

What is persistence luminescence?

Persistent luminescence is a process where the material emits light in the visible range appreciably for hours even after the irradiation source has been waived off. The storage of the irradiation energy by the traps is supposed to be responsible for long decay time of persistence luminescence.

What is luminescence & how does it work?

Luminescence is classically defined as relaxation of species from the excited state followed by spontaneous light emission. The material is activated or charged by blue/UV content of solar radiation during regular condition. In extreme dark conditions, the energy is released as afterglow.

What is optically stimulated luminescence (OSL)?

... Specifically optically stimulated luminescence (OSL), also known as photostimulated luminescence, has emerged as a reliable tool for dose evaluation^{8,9} and also shown to be potentially useful in anticounterfeiting, optical data storage and bioimaging applications.

What is thermo luminescence?

Thermo luminescence is essentially defined as temperature stimulated light emission from the crystal well after the dispersal of excitation. It can be broadly classified in two stages.

What is the role of DY 3+ in persistent luminescence phosphor?

Dy 3+ plays an important role in the persistent luminescence phosphor SrAl₂O₄: Eu²⁺, Dy³⁺. Persistent luminescence is a process where the material emits light in the visible range appreciably for hours even after the irradiation source has been waived off.

What is the significance of trap depth in persistent luminescence?

Significance of trap depth in persistent luminescence Enhancement in properties of persistent luminescent materials can be brought about by forming a pitch for probable traps into the phosphor lattice. These traps are often created by substitution of appropriate dopant having charge different from the host constituents of the lattice.

Persistent luminescence is a process where the material emits light in the visible range appreciably for hours even after the irradiation source has been waived off. The storage ...

Afterwards, the temperatures in the model house coated with SESMs merges a platform between 36 and 39 °C, demonstrating the solid-liquid phase change and thermal energy storage SESMs under solar radiation. The thermal energy storage of the SESMs in this section can be calculated to be 10 g × 126.2 J g⁻¹ = 1262 J. While the temperatures ...

electrons (energy transfer process), losing energy in the process and eventually disappearing with luminescence (luminescence process) or being captured. The OSL is then observed by photo-stimulation of the captured electrons and holes. The processes of information storage, latency, read out, and erasure in the OSL phenomenon are shown in Fig. 2.

Optically stimulated luminescence (OSL) materials, enabling energy storage by capturing of charge carriers and then the energy conversion to light via photostimulation, can find many advanced applications in various fields, spanning from radiation dosimetry, optical data storage and security, environmental monitoring, biomedicine, clinical diagnostic, to archaeology and ...

Bioanalysis based on optical imaging has gained significant progress in the last few decades. Luminescence probes are capable of detecting, monitoring, and tracing particular biomolecules in complex biological systems ...

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Journal Highlight: Optically stimulated luminescence (OSL) materials, enabling energy storage by capturing of charge carriers and then the energy conversion to light via photostimulation, can find many advanced ...

Examine the potential of Co ($^{2+}$)-doped CeO ($_2$) NPs in energy storage applications, such as supercapacitors and batteries, due to their promising capacitance and energy density. Study the integration of these NPs into optoelectronic devices, including light-emitting diodes (LEDs) or photodetectors, capitalizing on their tunable photoluminescence and ...

It systematically elucidates their design and formation principles, emphasizing the strategic approaches employed in their synthesis. Additionally, it explores the influence of various hybridization methods on the energy-storage efficiency of SCs, providing a thorough understanding of the synergistic effects engendered by the integration of ...

These results revealed the potential applications of (K0.5Na0.5)NbO₃-based ceramics for energy storage and provide a feasible approach of domain engineering to develop new lead-free energy storage ...

Optically stimulated luminescence (OSL) materials enable energy storage and energy conversion to light upon photostimulation. Here, a comprehensive review is provided on the fundamental principle, design, preparation, characterization, optimization, research progress, application, mechanism, and prospect of OSL materials.

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