Supplementary Materials

Hetero-Porous, High-Surface Area Green Carbon Aerogels for the Next-Generation Energy Storage Applications

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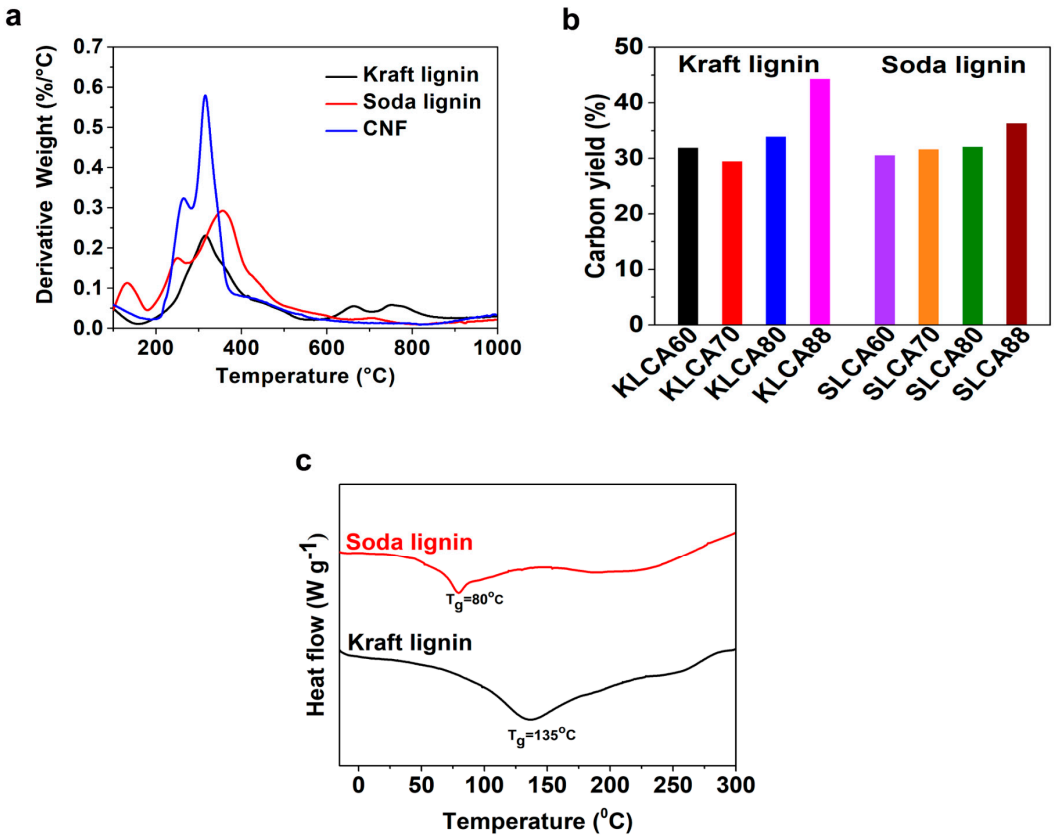

Figure S1. (a) Derivative thermogravimetric (DTG) curve of kraft, soda and CNF; (b) carbon yield for KL- and SL-based carbon aerogels; (c) differential scanning calorimetry (DSC) curves for kraft lignin and soda lignin.

