

Abstract Submitted
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Extremely Long Multiwall Carbon Nanotube Arrays for Spinning Yarn CHAMINDA JAYASINGHE, PRAVAHAN SALUNKE, LUCY LEE, EMILY HEAD, Department of Chemical and Material Engineering, University of Cincinnati, Cincinnati, OH 45221-0012, NILANJAN MALLIK, YEOHEUNG YUN, Department of Mechanical Engineering, University of Cincinnati, Cincinnati, OH 45221-0072 , CHANDRASHEKHAR PENDYALA, Department of chemical engineering, University of Louisville, Louisville, KY 40292, MARK J. SCHULZ, Department of Mechanical Engineering, University of Cincinnati, Cincinnati, OH 45221-0072 , VESSELIN N. SHANOV, Department of Chemical and Material Engineering, University of Cincinnati, Cincinnati, OH 45221-0012 — Centimeter long Multiwall Carbon Nanotube (MWCNT) arrays have been grown by CVD from H₂-C₂H₄-H₂O-Ar gas mixture at 750 ° C in an Easy Tube furnace from First Nano Inc. The arrays were characterized by AFM, SEM, TEM and Raman spectroscopy. The diameter of the CNT was found to be affected by the substrate design. The substrate preparation had great impact on the nanotube diameter. The CVD growth has been optimized with respect to the length and the purity of the CNT. It was found that the CVD growth conditions affect dramatically the quality of the arrays. Base on the optimized process 15 mm long CNT arrays were synthesized and preliminary data were obtained on spinning them into yarns.

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