**Abstract**

**Direction:** 12.04.03 Photonics and optical informatics

**Major:** Photonics of nanostructures

**Program mode:** Full-time

**Required duration:** 2 years

**Qualification awarded upon graduation:** Master

**Graduating Institution**: Institute of nanotechnologies in nanoelectronics, spintronics and photonics

**Purpose of the program:** obtaining the higher 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 devices and systems of photonics and opt. informatics, have the general cultural and professional competencies promoting his/her social mobility and firmness in the labor market.

**The area of professional activity of graduates**: fundamental and applied research work in photonics and opt. informatics; devices and systems on the base of coherent optics, holography; materials and systems, methods and technologies for optical transfer, transformation and storage of information; systems for optical and quantum calculations; systems on the base of nano-scale structures.

**Acquirements:** ability for computer modeling of informational signals and systems; ability for design of a photonic device; ability to use the modern methodic of investigations of the general physical and chemical features of optical glasses and crystals, to use prognostic methodic for parameters of new materials; ability to develop optical methods of record, transfer, storage and display of information.

**Competitive strengths of the program:** the high technological level of the experimental basis, 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 photonic optoelectronic devices, quantum informatics, ets. Research practice is advised by successful acting scientists.

**Basic courses**: Interaction of radiation with the matter, Physical optics, Terahertz photonics, Optical electronics, Practice in computer modeling of optical systems, Non-linear optics, Quantum informatics, Technologies of epitaxy for photonics materials, Nano-optics and nano-materials, Optical sensors, Materials and technologies for optics, Nanophotonics, Industrial practice (research work).

**Organizations for the practice and employment of graduates**: The Institution of Functional Nuclear Electronics NRNU MEPhI, scientific centers and industrial companies, Institutions of the Academy of Sciences.