Electronic Supplementary Material (ESI) for Environmental Science: Nano.
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A New Synthesized Highly-Stable Ag/N-Carbon Electrode for Enhanced Desalination by Capacitive Deionization

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Content

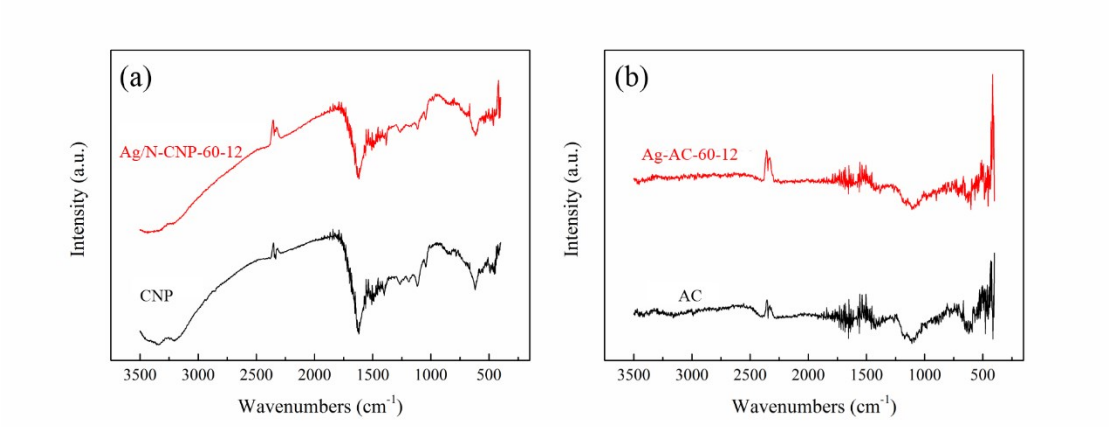

Figure S1. The FTIR spectrum of PmPD (a) and AC (b) before and after adsorb Ag^{+}.

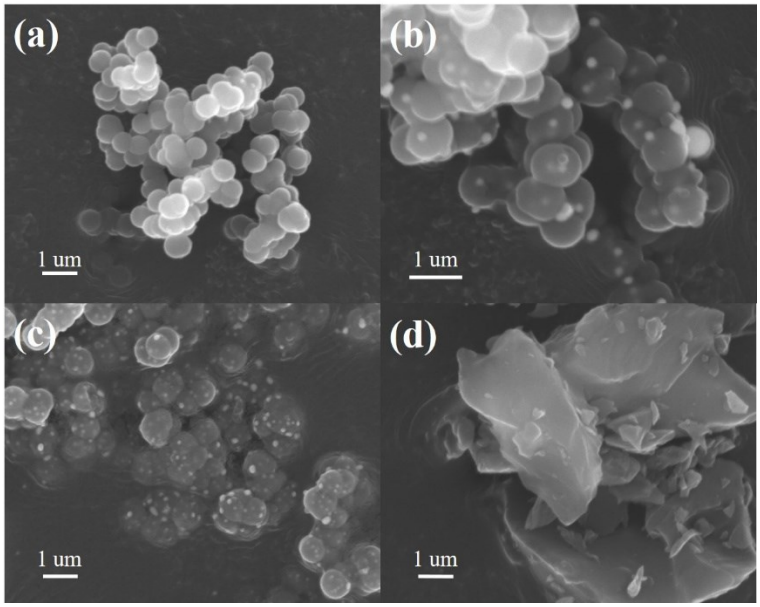

Figure S2. SEM image of CNP (a), Ag/N-CNP-60-2 (b), Ag/N-CNP-120-24 (c) and c-AC-Ag-60-12 (d).

