

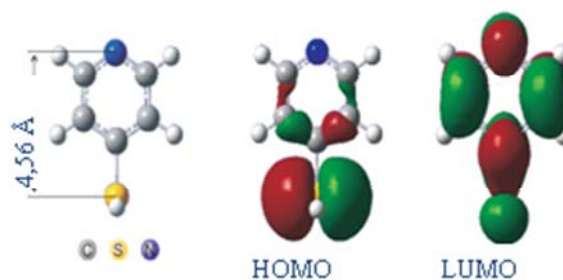
Organic Molecules in Contact to a Metal: A Special Interface

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This contribution aims at introducing the basic phenomena and problems when dealing with larger molecules in contact with a metal. For this purpose, an experimental point of view will be adopted with special focus on characterizing molecules & supporting substrates by Scanning Tunneling as well as Ultraviolet Photoelectron Spectroscopy [STS and UPS]. These techniques provide information on the topographic and electronic properties of both, substrate and molecules. One step further, especially different variants of the tunneling method allow i) the localization of a single molecule in relation to the substrate as well as the determination of the detailed arrangement of islands or complete monolayers of molecules, ii) measurement of the local electronic density of states (LDOS) of a single molecule depending on its exact position as well as iii) vibrational properties of such a molecule. UPS, on the other hand, delivers electronic properties which represent averages over an ensemble of molecules. These various experimental approaches will be demonstrated on one type of molecule:

4-Mercaptopyridin (4PySH)



In all cases, this type of molecule is deposited on top of Au (111).

Analysis covers the properties of the complete range, from one single molecule to a self-assembled monolayer (SAM). In the latter case, also the properties of a metallic Pd counter electrode will be addressed complementing the arrangement to an Au/4PySH/Pd sandwich.