Supporting Information

A Turn-on Fluorescent Sensor for Selective Detection of Zn^{2+}, Cd^{2+}, and Hg^{2+} in Water

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Contents

1. The pH Responses of Receptor 1

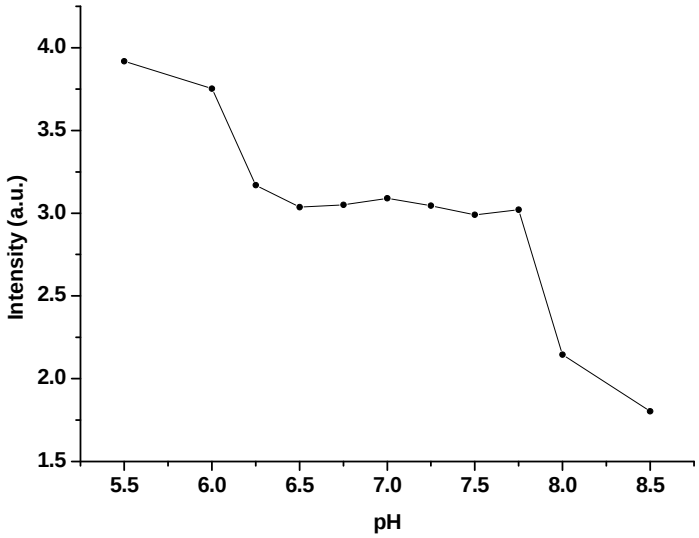

Figure S1. Effect of pH on the fluorescence intensity at 435 nm of receptor **1** (1.0×10^{-5} M) in buffer solution. The pH of solution was adjusted by aqueous solution of NaOH (1.0 M) and HCl (1.0 M). λ_{ex} = 330 nm, λ_{em} = 435 nm.

2. Job's Plot of Receptor 1 and Zn^{2+}

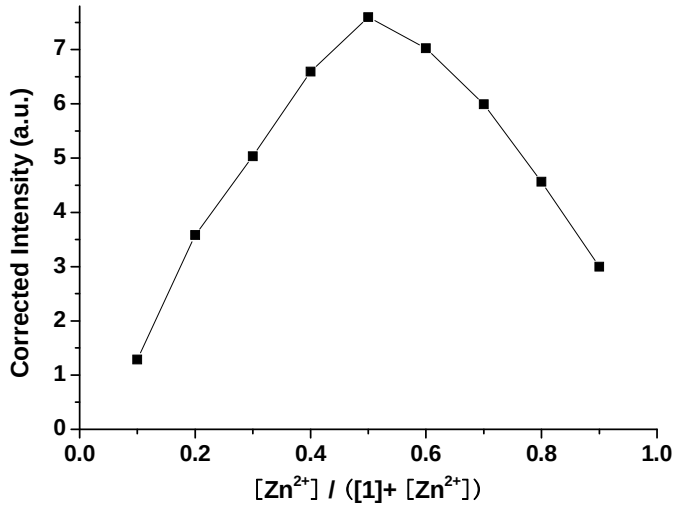

Figure S2. Job's plot of receptor **1** and Zn^{2+}. The total concentration of **1** and Zn^{2+} was kept at 10 μM in HEPES (10.0 mM, pH = 7.2). λ_{ex} = 330 nm, λ_{em} = 435 nm.

