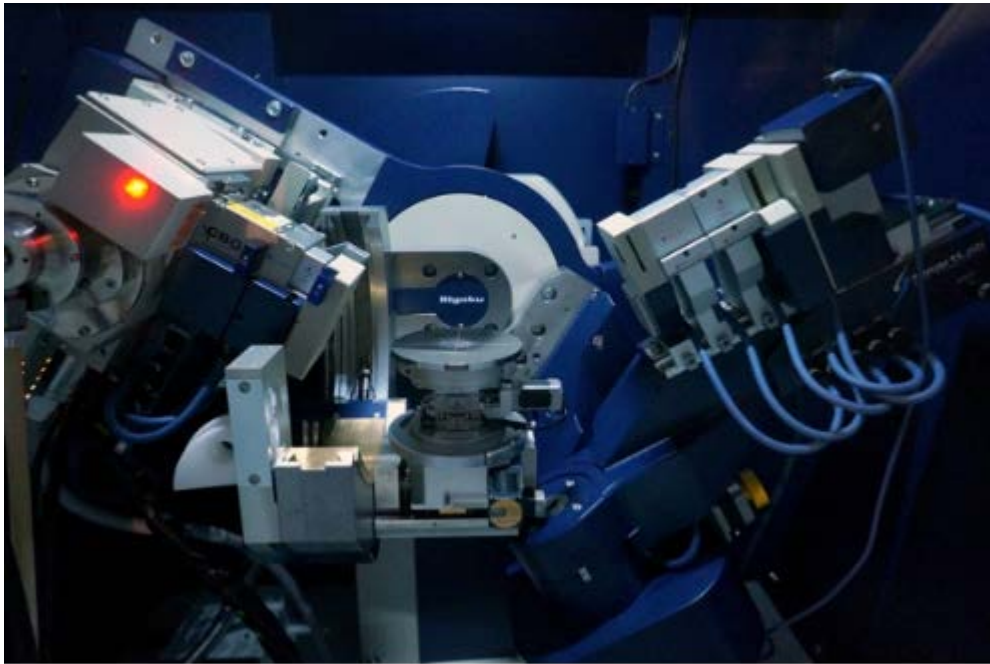


## X-ray diffractometer



**Rigaku SmartLab System**

The Rigaku SmartLab System is a high-resolution four-circle X-ray diffractometer. The system is equipped with a 9 kW rotating Cu-K $\alpha$ 1 anode and the incident parallel beam optics consist of a reflecting mirror and a two-bounce Ge (220) monochromator ( $\Delta\lambda/\lambda = 3.8 \times 10^{-4}$ ). Additionally, the system is equipped with an in-plane scattering arm for grazing incidence in-plane surface diffraction measurements.

A customized He-cooled sample cell with a Beryllium dome can be used to perform X-ray diffraction and reflectivity measurements at low temperatures down to 10 K. The XRD system is mainly used to perform:

- X-ray reflectivity measurements of thin monolayers or multilayers in order to extract film thicknesses and interface roughnesses;
- Out-of-plane (00L) X-ray diffraction measurements in order to determine out-of-plane lattice parameters of thin film samples;
- Reciprocal space maps in order to study strain effects in thin film heterostructures.