Figure S.1. The Chemical structures of (a) PMMA, (b) PS, and (c) PAN polymers

Table S.1. Electrospraying parameters of PS-TEGO, PMMA-TEGO, and PAN-TEGO spheres

<table>
<thead>
<tr>
<th>Polymer type</th>
<th>Polymer concentration (wt%)</th>
<th>Solvent</th>
<th>TEGO amount (wt%)</th>
<th>Flowrate (μL/min)</th>
<th>Voltage (kV)</th>
<th>Distance (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMMA</td>
<td>20</td>
<td>DMF</td>
<td>0</td>
<td>13</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>DMF</td>
<td>0.005</td>
<td>17</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>DMF</td>
<td>0.01</td>
<td>18</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>DMF</td>
<td>0.02</td>
<td>17</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>PS</td>
<td>20</td>
<td>DMF</td>
<td>0.005</td>
<td>16</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>DMF</td>
<td>0.01</td>
<td>17</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>DMF</td>
<td>0.02</td>
<td>17</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>PAN</td>
<td>5</td>
<td>DMF</td>
<td>0</td>
<td>15</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>DMF</td>
<td>0.02</td>
<td>18</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3.5</td>
<td>DMF</td>
<td>0.05</td>
<td>14</td>
<td>13</td>
<td>10</td>
</tr>
</tbody>
</table>
Table S.2. The positions and intensities of D, G, 2D peaks, $I_D/I_G$ and $I_G/I_{2D}$ values of untreated TEGO, sonicated and electrosprayed TEGO

<table>
<thead>
<tr>
<th></th>
<th>D</th>
<th>G</th>
<th>2D</th>
<th>$I_D/I_G$</th>
<th>$I_G/I_{2D}$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position</strong></td>
<td><strong>Intensity</strong></td>
<td><strong>Position</strong></td>
<td><strong>Intensity</strong></td>
<td><strong>Position</strong></td>
<td><strong>Intensity</strong></td>
</tr>
<tr>
<td><strong>cm$^{-1}$</strong></td>
<td>(a.u.)</td>
<td><strong>cm$^{-1}$</strong></td>
<td>(a.u.)</td>
<td><strong>cm$^{-1}$</strong></td>
<td>(a.u.)</td>
</tr>
<tr>
<td>TEGO</td>
<td>1346</td>
<td>4297</td>
<td>1575</td>
<td>20033</td>
<td>2713</td>
</tr>
<tr>
<td>Sonicated TEGO</td>
<td>1352</td>
<td>2047</td>
<td>1578</td>
<td>18346</td>
<td>2717</td>
</tr>
<tr>
<td>Electrosprayed TEGO</td>
<td>-</td>
<td>-</td>
<td>1581</td>
<td>24014</td>
<td>2721</td>
</tr>
</tbody>
</table>

Table S.3. Mark-Houwink-Sakurada constants for PMMA, PS, and PAN polymers at room temperature.

<table>
<thead>
<tr>
<th>Polymer type</th>
<th>Solvent</th>
<th>$a$</th>
<th>$K_H$ (10$^{-3}$ mL/g)</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMMA</td>
<td>DMF</td>
<td>0.625</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>PS</td>
<td>DMF</td>
<td>0.603</td>
<td>31.8</td>
<td>2</td>
</tr>
<tr>
<td>PAN</td>
<td>DMF</td>
<td>0.780</td>
<td>17.7</td>
<td>3</td>
</tr>
</tbody>
</table>

Table S.4. XRD diffraction peak intensities and positions of TEGO based PMMA and PS based spheres

<table>
<thead>
<tr>
<th>TEGO amount (wt%)</th>
<th>XRD polymer peak intensity</th>
<th>2θ of polymer peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>305</td>
<td>14.4</td>
</tr>
<tr>
<td>PMMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.005</td>
<td>287</td>
<td>13.9</td>
</tr>
<tr>
<td>0.01</td>
<td>189</td>
<td>13.7</td>
</tr>
<tr>
<td>0.02</td>
<td>184</td>
<td>13.5</td>
</tr>
<tr>
<td>0</td>
<td>205</td>
<td>19.9</td>
</tr>
<tr>
<td>PS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.005</td>
<td>169</td>
<td>19.6</td>
</tr>
<tr>
<td>0.01</td>
<td>152</td>
<td>19.5</td>
</tr>
<tr>
<td>0.02</td>
<td>150</td>
<td>19.2</td>
</tr>
</tbody>
</table>
Table S.5. Raman intensities of PS and PS-0.02 wt% TEGO spheres

<table>
<thead>
<tr>
<th>TEGO amount (wt%)</th>
<th>Intensity of 3050 cm(^{-1}) peak</th>
<th>Intensity of 2900 cm(^{-1}) peak</th>
<th>Intensity of 1600 cm(^{-1}) peak</th>
<th>Intensity of 995 cm(^{-1}) peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>48003</td>
<td>22031</td>
<td>9870</td>
<td>66635</td>
</tr>
<tr>
<td>0.02</td>
<td>14170</td>
<td>7269</td>
<td>3701</td>
<td>21170</td>
</tr>
</tbody>
</table>

Figure S.2. SEM image of PMMA spheres containing 0.02 wt% TEGO using methanol as a core material with the flow rate of 5 μL/min

References