

### Characterization of Cu(In, Ga)Se<sub>2</sub>/CuInSe<sub>2</sub> Thin Film Photovoltaic Absorbers Formed by Non-Vacuum Nanocrystal Ink Process

이정은, 박진호\*  
영남대학교  
(chpark@ynu.ac.kr\*)

CIGS nano-particles were also synthesized by reacting cupric chloride (CuCl), indium trichloride (InCl<sub>3</sub>), gallium trichloride (GaCl<sub>3</sub>) and selenium (Se) via sonochemical colloidal route process. CuInSe<sub>2</sub> (CIS) nano-particles were synthesized by reacting CuCl, InCl<sub>3</sub> and Se via sonochemical colloidal route process. As-synthesized CIS and CIGS nano-particles were washed with methanol and dispersed in proper solvents respectively. The prepared inks were found to be mono-disperse and the colloids were stable for extended period. The CIS and CIGS thin films were formed by air spray coating method respectively and annealed under N<sub>2</sub> atmosphere at 550 °C for 30 min. It was found that the non-vacuum nanocrystal ink process developed in this study provide a feasible route to high-quality CIS and CIGS based thin film solar cells at relatively low cost. This research was financially supported by the Ministry of Education, Science Technology (MEST) and National Research Foundation of Korea (NRF) through the Human Resource Training Project for Regional Innovation.