

Supporting Information

Two-Dimensional Imine-Based Covalent-Organic-Framework Derived Nitrogen-Doped Porous Carbon Nanosheets for High- Performance Lithium-Sulfur Batteries

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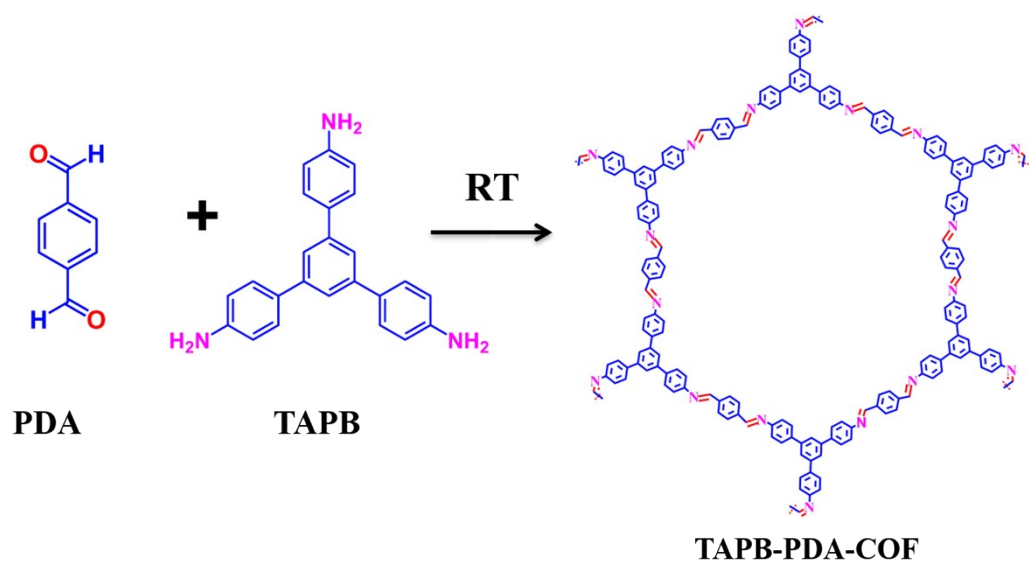


Fig. S1. Construction of the TAPB-PDA-COF.

