Supporting Information

Facile preparation of graphene@polyaniline nanofiber network/ oxidized carbon cloth composite for high-performance flexible solid-state supercapacitor

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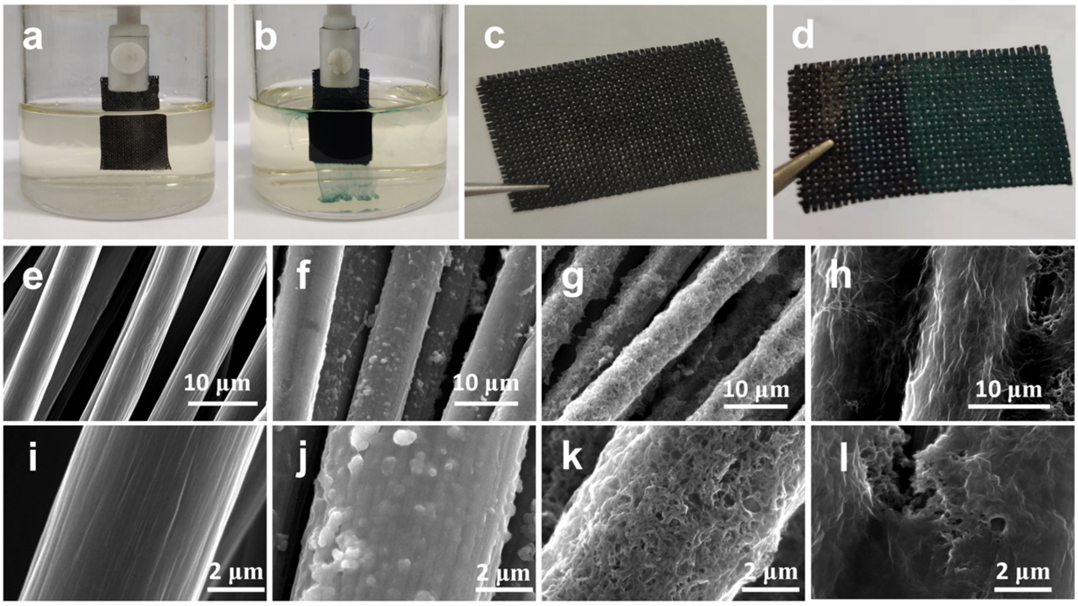

Fig. S1. Digital images showing of (a) the process of impregnation of CC in mixed solution of H_2SO_4 and aniline, (b) the process of impregnation of MnO_2/OCC in mixed solution of H_2SO_4 and aniline, (c) substrate before impregnation(MnO_2/OCC), (d) substrate after impregnation (PANI-NFN/OCC). SEM images of (e, i) CC, (f, j) PANI-NFN/OCC, (g, k) PANI-NFN/OCC and (h, l) rGO@PANI-NFN/OCC.

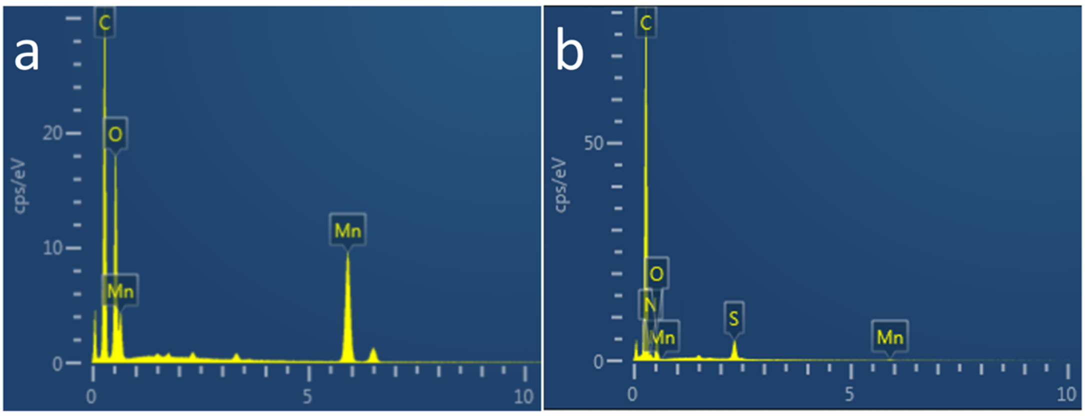

Fig. S2. EDS spectra of (a) MnO_2/OCC and (b) PANI-NFN/OCC.

