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Supporting Information

Carbon Nanotube-Modified Nickel Hydroxide as Cathode Materials for High-Performance Li-S Batteries

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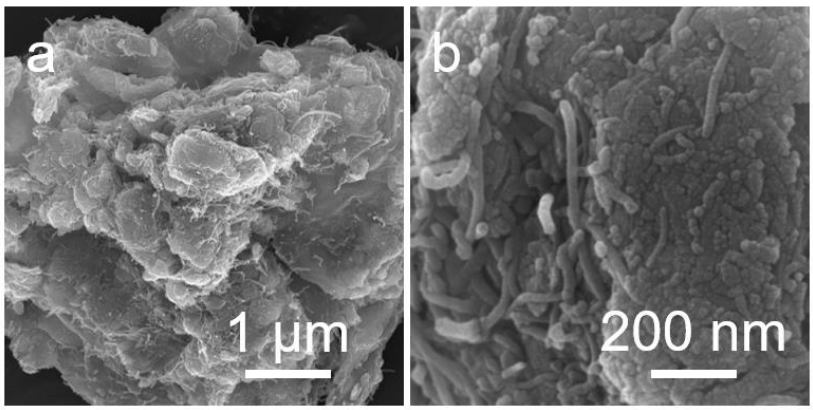

Figure S1. SEM images of S/Ni(OH)$_2$@CNT.

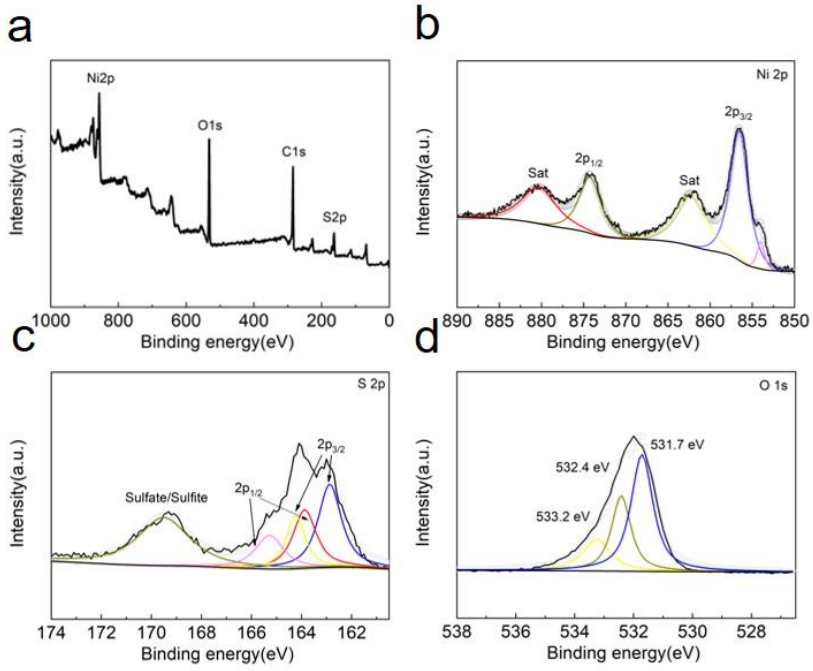

Figure S2. (**a**) XPS survey and high-resolution (**b**) Ni 2p, (**c**) S 2p, and (**d**) O 1s spectra of S/Ni(OH)$_2$@CNT.

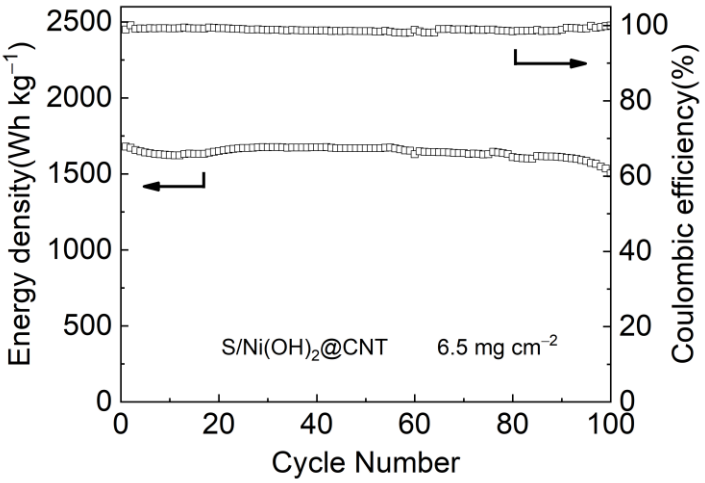

Figure S3. Energy density of S/Ni(OH)$_2$@CNT cathode with high sulfur loading of 6.5 mg cm^{-2} at 0.2 C.

Table S1. Sulfur loading comparison of S/Ni(OH)$_2$@CNT with previously reported S/C cathodes.

Samples	Weight Ratio (S:Samples)	Sulfur Content (%)	Ref.
DIB@CNT	3:1	67.0	[1]
CNT/ CPO/CPNC-1	7:3	70.0	[2]
CNTs	5:1	78.0	[3]
CNT@UIO66-SH	3:1	60.0	[4]
CCB	3:2	59.3	[5]
MgAl-LDH@CNT	9:11	55.0	[6]
CNTs/(Ni-P)	7:3	70.8	[7]
Ni(OH)$_2$@CNT	**3:1**	**74.6**	**This work**

Table S2. Performance comparison among different C-based sulfur electrodes.

Samples	Initial Capacity (mAh g^{-1})/rate	Areal Capacity (mAh cm^{-2})	Cycle	S Loading (mg cm^{-2})	Ref.
NSHC/S	1586/0.1C	4.07	100	6.72	[8]
S-C@S	958/0.1C	1.72	200	2.9	[9]
CP/Fe–N-GMOC/S	1473/0.2C	5	120	6	[10]
S@SPPC	1386/0.1C	4.4	150	4.8	[11]
S/3DOM ZnO	1110/0.2C	4.5	100	5	[12]
S/Ni(OH)$_2$@CNT	**1146/0.2C**	**4.6**	**100**	**6.5**	**This work**

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