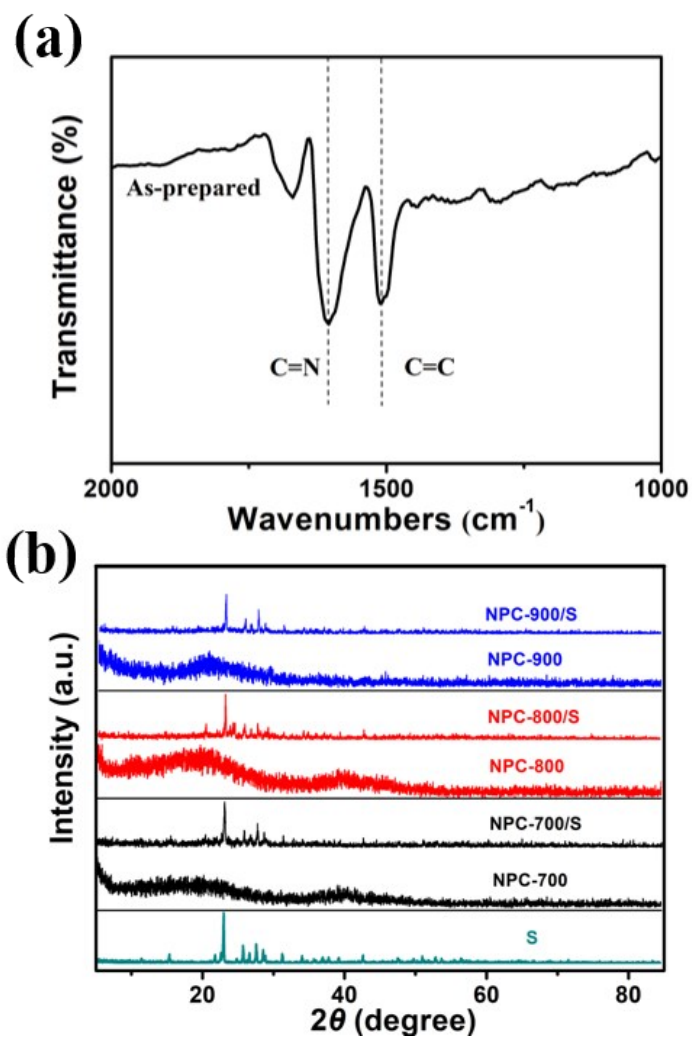


Fig. S2. (a) The FT-IR spectra of TAPB-PDA-COF. (b) XRD patterns of sulfur, NPC-700, NPC-700/S, NPC-800, NPC-800/S, NPC-900 and NPC-900/S.

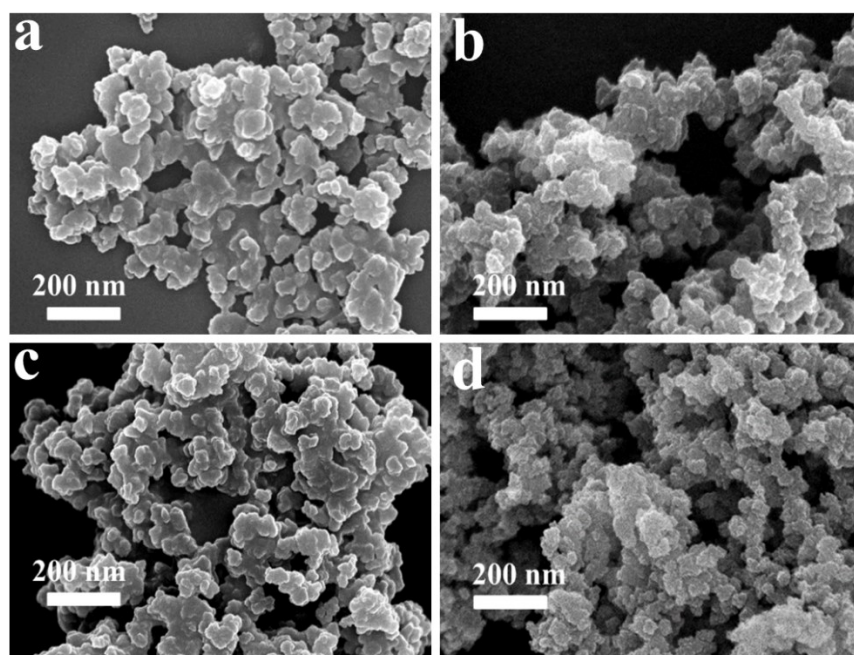


Fig. S3. SEM images of (a) NPC-700, (b) NPC-700/S, (c) NPC-900 and (d) NPC-900/S.

