Supplementary Material (ESI) for Dalton Transactions
This journal is (c) The Royal Society of Chemistry 2011

Supporting Information

A Pentaquinone Based 4-2 Bit Photonic Encoder

Vandana Bhalla*, Roopa, Ankush Gupta, Abhimanew Dhir, Manoj Kumar*

Department of Chemistry, UGC Centre for Advanced Studies,

Guru Nanak Dev University, Amritsar, Punjab -143005- INDIA

S3 UV-visible spectra of **5** in the presence of $\mathbf{Hg^{2+}}$ ions.

S4 UV-visible spectra of **5** in the presence of $\mathbf{Fe^{3+}}$ ions.

S5 UV-visible spectra of **5** in the presence of $\mathbf{F^-}$ and $\mathbf{CN^-}$ ions.

S6 UV-visible spectra of **5** in the presence of $\mathbf{OH^-}$ ions.

S7 Fluorescence spectra of **5** in response to the presence of $\mathbf{Hg^{2+}}$ ions (340-1000equiv.)

S8 Fluorescence spectra of **5** in response to the presence of $\mathbf{F^-}$ ions (0- 3000 equiv.)

S9 Job's plot of **5** with $\mathbf{Hg^{2+}}$ and $\mathbf{Fe^{3+}}$ ions.

S10 Job's plot of **5** with $\mathbf{CN^-}$ and $\mathbf{F^-}$ ions.

S11 Fluorescence spectra of **5** in response to the presence of $\mathbf{Fe^{3+}}$ ions.

S12 Fluorescence spectra of **5** in response to the presence of various metal ions except Hg^{2+} and Fe^{3+} ions.

S13 Fluorescence spectra of **5** in response to the presence of various anions except CN^- and F^- ions.

S14 ^{1}H NMR Spectrum of **3.**

S15 Mass Spectrum of **3**.

S16 ^{1}H NMR Spectrum of **5.**

S17 ^{13}C NMR Spectrum of **5.**

S18 Mass Spectrum of **5.**

S19 IR Spectrum of **5.**

S20 IR Spectrum of **5.Hg**$^{2+}$ complex.

S21 Reversibility of **5.Fe**$^{3+}$ complex.

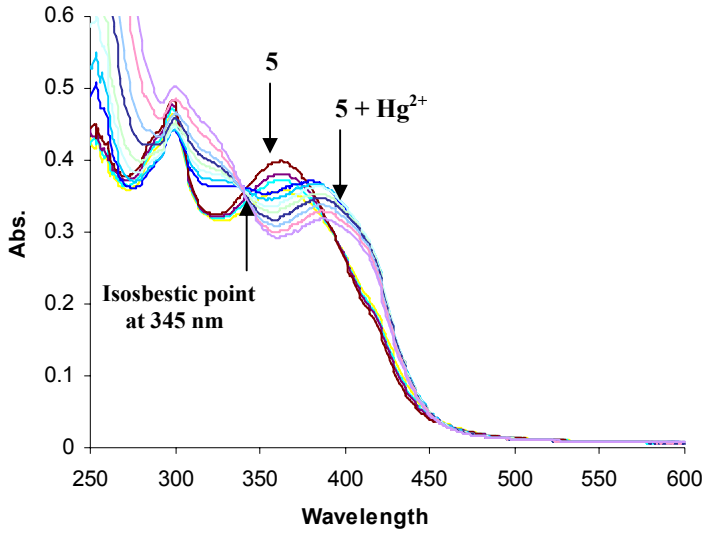


Figure S1. UV-visible spectra of **5** (1X 10^{-5} M) in the presence of $\mathbf{Hg^{2+}}$ ions (0-100 equiv.) in THF.

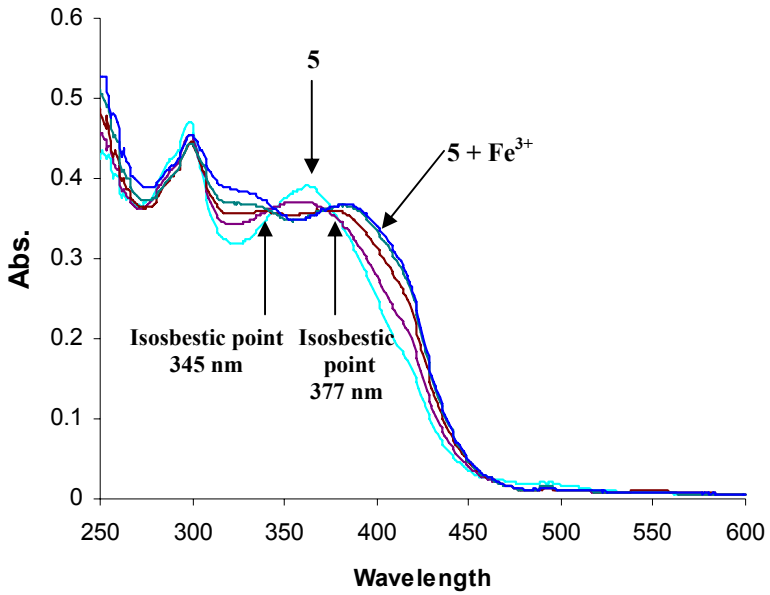


Figure S2. UV-visible spectra of **5** (1X 10^{-5} M) in the presence of $\mathbf{Fe^{3+}}$ ions (0-100 equiv.) in THF.

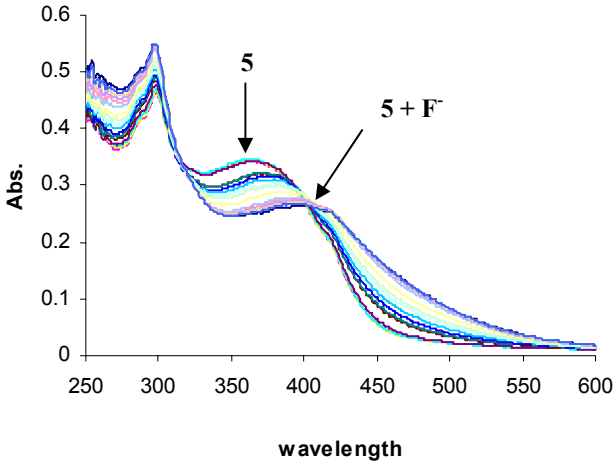


Figure S3. UV-visible spectra of **5** (1X 10^{-5} M) in the presence of **F**$^-$ ions (0-500 equiv.) in THF.

