O 79: Invited Talk Stefan Tautz

Time: Thursday 17:45–18:30 Location: HE 101

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Bonding, Structure and Function of Highly Ordered Molecular Adsorbate Layers on Metal Surfaces — •Stefan Tautz — Institut für Bio- und Nanosysteme 3, Forschungszentrum Jülich, 52425 Jülich

The adsorption of large π-conjugated organic molecules on solid surfaces is attracting increasing interest, because it presents some fundamentally new aspects compared to small molecule adsorption. Moreover, molecular semiconductors have been developed to a point where devices such as OLEDs and OFETs are feasible. In these devices, interfaces between molecular phases and inorganic materials are important functional elements, and hence an additional, technological interest to study the adsorption of π-conjugated molecules has arisen.

In the present contribution, we focus on highly ordered organic adsorbate layers as model systems and discuss selected aspects of their bonding, structure and functional properties. The following issues are addressed: (1) The *bonding* of π-conjugated molecules often involves chemical contributions from different functional groups of the molecule. Using a well-studied example molecule, the particular properties of such bonds and their interplay are discussed. (2) Intermolecular interactions have an important influence on the *structure formation* at the interface, leading to complex phase behaviour, for which examples are discussed. (3) Charge transport is the most relevant *function* of organic semiconductors. Transport experiments through a single-molecular wire, contacted covalently with an STM tip and gated mechanically by tip manipulation, demonstrate the strong influence of the metal-molecule bond on the transport characteristics.