Supporting Information

A Simple Strategy toward Hierarchically Porous Graphene/Nitrogen-Rich Carbon Foams for High-Performance Supercapacitors

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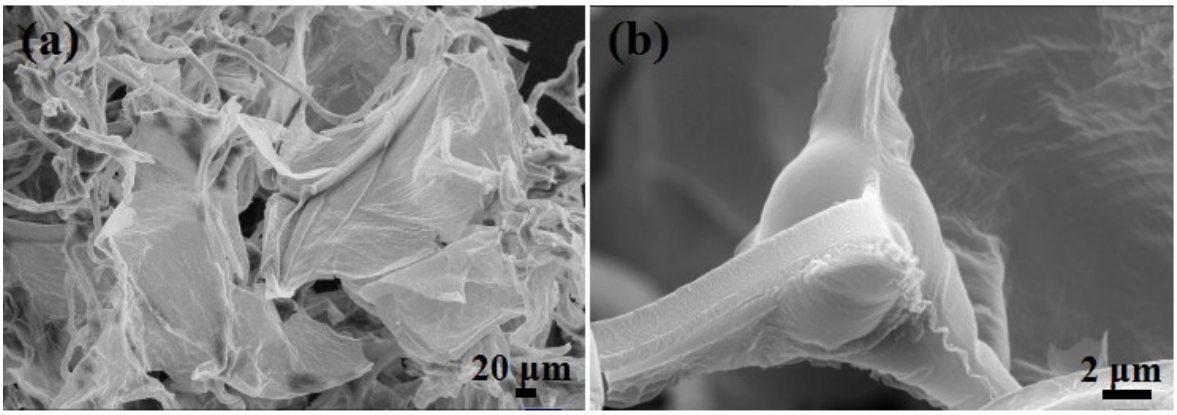

Fig. S1 SEM images of the dried melamine foam/GO/KOH mixtures at (a) low magnification and (b) high magnification.

