

## **Master dual degree program “Chemical Physics”**

**Partner university:** al-Farabi Kazakh National University

**Major:** 03.04.01 Applied Mathematics and Physics

**Language of instruction:** Russian

**Graduation department:** MEPhI Chemical Physics Department (№4), Institute for Laser and Plasma Technologies. The Department was found in 1951. Nikolay N. Semenov, the Nobel Prize laureate, became its founder and first Head. The department has more than 50 years of experience in educational and research activities with the participation of employees of leading scientific organizations.

**Abstract:** The program is aimed at training professionals with deep physical and mathematical training and fundamental knowledge in the field of chemical physics, industrial safety and ecology. Masters in this specialty are research engineers who are able to solve a wide range of problems in the physics of fast-flowing processes, extreme States of matter at high pressures and temperatures, monitoring the safety of industrial facilities and the environment, developing methods for computer modeling and forecasting the consequences of man-made accidents and catastrophes.

### **Program Supervisors**

Sergey A. Gubin – Head of Chemical Physics Department (Dr. Sci. in Physics and Mathematics, Professor)

Bahitzhan Lesbaev – Head of KazNU Educational Laboratory of Computational Methods in Chemistry, Faculty of Chemistry and Chemical Technology, Candidate of Chemical Sciences

### **Career opportunities**

leading Russian and foreign research centers and companies specializing in scientific software.

### **Areas of research and experts training:**

- Risk analysis and predictive modelling of consequences of man-made accidents and natural disasters;
- Supercomputer modelling and experimental research on physical and chemical reactions in fluid, gas and solid;
- Theoretical research on wide-range equations of state for fluid mixtures, condensed and nanodispersed matter and materials, products of combustion and detonation of chemical energetic;
- Monte Carlo and molecular dynamics simulation for thermodynamic properties of matter at extreme temperature and pressure.