Supporting Information

**ZnS Quantum Dots@Multilayered Carbon: Geological-Plate-Movement-Inspired Design for High-Energy Li-ion Batteries**

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Figure S1. XRD patterns of ZIF-7.
Figure S2. a) TEM image of ZIF-7. b-d) SEM images of ZIF-7.
Figure S3. a-e) Scanning TEM image and corresponding EDS elemental mapping images of Zn, S, C, N for ZnS-QDs@mNC.
Figure S4. TGA curves of ZnS-QDs@mNC.
Figure S5. a) The initial first Galvanostatic charge–discharge voltage curves of ZnS-QDs@mNC at the current density of 140 mA g\(^{-1}\); b) First four cycles of the CV curves for the ZnS-QDs@mNC with a scan rate of 0.1 mV/s and a voltage range of 0.01-2.5 V.
Figure S6. Impedance spectra of the ZnS-QDs@mNC electrode before and after 20 cycles.
Figure S7. Magnified TEM images of a) pristine and corresponding b) fully lithiated ZnS-QDs@mNC, showing size changes of ZnS quantum dots before and after lithiation.

Table S1. Sizes of pristine and lithiated quantum dots marked in figure S8 and corresponding size expansions.

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
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<tbody>
<tr>
<td>Pristine (nm)</td>
<td>4.3</td>
<td>5.0</td>
<td>4.3</td>
<td>5.0</td>
<td>3.8</td>
<td>2.9</td>
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<tr>
<td>Lithiated (nm)</td>
<td>5.8</td>
<td>5.8</td>
<td>5.2</td>
<td>6.4</td>
<td>4.9</td>
<td>3.9</td>
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<tr>
<td>Size expansion (%)</td>
<td>34.9</td>
<td>16.0</td>
<td>20.9</td>
<td>28.0</td>
<td>28.9</td>
<td>34.5</td>
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</table>
Figure S8. TEM images of a) and c) ZnS quantum dots in ZnS-QDs@mNC and corresponding high-resolution TEM images of b) and d) ZnS quantum dots in ZnS-QDs@mNC.
Figure S9. High-resolution TEM images of a) and c) pristine and corresponding b) and d) fully lithiated ZnS-QDs@mNC.