

Supporting Information

For

An Efficient Synthesis of Hydropyrido[1,2-*a*]indole-6(7*H*)-ones via an In(III)-catalyzed Tandem Cyclopropane Ring-opening/Friedel-Crafts Alkylation Sequence

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1. General Methods

All reactions were carried out in pre-dried glassware from the oven where additional moisture was removed by flame-drying the reaction vessel. Each reaction proceeded under a nitrogen atmosphere, and dry solvents were used, unless stated otherwise. Tetrahydrofuran and diethyl ether were distilled from a sodium/benzophenone ketyl under nitrogen and stored in a Schlenk flask. 1,2-Dichloroethane and dichloromethane were purified by distillation from calcium hydride under N₂ prior to use. Acetonitrile was dried by fractional distillation over CaH₂. Benzene was purified by drying with CaH₂. All other reagents were purchased from Acros, Sigma-Aldrich, Fluka, VWR, Merck, Alfa Aesar, TCI and Strem (for metal catalysts) and used without further purification.

Chromatographic purification was performed as flash chromatography with Silicycle silica gel (40-63 μm) and solvents indicated as eluent with 0.1-0.5 bar pressure. For quantitative flash chromatography, technical grade solvents were utilized. Analytical thin-layer chromatography (TLC) was performed on EMD silica gel 60 F₂₅₄ TLC glass plates. Visualization was accomplished with UV light, aqueous basic potassium permanganate (KMnO₄) solution, iodine, aqueous acidic dinitrophenylhydrazine (DNP) solution, aqueous acidic *p*-anisaldehyde (PAA) solution, and ethanol solution of phosphomolybdic acid (PMA) followed by heating. Each yield refers to isolated analytically pure material.

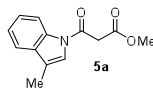
Infrared (IR) spectra were obtained using a Nicolet 4700 FTIR with an ATR attachment from SmartOrbit ThermoElectronic Corp. The IR bands are characterized as broad (br), weak (w), medium (m), and strong (s). Proton and carbon nuclear magnetic resonance spectra (¹H NMR and ¹³C NMR) were recorded on a Varian Mercury Vx 300 spectrometer or a Varian Mercury Vx 400 spectrometer with solvent resonances as the internal standard (¹H NMR: CDCl₃ at 7.26 ppm; ¹³C NMR: CDCl₃ at 77.0 ppm). ¹H NMR data are reported as follows: chemical shift (ppm), multiplicity (s = singlet, d = doublet, dd = doublet of doublets, dt = doublet of triplets, ddd = doublet of doublet of doublets, t = triplet, m = multiplet), coupling constants (Hz), and integration. Mass spectra were obtained using a VG-70SE instrument.

Diastereomeric ratios for cyclized products **4** were determined by ¹H NMR based on comparing the integral ratios of the benzylic protons (~4.0-5.0 ppm) for the two diastereomeric protons. The first signal represents the *trans* isomer and the second signal represents the *cis* isomer. This assignment is based on the coupling constants assigned from ¹H NMR in conjunction with decoupling experiments to assign all the coupled proton signals.

2. Experimental Procedures

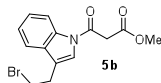
A. N-Acylation of Indole Compounds

Sodium hydride (1.1 equiv.) was suspended in THF (20 mL) and cooled to 0 °C. In a separate flask, the desired indole (1.0 equiv.) was dissolved in 30 mL of THF and syringed into the reaction vessel. After 30 min, methyl-3-chloro-3-oxopropanoate (1.1 equiv.) was slowly added. The reaction was stirred for 14 h at room temperature. The reaction mixture was quenched with water. The organic layer was separated, and the aqueous layer was extracted three times with EtOAc. The combined organic layers were washed with brine, dried with anhydrous sodium sulfate, filtered, and concentrated under reduced pressure. The residue was purified by silica gel flash chromatography for product isolation.

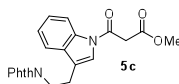


Methyl 3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (5a): The general procedure was followed using sodium hydride (1.90 g, 47.7 mmol), 3-methyl-1H-indole (5.00 g, 38.1 mmol), methyl-3-chloro-3-oxopropanoate (4.9 mL, 45.7 mmol), and THF (50 mL). After 14 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.26 and R_f 0.15 for keto and enol tautomers) afforded **5a** as a light brown solid (6.44 g, 73%). [m.p. 49-51°C] ¹H NMR (300 MHz, CDCl₃) δ 8.43 (d, J = 7.1 Hz, 1H),

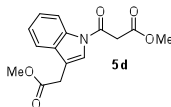
7.52 – 7.47 (m, 1H), 7.41 – 7.28 (m, 2H), 7.10 (s, 1H), 3.92 (s, 2H), 3.79 (s, 3H), 2.27 (s, $J = 1.3$ Hz, 3H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 166.8, 163.4, 136.0, 131.5, 125.5, 124.0, 121.4, 119.7, 118.9, 116.7, 52.9, 43.6, 9.7. **IR:** 3051.9 (w), 2937.6 (w), 1747.0 (s), 1685.1 (s), 1604.1 (w), 1447.0 (s), 1375.5 (s), 1232.6 (m), 1070.7 (m), 913.5 (m), 732.6 (s) cm^{-1} . **HRMS (ESI) M/Z^+ Calc.** 231.0895, Obs. 231.0895.



Methyl 3-(3-(2-bromoethyl)-1H-indol-1-yl)-3-oxopropanoate (5b):¹ A mixture of potassium carbonate (0.100 g, 0.724 mmol) and 3-(2-bromoethyl)-1H-indole (0.250 g, 1.1 mmol), methyl-3-chloro-3-oxopropanoate (0.21 mL, 1.95 mmol) and acetonitrile (13 mL) were heated to reflux. After 16 h, the reaction mixture was cooled, filtered and dried *in vacuo*. The residue was dissolved in EtOAc/Hex (1:2.5). The organic layer was separated, and the aqueous layer was extracted three times with EtOAc. The combined organic layers were dried with anhydrous sodium sulfate, filtered, and concentrated. Column chromatography (20% EtOAc/Hex, R_f 0.35) afforded **5b** as a yellow-brown solid (0.290 g, 81%). [**m.p.** 68–70°C] $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.41 (d, $J = 7.8$ Hz, 1H), 7.47 (d, $J = 7.6$ Hz, 1H), 7.40 – 7.24 (m, 2H), 7.22 (s, 1H), 3.92 (s, 2H), 3.76 (s, 3H), 3.61 (t, $J = 7.2$ Hz, 2H), 3.22 (t, $J = 7.2$ Hz, 2H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 166.5, 163.5, 135.7, 129.8, 125.6, 123.9, 122.1, 120.4, 118.4, 116.7, 52.7, 43.3, 31.1, 28.5. **IR:** 3091.7 (w), 2940.7 (w), 2878.8 (w), 1760.1 (s), 1657.8 (s), 1615.6 (s), 1535.5 (s), 1440.9 (s), 1239.4 (s), 1191.4 (s), 1040.8 (m), 820.8 (m), 777.4 (m) cm^{-1} . **HRMS (ESI) M/Z^+ Calc.** 323.0157, Obs. 323.0162.

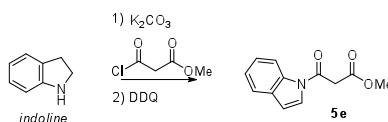


Methyl 3-(3-(2-(1,3-dioxoisindolin-2-yl)ethyl)-1H-indol-1-yl)-3-oxopropanoate (5c): The general procedure was followed using sodium hydride (0.459 g, 11.5 mmol), 2-(2-(1H-indol-3-yl)ethyl)isindoline-1,3-dione² (3.01 g, 10.4 mmol), methyl-3-chloro-3-oxopropanoate (1.4 mL, 13.0 mmol), and THF (90 mL). After 16 h, the reaction was quenched, and column chromatography (30% EtOAc/Hex, R_f 0.17) afforded **5c** as a white solid (1.69 g, 42%). [**m.p.** 138–140°C] $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.41 (d, $J = 7.7$ Hz, 1H), 7.88 – 7.77 (m, 2H), 7.75 – 7.67 (m, 2H), 7.64 (d, $J = 7.7$ Hz, 1H), 7.40 – 7.27 (m, 3H), 4.04 (t, $J = 7.2$ Hz, 2H), 3.96 (s, 2H), 3.78 (s, 3H), 3.10 (t, $J = 7.4$ Hz, 2H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 171.0, 168.3, 167.2, 166.7, 163.7, 136.0, 134.1, 131.9, 130.4, 125.7, 124.2, 123.3, 121.9, 120.0, 118.9, 116.8, 52.9, 52.8, 43.4, 40.5, 37.2, 24.1. **IR:** 2937.6 (w), 1742.2 (s), 1703.2 (s), 1691.8 (s), 1599.3 (w), 1456.5 (m), 1383.6 (m), 1329.9 (m), 1210.0 (m), 1153.5 (s), 1008.8 (m), 923.1 (w), 719.7 (s) cm^{-1} . **HRMS (ESI) M/Z^+ Calc.** 390.1216, Obs. 390.1213.



Methyl 3-(3-(2-methoxy-2-oxoethyl)-1H-indol-1-yl)-3-oxopropanoate (5d): The general procedure was followed using sodium hydride (0.702 g, 17.6 mmol), methyl 2-(1H-indol-3-yl)acetate (3.00 g, 15.9 mmol), methyl-3-chloro-3-oxopropanoate (2.0 mL, 18.6 mmol), and THF (60 mL). After 16 h, the reaction was quenched, and column chromatography (30% EtOAc/Hex, R_f 0.24) afforded **5d** as a dark brown oil (3.55 g, 77%). $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.43 (d, $J = 8.0$ Hz, 1H), 7.57 – 7.49 (m, 1H), 7.43 – 7.27 (m, 3H), 3.96 (s, 2H), 3.79 (s, 3H), 3.73 (s, 2H), 3.72 (s, 3H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 171.0, 166.6, 163.6, 135.8, 130.1, 125.8, 124.2, 123.1, 118.9, 116.8, 116.0, 52.8, 52.2, 43.4, 30.6. **IR:** 3009.3 (w), 2952.1 (w),

1737.4 (s), 1703.2 (s), 1595.1 (m), 1366.0 (s), 1265.7 (m), 1204.7 (s), 1148.4 (s), 1015.7 (m), 909.4 (m), 728.3 (s) cm^{-1} . **HRMS (ESI)** M/Z^+ Calc. 289.0950, Obs. 289.0945.

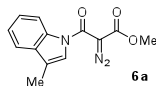


Methyl 3-(1H-indol-1-yl)-3-oxopropanoate (5e): Following a modification of Kerr's reported procedure,³ indoline (4.0 g, 33.56 mmol) was dissolved in THF (70 mL) in a round bottom flask equipped with a magnetic stir bar. K_2CO_3 (9.28 g, 67.14 mmol) was added and the mixture was cooled to 0°C . Methyl malonyl chloride (3.977 mL, 37.09 mmol) was added dropwise with rapid stirring. Formation of white precipitate was immediately observed. After 30 min, the reaction mixture was filtered, and the solvent was removed under reduced pressure to yield the indoline β -amide ester, which was used without purification.

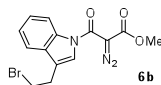
In a dry round bottom flask equipped with a reflux condenser, the resulting β -amide ester (4.26 g, 19.43 mmol) was dissolved in dry toluene (55 mL), and DDQ (5.28 g, 23.26 mmol) was added. The reaction mixture was heated to a reflux for 12 hours. The reaction was cooled to room temperature, diluted with EtOAc, washed with water and brine and dried over anhydrous MgSO_4 . The solvent was removed *in vacuo* and purification of the crude reaction mixture by flash column chromatography (15% EtOAc/Hex, R_f 0.35) yielded **5e** as a yellow-brown oil (2.72 g, 37.3% over the two steps). **$^1\text{H NMR}$** (300 MHz, CDCl_3) δ 8.44 (d, $J = 8.1$ Hz, 1H), 7.56 – 7.51 (m, 1H), 7.38 – 7.23 (m, 3H), 6.61 (dd, $J = 3.8, 0.8$ Hz, 1H), 3.91 (s, 2H), 3.74 (s, 3H). **$^{13}\text{C NMR}$** (75 MHz, CDCl_3) δ 166.5, 163.8, 135.4, 130.2, 125.1, 124.5, 123.9, 120.7, 116.3, 109.8, 52.6, 43.1. **IR:** 3109.7 (w), 3152.9 (w), 3036.6 (w), 2953.6 (w), 2850.7 (w), 1737.9 (m), 1703.1 (s), 1691.8 (m), 1529.04 (w), 1472.2 (w), 1450.6 (m), 1383.1 (m), 1346.9 (s), 1261.2 (m), 1204.9 (s), 1150.2 (s), 1015.7 (m), 925.7 (m), 747.3 (s), 715.2 (m), 689.3 (m) cm^{-1} . **HRMS (ESI)** M/Z^+ Calc. 217.0739, Obs. 217.0738.

B. Formation of the Diazo Compounds

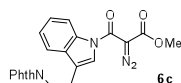
The β -amide ester (1.0 equiv.) was dissolved in acetonitrile. Triethylamine (1.2 equiv.) was added to the reaction mixture and stirred for 10 min. Tosyl azide (1.2 equiv) was placed in the reaction flask. The mixture was stirred at room temperature for 12 h and concentrated under reduced pressure. The resulting residue was purified by silica gel flash chromatography to afford the diazo compound.



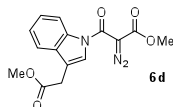
Methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (6a): The general procedure was followed using methyl 3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (2.71 g, 11.7 mmol), triethylamine (2.0 mL, 14.4 mmol), tosyl azide (2.81 g, 14.2 mmol), and acetonitrile (30 mL). After 12 h, the reaction mixture was concentrated, and column chromatography (20% EtOAc/Hex, R_f 0.41) afforded **6a** as a yellow solid (2.79 g, 93%). [**m.p.** 74–76 $^\circ\text{C}$] **$^1\text{H NMR}$** (300 MHz, CDCl_3) δ 8.17 (d, $J = 8.6$ Hz, 1H), 7.51 – 7.47 (m, 1H), 7.39 – 7.26 (m, 2H), 7.11 (s, 1H), 3.85 (s, 3H), 2.28 (s, 3H). **$^{13}\text{C NMR}$** (75 MHz, CDCl_3) δ 161.5, 158.9, 136.0, 131.7, 124.8, 123.7, 123.3, 118.9, 117.7, 115.7, 69.7, 52.6, 9.7. **IR:** 3047.1 (w), 2956.6 (w), 2918.5 (w), 2132.7 (s), 1708.9 (s), 1651.7 (s), 1601.0 (m), 1466.0 (s), 1349.6 (s), 1302.9 (s), 1254.3 (s), 1127.9 (s), 1046.9 (s), 865.9 (m), 732.7 (s) cm^{-1} . **HRMS (ESI)** M/Z^+ Calc. 257.0800, Obs. 257.0805.



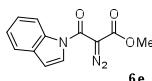
Methyl 3-(3-(2-bromoethyl)-1*H*-indol-1-yl)-2-diazo-3-oxopropanoate (6b): The general procedure was followed using methyl 3-(3-(2-bromoethyl)-1*H*-indol-1-yl)-3-oxopropanoate (0.110 g, 0.339 mmol), triethylamine (0.0412 g, 0.407 mmol), tosyl azide (0.080 g, 0.407 mmol), and acetonitrile (10 mL). After 16 h, the reaction mixture was concentrated, and column chromatography (20% EtOAc/Hex, R_f 0.50) afforded **6b** as a yellow oil (0.104 g, 88%). $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.15 (d, $J = 8.0$ Hz, 1H), 7.47 (d, $J = 7.6$ Hz, 1H), 7.36 – 7.23 (m, 2H), 7.22 (s, 1H), 3.81 (s, 3H), 3.61 (t, $J = 7.3$ Hz, 2H), 3.23 (t, $J = 7.2$ Hz, 2H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 161.2, 159.1, 136.0, 130.1, 125.0, 124.2, 123.8, 118.7, 118.5, 115.8, 70.1, 52.7, 31.2, 28.7. **IR:** 3018.6 (w), 2947.1, (w), 2142.0 (s), 1732.7 (s), 1656.5 (s), 1604.1 (w), 1451.7 (s), 1380.4 (s), 1306.8 (s), 1251.7 (m), 1056.4 (m), 861.2 (w), 734.3 (s), 708.8 (m) cm^{-1} . **HRMS (ESI) M/Z+ Calc.** 349.0062, Obs. 349.0061.



Methyl 2-diazo-3-(3-(2-(1,3-dioxoisindolin-2-yl)ethyl)-1*H*-indol-1-yl)-3-oxopropanoate (6c): The general procedure was followed using methyl 3-(3-(2-(1,3-dioxoisindolin-2-yl)ethyl)-1*H*-indol-1-yl)-3-oxopropanoate (1.48 g, 3.78 mmol), triethylamine (700 μL , 5.02 mmol), tosyl azide (0.896 g, 4.54 mmol), and acetonitrile (20 mL). After 18 h, the reaction mixture was concentrated, and column chromatography (40% EtOAc/Hex, R_f 0.44) afforded **6c** as a yellow-brown solid (1.49 g, 95%). [**m.p.** 98-100°C] $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.18 – 8.13 (m, 1H), 7.86 – 7.80 (m, 2H), 7.74 – 7.64 (m, 3H), 7.37 – 7.27 (m, 2H), 7.23 (s, 1H), 4.00 (t, $J = 6.0$ Hz, 2H), 3.81 (s, 3H), 3.10 (t, $J = 6.0$ Hz, 2H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) (Rotamers!!!) δ 168.2, 161.2, 159.2, 136.1, 133.9, 133.8, 132.1, 130.5, 125.0, 124.1, 123.9, 123.2, 123.1, 122.1, 122.0, 119.4, 119.0, 118.8, 118.0, 115.8, 112.4, 111.1, 69.8, 52.7, 38.5, 37.4, 24.4, 24.2. **IR:** 3032.8 (s), 2942.4 (w), 2137.5 (s), 1708.4 (s), 1642.2 (m), 1604.1 (w), 1451.7 (w), 1379.6 (s), 1306.8 (s), 1256.4 (m), 1170.7 (m), 1095.3 (m), 1004.0 (w), 861.2 (m), 732.4 (s) cm^{-1} . **HRMS (ESI) M/Z+ Calc.** 416.1121, Obs. 416.1105.



Methyl 2-diazo-3-(3-(2-methoxy-2-oxoethyl)-1*H*-indol-1-yl)-3-oxopropanoate (6d): The general procedure was followed using methyl 3-(3-(2-methoxy-2-oxoethyl)-1*H*-indol-1-yl)-3-oxopropanoate (1.49 g, 5.16 mmol), triethylamine (880 μL , 6.31 mmol), tosyl azide (1.22 g, 6.19 mmol), and acetonitrile (20 mL). After 18 h, the reaction mixture was concentrated, and column chromatography (40% EtOAc/Hex, R_f 0.43) afforded **6d** as a brown solid (1.36 g, 83%). [**m.p.** 77-79°C] $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.17 (d, $J = 7.8$ Hz, 1H), 7.52 (d, $J = 7.7$ Hz, 1H), 7.41 – 7.26 (m, 3H), 3.84 (s, 3H), 3.73 (s, 2H), 3.72 (s, 3H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 171.1, 161.3, 159.2, 135.9, 130.3, 125.2, 125.1, 123.9, 118.9, 115.8, 114.1, 70.1, 52.7, 52.1, 30.7. **IR:** 2999.5 (w), 2961.4 (w), 2137.5 (s), 1721.8 (s), 1637.44 (s), 1599.3 (w), 1446.9 (s), 1364.2 (s), 1305.1 (s), 1253.8 (s), 1139.6 (s), 1051.6 (w), 870.7 (m), 747.9 (s) cm^{-1} . **HRMS (ESI) M/Z+ Calc.** 315.0855, Obs. 315.0860.

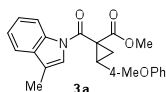


Methyl 2-diazo-3-(1*H*-indol-1-yl)-3-oxopropanoate (6e): The general procedure was followed using methyl 3-(1*H*-indol-1-yl)-3-oxopropanoate (1.42 g, 6.54 mmol), triethylamine (1.82 mL, 13.07 mmol), tosyl azide (1.547 g, 7.845 mmol), and acetonitrile (30 mL). After 12 h, the reaction mixture was concentrated, and column chromatography (10% EtOAc/Hex, R_f 0.35) afforded **6e** as a yellow oil (1.49 g, 93.7%). ^1H

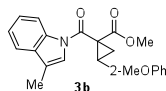
NMR (300 MHz, CDCl₃) δ 8.22 – 8.16 (m, 1H), 7.59 – 7.53 (m, 1H), 7.40 – 7.23 (m, 3H), 6.61 (dd, *J* = 3.8, 0.7 Hz, 1H), 3.83 (s, 3H). **¹³C NMR** (75 MHz, CDCl₃) δ 161.3, 159.5, 135.7, 130.6, 127.4, 126.7, 124.7, 123.8, 120.9, 115.5, 108.2, 52.7. **IR**: 3162.8 (w), 3053.2 (w), 2953.6 (w), 2140.3 (s), 1710.8 (s), 1721.3 (s), 1657.8 (s), 1649.7 (s), 1529.0 (w), 1451.1 (s), 1380.5 (s), 1342.4 (s), 1298.4 (s), 1244.9 (m), 1139.5 (m), 1121.6 (m), 1090.6 (m), 1067.0 (m), 945.5 (w), 883.1 (m), 859.7 (m), 746.5 (s), 640.3 (w) cm⁻¹. **HRMS (ESI) M/Z+** Calc. 243.0644, Obs. 243.0640.

