

## Electronic Supplementary Information

# Polymerization of 1,3-Butadiene with Catalysts Based on Cobalt Dichloride Complexes with Aminophosphines: Switching the Regioselectivity by Varying the MAO/Co Molar Ratio

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***FT-IR Spectra of the cobalt complexes***

Figure S1. IR spectrum (solid state) of **CoL1**

Figure S2. IR spectrum (solid state) of **CoL2**

Figure S3. IR spectrum (solid state) of **CoL3**

Figure S4. IR spectrum (solid state) of **CoL4**

Figure S5. IR spectrum (solid state) of **CoL5**

Figure S6. IR spectrum (solid state) of **CoL6**

Figure S7. IR spectrum (solid state) of **CoL7**

***FT-IR Spectra of the polymers***

Figure S8. FTIR spectrum of entry **1** (ref. Table 3 of the manuscript).

Figure S9. FTIR spectrum of entry **2** (ref. Table 3 of the manuscript).

Figure S10. FTIR spectrum of entry **3** (ref. Table 3 of the manuscript).

Figure S11. FTIR spectrum of entry **4** (ref. Table 3 of the manuscript).

Figure S12. FTIR spectrum of entry **5** (ref. Table 3 of the manuscript).

Figure S13. FTIR spectrum of entry **6** (ref. Table 3 of the manuscript).

Figure S14. FTIR spectrum of entry **7** (ref. Table 3 of the manuscript).

Figure S15. FTIR spectrum of entry **8** (ref. Table 3 of the manuscript).

Figure S16. FTIR spectrum of entry **9** (ref. Table 3 of the manuscript).

Figure S17. FTIR spectrum of entry **10** (ref. Table 3 of the manuscript).

Figure S18. FTIR spectrum of entry **11** (ref. Table 3 of the manuscript).

Figure S19. FTIR spectrum of entry **12** (ref. Table 3 of the manuscript).

Figure S20. FTIR spectrum of entry **13** (ref. Table 3 of the manuscript).

Figure S21. FTIR spectrum of entry **14** (ref. Table 3 of the manuscript).

Figure S22. FTIR spectrum of entry **15** (ref. Table 3 of the manuscript).

Figure S23. FTIR spectrum of entry **16** (ref. Table 3 of the manuscript).

Figure S24. FTIR spectrum of entry **17** (ref. Table 3 of the manuscript).

***<sup>1</sup>H and <sup>13</sup>C NMR spectra of the polymers.***

Figure S25. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **1** (ref. Table 3 of the manuscript).

Figure S26. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **3** (ref. Table 3 of the manuscript).

Figure S27. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **9** (ref. Table 3 of the manuscript).

Figure S28. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **10** (ref. Table 3 of the manuscript).

Figure S29. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **11** (ref. Table 3 of the manuscript).

Figure S30. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **12** (ref. Table 3 of the manuscript).

Figure S31. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **13** (ref. Table 3 of the manuscript).

Figure S32. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **14** (ref. Table 3 of the manuscript).

Figure S33. <sup>1</sup>H (bottom) and <sup>13</sup>C NMR (top) spectra of entry **15** (ref. Table 3 of the manuscript).

