Self-Supporting Poly (3,4-ethylenedioxythiophene) and Fe_3C Co-Decorated Electrospun Carbon Nanofibers as Li_2S Supporter for Lithium Sulfur Batteries

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Supporting Information

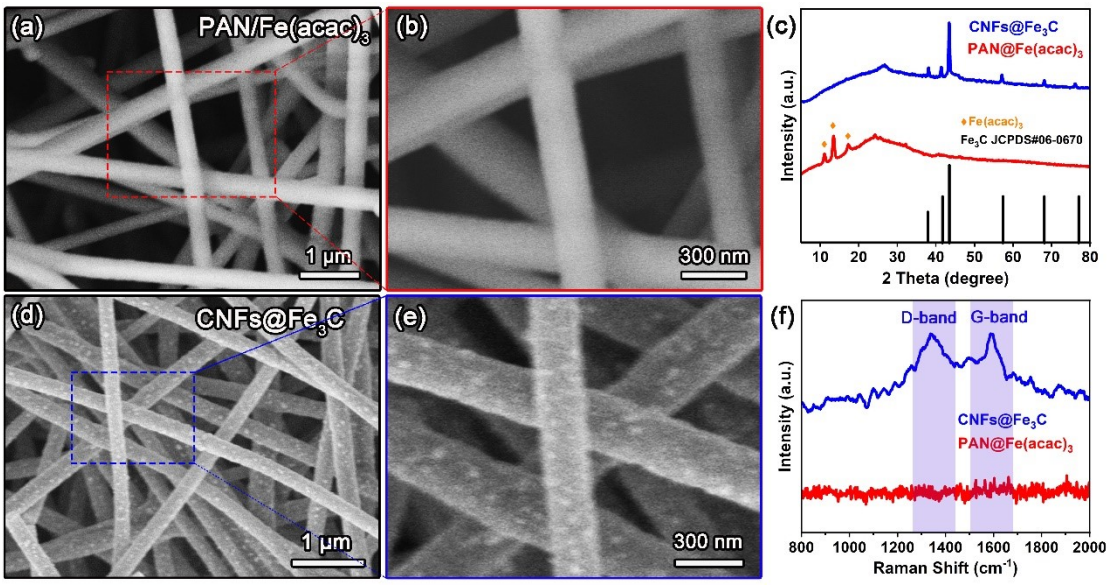

Figure S1 The phase structure and morphology characterization results of PAN/$Fe(acac)_3$ and CNFs@Fe_3C composite nanofiber membranes: (a, b) SEM images of PAN/$Fe(acac)_3$, (c) XRD pattern, (d, e) SEM images of CNFs@Fe_3C, (f) Raman spectra.

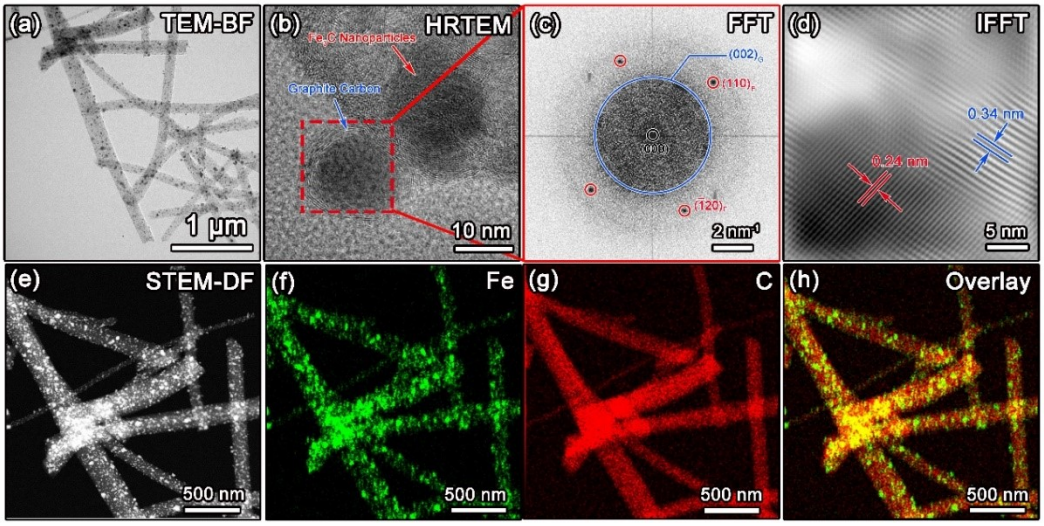

Figure S2 TEM characterization results of CNFs@Fe_3C nanofiber membranes: (a) TEM-BF image, (b) HRTEM image, (c) Corresponding FFT figure, (d) IFFT figure, (e) STEM-DF image, (f-h) EDX mapping results of the distribution of Fe, C and overlay mapping.

