Supporting Information

Switchable Platinum-based Tweezers with Pt-Pt Bonding and Selective Luminescence Quenching

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NMR spectra of compounds

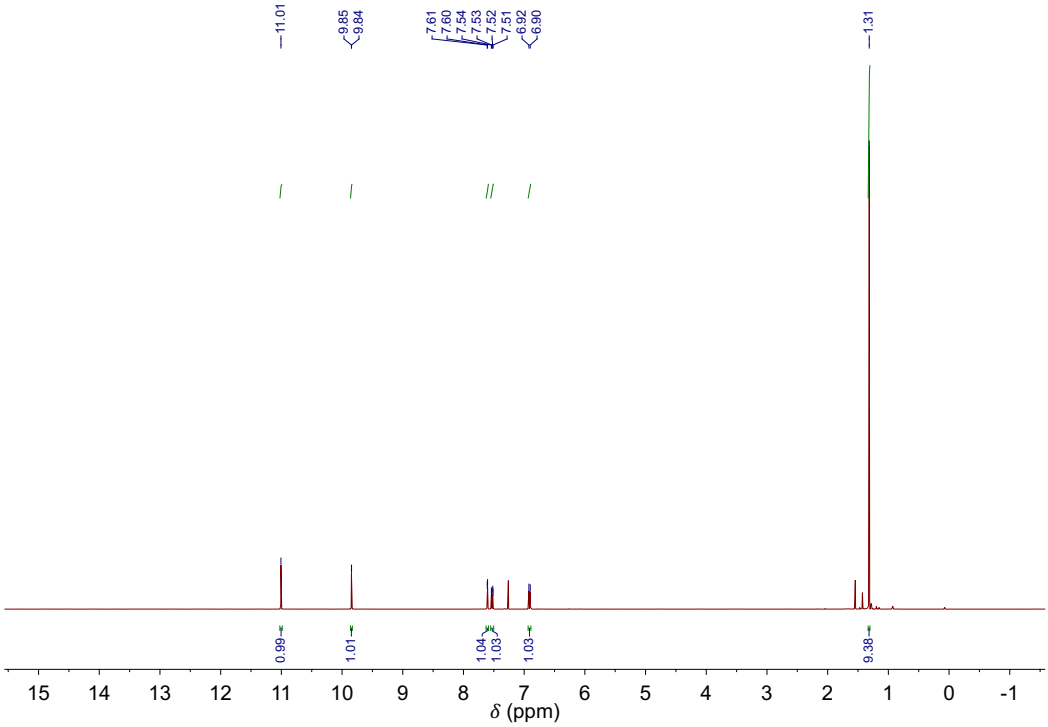

Figure S1. ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **4** in $CDCl_3$.

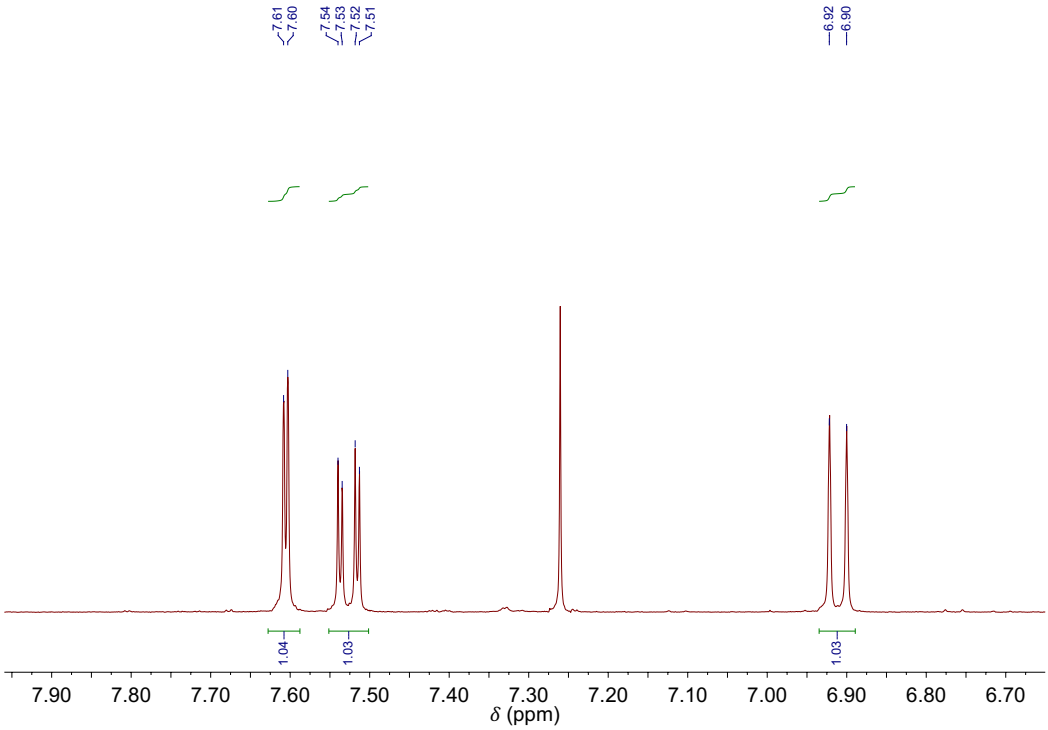

Figure S2. Aromatic region of ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **4** in $CDCl_3$.

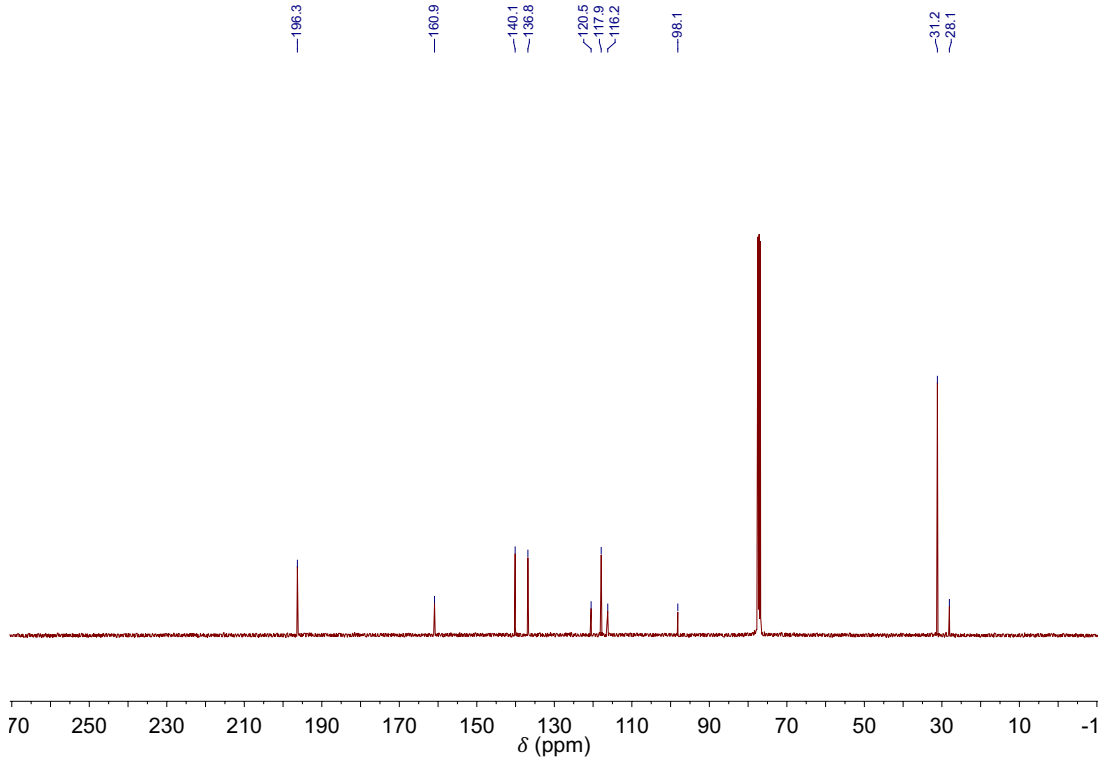

Figure S3. ^{13}C NMR (101 MHz, 300 K) spectrum of Compound **4** in $CDCl_3$.

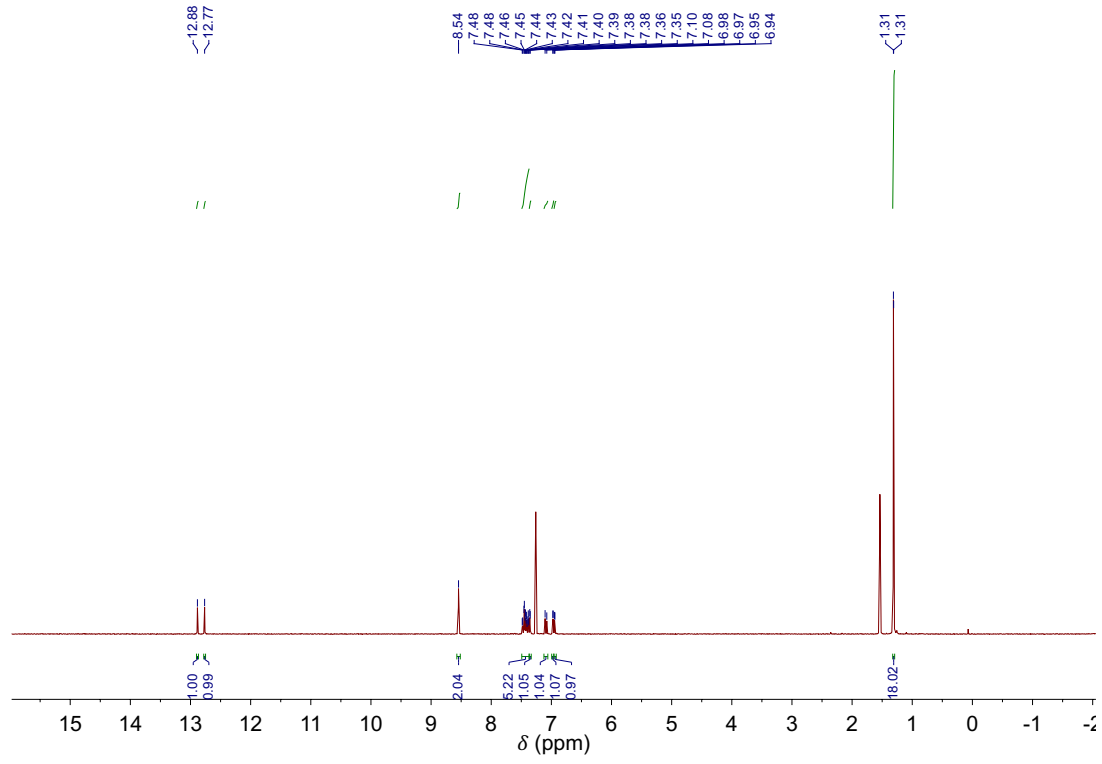

Figure S4. ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **6** in $CDCl_3$.

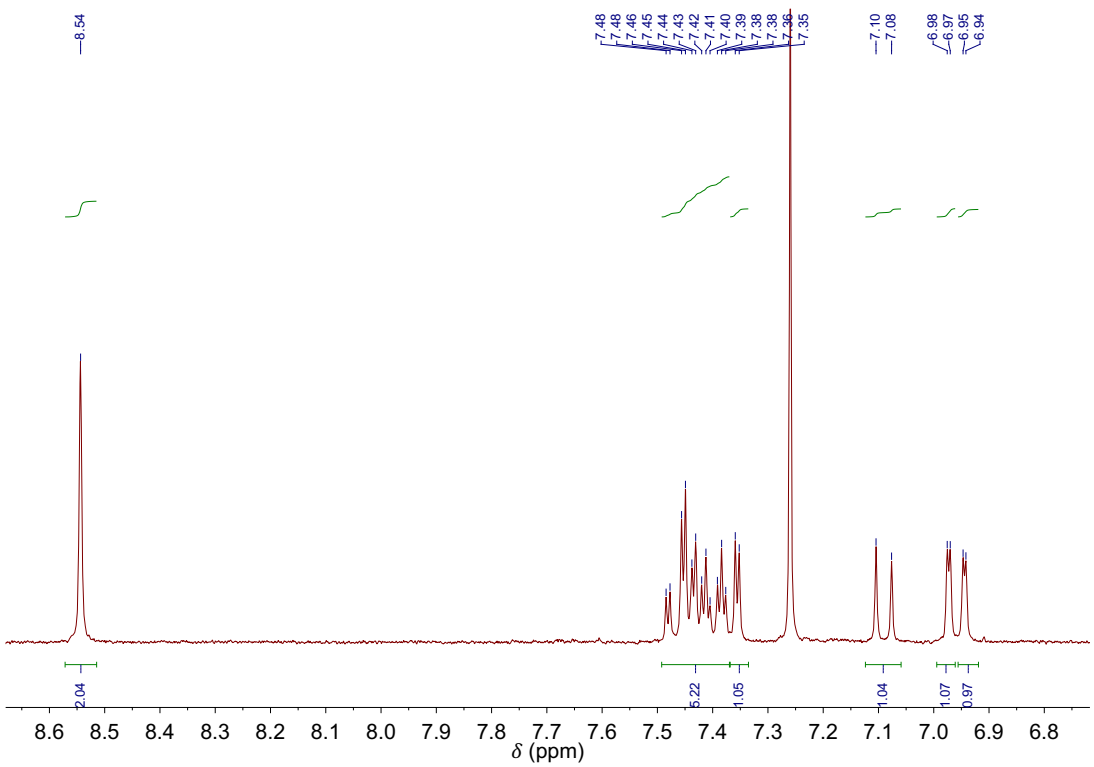

Figure S5. Aromatic region of ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **6** in $CDCl_3$.

