

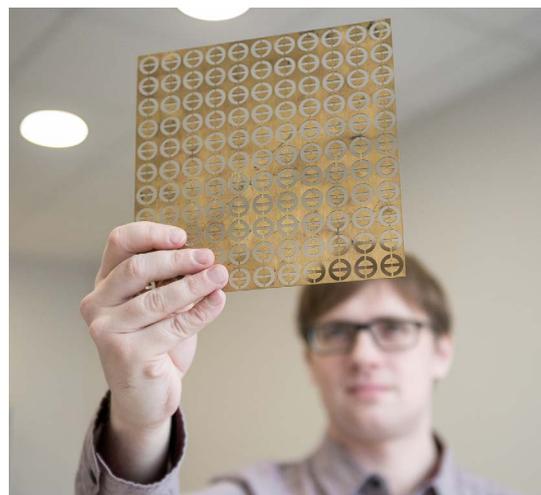
NUST MISIS SCIENCE NEWS DIGEST

January – April, 2017

NEW METAMATERIAL TO BECOME THE BASIS OF THE NEXT GENERATION STEALTH-TECHNOLOGIES

A group of scientists from the NUST MISIS Laboratory of Superconducting Metamaterials led by Associate Researcher, PhD Alexey Basharin, has created a metamaterial with extremely high values of anapole quality – phenomena that occur due to a special configuration of electromagnetic fields. The new metamaterial can be applied to create next generation sensors out of banned and explosive materials, as well as in different laser systems and STEALTH-technologies. An article about this development was published in the *Physical Review* journal.

<http://en.misis.ru/university/news/5-100/2017-01/4365/>

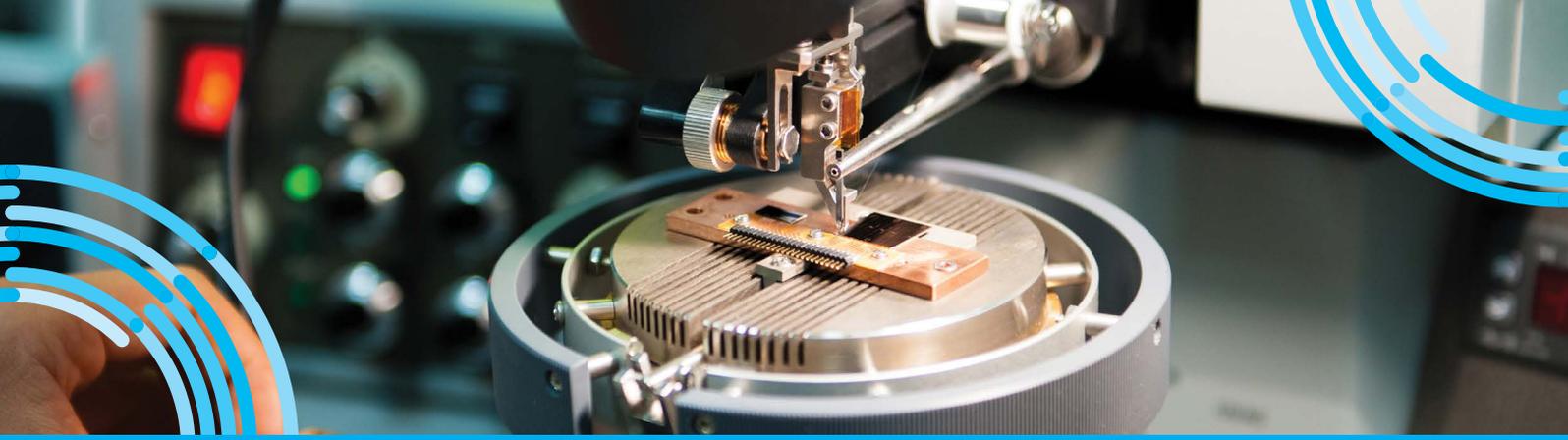


ULTRA-HIGH-MOLECULAR-WEIGHT POLYETHYLENE IMPLANT HAS SUCCESSFULLY REPLACED BONE TISSUE

NUST MISIS scientists, led by PhD Fedor Senatov, Research Assistant at the NUST MISIS Center of Composite Materials, with the help of colleagues from both the Russian Cancer Center, named after N.N. Blokhin, as well as the State Plant for Medical Preparations have successfully tested the implants of cancellor bones based on ultra-high-molecular-weight polyethylene (UHMWPE): 100% of implanted samples have been successfully grafted. The implant presents an opportunity to provide a replacement for bone loss, and to initiate the regeneration process while maintaining the functional capabilities of limbs. An article with the research results was published in the *Materials Science and Engineering* journal.

<http://en.misis.ru/university/news/science/2017-03/4577/>





NUST MISIS SCIENTISTS DETECT OSCILLATIONS OF CHIMERAS

For the first time, a group of NUST MISIS scientists, led by Professor Georgios Tsironis, together with colleagues from foreign universities, have found the chimera state present in large arrays of semiconductor lasers. It turns out that what the group detected during its attempt to study and control the phenomenon was a turbulent chimera. This discovery will allow scientists to make laser systems more efficient, and will be utilized in fiberscopes used in laser medicine and various sensors. An article with the research results was published in the *Scientific Reports* journal in February, 2017.

<http://en.misis.ru/university/news/science/2017-02/4411/>



SCIENTISTS DEVELOP “ETERNAL” ACCELERATOR ON THE BASIS OF NANOMATERIALS

A group of NUST MISIS scientists led by Professor Alexander Mukasyan has produced a unique accelerator by developing self-propagating high-temperature synthesis (SHS). The accelerator doesn't degrade and doesn't get polluted during the working process, and this is the reason why it operates ten times longer than ordinary accelerators. It has been working intensively for several years, hence why it is jokingly called “eternal”. Accelerators are used to obtain nanomaterials, as well as for the after combustion process in vehicles. Additionally, they reduce harmful emissions into the atmosphere.

<http://en.misis.ru/university/news/5-100/2017-02/4387/>



International Research Projects Department

Elena V. Shtanskaya
Head of the Department
Tel: +7 (495) 638-46-29
E-mail: projects@misis.ru
www.science.misis.ru/en/

Marketing and Communications Department

Yulia A. Shalneva
Head of the Department
Tel: +7 (495) 647-23-09
E-mail: press@misis.ru
www.en.misis.ru