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**A Molecular Switch Made of Charge Transfer Complexes on Au**

(111) U.G.E. PERERA, Ohio University, Physics and Astronomy Department, Athens, OH 45701, F. JÄCKEL, Humboldt-Universität zu Berlin, Institut f. Physik, Newtonstraße 15, 12489 Berlin, Germany, V. IANCU, K.-F. BRAUN, Ohio University, Physics and Astronomy Department, Athens, OH 45701, N. KOCH, J.P. RABE, Humboldt-Universität zu Berlin, Institut f. Physik, Newtonstraße 15, 12489 Berlin, Germany, S.-W. HLA, Ohio University, Physics and Astronomy Department, Athens, OH 45701 — A low temperature scanning tunneling microscope (STM) and spectroscopy study of organic charge transfer complexes is presented. The complexes are formed by self assembly of the electron donor  $\alpha$ -sexithiophene (6T) and the electron acceptor tetrafluoro-tetracyano-quinodimethane (F<sub>4</sub>TCNQ) on Au (111) surface. The formation of new hybrid molecular orbitals in CTCs is evident by STM imaging at different bias voltages as well as by differential conductance spectra. The charge transfer lead to the shift of HOMO and LUMO orbitals of the molecules in complexes with respect to the pure molecular orbitals. Finally, we use a voltage dependent resonance-tunneling scheme to demonstrate a molecular switch made of F<sub>4</sub>TCNQ/6T charge transfer complexes. This work is financially supported by the US-DOE grant DE-FG02-02ER46012.

U.G.E. Perera

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