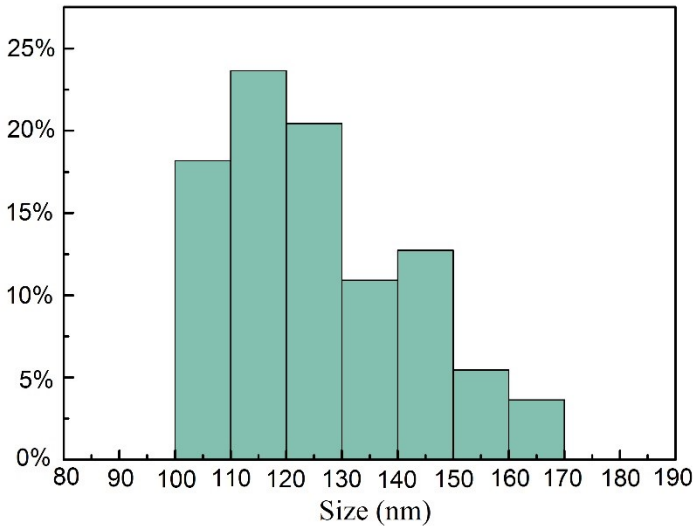

Figure S3. Particle size distribution of Ag/N-CNP-60-12.

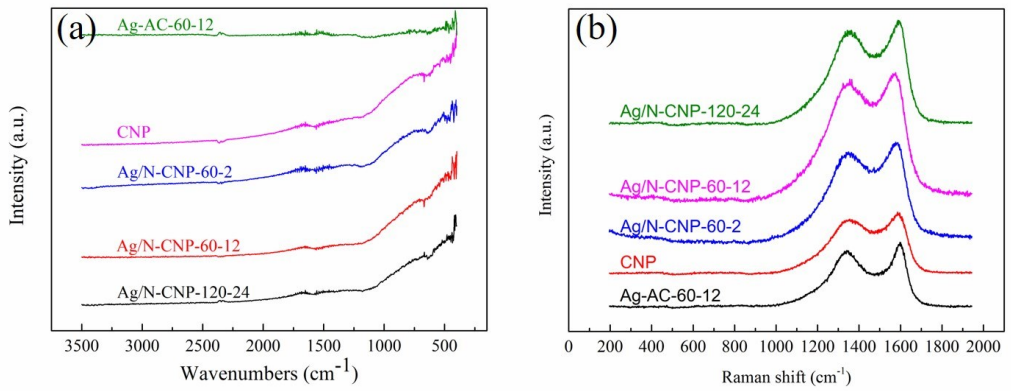

Figure S4. The FTIR and Raman spectrums of the series of the Ag/N-CNP.

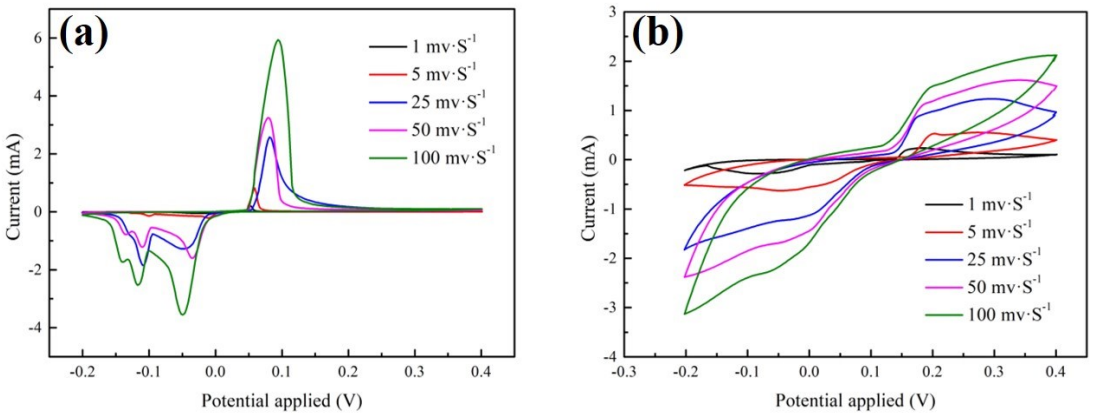

Figure S5. The CV curves of CNP and Ag/N-CNP-60-12 in 1M NaCl (a) and 500ppm Cl^- solution (b).

