

Supporting Information

Simple and scalable synthesis of hierarchical porous carbon derived from cornstalk without pith for high capacitance and energy density

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Table S1. Corn stalk-based porous carbon with different reaction condition.

Sample	Carbon precursor	Carbon precursor: K₂C₂O₄: CaCO₃ (by weight)
BC	entire plant	/
C-1	entire plant	1:1:1
R-1.5	rind	1:1.5:1
P-1.5	pith	1:1.5:1
C-1.5	entire plant	1:1.5:1
C-2	entire plant	1:2:1
R-2	rind	1:2:1

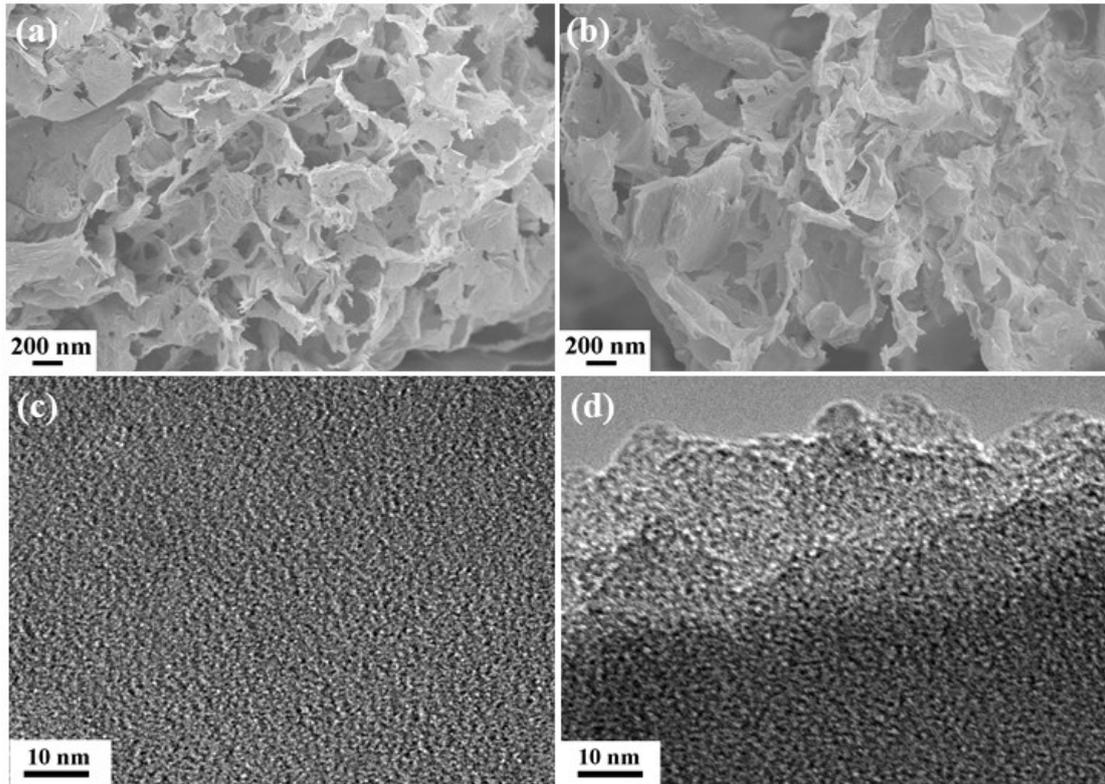


Figure S1. SEM images of C-1 (a) and C-2 (b); TEM images of C-1 (c) and C-2 (d).

