

Is light conversion agents-guided plant cultivation a sustainable strategy?

Therefore, light conversion agents-guided plant cultivation is a promising strategy in the development of sustainable systems. This review introduces the mechanism and classification of nano light conversion agents and summarises recent advances in the applications of light conversion agents for plant cultivation.

What is the research article light/electricity energy conversion and storage?

Research Article Light/Electricity Energy Conversion and Storage for a Hierarchical Porous In<sub>2</sub>S<sub>3</sub>@CNT/SS Cathode towards a Flexible Li-CO<sub>2</sub>Battery De-Hui Guan, De-Hui Guan

Can nano light conversion agents guide plant cultivation?

With the flourishing development of nanotechnology, nano light conversion agents have been demonstrated to be alternative tools to traditional artificial light sources. Therefore, light conversion agents-guided plant cultivation is a promising strategy in the development of sustainable systems.

What are nanolight conversion agents (LCAs)?

Nanolight conversion agents (LCAs) are nanoscale fluorescent materials, including rare earth-doped nanomaterials, quantum dots, carbon-based nanomaterials, reticulated materials and conjugated polymers nanoparticles (Fig. 1).

What are the light conversion mechanisms of LCAs?

Therefore, in this review, the light conversion mechanisms of LCAs are described, involving radiative transition, energy transfer, and electron transfer, followed by a summary of the classification of LCAs.

Which phosphor materials are suitable for light conversion?

Incorporating light conversion phosphor materials in the QDSC device structure is a scientifically accepted way to rectify this problem. Trivalent lanthanide ions having the electronic configuration [Xe]4f<sub>n</sub> (n = 0-14) are suitable materials for light conversion. Each of the n electrons is associated with one of the seven 4f orbitals.

Under sunlight, photovoltaic devices can convert solar energy into electrical energy, which is stored in complementary energy storage devices. This stored energy can then be ...

This review presents an overview of the development of visible-light responsive azo-based materials, covering molecular design strategies and their applications in energy ...

Poor photostability has become a major obstacle of organic fluorescent dyes (OFD) used as light conversion agent. To explore the intrinsic mechanisms of photodegradation and ...

The primary advantages of light conversion technology were summarized as follows: the use of LCAs can

convert useless light energy from the sun into effective ...

The energy conversion and storage technology in the integrated energy agent technology can effectively improve the efficiency of energy development and utilization and ...

A new kind of device with solar-thermal-electric energy conversion capability for energy conversion and storage can be formed by combining PCPCMs with photo-thermal ...

Thermal Energy Storage: Storage of energy in the form of heat, often using materials like molten salts or phase-change materials. Mechanical Energy Storage: Storage of energy through ...

As the information age progresses, electronic and electrochemical energy storage devices are advancing towards higher integration and power density [[1], [2], [3]]. These ...

The visible-to-UV light conversion processes have four main mechanisms: second-harmonic generation (SHG; Figure 2a), two-photon absorption (TPA; Figure 2b), lanthanide-based UC (Figure 2c,d), and ...

Herein, we constructed a new sunlight-driven thermoelectric system (Scheme 1). Given the ultrafast photothermal conversion of the nonradiative decay of the excited state of ...

1 INTRODUCTION. Renewable, abundant, and clean solar energy is expected to replace fossil fuels and alleviate the energy crisis. However, intermittence and instability are the deficiencies of solar energy due to its ...

Here, we fabricate a new kind of photo-rechargeable zinc-ion hybrid capacitor (ZHC) benefiting from light-harvesting carbon dots (CDs) and natural thylakoids for realizing ...

The non-renewable energy such as coal, oil and natural gas is in the danger of drying up. As a clean and renewable energy, the solar energy has been one of the research ...

Rare earth light conversion agent material is a fluorescent material that can convert solar energy into light of different wavelengths for various applications. ... (III), Sm (II), and Dy (III) ions based on bis (pyridine-triazole) ...

Light-converting agent Light-converting masterbatch Rare earth ABSTRACT The light-converting agricultural film is a new high-end functional film that can convert ultra-violet ...

Solar cell production equipment supplier Suzhou Maxwell Technologies has increased the power of a 60-cell heterojunction (HJT) module by more than 5W thanks to the addition of a light conversion film.

In this study, we have successfully demonstrated acceleration of plant growth using double light conversion

films, prepared by incorporating biomass-based CDs into a polyvinyl ...

The research progress of rare earth agricultural light conversion film Heliyon ( IF 3.4) Pub Date : 2024-08-27, DOI: 10.1016/j.heliyon.2024.e36967

Photovoltaic technology provides a promising approach for solar energy conversion. One significant factor limiting the efficiency is the poor light harvesting of solar ...

This review presents an overview of the advantages and limitations of QDSCs, different types of lanthanide-based light conversion phosphor materials, their synthesis and light conversion mechanism, and their ...

These excellent properties can be ascribed to the hierarchical porous and free-standing structure of ICS, as well as the key role of photogenerated electrons and holes during discharging and charging ...

Phase change materials (PCMs) play significant roles in solar thermal energy storage. In this work, a novel PCM, light-to-thermal conversion phase change hydrogel ...

This review provides a comprehensive overview of the progress in light-material interactions (LMIs), focusing on lasers and flash lights for energy conversion and storage ...

( ),?Ternary mixture thermochromic microcapsules for visible light absorption and photothermal conversion energy ...

Photovoltaic technology provides a promising approach for solar energy conversion. One significant factor limiting the efficiency is the poor light harvesting of solar energy, which is ...

Historic Energy Conversion Sequences o Biomass -> heat (esp. cooking) o Solar -> heat, dry clothes, dry food - Solar is still main light source, no need for conversion - Solar ...

To store the energy generated by them, a separate energy storage module and voltage regulator module are required, but it is clear that this pairing is unwieldy for application. To address...

The predominant concern in contemporary daily life revolves around energy production and optimizing its utilization. Energy storage systems have emerged as the paramount solution for harnessing produced energies ...

In order to improve energy efficiency and reduce energy waste, efficient energy conversion and storage are current research hotspots. Light-thermal-electricity energy ...

Rare earth light conversion agent material is a fluorescent material that can convert solar energy into light of

different wavelengths for various applications. In this paper, the research progress of organic rare earth ...

Solar-thermal storage with phase-change material (PCM) plays an important role in solar energy utilization. However, most PCMs own low thermal conductivity which restricts the ...

Latent thermal energy storage using phase change material (PCM) is an effective way to store and transport thermal energy. In this work, a shape-stabilized light-to-thermal ...

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