03.04.02 Physics

Promising semiconductor lasers and technologies

Program objective

The main goal of the department is the advanced training of scientific, engineering and managerial personnel in the field of semiconductor lasers and technologies. The department is actively involved in the educational process of existing industry specialists, leading scientists and researchers to teach professional courses. Students of the department have the opportunity to undergo internships and industrial practices, as well as to perform a master's thesis on the basis of partner organizations.

Key research areas

- Laser nanostructuring of surfaces of biocompatible materials

- The use of semiconductor lasers and technologies for biomedical applications, including: the use of laser phototherapy in oncology, light scattering in mesoscopic media such as blood plasma, protein model solutions, etc.

- Development and creation of elements and devices of semiconductor lasers and devices based on them

- Laser diode rulers, matrices and pumping modules

- Development of diode-pumped solid-state lasers

- Diode lasers and modules for fiber-optic communication systems

- Interaction of laser radiation with matter, including biomaterials

Future employment areas

- Physics of semiconductors

- Interaction of radiation with matter

- Physics of fast-flowing processes

- Physics of the nucleus and elementary particles

- Laser fusion

- Laser physics, plasma physics

- Control and automated control systems

- Condensed matter physics, biophotonics, optics, etc.

Practical training and future employment

- Lebedev Physical Institute, Moscow

- Scientific and production enterprise "Inject", Saratov

- M.F.Stelmakh Research Institute "Polyus", Moscow

- Keldysh Institute of Applied Mathematics, Moscow

- LLC "LASSARD", Obninsk, Kaluga region

- All-Russian Scientific Research Institute of Experimental Physics, Saratov

- Enterprises of Rosatom State Corporation