Supporting Information

Facile Synthesis of Uniform Yolk-shell Structured FeS@mesoporous Carbon Spheres for High-performance Sodium-ion Batteries

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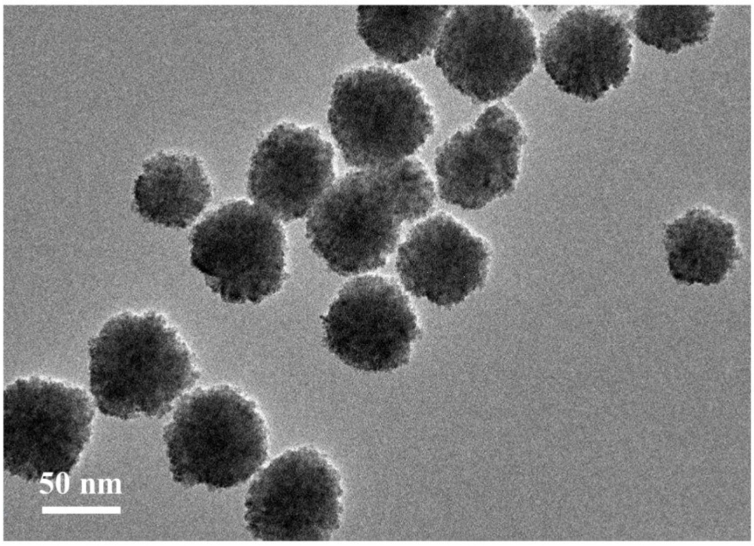

Figure S1. TEM image of the Fe_3O_4 particles.

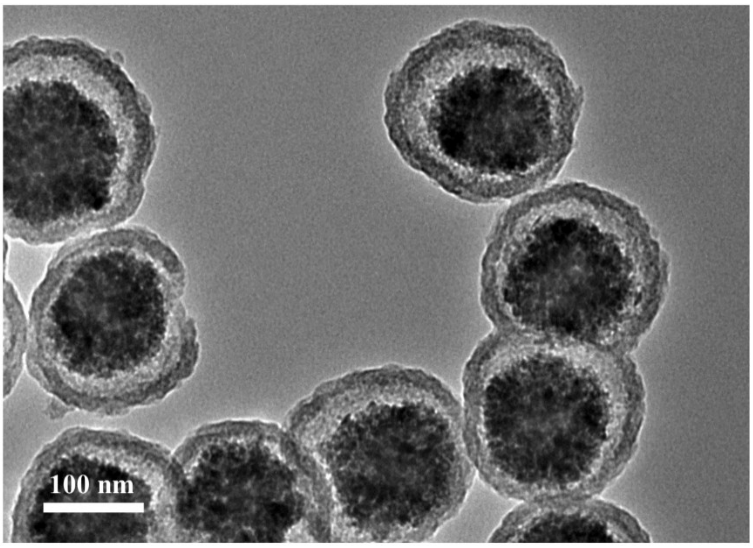

Figure S2. TEM image of the yolk-shell structured Fe_3O_4@meso-C composites.

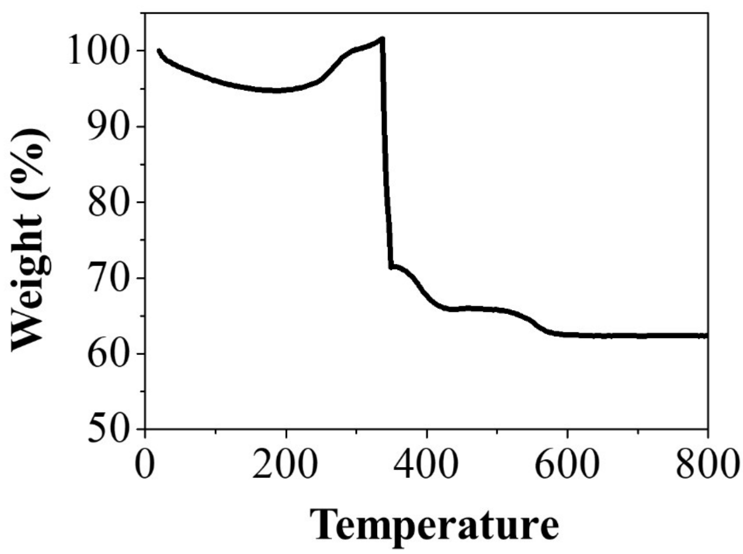

Figure S3. TGA curve of the yolk-shell structured FeS@meso-C composites. The residuum of the yolk-shell structured FeS@meso-C composites is Fe_2O_3 ($FeS+7/4O_2=1/2Fe_2O_3+SO_2$), the content of FeS in the electrode materials is calculated by the weight change of the TGA curve and the loss of FeS transform to Fe_2O_3. The total weight of the yolk-shell structured FeS@meso-C composites is 100 %, the content of FeS is X, the transformational weight loss between FeS and Fe_2O_3 is (88-80)X/88. Therefore, 39 % = (100 %-X) + (88-80)X/88, the number of X is 85.8 %. The content of Fe_2O_3 is directly calculated based on the weight change in the above TGA curve