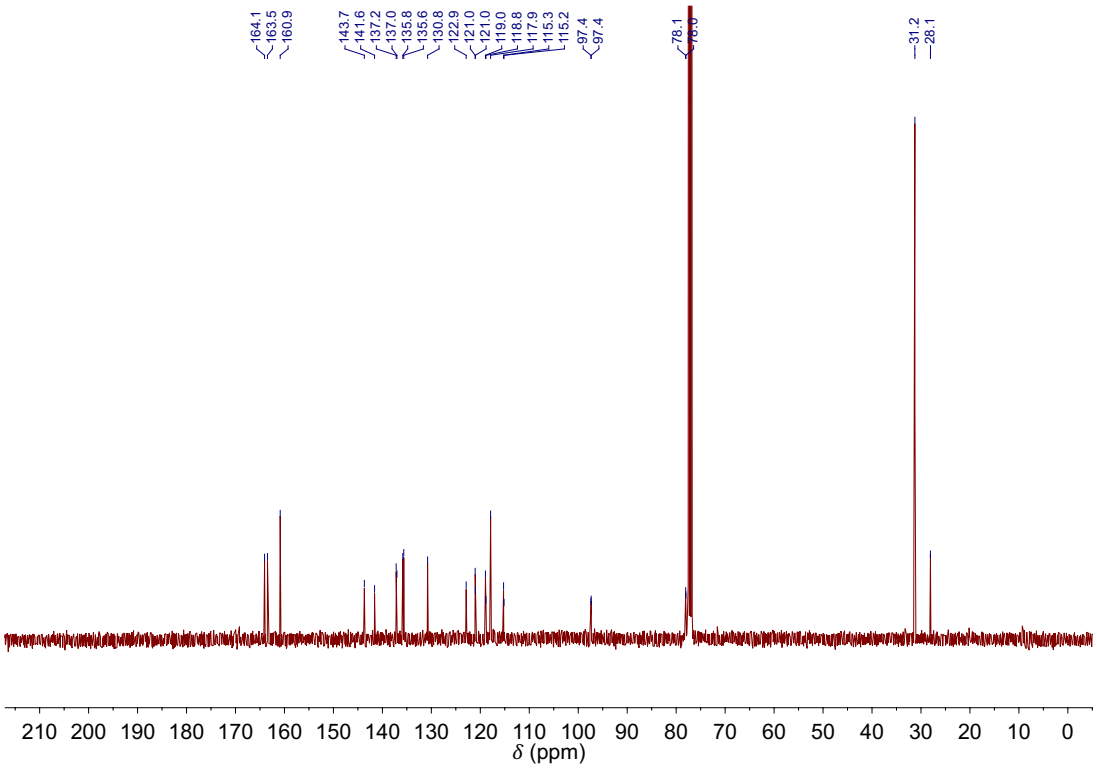

Figure S6. ^{13}C NMR (101 MHz, 300 K) spectrum of Compound **6** in $CDCl_3$.

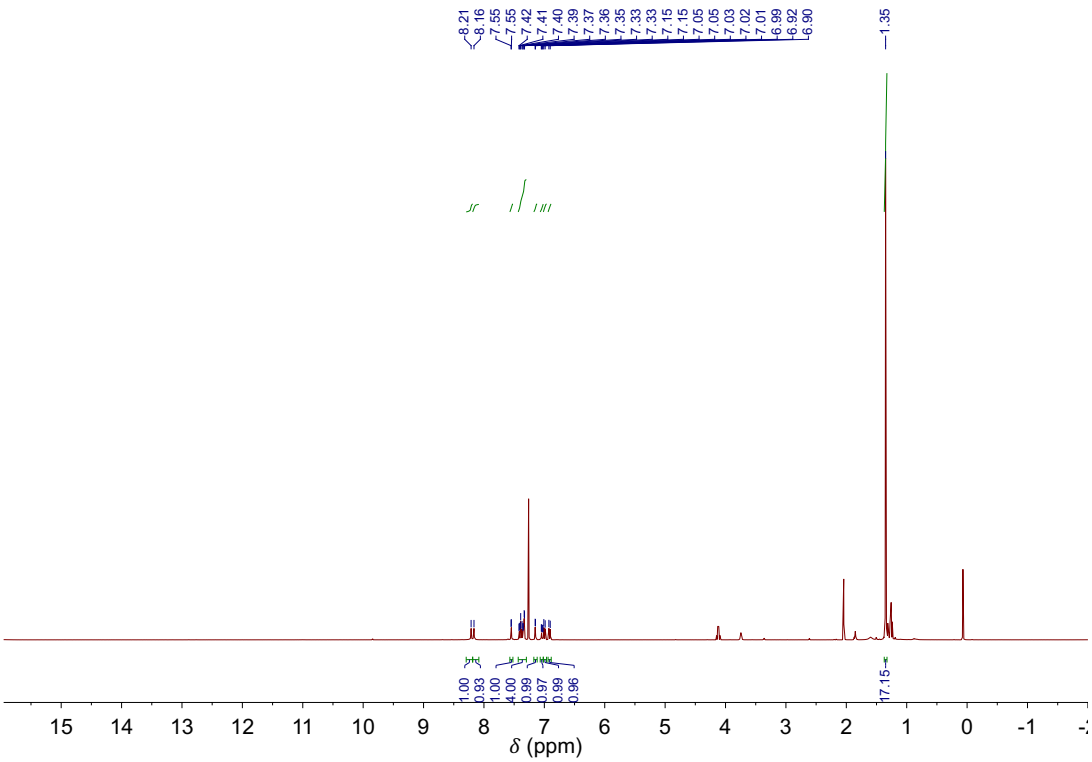

Figure S7. ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **7** in $CDCl_3$.

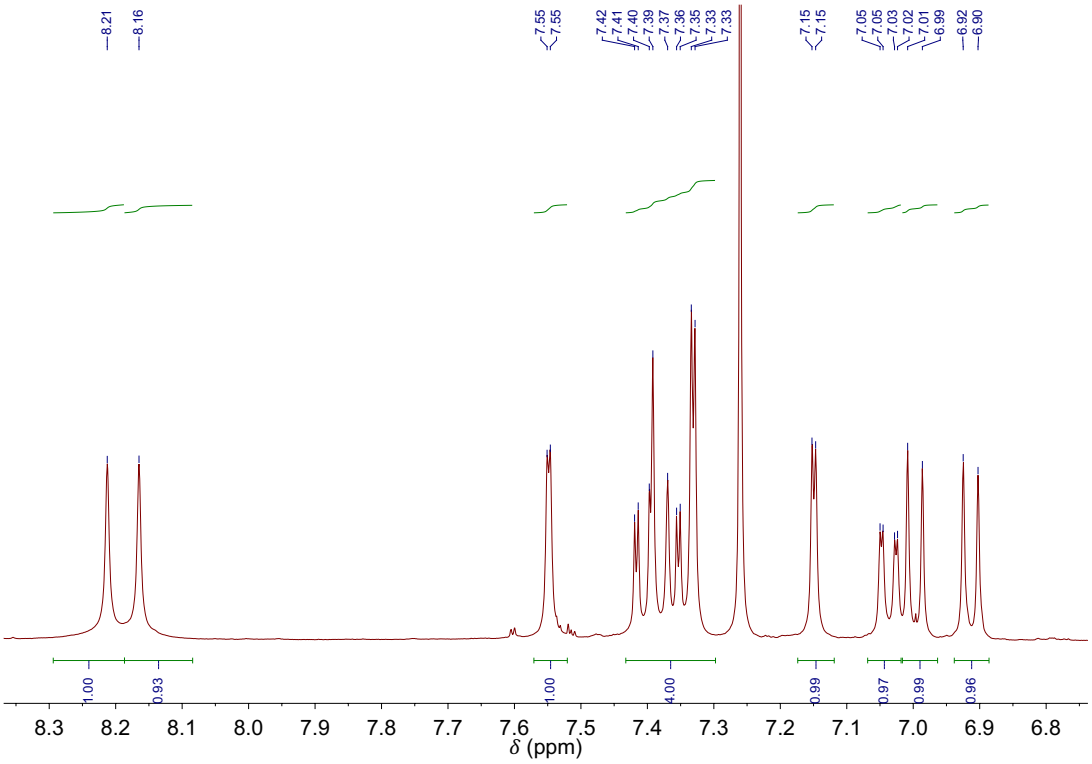

Figure S8. Aromatic region of ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **7** in $CDCl_3$.

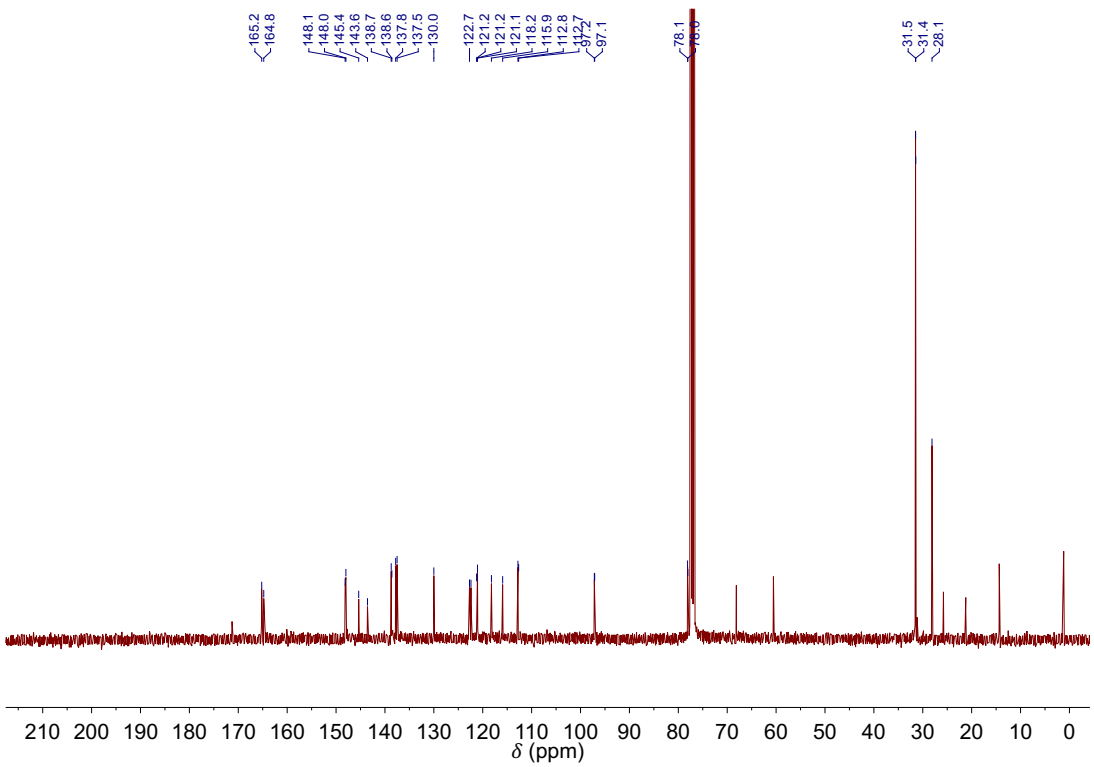

Figure S9. ^{13}C NMR (101 MHz, 300 K) spectrum of Compound **7** in $CDCl_3$.

