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Are aluminum-based aqueous batteries suitable for energy storage systems?

Aluminum-based aqueous batteries are considered one of the most promising candidates for the upcoming generation energy storage systems owing to their high mass and volume-specific capacity, high stability, and abundant reserves of Al. But the side reactions of self-corrosion and passive film severely impede the advancement of aluminum batteries.

What is aqueous aluminum based energy storage system?

Aqueous aluminum-based energy storage system is regarded as one of the most attractive post-lithium battery technologies due to the possibility of achieving high energy density beyond what LIB can offer but with much lower cost thanks to its Earth abundance without being a burden to the environment thanks to its nontoxicity.

What is a high specific energy rechargeable aqueous aluminum-manganese battery?

In summary, a high specific energy rechargeable aqueous aluminum-manganese battery with Pt-modified aluminum anode and layered γ -MnO₂ cathode has been constructed. The use of 5 mol L⁻¹ Al (OTF) 3 makes the battery system have a wide electrochemical window.

What is a aqueous aluminum ion battery (AAIB)?

An alternative battery system that uses Earth-abundant metals, such as an aqueous aluminum ion battery (AAIB), is one of the most promising post-lithium battery technologies not only because of its safety and sustainability but also because of their high theoretical energy density in addition to their natural abundance in the Earth's crust.

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