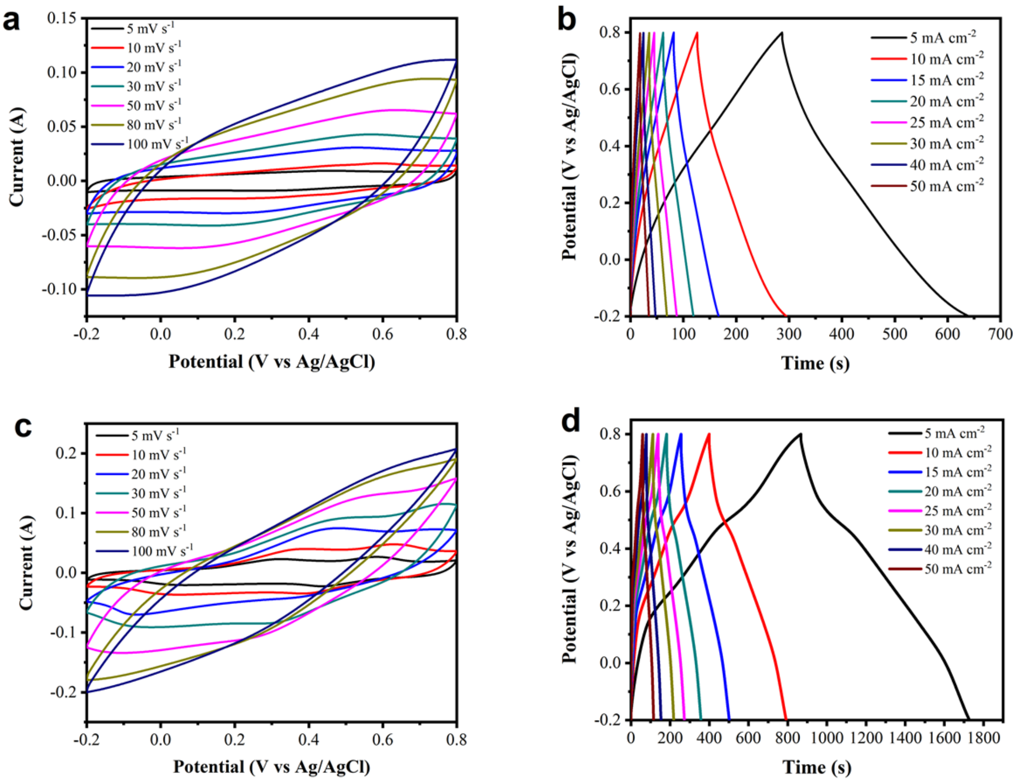

Fig. S3. (a) CV curves of MnO_2/OCC at a scan rate from 5 mV s^{-1} to 100 mV s^{-1}. (b) GCD curves of MnO_2/OCC at a current density from 5 mA cm^{-2} to 50 mA cm^{-2}. (c) CV curves of PANI-NFN/OCC at a scan rate from 5 mV s^{-1} to 100 mV s^{-1}. (d) GCD curves of PANI-NFN/OCC at a current density from 5 mA cm^{-2} to 50 mA cm^{-2}.

