

APPENDIX 5

Spectra Relevant to Chapter 3:

*The Aldehyde-Selective Tsuji–Wacker Oxidation, A Tool
for Facile Catalytic Transformations of Hindered Terminal Olefins*

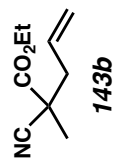
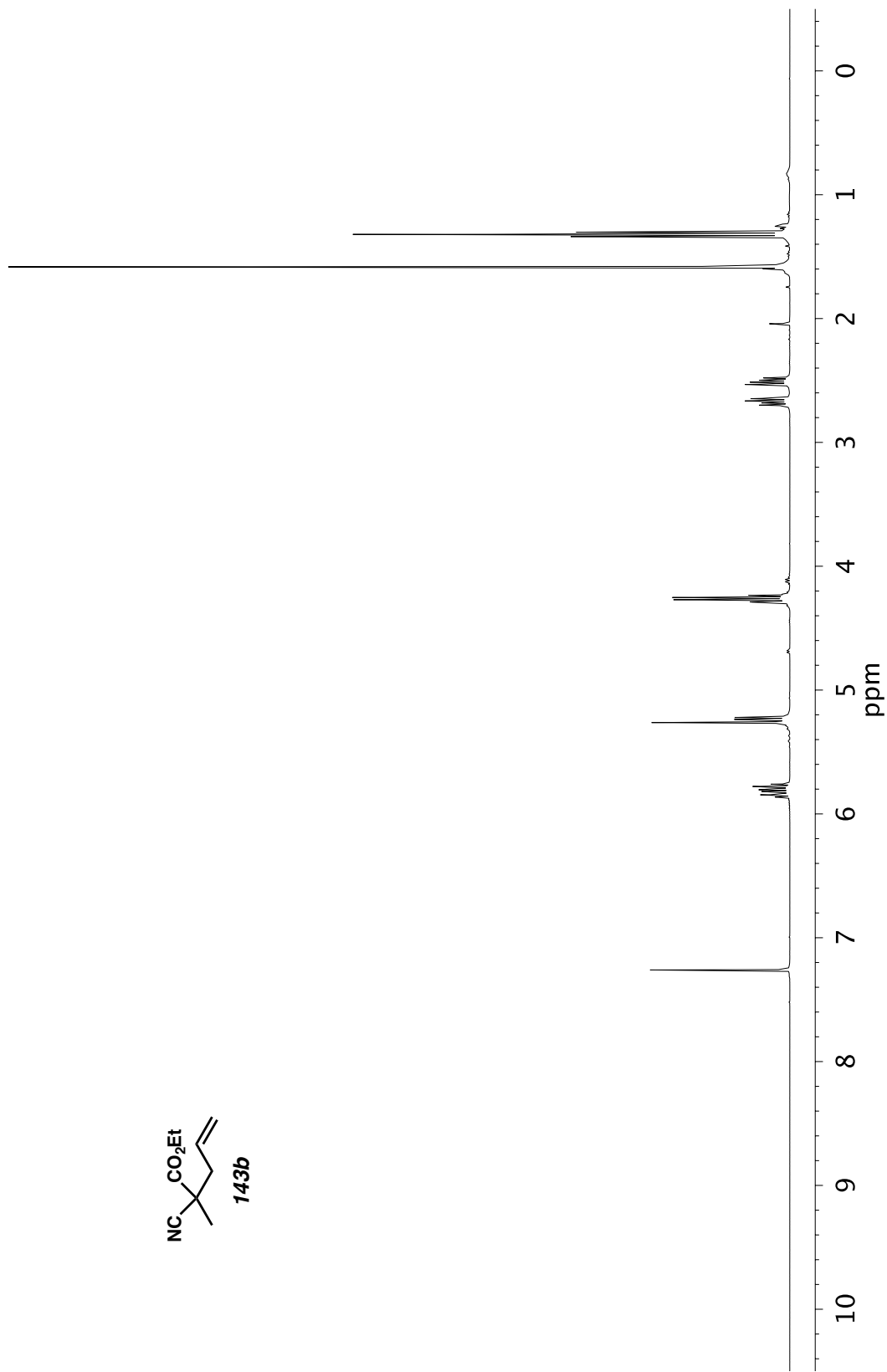


Figure A5.1. ^1H NMR (400 MHz, CDCl_3) of compound **143b**.

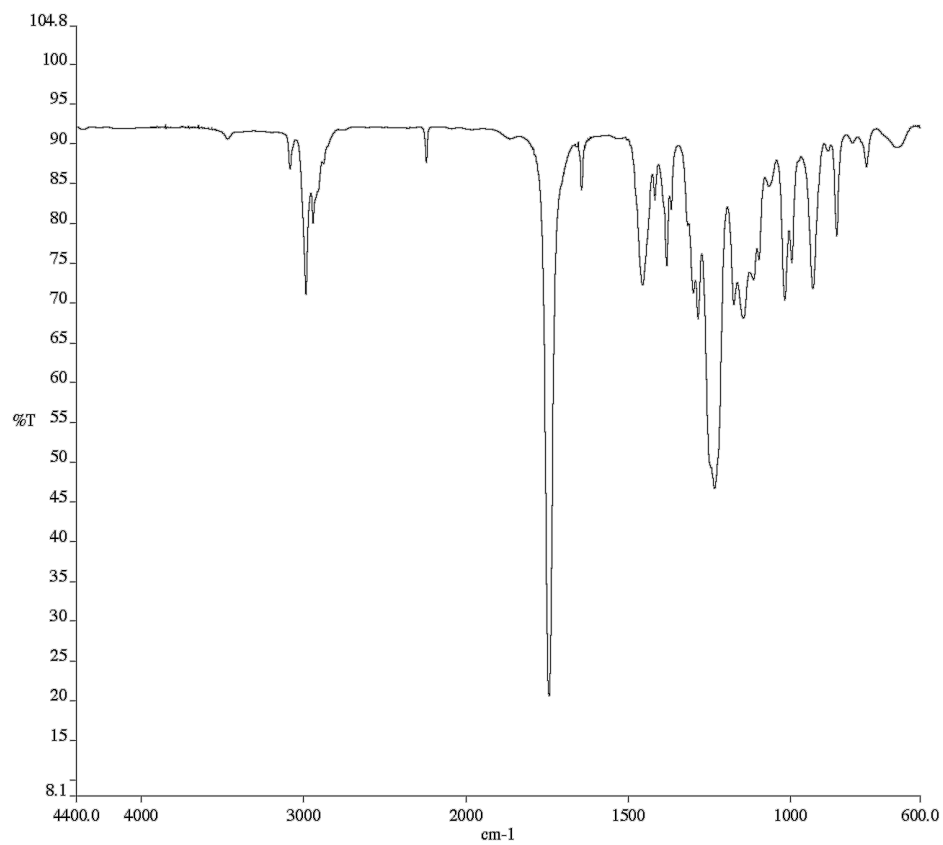


Figure A5.2. Infrared spectrum (Thin Film, KBr) of compound **143b**.

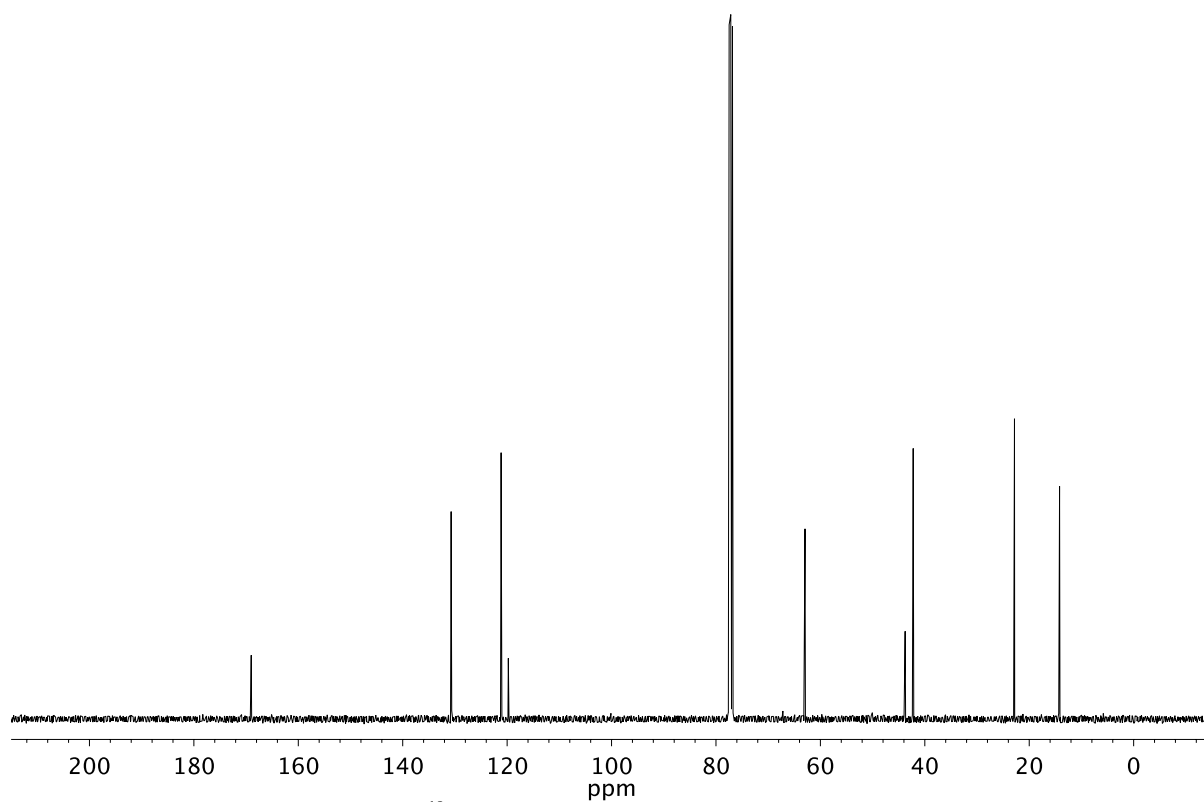


Figure A5.3. ¹³C NMR (101 MHz, CDCl₃) of compound **143b**.

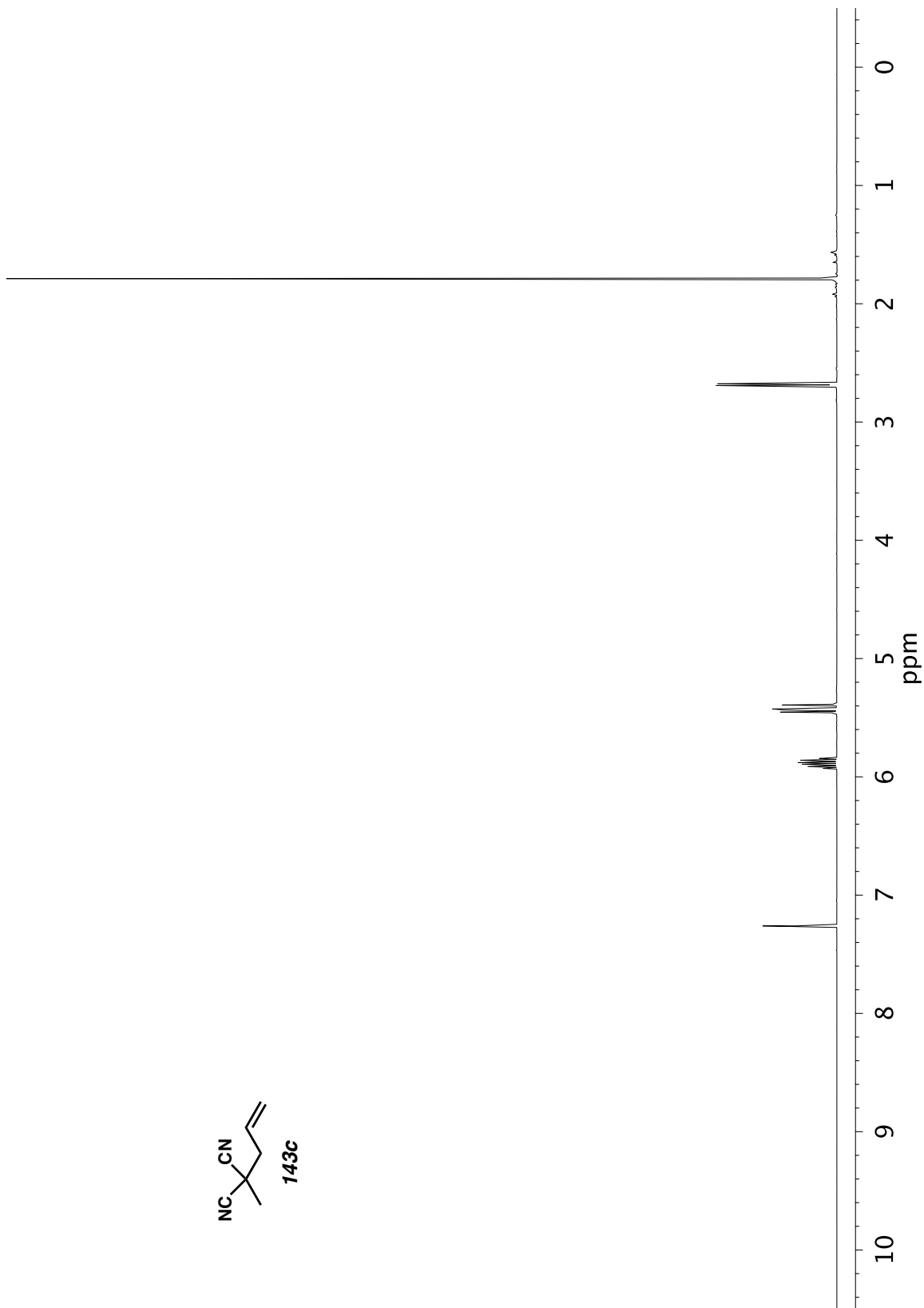
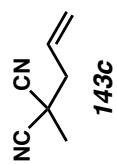


Figure A5.4. ^1H NMR (500 MHz, CDCl_3) of compound **143c**.

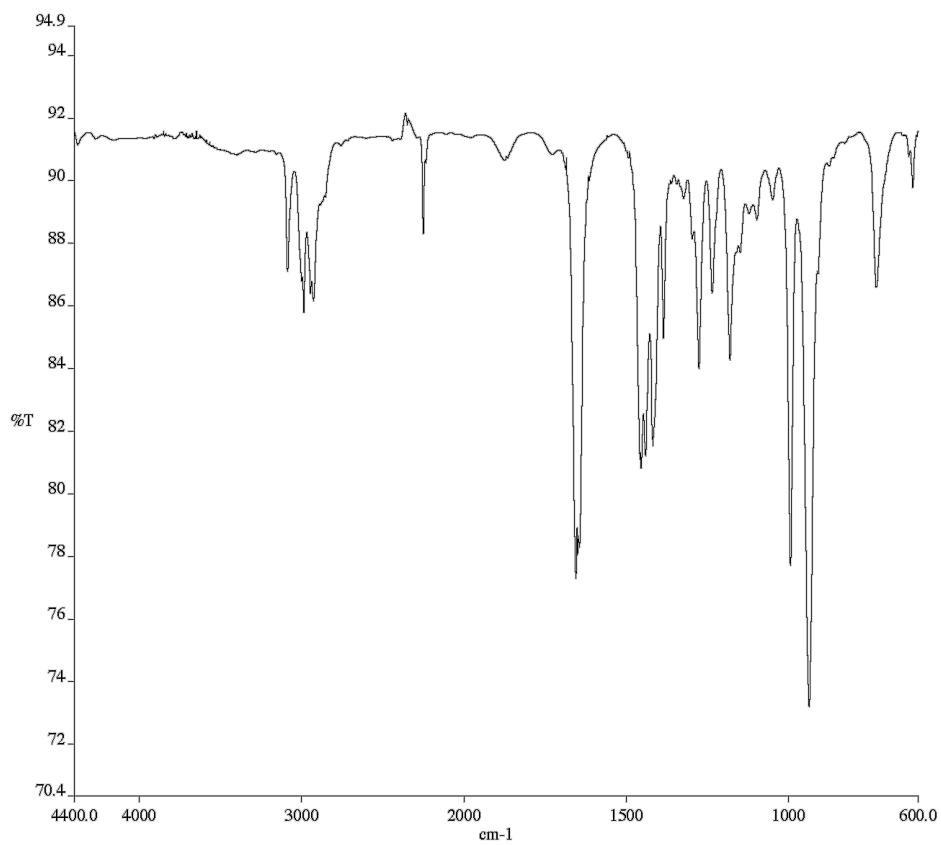


Figure A5.5. Infrared spectrum (Thin Film, KBr) of compound **143c**.

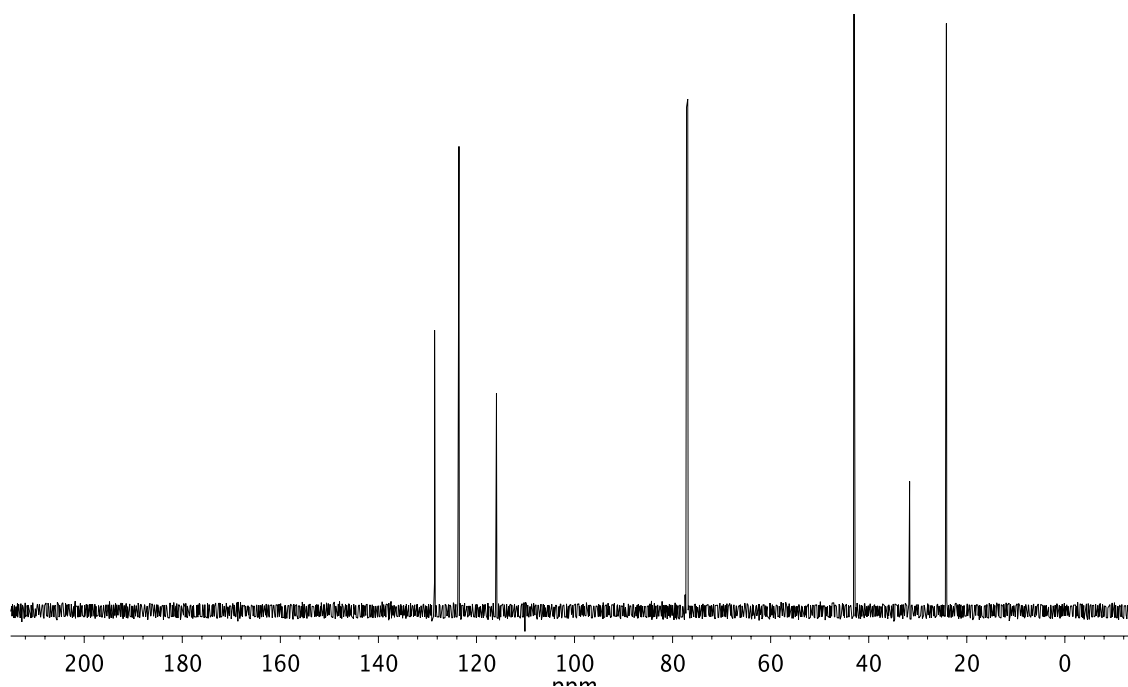
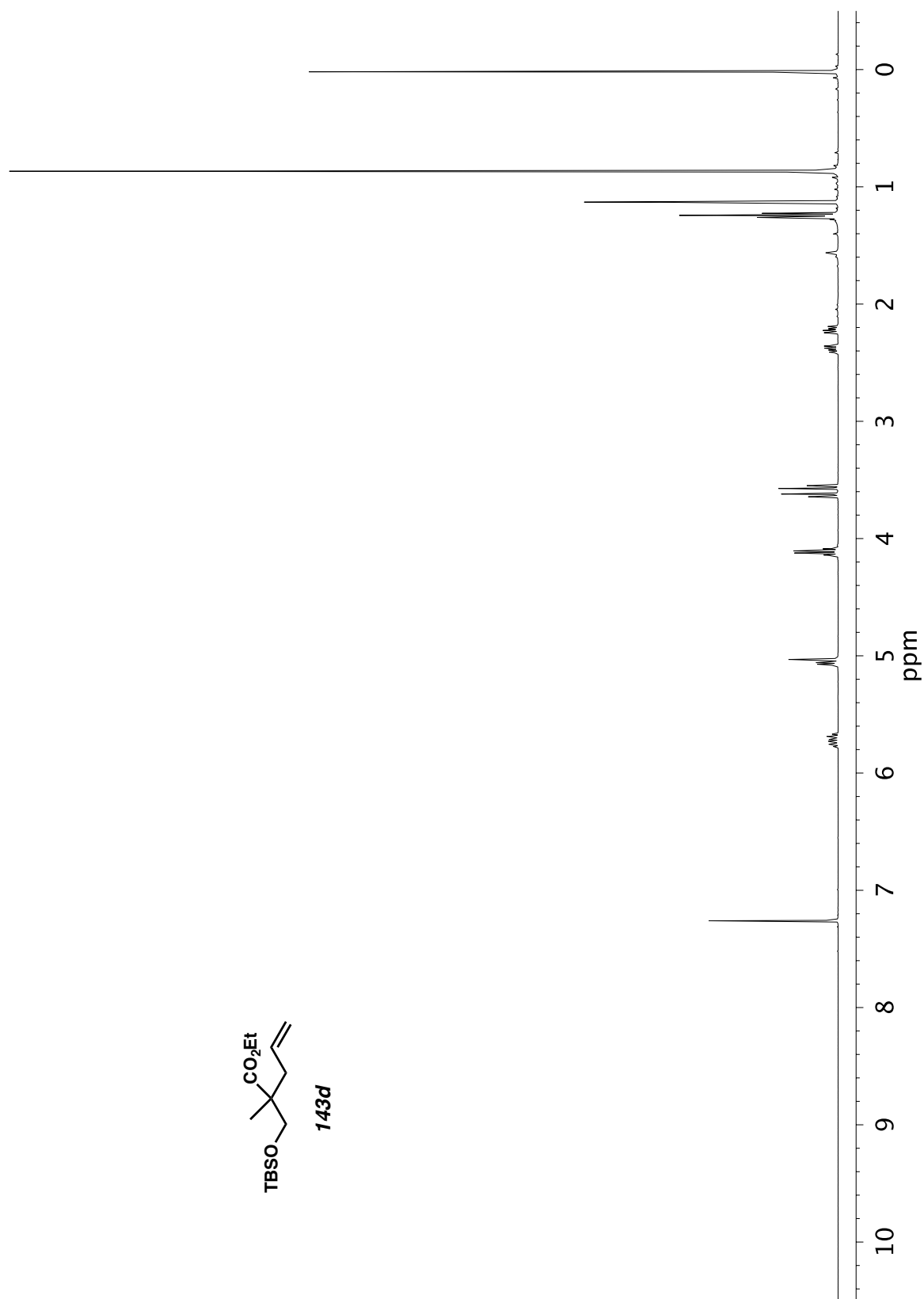


Figure A5.6. ¹³C NMR (126 MHz, CDCl₃) of compound **143c**.

Figure A5.7. ^1H NMR (400 MHz, CDCl_3) of compound **143d**.

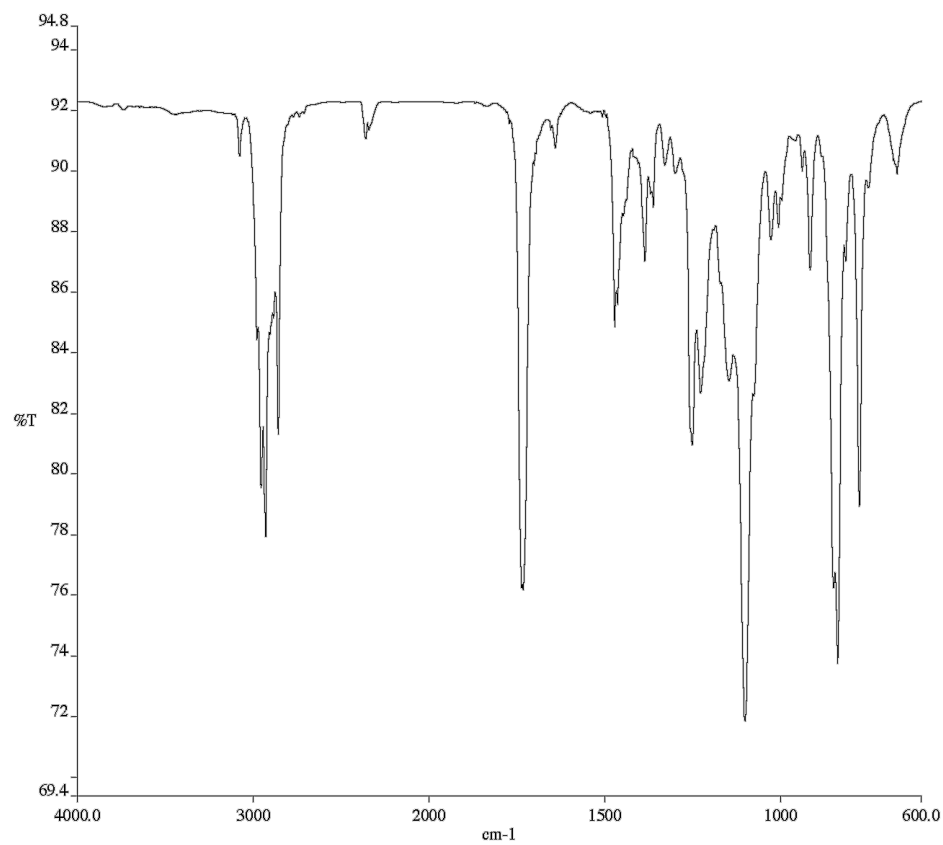


Figure A5.8. Infrared spectrum (Thin Film, KBr) of compound **143d**.

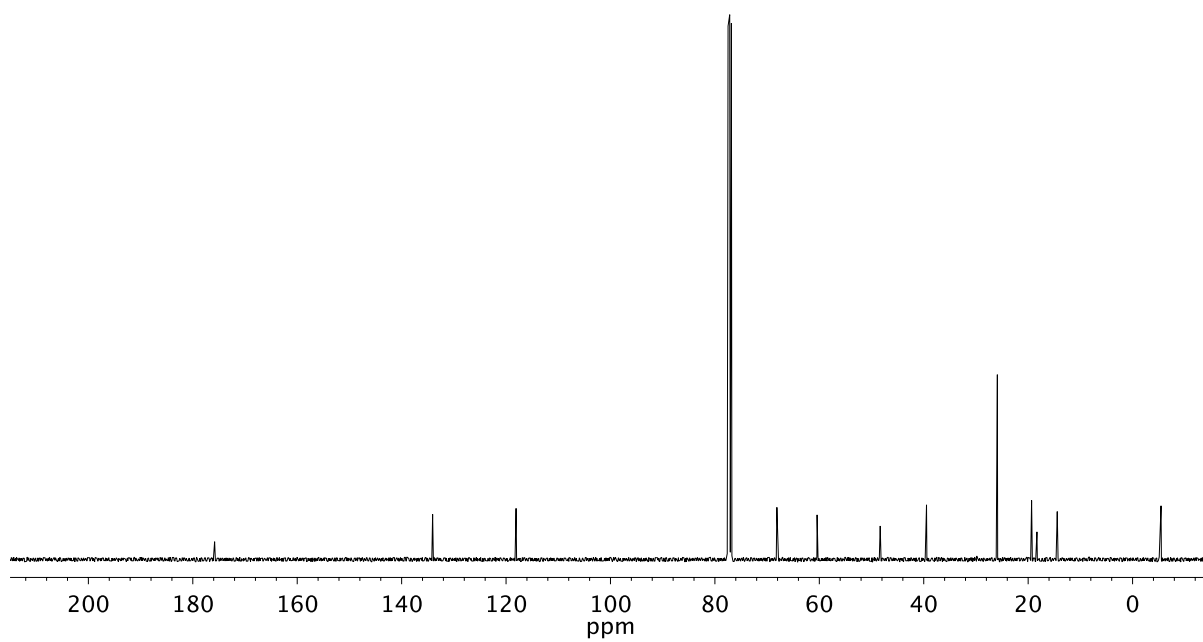
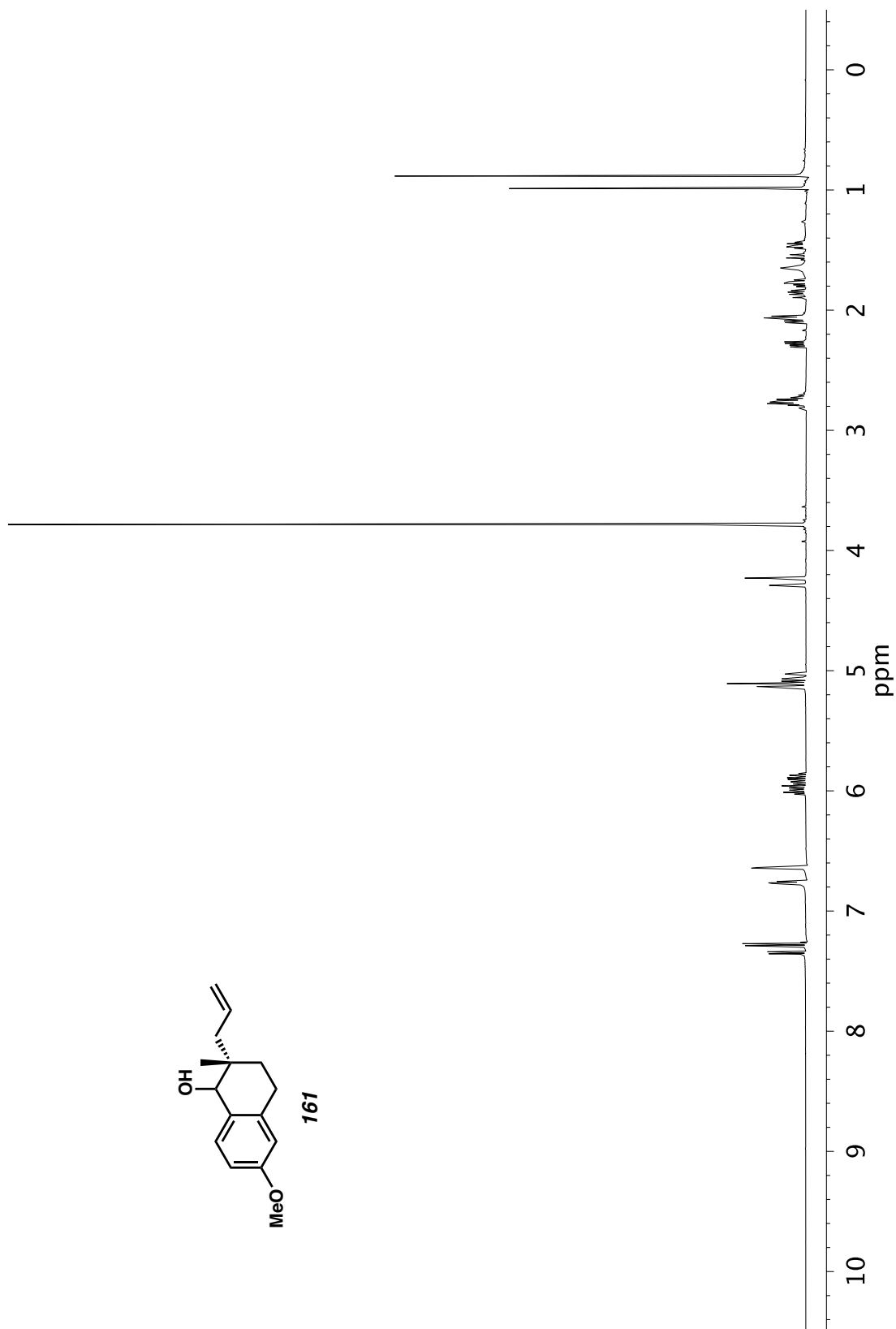


Figure A5.9. ¹³C NMR (101 MHz, CDCl₃) of compound **143d**.

Figure A5.10. ¹H NMR (500 MHz, CDCl₃) of compound **161**.

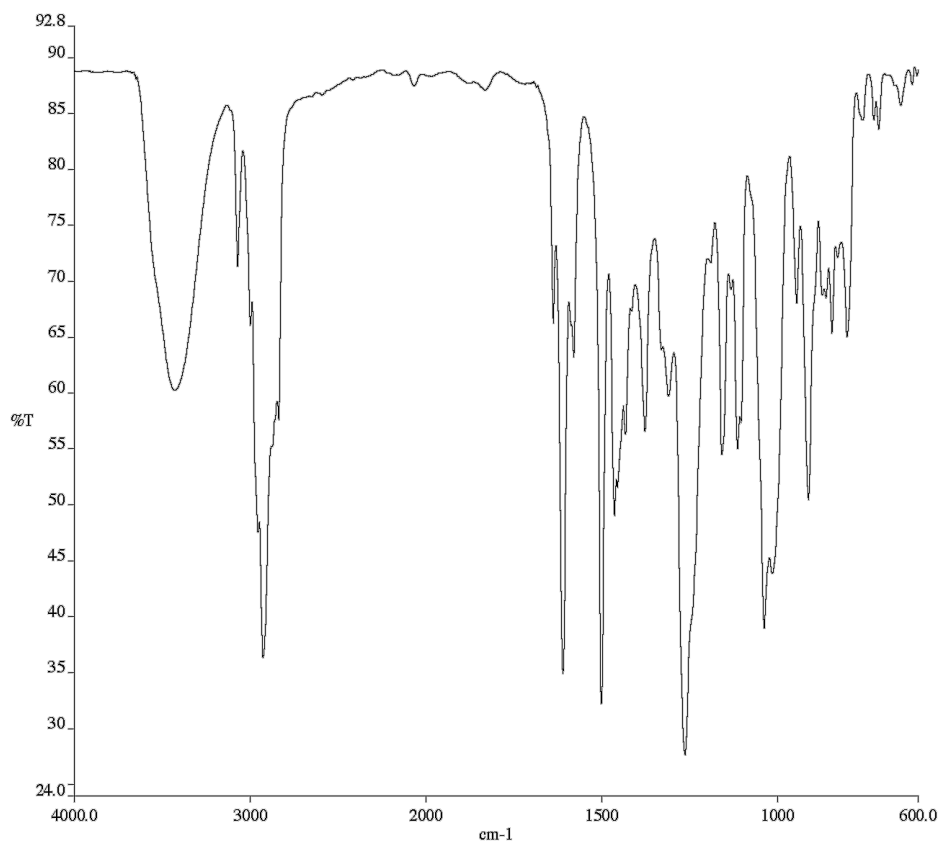


Figure A5.11. Infrared spectrum (Thin Film, KBr) of compound **161**.

