



# World of MEPHI

February '20



**FUTURE IS**

**PURCHASED**

**BY THE PRESENT**

## NEWS

## GRADUATION OF FOREIGN STUDENTS HELD AT MEPhI

On February 13, the graduation ceremony was held at Moskvorechye Cultural Center. Diplomas of National Research Nuclear University MEPhI on higher education in the field of nuclear energy have been granted to the 81 students from Turkey and Vietnam. Among the 2020 graduates, one graduated with honours - Ozlem Arslan.

The diploma awarding ceremony was attended by the Rector of MEPhI Mikhail Strikhanov, HR Director of Rosatom State Corporation Tatyana Terentyeva, HR Director of Akkuyu Nuclear JSC Yulia Zholobova, the Undersecretary of the Embassy of the Republic of Turkey in the Russian Federation Zeynep Savas, and the Acting Director General of the Department of Nuclear Energy and International Projects of the Ministry of Energy and Natural Resources of the Republic of Turkey Ibrahim Halil Dere, First Secretary of the Education Department of the Embassy of the Socialist Republic of Vietnam in Moscow Lee Tien Hung, as well as Director of MEPhI Institute of Nuclear Physics and Engineering Natalia Barbashina and her Deputy Director Georgy Tikhomirov.

"As you know, MEPhI is one of Russia's leading universities, as

well as the basic university for training personnel of Rosatom State Corporation. You have acquired in-depth knowledge and skills that will help you make a brilliant career. You will represent the scientific and technological elite in your countries. I believe we will meet again, but already at the places of your work. You have a great future ahead, congratulations!" — said Rector of MEPhI.

Representatives of the embassies of Turkey and Vietnam congratulated the young specialists stressing that MEPhI graduates will apply their knowledge, skills, competencies, and thus will make a significant contribution to the development of their countries. They also wished them success and to keep the desire for knowledge.

"Each of you has contributed a piece of yourself to MEPhI development. I hope that you will take with you a skill to learn, to communicate, to solve complex problems and, of course, a skill to relax," said Georgy Tikhomirov.

On behalf of all graduates, Archun Chupan thanked the faculty and staff of the university. "You taught us to love the Russian language and culture. Thanks to your work, your knowledge and patience, we exit the walls of

alma mater ready to solve any complex problems. We wish you happiness and prosperity. We hope that friendship between our countries will only be strengthened".

On February 14, during the ceremony in the Hall of MEPhI main building, the heads of the institutes and their deputies, professors of the departments and guests of honor presented diplomas of higher education more than 240 students, thanking them for their hard work and good academic performance and expressing sincere wishes to them. Diplomas with honours received 10 people.



## PARTICIPANTS OF OLYMPICS "I AM A PROFESSIONAL" VISITED WINTER NUCLEAR SCHOOL

For the second time, Winter Nuclear School was held at MEPhI in conjunction with the State Corporation Rosatom and the Olympiad «I am a Professional.» This year it brought together 184 participants from 61 universities. More than a hundred participants of the school are students of universities that participate in the Association "Consortium of reference universities of Rosatom".

"Winter Nuclear School is a modern format of education that introduces to students traditional and innovative areas of nuclear industry. Talented students have met with leading experts in the fields of their interests and visited enterprises where they can work in the future. The format allows school participants to gain a set of new knowledges and expand horizons for professional development", noticed rector of MEPhI Mikhail Strikhanov.

The school was held in five sections:

- nuclear physics and technology;
- laser, plasma and radiation technologies;
- security of information systems and technologies of critical facilities;
- engineering, physical, nuclear and nano-technology in medicine;
- automation and electronics.

Leaders of nuclear industry enterprises gave lectures, for example, Evgeny Adamov talked about future energetics realities and prospects, Andrey Goverdovsky talked

about fundamental nuclear physics as an innovation driver for Rosatom, Viktor Ilgisonis talked about plasma engines, the basis of future cosmonautics. The school program included also thematic business games, trainings and master classes.

"For students, this is going beyond university studies, this is the first meeting with other project participants, with their like-minded people. At schools, participants also meet with potential employers who talk about the profession prospects and their approach to choosing employees. For the most part, speakers of winter schools are the top officials of companies. Here, at school, students formed professional ties that will help them in the future," said Valeria Kasamara, the head of the Olympiad "I am a Professional".

