Electronic Supplementary Information (ESI)

for

Luminol and gold nanoparticles co-precipitated reduced graphene oxide hybrids with long-persistent chemiluminescence for cholesterol detection

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**Fig. S1** ζ-potential measurements of AuNPs, GO and rGO/AuNPs/luminol hybrids.

**Fig. S2** Size distribution histograms of AuNPs on the rGO/AuNPs/luminol hybrids.

**Fig. S3** The EDS spectrum of GO.
Fig. S4 (A) FT-IR spectra of rGO/AuNPs/luminol (a), GO (b) and luminol (c). (B) Raman spectra of GO (a) and rGO/AuNPs/luminol hybrids (b). Laser wavelength: 532nm. Power: 28 mW. Lens: 50× objective. Acquisition time: 5 s.

Fig. S5 The ESR spectra of (A) DMPO-•OH adduct, (B) DMPO-O₂•− adduct in the luminol-AuNPs-H₂O₂ system.

Fig. S6 CL spectrum of rGO/AuNPs/luminol hybrids-H₂O₂ system.
**Fig. S7** Effects of the (A) pH, (B) mass concentration ratio of cholesterol/ChOx on the rGO/AuNPs/luminol-cholesterol/CHOx system.

**Table S1** Comparison of various cholesterol biosensors based on nano-hybrids.

<table>
<thead>
<tr>
<th>Nanomaterials</th>
<th>Detection method</th>
<th>LOD</th>
<th>Liner range</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Au@CDs nanoconjugates</td>
<td>Fluorescence &amp; colorimetry</td>
<td>2.5 µM</td>
<td>1-6.25 mM</td>
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<tr>
<td>Graphene/PVP/polyaniline</td>
<td>Amperometry</td>
<td>1 µM</td>
<td>0.05-10 mM</td>
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<tr>
<td>β-cyclodextrin-graphene</td>
<td>Fluorescence</td>
<td>5 µM</td>
<td>5-30 µM</td>
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<tr>
<td>BSA-AuNCs</td>
<td>Fluorescence</td>
<td>1.4 µM</td>
<td>1-100 µM</td>
<td>4</td>
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<tr>
<td>rGO-Fn AuNPs</td>
<td>Electrochemistry</td>
<td>0.34 mM</td>
<td>0.65-11.43 mM</td>
<td>5</td>
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<tr>
<td>rGO/AuNPs/luminol hybrids</td>
<td>Chemiluminescence</td>
<td>0.55 µM</td>
<td>0.71-11.43 µM</td>
<td>Our work</td>
</tr>
</tbody>
</table>

**References:**