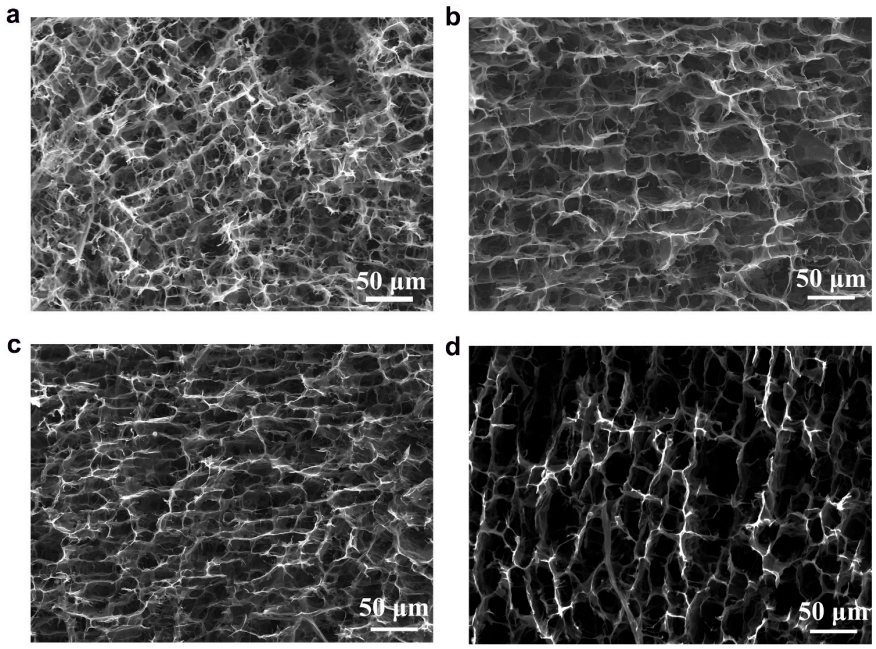

Figure S2. Honeycomb-like micro-structure in the cross section of CAs (a) SLCA60 (b) SLCA70 (c) SLCA80 and (d) SLCA88.

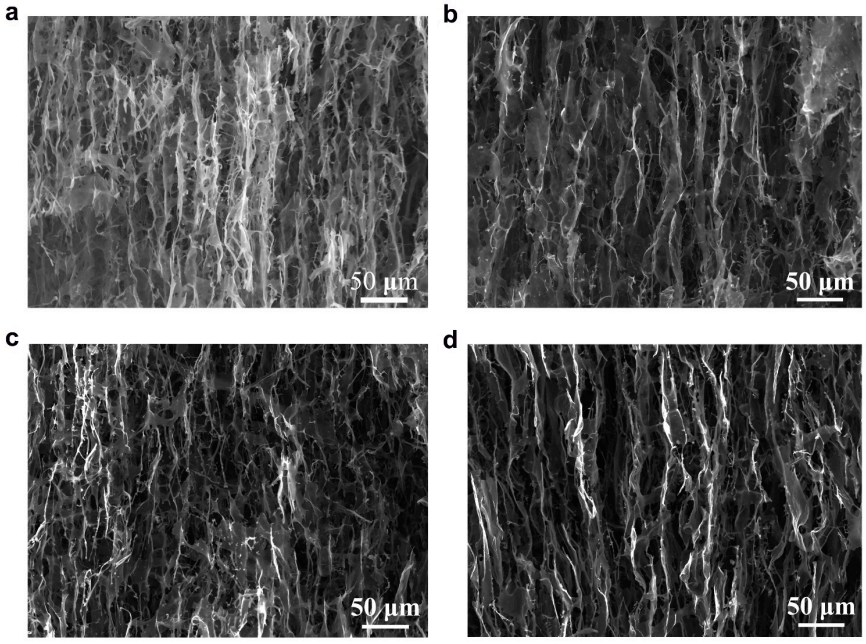

Figure S3. Longitudinal channel like micro-structure in the CAs (a) SLCA60 (b) SLCA70 (c) SLCA80 and (d) SLCA88.

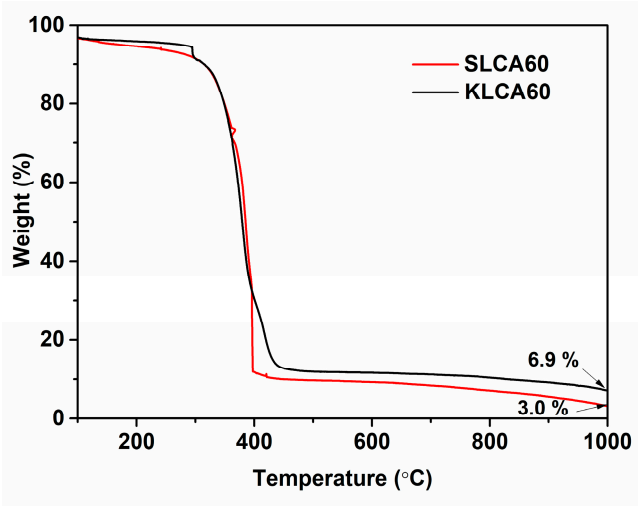

Figure S4. Thermogravimetric analysis of SLCA60 and KLCA60 in oxygen atmosphere.

