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## Recent progress of the new spectrometer in MLF, POLANO

POLANO is the chopper type spectrometer with a polarization analysis capability in the Materials and Life Science Experimental Facility (MLF), J-PARC. After several years spending for designing, manufacturing and construction of the spectrometer, we finally commenced the beam commissioning and a part of user program with unpolarized neutron beam condition. With using neutron beam, its intensity, divergence of the neutron beam, time-of-flight beam profiles and direct imaging were measured. Since POLANO is targeting high-energy polarization experiment, all those components are designed as optimizing for 100 meV of neutron energy. In particular, 4 Qc converging super mirror guide tube can effectively transport such a relatively high energy neutrons to the sample position. Also, we are making our efforts to eliminate unintended contaminations (backgrounds). As mentioned above, POLANO principal concept is to achieve higher-energy polarization analysis of inelastic scattering beyond a reactor-based neutron source. We target the energy range (transfer energy) over  $dE = 40$  meV with using SEOP for a polarizer and bender supermirror as an analyzer (phase I). We are now working on developing *in situ* SEOP system, achieve 70~75 % of  $^3\text{He}$  spin polarization. Also, magnetic devices and system are under development. Recently, both SEOP system and magnetic systems will be installed in the beam line, and will start polarization beam commissioning. In the second phase, we focus on higher energy experiments ( $0 \text{ meV} < dE < 100 \text{ meV}$ ) with a wide solid angle SEOP/MEOP analyzer. In order to achieve a high flux polarized neutron experiment, we plan to adopt cross correlation method. R&D of the correlation chopper is now under way.

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