C. Synthesis of the Cyclopropanes

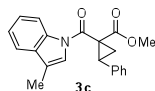
The cyclopropanes were prepared using a modified version of Gonzalez-Bobes' protocol:⁴ A round bottom flask was charged with Rh₂esp₂ (0.1 mol%) and a magnetic stir bar. DCM (2.0 mL) was added to the flask. The reaction vessel was cooled to 0 °C, and the corresponding alkene (1.0 equiv) was added. After 10 min, the diazo reagent (1.3 equiv.) was dissolved in DCM (5 mL) and syringed into the reaction mixture. After 10 min, the ice bath was removed and the reaction proceeded at room temperature. Upon completion (monitored by TLC) or 12 h of reactivity, the reaction was quenched with saturated thiourea and stirred for 30 min. The organic layer was separated, and the aqueous layer extracted three times with DCM. The combined organic layers were washed with brine, dried with anhydrous sodium sulfate, filtered, concentrated under reduced pressure. The residue was purified by silica gel flash chromatography.



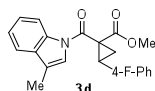
Methyl 2-(4-methoxyphenyl)-1-(3-methyl-1H-indole-1-carbonyl) cyclopropane carboxylate (3a): The general procedure was followed using 4-methoxystyrene (0.201 g, 1.49 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.500 g, 1.94 mmol), Rh₂esp₂ (1.5 mg, 1.98 μmol) and DCM (8 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, *R_f* 0.52) afforded **3a** as a pale yellow solid (0.328 g, 60%). [*m.p.* 110-112 °C] **¹H NMR** (300 MHz, CDCl₃) δ 8.45 (d, *J* = 8.0 Hz, 1H), 7.61-7.45 (m, 1H), 7.44 – 7.26 (m, 5H), 6.90 – 6.83 (m, 2H), 3.81 (s, 3H), 3.41 (t, *J* = 4 Hz, 1H), 3.41 (s, 3H), 2.40 (dd, *J* = 8.3, 5.2 Hz, 1H), 2.28 (s, 3H), 1.82 (dd, *J* = 9.3, 5.2 Hz, 1H). **¹³C NMR** (75 MHz, CDCl₃) δ 168.0, 165.8, 158.9, 136.0, 131.5, 130.2, 126.1, 125.4, 123.8, 121.5, 119.2, 118.9, 116.5, 113.6, 55.2, 52.8, 39.5, 31.1, 18.8, 9.8. **IR**: 3050.0 (w), 2914.3 (m), 1742.9 (m), 1681.0 (s), 1600.0 (m), 1514.29 (m), 1450.0 (s), 1346.3 (s), 1246.8 (s), 1176.5 (s), 1028.6 (s), 838.1 (s), 748.2 (s) cm⁻¹. **HRMS (ESI) M/Z+** Calc. 363.1471, Obs. 363.1471.



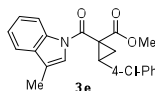
Methyl 2-(2-methoxyphenyl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropane carboxylate (3b): The general procedure was followed using 1-methoxy-2-vinylbenzene (0.095 g, 0.709 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.210 g, 0.816 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (10 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, *R_f* 0.35) afforded **3b** as a pale yellow solid (0.196 g, 76%). [*m.p.* 106-108 °C] **¹H NMR** (300 MHz, CDCl₃) δ 8.54 (d, *J* = 7.9 Hz, 1H), 7.57 – 7.27 (m, 6H), 7.04 – 6.95 (m, 1H), 6.91 (d, *J* = 8.2 Hz, 1H), 3.88 (s, 3H), 3.45 (s, 3H), 3.45 (t, 1H), 2.35 (dd, *J* = 7.9, 4.5 Hz, 1H), 2.32 (d, *J* = 1.3 Hz, 3H), 1.97 (dd, *J* = 9.3, 5.0 Hz, 1H). **¹³C NMR** (75 MHz, CDCl₃) δ 168.4, 165.9, 158.5, 136.0, 131.4, 130.0, 129.7, 128.7, 127.7, 125.0, 123.5, 122.8, 122.2, 120.0, 118.6, 118.1, 116.5, 109.9, 66.7, 55.2, 52.4, 38.0, 28.3, 21.5, 19.0, 14.6, 9.7. **IR**: 3059.9 (w), 2983.6 (w), 1720.3 (s), 1658.0 (s), 1441.1 (s), 1338.7 (s), 1233.7 (m), 712.5 (s), 674.4 (m) cm⁻¹. **HRMS (ESI) M/Z+** Calc. 363.1471, Obs. 363.1471.



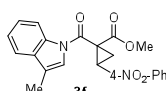
Methyl 1-(3-methyl-1H-indole-1-carbonyl)-2-phenylcyclopropanecarboxylate (3c): The general procedure was followed using styrene (0.100 g, 0.960 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.329 g, 1.28 mmol), Rh₂esp₂ (1.0 mg, 1.32 μmol), and DCM (13 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.60) afforded **3c** as a white solid (0.273 g, 85%). [m.p. 130-132°C] ¹H NMR (300 MHz, CDCl₃) δ 8.46 (d, *J* = 8.0 Hz, 1H), 7.55 – 7.48 (m, 1H), 7.45 – 7.26 (m, 8H), 3.48 (t, *J* = 8.8 Hz, 1H), 3.40 (s, 3H), 2.46 (dd, *J* = 8.3, 5.2 Hz, 1H), 2.29 (s, 3H), 1.84 (dd, *J* = 9.3, 5.2 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 167.9, 165.6, 136.0, 134.2, 131.5, 129.1, 128.2, 127.4, 125.4, 123.8, 121.4, 119.2, 118.9, 116.5, 52.8, 39.5, 31.5, 18.5, 9.8. IR: 3037.6 (w), 2951.9 (w), 2918.5 (w), 1732.7 (s), 1692.0 (s), 1446.9 (s), 1390.8 (s), 1348.3 (s), 1208.8 (m), 1051.6 (m), 742.1 (m), 684.9 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 333.1365, Obs. 333.1367.



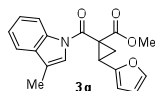
Methyl 2-(4-fluorophenyl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropane carboxylate (3d): The general procedure was followed using 4-fluorostyrene (0.146 g, 1.19 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.356 g, 1.38 mmol), Rh₂esp₂ (1.6 mg, 2.10 μmol), and DCM (8 mL). After 10 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.64) afforded **3d** as a pale green solid (0.273 g, 65%). [m.p. 120-122°C] ¹H NMR (300 MHz, CDCl₃) δ 8.45 (d, *J* = 8.0 Hz, 1H), 7.52 (d, *J* = 8.3 Hz, 1H), 7.44 – 7.29 (m, 4H), 7.25 (s, 1H), 7.07 – 6.98 (m, 2H), 3.46 (t, *J* = 8.5 Hz, 1H), 3.42 (s, 3H), 2.42 (dd, *J* = 8.2, 5.3 Hz, 1H), 2.29 (s, 3H), 1.84 (dd, *J* = 9.3, 5.3 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 167.8, 165.4, 163.8, 160.5, 136.0, 131.5, 130.7, 130.0, 125.4, 123.9, 121.3, 119.4, 118.9, 116.5, 115.3, 115.0, 52.9, 39.5, 30.8, 18.7, 9.8. IR: 3010.0 (w), 2947.1 (w), 2904.3 (w), 1727.9 (m), 1685.1 (s), 1518.4 (s), 1456.5 (s), 1399.3 (s), 1337.4 (s), 1215.2 (s), 1146.9 (s), 1051.7 (m), 846.9 (m), 723.1 (s), 608.7 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 351.1271, Obs. 351.1268.



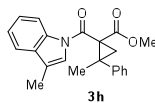
Methyl 2-(4-chlorophenyl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropane carboxylate (3e): The general procedure was followed using 4-chlorostyrene (0.124 g, 0.898 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.250 g, 0.973 mmol), Rh₂esp₂ (1.5 mg, 1.71 μmol), and DCM (8 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.64) afforded **3e** as a white solid (0.275 g, 83%). [m.p. 129-131°C] ¹H NMR (300 MHz, CDCl₃) δ 8.46 (d, *J* = 8.0 Hz, 1H), 7.55 – 7.50 (m, 1H), 7.45 – 7.29 (m, 6H), 7.26 (d, *J* = 1.3 Hz, 1H), 3.44 (t, *J* = 6.8 Hz, 1H), 3.44 (s, 3H), 2.43 (dd, *J* = 8.3, 5.3 Hz, 1H), 2.30 (s, 3H), 1.86 (dd, *J* = 9.3, 5.3 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 167.7, 165.3, 136.0, 133.3, 132.8, 131.5, 130.4, 128.3, 125.4, 123.9, 121.2, 119.4, 118.9, 116.5, 52.9, 39.5, 30.8, 18.6, 9.7. IR: 3010.0 (w), 2951.9 (w), 2913.8 (w), 1727.9 (s), 1691.9 (s), 1485.0 (m), 1451.0 (s), 1389.9 (s), 1347.9 (s), 1218.3 (m), 1156.4 (m), 1080.2 (m), 842.1 (m), 742.1 (m) 708.7 (w) cm⁻¹. HRMS (ESI) M/Z+ Calc. 367.0975, Obs. 367.0981.



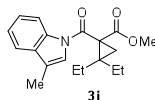
Methyl 1-(3-methyl-1H-indole-1-carbonyl)-2-(4-nitrophenyl)cyclopropane carboxylate (3f): The general procedure was followed using 4-nitrostyrene (0.252 g, 1.69 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.505 g, 1.97 mmol), Rh₂esp₂ (1.2 mg, 1.98 μmol), and DCM (8 mL). After 10 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.69) afforded **3f** as a yellow solid (0.325 g, 51%). [m.p. 163-165°C] ¹H NMR (300 MHz, CDCl₃) δ 8.43 (d, *J* = 7.9 Hz, 1H), 8.24 – 8.17 (m, 2H), 7.58 – 7.50 (m, 3H), 7.45 – 7.30 (m, 2H), 7.21 (s, 1H), 3.54 (t, *J* = 8.8 Hz, 1H), 3.43 (s, 3H), 2.51 (dd, *J* = 8.3, 5.4 Hz, 1H), 2.29 (s, 3H), 1.94 (dd, *J* = 9.2, 5.4 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 167.5, 164.8, 147.3, 142.0, 136.0, 131.5, 130.0, 125.6, 124.1, 123.4, 120.9, 119.8, 119.0, 116.5, 53.1, 40.0, 30.9, 18.9, 9.8. IR: 3000.0 (w), 2913.8 (w), 2851.9 (w), 1727.9 (m), 1691.2 (s), 1599.3 (m), 1508.9 (s), 1449.8 (s), 1390.3 (s), 1342.9 (s), 1216.9 (s), 1142.1 (m), 1046.9 (m), 856.4 (m), 736.7 (s), 699.2 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 378.1216, Obs. 378.1208.



Methyl 2-(furan-2-yl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (3g): The general procedure was followed using 2-vinylfuran (0.059 g, 0.627 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.210 g, 0.816 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (10 mL). After 12 h, the reaction was quenched, and column chromatography (15% EtOAc/Hex, R_f 0.35) afforded **3g** as a white solid (0.084 g, 41%). [m.p. 95-97°C] ¹H NMR (300 MHz, CDCl₃) δ 8.45 (d, *J* = 7.9 Hz, 1H), 7.56 – 7.50 (m, 1H), 7.44 – 7.30 (m, 4H), 6.41 – 6.35 (m, 1H), 6.32 – 6.28 (m, 1H), 3.54 (s, 3H), 3.25 (t, *J* = 8.7 Hz, 1H), 2.34 (dd, *J* = 6.9, 4.2 Hz, 1H), 2.31 (d, *J* = 1.3 Hz, 3H), 1.96 (dd, *J* = 9.5, 5.2 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) 167.6, 164.9, 149.1, 142.3, 136.0, 131.5, 125.3, 123.9, 121.7, 119.3, 118.8, 116.5, 110.5, 108.8, 52.9, 38.2, 24.7, 18.7, 9.8. IR: 3086.97 (w), 2972.5 (w), 1726.4 (m), 1711.4 (m), 1441.3 (m), 1382.7 (m), 759.9 (s), 663.0 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 323.1158, Obs. 323.1159.

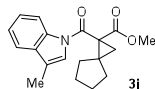


Methyl 2-methyl-1-(3-methyl-1H-indole-1-carbonyl)-2 phenylcyclopropane carboxylate (3h): The general procedure was followed using prop-1-en-2-ylbenzene (0.123 g, 1.046 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.350 g, 1.360 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (10 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.38) afforded **3h** as a colorless oil (0.225 g, 62%). ¹H NMR (300 MHz, CDCl₃) δ 8.61 (d, *J* = 7.8 Hz, 0.90), 7.88 – 7.80 (m, 0.16), 7.63 – 7.55 (m, 1.05), 7.54 – 7.28 (m, 8.37), 7.24 – 7.20 (m, 0.51), 3.69 (s, 0.40), 3.46 (d, *J* = 0.8 Hz, 3), 2.67 (d, *J* = 5.5 Hz, 0.14), 2.53 (d, *J* = 5.1 Hz, 1.33), 2.39 (s, 2.99), 2.26 (d, *J* = 1.3 Hz, 0.42), 1.96 (d, *J* = 6.6 Hz, 0.55), 1.85 (d, *J* = 5.1 Hz, 1.03), 1.64 (s, 0.27), 1.55 (s, 2.91). ¹³C NMR (75 MHz, CDCl₃) δ 168.4, 164.9, 140.6, 136.0, 131.5, 128.4, 128.0, 127.8, 127.2, 125.3, 123.8, 122.3, 118.8, 118.7, 116.8, 52.6, 41.9, 38.4, 26.0, 25.7, 9.8. IR: 3080.6 (w), 2939.6 (w), 2896.9 (w), 1724.3 (s), 1657.6 (s), 1421.8 (s), 1382.7 (s), 1267.7 (s), 789.5 (s), 664.3 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 347.1521, Obs. 347.1516.

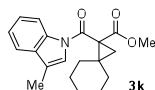


Methyl 2,2-diethyl-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (3i): The general procedure was followed using 3-methylenepentane (0.062 g, 0.747 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.250 g, 0.971 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (10 mL). After 12 h, the reaction was quenched, and column chromatography (15% EtOAc/Hex, R_f 0.35) afforded **3i** as a white solid (0.117 g, 50%). [m.p. 78-80°C] ¹H NMR (300 MHz, CDCl₃) δ 8.40 (d, *J* = 8.0 Hz, 1H), 7.45 – 7.39 (m, 1H), 7.33 – 7.21 (m, 3H), 3.58 (s, 3H), 2.21 (d, *J* = 1.3 Hz, 3H), 1.97 – 1.73 (m, 3H), 1.62 (dd, *J* = 4.8, 1.2 Hz, 1H), 1.51 (d, *J* = 4.8 Hz, 1H), 0.99 (t, *J* = 7.5 Hz, 3H), 0.91 – 0.71 (m, 4H). ¹³C NMR

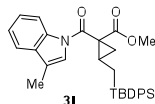
(75 MHz, CDCl₃) δ 169.7, 165.7, 135.9, 131.4, 125.0, 123.6, 122.7, 118.6, 118.0, 116.7, 52.6, 41.4, 40.1, 27.4, 26.2, 21.5, 10.7, 10.6, 9.7. **IR:** 3059.7 (w), 2946.2 (m), 1714.5 (s), 1657.6 (s), 1414.8 (s), 1381.3 (s), 1292.4 (s), 1081.2 (s), 728.5 (s), 663.3 (m) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 313.1678, Obs. 313.1683.



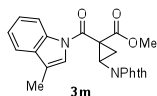
Methyl 1-(3-methyl-1H-indole-1-carbonyl)spiro[2.4]heptane-1-carboxylate (3j): The general procedure was followed using methylenecyclopentane (0.098 g, 1.20 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.400 g, 1.55 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (10 mL). After 4 h, the reaction was quenched, and column chromatography (15% EtOAc/Hex, R_f 0.35) afforded **3j** as a colorless oil (0.342 g, 92%). **¹H NMR** (300 MHz, CDCl₃) δ 8.52 (s, 1H), 7.55 – 7.48 (m, 1H), 7.43 – 7.27 (m, 2H), 7.10 (s, 1H), 3.65 (s, 3H), 2.31 (s, 3H), 2.24 – 1.98 (m, 2H), 1.90 – 1.62 (m, 7H), 1.46 – 1.33 (m, 1H). **¹³C NMR** (75 MHz, CDCl₃) δ 170.1, 165.6, 135.7, 131.2, 124.9, 123.4, 121.9, 118.5, 118.3, 116.3, 52.2, 40.0, 39.2, 34.4, 34.2, 33.6, 31.6, 31.3, 29.0, 25.5, 25.5, 25.0, 22.4, 20.4, 13.9, 9.5. **IR:** 3040.0 (w), 2892.6 (w), 1765.3 (s), 1711.65 (s), 1439.1 (s), 1359.7 (s), 715.5 (s), 662.9 (m) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 311.1521, Obs. 311.1515.



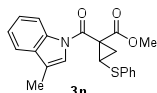
Methyl 1-(3-methyl-1H-indole-1-carbonyl)spiro[2.5]octane-1-carboxylate (3k): The general procedure was followed using methylenecyclohexane (0.068 g, 0.709 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.210 g, 0.816 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (10 mL). After 6 h, the reaction was quenched, and column chromatography (15% EtOAc/Hex, R_f 0.40) afforded **3k** as a white solid (0.160 g, 69%). [m.p. 120-122°C]. **¹H NMR** (300 MHz, CDCl₃) δ 8.49 (d, *J* = 5.7 Hz, 1H), 7.60 – 7.48 (m, 1H), 7.44 – 7.27 (m, 2H), 7.14 (s, 1H), 3.65 (s, 3H), 2.32 (d, *J* = 1.2 Hz, 3H), 2.18 (d, *J* = 12.5 Hz, 1H), 1.92 – 1.21 (m, 10H), 1.05 – 0.94 (m, 1H). **¹³C NMR** (75 MHz, CDCl₃) δ 169.5, 165.7, 135.8, 131.4, 125.0, 123.5, 122.5, 118.6, 118.2, 116.5, 52.5, 41.1, 37.5, 33.9, 28.7, 26.4, 25.8, 25.6, 25.5, 9.7. **IR:** 2998.1 (w), 2878.5 (w), 1720.8 (m), 1711.4 (m), 1439.8 (m), 1340.7 (m), 1138.1 (w), 759.5 (s), 674.3 (s) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 325.1678, Obs. 325.1681.



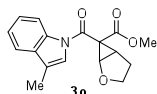
Methyl 2-((tert-butylidiphenylsilyl)methyl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (3l): The general procedure was followed using allyl(*tert*-butyl)diphenylsilane (0.294 g, 1.05 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.350 g, 1.36 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (8 mL). After 6 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.45) afforded **3l** as a white solid (0.332 g, 62%). [m.p. 127 – 129°C] **¹H NMR** (300 MHz, CDCl₃) δ 8.39 (d, *J* = 7.9 Hz, 1H), 7.76 – 7.64 (m, 4H), 7.57 – 7.23 (m, 9H), 7.17 (s, 1H), 3.69 (s, 3H), 2.28 (s, 3H), 1.74 – 1.66 (m, 1H), 1.57 – 1.40 (m, 2H), 1.31 (dd, *J* = 8.5, 5.5 Hz, 2H), 1.13 (s, 9H). **¹³C NMR** (75 MHz, CDCl₃) δ 169.6, 166.3, 136.0, 136.9, 135.8, 134.1, 133.8, 131.4, 129.3, 129.2, 127.7, 127.6, 125.1, 123.6, 121.6, 118.7, 118.6, 116.4, 52.7, 37.3, 27.8, 25.7, 23.0, 18.1, 9.7, 8.0. **IR:** 3066.2 (w), 2932.8 (m), 2842.4 (m), 1728.1 (s), 1692.7 (s), 1451.6 (s), 1389.5 (m), 1348.5 (s), 1213.1 (m), 1153.3 (m), 1106.0 (m), 818.3 (w), 749.1 (m), 701.5 (s) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 509.2386, Obs. 509.2388.



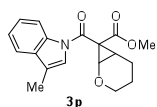
Methyl 2-(1,3-dioxoisindolin-2-yl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropane carboxylate (3m): The general procedure was followed using N-vinyl-phthalimide (0.155 g, 897 μmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.300 g, 1.17 mmol), Rh_2esp_2 (1.1 mg, 1.45 μmol), and DCM (8 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.20) afforded **3m** as a white solid (0.247 g, 68%). [m.p. 88-90°C] *Diastereomeric Ratio:* (2.5:1). $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.43 (d, $J = 7.4$ Hz, 0.83), 8.22 (d, $J = 6.1$ Hz, 0.27), 7.98 (s, 1.00), 7.83 (dt, $J = 6.9, 3.5$ Hz, 2.19), 7.76 – 7.66 (m, 2.80), 7.66 – 7.58 (m, 1.00), 7.51 – 7.45 (m, 1.16), 7.42 – 7.18 (m, 3.88), 4.16 (dd, $J = 9.2, 6.8$ Hz, 0.23), 3.71 (s, 1.11), 3.67 (dd, $J = 8.0, 6.5$ Hz, 1.18), 3.57 (s, 3.00), 3.47 (t, $J = 6.5$ Hz, 0.63), 2.59 (t, $J = 6.4$ Hz, 1.00), 2.35 – 2.27 (m, 4.00), 2.23 (s, 1.45), 2.17 (dd, $J = 9.2, 6.2$ Hz, 0.60). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 169.7, 168.2, 168.0, 167.8, 164.0, 136.0, 134.3, 134.2, 134.2, 131.8, 131.4, 131.3, 125.3, 125.1, 124.0, 123.8, 123.6, 123.4, 122.5, 122.1, 119.0, 118.9, 118.8, 118.7, 116.5, 116.3, 53.4, 53.3, 48.8, 35.9, 33.9, 20.6, 17.4, 9.8, 9.6. **IR:** 3056.7 (w), 2951.9 (w), 1770.8 (w), 1720.5 (s), 1680.3 (s), 1604.1 (w), 1442.2 (m), 1389.3 (s), 1308.8 (s), 1223.1 (s), 1070.7 (m), 970.7 (w), 865.9 (w), 714.8 (s) cm^{-1} . **HRMS (ESI) M/Z+ Calc.** 402.1216, Obs. 402.1213.



