

SEMINAR

BOTTOM-UP CREATION OF SINGLE
MAGNETIC MOLECULES WITH A
SCANNING TUNNELING MICROSCOPE**DR. DANIEL WEGNER**

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The study of magnetic molecules is of growing interest because their spin properties can be tuned chemically with unprecedented precision.

Potential future applications include nanoscopic magnetic memory devices, spintronic devices and quantum computation. Single molecule magnets are particularly interesting for such applications, but due to their large size and composition they are not so easily controlled on surfaces and modified. An alternative approach is the creation of molecular magnets from building blocks by atomically controlled manipulation. Charge-transfer compounds based on transition metals and tetracyanoethylene (TCNE) are promising candidates for this approach, as they form an important group of molecule-based ferromagnets with large Curie temperatures.

In a bottom-up approach, they have used a cryogenic scanning tunneling microscope to arrange single V atoms and TCNE molecules to form charge transfer complexes of different size and geometry. Scanning tunneling spectroscopy proves local chemical bonding as well as the emergence of magnetic properties. TCNE significantly alters the charge and spin configuration of V through chemical hybridization. They also find evidence for antiferromagnetic coupling between V spin centers interconnected via a TCNE molecule.

REMEMBER**DR. DANIEL WEGNER**

Specific Seminar: Bottom-up creation of single magnetic molecules with a scanning tunnelling microscope

DATE: March, 20th, 2009

TIME: 12:00

PLACE: IFAE