

## ***APPENDIX 2***

*Spectra Relevant to Chapter 3*

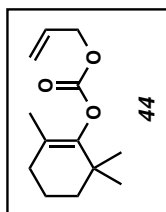
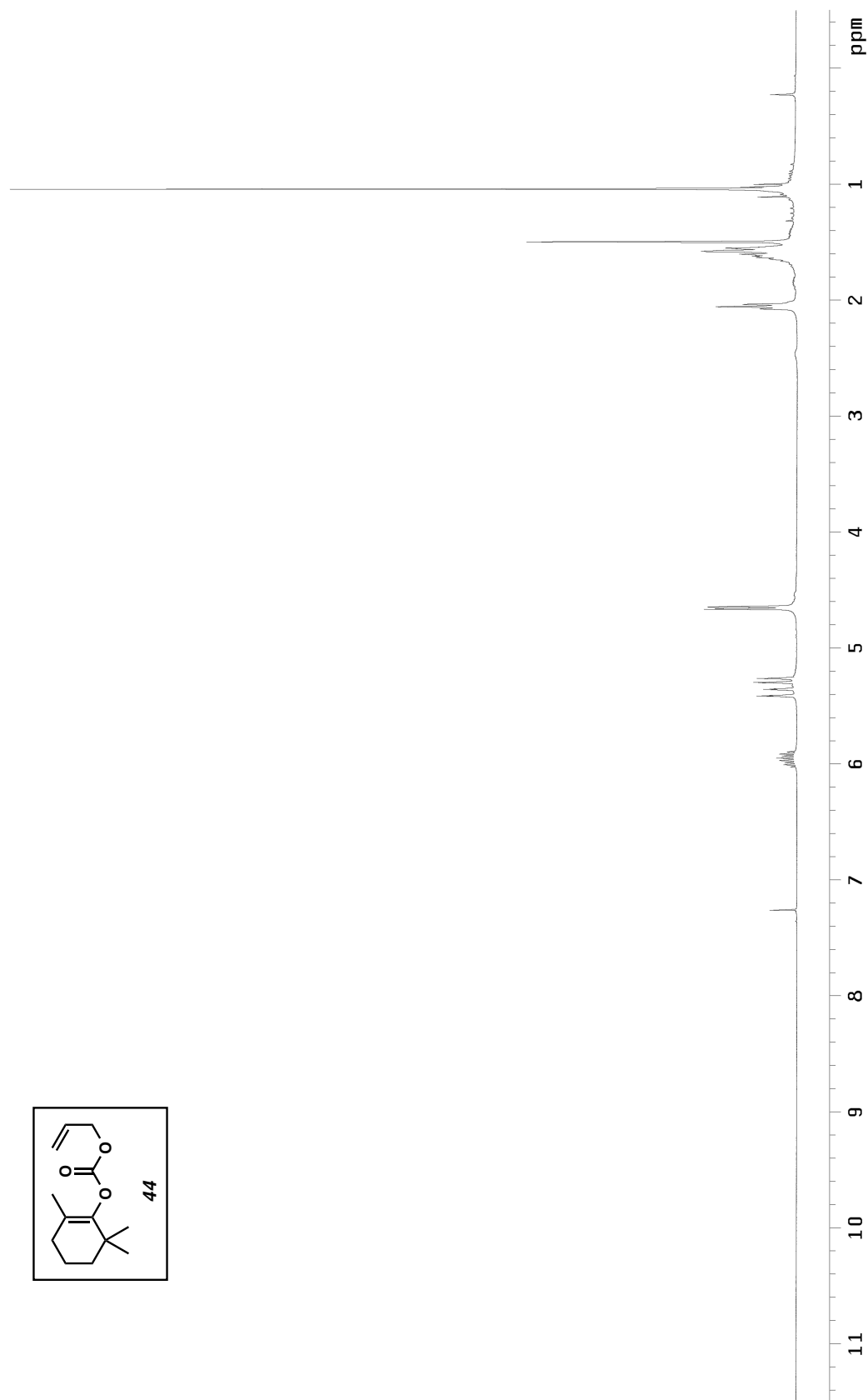


Figure A2.1  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound 44.

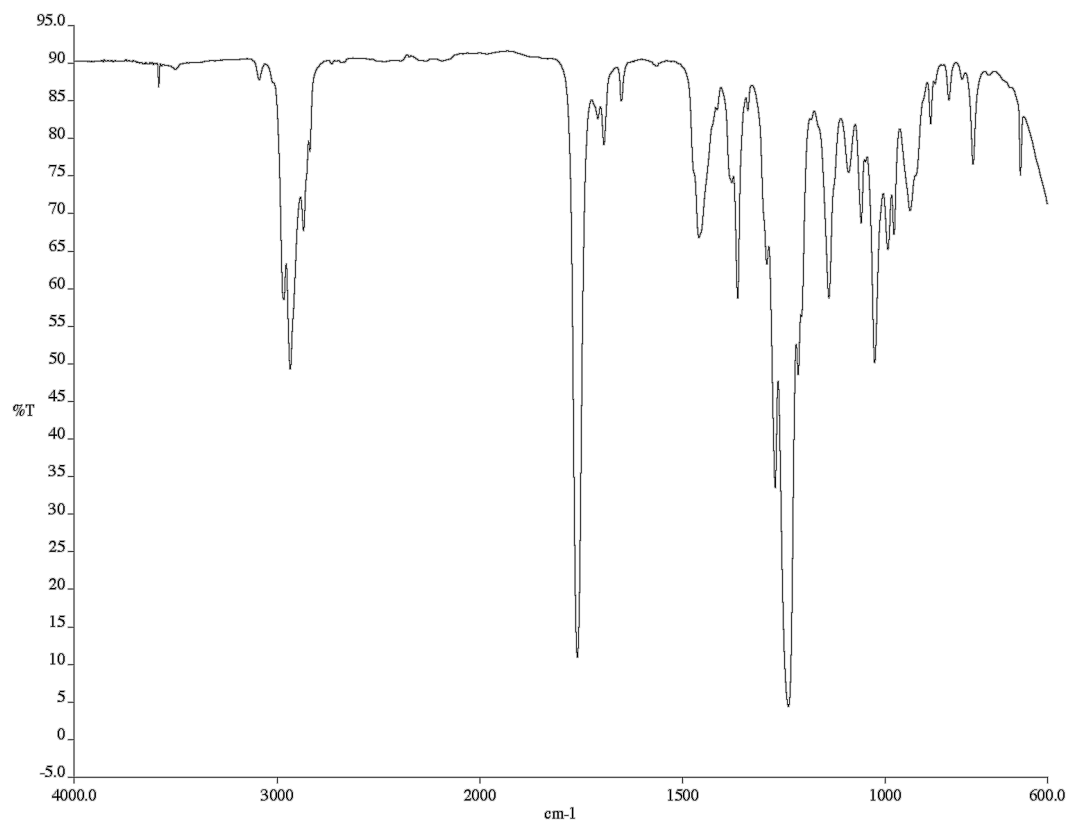


Figure A2.2 Infrared spectrum (Thin Film, NaCl) of compound **44**.

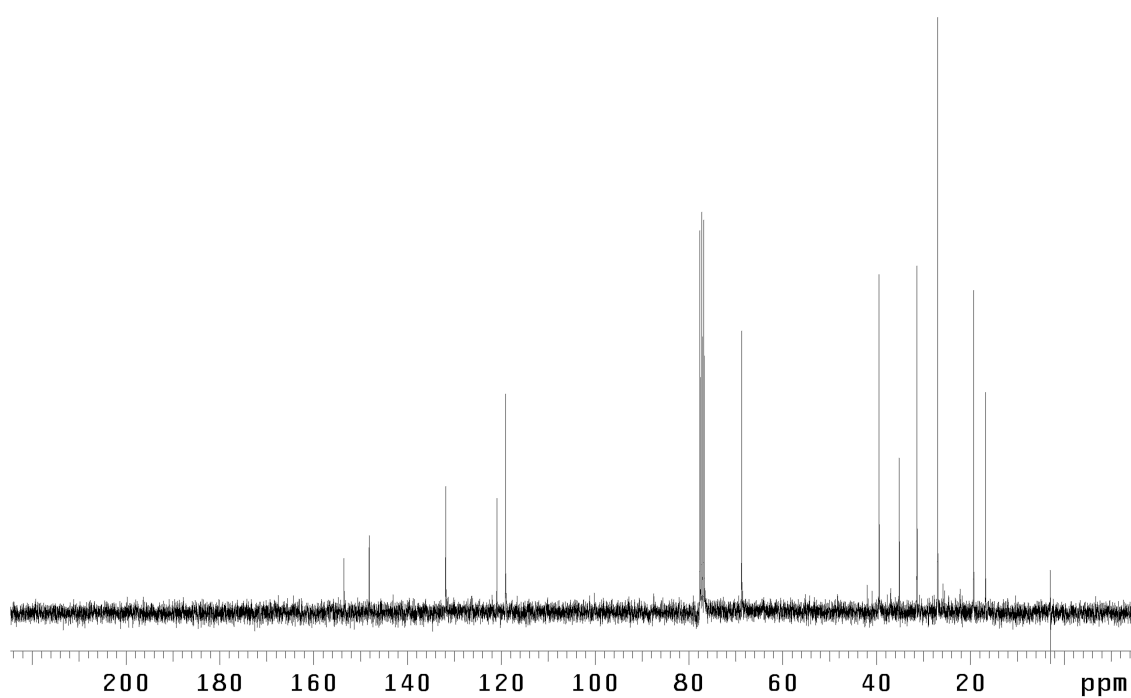


Figure A2.3 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **44**.

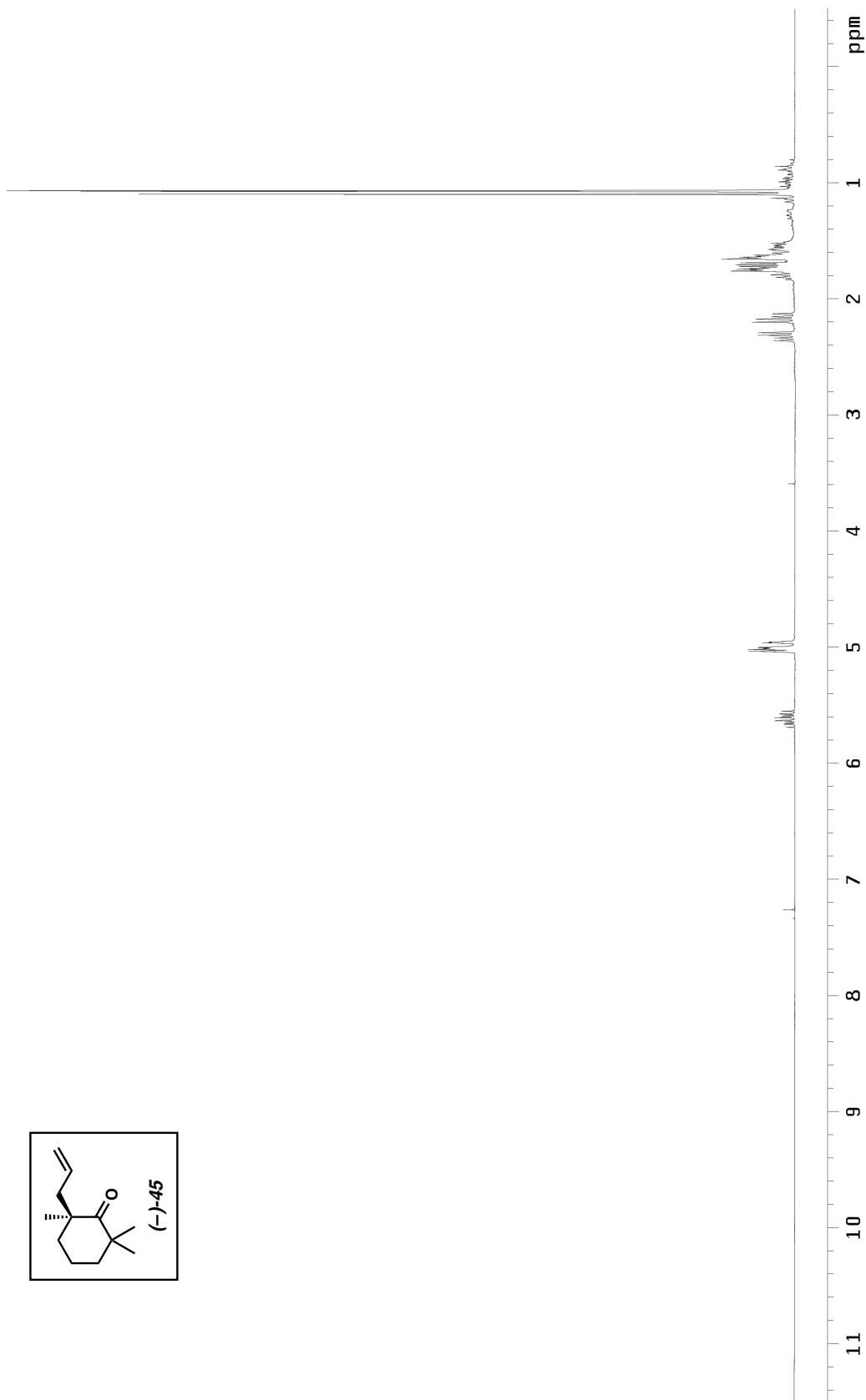


Figure A2.4 <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) of compound 45.

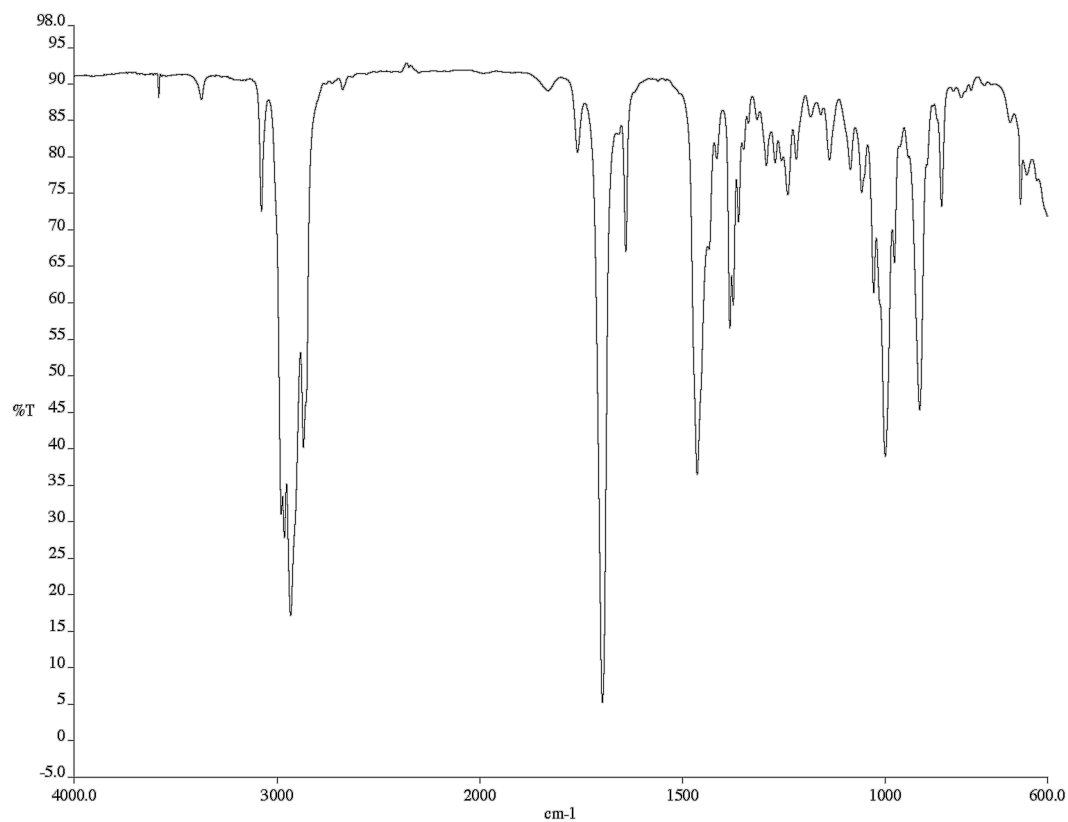


Figure A2.5 Infrared spectrum (Thin Film, NaCl) of compound **45**.

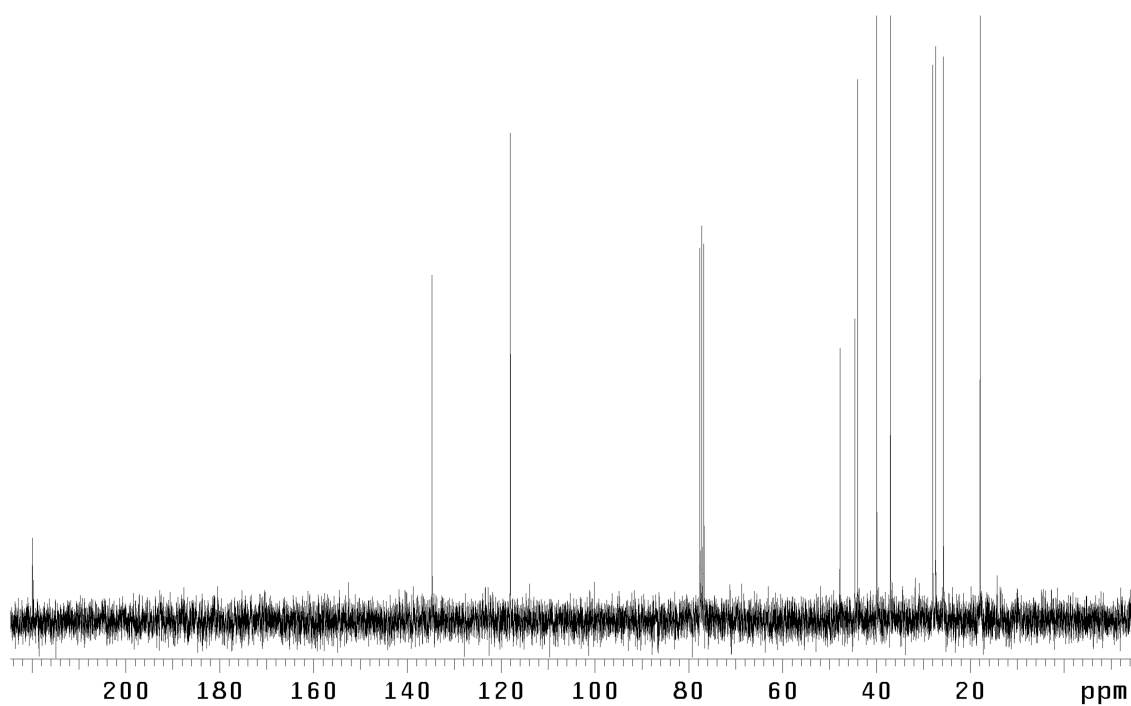


Figure A2.6 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **45**.

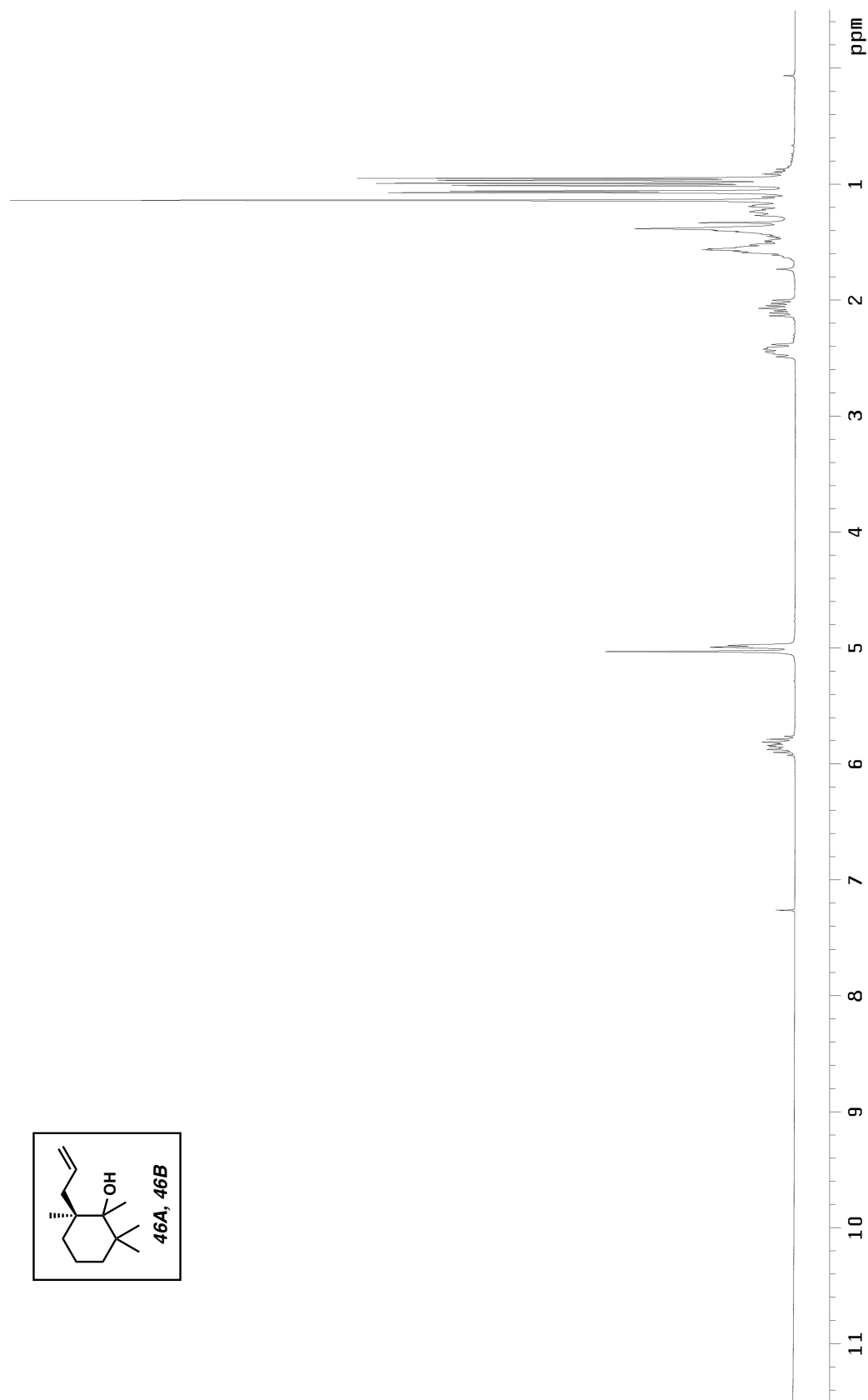


Figure A2.7  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compounds 46A and 46B.

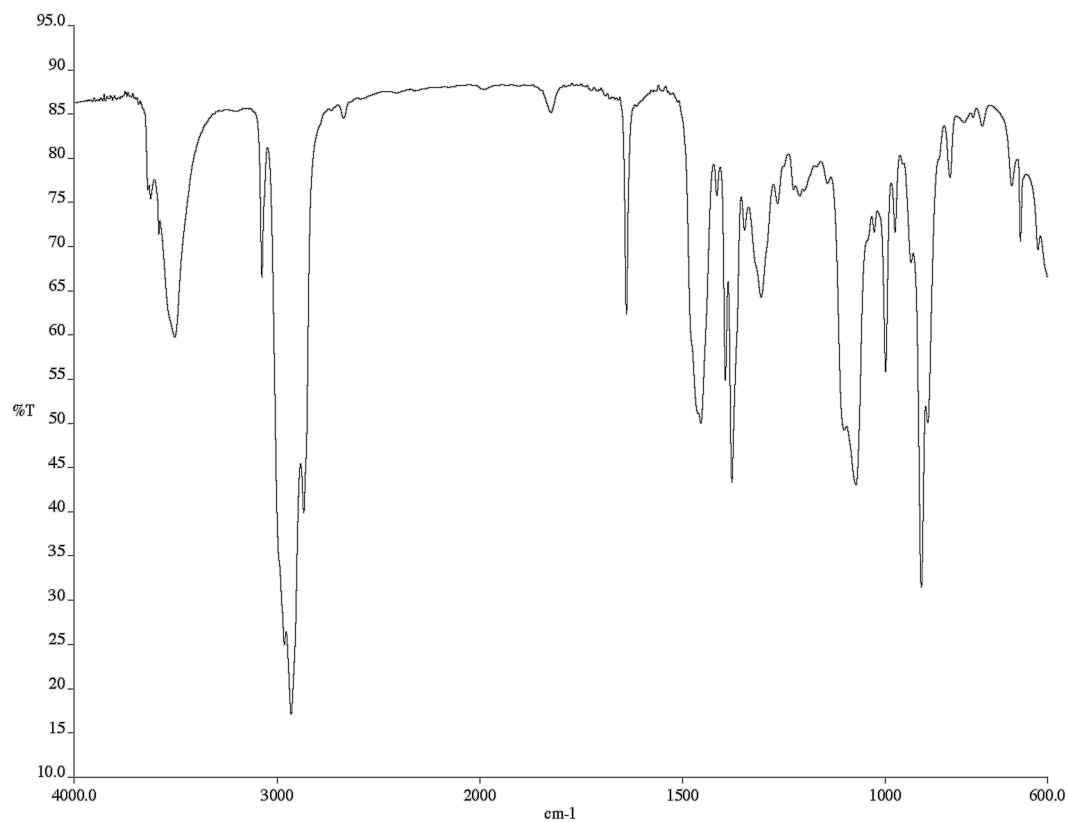


Figure A2.8 Infrared spectrum (Thin Film, NaCl) of compound **46A** and **46B**.

