Abstract Submitted for the MAR05 Meeting of The American Physical Society

Addressing individual metal ion centers in supramolecules by STS M.S. ALAM, S. STROMSDORFER, V.V. DREMOV, P. MULLER, Physikalisches Institut III, Universität Erlangen, Germany, A.M. AKO, R.W. SAALFRANK, Institut für Organische Chemie, Universität Erlangen, Germany, M. RUBEN, INT, FZ Karlsruhe, Germany, L.K. THOMPSON, Dept. of Chemistry, Memorial University, St. Johns, NL, Canada, J.-M. LEHN, ISIS, Strasbourg, France — As the information of STM measurements arises from electronic structure, separating information on the topography is not straightforward for complex molecules. Scanning tunneling spectroscopy (STS) measurements give information about the molecular energy levels, which are next to the molecules Fermi level. Using a home built STM working under ambient conditions, we succeeded to combine high resolution topography mapping with simultaneous current-voltage characteristics (STS) measurements on single molecules deposited on highly oriented pyrolytic graphite surfaces. We present our recent results on grid-type molecules $[Co_4L_4]$ (L=4,6-bis(2',2"bipyridyl-6-yl)pyrimidine) and $[Mn_9L_6]$ (L=2POAP-2H) as well as on ring-shaped Fe ion chains $[Fe_6Cl_6L_6]$ (L=1-Ecosyliminodiethanol). Small, regular molecule clusters as well as separated single molecules were observed. We found a rather large contrast at the expected location of the metal centers in our molecules, i.e. the location of the individual metal ions in their organic matrix is directly addressable by STS.

> P. Mueller Univ. Erlangen

Date submitted: 30 Nov 2004

Electronic form version 1.4