

Supporting Information

High Performance Aqueous Zinc-Ion Batteries Developed by PANI Intercalation Strategy and Separator Engineering

Ling Deng ^{1,2}, Kailing Sun ^{1,*}, Jie Liu ¹, Zeyang Li ¹, Juexian Cao ¹ and Shijun Liao ^{3,*}

¹ School of Physics and Optoelectronics & Hunan Institute of Advanced Sensing and Information Technology, Xiangtan University, Xiangtan 411105, China

² School of Energy, Mechanical and Electrical Engineering, Hunan University of Humanities, Science and Technology, Loudi 417000, China

³ The Key Laboratory of Fuel Cell Technology of Guangdong Province, School of Chemistry and Chemical Engineering, South China University of Technology, Guangzhou 510641, China

* Correspondence: skl2020@xtu.edu.cn (K.S.); chsjliao@scut.edu.cn (S.L.)

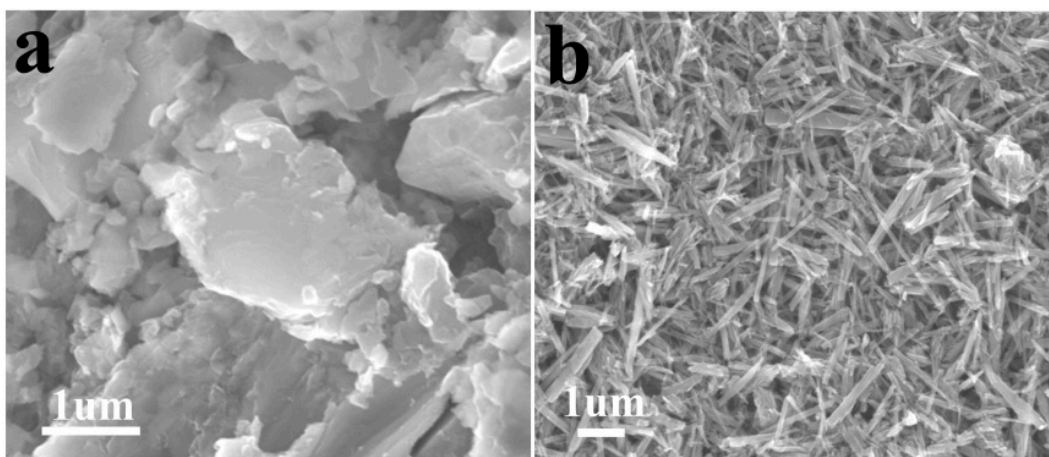


Figure S1. SEM images of a) HVO and b) PAVO₁

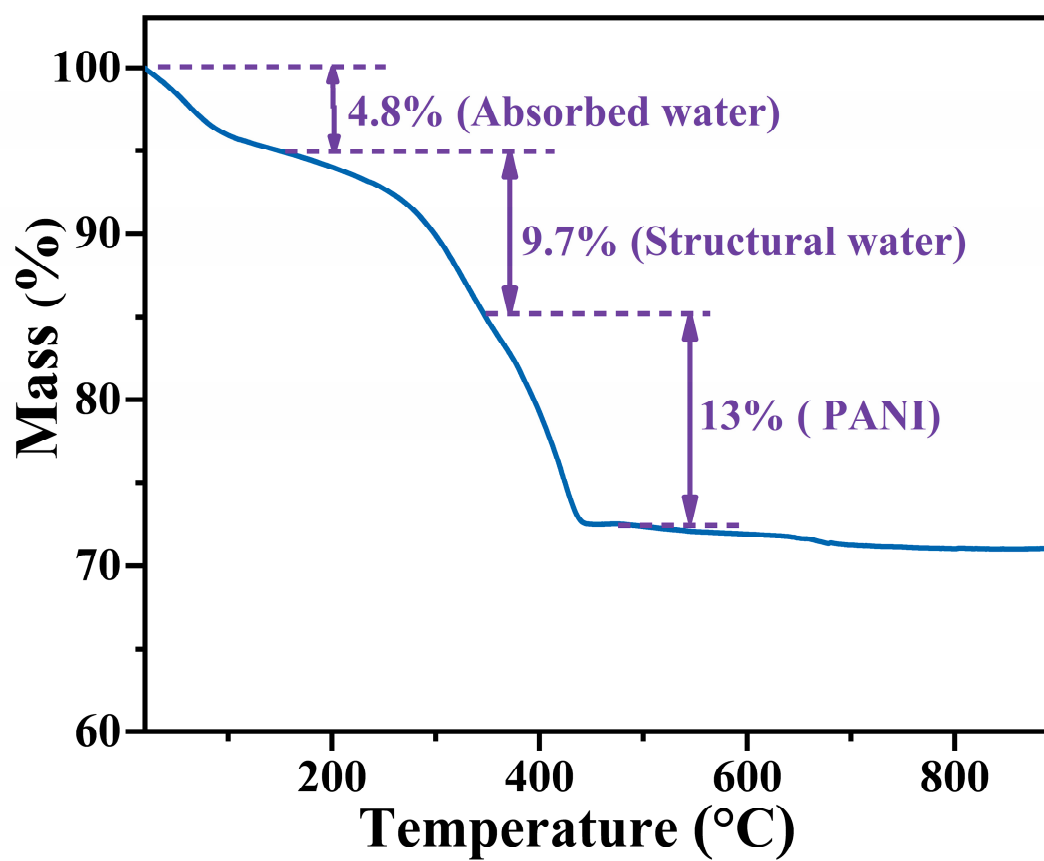


Figure S2. The TG curves of PAVO₁.