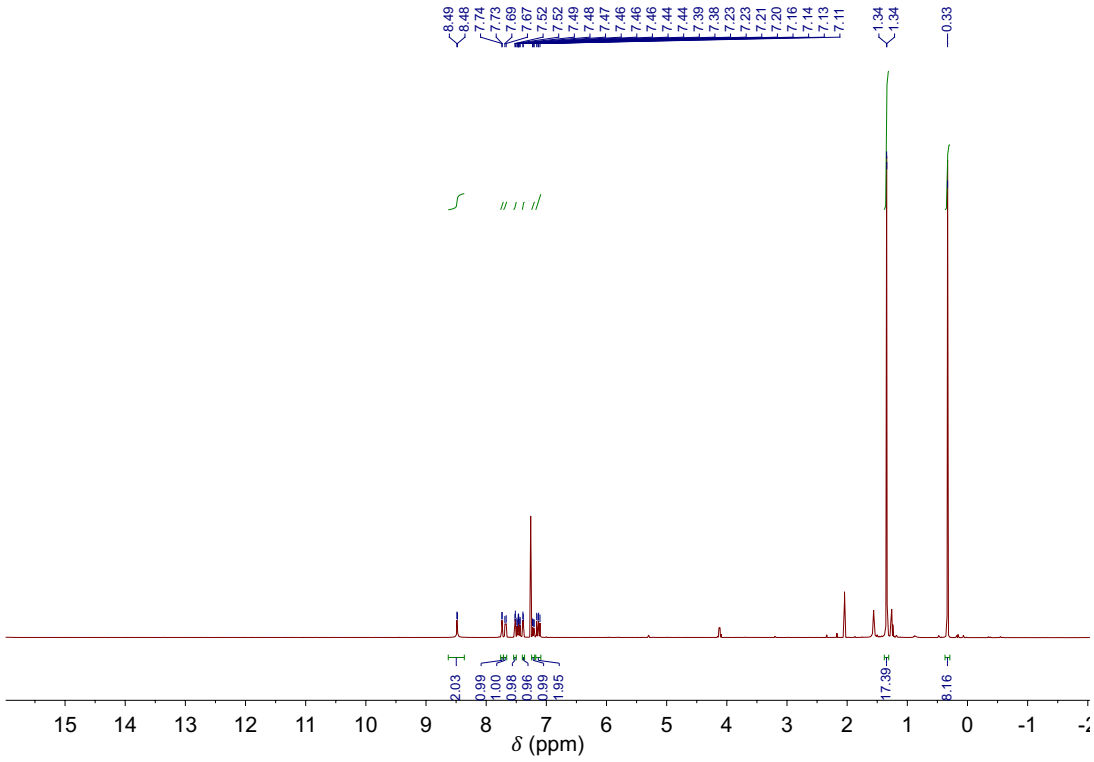

Figure S10. ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **8** in $CDCl_3$.

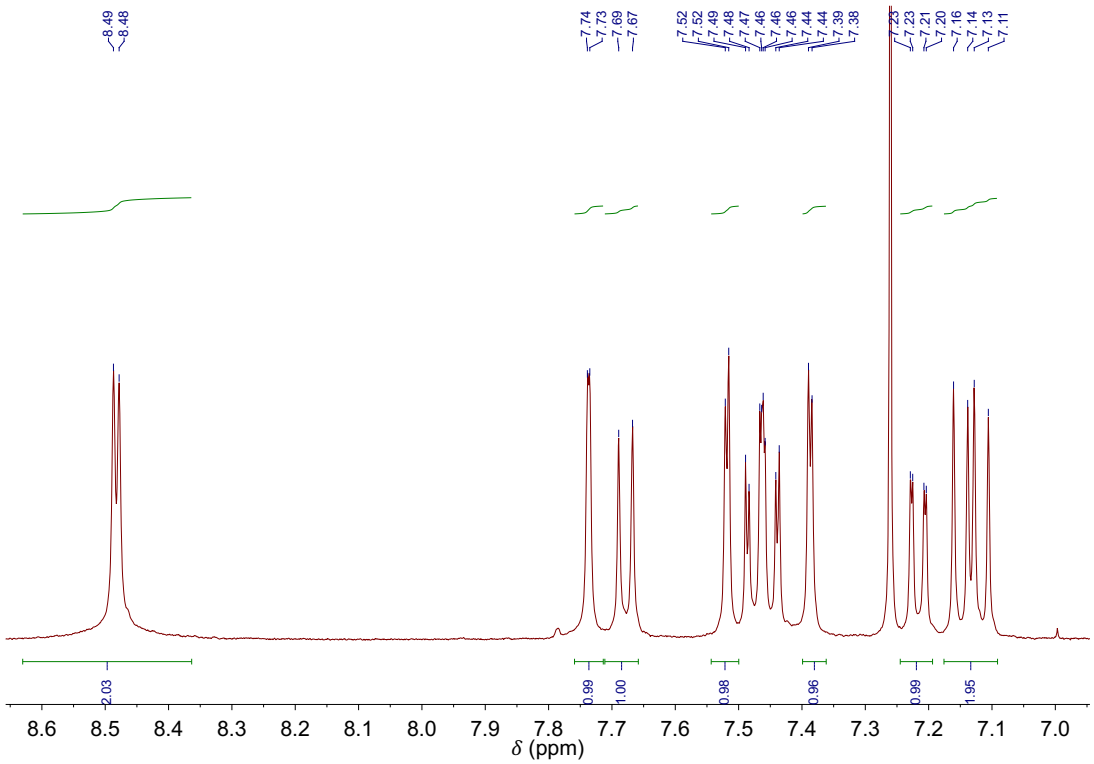

Figure S11. Aromatic region of ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **8** in $CDCl_3$.

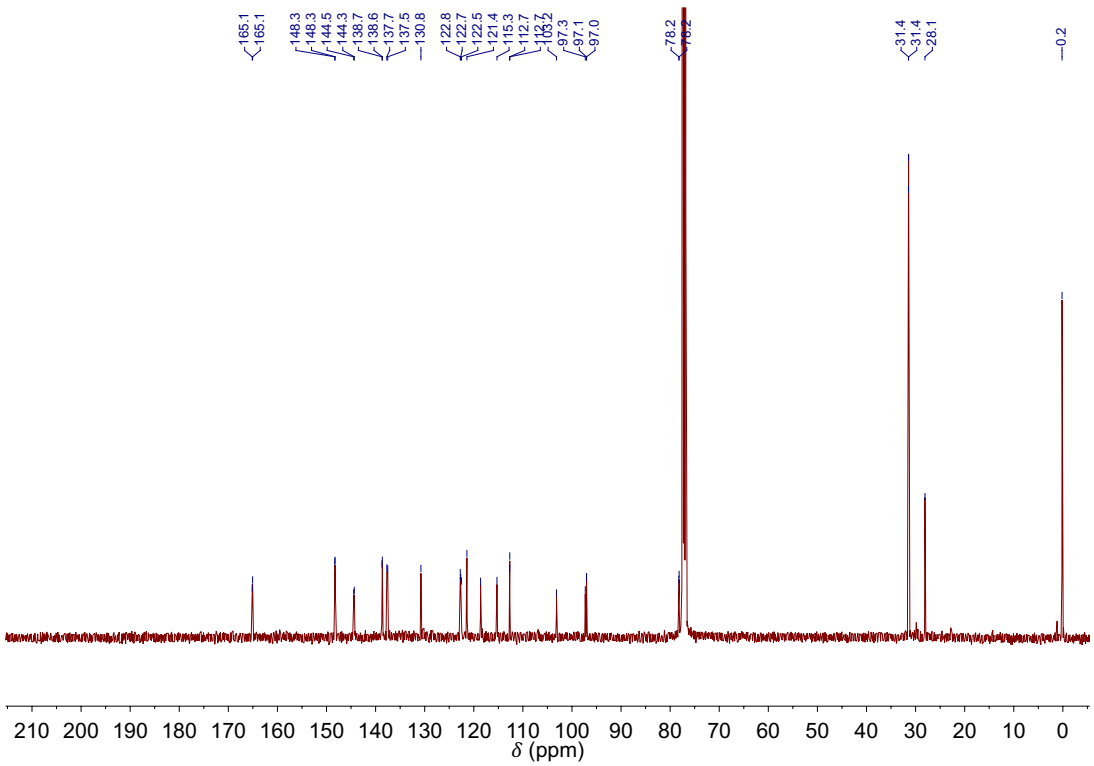

Figure S12. ^{13}C NMR (101 MHz, 300 K) spectrum of Compound **8** in $CDCl_3$.

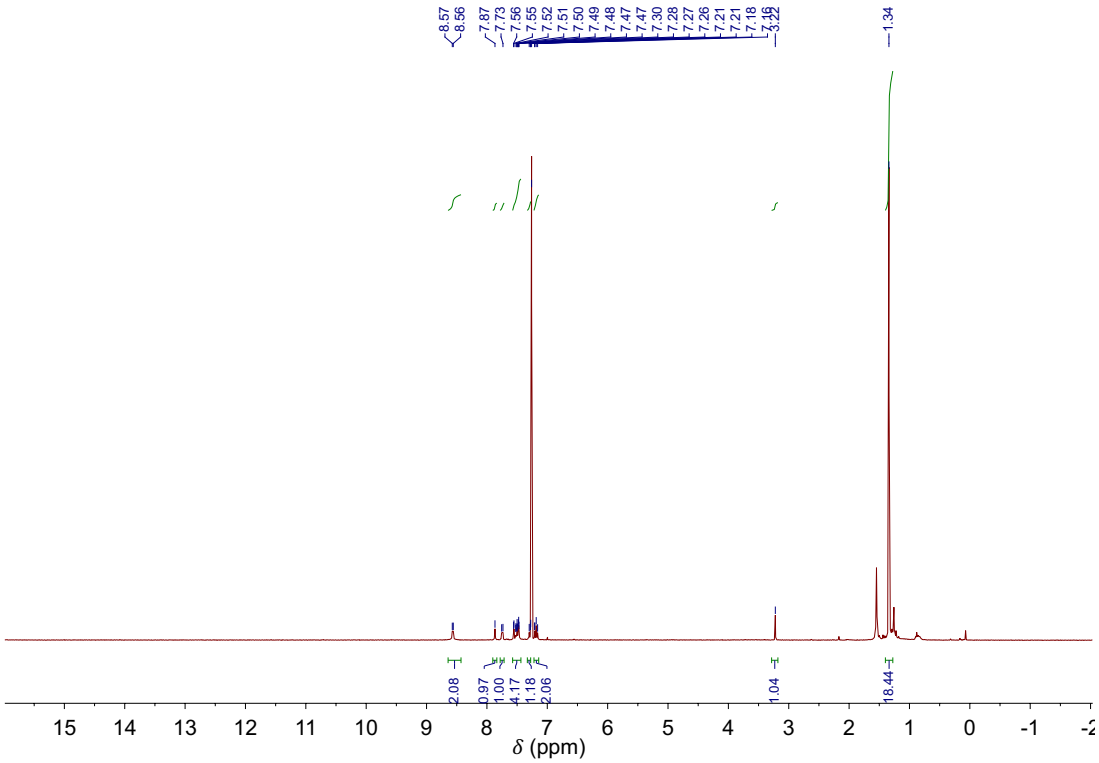

Figure S13. ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **9** in $CDCl_3$.

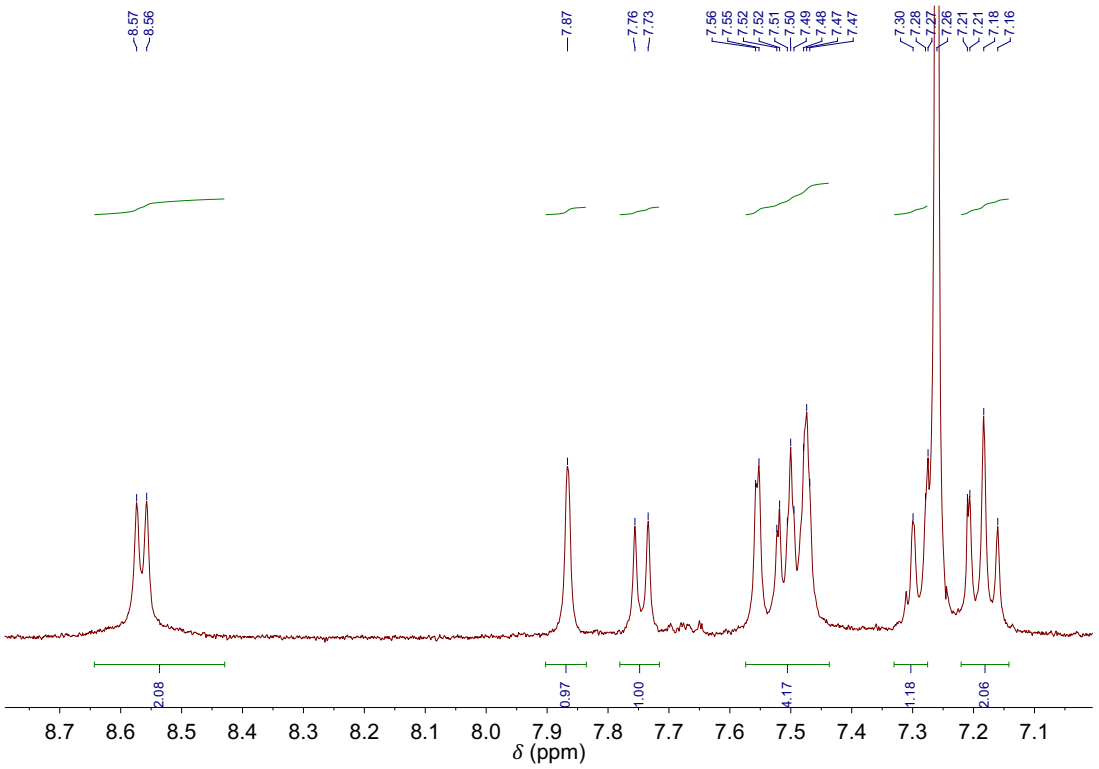

Figure S14. Aromatic region of ^{1}H NMR (400 MHz, 300 K) spectrum of Compound **9** in $CDCl_3$.