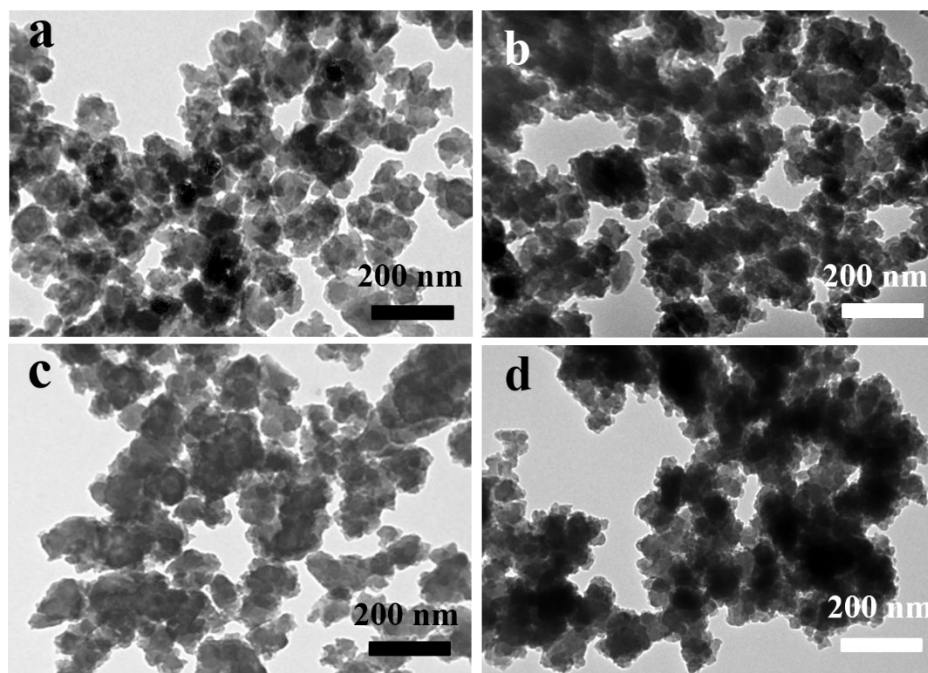


Fig. S4. TEM images of (a) NPC-700, (b) NPC-700/S, (c) NPC-900 and (d) NPC-900/S.

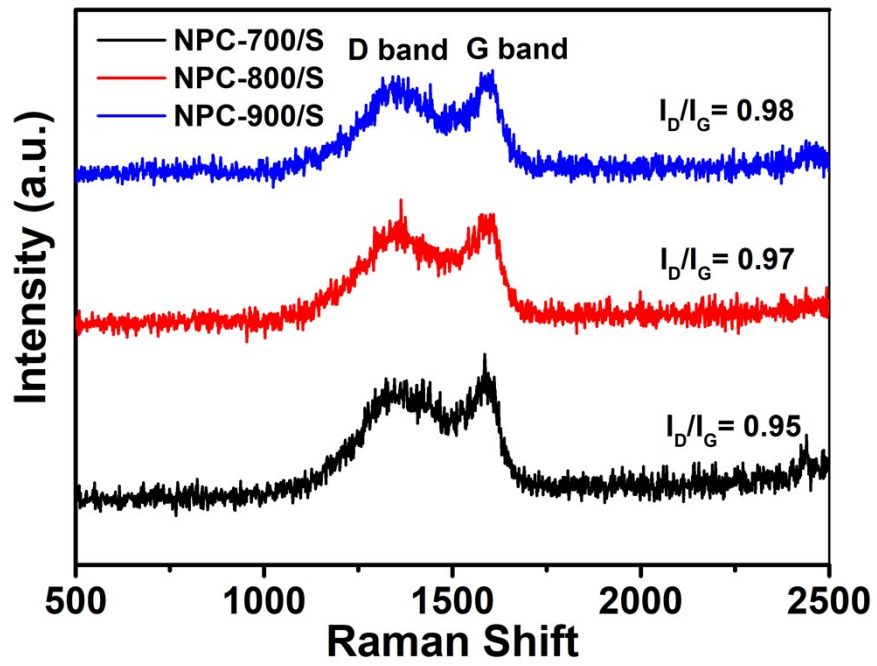


Fig. S5. Raman spectra of NPC-700/S, NPC-800/S, and NPC-900/S.

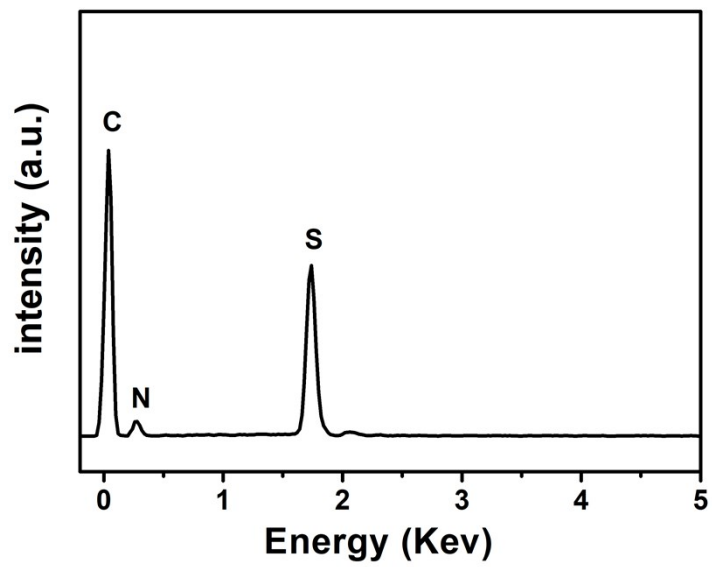


Fig. S6. EDS spectra of NPC-800/S.

