Supporting Information

A highly selective and sensitive fluorescent probe for detection of CN$^-$, SO$_3$$^{2-}$ and Fe^{3+} based on aggregation-induced emission

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Table 1 particle sizes of **1** (2 uM) in the DMSO/water mixture

Water content/%	0	10	20	30	40	50	60	70	80	90	99
particle sizes/nm	1	1	1	2	2	8	21	79	215	396	220

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

Figure S2. ^{13}C NMR spectrum of **1** in DMSO-d_6
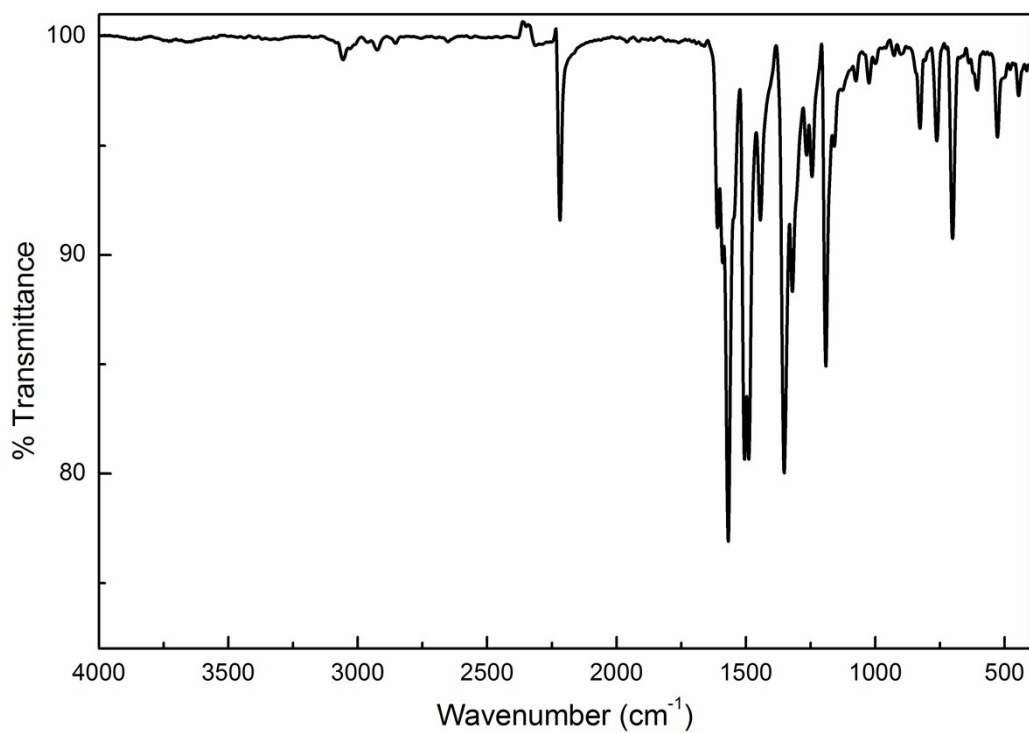
Figure S3. IR spectrum of **1**
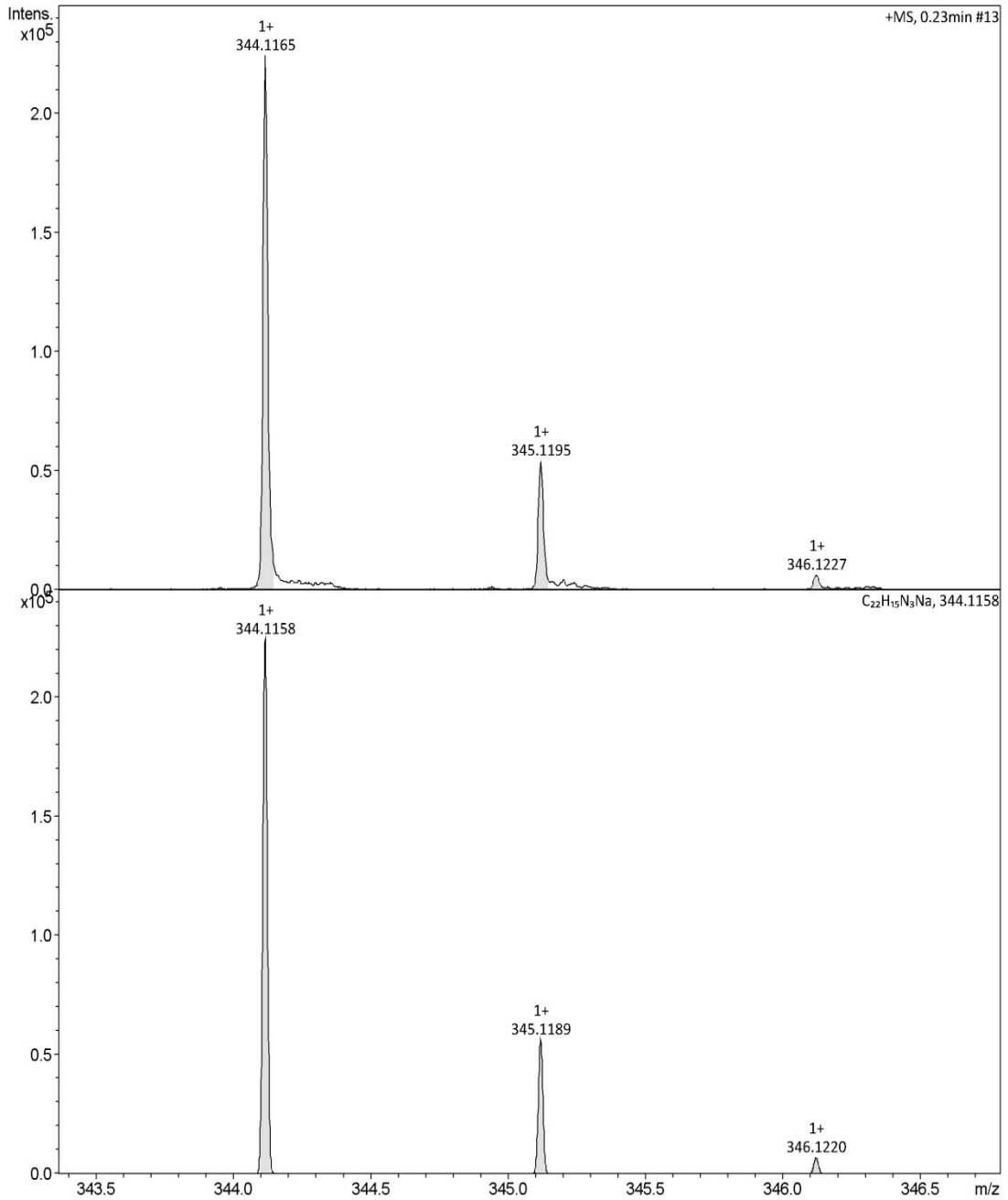
Figure S4. ESI-MS spectrum of **1**
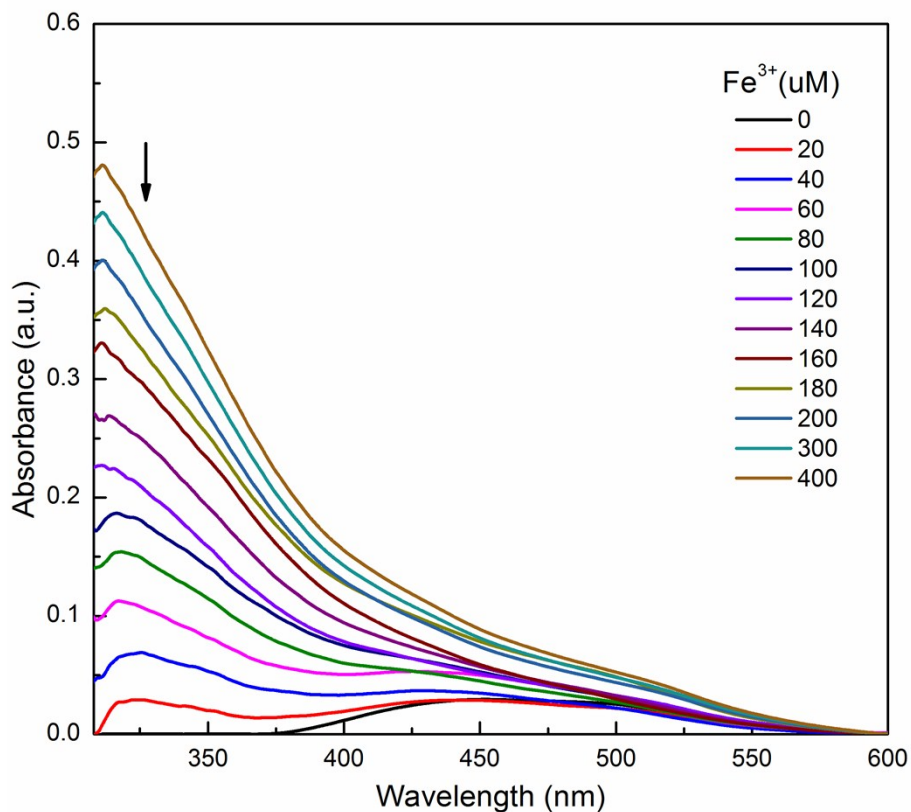
Figure S5. UV-vis absorption spectra of **1** (2 μM) exposed to various concentration of Fe^{3+} in aqueous solution
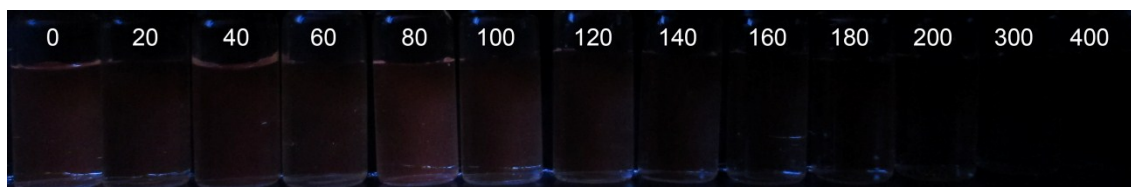
