

The not-so-innocent surface: Scanning probe experiments where the surface matters
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Scanning probe microscopy has become the primary tool for studying surfaces and adsorbates at the nanoscale. Its two most prominent representatives, atomic force microscopy (AFM) and scanning tunneling microscopy (STM), allow imaging morphologies and measuring electronic properties with atomic resolution. Despite the outstanding capabilities of AFM and STM, surfaces remain a devilish study subject whose role more often than not goes beyond simply being a tabletop for adsorbates.

In my talk, I will discuss several examples of the key role that surface-adsorbate interactions can play in scanning probe studies. A first set of experiments investigates the modulation of electronic properties of single molecules by an ultra-thin insulating layer [1, 2], and how this can be utilized to interpret tunneling spectroscopy beyond the prevalent single-particle picture [3]. Secondly, I will show how a change of substrate can flip the outcome of a surface-assisted molecular coupling reaction upside-down ? or not, depending on the morphology of the molecules [4].

[1] F. Schulz *et al.*, Phys. Rev. B 89 (2014) 235429.

[2] F. Schulz *et al.*, ACS Nano 7 (2013) 11121.

[3] F. Schulz *et al.*, Nat. Phys. 11 (2015) 229.

[4] F. Schulz *et al.*, J. Phys. Chem. C (2017) doi: 10.1021/acs.jpcc.6b12428.