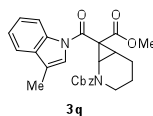
Methyl 1-(3-methyl-1H-indole-1-carbonyl)-2-(phenylthio)cyclopropanecarboxylate (3n): The general procedure was followed using phenyl(vinyl)sulfane (0.311 g, 2.29 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.722 g, 2.81 mmol), Rh_2esp_2 (1.8 mg, 2.4 μmol), and DCM (13 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.40) afforded **3n** as a colorless oil (0.125 g, 15%). $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 8.44 (d, $J = 7.9$ Hz, 1H), 7.55 – 7.47 (m, 3H), 7.43 – 7.28 (m, 4H), 7.23 – 7.16 (m, 2H), 3.56 (dd, $J = 7.5, 5.6$ Hz, 1H), 3.52 (s, 3H), 2.25 (d, $J = 1.3$ Hz, 3H), 2.15 (dd, $J = 7.3, 5.7$ Hz, 1H), 1.92 (dd, $J = 9.2, 5.7$ Hz, 1H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 167.3, 164.6, 135.9, 135.4, 131.6, 129.0, 127.7, 126.0, 125.7, 124.0, 121.1, 119.7, 119.0, 116.6, 53.1, 39.8, 28.2, 20.0, 9.7. **IR:** 3080.6 (w), 2939.6 (w), 2896.9 (w), 1724.3 (s), 1657.6 (s), 1421.8 (s), 1382.7 (s), 1267.7 (s), 789.5 (s), 664.3 (s) cm^{-1} . **HRMS (ESI) M/Z+ Calc.** 365.1079, Obs. 365.1083.



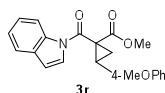
Methyl 6-(3-methyl-1H-indole-1-carbonyl)-2-oxabicyclo[3.1.0]hexane-6-carboxylate (3o): The general procedure was followed using 2,3-dihydrofuran (0.073 g, 1.05 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.350 g, 1.36 mmol), Rh_2esp_2 (1.0 mg, 1.31 μmol), and DCM (9 mL). After 10 h, the reaction was quenched and column chromatography (20% EtOAc/Hex, R_f 0.30) afforded **3o** as a brown solid (0.235 g, 75%). [m.p. 83-85°C] $^1\text{H NMR}$ (300 MHz, CDCl_3) δ 7.72 – 7.63 (m, 1H), 7.56 – 7.49 (m, 2H), 7.31 – 7.17 (m, 2H), 6.27 (d, $J = 6.2$ Hz, 1H), 4.19 – 4.10 (m, 1H), 4.05 – 3.97 (m, 1H), 3.96 – 3.85 (m, 1H), 3.72 (s, 3H), 2.35 (s, 3H), 2.25 – 2.16 (m, 2H). $^{13}\text{C NMR}$ (75 MHz, CDCl_3) δ 164.1, 156.4, 135.8, 130.3, 125.0, 123.2, 121.7, 118.8, 115.2, 114.2, 108.3, 89.2, 67.1, 50.9, 47.3, 32.0, 9.5. **IR:** 2951.9 (w), 2880.5 (w), 1740.9 (s), 1691.3 (s), 1599.3 (w), 1449.2 (s), 1348.9 (s), 1105.2 (s), 1064.3 (s), 995.6 (s), 734.8 (s) cm^{-1} . **HRMS (ESI) M/Z+ Calc.** 299.1158, Obs. 299.1155.



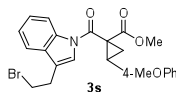
Methyl 7-(3-methyl-1*H*-indole-1-carbonyl)-2-oxabicyclo[4.1.0]heptane-7-carboxylate (3p): The general procedure was followed using 2,3-dihydropyran (95 μ L, 1.04 mmol), methyl 2-diazo-3-(3-methyl-1*H*-indol-1-yl)-3-oxopropanoate (0.350 g, 1.36 mmol), Rh₂esp₂ (1.0 mg, 1.31 μ mol), and DCM (8 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.40) afforded **3p** as a pale red solid (0.142 g, 43%). [m.p. 123-125°C]. ¹H NMR (300 MHz, CDCl₃) δ 8.45 (d, *J* = 8.1 Hz, 1H), 7.51 – 7.43 (m, 1H), 7.42 – 7.22 (m, 2H), 7.17 (s, 1H), 6.54 (s, 1H), 4.60 (s, 1H), 4.00 – 3.87 (m, 2H), 3.77 (s, 3H), 2.39 – 2.27 (m, 1H), 2.26 (s, 3H), 2.14 – 2.02 (m, 1H), 1.97 – 1.77 (m, 2H). ¹³C NMR (75 MHz, CDCl₃) δ 168.8, 165.6, 144.5, 136.0, 131.2, 125.3, 123.8, 121.1, 119.2, 118.7, 116.7, 106.4, 80.7, 65.6, 56.0, 52.6, 21.8, 21.5, 9.6. IR: 2942.4 (w), 2866.2 (w), 1756.5 (s), 1694.6 (s), 1651.7 (s), 1608.9 (w), 1451.7 (s), 1385.0 (s), 1349.3 (s), 1140.7 (s), 1065.9 (s), 1018.3 (m), 937.4 (m), 745.4 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 313.1314, Obs. 313.1312.



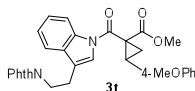
2-benzyl 7-methyl 7-(3-methyl-1*H*-indole-1-carbonyl)-2-azabicyclo[4.1.0]heptane-2,7-dicarboxylate (3q). The general procedure was followed using benzyl 3,4-dihydropyridine-1(2*H*)-carboxylate (0.179 g, 0.897 mmol), methyl 2-diazo-3-(3-methyl-1*H*-indol-1-yl)-3-oxopropanoate (0.300 g, 1.17 mmol), Rh₂esp₂ (1.3 mg, 1.79 μ mol), and DCM (9 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.25) afforded **3q** as a colorless oil (0.295 g, 74%). ¹H NMR (300 MHz, CDCl₃) δ 8.48 (d, *J* = 7.9 Hz, 1H), 7.49 (d, *J* = 7.5 Hz, 1H), 7.42 – 7.26 (m, 6H), 7.13 (t, *J* = 32.4 Hz, 2H), 5.20 (s, 2H), 4.77 (d, *J* = 26.5 Hz, 1H), 3.76 (d, *J* = 11.9 Hz, 3H), 3.71 – 3.44 (m, 2H), 2.27 (s, 3H), 2.51 – 2.02 (m, 2H), 1.96 – 1.74 (m, 2H). ¹³C NMR (75 MHz, CDCl₃) δ 168.5, 165.4, 153.4, 152.6, 135.9, 135.8, 131.2, 128.4, 128.1, 128.0, 126.2, 125.7, 125.4, 123.8, 121.1, 119.3, 118.7, 116.7, 111.5, 110.8, 67.6, 57.5, 52.7, 41.9, 41.7, 23.5, 22.8, 21.1, 14.5, 9.6. IR: 2942.4 (w), 2880.5 (w), 1751.6 (w), 1703.3 (s), 1691.6 (s), 1449.2 (m), 1406.5 (m), 1319.9 (m), 1260.5 (m), 1172.1 (m), 747.1 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 446.1842, Obs. 446.1840.



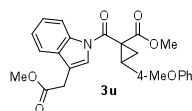
Methyl 1-(1*H*-indole-4-yl)-2-(4-methoxyphenyl)cyclopropanecarboxylate (3r): The general procedure was followed using 4-methoxystyrene (0.061 g, 0.459 mmol), methyl 2-diazo-3-(5-methyl-1*H*-indol-1-yl)-3-oxopropanoate (0.331 g, 2.466 mmol), Rh₂esp₂ (1.87 mg, 2.4 μ mol), and DCM (20 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.30) afforded **3r** as a white solid (0.625 g, 72.8%). [m.p. 83-85°C] ¹H NMR (300 MHz, CDCl₃) δ 8.44 (d, *J* = 8.2 Hz, 1H), 7.56 – 7.46 (m, 2H), 7.39 – 7.19 (m, 4H), 6.86 – 6.80 (m, 2H), 6.63 – 6.60 (m, 1H), 3.76 (s, 3H), 3.44 – 3.34 (m, 4H), 2.38 (dd, *J* = 8.3, 5.3 Hz, 1H), 1.82 (dd, *J* = 9.7, 5.6, 0.7 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 167.8, 166.2, 158.9, 135.7, 130.4, 130.1, 125.8, 125.2, 124.7, 124.0, 120.9, 116.4, 113.5, 109.7, 55.1, 52.7, 39.3, 31.2, 18.8. IR: 3109.7 (w), 3010.1 (w), 2947.0 (w), 2827.4 (w), 1741.56 (m), 1715.0 (s), 1685.1 (s), 1615.4 (m), 1505.8 (m), 1450.0 (s), 1376.29 (m), 1333.4 (s), 1306.6 (s), 1246.1 (s), 1160.6 (s), 1149.4 (s), 1123.91 (m), 1074.1 (m), 1030.9 (m), 951.2 (m), 841.7 (m), 747.6 (s), 629.1 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 349.1314, Obs. 349.1310.



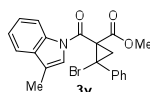
Methyl 1-(3-(2-bromoethyl)-1H-indole-1-carbonyl)-2-(4-methoxyphenyl) cyclopropanecarboxylate (3s): The general procedure was followed using 4-methoxy styrene (0.073 g, 0.549 mmol), methyl 3-(3-(2-bromoethyl)-1H-indol-1-yl)-2-diazo-3-oxopropanoate (0.250 g, 0.713 mmol), Rh₂esp₂ (1.0 mg, 1.31 μmol), and DCM (15 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.35) afforded **3s** as a white solid (0.188 g, 75%). [m.p. 122-124°C]. ¹H NMR (300 MHz, CDCl₃) δ 8.43 (d, *J* = 8.1 Hz, 1H), 7.51 – 7.45 (m, 1H), 7.41 – 7.19 (m, 5H), 6.86 – 6.79 (m, 2H), 3.76 (s, 3H), 3.61 (t, *J* = 7.0 Hz, 2H), 3.42 – 3.34 (m, 4H), 3.23 (t, *J* = 7.3, 4.4 Hz, 2H), 2.38 (dd, *J* = 8.3, 5.3 Hz, 1H), 1.82 (dd, *J* = 9.4, 5.2 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 167.8, 166.0, 158.9, 136.0, 130.1, 130.0, 126.0, 125.6, 124.0, 122.4, 120.1, 119.3, 118.5, 116.7, 113.6, 55.2, 52.8, 43.4, 39.3, 31.4, 31.3, 28.7, 18.9. IR: 2982.4 (w), 2917.1 (w), 1722.1 (s), 1658.4 (s), 1441.3 (s), 1375.7 (s), 934.5 (s), 700.5 (s), 662.9 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 455.0708, Obs. 455.0732.



Methyl 1-(3-(2-(1,3-dioxoisindolin-2-yl)ethyl)-1H-indole-1-carbonyl)-2-(4-methoxyphenyl)cyclopropanecarboxylate (3t): The general procedure was followed using 4-methoxystyrene (0.208 g, 1.55 mmol), methyl 3-(3-(2-(1,3-dioxoisindolin-2-yl)ethyl)-1H-indol-1-yl)-3-oxopropanoate (0.810 g, 1.95 mmol), Rh₂esp₂ (1.3 mg, 1.71 μmol), and DCM (8 mL). After 12 h, the reaction was quenched, and column chromatography (40% EtOAc/Hex, R_f 0.38) afforded **3t** as a pale brown solid (0.182 g, 23%). [m.p. 158-160°C] ¹H NMR (300 MHz, CDCl₃) δ 8.44 (d, *J* = 7.9 Hz, 1H), 7.88 – 7.81 (m, 2H), 7.78 – 7.65 (m, 3H), 7.44 – 7.24 (m, 5H), 6.92 – 6.83 (m, 2H), 4.02 (t, *J* = 7.2 Hz, 2H), 3.81 (s, 3H), 3.39 (t, *J* = 9.0, 1H), 3.38 (s, 3H), 3.11 (t, *J* = 7.7 Hz, 2H), 2.41 (dd, *J* = 8.3, 5.3 Hz, 1H), 1.79 (dd, *J* = 9.4, 5.3 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) (Rotamers!!) δ 168.2, 167.7, 166.0, 158.9, 136.1, 134.0, 133.8, 132.0, 130.4, 130.2, 126.0, 125.6, 124.0, 123.3, 123.2, 122.1, 122.0, 119.6, 119.5, 119.0, 118.9, 116.6, 113.6, 55.2, 53.4, 52.7, 39.6, 38.5, 37.4, 31.3, 24.3, 18.9. IR: 3051.9 (w), 2942.4 (w), 1760.0 (w), 1708.8 (s), 1685.1 (s), 1594.6 (m), 1513.6 (m), 1442.2 (m), 1375.5 (m), 1242.2 (m), 1104.0 (w), 832.6 (m), 732.8 (s), cm⁻¹. HRMS (ESI) M/Z+ Calc. 522.1791, Obs. 522.1777.



Methyl 1-(3-(2-methoxy-2-oxoethyl)-1H-indole-1-carbonyl)-2-(4-methoxyphenyl) cyclopropanecarboxylate (3u): The general procedure was followed using 4-methoxystyrene (0.211 g, 1.57 mmol), methyl 2-diazo-3-(3-(2-methoxy-2-oxoethyl)-1H-indol-1-yl)-3-oxopropanoate (0.611 g, 1.94 mmol), Rh₂esp₂ (1.5 mg, 1.98 μmol), and DCM (8 mL). After 14 h, the reaction was quenched, and column chromatography (EtOAc/Hex, R_f 0.21) afforded **3u** as a yellow solid (0.312 g, 47%). [m.p. 82 – 84 °C]. ¹H NMR (300 MHz, CDCl₃) δ 8.46 (d, *J* = 8.1 Hz, 1H), 7.58 – 7.49 (m, 2H), 7.46 – 7.26 (m, 4H), 6.92 – 6.82 (m, 2H), 3.81 (s, 3H), 3.73 (s, 2H), 3.73 (s, 3H), 3.43 (s, 3H), 3.43 (t, *J* = 4.5 Hz, 1H), 2.42 (dd, *J* = 8.3, 5.3 Hz, 1H), 1.86 (dd, *J* = 9.4, 5.2 Hz, 1H). ¹³C NMR (75 MHz, CDCl₃) δ 171.0, 167.8, 166.0, 158.9, 135.9, 130.2, 130.1, 125.9, 125.6, 124.0, 123.3, 119.0, 116.6, 115.7, 113.6, 55.2, 52.8, 52.2, 39.3, 31.3, 30.8, 18.9. IR: 3009.0 (w), 2947.1 (w), 1742.2 (s), 1694.6 (s), 1608.9 (m), 1504.1 (m), 1446.9 (s), 1356.5 (s), 1246.9 (s), 1032.6 (m), 827.8 (m), 732.8 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 421.1525, Obs. 421.1519.

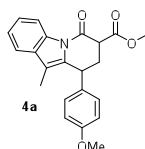


Methyl 2-bromo-1-(3-methyl-1H-indole-1-carbonyl)-2-phenylcyclopropanecarboxylate(3v): The general procedure was followed using (1-bromovinyl)benzene (0.150 g, 0.819 mmol), methyl 2-diazo-3-(3-methyl-1H-indol-1-yl)-3-oxopropanoate (0.274 g, 1.065 mmol), Rh₂esp₂ (1.0 mg, 1.319 μmol), and DCM (12 mL). After 12 h, the reaction was quenched, and column chromatography (20% EtOAc/Hex, R_f 0.40) afforded **3v** as a white solid (0.075 g, 22.2%). [m.p. 132-134°C] ¹H NMR (300 MHz, CDCl₃) δ 8.12 – 8.04 (m, 1H), 7.48 – 7.37 (m, 3H), 7.27 – 7.18 (m, 3H), 7.17 – 7.04 (m, 3H), 3.80 (s, 3H), 2.86 (d, J = 7.3 Hz, 1H), 2.56 (d, J = 7.3 Hz, 1H), 2.27 (d, J = 1.3 Hz, 3H). ¹³C NMR (75 MHz, CDCl₃) δ 166.76, 161.38, 136.52, 135.61, 131.27, 128.86, 128.57, 127.85, 125.06, 123.77, 122.47, 118.71, 118.60, 116.25, 53.54, 43.79, 40.49, 26.14, 9.70. IR: 3066.5 (w), 2960.3 (w), 2920.4 (w), 2867.3 (w), 1737.9 (m), 1691.2 (m), 1678.5 (m), 1612.1 (w), 1448.6 (m), 1388.6 (m), 1346.9 (s), 1238.1 (s), 1218.1 (m), 1146.1 (m), 1120.2 (s), 1063.0 (m), 1018.9 (m), 914.7 (w), 749.3 (s), 693.5 (s), 632.5 (w) cm⁻¹. HRMS (ESI) M/Z+ Calc. 411.0470, Obs. 411.0461.

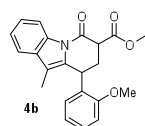
D. In(OTf)₃-Catalyzed Homo-Nazarov Cyclizations

General Method A: The cyclopropyl β-amide ester **3** (1.0 equiv) was added to a solution of In(OTf)₃ (0.30 equiv) in anhydrous dichloromethane (2 mL) at room temperature. Upon completion, the reaction mixture was quenched with water and the product was extracted from the aqueous phase with dichloromethane. The combined organic layers were washed with brine and dried over MgSO₄. The organic layers were concentrated for silica gel flash column chromatography.

General Method B: To a mixture of In(OTf)₃ (0.30 equiv) in anhydrous 1,2-dichloroethane heated to a reflux, dissolved cyclopropyl β-amide ester **3** (1.0 equiv) was syringed into the reaction vessel. The reaction was monitored by TLC and quenched with water. The phases were separated, and the product was extracted from the aqueous phase with dichloromethane. The combined organic layers were washed with brine, dried over MgSO₄, filtered, and concentrated for silica gel flash column chromatography.

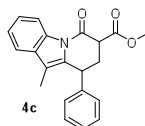


Methyl 9-(4-methoxyphenyl)-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate(4a): Methyl 2-(4-methoxyphenyl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (0.100 g, 0.275 mmol), In(OTf)₃ (0.046 g, 0.082 mmol) and DCM (4 mL) were combined according to general method A to afford **4a** as a pale brown oil (0.099 g, 99%) after 2 h. R_f 0.35 (20% EtOAc/Hex). **Diastereomeric ratio:** (2.6:1). ¹H NMR (300 MHz, CDCl₃) δ 8.55 – 8.47 (m, 1.34), 7.50 – 7.28 (m, 4.53), 7.15 – 7.09 (m, 0.86), 7.01 – 6.95 (m, 2.09), 6.88 – 6.80 (m, 3.05), 4.59 (t, J = 4.3 Hz, 0.94), 4.34 (dd, J = 8.5, 5.1 Hz, 0.36), 3.81 – 3.78 (m, 8.28), 3.69 (d, J = 4.5 Hz, 0.56), 3.65 (d, J = 4.5 Hz, 0.56), 3.56 (d, J = 1.1 Hz, 1.37), 2.92 – 2.68 (m, 1.40), 2.59 – 2.34 (m, 1.39), 2.00 (s, 3.0), 1.75 (s, 1.26). ¹³C NMR (75 MHz, CDCl₃) δ 169.6, 169.2, 165.0, 164.9, 158.5, 158.5, 134.5, 134.4, 133.7, 133.5, 132.8, 132.3, 131.3, 131.0, 128.9, 128.3, 124.8, 124.8, 124.1, 124.0, 118.1, 118.0, 116.5, 115.2, 114.8, 114.1, 113.9, 55.1, 52.5, 52.4, 49.7, 47.1, 43.4, 37.9, 35.2, 33.8, 33.0, 8.7, 8.3. IR: 3051.9 (w), 2932.8 (w), 1747.0 (s), 1685.1 (s), 1618.4 (w), 1451.7 (s), 1366.0 (s), 1242.2 (s), 1170.7 (s), 1156.4 (s), 1023.1 (s), 899.2 (m), 729.0 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 363.1471, Obs. 363.1475.

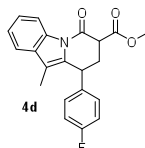


Methyl 9-(2-methoxyphenyl)-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4b): Methyl 2-(2-methoxyphenyl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (0.070 g,

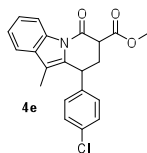
0.192 mmol), In(OTf)₃ (0.032 g, 0.057 mmol) and DCM (3 mL) were mixed according to general method A to afford a pale yellow oil (0.066 g, 95.0%) after 3 h. R_f 0.37 (20% EtOAc/Hex). *Diastereomeric ratio*: (3.2:1). ¹H NMR (300 MHz, CDCl₃) δ 8.59 – 8.48 (m, 1.32), 7.50 – 7.29 (m, 4.33), 7.28 – 7.19 (m, 1.66), 6.93 (dd, *J* = 8.3, 3.2 Hz, 1.57), 6.84 – 6.74 (m, 1.84), 6.57 (dd, *J* = 7.5, 1.6 Hz, 1.12), 4.95 (dd, *J* = 4.9, 3.0 Hz, 1.03), 4.80 (t, *J* = 6.1 Hz, 0.32), 3.97 – 3.88 (m, 4.23), 3.83 – 3.75 (m, 3.52), 3.74 – 3.62 (m, 1.07), 3.45 (s, 0.94), 2.95 (dt, *J* = 13.8, 7.0 Hz, 0.37), 2.81 – 2.66 (m, 1.36), 2.61 – 2.44 (m, 1.44), 2.31 (q, *J* = 7.8 Hz, 0.37), 2.00 (s, 2.89), 1.81 (s, 0.94). ¹³C NMR (75 MHz, CDCl₃) δ 169.9, 169.4, 165.5, 156.8, 156.5, 134.6, 134.0, 131.2, 129.0, 128.6, 128.5, 128.4, 128.3, 124.7, 124.66, 124.15, 124.0, 122.1, 120.5, 120.4, 118.2, 117.9, 116.7, 116.6, 114.4, 110.5, 110.3, 55.4, 55.3, 52.5, 52.3, 49.5, 47.6, 31.0, 30.7, 30.1, 8.3, 8.3. IR: 3097.4 (w), 2986.9 (w), 2854.2 (w), 1724.1 (s), 1711.7 (m), 1657.3 (s), 1591.8 (m), 1440.0(s), 1374.7(s), 1221.0(s), 1044.7(s), 784.2 (s), 674.3 (m) cm⁻¹. HRMS (ESI) M/Z+ Calc. 363.1471, Obs. 363.1472.



