



World of MEPhI

DEAR COLLEAGUES! DEAR FRIENDS!



Please accept my most sincere congratulations on the upcoming holidays – New Year and Christmas!

Summing up the year, it's safe to say that the teamwork of all our staff has enabled the University to

make significant progress in research, science and innovation activities, to improve the range of educational programs and significantly expand international ties.

All this contributed to the consolidation of MEPhI leadership positions in global rankings of the best universities in the world, forming its positive image in the international educational space.

I thank everyone who through their educational, scientific, creative and sports achievements multiplied the glory of our University. I am convinced that good traditions of the University and the unique scientific poten-

tial of our colleagues will allow the University to move forward, to achieve new heights in science and education.

I wish 2016 to be generous with interesting plans and professional victories, which will open new horizons for scientific and educational achievements, and productive work will bring success and prosperity to MEPhI.

I wish each of you good health, prosperity, realization of all your plans and hopes.

**Rector of MEPhI
Mikhail Strikhanov.**

TIMES HIGHER EDUCATION BRICS & EMERGING ECONOMIES RANKINGS: MEPhI IN TOP THREE AMONG PARTICIPANTS OF PROJECT "5-100"

3rd of December 2015. MEPhI has been ranked the 3rd among Russian universities – participants of the project "5-100", taking the 26th place among the top 200 universities from 35 countries (including BRICS countries, Baltic states as well as Mexico, Poland, Czech Republic, UAE and others).

"It is great news that Russia has 15 institutions in this list, with seven of these sitting within the top 50, up from three last year", said the chief editor of Times Higher Education rankings Phil Baty. "These rankings are based on the same established and trusted thirteen performance indicators used to create the annual Times Higher Education World University Rankings, but they are specially calibrated to reflect the development priorities of universities in emerging economies. Russia has made huge efforts to improve its higher education system in recent years, including the launch of its project 5-100 initiative, which is designed to provide enough federal support to help at least five Russian universities enter the world top 100 by 2020. It seems the nation's universities are already reaping the rewards of the scheme, but Russia will have to continue to work hard to ensure it can compete with rival developing nations, such as China, which are also heavily investing in higher education."

The Deputy Minister of Education and Science of the Russian Federation Alexander Povalko noticed that two years ago only Moscow and St. Petersburg universities were in the THE BRICS & Emerging Economies Rankings. In turn, the head of the International Advisory Board of QS World University rankings Martin Ince expressed confidence that Russian universities need to pay attention to science so that to succeed in the rankings.

MEPHI HOLDS FINAL EVENT OF RUSSIAN ENGINEERING COMPETITION



National Research Nuclear University "MEPhI" has held the awarding ceremony for the winners of the Russian Engineering Competition, which was organized by the Ministry of Education and Science of the Russian Federation in 2014. It was attended by high guests: the Vice-Premier of the Russian Federation Government Olga Golodets, the Minister of Education and

Science of the Russian Federation Dmitry Livanov, the General Director of the State Corporation "Rosatom" Sergey Kiriyeenko and their attendants. This year more than 12 thousand students from all regions of Russia participated in the Competition.

See more on page 2.

PARTICIPANTS OF RUSSIAN ENGINEERING COMPETITION SHARE THEIR IMPRESSIONS



The winner of the Russian engineering competition, postgraduate student of the Tomsk Polytechnic University Gleb Apalkov:

Russian engineering competition is a necessary, informative and very useful event. And not only because you can present your project, but here you can also see solutions and ideas of other participants, find some ideas for your further work. In addition, this event is a great platform to exchange ideas and communicate with representatives of various companies, experts, students from other universities. It is very important.

The winner of the Russian engineering competition, postgraduate student of the Lomonosov Moscow State University Maria Efremova:

It was interesting for me to present my project once again, as well as to meet other participants, to establish new useful contacts. I believe that it's important to hold such contests because discussion with experts makes my project better; they give a lot of practical advices.

The representative of the Russian Helicopters Company Ruslan Tarasichev:

We know MEPhI for a very long time. It is a serious physical University with very strong students. Still we have few representatives of the University in our company, but that's the reason why we participate in Career Day, which is combined with the final of the Engineering competition. We tell young people about the company, perform professional orientation. I hope that we will manage to arouse the desire of students to work in the "Russian Helicopters" in future.

The representative of the United Aircraft Corporation Kristina Avraamova:

Now representatives of government agencies, educational institutions and businesses put a great effort and invest a lot of funds in the process of revival and development of the engineering profession. For example, our Corporation is here today to show future professionals that the profession of engineer is not a routine, but the true art.

