Electronic Supplementary Material (ESI) for Nanoscale.

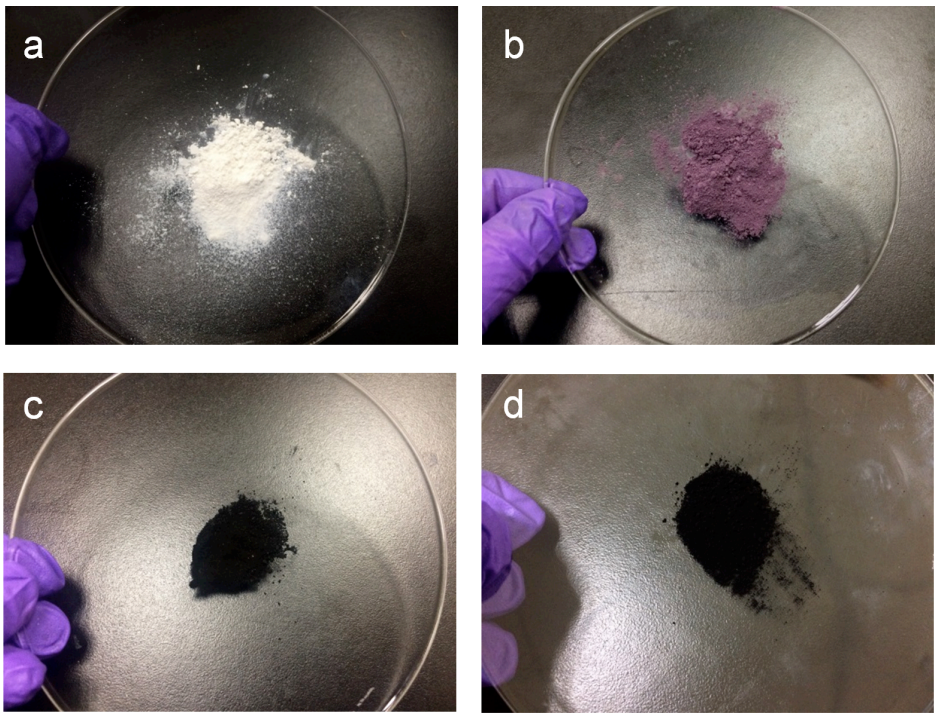

Figure S1. Optical micrographs of (a) ZIF-8 and (b) Au@ZIF-8 precursor and samples carbonized at 800 °C, (c) NC800 and (d) Au@NC800.

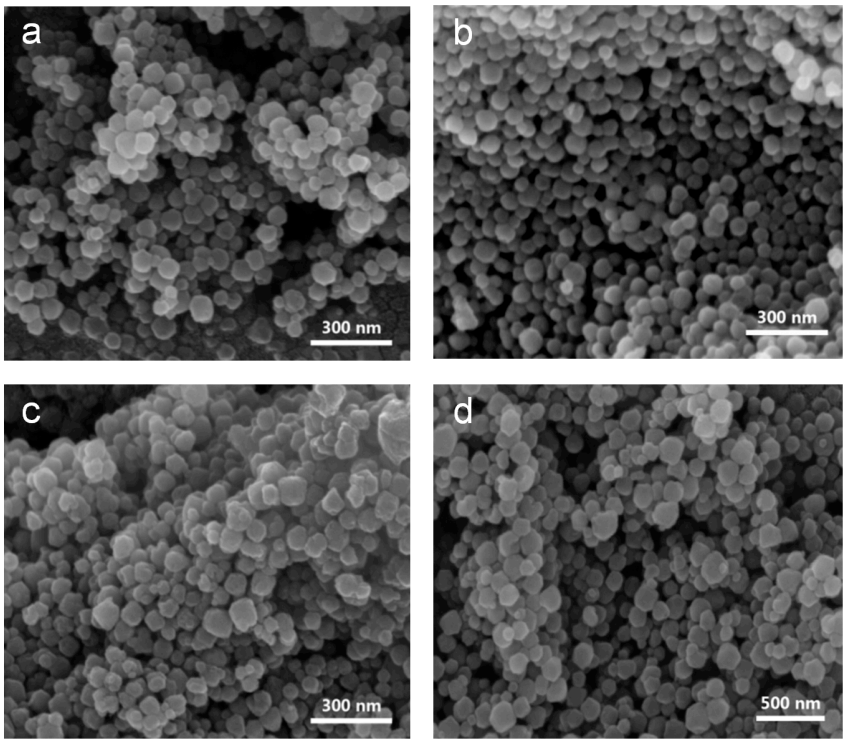

Figure S2. SEM images of (a) ZIF-8, (b) NC600, (c) NC800 and (d) NC900.

