

Bimetallic MOFs-Derived Hollow Carbon Spheres Assembled by Sheets for Sodium-Ion Batteries

Hui Yang ¹, Ang Li ^{1,*}, Chunli Zhou ^{1,2}, Xuwei Liu ¹, Xiaohong Chen ¹, Haiyan Liu ³, Tao Liu ³ and Huaihe Song ^{1,*}

¹ State Key Laboratory of Chemical Resources Engineering, Beijing Key Laboratory of Electrochemical Process and Technology for Materials, Beijing University of Chemical Technology, Beijing 100029, China

² Tangshan Key Laboratory of Optoelectronic Conversion Materials, School of Physical Science and Technology, Tangshan Normal University, Tangshan 063000, China

³ Shandong Energy Group Ltd., Zhoucheng 277527, China

* Correspondence: li_ang@mail.buct.edu.cn (A.L.); songhh@mail.buct.edu.cn (H.S.); Tel.: +86-10-64434916 (H.S.)

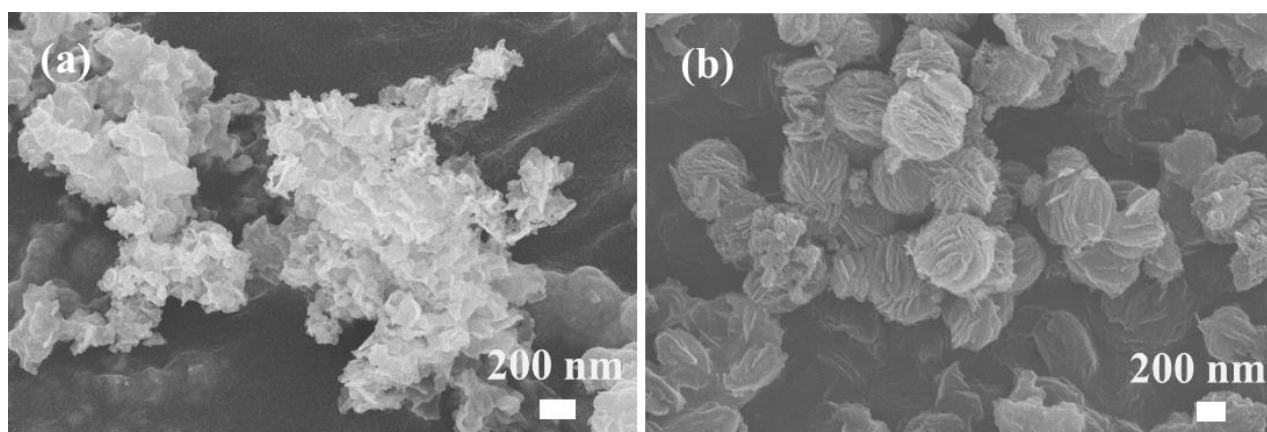


Figure S1. (a) SEM image of Co/C; (b) SEM image of CoCu/C.