Figure S6. Photographs under UV lamp (365nm) of **1** (2 μM) exposed to various concentration of Fe^{3+} (0-400 uM) in aqueous solution
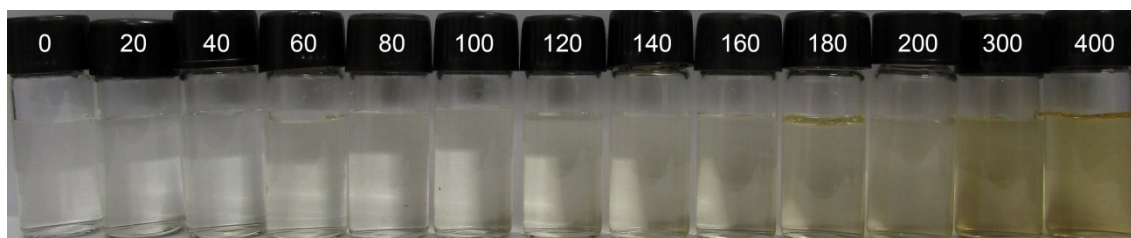
Figure S7. Photographs under sunlight of **1** (2 μM) exposed to various concentration of Fe^{3+} (0-400 uM) in aqueous solution

Figure S8. Job's plot of **1** for Fe^{3+} in aqueous solution, $[\mathbf{1}] + [Fe^{3+}] = 20$ 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.)

