Electronic supplementary information (ESI)

†3D Graphene-supported N-doped **Hierarchically Porous Carbon** for Capacitive Deionization of Saline Water

Bin Feng[a], Zaheen Ullah Khan[a,b], Wasid Ullah Khan[c,d]*

[a]*Department of Chemistry, Research Center of Nano Science and Technology, Shanghai University, Shanghai, 200444, China.*

[b]*School of Environmental Science and Engineering, Southern University of Science and Technology (SUSTech), Shenzhen 518055, China*

[c] *State Key Laboratory of Electroanalytical Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, 5625 Renmin Street, Changchun, 130022 China*

[d] *School of Applied Chemistry and Engineering, University of Science and Technology of China, Hefei, Anhui 230026, P.R. China*

*corresponding Author.

Email: khan@sustech.edu.cn

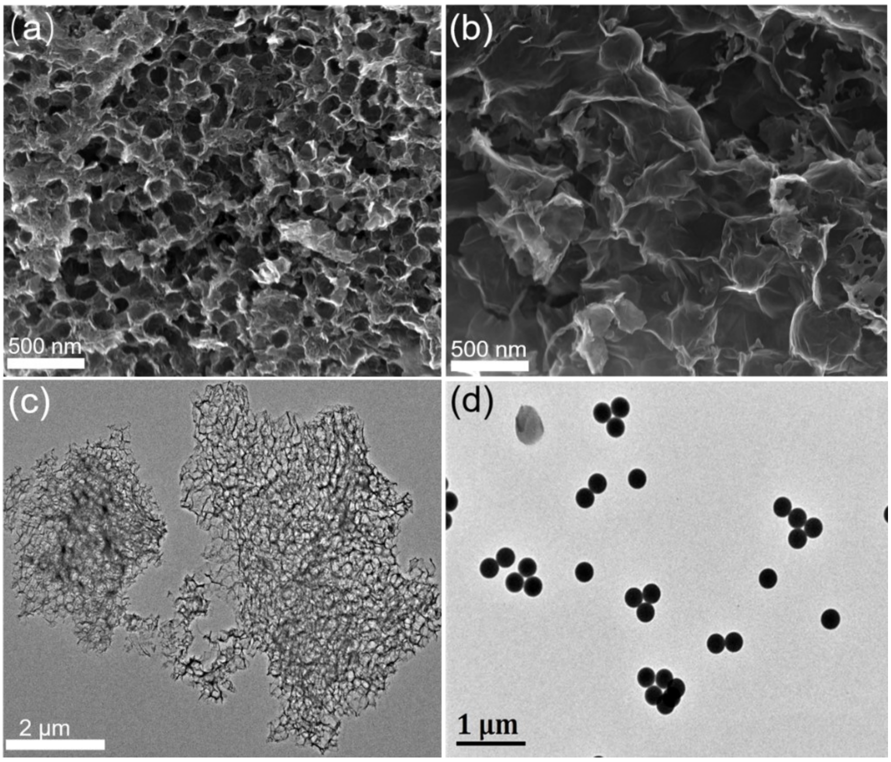

Fig. S1. (a and b) SEM images of the prepared 3DNHPC. (c) HRTEM images of the 3DNHPC. (d) TEM images of the polystyrene microspheres

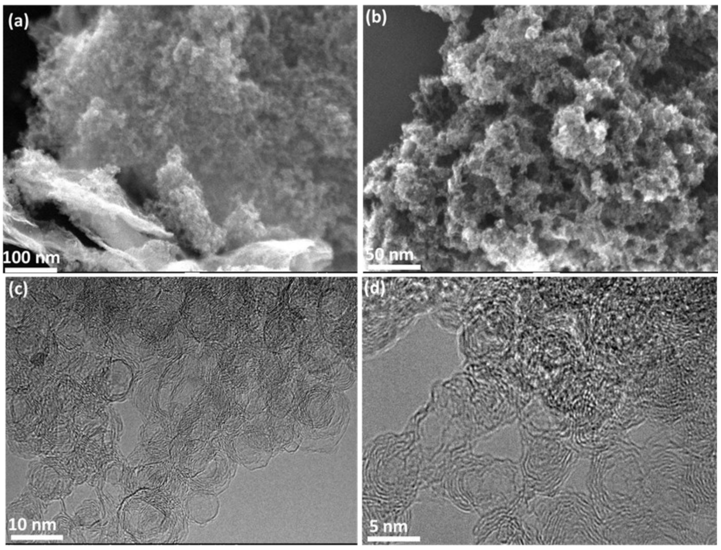

Fig. S2. (a-b) HRSEM and (c-d) HRTEM images of the 3DG.