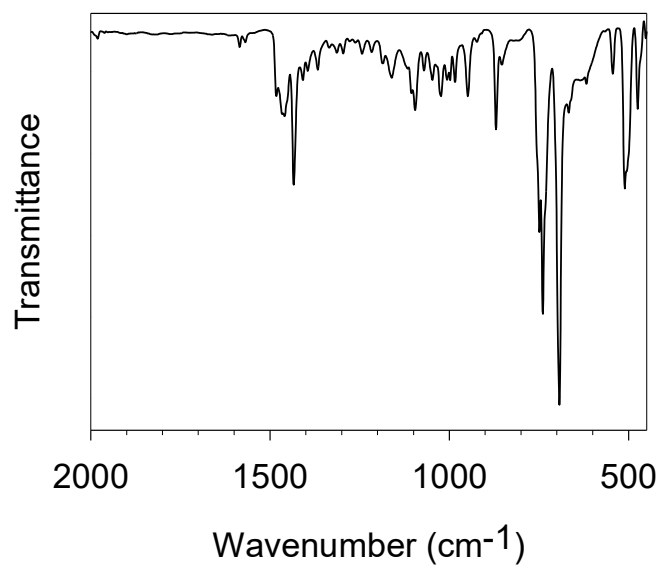


Figure S1. IR spectrum (solid state) of **CoL1**

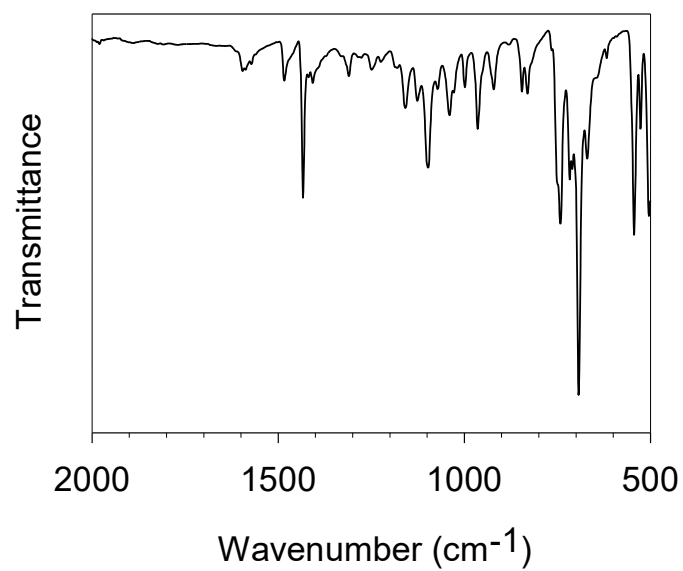


Figure S2. IR spectrum (solid state) of **CoL2**

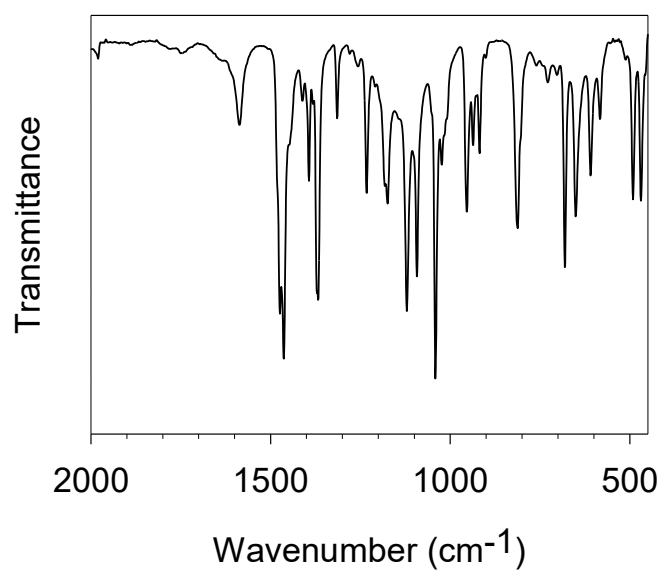


Figure S3. IR spectrum (solid state) of **CoL3**

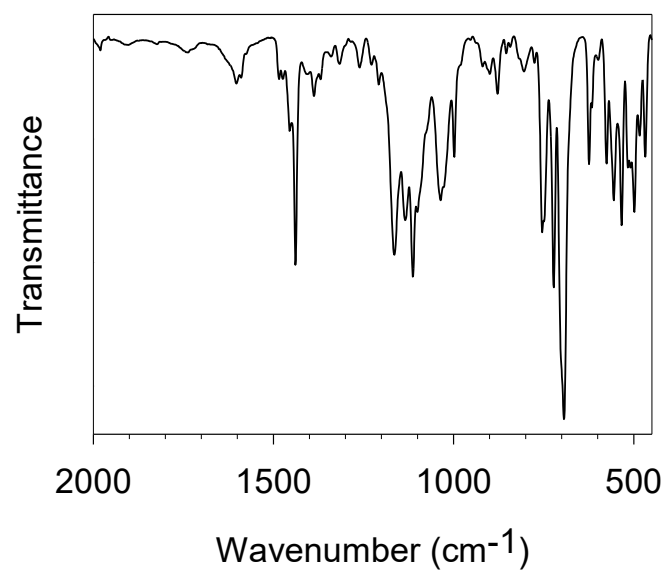


Figure S4. IR spectrum (solid state) of **CoL4**

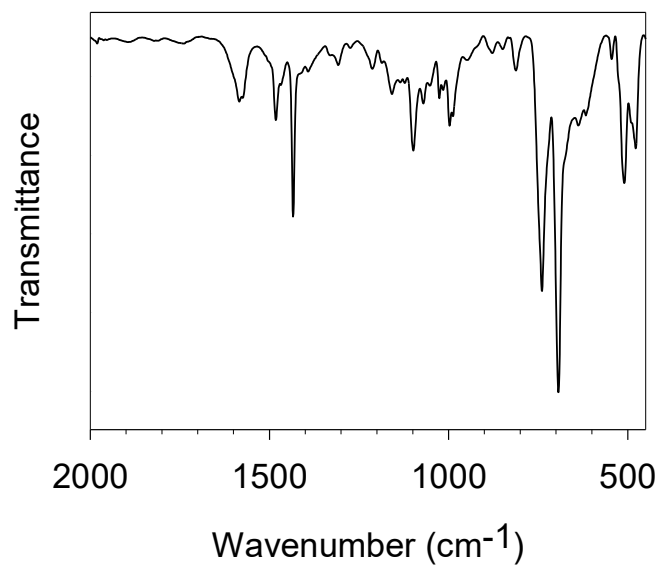


Figure S5. IR spectrum (solid state) of **CoL5**

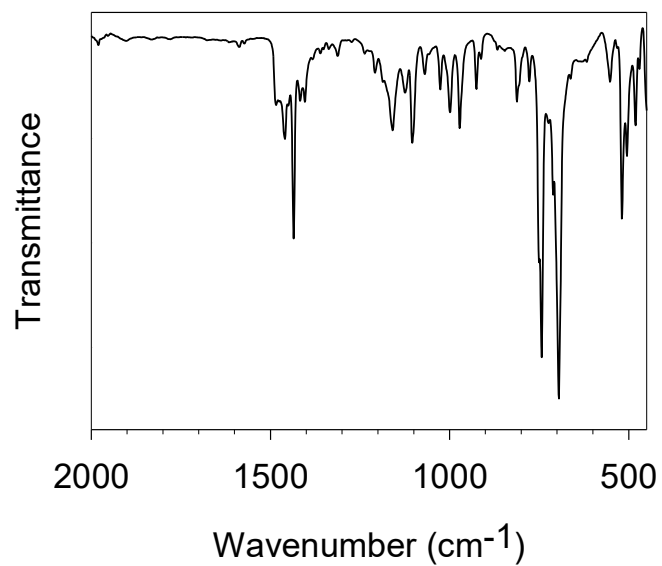


Figure S6. IR spectrum (solid state) of **CoL6**



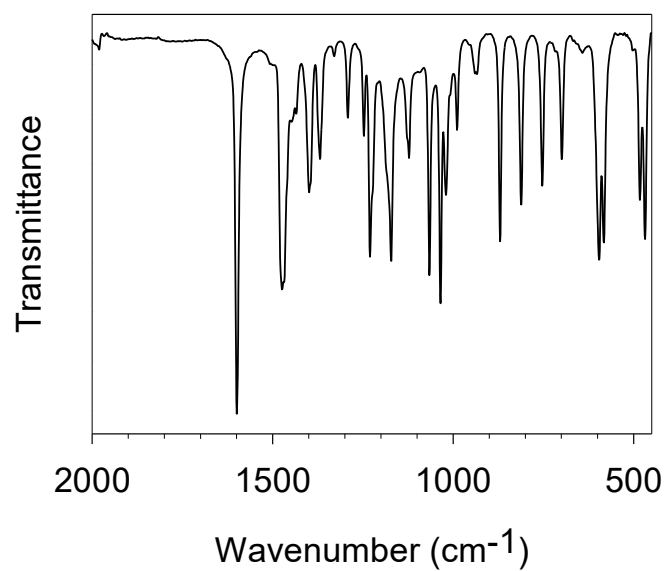


Figure S7. IR spectrum (solid state) of **CoL7**

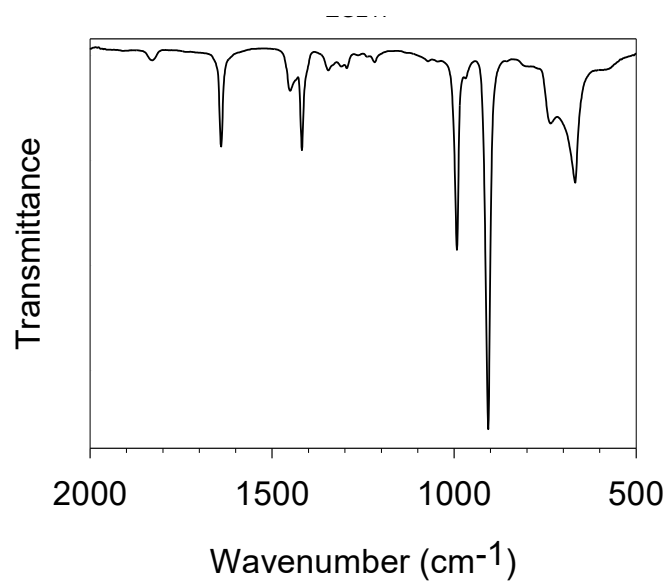


Figure S8. FTIR spectrum of entry **1** (ref. Table 3 of the manuscript).

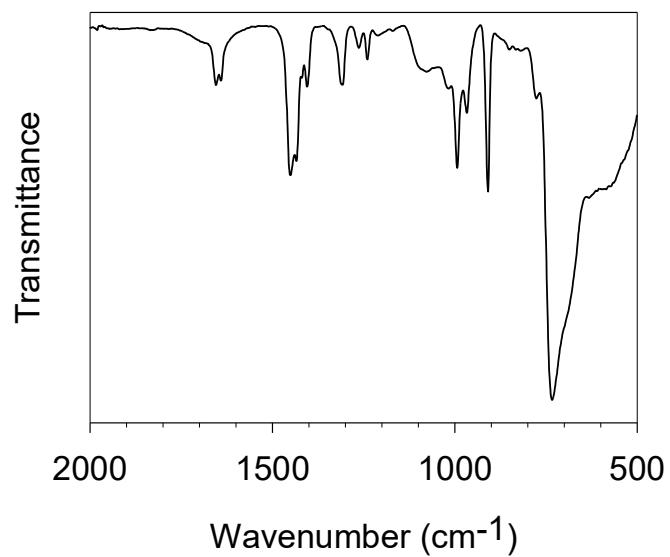


Figure S9. FTIR spectrum of entry 2 (ref. Table 3 of the manuscript).

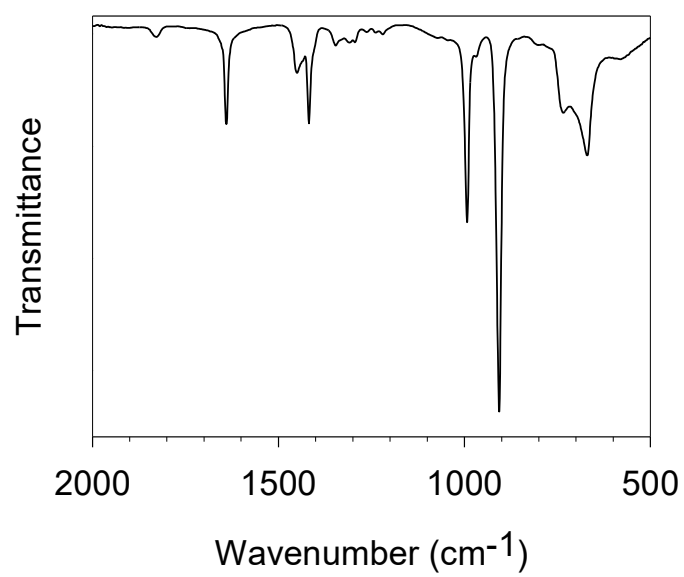


Figure S10. FTIR spectrum of entry 3 (ref. Table 3 of the manuscript).

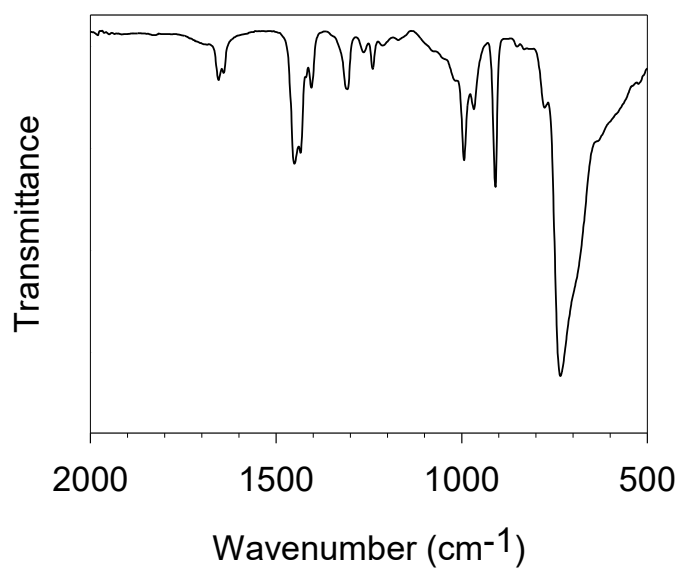


Figure S11. FTIR spectrum of entry 4 (ref. Table 3 of the manuscript).