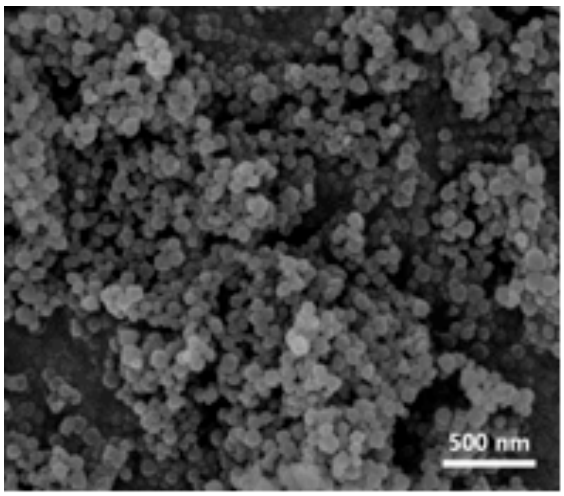

Figure S3. SEM image of NC800-PEDOT.

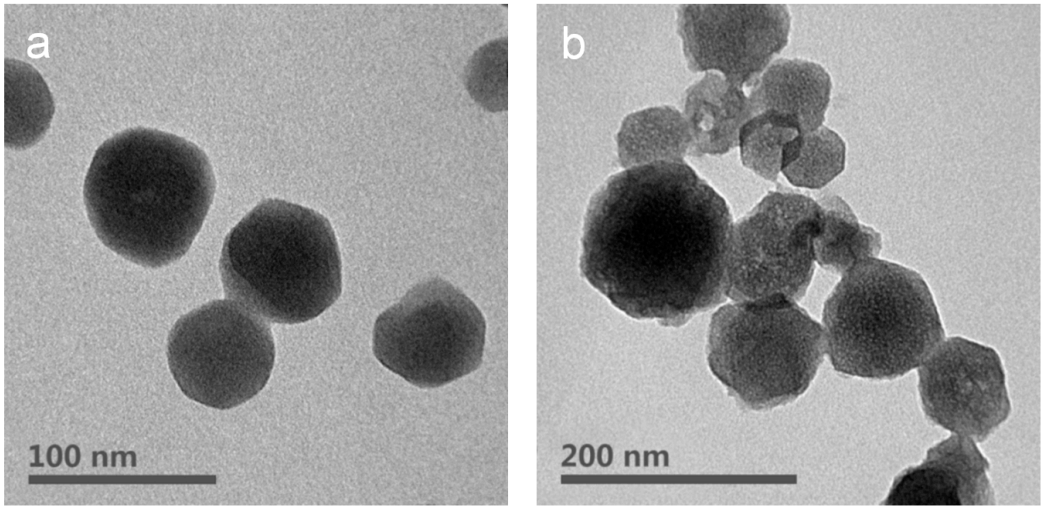

Figure S4. TEM images of (a) ZIF-8 and (b) NC800.

Table S1. Summary of peaks in FT-IR spectra of ZIF-8, NC600, NC800, NC900, Au@ZIF-8, Au@NC800 and NC800-PEDOT.

