

Abstract Submitted  
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**Simple, High Yield Nano-device Fabrication via SWNT Controlled Growth from a Catalytic Block Copolymer**<sup>1</sup> SARAH LASTELLA, YUNG JOON JUNG, P.M. AJAYAN, CHANG Y. RYU, Nanocenter RPI, NY, DAVE RIDER, IAN MANNERS, Univ. of Toronto, Canada, GOVIND MALLICK, SHASHI KARNA, ARL WMRD, APG, MD — We report a simple process in which single walled carbon nanotubes (SWNT) are grown specifically to allow for a three step device fabrication. Our extremely pure SWNT bundles (dia. 2-5 nm, length  $\sim 10 \mu\text{m}$ ) were produced via a chemical vapor deposition method where a ferrocene containing block copolymer was utilized as the catalyst. Unlike other methods, the nanotube surface coverage density was manipulated via the polymer film thickness to create approximately three to six tubes per  $100 \mu\text{m}^2$ . This allows for the direct deposition of metal electrodes onto the silica/nanotube surface without tedious positioning of the nanotubes between metal contacts as an additional processing step. Thus, over 100 working nanodevices can be constructed on a single 1" x 1" wafer with this simple three step process: 1) spin casting catalytic polymer film; 2) CVD; 3) metal electrode deposition. I-V measurements show large current flow between gold electrodes ranging from hundreds of  $\mu\text{A}$  to a few mA as a result of the large number of bridging nanotubes. Ease of construction and high device yield make this process a promising candidate for applications as nano-chemical and biological sensors.

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Sarah Lastella  
Nanocenter RPI, NY

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