

Abstract Submitted
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Molecular-scale Structure of Pentacene at Functionalized Electronic Interfaces SOONJOO SEO, Chungbuk National University, GUOWEN PENG, MANOS MAVRIKAKIS, ROSE RUTHER, ROBERT HAMERS, PAUL EVANS, University of Wisconsin-Madison, HEE JAE KANG, Chungbuk National University, GUOWEN PENG AND MANOS MAVRIKAKIS COLLABORATION, ROSE RUTHER AND ROBERT J. HAMERS COLLABORATION, PAUL G. EVANS TEAM, HEE JAE KANG TEAM — A dipolar interlayer can cause dramatic changes in the device characteristics of organic field-effect transistors or photovoltaics. We have conducted a series of experiments in which different molecular linkages are placed between a pentacene thin film and a silicon substrate. Interface modifications with different linkages allow us to predict the nature of tunneling through pentacene on modified Si surfaces with different dipole moment. The molecular-scale structure and the tunneling properties of pentacene thin films on modified Si (001) with nitrobenzene and styrene were examined using scanning tunneling spectroscopy. Electronic interfaces using organic surface dipoles can be used to control the band lineups of a semiconductor at organic/inorganic interfaces. Our results can provide insights into the charge transport characteristics of organic thin films at electronic interfaces.

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