Wavenumber/cm^{-1}	Functional groups
3372	O-H
2153	CN triple bond
1678	C=C/C=O
1586	C=N
1424/1461	COO
1305	N-H
993/1143	C-C/C-O-C

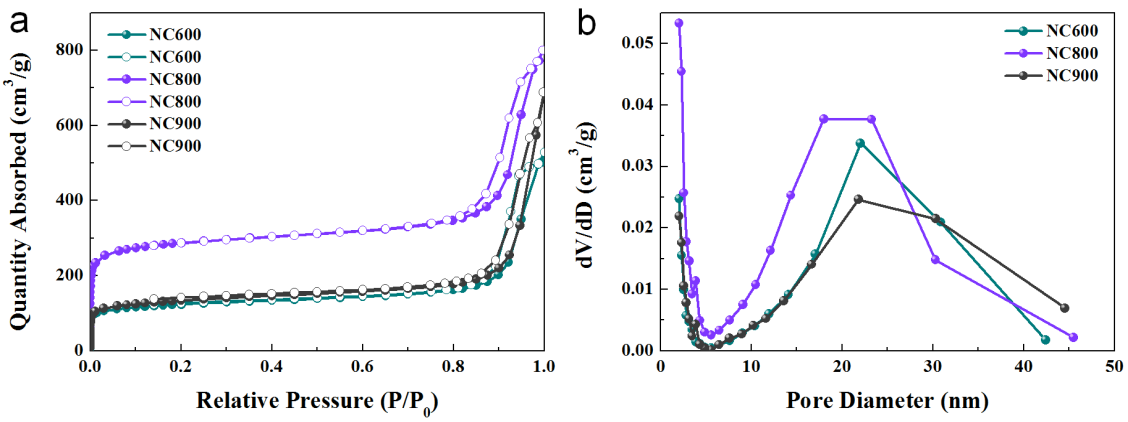

Figure S5. (a) N_2 adsorption/desorption and (b) pore-size distribution of NC600, NC800 and NC900.

Table S2. Summary of the porous characteristics for all samples.

Sample	S_{BET} (m^2/g)	V_{total} (cm^3/g)	V_{micro} (cm^3/g)	$V_{meso}+V_{macro}/V_{micro}$
ZIF-8	1343.18	1.61	0.53	2.02
Au@ZIF-8	1181.53	0.83	0.25	2.27
NC600	423.64	0.82	0.12	6.10
NC800	975.40	1.24	0.14	8.09
NC900	461.81	1.06	0.12	8.17
NC800-PEDOT	1185.99	1.55	0.32	3.82
Au@NC800	953.73	1.20	0.06	19.75

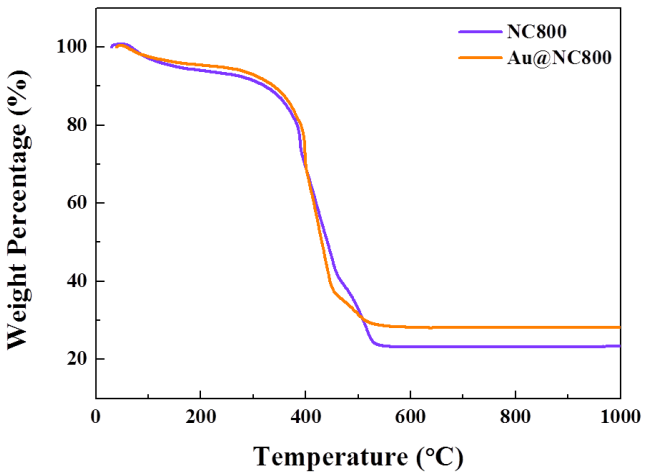

Figure S6. TG curve of NC800 and Au@NC800.

