Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supporting information

Binder-free three-dimensional interconnected $CuV_2O_5 \cdot nH_2O$ nest as cathodes for high-loading aqueous zinc-ion batteries

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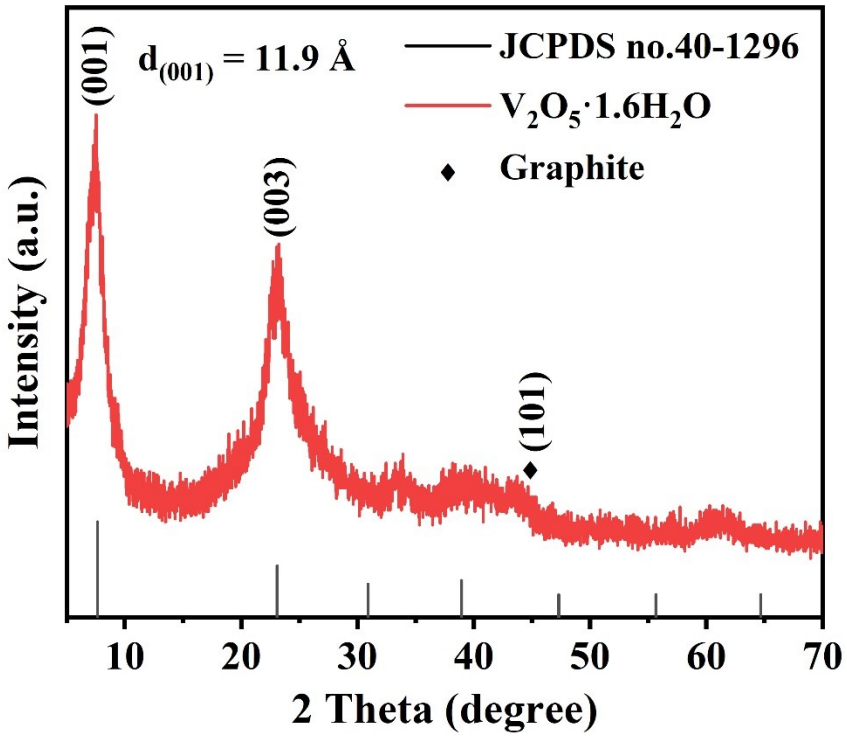

Fig. S1 XRD patterns of VOH@CC.

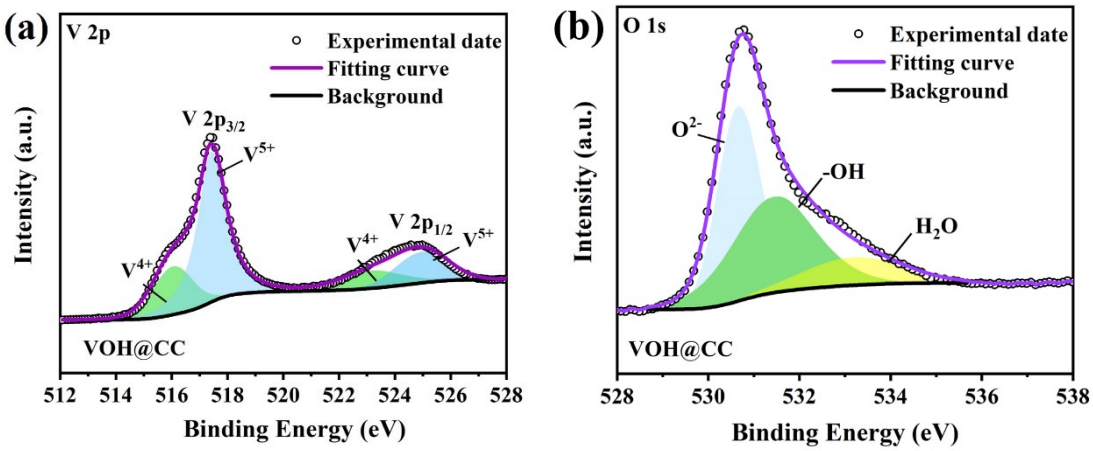

Fig. S2 The XPS spectra of V 2p (A) and O1s (B) of VOH@CC.

