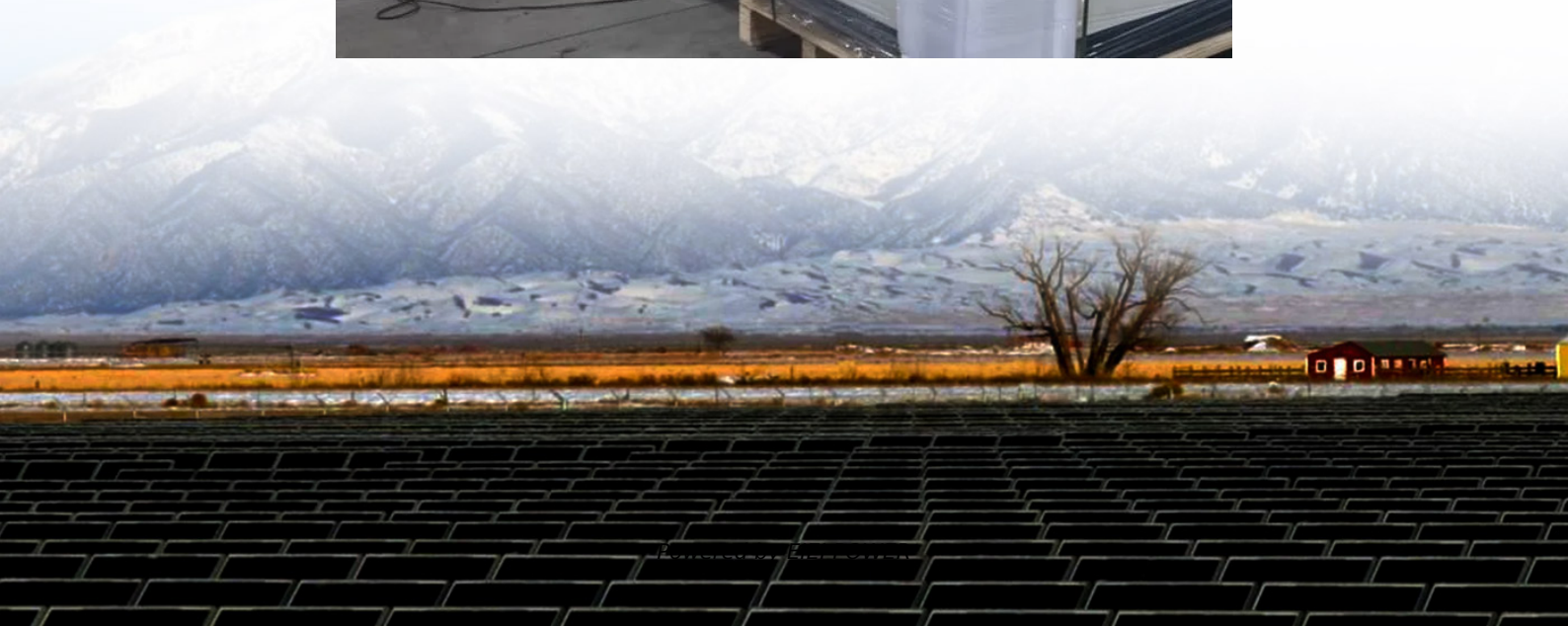


Tin is widely used in electrochemical energy storage





Overview

What is tin used for?

Tin and its compounds such as tin oxides and tin sulfides, have been widely used as functional materials in electronics, chemical engineering, energy storage, and bio-photonics .

Can tin oxide be used for optoelectronic and energy storage devices?

The current trend of using tin oxide materials for optoelectronic and energy storage devices is a challenge that involves materials scientists and mechanical, electrical and chemical engineers. It should be recognized that doped SnO₂ and doped ZnO (e.g. GZO) are complementary TCOs.

Can tin be used in lithium ion batteries?

Similar to the application of Sn/SnO₂ in lithium-ion batteries, the combination of carbon and tin-based materials can generate a sodium-ion battery with much better performance. Li et al. employed porous carbon as the tin skeleton, and a very high specific capacity at 1148.1 mAhg⁻¹ was obtained, as shown in Figure 6 .

Can tin be used for reversible potassium storage?

Tin can form several different binary phase alloys with K, and reversible potassium storage can be achieved through alloying reaction, indicating that tin-based materials can be used to develop anode materials with high volume energy density.



Tin is widely used in electrochemical energy storage



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Sn/C Or Sn-M/C Nanocomposites
Sn-P Composites
Sn-O/S/Se (Vi Group) Composites
The alloy formed by tin and phosphorus is usually Sn4P3. Because of its high reversible capacity and low redox potential, Sn4P3 is considered to be one of the most promising anode materials for SIBs. However, the large volume expansion and tin aggregation during cyclic de/intercalation of sodium ions lead to poor cycle stability.
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