Supporting Information

A novel histidine functionalized 1,8-naphthalimide-based fluorescent chemosensor for selective and sensitive detection of Hg^{2+} in water

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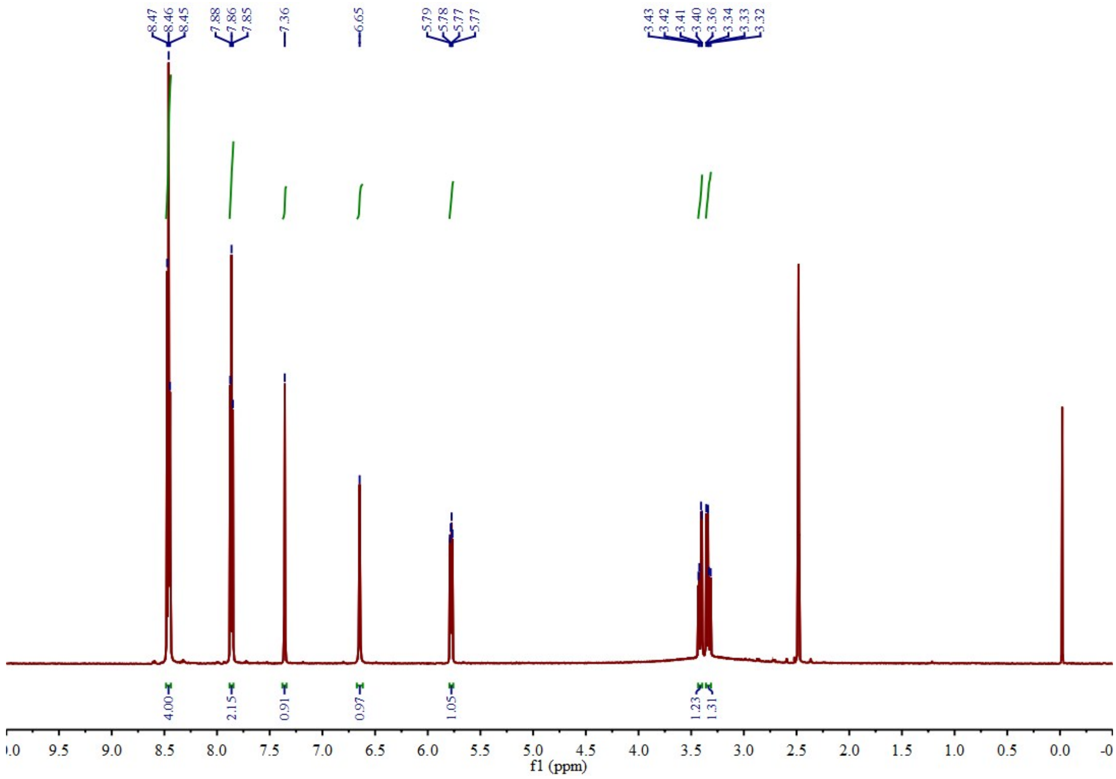


Fig. S1 ^{1}HNMR spectrum of $\mathbf{Z_1}$ in DMSO-d_6.