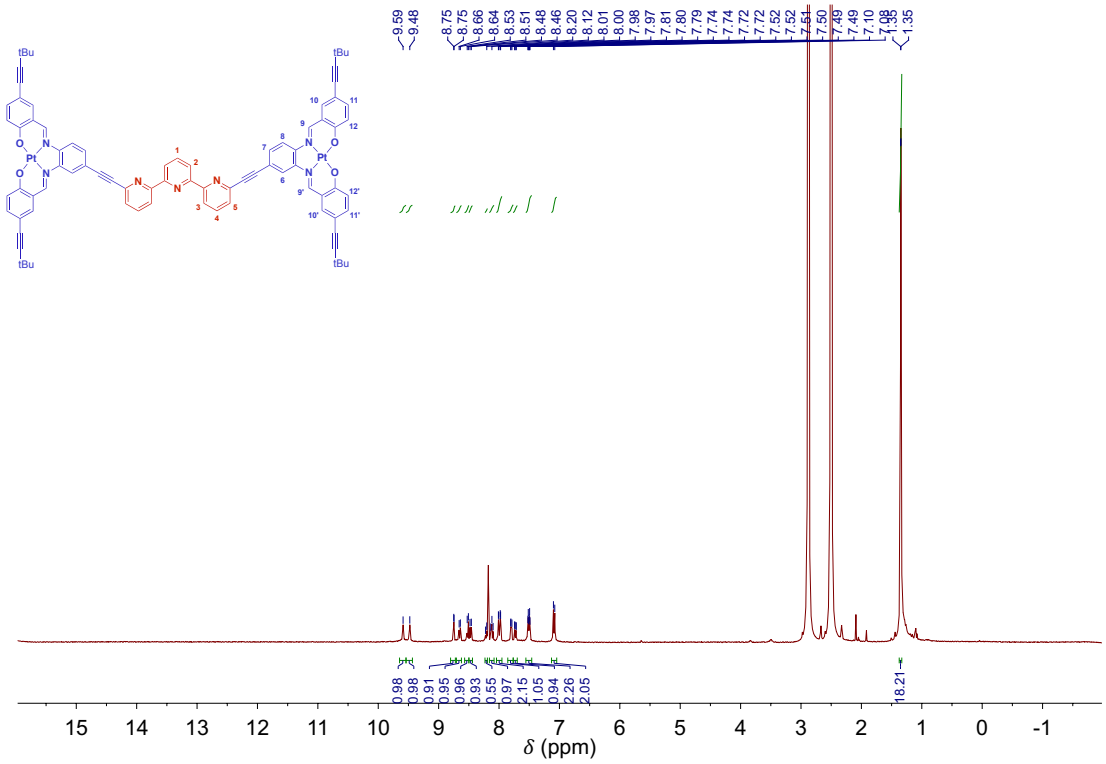

Figure S15. ^{1}H NMR (400 MHz, 370 K) spectrum of Tweezers **1** in DMSO-d_6.

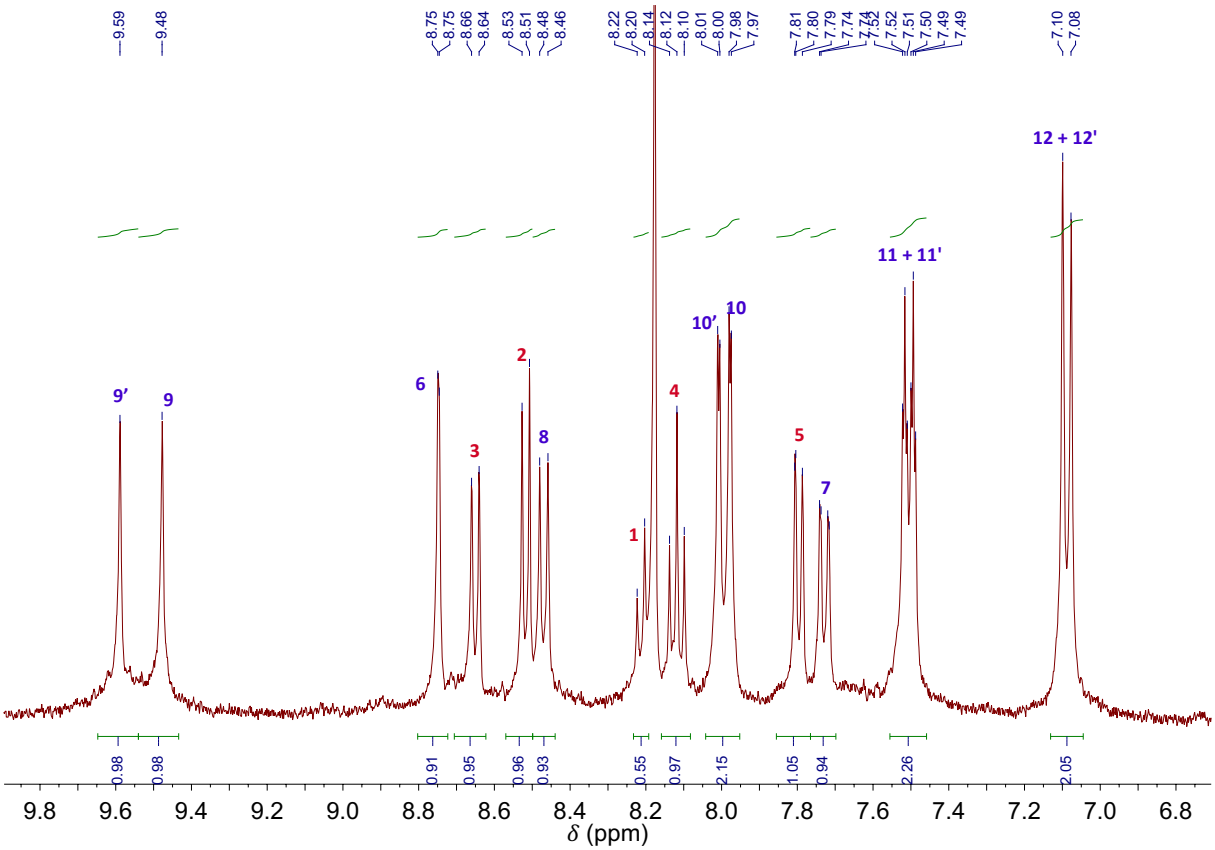

Figure S16. Aromatic region of ^{1}H NMR (400 MHz, 370 K) spectrum of Tweezers **1** in DMSO-d_6.

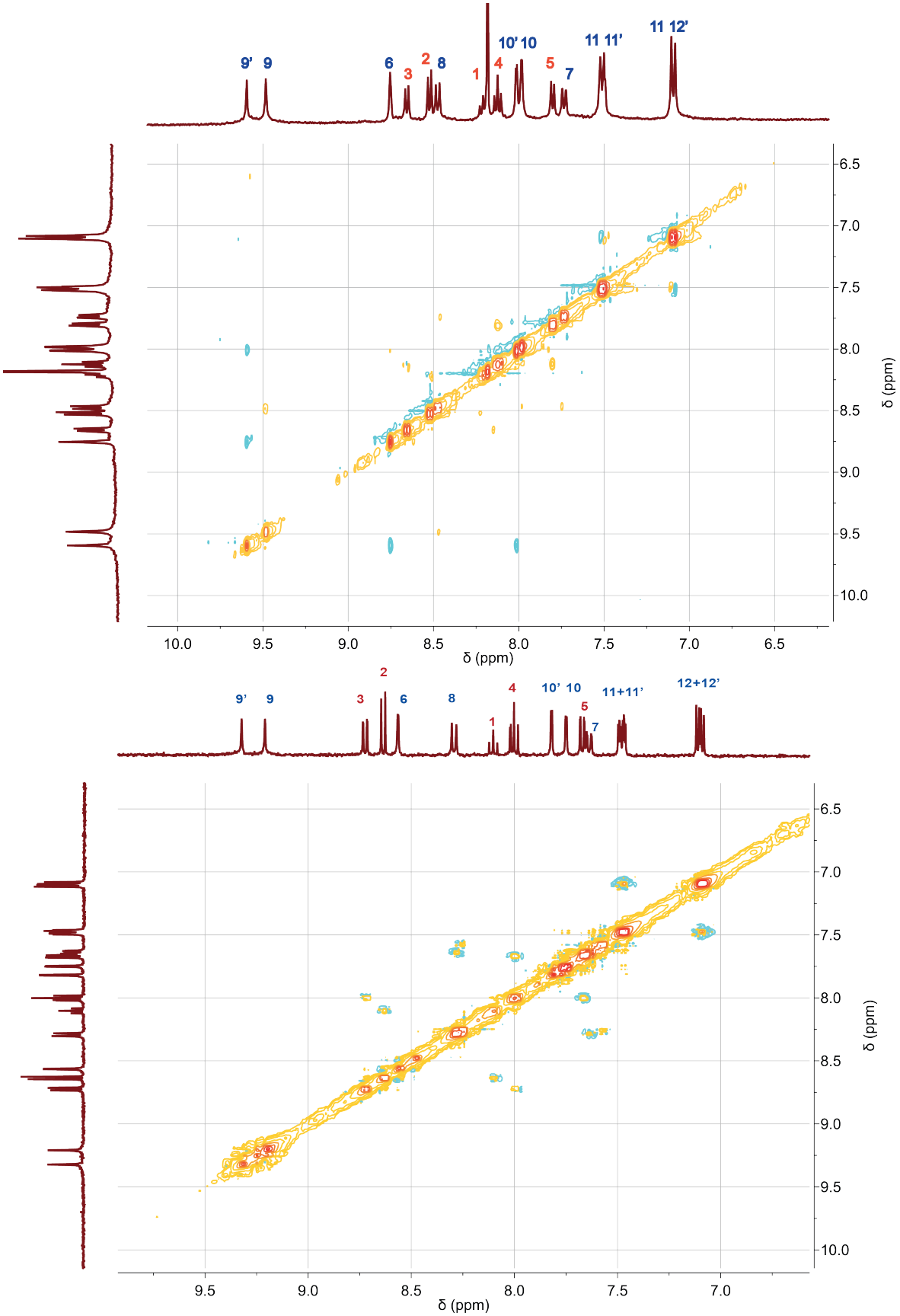

Figure S17 NOESY (400 MHz) spectrum of Tweezers **1** in DMSO-d_6 at 370 K (top) and THF-d_8 at 300K (bottom).

