

Fig. S1. Enlarged SEM image of the surface of raw pigskin.

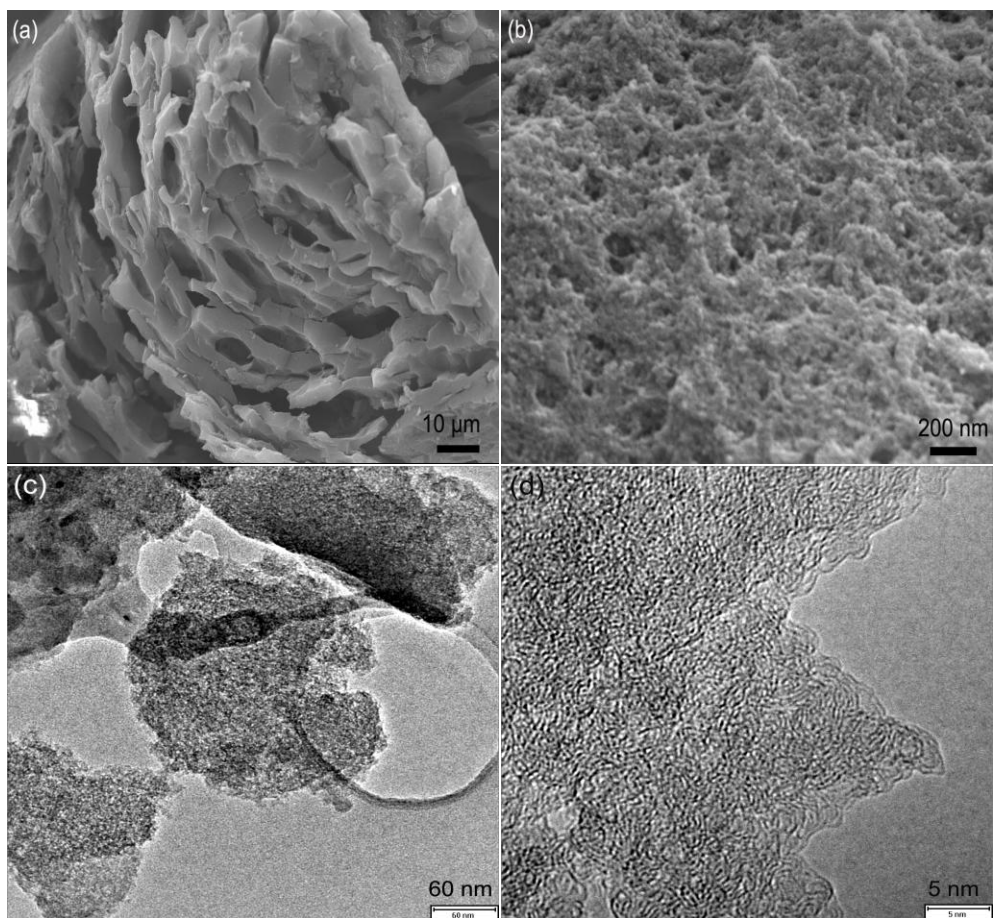


Fig. S2. SEM (a, b) and HRTEM images (c, d) of pigskin-derived carbon activated at 800 °C.

