Diaminopyrene modified reduced graphene oxide as novel electrode material for excellent performance supercapacitors

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Supplementary Figures

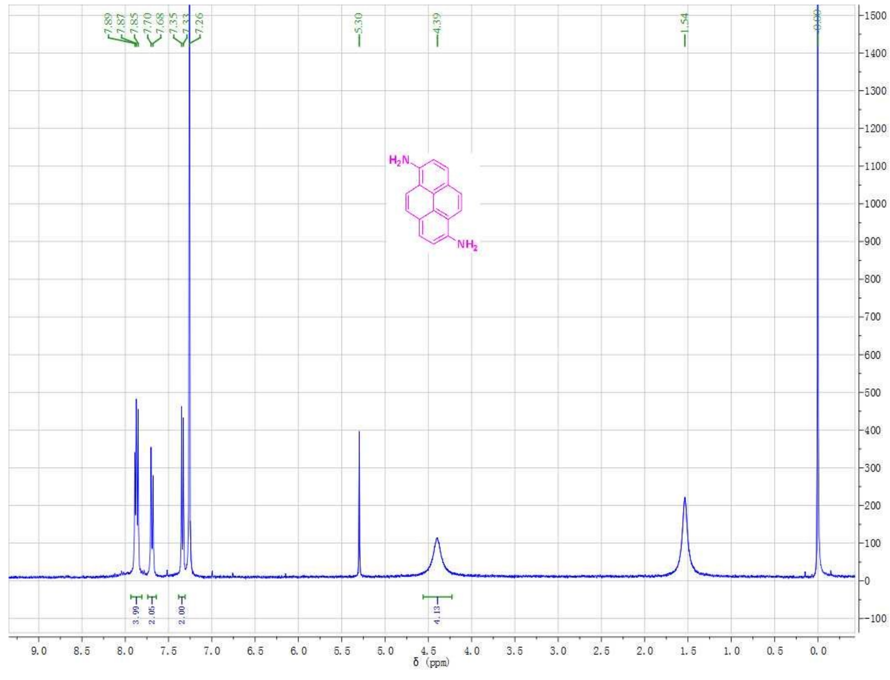

Fig. S1 NMR spectra of the prepared DAP materials.

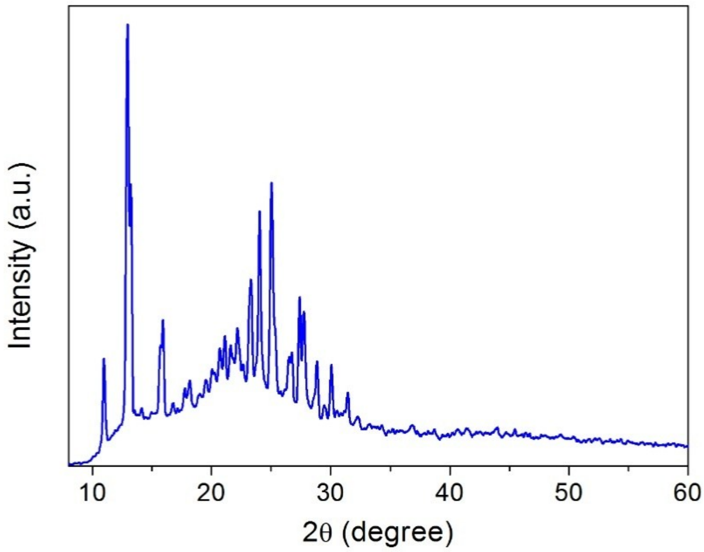

Fig. S2 XRD pattern of DAP sample.

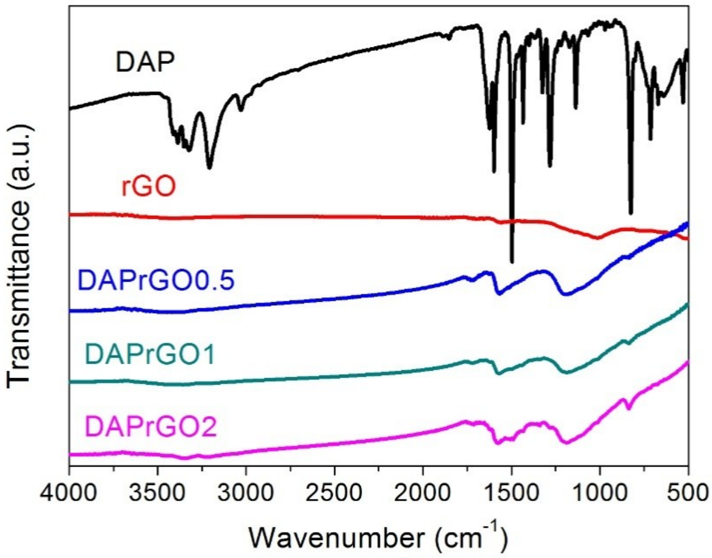

Fig. S3 The comparison of FTIR spectra of DAP, rGO, DAPrGO0.5, DAPrGO1, and DAPrGO2 samples.

