APPENDIX 2

Spectra Relevant to Chapter 2

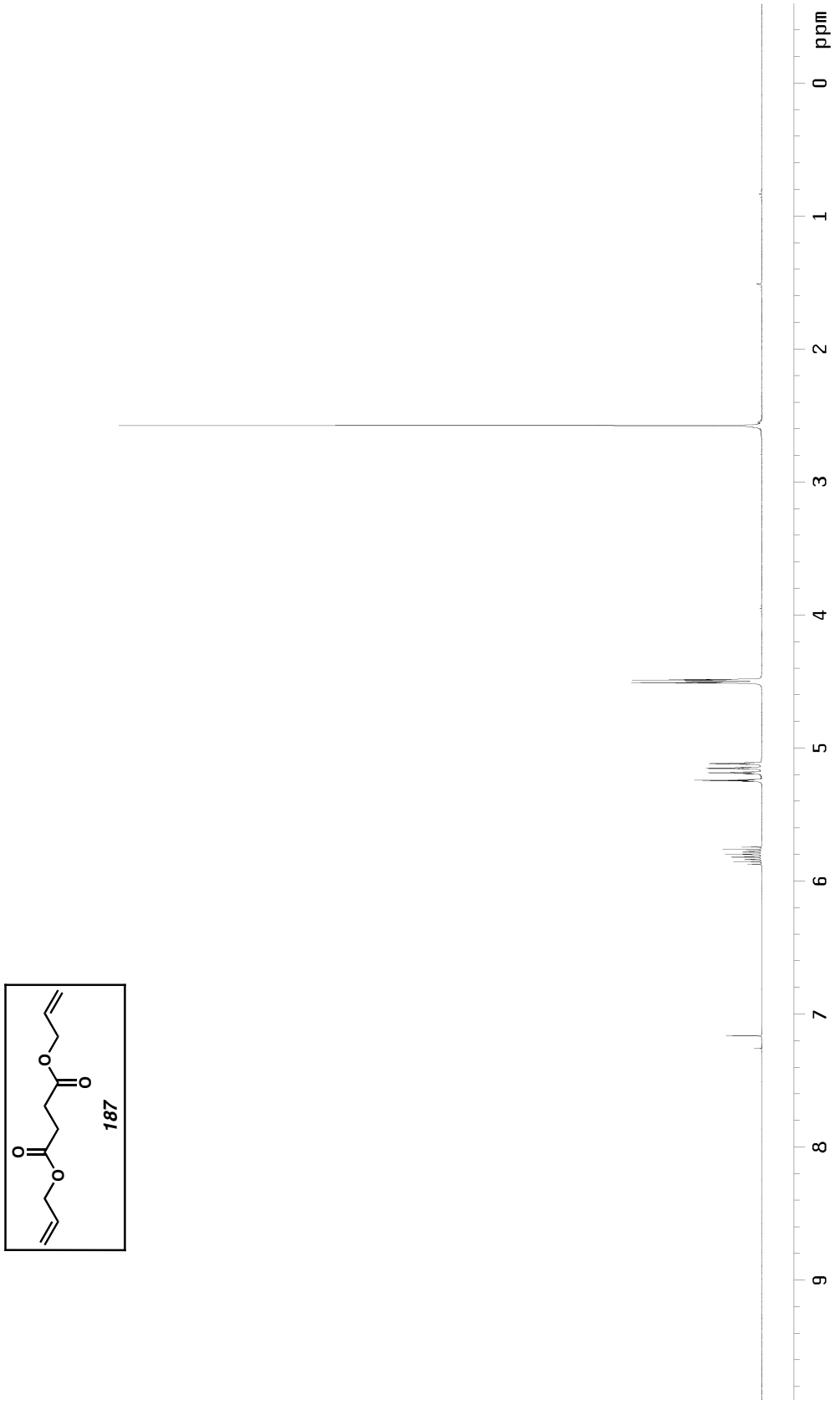

Figure A2.1 ^{1}H NMR (300 MHz, $CDCl_3$) of diallyl succinate (**187**).

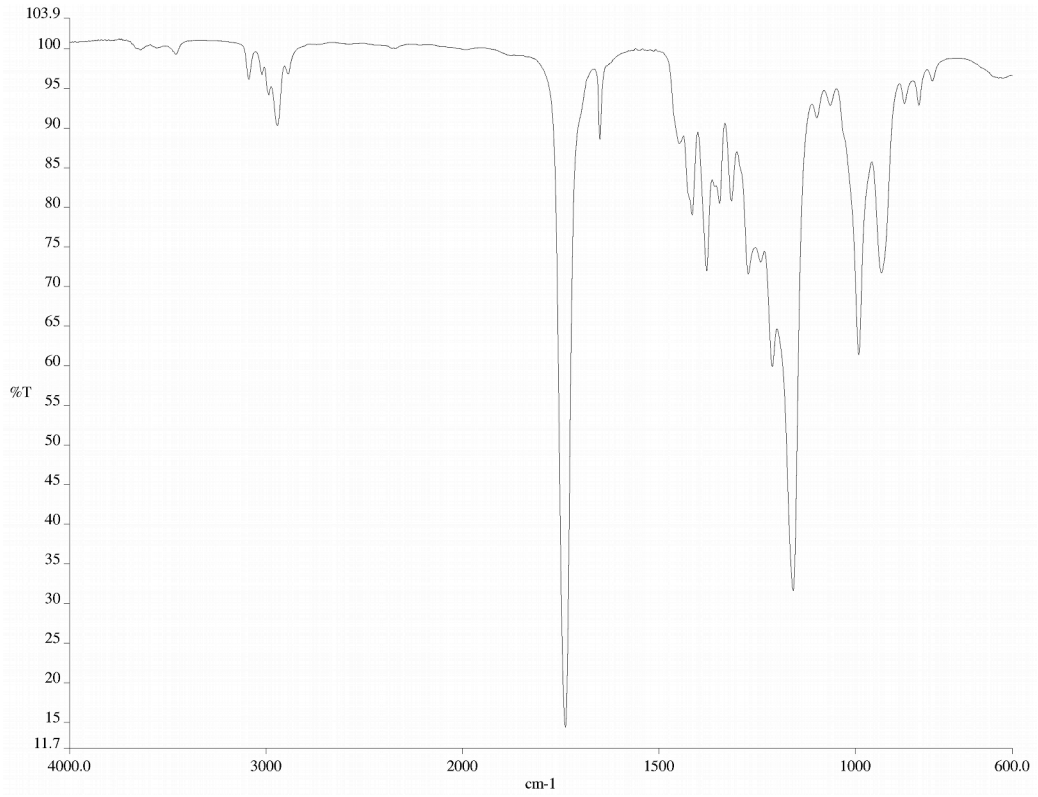

Figure A2.2 Infrared spectrum (thin film/NaCl) of diallyl succinate (**187**).

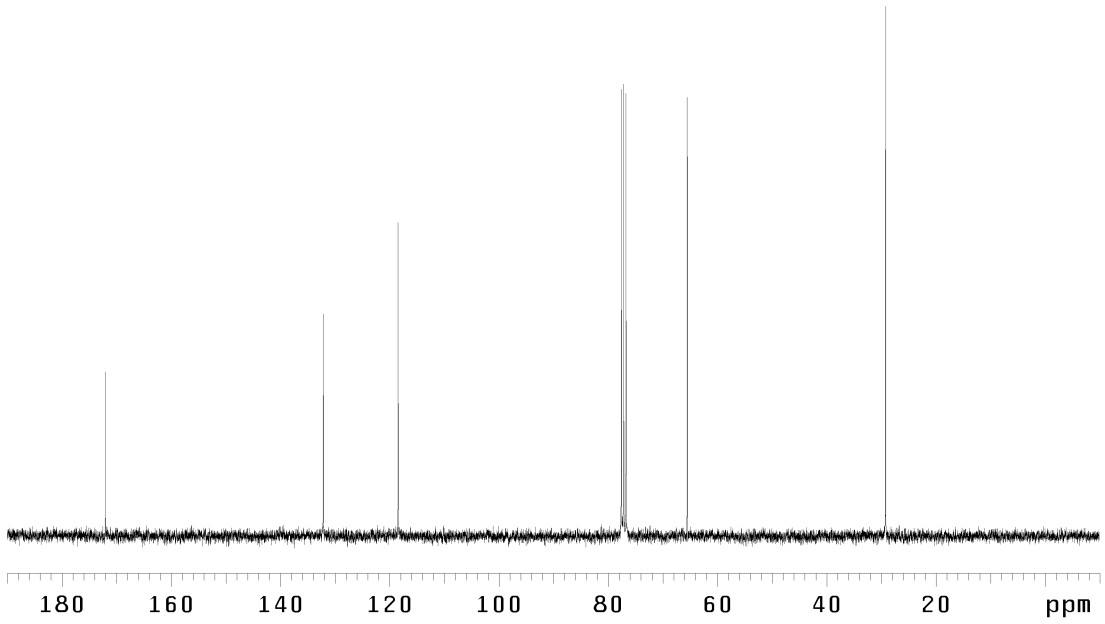

Figure A2.3 ^{13}C NMR (75 MHz, $CDCl_3$) of diallyl succinate (**187**).

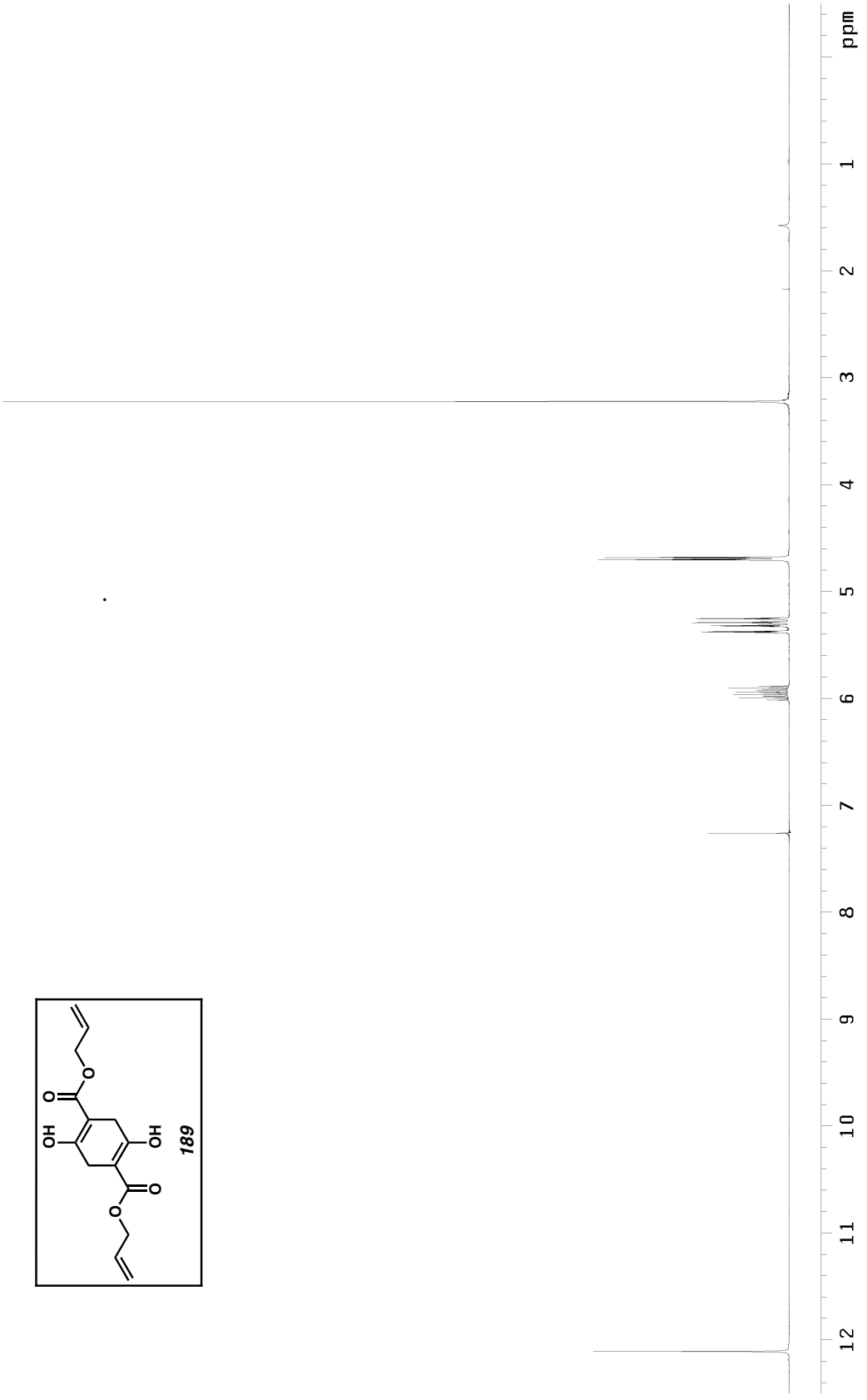

Figure A2.4 ^{1}H NMR (300 MHz, $CDCl_3$) of diallyl succinyl succinate (**189**).

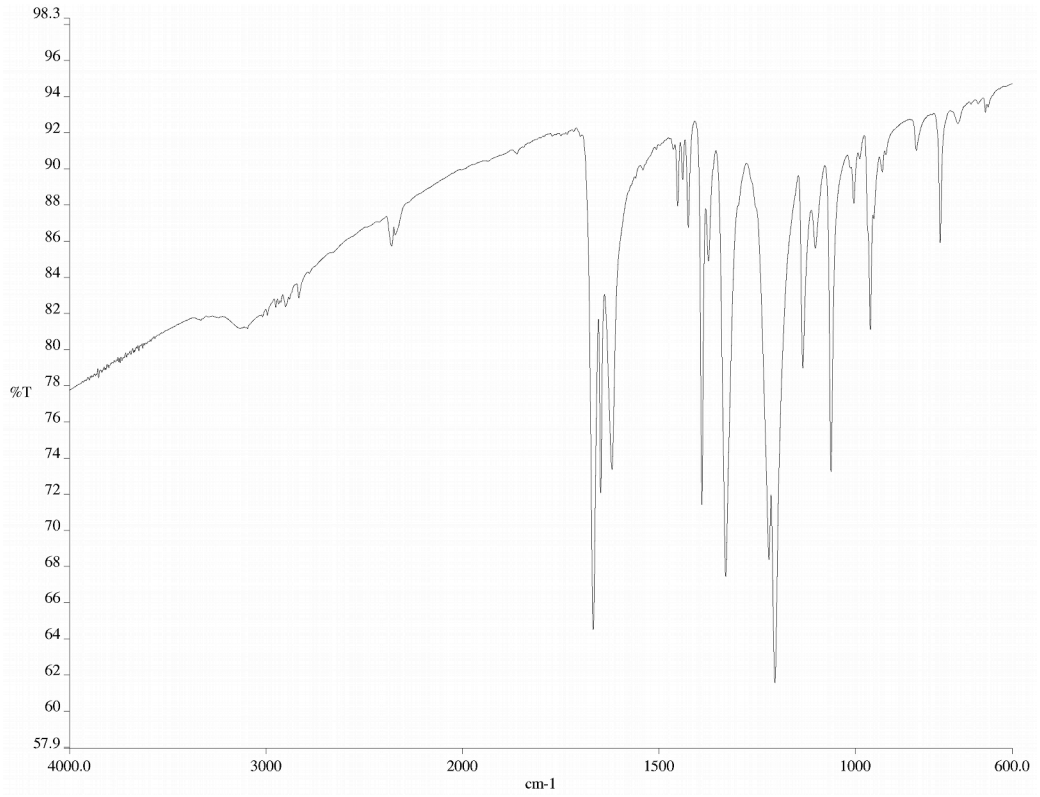

Figure A2.5 Infrared spectrum (thin film/NaCl) of diallyl succinyl succinate (**189**).

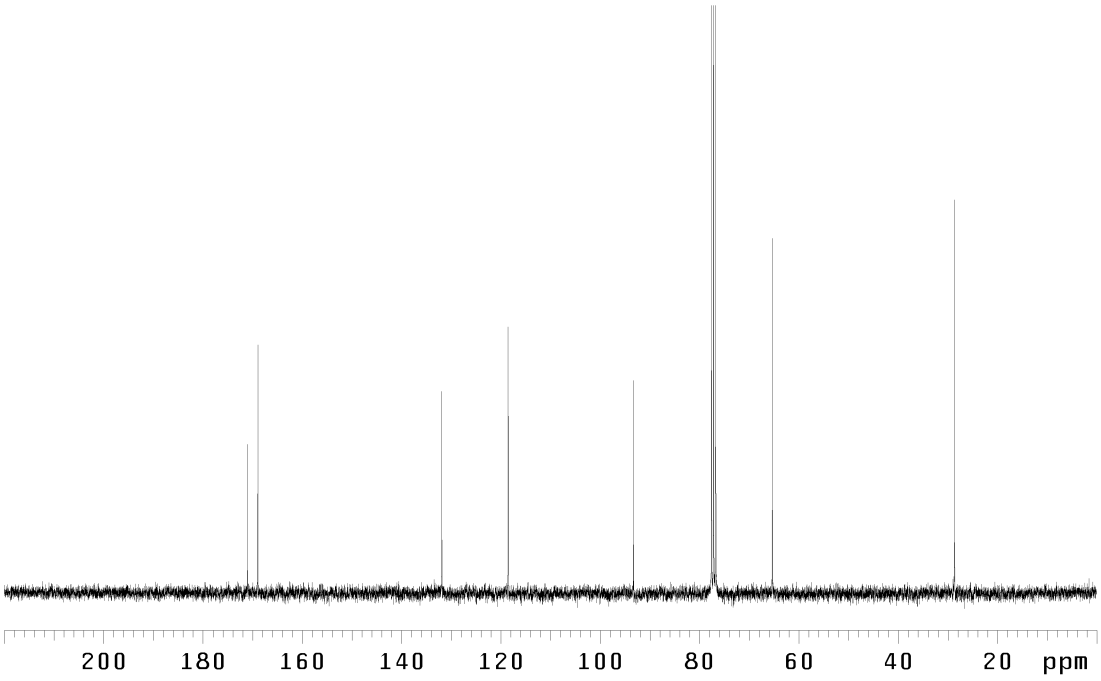

Figure A2.6 ^{13}C NMR (75 MHz, $CDCl_3$) of diallyl succinyl succinate (**189**).

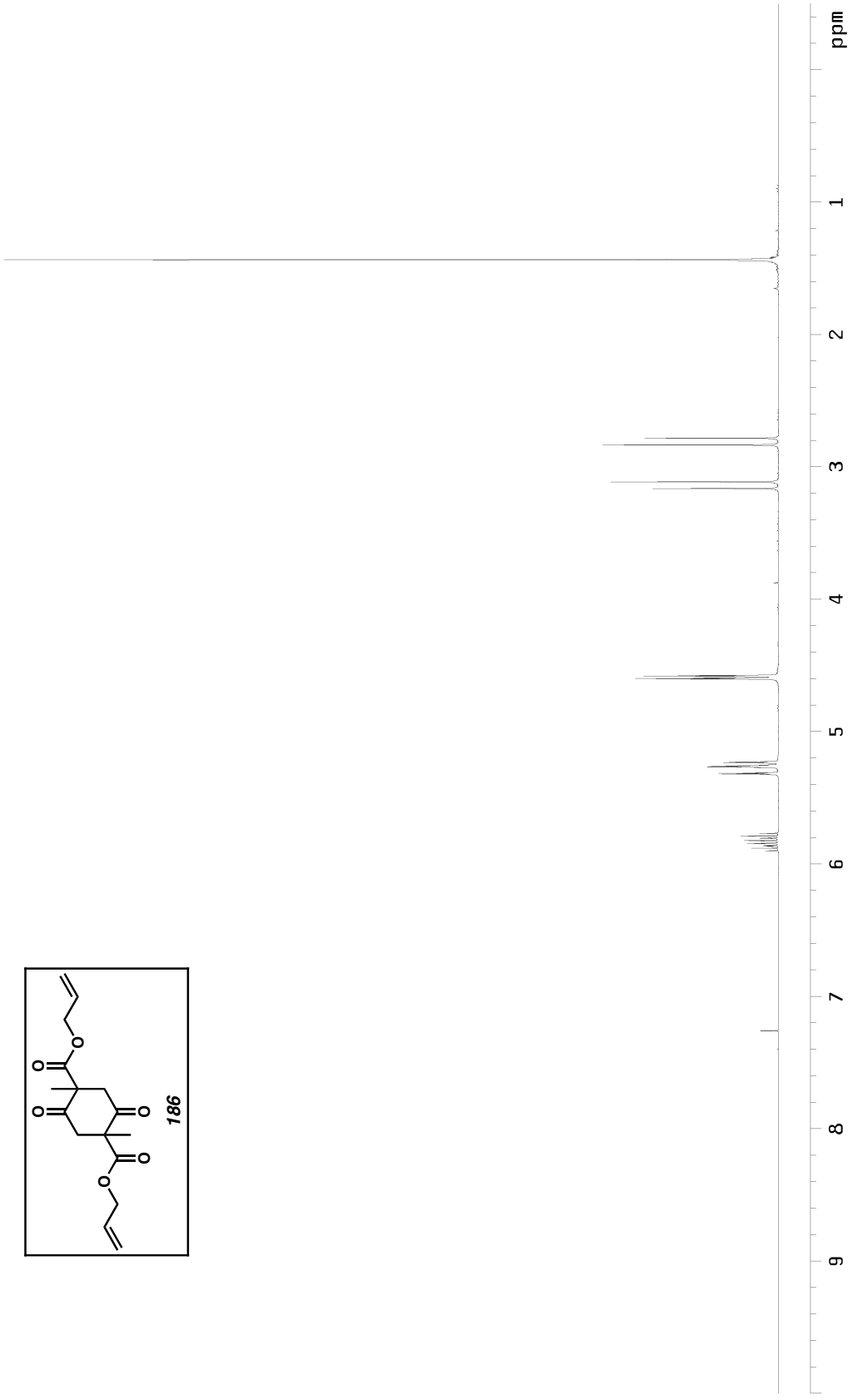

Figure A2.7 ^{1}H NMR (300 MHz, $CDCl_3$) of bis(β-ketoester) **186**.

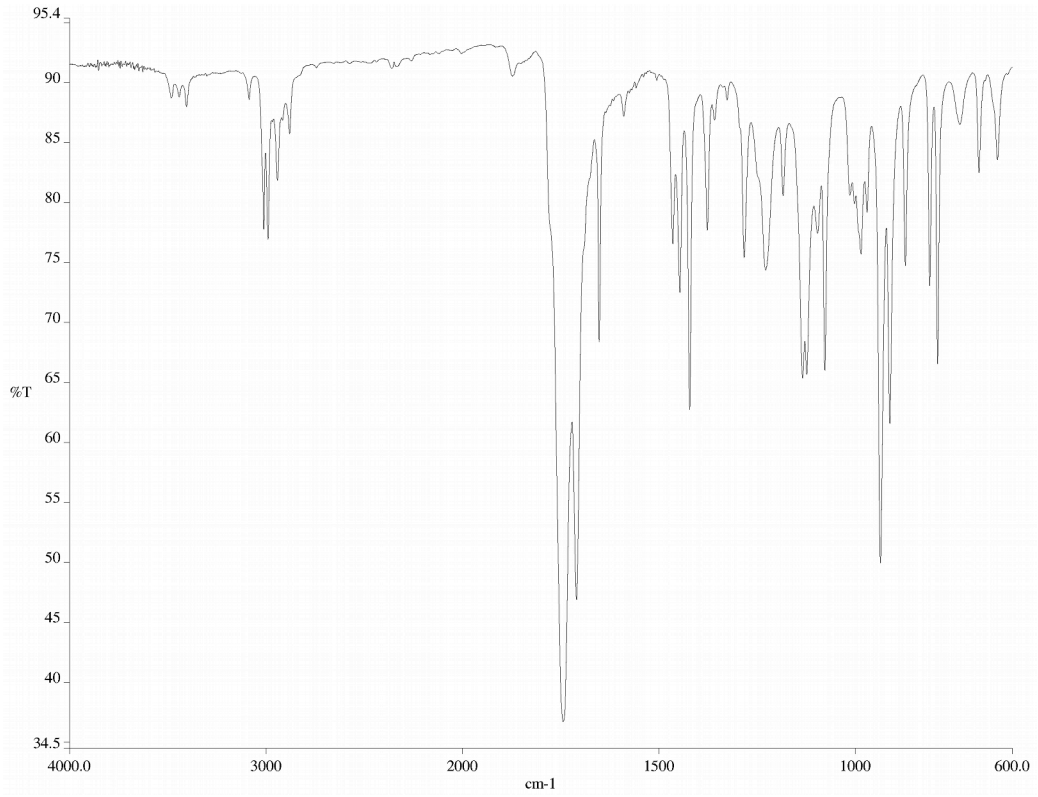

Figure A2.8 Infrared spectrum (thin film/NaCl) of bis(β-ketoester) **186**.

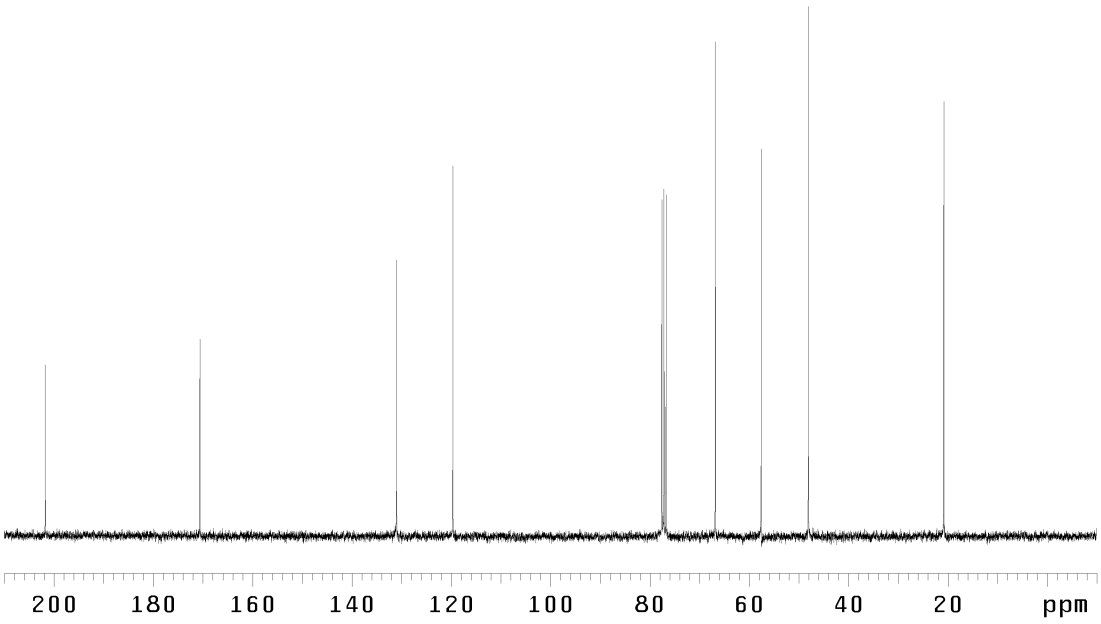

Figure A2.9 ^{13}C NMR (75 MHz, $CDCl_3$) of bis(β-ketoester) **186**.

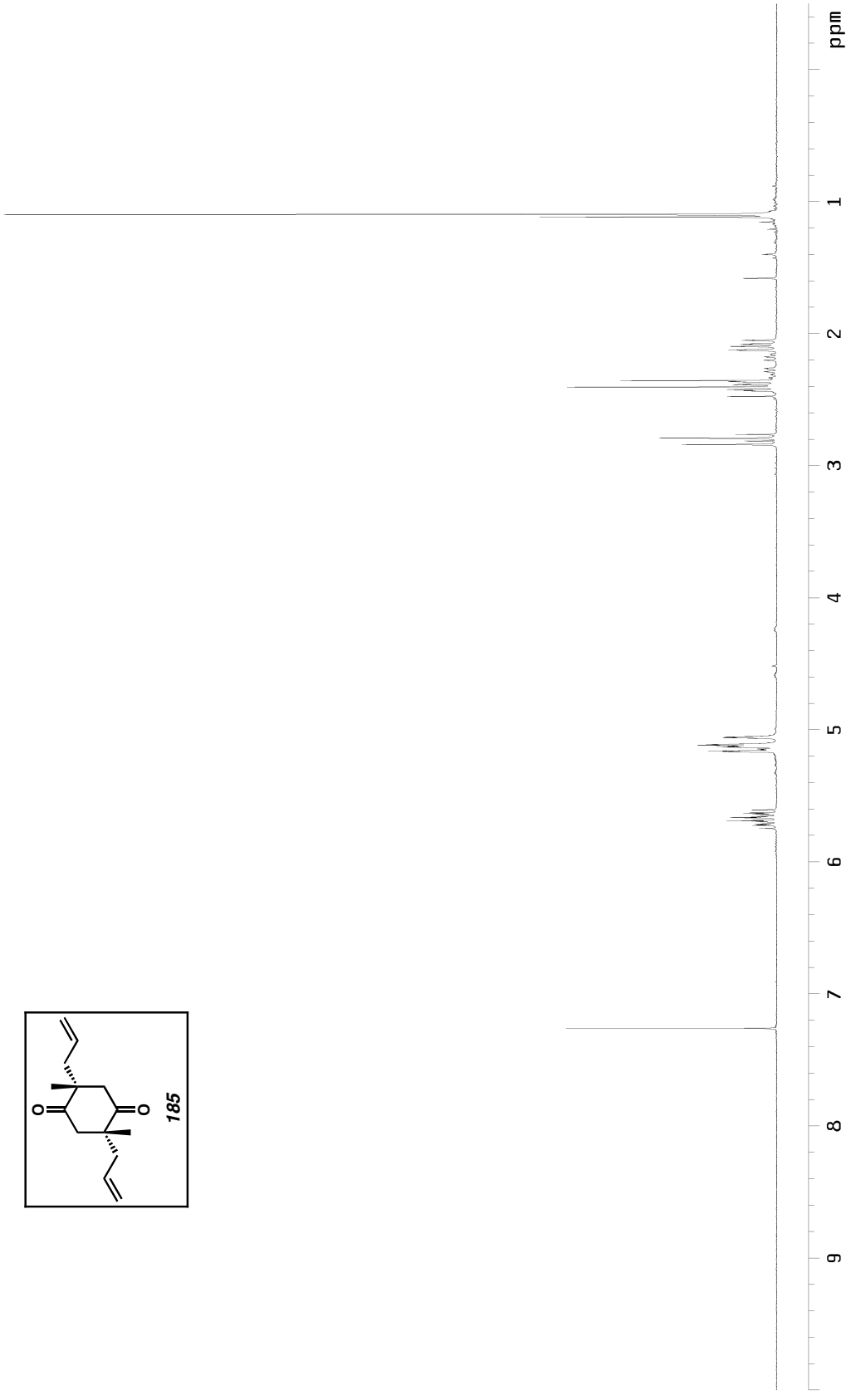

Figure A2.10 ^{1}H NMR (300 MHz, $CDCl_3$) of diketone **185**.

