

Producing the CuInS_2 solar cell with solution based process and ZnO nanostructure

김상국, 이동욱, 용기중†

포항공과대학교

(kyong@postech.ac.kr†)

Solar energy is one of promising future energy sources. Among many solar cells, CuInS_2 (CIS) thin film solar cell is paid attention because of its high absorption coefficient, adjustable band gap, high incident photon conversion efficiency, good stability and so on. The efficiency of the cell recorded 20.3% recently, but those processes required high vacuum conditions which would lead to high cost and limitation on mass production. This research tried to produce CIS solar cell at low temperature with non-vacuum condition using solution coating. The solution containing Cu, In and S was spin-coated on ZnO/CdS nanowire core-shell structure absorption layer, that made a superstrate structure solar cell. The nanostructure let contact area at each layer larger so that higher efficiency in light absorption and carrier transfer were possible. SEM, XRD, UV-transmittance were also measured. In conclusion, superstrate CIS solar was produced using solution process at low temperature with room pressure. The cell with ZnO nanostructure could show better efficiency than earlier superstrate solar cell.