

Surface Modification of Graphite Felt Electrode to Improve the Performance of Vanadium Redox Flow Battery

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Redox Flow Battery (RFB) is battery of the Energy Storage System (ESS) that has the advantages of high stability and design independence of capacity and power. The Vanadium Redox Flow Battery (VRFB) has been actively studied. Among the many component of the VRFB, the electrode is a key factor that determines the performance of the RFB. However, graphite felt, which is a generally used electrode material, has problems with poor wettability and low electrochemical reactivity. Therefore we performed the surface modification of the graphite felt electrode to improve the performance of VRFB by increasing the reaction area for the vanadium redox active material. We confirmed the surface condition of the modified felt through SEM, BET and XPS. And the performance test of the electrode was conducted through a half-cell test and a full cell test. As a result, we confirmed that the VRFB performance was improved by the increase of the vanadium active site.

This study was supported by the Human Resource Development Programs for Green Convergence Technology funded by the Korea Ministry of Environment (MOE).