nanomaterials

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Article

Stable supercapacitors based on activated carbon prepared from Italian orange juice

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Supplementary Figures

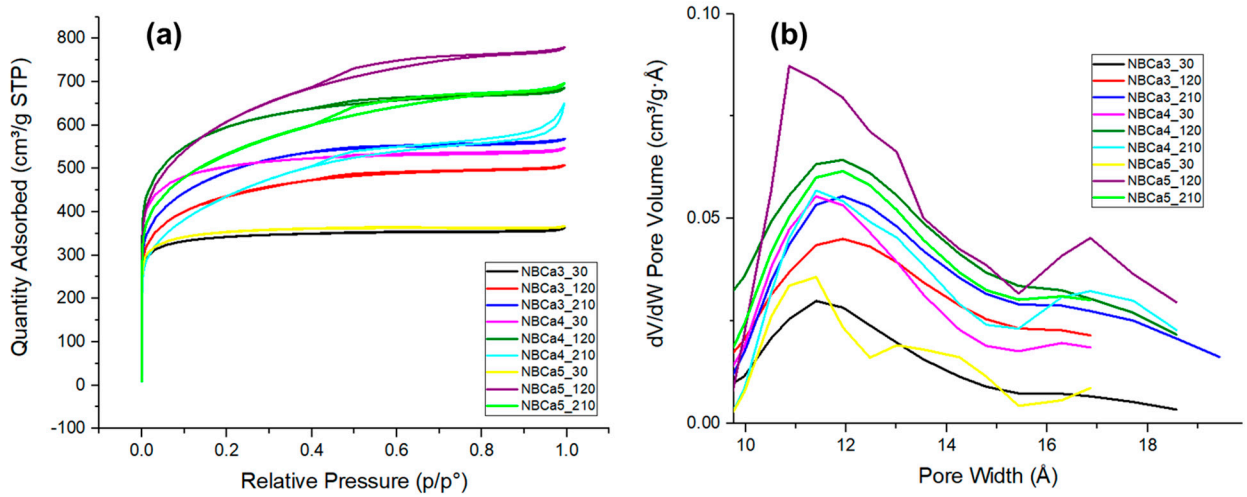


Figure S1. (a) Nitrogen sorption isotherms of all active carbons, showing some hysteresis. (b) Pore size distributions of all active carbons obtained by the NLDFT method.

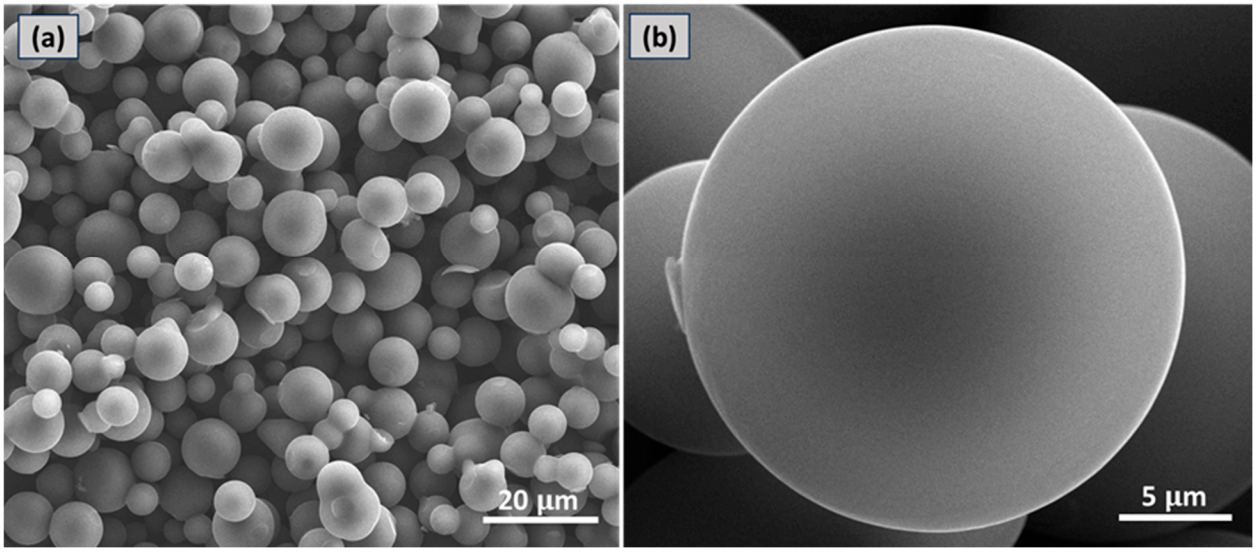


Figure S2. SEM image of pyrolyzed sample.