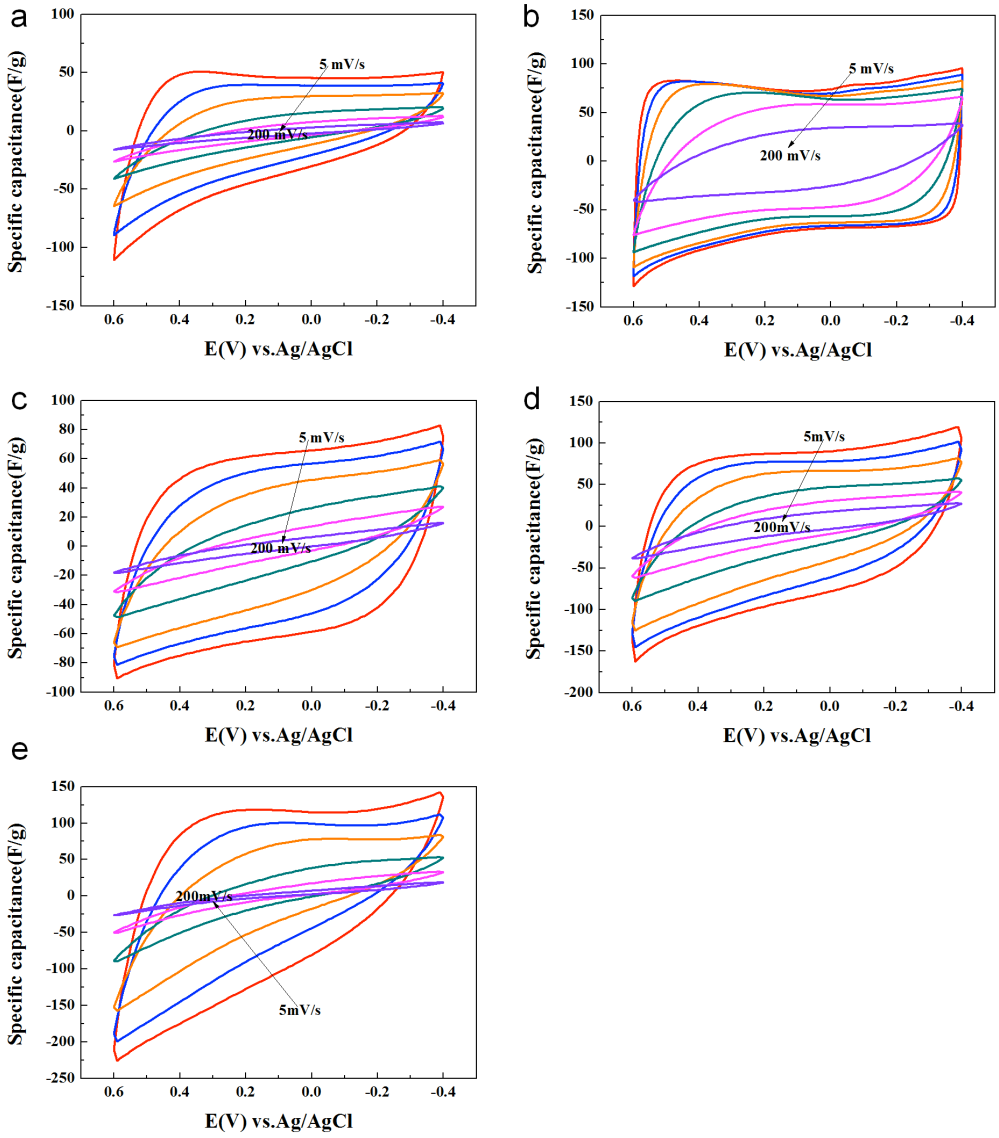

Figure S7. CV curves of (a) NC600, (b) NC800, (c) NC900, (d)Au@NC800 and (e)NC800-PEDOT in 1 M NaCl solutions at various scan rates.