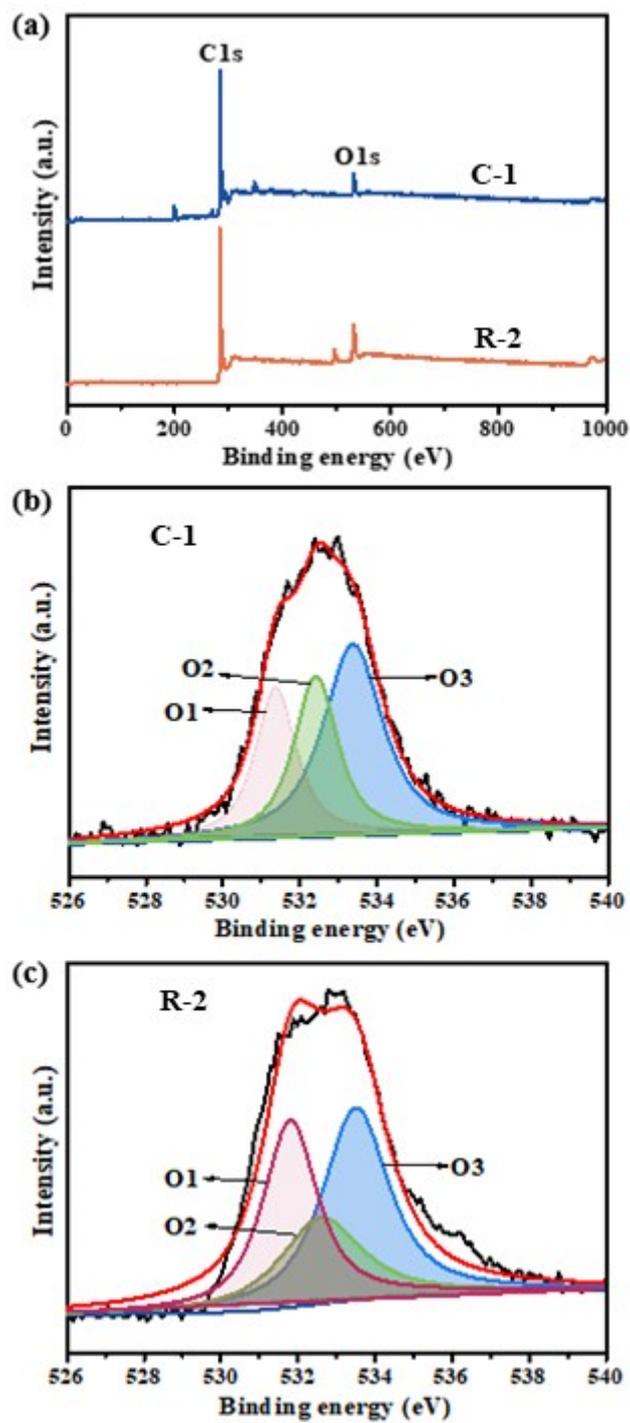


Figure S2. XPS survey spectra of C-1 and R-2 (a); high-resolution O1s spectra of C-1 (b) and R-2 (c).

Table S2. Relative concentrations of oxygen species by fitting the O1s XPS spectra.

Sample	XPS composition (at%)			O species (%)		
	C	N	O	O1	O2	O3
BC	77.22	2.68	20.1	28.2	29.4	42.4
C-1	91.20	2.30	6.47	25.1	28.6	46.3
C-1.5	90.29	2.74	6.97	42.8	29.6	27.6
R-1.5	89.34	1.81	8.85	51.7	23.1	25.2
C-2	92.93	1.20	5.87	40.3	20.2	39.5
R-2	91.00	1.20	7.80	34.2	23.3	42.4

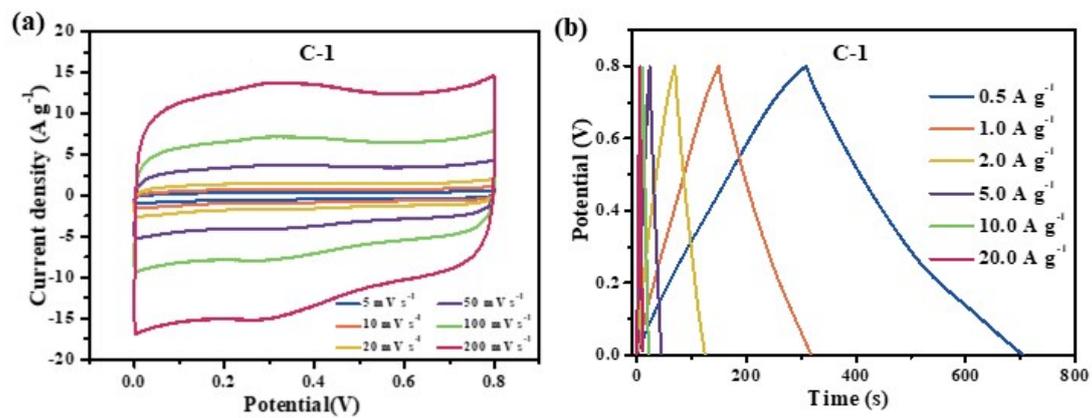


Figure S3. CV curves (a) and GCD curves (b) of C-1.

