Electronic Supplementary Material (ESI) for RSC Advances
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Supporting Information

Syntheses of mono- and diacylated bipyrroles with rich substitution modes and development of a prodigiosin derivative as a fluorescent Zn(II) probe

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Contents

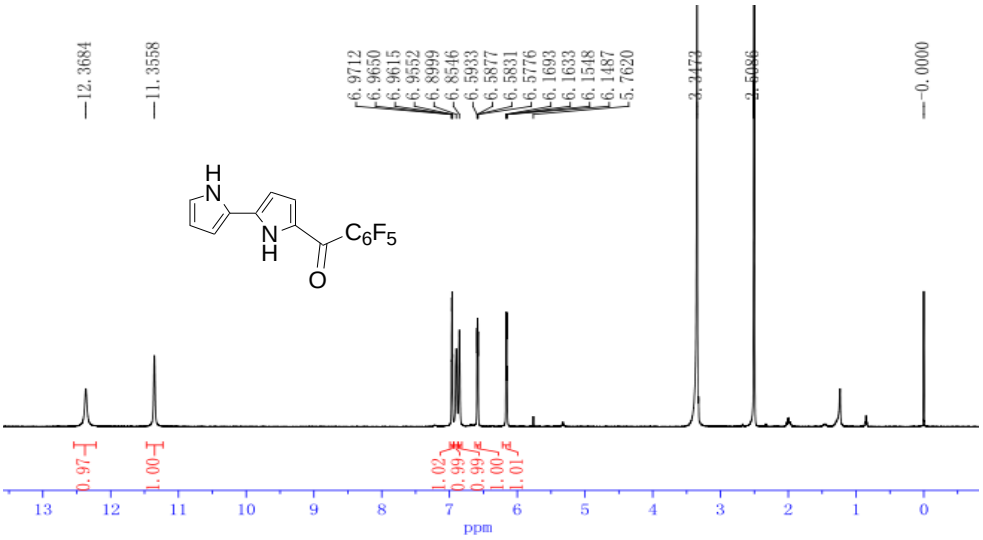

Figure. S1. The ^{1}H NMR spectrum of **1** in DMSO-d_6.

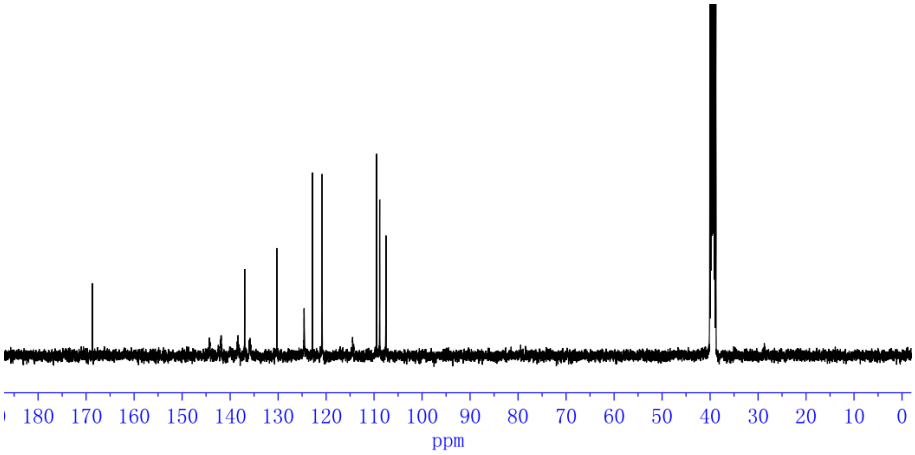

Figure. S2. The ^{13}C NMR spectrum of **1** in DMSO-d_6.

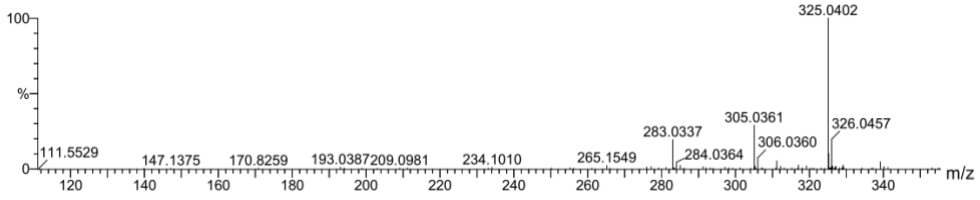

Figure. S3. ESI-HRMS of **1** in MeOH.

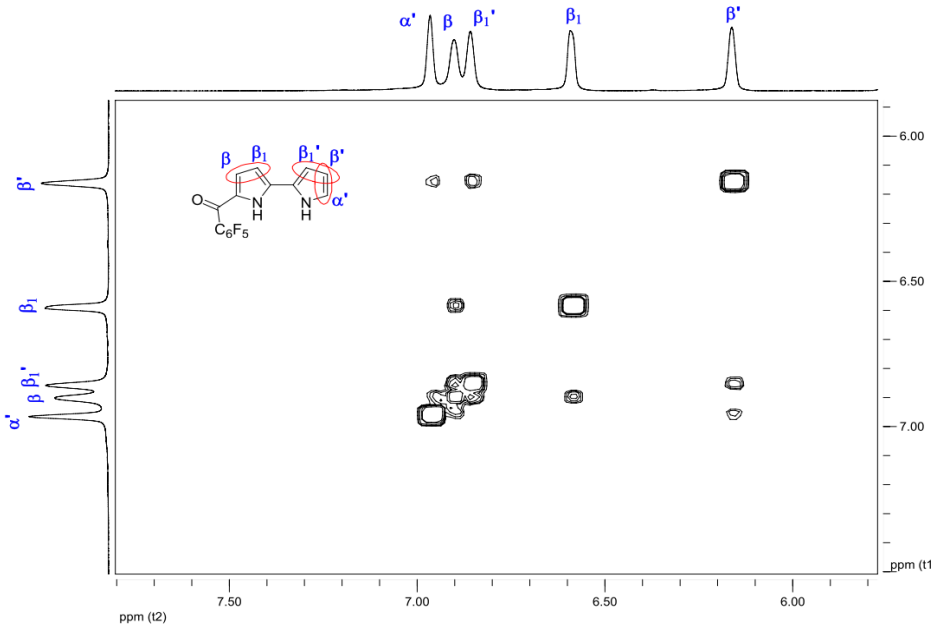

Figure S4. The ^{1}H-^{1}H COSY NMR spectrum of **1** (500 MHz in DMSO-d_6 at 298K).

