Supplementary Information

Highly porous graphitic biomass carbon as advanced electrode materials for supercapacitors

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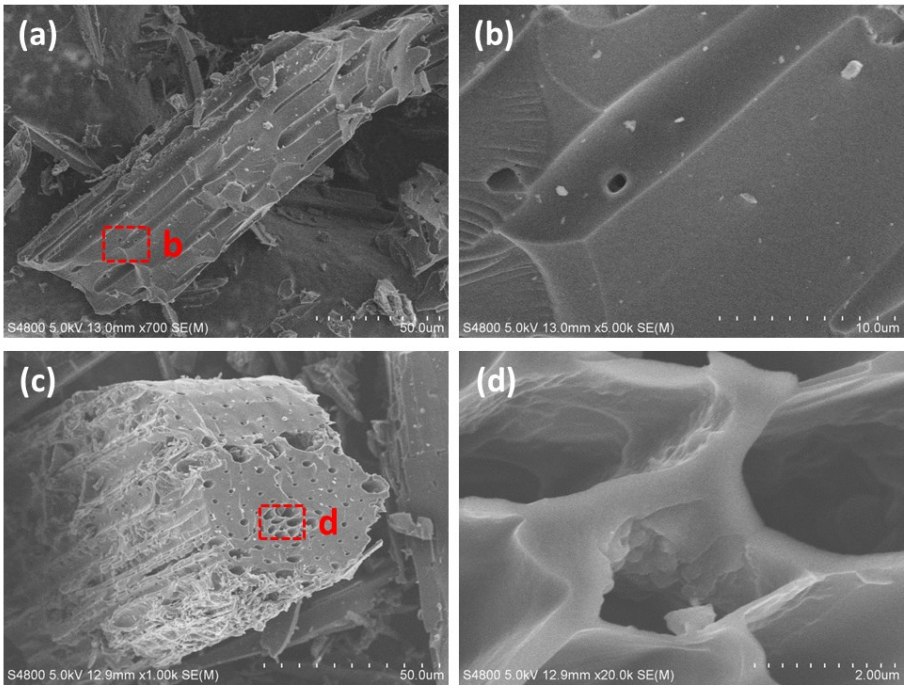

Fig.S1 SEM images of the BC sample: (a and c) low magnification, (b and d) high magnification.

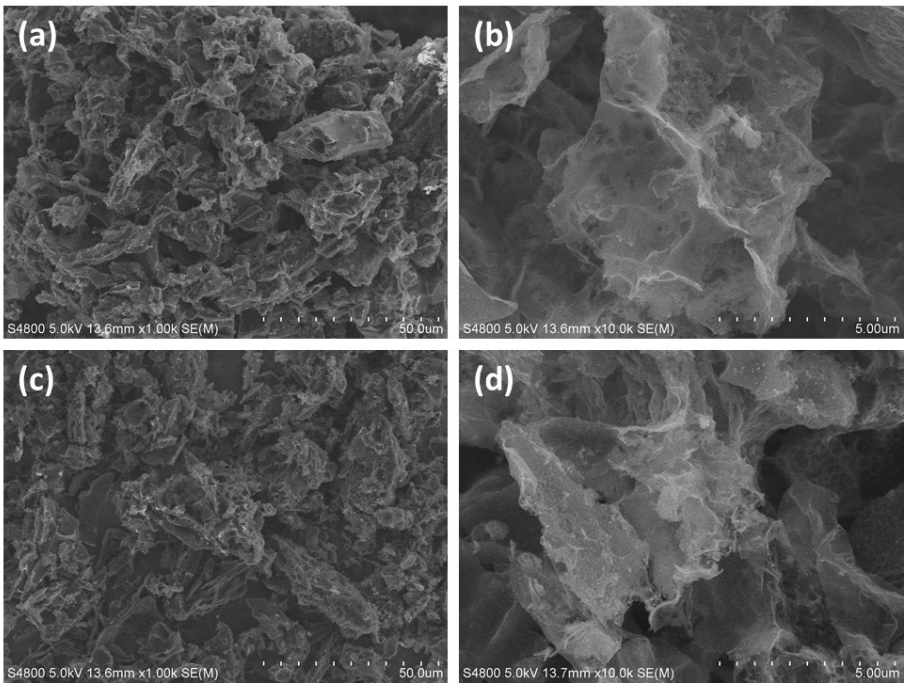

Fig.S2 SEM images of the PGBC-2 sample: (a and c) low magnification, (b and d) high magnification.