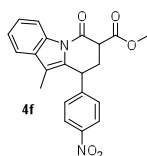
Methyl 10-methyl-6-oxo-9-phenyl-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4c): Methyl 1-(3-methyl-1*H*-indole-1-carbonyl)-2-phenylcyclopropane carboxylate (0.100 g, 0.300 mmol), In(OTf)₃ (0.050 g, 0.090 mmol) and DCE (4 mL) were combined according to general method B to afford **4c** as a brown oil (0.051 g, 52%) after 8 h. R_f 0.25 (20% EtOAc/Hex). *Diastereomeric ratio*: (2.6:1). ¹H NMR (300 MHz, CDCl₃) δ 8.57 – 8.47 (m, 1.37), 7.53 – 7.27 (m, 10.63), 7.07 (d, *J* = 7.4 Hz, 2.24), 4.64 (t, *J* = 4.3 Hz, 1.00), 4.40 (dd, *J* = 8.2, 5.7 Hz, 0.39), 3.80 (dd, *J* = 9.4, 3.3 Hz, 3.61), 3.75 – 3.63 (m, 1.46), 3.53 (d, *J* = 1.1 Hz, 1.28), 2.95 – 2.74 (m, 2.28), 2.64 – 2.42 (m, 2.12), 2.00 (s, 3.13), 1.74 (s, 1.24). ¹³C NMR (75 MHz, CDCl₃) δ 169.6, 169.2, 165.0, 164.9, 140.8, 140.5, 134.6, 133.3, 133.2, 131.3, 131.1, 128.9, 128.7, 128.6, 128.3, 128.0, 127.6, 127.3, 127.2, 127.2, 125.7, 125.0, 124.2, 124.1, 118.2, 118.0, 116.7, 116.6, 115.47, 115.12, 52.6, 52.4, 49.8, 47.1, 38.7, 36.1, 33.8, 32.9, 8.8, 8.4. IR: 3032.9 (w), 2961.4 (w), 2904.3 (w), 1744.6 (s), 1699.4 (s), 1537.4 (w), 1457.6 (s), 1382.5 (s), 1242.2 (m), 1018.3 (w), 749.9 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 333.1365, Obs. 333.1367.



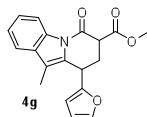
Methyl 9-(4-fluorophenyl)-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4d): Methyl 2-(4-fluorophenyl)-1-(3-methyl-1*H*-indole-1-carbonyl) cyclopropanecarboxylate (0.100 g, 0.285 mmol), In(OTf)₃ (0.047 g, 0.085 mmol, 30 mol%) and DCE (4 mL) were combined according to general method B to afford **4d** as a brown oil (0.048 g, 48%) after 8 h. R_f 0.28 (20% EtOAc/Hex). *Diastereomeric ratio*: (2.6:1). ¹H NMR (300 MHz, CDCl₃) δ 8.57 – 8.46 (m, 1.37), 7.76 (d, *J* = 8.1 Hz, 0.68), 7.53 – 7.29 (m, 5.16), 7.26 – 6.77 (m, 12.82), 5.75 (s, 0.62), 4.62 (t, *J* = 4.4 Hz, 1.00), 4.39 (dd, *J* = 8.2, 5.3 Hz, 0.35), 3.80 (s, 3.03), 3.65 (dd, *J* = 11.8, 4.5 Hz, 1.24), 3.55 (s, 1.24), 2.93 – 2.79 (m, 2.17), 2.61 – 2.38 (m, 1.87), 2.00 (s, 3.18), 1.76 (s, 1.43). ¹³C NMR (75 MHz, CDCl₃) δ 169.5, 169.2, 164.8, 160.2, 136.2, 134.6, 132.9, 131.0, 129.6, 129.4, 128.9, 128.8, 125.1, 124.3, 124.2, 118.3, 118.1, 116.6, 115.9, 115.6, 115.4, 115.2, 52.7, 52.5, 49.6, 47.8, 47.1, 35.9, 35.4, 33.8, 33.0, 33.1, 8.4. IR: 3051.9 (w), 2932.8 (w), 2861.4 (w), 1738.3 (m), 1664.6 (m), 1604.1 (m), 1535.1 (m), 1508.3 (m), 1314.8 (m), 1250.8 (s), 1209.5 (s), 1097.4 (m), 989.0 (w), 832.4 (m), 736.0 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 351.1271, Obs. 351.1272.



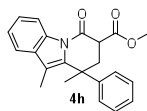
Methyl 9-(4-chlorophenyl)-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4e): Methyl 2-(4-chlorophenyl)-1-(3-methyl-1H-indole-1-carbonyl) cyclopropanecarboxylate (0.100 g, 0.272 mmol), In(OTf)₃ (0.045 g, 0.081 mmol) and DCE (4 mL) were mixed according to general method B to yield a brown oil (0.049 g, 49.7%) after 12 h. *R_f* 0.43 (15% EtOAc/Hex). *Diastereomeric ratio:* (1.9:1). ¹H NMR (300 MHz, CDCl₃) δ 8.55 – 8.46 (m, 1.38), 7.50 – 7.27 (m, 8.02), 7.17 – 7.13 (m, 1.05), 7.04 – 6.98 (m, 2.15), 6.81 – 6.77 (m, 0.45), 4.61 (t, *J* = 4.6 Hz, 1.00), 4.40 (dd, *J* = 7.6, 5.8 Hz, 0.52), 3.80 (s, 3.14), 3.65 (d, *J* = 4.5 Hz, 0.55), 3.61 (d, *J* = 4.5 Hz, 0.55), 3.54 (s, 1.24), 2.93 – 2.70 (m, 2.53), 2.62 – 2.37 (m, 2.54), 1.99 (s, 2.80), 1.77 (s, 1.20). ¹³C NMR (75 MHz, CDCl₃) δ 169.4, 164.7, 139.1, 134.6, 133.2, 132.6, 131.0, 129.3, 129.1, 129.0, 128.8, 128.7, 127.1, 125.2, 124.4, 124.3, 118.3, 118.2, 116.7, 115.3, 77.4, 77.2, 77.0, 76.5, 52.7, 52.5, 49.6, 47.1, 38.0, 35.6, 33.6, 32.9, 8.9, 8.5. IR: 3051.9 (w), 2956.6 (m), 2918.6 (m), 2847.1 (m), 1747.0 (m), 1699.4 (m), 1613.6 (m), 1542.2 (s), 1313.6 (m), 1251.5 (m), 1208.8 (m), 1094.5 (w), 1004.0 (w), 832.6 (w), 737.7 (s) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 367.0975, Obs. 367.0988.



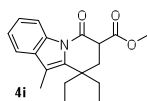
Methyl 10-methyl-9-(4-nitrophenyl)-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4f): Methyl 1-(3-methyl-1H-indole-1-carbonyl)-2-(4-nitrophenyl) cyclopropanecarboxylate (0.100 g, 0.264 mmol), In(OTf)₃ (0.044 g, 0.079 mmol) and DCE (4 mL) were mixed according to general method B to yield a brown oil after 20 h. The reaction afforded an inseparable mixture of trace amounts of **4f** and other by-products as observed by crude ¹H NMR. *R_f* 0.35 (15% EtOAc/Hex).



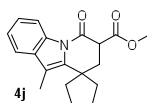
Methyl 9-(furan-2-yl)-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4g): Methyl 2-(furan-2-yl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropane carboxylate (0.050 g, 0.154 mmol), In(OTf)₃ (0.026 g, 0.046 mmol) and DCM (3 mL) were mixed according to general method A to afford a colorless oil (0.049 g, 99.0%) after 2 h. *R_f* 0.40 (20% EtOAc/Hex). *Diastereomeric ratio:* (4.5:1). ¹H NMR (300 MHz, CDCl₃) δ 8.57 – 8.51 (m, 0.37), 8.50 – 8.42 (m, 0.97), 7.53 – 7.46 (m, 1.50), 7.42 – 7.29 (m, 3.77), 6.30 – 6.25 (m, 1.21), 5.91 – 5.87 (m, 1.16), 4.65 (t, *J* = 3.9 Hz, 1), 4.52 (t, *J* = 5.2 Hz, 0.22), 3.84 (d, *J* = 1.0 Hz, 3.24), 3.81 – 3.72 (m, 1.42), 3.51 (d, *J* = 0.8 Hz, 0.69), 3.08 (dt, *J* = 13.8, 5.6 Hz, 0.25), 2.72 (dt, *J* = 4.4, 3.6 Hz, 2.07), 2.53 (dt, *J* = 13.8, 5.3 Hz, 0.27), 2.15 (d, *J* = 0.3 Hz, 3.09), 2.00 (d, *J* = 0.9 Hz, 0.67). ¹³C NMR (75 MHz, CDCl₃) δ 169.6, 164.8, 152.4, 142.4, 142.1, 134.6, 131.1, 130.8, 125.1, 124.2, 118.3, 116.6, 115.3, 110.3, 110.2, 108.1, 107.6, 52.7, 47.7, 31.3, 30.7, 29.3, 8.3. IR: 3090.2 (w), 2936.8 (w), 1767.1 (s), 1725.6 (s), 1469.4(s), 1376.2(m), 1269.5(m), 785.4 (s), 663.0 (m) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 323.1158, Obs. 323.1159.



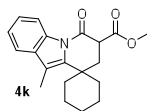
Methyl 9,10-dimethyl-6-oxo-9-phenyl-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4h): Methyl 2-methyl-1-(3-methyl-1H-indole-1-carbonyl)-2-phenyl cyclopropanecarboxylate (0.070 g, 0.201 mmol), In(OTf)₃ (0.033 g, 0.060 mmol) and DCM (3 mL) were combined according to general Method A to afford a **4h** as a white solid (0.065 g, 94.14%) after 2 h. *R_f* 0.28 (20% EtOAc/Hex). [m.p. 139-141°C] *Diastereomeric ratio:* (1.1:1). ¹H NMR (300 MHz, CDCl₃) δ 8.58 – 8.50 (m, 1.81), 7.54 (ddt, *J* = 7.6, 4.3, 2.2 Hz, 1.0), 7.45 – 7.25 (m, 13.52), 7.13 – 7.08 (m, 2.11), 3.99 (dd, *J* = 12.2, 5.0 Hz, 0.80), 3.80 (s, 3.0), 3.72 (s, 2.71), 3.43 (dd, *J* = 13.2, 4.4 Hz, 0.99), 2.84 (dt, *J* = 26.7, 13.4 Hz, 1.88), 2.50 – 2.41 (m, 1.35), 2.26 – 2.18 (m, 4.15), 1.99 (s, 2.99), 1.85 (s, 2.62), 1.65 (s, 2.68). ¹³C NMR (75 MHz, CDCl₃) δ 169.5, 169.4, 165.3, 164.9, 145.9, 143.8, 138.5, 136.9, 134.3, 134.2, 131.6, 131.9, 128.9, 128.5, 127.1, 126.8, 126.4, 125.9, 125.1, 124.9, 124.1, 124.1, 118.0, 117.9, 116.7, 115.6, 114.6, 52.6, 48.5, 47.9, 42.1, 41.23, 40.74, 39.56, 29.4, 24.6, 10.0, 9.2. IR: 3040.9 (w), 2963.4 (w), 2890.4 (w), 1722.2 (s), 1640.6 (s), 1483.9 (s), 1383.5 (s), 1270.4 (m), 1182.4 (m), 1134.3 (w), 740.1 (s), 640.4 (s) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 347.1521, Obs. 347.1516.



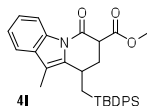
Methyl 9,9-diethyl-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4i): Methyl 2,2-diethyl-1-(3-methyl-1H-indole-1-carbonyl)cyclopropane carboxylate (0.055 g, 0.175 mmol), In(OTf)₃ (0.029 g, 0.052 mmol) and DCE (3 mL) were mixed according to general method B to yield a colorless oil (0.046 g, 84.8%) after 6 h. *R_f* 0.38 (20% EtOAc/Hex). ¹H NMR (300 MHz, CDCl₃) δ 8.51 – 8.44 (m, 1H), 7.44 (ddd, *J* = 6.7, 4.5, 2.6 Hz, 1H), 7.34 – 7.28 (m, 2H), 3.94 – 3.83 (m, 4H), 2.58 (t, *J* = 13.5 Hz, 1H), 2.30 (d, *J* = 0.7 Hz, 3H), 2.21 (dt, *J* = 14.6, 7.4 Hz, 1H), 1.95 (dd, *J* = 13.7, 5.0 Hz, 1H), 1.87 – 1.65 (m, 3H), 0.93 (dt, *J* = 10.0, 7.4 Hz, 6H). ¹³C NMR (75 MHz, CDCl₃) δ 170.2, 165.3, 136.9, 134.4, 131.7, 124.7, 123.9, 117.6, 116.6, 113.7, 77.4, 76.9, 76.5, 52.7, 47.4, 39.3, 32.3, 31.6, 29.1, 9.7, 8.5, 8.3. IR: 3025.9 (w), 2894.8 (w), 1786.6 (s), 1725.4 (s), 1484.2 (s), 1383.2 (m), 1283.0 (m), 1180.6 (m), 713.41 (s), 662.9 (m) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 313.1678, Obs. 313.1678.



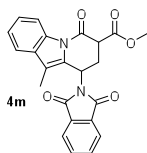
Methyl 10'-methyl-6'-oxo-7',8'-dihydro-6'H-spiro[cyclopentane-1,9'-pyrido[1,2-a]indole]-7'-carboxylate (4j): Methyl 1-(3-methyl-1H-indole-1-carbonyl)spiro[2.4] heptane-1-carboxylate (0.050 g, 0.160 mmol), In(OTf)₃ (0.027 g, 0.048 mmol) and DCE (3 mL) were mixed according to general method B to yield a colorless oil (0.044 g, 88.8%) after 6 h. *R_f* 0.35 (20% EtOAc/Hex). ¹H NMR (300 MHz, CDCl₃) δ 8.48 – 8.41 (m, 1H), 7.47 – 7.41 (m, 1H), 7.30 (ddd, *J* = 4.6, 4.2, 2.9 Hz, 2H), 3.85 (d, *J* = 0.8 Hz, 3H), 3.84 – 3.79 (m, 1H), 2.69 – 2.54 (m, 1H), 2.47 (t, *J* = 13.2 Hz, 1H), 2.30 (d, *J* = 0.7 Hz, 3H), 2.13 (dd, *J* = 13.4, 4.6 Hz, 1H), 2.02 – 1.83 (m, 5H), 1.83 – 1.70 (m, 2H). ¹³C NMR (75 MHz, CDCl₃) δ 169.9, 165.4, 139.3, 134.0, 131.9, 124.7, 124.0, 117.6, 116.5, 112.6, 52.7, 48.8, 42.6, 39.0, 38.7, 37.8, 25.8, 25.3, 9.73. IR: 2998.5 (w), 2893.7 (w), 1786.8 (s), 1724.9 (s), 1470.0 (s), 1385.1 (m), 1269.5 (m), 1180.4 (m), 714.3 (s), 662.7 (m) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 311.1521, Obs. 311.1520.



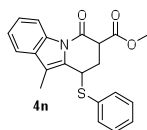
Methyl 10'-methyl-6'-oxo-7',8'-dihydro-6'-H-spiro[cyclohexane-1,9'-pyrido[1,2-a]indole]-7'-carboxylate (4k): Methyl 1-(3-methyl-1H-indole-1-carbonyl)spiro[2.5]octane-1-carboxylate (0.080 g, 0.246 mmol), In(OTf)₃ (0.041 g, 0.073 mmol) and DCE (3 mL) were mixed according to general method B to yield a colorless oil (0.062 g, 78.6%) after 6 h. *R_f* 0.39 (20% EtOAc/Hex). (*Conformers!!*) ¹H NMR (300 MHz, CDCl₃) δ 8.49 – 8.41 (m, 1H), 7.47 – 7.42 (m, 1H), 7.36 – 7.27 (m, 2H), 3.86 (dd, *J* = 2.9, 0.6 Hz, 3H), 3.76 (dd, *J* = 13.1, 4.6 Hz, 1H), 2.71 – 2.59 (m, 3H), 2.54 – 2.39 (m, 4H), 2.36 – 2.17 (m, 2H), 1.91 – 1.76 (m, 4H), 1.70 (d, *J* = 11.9 Hz, 3H). ¹³C NMR (75 MHz, CDCl₃) δ 170.2, 165.5, 139.5, 134.0, 132.1, 125.1, 124.8, 123.9, 121.7, 119.4, 117.7, 116.6, 114.4, 113.1, 58.6, 52.7, 47.2, 36.1, 35.6, 33.9, 33.7, 32.7, 31.2, 30.8, 25.6, 25.4, 23.1, 21.5, 21.3, 10.8, 10.2. IR: 2969.7 (w), 2890.9 (w), 1736.7 (m), 1689.1 (m), 1469.0 (m), 1382.7 (m), 1269.5 (s), 759.9 (s), 662.9 (s) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 325.1678, Obs. 325.1681.



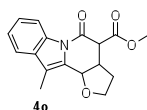
Methyl 9-((tert-butyl)diphenylsilyl)methyl-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4l): Methyl 2-((tert-butyl)diphenylsilyl)methyl-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (0.100 g, 0.196 mmol), In(OTf)₃ (0.033 g, 0.058 mmol) and DCE (4 mL) were combined according to general method B to afford a colorless oil (0.082 g, 82%) after 16 h. *R_f* 0.41 (20% EtOAc/Hex). ¹H NMR (300 MHz, CDCl₃) δ 8.37 (ddd, *J* = 4.3, 2.2, 0.6 Hz, 1H), 7.72 – 7.66 (m, 4H), 7.45 – 7.32 (m, 7H), 7.29 – 7.24 (m, 2H), 3.89 (dd, *J* = 13.5, 4.8 Hz, 1H), 3.72 (s, 3H), 3.45 – 3.33 (m, 1H), 2.19 (ddd, *J* = 18.1, 8.8, 3.1 Hz, 1H), 1.99 (s, 3H), 1.83 (ddd, *J* = 13.5, 4.8, 2.5 Hz, 1H), 1.55 (dd, *J* = 8.3, 4.6 Hz, 2H), 1.06 – 1.00 (m, 9H). ¹³C NMR (75 MHz, CDCl₃) δ 169.7, 165.1, 138.5, 135.8, 135.7, 134.4, 134.1, 133.0, 131.2, 129.5, 129.4, 127.9, 124.5, 124.0, 117.9, 116.5, 112.0, 52.4, 46.7, 29.9, 27.7, 26.5, 18.3, 14.9, 8.5. IR: 3061.4 (w), 2951.9 (m), 2928.1 (m), 2851.9 (m), 1745.6 (s), 1692.0 (s), 1457.2 (s), 1381.4 (s), 1270.6 (m), 1103.8 (m), 740.4 (s), 702.1 (s) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 509.2386, Obs. 509.2383.



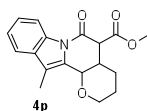
Methyl 9-(1,3-dioxoisindolin-2-yl)-10-methyl-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4m): Methyl 2-(1,3-dioxoisindolin-2-yl)-1-(3-methyl-1H-indole-1-carbonyl)cyclopropanecarboxylate (0.090 g, 0.224 mmol), In(OTf)₃ (0.037 g, 0.067 mmol) and DCE (4 mL) were mixed according to general method B to yield a yellow-green solid (0.049 g, 55%) after 8 h. *R_f* 0.38 (20% EtOAc/Hex). [m.p. 167–169°C] *Diastereomeric ratio*: (4.8:1). ¹H NMR (300 MHz, CDCl₃) δ 8.52 – 8.47 (m, 1.27), 7.89 – 7.70 (m, 5.64), 7.46 – 7.28 (m, 4.18), 5.96 (t, *J* = 4.5 Hz, 1.00), 4.19 (dt, *J* = 12.5, 6.3 Hz, 0.70), 3.83 – 3.79 (m, 3.92), 2.86 (ddd, *J* = 14.1, 11.8, 5.3 Hz, 0.75), 2.58 (ddd, *J* = 14.3, 4.9, 4.0 Hz, 0.75), 2.29 – 2.26 (m, 0.22), 2.07 (s, 2.75), 2.04 (s, 0.38). ¹³C NMR (75 MHz, CDCl₃) δ 169.5, 167.6, 164.4, 134.8, 134.5, 131.3, 130.3, 128.2, 125.8, 124.1, 123.6, 118.5, 116.7, 116.3, 52.8, 48.2, 40.3, 30.7, 8.3. IR: 3061.6 (w), 2942.6 (w), 2928.32 (w), 1733.2 (m), 1708.2 (s), 1614.2 (w), 1452.3 (m), 1452.3 (m), 1383.6 (s), 1309.5 (s), 1261.0 (s), 1104.7 (m), 890.4 (m), 734.4 (s) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 402.1216, Obs. 402.1219.