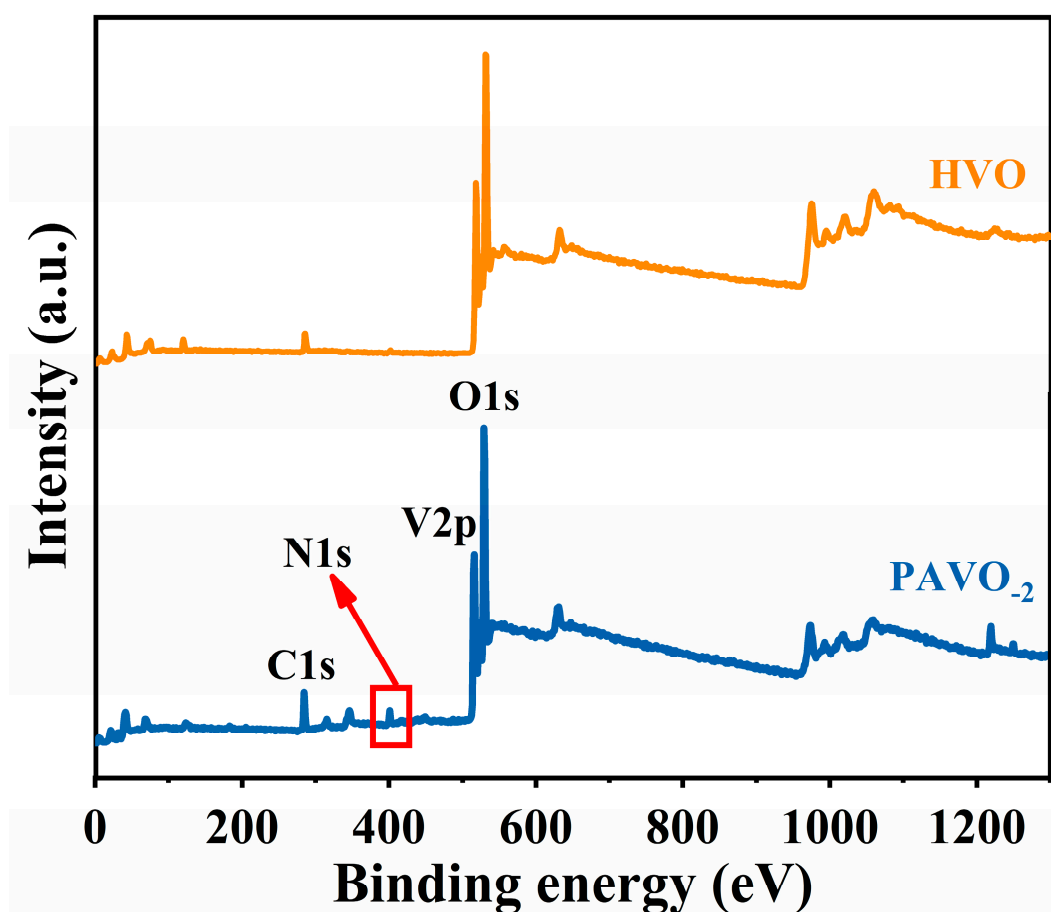


Figure S3. XPS full survey spectra of HVO and PAVO₂

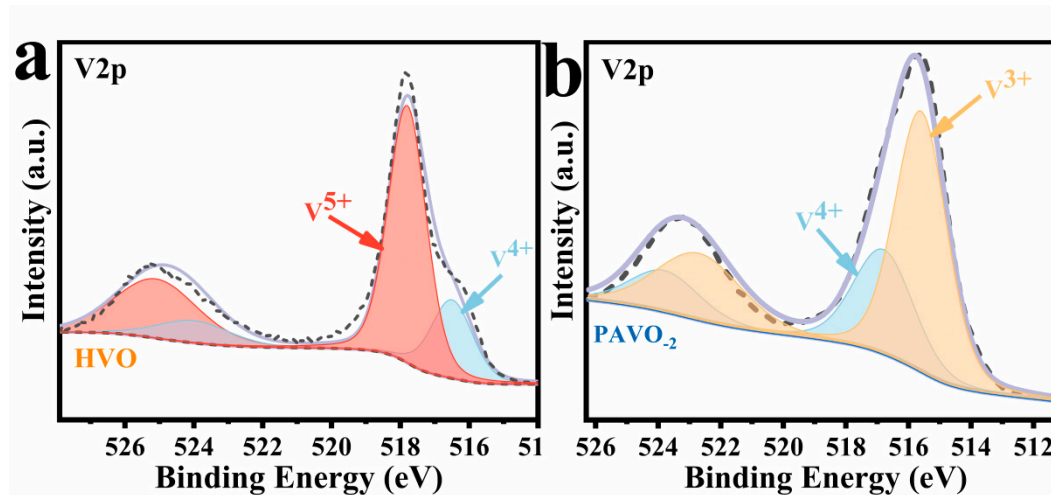


Figure S4. V 2p high-resolution XPS