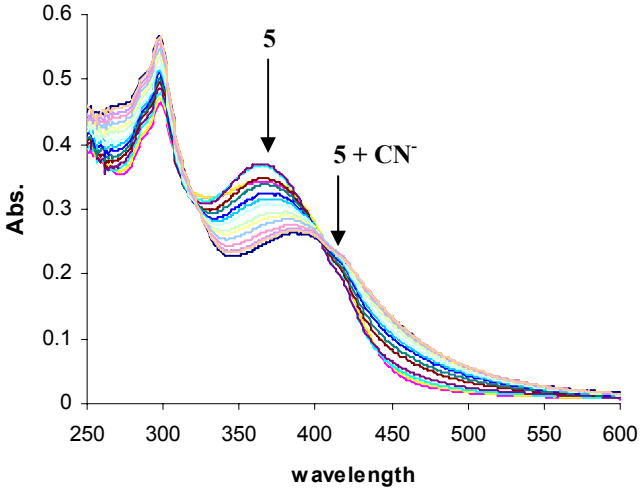


Figure S4. UV-visible spectra of **5** (1X 10^{-5} M) in the presence of **CN**$^-$ ions (0-500 equiv.) in THF.

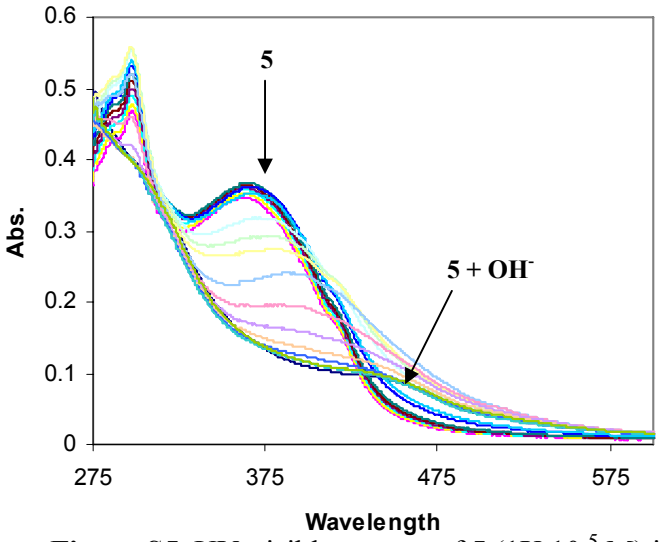


Figure S5. UV-visible spectra of **5** (1X 10^{-5} M) in the presence of **OH**$^-$ ions (0-300 equiv.) in THF.

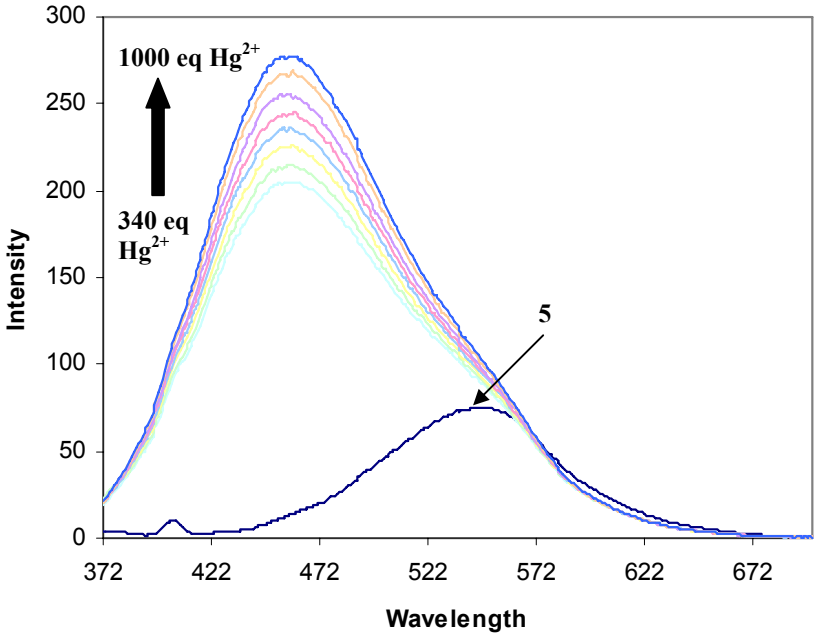


Figure S6. Fluorescence spectra of **5** (1 X 10^{-5} M) in response to the presence of $\mathbf{Hg^{2+}}$ ions (340-1000 equiv.) in THF; λ_{ex} = 340 nm.

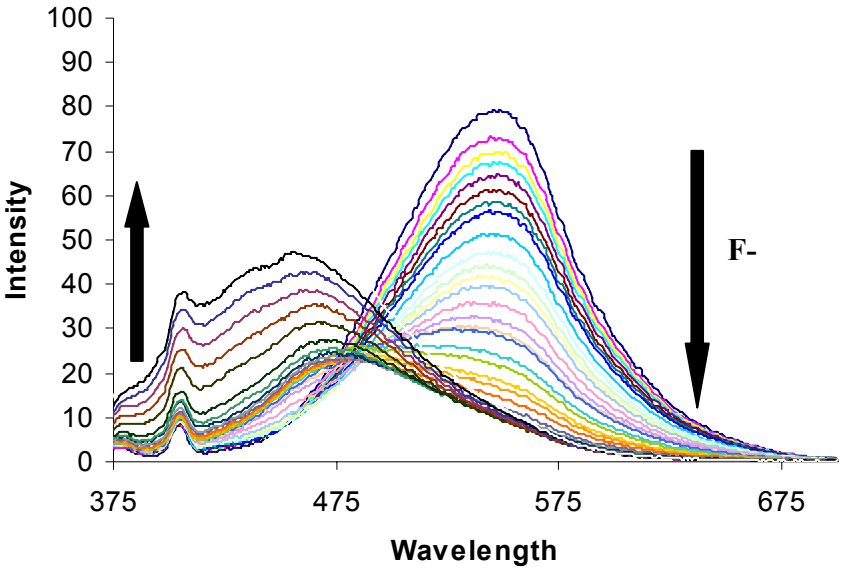


Figure S7. Fluorescence spectra of **5** (1 X 10^{-5} M) in response to the presence of $\mathbf{F}^-$ ions (0- 3000 equiv.) in THF; λ_{ex} = 340 nm.

