


**Internship proposal 2011-2012**

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*Title for the scientific project*  
**Electronic structure of hybrid organic/inorganic compounds**

**Scientific project:**

The fabrication of organic/inorganic semiconductor hybrid structures is the subject of a worldwide research effort due to the possible applications in the field of organic electronics. In the last decade, specific attention was devoted to reaction of organic molecule with the (001) oriented silicon, reconstructed  $2 \times 1$ , which can be used as a template for the grafting of organic molecules arrays via the reaction of molecular functionalities ( $\pi$  bonds, amines, alcohols, etc.) with surface silicon dangling bonds in ultra high vacuum (UHV) conditions

The proposed internship will consist to study the influence of interaction of organic molecules with hydroxylated silicon surface. At room temperature and at saturation coverage, the water molecule chemisorbs dissociatively on the silicon dimer leading to a H-Si-Si-OH unit. The surface silanols are highly reactive and can lead to a selective reaction to graft organic molecules.

**Techniques in use:**

X-ray photoemission spectroscopy (XPS) and X-ray absorption spectroscopy (SOLEIL synchrotron).

**Applicant skills:**

Stronger interest in surface science and experiment work.

**Granted internship:** yes (~400 €/month)

**C'nano IdF laboratory (France only):** yes

**Possibility for a thesis:** financial support to be defined