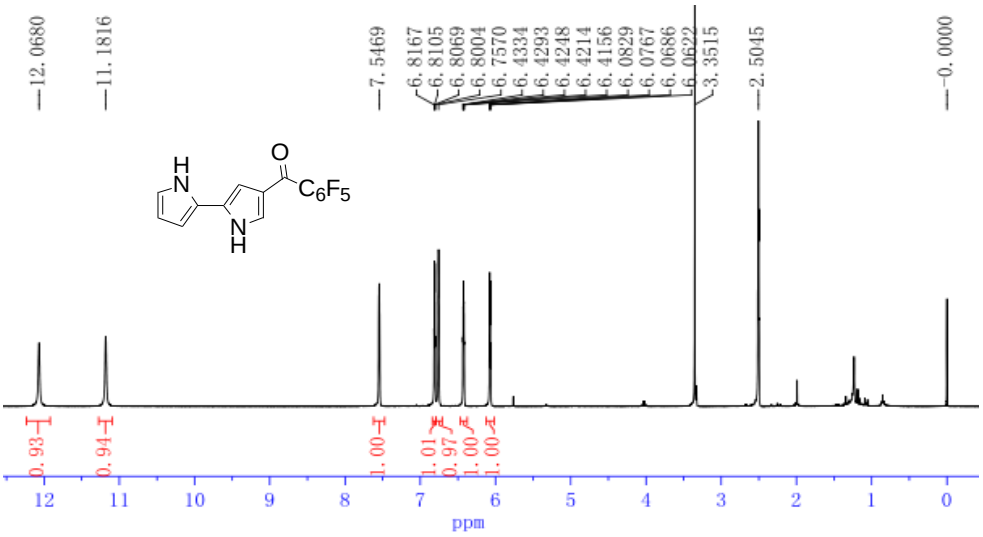

Figure. S5. The ^{1}H NMR spectrum of **2** in DMSO-d_6.

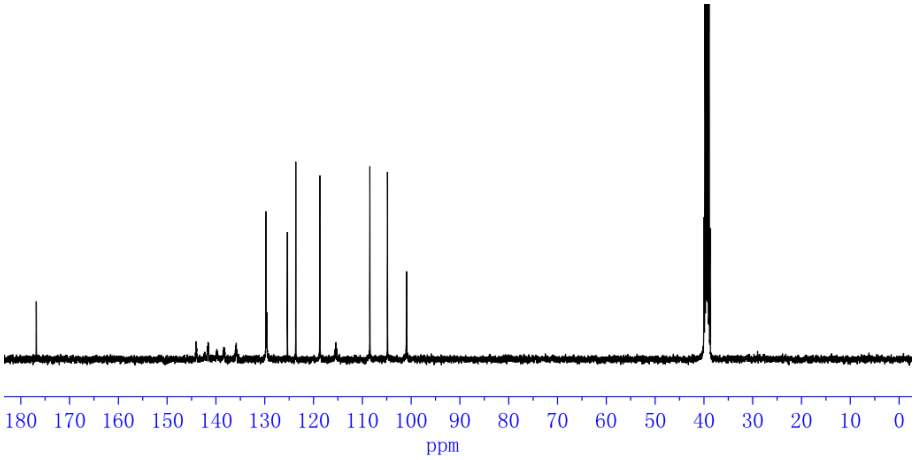

Figure. S6. The ^{13}C NMR spectrum of **2** in DMSO-d_6.

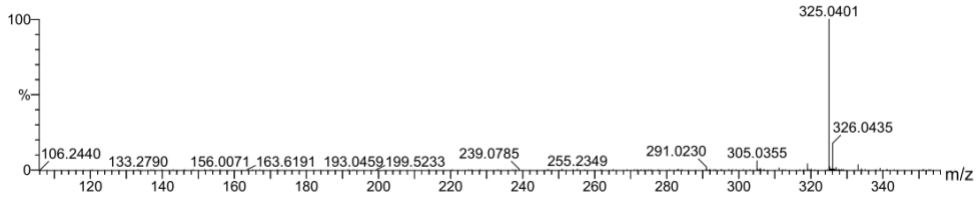

Figure. S7. ESI-HRMS of **2** in MeOH.

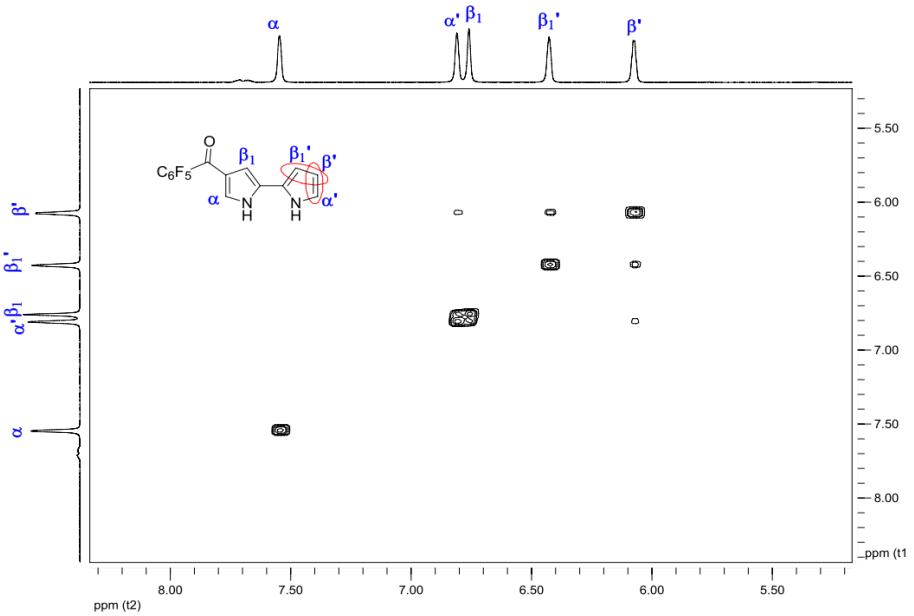

Figure. S8. The ^{1}H-^{1}H COSY NMR spectrum of **2** (500 MHz in DMSO-d_6 at 298K).

