

## Supplementary Information

### **Steric Influence and Controlled Dynamic Process in a Chiral Square Planar Nickel(II) Complex Supported by a Dipyrromethane-based NNNN Tetradentate Ligand**

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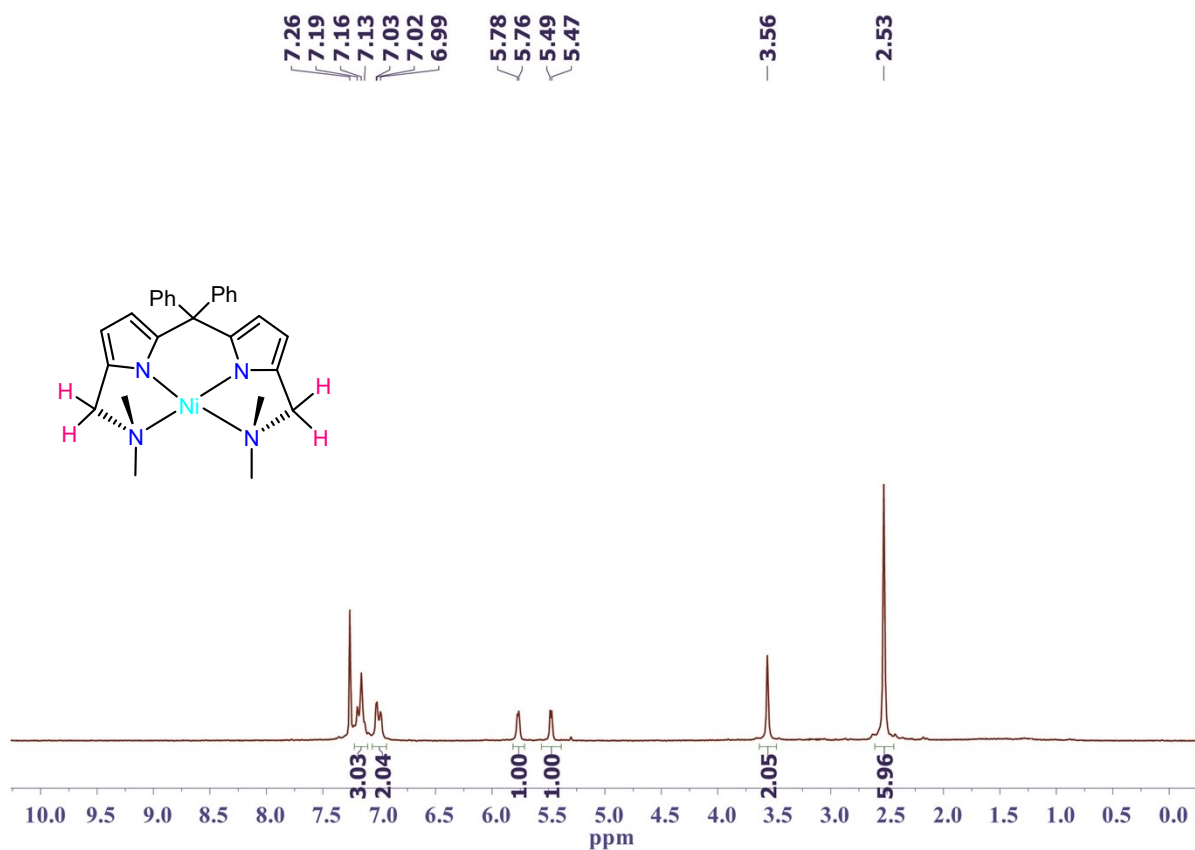
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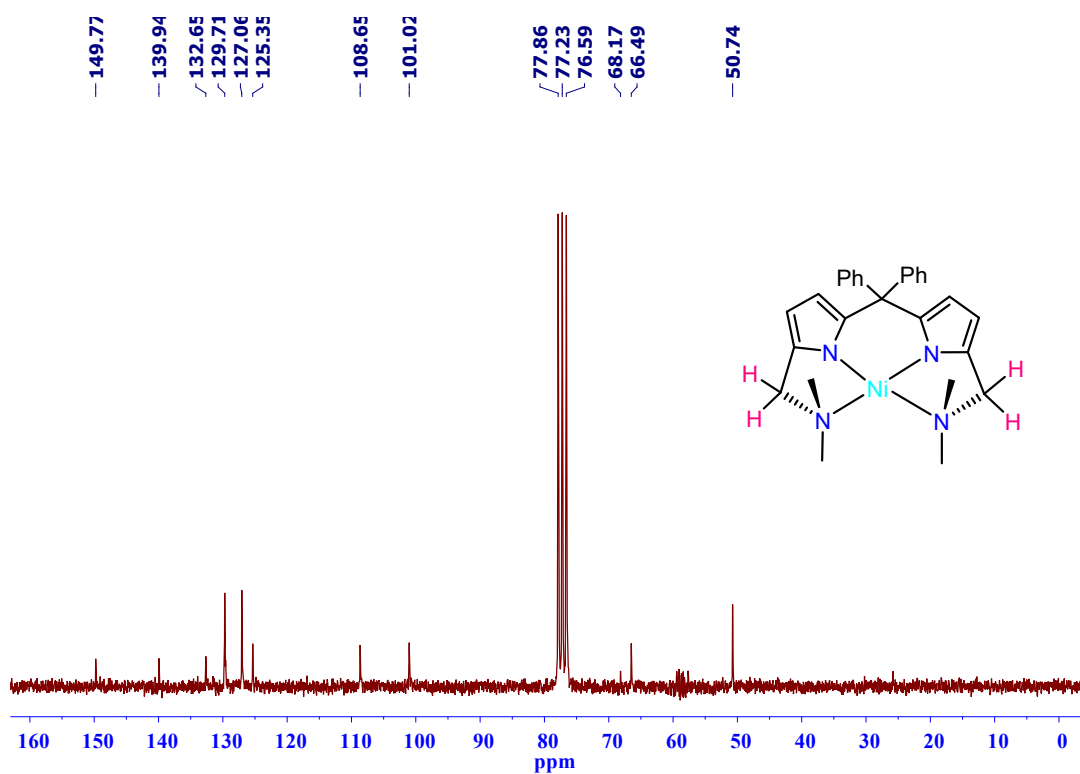
#### **Experimental Section**

