

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Self-assembly of functionalized anthradithiophene on Au(111)

BRAD CONRAD, SHAWN HUSTON, Appalachian State University, JIUYANG WANG, North Carolina State University, MARSHA LOTH, JOHN ANTHONY, University of Kentucky, DANIEL DOUGHERTY, North Carolina State University — We utilize scanning tunneling microscopy (STM) to characterize the initial growth and crystallization of the high-performance, small organic molecule 2,8-difluoro-5,11-triethylsilylethynyl (diF TESADT) on Au(111). Two ordered structures are observed with diF TESADT backbone planes parallel to the substrate. Submolecular resolution imaging of the first monolayer ordered film regions realizes structures with close approach of fluorine-sulfur and fluorine-fluorine atoms of alternating molecules. These measurements provide evidence for the importance of non-covalent F-S and F-F interactions in driving 2D self-assembly. Scanning Tunneling Spectroscopy indicates a 2.4 eV transport gap which is insensitive to the local domain. Structures and growth are put in context of bulk measurements and device performance measurements.

Brad Conrad
Appalachian State University

Date submitted: 27 Nov 2012

Electronic form version 1.4