Electronic supplementary information (ESI) for

Room-Temperature Synthesis of Cobalt 2,3,5,6-Tetrafluoroterephthalic Coordination Polymer with Enhanced Capacity and Cycling Stability for Lithium Batteries

Xiaobing Lou, Xiaoshi Hu, Chao Li, Yanqun Ning, Qun Chen, Ming Shen* and Bingwen Hu*

Shanghai Key Laboratory of Magnetic Resonance, School of Physics and Materials Science, East China Normal University, Shanghai 200062, China. E-mail: mshen@phy.ecnu.edu.cn (M.S.); bwhu@phy.ecnu.edu.cn (B.H.).
Fig. S1 XRD patterns of Co-TFBDC.

Fig. S2 XRD patterns of the annealed Co-TFBDC, which shows that the annealing product is Co$_3$O$_4$. 
Fig. S3 High-resolution (a) F 1s (b) O 1s (c) C 1s XPS spectra of Co-TFBDC.
Fig. S4 Solid-state $^{13}$C NMR spectra of Co-TFBDC and H$_2$TFBDC.

Fig. S5 Whole energy spectra of Co-TFBDC from the selected region. Before test, the samples were mounted on aluminum stubs, sputtered with gold resulting in the remaining peaks (e.g. approx. 2 keV) on the EDX spectrum.
Fig. S6 ex-situ XPS spectra of (a) fresh electrode, (b) discharged electrode (0.01V), and charged electrode (3.0V).

<table>
<thead>
<tr>
<th>Table S1</th>
<th>Atomic ratio of Co-TFBDC obtained from EDS analysis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>Weight%</td>
</tr>
<tr>
<td>C</td>
<td>29.37</td>
</tr>
<tr>
<td>O</td>
<td>19.73</td>
</tr>
<tr>
<td>F</td>
<td>6.08</td>
</tr>
<tr>
<td>Co</td>
<td>44.82</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
</tr>
</tbody>
</table>