High-efficiency cadmium telluride thin-film solar modules

PV solar cells based on CdTe represent the largest segment of commercial thin-film module production worldwide. Recent improvements have matched the efficiency of multicrystalline ...

Composite light-trapping structures offer a promising approach to achieving broadband absorption and high efficiency in thin-film solar cells (TFSCs) in order to accelerate sustainable ...

This review explores recent progress in the enhancement of power conversion efficiency (PCE), particularly through bandgap engineering, alkali metal doping, and interface optimization.

DOE supports innovative research focused on overcoming the current technological and commercial barriers for cadmium telluride (CdTe) solar cells.

Cadmium telluride solar cells are the most widely used thin-film solar technology in the world, but their performance still has significant room for improvement. A new approach could now ...

Success of cadmium telluride PV has been due to the low cost achievable with the CdTe technology, made possible by combining adequate efficiency with lower module area costs.

Cadmium Telluride (CdTe) solar cells have been successful and promising in producing solar energy at commercial scales and power plants. That is mainly due to the versatility in...

Cadmium telluride (CdTe)-based cells have emerged as the leading commercialized thin film photovoltaic technology and has intrinsically better temperature co-efficients, energy yield, and ...

The study measured and compared key performance metrics, including electrical conductivity, hall coefficient, Tanu plot performance, I-V measurement, rectification ratio, and ...

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OverviewHistoryBackgroundTechnologyMaterialsRecyclingEnvironmental and health impactMarket viabilityResearch in CdTe dates back to the 1950s, because its band gap (~1.5 eV) is almost a perfect match to the distribution of photons in the solar spectrum in terms of conversion to electricity. A simple heterojunction design evolved in which p-type CdTe was matched with n-type cadmium sulfide (CdS). The cell was completed by adding top and bottom contacts. Early leaders in CdS/CdTe cell efficiencies were GE in the 1960...

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