

Is a broadband solar energy absorber based on monolayer molybdenum disulfide (MoS₂)?

We propose a broadband solar energy absorber based on monolayer molybdenum disulfide (MoS₂) using tungsten (W) elliptical arrays. We find that the solar energy absorption efficiency is high and the operating region is extremely wide due to the combination of monolayer MoS₂ and W elliptical arrays. 1. Introduction

What is an ultra-wideband solar energy absorber?

Solar energy absorption is a very important field in photonics. The successful development of an efficient, wide-band solar absorber is an extremely powerful driver in this field. We propose an ultra-wideband (UWB) solar energy absorber composed of a Ti ring and SiO₂-Si₃N₄-Ti thin films.

Can a broadband solar energy absorber efficiently absorb solar energy?

As an important way to collect source of energy, solar absorber is widely reported and studied. However, how to efficiently absorb the solar energy in the solar radiation range is a long-term perplexing problem. In this work, we propose a new type of broadband solar energy absorber based on monolayer molybdenum disulfide (MoS₂).

Is tungsten ring array a novel solar energy absorber?

Metamaterials play a crucial role in the research of broadband absorbers. In order to achieve broadband and efficient absorption of solar energy, a novel solar energy absorber based on tungsten ring array is proposed in this paper.

How do solar absorbers work?

Solar absorbers play a very important part in the solar energy utilization system. The concentrator concentrates scattered sunlight onto the absorber, causing the surface to concentrate a hundred times more energy than the sun normally shines on it.

What is a perfect solar absorber based on?

Qin, F. et al. Ultra-broadband and wide-angle perfect solar absorber based on TiN nanodisk and Ti thin film structure. Sol.

Spectrally selective solar absorbers harvest solar energy in the form of heat. Solar absorbers using cermet-based coatings demonstrate a high absorptance of the solar spectrum and a low emittance in the infrared (IR) regime. Extensive ...

Solar selective absorbers (SSAs) possess high sunlight absorption (300-2500 nm) and low infrared thermal radiative losses (2.5-25 μm), which are undoubtedly the best choice for photothermal conversion process, and SSAs have been ...

Solar energy absorber bracket

In this work, we proposed a novel kind of broadband solar energy absorber based on tungsten (W) to achieve broadband absorption of solar energy. A four-layer ring-disk structure (SiO_2 - SiO_2 -W) is employed in our design. A finite ...

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