

Theoretical Analysis of Graded Interface CdS/CIGS Solar Cell

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Abstract : We have theoretically calculated the photovoltaic conversion efficiency of a graded interface CdS/CIGS solar cell, which can be experimentally fabricated. Because the conduction band discontinuity or spike in an abrupt heterojunction CdS/CIGS solar cell can hinder the separation of hole-electron by electric field, a graded interface layer is used to eliminate the spike and reduces recombination in space charge region. This paper describes the role of the graded band gap interface layer in decreasing the performance of the heterojunction cell. By optimizing the thickness of the graded region, an improvement of conversion efficiency has been observed in comparison to the conventional CIGS system.

Keywords : heterojunction, solar cell, graded interface, CIGS

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