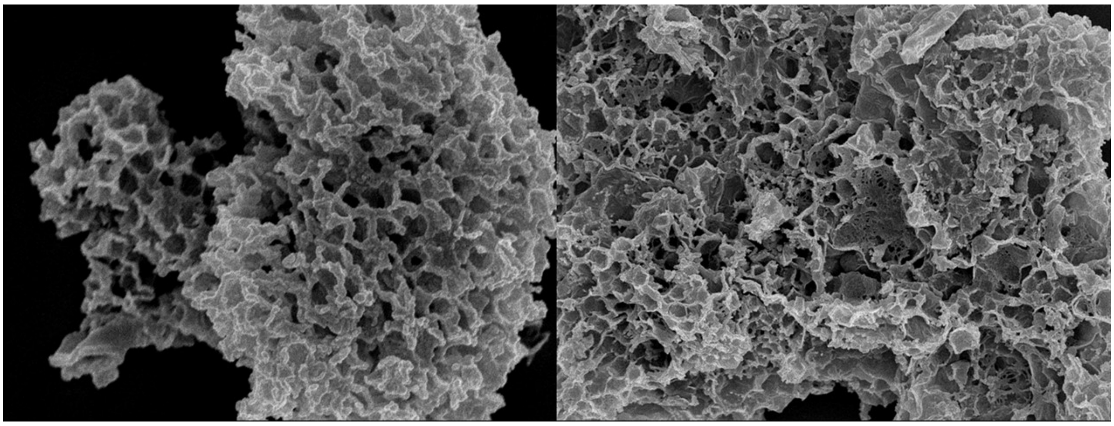

Fig. S3. HRSEM images of 3DNHPC.

Table S1 Specific surface area, pore size and pore volume for the investigated 3DG and 3DNHPC

Samples	Specific surface area (m^2 g^{-1})	Average pore size (nm)	Pore volume (cm^3 g^{-1})
3DG	450	31.2	0.35
3DNHPC	650	10.3	0.16

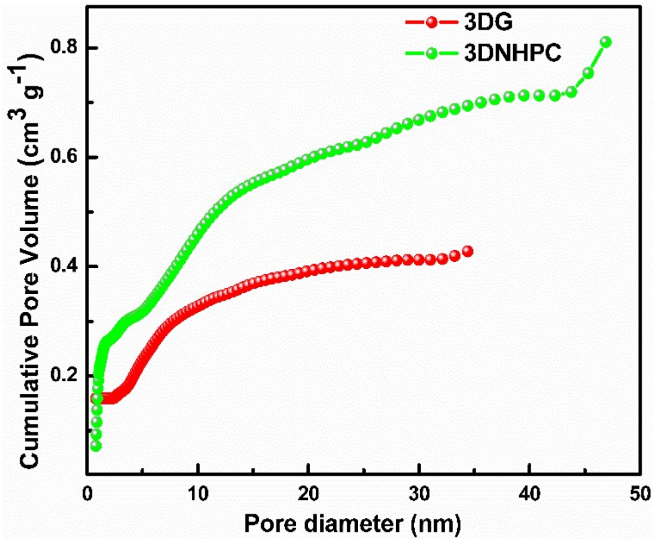

Fig. S4. Cumulative pore volumes of 3DNHPC and 3DG.

