Supporting Information

Cu(II)/polydopamine-modified glass fiber separators towards high-performance zinc-ion batteries

Fengcan Ma, Kaixuan Xie, Siheng Wu, Chi Zhang, Xiaodie Liao, and Qinghong Wang*

School of Chemistry and Materials Science, Jiangsu Normal University, Xuzhou 221116, China

**Correspondence: wangqh@jsnu.edu.cn*

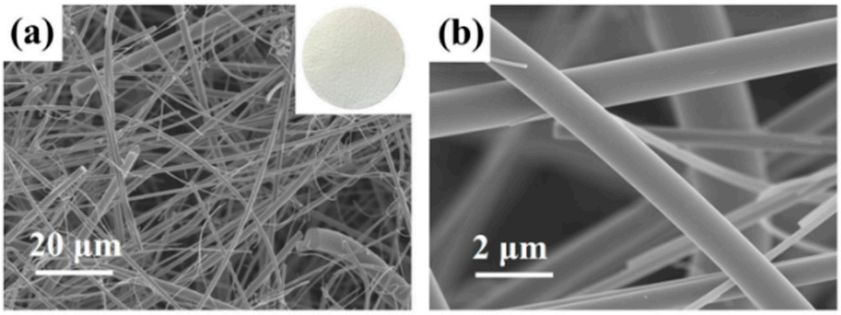

Figure S1. (a, b) SEM images of pristine GF separator. Insert in (a) is the photo of pristine GF.

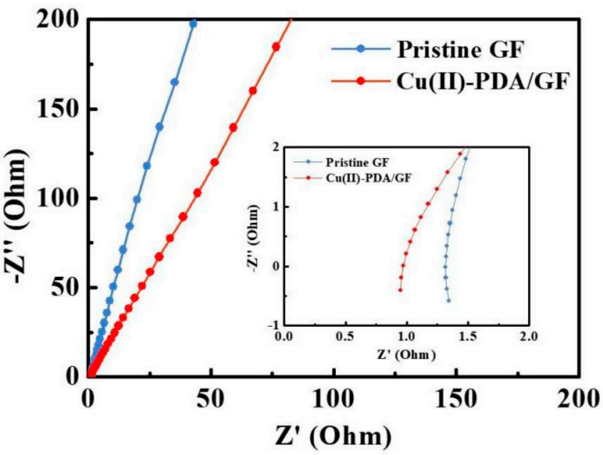

Figure S2. EIS test of the stainless steel//stainless steel cells with different separators.

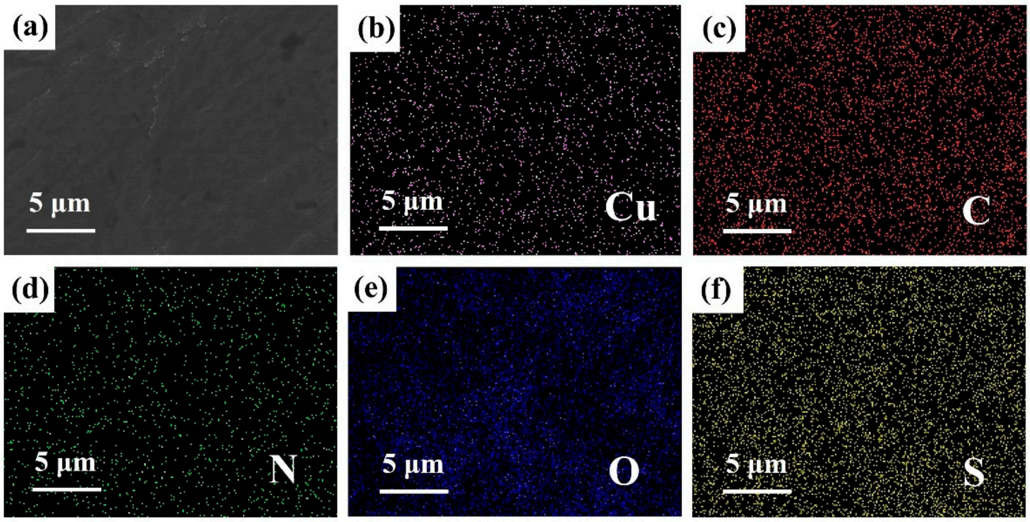

Figure S3. EDS images of Zn foils after Zn deposition for 10 min at the current density of 1 mA cm^{-2} in the symmetric cells using Cu(II)-PDA/GF separator.

