Abstract Submitted
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Molecular and electronic structure of organic semiconductors on ultra-thin oxide films[1] BRAD CONRAD, WILLIAM CULLEN, ELLEN WILLIAMS, University of Maryland College Park — We utilize scanning tunneling microscopy (STM) to molecularly image and probe the interactions of organic semiconductors. To mimic a device substrate and growth modes, ultra-thin oxide (UTO) films less than 1 nm thick are grown on Si(111) in ultrahigh vacuum at room temperature. These films are characterized by STM and display a long range RMS roughness of 0.109 nm versus a typical RMS roughness of 0.3 nm for thick SiO2. UTO films are then used as substrates for growth of pentacene, C60, and PCBM. Standing up pentacene is molecularly resolved and described by a thin-film phase unit cell with a=0.76nm and b=0.59nm in the ab-plane. The morphology and electronic structure of co-depositions of pentacene, C60, and PCBM are then deposited on UTO films and will be presented. http://arxiv.org/abs/0811.2515

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