

Design, synthesis and study of III-N wide-bandgap heterostructured materials and microlasers with high-quality resonators

spb.hse.ru/en/fmcs/qoe/project_a3n

Research Unit of HSE University
International Laboratory of Quantum Optoelectronics

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project leader

Natalia Kryzhanovskaya,
Head of Laboratory

Research Unit of Partner
Center for wide-bandgap nano- and microelectronics at the B.I. Stepanov Institute of Physics of the National Academy of Sciences of Belarus

ifan.basnet.by/en

project leader

Evgenii Lutsenko,
Director of the Center

Belarus and Russia
make science together

Natalia Kryzhanovskaya:

Why are such micro-lasers so important?

The lasers can be used for data transmission, detection of chemicals, in biosensors and so on. They are of great research interest as sources of directional ultraviolet and visible light, capable of operating under extreme conditions, for example, at high temperatures.

Whom does your laboratory, the International Laboratory of Quantum Optoelectronics (ILQO) in St. Petersburg, conduct research with?

Our research partners present one of the largest research centers in Belarus in the field of semiconductor materials and devices based on them. It is the Center for Wide-Band Nano- and Microelectronics at the B.I. Stepanov Institute of Physics of the National Academy of Sciences of Belarus. Its team is a leader in the field of semiconductor materials research and development of light-emitting devices based on them.

What state-of-the-art equipment do you use?

The laboratory is provided with modern equipment necessary for creation and research of microlasers with record-breaking characteristics. In particular, we have a large-scale research facility "Complex Optoelectronic Stand" at our disposal. We expect that a joint efforts of the two project teams will be conducive to establish and develop the III-N microlasers scientific school in Russia and Belarus and help to involve talented undergraduate and graduate students in the research process.



International Academic Cooperation, HSE University

Joint Basic Research Projects



**SINCE 2023, A COMPETITION FOR JOINT
FUNDAMENTAL RESEARCH PROJECTS HAS
BEEN INITIATED.**

The Competition shall be held among academic (research) structural subdivisions of HSE University planning to implement joint basic research projects with academic units of international universities and research centres engaged in research topics similar to the academic (research) subdivisions of HSE University.

Our goal:

- development of international scientific collaborations
- expansion of the research agenda and multidisciplinary
- involvement of students in joint basic research projects to improve their culture of academic research

