

## Supporting Information

# Enhancing Sodium-Ion Energy Storage of Commercial Activated Carbon by Constructing Closed Pores via Ball Milling

Xiaojie Wang, Qian Fang, Tiejun Zheng, Yanyan Xu, Rui Dai, Zhijun Qiao, Dianbo Ruan \* and Yuzuo Wang \*

Institute of Advanced Energy Storage Technology and Equipment Faculty,  
Ningbo University,  
Ningbo 315211, China; 17806230316@163.com (X.W.); afangqian@163.com (Q.F.);  
stress1224@163.com (T.Z.); 15856717889@163.com (Y.X.); 17754110986@163.com  
(R.D.); qiaozhi8702@163.com (Z.Q.)

\* Correspondence: ruandianbo@nbu.edu.cn (D.R.); wangyuzuo@nbu.edu.cn  
(Y.W.)

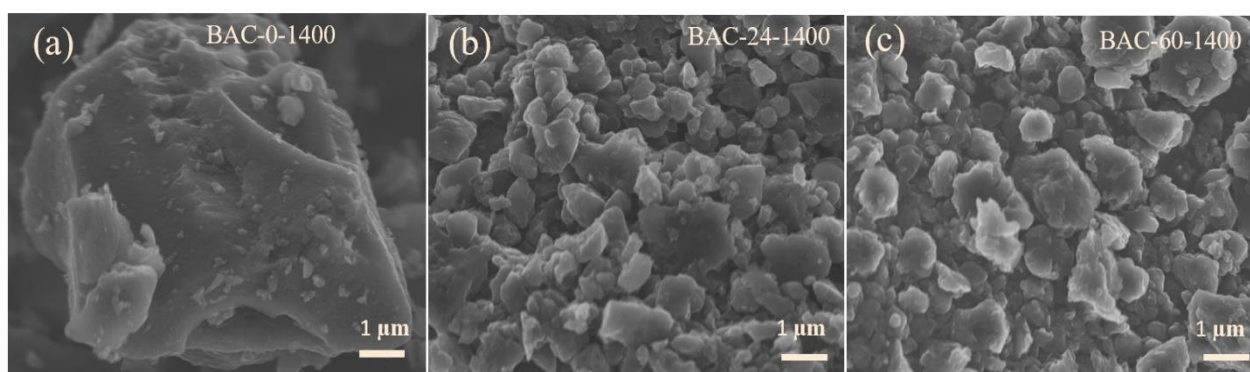


Figure S1. SEM images of (a) BAC-0-1400, (b) BAC-24-1400, (c) BAC-60-1400

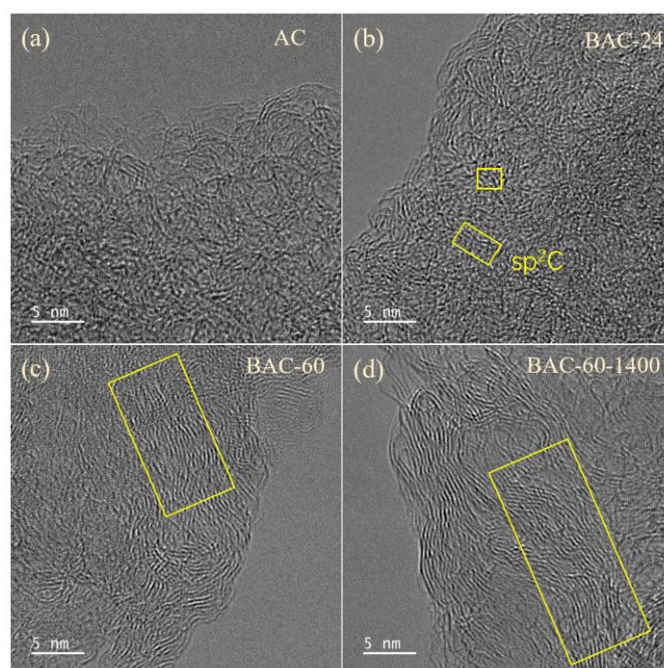


Figure S2. TEM images of (a) AC, (b) BAC-24, (c) BAC-60 and (d) BAC-60-1400.

