Supporting Information

Multifunctional Vanadium Nitride@N-Doped Carbon Composite for Kinetic-Enhanced Lithium-Sulfur Batteries

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Fig. S1 TEM images of the V_2O_5 precursor after ppy coating.



Fig. S2 TEM images of the carbon nanofibers.



Fig. S3 TGA curves of the VN@C composite and VN.



Fig. S4 (a) XPS survey spectrum of VN@C and the high-resolution spectra of (b) V 2p (c) N 1s and (d) C 1s.



Fig. S5 CV curves of (a) VN@C/S and (b) C/S cathodes at different sweep rates.

Fig. S6 (a) Nyquist plots of VN@C/S and C/S. (b) The plots of Z' vs square root of frequency.

Fig. S7 Cycling performance of VN@C without sulfur loading at 0.5 C.

Fig. S8 (a-c) TEM images of VN@C after cycling. (d) The XRD patterns of VN@C before and after cycling.

Fig. S9 Charge-discharge profiles of C/S electrodes at 0.5 C.

Fig. S10 The charge-discharge profiles of the rate performance.

Fig. S11 Cycle stability and columbic efficiency of C/S at 1 C.

Fig. S12 (a) Cycling performance of VN@C/S and C/S in LiNO₃ free electrolyte at 1 C. (b) The corresponding columbic efficiency.