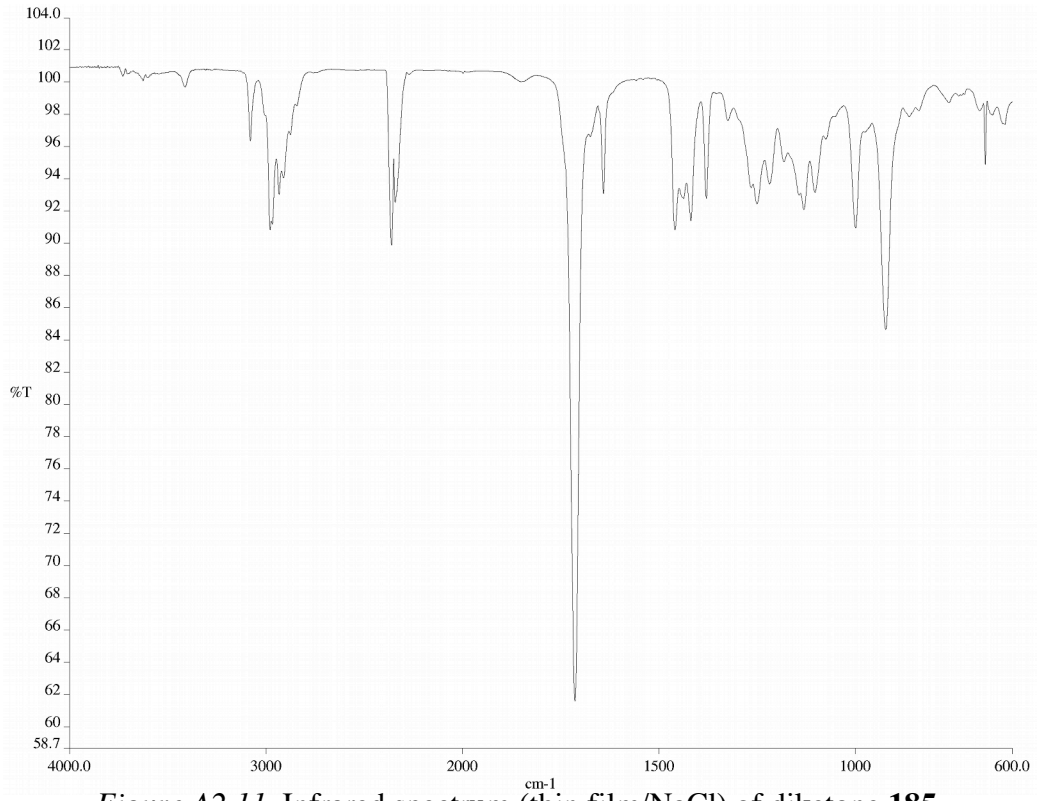

Figure A2.11 Infrared spectrum (thin film/NaCl) of diketone **185**.

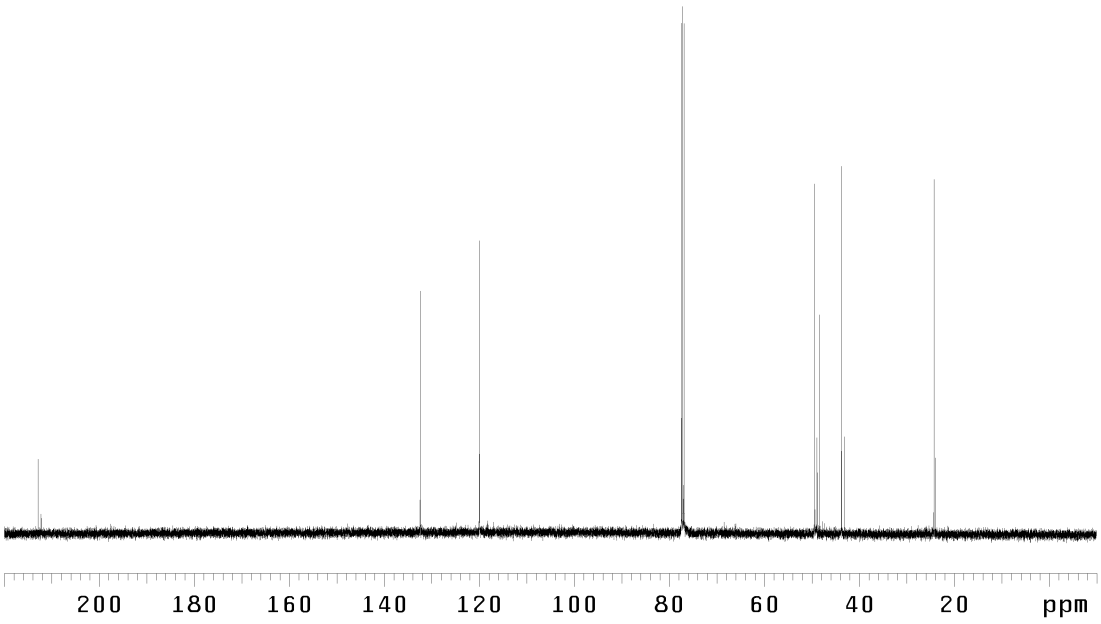

Figure A2.12 ^{13}C NMR (125 MHz, $CDCl_3$) of diketone **185**.

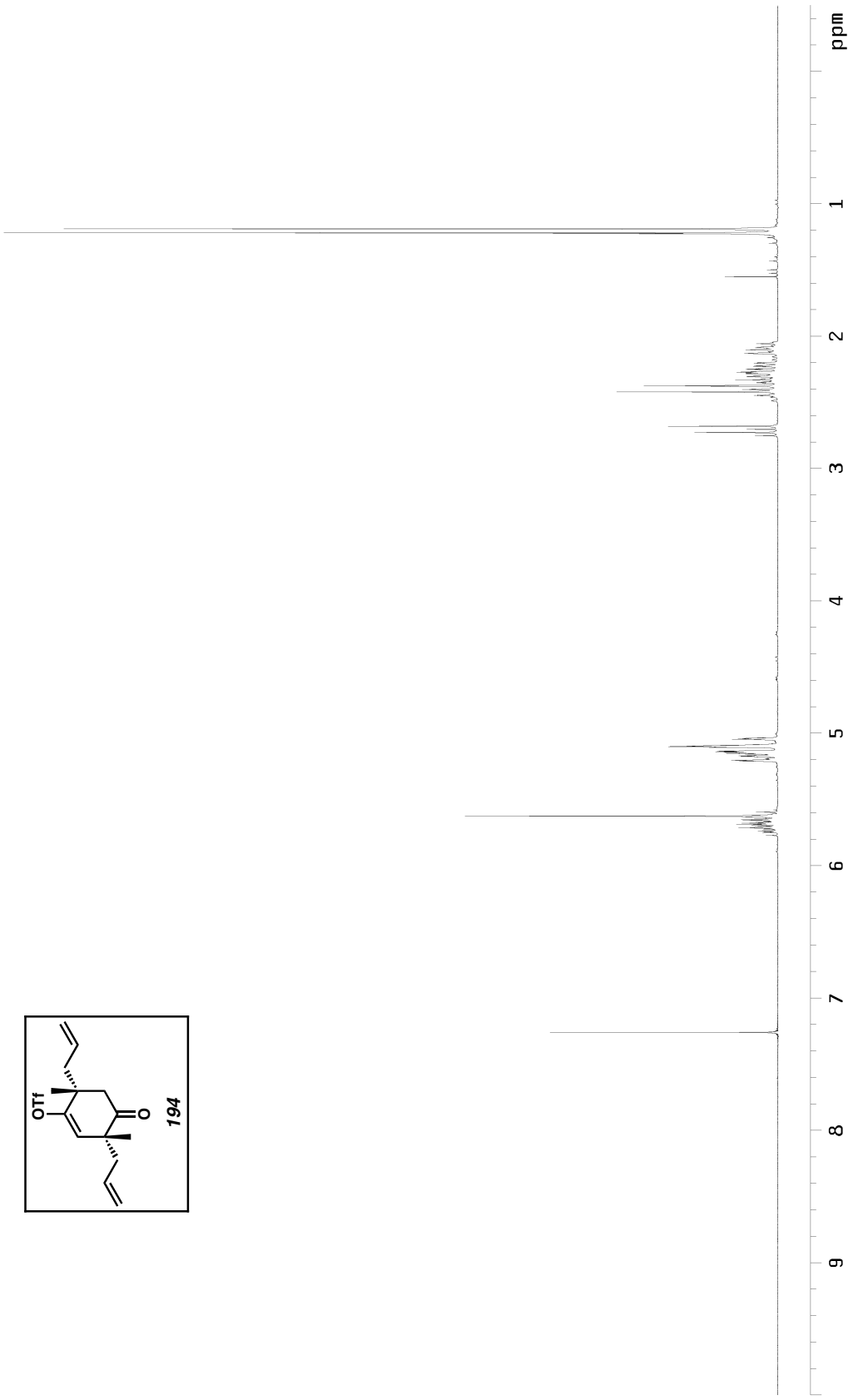

Figure A2.13 ^{1}H NMR (300 MHz, $CDCl_3$) of triflate **194**.

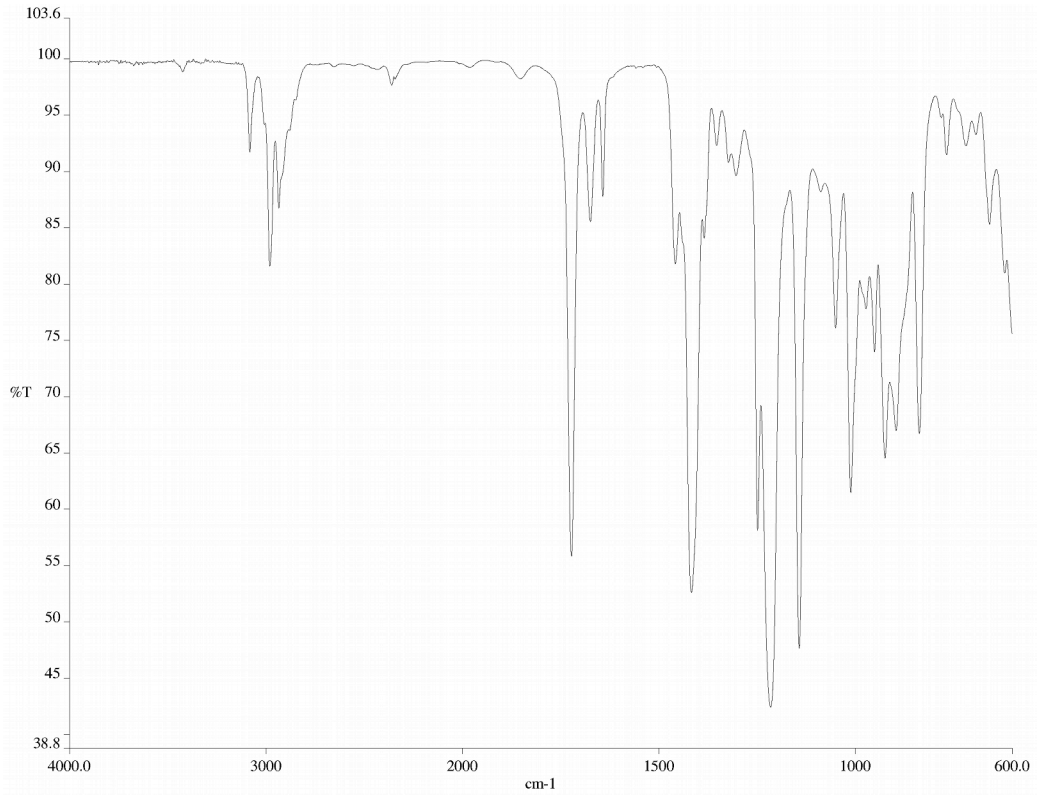

Figure A2.14 Infrared spectrum (thin film/NaCl) of trilfate **194**.

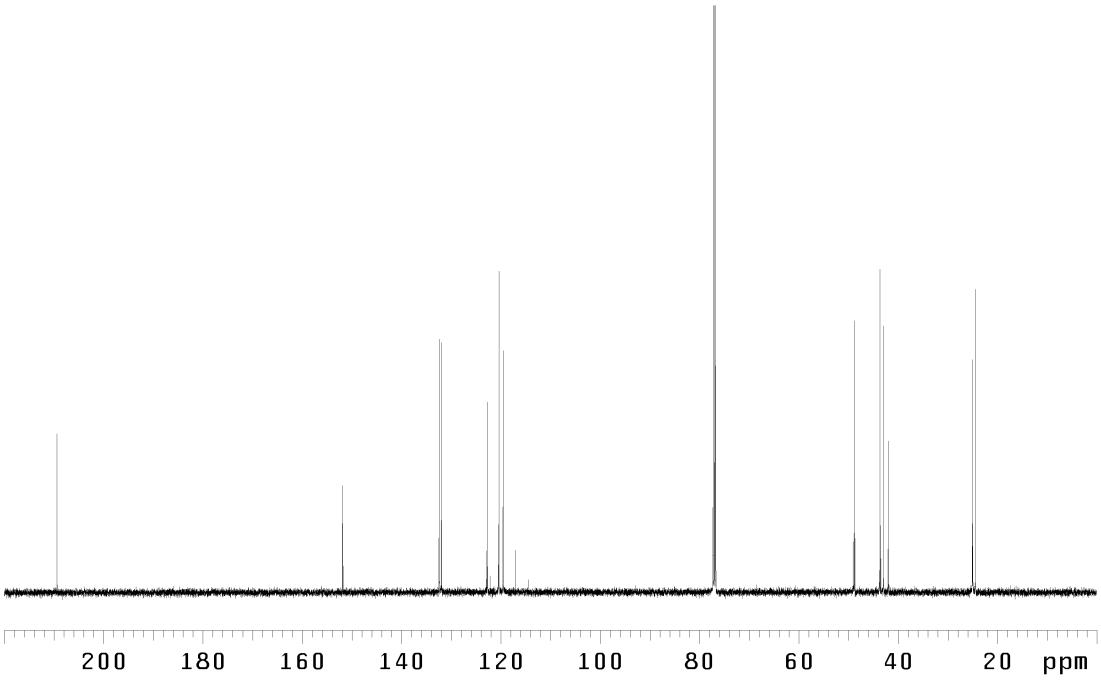

Figure A2.15 ^{13}C NMR (125 MHz, $CDCl_3$) of triflate **194**.

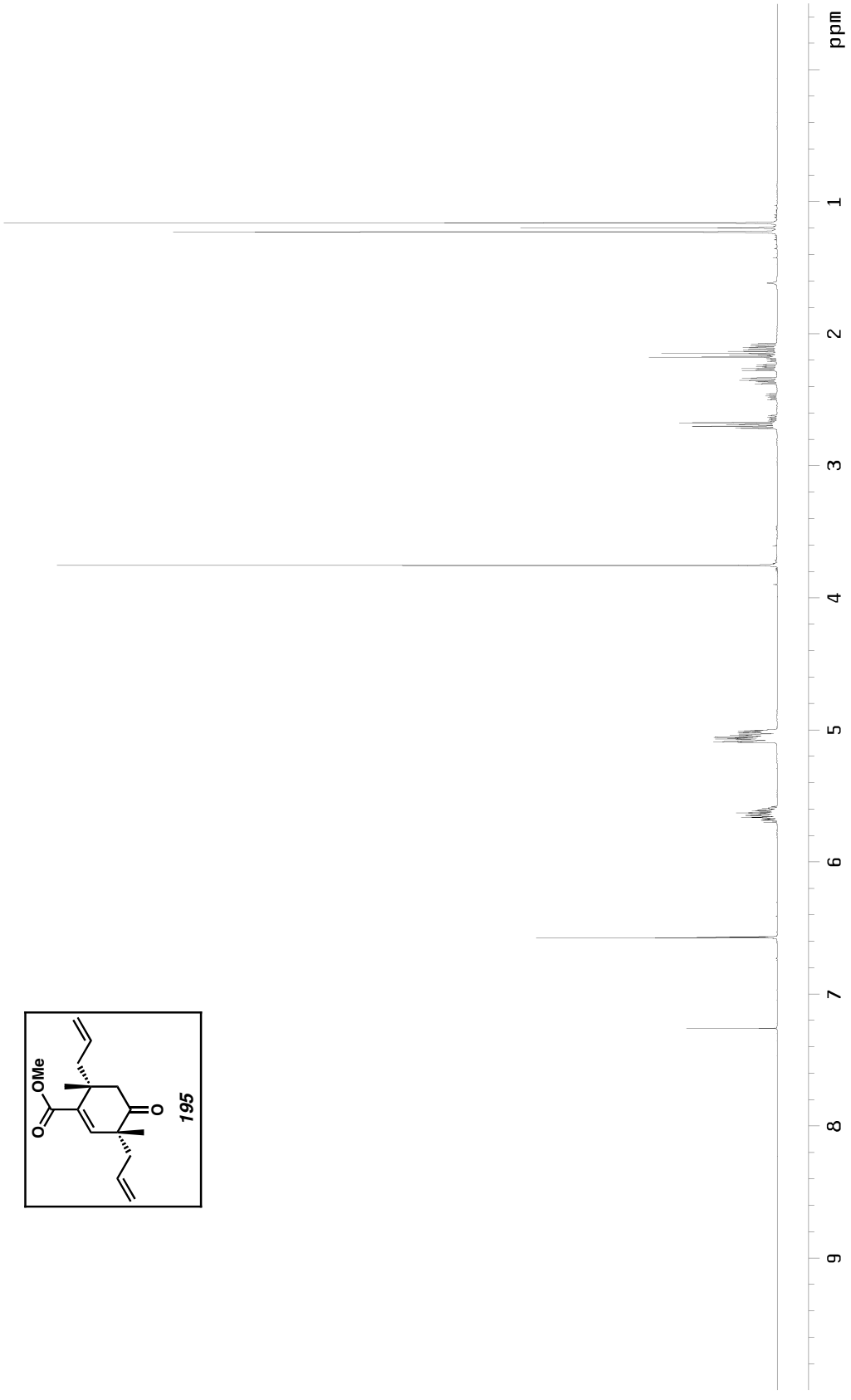

Figure A2.16 ^{1}H NMR (500 MHz, $CDCl_3$) of enoate **195**.

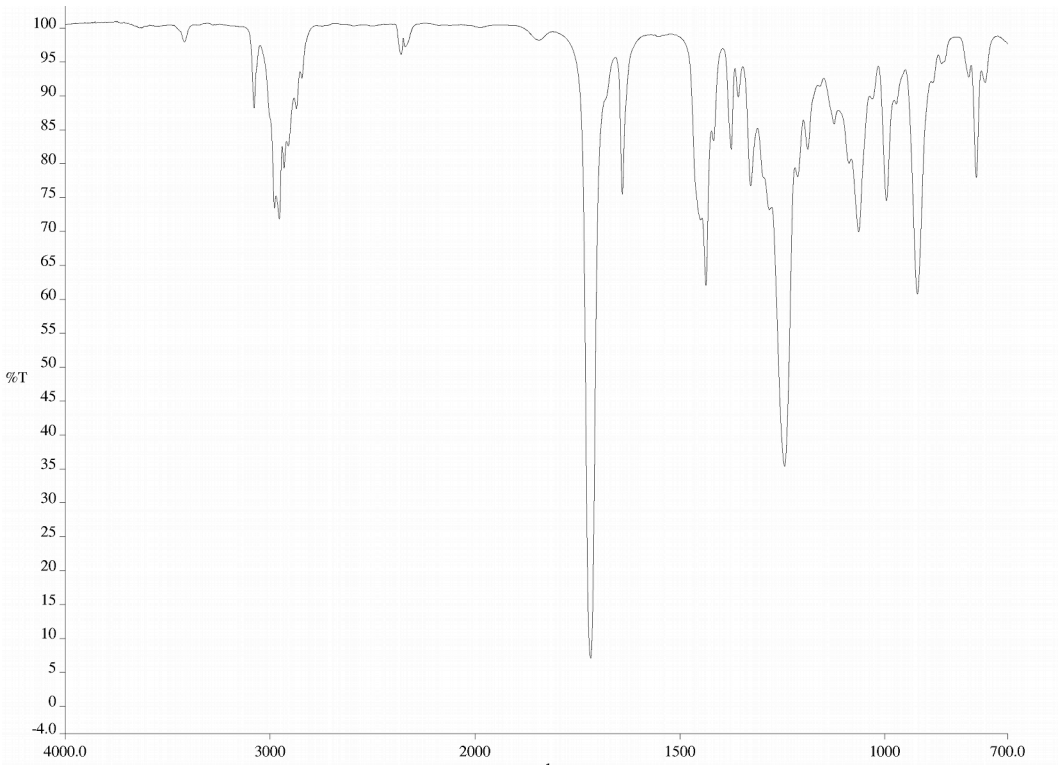

Figure A2.17 Infrared spectrum (thin film/NaCl) of enoate **195**.

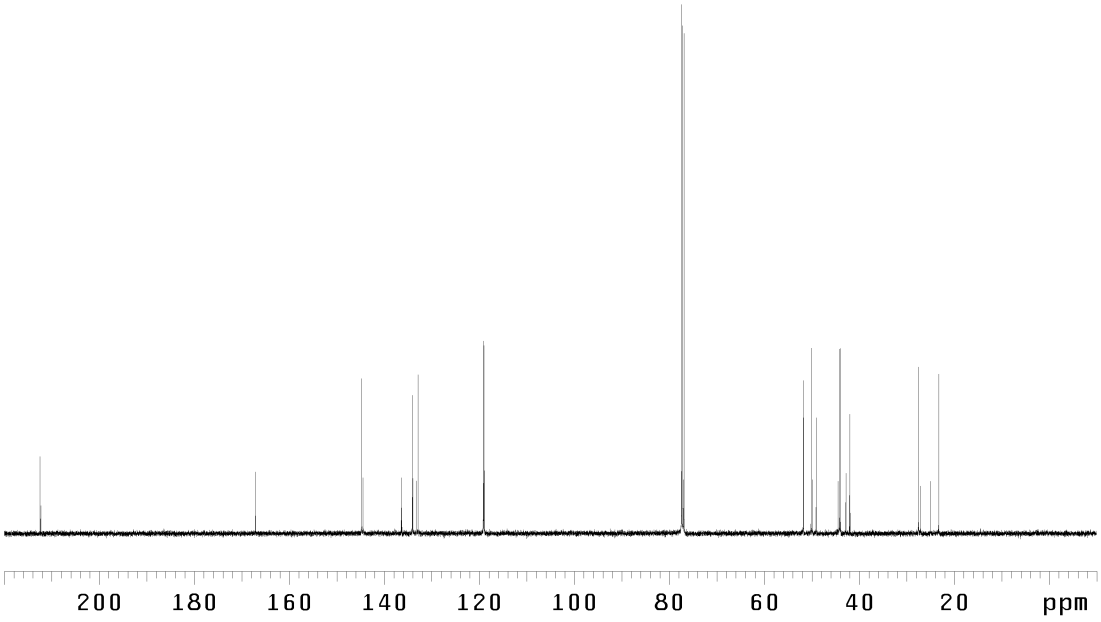

Figure A2.18 ^{13}C NMR (125 MHz, $CDCl_3$) of enoate **195**.

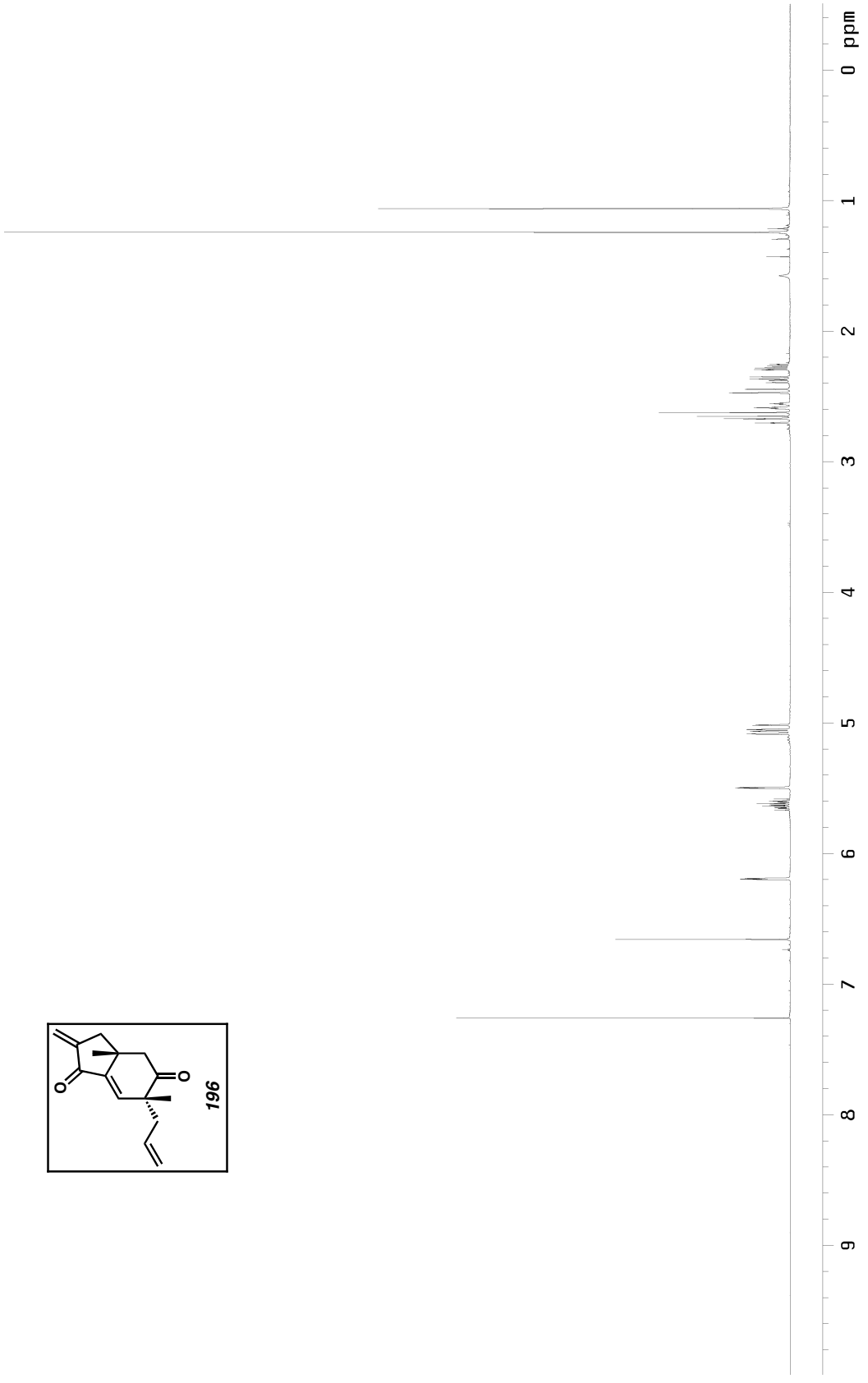

Figure A2.19 ^{1}H NMR (500 MHz, $CDCl_3$) of cyclopentadienone **196**.