3. Fluorescent Titrations of Receptor 1 with Zn^{2+}

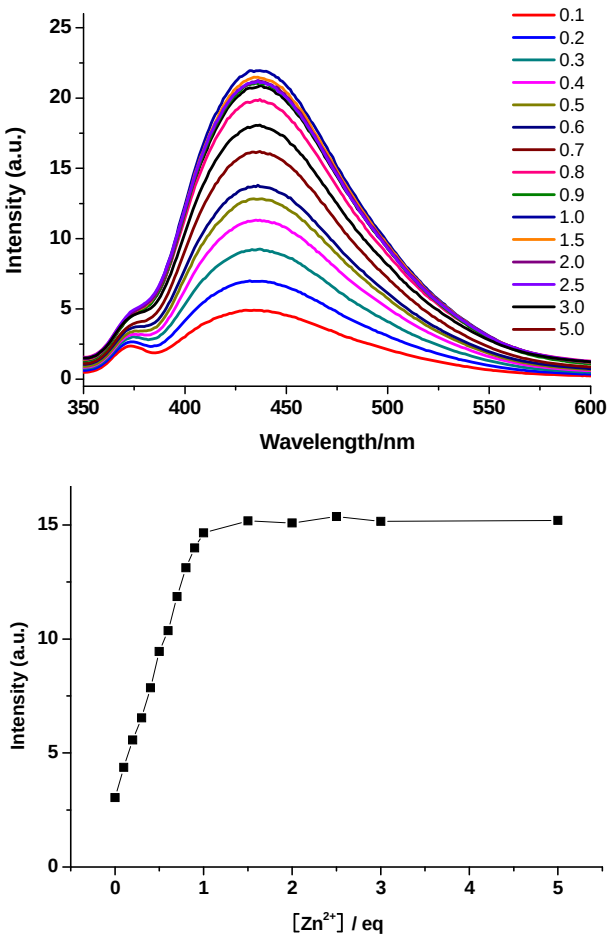

Figure S3. Up: emission spectra (λ_{ex} = 330 nm) of **1** (1.0×10^{-5} M) in the presence of Zn^{2+} in HEPES (10.0 mM, pH = 7.2) at 25°C. Down: the fluorescence intensity of **1** at 435 nm vs. the number of equivalents of Zn^{2+} added.

4. Job's Plot of Receptor 1 and Cd^{2+}

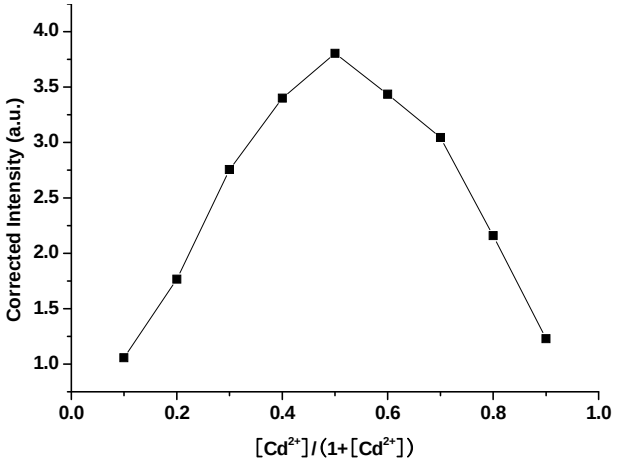

Figure S4. Job's plot of receptor **1** and Cd^{2+}. The total concentration of **1** and Cd^{2+} were kept at 10 μM in HEPES (10.0 mM, pH = 7.2). λ_{ex} = 330 nm, λ_{em} = 435 nm.

5. Fluorescent Titrations of Receptor 1 with Cd^{2+}

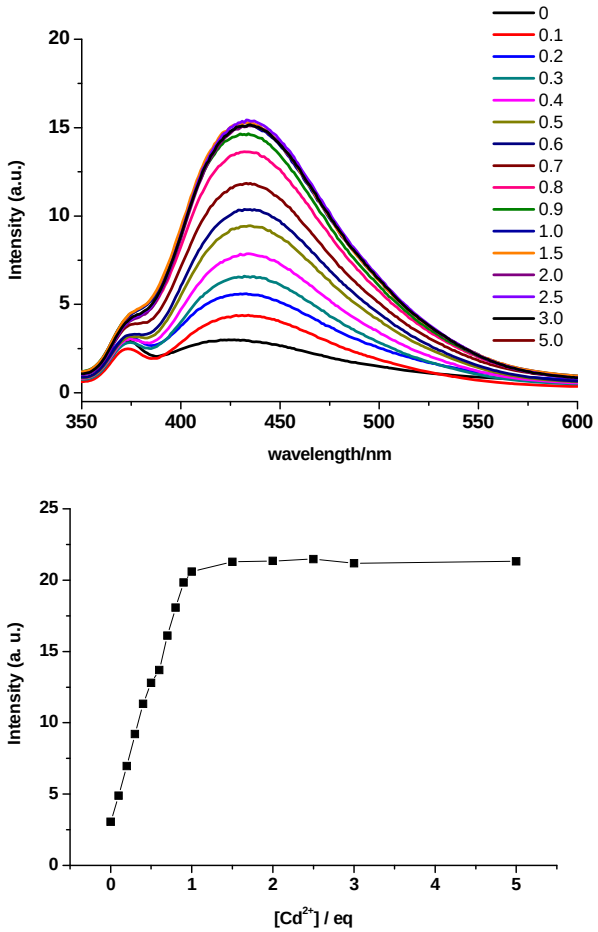

Figure S5. Up: emission spectra (λ_{ex} = 330 nm) of **1** (1.0×10^{-5} M) in the presence of Cd^{2+} in HEPES (10.0 mM, pH = 7.2) at 25°C. Down: the fluorescence intensity of **1** at 435 nm vs. the number of equivalents of Cd^{2+} added.