##### **General**

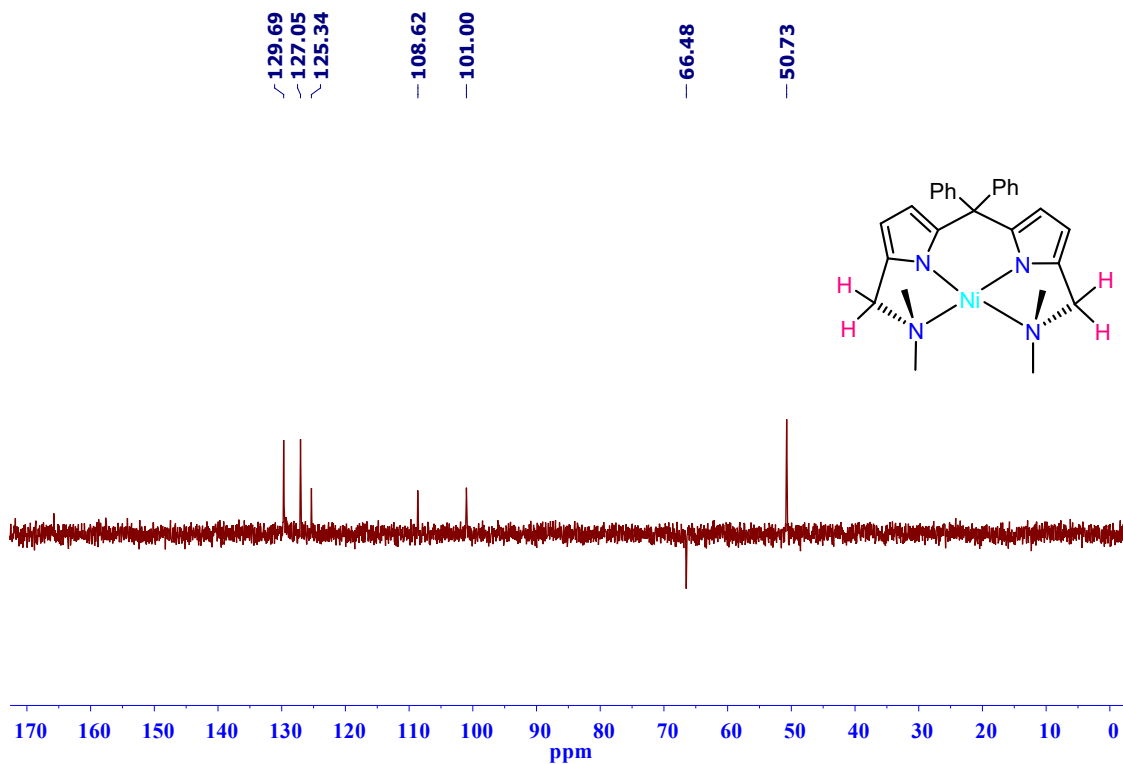
All reactions were carried out using standard Schlenk-line techniques under a nitrogen atmosphere or nitrogen filled glove box. Petroleum ether (bp 40–60 °C) and other solvents were distilled under N<sub>2</sub> atmosphere according to the standard procedures. Other chemicals were obtained from commercial sources and used as received. The compounds **H<sub>2</sub>L1** and **H<sub>2</sub>L2** were prepared as reported.<sup>[1,2]</sup> [NiCl<sub>2</sub>(DME)] was prepared by following the reported procedure.<sup>[3]</sup> <sup>1</sup>H NMR (200 MHz and 400 MHz) and <sup>13</sup>C NMR (50.3 MHz) spectra were recorded on Bruker ACF200 or Bruker ACF400 spectrometer. Chemical shifts were referenced with respect to the chemical shifts of the residual protons present in deuterated solvents. FTIR spectra were recorded using a PerkinElmer Spectrum Rx. instrument. High-resolution mass spectra (ESI) were recorded using a Xevo G2 Tof mass spectrometer (Waters). Elemental analyses were carried out using a Perkin-Elmer 2400 CHN analyzer. Melting points were determined in open capillaries and are corrected using benzophenone as a reference. Room temperature is 25 °C.