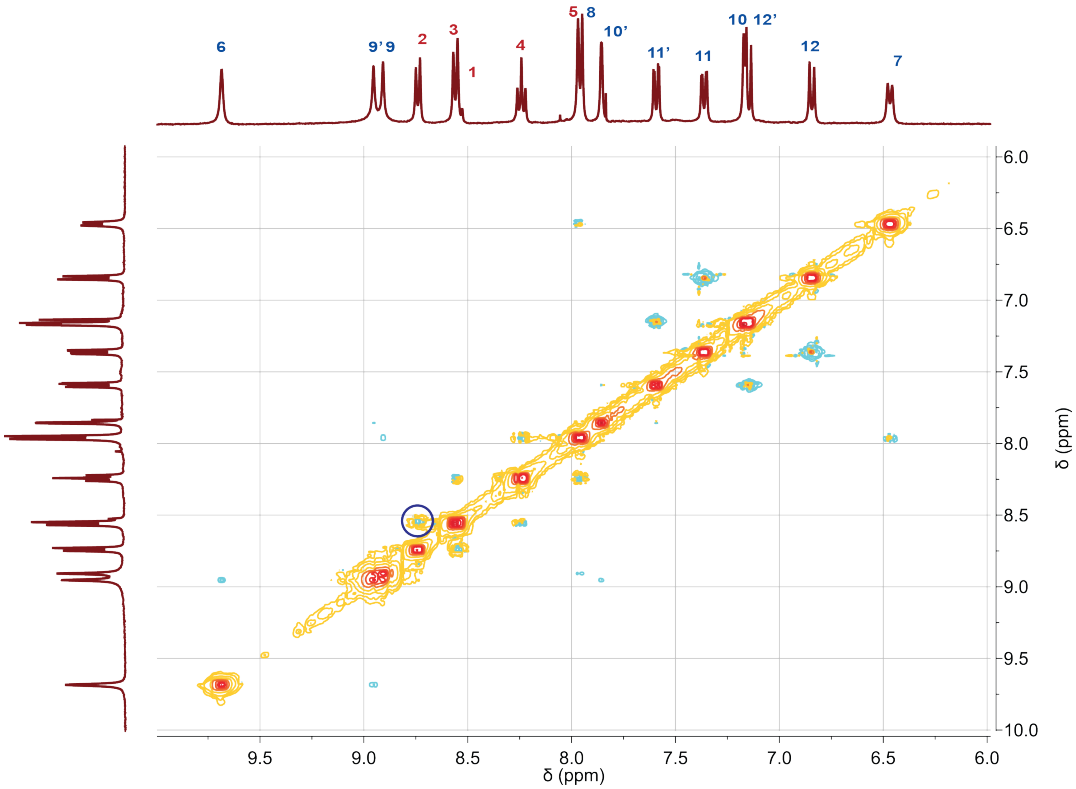

Figure S18 NOESY (400 MHz, 300 K) spectrum of [Zn(**1**)]Cl_2 in THF-d_8.

Mass spectra of 1

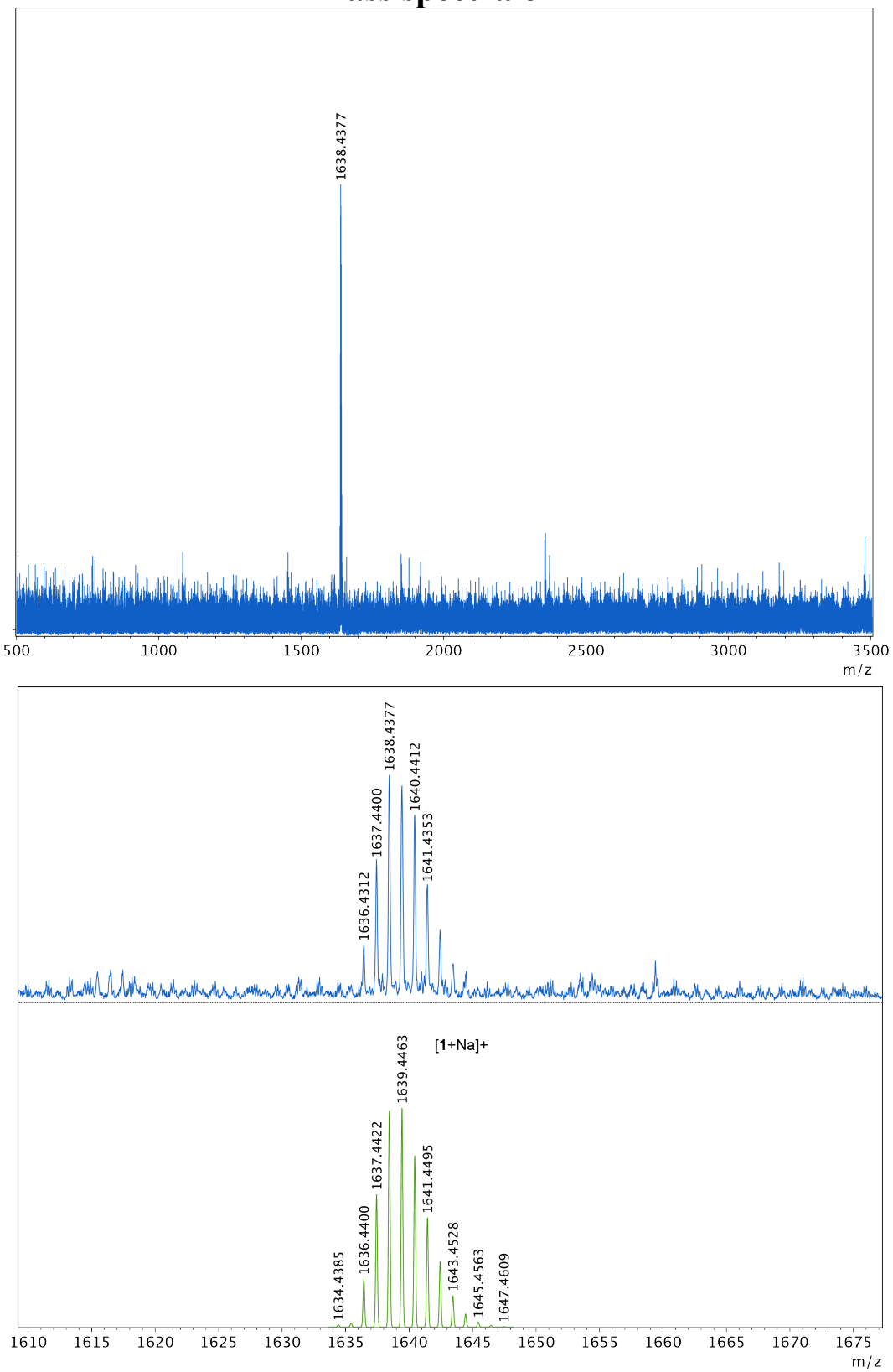

Figure S19 ESI-TOF HRMS spectra of tweezers **1** and isotopic pattern experimental (top) and calculated (bottom).

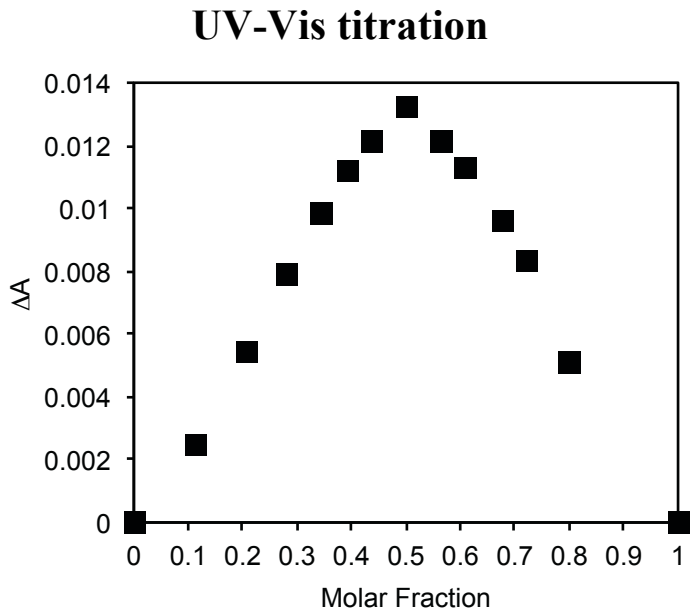

Figure S20. Job plot of Tweezers **1** with $Zn(ClO_4)_2$ at 600 nm showing the formation of the 1:1 complex $[Zn(\mathbf{1})]^{2+}$.

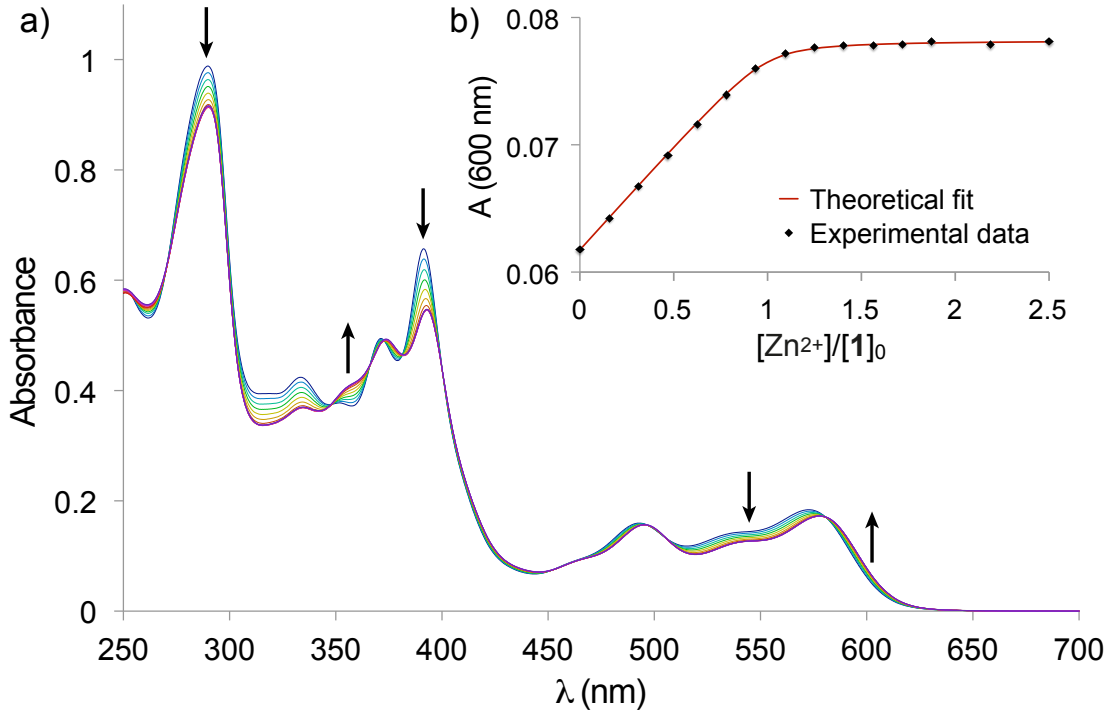

Figure S21. a) UV-Vis titration of tweezers **1** (5.0×10^{-6} mol.L^{-1}) upon addition of $ZnCl_2$ in THF. b) Absorbance at 600 nm and 1:1 binding model fit.

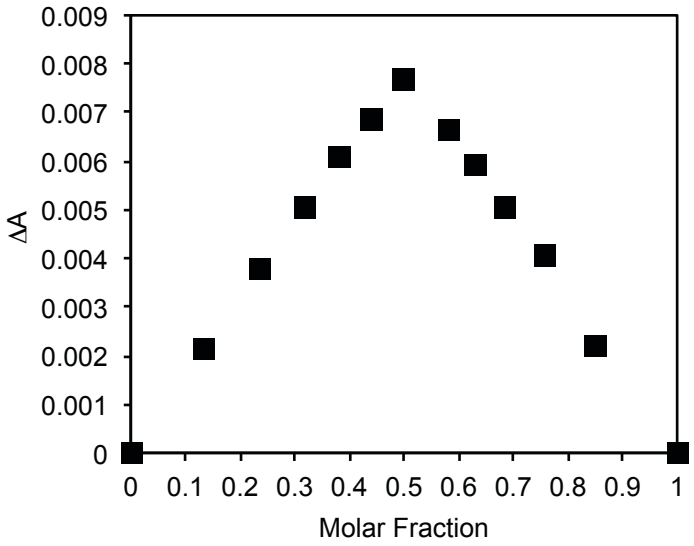

Figure S22. Job plot of Tweezers **1** with $ZnCl_2$ at 600 nm showing the formation of the 1:1 complex $[Zn(\mathbf{1})]^{2+}$

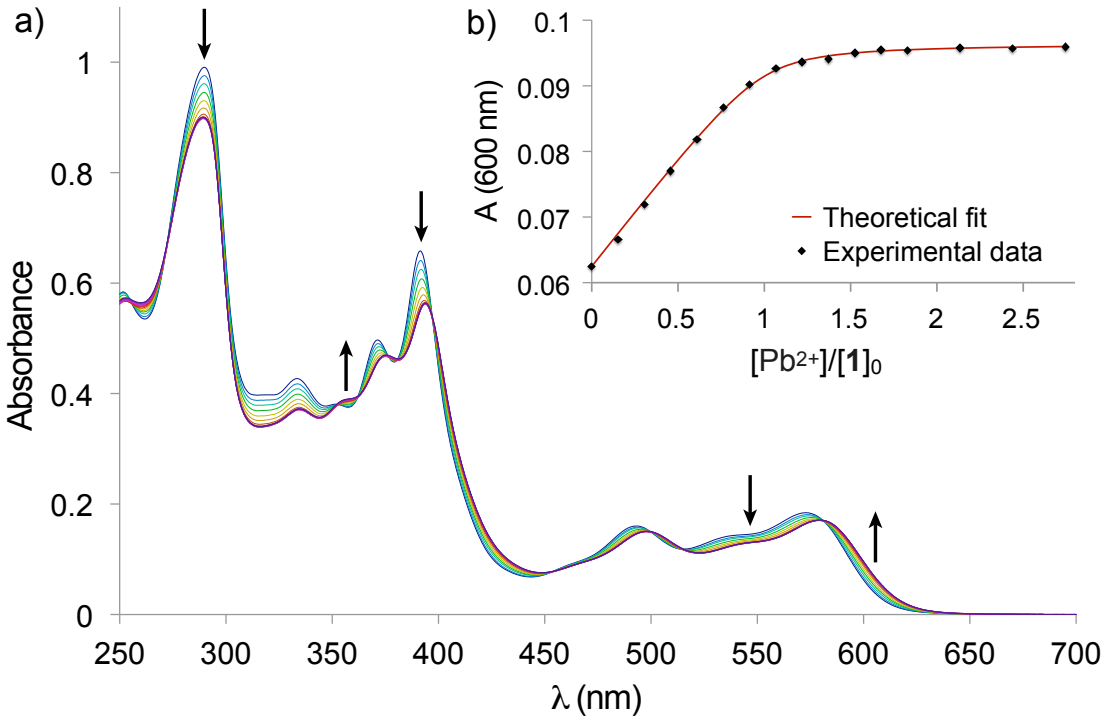

Figure S23. a) UV-Vis titration of tweezers **1** (5.0×10^{-6} mol.L^{-1}) upon addition of $Pb(ClO_4)_2$ in THF. b) Absorbance at 600 nm and 1:1 binding model fit.

