

Abstract Submitted
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High yield assembly and electron transport investigation of semiconducting-rich local-gated single-walled carbon nanotube field effect transistors KRISTY KORMONDY, PAUL STOKES, SAIFUL KHONDAKER, Nanoscience Technology Center and Department of Physics, University of Central Florida, Orlando, Florida, 32826 — Single-walled carbon nanotubes (SWNTs) are ideal for use in nanoelectronic devices because of their high current density, mobility and subthreshold slope. Using individual local gates and scaling the gate oxide has shown faster switching behavior and lower power consumption. However, assembly methods must be developed to reproducibly align all-semiconducting SWNTs at specific locations with individually addressable gates for future integrated circuits. We show high yield assembly of local-gated semiconducting SWNTs assembled via AC-dielectrophoresis (DEP). Detailed electron transport investigations on the devices show that 98% display good FET behavior, with an average threshold voltage of 1V and subthreshold swing as low as 120 mV/dec.

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