Supporting information

A highly sensitive and selective colorimetric probe based on a cycloruthenated complex: a Hg^{2+}-promoted switch of thiophene coordination

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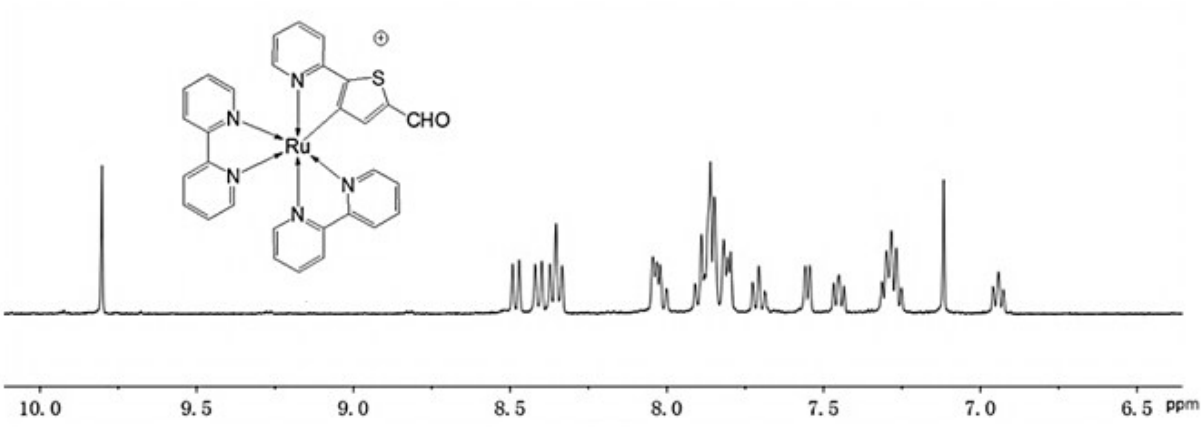

Figure S1. ^{1}H NMR of $[Ru(fthpy)(bpy)_2]^+$ in CD_3CN.

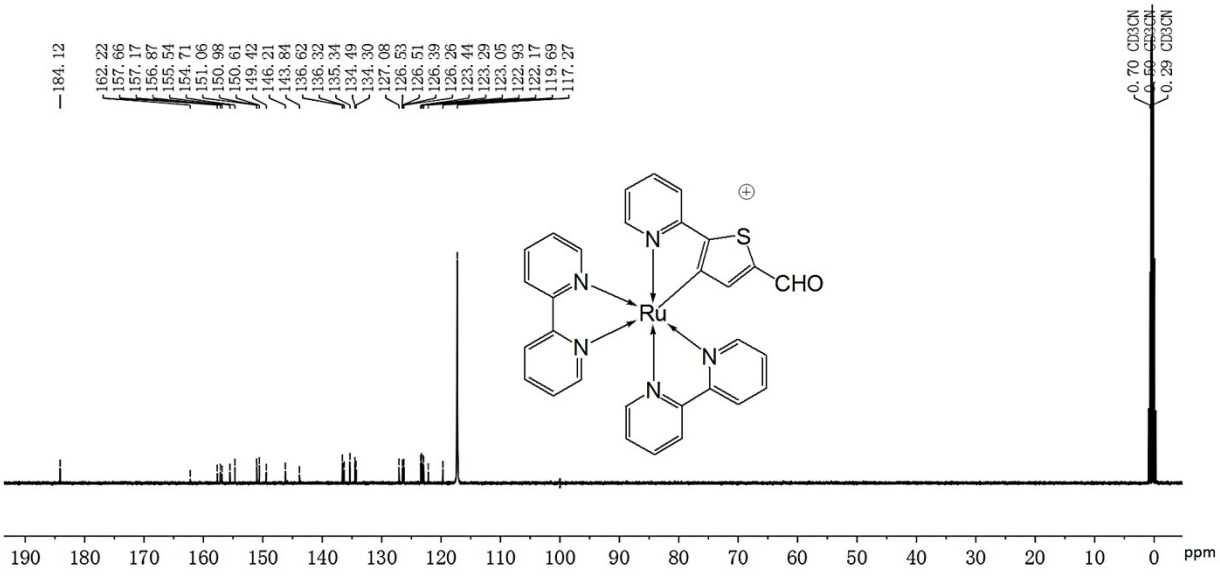

Figure S2. ^{13}C NMR of $[Ru(fthpy)(bpy)_2]^+$ in CD_3CN.

