nature portfolio

https://doi.org/10.1038/s41596-022-00784-6

Supplementary information

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Monomicellar assembly to synthesize structured and functional mesoporous carbonaceous nanomaterials

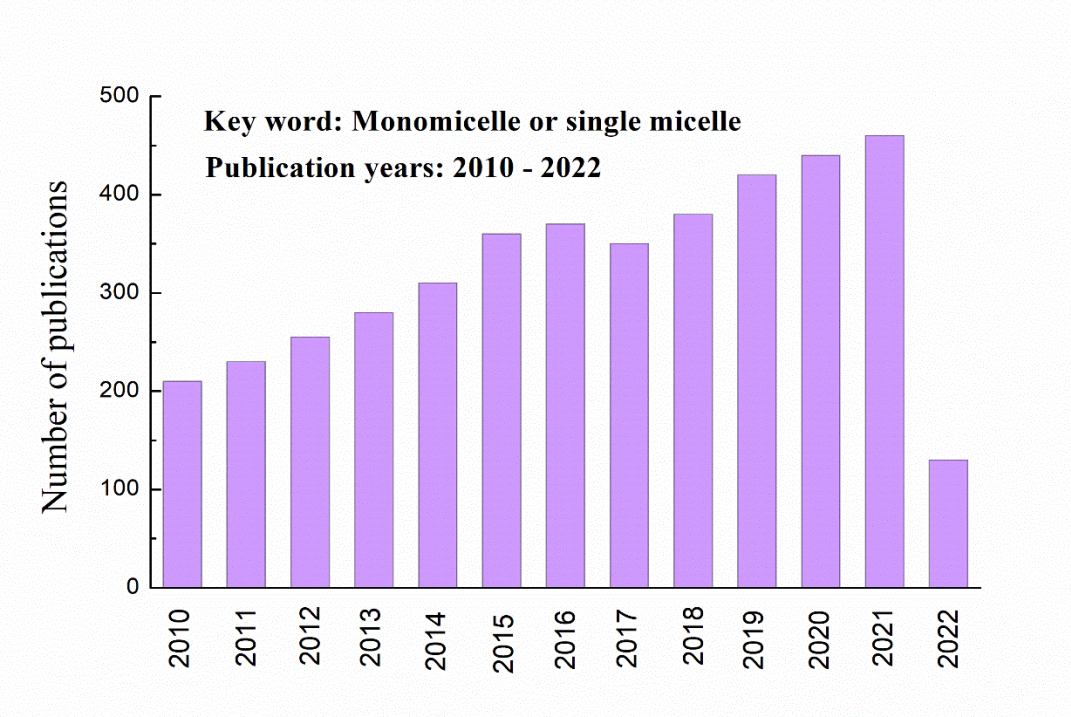
Liang Peng, Huarong Peng, Wei Li*, and Dongyuan Zhao*

Department of Chemistry, Laboratory of Advanced Materials, Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, *i*ChEM and State Key Laboratory of Molecular Engineering of Polymers, College of Chemistry and Materials, Fudan University, Shanghai 200433, P. R. China

