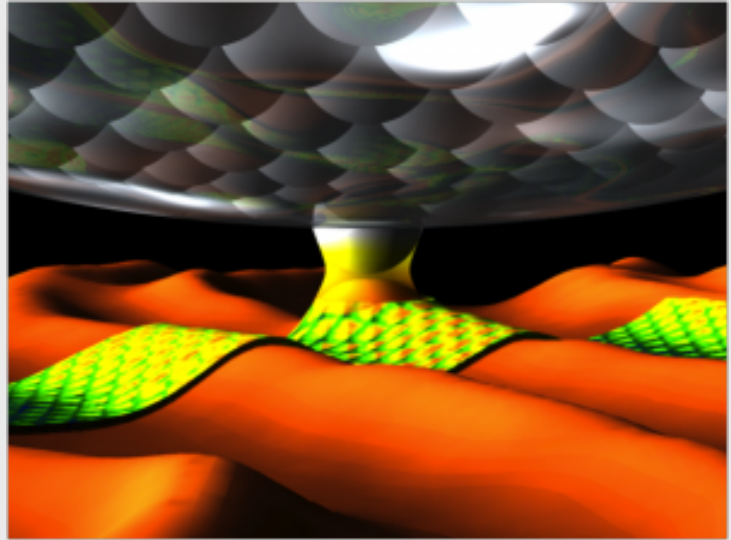


The Small Frontier: Imaging Atomic and Molecular Functionality

Date: Friday, 7th March 2014.



Time: 12:00h

Place: Departamento de Física de la Materia Condensada, Facultad Ciencias, Módulo 3 ,
Aula de Seminarios (5ª Planta).

Klaus Kern (Max-Planck-Institute for Solid State Research (MPI-FKF) and Ecole
Polytechnique Fédérale de Lausanne - EPFL).

ABSTRACT:

The advent of scanning probe microscopy has provided the unique ability to investigate matter with ultimate precision. Single atoms and molecules can today not only be imaged with unprecedented resolution but also probed by local spectroscopy, manipulated to assemble functional nanostructures and excited to induce chemical change. In the present talk I will present our recent efforts to push the limit of scanning probe microscopy and spectroscopy by exploiting ultralow temperatures (10mK) and high magnetic fields (14T) as well as by developing novel vacuum interfaces for the controlled handling of large molecules with negligible vapor pressure. The experiments provide unprecedented microscopic details of single molecule and atom junctions, quantum magnetism, single molecule electrostatics and protein folding. Many new perspectives ranging from quantum critical phenomena through molecular engineering to energy conversion are opened up by these developments.

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