

# CREATION OF A NEUTRON REFLECTOMETRY FACILITY BASED ON THE WWR-K RESEARCH REACTOR

Leading international neutron institutes are actively working on the creation and promotion of experimental methods of neutron reflectometry, which makes it possible to study surfaces, thin magnetic films and multilayer structures at the nanometer level. This method provides a unique opportunity to study the boundaries of liquid and solid phases, as well as layered structures, regardless of their chemical composition. Due to the high interest in nanoscale structures and phenomena, neutron reflectometry is becoming an important tool for solving fundamental and applied problems in physics, chemistry and biology.

Unlike X-ray reflectometry, neutron reflectometry makes it possible to study a wider range of materials used in multilayer magnetic nanostructures (MMN). Polarization neutron reflectometry makes it possible to characterize in detail the layered distribution of not only the nuclear density, but also the magnetization vector, including complex non-collinear distributions.

In Kazakhstan, there is a need to create a new neutron reflectometry facility, since the current leading institutes do not have such equipment. The development of an installation with a horizontal scattering plane for condensed matter research at the WWR-K reactor will open up significant prospects for the country and allow the Institute of Nuclear Physics of the Ministry of Energy of the Republic of Kazakhstan to become a priority center for neutron research at the international level.

This article describes the basic steps of designing and building a new installation, the problems encountered during assembly, and ways to solve them. The first results and future directions of modernization of the installation are presented.

## Section

Energy and materials science (Section 2)

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