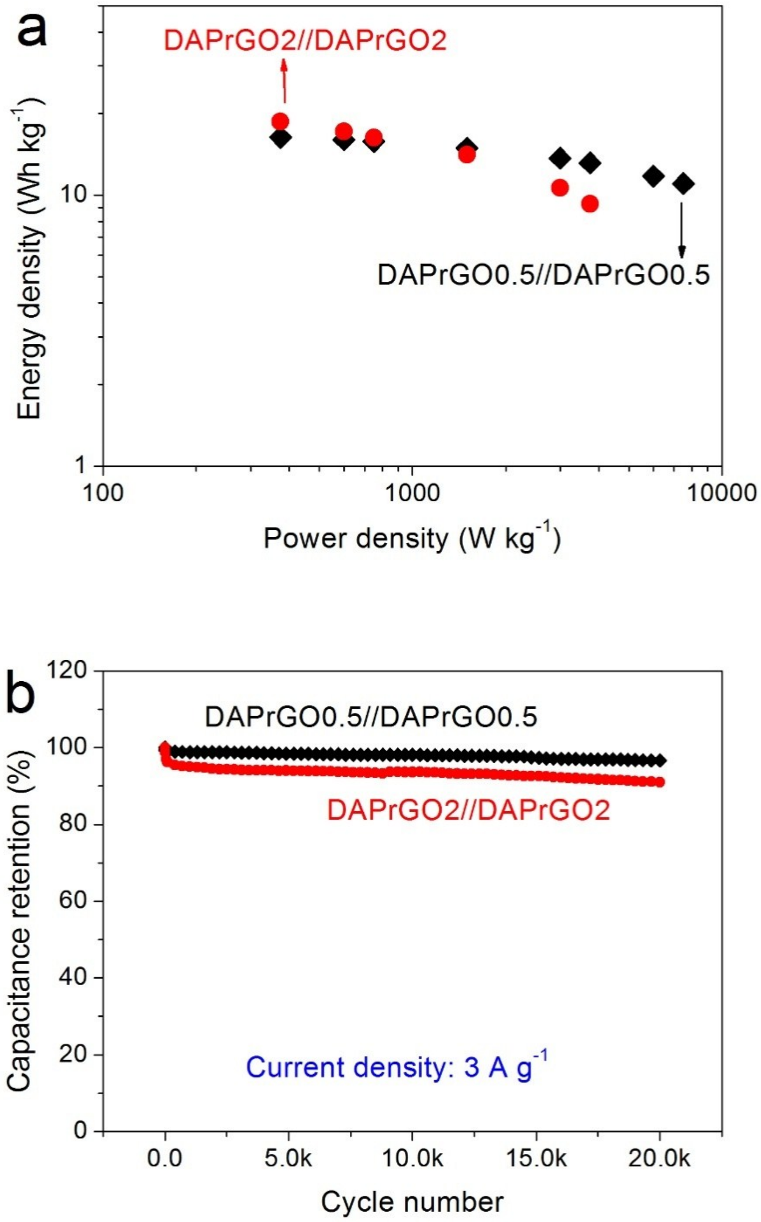

Fig. S4 (a) Ragone plot and (b) Cyclic stability of DAPrGO0.5//DAPrGO0.5 SSS and DAPrGO2//DAPrGO2 SSS.

Table S1 Textural parameters of the GO, rGO and DAPrGOs samples

Sample	S_{BET} (m^2 g^{-1})	D_{DFT} (nm)	V (cm^3 g^{-1})
GO	5.80	2.199	0.002
rGO	122.96	14.592	0.531
DAPrGO0.5	26.56	40.321	0.084
DAPrGO1	38.83	13.963	0.129
DAPrGO2	32.17	12.730	0.126

Note: S_{BET} is the BET surface area; D_{DFT} is the DFT desorption average pore diameter; V is the total pore volume.

Table S2 Comparison of electrochemical performances for the similar conductive organic-based electrode materials in the previous literatures.

Samples	*Sc* (F g^{-1})	Current density (Scan rate)	E (W h kg^{-1}) P (W kg^{-1})	capacitance retention (cycle numbers)	Ref.
AQS@rGO	567.1	1 A g^{-1}	29.2; 3420	83.1% 10,000	1
quinone-coated carbon onions	264	1.3 A g^{-1}	4.5	97% 10,000	2
PPy-RGO	255.7	0.2 A g^{-1}	7.02; 89	93% 1,000	3
Ap-rGO	160	5 mV s^{-1}	5.6; ~ 50	85% (5,000)	4
RGO/BPA	466	1 A g^{-1}	/; /	90% (4,000)	5
PYT-NH_2/rGO	326.6	0.5 A g^{-1}	15.4; 300.3	~100% (25,000)	6
RGO/UCNTs/PANI	359.3	1 A g^{-1}	7.4; 189.0	80.5% (2,000)	7
AQSGH	258	0.3 A g^{-1}	/; /	>100% (2,000)	8
PPD modifie rGO	316.54	10 mV s^{-1}	27.01; 926.06	93.66% (4000)	9
PF-PAM-RGO	214.8	0.2 mA cm^2	80.59 µWh cm^2; 2549.83 µW cm^2	92.36% 8000	10
DAPrGO1	397.63	0.5 A g^{-1}	25.84 (375); 18.71 (7500)	94.57% (20,000)	This work

Notes and references

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