Supporting Information

Sulfur-doped porous carbon nanosheets as an advanced electrode material for supercapacitor

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Table S1. The percentage of given elements in different samples obtained from XPS data.

Sample	Atomic percentage (at%)				Weight percentage (wt%)		
	C	O	S	C/O	C	O	S
S-PCNS	92.09	4.02	3.89	22.9	85.41	4.97	9.62
S-AC	89.08	7.45	3.47	12.0	82.28	9.17	8.55

Table S2. Textural properties of S-PCNS and S-AC.

	BET surface area (m^2 g^{-1})	Micropore area (m^2 g^{-1})	External surface area (m^2 g^{-1})	Total pore volume (cm^3 g^{-1})	Micropore volume (cm^3 g^{-1})	Average pore diameter (nm)
S-PCNS	2005	585	1420	1.21	0.33	2.5
S-AC	2172	663	1509	1.34	0.38	2.7

Table S3. Comparison of specific capacitances of some sulfur-doped carbons and graphene materials in the literature.

Material	electrolyte	C_s (F g^{-1})	Ref.
S-PCNS	6 M KOH	312	This work
N, S-doped activated hydrothermal carbon derived from human hair and glucose	6 M KOH	264	S1
Sulfur-containing activated carbons	LiCl	~200	S2
S-doped micro/mesoporous carbon-graphene composite	6 M KOH	109	S3
Nitrogen and sulfur co-doped ordered mesoporous carbon	2 M KOH	≤ 200	S4
S-doped carbon/graphene composite	1 M H_2SO_4	178	S5
Aromatic sulfur mediated mesoporous carbon	6 M KOH	191	S6
Graphene-based macro- and mesoporous frameworks	1 M H_2SO_4	226	S7
Graphene-CNT networks	6 M KOH	180	S8
Few layer graphene and carbon nanotube foam architectures	6 M KOH	286	S9
Hybrid graphene/CNTs	30 wt % KOH	187	S10
Three-dimensional graphene hydrogel	1 M H_2SO_4	~190	S11
Three-dimensional graphene gel	5 M KOH	152	S12
Mesoporous graphene nanoballs	1 M H_2SO_4	206	S13
Three-dimensional hierarchical porous graphene-like networks	6 M KOH	305	S14

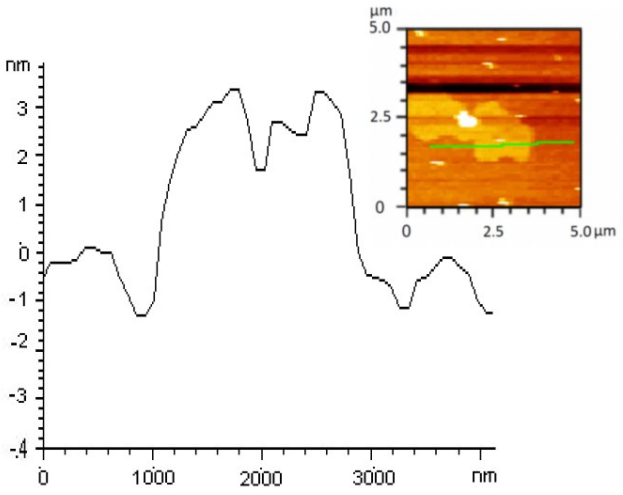

Fig. S1 AFM image of S-PCNS.

