Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

Stable cycling of Prussia blue-based Na/Zn hybrid battery in aqueous electrolyte with a wide electrochemical window

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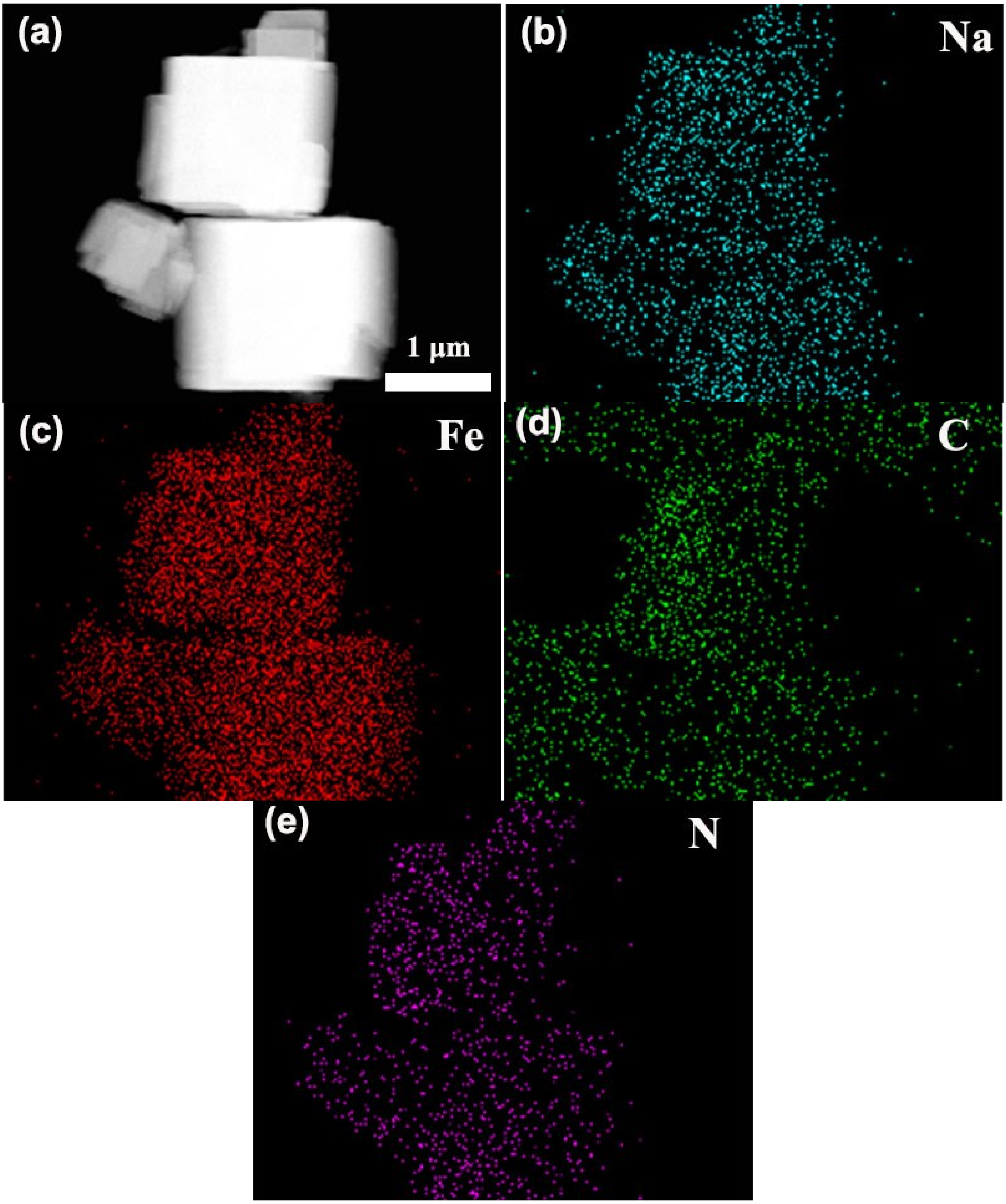


Fig. S1 HAADF-STEM image and EDX mapping of FeHCF.

