

How plasmonic bamboo device is prepared for solar steam generation?

Plasmonic bamboo device was prepared for solar steam generation. Nano-plasma metal converted solar energy into heat energy by the plasma effect. The microstructure and heat behavior were characterized. Thermal conversion efficiency up to 87% was achieved. Superior stability and cycle performance was revealed. -2 -2

Is bamboo a sustainable biomass resource?

Executive Summary Bamboo is potentially a highly sustainable biomass resource and can contribute to domestic and global renewable energy targets, such as those set by the European Union (EU) within the Renewable Energy Directive (REDII).

Are bamboo bioenergy systems sustainable?

overall economic and environmental impacts of bamboo bioenergy systems. The methodology has been utilized in many studies to assess the suitability of bamboo as a re-newable energy source and has proven to be an effective tool for guiding policy and investment decisions related to sustainable bioenergy systems development.

How can bamboo be converted into energy?

As shown in Figure 1, bamboo can be transformed into four different energy forms through various conversion technologies, namely bioethanol, bio-oil, biogas, and biochar. Due to its high lignocellulose content, bamboo is well suited for bioethanol production, which involves pretreatment followed by hydrolysis and fermentation.

Can bamboo be used as a source of electricity?

For example, the Numaligarh Refinery in Assam, India, reportedly utilizes around 500,000 tons of fresh bamboo annually to produce biomass products, with bioethanol production reaching up to 49,000 tons. The residue waste after production can be burned as a source of electricity (NRL, 2020-21).

What is sustainable bamboo production?

Sustainable bamboo production systems can directly contribute to tackling climate change and achieving goals of the UN sustainable development agenda (Yiping, Buckingham and Guo-mo, 2010; INBAR, 2015b; 2015a).

A solar PV tree system is an amalgamation of a solar tree configuration and a solar PV system, with the solar tree implemented through the power generation subsystem of the solar PV ...

Harnessing the power of the sun while offering shade on demand, retractable solar panels become a dynamic asset to a gazebo. Key points: Functionality: The dual-function design of these panels provides both a solar energy harvesting ...

Bamboo, due to its fast growth rate, commercial value, and sustainability, has become a promising alternative biomass resource (Sharma et al., 2018). In recent years, the proportion ...

This research paper describes the design, fabrication, and performance assessment of a bamboo-based solar garden light that operates a 1W led load from dusk to dawn while being charged ...

Bamboo can be used as a good substrate material for an evaporation device because of its rich resources, low thermal conductivity, porous structure of microchannels, and high ...

This in-depth analysis examines the feasibility of bamboo-based biophotovoltaic devices as ground-breaking solutions in the search of environmentally friendly solar applications. This ...

Given the green developments in interfacial solar steam generation (ISSG), a biobased evaporator with excellent photothermal conversion efficiency is urgently needed to address the freshwater shortage. However, it is still challenging that ...

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