Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Sustainable rose multiflora derived nitrogen/oxygen-enriched micro-/mesoporous carbon as low-cost competitive electrode towards high-performance electrochemical supercapacitors

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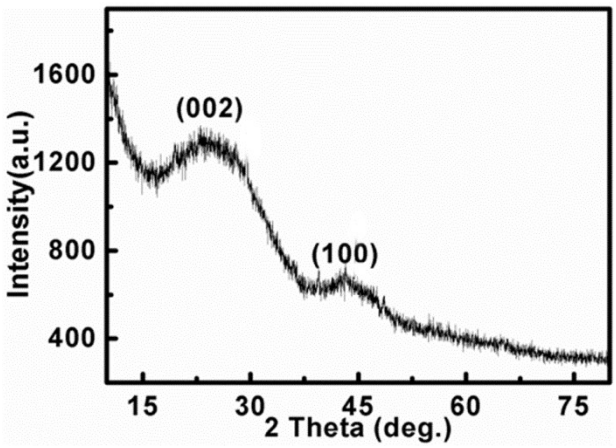

Fig. S1. Typical XRD pattern of the NOC-K product

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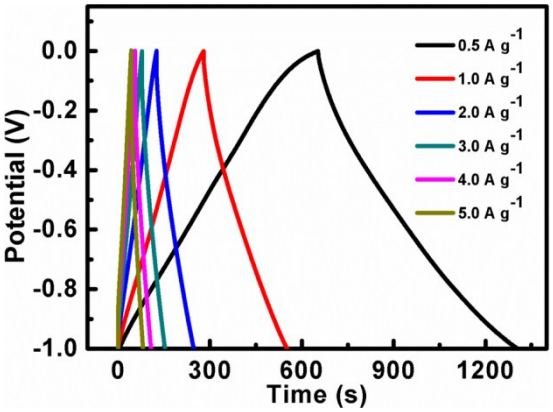

Fig. S2. CP plots of the NOC-K in 6 M KOH aqueous electrolyte

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Table S1 Comparisons between the NOC-K electrode and other carbon electrodes in electrochemical performance in various electrolytes and different tesing systems as indicated

Carbons	SC ($F\ g^{-1}$)	Current density	Mass loading	SED ($Wh\ kg^{-1}$)	SPD ($W\ kg^{-1}$)	Ref.
Newspaper-based C	~180 [a]	2 mV s^{-1} [a]	10 mg [a]	/	/	1
Coconut-shell based C	~228 [a]	5 mV s^{-1} [a]	~5 mg cm^{-2} [a]	/	/	2
	~48 [b]	1 A g^{-1} [b]	/	~9.6 [b]	/	
Prawn shells-based C	~315 [a]	0.2 A g^{-1} [a]	~3.5 mg [a]	/	/	3
	/	0.05 A g^{-1} [b]	~7.0 mg [b]	~7.8 [b]	/	
Pomelo peel-based C	~342 [a]	0.1 A g^{-1} [a]	2 mg [a]	/	/	4
	~68 [b]	0.2 A g^{-1} [b]	4 mg [b]	~9.4 [b]	96 [b]	
Chestnut shell-based C	~59.6 [b]	0.1 A g^{-1} [b]	4.0 mg [b]	~6.7 [b]	9000 [b]	5
Bamboo-based C	~301 [a]	0.1 A g^{-1} [a]	2 mg cm^{-2} [a]	/	/	6
Cotton-based C	~314 [a]	0.1 A g^{-1} [a]	10 mg [a]	/	/	7
Lotus seedpod shell-based C	~165 [a]	0.5 A g^{-1} [a]	8 mg [a]	/	/	8
Corn stover-based C	~211.6 [a]	1 A g^{-1} [a]		/	/	9
Endothelium corneum Gigeriae galli-based C	~198 [a]	1 A g^{-1} [a]	/	/	/	10
coffee grounds-based C	~175 [a]	1 A g^{-1} [a]	2 mg cm^{-2} [a]	/	/	11
Lignin-based C	~286.7 [b]	0.2 A g^{-1} [b]	/	~8.9 [b]	51.92 [b]	12
Loofah sponge network-based C	~304 [a]	1 A g^{-1} [a]	~4 mg [a]	/	/	13
	~51.5 [c]	1 A g^{-1} [c]	/	~10 [c]	~500 [c]	
Biowaste corncob C	~298.0 [a]	10 mV s^{-1} [a]	~4.5 mg cm^{-2} [a]	/	/	14
	~30.0 [b]	1 A g^{-1} [b]	~4.5 mg cm^{-2} [b]	~5.3 [b]	~8276 [b]	
	/	/	/	~15 [d]	~2827 [d]	
Cashmere-C	~236.0 [a]	1 A g^{-1} [a]	3 mg [a]	/	/	15
	~32.0 [b]	1 A g^{-1} [b]	6 mg [b]	~3.4 [b]	/	
	~18.0 [e]	1 A g^{-1} [e]	2.4 mg [e]	~17.9 [e]	~125 [e]	
Nitrogen-rich carbon sphere	~371 [a]	0.5 A g^{-1} [a]	1 mg [a]	/	/	16
	/	/	2 mg [b]	~9.97 [b]	~125 [b]	
	~81 [e]	0.5 A g^{-1} [e]	/	~50.6 [e]	~400 [e]	
Shiitake mushroom C	~306 [a]	1 A g^{-1} [a]	2.4 mg [a]	/	/	17
	/	/	/	~8.2 [b]	~100 [b]	
	/	/	/	~31.7 [d]	~6250 [d]	
Carbon nanosheets	~25.8 [d]	5 A g^{-1} [d]	3.5 mg [d]	~22.4 [d]	/	18
N-doped graphene-C	~58 [e]	1 A g^{-1} [e]	/	~30.4 [e]	~1000 [e]	19
Porous carbon	~54 [d]	1 A g^{-1} [d]	0.8 mg cm^{-2} [d]	~20 [d]	~500 [d]	20
NOC-K	~281.6 [a]	1 A g^{-1} [a]	5 [a]	/	/	Our work
	~56.8 [b]	1 A g^{-1} [b]	6 [b]	~7.9 [b]	~500 [b]	
	~35.7 [e]	10 A g^{-1} [e]	0.43 [e]	~38.9 [e]	~14000 [e]	

