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Support information

Promoting the conversion of S and Li_2S by Co_3O_4 @NC additive in all-solid-state Li-S batteries

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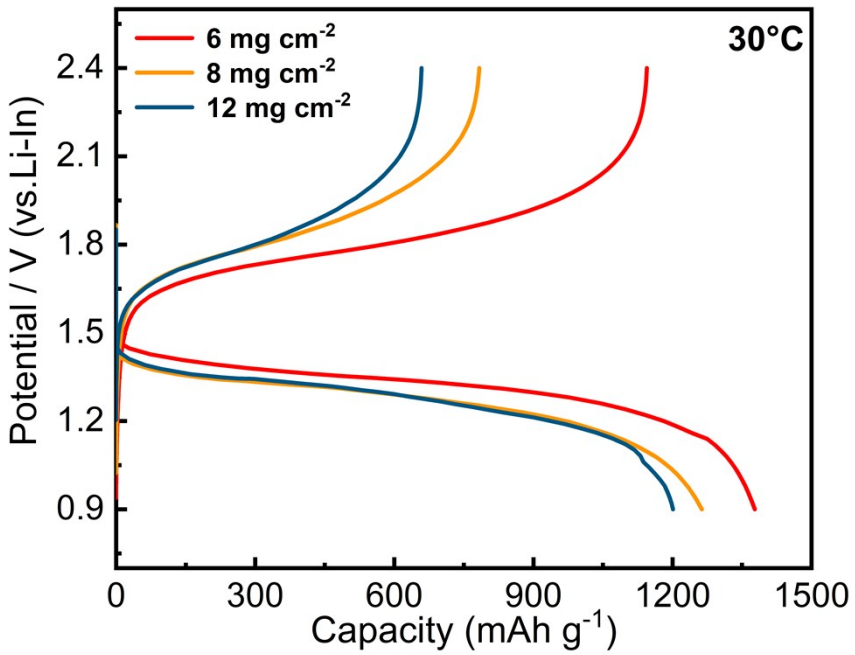

Fig. S1 The 1st cycle of charge-discharge curves of S-CoNC-LPS cathode at different sulfur loadings (tested at 0.2 mA cm^{-2} and 30 °C).

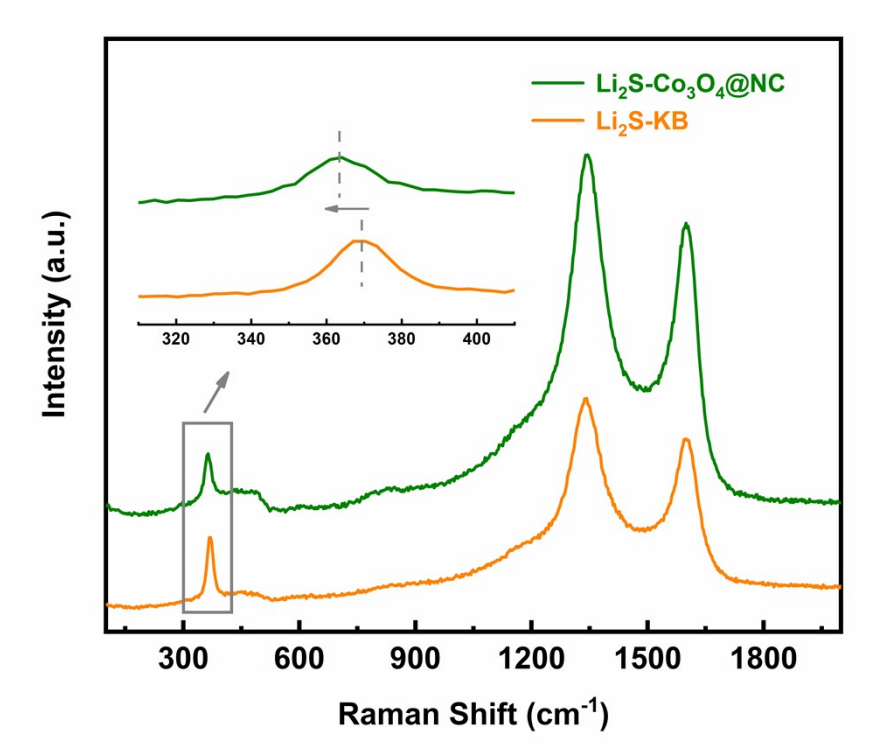

Fig. S2 Raman spectra of Li_2S-Co_3O_4@NC and Li_2S-KB.

Table S1. The electrochemical performance of the as-prepared S-CoNC-LPS is compared with the previously reported studies.

Active material	Content (wt%)	Areal loading (mg cm^{-2})	Test conditions	Cut-off voltage(V) vs. Li	Initial discharge capacity (mAh g^{-1})	Number of cycle	capacity retention (%)	Ref.
S	50	4	0.2 mA cm^{-2} at 30°C	1.5-3.0	1313	100	88.9	This work
S	50	12	0.2 mA cm^{-2} at 60°C	1.5-3.0	1343	20	86.4	This work
S	45	/	0.05C at RT	1.5-3.0	791	60	~100	[1]
$Te_{0.05}S_{0.95}$ @pPAN @$Li_7P_3S_{11}$	~10	~1.04-1.3	0.3C at RT	1.0-3.0	1173.1 (2^{nd} cycle)	500	56.7	[2]
S	40	2.5	1.3 mA cm^{-2} at 25°C	1.1-3.6	1488	100	/	[3]
SeS_2	40	~1.6	0.4 A g^{-1} at 25°C (0.2 A g^{-1} for the initial 5 cycles)	1.5-3.0	1116 (5^{th} cycle)	100	83.8	[4]
S	50	~1.9	0.64 mA cm^{-2} at 25°C	1.1-3.1	1288	1	/	[5]
rGO@S	12.3	0.43	1C at 60°C	1.5-2.8	930	750	89.2	[6]
$Se_{0.05}S_{0.95}$ @pPAN	20	1	167.5 mA g^{-1} at RT	1.0-3.0	801 (2^{nd} cycle)	150	81	[7]
S@BP2000	29.2	0.58	3C at RT	1.4-3.0	991.4	1200	99.4	[8]
S-FeS_2	30	1	83.5 mA g^{-1} at 20°C	1.3-3.1	approaching 1200 (20^{th} cycle)	20	/	[9]
S	38.5	4.5	0.1C at 60°C	1.1-3.1	957.3	50	＞90	[10]
S	40	~3.15	1st-3rd:C/20 4th-200th:C/10 at RT	1.3-3.3	1166	220	/	[11]
S	20	~0.8	0.5C at RT	1.4-3.0	1252	1000	100	[12]

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