

Modified flow channel structure design for Vanadium redox battery performance improvement

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Application of renewable energy sources such as solar cell, wind power requires flexible energy storage system. Vanadium Redox Battery(VRB) is the rechargeable chemical cell. Storage tank and reaction cell of VRB are separated so that it is easy to control power and energy capacity independently. VRB cell use porous carbon electrodes to increase active surface area. Also VRB use flow channel structure to enhance mass transportation of electrolyte of cell. General flow channel structure locates channel at current collector, outside of porous electrode. In this study interdigitated channel structure is placed in the porous electrode. Inside channel structure showed advanced cell efficiency. It reduce pressure drop of cell as ordinary design. Modified structure helps electrolyte flow entire electrode area. Efficient electrolyte flow improved electrical characteristics Reserch use COMSOL to simualate VRB process.