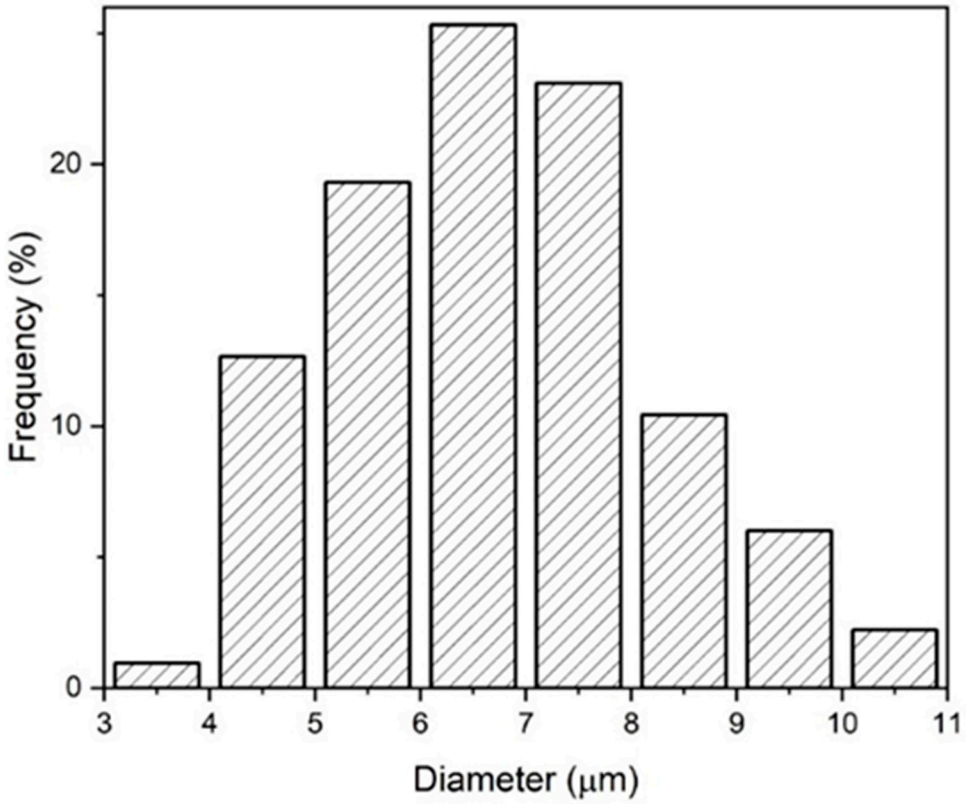


Figure S3. Microsphere Size Distribution after pyrolysis. Average diameter 6.6 μm with a standard deviation of 1.5 μm.

