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A Comparative Study on the Properties Of ZnO And ZnS Nanoparticles

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Abstract: ZnO and ZnS nanoparticles are synthesized by a simple precipitation method by varying the growth temperature. These nanoparticles are characterized by X-ray Diffraction (XRD), Ultraviolet-Visible Spectroscopy (UV-Vis), Fourier Transform Infrared Spectroscopy (FTIR) and Scanning Electron Microscopy (SEM). In addition, the conductivity of the synthesized ZnO and ZnS nanoparticles are measured for different concentrations. The average particle size of the as-prepared ZnO and ZnS nanoparticles is determined by XRD in the range of 30 - 50 nm and 40 - 60 nm respectively with hexagonal form. The functional groups were confirmed by FTIR. SEM images confirm the nanocrystalline nature of the particles. The optical band gaps of ZnO and ZnS particles are calculated from the UV-Vis spectra in the range of 4.5- 4.6 eV and 5.2 - 5.4 eV respectively. The conductivity of the prepared samples increases with the growth temperature as well as the concentration. The results of the as-prepared ZnO and ZnS nanoparticles are compared with each other and with those reported in literature.
Keywords: XRD, UV-Vis, FTIR, SEM, Conductivity.

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