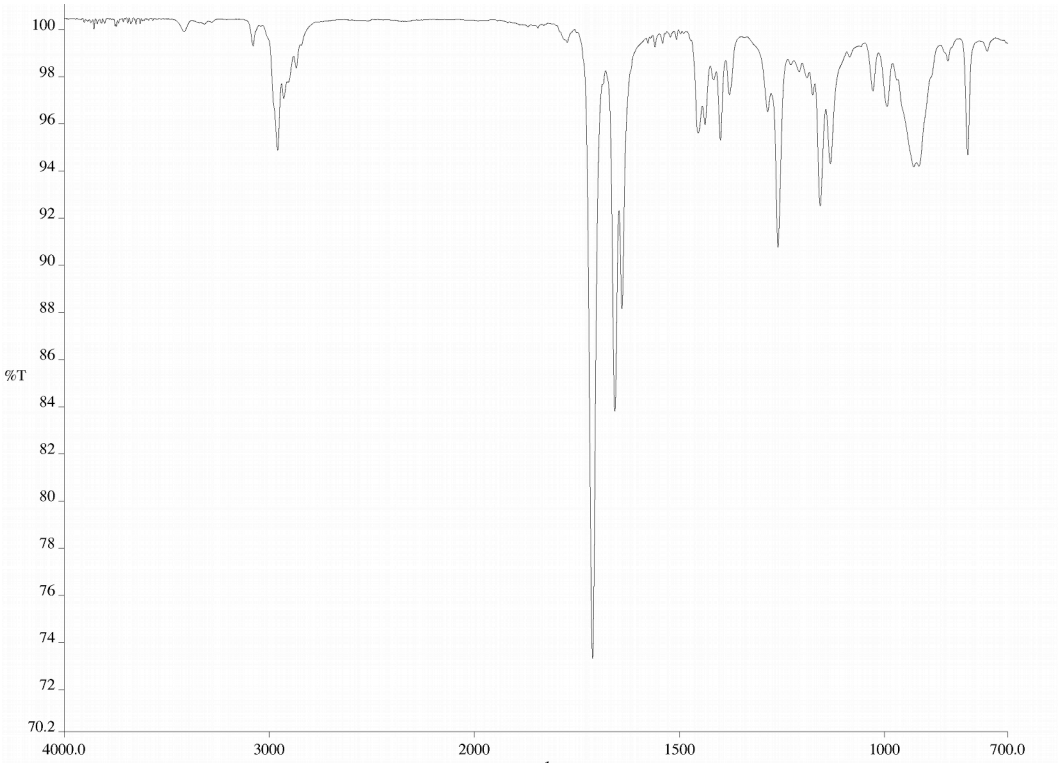

Figure A2.20 Infrared spectrum (thin film/NaCl) of cyclopentadienone **196**.

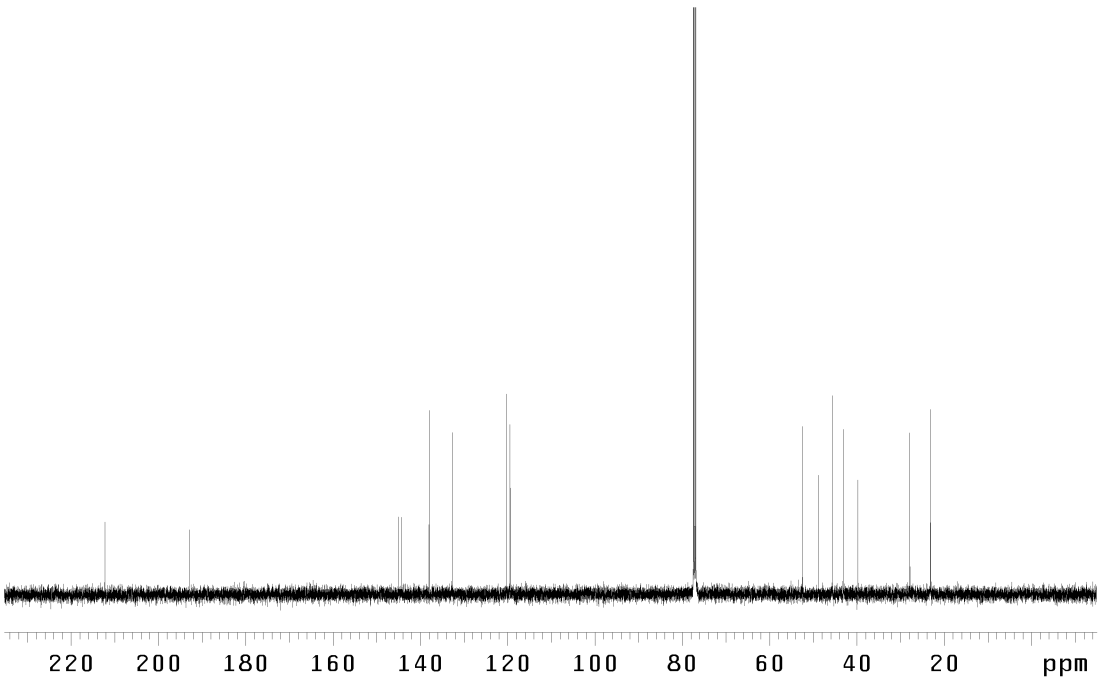

Figure A2.21 ^{13}C NMR (125 MHz, $CDCl_3$) of cyclopentadienone **196**.

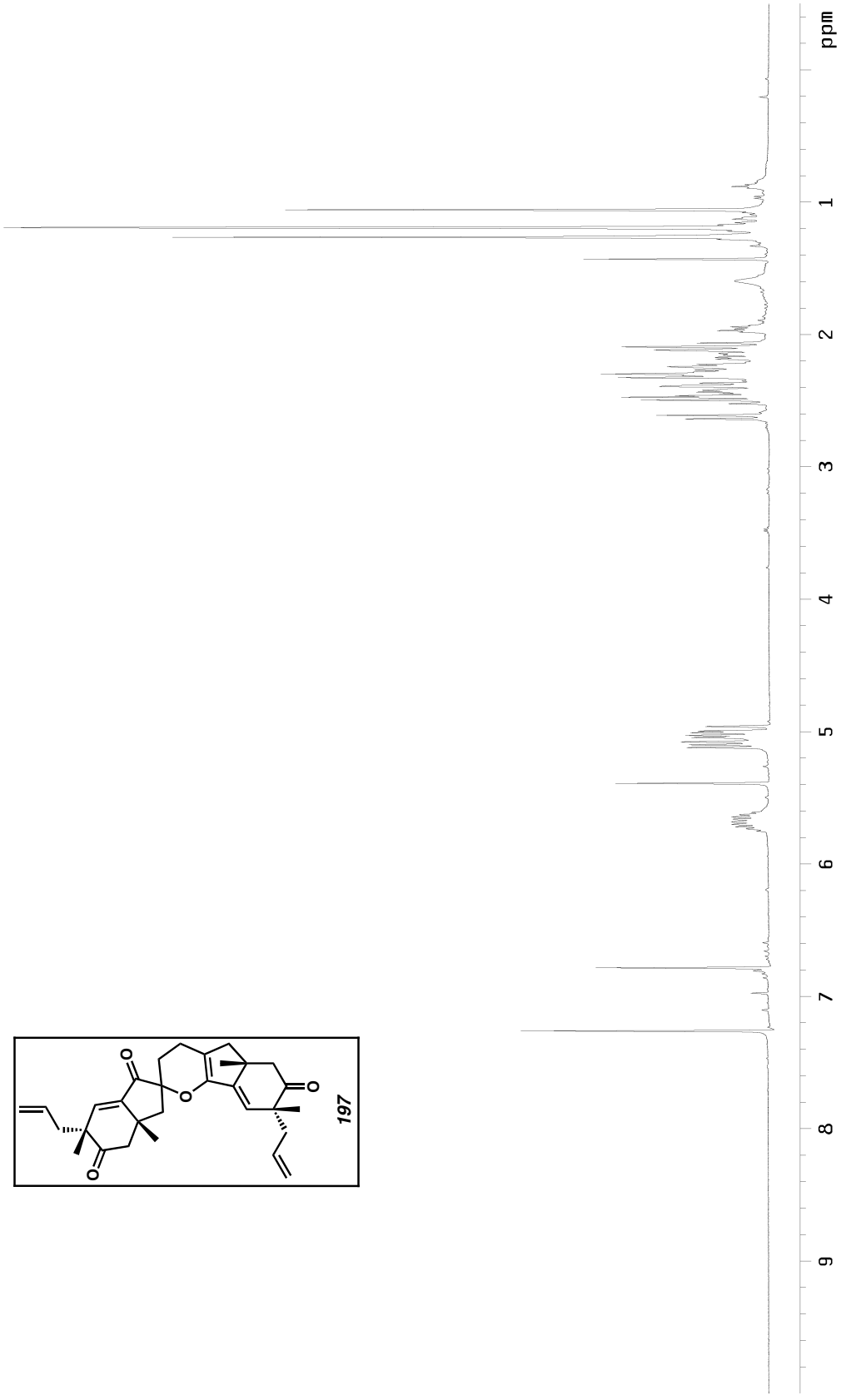

Figure A2.22 ^{1}H NMR (500 MHz, $CDCl_3$) of spirocycle **197**.

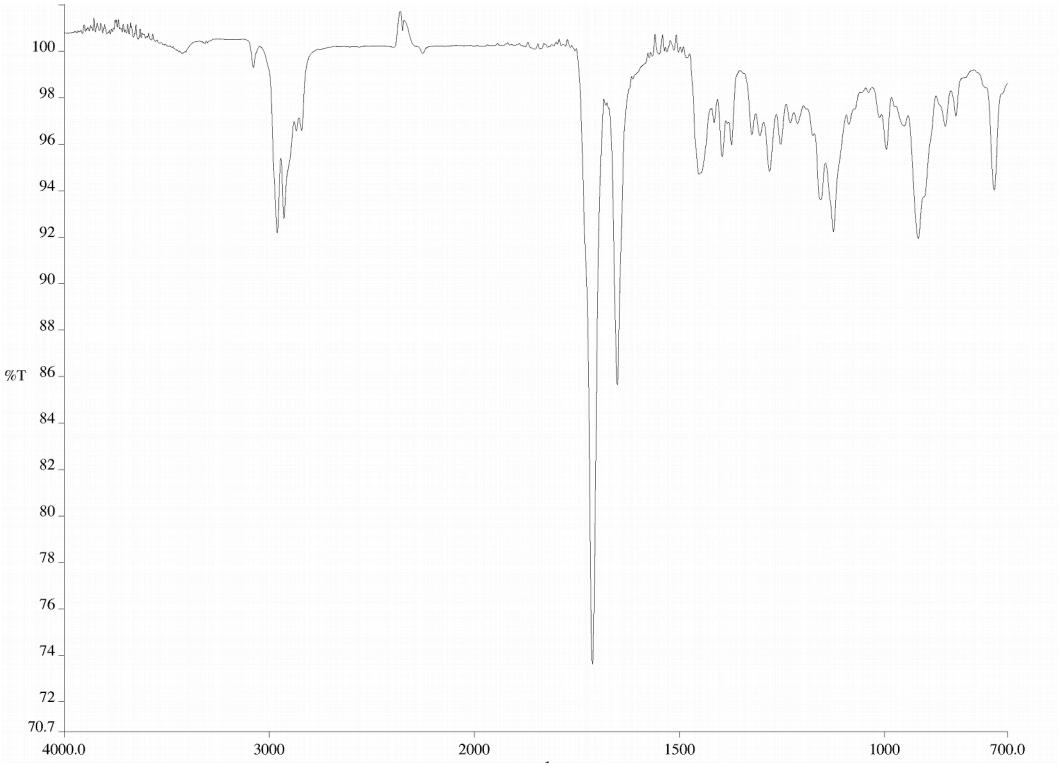

Figure A2.23 Infrared spectrum (thin film/NaCl) of spirocycle **197**.

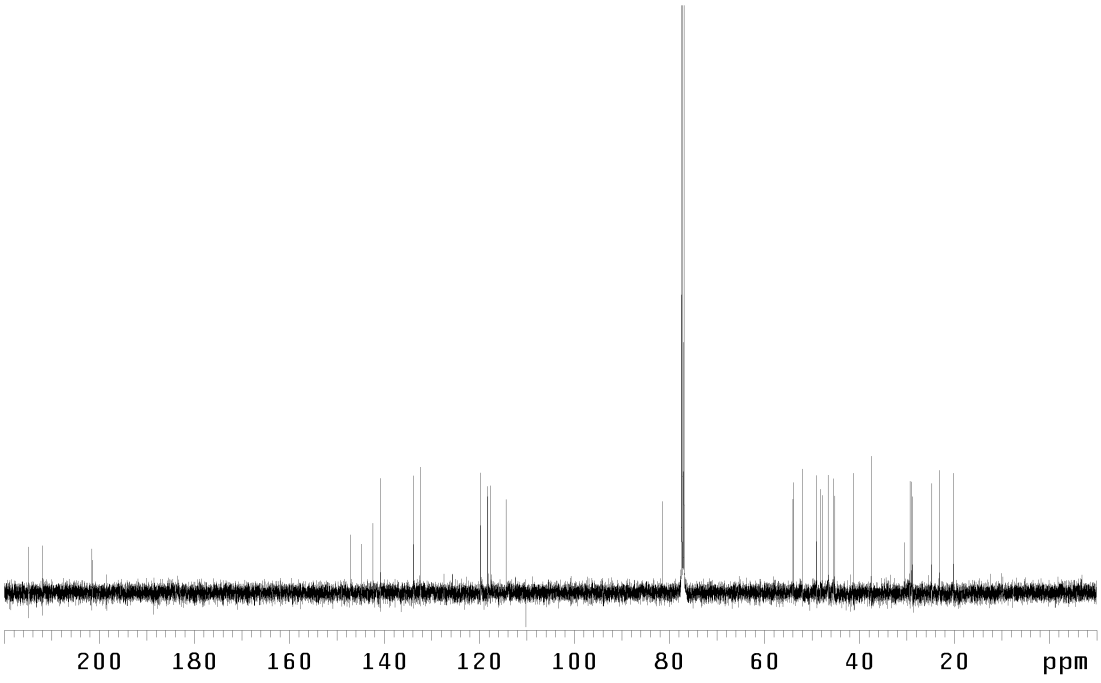

Figure A2.24 ^{13}C NMR (125 MHz, $CDCl_3$) of spirocycle **197**.

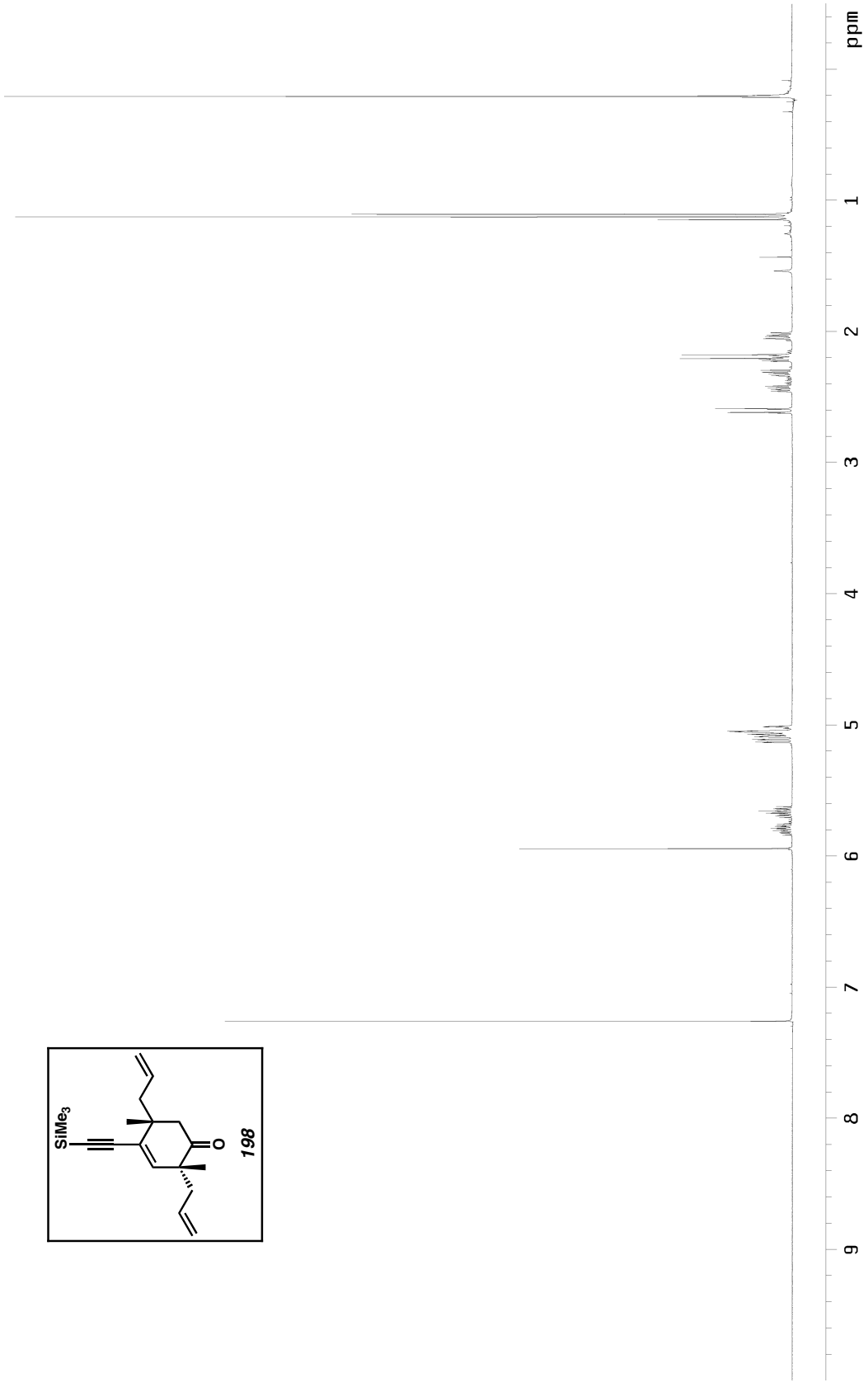

Figure A2.25 ^{1}H NMR (500 MHz, $CDCl_3$) of alkyne **198**.

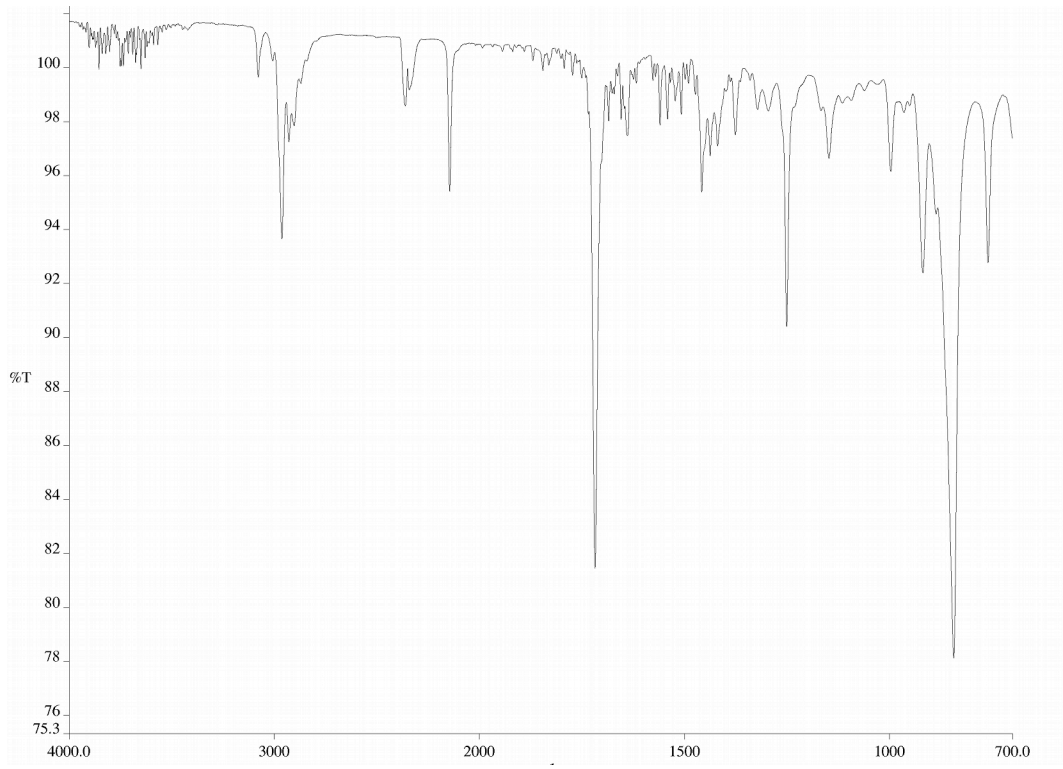

Figure A2.26 Infrared spectrum (thin film/NaCl) of alkyne **198**.

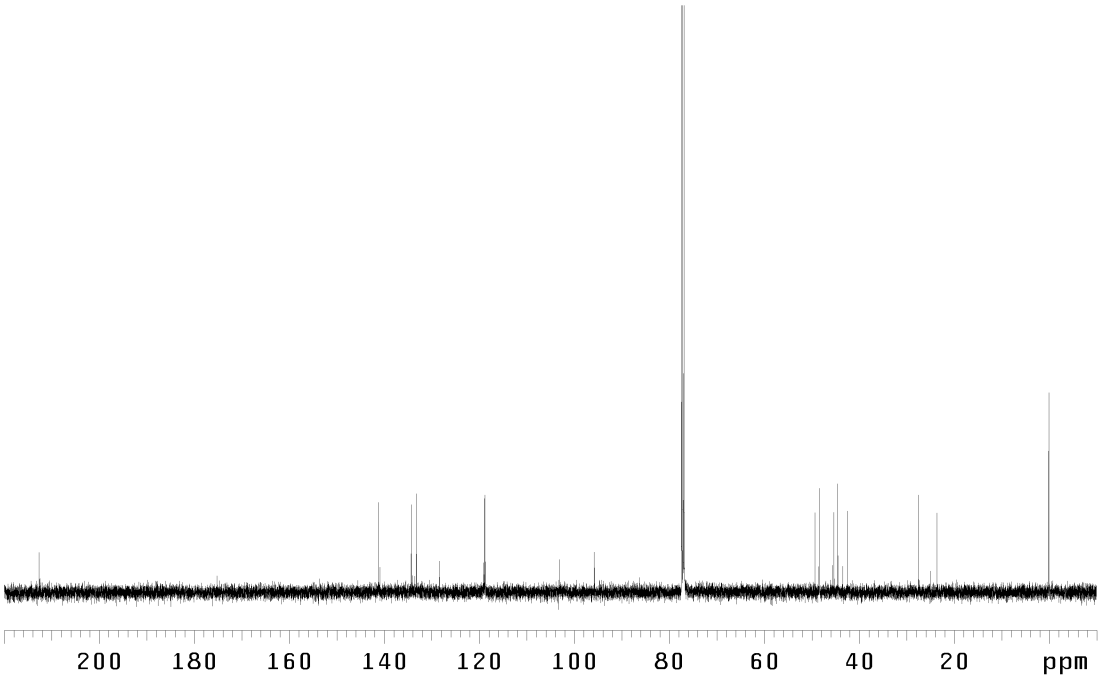

Figure A2.27 ^{13}C NMR (500 MHz, $CDCl_3$) of alkyne **198**.

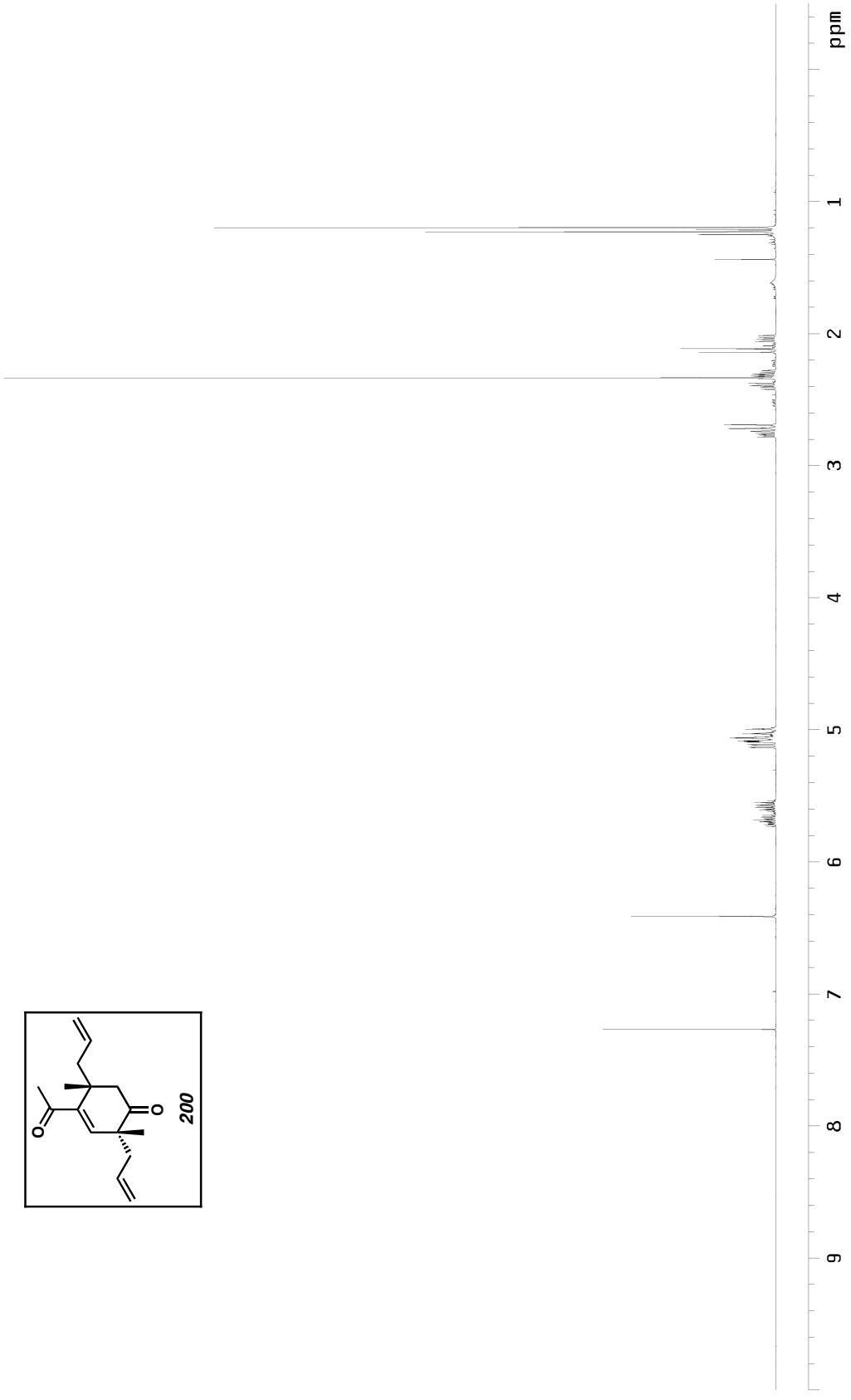

Figure A2.28 ^{1}H NMR (500 MHz, $CDCl_3$) of ketone **200**.

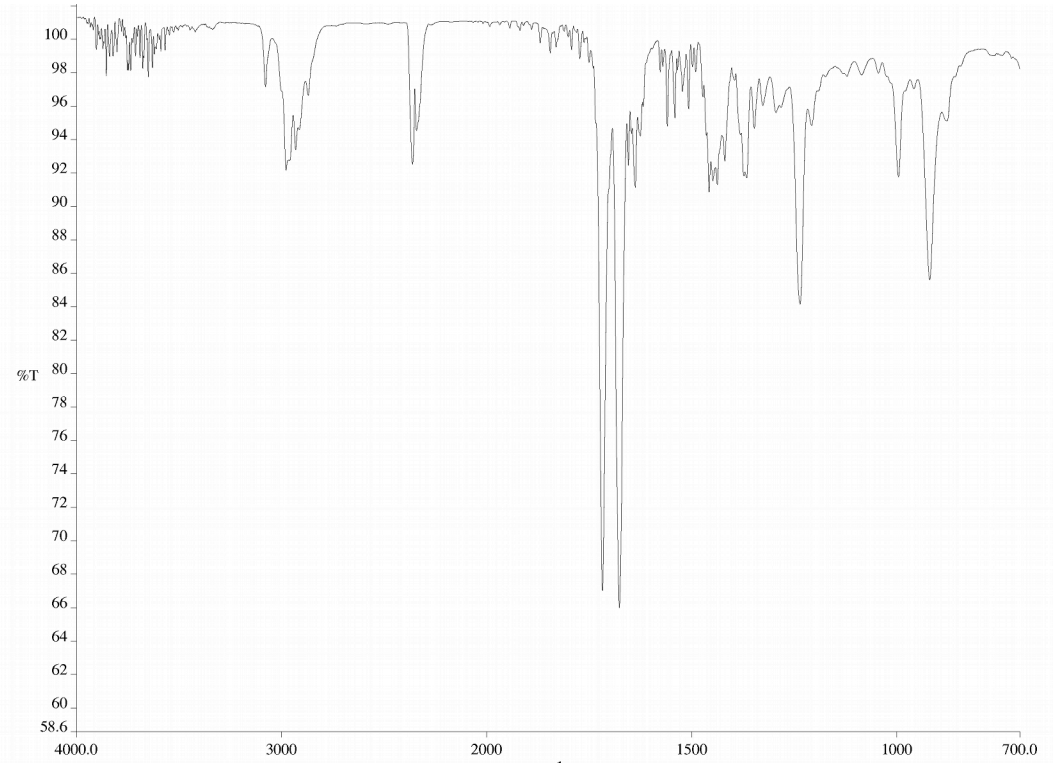

Figure A2.29 Infrared spectrum (thin film/NaCl) of ketone **200**.