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Notes: *a* for 6M KOH (3-electrode system); *b* for 6M KOH (2-electrode symmetric cell); *c* for 1 M Et_4NBF_4-PC (2-electrode symmetric cell); *d* for 1 M $TEABF_4$-AN (2-electrode symmetric cell); *e* for 1M $TEABF_4$/PC (2-electrode symmetric cell)

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Table S2

The parameter value of fitting EIS

Samples	R_s (Ohm)	R_{ct} (Ohm)
NOC	~0.6	~6.4
NOC-K	~0.4	~1.6

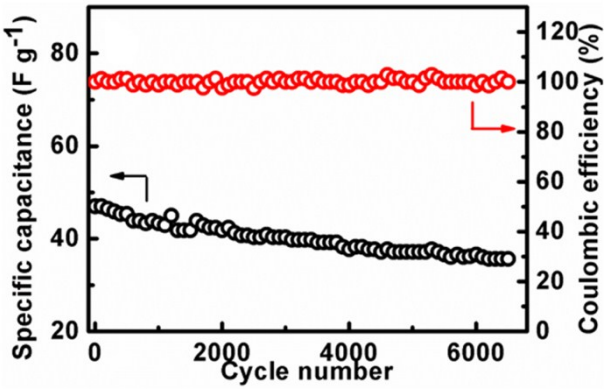

Fig. S4. Cycling performance of the NOC-K based symmetric device with 1 M $TEABF_4$/PC organic electrolyte in the voltage range from 0.0 to 3.0 V

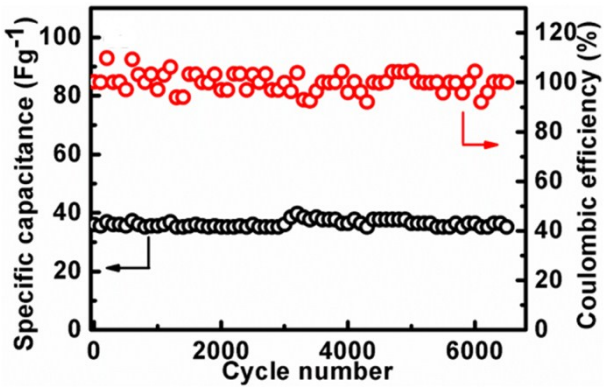

Fig. S5. Cycling performance of the NOC-K based symmetric device with 1 M $TEABF_4$/PC organic electrolyte in the voltage range from 0.0 to 2.5 V