Supporting Information for

High-Voltage Flexible Aqueous Zn-Ion Battery with Extremely Low Dropout Voltage and Super-Flat Platform

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Supplementary Table and Figures

Table S1 The ionic conductivity comparison of common zinc ion gel electrolytes

Gel types	Ionic conductivity mS cm^{-1}	References
HPE	2.04	This work
GE	1.09	This work
PEO	0.5~0.8	[S1]
PEO	2~4	[S2]
Poly-ε-caprolactone	0.88	[S3]
Poly(4-vinylpyridine)	2×10^{-5}	[S4]

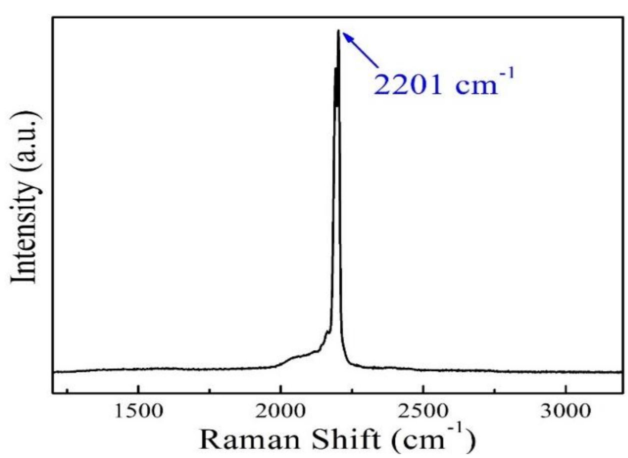

Fig. S1 Raman spectrum of ZnHCF active materials

The wavenumber peak of ν(CN) located at 2201 cm^{-1} corresponds to the stretching vibration mode of the cyanide CN^- that coordinated to Fe(III), which accords with the structure of ZnHCF. [S5].

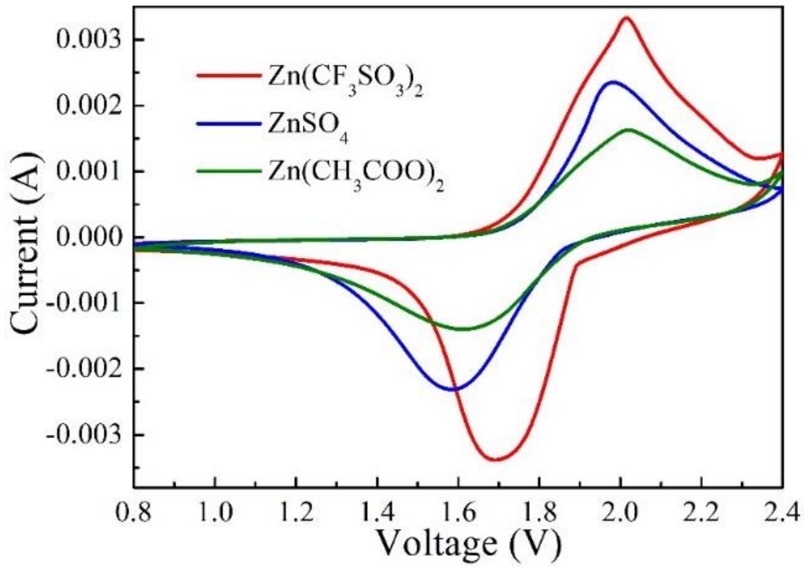

Fig. S2 CV curves of three zinc salts ($Zn(CF_3SO_3)_2$, $ZnSO_4$, $Zn(CH_3COO)_2$) at 5 mV s^{-1} scan rate

In the picture, the charging/discharging voltage 2.01/1.69 V of $Zn(CF_3SO_3)_2$, 1.98/1.58 V of $ZnSO_4$, 2.01/1.62 V of $Zn(CH_3COO)_2$ give a distinct result that $Zn(CF_3SO_3)_2$ is more suitable for electrolytes of ZIBs to give full play to their high voltage performance.