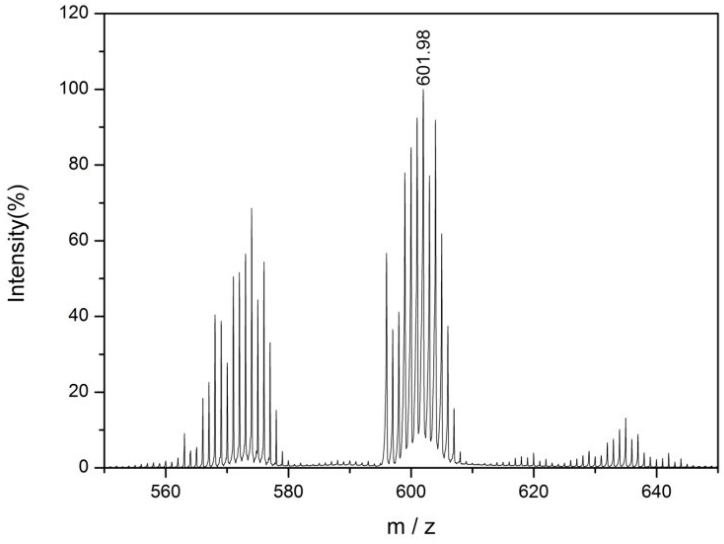

Figure S3. MS spectrum of $[Ru(fthpy)(bpy)_2]^+$ in CD_3CN.

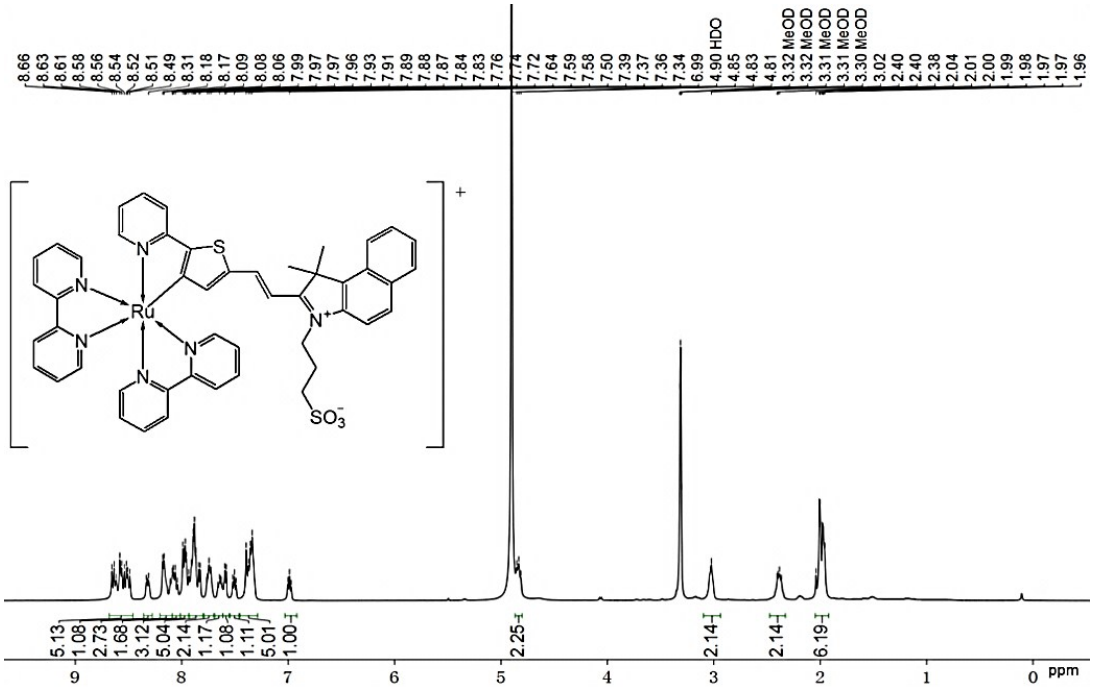

Figure S4. ^{1}H NMR spectra of **1** in CD_3OD.