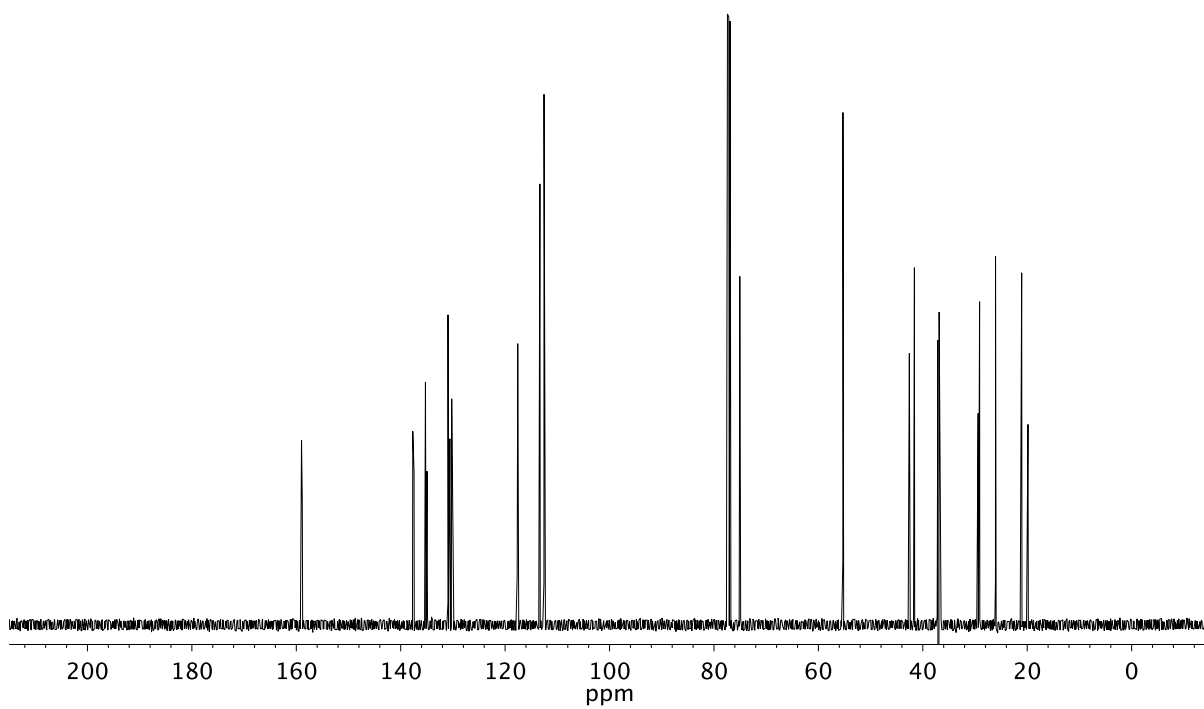
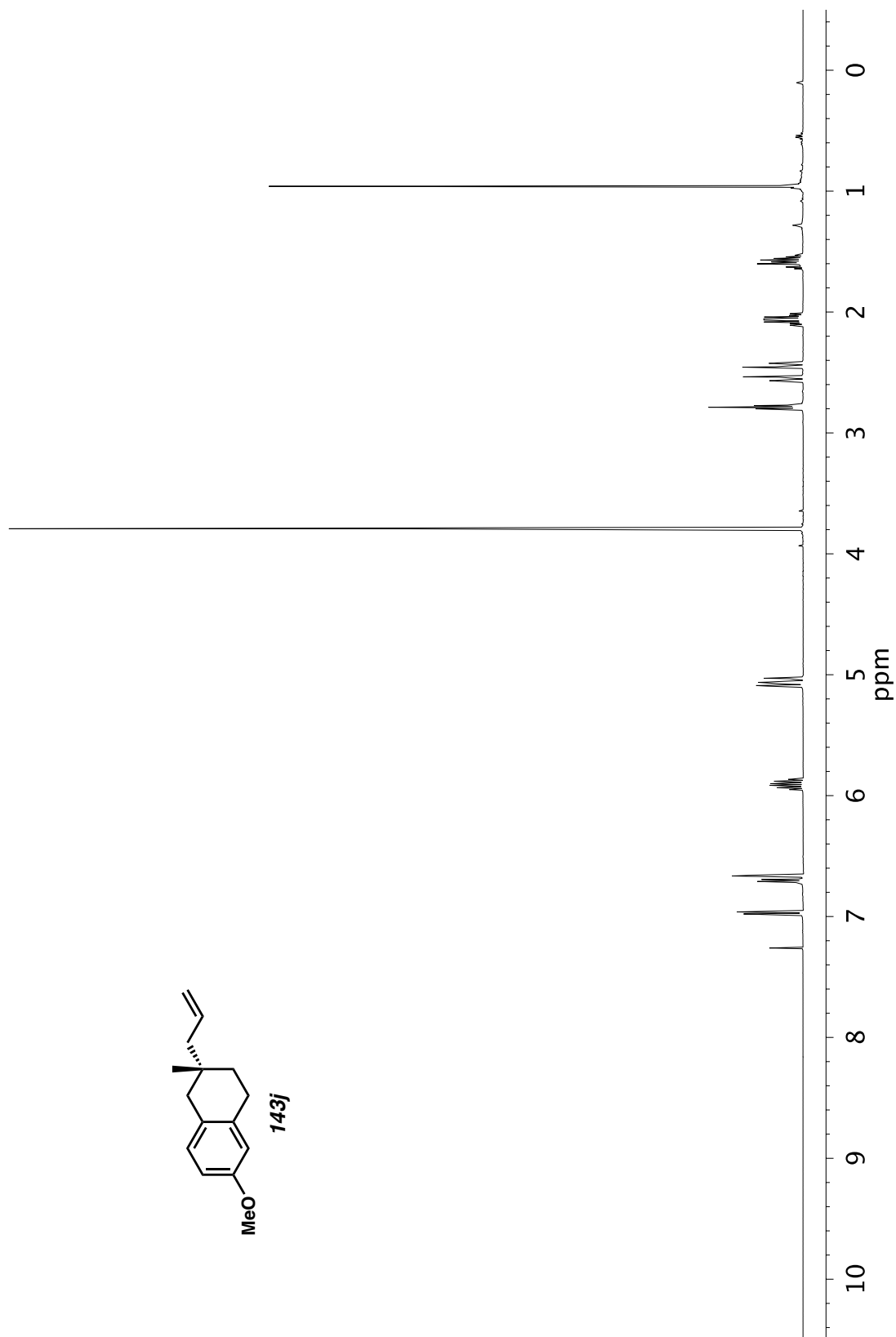


Figure A5.12. ¹³C NMR (126 MHz, CDCl₃) of compound **161**.

Figure A5.13. ¹H NMR (500 MHz, CDCl₃) of compound **143j**.

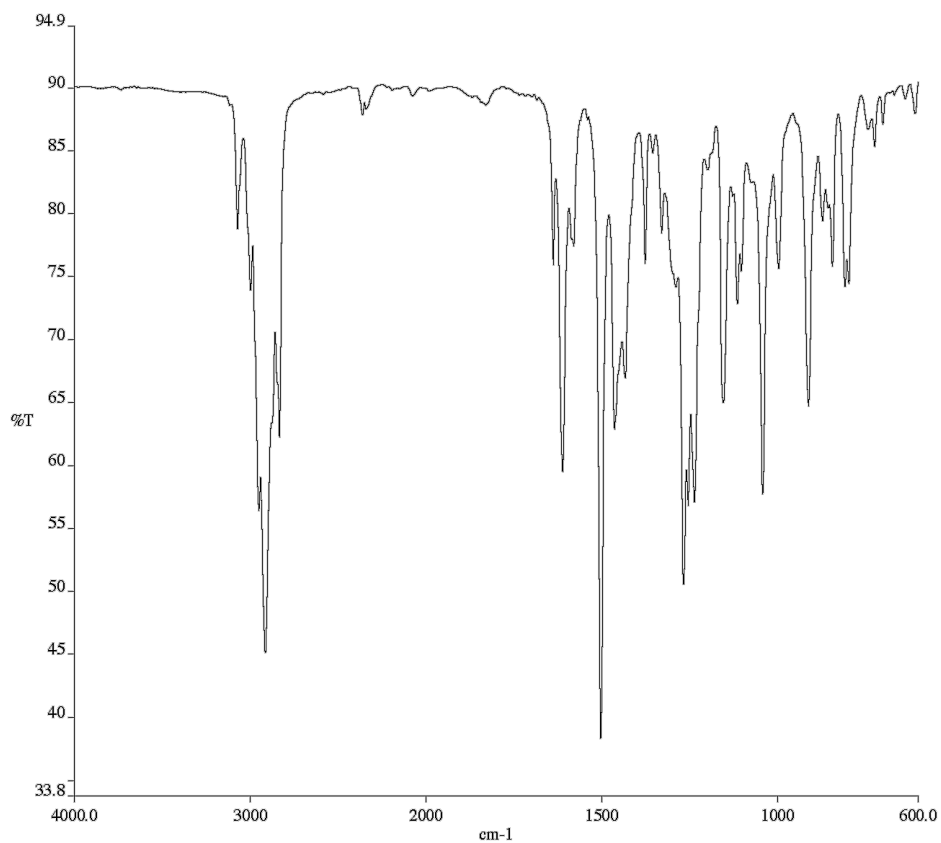


Figure A5.14. Infrared spectrum (Thin Film, KBr) of compound **143j**.

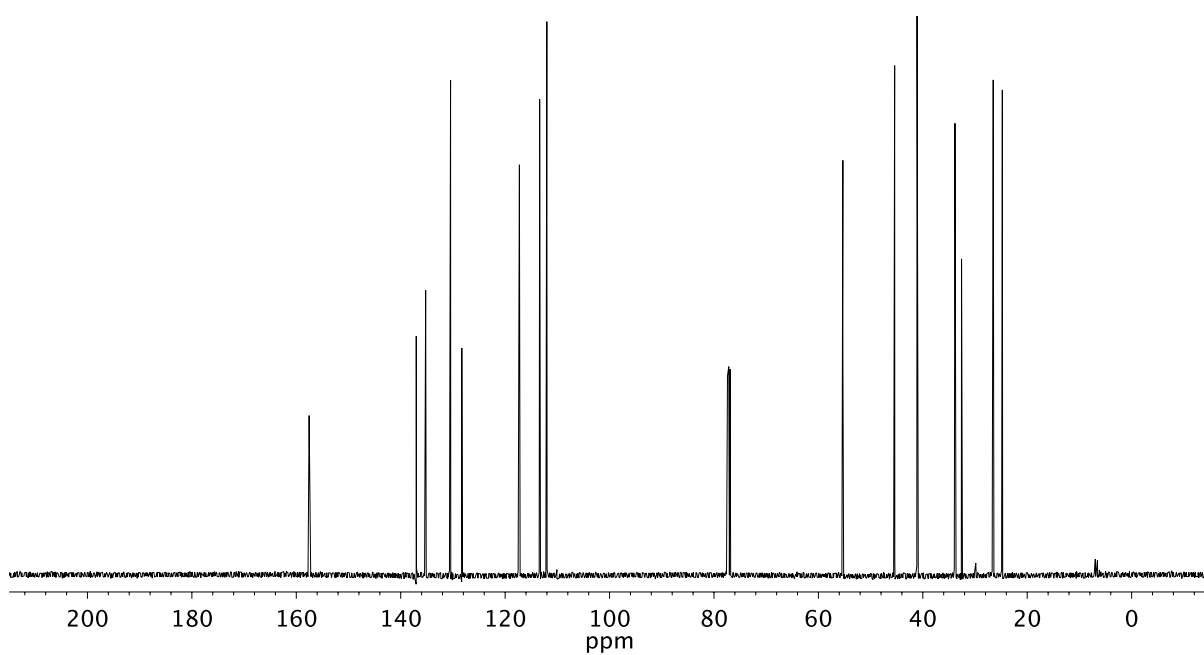
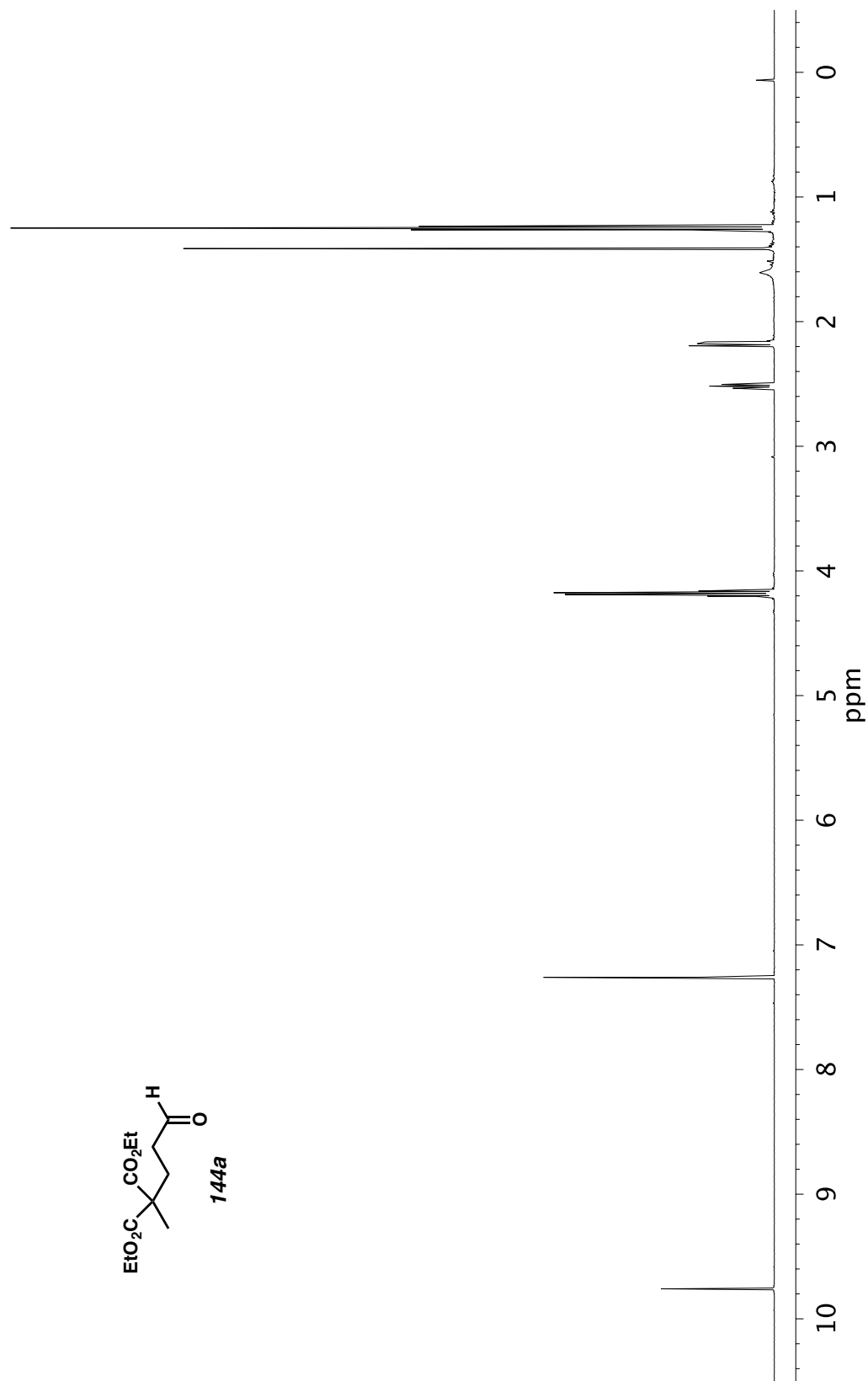


Figure A5.15. ¹³C NMR (126 MHz, CDCl₃) of compound **143j**.

Figure A5.16. ^1H NMR (500 MHz, CDCl_3) of compound **144a**.

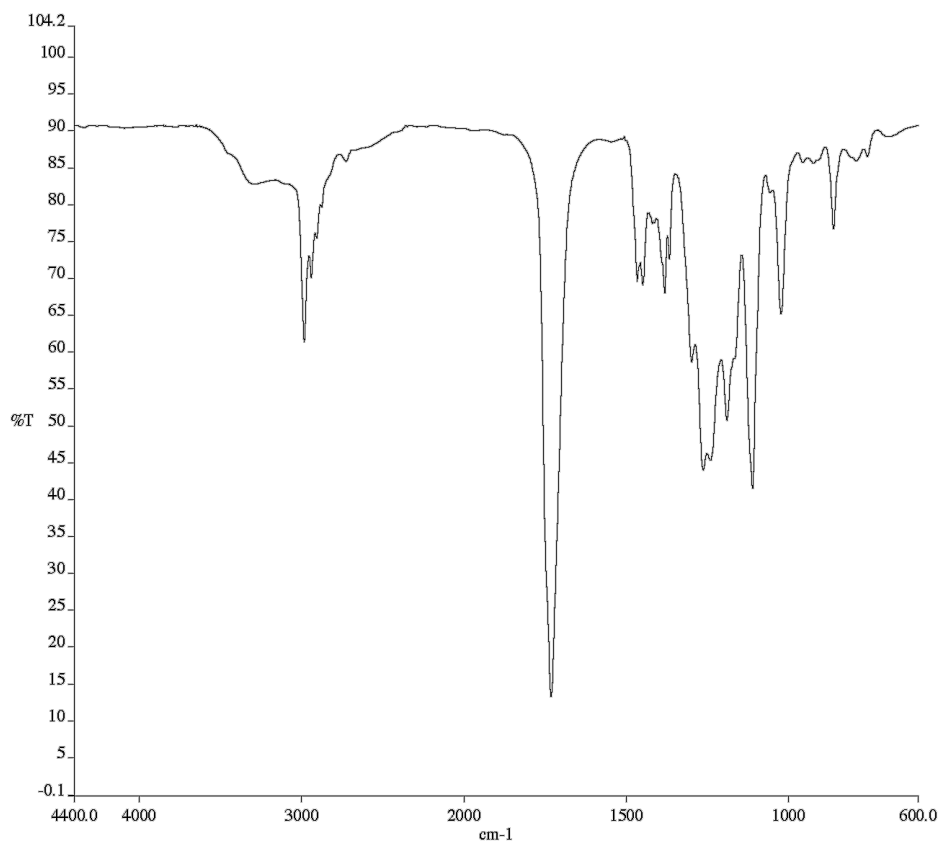


Figure A5.17. Infrared spectrum (Thin Film, KBr) of compound **144a**.

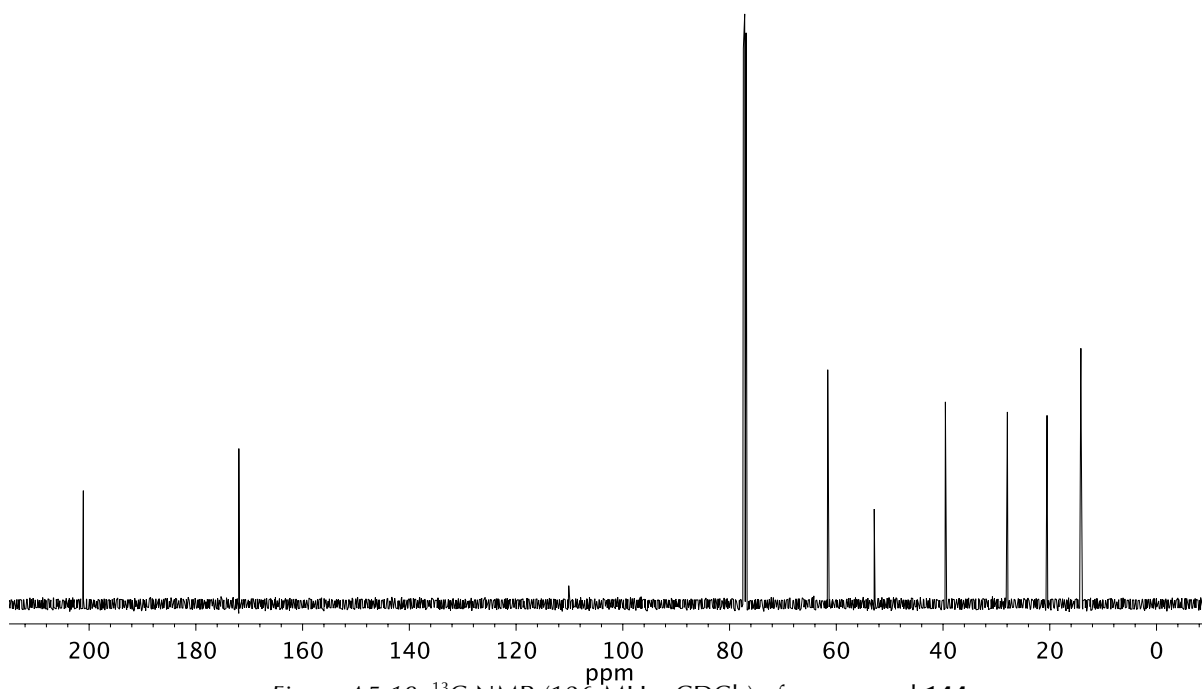
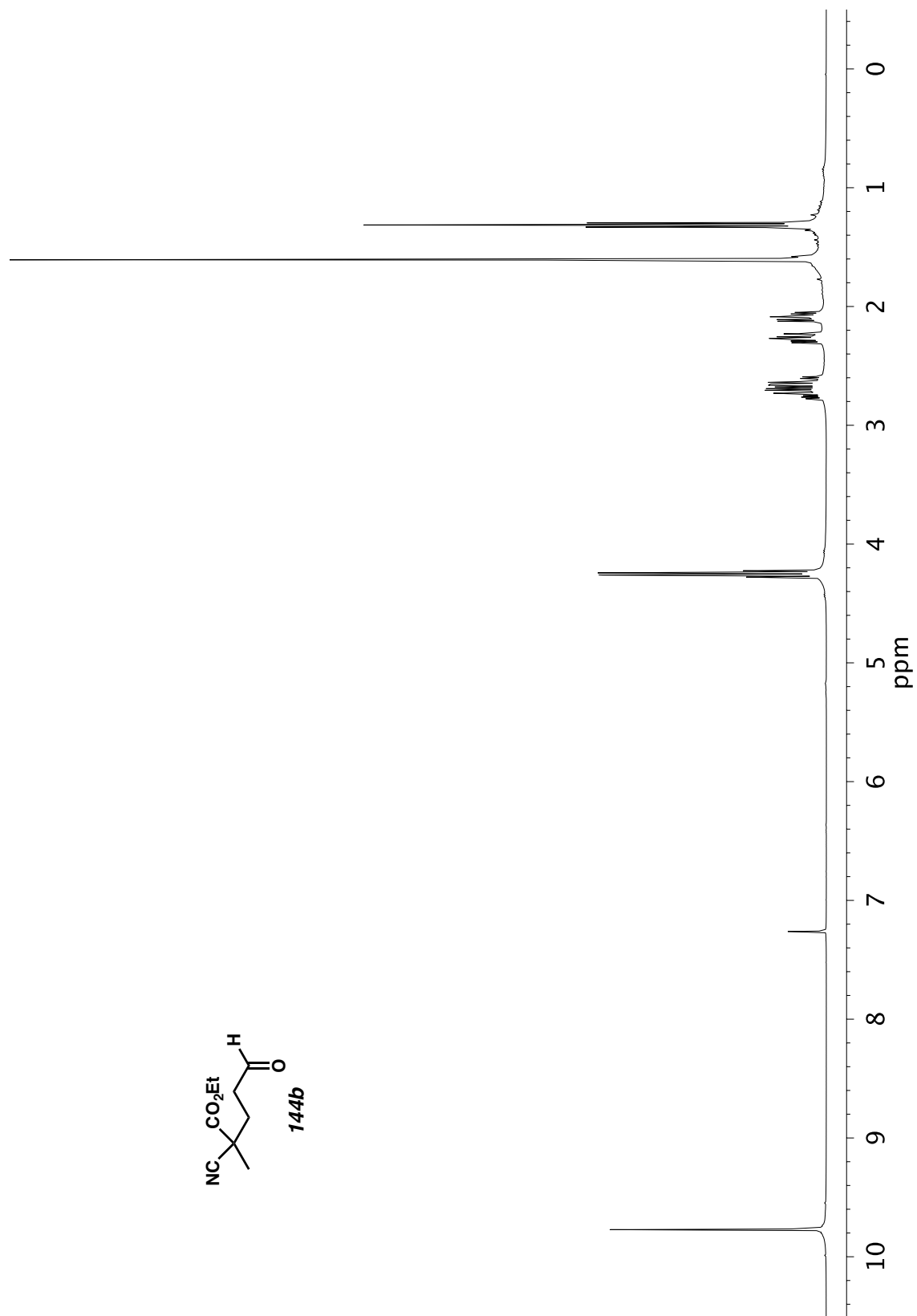


Figure A5.18. ¹³C NMR (126 MHz, CDCl₃) of compound **144a**.

Figure A5.19. ¹H NMR (400 MHz, CDCl₃) of compound **144b**.

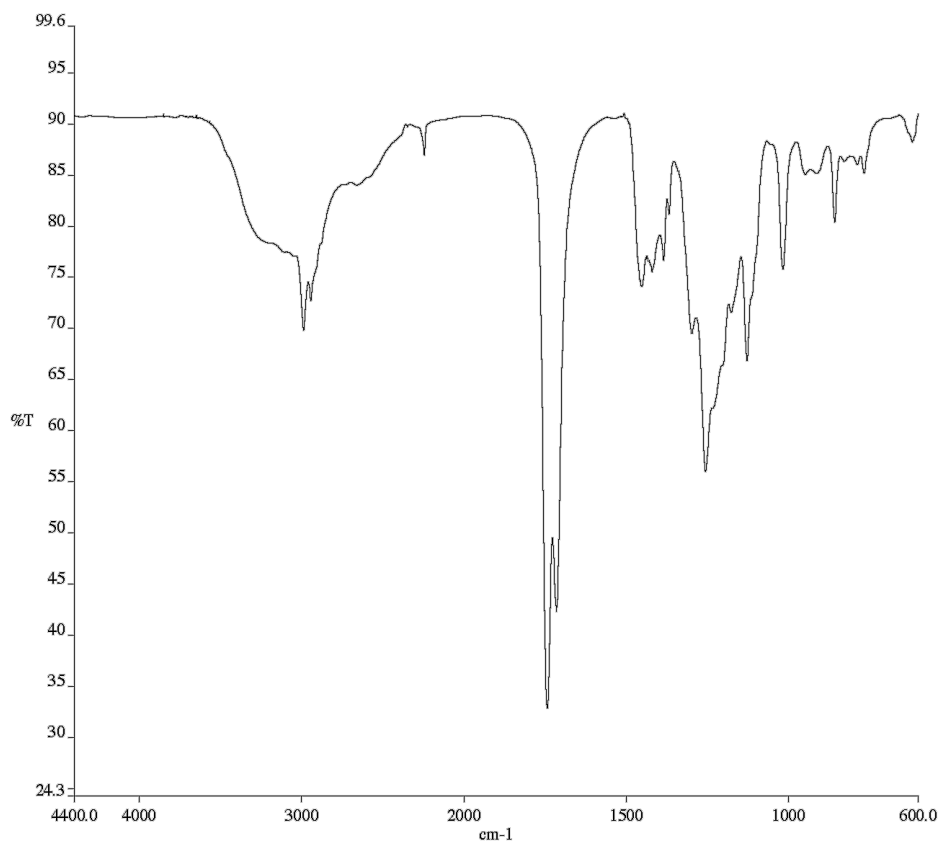


Figure A5.20. Infrared spectrum (Thin Film, KBr) of compound **144b**.

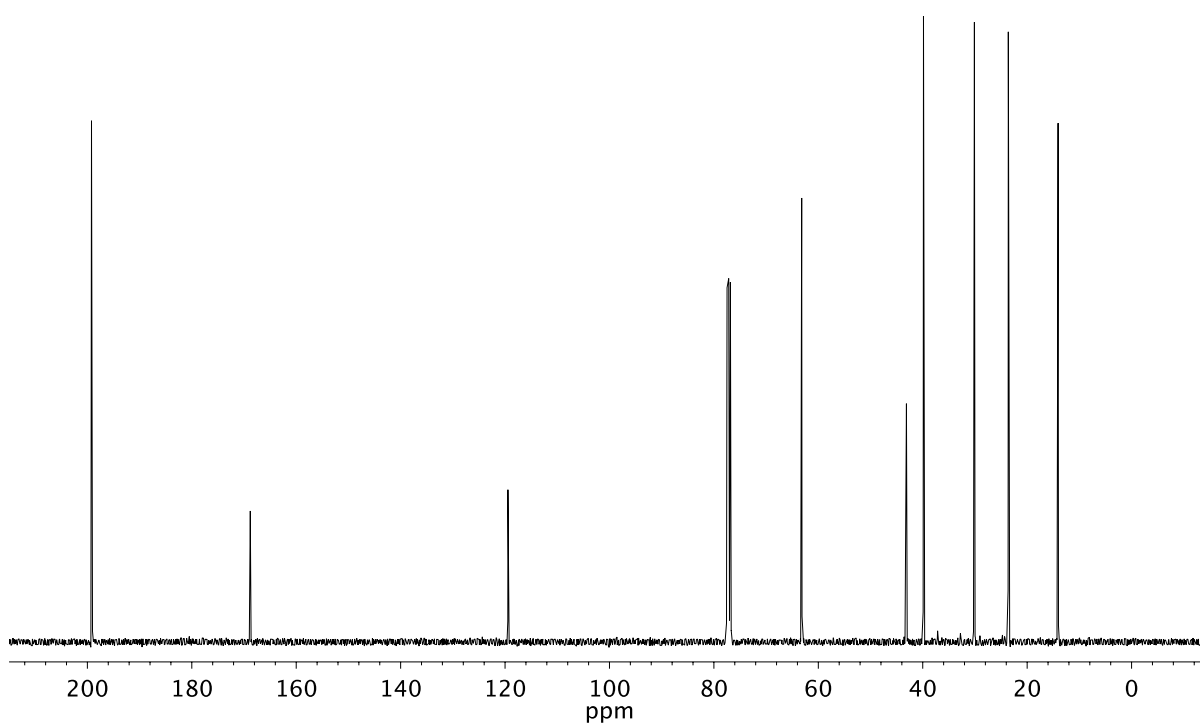
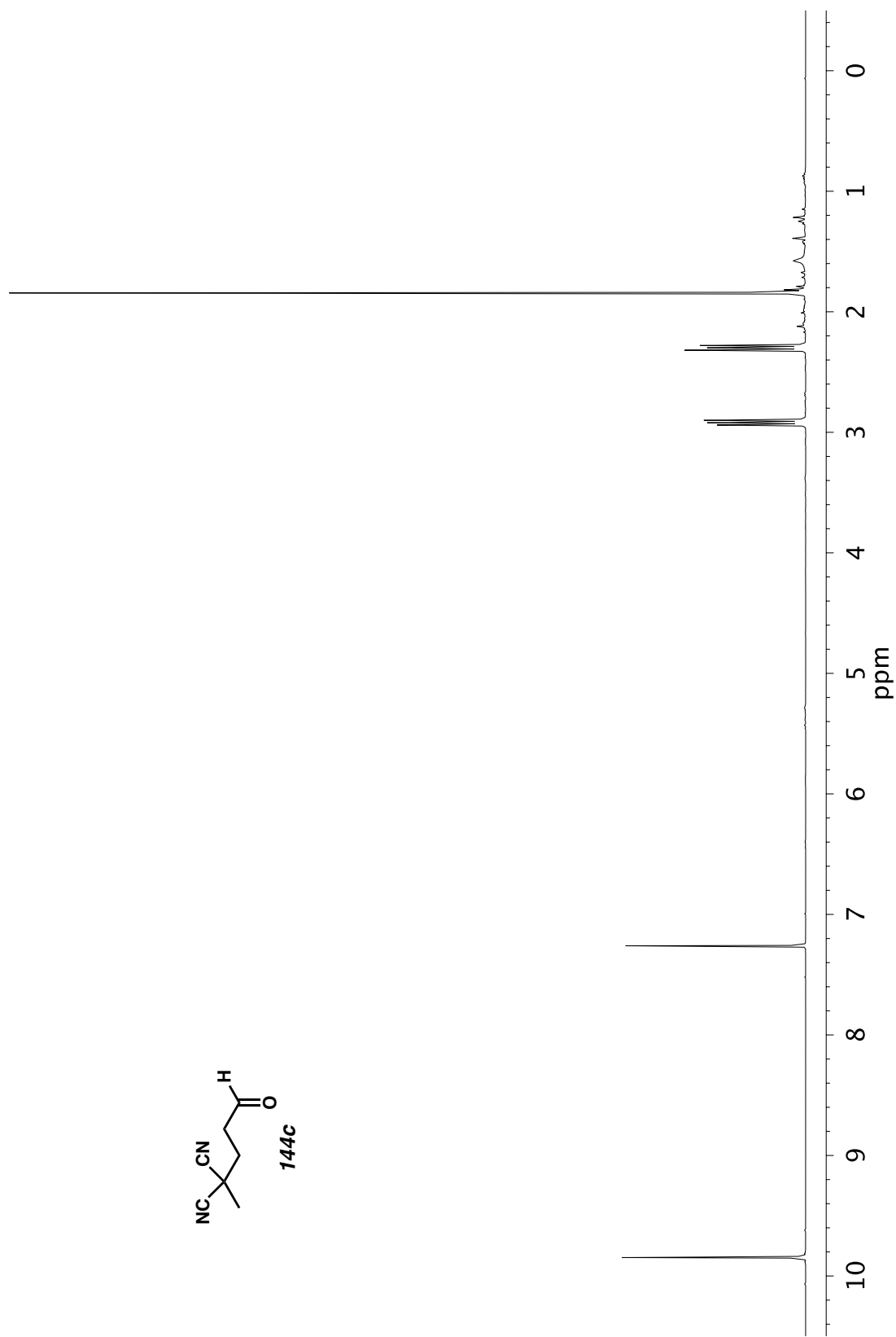


Figure A5.21. ¹³C NMR (101 MHz, CDCl₃) of compound **144b**.

Figure A5.22. ¹H NMR (400 MHz, CDCl₃) of compound **144c**.

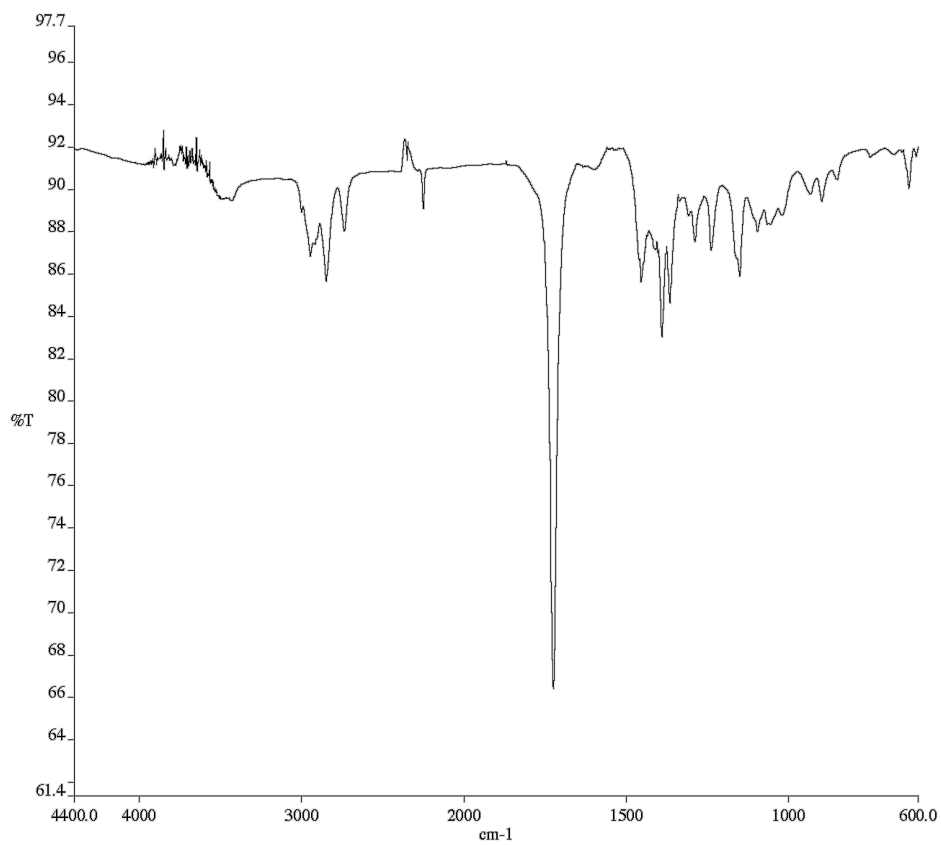


Figure A5.23. Infrared spectrum (Thin Film, KBr) of compound **144c**.

