WHAT IS CLAIMED IS:

1. An electrolyte solution, characterized in that the electrolyte solution comprises: a positive electrolyte solution and a negative electrolyte solution, the positive electrolyte solution and the negative electrolyte solution comprise chloride ions, sulfate ions and vanadium ions; both the positive electrolyte solution and the negative electrolyte solution satisfy:

$2.9 \leq [c(Cl^-)+c(SO_4^{2-})]/c(V^{n+}) \leq 3.6$;

wherein the $c(Cl^-)$ represents a concentration of the chloride ions, the $c(SO_4^{2-})$ represents a concentration of the sulfate ions, and the $c(V^{n+})$ represents a concentration of the vanadium ions; and

wherein the $c(Cl^-)$ satisfies: $1.5\ mol/L \leq c(Cl^-) \leq 6.5\ mol/L$; and

wherein the $c(Cl^-)$ and the $c(V^{n+})$ further satisfy: $0.5 \leq c(Cl^-)/c(V^{n+}) \leq 3.0$.

2. The electrolyte solution according to claim 1, characterized in that the $c(Cl^-)$ satisfies: $2.5\ mol/L \leq c(Cl^-) \leq 5.5\ mol/L$.

3. The electrolyte solution according to claim 1, characterized in that the $c(Cl^-)$ satisfies: $3.0\ mol/L \leq c(Cl^-) \leq 5.0\ mol/L$.

4. The electrolyte solution according to claim 1, characterized in that the $c(Cl^-)$ satisfies: $3.5\ mol/L \leq c(Cl^-) \leq 4.5\ mol/L$.

5. The electrolyte solution according to claim 1, characterized in that the $c(SO_4^{2-})$ satisfies: $0.5\ mol/L \leq c(SO_4^{2-}) \leq 5.5\ mol/L$; and/or

the $c(V^{n+})$ satisfies: 1.6 mol/L≤$c(V^{n+})$≤2.65 mol/L.

6. The electrolyte solution according to claim 5, characterized in that the $c(Cl^-)$ and the $c(SO_4^{2-})$ further satisfy: 0.4≤$c(Cl^-)/c(SO_4^{2-})$≤3.1.

7. The electrolyte solution according to claim 1, characterized in that the positive electrolyte solution further comprises phosphate ions, and the positive electrolyte solution further satisfies: 2.9≤$[c(Cl^-)+c(SO_4^{2-})+c(PO_4^{3-})]/c(V^{n+})$≤3.7; wherein the $c(PO_4^{3-})$ represents a concentration of the phosphate ions.

8. The electrolyte solution according to claim 7, characterized in that the $c(PO_4^{3-})$ further satisfies at least one of the following features:

a) 0.01 mol/L≤$c(PO_4^{3-})$≤0.15 mol/L;

b) 0.02≤$c\ (PO_4^{3-})/c(V^{n+})$≤0.06; and

c) $[c(Cl^-)+c(SO_4^{2-})+c(PO_4^{3-})-0.8\times c(V^{n+})]$≥4.2 mol/L;

wherein $0.8\times c(V^{n+})$ represents an average molar concentration of acid group ions bound by the vanadium ions in the positive electrolyte solution.

9. The electrolyte solution according to claim 1, characterized in that the negative electrolyte solution further comprises phosphite ions, and the negative electrolyte solution further satisfies: 2.9≤$[c(Cl-)+c(SO_4^{2-})+c(PO_3^{3-})]/c(V^{n+})$≤3.7; wherein the $c(PO_3^{3-})$ represents a concentration of the phosphite ions.

10. The electrolyte solution according to claim 9, characterized in that the $c(PO_3^{3-})$ further satisfies at least one of the following features:

d) 0.01 mol/L≤$c(PO_3^{3-})$≤0.15 mol/L;

e) 0.03≤$c(PO_3^{3-})/c(V^{n+})$≤0.1; and

f) $[c(Cl^-)+c(SO_4^{2-})+c(PO_3^{3-})-1.5\times c(V^{n+})]$≤4.5mol/L;

wherein $1.5\times c(V^{n+})$ represents an average molar concentration of acid group ions bound by the vanadium ions in the negative electrolyte solution.

11. The electrolyte solution according to claim 1, characterized in that the positive electrolyte solution and the negative electrolyte solution further comprise an additive, and the positive electrolyte solution and the negative electrolyte solution further satisfy: $2.9\leq[c(Cl^-)+c(SO_4^{2-})+c(A)]/c(V^{n+})\leq3.7$; wherein the c(A) represents a concentration of the additive, and the additive is one or more of additives containing -OH, -COOH, or $-NH_2$ functional group.

12. The electrolyte solution according to claim 11, characterized in that the additive satisfies:

the concentration of the additive c(A) satisfies: $0.02\ mol/L\leq c(A)\leq0.2mol/L$.

13. The electrolyte solution according to claim 1, characterized in that a temperature stability range of the electrolyte solution is -30~60°C.

14. The electrolyte solution according to claim 1, characterized in that the chloride ions are provided by an acid or salt containing the chloride ions; the sulfate ions are provided by an acid or salt containing the sulfate; the vanadium ions are provided by a vanadate.

15. An all-vanadium redox flow battery, characterized in that the all-vanadium redox flow battery comprises the electrolyte solution according to any one of claims 1-14.