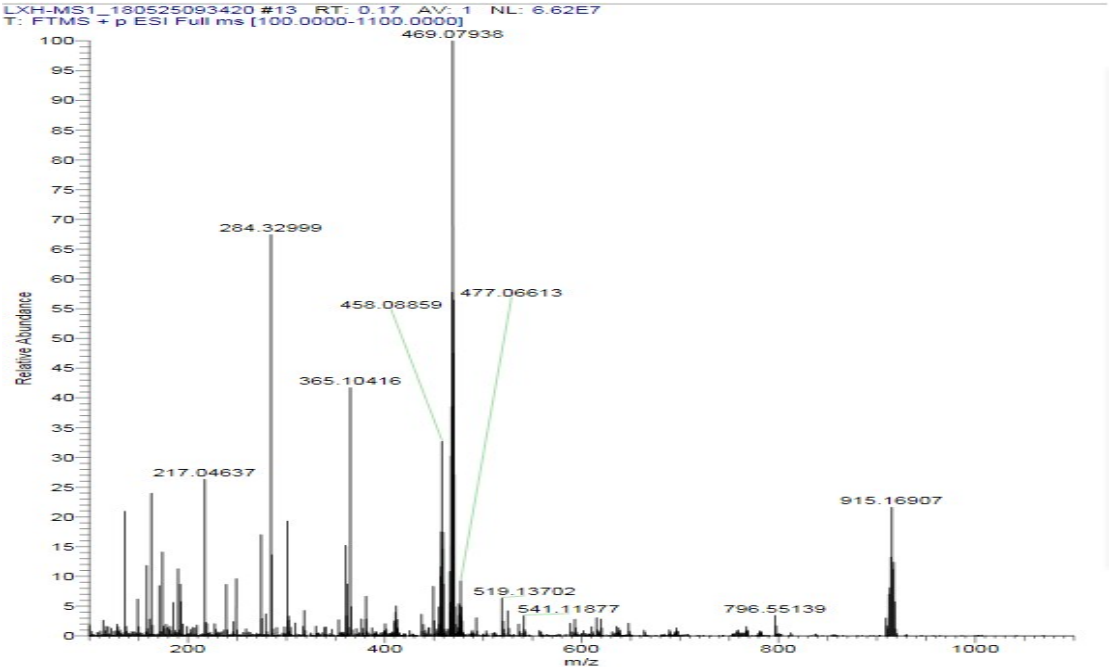

Figure S5. HRMS spectrum of the complex **1**.

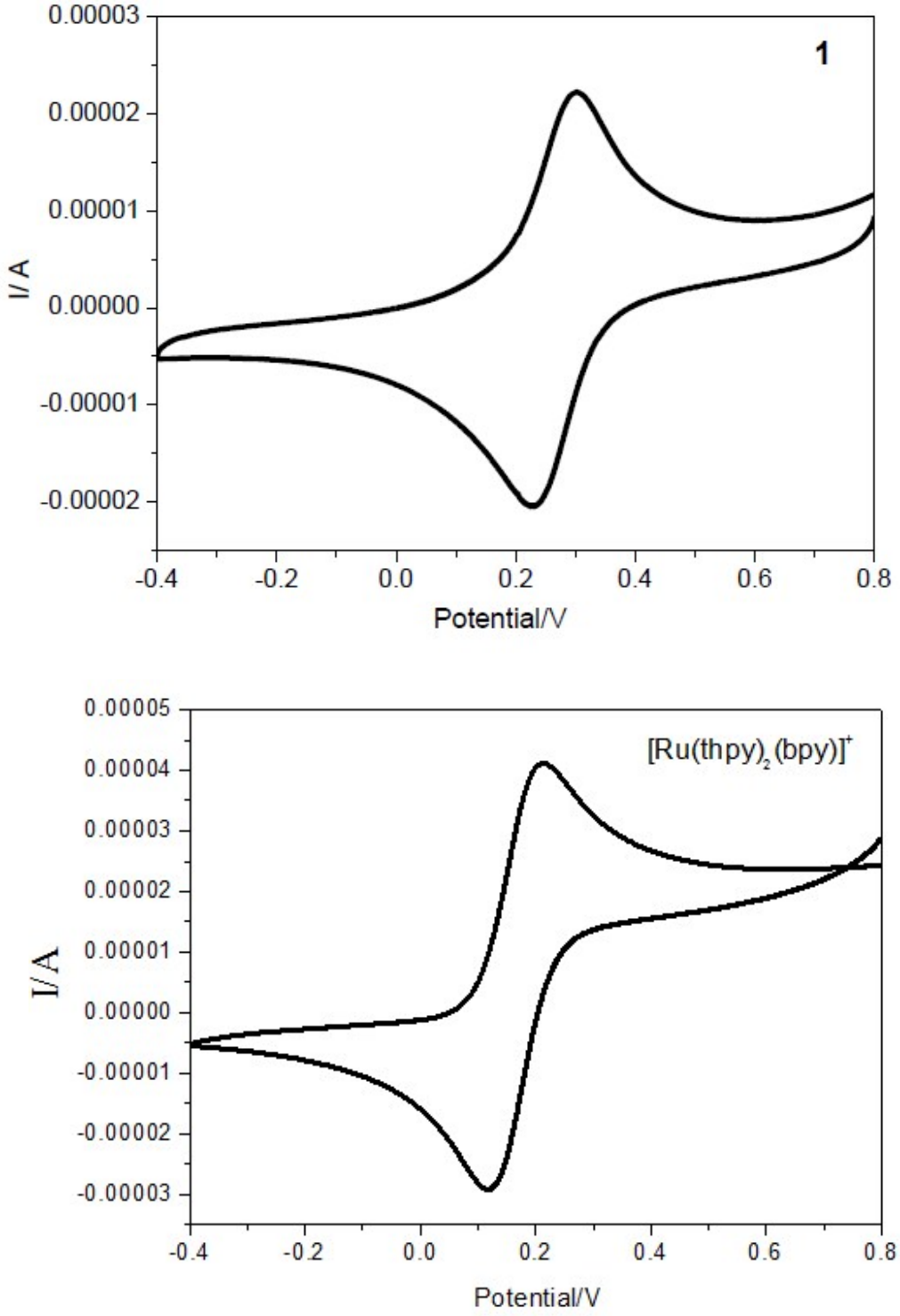

Figure S6. Cyclic voltammograms of **1** and $[Ru(thpy)_2(bpy)]^+$ in the CH_3CN solution containing 0.1 M Bu_4NBF_4. The scan rate is of 100 mV/s. The working electrode is a platinum wire, the counter electrode is another platinum wire with $Ag/AgNO_3$ used as the reference electrode.

