

Do grain boundaries determine recombination in perovskite solar cells?

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In order to investigate the interplay between grain boundary and intra-grain defects on solar cell performance and determine the potential benefits of developing biaxially-textured film solar cells, I ...

Historically seen as a limitation, grain boundaries (GBs) within polycrystalline metal halide perovskite (MHP) films are thought to impede charge transport, adversely impacting the ...

The power conversion efficiency (PCE) of flexible perovskite solar cells (PSCs) has increased rapidly, while the mechanical flexibility and environmental stability are still far from satisfactory. Previous ...

Abstract Cadmium Telluride (CdTe) solar cell technology is a promising candidate to help boost green energy production. However, impurities and structural defects are major barriers to improving the ...

The model assumptions and simulation results show how the concentration of surface donors at the grain boundaries affects the height of the grain boundary barriers and the measured ...

Grain boundaries (GBs) in polycrystalline halide perovskite solar cells play a significant role in not only device performance but also stability. The first section of this chapter (Section ) provides fundamental ...

The power conversion efficiency of perovskite solar cells has been significantly improved in recent years. One of the key factors leading to this change is that the microstructure of ...

The work presents two-dimensional simulations of the impact of donor defects at grain boundaries (GB) on potential barriers at the GBs in Cu (In,Ga)Se<sub>2</sub> (CIGS) thin films as well as on the ...

Abstract: Grain boundaries (GBs), inherent in polycrystalline perovskite films and associated with numerous trap states, are widely regarded as non-radiative recombination centers ...

Abstract As a general materials phenomenon driven by thermodynamics, grain boundary network, when extending onto the film surface or interface, can create an intriguing grooving geometry. Such formed ...

The resulting perovskite film exhibited higher crystallinity, enlarged grain size, and reduced dependence on the substrate. In addition, the cross-linked FTA [CL (FTA)] distributed along the grain boundaries ...

Sub-micrometer-resolved photocurrent mapping in operational perovskite solar cells, achieved through our home-built photoluminescence and photocurrent imaging microscopy, reveals ...

# Grain boundary solar container

The grain boundaries (GBs) instability induced by photodecomposition of residual  $\text{PbI}_2$  is long-standing challenge for further simultaneous improvement of stability and power conversion ...

This review addresses the question of how K boosts performance. Early studies of K in CIGS assumed it was similar to Na--primarily modifying grain interior (GI) and grain boundary (GB) ...

Since the (two-dimensional, projected) density of point defects at a grain-boundary plane is enhanced with respect to those (three-dimensional) in the grain interiors of the adjacent grains, the nonradiative ...

Grain boundaries (GBs) in polycrystalline perovskite films play a crucial role in determining photogenerated carrier transport and recombination, thereby impacting both efficiency ...

??? ?????? ?? Efficient rigid and flexible perovskite solar cells using strongly adsorbed molecules for lattice repair and grain boundary mitigation ?????????????????????? ...

Grain boundaries (GBs) play an important role in determining recombination in perovskite solar cells (PSCs). Vaynzof et al. report on this effect using both experimental characterizations and theo-retical ...



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