

APPENDIX 3

*Spectra Related to Chapter 3:
Construction of Vicinal Tertiary and All-Carbon Quaternary
Stereocenters via Ir-Catalyzed Regio-, Diastereo-, and Enantioselective
Allylic Alkylation and Applications in Sequential Pd-Catalysis*

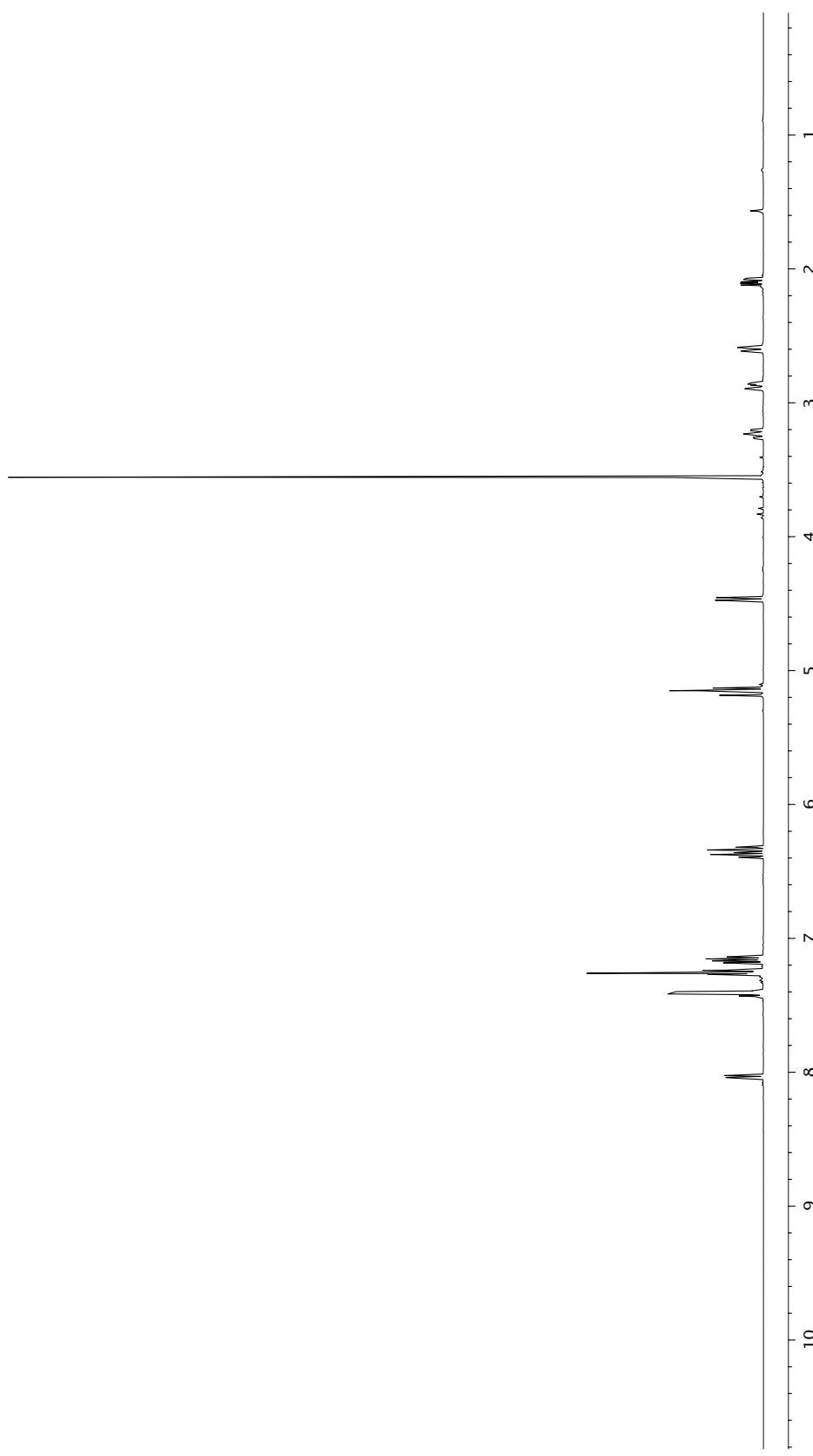
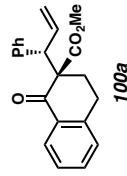


Figure A3.1 ^1H NMR (500 MHz, CDCl_3) of compound 100a.

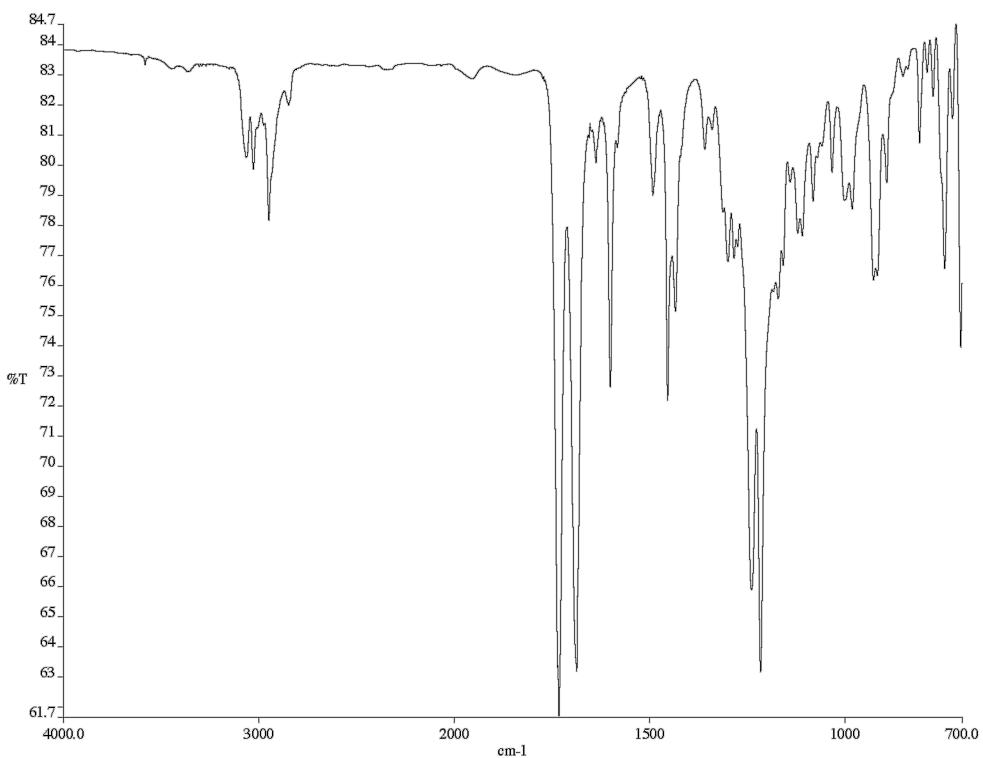


Figure A3.2 Infrared spectrum (thin film/NaCl) of compound **100a**.

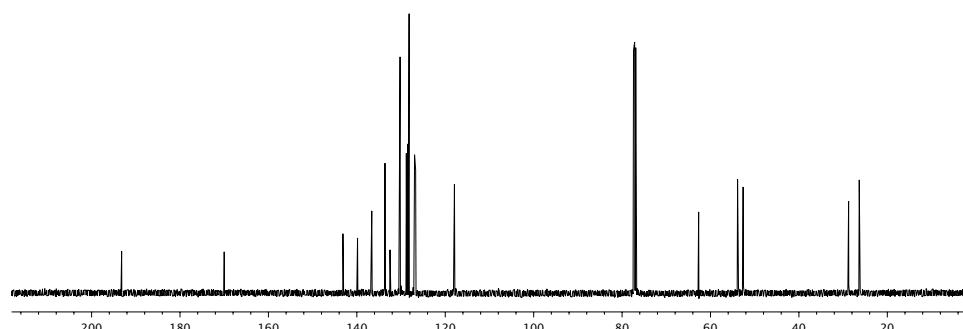


Figure A3.3 ¹³C NMR (125 MHz, CDCl₃) of compound **100a**.

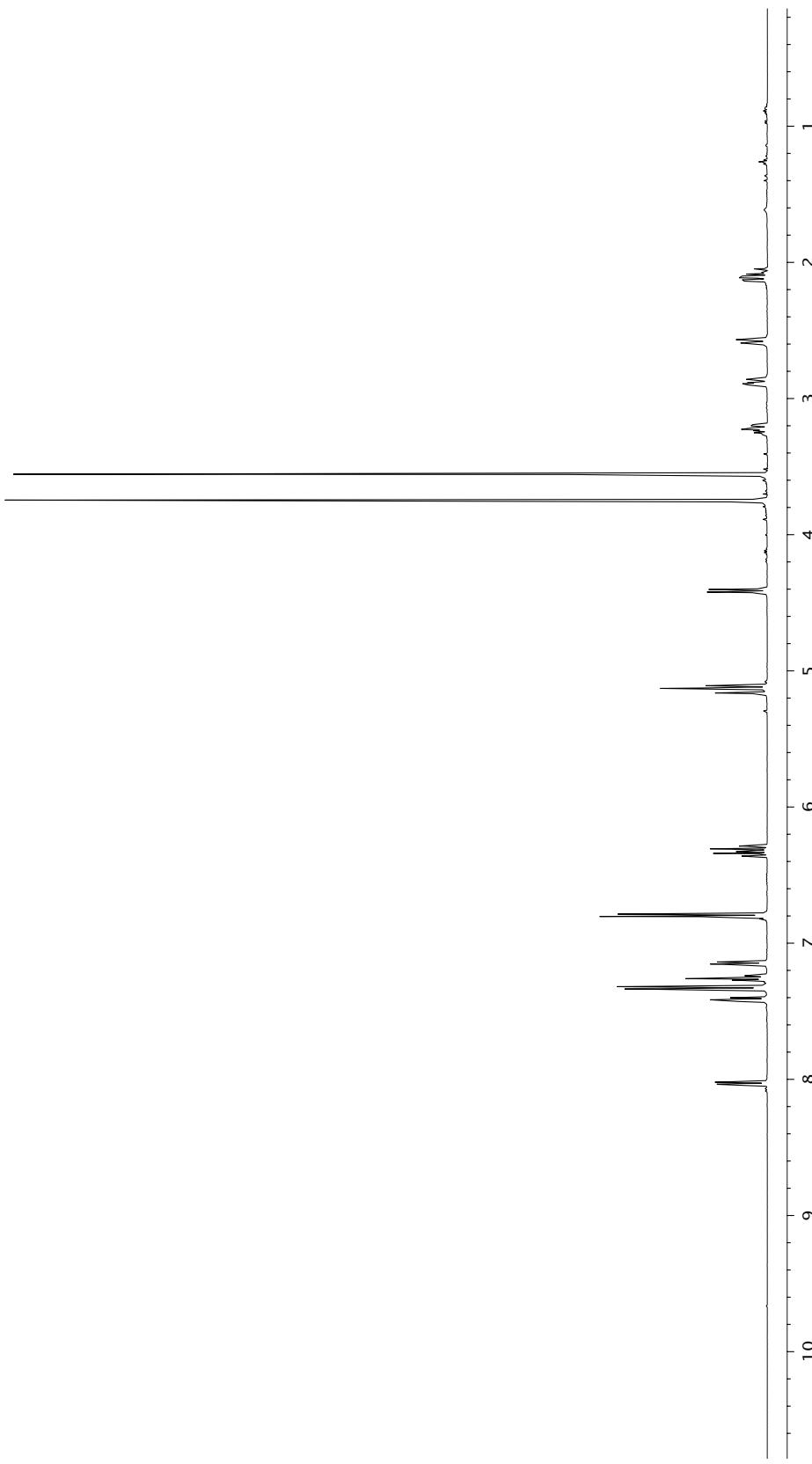
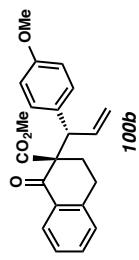


Figure A3.4 ¹H NMR (500 MHz, CDCl₃) of compound 100b.

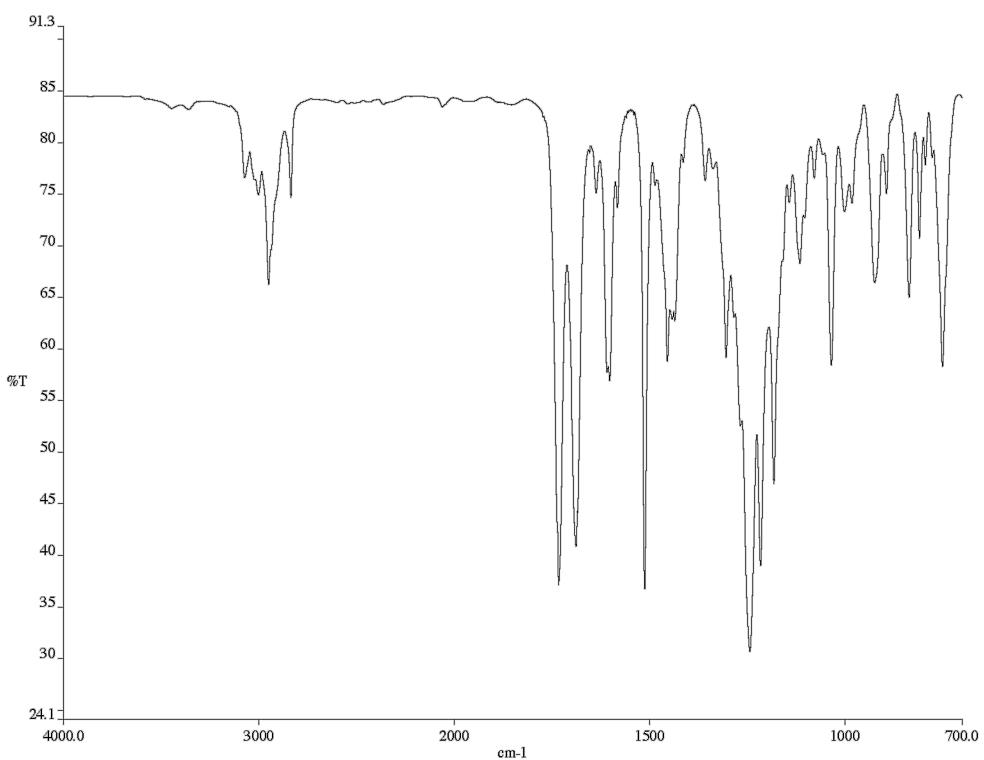


Figure A3.6 Infrared spectrum (thin film/NaCl) of compound **100b**.

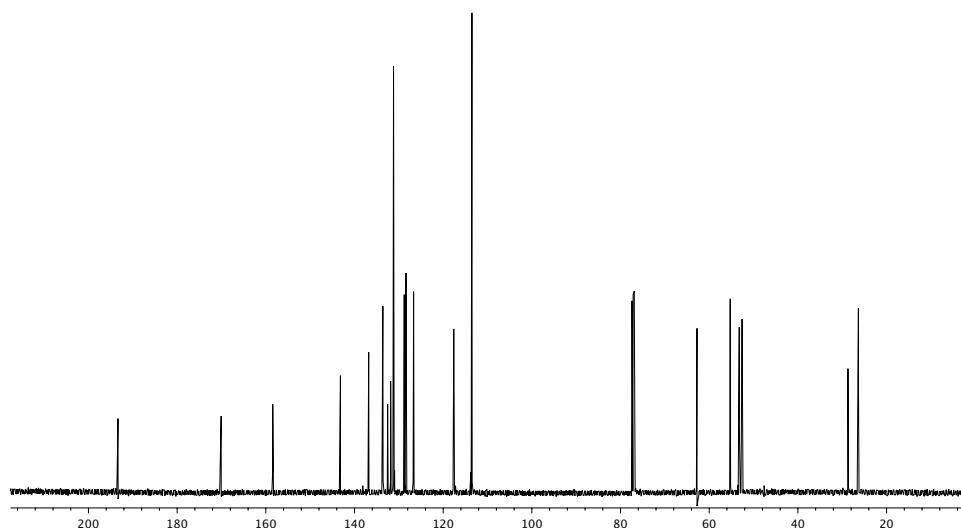


Figure A3.6 ¹³C NMR (125 MHz, CDCl₃) of compound **100b**.

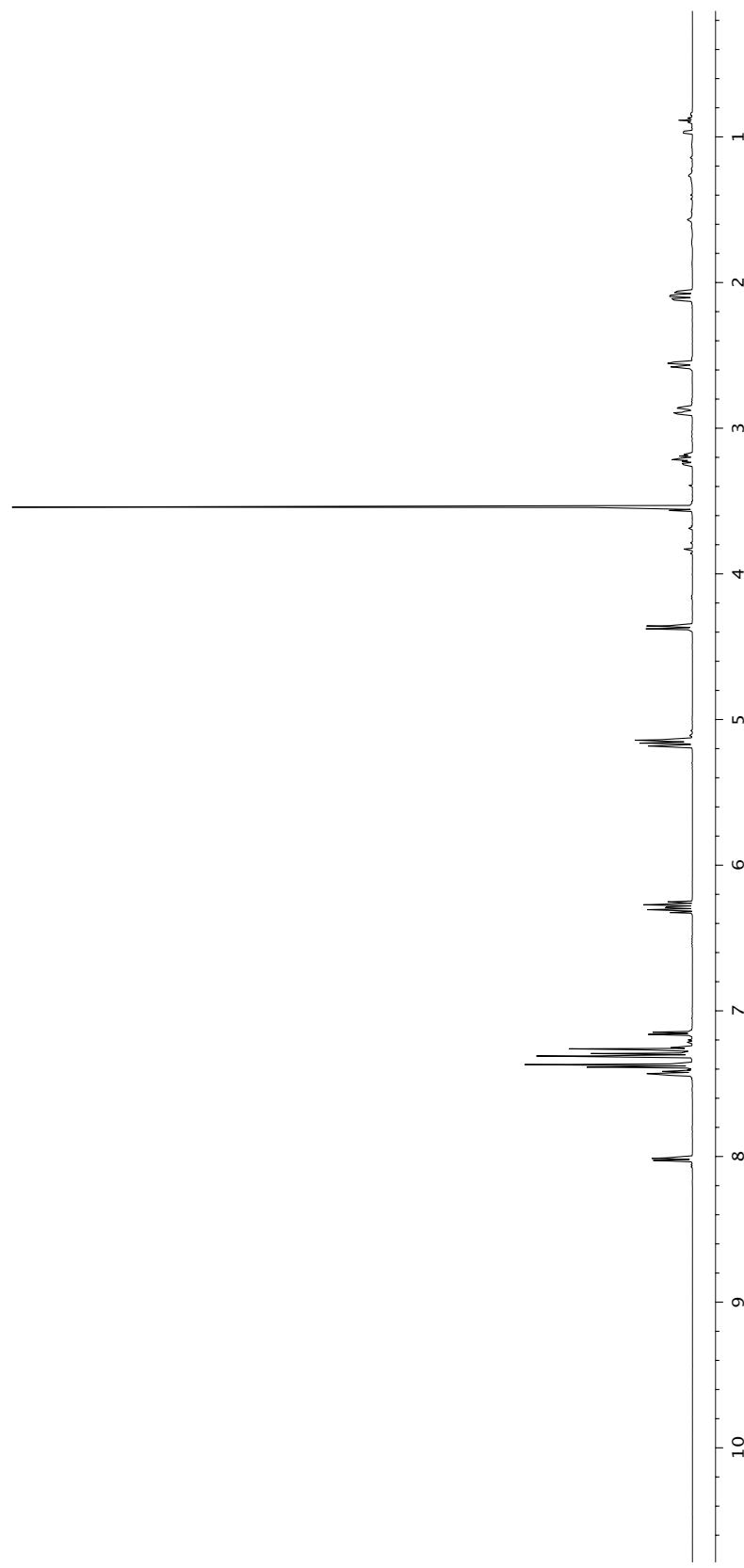
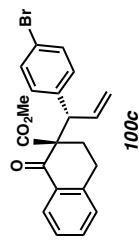


Figure A3.7 ¹H NMR (500 MHz, CDCl₃) of compound 100c.

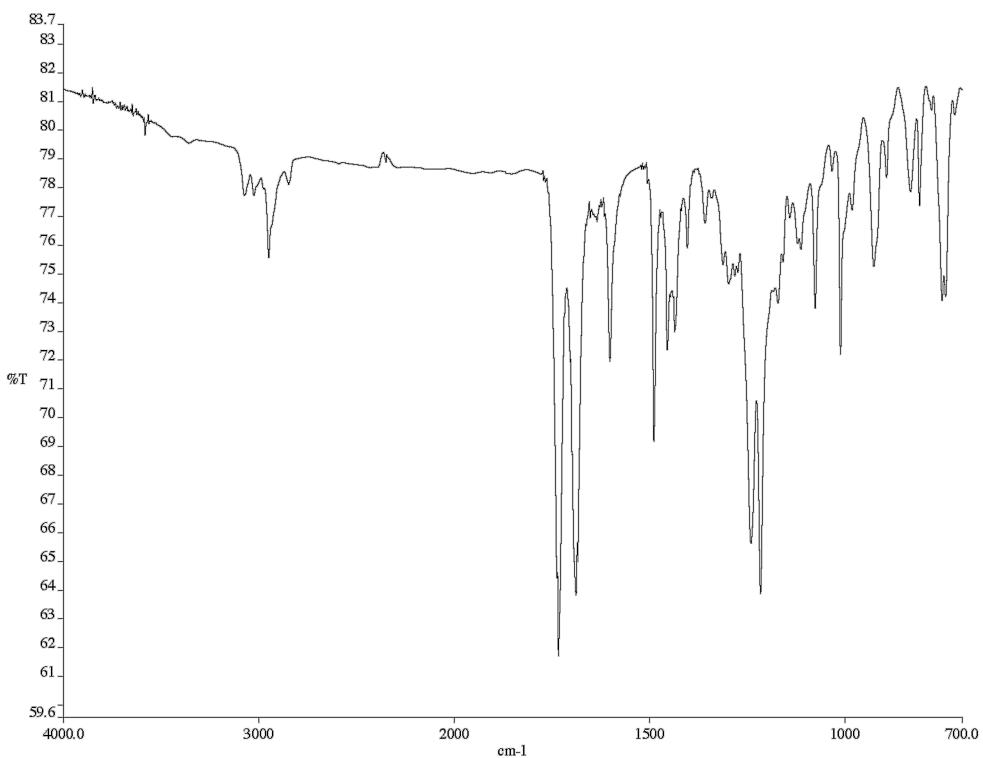


Figure A3.8 Infrared spectrum (thin film/NaCl) of compound **100c**.

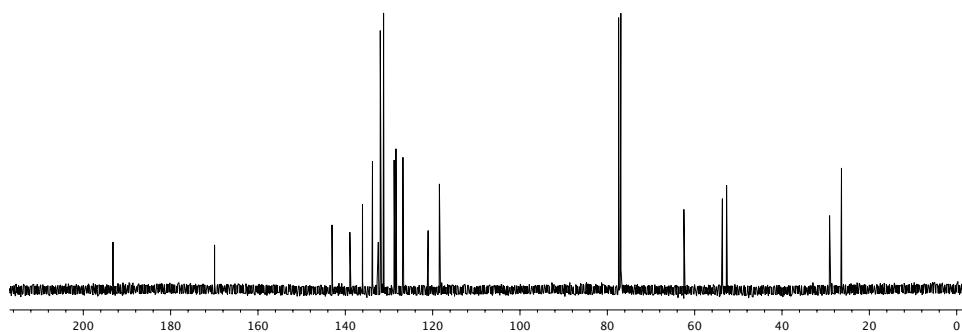


Figure A3.9 ^{13}C NMR (125 MHz, CDCl_3) of compound **100c**.