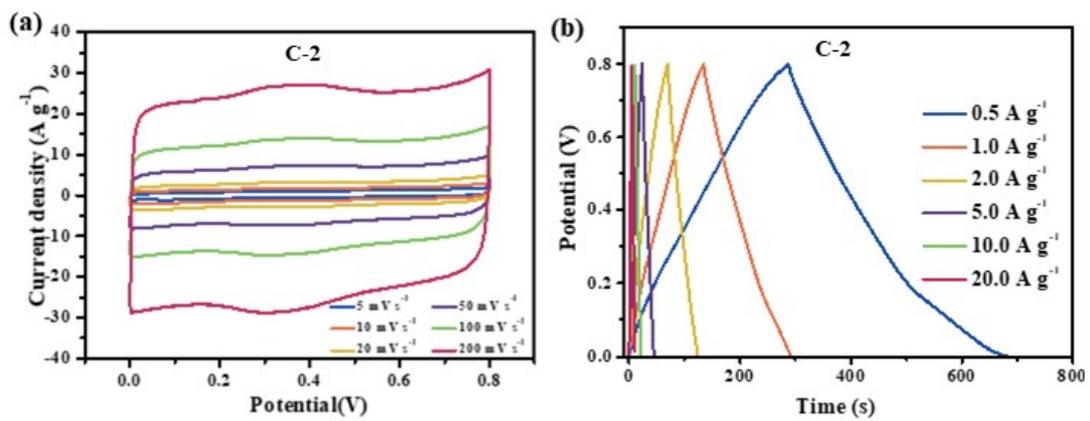


Figure S4. CV curves (a) and GCD curves (b) of C-2.

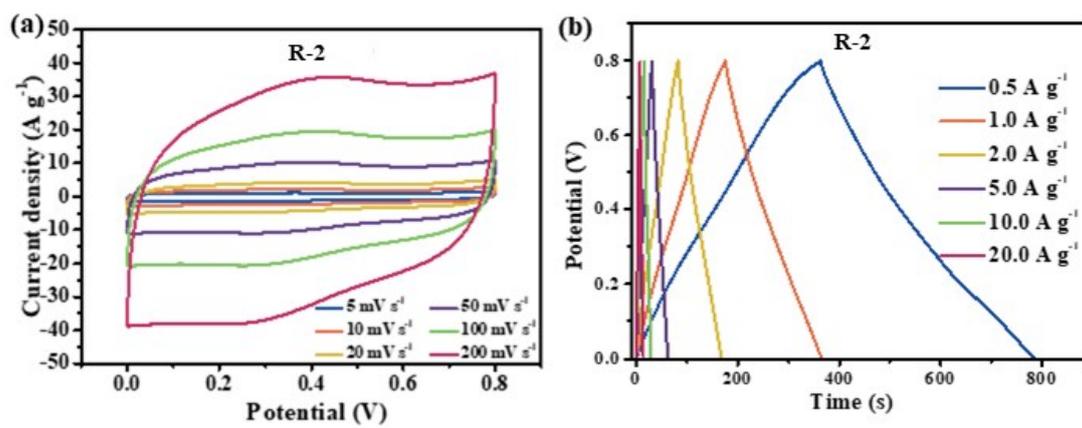


Figure S5. CV curves (a) and GCD curves (b) of R-2.