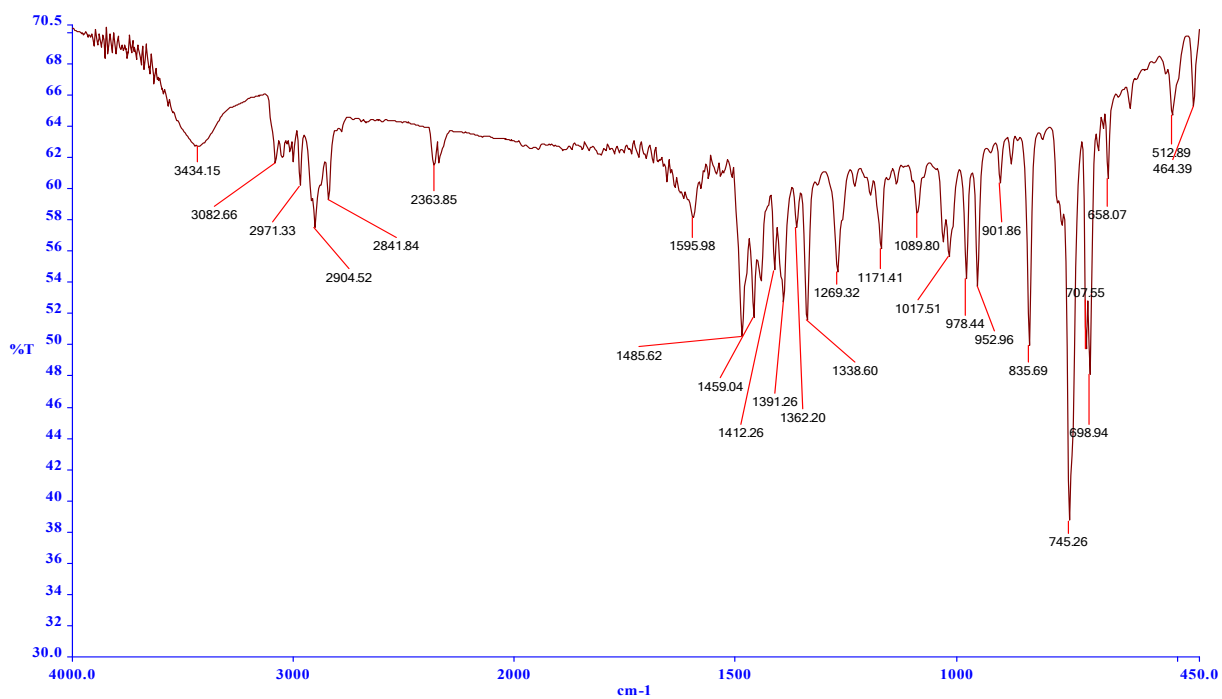
**Figure S1:**  $^1\text{H}$  NMR (200 MHz) spectrum of complex **1** in  $\text{CDCl}_3$  at room temperature.



