APPENDIX 5

Spectra Relevant to Chapter 3:

Unified Approach to Daucane and Sphenolobane

Bicyclo[5.3.0]decane core: Enantioselective Synthesis of

Four Daucane Sesquiterpenes and Related Molecules

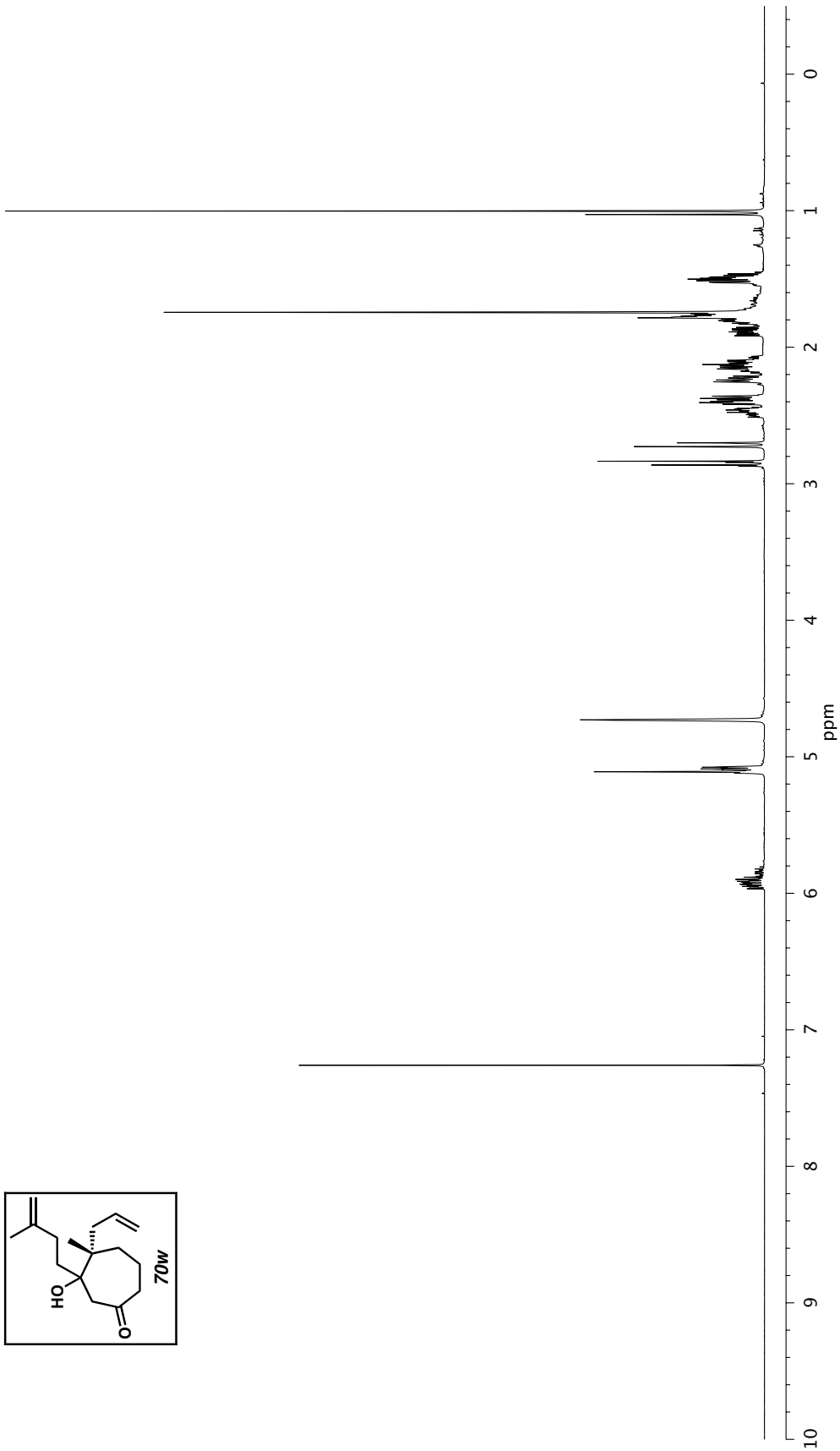

Figure A5.1.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **70w**.

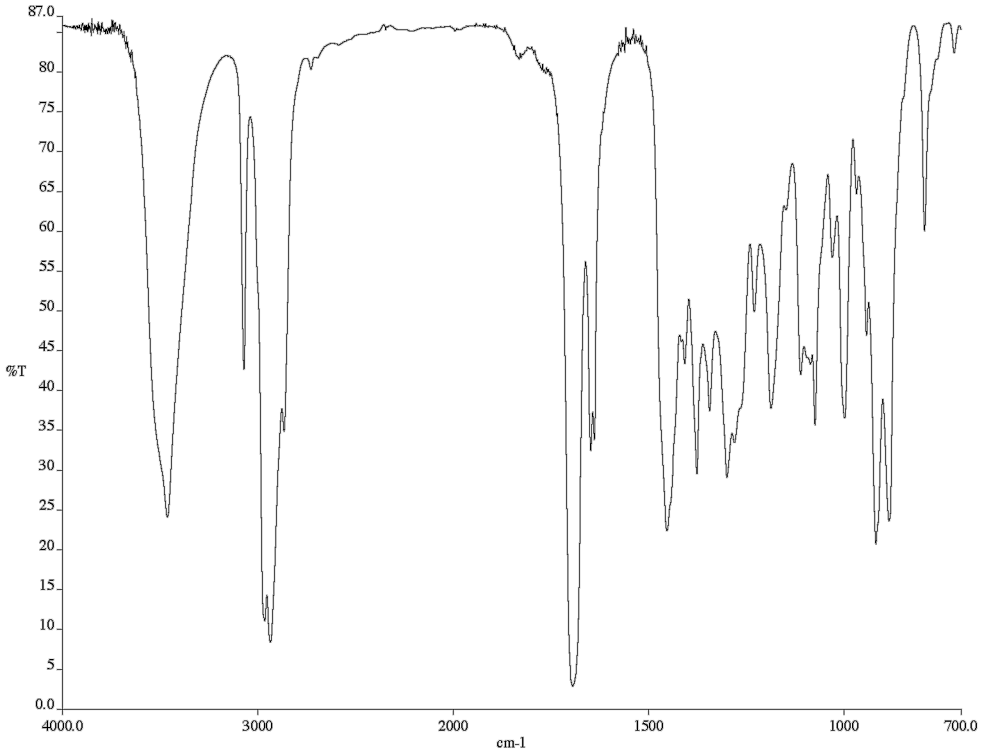

Figure A5.1.2. Infrared spectrum (thin film/NaCl) of compound **70w**.

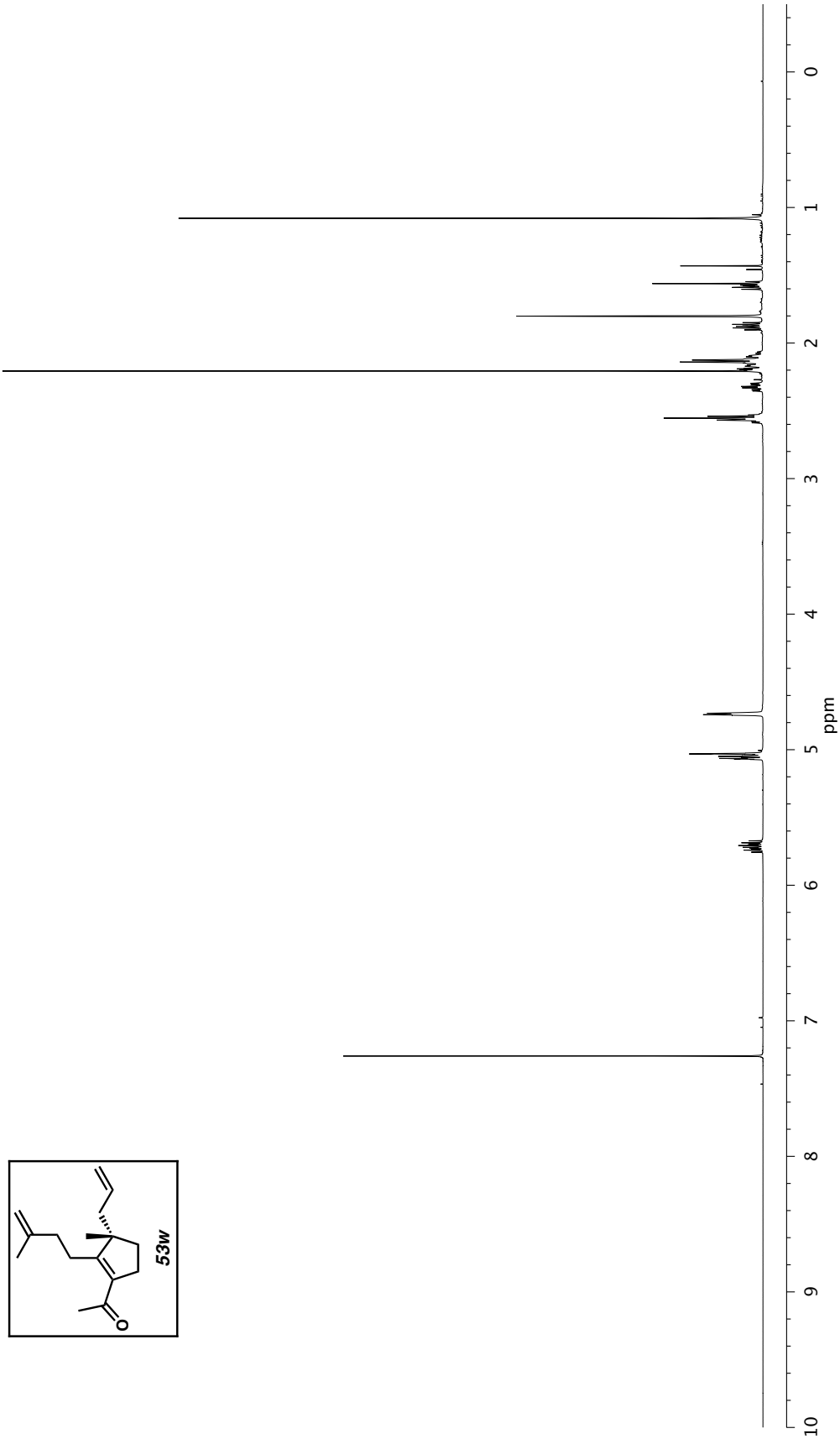

Figure A5.2.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **53w**.

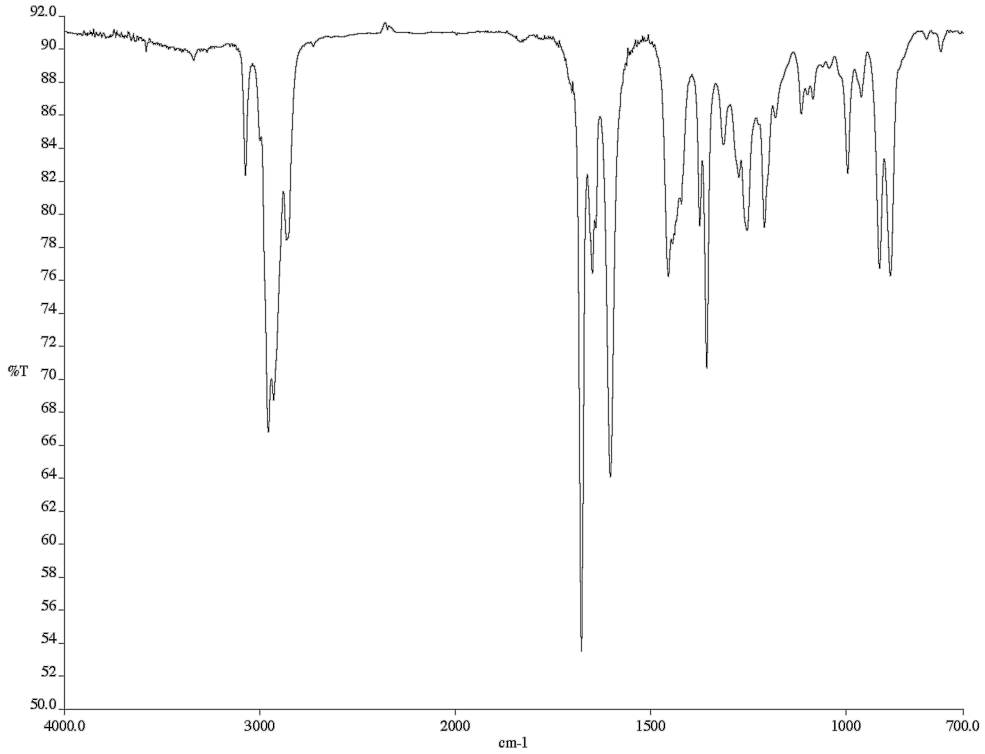

Figure A5.2.2. Infrared spectrum (thin film/NaCl) of compound **53w**.

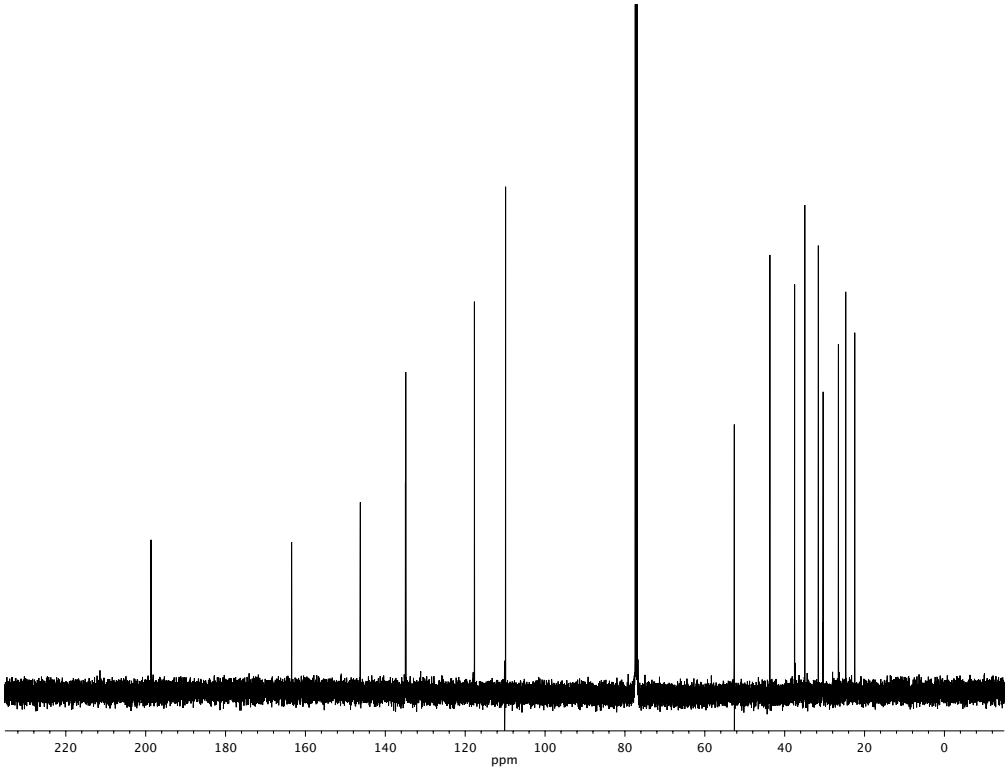

Figure A5.2.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **53w**.

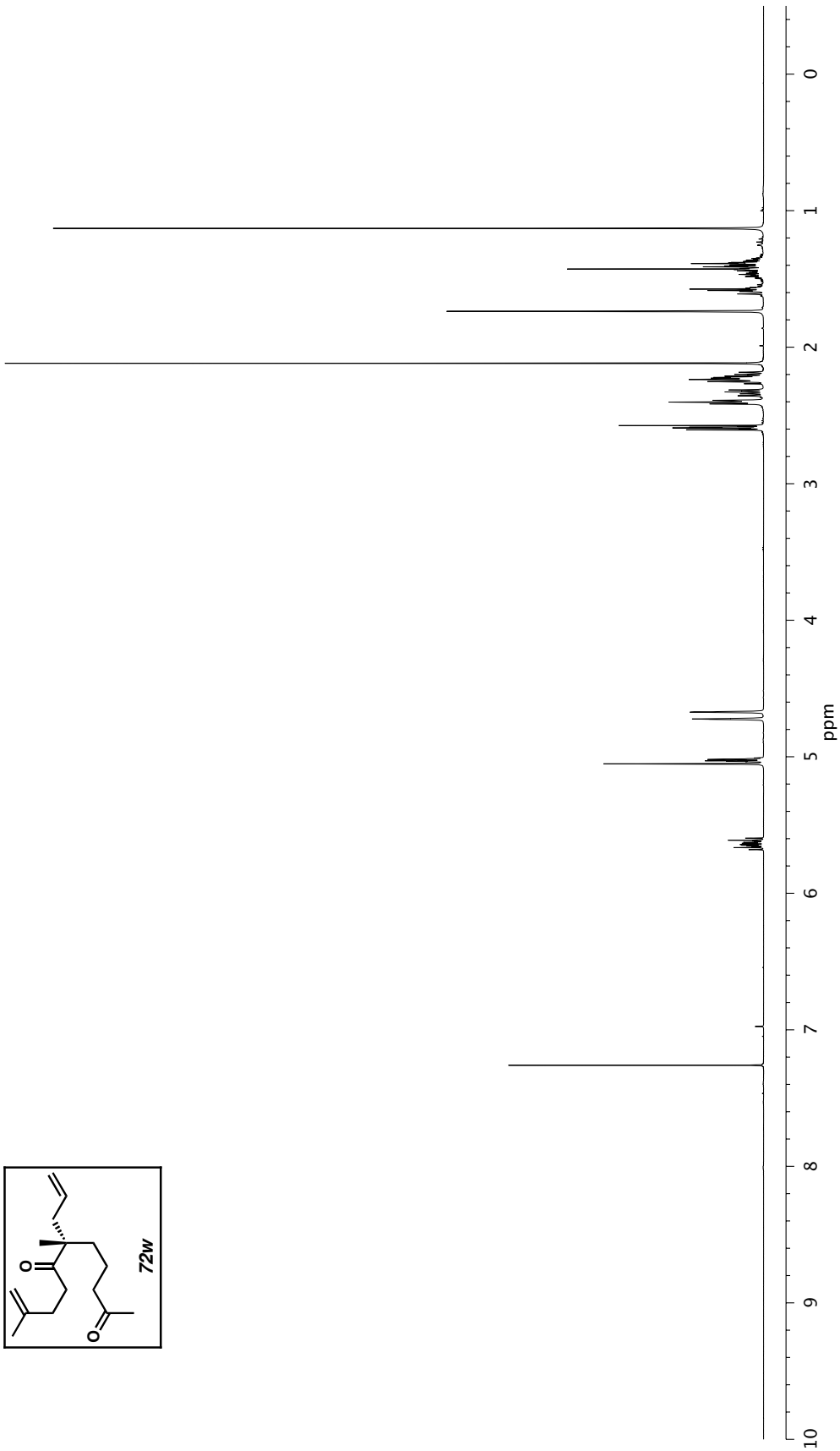

Figure A5.3.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **72w**.

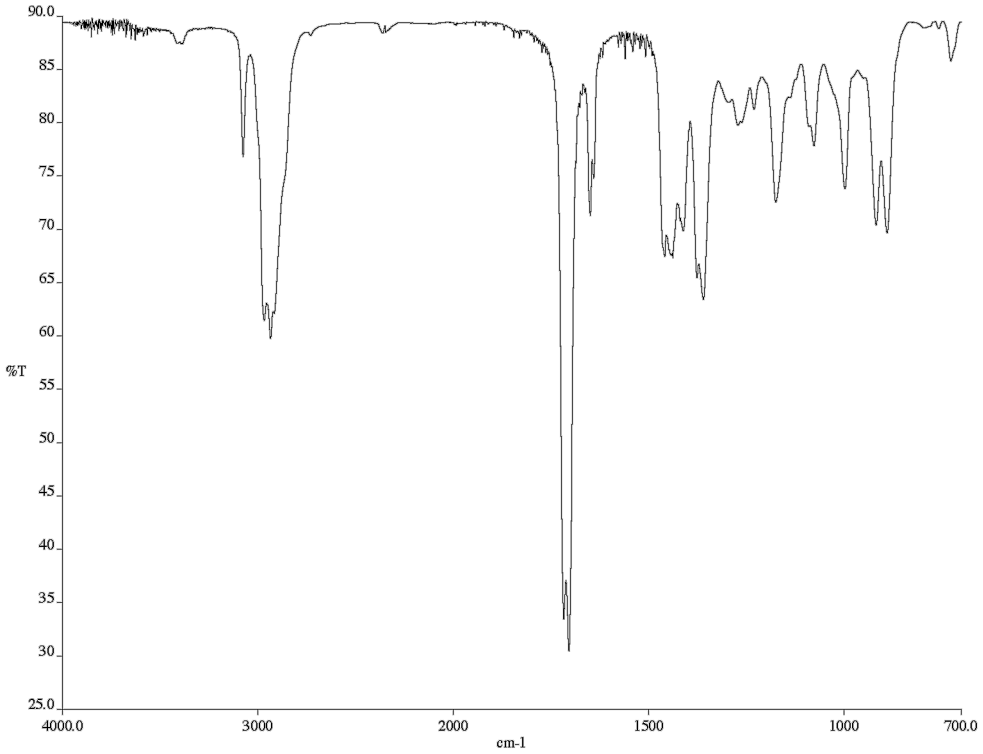

Figure A5.3.2. Infrared spectrum (thin film/NaCl) of compound **72w**.

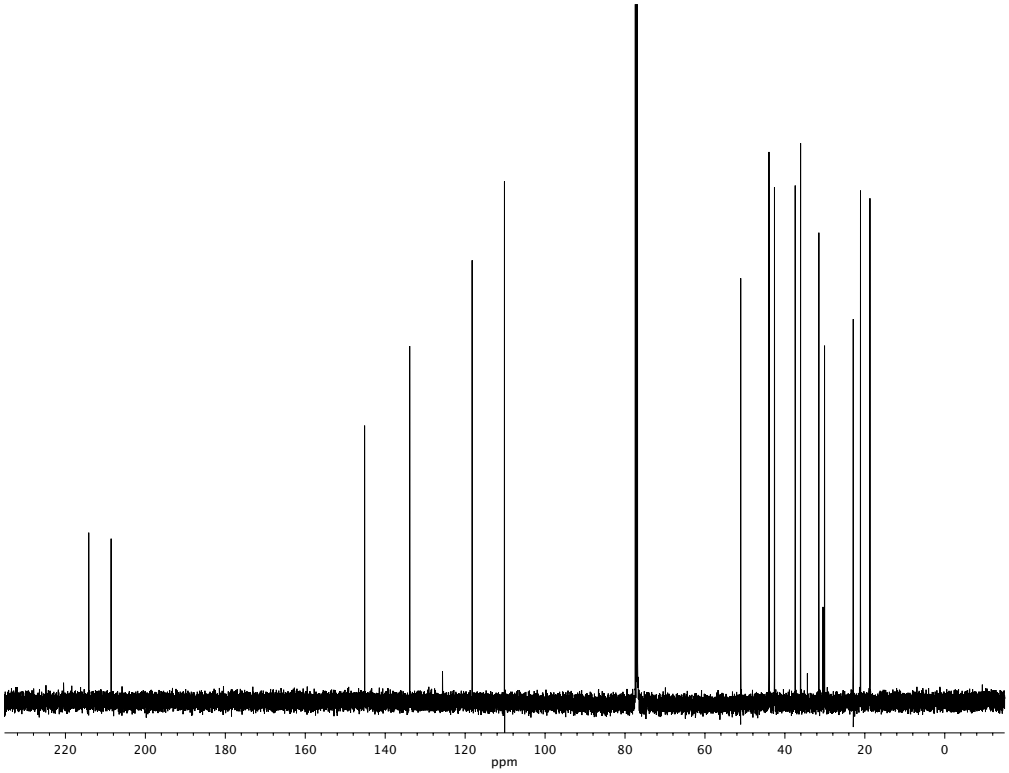

Figure A5.3.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **72w**.

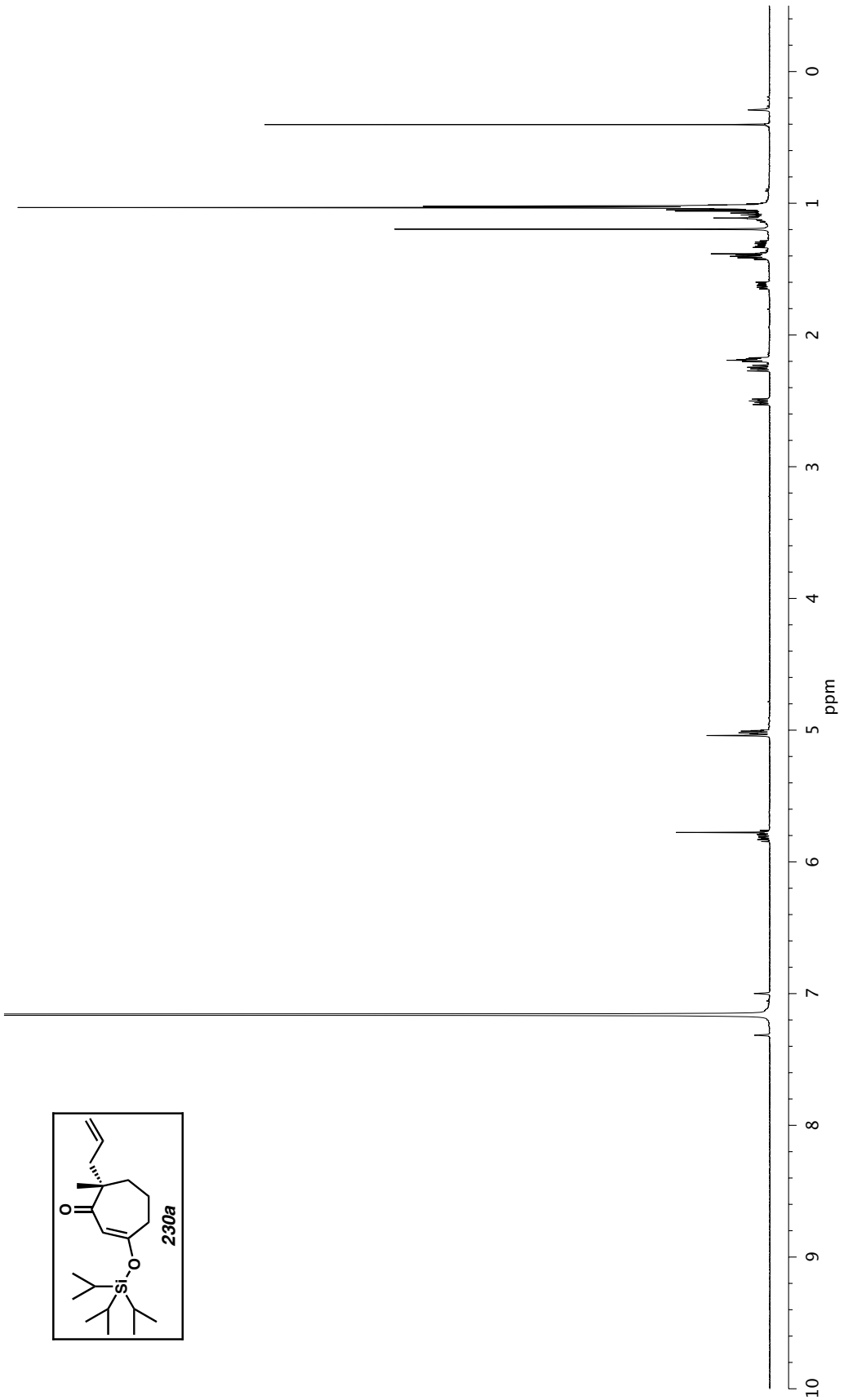

Figure A5.4.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **230a**.

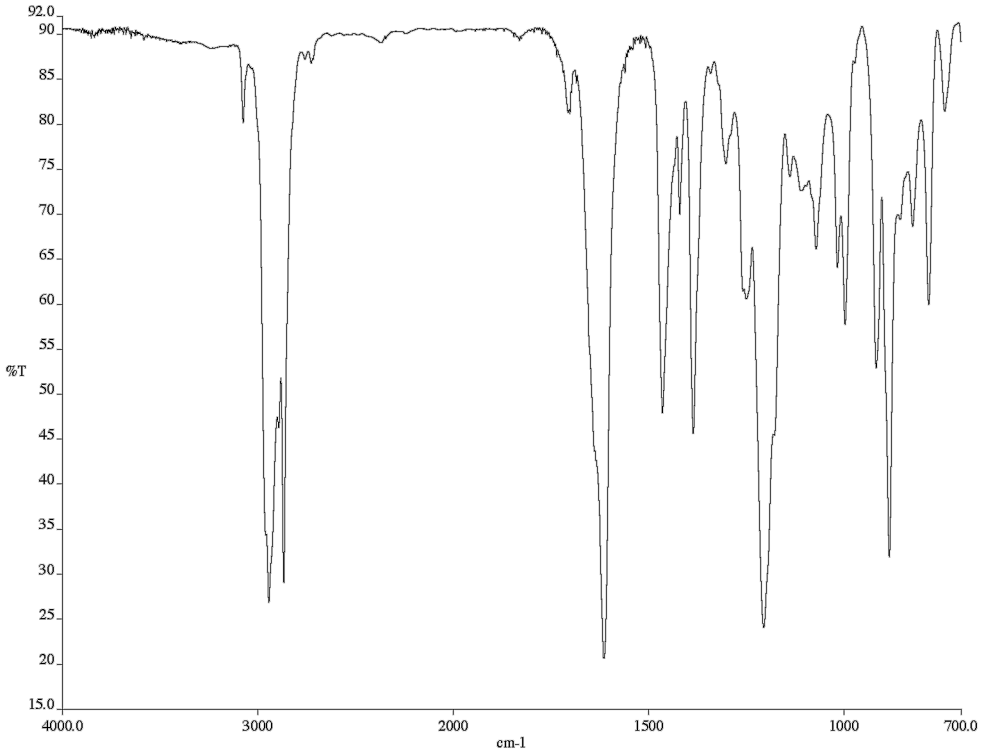

Figure A5.4.2. Infrared spectrum (thin film/NaCl) of compound **230a**.