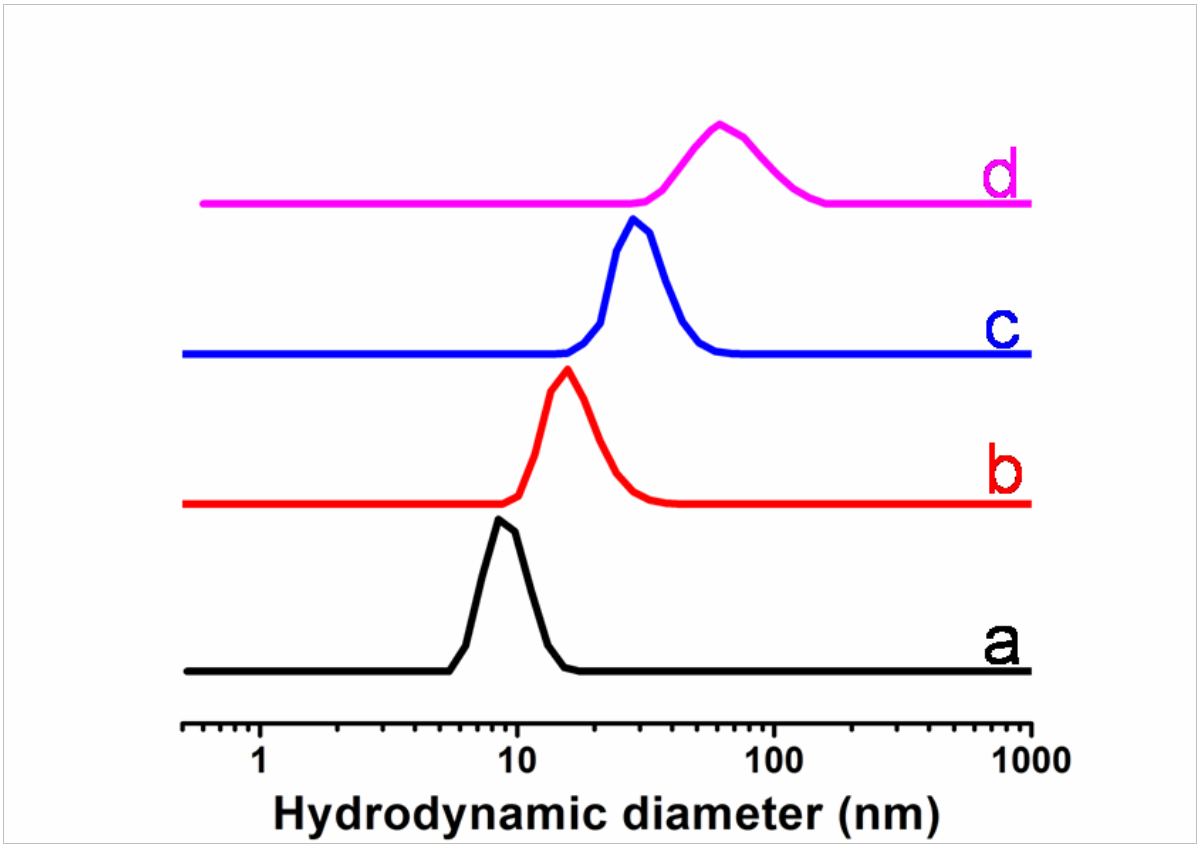
*To whom correspondence should be addressed.