spectra of a) HVO and b) PAVO₂

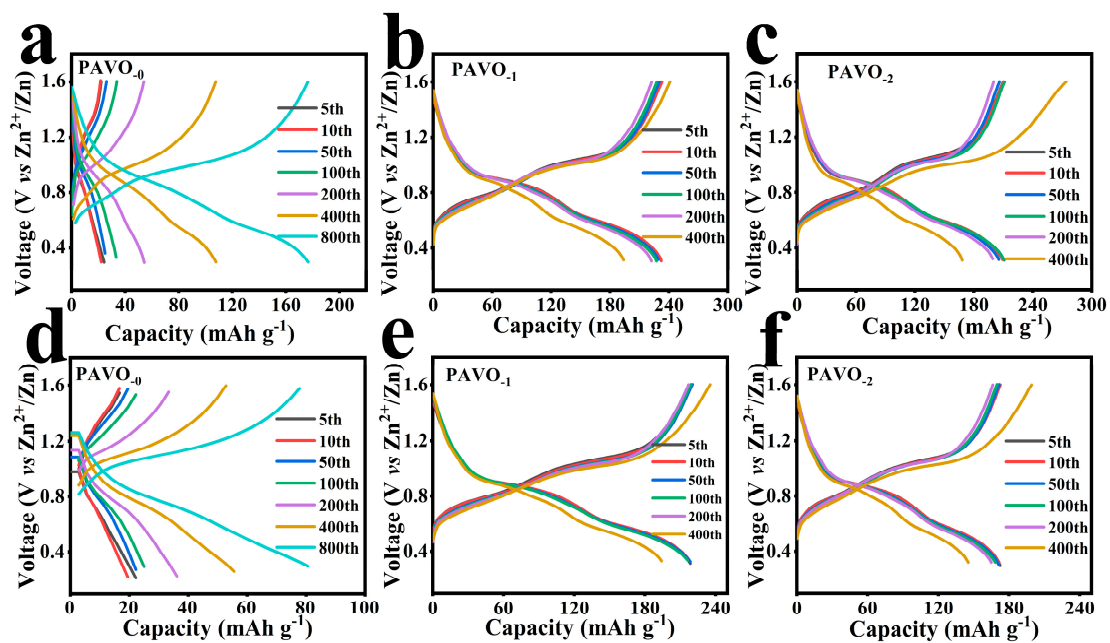


Figure S5. Charge/discharge curves of HVO, PAVO_{0.1} and PAVO_{0.2} a-c) at 5 A g⁻¹. d-f) at 10 A g⁻¹.