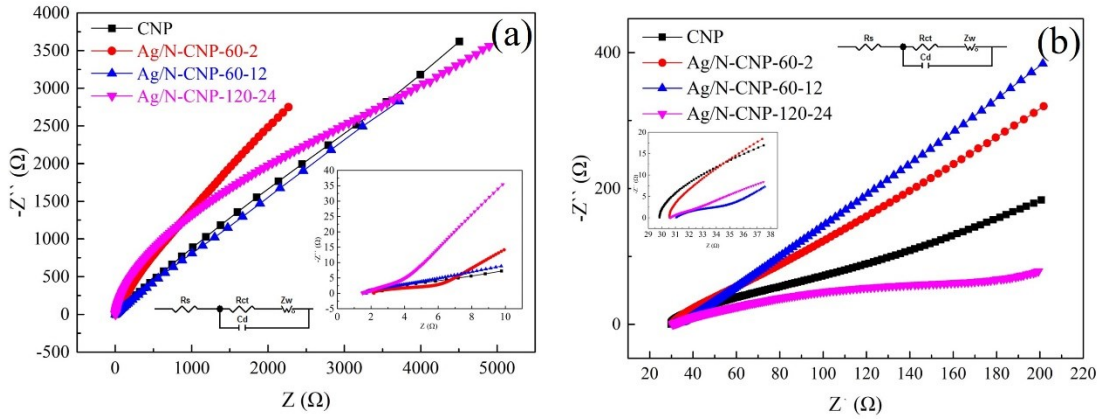

Figure S6. The Nyquist plot of CNP and Ag/N-CNP electrode in 1M NaCl (a) and 500ppm Cl^- solution (b).

