

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Synthesis of Single Wall Carbon Nanotubes and Carbon Nanohorns by High Power Laser Vaporization** D. B. GEOHEGAN, A. A. PURETZKY, D. STYERS-BARNETT, C. M. ROULEAU, B. ZHAO, H. HU, H. CUI, I. N. IVANOV, P. F. BRITT, Oak Ridge National Laboratory, Oak Ridge, TN and Dep. of Mater. Sci. and Eng., Univ. of Tennessee — In this study we present the results of high volume, high yield synthesis of single wall carbon nanotubes (SWNTs) based on a high power industrial Nd:YAG (600 W av. power) laser vaporization of a composite C/Co/Ni target at elevated temperatures. The high power laser also allows us to synthesize single wall carbon nanohorns (SWNHs) as well as metal nanoparticle (e.g., Pt, Pd) decorated SWNHs. Efficiencies and similarities between the conditions for SWNH synthesis are compared with those for SWNTs. *Ex situ* characterizations are compared with *in situ* diagnostics (fast laser plume photography and target pyrometry) to correlate the synthesis conditions with the resulting products and gain insight into their formation processes. Research on Functional Nanomaterials at the Center for Nanophase Materials Sciences is supported by the U. S. Dep. of Energy, Div. of Materials Science, Basic Energy Sciences. The SWNH part of this research is supported by DOE Center of Excellence on Carbon-based Hydrogen Storage Materials.

David Styers-Barnett  
Oak Ridge National Lab

Date submitted: 30 Nov 2005

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