

APPENDIX FOUR
Spectra of Compounds in Chapter Three

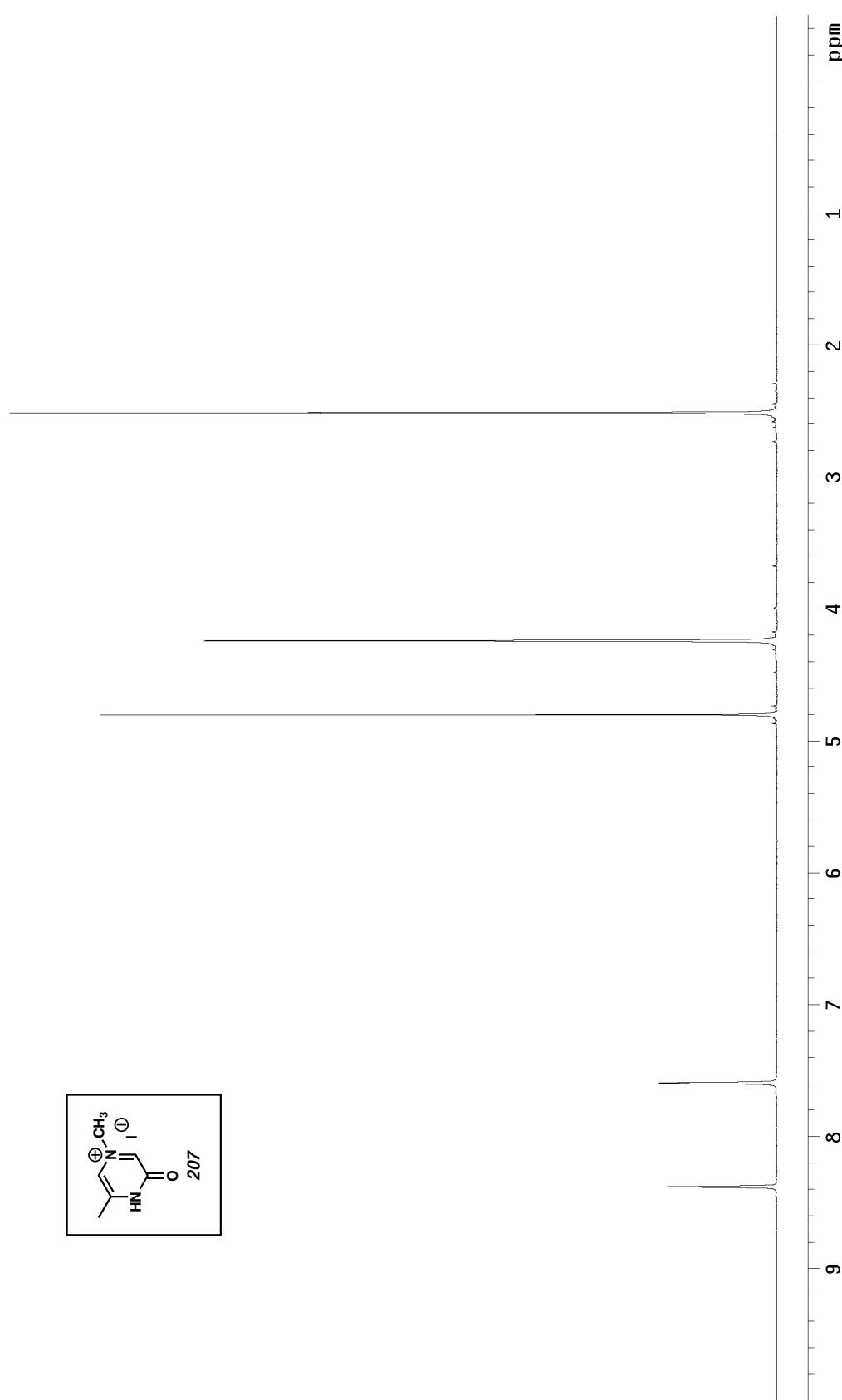


Figure A4.1 ^1H NMR of compound 207 (300 MHz, D_2O)

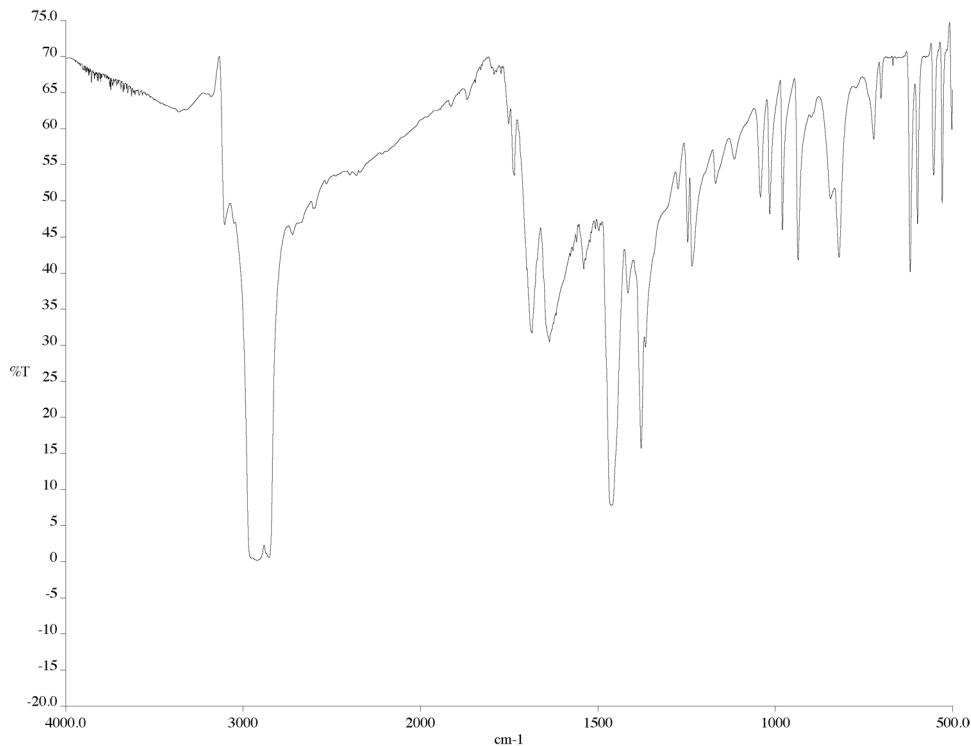


Figure A4.2 IR of compound **207** (Nujol)

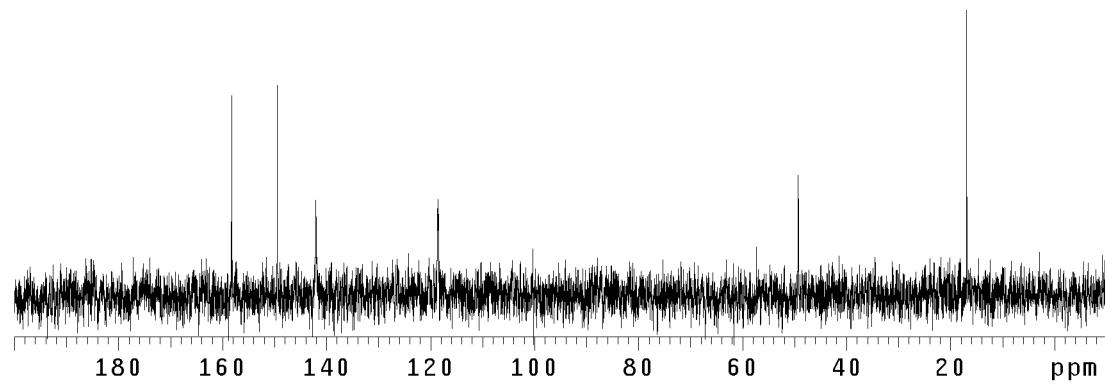


Figure A4.3 ¹³C NMR of compound **207** (75 MHz, D₂O)

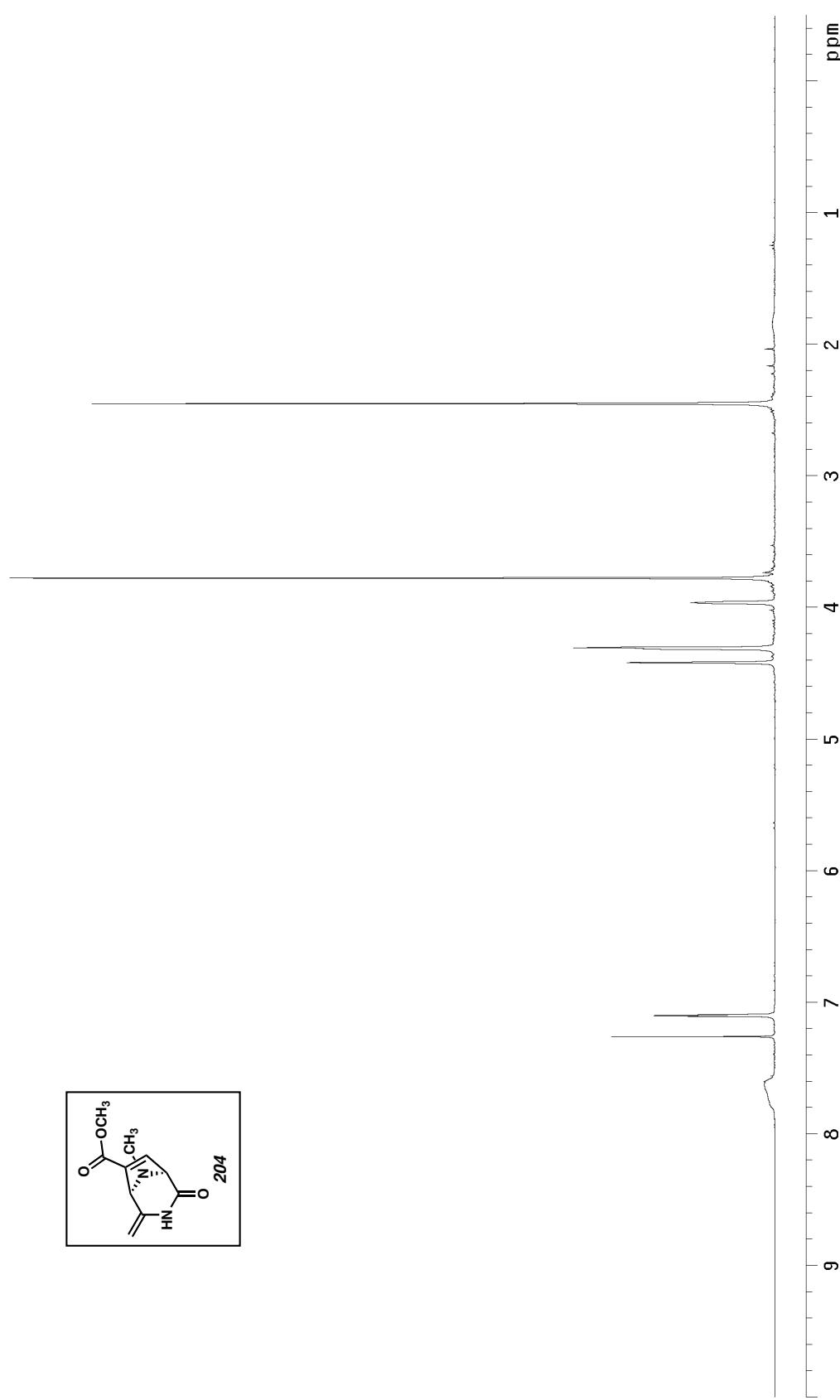


Figure A4.4 ^1H NMR of compound 204 (300 MHz, CDCl_3)

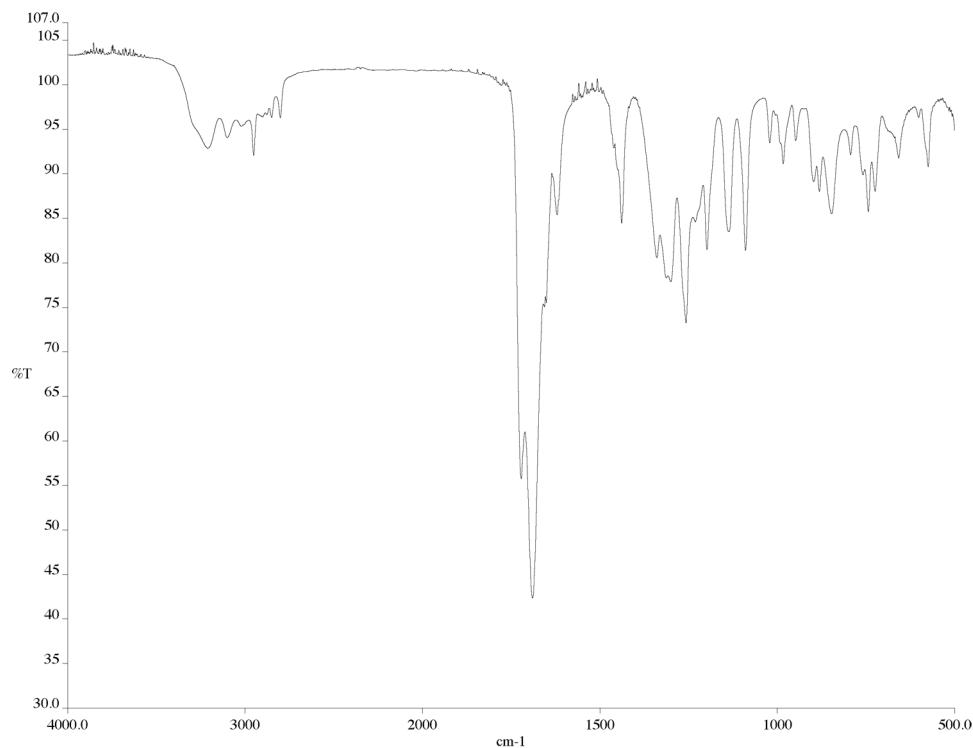


Figure A4.5 IR of compound **204** (NaCl/film)

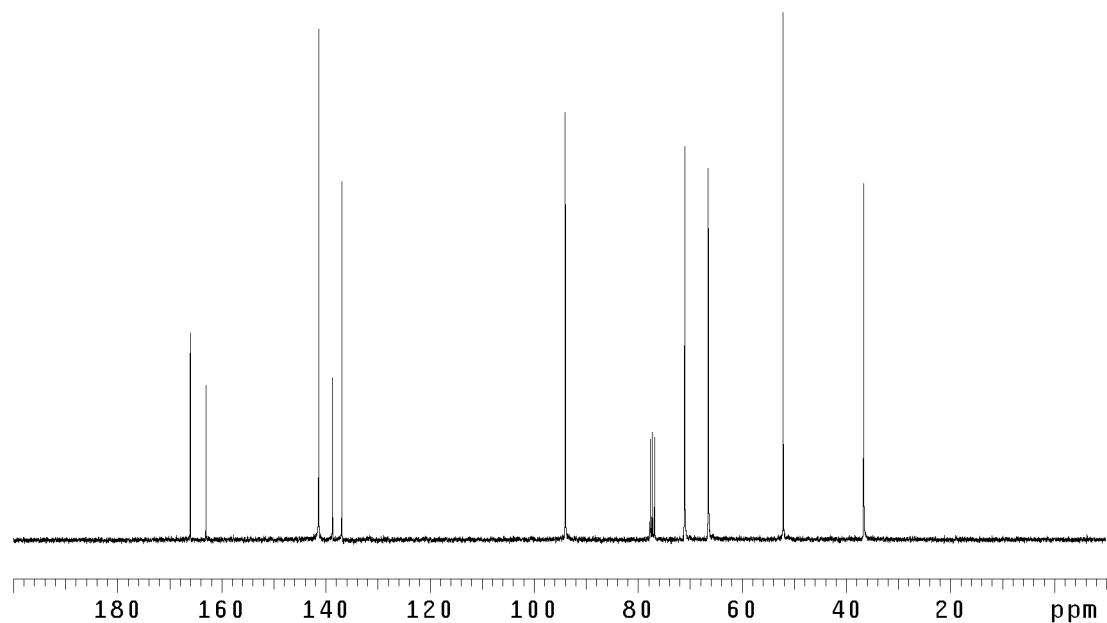


Figure A4.6 ^{13}C NMR of compound **204** (75 MHz, CDCl_3)

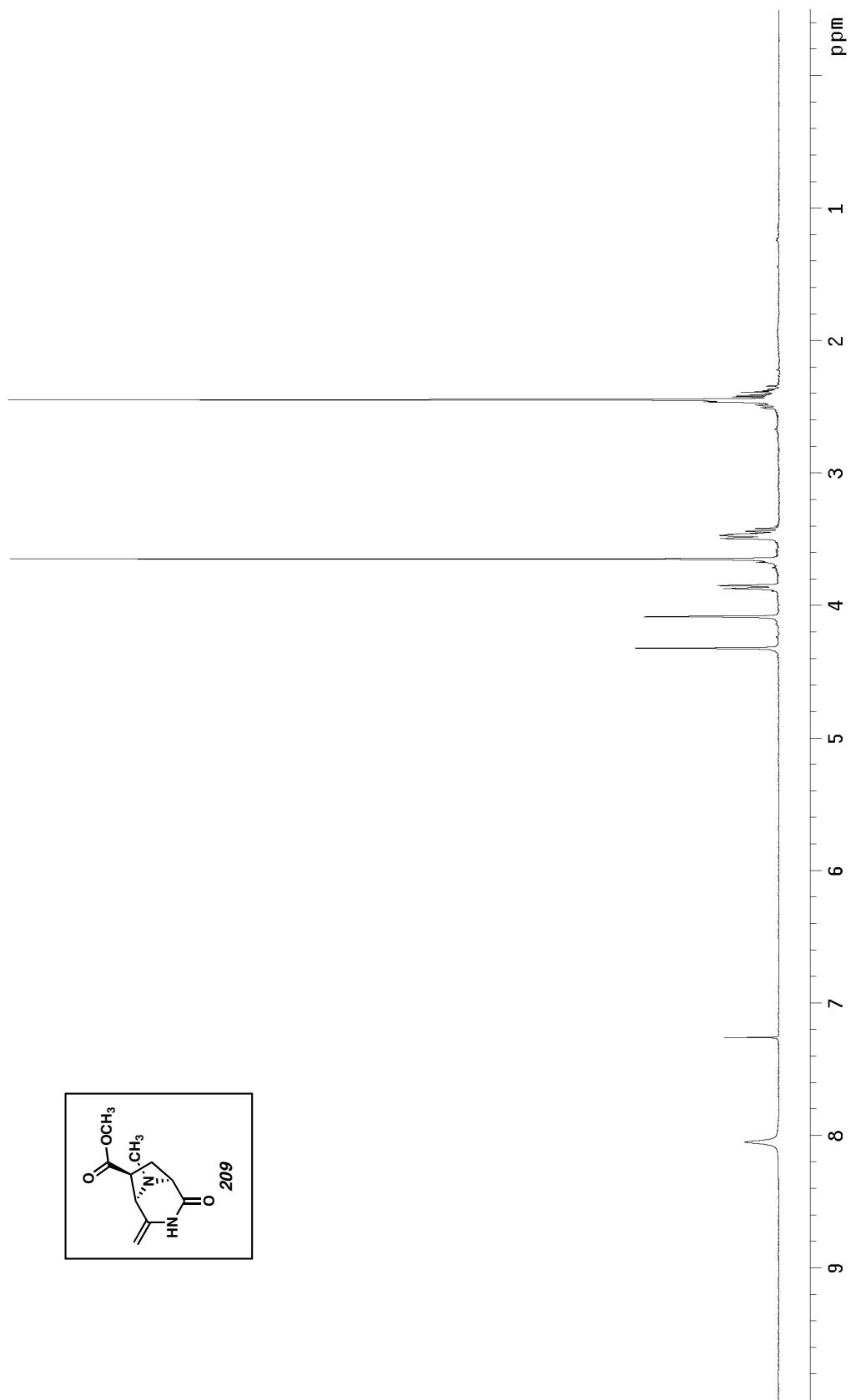


Figure A4.7 ^1H NMR of compound **209** (300 MHz, CDCl_3)

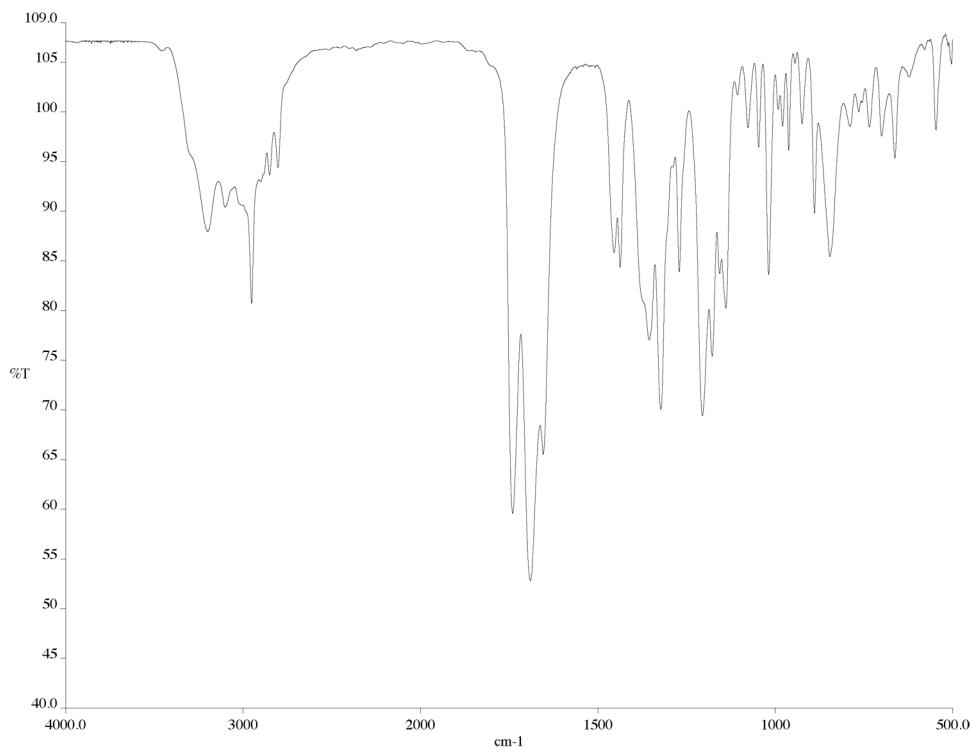


Figure A4.8 IR of compound **209** (NaCl/film)

