Supporting Information for

Nitrogen-doped graphene–Fe₃O₄ architecture as Anode Material for Improved Li-ion Storage

Yuping Liu†, Kai Huang‡, Hong Luo†, Hongxing Li†, Xiang Qi†, Jianxin Zhong‡

†Hunan Key Laboratory for Micro-Nano Energy Materials and Devices, Laboratory for Quantum Engineering and Micro-Nano Energy Technology, Faculty of Materials and Optoelectronic Physics, Xiangtan University, Hunan 411105, P. R. China

Tel.:+86 73158292195, Fax: +86 73158292468; E-mail address: huangk@xtu.edu.cn
Figure S1. CV curves of the first five cycles of the (a): G-Fe₃O₄ and (b): N-G-Fe₃O₄ composite at a scan rate of 0.2 mVs⁻¹.

From the CV curves of the G-Fe₃O₄ and N-G-Fe₃O₄, an improved electrical conductivity of graphene and stable SEI layer can be obtained.
The N-G-Fe$_3$O$_4$ composite after TGA was tested by XRD, and the result shows that the Fe$_3$O$_4$ has changed into Fe$_2$O$_3$ (Maghemite-Q, Tetragonal, PDF-#:25-1402). According to (Fe$_3$O$_4$)$_2 \rightarrow$(Fe$_2$O$_3$)$_3$, we calculate that the Fe$_3$O$_4$ content is about 62.8%, and the electrochemical capacity also has been recalculated in the manuscript.
**Table 1**

Comparison on reversible capacity and rate capability with recent literatures.

<table>
<thead>
<tr>
<th>Label</th>
<th>Reversible capacity</th>
<th>Rate capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Coated Fe$_3$O$_4$ Nanospindles$^1$</td>
<td>745 mAh$^{-1}$ after 100 cycles</td>
<td>600 mAh$^{-1}$ at 463 mAg$^{-1}$</td>
</tr>
<tr>
<td>porous hollow Fe$_3$O$_4$ beads$^2$</td>
<td>700 mAh$^{-1}$ after 50 cycles</td>
<td>573.1 mAh$^{-1}$ at 500 mAg$^{-1}$</td>
</tr>
<tr>
<td>Graphene Foam Supported Fe$_3$O$_4$$^3$</td>
<td>785 mAh$^{-1}$ after 500 cycles</td>
<td>400 mAh$^{-1}$ at 5500 mAg$^{-1}$</td>
</tr>
<tr>
<td>Coaxial Fe$_3$O$_4$@ C Hollow Particles$^4$</td>
<td>864 mAh$^{-1}$ after 100 cycles</td>
<td>582 mAh$^{-1}$ at 500 mAg$^{-1}$</td>
</tr>
</tbody>
</table>

The comparison on reversible capacity and rate capability with recent literatures are given in table 1, the parameters of reversible capacity with Coaxial Fe$_3$O$_4$@ C Hollow Particles is better than literatures due to its coaxial and penetrated hollow mesochannel based on the concept of “confined nanospace pyrolysis”. However, the rate capability are difficult to comparative analysis for their different current densities.
References


