# Non-vacuum processing of CIGS absorber layer using nanoparticle

Chang-woo Ham, Ki-bong Song, Jeong-dae Suh, Jung-min Cho
Electronics and Telecommunications Research Institute

**Abstract :** Solar cells with CIGS absorber layers have proven their suitability for high efficiency and stable low cost solar cells. We prepared and characterized particle based CIGS thin film using a non-vacuum processing. CIGS powder were obtained at 240°C for 6 hours from the reaction of $CuCl_2$, $InCl_3$, $GaCl_3$, Se powder in solvent. The nanoparticle precursors were mixed with binder material. The CIGS thin film deposited on a sodalime glass. The CIGS thin film were identified to have a typical chalcopyrite tetragonal structure by using UV/Visible-spectroscopy, X-ray diffraction(XRD), Auger Electron Spectroscopy(AES), Scanning Electron Microscopy(SEM).

**Key Words :** CIGS, Solar cells, Nanoparticle, Thin film, Non-vacuum