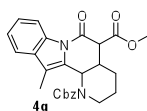
Methyl 10-methyl-6-oxo-9-(phenylthio)-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4n): Methyl 1-(3-methyl-1H-indole-1-carbonyl)-2-(phenylthio)cyclopropane carboxylate (0.018 g, 0.049 mmol), In(OTf)₃ (0.008 g, 0.014 mmol) and DCE (1 mL) were mixed according to general method B to yield a colorless oil (0.014 g, 81%) after 7 h. *R_f* 0.30 (20% EtOAc/Hex). *Diastereomeric ratio:* (10:1). **¹H NMR** (300 MHz, CDCl₃) δ 8.54 (d, *J* = 8.6 Hz, 0.10), 8.47 – 8.40 (m, 1), 7.54 – 7.29 (m, 9.0), 4.91 – 4.84 (m, 1.06), 4.48 (dd, *J* = 13.1, 4.8 Hz, 1.04), 3.94 – 3.76 (m, 3.80), 2.72 (td, *J* = 13.6, 3.9 Hz, 1.19), 2.42 – 2.32 (m, 1.42), 2.20 (s, 0.31), 2.04 (s, 3.10). **¹³C NMR** (75 MHz, CDCl₃) δ 169.6, 164.5, 134.7, 134.5, 132.5, 130.5, 130.4, 129.3, 129.2, 128.8, 128.6, 125.6, 124.3, 118.5, 116.6, 52.8, 46.9, 40.0, 29.6, 8.3. **IR:** 2997.7 (w), 2890.9 (w), 1766.6 (m), 1711.7 (m), 1468.2 (m), 1269.7 (s), 760.1 (s), 663.0 (s) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 365.1119, Obs. 365.1089.



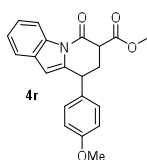
Methyl 11-methyl-5-oxo-2,3,3a,4,5,11b-hexahydrofuro[2',3':3,4]pyrido[1,2-a]indole-4-carboxylate (4o): Methyl 6-(3-methyl-1H-indole-1-carbonyl)-2-oxabicyclo[3.1.0] hexane-6-carboxylate (0.025 g, 0.083 mmol), In(OTf)₃ (0.014 g, 0.025 mmol) and DCM (2 mL) were combined according to general method A to afford a colorless oil (0.024 g, 97%) after 2.5 h. *R_f* 0.30 (20% EtOAc/Hex). **¹H NMR** (300 MHz, CDCl₃) δ 8.39 (d, *J* = 4.9, 3.3 Hz, 1H), 7.51 (d, *J* = 6.8, 1.3 Hz, 1H), 7.41 – 7.27 (m, 2H), 5.05 (d, *J* = 4.5 Hz, 1H), 4.17 – 3.99 (m, 2H), 3.87 (s, 3H), 3.78 (d, *J* = 10.7 Hz, 1H), 3.32 – 3.21 (m, 1H), 2.47 – 2.22 (m, 1H), 2.32 (s, 3H), 1.96 – 1.82 (m, 1H). **¹³C NMR** (75 MHz, CDCl₃) δ 169.2, 164.0, 134.5, 130.9, 128.8, 125.8, 124.2, 119.5, 118.8, 116.4, 69.9, 66.3, 52.8, 52.3, 40.7, 30.7, 8.5. **IR:** 2947.1 (w), 2923.3 (w), 2856.6 (w), 1744.8 (s), 1703.1 (s), 1623.2 (w), 1459.5 (m), 1382.2 (s), 1265.2 (m), 1035.5 (m), 751.0 (s) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 299.1158, Obs. 299.1158.



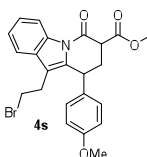
Methyl 12-methyl-6-oxo-3,4,4a,5,6,12b-hexahydro-2H-pyrano[2',3':3,4]pyrido[1,2-a]indole-5-carboxylate (4p): Methyl 7-(3-methyl-1H-indole-1-carbonyl)-2-oxabicyclo[4.1.0]heptane-7-carboxylate (0.025 g, 0.079 mmol), In(OTf)₃ (0.013 g, 0.023 mmol) and DCM (2 mL) were mixed according to general method A to yield a pale yellow solid (0.023 g, 92.9%) after 2.5 h. *R_f* 0.25 (20% EtOAc/Hex). [*m.p.* 128–130°C] **¹H NMR** (300 MHz, CDCl₃) δ 8.41 (d, 1H), 7.50 (d, 1H), 7.40 – 7.25 (m, 2H), 4.81 (s, 1H), 4.33 (d, *J* = 12.2 Hz, 1H), 4.08 (d, 1H), 3.86 (s, 3H), 3.71 (t, *J* = 11.6, 2.4 Hz, 2H), 2.72 (d, 1H), 2.30 (s, 3H), 1.98 – 1.73 (m, 2H), 1.56 – 1.47 (m, 1H). **¹³C NMR** (75 MHz, CDCl₃) δ 169.5, 165.2, 134.3, 130.8, 125.8, 124.2, 122.2, 118.8, 117.7, 116.6, 68.3, 68.1, 52.6, 50.1, 35.7, 25.7, 20.4, 8.4. **IR:** 2737.5(w), 1746.9(m), 1632.6(w), 1532.6(m), 1056.8(w), 751.6(s), 680.1(s) cm⁻¹. **HRMS (ESI) M/Z+ Calc.** 313.1314, Obs. 313.1315.



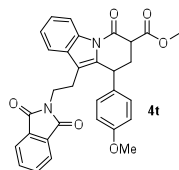
1-Benzyl 5-methyl 12-methyl-6-oxo-2,3,4,4a,5,6-hexahydroindolo[1,2-*h*][1,7] naphthyridine-1,5(12*bH*)-dicarboxylate (4q): 2-benzyl 7-methyl 7-(3-methyl-1*H*-indole-1-carbonyl)-2-azabicyclo[4.1.0]heptane-2,7-dicarboxylate (0.100 g, 0.223 mmol), In(OTf)₃ (0.037 g, 0.067 mmol) and DCM (4 mL) were combined according to general method A to afford **4q** as a colorless oil (0.098 g, 98.0%) after 2 h. *R_f* 0.25 (25% EtOAc/Hex). *Diastereomeric ratio:* (7.1:1). ¹H NMR (300 MHz, CDCl₃) δ 8.55 – 8.40 (m, 1.22), 7.52 – 7.27 (m, 10.67), 5.98 (d, 1), 5.91 (d, 0.14), 5.38 – 5.16 (m, 2.64), 4.20 – 4.04 (m, 1.20), 3.95 (dd, *J* = 13.9, 3.7 Hz, 0.23), 3.85 (s, 0.77), 3.74 (s, 3), 3.68 (d, *J* = 1.7 Hz 1.41), 2.81 – 2.50 (m, 2.68), 2.35 – 2.20 (m, 0.32), 2.08 – 2.03 (m, 3.99), 1.79 – 1.85 (m, 1.54), 1.58 – 1.70 (m, 2.70), 1.51 – 1.33 (m, 1.42). ¹³C NMR (75 MHz, CDCl₃) δ 168.4, 167.6, 162.6, 155.0, 136.3, 134.5, 131.3, 128.4, 128.3, 128.1, 127.8, 127.7, 125.1, 124.1, 122.0, 117.9, 116.4, 116.3, 67.5, 56.0, 53.5, 53.0, 52.4, 48.3, 39.4, 37.9, 34.5, 31.4, 26.5, 25.1, 24.6, 22.5, 14.6, 7.6. IR: 3042.4 (w), 2932.8 (w), 2861.4 (w), 1738.4 (s), 1702.9 (s), 1457.3 (m), 1373.1 (s), 1256.6 (m), 1201.5 (m), 1164.4 (m), 1113.6 (w), 761.1 (m), 689.7 (m) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 446.1842, Obs. 446.1840.



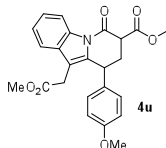
Methyl 9-(4-methoxyphenyl)-6-oxo-6,7,8,9-tetrahydropyrido[1,2-*a*]indole-7-carboxylate (4r): Methyl 1-(1*H*-indole-1-carbonyl)-2-(4-methoxyphenyl)cyclopropanecarboxylate (0.75 g, 0.215 mmol), In(OTf)₃ (0.036 g, 0.064 mmol) and DCM (4 mL) were combined according to general method A to afford **4r** as a colorless oil (0.742 g, 98.99%) after 45 min. *R_f* 0.30 (20% EtOAc/Hex). *Diastereomeric ratio:* (1.1:1). ¹H NMR (300 MHz, CDCl₃) δ 8.53 – 8.42 (m, 1.77), 7.45 – 7.20 (m, 8.18), 7.19–7.12 (m, 1.68), 6.96 – 6.85 (m, 3.86), 6.08 (s, 0.78), 6.00 – 5.89 (m, 1), 4.36 (dd, *J* = 9.9, 4.2 Hz, 0.76H), 4.13 (dd, *J* = 13.0, 2.6 Hz, 1.09), 3.97 – 3.79 (m, 13.94), 2.79 – 2.64 (m, 1.92), 2.54 – 2.37 (m, 1.88). ¹³C NMR (75 MHz, CDCl₃) δ 169.5, 169.3, 165.3, 164.7, 159.1, 158.9, 141.5, 140.6, 135.2, 135.1, 132.7, 132.3, 129.6, 129.5, 129.3, 129.0, 124.7, 124.4, 124.4, 120.1, 120.1, 116.6, 116.5, 114.2, 107.6, 55.3, 53.0, 52.8, 51.6, 49.2, 40.3, 37.4, 33.6, 33.2. IR: 2997.1 (w), 2950.6 (w), 2834.32 (w), 1737.9 (s), 1703.3 (s), 1555.7 (w), 1512.5 (m), 1453.1 (s), 1379.0 (s), 13050.2 (s), 1247.2 (s), 1177.1 (s), 1034.6 (s), 838.4 (m), 798.5 (m), 752.0 (m), 688.9 (w) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 349.1314, Obs. 349.1307.



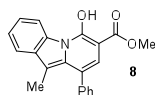
Methyl 10-(2-bromoethyl)-9-(4-methoxyphenyl)-6-oxo-6,7,8,9-tetrahydropyrido[1,2-*a*]indole-7-carboxylate (4s): Methyl 1-(3-(2-bromoethyl)-1*H*-indole-1-carbonyl)-2-(4-methoxyphenyl)cyclopropane carboxylate (0.050 g, 0.109 mmol), In(OTf)₃ (0.018 g, 0.032 mmol) and DCM (3 mL) were mixed according to general method A to afford **4s** as a colorless oil (0.049 g, 98.2%) after 1 h. *R_f* 0.35 (20% EtOAc/Hex). *Diastereomeric ratio:* (2.7:1). ¹H NMR (300 MHz, CDCl₃) δ 8.54 (ddd, *J* = 10.3, 6.9, 1.4 Hz, 1.38), 7.53 – 7.29 (m, 4.31), 7.16 – 7.11 (m, 0.81), 6.95 (dd, *J* = 6.9, 4.7 Hz, 2.07), 6.89 – 6.80 (m, 2.88), 4.68 (t, *J* = 4.2 Hz, 1), 4.43 (dd, *J* = 8.8, 5.3 Hz, 0.37), 3.86 – 3.77 (m, 7.57), 3.69 (dd, *J* = 12.2, 4.6 Hz, 1.29), 3.57 (d, *J* = 3.5 Hz, 1.28), 3.53 – 3.05 (m, 4.08), 3.03 – 2.73 (m, 3.37), 2.66 – 2.37 (m, 2.03). ¹³C NMR (75 MHz, CDCl₃) δ 169.4, 165.2, 158.8, 135.5, 134.7, 132.3, 129.6, 129.1, 128.3, 125.2, 124.4, 118.0, 116.9, 116.0, 114.3, 114.2, 55.3, 52.7, 47.1, 35.4, 33.0, 30.9, 27.7. IR: 3023.9 (w), 2918.9 (w), 1725.1 (s), 1658.6 (s), 1591.0 (m), 1493.2 (s), 1349.0 (m), 993.6(s), 725.0 s), 663.0 (m) cm⁻¹. HRMS (ESI) *M/Z*+ Calc. 455.0708, Obs. 455.0734.



Methyl 10-(2-(1,3-dioxoisindolin-2-yl)ethyl)-9-(4-methoxyphenyl)-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4t): Methyl 1-(3-(2-(1,3-dioxoisindolin-2-yl)ethyl)-1H-indole-1-carbonyl)-2-(4-methoxyphenyl)cyclopropanecarboxylate (0.050 g, 0.096 mmol), In(OTf)₃ (0.016 g, 0.028 mmol) and DCM (3 mL) were mixed according to general method A to yield a white solid (0.038 g, 76.0%) after 2 h. [m.p. 166–168°C] R_f 0.38 (40% EtOAc/Hex). *Diastereomeric ratio:* (2.8:1). ¹H NMR (300 MHz, CDCl₃) δ 8.52 – 8.46 (m, 1.35), 7.79 – 7.58 (m, 7.24), 7.41 – 7.26 (m, 2.90), 7.18 – 7.13 (m, 0.89), 7.00 – 6.93 (m, 2.37), 6.86 – 6.72 (m, 2.97), 4.70 (t, *J* = 4.1 Hz, 1), 4.48 (dd, *J* = 8.3, 5.1 Hz, 0.35), 3.85 – 3.80 (m, 0.84), 3.79 – 3.63 (m, 11.93), 3.54 (s, 1.09), 3.02 – 2.90 (m, 1.23), 2.88 – 2.71 (m, 3.21), 2.61 – 2.50 (m, 0.57), 2.44 – 2.33 (m, 1.73). ¹³C NMR (75 MHz, CDCl₃) δ 169.6, 169.2, 168.0, 165.3, 165.1, 158.8, 158.7, 135.5, 135.3, 134.7, 134.6, 133.8, 132.5, 131.9, 131.9, 130.4, 130.0, 129.1, 128.3, 125.1, 125.0, 124.5, 124.4, 123.1, 123.0, 118.4, 118.2, 116.8, 116.7, 115.7, 115.2, 114.2, 114.1, 55.2, 55.2, 52.7, 52.5, 49.6, 47.0, 37.7, 36.9, 36.8, 35.3, 33.7, 33.2, 23.1, 22.8. IR: 3047.1 (w), 2947.1 (w), 2847.1 (w), 1766.03 (w), 1751.74 (m), 1708.8 (s), 1618.4 (m), 1504.1 (m), 1451.7 (m), 1376.6 (s), 1245.9 (s), 1032.6 (s), 837.3 (m), 715.9 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 522.1791, Obs. 522.1791.



Methyl 10-(2-methoxy-2-oxoethyl)-9-(4-methoxyphenyl)-6-oxo-6,7,8,9-tetrahydropyrido[1,2-a]indole-7-carboxylate (4u): Methyl 1-(3-(2-methoxy-2-oxoethyl)-1H-indole-1-carbonyl)-2-(4-methoxyphenyl)cyclopropanecarboxylate (0.070 g, 0.167 mmol), In(OTf)₃ (0.028 g, 0.049 mmol) and DCM (3 mL) were combined according to general method A to afford 4u as a brown oil (0.062 g, 88.0%) after 3 h. R_f 0.45 (40% EtOAc/Hex). *Diastereomeric ratio:* (2.0:1). ¹H NMR (300 MHz, CDCl₃) δ 8.56 – 8.47 (m, 1.45), 7.56 – 7.48 (m, 1.05), 7.44 – 7.28 (m, 3.67), 7.18 – 7.11 (m, 1.06), 7.01 – 6.90 (m, 2.29), 6.88 – 6.78 (m, 3.02), 4.66 (t, *J* = 4.5 Hz, 1), 4.40 (dd, *J* = 9.7, 5.1 Hz, 0.48), 3.90 – 3.81 (m, 1.32), 3.81 – 3.78 (m, 7.54), 3.73 – 3.67 (m, 1.32), 3.64 (s, 1.44), 3.55 (s, 1.42), 3.53 (s, 2.98), 3.52 (s, 0.31), 3.43 (d, *J* = 17.3 Hz, 1.59), 3.32 (d, *J* = 17.7 Hz, 0.85), 3.02 – 2.69 (m, 2.34), 2.58 – 2.38 (m, 1.62). ¹³C NMR (75 MHz, CDCl₃) δ 170.8, 170.6, 169.4, 169.1, 165.2, 158.9, 158.8, 136.3, 135.8, 134.6, 134.5, 132.3, 131.9, 130.3, 129.9, 129.2, 128.5, 125.2, 125.2, 124.5, 124.4, 118.4, 118.0, 116.7, 114.2, 114.1, 112.3, 112.0, 55.3, 52.7, 52.6, 52.0, 51.9, 50.1, 47.2, 38.5, 35.4, 34.0, 33.2, 29.7, 29.4. IR: 3013.8 (w), 2918.6 (w), 2832.8 (w), 1747.0 (s), 1737.7 (s), 1699.3 (s), 1613.6 (m), 1518.4 (m), 1456.5 (s), 1366.0 (s), 1245.6 (s), 1152.1 (s), 1032.6 (s), 837.3 (m), 731.8 (s) cm⁻¹. HRMS (ESI) M/Z+ Calc. 421.1525, Obs. 421.1522.



Methyl 6-hydroxy-10-methyl-9-phenylpyrido[1,2-a]indole-7-carboxylate (8): Methyl 2-bromo-1-(3-methyl-1H-indole-1-carbonyl)-2-phenylcyclopropanecarboxylate (0.060 g, 0.145 mmol), In(OTf)₃ (0.0245 g, 0.043 mmol) and DCM (3 mL) were combined according to general method A to afford 8 as a yellow-green oil (0.013 g, 28.5%) after 4 h. R_f 0.55 (20% EtOAc/Hex). ¹H NMR (300 MHz, CDCl₃) δ 12.12 (s, 1H), 8.57 – 8.50 (m, 1H), 7.86 (s, 1H), 7.71 – 7.66 (m, 1H), 7.63 – 7.46 (m, 2H), 7.38 – 7.32 (m, 1H), 7.23 – 7.06 (m, 3H), 6.95 (m, 1H), 3.98 (s, 3H), 2.45 (d, *J* = 1.1 Hz, 3H). ¹³C NMR (75 MHz, CDCl₃) δ 170.9, 160.7, 138.5, 134.6, 130.3, 128.7, 127.4, 126.5, 125.4, 124.3, 123.7, 123.4, 122.1, 119.4, 119.0, 112.0,

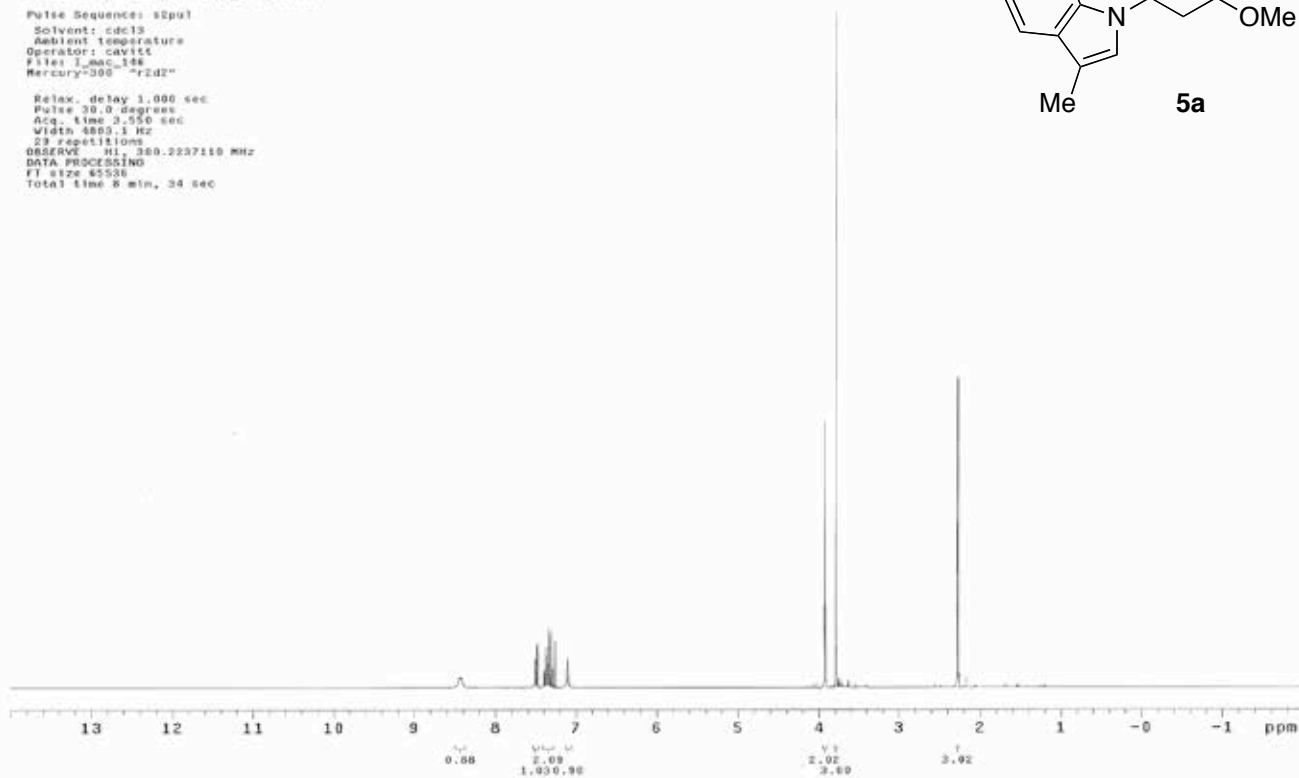
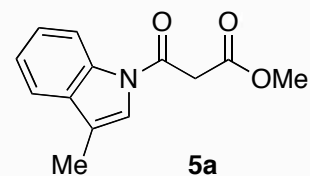
110.5, 105.0, 52.5, 9.7. **IR:** 3600-2800 (br), 2960.3 (m), 2923.7 (m), 2847.4 (m), 1657.1 (s), 1649.7 (s), 1525.7 (m), 1449.7 (s), 1334.3 (m), 1321.1 (m), 1255.4 (9s), 1226.3 (s), 1193.8 (w), 1122.6 (m), 1020 (m), 796.6 (s), 740.7 (s), 705.2 (m). **HRMS (ESI)** M/Z+ Calc. 331.1208, Obs. 331.1203.

