

Supporting information

**A 3D printed freestanding ZnSe/NC anode for Li-ion
microbatteries**

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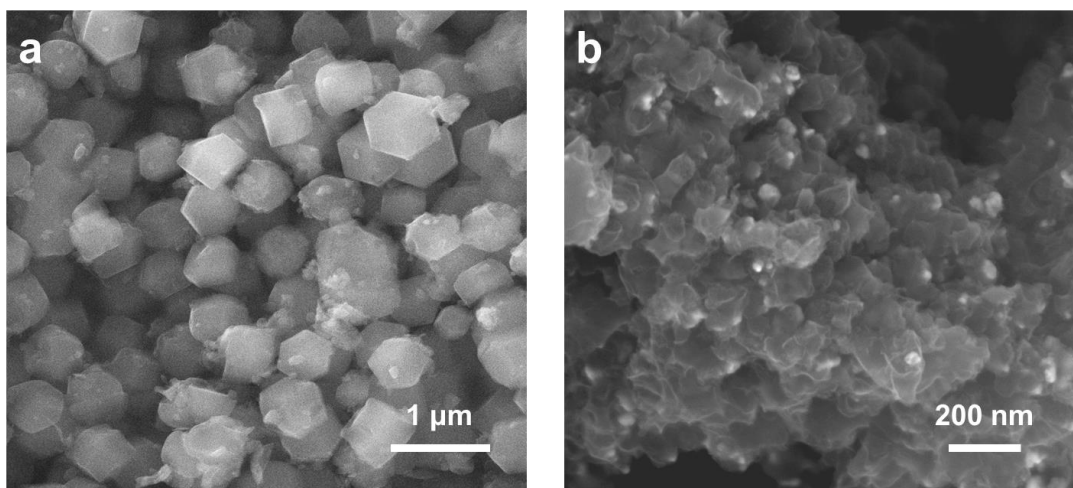


Fig. S1 a) SEM image of ZIF-8 precursor. b) Magnified SEM image of ZnSe/NC composite.

Table S1 The content of Se, Zn, C, O, N elements in ZnSe/NC composite calculated by XPS.

Element	Start BE	Peak BE	End BE	Atom Conc %	Mass Conc %
Zn 2p	1015	1042.21	1046	14.48	33.7
Se 3d	49	51.84	60	10.83	30.7
C 1s	280	282.9	288	43.38	18.7
N 1s	394	396.64	402	14.41	7.2
O 1s	525	529.83	537	16.9	9.7

Table S2 Comparison with recently reported microbatteries.

Ref.	Current density (A g ⁻¹)	Specific capacity (mA h g ⁻¹)	Capacity retention	Cycling stability
1	0.154 to 1.54	375 to 156	19.2%	1300 cycles (5C)
2	0.1 to 2.0	322 to 62	27.9%	300 cycles
3	0.1 to 2.5	297 to 83	41.8%	1000 cycles (1 A g ⁻¹)
4	2 to 42	1907 to 748	39.2%	600 cycles (21 A g ⁻¹)
5	0.1 to 1.6	164 to 52	31.7%	1000 cycles (0.2 A g ⁻¹)
6	0.2 to 5	336 to 85	25.3%	50 cycles (0.5 A g ⁻¹)
7	0.03 to 0.6	142 to 127	89.4%	417 cycles (0.3 A g ⁻¹)
This work	0.1 to 2.0	1130 to 433	38.2%	1000 cycles (1 A g⁻¹)

