

12.03.04 Biological Systems and Technologies

Bionanotechnologies

multidisciplinary program of expertise in physics, chemistry, biology, computer science, and medicine. Biomedical nanotechnologies are expected to lead to a qualitative leap in the development of new pharmaceuticals that will help to manage previously incurable diseases, as well as in the design of devices and methods for diagnostics and treatment.

Program research training helps to develop the skills of working with state-of-the-art equipment. Moreover, MEdPhI professors and practitioners provide knowledge on how practical challenges in the field of radiodiagnostics and therapeutics, radioisotope diagnostics methods for medicine can be resolved.

Key research areas

- laser methods for synthesis of ultrapure nanomaterials for biomedicine
- interaction between the optical radiation and biosystems
- methods for designing the smart nanomaterials for biomedicine
- biosensors with the use of nanoparticles and nanocomposites
- cellular nanotechnologies for treatment of oncological diseases and other socially significant diseases
- imaging and analysis of biomedical diagnostic images
- methods and materials for nanosensors

Practical training and employment

- State Atomic Energy Corporation ROSATOM
- National Research Center “Kurchatov Institute”
- Burdenko National Research and Practical Center for Neurosurgery
- Blokhin National Cancer Research Center
- Emergency Children's Surgery and Traumatology Research Institute
- Russian Scientific Center of Roentgen Radiology
- Lebedev Physical Institute of the Russian Academy of Sciences etc.