Light-generated energy storage fluorescence

Can persistent luminescent phosphors store light energy in advance?
Nature Materials 22,289-304 (2023) Cite this article Persistent luminescent phosphors can store light energy in advanceand release it with a long-lasting afterglow emission.

Which light source is used to charge persistent luminescent phosphors?
As for the pumping source,ultraviolet-visible(UV-Vis) light is the most widely used source to charge persistent luminescent phosphors; however,persistent luminescent phosphors that can be charged with deep-red and even NIR light sources are highly desirable for biological applications.

What are laser and flash light sources used for?
Laser and flash lamp light sources have been widely applied in numerous LMIs,including sintering,crystallization,lift-off,surface modification,carbonization,oxidation/reduction,doping,and synthesis,providing practical photothermal or photochemical strategies for numerous energy devices,ranging from batteries to self-powered electronics.

How can a large-area processable light source improve optical energy density?
To address this issue, large-area processable light sources (e.g., line beam lasers, and flash lamps) along with optical beam shaping technologies can be introduced to enable required optical energy density over broad surfaces without sacrificing process quality and precision.

What are light-induced photothermal and photochemical processes?
In addition,this study covers various light-induced photothermal and photochemical processes ranging from melting,crystallization,and ablation to doping and synthesis,which are essential for developing energy materials and devices.

How does Vis-NIR-range flash light produce graphene?
The photothermal energygenerated by Vis-NIR-range flash light led to graphene formation,resulting in the production of a large-area (5 × 10 cm 2) graphene with a low density of 0.0354 g cm -3 in a few milliseconds.

The ballast is a magnetic part that regulates the voltage going through the light. As the fluorescent light is used more and more, the light requires more energy in order to start. This weakens the ballast, ...

Optical information processing, display and storage can be accomplished with linearly or circularly polarized light. In passive (non-emitting) devices, linear polarization can be produced by ...

Opacity of tissues to excitation-light depends on light interaction with structures (i.e. epicuticular waxes,

trichomes, etc.) and cellular components (i.e. phenolic compounds, ...

A fluorescent lamp has changed over electrical energy into useful light energy to a great deal more proficiently than incandescent lamps. The normal luminous viability of ...

Until 2017, all LPL materials used were inorganic, but the discovery of organic emitters has expanded their potential applications. Inorganic LPL materials emit light through ...

Abstract and Figures Background: We have previously reported clinical efficacy with a novel form of photobiomodulation-a biophotonic platform inducing fluorescent light ...

Here, a cooperative optimization strategy of microstructure control and superparaelectric regional regulation is proposed to simultaneously achieve excellent energy storage performance and real ...

Introduction to Fluorescence When specimens, living or non-living, organic or inorganic, absorb and subsequently re-radiate light, the process is described as photoluminescence. If the ...

Trivalent lanthanides in wide bandgap fluoride or phosphate hosts can present persistent luminescence between 200 nm and 1.7 µm after charging by X-rays. Mechanisms ...

In this work, we have successfully explored the application of chitosan-based green, sustainable, and biodegradable materials as feedstock materials for the direct laser writing fabrication of LIG electrodes ...

Fluorescent light is defined as light emitted by fluorescent proteins when they are stimulated with light of an appropriate wavelength, resulting in the emission of light in various colors, such as ...

Thermally activated delayed fluorescence (TADF) materials have received increasing attention from organic electronics to other related fields, such as bioapplications and photocatalysts.

In this context, fluorescent light energy (FLE) is a biophotonic platform offering a unique approach to dermatology, aesthetic medicine, and wound care [8, 10, 14]. To generate FLE, chromophores translate light energy ...

In recent years, thermally activated delayed fluorescence (TADF) has attracted much attention as a novel electronic transition process, since it enables harvesting electrically ...

Carbon/graphene quantum dots are 0D fluorescent carbon materials with sizes ranging from 2 nm to around 50 nm, with some attractive properties and diverse applications. Different synthesis ...

Strategic placement of windows can maximize natural light while minimizing heat gain during the hottest

parts of the day. Conclusion Fluorescent lights have been a popular choice for their energy efficiency and longevity. ...

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Time-dynamic fluorescence encryption and anti-counterfeiting technology have garnered significant attention in the high-end information security field...

The increasing demand for electrochemical energy storage devices continuously promotes the development of new electrode materials and electrolytes. As a result, ...

Phosphorescence and thermally activated delayed-fluorescence (TADF) devices have been developed as highly efficient organic light-emitting diodes (OLEDs). However, they ...

The hydrogel displayed a bright blue color fluorescence under UV light, and Fe 3+ could quench the fluorescence, thereby realizing information storage and anti-counterfeiting. ...

A new smart multifunctional fluorescent textile SC featuring UV light-switchable properties and, simultaneously, high energy storage ability and excellent cyclability (100% after ...

Purely organic molecules with thermally activated delayed fluorescence (TADF) features perform reverse intersystem crossing (RISC) process, converting triplet excited state ...

Carbon/graphene quantum dots are 0D fluorescent carbon materials with sizes ranging from 2 nm to around 50 nm, with some attractive properties and diverse applications. Different synthesis routes, bandgap ...

Persistent luminescent phosphors can store light energy in advance and release it with a long-lasting afterglow emission.

Phosphorescence is a type of photoluminescence related to fluorescence. When exposed to light (radiation) of a shorter wavelength, a phosphorescent substance will glow, absorbing the light and reemitting it at a longer ...

The responses of plant photosynthesis to rapid fluctuations in environmental conditions are critical for efficient conversion of light energy. These responses are not well-seen laboratory conditions and are difficult ...

A photoinduced electron-transfer strategy for switchable fluorescence and phosphorescence in lanthanide-based coordination polymers+

Light-generated energy storage fluorescence

Dielectric ceramics have attracted wide interest in the field of energy storage. However, high energy density depends on large electric field, seriously threatening the safety ...

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 ...

A fluorescent lamp has changed over electrical energy into useful light energy to a great deal more proficiently than incandescent lamps. The normal luminous viability of fluorescent lighting frameworks is 50 ...