Participants will receive additional points upon admission to the magistracy and graduate school of MEPhI - 2 points for a certificate of participation in the School, 5 points - a diploma for the best participant, which was chosen by experts from Rosatom and MEPhI.

Winter schools are also held in other leading Russian universities. In parallel with them, the final full-time stage of the Olympiad takes place in January-February, the winners of which will be determined in the spring of 2020. Diploma holders will have the exemptions during admission in magistracy or graduate school and will have an internship in a large company. For medalists, it is also provided cash prizes in the amount of 100 to 300 thousand rubles.



## SCIENCE

# MEPHI ENGINEER GETS MOSCOW GOVERNMENT PRIZE FOR CREATING 3D PRINTER FOR MICROELECTRONIC PRODUCTS

In February, the awarding ceremony for the winners of the competition for the Moscow Government Young Scientists 2019 prize was held in the State Kremlin Palace. Laureate of the competition in the nomination "Instrument Making" was the engineer of the Department of Micro- and Nanoelectronics NESPI MEPHI Konstantin Oblov. About three years, his research team has been working on a simple and inexpensive 3D printer for microelectronic products.

Modern equipment for the production of electronic components has a variety of disadvantages: high cost, complexity and high cost of maintenance, and sometimes just the unavailability of consumables. A few years ago, the staff of the Department of Micro- and Nanoelectronics at MEPHI had the idea to make their own equipment to circumvent these limitations. Since then, they began working on a project to create a hardware-software complex

for four-coordinate adaptive laser micro-milling, which would allow small scientific teams to get the same result as on an industrial scale.

The equipment is a new multifunctional device — a combination of several devices, which is already on the market. In fact, this is a regular laser marker, supplemented by software and hardware. The main feature is that special software has been written for this project that integrates a roughness measurement system, a microscope and a metallization application system.

It turns out that it is a relatively inexpensive and easy to use 3D printer for microelectronic products. With the help of this equipment, you can repeat all the same operations that are done in large laboratories, and also use new materials that are difficult to process using other technologies. For example, aluminum and zirconium ceramics, which are also used to create gas sensors.

The complex does not

need specialized «clean rooms» and is available for work even for an undergraduate student who knows the basics of 3D printing, three-dimensional modeling and laser cutting. Moreover, its cost does not exceed 150

thousand US dollars. For comparison, the cost of the technological line of equipment for the manufacture of ceramic MEMS products and SMD cases according to traditional technology is estimated in millions of US dollars.

Currently, the created hardware-software complex is used at MEPHI as an exclusive technology for the manufacture of ceramic MEMS sensors and is also used in three international scientific projects.



## MEPHI PROPOSED NEW METHOD OF DESALINATION FOR SOUTHERN REGIONS

Currently, there is a problem of providing fresh water to the southern regions of Russia. One of the options is the distillation of non-potable water (for example, evaporation of sea water). Most existing desalination technologies are energy intensive; alternative solutions are being sought, among which the most promising is the distillation of water through heating by the sun.

An international team of scientists led by Associate Professor of MEPHI Boris Balakin received a research grant for the implementa-

tion of the project "Solar Desalination Using Nanofluids" as part of a joint competition of fundamental scientific research of the Russian Federal Property Fund and the State Fund for Natural Sciences of China.

The project aims to develop a new, improved method of solar desalination using nanofluid - a stable suspension of solid nanoparticles in saline. Recent studies have shown that less energy is required for the evaporation of a nanofluid by sunlight.

An important stage of the project is the development of a theoretical approach to the description of light

absorption and heat and mass transfer in the process of solar desalination. MEPHI scientists, together with colleagues from the Harbin Institute of Technology (China), are currently developing numerical models of photothermal boiling.

The project plans to develop, manufacture and experimentally verify the effectiveness of nanofluids for solar desalination technology. It should be reminded that in 2017 MEPHI already began to study the possibility of using nanofluids in power plants, and also created a working prototype of a solar electric power generator.

## PROFESSOR MEPHI ARKADY HALPER AWARDED GOLD MEDAL NAMED AFTER D.V. SKOBELTSYN

On February 11, at the meeting of the Presidium of the Russian Academy of Sciences, Professor of MEPHI Arkady Halper was awarded a gold medal named after D.V. Skobeltsyna 2019 for his outstanding contribution to the development of space research methods in the field of cosmic ray astrophysics and gamma-astronomy.

