Supporting Information for

Synthesis of Fe$_3$O$_4$ Nano-Sphere@MgAl Layered Double Hydroxide Hybrid and Application in Fabricating Multifunctional Epoxy Nanocomposites

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The textural and pore size distribution properties of unmodified LDH and calcinated LDH samples were analyzed by nitrogen adsorption – desorption measurement. Both the unmodified LDH (Figure S1a) and calcinated LDH (c-LDH) samples (Figure S1b) exhibit a typical isotherm with a H1 and H3 type hysteresis loop, indicating the presence of mesopores in the both samples. These results correspond well with the uniform distribution of pore size as shown in Figures S1c and S1d. The pore size distribution of the unmodified LDH and c-LDH is listed in Table S1. The pore diameter distribution of unmodified LDH covers a narrow range, with the pore size average of about 15 nm which are corresponding to the voids and empty spaces between the platelets. After the calcination at 400 °C, c-LDH sample showed an increase in the trend for the specific surface area, pore size average and total pore volume. This may be resulted by the shrinking of the LDH crystallites during the calcinations and hence, formation of a large number of the pores in the microcrystallites.¹

![Figure S1](image1.png)  
**Figure S1** Nitrogen sorption isotherms of unmodified LDH (a) and c-LDH (b); Pore size distributions of unmodified LDH (c) and c-LDH (d).
Table S1 Physicochemical properties of the unmodified LDH and calcinated LDH

<table>
<thead>
<tr>
<th>Sample</th>
<th>BET (m²·g⁻¹)</th>
<th>Specific Volume (cm³·g⁻¹)</th>
<th>BJH (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDH</td>
<td>14.3</td>
<td>0.056</td>
<td>15.7</td>
</tr>
<tr>
<td>C-LDH</td>
<td>228.3</td>
<td>0.520</td>
<td>9.1</td>
</tr>
</tbody>
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References