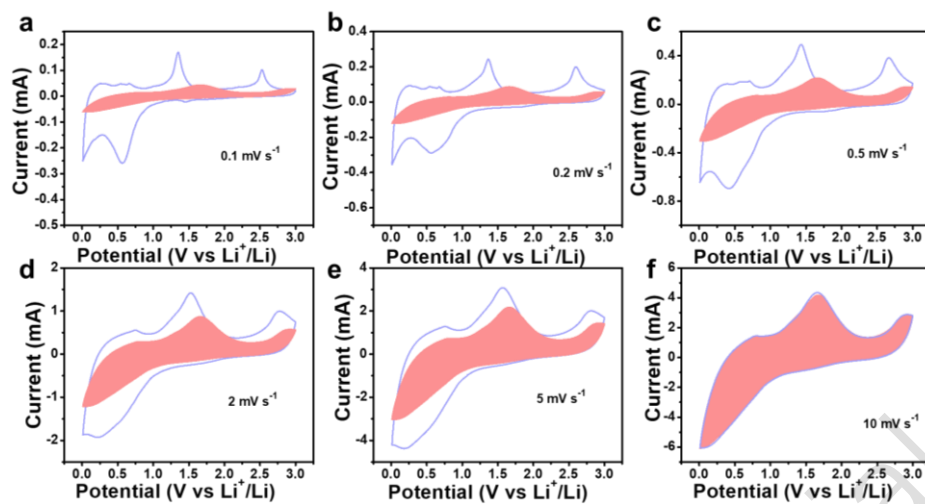


Fig. S2 CV curves of ZnSe/NC electrodes for the pseudocapacitive contribution at 0.1, 0.2, 0.5, 2, 5 and 10 mV s^{-1} .

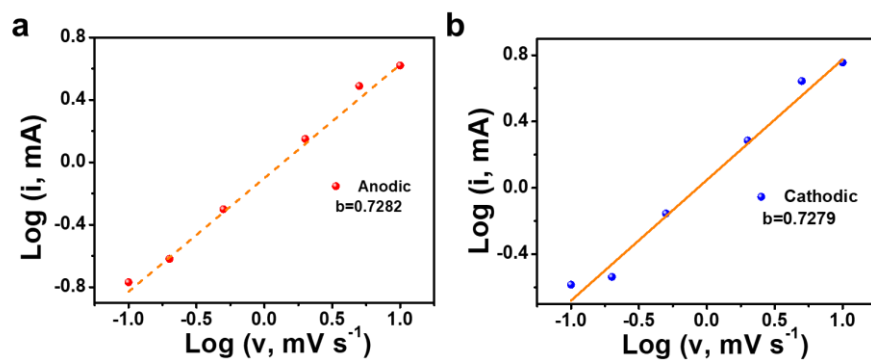


Fig. S3 Linear fitting line of anodic and cathodic peaks of ZnSe/NC anode.

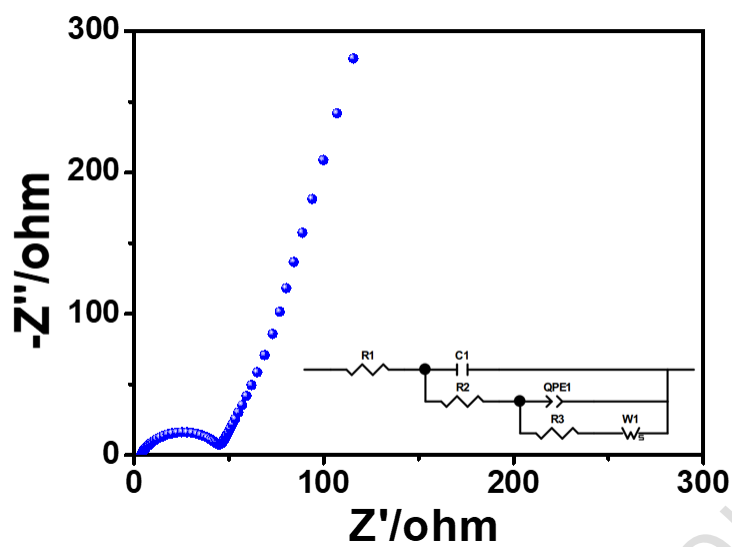


Fig. S4 EIS curve of ZnSe/NC electrode.

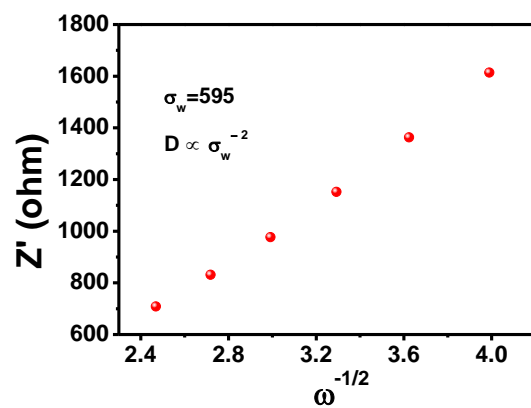


Fig. S5 Linear fitting of ZnSe/NC electrode.

New Carbon Materials