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Supporting information for

A simple hydrazone as a multianalyte (Cu^{2+}, Al^{3+}, Zn^{2+}) sensor at different pH value and resultant Al^{3+} complex as a sensor for F^-

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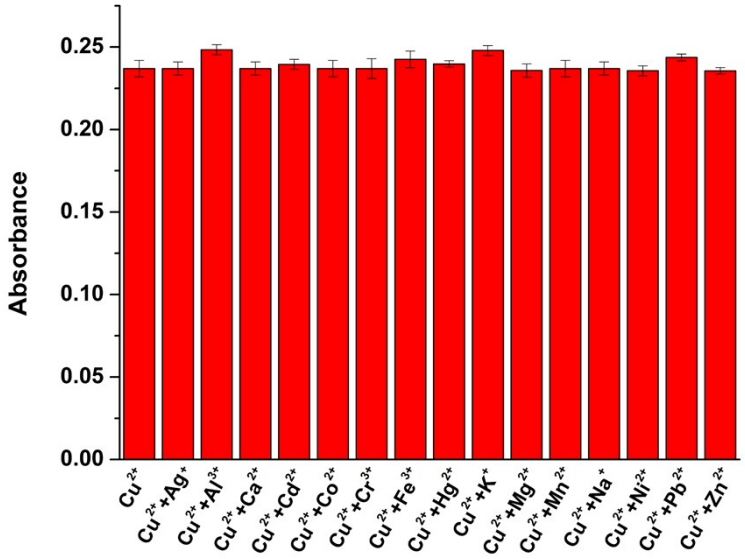

Fig. S1 The effect of 1 eq. coexistent metal cations on the absorbance at 398 nm of **1** (5 μM) with 1 eq. Cu^{2+} in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=6.0).

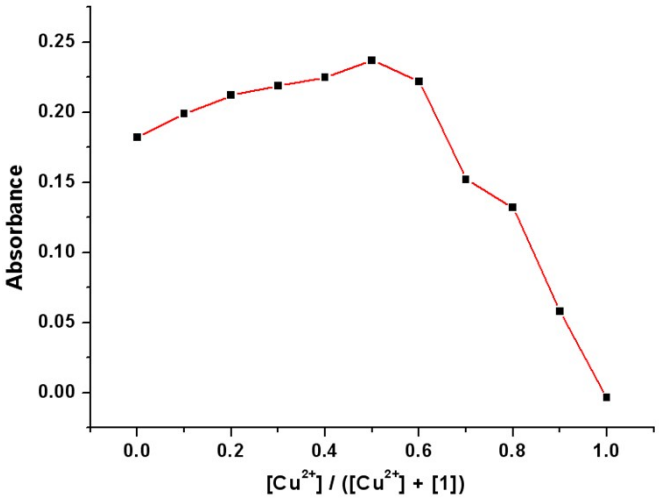

Fig. S2 Job plots of **1** and Cu^{2+} in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=6.0) according to the absorbance at 398 nm. The total concentration of **1** and Cu^{2+} were all kept at 10 μM.