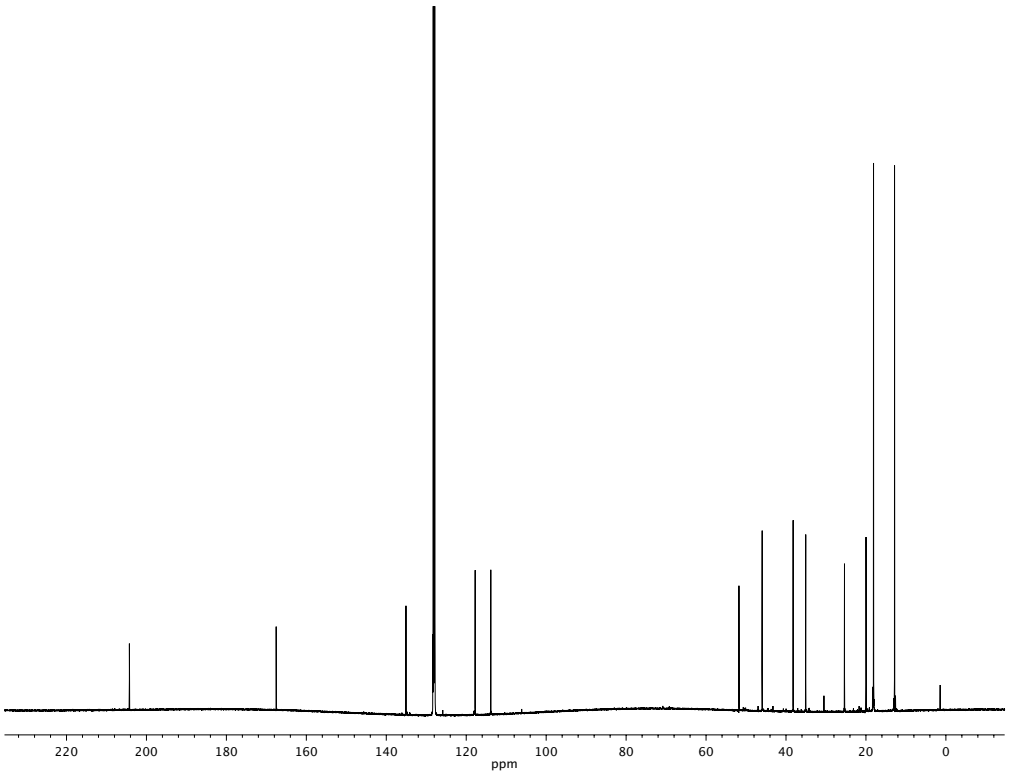

Figure A5.4.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **230a**.

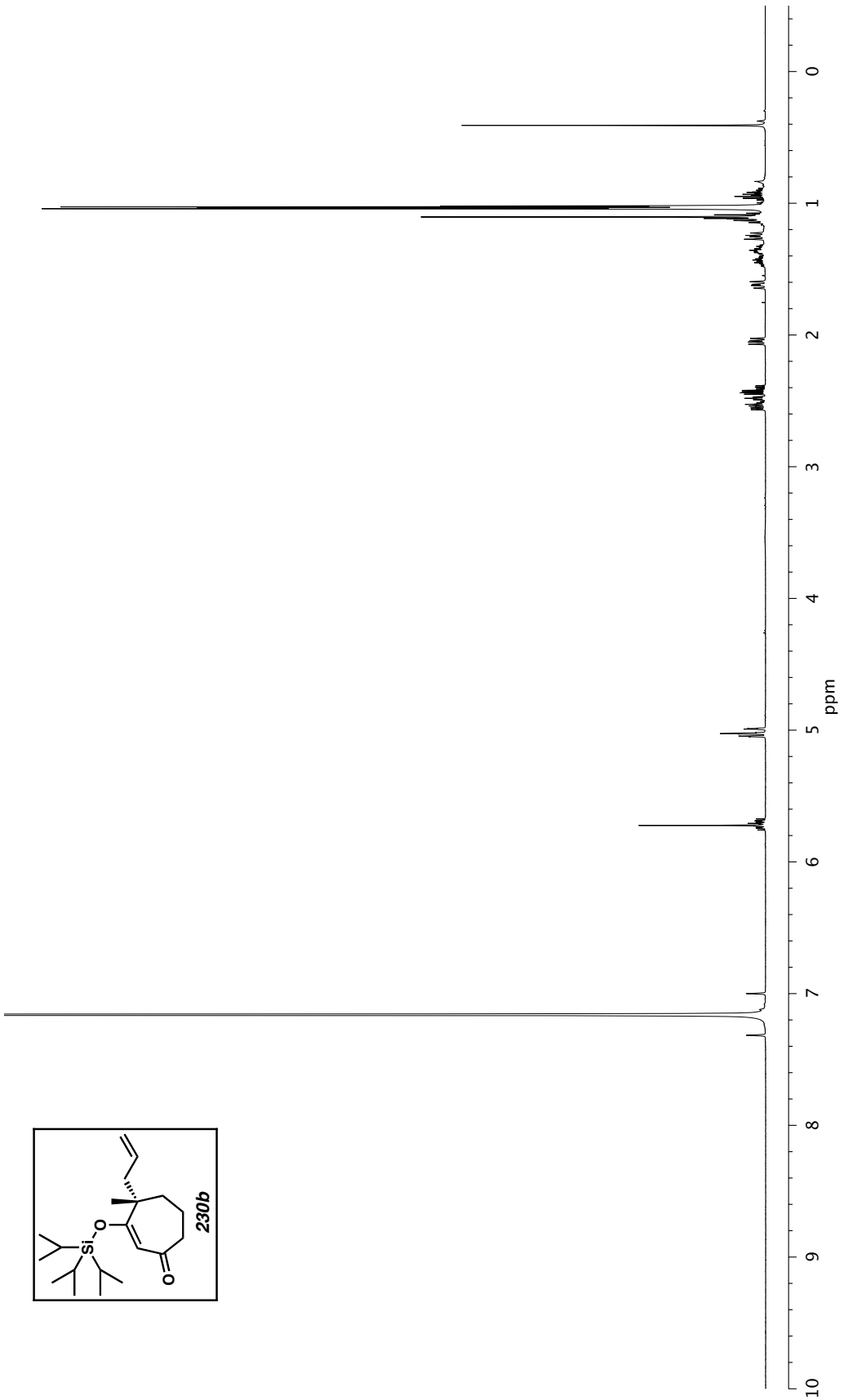

Figure A5.5.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **230b**.

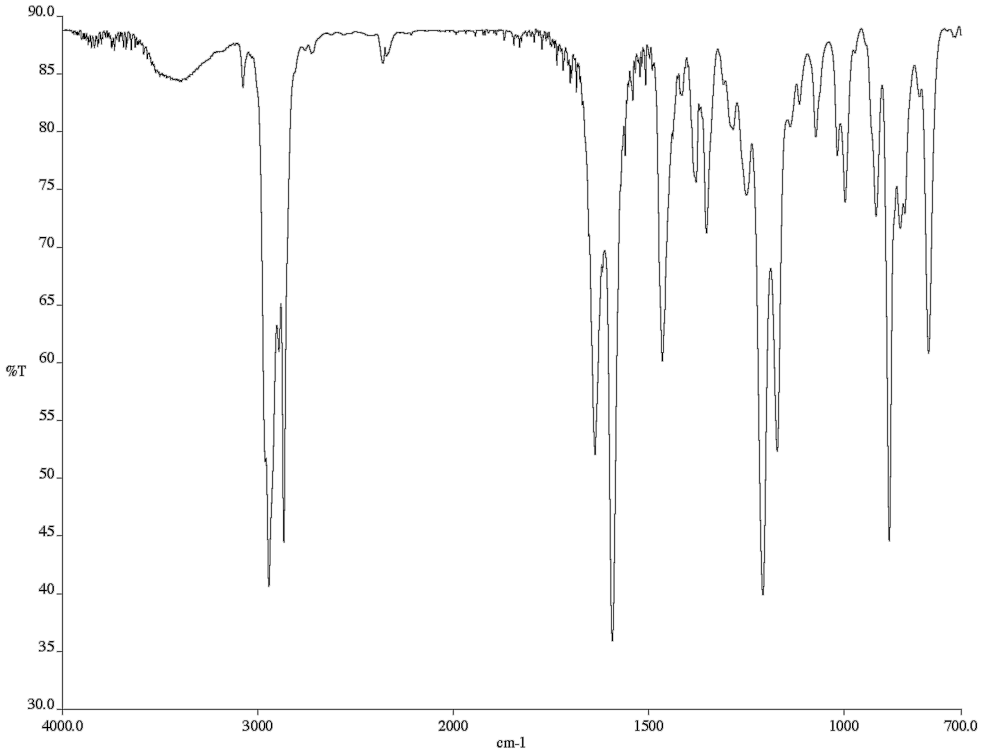

Figure A5.5.2. Infrared spectrum (thin film/NaCl) of compound **230b**.

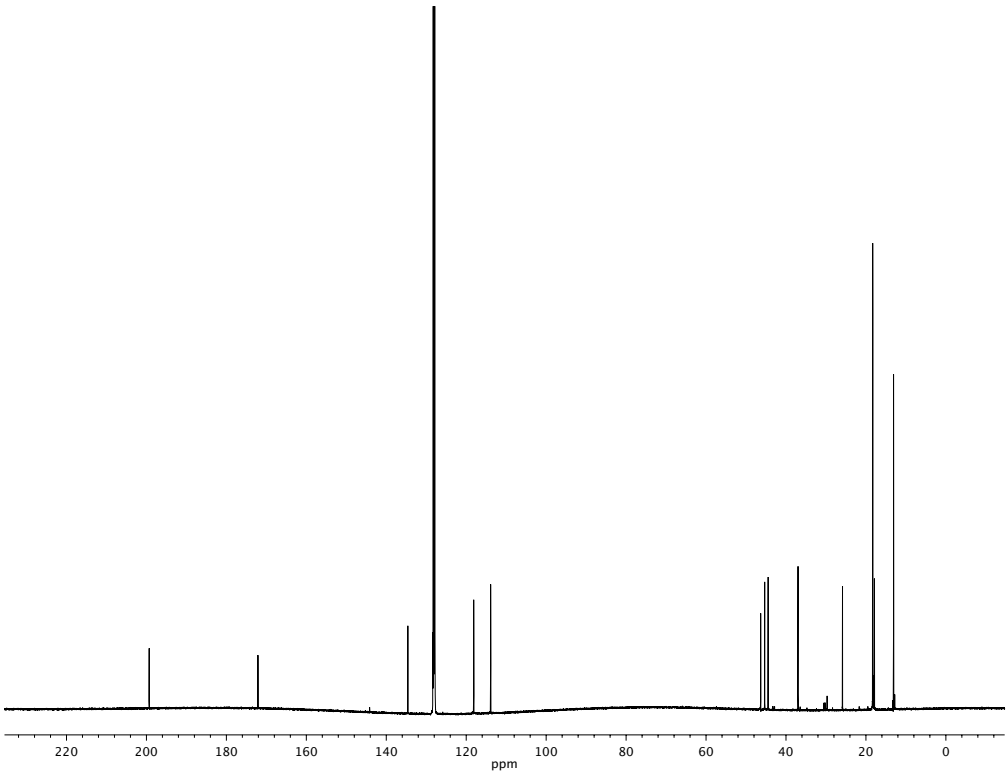

Figure A5.5.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **230b**.

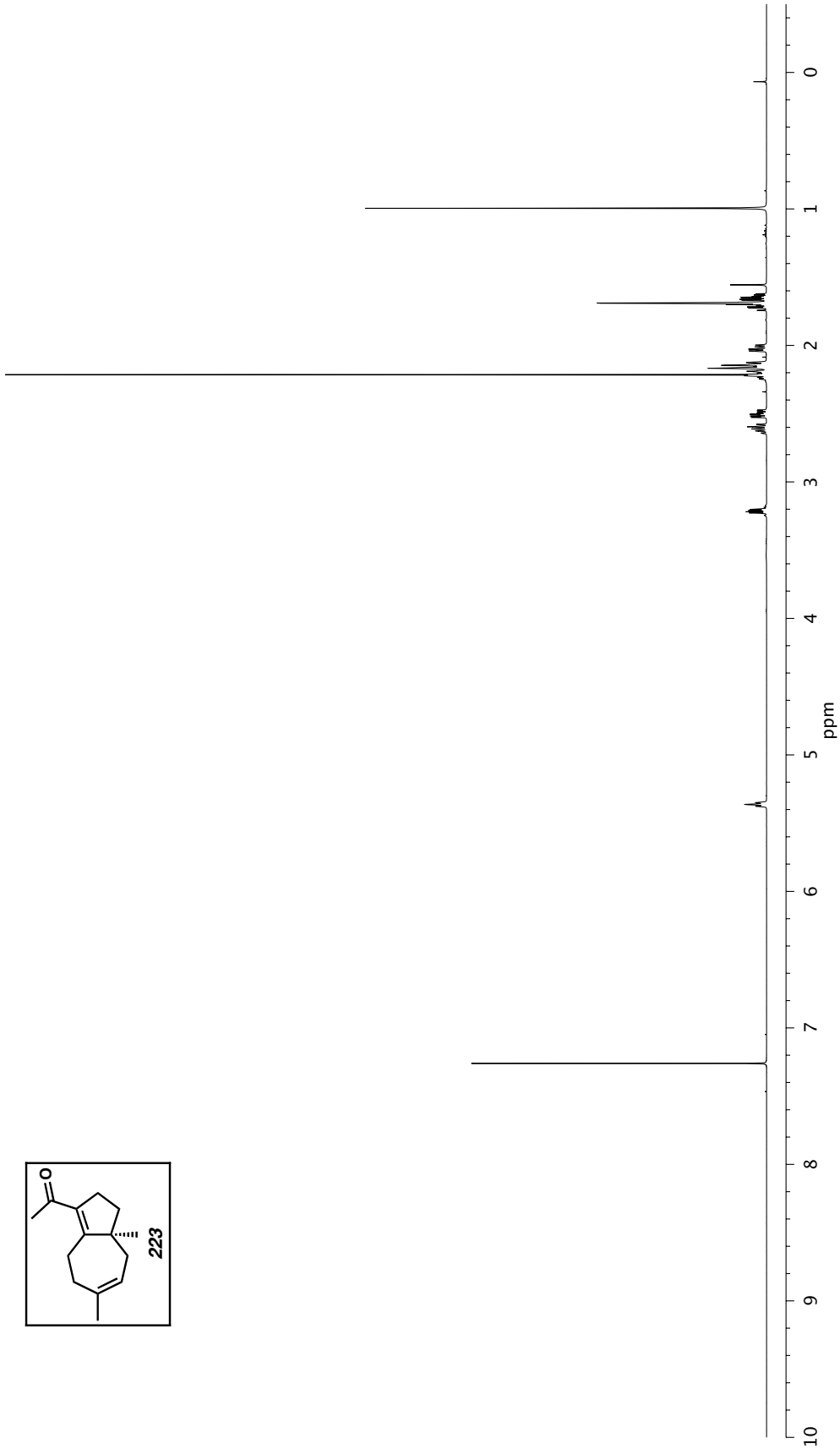

Figure A5.6.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **223**.

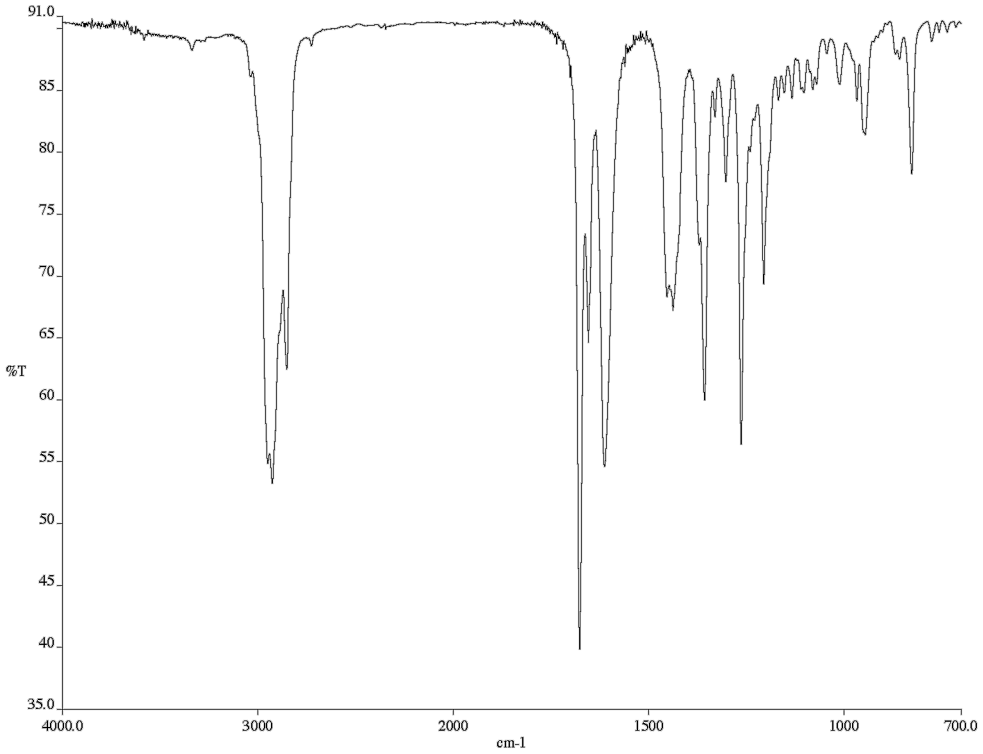

Figure A5.6.2. Infrared spectrum (thin film/NaCl) of compound **223**.

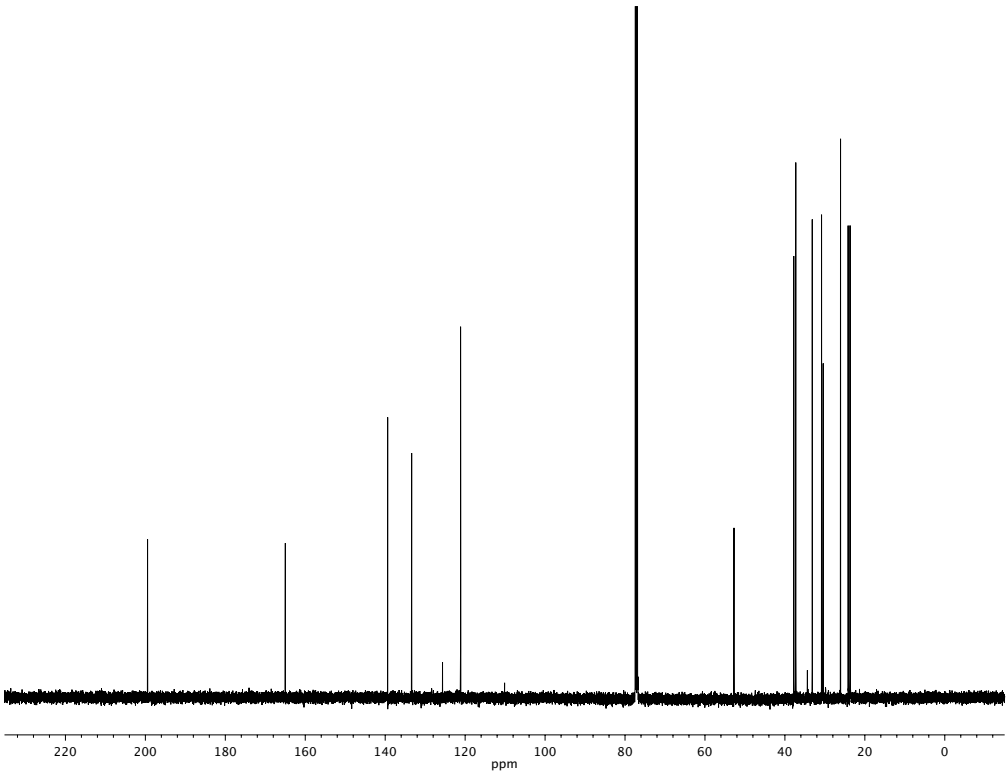

Figure A5.6.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **223**.

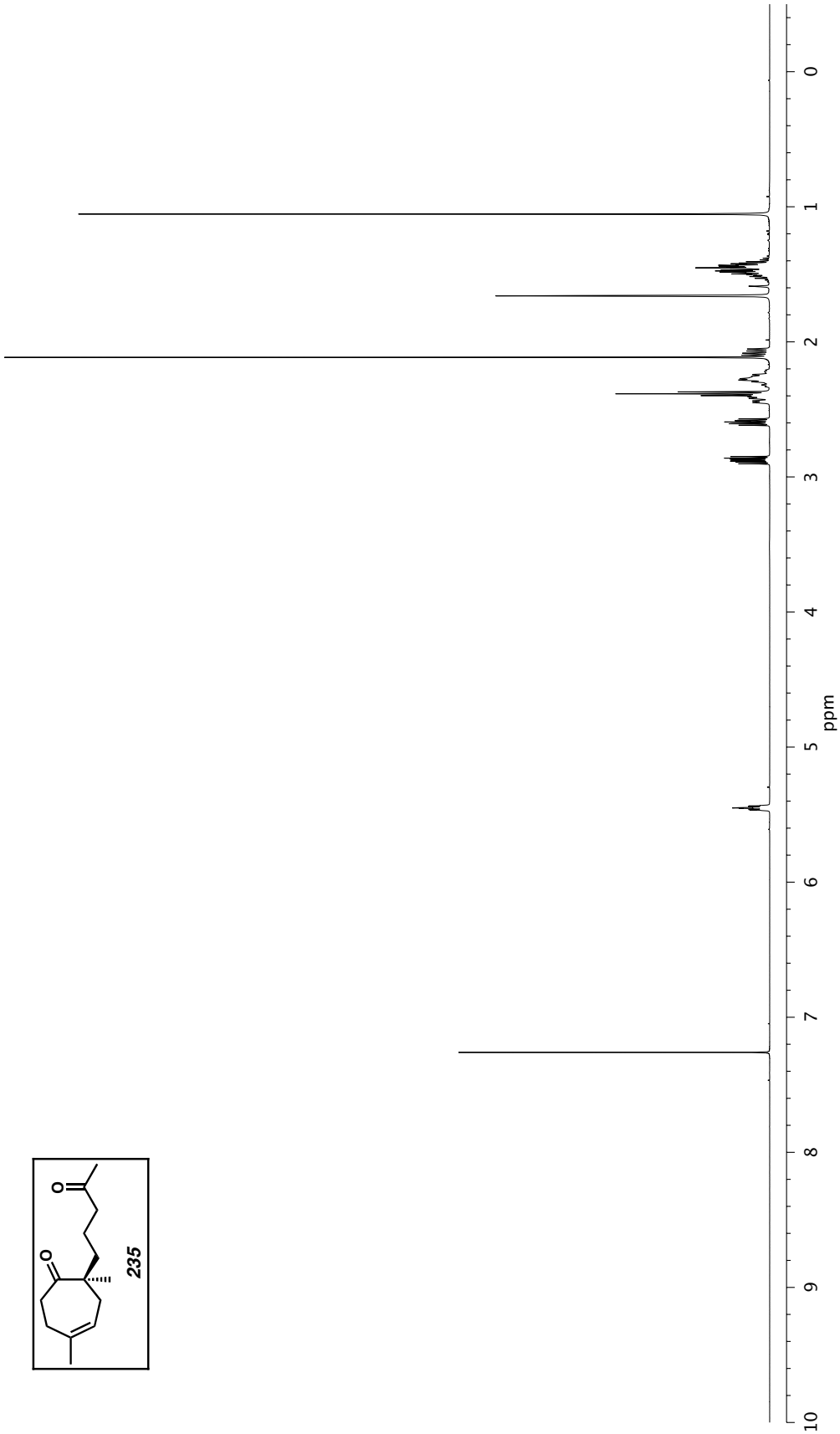

Figure A5.7.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **235**.

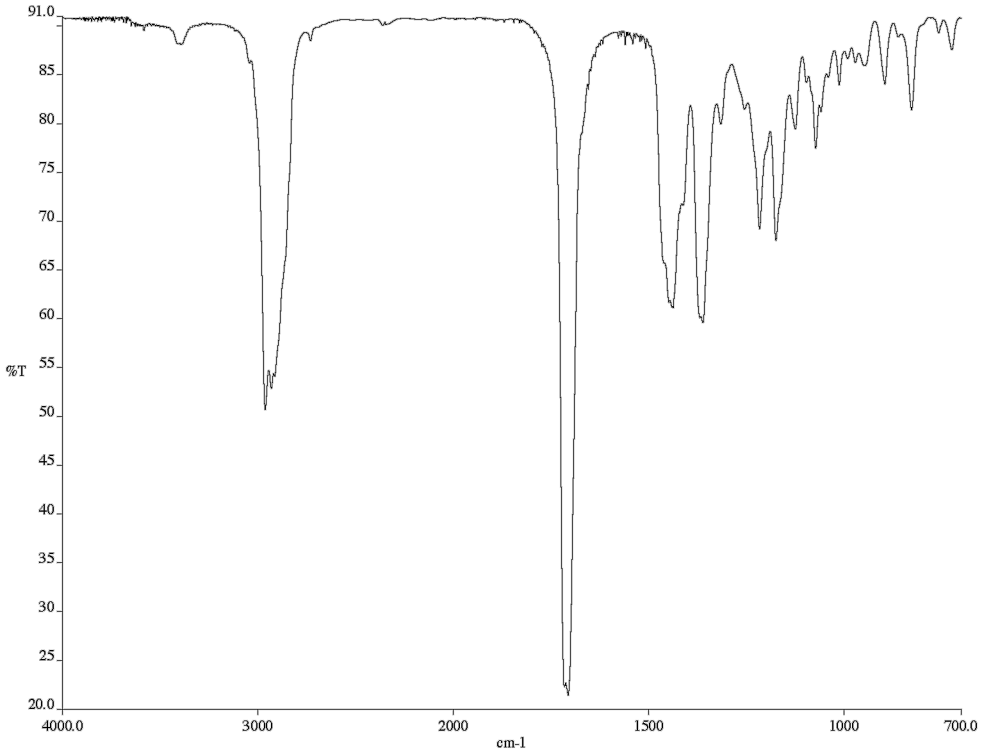

Figure A5.7.2. Infrared spectrum (thin film/NaCl) of compound **235**.

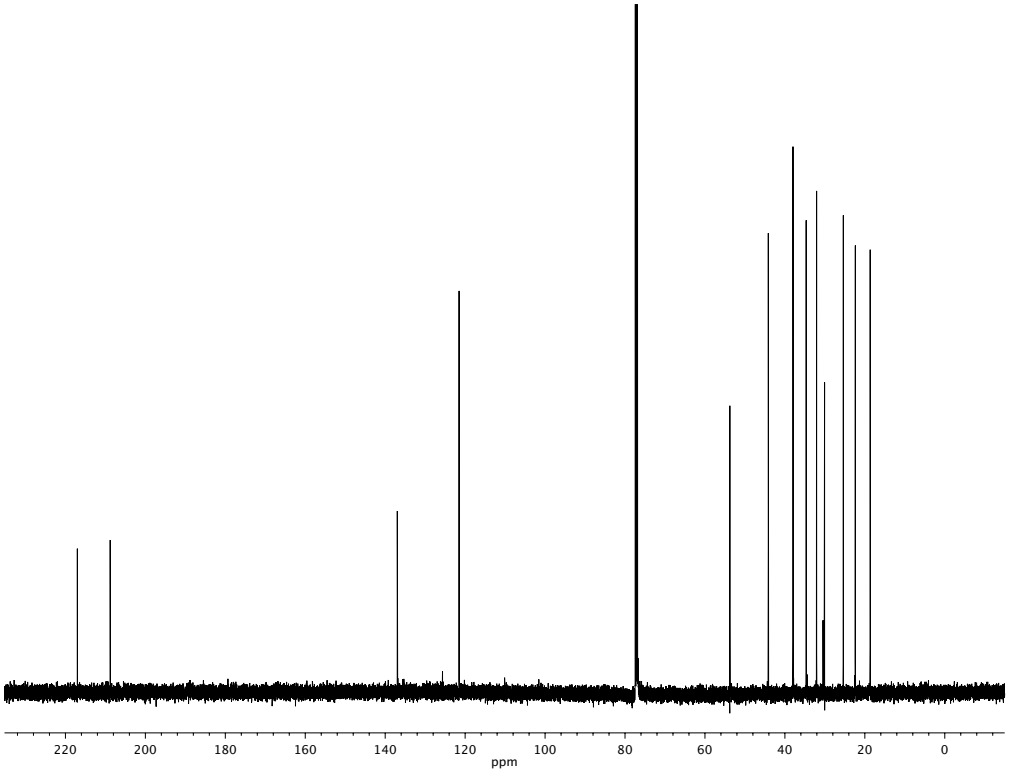

Figure A5.7.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **235**.

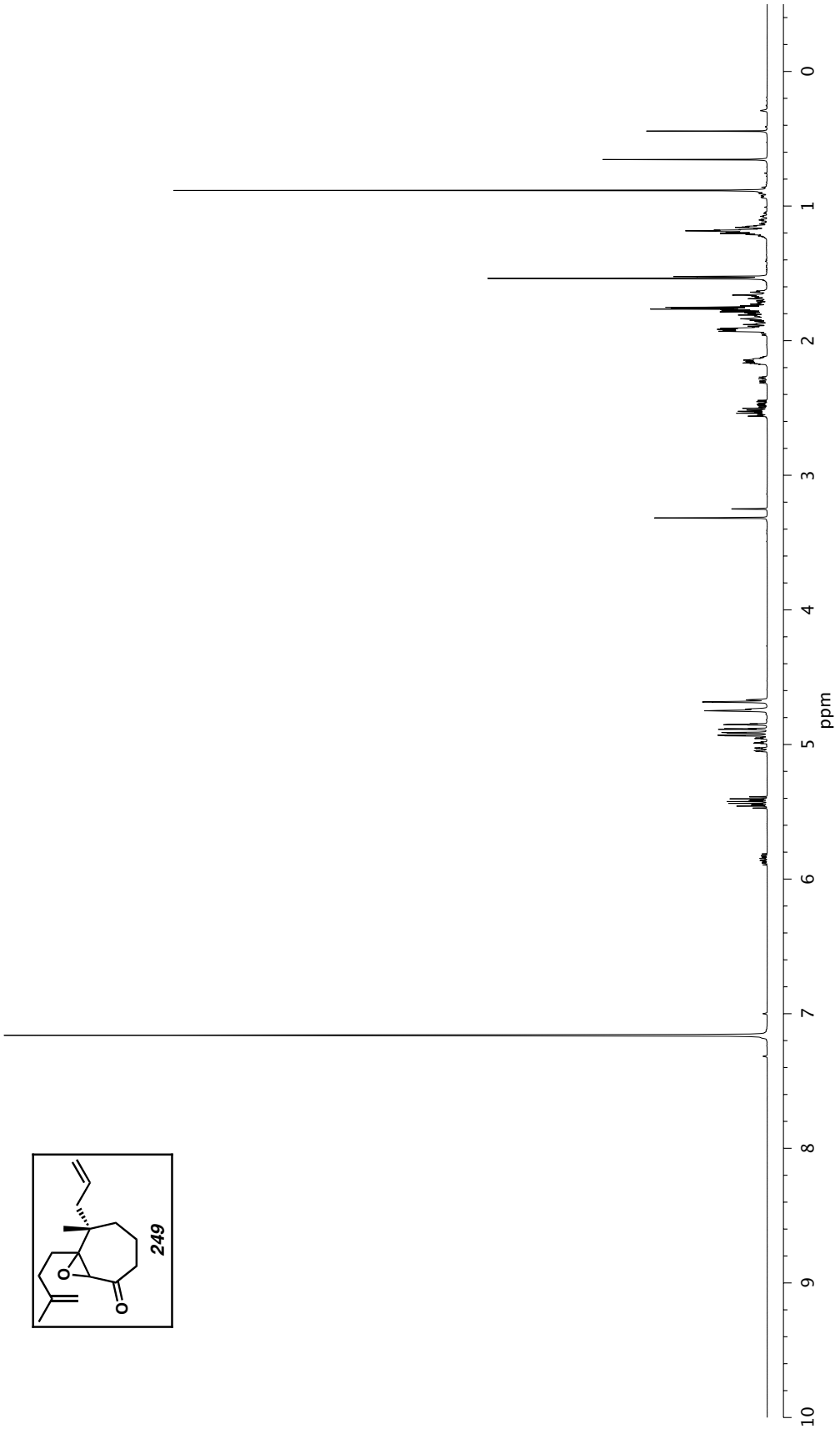

Figure A5.8.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **249**.