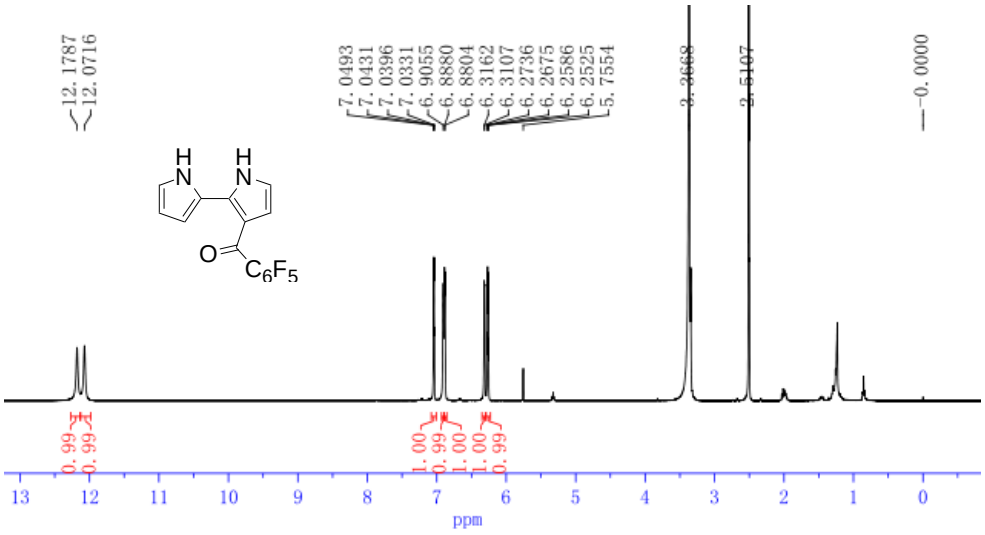

Figure. S9. The ^{1}H NMR spectrum of **3** in DMSO-d_6.

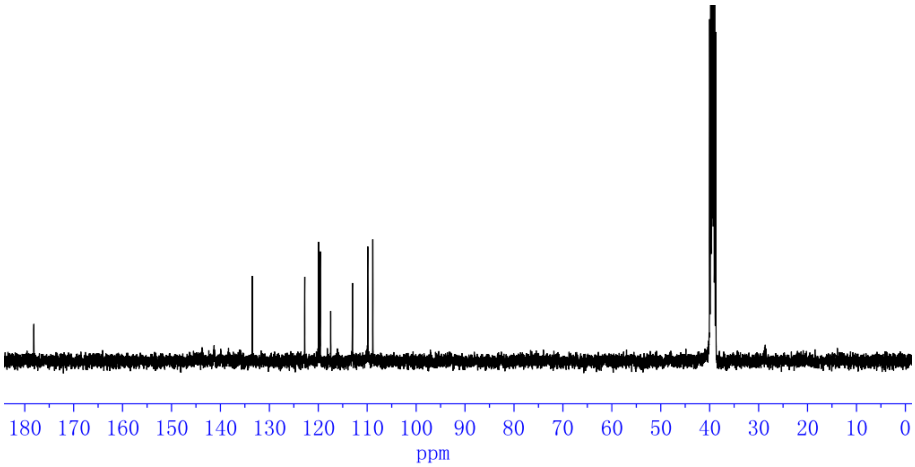

Figure. S10. The ^{13}C NMR spectrum of **3** in DMSO-d_6.

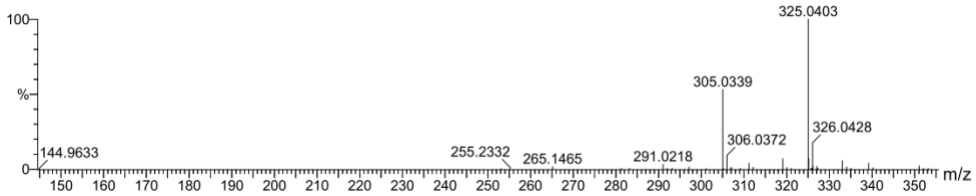

Figure. S11. ESI-HRMS of **3** in MeOH.

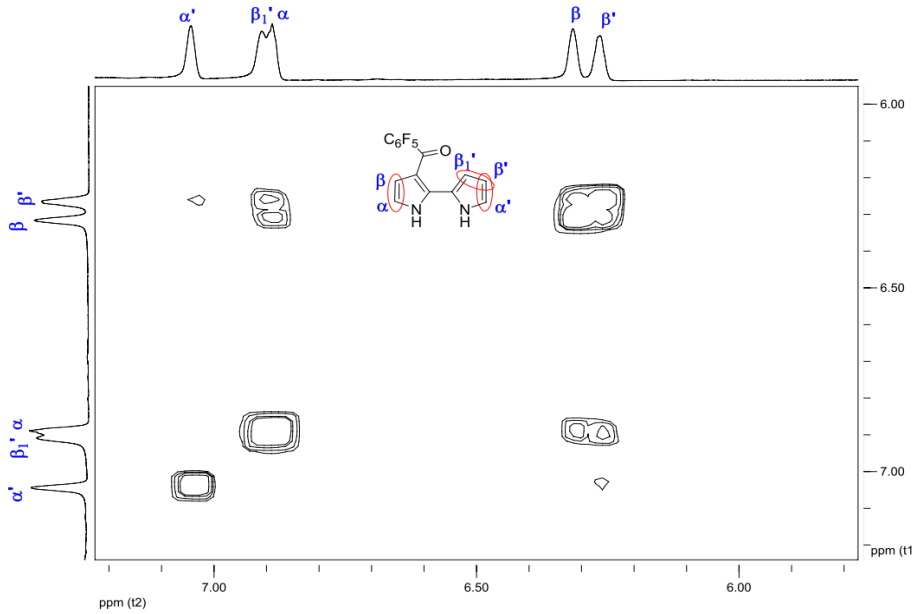

Figure. S12. The ^{1}H-^{1}H COSY NMR spectrum of **3** (500 MHz in DMSO-d_6 at 298K).

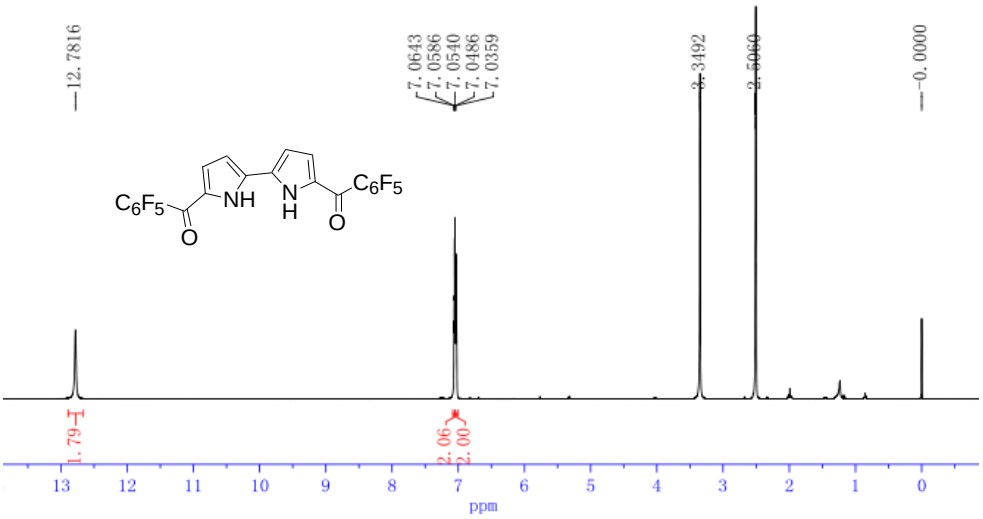

Figure. S13. The ^{1}H NMR spectrum of **4** in DMSO-d_6.