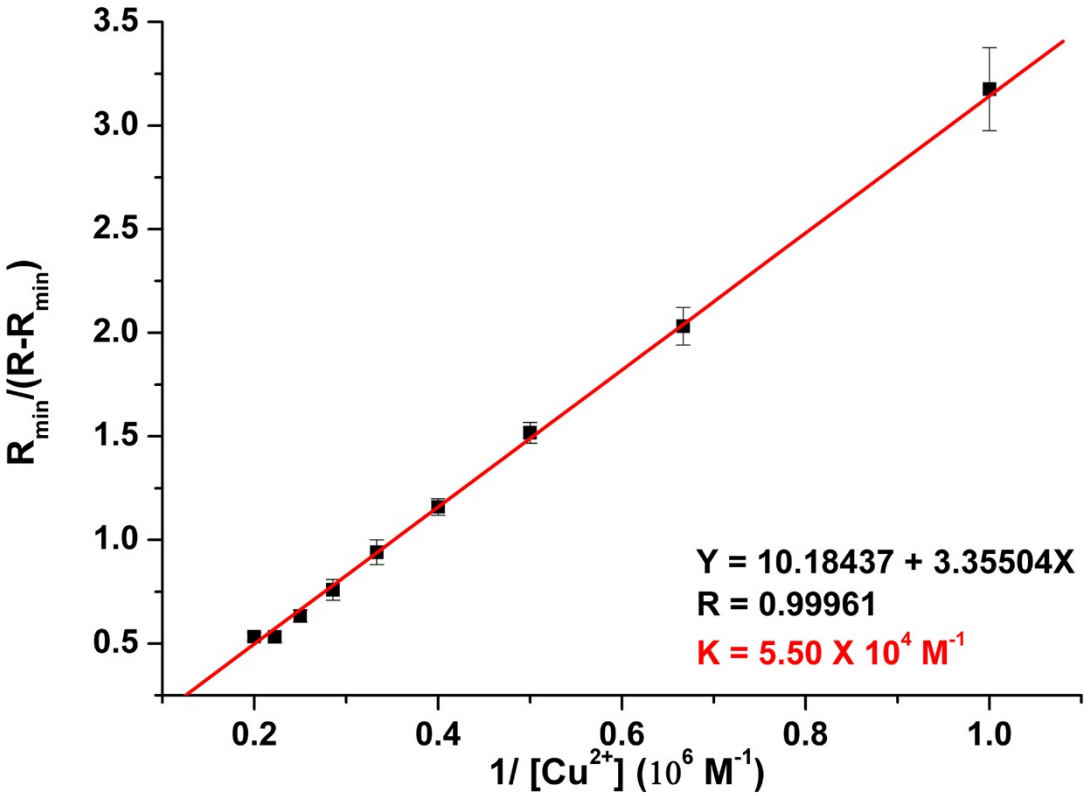

Fig. S3 The Benesi-Hildebrand plot of the **1**-Cu^{2+} complex, R= A_{398}/A_{376}.

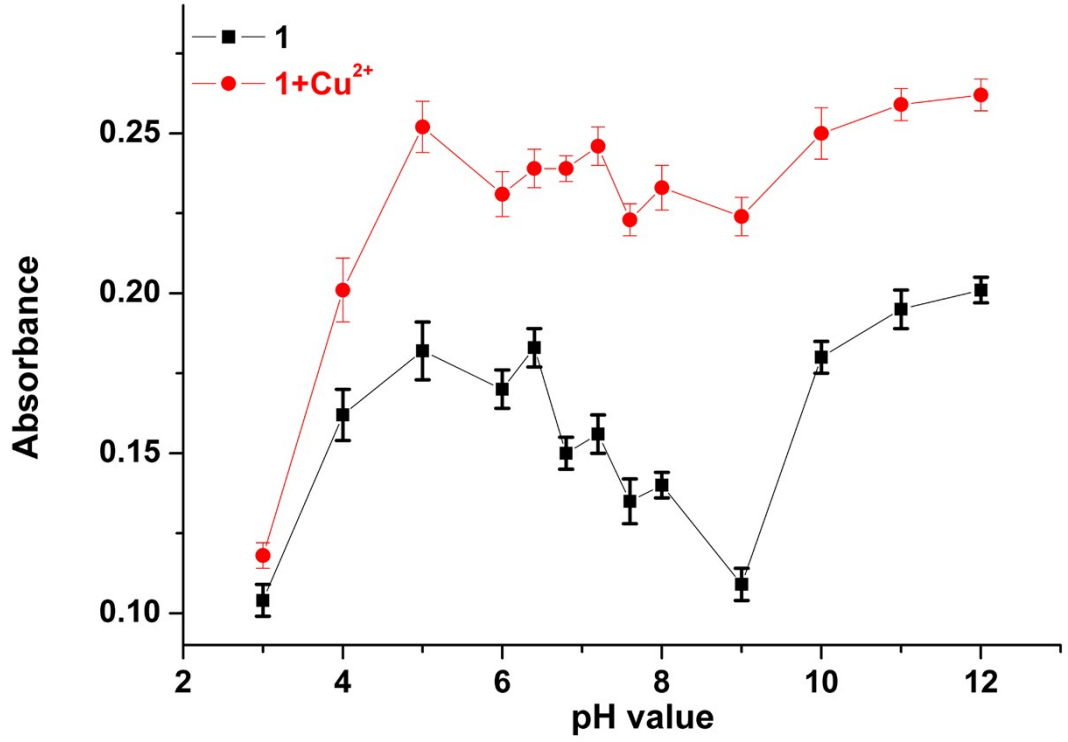

Fig. S4 The effect of pH (3.0-12.0) on the relative absorbance at 398 nm of 5 μM probe **1** with 1 eq. Cu^{2+} in CH_3CN/HEPES solution (10 mM, 1/1, v/v).

