

Ethanol flow battery

Can ethanol be used as electrolyte in zinc-air flow batteries?

This work demonstrated the positive effects of the addition of ethanol to 8 M KOH aqueous solution as the electrolyte in zinc-air flow batteries. The utilization of ethanol was studied for a range of different concentrations ethanol (0-50% v/v).

How does ethanol affect battery performance?

By adding 5% v/v ethanol, the batteries exhibited 450 mAh/g and 548 mWh/g (25% improvement in specific capacity and 11% improvement in specific energy). In comparison, the battery using 10% v/v ethanol electrolyte exhibited 470 mAh/g and 576 mWh/g (30% improvement in specific capacity and 16% improvement in specific energy).

Are flow batteries scalable?

Scalability: One of the standout features of flow batteries is their inherent scalability. The energy storage capacity of a flow battery can be easily increased by adding larger tanks to store more electrolyte.

What are flow batteries used for?

Renewable Energy Storage: One of the most promising uses of flow batteries is in the storage of energy from renewable sources such as solar and wind. Since these energy sources are intermittent, flow batteries can store excess energy during times of peak generation and discharge it when demand is high, providing a stable energy supply.

How are flow batteries fabricated?

The flow batteries were fabricated using the anode made of zinc granules. The flow rate of the electrolytes was set at a circulation rate of 20 mL/min. The polarization characteristics of the batteries with the electrolytes containing ethanol 0%, 5%, and 10% v/v are shown in Fig. 7a.

Are flow batteries more scalable than lithium-ion batteries?

Scalability: Flow batteries are more easily scalable than lithium-ion batteries. The energy storage capacity of a flow battery can be increased simply by adding larger tanks to store more electrolyte, while scaling lithium-ion batteries requires more complex and expensive infrastructure.

Zinc-air flow batteries exhibit high energy density and offer several appealing advantages. However, their low efficiency of zinc utilization resulted from passivation and corrosion of the ...

Though the addition of ethanol increased solution resistance and hence slightly decreased the discharge potential of the batteries, a significant enhancement of discharge capacity and energy ...

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