

A Study on the Morphology of Carbon Nanomaterials Prepared by Thermal Chemical Vapor Deposition on Mechanochemically Treated Catalysts

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Carbon nanotubes (CNTs) have been grown by the thermal chemical vapor deposition (CVD) process in which C_2H_2 gas was deposited on the $Fe(NO_3)_3-Al(OH)_3$ mixture pretreated by mechanochemical treatment with a high energy mixer mill. As the duration time of grinding for the $Fe(NO_3)_3-Al(OH)_3$ mixture by the mixer mill increased, amorphous $Al(OH)_3$ and smaller Fe particles agglomerated into spheres. With unground and ground mixtures of $Fe(NO_3)_3-Al(OH)_3$, CNTs were grown at 700°C. As a result, CNTs grown on ground mixtures have a more uniform diameter and morphology than those on unground mixtures. The characterization of $Fe(NO_3)_3-Al(OH)_3$ mixture and as-grown CNTs was carried out by XRD, SEM and TEM.

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