Supplementary Information

ZIF-8-derived Hybrid Nanocomposite Platform with Magnetic Hematite Nanoparticles as Enhanced Anode Materials for Lithium Storage

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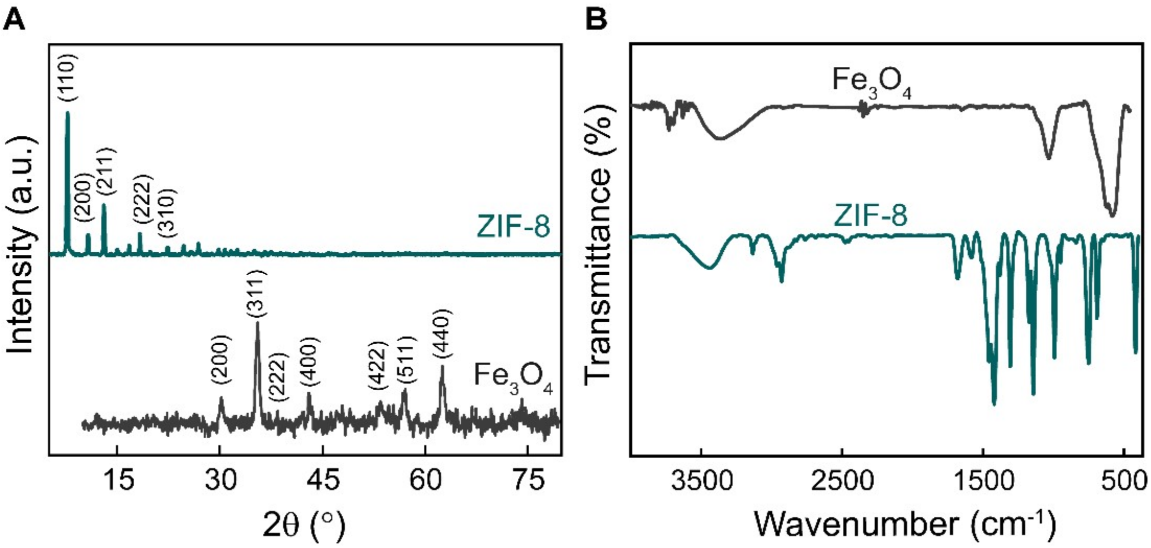

Figure S1. XRD patterns of Fe_3O_4 and ZIF-8 nanomaterial.

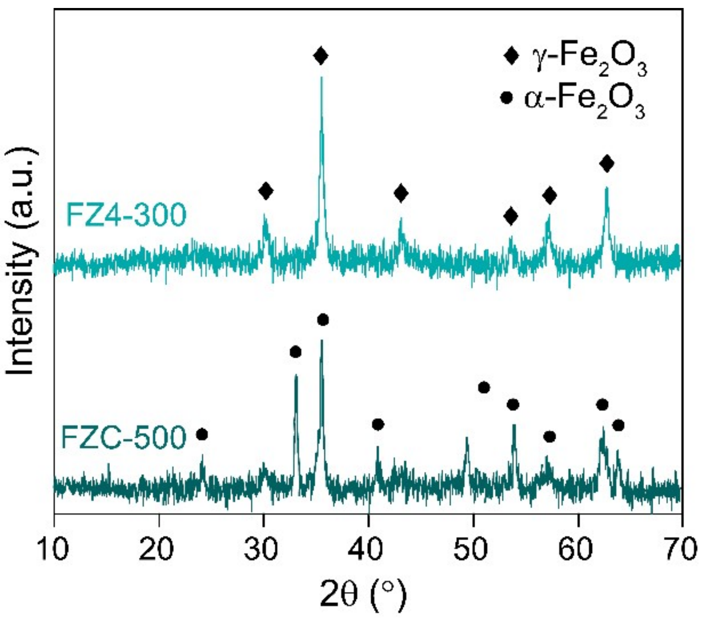

Figure S2. XRD patterns of FZC4-300 and FZC4-500 nanocomposites.

