

Optical and electrical properties of the CdS/InP heterostructures solar cells

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Abstract

Technological procedures of solar cells fabrication based on n/sup +/- CdS/p-p/sup +/-InP heterostructures are presented. The conversion efficiency under AM 1.5 illumination condition of the obtained solar cell was $\eta = 12.6\%$ at $I_{SC} = 16\text{mA/cm}^2$, $U_{OC} = (0.74-0.78)\text{V}$. The charge transport mechanism in solar cells in the temperature range of (100-300) K has been investigated, it has been established that direct current is determined either by charge carrier tunneling through local centres (low temperature) or by recombination processes in the charge depleted region. The heterojunction breakdown mechanism is determined by charge carrier tunneling processes.