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Electronic Supplementary Information

Silver(I) complexes with a P-N hybrid ligand and oxyanions: synthesis, structures, photocatalysis and photocurrent responses

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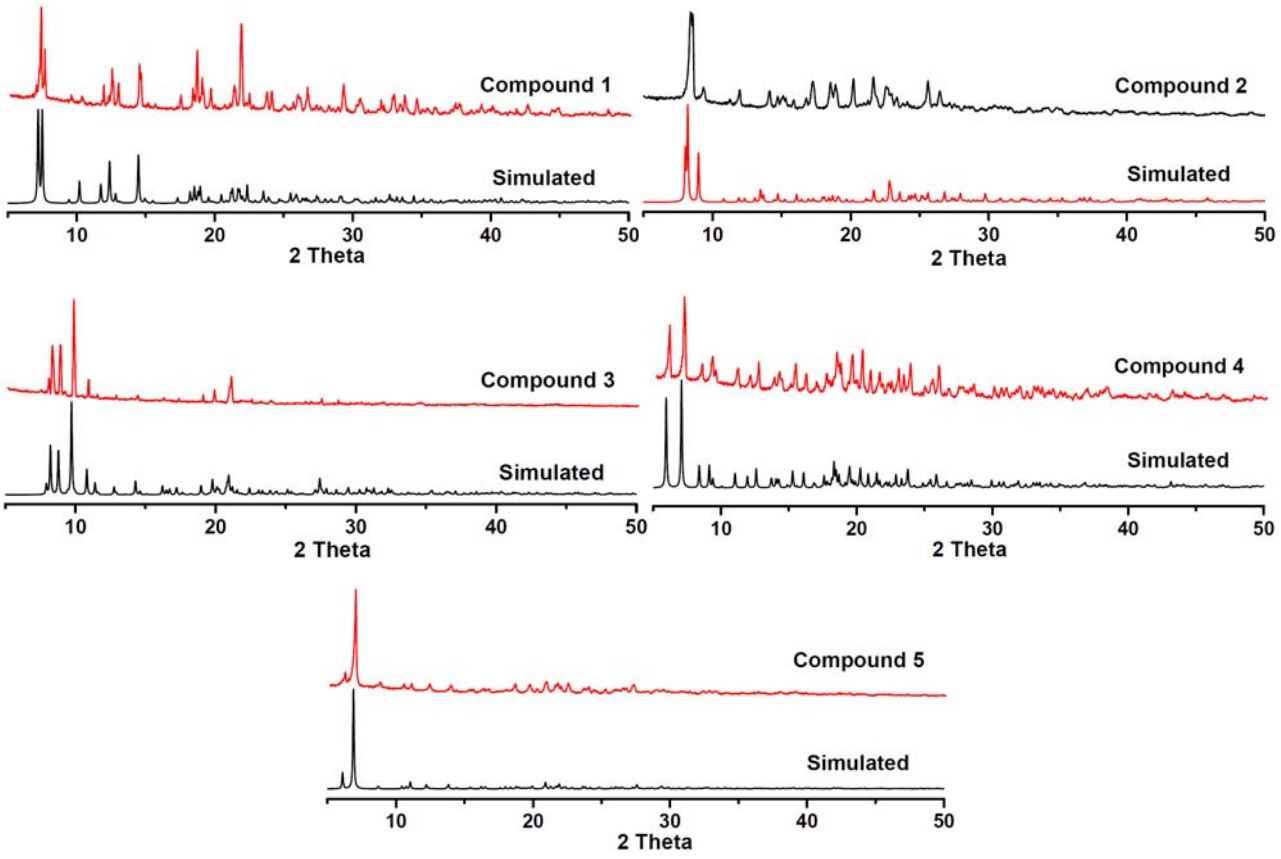


Figure S1. PXRD patterns for **1**–**5**: simulated from single crystal data (Black) and single-phase polycrystalline sample (Red).

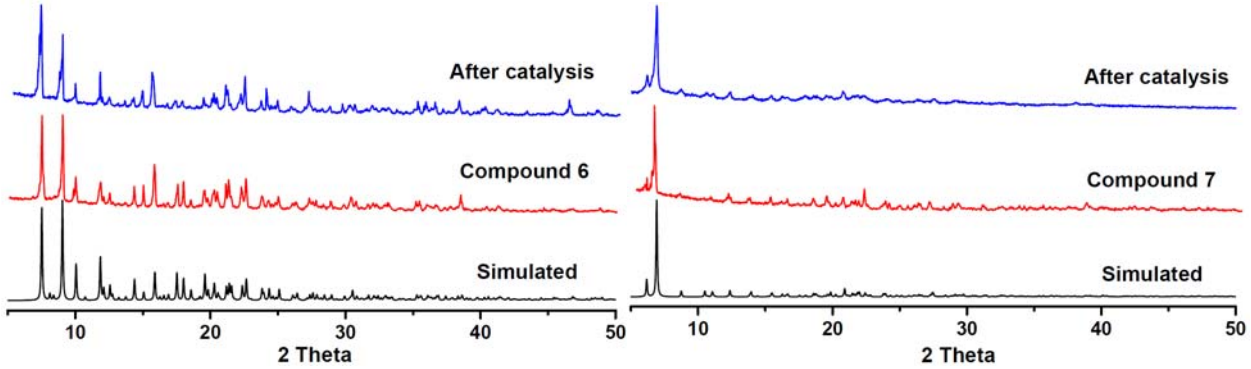


Figure S2. PXRD patterns for **6** and **7**: simulated from single crystal data (Black), single-phase polycrystalline sample (Red),·and samples after catalyzed the photodegradation of RhB.