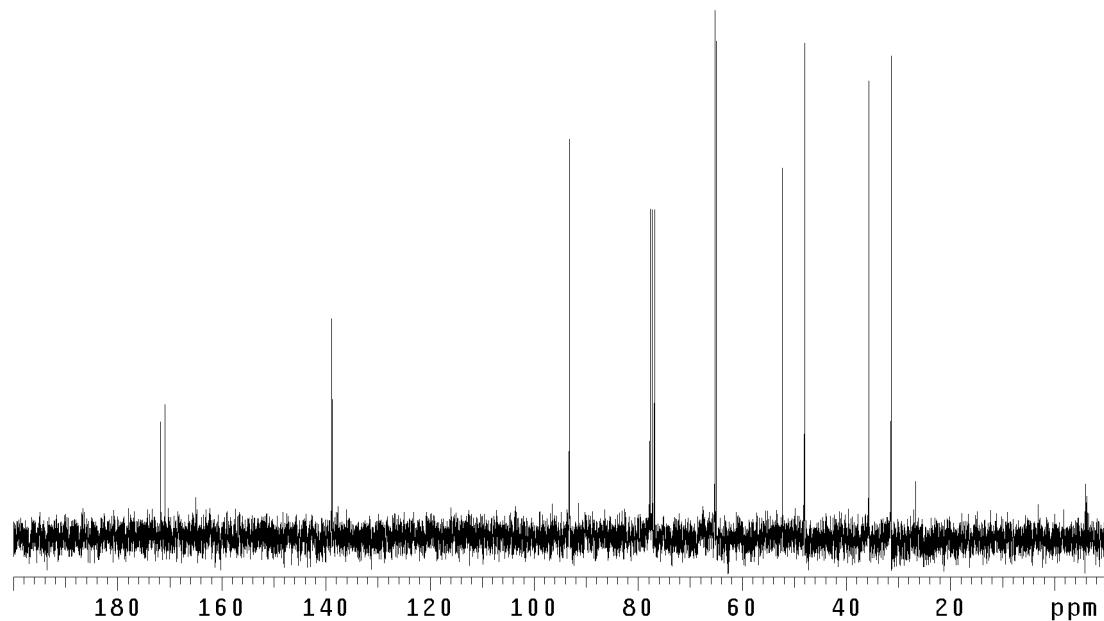


Figure A4.9 ^{13}C NMR of compound **209** (75 MHz, CDCl_3)

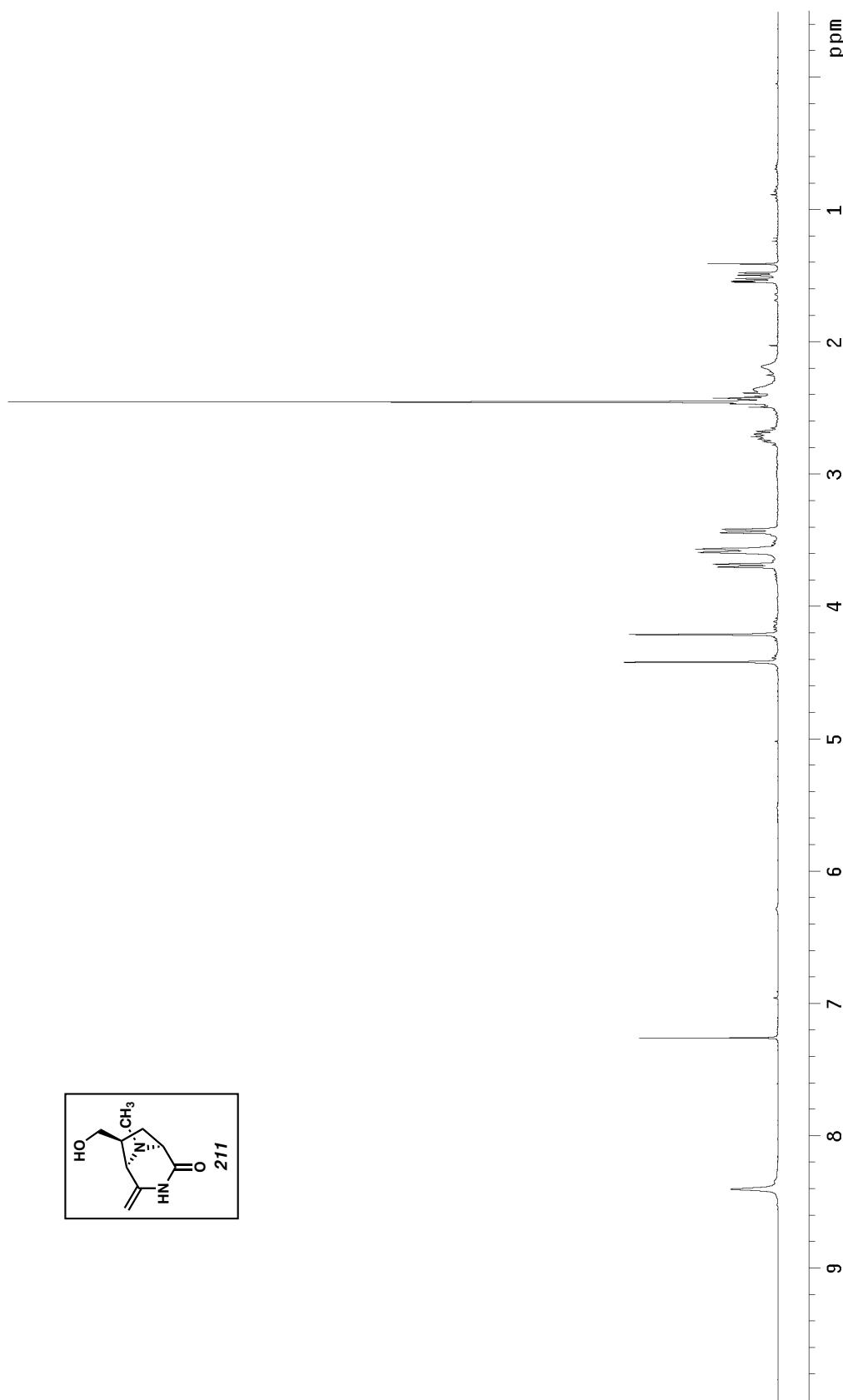


Figure A4.10 ^1H NMR for compound 211 (300 MHz, CDCl_3)

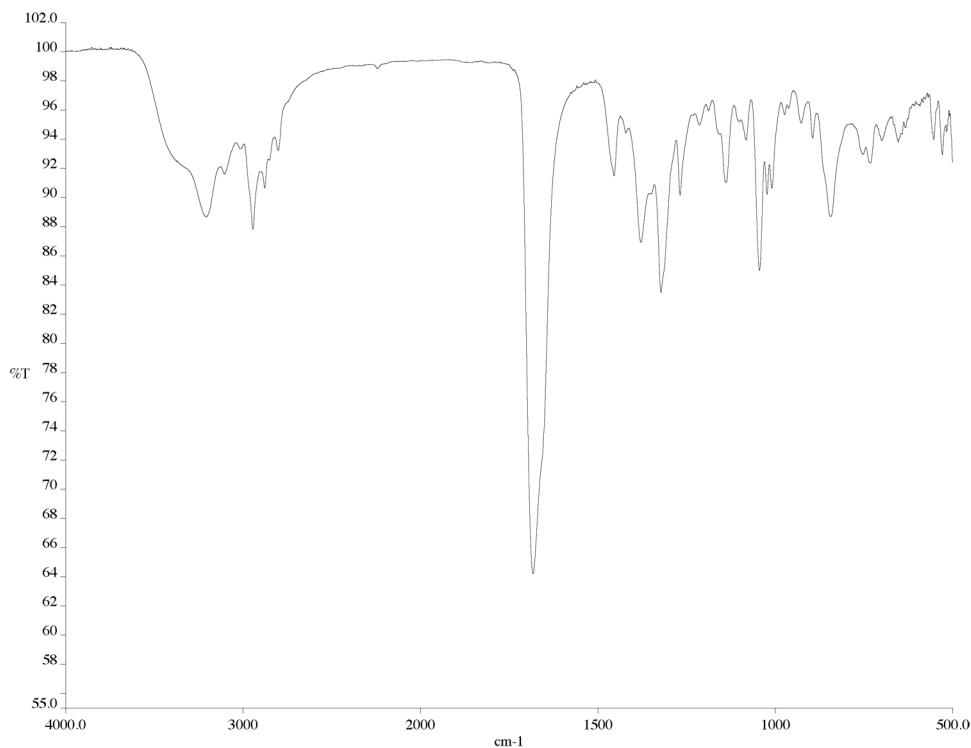


Figure A4.11 IR of compound **211** (NaCl/film)

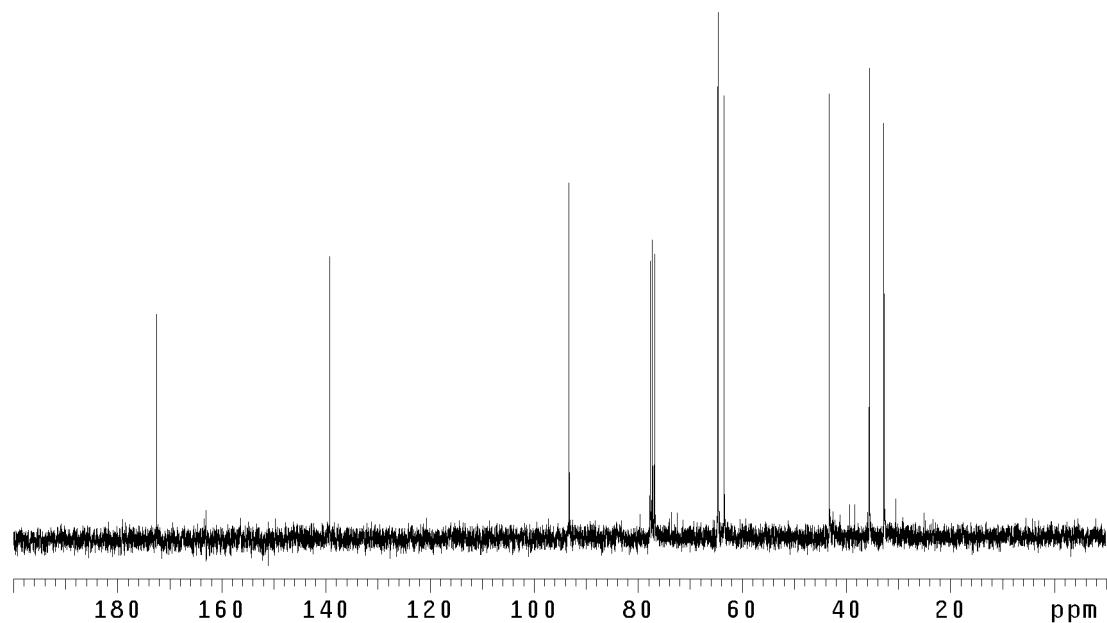


Figure A4.12 ¹³C NMR of compound **211** (75 MHz, CDCl₃)

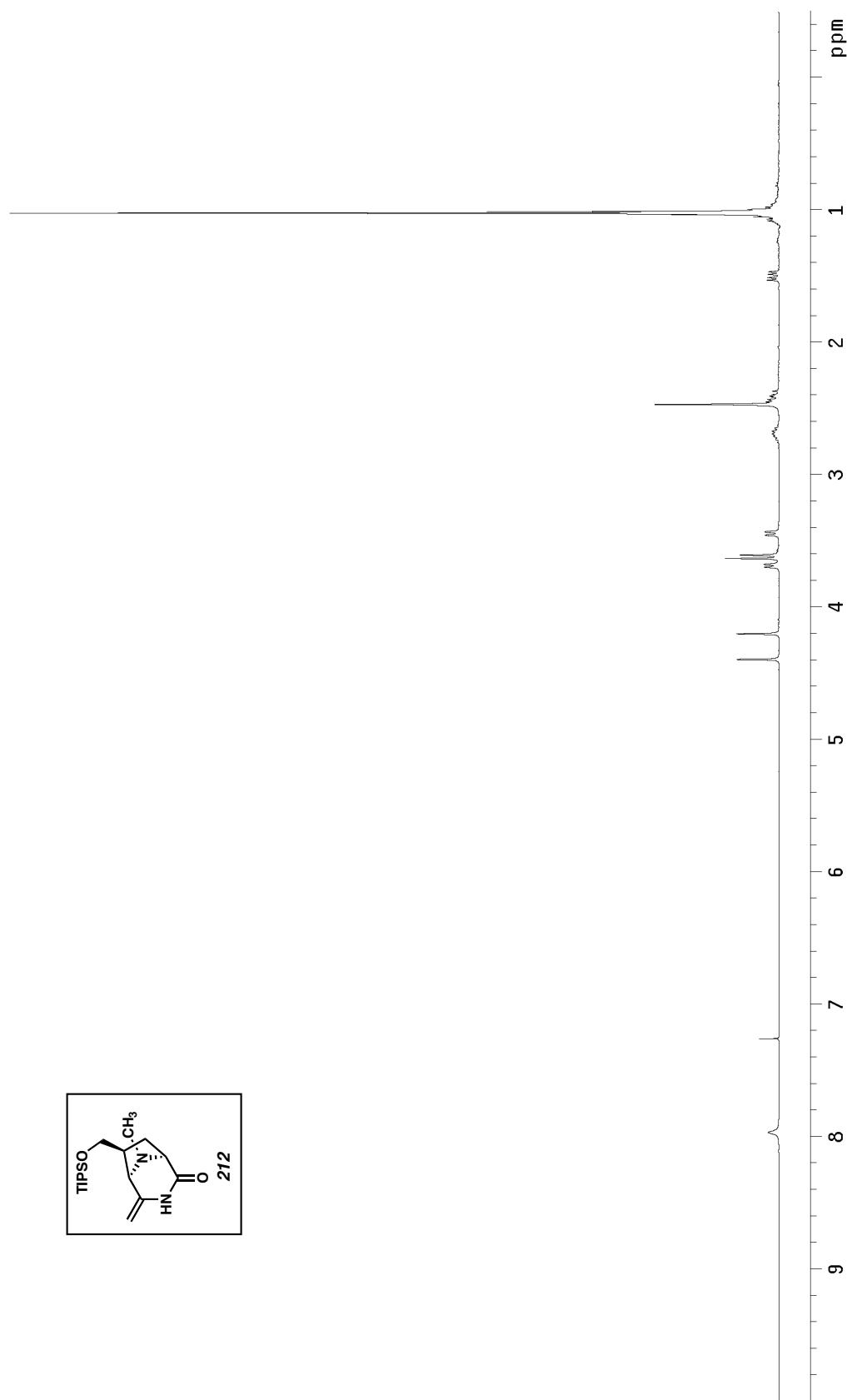


Figure A4.13 ^1H NMR of compound 212 (300 MHz, CDCl_3)

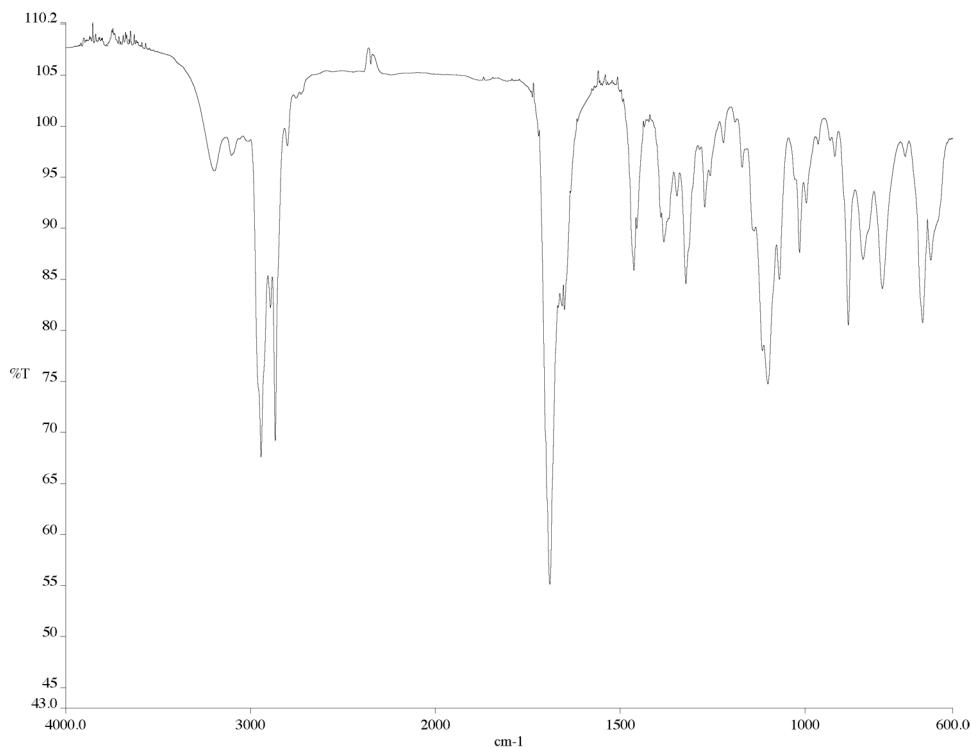


Figure A4.14 IR of compound **212** (NaCl/film)

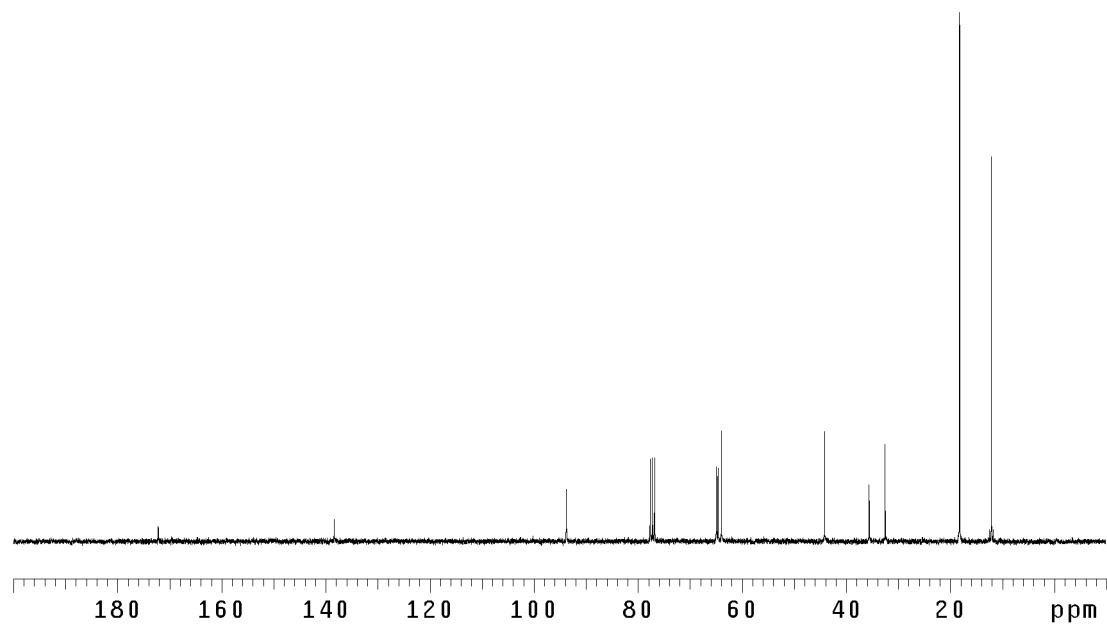


Figure A4.15 ¹³C NMR of compound **212** (75 MHz, CDCl₃)

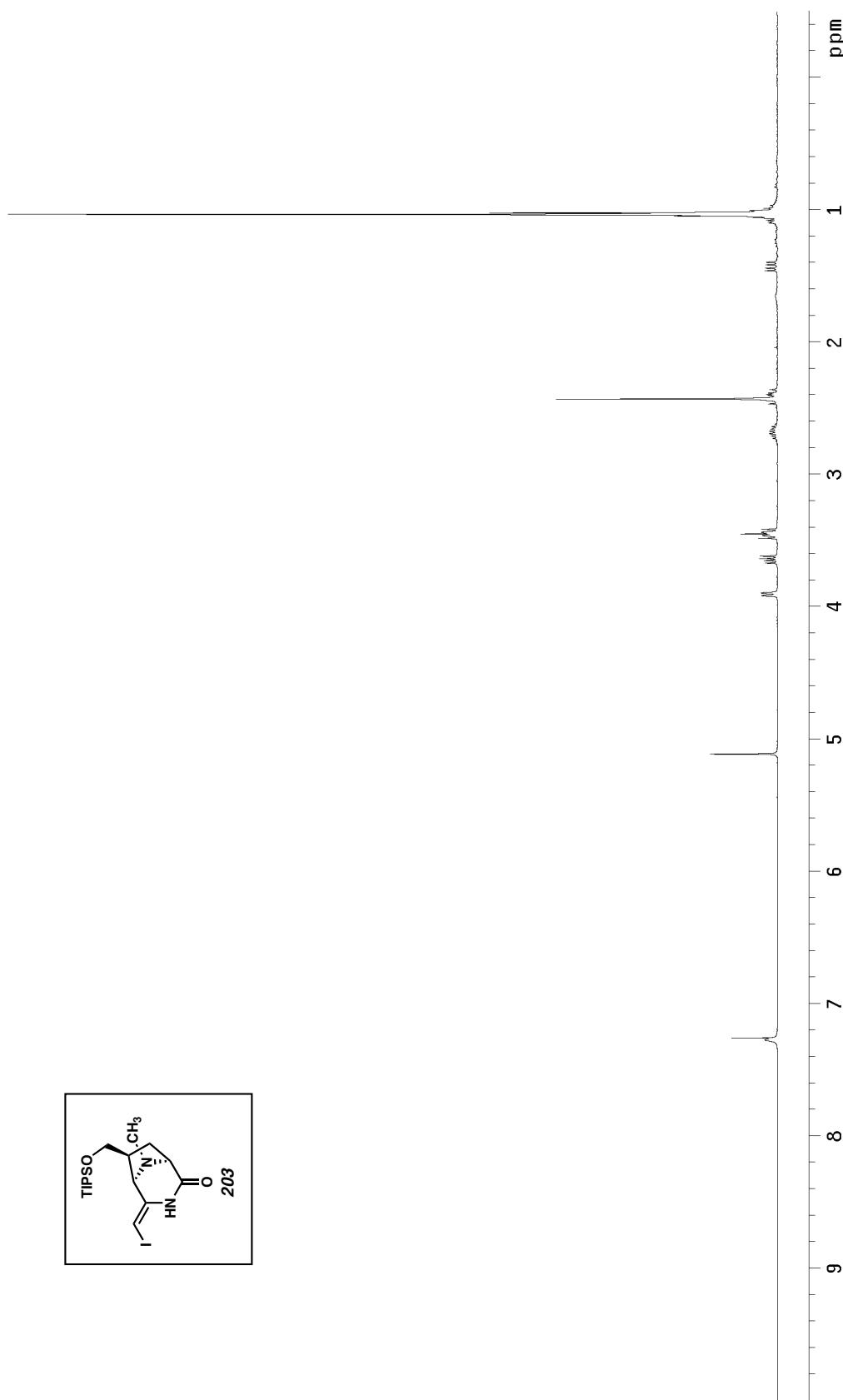
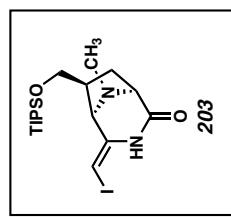