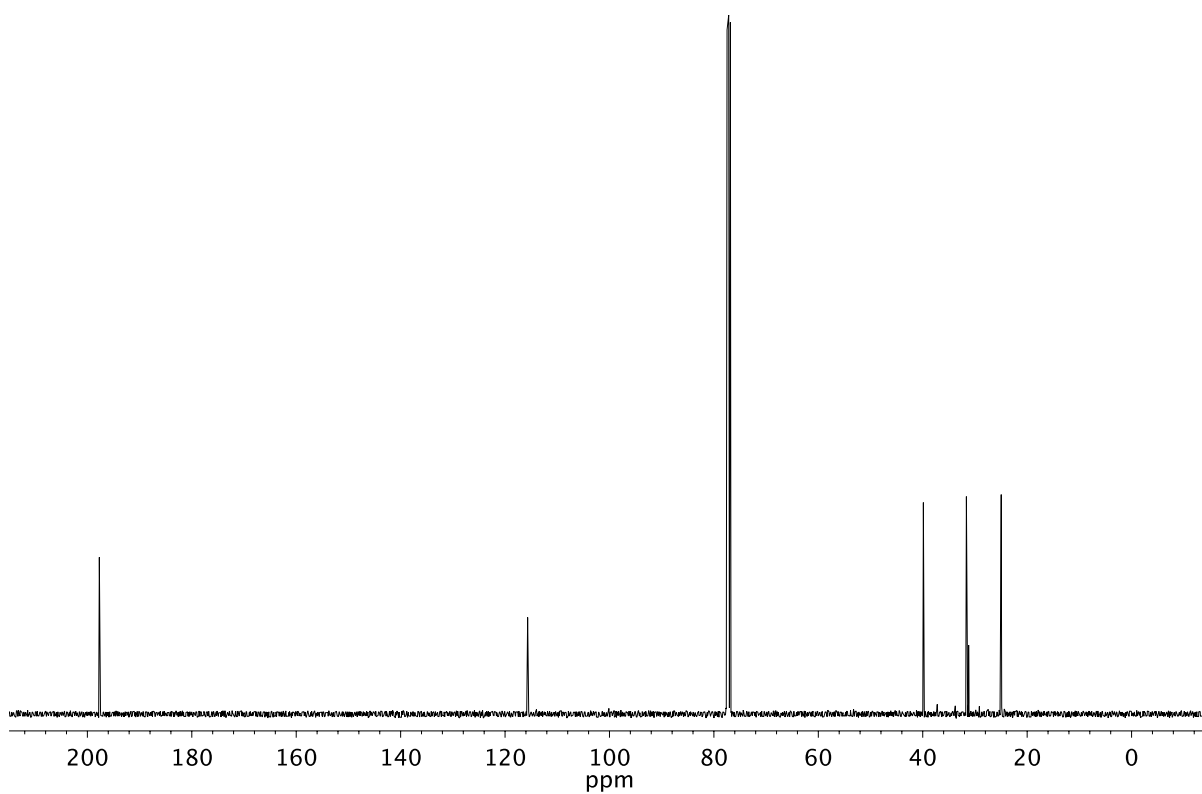
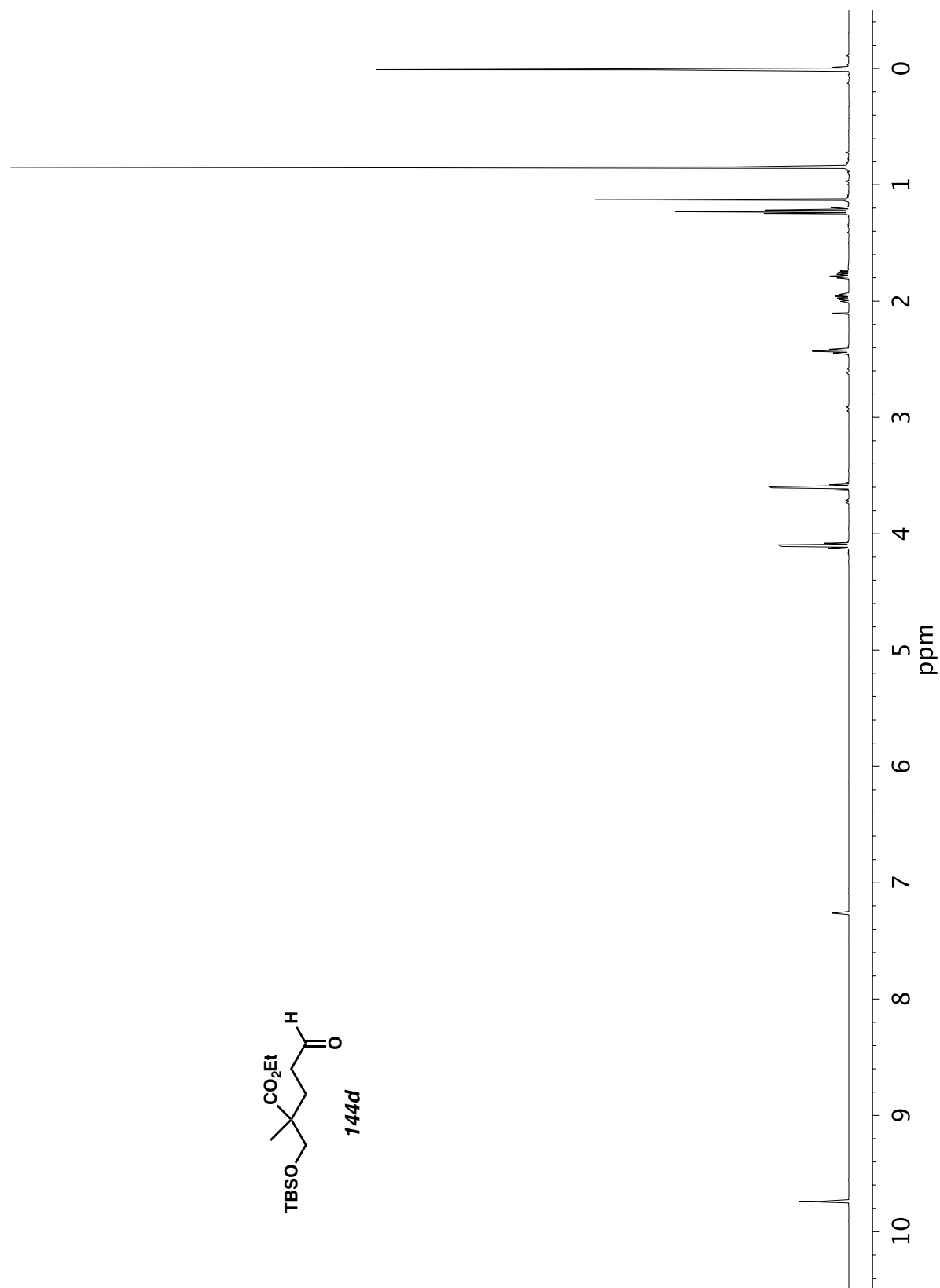


Figure A5.24. ¹³C NMR (101 MHz, CDCl₃) of compound **144c**.

Figure A5.25. ^1H NMR (500 MHz, CDCl_3) of compound **144d**.

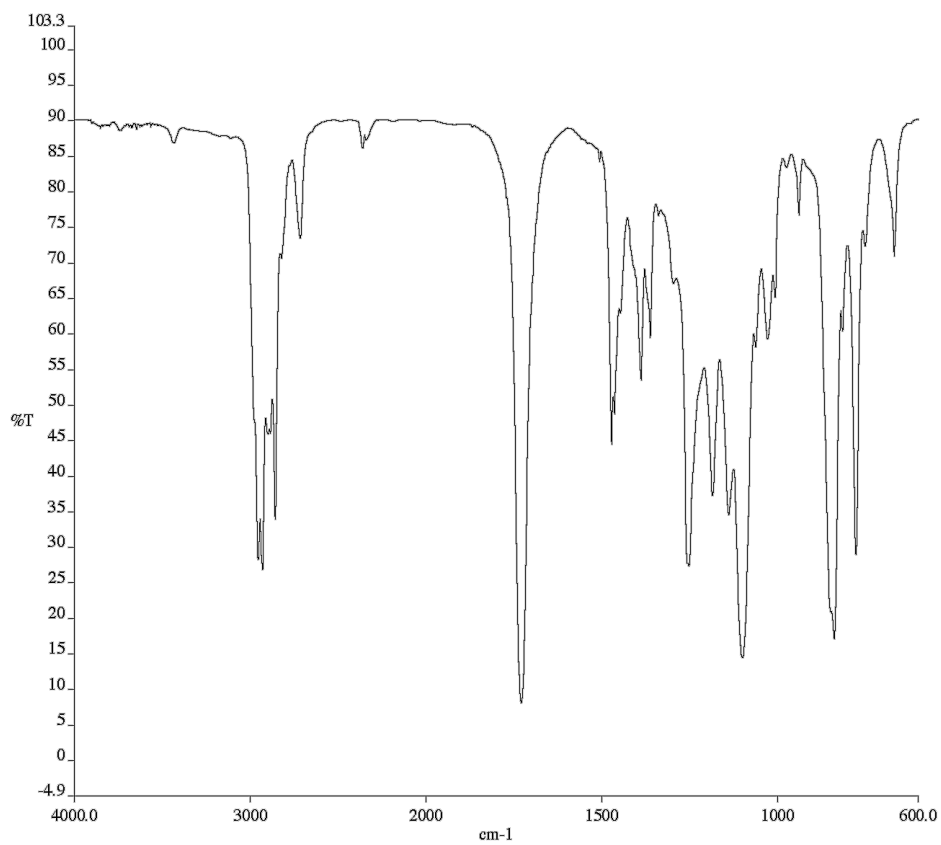


Figure A5.26. Infrared spectrum (Thin Film, KBr) of compound **144d**.

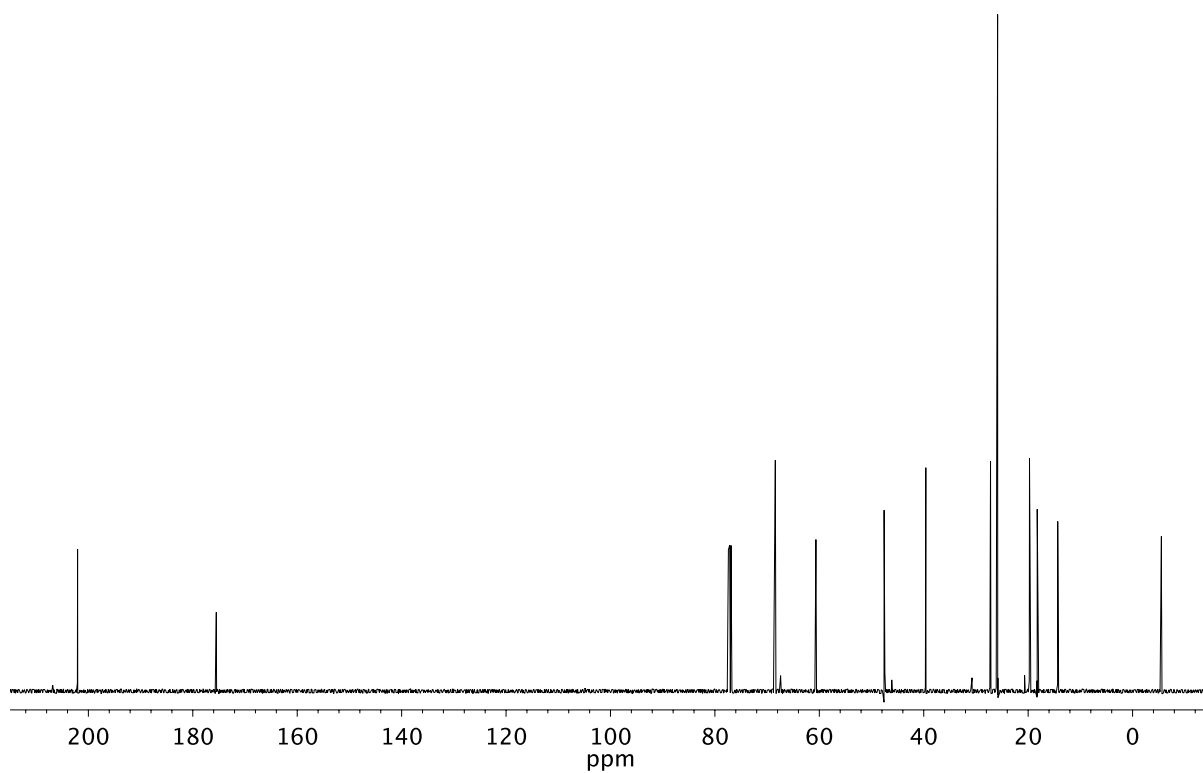
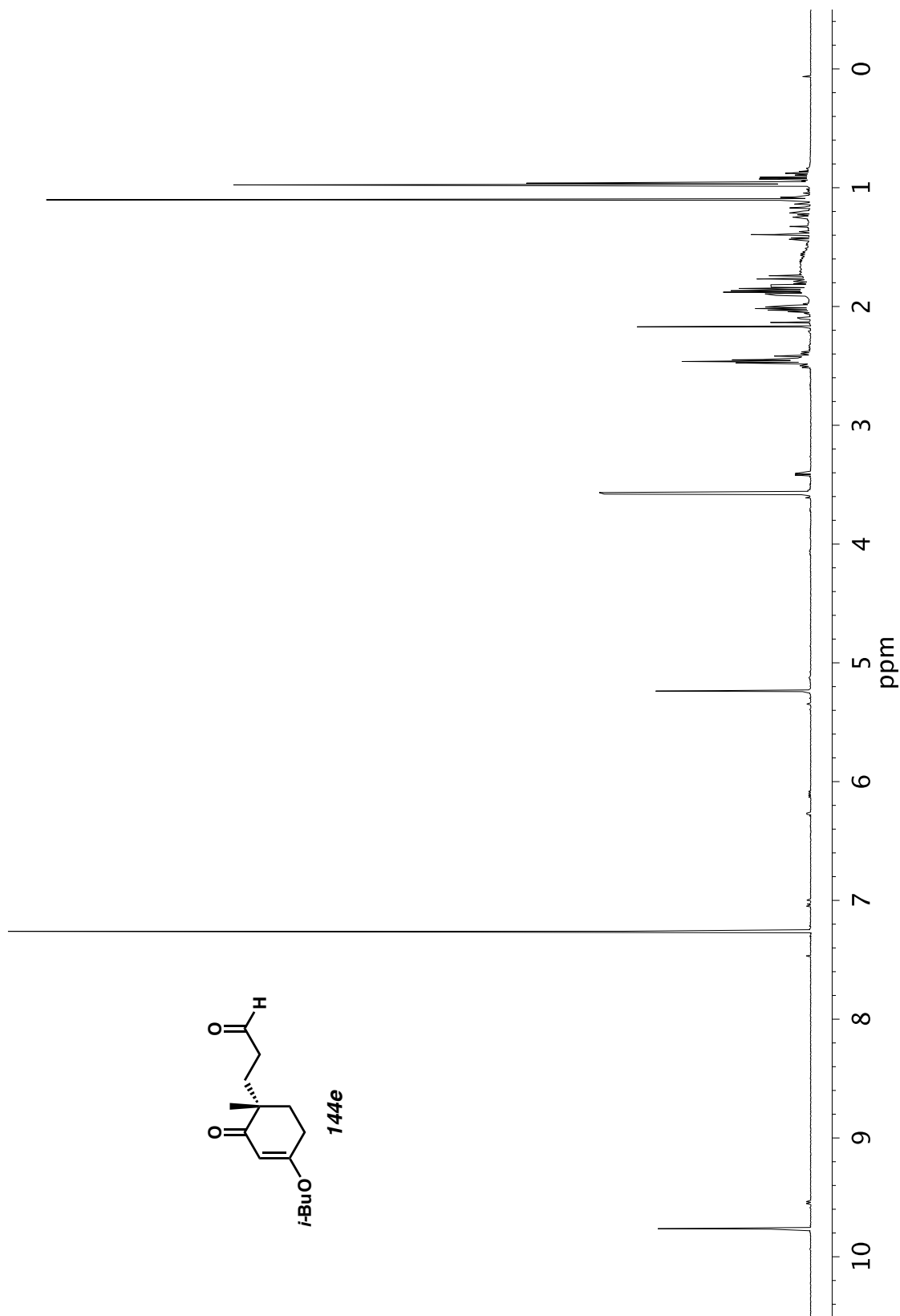


Figure A5.27. ¹³C NMR (126 MHz, CDCl₃) of compound **144d**.

Figure A5.28. ¹H NMR (500 MHz, CDCl₃) of compound **144e**.

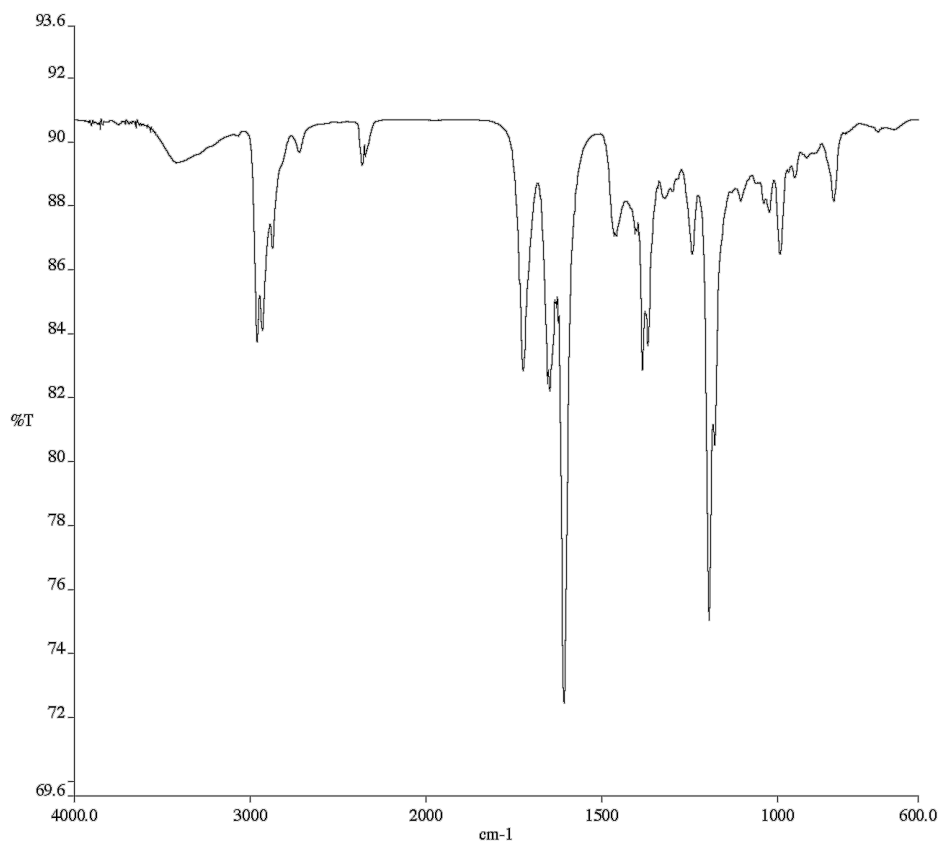


Figure A5.29. Infrared spectrum (Thin Film, KBr) of compound **144e**.

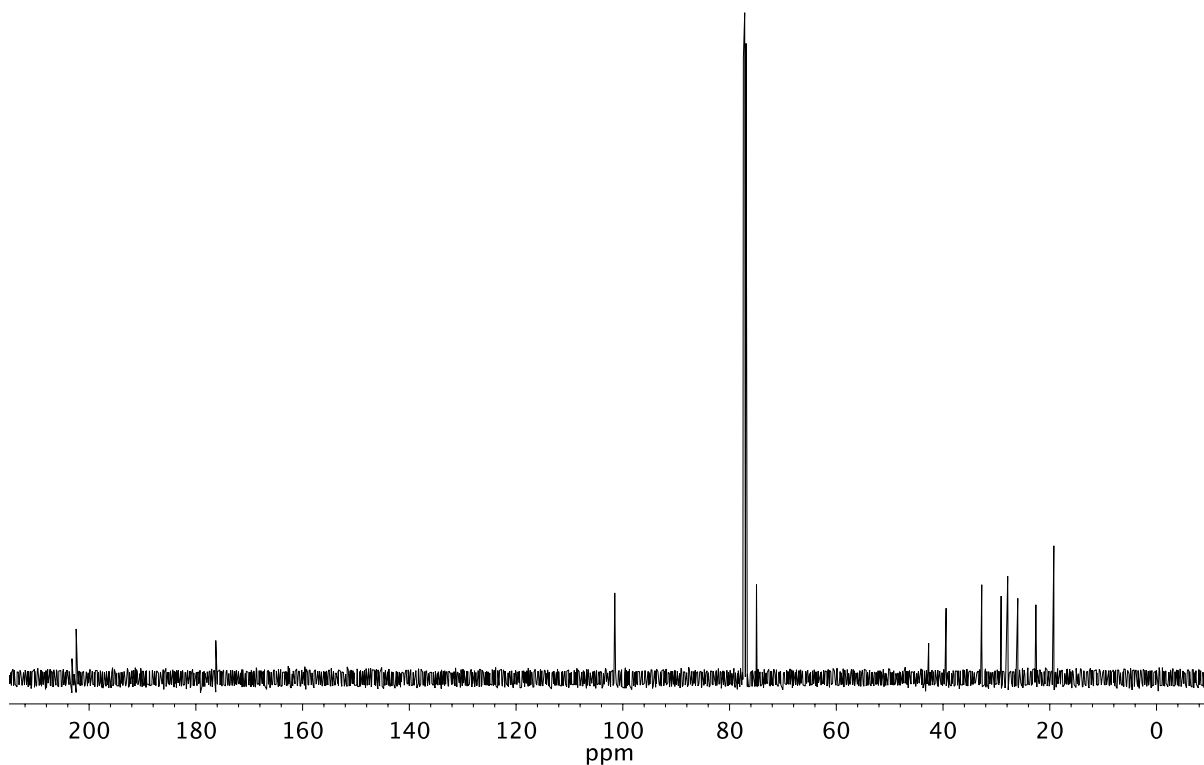
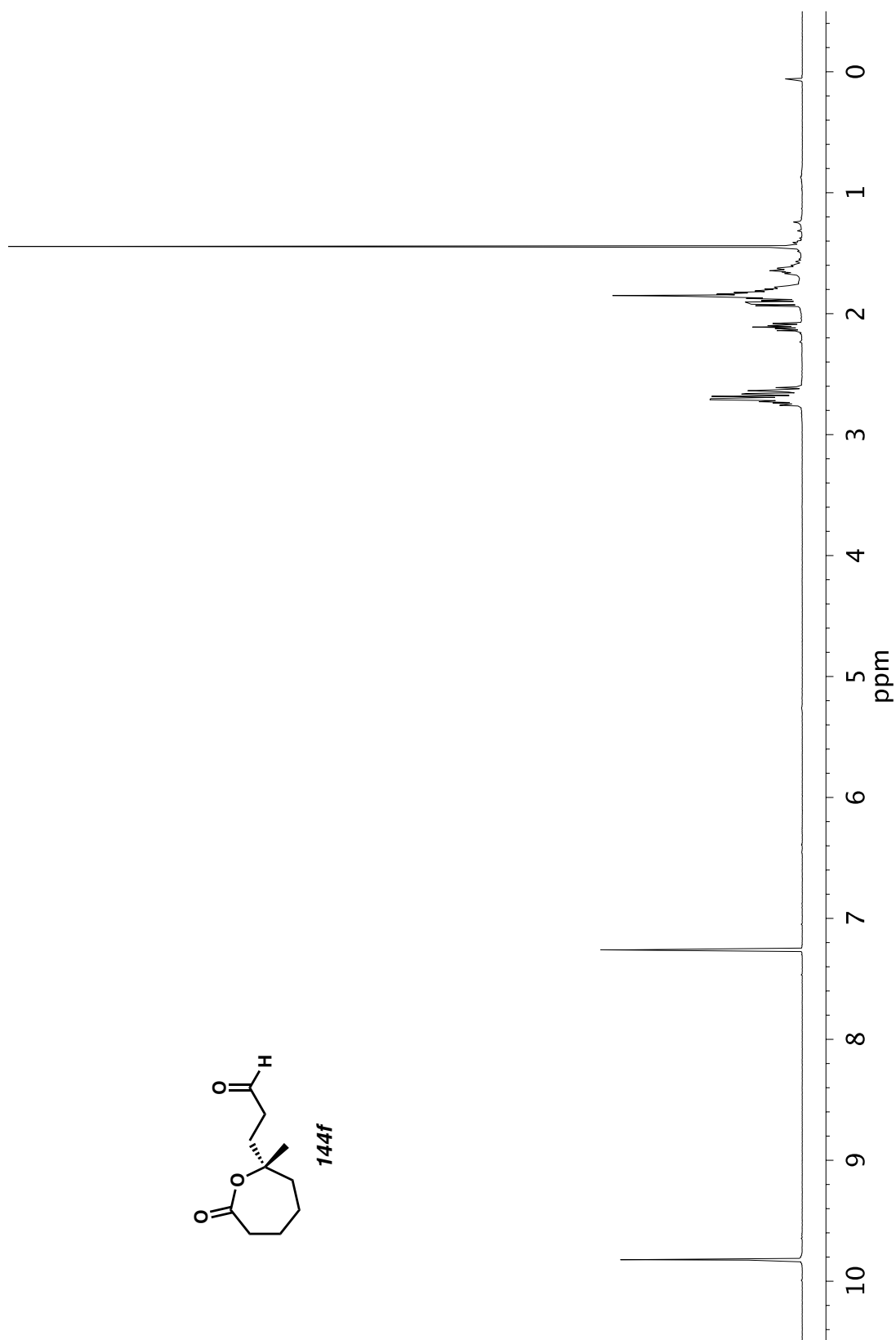


Figure A5.30. ¹³C NMR (126 MHz, CDCl₃) of compound **144e**.

Figure A5.31. ^1H NMR (500 MHz, CDCl_3) of compound **144f**.

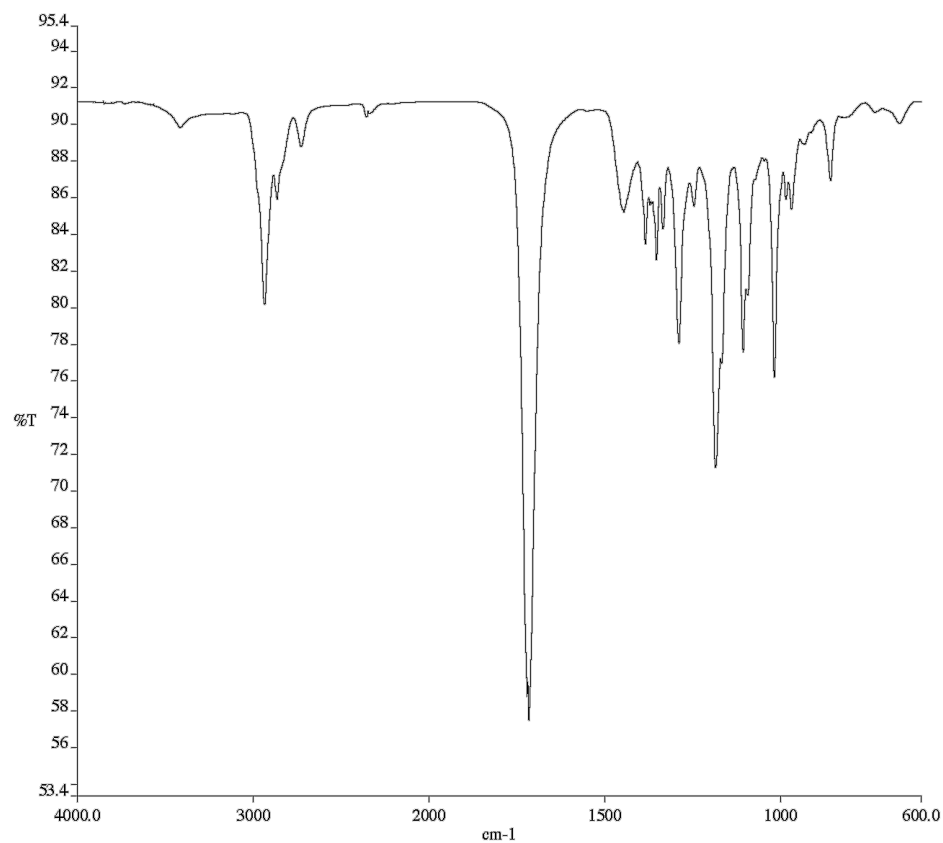


Figure A5.32. Infrared spectrum (Thin Film, KBr) of compound **144f**.

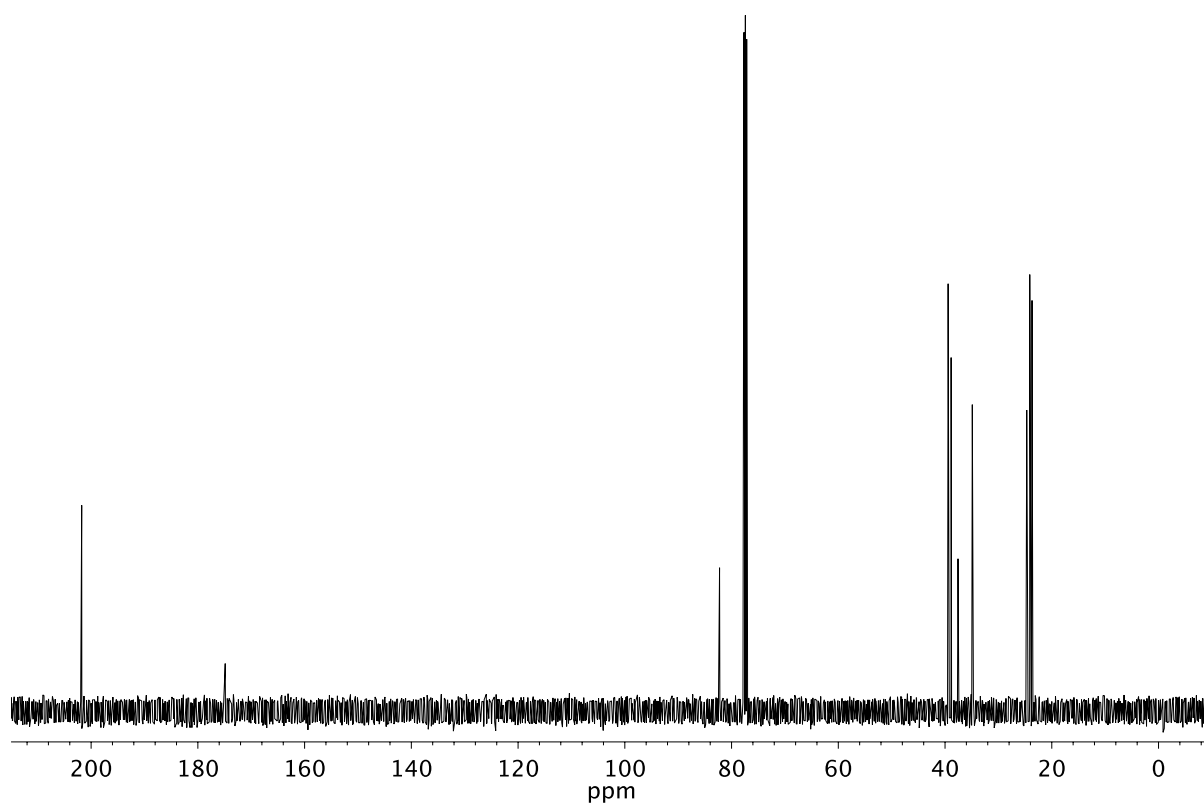


Figure A5.33. ¹³C NMR (126 MHz, CDCl₃) of compound **144f**.

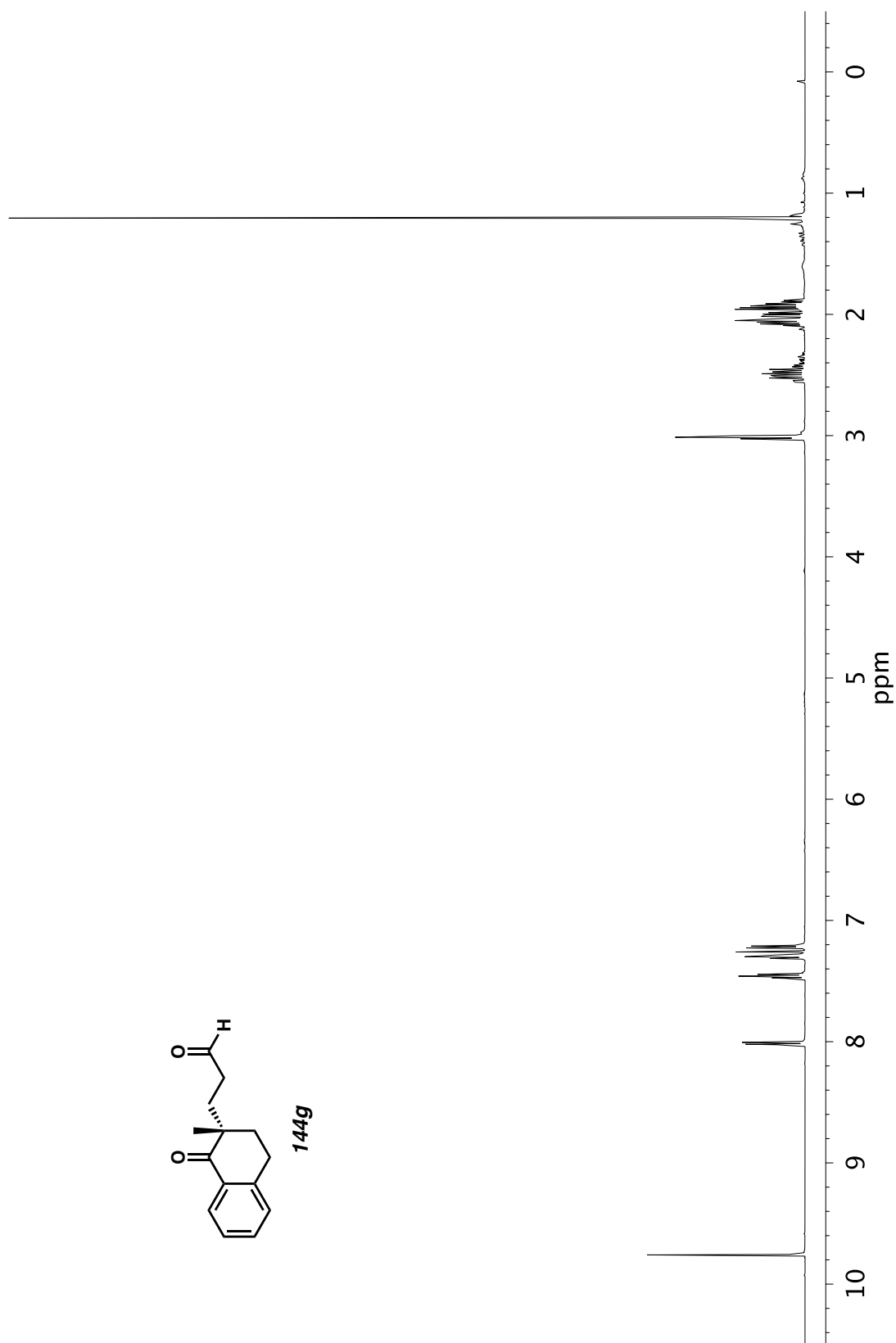


Figure A5.34. ¹H NMR (500 MHz, CDCl₃) of compound **144g**.

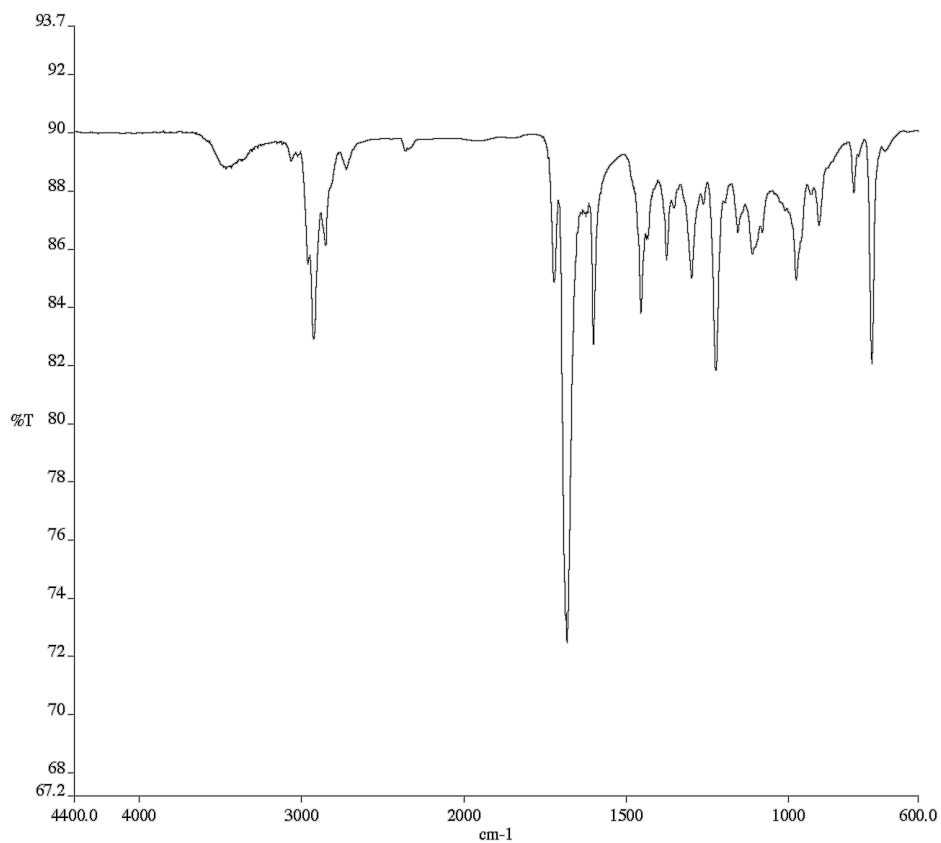


Figure A5.35. Infrared spectrum (Thin Film, KBr) of compound **144g**.