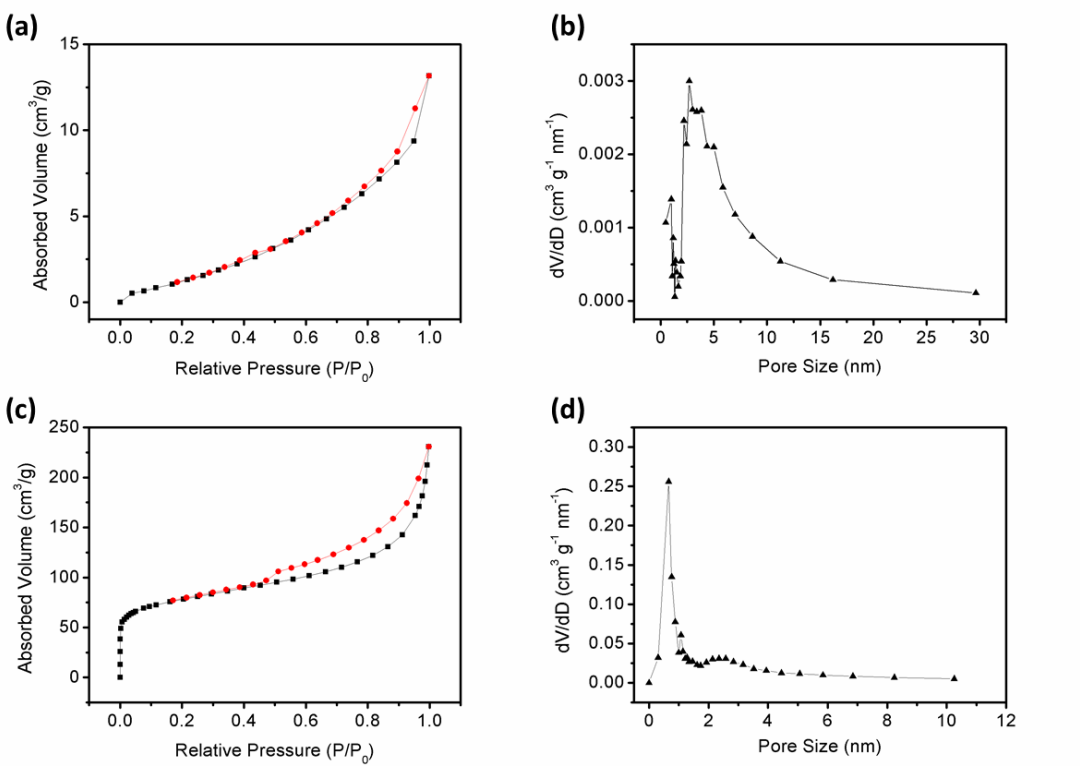

Fig.S3 N_2 adsorption–desorption isotherms of (a) BC and (c) PGBC-2, and pore size distributions of (b) BC and (d) PGBC-2.

