Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

**Carbon Nanostraws with Novel Magnetic Properties for Microwave Devices and Biomedical Applications**[1] K. STOJAK, S. CHANDRA, S. PAL, H. KHURSHID, M.H. PHAN, H. SRIKANTH, University of South Florida-Physics — Carbon nanotubes (CNTs) have stirred interest in many areas of current research because of their unique electrical properties and potential use in the biomedical field. Here, we report on the synthesis, structural, and magnetic characterization of "nanostraws," which consist of nanoparticle-filled CNTs made by a template-assisted chemical vapor deposition method. In this study, the nanoparticle fillers are magnetite, cobalt ferrite, and nickel ferrite. These high-aspect ratio magnetic nanostructures have a tunable anisotropy in addition to enhanced magnetic interactions amongst the CNT-encapsulated magnetic nanoparticles. Enhanced magnetic interactions include higher saturation magnetization and higher blocking temperature. These properties are desirable for microwave devices and biosensing applications.

[1]Work Funded by CIFM and FCASST

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Date submitted: 11 Nov 2011 Electronic form version 1.4