

Supplementary Information

Dual effects of Ag⁺ intercalation boosting kinetics and stability of NH₄V₄O₁₀ cathodes for enhanced zinc ion storage

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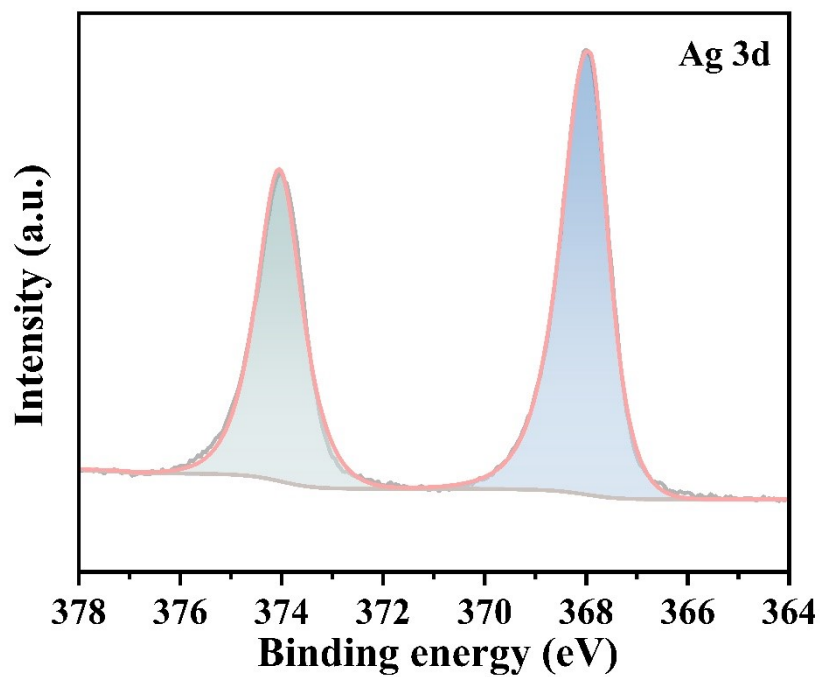


Fig. S1 High-resolution XPS spectra of Ag 3d.

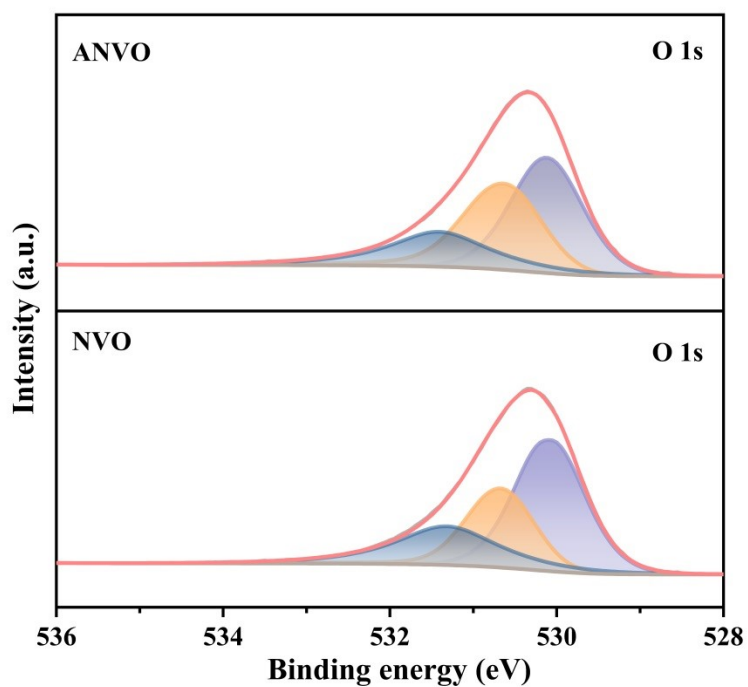


Fig. S2 High-resolution XPS spectra of O 1s.

