Supplementary Material for

**Sulfur-containing polymer/carbon nanotube composite cathode materials for high-energy lithium-sulfur batteries**

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**Fig. S1.** (a) Raman spectra of S, S-TVTC$i_4$, S-TVTC$i_4$-CNT$_{10\%}$; (b) XPS survey spectra of S-TVTC$i_4$-CNT$_{10\%}$; (c) XPS C 1s spectra of S-TVTC$i_4$-CNT$_{10\%}$; (d) XPS S 2p spectra of S-TVTC$i_4$-CNT$_{10\%}$
Fig. S2. Proposed molecular structure of S-TVTCSi$_4$

Fig. S3. SEM image of S-TVTCSi$_4$ powder
**Fig. S4.** SEM image of pure CNT

**Fig. S5.** Separators of S-TVTC\textsubscript{Si\textsubscript{4}}-based battery and S-based battery after cycling
Fig. S6. Electrolytes soaked the cycled S cathode and cycled S-TVTC\textsubscript{Si\textsubscript{4}} cathode.

Fig. S7. C 1s XPS spectra of S-TVTC\textsubscript{Si\textsubscript{4}} cathode after first cycle.
Fig. S8. Charge-discharge profiles of different batteries at 0.3C

Fig. S9. Charge-discharge profiles of S-TVTC\textsubscript{Si\textsubscript{4}}-CNT\textsubscript{10\%}-based battery at a high C-rate of 1C
Fig. S10. First three cycle CV curves of S-TVTCSi₄-CNT₁₀% -based battery at a scan rate of 0.1 mV s⁻¹