Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Using inorganic dynamic porogens for preparing high surface area capacitive carbons with tailored micropores

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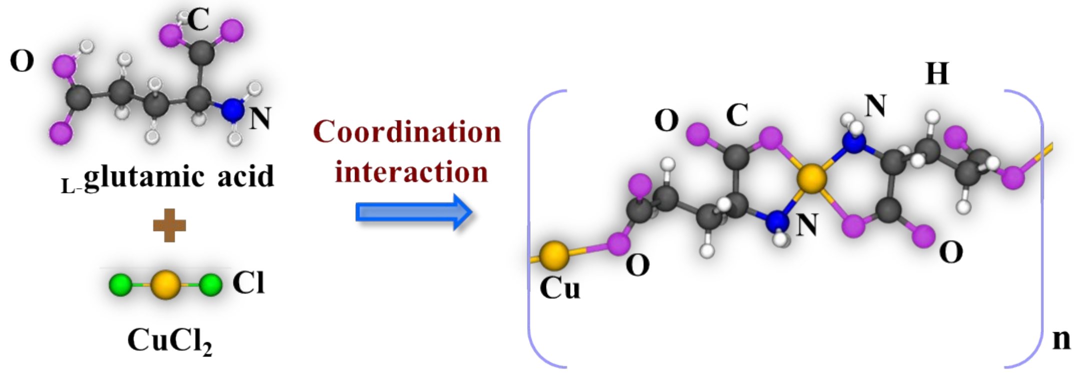

Fig.S1. Schematic illustration for preparing the complex.

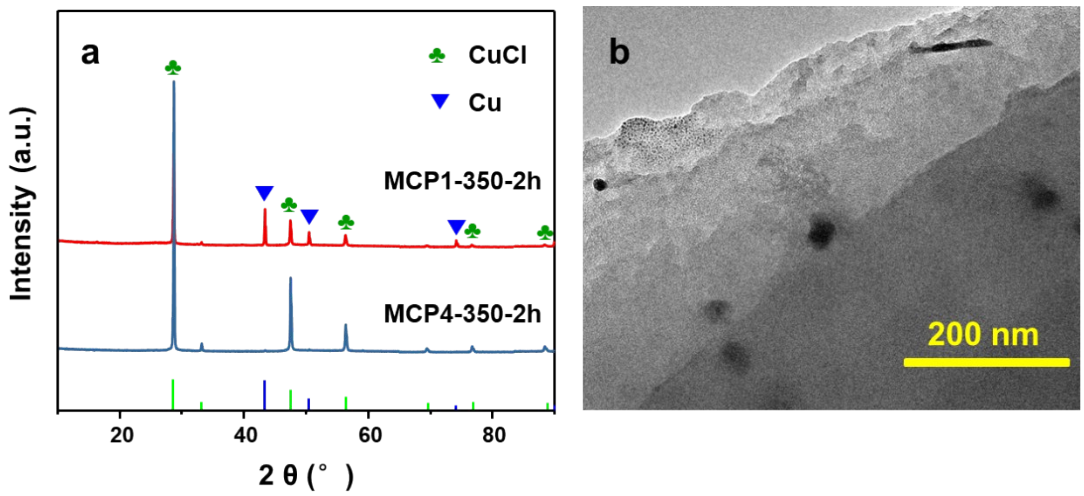

Fig. S2. (a) XRD patterns of MCP1-350-2h and MCP4-350-2h. (b) TEM image of MCP1-350-2h.