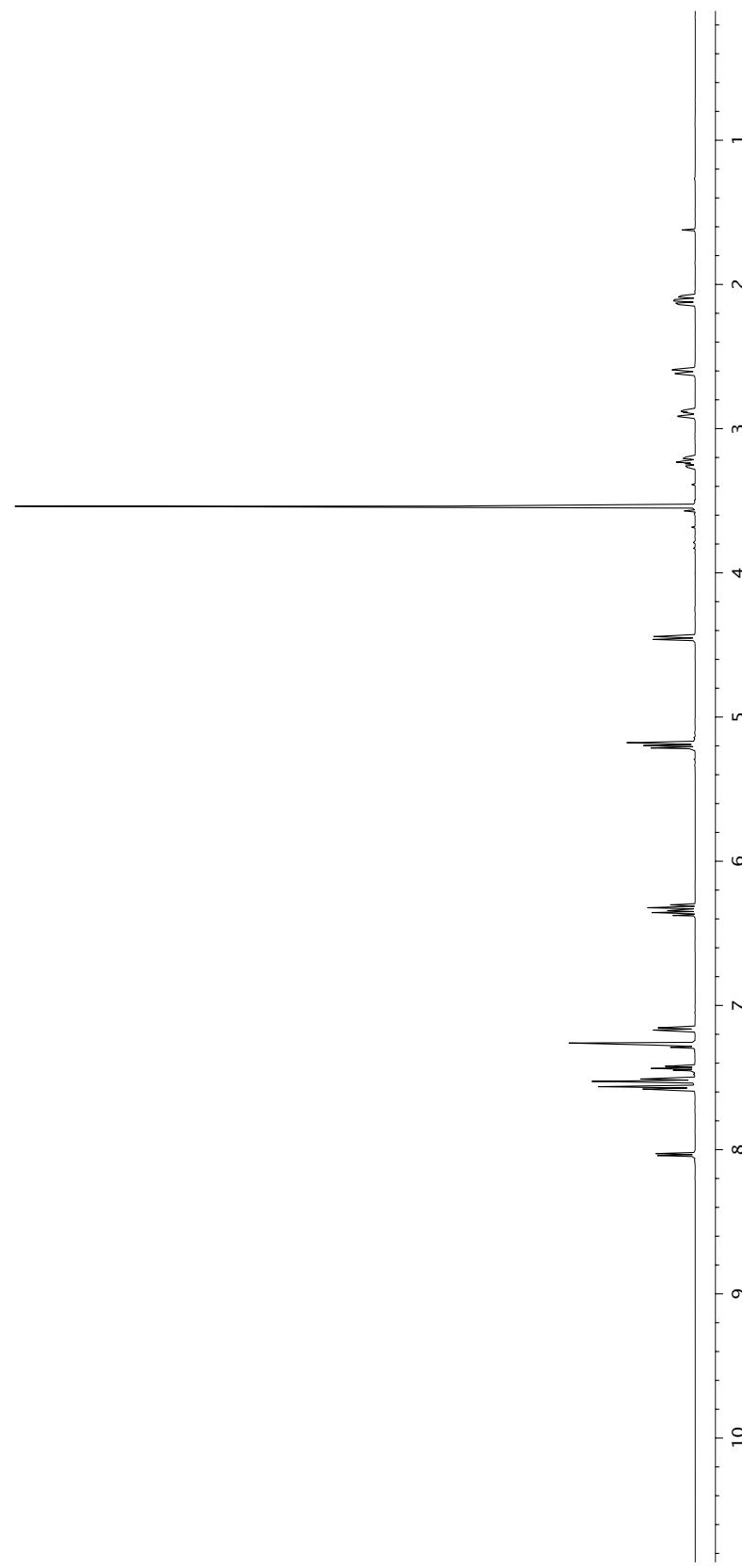
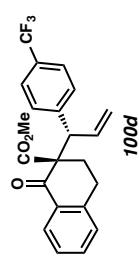


Figure A3.10 ^1H NMR (500 MHz, CDCl_3) of compound **100d**.

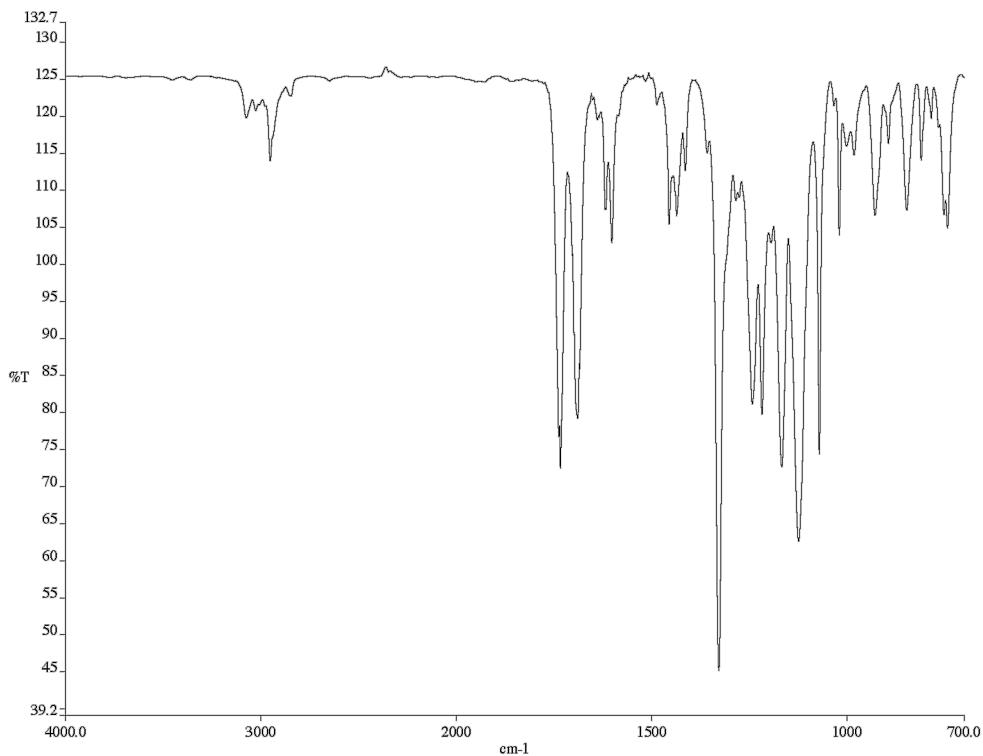


Figure A3.11 Infrared spectrum (thin film/NaCl) of compound **100d**.

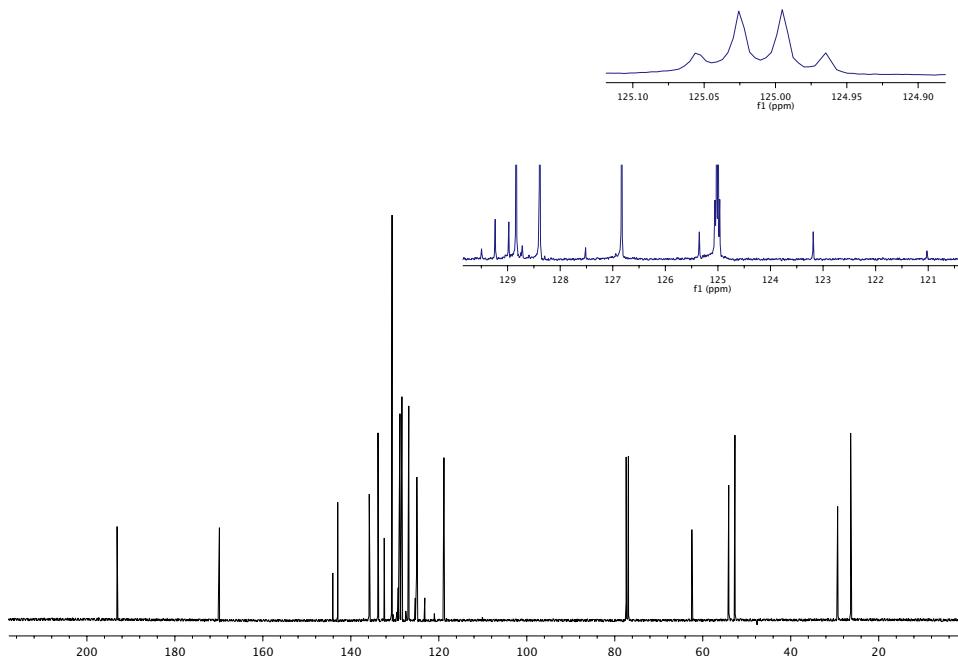


Figure A3.12 ^{13}C NMR (125 MHz, CDCl_3) of compound **100d**.

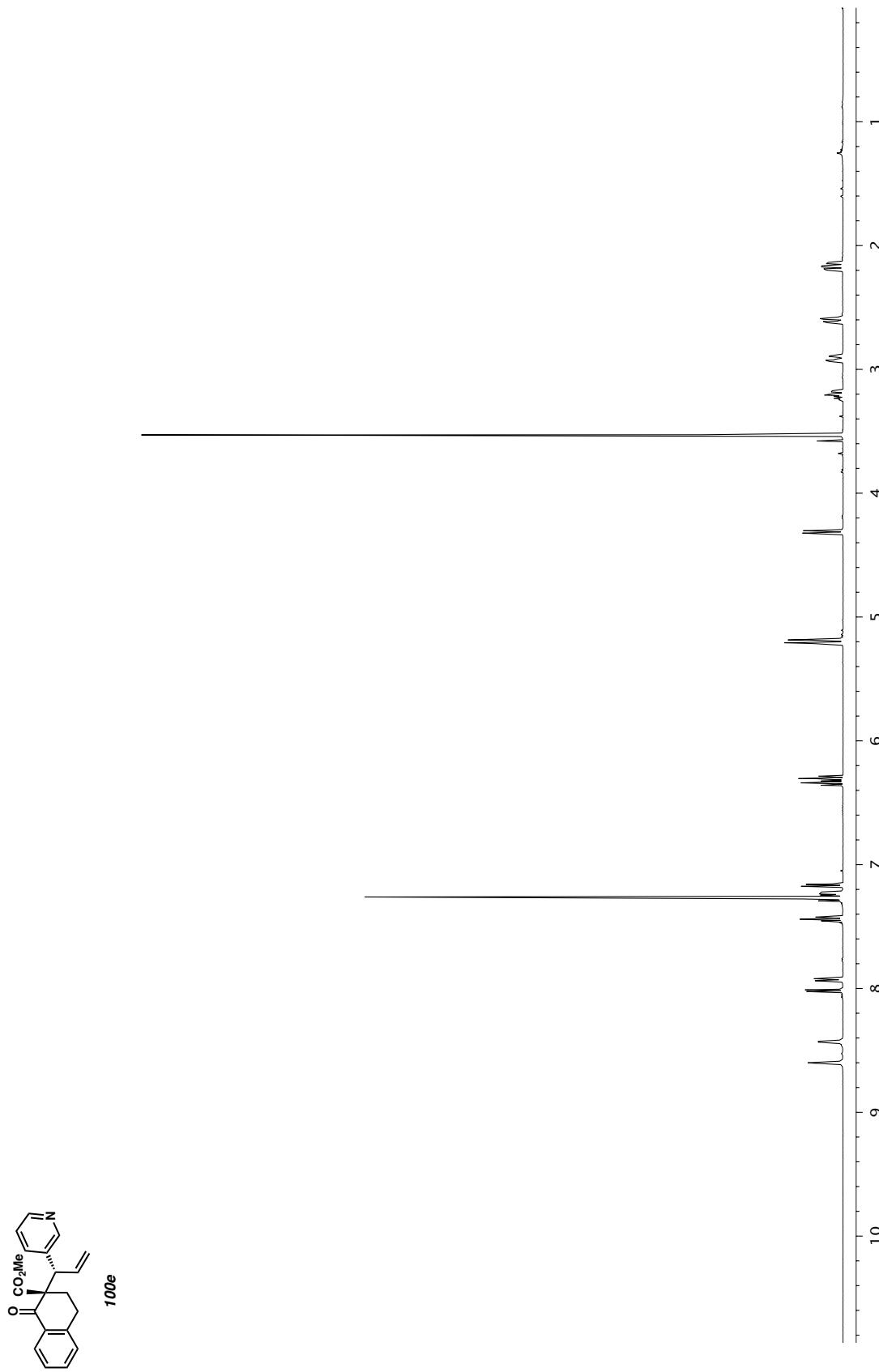


Figure A3.13 ^1H NMR (500 MHz, CDCl_3) of compound **100e**.

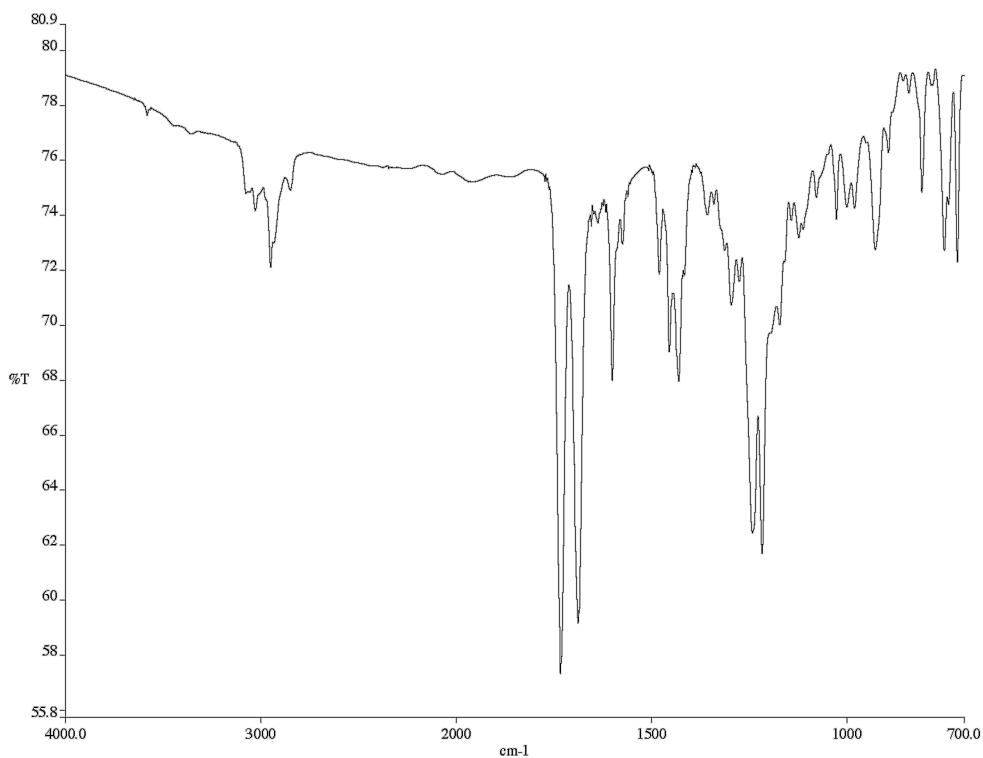


Figure A3.14 Infrared spectrum (thin film/NaCl) of compound **100e**.

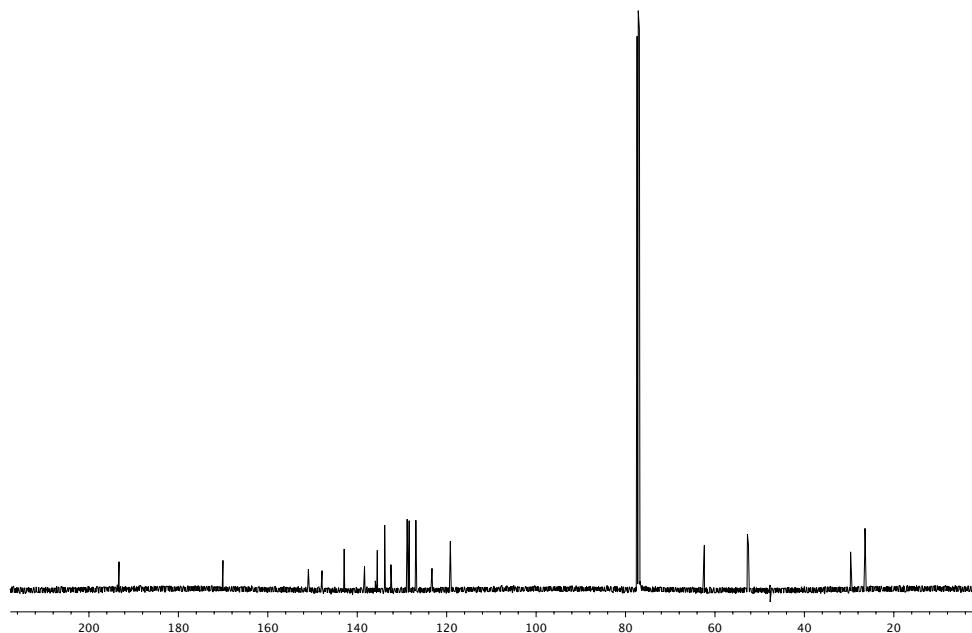


Figure A3.15 ¹³C NMR (125 MHz, CDCl₃) of compound **100e**.

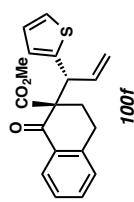
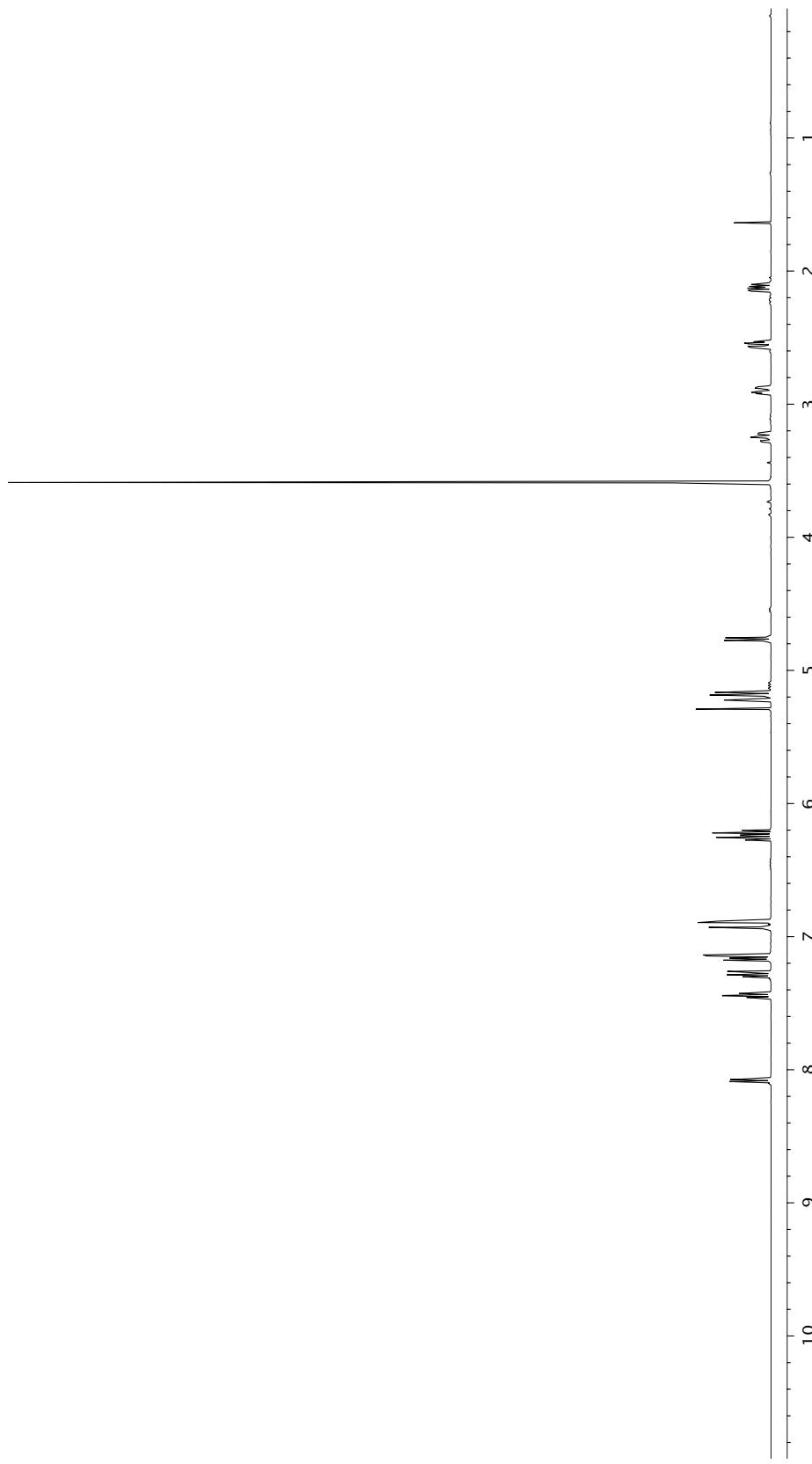


Figure A3.16 ^1H NMR (500 MHz, CDCl_3) of compound 100f.

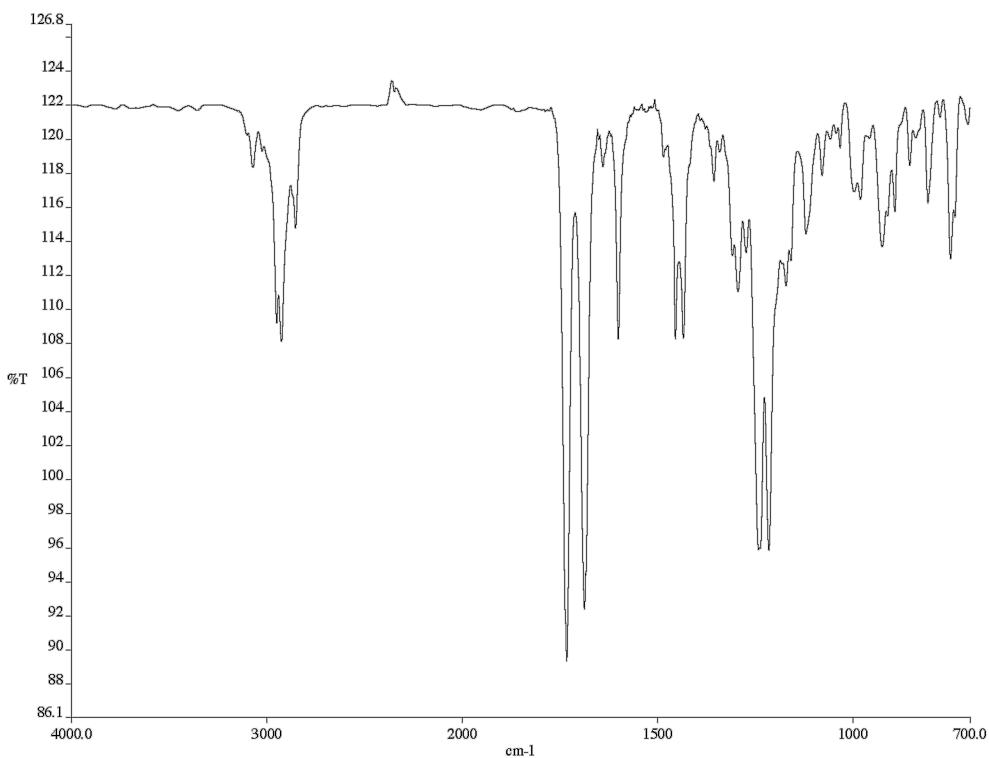


Figure A3.17 Infrared spectrum (thin film/NaCl) of compound **100f**.

