

Abstract

Iman Gamal Morsi

A Novel CuInS₂/Polyaniline Base Heterojunction Solar Cell

Copper indium disulfide (CuInS₂) has direct band-gap energy of about 1.5 eV; a large absorption coefficient, which are well suited to the photovoltaic conversion of solar energy. In this task a novel fluorine doped tin oxide (FTO)/CuInS₂/ polyaniline base/ZnO/FTO heterojunction solar cell was fabricated. CuInS₂ thin films were electrodeposited onto fluorine doped tin oxide substrate by the electrodeposition technique. Current–voltage characteristic curves were measured under darkness; illumination. It found that J_{sc}, V_{oc}, η are 3.2x10⁻⁶ A/cm², 0.714 V; 1.92x10⁻³ % for FTO/CuInS₂/ZnO/ITO heterojunction solar cell while J_{sc}, V_{oc}, η are 3.25x10⁻⁶ A/cm², 0.724 V; 1.8x10⁻³ % for FTO/CuInS₂/polyaniline base ZnO/ITO heterojunction solar cell.