Electronic Supplementary Information for

One-step preparation of multifunctional alginate microspheres loading in situ-formed gold nanostars as a photothermal agent

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Additional experimental data
Fig. S1  a-d Optical micrographs; and a'-d' the corresponding SEM images of microspheres. (a, a') CA; (b, b') Au@CA-2.5; (c, c') Au@CA-5 and (d, d') Au@CA-20 microspheres

Fig. S2 a TEM images of the in situ-formed Au NPs in the dispersed phase; b TEM images of Au NSs disintegrated from Au@CA microspheres
Fig. S3 HRTEM images and the corresponding SAED pattern of the *in situ*-formed Au NS in Au@CA-2.5 microspheres (a, c) and Au@CA-10 microspheres (c, d).

Tab. S1 Content of gold in Au@CA microspheres

<table>
<thead>
<tr>
<th>gold content (wt%)</th>
<th>Au@CA-2.5</th>
<th>Au@CA-5</th>
<th>Au@CA-10</th>
<th>Au@CA-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>theoretical value</td>
<td>2.40</td>
<td>4.69</td>
<td>8.97</td>
<td>16.46</td>
</tr>
<tr>
<td>measured value</td>
<td>2.80 ± 0.05</td>
<td>4.76 ± 0.03</td>
<td>8.87 ± 0.06</td>
<td>13.50 ± 0.71</td>
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</tbody>
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