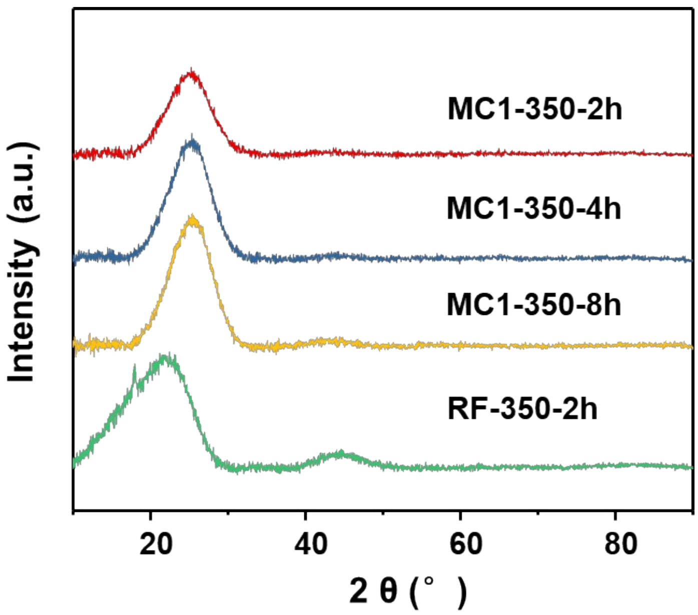

Fig.S3 XRD patterns of MC1-350-2h, MC1-350-4h, MC1-350-8h and RF-350-2h.

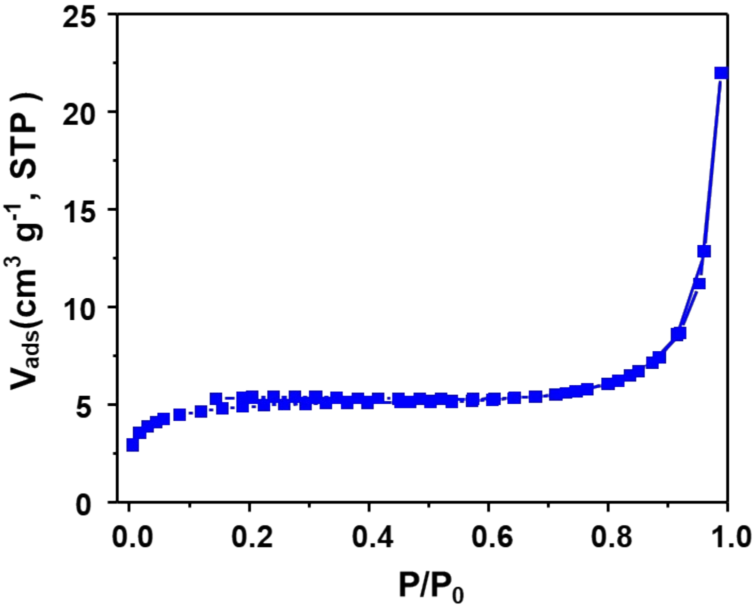

Fig. S4. Nitrogen sorption isotherm of RF-350-2h.

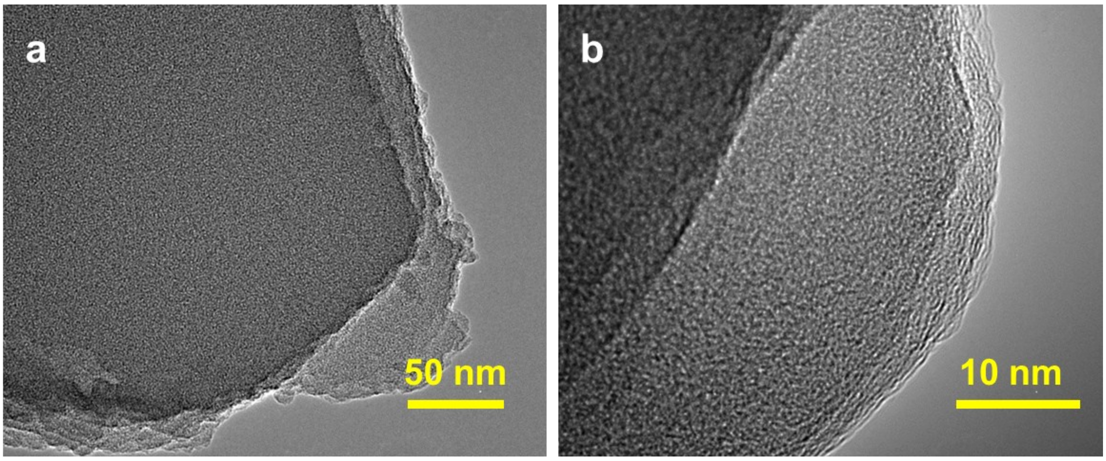

Fig. S5. TEM images of MC1-350-4h.