6. Job's Plot of Receptor 1 and Hg^{2+}

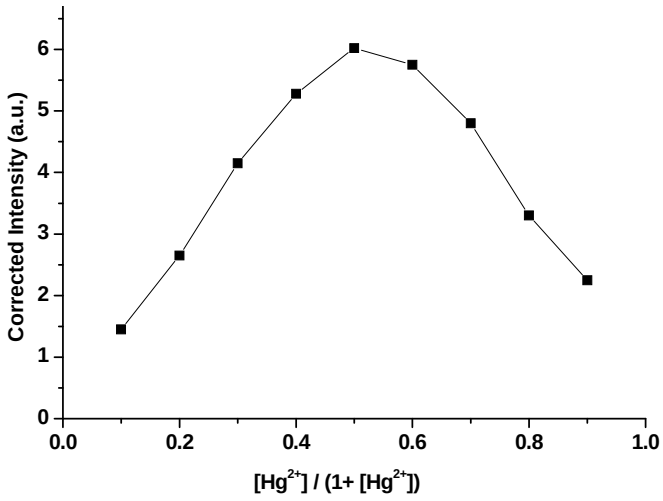

Figure S6. Job's plot of receptor **1** and Hg^{2+} The total concentration of **1** and Hg^{2+} were kept at 10 μM in HEPES (10.0 mM, pH = 7.2). λ_{ex} = 330 nm, λ_{em} = 435 nm.

7. Fluorescent Titrations of Receptor 1 with Hg^{2+}

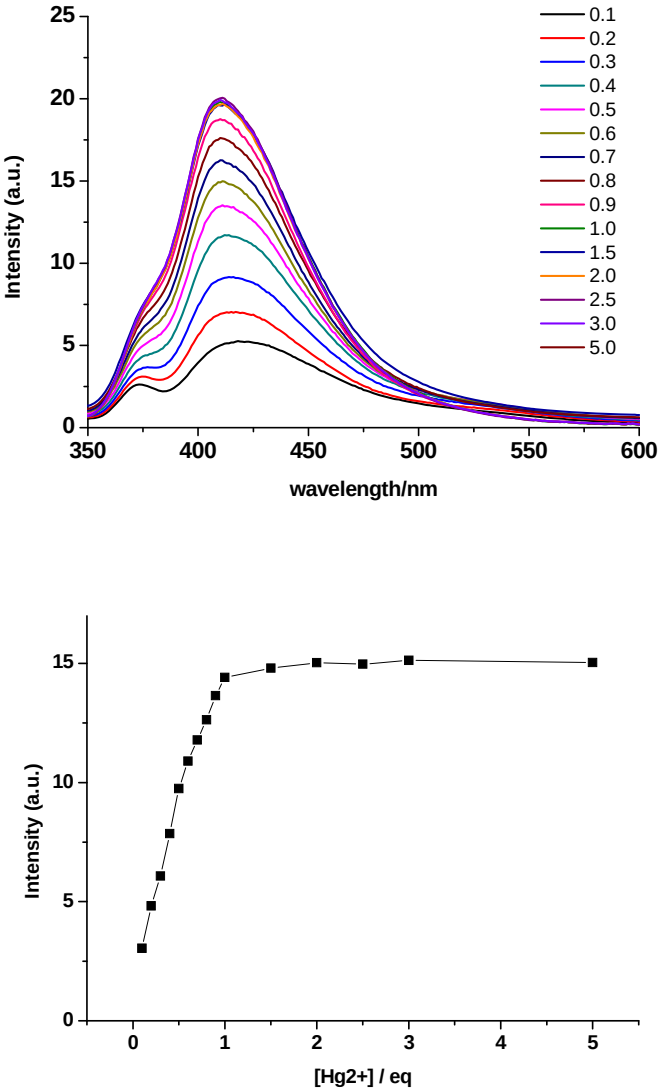

Figure S7. Up: emission spectra (λ_{ex} = 330 nm) of **1** (1.0×10^{-5} M) in the presence of Hg^{2+} in HEPES (10.0 mM, pH = 7.2) at 25°C. Down: the fluorescence intensity of **1** at 410 nm vs. the number of equivalents of Hg^{2+} added.