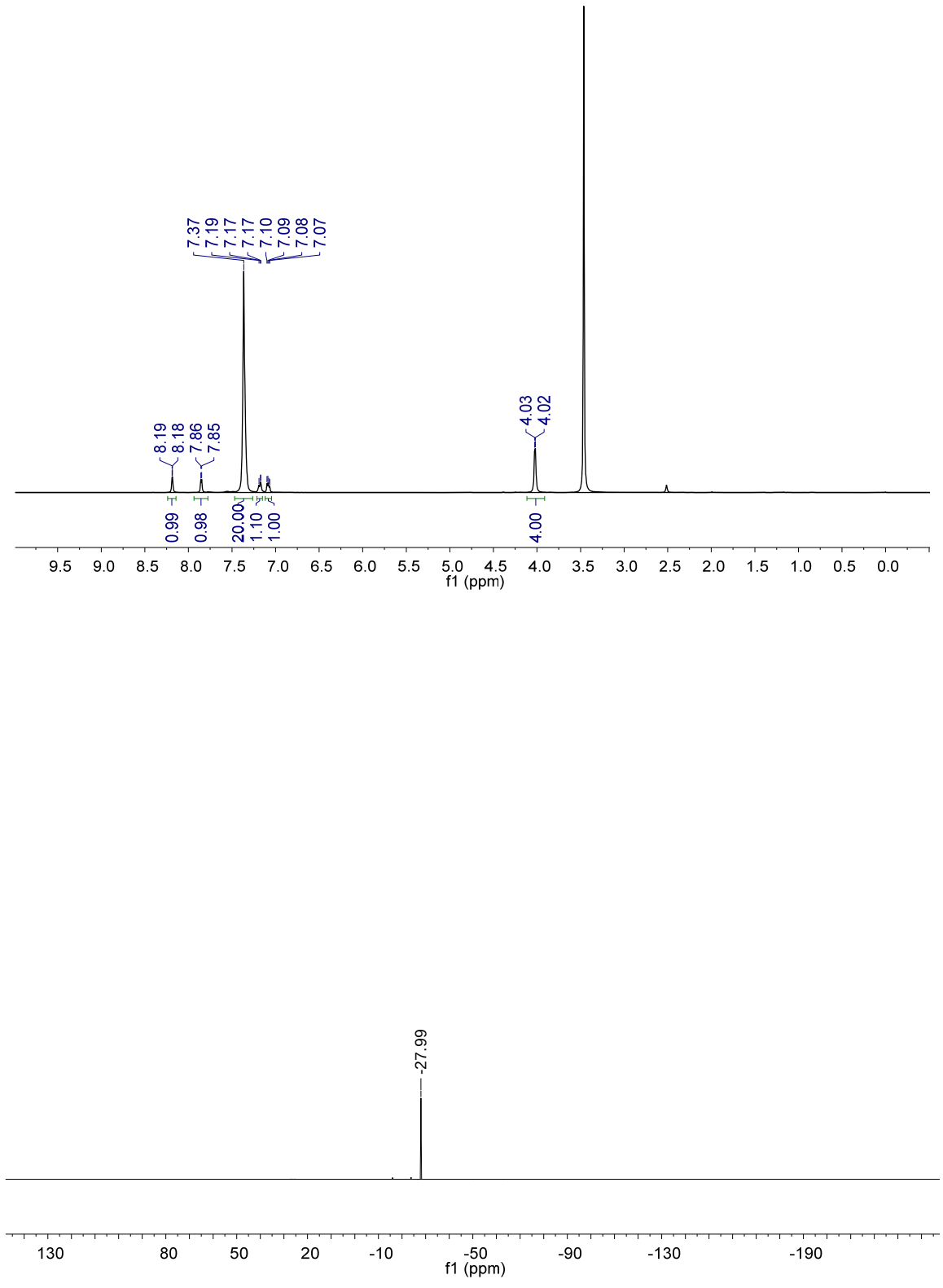
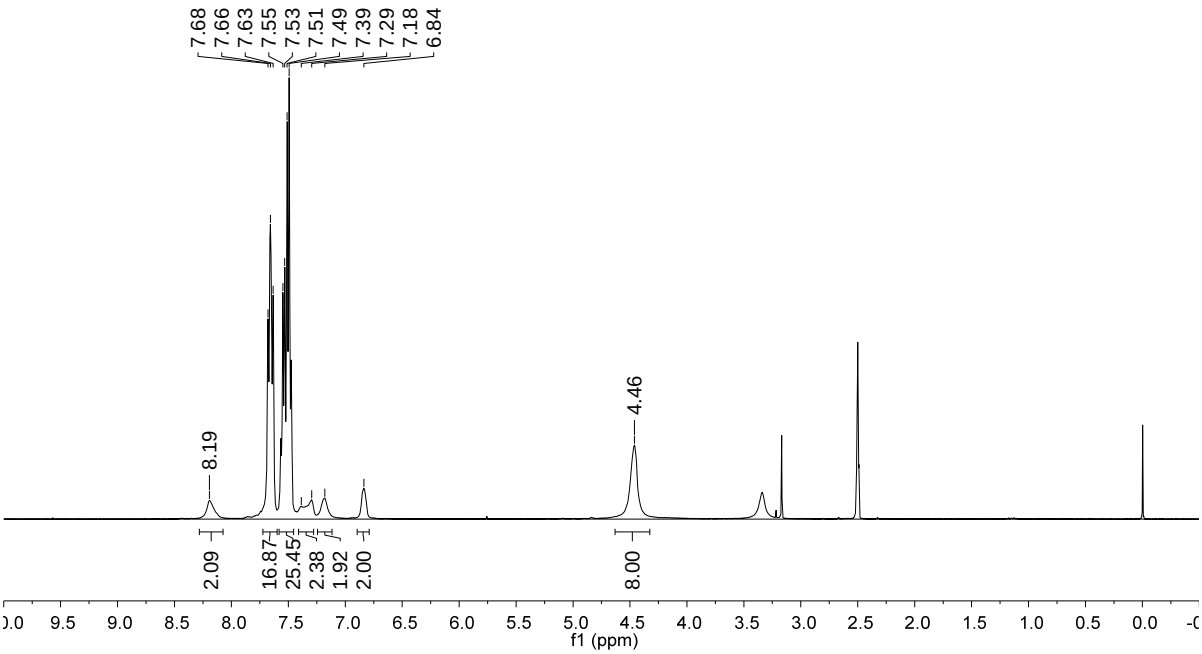


Figure S3. ^{1}H NMR and ^{31}P{^{1}H} NMR spectra of 3-bdppmapy.