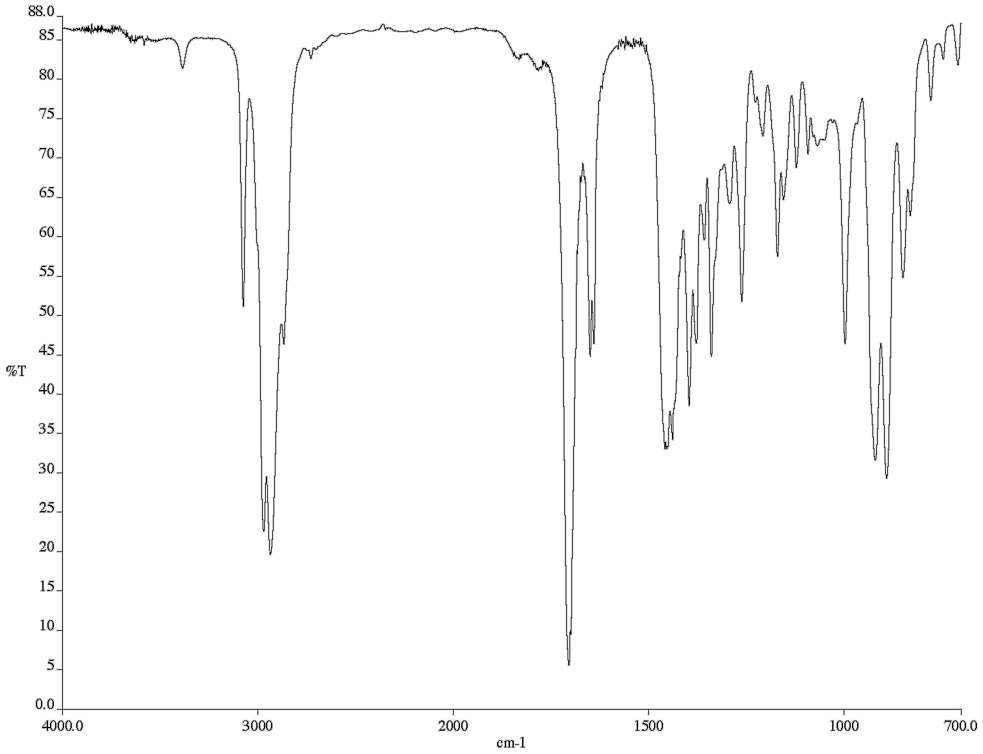

Figure A5.8.2. Infrared spectrum (thin film/NaCl) of compound **249**.

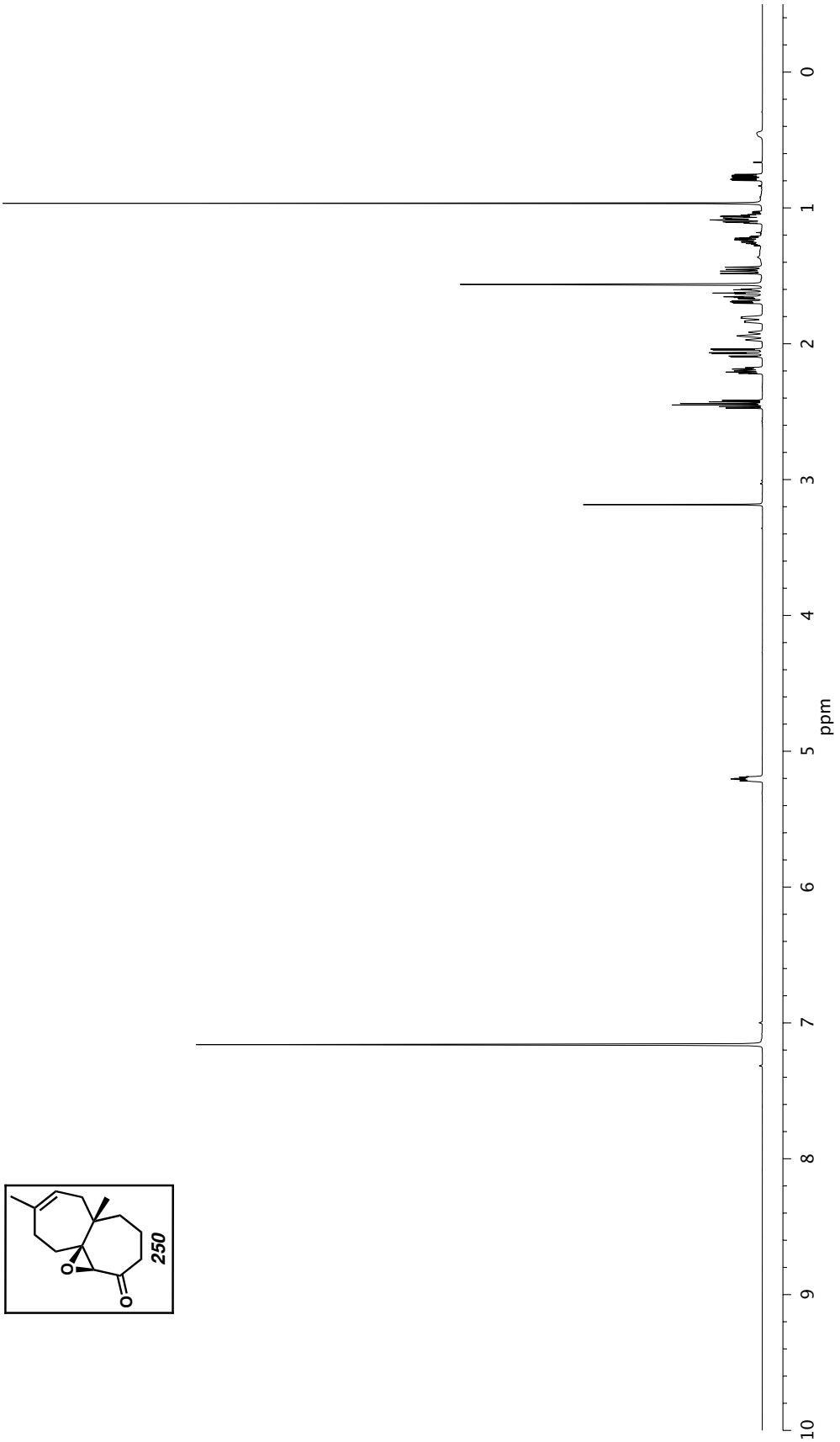

Figure A5.9.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **250**.

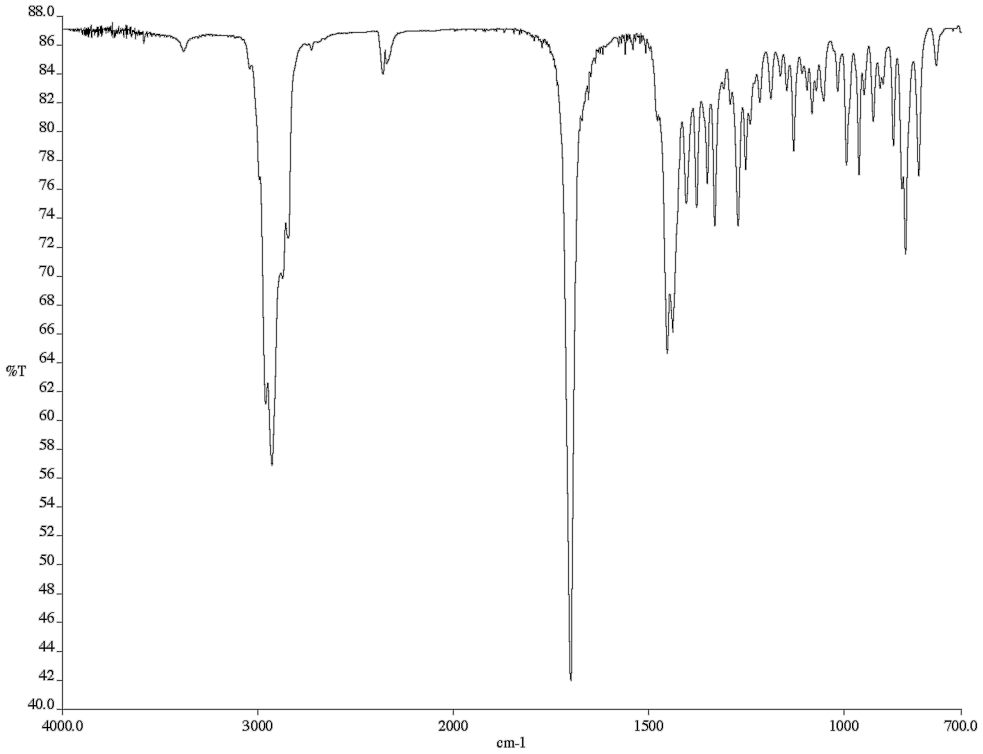

Figure A5.9.2. Infrared spectrum (thin film/NaCl) of compound **250**.

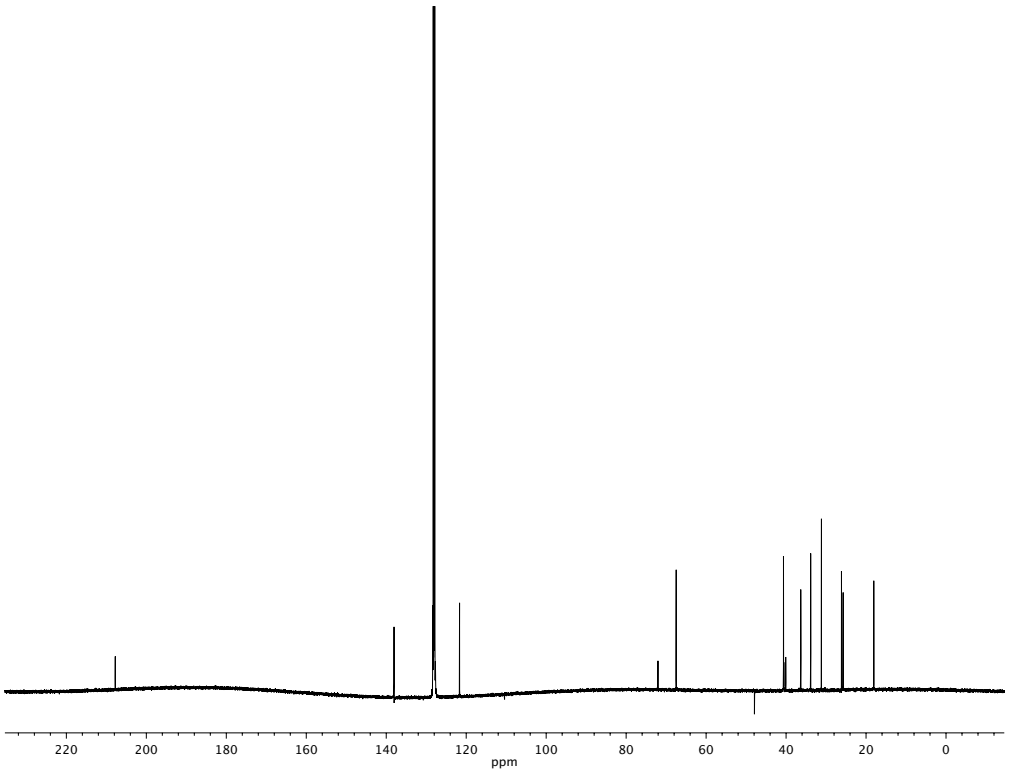

Figure A5.9.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **250**.

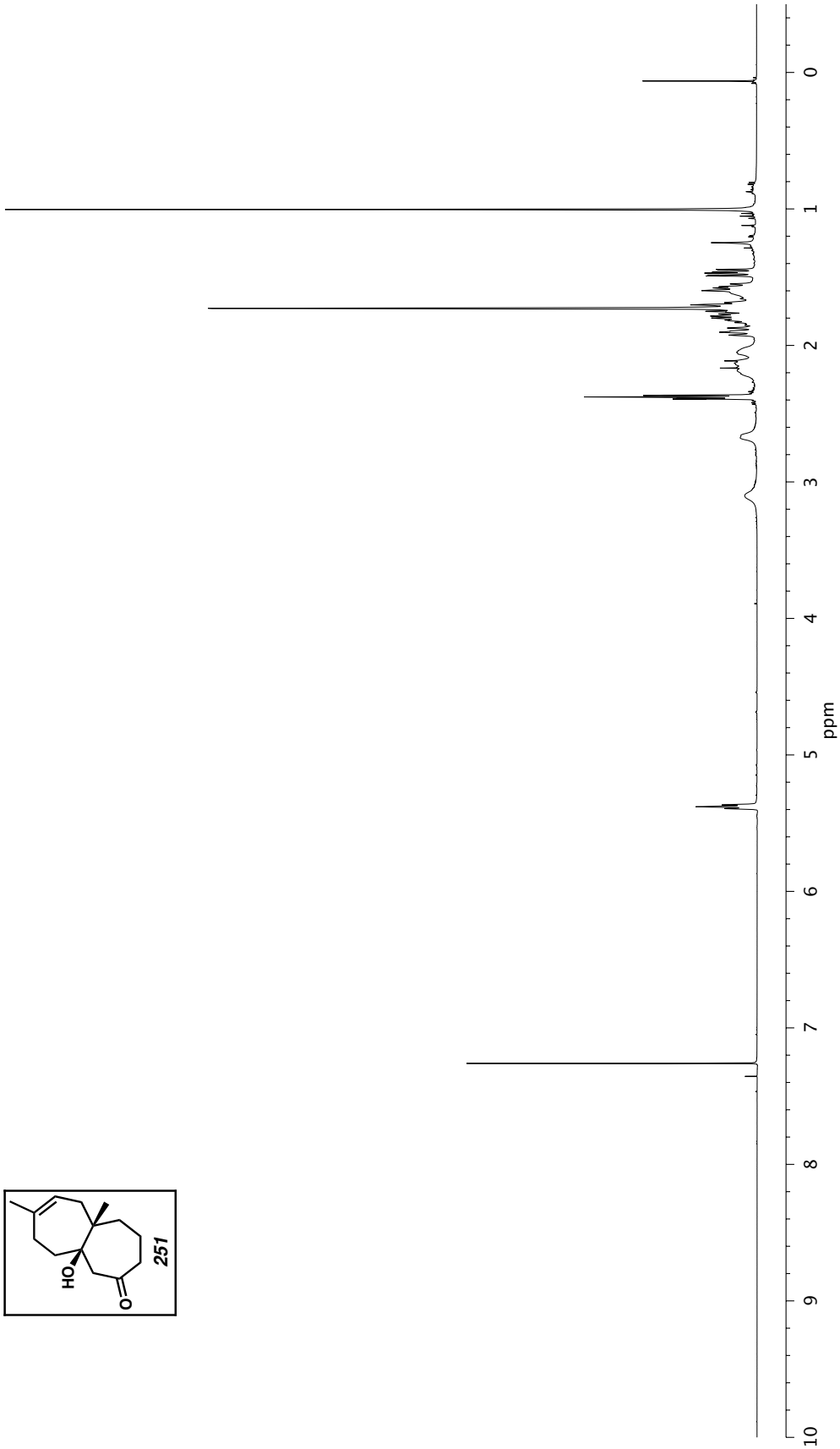

Figure A5.10.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **251**.

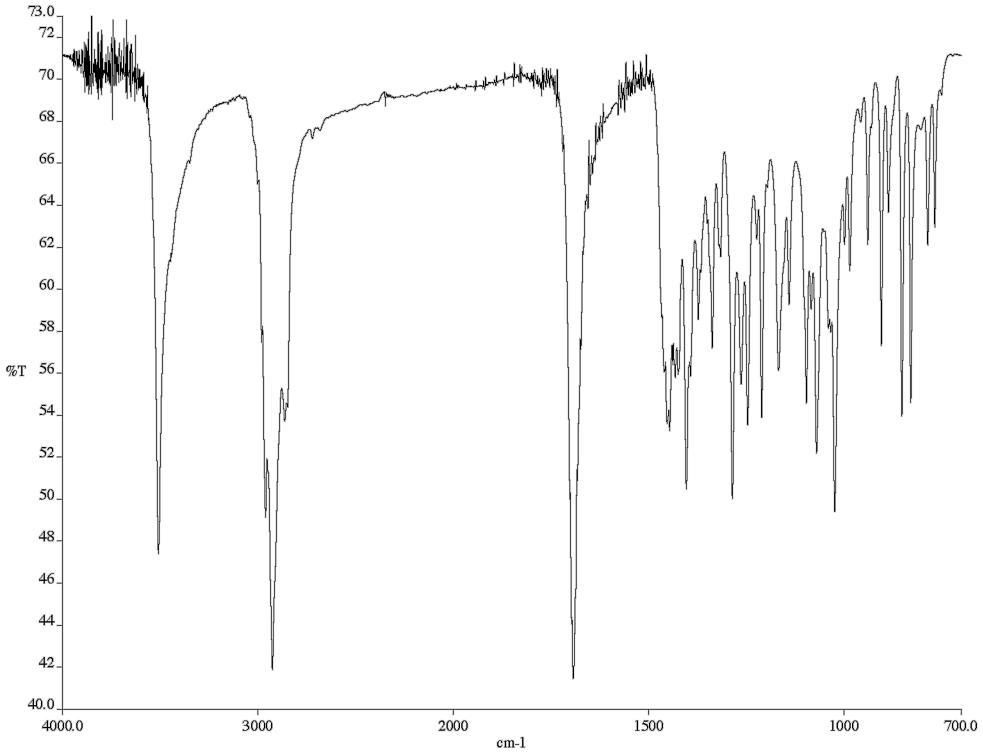

Figure A5.10.2. Infrared spectrum (thin film/NaCl) of compound **251**.

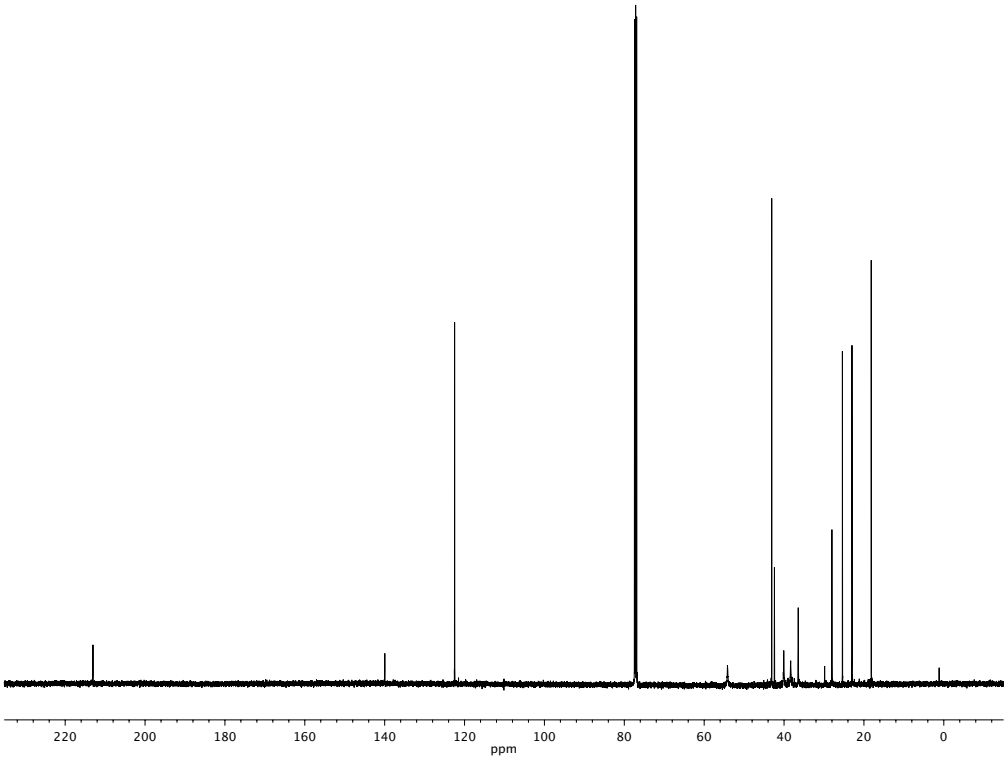

Figure A5.10.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **251**.

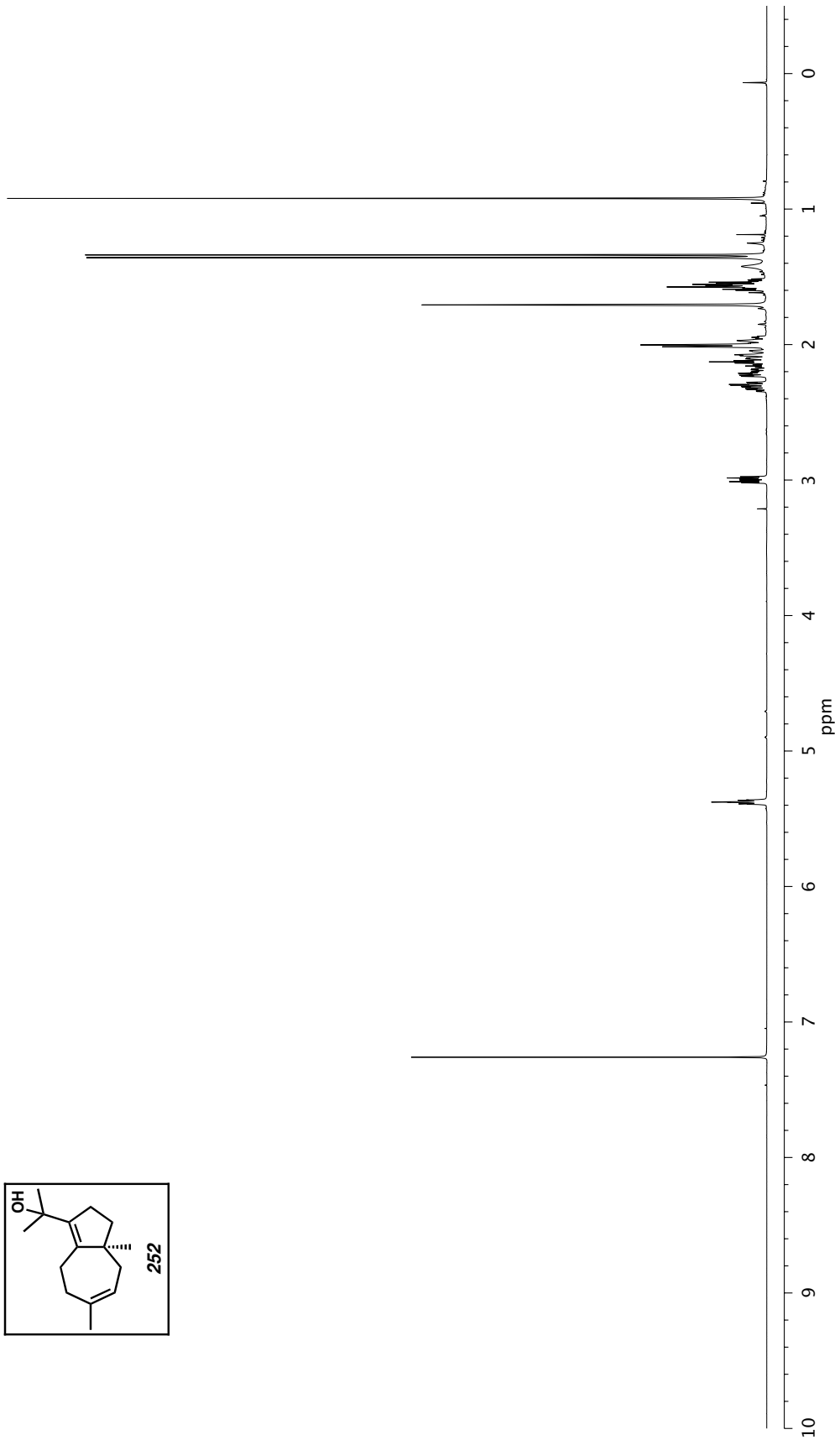

Figure A5.11.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **252**.

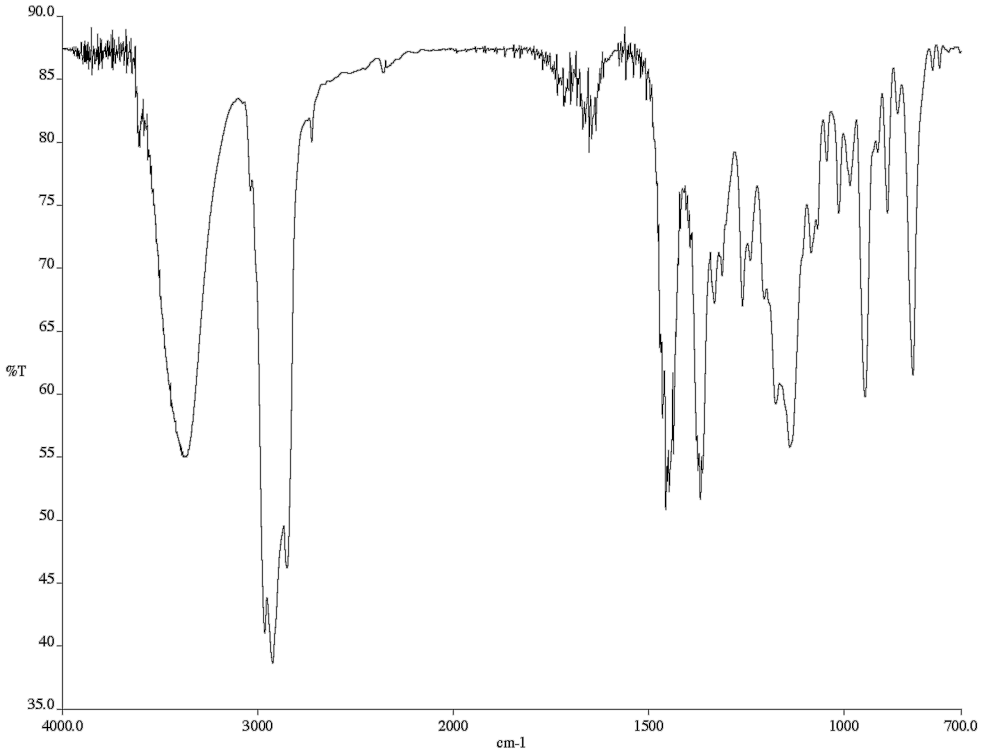

Figure A5.11.2. Infrared spectrum (thin film/NaCl) of compound **252**.

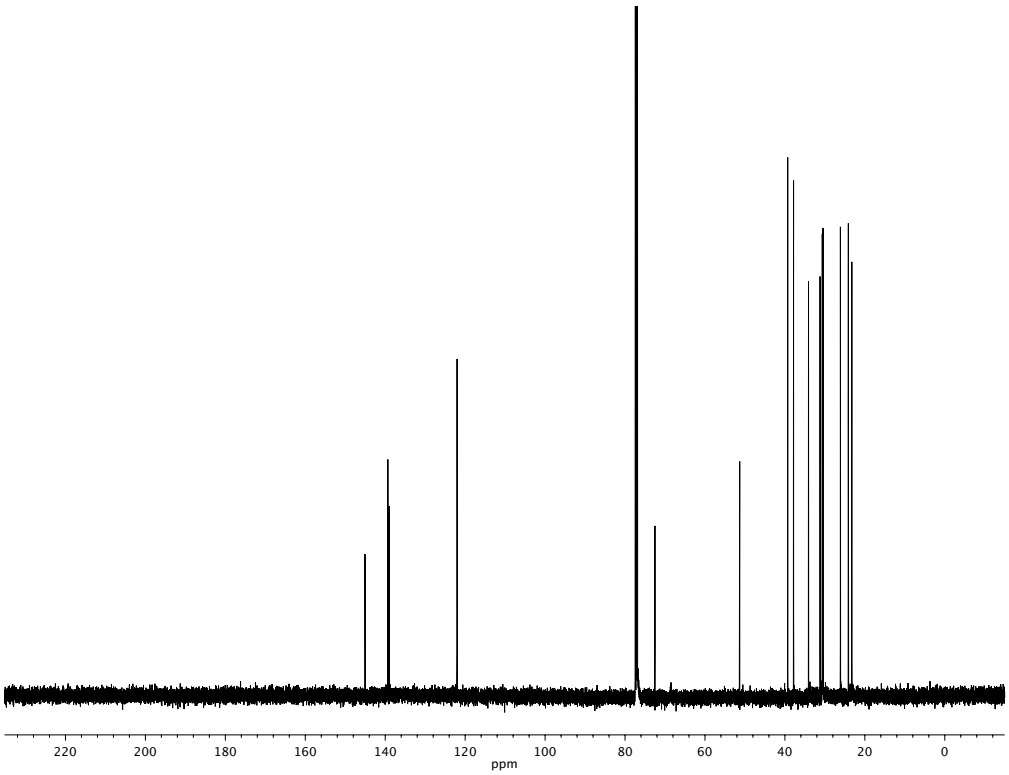

Figure A5.11.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **252**.

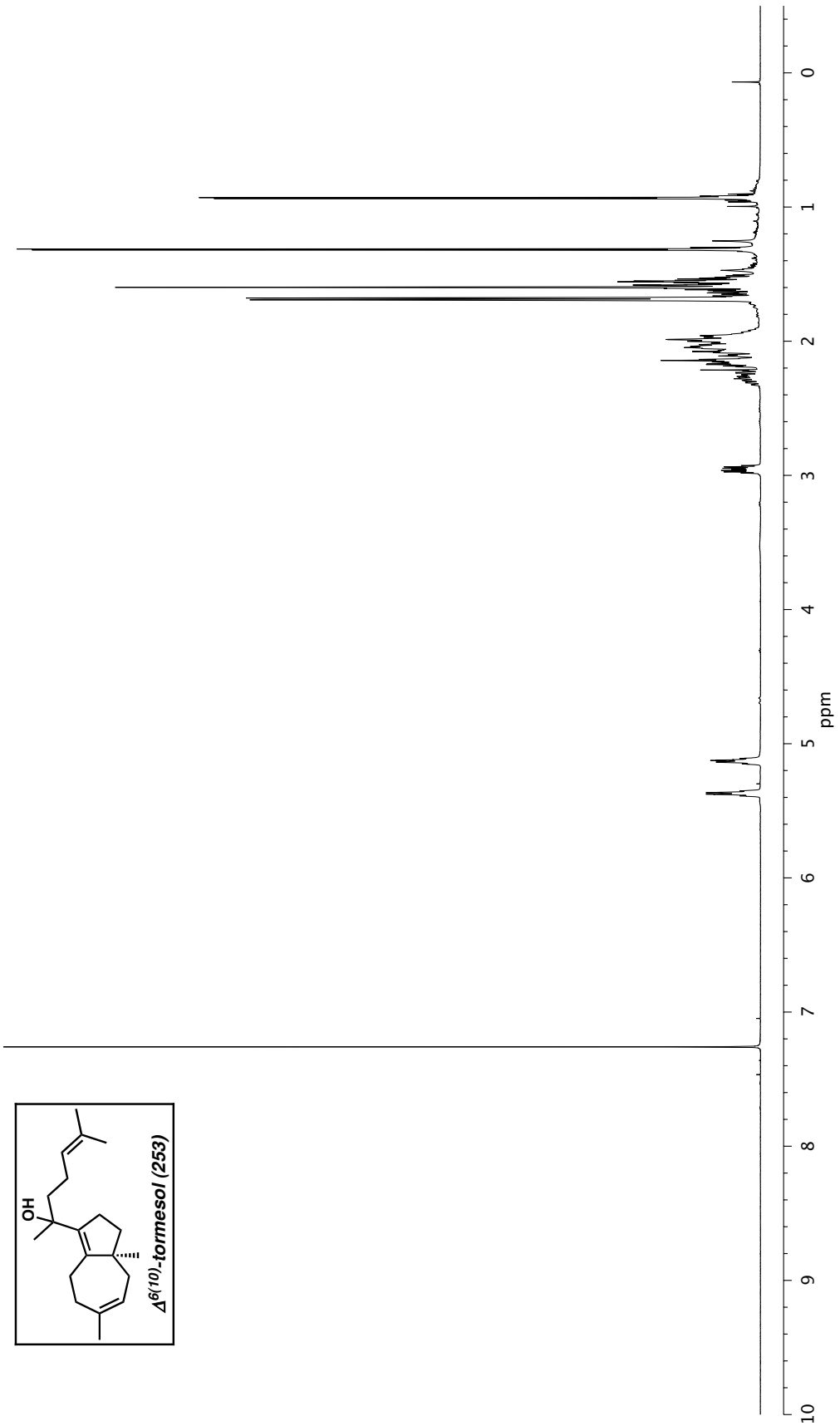

Figure A5.12.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **253**.

