Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

STM studies of hybrid inorganic-organic molecular magnets on an ultrathin insulating film.[1] TAEYOUNG CHOI, JAY GUPTA, Physics department, The Ohio State University — The interplay of electronic structure and magnetic properties is of interest in various organic materials. For example, transition metal – tetracyanoethylene (TCNE) complexes form a family of organic magnets with Curie temperatures exceeding room temperature. TCNE has a strong electron affinity that facilitates chemical bond formation and charge transfer with metals. However, the chemical bonding and its influence on electronic and magnetic properties is not well understood at the atomic scale. We use scanning tunneling microscopy to build Co-TCNE and Fe-TCNE complexes with atomic manipulation on an ultrathin insulating layer (Cu2N on Cu(100)). Cu2N decouples the complexes from the conducting substrate, which impacts their electronic and magnetic properties. Tunneling spectroscopy shows molecular orbitals and inelastic steps due to various vibrational modes and spin excitations. The ability to connect such complexes with additional metal atom chains provides an opportunity to study spin and charge transport through single molecules with atomically precise contacts. http://www.physics.ohio-state.edu/∼jgupta

[1]Supported by NSF CAREER Award No. DMR-0645451

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Date submitted: 20 Nov 2009 Electronic form version 1.4