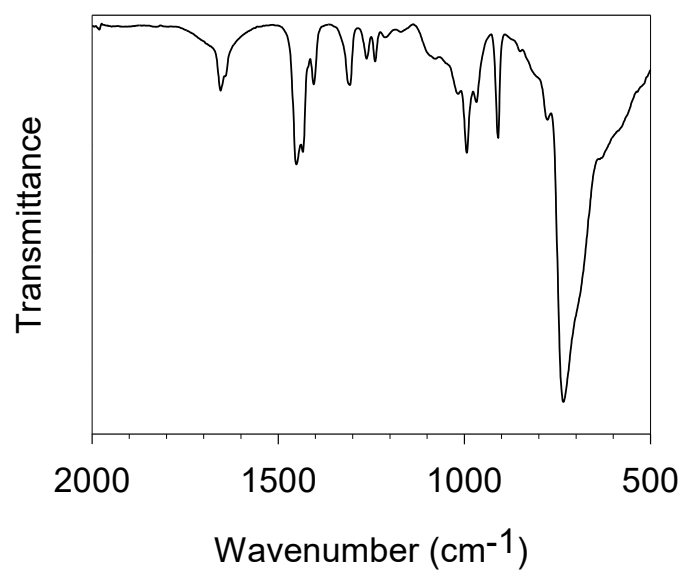


Figure S12. FTIR spectrum of entry **5** (ref. Table 3 of the manuscript).

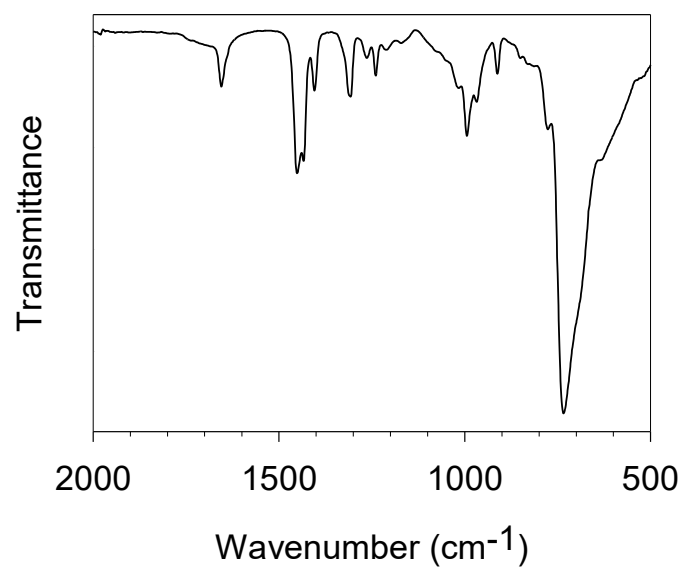


Figure S13. FTIR spectrum of entry 6 (ref. Table 3 of the manuscript).

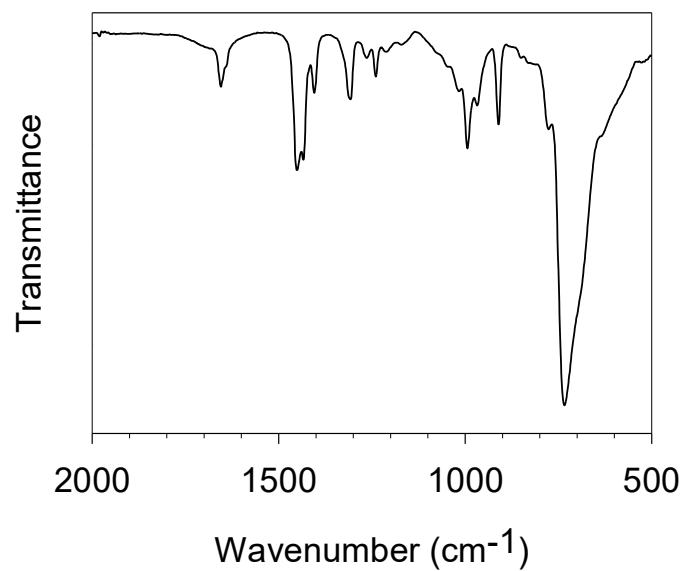


Figure S14. FTIR spectrum of entry 7 (ref. Table 3 of the manuscript).



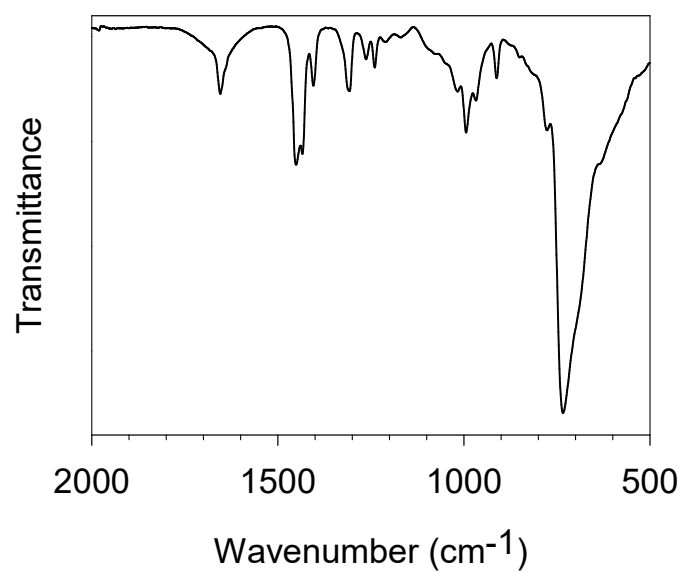


Figure S15. FTIR spectrum of entry 8(ref. Table 3 of the manuscript).

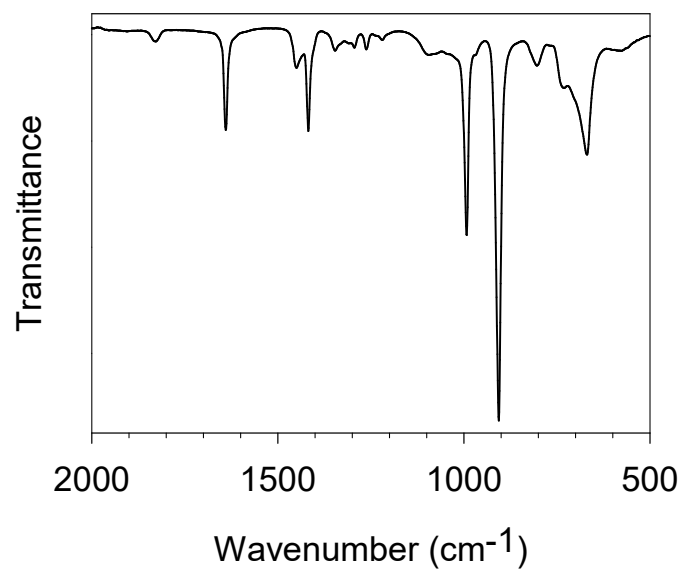


Figure S16. FTIR spectrum of entry 9 (ref. Table 3 of the manuscript).

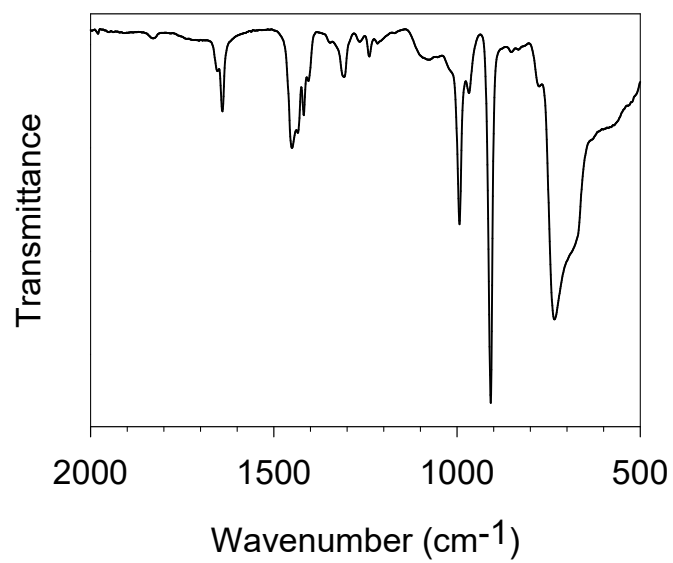


Figure S17. FTIR spectrum of entry **10** (ref. Table 3 of the manuscript).

