularly appealing is this idea of training students early on for future innovation, not so much for academic research," he said.

Cooperation@Skoltech

Startup Tour in Irkutsk

February 1 in Irkutsk marked the start of the next Skolkovo Startup Tour — Russia's most ambitious road show in search of promising innovative projects. Last year the innovative road show began in the south of Russia, in the city of Rostov-na-Donu. This year it will move from the east to the west. In addition to ten Russian cities the road show will also visit Kazakhstan's Almaty and Belarussian capital Minsk. The finalists of all stages will take part in the Startup Village conference that will be held at Skolkovo in the beginning of June.



Irkutsk was visited by a large group of experts and employees of the Skolkovo Foundation and representatives of Skoltech who held a number of master classes for the participants. Dmitry Pebalk, Skoltech Innovation Program Manager, gave a presentation entitled "Innovations from the University." He spoke about the relevant Skoltech programs, particularly the Translational Research and Innovation Program that assists Skoltech researchers in creation of new product prototypes, and the Innovation Workshop project that unites the new students with common challenges and teaches them their first technological entrepreneurship skills. Andrei Kazak, leading research scientist of the Center for Hydrocarbon Recovery, spoke to the participants of Startup Tour about the Center's current research and projects. Skoltech is always on the lookout for the most gifted and motivated students, and so another visitor to Irkutsk was Anna Nikolaeva, Manager for Student Outreach, who told the audience about various educational programs, application procedures and student life at Skoltech.

The second day of Startup Tour was dedicated to the project competition, in which the residents of Irkutsk were joined by teams from nearby regions. More than 100 projects were presented during the pitch session and the expert jury selected 15 finalists in five fields — IT, Energy and Energy-Efficient Technologies, Biological and Medical Technologies, Industrial Technologies and Materials, and Biotechnologies in Industry and Agriculture. All the finalists were given the right to participate in the Startup Village competition, organized in part by Skoltech, without undergoing any additional expert evaluation.



One of the Day 1 lectures

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Startup Tour in Vladivostok

On February 4 and 5 Startup Tour in Vladivostok was attended by more than 500 participants — young entrepreneurs and scientists from Amur, Magadan and Sakhalin Regions, Republic of Sakha (Yakutia), the Jewish and Chukotka Autonomous Regions, Kamchatka and Khabarovsk Regions. The regional competition produced 15 finalists who won the recognition of the experts and investors of the Russian innovative market.

Internationally acclaimed mathematician, academician Alexander Kuleshov, who assumed the office of Skoltech's president just a week later, on February 12, spoke to the Startup Tour's participants on the first day, February 4. Academician told the audience that he came to Vladivostok because of Skoltech's interest in cooperation with the Far Eastern Federal University. "In the very near future we will send a delegation of top caliber professors who work at Skolkovo Institute of Science and Technology and we will begin to set up educational tours and short-term intensive lecture courses that will last a couple of weeks or a month. We will start with biology, because the Far East is known for its maritime biology research. We now have an extensive program of collaborative research activities," said the new president of Skoltech.

In addition to academician Kuleshov, the team, which represented Skoltech in Vladivostok, consisted of Alexei Sitnikov, Vice-President for Institutional and Resource



Development, Ilya Dubinsky, Director of the Center for Entrepreneurship and Innovation, Andrei Kazak from the Center for Hydrocarbon Extraction, Anna Nikolaeva, Student Outreach Manager, and Elena Barinova from Skoltech's communications team.

The second day of Startup Tour was devoted to the competition. The teams that survived the preliminary selection process presented their projects to the jury of competent experts and venture investors. Kamila Zarubina, one of Skolkovo Foundation's experts, admitted that "to me it seemed that the quality of projects at Vladivostok was the highest I've seen in my three years with the Startup Tour."



