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**Study of Interfacial Water Layer during Pentacene Monolayer Deposition** SONGTAO WO, BINRAN WANG, YIPING WANG, RANDALL HEADRICK, University of Vermont, ALEXANDER KAZIMIROV, Cornell High Energy Synchrotron Source, Cornell University — This study includes the formation of pentacene monolayer on SiO<sub>2</sub> substrate. *In situ* synchrotron x-ray scattering was used to probe the early stages of pentacene growth in real time and under conditions relevant to the fabrication of Organic Thin Film Transistors(OTFTs). Reflectivity measurements reveal that there is interfacial water layer between the pentacene monolayer and SiO<sub>2</sub>, which initially present on the substrate, and is trapped at the interface when the pentacene film is deposited. Anti-Bragg oscillations, observed for the first time during organic film growth, reveal that the first monolayer of pentacene completes fully before the second one nucleates.

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