

Abstract Submitted
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Syntheses and characterization of SWCNT assemblies prepared on silicon substrates with different methods of patterning catalyst particles IRMA KULJANISHVILI, VENKAT CHANDRASEKHAR, Department of Physics and Astronomy, Northwestern University, OWEN LOH, DMITRIY DIKIN, HORACIO ESPINOSA, Department of Mechanical Engineering, Northwestern University, RICHARD PINER, RODNEY S. RUOFF, Department of Mechanical Engineering, University of Texas at Austin — Techniques for controlled way of preparation of single wall carbon nanotubes (SWCNT) on substrates continue to be of interest, including for potential applications in integrated circuits and nanodevices. We report our work, undertaken to elucidate a number of favorable conditions for controlled patterning and growth of high quality SWCNT. Synthesis is carried out under ambient pressure with methane used as feed gas. A key factor for successful SWCNT growth is known to be the catalytic precursor. We compare several methods of controlled deposition of the catalyst precursors on oxidized silicon substrates using methods such as e-beam lithography, photolithography and scanning probe writing methods that allow for maximum flexibility and high efficiency for incorporating SWCNTs into devices or circuit architectures. The advantages and some limitations of these methods of selective patterning will also be addressed. Analysis and characterization of the as-grown SWCNTs was performed by Raman Spectroscopy, AFM and SEM.

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