SACLAY

DIRECTION DES SCIENCES DE LA MATIERE,
DEPARTEMENT DE RECHERCHE SUR L'ETAT CONDENSE,
LES ATOMES ET LES MOLECULES,
SERVICE DE PHYSIQUE ET DE CHIMIE DES SURFACES ET DES INTERFACES

SEMINAIRE

Vendredi 7 Décembre 2007 à 11h00

Bâtiment 466, salle 111 - CEA Saclay, 91191, Gif sur Yvette

Single Molecule Interactions and Contacts on the Si Surfaces

J. BORLAND

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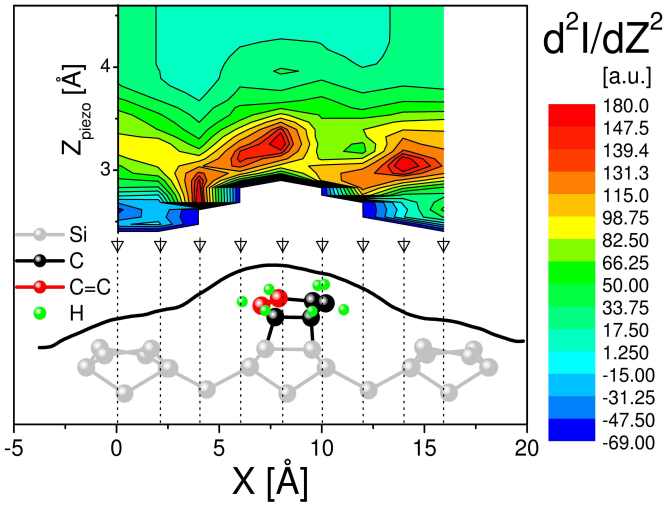
Invité par P. Soukiassian

Résumé:

Here in this presentation we describe recent STM results on contacts with single molecule and other nanoscale objects on Si(100). We demonstrate that contact formation can result in dramatic electronic and structural rearrangements of molecules, one which can transform initially uninteresting and electrically insulation molecules into potential candidates for molecular devices. We also demonstrate how it is possible to tailor the composition of the STM probe and how this leads to specific interactions between the probe and the target molecule. Starting for the far-field, we monitor the approach of the metal probe to the target molecule, the motion and rearrangement of the molecule, including vibrational quenching, rehydridisation and bond formation. We describe the strengths and limitations of this approach and its potential to provide insights into both contact bond formation and chemical reaction dynamics.

The second part of this talk will focus on the stresses that occur during contact and chemical surface passivation. Using a novel STM technique we measure the stress evolution of the Si(111) during oxidation and show that discontinuities observed are associated with changes in the structure of the oxidised surface. We discuss the possible implications of these observations and the potential of this new analytical method.



*** SERA PRECEDE D'UNE PAUSE-CAFE A PARTIR DE 10H30**

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