Supporting Information

Fluorometric Sensing of Hg$^{2+}$ ions in aqueous medium by nano-aggregates of a tripodal receptor

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Figure S2. $^1$H NMR spectrum of compound 1.

Figure S3. $^{13}$C NMR spectrum of compound 1.

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Figure S6. $^1$H NMR spectrum of compound 2.

Figure S7. $^{13}$C NMR spectrum of compound 2.

Figure S8. ESI Mass spectrum of compound 1.

Figure S9: Effect of water content (0-100%) on the formation of nanoparticles.

Figure S10. Determination of LOD

Figure S11. Fluorescence spectra of nano-aggregates N1 on addition on various tetrabutylammonium anions (F$, Cl^-$, Br$, I$, PO$_4^{3-}$, ClO$_4^-$, HSO$_4^-$, CN$^-$ and CH$_3$COO$^-$).

Figure S12. Fluorescence spectra of nano-aggregates N2 on addition on various tetrabutylammonium anions (F$, Cl^-$, Br$, I$, PO$_4^{3-}$, ClO$_4^-$, HSO$_4^-$, CN$^-$ and CH$_3$COO$^-$).

Figure S13. Fluorescence spectra of nano-aggregates N1 at different pH values.

Figure S14. Fluorescence spectra of nano-aggregates N1 at different concentrations of TBA nitrate to evaluate the salt effect.

Figure S15. ESI Mass spectrum of complex [1.Hg$^{2+}$.NO$_3^-$]$_2$.H$_2$O.
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Figure S3. $^{13}$C NMR spectrum of compound 1.

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Figure S5. FT IR spectrum of compound 2.

Figure S6. $^1$H NMR spectrum of compound 2.
Figure S7. $^{13}$C NMR spectrum of compound 2.

Figure S8. ESI Mass spectrum of compound 2.
**Figure S9**: Effect of water content (0-100%) on the formation of nanoparticles.

\[ y = 0.8992x + 184.01 \]
\[ R^2 = 0.9417 \]

**Figure S10.** Fluorescence Intensity (380 nm, excited at 285nm) of nano-aggregates N1(25µM) as a function of Hg^{2+} concentration. The calibration curve in this concentration range is linear. The standard deviation (σ) of the emission intensity without any Hg^{2+} was determined to be 0.7237. Therefore, the detection limit was determined to be \(2.41 \times 10^{-9}\) M according to the 3σ method.
**Determination of the detection limit.**

The detection limit (DL) of nano-aggregates of 1 for Hg\(^{2+}\) was determined from the following equation:

\[
DL = \frac{KS_{b1}}{S}
\]

Where \(K = 3\); \(S_{b1}\) is the standard deviation of the blank solution; \(S\) is the slope of the calibration curve.

**Figure S11.** Fluorescence spectra of nano-aggregates N1 on addition on various tetrabutylammonium anions (F\(^-\), Cl\(^-\), Br\(^-\), I\(^-\), PO\(_4^{3-}\), ClO\(_4^{-}\), HSO\(_4^{-}\), CN\(^-\) and CH\(_3\)COO\(^-\)).
Figure S12. Fluorescence spectra of nano-aggregates N2 on addition on various tetrabutylammonium anions (F⁻, Cl⁻, Br⁻, I⁻, PO₄³⁻, ClO₄⁻, HSO₄⁻, CN⁻ and CH₃COO⁻).

Figure S13. Fluorescence spectra of nano-aggregates N1 at different pH values.
Figure S14. Fluorescence spectra of nano-aggregates N1 at different concentrations of TBA nitrate to evaluate the salt effect.

Figure S15. ESI Mass spectrum of complex [1.Hg\(^{2+}\).(NO\(_3\))\(_2\)].H\(_2\)O.
<table>
<thead>
<tr>
<th>Solvent System</th>
<th>Linear range (µM)</th>
<th>LOD</th>
<th>Working mechanism</th>
<th>Ref. No.</th>
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<tbody>
<tr>
<td>CH$_3$CN–HEPES buffer</td>
<td>0.001-1</td>
<td>7.4 nm</td>
<td>Fluorescence on</td>
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<td>Dichloromethane</td>
<td>0-2.0</td>
<td>50 nm</td>
<td>Fluorescence on</td>
<td>15</td>
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<tr>
<td>Water:MeOH (1:2)</td>
<td>0.3-1.0</td>
<td>30 nm</td>
<td>FRET</td>
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<tr>
<td>THF-Water (95:5)</td>
<td>NA</td>
<td>NA</td>
<td>Bond energy Transfer</td>
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</tr>
<tr>
<td>H$_2$O–MeCN(99:1)</td>
<td>0.01-4.5</td>
<td>2.1 nm</td>
<td>Fluorescence on</td>
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<tr>
<td>Tris-HCl buffer</td>
<td>0.1-20</td>
<td>0.5 ppb</td>
<td>Fluorescence off</td>
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<tr>
<td>HEPES buffer</td>
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<td>200 nm</td>
<td>Fluorescence on</td>
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<tr>
<td>THF/H$_2$O (9:1)</td>
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<td>4.5 nm</td>
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<tr>
<td>Phosphate buffer</td>
<td>0-30</td>
<td>0.2 µM</td>
<td>Fluorescence off</td>
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</tr>
<tr>
<td>Acetonitrile :water (4:1)</td>
<td>NA</td>
<td>1.74 µM</td>
<td>Fluorescence off</td>
<td>23</td>
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<tr>
<td>Methanol</td>
<td>NA</td>
<td>15 µM</td>
<td>Fluorescence off</td>
<td>24</td>
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<tr>
<td><strong>Water</strong></td>
<td><strong>1-10</strong></td>
<td><strong>2.4 nM</strong></td>
<td><strong>Fluorescence on</strong></td>
<td><strong>Present work</strong></td>
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</tbody>
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