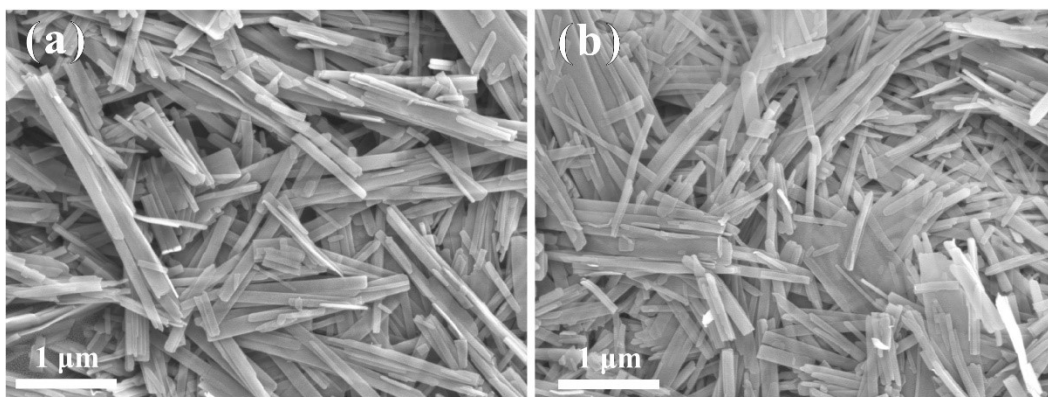


Fig. S3 SEM images of ANVO-1 (a) and ANVO-2 (b).

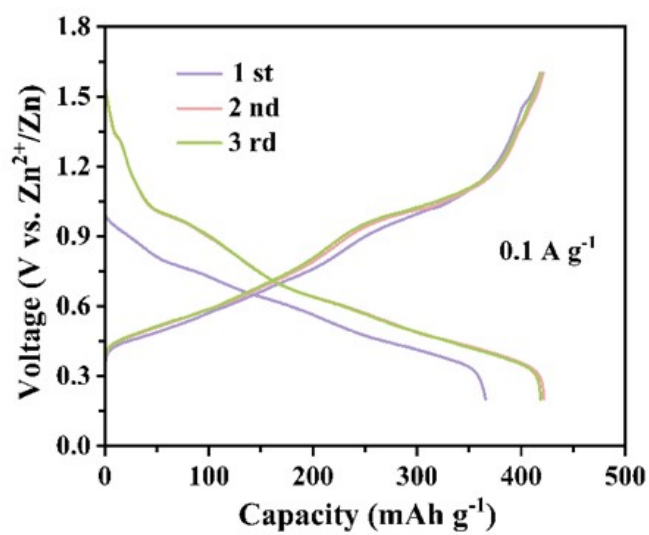


Fig. S4 GCD curves of NVO electrode at 0.1 A g^{-1} .

