Commissioning for the High Intensity Total Diffractometer (NOVA) at J-PARC

H. Ohshita[1], T. Otomo[1], K. Ikeda[1], N. Kaneko[1], M. Tsubota[1], T. Seya[1],
K. Suzuya[2], on behalf of NOVA group
[1]IMSS KEK, [2]J-PARC Center JAEA.

A High Intensity Total Diffractometer (NOVA) has been constructed in BL21 of MLF at J-PARC. NOVA can measure a static structure factor S(Q) between 0.01 $Å^{-1}$ and 100 $Å^{-1}$ in a short measurement time. NOVA can not only observe structures of various materials such as crystalline, amorphous and liquid phases, but also measure in-situ observation of hydrogen absorption and desorption reaction processes.

NOVA has five detector banks ("high-angle", "90 degrees", "45 degrees", "20 degrees" and "small-angle" whose names are derived from directions of scattering angles). Almost 900 3-helium gas detectors are set in the detector banks. A Gas Electron Multiplier (GEM) is used as an incident-neutron beam monitor. As a result of commissioning of NOVA, we found that the Q-resolution (dQ/Q) is close to that of the design value. Each detector position was corrected by parameters for matching the d-value of a Si powder. A measurable Q-range for NOVA is estimated by analyzing of a CCl_4 standard sample.

In 2010 summer, a T0 chopper, a disk chopper and a Fermi chopper which is used for inelastic neutron scattering experiment were installed The sample environment for research of a hydrogen storage material (a PCT instrument and a thermostatic chamber) were also developed

In this presentation, the current status of commissioning for NOVA is reported. This work was supported by NEDO under “Advanced Fundamental Research Project on Hydrogen Storage Materials”.