Table S1 ICP test results of CuVOH @ CC

Line	Conc.1 (mg/L)	RSD (%)	Conc.2 (mg/L)	Molar ratio
Cu	47.048	2.21	47.048	1
V	426.97	1.31	426.97	11.32

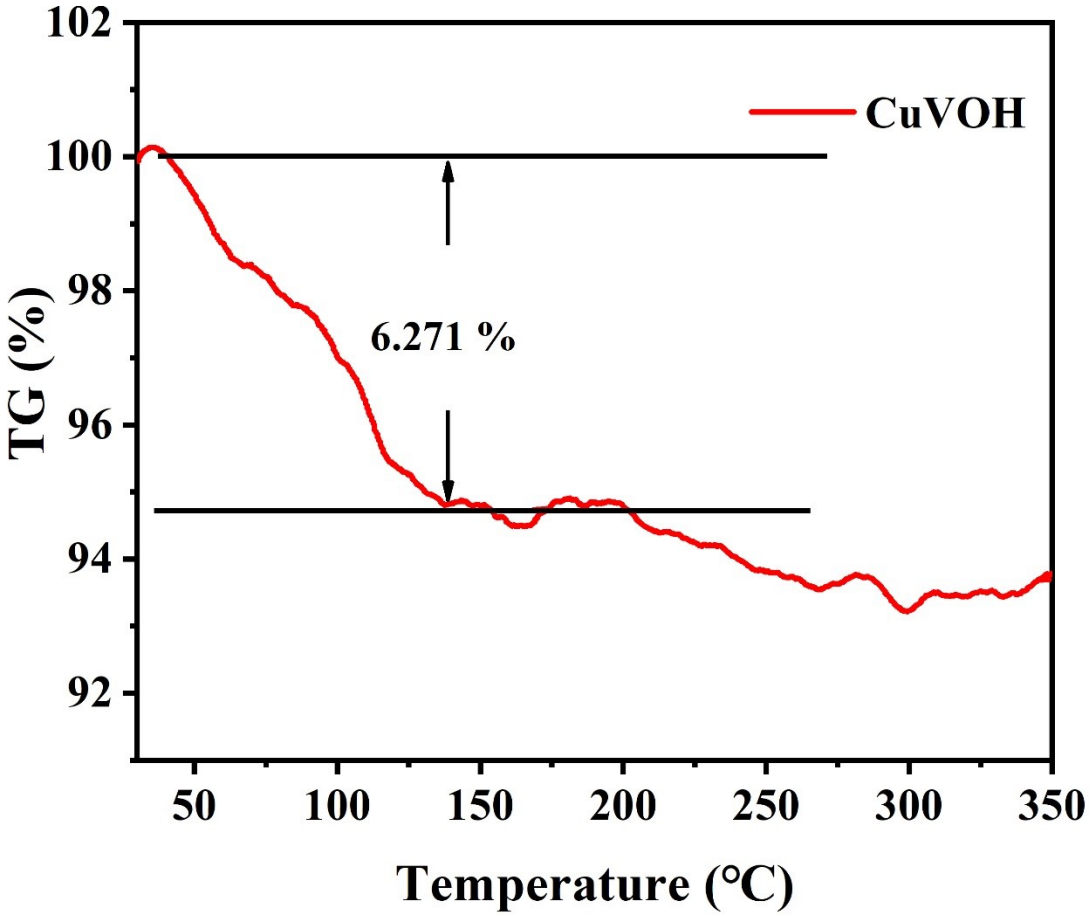

Fig. S3 TGA image of CuVOH@CC.

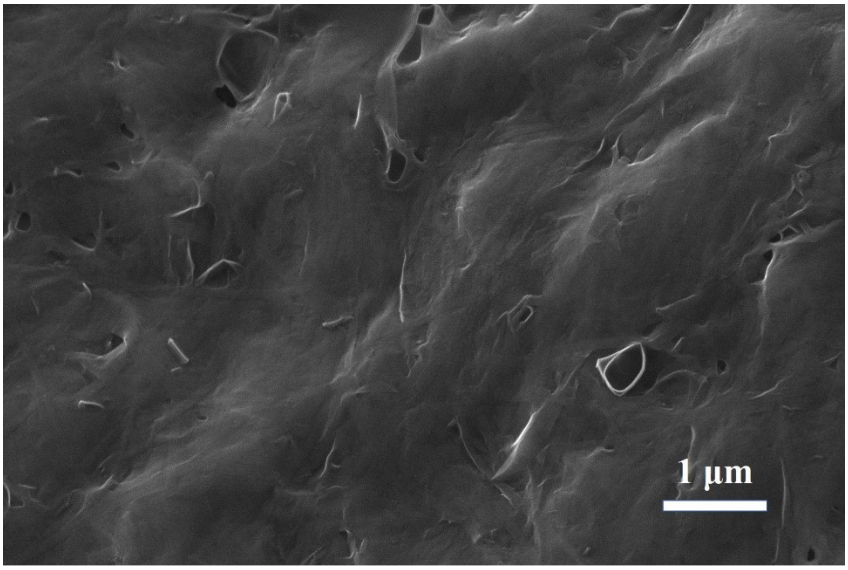

Fig. S4 SEM image of VOH@CC.