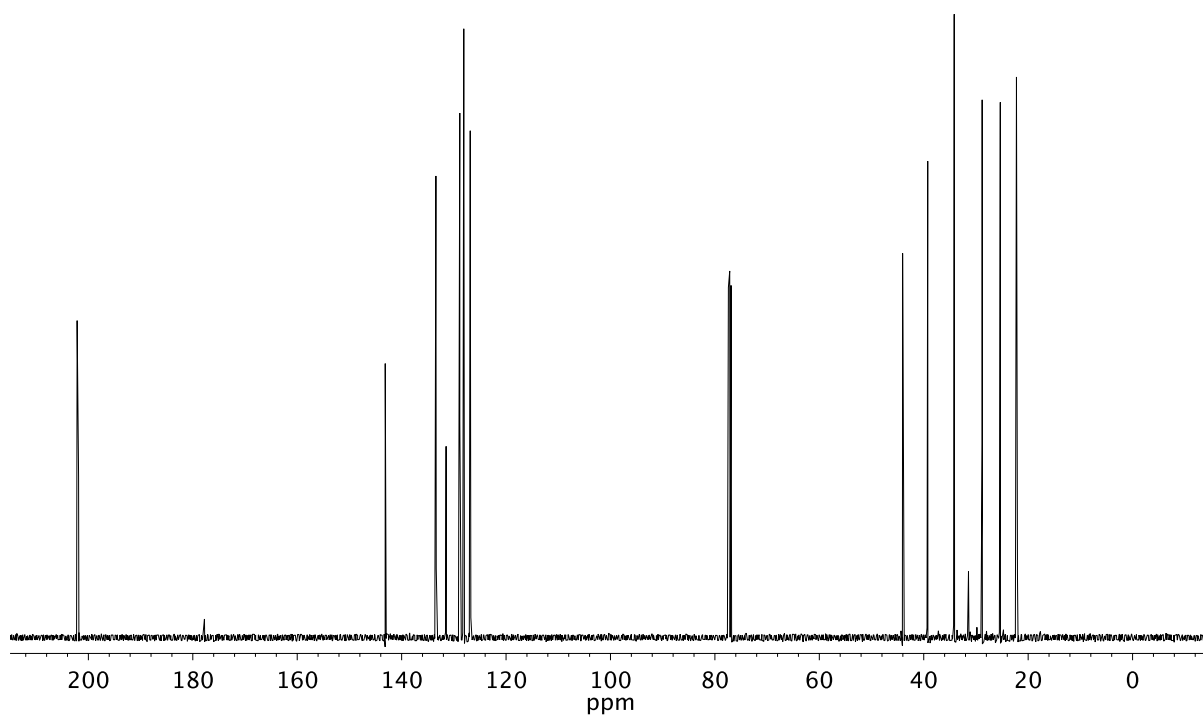
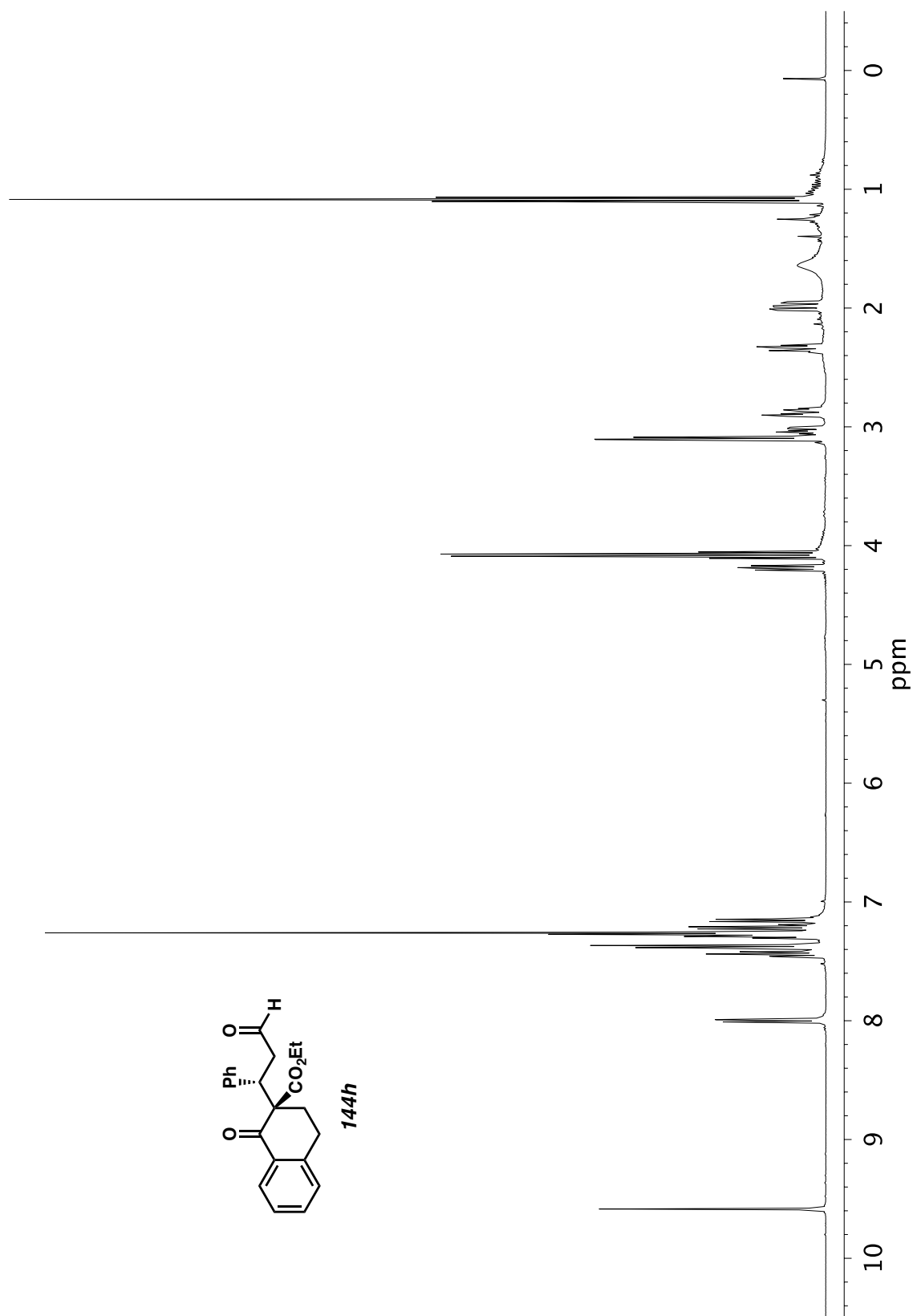


Figure A5.36. ¹³C NMR (126 MHz, CDCl₃) of compound **144g**.

Figure A5.37. ¹H NMR (400 MHz, CDCl₃) of compound **144h**.

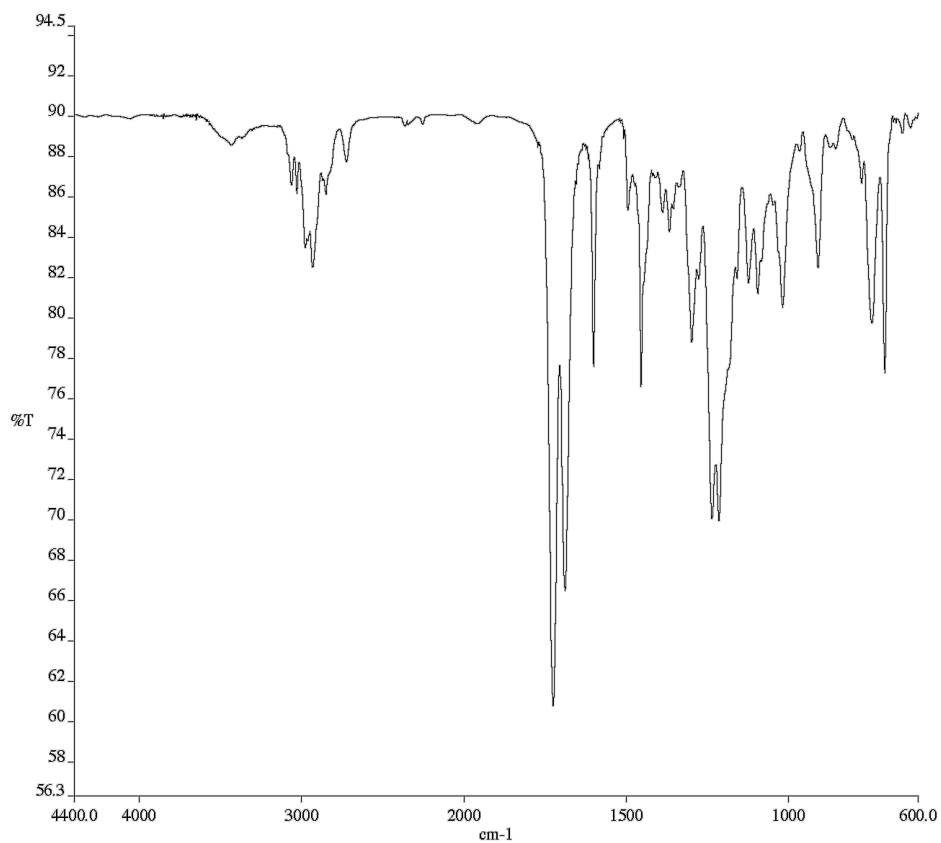


Figure A5.38. Infrared spectrum (Thin Film, KBr) of compound **144h**.

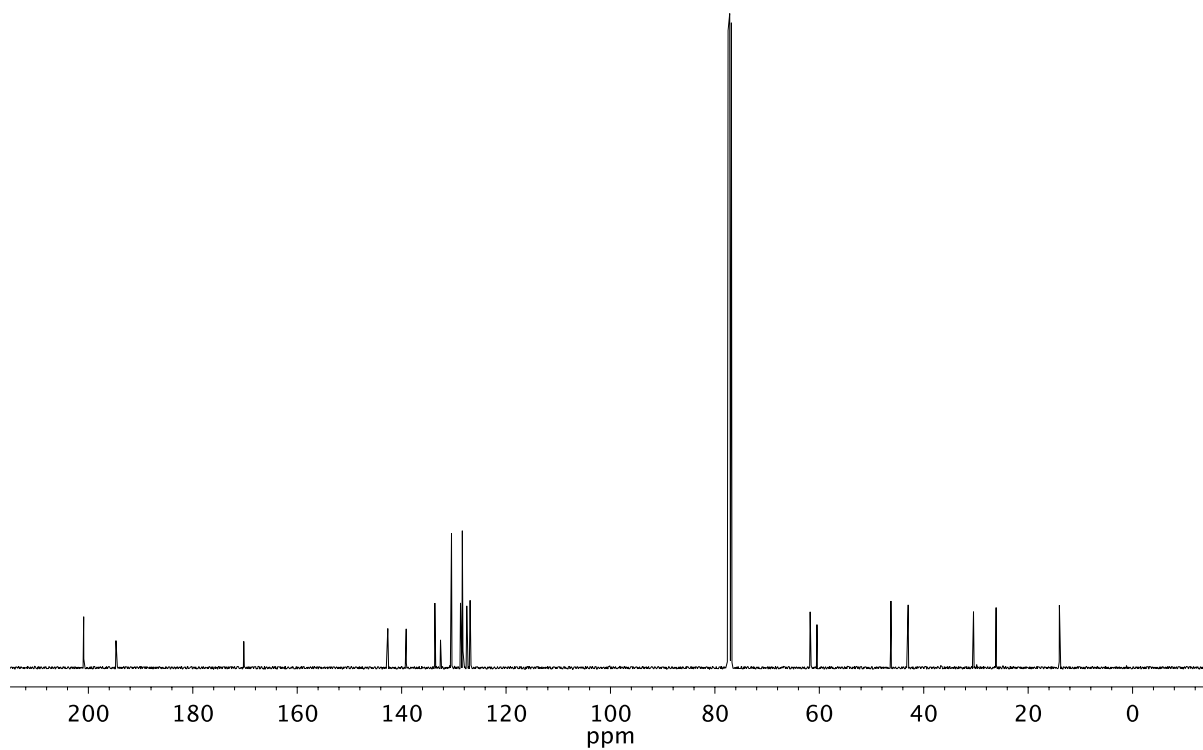
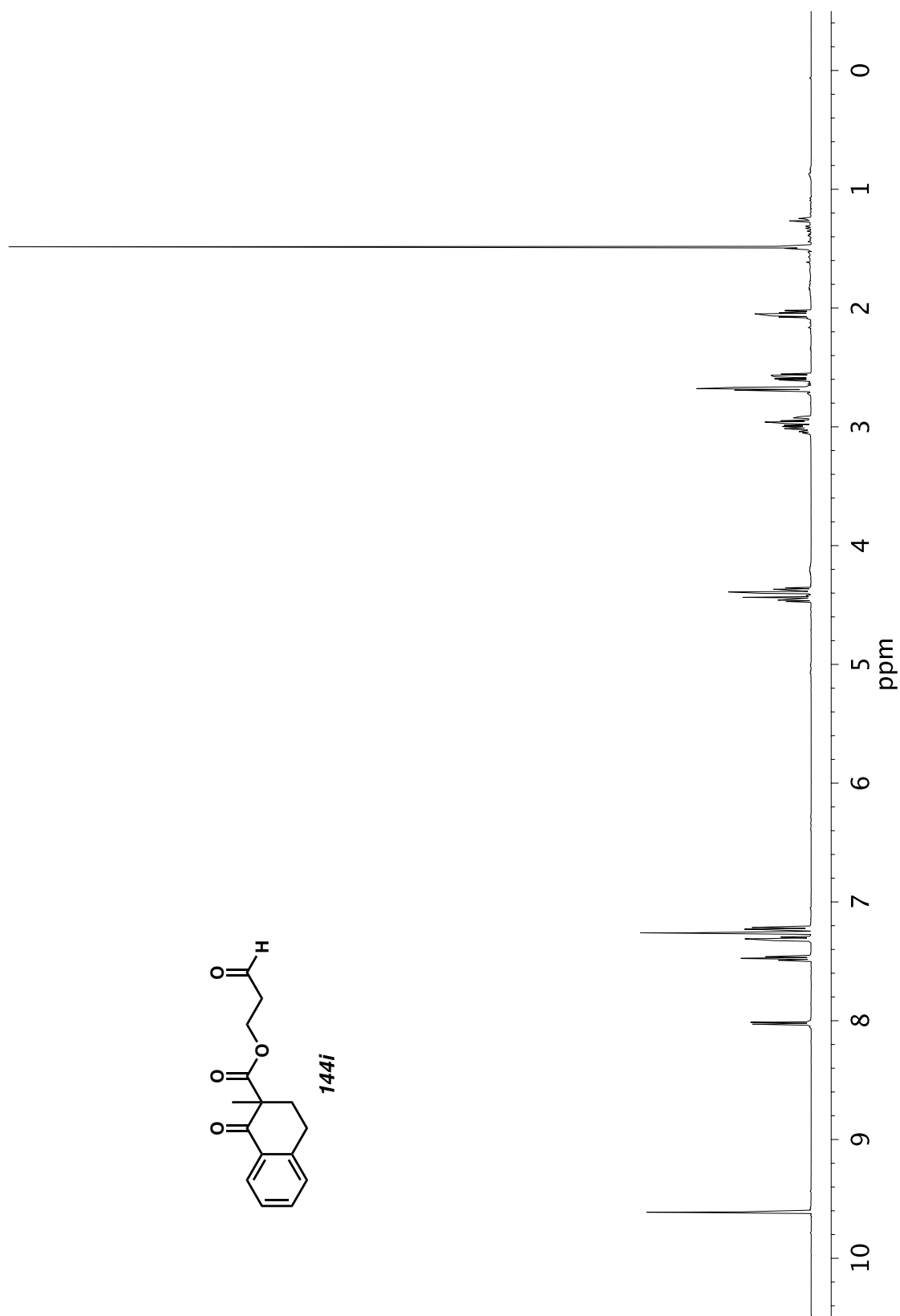


Figure A5.39. ¹³C NMR (101 MHz, CDCl₃) of compound **144h**.

Figure A5.40. ¹H NMR (500 MHz, CDCl₃) of compound **144i**.

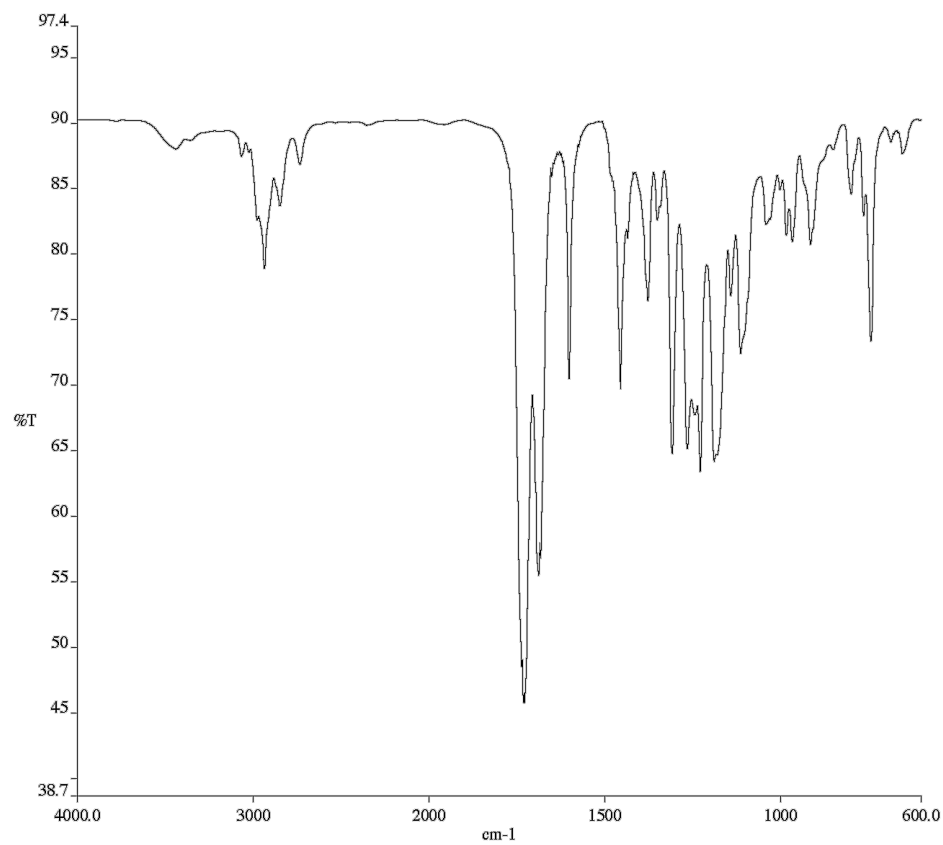


Figure A5.41. Infrared spectrum (Thin Film, KBr) of compound **144i**.

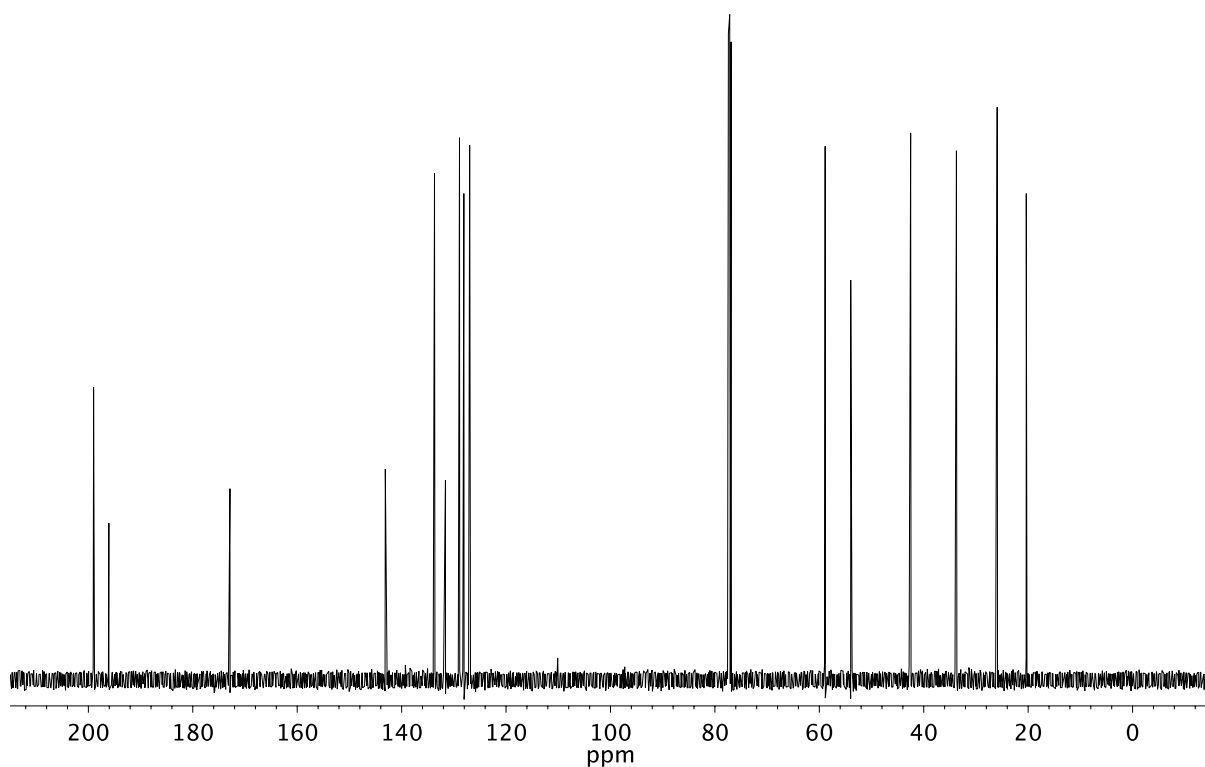
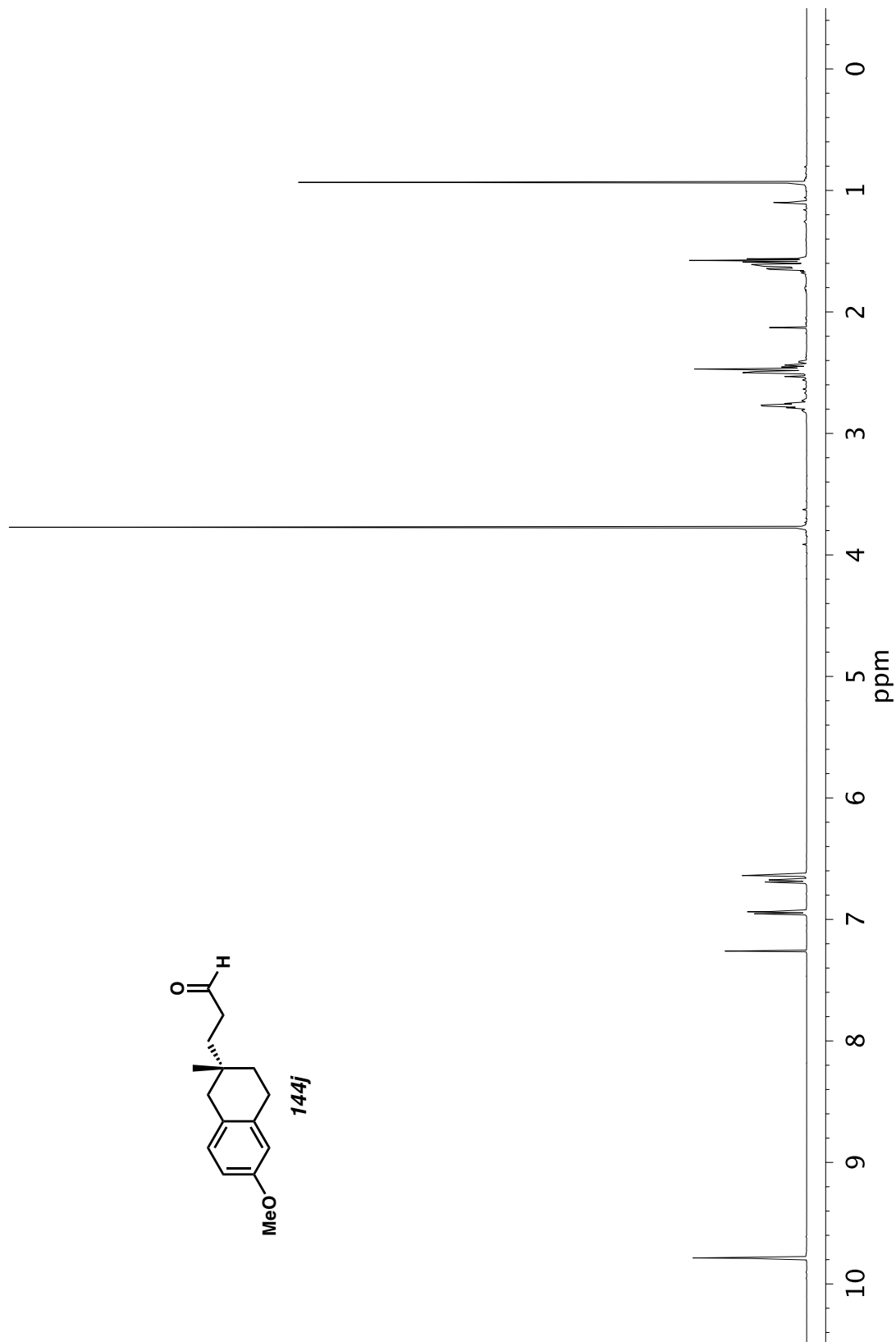


Figure A5.42. ¹³C NMR (126 MHz, CDCl₃) of compound **144i**.

Figure A5.43. ^1H NMR (500 MHz, CDCl_3) of compound **144j**.

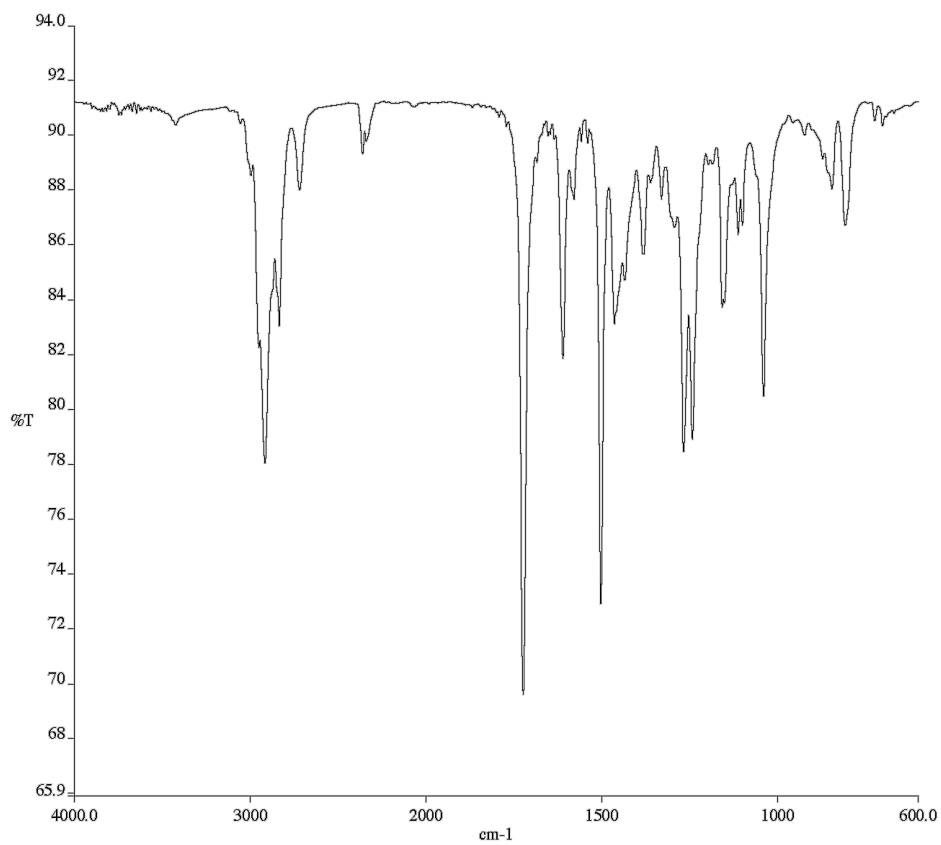


Figure A5.44. Infrared spectrum (Thin Film, KBr) of compound **144j**.

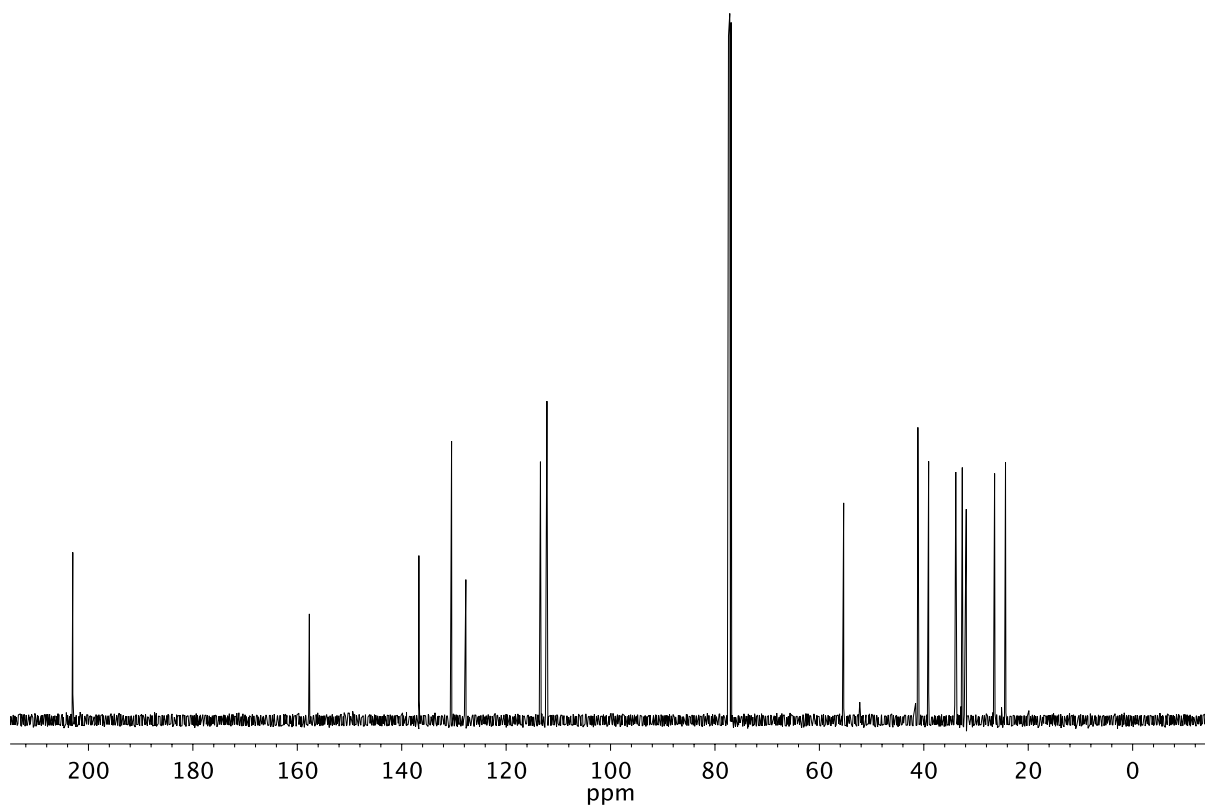
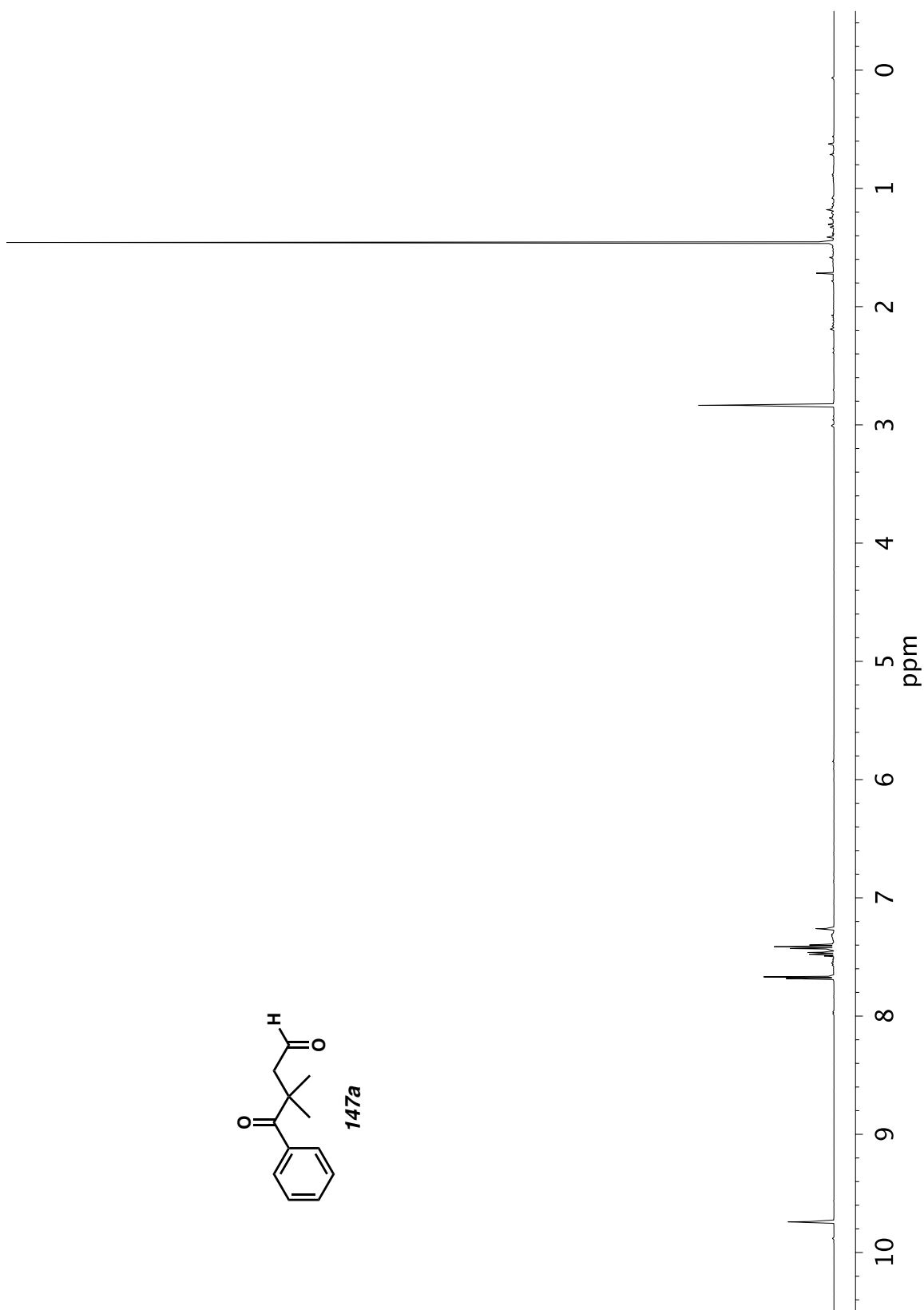


Figure A5.45. ¹³C NMR (126 MHz, CDCl₃) of compound **144j**.

Figure A5.46. ^1H NMR (500 MHz, CDCl_3) of compound **147a**.

