

Abstract Submitted
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Growth of pentacene films for transistor applications GEORGE MALLIARAS, ALEX MAYER, Cornell University, RANDALL HEADRICK, University of Vermont — Organic thin film transistors (OTFTs) are being developed in academic and industrial labs for “disposable” plastic electronics such as smart identification tags. Among the most promising organic semiconductors is pentacene, which yields transistors with performance similar to that of amorphous silicon. The interfaces of pentacene films with dielectric materials (gate oxide) and conductors (electrodes) play a major role in determining OTFT performance. A combination of synchrotron x-ray diffraction and atomic force microscopy was used to probe these interfaces and help optimize pentacene growth. By varying the growth conditions we were able to obtain polycrystalline films with crystallite sizes of the order of tens of microns. The connection between growth, morphology and OTFT performance will be discussed.

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