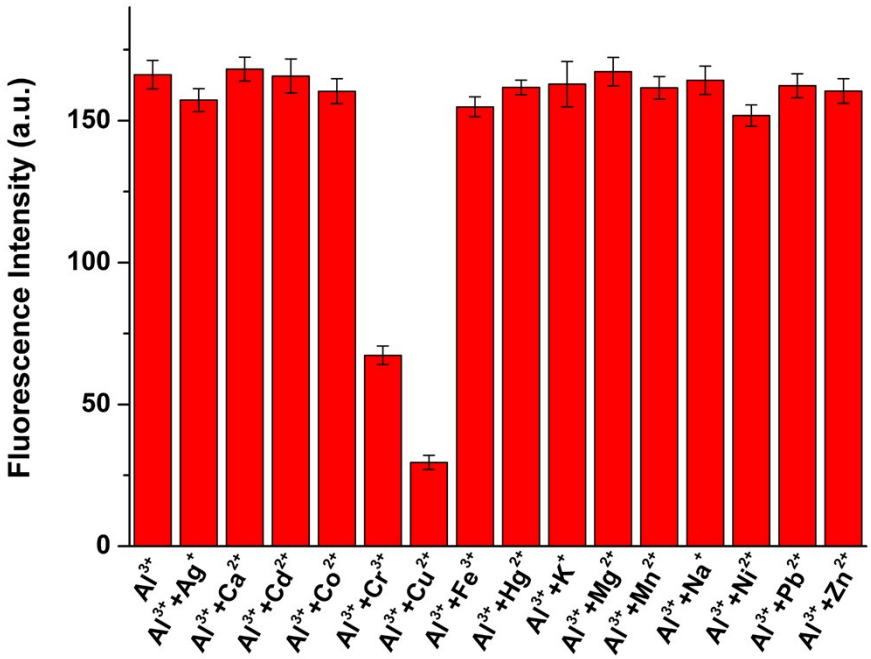

Fig. S5 The effect of 1 eq. coexistent metal cations on fluorescence intensity at 460 nm of **1** (5 μM) with 1 eq. Al^{3+} in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=6.0). Excitation wavelength was 390 nm (the pass width of emission and excitation being 2.5 nm).

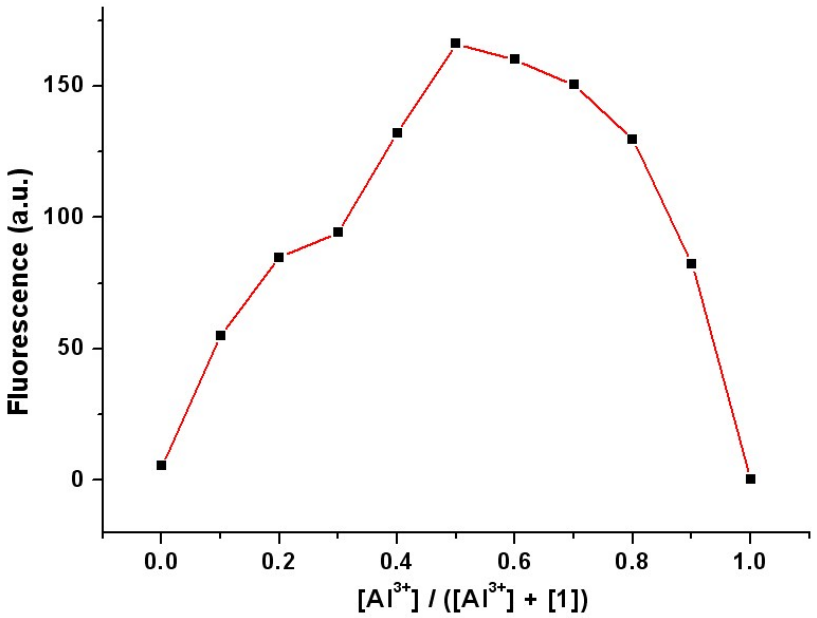

Fig. S6 Job plots of **1** and Al^{3+} in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=6.0) according to the fluorescence at 460 nm (λ_{ex} = 390 nm). The total concentration of **1** and Al^{3+} were all kept at 10 μM.

