

Is copper a good material for solar energy conversion?

Cuprous oxide (Cu_2O) is a promising material with the capacity for low cost, large-scale solar energy conversion due to the abundant nature of copper and oxygen, suitable bandgap for absorption of visible light, as well as effective, low energy intensity fabrication processes such as electrodeposition.

Is Cu_3PSe_4 a good absorber for thin-film solar cells?

To seek an earth-abundant and environmentally friendly absorber for thin-film solar cells, Cu_3PSe_4 is investigated by first-principles calculations and device simulations. We demonstrate that the compound has a suitable band gap width of 1.3 eV as well as a high sunlight absorption coefficient.

Do CIGS solar minimodules have high photovoltaic efficiency?

In this communication, recent developments in the photovoltaic performance of lightweight and flexible monolithically interconnected CIGS solar minimodules are presented. The issues regarding the development of CIGS solar cells and modules with higher photovoltaic efficiency values are also discussed.

Are CIGS-based lightweight and flexible photovoltaic devices possible?

This communication presents the prospects of $\text{Cu}(\text{In,Ga})\text{Se}_2$ (CIGS)-based lightweight and flexible photovoltaic devices. The current status of flexible CIGS minimodules with photovoltaic efficiency values greater than 18% and future directions to enhance their efficiency values toward >20% are discussed.

Are lightweight and flexible solar cells the future of solar energy?

The development of lightweight and flexible photovoltaic solar cells that can be installed in places with severe weight restrictions, curved surfaces, or places with difficulty in the utilization of conventional silicon (Si)-based solar cells is expected to result in the widespread use of solar energy.

Are CIGS solar cells more efficient than Si photovoltaics?

$\text{Cu}(\text{In,Ga})(\text{S,Se})_2$ (CIGS) solar cells show record efficiencies comparable to those of crystalline Si-based technologies. Their industrial module production costs are also comparable to those of Si photovoltaics in spite of their much lower production volume.

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Silver (Ag) consumption in the photovoltaic (PV) industry, which takes around 10% of the yearly global Ag production, is becoming a great concern in the PV community. [1 - 3] In 2020, the global solar PV capacity
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In terms of enhancing energy security and reducing climate change, photovoltaic (PV) technology is one of the most promising and greenest. Aside from the benefits listed before, PV ...

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Thin Cu₂O-Cu photovoltaic cells grown by anodic oxidation of Cu in an alkaline solution at T = 86 °C give an open-circuit voltage of up to 400 mV and a short-circuit current density of up to 0.6 mA ...

One of the main issues limiting the efficiency of Cu₂O solar cells is the availability of n-type window layers with an appropriate band offset and low interfacial reactivity. In this work, we ...

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