Skoltech Center for Hydrocarbon Extraction brochures

Cooperation@Skoltech

Startup Tour in Novosibirsk

February 9 and 10 marked the dates of the third leg of the Startup Tour whose destination this time was Novosibirsk. The event was attended by more than 500 participants that included entrepreneurs and scientists from the Altai, Kemerovo, Omsk and Tomsk Regions. The first day program was traditionally given over to educational sessions and lectures, and on the second day the previously selected teams presented their projects to the experts of the Skolkovo Foundation and venture investors from different funds. The most popular fields in this particular competition were the biomedical technologies and energy, which drew the greatest number of participating teams.



Skoltech was represented in Novosibirsk by Bram Caplan, Alexei Cheremisin and Igor Seleznev. Caplan, Director for Student Affairs, spoke to the participants of Startup Tour about educational programs and student life at Skoltech, while Seleznev, Director of Research at the Center for Entrepreneurship and Innovation, gave a presentation detailing approaches used at Skoltech that allow the scientists to overcome the barriers between their fundamental research and final products with a clear market demand. He explained that even during the early research stage it's important to go out of the lab in search for potential applications and to closely interact with the industry. Cheremisin, Deputy Director of the Center for Hydrocarbon Recovery, shared the stories of current research in this field and spoke about the center's projects.

Kirill Kaem, Vice-President and Executive Director of the Skolkovo Biomedical Technologies Cluster, noted that the representatives of the

Skolkovo Foundation "are always happy to visit Novosibirsk because the quality and level of preparation of the local teams is always very high." He expressed hope that cooperation with the region will continue to strengthen and once again extended an invitation to the Startup Village to all of the finalists.



Participants of Startup Tour Novosibirsk

Cooperation @Skoltech

Startup Tour in Chelyabinsk

On February 15 and 16 the Startup Tour came to the capital of Southern Urals Chelyabinsk. The two-day event drew entrepreneurs from all over the region, as well as from Kurgan, Sverdlovsk and Tyumen Regions, and Khanty-Mansy and Yamalo-Nenets Autonomous Regions.



Skoltech representatives had once again joined the “landing party” of Skolkovo Foundation experts and venture investors. The Skolkovo Institute of Science and Technology was represented in the Southern Urals by Sergei Ulyakhin from the Center for Entrepreneurship and Innovation and student Dmitry Zhestkov, himself a native of Chelyabinsk. Ulyakhin shared with the audience the first stories of success among Skoltech students and graduates. Thanks to the skills acquired at the institute, they were able to introduce their innovative products

to the Russian and global markets. Ulyakhin also spoke about Skoltech’s policies in the sphere of intellectual property and about assistance provided to the scientists by the institute’s Knowledge Transfer Office. Zhestkov who combines his studies with work at the Center for Energy Research told the participants about educational programs and student life at Skoltech. Dmitry even had a quote in the news story about the Startup Tour that was prepared by the local TV channel.

The traditional second day pitch session was entered by 168 regional teams. Almost half of all the proposals were in the field of information technologies. Just like in previous cities, the expert jury selected 15 finalists in five fields, and now we await their visit to Skolkovo in the beginning of June, for the outdoor competition Startup Village.



Jury of experts



Skoltech student Dmitry Zhestkov talks about student life

Research@Skoltech

Mission to Mars

For six ambitious Skoltech students the new year began with a truly unique experience. On January 9 the team, which was given a name "Crew 161," arrived to the state of Utah to begin a mission at the Mars Desert Research Station, a simulated Mars surface exploration habitat set up in 2002 by the Mars Society whose activities are directed at the future exploration of the Red Planet.



For two weeks the team lived in conditions that closely resembled the ones on Mars, conducting all sorts of research and experiments aimed at studying the possibilities of future human colonization of Mars. Members of the crew took soil samples and examined their composition. They studied the possibility of growing plants on the surface of the Red Planet and worked on the development and operation of a robotic arm that can automatically scoop up soil samples changing the force and shift of the grab.

