Supporting Information

Sustainable production of nano α-Fe_2O_3/N-doped biochar hybrid nanosheets for supercapacitors

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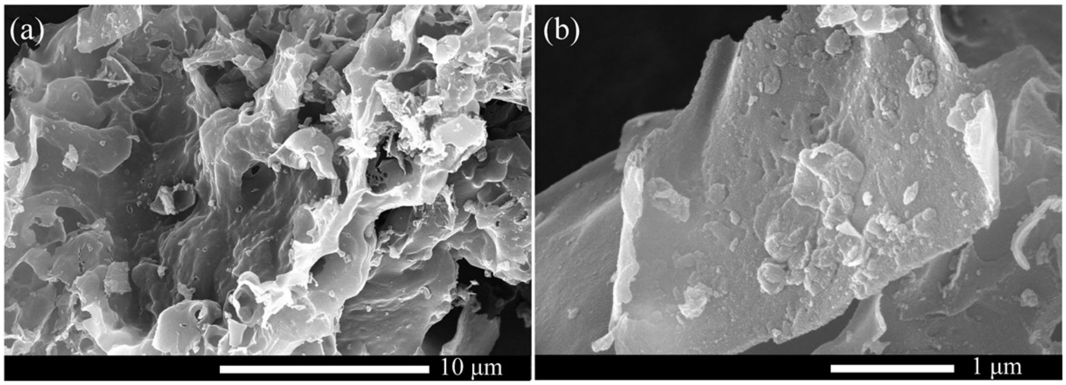

Fig. S1 FESEM images of NBCS-Fe-Ar.

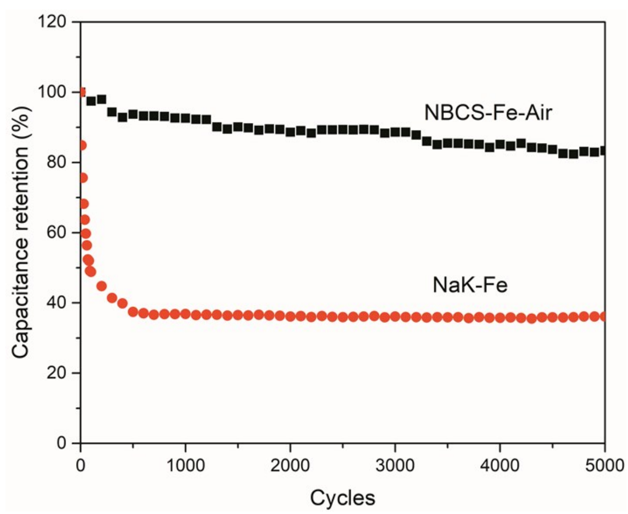

Fig. S2 Cycling stability of NBCS-Fe-Air and NaK-Fe at 5 A g^{-1} in the three-electrode system.