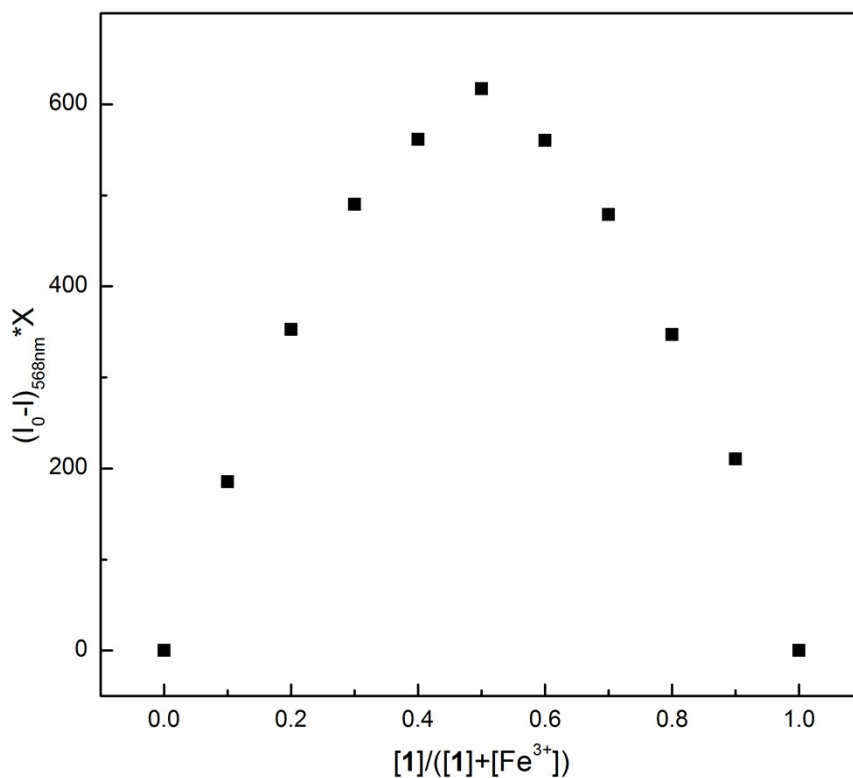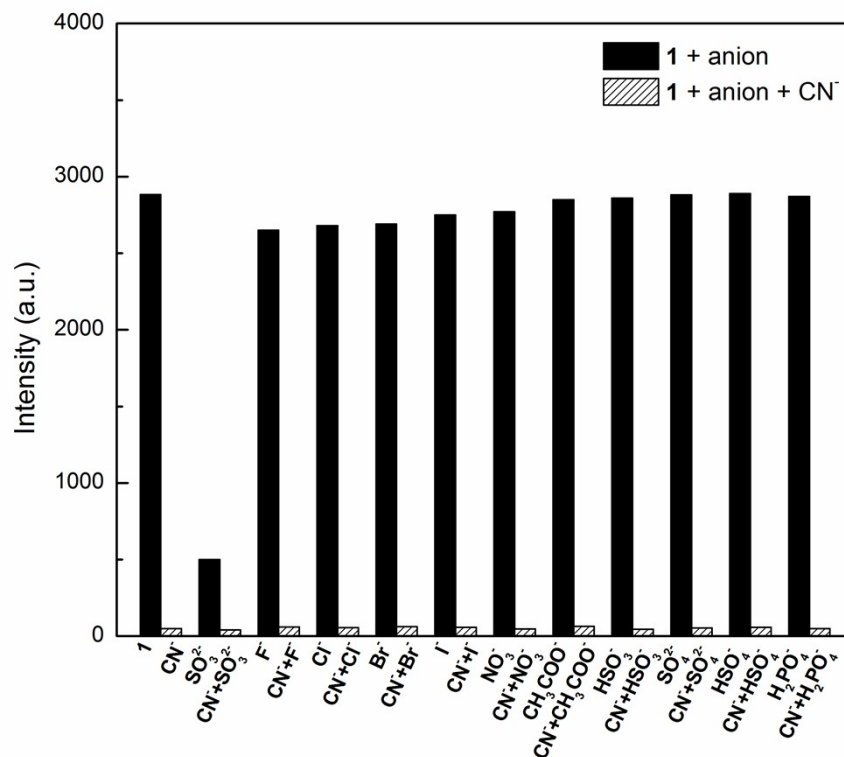
Figure S9. Fluorescence intensity at 568 nm of **1** (2 μM) exposed to 10 equiv various anions and to the mixture of 10 equiv CN^- with other 10 equiv anions in aqueous solution.