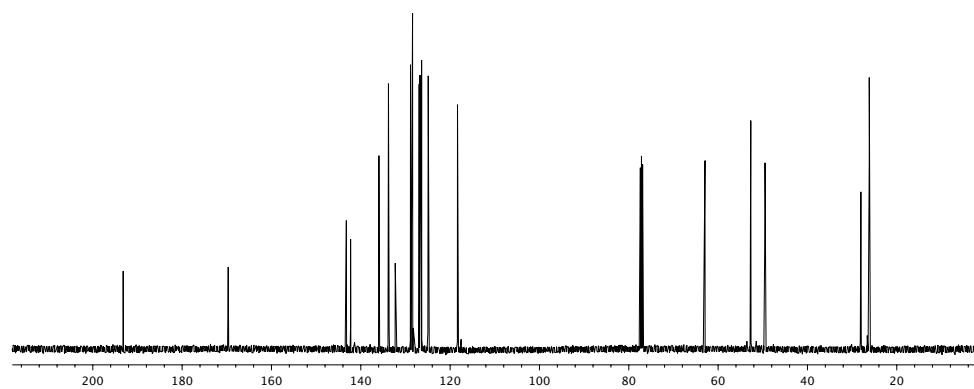


Figure A3.18 ^{13}C NMR (125 MHz, CDCl_3) of compound **100f**.

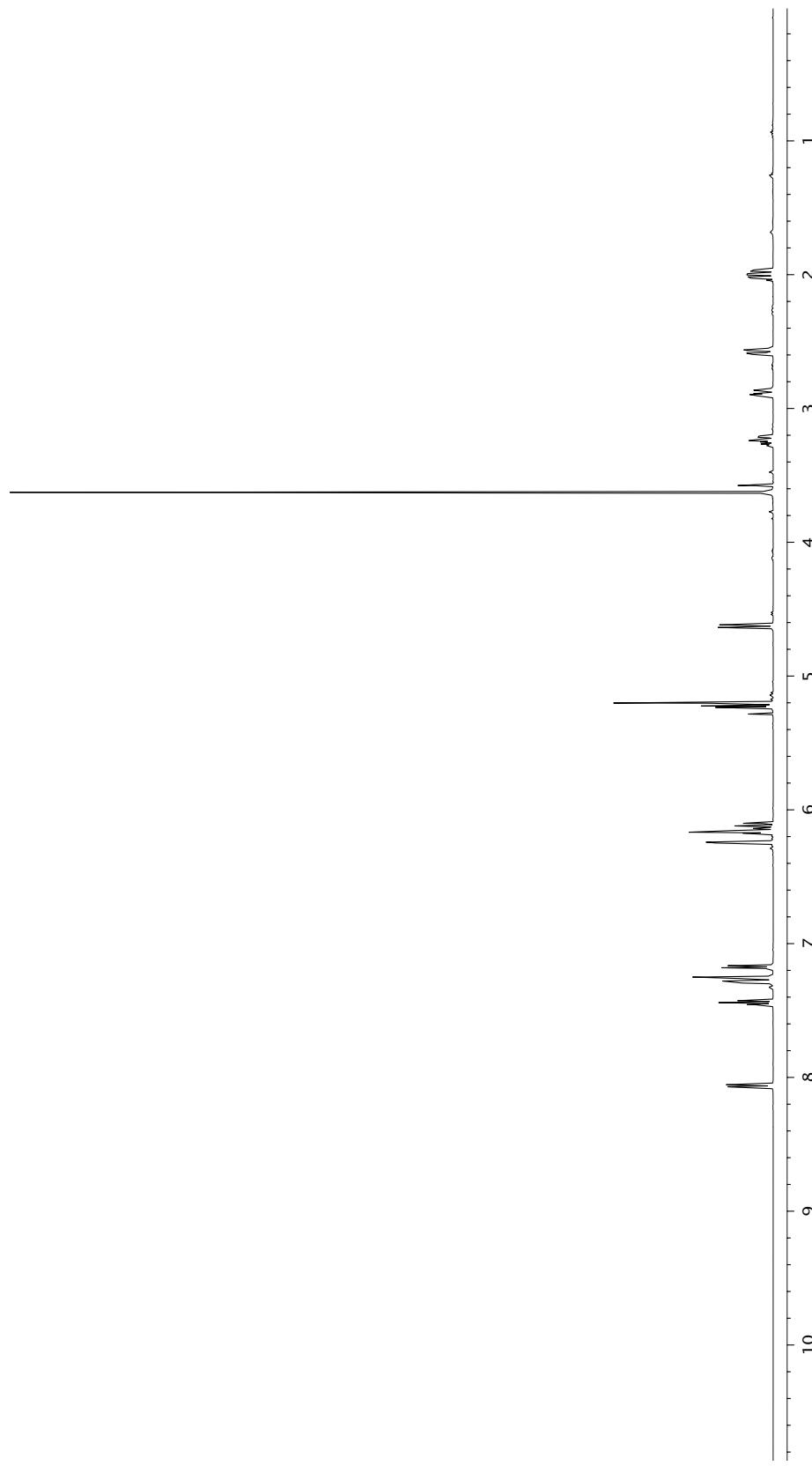
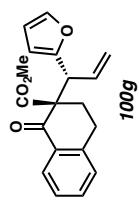


Figure A3.19 ^1H NMR (500 MHz, CDCl_3) of compound 100g



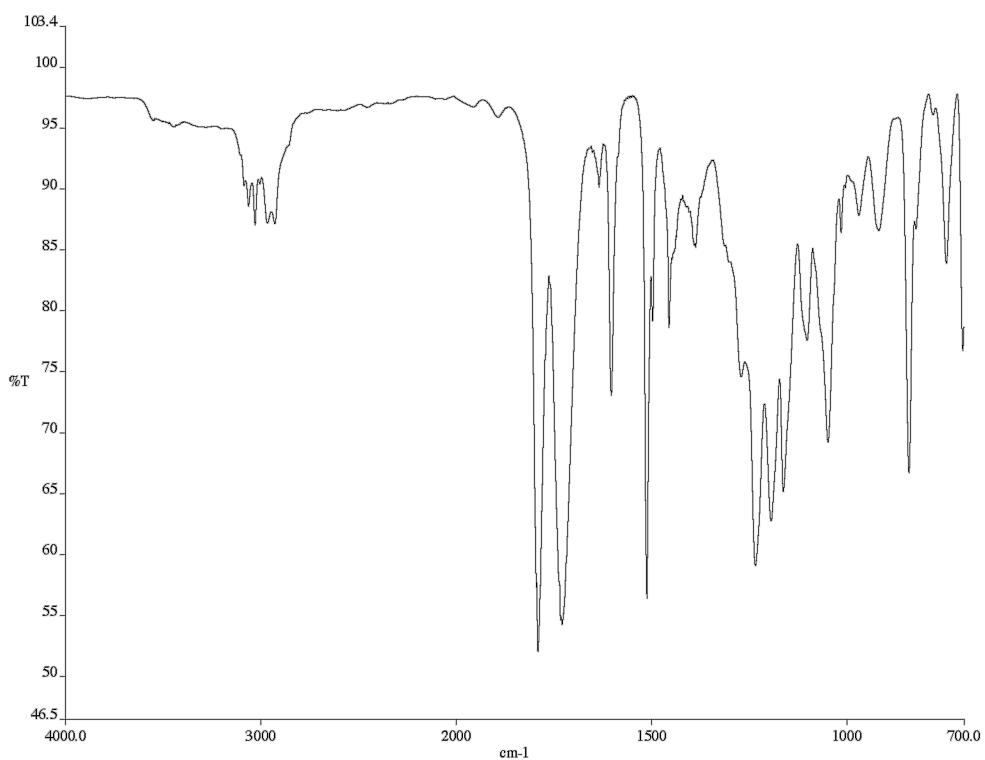


Figure A3.20 Infrared spectrum (thin film/NaCl) of compound **100g**.

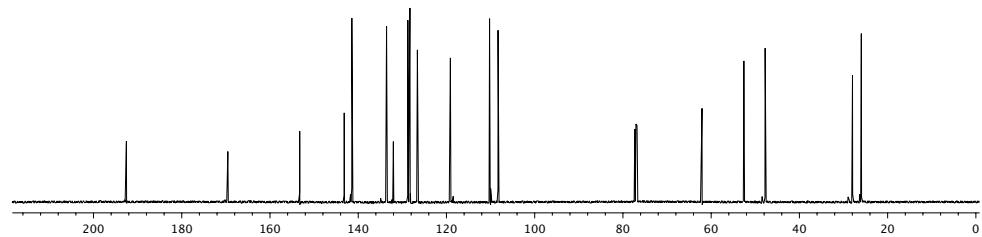


Figure A3.21 ^{13}C NMR (125 MHz, CDCl_3) of compound **100g**.

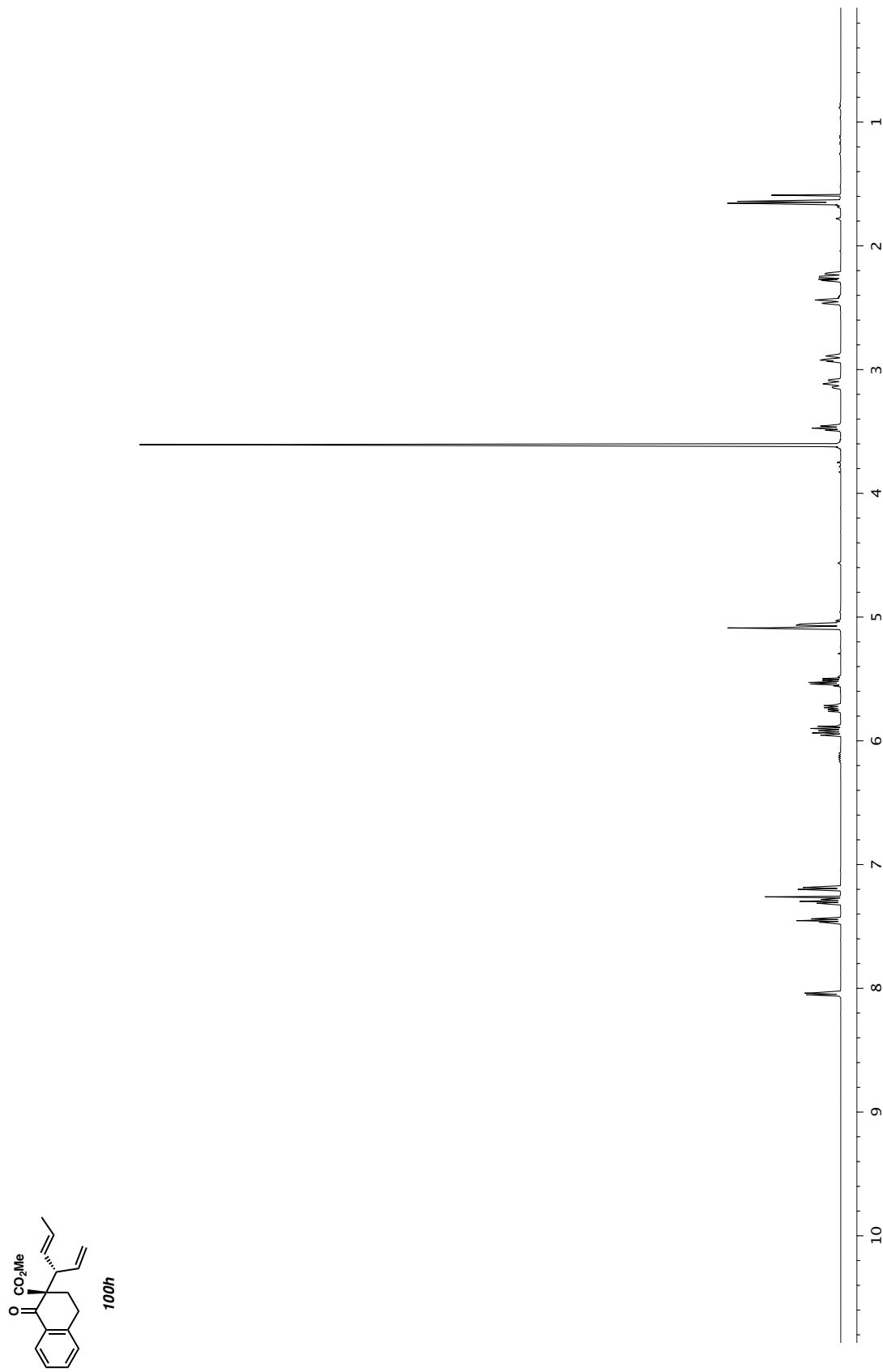


Figure A3.22 ¹H NMR (500 MHz, CDCl₃) of compound **100h**.

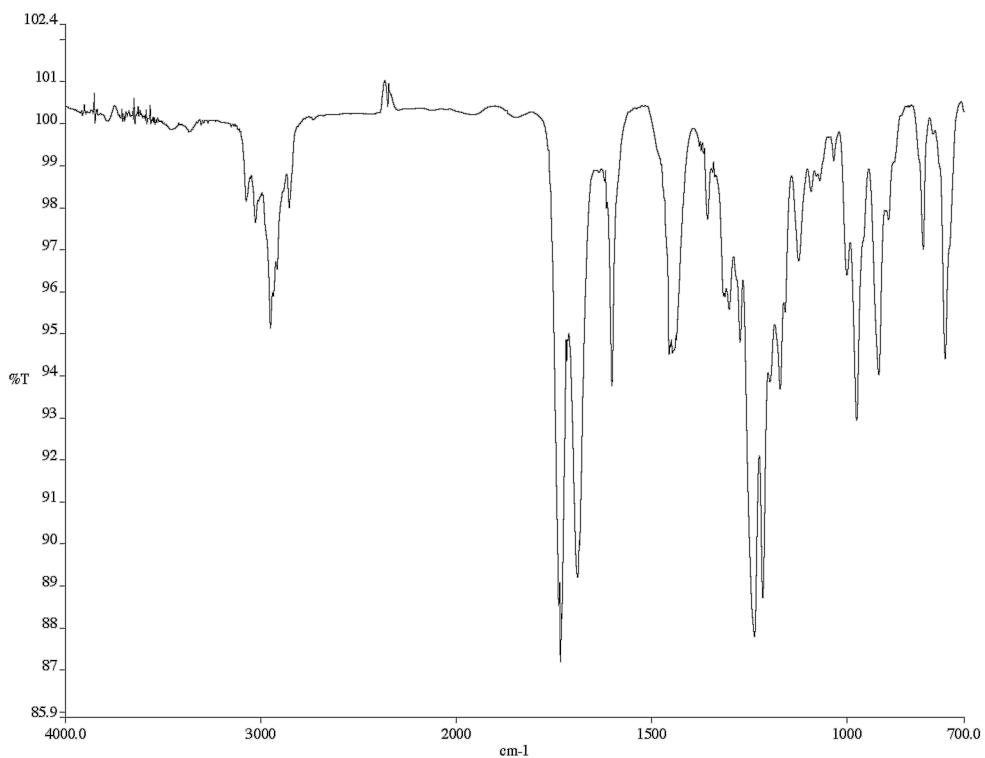


Figure A3.23 Infrared spectrum (thin film/NaCl) of compound **100h**.

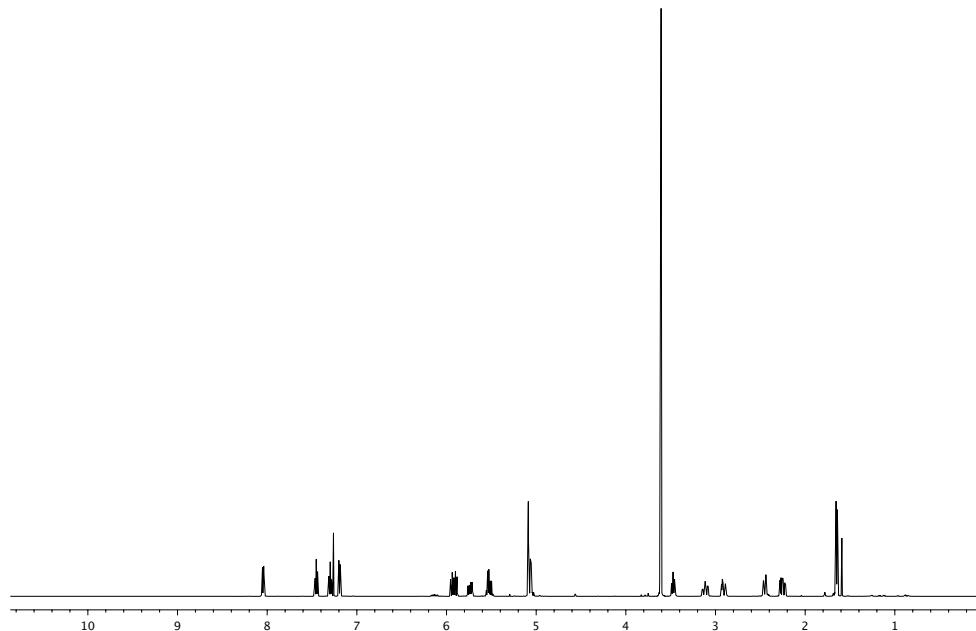


Figure A3.24 ^{13}C NMR (125 MHz, CDCl_3) of compound **100h**.

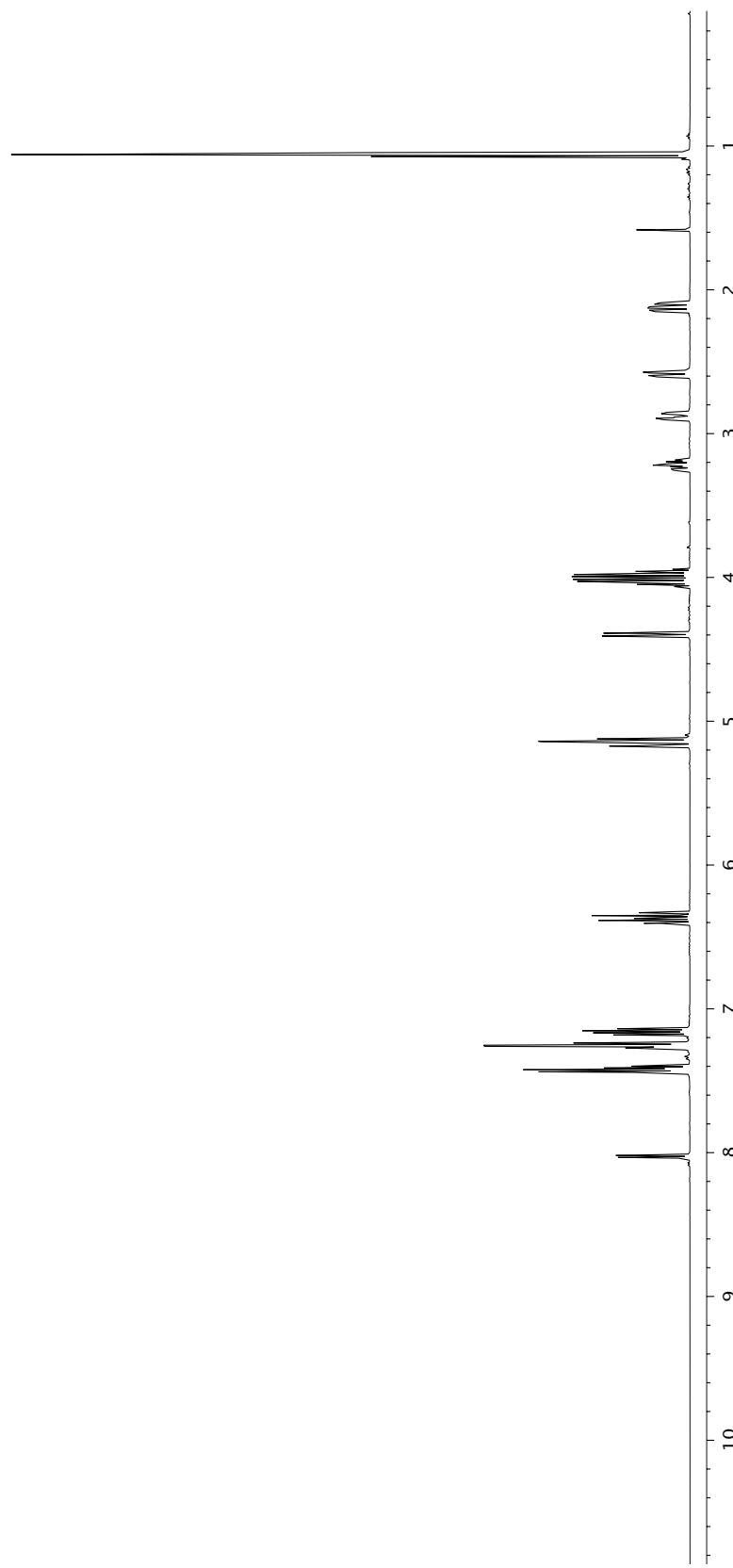
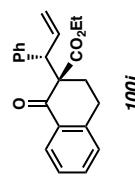


Figure A3.25 ^1H NMR (500 MHz, CDCl_3) of compound 100i.

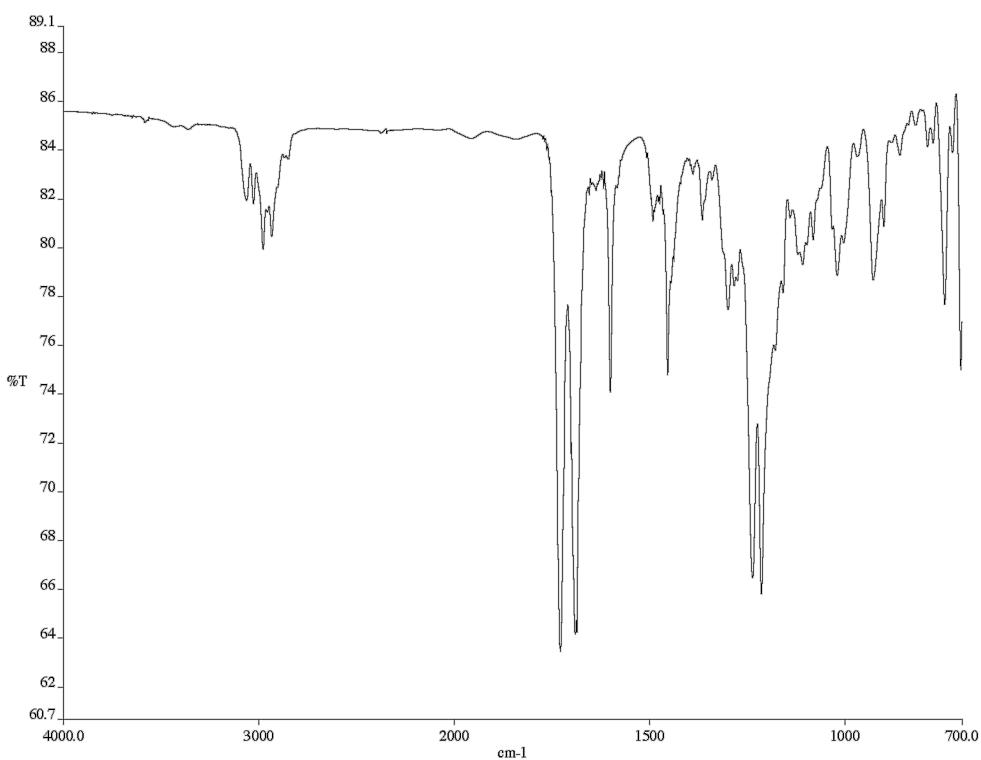


Figure A3.26 Infrared spectrum (thin film/NaCl) of compound **100i**.

