O 82: Invited talk (Willi Auwärter)

Time: Friday 9:30–10:15 Location: HE 101

Invited Talk O 82.1 Fri 9:30 HE 101

Nanochemistry with functional molecules - a 2D perspective

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The comprehensive characterization and engineering of low-dimensional nanostructures on surfaces is of significant current interest, both from a scientific and technological point of view. Specifically, the fabrication of molecular nano-architectures on metal surfaces, applying self-assembly protocols inspired from supramolecular chemistry, is a maturing and rapidly advancing field of research. We will put particular emphasis on recent results elaborated with porphyrins. Given their intriguing variety of functional properties, which are exploited in both biological and artificial systems, porphyrins are ideally suited as building blocks for surface-confined nanostructures. Moreover, they represent model systems to explore surface coordination chemistry. Scanning tunneling microscopy (STM) and spectroscopy (STS) allows the inspection of the interior of these molecules and their electronic characteristics. Supported with complementary theoretical modeling and space-averaging techniques we address key questions related to their functionality: How does the molecular conformation respond to surface anchoring and how do specific groups guide the self-assembly? What determines the response of adsorbed metalloporphyrins towards small gas molecules? Can we achieve and control conductance switches or molecular rotors?