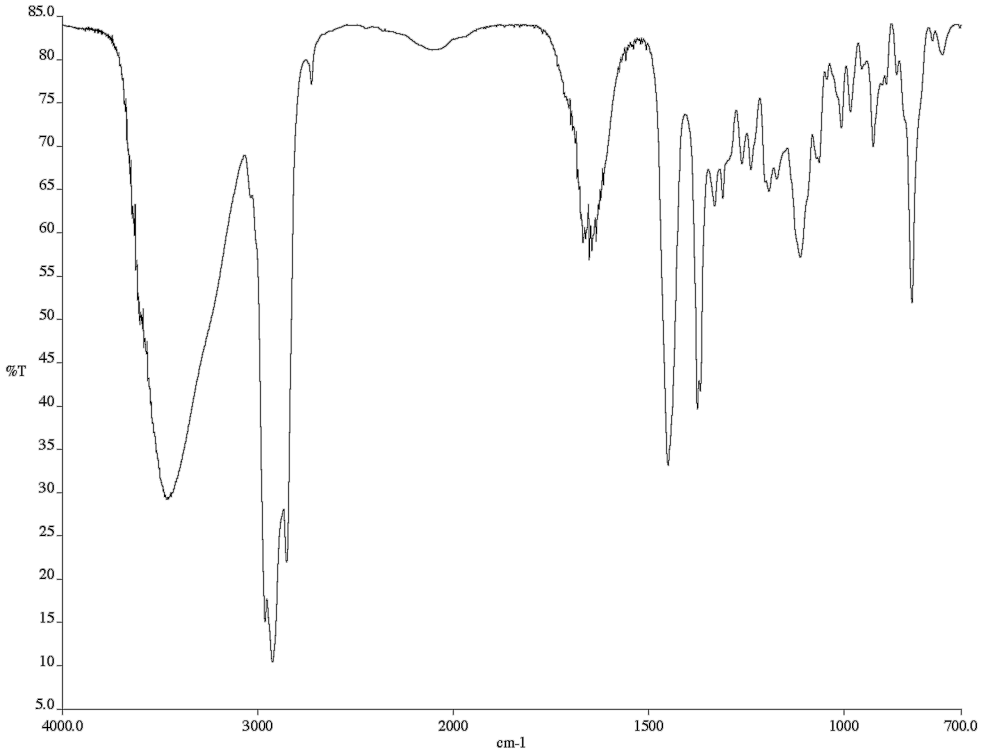

Figure A5.12.2. Infrared spectrum (thin film/NaCl) of compound **253**.

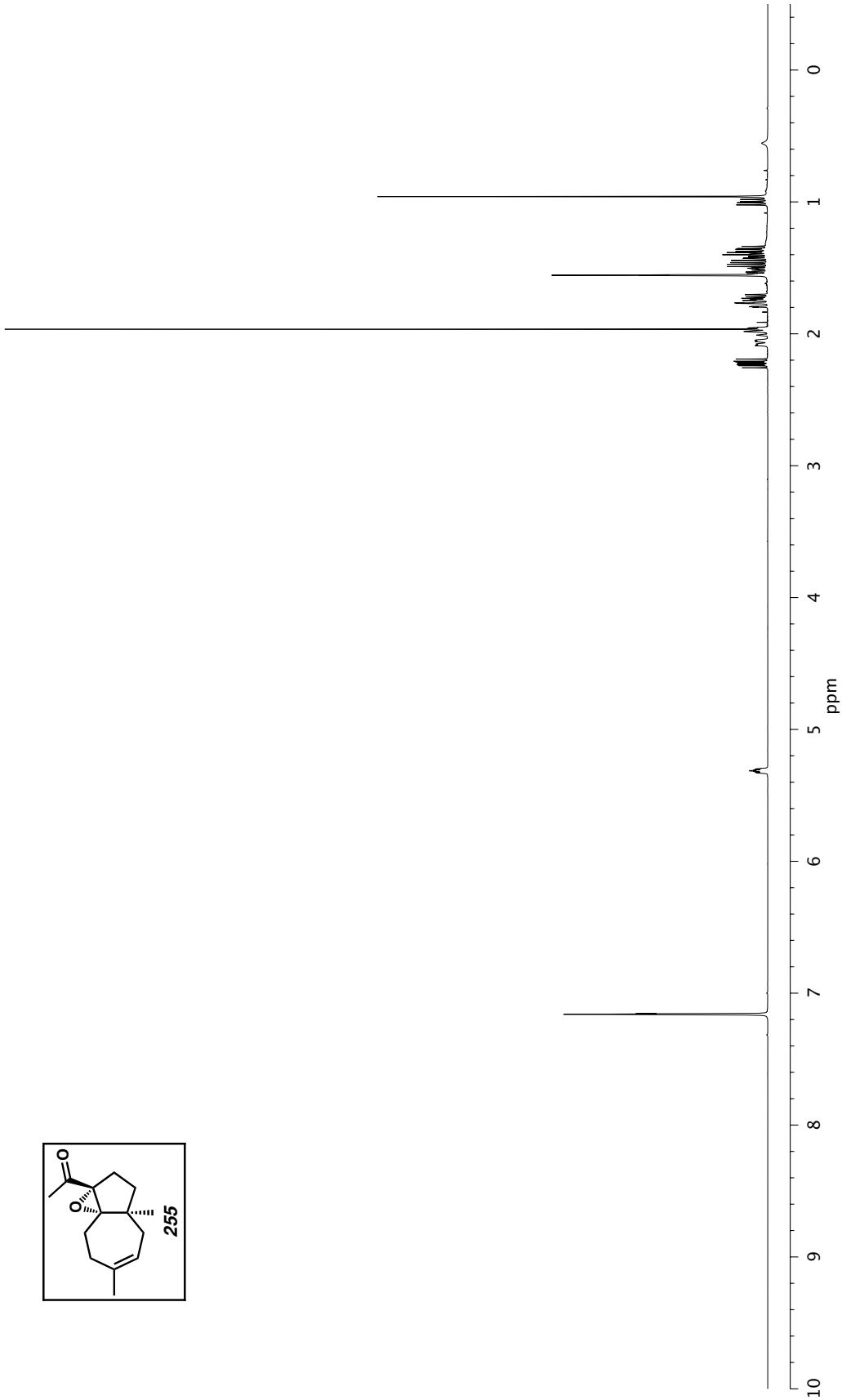

Figure A5.13.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **255**.

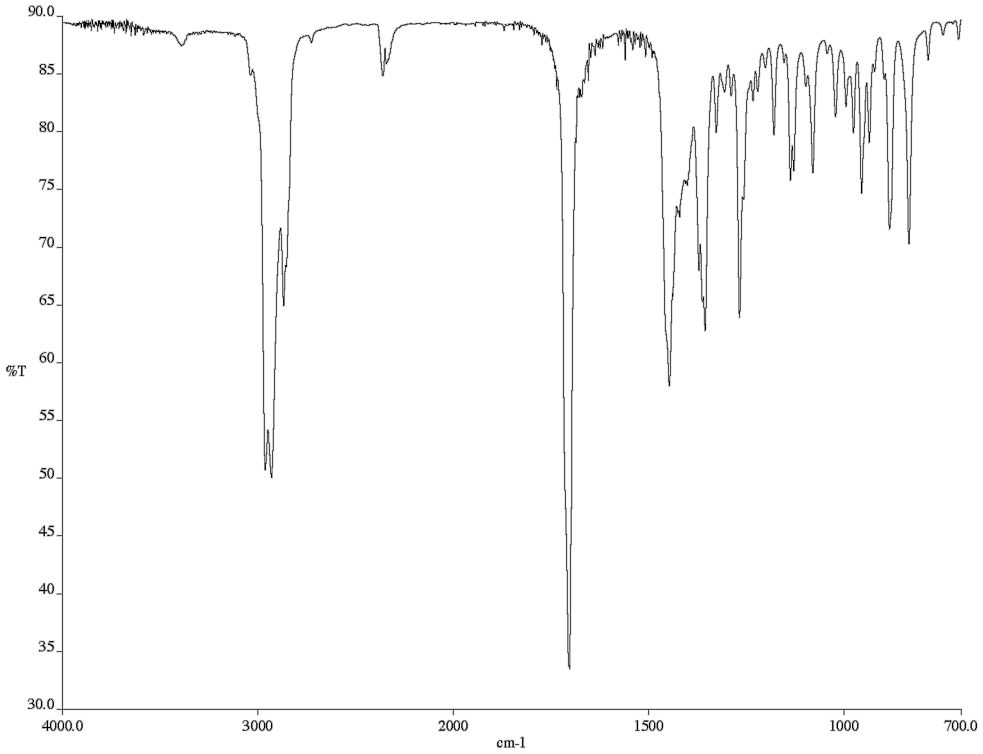

Figure A5.13.2. Infrared spectrum (thin film/NaCl) of compound **255**.

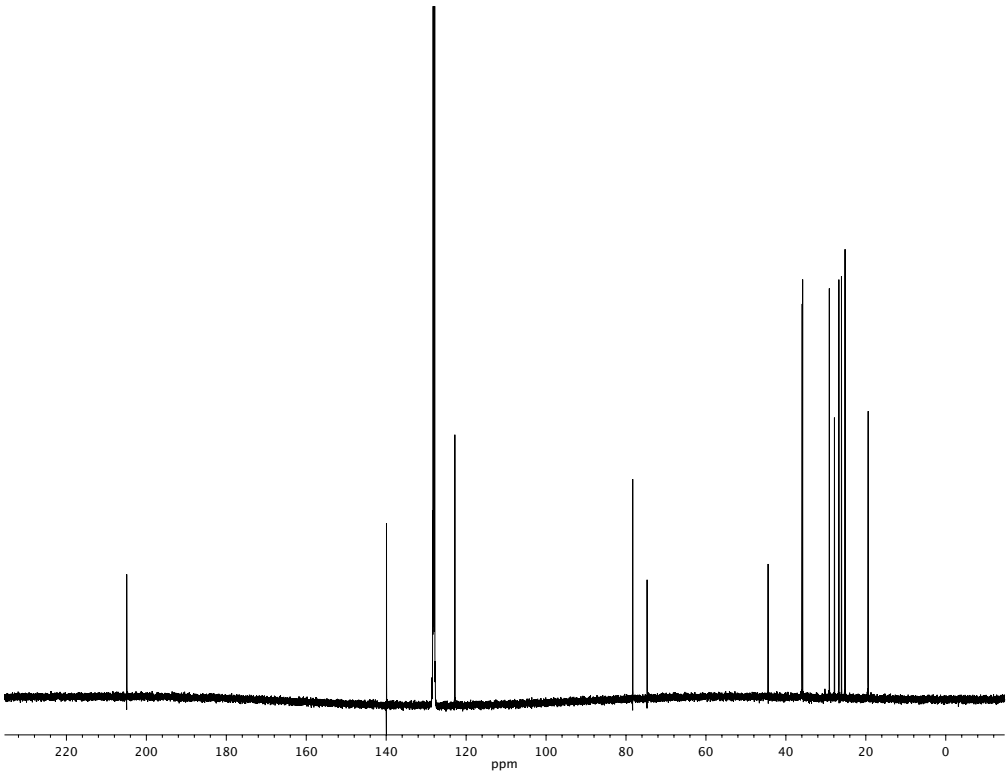

Figure A5.13.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **255**.

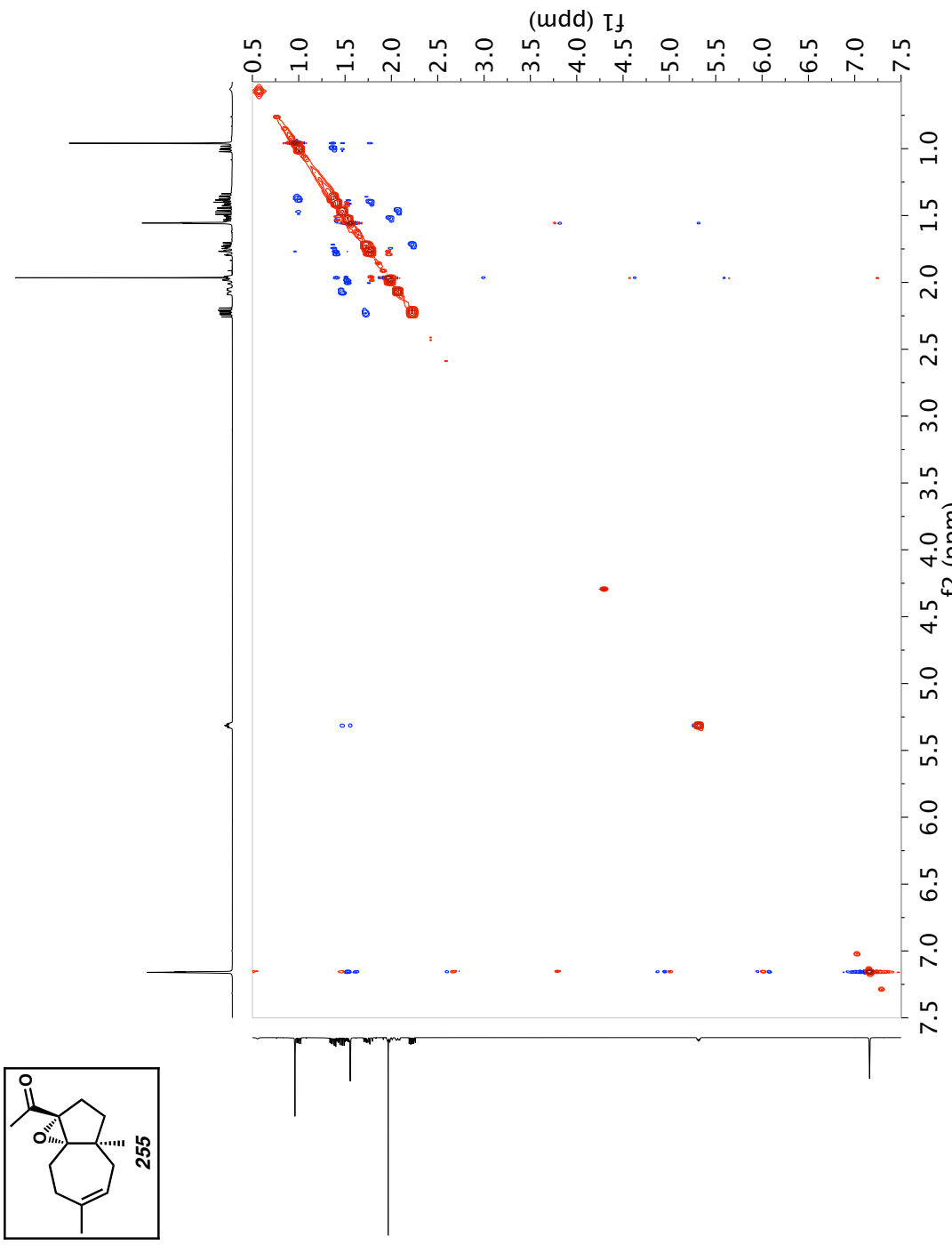

Figure A5.13.4. NOESY NMR (500 MHz, C_6D_6) of compound **255**.

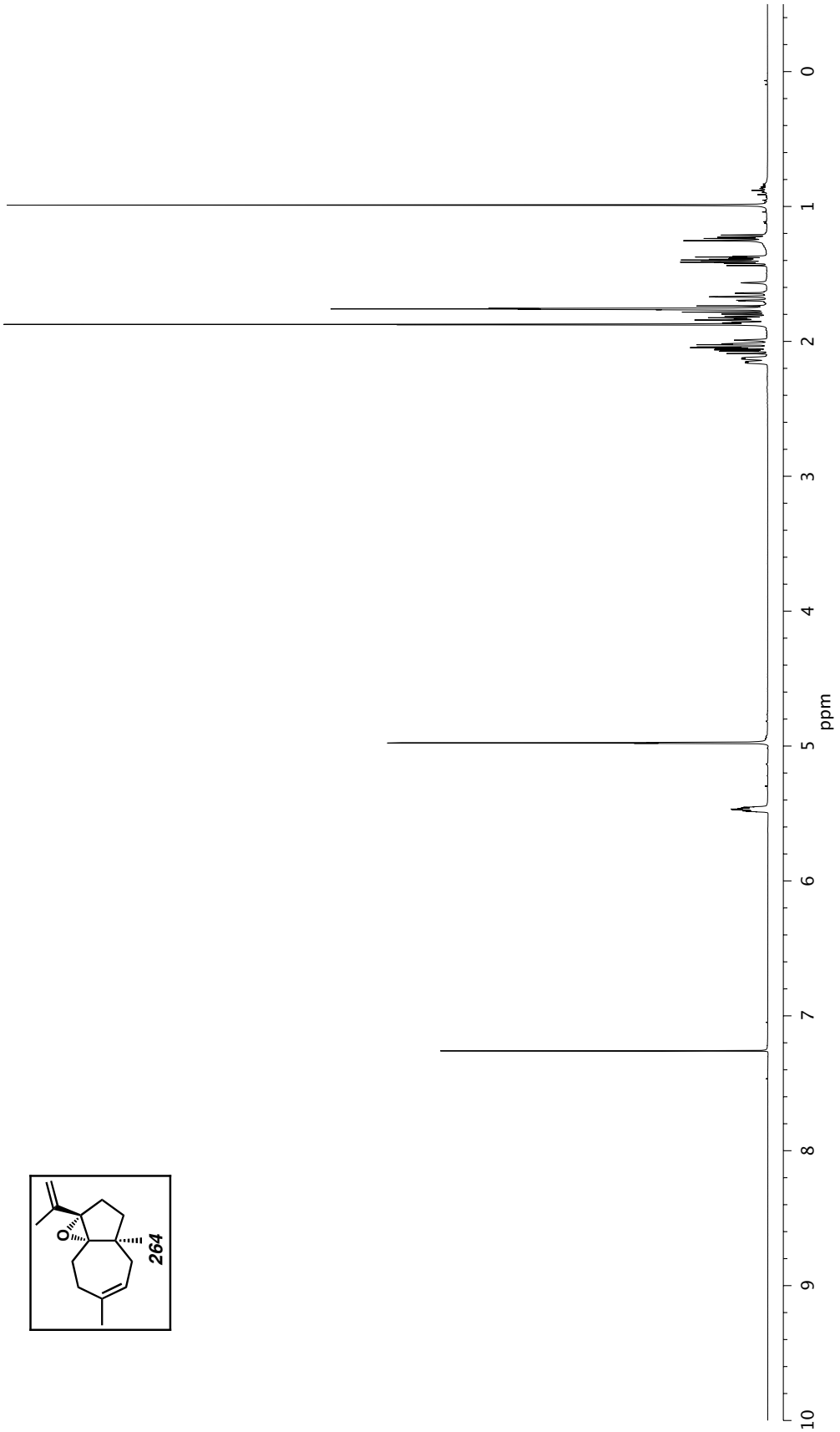

Figure A5.14.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **264**.

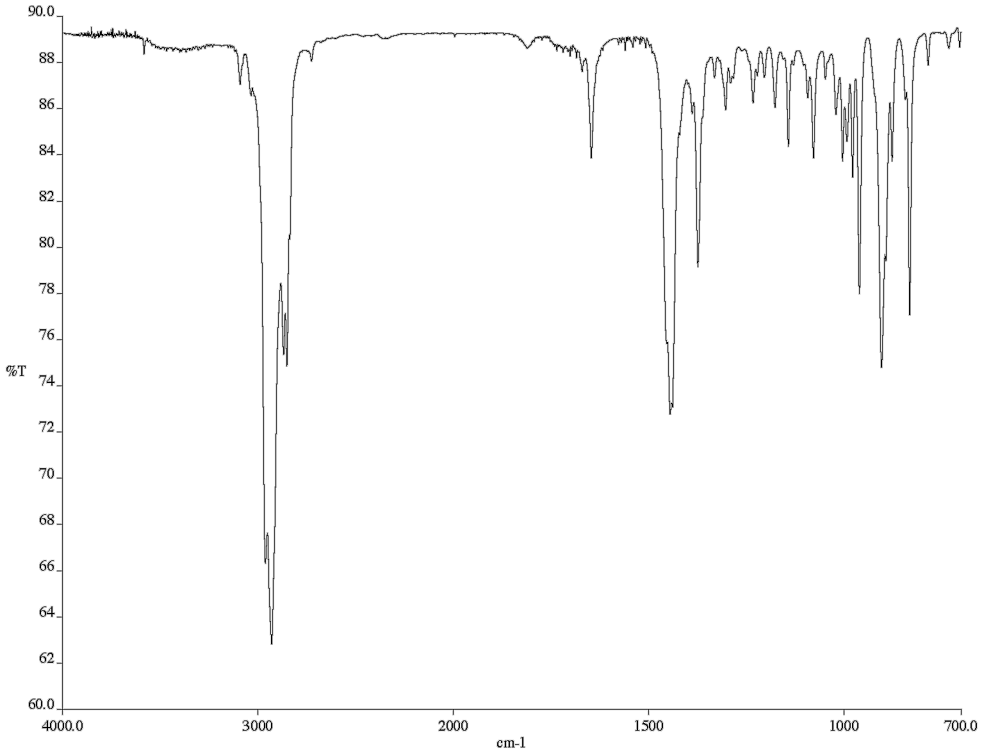

Figure A5.14.2. Infrared spectrum (thin film/NaCl) of compound **264**.

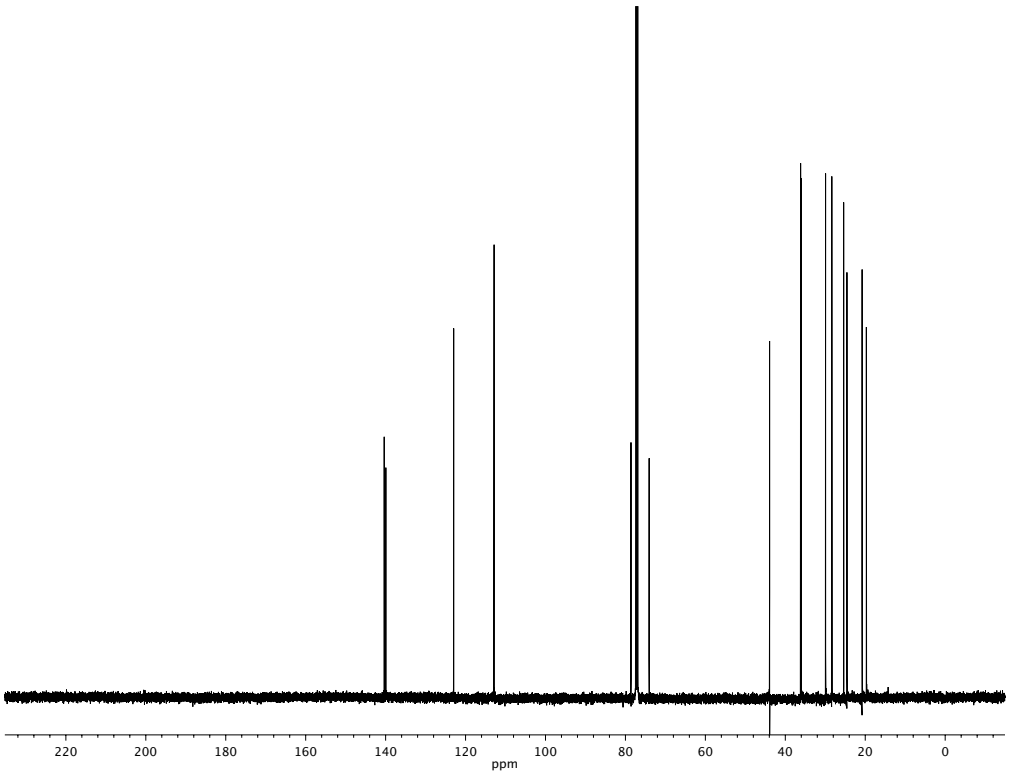

Figure A5.14.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **264**.

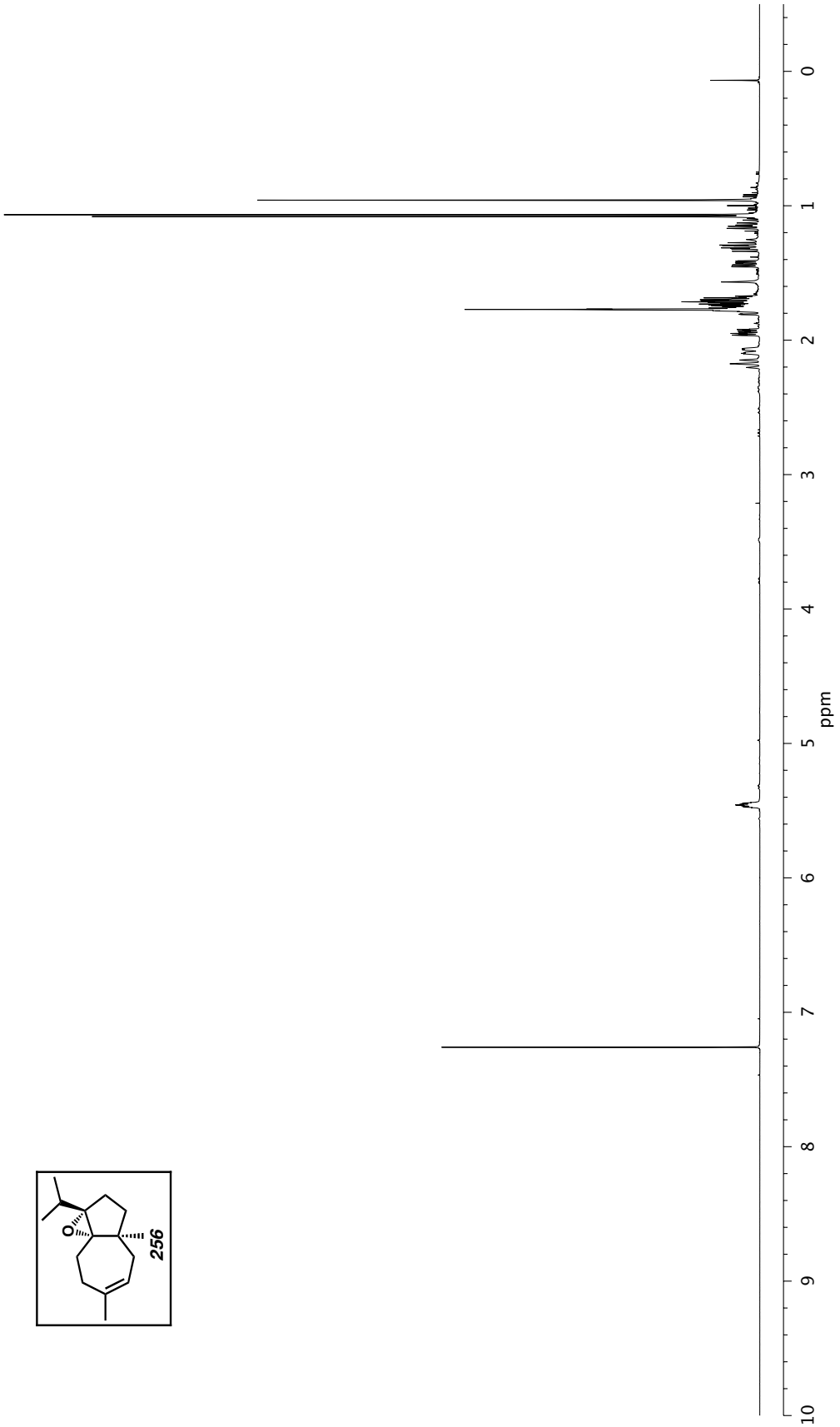

Figure A5.15.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **256**.

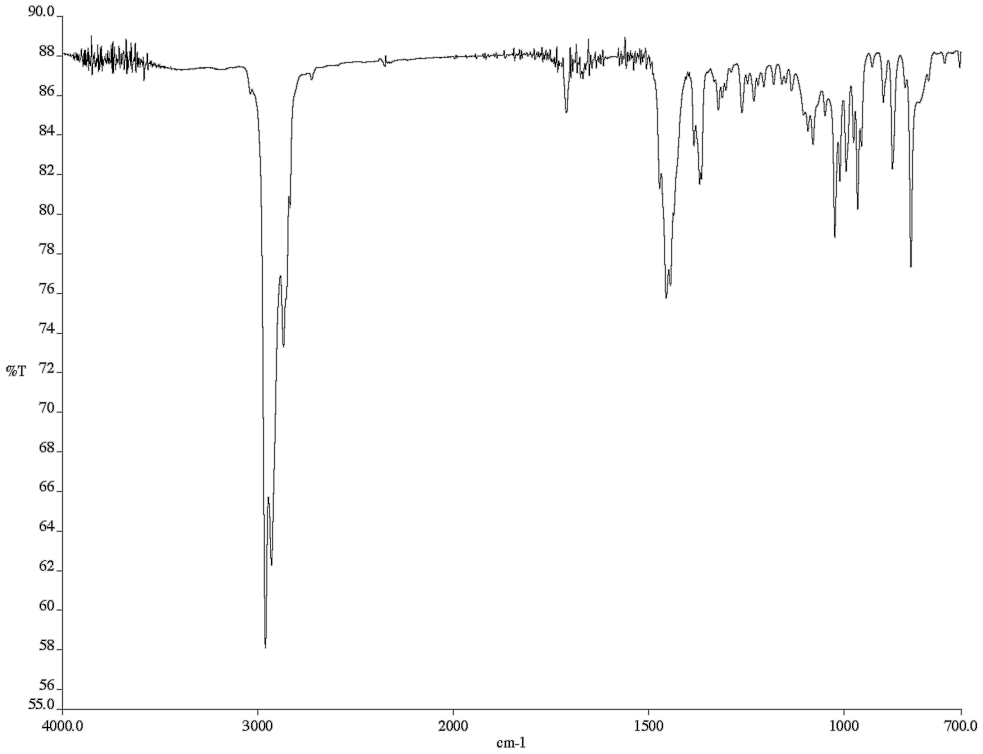

Figure A5.15.2. Infrared spectrum (thin film/NaCl) of compound **256**.

