Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supporting Information

Mechanism and Thermal Effects of Phytic Acid-Assisted Porous Carbon Sheets for High-Performance Lithium-Sulfur Batteries

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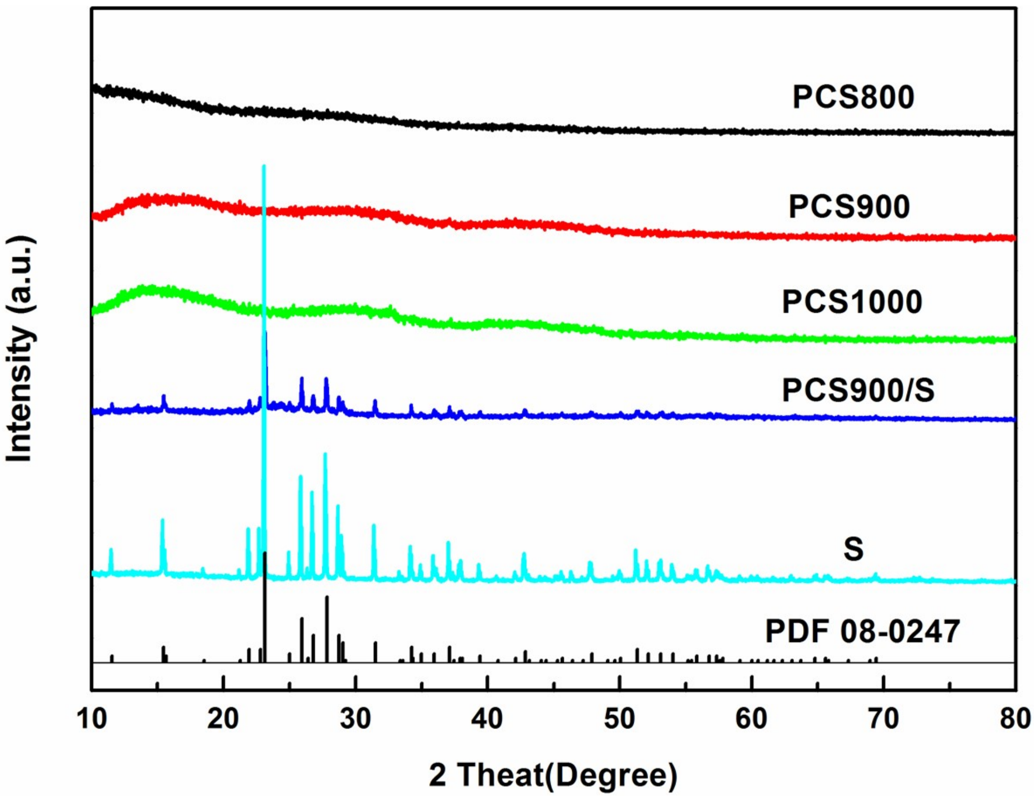

Figure S1. XRD patterns of PCS800, PCS900, PCS1000, PCS900/S and sulfur samples.