8. Absorption Titrations of Receptor 1 with Metal Ions

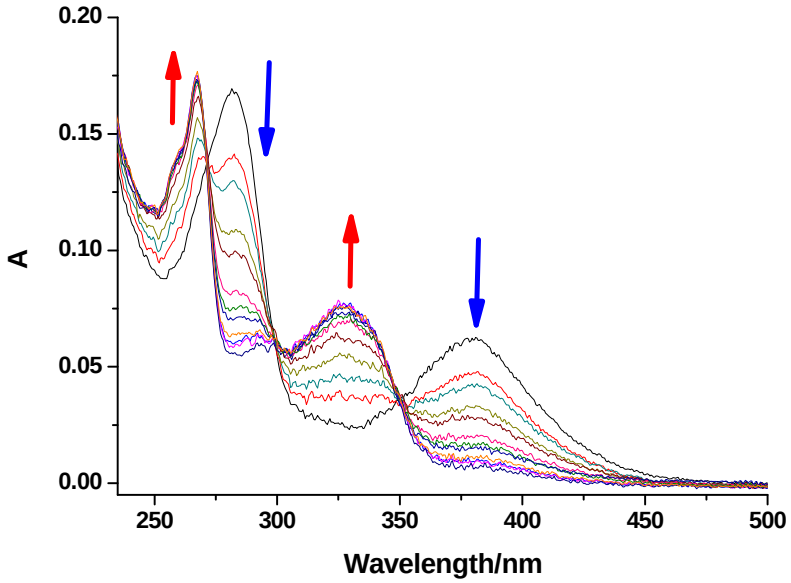

Figure S8. Absorption spectra of receptor **1** (1.0×10^{-5} M) in HEPES (10.0 mM, pH = 7.2) to various concentrations of Zn^{2+}.

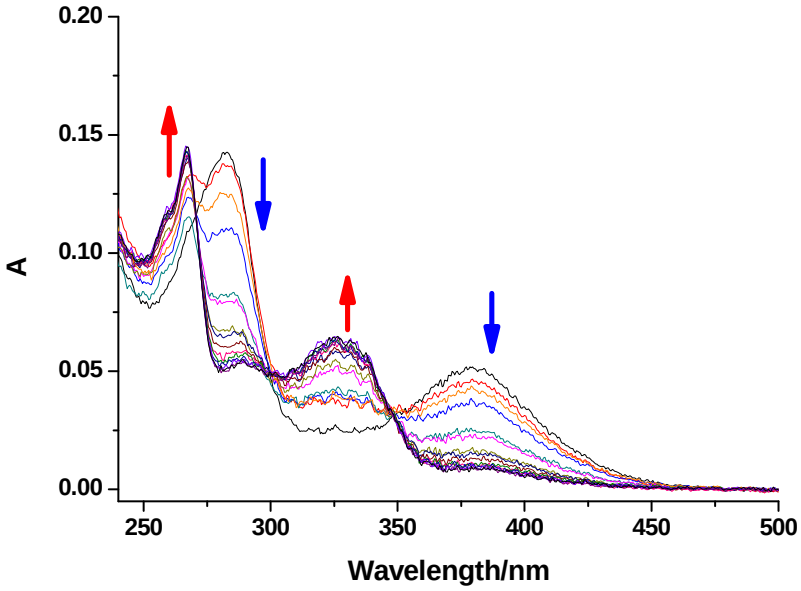

Figure S9. Absorption spectra of receptor **1** (1.0×10^{-5} M) in HEPES (10 mM, pH = 7.2) to various concentrations of Cd^{2+}.

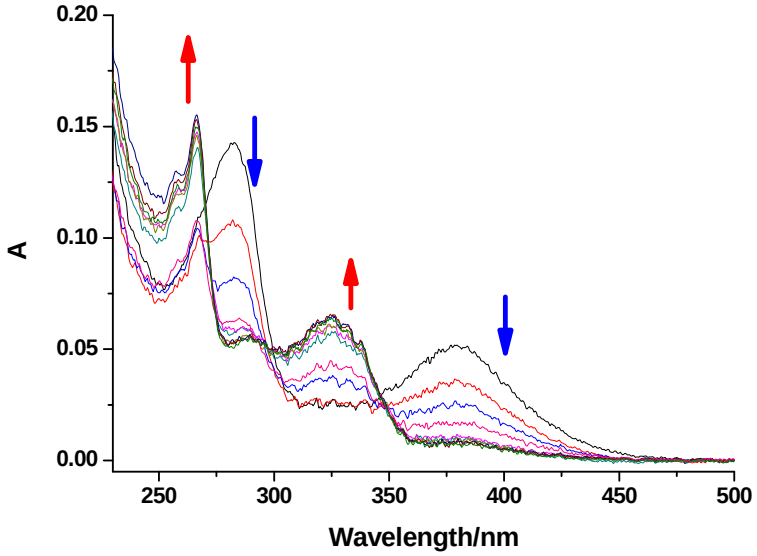

Figure S10. Absorption spectra of receptor **1** (1.0×10^{-5} M) in HEPES (10 mM, pH = 7.2) to various concentrations of Hg^{2+}.

