Solar cell external electric field

Probing ionic conductivity and electric field screening in perovskite solar cells: ... of metal halide perovskite-based optoelectronic devices to over 26% power conversion efficiency for single-junction solar cells and over 30% external quantum efficiency for light-emitting devices (LEDs), slow transient effects during device operation became apparent. 1,2 After charge trapping or ...

Huang et al. in 2011, for the first time inserted an ultrathin polymer ferroelectric P(VDF-TrFE) layer between the absorbing layer and the metal electrode in an organic solar cell and studied the effect of external ...

An external electric field is applied on a silicon photovoltaic solar cell, inducing band-trap ionization of charge carriers. Output current is then monitored and the thermodynamic efficiency is ...

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PTQ10/T2EH blend is more accessible to achieve charge separation by direct photoexcitation. The application of a strong external electric field (Fext) facilitates the control of light-induced charge transfer and photovoltaic performance.

Based on Marcus theory, the photoinduced electron transfer properties of D-A type non-fullerene acceptor organic solar cells (OSCs) under the dependence of external electric field (Fext) were investigated. The research results shown that the charge transfer mode under different Fext intensities changes with certain regularity.

An external electric field is applied on a silicon photovoltaic solar cell, inducing band-trap ionization of charge carriers. Output current is then monitored and the thermodynamic efficiency is calculated. Results show on ...

An external electric field is applied on a silicon photovoltaic solar cell, inducing band-trap ionization of charge carriers. Output current is then monitored and the thermodynamic...

In this article, we studied the influence of an external electric field applied in the base of a solar cell on its various electric parameters when it is illuminated by a monochromatic light. We have taken into account the actual values of intrinsic recombination velocities at the junction and the back face. This study revealed that when the ...

Solar cell external electric field

This study deals with external electric field influence on polycrystalline silicon solar cell behavior. We study an n-p-p + solar cell under electric field resulting from a polarization and under constant multispectral illumination. Taking into account this electric field, we establish news expressions of continuity equation, photocurrent density and back surface recombination velocity.

Here, we demonstrate a unique nonchemical approach that employs an external electric field (EEF) to tune the morphology of photoactive layers in the wet coating process (not after the film is already dried). This method is highly effective in improving the BHJ morphology and device performance over a number of SMA-based OSC systems, showing its ...

Here, we demonstrate a completely different approach by applying an external electric field (EEF) on the active layer during the wet coating. The EEF-coating method is perfectly compatible with an ambient blade coating using environmentally friendly solvents, which are essential requirements for industrial production of OSCs. A ...

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external electric field is applied on a silicon photovoltaic solar cell, inducing band-trap ionization of charge carriers. Output current is then monitored and the thermodynamic

In this work, a detailed comparison of optical and electronic properties in bulk and interfaces of well-known organic semiconductor systems in presence of an external electric field is reported. We have used density functional theory (DFT) to ...

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