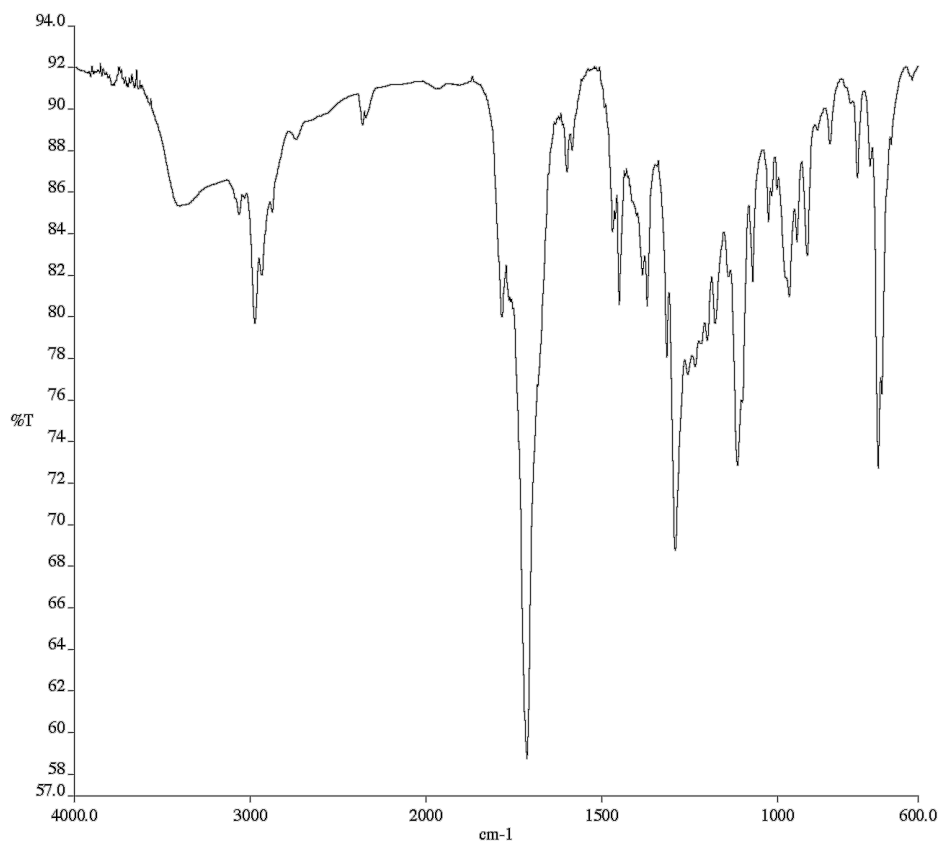


Figure A5.47. Infrared spectrum (Thin Film, KBr) of compound **147a**.

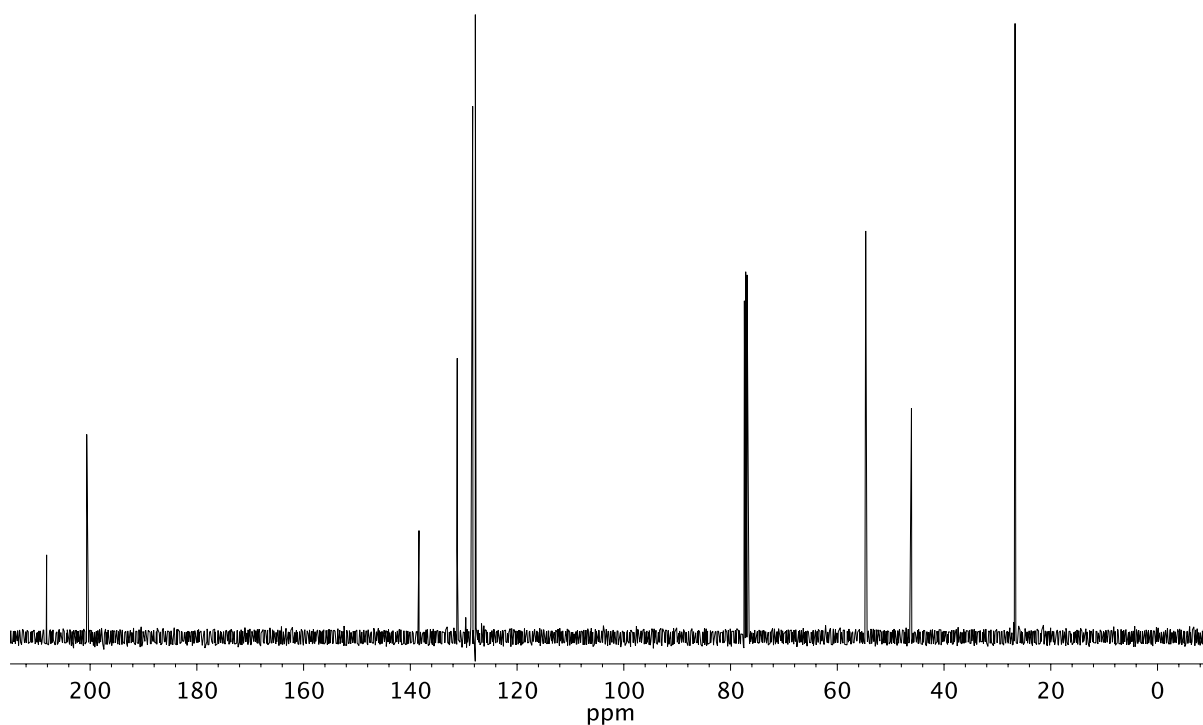
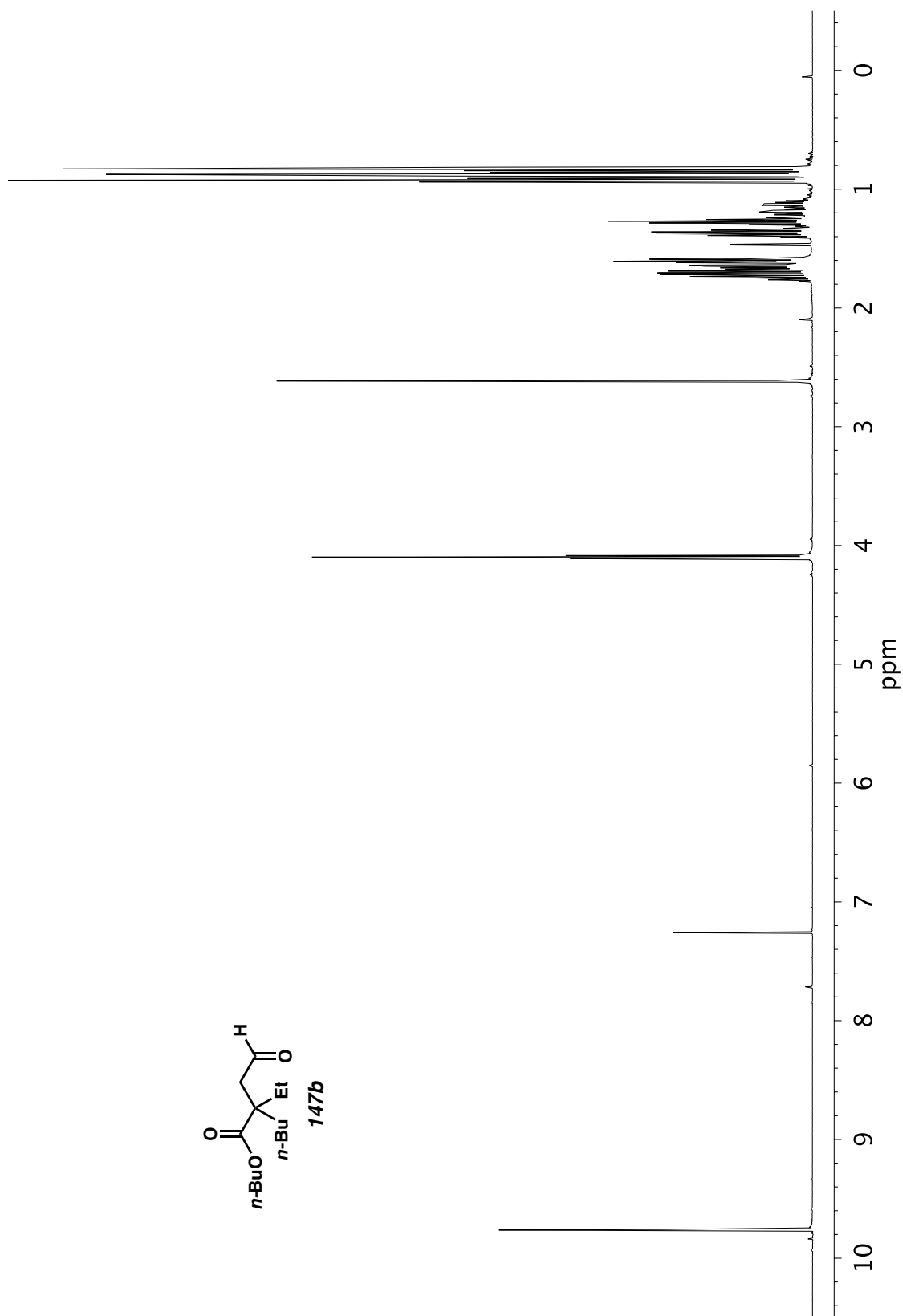


Figure A5.48. ¹³C NMR (126 MHz, CDCl₃) of compound **147a**.

Figure A5.49. ^1H NMR (500 MHz, CDCl_3) of compound **147b**.

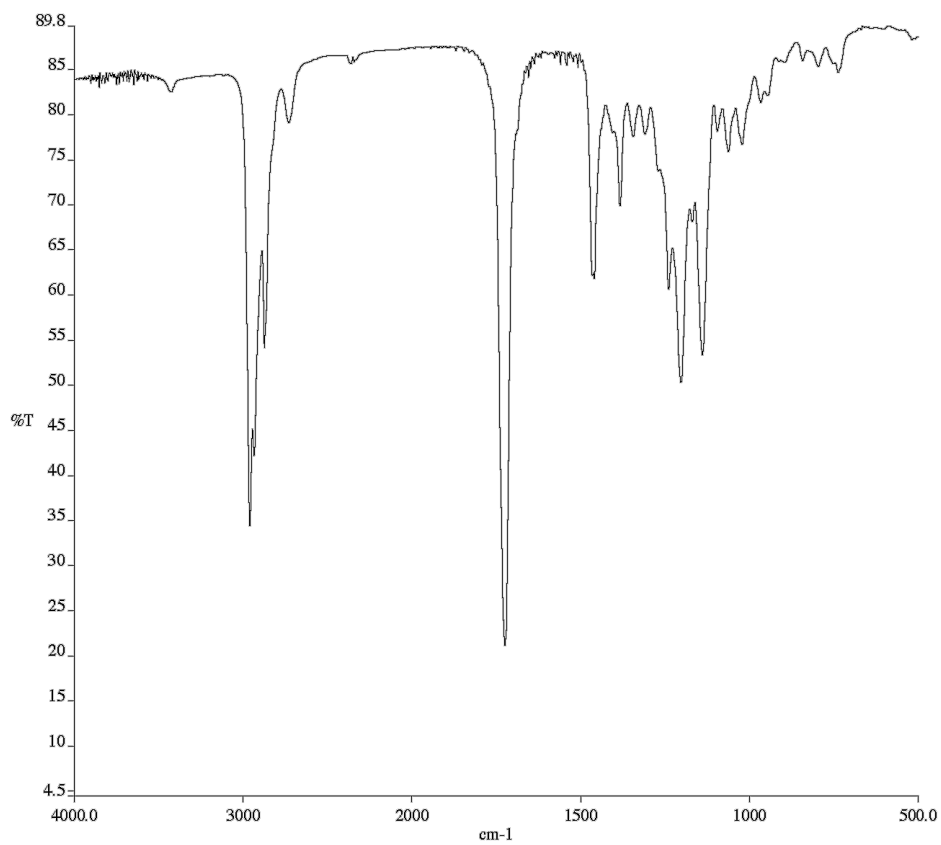


Figure A5.50. Infrared spectrum (Thin Film, KBr) of compound **147b**.

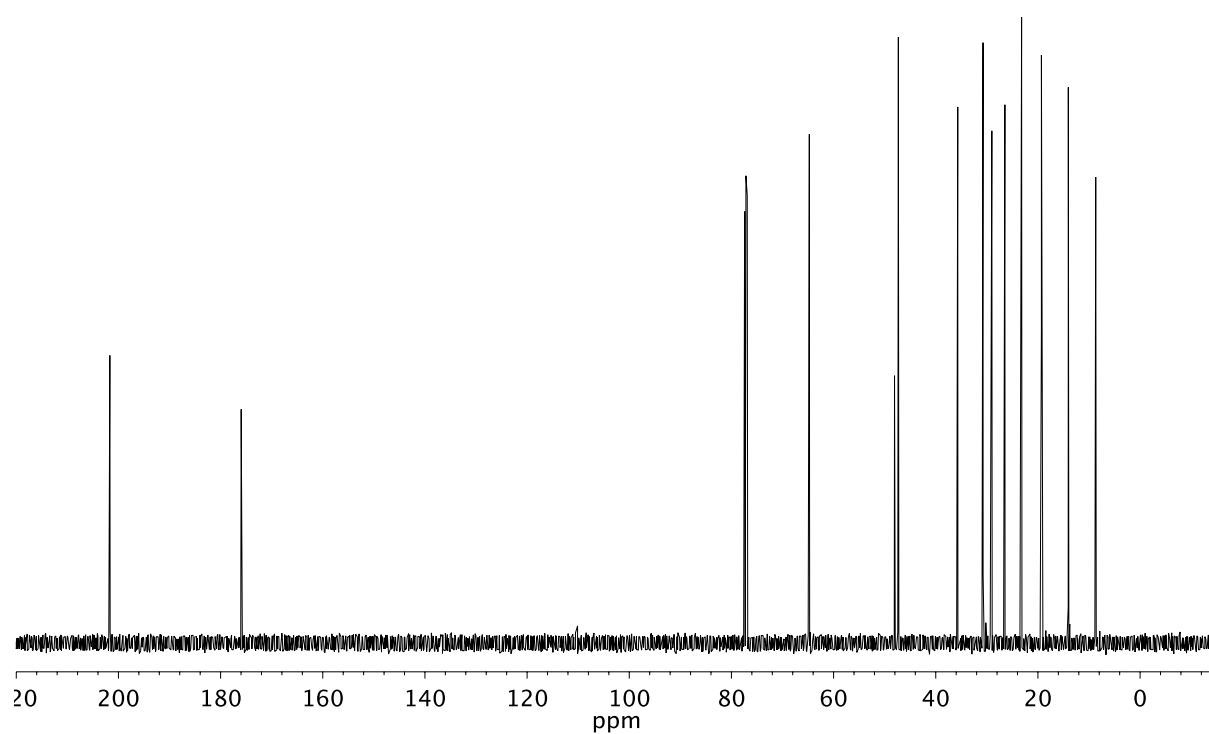
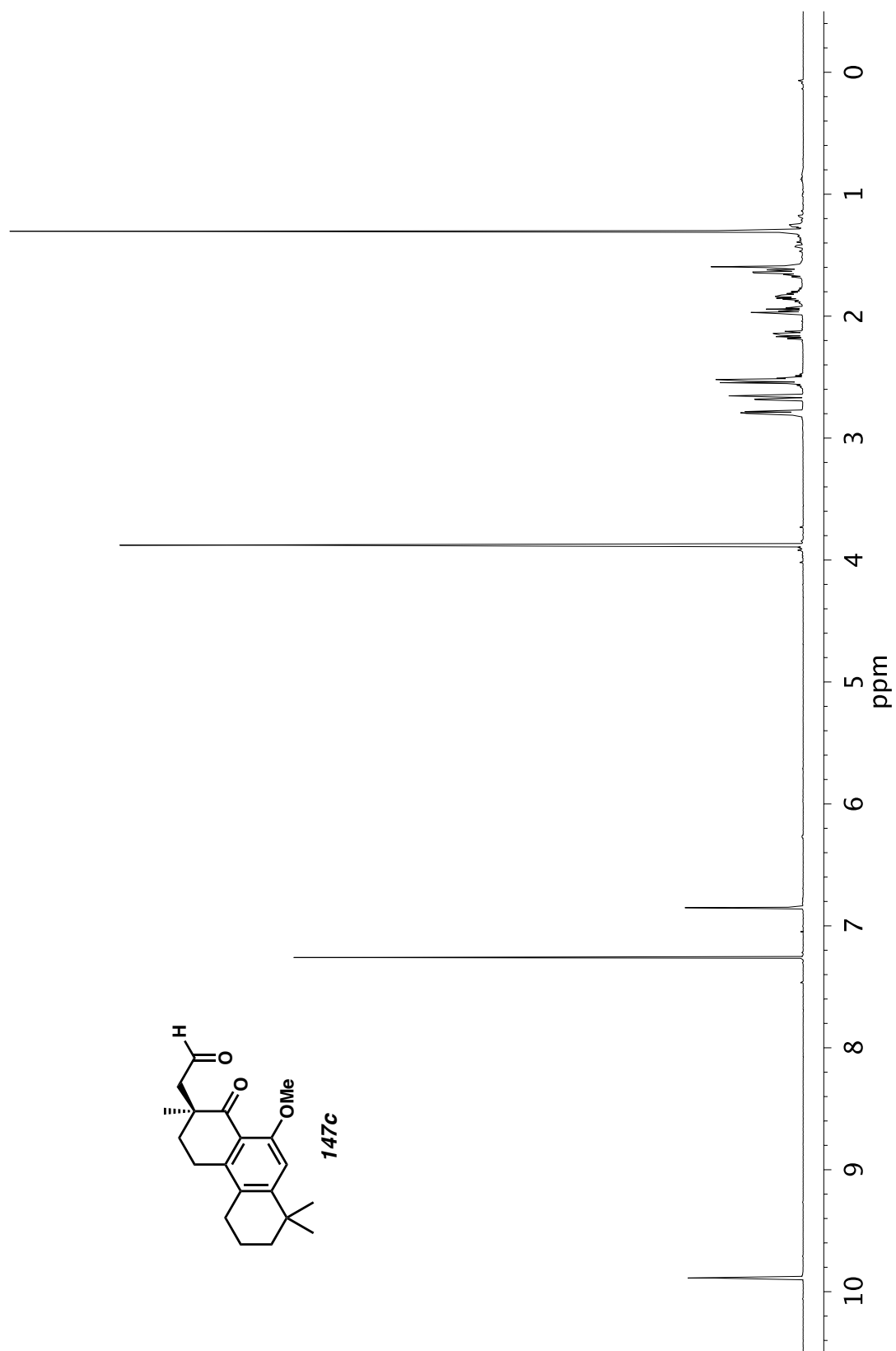


Figure A5.51. ¹³C NMR (126 MHz, CDCl₃) of compound **147b**.

Figure A5.52. ¹H NMR (500 MHz, CDCl₃) of compound **147c**.

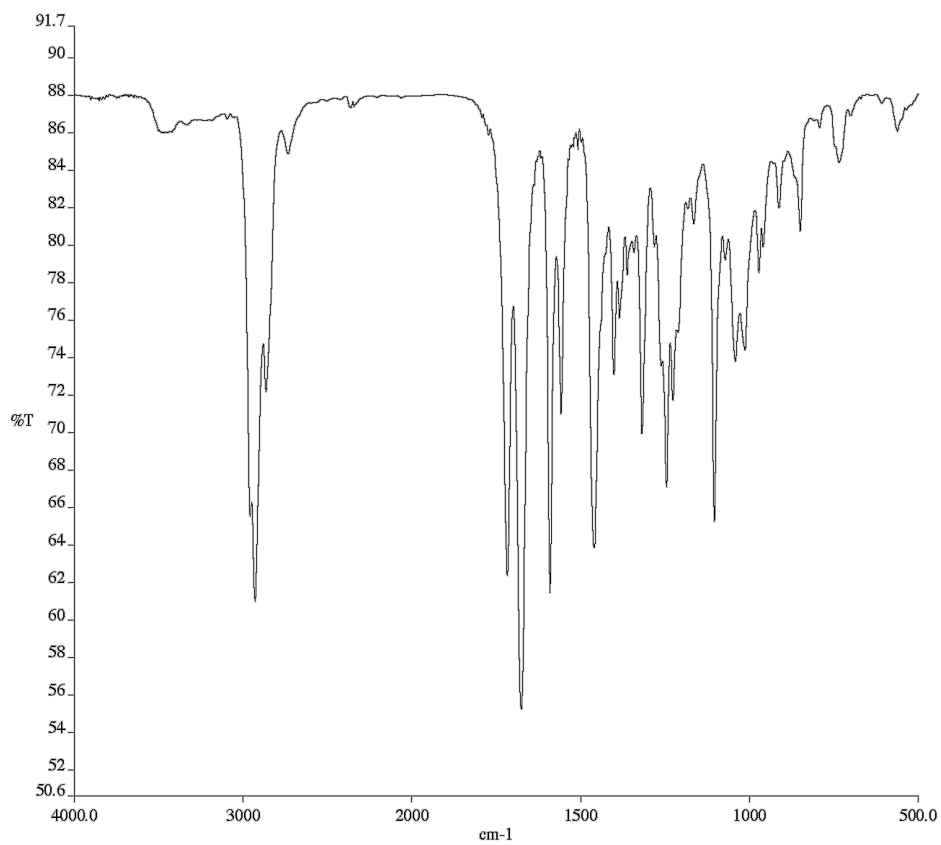


Figure A5.53. Infrared spectrum (Thin Film, KBr) of compound **147c**.

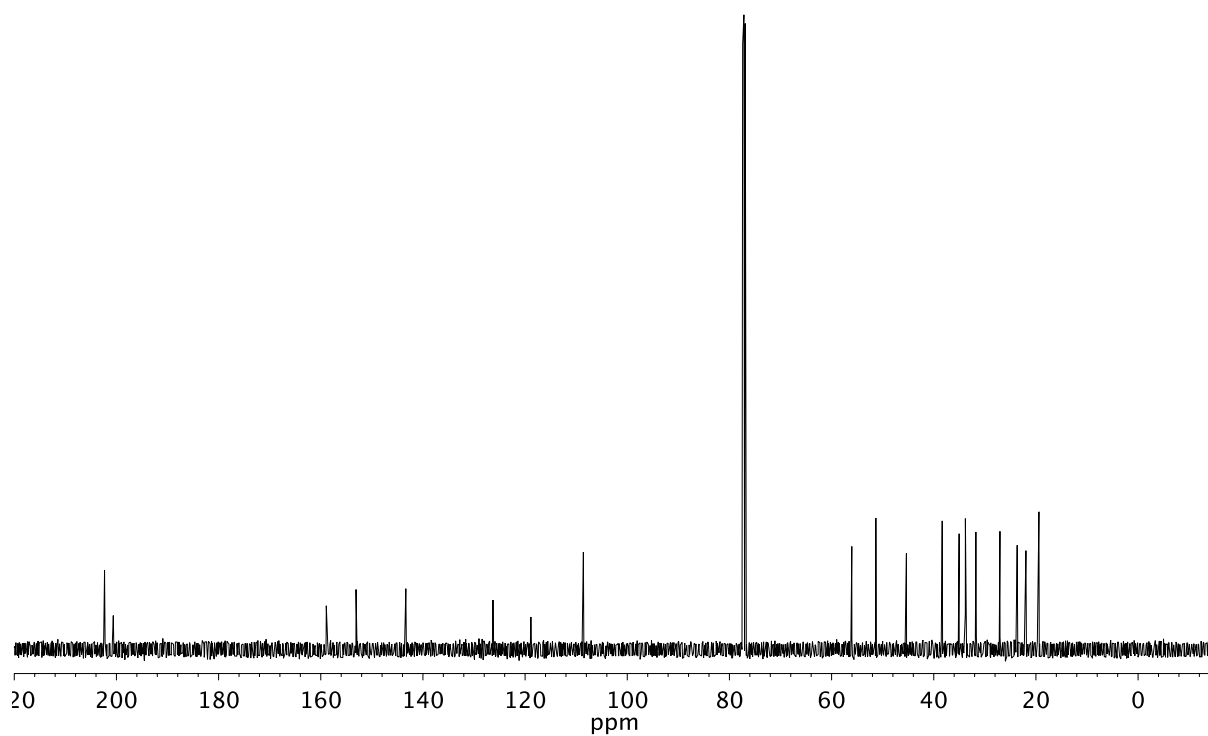
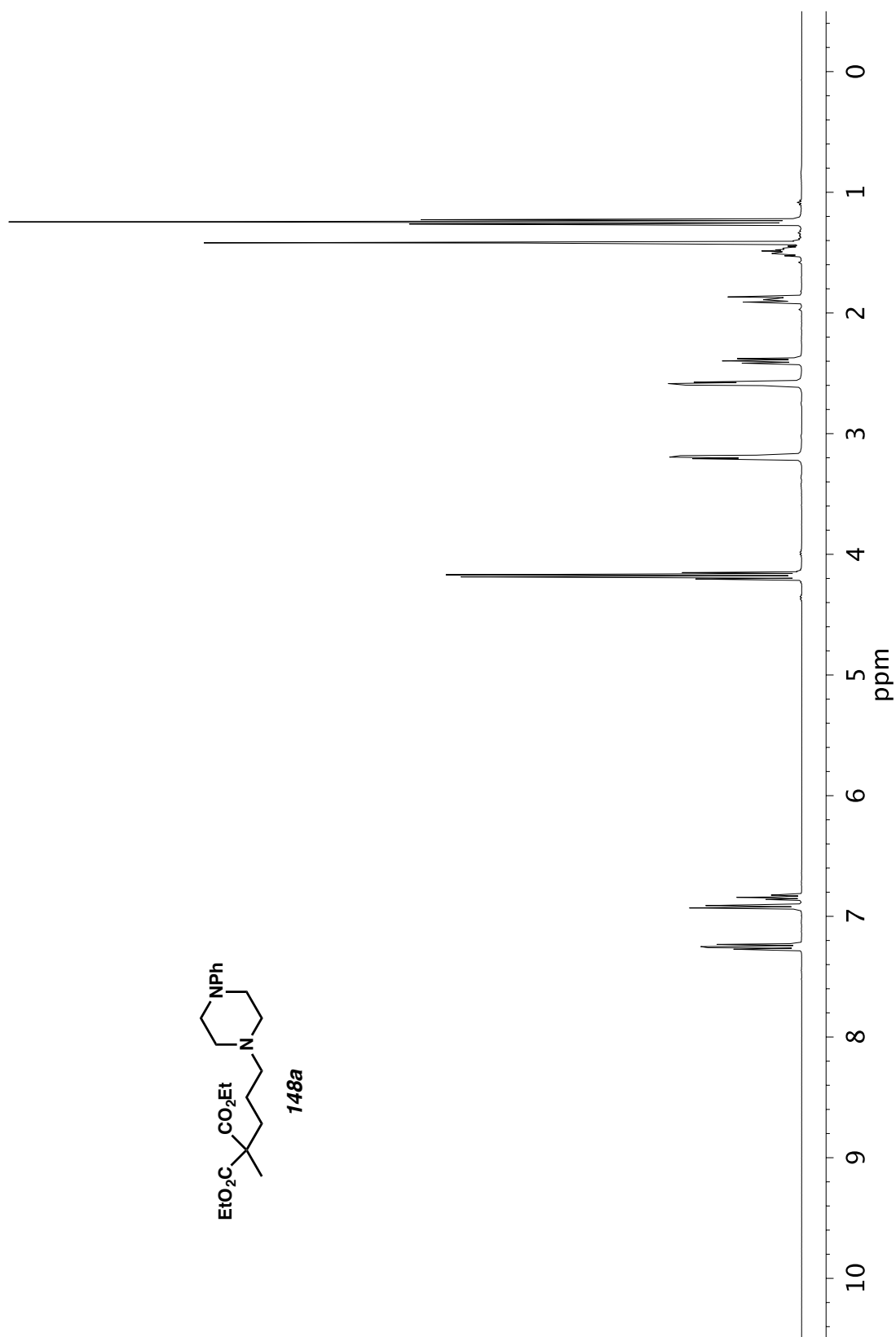


Figure A5.54. ¹³C NMR (126 MHz, CDCl₃) of compound **147c**.

Figure A5.55. ^1H NMR (400 MHz, CDCl_3) of compound **148a**.

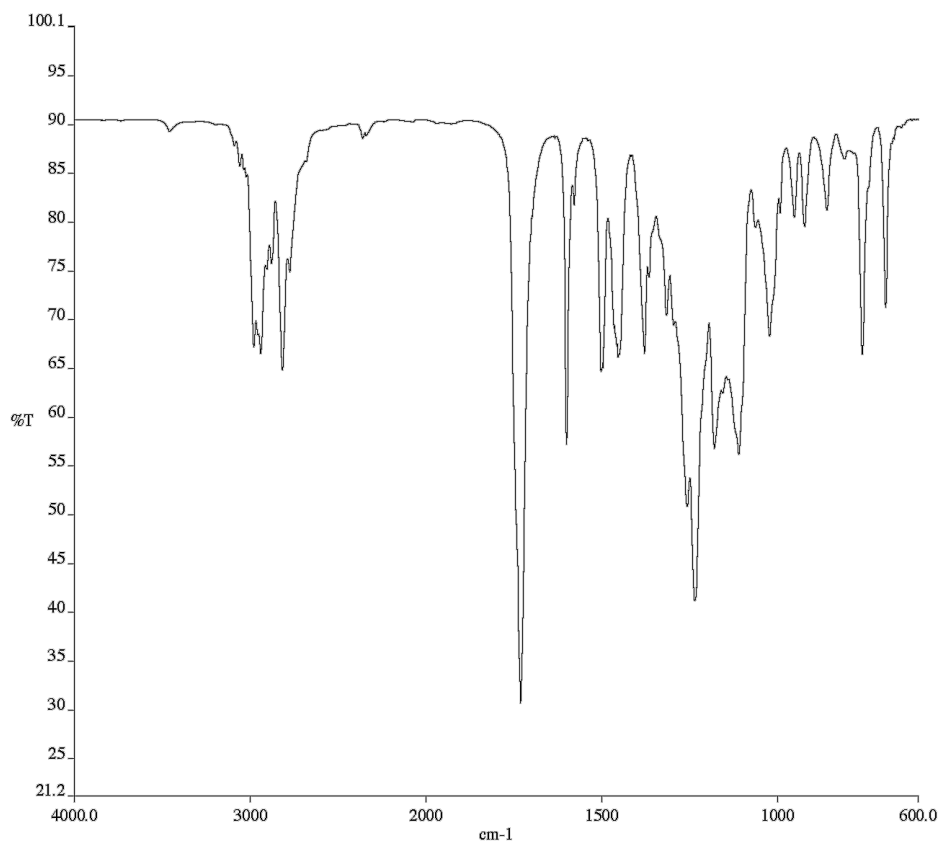


Figure A5.56. Infrared spectrum (Thin Film, KBr) of compound **148a**.

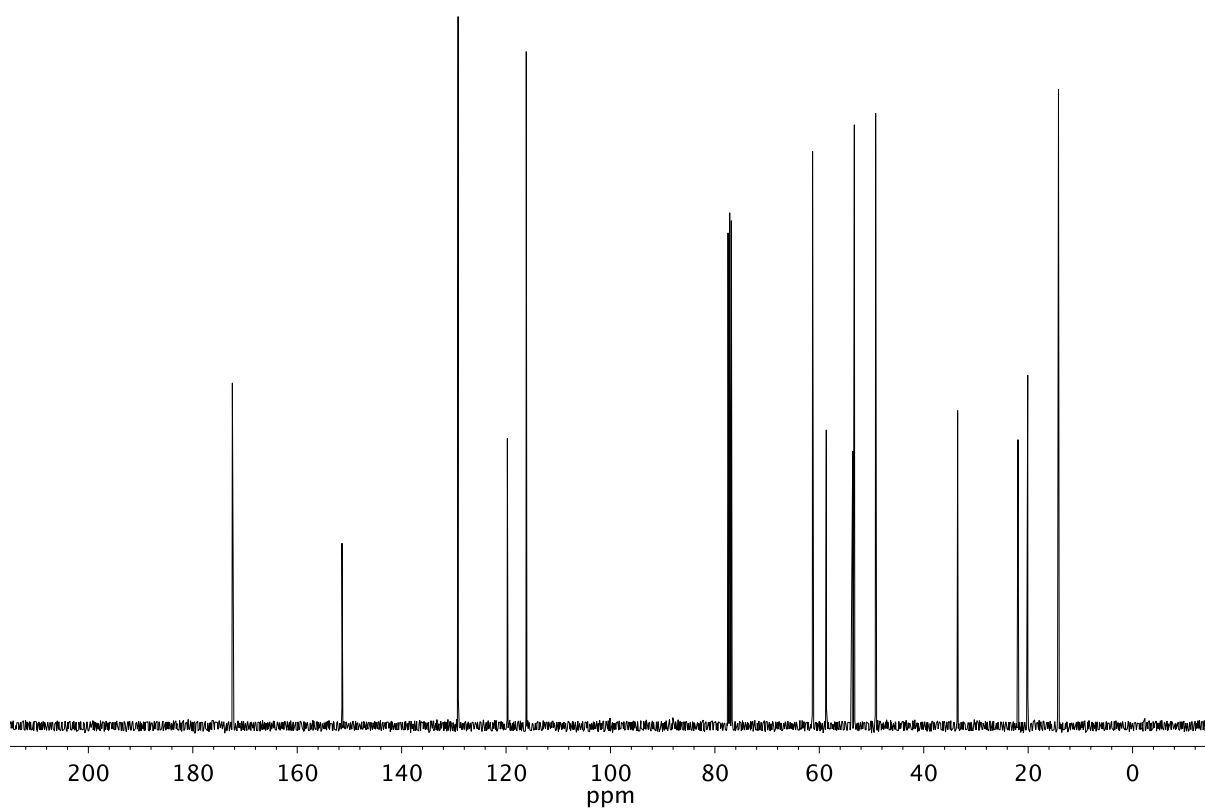
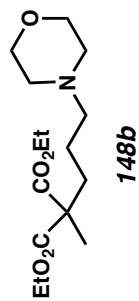
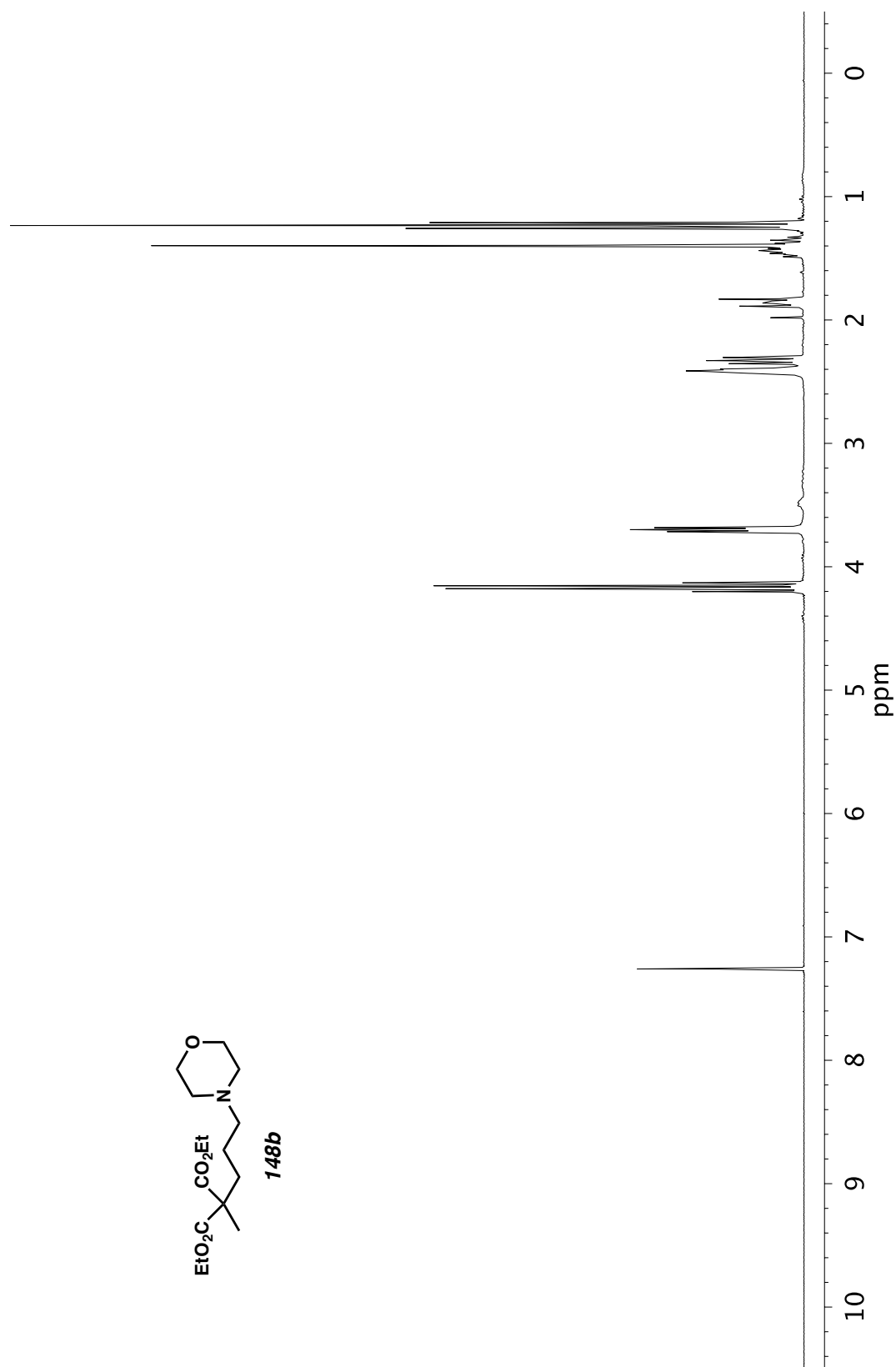


Figure A5.57. ¹³C NMR (101 MHz, CDCl₃) of compound **148a**.