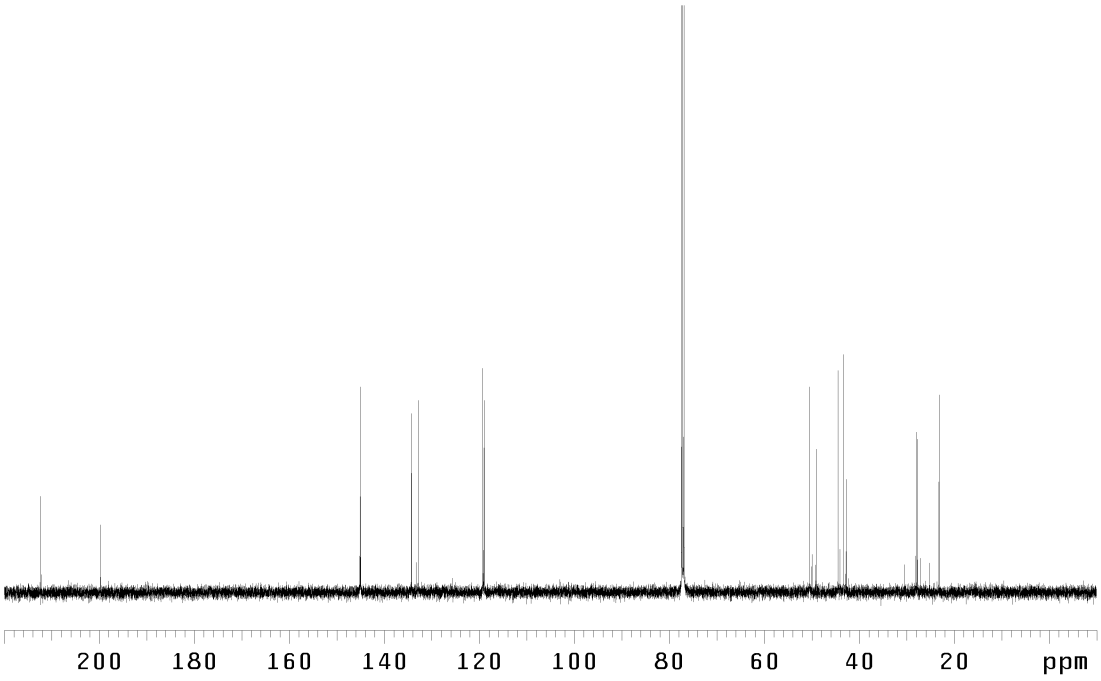

Figure A2.30 ^{13}C NMR (125 MHz, $CDCl_3$) of ketone **200**.

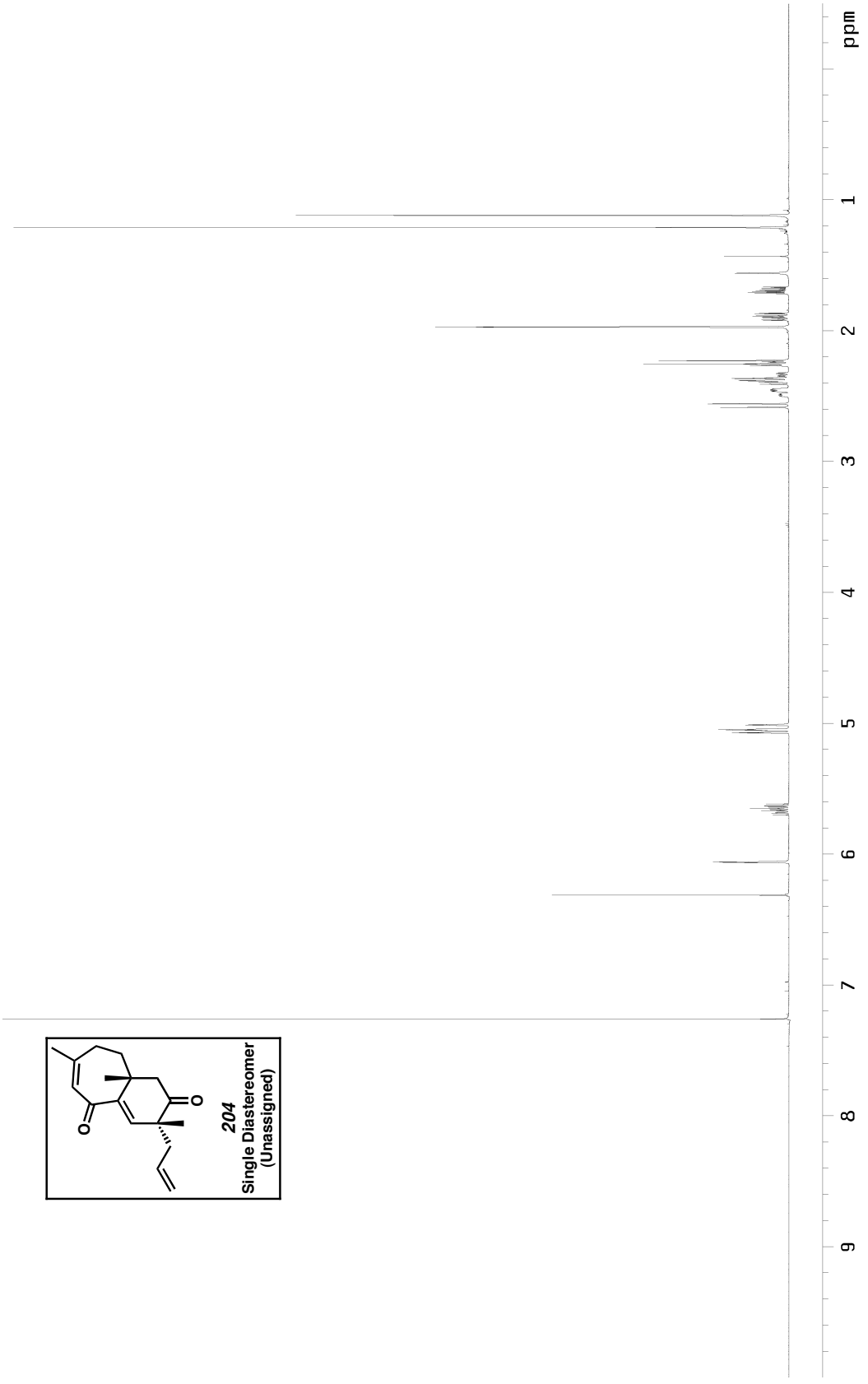

Figure A2.31 ^{1}H NMR (500 MHz, $CDCl_3$) of bicyclic enone **204(A)**.

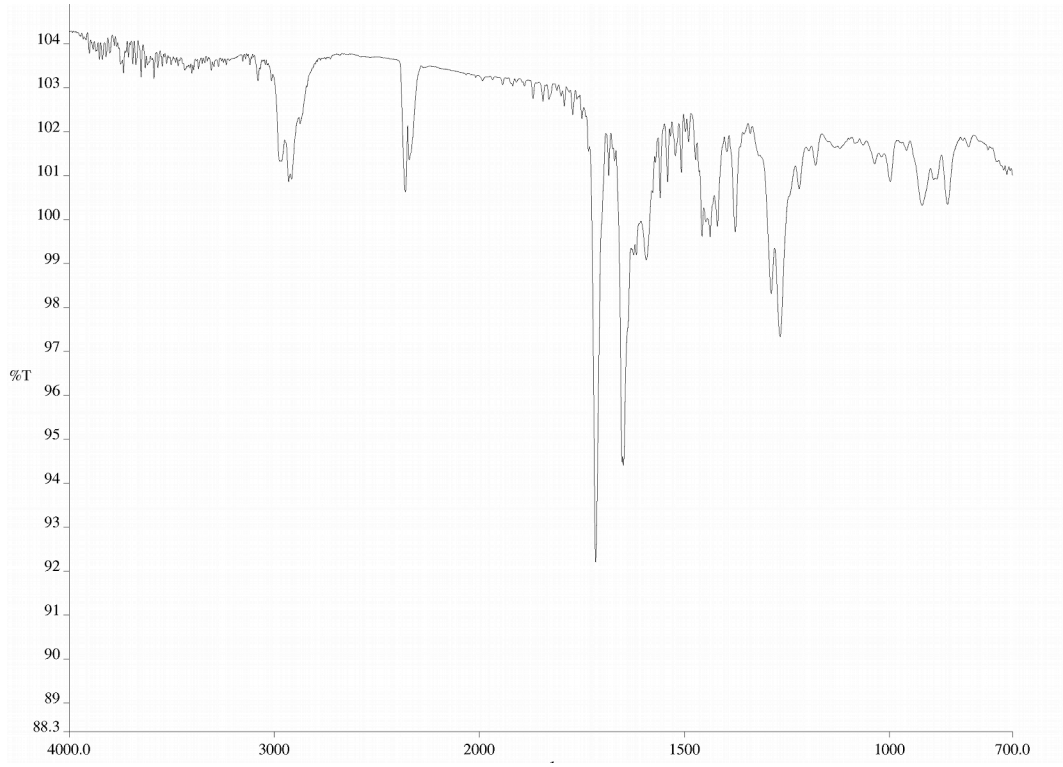

Figure A2.32 Infrared spectrum (thin film/NaCl) of bicyclic enone **204(A)**.

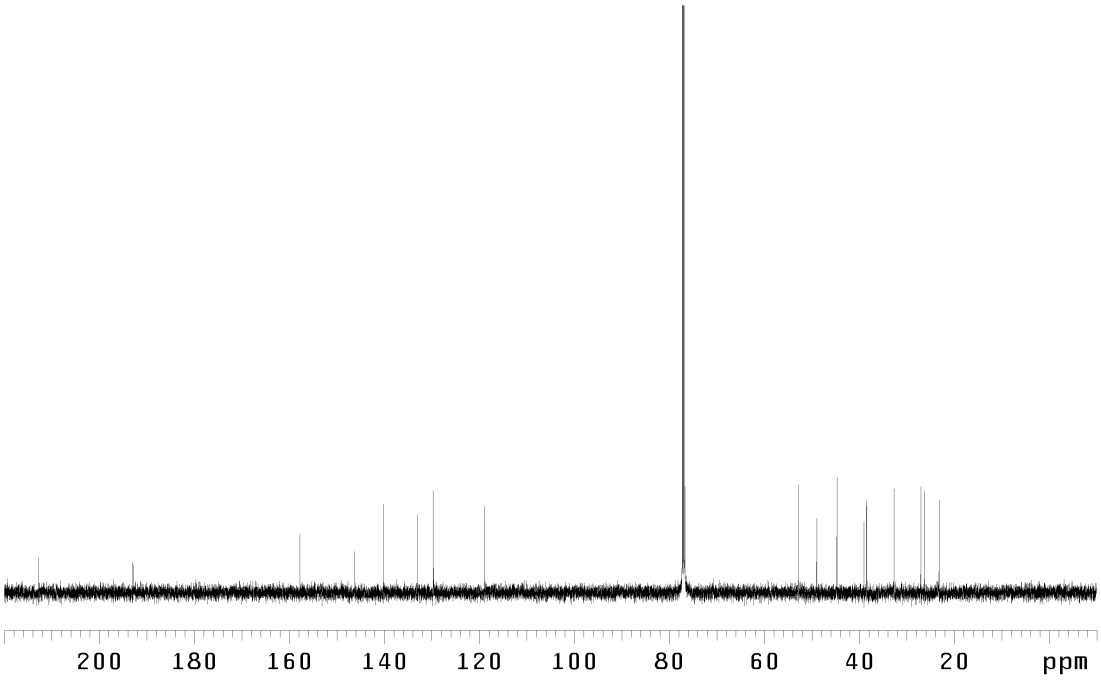

Figure A2.33 ^{13}C NMR (125 MHz, $CDCl_3$) of bicyclic enone **204(A)**.

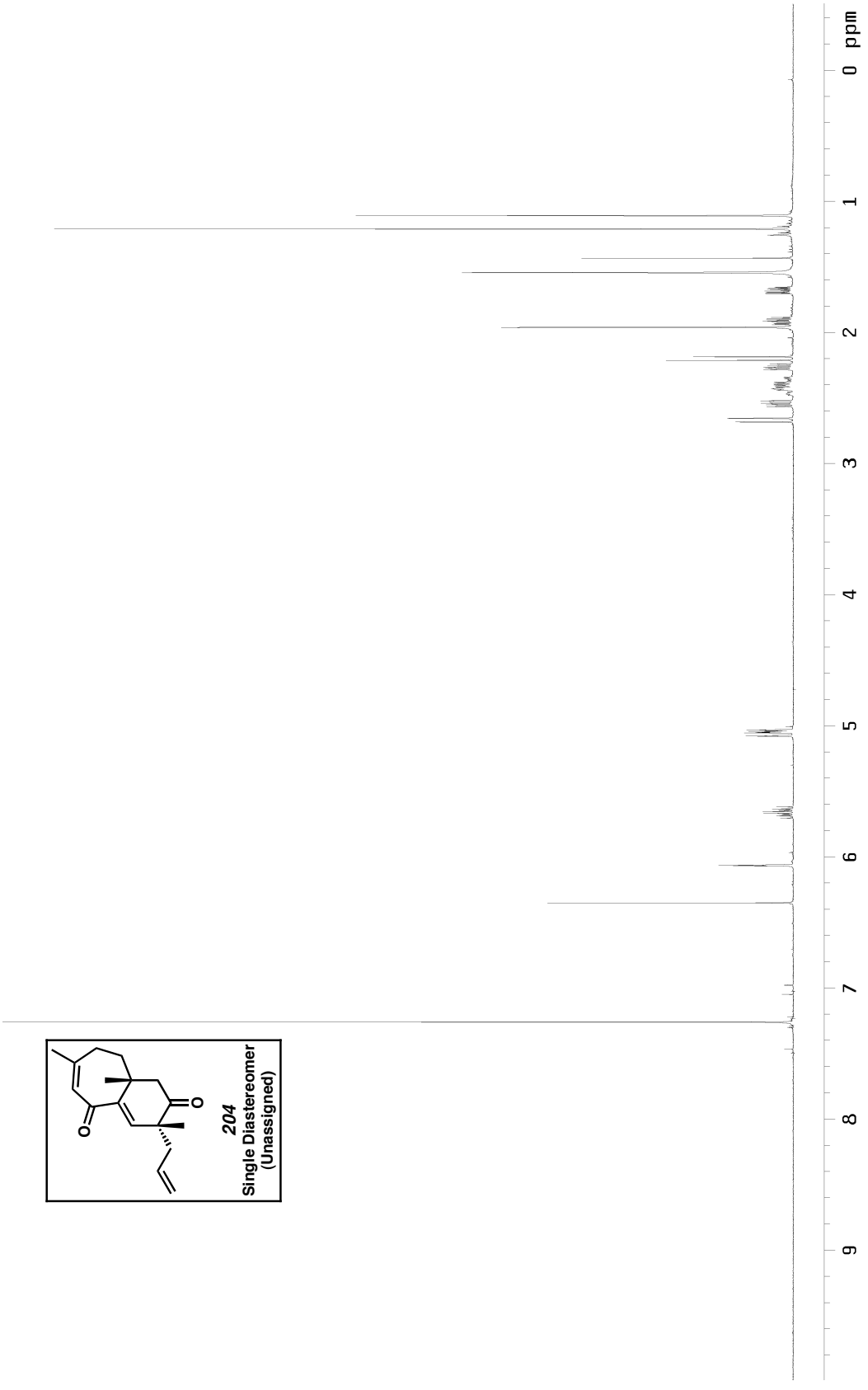

Figure A2.34 ^{1}H NMR (500 MHz, $CDCl_3$) of bicyclic enone **204(B)**.

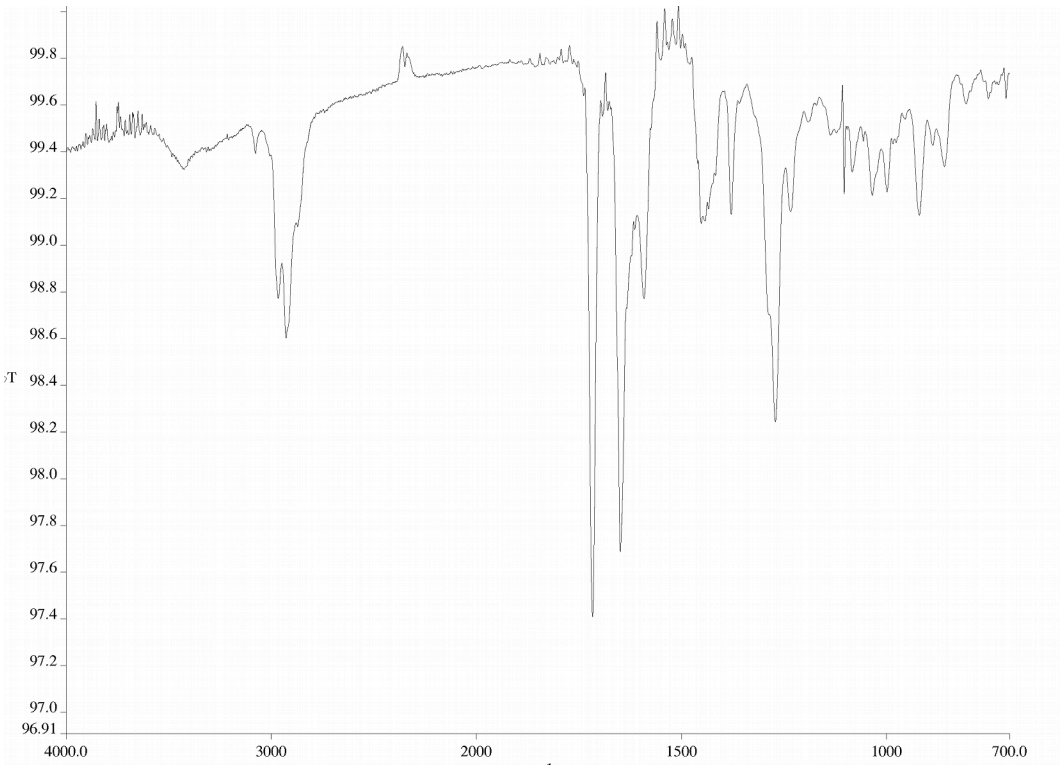

Figure A2.35 Infrared spectrum (thin film/NaCl) of bicyclic enone **204(B)**.

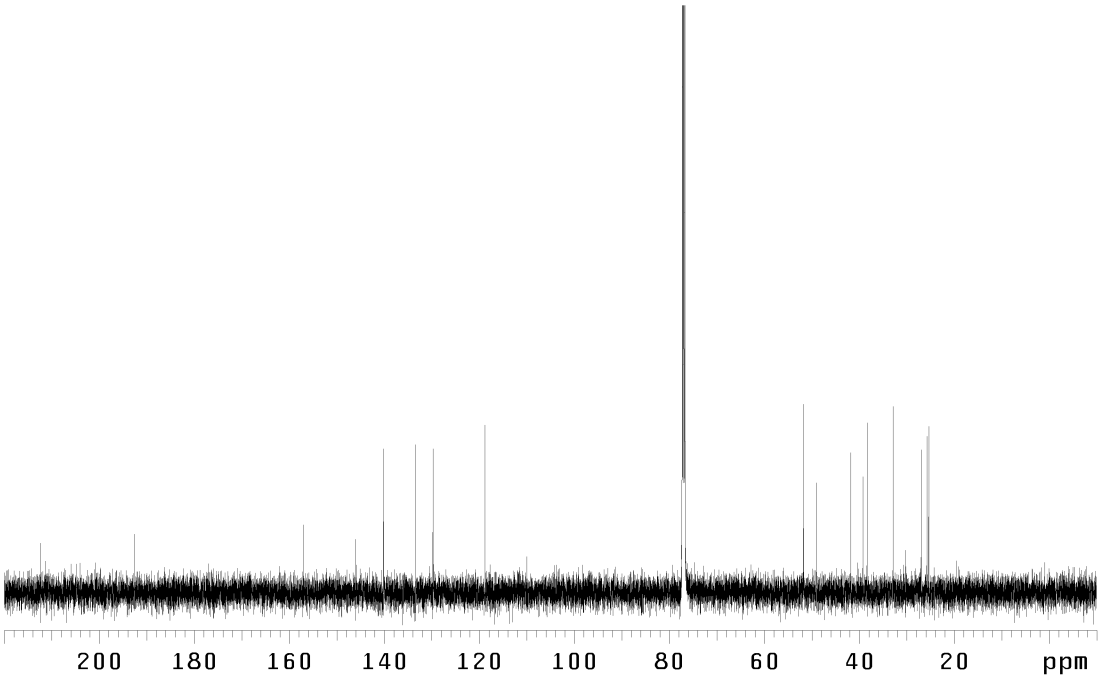

Figure A2.36 ^{13}C NMR (125 MHz, $CDCl_3$) of bicyclic enone **204(B)**.

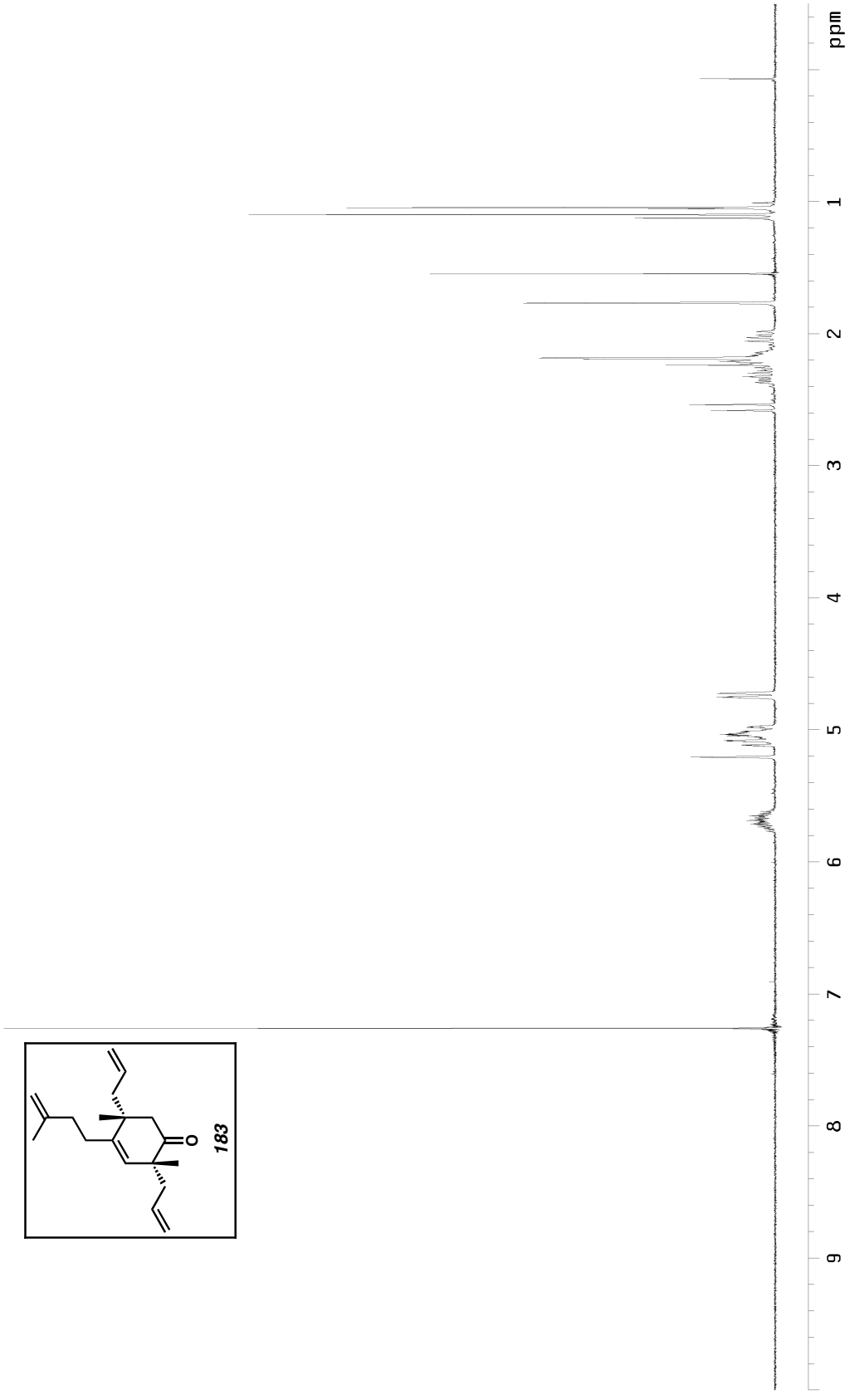

Figure A2.37 ^{1}H NMR (300 MHz, $CDCl_3$) of tetraolefin **183**.

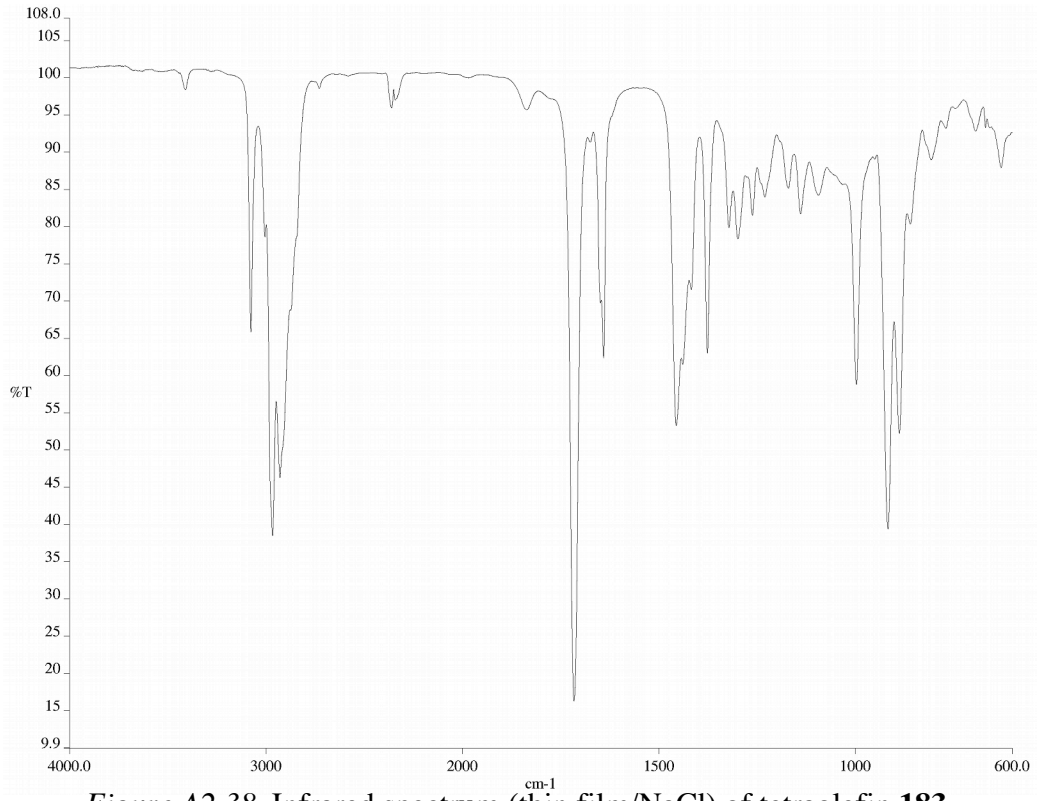

Figure A2.38 Infrared spectrum (thin film/NaCl) of tetraolefin **183**.

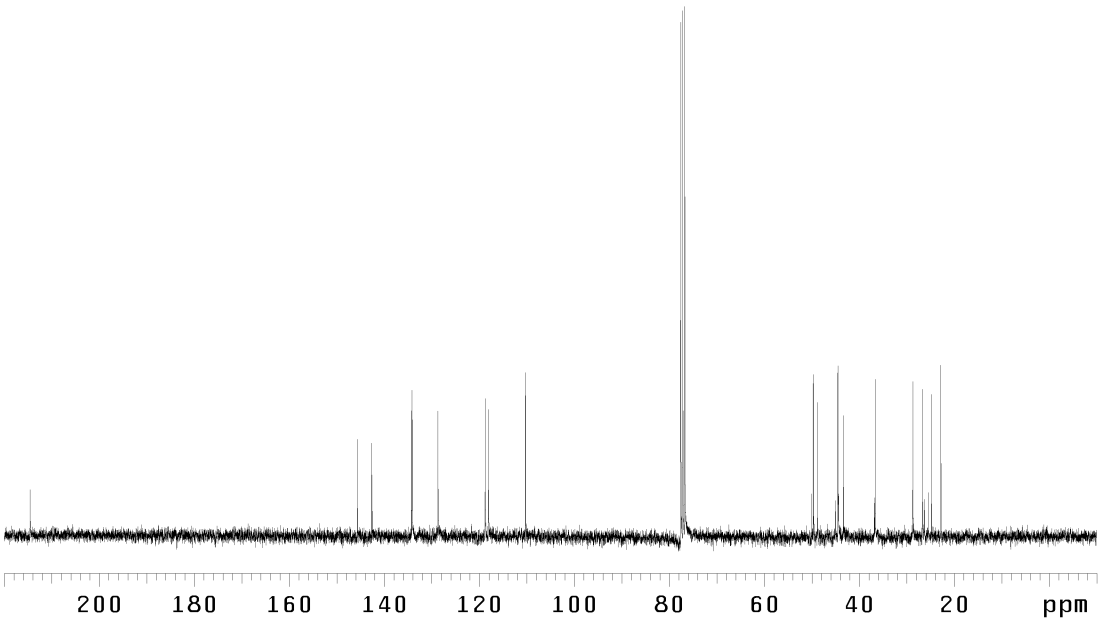

Figure A2.39 ^{13}C NMR (75 MHz, $CDCl_3$) of tetraolefin **183**.

