

What materials can be used for a sodium ion battery?

These range from high-temperature air electrodes to new layered oxides, polyanion-based materials, carbons and other insertion materials for sodium-ion batteries, many of which hold promise for future sodium-based energy storage applications.

What is a rechargeable electrochemical cell based on sodium?

With sodium's high abundance and low cost, and very suitable redox potential ( $E(\text{Na}^+/\text{Na}) = 2.71 \text{ V}$  versus standard hydrogen electrode; only 0.3 V above that of lithium), rechargeable electrochemical cells based on sodium also hold much promise for energy storage applications.

Are Na and Na-ion batteries suitable for stationary energy storage?

In light of possible concerns over rising lithium costs in the future, Na and Na-ion batteries have re-emerged as candidates for medium and large-scale stationary energy storage, especially as a result of heightened interest in renewable energy sources that provide intermittent power which needs to be load-levelled.

Are sodium-ion batteries a solid state material?

The sodium-ion battery field presents many solid state materials design challenges, and rising to that call in the past couple of years, several reports of new sodium-ion technologies and electrode materials have surfaced.

What is a sodium ion cell?

Sodium-ion cells based on intercalation materials that employ non-aqueous electrolytes, akin to lithium-ion batteries, were explored in the mid-1980s, and have undergone a renaissance in the last few years with quite a number of new materials and approaches having been reported.

What is a high-temperature solid-state sodium ion conductor?

The report of a high-temperature solid-state sodium ion conductor - sodium  $\beta$ -alumina ( $\text{NaAl}_{11}\text{O}_{17}$ ) - almost 50 years ago spawned tremendous interest both in the field of solid state ionics and sodium electrochemistry.



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