During his scientific career A.M. Halper successfully carried out numerous experiments on high-altitude balloons and on spacecraft to study

high-energy cosmic rays, trapped radiation in the Earth's magnetic field and in the field of gamma astronomy. A.M. Halper was a co-director along with Professor P. Picozza from Italy in the PAMELA project.

Currently A.M. Halper is a professor at the Department of Experimental Nuclear Physics and Cosmophysics, the head of the Cosmophysics field of study at MEPHI. He leads the project — the new unique GAMMA-400 space telescope, which is being created by the Lebedev Physical Institute and MEPHI.

## REGIONS

## HEAD OF COLLEGE CFTI MEPhI — BEST CURATOR OF WORLDSKILLS PROJECT

**Ekaterina Voinova, Head of the College of Physics and Technology Physics at MEPhI, was recognized as the best curator of the project «Training of workers and engineers according to international standards» of the social projects contest #ROSATOMVMESTE 2019.**

The competition results of social projects #ROSATOMVMESTE were summed up during the IV Forum of Atomic Cities. The winners of the contest were congratulated by the Director General of Rosatom State Corporation Alexey Likhachev.

The project of Ekaterina Voinova summarizes the long-term experience of the CFTI MEPhI team on the introduction of world stan-

dards in the training of students of higher and secondary vocational education, as well as juniors.

The key idea of the WorldSkills project is the systematic work at all levels from juniors (schoolchildren) to the “silver” age, which is based on practical orientation, proximity to production, mentoring and talent development for everyone.

IV Forum of Cities of the Nuclear Industry “National Goals. Urban Dimension” was held on February 26-28. It was attended by over 400 people from 27 regions of Russia and the Republic of Belarus. They discussed key issues of socio-economic development of cities where nuclear power and industry enterprises are located.



## STUDENT DETACHMENT OF VITY MEPhI — WINNER OF REGIONAL COMPETITION

**Student team VITY MEPhI «Atom-235» became the best student brigade in the Rostov region.**

February 17 was the Day of Russian Student Brigades. Their representatives in the Rostov Region gathered in the Don capital: the best active students, leaders of linear student brigades (LSB), and “veterans” of the movement. Today in the Rostov region there are

more than five thousand “fighters” in more than 90 line units, including construction, pedagogical, service, and agricultural. The most experienced participants took part in round tables organized by the leaders of the Rostov headquarters of LSB. They talked about the results of work in 2019, thanked for the contribution to the movement development of student teams and made plans for

2020. The Governor of the Rostov Region Vasily Golubev welcomed the participants of the event. He spoke about the achievements of the Don student brigades and wished them new successes.

The event was attended by “fighters” from the Volgogradsk Engineering Institute. The university has four teams: Atom-235, At-Mira, X-ray and Uranus.



## PROJECT URTK MEPhI — WINNER OF FUND CONTEST

The Municipal Development Fund “Association of Territories for the Location of Nuclear Power Plants” (ATR NPP Fund) held an open competition among non-profit organizations for the development and implementation of socially significant projects. The purpose of the competition is to support the initiatives of non-profit organizations to create and maintain a comfortable social environment in the territories where nuclear power plants are located.

Ural College of Technology — a branch of the National Research Nuclear University MEPhI — presented the project of Center for language competencies «Welcome».

The goal of this project is to promote the development of a comfortable sociolinguistic environment in Zarechny, the territory where Rosenergoatom Concern JSC enterprises are present.

The project scored 65 points at the municipal qualifying stage. The final stage was held in the tender commission of the APR NPP Fund. Of the 158 projects received by the competition committee, 85 projects were recommended for implementation. Among them is the UrTK MEPhI project.

The level of students’ foreign language skills will increase thanks to special programs for teaching technical English.

## GRADUATE OF SARFTI MEPhI — CHAMPION IN POWERLIFTING

**February 22, the Powerlifting Championship of Russia in was ended.**

The competition was attended by 650 athletes from 66 regions of the country. Powerlifting (bench press) competitions were held among juniors boys 19-23 years old and girls 14-18 years old.

The city of Sarov and the Nizhny Novgorod region was represented by Elena Zabelina, a graduate of SarPTI MEPhI. In her weight category (52 kg) Elena won the gold medal, lifting 92.5 kg. As a member of the team of

the Nizhny Novgorod region, the athlete won the 3rd team place.