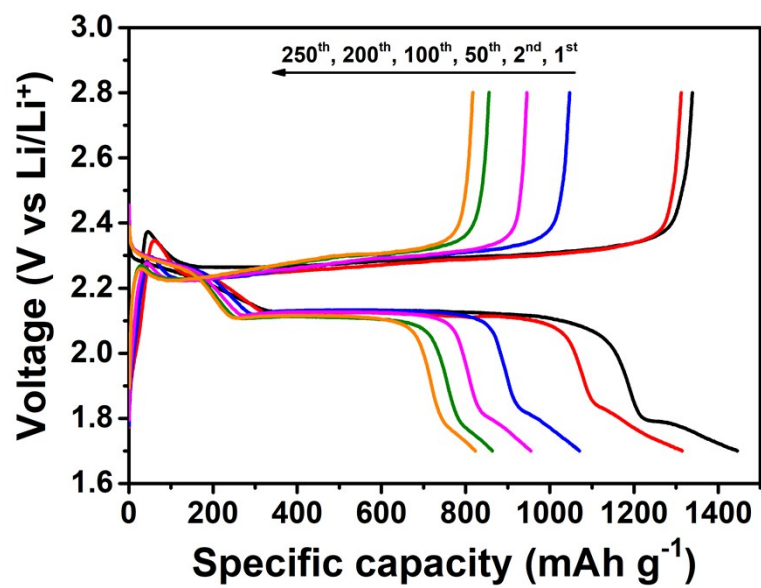


Fig. S7. Discharge/charge curves of NPC-800/S after different cycles.

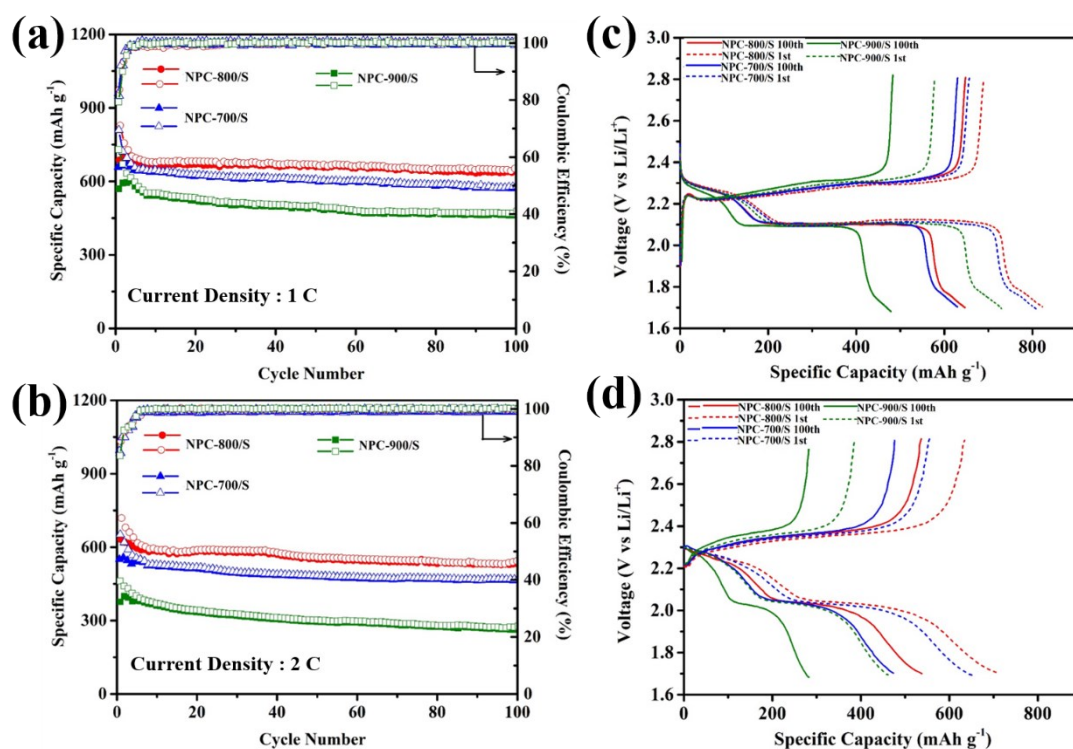


Fig. S8. Cycling performances of NPC-700/S, NPC-800/S and NPC-900/S under current rates of (a) 1 C and (b) 2 C. Discharge/charge curves of NPC-700/S, NPC-800/S, and NPC-900/S for the first cycle and the 100th cycle under current rates of (c) 1 C and (d) 2 C.