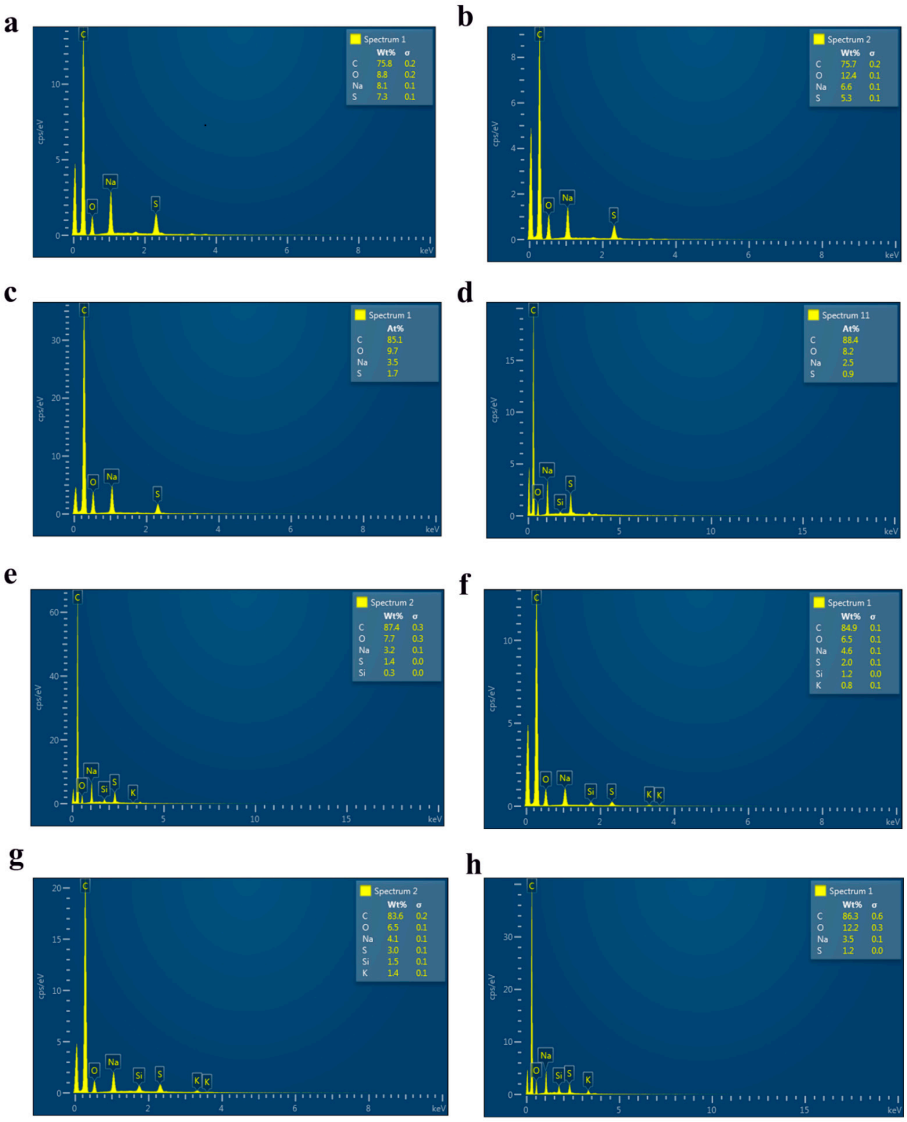

Figure S5. EDX spectra for (a) KLCA60, (b) KLCA70, (c) KLCA80 (d) KLCA88 (e)SLCA60 (f) SLCA70, (g)SLCA80, and (h) SLCA88.

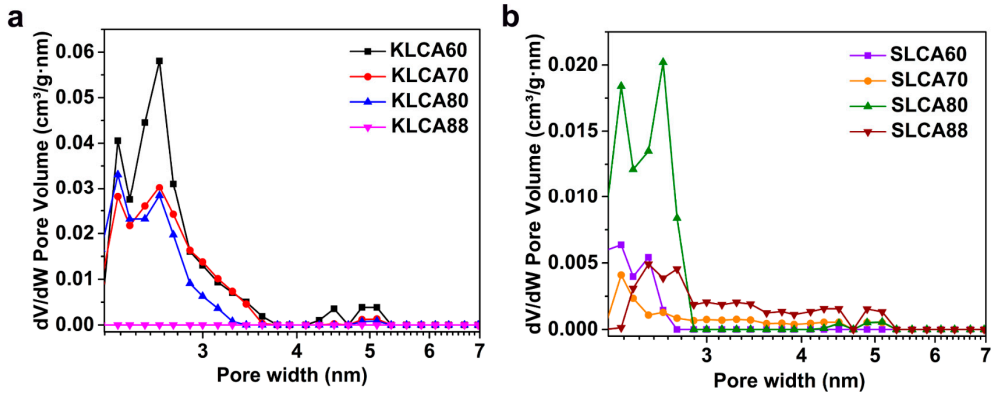

Figure S6. Pore size distribution of a) KLCAs and b) SLCAs (represented as differential pore volume plotted against pore width) derived from adsorption isotherms of KLCAs and SLCAs and calculated with the NLDFT model.

