

O 1: Invited talk (Grill, Leonhard)

Time: Monday 10:15–11:00

Location: H36

Invited Talk

O 1.1 Mon 10:15 H36

Manipulation and assembly of single functional molecules: Towards molecular nanotechnology — ●LEONHARD GRILL — Fritz-Haber-Institut der Max-Planck-Gesellschaft, 14195 Berlin

Functional molecules are of great interest for future applications in molecular nanotechnology where they should be used as single-molecule devices. The scanning tunneling microscope (STM) is a very important instrument for the investigation of such molecules, because it can image single molecules with submolecular resolution and is also capable to manipulate them by chemical and electrostatic forces or electronic processes [1].

In this talk, various examples of manipulations of single molecules

by low temperature STM will be given. The controlled assembly of functional molecules by "on-surface-synthesis" [2] will be presented, whereas covalent bonding is the desired intermolecular interaction, because it provides high stability and the possibility of efficient intermolecular charge transfer. By pulling a polymer from a metallic surface, the conductance can be measured for a single molecular wire as a continuous function of the electrode-electrode distance, revealing electronic and mechanical properties [3]. Finally, the adsorption and growth of such organic nanostructures on inorganic crystallites, thus creating a hybrid system, will be discussed.

[1] L. Grill, *J. Phys.: Cond. Matt.* 20, 053001 (2008) [2] L. Grill et al., *Nature Nanotechn.* 2 (2007) 687 [3] L. Lafferentz et al., *Science* 323, 1193 (2009)