Supplementary Information

Highly Compact, Free-Standing Porous Electrodes from Polymer-Derived Nanoporous Carbons for Efficient Electrochemical Capacitive Deionization

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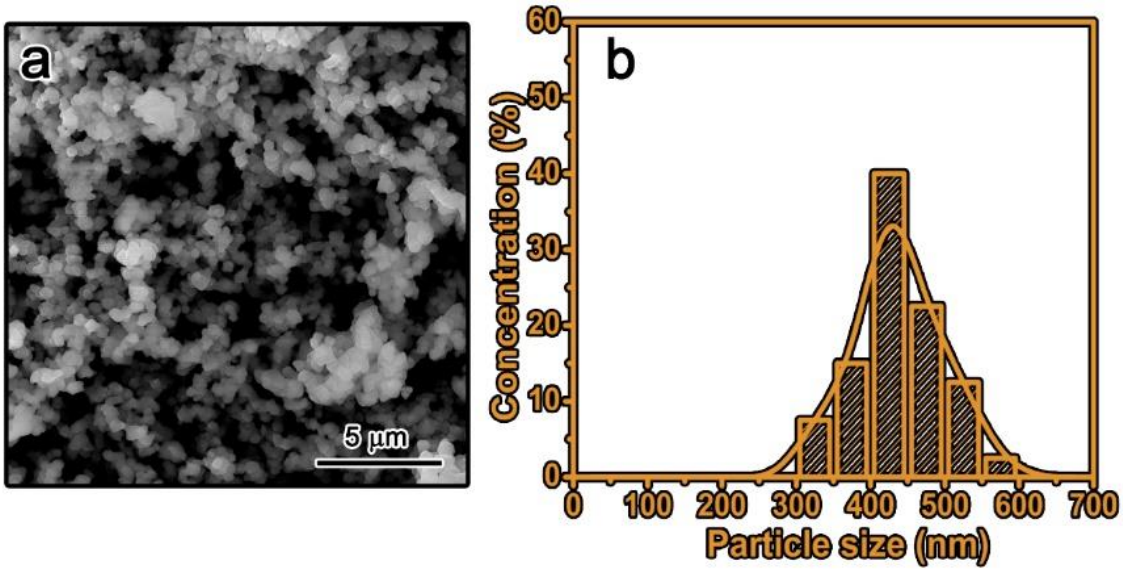

Figure S1. a) SEM image of PPy. b) The particle size distribution of PPy. The average particle size is about 440 ± 46.9 nm.

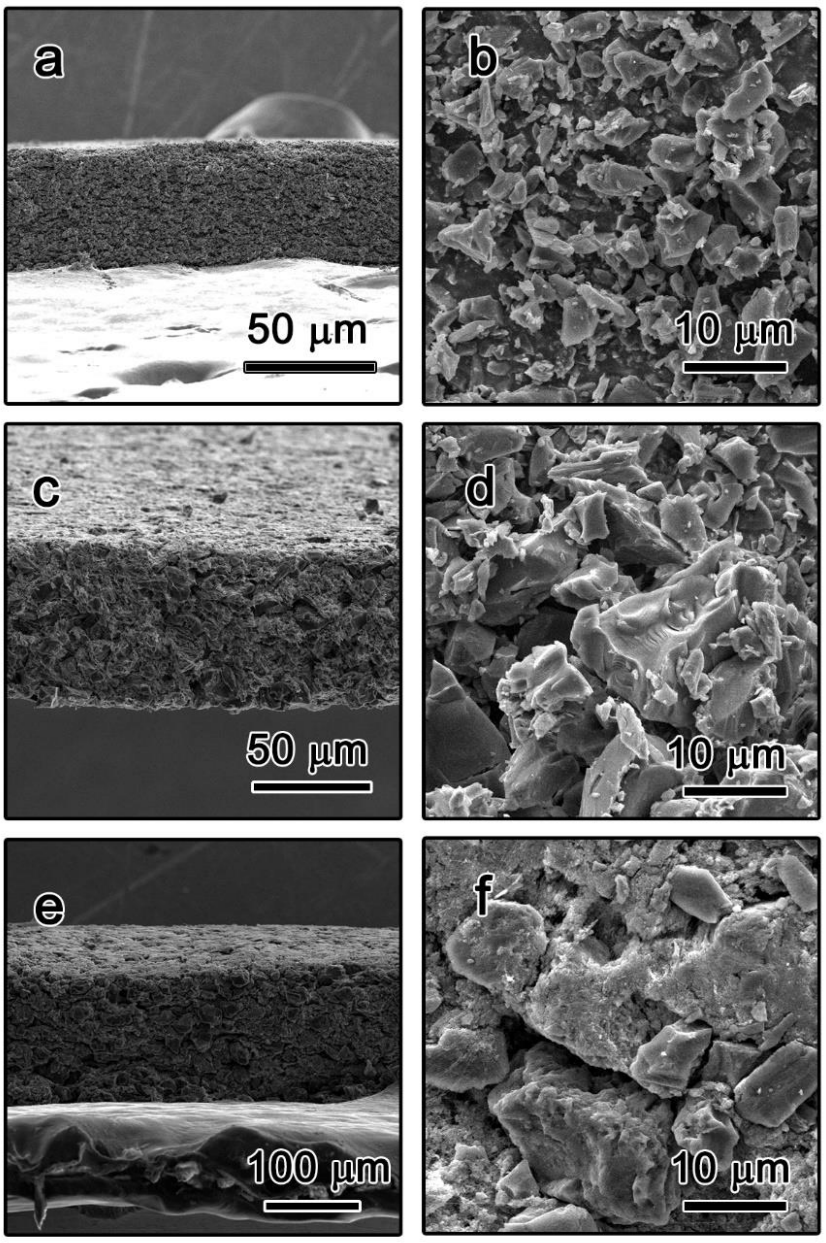

Figure S2. Cross-sectional and magnified SEM images of a,b) AC-1, c,d) AC-2, and e,f) PACMM.

