

## ITO-Si heterojunction solar cell with nanocrystal line CdTe thin films

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The electrical and optical properties of CdTe devices, as determined by current–voltage and photovoltage spectroscopy, were found to change with temperature over a range of 80–300 K.

### Summary

ITO-Si heterojunction solar cell with nanocrystal line CdTe thin films grown by magnetron sputtering are studied. The electrical and optical properties of these solar cell devices, as determined by current–voltage and photovoltage spectroscopy, were found to change with temperature over a range of 80–300 K. The electron traps present in devices with a different morphology of the CdTe films have been investigated using transient photovoltage techniques with 650 nm pulse excitation. Solar cells with CdTe films with a thickness of 24 nm exhibits the highest efficiency of 11 % as compare with 9,4% for the reference ITO-Si cells without CdTe. We have proposed the model that explains the increase achieve of efficiency due to increase of the photovoltage while short-circuit current exhibits a week lowering. Also we have established the physical mechanism of the observed increase in the lifetime of photoexcited charge carriers.

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