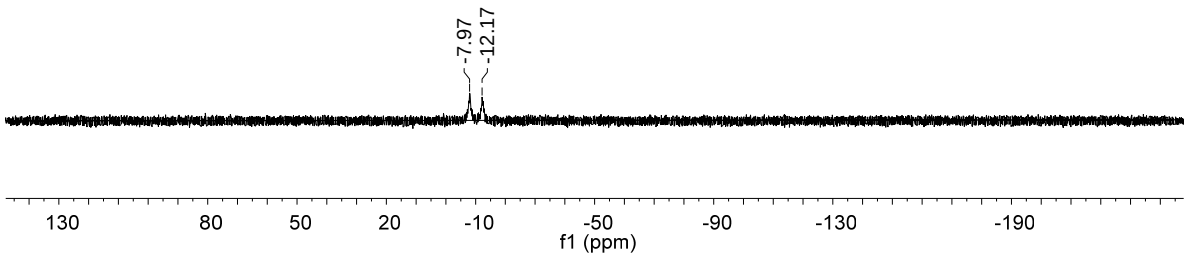


Figure S4. ^{1}H NMR and ^{31}P{^{1}H} NMR spectra of compound **1**.

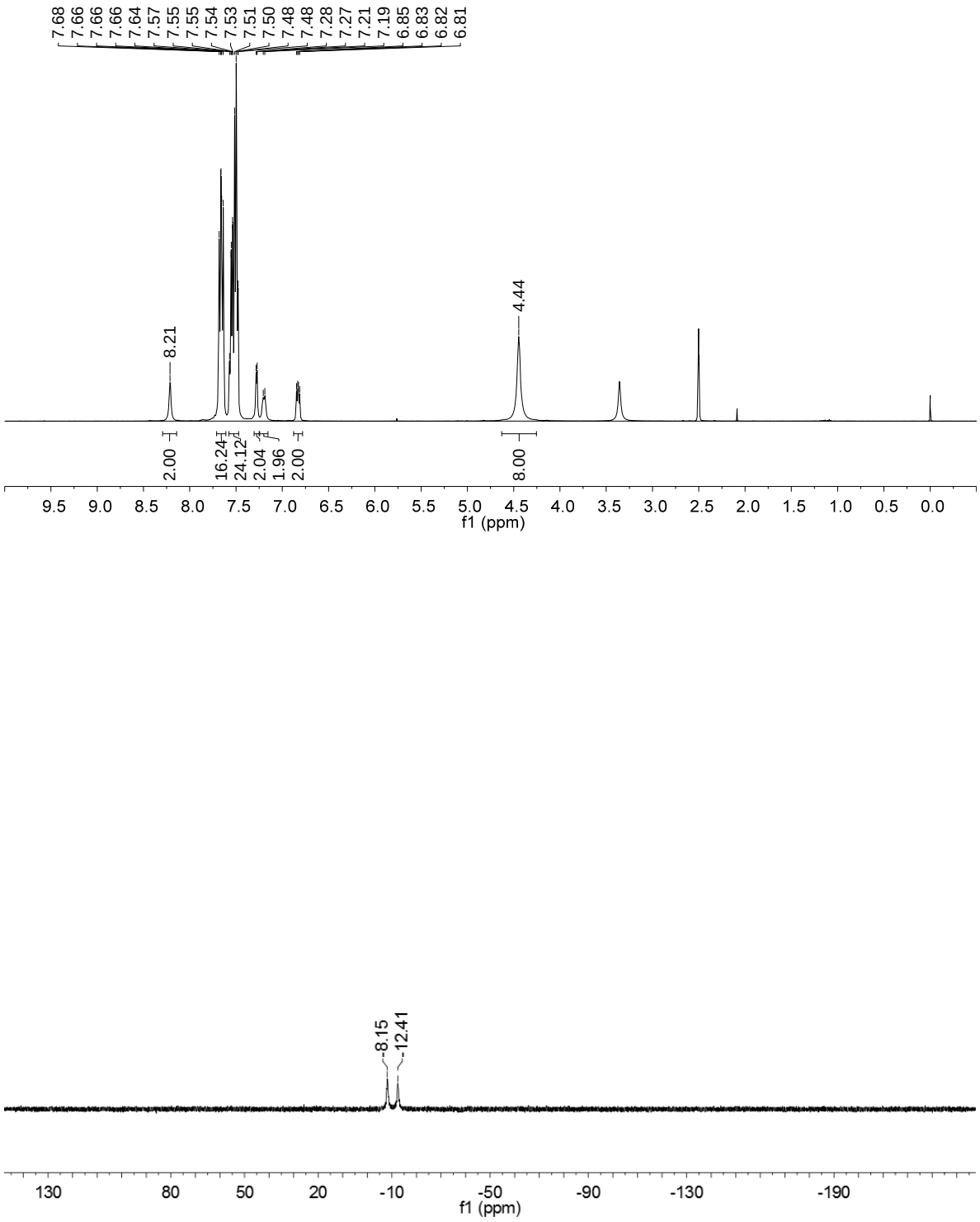


Figure S5. ^{1}H NMR and $^{31}P\{^{1}H\}$ NMR spectra of compound **2**.

