Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Promoting Zn^{2+} Storage Capability of Vanadium-based Cathode via Structural Reconstruction for Aqueous Zn-ion Battery

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Calculations:

The specific capacity *C* of the as-fabricated battery was calculated by the following formula with the discharge curve:

$$C = \frac{\int_0^{\Delta t} I \times dt}{m} \quad (1)$$

Where *C* (mAh g^{-1}) is the specific capacity, *I* (mA) is the actual discharging current, *Δt* (h) is the discharged time and *m* (mg) is the mass loading of the electrode.

The energy density *E* and power density *P* of the battery were numerated (or calculated) with the following equations:

$$E = C \times \Delta V \quad (2)$$

$$P = \frac{C \times \Delta V}{1000 \times \Delta t} \quad (3)$$

Where *E* (Wh kg^{-1}) is the energy density, *C* (mAh g^{-1}) is the mass capacity obtained from Equation (1) and *ΔV* (V) is the voltage. *P* (kW kg^{-1}) is the specific power density and *Δt* (h) is the discharged time.

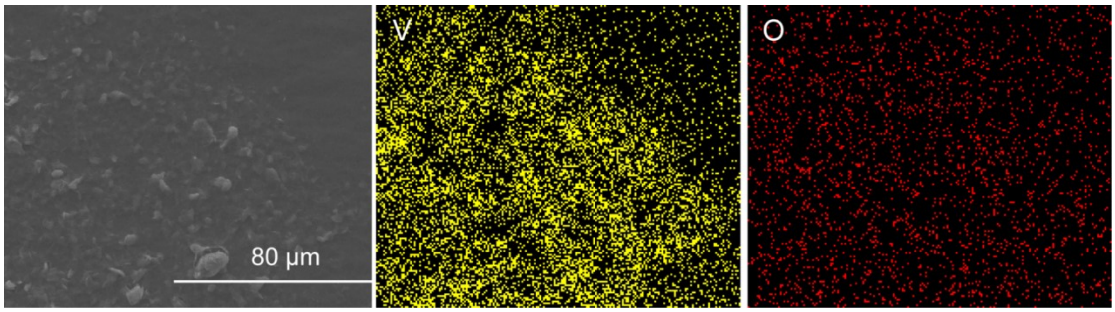

Figure S1. SEM selected-area elemental mapping images of VO sample**.**

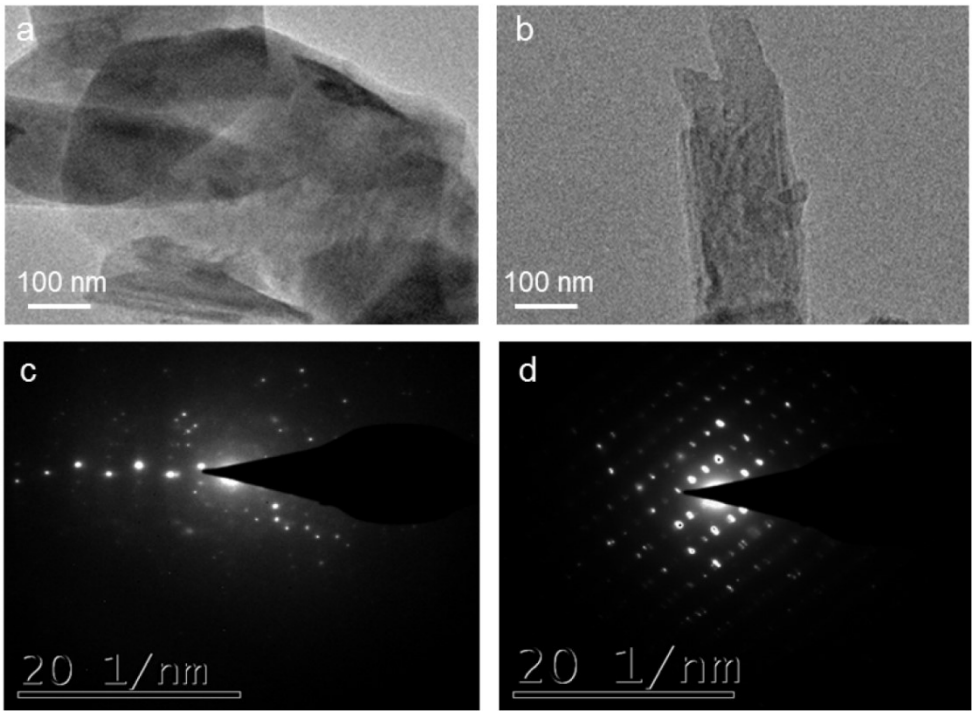

Figure S2. TEM images of (a) VO and (b) VOHO samples. The corresponding SAED patterns of (c) VO and (d) VOHO sample**.**

