



# **GEMaC**

## **Groupe d'Étude de la Matière Condensée**

## **ATOMIC FORCE MICROSCOPY (AFM)**

GEMaC has a Bruker Dimension ICON® atomic force microscope, equipped with automatic imaging optimisation (ScanAsyst ®) in PeakForce tapping mode.

Atomic Force Microscopy is based on the detection of the interactions forces between a probe and a surface of conducting or insulating sample or insulator. The lateral and vertical displacement of the tip above the sample is driven by a piezoelectric tube allowing to characterise the sample surface (roughness) as well as metrologic measurements at the nanometer scale.

3 modes are available: contact mode, tapping and peakForce.

Measurements of the distribution of the electrical and magnetical gradients (EFM and MFM) are possible, as well as an electrical characterisation (C-AFM module) on samples that are weakly conducting (current range 2 pA to 1  $\mu$ A).

Manipulation of nano-objects (indentation, local anodic oxidation, etc.) is facilitated by the Nanolithography software. Measurements can be realised in air or in liquid media. A

mapping of the nanomechanical properties is allowed by the QNM® (quantitative nano-mechanical mapping) software, on a large variety of samples (range from 1 MPa to 50 GPa for the Young modulus, and 10 pN to 10 µN for adhesive forces).



The AFM is open to all GEMaC and ILV research teams. Prestations for external laboratories and companies are possible.