Figure A4.16 ¹H NMR of compound 203 (300 MHz, CDCl₃)



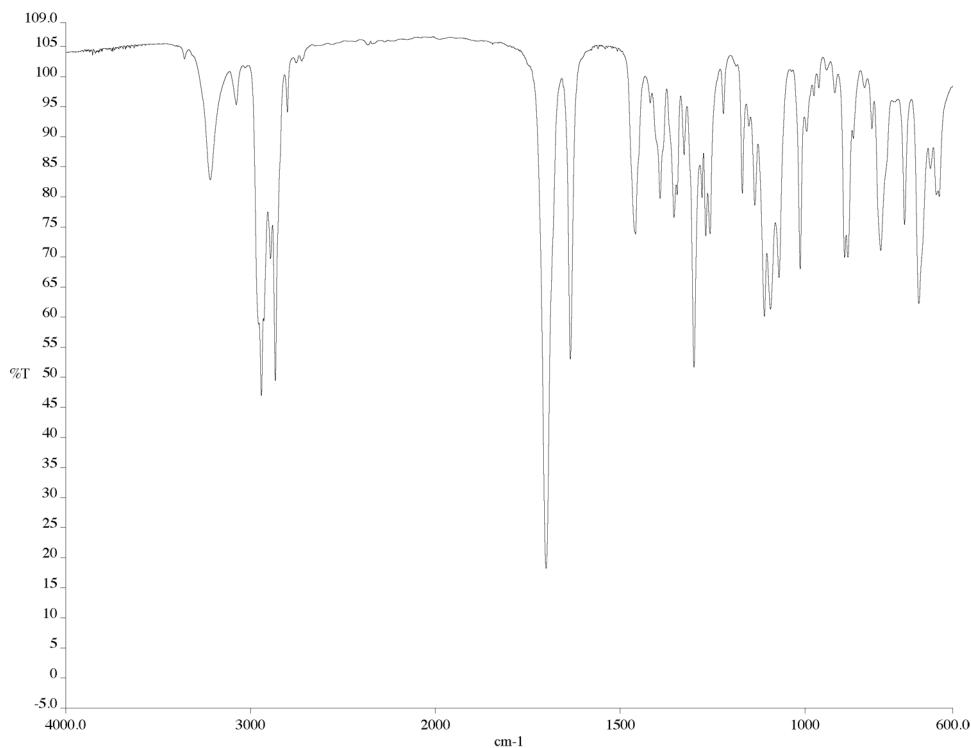


Figure A4.17 IR of compound **203** (NaCl/film)

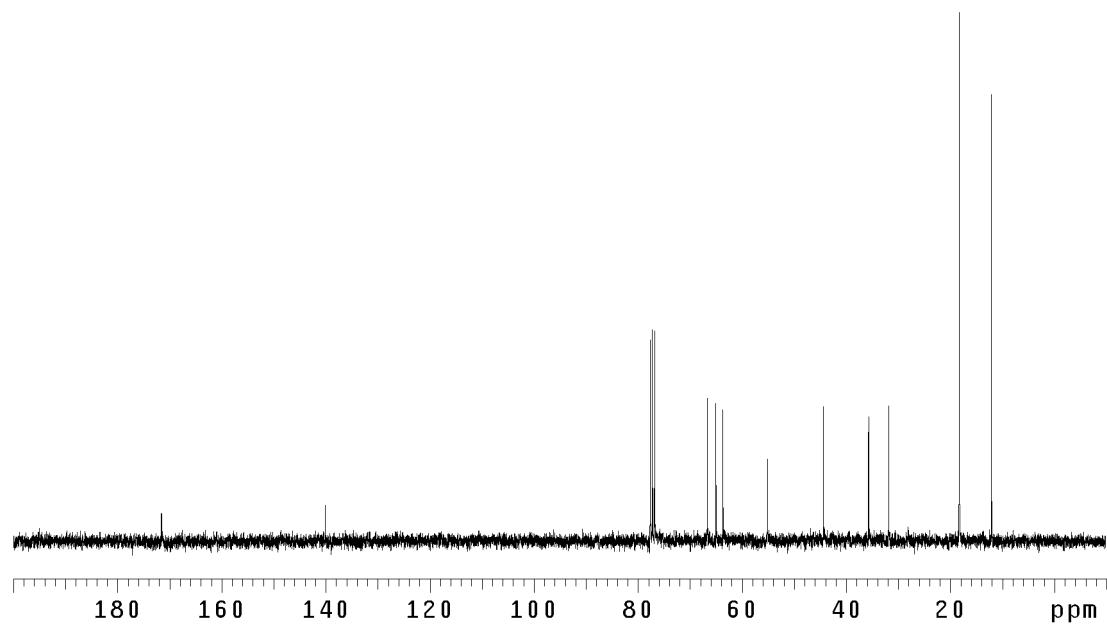


Figure A4.18 ¹³C NMR of compound **203** (75 MHz, CDCl₃)

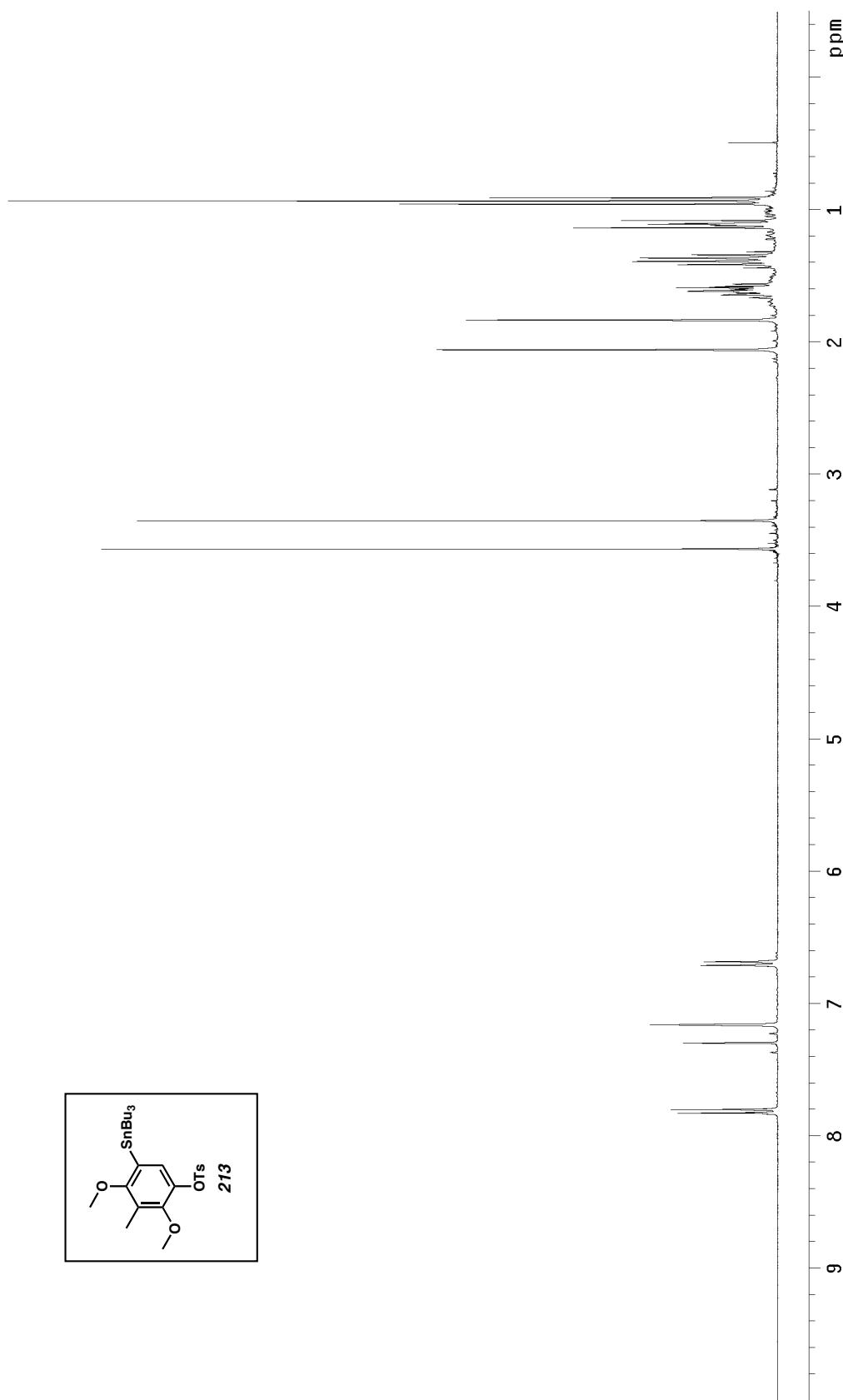


Figure A4.19 ^1H NMR of compound 213 (300 MHz, C_6D_6)

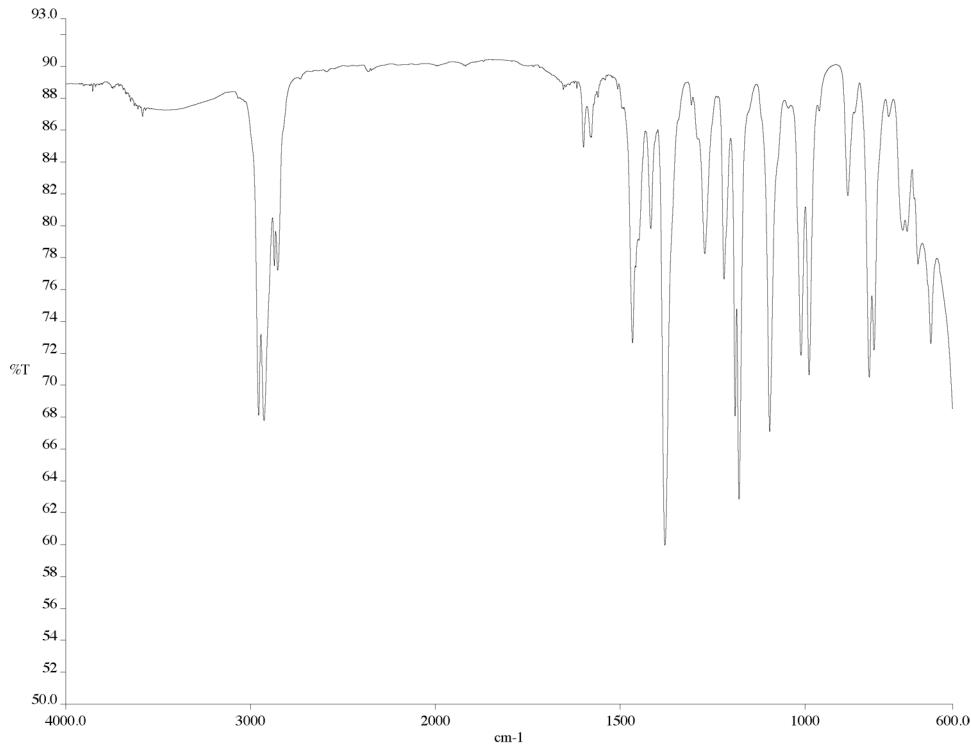


Figure A4.20 IR of compound **213** (NaCl/film)

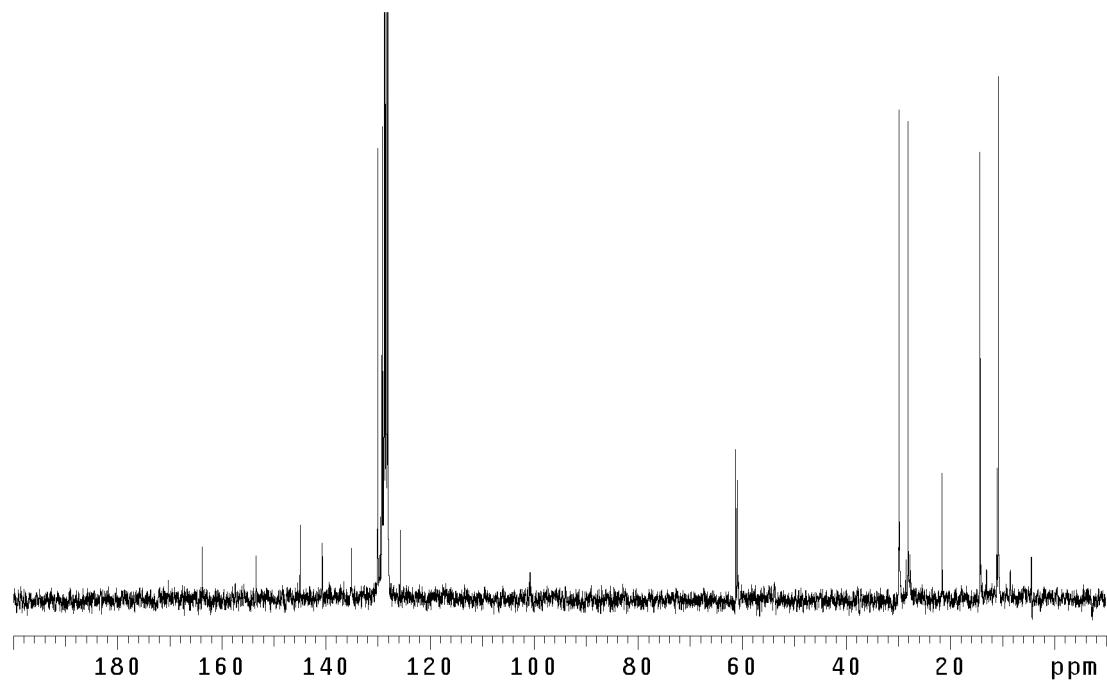


Figure A4.21 ^{13}C NMR of compound **213** (75 MHz, C_6D_6)

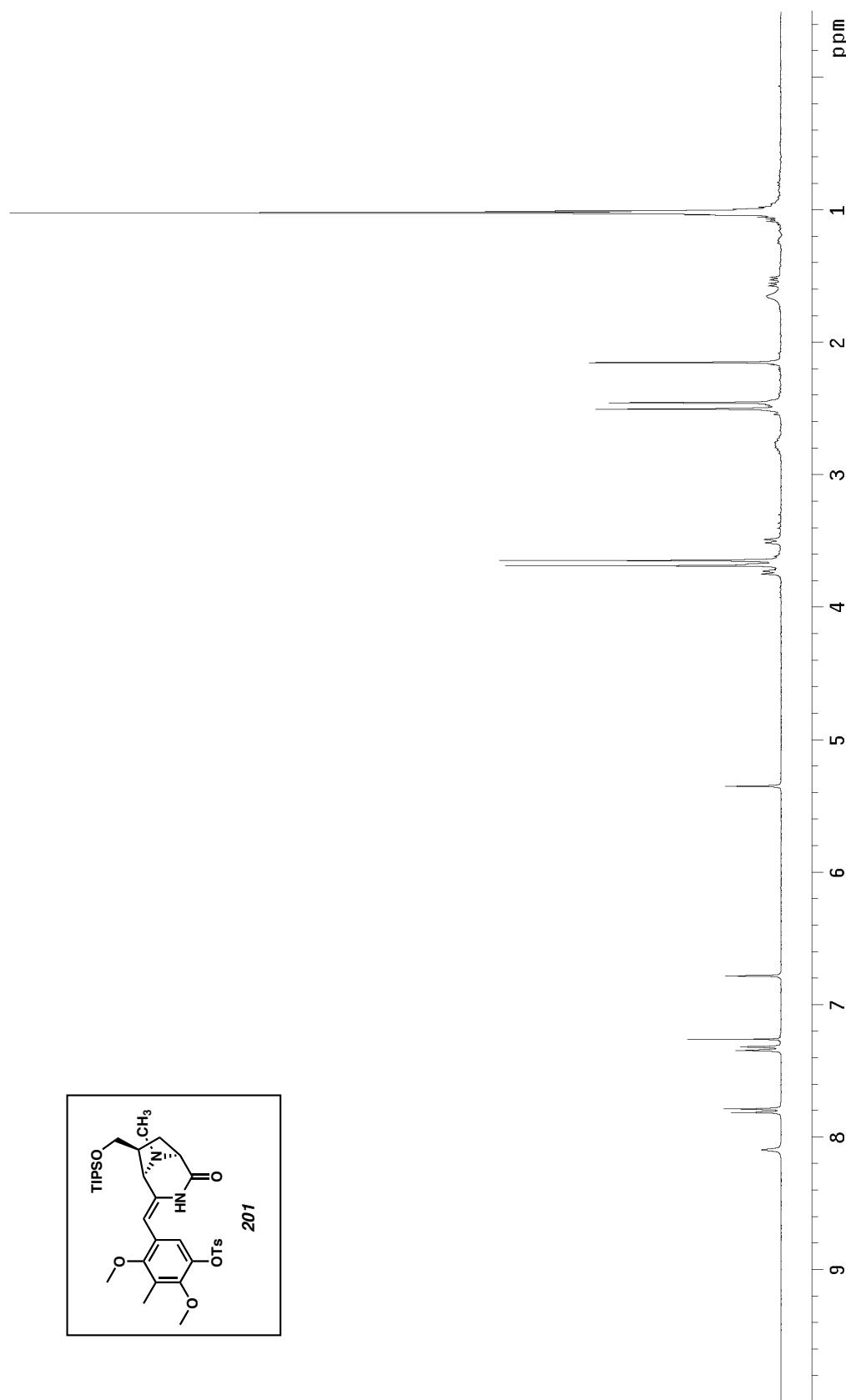


Figure A4.22 ^1H NMR of compound 201 (300 MHz, CDCl_3)

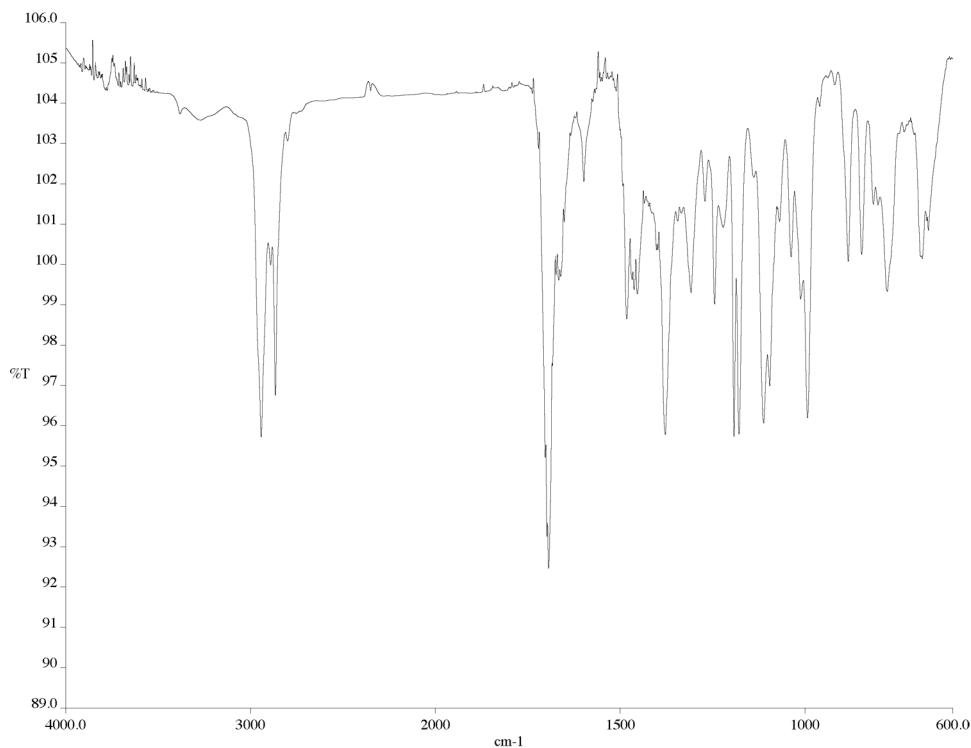


Figure A4.23 IR of compound **201** (NaCl/film)