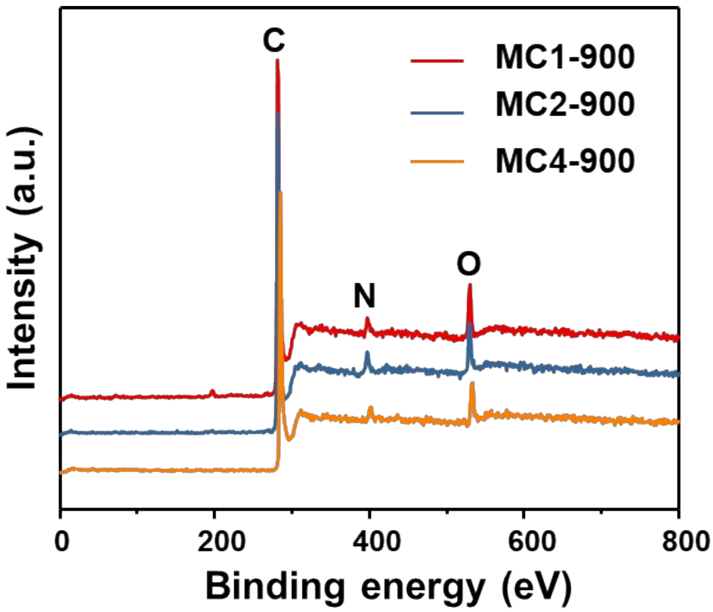

Fig. S6 XPS survey spectra of MC1-900, MC2-900 and MC4-900.

