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Does Organic Field Effect Transistors (OFETs) Device Performance using Single-walled Carbon Nanotubes (SWNTs) Depend on the Density of SWNT in the Electrode?¹ NARAE KANG, BIDDUT K. SARKER, Nanoscience Technology Center, and Department of Physics, University of Central Florida, SAIFUL I. KHONDAKER, Nanoscience Technology Center, and Department of Physics, and School of Electrical Engineering and Computer Science, University of Central Florida, — Carbon nanotubes as an electrode material for organic field effect transistors (OFETs) have attracted significant attention. One open question is that whether the density of the Single-walled carbon nanotubes (SWNTs) in the electrode has any influence in the device performance of OFETs. In order to address this issue, we fabricated OFETs using SWNT aligned array electrode, where we varied the linear density of the nanotubes in the array of the electrodes during dielectrophoretic assembly of high quality surfactant free and stable aqueous SWNT solution. The source and drain of SWNT electrodes have been formed by electron beam lithography (EBL) and oxygen plasma etching. The OFETs were fabricated by depositing a thin film of poly (3-hexylthiophene) on the SWNT electrodes. We will present detailed result of our study.

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