E-mail: weilichem@fudan.edu.cn

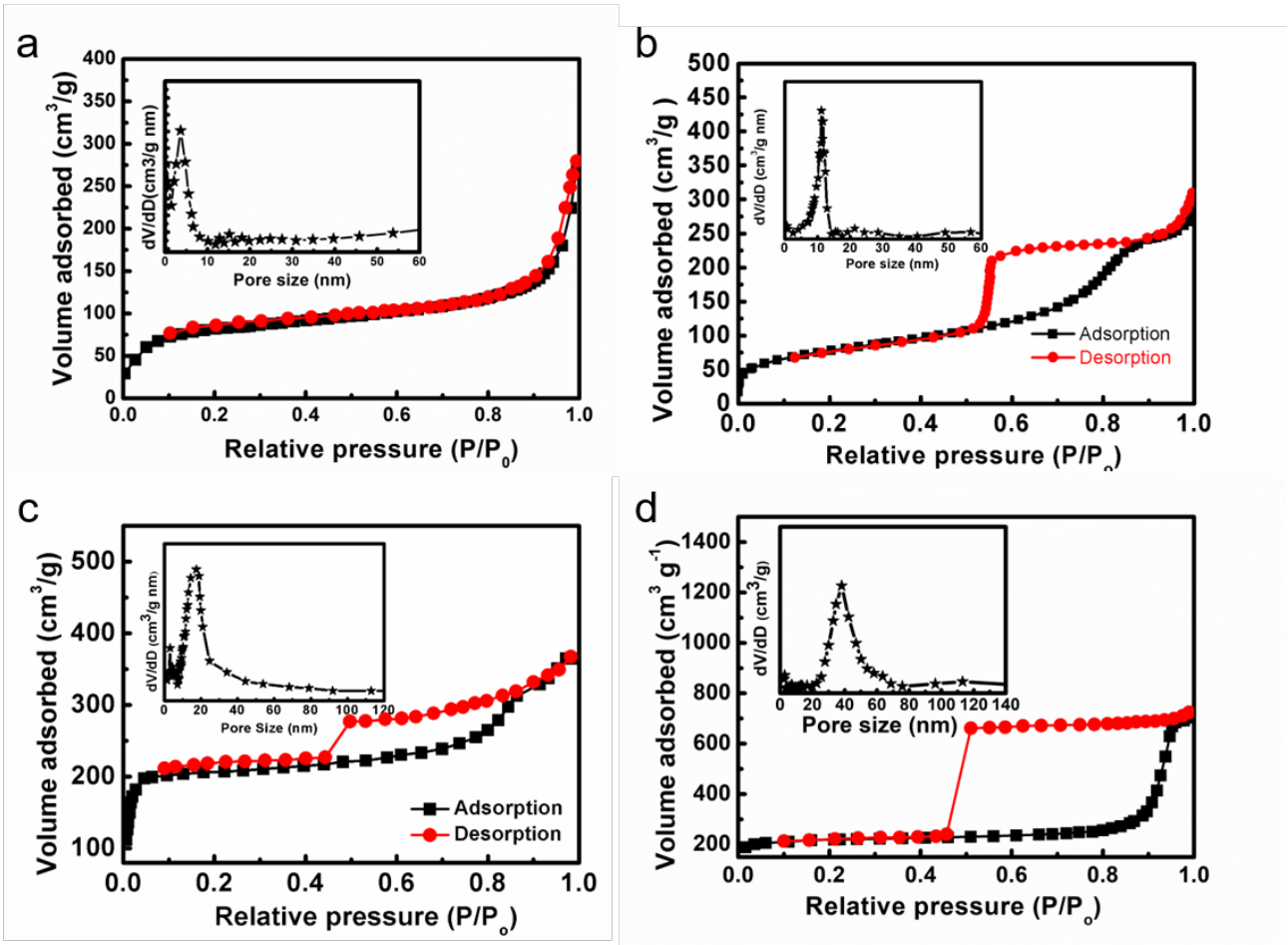
dyzhao@fudan.edu.cn



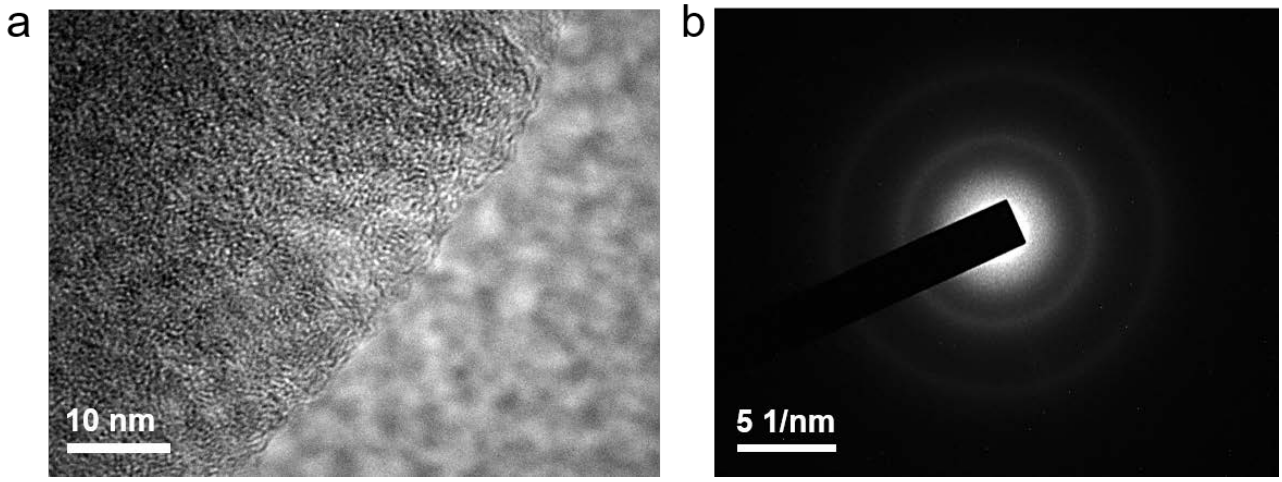
Supplementary Fig. S1 Number of the published papers collected from the Web of Science using "monomicelle" or "single micelle" as keywords.



