Supporting information

Ternary Ag–TiO$_2$/Reduced Graphene Oxide Nanocomposite as Anode Material for Lithium Ion Battery

Jiuling Yu,$^a$ Di Huang,$^a$ Yanan Liu,$^b$ Hongmei Luo$^{a,*}$

$^a$Department of Chemical and Materials Engineering, New Mexico State University, Las Cruces, NM 88003, USA.

$^b$State Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical Technology, 100029, China.

* Corresponding author. E-mail: hluo@nmsu.edu

Figure S1. XRD pattern of GO.
Figure S2. Nitrogen adsorption/desorption isotherms with corresponding pore size distribution (inset) of (a) TiO$_2$/rGO; and (b) TiO$_2$.

Table S1. Summary of desorption parameters of different samples.

<table>
<thead>
<tr>
<th>Sample</th>
<th>BET surface area (m$^2$ g$^{-1}$)</th>
<th>Pore volume (cm$^3$ g$^{-1}$)</th>
<th>Pore size (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag-TiO$_2$/rGO</td>
<td>160.50</td>
<td>0.2070</td>
<td>4.50</td>
</tr>
<tr>
<td>TiO$_2$/rGO</td>
<td>168.75</td>
<td>0.2211</td>
<td>4.28</td>
</tr>
<tr>
<td>TiO$_2$</td>
<td>149.20</td>
<td>0.2327</td>
<td>5.18</td>
</tr>
</tbody>
</table>

Figure S3. TEM images of (a) Ag-TiO$_2$/5_rGO; (b) Ag-1_TiO$_2$/rGO; (c) M_Ag-TiO$_2$/rGO; and (d) M_Ag-TiO$_2$-rGO.
Figure S4. (a) SEM image of Ag-TiO$_2$/rGO; (b, c) EDX mappings of Ag-TiO$_2$/rGO.

Figure S5. Galvanostatic discharge/charge voltage profiles of (a) TiO$_2$/rGO; and (b) TiO$_2$ for the 1st, 3rd, 5th, 50th, 100th cycle at a current density of 1 C (1 C=168 mA g$^{-1}$).
Figure S6. Cycling performances of Ag-TiO$_2$/rGO, TiO$_2$/rGO, M$_{Ag-TiO_2}$/rGO, M$_{Ag-TiO_2}$-rGO and TiO$_2$ at a current density of 1 C and corresponding Coulombic efficiencies.