

ELECTROLYTE AND VANADIUM REDOX FLOW BATTERY

ABSTRACT

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An electrolyte solution and an all-vanadium redox flow battery are disclosed. The electrolyte solution includes: a positive electrolyte solution and a negative electrolyte solution, the positive electrolyte solution and the negative electrolyte solution include chloride ions, sulfate ions and vanadium ions; both the positive
 10 electrolyte solution and the negative electrolyte solution satisfy: $2.9 \leq [c(\text{Cl}^-) + c(\text{SO}_4^{2-})]/c(\text{V}^{n+}) \leq 3.6$; the $c(\text{Cl}^-)$ represents a concentration of the chloride ions, the $c(\text{SO}_4^{2-})$ represents a concentration of the sulfate ions, and the $c(\text{V}^{n+})$ represents a concentration of the vanadium ions. When Cl^- , SO_4^{2-} and V^{n+} in the electrolyte solution meet the appropriate concentration relationship, the Cl_2
 15 production rate can be greatly reduced, thereby reducing the corrosion of battery materials. A small amount of Cl_2 evolved can compensate for the oxidation of the battery electrode carbon felt, and protect the electrode carbon felt and reduce the risk level of chlorine-containing electrolytes operation environmental.

20 **Figure 2**