3. References

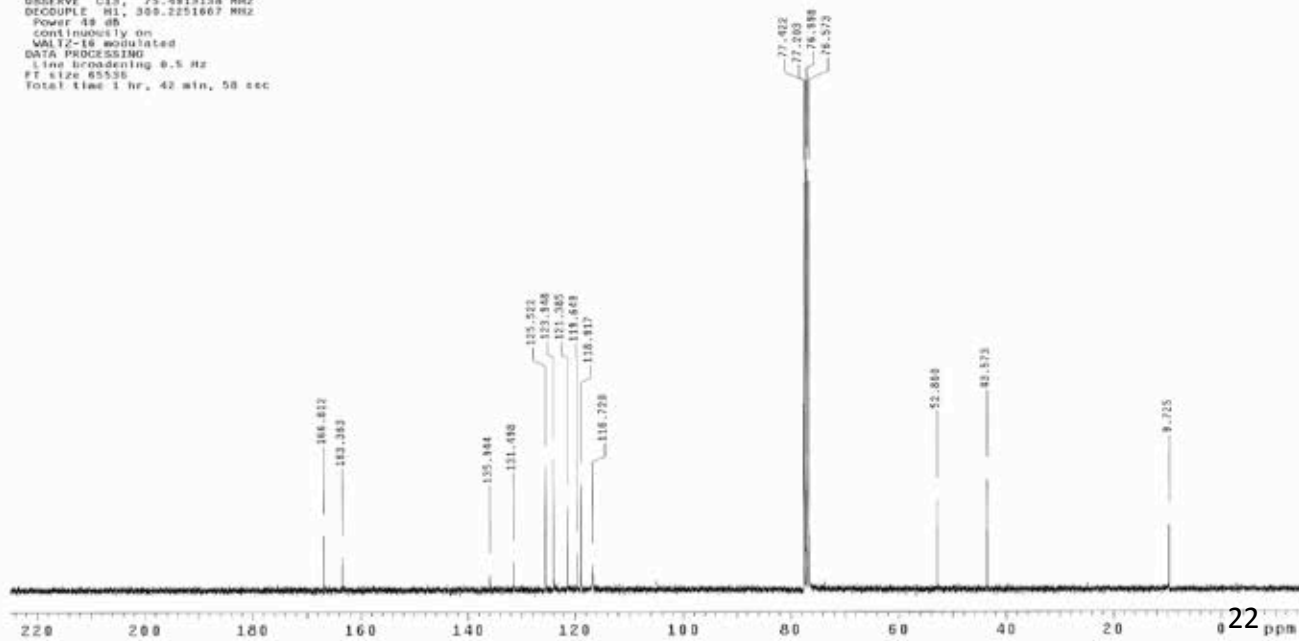
1. Christie, B. D.; Rapoport, H. *J. Org. Chem.* **1985**, 50, 1239.
2. Fei, S.; Yong, Q.; *J. Am. Chem. Soc.* **2010**, 132, 14052.
3. Magolan, J.; Kerr, M.A. *Org. Lett.* **2008**, 10, 1437.
4. González-Bobes, F.; Fenster, M. D. B.; Kiau, S.; Kolla, L.; Kolotuchin, S.; Soumeillant, M. *Adv. Synth. Catal.* **2008**, 350.

4. Characterization/Spectra

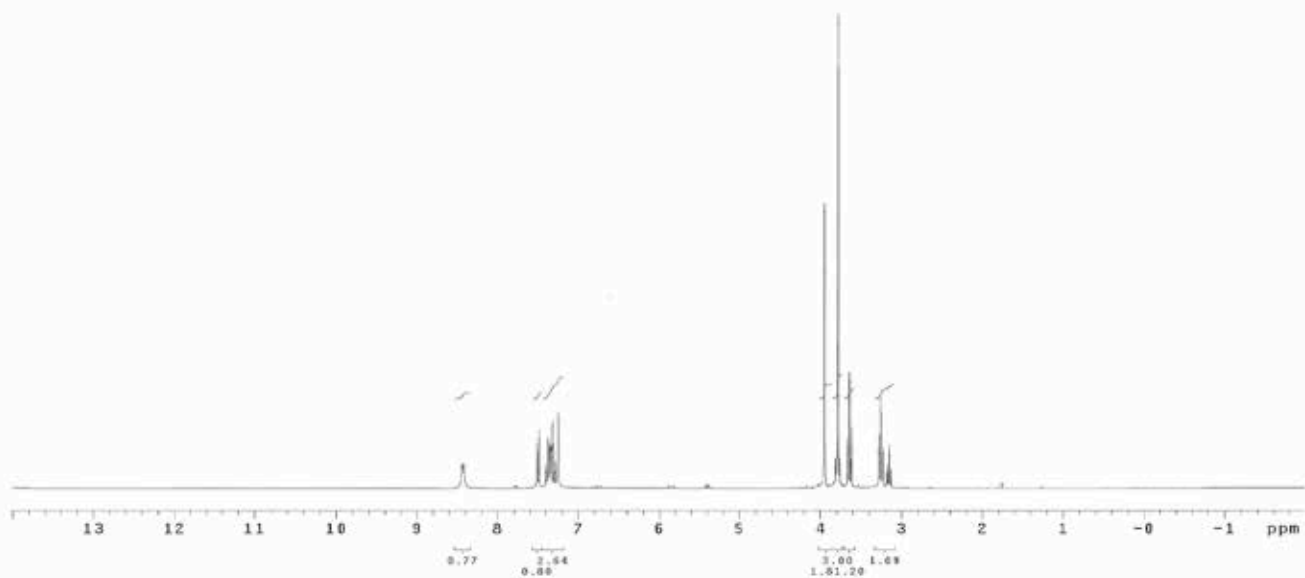
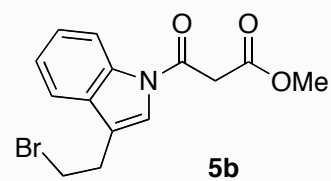
I_mac_146
File: hmc/franco/cavitt/I_mac_146.fid
Pulse Sequence: sZpu1
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: I_mac_146
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acc. time 3.550 sec
Width 4893.1 Hz
23 repetitions
OBSERVE M1, 300.2237110 MHz
DATA PROCESSING
FT size 45526
Total time 8 min, 34 sec



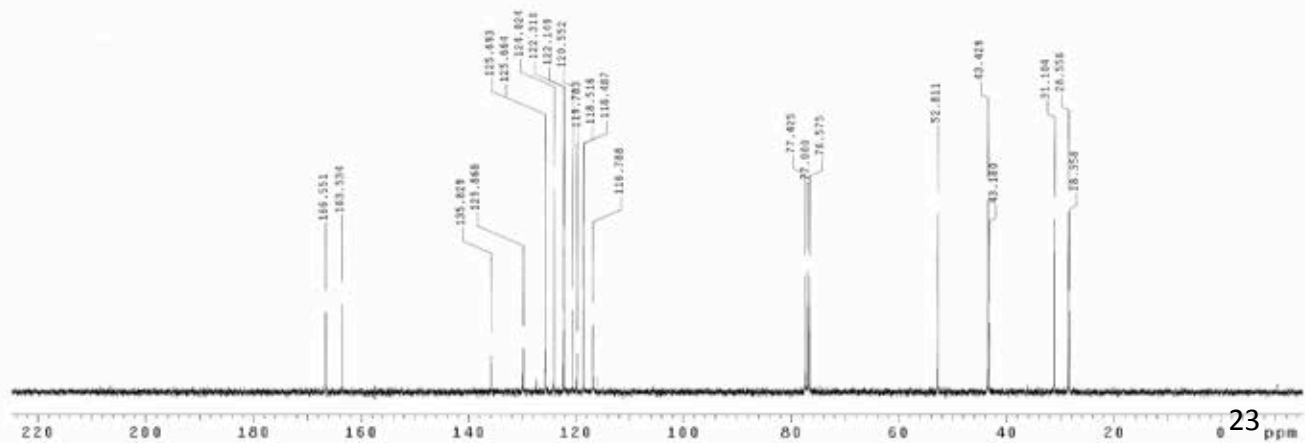
I_mac_146_130
File: hmc/franco/cavitt/I_mac_146_130.fid
Pulse Sequence: sZpu1
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: I_mac_146_130
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acc. time 1.303 sec
Width 10315.4 Hz
1883 repetitions
OBSERVE C13, 75.4813158 MHz
DECOUPLE M1, 300.2251667 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 1 hr, 42 min, 58 sec



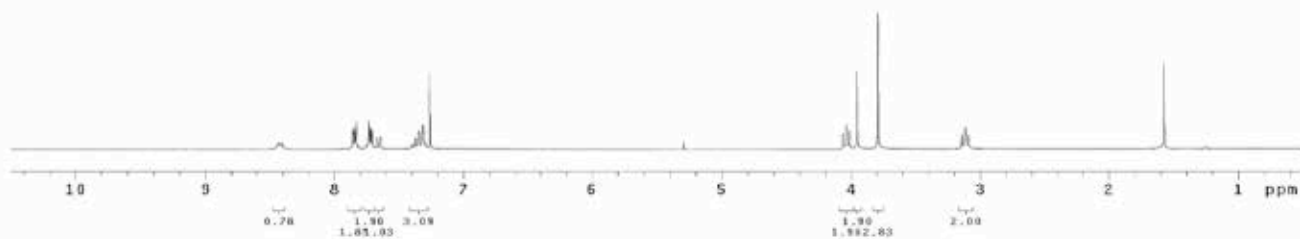
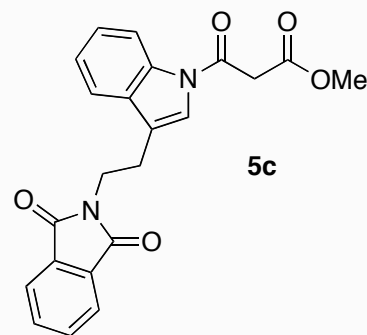
Std Proton parameters
Sample: NS-4-DVP-188-B
File: sp
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpatt11
Mercury-300 "r2d3"
Relax. delay 1.000 sec
Pulse 32.0 degrees
Acq. time 3.558 sec
Width 4883.1 Hz
18 repetitions
OBSERVE H1, 300.2237117 MHz
DATA PROCESSING
FT size 85538
Total time 1 min, 16 sec



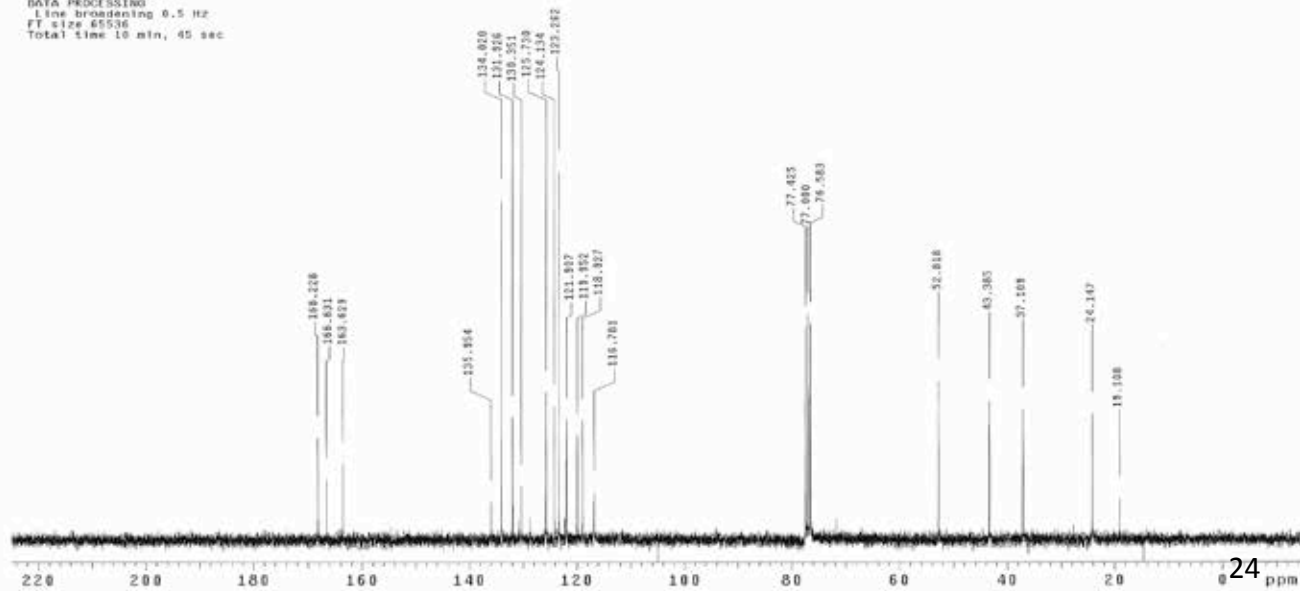
Std Carbon experiment
Sample: NS-4-DVP-188-B
File: sp
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpatt11
Mercury-300 "r2d3"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18115.3 Hz
132 repetitions
OBSERVE C13, 75.4813225 MHz
DECOUPLE H1, 300.2251667 MHz
Power 60 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 85536
Total time 10 min, 45 sec



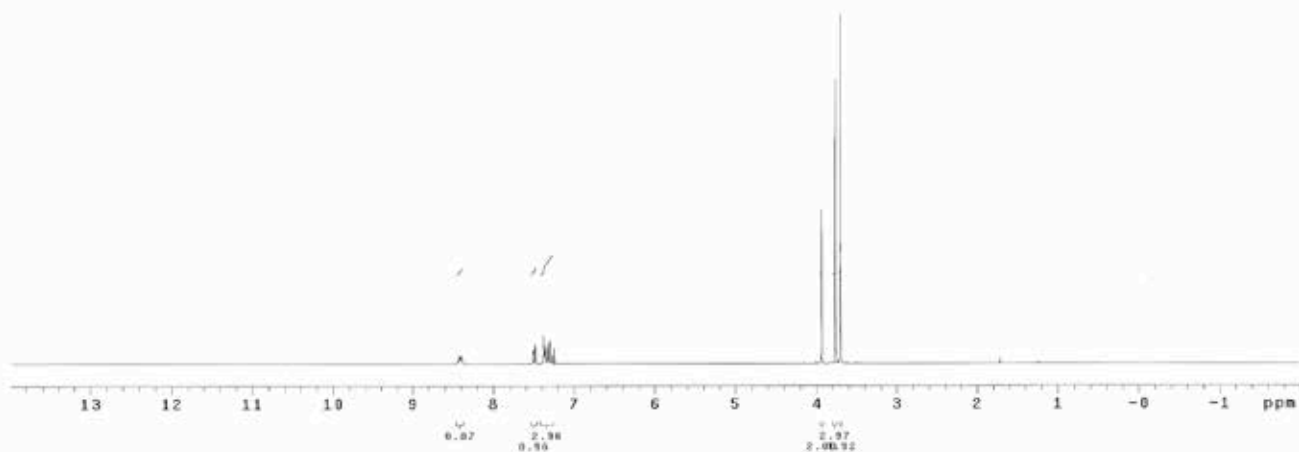
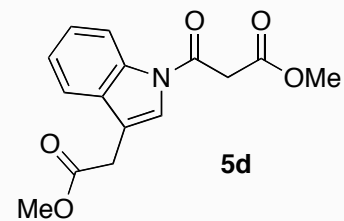
3-nphth-ester
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: caw11
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4000.1 Hz
41 repetitions
OBSERVE HI, 300.2185001 MHz
DATA PROCESSING
FT size 65536
Total time 8 min, 34 sec



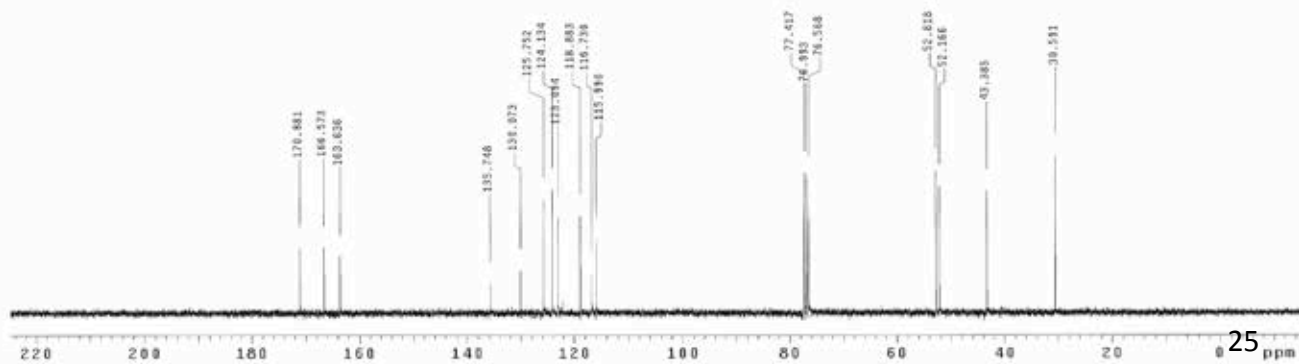
Std Carbon experiment
Sample: I-MAC-188-II
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpatt1
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18215.3 Hz
258 repetitions
OBSERVE CD3, 75.4913164 MHz
DECUPLE HI, 300.2251067 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec



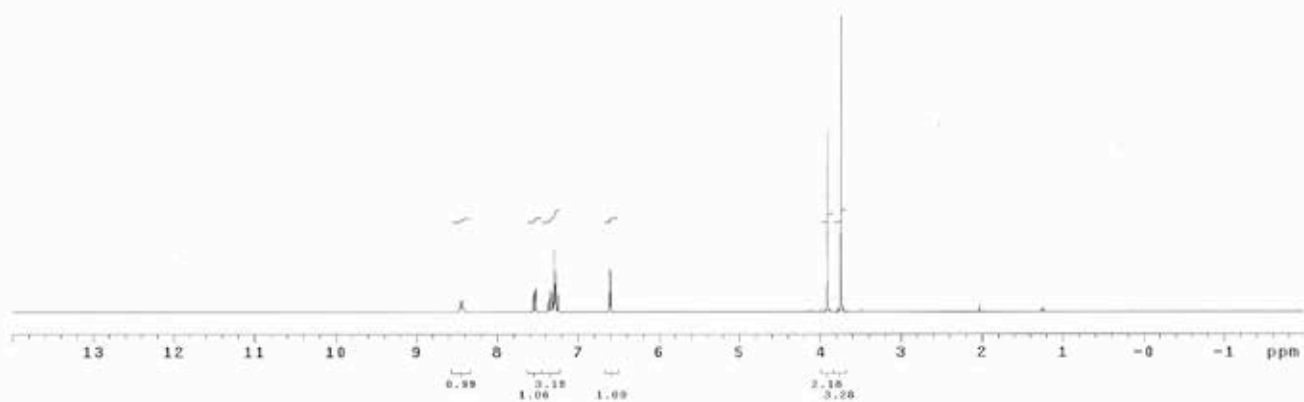
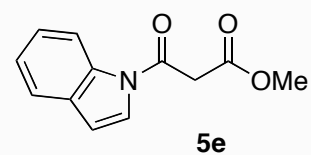
Std Proton parameters
Sample: 1
File: xp
Pulse Sequence: s2pu1
Solvent: cdcl3
Ambient temperature
Operator: dpat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4803.1 Hz
16 repetitions
OBSERVE H1, 300.2207167 MHz
DATA PROCESSING
FT size 45536
Total time 1 min, 16 sec



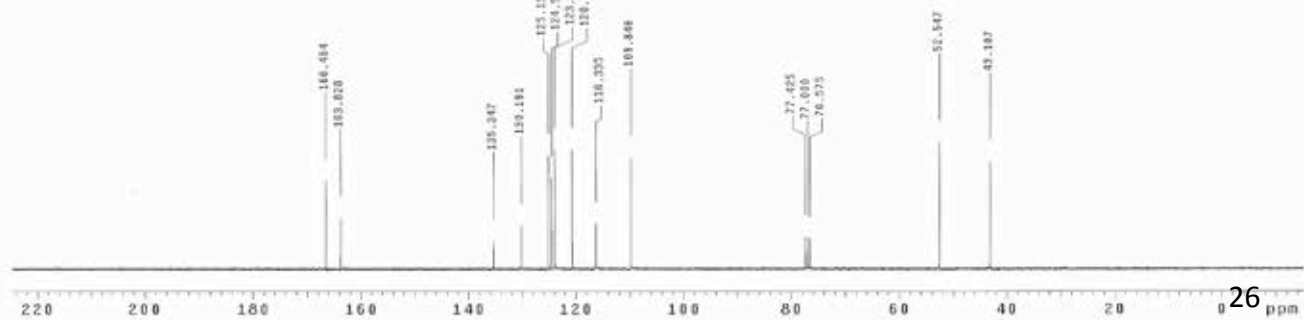
Std Carbon experiment
Sample: 1
File: xp
Pulse Sequence: s2pu1
Solvent: cdcl3
Ambient temperature
Operator: dpat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18115.8 Hz
122 repetitions
OBSERVE C13, 76.4833181 MHz
DECOUPLE H1, 300.2201667 MHz
Power 40 dB
continuous on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 45536
Total time 10 min, 45 sec