In addition to the daily research, engineering check-ups, analytical work and compilation of daily reports, members of the crew had to deal with the difficult psychological aspects of isolated life with limited options and resources. Activities outside the "space ship" became a serious experiment in themselves: going outside, the crew members would put on the heavy space suits and oxygen tanks, and they operated all-terrain vehicles like real astronauts.

Each day the team would meet twice for consultations to assign the tasks, the students conducted research both inside and outside of the space ship, and they kept in constant communication with the control center, reporting on their successes and coordinating all the steps. All of this helped to produce a real team spirit among the Skoltech students who did a lot to keep this spirit alive. In the evenings the crew members would play board games, share their high school memories, and expand each other's horizons with stories of their countries and conversations about science, faith, world peace and future space exploration. Each day "Crew 161" compiled reports that can be found on the Mars Society's website.



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Following the mission and “return to Earth,” the students shared their impressions.



Divya Shankar (team captain): “As commander of Crew 161, it has been a great honour to lead this team of highly-talented individuals to push the boundaries of our understanding of Mars. As a person, I learnt to lead by example, listen to all crew members and gauge every decision as per what’s best for the team. I am glad that our mission has been hugely successful: we formed life-long friendships and made some important progress with our research projects.”

Natalia Glazkova (health and safety officer/biologist): “Overall it was definitely one of the greatest learning experiences with an opportunity to apply the accumulated knowledge and explore my own resources. I’m very thankful to my most amazing Crew and Mission Support who helped to easily overcome all of the challenges and made my stay on the Red Planet unforgettable.”

Veronica Shteyngardt (astronomer): “During the mission, I expanded my astronomy skills, and tried new techniques in astrophotography. I accomplished my plans only partly: caught

a sight of the comet, made a picture of the Moon, but I wasn’t able to make a series of pictures of the Moon to track changes and I also failed to record the occultation of Aldebaran by the Moon because of the weather. It taught me to plan astronomical observations with greater care, even when working in the most promising place weather-wise.”

Adeniyi Adebayo (executive officer/journalist): “I learnt a lot from the other crew members: assembling a robot with our crew engineer, making pancakes and tending for plants with the crew biologist, the wonders of astrophotography with our crew astronomer and lots of interpersonal and leadership skills that cannot be quantified with our crew commander. I thoroughly enjoyed my time here at MDRS and will be taking home with me a myriad of stories about Mars, our crew and our research projects.”

Mahbubur Rahman (engineer): “Spending time with different crew members, discussing and understanding each other’s points of view on different topics, has been a great input to my personal worldview. This is an experience I will never forget.”

Mikhail Khmelik (engineer): “This trip to Mars was one of the most exciting and intense for me. I realized that even though space exploration is very romantic, it is a very difficult job. However, I’m eager to continue pushing the limits and maybe one day become a real Martian engineer.”

In their final report to the control center, the Skoltech Martian crew wrote these words: “The crew expresses its immense gratitude to our alma-mater: the Skolkovo Institute of Science and Technology for the amazing opportunity to be at the frontiers of space research and exploration.”



Research@Skoltech

Robotics Lab

We continue to tell you about the new labs that are opened at Skoltech and their research.

The Robotics Lab at Skoltech opened at the very end of 2015, and now the students of robotics have full access to the most advanced and hi-tech equipment. The lab has a state-of-the-art 3D printer, a Nao robot, several models of the Webot telepresence robot, a few flying drones, Phantom Omni tactile display, computers with all the necessary software, drilling machines, racks full of instruments and parts, and much more.



Webot telepresence robot



A separate auditorium that will soon become a part of the lab will be used to create Russia's first platform for testing all sorts of activities of the swarm of drones. In order to do that, the room will be outfitted with special high precision cameras that will monitor the flying drones, as well as foam pads and netting that will catch the falling machines to prevent damage. "We are designing the

future here, proving that world-class robotics projects can be developed in Russia. And we are just starting!" says Dzmitry Tsetserukou, Skoltech professor and head of the Robotics Lab. Tsetserukou completed his PhD studies at the University of Tokyo, Japan, and established a successful lab at the Toyohashi University of Technology before joining Skoltech faculty.

