Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Single Molecule Manipulation of Co-Salophene-Br_2[1] ANDREW DILULLO, Ohio University, SHIH-HSIN CHANG, GERMAR HOFFMAN, ROLAND WIESENDANGER, University of Hamburg, Germany, SAW-WAI HLA, Ohio University — Using Low Temperature Scanning Tunneling Microscopy (LT-STM) manipulation we studied the system of individual Co-Salophene-Br_2 molecules adsorbed on a Au(111) surface. Co-Salophene-Br_2 has a metallic ion caged on three sides, and two of three π-rings have bromine termination. This molecule adsorbs onto Au(111) in a planar orientation and forms ordered molecular clusters. With the STM tip single molecules were pulled out from molecular clusters and then the bromine atoms were individually dissociated to form Co-Salophene molecules having two, one, or zero attached bromine atoms. The bond dissociation was selectively done by locally injecting tunneling electrons. In conjunction with our manipulation studies Kondo resonances of the intact and de-brominated molecules were probed by means of local tunneling spectroscopy and spectroscopic mapping. This work is a step towards the engineering of molecular systems on a surface from basic molecular units.

[1]NSF-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