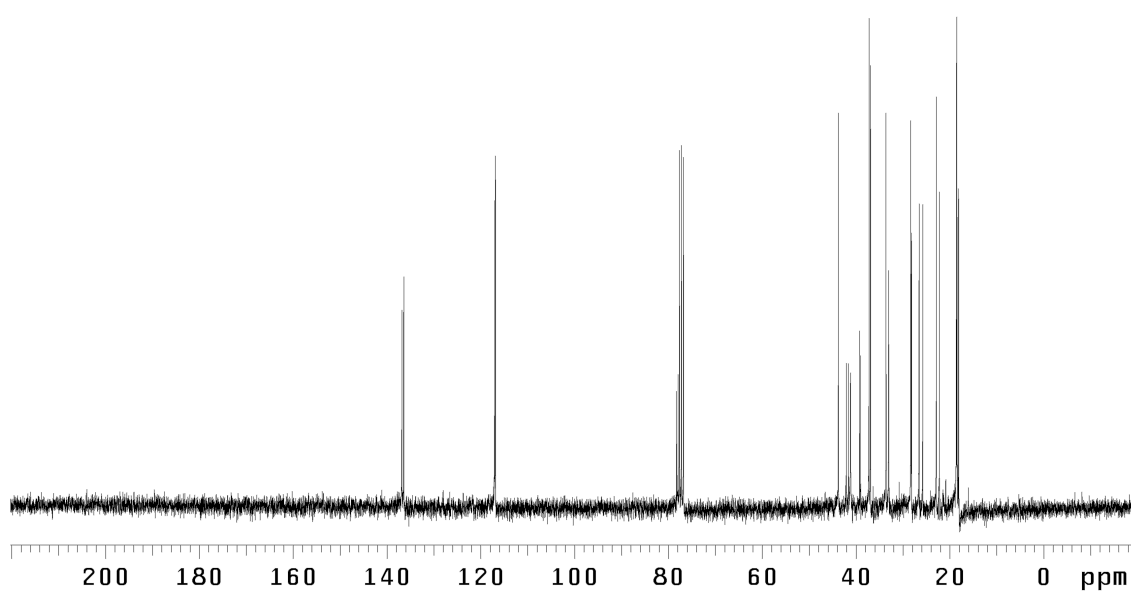


Figure A2.9 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compounds **46A** and **46B**.

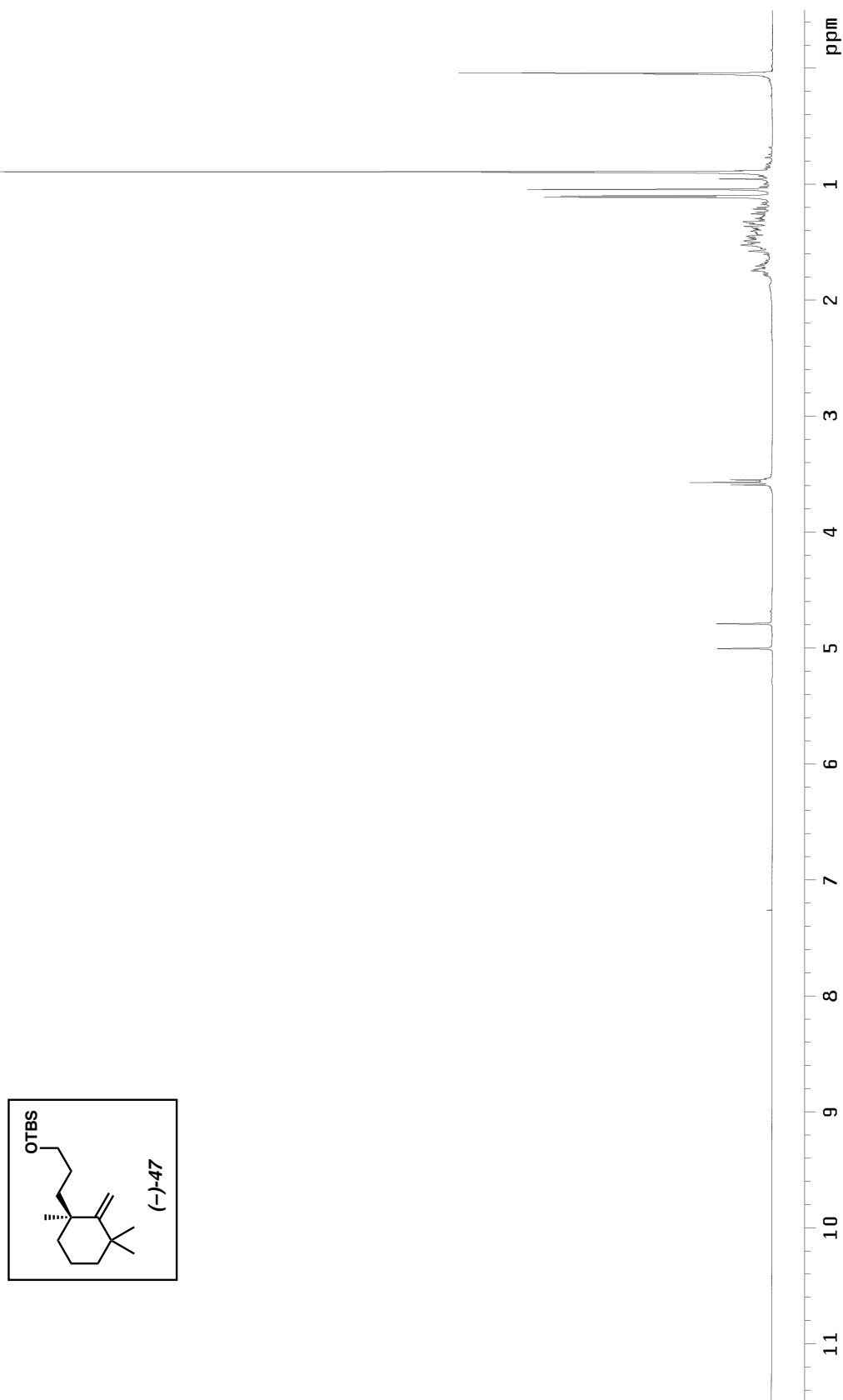


Figure A2.10  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound 47.



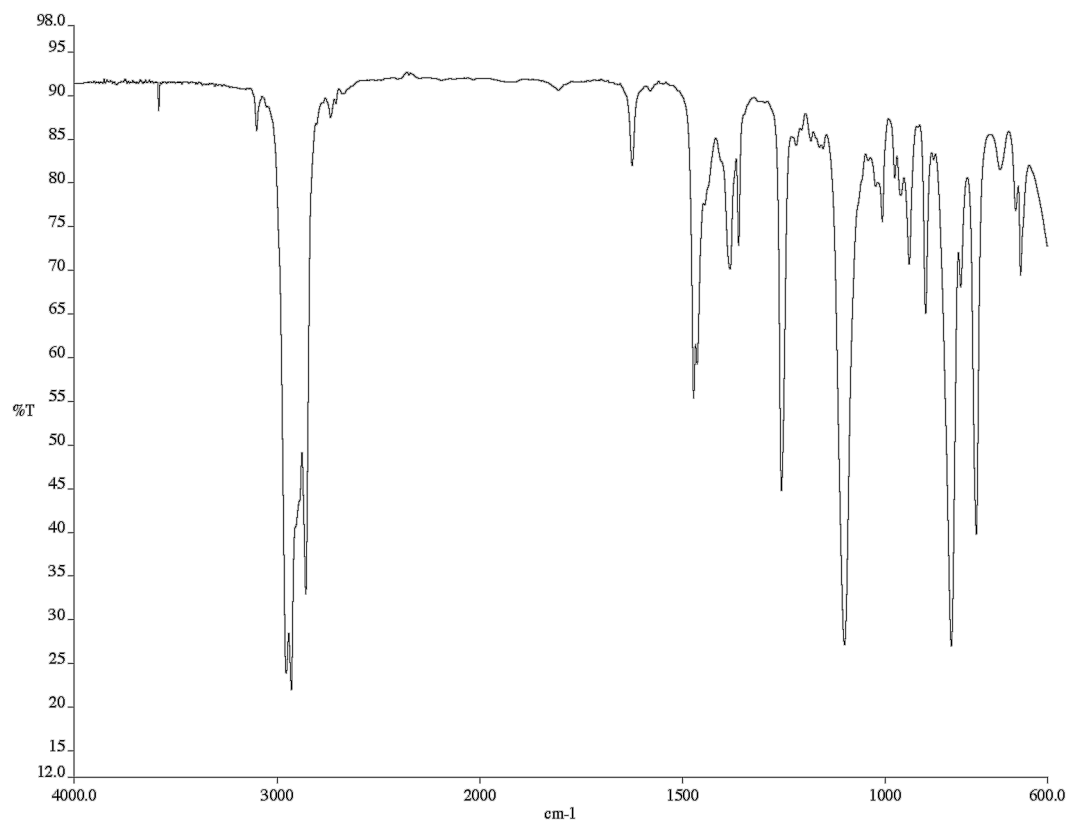


Figure A2.11 Infrared spectrum (Thin Film, NaCl) of compound 47.

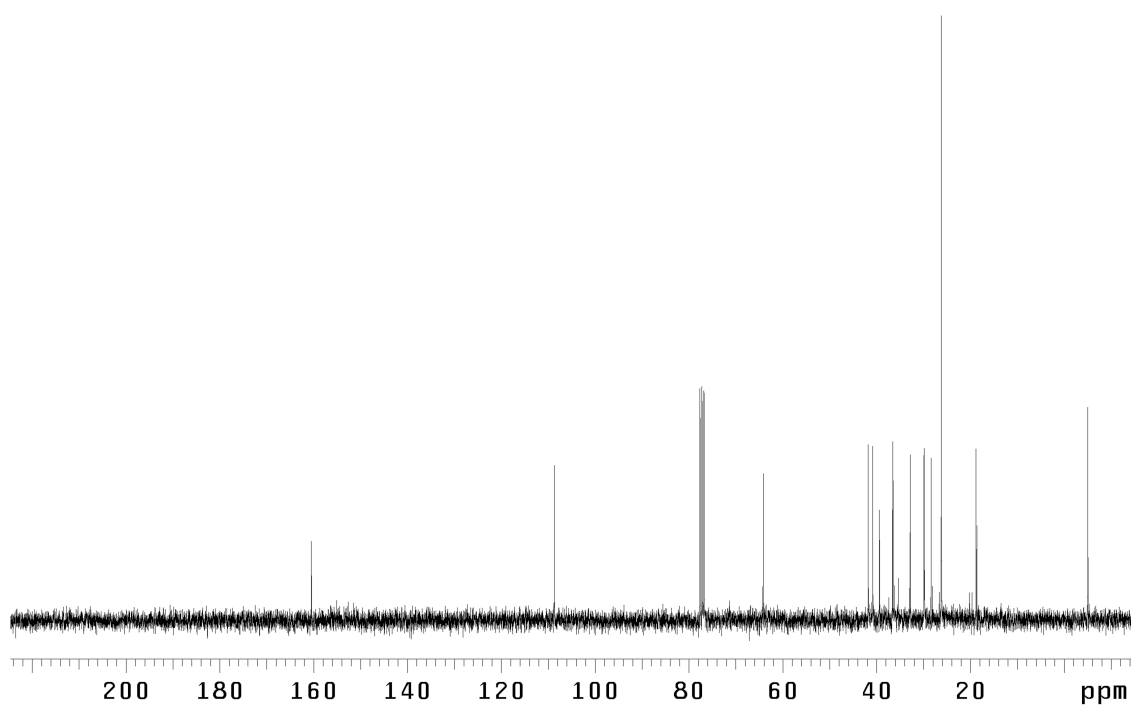
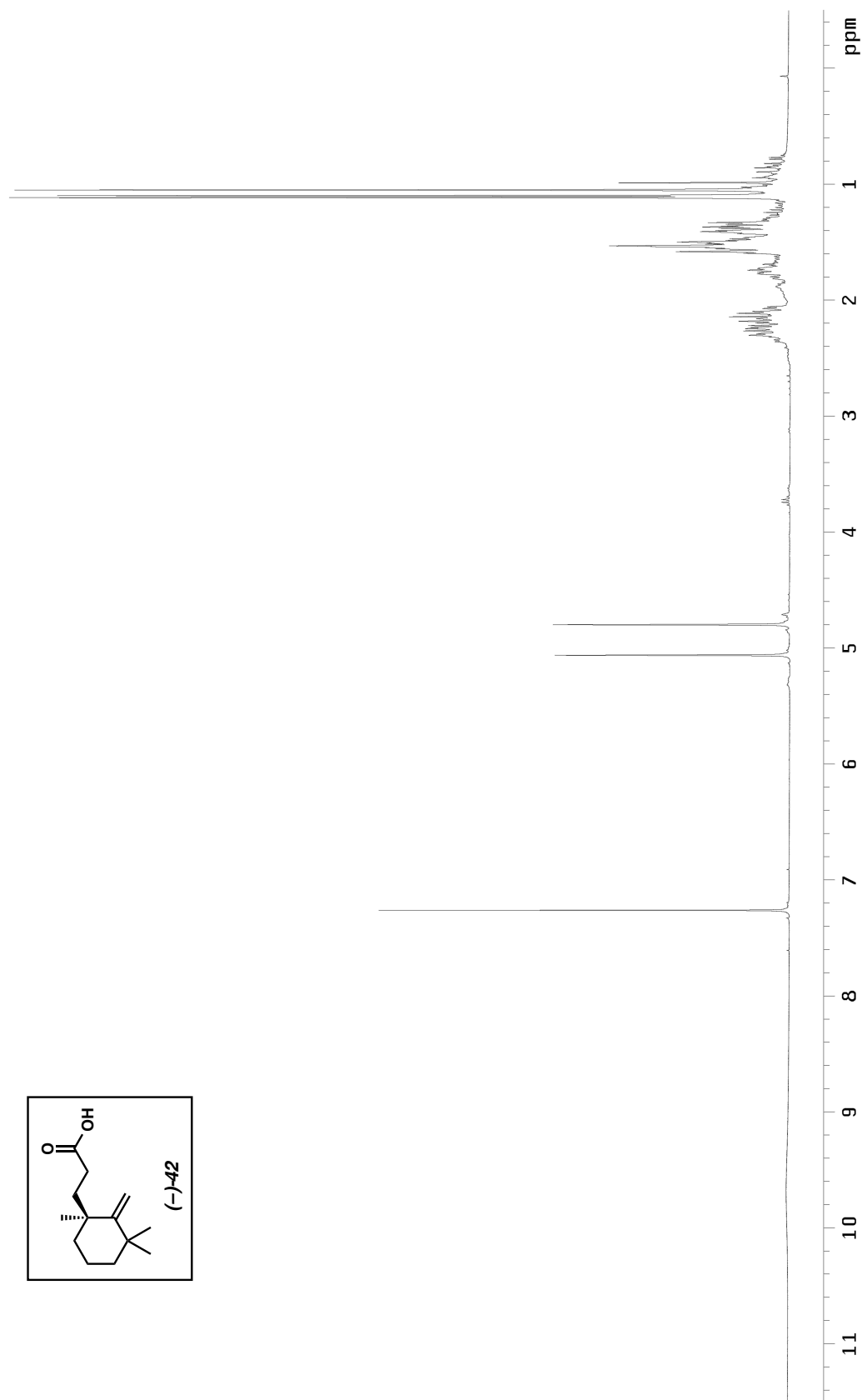


Figure A2.12 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound 47.

Figure A2.13  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound 42.

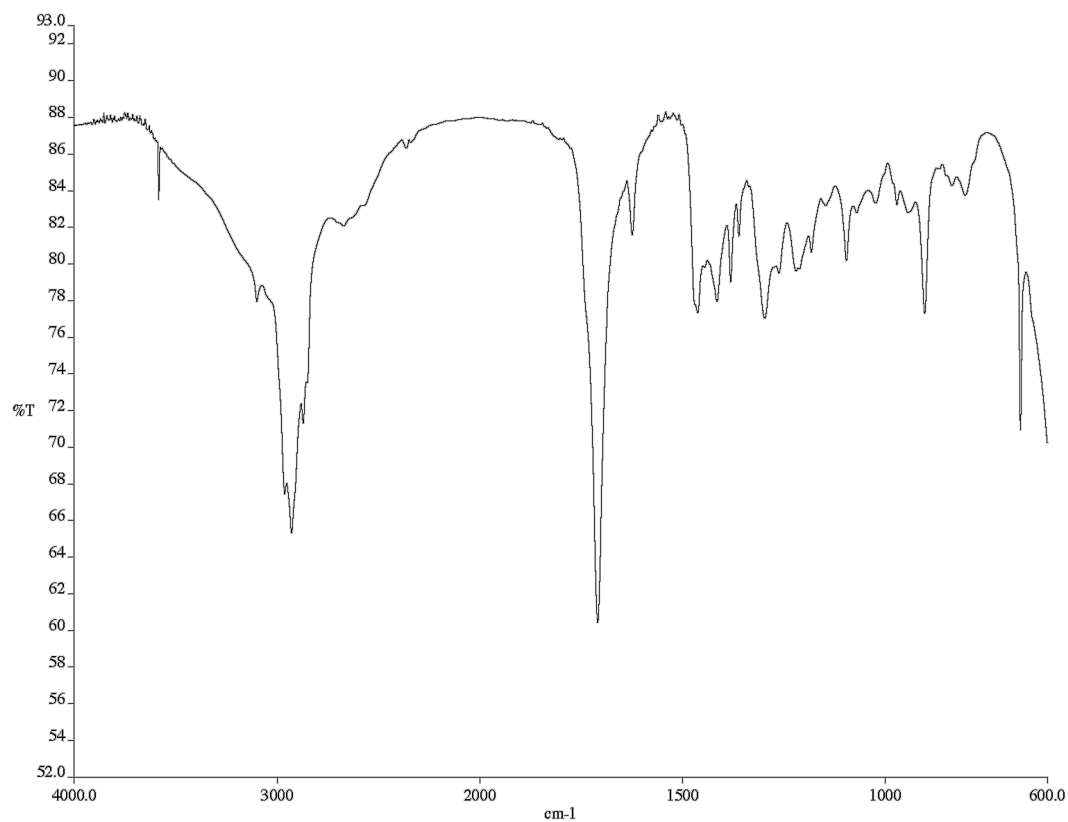


Figure A2.14 Infrared spectrum (Thin Film, NaCl) of compound **42**.

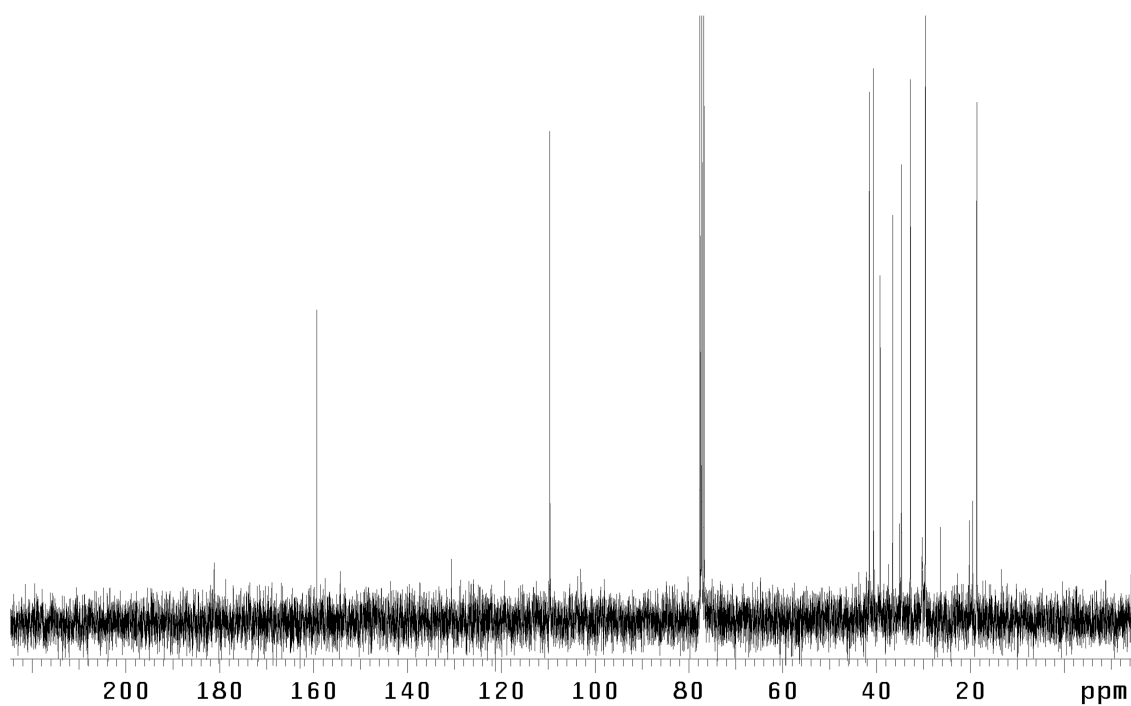


Figure A2.15 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **42**.

