Supporting Information

Sulfur and Nitrogen Co-doped Hollow Carbon Spheres for Sodium-ion Batteries with Superior Cyclic and Rate Performance

Jianchuan Ye, Jun Zang, Zhaowu Tian, Mingsen Zheng & Quanfeng Dong

State Key Laboratory for Physical Chemistry of Solid Surfaces and Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Collaborative Innovation Centre of Chemistry for Energy Materials (iChEM), Xiamen 361005, China

Correspondence should be addressed to Quanfeng Dong (email: qfdong@xmu.edu.cn) or Mingsen Zheng (email: mszheng@xmu.edu.cn)

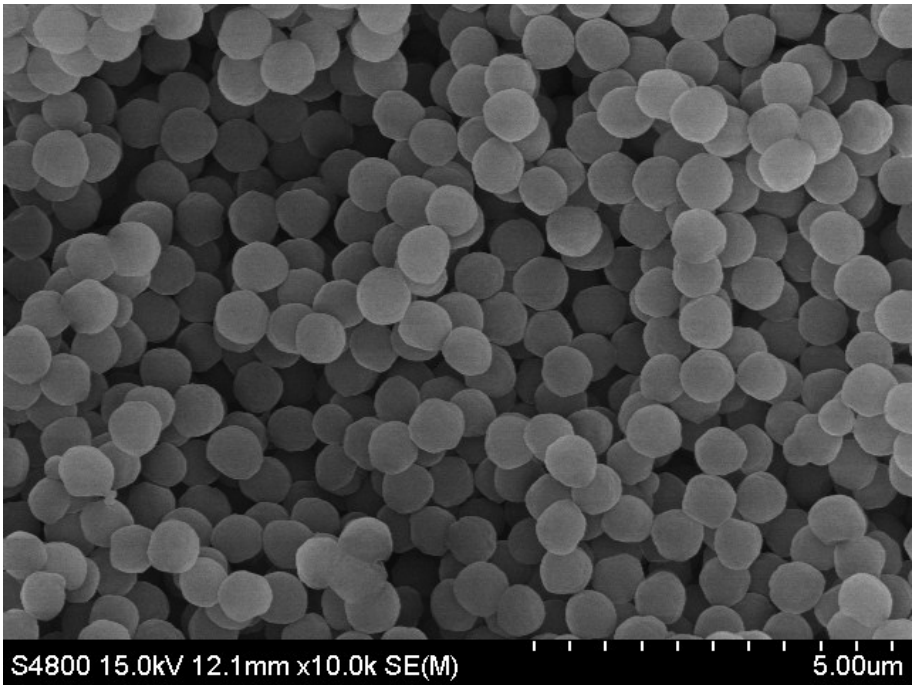


Fig. S1 SEM image of PMMA template spheres.