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The students who study robotics under Tsetserukou's tutelage presented their projects that were designed in a matter of just ten days after the end of the 45-day course. One of the presentations was not just a final project for the robotics course, but a prototype of the robot that will take part in the annual international robotics competition Eurobot 2016. "We are making two autonomous robots that will solve specific tasks. The tasks are determined by the rules of this year's competition, - says the Skoltech Eurobot team. - One of the robots will be building a castle out of cubes, cylinders and cones. In order to do that, we are currently working on a special type of mechanic arm that will allow us to build towers inside the robot and then unload them onto the platform. The other robot will perform the remaining tasks, one of which is to catch fish from a special pool and to transfer

it to the net. We are also creating a special mechanic arm for this. We are designing the electronic insides of both robots, and we're working with special circuit boards that are used to plug in the engines, servo drives and all kinds of sensors essential for the performance of the set tasks."

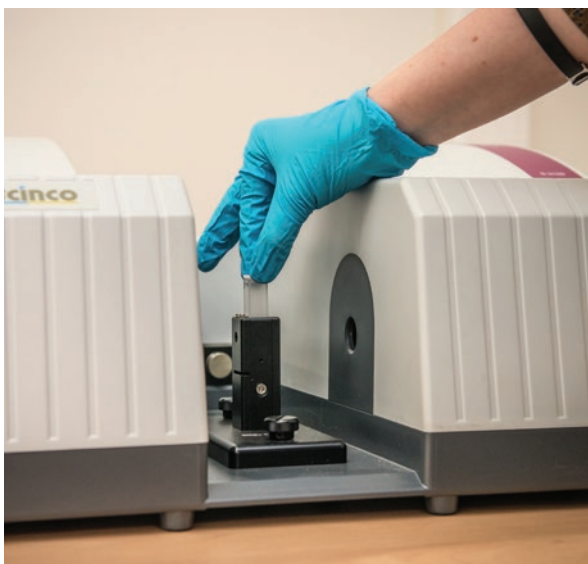


Prototype of the robot that will take part in the annual international robotics competition Eurobot 2016

Research@Skoltech

Energy research at Skoltech

The energy research, education and innovation at Skoltech concentrates around three Centers.



Power systems around the world are undergoing a period of unprecedented change due to penetration of distributed and renewable energy, smart metering, EV's, batteries and advances in ICT. The Skoltech Center for Energy Systems addresses those challenges by undertaking an interdisciplinary effort of scientists from many disciplines: engineers, mathematicians, physicists, economists, social scientists, political scientists and others. We collaborate closely with MIT, Caltech, Newcastle University, University College Dublin and some of the best Russian institutions in order to create a cyber-physical energy system able to deal with the challenges of the 21st Century. Our particular strength is in applying advanced mathematical methods to solve new (and also some old) energy systems problems. Our research covers not only power systems but generally energy systems due to close interactions between power, gas and heat networks. This is especially important in Russia because of wide utilization of district heating.

The main goal of Skoltech Center for Hydrocarbon Recovery (SCHR) is to provide world-class research, education and innovations in the area of exploration and production of unconventional and hard-to-recover hydrocarbons. Main areas of SCHR activity are geomechanics, enhanced oil recovery,

geophysics & petrophysics of unconventional reservoirs, gas hydrates and advanced reservoir simulations. We focus our research efforts on development of new technological solutions for exploration and production of hydrocarbons at brown fields, tight oil, heavy oil, shale oil, oil fields in polar regions and Arctic shelf. SCHR develops collaboration with world leading universities including Texas A&M University, University of Calgary, Heriot-Watt University, and others. The Russian partners include Moscow State University, Bashkir State University, Russian State University of Oil and Gas, and the Institutes of Russian Academy of Sciences.

