Supporting Information

Controllable synthesis of 3D hierarchical bismuth compounds with good electrochemical performance for advanced energy storage devices

Jinfeng Sun\textsuperscript{a, b}, Jinqing Wang\textsuperscript{a, *}, Zhangpeng Li\textsuperscript{a}, Zhigang Yang\textsuperscript{a}, and Shengrong Yang\textsuperscript{a, *}

\textsuperscript{a} State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, P. R. China
\textsuperscript{b} University of Chinese Academy of Sciences, Beijing 100080, P. R. China

* Corresponding authors. Tel.: +86 931 4968076; Fax: +86 931 8277088 (J. Wang)
E-mail addresses: jqwang@licp.cas.cn (J. Wang); sryang@licp.cas.cn (S. Yang)
Fig. S1 Size distribution of diameter for Bi-samples.
Fig. S2 SEM images of Bi-2 (Bi^{3+}/urea, 1/5) at different reaction times (1-24 h).

Fig. S3 SEM images of Bi-2 (Bi^{3+}/urea, 1/5) with 15 mL EG + 15 mL H₂O.
Table S1 Surface area, pore volume, and average pore size of the samples

<table>
<thead>
<tr>
<th>Samples</th>
<th>$S_{BET}^a$ (m$^2$ g$^{-1}$)</th>
<th>$V_{tot}^b$ (cm$^3$ g$^{-1}$)</th>
<th>$A_{ps}^c$ (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi-1</td>
<td>6.23</td>
<td>0.0227</td>
<td>14.5</td>
</tr>
<tr>
<td>Bi-2</td>
<td>29.25</td>
<td>0.1671</td>
<td>22.9</td>
</tr>
<tr>
<td>Bi-3</td>
<td>32.67</td>
<td>0.2131</td>
<td>26.1</td>
</tr>
<tr>
<td>Bi-4</td>
<td>45.31</td>
<td>0.2485</td>
<td>21.9</td>
</tr>
<tr>
<td>Bi-5</td>
<td>67.89</td>
<td>0.3187</td>
<td>18.7</td>
</tr>
</tbody>
</table>

*a-BET surface area; b-Total pore volume of pore; c-Average pore size
Fig. S4 XRD pattern of the fully discharged electrode.
Fig. S5 CV curves at various scan rates from 1.5 to 10 mV s$^{-1}$ of the samples.
Fig. S6 charge-discharge curves at various current densities from 1 to 20 A g\(^{-1}\) of the samples.
Fig. S7 Electrochemical properties of the Bi-4 electrode in different electrolyte: (a) 4 M KOH, (b) 2 M KOH, (c) 2 M NaOH, (d) 1 M Na₂SO₄.

Fig. S8 (a) Specific capacitances of Bi-4 electrode at a scan rate of 2.5 mV s⁻¹ in different electrolyte. (b) Corresponding specific capacitances as a function of current densities of Bi-4 electrode in different electrolyte.
Fig. S9 Cycle stability and Coulombic efficiency of Bi-4 at a current density of 5 A g$^{-1}$. 
Fig. S10 Electrochemical properties of the fabricated Bi$_2$O$_3$//AC asymmetric supercapacitor: (a) CV curves of Bi$_2$O$_3$//AC at different scan rates from 10 to 80 mV s$^{-1}$. (b) Typical charge and discharge curves of Bi$_2$O$_3$//AC at different discharge rates from 0.2 to 4 A g$^{-1}$. (c) Corresponding specific capacitances as a function of current densities.