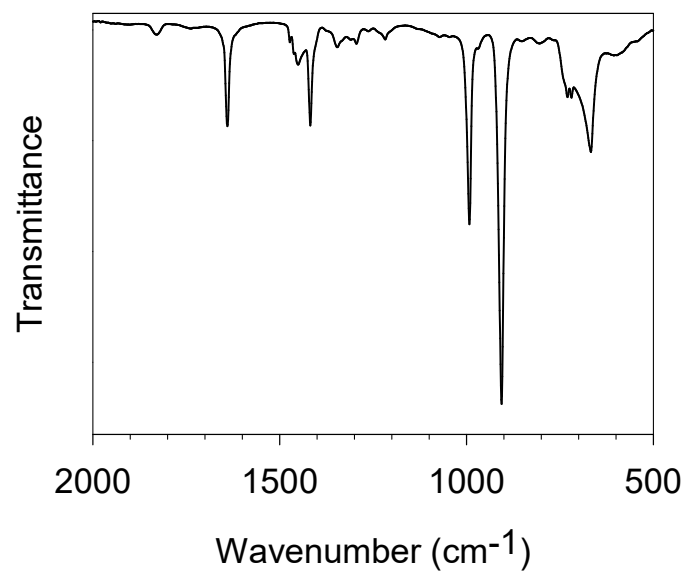


Figure S18. FTIR spectrum of entry **11** (ref. Table 3 of the manuscript).

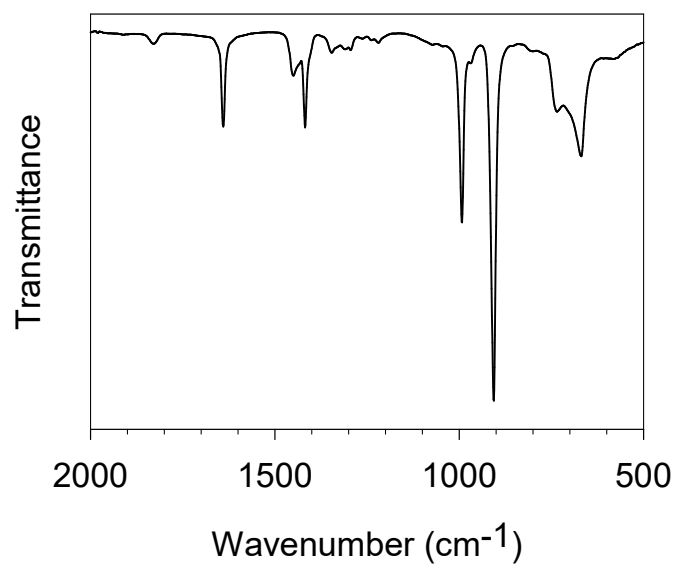


Figure S19. FTIR spectrum of entry **12** (ref. Table 3 of the manuscript).

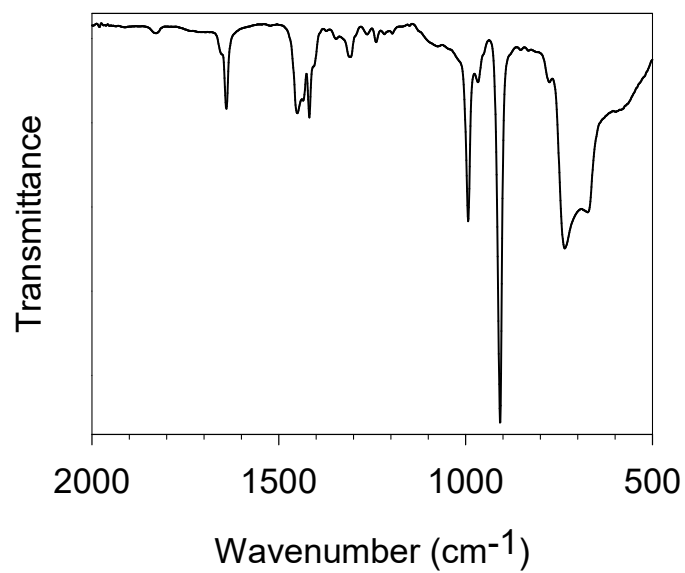


Figure S20. FTIR spectrum of entry **13** (ref. Table 3 of the manuscript).

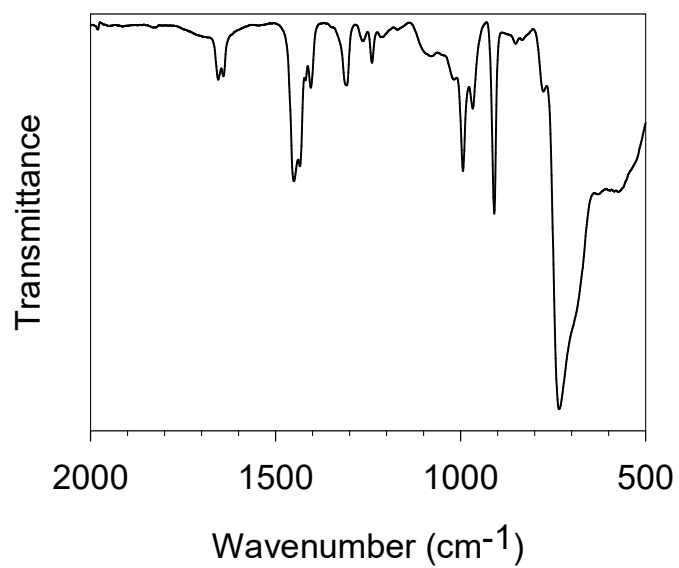


Figure S21. FTIR spectrum of entry **14** (ref. Table 3 of the manuscript).

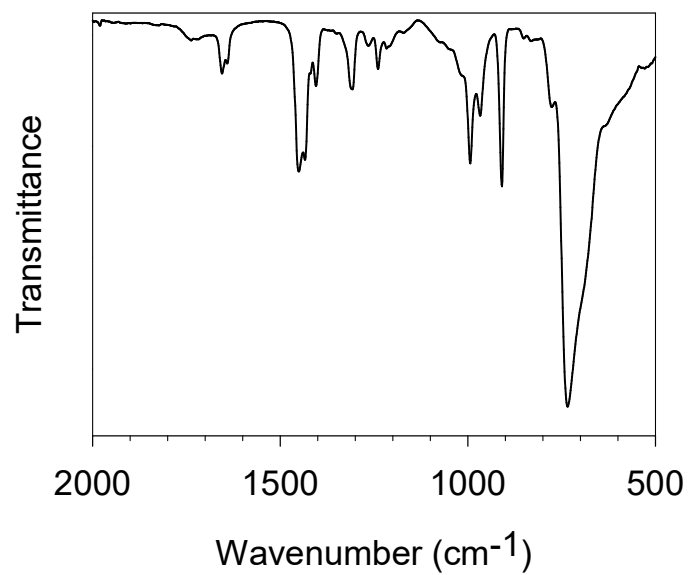


Figure S22. FTIR spectrum of entry **15** (ref. Table 3 of the manuscript).



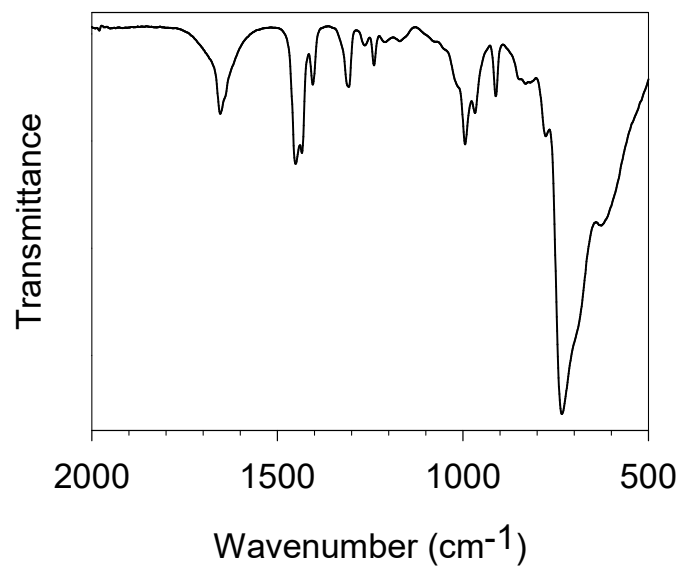


Figure S23. FTIR spectrum of entry **16** (ref. Table 3 of the manuscript).