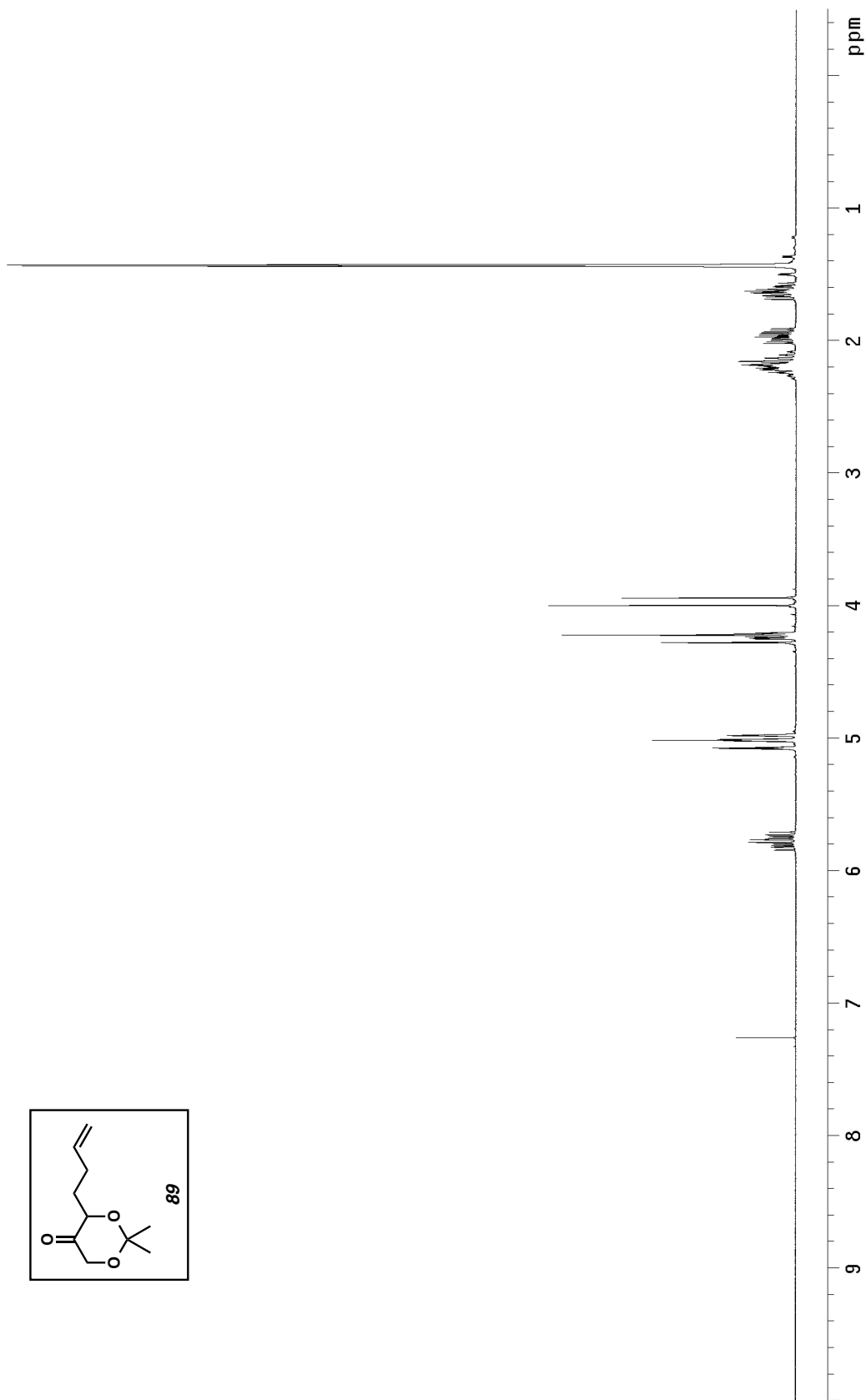


Figure A2.16  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **89**.

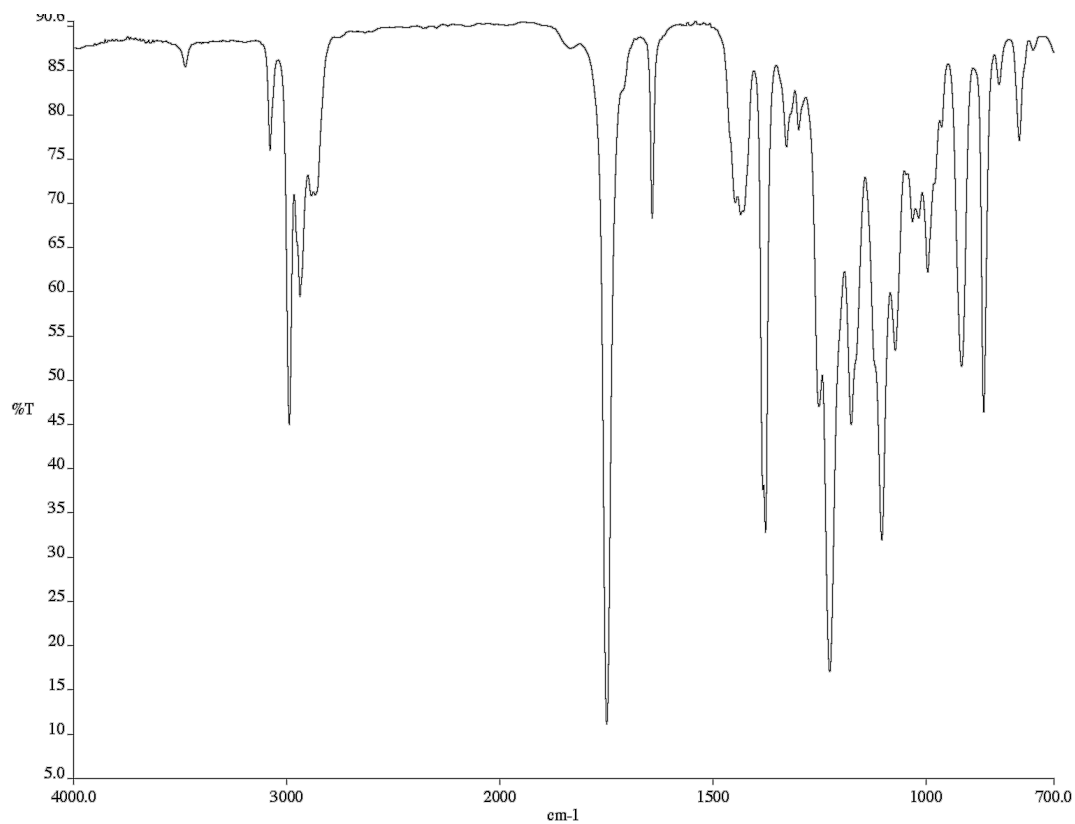


Figure A2.17 Infrared spectrum (Thin Film, NaCl) of compound **89**.

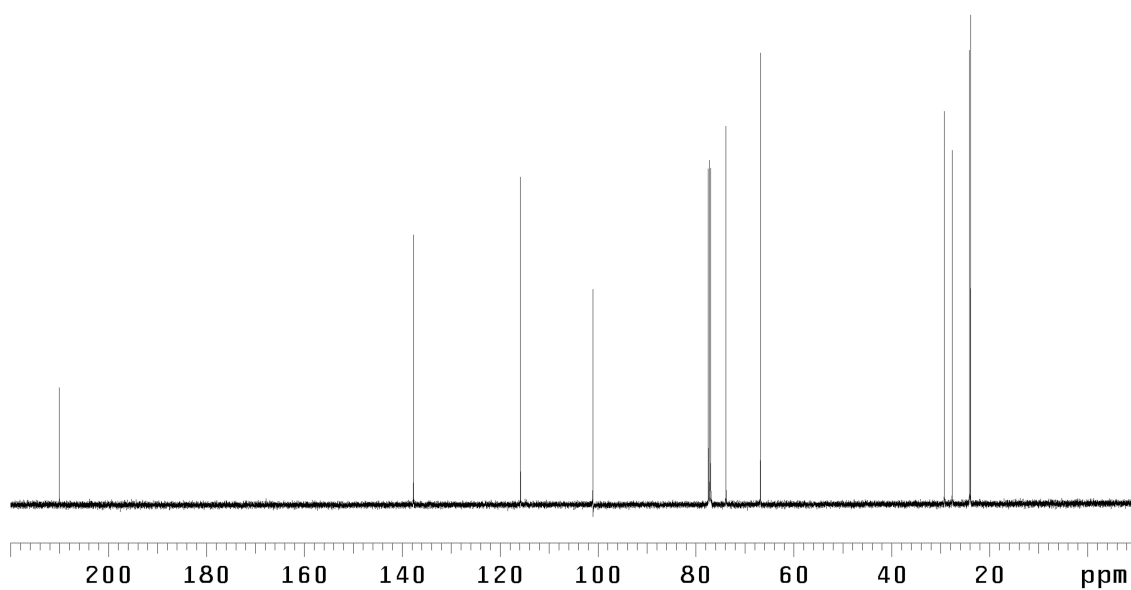


Figure A2.18 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **89**.

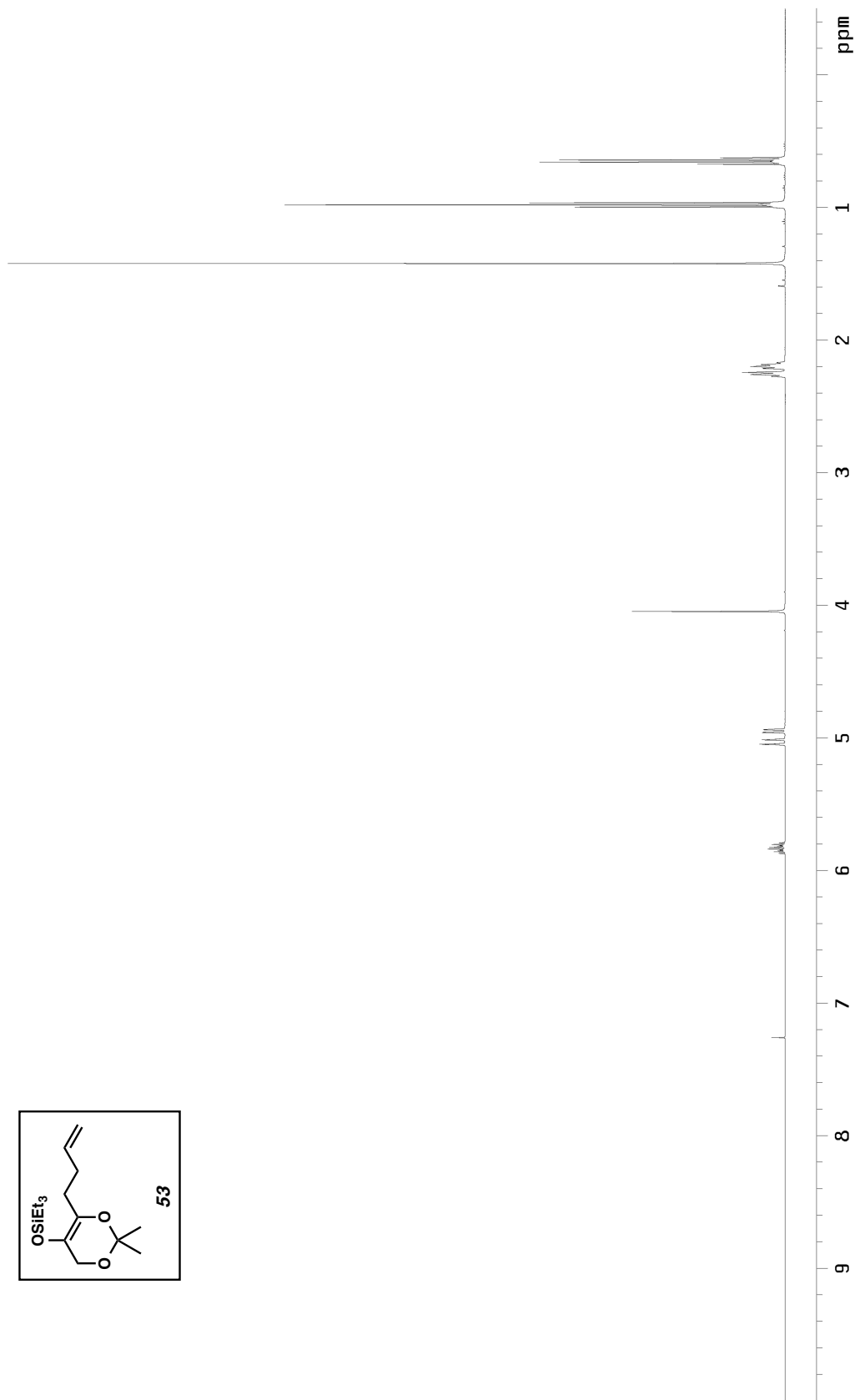
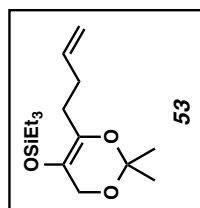


Figure A2.19 <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>) of compound **53**.

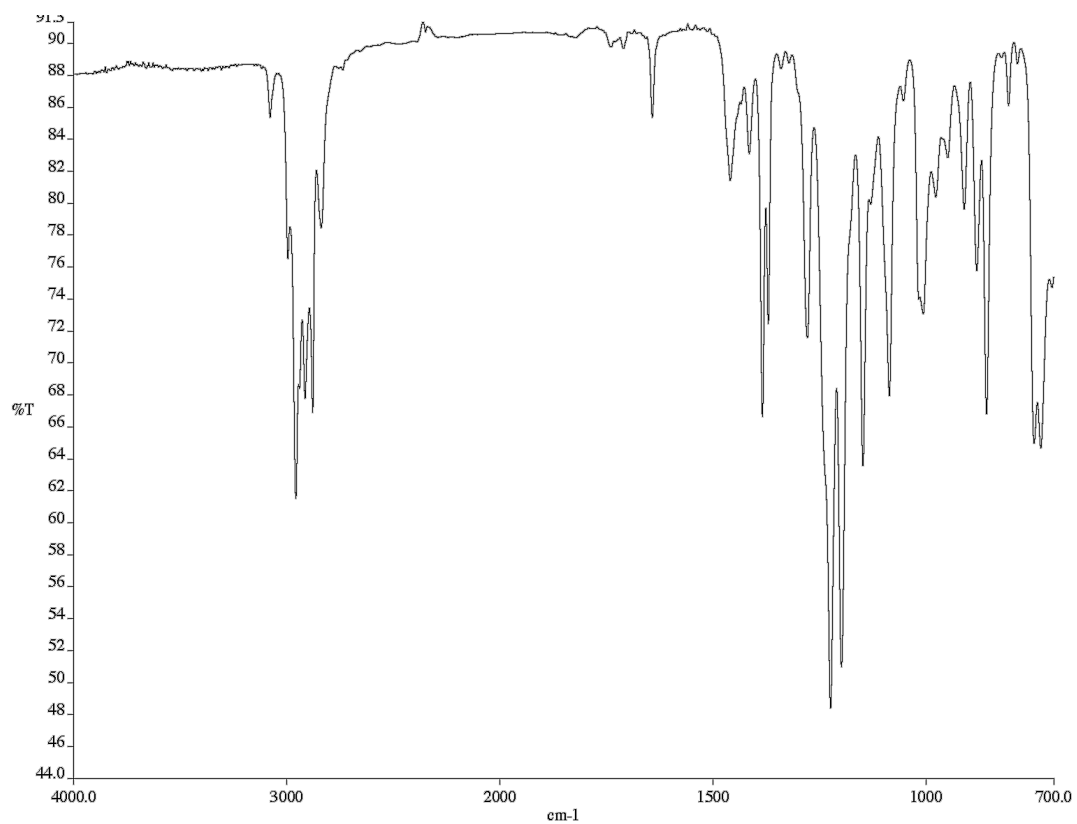


Figure A2.20 Infrared spectrum (Thin Film, NaCl) of compound **53**.

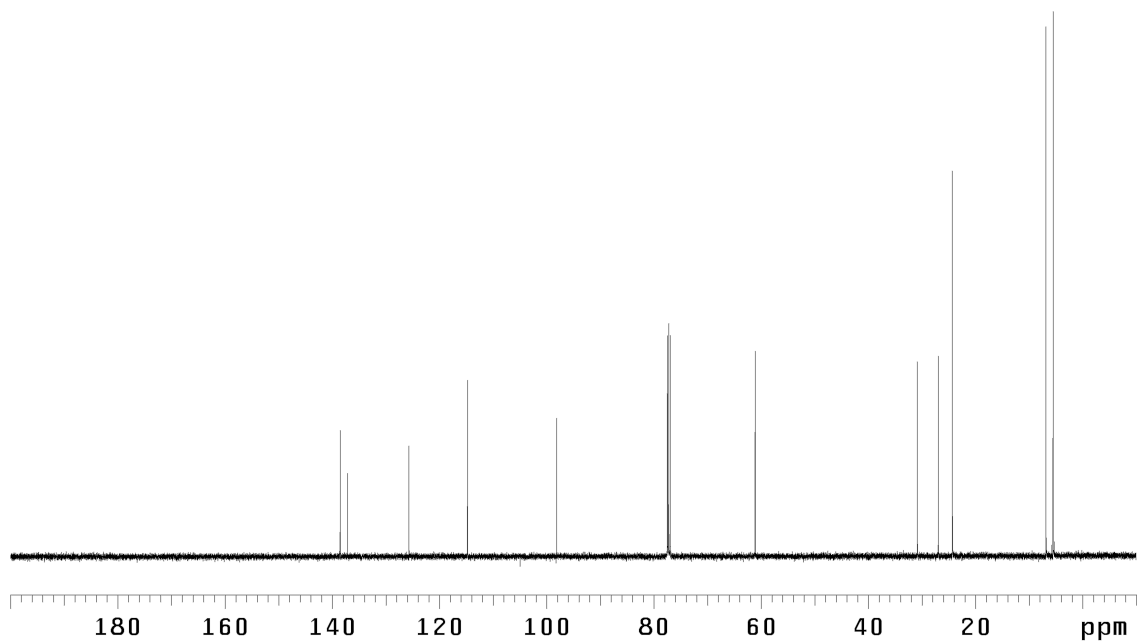


Figure A2.21 <sup>13</sup>C NMR (125 MHz, CDCl<sub>3</sub>) of compound **53**.

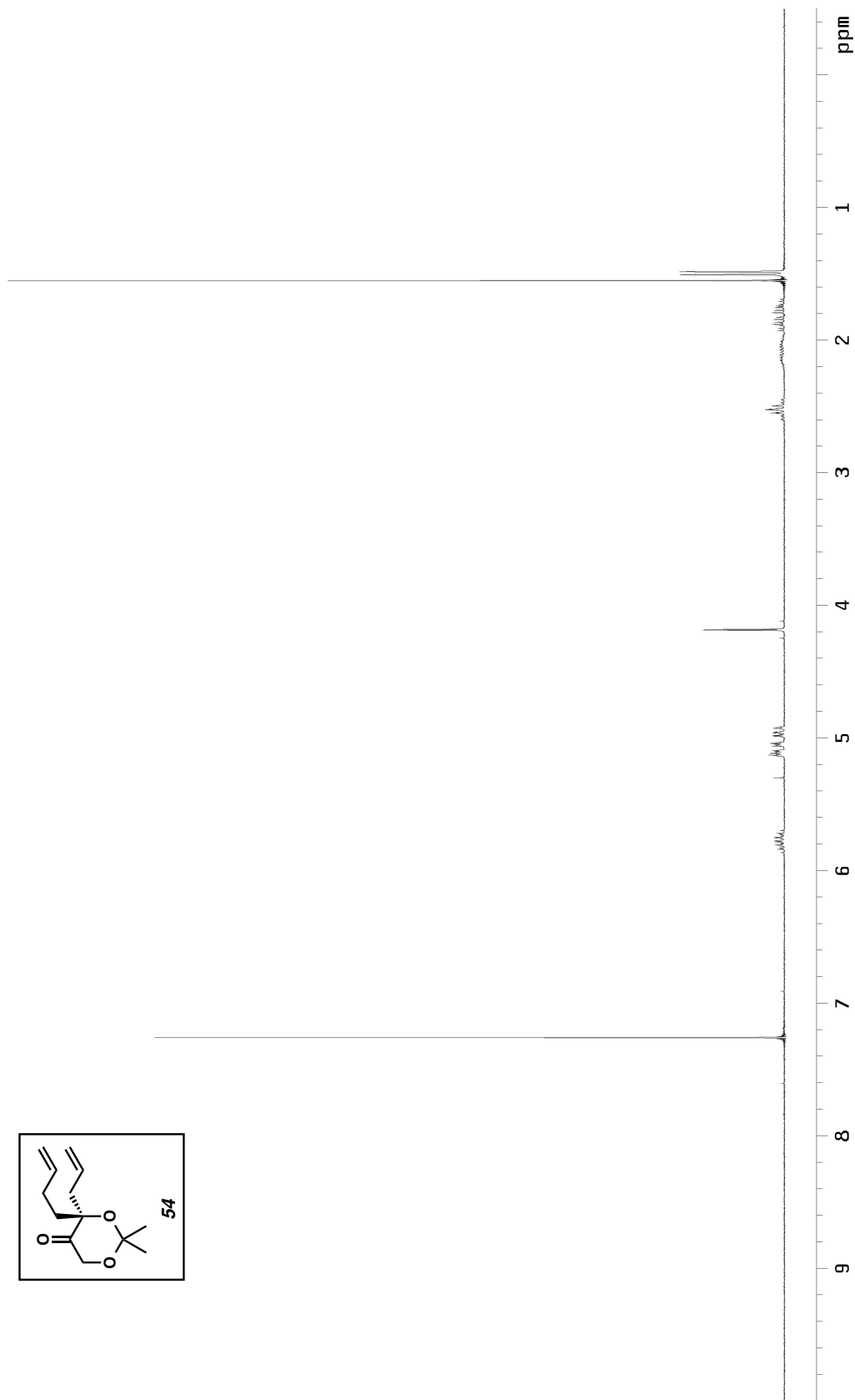


Figure A2.22  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **54**.



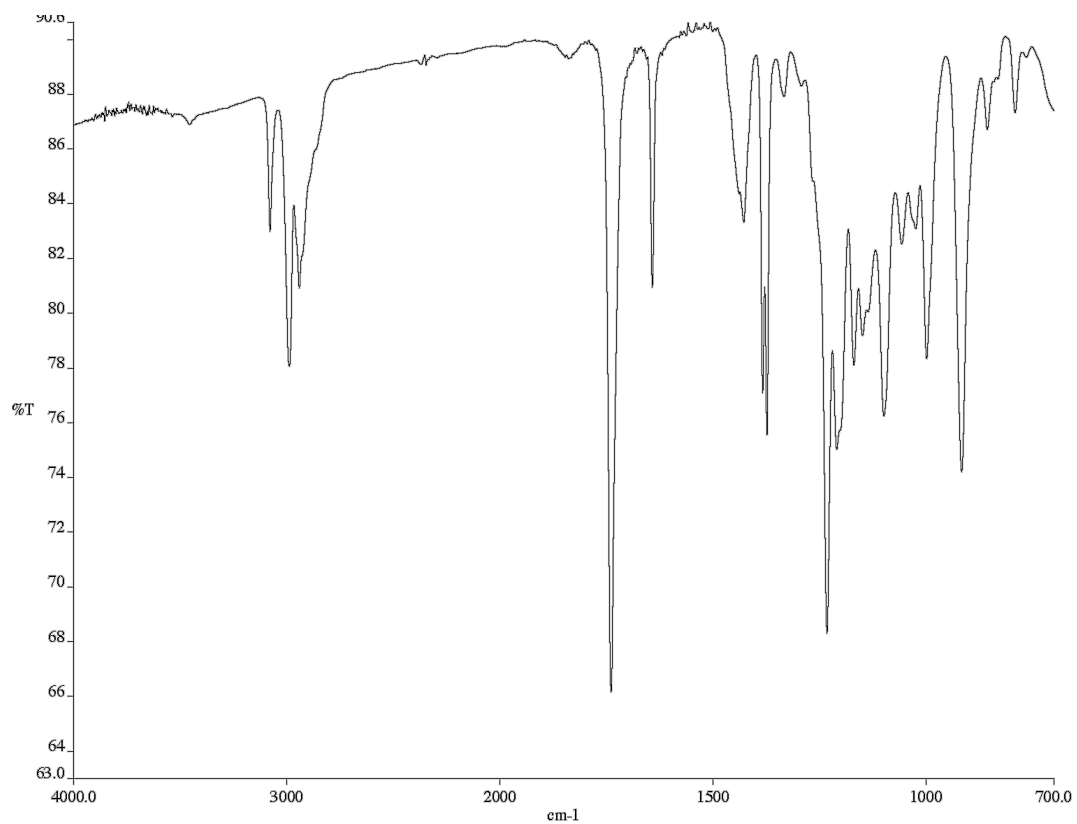


Figure A2.23 Infrared spectrum (Thin Film, NaCl) of compound **54**.