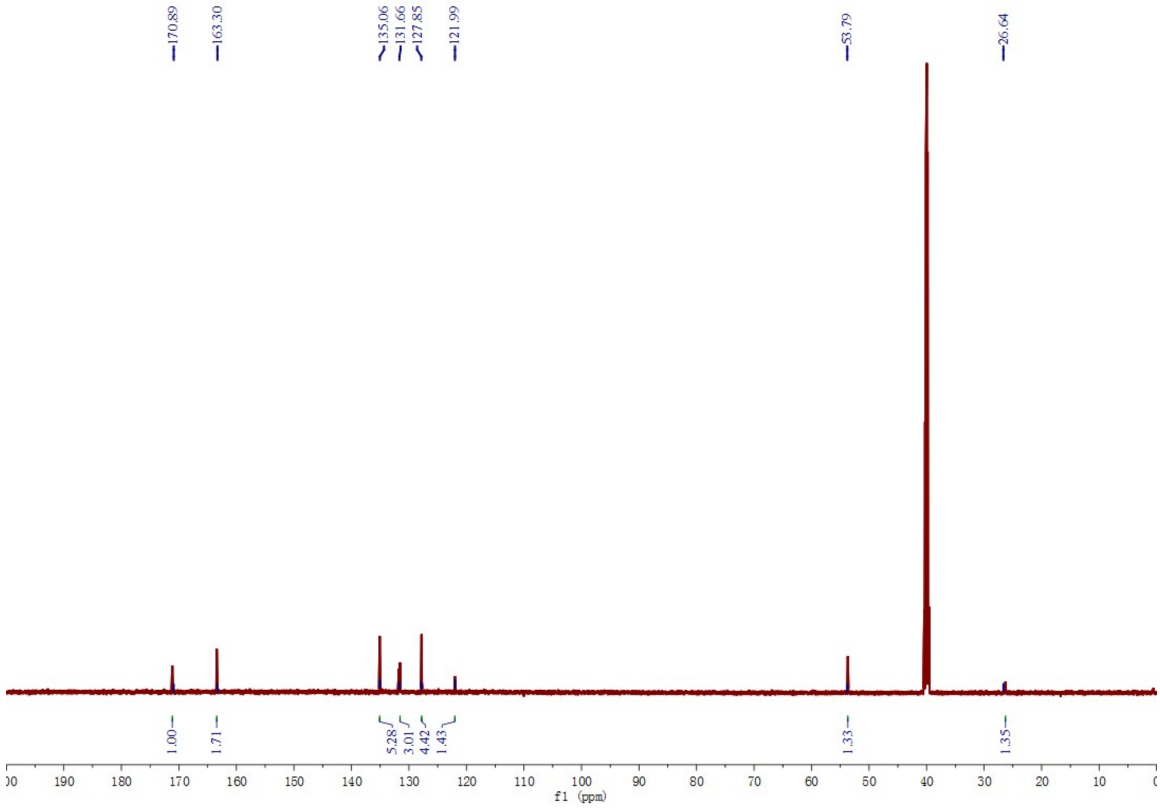


Fig. S2 ^{13}C NMR spectrum of $\mathbf{Z_1}$ in DMSO-d$_6$.

