Supporting Information

A highly selective and sensitive fluorescent probe for detection of CN⁻, SO₃²⁻ and Fe³⁺ based on aggregation-induced emission

Xiaodong Yang,¹ Xiuli Chen,¹ Xiaodan Lu,² Chenggong Yan,³ Yikai Xu,³ Xiaodong Hang,¹ Jinqing Qu,*,¹ Ruiyuan Liu*,²

¹ School of Chemistry and Chemical Engineering, South China University of Technology, Guangzhou 510640, P.R.China. E-mail: cejqqu@scut.edu.cn

² School of Pharmaceutical Science, Southern Medical University, Guangzhou 510515, P.R. China. E-mail: ruiyliu@smu.edu.cn

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Figure S9. Fluorescence intensity at 568 nm of 1 (2 μM) exposed to 10 equiv various anions and to the mixture of 10 equiv CN$^{-}$ with other 10 equiv anions in aqueous solution.

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Figure S11. Job’s plot of 1 for CN$^{-}$ in aqueous solution, [1] + [CN$^{-}$] = 20 μM. (where X is the mole fraction of 1, $I_0$ and I indicate the emission intensity at 568 nm before and after addition of CN$^{-}$ ions, respectively.)

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Figure S13. (a) Fluorescence spectra of 1 (2 μM) exposed to various concentration of SO$_3^{2-}$ in aqueous solution; (b) Fluorescence titration curve of 1 (2 μM) with SO$_3^{2-}$ in aqueous solution, inset: The relationship between fluorescence intensity and SO$_3^{2-}$ concentration.

Figure S14. Response time of 1 (2 μM) exposed to 2 equiv. of CN$^{-}$ or 10 equiv. of SO$_3^{2-}$ in different time in aqueous solution.

Figure S15. Cytotoxicity test of HeLa cells treated with various concentrations of 1 after 24 and 48 hours.
### Table 1: particle sizes of 1 (2 uM) in the DMSO/water mixture

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<th>Water content/%</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
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<th>50</th>
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<th>70</th>
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<tbody>
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<td>2</td>
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<td>8</td>
<td>21</td>
<td>79</td>
<td>215</td>
<td>396</td>
<td>220</td>
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</tbody>
</table>

**Figure S1.** $^1$H NMR spectrum of 1 in DMSO-$d_6$. 
Figure S2. $^{13}$C NMR spectrum of 1 in DMSO-$d_6$

Figure S3. IR spectrum of 1
Figure S4. ESI-MS spectrum of 1
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**Figure S7.** Photographs under sunlight of 1 (2 μM) exposed to various concentration of Fe$^{3+}$ (0-400 uM) in aqueous solution
**Figure S8.** Job’s plot of 1 for Fe$^{3+}$ in aqueous solution, [1] + [Fe$^{3+}$] = 20 μM. (where X is the mole fraction of 1, $I_0$ and I indicate the emission intensity at 568 nm before and after addition of Fe$^{3+}$ ions, respectively.)

**Figure S9.** Fluorescence intensity at 568 nm of 1 (2 μM) exposed to 10 equiv various anions and to the mixture of 10 equiv CN$^-$ with other 10 equiv anions in aqueous solution.
Figure S10. Fluorescence intensity at 568 nm of 1 (2 μM) exposed to 10 equiv various anions and to the mixture of 10 equiv SO$_3^{2-}$ with other 10 equiv anions in aqueous solution.

Figure S11. Job’s plot of 1 for CN$^-$ in aqueous solution, [1] + [CN$^-$] = 20 μM. (where X is the mole fraction of 1, I$_0$ and I indicate the emission intensity at 568 nm before and after addition of CN$^-$ ions, respectively.)
Figure S12. Job’s plot of 1 for SO$_3^{2-}$ in aqueous solution, [1] + [SO$_3^{2-}$] = 20 μM. (where X is the mole fraction of 1, $I_0$ and I indicate the emission intensity at 568 nm before and after addition of SO$_3^{2-}$ ions, respectively.)

Figure S13. (a) Fluorescence spectra of 1 (2 μM) exposed to various concentration of SO$_3^{2-}$ in aqueous solution; (b) Fluorescence titration curve of 1 (2 μM) with SO$_3^{2-}$ in aqueous solution, inset: The relationship between fluorescence intensity and SO$_3^{2-}$ concentration.
Figure S14. Response time of 1 (2 μM) exposed to 2 equiv. of CN$^-$ or 10 equiv. of SO$_3^{2-}$ in different time in aqueous solution.

Figure S15. Cytotoxicity test of HeLa cells treated with various concentrations of 1 after 24 and 48 hours.