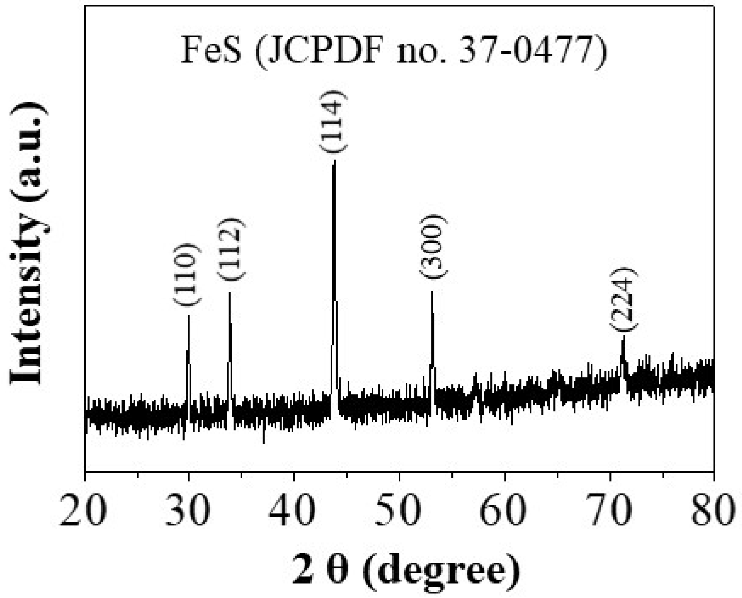

Figure S4. XRD pattern of the pure FeS.

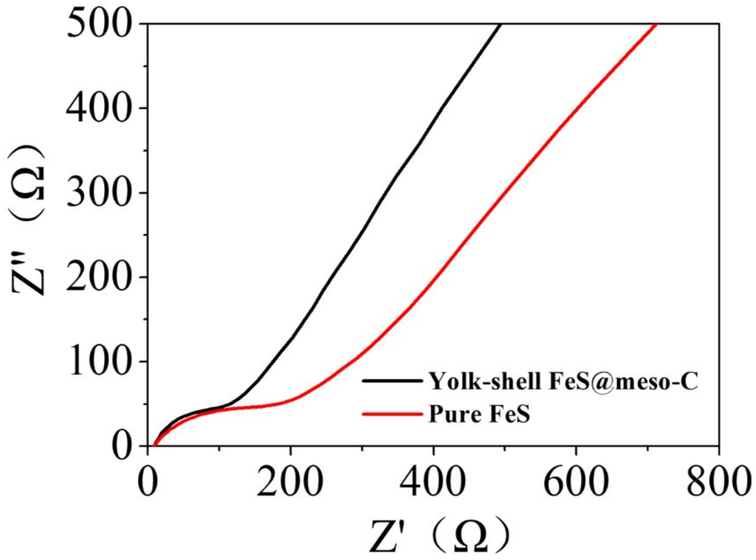

Figure S5. Nyquist plots of the yolk-shell structured FeS@meso-C composites and the pure FeS electrode.

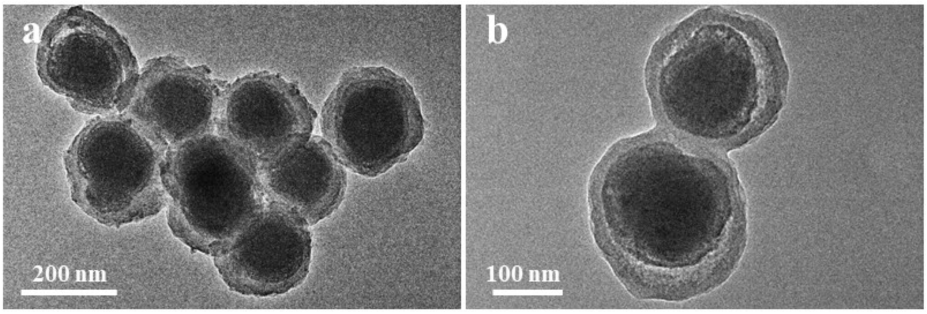

Figure S6. TEM images of the yolk-shell structured FeS@meso-C electrodes after 30 cycles.

Table S1. The comparison of electrochemical performances of different iron sulfide based anodes materials for SIBs.

Anode	Current density (mA g^{-1})	Discharge capacity (mA h g^{-1})	Cycle number	Reference
Fe_3O_4@FeS	200	169	750	1
P-FeS@C	200	555.1	150	2
FeS@TiO_2@C	200	444	150	3
FeS/C	100	575.7	100	4
FeS/NC	200	599.9	100	5
FeS@C/carbon cloth	100	430	50	6
FeS_2/CNT	200	394	400	7
FeS@meso-C	200	596	100	This work

References

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