Studies of over-potential and actual capacity in Vanadium Redox Flow Battery (VRFB)

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It is necessary to study how each component of the battery affects the overall performance of the cell in order to commercialize VRFB. The Ag/AgCl reference electrode can be inserted into the battery to in-situ measure the voltage loss of each cell component. As a result of the measurement, it was confirmed that a voltage loss of anode is larger than the cathode. It was found that the overall VRFB cell performance is determined by the large voltage loss in the anode. In addition, the state of charge (SOC) of the electrolyte can be measured by introducing OCV-cell for measuring electrolyte potential. It was possible to easily and quickly analyze the electrolyte imbalance by crossover of vanadium ions. As a result, it was able to obtain actual capacity of the electrolyte.