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Atmospheric Effects on diF TESADT Thin-Film Transistors BRAD CONRAD, CORTNEY BOUGHER, SHAWN HUSTON, Appalachian State Univ, JEREMY WARD, Wake Forest University, ABDUL OBAID, MARSHA LOTH, JOHN ANTHONY, University of Kentucky, OANA JURCHESCU, Wake Forest University — Crystalline organic semiconductors often display carrier mobilities that vary with environmental conditions and fabrication parameters. Additionally, the electrical properties of organic thin-film devices are highly dependent on film structure, crystallinity, and molecular packing. In solution-deposited polycrystalline thin-films, the regions between crystals often affect the overall device performance, as molecular ordering and crystal structure may differ significantly from neighboring regions. Device characterization and Kelvin Probe Force Microscopy (KPFM) is used to analyze the electrical properties of grain boundaries, electrodes, and crystalline regions within 2,8-difluoro-5,11-triethysilylethynyl anthradithiophene (diF TESADT) thin-film transistor surfaces. The influence of both atmospheric dopants and exposure time is examined and explained in the context of device characterization and interfacial effects.

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