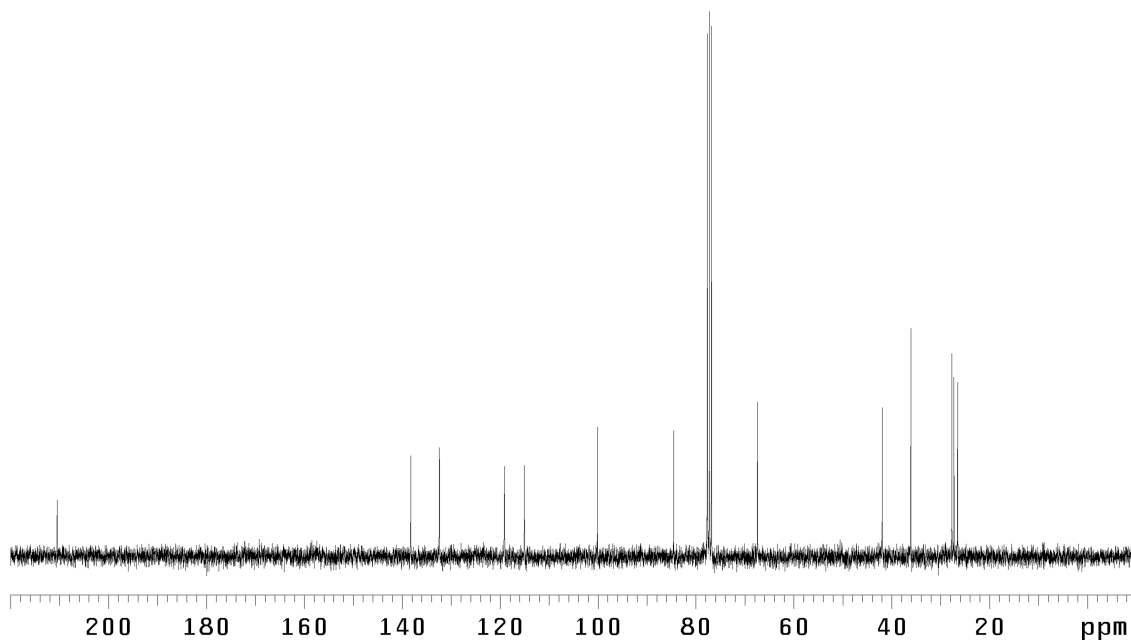


Figure A2.24 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **54**.

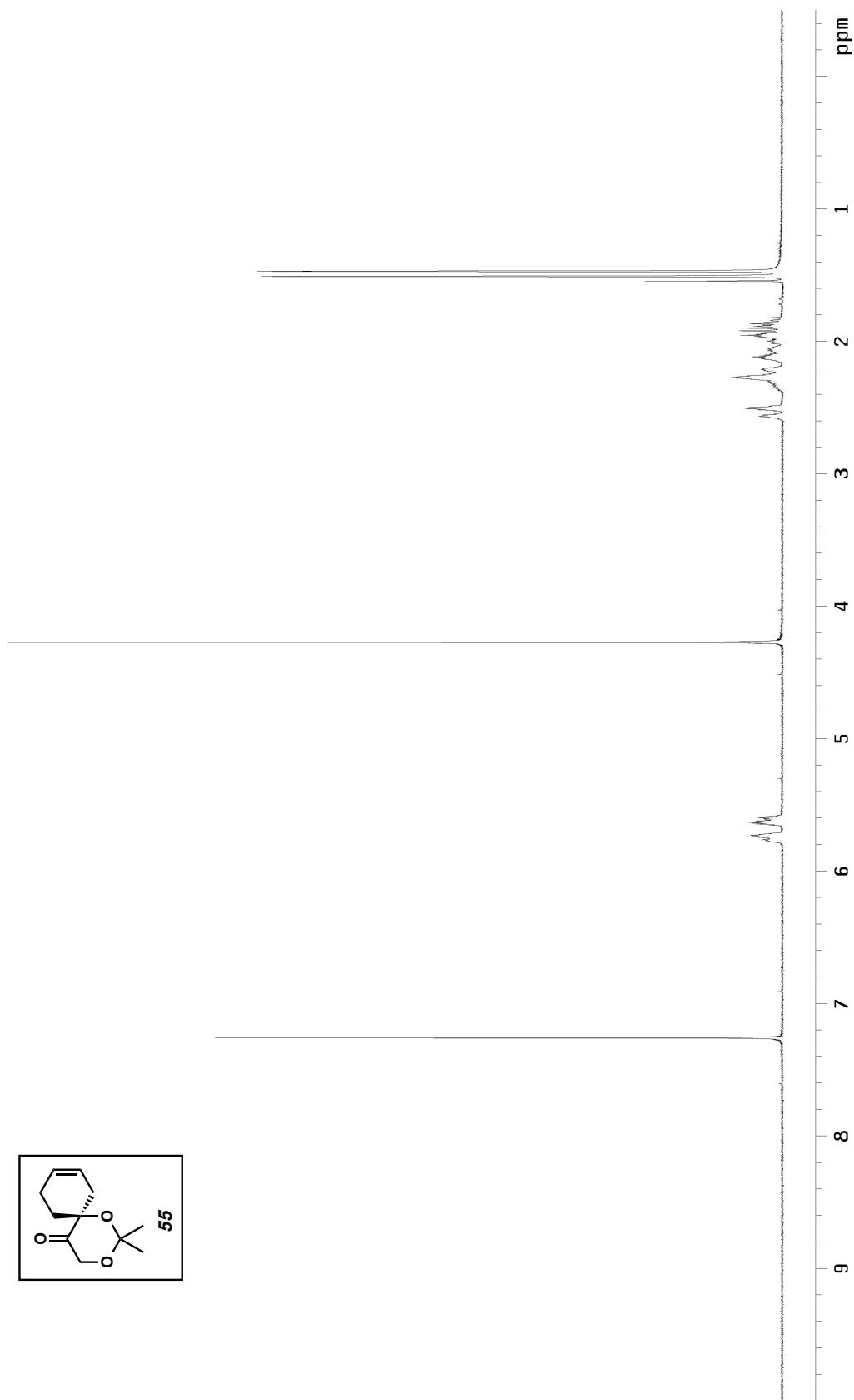


Figure A2.25  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **55**.

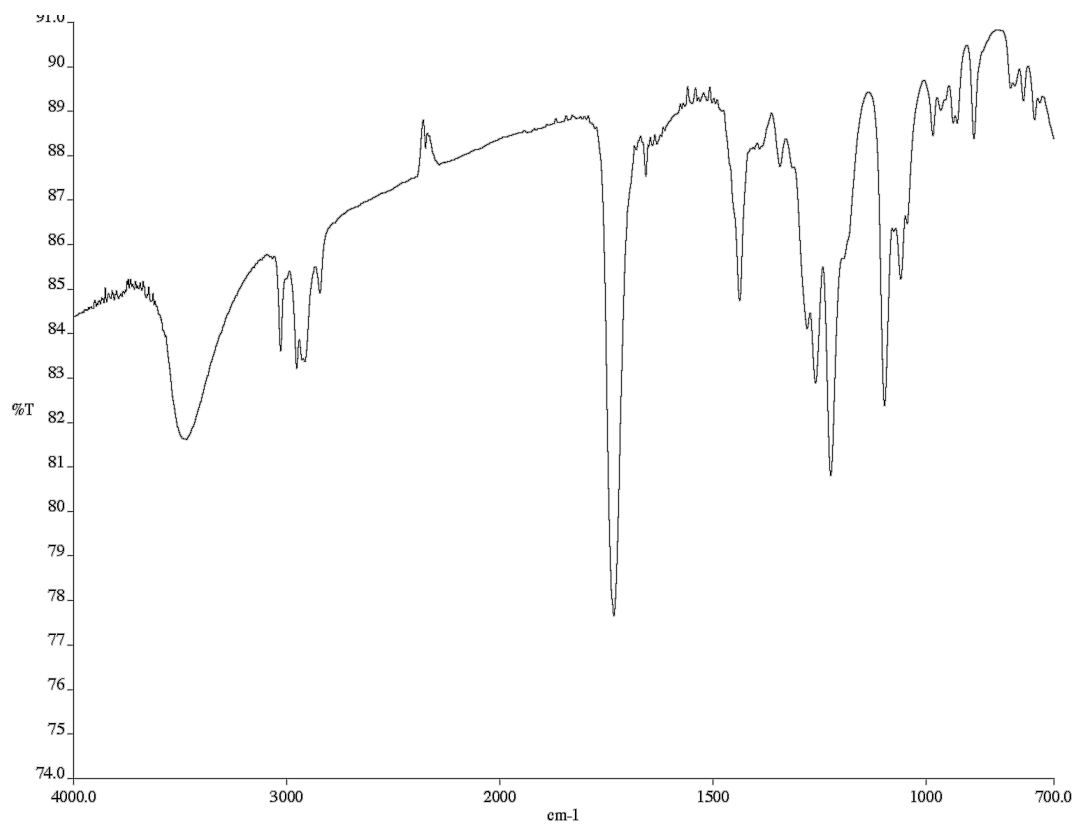


Figure A2.26 Infrared spectrum (Thin Film, NaCl) of compound **55**.

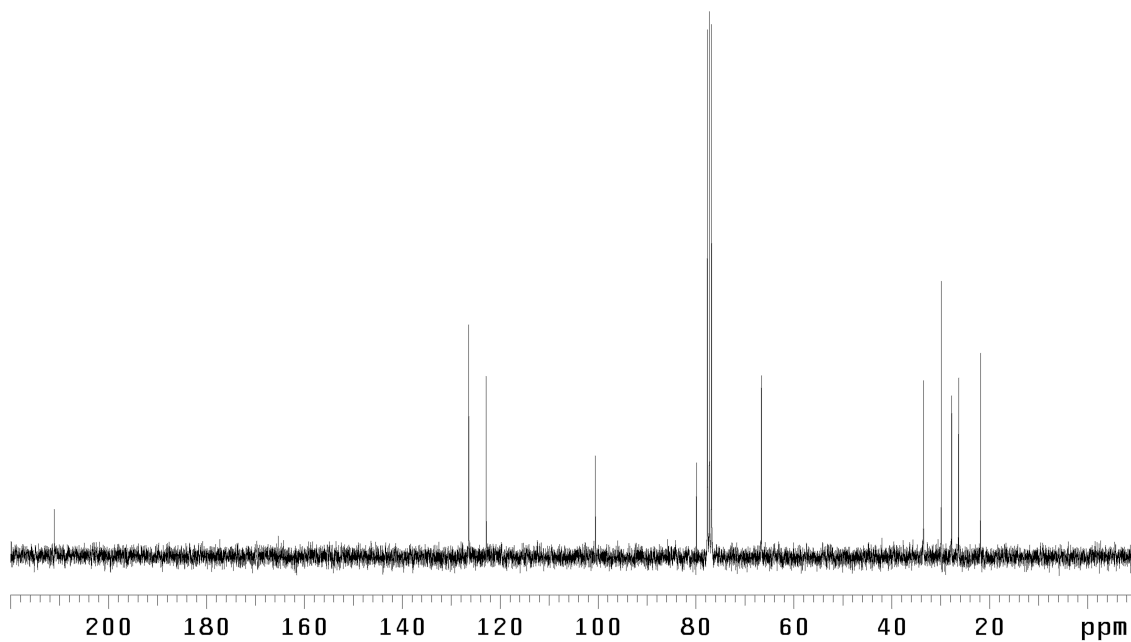


Figure A2.27 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **55**.

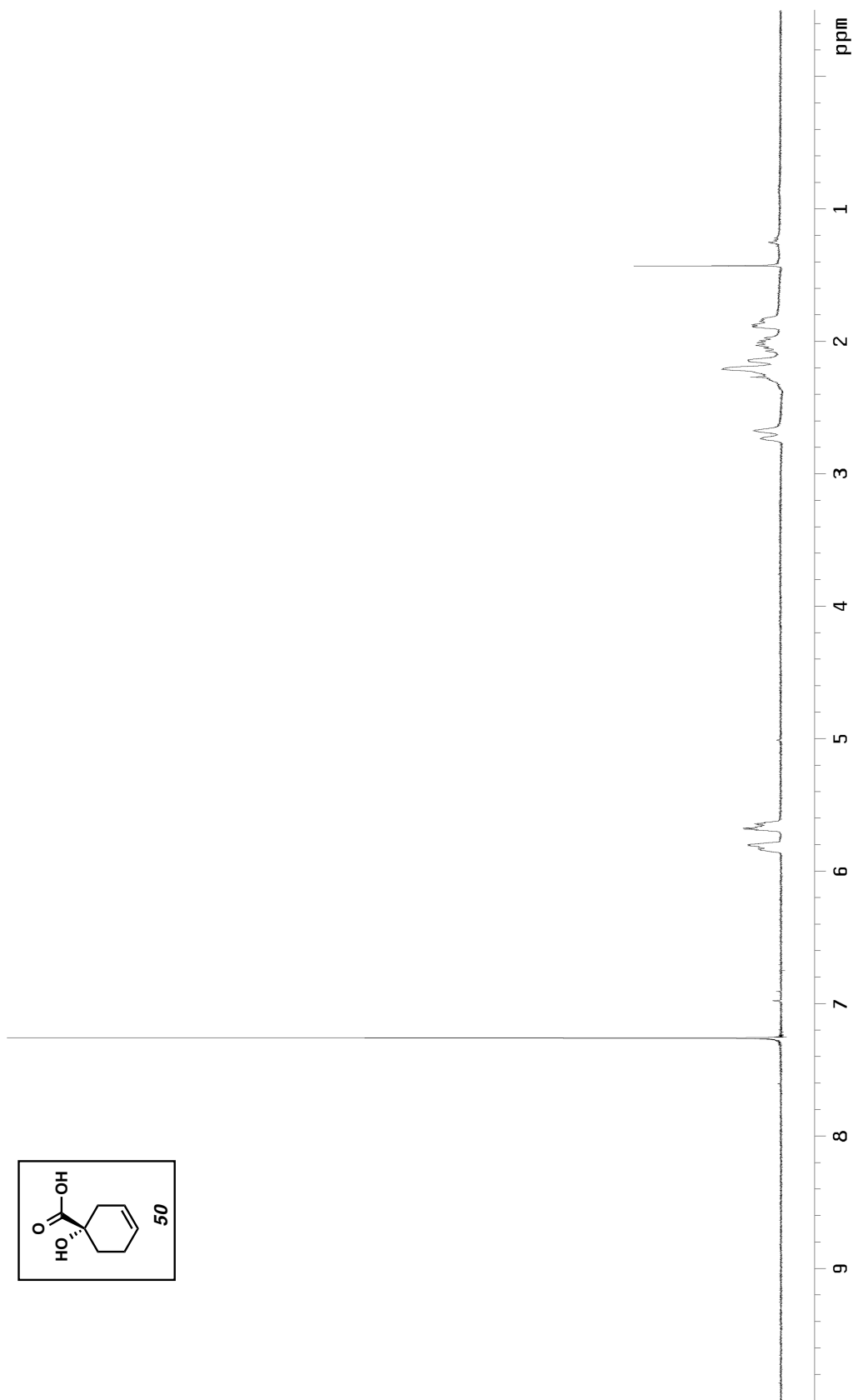


Figure A2.28 <sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>) of compound 50.

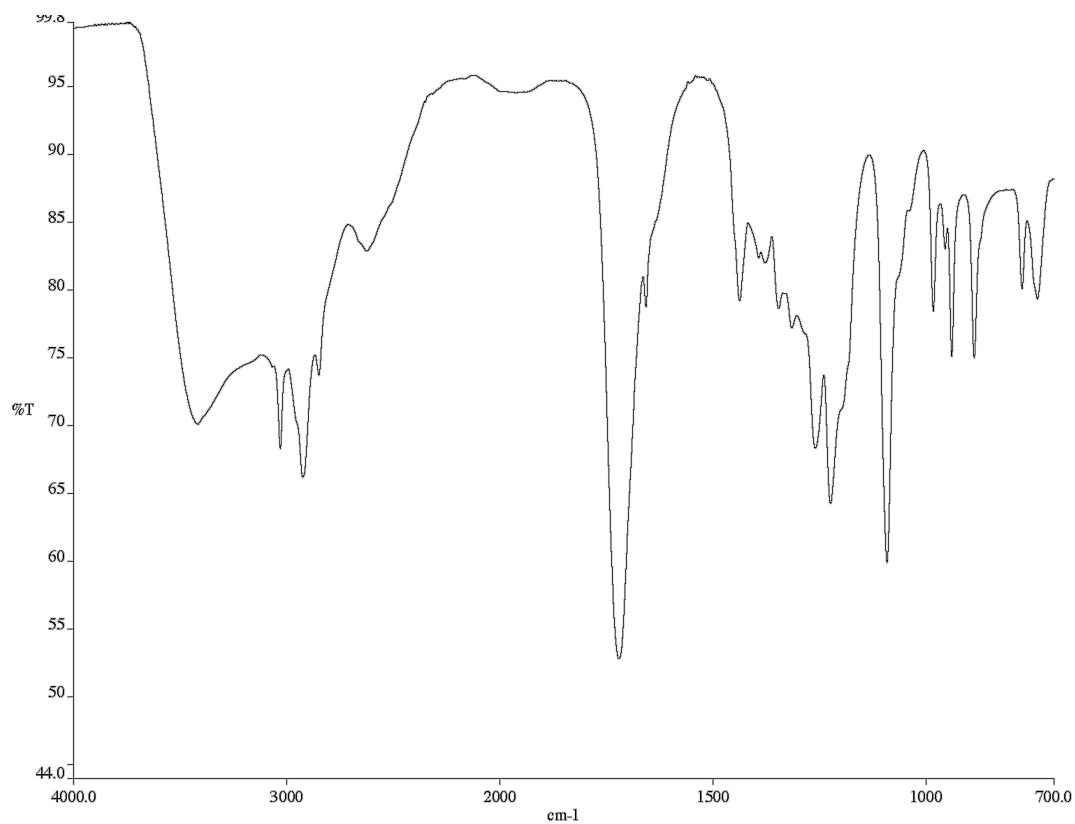


Figure A2.29 Infrared spectrum (Thin Film, NaCl) of compound **50**.

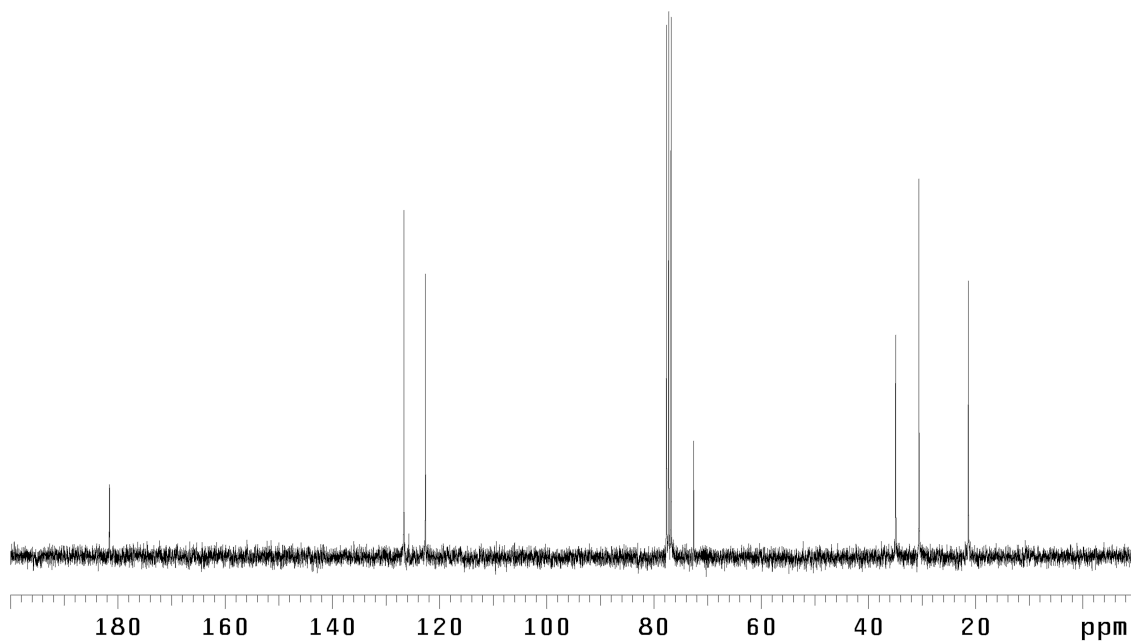


Figure A2.30 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **50**.

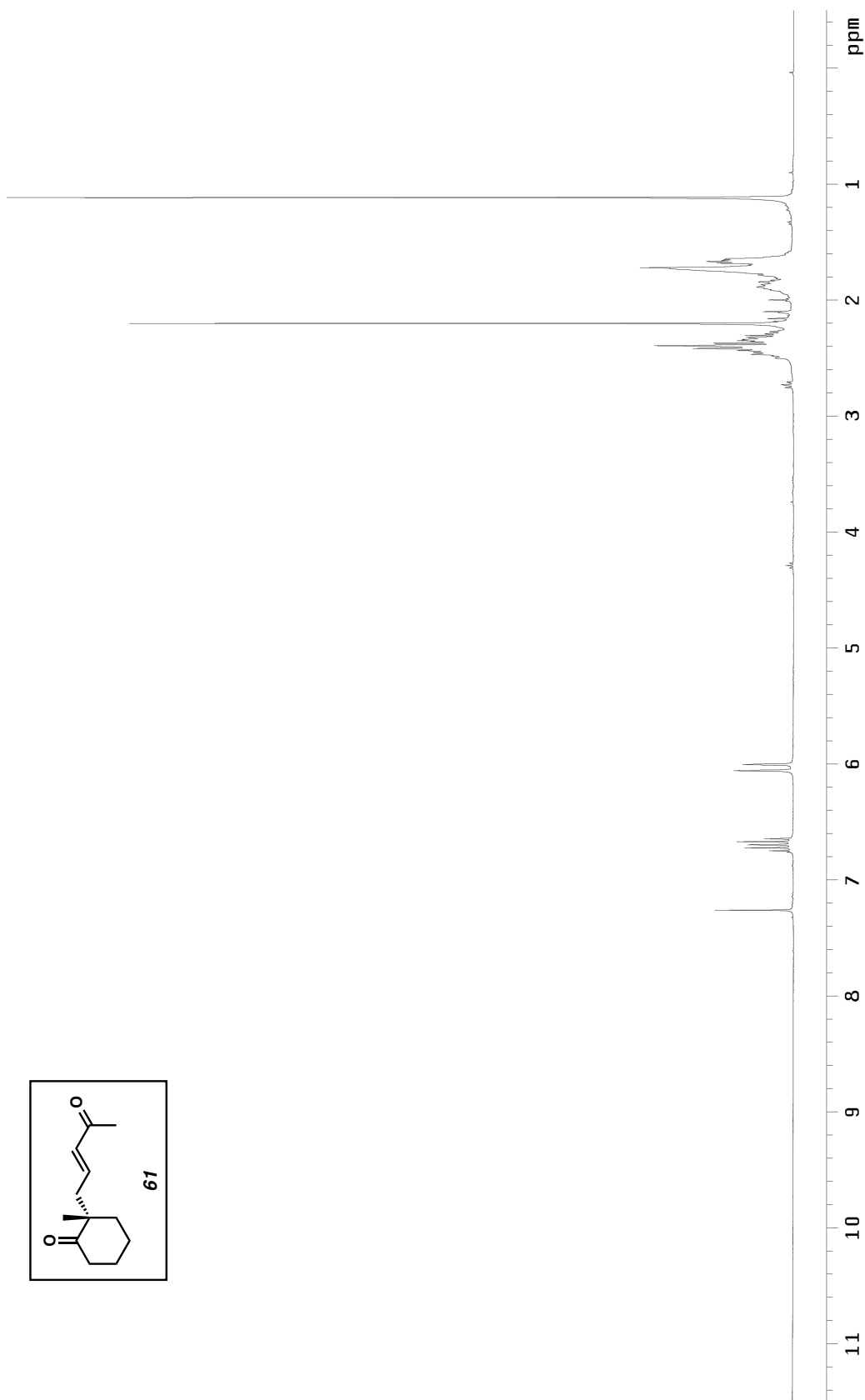


Figure A2.31  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **61**.