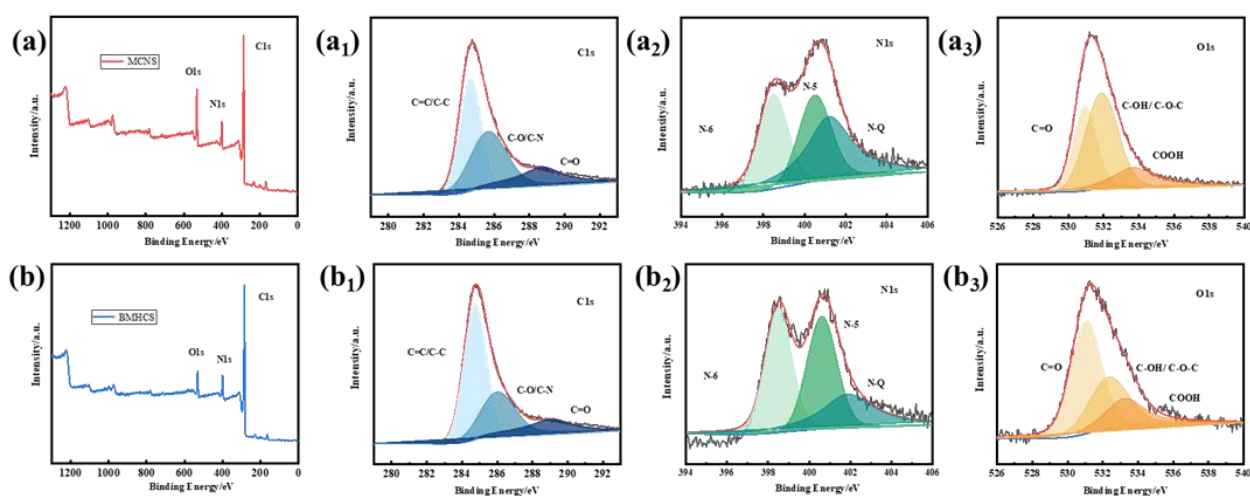


Figure S2. (a) XPS survey spectrum; (a1) C1s spectra; (a2) N1s spectra; (a3) O1s spectra of MCNS; (b) XPS survey spectrum; (b1) C1s spectra; (b2) N1s spectra; (b3) O1s spectra of BMHCS.

Table S1. Elemental composition of MCNS and BMHCS according to XPS test.

Sample	N /at%	N-5	N-6	N-Q	O /at%	C=O	C-OH/C-O-C	COOH
MCNS	9.72	3.04	2.86	3.82	11.25	3.74	5.63	1.88
BMHCS	10.04	3.89	3.69	2.46	6.17	3.18	1.85	1.14