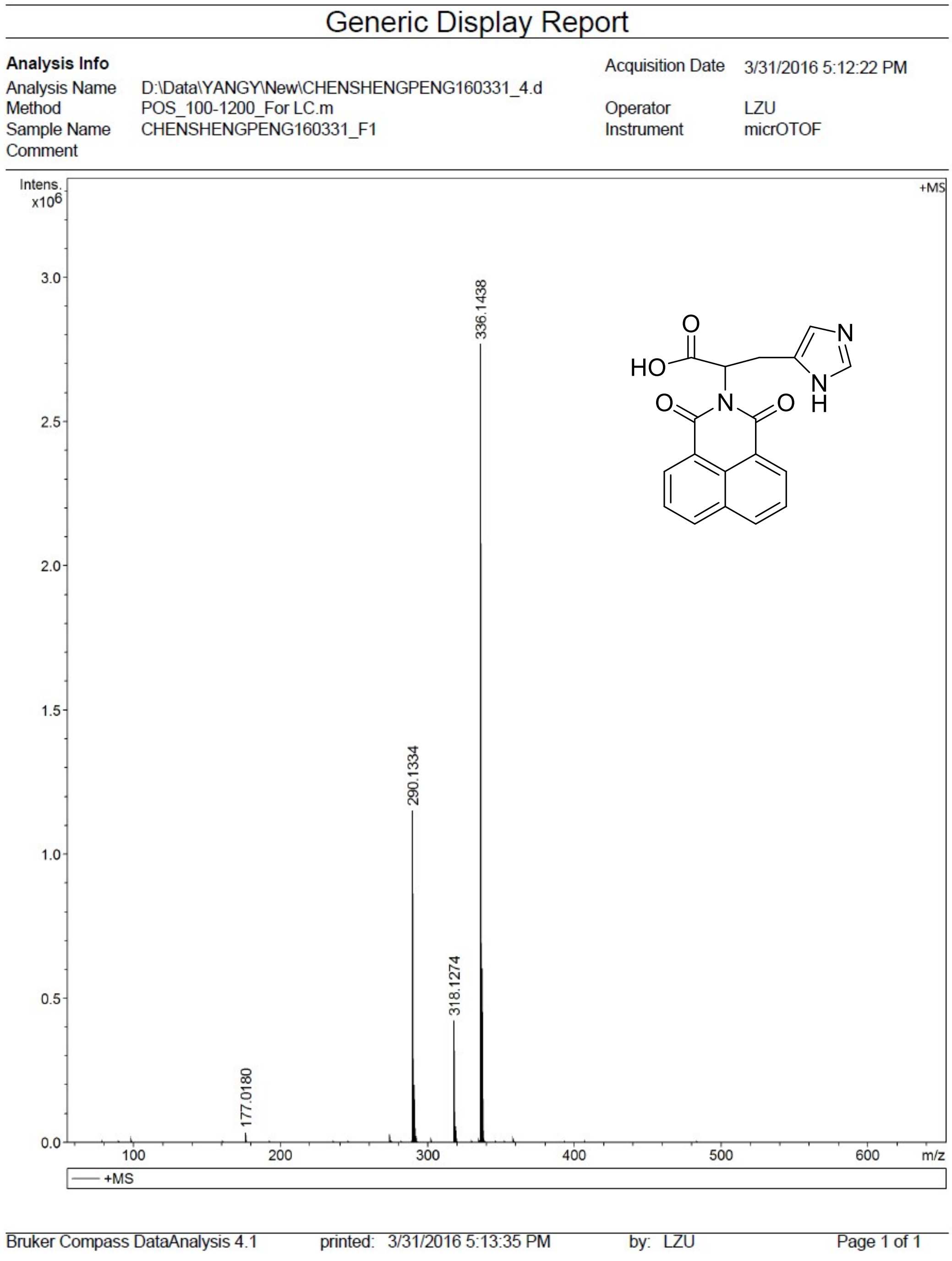
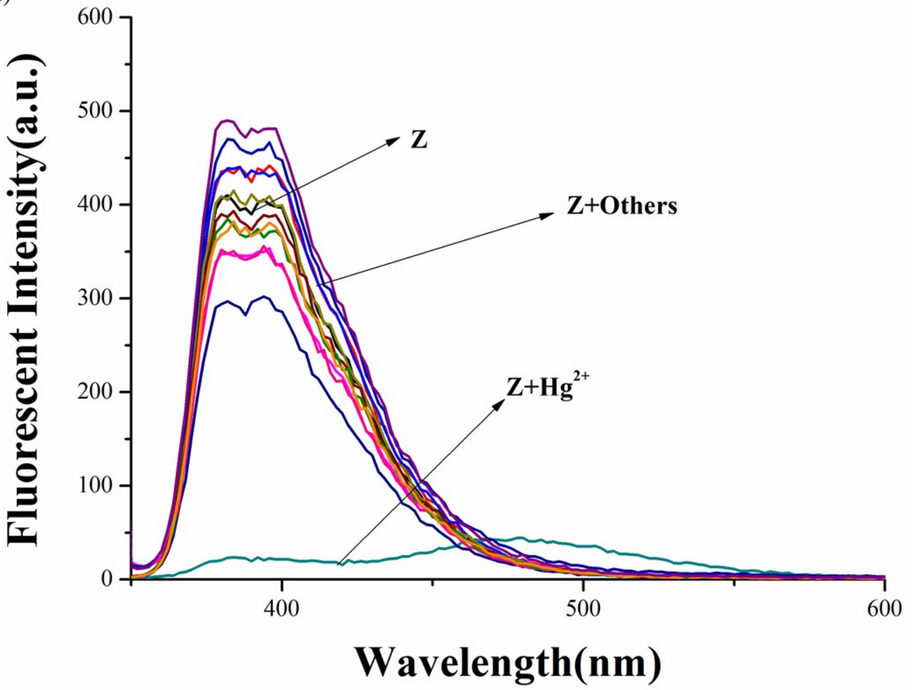


Figure S3 ESI-MS spectrum of **Z_1**.

(a)



(b)

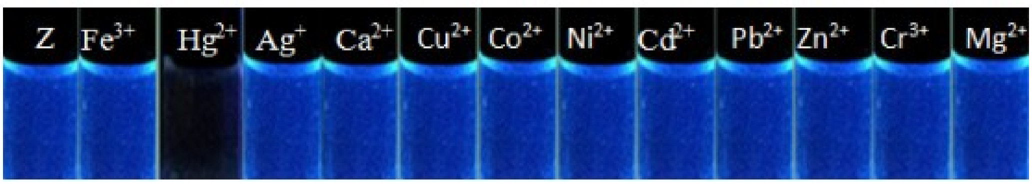


Figure S4 (a) Fluorescence emission data for a 1:10 mixture of **Z** (2.0×10^{-5} M) and different metal ions, as their perchlorate salts, in water.(λex=343 nm). (b) Visual fluorescence emissions of sensor **Z** after the addition of various metal ions (10 equiv.) in water on excitation at 384 nm using UV lamp.

