

# Status Report of Super High Resolution Powder Diffractometer at J-PARC

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Three years have passed since the first neutron beam production in the Materials and Life Science Experimental Facility (MLF) of the Japan Proton Accelerator Research Complex (J-PARC); in November 2010, neutron beam power reached 200kW. In the early stage of commissioning of the Super High Resolution Powder Diffractometer, SuperHRPD, we evaluated ultimate instrumental resolution at the highest scattering angle to be  $\Delta d/d = 0.035\%$  using a single crystals Si sample. In low beam power, large amount of powder sample and large solid angle are practically necessary which results in ordinary resolution to be 0.1%. Using recycled one-dimensional He-3 detectors, 0.06% resolution was achieved by a limited detector area and a slender type of sample holder (3mm in diameter). We are introducing high-resolution detectors and substitute them for recycled detectors.

We are continuously upgrading SuperHRPD by the replacement of scattering chambers, the increase of detector solid angle, and the improvement of the detector systems and the R&D of sample environments. Rietveld analyses of the three detector banks data for standard samples were successful. The general user program has been started and more than 40 proposals have been carried out so far.

SuperHRPD and other neutron diffractometers with long flight paths suffered from the East Japan Earthquake on March 11, 2011. A dedicated annex beamline building subsided by 8.8 cm and a part of guide tube is broken. Recovery scenario with immediate restart is planned.