Post-doc with experience in one or more of the following fields: MFM, UHV-STM, molecular magnetism.

ONE – Year Position

ER= Experienced Researchers (PhD or research experience > 4 years but < 10 years).

Not working in Italy more than 12 months in the previous 3 years.

Starting: October 1st, 2014.
Limit to submit candidatures: August 15th, 2014
One-year post-doc position is offered in the frame of the project IAPP ESN-STM (http://in.bgu.ac.il/en/Labs/esn-stm/Pages/default.aspx) at the Laboratory of Molecular Magnetism (http://www.lamm.unifi.it), INSTM (www.instm.it) Research Unit of Firenze, Italy, at the Department of Chemistry of the Università degli studi di Firenze.

The candidate will be included in a multidisciplinary team working in the exploration of novel approaches for the detection of local magnetic properties. Her/his activities will be related to the development of novel procedure for the detection of radiofrequency signals in a Scanning Tunneling Microscope (STM), the preparation of UHV compatible systems of organic radical or molecular magnets grafted on conductive surfaces . The preparation will be based on sublimation in vacuum or via wet chemistry approaches in order to assemble new molecular nano- and micro-architectures suitable for Electron Spin Noise (ESN) STM and Magnetic Force Microscopy experiments.

The IAPP project has as final goal to develop scanning probe-based techniques capable of identifying a single object (atom or molecule) using a local probe of its magnetic features. The project , on the basis of the recent success in ESN detection, is dedicated to investigate the hyperfine coupling between the spin of the tunneling electron and the nuclear spins of the atoms on the sample surface.
To achieve this goal, several improvements to the technique are necessary and are planned by the project. As an example, major steps are to develop and study four advanced ESN-STM setups:
1) in ambient conditions ,
2) in ultra-high vacuum (UHV),
3) at low temperature (LT)
4) at LT-UHV.

The project also requires to improve Radio Frequency recovery and detection systems, ESN spectra sampling strategies and to explore the use of magnetic tips.

Besides the chemical identification of the spin centers, the analysis of the spectral parameters will allow to investigate the coupling with to the surrounding nuclei, the local viscosity, the oxidation state and the motion of atoms and molecules under the probe.

The ideal candidate is an experienced post-doc with a well documented surface science, scanning probe microscopy and molecular magnetism background with strong motivation to work in a multidisciplinary field where continuous exchange between chemists and physicist is required.

For further information, please contact Prof. Andrea Caneschi: andrea.caneschi@unifi.it