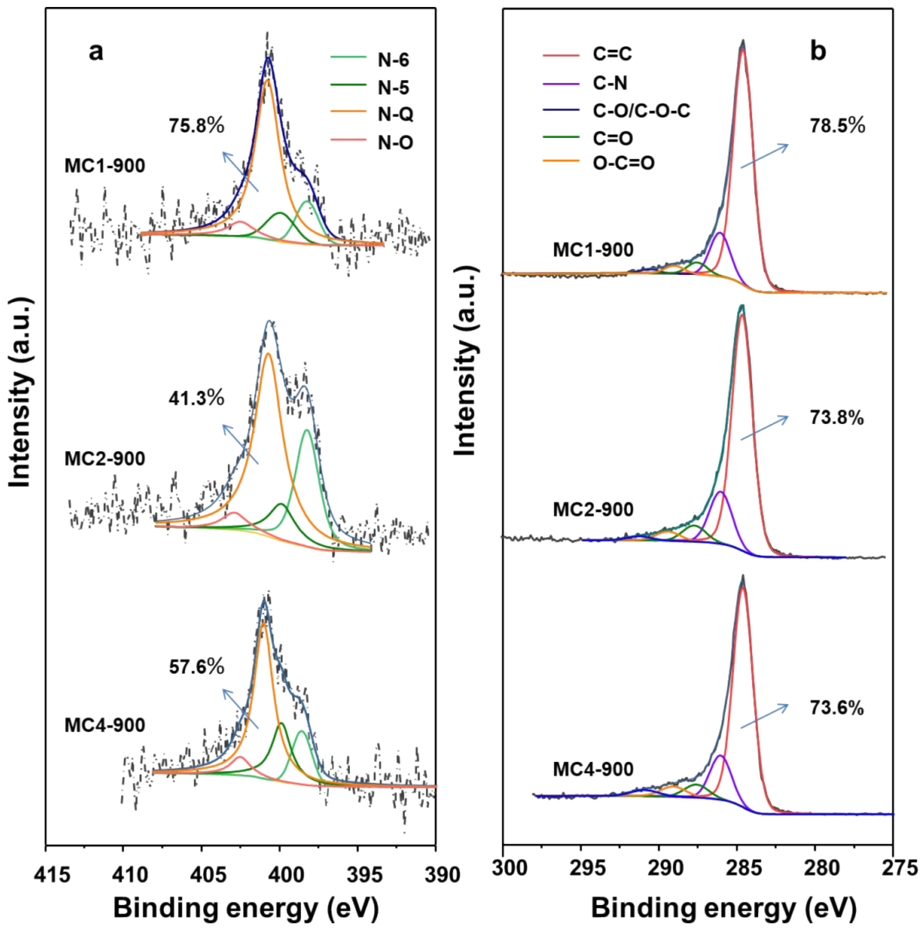

Fig. S7. High-resolution XPS spectra of the deconvoluted N1s peak (a) and C1s peak (b) for MC1-900, MC2-900 and MC4-900.

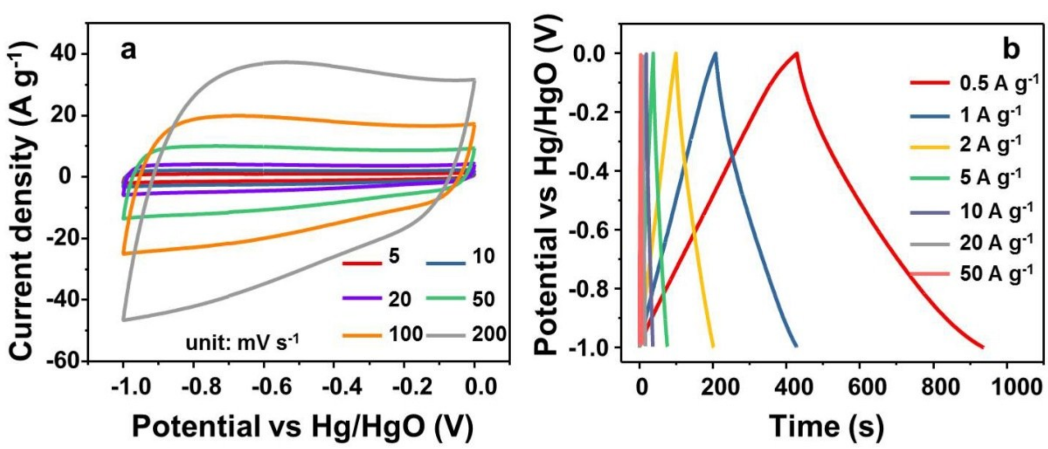

Fig. S8. (a) CV curves and (b) GC curves of MC4-900 electrode in 6 M aqueous KOH electrolyte.

Table S1. Tap densities and chemical compositions of the samples quantified by XPS.

Sample	$n(CuCl_2)/n$ (L-glutamic acid)	Tap density	XPS atom%		
		$g\ cm^{-3}$	C	O	N
MC1-900	1:1	0.58	79.87	16.34	2.77
MC2-900	2:1	0.45	78.67	15.88	3.64
MC4-900	4:1	0.35	73.31	21.56	3.22

Table S2. XPS results about surface atomic percentages of carbon and nitrogen species of the samples.

Samples	% of total O1s					% of total N1s			
	C=C	C-N	C-O/ C-O-C	C=O	O-C=O	N-6	N-5	N-Q	N-X
MC1-900	78.5	13.9	3.8	2.6	1.2	12.9	6.7	75.8	4.7
MC2-900	73.8	16.4	5.3	3.1	1.5	14.0	37.6	41.3	7.1
MC4-900	73.6	14.9	5.0	3.9	2.6	13.5	22.0	57.6	6.9

Table S3. Specific capacitances of recently reported carbons in aqueous electrolytes.