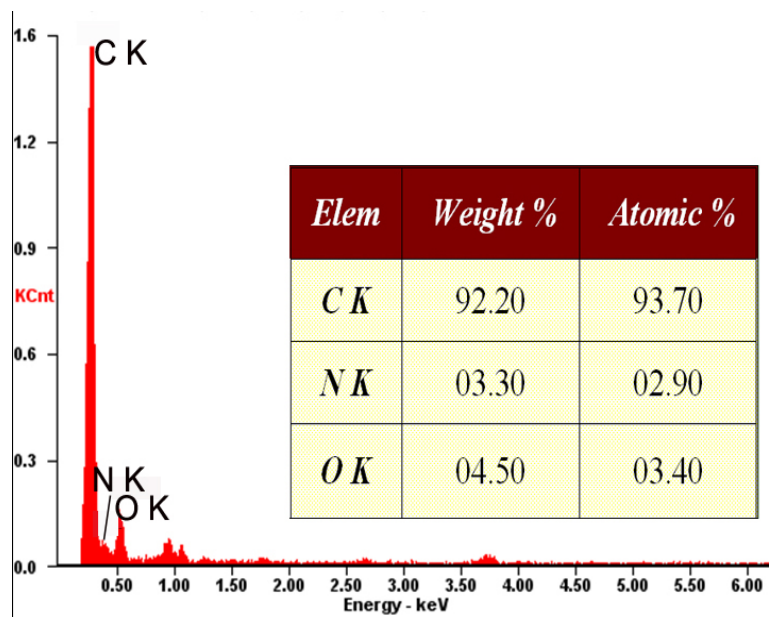


Fig. S3. EDX spectra of pigskin-derived carbon activated at 600 °C.

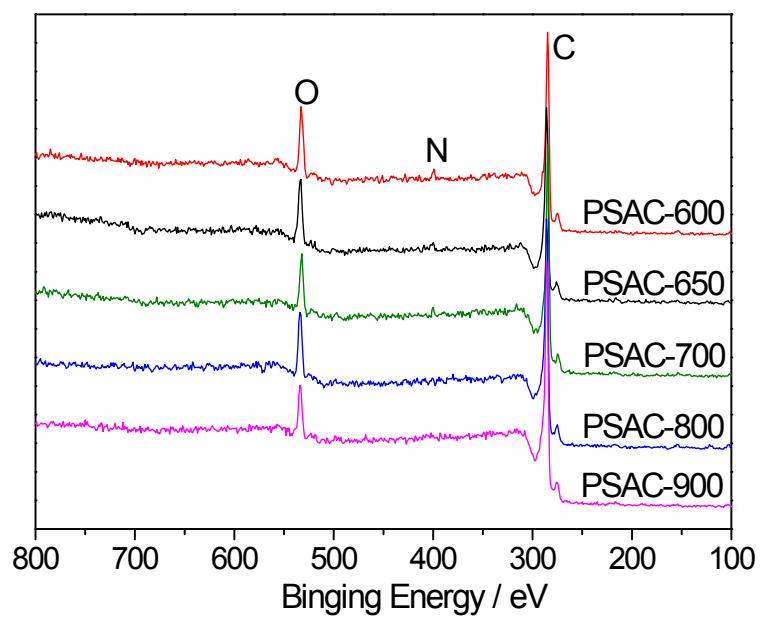


Fig. S4. XPS spectra of pigskin-derived carbons activated at different temperatures.