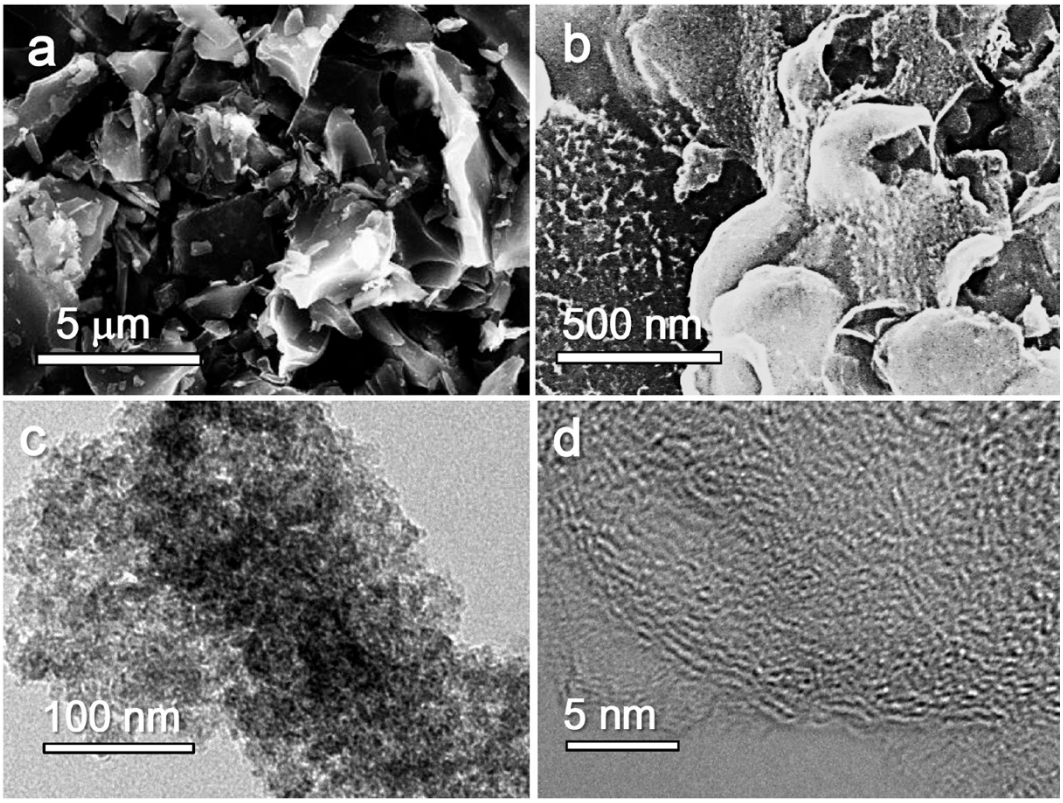

Fig. S2 SEM (a, b) and TEM (c, d) images of S-AC.

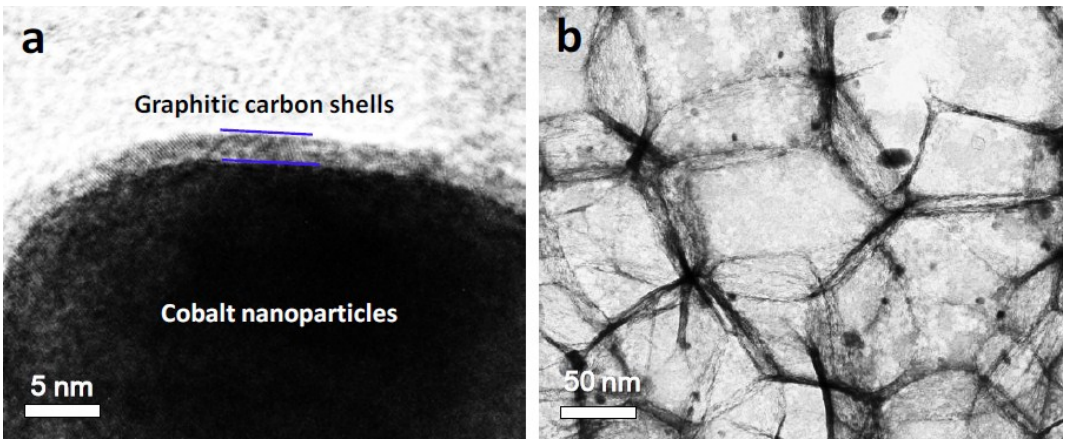

Fig. S3 (a) TEM image of cobalt ion-impregnated sulfonic acid ion exchange resin after pyrolysis. (b) TEM image of cobalt ion-impregnated sulfonic acid ion exchange resin after pyrolysis followed by acid leaching.

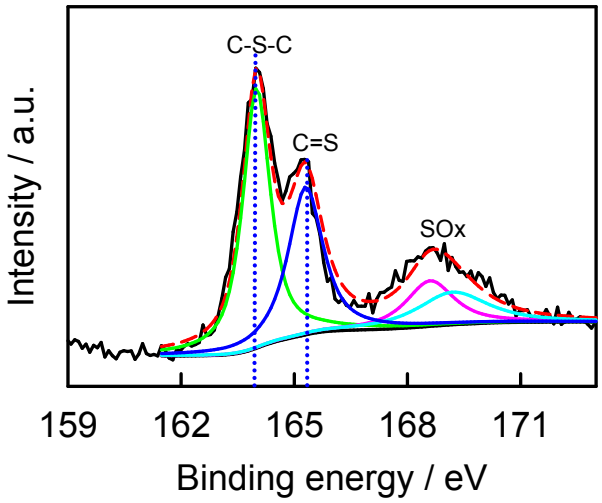

Fig. S4 High resolution XPS spectrum of S2p peak for S-AC.

