Electronic Supplementary Information(ESI)

Removal of NaCl from saltwater solutions using micro/mesoporous carbon sheets derived from watermelon peels via deionization capacitors

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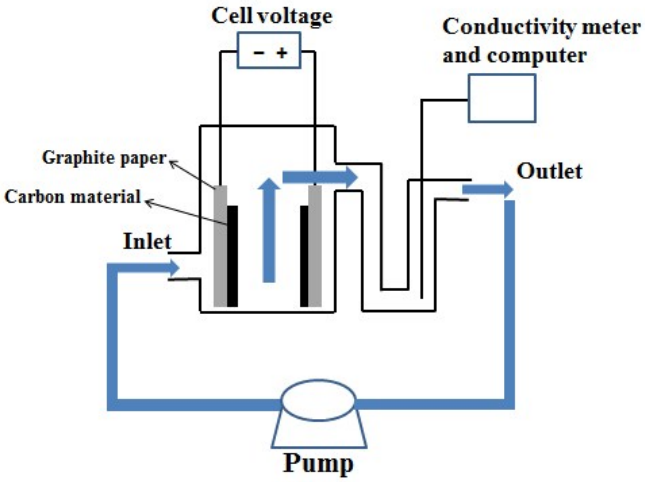

Fig.S1 Schematic of the flow-through electrode setup.

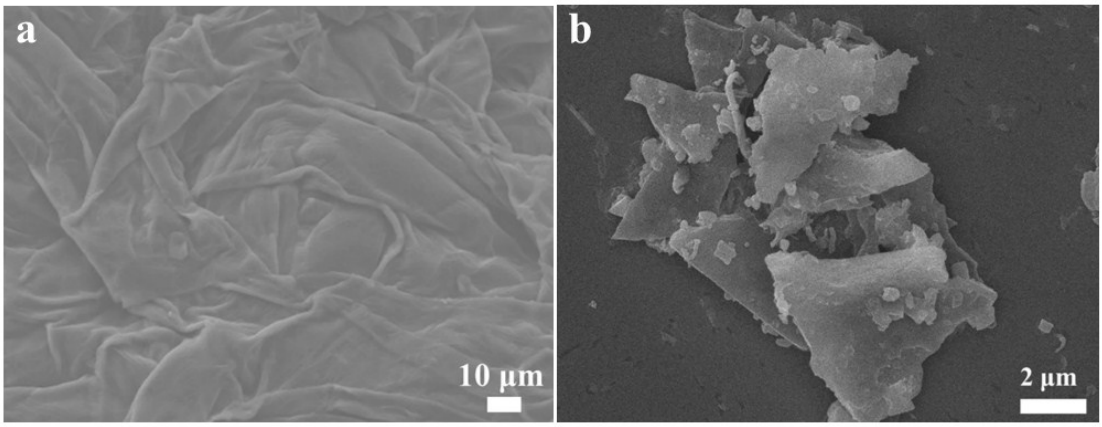

Fig. S2 SEM images of the (a) freeze dried watermelon peel and (b) carbonized watermelon peel (before HF etching).

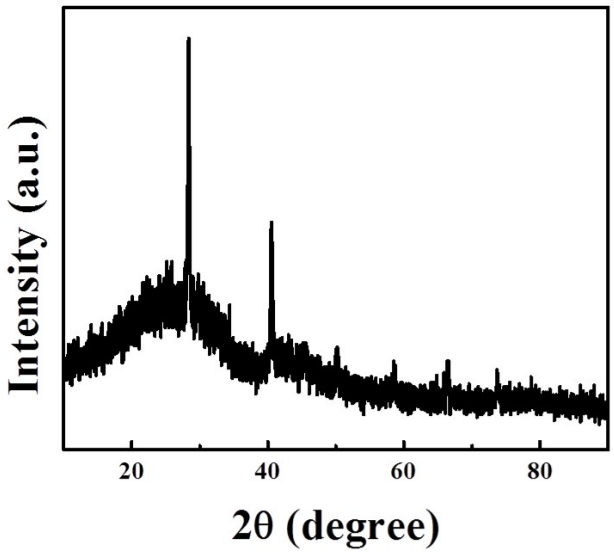

Fig.S3 XRD patterns of the carbonized watermelon peel (before HF etching).