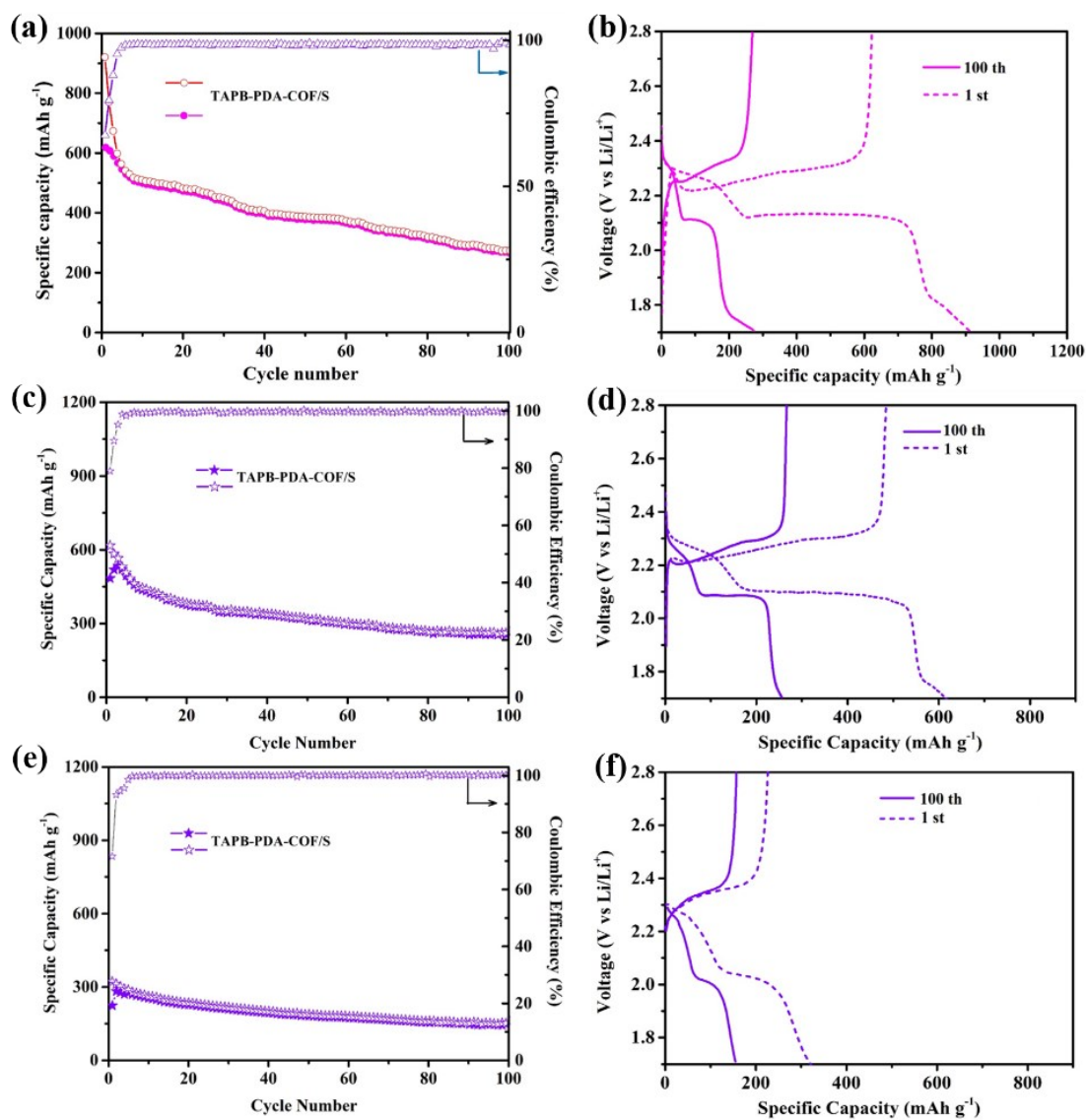


Fig. S9. (a) Cycling performance and (b) charge/discharge profiles for the first and 100th cycles of TAPB-PDA-COF/S under the current rate of 0.1 C. (c) Cycling performance and (d) charge/discharge profiles for the first and 100th cycles of TAPB-PDA-COF/S under the current rate of 1 C. (e) Cycling performance and (f) charge/discharge profiles for the first and 100th cycles of TAPB-PDA-COF/S under the current rate of 2 C.