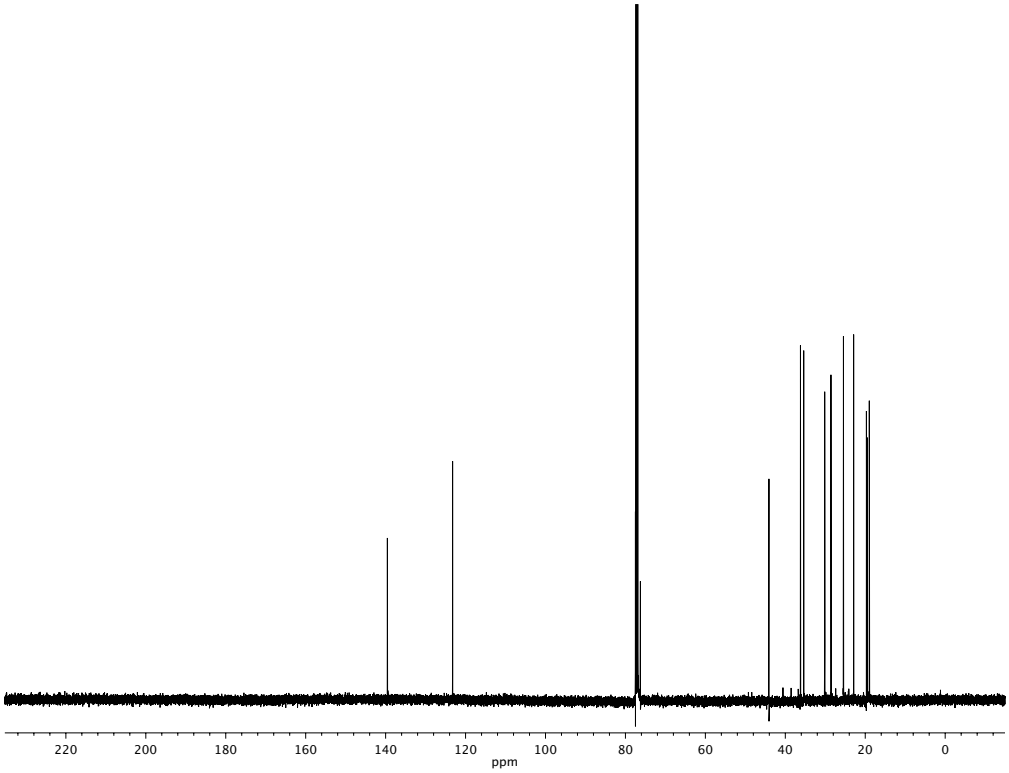

Figure A5.15.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **256**.

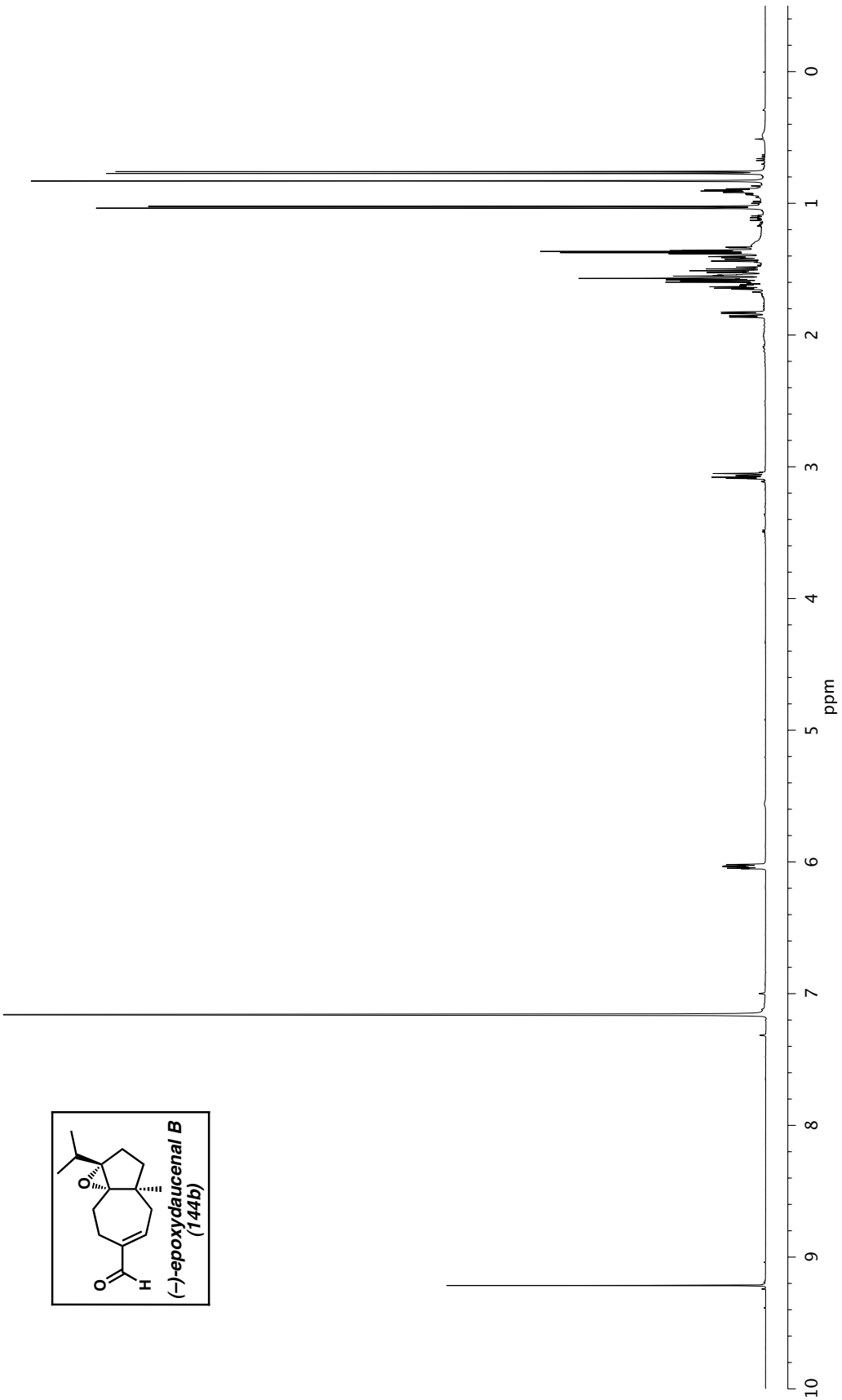

Figure A5.16.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **144b**.

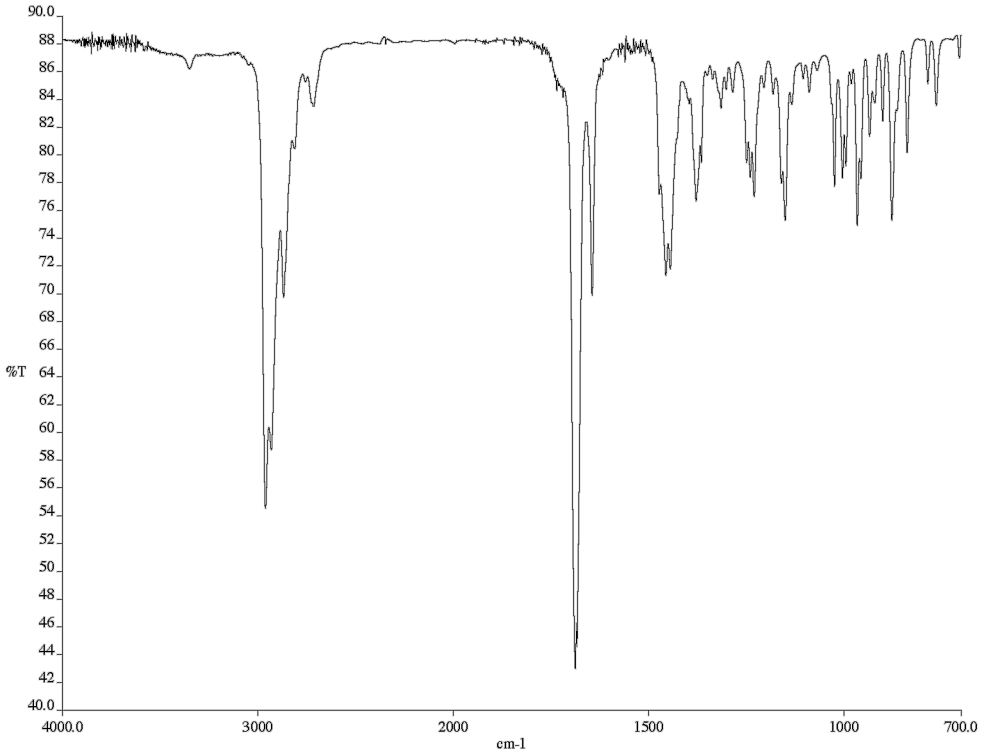

Figure A5.16.2. Infrared spectrum (thin film/NaCl) of compound **144b**.

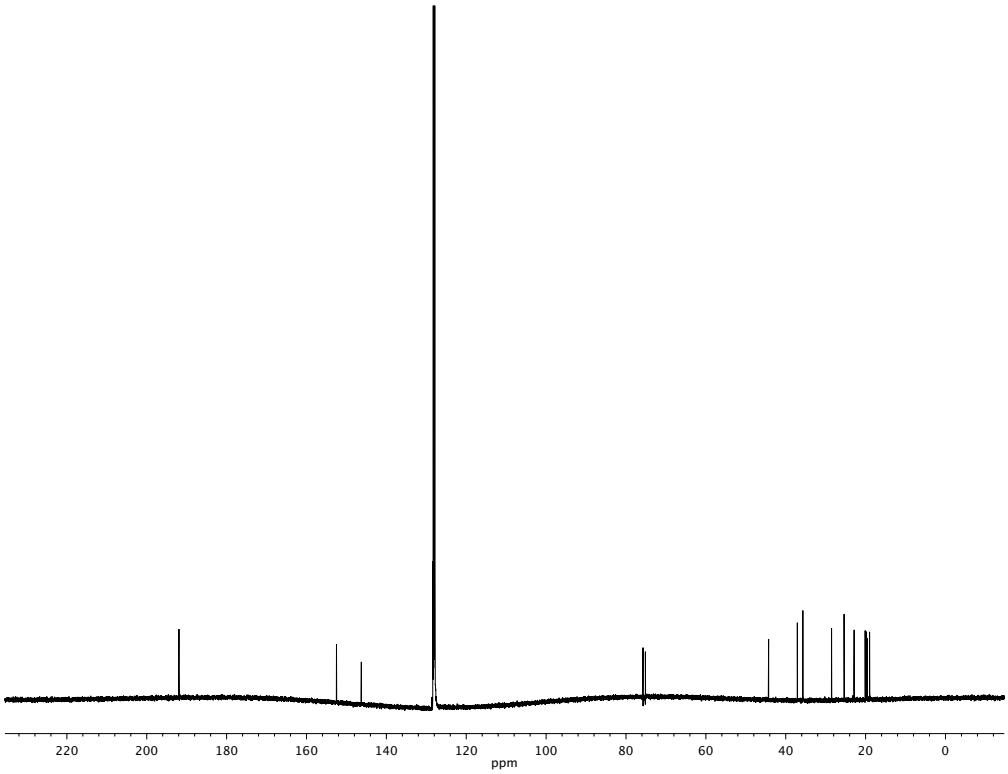

Figure A5.16.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **144b**.

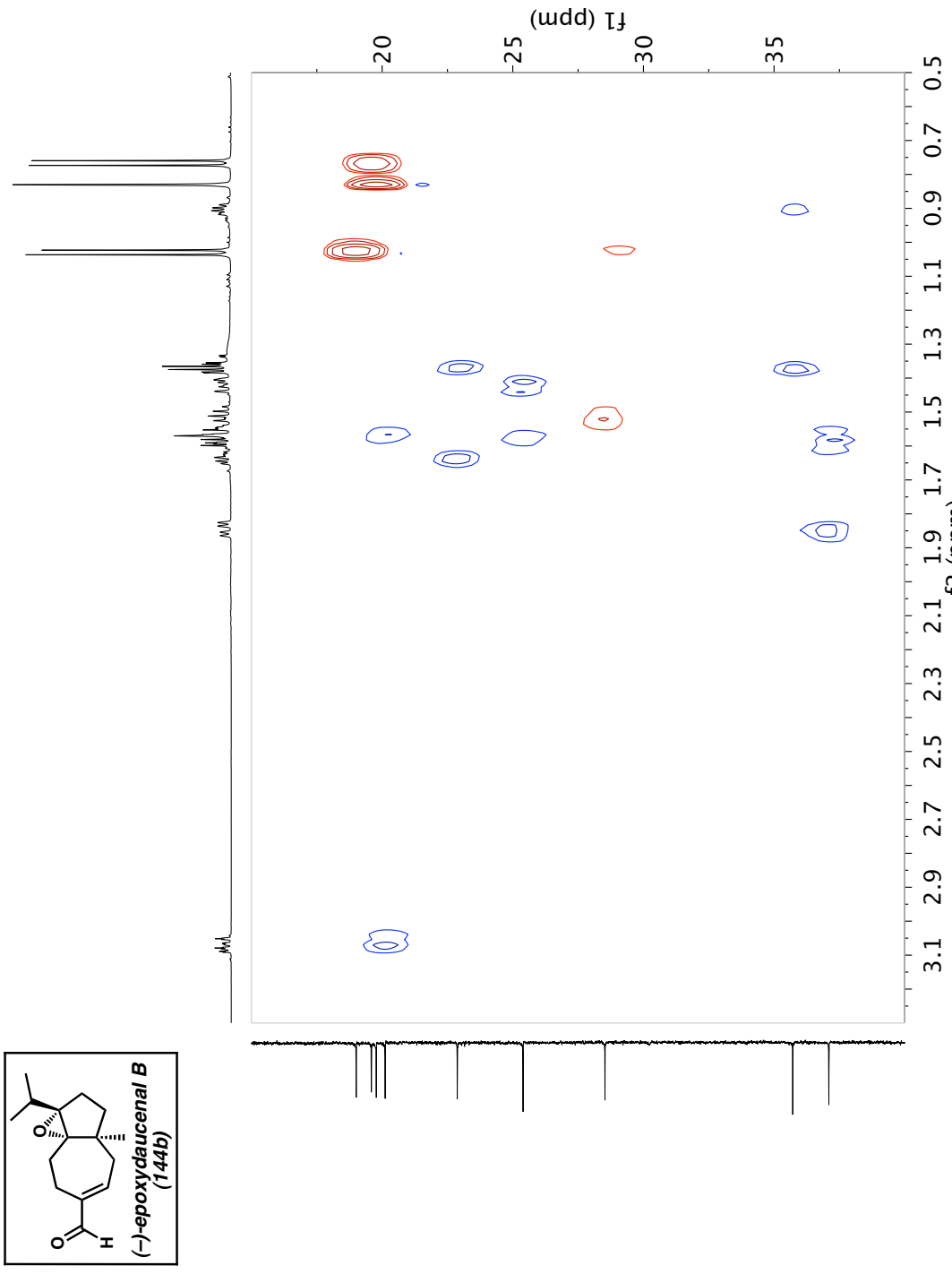

Figure A5.16.4. HSQC NMR (400 MHz, C_6D_6) of compound **144b**.

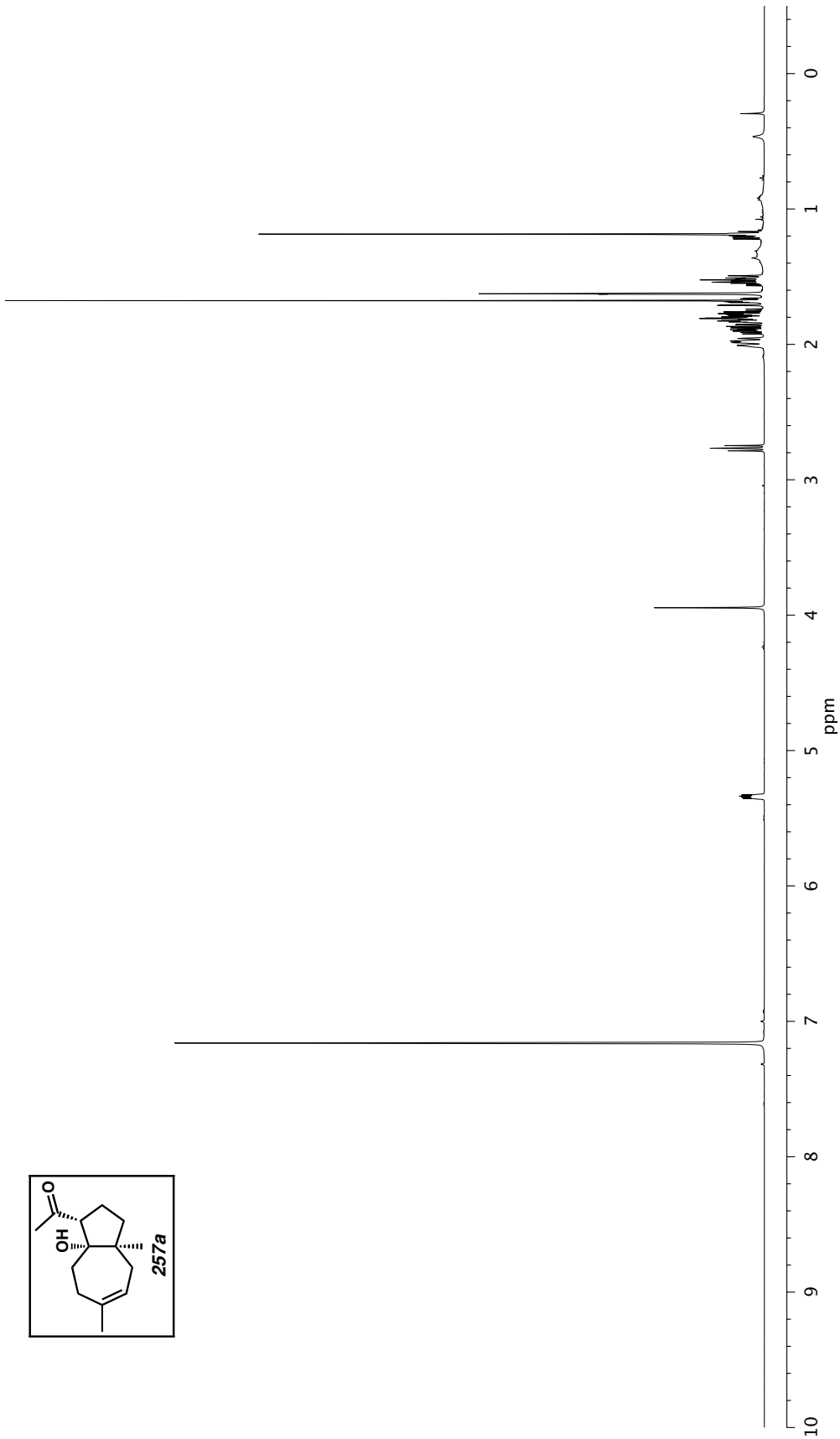

Figure A5.17.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **257a**.

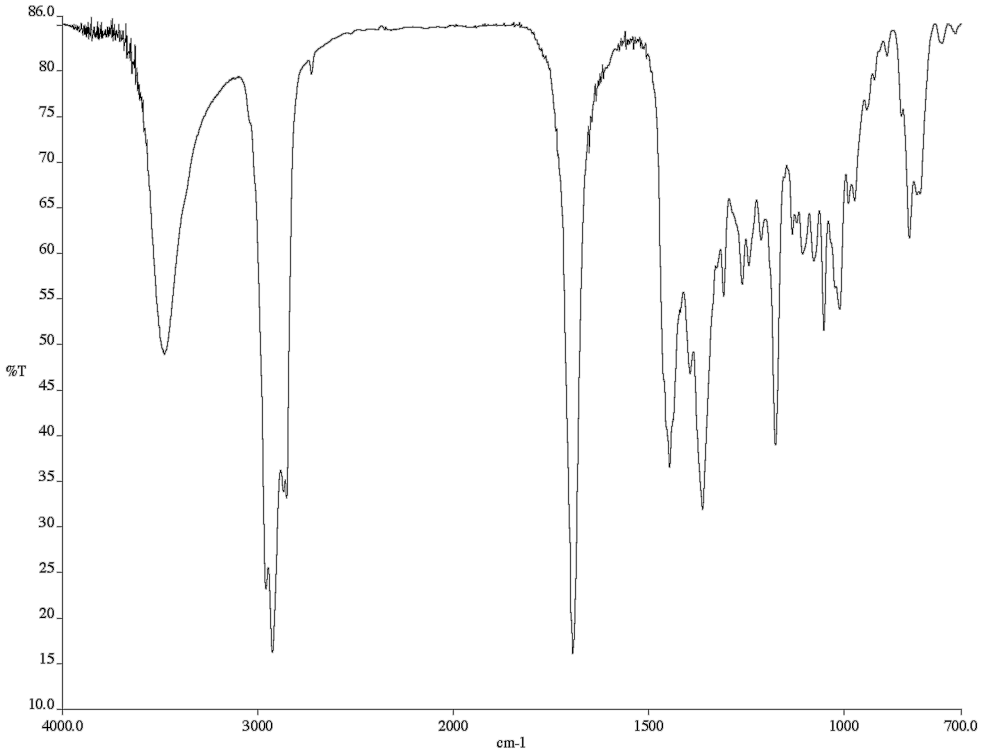

Figure A5.17.2. Infrared spectrum (thin film/NaCl) of compound **257a**.

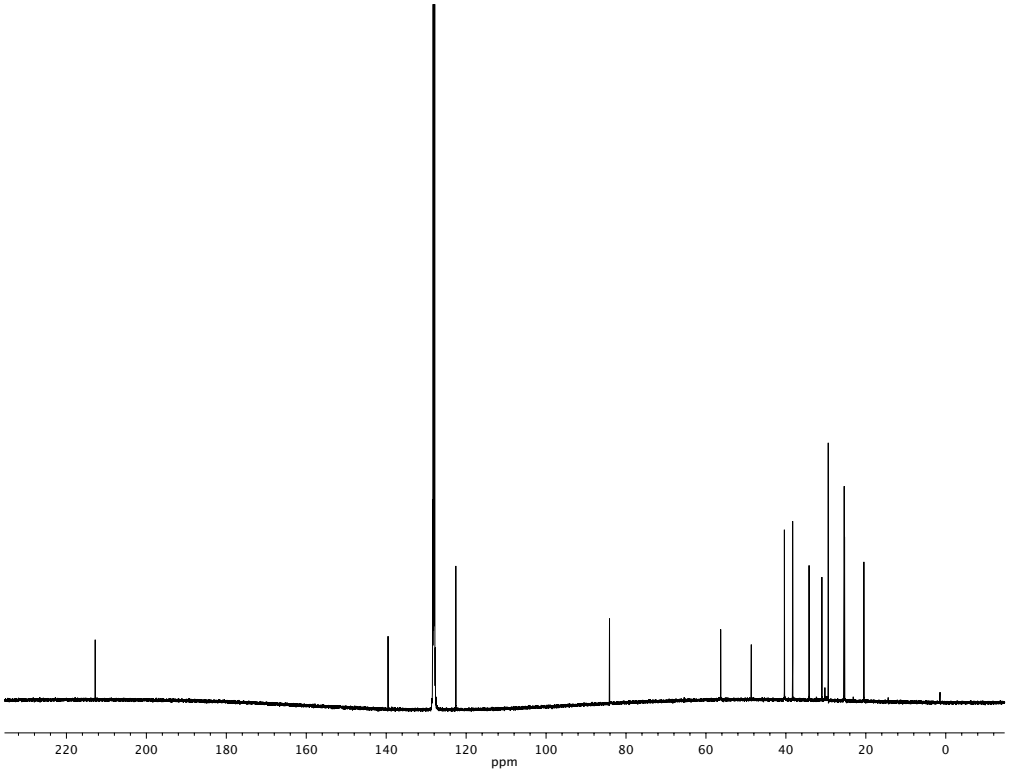

Figure A5.17.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **257a**.

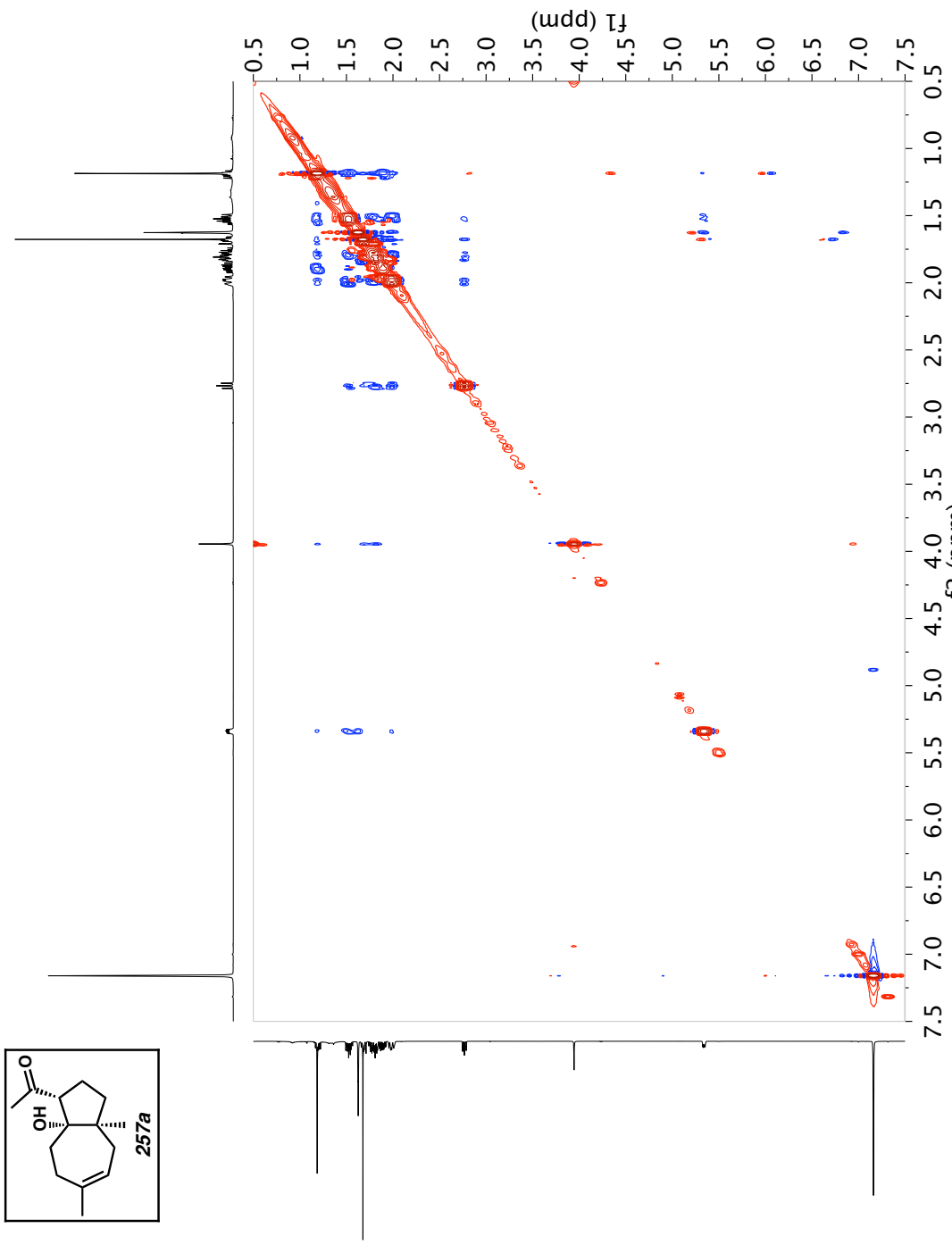

Figure A5.17.4. NOESY NMR (500 MHz, C_6D_6) of compound **257a**.

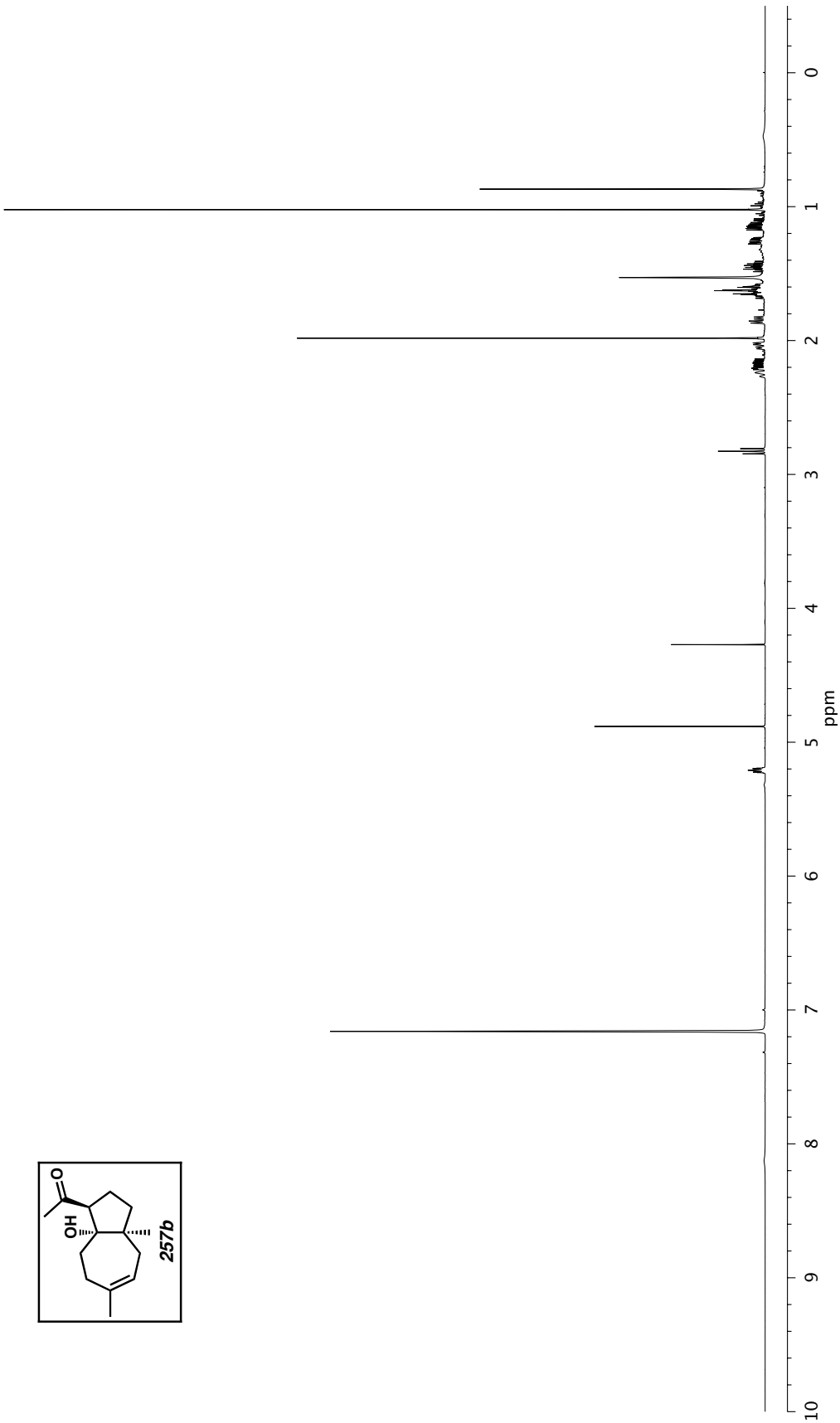

Figure A5.18.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **257b**.