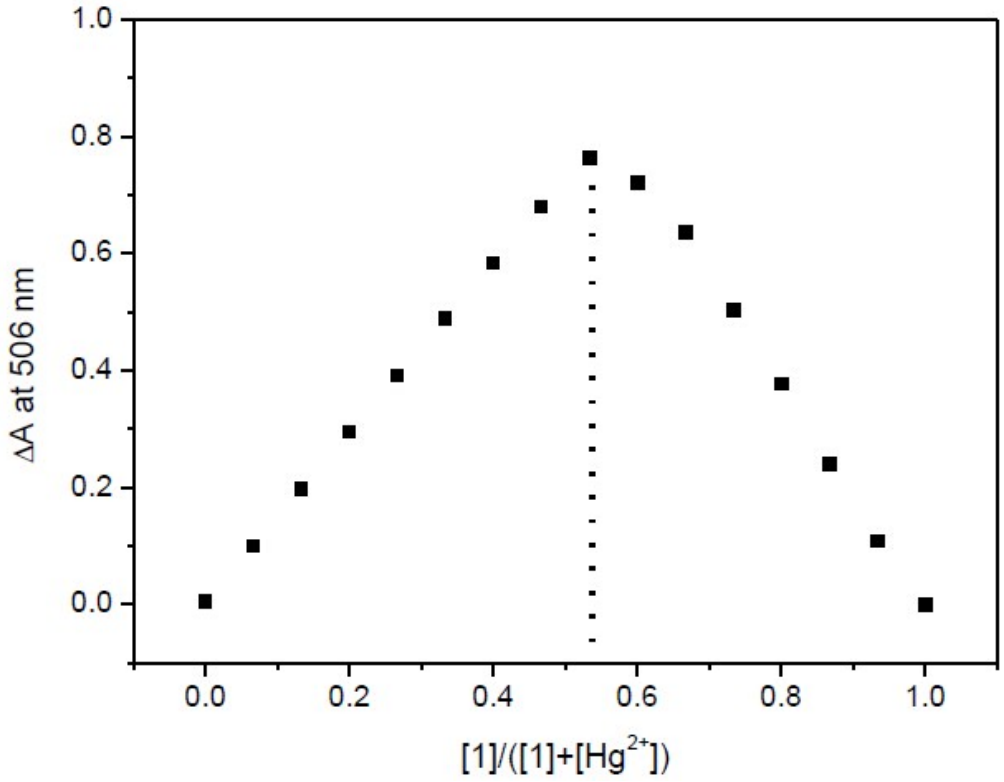

Figure S7. Job's plot for **1** and Hg^{2+} in water. [**1**] + [Hg^{2+}] = 1.0 × 10^{-4}M.