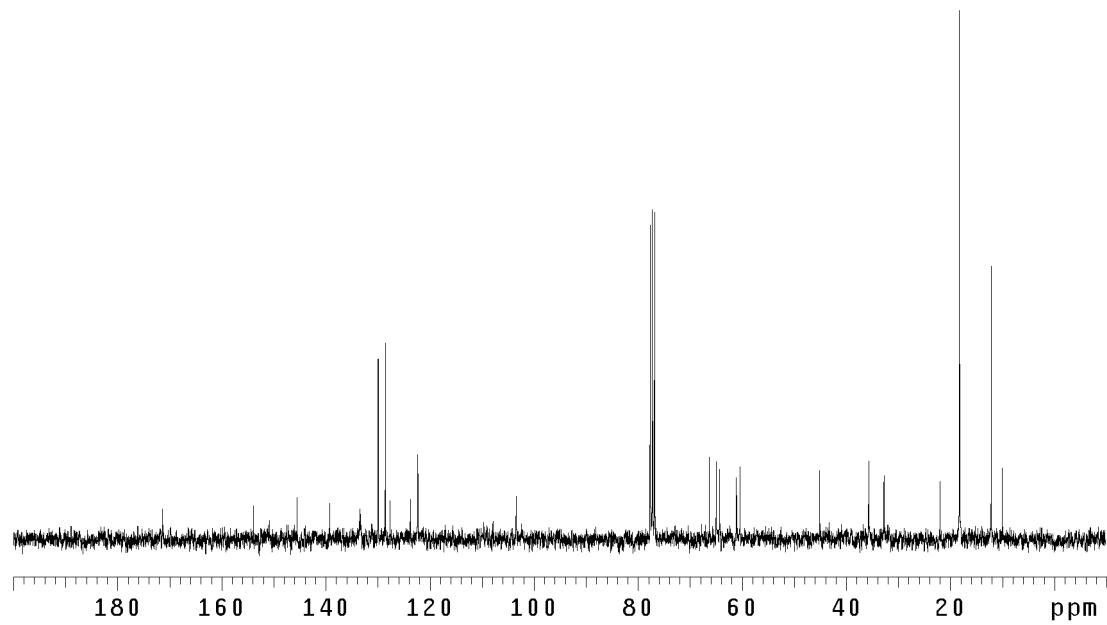


Figure A4.24 ¹³C NMR of compound **201** (75 MHz, CDCl₃)

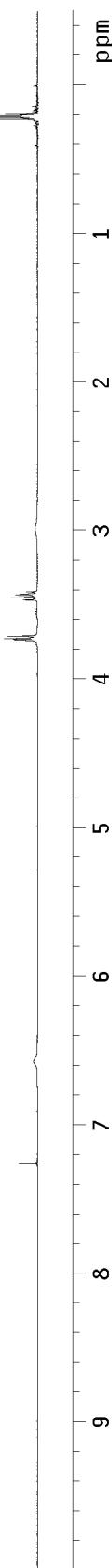
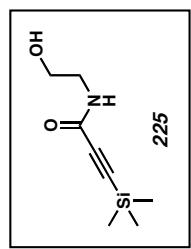


Figure A4.25 ¹H NMR of compound 225 (300 MHz, CDCl₃)



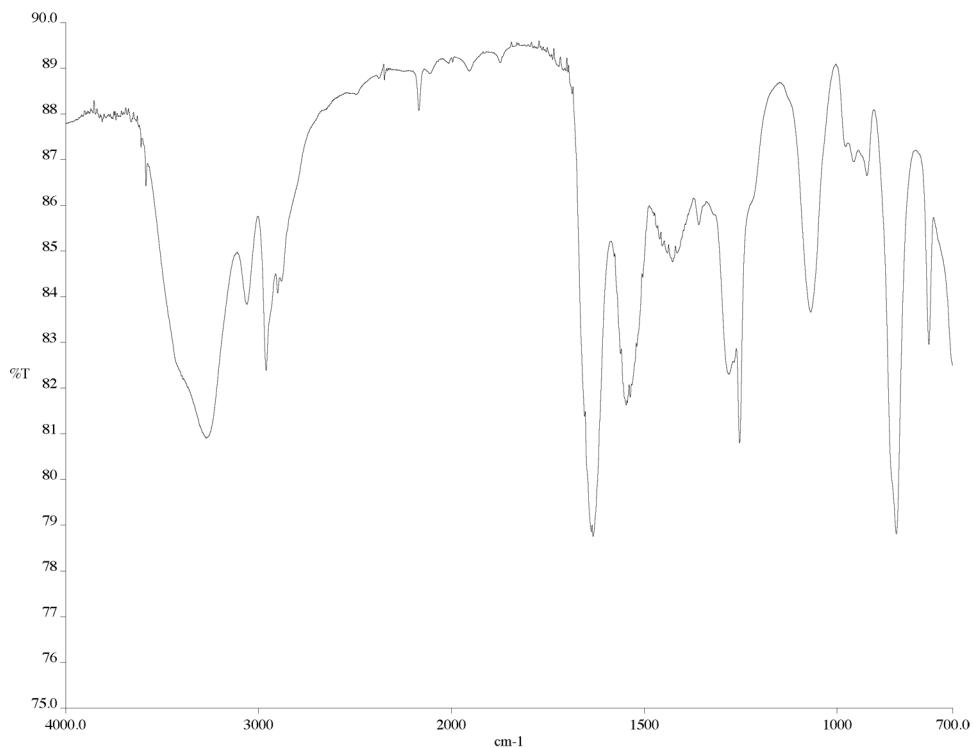


Figure A4.26 IR of compound **225** (NaCl/film)

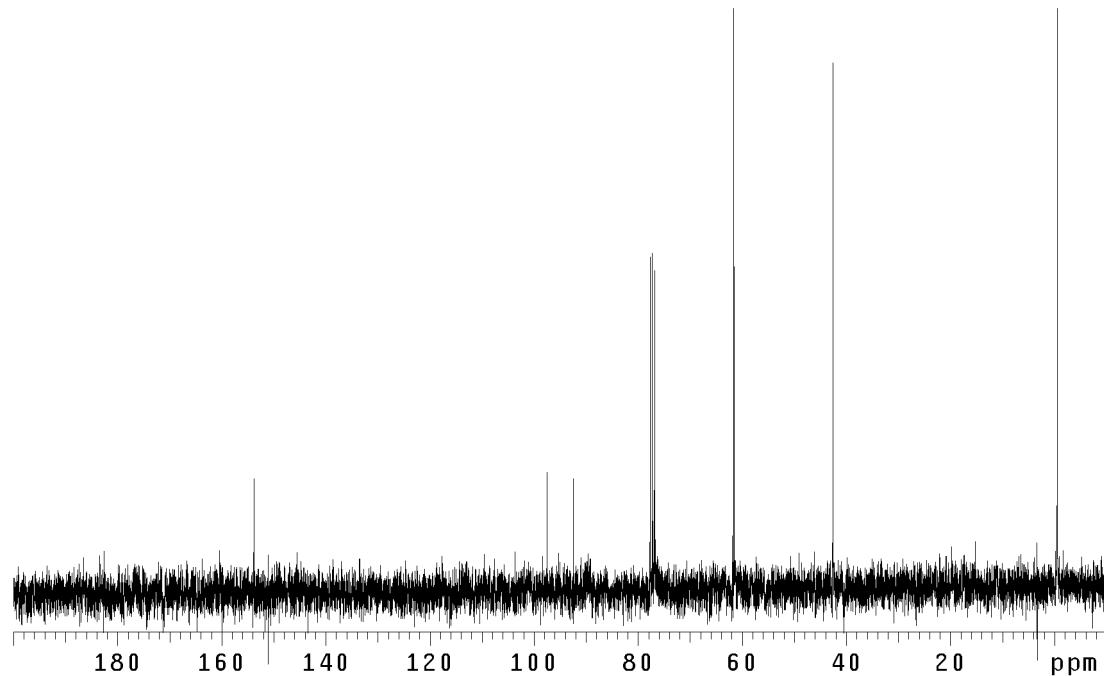


Figure A4.27 ^{13}C NMR of compound **225** (75 MHz, CDCl_3)

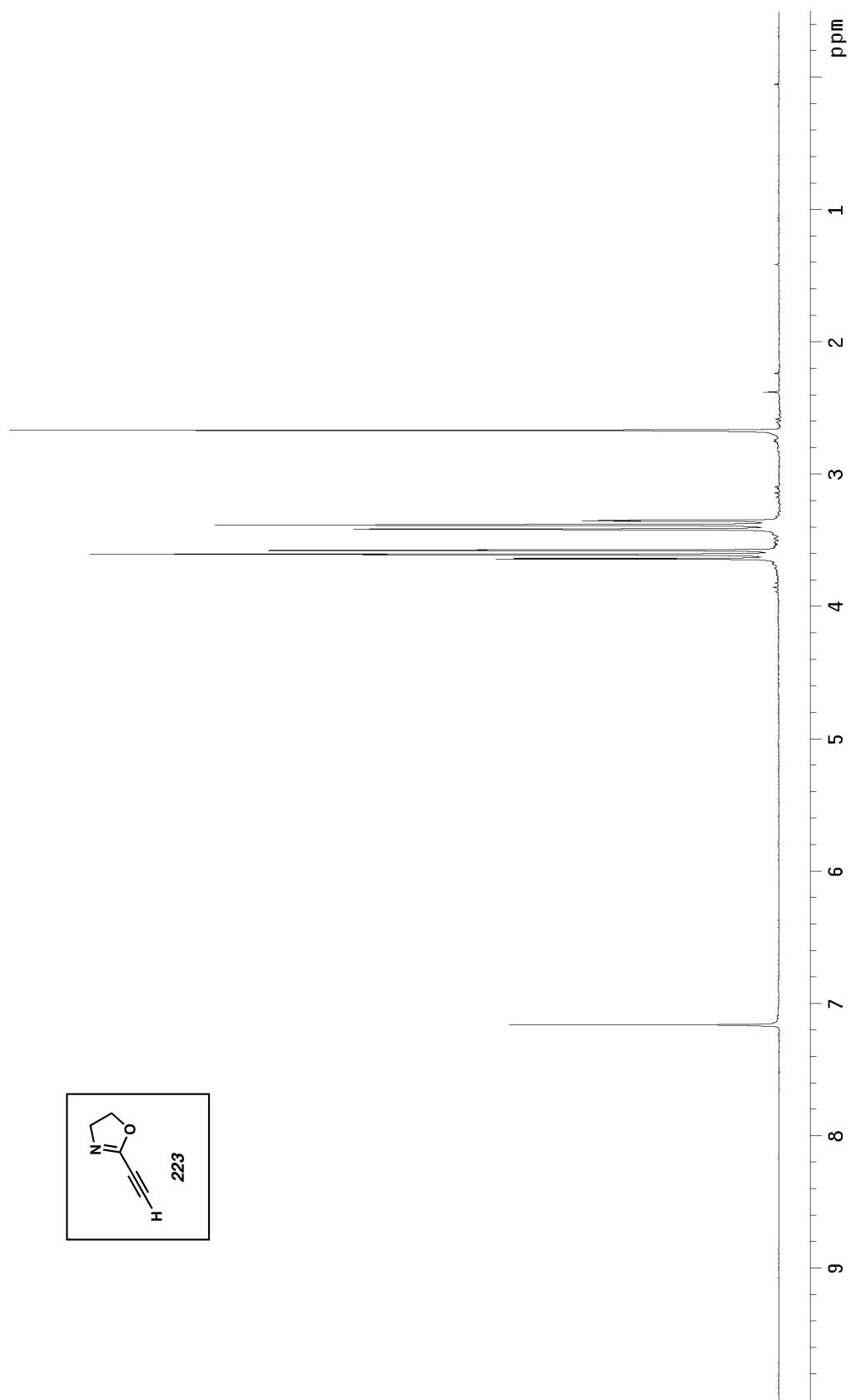


Figure A4.28 ^1H NMR of compound 223 (300 MHz, C_6D_6)

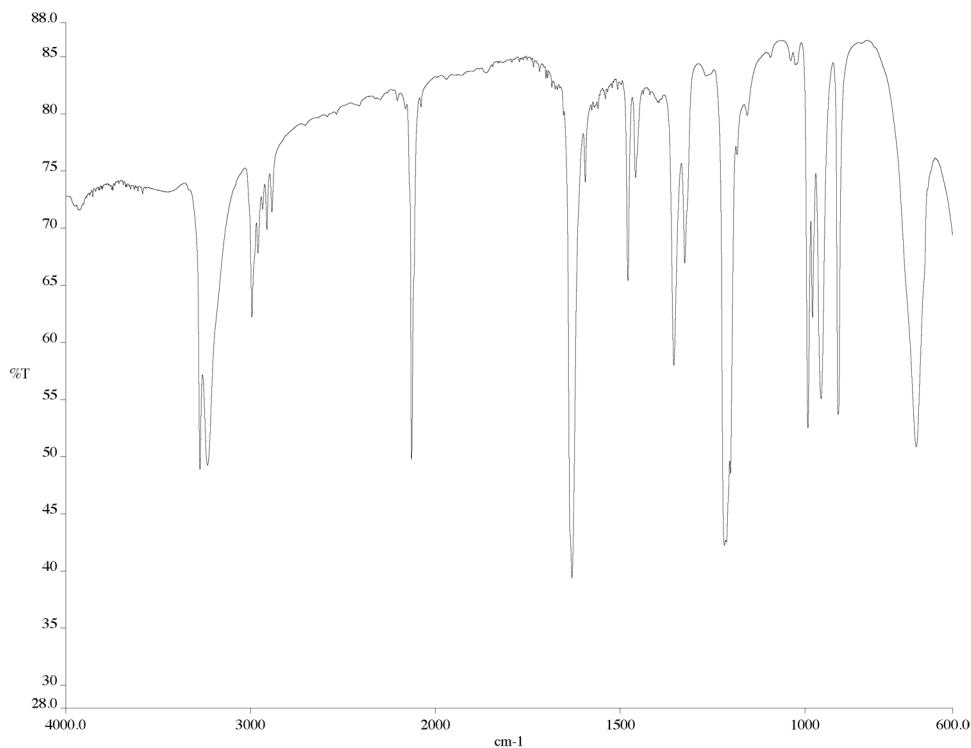


Figure A4.29 IR of compound **223** (NaCl/film)

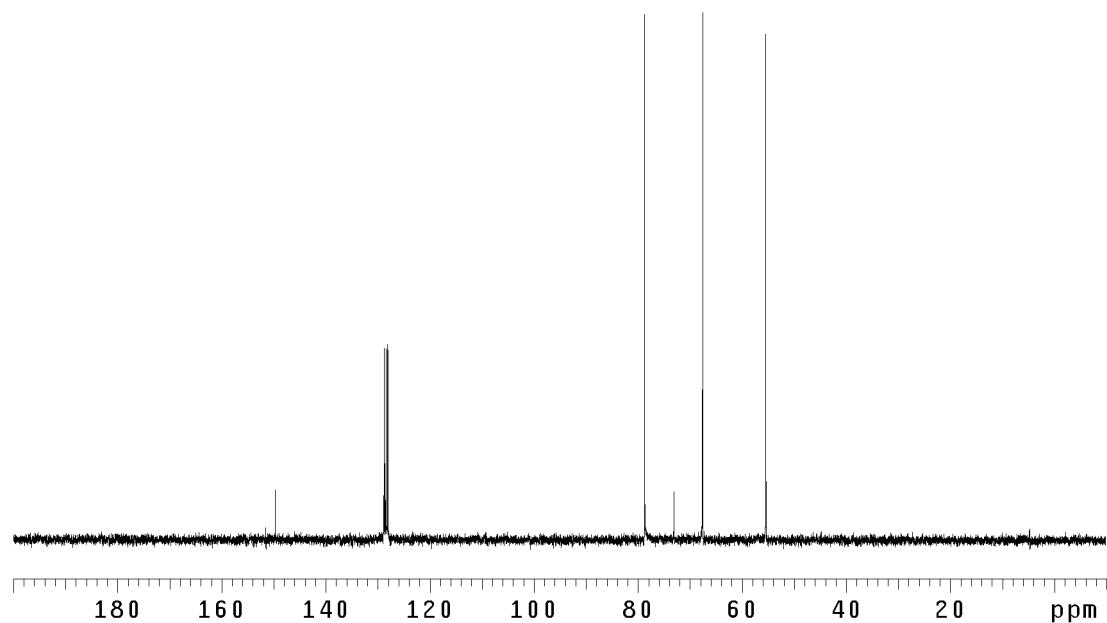


Figure A4.30 ^{13}C NMR of compound **223** (75 MHz, C_6D_6)

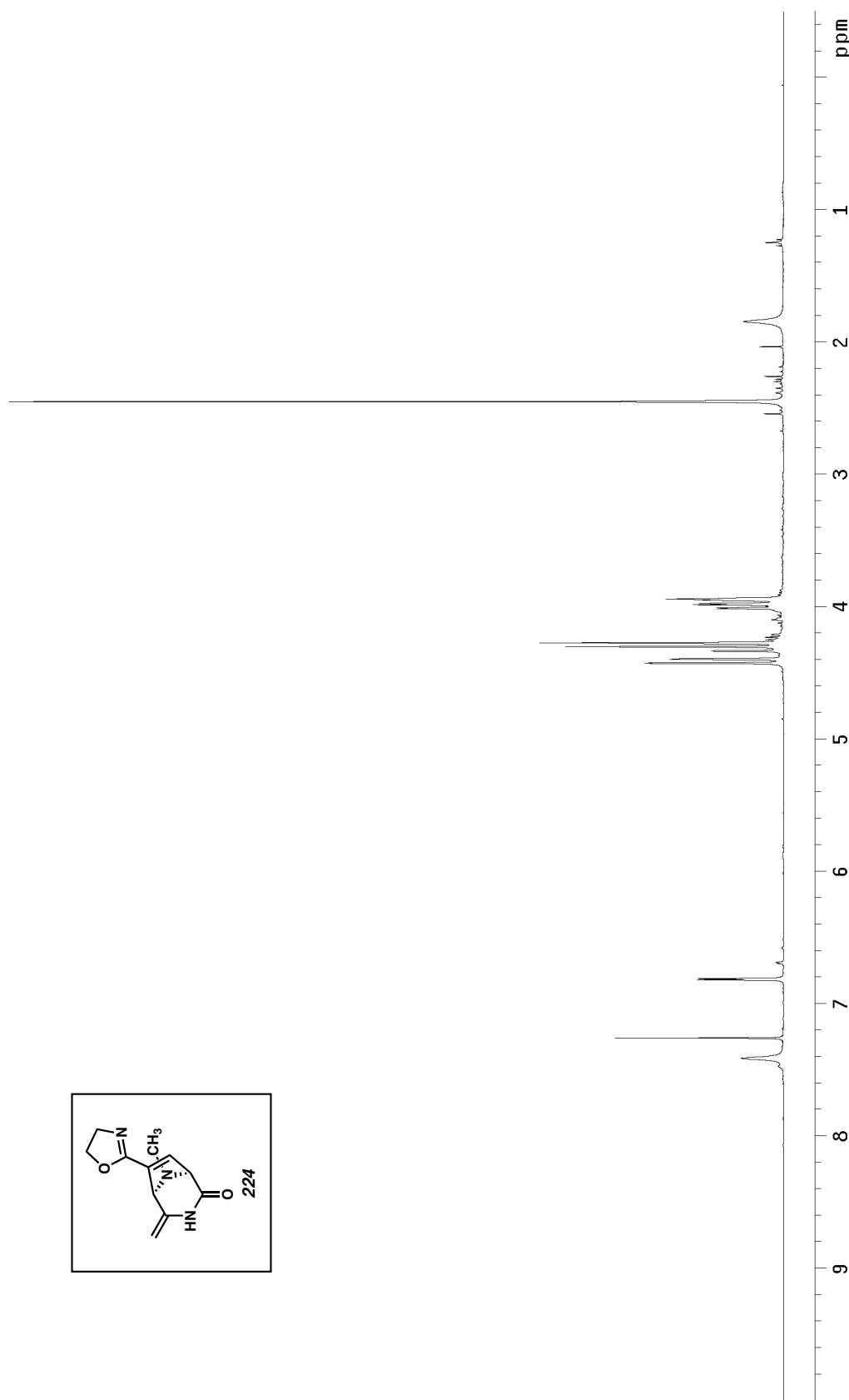


Figure A4.31 ^1H NMR of compound 224 (300 MHz, CDCl_3)

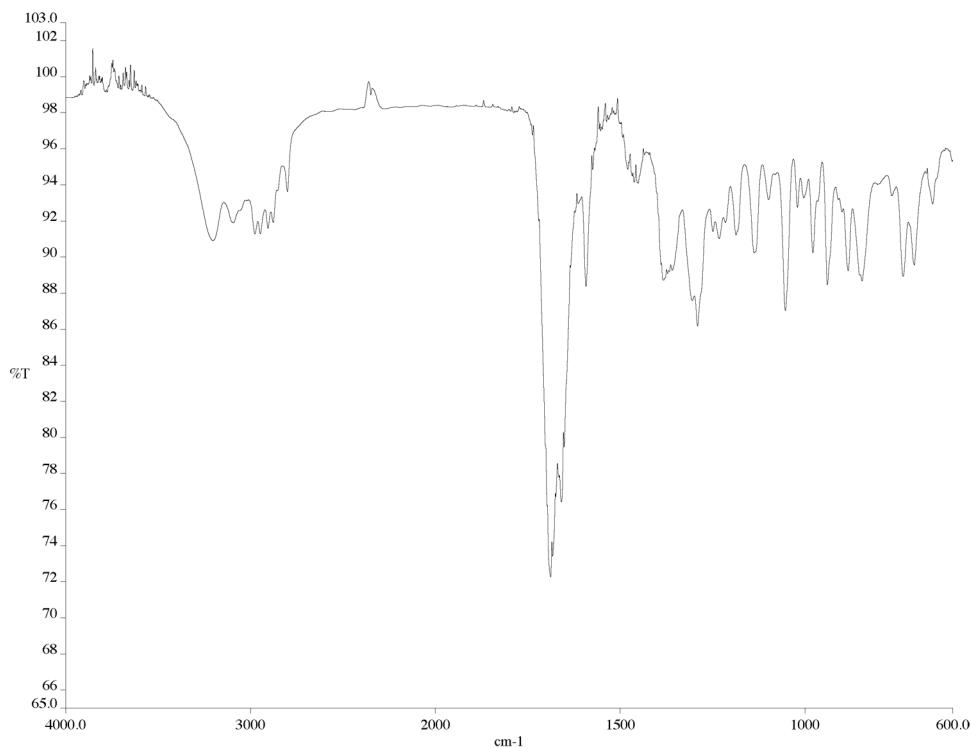


Figure A4.32 IR of compound **224** (NaCl/film)