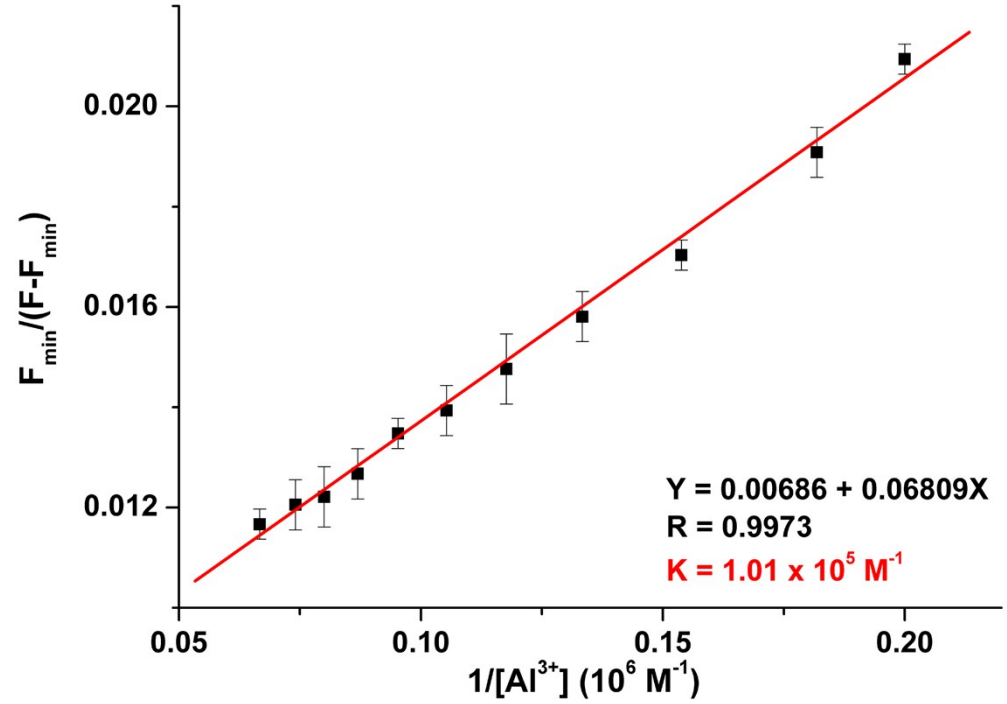

Fig. S7 The Benesi-Hildebrand plot of the **1**-Al^{3+} complex.

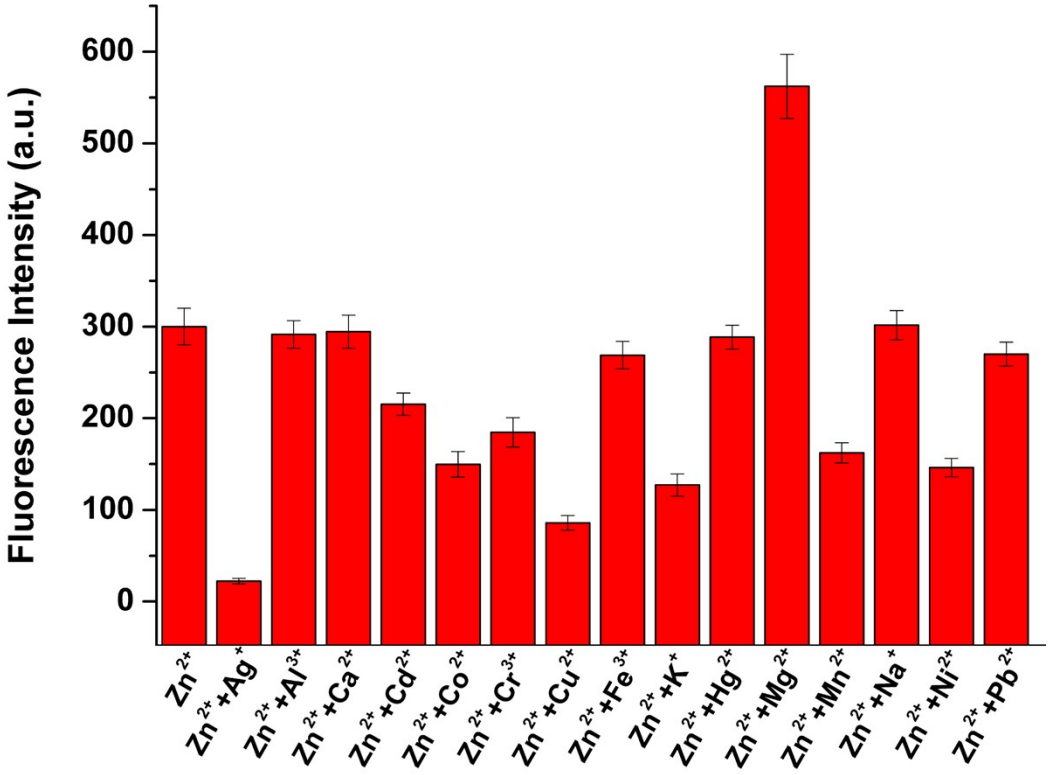

Fig. S8 The effect of 1 eq. coexistent metal cations on fluorescence intensity at 460 nm of **1** (5 μM) with 1 eq. Zn^{2+} in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=10.0). Excitation wavelength was 390 nm (the pass width of emission and excitation being 5 nm).