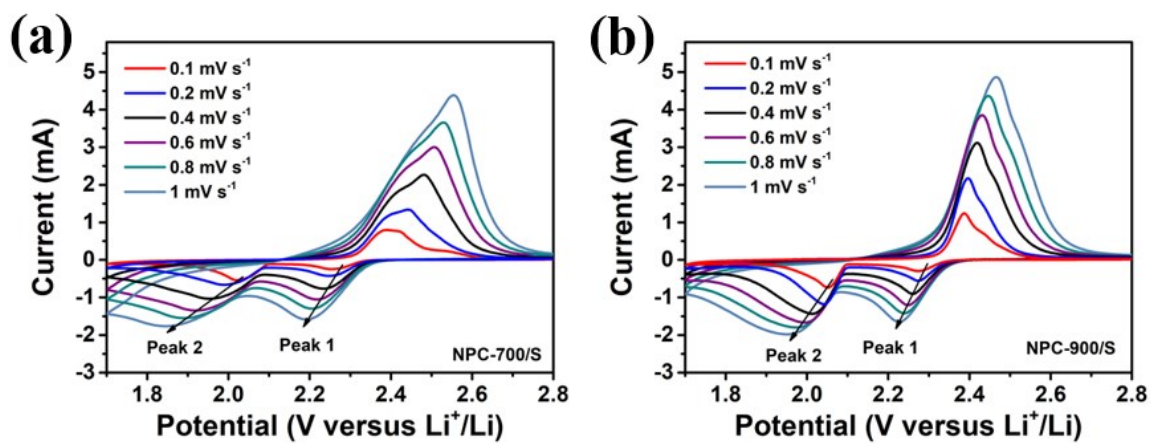


Fig. S10. CV curves of (a) NPC-700/S and (b) NPC-900/S electrode at different scan rate ranging from 0.1 to 1 mV s⁻¹.

Table S1 | Electrochemical property comparison between the NPC/S electrode of this work and carbon related materials with S electrodes from previous relative reports. (IRC: initial reversible capacity, mAh g⁻¹; RRC: retained reversible capacity, mAh g⁻¹; CN: cycle number; CD: current density, mA g⁻¹; V: voltage range, V)

Composite	Morphology	IRC/CD	RRC/CN/CD	V	Ref
N-doped C	nanosheet	1398/100	762/10/500	1.7-2.8	This work
N-doped C	sphere	1660/50	1000/20/50	1.0-3.0	[1]
N-doped C	porous	1598/30	670/200/1000	1.5-3.0	[2]
N-doped C	sphere	1200/200	706/400/1000	1.9-2.7	[3]
N-doped C	coralloid	1166/100	607/200/800	1.5-3.0	[4]
Carbon	sheets	1360/100	493/1000/500	1.8-2.8	[5]
Carbon	sheet	1344/1000	1017/50/1000	1.8-2.6	[6]
Carbon	nanotube	1090/500	818/400/500	1.5-2.8	[7]
C nanotube Particles	nanotube	1544/500	901/100/500	1.5-2.8	[8]
N-doped C on graphene	sheet	1332/100	608/300/1000	1.7-2.8	[9]
N-doped C with graphene	sphere	1360/200	600/200/2000	1.5-2.8	[10]
Graphene/reduced-graphene oxide	network	1000/200	645/350/200	1.5-2.8	[11]
N/O-doped C	flower-like	1320/100	1027/100/200	1.85-2.65	[12]
CNT-N-doped C	thin film	1235/50	926/200/1000	1.8-2.5	[13]
N-doped C	sphere	1134/100	969/30/500	1.0-3.0	[14]
N,S-doped C	nanorod	1370/200	1080/100/500	1.8-3.0	[15]

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