High Performance Positive Electrolyte with Potassium Diformate (KDF) Additive for Vanadium Redox Flow Batteries

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Vanadium redox flow batteries (VRFB) are considered as one of the auspicious candidate for energy storage application. However, the low solubility and poor thermal stability of the positive electrolyte as technical bottlenecks restrict the application of VRFB. Here, we present potassium diformate (KDF) that could significantly improve the performance of the V(V) electrolyte. The precipitation time of the electrolyte with KDF has prolonged at high temperature compared with the pristine. The electrochemical activity of the electrolyte has been enhanced significantly, and the corresponding cycle stability of the battery is also remarkably increased. Results revealed that the energy efficiency of battery with V(V) electrolyte containing KDF is higher than that of the pristine during cycling tests.

Keywords: VRFB; positive electrolyte; additive; potassium diformate

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