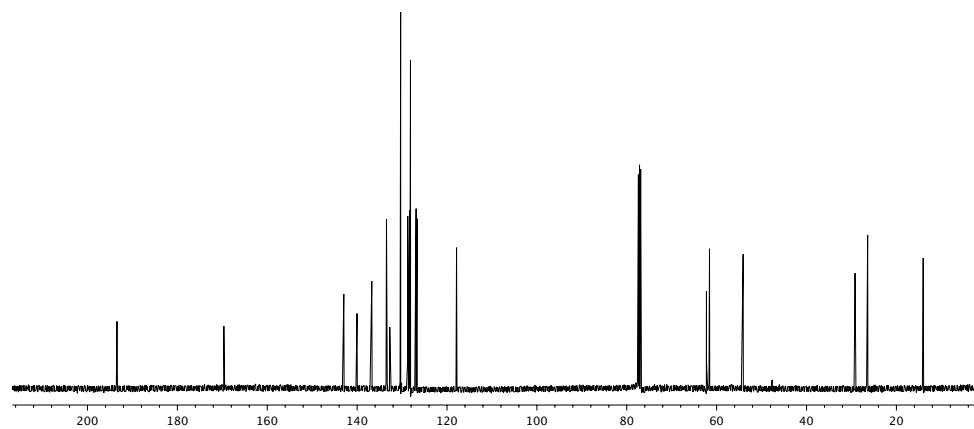


Figure A3.27 ^{13}C NMR (125 MHz, CDCl_3) of compound **100i**.

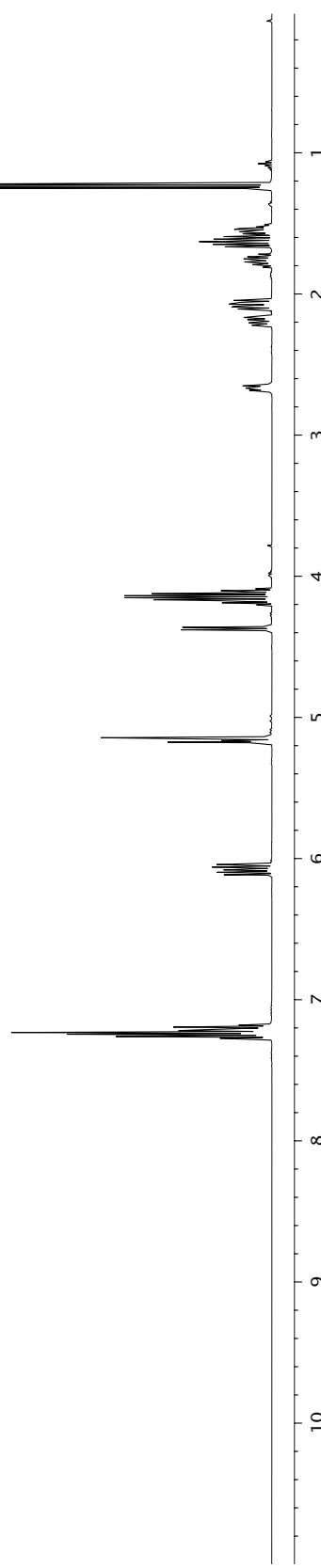
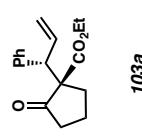


Figure A3.28 ^1H NMR (500 MHz, CDCl_3) of compound 103a.

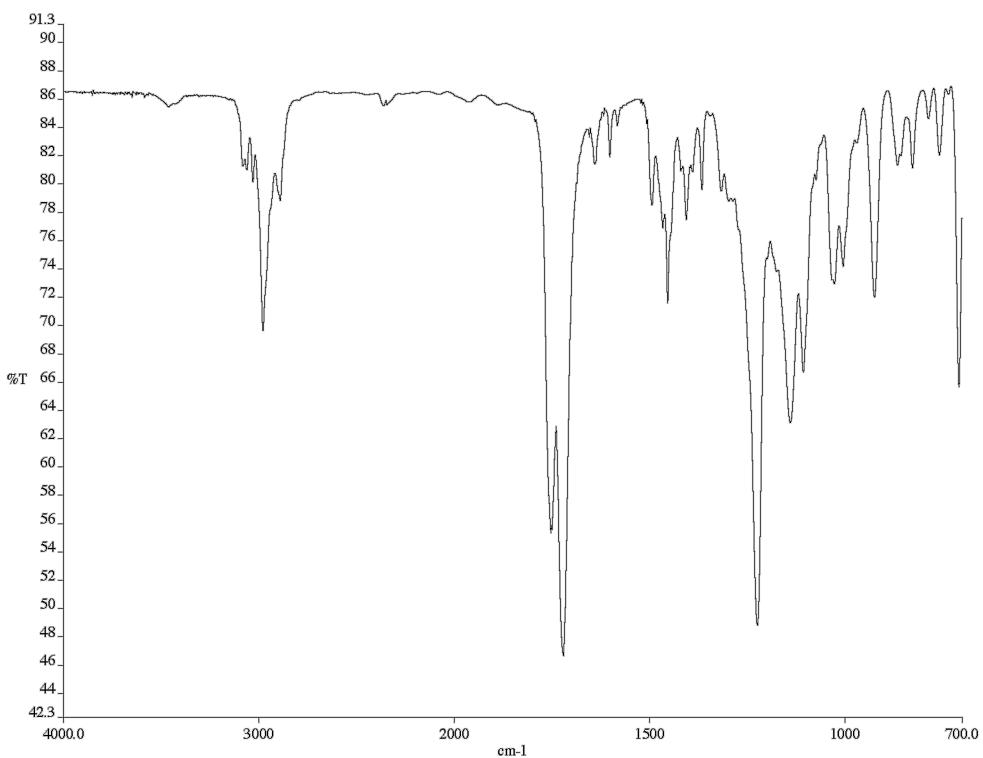


Figure A3.29 Infrared spectrum (thin film/NaCl) of compound **103a**.

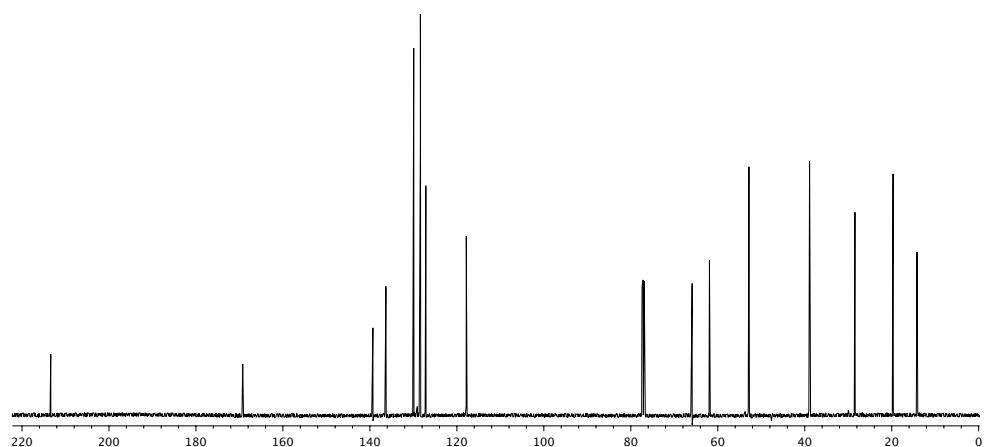
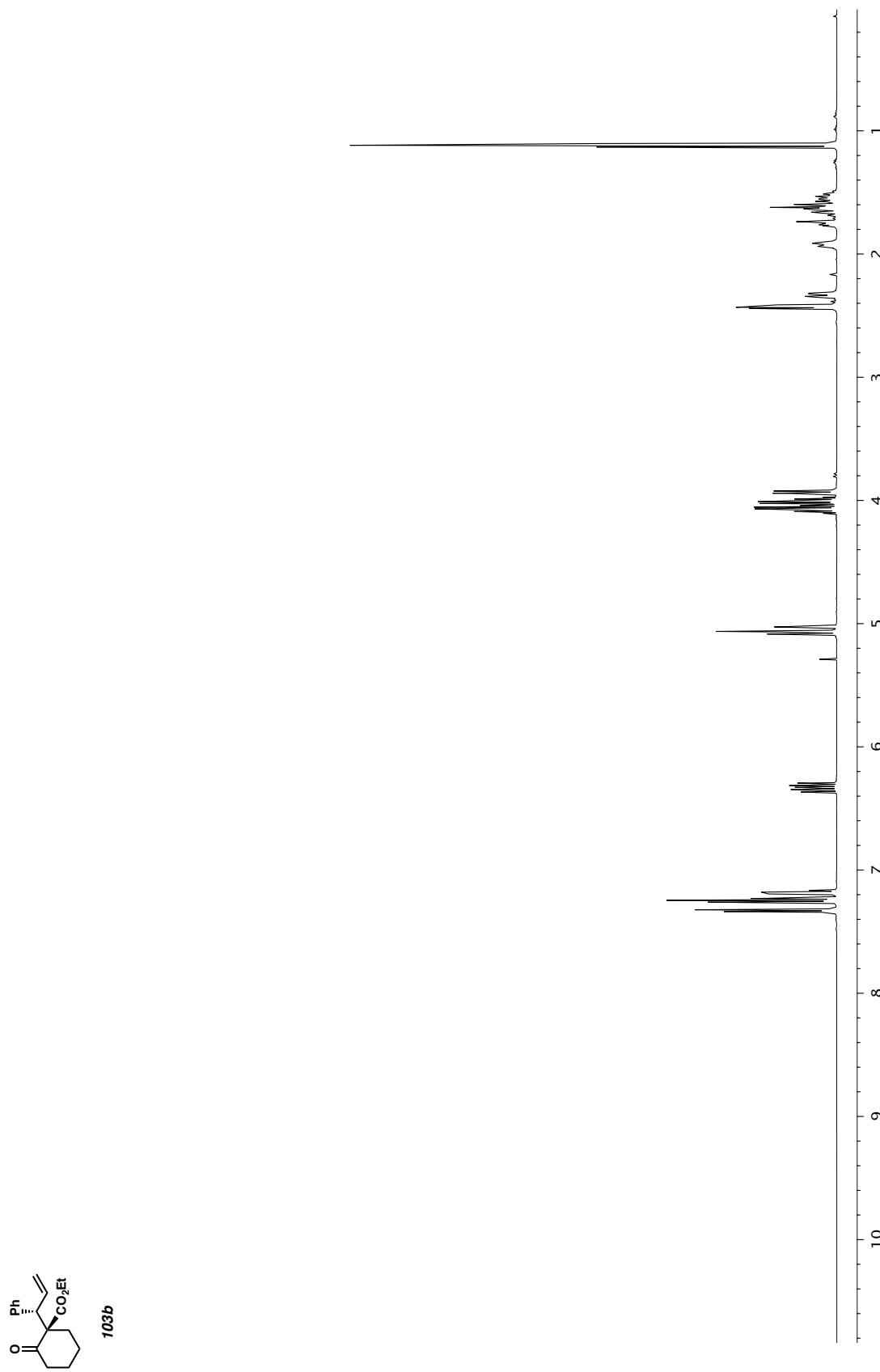


Figure A3.30 ^{13}C NMR (125 MHz, CDCl_3) of compound **103a**.

Figure A3.31 ^1H NMR (500 MHz, CDCl_3) of compound 103b.

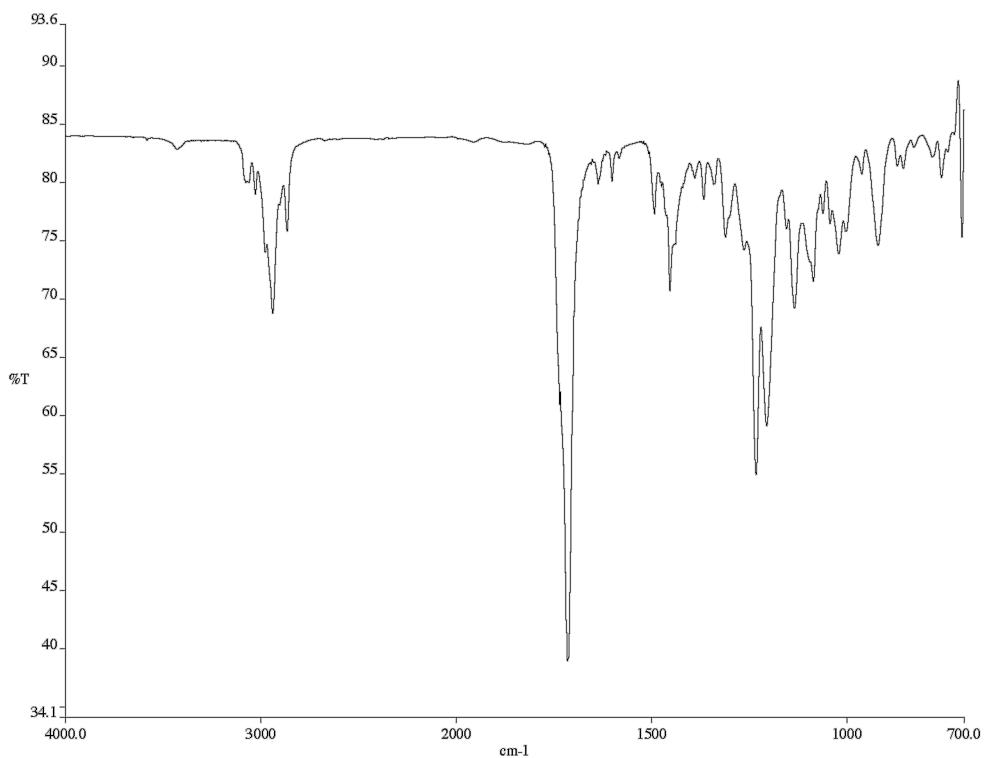


Figure A3.32 Infrared spectrum (thin film/NaCl) of compound **103b**.

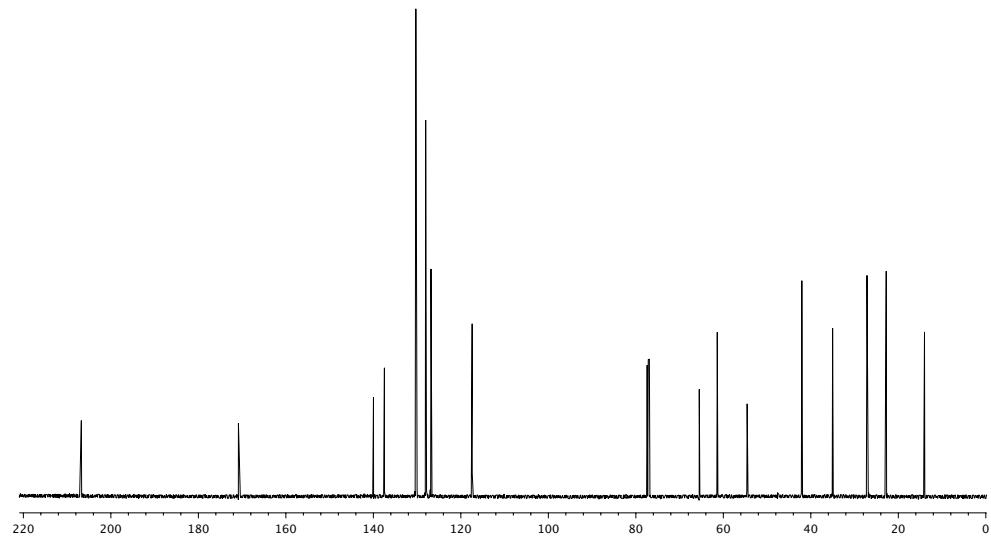


Figure A3.33 ^{13}C NMR (125 MHz, CDCl_3) of compound **103b**.

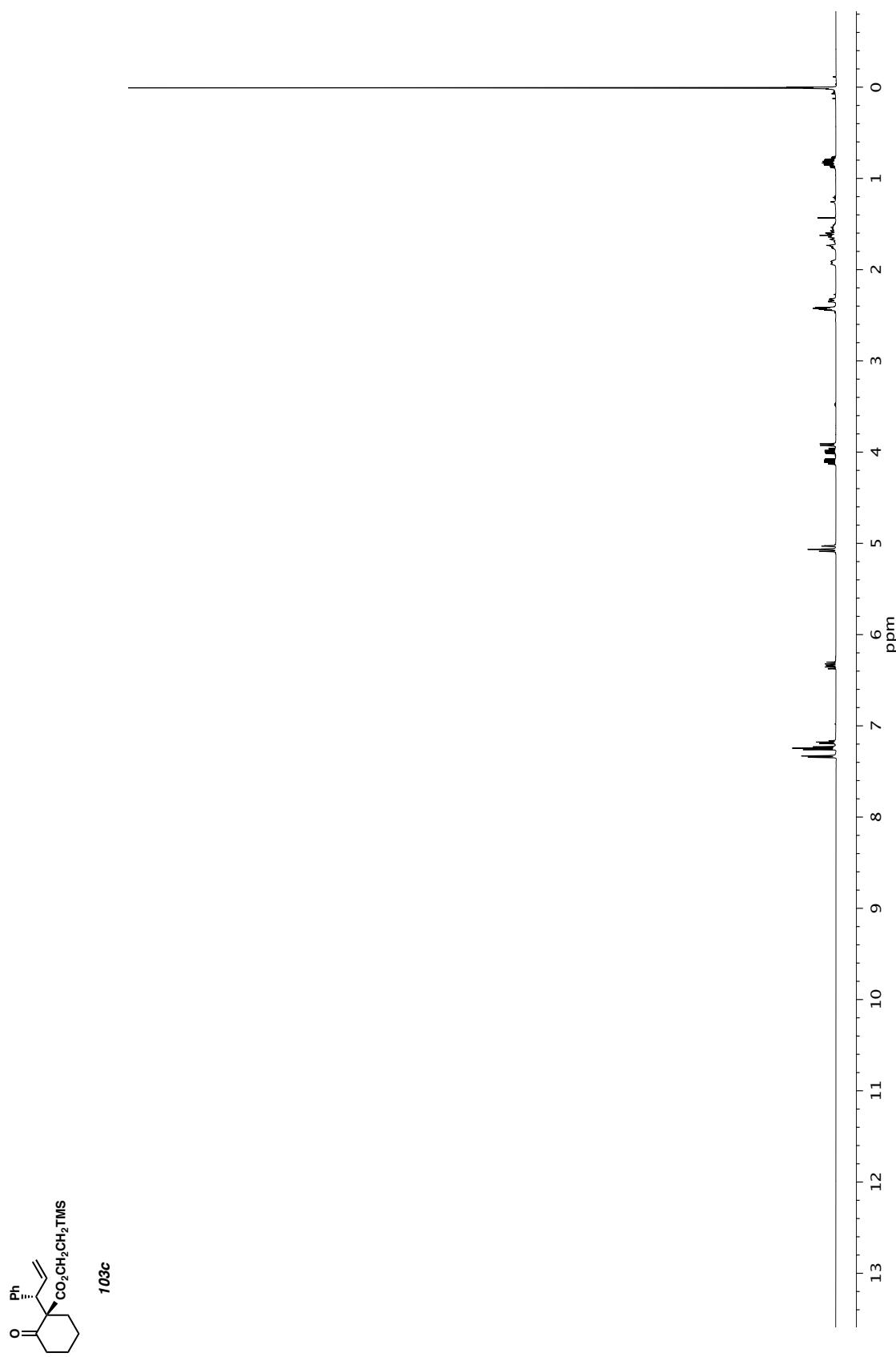
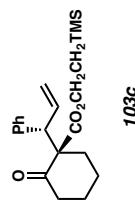


Figure A3.34 ^1H NMR (500 MHz, CDCl_3) of compound 103c.



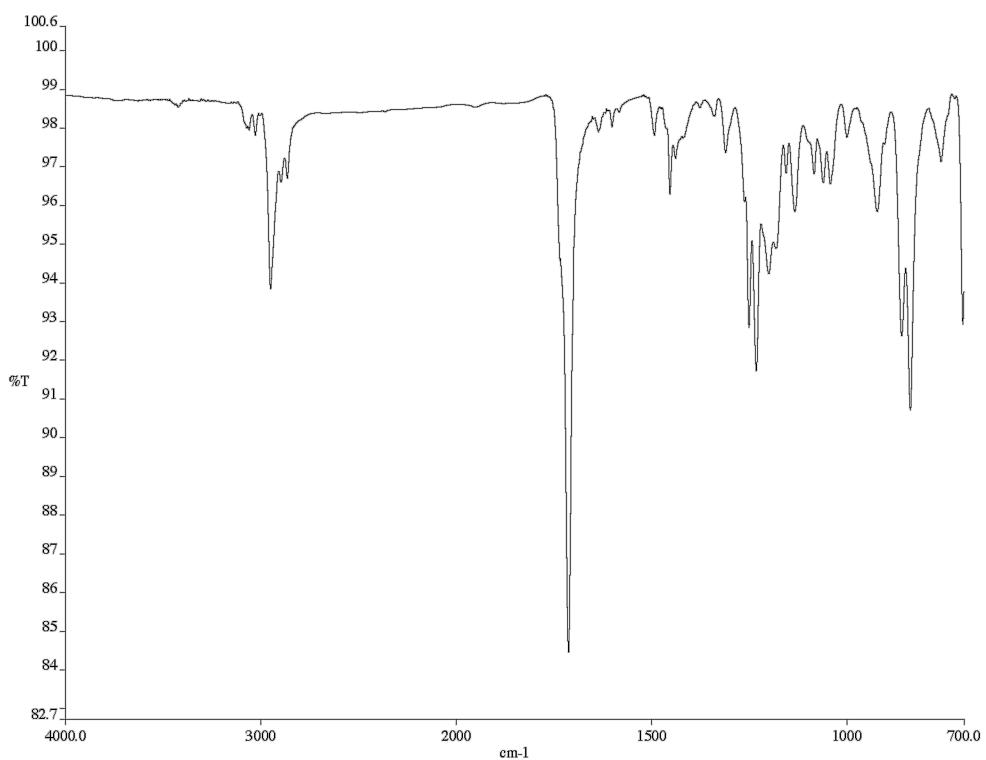


Figure A3.35 Infrared spectrum (thin film/NaCl) of compound **103c**.

