CLEAN CLAIMS:

We Claim:

1. An electrolyte for a battery, the electrolyte comprising:
a solvent comprising water and sulfuric acid;
a vanadium salt;
a deprotonation inhibitor for $[VO_2(H_2O)_3]^+$; and
a V_2O_5 precipitation inhibitor, which is an organic compound selected from one or more of the group consisting of polyvinylpyrrolidone (PVP), and a water-soluble polyalkylene glycol.

2. The electrolyte of Claim 1, wherein the deprotonation inhibitor for $[VO_2(H_2O)_3]^+$ is an inorganic compound.

3. The electrolyte of Claim 2, wherein the inorganic compound is present in an amount of from 0.001 to 3 wt% of the combined weight of the vanadium salt and the solvent.

4. The electrolyte of Claim 3, wherein the inorganic compound is present in an amount of from 0.25 to 1 wt% of the combined weight of the vanadium salt and the solvent.

5. The electrolyte of Claim 2 wherein the inorganic compound is selected from one or more of a group consisting of a phosphate salt and a non-halide ammonium containing compound, or from one or more of a group consisting of a sodium phosphate, a potassium phosphate and an ammonium phosphate.

6. The electrolyte of Claim 5, wherein the inorganic compound is one or both of $NH_4H_2PO_4$ and $(NH_4)_2HPO_4$.

7. The electrolyte of Claim 1, wherein the organic compound is present in an amount of from 0.0001 to 0.5 wt% of the combined weight of the vanadium salt and the solvent.

8. The electrolyte of Claim 1, wherein the organic compound is present in an amount from 0.025 to 0.1 wt% of the combined weight of the vanadium salt and the solvent.

9. The electrolyte of Claim 2, wherein the organic compound is selected from one or more of polyvinylpyrrolidone (PVP) and polyethylene glycol, and the inorganic compound includes $NH_4H_2PO_4$.

10. The electrolyte of Claim 2, wherein the inorganic compound includes $(NH_4)_2HPO_4$ and the organic compound includes PVP.

11. The electrolyte of Claim 1, wherein the vanadium salt comprises a vanadium sulfate.

12. The electrolyte of Claim 1, wherein the electrolyte comprises vanadium ions in a concentration of from 1.0 to 3.0 M.

13. The electrolyte of Claim 12, wherein the electrolyte comprises vanadium ions in a concentration of from 1.6 to 2M.

14. The electrolyte of Claim 1, wherein the electrolyte comprises sulphate ions in a concentration of from 2 to 6M.

15. The electrolyte of Claim 14, wherein the electrolyte comprises sulphate ions in a concentration of from 4 to 5M.

16. The electrolyte of claim 1, further comprising:
water;
vanadium ions present in a concentration from 1.6 M to 2M;
sulfate ions present in a concentration of from 4 M to 5M; and
at least two additives, wherein:
the at least two additives include:
ammonium phosphate present in an amount of from 0.25 to 1 wt% of the weight of the electrolyte without the additives; and
PVP present in an amount of from 0.025 to 0.1 wt% of the weight of the electrolyte without the additives wherein
the at least two additives prevent the precipitation of more than 150 mg of V_2O_5 per 2 mL of the electrolyte following heating of the electrolyte for 7 days at 50°C.

17. A redox flow battery comprising the electrolyte of Claim 1.

18. A method of storing energy comprising charging the redox flow battery of Claim 17.

19. A kit of parts for stabilizing a vanadium electrolyte for use in a vanadium redox flow battery, the kit of parts comprising: the electrolyte of Claim 1.

20. A method of stabilizing a vanadium electrolyte for use in a vanadium redox flow battery, the vanadium electrolyte comprising:

a solvent comprising water and sulfuric acid, and

a vanadium salt, the method comprising obtaining a stabilized electrolyte by:

adding a deprotonation inhibitor for $[VO_2(H_2O)_3]^+$ and a V_20_5 precipitation inhibitor to the vanadium electrolyte,

wherein the V_2O_5 precipitation inhibitor is an organic compound selected from one or more of the group consisting of polyvinylpyrrolidone (PVP), and a water-soluble polyalkylene glycol.

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