9. ^{1}H NMR Titration of Receptor 1 in the Presence of Metal Ions

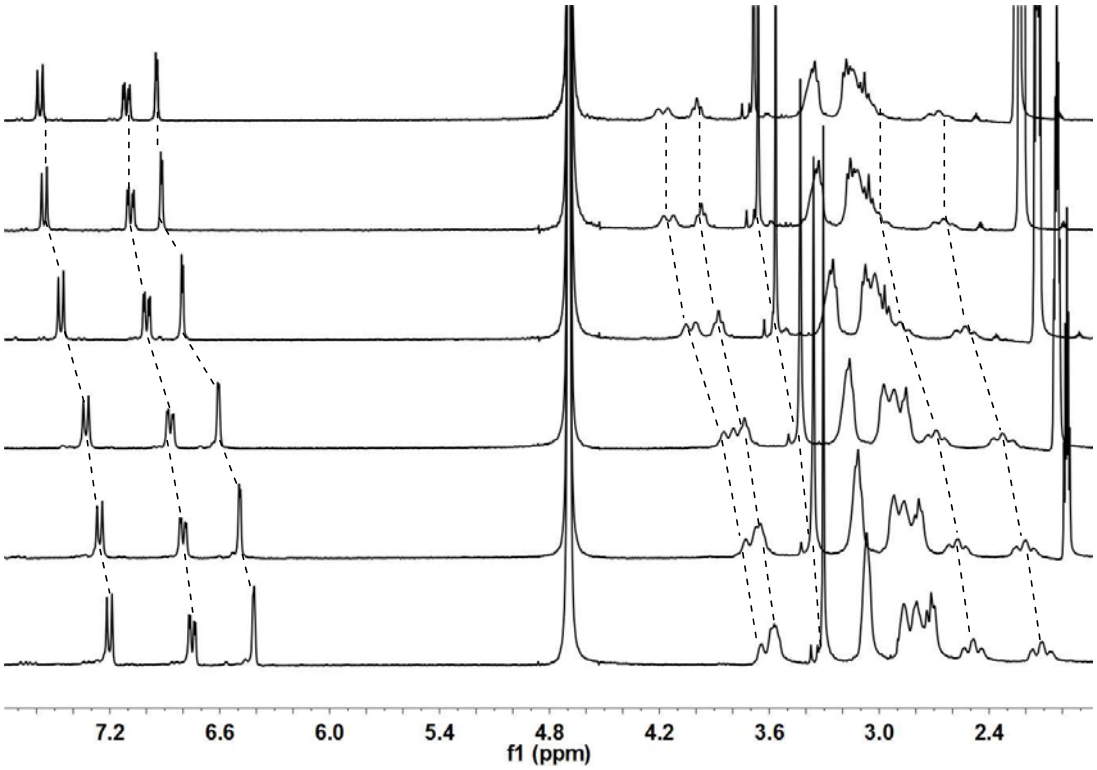

Figure S11. Partial ^{1}H NMR spectra of **1** in the presence of Cd^{2+} (from down to up: 0, 0.25, 0.5, 0.75, 1.0, and 2.0 equiv.) in D_2O.