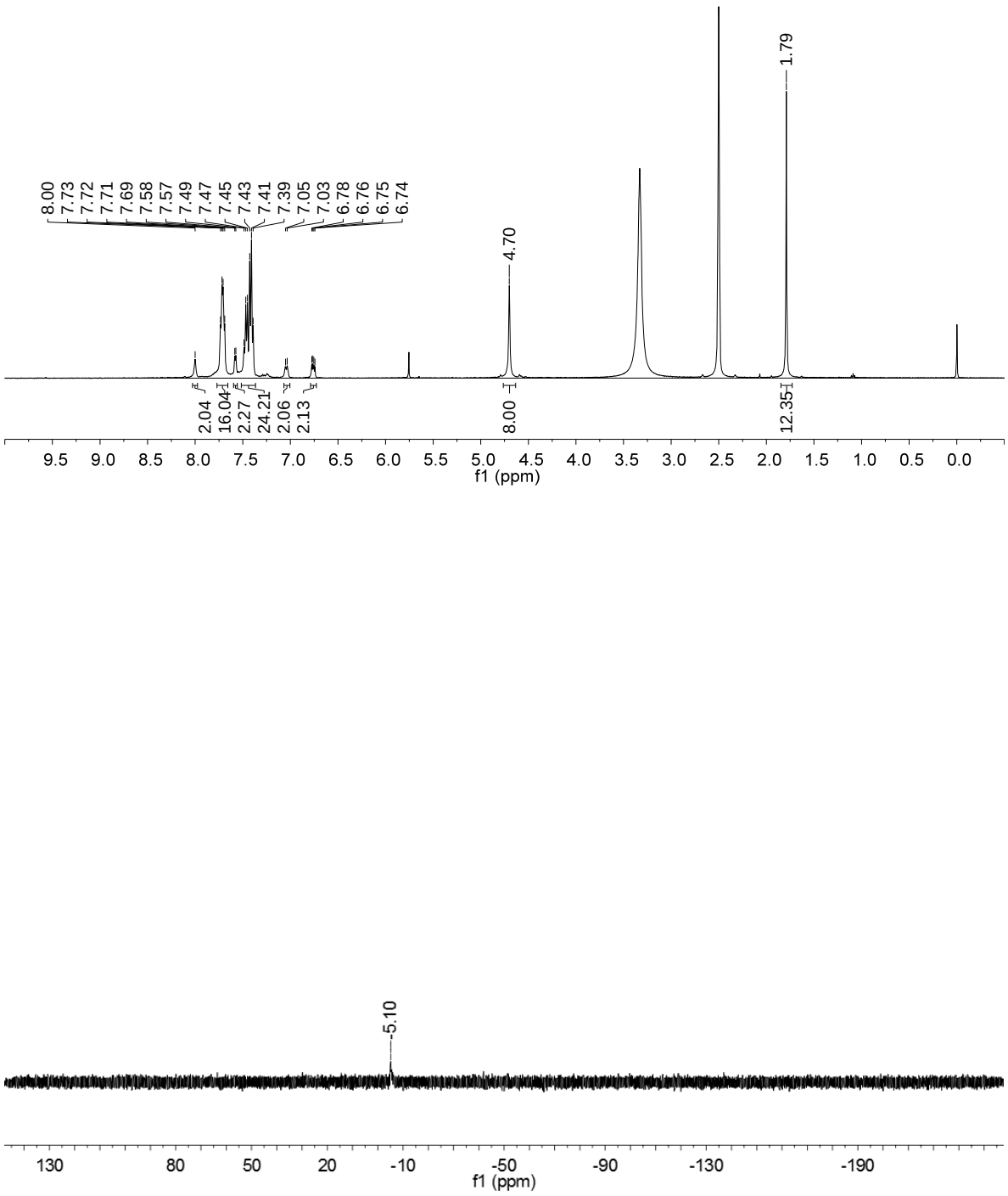


Figure S6. ^{1}H NMR and $^{31}P\{^{1}H\}$ NMR spectra of compound **3**.

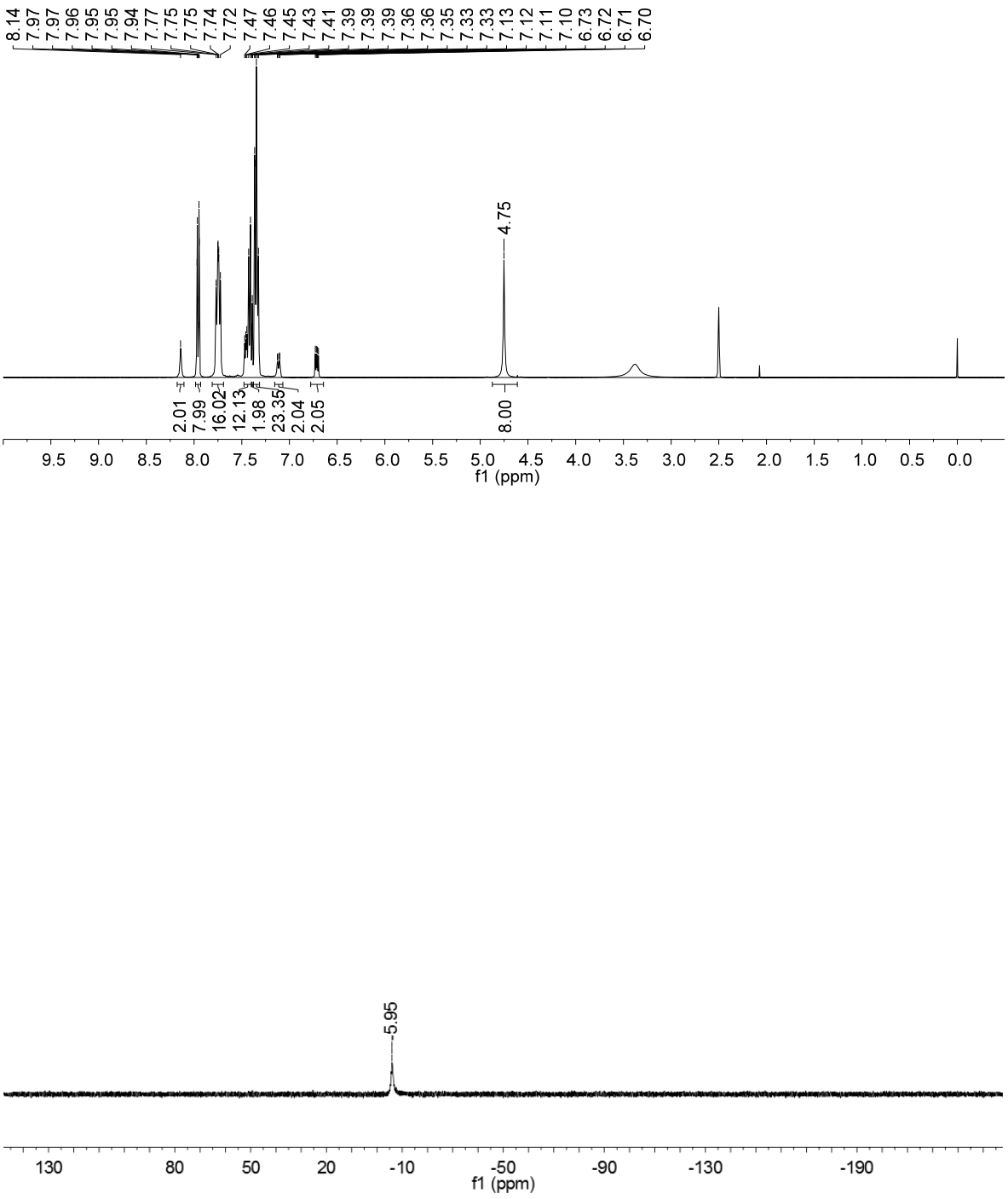


Figure S7. ^{1}H NMR and $^{31}P\{^{1}H\}$ NMR spectra of compound **4**.