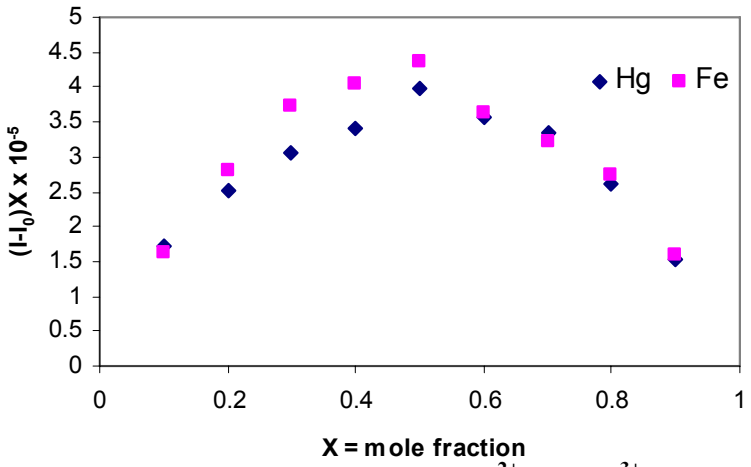


Figure S8. Job's plot of **5** with $\mathbf{Hg^{2+}}$ and $\mathbf{Fe^{3+}}$ representing stoichiometry 1:1 (host: guest).

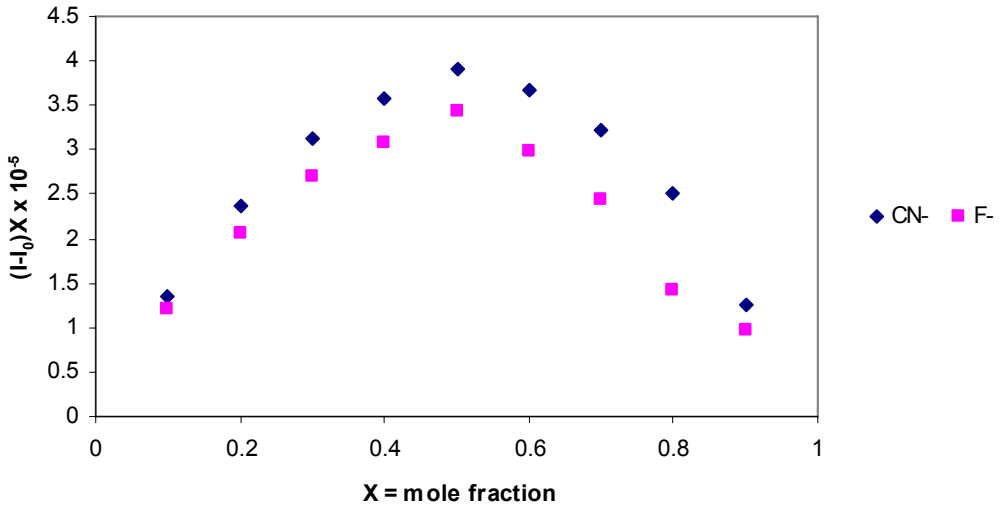


Figure S8. Job's plot of **5** with **CN⁻** and **F⁻** representing stoichiometry 1:1 (host: guest).

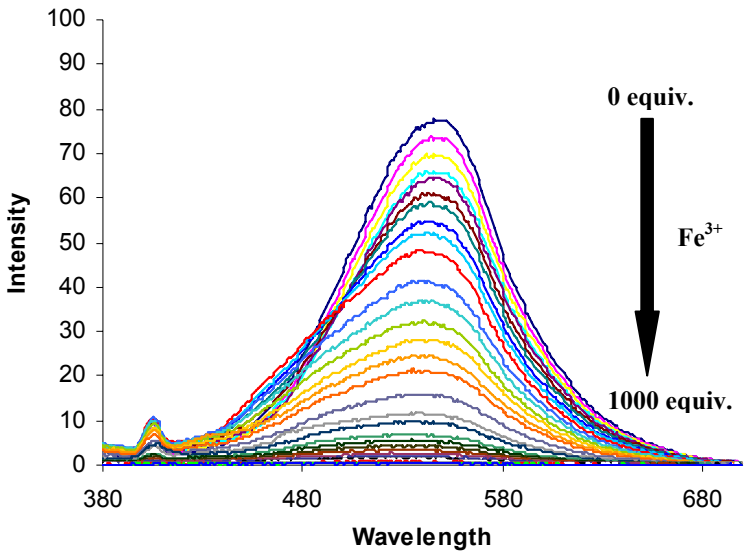


Figure S9. Fluorescence spectra of **5** (1 X 10^{-5} M) in response to the presence of **Fe^{3+}** ions (1000 equiv.) in THF; λ_{ex} = 340 nm.