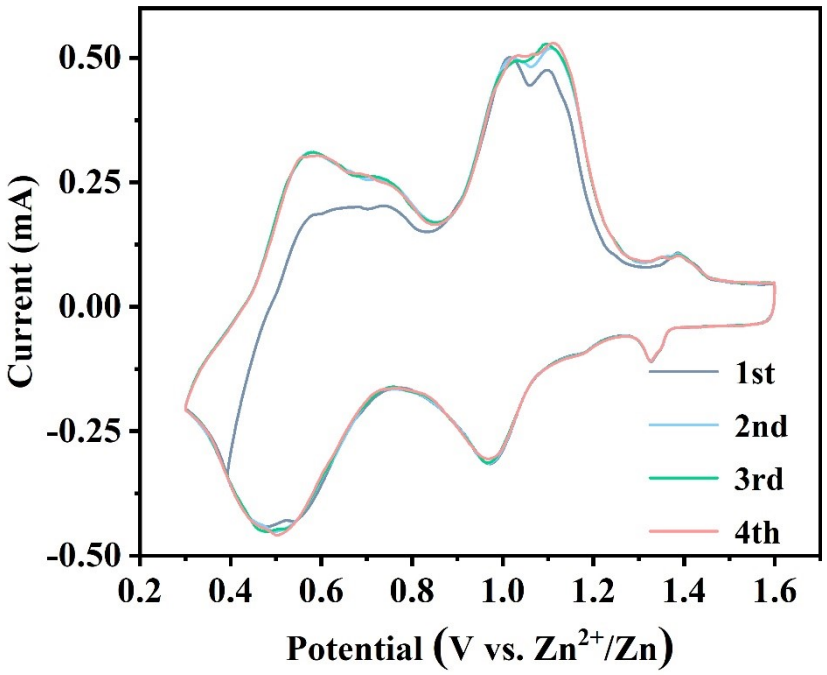

Fig. S5 CV curve at 0.1 mV s^{-1} of the VOH@CC.

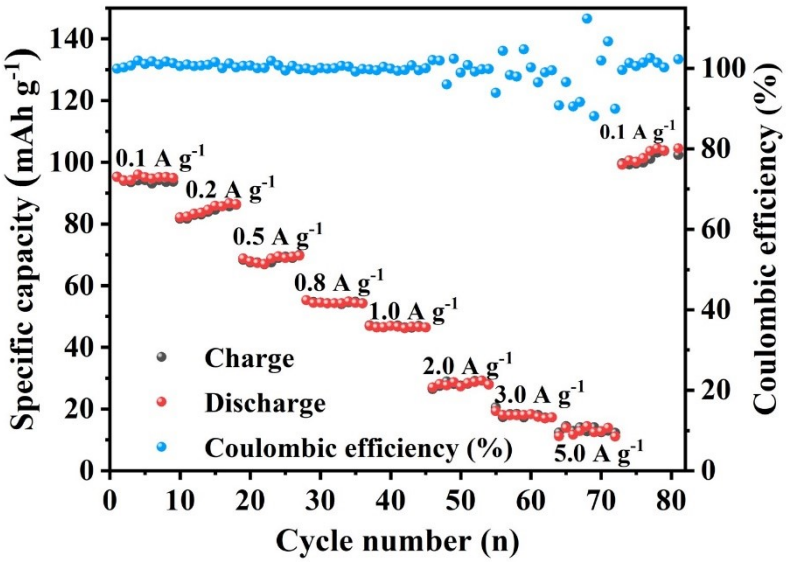

Fig. S6 Rate capabilities of VOH@CC at various current densities.