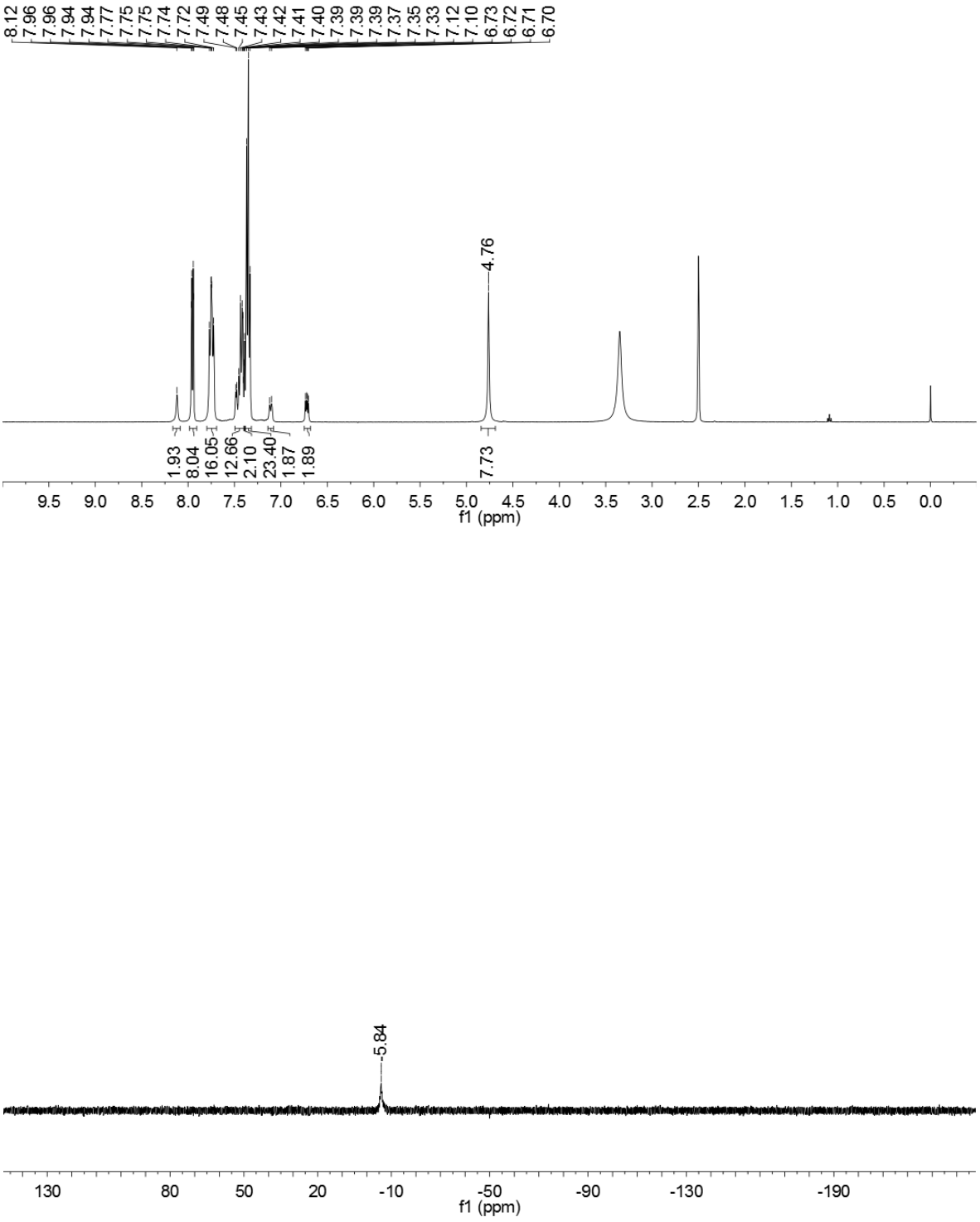


Figure S8. ^{1}H NMR and $^{31}P\{^{1}H\}$ NMR spectra of compound **5**.

