

# All-aluminum liquid flow battery electrolyte





## Overview

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What electrolytes are used in aluminum-ion batteries?

This review presents an overview of recent advances in electrolytes in aluminum-ion batteries (AIBs). AIB electrolytes mainly include liquid and solid electrolytes. The main research directions in liquid electrolytes for AIBs mainly include electrolyte solutes, “water-in-salt” (WIS) electrolytes, and electrolyte additives Conflict of Interests.

Are aluminum batteries based on IL electrolytes?

Fig. 2 shows the development history of batteries with metal aluminum as anode. The first aluminum battery, dating back to the 1850 s, called Buff battery and used aluminum metal as anode. RABs are not being favored by chances in the early stage. In 1980 s, the researches about aluminum batteries based on IL electrolytes have emerged , .

Can hydrate-melt electrolyte improve aqueous aluminum-based batteries?

Achieving cathodes with large areal capacities is crucial for advancing aqueous aluminum-based batteries. Here, authors report a hydrate-melt electrolyte based on  $\text{AlCl}_3$  and organic halide salts that enables reversible  $\text{Br}^-/\text{Br}_0/\text{Br}^+$  chemistry with a high areal capacity of  $5 \text{ mAh cm}^{-2}$ .

Can organic electrolytes be used in rechargeable aluminum batteries?

LIBs with organic electrolytes have been widely studied and maturely used, however, few researches on organic electrolytes in rechargeable aluminum batteries have been reported due to the passivation layer formed on the surface of aluminum metal anode in organic solvents.



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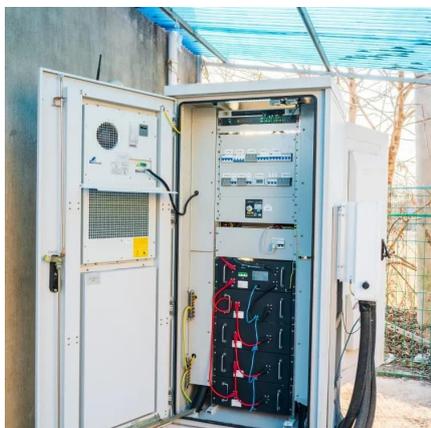


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