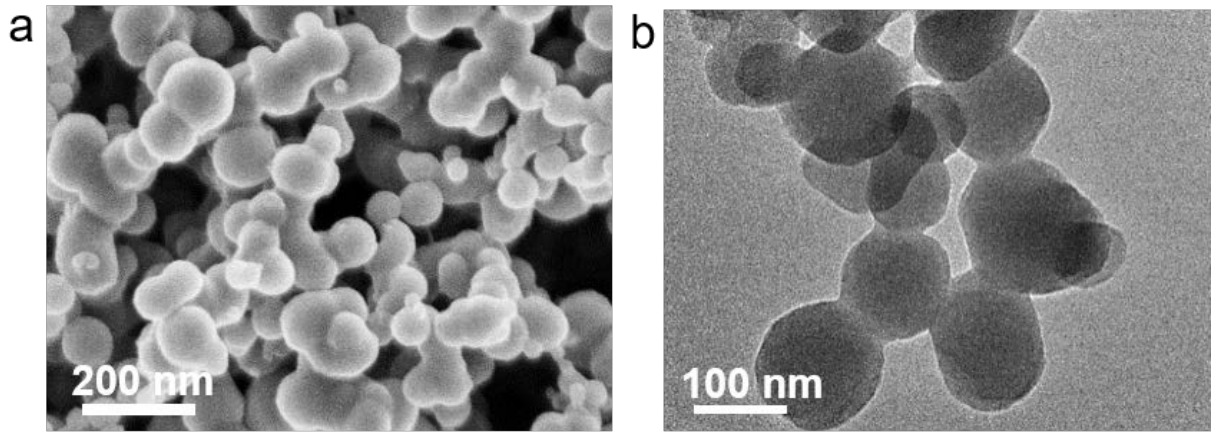
Supplementary Fig. S2 The monomicelle size distributions withdrawn from the F127/TMB/DA monomicelle systems prepared by using different amounts of TMB: (a) 0.5 mL, (b) 1.0 mL, 1.5 mL and (d) 2.0 mL. The measurements were conducted by dynamic light scattering (DLS) at ambient conditions. It can be seen that the monomicelle sizes increase from 8.0, to 15.2, to 28.6, and to 52.0 nm with the increasement of TMB amounts from 0.5, to 1.0, to 1.5, and to 2.0 mL. Image reproduced from ref.[1]



