PROPERTIES OF GRAPHITE IN WATER WITH ADDITION OF AMMONIA SOLUTION

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ABSTRACT

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Finding a facile and cost-efficient solvent for production of finest carbon based on graphite is highly demanded in order to bring graphite closer to the real-world applications. Due to the hydrophobicity characteristics of the graphite makes it impossible for the water to be used as solvent to exfoliate graphite although water is the most widely used green solvent. In this study, the finest carbon material is synthesized by directly exfoliated the graphite in deionized water without any surfactants and polymers. The exfoliation of few-layers graphite nanosheets from pristine graphite can be achieved by small addition of ammonia solution. The concentration of the ammonia solution varies from 18% to 26%. The release of gaseous ammonia solution plays important role in the exfoliation process. The structural properties of the graphite were examined using XRD, Raman Analysis and Scanning Electron Microscope (SEM) followed by UV-Vis Spectroscopy for its optical properties. 24% and 26% ammonia concentration are the optimum condition to produce finest carbon material in the form of multi-layered graphite.