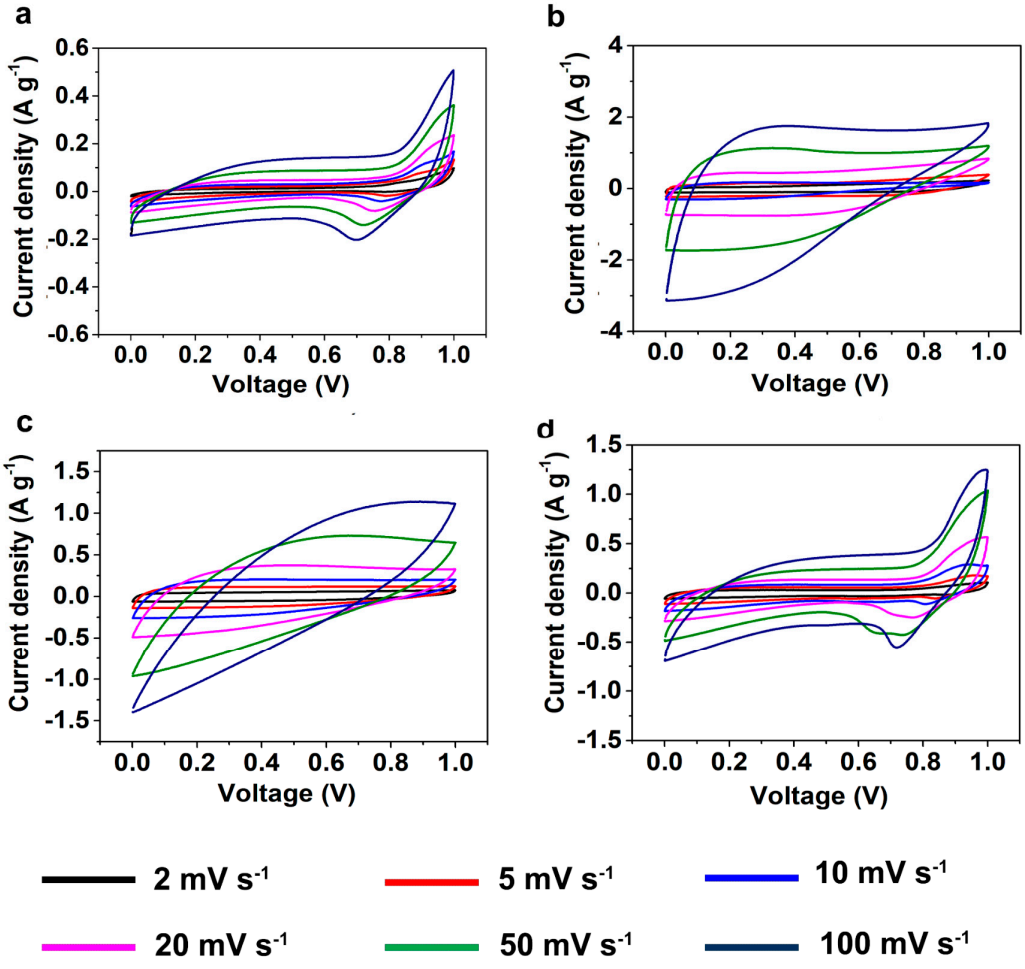

Figure S7. Cyclic voltammograms (CVs) and galvanostatic charge discharge (GCD) curves for soda lignin based carbon aerogels. (a) SLCA60 (b) SLCA70 (c) SLCA80 and (d) SLCA88.

