Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Measurement of metal/carbon nanotube contact resistance by shortening contact length CHUN LAN, DMITRI ZAKHAROV, RONALD REIFENBERGER, Birck Nanotechnology Center, Purdue University — Estimating the contact resistance to achieve a minimum contact length of a nanotube interconnect to a nanoscale electronic device is a major challenge. In this study, we describe a novel experiment using a focused ion beam to sequentially shorten the contact length between a nanotube and an evaporated metallic film. We develop a theoretical model that relates the measured resistance change as a function of contact length to the intrinsic linear resistivity of the nanotube as well as the specific contact resistivity between the nanotube and the deposited metallic film. In this way, we arrive at an estimate for the optimal contact length of the metal film to the carbon nanotube. The results for Au and Ag contacts to multi-wall carbon nanotubes will be summarized. Our method is quite general and can be used to accurately determine the contact resistance of any metallic film to a wide variety of different nanotubes and nanowires.

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Date submitted: 27 Nov 2007 Electronic form version 1.4