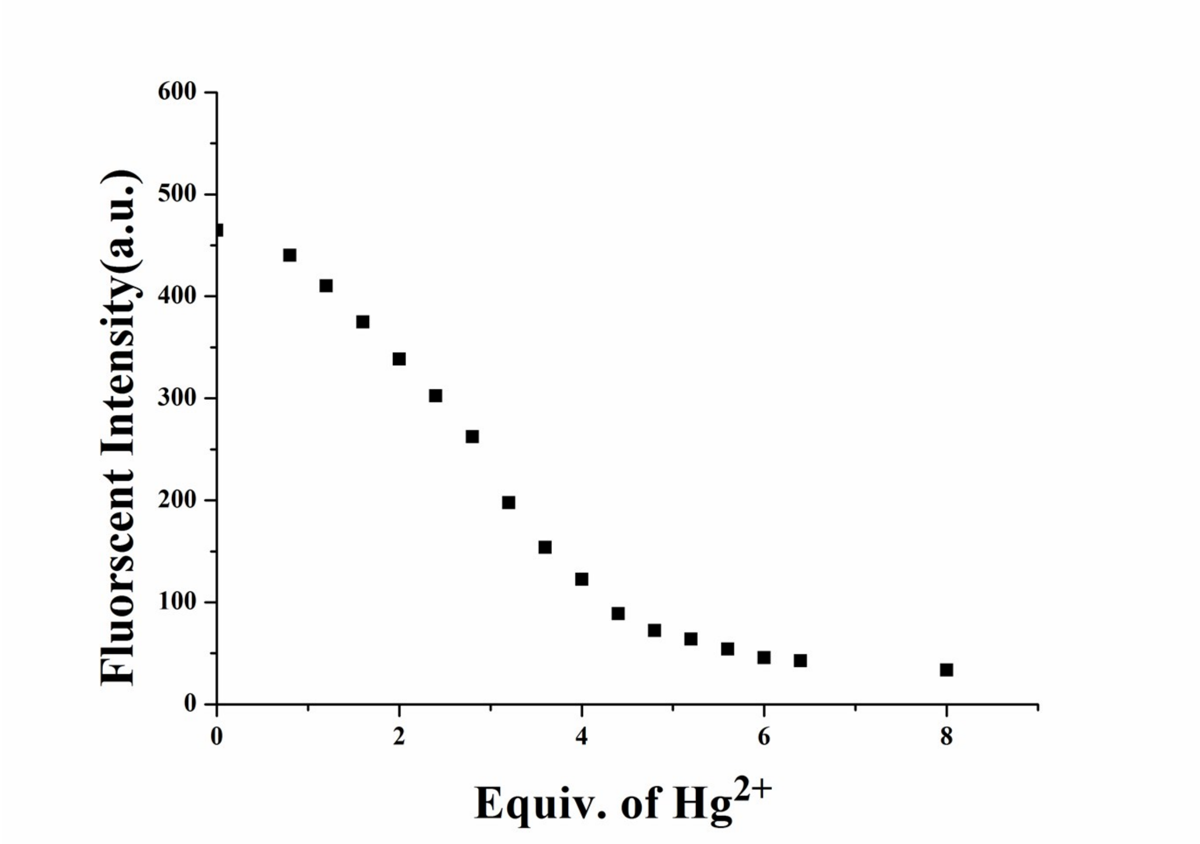


Fig. S5 A plot of fluorescence intensity of the sensor **Z** (2.0×10^{-5} M, water solution) depending on the concentration of Hg^{2+} in the range from 0 to 8 equivalents.