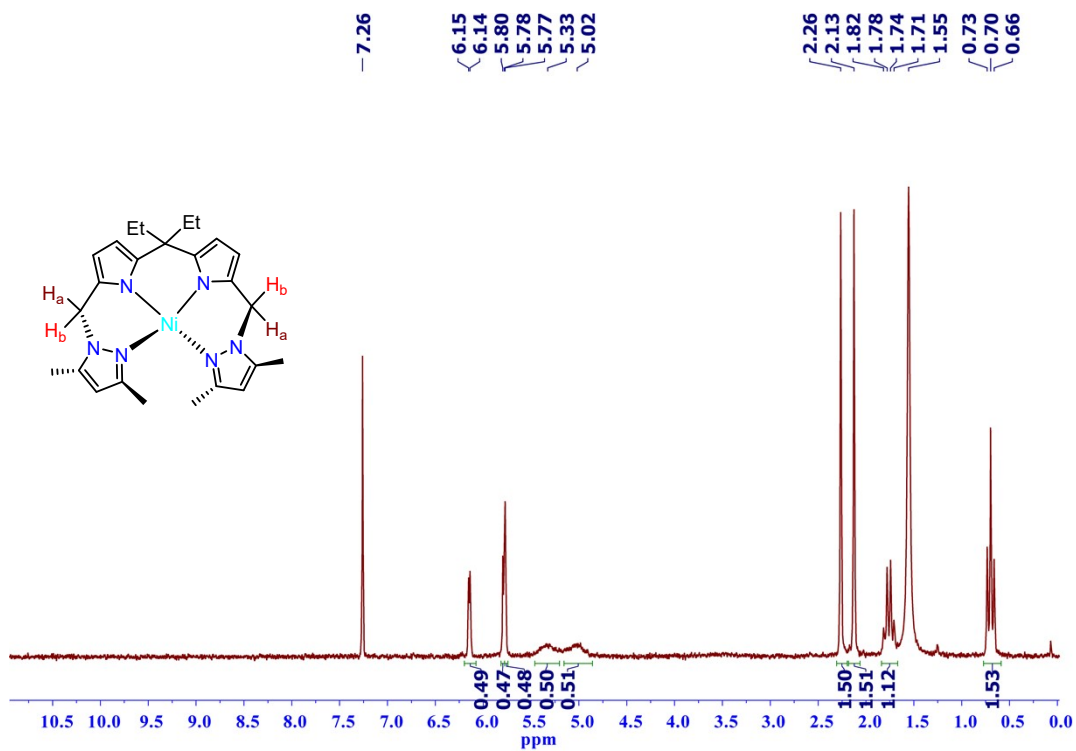
**Figure S2:**  $^{13}\text{C}\{^1\text{H}\}$  NMR (50.3 MHz) spectrum of complex **1** in  $\text{CDCl}_3$  at room temperature.



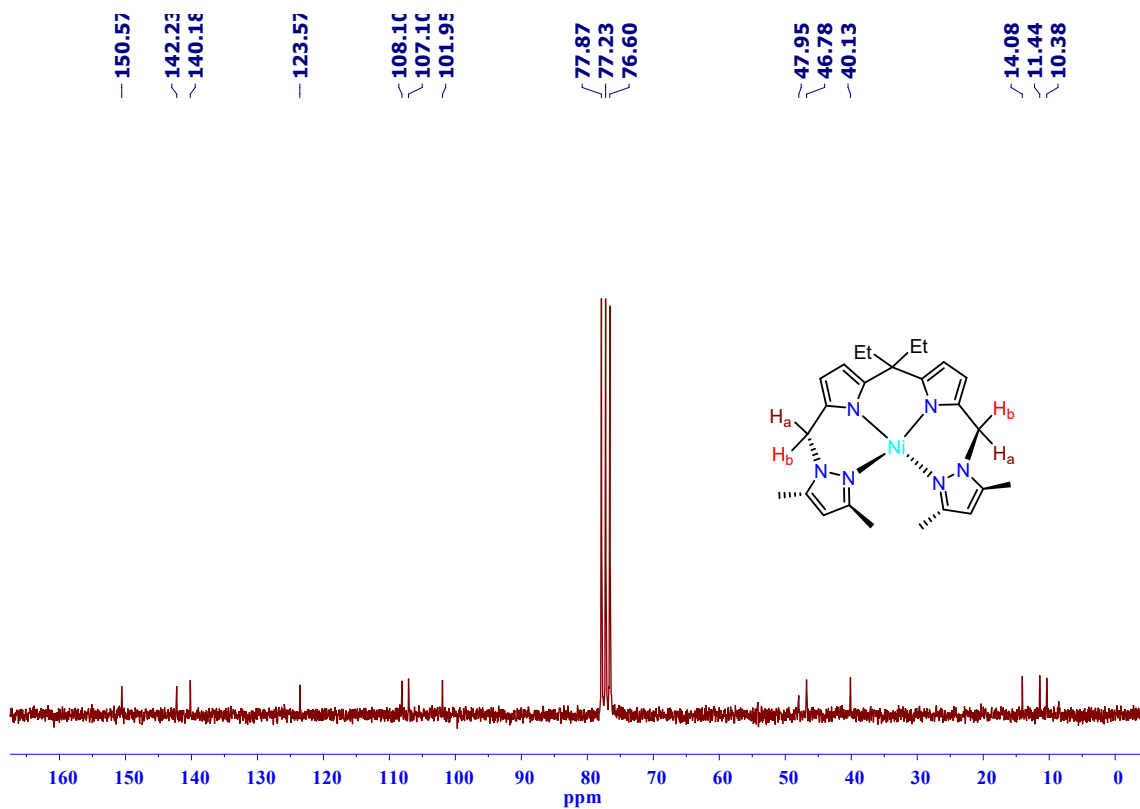
**Figure S3:** DEPT-135 $\{^1\text{H}\}$  NMR (50.3 MHz) spectrum of complex **1** in  $\text{CDCl}_3$  at room temperature.