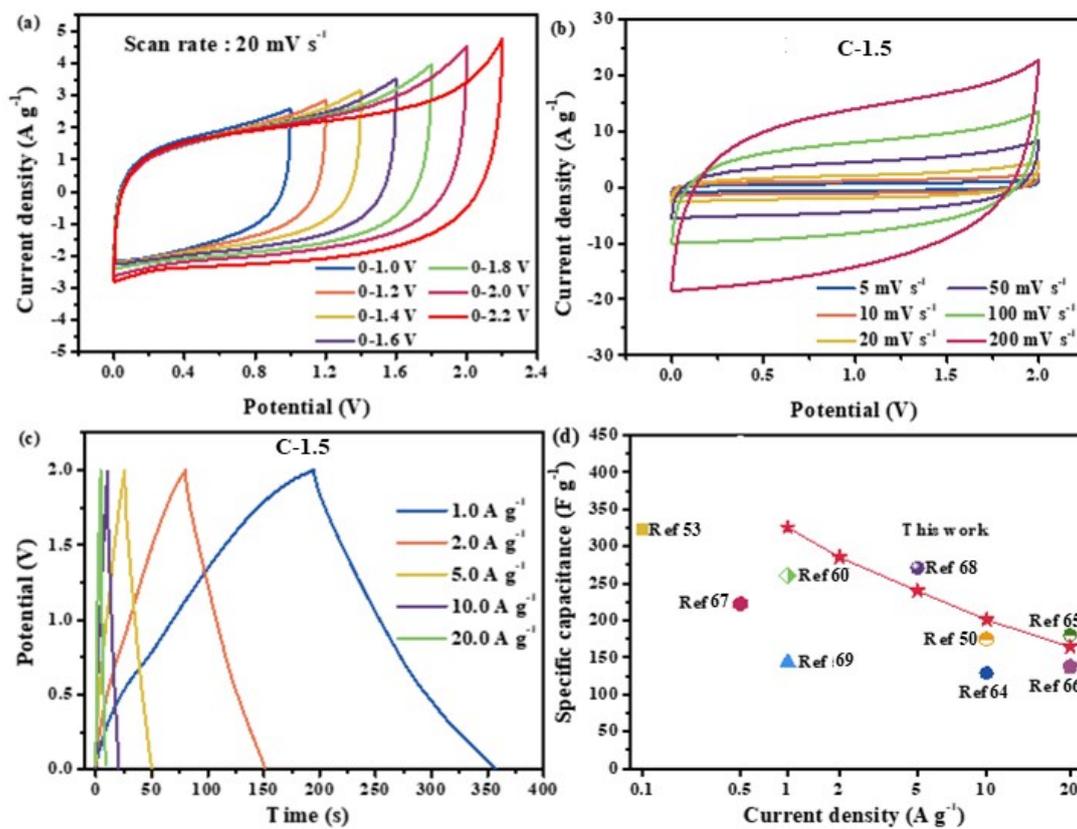


Figure S6. CV curves of C-1.5 symmetrical supercapacitor in different operation voltages at a scan rate of 20 mV s⁻¹ (a); CV curves of C-1.5 symmetrical supercapacitor at different scan rates (b); GCD curves of C-1.5 symmetrical supercapacitor at different current densities (c); specific capacitances for a single electrode at different current densities (d).

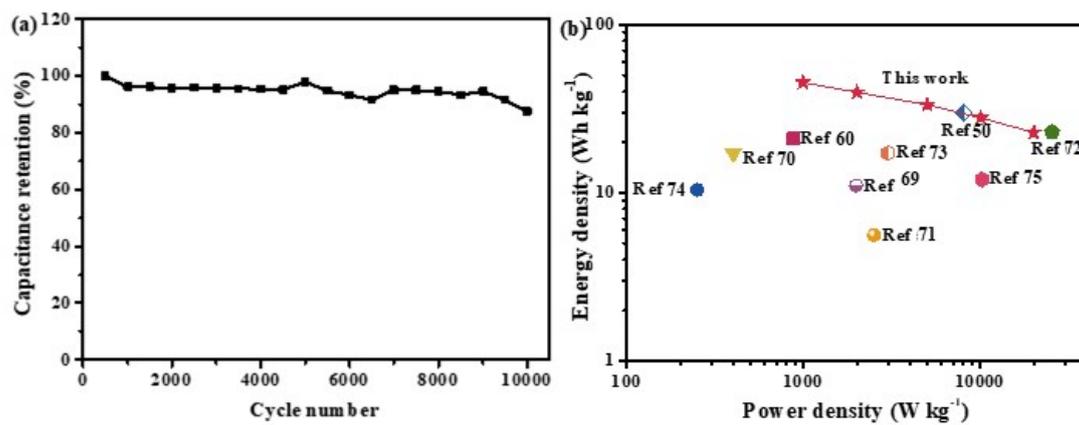


Figure S7. Cycle stabilities of C-1.5 at a current density of 10.0 A g⁻¹ (a) and Ragone plots compared with other carbon materials in aqueous electrolyte (b).