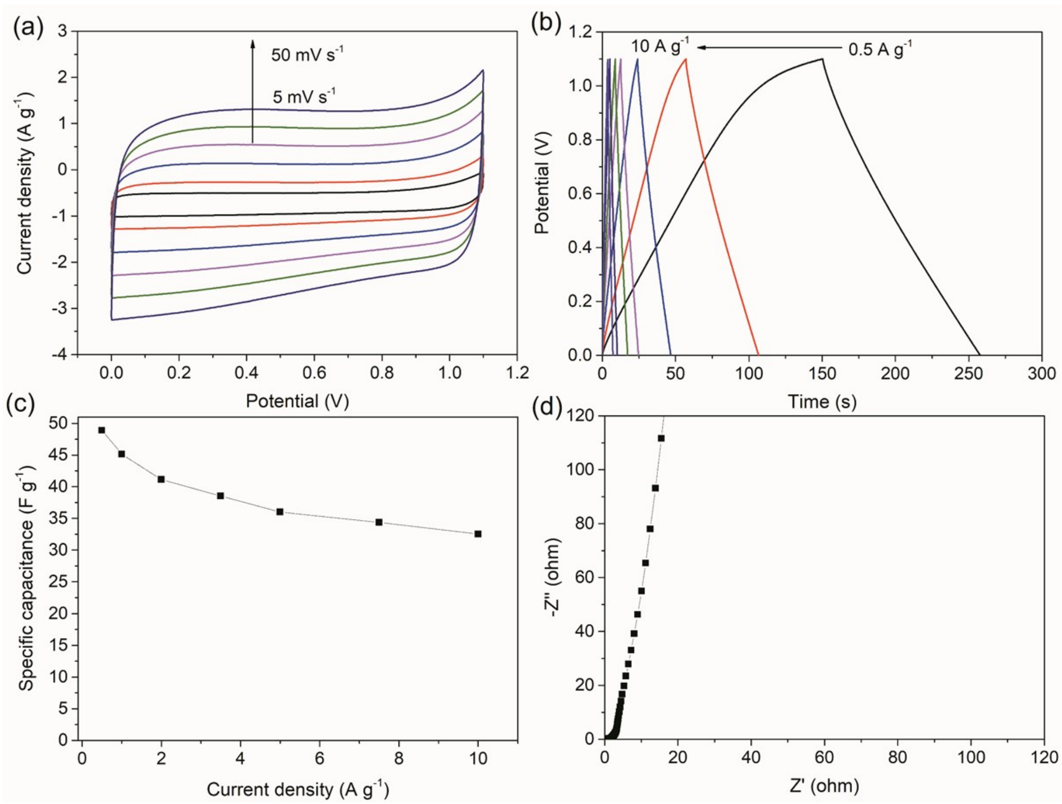

Fig. S3 Electrochemical performance of NBCS-Fe-Air in a symmetrical two-electrode system. (a) CV curves at different scan rates, (b) GCD curves at different current densities, (c) specific capacitance of the samples as a function of current density and (d) Nyquist plots of NBCS-Fe-Air//NBCS-Fe-Air symmetrical supercapacitor.

