Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Seeded Growth of Single-Walled Carbon Nanotubes from Open-ended SWNT Substrates[1] MYUNG JONG KIM, ERIK HAROZ, HONG-WEI SHAN, NOLAN NICHILAS, CARTER KITTRELL, CNL, Rice University, ROBERT WHEELER, TIA BENSON-TOLLE, Air Force Research Laboratory, YEONWOONG JUNG, DAVID LUZZI, Dept. of Materials Science and Engineering, University of Pennsylvania, T.J. WAINERDI, CNL, Rice University and CNI, HOWARD SCHMIDT, ROBERT HAUGE, RICHARD SMALLEY, CNL, Rice University — We prepared nanoscopically flat open-ended SWNT substrates from SWNT spun fibers by using the focused ion beam cutting technique followed by various etching and cleaning schemes or alternatively from vertically aligned SWNT film by flipping over. Deposited catalyst was docked to the open ends of SWNTs, and carbon feedstocks were catalyzed into continued single-walled carbon nanotube growth resembling 1D molecular epitaxy in both the cold wall furnace and the hot wall furnace setups. The data obtained from Raman spectroscopy indicates that the (n, m) structure of the newly grown SWNT was cloned from that of the pre-existing SWNT substrate. Such results lead us to believe that this method will provide us with a means of chirality-controlled SWNTs growth on a macroscopic scale using a fairy general and scalable setup in the future.

[1]This work is supported by DOE and NASA.

Myung Jong Kim
CNL, Rice University

Date submitted: 02 Dec 2005 Electronic form version 1.4