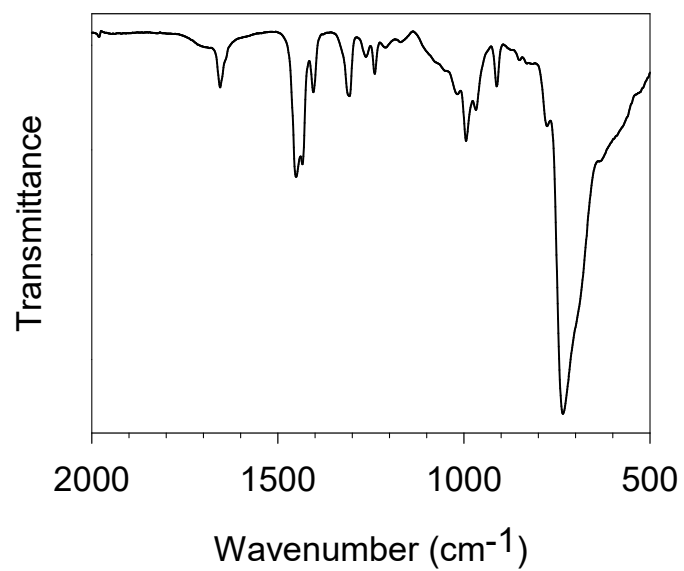


Figure S24. FTIR spectrum of entry 17 (ref. Table 3 of the manuscript).

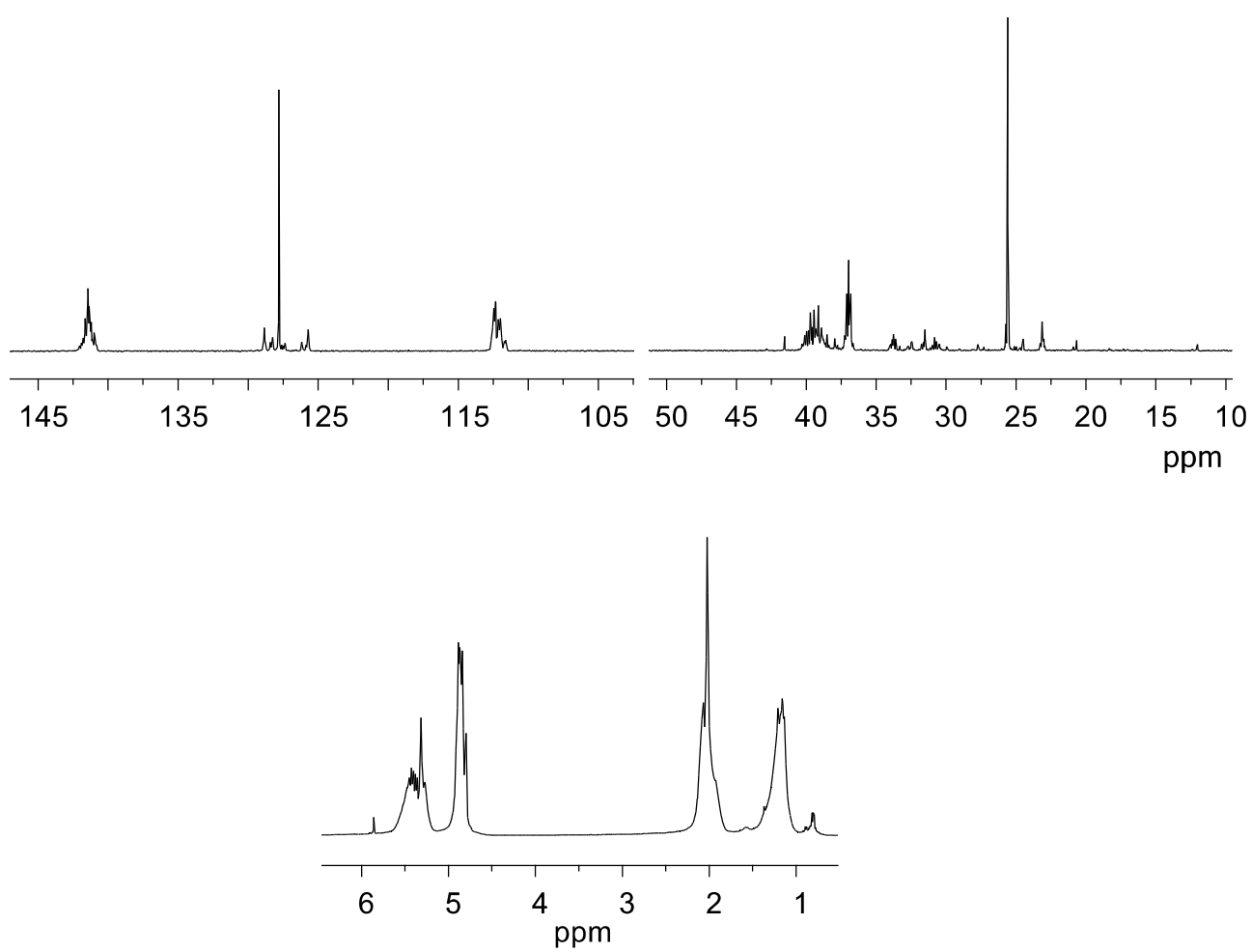


Figure S25.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry 1 (ref. Table 3 of the manuscript).

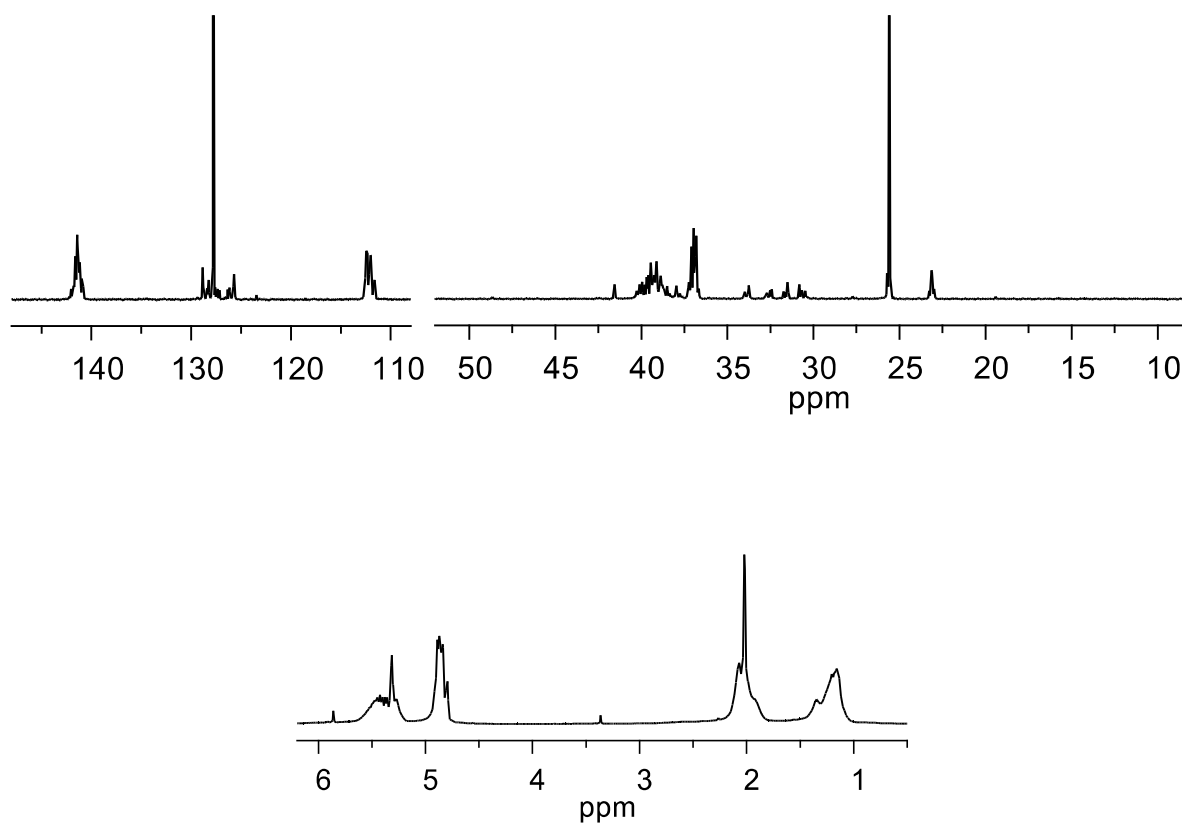


Figure S26.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry **3** (ref. Table 3 of the manuscript).