Samples	AC	BAC-24	BAC-60	BAC-60-1400
true density ( $\text{g cm}^{-3}$ )	2.145	1.836	1.828	1.808
closed pore volume ( $\text{cm}^3 \text{g}^{-1}$ )	0.024	0.102	0.105	0.111
$d_{002}$ (nm)	3.96	3.60	3.56	3.49
$L_c$ (nm)	2.71	2.46	2.43	2.39
$L_a$ (nm)	1.416	1.423	1.433	1.431
SSA ( $\text{m}^2 \text{g}^{-1}$ )	1437	788	19.61	173

Table S1. Physical parameters for the obtained samples.

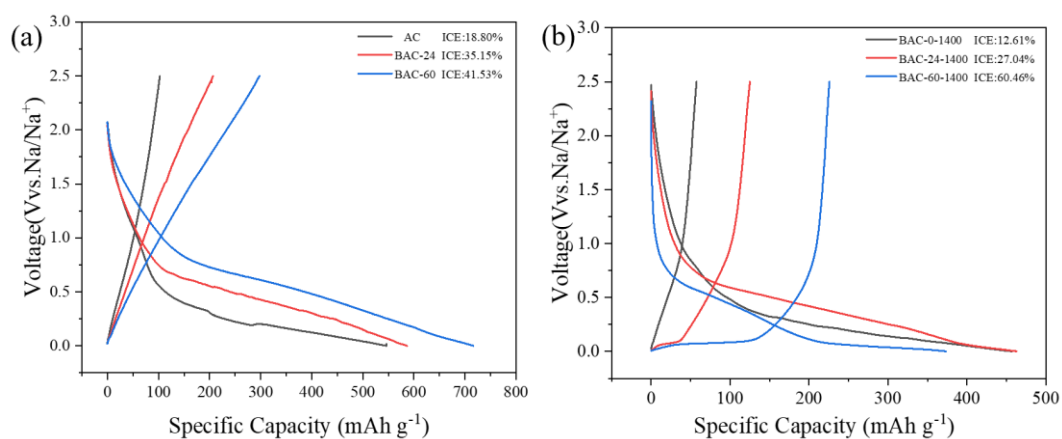


Figure S3. (a), (b) Charge and discharge curve of first ring and IEC of activated carbon electrode at 0.1C current rate

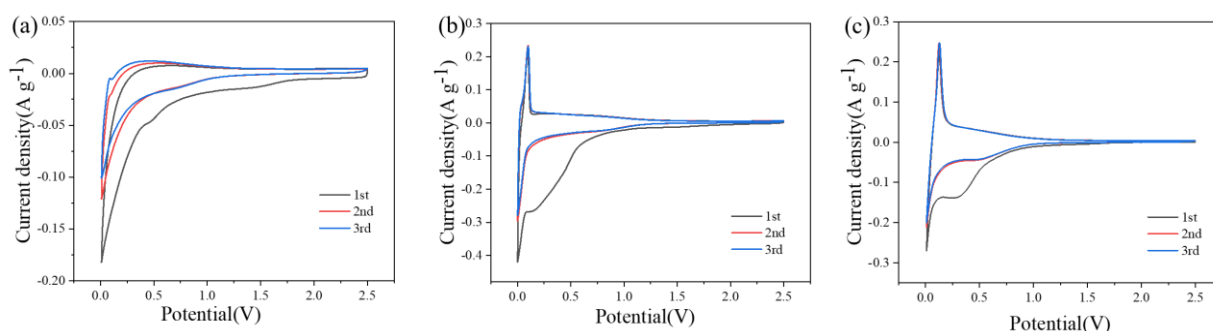


Figure S4. CV curves of (a) BAC-0-1400, (b) BAC-24-1400 and (c) BAC-60-1400 when the scan rate is 0.1 mV s<sup>-1</sup>