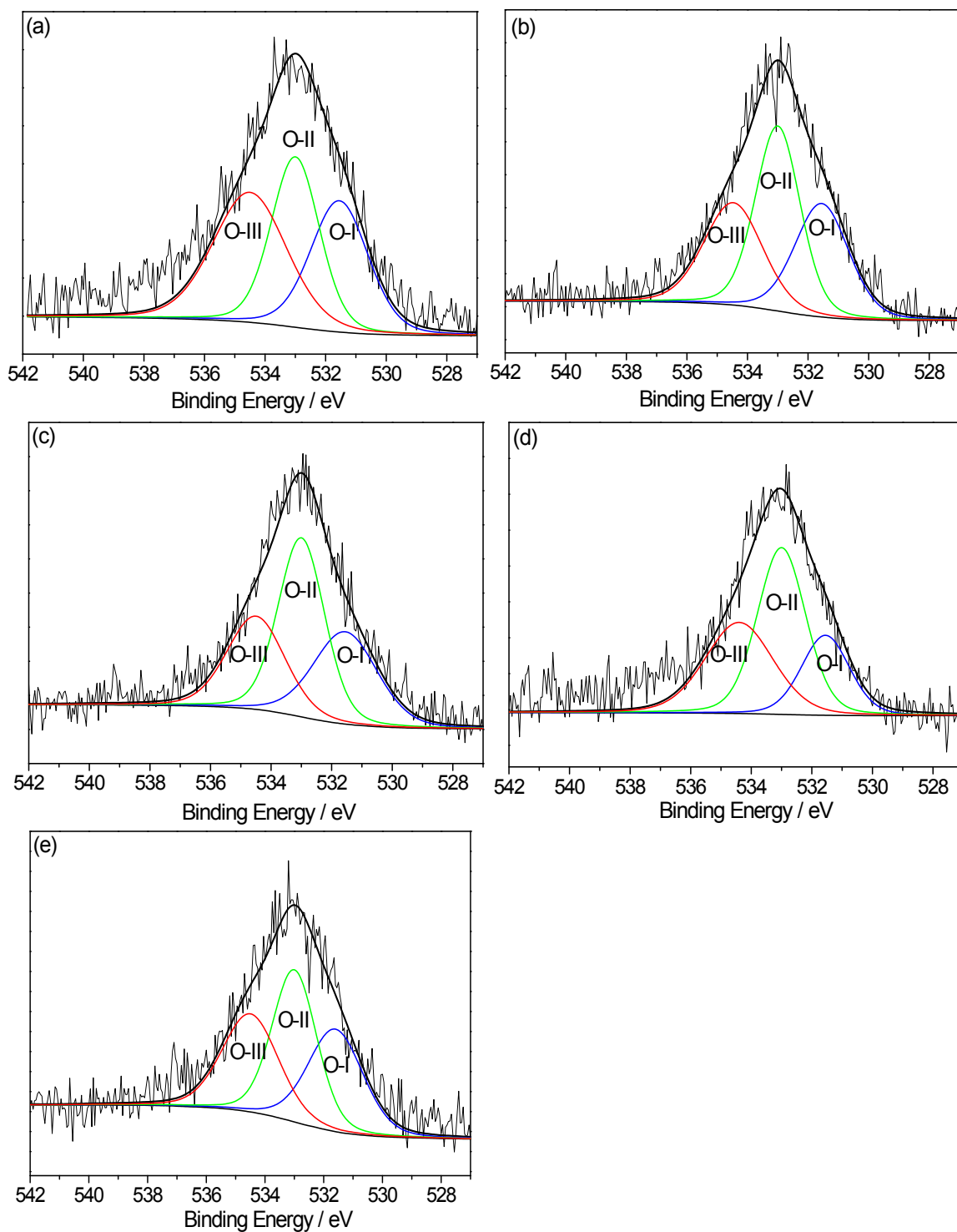


Fig. S5. O1s XPS spectra of pigskin-derived carbon sheets activated at different temperatures: PSAC-600 (a); PSAC-650 (b); PSAC-700 (c); PSAC-800 (d); PSAC-900 (e).

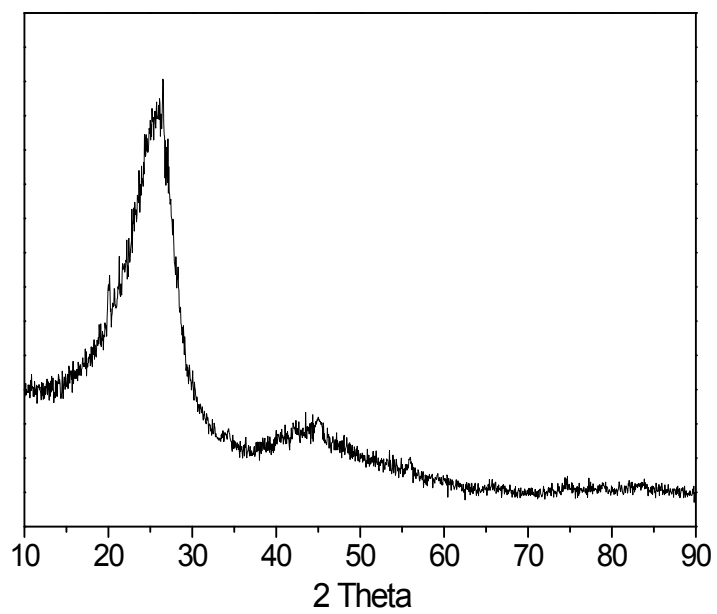


Fig. S6. XRD pattern of pigskin-derived carbon carbonized at 600 °C without KOH activation.