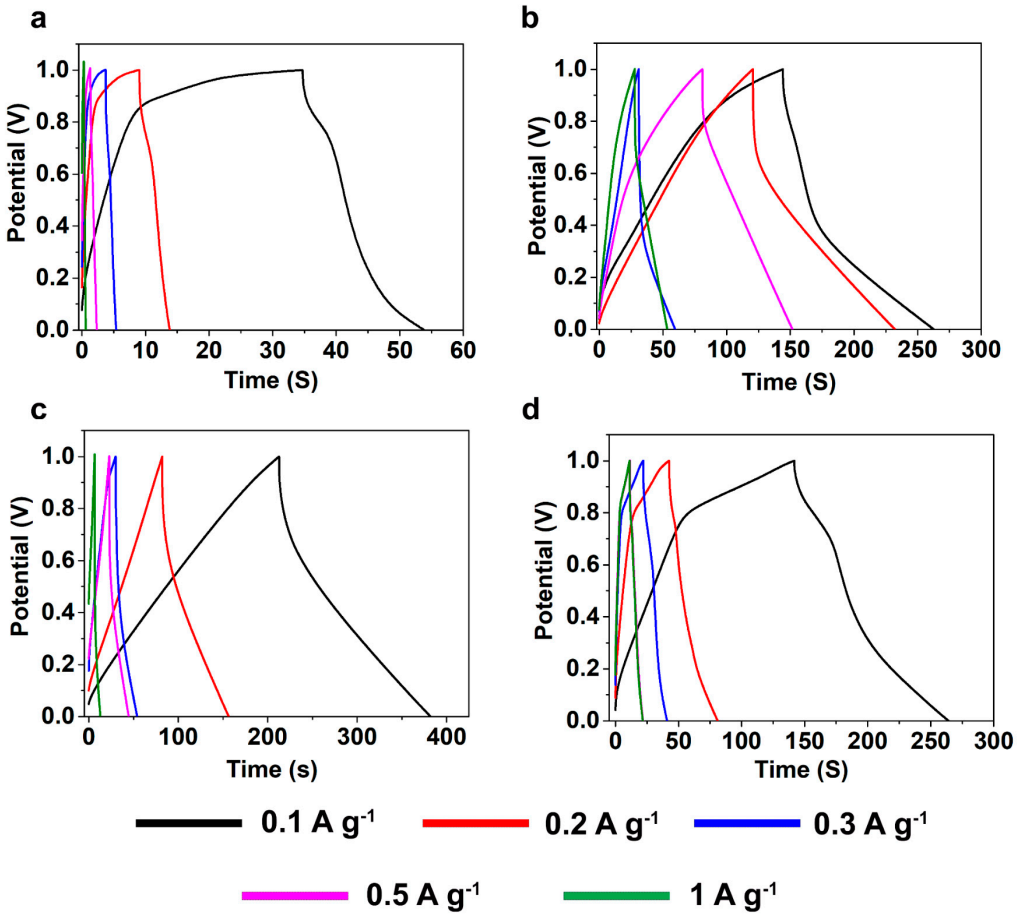

Figure S8. Galvanostatic charge discharge (GCD) curves for soda lignin based carbon aerogels. (a) SLCA60 (b) SLCA70 (c) SLCA80 and (d) SLCA88.

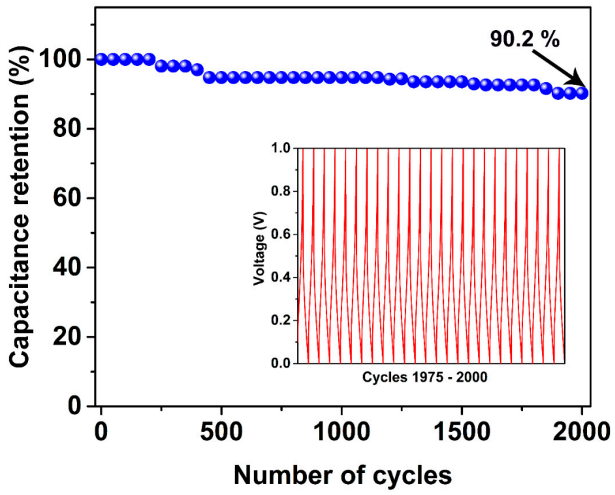

Figure S9. Cyclic stability of KLCA60 electrodes after 2000 charge-discharge cycles.

Table S1. Electrochemical properties of the supercapacitors of KLCA electrodes.

	Galvano static charge discharge measurements				Cyclic voltammetry		
Sample	**Current density A g^{-1}**	**Specific capacitance F g^{-1}**	**Energy density Wh kg^{-1}**	**Power density W kg^{-1}**	**Scan rate mV s^{-1}**	**Specific capacitance F g^{-1}**	**Energy density Wh kg^{-1}**
KLCA60	0.1	162	5.7	50	2	163	5.7
	0.2	128	4.4	100	5	140	4.4
	0.3	115	4.0	150	10	123	4.0
	0.5	111	3.8	250	20	108	3.8
	1	97	3.4	500	50	86	3.4
KLCA70	0.1	105	3.7	50	2	129	4.5
	0.2	94	3.3	100	5	102	3.5
	0.3	77	2.7	150	10	93	3.2
	0.5	66	2.3	250	20	71	2.5
	1	34	1.2	500	50	34	1.2
KLCA80	0.1	79	2.7	50	2	95	3.3
	0.2	71	2.5	100	5	85	3.0
	0.3	69	2.4	150	10	76	2.6
	0.5	62	2.2	250	20	63	2.2
	1	44	1.5	500	50	39	1.4
KLCA88	0.1	93	3.2	50	2	106	3.7
	0.2	76	2.6	100	5	93	3.2
	0.3	66	2.3	150	10	81	2.8
	0.5	49	1.7	250	20	67	2.3
	1	47	1.6	500	50	48	1.7