

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Modification of interfacial electronic structure as a function of organic overlayer stereochemistry** N.M. SANTAGATA, K.M. ANDREWS, North Carolina State University, A. CALZOLARI, CNR/INFM Democritos, M. BUONGIORNO NARDELLI, T. PEARL, North Carolina State University — Hydrogen bonding interactions involving molecular chiral centers control the organizational structure at the tartaric acid/Ag(111) interface. Specifically, for enantiopure tartaric acid films, a single molecule basis adsorbs with the molecular axis orientated parallel to the surface plane. Conversely, a paired basis unit composed of opposite enantiomers adsorbs with the combined molecular axis perpendicular to the surface plane for racemic tartaric acid films. Here, the unique electronic structure of each interface will be discussed. Scanning tunneling spectroscopy results give quantitative shifts of the Ag(111) Shockley-type surface state (67 meV below the Fermi level) of 881 meV and 55 meV for enantiopure and racemic films, respectively. Density functional theory computations have also been carried out in support of the experimental results. The respective energetic shifts will be discussed in terms of a modified surface potential, film polarizability, and work function changes.

Nancy Santagata  
The Ohio State University

Date submitted: 20 Nov 2009

Electronic form version 1.4