Electronic Supplementary Information (ESI)

Superior One-pot Synthesis of Doped Graphene Oxide Electrode for High Power Density Supercapacitor

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Figure S1. FESEM elemental compositions mapping images of GO and rGO (carbon (a and c) and oxygen (b and d)).
Figure S2. FESEM elemental compositions mapping images of S-rGO (carbon (a), oxygen (b), and sulfur (c)).
Figure S3. (A) XRD patterns and (B) FTIR spectra of GO (a), rGO (b), S-rGO (Na₂S) (C), and S-rGO (Na₂S+NaBH₄) (d), respectively.
**Figure S4.** The stability of (a) GO, (b) rGO, and (c) S-rGO suspensions after sonication in various solvents (from left to right (deionised water, ethanol, dimethylacetamide, dimethylformamide, tetrahydrofuran, chloroform, and toluene). (d-f) The stability of the suspensions after stored at dark condition for 1 day.
Figure S5. The stability of the suspensions GO, rGO, and S-rGO after stored at dark condition for 5 days (a-c) and 10 days (d-f).
Figure S6. The stability of the suspensions S-rGO after stored at dark condition for around 1 year in water, DMAC and DMF.
Figure S7. UV-visible spectra of the synthesised GO, rGO, and S-rGO suspensions in THF.
Figure S8. (a) CV graphs of GO, rGO, S-rGO (Na$_2$S), and S-rGO (Na$_2$S+NaBH$_4$) at 5 mV s$^{-1}$ scan rate. (b) CV graph of S-rGO (Na$_2$S) at different scan rates. (c) Galvanostatic charge-discharge analysis of the four samples at the current density of 0.05 mA cm$^{-2}$. (d) CD analysis of S-rGO (Na$_2$S) sample at different current densities.
**Table S1.** XPS chemical composition values of GO, rGO, and S-rGO.

<table>
<thead>
<tr>
<th>Name</th>
<th>GO (At. %)</th>
<th>rGO (At. %)</th>
<th>S-rGO (At. %)</th>
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<tbody>
<tr>
<td>C1s</td>
<td>65.67</td>
<td>75.75</td>
<td>84.75</td>
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<td>O1s</td>
<td>34.33</td>
<td>24.25</td>
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<tr>
<td>S2p</td>
<td>-</td>
<td>-</td>
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