

Abstract Submitted
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Electrical Characterization of Y-junction Carbon Nanotubes of Fish-bone Structure¹

Y. SUN, J. I. OH, S. CHEN, D. Z. WANG, K. KEMPA, Z. F. REN, Boston College, W. Z. LI, Florida International University, M. J. NAUGHTON, Boston College — Y-junction carbon nanotubes (YCNTs) of fish-bone structure, synthesized by the pyrolysis of methane over cobalt supported on magnesium oxide [1], have been characterized by means of electrical transport measurements. We report both 2- and 4-probe I-V characteristics of YCNTs down to $T = 3$ K and up to $B = 8$ T. At 3 K, we found that change in magnetoresistance was about 0.5 % at 8 T, perhaps due to piezoeffect of YCNTs. Also, we report the piezoresistivity of YCNTs directly obtained by an *in situ* STM incorporated into TEM. This piezoresistivity appeared to be substantially bigger than that of straight fish-bone CNTs. In addition, we fabricated some FET-shaped samples with YCNTs whose all 3 branches were contacted by Ti/Au electrodes. We found that there is no rectifying behavior in the fish-bone junctions unlike in similar YCNTs reported in [2]. [1] W. Z. Li, J. G. Wen, Z. F. Ren, Appl. Phys. Lett. **79**, 1879 (2001). [2] P. R. Bandaru, C. Daraio, S. Jin, A. M. Rao, Nature Mats. **4**, 663 (2005).

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