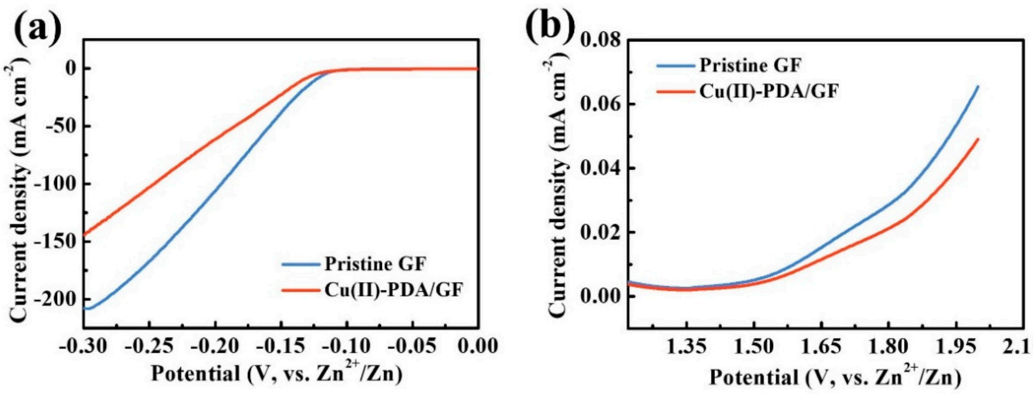

Figure S4. Electrochemical stability windows of Zn//Ti cells with pristine GF and Cu(II)-PDA/GF separator. (a) and (b) LSV curves measured at a scan rate of 1 mV s^{-1}.

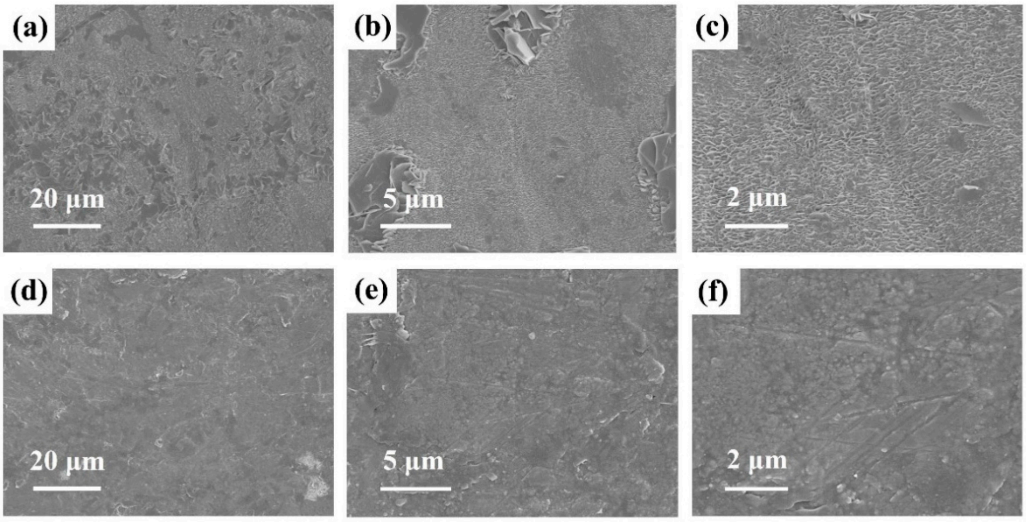

Figure S5. The SEM images of zinc foils after assembled with pristine GF separator (a–c) and Cu(II)-PDA/GF separator (d–f) for 48h.