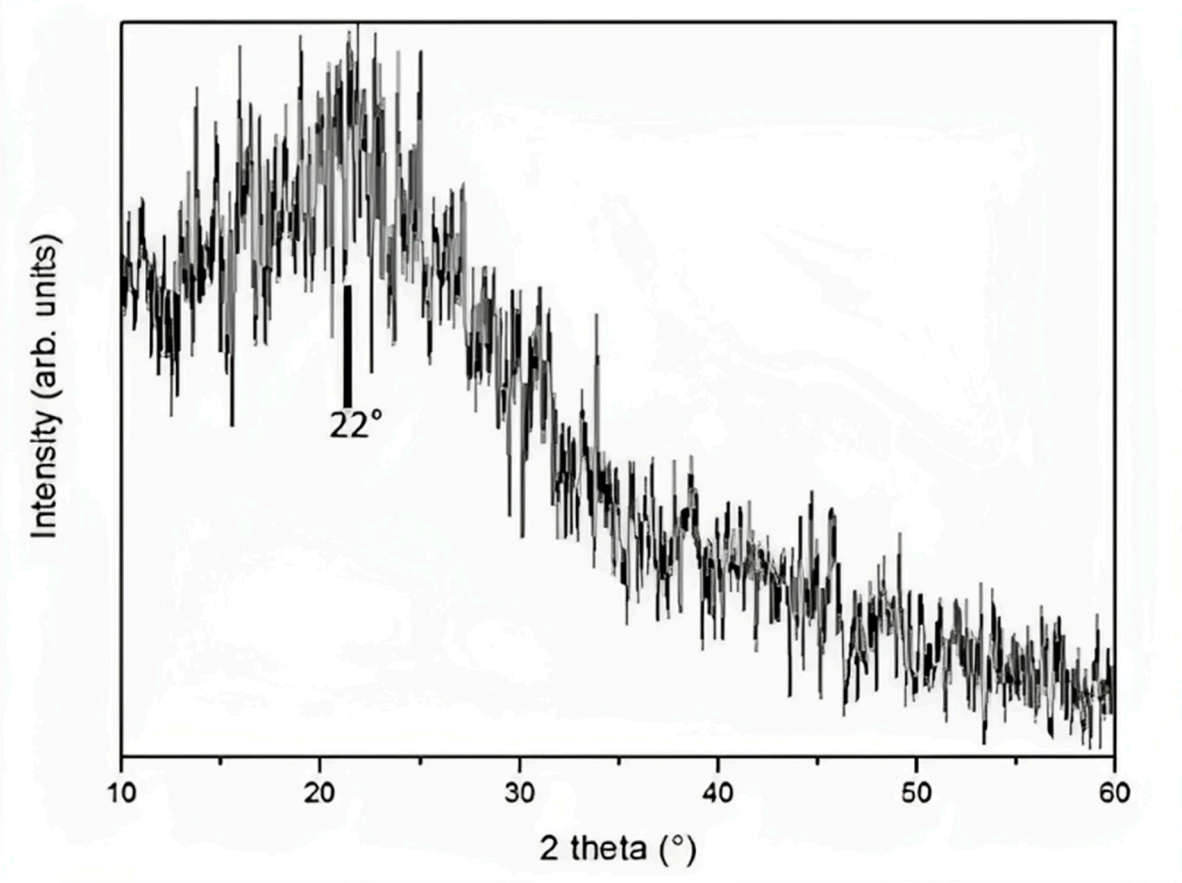


Figure S4. XRD pattern of a biochar sample after carbonization.

