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Investigating Organic Field Effect Transistors with Reduced Graphene Oxide Electrodes of Different Reduction Efficiency NARAE KANG, Nanoscience Technology Center and Department of Physics, University of Central Florida, SAIFUL I. KHONDAKER, Nanoscience Technology Center, Department of Physics, and School of Electrical Engineering and Computer Science, University of Central Florida, USA — Organic field-effect transistors (OFETs) have received much attention owing to their flexibility, transparency, and low-cost of fabrication. One of the major limiting factors in fabricating high-performance OFET is the large injection barrier at metal electrodes/organic semiconductor interface, which results in low charge injection from metal electrodes to organic semiconductor. Graphene has been suggested as an alternative electrode material due to its high work function, extraordinary electronic properties and strong π-π interaction with organic molecule; all of which can reduce the injection barrier at the electrode/organic interface. In particular, due to its solubility, large scale production, and its chemical functionality, reduced graphene oxide (RGO) has been introduced as a promising electrode for OFETs. Its tunability of electrical and optical properties can make RGO a highly desired electrode material because the work function match is essential for better charge injection at electrode/organic interface. In this talk, we will discuss the fabrication of OFETs with RGO of different reduction efficiency as an electrode material. We will also present the electrical transport properties fabricated devices.

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