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The I07 surface and Interface diffraction beamline at Diamond Light Source

The I07 beamline at Diamond Light Source (UK) is dedicated to the characterization of surfaces and interfaces using x-ray diffraction and scattering techniques. The beamline operates in the energy range from 6keV to 30keV using a crocooled undulator source, and it's operating 2 experimental hutches with 3 instruments: multipurpose diffractometer, a double crystal deflector for experiment on liquid surfaces and a UHV diffractometer.

The beamline provides also a suite of different sample environments, which includes: electrochemical cells (for electrocatalysis, corrosion, battery and electrodeposition studies), a catalysis reactor (operating at up to 20bar), and several environmental chambers and adaptable setups allowing for temperature and atmosphere control.

The beamline is thus an ideal tool for a variety of different experiments and is particularly well suited to investigate time-dependent processes and study surface dynamics. I07 supports different kind of techniques that can provide information regarding surface crystallographic structure as well as surface morphology and composition at different length scales. The techniques supported by I07 include: Grazing Incidence X-ray Diffraction (GIXD), Surface X-ray Diffraction (SXRD), Grazing Incidence Small Angle X-ray Scattering (GISAXS) and X-ray reflectivity (XRR). X-ray fluorescence can also be used as a complementary technique to provide information regarding chemical composition and oxidation state of the materials.

Thanks to the heavy duty sample positioning system on the multipurpose end station the beamline can, as well, support experiments performed with custom users sample environments (up to 250kg).

Please select the related topic from the list below

Instrumentation and methods

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