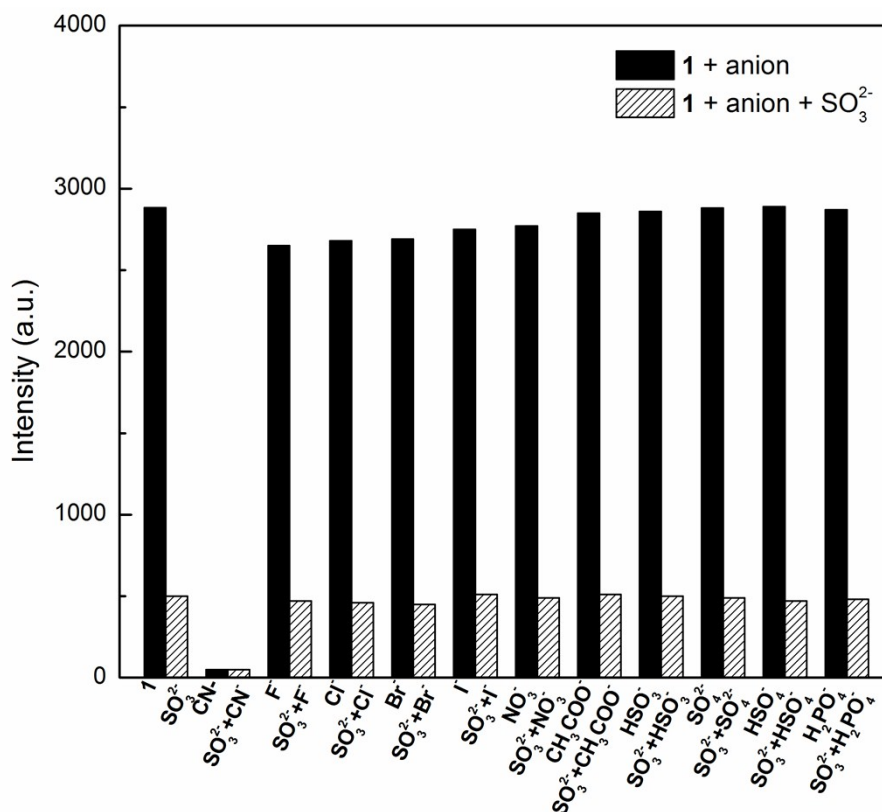
Figure S10. Fluorescence intensity at 568 nm of **1** (2 μM) exposed to 10 equiv various anions and to the mixture of 10 equiv SO_3^{2-} with other 10 equiv anions in aqueous solution.

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, $[\mathbf{1}] + [SO_3^{2-}] = 20\ \mu M$. (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.)