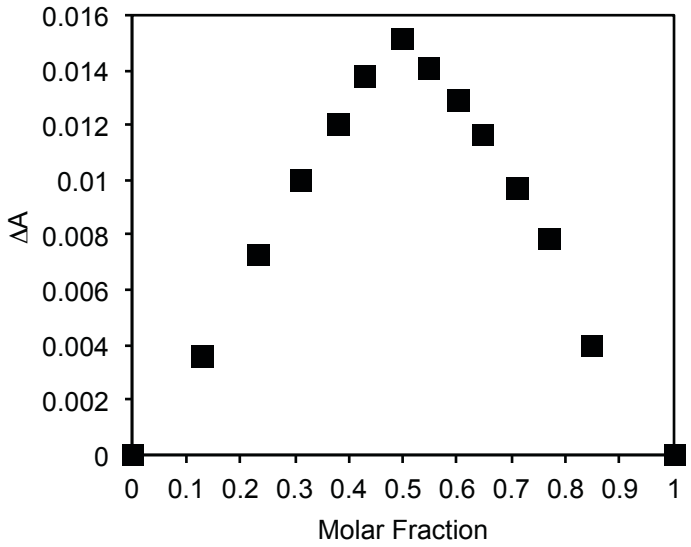

Figure S24. Job plot of Tweezers **1** with $Pb(ClO_4)_2$ at 600 nm showing the formation of the 1:1 complex $[Pb(\mathbf{1})]^{2+}$.

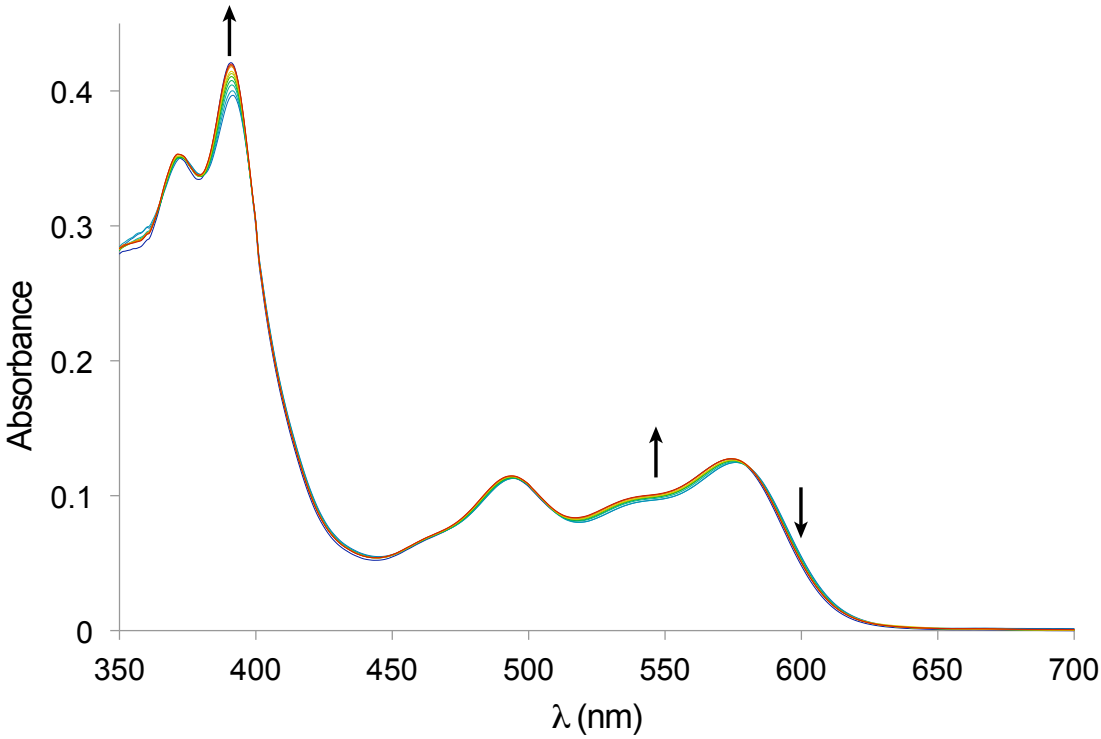

Figure S25. UV-Vis titration of complex $[Zn(\mathbf{1})]^{2+}$ (5.0×10^{-6} mol.L^{-1}) upon addition of phen (1,10-phenanthroline) in THF.

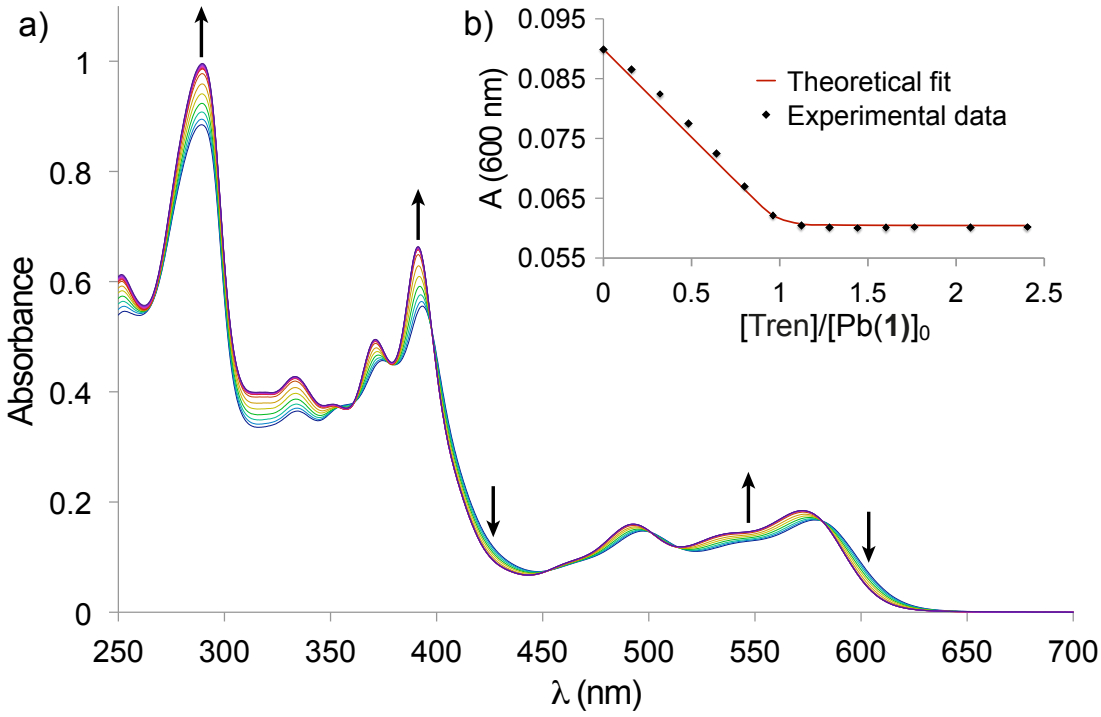

Figure S26. a) UV-Vis titration of complex $[Pb(\mathbf{1})]^{2+}$ (5.0×10^{-6} mol.L^{-1}) upon addition of tren in THF. b) Absorbance at 600 nm and 1:1 binding model fit.

UV-Vis titration of tweezers 1 with $Hg(ClO_4)_2$: Closing and intercalation

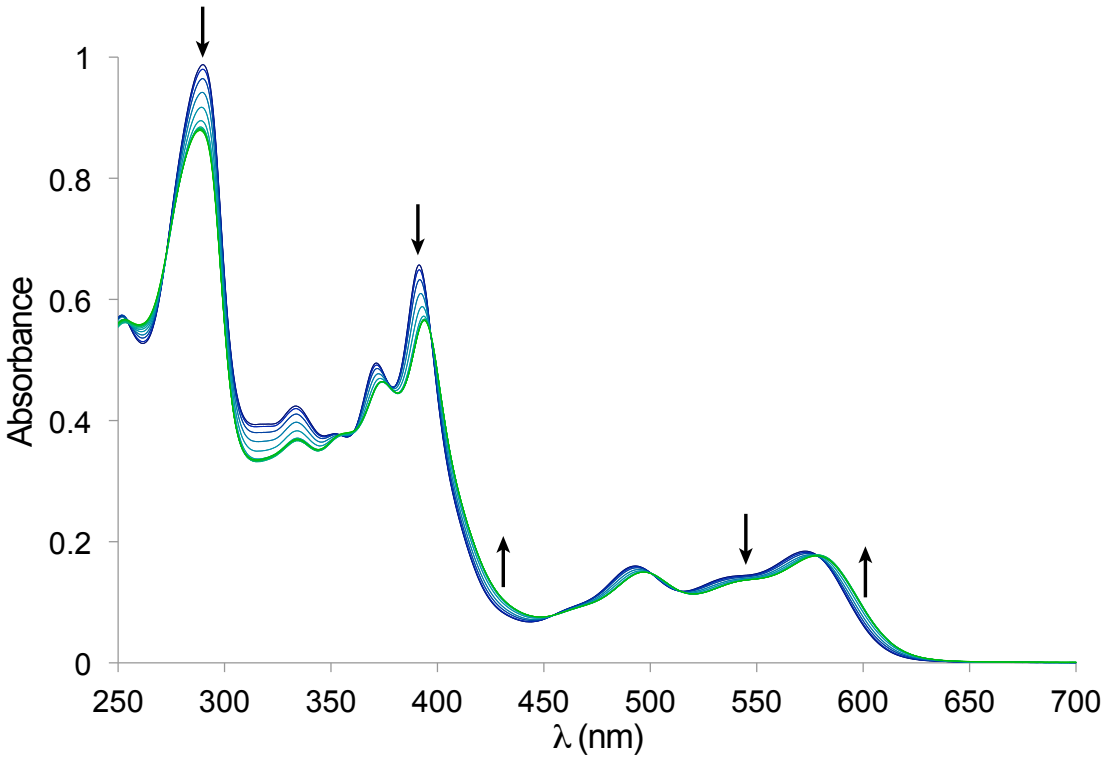

Figure S27. UV-Vis titration of tweezers **1** (5.0×10^{-6} mol.L^{-1}) upon addition of $Hg(ClO_4)_2$ in THF, from 0 to 1 equivalents.

