HJ Solar

Solar container efficiency of laser medium

Overview

The efficiency of solar-pumped lasers (SPLs) is limited when the length of the laser medium is unsuitable. This is because superfluous regions in the laser medium introduce losses and contribute slightly to the stimulation of radiation in the laser resonator. Herein, we report significant improvements in end-side-pumped solar laser collection efficiency and beam brightness using a novel 1.

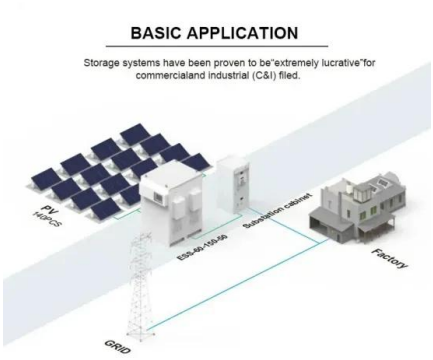
Solar container efficiency of laser medium

Highly Efficient Solar Laser Pumping Using a Solar Concentrator

Solar-pumped lasers (SPLs) allow direct solar-to-laser power conversion, and hence, provide an opportunity to harness a renewable energy source. Herein, we report significant ...

Mexico Solar Container Power Systems Market Price Formation and

Operational efficiency in the Mexico Solar Container Power Systems market is gauged through key performance indicators such as capacity utilization, system uptime, and energy ...



Highly Efficient Four-Rod Pumping Approach for the Most Stable ...

The direct conversion of natural sunlight into laser light may be considered as one of the most promising technologies in renewable energy research, providing a cost-effective production of coherent optical ...

Full article: High-efficiency solar-pumped lasers

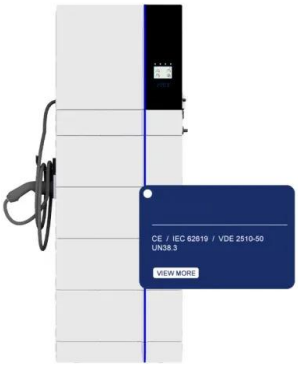
It discusses potential applications both on Earth and in space, and traces historical progress of solid-state solar-pumped lasers - particularly those employing Nd:YAG and Ce:Nd:YAG ...

Full article: High-efficiency solar-pumped lasers

Section 3 focuses on Ce:Nd:YAG solar laser systems, discussing the characteristics of the Ce:Nd:YAG active medium and historical advancements of these systems. Section 4 emphasizes ...

Investigation of dependence of solar-pumped laser power on laser medium

The efficiency of solar-pumped lasers (SPLs) is limited when the length of the laser medium is unsuitable. This is because superfluous regions in the laser medium introduce losses and ...



PROCEEDINGS OF SPIE

Solar-pumped laser (SPL) is an appropriate equipment which can transform the broad-band solar light into narrow-band laser directly, with the advantages of simple structure, high efficiency and

Laser Materials for Solar-Pumped Lasers , Springer Nature Link

Solar laser active media play an essential role in the success of solar laser emission. Physical and laser properties of the commonly used Nd:YAG and Cr:Nd:YAG solar laser media are ...

Efficient 38.8 W/m2 solar pumped laser with a Ce:Nd:YAG

A Fresnel lens, quartz cooling-water tube, and gold-plated conical cavity constituted the solar-energy collection and concentration system, which was designed to maximum pump light ...

High-efficiency solar laser pumping by a modified ring-array

Abstract To considerably improve solar laser efficiency, a 5.5 mm diameter 20 mm length Nd:YAG single-crystal rod can be efficiently pumped by highly concentrated solar radiation through a ...

Low-threshold and high-efficiency solar-pumped laser with Fresnel

High-efficiency solar pumped lasers with low threshold power would be more promising than semiconductor lasers with large solar panel in space laser communication.

Efficient 38.8 W/m2 solar pumped laser with a Ce:Nd:YAG crystal and ...

Herein, we report a significant improvement in solar-pumped laser collection efficiency based on end-side pumping a 6-mm-diameter 95-mm-length Ce:Nd:YAG/YAG grooved bonded ...

Highly efficient solar-pumped Nd:YAG laser

The recent progress in solar-pumped laser with Fresnel lens and Cr:Nd:YAG ceramic medium has revitalized solar laser researches, revealing a promising future for renewable reduction ...

A novel laser gain medium: Micro-sphere array cooled by refractive

A micro-sphere array laser gain medium cooled by refractive index-matched coolant was demonstrated for the first time to our knowledge. The new concept is possessed of potential to ...

Lowest threshold solar-pumped Ce:Nd:YAG laser with 2.06% solar-to ...

Notably, 1.41 W TEM 00 mode solar laser power was also measured by adopting an asymmetric laser resonant cavity, resulting in 2.06% solar-to-TEM00 mode laser conversion ...

Four-Ce:Nd:YAG-rod solar laser with 4.49% conversion ...

In 2022, Liang et al. documented a record solar-to-laser power conversion efficiency of 4.64% in multimode regime 22. This achievement was made possible by a system comprised by a ...

Highly Efficient Solar Laser Pumping Using a Solar Concentrator

Herein, we report significant improvements in end-side-pumped solar laser collection efficiency and beam brightness using a novel 1.5-m-diameter compound solar concentrator ...

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