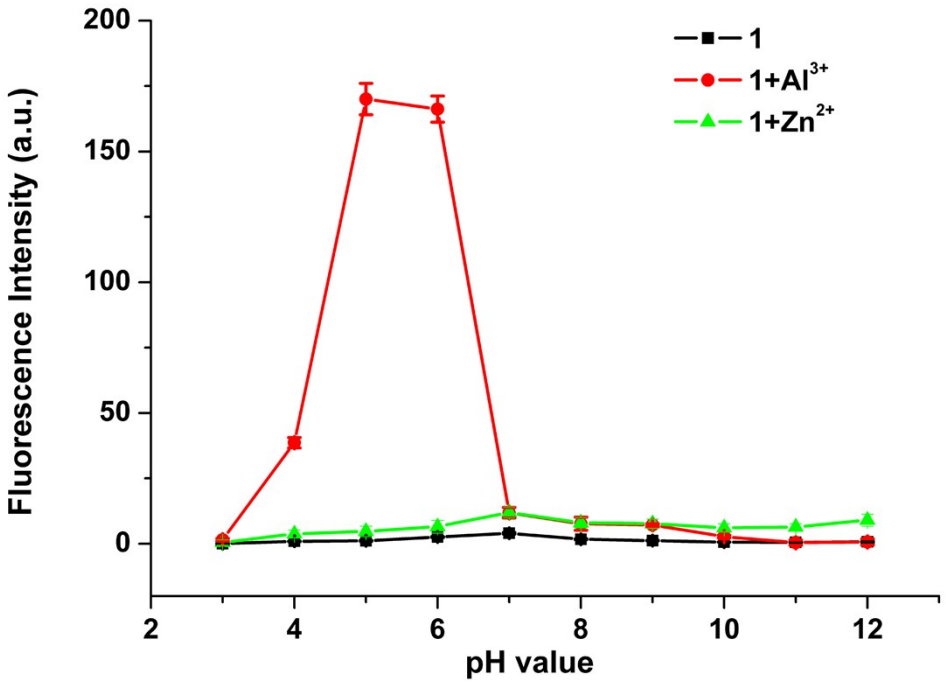

Fig. S9 The effect of pH (3.0-12.0) on the relative fluorescence intensity of 5 μM probe **1** with 1 eq. Al^{3+} or Zn^{2+} in CH_3CN/HEPES solution (10 mM, 1/1, v/v), the pass width is 2.5 nm and excitation wavelength is 390 nm.

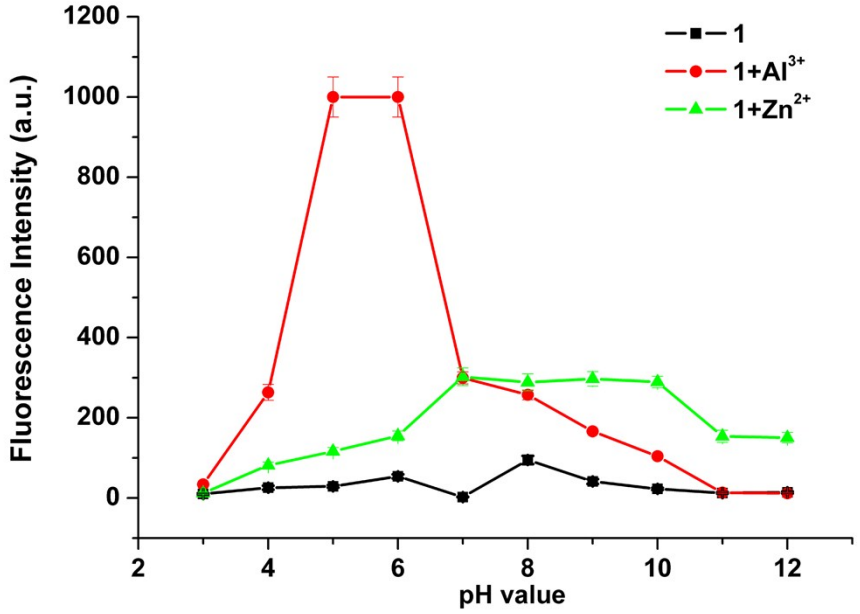

Fig. S10 The effect of pH (3.0-12.0) on the relative fluorescence intensity of 5 μM probe **1** with 1 eq. Al^{3+} or Zn^{2+} in CH_3CN/HEPES solution (10 mM, 1/1, v/v), the pass width is 5 nm and excitation wavelength is 390 nm.