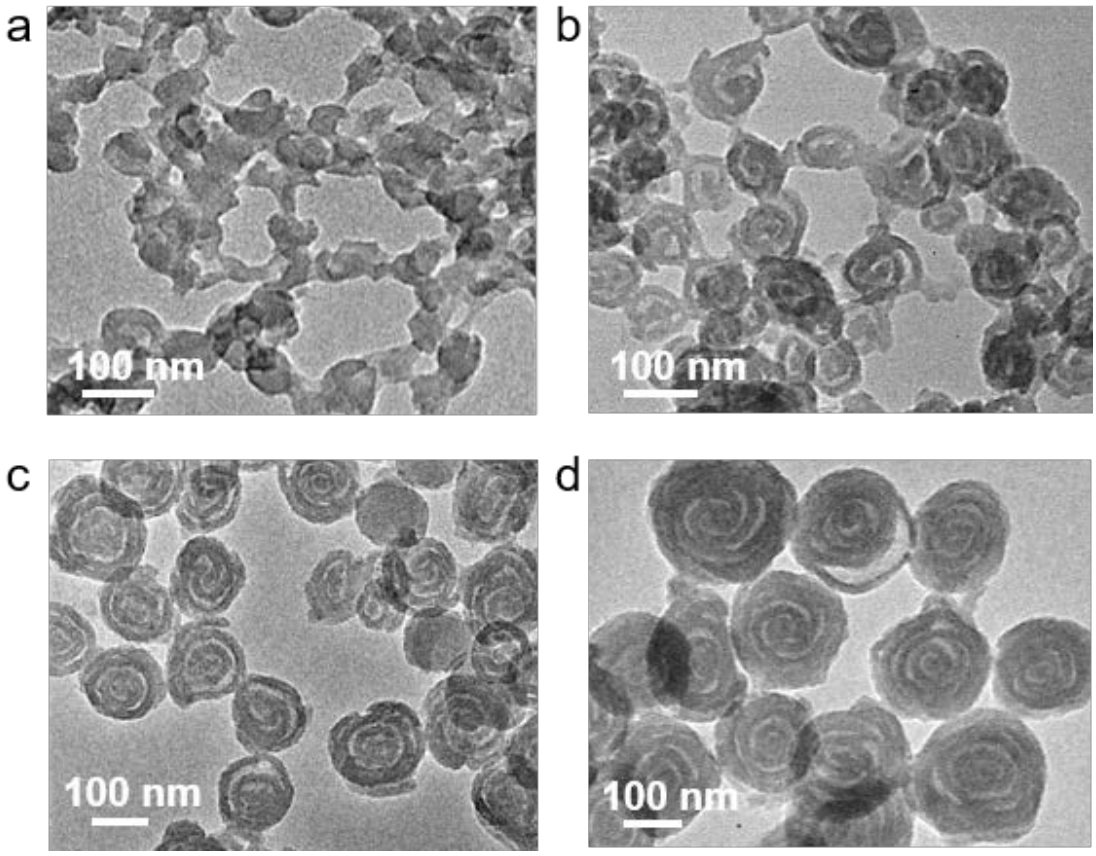
Supplementary Fig. S3 The N_2 sorption isotherms of the mesoporous carbon nanospheres with tunable pore sizes prepared by the monomicelle assembly method using different TMB amounts: (a) 0.5 mL, (b) 1.0 mL, 1.5 mL and (d) 2.0 mL. Insets of them are the corresponding pore size distributions. Images reproduced from ref.[1]



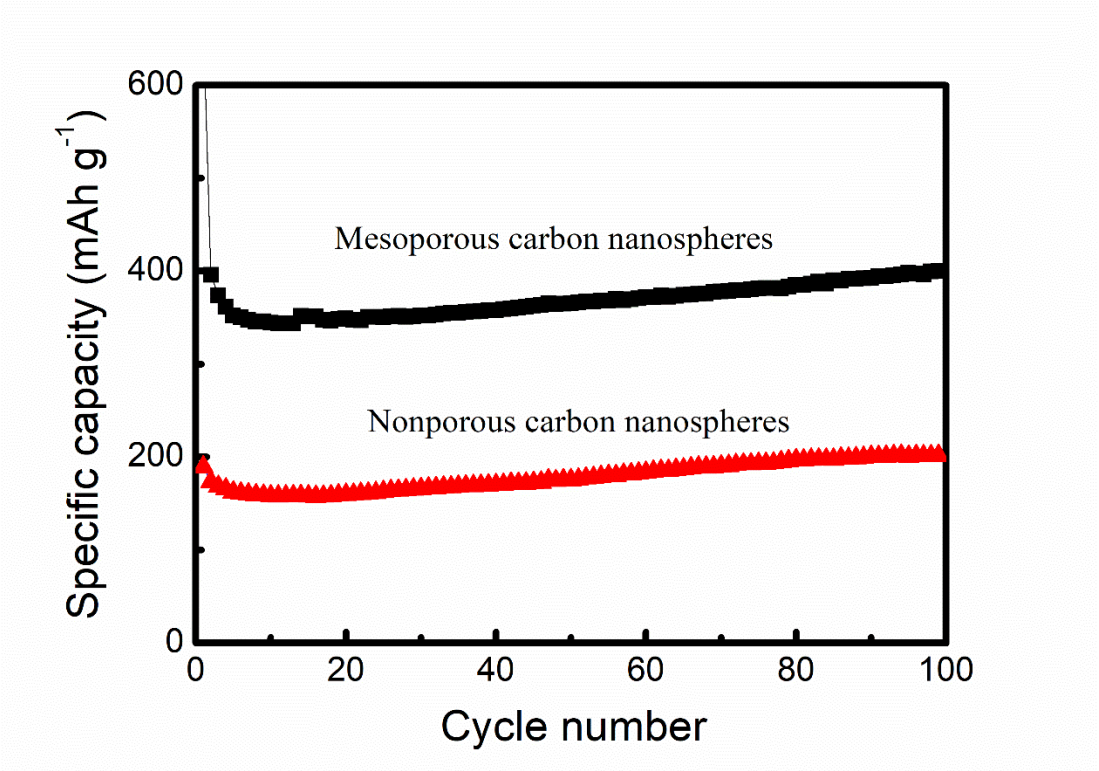
Supplementary Fig. S4 High-resolution TEM image (a) and corresponding SAED pattern (b) of the mesoporous carbon nanomaterials. It can be seen that the obtained mesoporous carbon nanomaterials possess an amorphous framework with many defects. Images reproduced from ref.[2]



