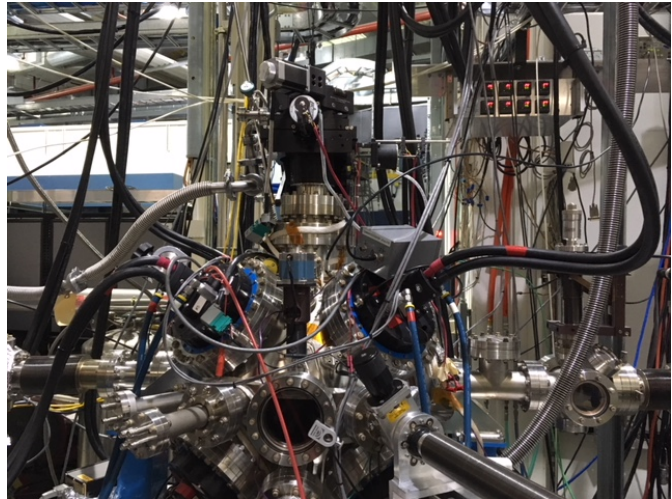
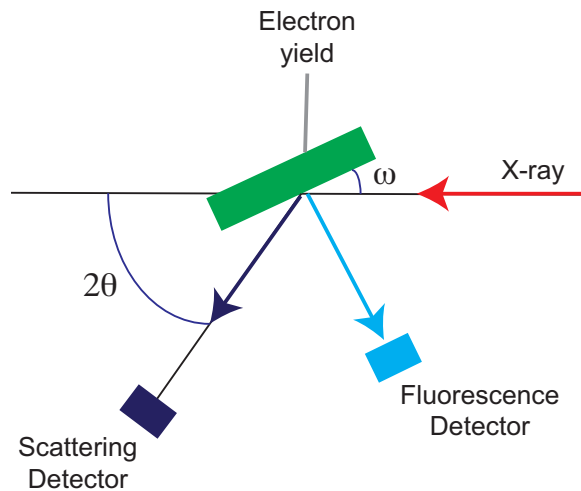


## Octupole Endstation

This endstation is a vector electromagnet that can apply a field in any direction with a magnitude of 0.4-0.5 T depending on the field direction. This chamber has 3 primary detection modes: surface sensitive electron yield via sample current, fluorescence using a Vortex energy discriminating detector, or scattering with a photodiode. The scattering angular range is a  $2\theta$  of 0-100 deg. and  $\omega$  is freely variable from 0-360 deg. **NOTE:** while we have control of the angular range, the detector reproducibility is not good enough to measure wide angle reflectivity scans as a function of angle. The geometry is shown below:



The sample temperature is variable from 500 K down to ~30 K. For sample mounting we have two options. One option has 3 sample holders (left in figure) that interface with a sample load lock. Samples need to be less than ~7mm diameter for this case. This option also allows course control of the sample azimuthal angle. In the second option (right in figure), there is an open space ~1 cm wide and 40 mm in length on which samples can be mounted. Additional samples can be loaded on the opposite face. Note that for the first option there is a sample load lock that can handle 8 additional samples that can be exchanged rapidly (~15 mins). For the second option, the entire chamber needs to be vented and pump down time ranges from 3 hours for measurements above 150K to 12-24 hours for the pressure to recover enough for low temperature measurements without rapid ice formation. Samples can be mounted using either Carbon tape or Silver paint/paste. In addition, the cryostat has 4 additional wires available for in-situ device measurements.

