SIRIUS: Soft Interfaces and Resonant Investigation on Undulator Source

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Areas of application, instrumentation and methodologies used
Energy range: 1.4 – 12keV with adjustable polarization

Sample environment:

- diffractometer with two detector arms and two sample stages: 6-axis tower to accommodate bulky and heavy dedicated sample environments or kappa head for crystallography.
- Langmuir trough + Brewster angle microscope
- solid sample holder
- High vacuum Baby Chamber with oven.

Techniques used:

- Diffraction, diffusion, Grazing Incidence x-ray fluorescence (GIXD, GISAXS, GIXF...) measurements for fixed energy solid and liquid interfaces (8, 10, 12 keV)
- Anomalous or resonance measurements at absorption edges elements of interest to soft matter (Ca, Cl, Cd, S, P, K ...) and at the K-, L- and M-edges of elements involved in semiconductor (GIDAFS) and magnetic (XRMD) nanostructures. The undulator selected makes it possible to vary the beam's polarization (linear, vertical or circular). The beam's coherence is exploited in the field of tender X-rays (around 2 keV)

Major disciplines
Structural studies of soft interfaces (Langmuir and Langmuir-Blodgett films, self-assembled, liquid crystal interfaces, biological systems, polymers, etc.) and semiconductor or magnetic nanostructures.