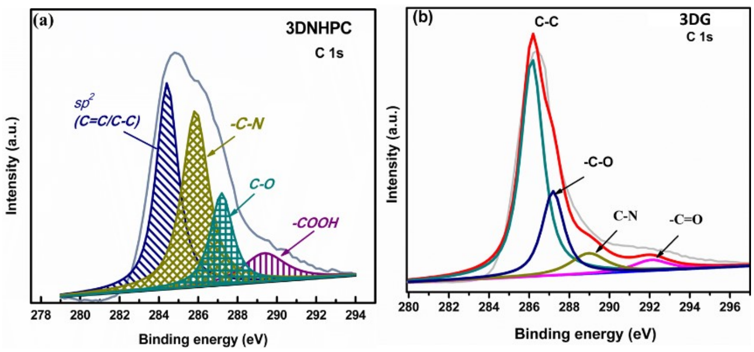

Fig. S5. C 1s spectra of (a) 3DNHPC and (b) 3DG.

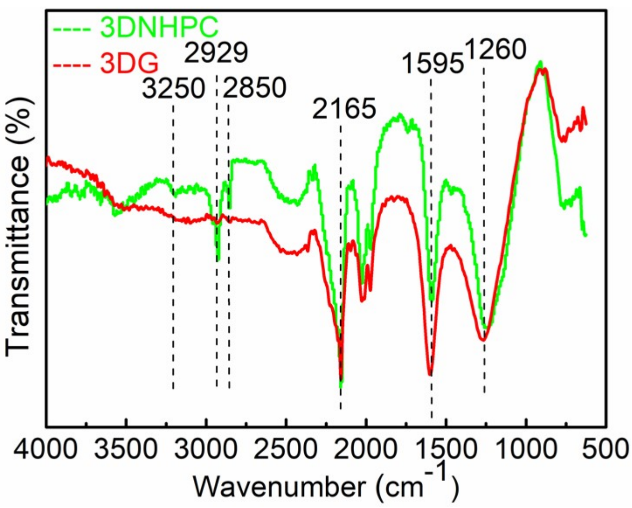

Fig. S6. FT-IR spectra of the 3DNHPC and 3DG

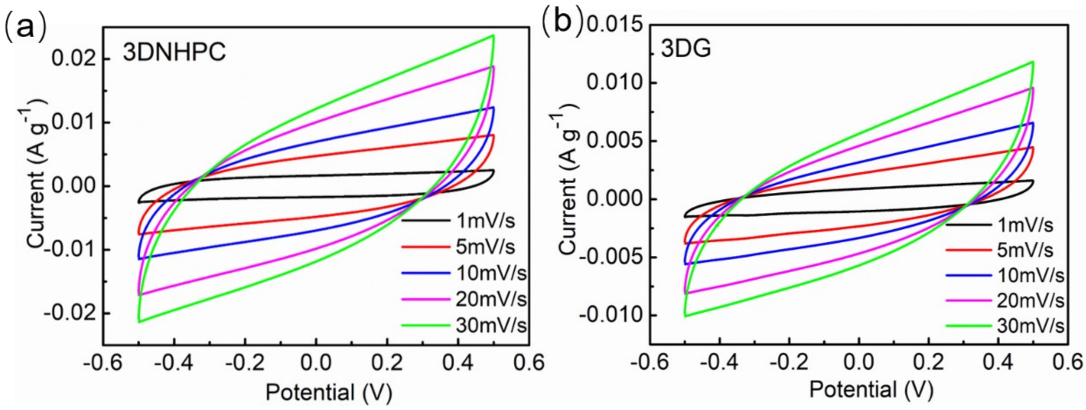

Fig. S7. Cyclic voltammograms of (a) 3DNHPC and (b) 3DG at different scan rate

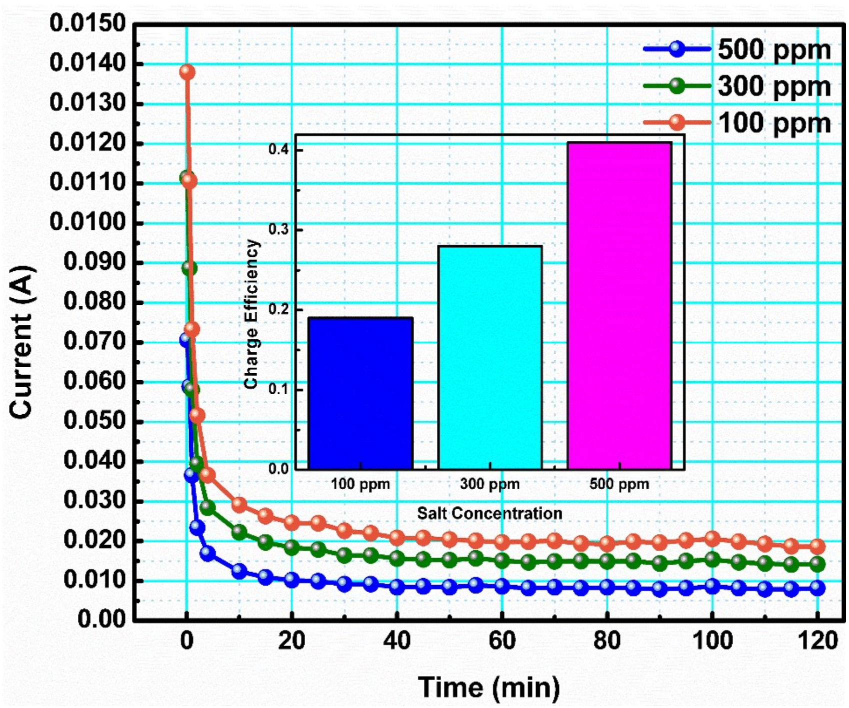

Fig. S8. Current transient and charge efficiency of 3DNHPC in different salt concentration.

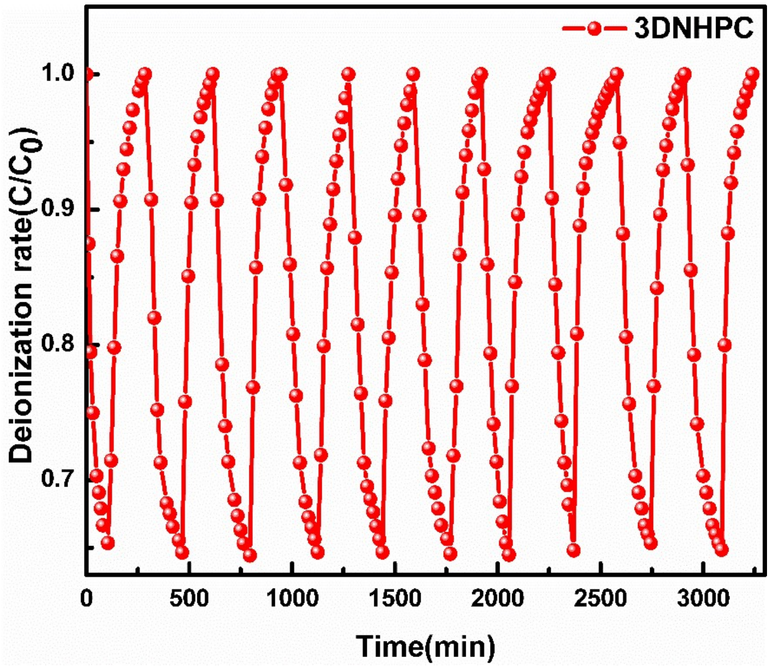

Fig. S9. Long term adsorption/desorption curves of 3DNHPC in 500 mg L^{-1} at 1.2 V.

Table S2 Comparison of salt adsorption capacity of reported carbon materials.

Electrode materials	Applied voltage [V]	Initial NaCl concentration [mg L^{-1}]	Adsorption capacity [mg g^{-1}]	Ref.
Graphene Aerogels	1.2	500	9.9	[1]
N-doped porous carbon spheres	1.2	500	13.71	[2]
Nitrogen-doped carbon nanorods	1.2	500	17.62	[3]
porous carbon spheres	1.2	500	12.8	[4]
Micro/mesoporous carbon sheets	1.2	500	17.38	[5]
Graphene bonded carbon nanofiber aerogels	1.2	500	15.7	[6]
3D Intercalated Graphene Sheet-Sphere Nanocomposite	1.2	500	22.09	[7]
3D graphene	1.2	500	14.7	[8]
N-doped porous hollow carbon spheres	1.4	500	12.95	[9]
Layered graphene/mesoporous carbon heterostructures	1.5	500	24.3	[10]
Porous graphene frameworks	1.4	500	19.1	[11]
3DNHPCs	1.2	500	25.5	This work

References

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