Supporting Information

A turn-on fluorescent sensor for Hg$^{2+}$ detection based on graphene oxide and DNA aptamers

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**Supplementary sections**

Table 1 Determination and recovery tests of Hg\(^{2+}\) in real samples by our sensor.

<table>
<thead>
<tr>
<th>Real samples</th>
<th>Added Hg(^{2+}) (nM)</th>
<th>Measured Hg(^{2+})</th>
<th>Recovery (%)</th>
<th>RSD (n = 5, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This method</td>
<td>AFS</td>
<td>Relative error (%)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>3.60</td>
<td>3.65</td>
<td>1.37</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>10.34</td>
<td>10.68</td>
<td>3.18</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>20.34</td>
<td>19.96</td>
<td>1.90</td>
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<tr>
<td>4</td>
<td>30</td>
<td>30.31</td>
<td>30.83</td>
<td>1.69</td>
</tr>
</tbody>
</table>

Fig. 1. Fluorescence emission spectra of AO. Conditions: The two reaction solutions were identical, which contain 1 µM AO, 50 µg/mL GO, 1 µM P2, 1 µM H-G4 and 0.05 µM Hg\(^{2+}\). And curve a was obtained by measuring the supernate of final reaction solution; curve b was obtained after shaking well the final reaction solution.

We can see that the fluorescence intensity of curve a recovered more obviously compared with that of curve b. These results suggest that the removing of GO can raise the fluorescence recovering efficiency, indicating the improvement of sensitivity of our sensor. And in this work, the fluorescence emission spectra of detecting Hg\(^{2+}\)
were all obtained by measuring the supernate of final reaction solution.

Fig. 2. Fluorescence emission spectra of AO. (a) 1 µM AO + 50 µg/mL GO; (b) 1 µM AO + 50 µg/mL GO + 1 µM P2 + 0.05 µM Hg$^{2+}$.

Fig. 3. Fluorescence emission spectra of AO. (a) 1 µM AO + 50 µg/mL GO + 1 µM P2 + 1 µM H-G4 + 0.05 µM Hg$^{2+}$; (b) 1 µM AO + 60 µg/mL GO + 1 µM P2 + 1 µM H-G4 + 0.05 µM Hg$^{2+}$. 