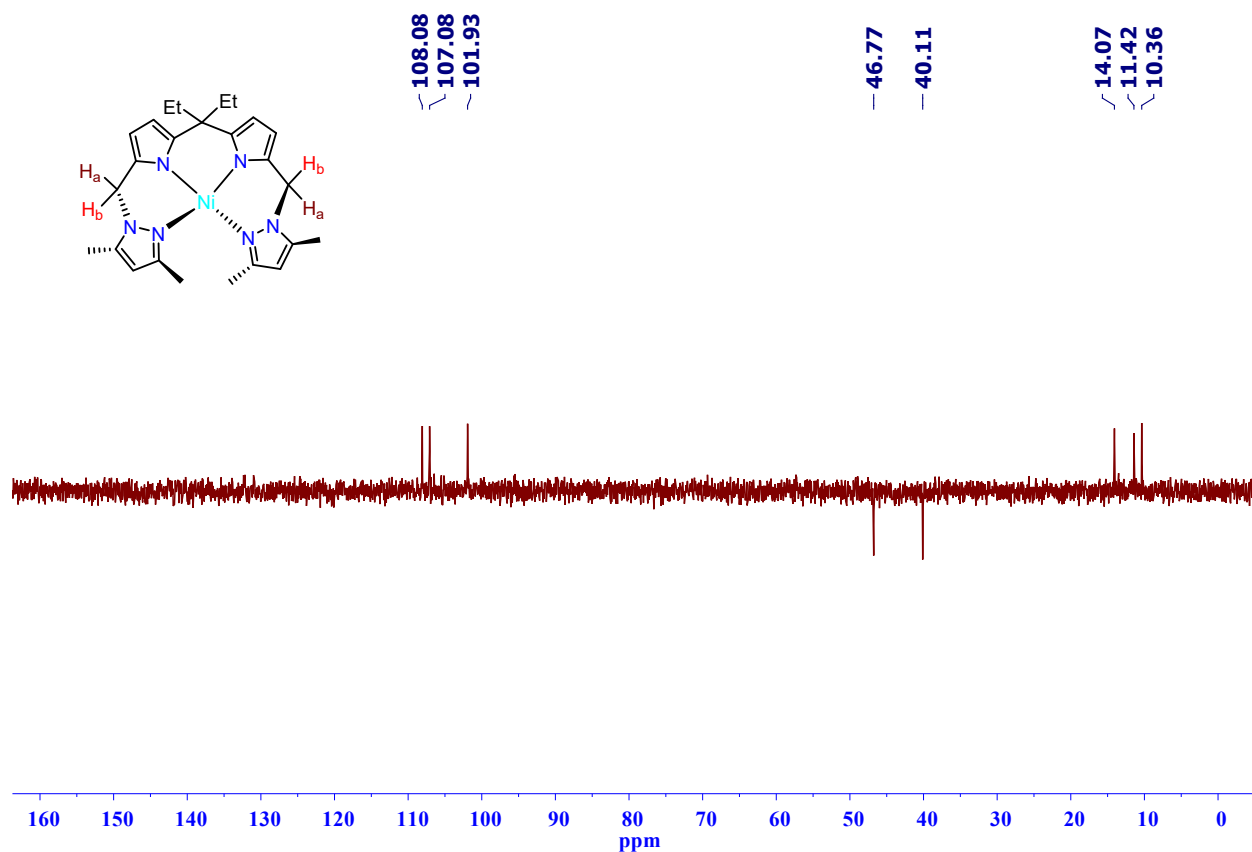
**Figure S4:** IR spectrum of complex **1** recorded as a KBr disc.