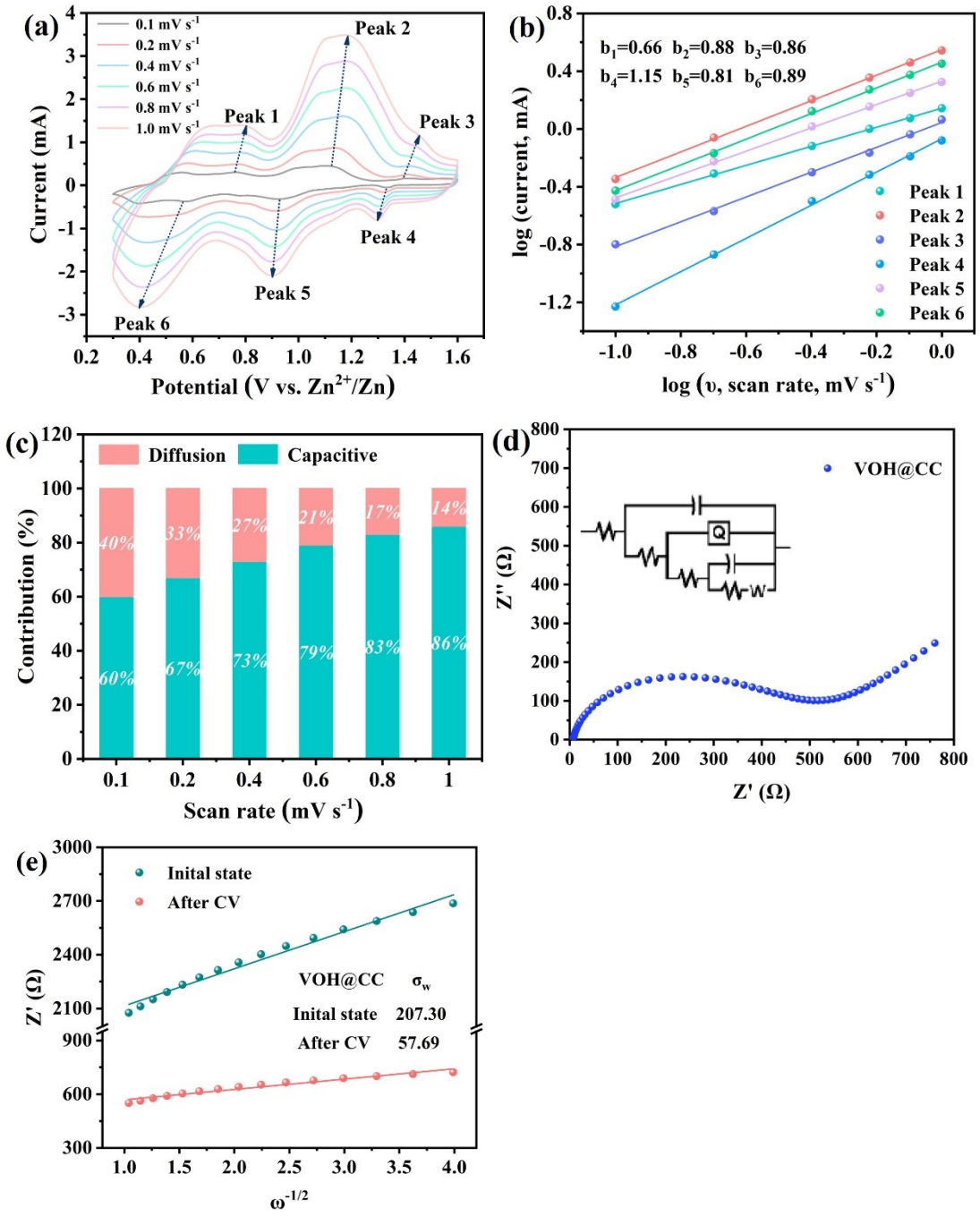

Fig. S7 (a) CV diagram at different scanning speeds, (b) log (*i*) vs. log (υ) linear relationship between cathode peak and anode peak at different scan speeds, (c) Pseudocapacitance contribution under 0.1-1.0 mV s^{-1}, (d) EIS and (d) Z' vs. $\omega^{-1/2}$ linear relationship image of the VOH@CC.