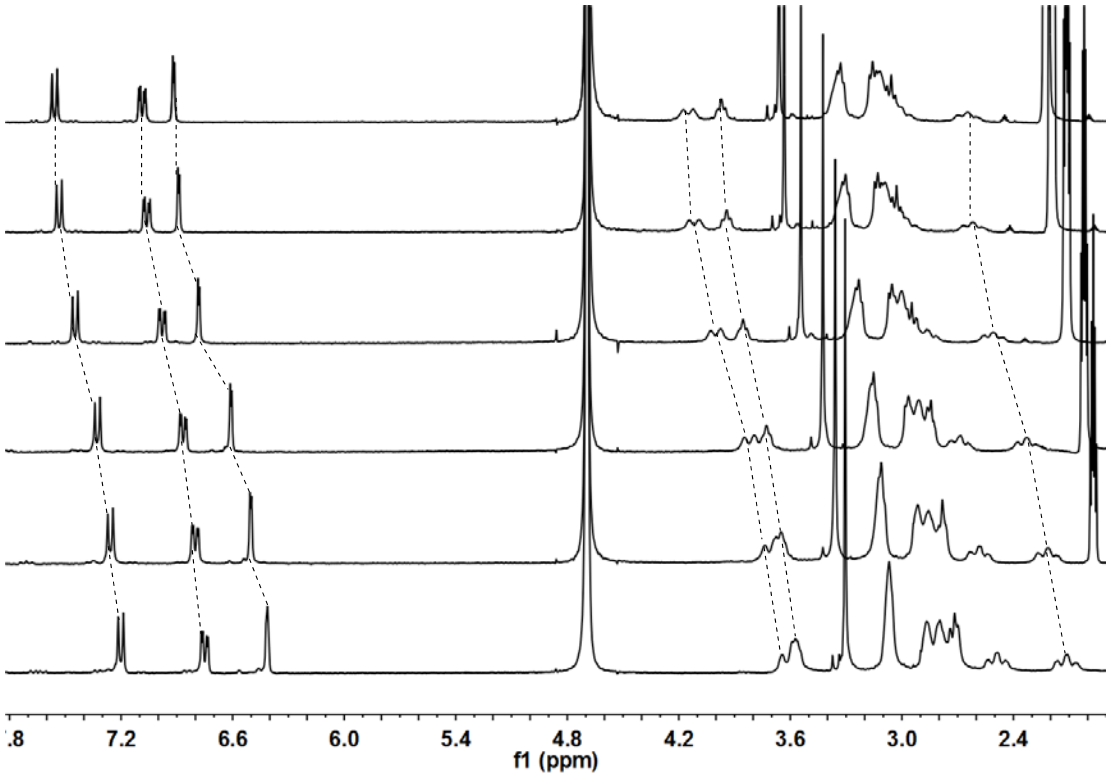

Figure S12. Partial ^{1}H NMR spectra of **1** in the presence of Zn^{2+} (from down to up: 0, 0.25, 0.5, 0.75, 1.0, and 2.0 equiv.) in D_2O.