Materials	Carbon precursors	Capacitance (F g^{-1})	Ref.
N, S, P co-doped graphene	graphene oxide	196.4 (1 A g^{-1})	1
PU sponge templated activation of GO	graphene oxide	260 (1 A g^{-1})	2
porous carbon	ZIF-67	272 (5 mV s^{-1}) 108 (200 mV s^{-1})	3
nitrogen-doped carbon	azine-linked covalent organic framework	234 (1 A g^{-1}) 167 (50 A g^{-1})	4
A850-6-3	liquefied wood	225 (0.5 A g^{-1})	5
HTC-JG-900	Jujun grass	220 (1.0 A g^{-1})	6
HPC25 (hierarchical porous carbon)	PVDC-b-PS copolymers	241.9 (0.5 A g^{-1}) 171 (20 A g^{-1})	7
zeolite-templated nanoporous carbon	ethylene	250 (1 A g^{-1})	8
hierarchical porous carbon	starch	229 (1 A g^{-1})	9
highly cross-linked porous carbon microspheres	polyacrylonitrile microspheres	290 (0.5 A g^{-1})	10
porous nitrogen self-doped carbon aerogels	benzoxazine	199 (0.5 A g^{-1})	11
nitrogen-doped porous carbon nanosheets	bio-oil	289 (0.5 A g^{-1})	12
carbon nanofiber/graphene nanosheet composites	Bacterial cellulose/graphene hydrogels	215 (1 A g^{-1})	13
zeolite templated carbon	pyrrole	253 (1.25 A g^{-1})	14
boron doped carbon spheres	glucose	277 (1 A g^{-1})	15

References

1. M. Fan, Y. Huang, F. Yuan, Q. Hao, J. Yang and D. Sun, *J. Power Sources* 2017, **366**, 143-150.

2. J. Xu, Z. Tan, W. Zeng, G. Chen, S. Wu, Y. Zhao, K. Ni, Z. Tao, M. Ikram, H. Ji and Y. Zhu, *Adv. Mater.* 2016, **28**, 5222-5228.

3. R. R. Salunkhe, J. Tang, Y. Kamachi, T. Nakato, J. H. Kim and Y. Yamauchi, *ACS Nano* 2015, ***9***, 6288-6296.

4. G. Kim, J. Yang, N. Nakashima and T. Shiraki, *Chem. Eur. J.* 2017, **23**, 17504 - 17510.

5. Y. Huang, L. Peng, Y. Liu, G. Zhao, J. Y. Chen and G. Yu, *ACS. Appl. Mater. Interfaces* 2016, **8**, 15205-15215.

6. Y. Liu, B. Huang, X. Lin and Z. Xie, *J. Mater. Chem. A.* 2017, **5**, 13009-13018.

7. J. Yang, G. Li, M. Cai, P. Pan, Z. Li, Y. Bao and Z. Chen, *Chem. Commun.* 2017, **53**, 5028-5031.

8. H. Lu, K. Kim, Y. Kwon, X. Sun, R. Ryoo and X. S. Zhao, *J. Mater. Chem. A* 2018, ***6***, 10388-10394.

9. J. Cao, C. Zhu, Y. Aoki and H. Habazaki, *ACS Sustain. Chem. Eng.* 2018, **6(6)**, 7292-7303.

10. Y. Liu, J. Cao, X. Jiang, Y. Yang, L. Yu and X. Yan, *J. Mater. Chem. A* 2018, **6**, 6891-6903.

11. M. Zhang, M. Chen, N. Reddeppa, D. Xu, Q. Jing and R. Zha, *Nanoscale* 2018, **10**, 6549-6557.

12. Q. Wang, B. Qin, X. Zhang, X. Xie, L. Jin and Q. Cao, *J. Mater. Chem. A* 2018, **6**, 19653-19663.

13. H. Luo, P. Xiong, J. Xie, Z. Yang, Y. Huang, J. Hu, Y. Wan and Y. Xu, *Adv. Funct. Mater.*2018, doi: 10.1002/adfm.201803075

14. C. Teng, Y. Han, G. Fu, J. Hu, H. Zheng, X. Lu and J. Jiang, *J. Mater. Chem. A* 2018, **6**, 18938-18947

15. F. Sun, Z. Qu, J. Gao, H. B. Wu, F. Liu, R. Han, L. Wang, T. Pei, G. Zhao and Y. Lu, *Adv. Funct. Mater*. 2018, **28**, 1804190.