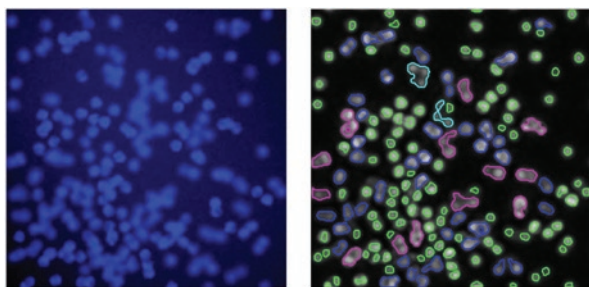
The development of advanced electrochemical energy storage technologies offers significant benefits for global economies, the environment and world energy diversity. The Skoltech Center for Electrochemical Energy Storage integrates research, education and innovation in a new university model to help support the energy industry in Russia and the world. Its charge is to develop and demonstrate materials, devices and systems that will provide the basis for innovative opportunities for energy storage technologies; and to enable impacts such as reducing the need for reserve power plants, cutting the cost of power failures, and in enabling renewable energy in wind and solar. In particular the inter-related energy storage technologies, batteries and fuel cells, serve as the core technologies that are being developed to assist Russia in diversifying its technology base and energy technology portfolio. Along with the development of light-assisted solar energy conversion schemes these technologies have the potential to span a broad range of applications due in part to their variable storage capacity, low maintenance, efficiencies and projected lifetimes.

By Professor Janusz Bialek



Research@Skoltech

Victor Lempitsky, the Associate Professor at Skoltech and head of Skoltech Computer Vision Group, and his colleagues Carlos Arteta, Alison Noble, and Andrew Zisserman from the Oxford University have developed a new method for highly accurate detection of objects in microscopy images. Their work was published in Medical Image Analysis.



The result of the method (right) on the challenging fluorescence microscopy image (left)

Object detection in microscopy images, such as detection of cells, cell colonies and nuclei, is a crucial step in many biological experiments. This kind of analysis can be performed on its own to determine the presence and to count the objects of interest (such as cancer cells in pathology images), but it can also serve as a starting point for further investigations (e.g. object segmentation or tracking).

Most computer vision methods used for understanding images with multiple overlapping objects fall into two classes. Methods that belong to the first class are based on individual object detection, while methods of the second class avoid the detection of individual instances but instead perform analysis based on local or global texture and appearance descriptors. The choice of the most appropriate method depends on the degree of overlap between objects and on the object density. Lempitsky and his colleagues developed a method that combines the advantages of both approaches. It demonstrates high accuracy in cases when microscopy images contain both high and low object density regions. Moreover, the researchers have developed a pre-processing module that allows their method to handle particularly challenging scenarios, such as detection on noisy microscopy images.

Skoltech PhD students Alexandra Gorkina, Evgenia Gilshteyn and Alexey Tsapenko, working with professor Albert Nasibulin, had recently reported on developing a novel carbon nanomaterial that can be used as a transparent conductor in modern electronic devices.

The results of the study have been recently published in Carbon, a prestigious journal dedicated to the scientific advances in the field of carbon materials and carbon nanomaterials. The method of nanohybrid synthesis, designed in the Nanomaterials Lab, is simple and inexpensive. The technological process includes spray deposition of graphene oxide (GO) onto CNT films, GO reduction in ambient or reducing atmosphere, and, finally, chemical doping of the samples with gold (III) chloride. Compared with optoelectrical performance of CNT/graphene hybrids reported in relevant publications, the samples produced by Skoltech researchers show superior performance.

