Investigations on the V(III) Reduction Process of All-Vanadium Redox Flow Battery

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The V(III) reduction process of all-vanadium redox flow battery was investigated by cyclic voltammetry, polarization curve and AC impedance. It was shown that V(III)/V(II) couple had undesired electrochemical activity and the V(III) reduction process was in mix controlling step. The probable reason was that the existence of complex of V(III), which had big ion radius, resulted in large diffusion resistance in the process of mass transfer. Therefore, the kinetics of V(III) reduction reaction was slow.

Keywords: All-vanadium redox flow battery; Reduction; Electrolyte; Polarization curve; Electrode process

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