# **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 cristalline 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 (x, y, , 2, ) and one translation axis z,

- a classical X-ray source (copper anode = 1.54 Å) that generates a X-ray beam. The beam is filtered using a germanium monochromator and an input slit.

- a detector (scintillation photomultipler).



### 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 , 2, et , 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 Nal. The various possible applications are acquisition of reciprocal space mapping, and the investigation of cristallographic properties using /2 geometry diffraction, as well as the study of monocrystals in high resolution and rocking curve.