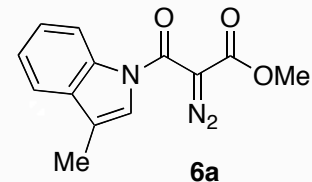


Std Proton parameters
Sample: NS-5-DVP-88-B-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 29.6 C / 293.1 K
Operator: dpat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 39.8 degrees
Acq. time 3.550 sec
Width 4803.1 Hz
16 repetitions
OBSERVE H1, 300.2185882 MHz
DATA PROCESSING
F1 size 65536
Total time 1 min, 16 sec

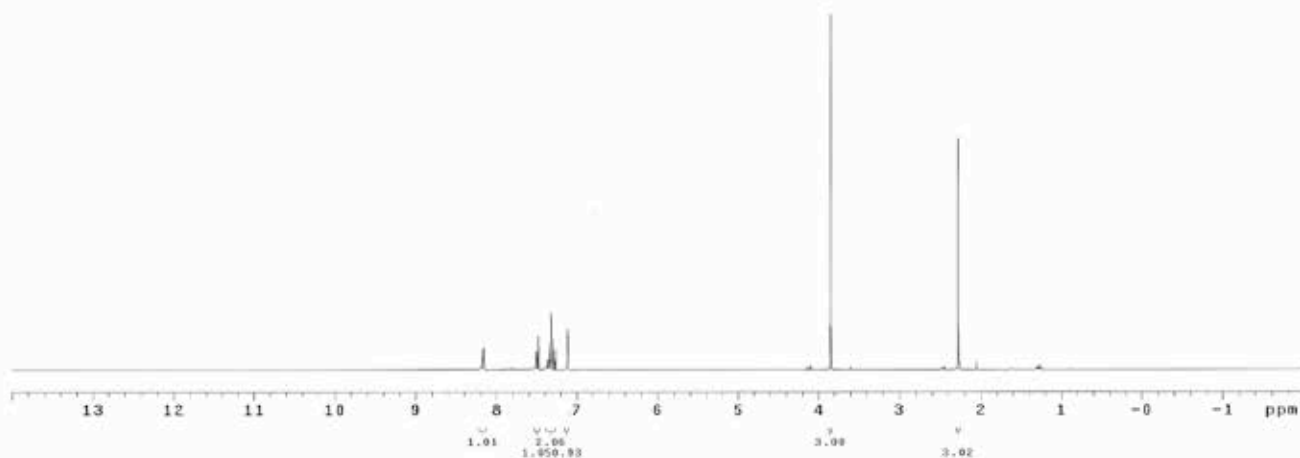


Std Carbon experiment
Sample: NS-5-DVP-88-B-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 29.6 C / 293.1 K
Operator: dpat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 39.8 degrees
Acq. time 1.303 sec
Width 18115.9 Hz
64 repetitions
OBSERVE C13, 75.4906236 MHz
DECOUPLE H1, 300.2185481 MHz
Power 49 dB
CONTINUOUSLY ON
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 65536
Total time 10 min, 45 sec



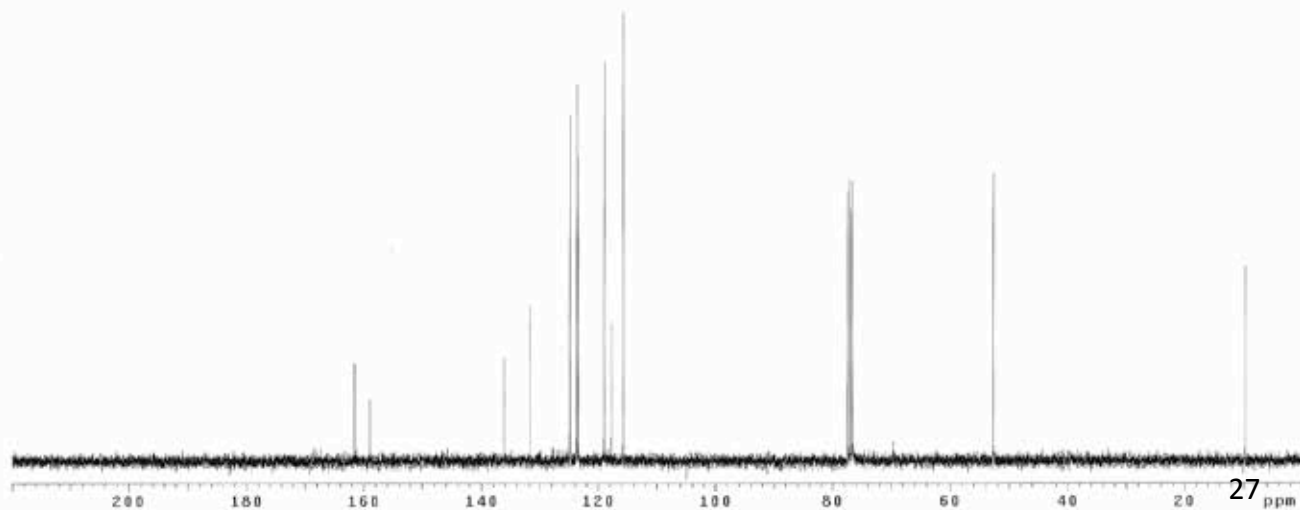


I_mac_154
 File: home/franco/cavitt/I_mac_154.fid
 Pulse Sequence: s2pu1
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 File: I_mac_154
 Mercury-300 "r1d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.558 sec
 Width 4803.1 Hz
 32 repetitions
 OBSERVE H1, 309.2237111 MHz
 DATA PROCESSING
 FT size 45536
 Total time 8 min, 34 sec

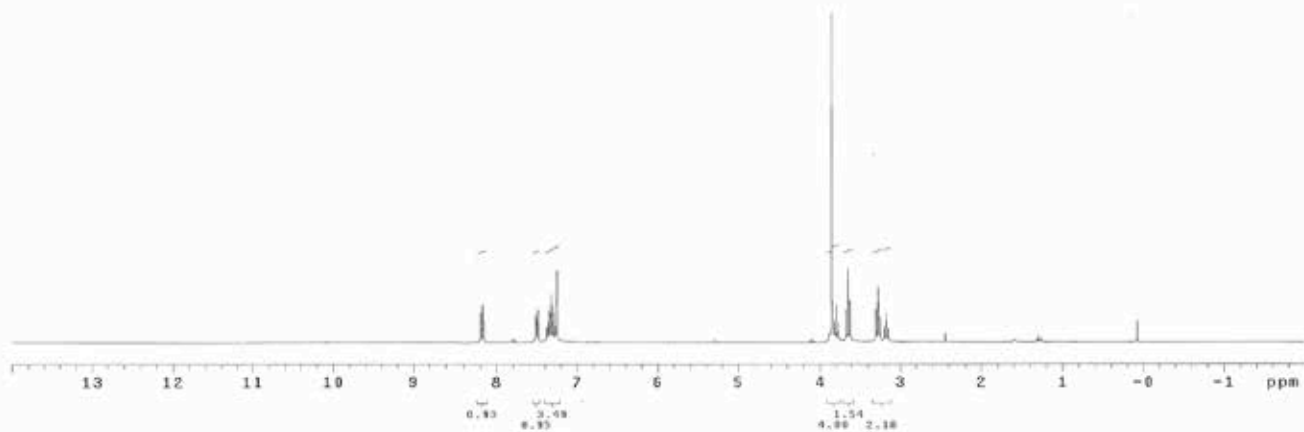
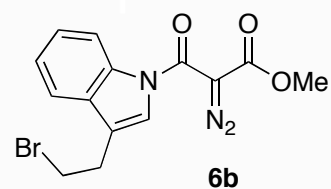


I_mac_154_130
 File: home/franco/cavitt/I_mac_154_130.fid
 Pulse Sequence: s2pu1
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 File: I_mac_154_130
 Mercury-300 "r2d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.381 sec
 Width 18115.9 Hz
 528 repetitions
 OBSERVE C13, 75.4813123 MHz
 DECOUPL H1, 309.2251667 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 8.5 Hz
 FT size 45536
 Total time 21 min, 3 sec

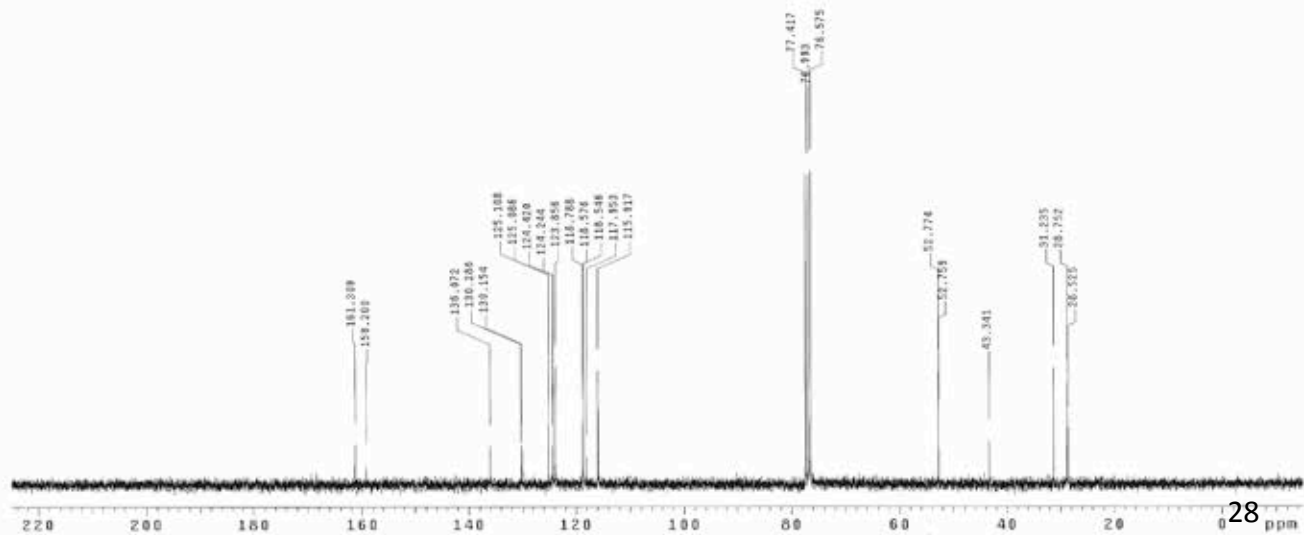
INDEX	FREQUENCY	PPM	HEIGHT
1	12184.8	161.537	21.8
2	11987.3	158.922	13.8
3	10274.8	136.383	23.8
4	9858.8	131.894	34.8
5	9424.8	124.846	77.5
6	9333.7	123.718	84.0
7	8314.8	123.389	88.1
8	8300.3	118.958	89.7
9	8090.8	117.772	31.4
10	8737.1	115.738	101.3
11	7926.8	104.993	-4.0
12	5849.5	77.486	80.4
13	5817.4	77.061	83.1
14	5785.4	76.636	82.0
15	5258.5	69.657	4.3
16	3970.1	52.656	64.5
17	733.9	9.722	43.8



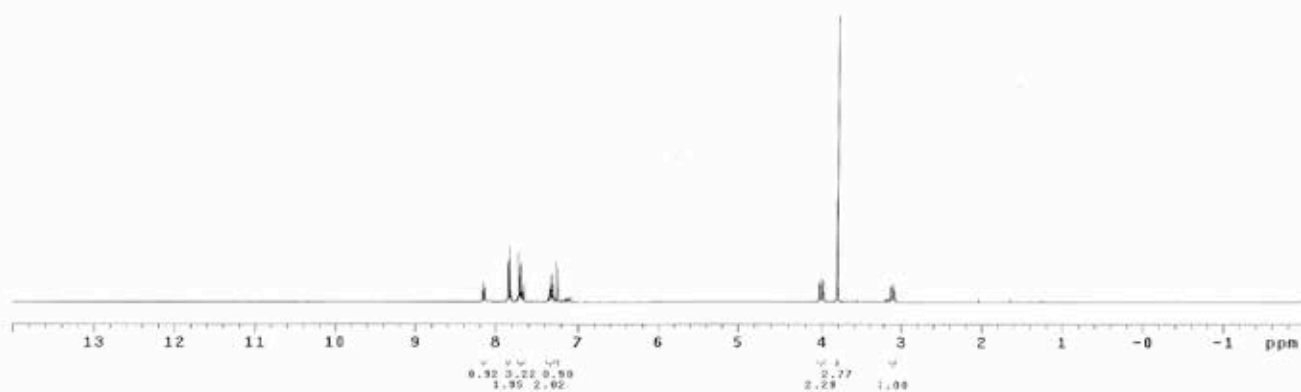
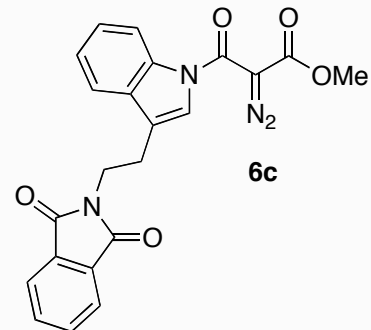
Std Proton parameters
Sample: EtBrindole-diazo-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: spat11
Mercury-300 "r122"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.250 sec
Width 4003.1 Hz
18 repetitions
OBSERVE H1, 300.2185002 MHz
DATA PROCESSING
F1 size 65536
Total time 1 min, 10 sec



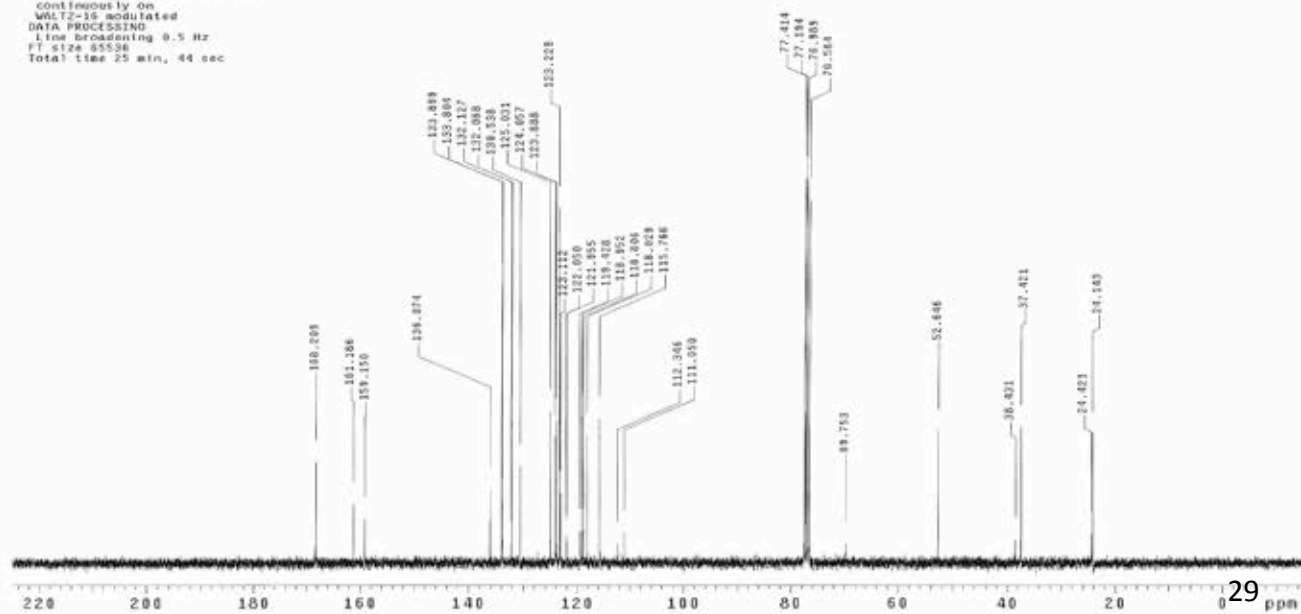
Std Carbon experiment
Sample: EtBrindole-diazo-C
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 22.0 C / 245.1 K
Operator: spat11
Mercury-300 "r122"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.201 sec
Width 10117.9 Hz
410 repetitions
OBSERVE C13, 75.4980048 MHz
DECOUPLE H1, 300.2185401 MHz
Power 50 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 65536
Total time 42 min, 2 sec



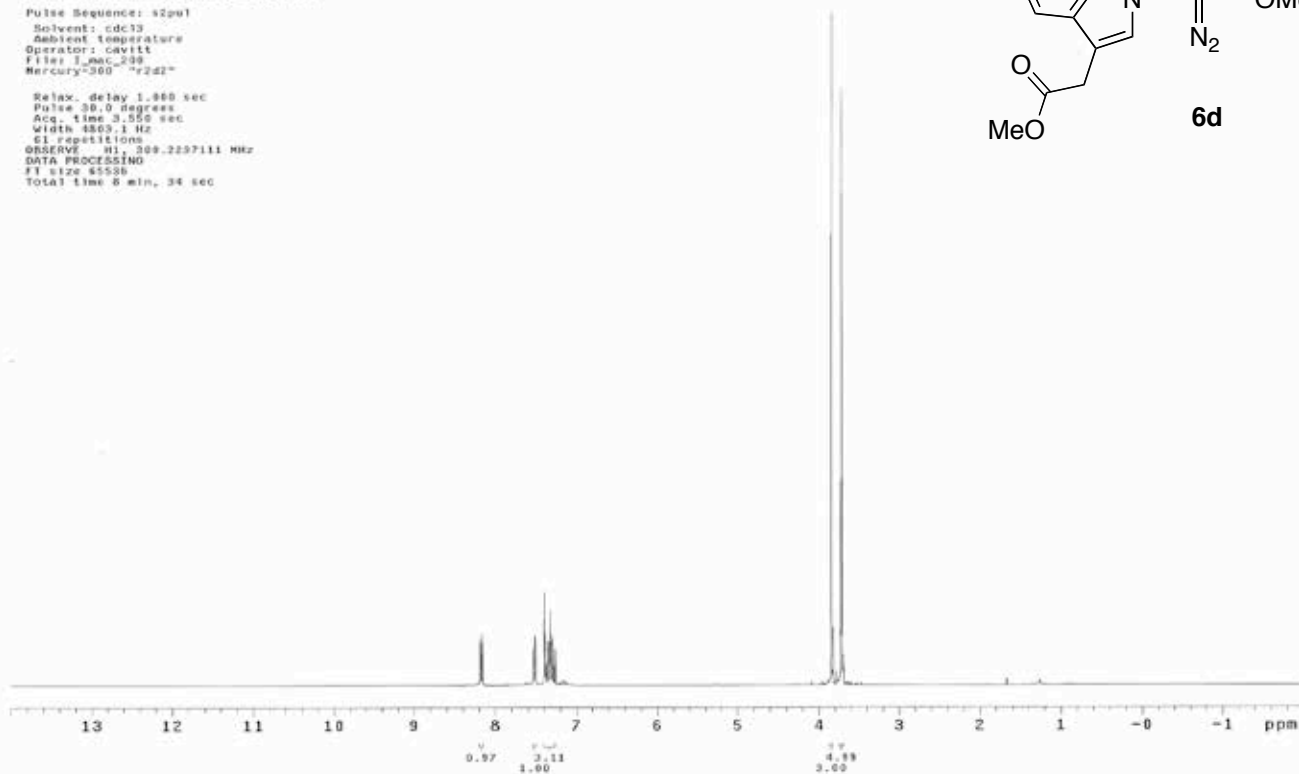
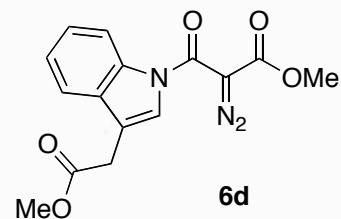
I_mac_201
File: hove/france/cavitt/I_mac_201.fid
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: I_mac_201
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 5.550 sec
Width 4803.1 Hz
48 repetitions
OBSERVE H1, 300.2237168 MHz
DATA PROCESSING
FT size 65536
Total time 5 min, 34 sec



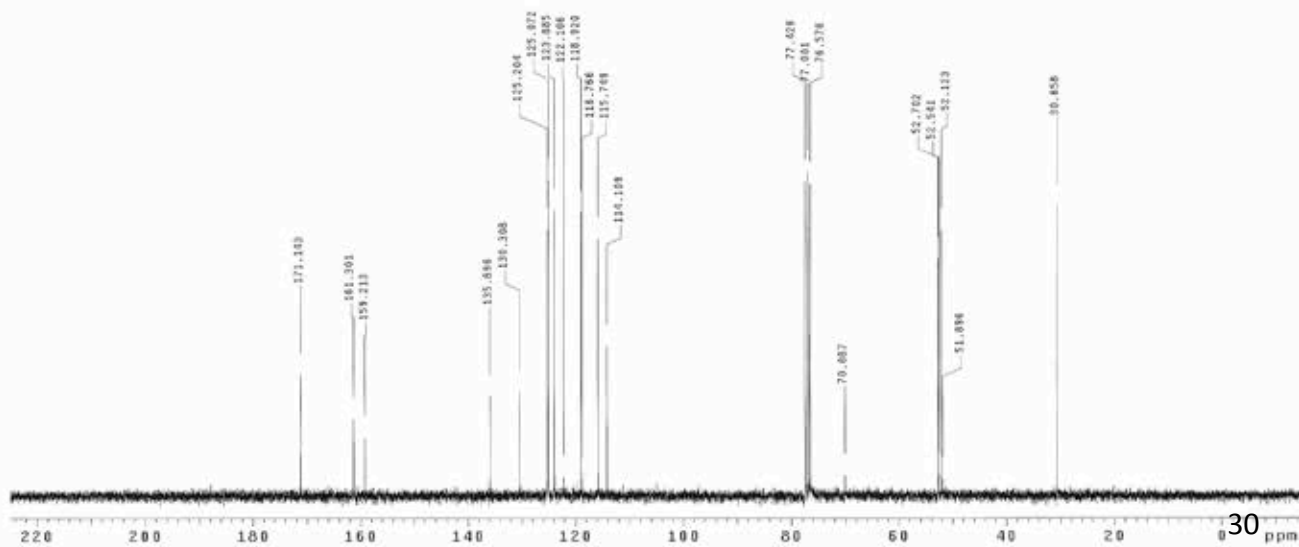
I_mac_201_130
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Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: I_mac_201_130
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.331 sec
Width 18115.5 Hz
500 repetitions
OBSERVE C13, 75.4913161 MHz
DECOUPLE H1, 300.2251067 MHz
Power 40 dB
Continuously On
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 25 min, 44 sec