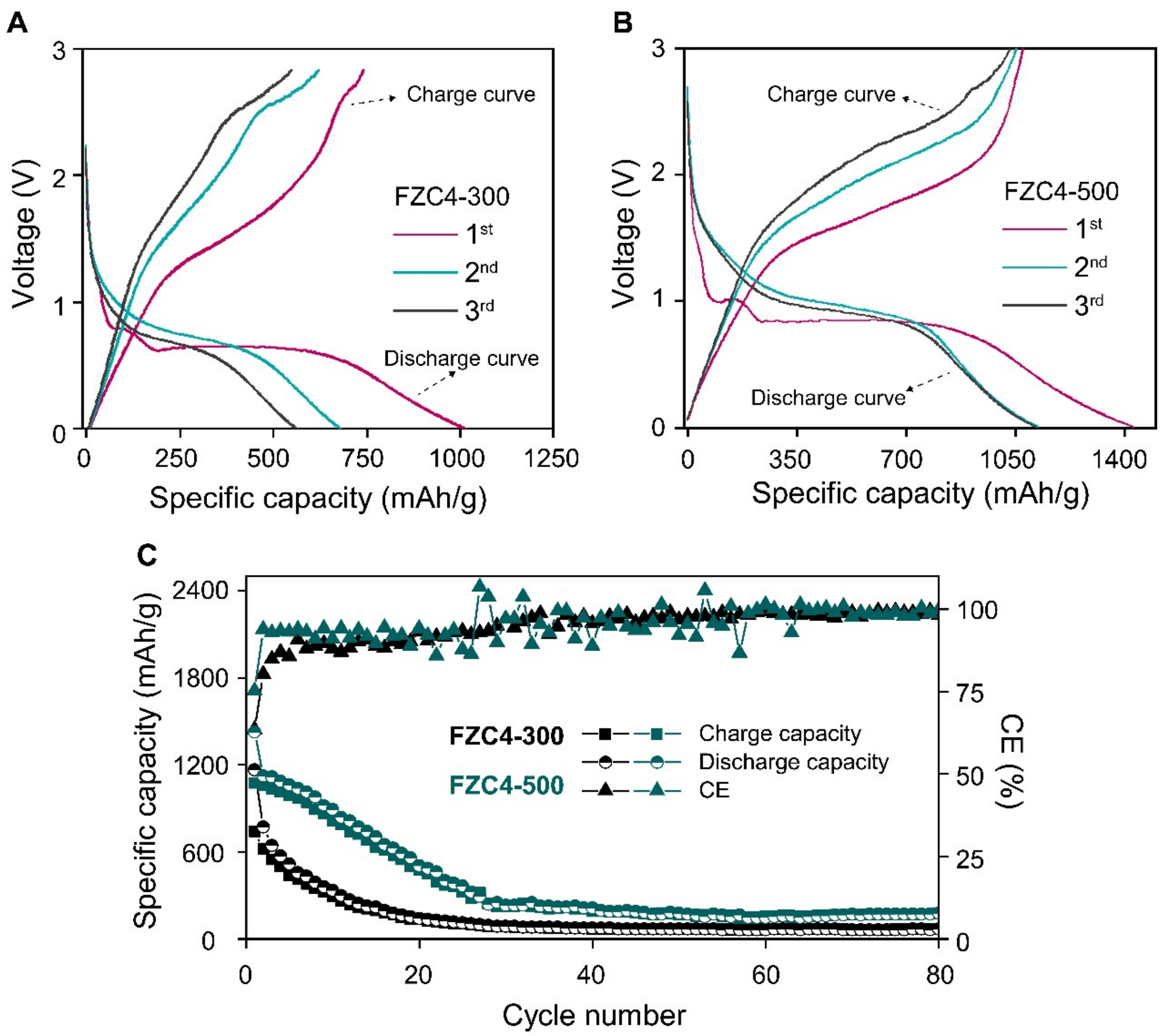

Figure S3. (A-B) GCD test and (C) cycling performances at 0.1 A/g current rate of FZC4-300 and FZC4-500 electrodes.

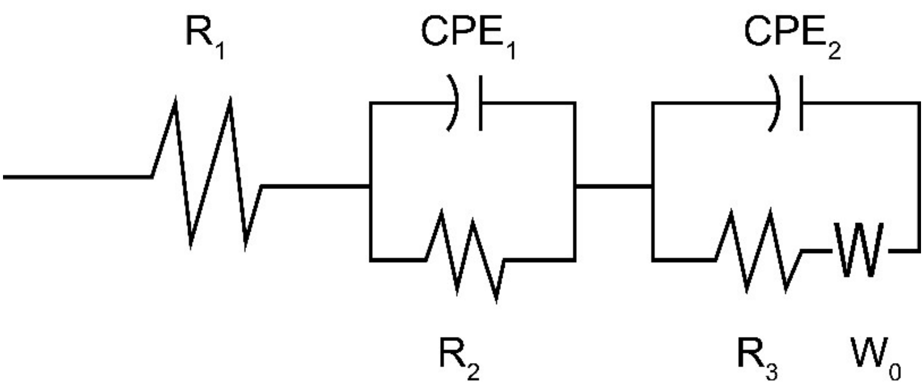

Figure S4. Equivalent circuit models were used in the analysis of anode electrodes.

Table S1. Specific capacities and CE of the initial three charge/discharge cycles for FZC4-300 and FZC4-500 anode electrodes.

Anode electrode	Cycle	Discharge capacity ($mAh\ g^{-1}$)	Charge capacity ($mAh\ g^{-1}$)	CE (%)
FZC4-300	1	1165.9	740.7	63.5
	2	773.2	620.1	80.2
	3	645.5	547.5	84.8
FZC4-500	1	1428.5	1075.2	75.3
	2	1123.5	1054.3	93.8
	3	1115.6	1034.0	92.7

Table S2. EIS result of FZC4 and FZC5 anode electrodes.

Anode electrode	R1 (Ω)	R2 (Ω)	R3 (Ω)
FZC4	3.665	2.676	8.678
FZC5	5.523	2.107	19.96

Table S3: Electrochemical performance comparison of ZIF-8-based, ZnO-based and Fe_2O_3-based anodes for lithium-ion batteries.

Anode material	*Cycling performance (mAh/g)*	*Current dinsity (A/g)*	*Cycle number*	*Ref.*
NC	349	0.05	50	[1]
NC-700	400	0.05	100	[2]
Bare ZnO	218	0.1	100	[3]

Bare ZnO	193	1	1000	[4]
Bare ZnO	340	1	200	[5]
ZnO/C	212	0.1	100	[6]
ZnO nanocrystal	500	0.2	100	[7]
Bare Fe_2O_3	53,42	0.2	100	[8]
Bare Fe_2O_3	619	0.5	500	[9]
Thin tripleshell a-Fe_2O_3 hollow microspheres	1702	50	50	[10]
FZC4	587.8	0.1	80	This work

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