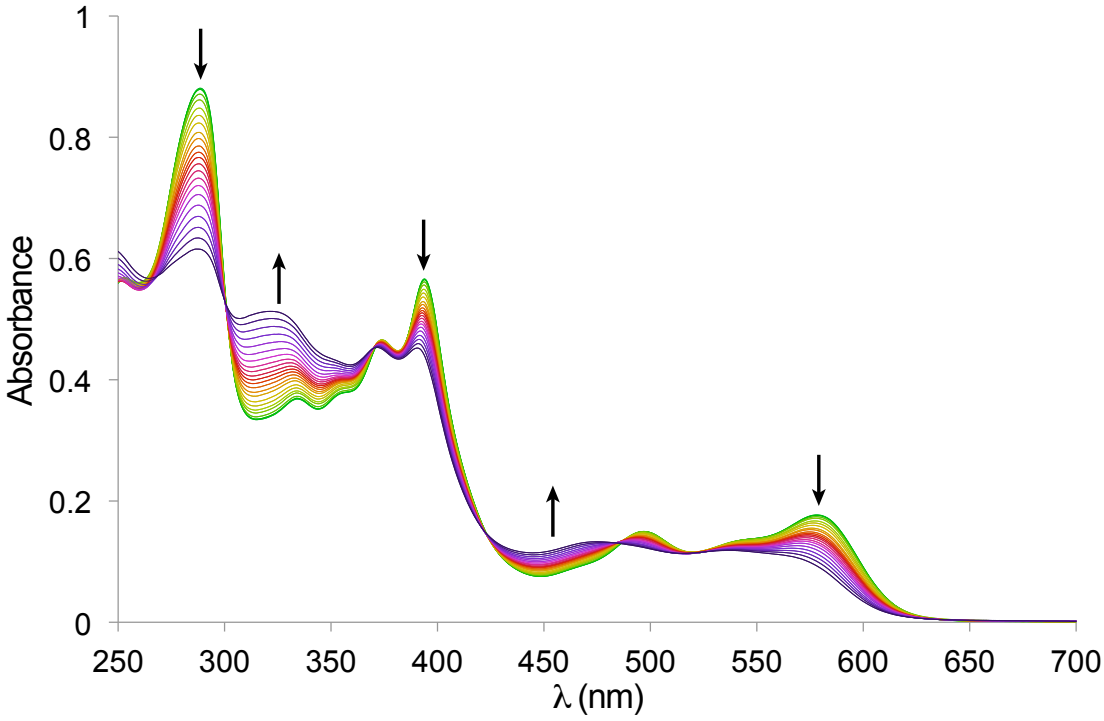

Figure S28. UV-Vis titration of tweezers **1** (5.0×10^{-6} mol.L^{-1}) upon addition of $Hg(ClO_4)_2$ in THF, from 1 to 10 equivalent.

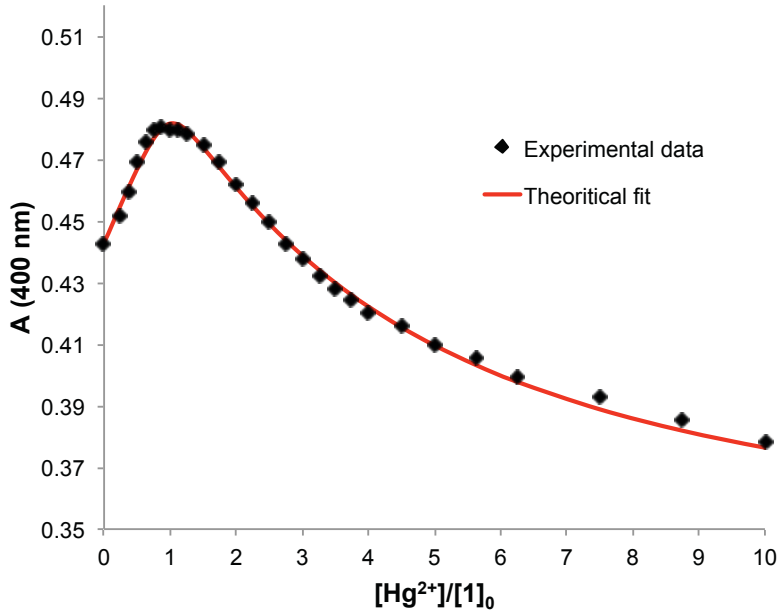

Figure S29 Absorbance at 400 nm of the titration of **1** with Hg^{2+} and 1:2 binding model fit.

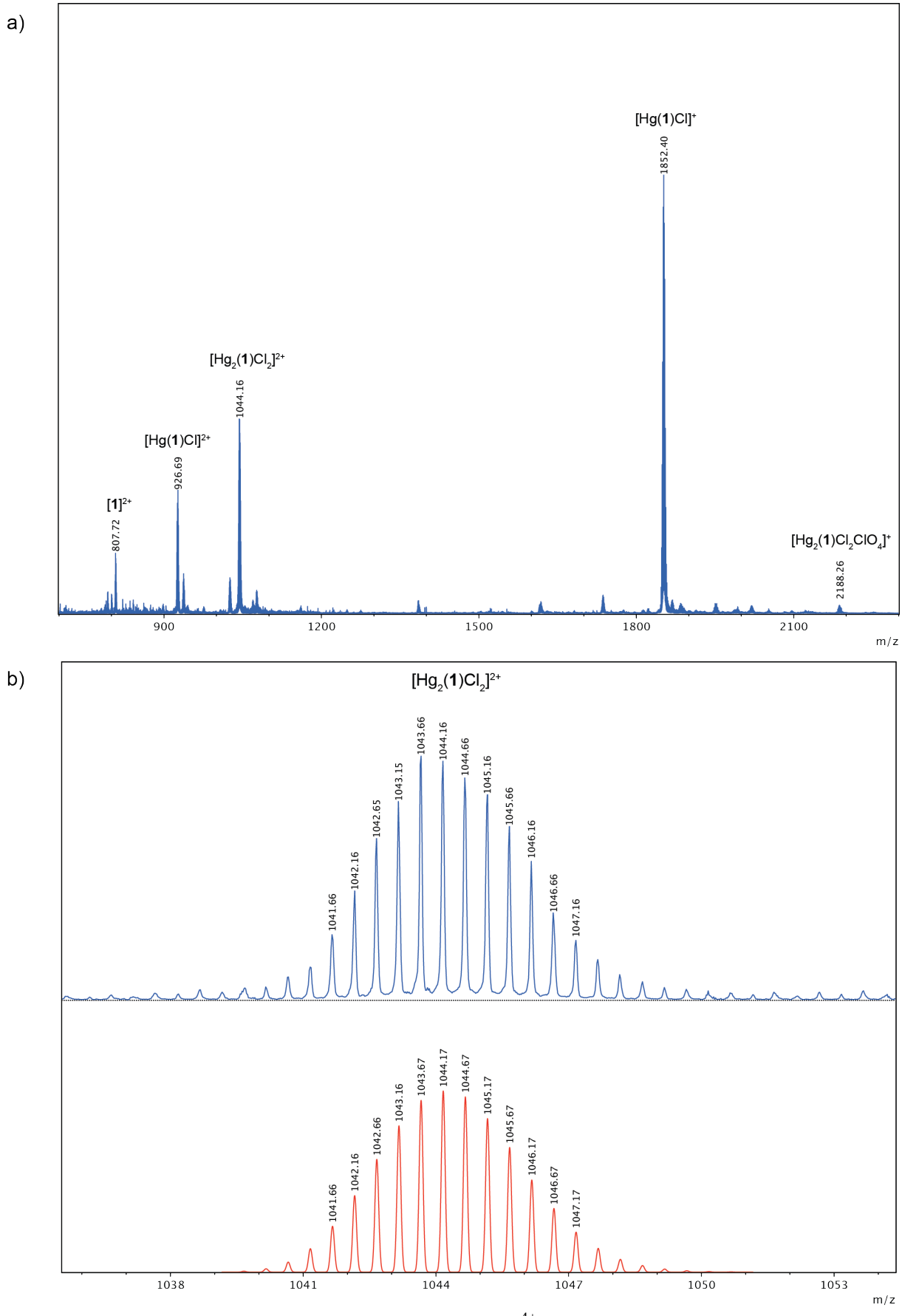

Figure S30 a) Full mass spectra (ESI-Tof) of $[Hg_2(\mathbf{1})]^{4+}$ b) experimental isotopic pattern (top) and calculated (bottom) for $[Hg \subset Hg(\mathbf{1})Cl_2]^{2+}$.

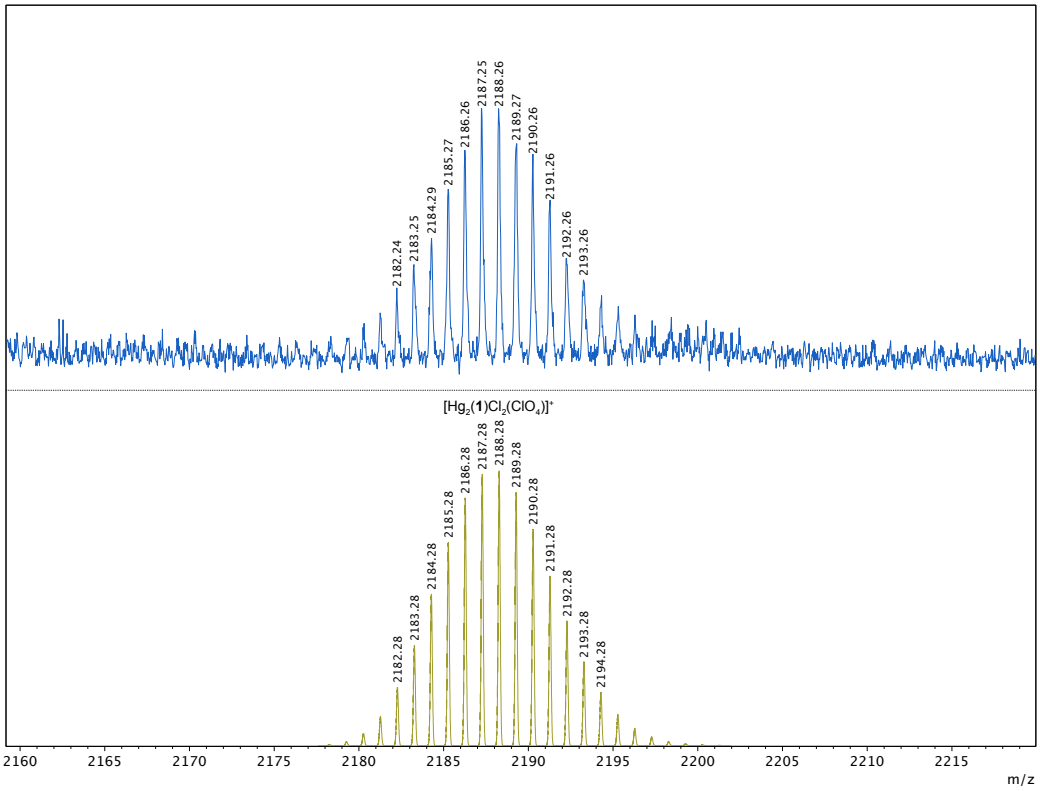

Figure S31 Experimental (top) and calculated (bottom) isotopic pattern for $[Hg(ClO_4) \subset Hg(\mathbf{1})Cl_2]^+$.

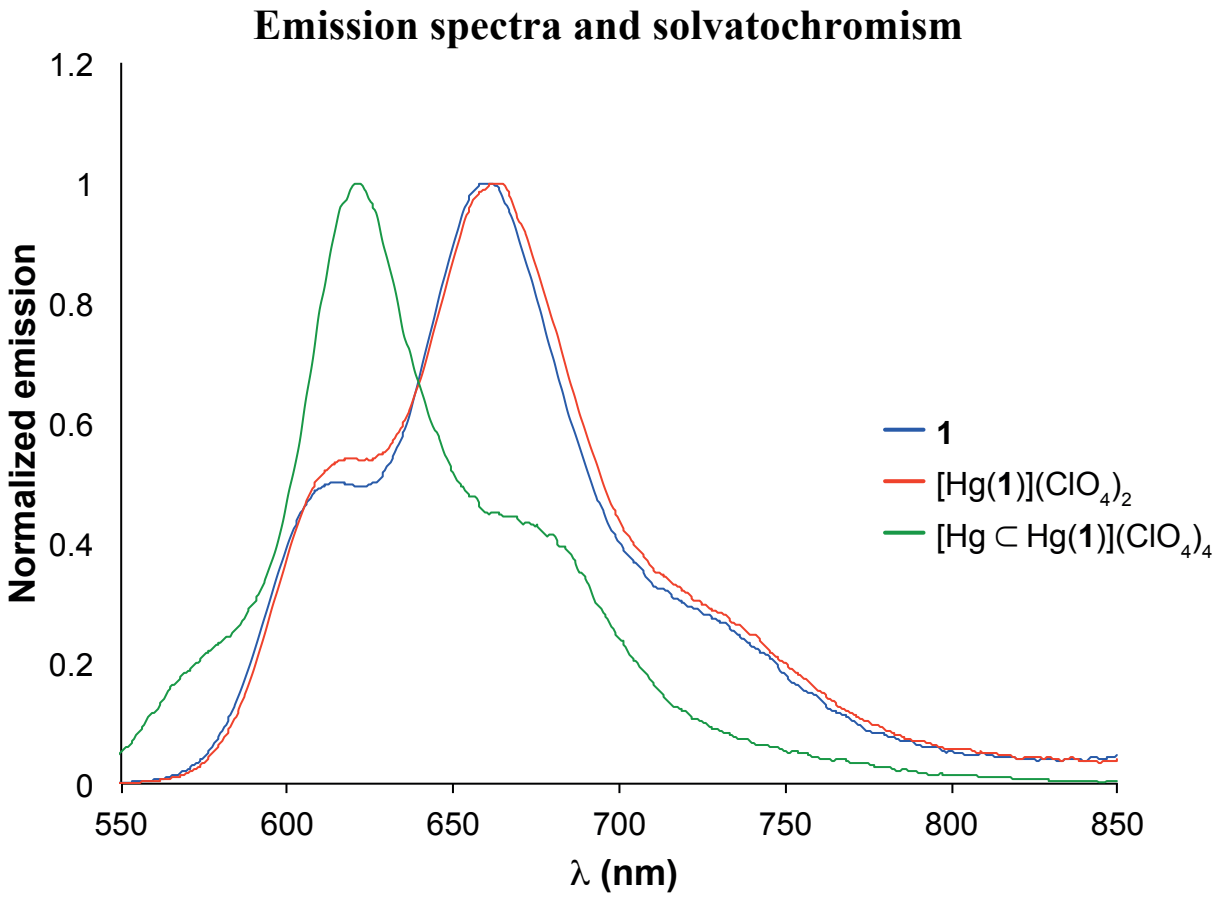

Figure S32 Normalized emission spectra in THF at 298 K (λ_{ex} = 532 nm).