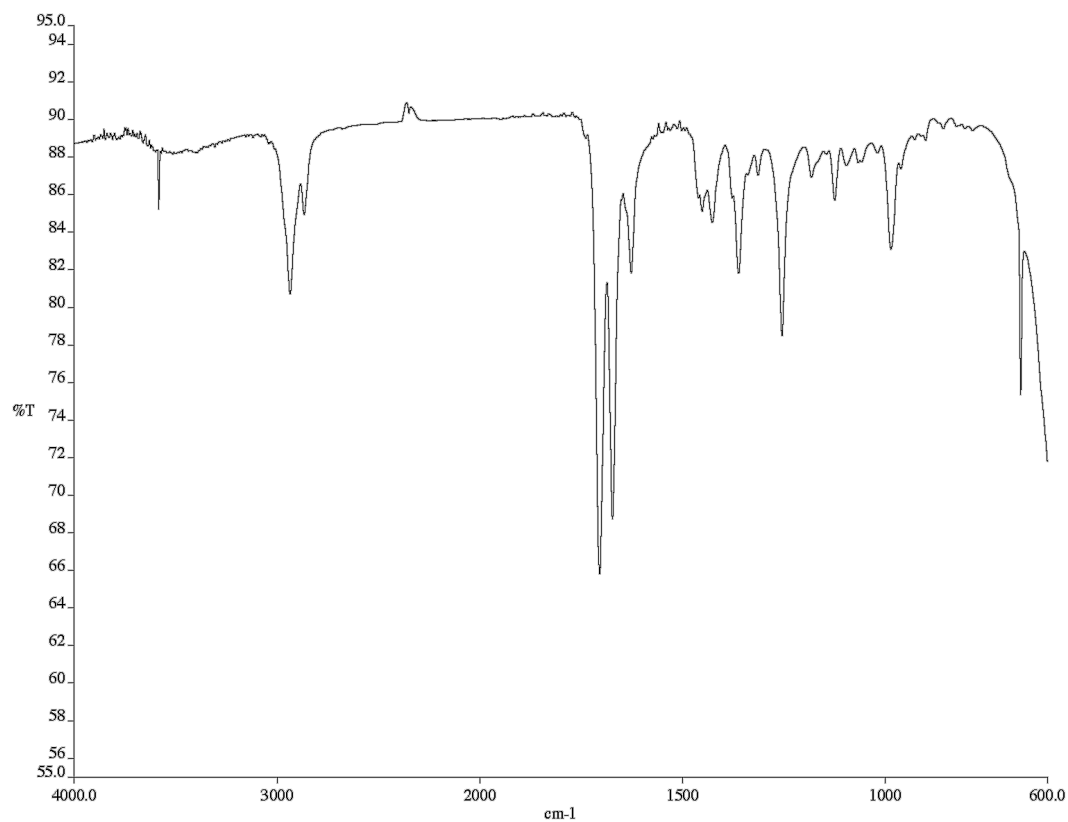


Figure A2.32 Infrared spectrum (Thin Film, NaCl) of compound **61**.

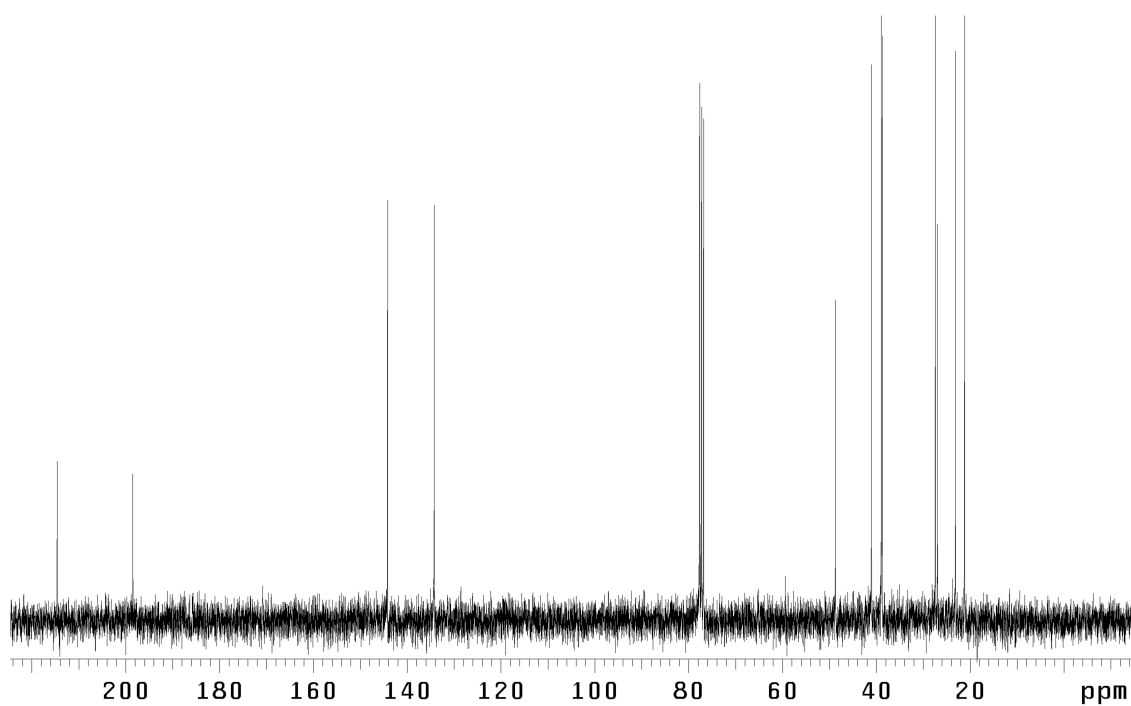


Figure A2.33 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **61**.

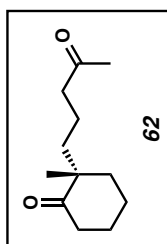
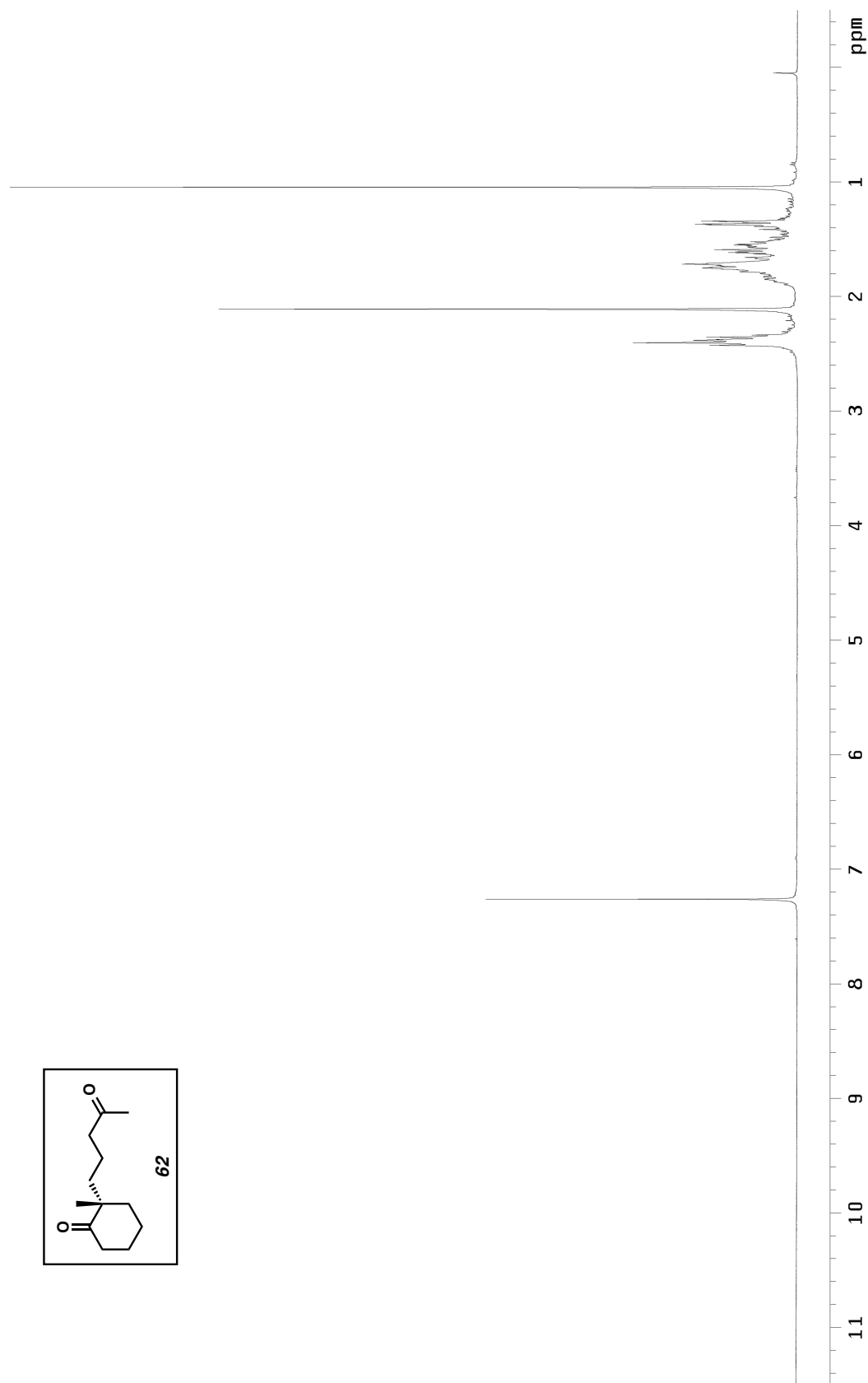


Figure A2.34  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **62**.



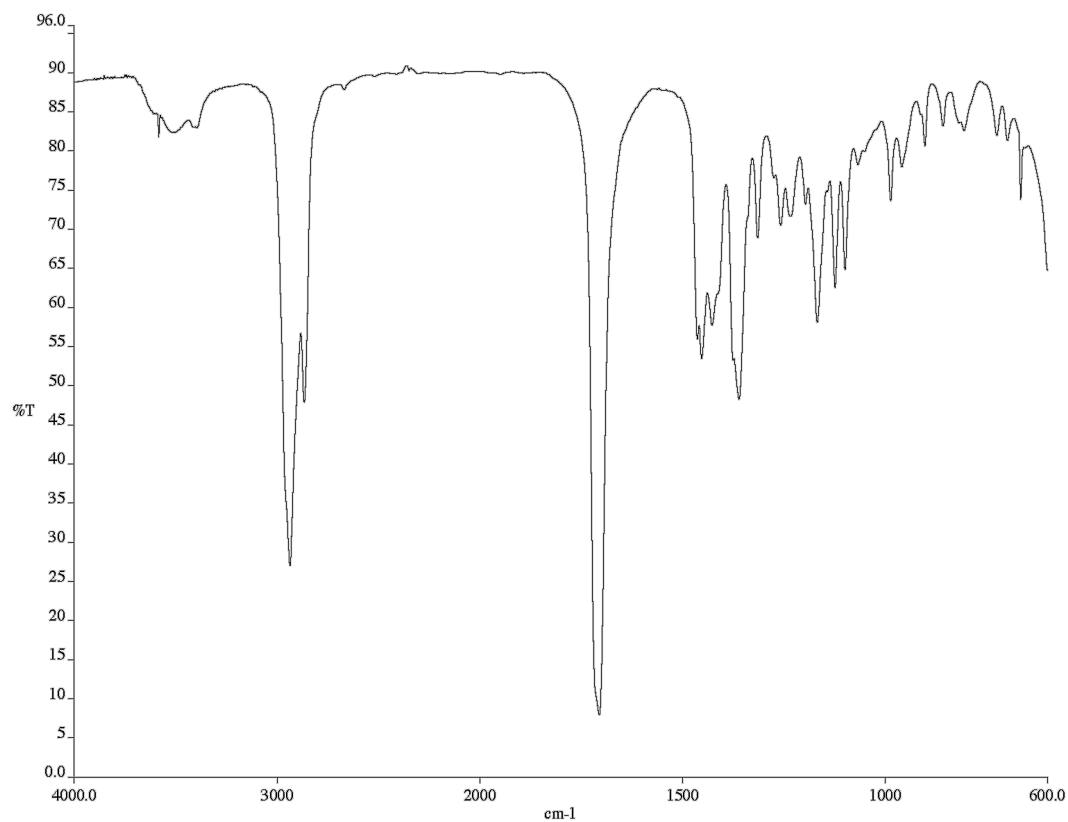


Figure A2.35 Infrared spectrum (Thin Film, NaCl) of compound **62**.

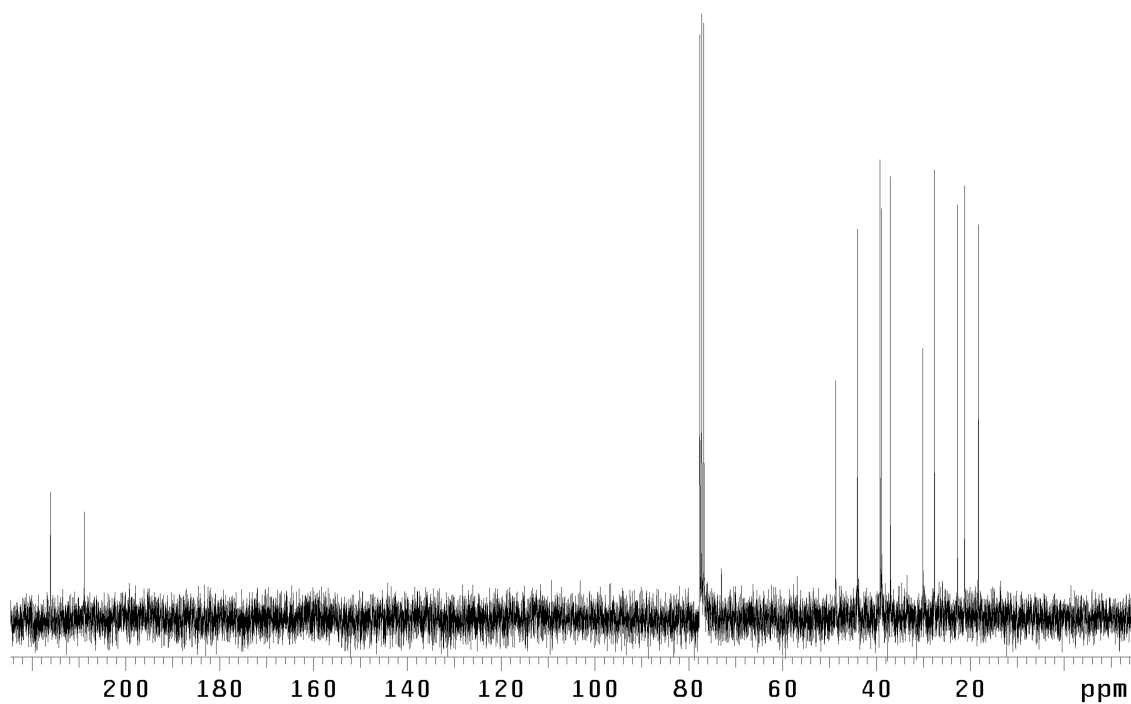


Figure A2.36 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **62**.

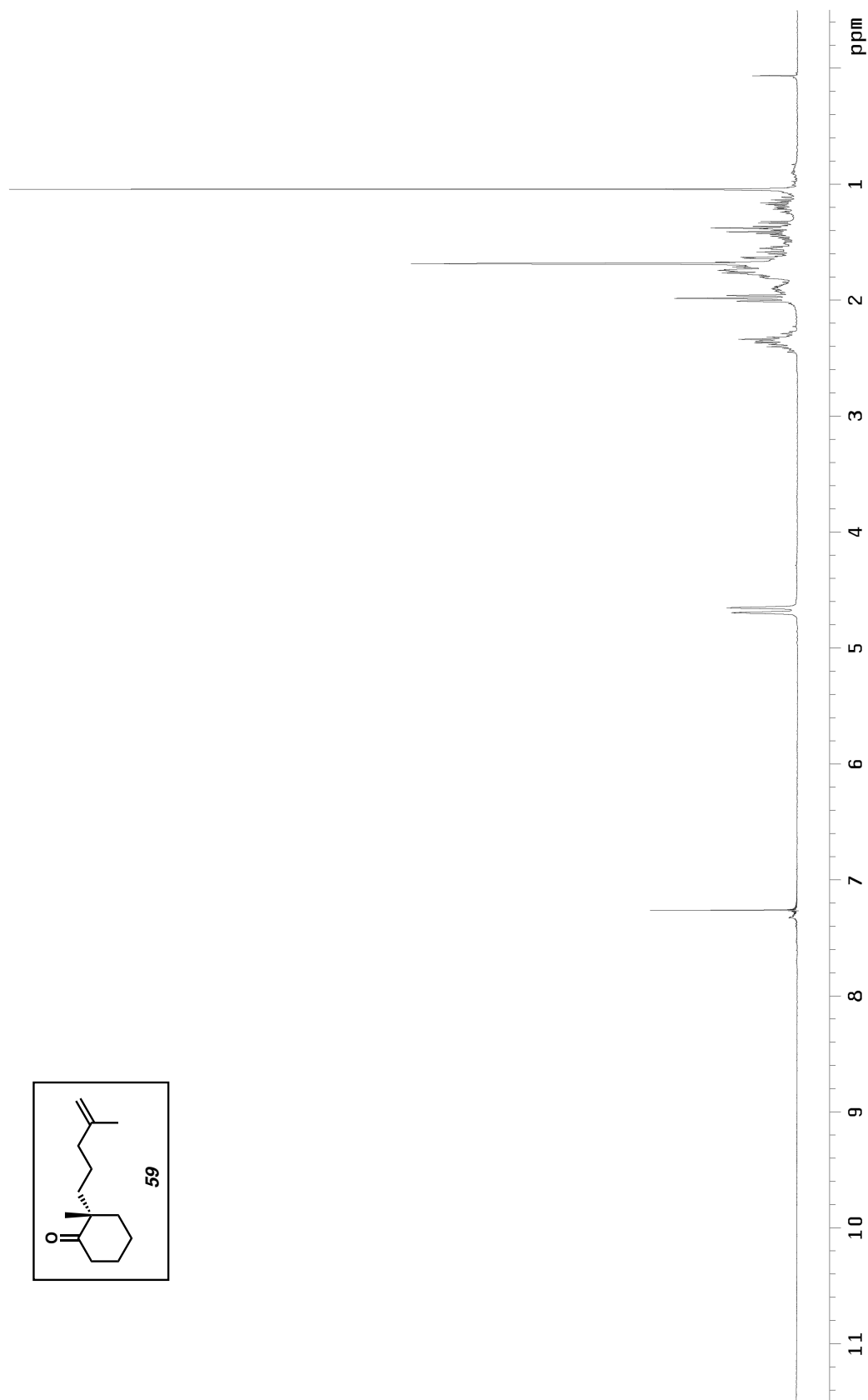


Figure A2.37  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **59**.

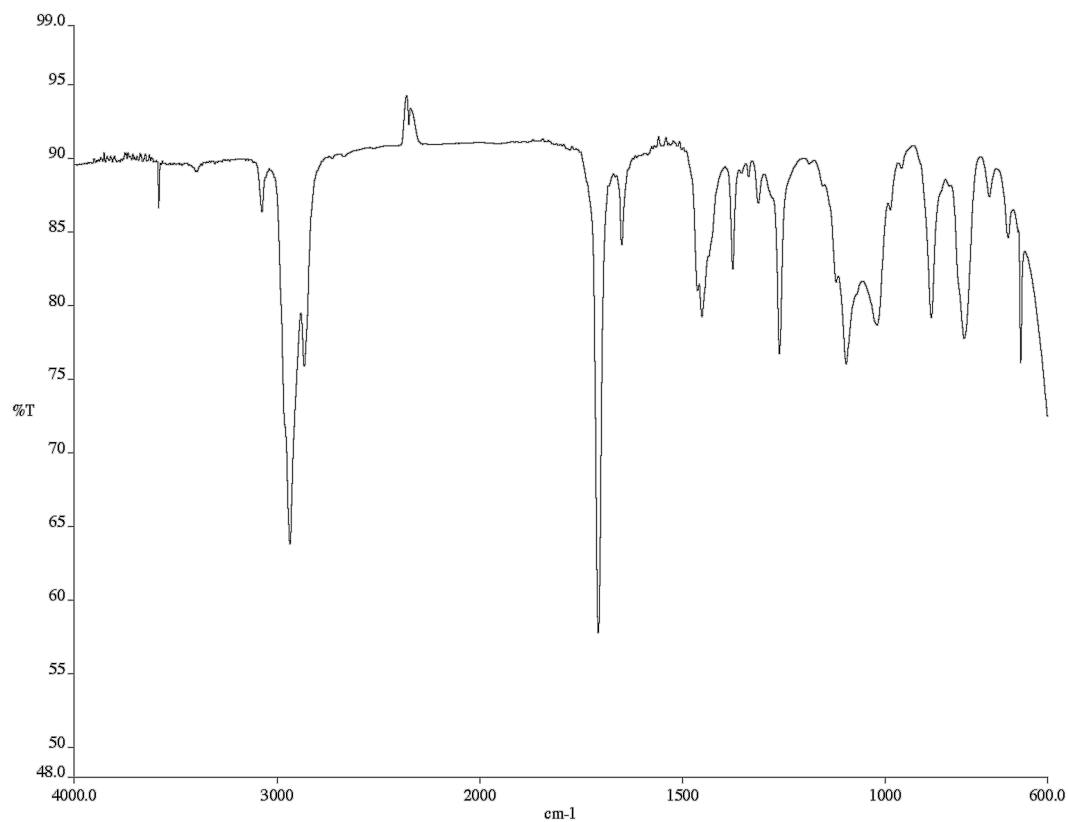


Figure A2.38 Infrared spectrum (Thin Film, NaCl) of compound **59**.

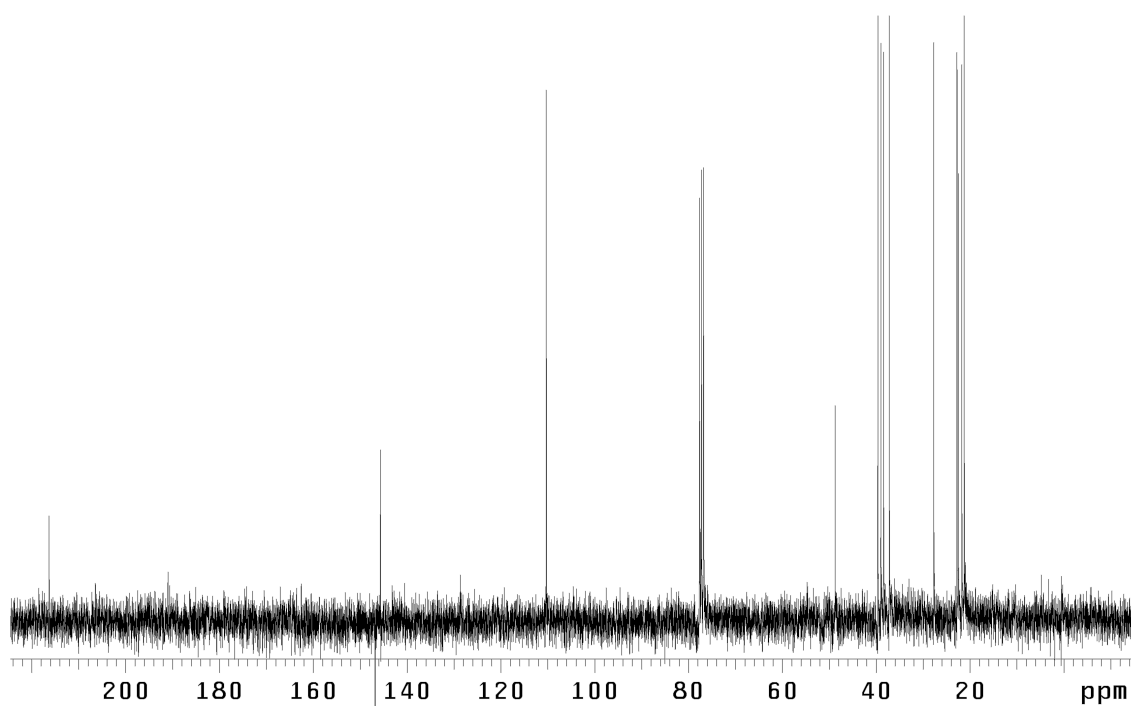


Figure A2.39 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **59**.