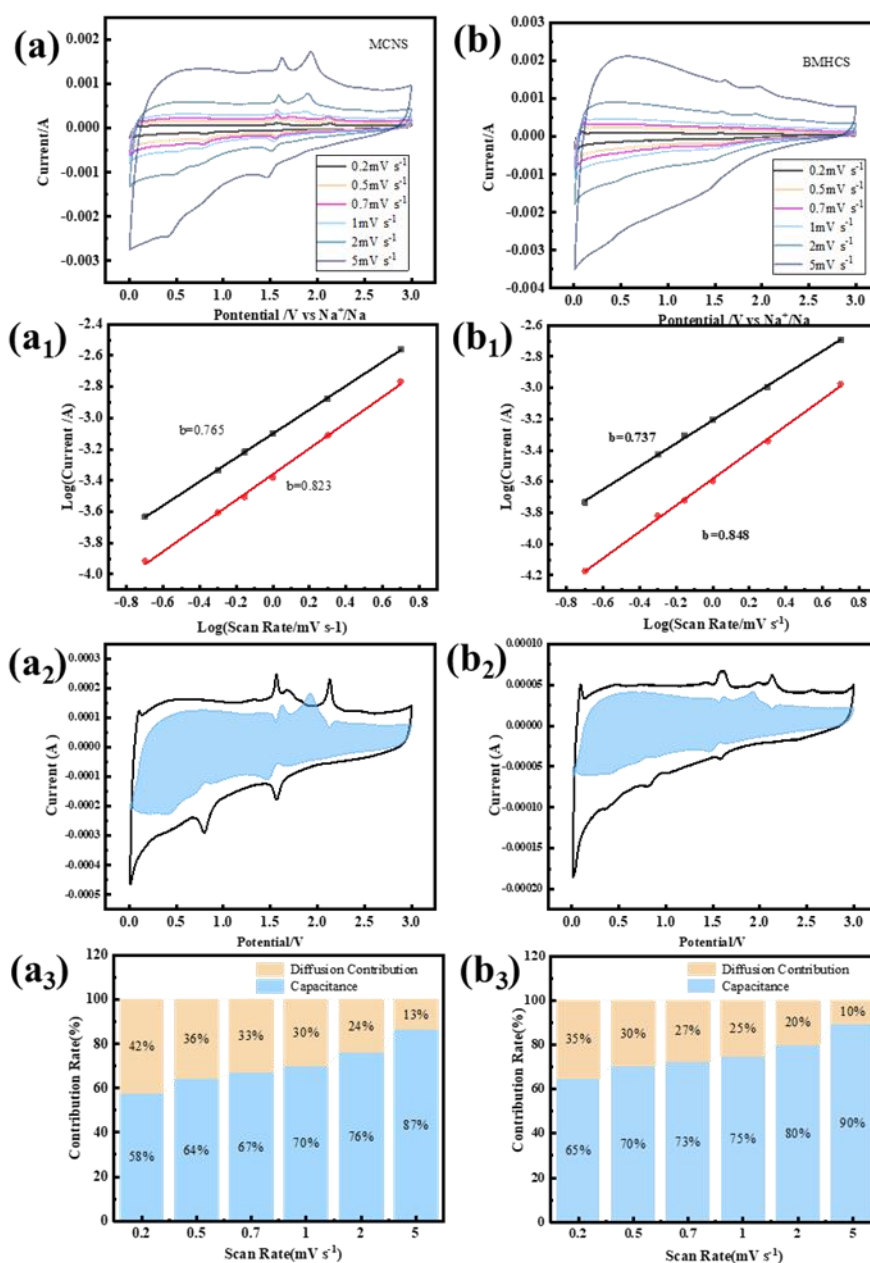


Figure S3. (a, b) CV curves at different scanning rates; (a₁, b₁) The fitted linearity between redox peak current and the square root of the scan rate; (a₂, b₂) CV curve at 0.2 mV s⁻¹, shaded part represents capacitive contribution; (a₃, b₃) Contribution rate of the capacitive and diffusion-controlled at different scanning rates of MCNS and BMHCS.

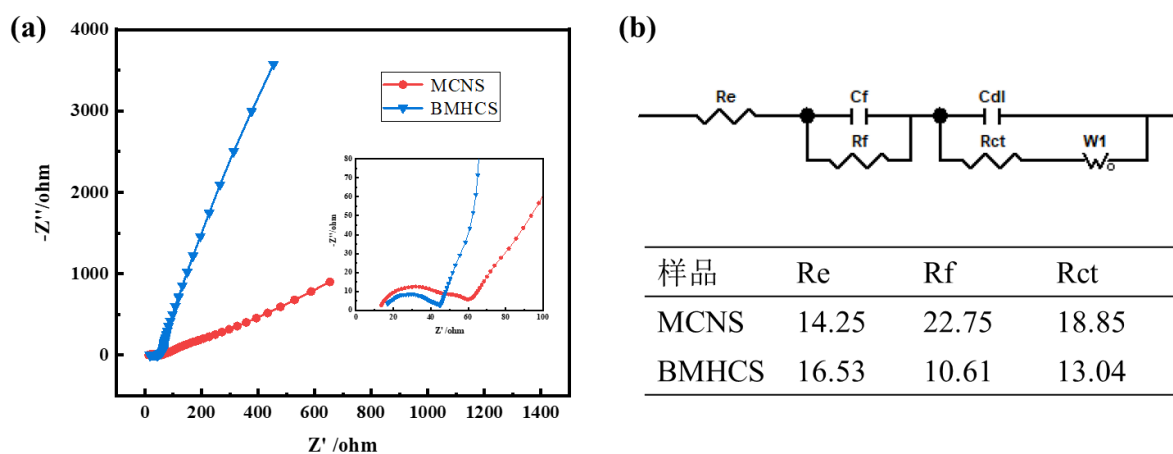


Figure S4. (a) Impedance profiles; (b) Equivalent circuit diagram and parameters of MCNS and BMHCS.