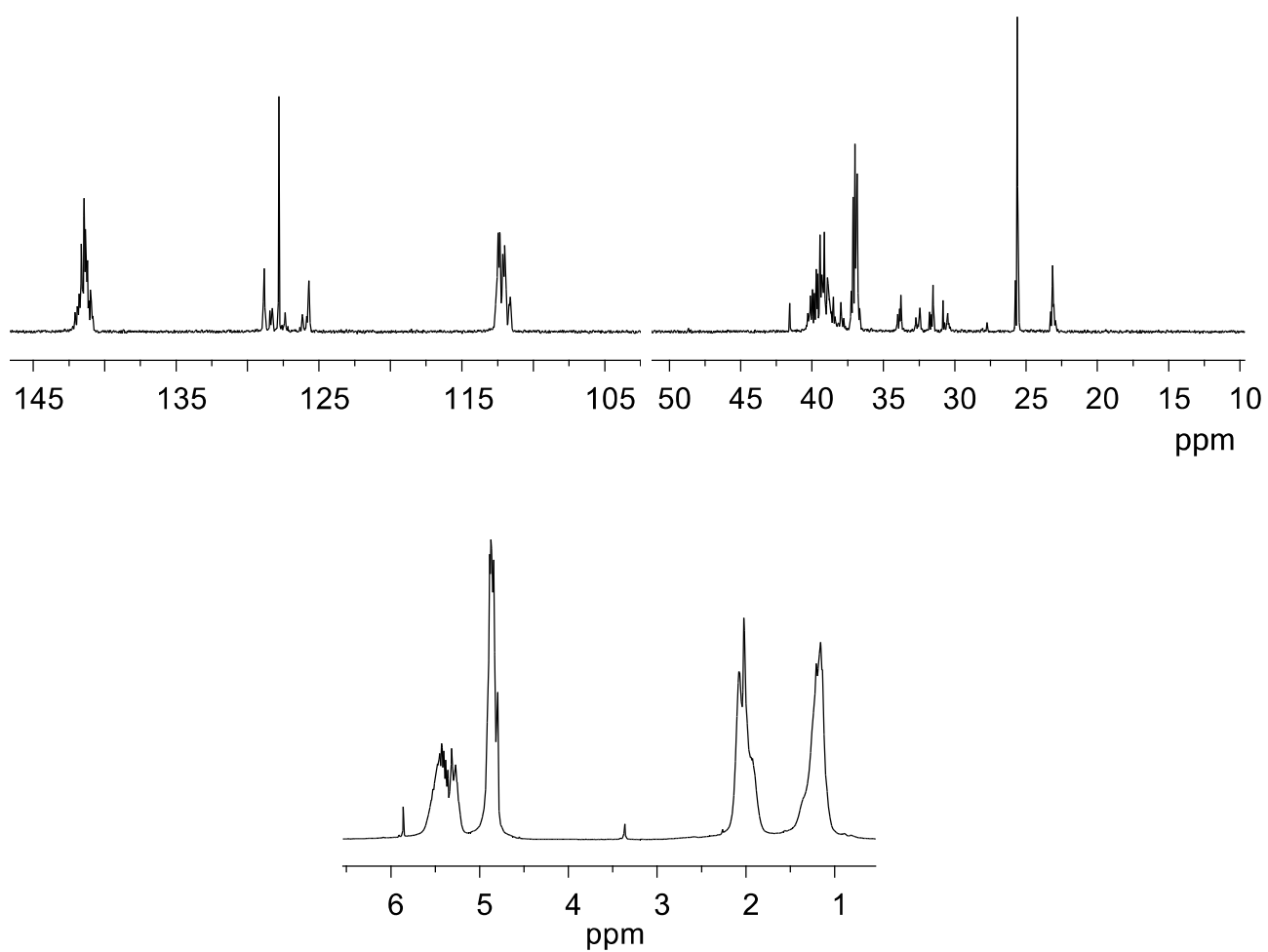


Figure S27.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry 9 (ref. Table 3 of the manuscript).

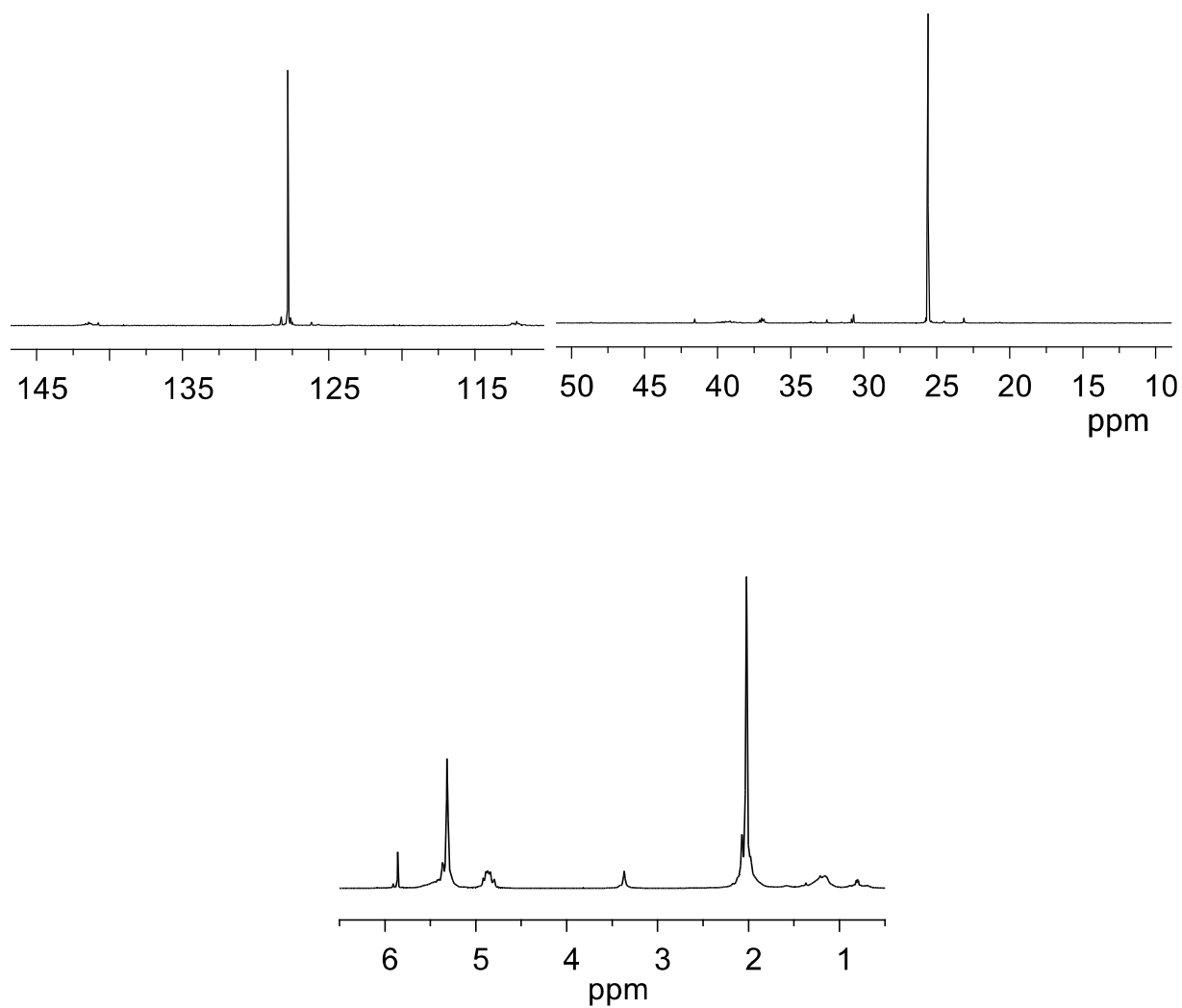


Figure S28.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry **10** (ref. Table 3 of the manuscript).