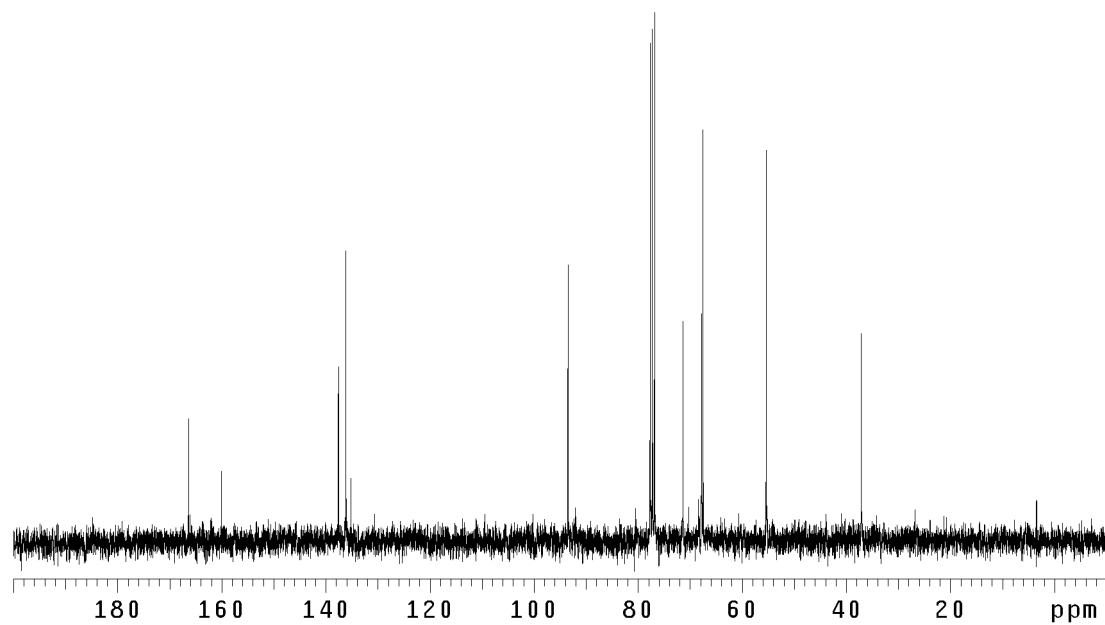


Figure A4.33 ¹³C NMR of compound **224** (75 MHz, CDCl₃)

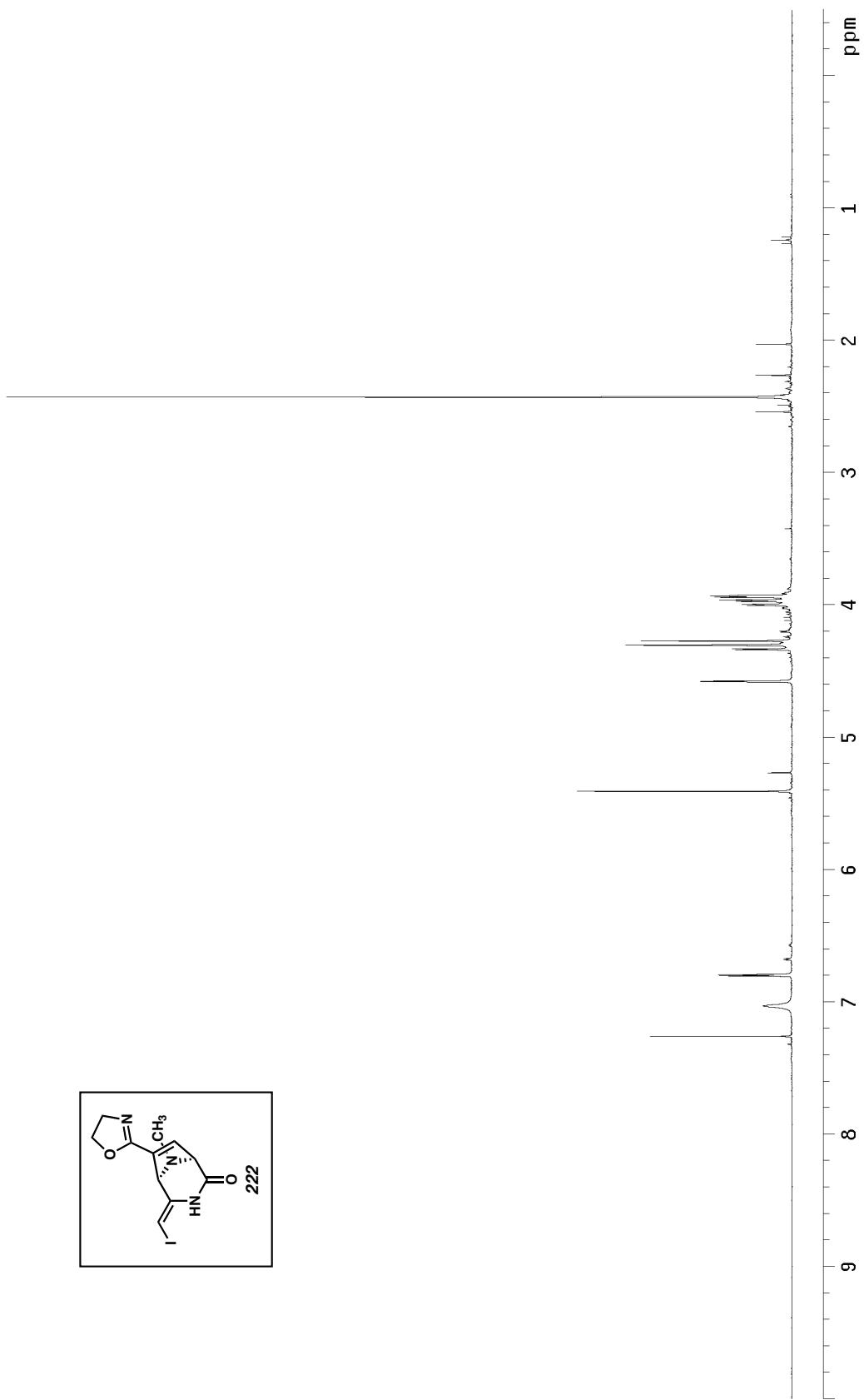


Figure A4.34 ^1H NMR of compound 222 (300 MHz, CDCl_3)

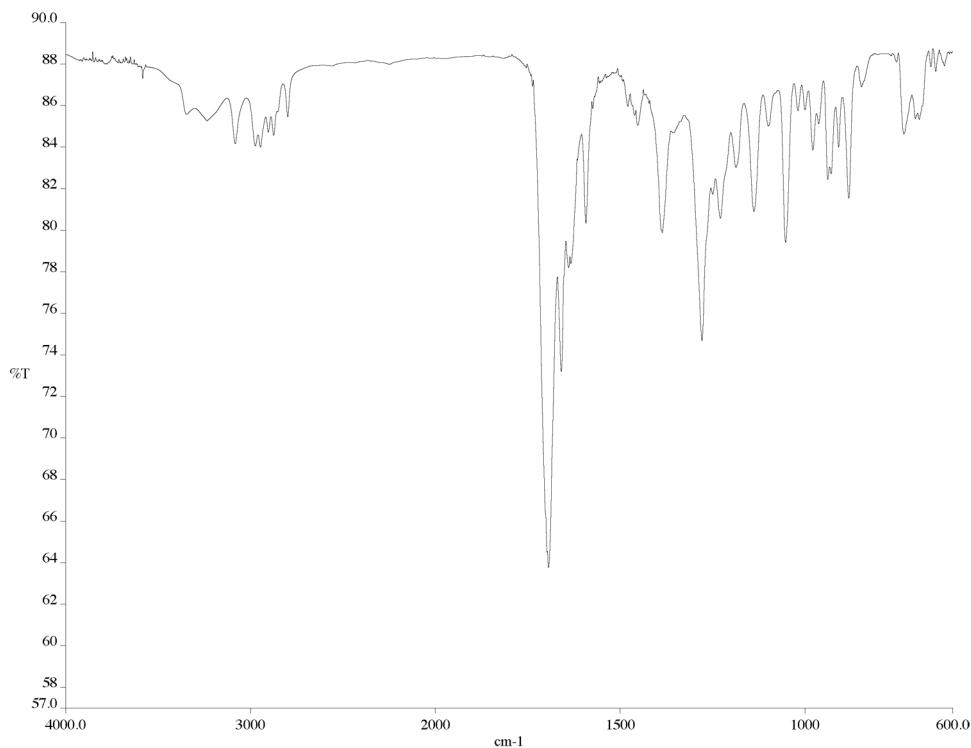


Figure A4.35 IR of compound **222** (NaCl/film)

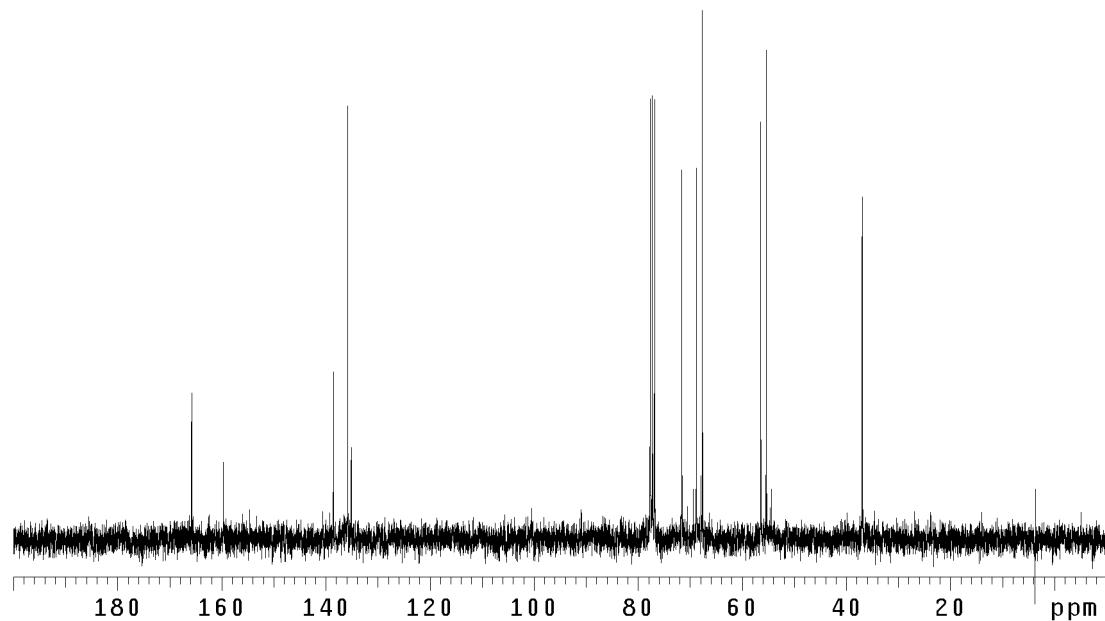


Figure A4.36 ^{13}C NMR of compound **222** (75 MHz, CDCl_3)

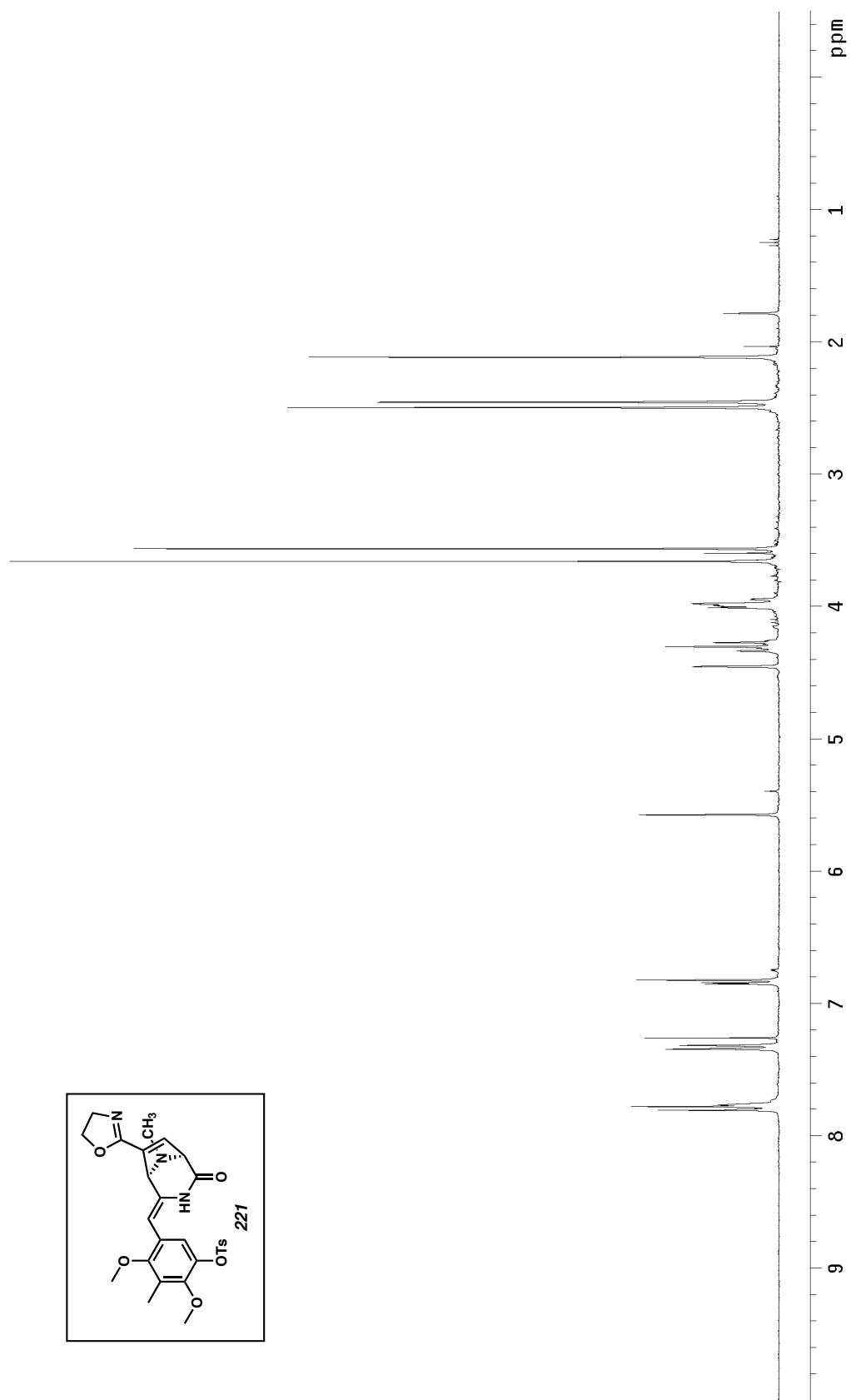


Figure A4.37 ^1H NMR of compound 221 (300 MHz, CDCl_3)

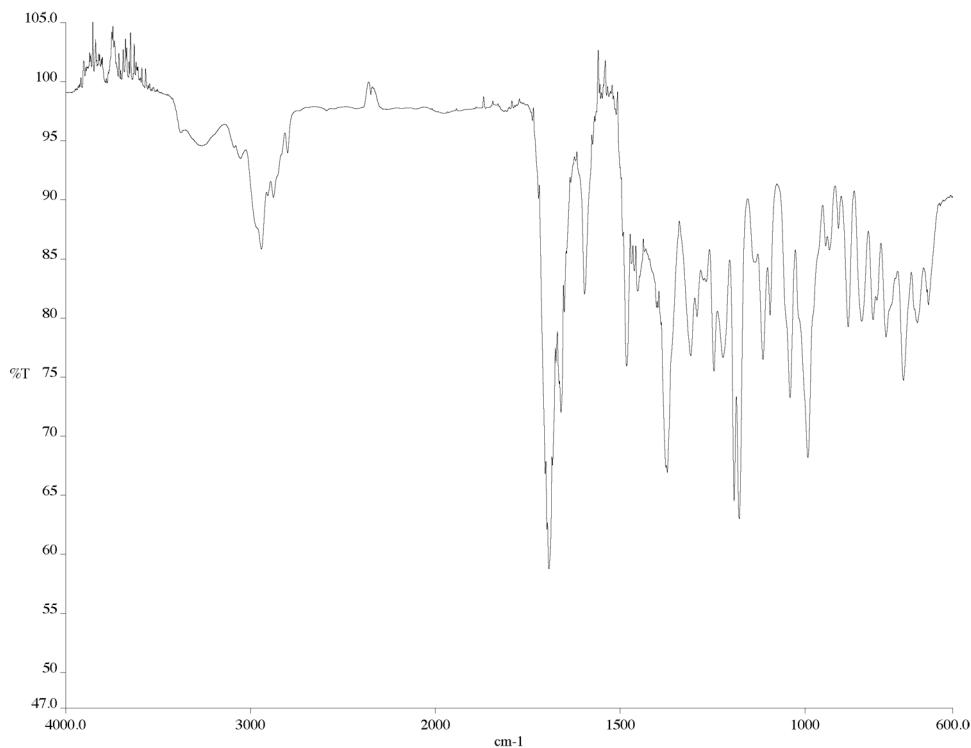


Figure A4.38 IR of compound **221** (NaCl/film)

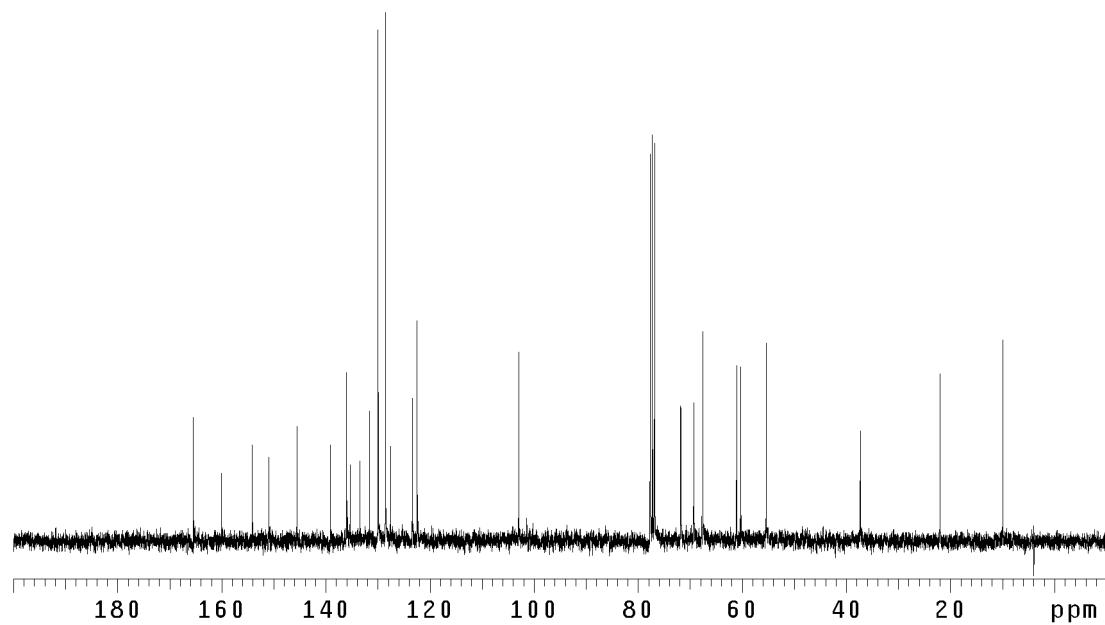


Figure A4.39 ¹³C NMR of compound **221** (75 MHz, CDCl₃)

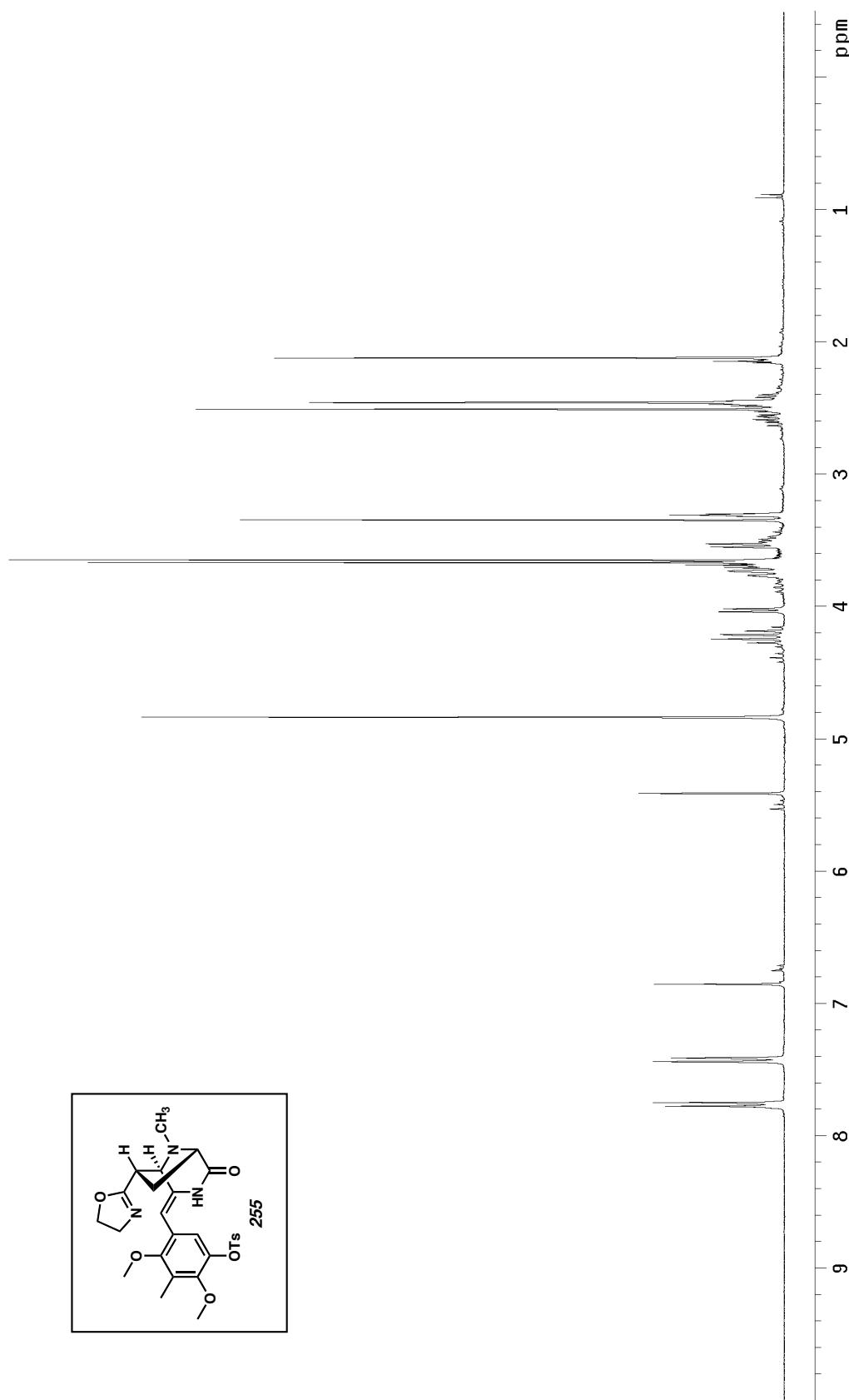


Figure A4.40 ¹H NMR of compound 255 (300 MHz, CD₃OD, impurity at 3.35 is CH₃OH)

