7,7,8,8-tetracyanoquinodimethane-assisted one-step electrochemical exfoliation of graphite and its performance as an electrode material

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Fig. S1. Schematic diagram of electrochemical exfoliation of graphite in presence of TCNQ-anion aqueous electrolyte.
Fig. S2 XPS survey spectra of graphite, TCNQG1 and TCNQG2
Fig. S1 Deconvoluted C1s spectra of pure graphite
Table S1 Comparison of materials preparation and electrochemical performance of TCNQ functionalized graphene sheets with the existing state-of-the-art compounds

<table>
<thead>
<tr>
<th>Methods of preparation</th>
<th>Modifying agents</th>
<th>Exfoliation time (h)</th>
<th>Capacitance value (F g(^{-1}))</th>
<th>Cyclic stability (%)</th>
<th>Energy (Wh kg(^{-1}))/power density (W kg(^{-1}))</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonochemical</td>
<td>9-anthracene carboxylic acid</td>
<td>24</td>
<td>148 in 1M H(_2)SO(_4)</td>
<td>Not reported</td>
<td>Not Reported</td>
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<tr>
<td>Chemical</td>
<td>PEI &amp; CNT</td>
<td>-</td>
<td>120 in 1M H(_2)SO(_4)</td>
<td>Not reported</td>
<td>Not reported</td>
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<tr>
<td>Chemical</td>
<td>tert-butylhydroquinone</td>
<td>48</td>
<td>302 in 1M H(_2)SO(_4)</td>
<td>94 after 800 cycle</td>
<td>Not reported</td>
<td>3</td>
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<tr>
<td>Chemical</td>
<td>CuO</td>
<td>14</td>
<td>331.9 in 6M KOH</td>
<td>95.1 after 1000</td>
<td>Not reported</td>
<td>4</td>
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<tr>
<td>Chemical</td>
<td>Goethite (a-FeOOH)</td>
<td>3</td>
<td>165.5</td>
<td>87 after 200 cycle</td>
<td>Not reported</td>
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<tr>
<td>Electrochemical</td>
<td>Sulfonated poly(ether-ether-ketone)</td>
<td>10-12</td>
<td>244 in 1M H(_2)SO(_4)</td>
<td>10(^{th}) cycle</td>
<td>Not reported</td>
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<tr>
<td>Electrochemical</td>
<td>9-anthracene carboxylic acid</td>
<td>10</td>
<td>577 in 1M H(_2)SO(_4)</td>
<td>83.4 after 1000 cycle</td>
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<tr>
<td>Electrochemical</td>
<td>6-amino-4-hydroxy-2-naphthalene-sulfonic acid</td>
<td>12</td>
<td>115 in 1M H(_2)SO(_4)</td>
<td>93 after 1000</td>
<td>Not reported</td>
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<td>Present study</td>
<td>7,7,8,8-tetracyanoquinodimethane</td>
<td>12</td>
<td>324 in 1M KOH</td>
<td>76 in KOH and 87 in Na(_2)SO(_4) after 3000 cycle</td>
<td>86.9 /300 in KOH and 24.72 / 499.95 in Na(_2)SO(_4)</td>
<td>9</td>
</tr>
</tbody>
</table>
Reference