10. Copies of ^{1}H NMR and ^{13}C NMR Spectra of New Compounds

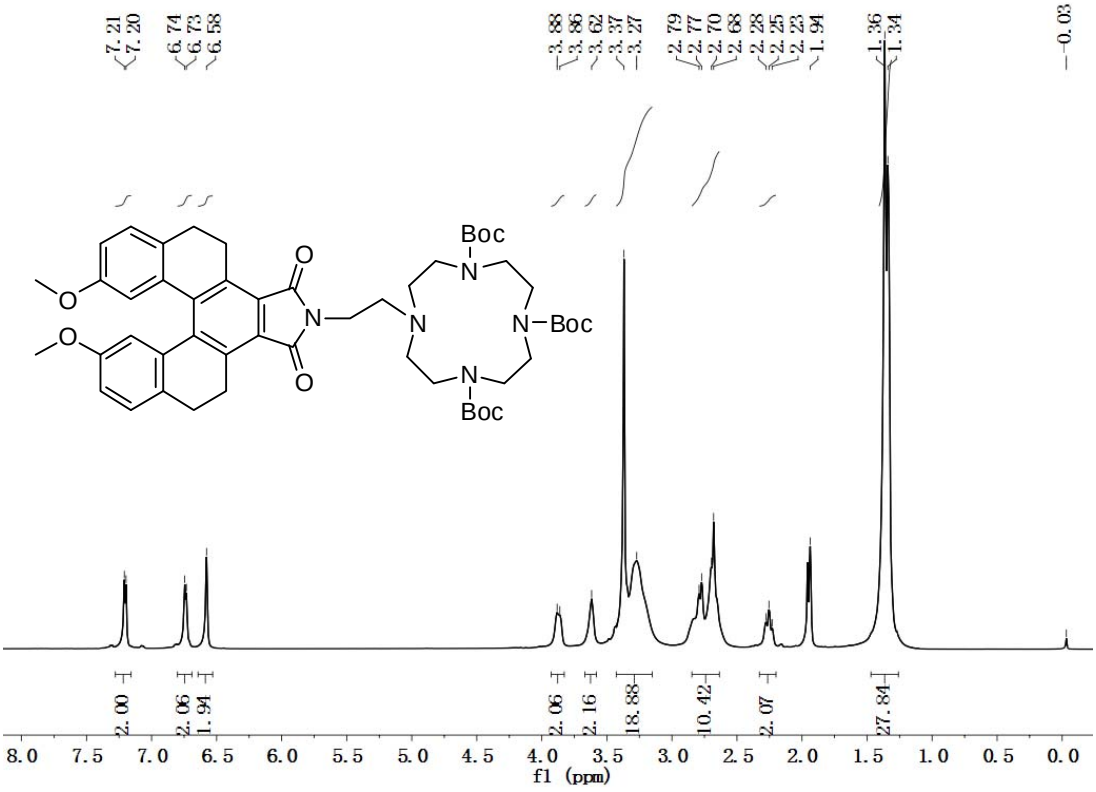

Figure S13. ^{1}H NMR spectrum (CD_3CN, 300 MHz) of **2**.

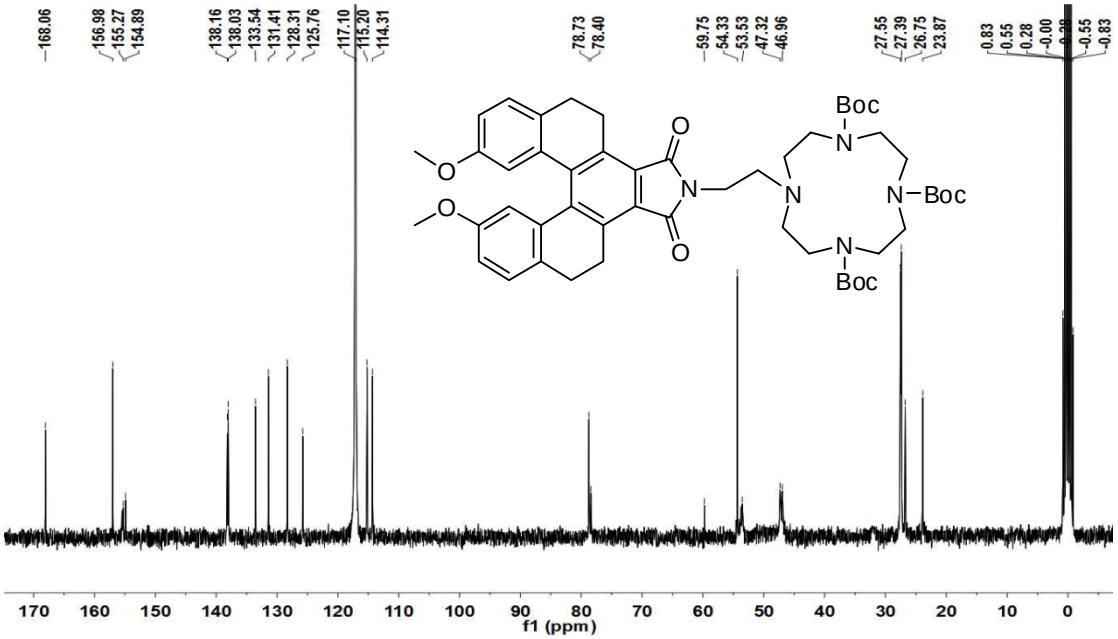

Figure S14. ^{13}C NMR spectrum (CD_3CN, 75 MHz) of **2**.