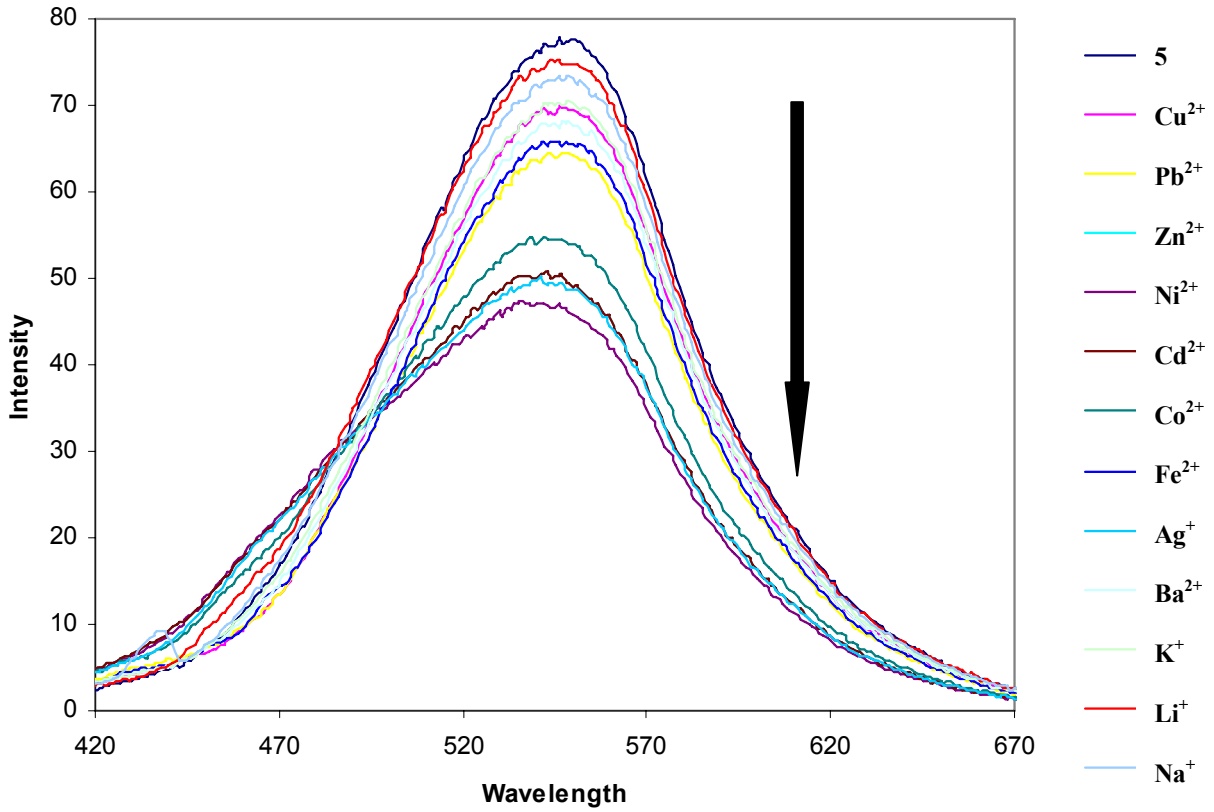


Figure S10. Fluorescence spectra of **5** (1 X 10^{-5} M) in response to the presence of various metal ions (1000 equiv.) except Hg^{2+} and Fe^{3+} ions in THF; λ_{ex} = 340 nm.