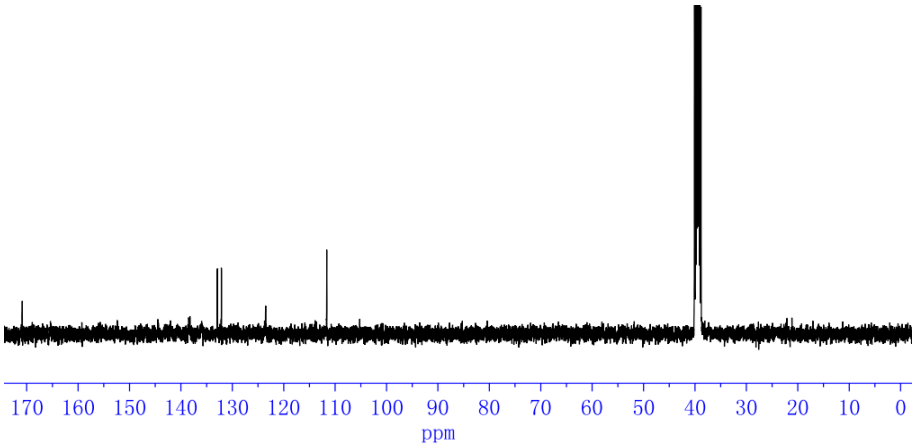

Figure. S14. The ^{13}C NMR spectrum of **4** in DMSO-d_6.

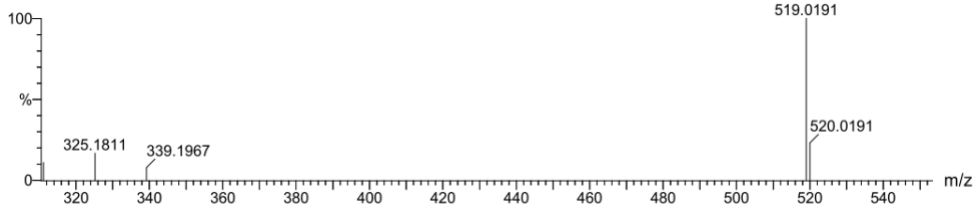

Figure. S15. ESI-HRMS of **4** in MeOH.

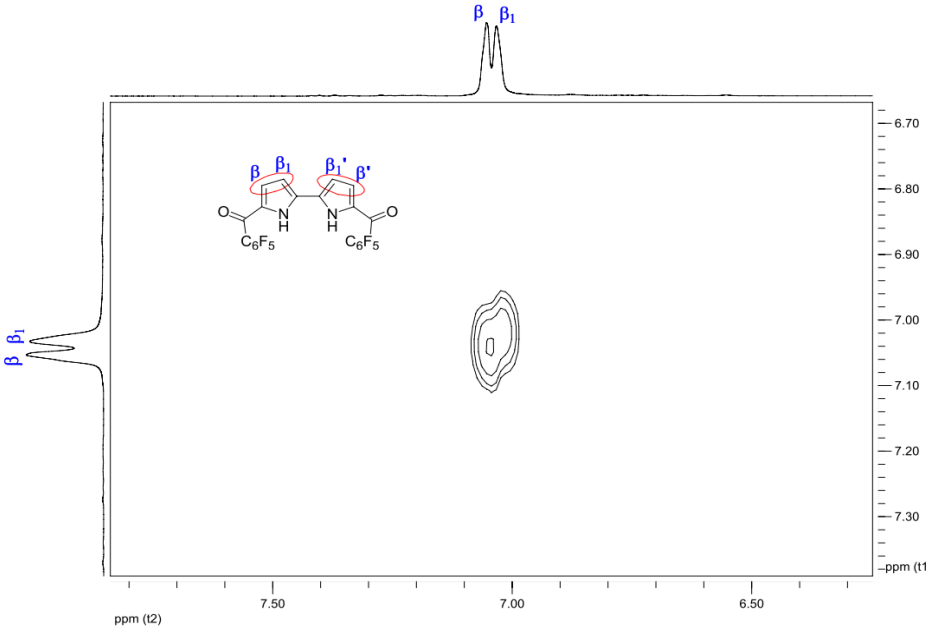

Figure. S16. The ^{1}H-^{1}H COSY NMR spectrum of **4** (500 MHz in DMSO-d_6 at 298K).

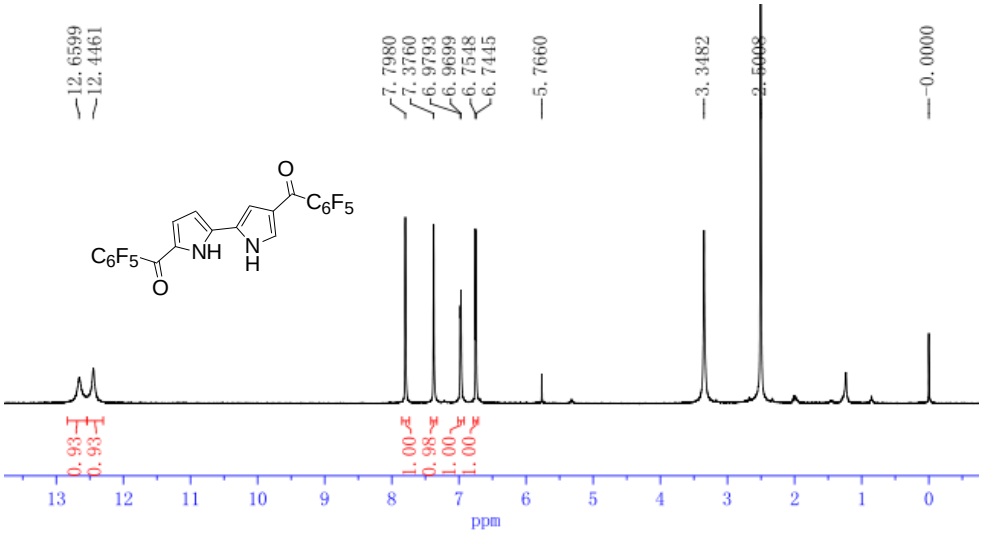

Figure. S17. The ^{1}H NMR spectrum of **5** in DMSO-d_6.

