



Synthesis of Carbon Nano-structures by Low-Temperature Hydrothermal Technique

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ABSTRACT

Carbon nanostructures (CNSt) have been prepared by a Hydrothermal deposition technique based on the polymer Polyethylene glycol (PEG-20.000Mw-(C₂H₄O)_{n+1}H₂O, bp:56-63°C) dissolved in D.I. water and Ethanol alcohol of a new carbon sources materials mixed with PdCl₂ as a catalyst mixed with Sodium hydroxide (8gm NaOH) using Parr reactor at temperature (190°C). A detailed study of how the synthesis parameter such as growth temperature affects the morphology of the carbon nanostructures is presented. The obtained (CNSt) are investigated (in Georgia Institute of Technology-MSE, Georgia, USA) by scanning electron microscope (SEM), transmitting electron microscope (TEM), X-ray diffraction (XRD) and Raman spectroscopy. It is observed that at (190 °C), normal CNTs are formed multi-walled carbon nanotubes (MWCNTs) and carbon nanosheets (CNS) but in little bit amount. Coiled carbon nanotubes (CCNTs) were obtained as main products high pure MWCNTs with lengths of (2–5 μm) and diameters of (60±20 nm) could be synthesized at as low temperature as (190 °C).

Keywords: Synthesis of Carbon Nano-structures, Hydrothermal Technique.
