

The logo for GEMaC features the text 'GEMaC' in a large, bold, sans-serif font. The letters are dark grey. Behind the text, there are several thin, light grey lines that curve and sweep across the page, creating a sense of motion and depth. Below the main text, the full name of the group is written in a smaller, bold, sans-serif font.

GEMaC

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

ATOMIC FORCE MICROSCOPY

Atomic Force Microscopy is based on the detection of the interactions forces between a probe and a surface of conducting sample or insulator. A tiny tip fixed at the end of a flexible cantiler is scanned in a raster pattern over the surface. The tip-sample interaction leads to the cantilever deflexion which is monitored using a laser beam reflected by the back of the tip. The beam is reflected towards photodectectors. A feedback control assure a tip-sample interaction constant during the displacement.

Our AFM (Dimension 3100 (Bruker AXS)) is composed of an electronics IIIA and Quadrex system. It is installed in an acoustic and vibration islation hood.

Mapping of the electric and magnetic fields (EFM and MFM) are realizable as well as an electric characterization (module C-AFM) on not very conducting samples (range of current of 2pA with 1 μ A).

The handling of nano-object (indentation, local anodic oxidation, etc) is facilitated by the Nanolithography software.

Local anodic oxydation of SrTiO_{3-x}

This device offers applications in various fields (physics, chemistry, biology). It is a tool for characterization of roughness but also for metrological measurements on the nanometric scale and handling of nano-objects.

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