



GEMaC

Groupe d'Étude de la Matière Condensée

X-RAY DIFFRACTION

GEMaC has an Empyrean Series 3 X-ray diffractometer from Malvern Panalytical, designed for the structural characterization of crystalline materials, whether in the form of powders, bulk samples, single crystals, or thin films deposited on a substrate.

Instrument configuration:

- » **Goniometer:** vertical, **Bragg-Brentano** configuration
- » **X-ray source:** copper anode (Cu, $\lambda = 1.54 \text{ \AA}$)
- » **Hybrid incident optics:** mirror + germanium (Ge) monochromator with two reflections
- » **Motorized sample stage:** rotations ω , 2θ , and χ , and vertical translation z .

Diffracted beam optics:

- » Automatic beam attenuator

- » **0.27°** planar collimator
- » **0D xenon (Xe)** proportional counter

Available techniques:

- » **High-resolution X-ray diffraction (XRD)**: phase identification, structural and crystallographic analysis.
- » **X-ray reflectivity (XRR)**: determination of the thickness, density, and roughness of thin films.
- » **Grazing-incidence X-ray diffraction (GIXRD)**: study of the crystallographic properties of surfaces and thin films.

