Abstract Submitted
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Controlled Chemical Morphology in TiOPc - C_{60} Films[1] YINYING WEI, Department of Chemistry and Biochemistry, University of Maryland , STEVE ROBEY, National Institute of Standards and Technology, JANICE REUTT-ROBEY, Department of Chemistry and Biochemistry, University of Maryland — A key strategy for the improvement of organic electronic devices involves the optimization of chemical morphology for efficient charge separation. Fundamental studies of chemical morphology - electronic property relations, particularly along crucial domain boundaries, are needed to realize these goals. We present STM/STS studies of TiOPc: C_{60} films, prepared by vapor deposition on Ag (111). We show how growth conditions can be adjusted to harness anisotropic TiOPc - TiOPc interactions, leading to three dramatically distinct film structures: nanophase segregated TiOPc and C_{60} domains, a co-crystalline $TiOPc_{(2)}$ $C_{60(1)}$ honeycomb network, and a quasi-periodic array of triangular TiOPc domains and C_{60} nanoclusters. Electronic transport gaps measured by STS (Z (V)) prove to be sensitive to the phase, varying by up to about 0.5 eV along domain boundaries. We propose structural models for each hetero interface and discuss the physical origin of the observed transport characteristics.

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