

Abstract Submitted  
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**Electrical Switching and Rectification in Carbon Nanotube Y-Junctions** JAY GAILLARD, K. YANG, Clemson University, C. DARAIIO, P. BANDARU, S. DIN, UCSD, M.J. SKOVE, APPARAO PAO, Clemson University — Recently, we have shown evidence for a dramatic electrical switching behavior in a Y-junction carbon-nanotube morphology [1]. The mutual interaction of the electron currents in the three branches of the Y-junction is shown to be the basis for a potentially new logic device. The Y-junction nanotubes that were prepared using our thermal CVD process [2] typically show the presence of a catalyst particle at the junction. The observed modulation of the current from an on- to an off state could be mediated by defects and the topology of the junction, or due to the presence of catalyst particle at the junction. We will compare the switching characteristics observed in a Y- junction nanotube that does not contain the catalyst particle to those reported in Ref. 1 with a view to elucidating the switching mechanism in branched nanotubes. (1) P. Bandaru et al., Nature Materials, vol. 4(9), 663-666, (2005) (2) N. Gothard, et al., Nanoletters 4, 213-217 (2004)

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