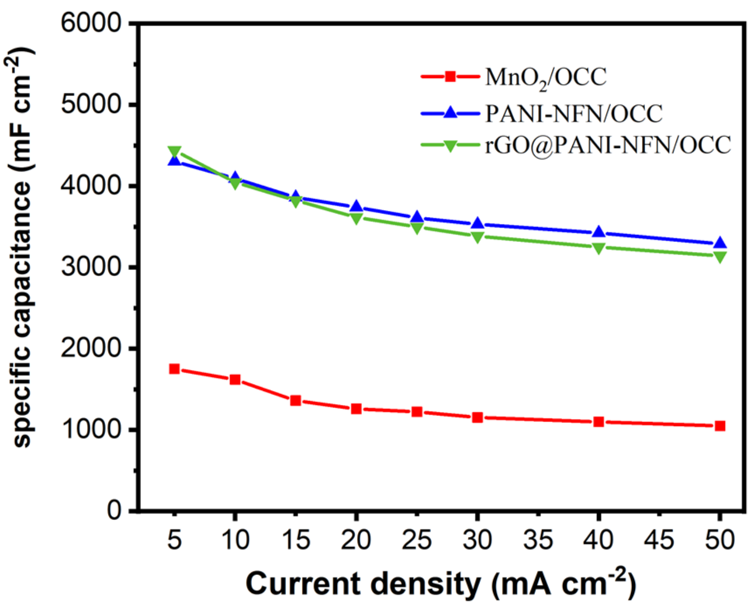

Fig. S4. Comparison of areal capacitance of MnO_2/OCC, PANI-NFN/OCC and rGO@PANI-NFN/OCC.

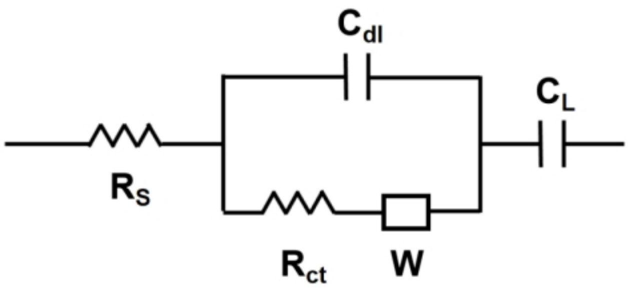

Fig. S5. Equivalent circuit model used for EIS data fitting. (R_s: combined series resistance; R_{ct}: charge-transfer resistance; W: Warburg element; C_{dl}: electrical-double-layer capacitance; C_L: limit capacitance.)

Table S1. Parameter of equivalent circuit elements

Samples	R_s (Ω)	R_{ct} (Ω)	W (Ω)	C_{dl} (mF)	C_L (mF)
MnO_2/OCC	2.061	1.166	2.473	0.963	1.263
PANI-NFN/OCC	2.04	0.221	1.069	3.446	0.189
rGO@PANI-NFN/OCC	1.833	0.082	0.468	3.583	1.501

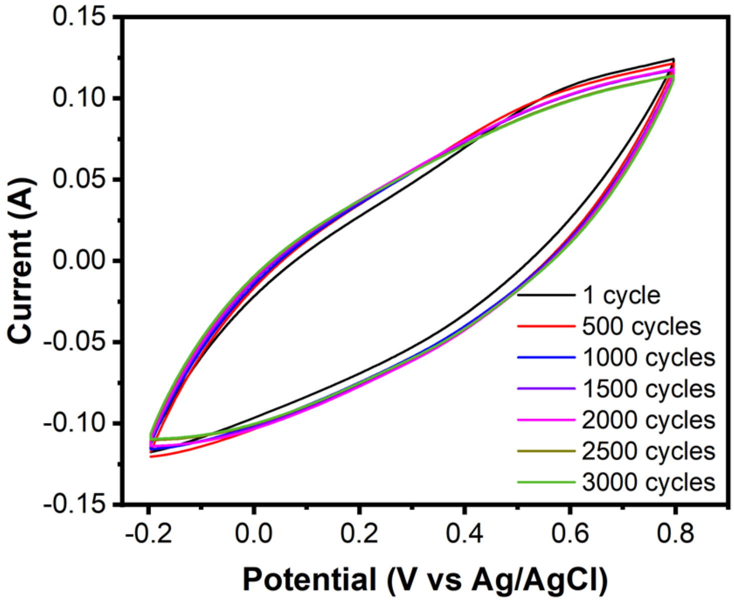

Fig. S6. CV curves of rGO@PANI-NFN/OCC during the cycle stability after 1, 500, 1000, 1500, 2000, 2500 and 3000 cycles, respectively.