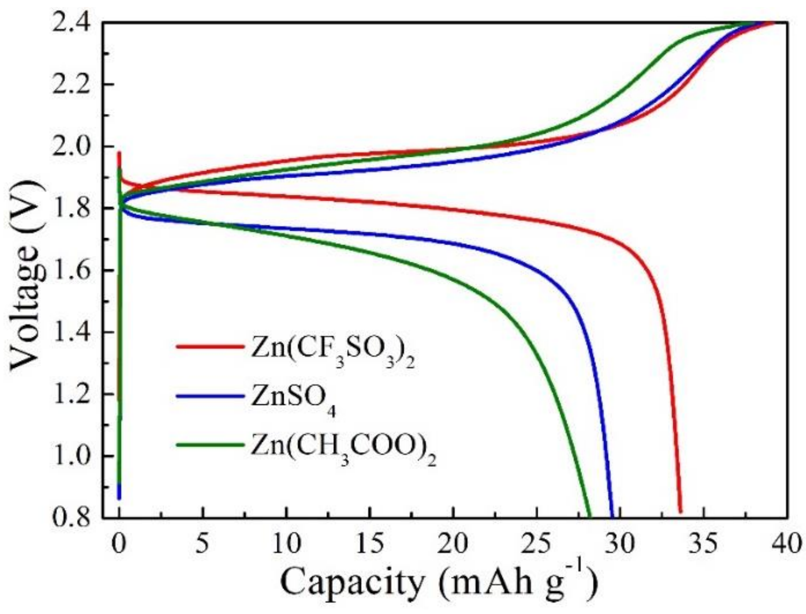

Fig. S3 GCD plots of three zinc salts ($Zn(CF_3SO_3)_2$, $ZnSO_4$, $Zn(CH_3COO)_2$) at 12.5 C

$Zn(CF_3SO_3)_2$ shows the highest capacity and excellent voltage platform, as well as the smallest dropout voltage among the three salts.

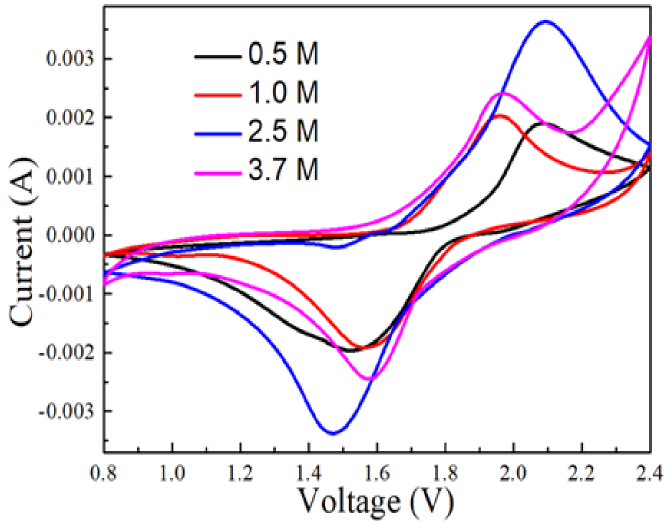

Fig. S4 CV curves of four $Zn(CF_3SO_3)_2$ concentrations

Four concentration gradients (0.5 M、1 M、2.5 M、3.7 M) were selected to perform CV tests at 10 mV s^{-1} under as same battery conditions. The results show that 1 M is significantly better than other concentrations.

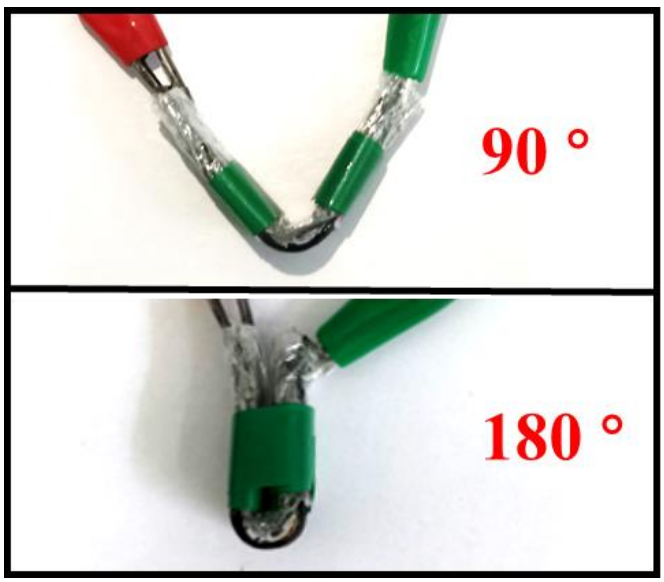

Fig. S5 Images of the battery at different bending angles

Batteries assembled in sandwich structures bent at 90° and 180° respectively, which shows the electrode is in good contact with the electrolyte. Despite being covered with a thick protective film, the battery still maintains good flexibility.

Supplementary References

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