Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Electron Thermal Microscopy of Multiwalled Carbon Nanotubes
KAMAL BALOCH, TODD BRINTLINGER, JOHN CUMINGS, University of Maryland — A thorough electrical and thermal characterization of carbon nanotubes (CNTs) is essential for their application as electrical and thermal devices. We demonstrate high-resolution thermal imaging of multiwall CNT using electron thermal microscopy. This is achieved by observing the solid to liquid phase transition of low melting point indium islands in a transmission electron microscope. High resolution thermal maps thus obtained provide a qualitative analysis of transfer of heat along a CNT suggesting a trend of CNT acting as a heat spreader. Also, important parameters like thermal conductivity of the CNT can be extracted by finite element modeling. The temperatures involved are ∼200C and the samples can be operated over several voltage cycles. Experimental technique, high resolution maps, real time videos, and simulation results will be presented.

Kamal Baloch
University of Maryland-College Park

Date submitted: 24 Jan 2008 Electronic form version 1.4