Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Electrical Transport Studies of (n,n) Armchair Carbon Nanotubes ROBERT CALDWELL, BHUPESH CHANDRA, CHRISTOPHE VOISIN, TONY F. HEINZ, JAMES HONE, Columbia University — By using Rayleigh scattering spectroscopy, a simple mechanical transfer process, and standard E-beam lithography fabrication of metallic leads, we can probe the electrical properties of individual single-walled carbon nanotubes of known chiral indices (n,m) on the substrate of our choosing. Using these techniques, we have discovered that (n,n) 'armchair' nanotubes consistently deviate from the predicted metallic behavior, specifically showing a gap in current – gate voltage curves. We present detailed studies of the transport behavior of these devices, including conductivity as a function of bias, length, and temperature.

Sami Rosenblatt
Columbia University

Date submitted: 27 Nov 2007 Electronic form version 1.4