

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Adsorption Kinetics of CH<sub>4</sub> on Purified HiPco Single-Walled Carbon Nanotubes**<sup>1</sup> MURAT BULUT, DINESH S. RAWAT, ALDO D. MIGONE, Southern Illinois University Carbondale — We present the results of an adsorption kinetics study of CH<sub>4</sub> on two sets of purified HiPco SWNTs. We monitor the time evolution of the pressure from the instant at which gas is added to the cell containing the nanotubes to the moment at which equilibrium is reached. The two sets of samples were baked, under vacuum, at different temperatures (300 and 400°C). The difference in baking temperatures resulted in a difference in the specific surface areas; the sample treated at 400°C has a 15% larger surface area than the sample treated at 300°C. It also caused a difference in the kinetic behavior of the samples; the equilibration times for the two samples differ by a factor of 3. Moreover, the sample heated at 400°C exhibits two distinct equilibration times, while the one heated at 300°C exhibits only one. These changes are probably the result of partially opening the purified SWNTs by baking them at 400°C, which does not occur when we heat them only to 300°C.

<sup>1</sup>This work was supported by NSF through grant # DMR-0705077.

Murat Bulut  
Southern Illinois University Carbondale

Date submitted: 16 Nov 2007

Electronic form version 1.4