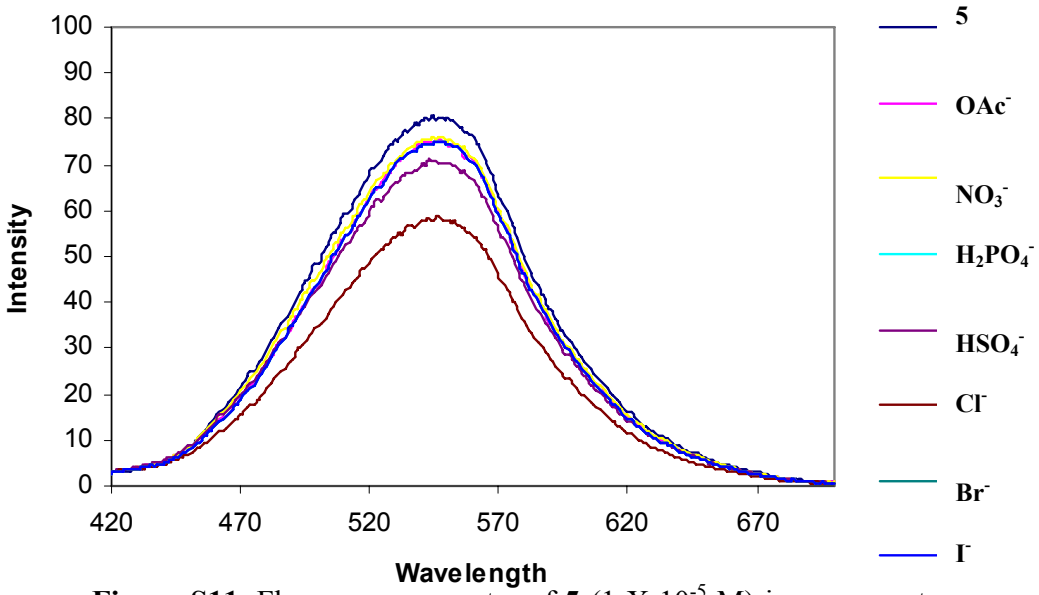
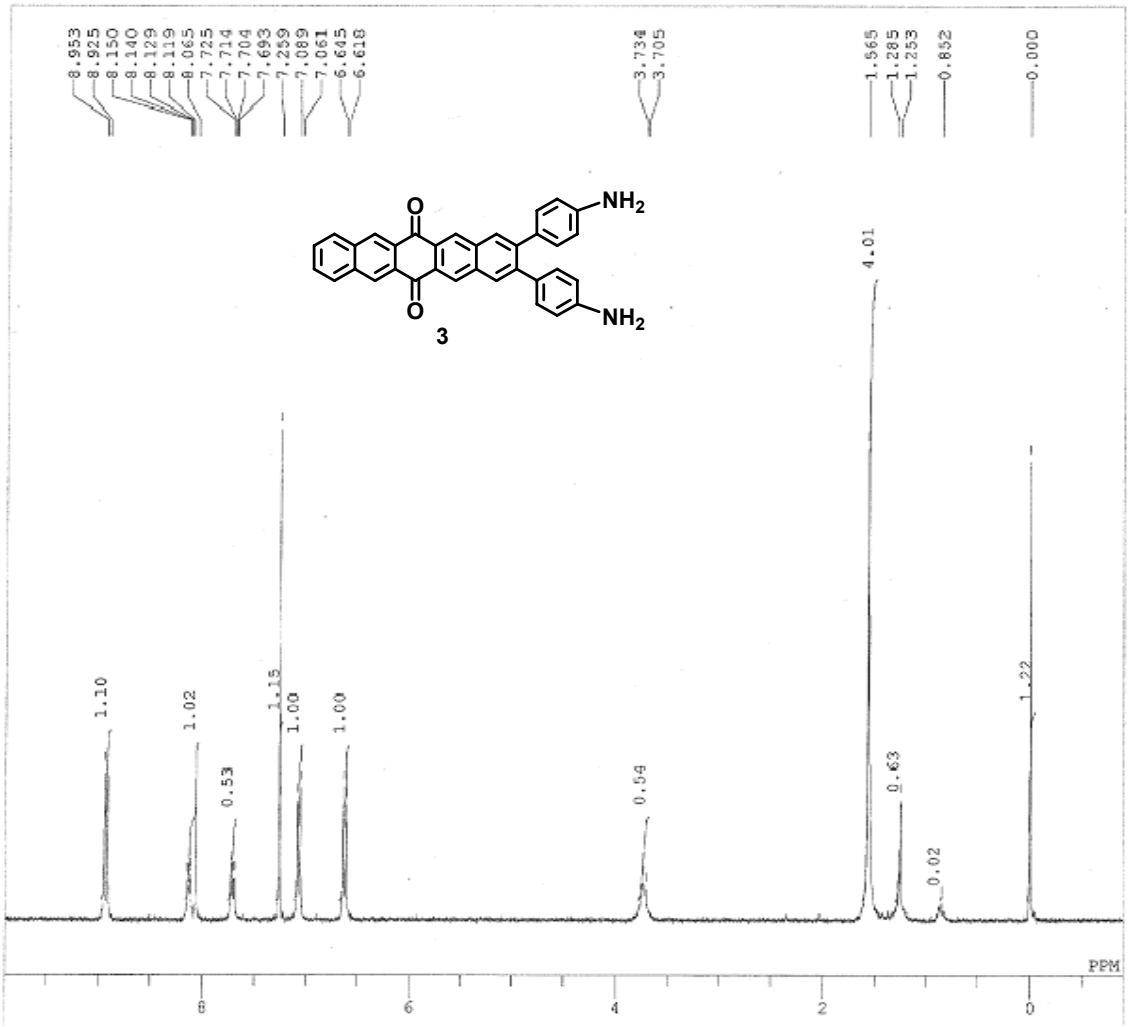
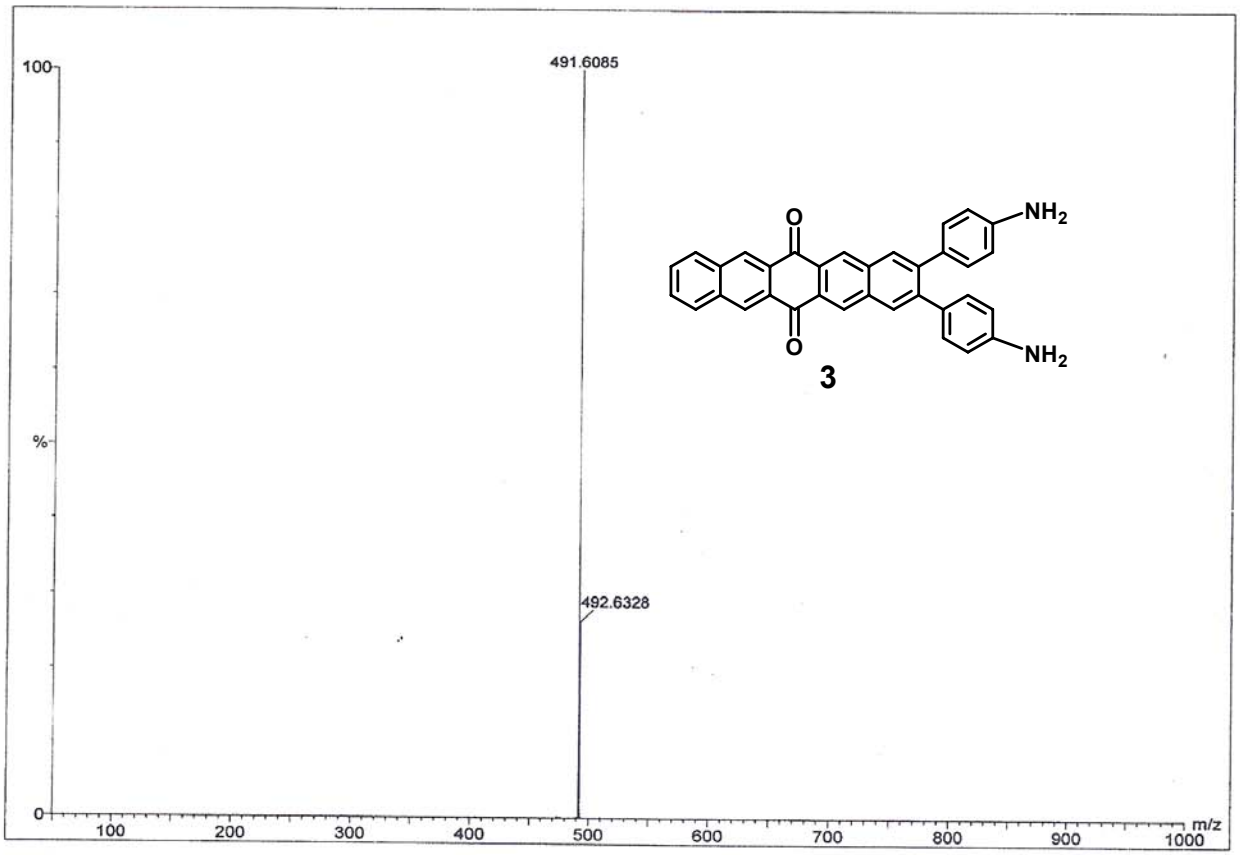


Figure S11. Fluorescence spectra of **5** (1 X 10^{-5} M) in response to the presence of various anions (3000 equiv.) except CN^- and F^- ions in THF; λ_{ex} = 340 nm.

