Group Report
BL17 SHARAKU - June 2012

Beamline Update

Reflectivity measurements using unpolarized neutrons

There are currently eight sets of 4-jaw slits in the beamline used to condition and collimate the neutron beam for reflectivity measurements. All the slits have now been fully tuned.

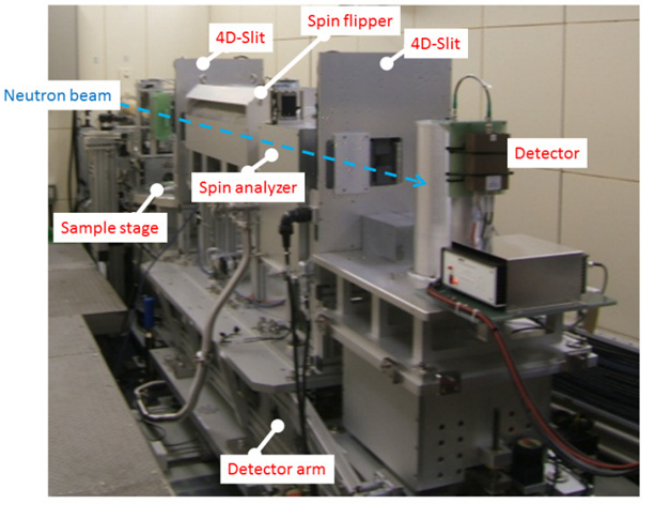
Reflectivity profiles for several standard samples (Ni thin films on 3 inch (diameter) glass substrates) using unpolarized neutrons have been collected. In a 2 hour data collection time, profiles were collected over six decades of intensity and with a momentum transfer resolution ($\Delta q/q$) of 3-5%.

Polarized neutron reflectivity measurements

All the components required for polarized neutron reflectivity measurements are now fully installed in the beamline. These have been aligned and the neutron spin flipping efficiency optimized using a supermirror polarizer, a supermirror analyzer and a two-coil spin flipper without a sample in place. By tuning the applied magnetic field, spin flipping ratios of between 50:1 and 20:1 were obtained in the wavelength range of 2.2 - 8.8 Å. The polarized neutron reflectivity measurements using a standard sample confirmed that the instrument is now ready for users.

Reflectivity measurements at low temperatures

Commissioning work to enable low-temperature reflectivity measurements is currently in progress. These experiments are challenging because the spatial requirements of combining a cryostat with the magnetic field system limit the sample size to 15mm x 15mm.



Left: The polarized neutron reflectomator at BL17. Right: Preparation for low-temperature experiments.