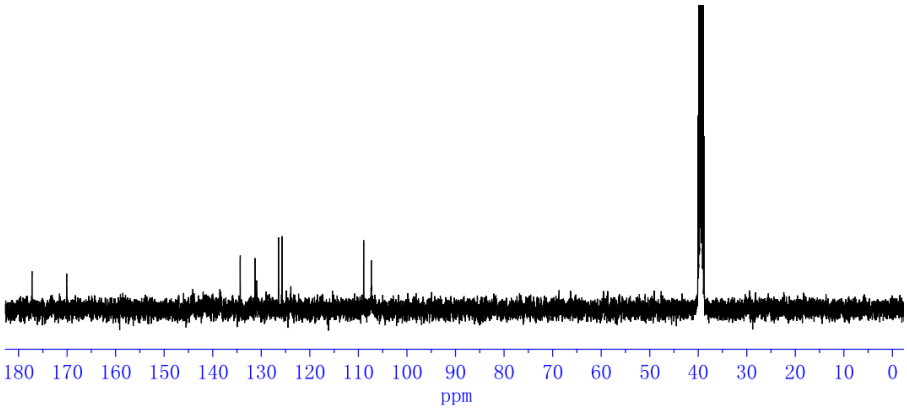

Figure. S18. The ^{13}C NMR spectrum of **5** in DMSO-d_6.

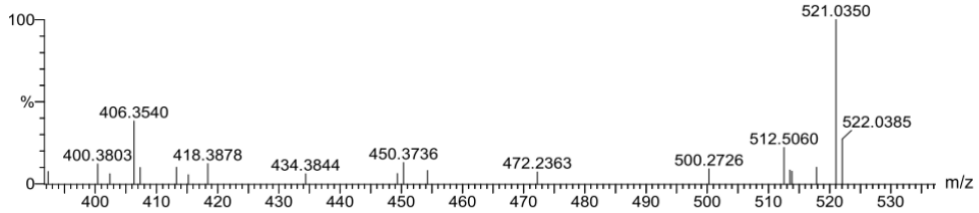

Figure. S19. ESI-HRMS of **5** in MeOH.

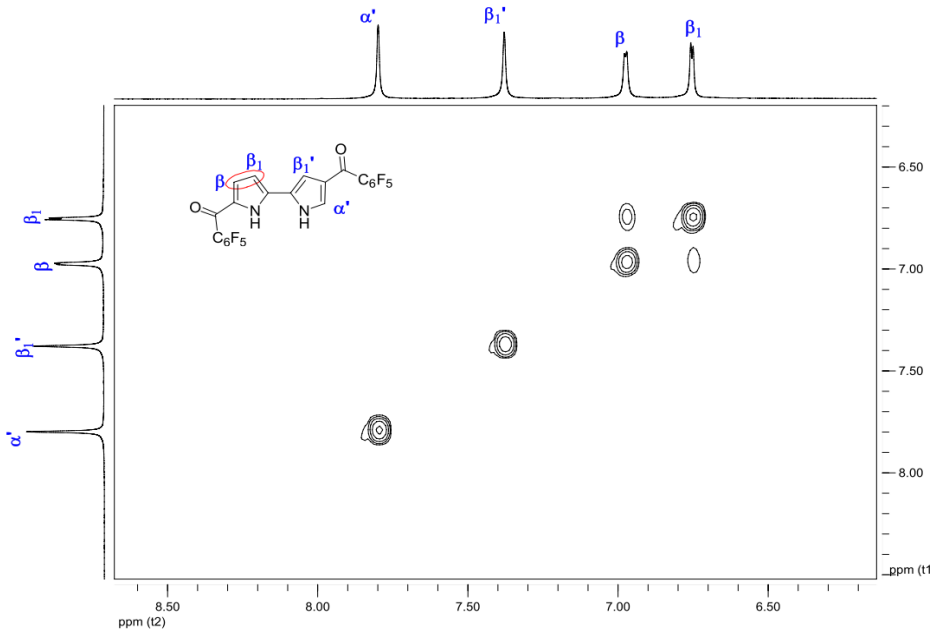

Figure. S20. The ^{1}H-^{1}H COSY NMR spectrum of **5** (500 MHz in DMSO-d_6 at 298K).

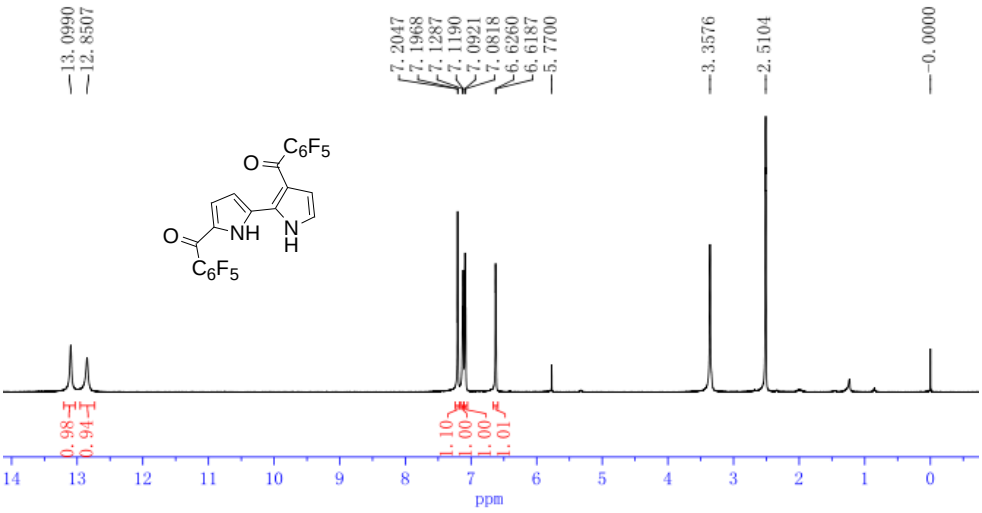

Figure. S21. The ^{1}H NMR spectrum of **6** in DMSO-d_6.