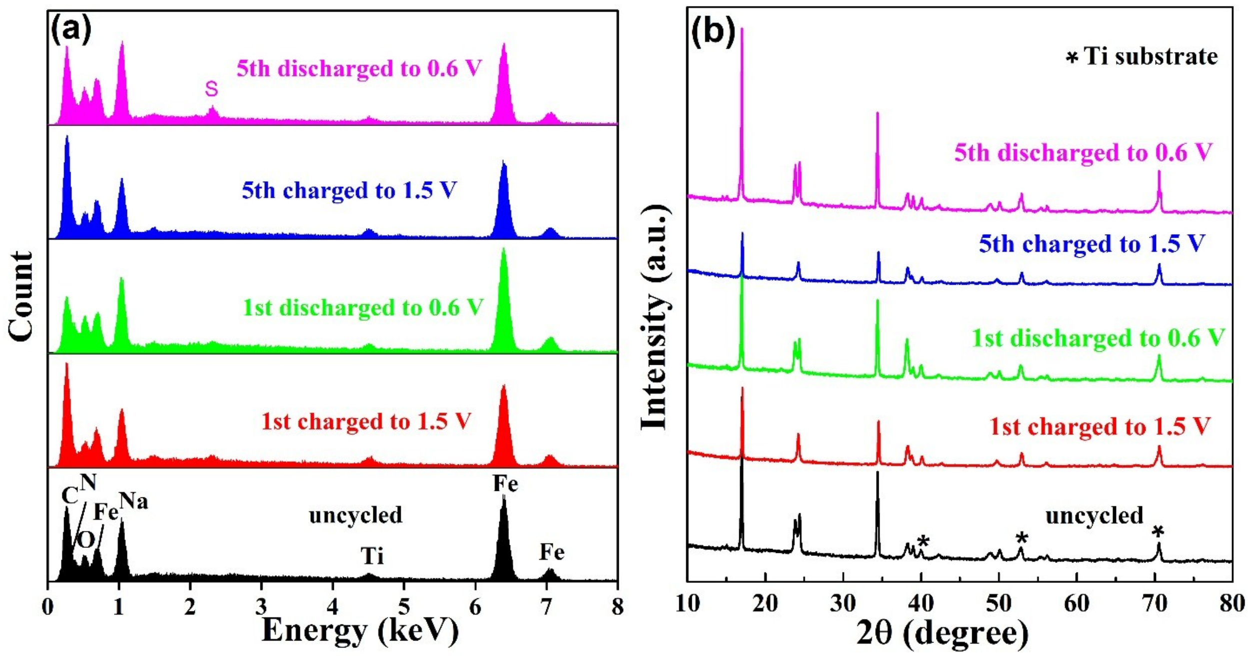


Fig. S2 (a) EDS spectra and (b) XRD patterns of FeHCF electrodes at various charge and discharge states.

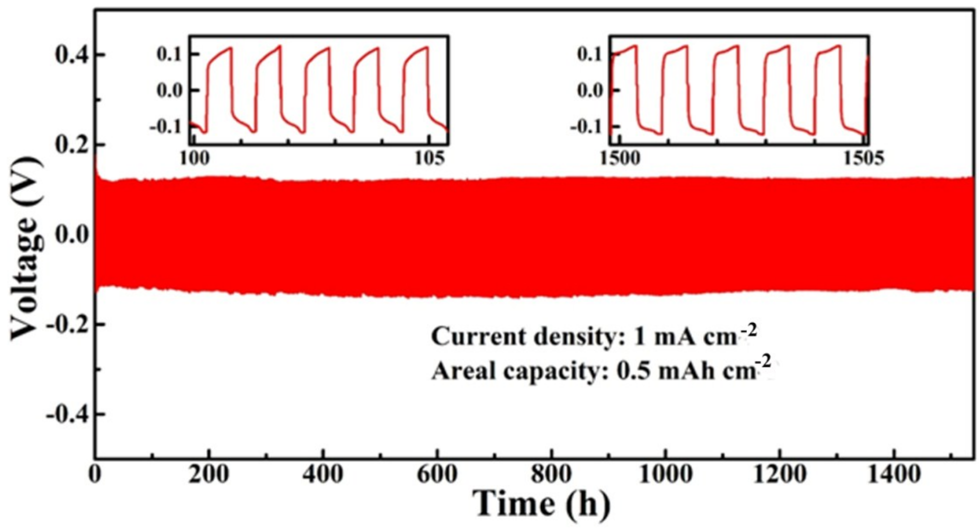


Fig. S3 Cycling performance of symmetric Zn cell with PA-coated Zn and VC-added electrolyte at a current density of 1 mA cm^{-2} and an areal capacity 0.5 mAh cm^{-2}.