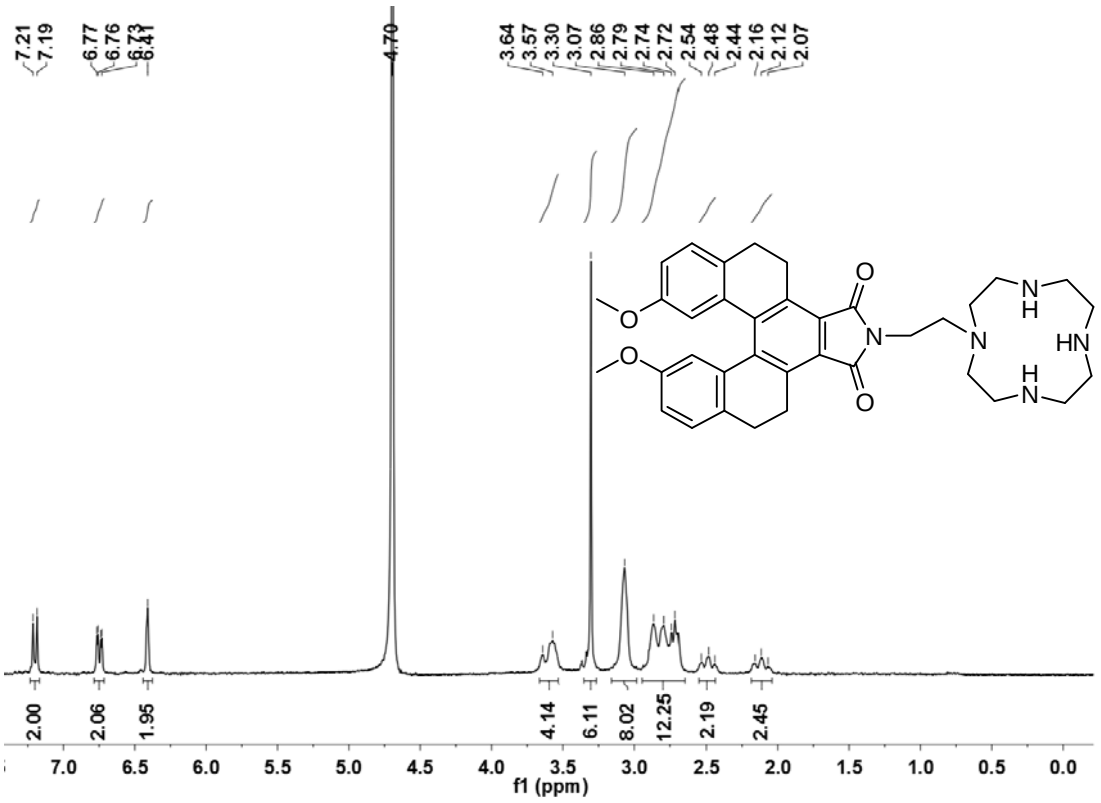

Figure S15. ^{1}H NMR spectrum (D_2O, 300 MHz) of **1**.

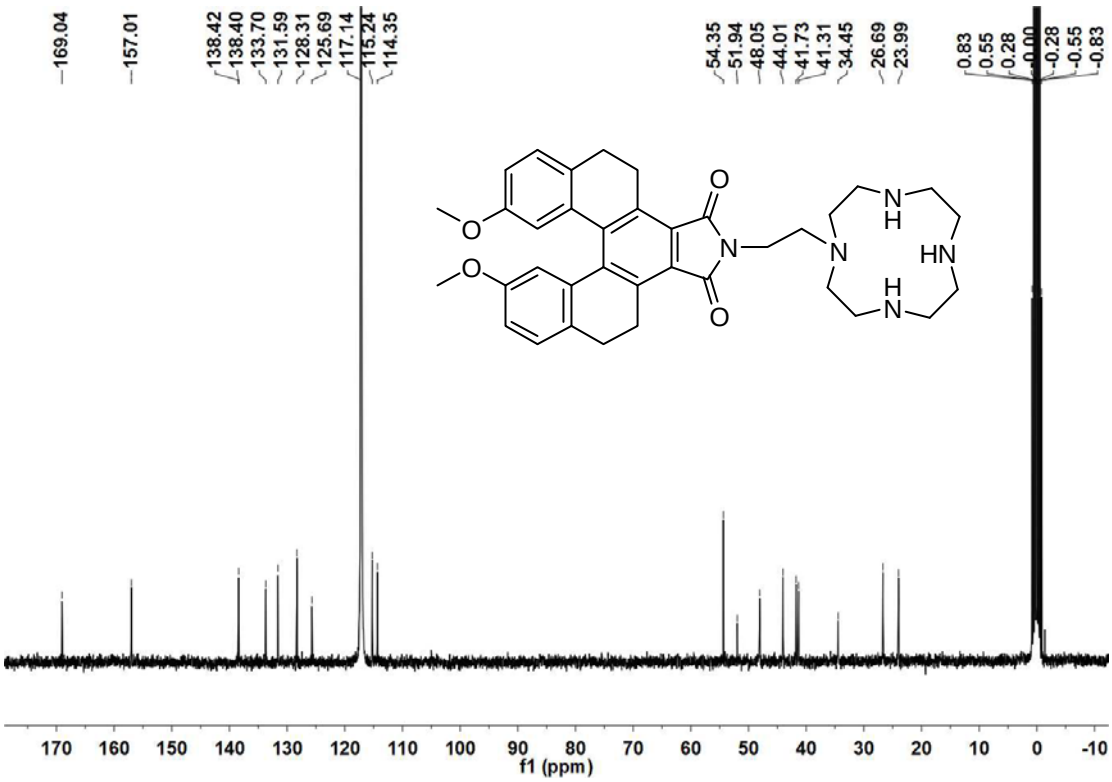

Figure S16. ^{13}C NMR spectrum (CD_3CN, 75 MHz) of **1**.