

عنوان مقاله:

Exploring the Frontier of Non-Aqueous Flow Batteries

محل انتشار:

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خلاصه مقاله:

Non-aqueous flow batteries, a subset of redox flow batteries, utilize electrolytes that are not water-based. These batteries offer several advantages over conventional aqueous oxidation-reduction flow batteries, including higher operating voltage and theoretical energy density. While still in the early stages of research, they hold promise for providing a broad operating temperature range, elevated cell voltage, and increased potential energy density, thus serving as a valuable complement to aqueous redox flow batteries. Research efforts have explored various facets of non-aqueous flow batteries, encompassing the development of high-voltage, high-energy non-aqueous lithium organic redox flow batteries, as well as the optimization of non-aqueous redox flow batteries through electrolyte design. Some studies have reported the maintenance of stable cycle capacity and high energy density in non-aqueous flow batteries. Due to the absence of concerns regarding solvent decomposition, non-aqueous electrolytes tend to yield a greater potential difference across batteries. This report elucidates the intricacies of these batteries and their different variants. Subsequently, it delves into the advantages and disadvantages of these batteries, along with detailing the energy density and operational temperature range of each battery type.

کلمات کلیدی:

Non-aqueous flow batteries, Energy storage, Rechargeable, Electrolyte, Oxidation

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