

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Transport Measurements on Individual Branched Nanostructures

YONG SUN, JEONG-IL OH, DEZHI WANG, K. KEMPA, Z.F. REN, Boston College, WENZHI LI, Florida Int'l Univ., M.J. NAUGHTON¹, Boston College — We have made electrical measurements on individual branched (“Y-junction”) carbon nanotubes. After isolation on silicon substrates and identification via electron microscopy, photo and e-beam lithography were used to deposit metal electrodes (*e.g.* Au/Ti) onto individual branches of the nanostructures, including 4-probe configurations across a branch point (Y-junction). Various post-processing procedures, such as rapid thermal annealing and electron beam welding, were employed in attempts to improve contact resistances. Four-probe I-V measurements at room temperature yield varied intrinsic conductivity in these nanostructures (resistances between 10^4 and $10^7\Omega$). Transmission microscopy reveals a fishbone internal structure, which could be responsible for the low conductance. We also report on the construction of “divining rod” cantilevers out of these branched nanotubes, using an etch-well technique, toward potential SPM applications, and on similar attempts using inorganic (*e.g.* ZnO₂) nanowires.

¹Supported by NSF NIRT-0210533.

Michael Naughton
Boston College

Date submitted: 06 Dec 2004

Electronic form version 1.4