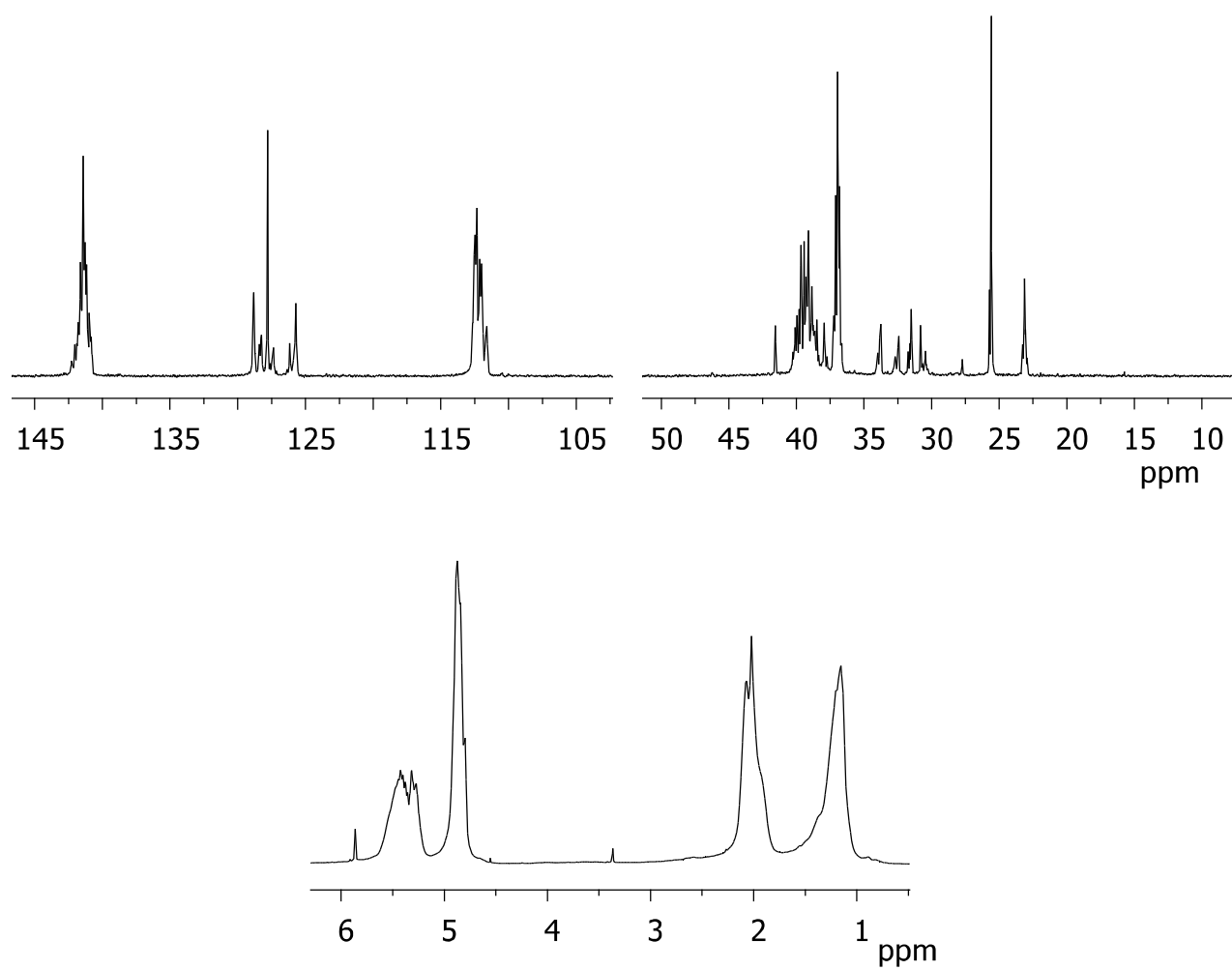


Figure S29.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry 11 (ref. Table 3 of the manuscript).

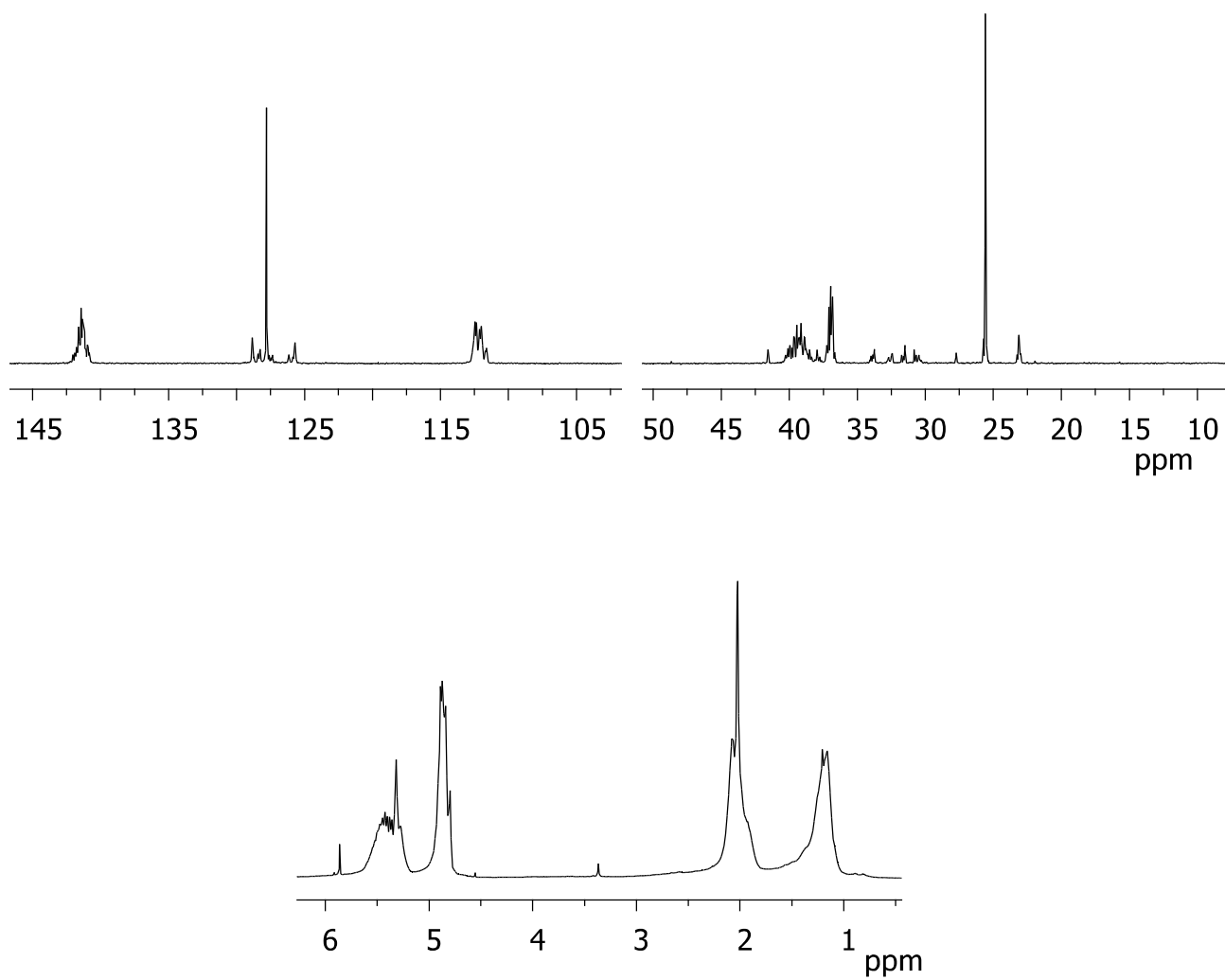


Figure S30.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry **12** (ref. Table 3 of the manuscript).



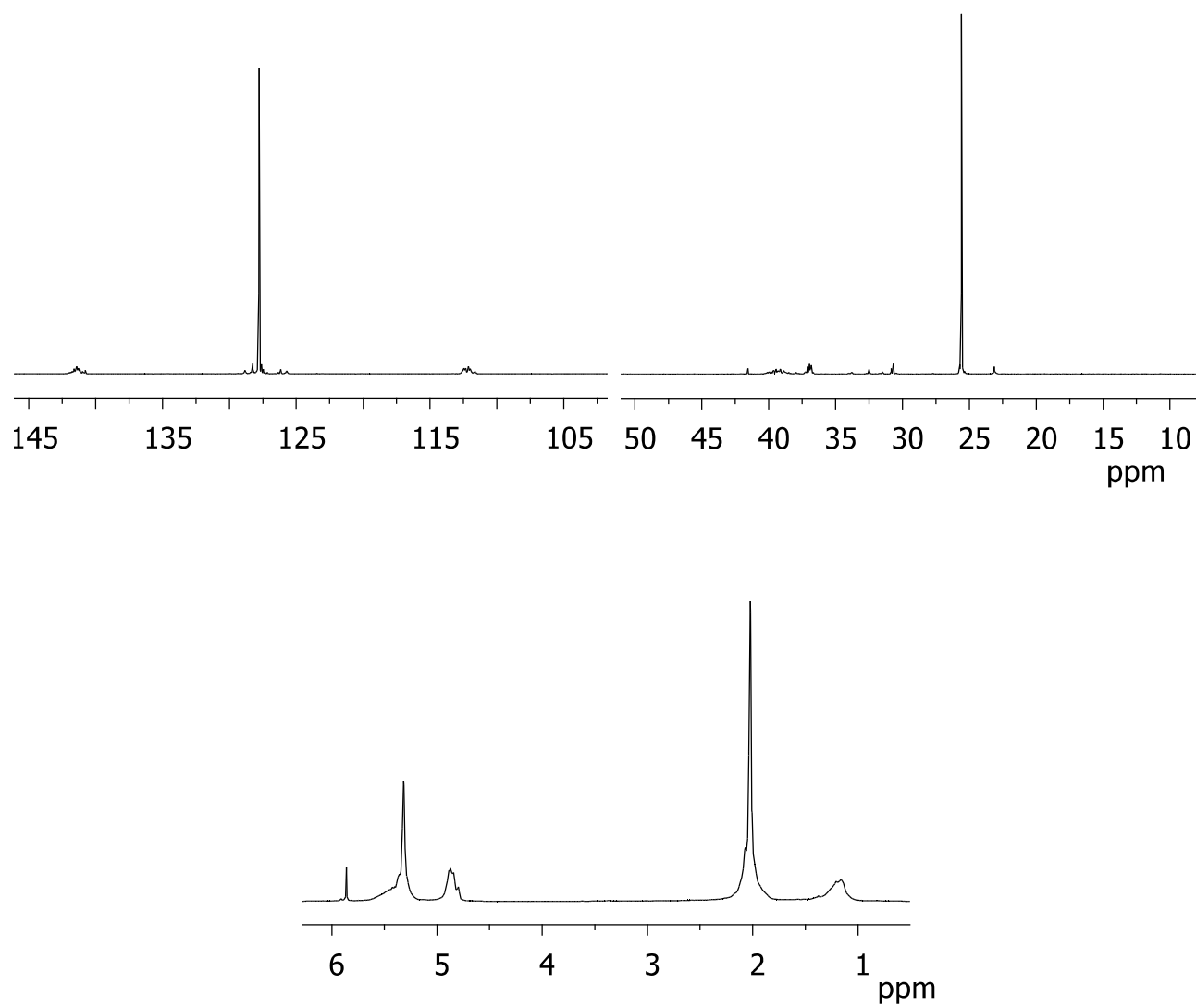


Figure S31.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry **13** (ref. Table 3 of the manuscript).