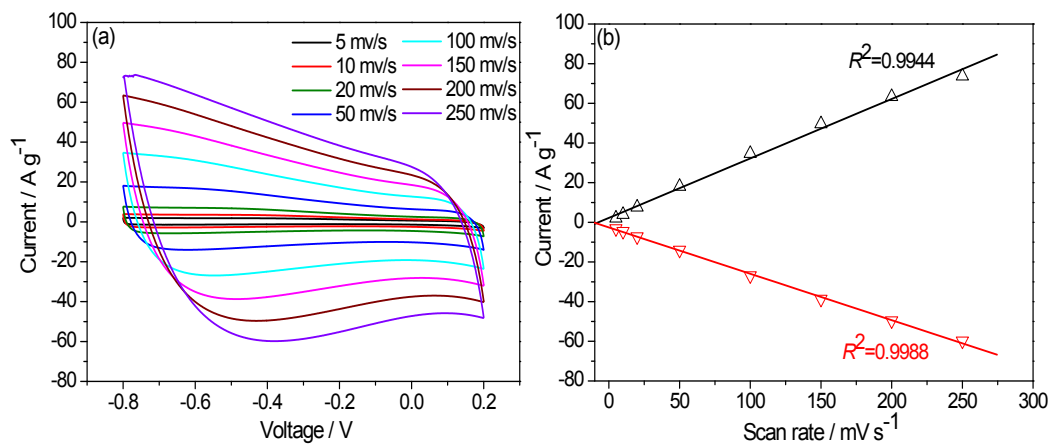


Fig. S7. Rate performance of pigskin-derived carbon sheets activated at 800 °C in 6 M KOH. (a) cyclic voltammety curves of PSAC-800 at various scan rates; (b) the relationship between the peak current and the scan rate for PSAC-800..

Table S1 Pore structure parameters and capacitance of pigskin-derived carbon sheets activated at different temperatures.

Sample	S_{BET} ($\text{m}^2 \text{g}^{-1}$)	$S_{\text{micro}}^{\text{a}}$ ($\text{m}^2 \text{g}^{-1}$)	$S_{0.6 < \text{micro} < 0.9 \text{ nm}}^{\text{b}}$ ($\text{m}^2 \text{g}^{-1}$)	$S_{\text{meso}}^{\text{c}}$ ($\text{m}^2 \text{g}^{-1}$)	$V_{\text{micro}}^{\text{d}}$ ($\text{cm}^3 \text{g}^{-1}$)	$V_{\text{meso}}^{\text{e}}$ ($\text{cm}^3 \text{g}^{-1}$)	$V_{\text{total}}^{\text{f}}$ ($\text{cm}^3 \text{g}^{-1}$)	$D_{\text{ave}}^{\text{g}}$ (nm)	C^{h} (F g^{-1})
PSAC-600	2209	1574	811	187	0.79	0.24	1.20	2.17	547
PSAC-650	2306	1556	769	205	0.76	0.26	1.26	2.18	337
PSAC-700	3147	1320	227	621	0.68	0.92	1.85	2.39	347
PSAC-800	3337	1283	267	764	0.65	1.17	2.06	2.51	288
PSAC-900	2713	1072	211	661	0.52	1.07	1.81	2.67	225

^a Surface area of micropores calculated by DFT method; ^b surface area of micropores between 0.6 and 0.9 nm by DFT method; ^c surface area of mesopores by DFT method; ^d pore volume of micropores by DFT method; ^e pore volume of mesopores by DFT method; ^f total pore volume; ^g average pore diameter; ^h capacitance at current load of 0.1 A g^{-1} in 6 M KOH.

Table S2 Elemental analysis and surface elemental composition of pigskin-derived carbon sheets activated at different temperatures.

Samples	Elemental analysis (wt%)				XPS (at%)				at% of total N1s				at% of total O1s		
	N	C	H	S	N	C	O	S	N-6	N-5	N-Q	N-X	O-I	O-II	O-III
PSAC-600	3.77	84.61	1.73	0.047	2.96	84.77	12.28	-	0.82	1.09	0.62	0.43	3.67	3.98	4.63
PSAC-650	3.07	84.19	1.10	0.009	2.45	85.83	11.72	-	0.59	0.73	0.61	0.52	3.42	4.76	3.54
PSAC-700	1.44	92.92	0.92	0.079	1.42	88.07	10.52	-	0.37	0.35	0.33	0.37	3.16	4.46	2.89
PSAC-800	0.80	95.73	0.68	0.120	0.69	90.89	8.43	-	0.18	0.15	0.12	0.25	1.86	3.76	2.88
PSAC-900	0.65	95.90	0.77	0.087	0.65	90.96	8.39	-	0.18	0.13	0.15	0.19	1.26	1.52	1.24