

Electronic and magnetic properties of single hydrogen atoms adsorbed on graphene by STM

Post doc positions will be available in 2016 at NEEL (Grenoble, France) in the UHV-STM team:

Postdoc#2 (18 months, starting mid 2016): The aim of the project (funded through the FlagERA program) is the investigation of the electronic and magnetic properties of single hydrogen atoms adsorbed on graphene, mostly by means of scanning tunneling microscopy (STM) and spectroscopy (STS). It has been foreseen theoretically that such adsorbed H monomers could indeed carry an "extended" magnetic moment, related to the presence of a zero energy state [O. Yaziev, Rep. Prog. Phys. 73, 056501 (2010)]. However, the realization of a dilute phase of such H monomers and the local analysis of its electronic structure has not yet been realized. In collaboration with a group from the UAM Madrid we have developed a technique allowing to manipulate H atoms on a graphene surface. This paves the way for the investigation of graphene magnetism at the nanometer scale. Specifically we shall focus on the preparation of different variants of graphene on SiC to study the robustness of the zero energy state/ magnetic moment. The experiments will be performed using 2 home made UHV STM, including a cryogenic one for spectroscopic studies. A strong background in solid state physics is necessary. Knowledge in surface science techniques is needed, experience with STM/STS measurements will be appreciated.

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