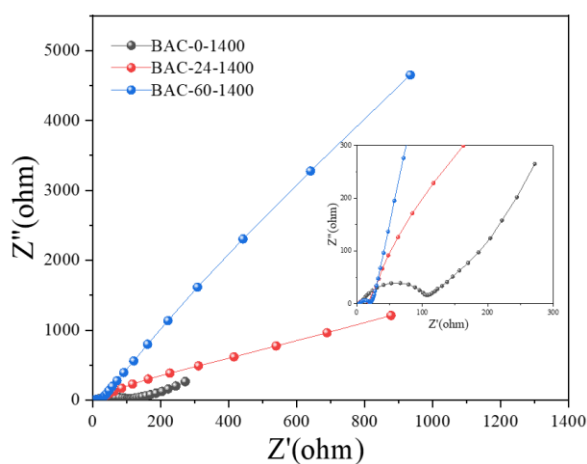


Figure S5. EIS of BAC-0-1400, BAC-24-1400, BAC-60-1400

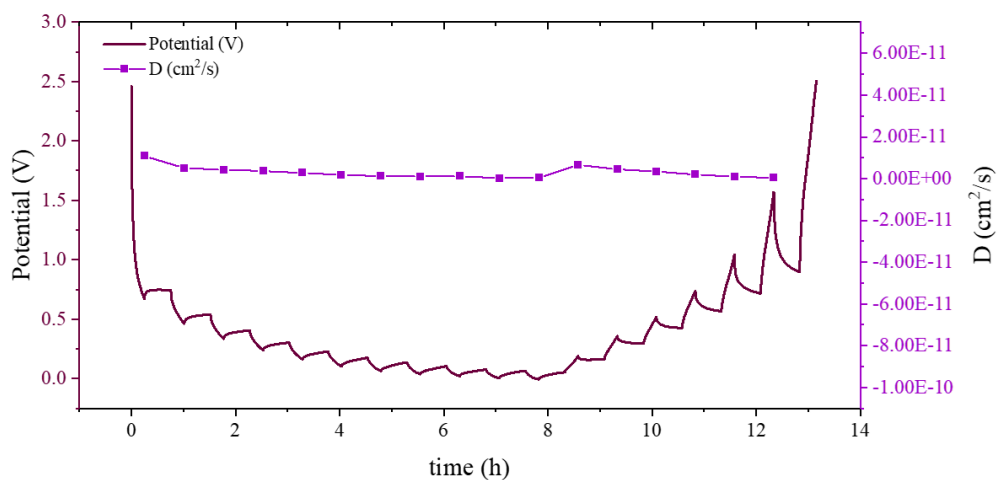


Figure S6 GITT test results of the BAC-0-1400 electrodes.

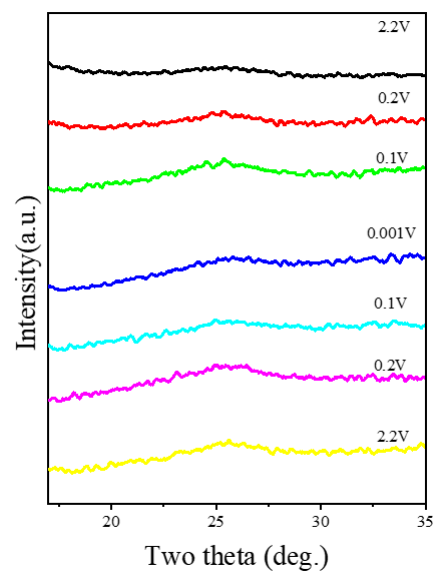


Figure S7 Ex situ XRD profiles of BAC-0-1400 electrodes at various stage of sodiation and desodiation.