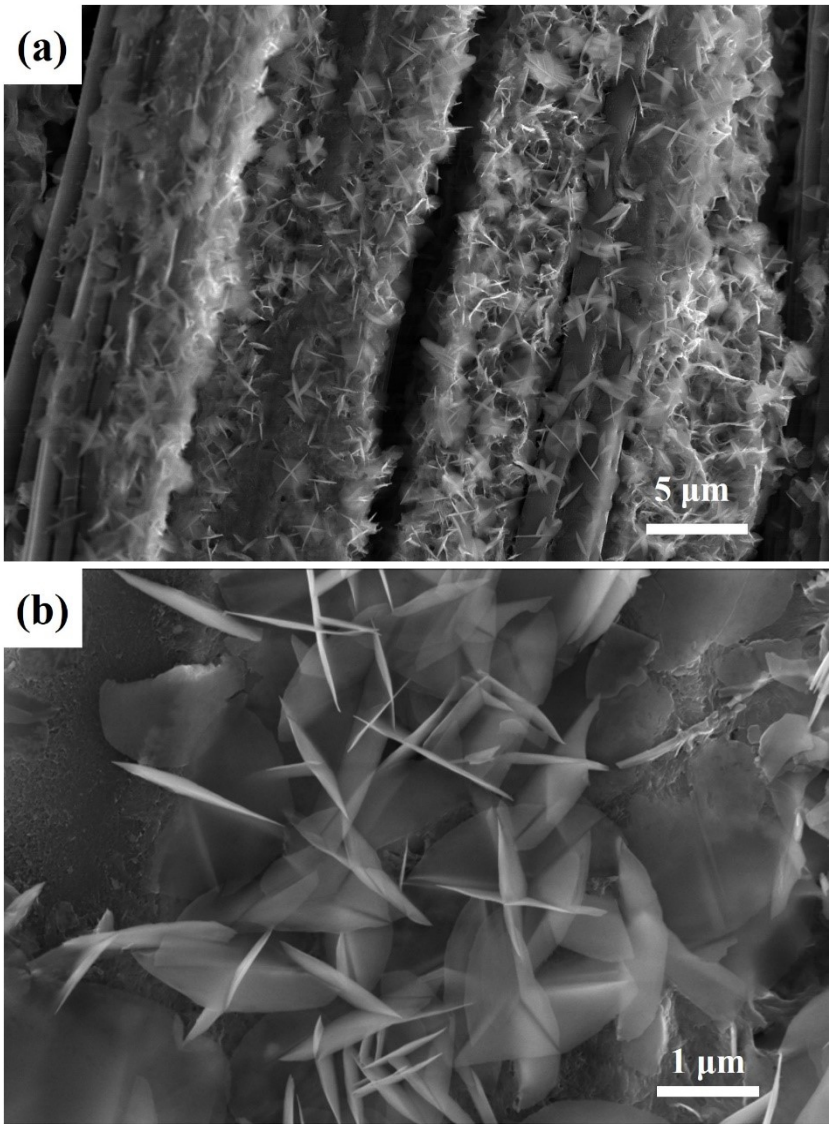

Fig. S8 SEM images of the CuVOH@CC after cycling.

Table S2 Performance and mass loading of different vanadium-based cathodes

Materials	Collector	Areal capacity (mAh cm^{-2})	Cycling performance	Mass Loading (mg cm^{-2})	Ref.
Al-$V_{10}V_{24}$·$12H_2O$	graphite sheet	0.719 at 1 A g^{-1}	98% after 3000 cycles at 5 A g^{-1}	1.8	1
$(NH_4)_xV_2O_5$·nH_2O	stainless steel	0.625 at 0.5 A g^{-1}	53% after 400 cycles at 2 A g^{-1}	1.6	2
VO_2(M)/CNT	--	0.379 at 1 A g^{-1}	93.8% after 5000 cycles at 20 A g^{-1}	1.1	3
VO_2(D)	Ti net	0.628 at 0.1 A g^{-1}	56% after 10000 cycles at 10 A g^{-1}	1.2-1.5	4
V_2O_3@C	stainless steel net	0.671 at 0.1 A g^{-1}	90% after 4000 cycles at 5 A g^{-1}	2.0	5
V_6O_{13}	carbon cloth	0.446 at 0.375 A g^{-1}	99% after 1000 cycles at 9 A g^{-1}	1.0	6
V_6O_{13}	carbon cloth	0.825 at 0.5 A g^{-1}	85.3% after 1000 cycles at 2 A g^{-1}	1.5	7
$NH_4V_3O_8$·$0.5H_2O$	Ti foil	0.576 at 1 A g^{-1}	85% after 120 cycles at 0.2 A g^{-1}	1.3	8
CuVOH@CC	carbon cloth	1.563 at 1 A g^{-1}	50% after 2000 cycles at 1 A g^{-1}	~7.0	**This work**

Reference

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