

Effect of sodium addition on CuInS₂ nano-particles

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The CuInS₂ nano-particles are prepared by the sonochemical colloidal route. Copper(I) chloride (CuCl), indium trichloride (InCl₃), and elemental sulfur are the three precursors used to synthesize CuInS₂ nano-particles. CuCl, InCl₃ are dissolved in ethanol and S is dissolved in ethylenediamine. The solution is then mixed under the ultra sonic. Various Na precursors are added to the solution for synthesizing CuInS₂ nano-particles. And Na-doped CuInS₂ nano-particles are annealed under N₂ atmosphere at 400 °C for 30 min. The properties of obtained Na doped CuInS₂ nano-particles are identified by various analysis methods. The size and morphology of nano-particles are measured by a scanning electronic microscope (SEM). The atomic ratio is investigated by an energy dispersive X-ray spectrometer (EDX). The structural and optoelectronic properties are studied by using X-ray diffractometer (XRD) and a photoluminescence spectrometer (PL) respectively. This research was financially supported by the Ministry of Education, Science Technology(MEST) and Korea Institute for Advancement of Technology(KIAT) through the Human Resource Training Project for Regional Innovation and the 2nd phase of the BK21 program.