

Measurements of silica glass and water using a high-pressure diffractometer in J-PARC/MLF

Yoshinori Katayama^{1*}, HATTORI, Takanori¹, YAGAFAROV, Oscar¹, SAITOH, Hiroyuki¹, SANO, Asami¹, SUZUYA, Kentaro¹, CHIBA, Ayano²

¹JAEA, ²Keio Univ.

Neutron diffraction measurements at ambient conditions and at pressures of 2.3 GPa and 5.5 GPa at room temperature were carried out using a high-pressure neutron diffractometer, PLANET, installed in J-PARC/MLF. We compressed a sample in a ZrO₂ cube using a six-axis press by a 6-6 method. The size of the sample was 4.6mm in diameter and 6.7mm in height. The size of the incident beam was 2.5mm in width and 4.5mm in height. The pressure was estimated from the applied load. Clean diffraction patterns without diffraction lines from surrounding materials were obtained. Measurements on heavy water at ambient conditions were also carried out. We will try to measure heavy water at high pressures. The results will be also reported.

Keywords: neutron diffraction, glass, water, high pressure