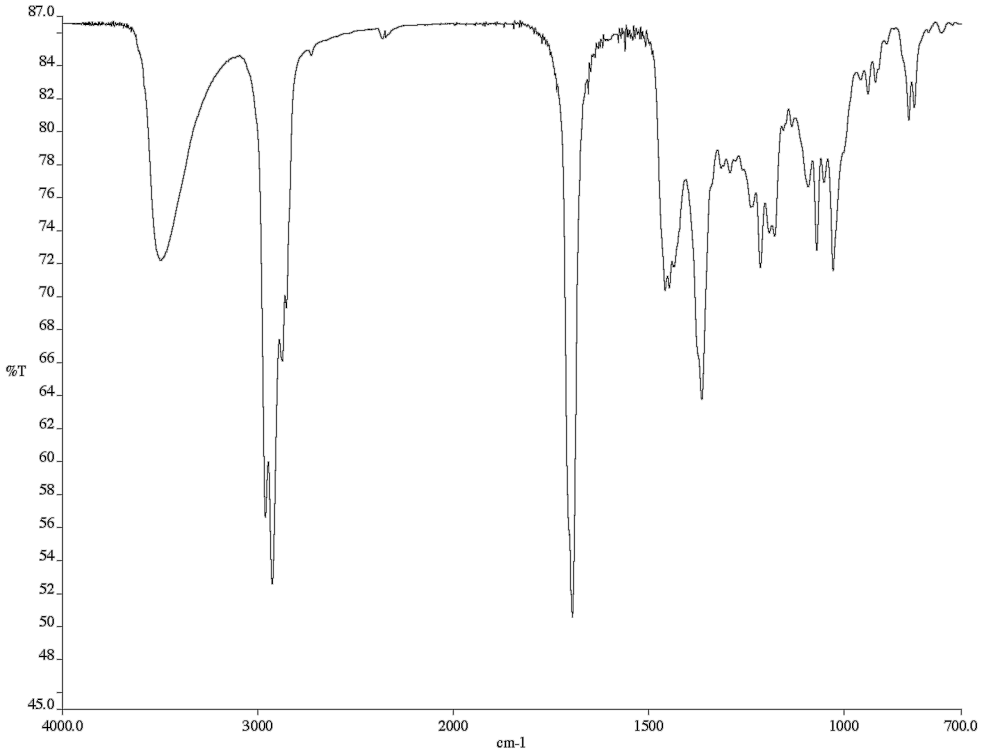

Figure A5.18.2. Infrared spectrum (thin film/NaCl) of compound **257b**.

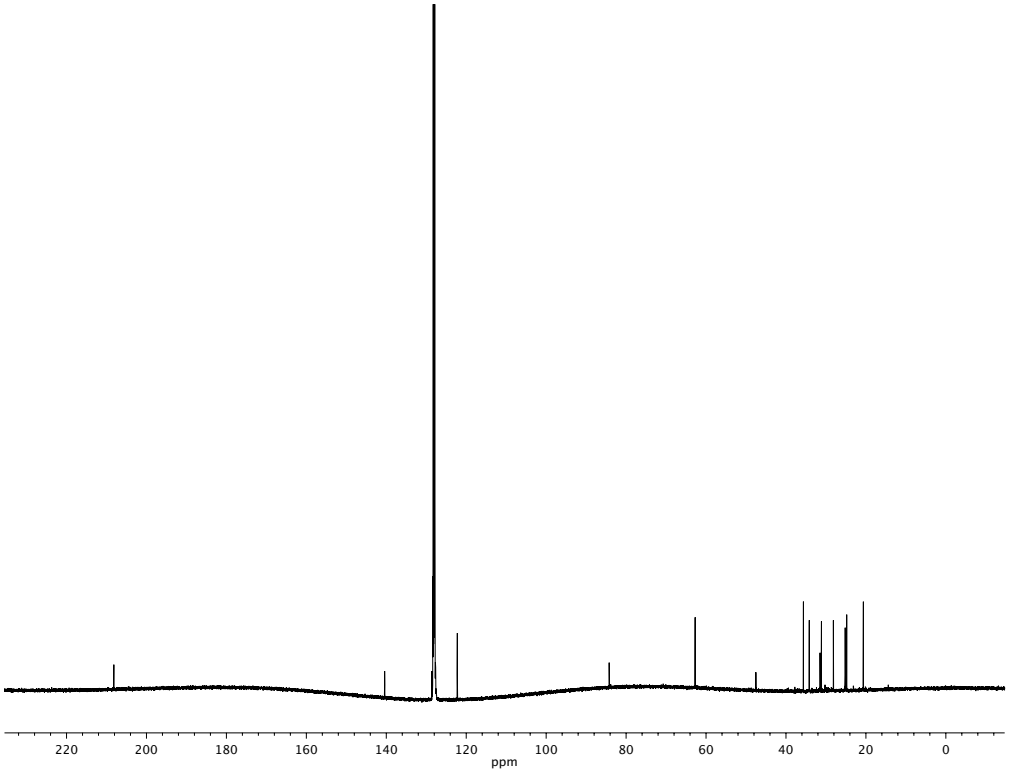

Figure A5.18.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **257b**.

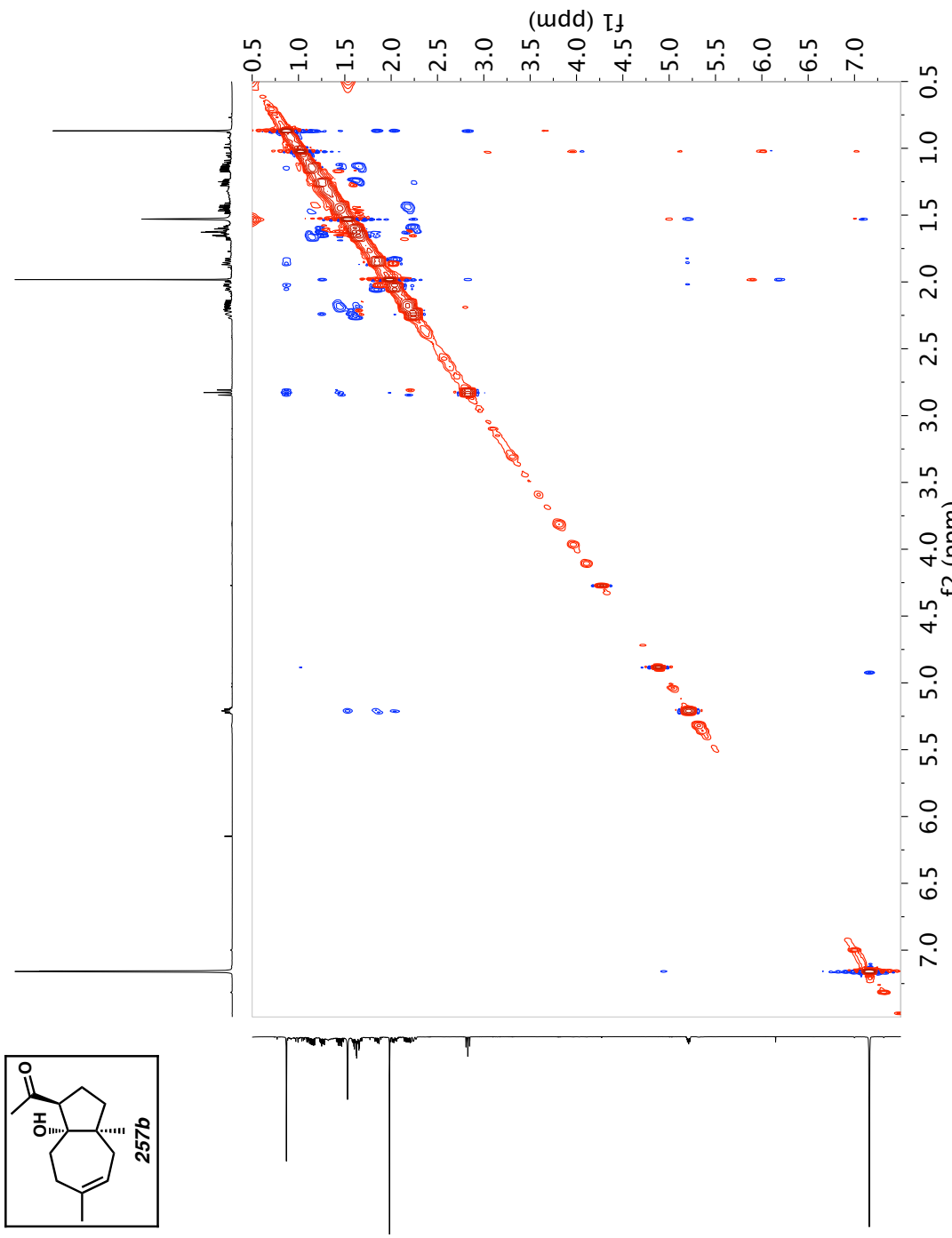

Figure A5.18.4. NOESY NMR (500 MHz, C_6D_6) of compound **257b**.

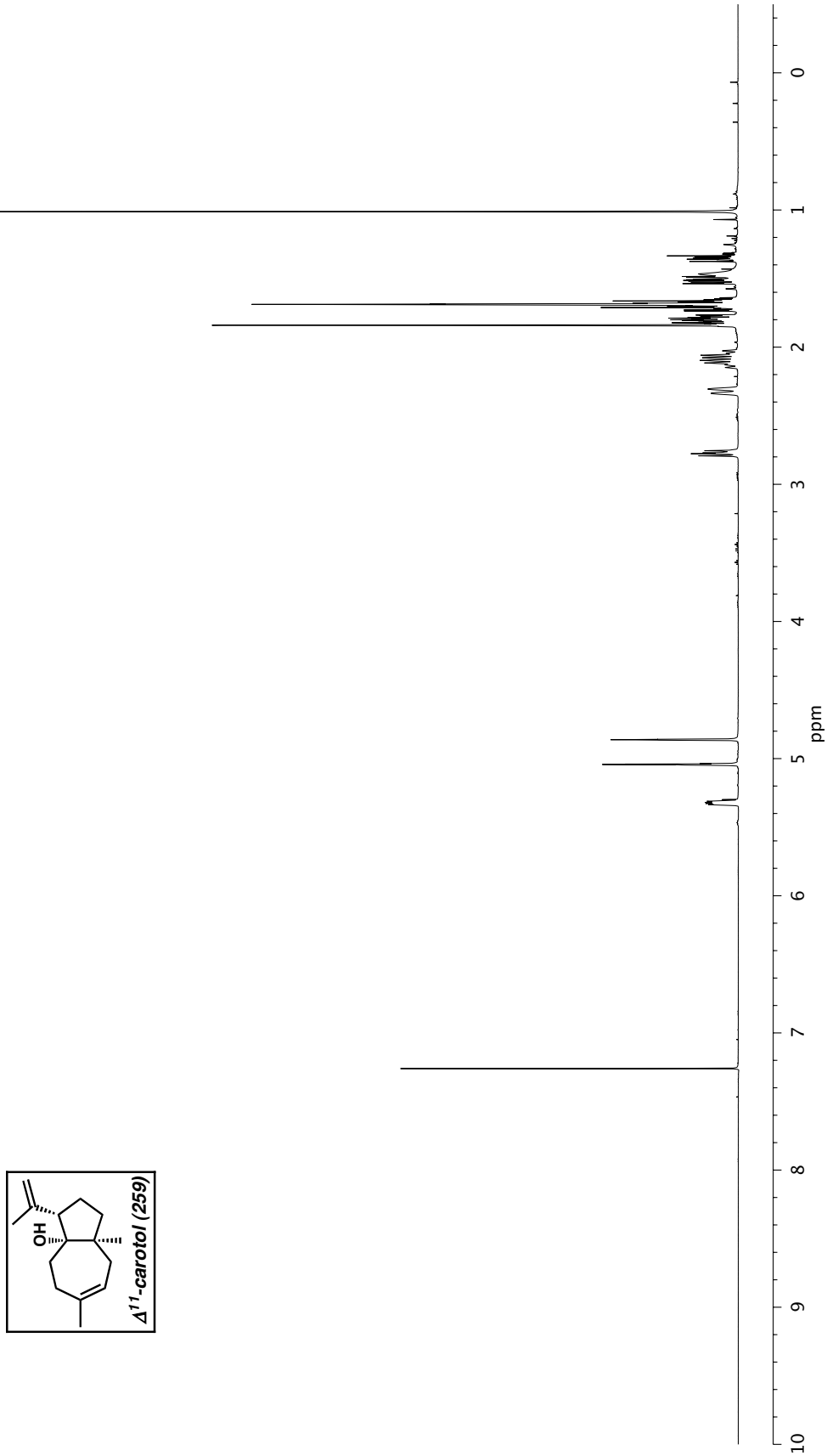

Figure A5.19.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **259**.

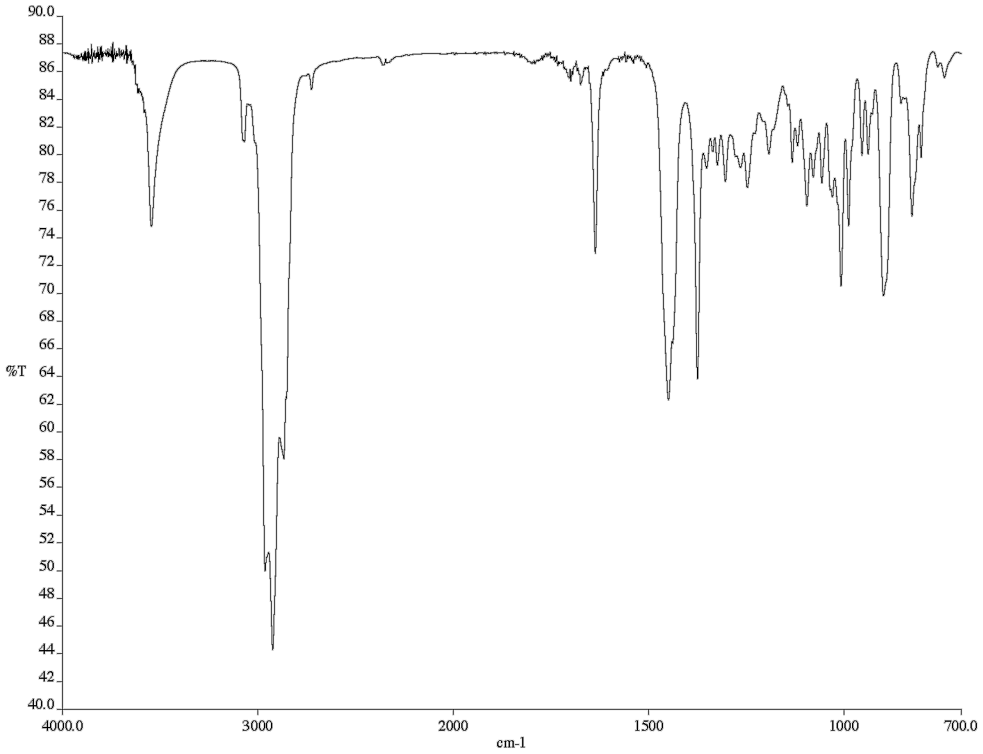

Figure A5.19.2. Infrared spectrum (thin film/NaCl) of compound **259**.

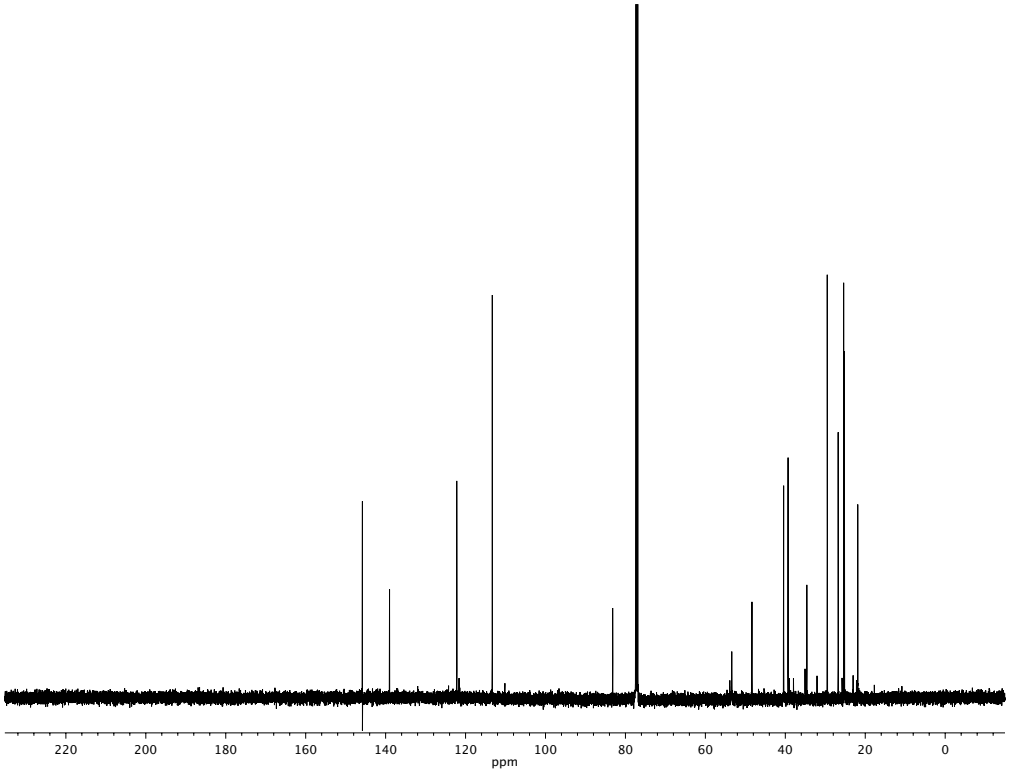

Figure A5.19.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **259**.

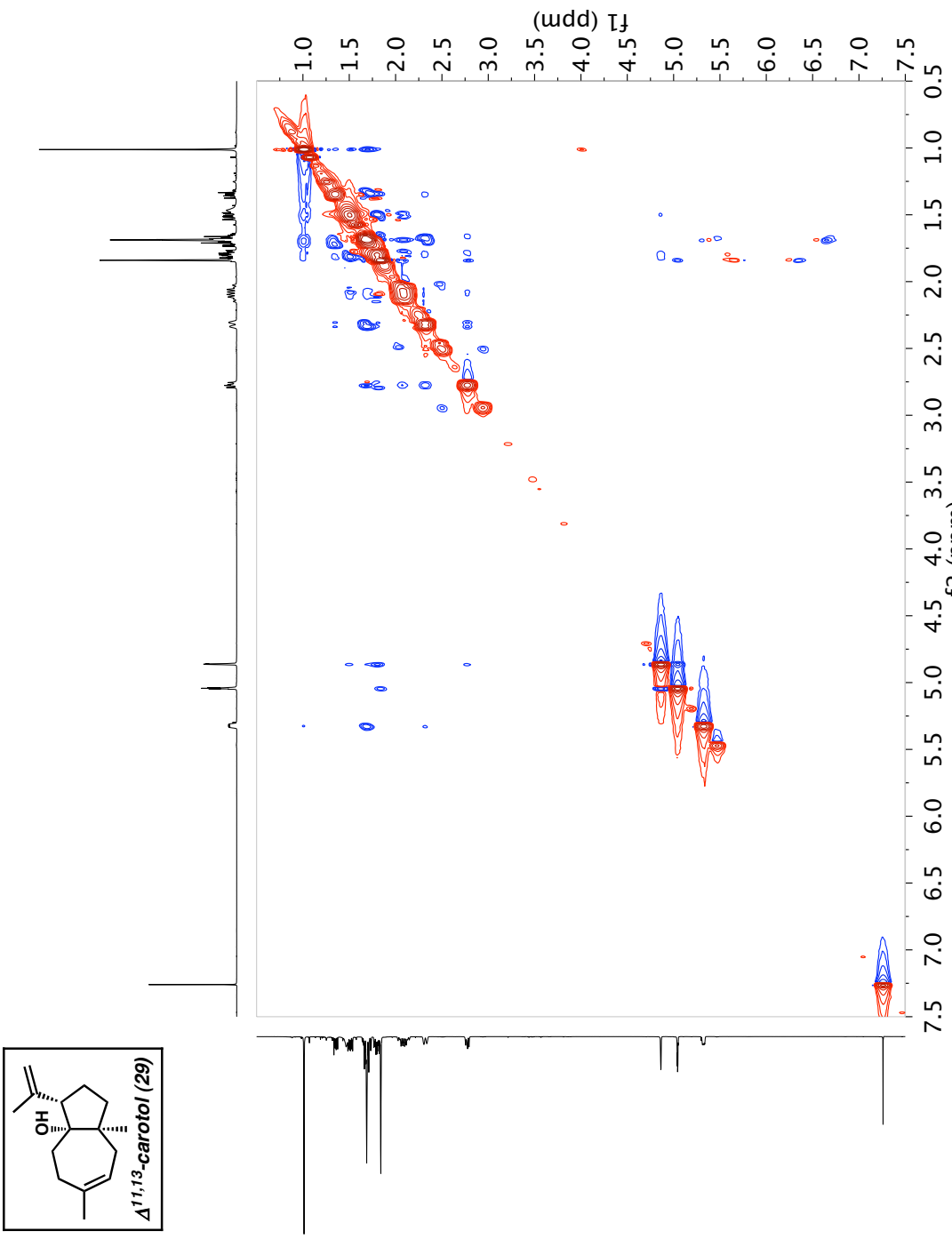

Figure A5.19.4. NOESY NMR (500 MHz, $CDCl_3$) of compound **259**.

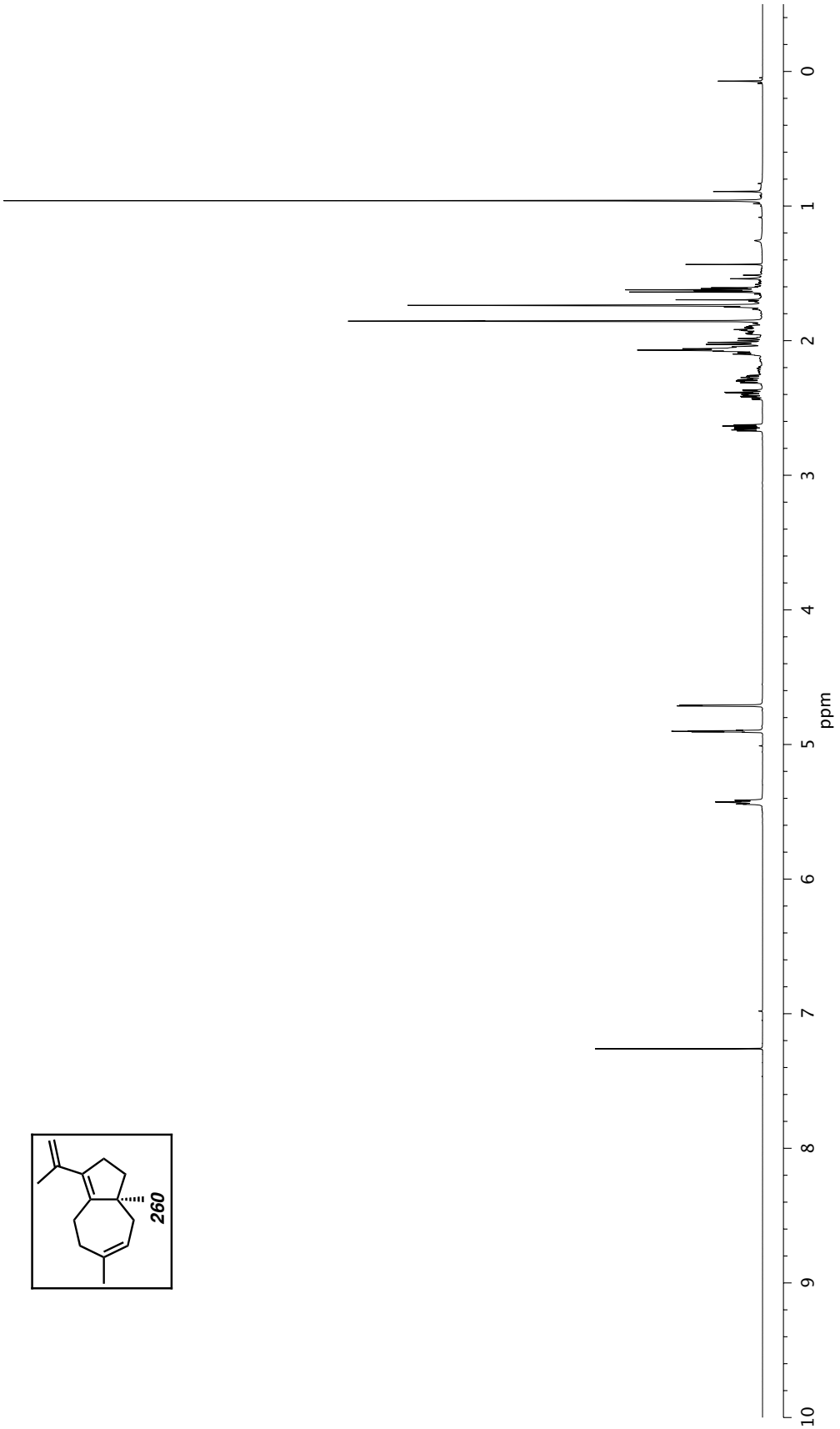

Figure A5.20.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **260**.

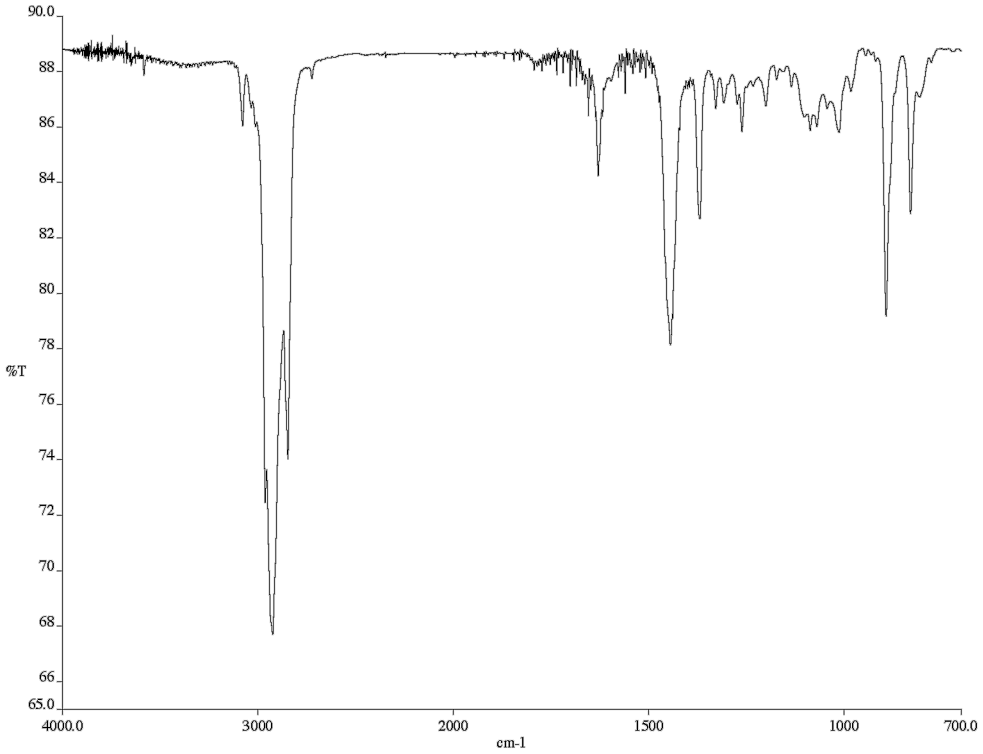

Figure A5.20.2. Infrared spectrum (thin film/NaCl) of compound **260**.

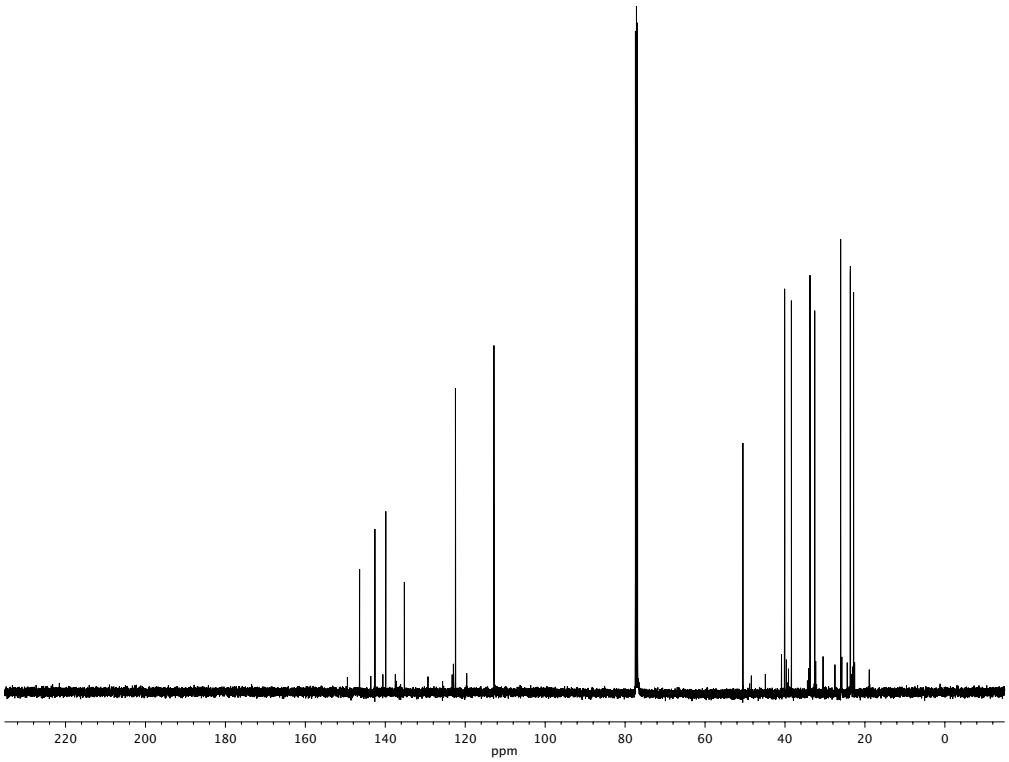

Figure A5.20.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **260**.

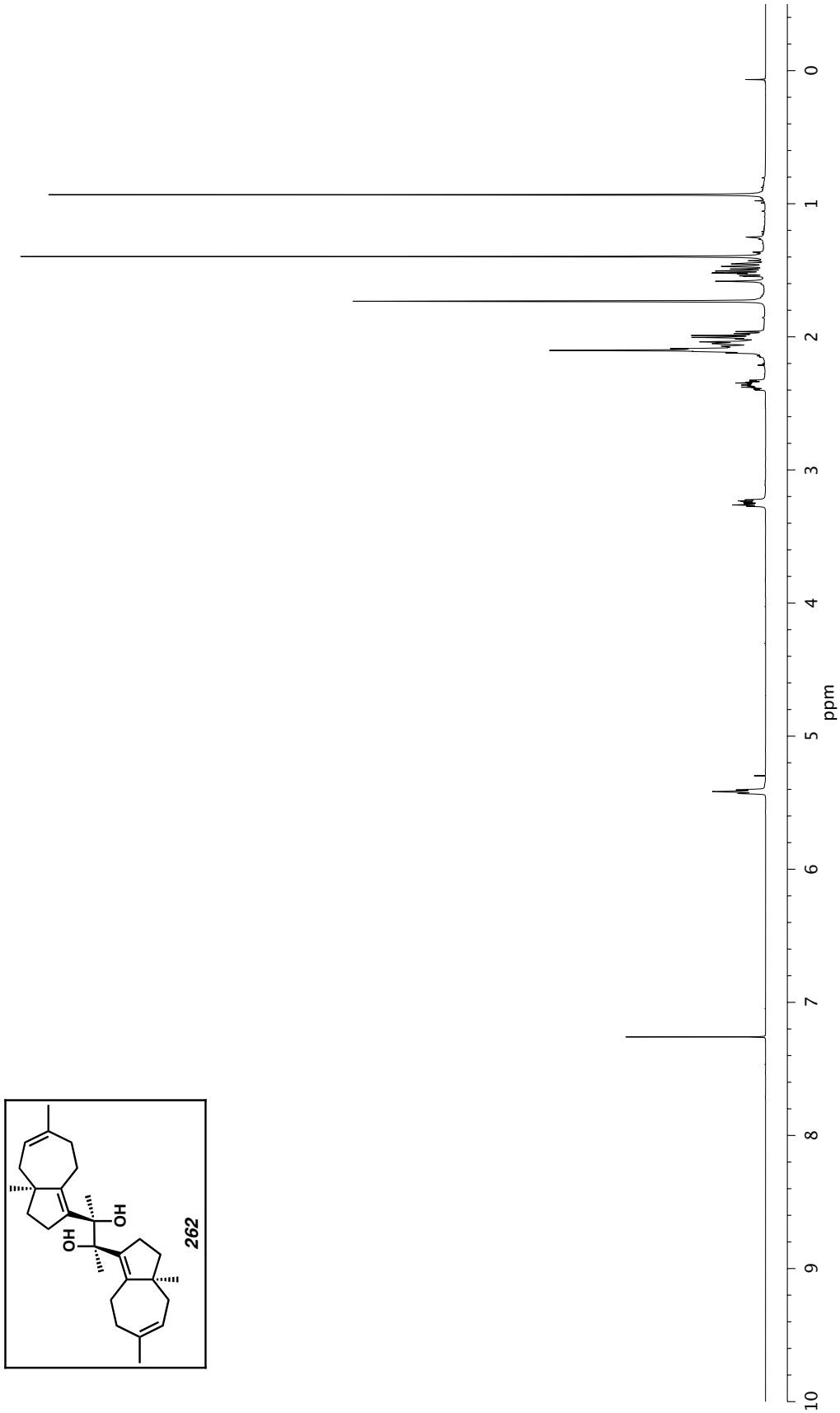

Figure A5.21.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **262**.