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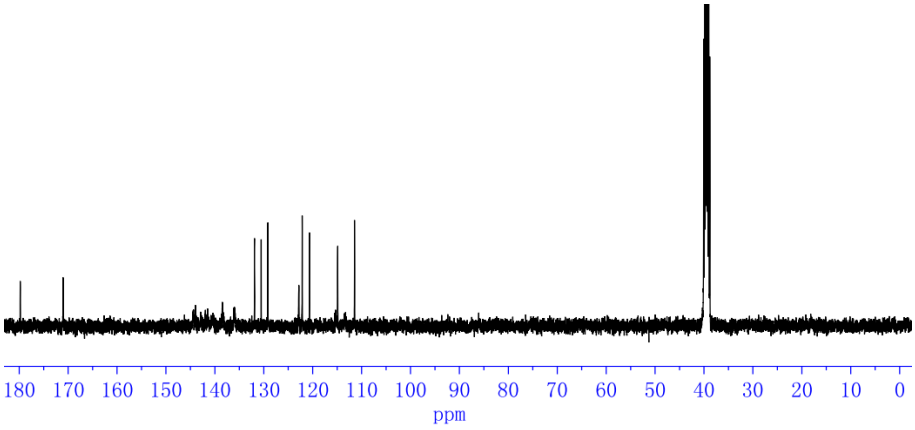

Figure. S22. The ^{13}C NMR spectrum of **6** in DMSO-d_6.

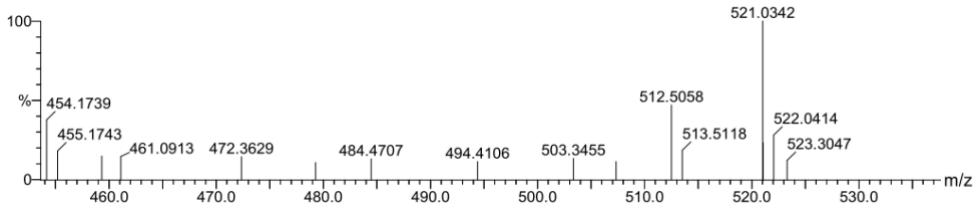

Figure. S23. ESI-HRMS of **6** in MeOH.

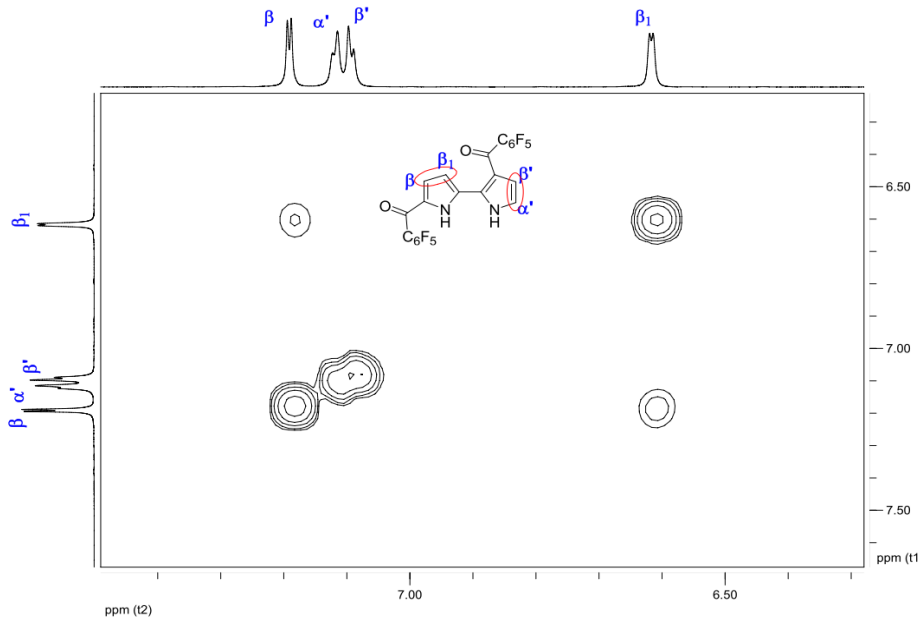

Figure. S24. The ^{1}H-^{1}H COSY NMR spectrum of **6** (500 MHz in DMSO-d_6 at 298K).

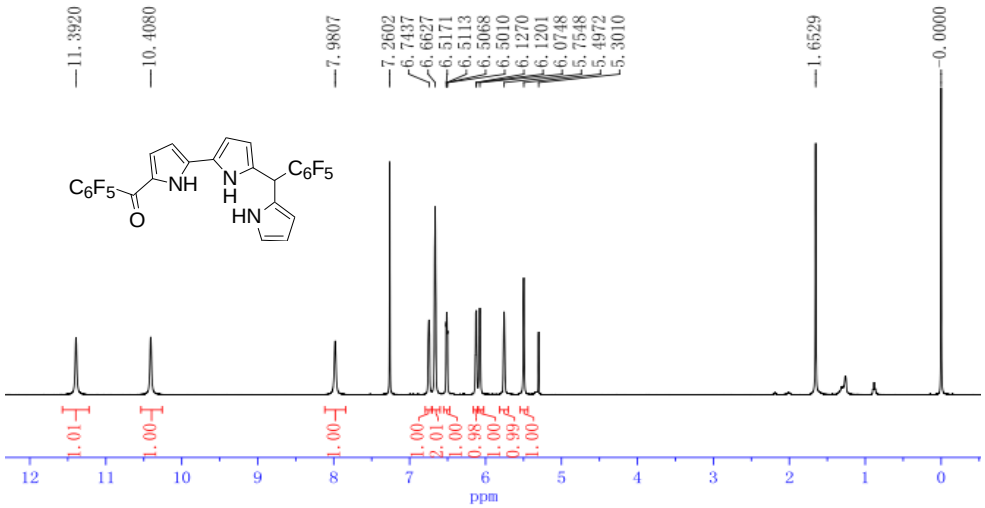

Figure. S25. The ^{1}H NMR spectrum of **8** in $CDCl_3$.