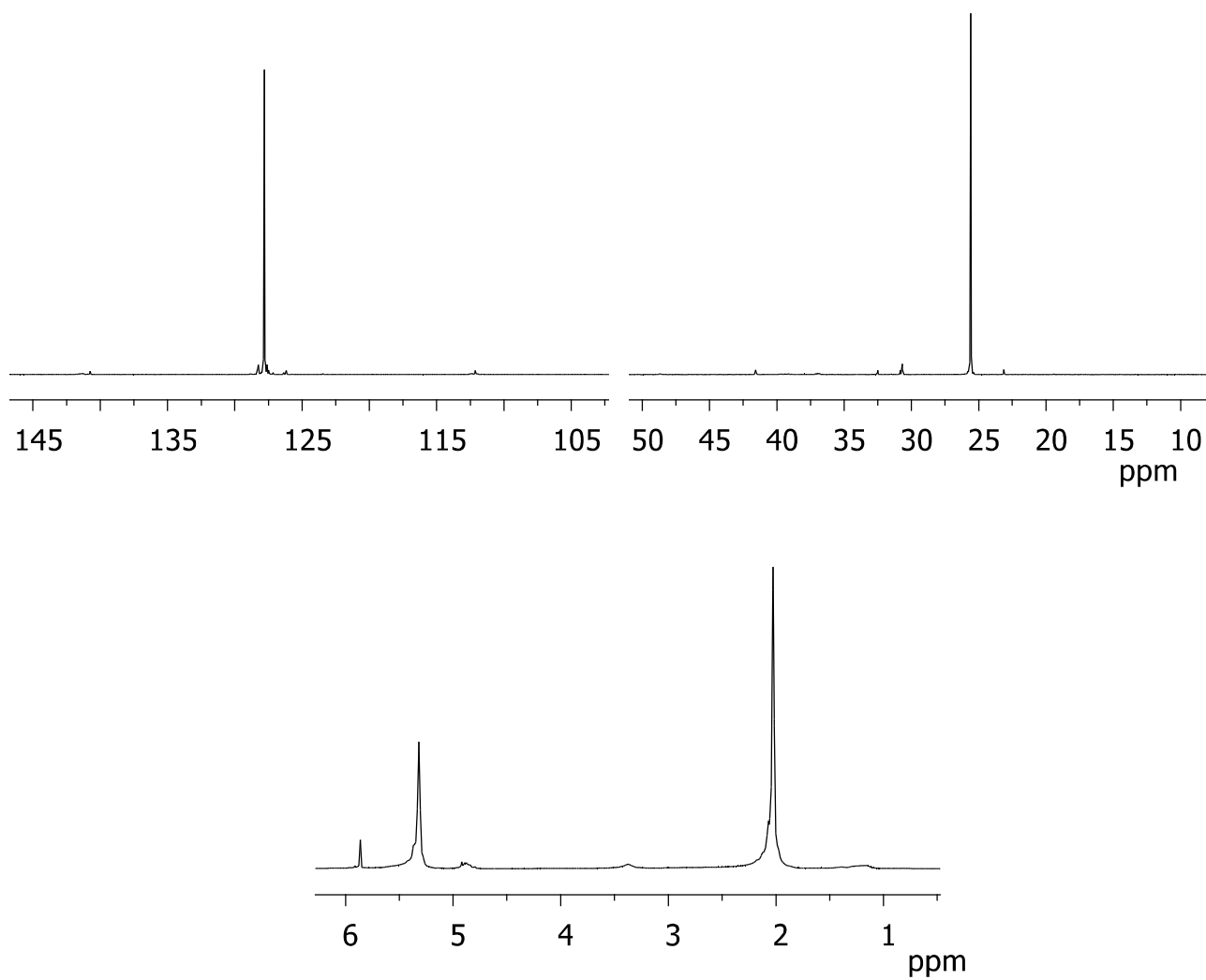


Figure S32.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry **14** (ref. Table 3 of the manuscript).

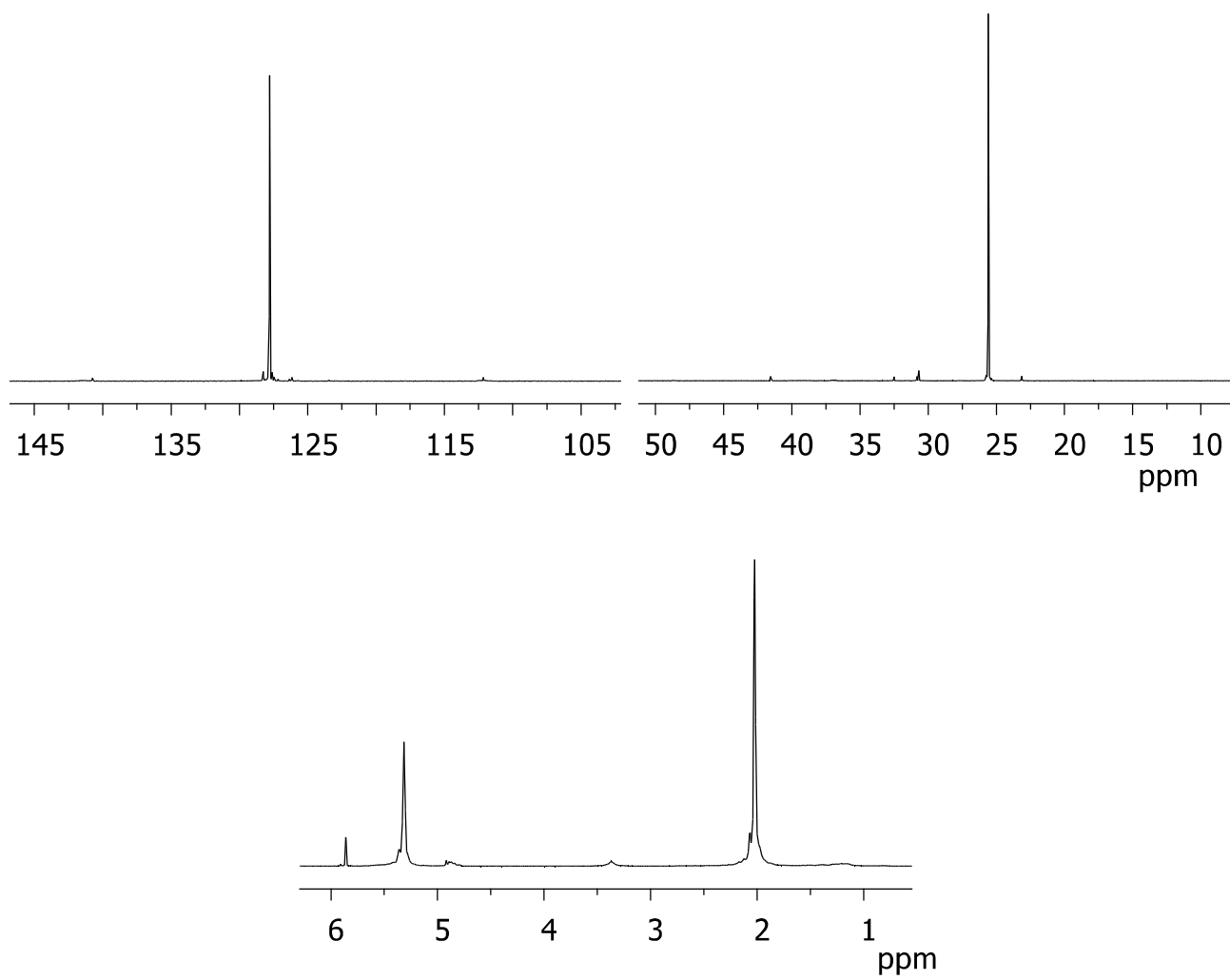


Figure S33.  $^1\text{H}$  (bottom) and  $^{13}\text{C}$  NMR (top) spectra of entry **15** (ref. Table 3 of the manuscript).