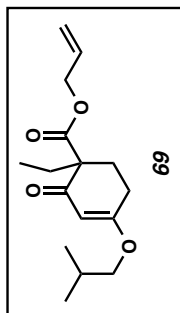
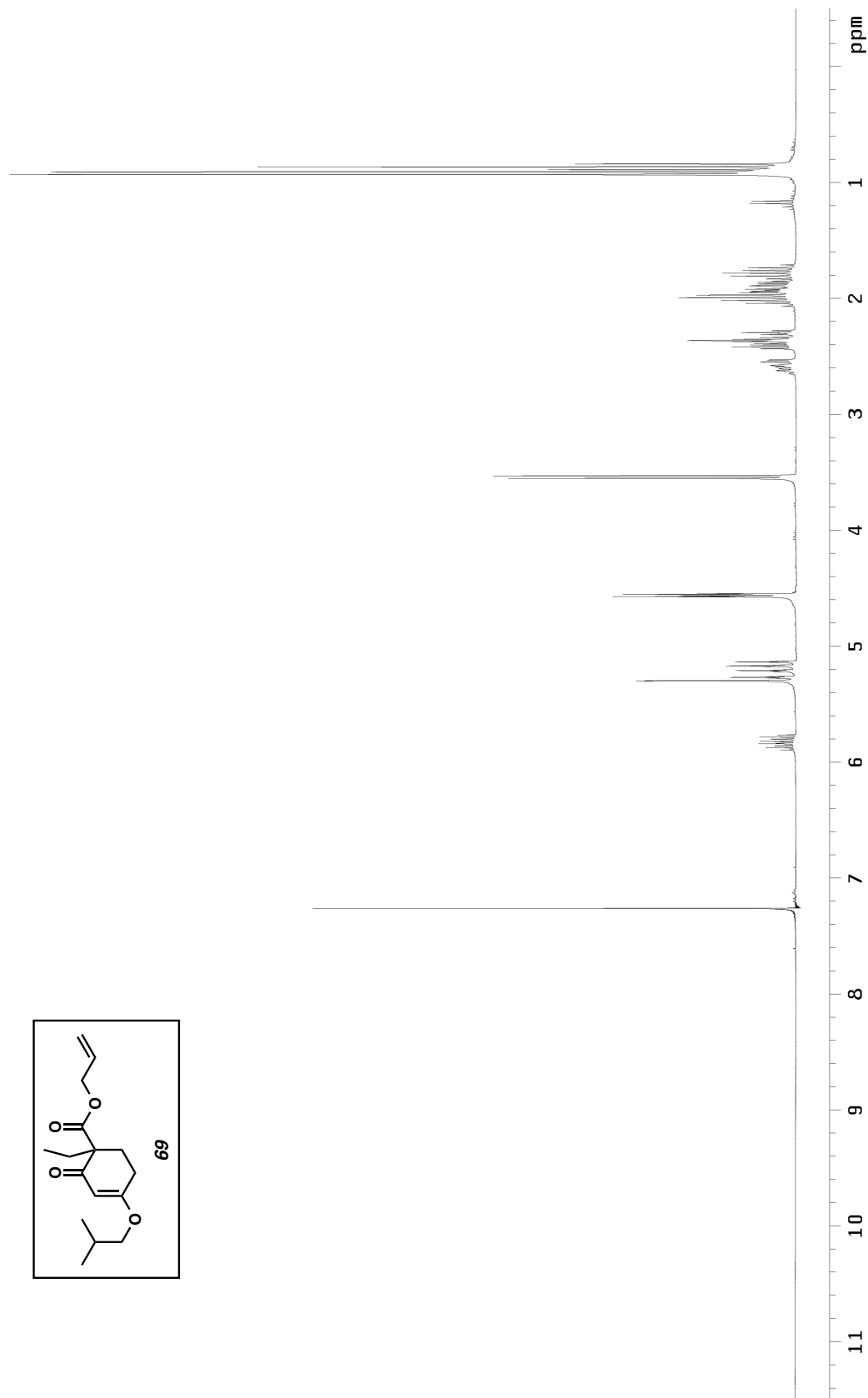


Figure A2.40  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **69**.

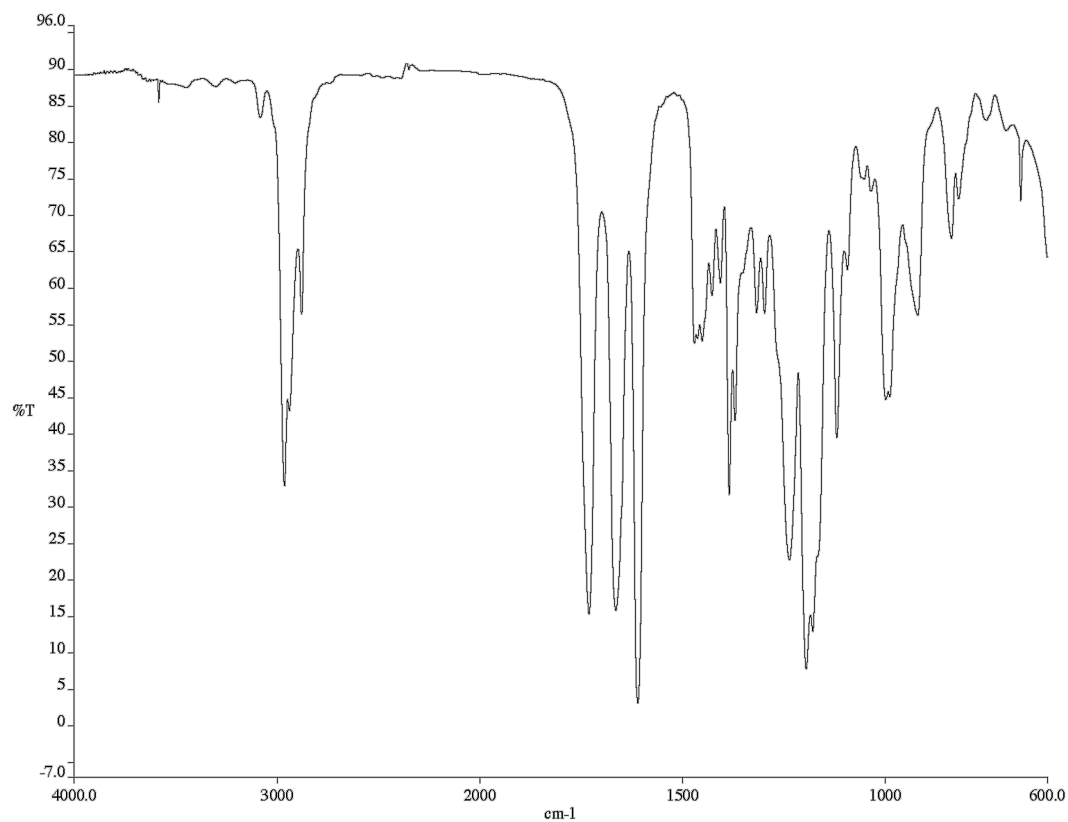


Figure A2.41 Infrared spectrum (Thin Film, NaCl) of compound **69**.

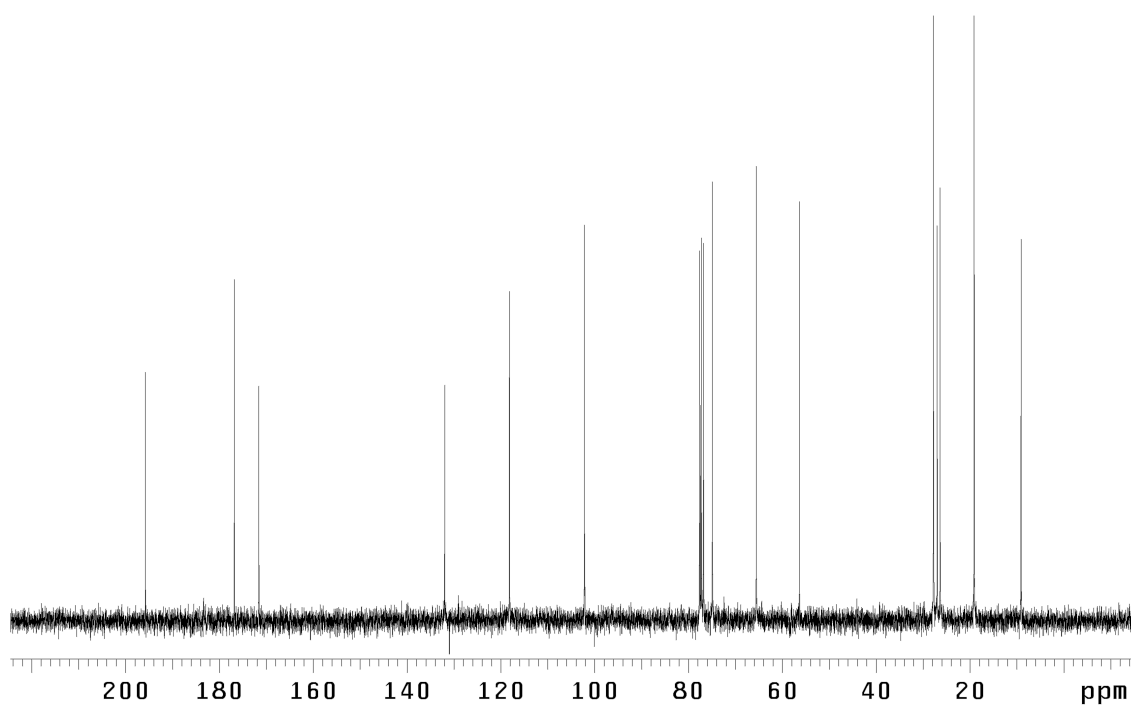


Figure A2.42 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **69**.

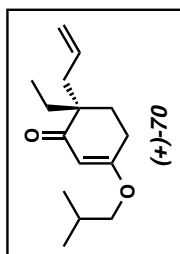


Figure A2.43  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **70**.

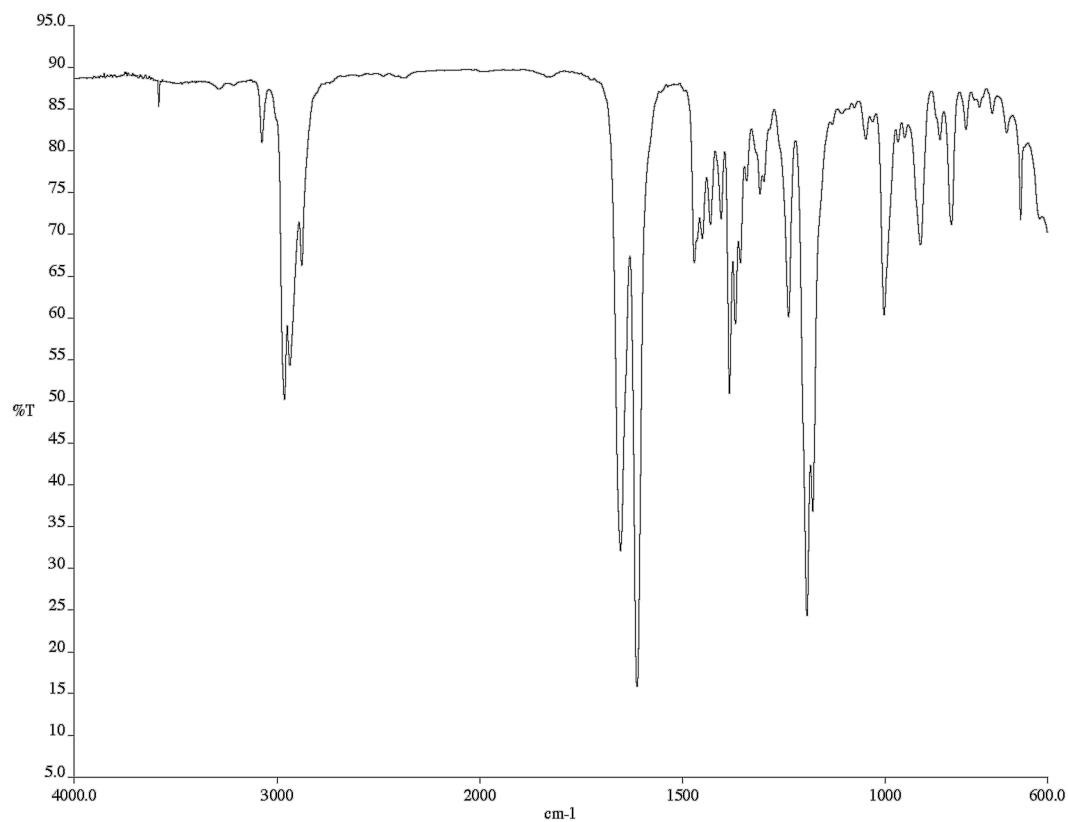


Figure A2.44 Infrared spectrum (Thin Film, NaCl) of compound **70**.

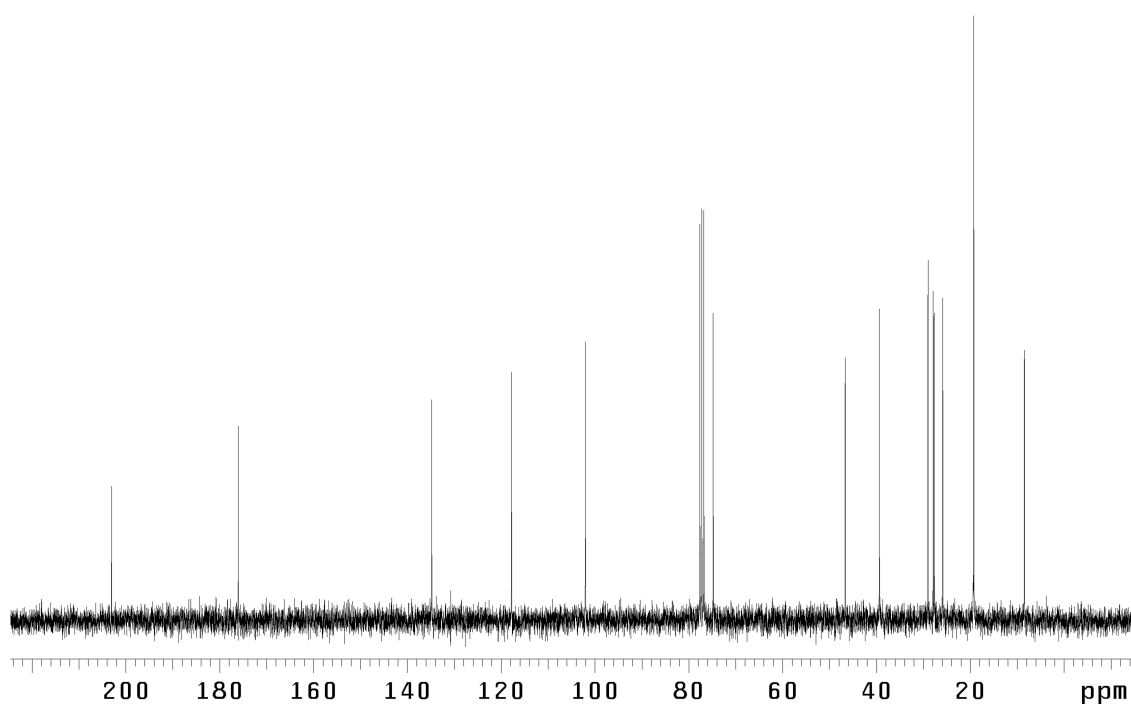


Figure A2.45 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **70**.

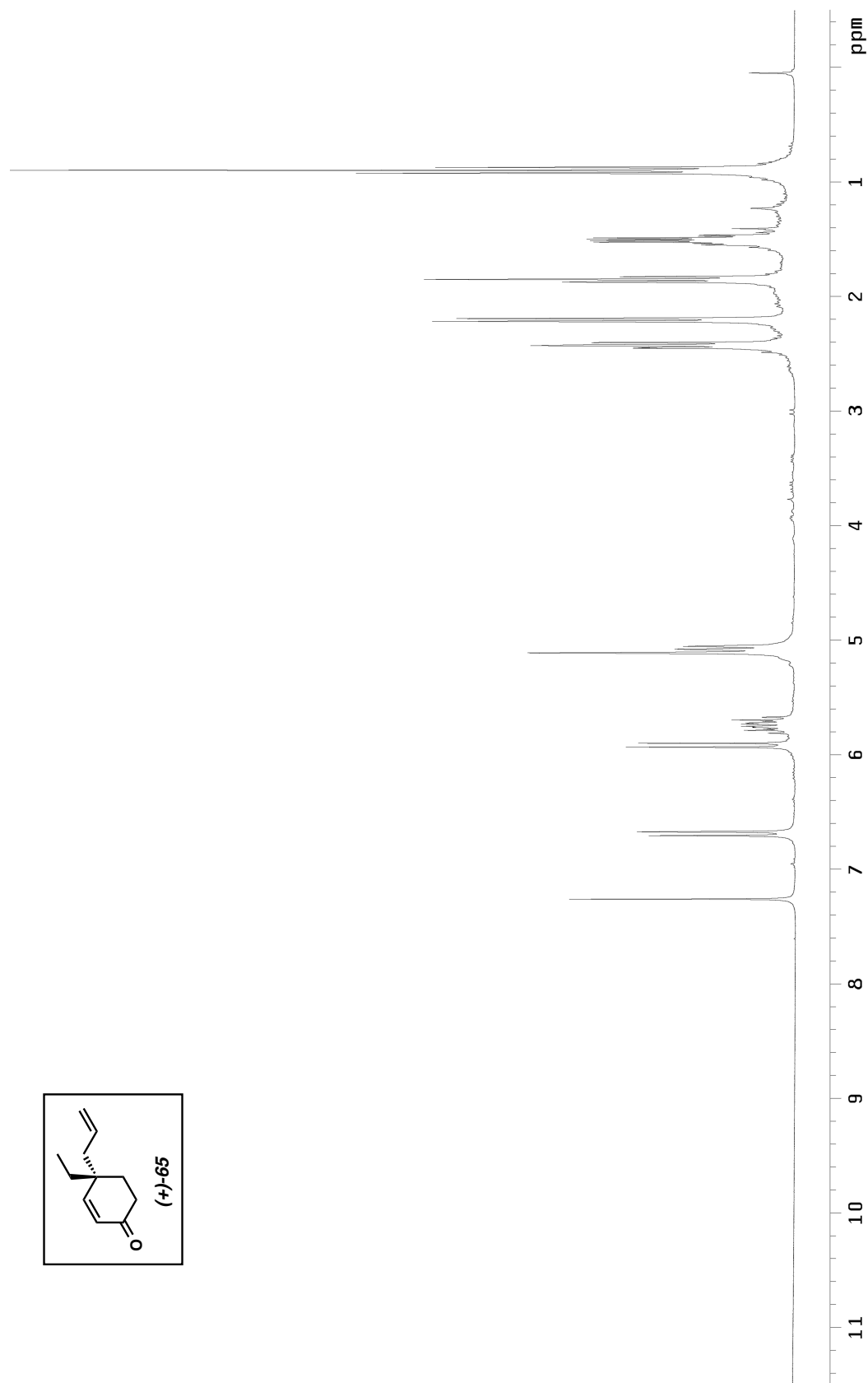


Figure A2.46  $^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ ) of compound **65**.



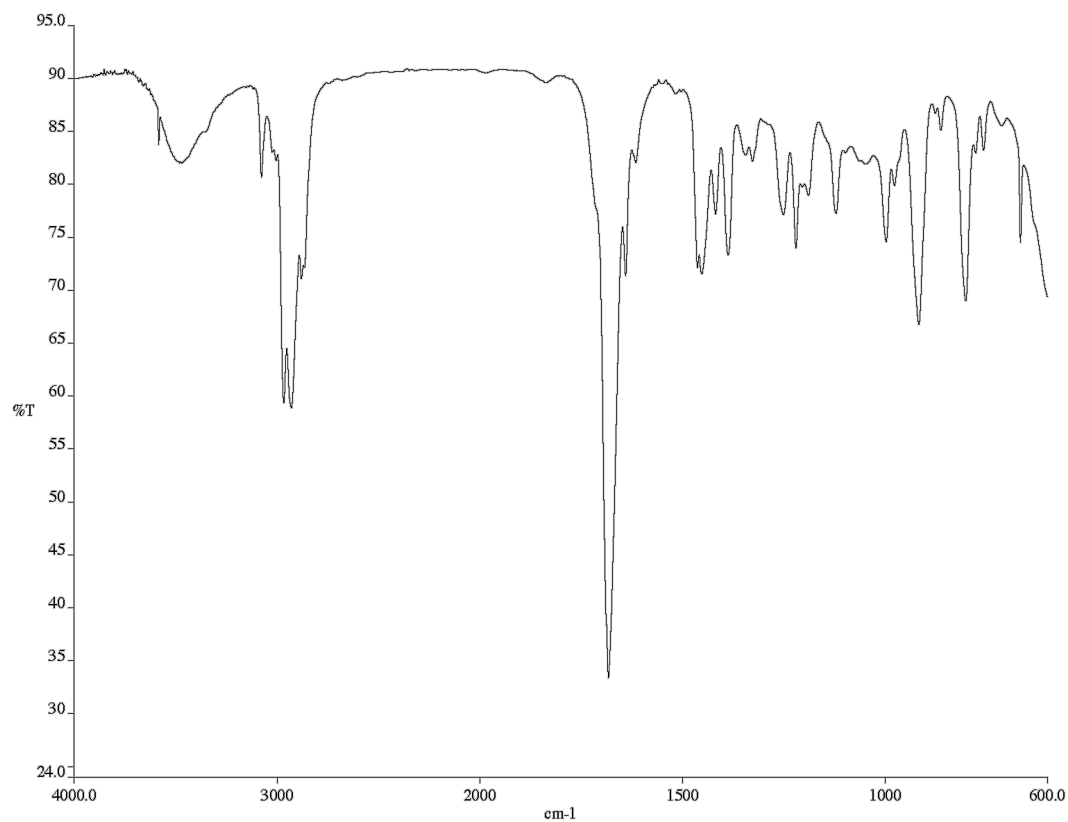


Figure A2.47 Infrared spectrum (Thin Film, NaCl) of compound **65**.

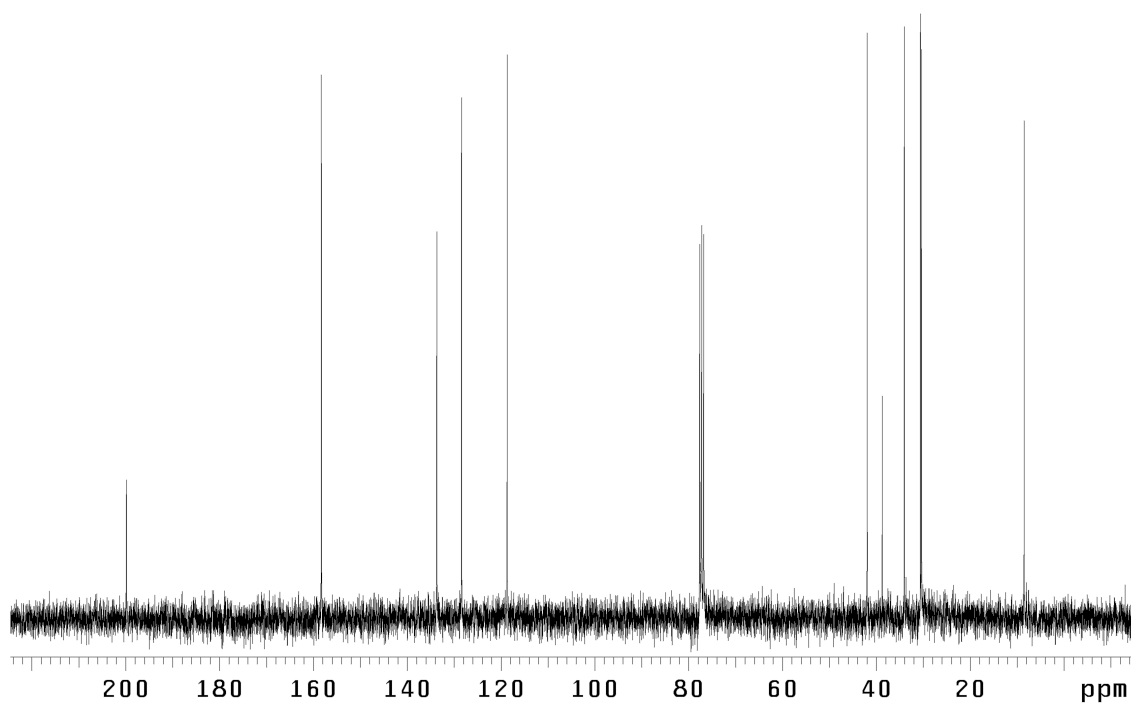


Figure A2.48 <sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>) of compound **65**.