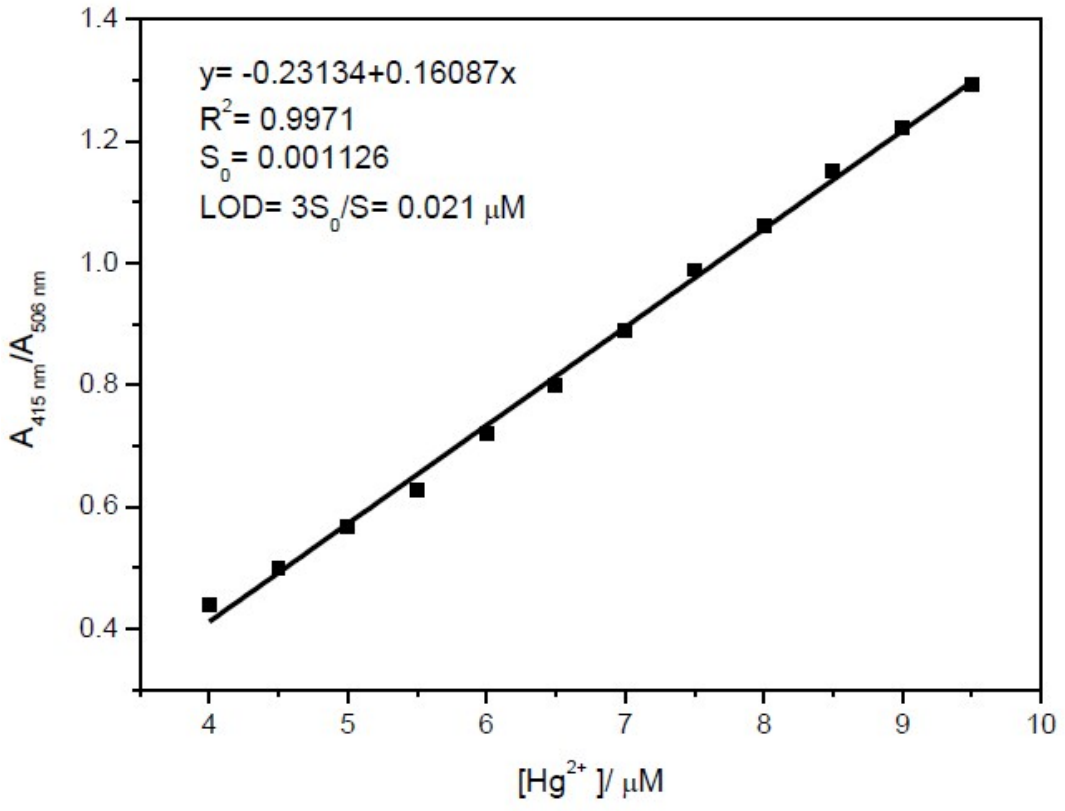

Figure S8. Sensitivity test of **1** towards Hg^{2+} by using UV-Vis absorption spectra.

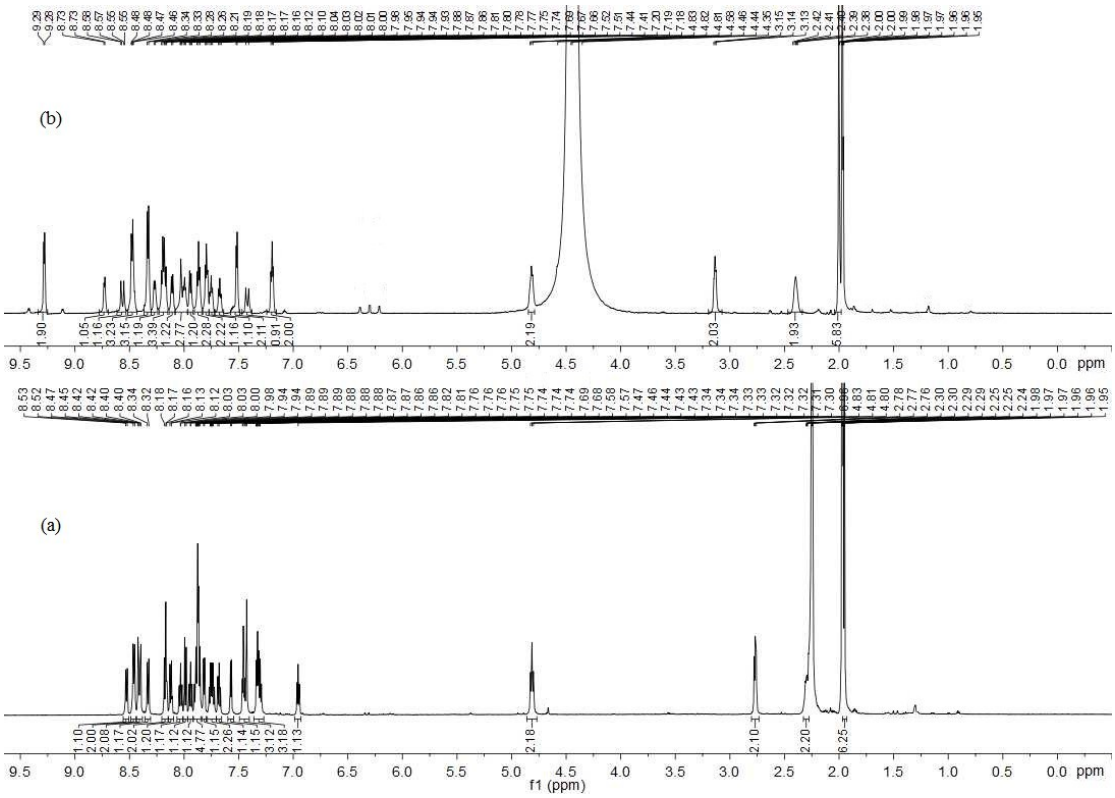

Figure S9. ^{1}H NMR spectra of **1** in the absence (a) and presence (b) of $Hg(ClO_4)_2$ in CD_3CN/D_2O (v/v=5:1).

