General information about
Federal State Institution "Technological Institute for Superhard and Novel Carbon Materials" (TISNCM).

The Institute was established in 1995 as the Scientific Technological Centre "Superhard Materials" (STC SHM). In 1998 the Institute was reorganized as the Federal State Institution "Technological Institute for Superhard and Novel Carbon Materials" (FSI TISNCM).

FSI TISNCM is administrated by the Federal Agency of Science and Innovations of the Ministry of Education and Science of the Russian Federation.

Scientific Research Departments at FSI TISNCM

1. Department of Structural Research
    - Laboratory of Spectral Research
    - Laboratory of Electron Microscopy
2. Department of New Superhard Material Synthesis
    - Laboratory of Nanostructured Metal-Carbon Materials
3. Department of Single Crystal Growth
    - Laboratory of Cubic Boron Nitride Synthesis
    - Laboratory of CVD Diamond Growth
4. Department of Physical Properties of Nanostructures
    - Laboratory of Gas and Thermal Treatment of Carbon Materials
5. Department of Physical and Mechanical Properties Research
    - Laboratory of Scanning Probe Microscopy
    - Laboratory of Physical and Chemical Measurements
6. Department of Scientific-Information Research of Superhard and Novel Carbon Materials
7. Department of Chemical Technologies and Nanomaterials
8. MIPT Department "Physics and Chemistry of Nanostructures"

The subdivisions within the Institute are grouped in the following divisions:

- FSI TISNCM Center of Collective Use (CCU) of Scientific Equipment "Research of Nanostructured, Carbon and Superhard Materials"
- Scientific Educational Center (SEC) "Physics and Chemistry of Nanostructures"
- Joint Laboratory TISNCM–SIEMENS "Functional and Constructional Nanomaterials"

TISNCM staff amounts today 180 members, including 9 doctors of science and 32 PhDs.

General Institute activities include creation of the new superhard materials; development of the synthesis techniques; perfection of the diamond tool technologies; development of the high pressure equipment; development of the special scientific equipment (for investigation and tests of superhard materials); etc. Among the materials under investigation are:

- Diamonds of different types;
- Cubic boron nitride;
- Nitrogen-carbon compounds;
- New fullerene and nanotube originated superhard materials.

Original technology for large (up to 7 carat), perfect, IIa type diamonds (of high purity and low nitrogen content) have been developed in TISNCM as well as new original technology of semiconductor diamonds doped with boron.

Competitive synthesis technologies for high quality diamond grits have been created and are being perfected in TISNCM.

Synthetic diamond single-crystal grits are used for the diamond instrument manufacture (for example high-production diamond wheel fro glass working; diamond wheels for instrumental steel working; hone bars; etc.)

The Institute possesses the technology for the production of diamond single crystals up to 7 carats in weight, which have no natural analogues (superpure, doped, and semiconductor). This technology is currently being promoted to the market.

TISNCM also develops the following types of constructional materials: metals, metal–carbon, carbon–carbon, and nanostructured ceramics. Materials with unique mechanical properties are also produced, including aluminum-, titanium-, and zirconium-based alloys; TiC–ZrC-based hard alloys; ultrahard fullerites; and β-Si3N4 and UO2 ceramics. The Institute is also engaged in the production of new nanostructured thermoelectric Bi2Te3-based materials.

TISNCM places great value on collaborations with Russian and foreign institutes, including the Scientific Center Kurchatov Institute, RAS Institute of Crystallography, GIREDMET, University of Umea (Sweden), University of Manchester (Great Britain), Laboratory of Crystallography of the French Academy of Sciences, and a range of other R&D centers in Russia, Australia, Germany, USA, and Japan.

The personnel are the main resource of any scientific institution. The year 2008 saw the establishment of the “Physics and Chemistry of Nanostructures” department at the MIPT Faculty of Molecular and Biological Physics. TISNCM was appointed as the base organization for this department, providing a training in Applied Mathematics and Physics as part of a master’s degree in Chemical Physics.

