

291z End Functional Carbon Nanotube/Pmma Nanocomposite Synthesized in Supercritical Carbon Dioxide

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In this work, we report an efficient and new method to prepare single wall carbon nanotube (SWNT)/polymer nanocomposite in supercritical carbon dioxide (scCO₂). SWNTs are first functionalized with double bond-containing Amino Ethyl Methacrylate (AEMA) and then copolymerize with Methyl Methacrylate to form nanocomposite. Electron microscopy analysis from SEM and TEM reveals enhanced dispersion of the SWNTs and excellent surface coverage of PMMA and interesting coating morphologies, attributed to the unique properties of scCO₂. The liquid-like solvency strength and gas-like diffusivity of scCO₂ allows maximum contact of reactants with CNT surfaces. It was also found that PMMA molecules are chemically attached to CNT surfaces through AEMA coupling.