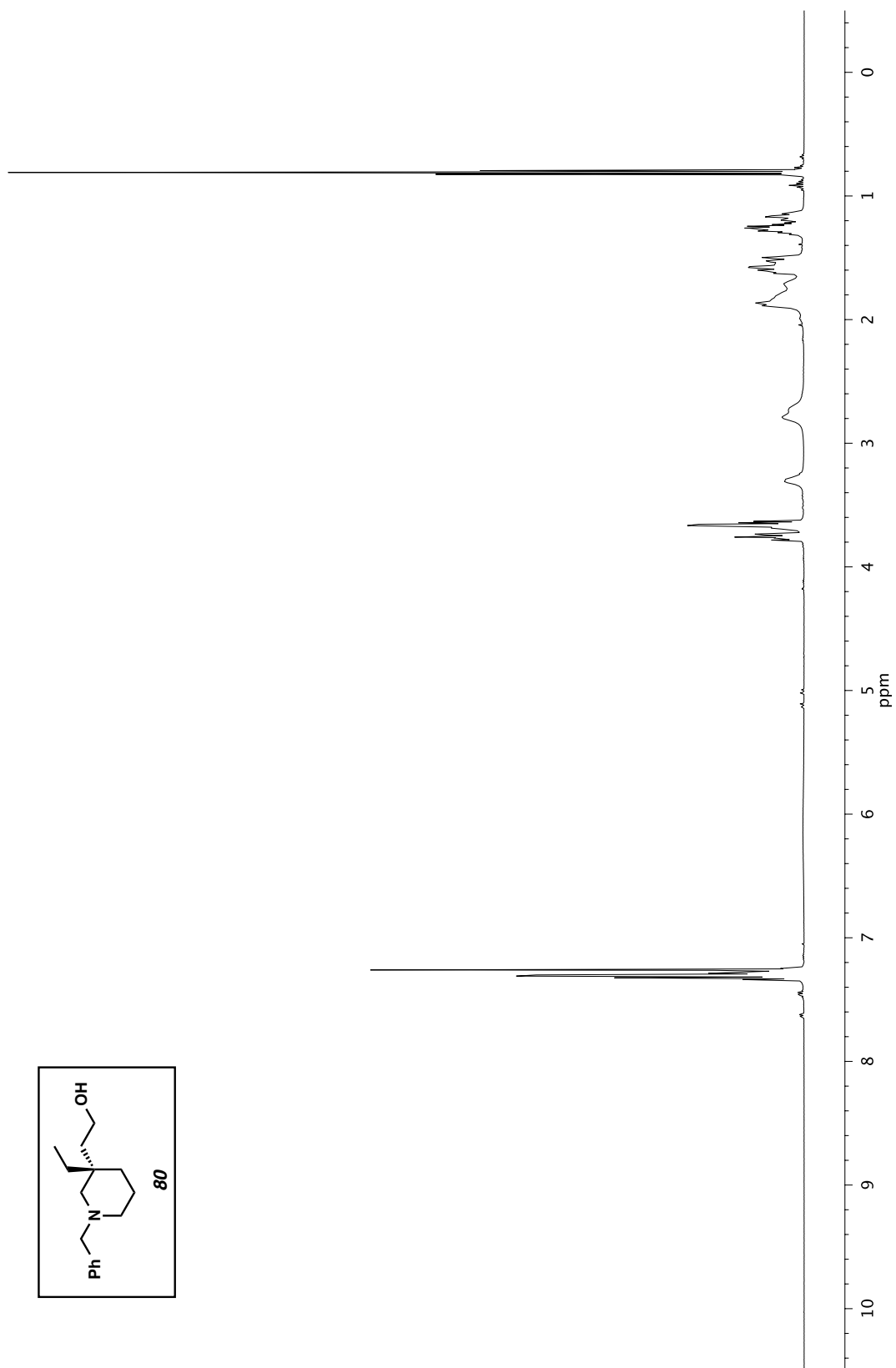


Figure A2.49  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ) of compound **80**.

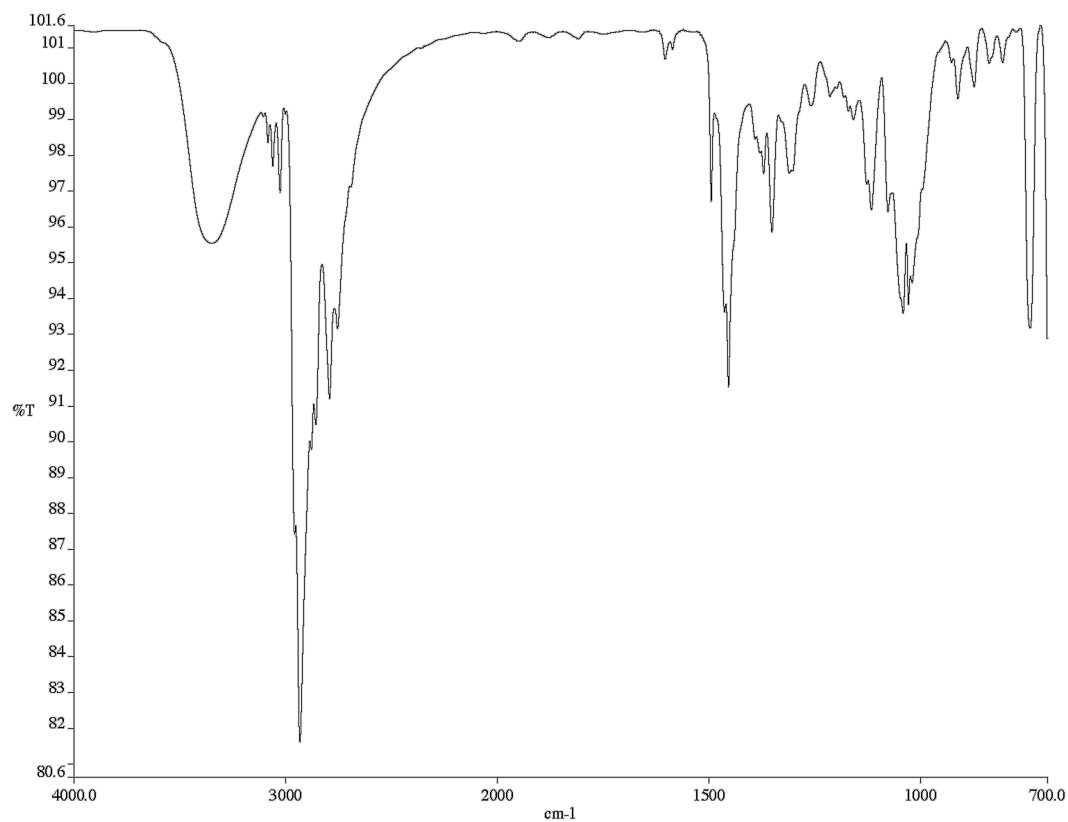


Figure A2.50 Infrared spectrum (Thin Film, NaCl) of compound **80**.

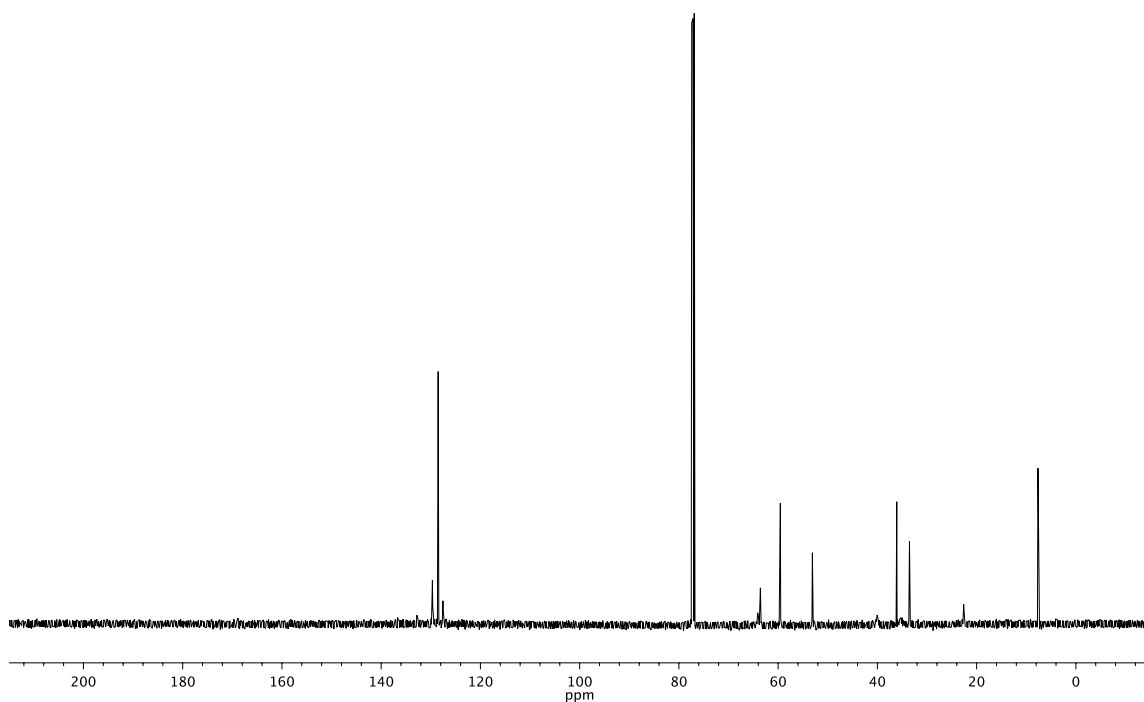


Figure A2.51 <sup>13</sup>C NMR (126 MHz, CDCl<sub>3</sub>) of compound **80**.

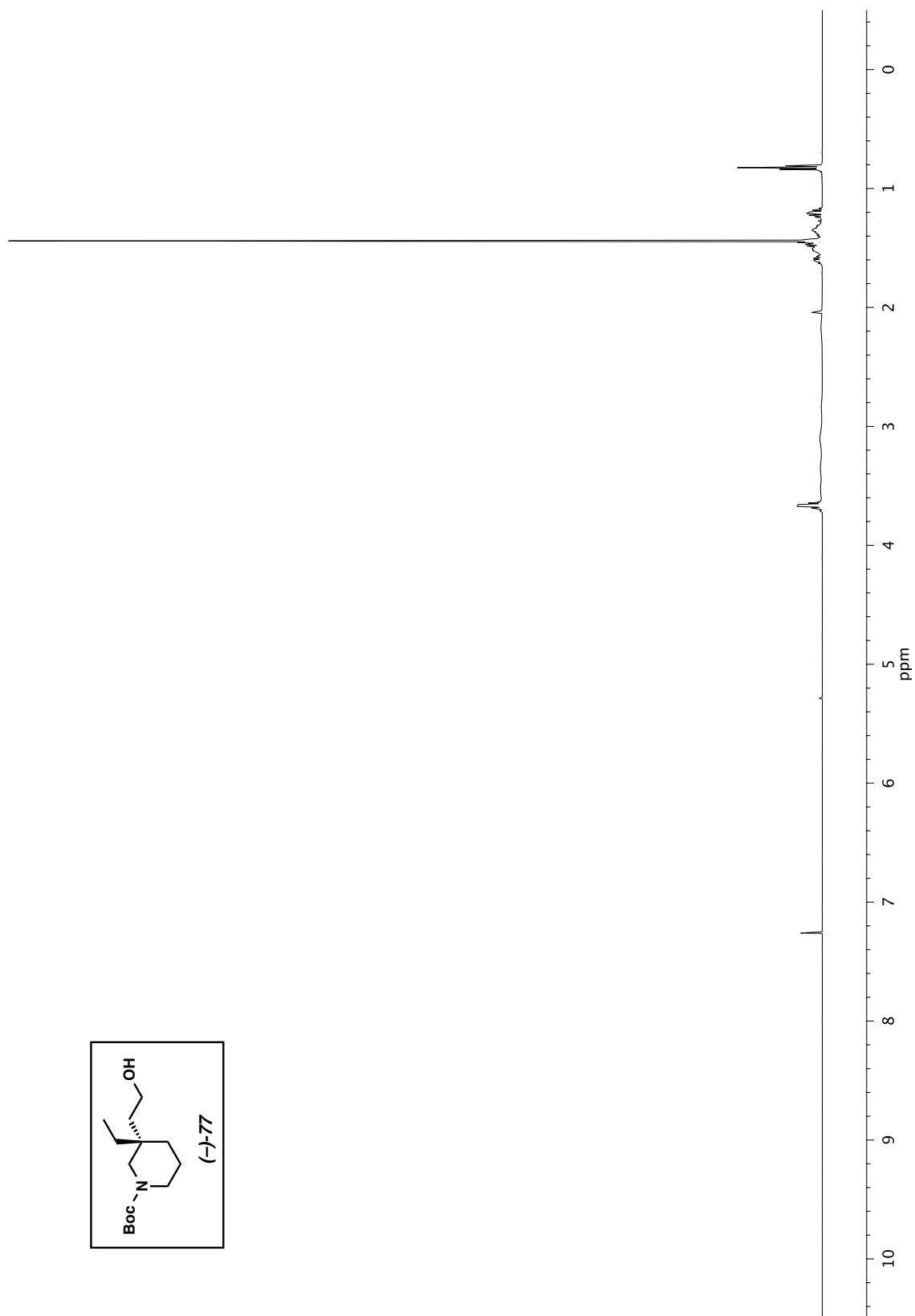


Figure A2.52 <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>) of compound 77.

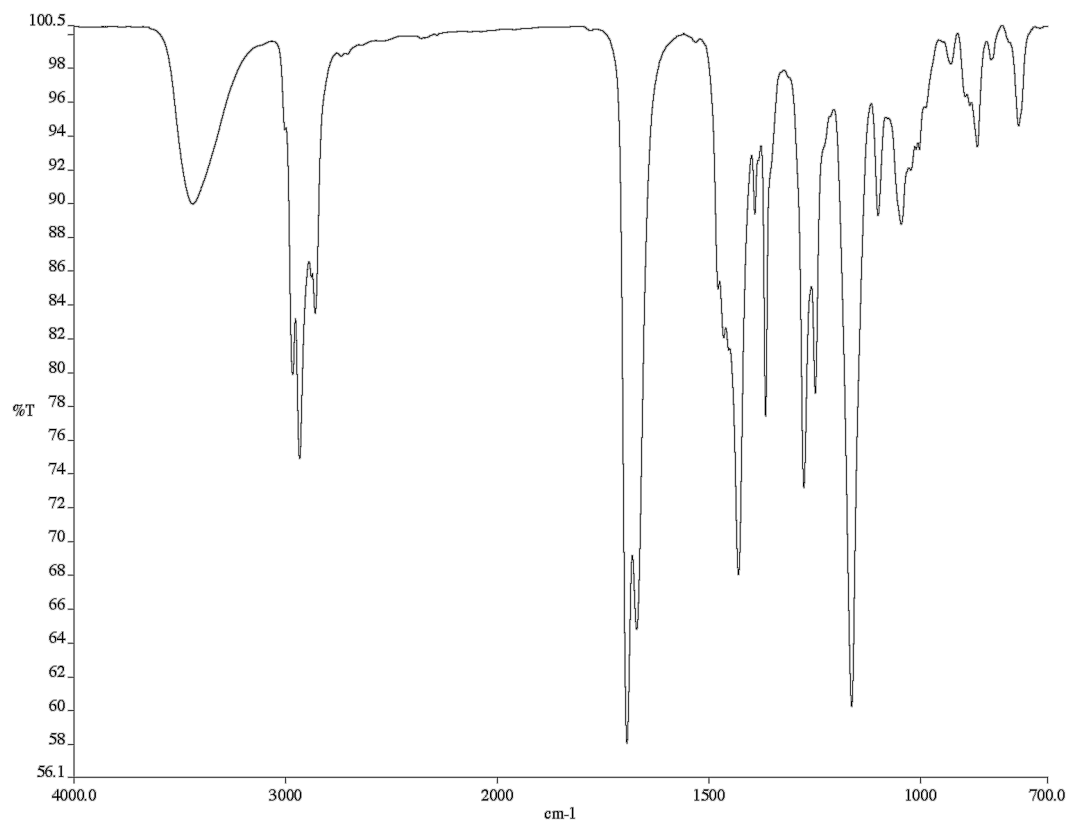


Figure A2.53 Infrared spectrum (Thin Film, NaCl) of compound 77.

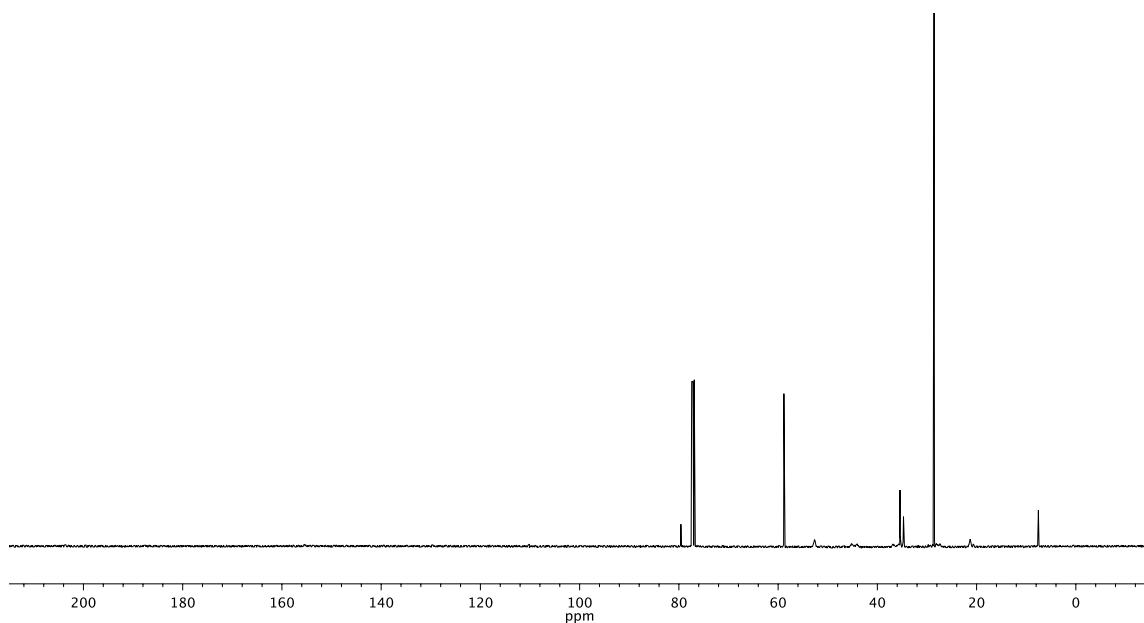


Figure A2.54 <sup>13</sup>C NMR (126 MHz, CDCl<sub>3</sub>) of compound 77.

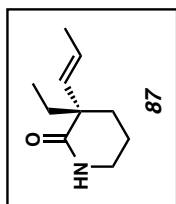
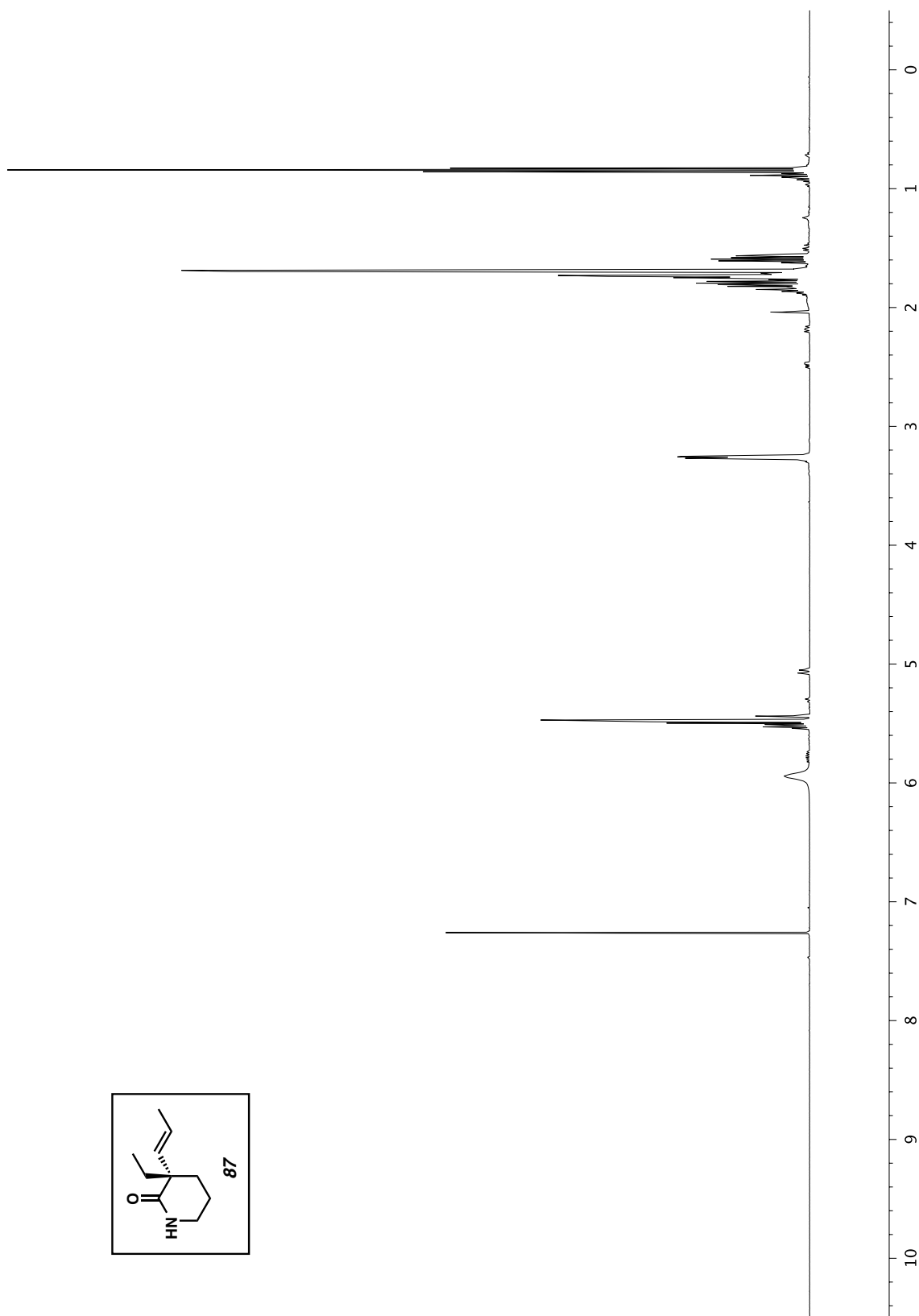


Figure A2.55  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ) of compound **87**.