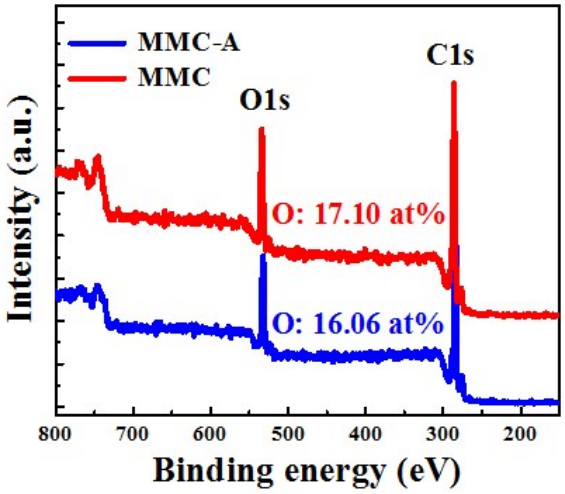

Fig.S4 XPS spectra of MMC-A and MMC.

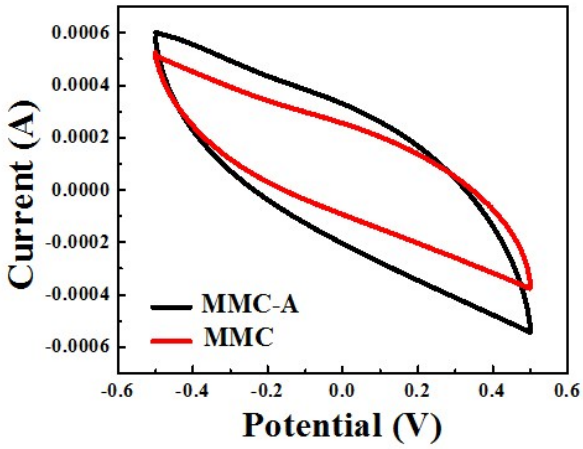

Fig. S5 CV curves of the MMC-A and MMC electrodes at 1mV s^{-1} in a 500 mg L^{-1} NaCl solution.

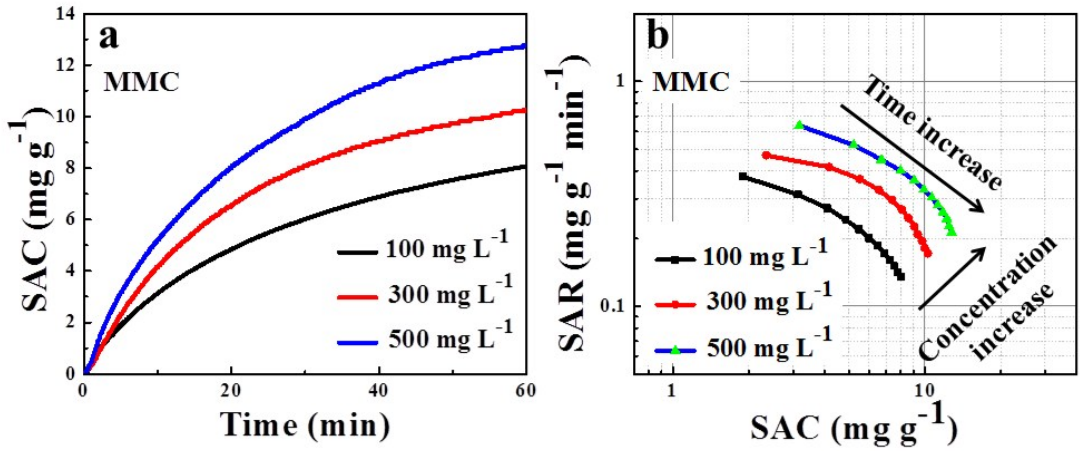

Fig. S6 (a) Plots of SAC *vs.* deionization time for the MMC electrodes; (b) Ragone plots of SAR *vs.* SAC for the MMC electrodes at a cell voltage of 1.2 V.