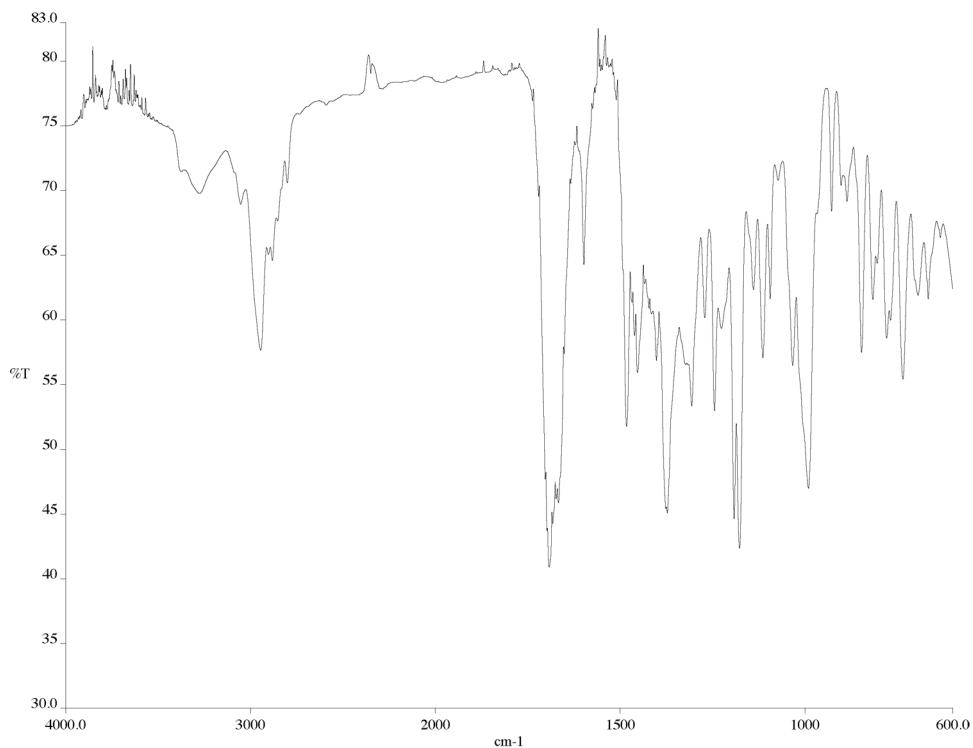


Figure A4.41 IR of compound **255** (NaCl/film)

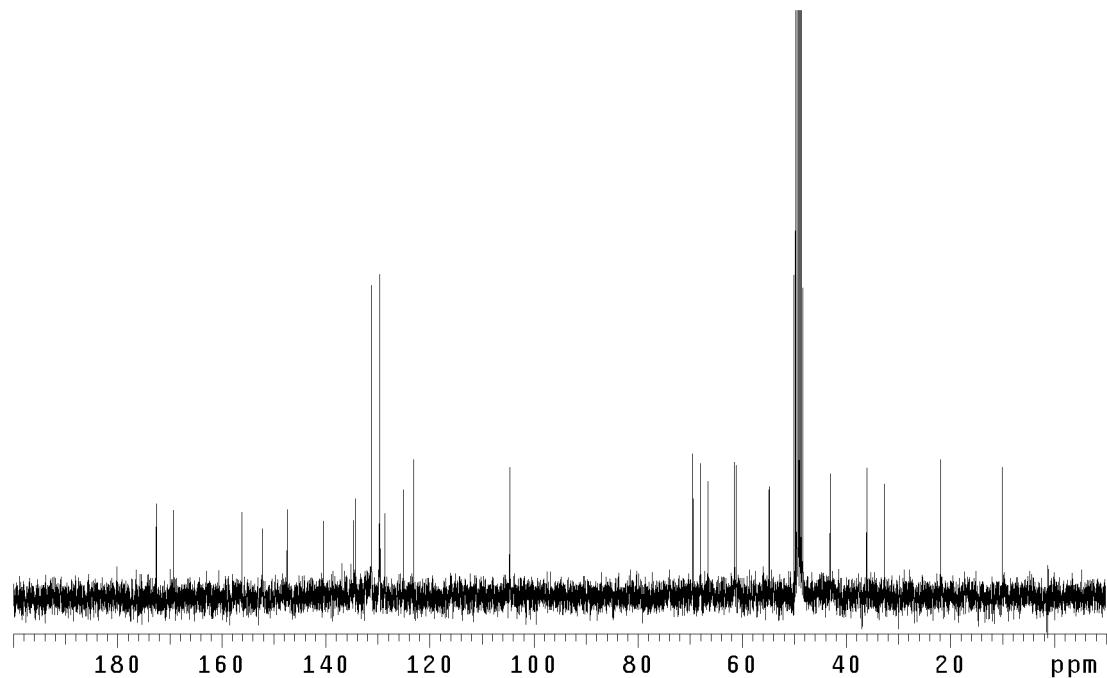


Figure A4.42 ¹³C NMR of compound **255** (75 MHz, CD₃OD)

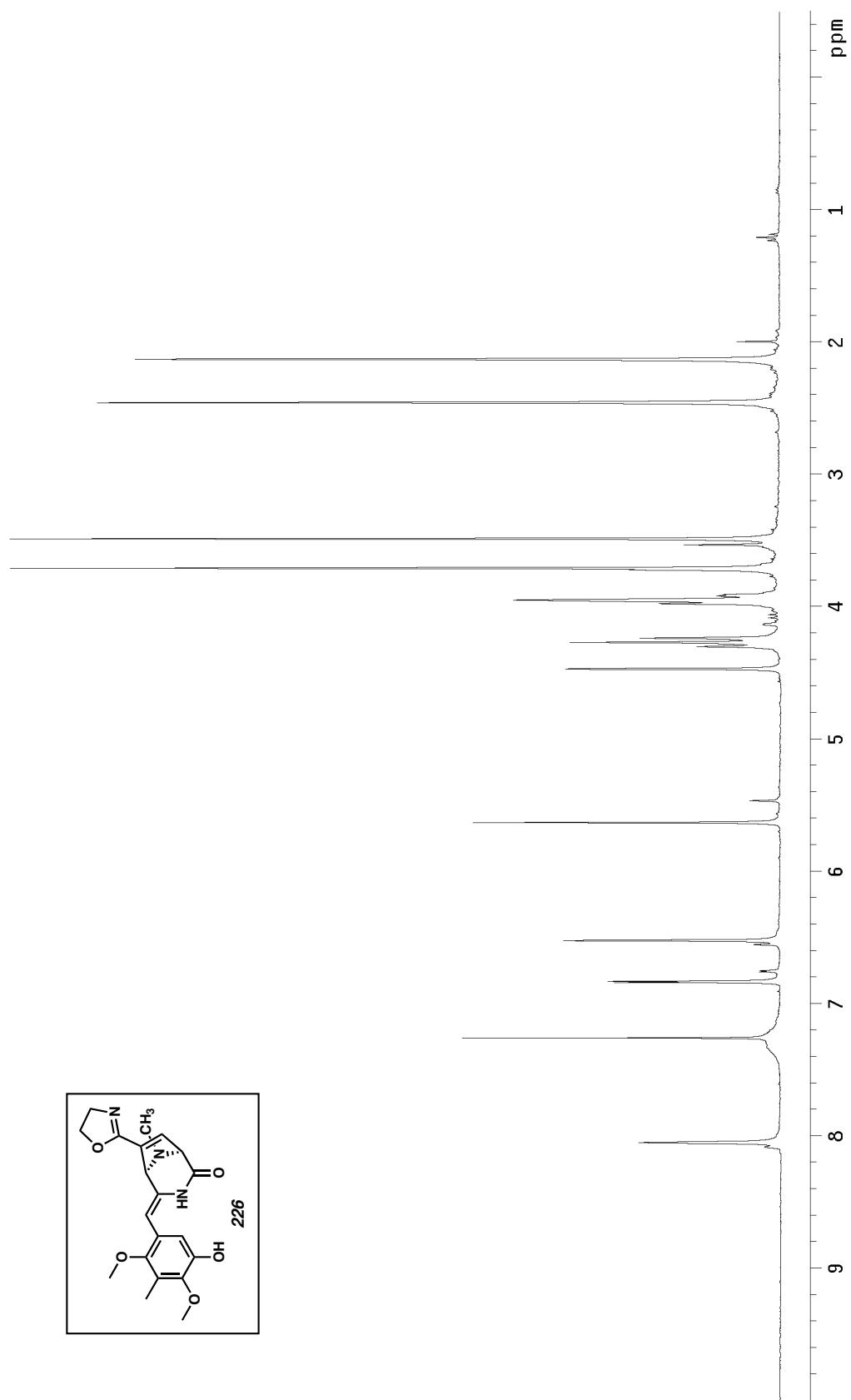
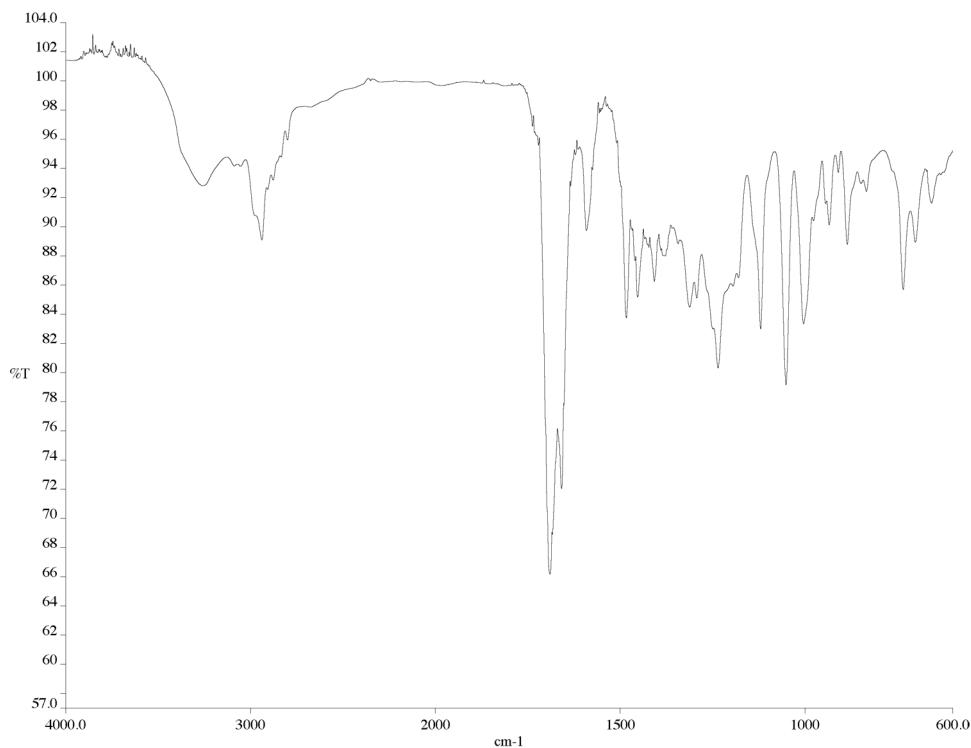
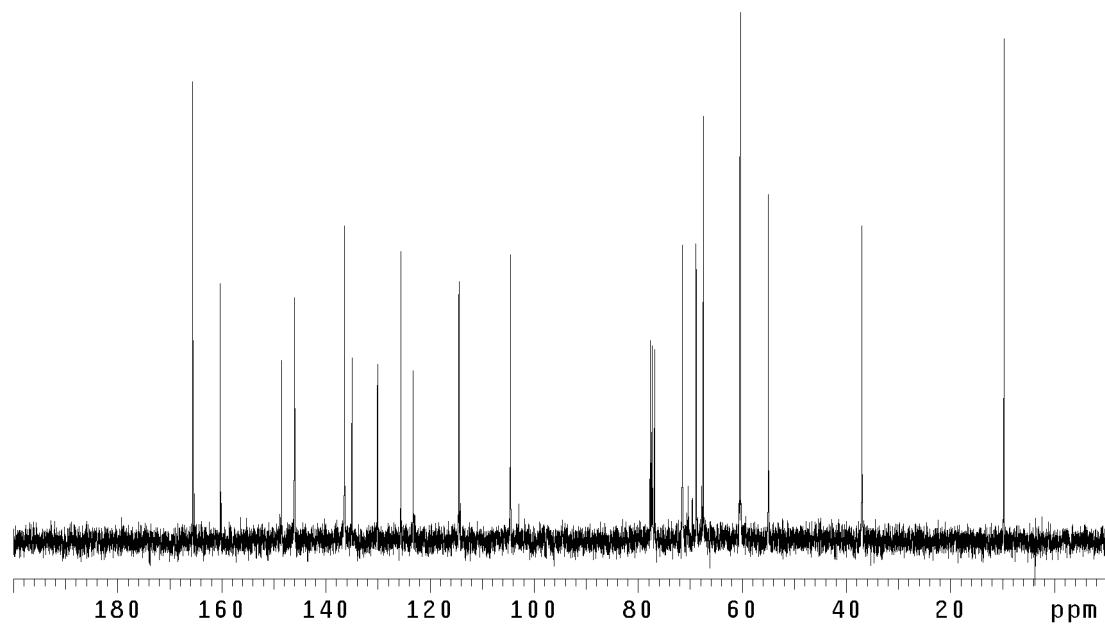


Figure A4.43 ^1H NMR of compound 226 (300 MHz, CDCl₃)

Figure A4.44 IR of compound **226** (NaCl/film)Figure A4.45 ^{13}C NMR of compound **226** (75 MHz, CDCl_3)

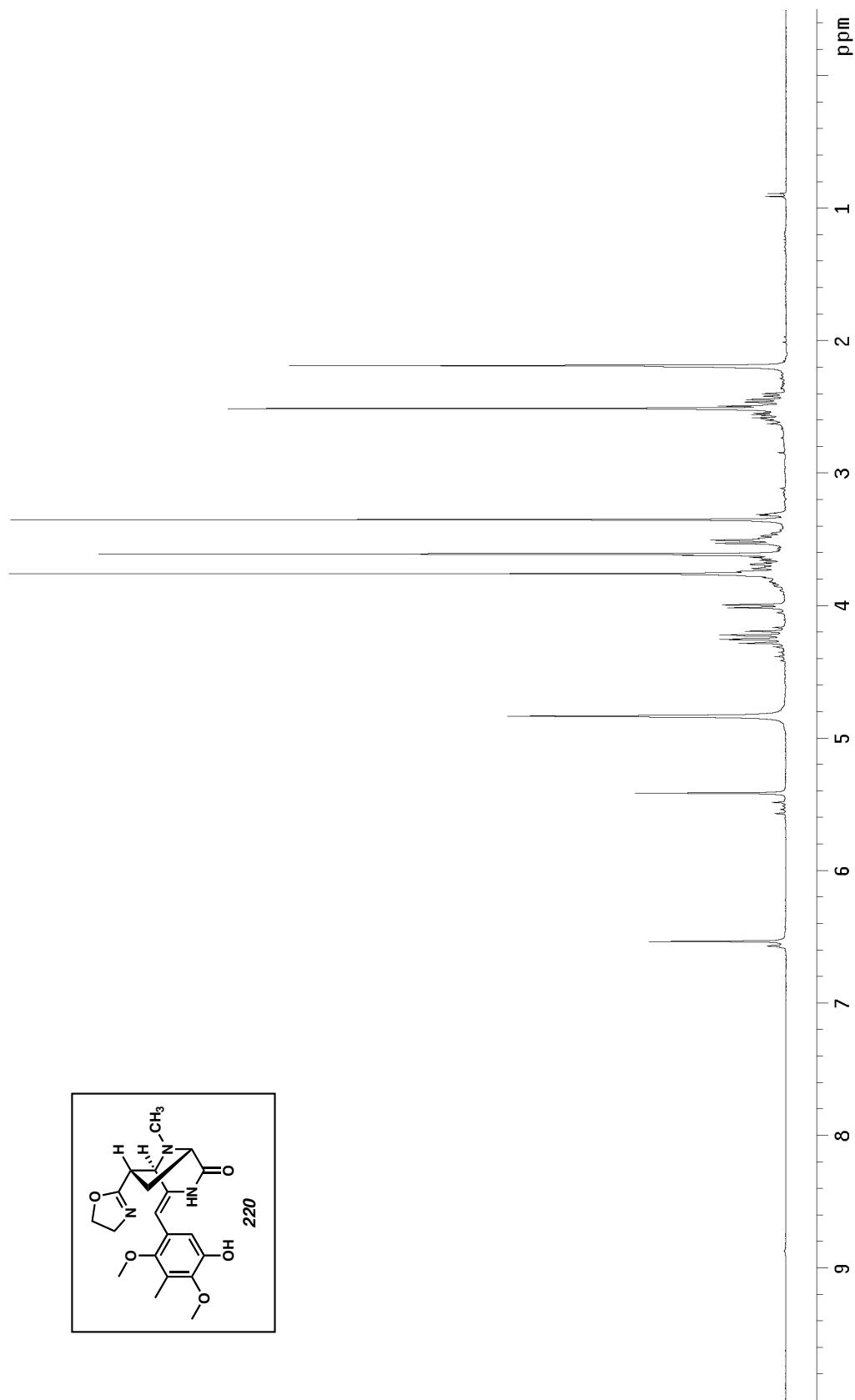


Figure A4.46 ^1H NMR of compound **220** (300 MHz, CD_3OD , impurity at 3.35 is CH_3OH)

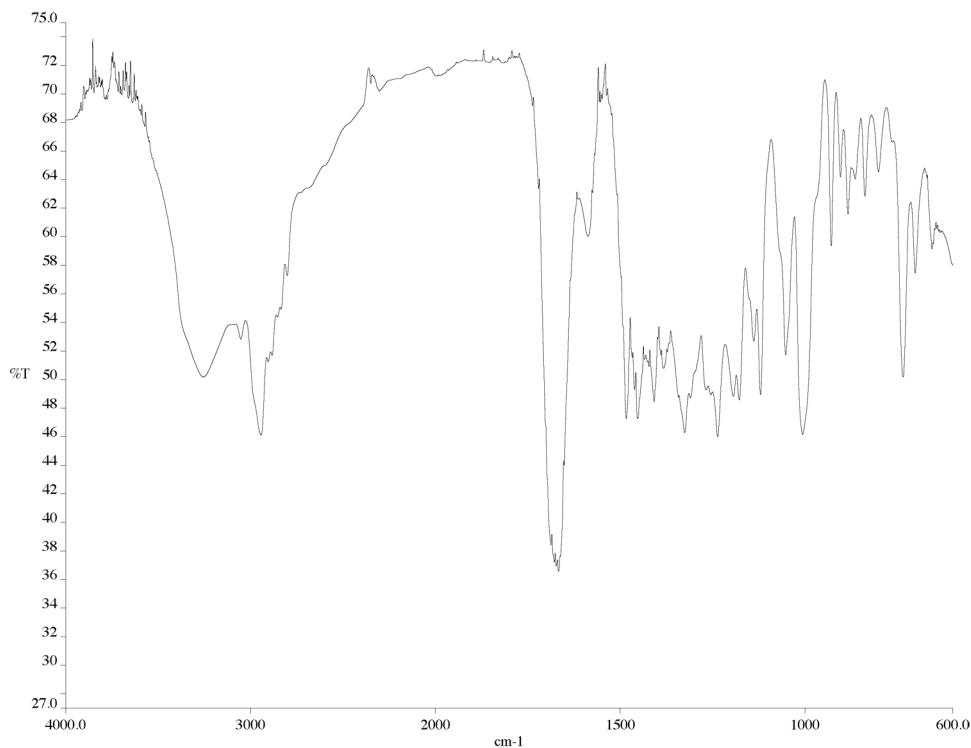


Figure A4.47 IR of compound **220** (NaCl/film)