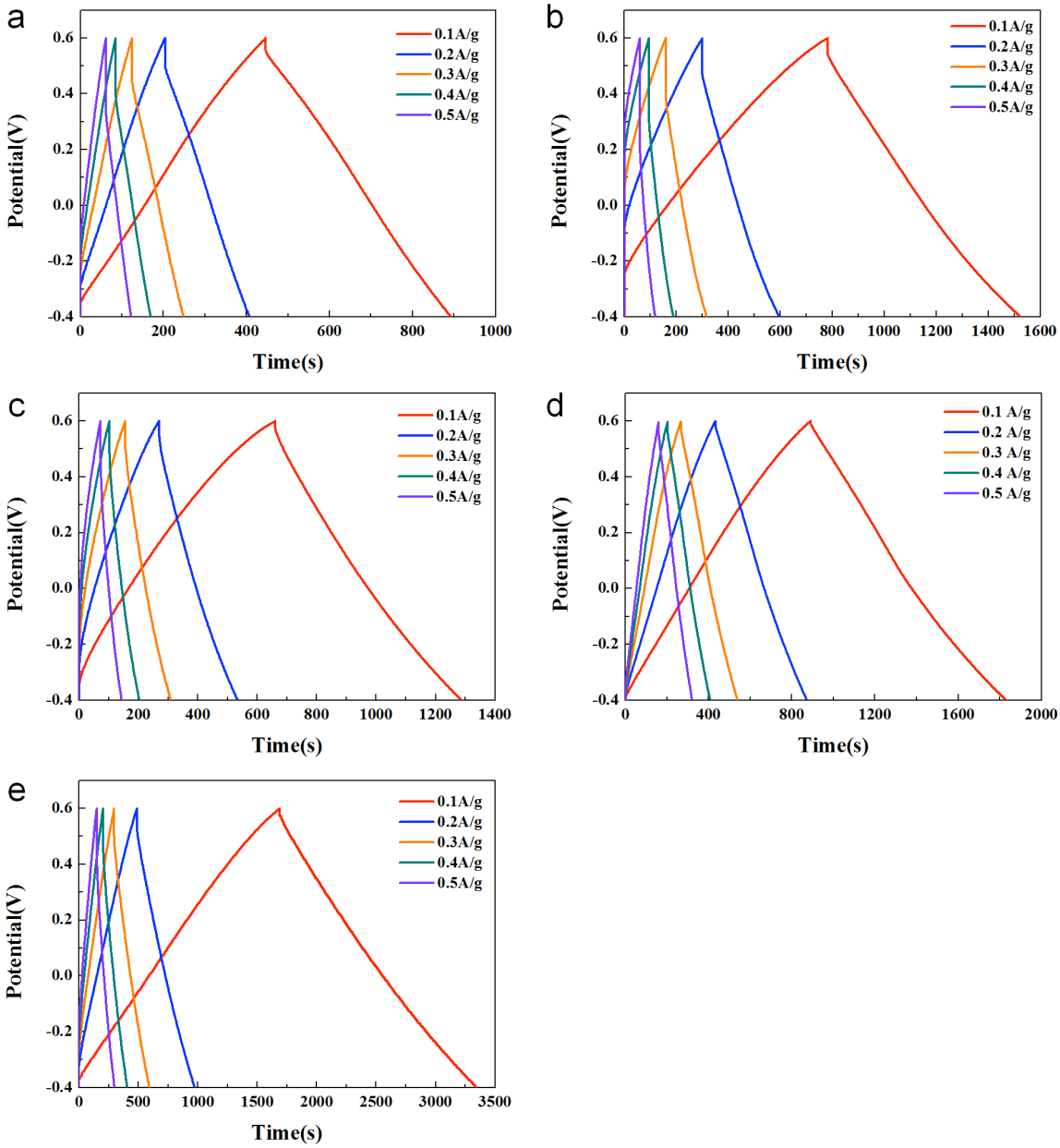

Figure S8. GC curves of (a)NC800, (b)NC800, (c)NC900, (d)Au@NC800 and (e)NC800-PEDOT samples at various current densities.

