

PhD Thesis

Single-Spin Spectroscopy of Molecules

Background: Individual atoms, rather than ensembles, carry the functionalities of man-made devices for switching, information storing and -calculating, or catalyzing. My group develops a “6th sense” that turns the scanning tunneling microscope (STM) from an imaging- into an identification tool with atomic resolution.

Task: Experimental determination with single-spin sensitivity of the spin Hamiltonian parameters (hyperfine splitting, ligand-field splitting) of individual functional molecules (single-molecules magnets, stable radicals) adsorbed on single-crystal substrates. The experiments are carried out at ultrahigh vacuum and cryogenic temperatures on a newly purchased, state-of-the art, low-temperature scanning tunneling microscope system featuring a variable magnetic field of up to 5 Tesla at the tunnel junction.

Start: Any time.

Duration: 3-4 years.

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