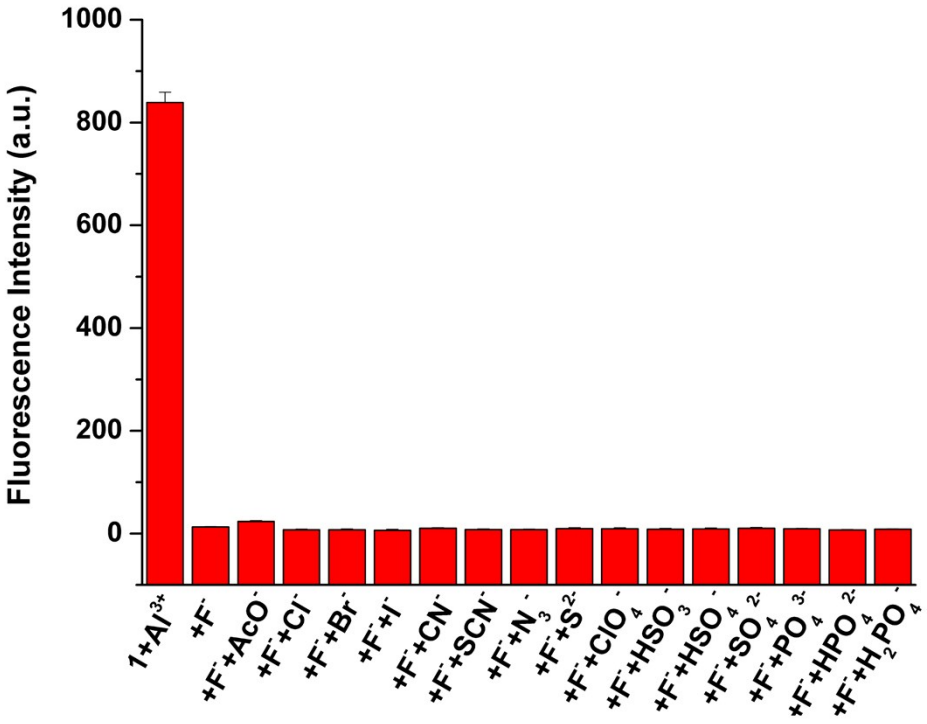

Fig. S11 The effect of 10 eq. coexistent anions on fluorescence intensity at 460 nm of **1**+Al^{3+} (5 μM) with 10 eq. F^- in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=6.0). Excitation wavelength was 390 nm (the pass width of emission and excitation being 2.5 and 5 nm, respectively).

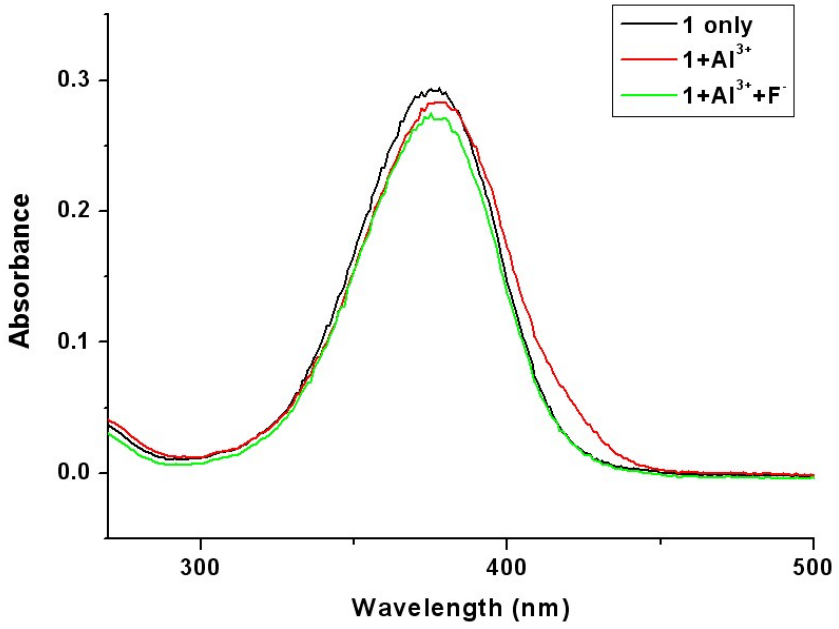

Fig. S12 Absorption spectra of 5 μM probe **1**, **1**+Al^{3+} in the absence and presence of 10 eq. F^- in buffered CH_3CN/HEPES solution (10 mM, 1/1, v/v, pH=6.0).