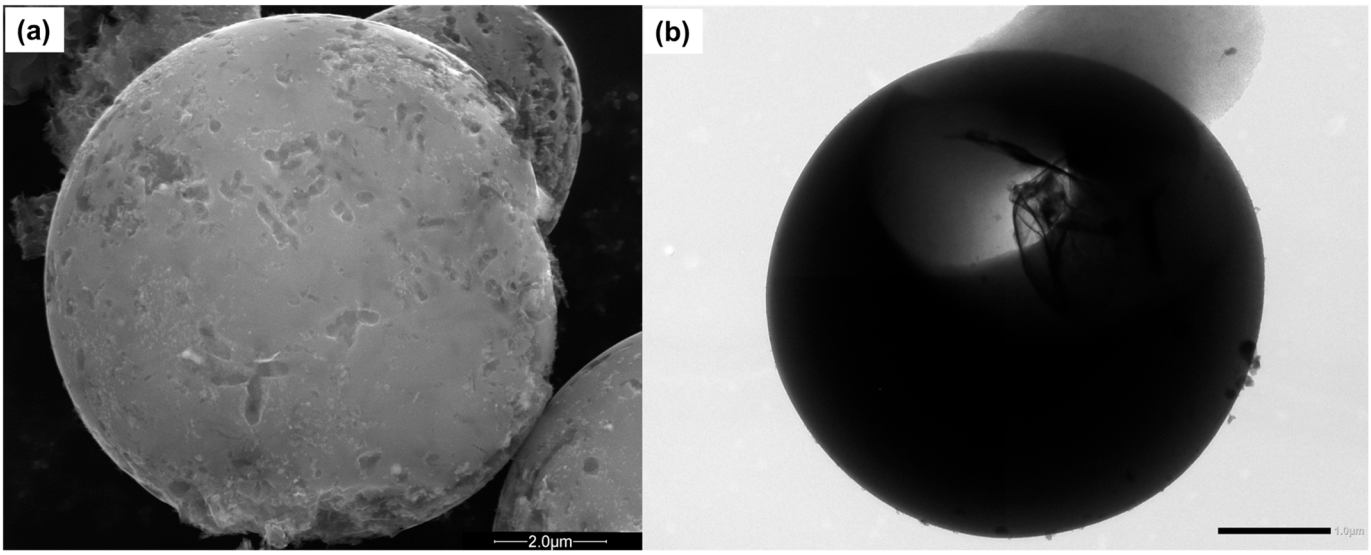


Figure S5. (a) SEM and (b) TEM morphology of the AC sample (5:1@120) after long-term cycling (5000 cycles).

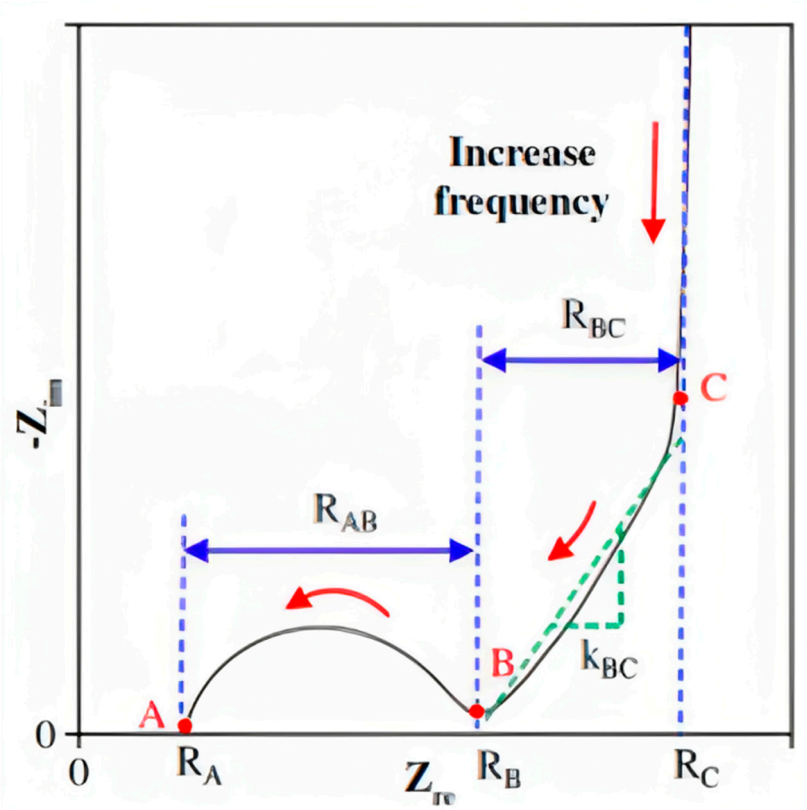


Figure S6. Illustration of the electrochemical impedance spectroscopy (EIS) Nyquist plot.