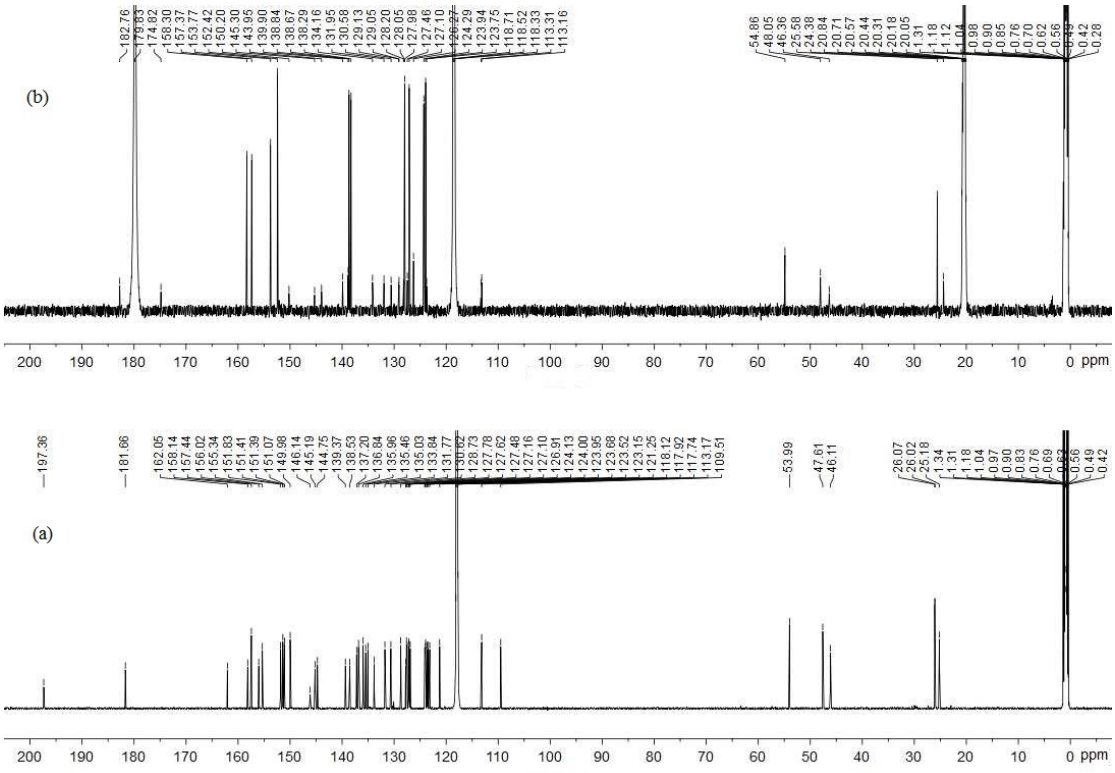

Figure S10. ^{13}C NMR spectra of **1** in the absence (a) and presence (b) of $Hg(ClO_4)_2$ in CD_3CN/D_2O (v/v=5:1).

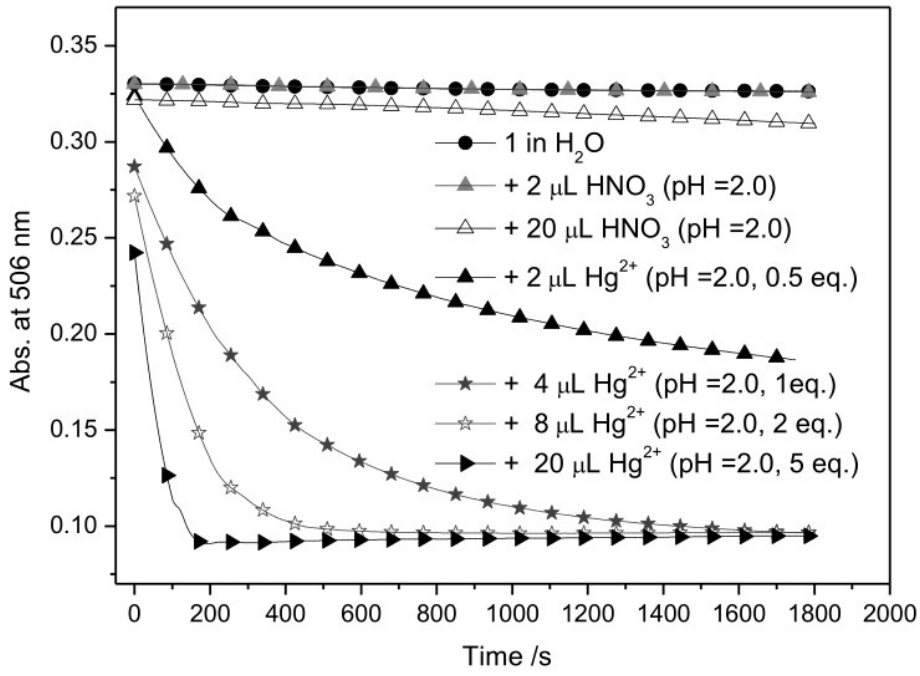

Figure S11. Time-dependent absorption spectral changes at $A_{506\ nm}$ of **1** in the presence and absence of Hg^{2+} (pH 2.0) in pure water.

