

Probing and manipulating the spin of magnetic adatoms and molecules with tunneling electrons

In the first part of the talk I briefly review recent experiments of inelastic scanning tunneling spectroscopy of single and a few magnetic atoms and molecules [1-6]. Then I show how these experiments can be modeled with a phenomenological spin-assisted tunneling Hamiltonian so that the inelastic dI/dV line shape is related to the spin spectral weight of the magnetic atom [7]. This accounts for the spin selection rules and dI/dV spectra observed experimentally for single Fe and Mn atoms deposited on Cu_2N , as well as Iron Pthalocyanines and Mn chains. In the final part of the talk I discuss how spin polarized STM can be used to manipulate the spin of the magnetic atoms and molecules [8].

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