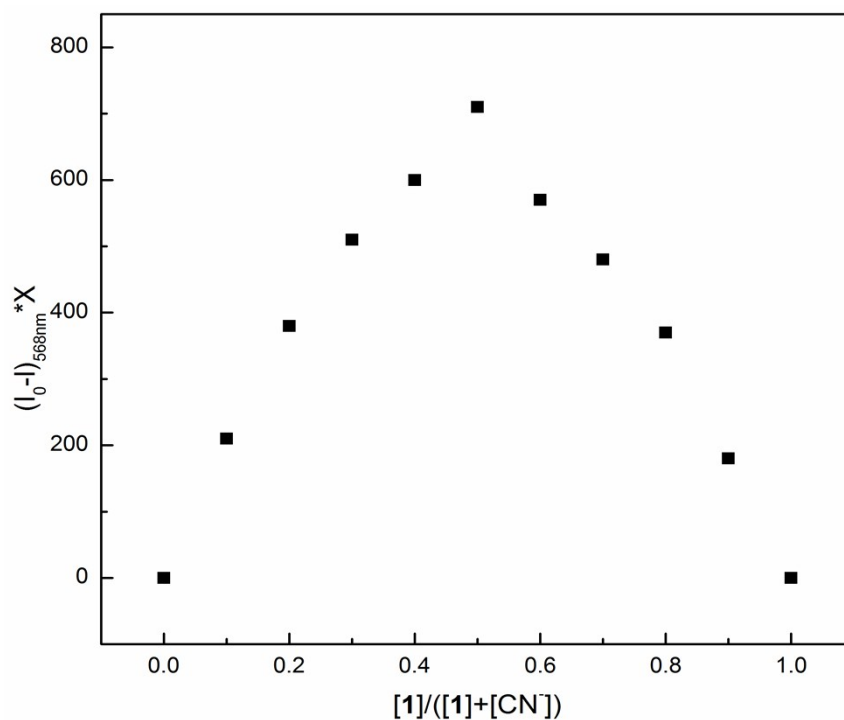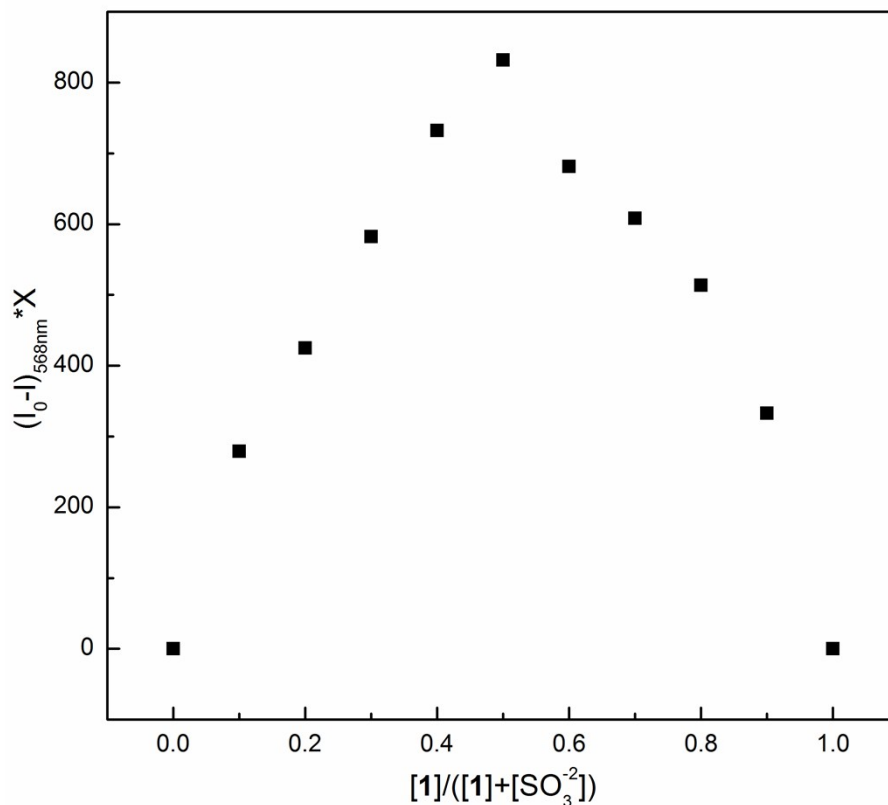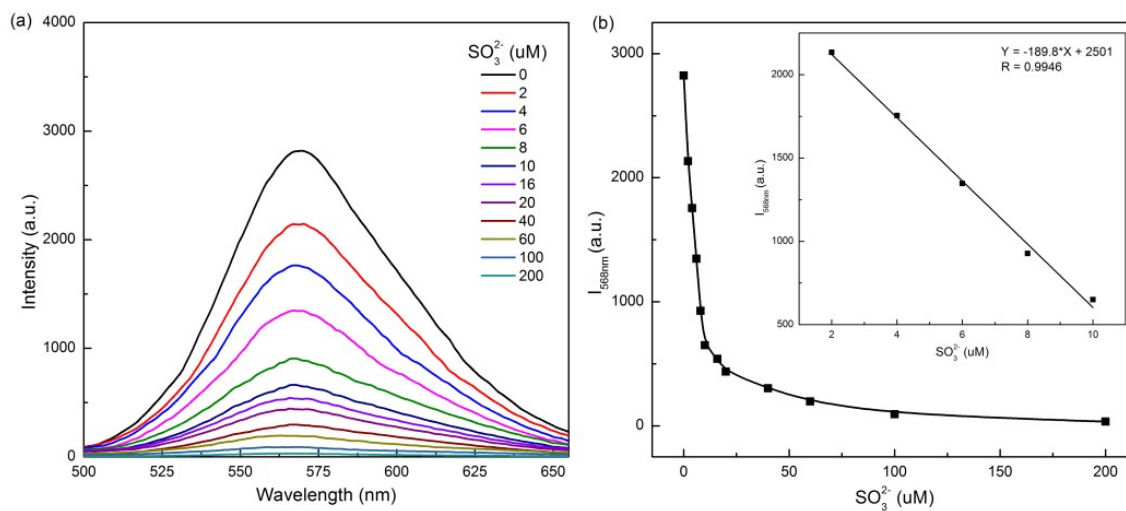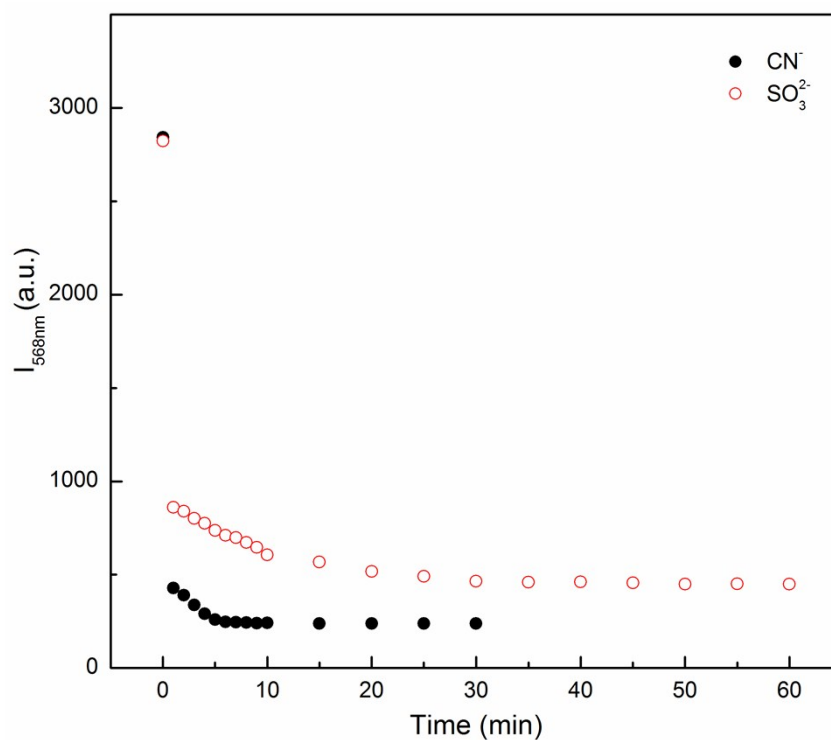**Figure S13.** (a) Fluorescence spectra of **1** (2 μM) exposed to various concentration of SO_3^{2-} in aqueous solution; (b) Fluorescence titration