

ABSTRACT

Novel synthesis of nanocomposite of $\text{CuO-Fe}_2\text{O}_3$ was done by adopting two methods to get comparative results. Green and chemical methods were used for synthesis. Synthesis was done by using salt of copper (copper sulphate Pentahydrate) and iron (iron sulphate heptahydrate) along with stabilizing agents. This reaction was pH dependent. Synthesized nanocomposites were then doped by metal sulphide of copper and iron. Iron and copper sulphide (metal sulphide) were synthesized separately by using chemical and green methods. Copper acetate salt was used along with Sodium sulfide as stabilizer.

Synthesized nanocomposites were doped with metal sulphide by using green, chemical and hydrothermal techniques. Reaction conditions were strictly followed to get desired results. Characterization was done to confirm the synthesis of desired nanocomposites. UV-Visible spectroscopy was done to check the maximum absorbed wavelength by the composites. By UV values, band gap was calculated by using Tauc relation. FTIR spectroscopy was done to detect functional groups in the composites which confirm the composition of composites. PSA was done to analyze the hydrodynamic diameter of particles prepared at different pH and by this data surface area was also obtained. PL was performed to study the electron-hole Relation in conduction and valence bands of nanoparticles. All these characterization confirms the synthesis