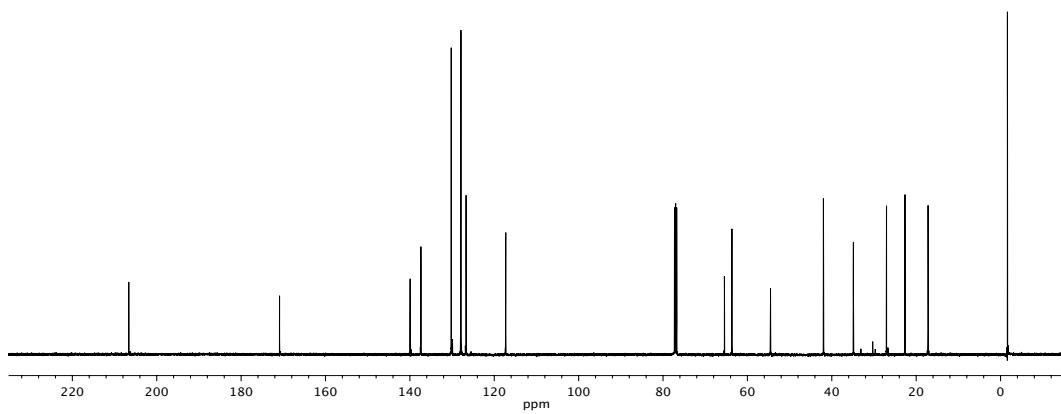


Figure A3.36 ^{13}C NMR (125 MHz, CDCl_3) of compound **103c**.

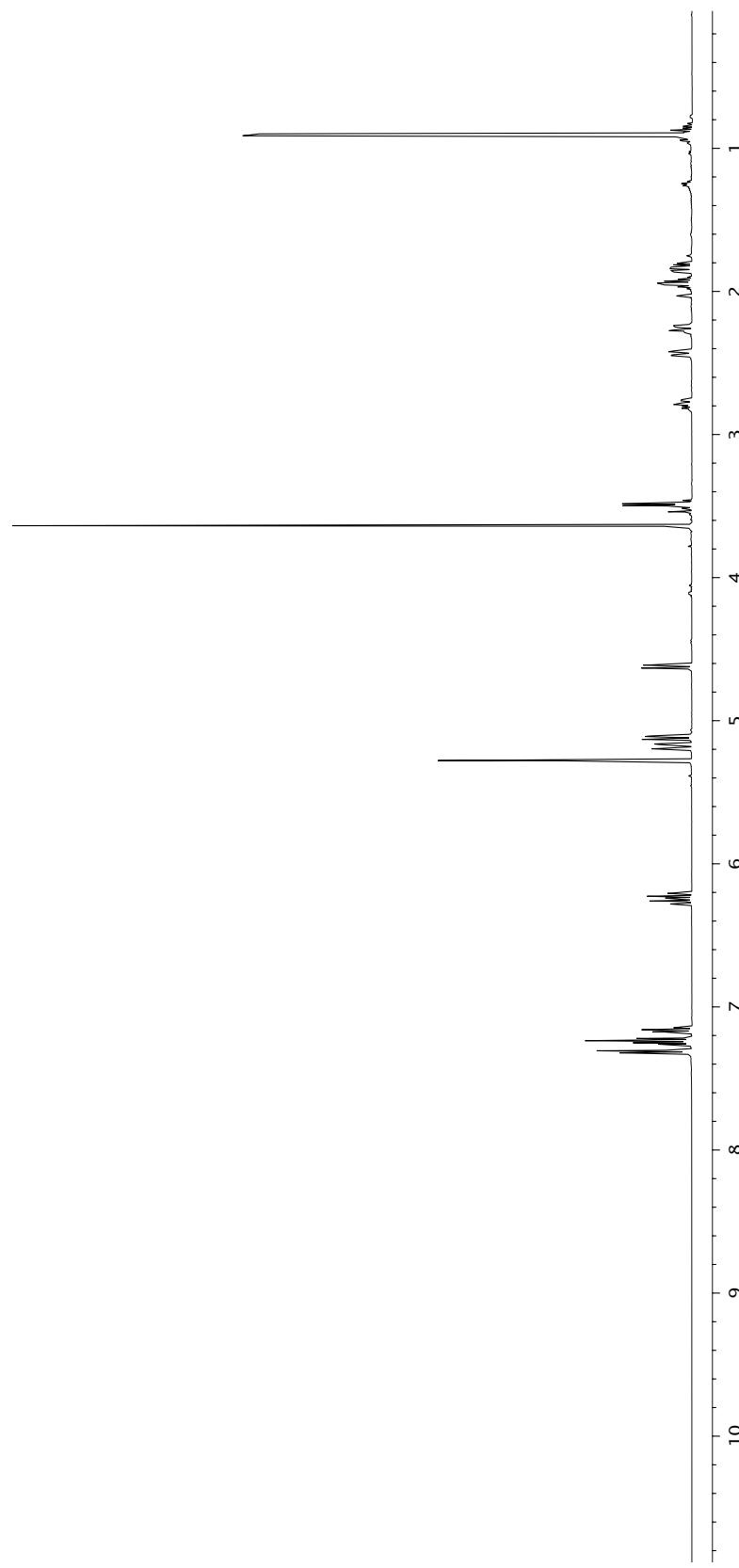
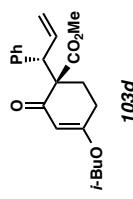


Figure A3.7 ^1H NMR (500 MHz, CDCl_3) of compound 103d.

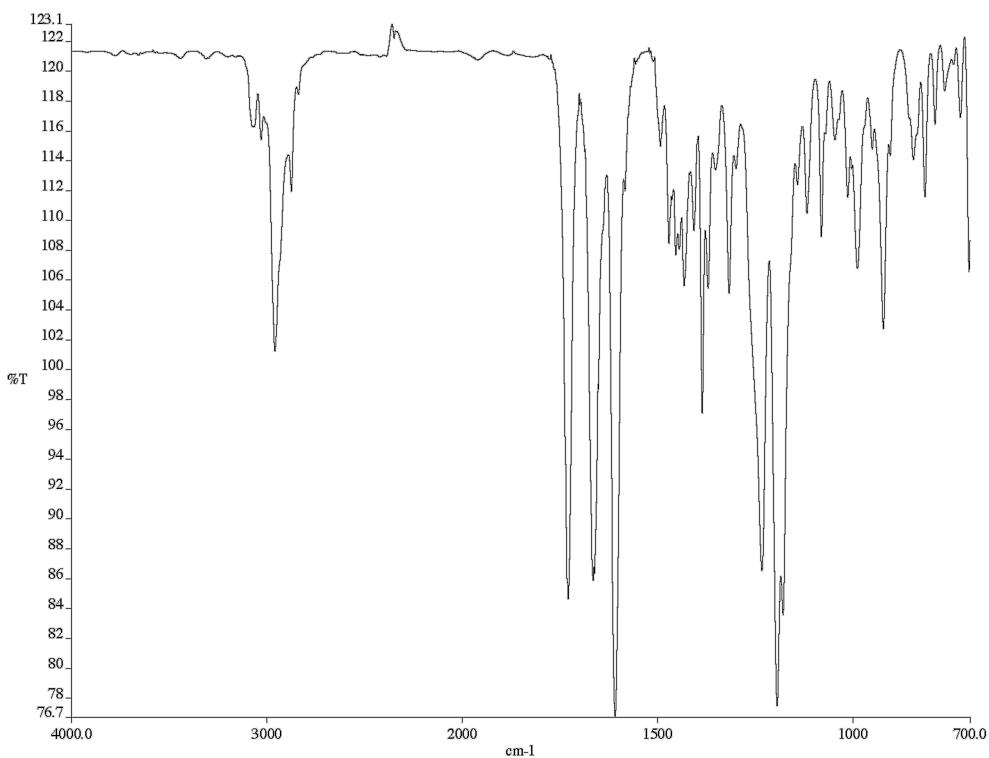


Figure A3.38 Infrared spectrum (thin film/NaCl) of compound **103d**.

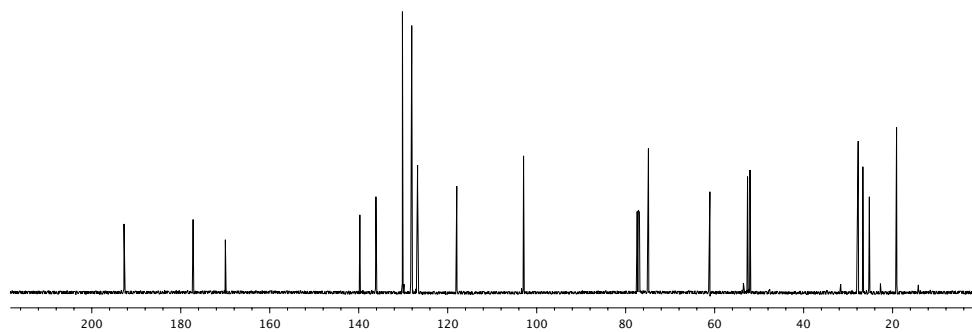


Figure A3.39 ^{13}C NMR (125 MHz, CDCl_3) of compound **103d**.

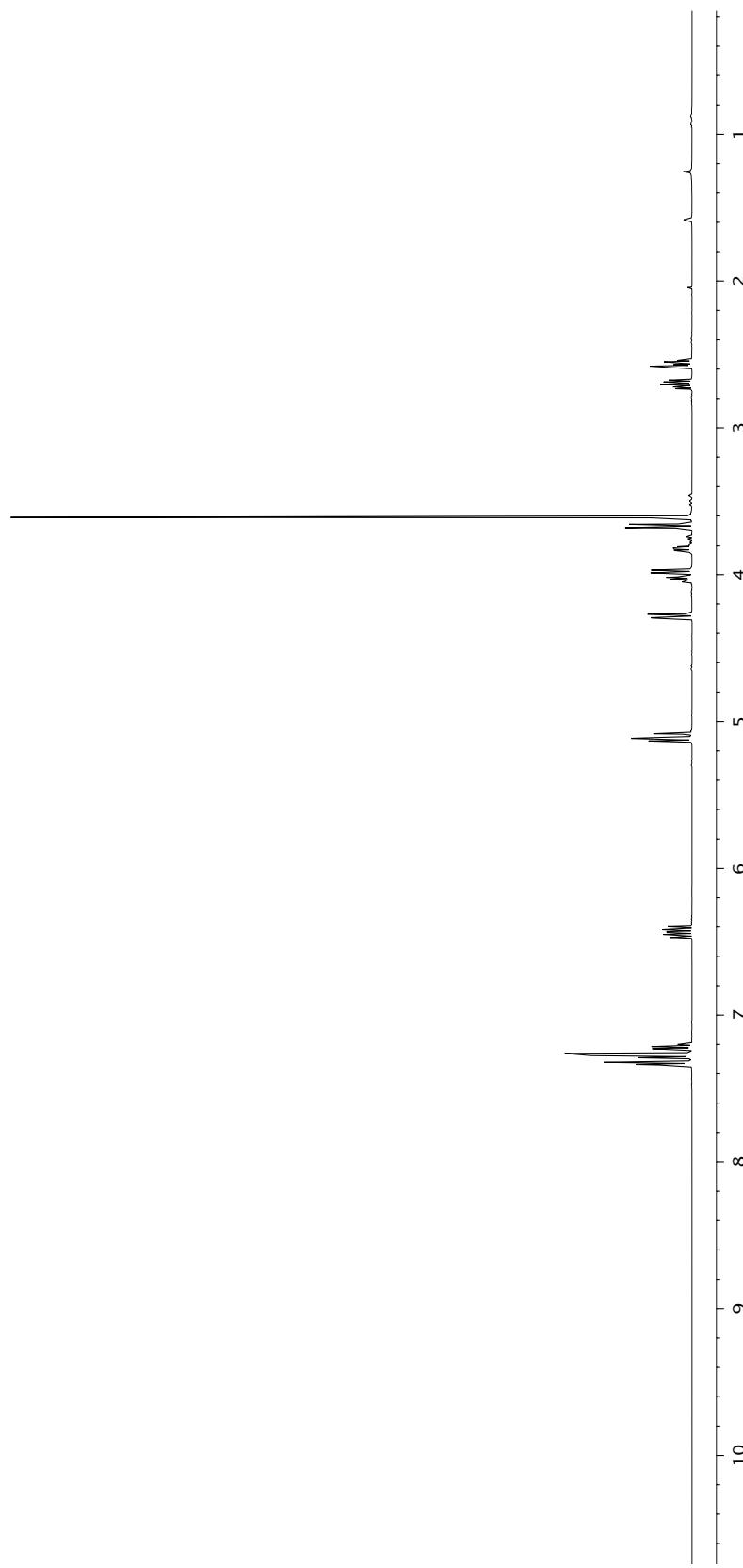
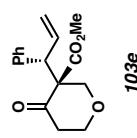


Figure A3.40 ^1H NMR (500 MHz, CDCl_3) of compound 103e.

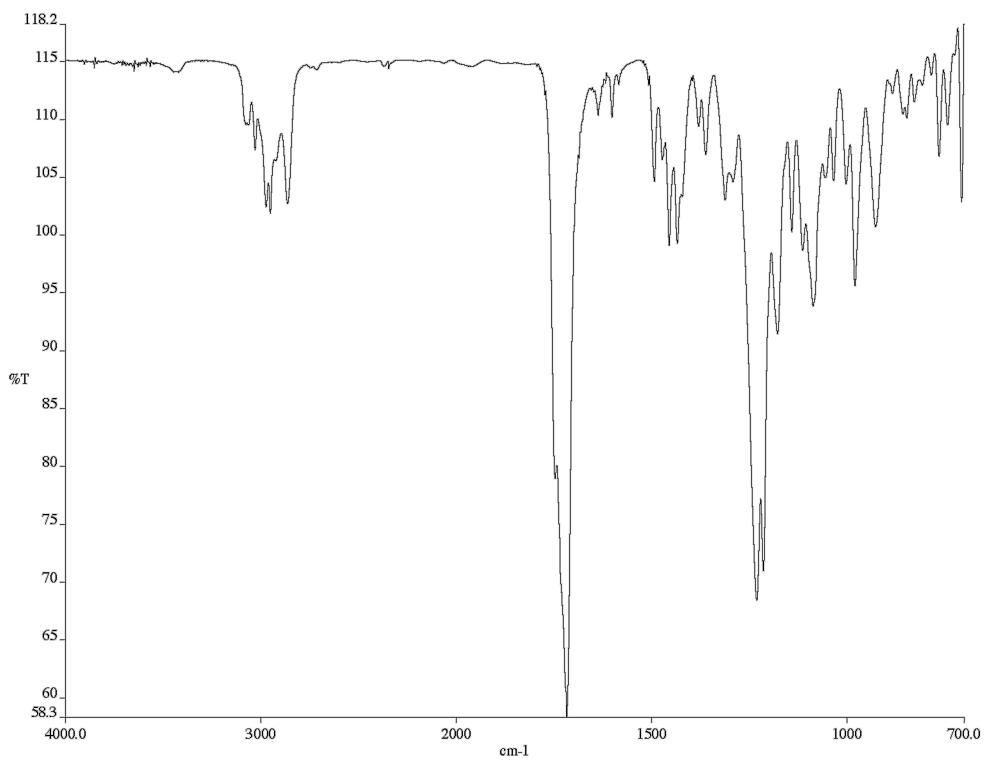


Figure A3.41 Infrared spectrum (thin film/NaCl) of compound **103e**.

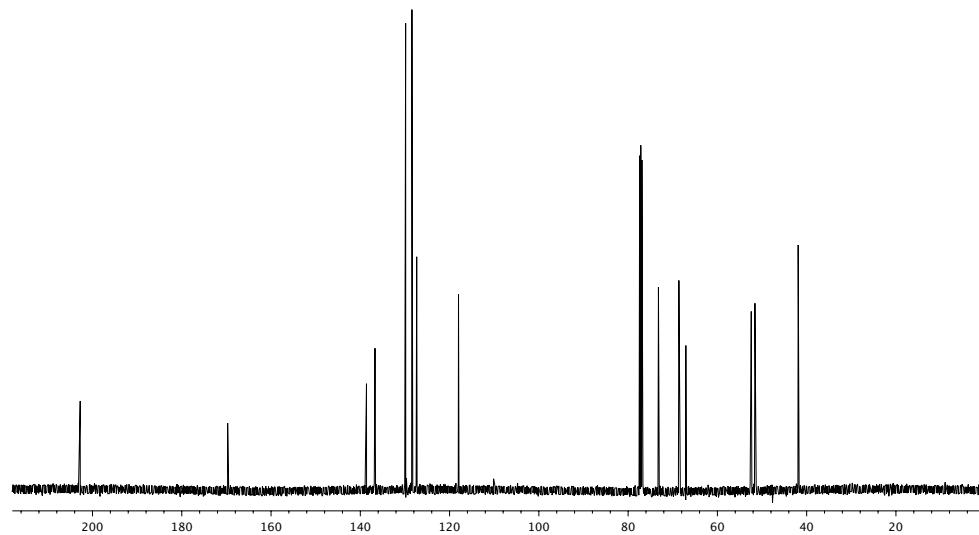


Figure A3.42 ^{13}C NMR (125 MHz, CDCl_3) of compound **103e**.

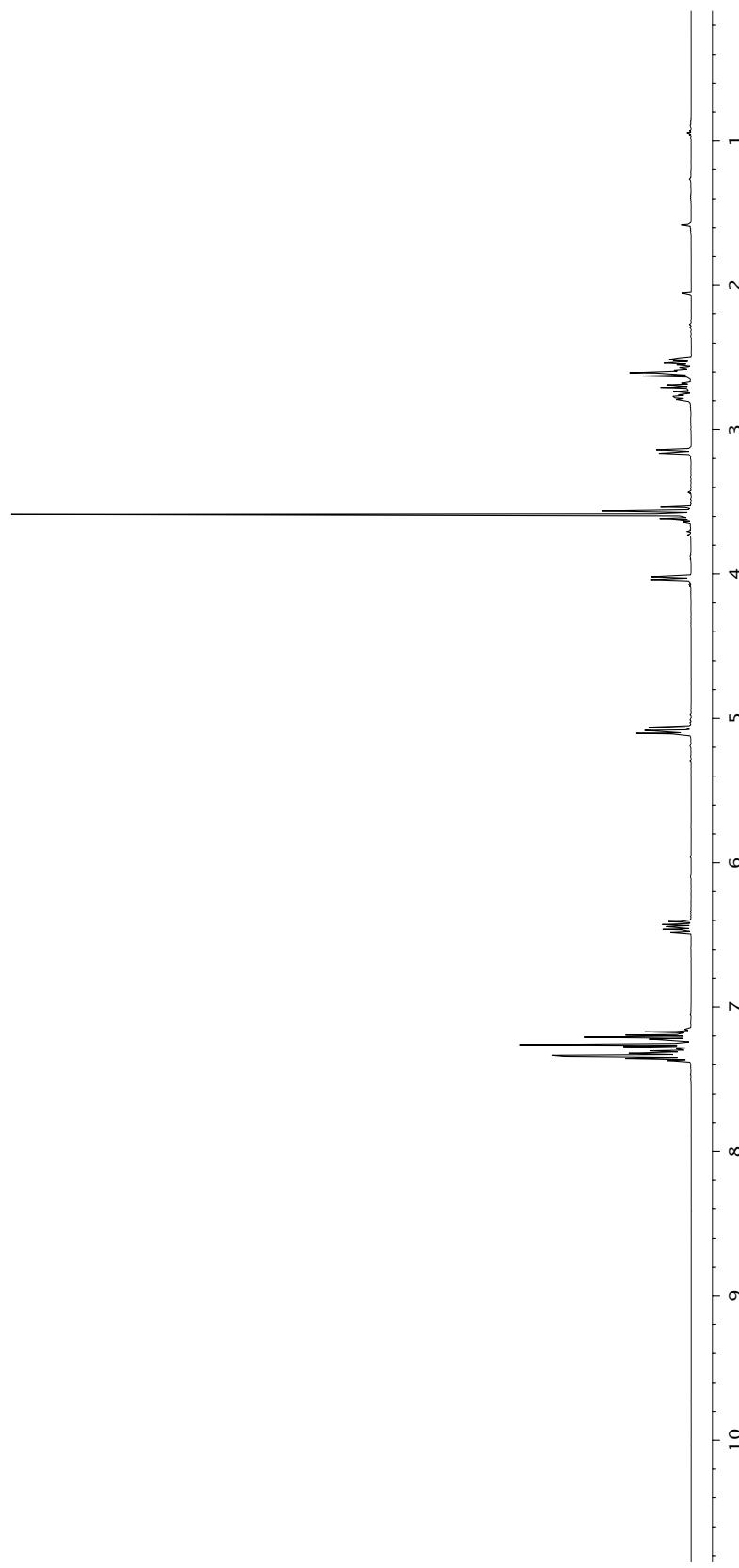
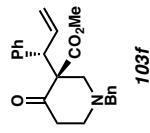


Figure A3.43 ^1H NMR (500 MHz, CDCl_3) of compound 103f.

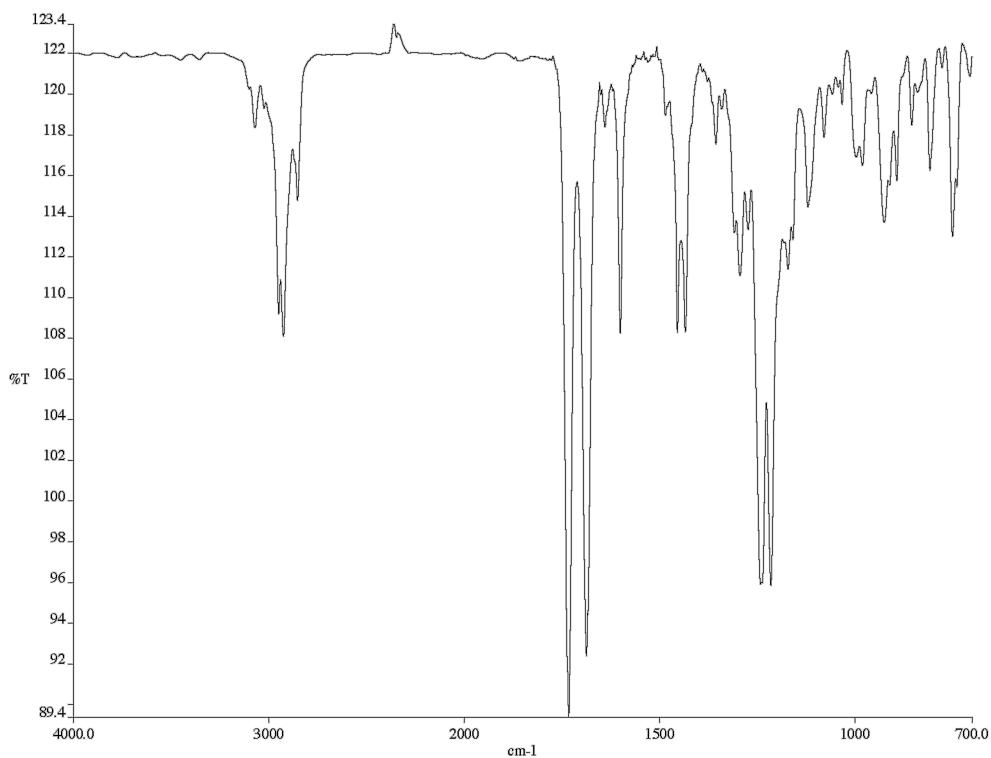


Figure A3.44 Infrared spectrum (thin film/NaCl) of compound **103f**.