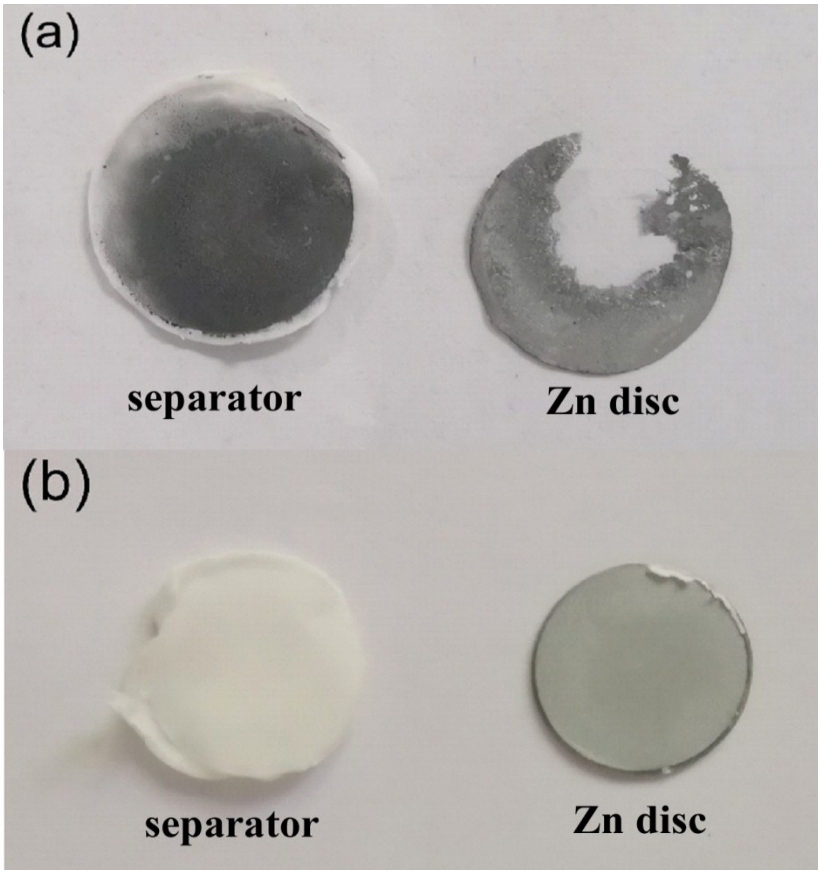
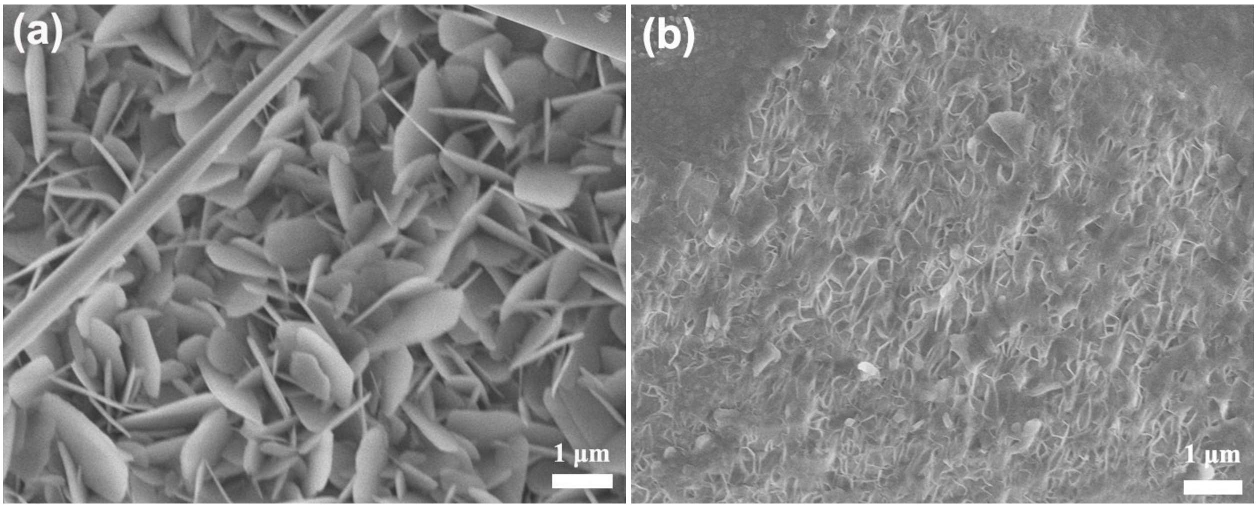


Fig. S4 Photos of zinc anode and separator after 500 cycles in full cell with (a) bare Zn and (b) PA-coated Zn.



