

High resolution neutron powder diffraction of methane hydrate at high pressure

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Neutron plays complementary role to x-ray in material science at high pressure, especially as the most powerful probe for structural analysis of hydrogen-bearing compounds. J-PARC (Japan Proton Accelerator Research Complex) now becomes one of the strongest pulsed neutron sources which give us such a probe. Here we present our recent high-resolution neutron powder diffraction result of fully-deuterated methane hydrate at high pressure, which was measured at TAKUMI beamline (BL19) at J-PARC MLF (Materials and Life Science Experimental Facility), using compact high-pressure anvil cells. For this purpose we have developed a new-type cell design suitable for time-of-flight neutron diffraction.

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