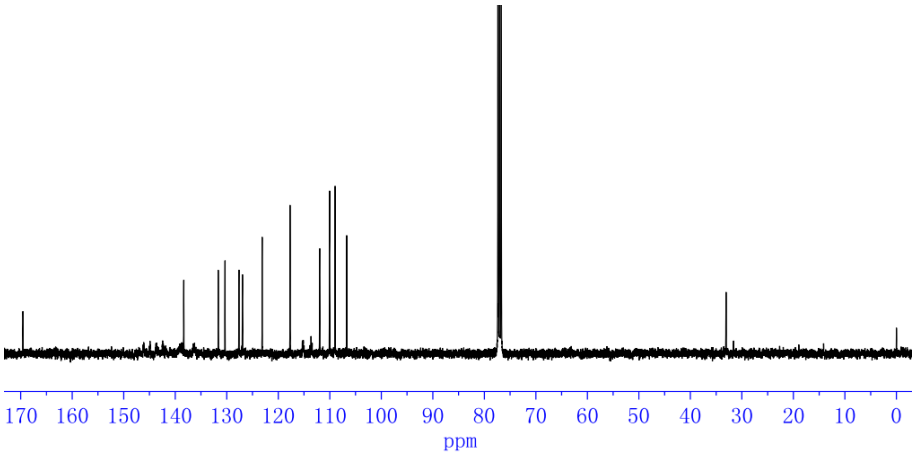

Figure. S26. The ^{13}C NMR spectrum of **8** in $CDCl_3$.

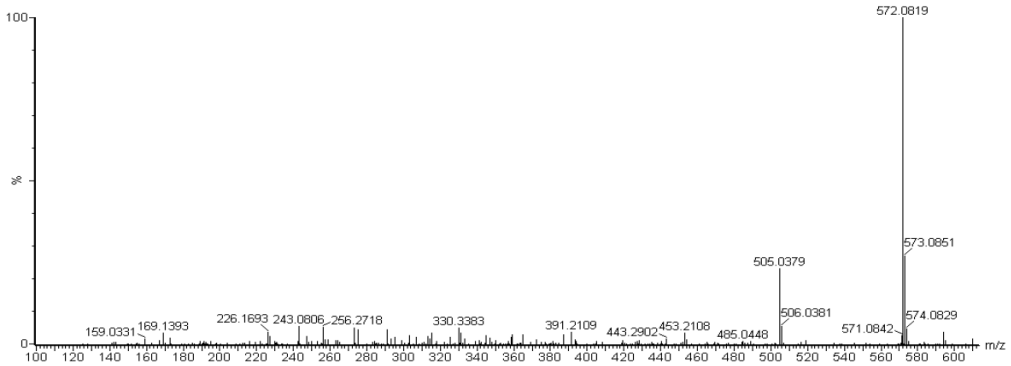

Figure. S27. ESI-HRMS of **8** in MeOH.

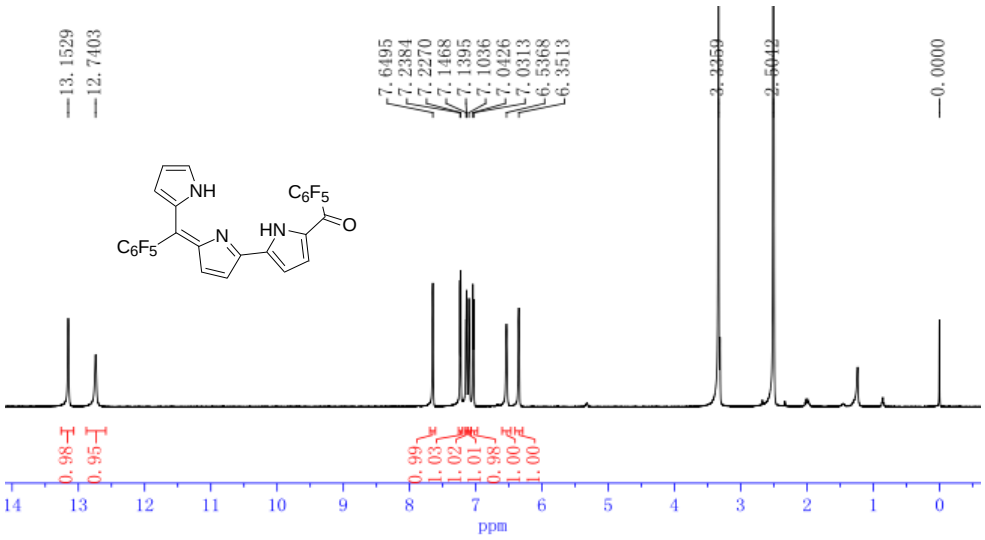

Figure. S28. The ^{1}H NMR spectrum of **9** in DMSO-d_6.

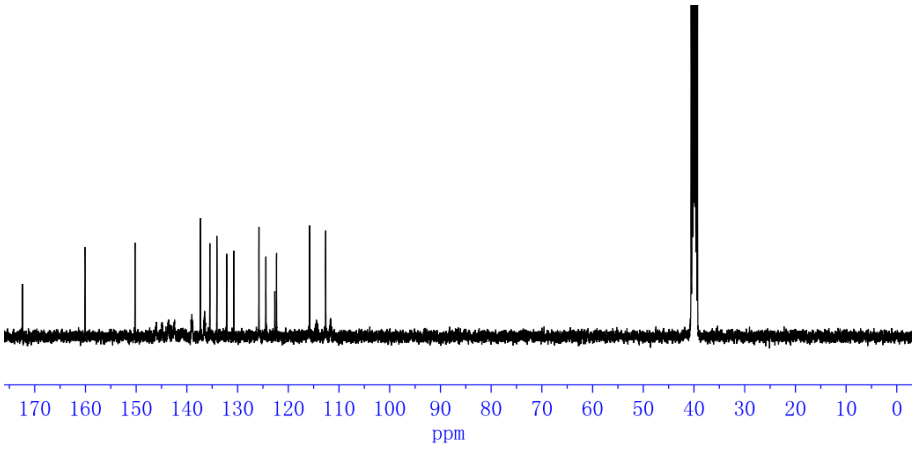

Figure. S29. The ^{13}C NMR spectrum of **9** in DMSO-d_6.

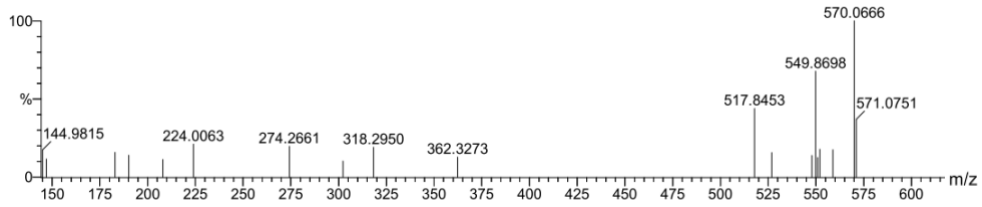

Figure. S30. ESI-HRMS of **9** in MeOH.