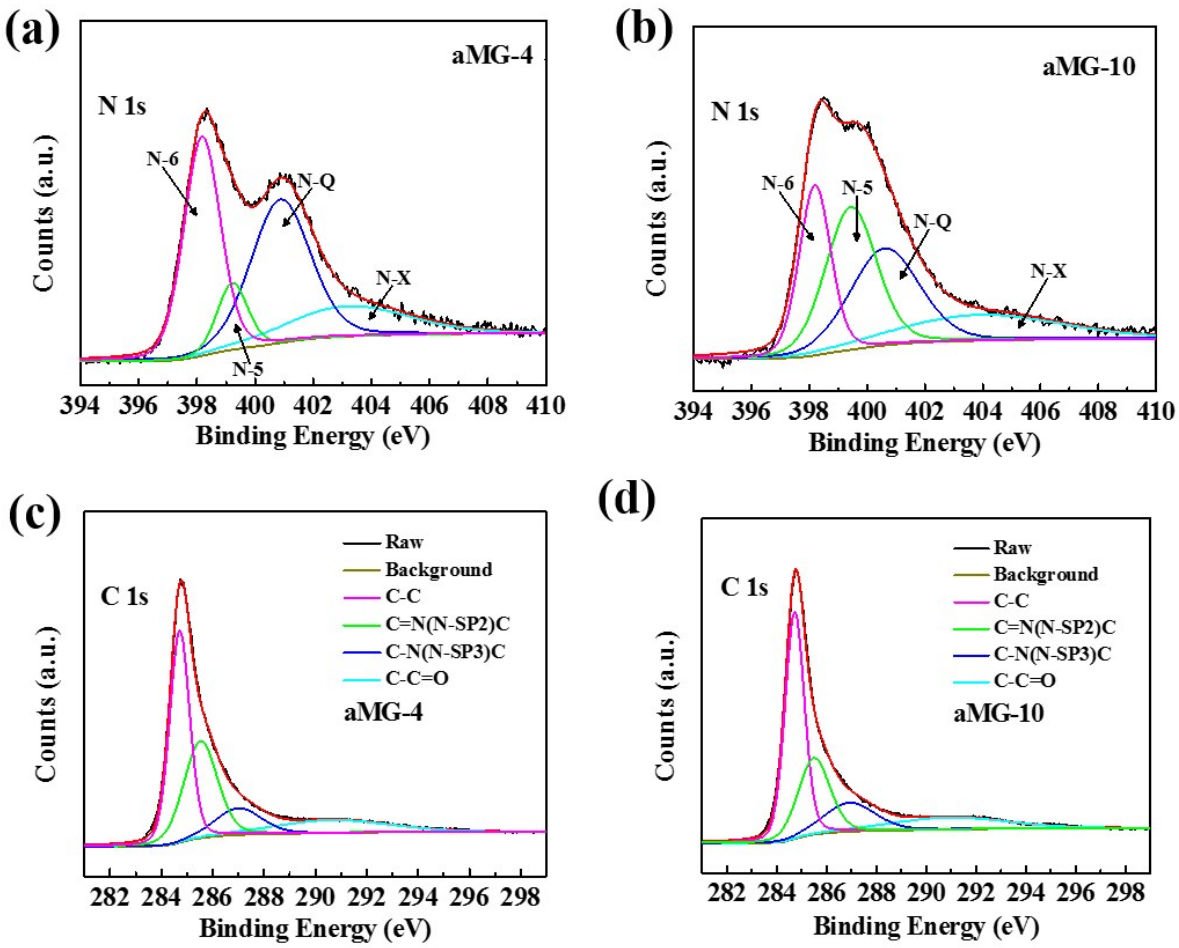

Fig. S2 N 1s XPS spectra of (a) the aMG-4 and (b) the aMG-10. C 1s XPS spectra of (c) the aMG-4 and (d) the aMG-10.

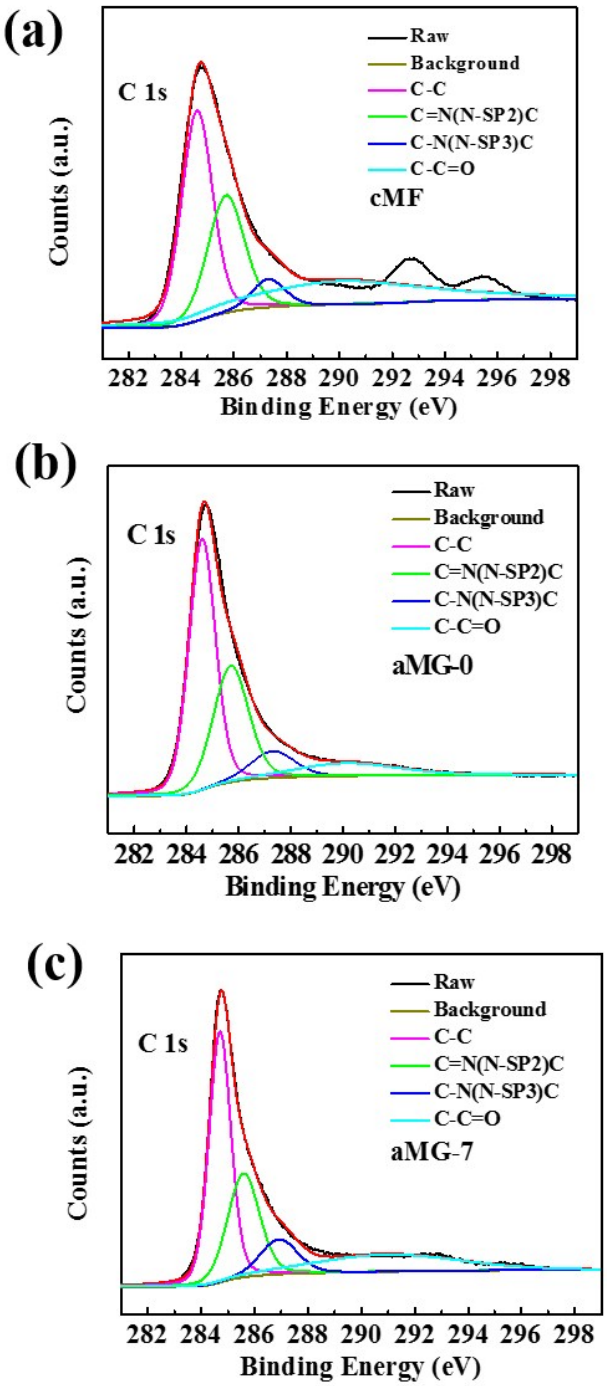

Fig. S3 C 1s XPS spectra of (a) the carbonized melamine foam, (b) the aMG-0, and (c) the aMG-7.

