ELECTROLYTE AND VANADIUM REDOX FLOW BATTERY

[0001] This application claims priority to the Chinese Patent Application No. 202211446542.2 filed with the China Patent Office on November 18, 2022, entitled “Electrolyte Solutions and All-Vanadium Redox Flow Batteries”, the entire content of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to a technical field of electrolyte solution preparation, and specifically relates to an electrolyte solution and an all-vanadium redox flow battery.

BACKGROUND

[0003] The all-vanadium redox flow battery is a redox flow battery in which vanadium ions of different valences are used as positive and negative active substances, and the active substances are dissolved in the supporting electrolyte and present in a liquid circulating flow state. As one of the new energy storage batteries, the all-vanadium redox flow battery has the characteristics of large capacity, high safety, long life, and resource saving, and can be widely used in renewable energy power generation, grid peak shaving, smart micro-grid, backup power, and other fields. The electrolyte solution is the storage carrier of electrical energy in the all-vanadium redox flow battery system, and its performance directly affects the electrode life, energy density and efficiency, system cost and other indicators of the system, and is related to the reliability of the battery system.

[0004] The long-term stable operation of the all-vanadium redox flow battery system depends on two factors: the stability of the battery material and the stability of the electrolyte solution. Frequent high-SOC operation (overcharging)