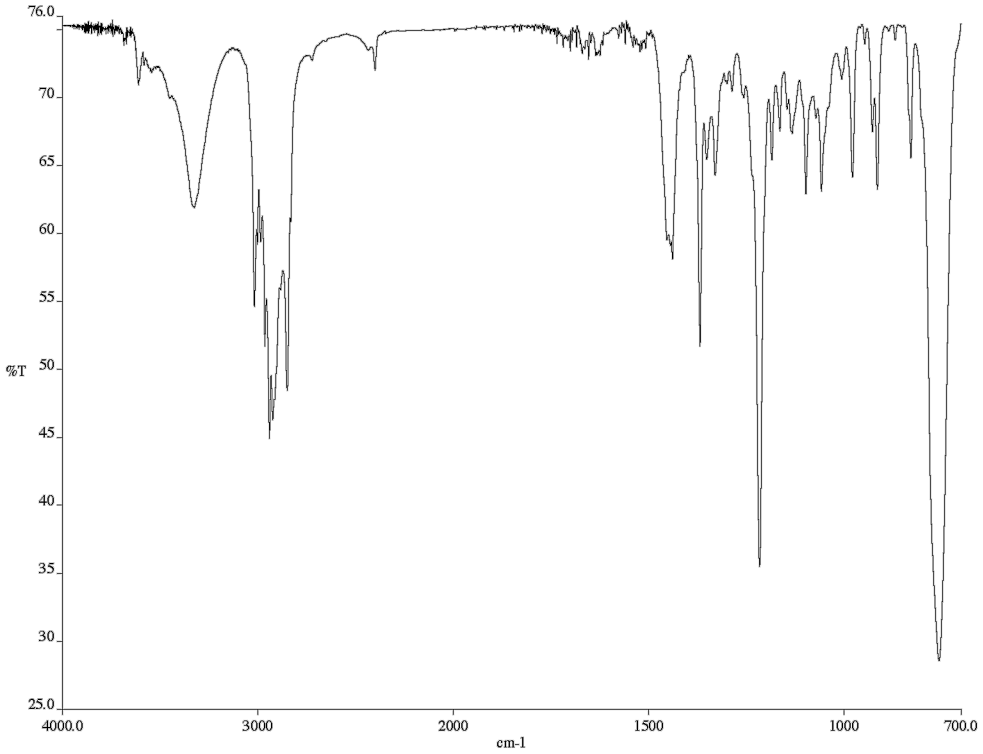

Figure A5.21.2. Infrared spectrum (thin film/NaCl) of compound **262**.

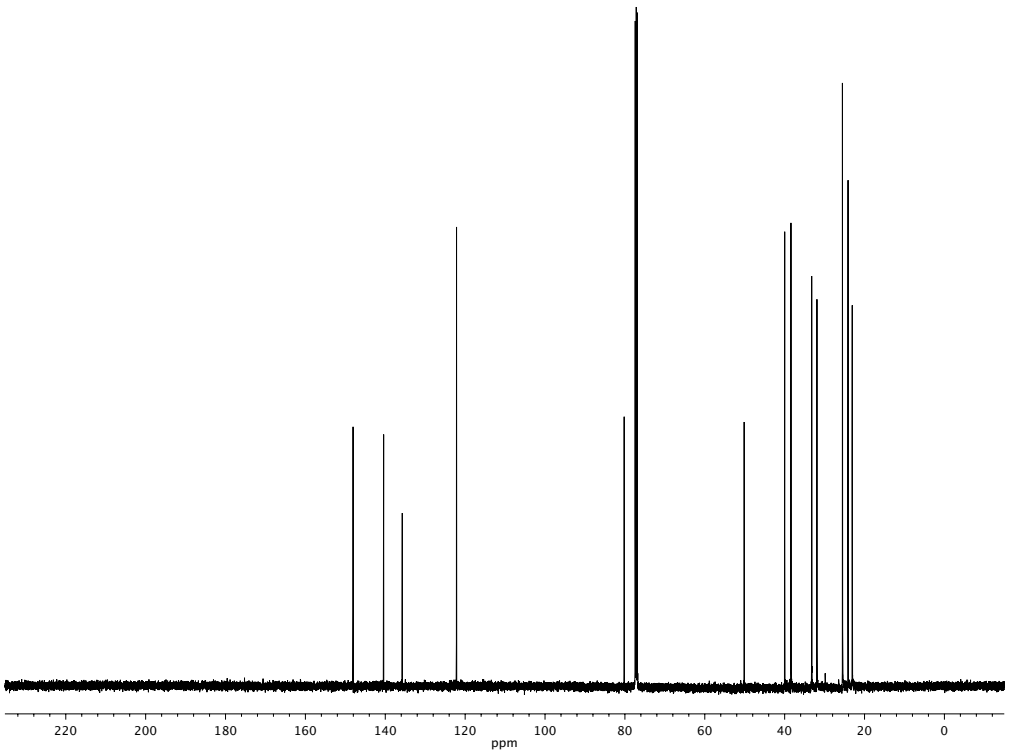

Figure A5.21.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **262**.

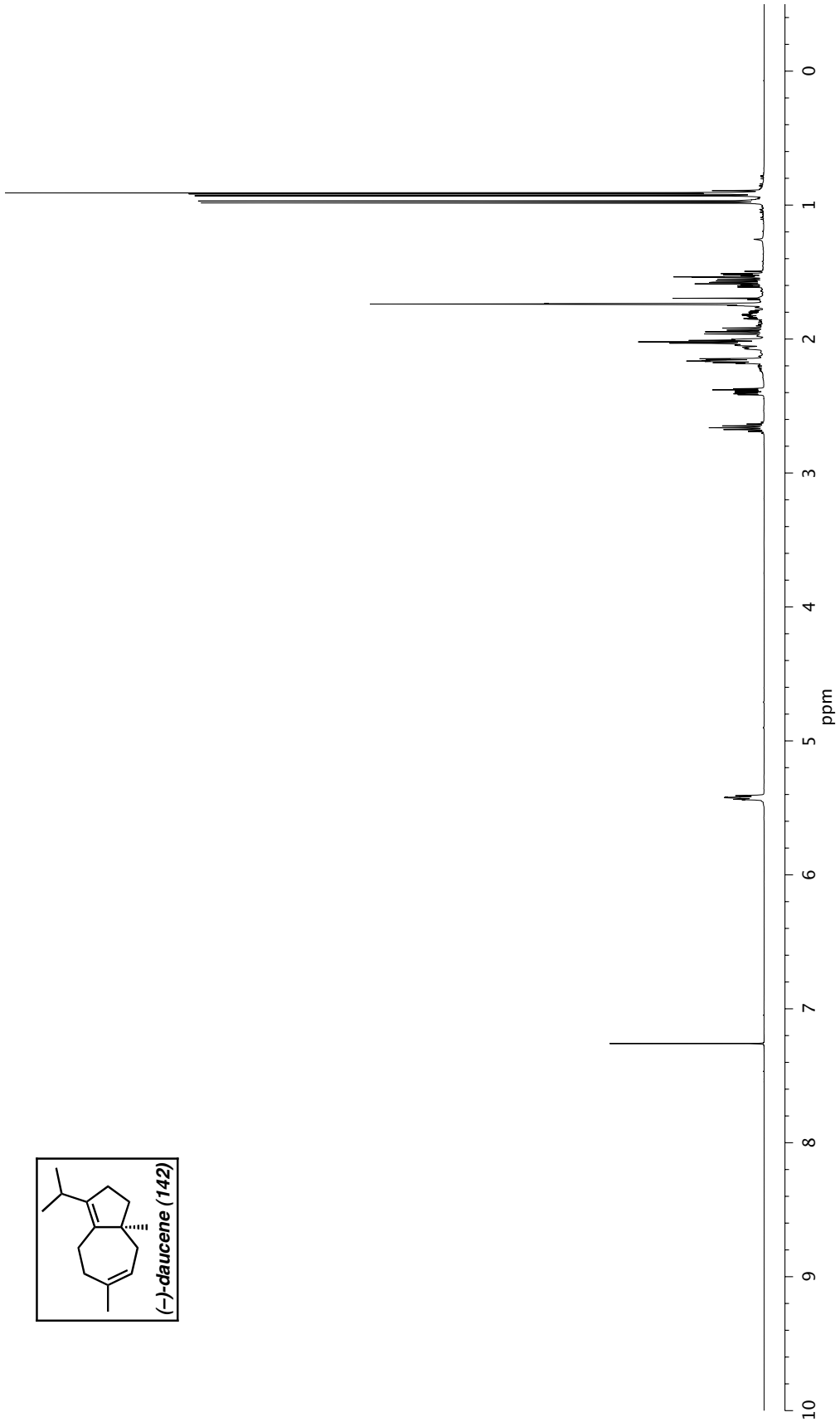

Figure A5.22.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **142**.

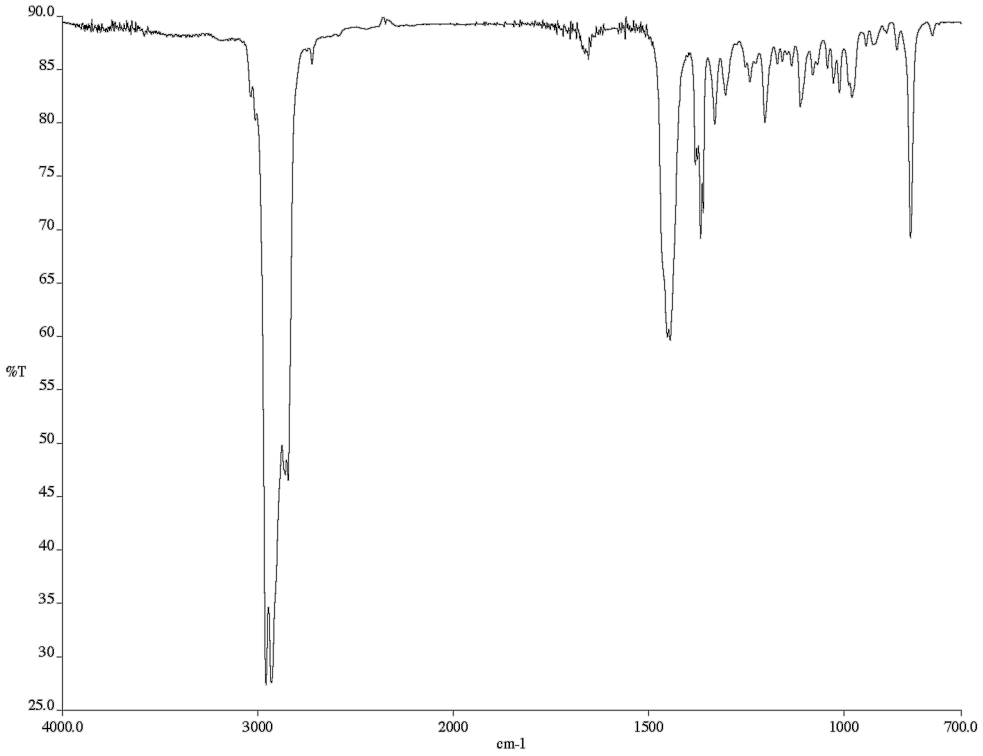

Figure A5.22.2. Infrared spectrum (thin film/NaCl) of compound **142**.

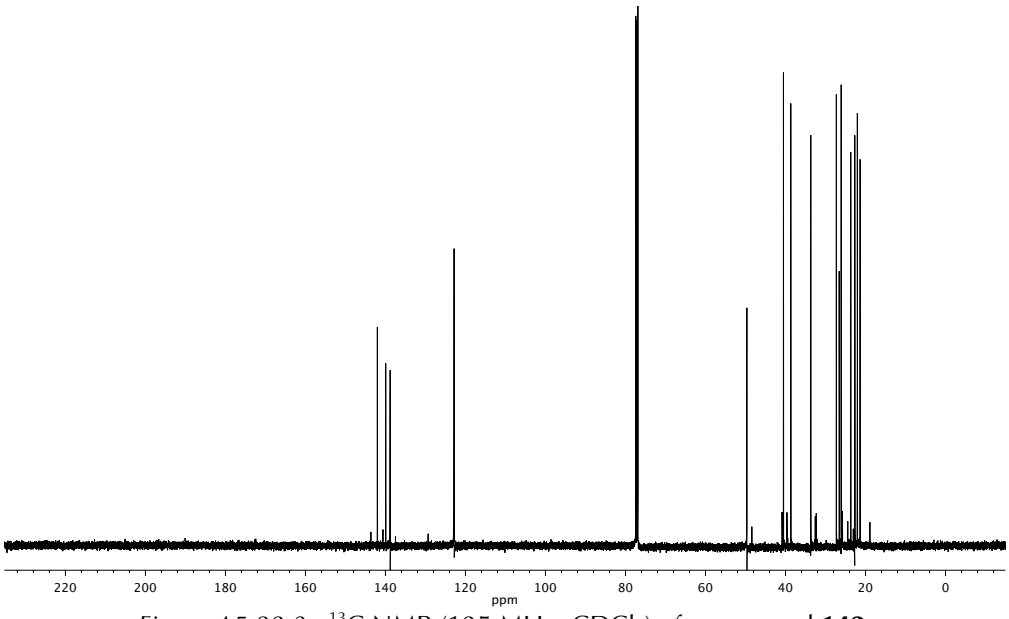

Figure A5.22.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **142**.

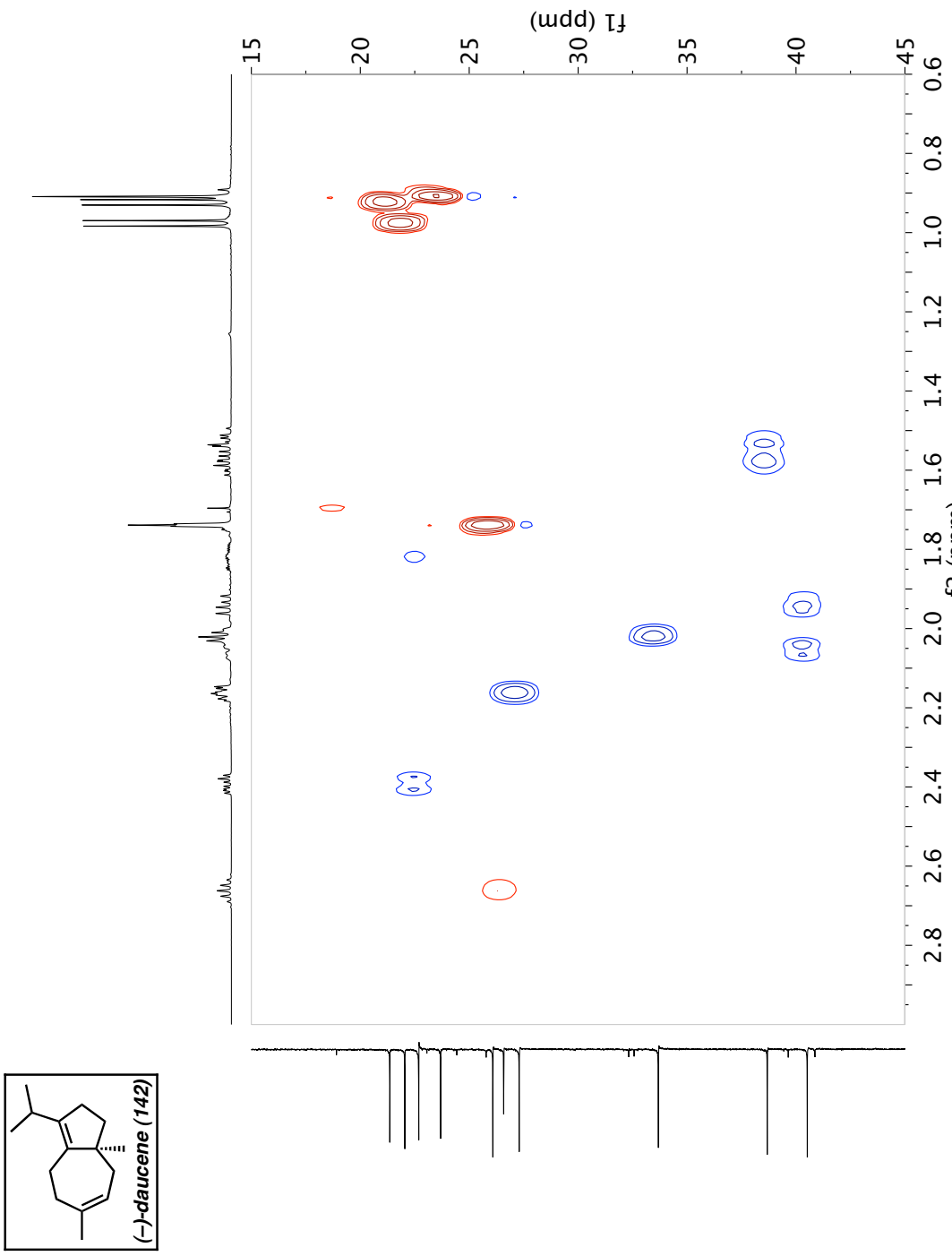

Figure A5.22.4. HSQC NMR (500 MHz, $CDCl_3$) of compound **142**.

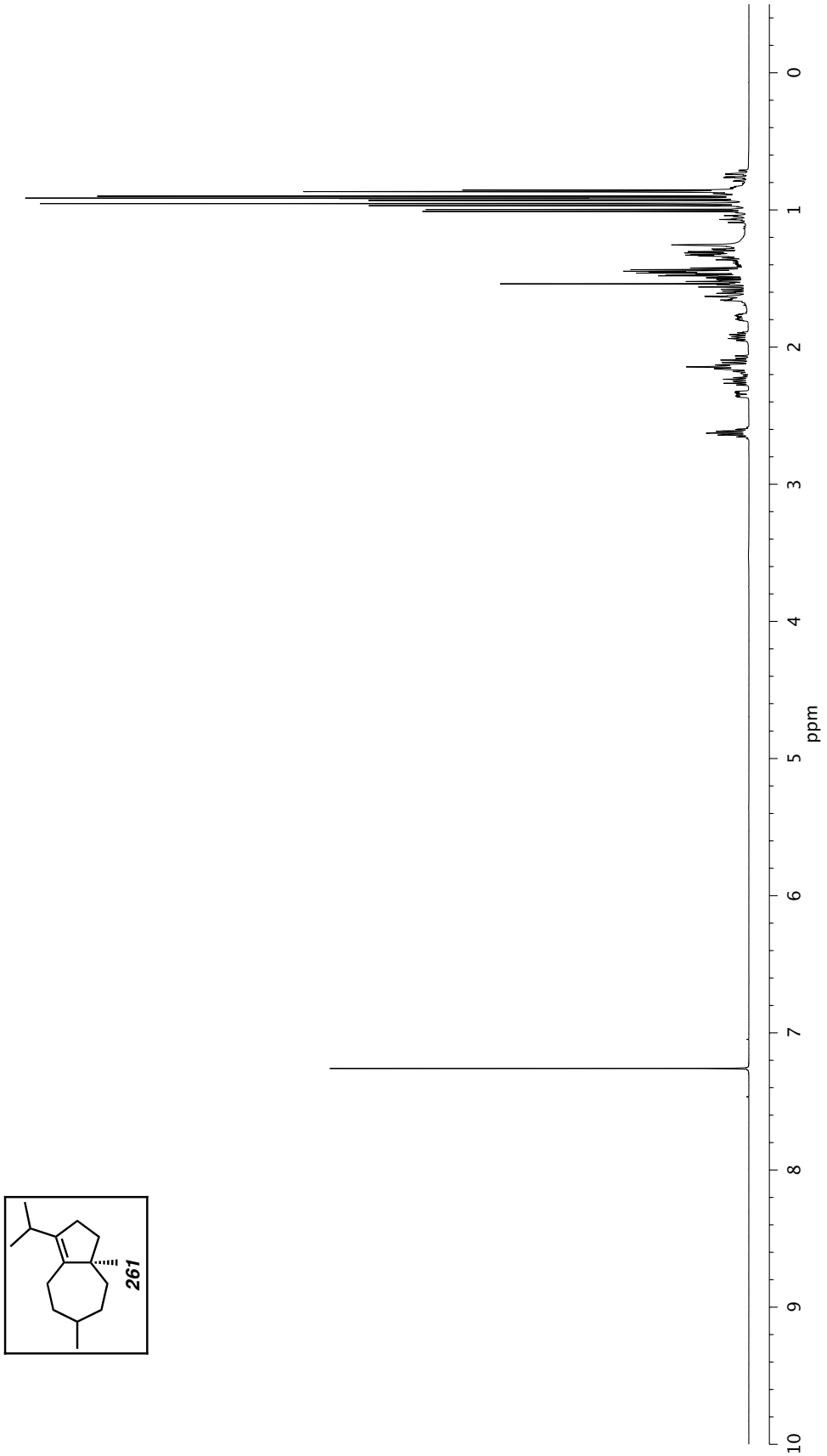

Figure A5.23.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **261**.

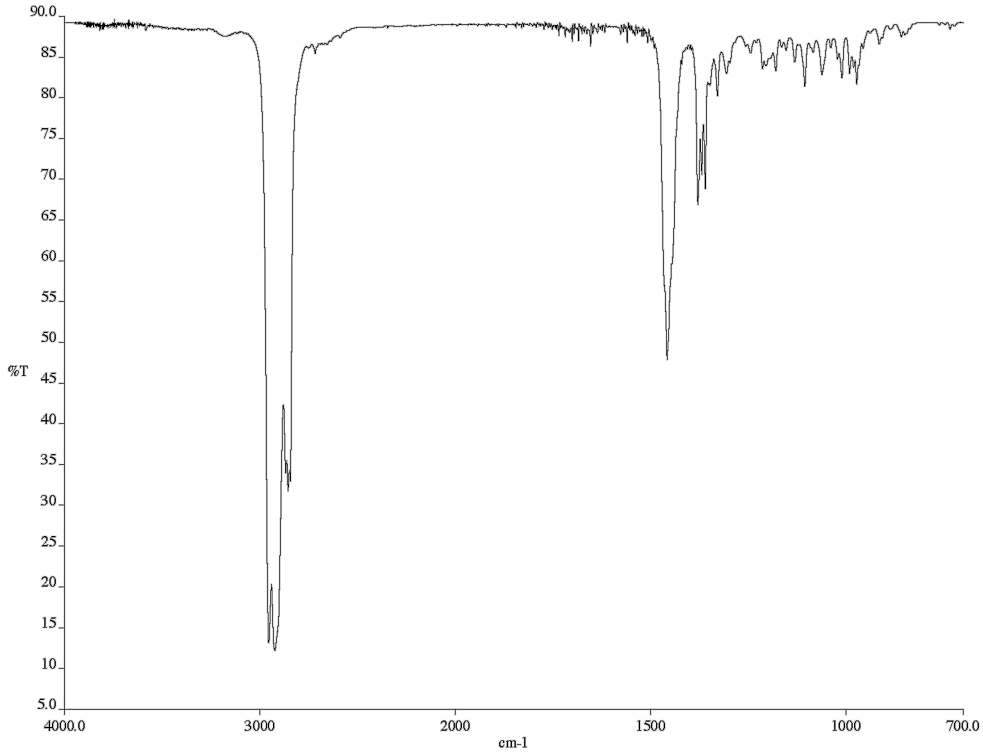

Figure A5.23.2. Infrared spectrum (thin film/NaCl) of compound **261**.

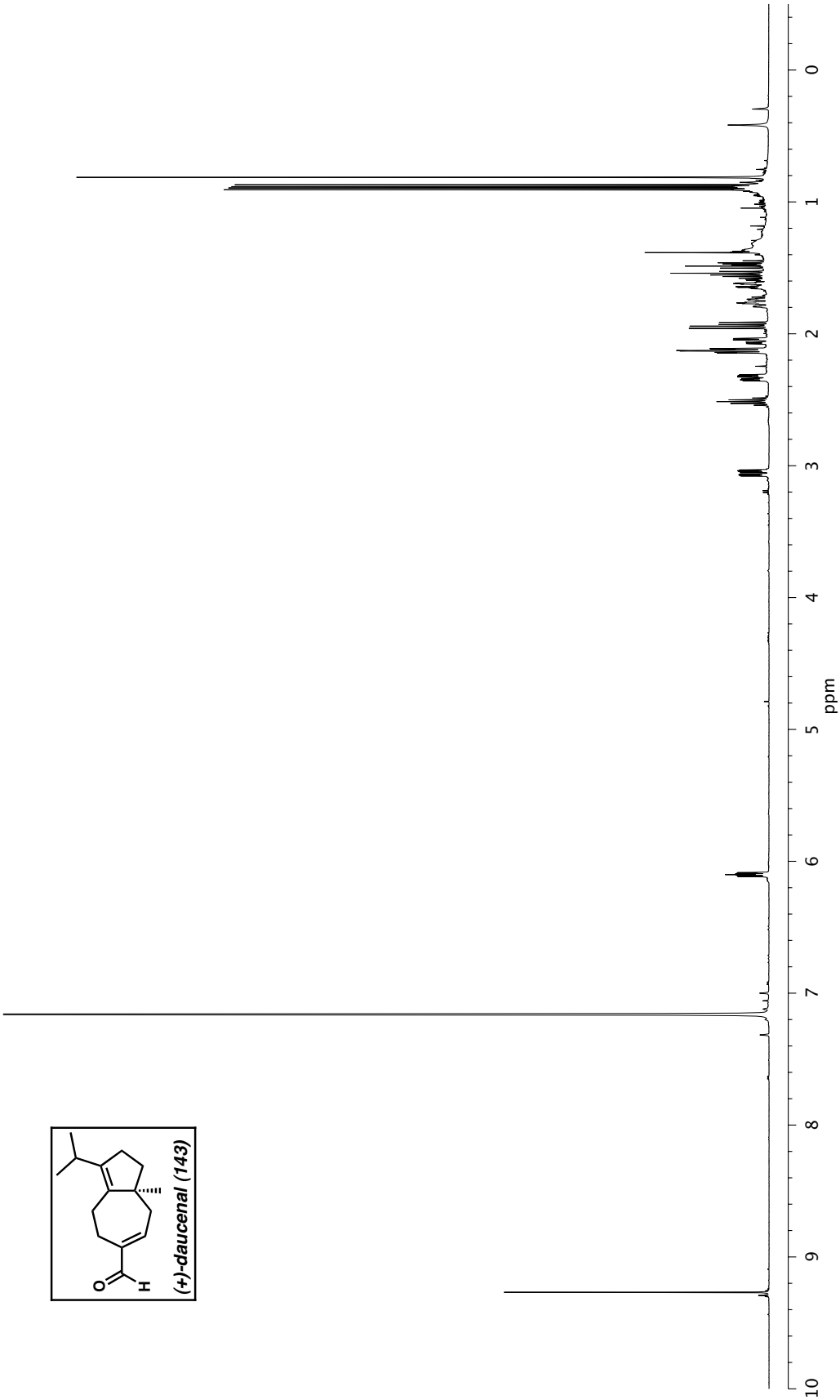

Figure A5.24.1. ^{1}H NMR (500 MHz, C_6D_6) of compound **143**.

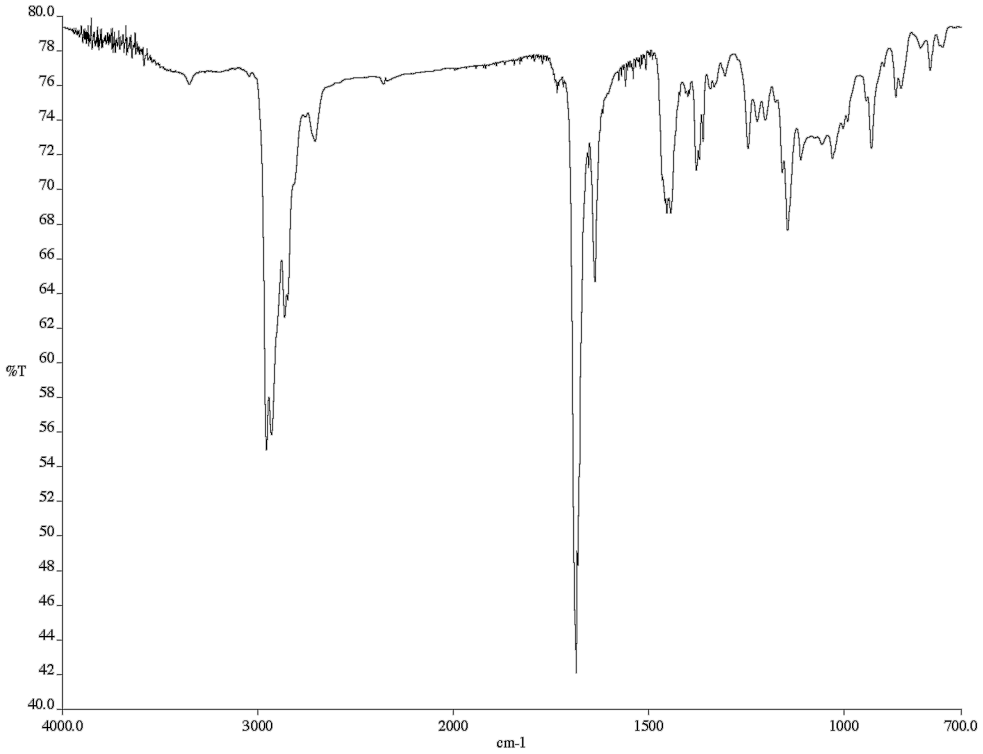

Figure A5.24.2. Infrared spectrum (thin film/NaCl) of compound **143**.