Olga Bobrysheva, MEPhI student:

Today I participated in large-scale events, devoted to the final of the Russian engineering competition, namely I worked in the Factory of processes. Its participants became employees who faced a task to simulate a complete production cycle and then to improve it. We created a company, which produced cakes. For this purpose we distributed the duties: someone was a doughmixer, someone put dough into shape, someone was responsible for chocolate. I chopped cookies and it was quite an important link, because the whole further process depended on us.

So, we organized three assembly lines and began factory's work. After the first hour we had a planning meeting where we received a task to increase performance six-fold. Of course, it seemed impossible, but after discussing of all the identified flaws, we modernized the factory and even exceeded the plan. It is worth noting that we were helped by representatives of the State Corporation "Rosatom", who are workers of the nuclear industry and tried to transfer their knowledge and skills in the food industry.

Maria Istomina, a student of the 9th grade of the Lyceum №1511:

Today in MEPhI I had an opportunity to take the test for career guidance, which revealed my propensity for technical sciences. It was an expected result, since I am planning to go into the engineering profession. And results only confirmed my choice.

At the moment I'm still in the stage of choosing my future University. Before I had ideas about outer space, but now I'm more inclined to the field of electrical appliances and devices. So MEPhI is among the favorites for my further study.



MEPHI HOLDS FINAL EVENT OF RUSSIAN ENGINEERING COMPETITION



On the threshold of the awarding ceremony a large-scale, colorful program was organized for the winners of the contest, as well as for students and postgraduates of higher educational institutions of Russia, which came that day in the leading engineering university of the country.

Intellectual and business games, trainings and seminars, foresight-sessions and lectures, master-classes, quests and quizzes – it is just a part of events, which were prepared for MEPhI visitors. The winners of the Competition were also involved in the discussion of problems of engineering education, met representatives of state corporations and companies, presented their individual projects at a poster session.

And, of course, the main event – final engineering competition. Students from various universities, divided into teams of six people, had to create a technical construction called "Tower-generator", which task was to obtain electricity from the energy of falling object.

Contest results were given by a representative jury, which included Olga Golodets, Dmitry Livanov, Sergey Kiriyyenko and the rector of MEPhI Mikhail Strikhanov. Representatives of engineering, scientific and educational organizations took the part of technical experts. The jury assessed not only the capac-

ity of the produced energy, but also the economic factor. In the end all teams coped with the task, and the team "ИББО" became the winner.

The final program of the event also included round tables and meetings which addressed issues of development of engineering education.

And finally, there was a solemn ceremony of awarding winners of the National Engineering Competition whose names and projects may soon be included in the golden fund of scientific and engineering potential of Russia. Awards and diplomas to the winners were presented by Olga Golodets, Dmitry

Livanov, Sergey Kiriyyenko and the Deputy Chairman of the Management Board for external communications of RUSNANO Andrey Trapeznikov.

A postgraduate student of MEPhI Tatiana Kazieva was among the winners. She won in the nomination "Individual research projects" in the field of "Photonics, instrumentation, optical and biotechnical systems and technologies" and received the diploma and the medal of the Russian Engineering Competition – 2015 from the hands of the Minister of Education and Science of the Russian Federation Dmitry Livanov.

After the awarding cer-

emony Rosatom handed RUSNANO a symbolic torch of the Russian Engineering Competition. "Engineering torch" was handed to the representative of "RUSNANO" by the MEPhI rector Mikhail Strikhanov.

"The focus on engineering education, of course, inspires and stimulates us to new victories. We took the decision to transform our educational courses and introduce more engineering and design activities in educational programs", said the rector of the University and expressed hope that after some time, that large-scale engineering competition would be held again in MEPhI.



THOMSON REUTERS: MEPHI MOST-CITED SCIENTIFIC AND EDUCATIONAL ORGANIZATION IN RUSSIA

On the 3rd of December the Ministry of Education and Science of the Russian Federation in collaboration with Thomson Reuters have held the award ceremony for the highly cited scientists and organizations that had made the greatest contribution to the development of world science. The decision was made on the basis of indicators for publication activity and citation in the database Web of

Science. The event was held at the annual forum "VUZ-PROMEXPO-2015".

Once again National Research Nuclear University "MEPhI" become the absolute leader in the category "Most-cited scientific and educational organization of the Russian Federation by Thomson Reuters in 2015", being ahead of not only educational institutions, but academic and scientific organizations.

This high award became a well-deserved result of scientific research of the University recognized by the expert community.

According to the first Vice-rector of MEPhI O.V. Nagornov, a high level citation became possible primarily due to the effective system of authors motivation developed in the University, which stimulates improvement of publications' quality.

