High-efficiency antimony-based thin-film solar cells

For heterojunction thin film solar cells, the quality of absorber material as well as the interface synergistically determine the final device efficiency 10,11,12. In general, the ...

The demand for low cost, high-efficiency solar cells are always the driving force for thin film photovoltaics. The metal chalcogenide semiconductor absorbers which can meet ...

It was observed that the substrate structure of the Sb2Se3 thin film solar cell which was constructed by annealing at 400 °C had the best performance with an efficiency of ...

Antimony chalcogenides, including Sb 2 S 3, Sb 2 Se 3, and Sb 2 (S,Se) 3, have been developed as attractive non-toxic and earth-abundant solar absorber candidates among the thin-film photovoltaic devices.Presently, a record ...

Antimony selenide (Sb2Se3) is a promising photovoltaic thin-film absorber material that has been widely studied in recent years. In Sb2Se3 thin-film solar cells, cadmium ...

Surprisingly, high efficiency of 9.39% Sb 2 (S,Se) 3 solar cells has been obtained with the addition of monoatomic Al 2 O 3 layer based on the adjustment crystal orientation, ...

Lin J, Mahmood A, Chen G, et al. Crystallographic orientation control and defect passivation for high-efficient antimony selenide thin-film solar cells. Mater Today Phys, 2022, 27: 100772

The rapidly expanding demand for photovoltaics (PVs) requires stable, quick, and easy to manufacture solar cells based on socioeconomically and ecologically viable earth-abundant ...

Thin-film solar cells based on antimony chalcogenide Sb 2 Se 3 have attracted significant interest owing to their environmentally friendly composition, low-cost fabrication ...

Presently, a record certified power conversion efficiency of 10.5% has been demonstrated for antimony chalcogenide solar cells, which is significantly lower than that of Cu2(In, Ga)Se2 ...

The earth-abundant constituent elements present in antimony selenosulfide (Sb 2 (S,Se) 3), its high absorption coefficient of greater than 10 5 cm -1, band gap tunability ...

Antimony sulfide (Sb2S3) solar cells fabricated via hydrothermal deposition have attracted widespread attention. The annealing crystallization process plays a crucial role in achieving ...

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We improve the crystallinity of antimony selenide films and then successfully produce superstrate cadmium sulfide/antimony selenide solar cells with a certified power ...

Antimony selenide (Sb2Se3) has sparked significant interest in high-efficiency photovoltaic applications due to its advantageous material and optoelectronic properties. In ...

Silver antimony sulfide (AgSbS2) is used as an absorption layer in thin film solar cells due to its suitable bandgap and economic considerations. Efforts have been made to improve the photovoltaic performance of devices, ...

We show that hydrothermal synthesis affords good morphology and reduced defects in antimony selenosulfide films, enabling solar cells with an efficiency of 10%.

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