Transparent conductive films (TCFs) are widely used in modern electronic devices such as organic light emitting diodes (OLEDs), liquid crystal displays (LCDs), touch screens and solar cells. Modern day standard transparent conductive films are based on rare metal oxides, such as indium-tin oxide (ITO), which are scarce and are therefore becoming increasingly expensive. Various materials have been proposed as potential replacements for ITO. Among them, carbon nanomaterials (carbon nanotubes (CNTs) and graphene) demonstrate the biggest potential thanks to their extraordinary electrical, optical and mechanical properties. However, the optoelectrical performance of CNT- or graphene-only TCFs still lags behind the levels of ITO optoelectrical performance. One of the ways to further improve optoelectrical characteristics of CNT- and graphene-based TCF is hybridization of these two materials. This approach leads to creation of novel materials that exhibit better properties than the separate constituents do. Skoltech researchers have developed a novel hybrid CNT-graphene nanomaterial for use in TCFs that can potentially replace ITO in electronic devices.



Student researchers with their mentor Professor Albert Nasibulin

Innovation@Skoltech

On March 17, representatives of Skoltech's Translations Research and Innovation Program will take an active part in the roundtable discussion Ecosystem of University Innovation: In Search of Effective Solutions that will be organized in St. Petersburg as part of St. Petersburg Industrial Congress at its Smart Place Industrial venue. The discussion will center around issues whose resolution will directly affect the establishment of conditions that will foster development of new high-tech markets in Russia and appearance of globally competitive companies.

The speakers and discussion participants will include representatives of the universities and the Russian Ministry of Education and Science, entrepreneurs and industrialists, delegates from the federal and regional institutes for development, representatives of the International Proof of Concept Centers Association, the Joint Center of Technology Transfer of the Russian Academy of Sciences and ROSNANO and the Russian Venture Capital Association. Skoltech will be represented at the meeting by Igor Seleznev, Director of Research Programs and Technology Transfer, Dmitry Pebalk, Translational Research and Innovation Program Manager, and Rustam Kagirov, Translational Research and Innovation Program Specialist from the Center for Entrepreneurship and Innovation.

One of the items of the roundtable discussion will be the problem of translational research in Russia, also known as "proof of concept" approach. This topic will provide an excellent transition to the presentation of the International Proof of Concept Centers Association (IPOCA), whose creation was initiated by Skoltech.



Innovation@Skoltech

Project of Translational Research and Innovation Program to become Skolkovo Foundation resident

The expert committee of the Skolkovo Foundation has approved the project Superhydrophobic and oleophobic textile finishing in supercritical carbon dioxide, which was developed in 2014-2015 within the Translational Research Program by Mikhail Kondratenko in cooperation with a team of scientists from the Physics Faculty of Moscow State University. The team of scientists was given a right to fill out the application for Skolkovo Foundation residency.



Sample of fabric with water-resistant coating



Project team

Dmitry Pebalk, Skoltech Innovation Program Manager, who worked with Kondratenko and his team in 2014-2015, spoke of the project's success: "During the competitive selection stage, the Program specialists said that Mikhail Kondratenko's project was potentially interesting, but risky. We suggested that the team split the project into two separate stages, and said that additional financing will be decided on the basis of results obtained by the end of 2014. However, the project team was very ambitious, they began development and implementation right away and demonstrated high level of readiness to communicate with potential partners. We quickly lost all doubts about extending our collaboration into 2015. At the same time we realized that for the team

itself participation in the Program will be no more than the first step towards future practical implementation of created technical solutions. Therefore, we agreed on long-term collaboration and will be happy to assist the project, particularly in its new status of the Skolkovo Foundation resident. For Skoltech this experience is very important since now there is no doubt that the mechanisms of support of early stage projects from laboratory to first prototypes are entirely functional. We continue to develop these mechanisms further, taking into account best international practices, including those of MIT's Deshpande Center."

The subject of translational research was to develop a new technology for textile coating. After participation in the Program the team had created the prototypes of superhydrophobic textile for sportswear, nonwoven filtering materials and gas diffusion electrodes for fuel cells.

