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Preparation, characterisation and optical properties of zinc oxide nanoparticles obtained by new intercalation chemical route
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Abstract

A new simple intercalation chemical route was used to synthesise ZnO nanoparticles via ZnO, sodium dodecyl sulfate as a surfactant and hydrogen peroxide at 90°C with strong stirring for five hours. The results of X-ray diffraction (XRD) and Fourier transformer infrared spectroscopy (FTIR) show that ZnO nanoparticles are all of crystalline hexagonal zincite phase. The results of scanning electron microscopy (SEM) and XRD indicate that the mean sizes of ZnO nanoparticles is about 25 nm. The thermal gravimetry reveals that the as-prepared ZnO has good thermal stability. Compared with other synthesis approaches, the proposed method can get fairly good product with a relatively low cost. The optical band gap energy of ZnO was 3.17 eV.

Author Keywords

Microstructure; Nanomaterials; Nanoparticles; Zinc oxide; ZnO

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