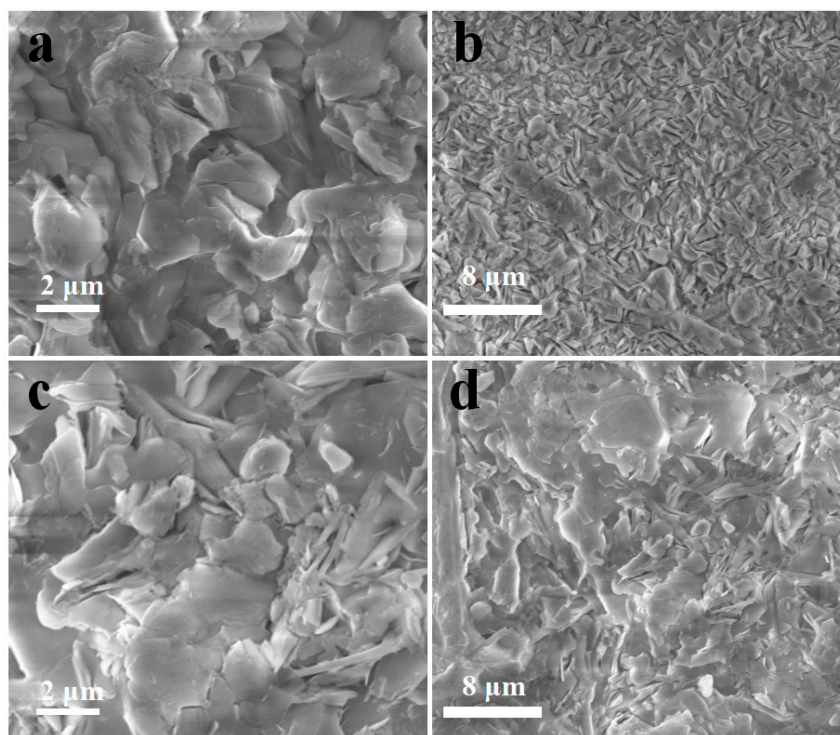


Figure S6. SEM of dendrites. a, b) PAVO_{0.1} ; c, d) PAVO_{0.2}

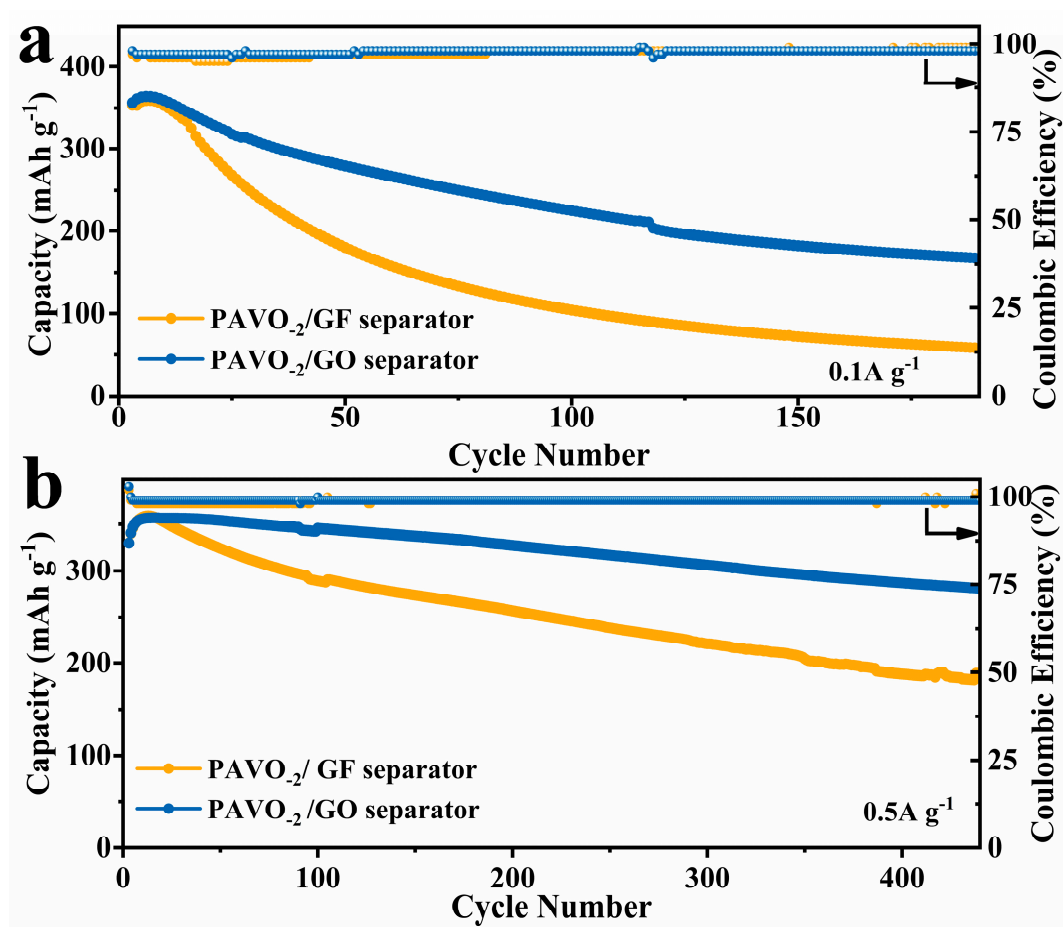


Figure S7. a) Cycle performances of PAVO₂ with