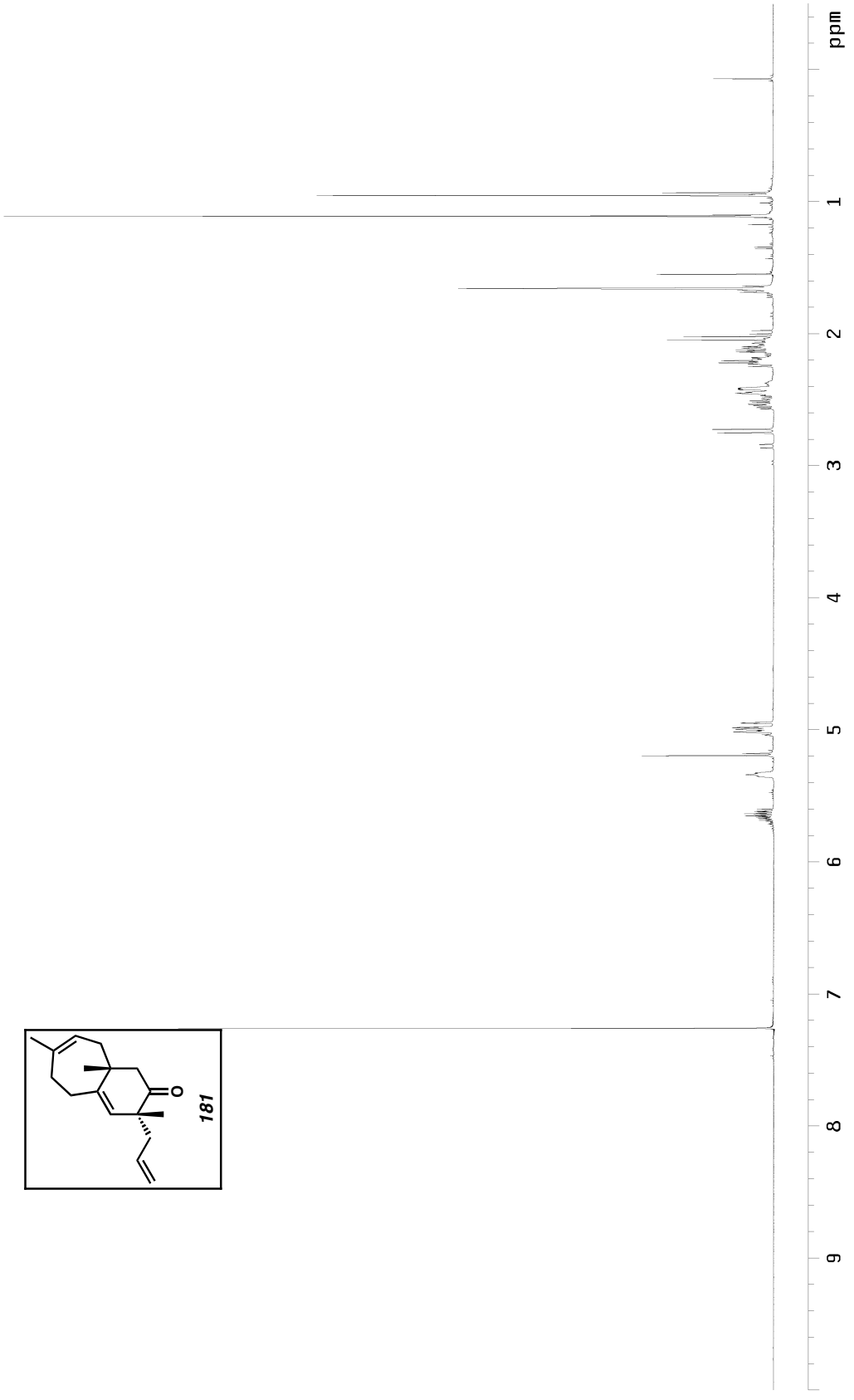

Figure A2.40 ^{1}H NMR (500 MHz, $CDCl_3$) of bicyclic ketone **181**.

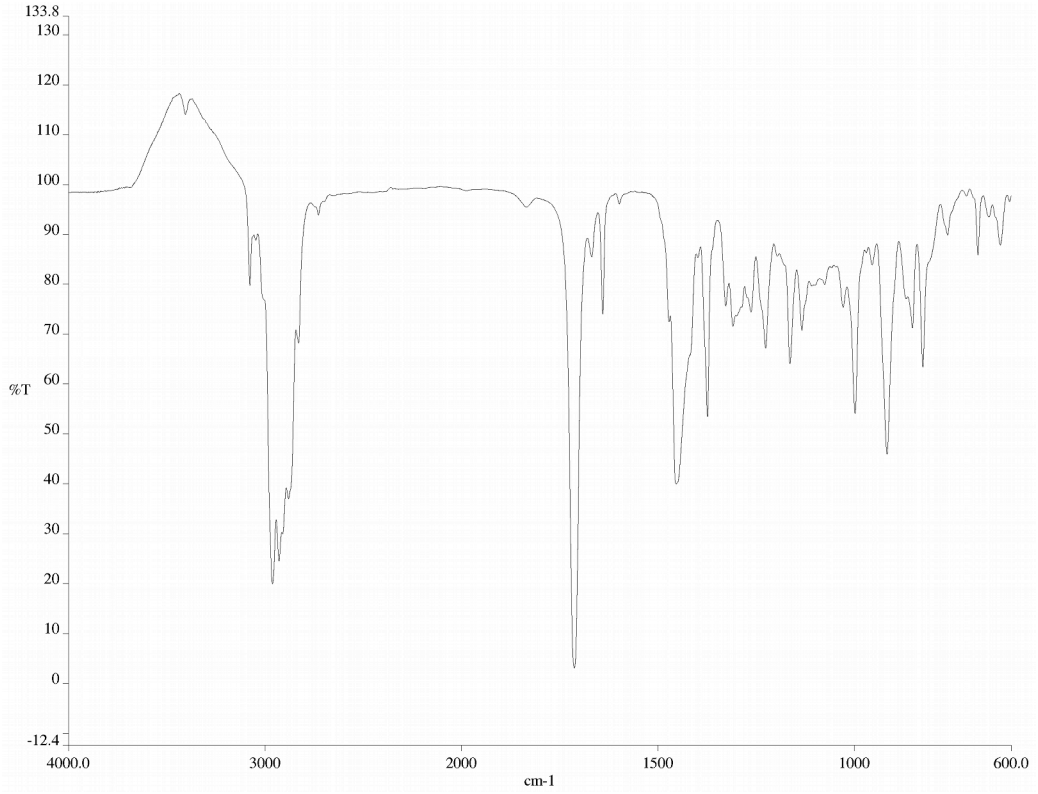

Figure A2.41 Infrared spectrum (thin film/NaCl) of bicyclic ketone **181**.

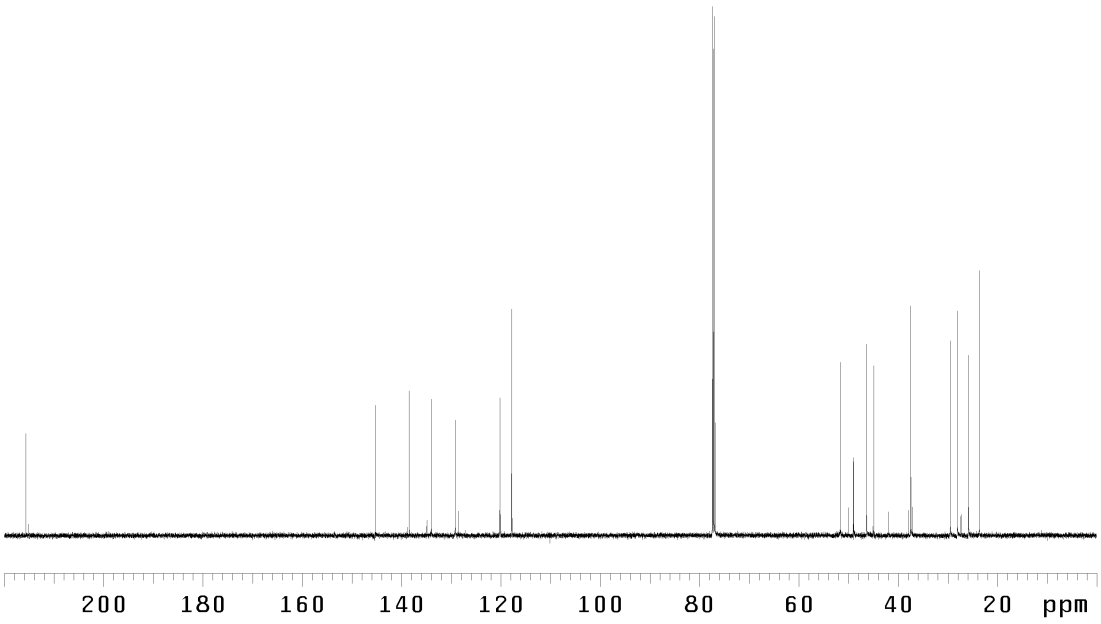

Figure A2.42 ^{13}C NMR (125 MHz, $CDCl_3$) of bicyclic ketone **181**.

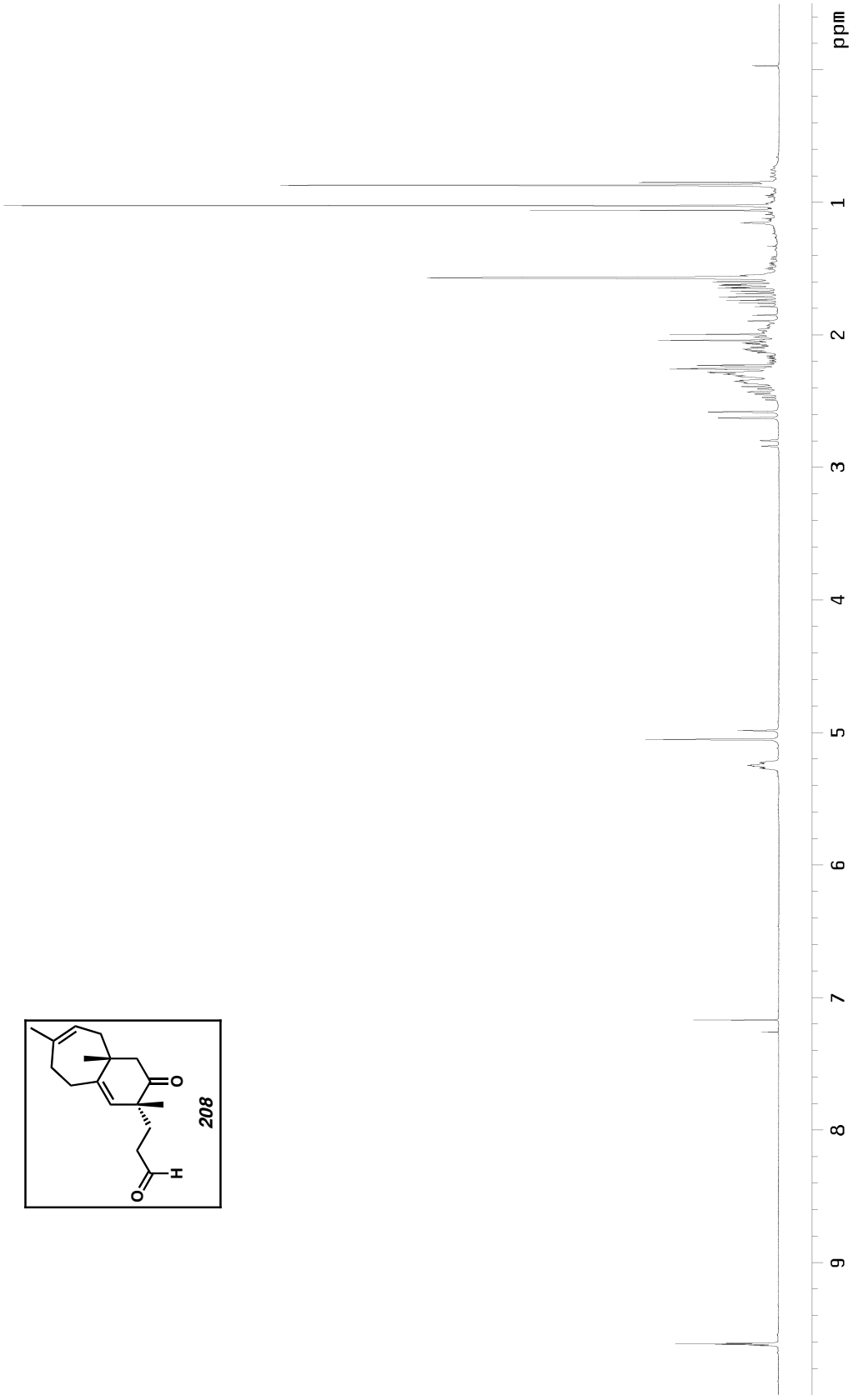

Figure A2.43 ^{1}H NMR (300 MHz, $CDCl_3$) of bicyclic aldehyde **208**.

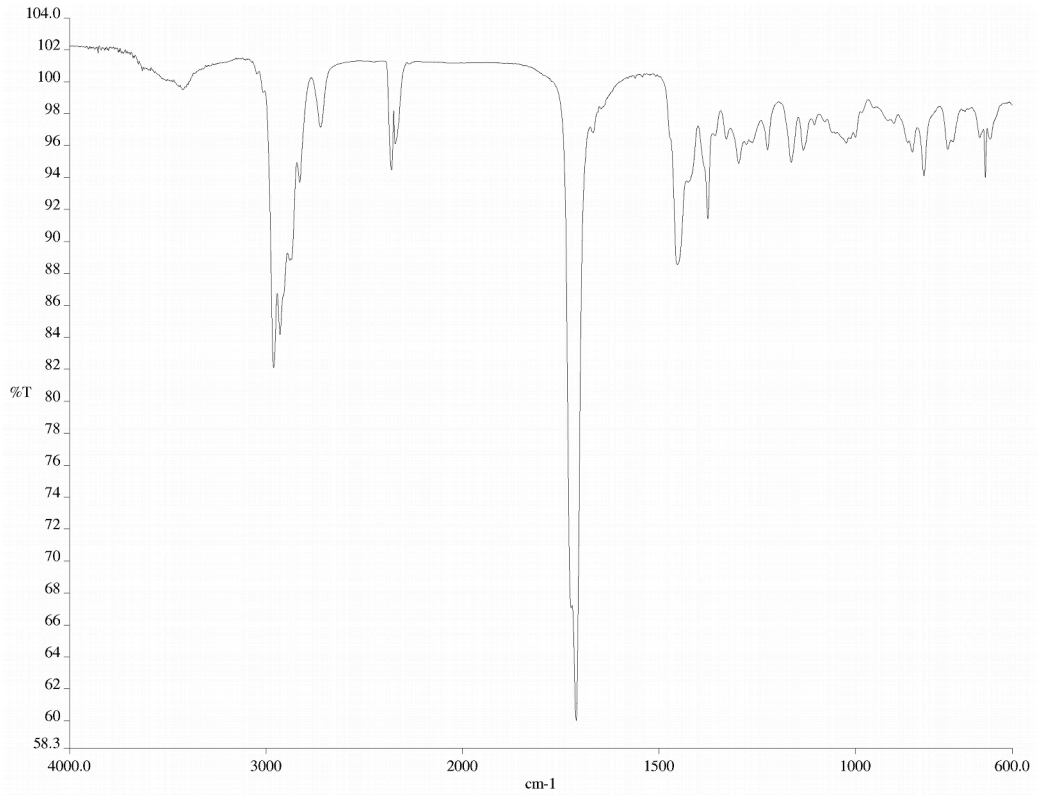

Figure A2.44 Infrared spectrum (thin film/NaCl) of bicyclic aldehyde **208**.

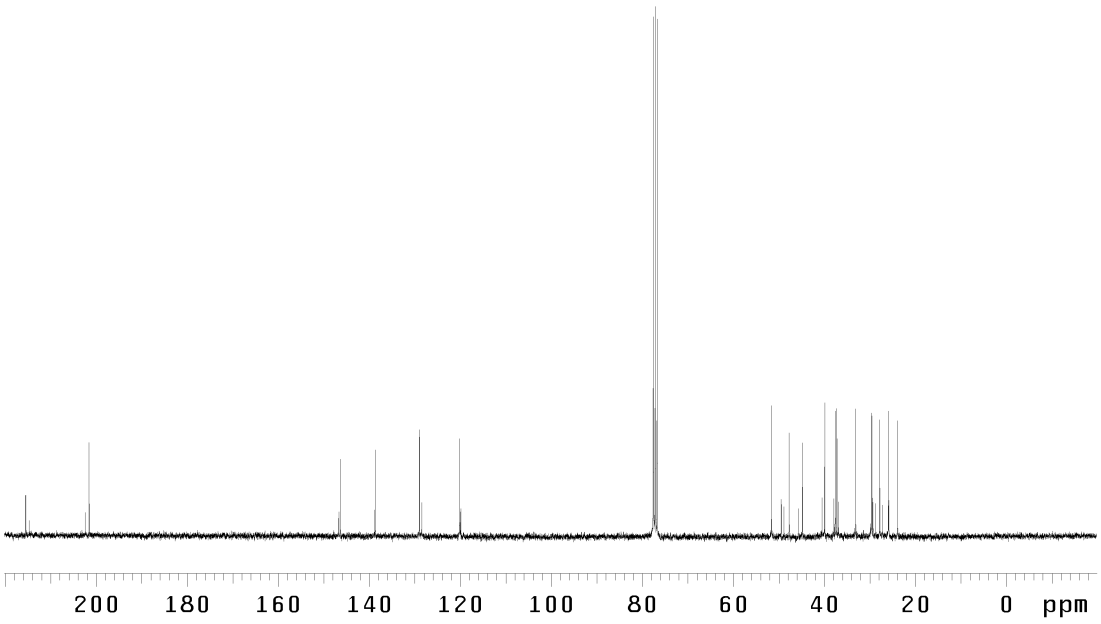

Figure A2.45 ^{13}C NMR (75 MHz, $CDCl_3$) of bicyclic aldehyde **208**.

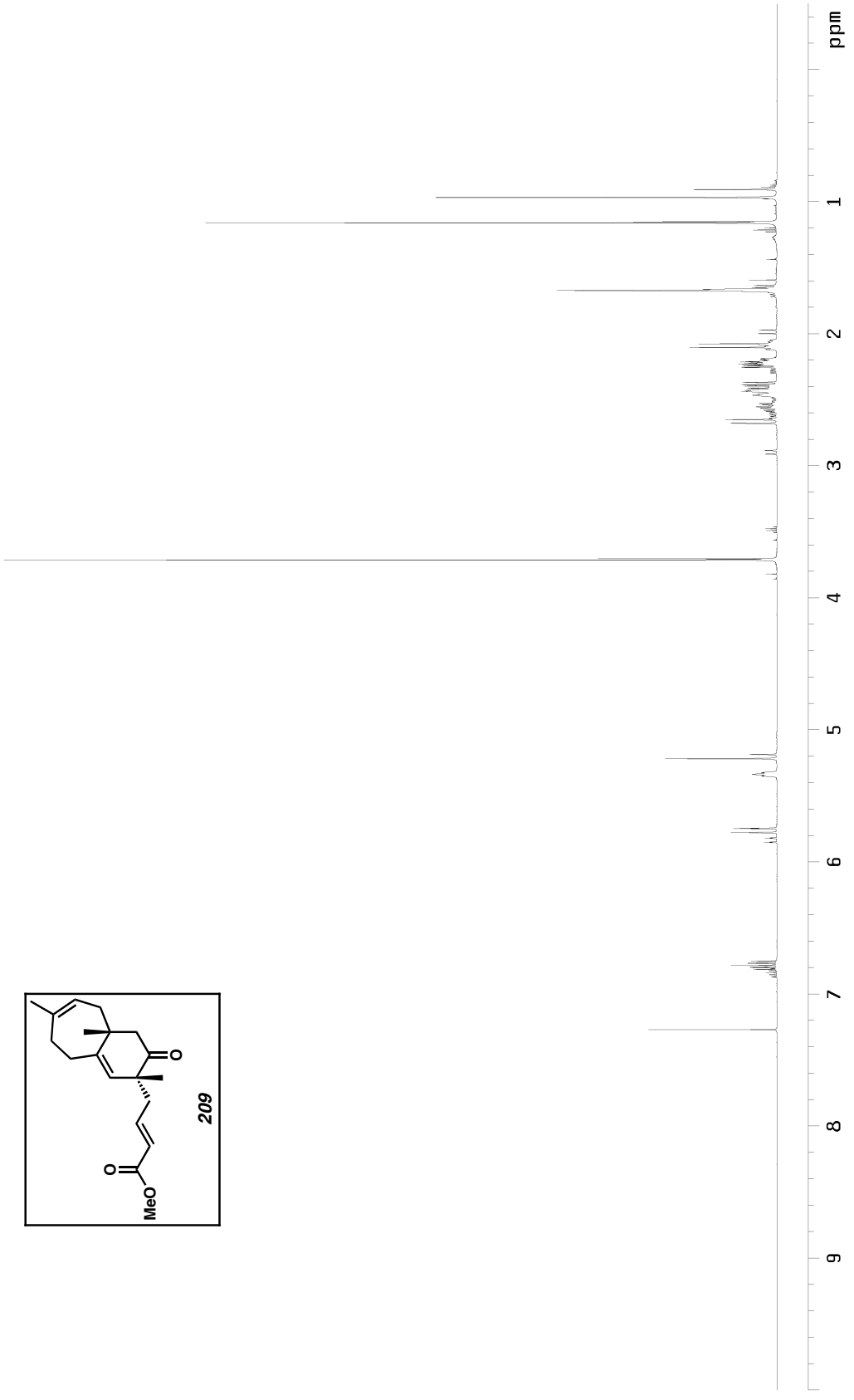

Figure A2.46 ^{1}H NMR (500 MHz, $CDCl_3$) of bicyclic enoate **209**.

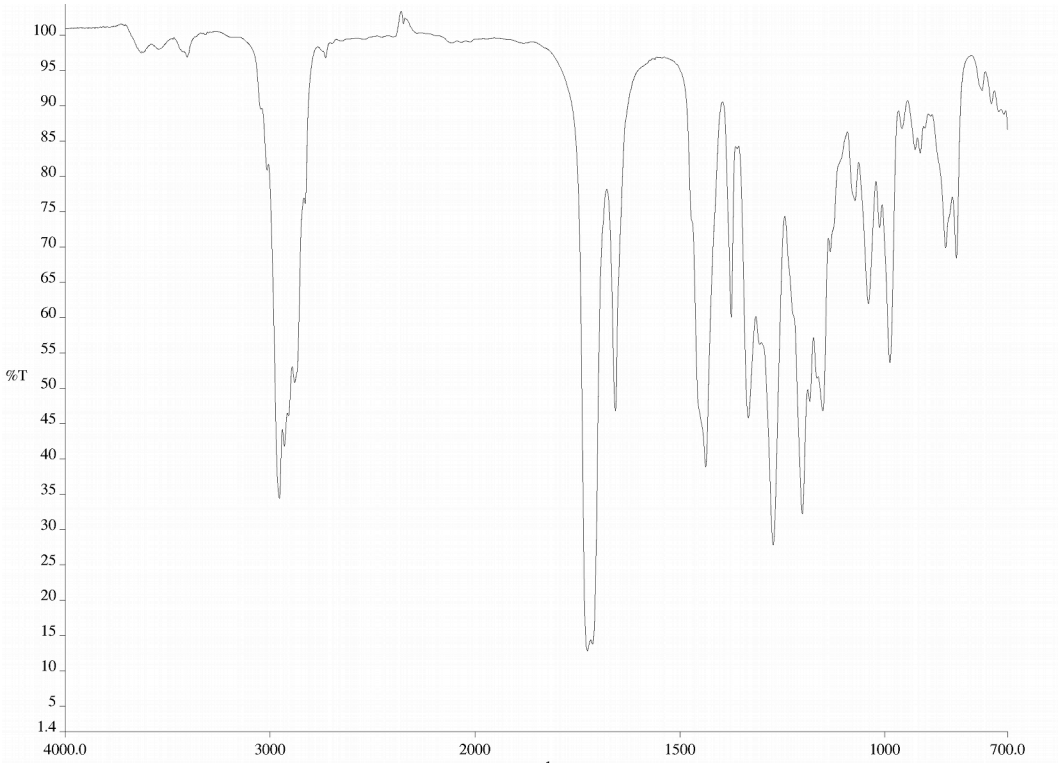

Figure A2.47 Infrared spectrum (thin film/NaCl) of bicyclic enoate **209**.

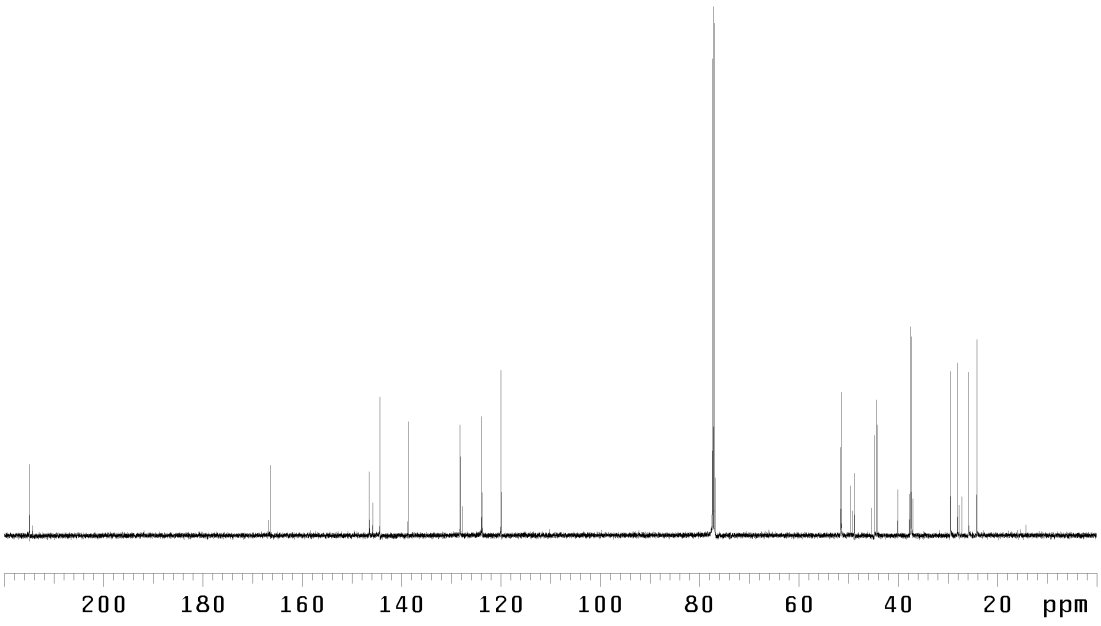

Figure A2.48 ^{13}C NMR (125 MHz, $CDCl_3$) of bicyclic enoate **209**.

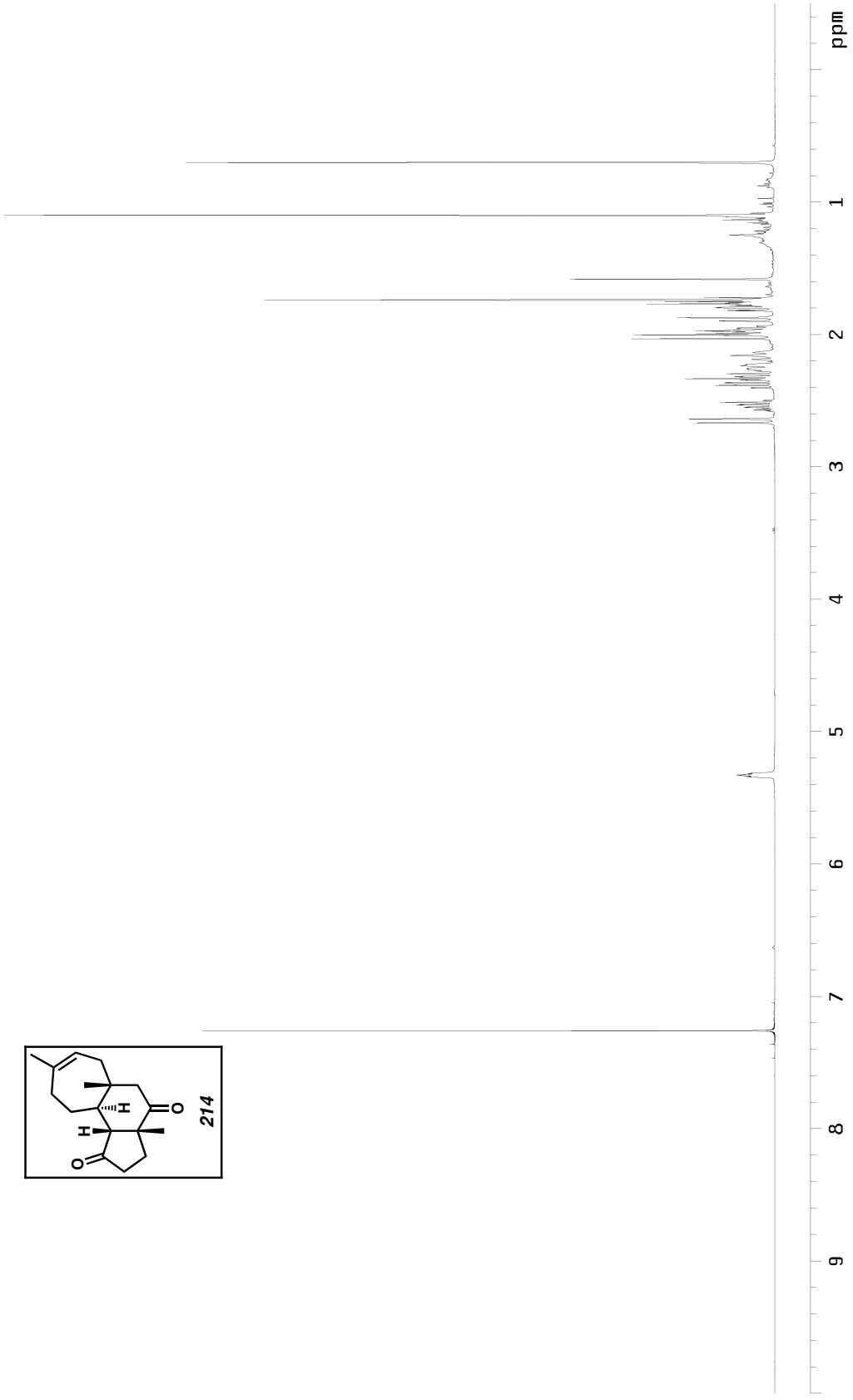

Figure A2.49 ^{1}H NMR (500 MHz, $CDCl_3$) of tricyclic diketone **214**.