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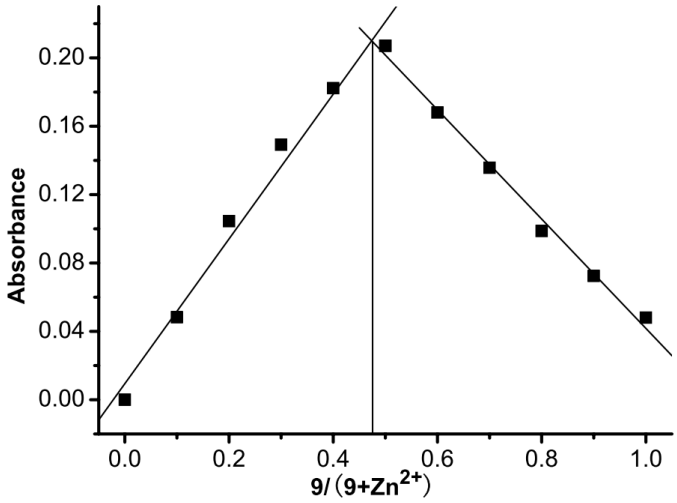

Figure. S31. Job's plot for determining the stoichiometry of **9** and Zn^{2+} in DMF.

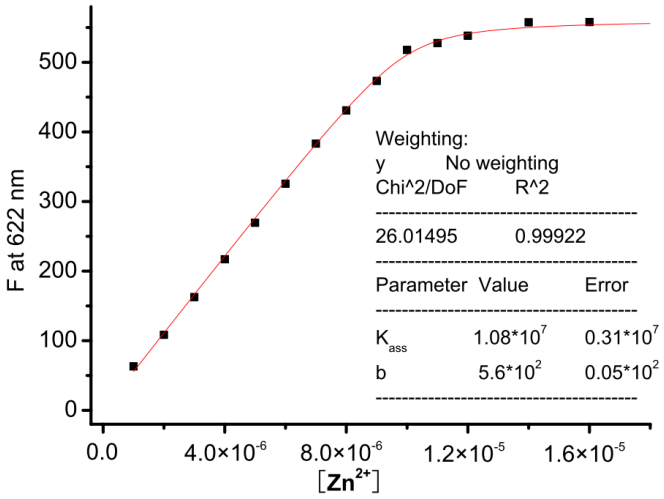

Figure. S32. Plot of F_{622nm} vs. $[Zn^{2+}]$ for **9** in DMF. λ_{ex} = 538 nm. The best fit line to the equation, superimposed on the data, yields K_{ass} of 1.08×10^7 M^{-1}.

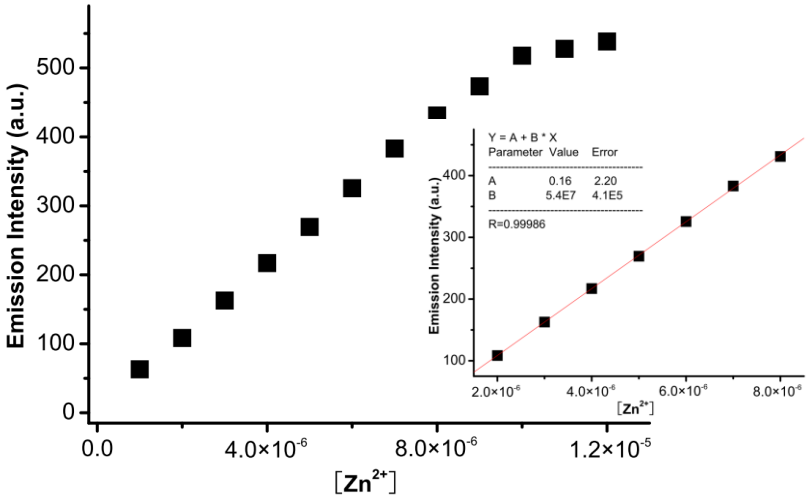

Figure. S33. Calibration curve of probe **9** in DMF, with the fluorescence intensity at 622 nm plotted vs Zn^{2+} concentration. The inset shows the linear responses at low Zn^{2+} concentrations. λ_{ex} was fixed at 538 nm. The detection limit was found to be 1.1×10^{-8} M.

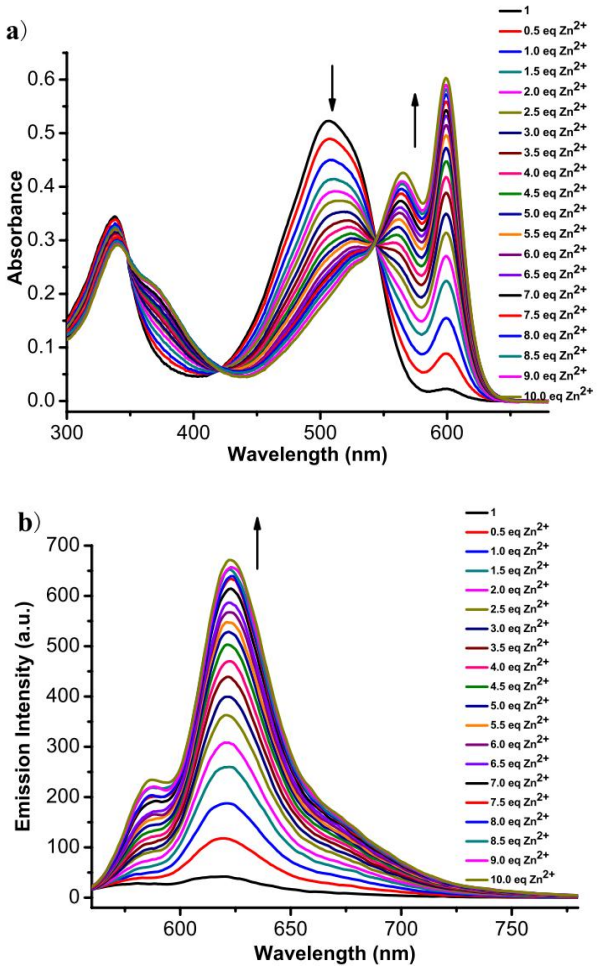

Figure. S34. a) Absorbance changes during the titration of **9** (10 μM) with Zn^{2+} in the HEPES buffer (DMF/50mM HEPES, 4:1, v:v, pH 7.2). b) Fluorescence changes during the titration of **9** (10 μM) with Zn^{2+} in the HEPES buffer. Excitation wavelength was fixed at 545 nm (one of the isosbestic points).