

Synthesis and characterization of MWCNT/CaCO₃ hybrid compound

Abstract

In this work, the chemical vapor deposition (CVD) technique was used to synthesis the multiwall carbon nanotubes/calcium carbonate (MWCNT/CaCO₃) hybrid compound. A gas mixture of CH₄/N₂ was used as the source of carbon and Ni/CaCO₃ was used as catalyst for the growth of the hybrid compound. The catalyst was prepared using a mixture of nickel salt and CaCO₃ via coprecipitation method. In short, the process involves the drying of the precipitate followed by calcinations at 900°C. Reduction process was carried under H₂ at 400°C and growth in CH₄/N₂ mixture at 800°C for 30 minutes. The resulted compound was then analyzed using XRD, SEM and HRTEM. From XRD analysis the CNT/ CaCO₃ was successfully synthesized. HRTEM micrographs support the formation of MWCNT on the CaCO₃ surface.