

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Surface Supported Formation of Magnetic Molecular Chains¹ ANDREW DILULLO, KENDAL CLARK, SAW-WAI HLA, Ohio University, SHIH-HSIN CHANG, STEFAN KUCK, GERMAR HOFFMAN, ROLAND WIESEN-DANGER, University of Hamburg, Germany — Further progress towards device development requires molecular classes with more flexible structures for functionalization. Salens are a promising molecular class of volatile metal-organic complexes with a metallic ion caged from three sides. Salens can be chemically modified to tune interactions with a substrate and neighboring molecules, or to establish intermolecular electronic and magnetic communication between two metallic centers through the organic periphery. Modification of Co-Salen structure to Co-Salophene-Br₂ provides more stable molecules which can form, by utilizing Ullmann type ring coupling reactions, surface supported covalently bound chains. Chain manipulations with a Low Temperature Scanning Tunneling Microscope (LT-STM) tip clearly identify covalent linking between the molecular units. Kondo effect of the engineered molecular chains is studied by local probe spectroscopy (dI/dV) and spectroscopic mapping. This work presents a novel avenue of molecular magnetism where new molecular systems are designed from basic units and assembled on a surface.

¹NSF-PIRE OSIE 0730257, DFG GrK 611 and SFB 668-A5, and EU “SPiDMe”.

Andrew DiLullo
Ohio University

Date submitted: 22 Dec 2009

Electronic form version 1.4