GF separator or GO separator at a) 0.1 A g⁻¹ and b) 0.5 A g⁻¹.

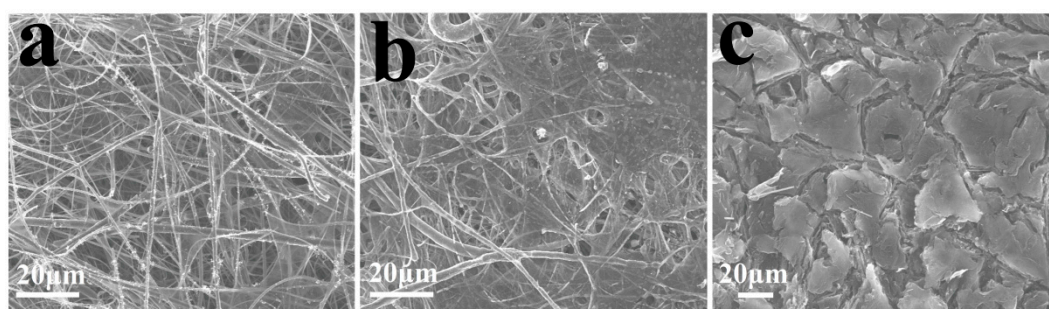


Figure S8. SEM of GO separator prepared with a) 2ml, b) 5ml and c) 15ml GO suspension.