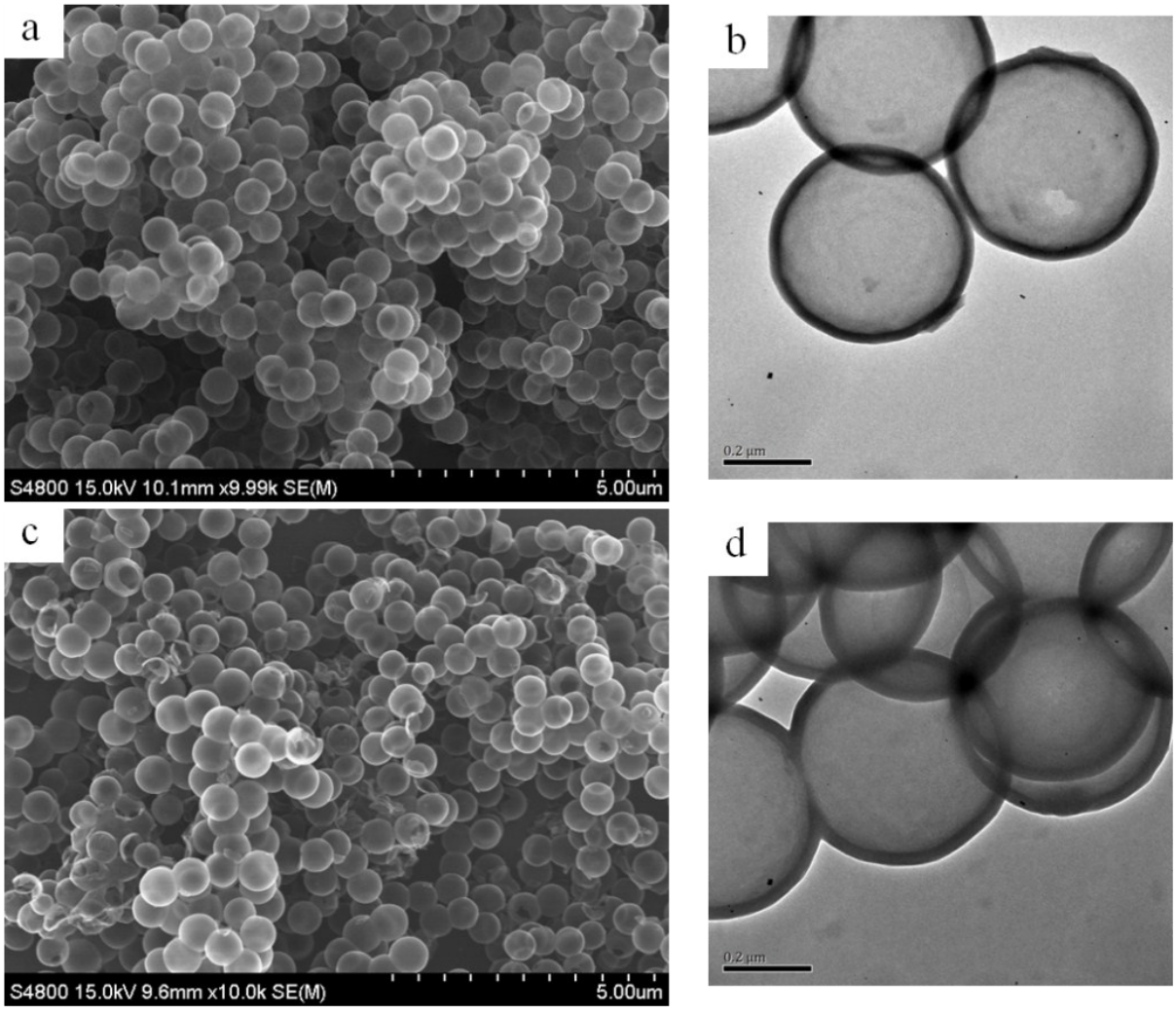


Fig. S2 (a) SEM image of N-HCS, (b) TEM image of N-HCS, (c) SEM image of HCS, (d) TEM image of HCS.

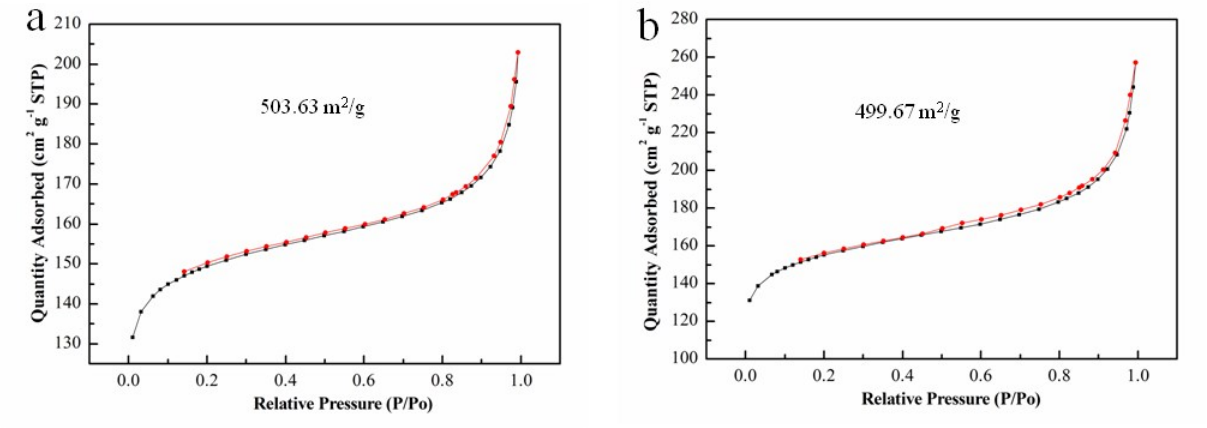


Fig. S3 N_2 adsorption-desorption analysis for (a) HCS and (b) N-HCS.

Species of element	Content (%)
C	94.43
H	1.016
N	2.408
S	0.552

Tab. S1 Vario El elemental analysis of SN-HCS.

Species of element	Content (%)
C	93.89
H	0.998
N	2.375

Tab. S2 Vario El elemental analysis of N-HCS.

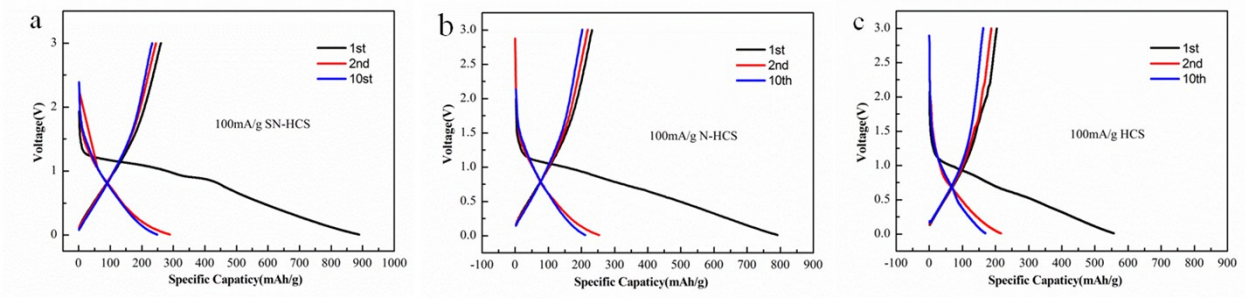


Fig. S4 (a) 1st, 2nd and 10th Galvanostatic discharge-charge curves of SN-HCS, (b) 1st, 2nd and 10th Galvanostatic discharge-charge curves of N-HCS, (c) 1st, 2nd and 10th Galvanostatic discharge-charge curves of HCS.