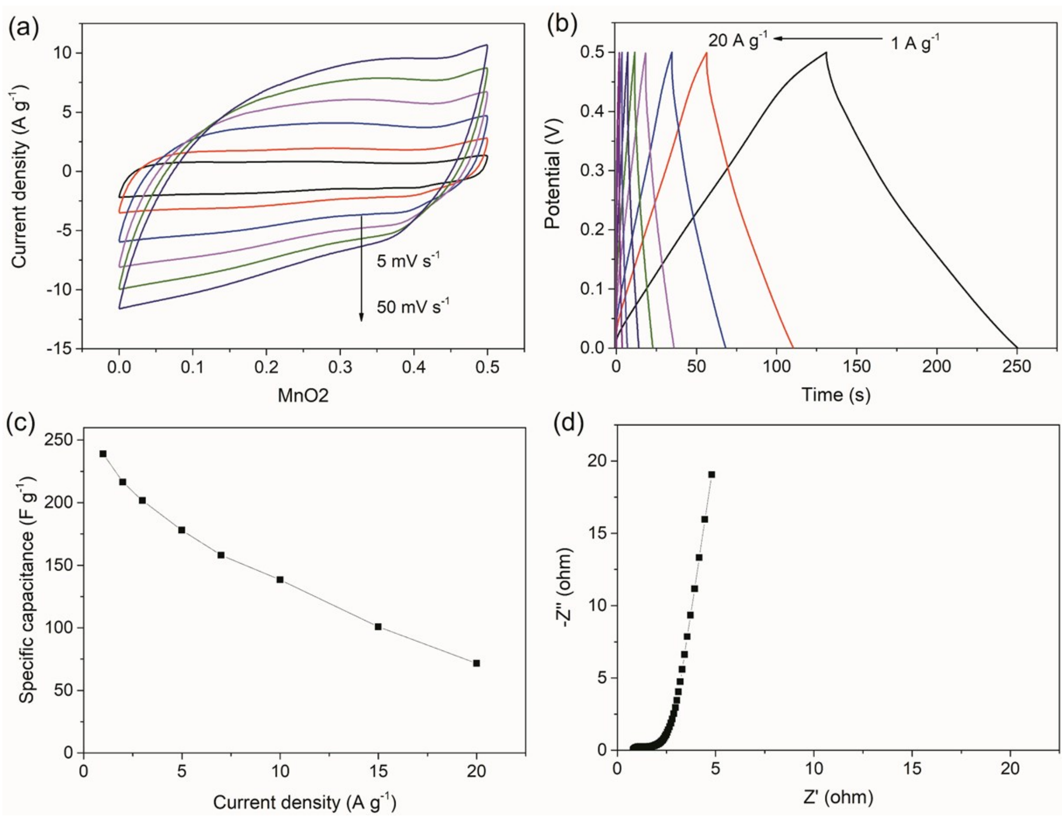

Fig. S4 Electrochemical performance of FMO in a three-electrode system. (a) CV curves at different scan rates, (b) GCD curves at different current densities, (c) specific capacitance of the samples as a function of current density and (d) Nyquist plots.

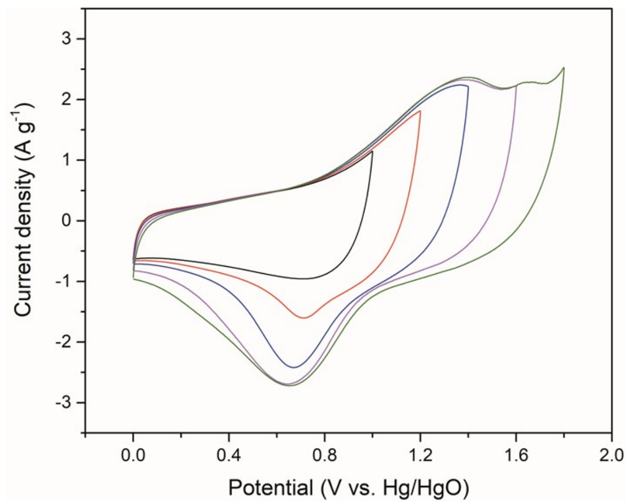

Fig. S5 CV curves of the NBCS-Fe-Air//FMO asymmetric supercapacitor collected in various potential windows at 30 mV s^{-1}.

Table S1 Chemical compositions of samples.

	Atomic percentage (%)		Assignment
	NBCS-Fe-Air	NBCS-Fe-Ar	
C 1s	45.66	51.78	C=C/C-C/C-H
	25.17	23.81	C-OH/C-O-C/C-N
	29.17	24.41	C=O
O 1s	12.66	10.64	O-Fe
	27.73	25.84	C-O-Fe
	27.16	27.40	C=O
	19.24	17.79	C-OH/C-O-C
	13.21	18.33	COOH
N 1s	30.24	37.62	Pyridinic-N
	40.98	34.97	Pyrrolic-N
	17.61	17.27	Quaternary-N
	11.17	10.14	Pyridine-N-oxides

Table S2 Comparison of the specific capacitance of some reported iron oxide- or carbon-based materials.

Material	Electrolyte	Specific capacitance ($F\ g^{-1}$)	Reference
Fe_3O_4/C	1 M Na_2SO_4	136.2 (1 A g^{-1}) 97.2 (2 A g^{-1})	1
α-Fe_2O_3/rGO	1 M Na_2SO_4	255 (0.5 A g^{-1})	2
Fe_2O_3/VACNT	2 M KOH	248 (8 A g^{-1})	3
rGO/α-Fe_2O_3	2 M KOH	469.5 (4 A g^{-1})	4
NiNTAs@Fe_2O_3 nanoneedles	1 M Na_2SO_4	418.7 (10 mV s^{-1})	5
Fe_3O_4@CF	2 M KOH	153.7 (0.2 A g^{-1})	6
ZFO-ACFs	2 M KOH	192 (1 A g^{-1})	7
α-Fe_2O_3/NBCS	2 M KOH	452.3 (2 A g^{-1})	This work

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