

ABSTRACT

CuO, NiO and CuO-NiO nanocomposites were successfully synthesized using chemical co-precipitation method at room temperature using NaOH as precipitating agent. CuO-NiO nanocomposites were produced in different concentration as 75+25, 50+50 and 25+75 respectively. The prepared samples were subjected to different characterization techniques like X-ray Diffraction (XRD), Scanning Electron Microscope (SEM), Fourier transform infrared spectroscopy (FTIR) and UV-Vis. Spectroscopy to study the crystal structure, morphology, and optical properties of the sample. XRD results shows decrease in the crystallite size as the concentration of CuO and NiO is 50-50 in CuO-NiO nanocomposites. This trend was also observed in SEM images which were in agreement with the XRD results. The agglomeration and spherical structure of the nanoparticles can be clearly observed in SEM images. The EDS analysis of the sample confirms the formation of well-defined synthesis of the sample along with carbon impurity. The FTIR results show the presence of different functional groups in their vibrating or stretching modes. The UV-Vis. shows that the calculated band gap values for CuO-NiO nanocomposites lies between 3.07eV to 3.33eV as calculated for un-doped CuO and un-doped NiO respectively. The present work has potential application in different fields like as in photocatalytic activity, gas sensing materials, applications in electronics and also use in biological field as antimicrobial activity against pathogens.