

CIME-SPM: Introduction to AFM and STM

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These practical works constitute an introduction to the Scanning Probes Microscopies and more precisely to Atomic Force Microscopy (AFM) and Scanning Tunnelling Microscopy (STM). At the end of these practical sessions, the participants will have a basic knowledge of the possibilities and capacities offered by these two techniques for imaging surfaces and also for characterizing locally the physical and electrical properties of nano-objects.

The practical will be divided in two sessions of four hours each, and according to the background and the interests of the participants, the sessions will focus more on one or two following aspects:

1. AFM session:

- Imaging well known surfaces in contact mode and dynamic mode
- Approach retract-curves in contact and dynamic mode
- Nano-oxidation / nano-lithography by AFM on hydrogenated silicon surface
- Injection and Detection of electric charges by AFM/EFM in a thin oxide layer deposited on conductive substrate

2. STM session:

- Imaging well known surfaces as gold film or graphite, from sub-micronics to atomic scale.
- Spectroscopy on well known surfaces
- STM tip: a tool for nano-indentation on graphite surface

Apparatus: Two commercial microscopes working at room temperature in air will be available.

- Veeco Dimension 3000 AFM
- Nanosurf STM

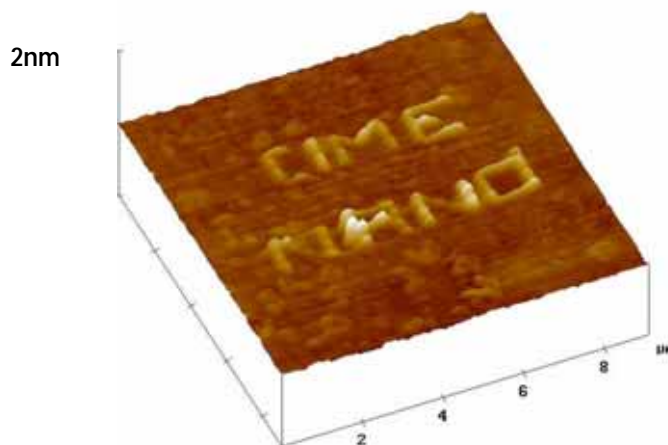


Figure 1 : nano oxidation by AFM on a Si surface

SPM practical work managers:

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