A luminescent solar concentrator with 7 1 power conversion efficiency

What is a luminescent solar concentrator (LSC)?
The Luminescent Solar Concentrator (LSC) consists of a transparent polymer plate,containing luminescent particles. Solar cells are connected to one or more edges of the polymer plate. Incident light is absorbed by the luminescent particles and re-emitted.

What is a transparent luminescent solar concentrator?
LSCs with a high degree of transparencyare referred to as transparent luminescent solar concentrators (TLSCs) and their transparency and colour can be reported similar to how transparent photovoltaics (TPVs) are reported (Yang et al.,2019aYang et al.,2019b).

What is the power conversion efficiency of an LSC with 4 GaAs cells?
The best result was obtained for an LSC with four GaAs cells. The power conversion efficiency of this device,as measured at European Solar Test Installation laboratories,was 7.1%(geometrical concentration of a factor 2.5).

What is power conversion efficiency (PCE)?
The power conversion efficiency (PCE), described in Eq. is the measure of electrical power generated relative to solar power incident on the front face of an LSC-PV. The majority of capture and loss mechanisms of LSCs are also described in Eq.). The terms PCE, are discussed in detail in the Terminology section.

What is the PCE efficiency of LSC-PV?
When using the standard PCE calculation method for the LSC-PV,the efficiency becomes 1.79%. Again,a paper utilising an LSC containing CuInS /ZnS quantum dots using crystalline Si (c-Si) solar cells recorded a PCE of 8.71% with the disputed method (Li et al.,2015). Clearly these results should not be benchmarks for record efficiencies.

Which LSC has the highest optical power efficiency?
The highest optical power efficiency was measured to be 8.9% by Zettl et al. on a LSC containing Lumogen Red 305,however due to the small measurement aperture,the efficiency is likely to be an overestimation due to non-uniform emission over the edge area (Zettl et al.,2017).

A luminescent solar concentrator with 7.1% power conversion efficiency. Phys. ... Near infrared, highly efficient luminescent solar concentrators. Adv. Energy Mater. 6, 1501913 ...

A luminescent solar concentrator with 7.1% power conversion efficiency ... A luminescent solar concentrator with 7.1% power conversion efficiency. Evert Bende. 2008, physica status solidi ...

Plasmonic luminescent solar concentrators (PLSCs) have been shown to enhance the optical performance and

power conversion efficiency of LSCs, due to added plasmonic ...

We demonstrated the LSC wider exploitation of the solar cells" quantum efficiency, with a higher conversion rate. Today Luminescent Solar Concentrators (LSCs) represent a ...

The Luminescent Solar Concentrator (LSC) consists of a transparent polymer plate, containing luminescent particles. Solar cells are connected to one or more edges of the polymer plate. ...

For the rays outside the escape cone this leads to a reduction in the reflection, and thus lower power conversion efficiency. The use of an "air-gap mirror", i.e., ... A luminescent ...

, 7.1%(2.5)? GaAs , 4.6%(10 ...

The best result was obtained for an LSC with four GaAs cell power conversion efficiency of this device, as measured at European Solar Test Installation laboratories, was 7.1% (geometrical ...

Photovoltaics (PVs) enable conversion of solar light into electricity without detrimentally affecting the environment. Unfortunately, solar cells require high-cost semiconductors, which makes ...

A luminescent solar concentrator with 7.1% power conversion efficiency ... A luminescent solar concentrator with 7.1% power conversion efficiency. Mauro Pravettoni. 2008, Physica Status ...

Slooff, L. H. et al. A luminescent solar concentrator with 7.1% power conversion efficiency. Phys. Status Solidi R 2, 257-259 (2008). Article Google Scholar ...

A luminescent solar concentrator with 7.1% power conversion efficiency Table 1 Calculated Isc and efficiency i for a 5 × 5 cm2 LSC containing Red305 and ...

The world energy crisis, as well as global warming, has intensified an urgent need for renewable energies. Solar radiation can be converted to electricity by solar cells readily; ...

The power conversion efficiency of this device, as measured at European Solar Test Installation laboratories, was 7.1% (geometrical concentration of a factor 2.5). With one GaAs cell ...

Simulations show that new developments in luminescent materials and wavelength-selective filters could enable efficient conversion of sun-light into electricity. Photovoltaics ...

A luminescent solar concentrator with 7.1% power conversion efficiency L. H. Slooff*, 1, ... Here the power conversion efficiency is defined in the standard way, i.e. the electrical power from ...

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The power conversion efficiency of this device, as measured at European Solar Test Installation laboratories, was 7.1% (geometrical concentration of a factor 2.5). With one ...

2.1 Power Conversion Efficiency. The incident photons to the waveguide sides are captured by the attached PV cell(s) for the generation of electricity. The ratio between the incident power (P in) and the electrical power ...

A luminescent solar concentrator with 7.1% power conversion Physica Status Solidi-Rapid Research Letters (IF 2.5) Pub Date : 2008-09-29, DOI: 10.1002/pssr.200802186

Large-size luminescent solar concentrators (LSCs), which act as a complement to silicon-based photovoltaic (Si-PV) systems, still suffer from low power conversion efficiency ...

Web: https://bardzyndzalek.olsztyn.pl