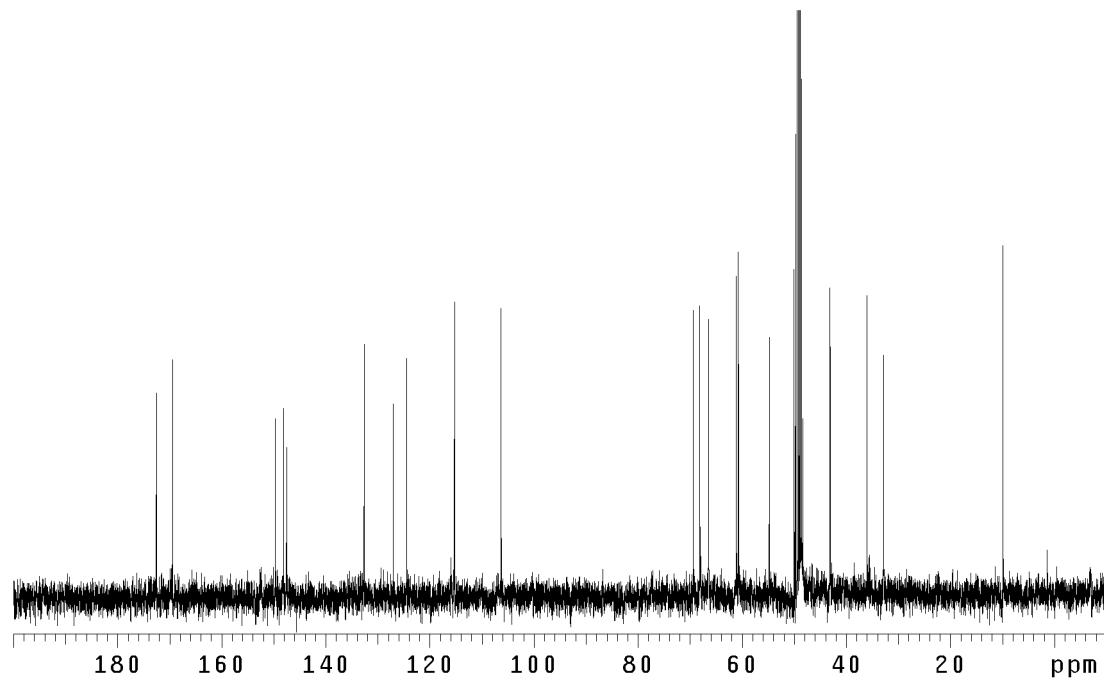
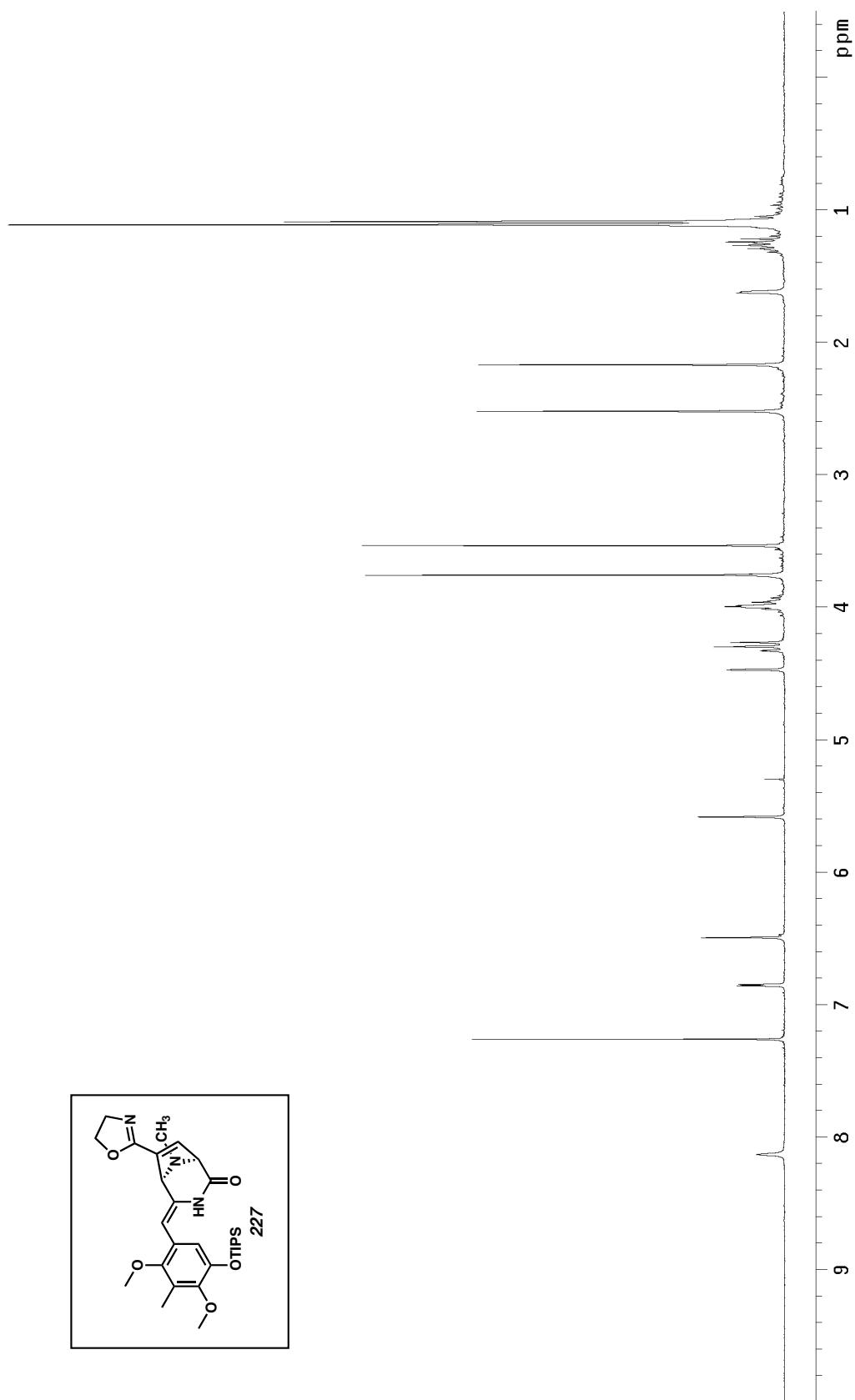


Figure A4.48 ¹³C NMR of compound **220** (75 MHz, CD₃OD)

Figure A4.49 ^1H NMR of compound 227 (300 MHz, CDCl_3)



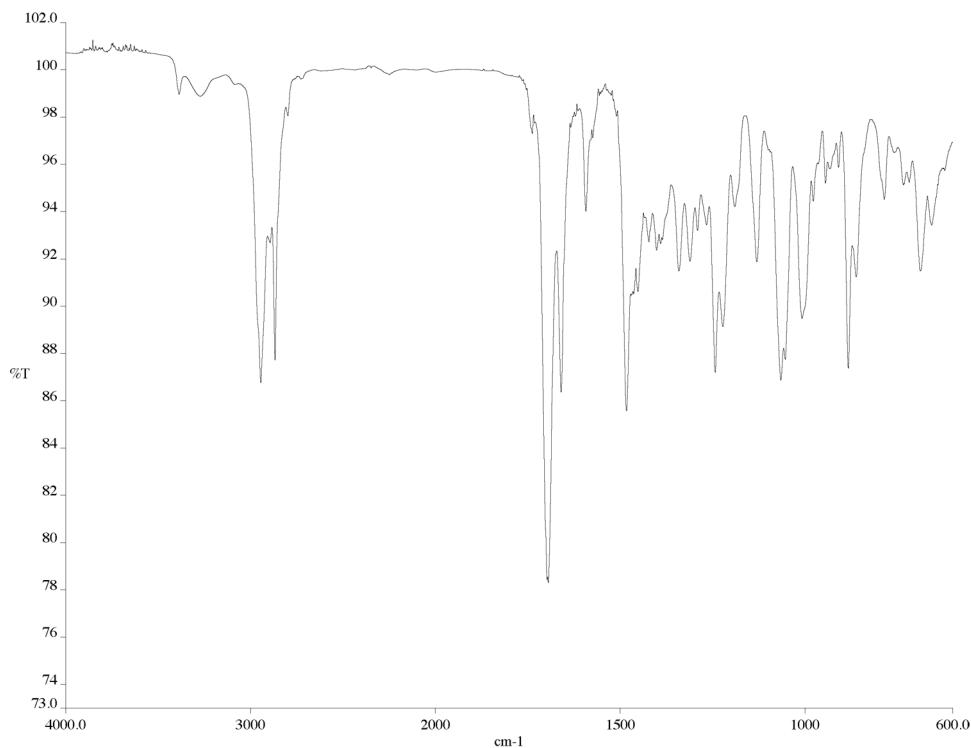


Figure A4.50 IR of compound **227** (NaCl/film)

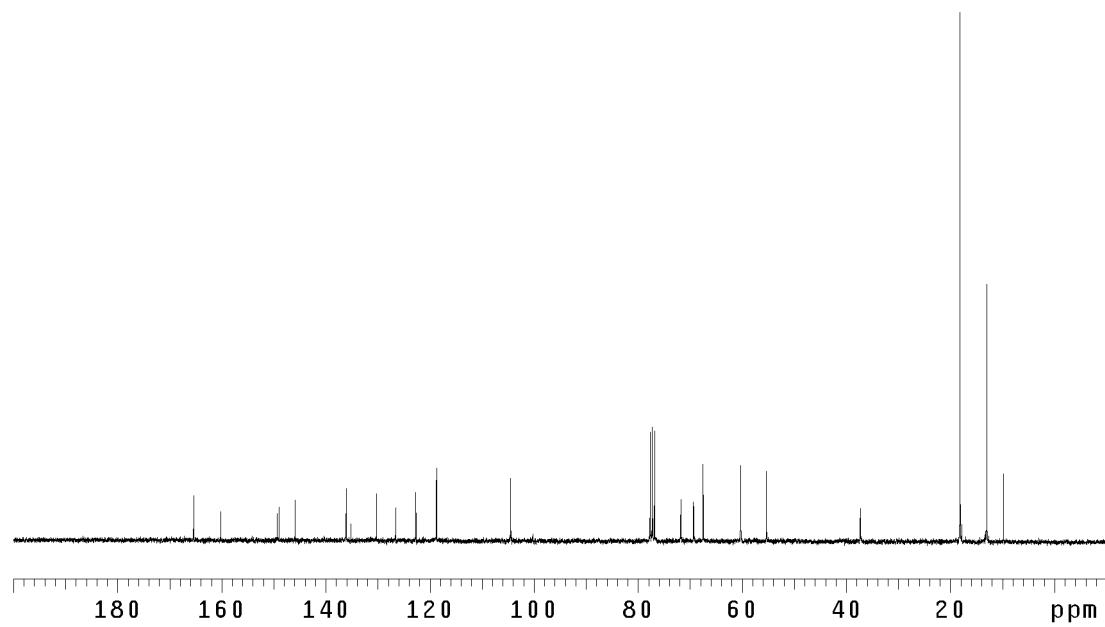
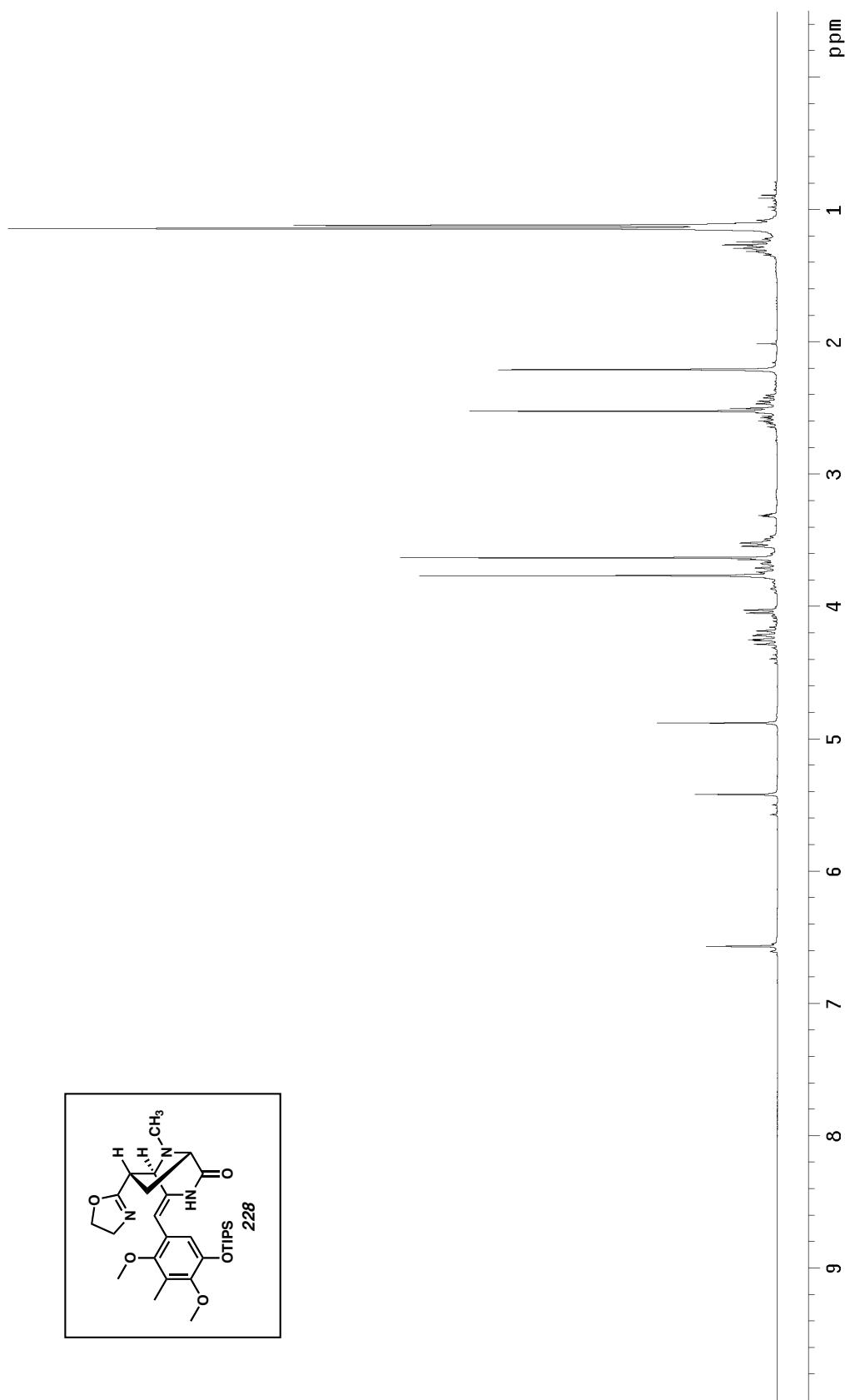


Figure A4.51 ^{13}C NMR of compound **227** (75 MHz, CDCl_3)

Figure A4.52 ^1H NMR of compound **228** (300 MHz, CD_3OD)



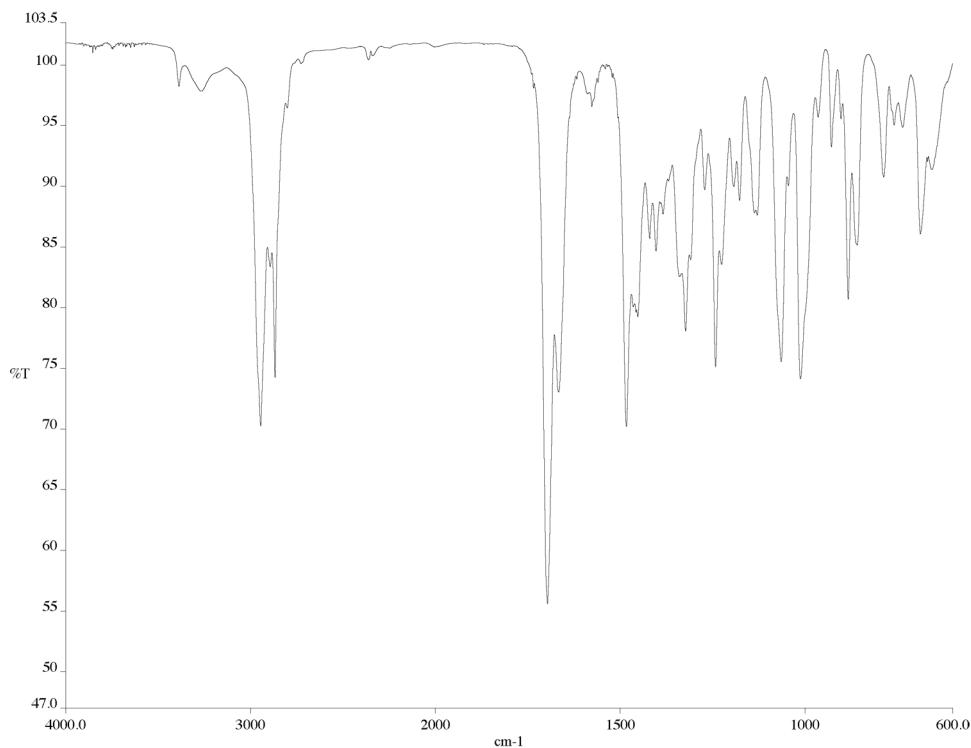


Figure A4.53 IR of compound **228** (NaCl/film)

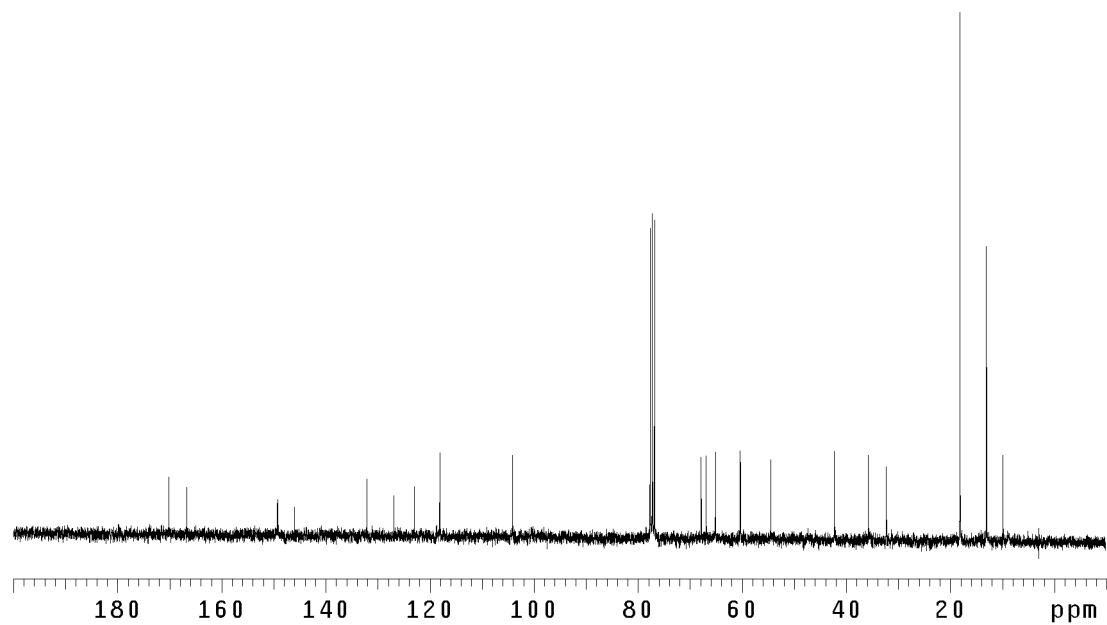


Figure A4.54 ¹³C NMR of compound **228** (75 MHz, CDCl₃)

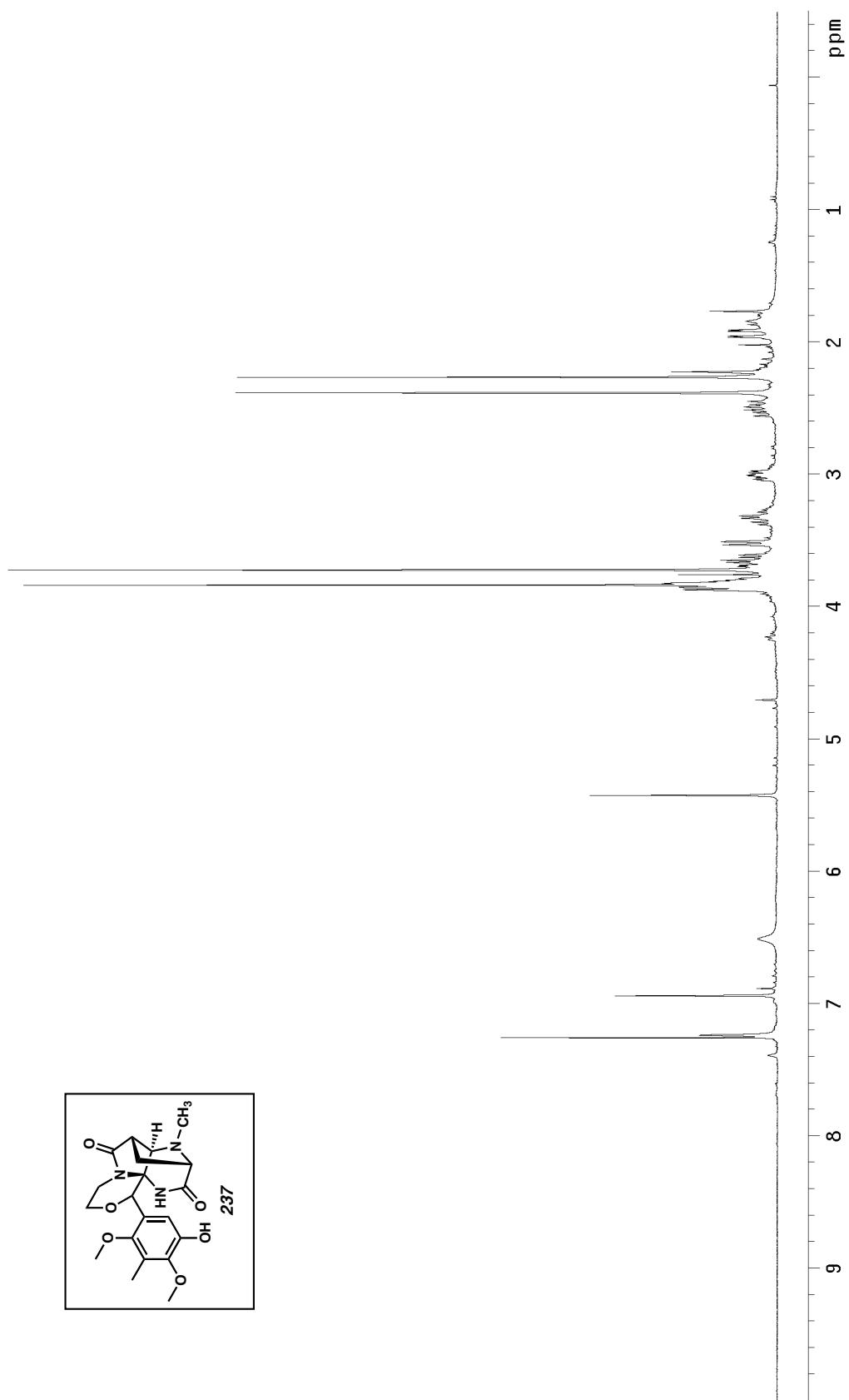


Figure A4.55 ^1H NMR of compound 237 (300 MHz, CDCl_3)

