

Physics and Nanotechnology of Heterostructure Electronics

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

Degree or qualification is awarded: **Master degree**

Language of study: **Russian**

Mode of study: **full-time**

Duration: **2 years**

Availability of free education: **yes**

Price: **196 820 rubles per semester**

Programme webpage at the university website:

http://eis.mephi.ru/AccGateway/index.aspx?report_url=/Accreditation/program_annotation&report_param_pid=99

Programme curator: **Vladimir R. Nikitenko**

Tel.: **Contact name: Olga N. Petukhova, Phone number. +74957885699, ext. 8045.**

E-mail: ONPetukhova@mephi.ru

Purpose of the program: obtaining the higher professional education by a graduate of the program, which will allow him/her to successfully work in the field of experimental research, technologies for preparation and modeling of solid-state (semiconductor) nanoscale multilayer structures (nanoheterostructures), have the general cultural and professional competencies promoting his/her social mobility and firmness in the labor market.

Competitive advantages of the program: the relevance of disciplines under study and the high technological level of the experimental basis (academic subjects are taught by acting scientists), the possibility of postgraduate work in areas that are extensively demanded at the present time and are the key areas for the applied science and technology: physics and technology of semiconductor electronic and optoelectronic devices (light-emitting diodes, photovoltaic cells, thin-film field-effect transistors, memory elements, etc.), based on nano-scale multilayer dielectric and semiconductor heterostructures.

Characteristics of the scope and objects of professional activity of graduates:

- development of physical principles and promising technologies for creating electronic and optoelectronic devices;
- work in the nuclear industry and at academic institutions (e.g., National Research Centre "Kurchatov Institute," Lebedev Physical Institute of the Russian Academy of Sciences, Ioffe Physico-Technical Institute of the Russian Academy of Sciences), continuation of the research as a post-graduate (including the National Research Nuclear University "Moscow Engineering Physics Institute").

Brief description of the curriculum.

The curriculum is based on knowledge gained at the bachelor's school under the program "Nuclear Physics and Technology" on the profile "Physics of Condensed Matter," including quantum physics, solid state physics, semiconductor physics, and experimental methods of condensed matter physics. The main basic and specialized disciplines are: "Physics of Nanosystems," "Introduction into Modern Nanotechnology," "Physics and Technology of Micro- and Nanoelectronics," "Optoelectronics," "Design and Simulation of Micro- and Nanoelectronics." Part of the curriculum is also implemented in English.

Leader of the program: M.N. Strikhanov, Professor, Rector of MEPhI, Head of Department No. 67

Specializations within this programme

Competitive advantages of the program: the relevance of disciplines under study and the high technological level of the experimental basis (academic subjects are taught by acting scientists), the possibility of postgraduate work in areas that are extensively demanded at the present time and are the key areas for the applied science and technology: physics and technology of semiconductor electronic and optoelectronic devices (light-emitting diodes,

photovoltaic cells, thin-film field-effect transistors, memory elements, etc.), based on nano-scale multilayer dielectric and semiconductor heterostructures.