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Flow battery fluorine

Overview

Can fluorine be used in rechargeable batteries?

Incorporating fluorine into battery components can improve the energy density, safety and cycling stability of rechargeable batteries.

Why is fluorine used in batteries?

First, fluorine materials in batteries improve the stability and quality of electrode and electrolyte interfaces by forming rigid and stable fluoride-rich (such as LiF) protection layers on the surface of anodes (that is, an SEI) and cathodes (that is, a cathode SEI or cathode–electrolyte interphase).

What are the benefits of fluorinated battery components?

Finally, the high oxidation stability of fluorinated compounds increases the resistance of the battery to oxidation when operating at high voltages, leading to batteries with improved energy density, a broad electrochemical stability window and associated chemical inertness 9. Fig. 1: Performance benefits of fluorinated battery components.

Can fluorinated compounds be used in battery design?

This Review explores the broad use of fluorinated compounds in battery design, examines the relationship between their chemical structure and battery performance and discusses the challenges and opportunities of fluorinated batteries within the present regulatory framework.

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Decreased vanadium (IV) permeability was reached compared to the fluorine-containing reference membrane FAPQ330. A vanadium (V) stability test for 55 days [1.6 M V ...

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