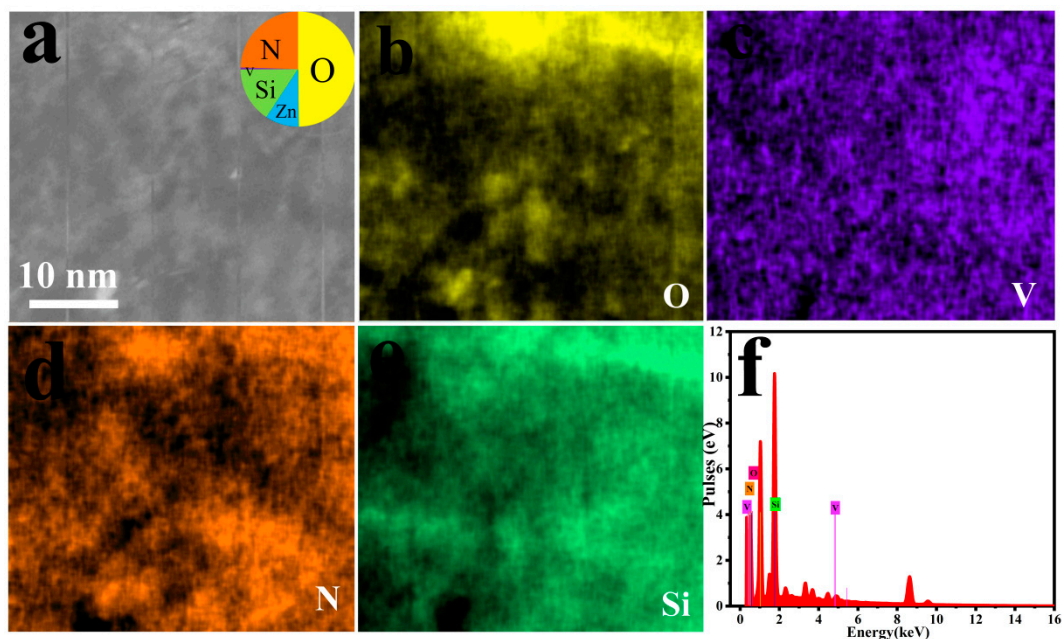


Figure S9. a) SEM images, b-e) the corresponding elemental mapping and f) EDS spectrum of GO separator after several cycles.

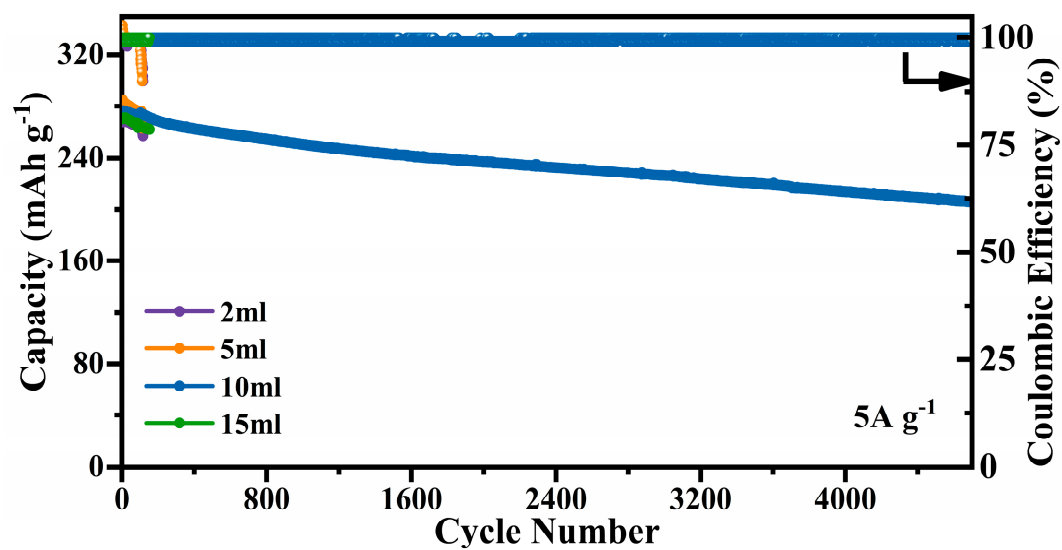


Figure S10. Cycling performance of PAVO₂ electrode with GO separator prepared with different GO suspensions at a current density of 5 A g⁻¹.

