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Preparation and Characteristics of Reduced Graphene Oxide in Ethanol/Water Solution by γ -Ray Irradiation

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Reduction of graphene oxide (GO) in ethanol/water solution in the presence of oxygen by γ -ray irradiation was studied. Suspension of GO was prepared by dispersing graphite oxide in the ethanol/water solution at a concentration of about 1 mg/ml under ultrasonic condition, and then irradiated by γ -rays in an absorbed dose range of 0 –250 kGy. The characteristic properties of GO and reduced GO (RGO) samples were analysed by Ultra-violet visible (UV-Vis) spectroscopy, Fourier–transform infrared spectroscopy (FTIR), X–ray diffraction (XRD), Raman spectroscopy, Transmission electron microscopy (TEM), Contact angle and Electrical conductivity measurements. The conductivity of the RGO was increased from 2.4×10^{-2} to 2.2 S/cm with increasing the absorbed doses from 25 to 250 kGy. Results of this study were indicated that a promising way could produce a large amount of pure graphene from GO with a simple reducing process using the gamma irradiation method.

Country/Organization invited to participate

Viet Nam

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