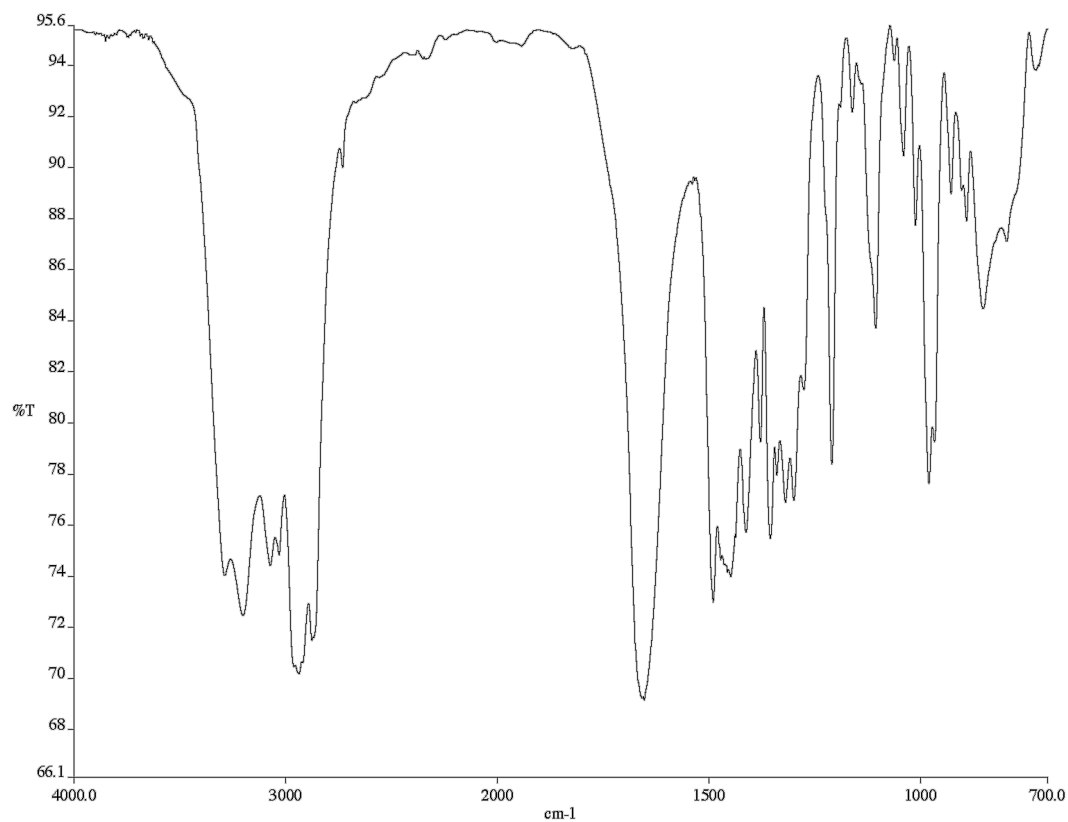


Figure A2.56 Infrared spectrum (Thin Film, NaCl) of compound **87**.

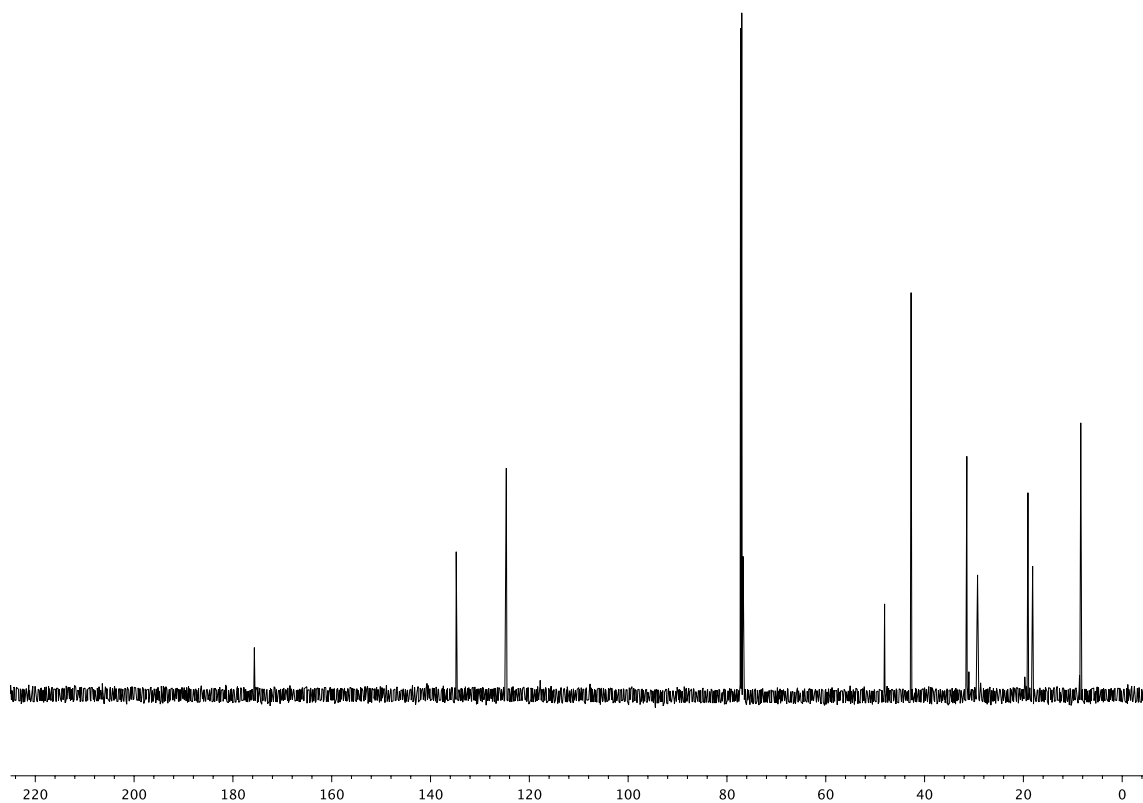


Figure A2.57 <sup>13</sup>C NMR (126 MHz, CDCl<sub>3</sub>) of compound **87**.

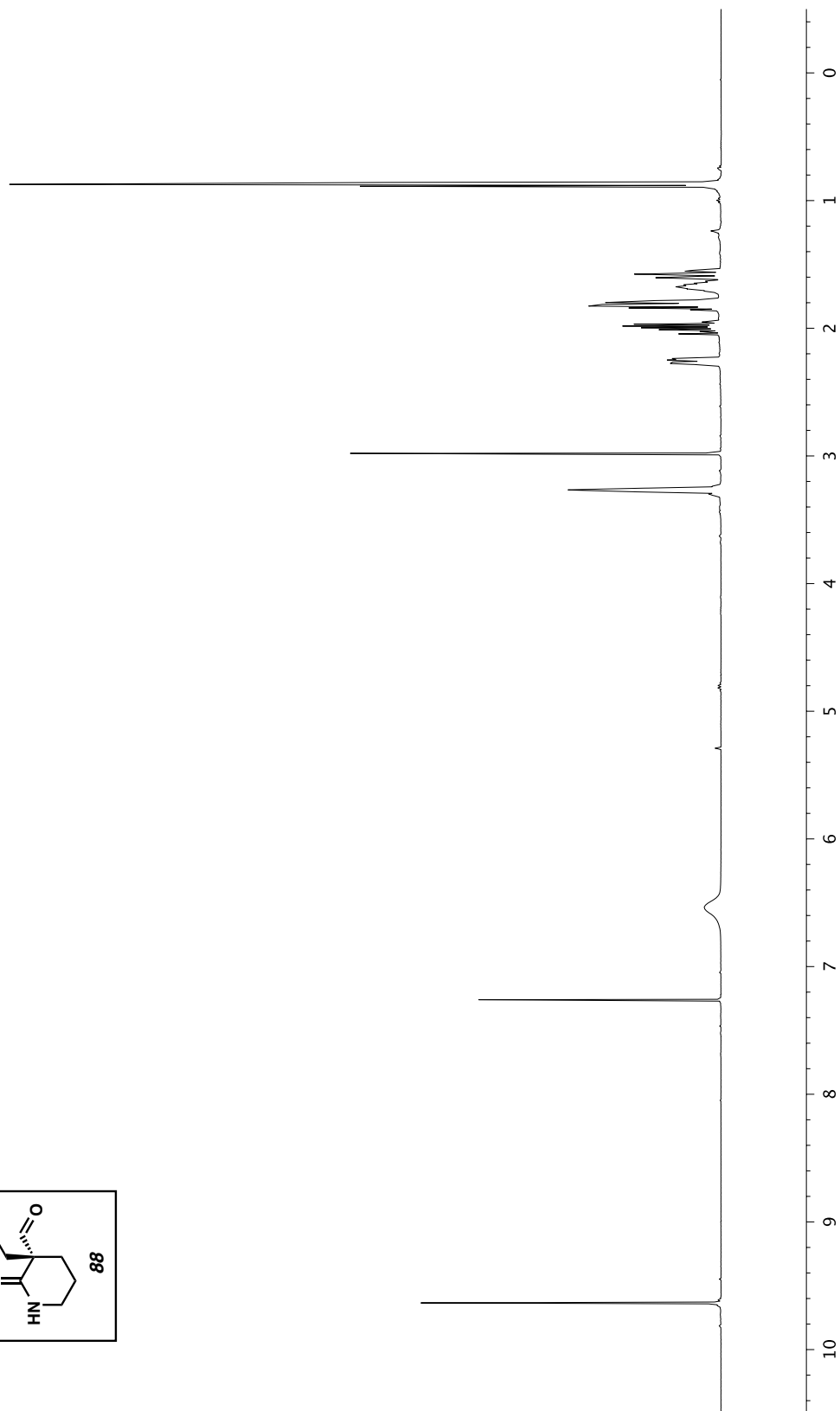
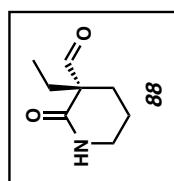


Figure A2.58 <sup>1</sup>H NMR (500 MHz, CDCl<sub>3</sub>) of compound **88**.



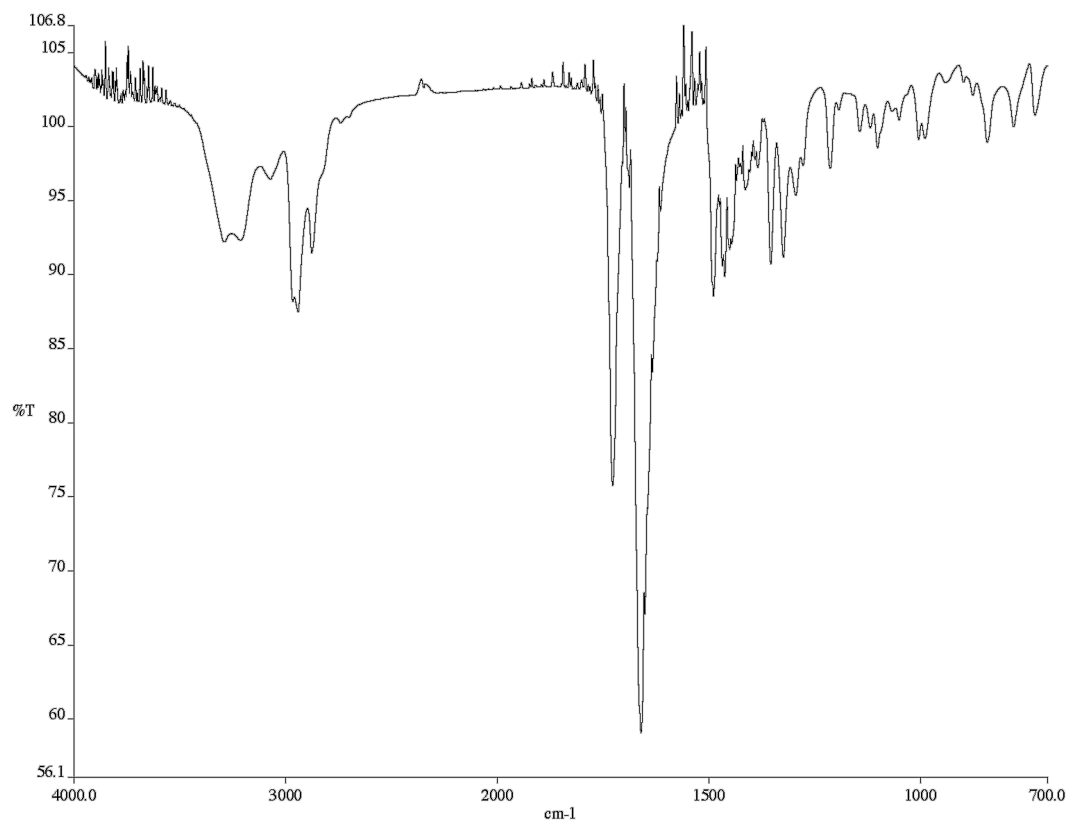


Figure A2.59 Infrared spectrum (Thin Film, NaCl) of compound **88**.

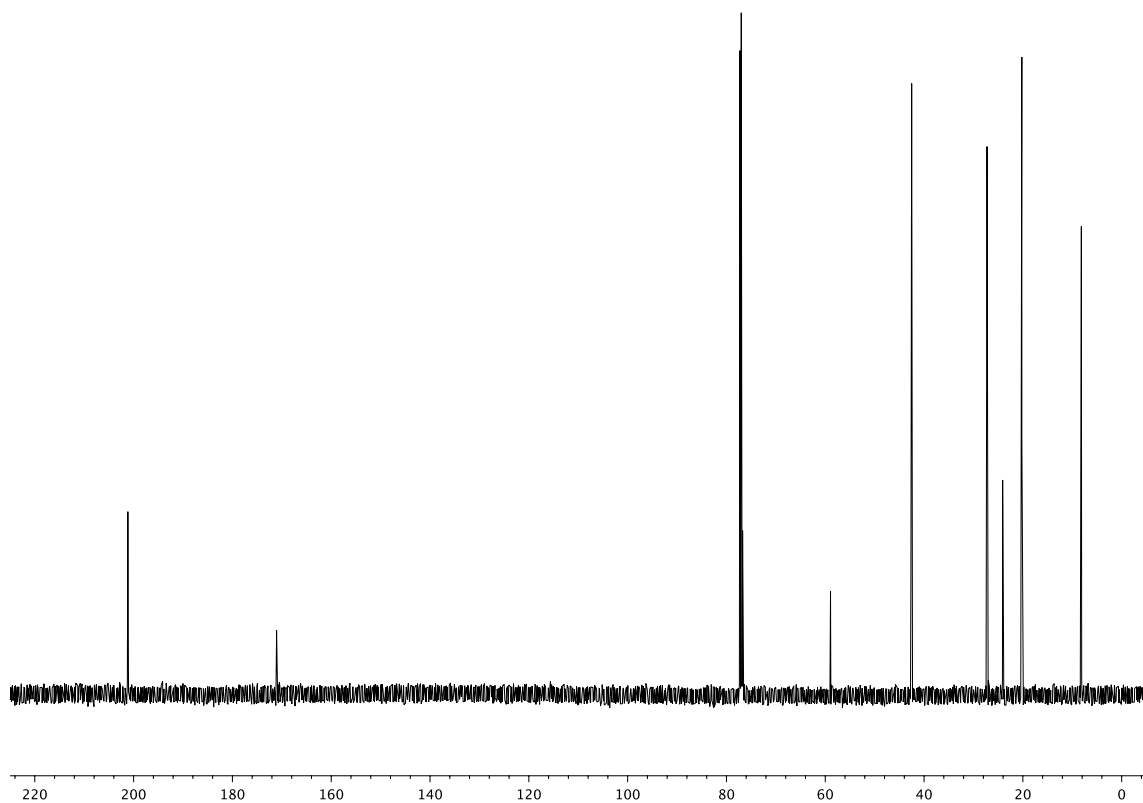


Figure A2.60 <sup>13</sup>C NMR (126 MHz, CDCl<sub>3</sub>) of compound **88**.

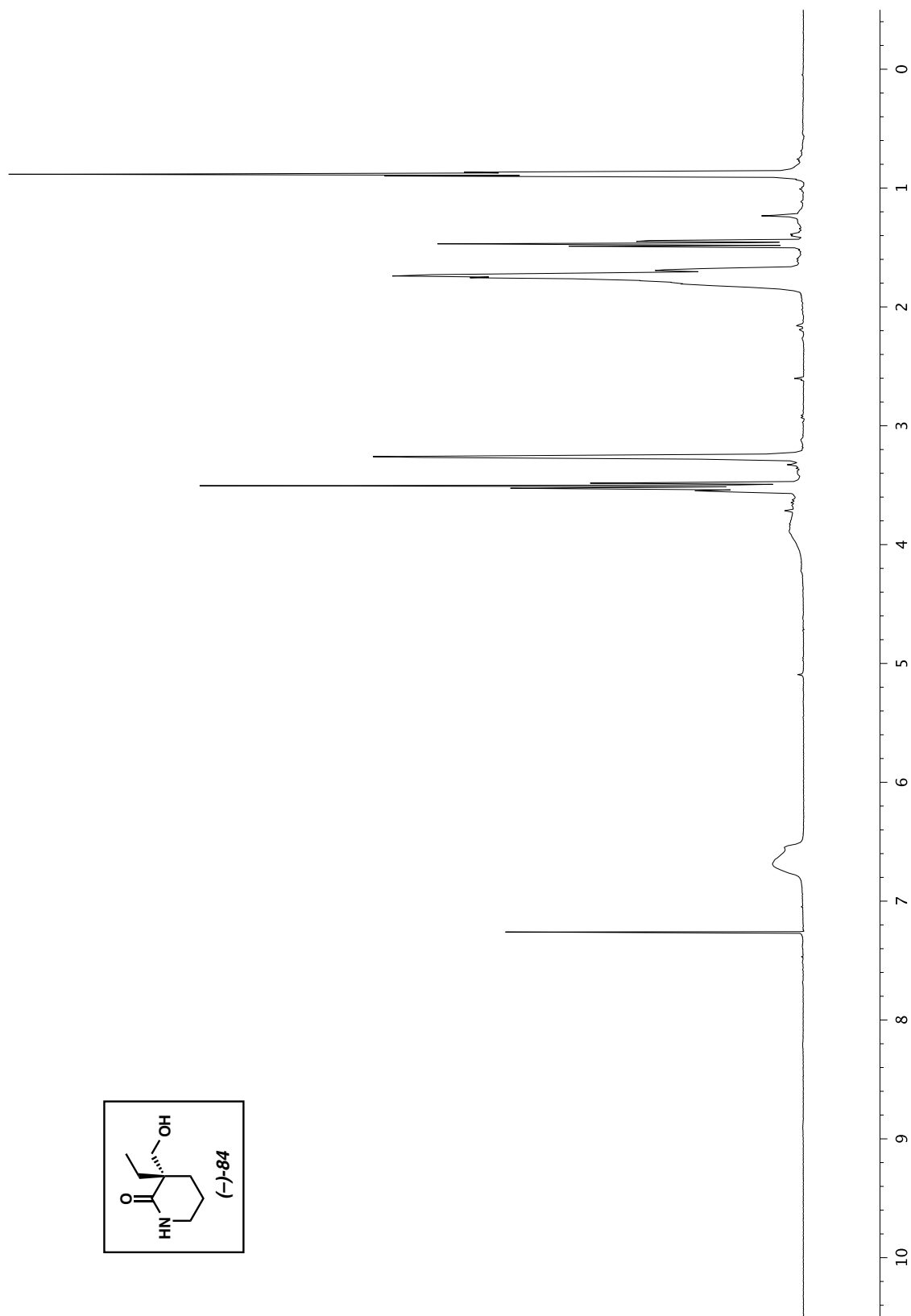


Figure A2.61  $^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ) of compound **84**.

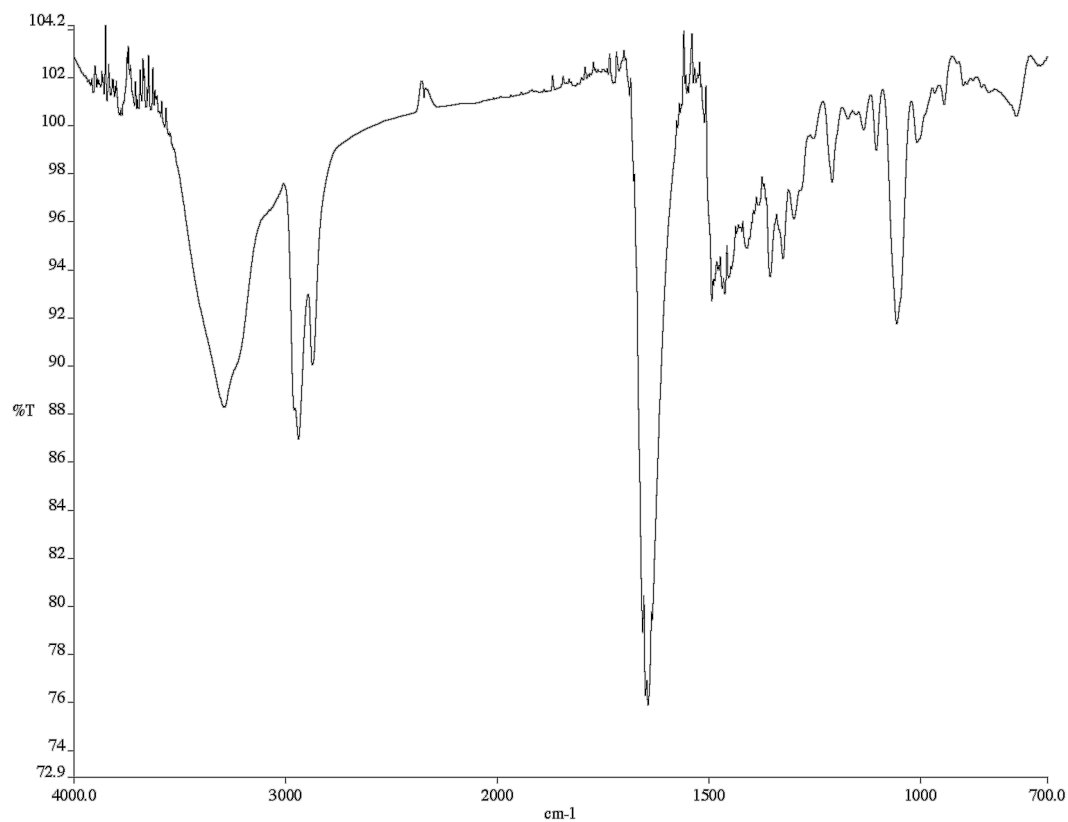


Figure A2.62 Infrared spectrum (Thin Film, NaCl) of compound **84**.

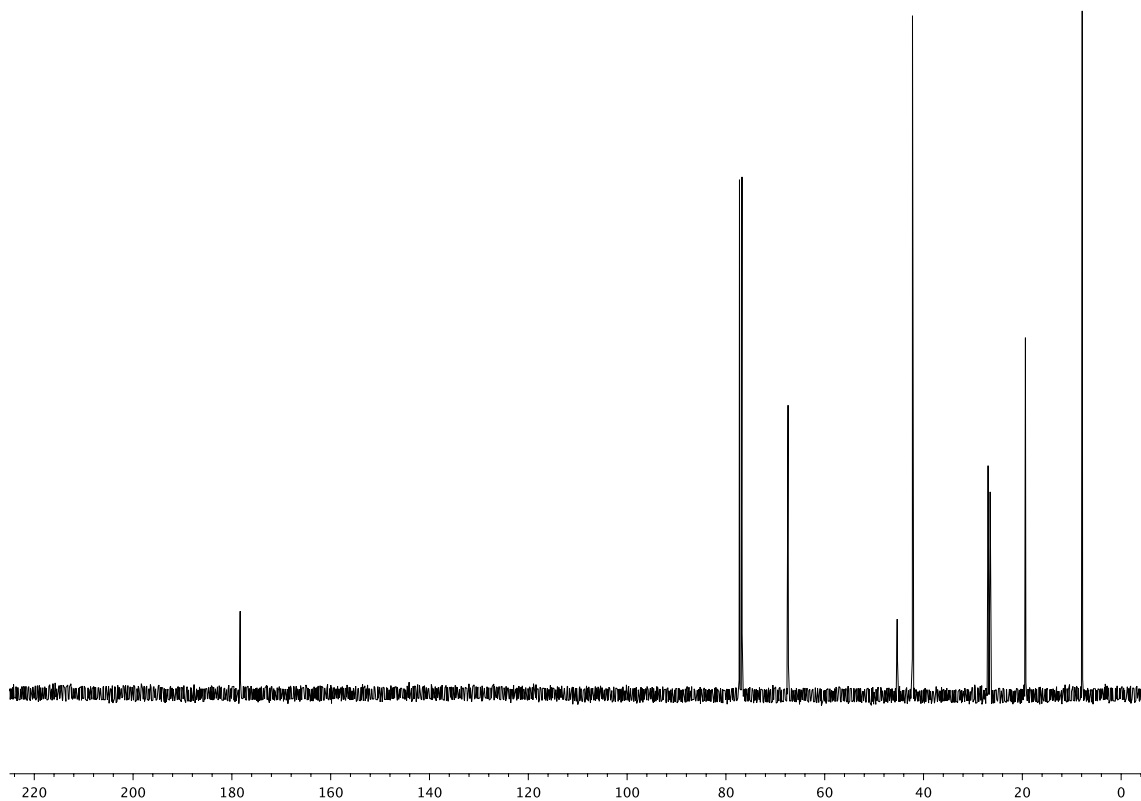


Figure A2.63 <sup>13</sup>C NMR (126 MHz, CDCl<sub>3</sub>) of compound **84**.