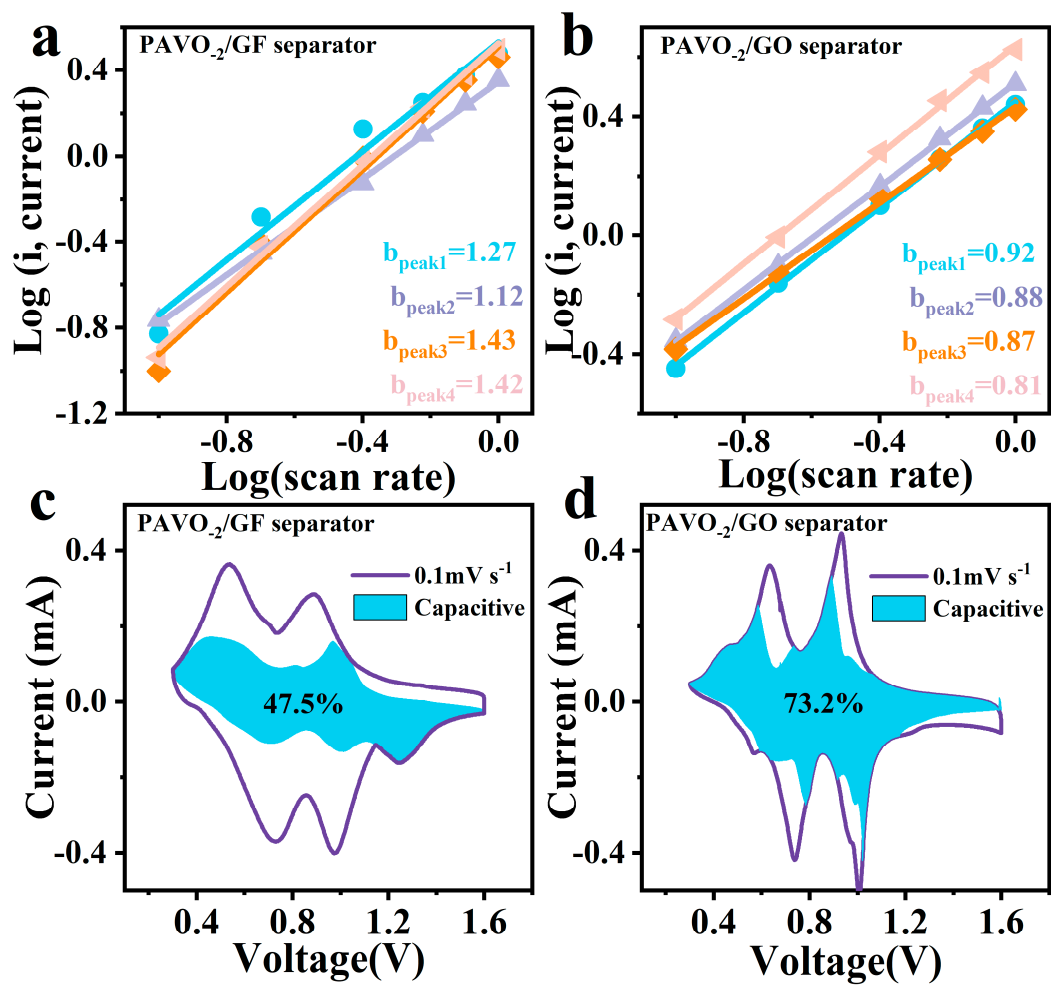


Figure S11. Log (v) vs log(i) of PAVO₂ with a) GF separator and b) GO separator plotted at peak current. CV curve of PAVO₂ with c) GF and d) GO at a scan rate of 0.1 mV s⁻¹.

