Supporting Information for

Better Lithium-Ion Storage Materials Made through Hierarchical Assemblies of Active Nanocrystals and Nanorods

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(a)

Volume adsorbed (cm$^3$ \cdot g$^{-1}$) vs. Relative pressure ($P/P_0$)
Figure S1. Nitrogen adsorption/desorption isotherms (a) and pore size distributions (b) of V_2O_5 nanorod spheres and commercial V_2O_5 particles.

Table S1. BET surface area, pore volume and average pore size of V_2O_5 nanorod spheres, commercial V_2O_5 particles, LiV_3O_8 nanorod spheres, Fe_3O_4 nanocrystal spheres and Fe_3O_4 nanocrystals.

<table>
<thead>
<tr>
<th>Samples</th>
<th>BET Surface Area (m^2/g)</th>
<th>Pore Volume (cm^3/g)</th>
<th>Average Pore Size (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_2O_5 nanorod spheres</td>
<td>13.4</td>
<td>0.061</td>
<td>31.2</td>
</tr>
<tr>
<td>Commercial V_2O_5 particles</td>
<td>5.9</td>
<td>0.033</td>
<td>30.6</td>
</tr>
<tr>
<td>LiV_3O_8 nanorod spheres</td>
<td>13.6</td>
<td>0.094</td>
<td>30.9</td>
</tr>
<tr>
<td>Fe_3O_4 nanocrystal spheres</td>
<td>23.8</td>
<td>0.135</td>
<td>24.0</td>
</tr>
<tr>
<td>Fe_3O_4 nanocrystals</td>
<td>120.8</td>
<td>0.301</td>
<td>8.3</td>
</tr>
</tbody>
</table>
**Figure S2.** The CV curves of V$_2$O$_5$ nanorod spheres for the first three cycles in a voltage range of 1.8 to 4.0 V vs. Li/Li$^+$ at a scan rate of 1 mV s$^{-1}$. The peak currents were normalized to active mass.

**Figure S3.** SEM image of V$_2$O$_5$ particles after crashing the nanorod-sphere structure.
Figure S4. Rate-capability of electrode made from commercial V$_2$O$_5$ particles cycled between 1.8 and 4.0 V at different current densities of 70, 140, 280, 1400 mA g$^{-1}$, respectively.

Figure S5. SEM image of LiV$_3$O$_8$ particles after crashing the nanorod-sphere structure.
Figure S6. XRD patterns of the Fe₃O₄ nanocrystal spheres.