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Hole Mobility Studies on Thiophene-Based Conjugated Polymers Developed for Use in Organic Electronic Devices N.C. HESTON, Univ of Florida, Dept of Phys, J. MEI, Univ of Florida, Dept of Chem, D.B. TANNER, Univ of Florida, Dept of Phys, J.R. REYNOLDS, Univ of Florida, Dept of Chem — In optimizing organic electronic devices, such as solar cells and field effect transistors, the mobility plays a crucial role affecting many aspects of performance, including: charge separation efficiencies, carrier densities, and drain currents. By fabricating hole-dominated devices and fitting the measured current-voltage characteristics to the field-dependent space-charge-limited mobility model we were able to measure hole mobilities in a set of conjugated polymers including p-Pt-BTD-Th, p-Pt-BTD-EDOT, and both regio-regular and regio-randem P3HT. These materials have been shown to exhibit promise as active layers in organic solar cells, light-emitting diodes, and field effect transistors. We present the results of these measurements and the effects induced by thermal annealing.

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