

Abstract

In this work, the synthesis of CuO-ZnO and CdS doped CuO-ZnO nanocomposites for the latent finger print development was done by sol-gel method. The Transmission Electron Microscopy (TEM), Fourier Transform Infrared spectroscopy (FT-IR), Field Emission Scanning Electron Microscopy (FESEM), X-Ray diffraction (XRD) and solid phase spectroscopy were used for characterization. The Hexagonal crystallite phase of ZnO, CdS and Monoclinic crystallite phase of CuO were observed using XRD and the average grain size was found to be 7.92, 3.75 and 1.95 nm of CuO-ZnO while the particle size of and CdS doped CuO-ZnO was 2.08, 2.85 and 6.79 nm calculated using Scherer equation. The band gap calculated was 3.9 to 3.7 eV of CuO-ZnO and CdS doped CuO-ZnO, respectively and confirmation of the composites formation was done by FTIR spectra. FESEM images were indicated the needle like particles on round ball like palates and the grain size calculated by TEM was 12.54 and 6.93 nm. The good quality Latent fingermarks with minimum background staining and maximum visualization of ridge details were observed by using CuO-ZnO and CdS doped CuO-ZnO nanocomposites on all the porous, semi-porous and non-porous surfaces.