

Synthesis of CIGSe nanoparticles by sonochemical method – a new approach

TrangThiThuyLe, 께자이바부, 박진호[†]

영남대학교

(chpark@ynu.ac.kr[†])

Cu (In,Ga)Se₂ (CIGSe) nanoparticles were synthesized by a “greener” approach without using any surfactant/stabilizers by sonochemical method. We used only ethanol as solvent to dissolve metal nitrate precursors. Though a reducing agent must be involved, it is substantially much less toxic compared to another reported sonochemical and solvothermal procedures. Moreover, all the reaction steps were carried out at room temperature under ambient conditions and did not include any organic stabilizers as act as insulators in final devices. Thus, the developed method herein is greener and economical. The “as prepared” products were characterized by XRD, EDS, SEM, TEM. The results show that formation of CuIn_{0.4}Ga_{0.6}Se₂ with particle size in the range ~10 – 40 nm with tetragonal structure. However, elemental Se still appears as impurities in the synthesized CIGSe nanoparticles. Further investigation is aiming to eliminate these impurities with a control over the CIGSe product stoichiometry is under progress.