Skoltech Translational Research and Innovation Program provides critical support for the research teams, helping them identify potential market opportunities, establish proof of concept and create prototypes, and bringing them together with the representatives of real economy interested in innovation. The Program promotes applied research and motivates scientists to accept responsibility for proving the importance of their products to the consumers.

Innovation@Skoltech

Interview with Mikhail Kondratenko



Head of the research group
Mikhail Kondratenko

Let's talk about the role played by Translational Research Program in your work. What kind of assistance and connections did they provide?

Participation in the Program allowed us to get out of the lab and look at what we were

doing from a different perspective. Meetings with Program mentors helped us to structure the project and develop its commercialization strategy. Thanks to the Program, we were able to take part in a number of exhibitions (Open Innovations 2014 and 2015, Innovative Practices Congress of 2014, Startup Village 2015), where we established contacts with a number of foreign and domestic companies with an interest in our technology. These companies were Guard Industrie, Elmarco and Russia's Prompolimer LLC. With consulting assistance from the Program we signed agreements on the transfer of sample materials to our potential partners for testing. Testing at the Guard Industrie labs brought positive results. Right now we are in the process of negotiations regarding further cooperation. Financial support from the Program was also very important because it allowed us to create the first samples.

Tell us about the project itself. The aim of research was to develop a new method of textile coating with polymers. Why is this technology useful, how can it be implemented? You had applied for residency at the Skolkovo Foundation in order to scale your technology and establish pilot production. Are you going to produce the hydrophobic fabrics? Are you going to cooperate with some established manufactures? How soon to you expect to roll out production and what sort of assistance do you await from the Skolkovo Foundation?

We are offering a new and energy efficient technology of dry-method application of hydrophobic and oleophobic coating to textiles. This technology helps to:

a) significantly reduce power costs of the final treatment;

c) avoid the use and contamination of water in the process of coating as well as the costs associated with purification of used water;

b) apply homogenous coating with high hydrophobic and oleophobic properties and longevity. At this point, the nylon fabrics that were processed with our method have received a maximum grade on a standard spray test of hydrophobic properties (5 points out of 5 under ISO 4920) and a high grade in the oleophobic properties test (6-7 points out of 8 under ISO 14419). The fabrics remain hydro- and oleophobic after 20 machine wash cycles.

The innovativeness of our approach is that it uses carbon dioxide in supercritical condition as the environment for application of polymer coating. When the pressure and the temperature are raised above critical point, carbon dioxide achieves a state of high density (like a liquid), while preserving mobility levels characteristic of the gaseous state. In this state the carbon dioxide also becomes a good solvent for many hydrophobic polymers that are used as water-repellent agents in the final treatment of fabrics. This technology can be used in manufacturing of waterproof breathable fabrics for high-tech clothing, oilproof filter materials, gas diffusion electrodes for electrochemical sensors and fuel cells.

Our main goal is to launch pilot demo production line to apply our coating to fabrics so that in the future we could license this technology to the leading manufacturers of waterproof breathable fabrics (such as W. L Gore & Associates, Sympatex, Polartec and others) and filter materials (such as Ahlstrom, DuPont and others). It would be great to meet our three-year timeline. We hope that the Skolkovo Foundation will act as a co-investor and will provide the project with media support.

Changes@Skoltech

Farewell ceremony for president Crawley

On February 12, the Cohort Space on the fourth floor of Skoltech building hosted the farewell-and-greeting event, where the students and faculty said a big "Thank you!" to the institute's first president and welcomed his successor, the Russian academician Alexander Kuleshov. Edward Crawley, professor of the Massachusetts Institute of Technology, who became the president of Skoltech at its inception in 2012, was more than that for the students and graduates of the institute who considered him their "academic dad." The ceremony was very informal and touching: Crawley's colleagues used their chance to reminisce about all sorts of amusing stories that had happened over the years.