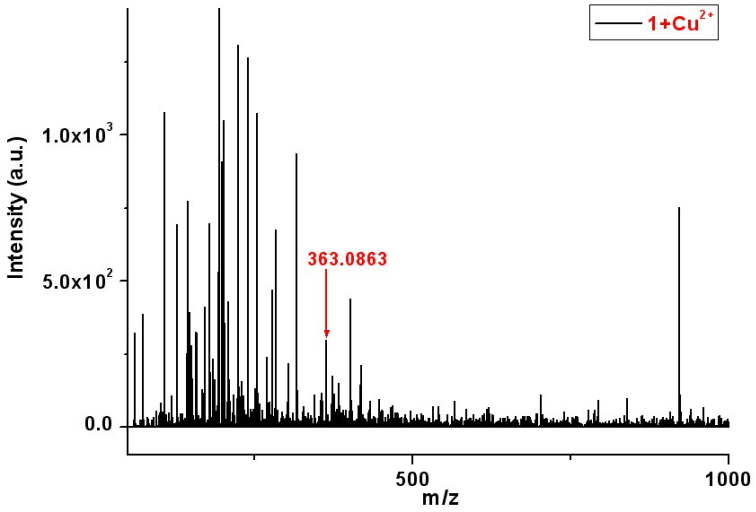

Fig. S13 ESI-MS spectrum of the sensor **1** with Cu^{2+} in CH_3CN solution.

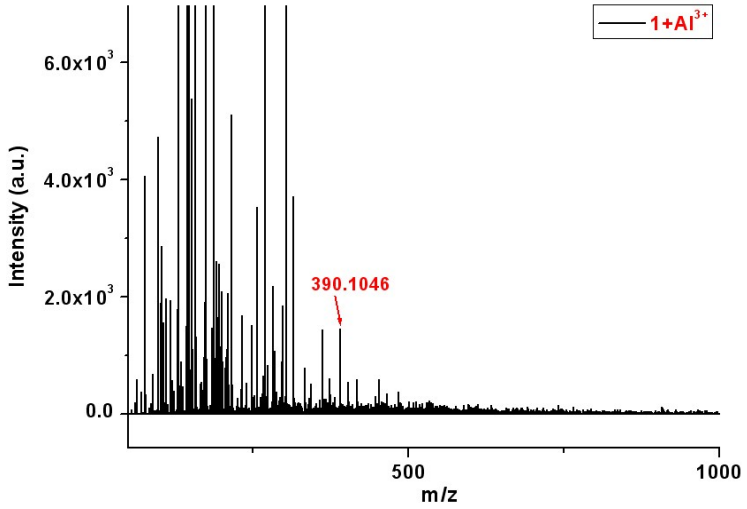

Fig. S14 ESI-MS spectrum of the sensor **1** with Al^{3+} in CH_3CN solution.

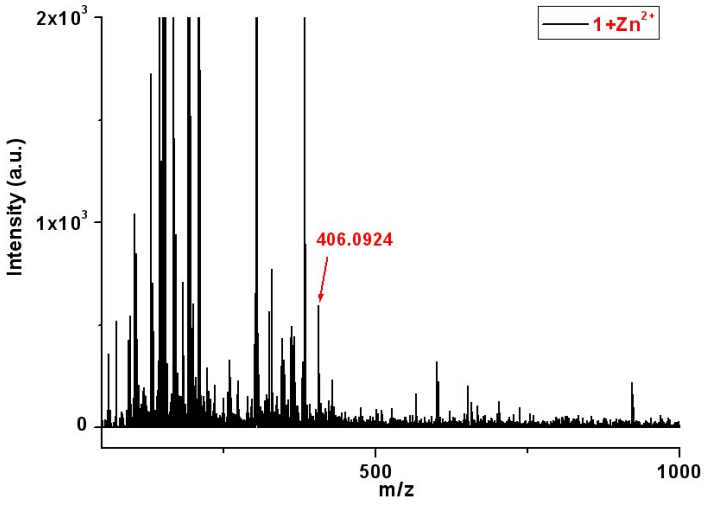

Fig. S15 ESI-MS spectrum of the sensor **1** with Zn^{2+} in CH_3CN solution.