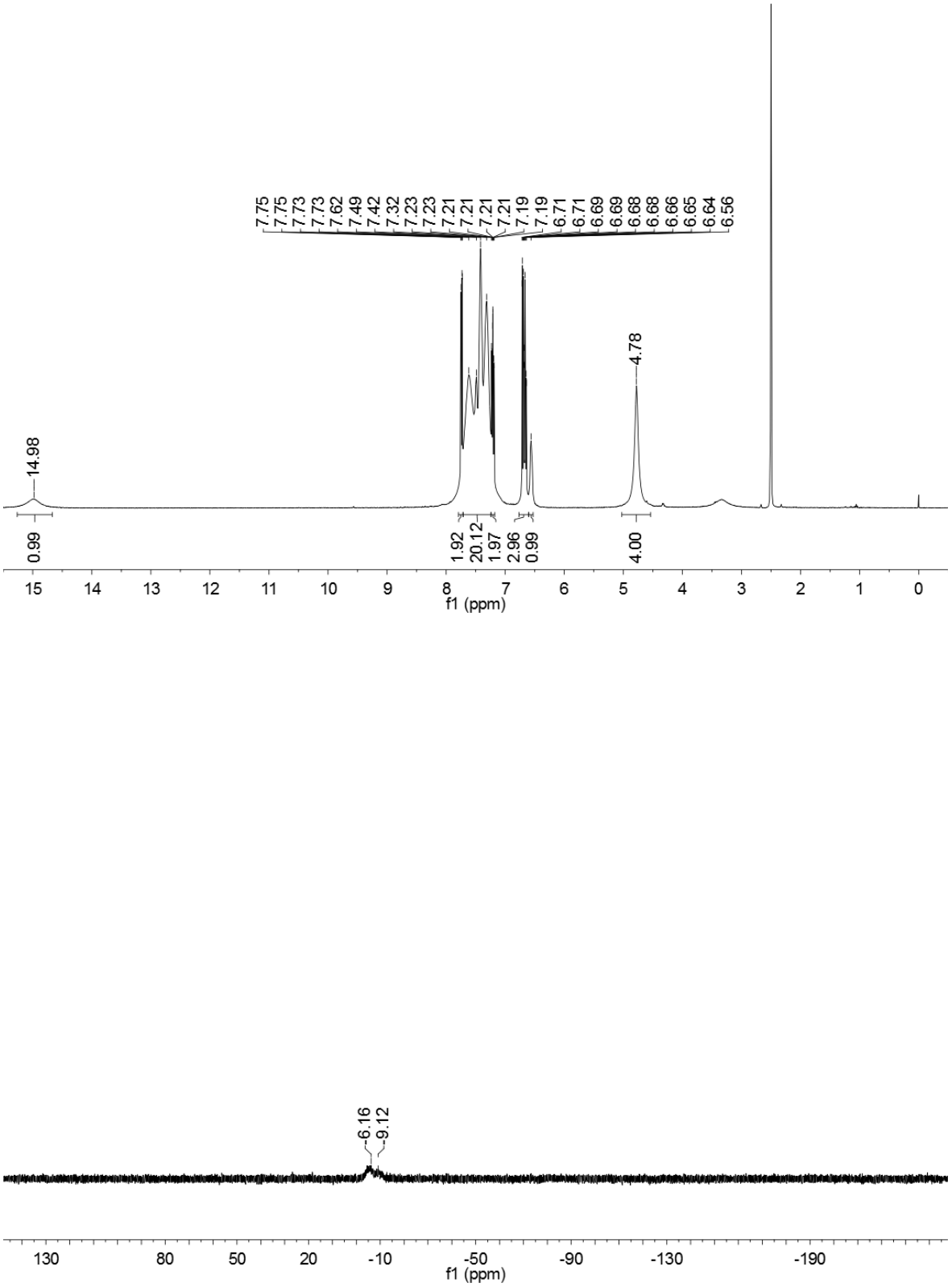


Figure S9. ^{1}H NMR and $^{31}P\{^{1}H\}$ NMR spectra of compound **6**.

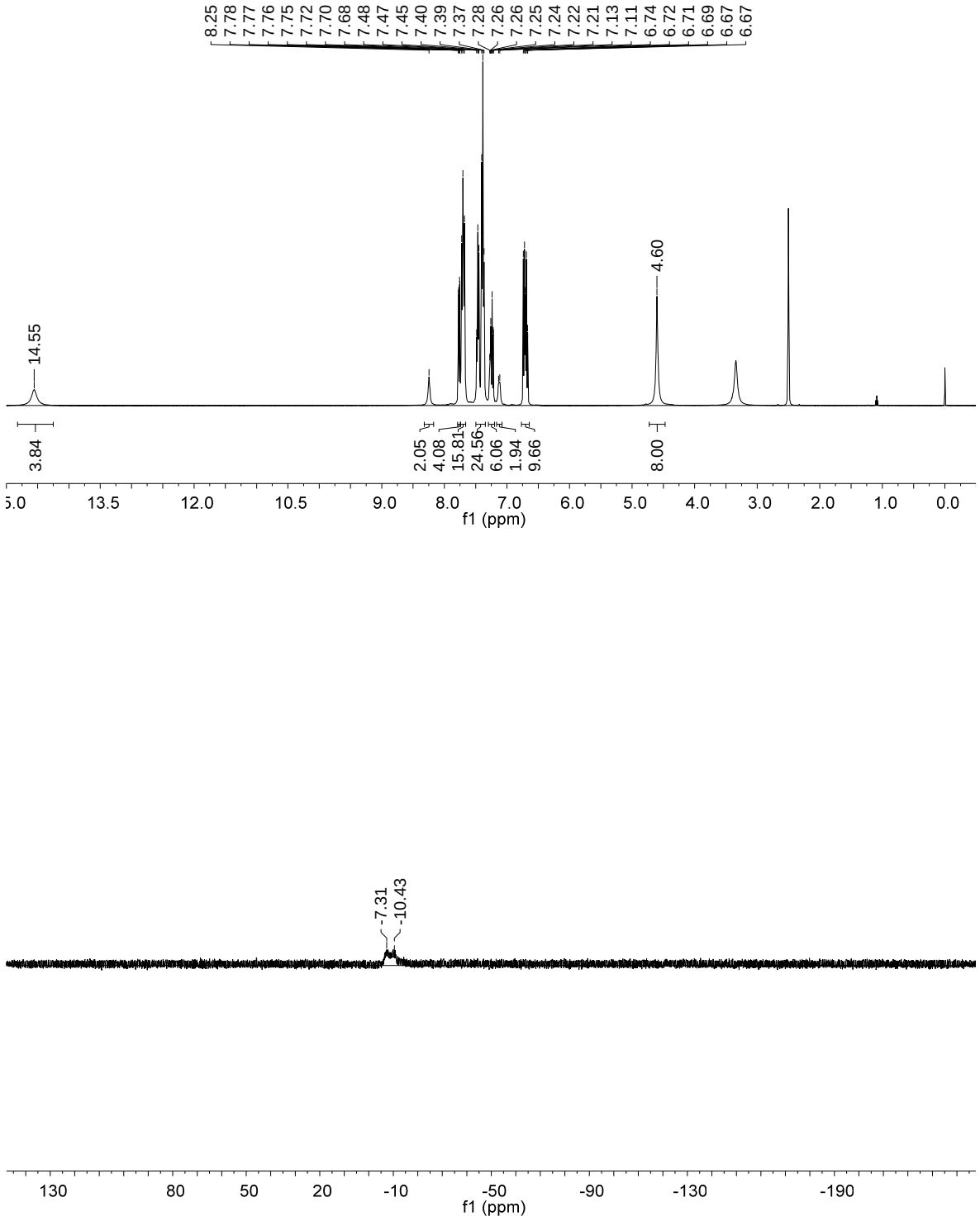


Figure S10. ^{1}H NMR and $^{31}P\{^{1}H\}$ NMR spectra of compound **7**.

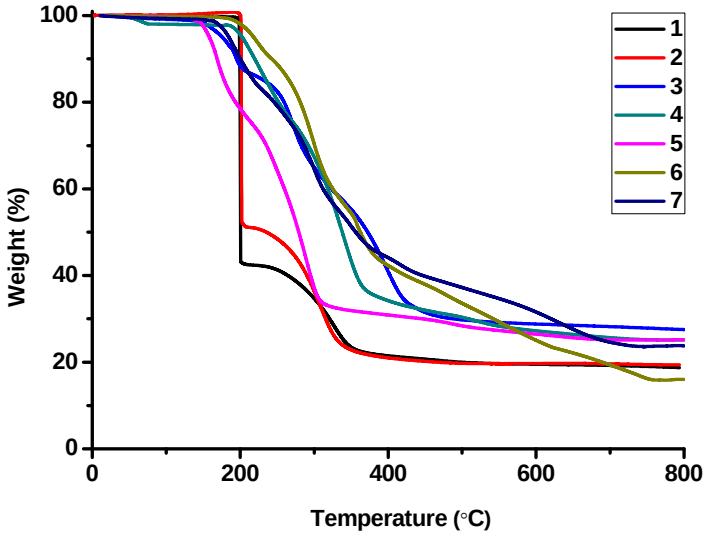


Figure S11. The TGA curves for complexes **1**–**7**.