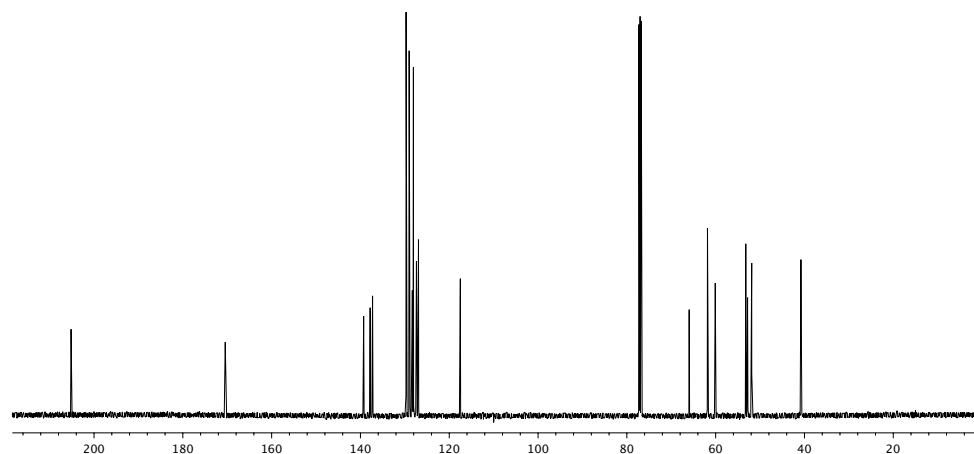


Figure A3.44 ^{13}C NMR (125 MHz, CDCl_3) of compound **103f**.

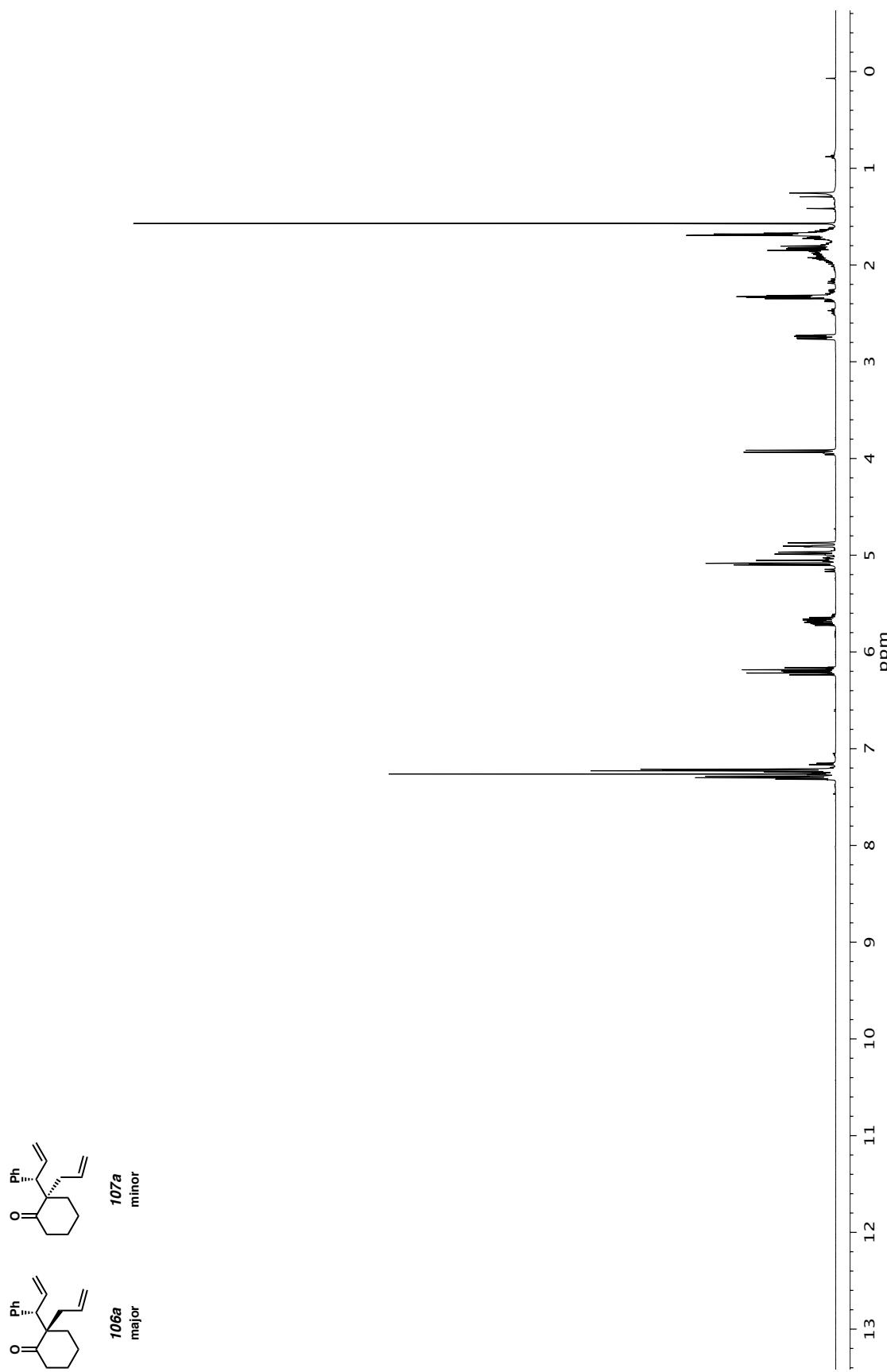


Figure A3.46 ^1H NMR (500 MHz, CDCl_3) of compound **106a** and **107a**.

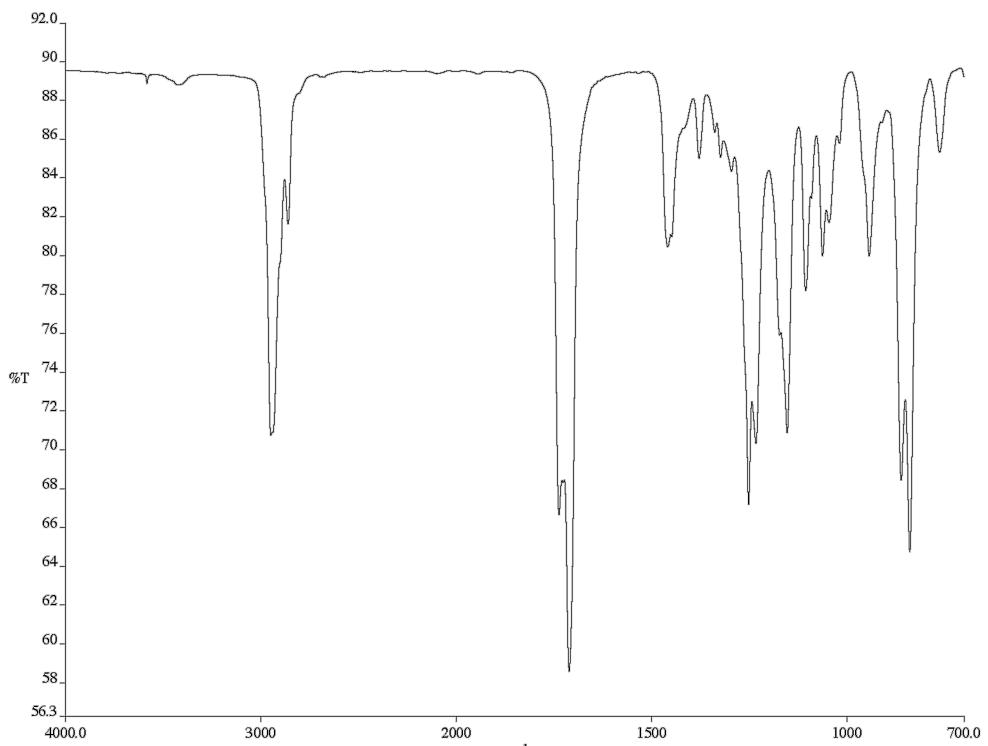


Figure A3.47 Infrared spectrum (thin film/NaCl) of compound **106a** and **107a**.

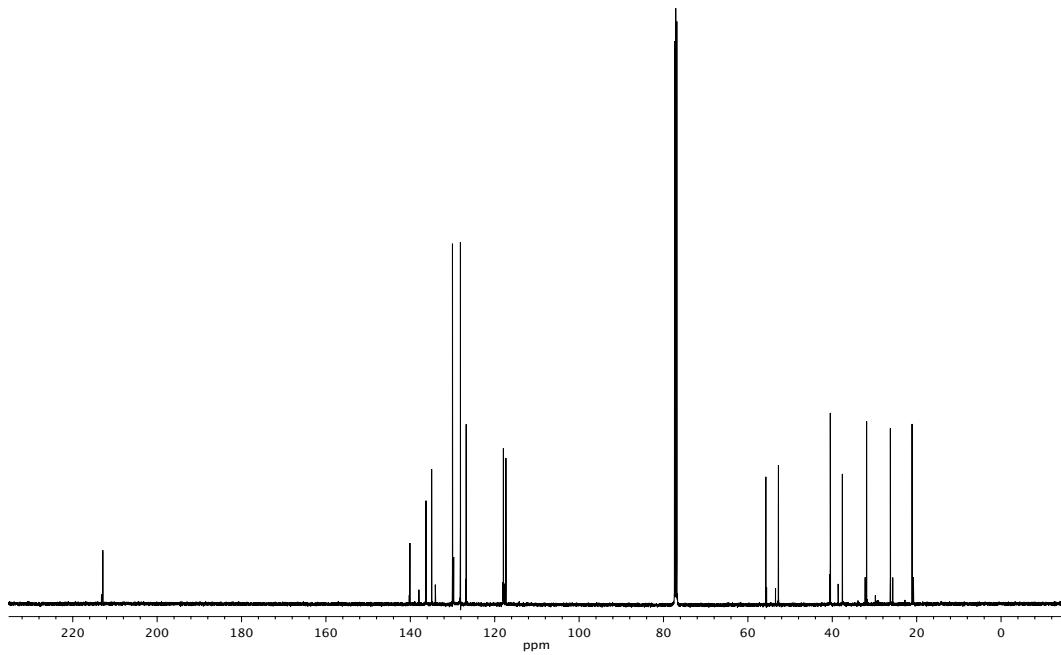


Figure A3.48 ^{13}C NMR (125 MHz, CDCl_3) of compound **106a** and **107a**.

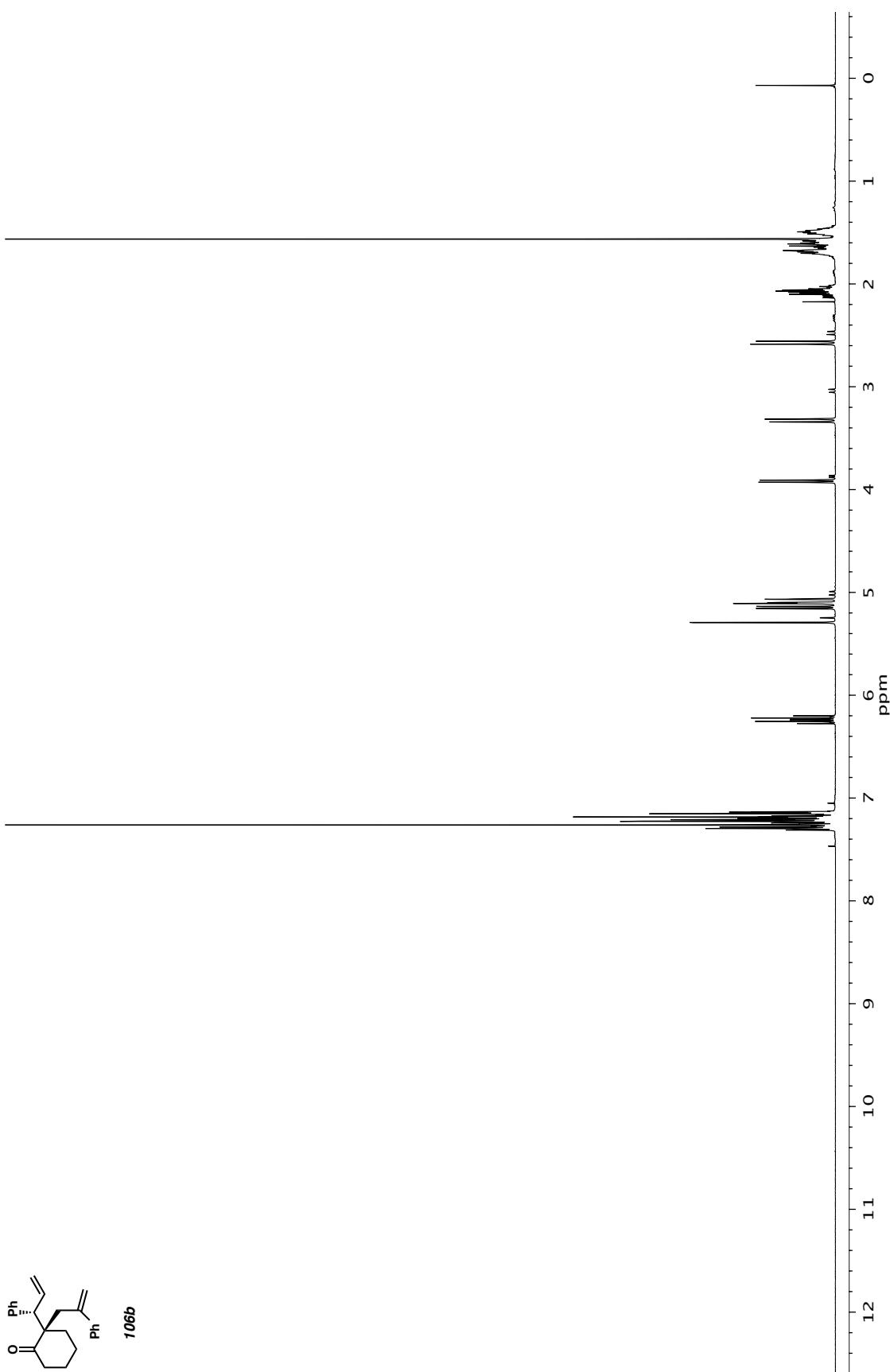


Figure A3.49 ^1H NMR (500 MHz, CDCl_3) of compound **106b**.

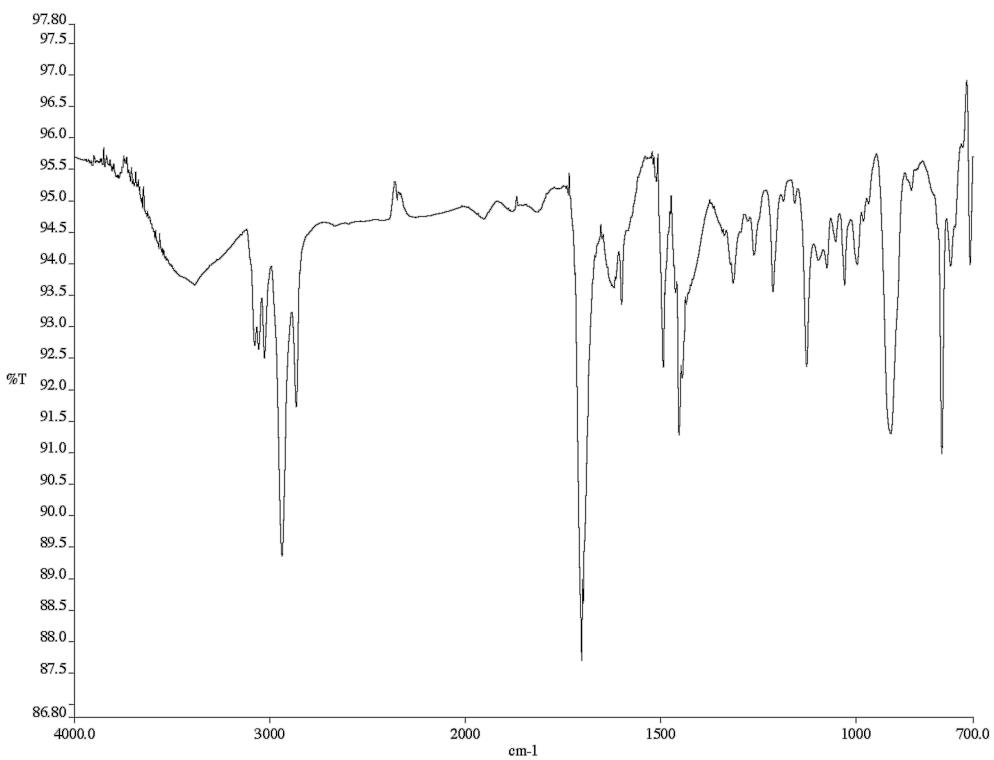


Figure A3.50 Infrared spectrum (thin film/NaCl) of compound **106b**.

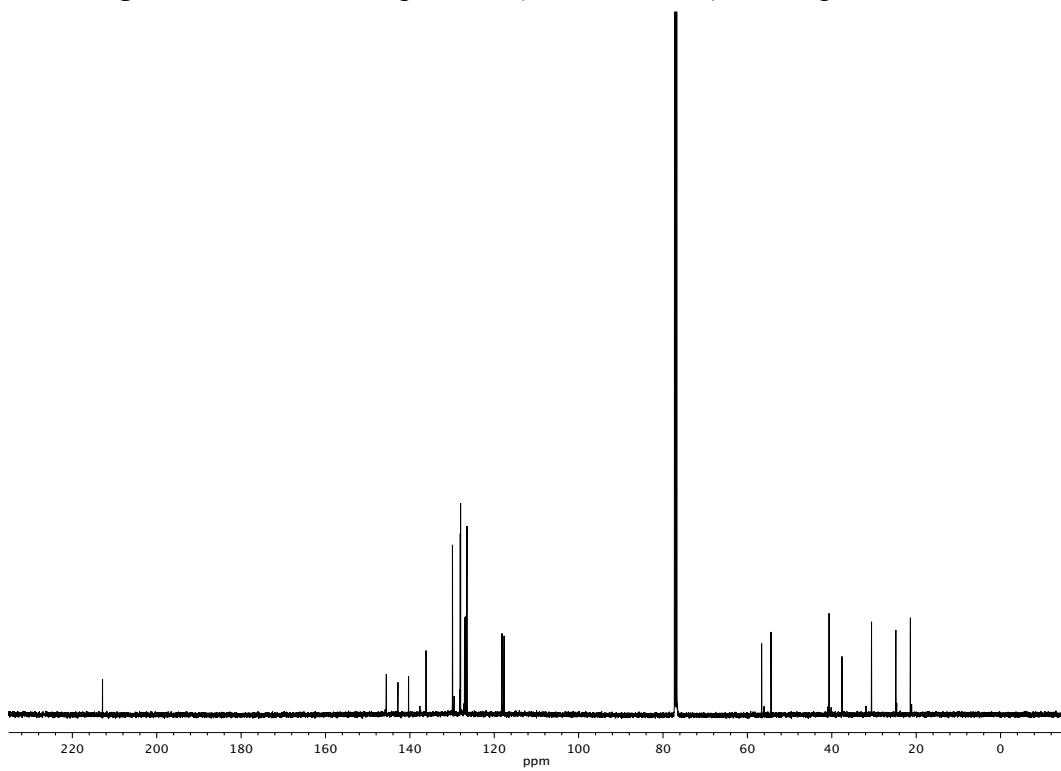


Figure A3.51 ¹³C NMR (125 MHz, CDCl₃) of compound **106b**.

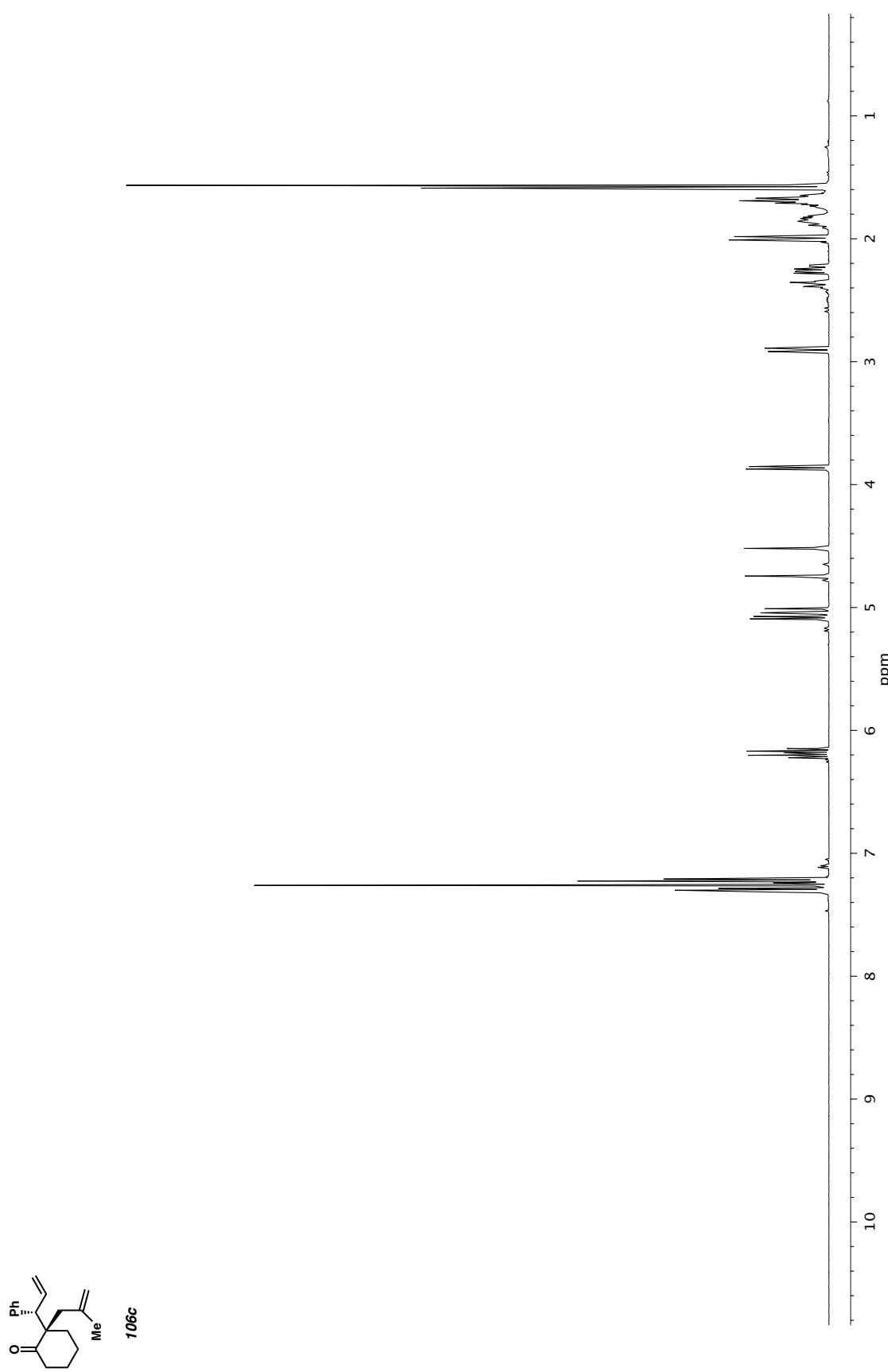


Figure A3.52 ^1H NMR (500 MHz, CDCl_3) of compound **106c**.

