

Structural control of DWCNTs growth using catalytic CVD and their field emission properties

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We have studied controlled growth of high-purity double-walled carbon nanotubes (DWCNTs) using catalytic chemical vapor deposition (CCVD) method. To synthesize the DWCNTs, we used a gas phase carbon source such as methane, ethylene over Fe-Mo embedded MgO support material with different BET. The produced carbon material showed high-purity DWCNTs free of amorphous carbon on the surface. The diameter and crystallinity of DWCNTs were dependent on growth temperature. Different type of CNTs(SWCNTs or DWCNTs), according to BET of support material has been demonstrated. We have evaluated field emission from DWCNTs, which showed low turn-on voltage similar to SWCNTs as well as higher emission stability compared with SWCNTs.