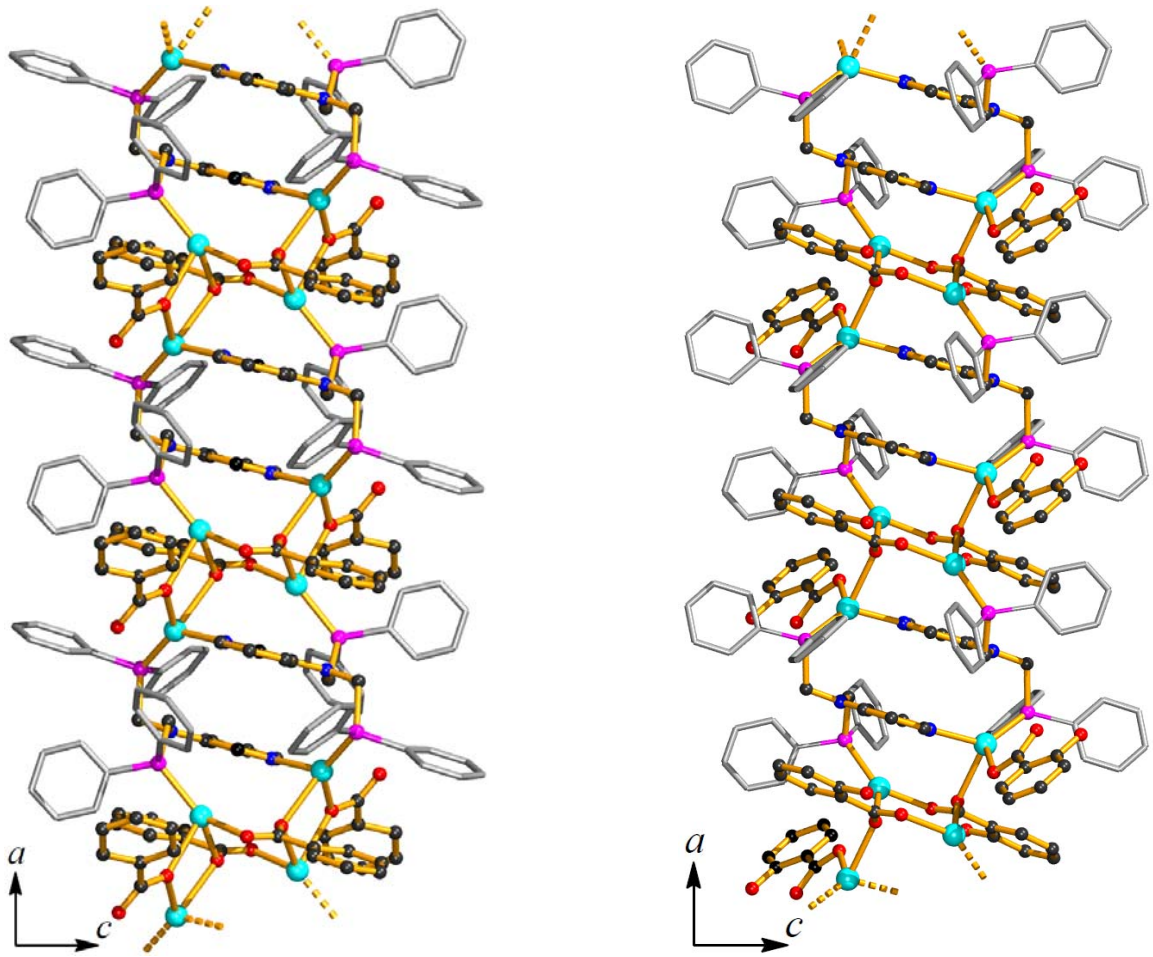


Figure S12. View of a section of the 1D chains of **5** (Left) and **7** (Right) extending along the *a* axis. All hydrogen atoms are omitted for clarity. Atom color codes: Ag, turquiose; P, pink; N, blue; O, red; C, black.

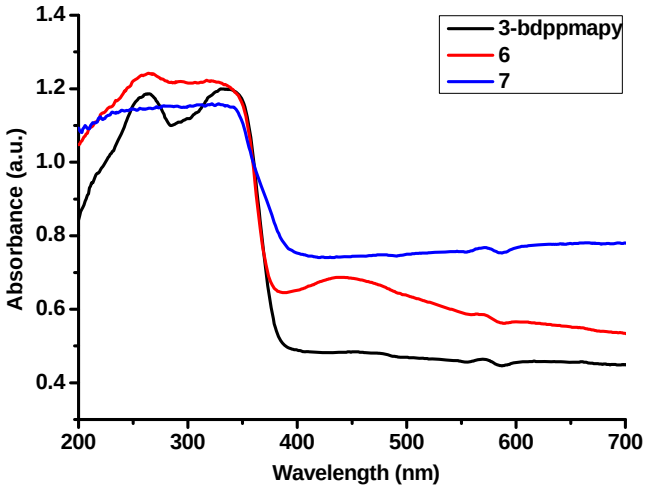


Figure S13. Solid-state absorption spectrum of 3-bdppmapy, **6** and **7** at ambient temperature.

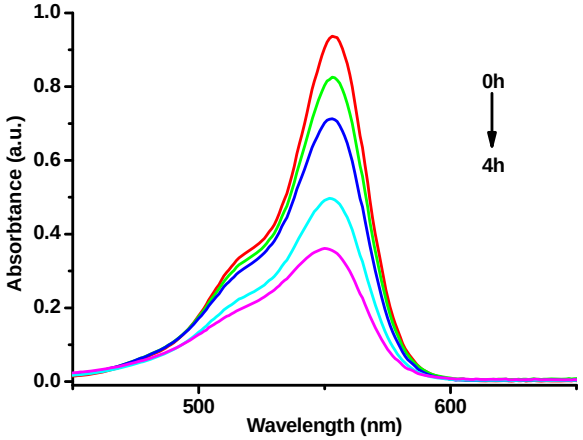


Figure S14. UV-Vis spectra of the mixture of aqueous solution of RhB and **6** after irridiated under UV light for 0–4 hours.