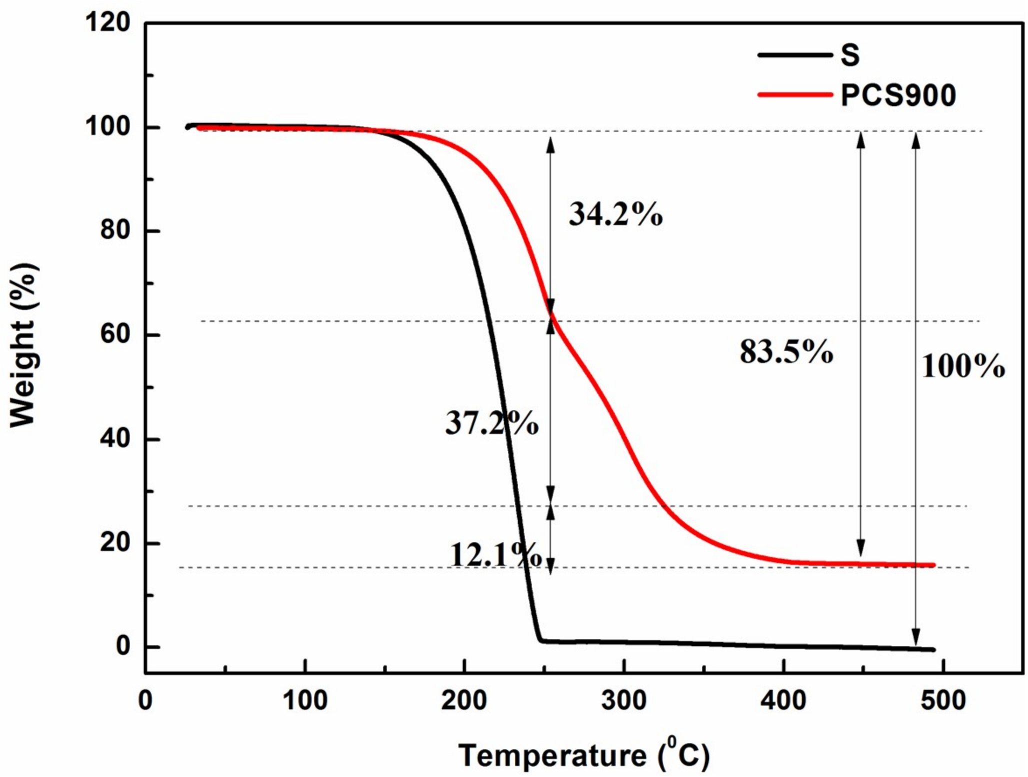

Figure S2. TGA analysis of PCS900/S.

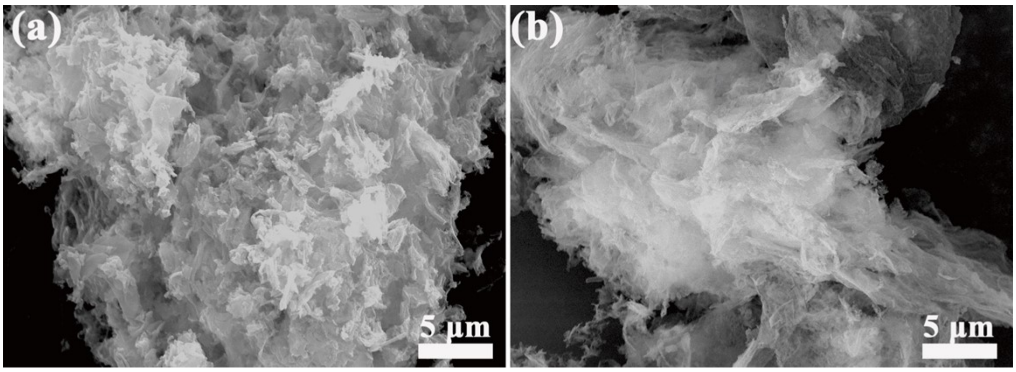

Figure S3. The morphology of PCSs obtained with melamine to phytic acid ratios: (a) 4:2, and (b) 4:6.

