

APS 4-ID-C 7T Magnet End Station:

The 7 T magnet end station is a split-coil horizontal field windowless superconducting solenoid, equipped with a liquid Helium (LHe) variable temperature insert (VTI, ~5 to 325 K) on which samples are mounted. The VTI is mounted on a positioner stage which allows ~40 mm of vertical travel for multiple samples and ~340° of sample polar angle (ϕ). Presently the accessible field range is -6 to +6 T. The field is in the same direction as the X-ray propagation vector. Two principal methods of detection are available: total electron yield which is performed by measuring the restoring current to the electrically isolated sample and X-ray fluorescence yield using a Vortex detector mounted perpendicular to the X-ray beam. It is also possible to measure reflectivity at a fixed angle of ~12 degrees grazing.

Samples are mounted on a transferable sample holder, which is then positioned in the sample mount carrier (Fig. 1). The samples can occupy the bottom 35-40 mm of the holder. For thin film samples, double sided carbon tape is used for mounting the samples. However, for bulk samples it is necessary to secure them more securely since the high magnetic field may be strong enough to pull the samples off the tape. The tapped holes on the holder may be used for this purpose. The sample holder/carrier is then mounted on a magnetic linear rotary drive in the introduction chamber (Fig. 2). It typically takes 15 minutes to transfer samples after mounting them in the intro chamber.



Figure 1.

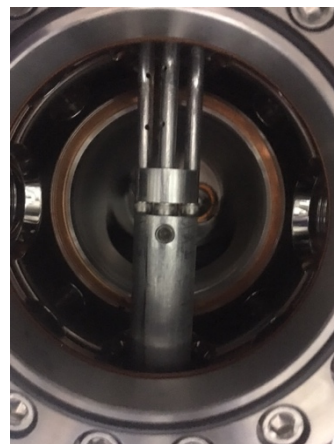


Figure 2.