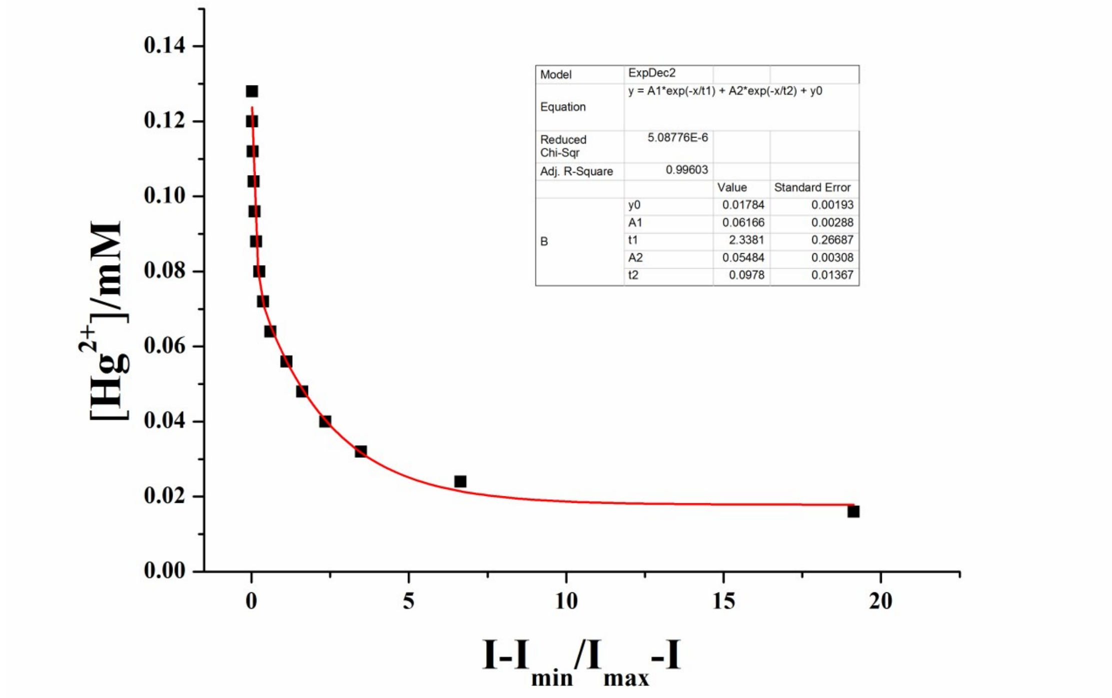


Figure S6 Non-linear least square fitting of intensity vs concentration of Hg^{2+} using 1:1 complex model.

