Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

STM Study of Donor-Bridge-Acceptor Molecules Having Different Bridge Structure CHENGGANG TAO, JIBIN SUN, XIAOWEI ZHANG, RYAN YAMACHIKA, DANIEL WEGNER, YASAMAN BAHRI, GEORGY SAMSONIDZE, MARVIN L. COHEN, STEVEN G. LOUIE, T. DON TILLEY, RACHEL A. SEGALMAN, MICHAEL F. CROMMIE, University of California, Berkeley and LBNL — Composite molecular solar cells form an interesting alternative to traditional silicon or gallium arsenide solar cells. In order to increase the efficiency these molecular systems, a deeper understanding of the microscopic mechanisms at work in organic solar cells is needed. Using scanning tunneling microscopy and spectroscopy we have investigated donor-bridge-acceptor molecules having different bridge structures covalently bonding similar donor and acceptor elements. Structural and electronic properties of individual molecules and self-assembled molecular chains will be presented. This study is aimed toward controlling energy conversion pathways within molecular solar cells and for developing higher efficiency solar cell materials.

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Date submitted: 30 Dec 2009 Electronic form version 1.4