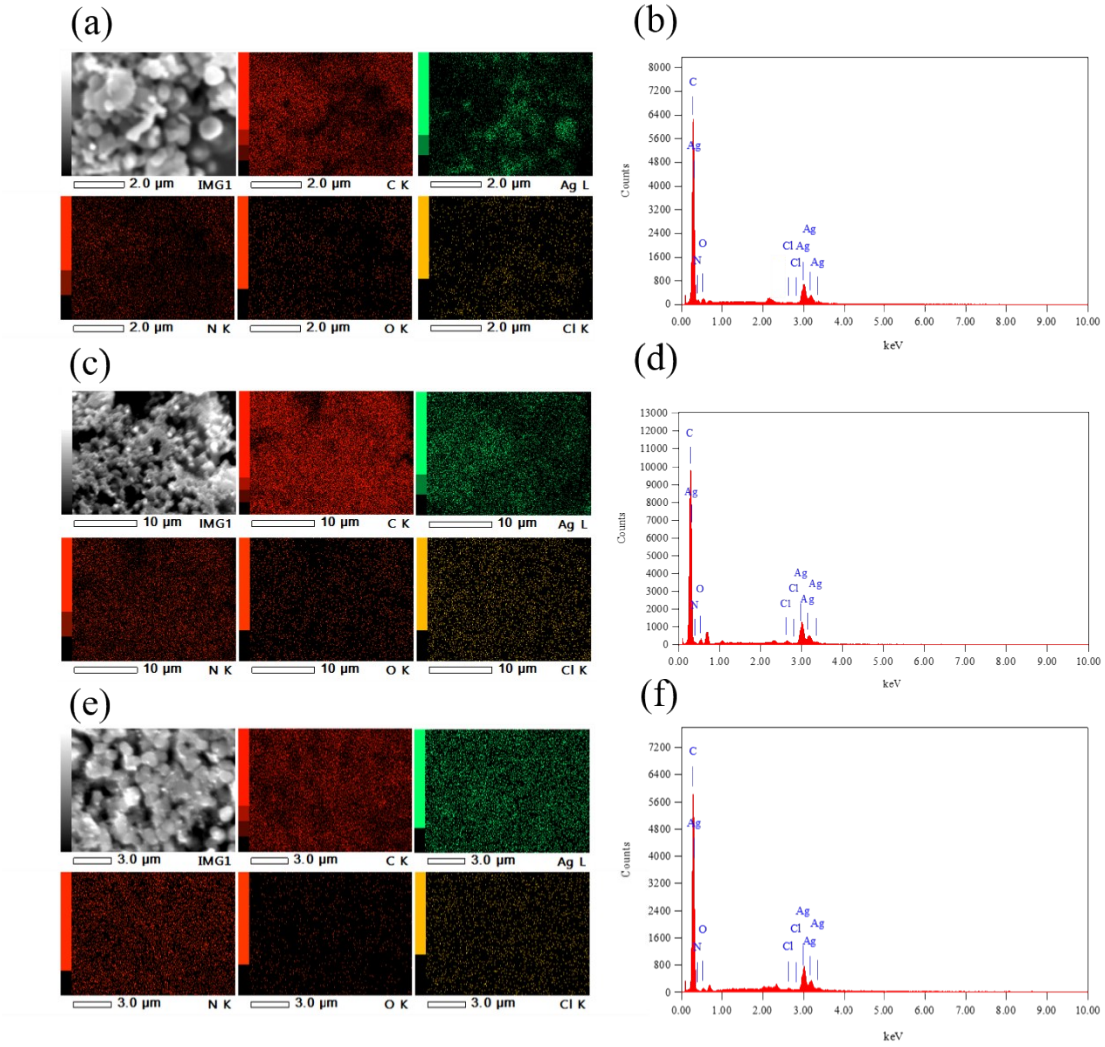

Figure S7. EDS mapping of Ag/N-CNP-60-12, initial (a, b), after10 cycles (c,d) and after 100 cycles (e, f).

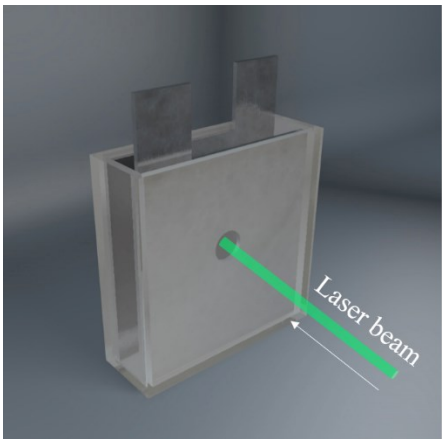

Figure S8. Schematic of *in-situ* Raman experiments set-up.

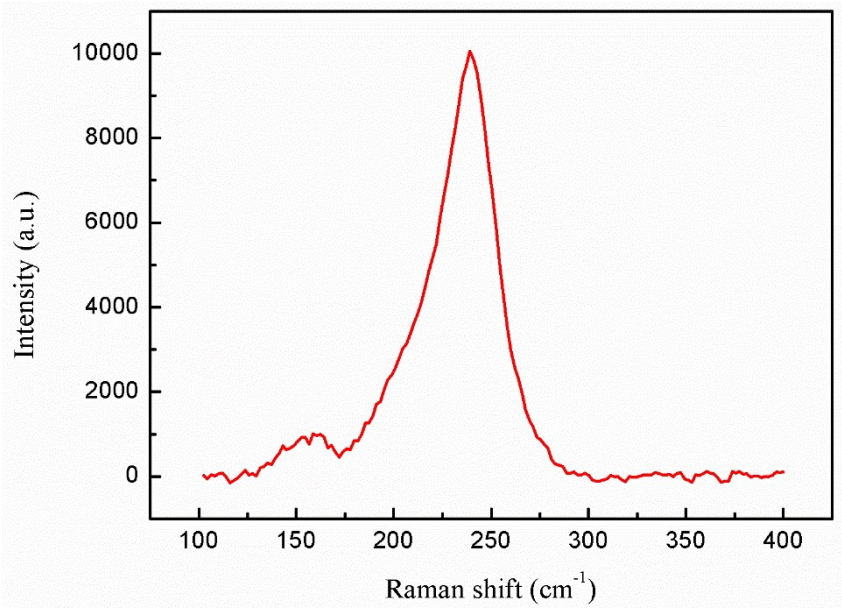

Figure S9. The Raman spectra of purely AgCl.

