Laser replaces solar power generation efficiency

Germanium laser power converters--devices that convert laser light into electrical power via the photovoltaic effect--offer attractive cost advantages, particularly at 1550 nm, a wavelength ...

Most efficient photovoltaic laser power converters (PVLPCs) are approaching efficiencies of 70% but produce power densities of only a few W/cm2, which precludes their implementation in ...

In this study, we present a novel approach utilizing a 193 nm ArF excimer laser for non-thermal laser contact opening (LCO) to improve energy uniformity and minimize heat-affected zones ...

"Since solar energy is the most abundantly available and reliable power source in space, 10x more than on Earth, space-based laser power generation would be a major step forward in terms of fulfilling ...

This sustained effort has led to the recognition of solar-pumped lasers as a promising technology for the future, capable of delivering laser radiation in a cost-effective and carbon-free way, ...

Abstract: Femtosecond laser processing enables the fabrication of high-absorption, low-emissivity solar absorbers and highly efficient microstructured heat sinks for heat dissipation in solar ...

Femtosecond laser treatment creates nano- and micro-patterns on thermoelectric materials. These patterns trap more sunlight across the spectrum and improve heat flow. Coupled ...

The development of solar laser systems that combine high efficiency and cost-effectiveness is key to the practical implementation of this renewable ...

"By combining better solar energy absorption and heat trapping at the hot side with better heat dissipation at the cold side, we made an astonishing ...

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Researchers achieve a 15-fold increase in the efficiency of STEG solar generators using black metal and femtosecond lasers.

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