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Doping of Grain Boundaries in diF TESADT Transistors[1] CORTNEY BOUGHER, SHAWN M. HUSTON, Appalachian State University, JEREMY W. WARD, ABDUL OBAID, Wake Forest University, MARSHA A. LOTH, JOHN E. ANTHONY, University of Kentucky, OANA D. JURCHESCU, Wake Forest University, BRAD R. CONRAD, Appalachian State University — We utilize Atomic Force Microscopy (AFM) and Kelvin Probe Force Microscopy (KPFM) to characterize the dynamics of electronic transport across 2,8-difluoro-5,11-triethylsilylethynyl anthradithiophene (diF TESADT) grain boundaries. We show that the morphology of grain boundaries and the adsorption of atmospheric dopants at these local boundaries have a direct impact on the electrical behavior of diF TESADT in thin film transistor (TFT) devices. Device voltage drops at grain boundaries are characterized as a function of both atmospheric dopants and transition time between dopants. The morphology, including crystallization and packing motifs, of diF TESADT grown on thermally grown SiO_2 will be discussed and related to other semiconducting small organic molecules. This work will be put in the context of other, recent advances in small molecule organics.

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