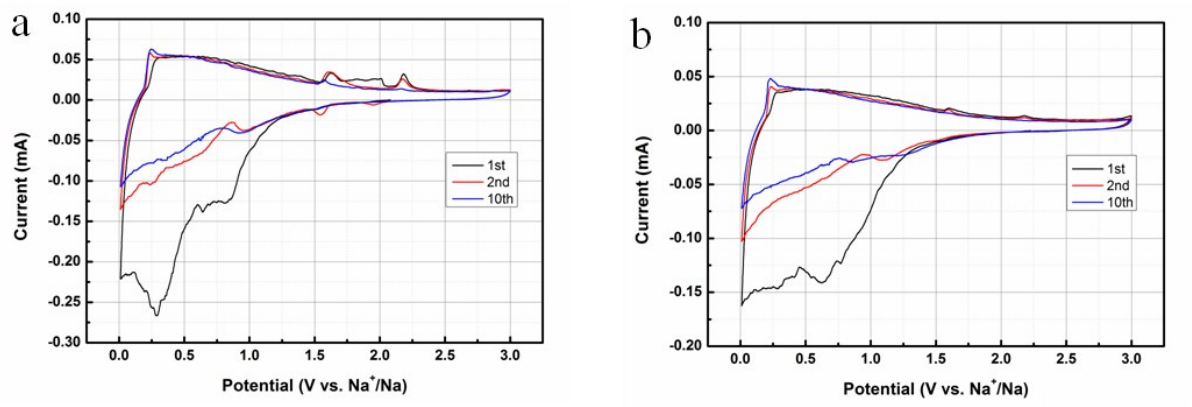
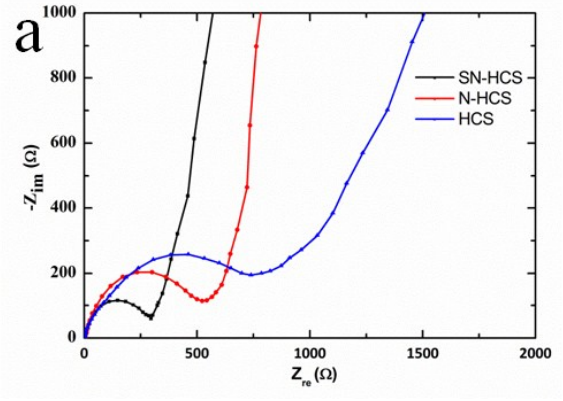


Fig. S5 Cyclic voltammetry performance of (a) HCS, (b) N-HCS.



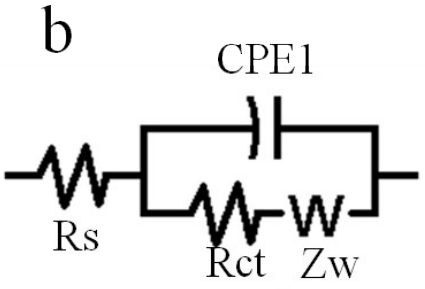


Fig. S6 (a) Electrochemical impedance spectra for SN-HCS, N-HCS and HCS and (b) equivalent circuit used for fitting the experimental data.

samples	Rct (Ω)
SN-HCS	162.4
N-HCS	311.9
HCS	513.5

Tab. S3 The fitting Rct results of SN-HCS, N-HCS and HCS.

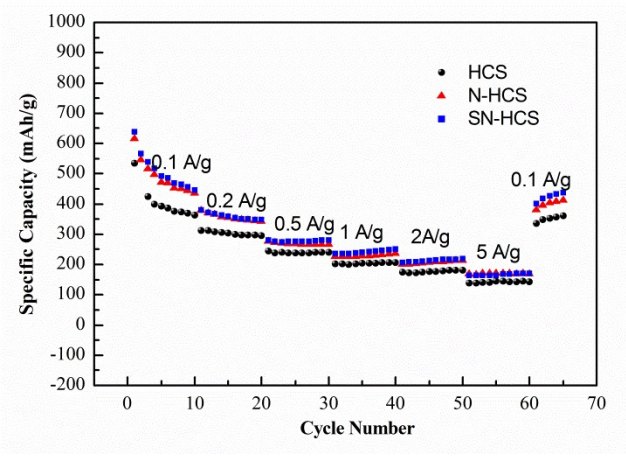


Fig. S7 Rate performance of LIBs for HCS, N-HCS and SN-HCS.