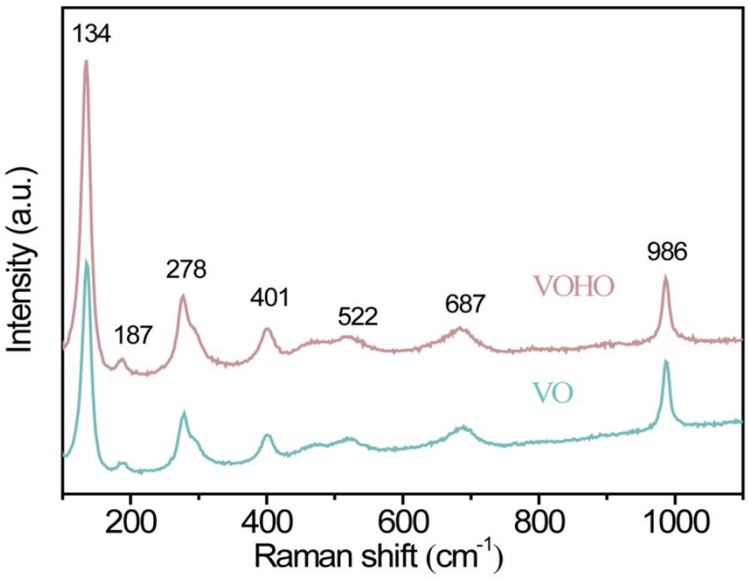

Figure S3. Raman spectra of VO and VOHO sample.

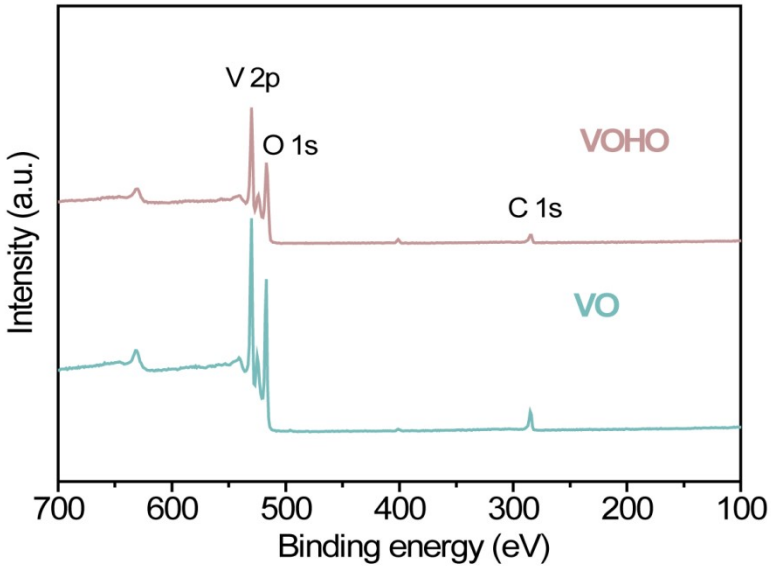

Figure S4. XPS survey spectrum of VO and VOHO sample.

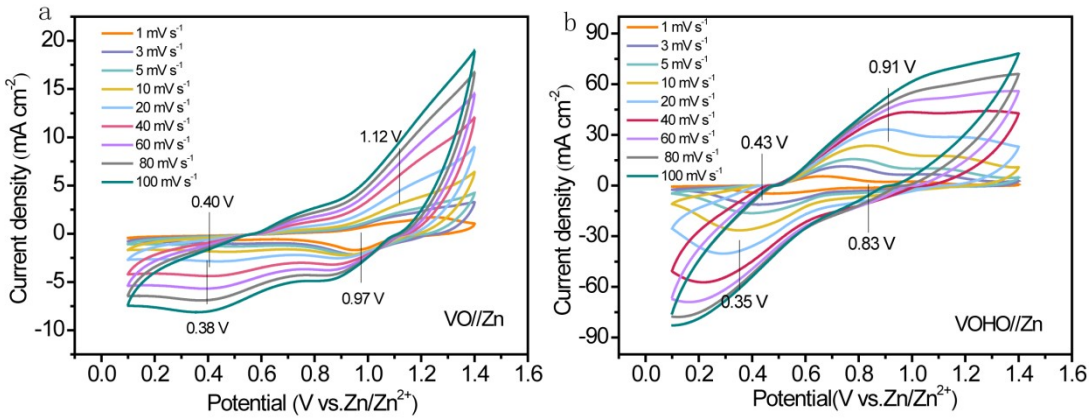

Figure S5. CV curves at different scan rates of (a) VO//Zn and (b) VOHO//Zn.