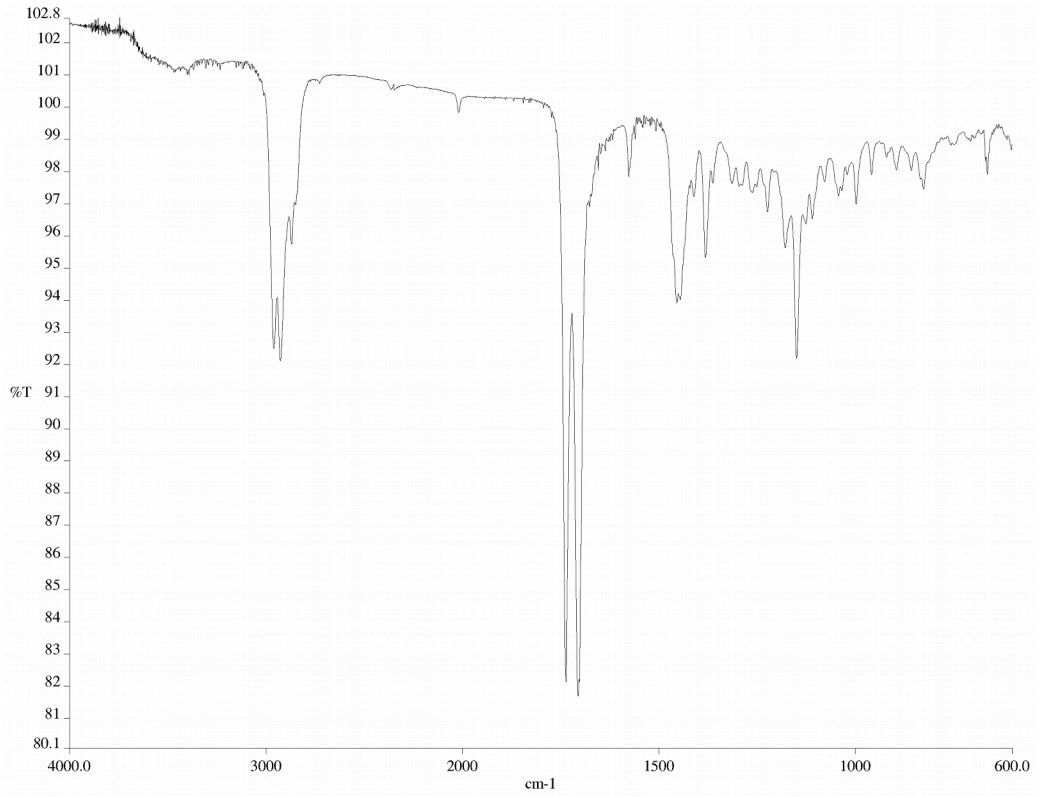

Figure A2.50 Infrared spectrum (thin film/NaCl) of tricyclic diketone **214**.

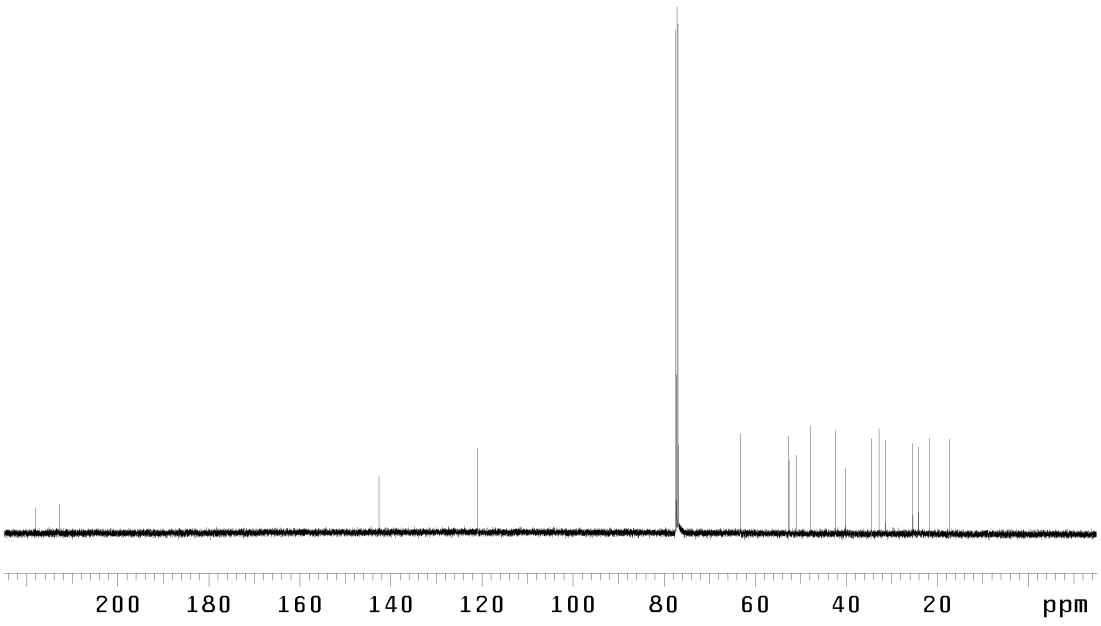

Figure A2.51 ^{13}C NMR (125 MHz, $CDCl_3$) of tricyclic diketone **214**.

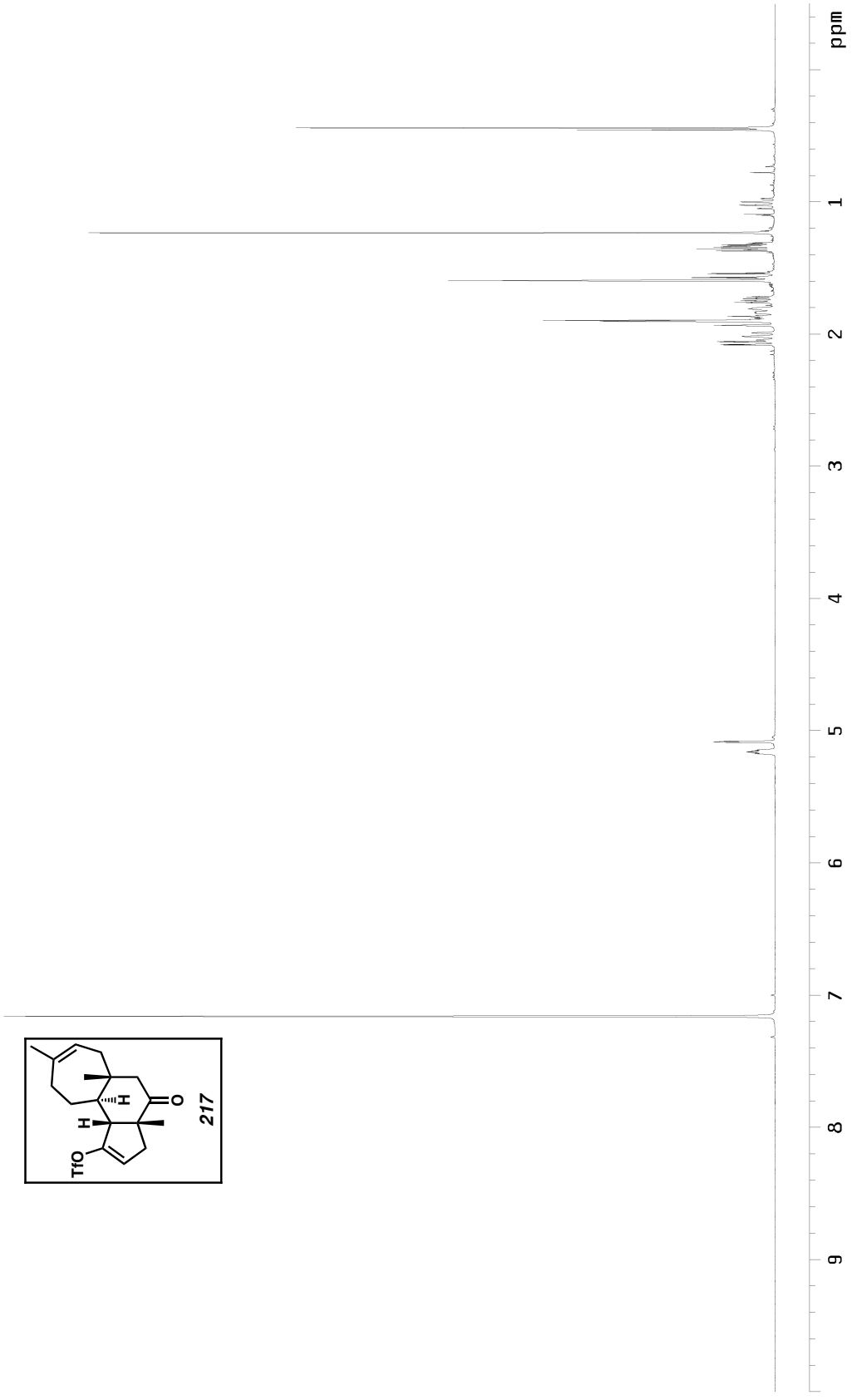

Figure A2.52 ^{1}H NMR (500 MHz, C_6D_6) of tricyclic triflate **217**.

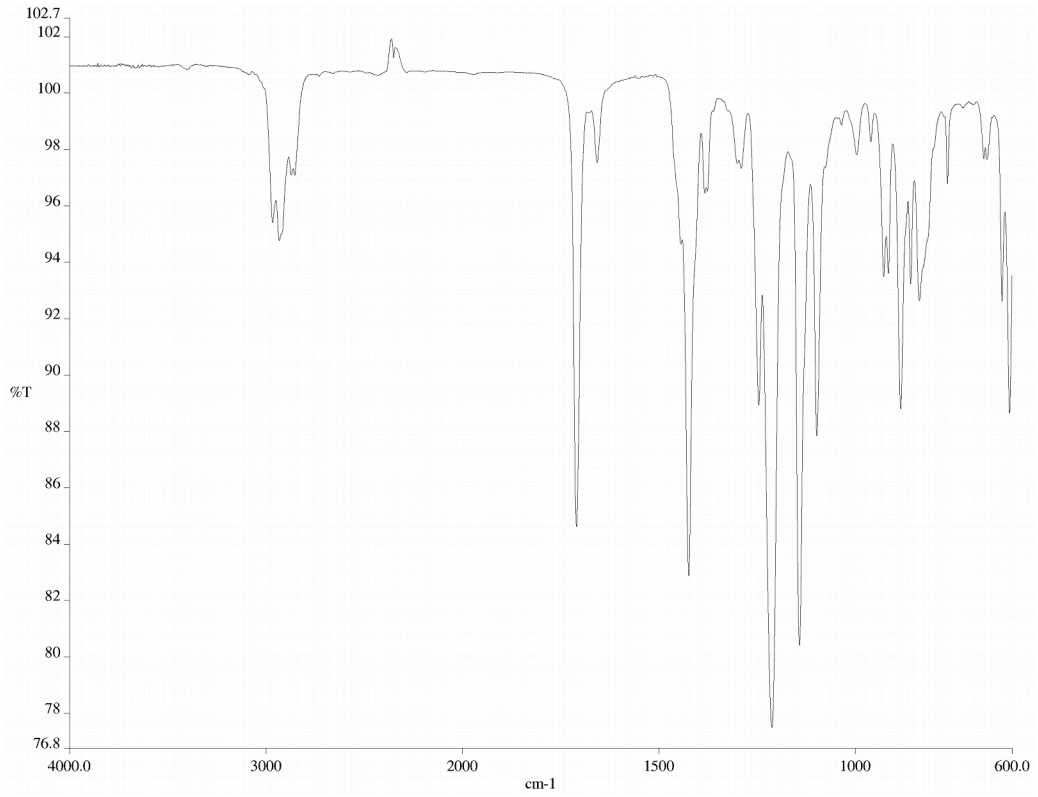

Figure A2.53 Infrared spectrum (thin film/NaCl) of tricyclic triflate **217**.

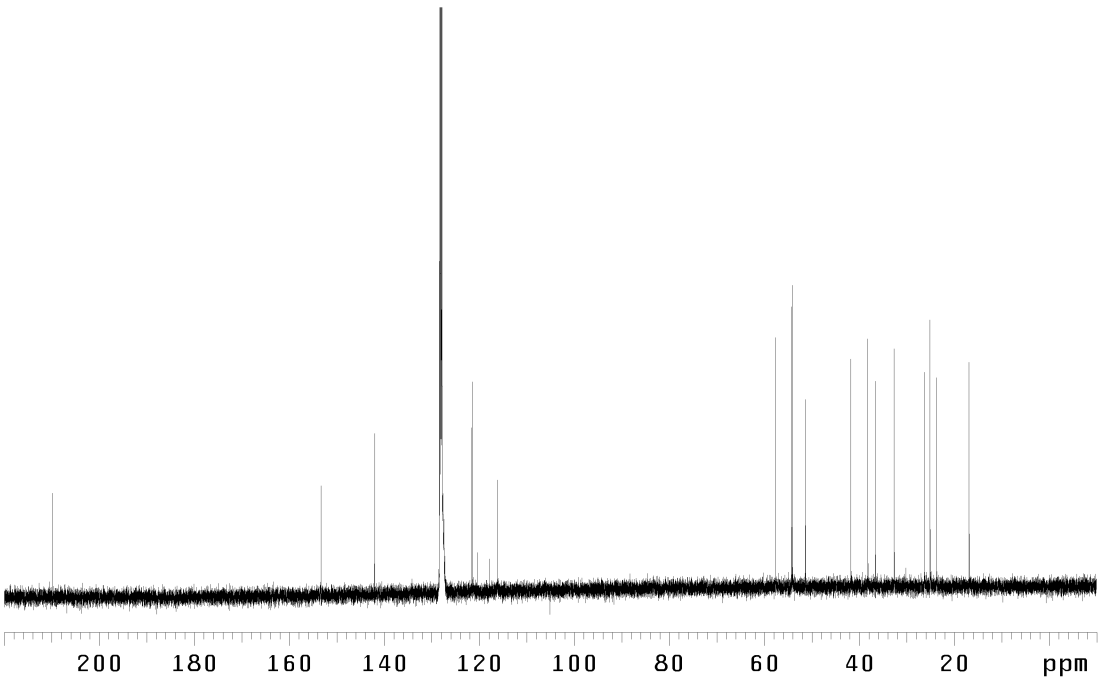

Figure A2.54 ^{13}C NMR (125 MHz, C_6D_6) of tricyclic triflate **217**.

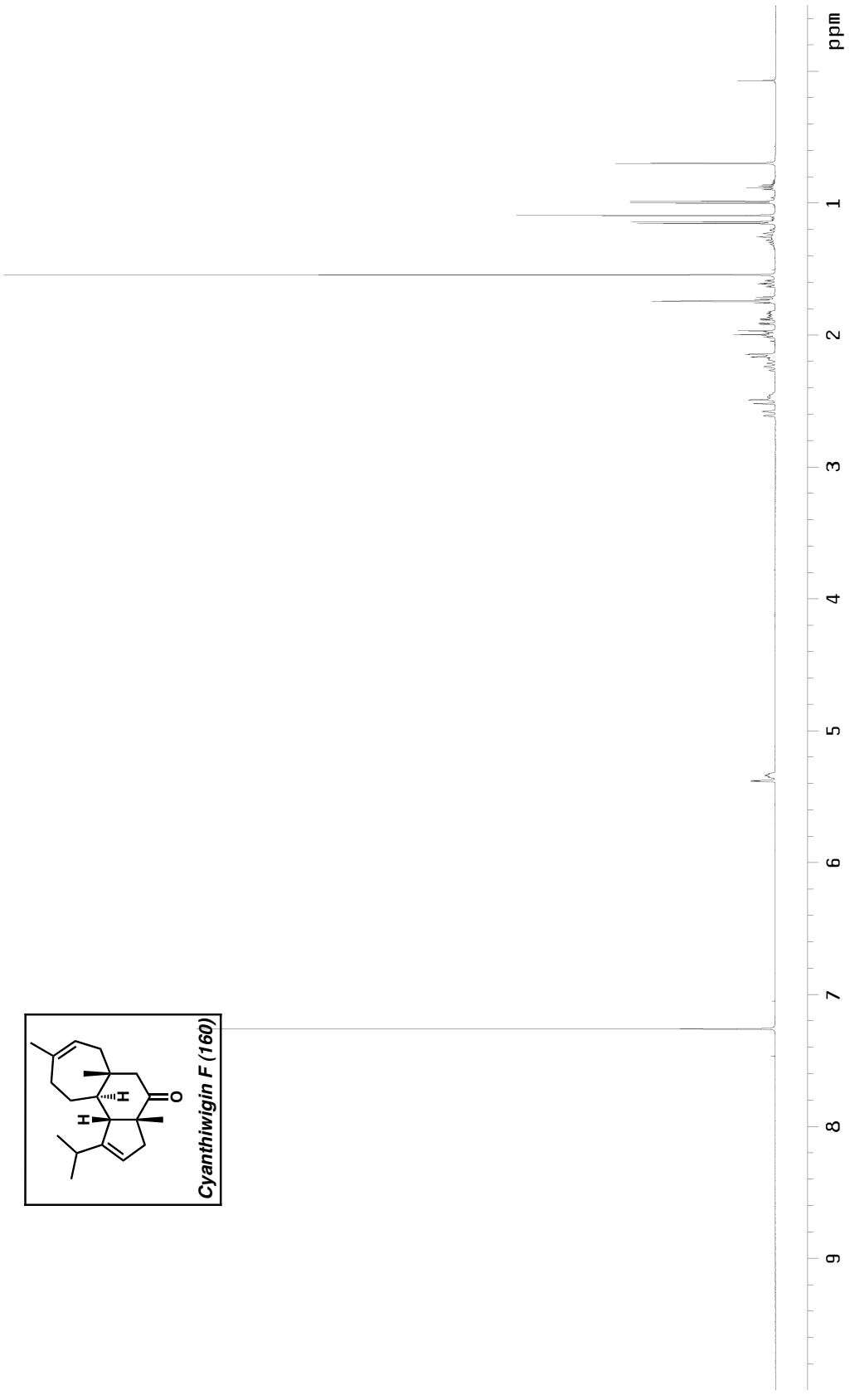

Figure A2.55 ^{1}H NMR (500 MHz, $CDCl_3$) of cyanthiwigin F (**160**).

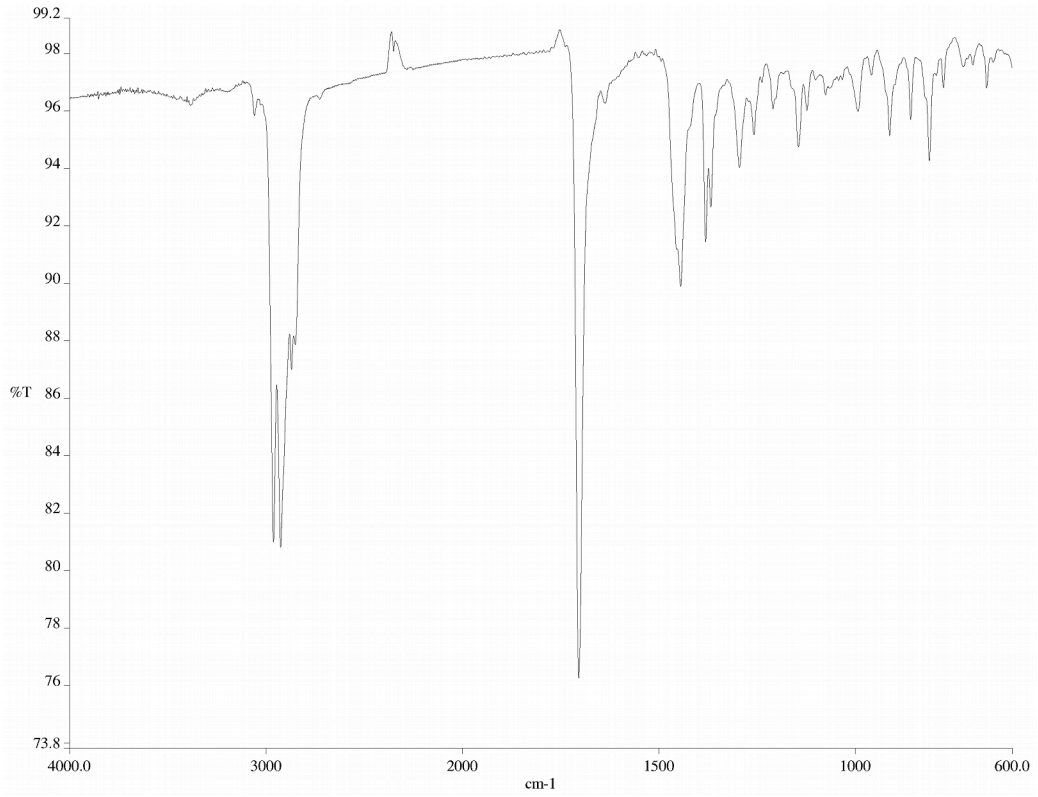

Figure A2.56 Infrared spectrum (thin film/NaCl) of cyanthiwigin F (**160**).

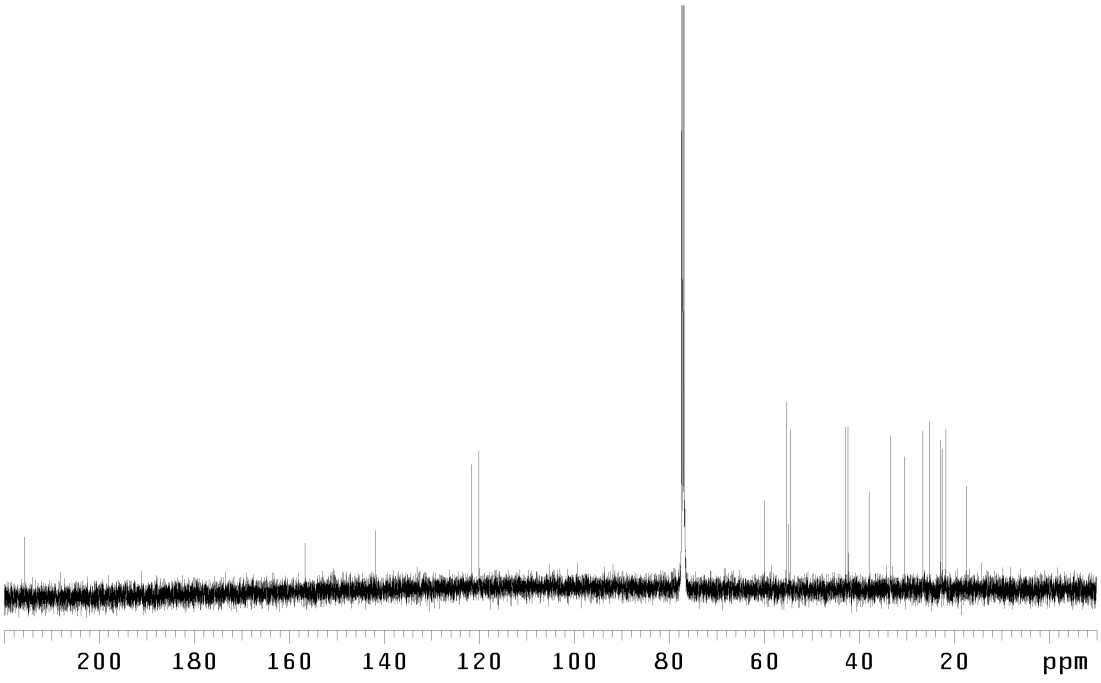

Figure A2.57 ^{13}C NMR (125 MHz, $CDCl_3$) of cyanthiwigin F (**160**).

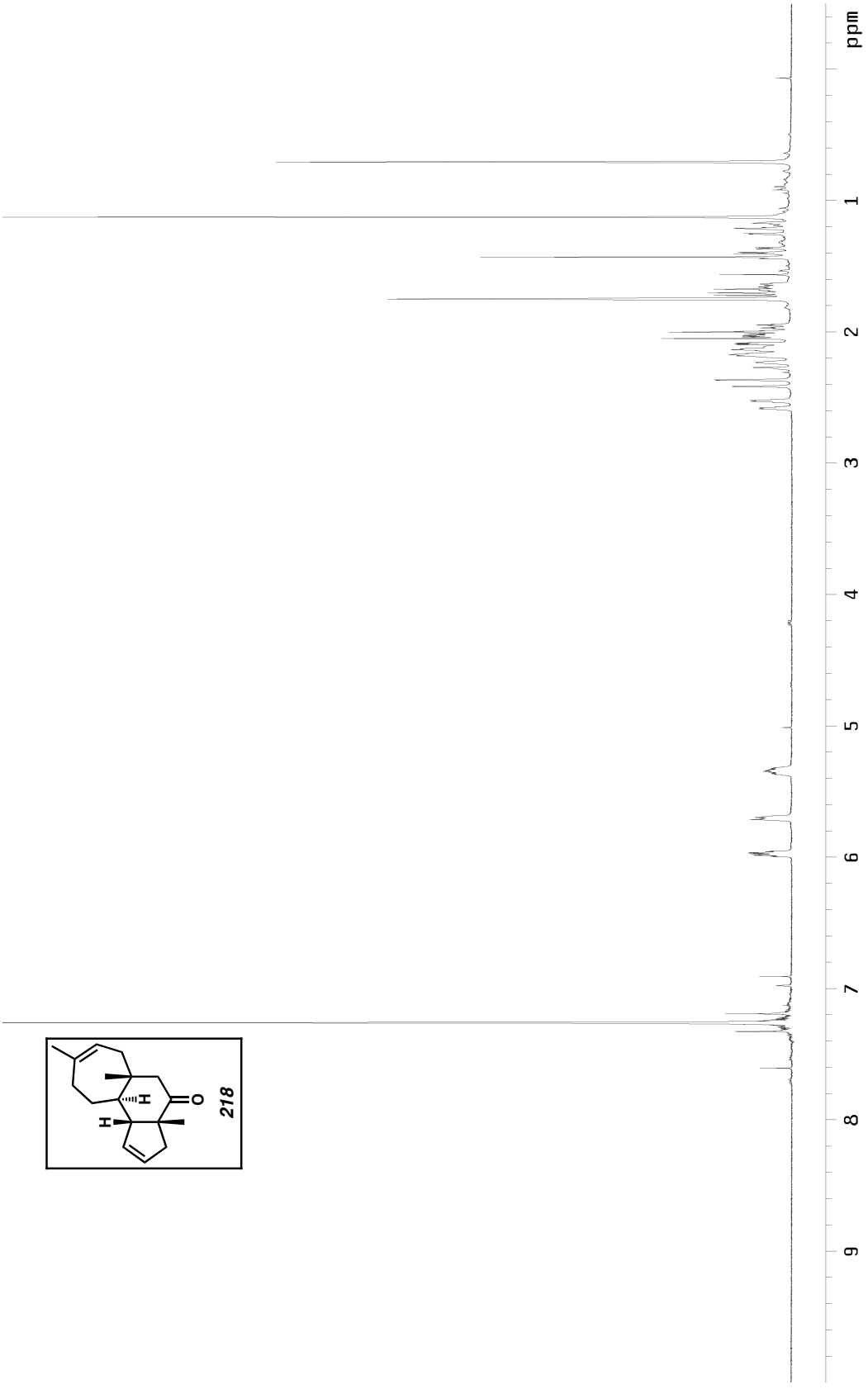

Figure A2.58 ^{1}H NMR (500 MHz, $CDCl_3$) of tricyclic ketone **218**.

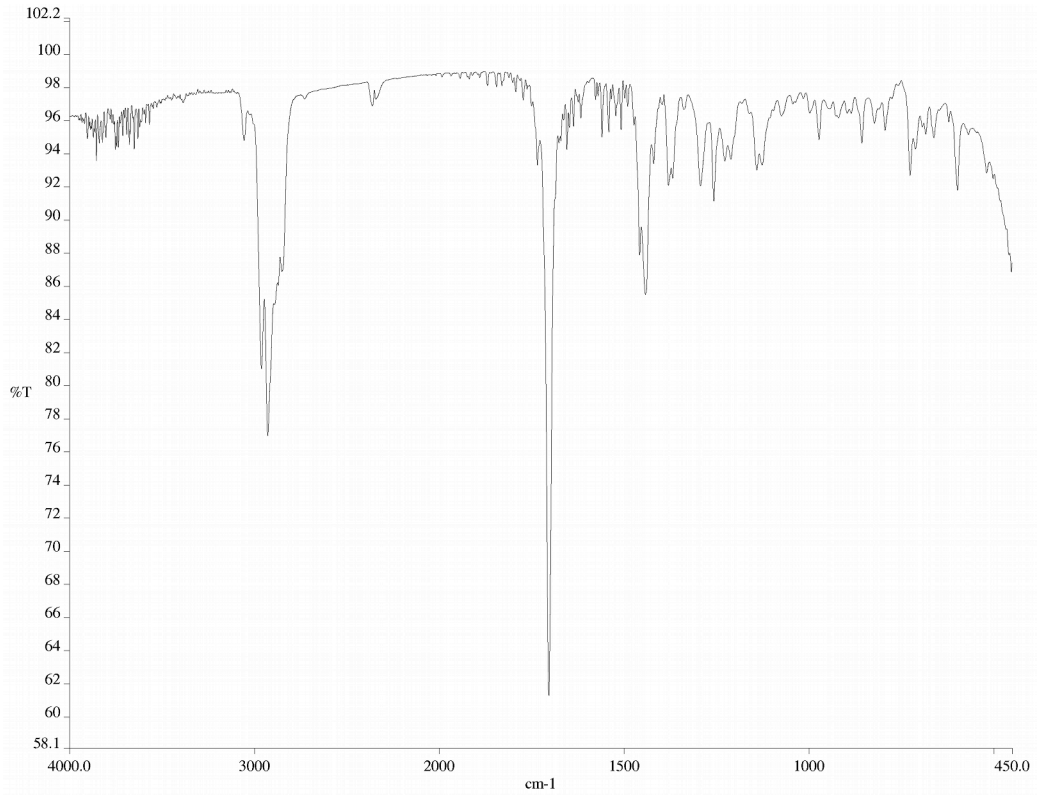

Figure A2.59 Infrared spectrum (thin film/NaCl) of tricyclic ketone **218**.

