

Physics of Kinetics Phenomena

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

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

Language of study: **Russian**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **129 000 rubles per semester**

Programme curator: **Vladimir D. Borman**

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Field of study: "Physics".

Duration of training: 4 years, 240 credits.

Course delivery language: russian & english.

Basic department: Molecular Physics (No. 10), Vladimir D. Borman, e-mail: VDBorman@mephi.ru.

The program of continuous training: Bachelor's Degree – Master of Science – Post Graduate.

The objectives are to prepare graduates to research and industrial activities in the fields of kinetics phenomena; at the stage of graduate training, to provide basic humanitarian, mathematics, natural sciences and professional knowledge, specialized competencies; give graduates skills in the professional field and to prepare for the Master's Degree.

Duration of the Bachelor study: 4 years.

Fields of professional activity:

Exploitation of modern physical equipment and devices, development of technological processes of new materials in preparation for production of new materials, devices, and systems. Theoretical and experimental research to solve scientific and industrial tasks on the separation of isotopic and multiphase mixtures using modern computer technology and methods of experimental physics. Selection and use of new innovative technologies and solutions based on the use of nano-materials in order to reduce energy consumption and to improve product quality. Design and operation of automatic control systems with the use of high technologies of computing. Installation, testing and commissioning of devices prototypes, systems and components of experimental devices. Selection of schemes and mounting of installations for obtaining pure and ultra-pure substances.

Brief description of the curriculum. The curriculum retains the traditional fundamental knowledge principles of engineers training and includes physical, mathematical and engineering disciplines. It also includes a lot of special disciplines, for example, physical kinetics of gases, methods and techniques for the study of physical and chemical phenomena, introduction into experimental techniques, special chapters of physics of separation processes, fundamentals of molecular selective devices, fundamentals of the membrane technology, physical basis of the separation of mixtures, etc.

Practice:

- Research Practice (during the 3rd and 4th courses).

Organizations for practice:

- national Research Nuclear University MEPhI;
- national Research Centre "Kurchatov Institute";
- russian Federal Nuclear Center – All-Russia Research Institute of Technical Physics;
- russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Experimental Physics;

- topchiev Institute of Petrochemical Synthesis of the Russian Academy of Sciences;
 - dukhov All-Russia Research Institute of Automatics;
 - national Research Institute of Physicotechnical and Radio Engineering Measurements;
 - leading Research Institute of Chemical Technology;
 - state Scientific Center of the Russian Federation "Central Research Institute of Chemistry and Mechanics", etc.
- Parts of the curriculum are taught in English

Specializations within this programme

Physics

Objects of professional activity: Systems of automatic control high technologies with application of computer technology. Modern physical plant and equipment, including isotope separation, obtaining enriched uranium and reprocessing of spent fuel. Analytical and mass spectrometric equipment. Prototypes of sensors of physical quantities, samples of instruments, systems and parts of special aparates to obtain pure and ultrapure substances based on the latest achievements of membrane technologies.