Figure A5.58. ^1H NMR (300 MHz, CDCl_3) of compound **148b**.

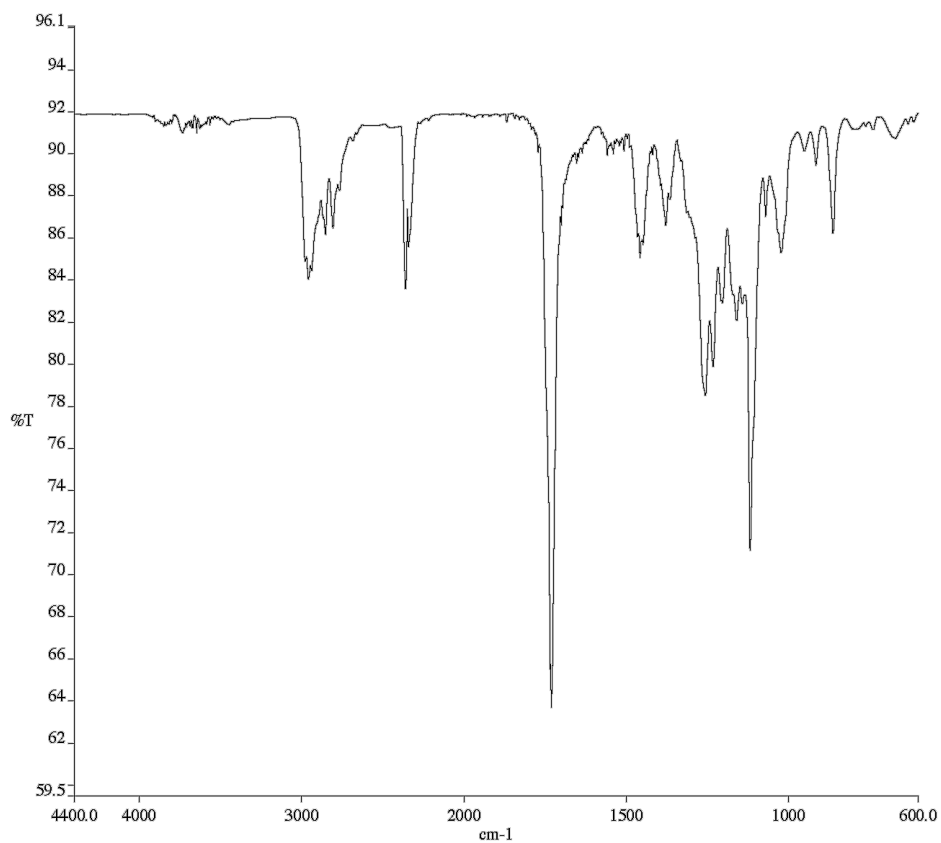


Figure A5.59. Infrared spectrum (Thin Film, KBr) of compound **148b**.

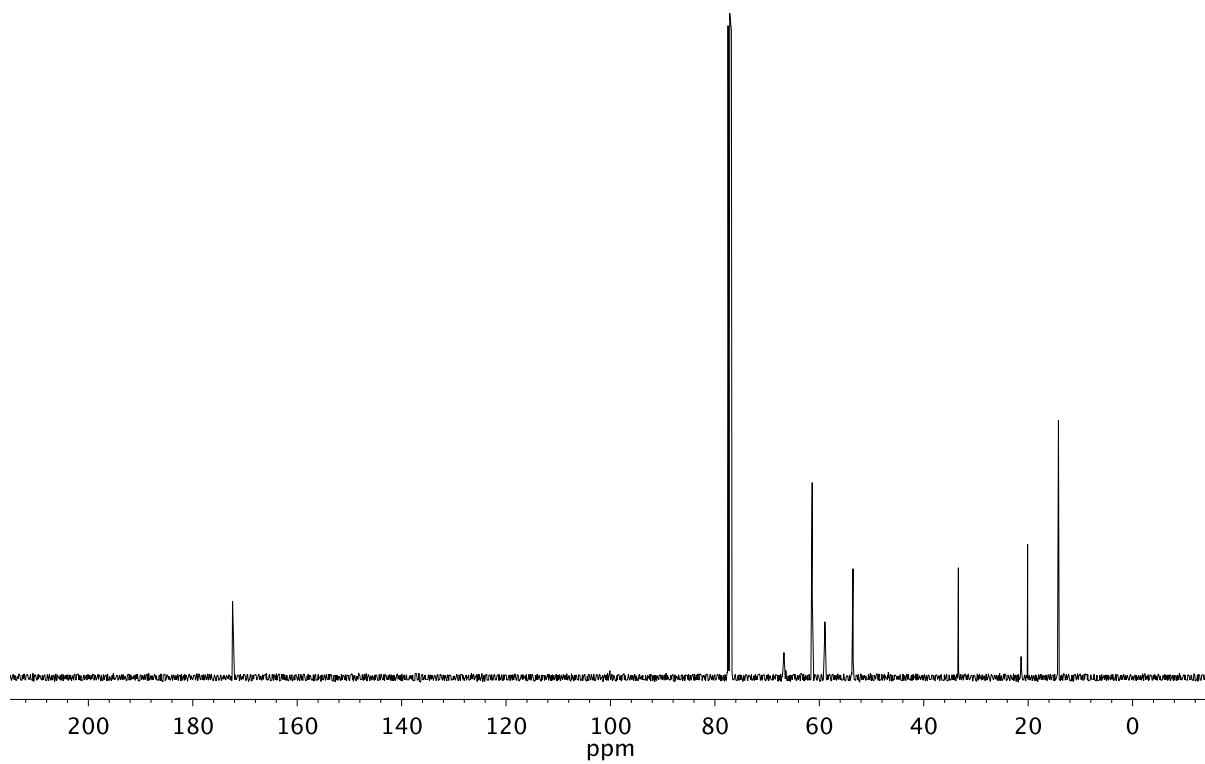
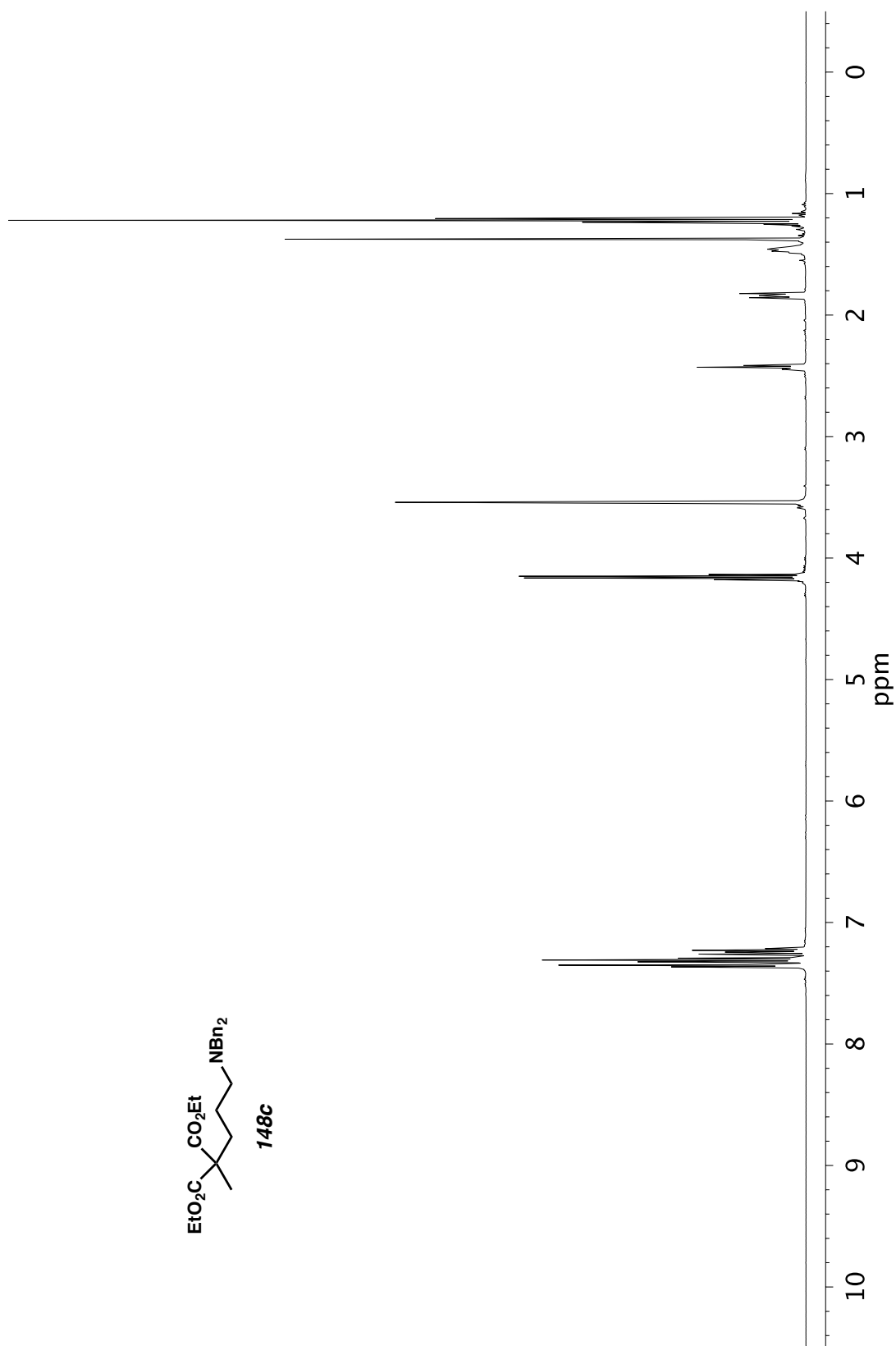


Figure A5.60. ¹³C NMR (101 MHz, CDCl₃) of compound **148b**.

Figure A5.61. ^1H NMR (500 MHz, CDCl_3) of compound **148c**.

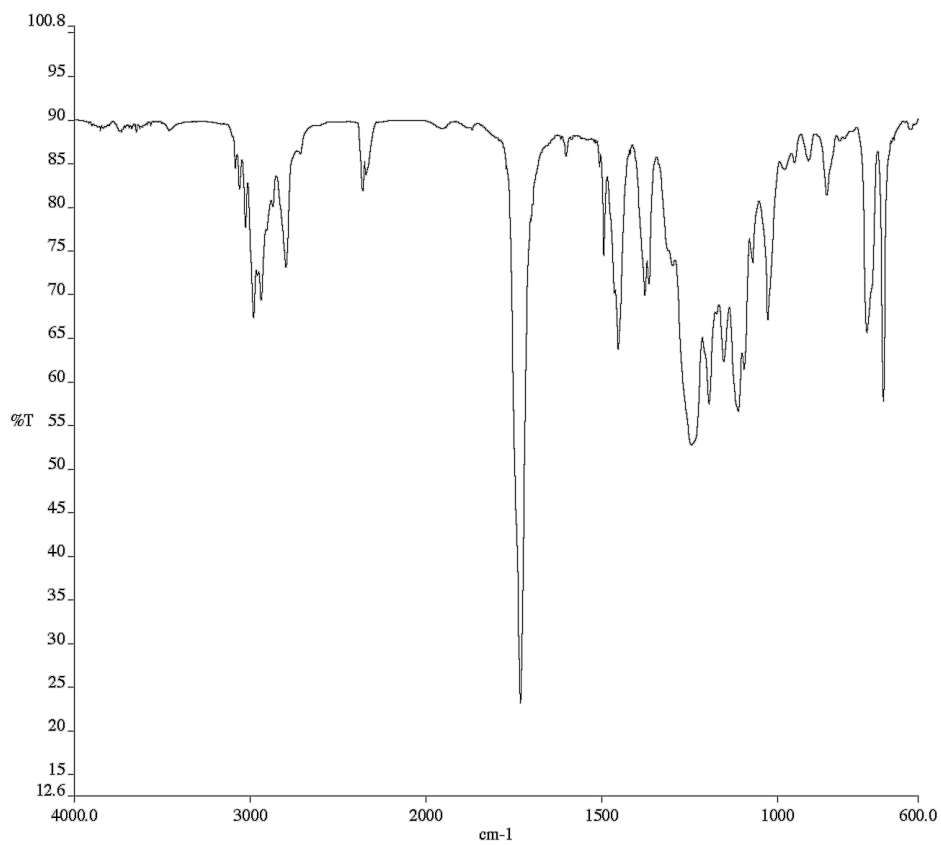


Figure A5.62. Infrared spectrum (Thin Film, KBr) of compound **148c**.

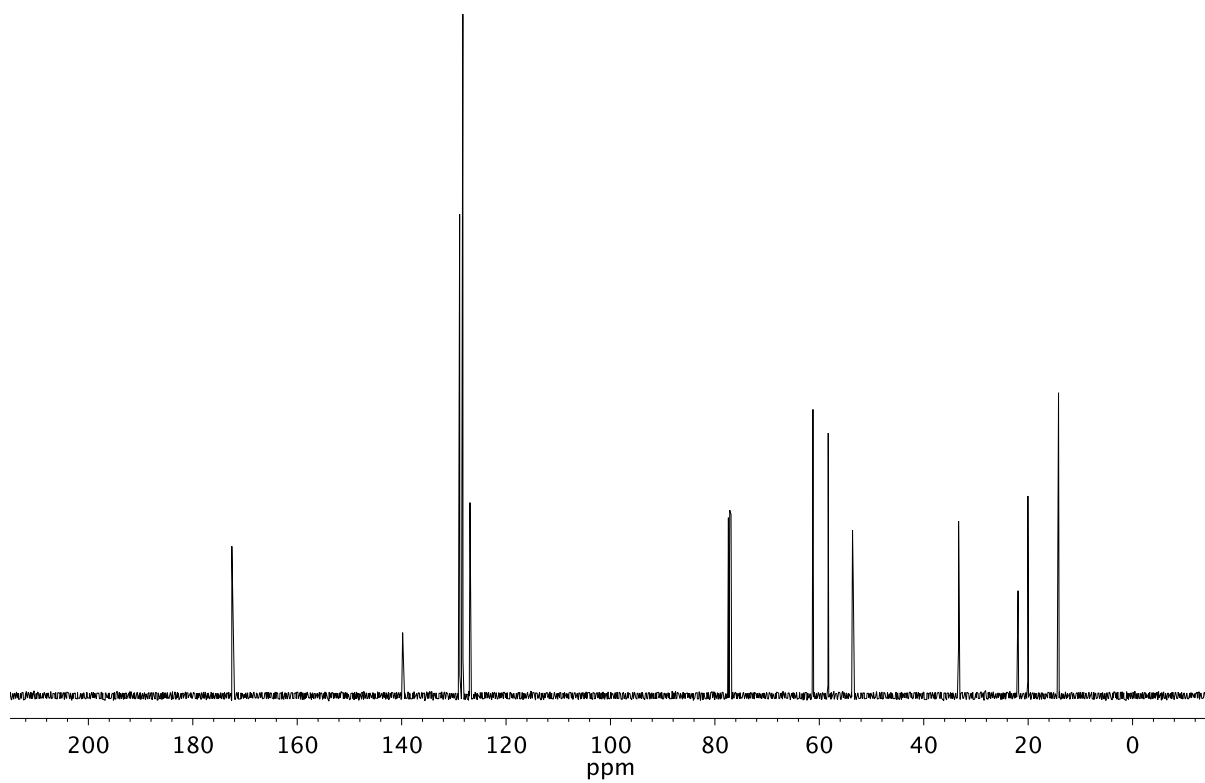


Figure A5.63. ¹³C NMR (126 MHz, CDCl₃) of compound **148c**.

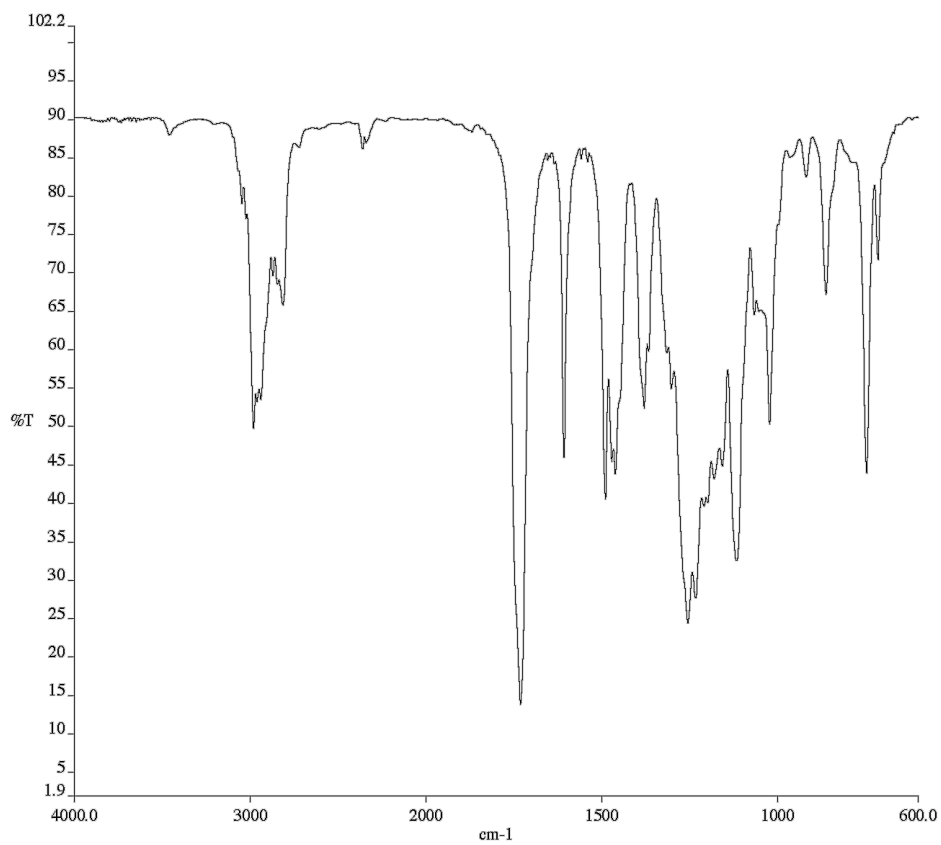


Figure A5.65. Infrared spectrum (Thin Film, KBr) of compound **148d**.

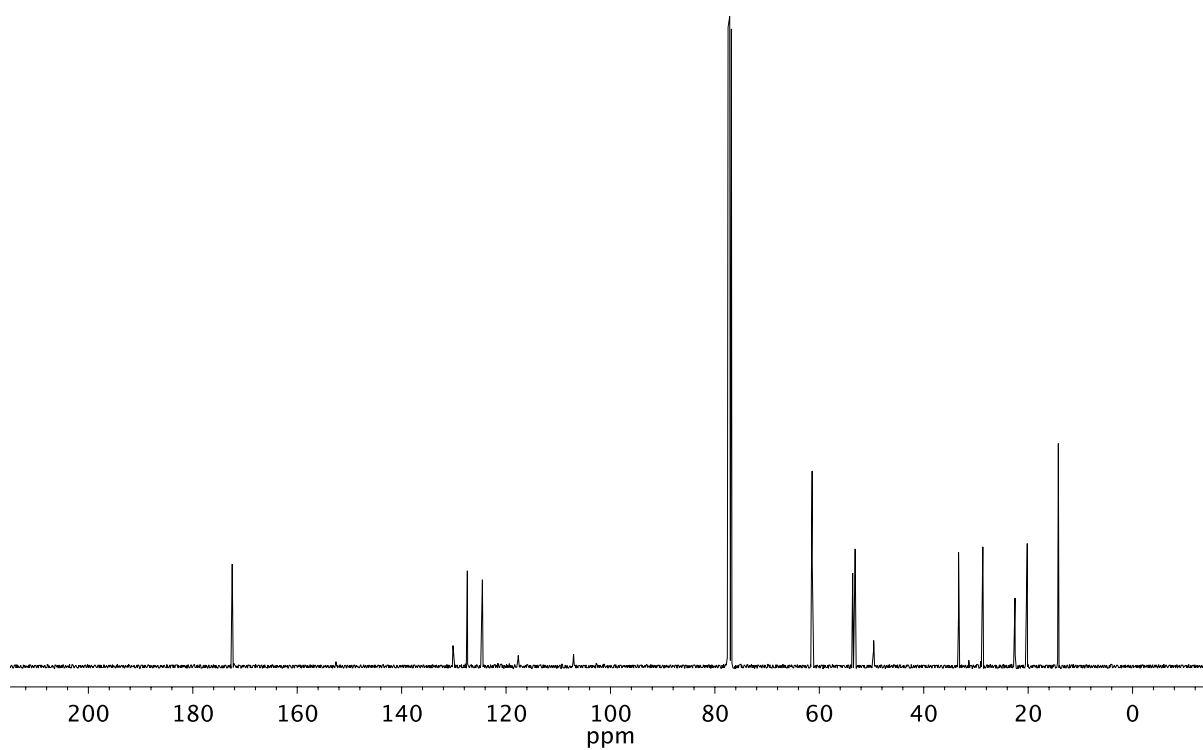
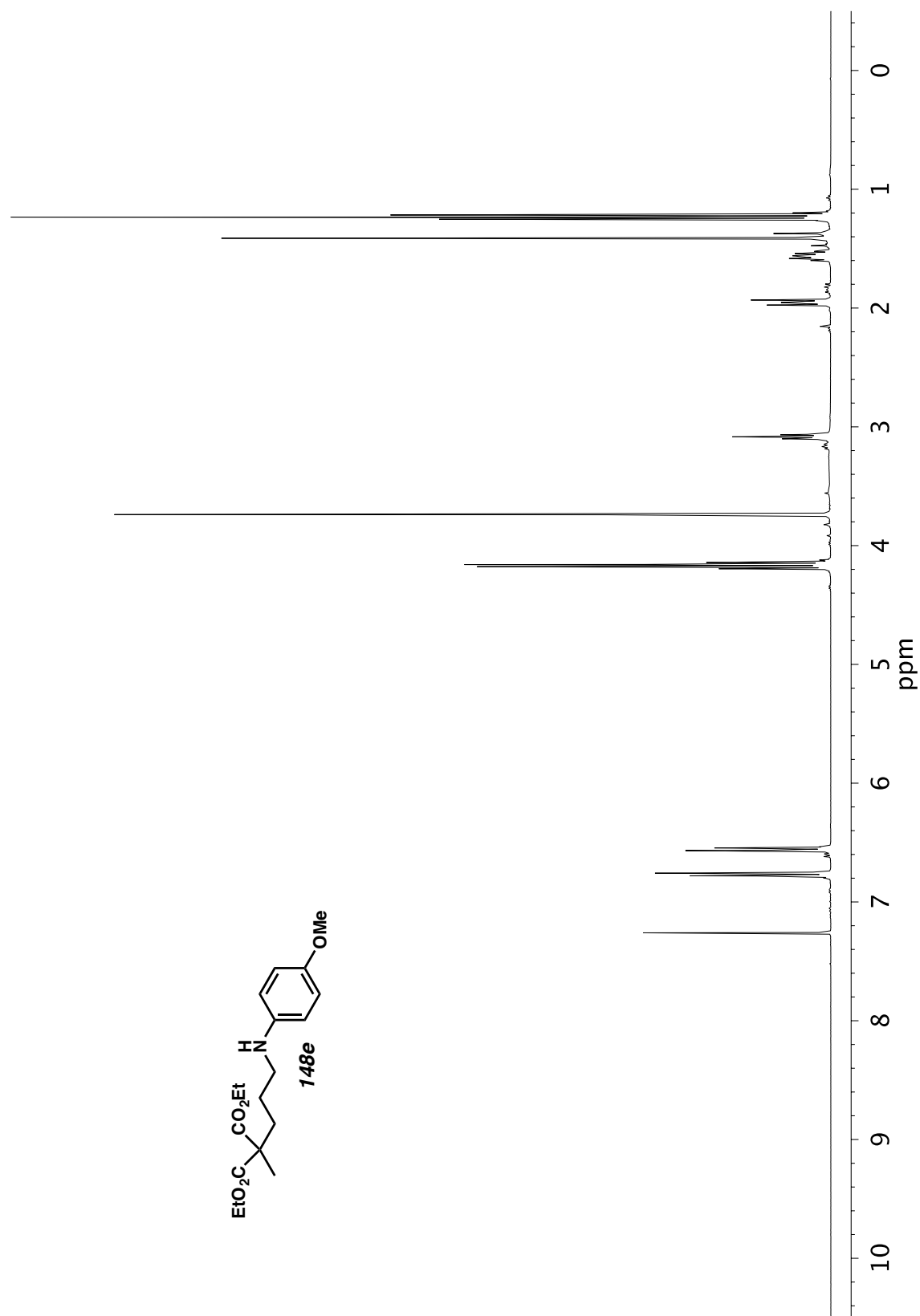


Figure A5.66. ¹³C NMR (101 MHz, CDCl₃) of compound **148d**.

Figure A5.67. ^1H NMR (400 MHz, CDCl_3) of compound **148e**.

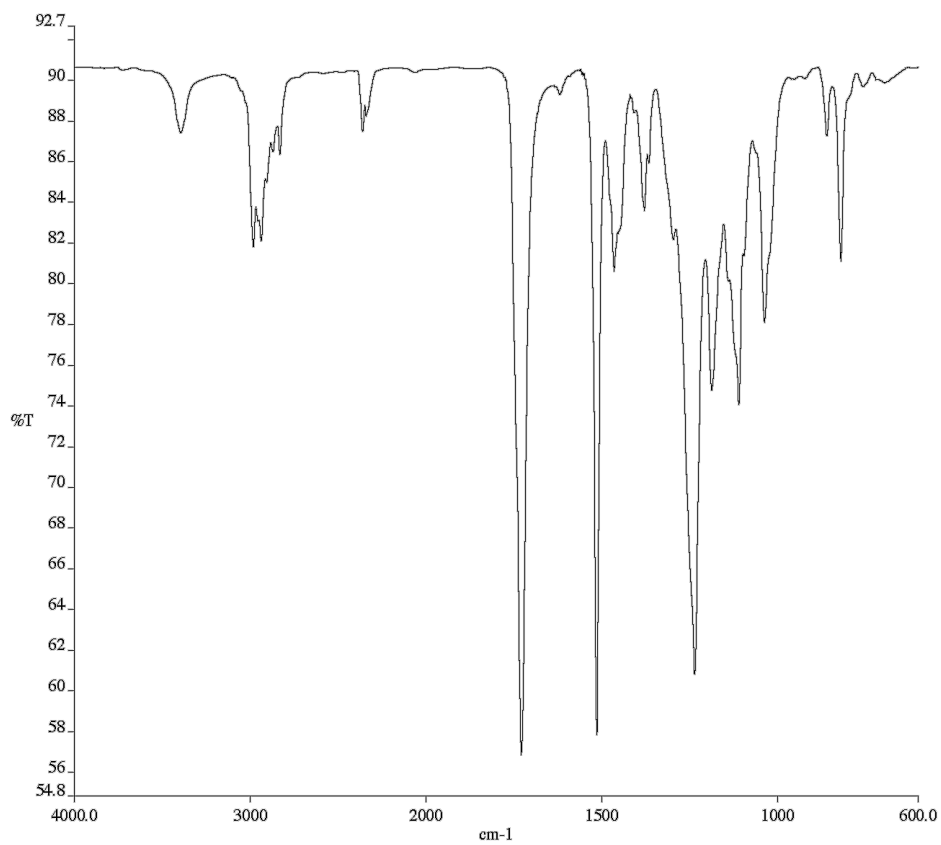


Figure A5.68. Infrared spectrum (Thin Film, KBr) of compound **148e**.

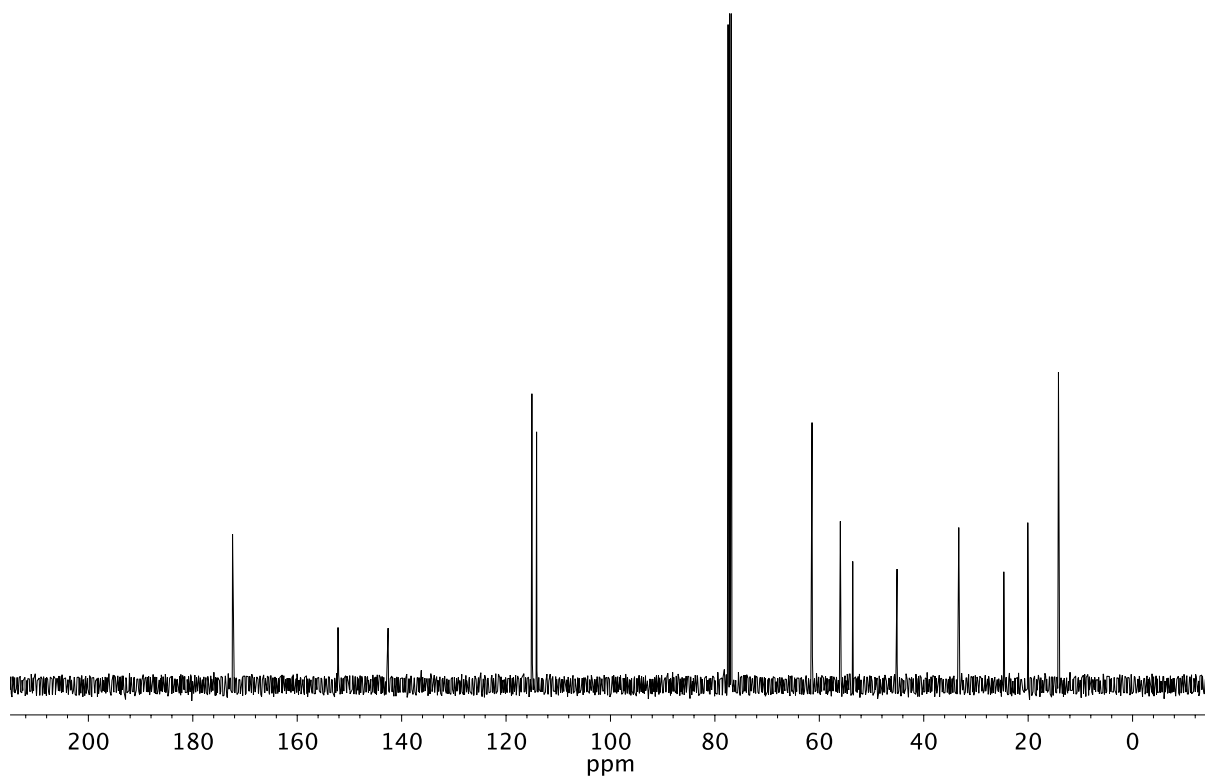
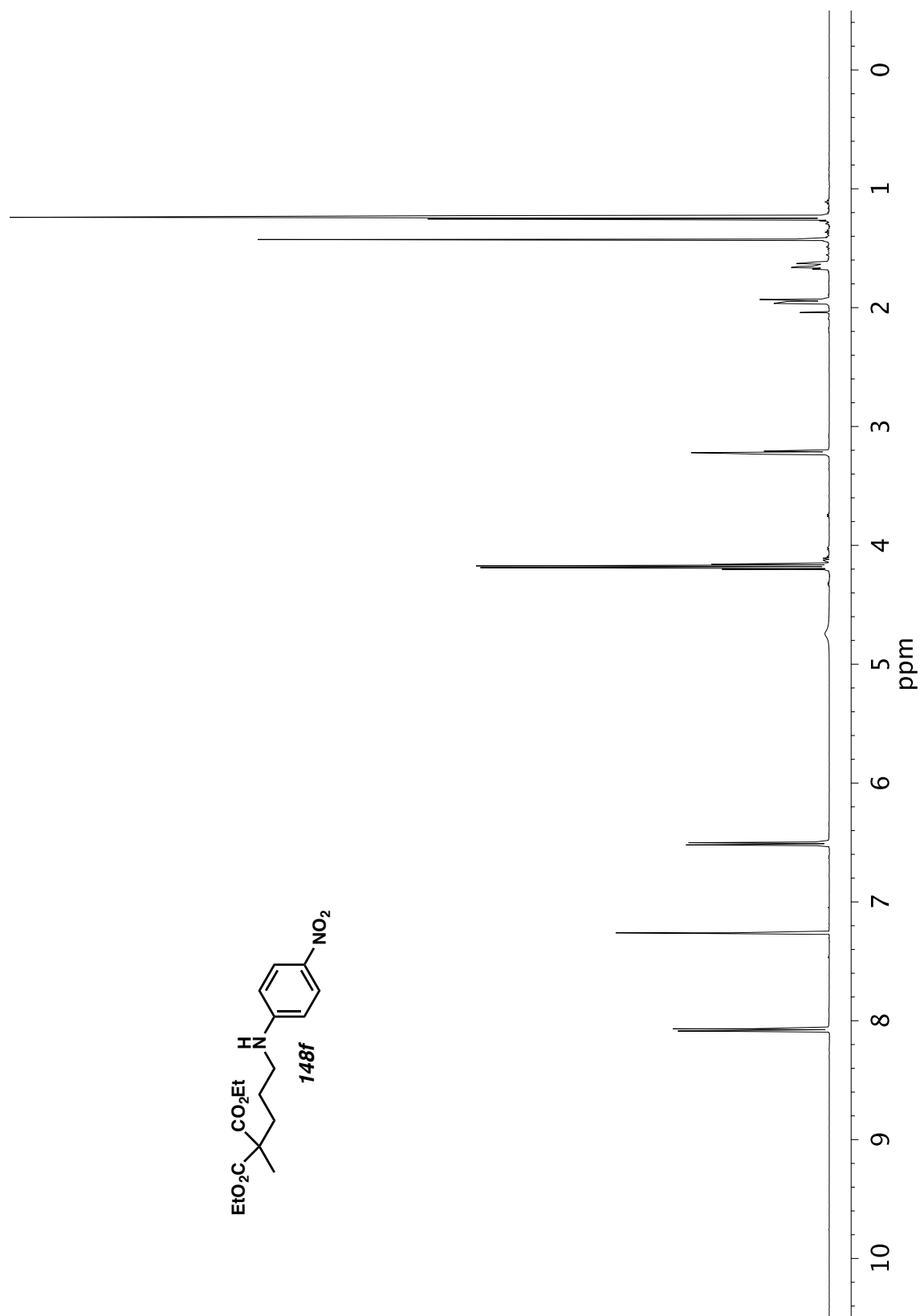


Figure A5.69. ¹³C NMR (101 MHz, CDCl₃) of compound **148e**.

Figure A5.70. ^1H NMR (500 MHz, CDCl_3) of compound **148f**.