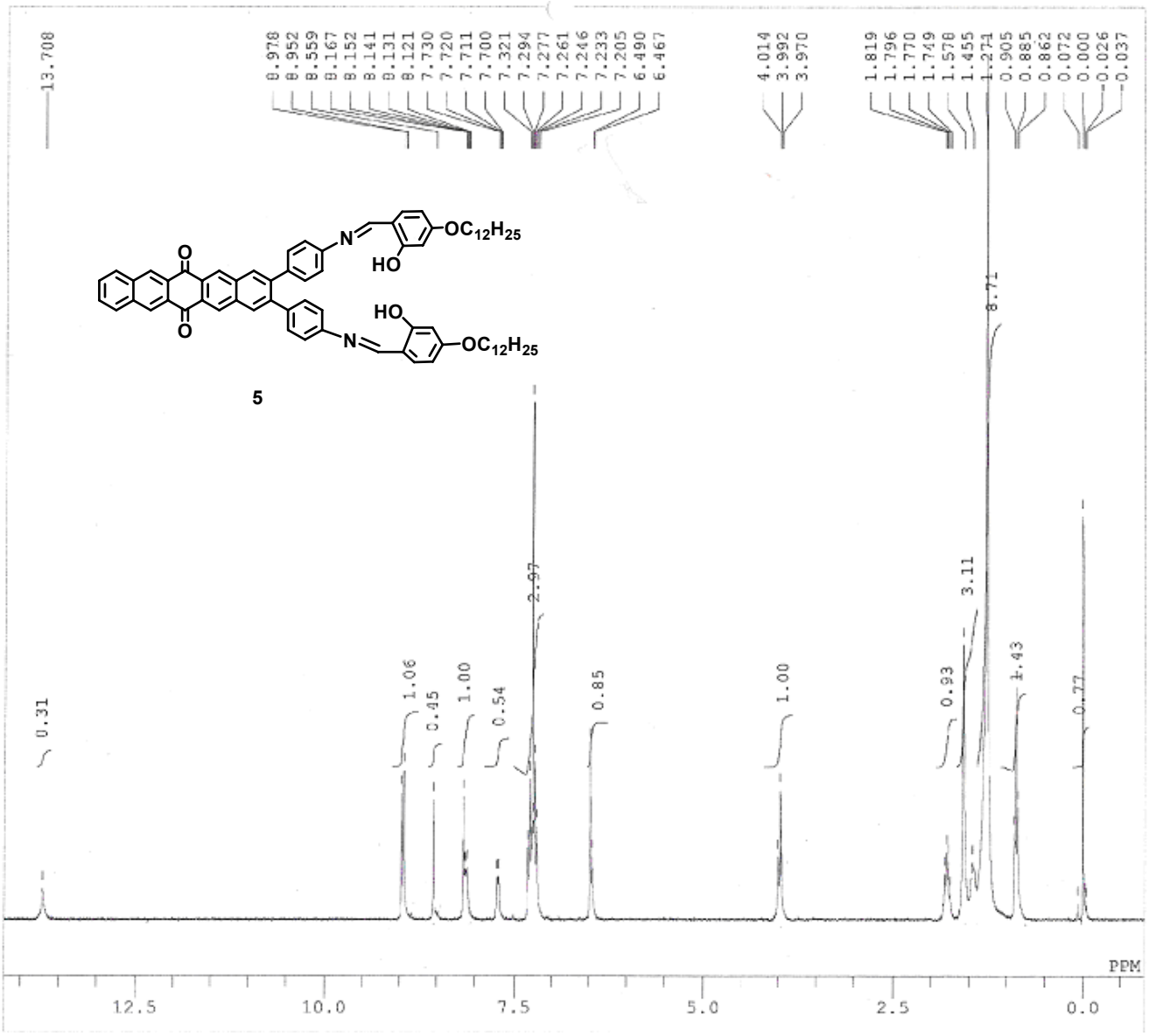
^{1}H NMR Spectrum of 3



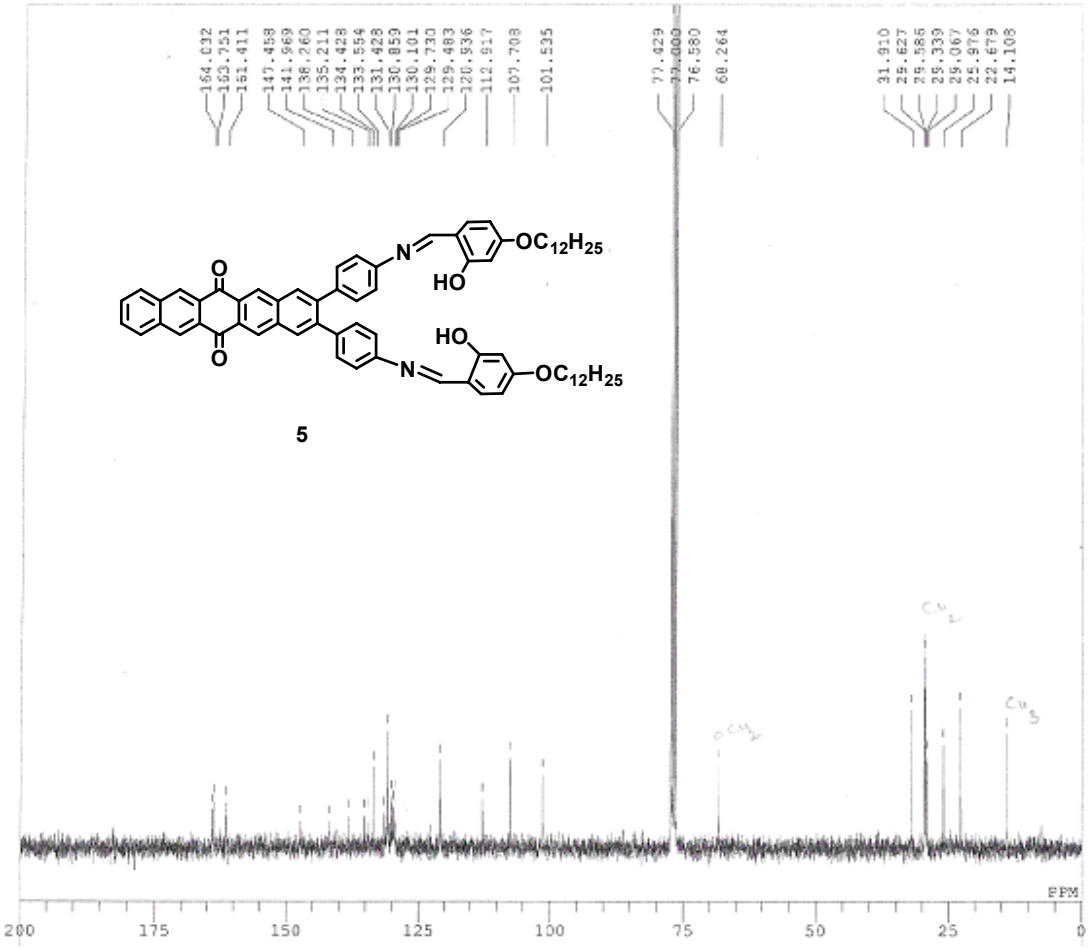
Mass Spectrum of 3



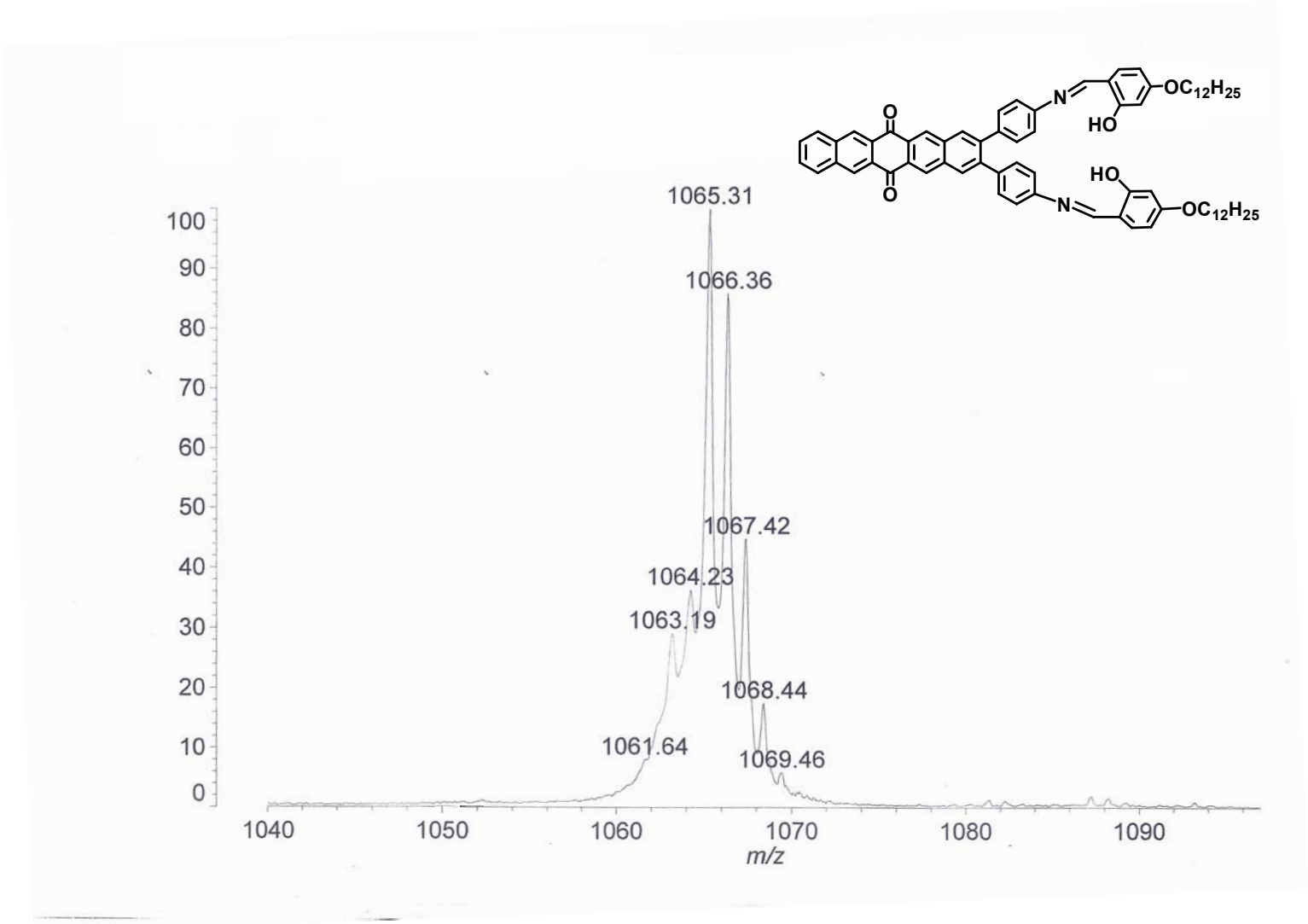
^{1}H NMR Spectrum of 5