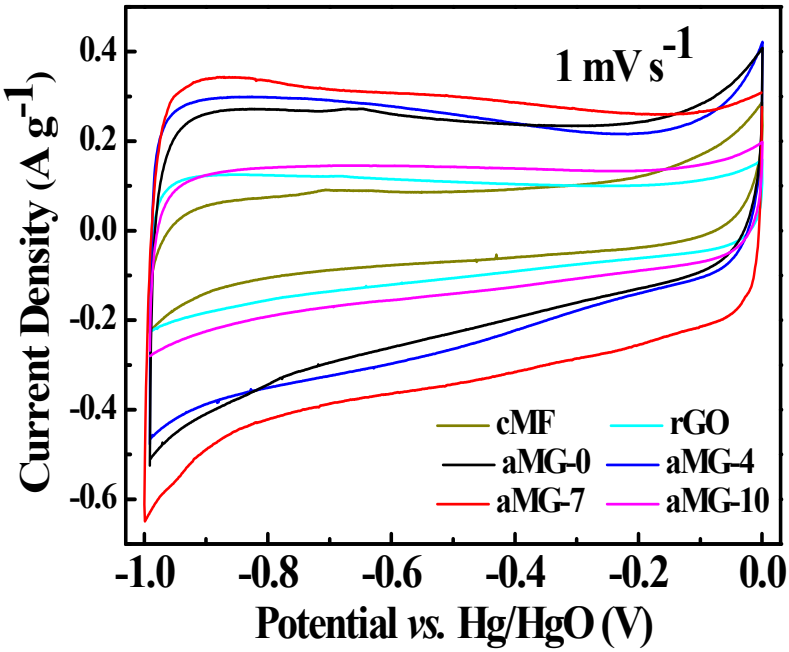

Fig. S4 CV curves at a scan rate of 1 mV s^{-1} in 6 mol L^{-1} KOH aqueous solution

Table S1. Elemental compositions of the samples quantified by XPS.

Samples	C at%	O at%	N at%	N-6	N-5	N-Q	N-X
cMF	67.2	16.2	16.6	53.40	14.15	32.45	
aMG-0	84.2	4.8	11.0	42.57	6.30	39.05	12.08
aMG-4	86.2	2.1	11.7	39.96	1.71	38.45	19.88
aMG-7	85.6	2.8	11.6	35.97	9.16	38.25	16.62
aMG-10	81.7	6.5	11.8	22.89	30.96	28.48	17.67

Table S2. Specific capacitance of the nitrogen-containing and foam-like structures in three-electrode systems.

Sampples	Electrolytes	Specific capacitance ($F\ g^{-1}$)	Capacitance Retention (Cycling Number)	Ref.
aMG-7	**6 M KOH**	**325 (0.1 A g^{-1})** **221 (1 A g^{-1})** **185 (10 A g^{-1})**	**99.5% (10000)**	**This work**
3D-HPCFs [a]	6 M KOH	139 (10 A g^{-1})	94% (1000)	[S1]
GNRs-PU [b]	2M KCl	87.5 (100 mV s^{-1})	92% (5000)	[S2]
STGS [c]	0.5 M NaCl	57 (10 mV s^{-1})	/	[S3]
HP-CF [d]	3 M KOH	136.3 (50 mV s^{-1})	91.2% (10000)	[S4]
N-CNTs/CF [e]	6 M KOH	133.1 (0.5 A g^{-1})	/	[S5]

Note: [a] Three-dimensional hierarchically porous carbon-CNT-graphene ternary all-carbon foams; [b] Polyurethane-based graphene nanoribbons; [c] Sponge-templated graphene; [d] Nitrogen-doped hierarchically porous carbon foam; [e] Carbon hybrid is fabricated with N-doped carbon nanotubes on skeleton of carbon foam.

Table S3. Specific capacitance of the nitrogen-containing and foam-like structures in two-electrode systems.

sampples	Electrolytes	Specific capacitance (F g^{-1})	Capacitance Retention (Cycling Number)	Ref.
aMG-7	**PVA/KOH gel**	**212 (0.1 A g^{-1})** **168 (1 A g^{-1})** **142 (10 A g^{-1})**	**99% (10000)**	**This work**
N-CNTs/CF [a]	6 M KOH	133.1 (0.5 A g^{-1})	95% (5000)	[S5]
NGA [b]	1 M H_2SO_4	223 (0.2 A g^{-1})	92% (2000)	[S6]
cMR-rGO$_{th}$ [c]	1 M $LiPF_6$ /EC/DEC	210 (0.5 A g^{-1})	96% (20000)	[S7]
MnO_2//NPC [d]	PVA/LiCl gel	182.5 (1 A g^{-1})	93.4% (6000)	[S8]
NCCF-rGO [e]	PVA/KOH gel	200 (0.1 A g^{-1})	94% (10000)	[S9]

Note: [a] Carbon hybrid is fabricated with N-doped carbon nanotubes on skeleton of carbon foam; [b] N-doped graphene aerogel; [c] Melamine-derived carbon/rGO; [d] Nitrogen-doped porous carbon derived from residuary shaddock peel, an all-solid-state ASC device based on the NPC negative electrode and a MnO_2 positive electrode; [e] N-doping cotton-derived carbon frameworks/graphene aerogels; those reported capacitance values were calculated based on a single electrode.

Supplementary References

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