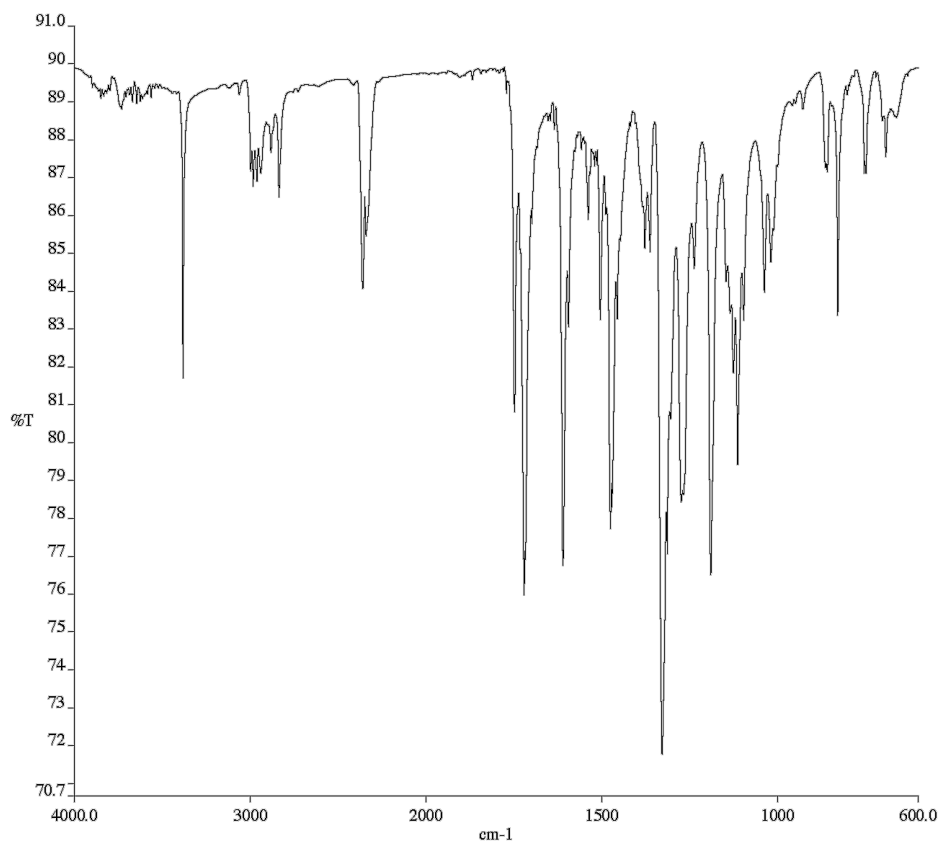


Figure A5.71. Infrared spectrum (Thin Film, KBr) of compound **148f**.

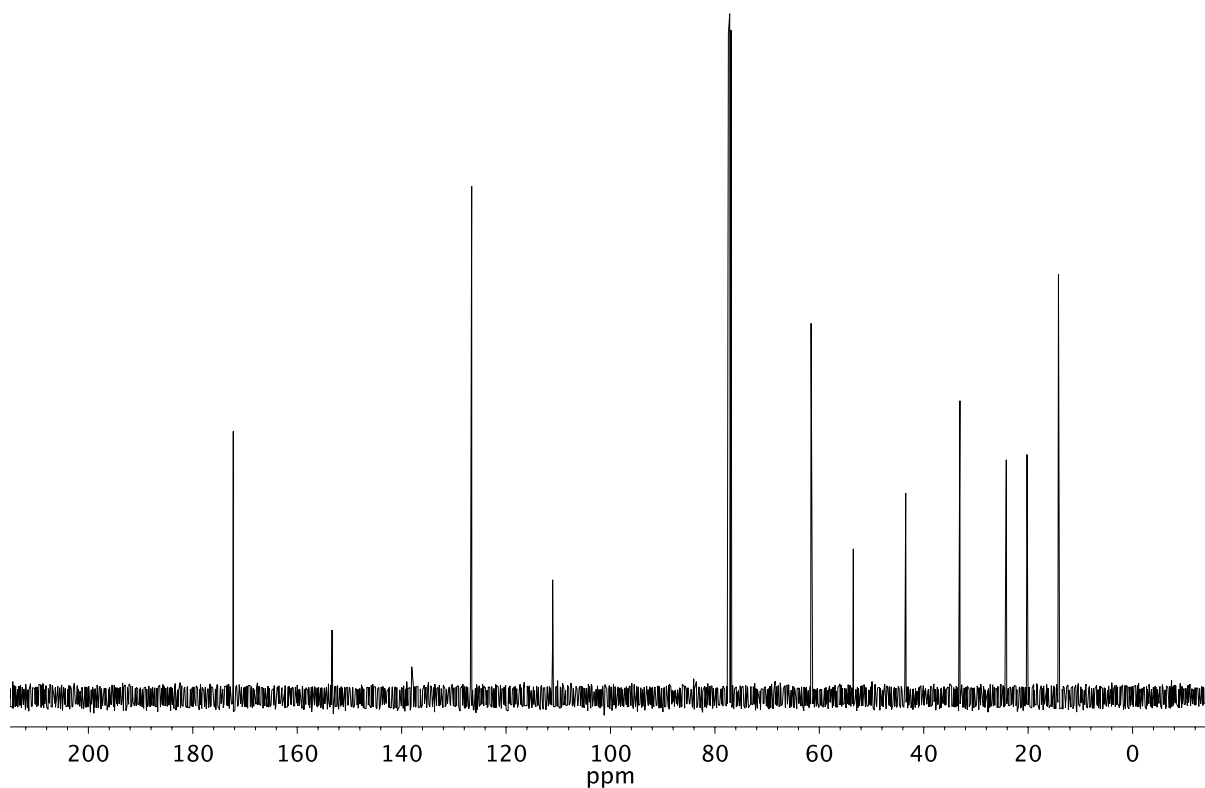
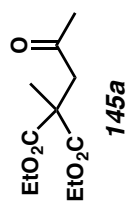
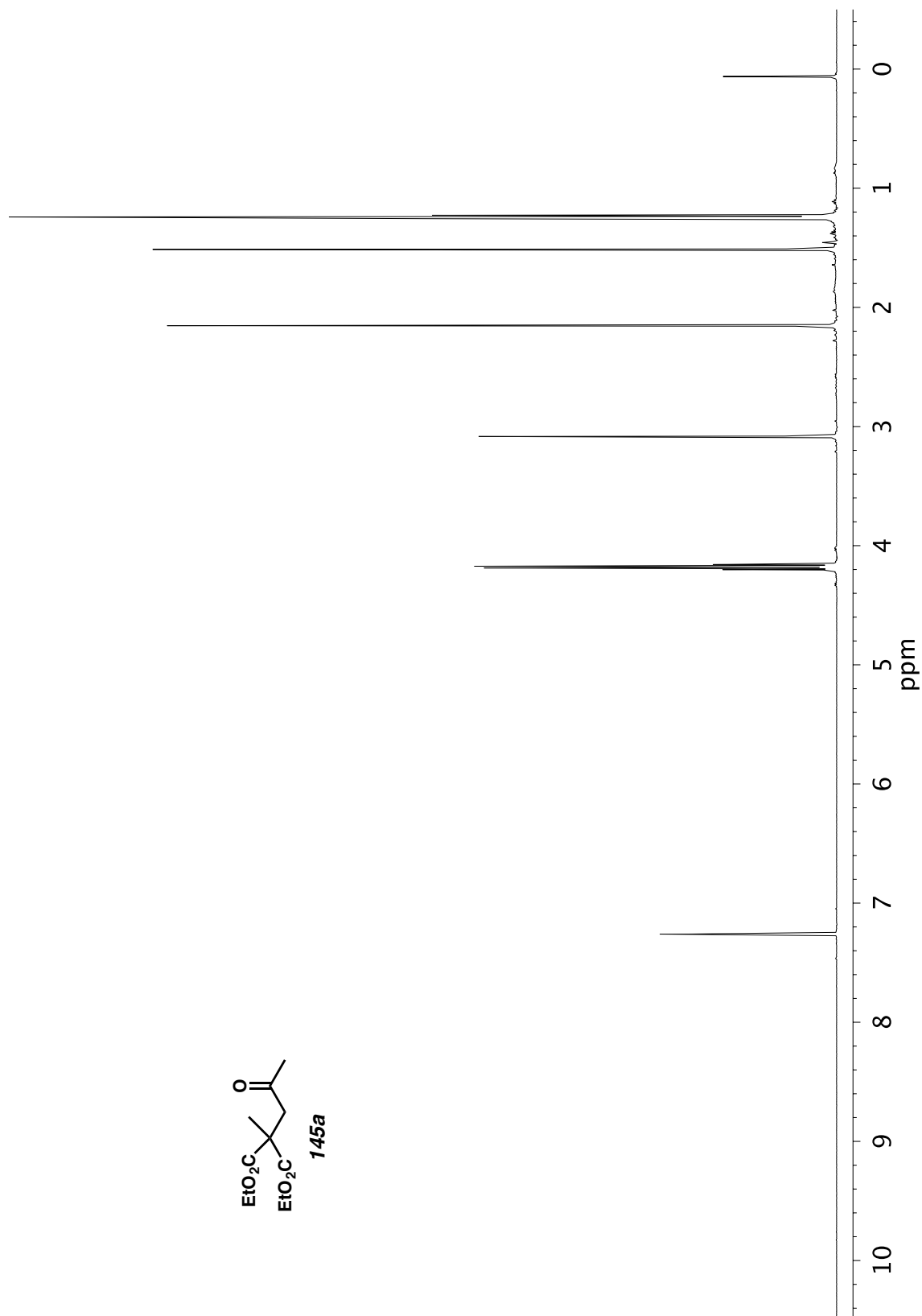


Figure A5.72. ¹³C NMR (126 MHz, CDCl₃) of compound **148f**.

Figure A5.73. ¹H NMR (500 MHz, CDCl₃) of compound 145a.

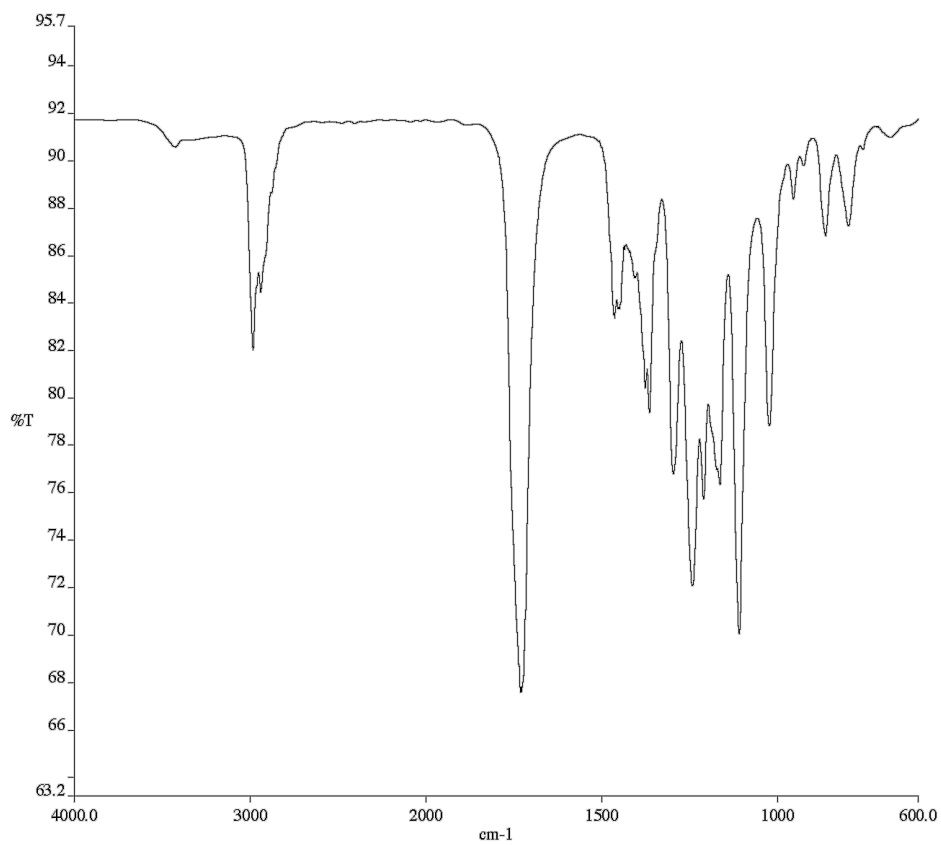


Figure A5.74. Infrared spectrum (Thin Film, KBr) of compound **145a**.

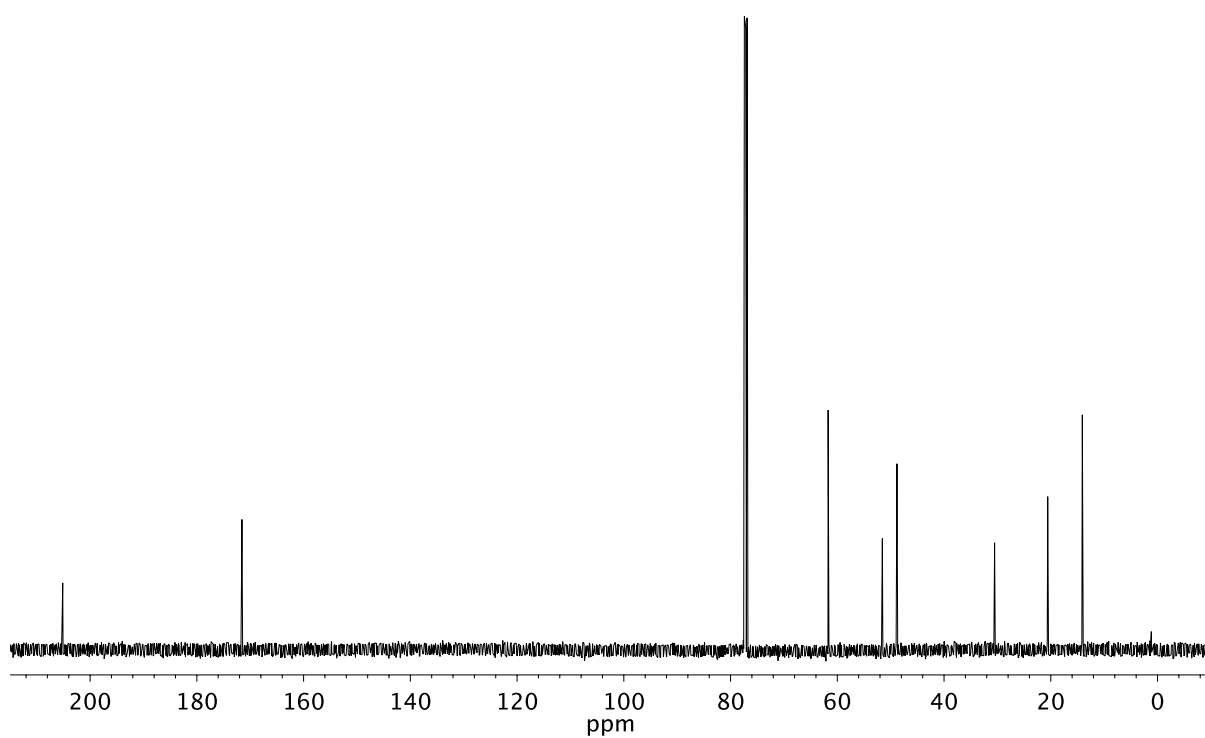
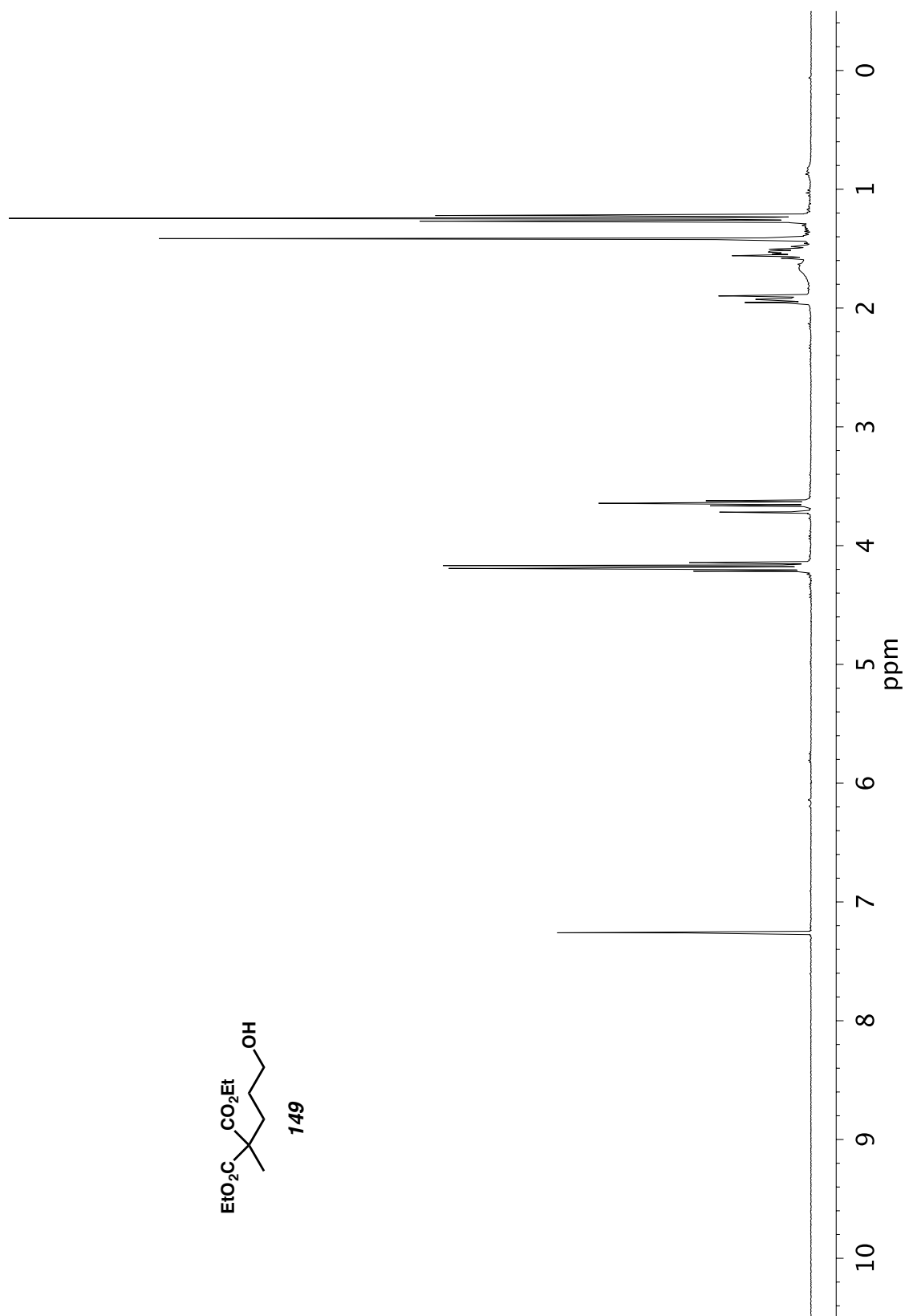


Figure A5.75. ¹³C NMR (126 MHz, CDCl₃) of compound **145a**.

Figure A5.76. ^1H NMR (300 MHz, CDCl_3) of compound **149**.

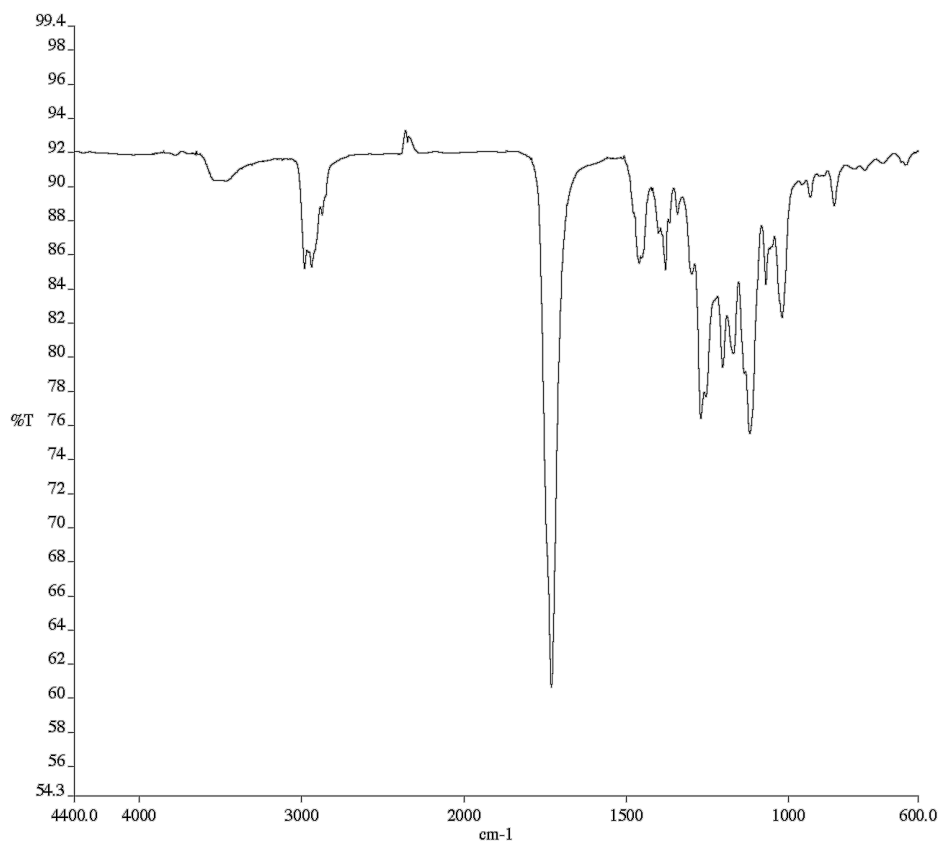


Figure A5.77. Infrared spectrum (Thin Film, KBr) of compound **149**.

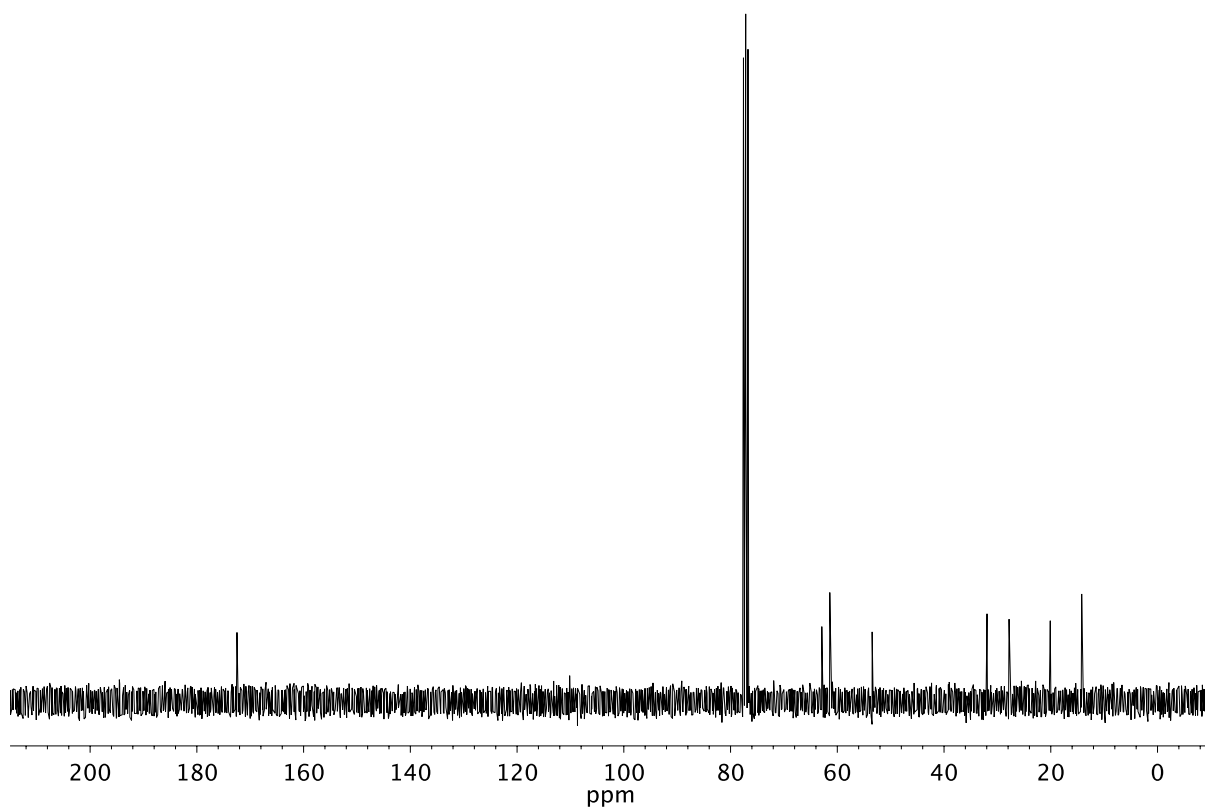
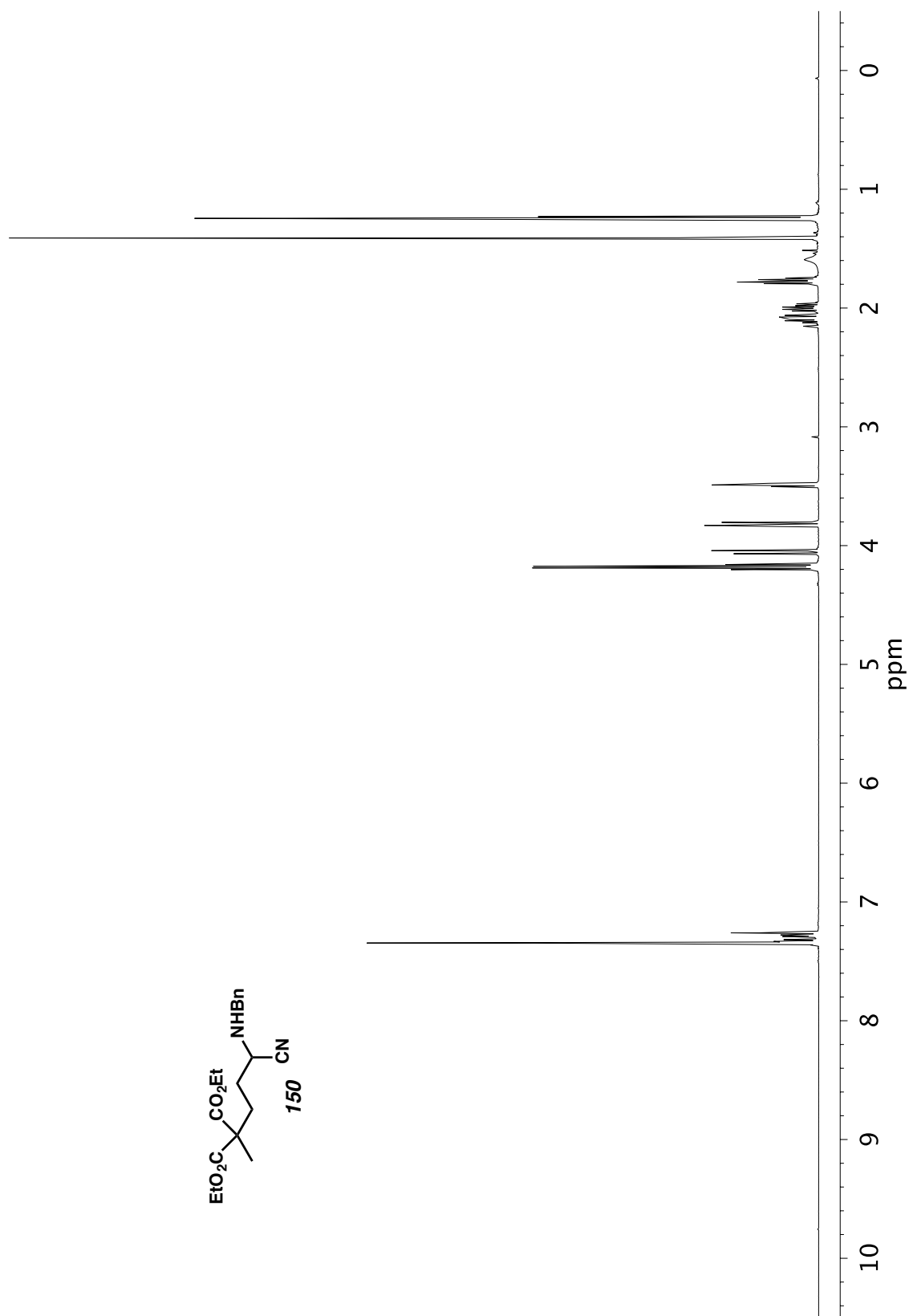


Figure A5.78. ¹³C NMR (75 MHz, CDCl₃) of compound **149**.

Figure A5.79. ^1H NMR (500 MHz, CDCl_3) of compound **150**.

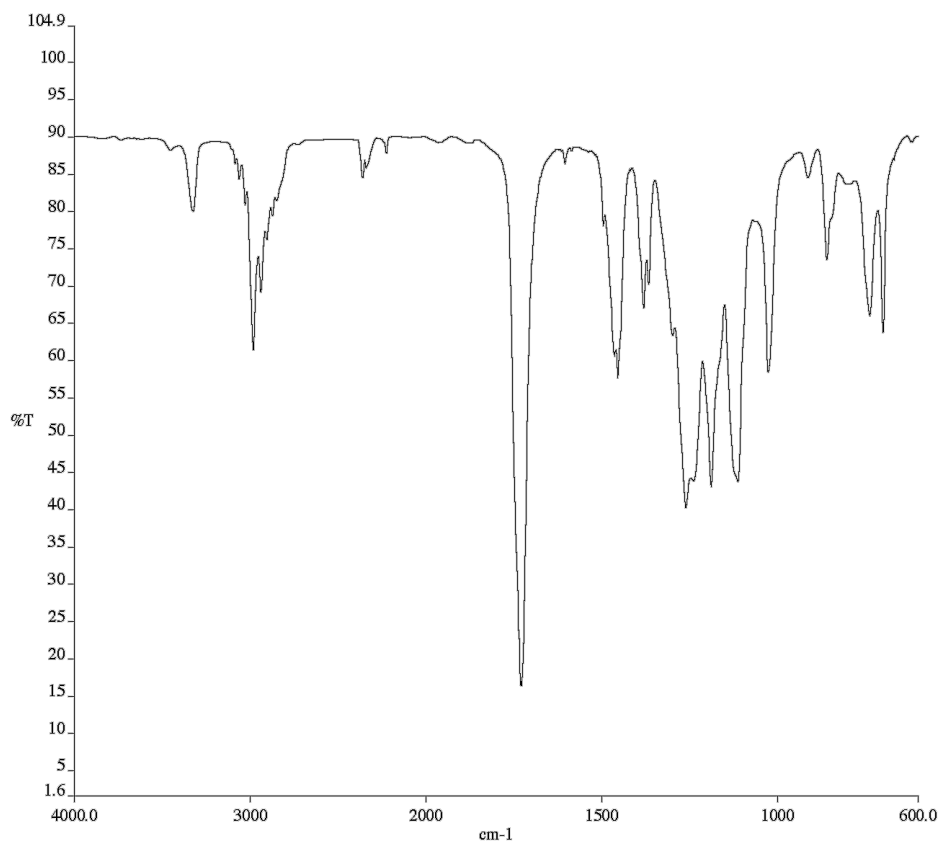


Figure A5.80. Infrared spectrum (Thin Film, KBr) of compound **150**.

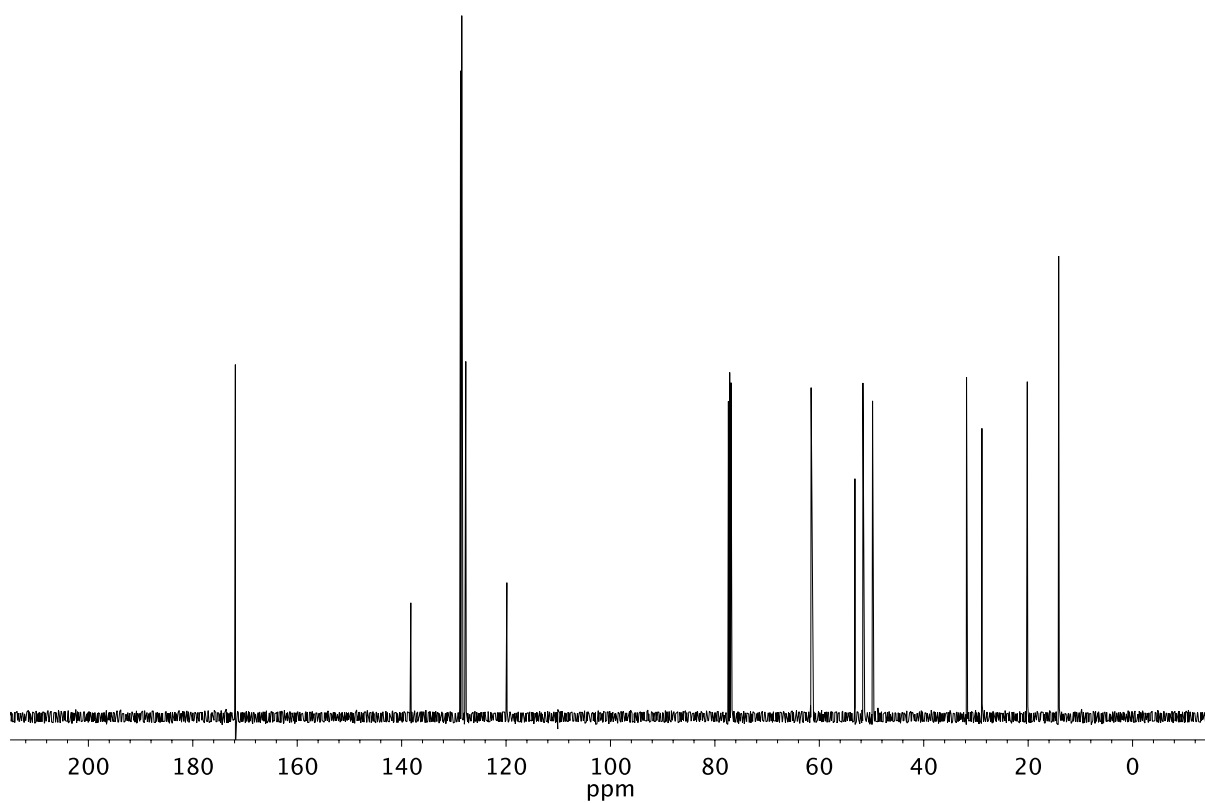
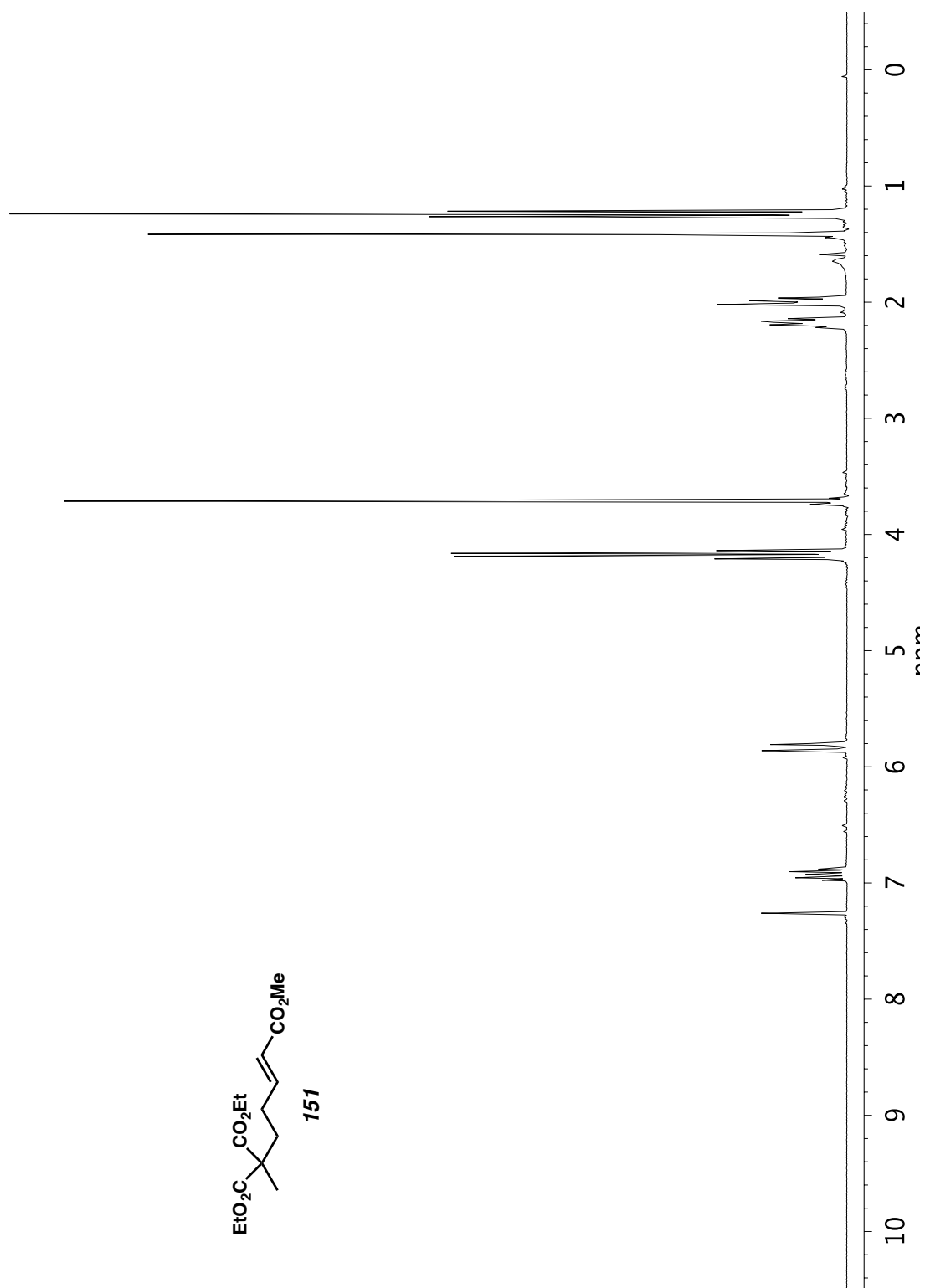


Figure A5.81. ¹³C NMR (126 MHz, CDCl₃) of compound **150**.