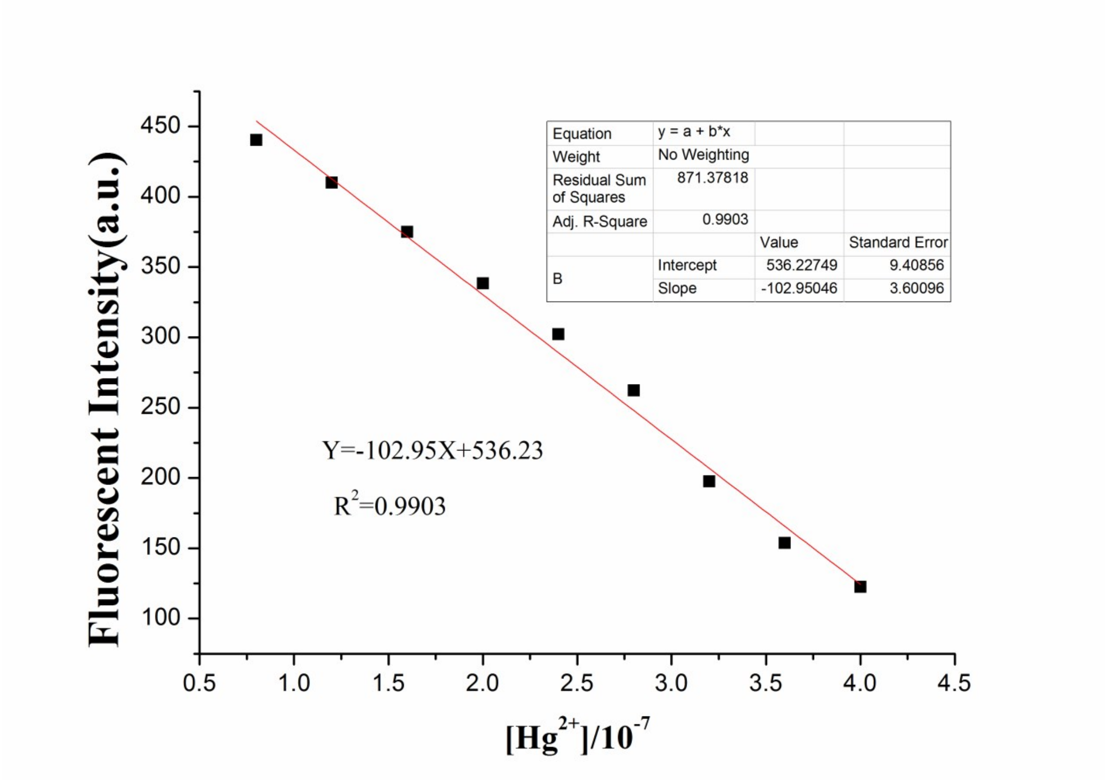


Figure S7 Plot of the intensity at 384 nm for a mixture of **Z** and Hg^{2+} in water in the range 1.0×10^{-7}–2.0×10^{-6} M (λex= 343 nm). Linear Equation: Y = -102.950X+536.227, $R^2 = 0.9903$

$\boldsymbol{\delta} = \sqrt{\dfrac{\sum(F_0 - F_1)^2}{N-1}}$ =6.069, K=3

$S = 1.03 \times 10^8$

LOD=K × **δ** / S

LOD=1.785×10^{-7} M

F_0 is the fluorescence intensity of **Z**; F_1 is the average of the F_0.

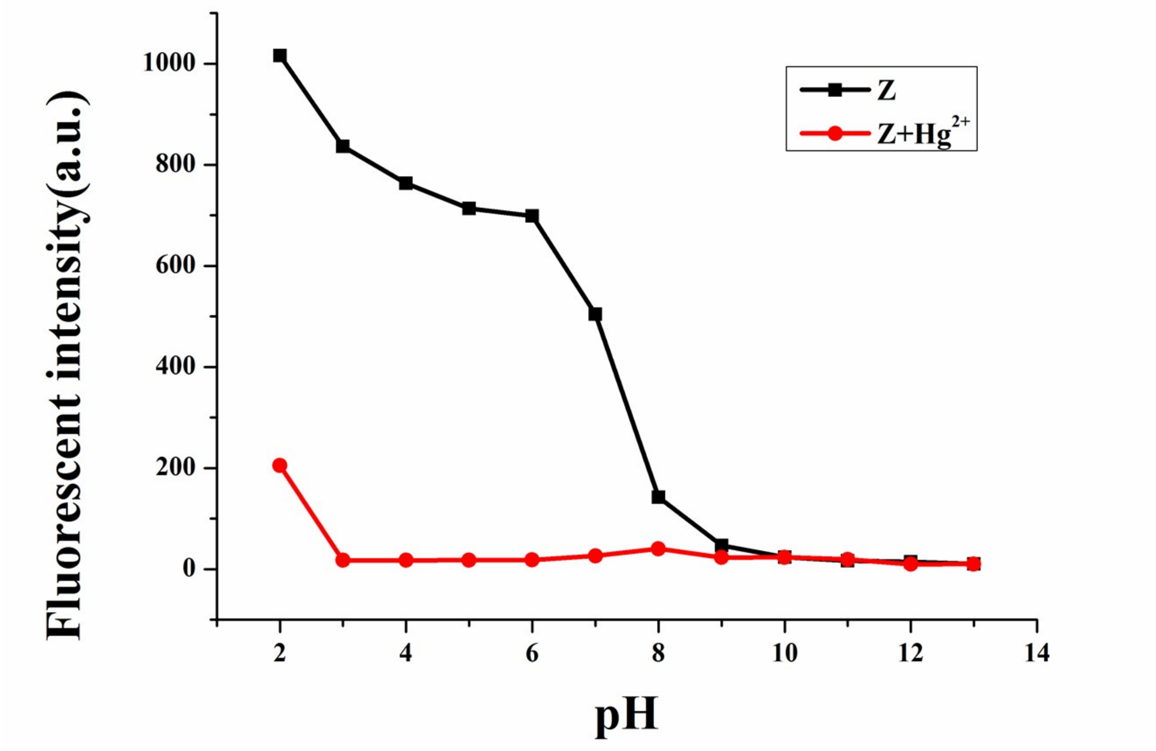


Figure S8 Influence of pH on the fluorescence of **Z** and **Z**+Hg^{2+} in HEPES buffered solution in water.