Professor Alessandro Golkar, who's known Edward Crawley for many years, spoke on behalf of the faculty. He said that Crawley's offer of a job at Skoltech was one of several that he was considering at that time. The Italian scientist placed his bet on the Skolkovo Institute of Science and Technology, moved to unknown Russia, and has absolutely no regrets. Almost everyone who spoke on that day confirmed that their work at Skoltech was a new and exciting experience for all the participants.

Professor Crawley was very touched and thanked everyone for these years. He reminded the crowd of Skoltech's ideological foundations (including the focus on innovations and their practical applications, as well as the institute's openness and international character), and spoke briefly of the principal stages of Skoltech's short history. One of these stages is the change of the school's president. "Today I'm going to be succeeded by my colleague and good friend, Alexander Kuleshov. A strong scientist, with expertise in mathematics



and information theory, areas of direct relevance to Skoltech. He is, of course, a member of the Russian Academy of Science. Throughout his career, he has worked to make connections between his science and application, exactly what we call fundamental research with a consideration of use," said Crawley handing his successor a special bell whose chimes traditionally announce the start of a new academic year.

Alexander Kuleshov, who until recently headed the Institute of Information Transmission Problems of the Russian Academy of Sciences, admitted that the new position "is both a great honour and a big, enormous responsibility." "For me personally, the main slogan is that "Skoltech is a school for the gifted." The quality of students is the cornerstone of success," academician Kuleshov said. He reminded the audience that Skoltech is the partner of MIT, "a technological talent factory", and continued: "It's impossible to overestimate the contribution that Edward Crawley made to the development of Skoltech. Any enterprise is remembered for its founder, not his successors. Ed, you've done a great job. I'm sure that we'll continue our collaboration. Thank you!"



Changes@Skoltech

New faculty and researchers join Skoltech team



Fardad Azarmi joined Skoltech as a full Professor beginning on January 25, 2016. Prof. Azarmi will be a member of the Skoltech Center for Design, Manufacturing and Materials. During his time at Skoltech, Professor Azarmi will oversee the establishment of CDM2

Additive Manufacturing Lab and continue exploring new techniques to produce advanced materials and structures for specific applications focusing on the design of high efficiency materials.



Dr. Georgii Bazykin joined Skoltech as an Assistant Professor and member of the Skoltech Center for Data Intensive Biomedicine and Biotechnology. Professor Bazykin's research interests lie in the field of biological evolution, particularly in the

field of immune system avoidance and drug resistance in pathogens, and in applications of evolutionary reasoning to medical genetics.



Dr. Aldo Bischì joined Skoltech as an Assistant Professor. Dr. Bischì will be a member of the Skoltech Center for Energy Systems. Main objective of Dr Bischì's research is the development of mathematical models for the scheduling and design optimization of CCHP systems.



Denis Demchenko joined Skoltech as Associate Professor of Practice on January 11, 2016. Professor Demchenko will be a member of the Skoltech Center for Energy Systems and he will contribute his professional expertise to the development of the broader Skoltech educational program in the Energy track.






There are also new faces at Skoltech's research labs. **Dr. Sergei Luchkin** has joined the institute as a Research Scientist to work with Professor Keith Stevenson who heads the Skoltech Center for Electrochemical Energy Storage. **Dr. Priyanko Guha Thakurta** joined Skoltech as a Research Scientist, and will work with professor Janusz Bialek who heads the Center for Energy Systems. **Dr. Armen Poghosyan** joined the team of Professor Alessandro Golkar, the deputy head of Skoltech's Space Center, as a Research Scientist. **Alexander Ivanishchev** joined Skoltech community as a Senior Research Scientist and will work with Professor Artem Abakumov at the Center for Electrochemical Energy Storage. **Elena Kozlova** will be a Senior Research Scientist at the Center for Hydrocarbon Recovery and **Daria Kopylova** joins Professor

Albert Nasibulin at the Center for Photonics and Quantum Materials as a Research Scientist.



Skoltech in social networks

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