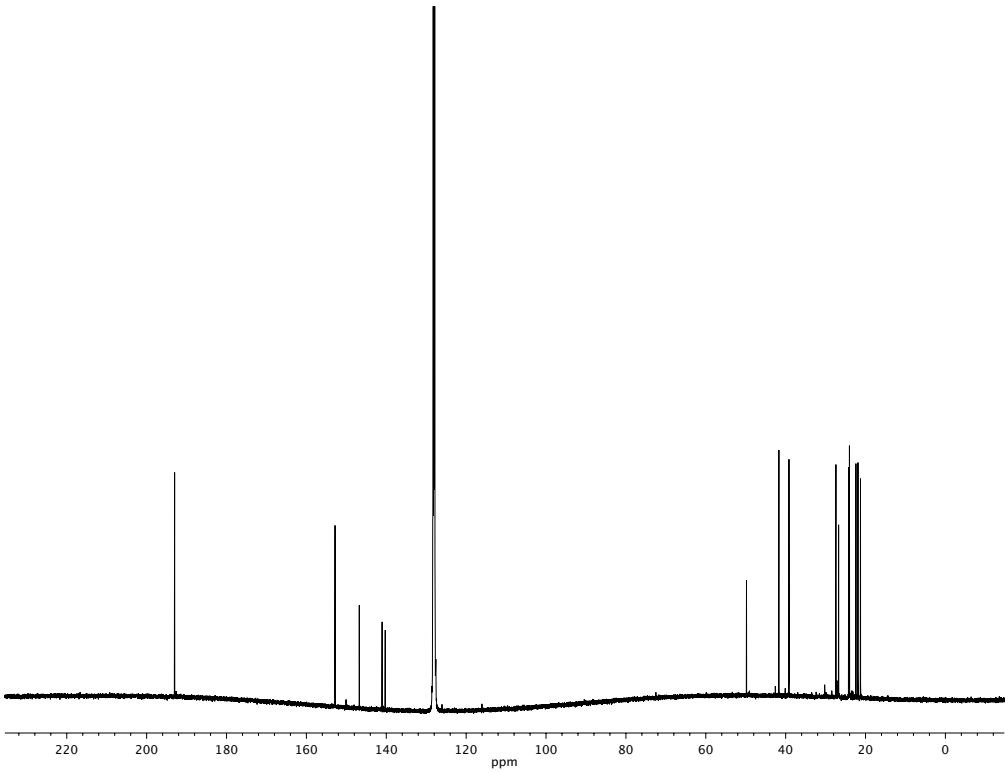

Figure A5.24.3. ^{13}C NMR (125 MHz, C_6D_6) of compound **143**.

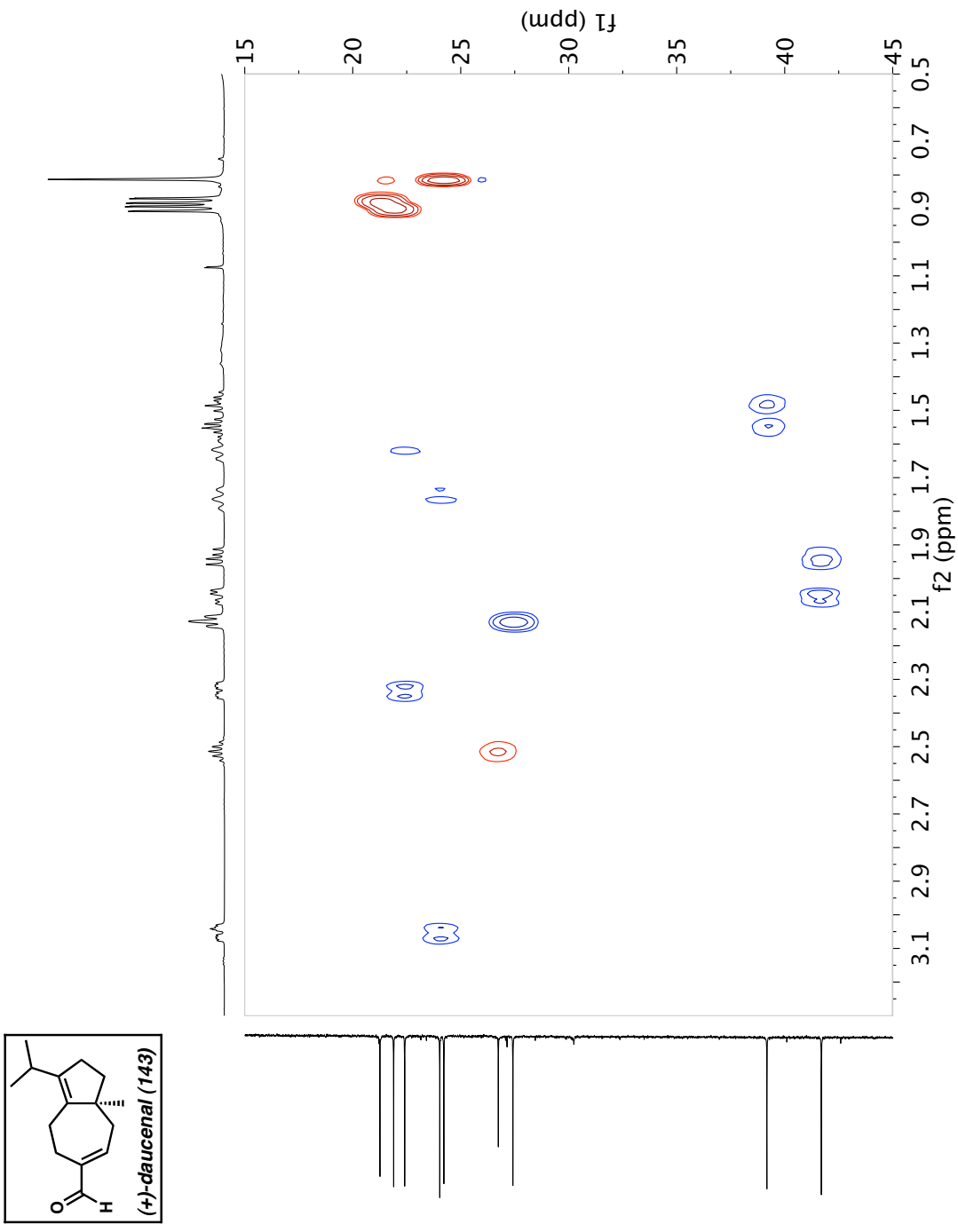

Figure A5.24.4. HSQC NMR (500 MHz, C_6D_6) of compound **143**.

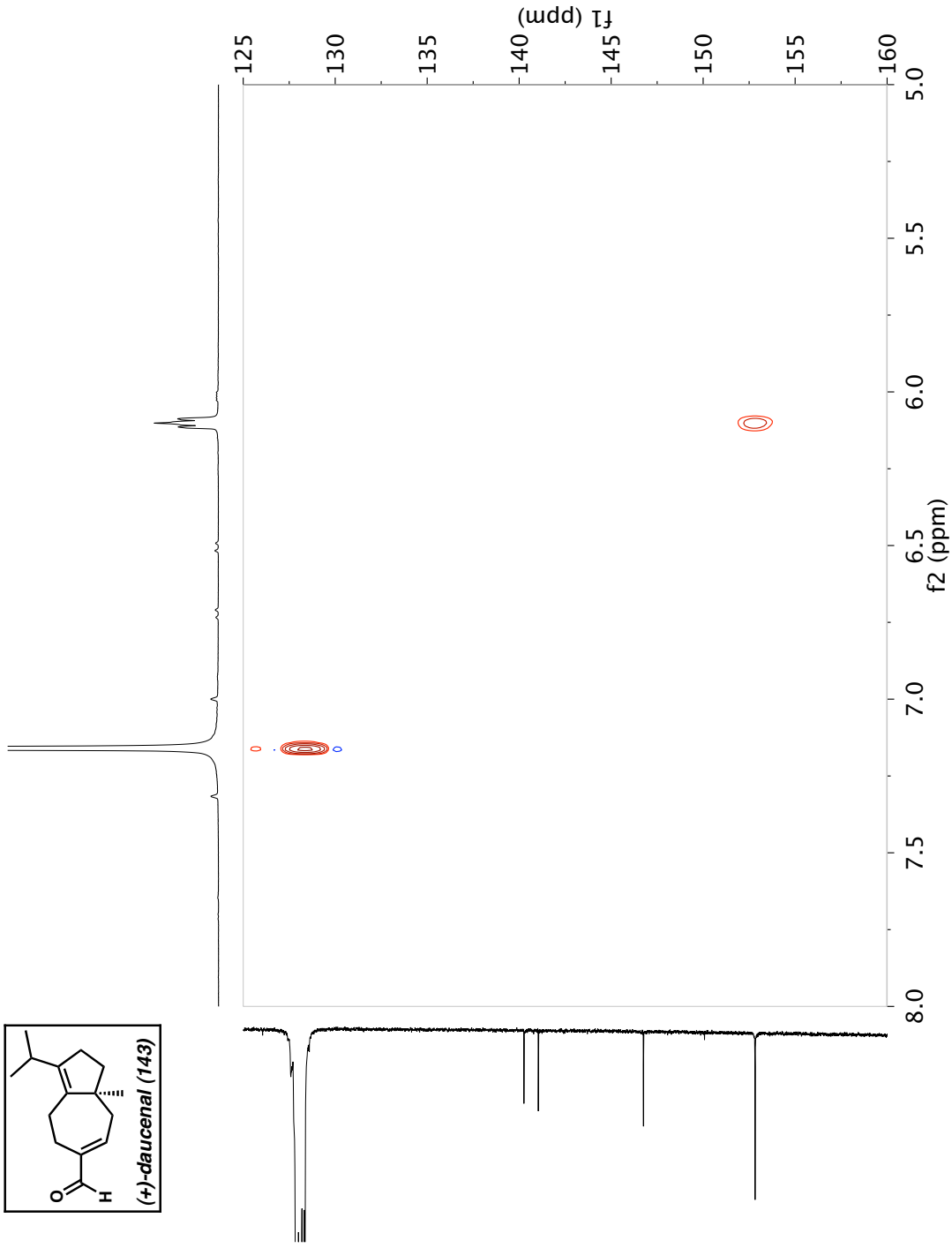

Figure A5.24.5. HSQC NMR (500 MHz, C_6D_6) of compound **143**.

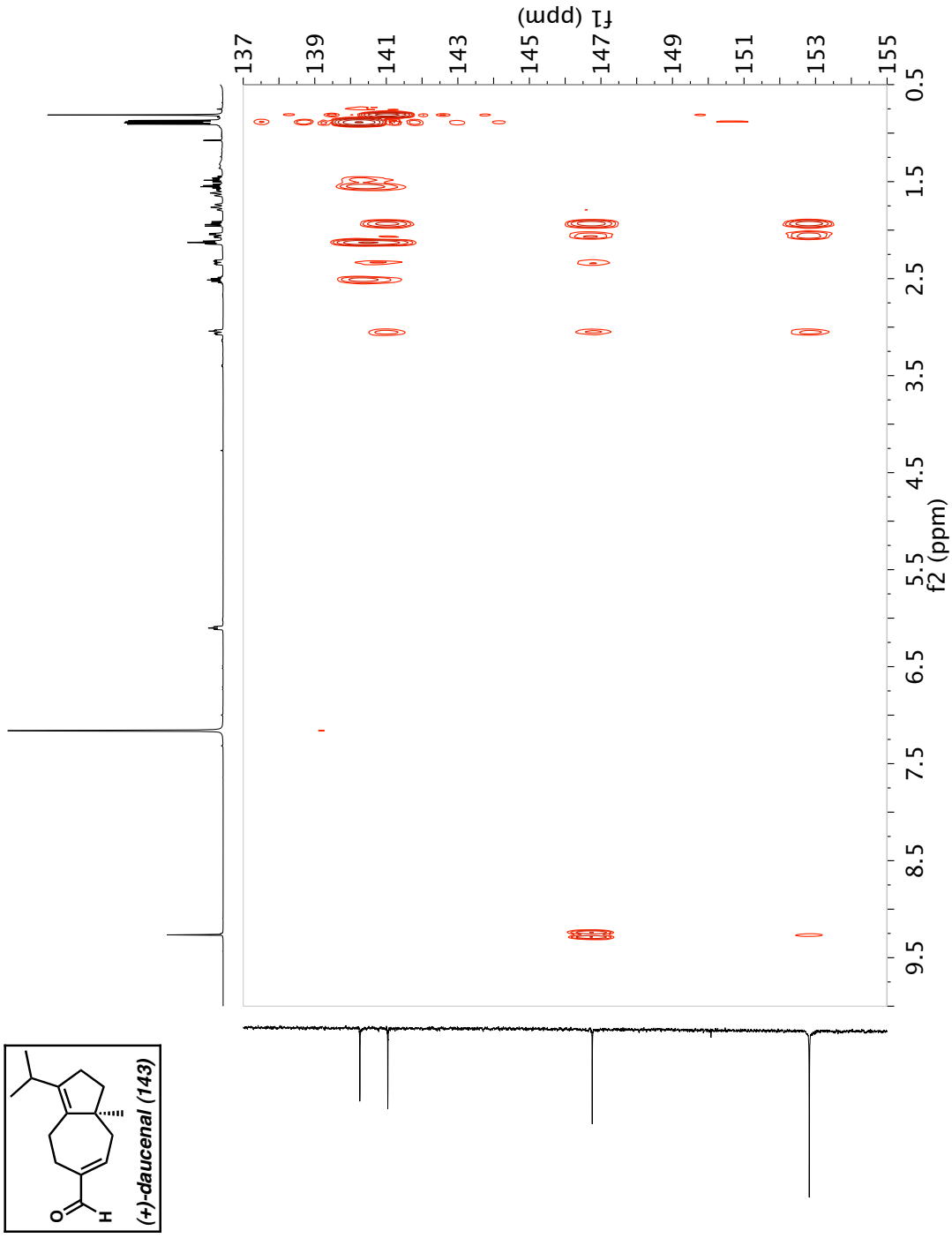

Figure A5.24.6. HMBC NMR (500 MHz, C_6D_6) of compound **143**.

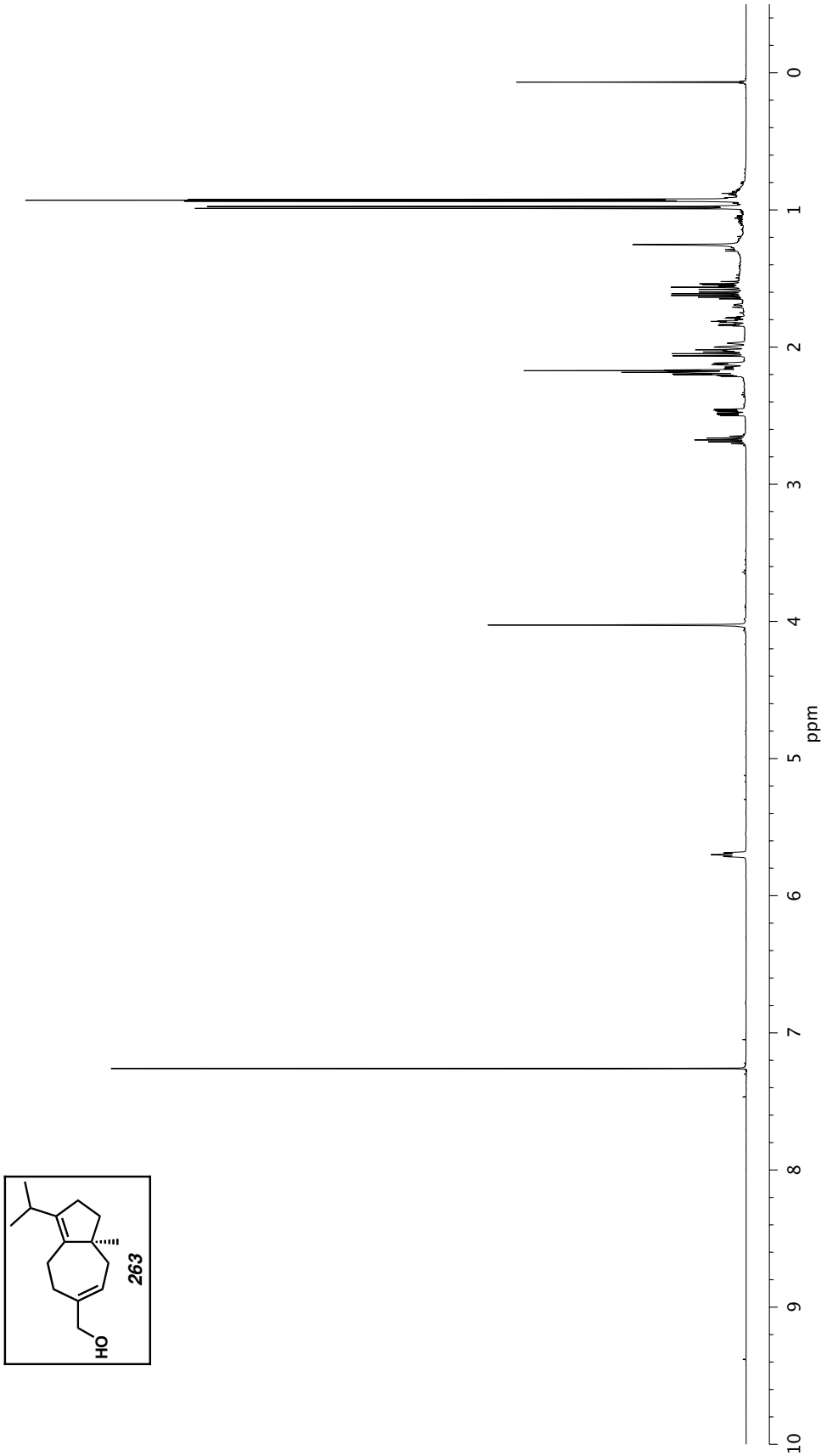

Figure A5.25.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **263**.

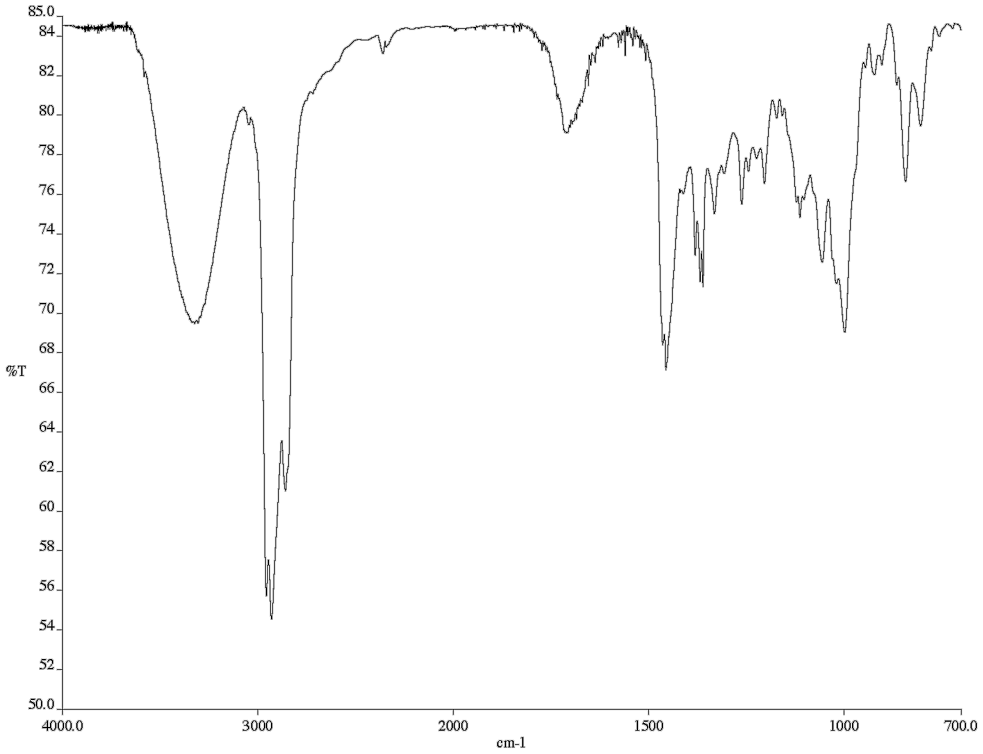

Figure A5.25.2. Infrared spectrum (thin film/NaCl) of compound **263**.

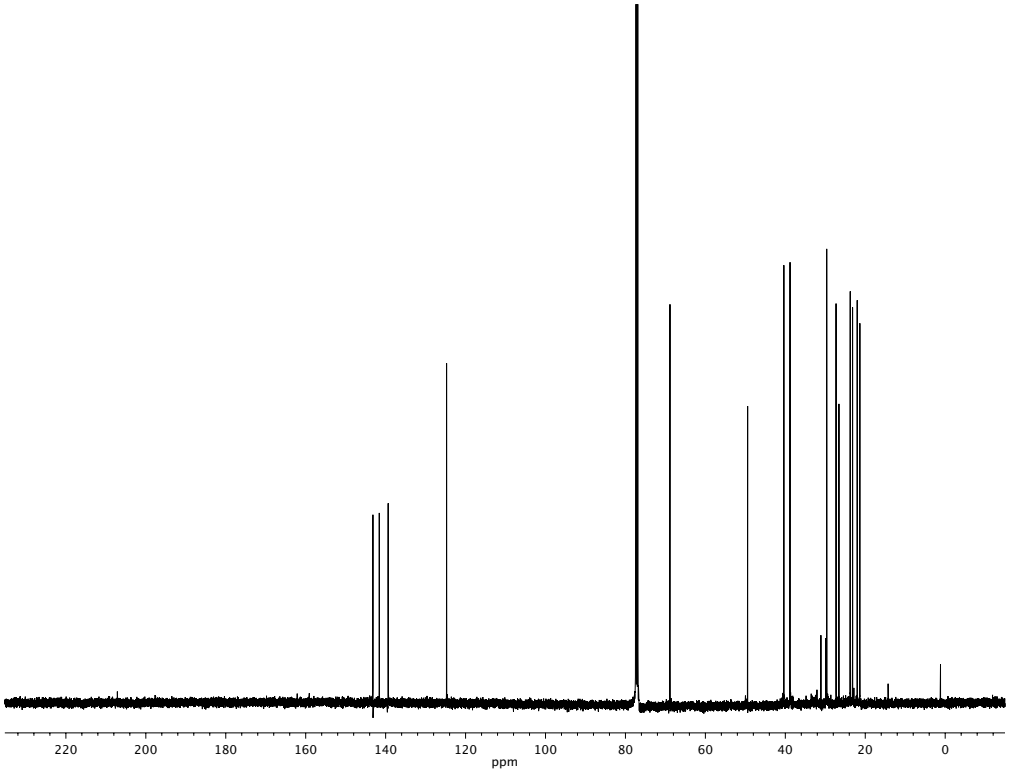

Figure A5.25.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **263**.

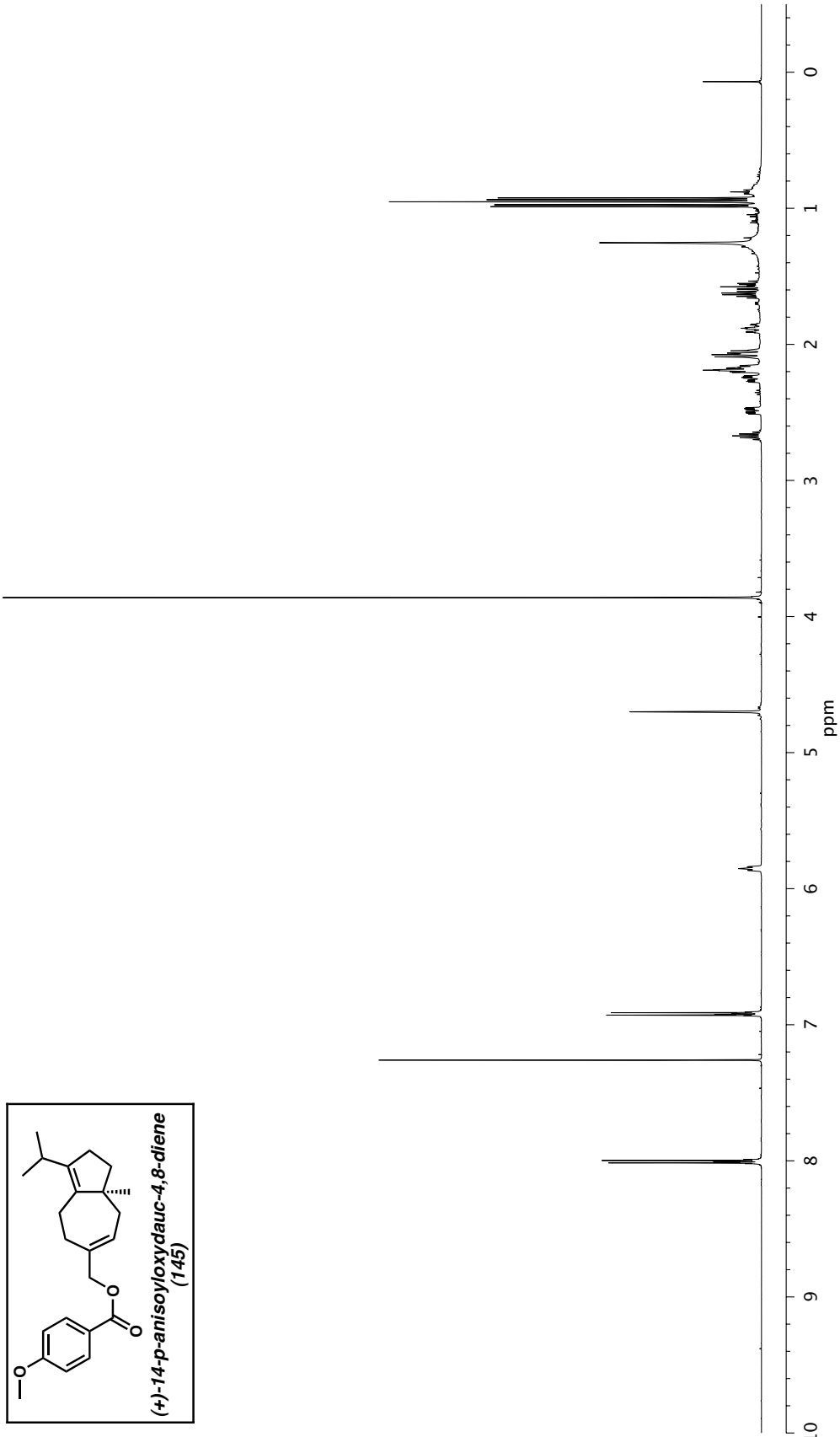

Figure A5.26.1. ^{1}H NMR (500 MHz, $CDCl_3$) of compound **145**.

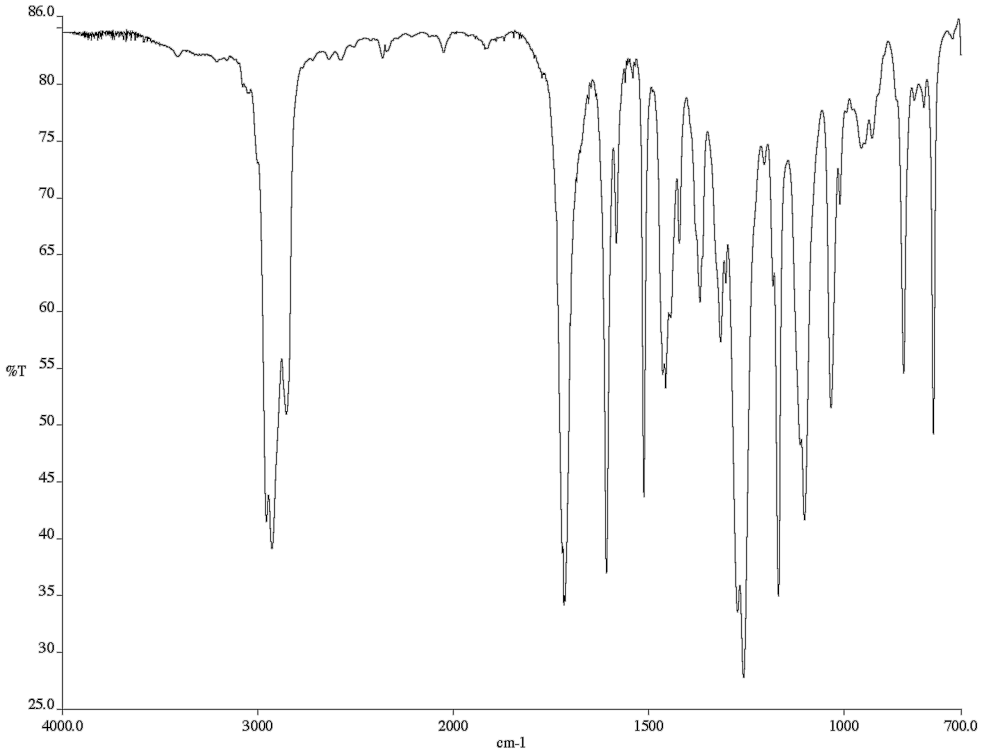

Figure A5.26.2. Infrared spectrum (thin film/NaCl) of compound **145**.

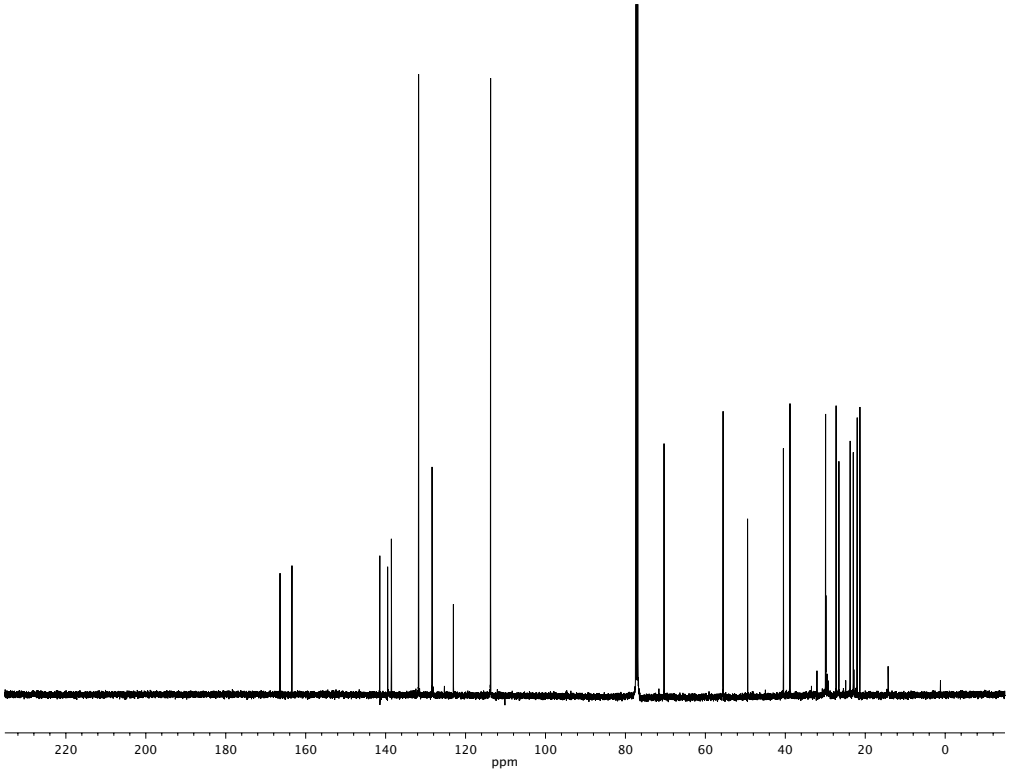

Figure A5.26.3. ^{13}C NMR (125 MHz, $CDCl_3$) of compound **145**.