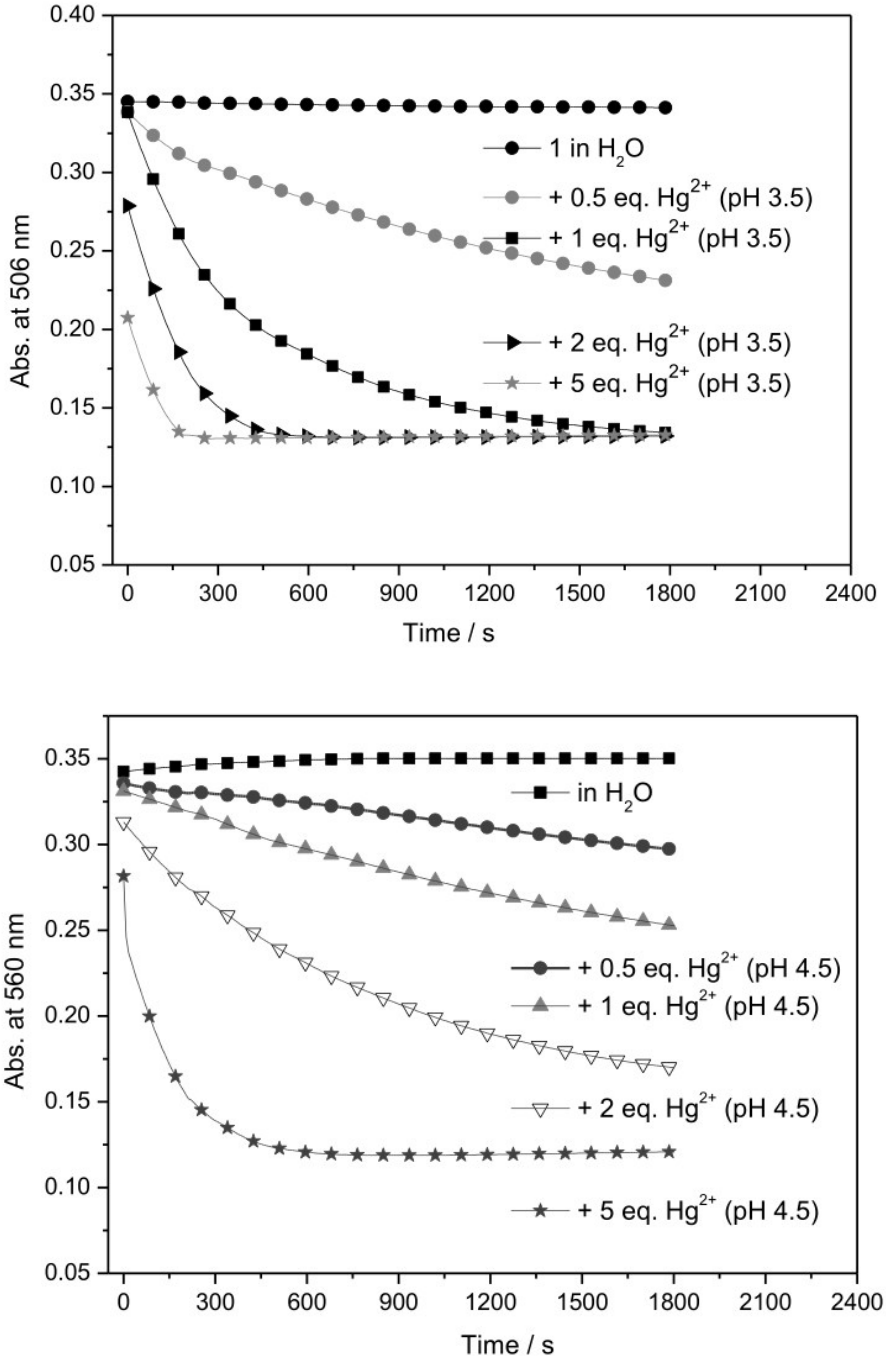

Figure S12. Time-dependent absorption spectral changes at $A_{506\ nm}$ of **1** in the presence of Hg^{2+} (pH 3.5 and pH 4.5) in pure water.

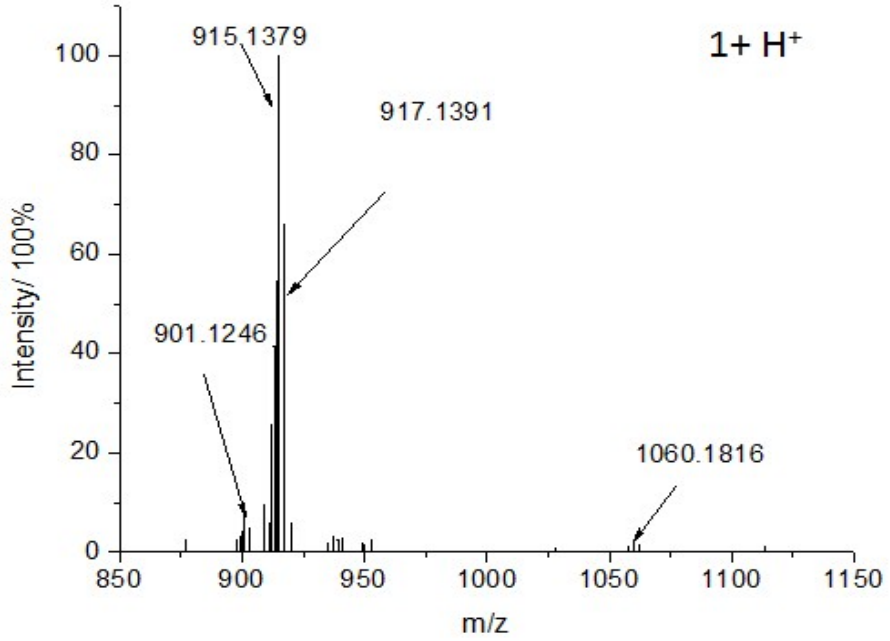

Figure S13. The mass spectrum of **1** in acid solution (pH 3.5).