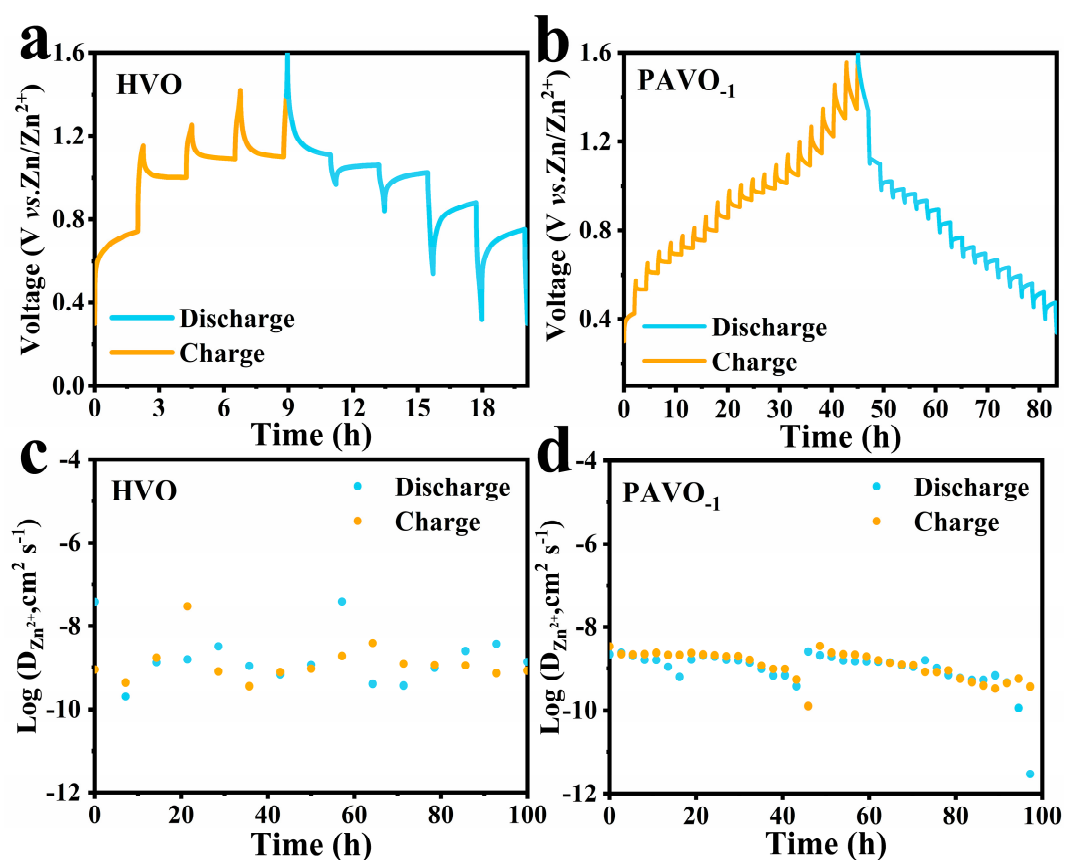


Figure S12. The charge-discharge curves of a) HVO and b) PAVO₋₁ electrode in GITT measurements and the corresponding Zn²⁺ diffusion coefficients of c) HVO and d) PAVO₋₁.

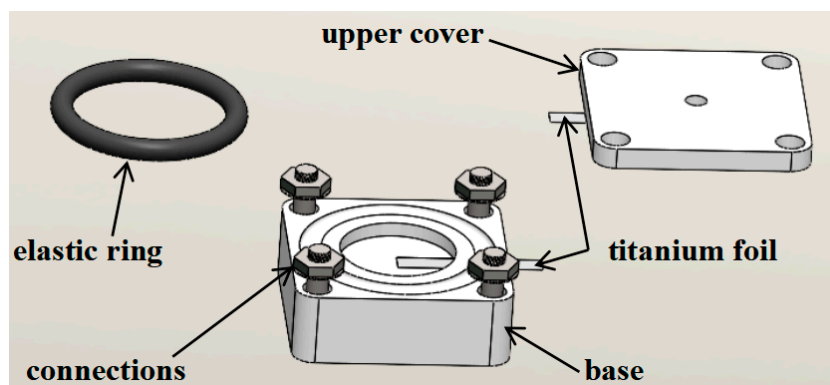


Figure S13. Structure illustration of the mold for pH tests