

ABSTRACT

A zinc-vanadium battery includes a modified positive electrode structure (including a positive electrode and a first modified layer), a separator, a negative electrode, and an aqueous electrolyte. The first modified layer on the positive electrode includes 70-95 parts by weight of vanadium-based material, 3-45 parts by weight of a conductive agent, and 3-45 parts by weight of a binder. The negative electrode is on the separator on the first modified layer. The positive electrode, the first modified layer, the separator, and the negative electrode are in the aqueous electrolyte. In the X-ray diffraction patterns of the vanadium-based material measured by XRD using CuK α 1 ray, an intensity ratio of a peak at $2\theta=8^{\circ}\pm1.0^{\circ}$ over a peak at $2\theta=20^{\circ}\pm1.0^{\circ}$ (denoted as I_8 and I_{20} , respectively) satisfies $0<I_8/I_{20}\leq1.4$. Furthermore, the modified positive electrode structure, a method of manufacturing the modified positive electrode structure, and a method of manufacturing the zinc-vanadium battery are provided.

FIG. 1A