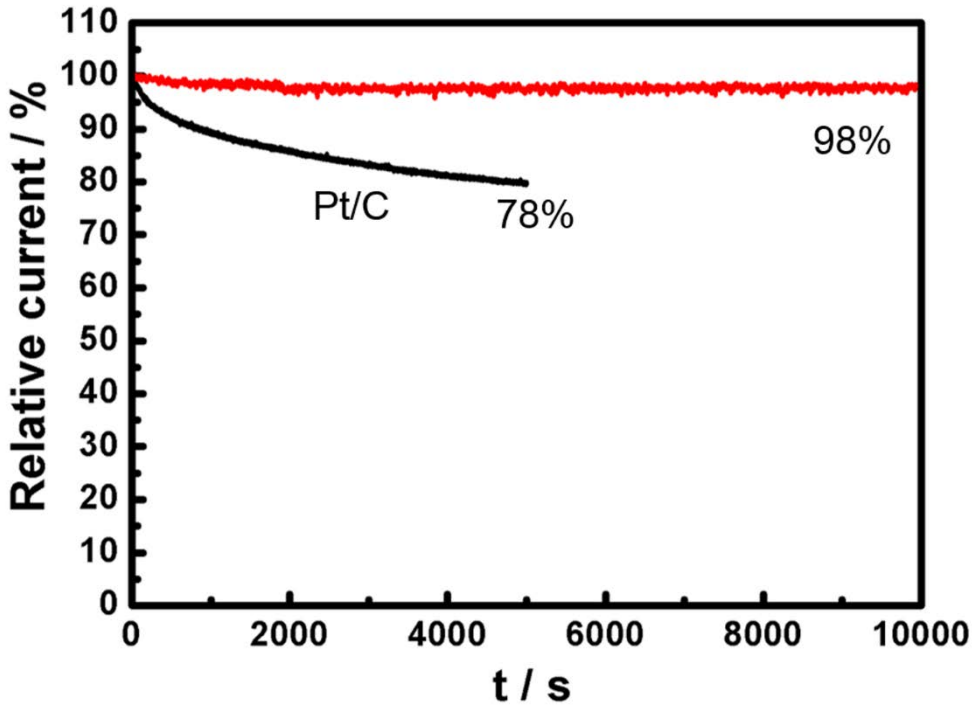
Supplementary Fig. S5 The SEM and TEM images of the carbon particles prepared by the monomicelle assembly method without adding TMB. It can be seen that only aggregated nonporous particles can be formed, indicating that TMB plays a critical role to the formation of the mesopores. Images reproduced from ref.[1]



Supplementary Fig. S6 The TEM images the mesoporous nanospheres prepared by the monomicelle assembly method at different reaction times: (a) 5 min, (b) 30 min, (c) 60 min, and (d) 180 min. Images adapted from ref.[2]



Supplementary Fig. S7 The reversible capacity tests of the mesoporous carbon nanosphere and the nonporous carbon nanoparticle electrodes at a current density of 0.1 A g^{-1} for sodium ion batteries, respectively. The nonporous carbon particles were synthesized the monomicelle assembly method without adding TMB molecule, as shown in Supplementary Fig. S5. Image adapted from ref.[3]



Supplementary Fig. S8 Current versus time (i-t) chronoamperometric response of the mesoporous carbon nanospheres and 20% Pt/C electrodes at -0.5 V in O_2-satuated 0.1 M KOH solution at 1600 rpm. Image reproduced from ref.[1]

References

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