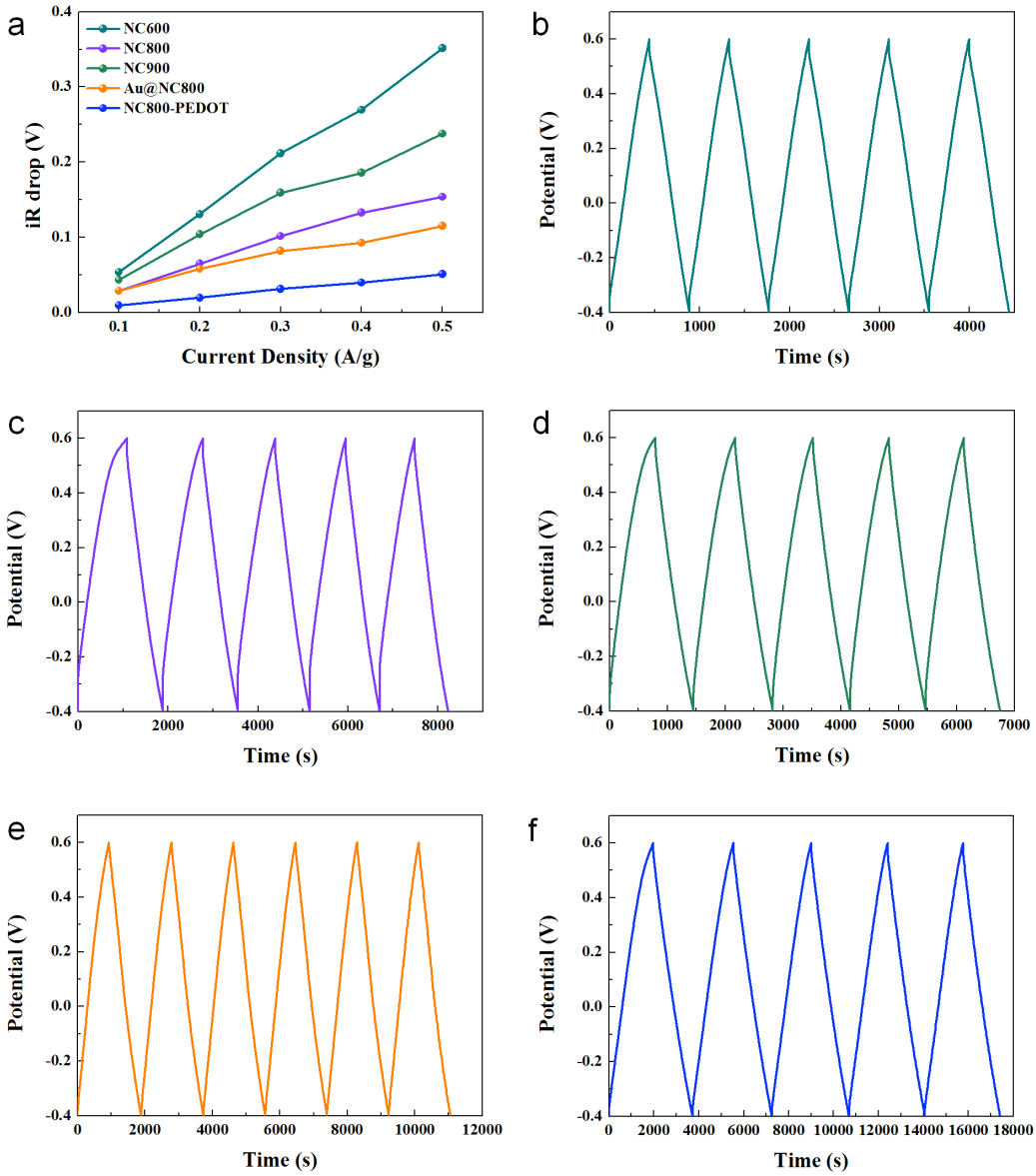

Figure S9. (a) *iR*-drops of the electrodes as a function of current density, (b-f) continuous GC curves of (b)NC800, (c)NC800, (d)NC900, (e)Au@NC800 and (f)NC800-PEDOT with a current density of 0.1 A/g.