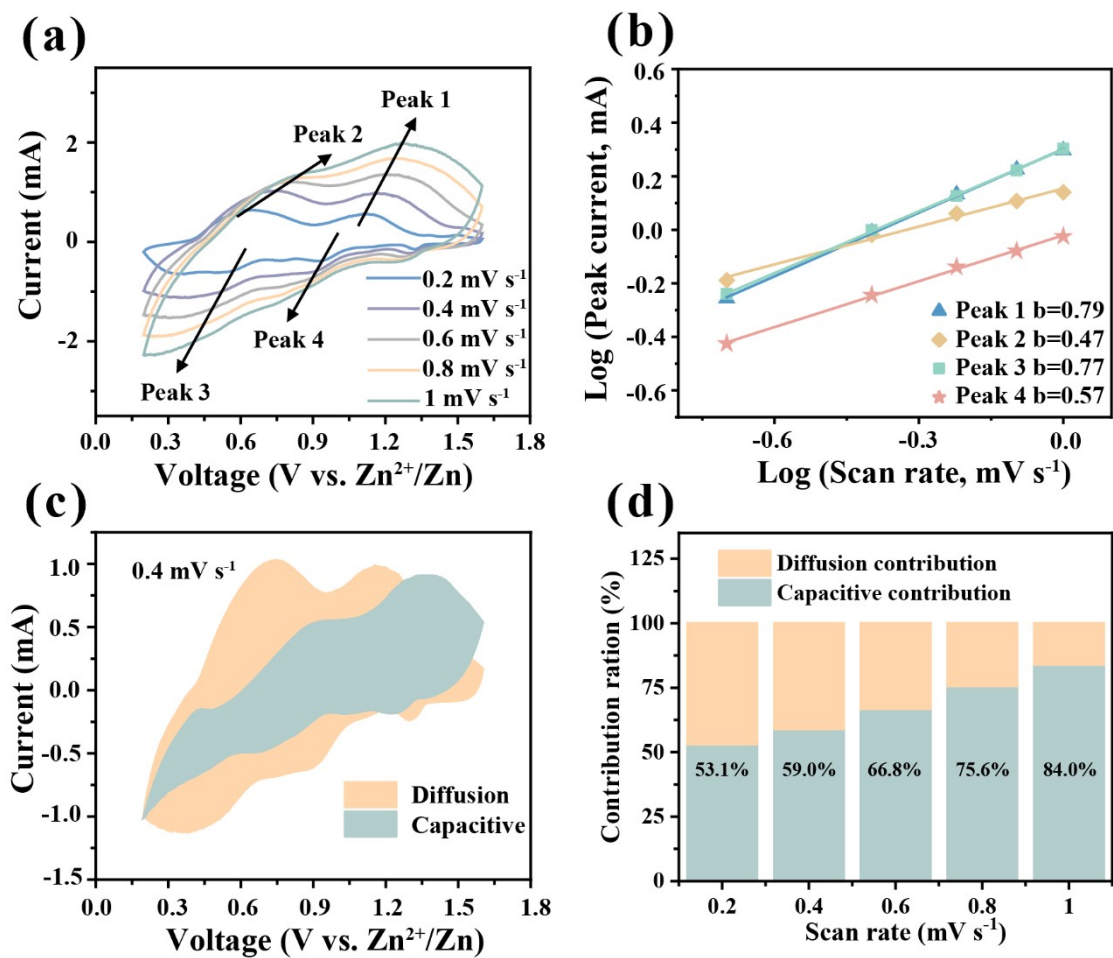


Fig. S5 (a) CV curves of NVO electrode at various scan rates from 0.2 to 1 mV s^{-1} ; (b) Corresponding $\text{log}(\text{peak current})$ vs $\text{log}(\text{scan rate})$ plots of peaks; (c) Capacitive-diffusion contribution ratio at 0.4 mV s^{-1} ; (d) Capacitive-diffusion contribution ratio at various scan rate.

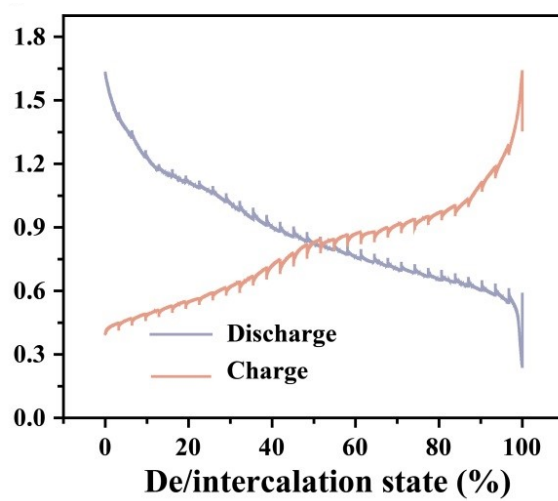


Fig. S6 GITT curve of NVO electrode.

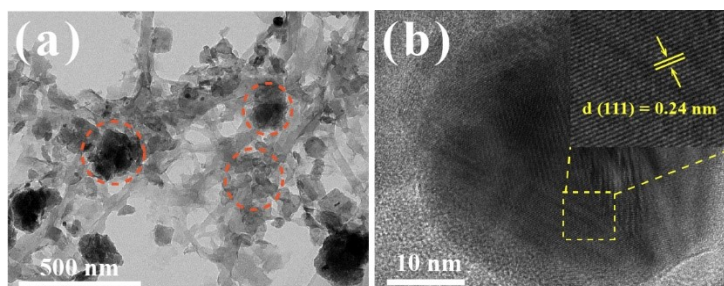


Fig. S7 (a) TEM image of ANVO electrode at the fully discharged state; (b) HRTEM images of Ag⁰.

Table S1. A comparison of the electrochemical performance in this work with those of the recently reported vanadium oxides-based cathodes for aqueous zinc-ion batteries.

Cathodes	Testing Voltage (V)	Rate specific capacity (mAh/g)	Cycle performance (mAh/g)	Ref.
ANVO	0.2–1.6	473.6(0.2 A/g) 286.6(10 A/g)	343.1 (5A/g after 1000 cycles)	this work
$\text{Na}_{0.3}(\text{NH}_4)_{0.6}\text{V}_4\text{O}_{10}\cdot 0.4\text{H}_2\text{O}$	0.4–1.5	258(5 A/g)	211 (10 A/g after 2000 cycles)	S1
AP-NVO	0.3–1.5	447(0.2 A/g) 263(5 A/g)	217 (5 A/g after 2000 cycles)	S2
Al-NVO@CC	0.2–1.6	275.4(0.5 A/g) 155.5(5 A/g)	152.8 (5 A/g after 2500 cycles)	S3
$\text{MnV}_2\text{O}_4(\text{p})/\text{C}-700$	0.2–1.8	410(0.1 A/g), 184(5 A/g)	150 (20 A/g after 1000 cycles)	S4
P-NVO	0.4–1.6	397.5(0.1 A/g)	300 (10 A/g after 1000 cycles)	S5
$\text{NH}_4\text{V}_4\text{O}_{10-x}@r\text{GO}$	0.2–1.6	278(10 A/g)	191 (15 A/g after 2000 cycles)	S6
SNVO	0.4–1.5	283.4(10 A/g)	287.9 (10 A/g after 1000 cycles)	S7

References

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