Interest in the scientific publications is also linked to the active participation of University in international scientific experiments. "MEPhI aims at joining the most advanced mega-science collaborations", said the first Vice-rector at the awarding ceremony. "It's hard, but only organizations with a high scientific level can become partners with leading research centers on a full basis and to develop a modern science". The result of this work increases not only of quantitative factors, but also value of scientific publications.

Thomson Reuters is the world's largest source of specialized information for businesses and professionals. The company cooperates with leading key figures of the financial, legal, tax, accounting, scientific, healthcare and media markets.

The award, established by Thomson Reuters, raises prestige and reputation of universities in the global scientific and educational space.

MEPHI SCIENTISTS CREATE PROTOTYPE OF REMOTE LIE DETECTOR

MEPhI scientists have developed a lie detector that can determine truthfulness of someone's answers through the video chat with him.

Scientists from the Laboratory of Robotechnics of the MEPhI Department "Computer systems and technologies" have developed a lie detector that allows to measure physiological parameters of a person remotely.

The new device allows to determine the veracity of answers by analysis of videotaped interviews with the man. All that you need to understand if a person is lying or not is to make a video with his conversation and upload it into the analysis program.

The technology had been developed in the study of noise reduction algorithms in the field of video content analysis. A prototype of the device is already developed and ready for the use both in Russia and abroad.



BETWEEN OF MICRO- AND NANOELECTRONICS

POSTGRADUATE STUDENT OF MEPHI DEPARTMENT "LASER PHYSICS" TATIANA KAZIEVA WINS IN COMPETITION OF INDIVIDUAL RESEARCH PROJECTS

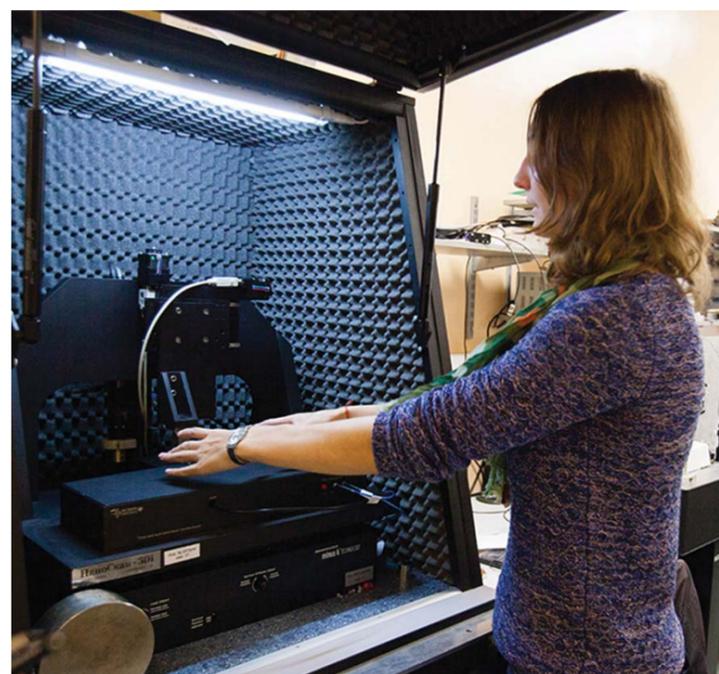
In October the Intellectual center of Lomonosov Moscow State University has held the final scientific and practical conference of the engineering contest "Engineering education in Russia: status and strategic perspectives – view of the youth".

Tatiana Kazieva, a postgraduate student of the MEPhI Department of Laser Physics, has won the contest of individual research projects, presenting a unique invention – three-axis heterodyne laser interferometer, designed for absolute mea-

surements of displacements of the system of object positioning or piezo-resonance sensitive elements of probe, atomic force, scanning electron microscopes with subnanometer accuracy.

According to Tatiana's scientific supervisor, Doctor of Physical and Mathematical Sciences Kuznetsov Andrey Petrovich, who is the Head of the MEPhI Laboratory of Laser Diagnostics, work on creation of laser interferometers and its application in nanometrology had been conducted at the Department for several years. In recent years this field of science has become incredibly topical since development of modern technologies requires continuous improvement of measuring and controlling devices.

