

Solar glass with cerium oxide





Overview

Can a cover glass be doped with cerium oxide?

This result shows that the cover glass doped with cerium oxide can perform similarly to the synthetic fused quartz. When the cover glass was doped with 1-2 wt% Ce, the radiation resistance performance improved for electron radiation in the range of ~1 MeV and proton radiation in the range of ~22 MeV.

Why do we need a cerium oxide photo/electrocatalyst?

Cerium oxide (CeO_2) photo/electrocatalysts for energy storage and environmental applications have attracted considerable interest because of stable crystal structure, low toxicity/cost, superior chemical stability, stable redox ($\text{Ce}^{3+}/\text{Ce}^{4+}$) pairs, abundant oxygen defects, and capability for intense interaction with other materials.

What is cerium oxide?

Cerium oxide (ceria) holds significant technological value owing to its distinctive properties. Ce exists in two oxidation states: Ce^{3+} and Ce^{4+} . Consequently, ceria exists in two forms in bulk materials: CeO_2 (with Ce^{4+}) and Ce_2O_3 (with Ce^{3+}).

Do space solar cells use CE-doped glass?

Space solar cells use Ce-doped glass as a substrate; however, they are heavy and expensive. Ce-doped metal oxide is expected to protect space solar cells from GCR. As the specific power of space solar cells is essential to minimize their weight, a Ce-doped metal oxide deposited on a lightweight substrate can replace the current heavy space glasses.



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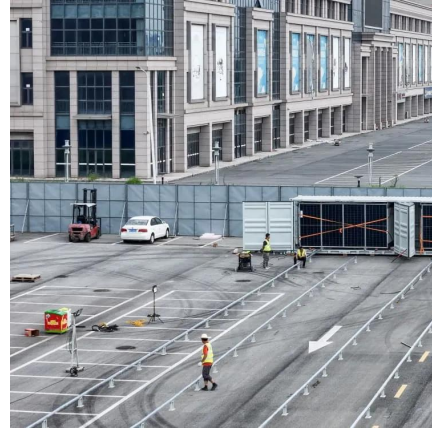
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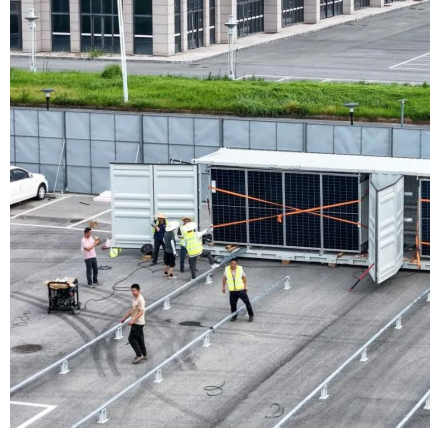
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