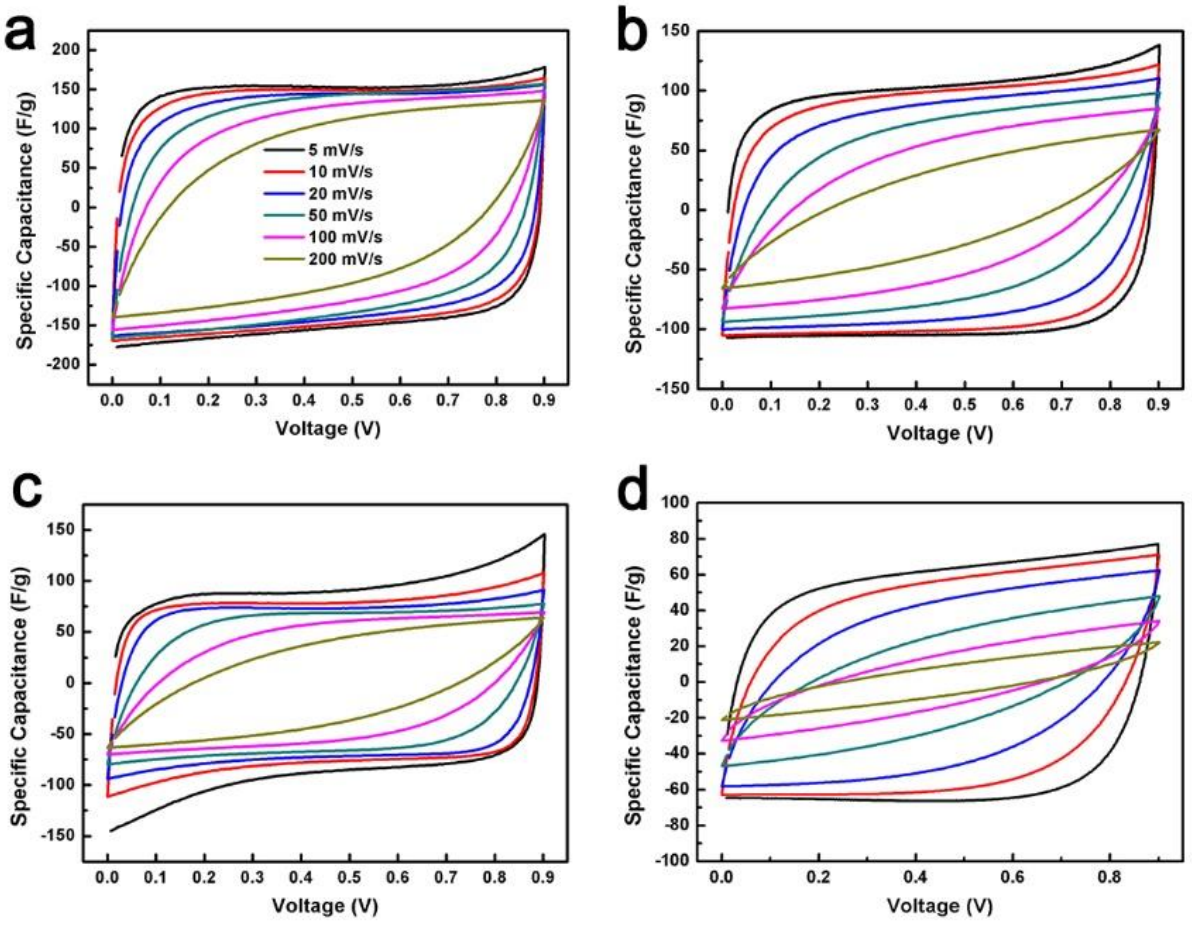

Figure S3. Cyclic voltammetry (CV) curves of a) PPy-AMC, b) AC-1, c) AC-2, and d) PACMM with different scan rates ranging from 5 mV/s to 200 mV/s.

Table S1. Summary of state-of-art porous carbon materials used for capacitive deionization.

Materials	**Surface area (m^2 g^{-1})**	**Pore volume (cm^3/g)**	**NaCl concentration**	**Scan rate (mV/s)**	**C_{sp} (F g^{-1})**	**Ref.**
3D Hierarchical Carbon	2061	1.01	0.5 M	5 10 40	142 95 40	(1)
Nitrogen-doped hollow carbon spheres	512	0.70	1 M	5 40	152 46	(2)
3D Graphene Archiectures	824	NA	0.5 M	1	151	(3)
High surface area graphene	305	NA	0.5 M	10 200	57 34	(4)
Graphene-like carbon nanosheets	220	NA	0.5 M	10 40	54.7 18.4	(5)
3D porous graphene	3513	NA	0.015 M	2	20.1	(6)
Carbon fiber/graphene	649	0.202	1 M	2 100	111 76	(7)
Sandwich-like N-doped graphene	918	2.41	0.5 M	10	56.2	(8)
N,P co-doped 3D hierarchical carbon	349	0.38	0.5 M	5	221	(9)
PPy-AMC (this work)	**2789**	**1.85**	**0.5 M**	**5 200**	**157 93**	**This work**

Table S2. Charge efficiency of electrode materials at various charging voltages

	0.4 V	0.6 V	0.8 V	1 V	1.2 V
PPy-AMC	0.97	0.92	0.97	0.96	0.88
AC-1	0.97	0.99	0.98	0.97	0.91
AC-2	0.44	0.89	0.99	0.91	0.98
PACMM	0.49	0.75	0.78	0.67	0.71

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