Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

An STM and Theoretical Study of the Interaction of hexabenzocorone on a Ru(0001) Surface KWANG TAEG RIM, LI LIU, Department of Chemistry and Columbia Center for Integrated Science and Engineering, Columbia University, CHAOCHIN SU, Department of Molecular Science and Engineering, National Taipei University of Technology, SHENGXIONG XIAO, MICHAEL STEIGERWALD, Department of Chemistry and Columbia Center for Integrated Science and Engineering, Columbia University, MARK HYBERTSEN, Department of Applied Physics and Applied Mathematics and Columbia Center for Integrated Science and Engineering, Columbia University, COLIN NUCKOLLS, GEORGE FLYNN, Department of Chemistry and Columbia Center for Integrated Science and Engineering, Columbia University — The interaction of hexabenzocorone (hbc) with a metal surface has been investigated using Scanning Tunneling Microscopy (STM) and Scanning Tunneling Spectroscopy (STS) in ultrahigh vacuum. The images obtained at room temperature, after hbc molecules were vacuum deposited at 325^oC onto a pristine ruthenium (0001) surface, exhibit surface bound molecules with off-centered bonding sites. I(V) curves over hbc molecules show high tunneling current at positive bias voltages. After annealing of the hbc-bonded Ru sample surface at 600^oC for 15min, hbc molecules appear to aggregate laterally and to bond symmetrically to the surface. The possibility of growing carbon nanotubes on the hbc-Ru precursor surface upon dosing with C_2H_2 will also be discussed along with a theoretical model for bonding and growth of nanotubes.

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Date submitted: 29 Nov 2005 Electronic form version 1.4