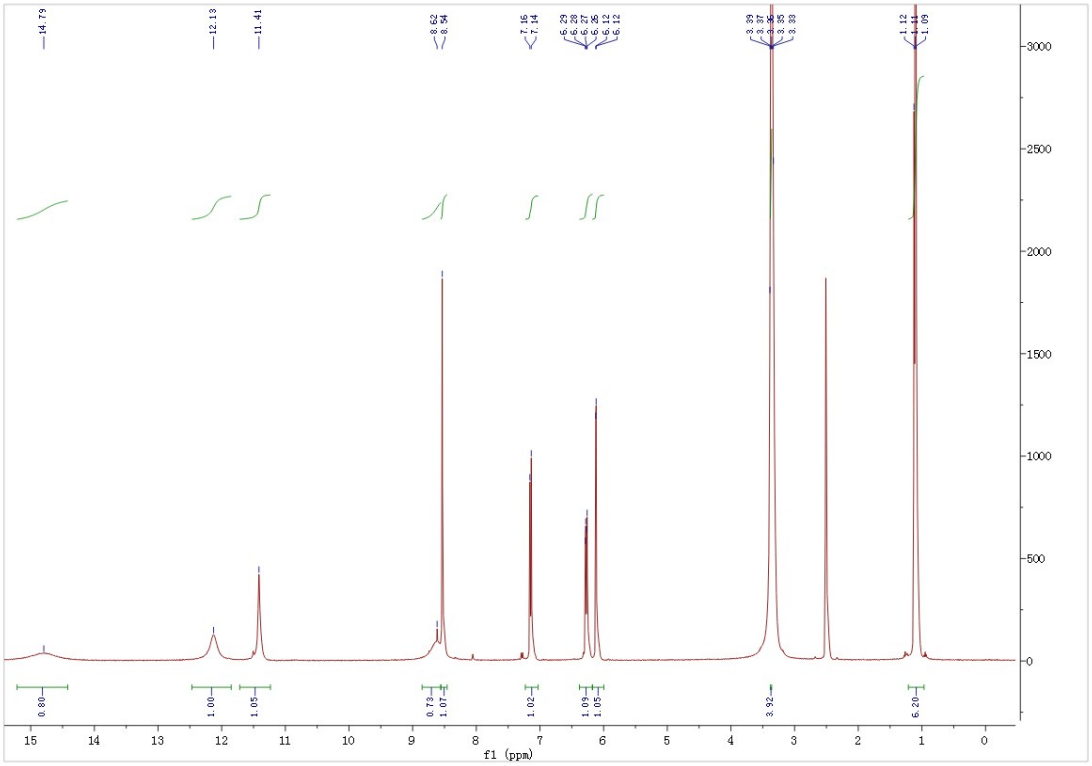

Fig. S16 ^{1}H NMR spectrum of **1**.

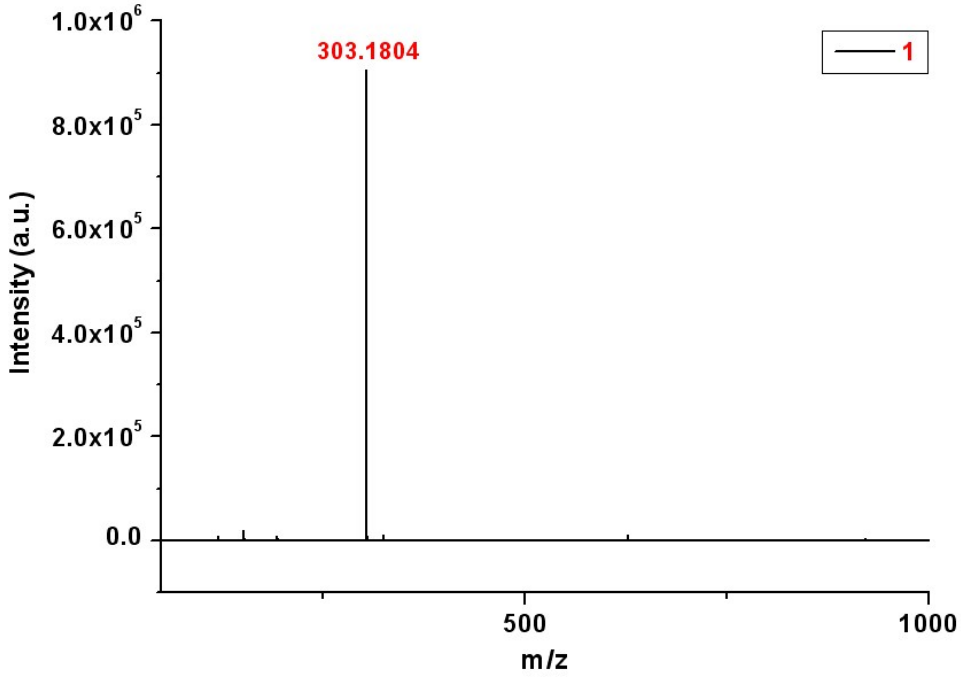

Fig. S17 ESI-MS spectrum of **1** in CH_3CN solution.