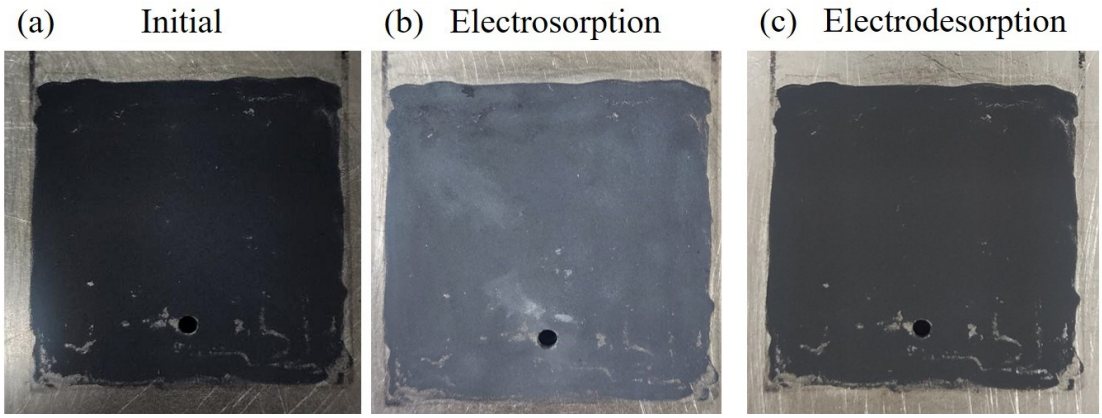

Figure S10 Picture of the Ag/N-CNP-60-12 electrode at the initial, after electrosorption, and after electrodesorption.

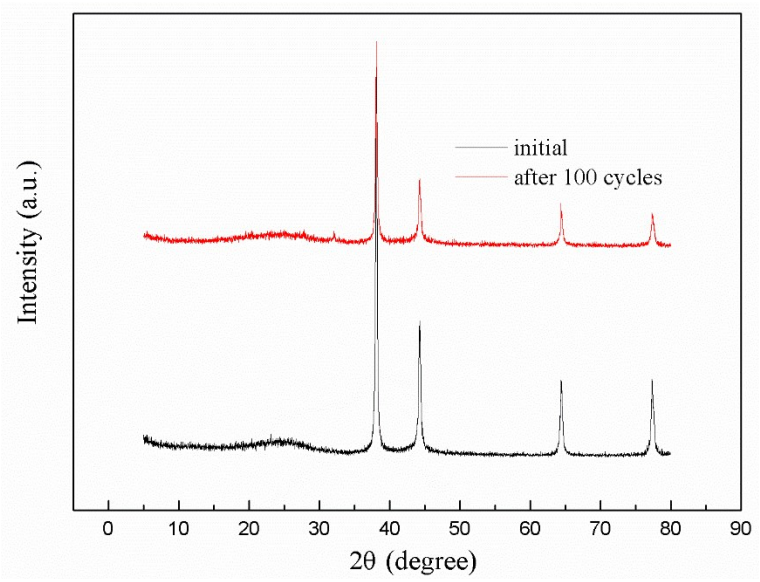

Figure S11. The XRD spectra of initial Ag/N-CNP-60-12 and after 100 cycles.

