Electronic Supplementary Information for

A semi-conductive organic cathode material enabled by extended conjugation for rechargeable aqueous zinc batteries

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Supporting figures and tables

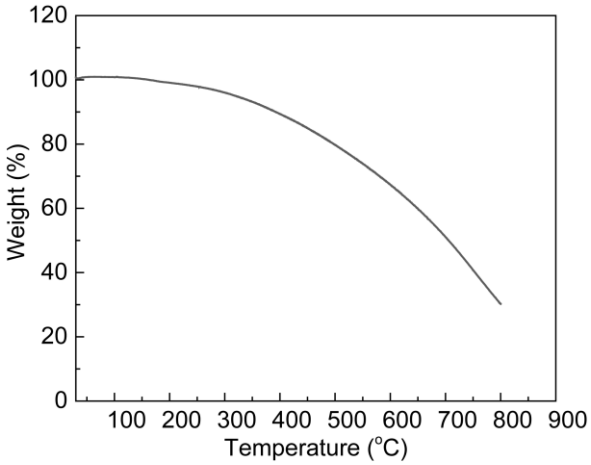

Fig. S1 TGA curve of TDT.

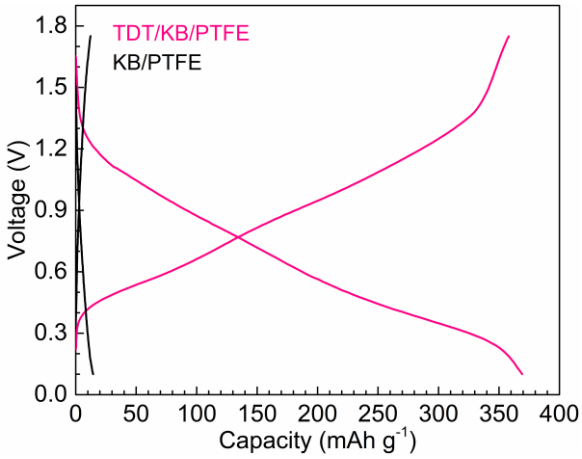

Fig. S2 The GCD curves of TDT electrode and the electrode containing only KB and PTFE (the specific capacity is calculated based on the loading of TDT for direct comparison).

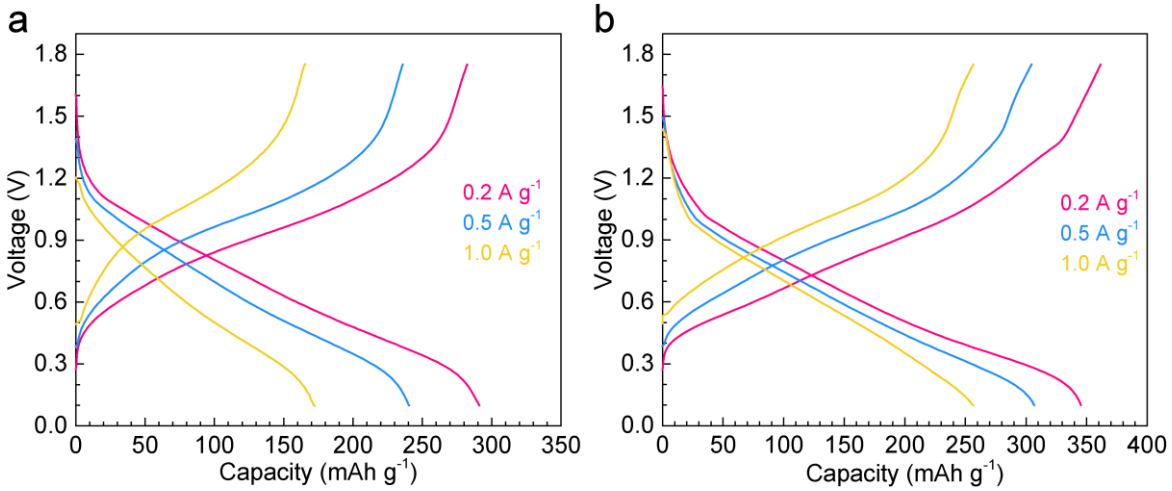

Fig. S3 The GCD curves of TDT cathode with a) 1.2 mg cm^{-2} loading and 5% carbon, b) 10 mg cm^{-2} loading and 10% carbon.

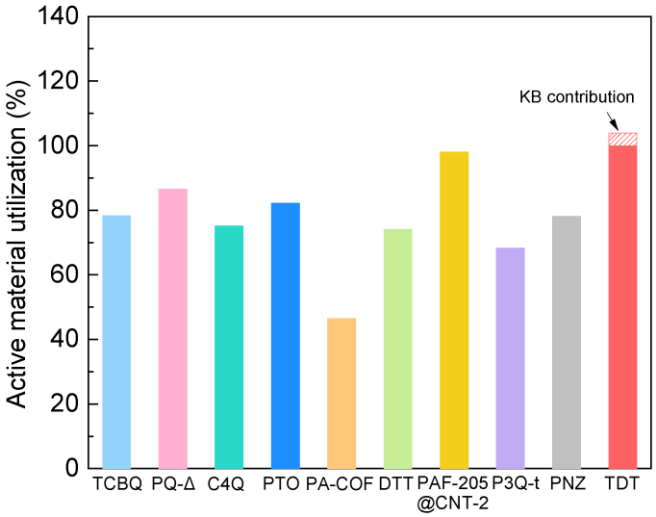

Fig. S4 Active material utilization comparison of TDT with reported organic cathode materials in aqueous zinc batteries.