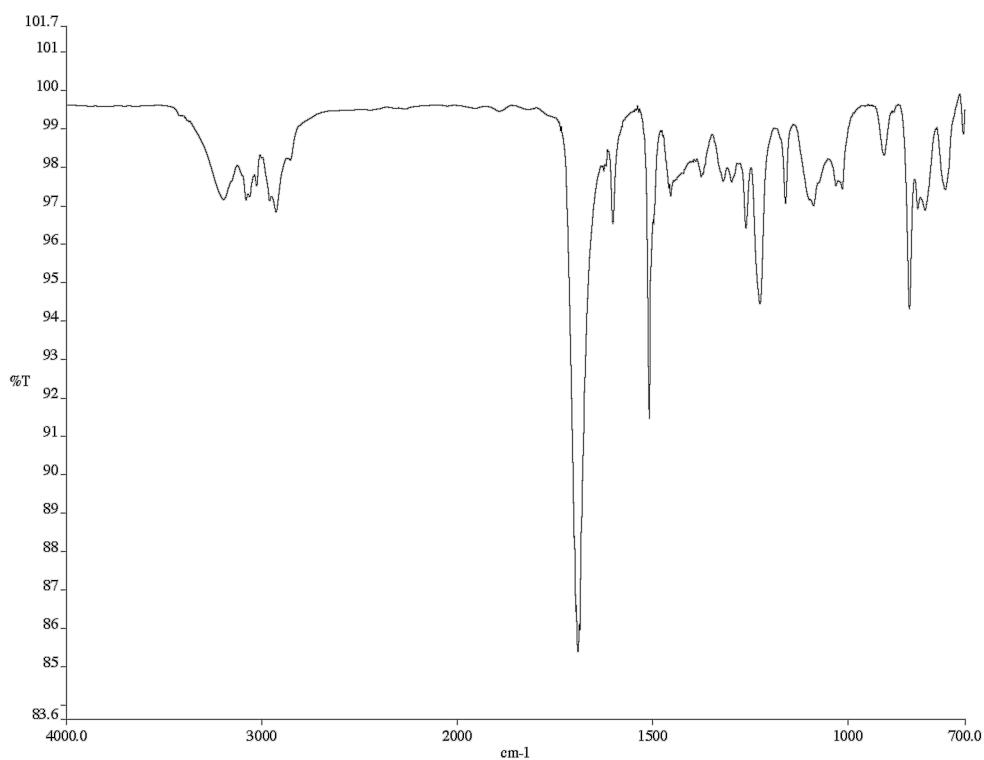


Figure A3.53 Infrared spectrum (thin film/NaCl) of compound **106c**.

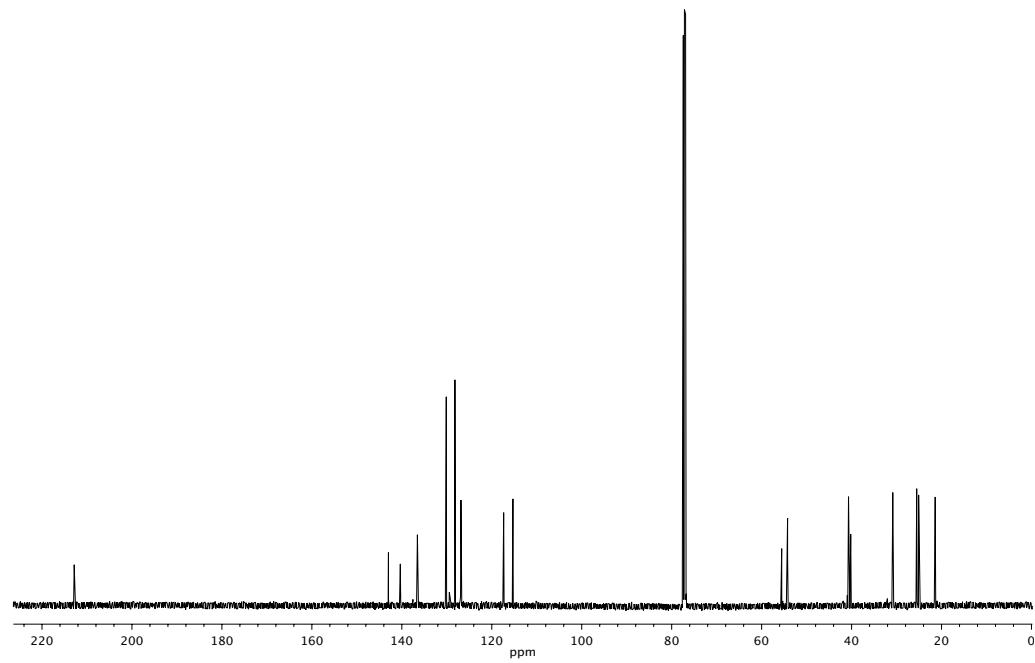


Figure A3.54 ^{13}C NMR (125 MHz, CDCl_3) of compound **106c**.

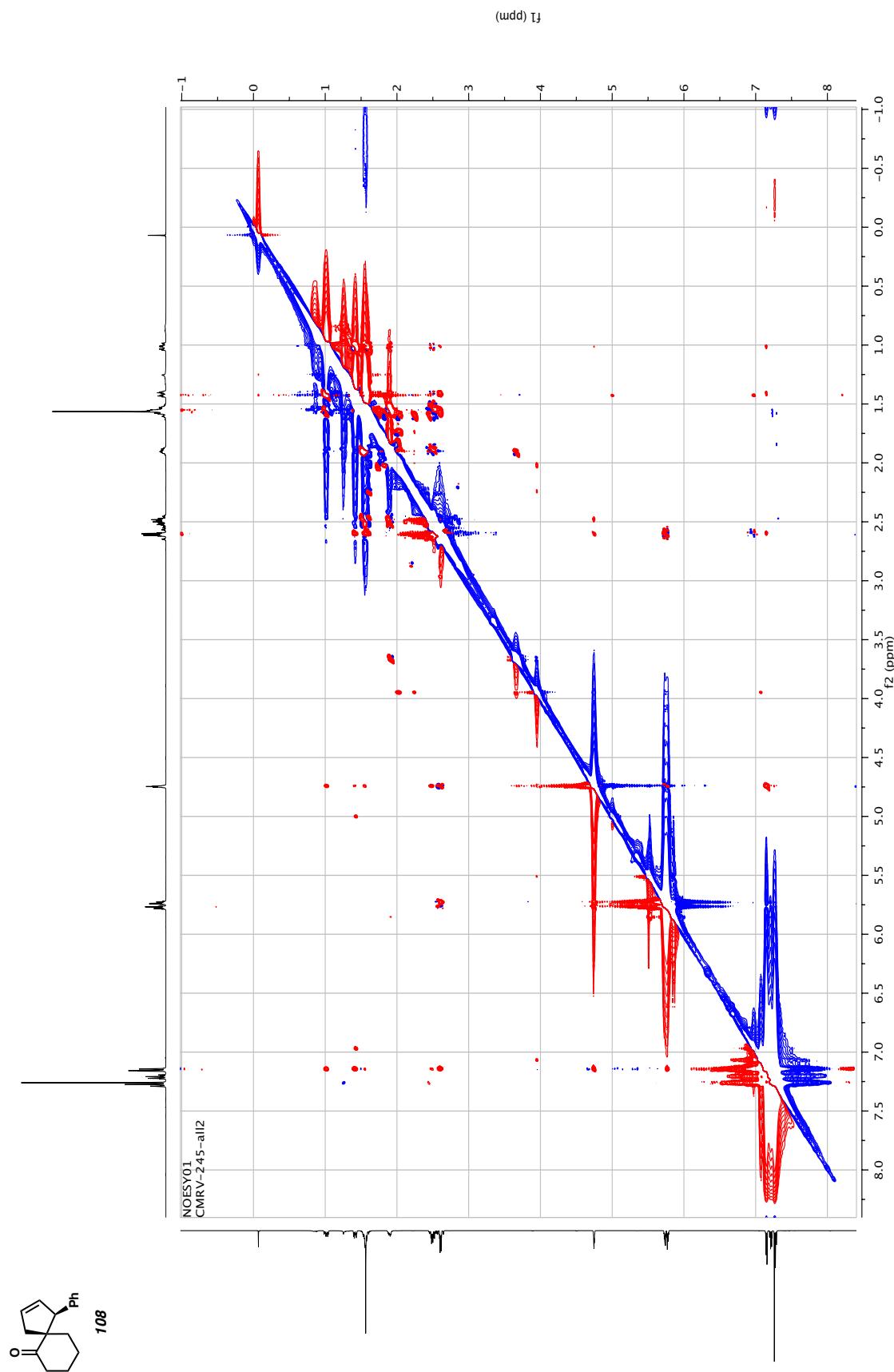


Figure A3.55 ^1H NOESY NMR (600 MHz, CDCl_3) of compound 108.

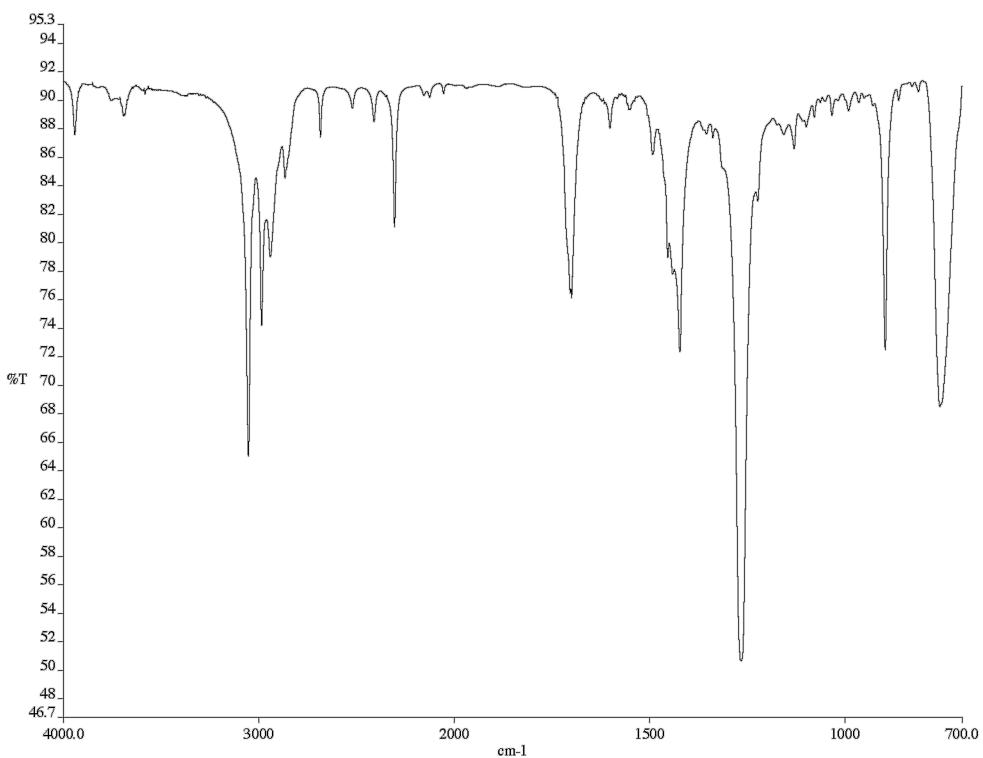


Figure A3.56 Infrared spectrum (thin film/NaCl) of compound **108**.

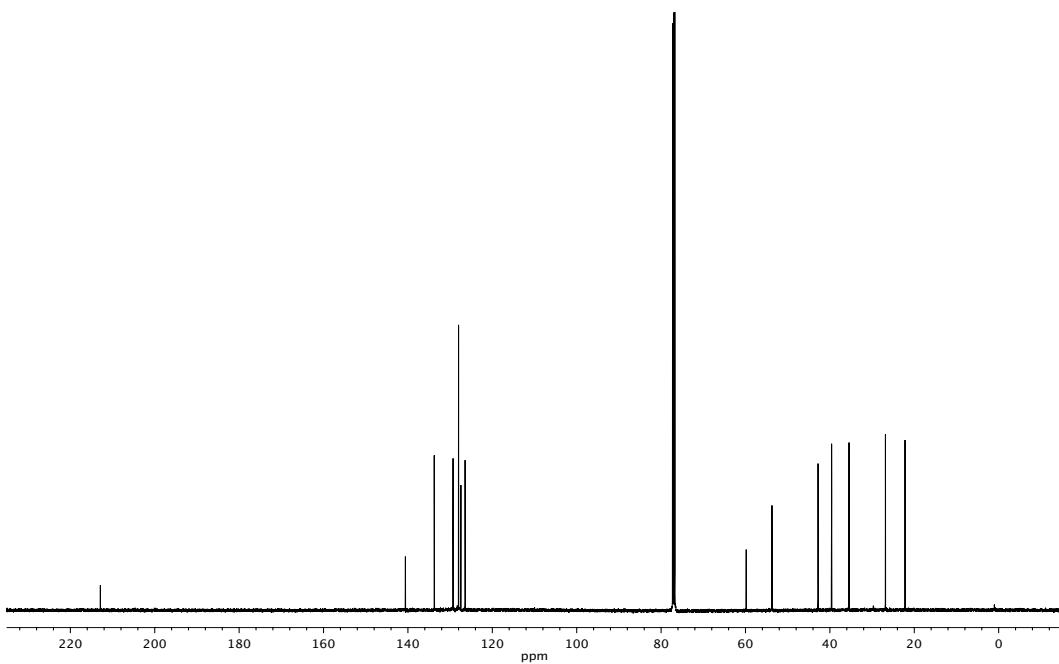


Figure A3.57 ^{13}C NMR (125 MHz, CDCl_3) of compound **108**.

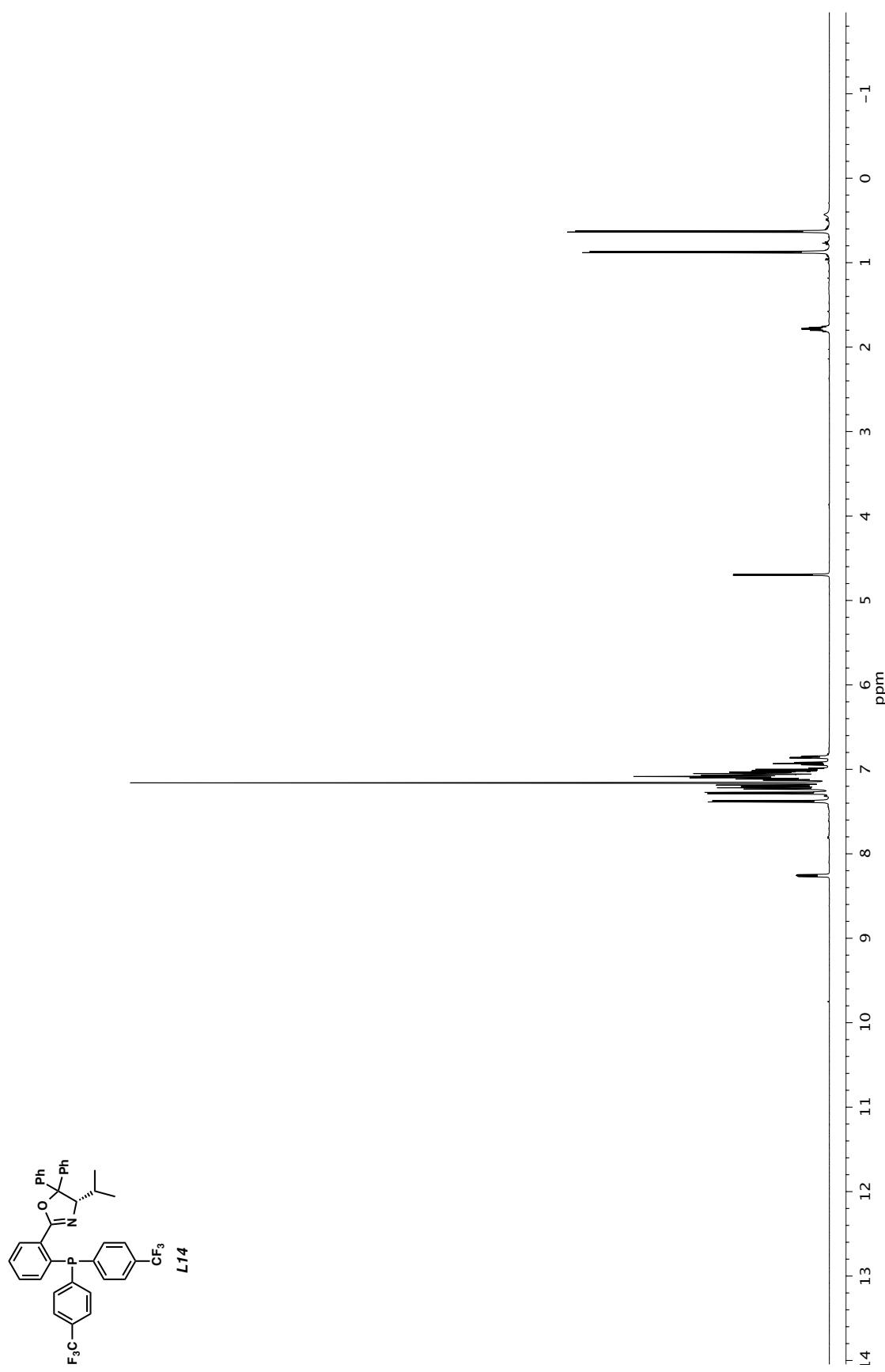


Figure A3.58 ^1H NMR (500 MHz, C_6D_6) of compound L14.

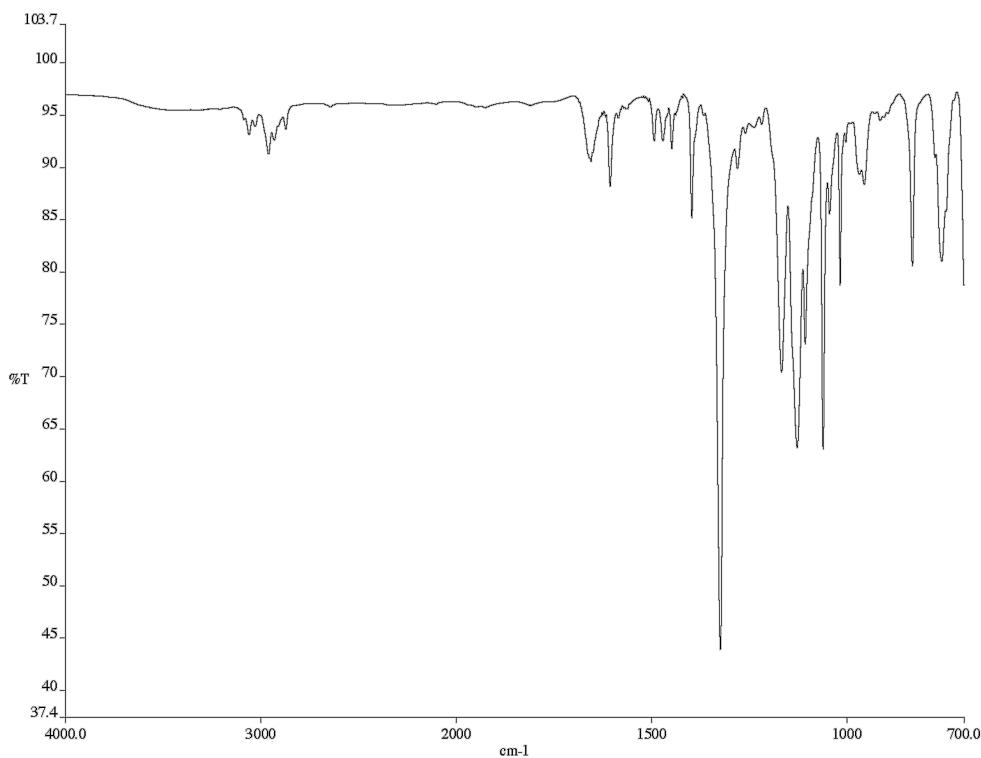


Figure A3.59 Infrared spectrum (thin film/NaCl) of compound **L14**.

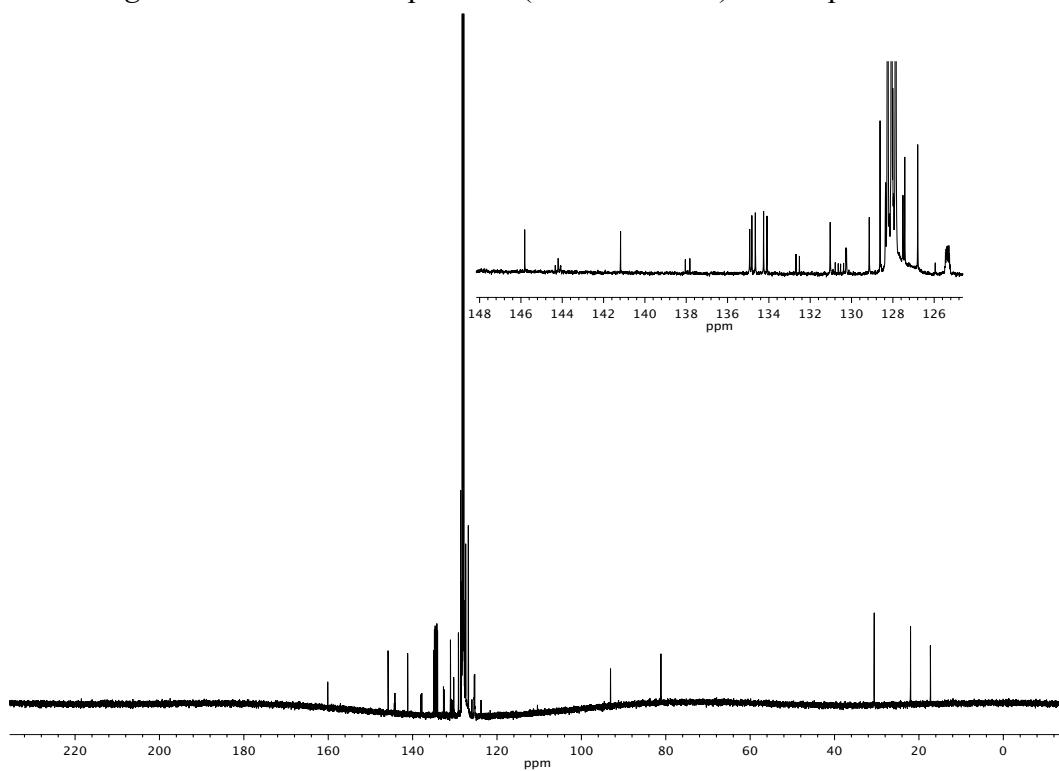


Figure A3.60 ^{13}C NMR (125 MHz, C_6D_6) of compound **L14**.

