

Reaction research of Vanadium Redox Flow battery with MATLAB

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Redox flow battery is secondary cell using electrolyte. Electrochemical energy stored with reduction and oxidation coupling of electrolyte. Redox flow battery is prospective energy storage source because of easy capacity and power design. Vanadium is compatible electrolyte for redox flow battery. Vanadium ion is used for both positive and negative electrode and redox potential of vanadium is stable.

Vanadium redox flow battery (VRB) cell is composed of electrodes and membrane. Aqueous electrolyte flow through porous electrodes. Reaction occurs on electrodes surface. Resistance in Reaction and transport makes over-potential to battery. The research progressed to analyze inner cell reaction by using MATLAB. Darcy's law and Butler-Volmer equation is used to compute fluid dynamics and electrochemical reaction kinetics