


Internship proposal 2008-2009

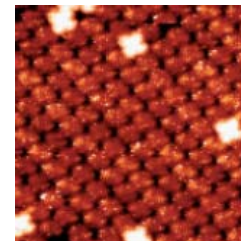
Laboratory : Institut des nanosciences de Paris Address : 4 place Jussieu, 75005 Paris Laboratory director : B. Perrin	
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Bio-inspired functional surfaces

Scientific project :

The Nature has developed very efficient processes to convert light into energy, transport oxygen molecules or activate chemical reactions. In all these processes, porphyrins and related molecules such as phthalocyanines play a crucial role due to their electronic properties, making these class of molecules ideal candidates for biomimetics applications. The broad range of functionality brought by these molecules can be exploited in large variety of fields such as pigment, solar cells, electronic devices, medical application, fuel cells, **sensors** and catalysis. In the later applications, metal phthalocyanines (Pc) play a crucial role in the gas reaction processes.

The internship will consist in preparing Lu phthalocyanine molecular films on various surfaces under very well controlled conditions and expose the film to reactive gases of ammonia and nitrogen dioxide for understanding the parameters, that influence sensing reaction. Optical spectroscopies together with scanning tunnelling microscopy under gases will be studied at UPMC. Electron spectroscopy under high pressure is scheduled in spring at MAX-lab synchrotron. The techniques will aim in improving the performance in heterogeneous catalysis and in gas sensors.



STM of Pc/graphite
Uppsala

Techniques in use :

ultra-high vacuum experiment, optical spectroscopies, scanning tunneling microscopy, electron spectroscopies (at MAX-Lab synchrotron, Sweden)

Applicant skills :

Great motivation, solid state, surface physics

Granted internship : yes if an internship agreement from UPMC is signed 400 euros /month
C'nano IdF laboratory (France only) : yes
Possibility for a thesis : yes , precise financial support ministry