Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Temperature stability of ferritin as a catalyst for Carbon nanotube growth RICHARD VANFLEET, MARK ESTY, ROBERT DAVIS, Brigham Young University — In Carbon nanotubes grown with thermal CVD the distribution of tube diameters is dependant upon the growth catalyst. Use of biologically derived catalysts particles have been explored with the hope of narrower diameter distributions resulting from the tight distribution of catalyst particle diameters. Ferritin is the iron storage system in biological systems and consists of a protein shell with an iron hydroxide core. Previous use of catalyst particles generated from ferritin has not consistently resulted in narrow nanotube size distributions. To explore this inconsistency we have studied the particle distribution and temperature stability of surface deposited ferritin on various substrates by TEM. The effects of common substrates (Carbon, SiO_2 and Si_3N_4) on particle densities will be reported. We removed the protein shell with either a low temperature oxygen plasma or a high temperature anneal. With plasma removal of the protein shell the initial particle size and spacing distribution can be maintained at temperatures up to 600 C.

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Date submitted: 04 Dec 2005 Electronic form version 1.4