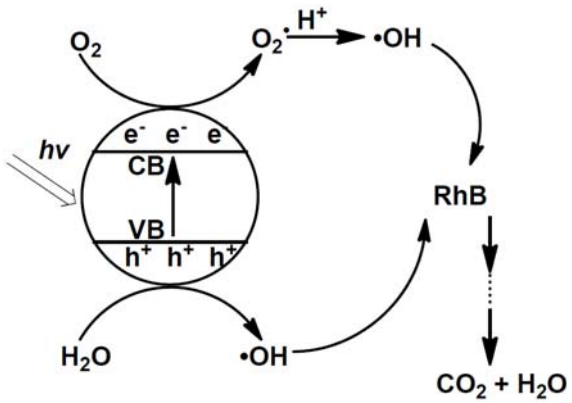


Figure S15. Proposed mechanism of the catalyzed photodegradation of RhB.

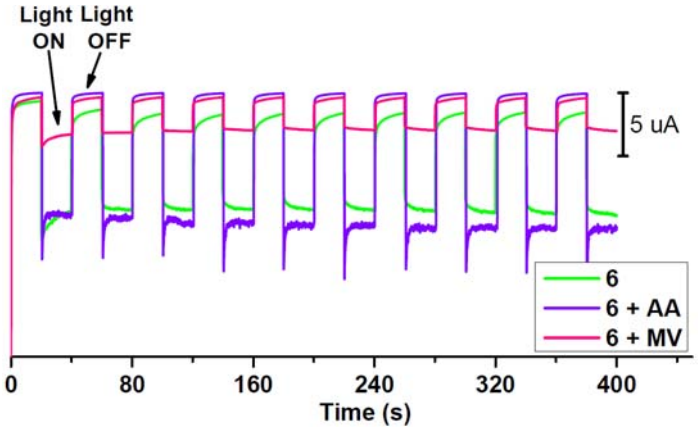


Figure S16. Photocurrent responses of **6** on ITO electrode in water (Green) or in the solution (0.1 mmol·L^{-1}) of ascorbic acid (AA, Purple) or methyl viologen (MV, Pink). Conditions: bias 0.75 V vs SCE, [Na_2SO_4] = 0.1 mol·L^{-1}, UV power density = 40 mW·cm^{-2}.

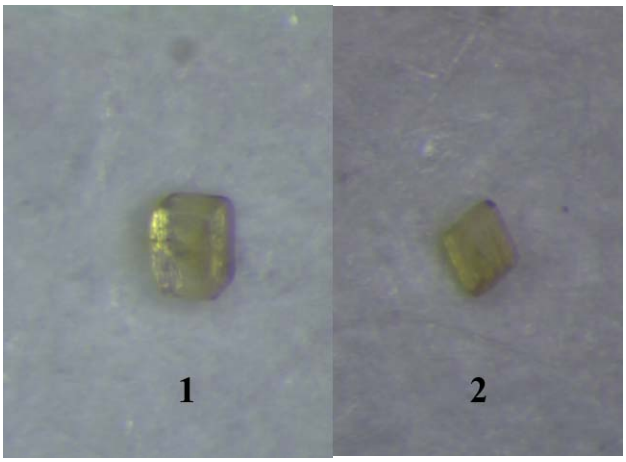


Figure S17. Colour of the crystals of compounds **1** and **2**.

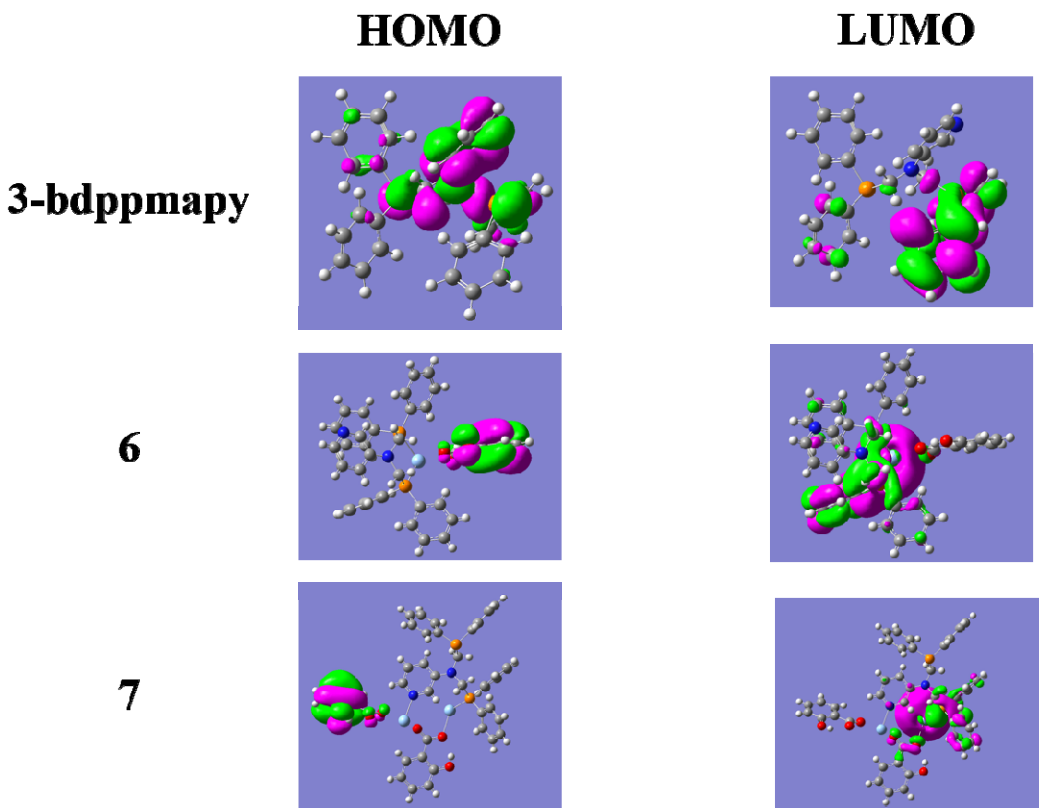


Figure S18. Frontier molecular orbitials (HOMO and LUMO) of 3-bdppmapy, **6** and **7** caculated with DFT on the B3LYP level.