Synthesis and characterization of AIS chalcopyrite thin films for solar cell applications

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Abstract

Highly stiochiometric AgInSe2 thin film was prepared on p-type Si (111) substrate via sol-gel spin coating technique. X-ray diffraction spectrum depicted that the crystal structure of AgInSe2 film was chalcopyrite with lattice constants a = 6.102 angstrom and c = 11.69 angstrom. The surface morphology was investigated by a scanning electron microscope (SEM). The results showed that the spherical particles are uniformly distributed with average particle size 23 nm. The current-voltage characteristic curves showed Schottky diode like behavior. The influence of annealing temperatures on the I-V characteristics, photocurrent and solar cell conversion efficiency was examined. The results indicated that the annealing temperature improved the AgInSe2/Si heterostructure photoconductivity properties.

Keywords

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