curve of **1** (2 μM) with SO_3^{2-} in aqueous solution, inset: The relationship between fluorescence intensity and SO_3^{2-} concentration.

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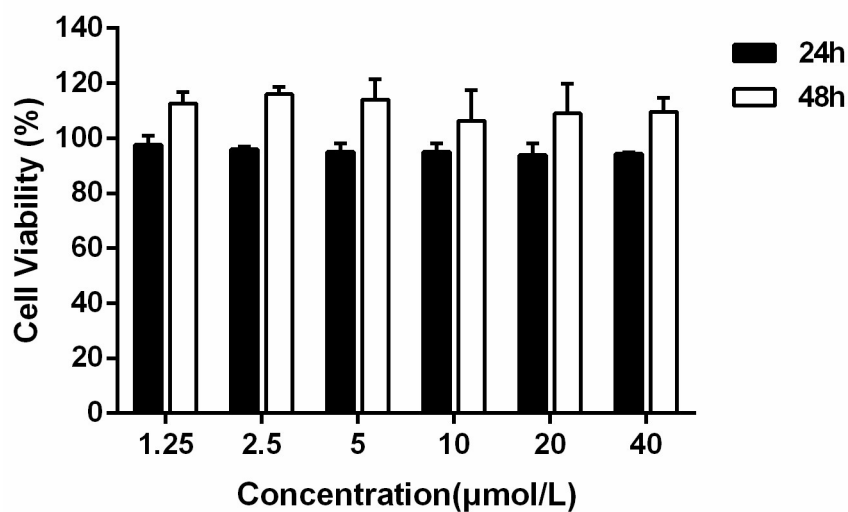
Figure S15. Cytotoxicity test of HeLa cells treated with various concentrations of **1** after 24 and 48 hours.