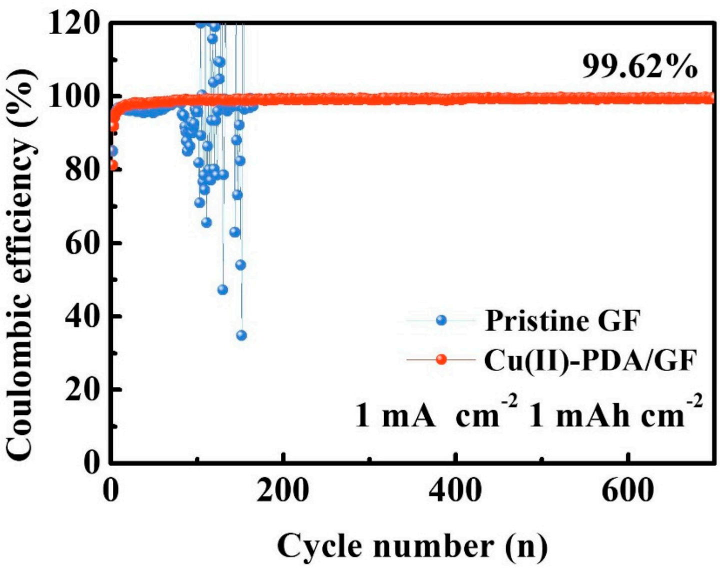

Figure S6. Coulombic efficiency of Zn plating/stripping on Cu at the current density of 1 mA cm^{-2} with the fixed capacity of 1 mAh cm^{-2} in Cu//Zn cells with different separators.

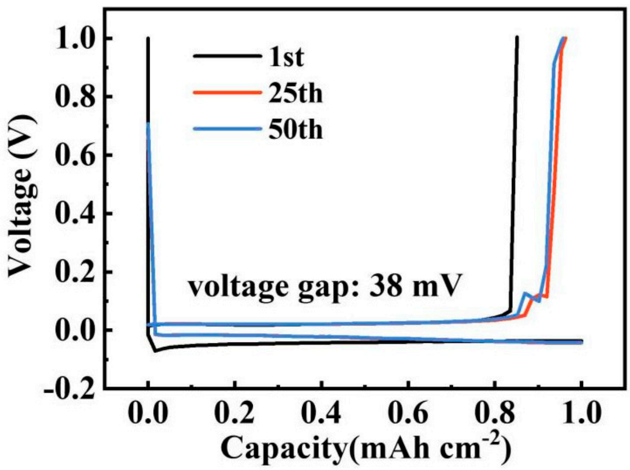

Figure S7. Voltage and capacity distribution of Cu//Zn cells with pristine GF separator.

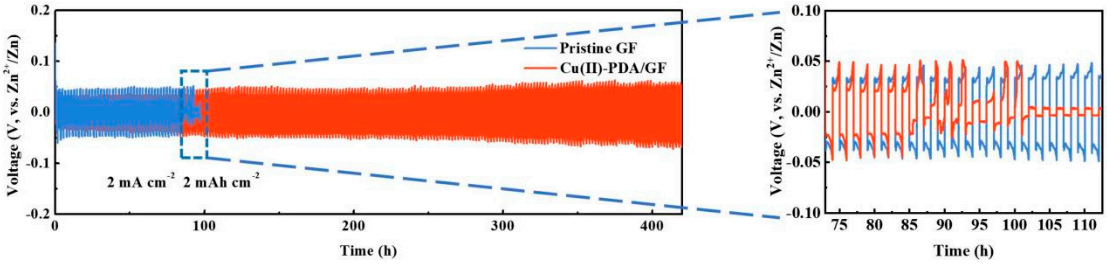

Figure S8. Cycling performance of the symmetrical cells with pristine GF and Cu(II)-PDA/GF separator at the current density of 2 mA cm^{-2} with the fixed capacity of 2 mAh cm^{-2}.

Table S1. Data for GF and Cu-PDA/GF separators obtained from electrolyte absorption experiments.

Separators	GF	Cu(II)-PDA/GF
Wa(g)	0.02491	0.02419
Wb(g)	0.4085	0.5644
Electrolyte absorption (%)	1540	2234

Table S2. A comparative table of this result with other same or different separators based ZIBs performance.

Strategies	Areal current (mA cm^{-2})	Areal capacity (mAh cm^{-2})	Life (h)	Ref.
Cu/PDA-GF	1	1	1800	This work
PVDF@PDA nanofibrous separator	2	1	200	1
$NaZnF_3$ and Nafion/cotton textile	0.5	0.5	300	2
Persimmon branch carbon/filter paper	1	0.5	320	3
$Ti_3C_2T_x$ MXene/glass fiber	1	1	1100	4
Nano-hydroxyapatite/bacterial cellulose	1	1	1600	5
N-doped carbon/glass fiber	1	1	1100	6
Cellulose–SO_3Zn separator	1	0.5	100	7
C/Cu nanocomposite/cellulose nanofiber	1	0.5	2000	8
ZSM-5 molecular sieve separator	1	1	2000	9
g-C_3N_4 coated separator	3	1	600	10
Vertical graphene/glass fiber	0.5	0.5	300	11
CF separator	1	1	2000	12
Zn-Nafion separator	0.5	5	550	13
UiO-66-GF	2	1	350	14

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