**Abstract**

Semiconductor nanoparticles doped with transition metal ions can influence the transition probabilities and electronic structure. The undoped and copper doped zinc sulphide nanoparticles with various concentrations are synthesized by wet chemical co-precipitation method. These nanoparticles are characterized by using X-ray powder diffraction (XRD), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy(TEM), Selected Area Electron Diffraction(SAED), UV–visible (UV–vis) absorption spectroscopy, Fourier Transform Infrared (FT-IR) Spectroscopy, conductivity measurement and time-resolved photo luminescence studies. X-ray powder diffraction analysis reveals that the synthesized samples have cubic zinc blende structure. The Scanning Electron Microscope shows the synthesized nanoparticles are agglomerated. The UV–visible spectra reveal the absorption edge is red shifted. The FT- IR spectra show vibrational peaks around 617cm-1 which indicate the presence of Cu–S stretching modes. The AC conductivity measurement confirms the semiconducting nature and shows a marked increase in conductivity as the doping concentration of copper increases. The photoluminescence shows that the emission at 426 nm may be due to transition from the conduction band to the zinc vacancies. These transition metal ions doped semiconductor nanoparticles have important applications in solid state lighting, imaging, and other photonic devices.