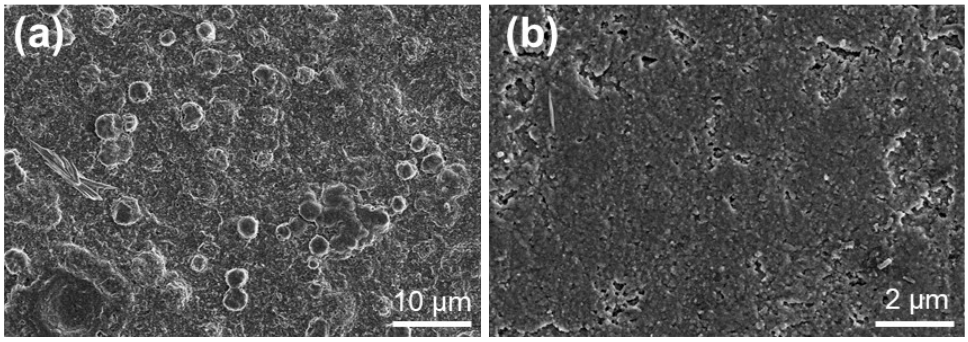

Figure S3 SEM images of the P@CNFs@Fe_3C-16%-Li_2S cathode after 1000 cycles under different magnifications (a, b).

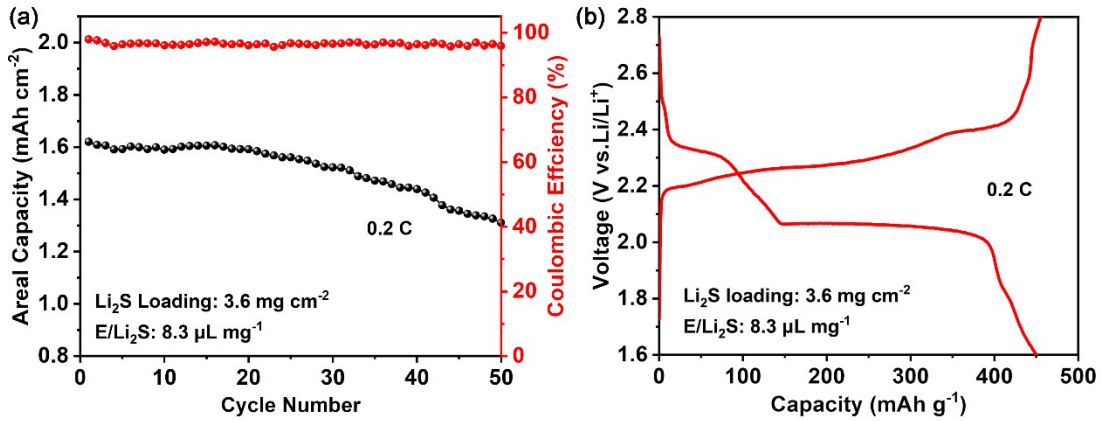

Figure S4 The cyclic performance (a) and corresponding galvanostatic charge-discharge curve (b) of P@CNFs@Fe_3C-16% cathode under high Li_2S loading amount and low E/Li_2S ratio.

Table S1 Electrochemical performance comparison of the recent reported Li_2S-based cathode in Li-S batteries

Cathode Materials	Cyclic Performance (mAh g^{-1})	Li_2S loading amount (mg cm^{-2})	References
Li_2S@C	411 (0.1C, 50 cycles)	0.54	1
MWCNT-Li_2S	550 (0.1C, 100 cycles)	1	2
Li2S/CNT/C-N/O	671 (0.1C, 200 cycles)	~2	3
Li_2S-rGO	315 (0.1C, 100 cycles)	0.96	4
ML-Ti_3C_2/Li_2S	450 (0.2C 100 cycles)	0.8	5
Li_2S/FWNTs@rGO NBF	868 (0.2C, 300 cycles)	1.0-1.5	6
Li_2S-ZnS@NC	640 (0.2C, 100 cycles)	2	7
Li_2S-PPy	785 (0.2C, 400 cycles)	~1	8
Li_2S-PAN	665 (0.5C, 250 cycles)	2.5	9
Nano-Li_2S/rGO	898 (0.5C, 145 cycles)	0.8-1.5	10
P@CNFs@Fe_3C	580 (0.1C, 100 cycles)	1.2	This work

References

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