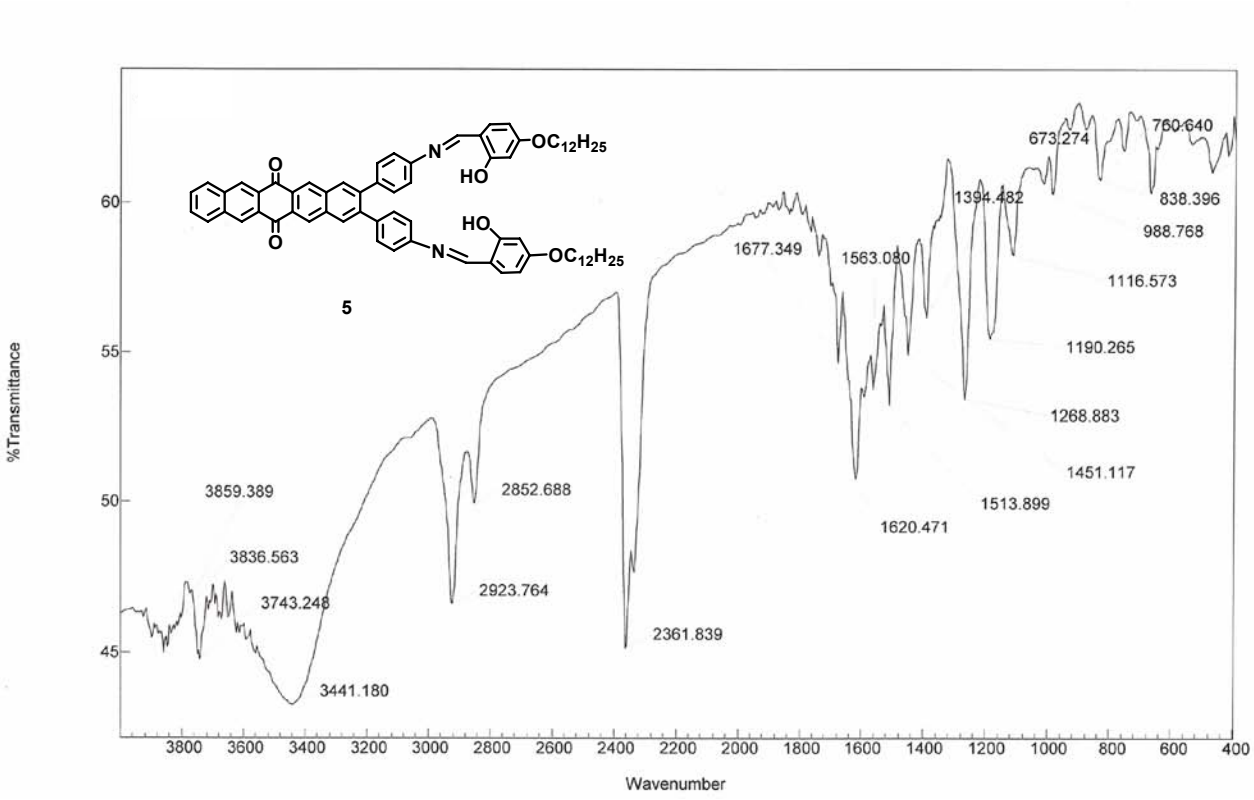
^{13}C NMR Spectrum of 5



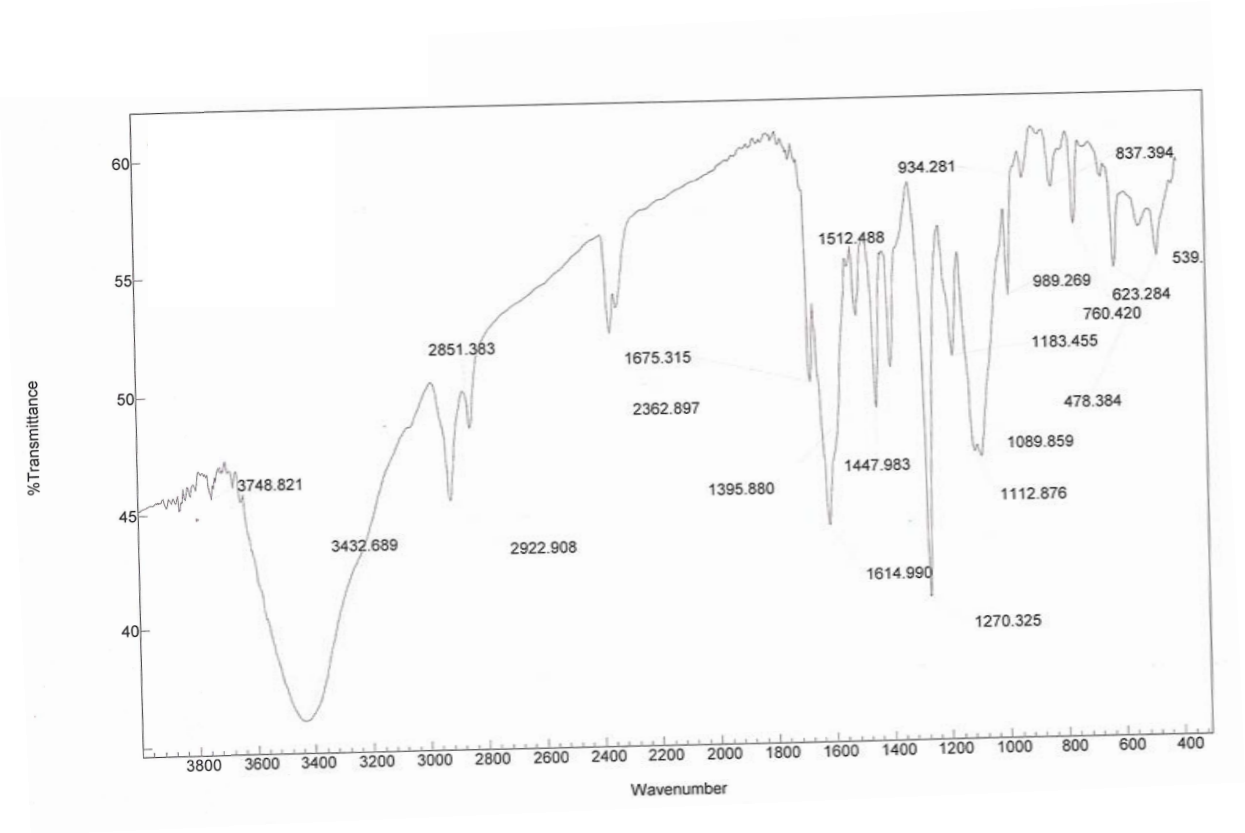
Mass Spectrum of 5



IR Spectrum of 5



IR Spectrum of 5 + Hg^{2+}