Table S2. Comparison table for the energy storage performance of PANI/carbon material-based composites.

Sr.no	Electrode Materials	Electrolyte	Areal capacitance	Number of cycles (Capacitance)	Ref.
1.	PANi-G-GCC	1 M H_2SO_4	4520 mF cm^{-2} (5 mA cm^{-2})	5000(92.7%)	8
2.	PANI/CNT/papers	1 M H_2SO_4	1506 mF cm^{-2} (10 mA cm^{-2})	11500(82%)	9
3.	FCC-PANI array-rGO	1 M H_2SO_4	471 mF cm^{-2} (0.5 mA cm^{-2})	10000(75.5%)	19
4.	PANI/RGO/PMFT	1 M H_2SO_4	564 mF cm^{-2} (5 mA cm^{-2})	10000(94.4)	55
5.	Lig/PANI/FGH/FCC	1 M H_2SO_4	1223 mF cm^{-2} (5 mV s^{-1})	5000(81%)	10
6.	HA/CNT/PANI fiber	1 M H_2SO_4	373 mF cm^{-2} (25 mV s^{-1})	3000(88.27%)	23
7.	FCC-PANI array-C	1 M H_2SO_4	1695 mF cm^{-2} (0.5 mA cm^{-2})	10000(102%)	54
8.	PANI nanofiber array/CC	1 M H_2SO_4	1459.2 mF cm^{-2} (10 mV s^{-1})	2000(80%)	11
9.	PANI/graphene/textile-HCl	1 M H_2SO_4	1601 mF cm^{-2} (1 mA cm^{-2})	10000(75%)	26
10.	strawberry-like FCC@PANI	1 M H_2SO_4	1859.2 mF cm^{-2} (0.2 mA cm^{-2})	10000(90.8%)	27
11.	PANI/GO/CC	1 M H_2SO_4	1122.8 mF cm^{-2} (5 mV s^{-1})	2000(94.1%)	52
12.	rGO@PANI-NFN/OCC	1 M H_2SO_4	4438 mF cm^{-2} (5 mA cm^{-2})	3000(88.2%)	**This work**

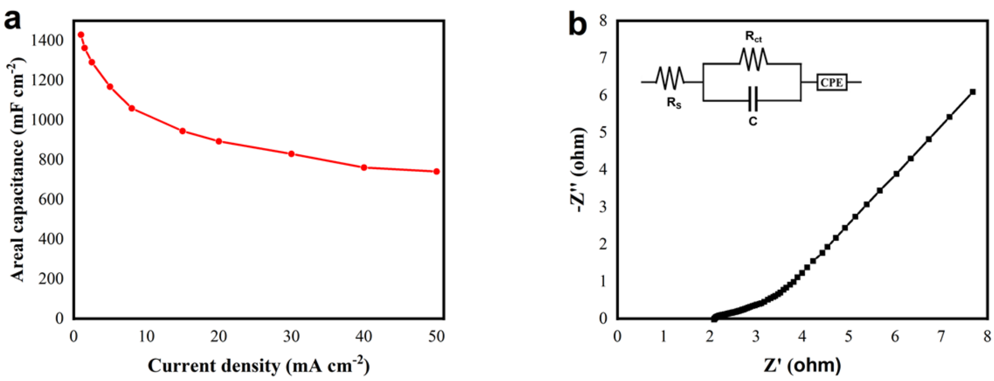

Fig. S7. (a) Areal capacitance of FSSCs based on rGO@PANI-NFN/OCC at different current density. (b) Nyquist plots of FSSCs based on rGO@PANI-NFN/OCC, and inset is the equivalent circuit mode of the FSSCs.