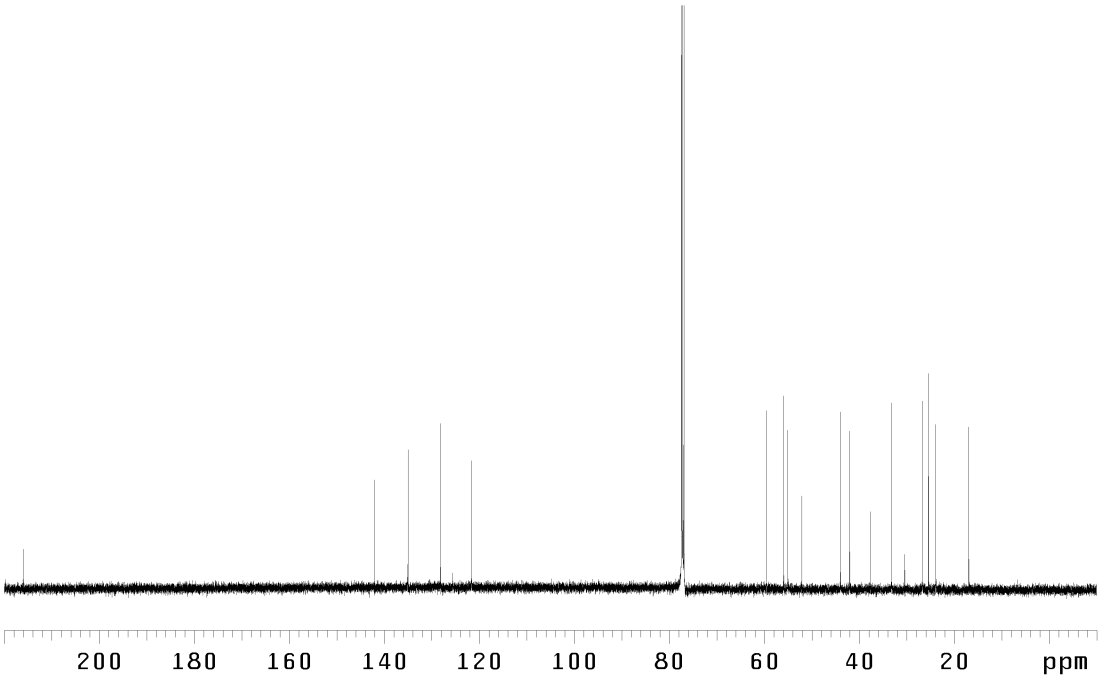

Figure A2.60 ^{13}C NMR (125 MHz, $CDCl_3$) of tricyclic ketone **218**.

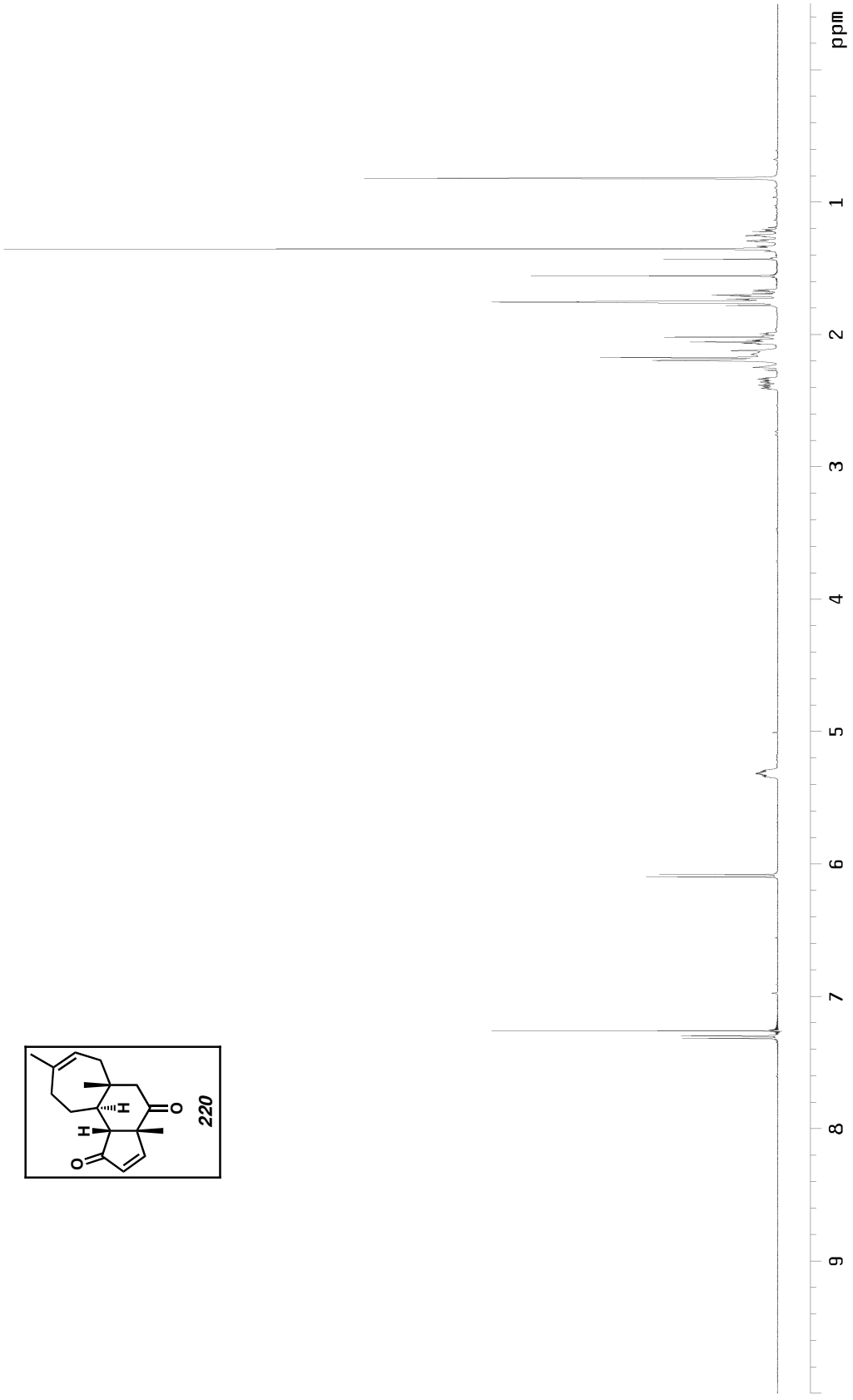

Figure A2.61 ^{1}H NMR (500 MHz, $CDCl_3$) of tricyclic enone **220**.

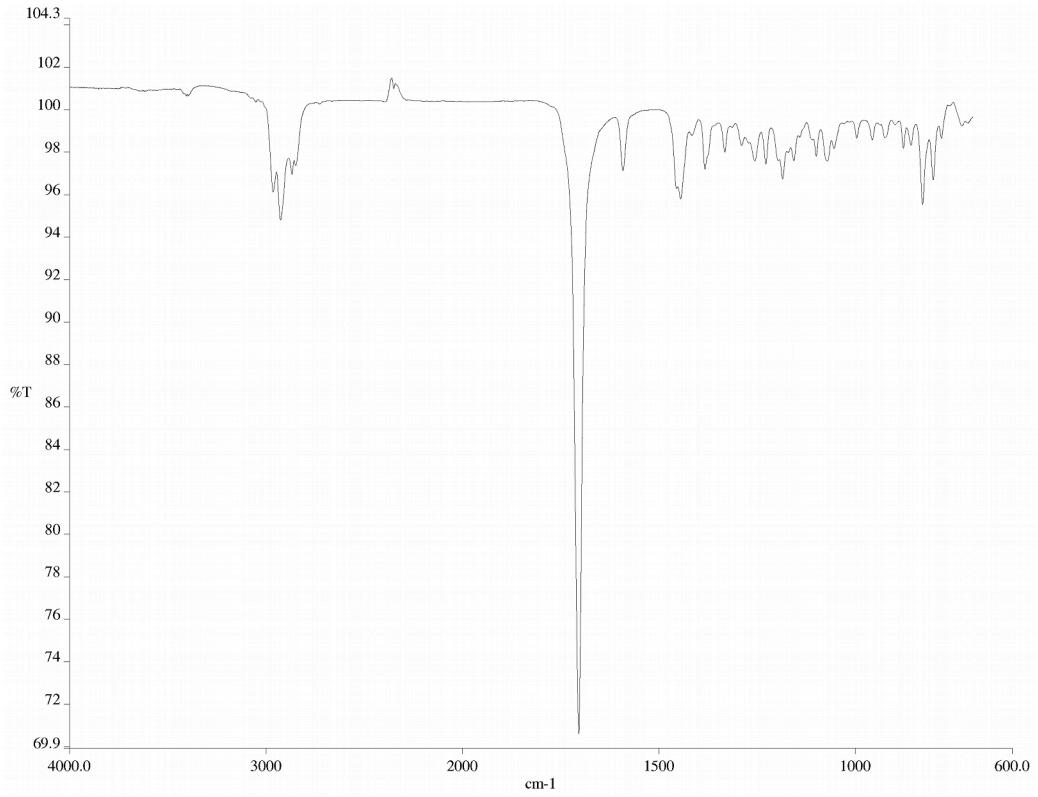

Figure A2.62 Infrared spectrum (thin film/NaCl) of tricyclic enone **220**.

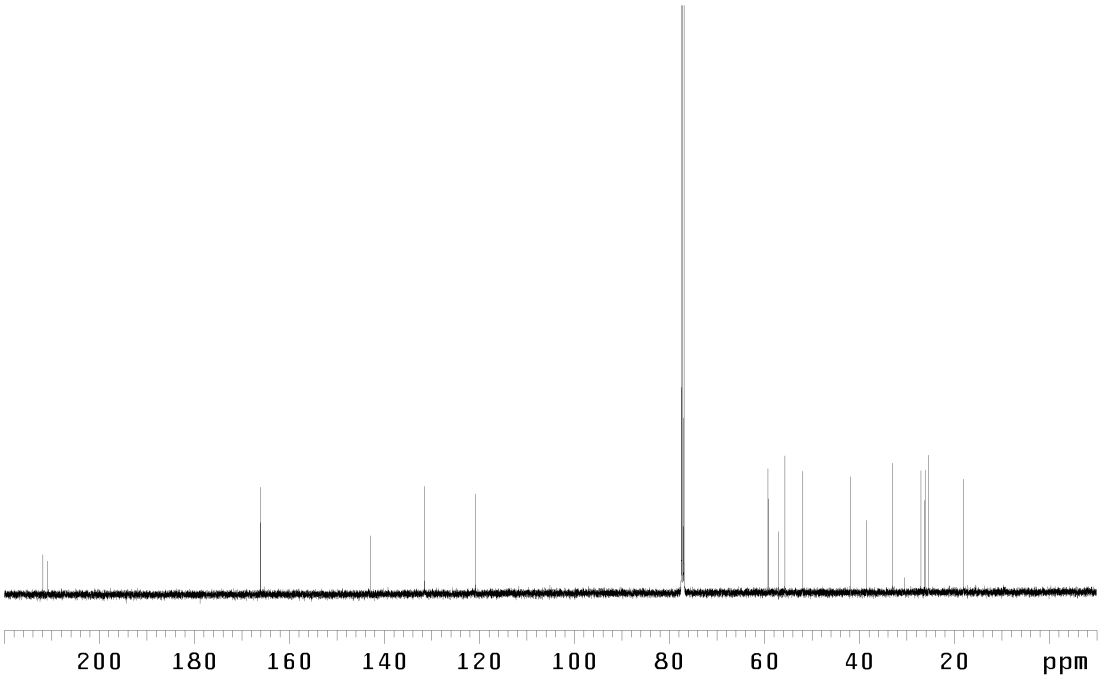

Figure A2.63 ^{13}C NMR (125 MHz, $CDCl_3$) of tricyclic enone **220**.

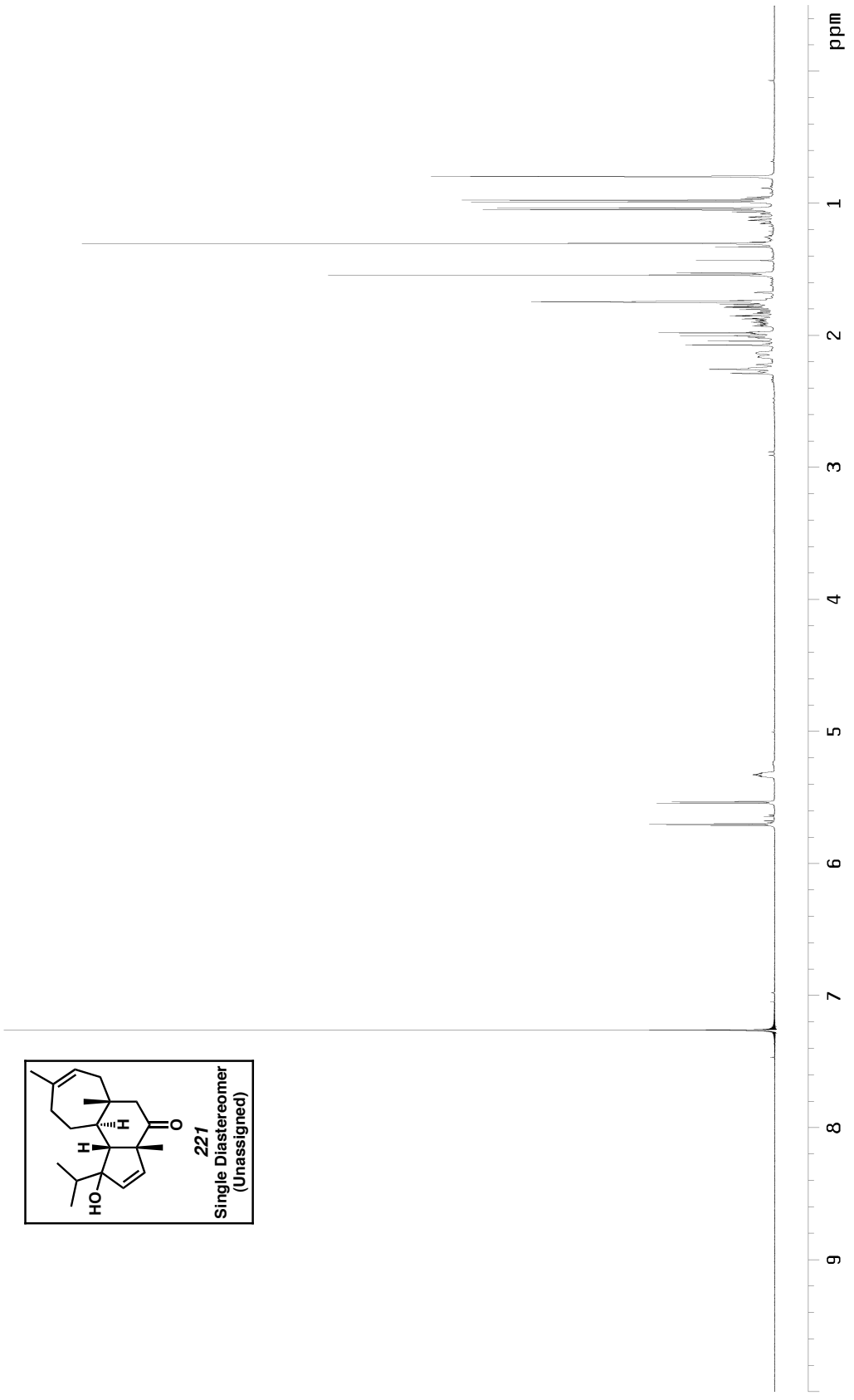

Figure A2.64 ^{1}H NMR (500 MHz, $CDCl_3$) of allylic alcohol **221(A)**.

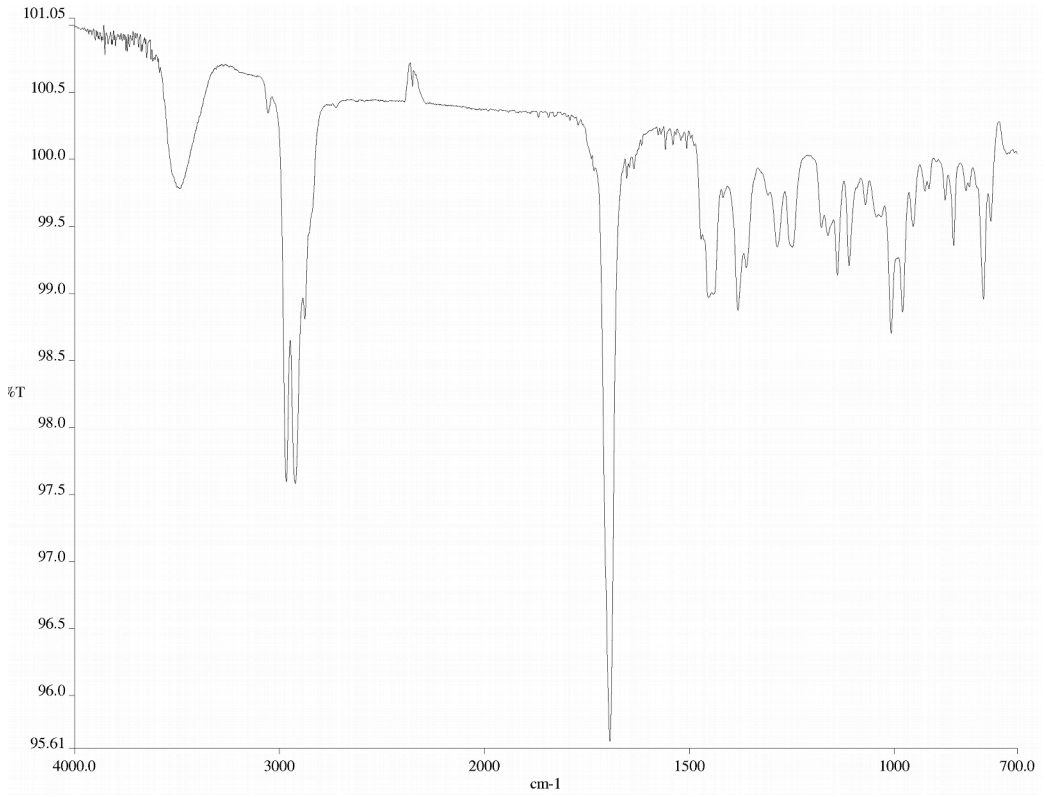

Figure A2.65 Infrared spectrum (thin film/NaCl) of allylic alcohol **221(A)**.

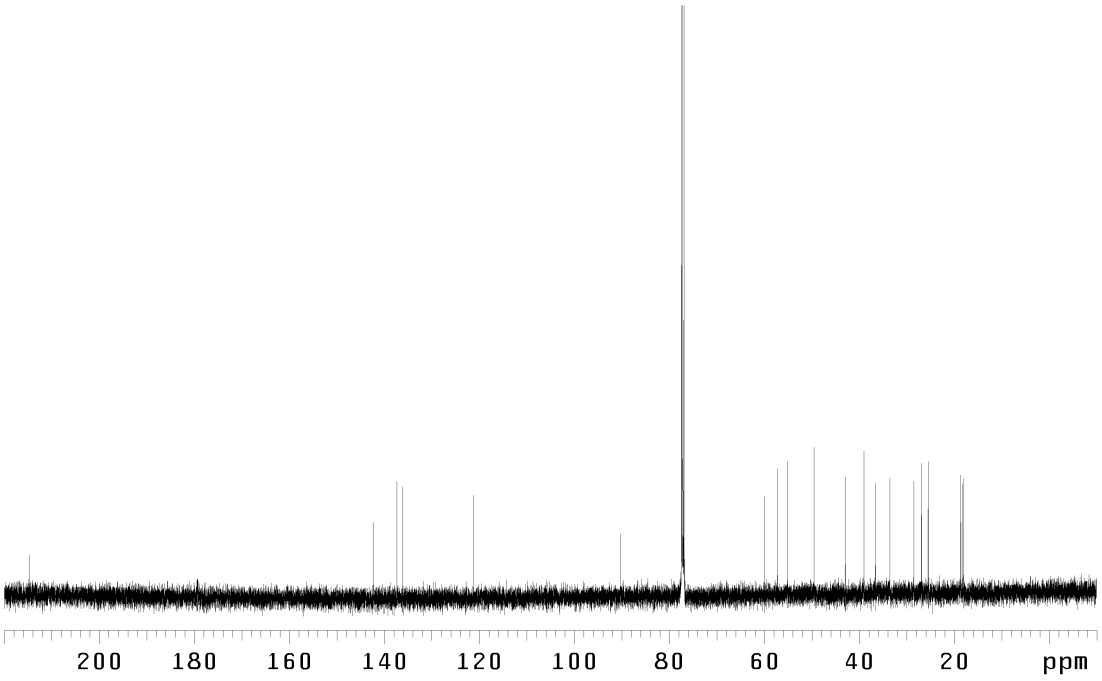

Figure A2.66 ^{13}C NMR (125 MHz, $CDCl_3$) of allylic alcohol **221(A)**.

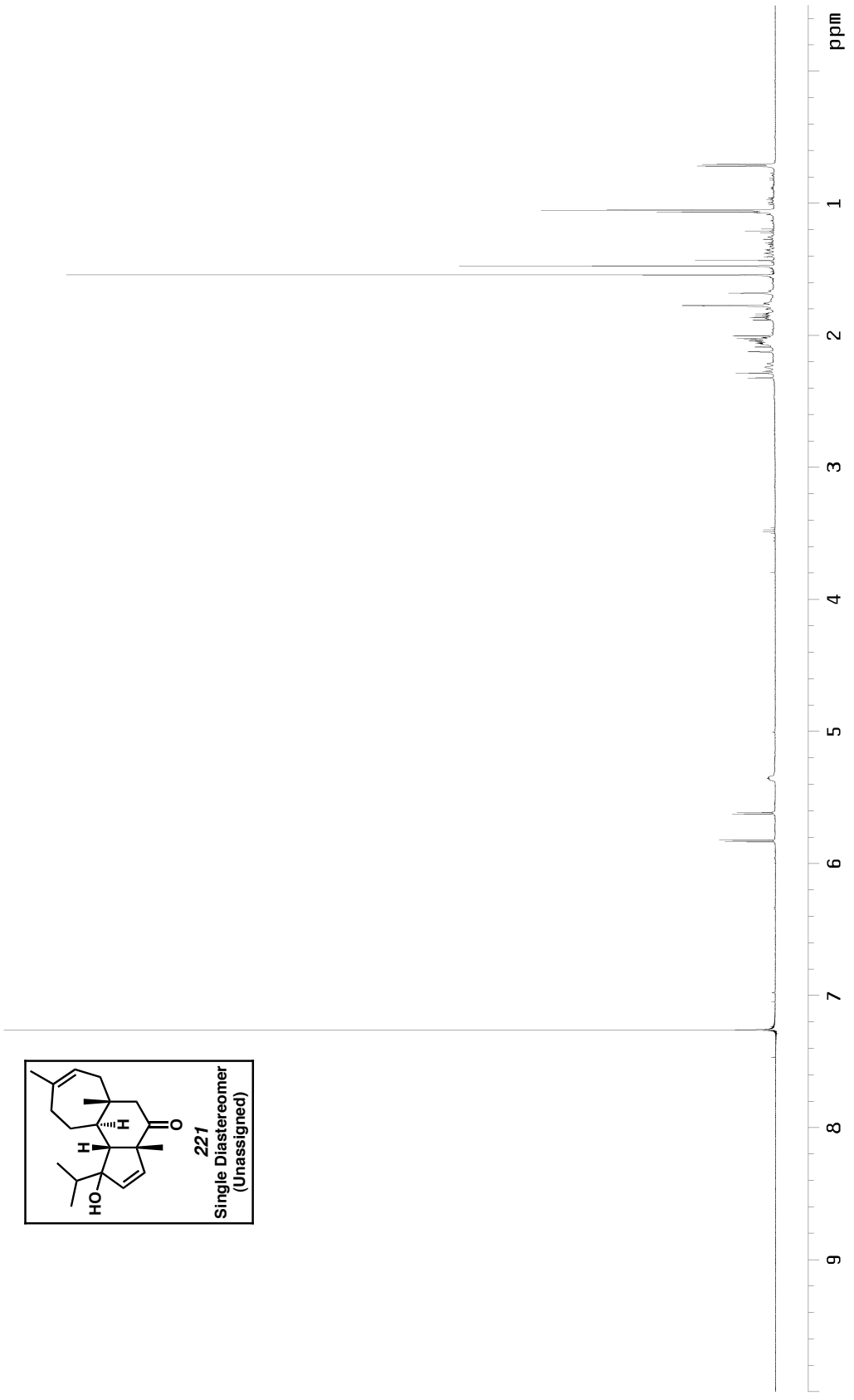

Figure A2.67 ^{1}H NMR (500 MHz, $CDCl_3$) of allylic alcohol **221(B)**.

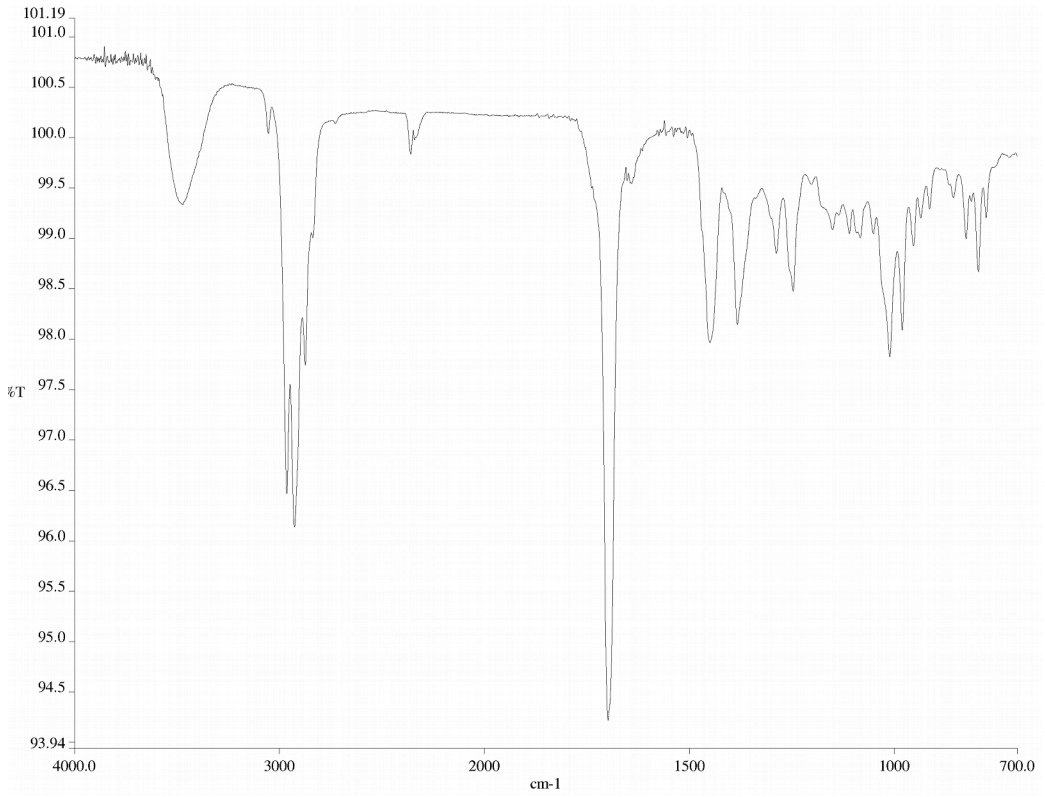

Figure A2.68 Infrared spectrum (thin film/NaCl) of allylic alcohol **221(B)**.

