MISIS
National University of
Science and Technology

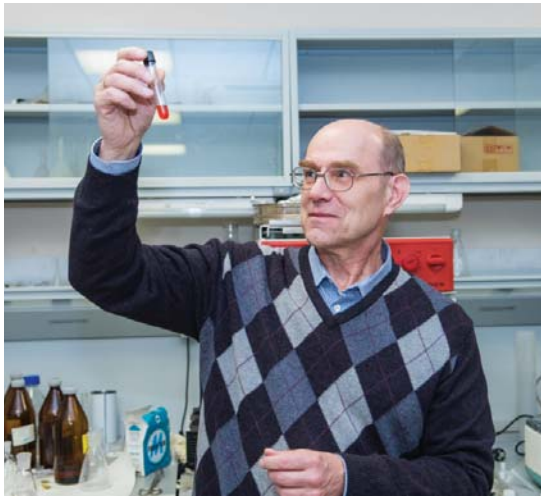
NUST MISIS SCIENCE NEWS DIGEST

October – December 2016

NUST MISIS AND TEZPUR UNIVERSITY RESEARCHERS USE COBRA VENOM AND QUANTUM DOTS FOR CANCER DIAGNOSIS

Researchers from the NUST MISIS and Tezpur University (India) have synthesized a substance based on snake venom alpha-neurotoxins and semiconductor fluorescent nanoparticles. The new substance can effectively mark the boundaries of cancer tumors. The ability to diagnosis cancer early and reliably is one of the most sought-after goals in biomedical research. Surgeons need to see the boundaries of the cancer: the more precisely the boundary is marked, the more effective the operation will be.

http://en.misis.ru/university/news/science/2016-12/4350/



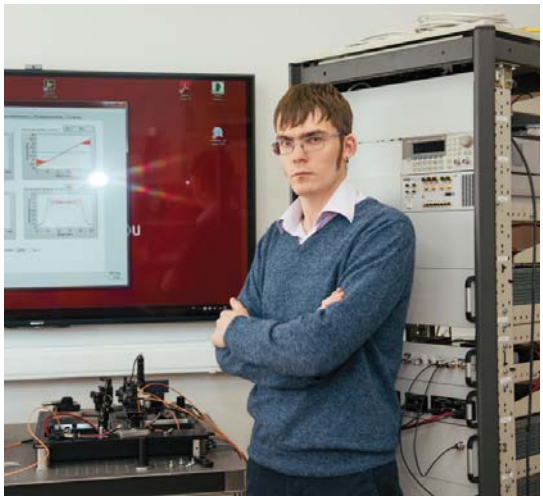
NUST MISIS SCIENTISTS DEVELOP TECHNOLOGY TO SLASH PRODUCTION PRICES OF SMARTPHONE DISPLAYS

The basis for modern Smartphone displays are artificial sapphires (monocrystalline corundum), which are acquired from high-purity aluminum oxide. These artificial sapphires are the main component of light emitted diode (LED) and the protective glass of modern gadgets. As Russia lacks large-capacity production of this raw material, companies have to buy it abroad at a high price. But NUST MISIS has begun to develop high-purity aluminum oxide, and the patented import-substituting technology will allow the university to provide domestic producers of monocrystalline corundums with the necessary raw materials.

http://en.misis.ru/university/news/science/2016-11/4303/

NUST MISIS SCIENTISTS CREATE UNIQUE LASER SYSTEM FOR CONTROLLED THERMONUCLEAR FUSION

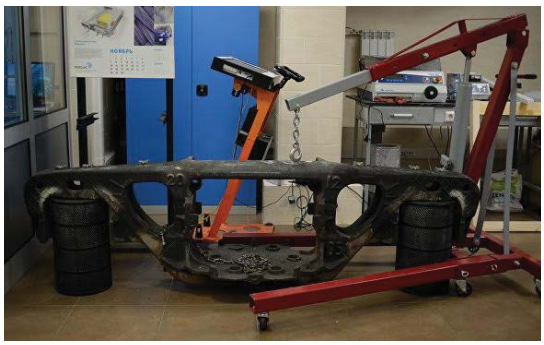
NUST MISIS has developed a system of acousto-optical control of laser pulses for the implementation of a new generation of inertial thermonuclear fusion. The new system, which has peak performance in efficiency and resolution, will open a width of opportunities to control operating modes of powerful laser equipment of the Mega-science rank. Scientists from the NUST MISIS Acoustoptic Center for Science-Technology and Education, in cooperation with colleagues from RFNC-VNIIEF, have created a unique laser system to control the emission of high-output femtosecond laser systems - sources of superpowerful laser fields to study extreme states of matter and controlled thermonuclear fusion.



NUST MISIS RESEARCHERS CONCEIVE OF A WAY TO MAKE TRAINS SAFER

Researchers have found a new heat treatment method which consists of quenching cast steel elements used in car trucks. This is expected to make the entire structure 1,5 times stronger. NUST MISIS researchers in cooperation with Moscow State University of Railway Engineering have developed a unique technology for preventing solebars in freight car trucks from breaking. Their invention is expected to increase the fatigue limit and fatigue strength of solebars by 50 percent, and reduce the number of elements that break down in the course of operation.

http://en.misis.ru/university/news/science/2016-12/4343/



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