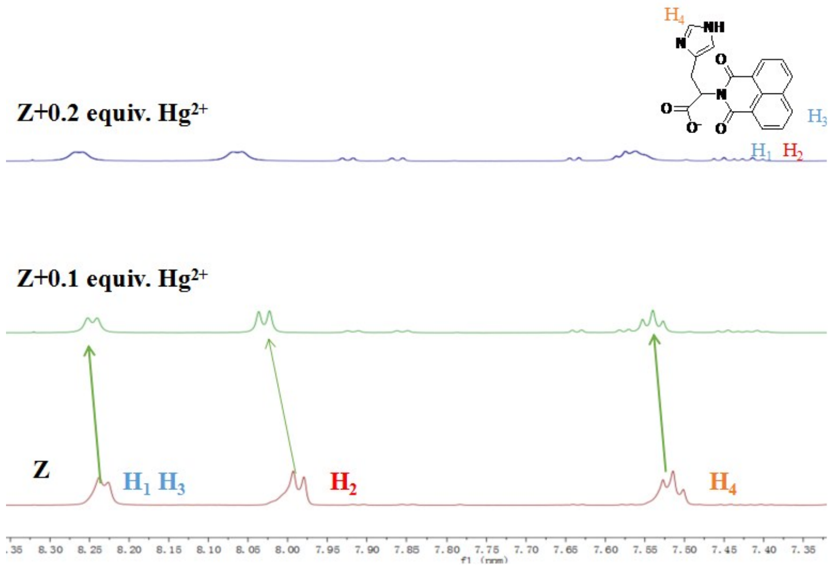


Fig. S9 Partial ^{1}H NMR spectra of **Z** (0.05 M, D_2O), and **Z** in the presence of varying amounts of Hg^{2+}.

Measurement of fluorescence quantum yields

Fluorescence quantum yields were determined by the following equation.

$$\Phi = \Phi_R \times \frac{I}{I_R}\frac{A_R}{A}$$

Where Φ is fluorescence quantum yield, I is the integrated fluorescence intensity and A is the optical density (absorption). The subscript R refers to the reference of Quinine hemesulfate salt.”

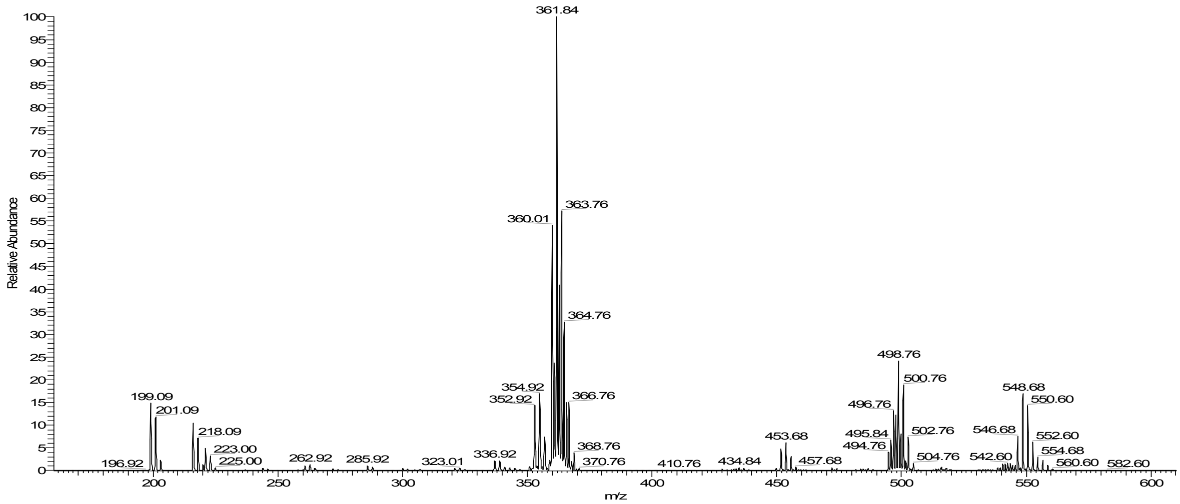


Figure S10 ESI-MS spectrum of **Z**+Hg^{2+} complex.