

Pariya Nilsaengrat 2009: Effect of Temperature on Carbon Nanotubes Growth on Thin Iron Film by Thermal Chemical Vapor Deposition Method. Master of Science (Physics), Major Field: Physics, Department of Physics. Thesis Advisor: Assistant Professor Surasak Chiangga , Dr.rer.nat. 81 pages.

This research study in the effect of temperature to synthesis carbon nanotubes (CNTs) by thermal chemical vapor deposition on thin iron film with a thickness of 8.0 nm, under hydrogen and acetylene gas pressure of 1×10^{-3} bar. The acetylene gas was carbon feedstock. The morphology of CNTs was observed by a scanning electron microscope (SEM) and a transmission electron microscope (TEM). The crystallinity was investigated by electron diffraction technique of TEM and Fourier transform Raman spectrometer (FT-Raman spectrometer).

Results obtained show that the average diameter and the density of CNTs decrease when the growth temperature increases. The growth rate of CNTs at 800°C is higher than at 700 and 900°C. We observe the multiwalled carbon nanotubes (MWNTs) with a bamboo-like structure synthesized at 700 and 800°C. We do not detect the nanotubes growth at 900°C. The nanostructures of synthesized CNTs for all temperatures have high defect and hybridization both sp^2 and sp^3 .

Student's signature

Thesis Advisor's signature

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