

## **Structural and transport mechanism studies of copper selenide nanoparticles**

### **ABSTRACT**

Copper selenide (CuSe) nanoparticles were successfully prepared via chemical precipitation method at room temperature. The field emission scanning electron microscopy (FESEM), transmission electron microscopy (TEM) and atomic force microscopy (AFM) micrograph showed the synthesized CuSe powder is nanoparticles. The energy dispersive x-ray (EDX) analysis and inductively coupling plasma (ICP) analysis showed the formation of the stoichiometric CuSe compound. In-situ x-ray diffraction (XRD) at temperatures ranging from 100 to 473 K was performed to study the structure stability of the CuSe compound. The electrical conductivity, Hall mobility, carrier sheet density and thermal diffusivity of the CuSe compound have been investigated at various temperatures to study the electron-phonon transport mechanism in the compound.

**Keyword:** CuSe nanoparticles; Electrical conductivity; Thermal diffusivity Chemical precipitation method