Solar lights match solar cells

Perovskite and organic semiconductors can be combined to make tandem solar cells but, to date, their efficiency has hovered around 20%. Now, researchers demonstrate a 23.6% tandem by reducing...

A good match of energy levels between dyes and redox couples is an important factor to reduce energy loss and further improve the power conversion efficiency of dye-sensitized solar cells (DSSCs). Pseudohalogens were introduced as an improved alternative to iodide/triiodide (I - /I 3-) couples to achieve this goal.

Advancements in Organic-Based Hybrid Tandem Solar Cells Considering Light Absorption and Spectral Matching of Organic Materials. Organic solar cells (OSCs) have emerged as promising energy harvesters owing to their outstanding optoelectronic properties, approaching a maximum power conversion efficiency of over 19%.

For example, under modern light emitting diode indoor illumination which, for energy efficiency reasons, is mostly restricted to visible light, organic solar cells show a significant relative performance gain whereas, e.g., silicon solar cells exhibit reduced performance. 39, 40 Therefore, the question which solar technology is the best may be ...

We reveal new ways to configure LED-based solar simulators with just four light source types to achieve A+ class spectrum. Even with A+ class spectrum significant spectral mismatch effects can remain, but may be reduced by adding or adjusting light sources.

Solar cells absorb sunlight photons by promoting electrons within the cell from ground to excited states, from where most are extracted as electrical current between cell terminals. Some of these photoexcited electrons, however, ...

Converting non-visual light into photocurrent while maintaining high visual ...

Converting non-visual light into photocurrent while maintaining high visual transparency is vital for semitransparent organic solar cells (ST-OSCs) application, yet often challenging over insufficient invisible light-harvesting.

The excitation intensity was adjusted to ~1 Sun by illuminating a contacted perovskite solar cell (short circuit) and matching the current density to the short-circuit current measured in the J ...

Breakthroughs in Solar Cell Efficiency. A team of researchers from the University of Potsdam and the Chinese Academy of Sciences has combined perovskite and organic solar cells--both of which are processed at low temperatures with a low carbon footprint--to create a tandem solar cell that achieves a record-breaking

efficiency of 25.7%.

3 ???· Organic solar cells (OSCs) have developed rapidly in recent years. However, the energy loss (Eloss) remains a major obstacle to further improving the photovoltaic performance. To address this issue, a ternary strategy has been employed to precisely tune the Eloss and boost the efficiency of OSCs. The B-N-based polymer donor has been proved process high E(T1) ...

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