High-pressure x-ray diffraction techniques using laboratory microfocus x-ray source XEUSS 3.0

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The XEUSS 3.0 x-ray diffractometer at the Laboratory of Neutron Physics of the JINR has been used for the small-angle x-ray scattering (SAXS) studies last two years. In addition to SAXS, which is the main area of research at this facility, a technique for x-ray powder diffraction experiments using high-pressure diamond anvil cells technique has been developed. The brightness of the source and the hardness of the x-ray beam of a microfocus tube with a molybdenum anode make it possible to conduct experiments at high pressures and obtain powder diffraction patterns at pressures up to 100 GPa.
A review of experimental techniques for high-pressure x-ray diffraction is presented. The results of studies of the crystal structure at high pressures obtained at the facility are shown.
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