Figure A5.82. ^1H NMR (300 MHz, CDCl_3) of compound **151**.

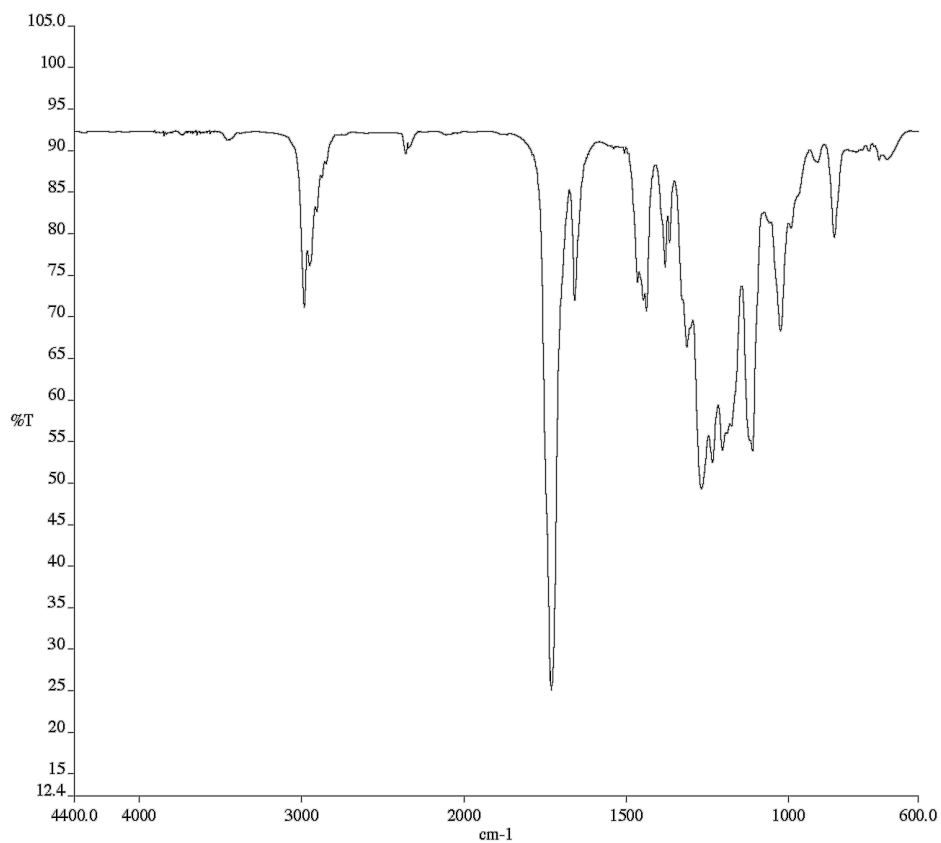


Figure A5.83. Infrared spectrum (Thin Film, KBr) of compound **151**.

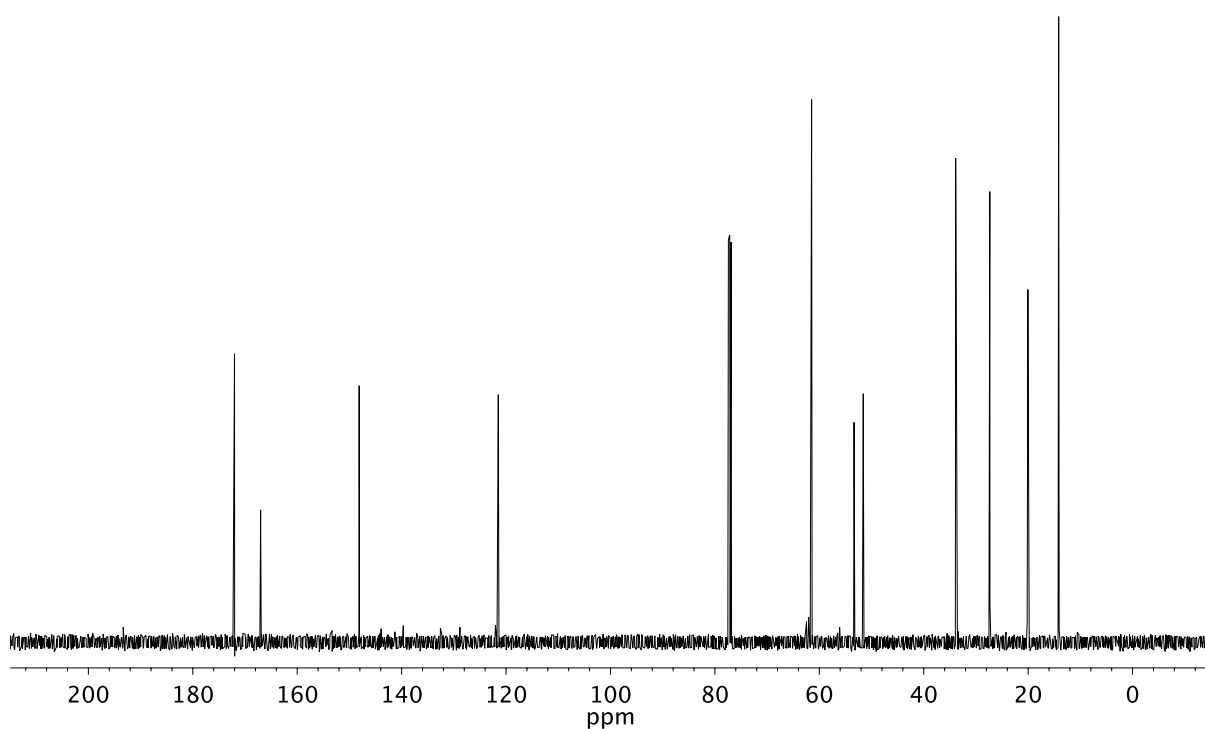
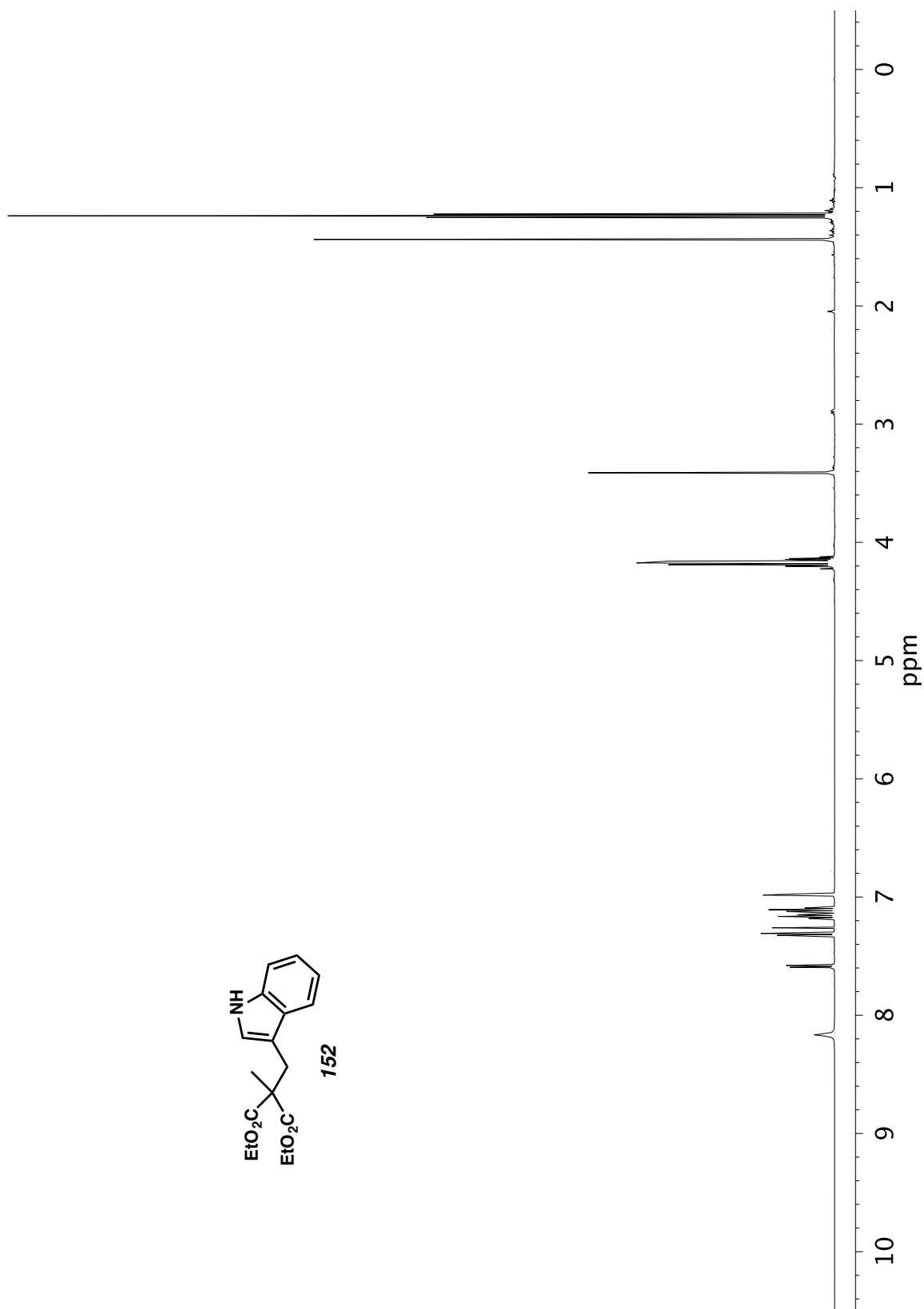


Figure A5.84. ¹³C NMR (126 MHz, CDCl₃) of compound **151**.

Figure A.5.85. ^1H NMR (500 MHz, CDCl_3) of compound **152**.

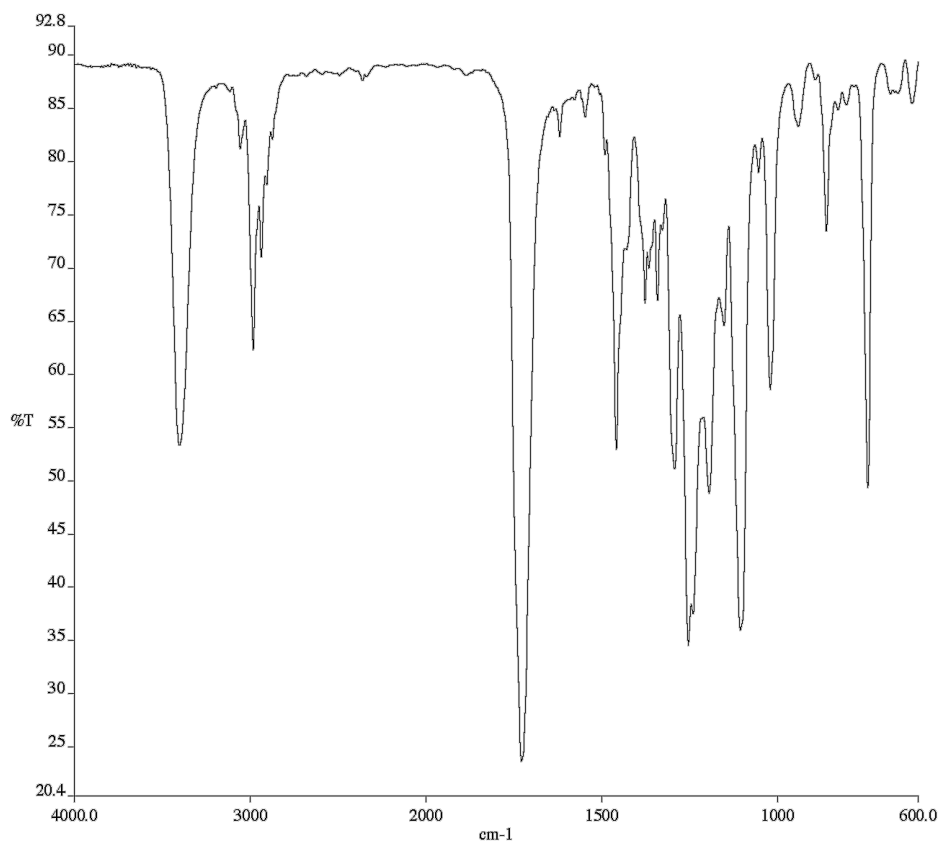


Figure A5.86. Infrared spectrum (Thin Film, KBr) of compound **152**.

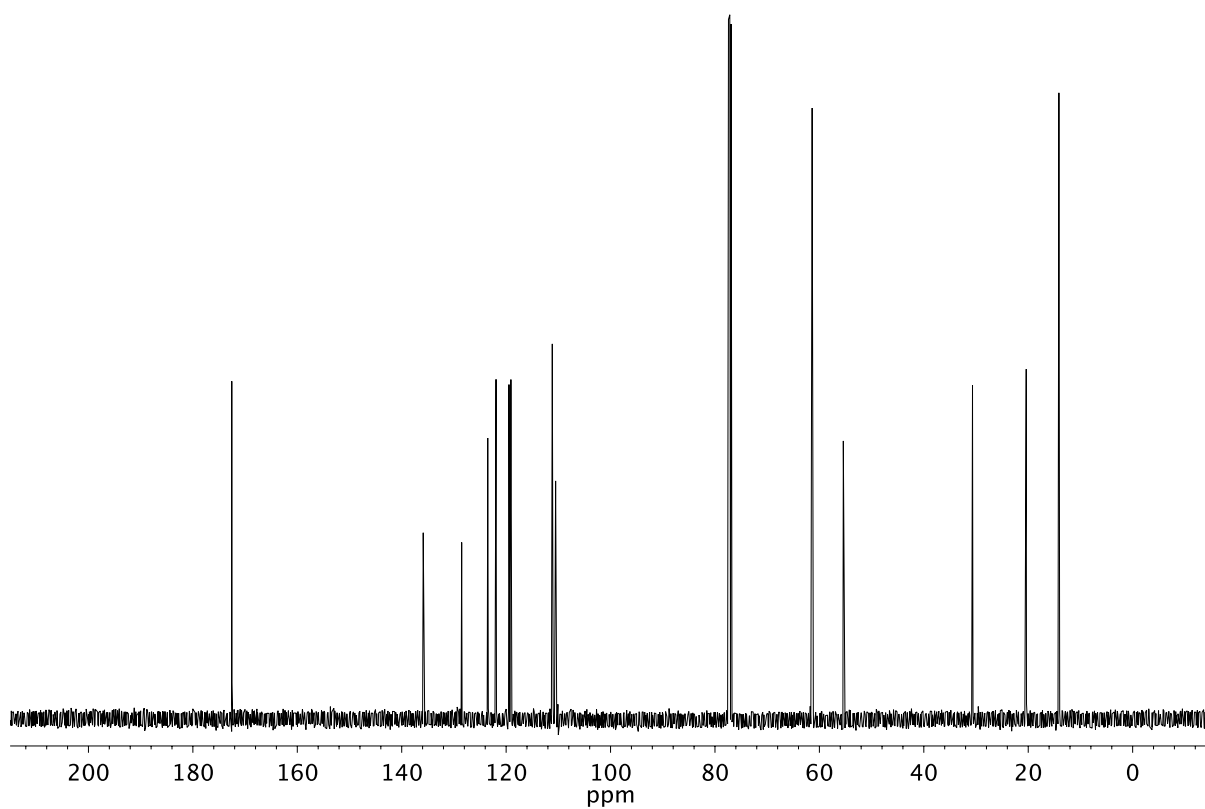
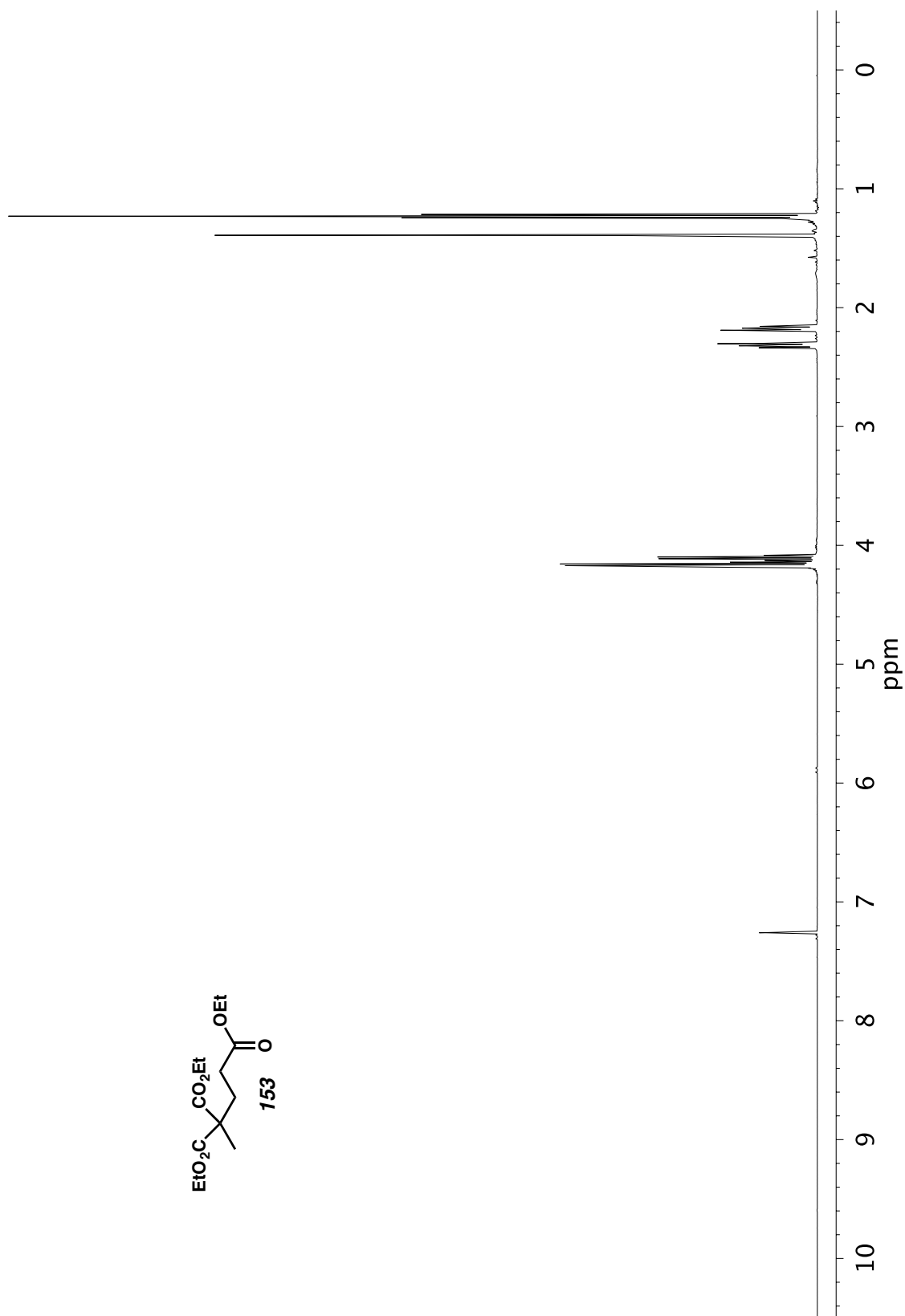


Figure A5.87. ¹³C NMR (126 MHz, CDCl₃) of compound **152**.

Figure A.5.88. ^1H NMR (500 MHz, CDCl_3) of compound **153**.

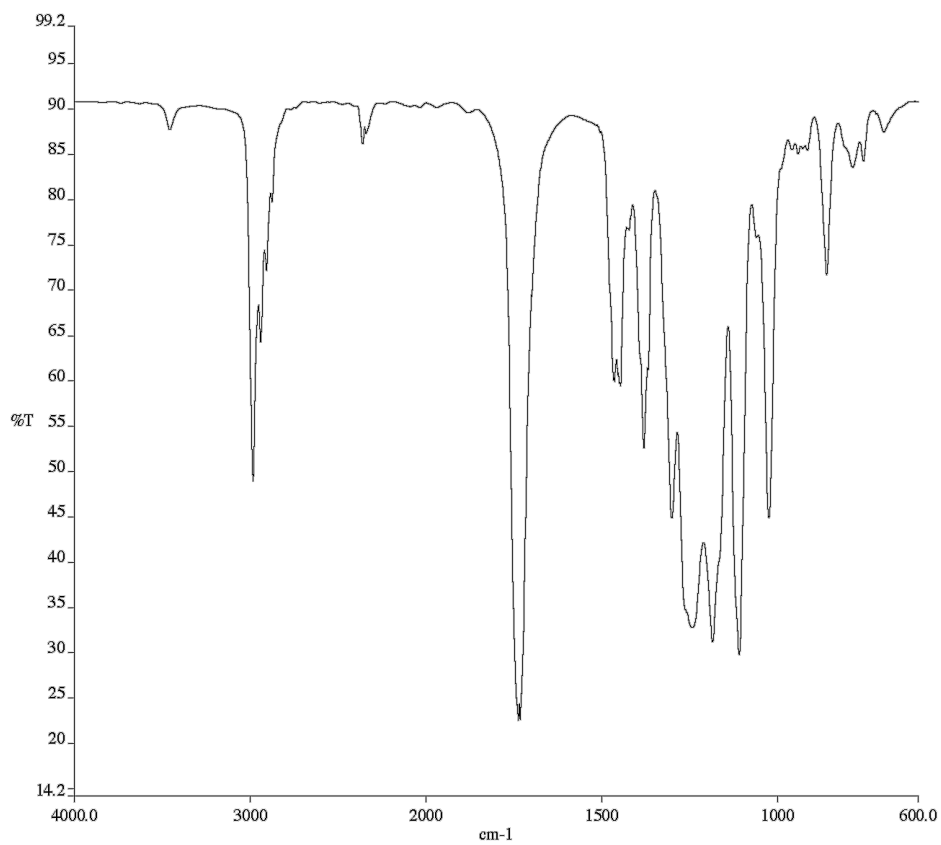


Figure A5.89. Infrared spectrum (Thin Film, KBr) of compound **153**.

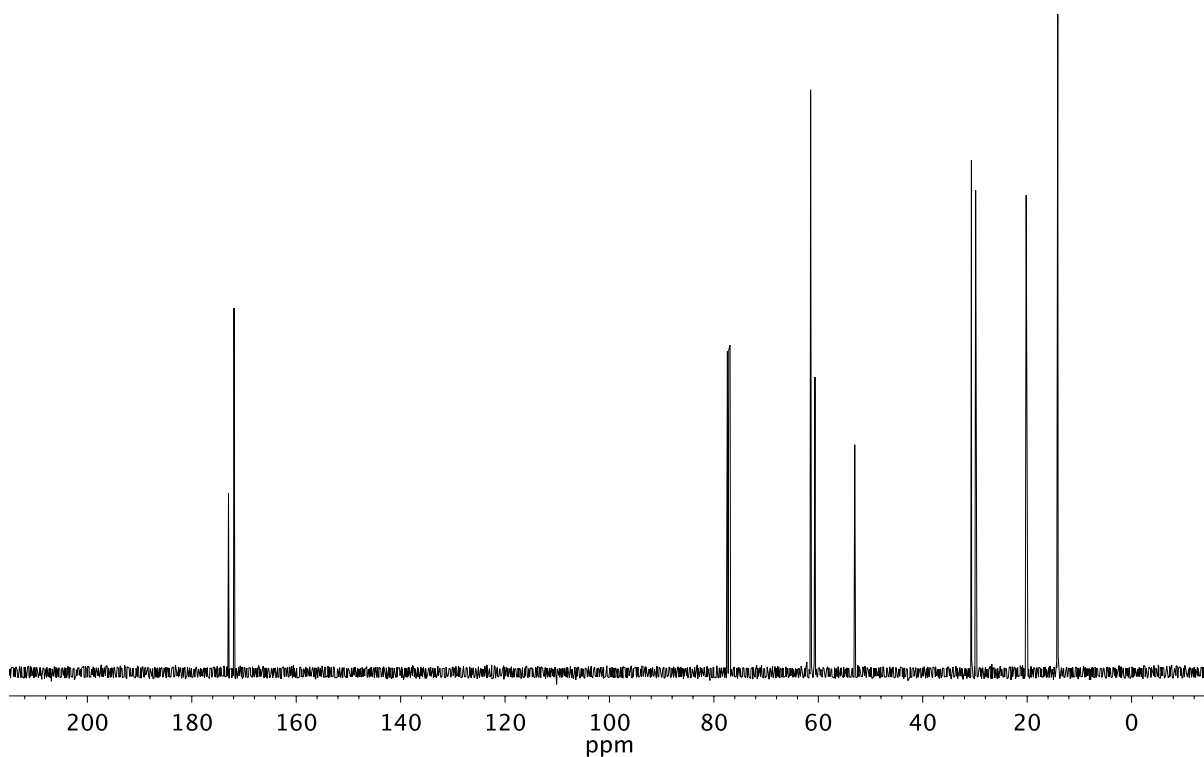
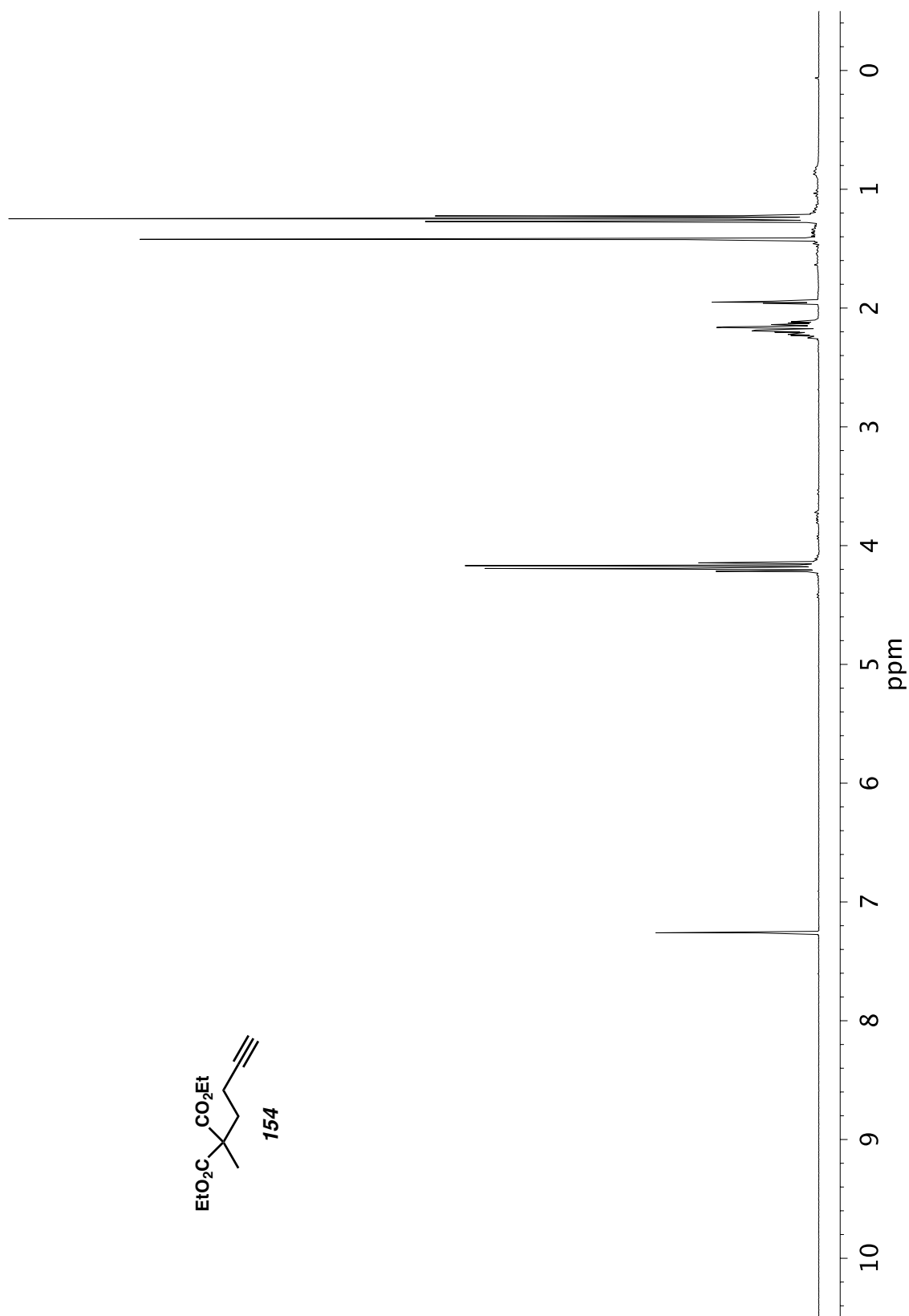


Figure A5.90. ¹³C NMR (126 MHz, CDCl₃) of compound **153**.

Figure A5.97. ¹H NMR (300 MHz, CDCl₃) of compound **154**.

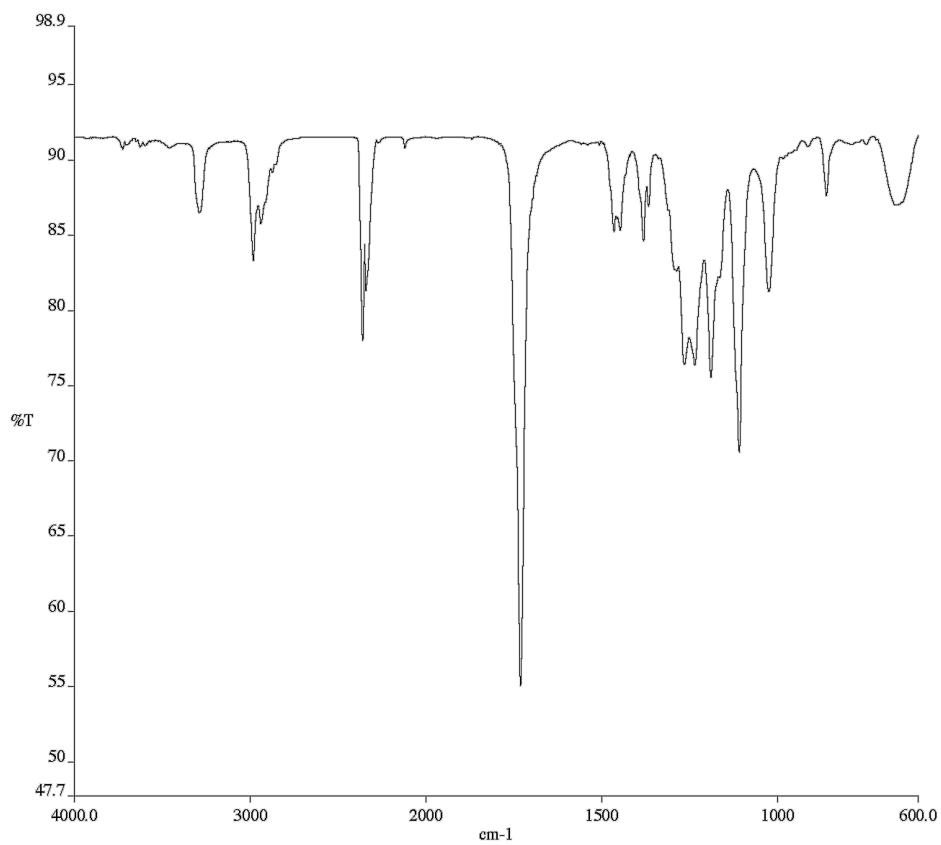


Figure A5.92. Infrared spectrum (Thin Film, KBr) of compound **154**.

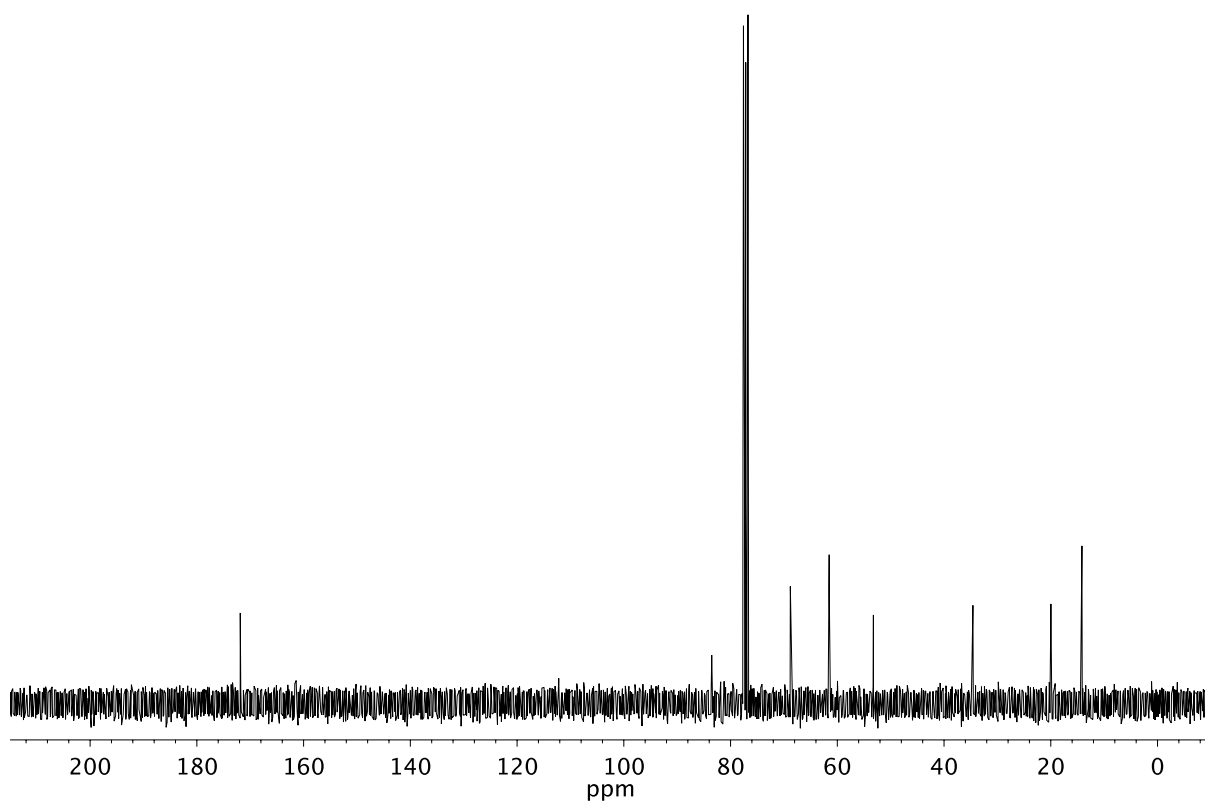


Figure A5.93. ¹³C NMR (75 MHz, CDCl₃) of compound **154**.