Conc. 5.0×10^{-6} mol.L^{-1}.

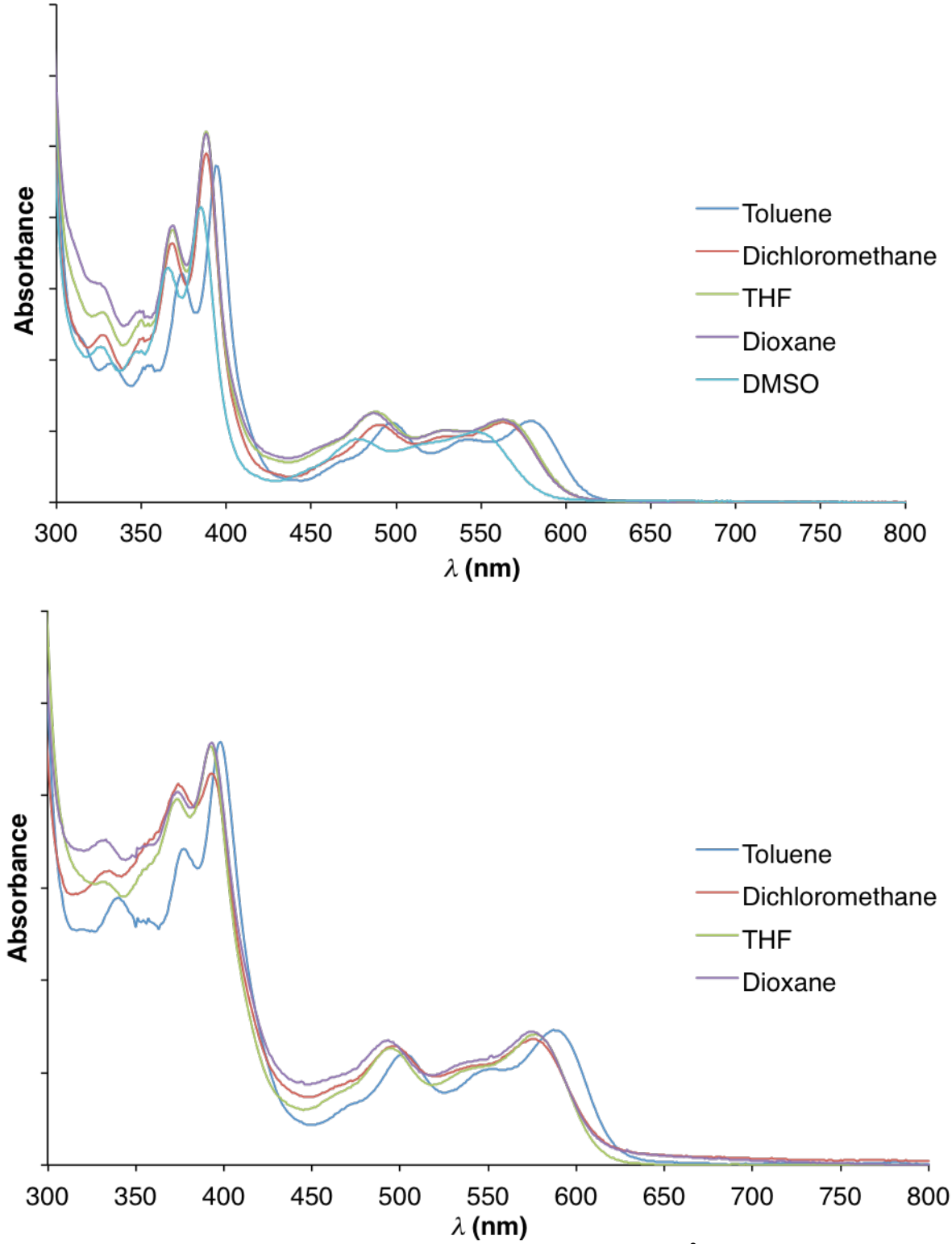

Figure S33 Electronic absorption spectra of **8** (top) and $[Zn(\mathbf{1})]^{2+}$ (bottom) in different solvents at 5.0×10^{-6} mol.L^{-1}. Spectra are normalised with respect to lowest energy absorption band.

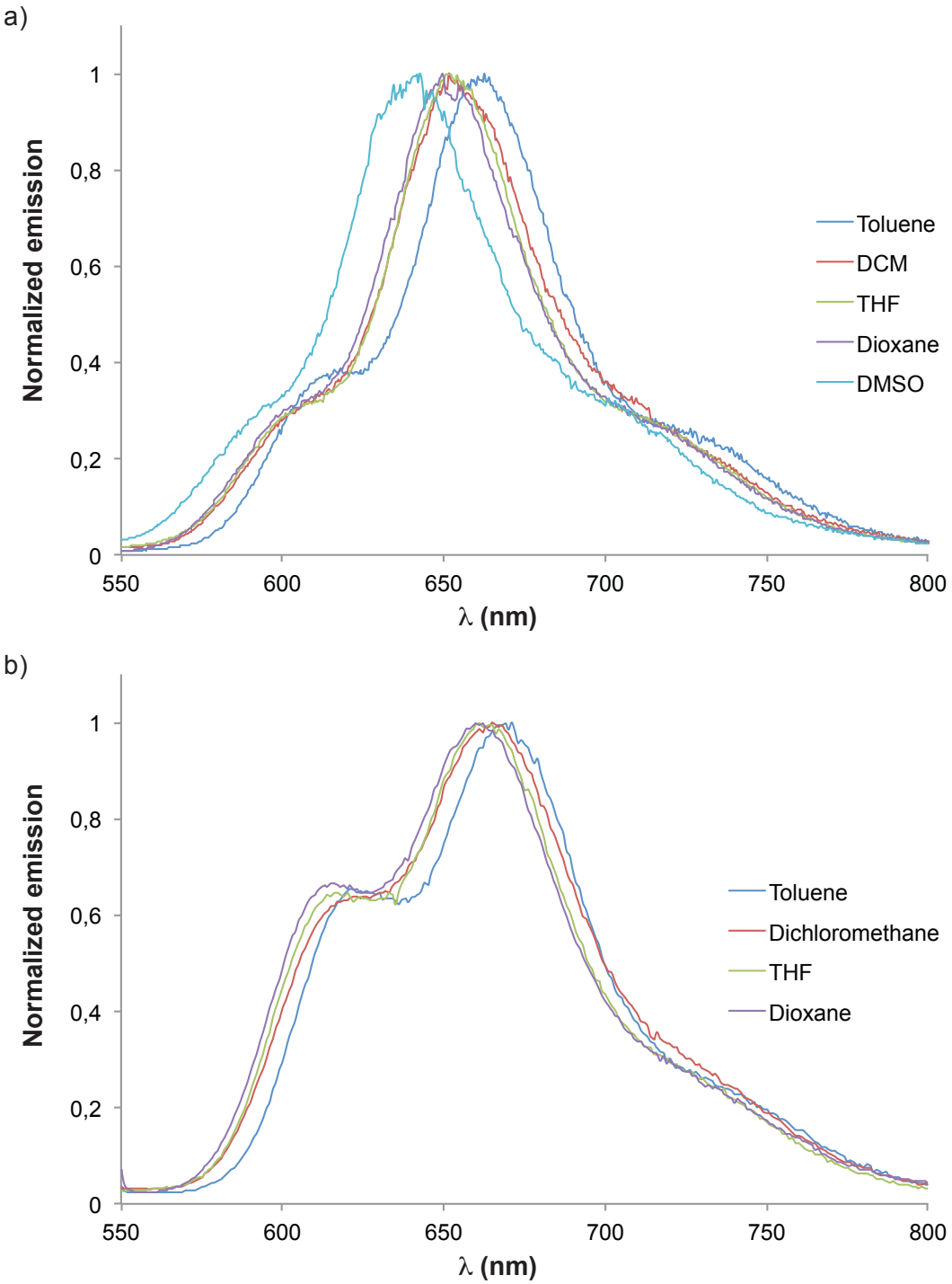

Figure S34 Normalized emission spectra of a) **8** and b) $[Zn(\mathbf{1})]^{2+}$ in different solvents at 5.0×10^{-6} mol.L^{-1} (λ_{ex} = 532 nm).

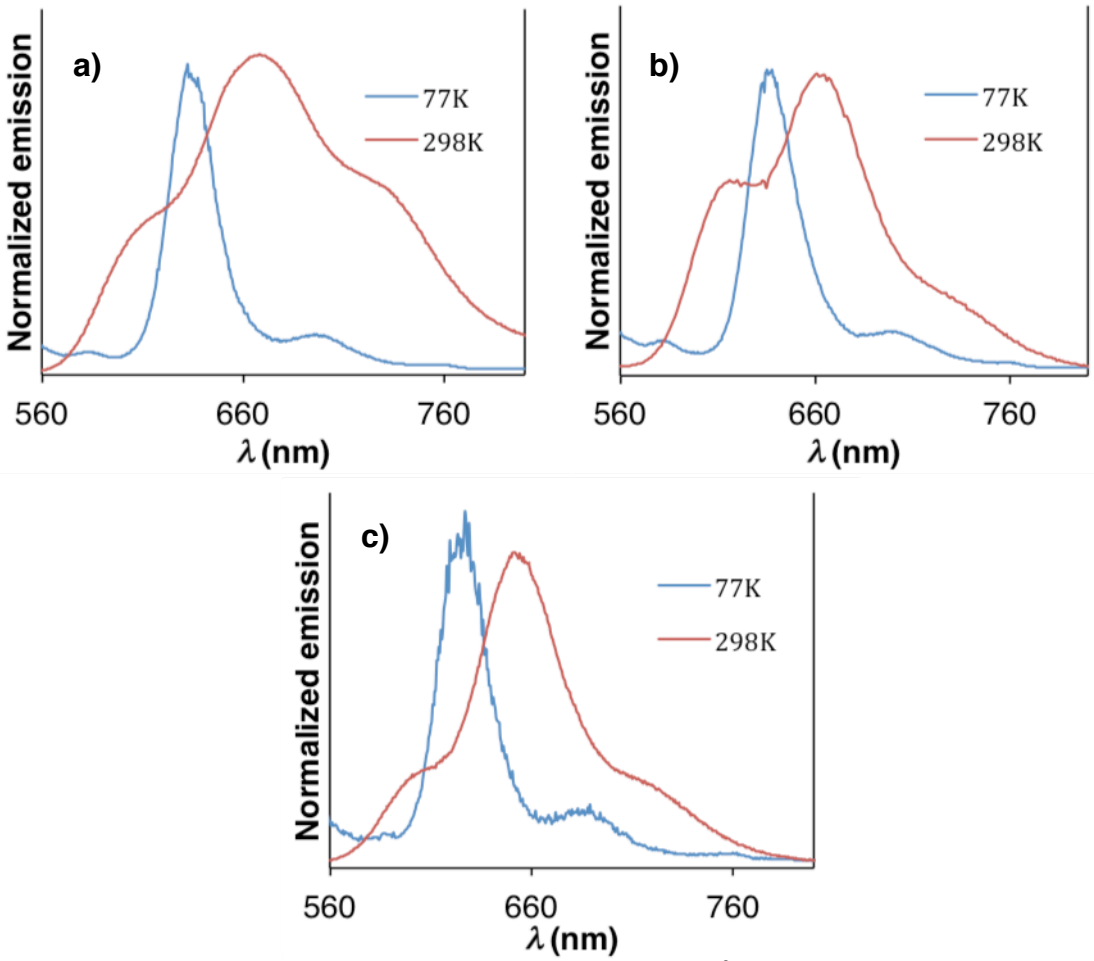

Figure S35 Normalized emission spectra of a) **1**; b) $[Zn(\mathbf{1})]^{2+}$ and c) **8** in THF at 298 K and 2-MeTHF at 77 K (λ_{ex} = 532 nm). Conc. 5.0×10^{-6} mol.L^{-1}.