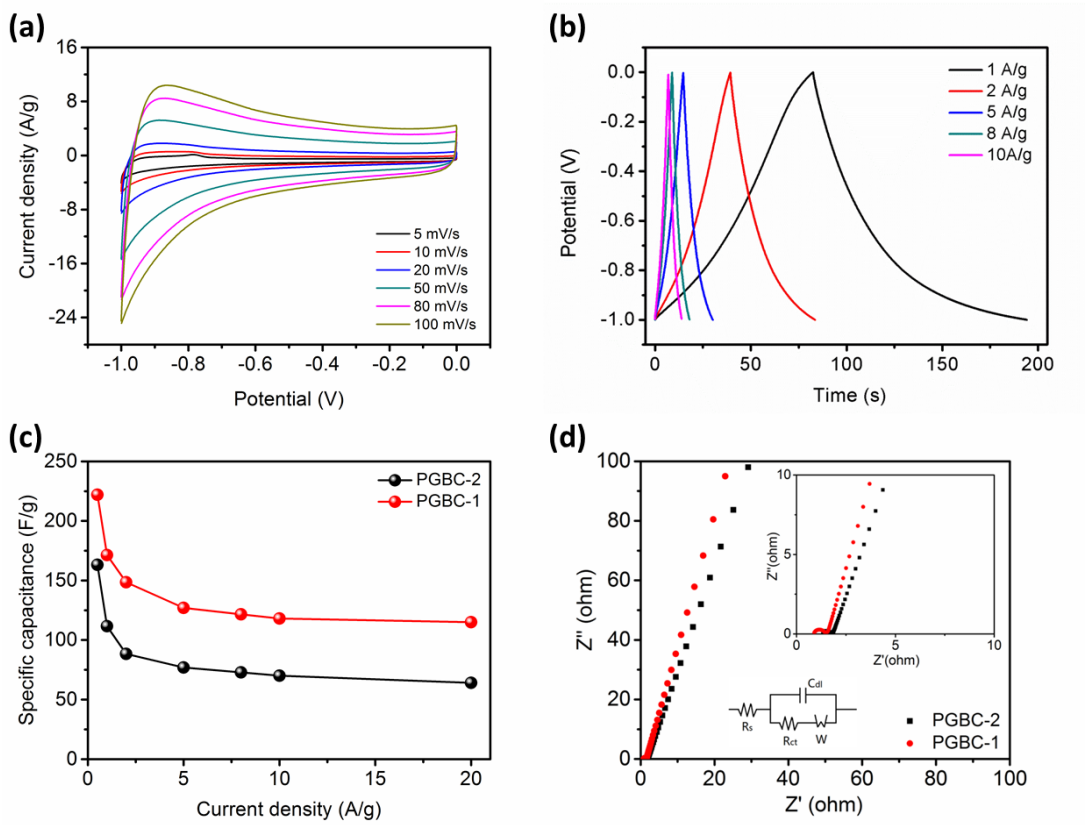

Fig.S4 (a) CV profiles and (b) GCD profiles of the single PGBC-2 electrode measured in a three-electrode system; (c) comparison of specific capacitances of each electrodes at various current densities; (d) EIS spectra (Nyquist plots) of electrodes collected at open-circuit potential and the electrical equivalent circuit used for fitting (inset).

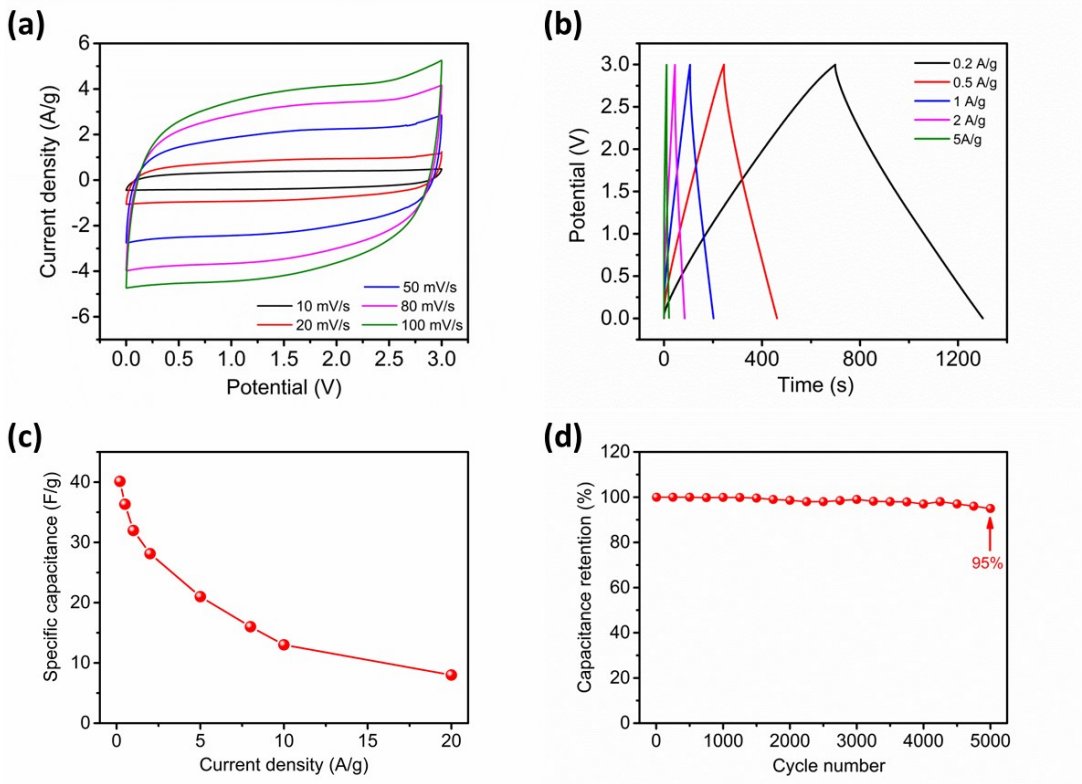

Fig.S5 Electrochemical performance of the PGBC-1 based coin-type symmetric supercapacitor in EMIM TFSI. (a) CV profiles; (b) GCD profiles; (c) specific capacitances at various current densities; (d) capacitance retention for 5000 cycles at 1.0 A/g.

Table S1. Comparison of various carbonaceous electrode based supercapacitors in aqueous electrolyte system

Materials	Electrolyte	Power density (W/kg)	Energy density (Wh/kg)	Ref.
Porous graphitic carbon nanosheets	KOH	200	9.4	[50]
3D hierarchical porous graphitic carbons	KOH	494	7.9	[9]
N-doped carbon nanofibers	H_3PO_4/PVA	1200	5.9	[51]
3D graphene hydrogel films	H_2SO_4/PVA	5000	4.5	[52]
Graphene on carbon cloth	H_2SO_4/PVA	670	1.64	[53]
Activated carbon monolith	H_2SO_4	12000	1.0	[54]
Carbon nanotubes (CNT) sponge	KOH	300	0.34	[55]
Paper coated with CNT	H_2SO_4/PVA	2500	0.4	[56]
PGBC	KOH/PVA	100.2 10000	6.68 3.33	Our work