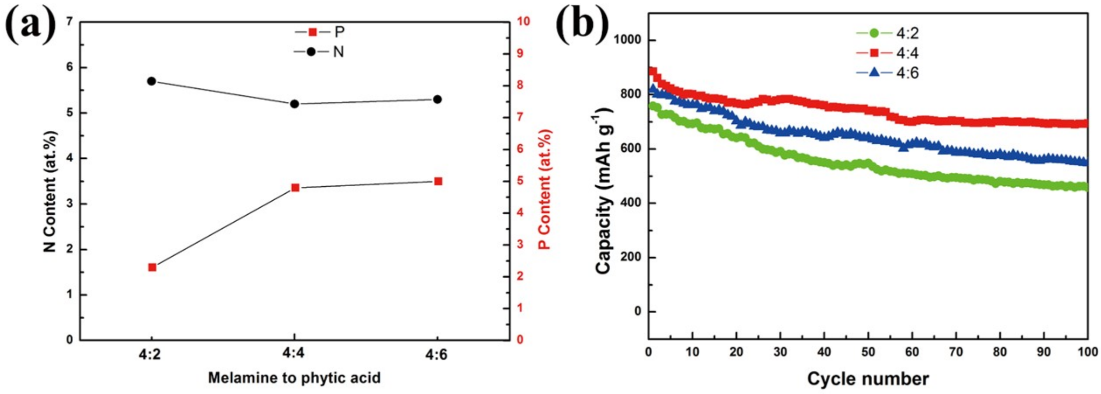

Figure S4. The P and O contents (b) of PCSs (a), and the cycling performance of different melamine to phytic acid ratios: 4:2, 4:4 and (b) 4:6

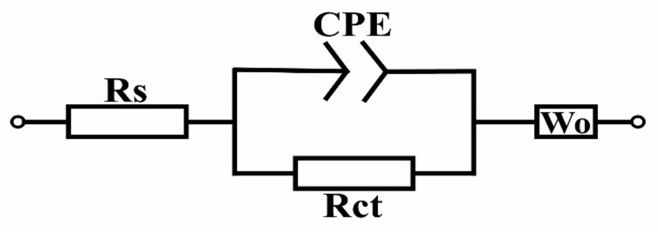

Figure S5. The equivalent circuit models of PCS800/S, PCS900/S, and PCS1000/S cathodes.

Table S1. Equivalent circuit fitting results of PCS800/S, PCS900/S, and PCS1000/S cathodes.

Sample	$R_s(\Omega)$	$R_{ct}(\Omega)$
PCS800/S	12.4	250.2
PCS900/S	4.1	16.4
PCS1000/S	4.1	21.5

Table S2. Comparison of performance with based on carbon sheets of Li–S batteries in this work

Samples	Sulfur content (wt%)	Sulfur loading (mg cm^{-2})	Rate (C)	Cycle number	Retained capacity (mA h g^{-1})	Average capacity decay rates (%/cycle)	High-loading performance			Ref.
							Loading (mg cm^{-2})	Cycle No.	Capacity (mAh g^{-1})	
shaddock peel carbon sheets	70	1.2	0.1 1	100 100	779 476	0.34 0.28	-	-	-	[1]
Amino-functionalized rGO	60	-	0.5	350	650	0.06	-	-	-	[2]
Graphite oxides	66	-	0.1	50	954	0.092	-	-	-	[3]
Sulfur Intercalation of Graphene oxide	32	1	0.06	220	880	0.033	-	-	-	[4]
Microporous carbon nanosheets	70	0.7-1.0	0.5	500	612	0.08	2.5	30	900	[5]
Corncobs-derived carbon sheets	44	-	0.03	50	634	1.2	-	-	-	[6]
Graphene-Backboned Mesoporous Carbon Nanosheets	64	0.4-0.6	1	400	510	0.054	-	-	-	[7]
Corn stalk-derived carbon sheet	52	1	0.2	100	743	0.23	-	-	-	[8]
exfoliated graphene sheets	70	0.56	0.06 3	60 200	899 290	0.14 0.10	-	-	-	[9]
Carbon aerogel/graphene/S	59	1.2	0.1 1	100 500	471 341	0.69 0.18	-	-	-	[10]
N-doped hierarchical porous carbon	70	1.5	0.5 1	100 300	759 577	0.12 0.11	7.1	50	700	[11]
N-porous carbon	50	1	0.1 0.5	250 100	452 400	0.23 0.34	-	-	-	[12]
N-Doped Hierarchical Porous Carbon−Carbon Nanotube	63	1.5	1	600	407	0.066	-	-	-	[13]
Nitrogen-Enriched Mesoporous Carbons	60	-	1	100	620	0.31	-	-	-	[14]
Phytic Acid -derived porous carbon sheets	**83**	**1.5**	**0.1 0.5 1**	**200 200 500**	**724 651 446**	**0.19 0.16 0.079**	**2.5 4.2**	**100 100**	**671 508**	**This work**

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