The achievements of the Institute were awarded by a range of prestigious prizes at international exhibitions, including the silver medal at the 27th International Salon of Innovations (Genève, 1999), Nanotechnology International Forum, (Moscow, 2008), and the Certificate iENa 2008 Internationale Fachmesse “IDEEN-ERFINDUNGEN-NEUHEITEN” (Nurnberg, 2008).

INSTITUTE OF NEW CARBON MATERIALS AND TECHNOLOGIES (JSC)

General information about limited the Institute of New Carbon Materials and Technologies

Institute of New Carbon Materials and Technologies (INCMT) performs research and development in the field of fundamental and applied materials science and commercialization of new structural and composite materials aimed to solve technological and ecological problems in various branches of industry.

INCMT is the research institute of new type, established in 2003 by Research and Production Association Unichimtek and Lomonosov Moscow State University on the base of the Moscow State University Chemical Engineering and New Materials Chair.

The Institute personnel consists of highly qualified specialists in physics, chemistry and materials science possessing wide experience in the development of tailored materials. Among the Institute staff members are the Moscow State University graduates and research scientists.

The Institute laboratories are equipped with state-of-the-art scientific devices and apparatus ensuring the wide range of tests and measurements including thermogravimetric, thermomechanical, X-ray phase analysis, accelerated weathering tests and others.

INCMT performs the development and commercialization of new composite and structural materials and technologies based on graphite nanostructuring and high-performance carbon, mineral, hollow polymer fibers for application in fuel and energy complex, chemical industry, metallurgy, machine building, aircraft, construction and other branches of economy.

The important field of INCMT activities is the promotion of developed materials by means of regulatory documents development, certification in accordance with Russian and international standards requirements and quality analysis.

The Institute provides services in the field of thermogravimetric, thermomechanical, mechanical properties measurement, X-Ray phase analysis, accelerated weathering tests of materials and coatings and other tests and measurements.

Among INCMT customers and scientific partners are state institutions, academic research centers and large manufacturing companies.

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General information about limited liability company "Kristalin"

The company "Krystalin" offers microsurgery ophthalmologic scalpels with diamond blade. In 1986 in Altai started the production process of this instrument. Hard work at upgrading of the holder construction, advancing sharpening of different forms of the blade considering leading Russian ophthalmologists requests made the production of this instrument possible.

Diamond microsurgery scalpels fit perfectly for any operations (ophthalmologic microsurgery, vessel and neurosurgery, cosmetology and plastic surgery). The sharpness of the cutting edge allows to pull apart tissues on molecular level which lead to fast recovery.

This good acquisition will let you make operations on a new higher level. The company is the only Russian producer of these unique scalpels with diamond blades. Our scalpels are of great demand of all leading ophthalmologic centers in Russia and abroad (USA, Germany, France and Switzerland).

Universal knife with diamond blade
The scalpel allows to cut and to exfoliate tissues, to make dosed in the width tunnel punctures.

Handle diameter	6 mm
Full length	100 mm
Blade length	min 4 mm
Blade thickness	0.2 mm
Blade width	10 mm
Material	titanium

Diamond knife with changeable tilt angle of the blade
The scalpel allows making dosed in the width tunnel punctures, to cut and to exfoliate tissues under the comfortable tilt angle from 0° to 75°.

Handle diameter	8 mm
Full length	150 mm
Blade outlet	min 4 mm
Blade thickness	0.2 mm
Blade width	from 1.0 mm
Material	titanium

Diamond knife with microadvance for keratotomy
The scalpel allows making dosed cuts and incisions of demanded depth during different keratotomy operations, cataract operations and antiglaucom operations.

Blade shift from the claw	0-0.9 mm
One point of the scale	5 mm
Blade width	1.0 mm
Blade thickness	0.2 mm
Full length	100 mm
Material	titanium

Scalpels consist of a titanium holder and a diamond blade attached to it. The width of the diamond blade cutting edge is 250-800 angstroms.

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