Electronic Supplementary Information (ESI)

Graphene Quantum Dot/Phthaocyanine Conjugate:
A Synergistic Catalyst for the Oxygen Reduction Reaction

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Fig. S1 A schematic conjugation process of GQD and FePC.
Fig. S2 SEM images of a) FePC and b) magnified FePC
Table S1. Comparison of performance values for this work with other previously reported works. The onset potential values have been rescaled to V vs RHE in 0.1M KOH.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Onset potential (V)</th>
<th>Electron transfer number (n)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>GQD-FePC</td>
<td>0.88</td>
<td>3.77</td>
<td>This work</td>
</tr>
<tr>
<td>Carboxyl acid/sulfonic acid functionalized graphene</td>
<td>0.81</td>
<td>2.2-3.8</td>
<td>1</td>
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<tr>
<td>Edge-selectively sulfurized graphene nanoplatelets</td>
<td>0.75</td>
<td>3.3</td>
<td>2</td>
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<tr>
<td>PDDA-Graphene</td>
<td>0.86</td>
<td>3.5-4</td>
<td>3</td>
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<tr>
<td>PDDA-ACNT</td>
<td>0.89</td>
<td>3.72</td>
<td>4</td>
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<tr>
<td>Cu/GQD</td>
<td>0.85</td>
<td>3.64</td>
<td>5</td>
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<td>Plasma-treated</td>
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<tr>
<td>Graphene</td>
<td>0.87</td>
<td>3.85</td>
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</table>
Table S2. Comparison of stability values for this work with other previously reported works. Current-time (i-t) chronoamperometric responses in O2-saturated KOH electrolytes.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Time (s)</th>
<th>Relative Current (%)</th>
<th>Reference</th>
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<tbody>
<tr>
<td>GQD-FePC</td>
<td>17,000</td>
<td>90.6</td>
<td>This work</td>
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<td>Fe3C@N-CNT</td>
<td>15,000</td>
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<td>Graphene-FePC</td>
<td>10,000</td>
<td>84.0</td>
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<td>FePC covalently functionalized Graphene</td>
<td>10,000</td>
<td>83.5</td>
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<td>S-doped graphene</td>
<td>30,000</td>
<td>73.0</td>
<td>10</td>
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<td>N, S-co doped 3D graphene frameworks</td>
<td>20,000</td>
<td>85.2</td>
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<td>Co/CoO/CoFe2O4/G</td>
<td>20,000</td>
<td>80.0</td>
<td>12</td>
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Supporting References