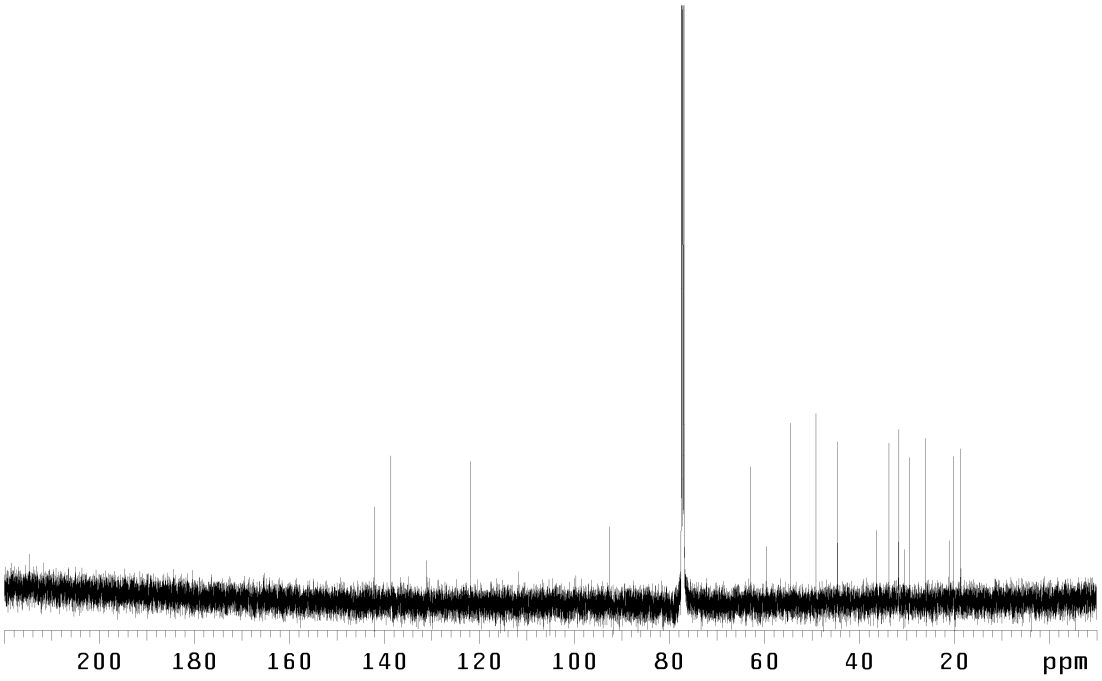

Figure A2.69 ^{13}C NMR (125 MHz, $CDCl_3$) of allylic alcohol **221(B)**.

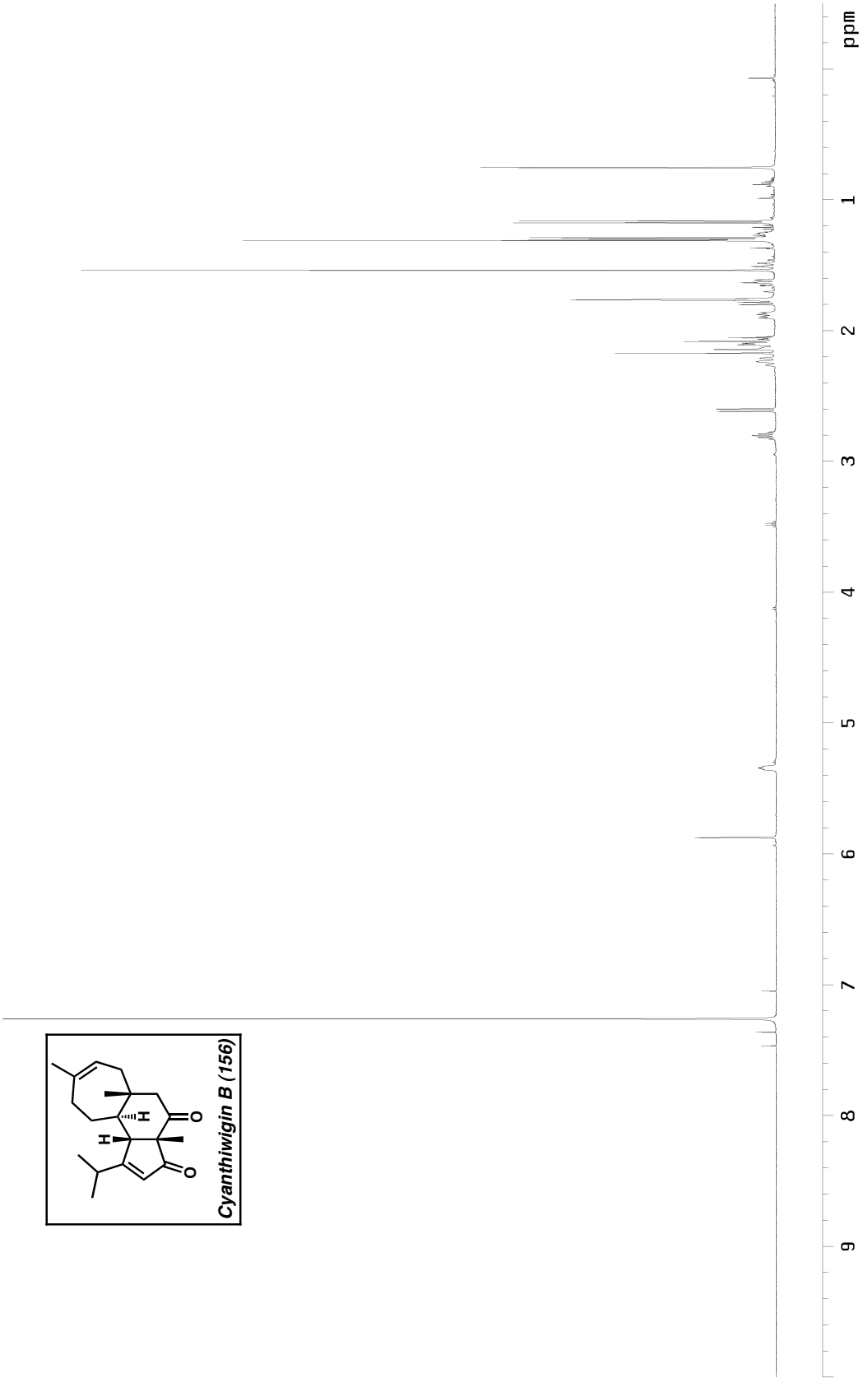

Figure A2.70 ^{1}H NMR (125 MHz, $CDCl_3$) of cyanthiwigin B (**156**).

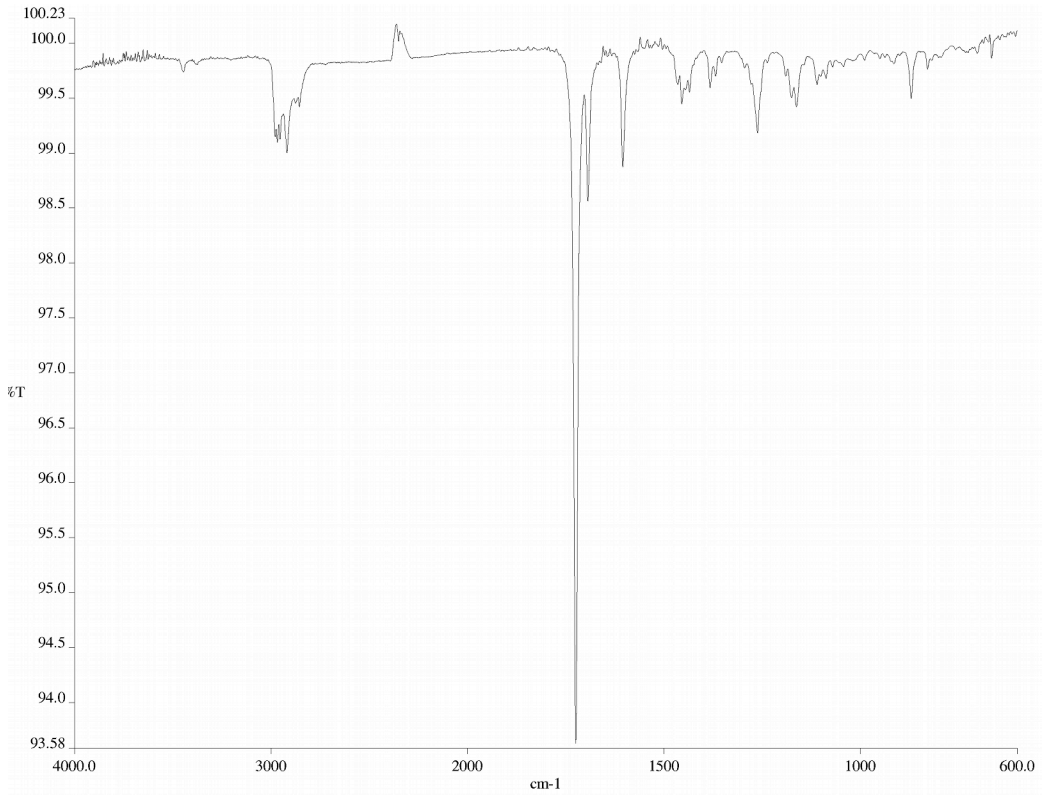

Figure A2.71 Infrared spectrum (thin film/NaCl) of cyanthiwigin B (**156**).

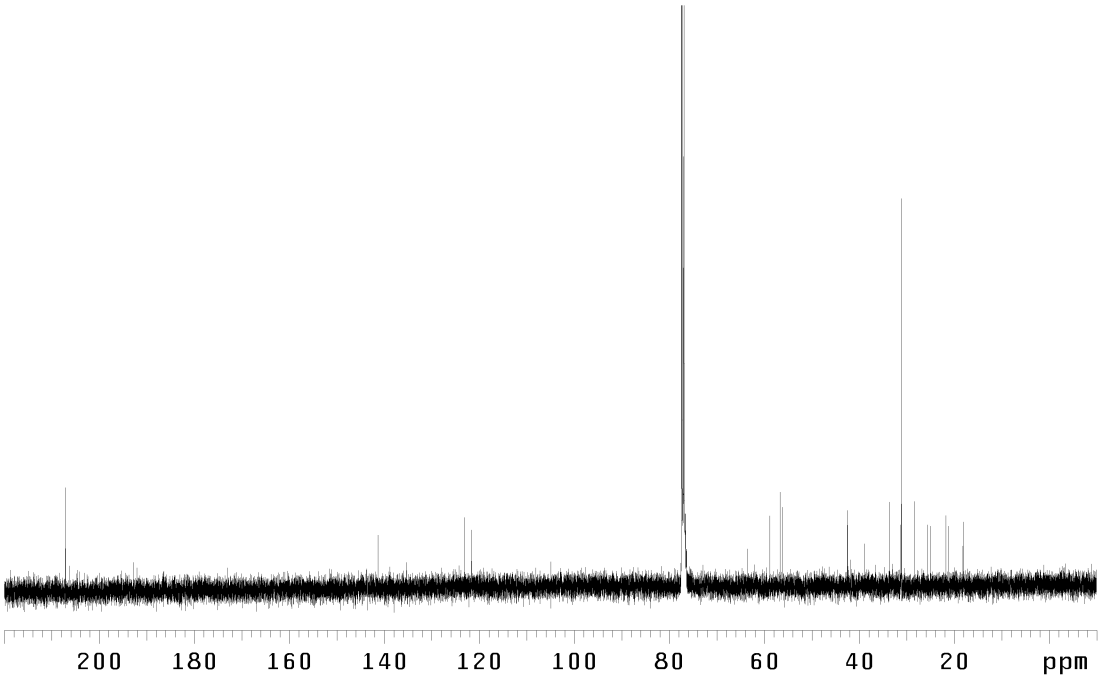

Figure A2.72 ^{13}C NMR (125 MHz, $CDCl_3$) of cyanthiwigin B (**156**).

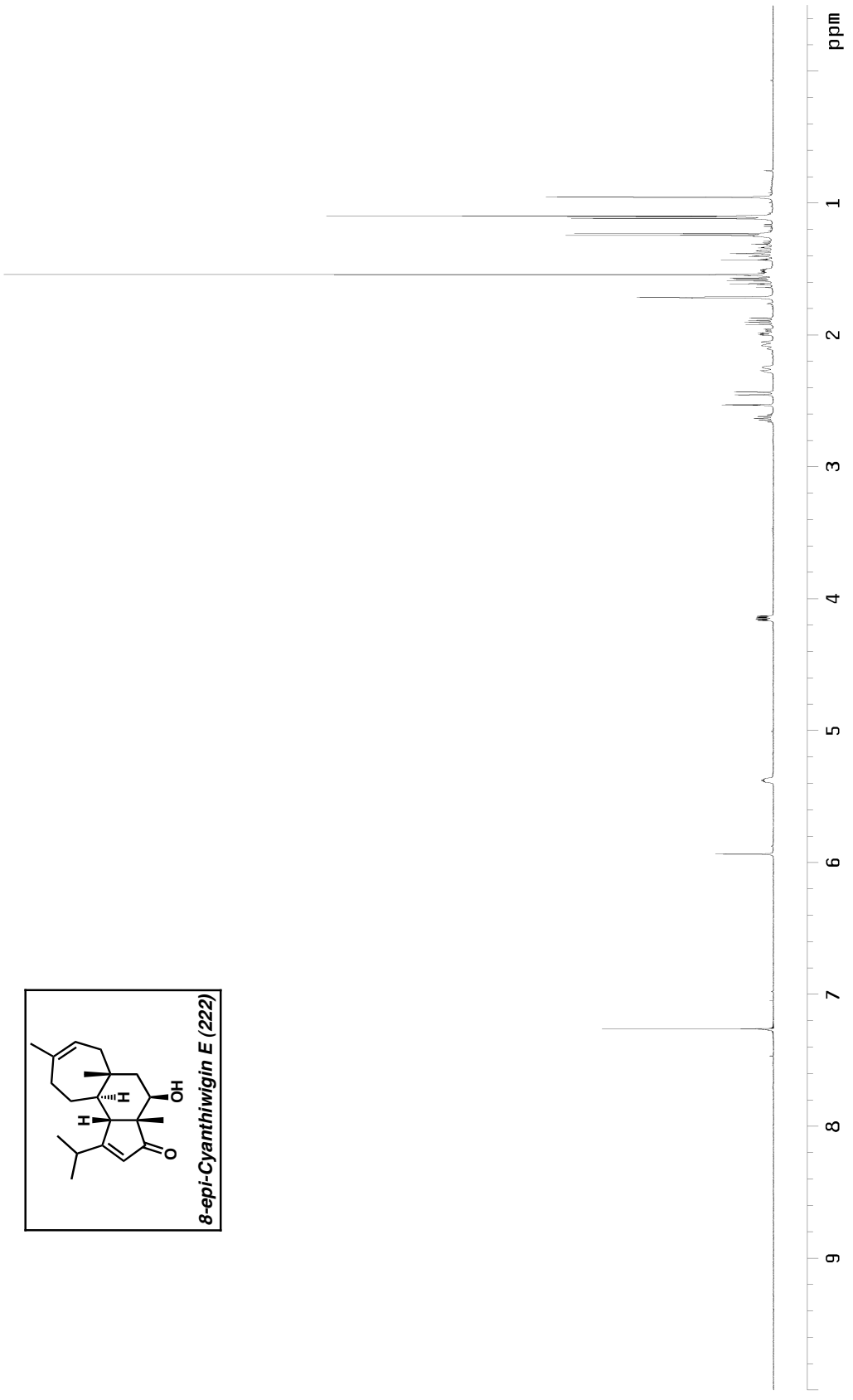

Figure A2.73 ^{1}H NMR (500 MHz, $CDCl_3$) of 8-*epi*-cyanthiwigin E (**222**).

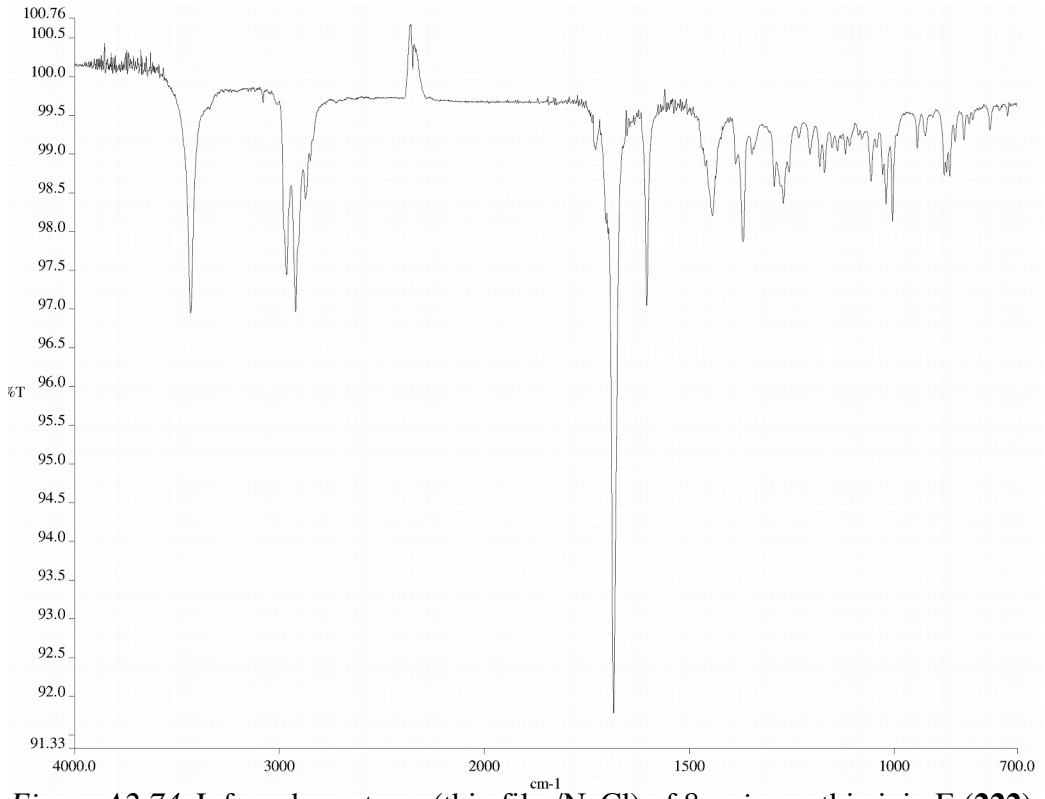

Figure A2.74 Infrared spectrum (thin film/NaCl) of 8-*epi*-cyanthiwigin E (**222**).

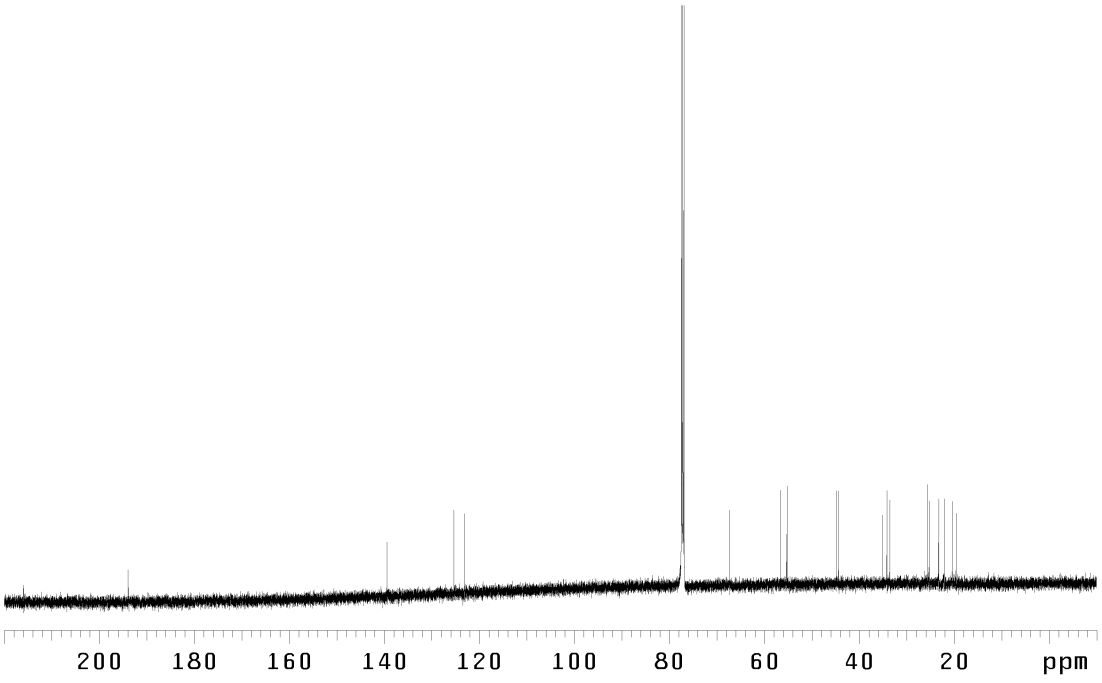

Figure A2.75 ^{13}C NMR (125 MHz, $CDCl_3$) of 8-*epi*-cyanthiwigin E (**222**).

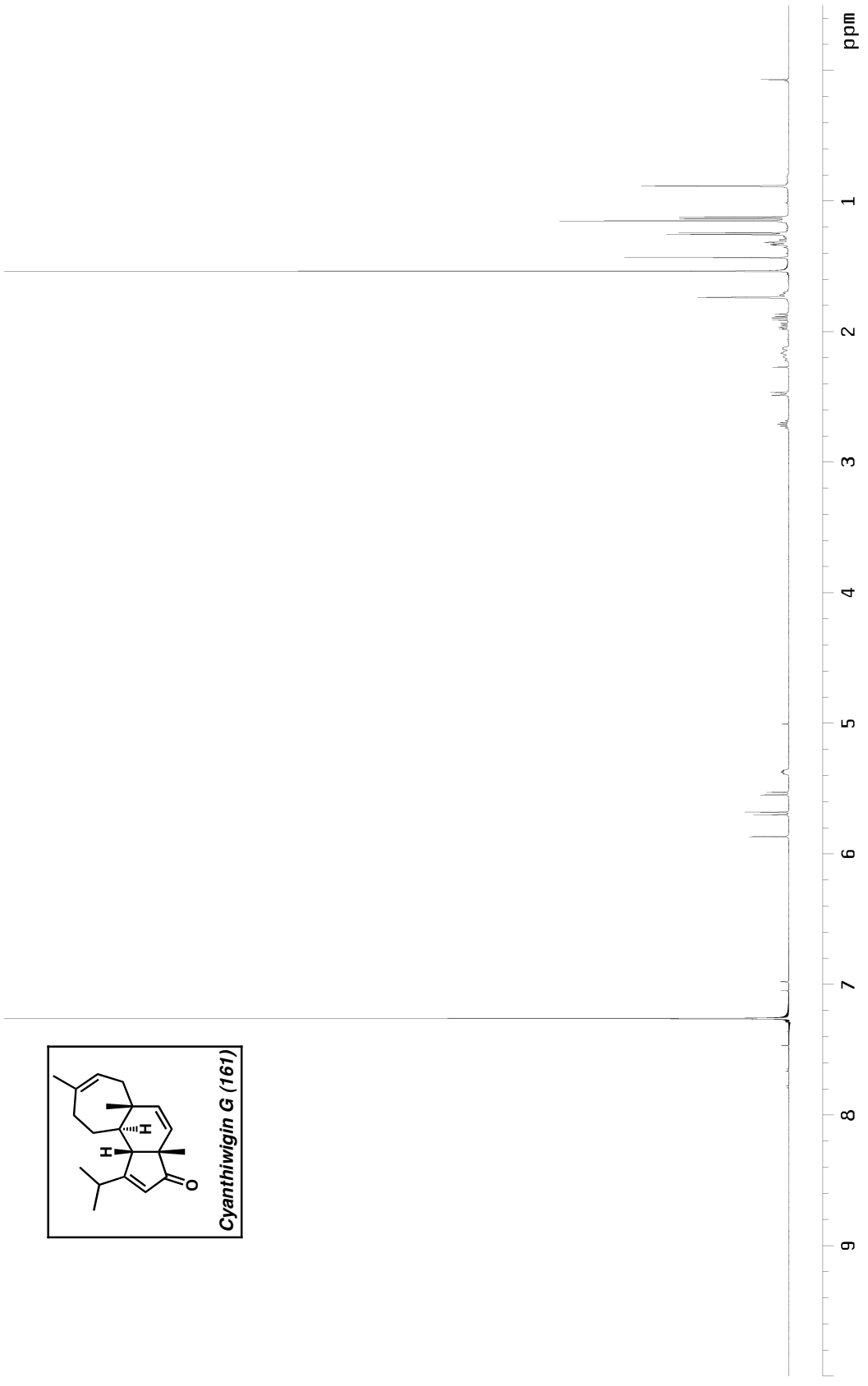

Figure A2.76 ^{1}H NMR (500 MHz, $CDCl_3$) of cyanthiwigin G (**161**).

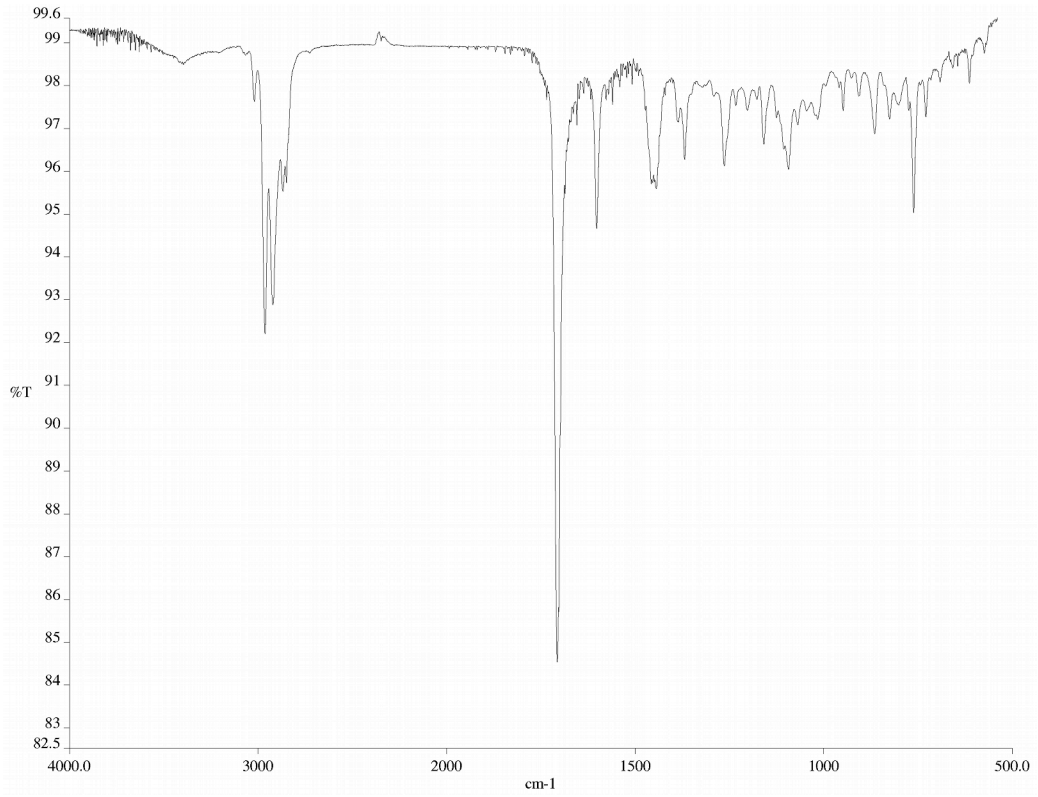

Figure A2.77 Infrared spectrum (thin film/NaCl) of cyanthiwigin G (**161**).

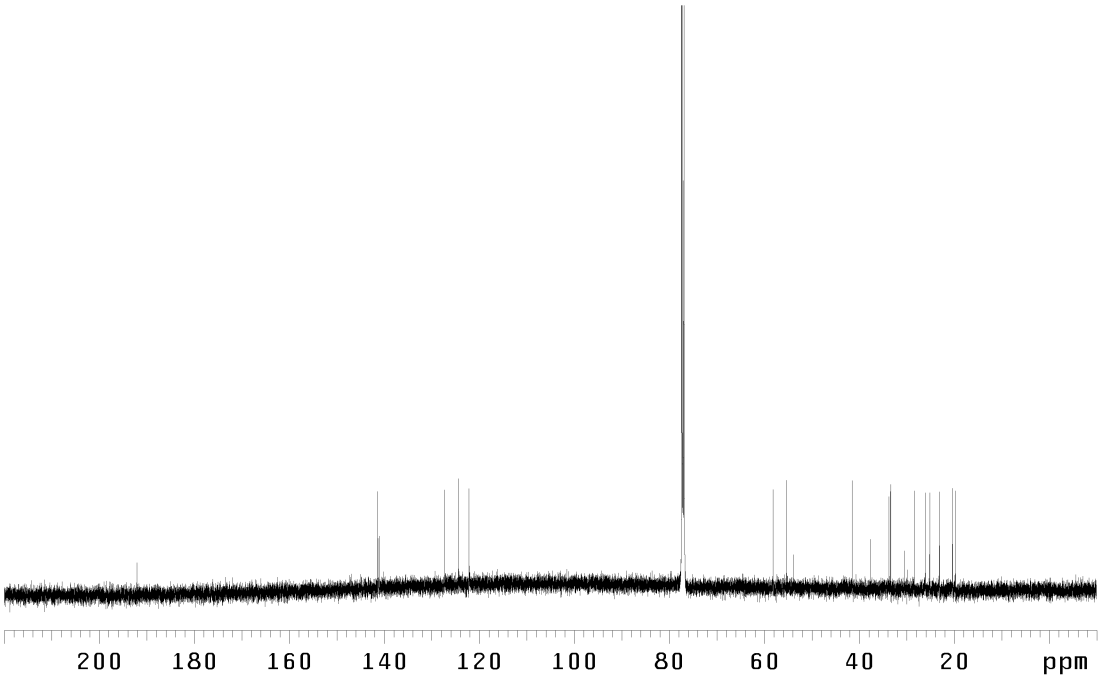

Figure A2.78 ^{13}C NMR (125 MHz, $CDCl_3$) of cyanthiwigin G (**161**).