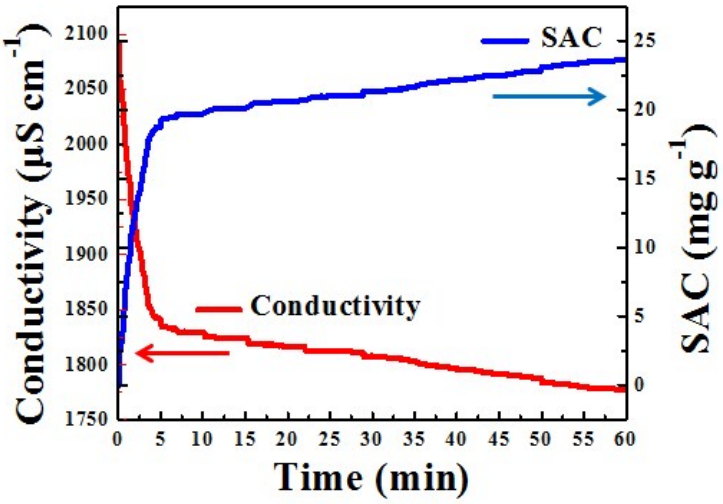

Fig.S7 Plots of solution conductivity and SAC *vs.* time for the MMC-A electrodes in a 1000 mg L^{-1} NaCl solution at 1.2 V. The SAC of electrodes is 23.65 mg g^{-1}.

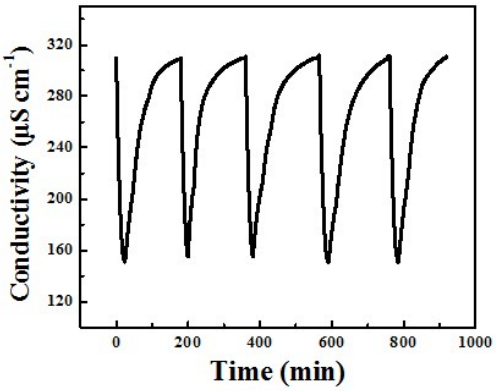

Fig.S8 Regeneration curves of the MMC-A electrodes in a 150 mg L^{-1} NaCl solution at 1.2 V.

Table S1. Comparison of salt adsorption capacity of different electrode materials for flow-through deionization capacitor

Electrode material	Cell voltage (V)	NaCl concentration (mg L^{-1})	SAC (mg g^{-1})	Ref.
Purified graphene	1.5	~100	1.27	[1]
Carbon nanotubes/graphene	1.2	~500	1.4	[2]
Carbon nanotubes	1.2	500	2.57	[3]
Activated carbon treated by sulfuric acid	1.2	500	~2.9	[4]
Activated carbon/polyaniline	1.2	200	~3.2	[5]
Nitrogen-doped graphene	1.8	100	4.81	[6]
Porous carbon spheres	1.6	500	5.81	[7]
Activated carbon nanofibers/carbon nanotubes	1.2	400	6.4	[8]
Porous carbon nanofibers/dimethyl sulfone	1.2	500	8.1	[9]
Porous carbon	1.2	500	9.39	[10]
Activated carbon	1.2	500	9.72	[11]
Graphene aerogels	1.2	500	9.9	[12]
Graphenic fibers	1.2	500	13.1	[13]
Graphene oxide/porous carbon nanofibers	1.2	450	13.2	[14]
Nitrogen-doped porous carbon spheres	1.2	500	13.71	[15]
Porous carbon polyhedra	1.2	500	13.86	[16]
Three-Dimensional Graphene Architecture with Nanopores	1.6	500	15	[17]
Carbon nanorods	1.2	500	15.12	[18]
Mesoporous graphene	1.6	~500	15.21	[19]
Nitrogen-doped carbon nanorods	1.2	500	17.62	[20]
Mesoporous carbon	1.2	4000	15.2	[21]
resorcinol-formaldehyde mesoporous carbon	1.2	3000	14.68	[22]
Micro/mesoporous carbon	1.2	100	12.43	This work
Micro/mesoporous carbon	1.2	300	15.34	This work
Micro/mesoporous carbon	1.2	500	17.38	This work

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