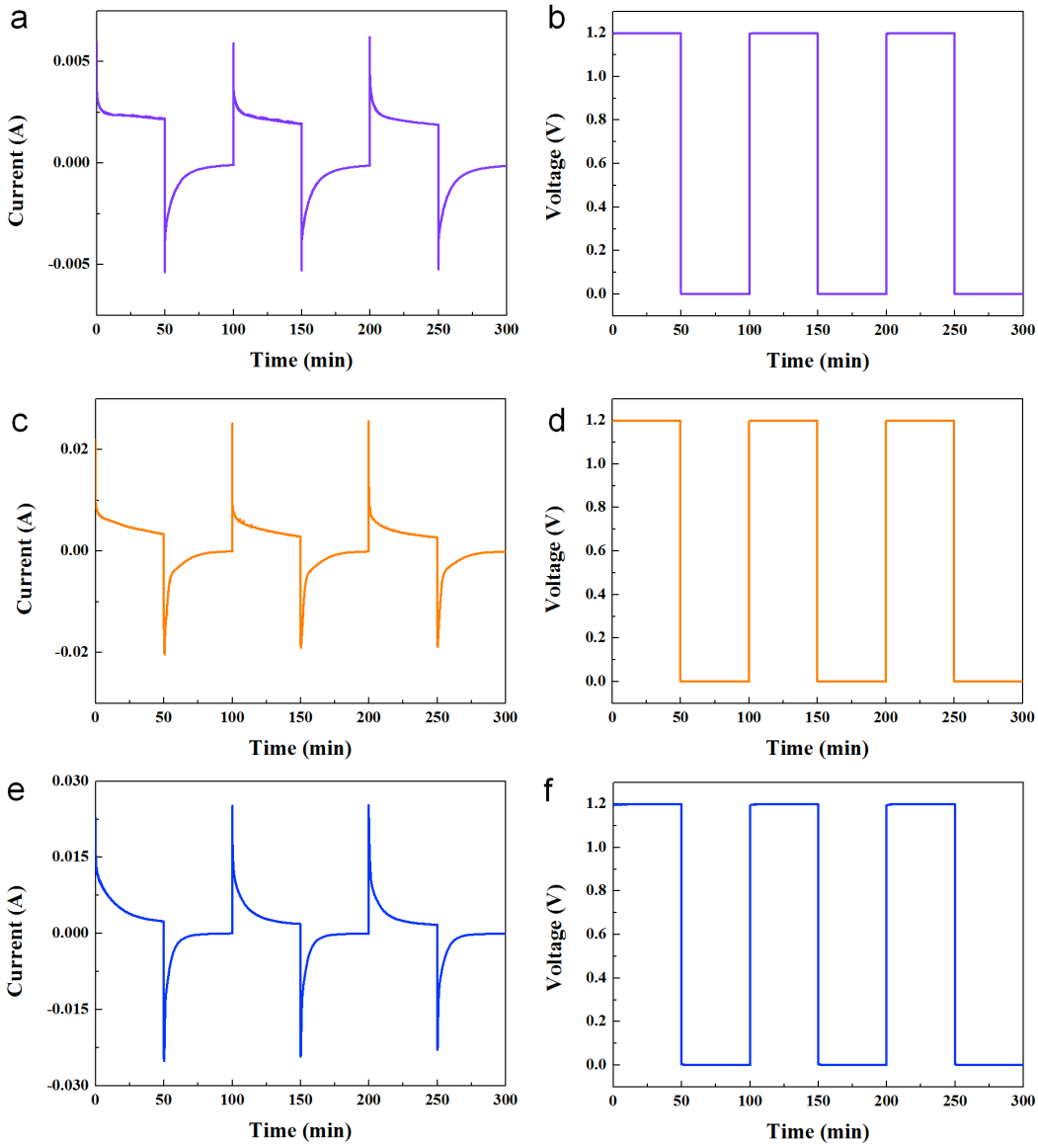

Figure S10. Currents responded with the applied voltage during 3-cycle CDI operation for (a,b) NC800, (c,d) Au@NC800 and (e,f) NC800@PEDOT samples.

Table S3. Comparison of electrosorption capacities of various carbon electrodes reported in literature.

Carbon material	Initial salt concentration (mg/L)	Cell voltage (V)	Salt adsorption (mg/g)	Ref
Carbon aerogel	~50	1.2	1.4	S1
Ordered mesoporous carbon	~50	0.8	0.93	S2
Carbon nanofiber webs	~95	1.6	4.6	S3
Reduced graphite oxidate-resol	~65	2.0	3.2	S4
PCP	500	1.2	13.86	S5
NC800	~58	1.2	8.52	S6
BNPC	500	1.4	16.63	S7
hCNT-PCP	1000	1.2	20.5	S8
e-CNT-PCP	500	1.2	16.98	S9
NC800	~58	1.2	8.36	This work
Au@NC800	~58	1.2	14.31	This work
NC800PEDOT	~58	1.2	16.18	This work

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