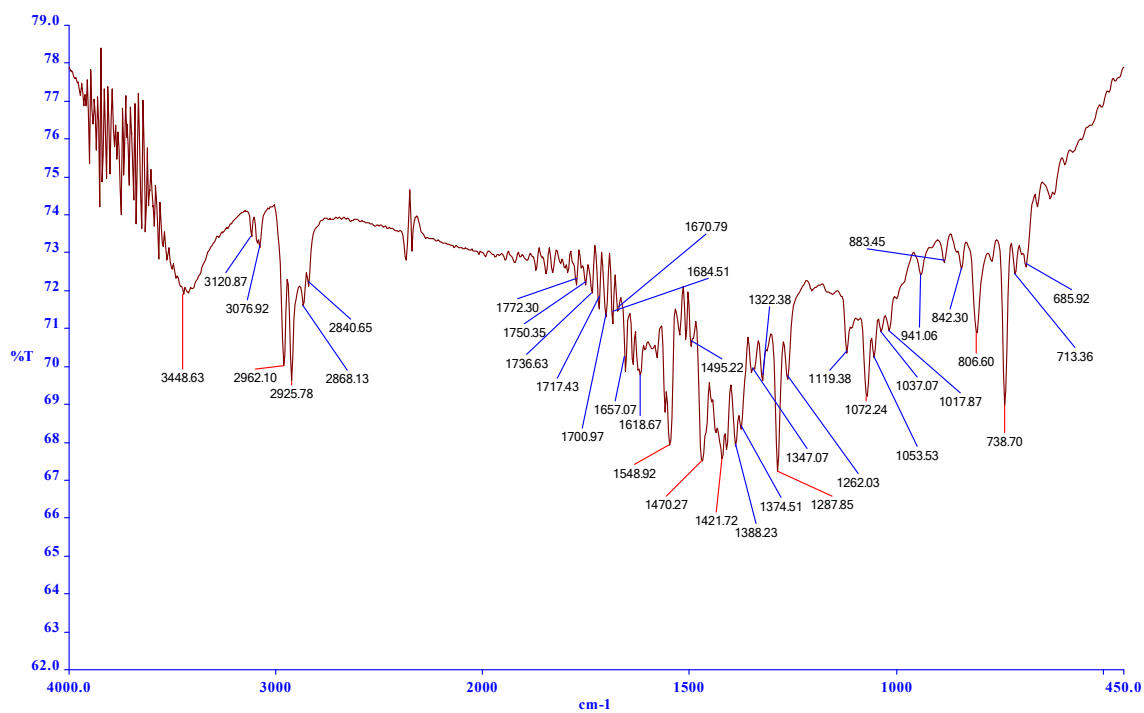
**Figure S5:**  $^1\text{H}$  NMR (200 MHz) spectrum of complex **2** in  $\text{CDCl}_3$  at room temperature.



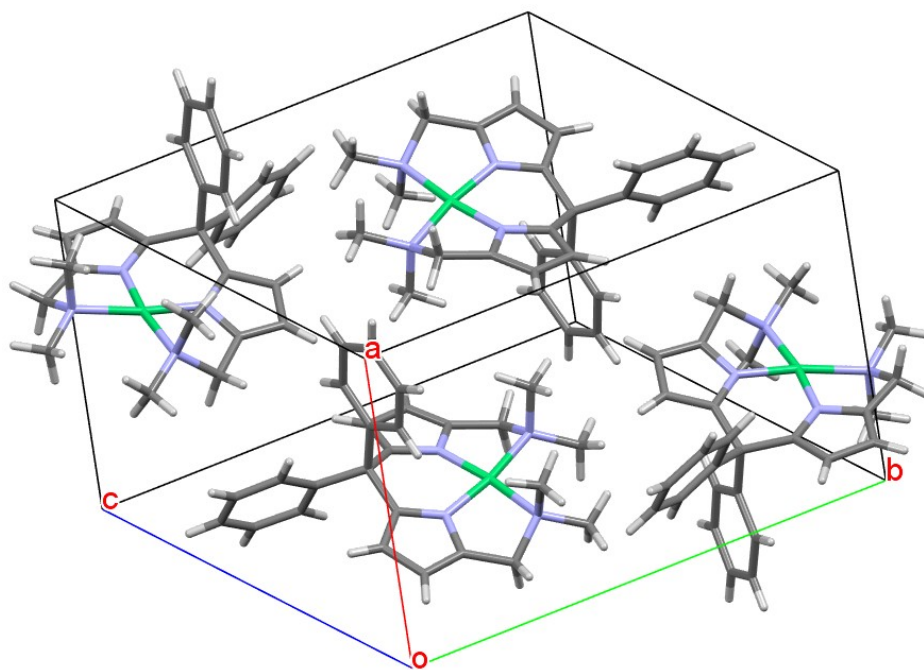
**Figure S6:**  $^{13}\text{C}\{^1\text{H}\}$  NMR (50.3 MHz) spectrum of complex **2** in  $\text{CDCl}_3$  at room temperature.



