CdZnTe solar cells

The energy bandgap of the samples were found to vary between 2.04 eV-2.54 eV, which covers the range of most BSF materials used for CdTe solar cells. The study has thus shown the feasibility of using RF sputtering for the development of both absorber and BSF layer in one monolithic structure, for applications in CdTe thin film solar cells.

The performance characteristics reveal that the maximum efficiency for CdTe thin film solar cells is 7.13% with post-CdCl2 heat treatment of 75 min while 8.11% efficiency is recorded for CdZnTe ...

To address the issue of open circuit voltage loss in CdTe solar cells, CZT and CMT-based PV technologies are viable and low-cost substitute PV technology for achieving maximum cell efficiency in light of the ...

Thin-film solar cells (TFSCs) are garnering attention for their unstoppable growth as a sustainable energy source as well as their innovations and indispensability. TFSCs" efficiency has plateaued, necessitating the development of novel, practical, and inexpensive alternative energy sources. CdTe material lacks the band gap for the top layer. It can still be used as an absorber top layer ...

In this case, the CdZnTe (CZT) material is a promising candidate for the fabrication of solar cells, where CdZnTe thin films are applied as absorber layers in devices possessing a tandem architecture.

Based on Crosslight APSYS, single junction CdZnTe and CIGS solar cells as well as two-terminal CdZnTe/CIGS tandem cells with tunnel junction are modeled. Basic physical quantities like band diagrams, optical absorption and generation are obtained. Quantum efficiency and I-V curves are presented. The results are discussed with respect to the interface recombination velocity, the ...

Based on Crosslight APSYS, single junction ZnTe/CdSe, CdZnTe/CdSe and CIGS/CdS solar cells as well as CdZnTe(CdSe)/CIGS tandem cells are modeled. Basic physical quantities like band diagrams, optical absorption and generation are obtained. Quantum efficiency and I-V curves are presented. The results are discussed with respect to the interface ...

Investigation of CdZnTe for Thin-Film Tandem Solar Cell Applications Preprint R. Dhere, T. Gessert, J. Zhou, S. Asher, J. Pankow, and H. Moutinho To be presented at the 2003 Materials Research Society Spring Meeting San Francisco, California April 21-25, 2003 National Renewable Energy Laboratory 1617 Cole Boulevard Golden, Colorado 80401-3393

Abstract Thin-film solar cells (TFSCs) are garnering attention for their unstoppable growth as a sustainable energy source as well as their innovations and indispensability. ... After that, device samples having ...

CdZnTe solar cells

However, CdZnTe solar cells fabricated by the identical process sequence used successfully for high efficiency CdTe cells gave efficiencies of only around 4.4%. In addition, the CdZnTe band gap shifted from 1.7 eV to 1.55 eV and the series resistance (around 2-6 ~ cm2) was 3-5 times higher than in the counterpart CdTe solar cells. ...

Keywords CdZnTe Graded solar cells Efficiency Heterojunction 1 Introduction Improving the performance efficiency is one of the major challenges in the design and implementation of the solar cells (Lo´pez et al. 2012; Bahrami et al. 2013). One technique used to increase the cell efficiency is to linearly grading band gap of the active layer ...

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