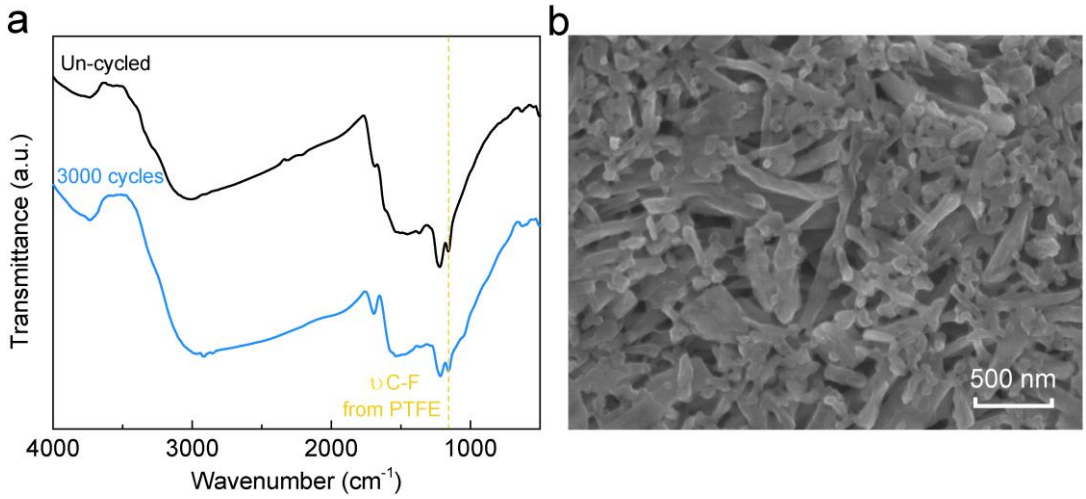

Fig. S5 (a) FT-IR spectra of pristine TDT cathode and after 3000 cycles. (b) SEM image of TDT cathode after 3000 cycles.

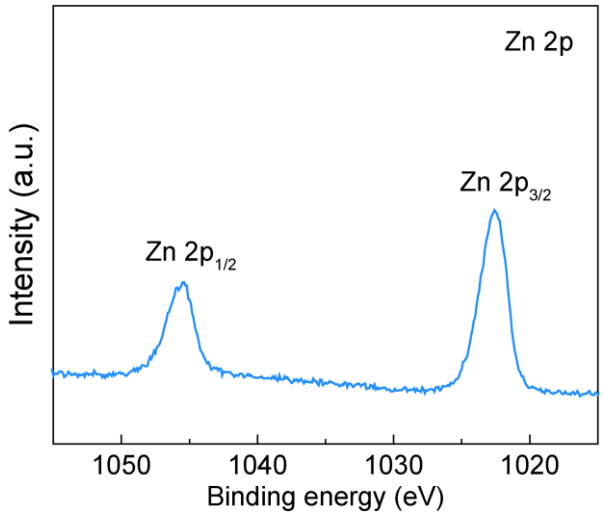

Fig. S6 Zn 2p XPS of discharged TDT.

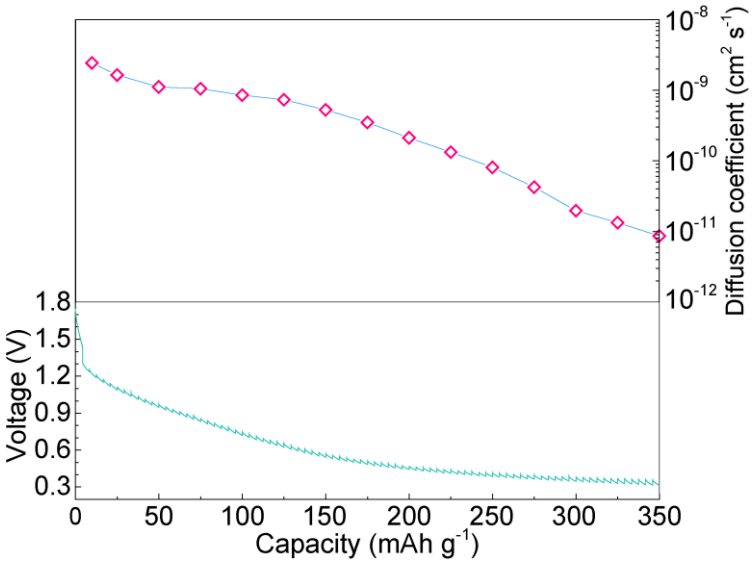

Fig. S7 GITT curves and calculated diffusion coefficients of TDT.

Table S1. Theoretical elemental percentages and EA results of TDT.

Element	C	N	H	O
Theoretical (wt. %)	47.69	27.81	3.33	21.17
EA (wt. %)	47.89	27.01	2.69	23.25

Table S2. Electrical conductivities of TDT, PTO and TCBQ measured by a four-probe system at different pressures.

Pressure	1 (MPa)	2 (MPa)	3 (MPa)
TDT	0.56 (mS cm^{-1})	10.00 (mS cm^{-1})	12.30 (mS cm^{-1})
PTO	2.91×10^{-5} (mS cm^{-1})	4.30×10^{-5} (mS cm^{-1})	6.85×10^{-5} (mS cm^{-1})
TCBQ	5.06×10^{-4} (mS cm^{-1})	9.45×10^{-4} (mS cm^{-1})	1.67×10^{-3} (mS cm^{-1})