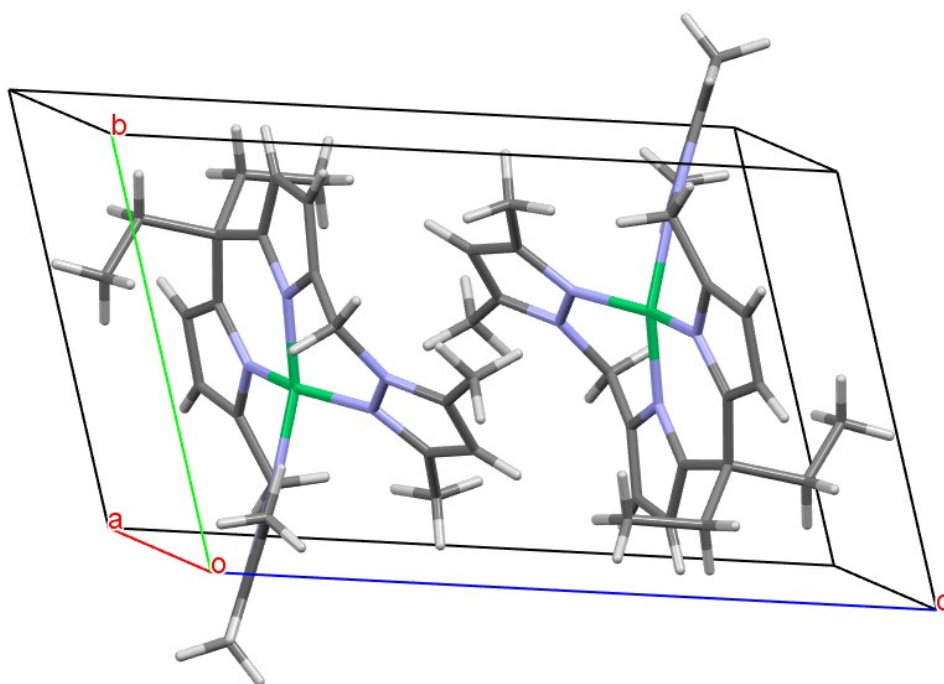
**Figure S7:** DEPT-135 $\{^1\text{H}\}$  NMR (50.3 MHz) spectrum of complex **2** in  $\text{CDCl}_3$  at room temperature.