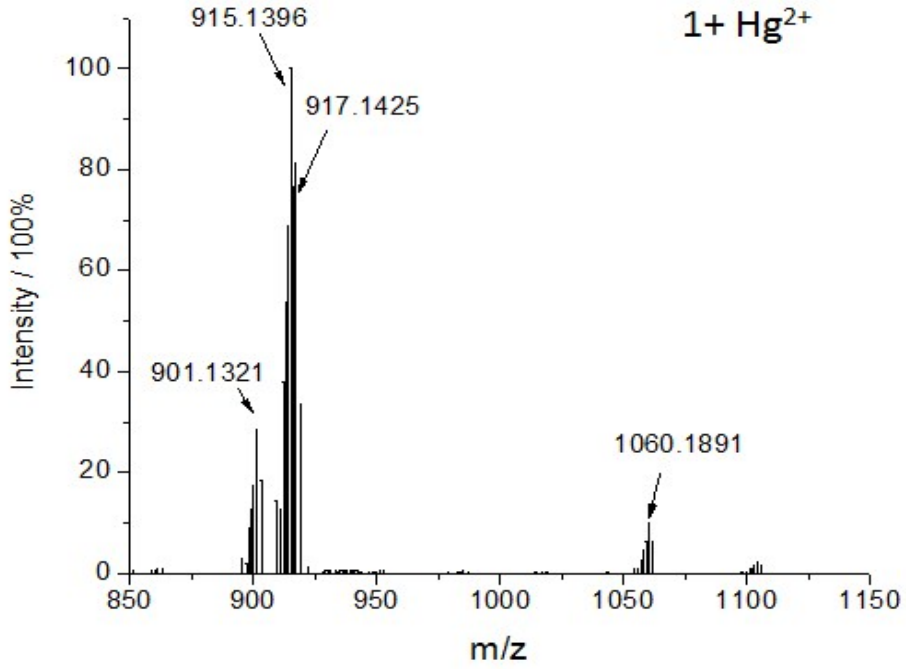

Figure S14. The mass spectrum of 1 in the presence of Hg^{2+} in CH_3CN/H_2O (v/v=5:1).

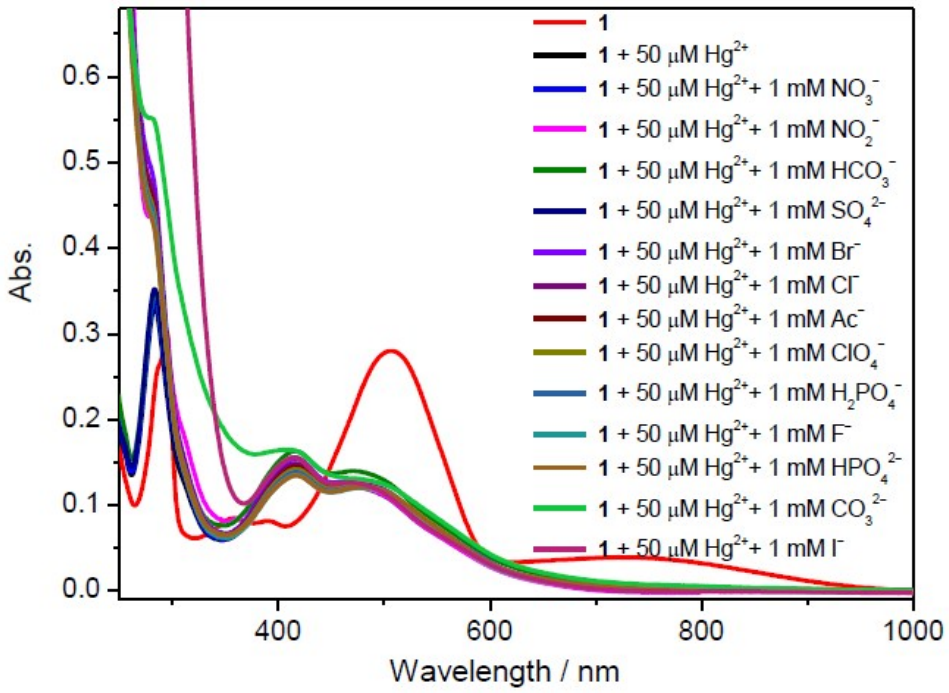

Figure S15. The absorption spectral changes upon the addition of 1mM various anions to the solutions of **1** (7 μM) with 50 μM Hg^{2+}.