

Abstract Submitted
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Synthesis and Structure of Carbon Nanotube Y-junctions BIMAL

PANDEY, WENZHI LI, Department of Physics ,Florida International University, Miami, Fl 33172 — The effect of catalyst and carbon source on the synthesis and structure of carbon nanotube Y-junctions (CNTYs) using chemical vapor deposition has been investigated. Three different nitrates, including cobalt nitrate, calcium nitrate, and magnesium nitrate, are used as catalyst precursors and thiophene (C_4H_4S) is used as carbon source to synthesize CNTYs. CNTYs with straight branches are synthesized by using mixture of cobalt/magnesium nitrates or cobalt/calcium nitrates while individual cobalt nitrate, magnesium nitrate, calcium nitrate, or mixture of magnesium/calcium nitrates doesn't grow any CNTYs, indicating that cobalt/magnesium or cobalt/calcium facilitates the formation of CNTYs. Experimental result shows that the diameter and yield of CNTYs are affected by the ratio of cobalt/magnesium or cobalt/calcium nitrates. In addition, carbon sources such as methane (CH_4) and acetylene (C_2H_2) have also been used as carbon source to grow CNTYs. It is found that linear nanotubes rather than CNTYs can be formed. The result shows both the catalyst and the carbon source affect the formation of CNTYs.

Bimal Pandey
Department of Physics ,Florida International University, Miami, Fl 33172

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