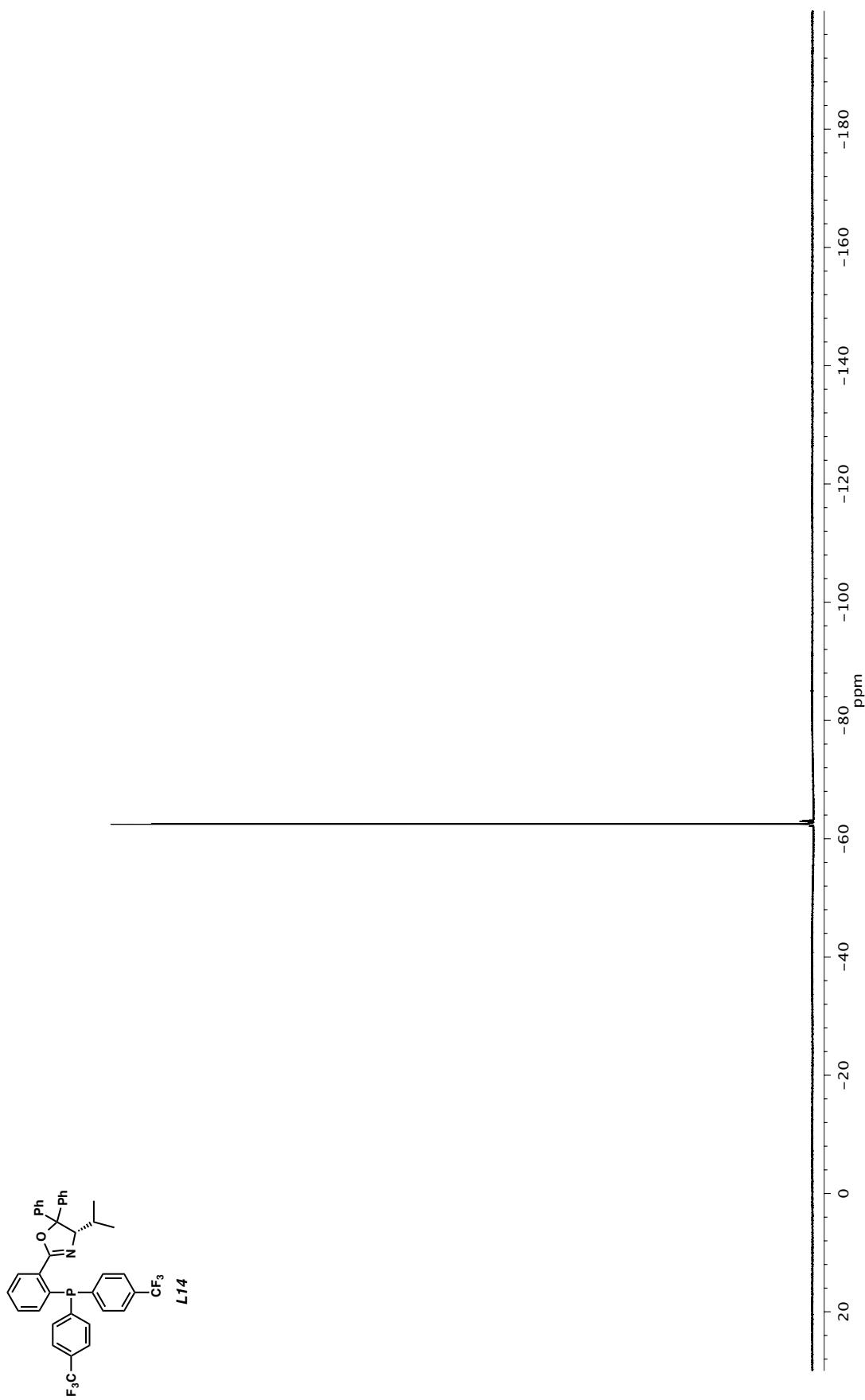


Figure A3.61 ^{19}F NMR (282 MHz, C_6D_6) of compound **L14**.

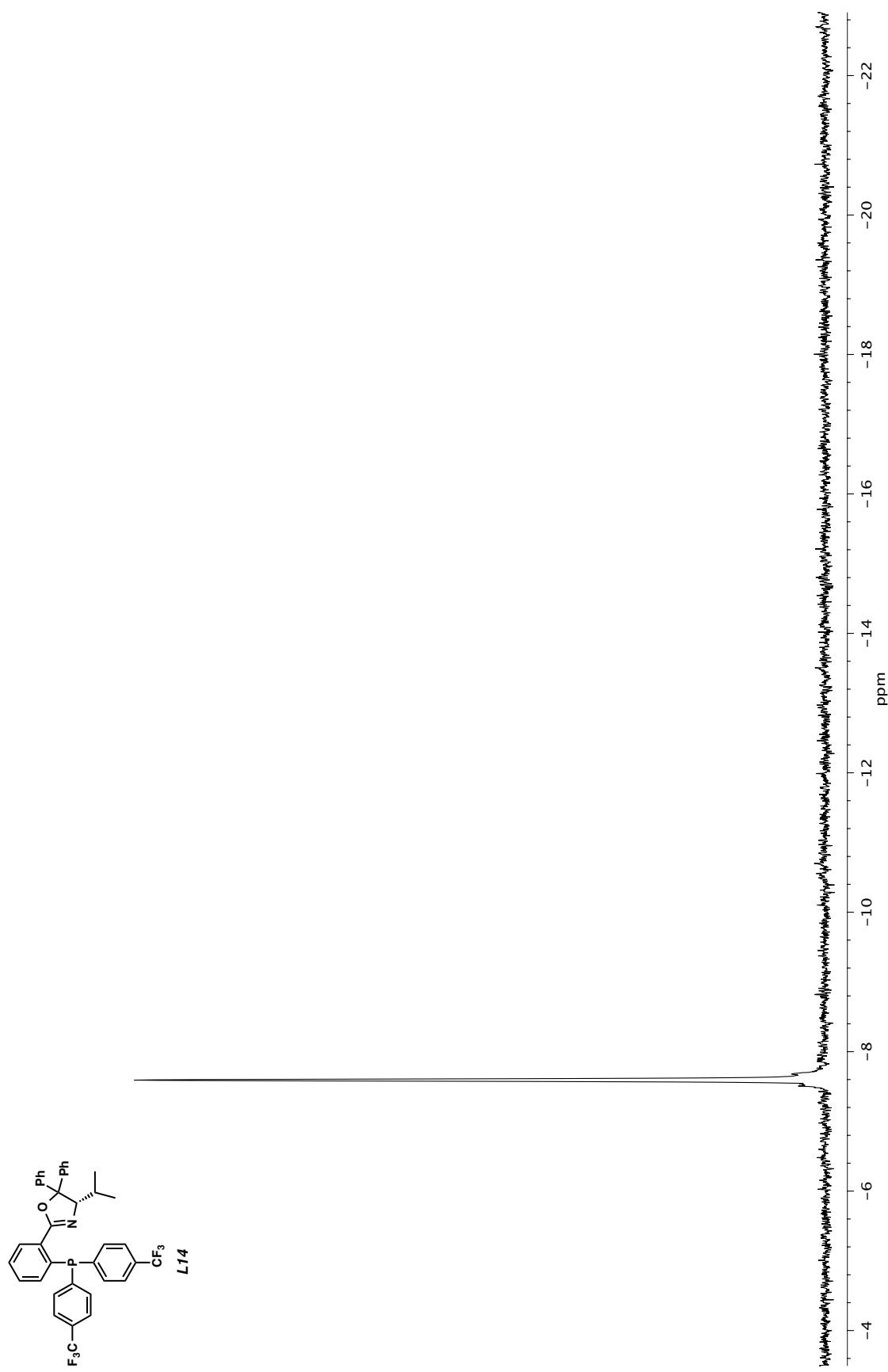


Figure A3.62 ^{31}P NMR (121 MHz, C_6D_6) of compound L14.

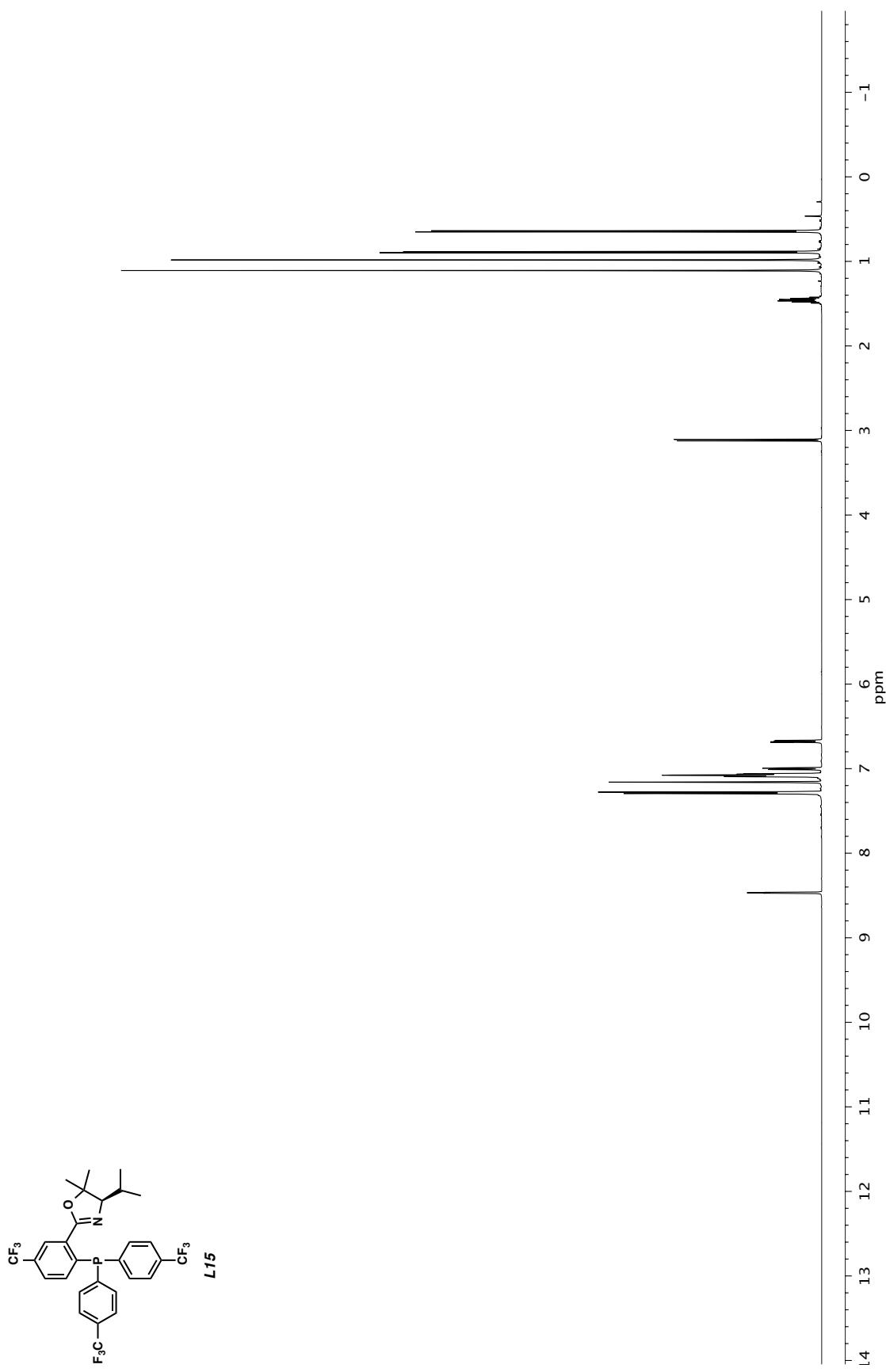


Figure A3.63 ^1H NMR (500 MHz, C_6D_6) of compound L15.

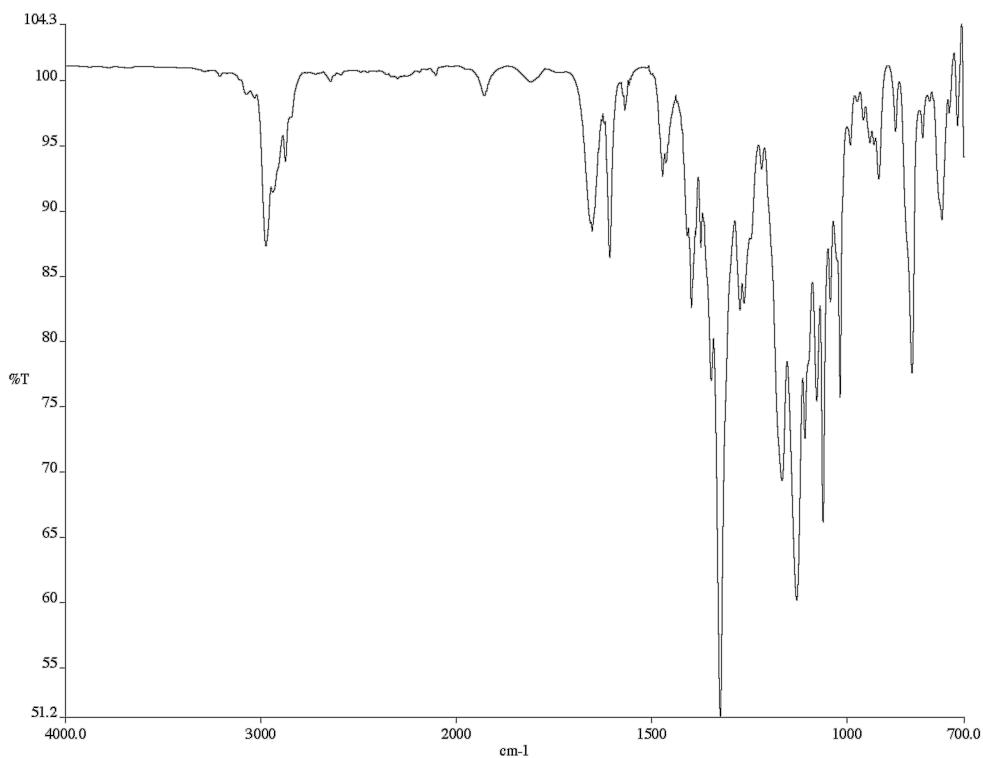


Figure A3.64 Infrared spectrum (thin film/NaCl) of compound **L15**.

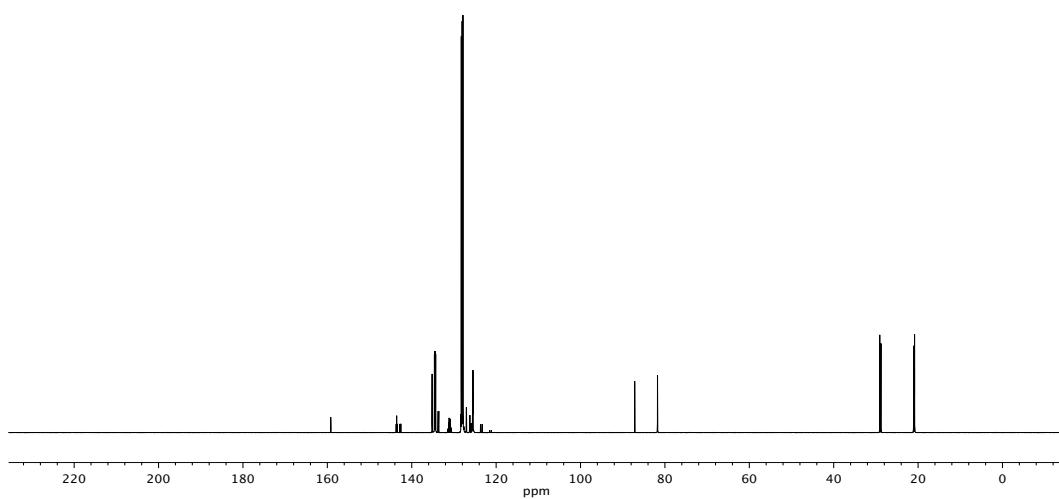


Figure A3.65 ^{13}C NMR (125 MHz, C_6D_6) of compound **L15**.

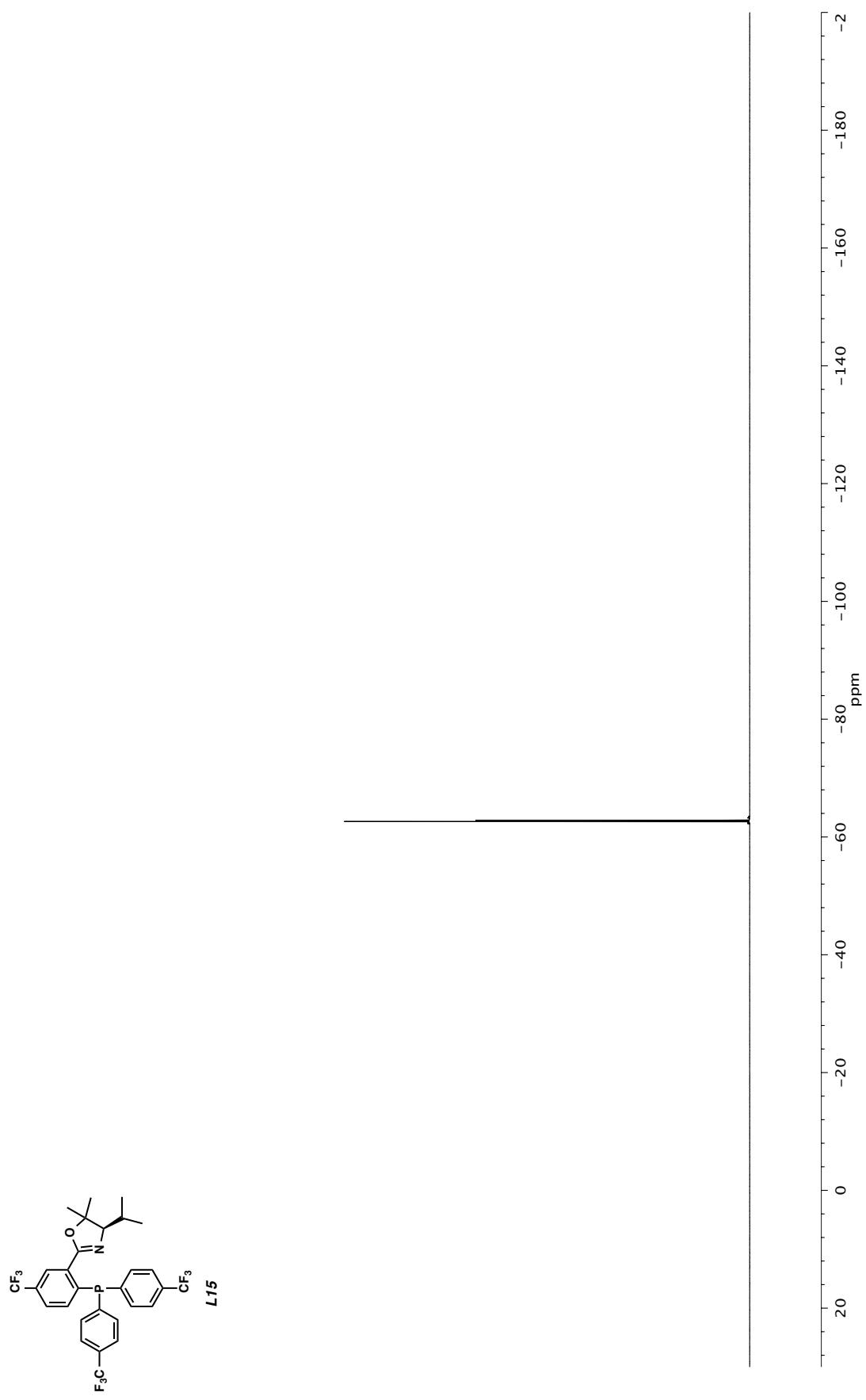


Figure A3.66 ^{19}F NMR (282 MHz, C_6D_6) of compound L8.

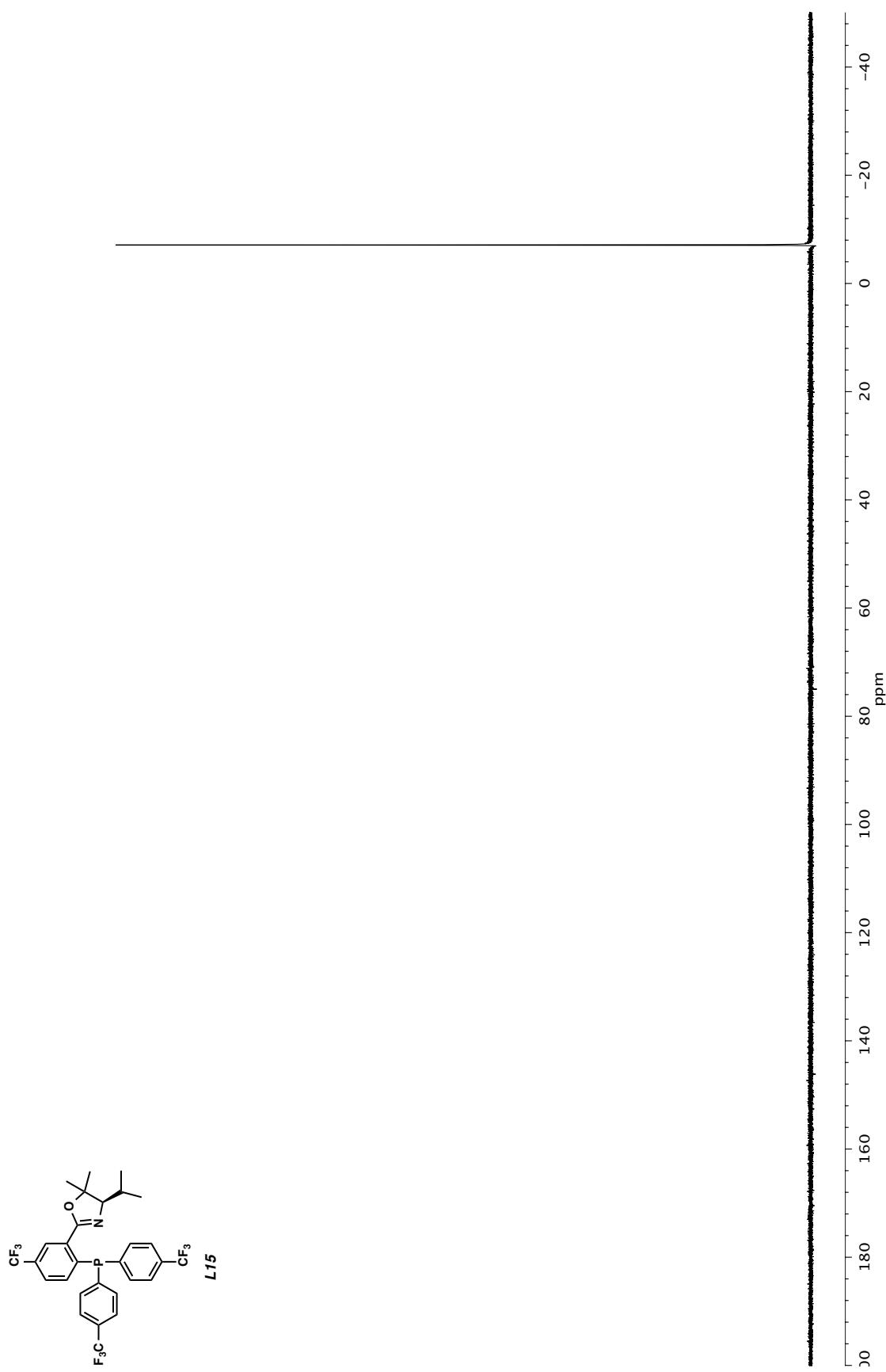


Figure A3.67 ^{31}P NMR (121 MHz, C_6D_6) of compound L15.