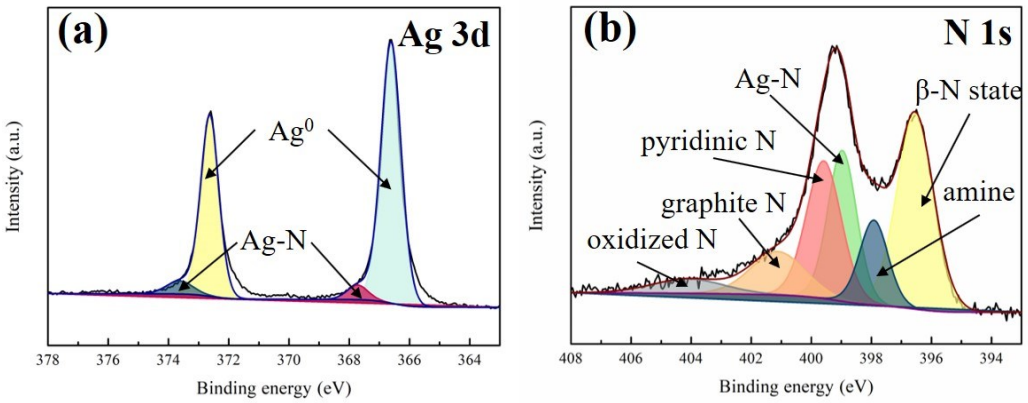

Figure S12. XPS spectra of Ag 3d (a), N 1s (b) after 100 cycles.

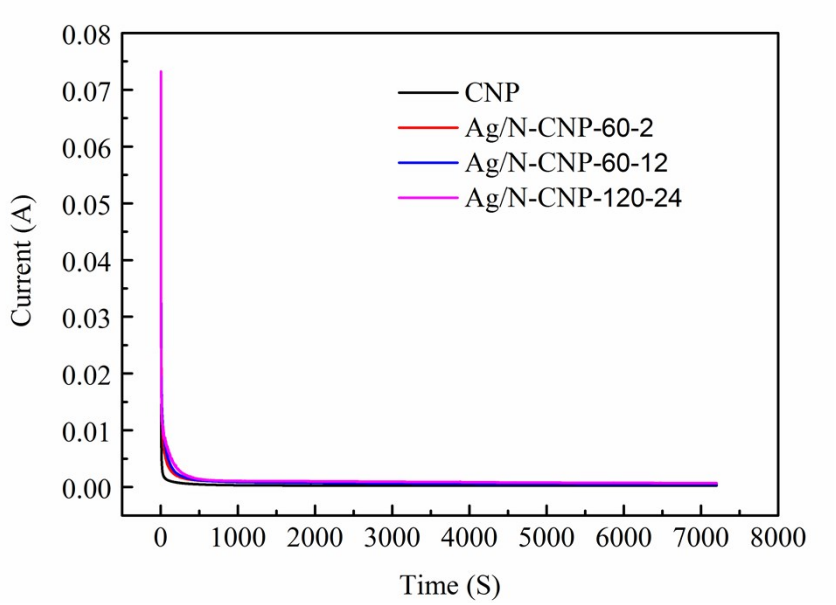

Figure S13. Current-time plots of CNP and Ag/N-CNP electrodes.

Table S1. XPS elemental contents of CNP and Ag/N-CNP-60-12.

Samples	C 1s	Ag 3d	N 1s	O 1s
CNP	93.35	0.33	1.16	5.16
Ag/N-CNP-60-2	88.2	0.87	6.97	3.95
Ag/N-CNP-60-12	86.77	1.84	6.07	5.32
Ag/N-CNP-120-24	81.76	4.71	8.51	5.01

Table S2. EDS elemental contents of initial Ag/N-CNP-60-12.

Element	Mass %	Atom %
C K (Ref.)	74.47	95.10
N K	0.56	0.62
O K	0.91	0.87
Cl K	ND	ND
Ag K	24.06	3.42

Table S3. EDS elemental contents of Ag/N-CNP-60-12 after 10 cycles.

Element	Mass %	Atom %
C K (Ref.)	76.19	95.79
N K	0.24	0.26
O K	0.79	0.70
Cl K	0.21	0.09
Ag K	22.62	3.16

Table S4. EDS elemental contents of Ag/N-CNP-60-12 after 100 cycles.

Element	Mass %	Atom %
C K (Ref.)	78.19	96.39
N K	0.10	0.10
O K	0.58	0.54
Cl K	0.24	0.10
Ag K	20.89	2.89