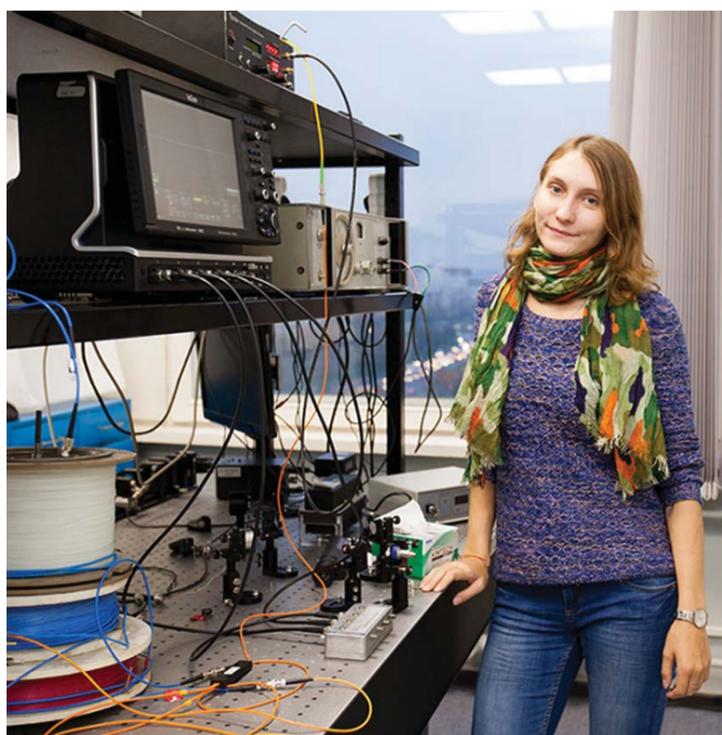
For example, in addition to monitoring of manufacturing processes of components for the microelectronics, interferometer can be used to estimate properties of new



materials and alloys. High measuring accuracy (similar devices in the USA and Germany have 10 times less accuracy than the analog of MEPhI!) allows to record the smallest changes in the geometry of the diamond tip of nanohardness tester.

It is no wonder that a unique interferometer, developed at the Department of Laser Physics, has generated considerable inter-

est among the world scientific community as a device, which doesn't have analogues. Similar measuring devices, which are in laboratories in USA, Japan or Germany, are nontransportable massive installations with a special system of vacuum pumping. It is not possible to use them every time, and the process of data collection takes much more time.



NEWSPAPER "ENGINEER-PHYSICIST" WINS RUSSIAN COMPETITION OF STUDENT PUBLICATIONS!



In November Moscow has hosted a solemn ceremony of awarding the laureates of Russian competition among student publications and young journalists "Crystal arrow". MEPHI newspaper "Engineer-physicist" won in the nomination №1 "Best journalistic work"!

This year it was already the 12th competition. "Crystal arrow" is organized by the Council of Vice-rectors on educational work of higher educational institutions and the Moscow Student Centre with the support

of the Moscow Government, the Ministry of Education and Science of the Russian Federation, and the Federal Agency for Youth Affairs. Being the most mass and democratic, it is the undisputed leader among competitions of student journalism. It was attended by students, postgraduates and editors from more than 68 regions of Russia. This year 4569 creative works and mass media from 403 educational institutions of higher education of Russia participated in the competition.

It was not the first award of the popular university newspaper in this prestigious contest of student publications. So in 2014, "Engineer-physicist" was honored with several awards from professional society: it took the 1st place in the category "Innovators among us", in the nomination "The best student edition" "Engineer-physicist" became the winner of the II degree, and the newspaper was awarded the Diploma of the Journalists Union of Russia "For coverage of innovative activity of higher school".



FIRST PLACE OF MEPHI TOURIST CLUB!

The Moscow Student Sports Games has been held for the 28th time. The strongest teams from Moscow universities met in stadiums to show their sport achievements.

Over 20 years these Games conduct competitions in sport tourism. This year it was held on October 24-25 within the Championship of Moscow region. Athletes needed to run a distance

with equipment, following the map, and cross various types of obstacles.

Since 2005 MEPHI team has been actively participating in these competitions. It is comprised of representatives from all Faculties, both freshmen, who just entered in September, and experienced guys from 4-5 years of studies and even graduate students. In all 25 people!

Consistently increasing their level, guys from the MEPHI Tourist club took the 1st place among universities of Moscow on pedestrian distances, being ahead of such strong teams as Moscow State University of Civil Engineering and Timiryazev Moscow Agricultural Academy.

Congratulations to our athletes!



MEPHI SAMBO ATHLETES – WINNERS OF MOSCOW COMPETITIONS IN MARTIAL ARTS!

Sambo athletes of MEPHI have successfully represented the University in various competitions in martial arts.

Vasiliy Pusey took an honourable 2nd place in the Championship of the XXVIII Moscow Student League of Combat Sambo in memory of Vladimir Sergeevich Osin among the masters in the category up to 82 kg.

Alexey Pazyuk took the

3rd place in the weight category up to 57 kg at the Championship of Moscow in Sambo among young men of 19-20 years.

Michael Ulizko took the 3rd place in Judo in weight category up to 66 kg in the XXVIII Moscow Student Sports Games.

We congratulate MEPHI guys and wish them luck in the forthcoming Championships of Russia!