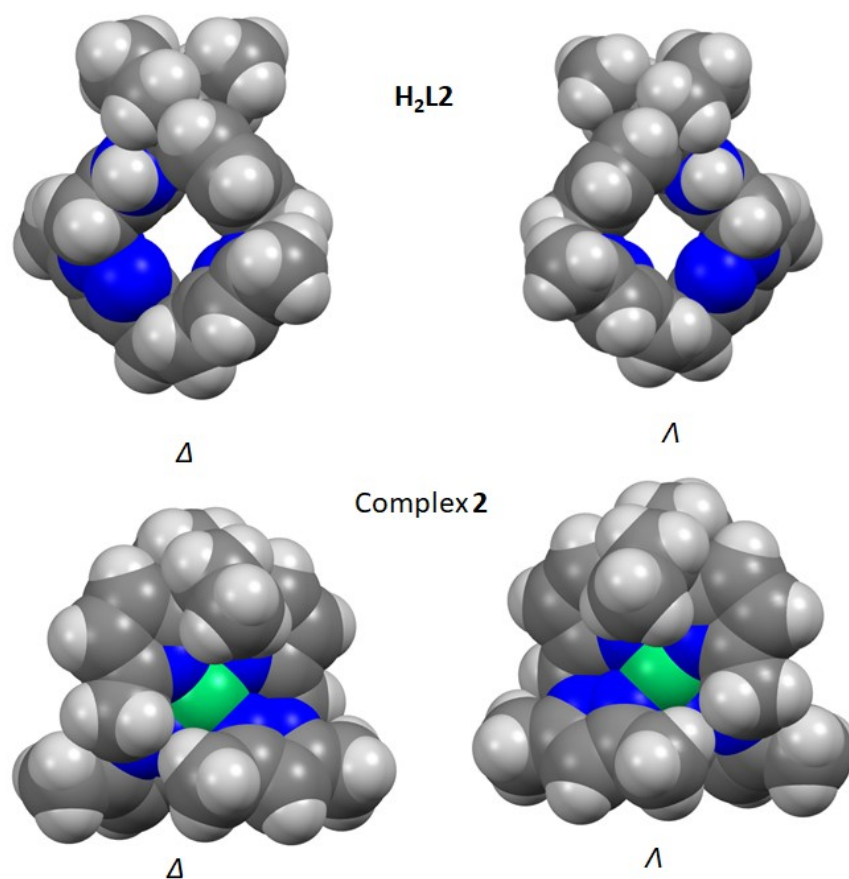
**Figure S8:** IR spectrum of complex **2** recorded as a KBr disc.



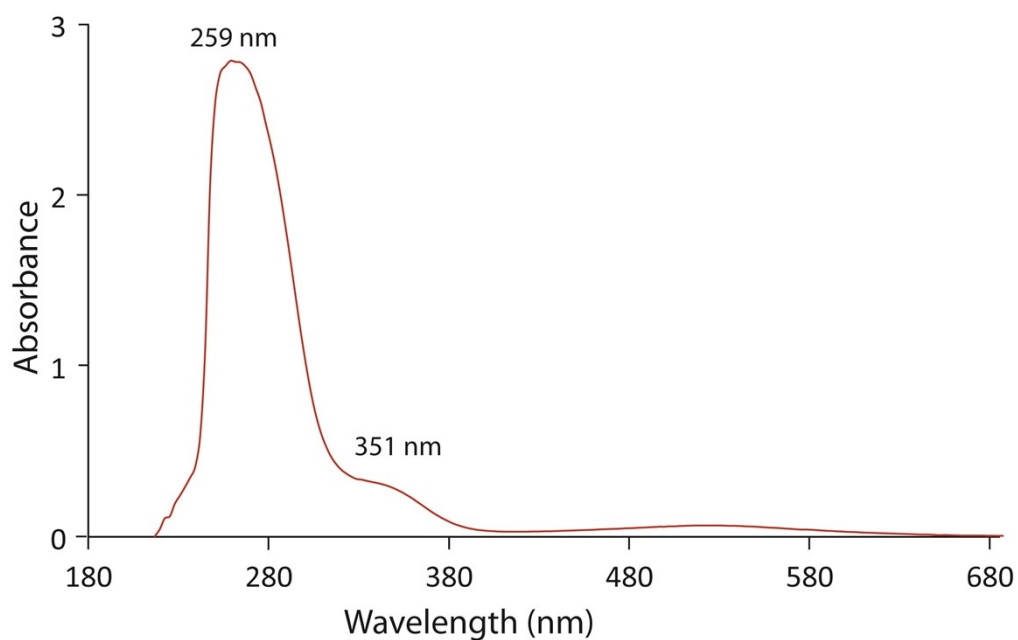
**Figure S9:** Unit cell packing diagram of complex **1**.



**Figure S10:** Unit cell packing diagram of complex **2**; both the enantiomers are present.



**Figure S11:** Spacefill model of the enantiomers of ligand **H<sub>2</sub>L2** and complex **2**.



**Figure S12:** UV-vis spectrum of enantiomeric mixture of complex **2** recorded in chloroform at room temperature ( $\epsilon = 14150 \text{ M}^{-1} \text{ cm}^{-1}$ ).

## References

1. G. Mani, T. Guchhait, R. Kumar and S. Kumar, *Org. Lett.*, 2010, **12**, 3910.
2. T. Guchhait, B. Barua, A. Biswas, B. Basak and G. Mani, *Dalton Trans.*, 2015, **44**, 9091.
3. L. G. L. Ward and J. R. Pipal, *Inorg. Synth.*, 2007, **13**, 154.