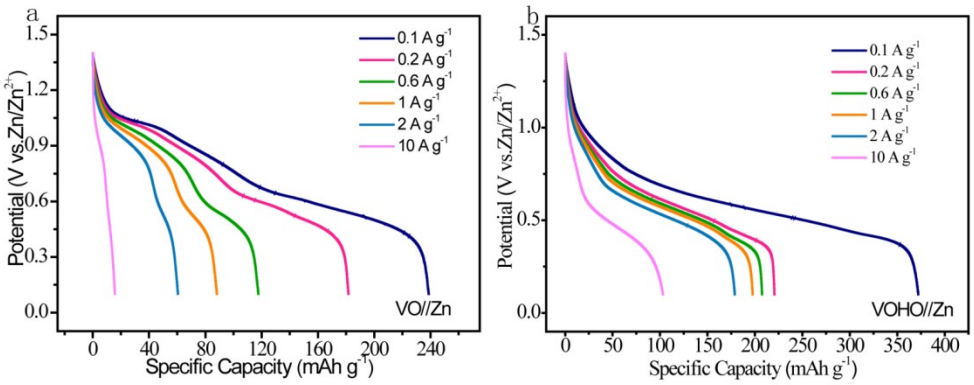

Figure S6. GCD curves at different current densities of (a) VO//Zn and (b) VOHO//Zn.

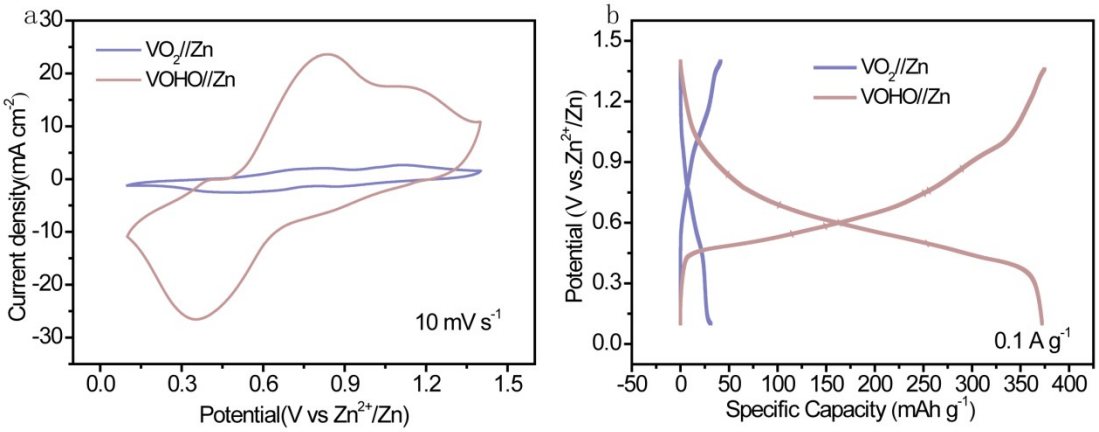

Figure S7. (a) CV curves at 1 mV s^{-1} and (b) GCD curves at 0.1 mA cm^{-2} of VO_2//Zn and VOHO//Zn batteries.

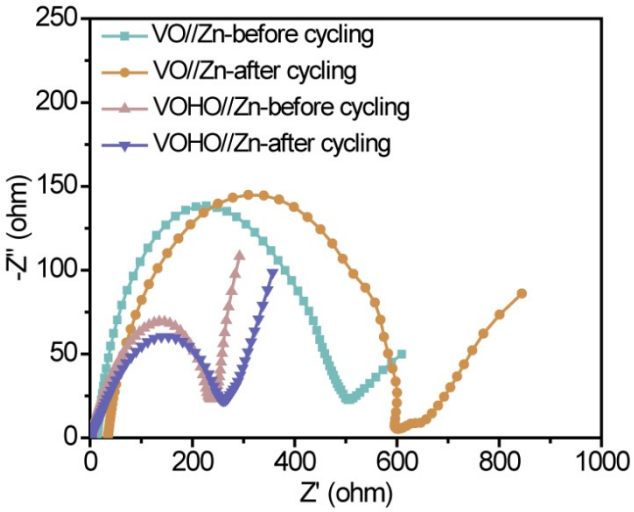

Figure S8. The EIS spectra of VO//Zn and VOHO//Zn batteries before and after cycles.