**Abstract**

In this study, quaternary semiconductor Cu2NiSnS4 (CNTS) nanoparticles have been synthesized by the hydrothermal method. The synthesized powder was characterized by using X-ray diffraction (XRD), energy dispersive spectroscopy (EDX), field emission scanning electron microscope (FESEM) and UV-VIS Spectroscopy (UV). Based on the EDX result, the stoichiometry of the Cu2NiSnS4 (CNTS) was determined and the elemental distribution was studied by mapping analysis. The synthesized CNTS nanoparticles show an optical band gap in the range from 1.29 to 1.5eV, which indicates that these nanoparticles are potential absorber materials for thin film photovoltaic applications.