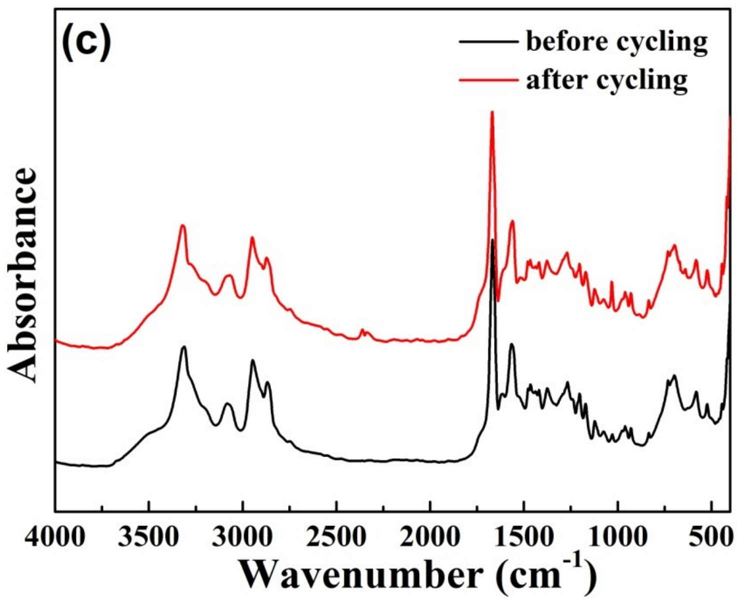


Fig. S5 SEM images of zinc anode after 500 cycles in full cell with (a) bare Zn and (b) PA-coated Zn, and (c) FTIR spectra of PA-coated zinc before and after cycling.

Table S1. Comparison of electrochemical performance of PB-based cathodes in aqueous cells

Cathode	Anode	Capacity ($mAh\ g^{-1}$)	Cycle number	Capacity retention	Reference
$Na_xFeFe(CN)_6$	**Zn**	**70**	**1000**	**77%@1000 mA g^{-1}**	**This work**
$Na_xFeFe(CN)_6$	**Zn**	**70**	**4000**	**60%@1000 mA g^{-1}**	**This work**
NiHCF	Zn	~60	1000	>81%@500 mA g^{-1}	[1]
$Na_2MnFe(CN)_6$	Zn	~130	**2000**	75%@800 mA g^{-1}	[2]
$Na_{0.61}Fe_{1.94}(CN)_6\cdot\square_{0.06}$	Zn	~73	1000	80%@300 mA g^{-1}	[3]
$Na_2NiFe(CN)_6$	$NaTi_2(PO_4)_3$	–	250	88%@500 mA g^{-1}	[4]
$Na_2CuFe(CN)_6$	$NaTi_2(PO_4)_3$	–	1000	88%@1000 mA g^{-1}	[5]
$Na_{1.24}Mn[Fe(CN)_6]_{0.81}\cdot 1.28H_2O$	$NaTi_2(PO_4)_3$	117	50	81%@2 mA cm^{-2}	[6]

Table S2. Fitting results of the Nyquist plots using the equivalent circuit

Full cell system	Sample	$R_e(\Omega)$	$R_f(\Omega)$	Q_1		$R_{ct}(\Omega)$	Q_2	
				Y	n		Y	n
Bare Zn &pristine electrolyte	10^{th} cycle	4.9	19.1	2.6×10^{-4}	0.64	61.0	1.1×10^{-3}	0.73
	500^{th} cycle	4.6	20.4	9.1×10^{-4}	0.82	119.3	3.8×10^{-3}	0.88
Coated Zn & pristine electrolyte	10^{th} cycle	5.1	83.6	1.3×10^{-4}	0.96	302.7	2.4×10^{-3}	0.54
	500^{th} cycle	1.9	38.2	1.2×10^{-4}	0.99	204.7	1.5×10^{-3}	0.55
Coated Zn & VC added electrolyte	10^{th} cycle	1.7	187.2	2.4×10^{-4}	0.83	295.3	2.9×10^{-3}	0.56
	500^{th} cycle	9.6	49.4	1.1×10^{-4}	0.99	170.7	1.7×10^{-3}	0.59

References

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