

Performance parameters of cadmium telluride solar glass





Overview

Are cadmium telluride solar cells effective?

Solar energy has emerged as a promising renewable solution, with cadmium telluride (CdTe) solar cells leading the way due to their high efficiency and cost-effectiveness. This study examines the performance of CdTe solar cells enhanced by incorporating silicon thin films (20-40 nm) fabricated via a sol-gel process.

What is cadmium telluride (CdTe)?

Cadmium Telluride (CdTe) thin-film solar cells have gained considerable attention for their high absorption coefficient, near-optimal direct bandgap (~ 1.45 eV), and manufacturing flexibility [3].

What is the Na concentration of cadmium telluride (CdTe) absorber layer?

Cadmium telluride (CdTe) absorber layer NA concentration is changed from 1.0×10^{10} to $1.0 \times 10^{19} \text{ cm}^{-3}$ for the purpose to predict its impact over the efficiency of CdTe cells. FeSi₂ has an electron concentration (NA) of 1×10^{17} , while NiO and SnO₂: F have donor concentrations (ND) of 1.0×10^{13} and 1.0×10^{18} respectively.

How does CdTe thickness affect the performance of solar cells?

The performance of the solar cell changes with changing the thickness of CdTe and CdS thin films. The J_{sc} of cells almost remains the same, the V_{oc} decreased as the CdTe thickness decreases.



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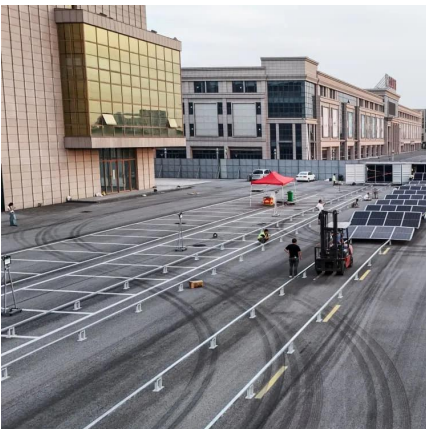


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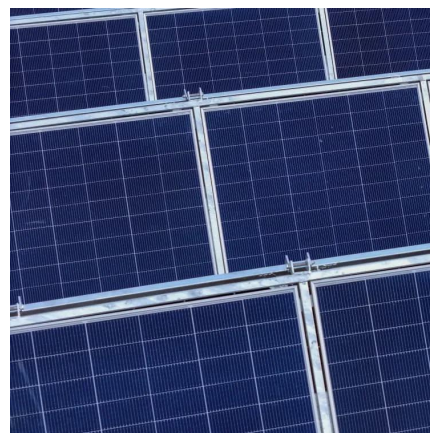
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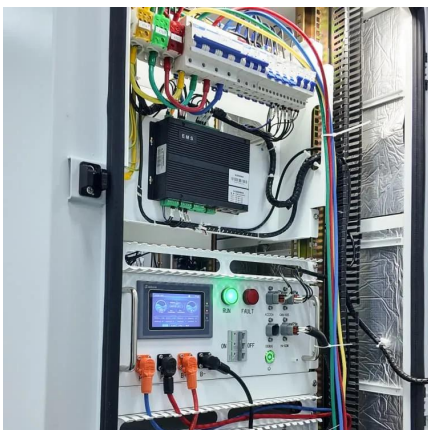


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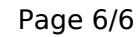
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