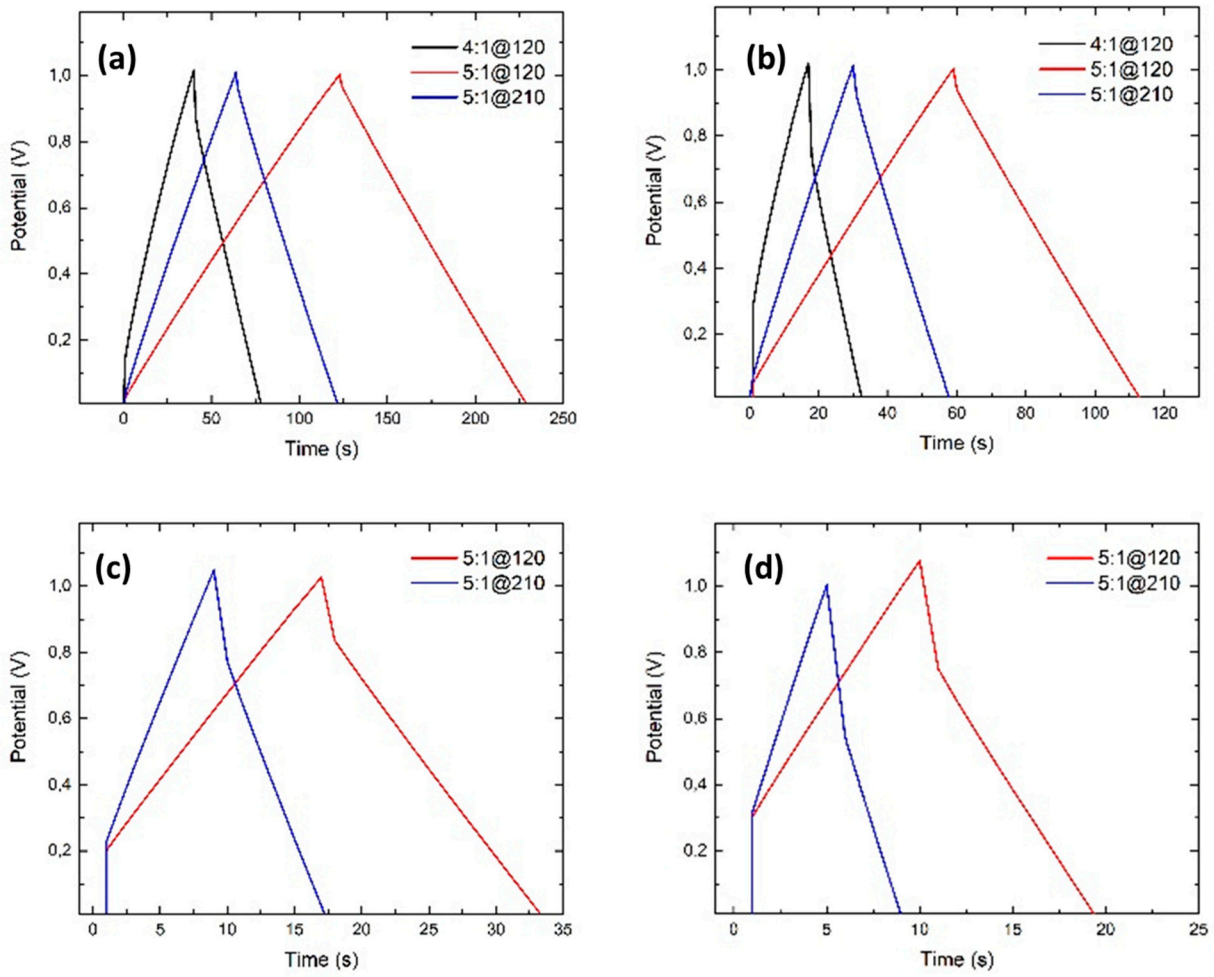


Figure S7. Galvanostatic cycling for different current densities: (a) 0.5 A/g, (b) 1.0 A/g, (c) 3.0 A/g, and (d) 5 A/g.

Supplementary Tables

Table S1. Position of Raman peaks for different samples under analysis.

Sample	D* (cm^{-1})	D (cm^{-1})	D** (cm^{-1})	G (cm^{-1})	2D (cm^{-1})	R^2
4:1@120	1198.91	1333.47	1439.41	1579.53	---	0.971
5:1@120	1221.78	1336.89	1431.97	1582.21	2678.37	0.997
5:1@210	1227.72	1335.71	1418.60	1574.74	2674.45	0.978

Table S2. Resistance values obtained from electrochemical impedance spectroscopy (EIS) measurements.

Devices	RA [Ω]	RB [Ω]	RC [Ω]	RBA [Ω]	RCB [Ω]	ESR [Ω]
4:1@120	3.33	4.96	6.85	1.63	1.89	7.83
51@120	2.36	3.38	3.83	1.02	0.45	4.41
5:1@210	2.17	2.33	2.79	0.16	0.46	2.98