



GEMaC

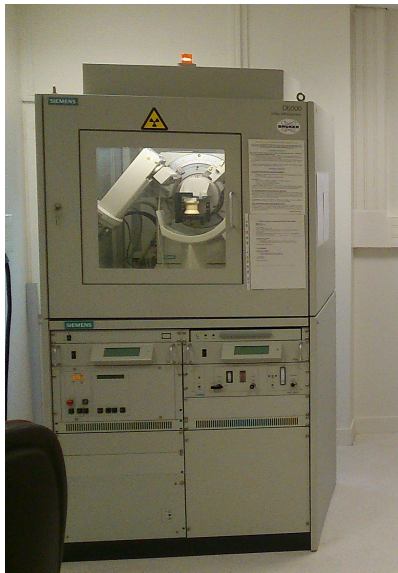
Groupe d'Étude de la Matière Condensée

X-RAY DIFFRACTION

GEMaC owns three diffractometers, equipped with a copper anticathode, allowing X-ray diffraction-based structural characterisation of crystalline material under the form of powder, bulk, monocrystals, thin layers deposited on a substrate.

Powder diffractometer Siemens D5000

- two-circles diffractometer (montage -)
- sealed copper tube (= 1.54 Å)
- graphite back monochromator
- scintillator



Bruker Nonius FR590 diffractometer

High resolution (~ 10 arcsec), dedicated to the study of single crystals and thin layers. It is composed of:

- a goniometer having 5 rotation axes (ω , ϕ , χ , ψ , θ) and one translation axis z ,
- a classical X-ray source (copper anode $\lambda = 1.54 \text{ \AA}$) that generates a X-ray beam. The beam is filtered using a germanium monochromator and an input slit.
- a detector (scintillation photomultiplier).



Seifert XRD3000 diffractometer

This system is equipped with a copper source, a 4-circle goniometer: the sample is adjustable in the three directions of space, and is vertically placed on a plane surface, fixed to a stage with motorised rotation motion about the axes ω , 2θ , and ϕ , and several optical elements: Göbel mirror, front monochromator (2 or 4 Ge (220) crystals), absorbers, Soller slits, possibly a back analyser (2 Ge (220) crystals), and a detector composed of a scintillation counter NaI. The various possible applications are acquisition of reciprocal space mapping, and the investigation of crystallographic properties using $\theta/2\theta$ geometry diffraction, as well as the study of monocrystals in high resolution and rocking curve.