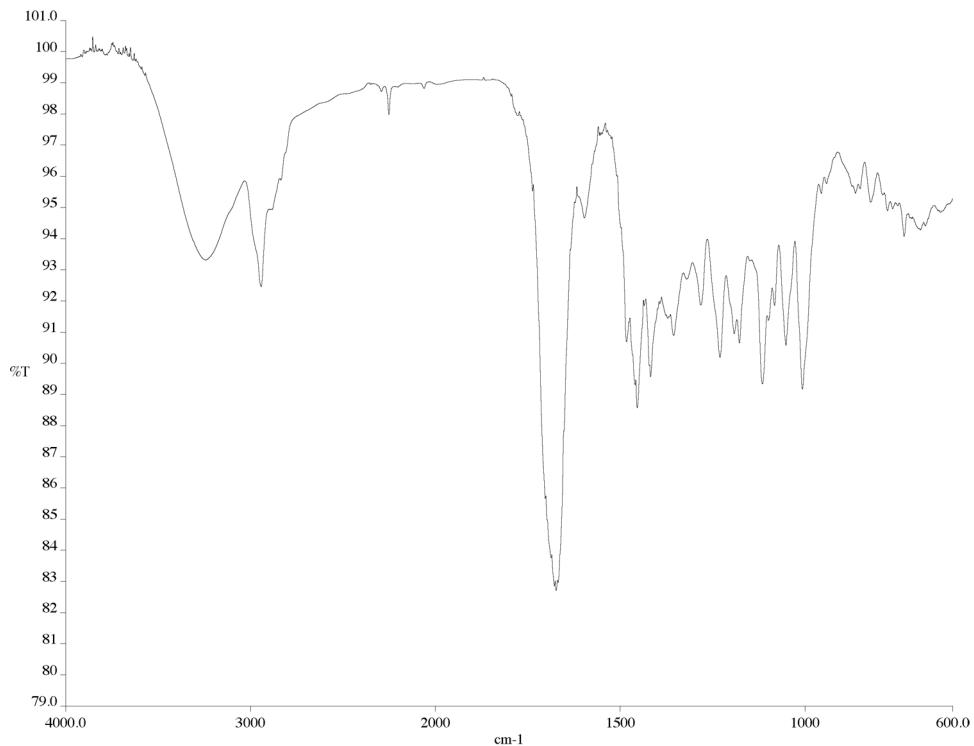


Figure A4.56 IR of compound **237** (NaCl/film)

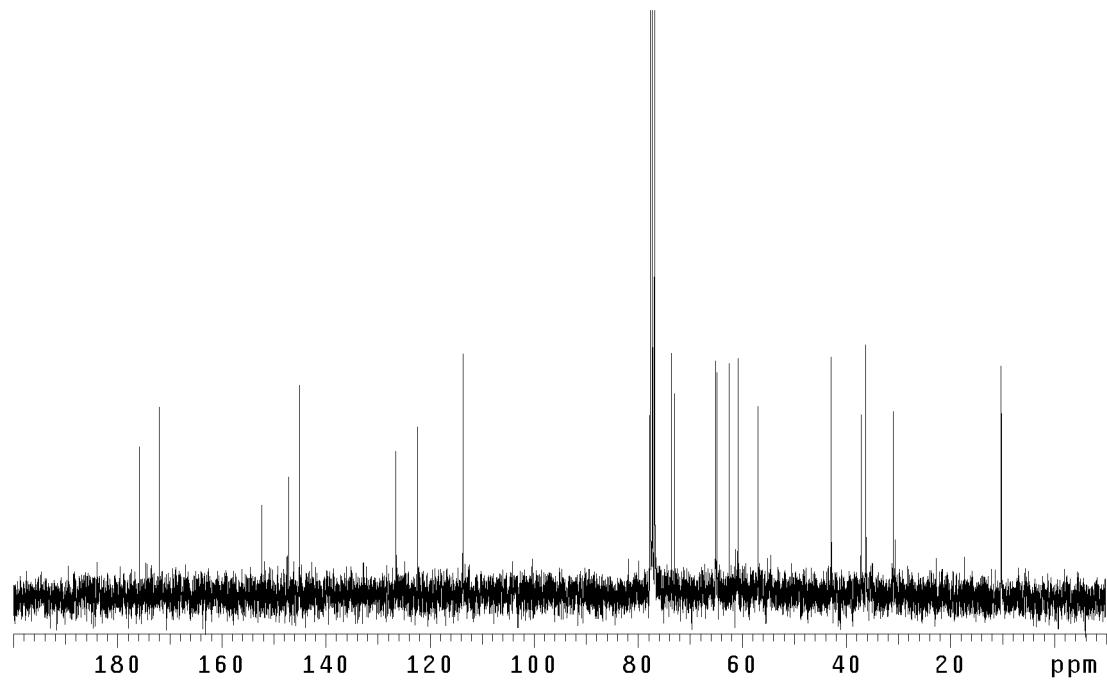


Figure A4.57 ^{13}C NMR of compound **237** (75 MHz CDCl_3)

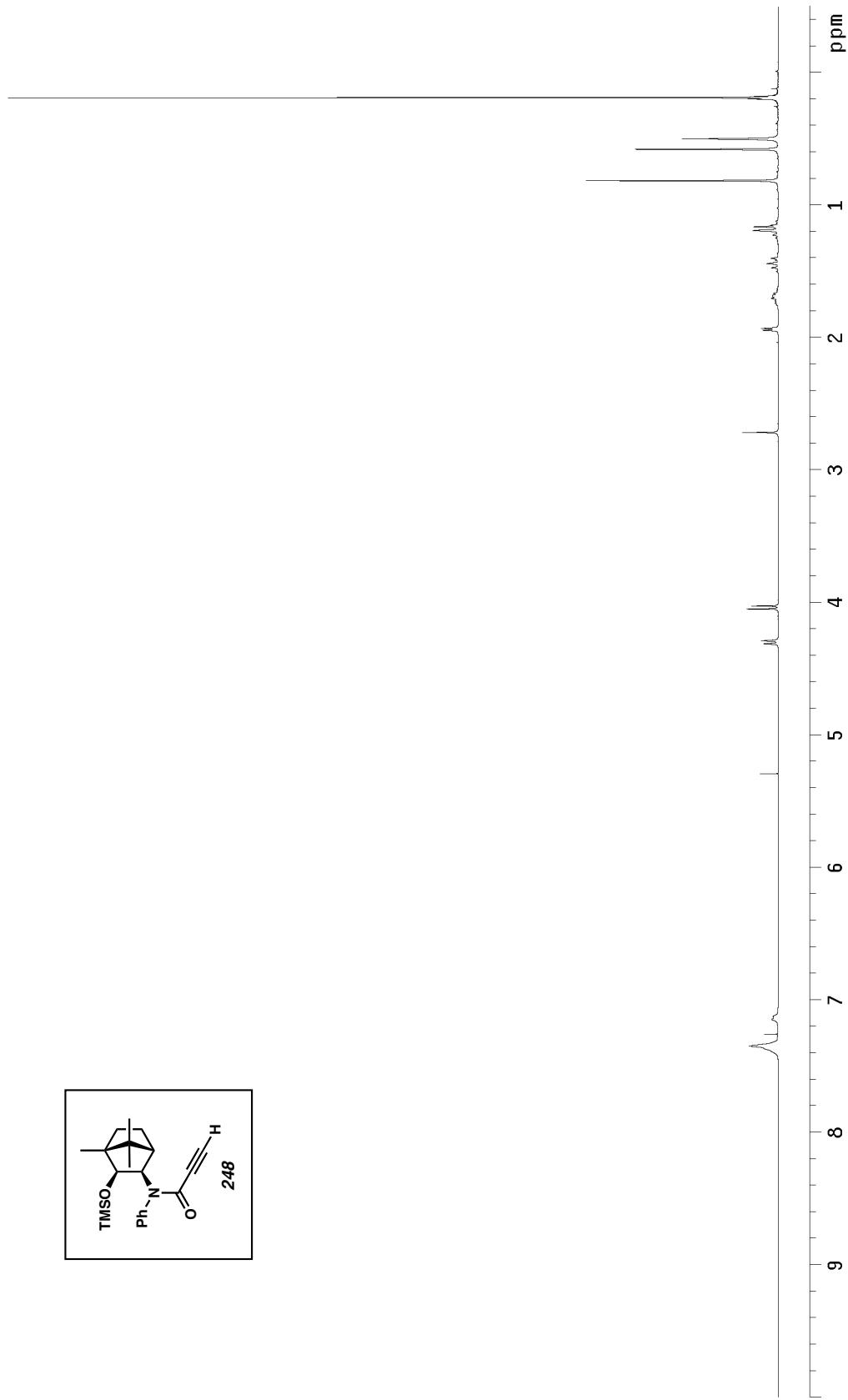


Figure A4.58 ^1H NMR of compound **248** (300 MHz, CDCl_3)

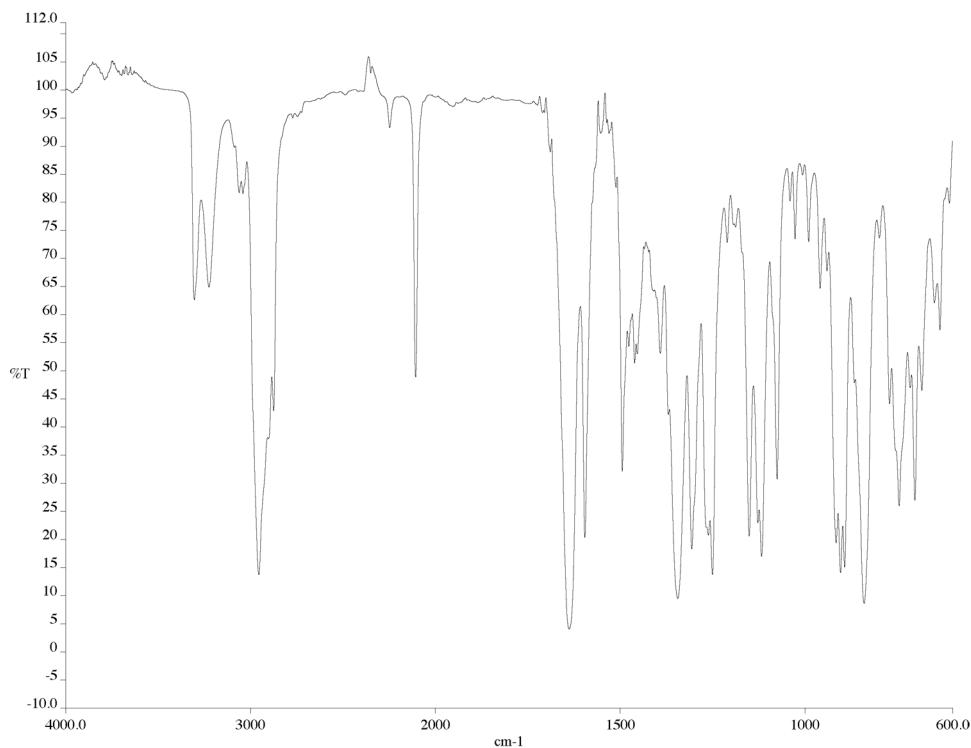


Figure A4.59 IR of compound **248** (NaCl/film)

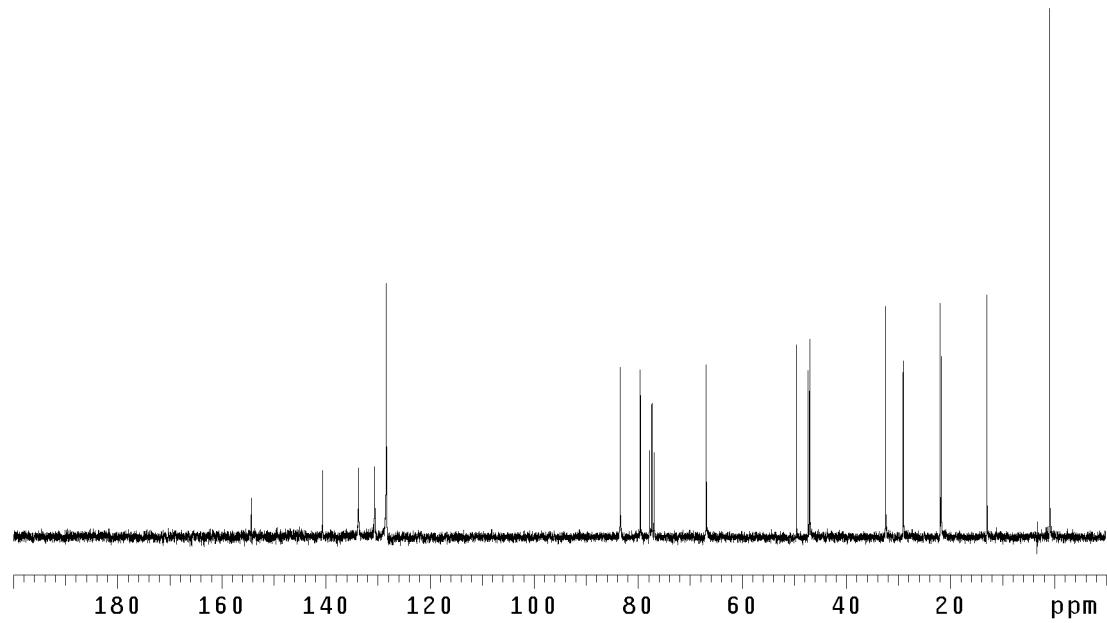


Figure A4.60 ¹³C NMR of compound **248** (75 MHz, CDCl₃)

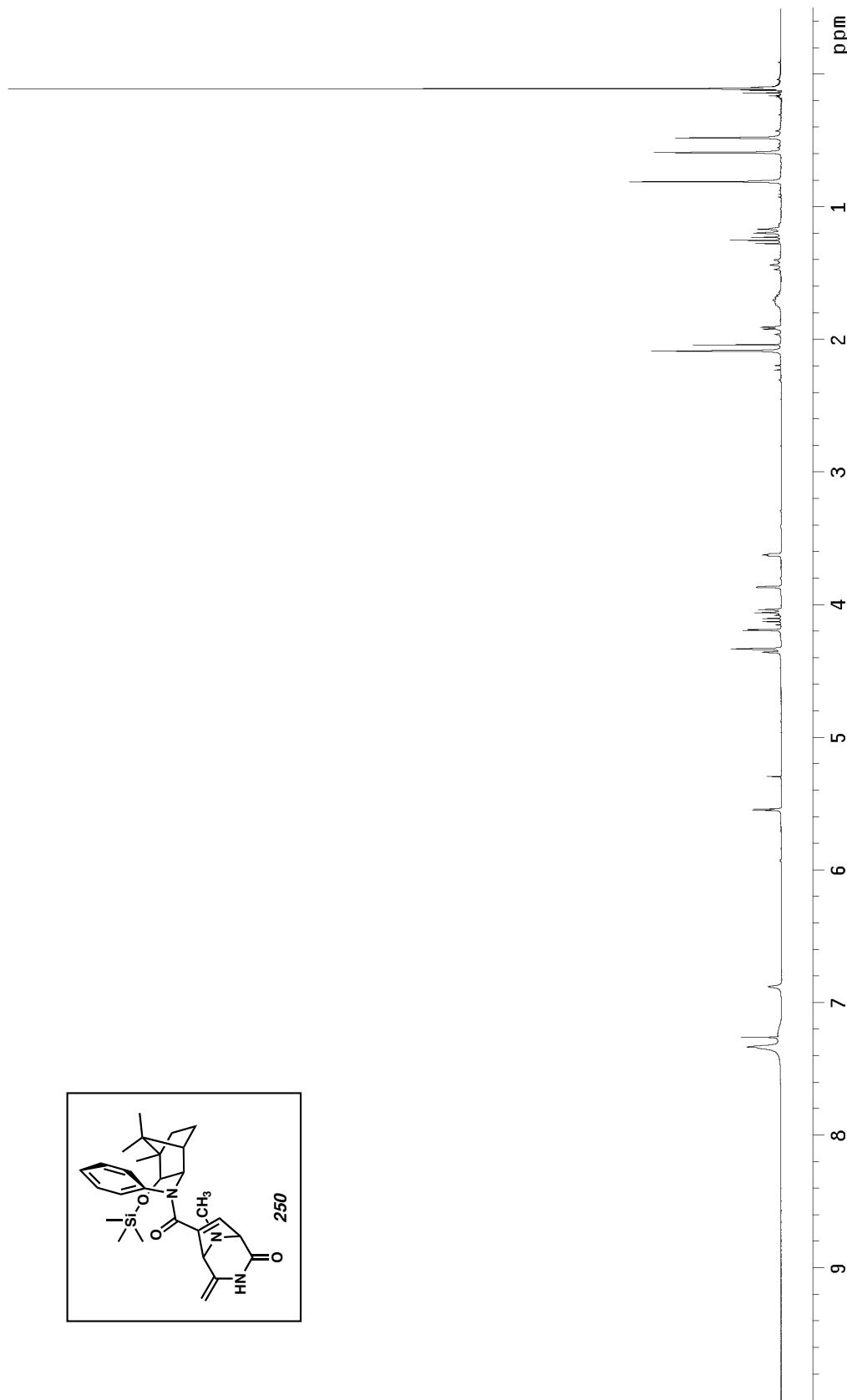
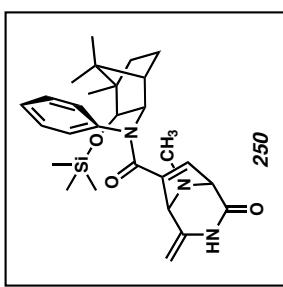
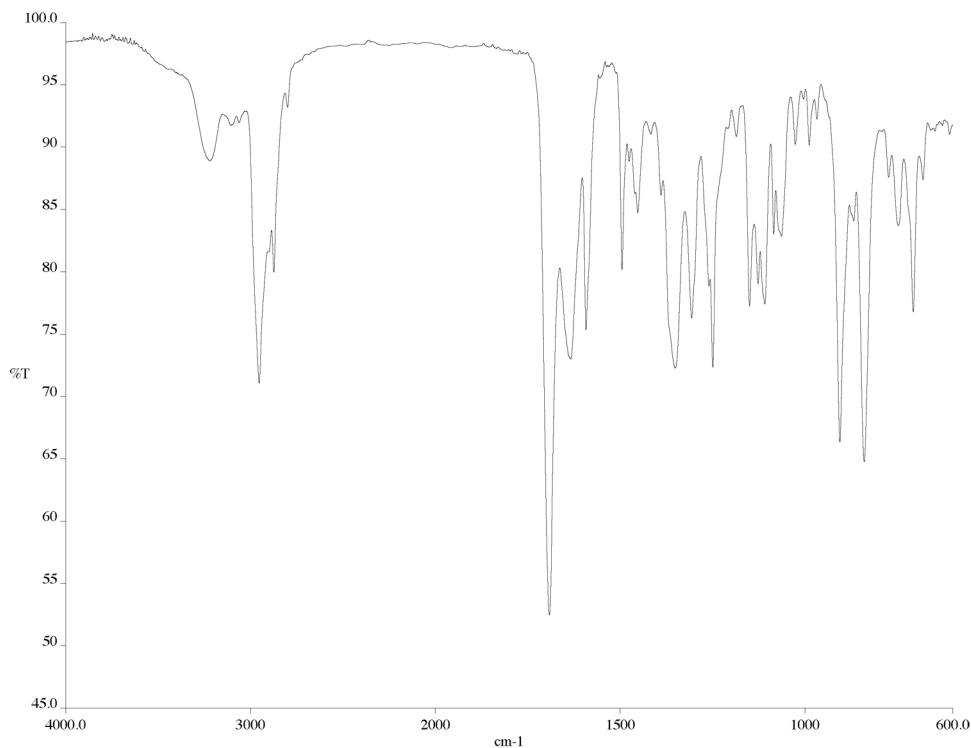
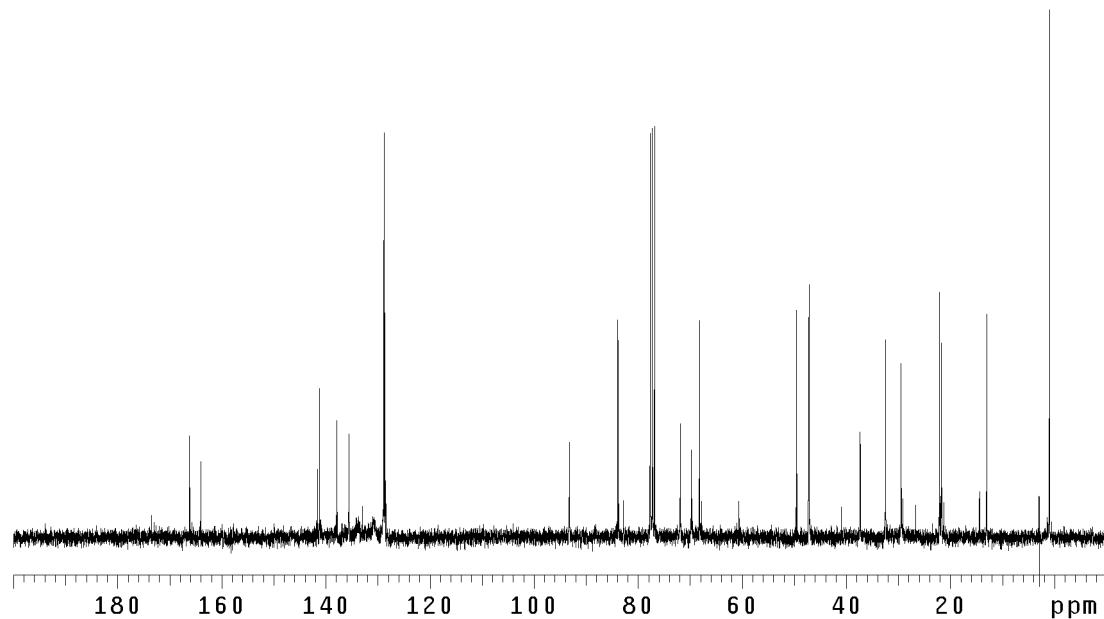


Figure A4.61 ¹H NMR of compound 250 (300 MHz, CDCl₃)

Figure A4.62 IR of compound **250** (NaCl/film)Figure A4.63 ¹³C NMR of compound **250** (75 MHz, CDCl₃)