Abstract Submitted
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Structural and electronic characterization of CoMoCat single-walled carbon nanotubes on H-passivated Si(100) surfaces with the UHV-STM KYLE RITTER, Dept. of Materials Science, Beckman Institute, University of Ilinois, PETER ALBRECHT, JOE LYDING, Dept. of Electrical Engineering — CoMoCat single-walled carbon nanotubes (SWNTs) [1] are deposited onto the Si(100)-2x1:H surface by *in situ* dry contact transfer (DCT) [2], forming a pristine SWNT-Si interface for room temperature UHV-STM studies. Recent spectrofluorimetry data suggests a sample distribution which favors smaller diameter SWNTs, in particular an enhancement of the (7,5) and (6,5) semiconductors [1]. Results to be presented include STM topographic and current images of CoMoCat SWNTs which provide a reasonable estimation of the chiral angle, along with measurements of both the diameter (inferred from STM topographic contours), and the local density of states (via spatially resolved tunneling spectroscopy) for a large sample of CoMoCat SWNTs. Smaller SWNT diameters imply greater curvature of the carbon lattice, yielding an enhanced sp^3 character [3] which could create an enhanced coupling to the underlying substrate. Experiments integrating H desorption with the adsorbed CoMoCat SWNTs are underway, with the potential for SWNT bandstructure perturbations upon interactions with chemically reactive clean Si. [1] S. M. Bachilo et. al J. Amer. Chem. Soc. 125, 11186 (2003). [2] P. M. Albrecht et. al. Appl. Phys. Lett. 83, 5029 (2003). [3] X. Blase et. al., Phys. Rev. Lett. 72, 1878 (1994).

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