**Electronic supplementary information**

# Self-Weaving Sulfur–Carbon Composite Cathodes for High Rate Lithium–Sulfur Batteries

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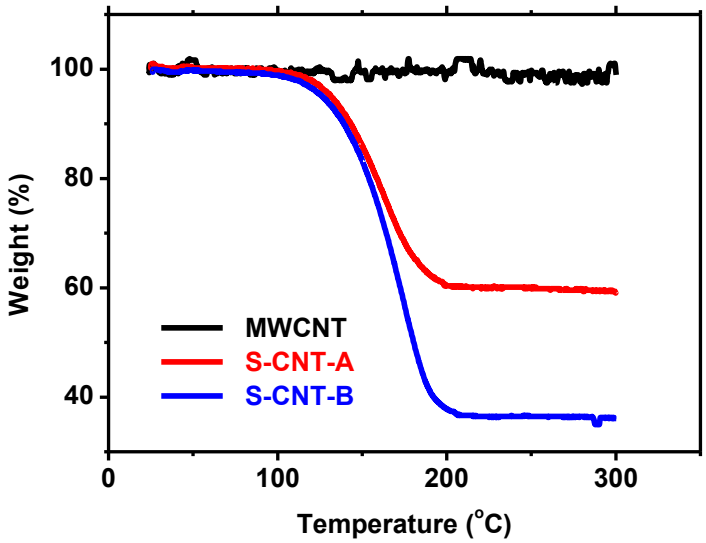


**Fig. S1.** Thermogravimetric analysis of pristine MWCNTs and the self-weaving sulfur–MWCNT composites in flowing air with a heating rate of 10 °C/min, showing 40 wt. % sulfur in the S–CNT–A cathode and 63 wt. % sulfur in the S–CNT–B cathode.

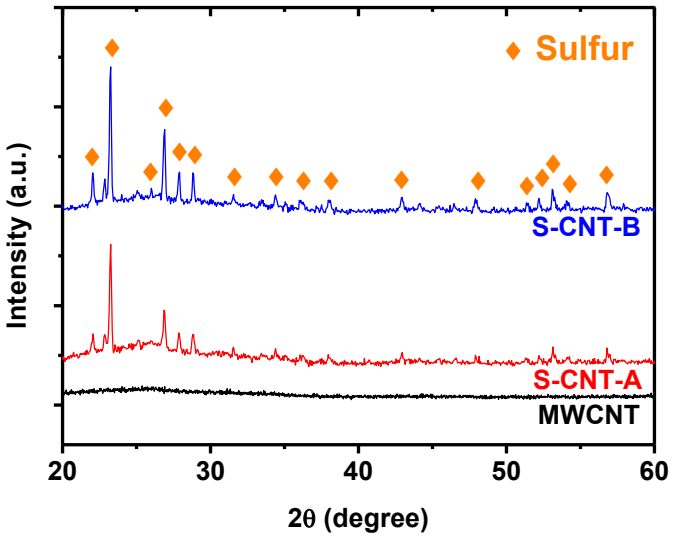


**Fig. S2.** XRD patterns of pristine MWCNTs and the self-weaving sulfur–MWCNT composite cathodes. While the pristine MWCNTs show an amorphous structure, the sulfur in the composite cathodes is well-crystalline.

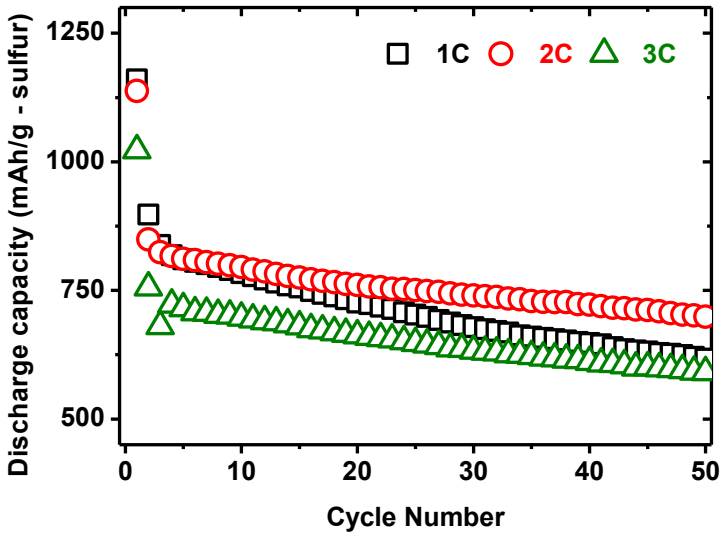


**Fig. S3.** High-rate cycle performance of pure sulfur cathodes (carbon : sulfur = 3 : 2 by wt.) at 1C, 2C, and 3C rates. A severe capacity drop occurs after the first cycle.

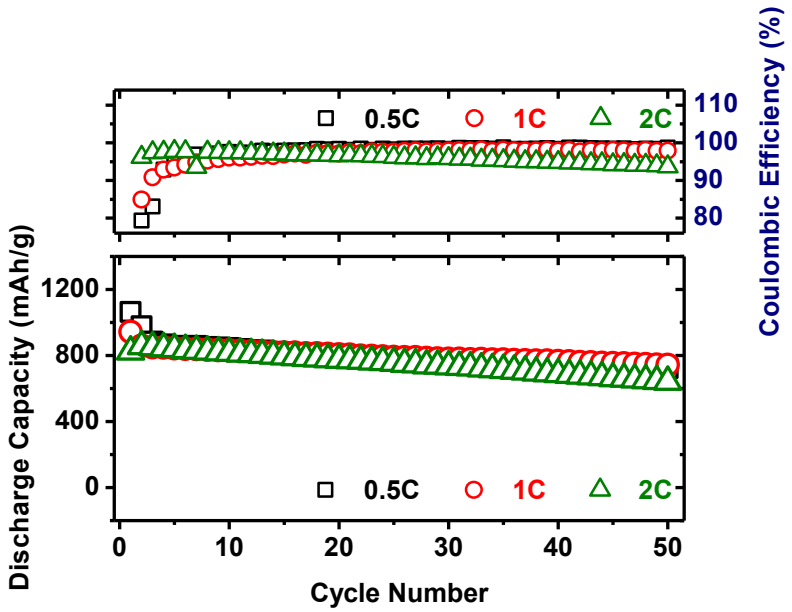


**Fig. S4.** High-rate cycle performance (bottom half) and Coulombic efficiency (upper half) of the S–CNT–B cathode at 0.5C, 1C, and 2C rates.