

## Poster Presentation

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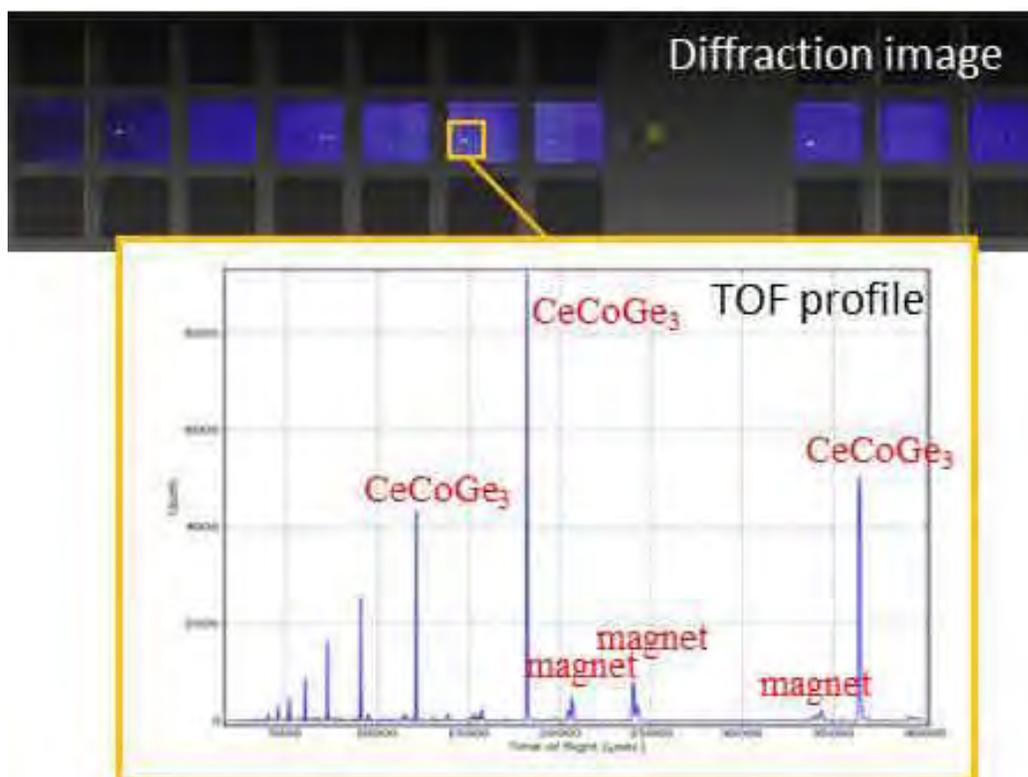
### SENJU, Extreme Environment Single Crystal Neutron Diffractometer at J-PARC

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SENJU, a TOF-Laue single crystal neutron diffractometer at the BL18 of MLF/J-PARC, was designed for precise crystal and magnetic structure analyses under multiple extreme environments such as low-temperature, high-pressure and high-magnetic field, and also capable of taking diffraction measurements of small single crystals, less than 1.0 mm<sup>3</sup> in volume [1]. Just after the launch of SENJU in March 2012, we newly installed and/or upgraded some sample environment devices. SENJU has a vacuum sample chamber and 37 two-dimensional scintillation detectors. Wavelength of incident neutron is 0.3 - 4.4 Å for the 1st frame and 4.6 - 8.8 Å for the 2nd frame. Because the short wavelength neutron is available and the sample position is covered by large solid angle of the detectors, wide reciprocal space within 30 Å<sup>-1</sup> can be measured simultaneously by one measurement. As sample environment devices, 4K cryostat with 2-axes goniometer, longitudinal magnet, high-pressure cell, high temperature furnace and other devices are available or in commissioning. The most popular sample environment device on SENJU is the 4 K cryostat with a fixed-chi type 2-axes goniometer. We adopted piezo-rotators to rotate the sample crystal under vacuumed and cryo conditions. The 2-axes goniometer works stably even at 4 K and the time for cooling was 4.5 hours. A longitudinal magnet was recently installed on SENJU. The lowest temperature was 1.42 K and the maximum magnetic field was 6.85 T. A test diffraction measurement of a CeCoGe<sub>3</sub> single crystal (1.5 x 1.5 x 3.0 mm) under 1.5 K and 0.5 T showed that Bragg reflections from the sample was clearly observed and the Bragg peaks of the sample crystal were much higher than the peaks from the magnet itself as shown in the figure. In this presentation, we will show the current status of sample environment devices for SENJU such as cryostat, magnet and other devices.

[1] I. Tamura, K. Oikawa, T. Kawasaki, et al., *J. Phys.: Conf. Ser.*, 2012, 340, 012040.



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