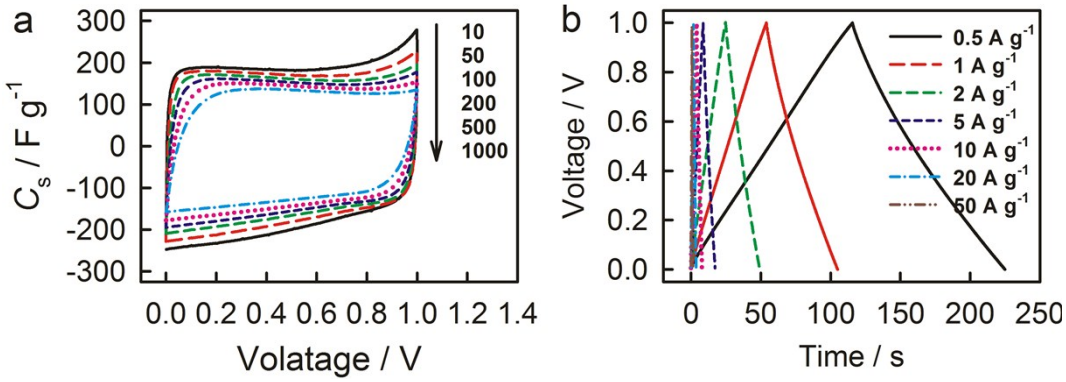

Fig. S5 (a) Cyclic voltammograms of S-AC in 6 M KOH aqueous solution at different scan rates. (b) Galvanostatic charge-discharge curves of S-AC at different current densities.

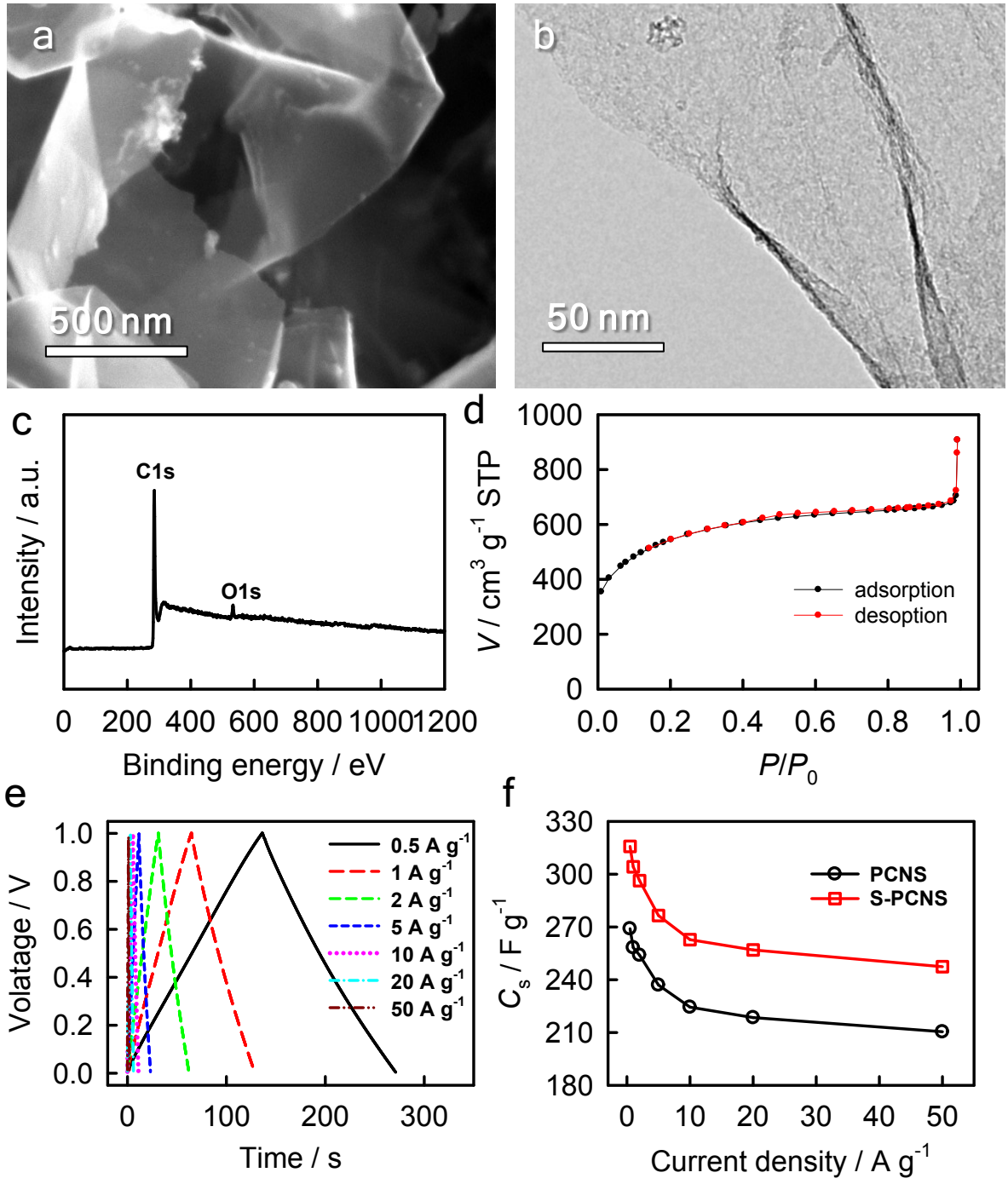

Fig. S6 SEM image (a), TEM image (b), XPS spectrum (c), Nitrogen adsorption/desorption isotherms (d), galvanostatic charge-discharge curves (e), and specific capacitance (f) of PCNS.

Reference

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