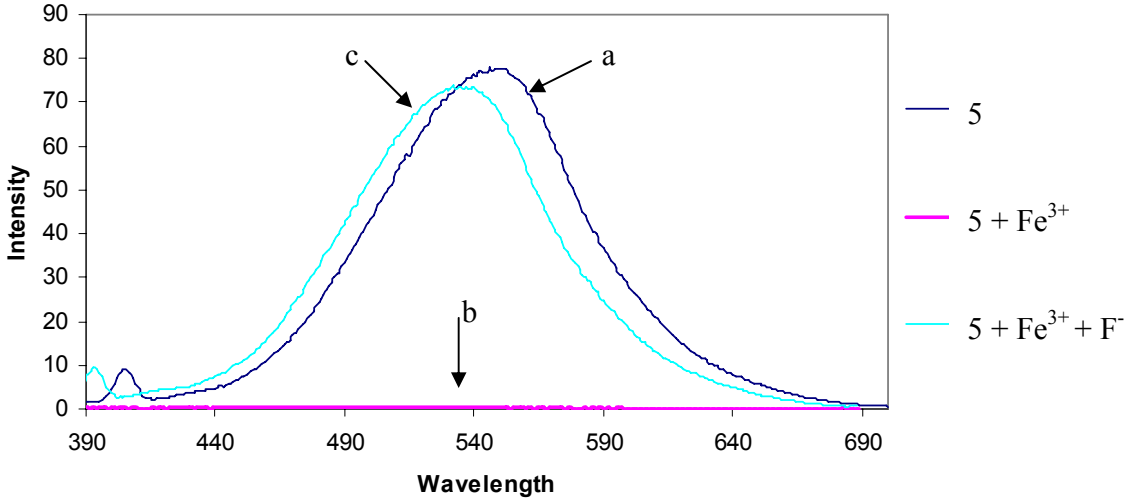


Figure S12. Fluorescence emission spectra of (a) **5** (1 X 10^{-5}); (b) 5 + Fe^{3+} (1000 equiv.) ; (c) 5 + Fe^{3+} (1000 equiv.) + F^- (3000 equiv.) in THF.