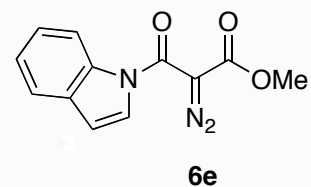


I_mac_200
File: home/franco/cavitt/I_mac_200.fid
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: I_mac_200
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4863.1 Hz
G1 repetitions
OBSERVE H1, 200.2297111 MHz
DATA PROCESSING
FT size 45526
Total time 8 min, 34 sec

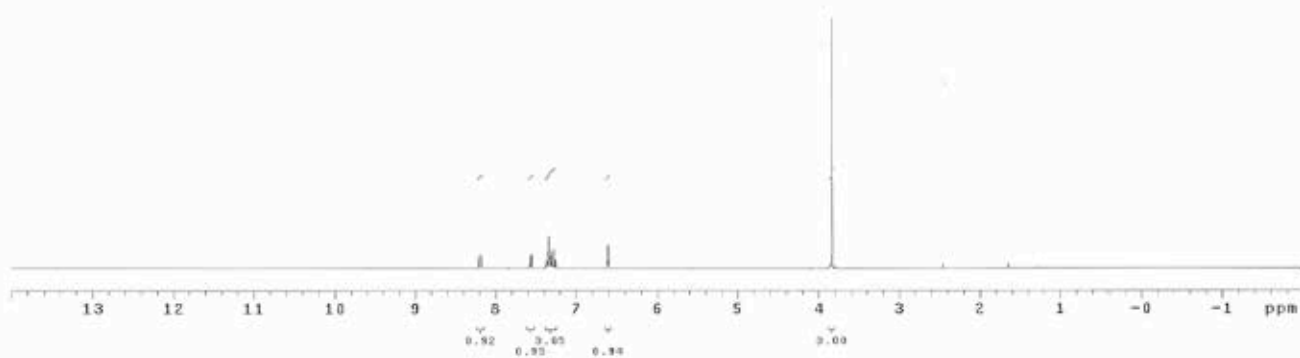


I_mac_200_130
File: home/franco/cavitt/I_mac_200_130.fid
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: I_mac_200_130
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.323 sec
Width 10115.9 Hz
360 repetitions
OBSERVE C13, 75.4913164 MHz
DECOUPLE H1, 200.2251067 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 30 min, 53 sec

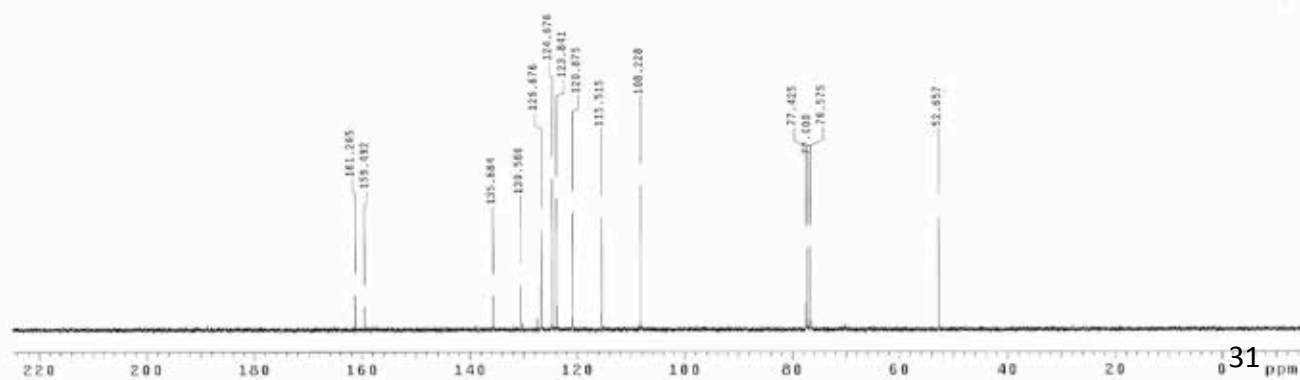




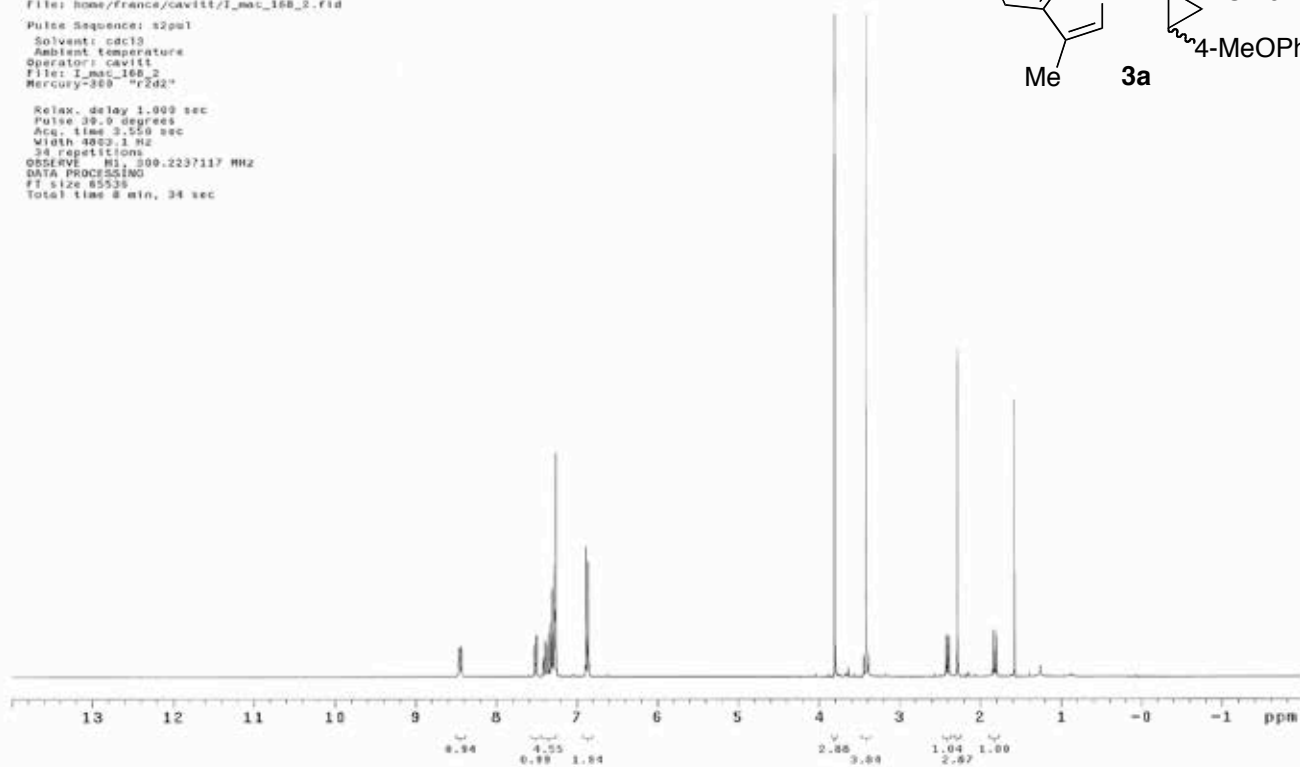
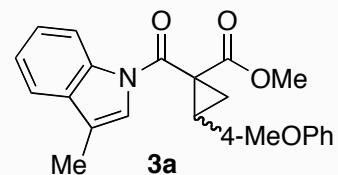
Sample: NS-5-DVP-88-C-H
File: xp
Pulse Sequence: szpul
Solvent: cdcl3
Temp: 29.9 C / 283.1 K
Operator: dpat11
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.558 sec
Width 6803.1 Hz
16 repetitions
OBSERVE H1, 300.2165002 MHz
DATA PROCESSING
FT size 85536
Total time 1 min, 16 sec



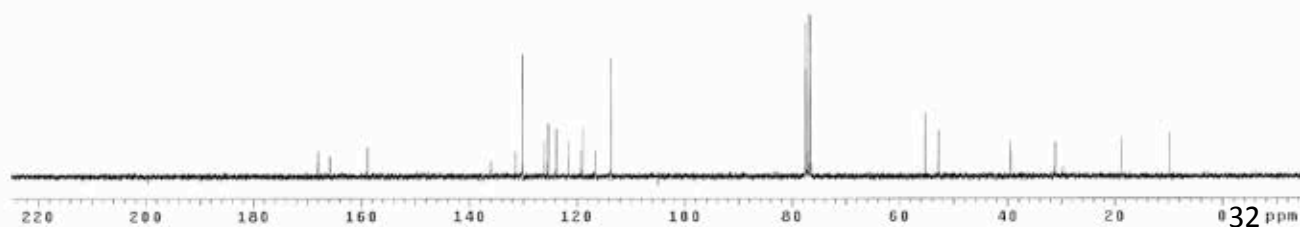
Std Carbon experiment
Sample: NS-5-DVP-88-C-H
File: xp
Pulse Sequence: szpul
Solvent: cdcl3
Temp: 29.9 C / 283.1 K
Operator: dpat11
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 30.6 degrees
Acq. time 1.301 sec
Width 16117.5 Hz
180 repetitions
OBSERVE C13, 75.4900067 MHz
DECUPLE H1, 300.2165001 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
line broadening 0.5 Hz
FT size 65536
Total time 18 min, 45 sec



I_mac_168_2
Lower spot
10N E10A2/hx
File: hoxe/france/cavitt/I_mac_168_2.fid
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: cavitt
File: I_mac_168_2
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 39.0 degrees
Acq. time 3.550 sec
Width 8000.1 Hz
34 repetitions
OBSERVE M1, 300.2237117 MHz
DATA PROCESSING
F1 size 85536
Total time 8 min, 34 sec

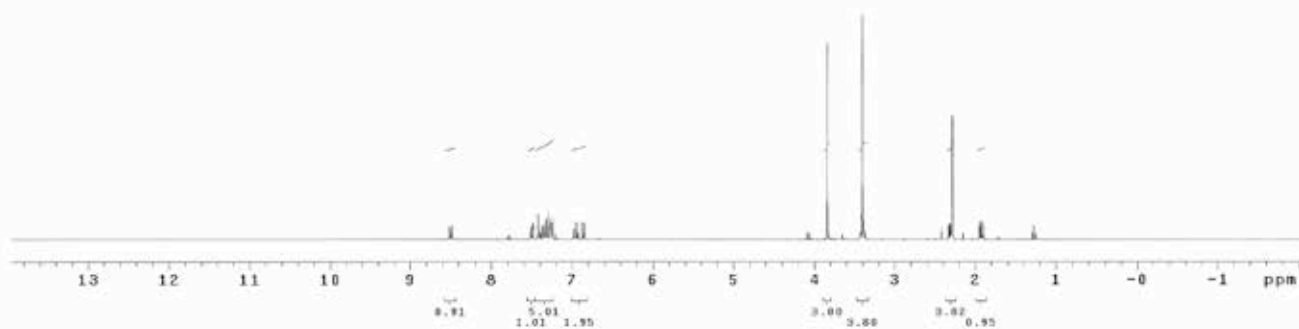
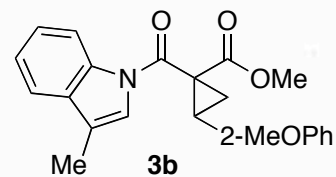


INDEX	FREQUENCY	PPM	HEIGHT
1	12682.1	167.934	5.7
2	12515.1	165.782	4.4
3	11993.2	158.869	6.5
4	10287.7	138.012	3.4
5	8926.8	131.522	5.6
6	8824.3	130.133	27.3
7	8518.6	126.089	7.9
8	8462.8	125.349	11.7
9	8345.0	123.789	10.6
10	8169.2	121.860	8.1
11	8096.2	119.168	5.7
12	8073.5	118.868	10.7
13	8786.6	118.517	5.5
14	8574.3	113.580	28.2
15	8044.9	77.425	34.8
16	8812.8	77.000	38.3
17	8786.6	76.575	36.1
18	4165.3	55.176	14.1
19	3982.9	52.759	10.2
20	2976.7	38.431	7.7
21	2848.6	31.111	7.8
22	1414.3	18.735	8.8
23	737.1	8.764	9.7

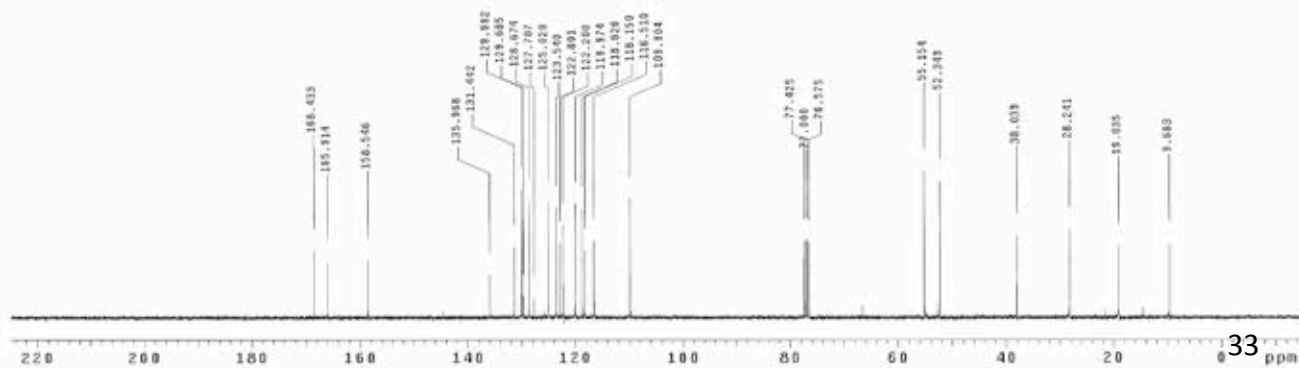


32 ppm

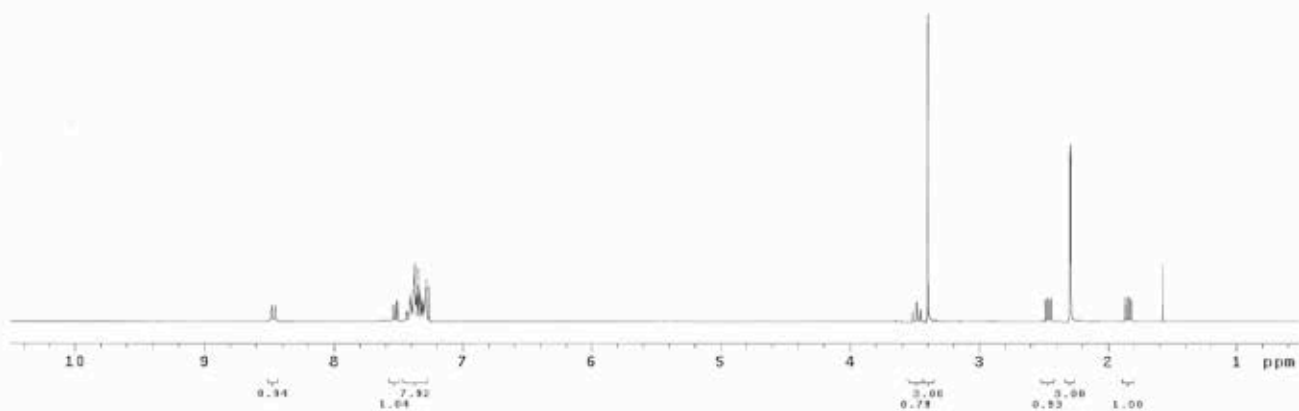
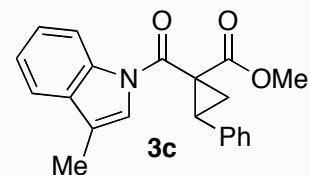
Std Proton parameters
Sample: NB-S-DVP-51-A-H
File: xp
Pulse Sequence: s2p91
Solvent: cdcl3
Temp: 22.6 C / 295.1 K
Operator: dpat11
Mercury-300 "r202"
Relax. Delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.350 sec
Width 4003.1 Hz
IS repetitions
OBSERVE H1, 300.2207250 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec



Std Carbon experiment
Sample: NB-S-DVP-51-A-H
File: xp
Pulse Sequence: s2p91
Solvent: cdcl3
Temp: 22.6 C / 295.1 K
Operator: dpat11
Mercury-300 "r202"
Relax. Delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 16115.3 Hz
IS repetitions
OBSERVE C13, 75.4913264 MHz
DECOUPLE H1, 300.2251067 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec

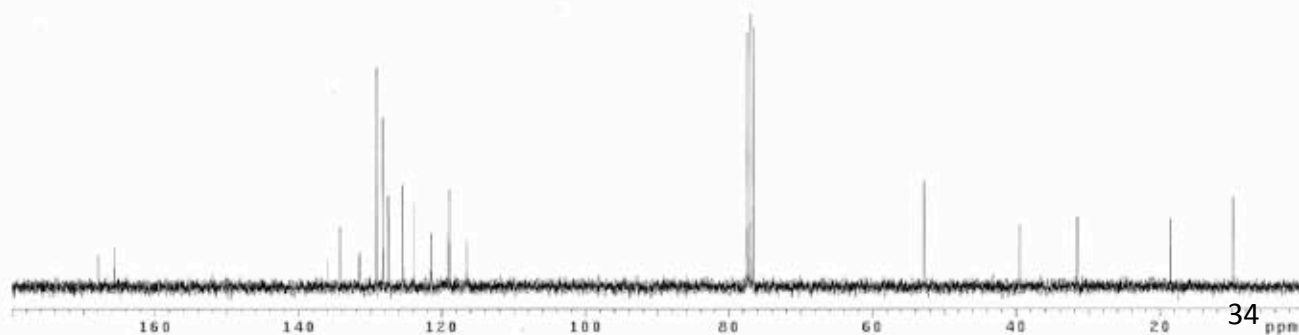


II-MAC-54-N
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4883.1 Hz
 41 repetitions
 OBSERVE H1, 300.2104887 MHz
 DATA PROCESSING
 FT size 65536
 Total time 6 min, 34 sec

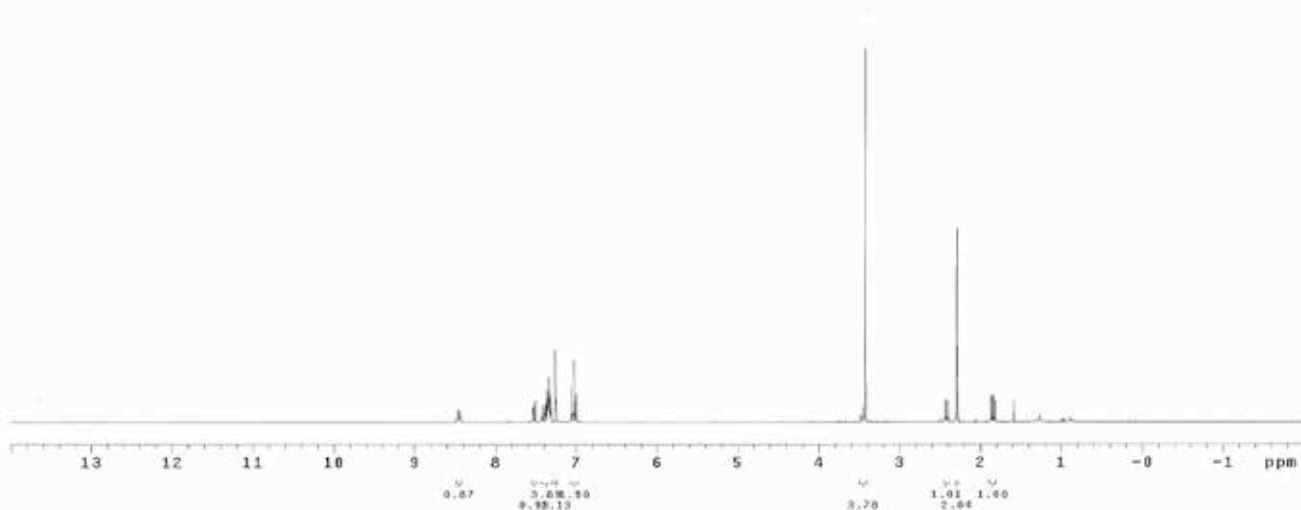
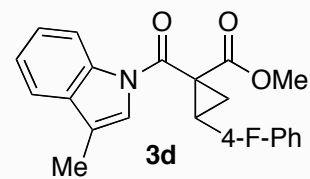


II-MAC-54-C
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 18115.0 Hz
 110 repetitions
 OBSERVE C13, 75.4360963 MHz
 DECOUPLE H1, 300.2139481 MHz
 Power 43 dB
 Continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 45536
 Total time 3580 hr, 7 min, 46 sec

INDEX	FREQUENCY	PPM	HEIGHT
1	12674.2	167.093	6.9
2	12504.5	165.644	8.7
3	10268.2	136.020	9.1
4	10134.4	134.248	13.4
5	8928.7	131.524	7.7
6	8744.1	129.078	49.1
7	8076.1	128.177	37.9
8	8520.2	127.437	29.3
9	8484.3	125.372	22.7
10	8347.1	123.819	10.7
11	8165.2	121.410	11.9
12	8061.6	119.242	11.6
13	8974.5	118.683	21.6
14	8786.5	116.525	10.1
15	5840.8	77.425	57.1
16	5812.7	77.000	81.4
17	5780.7	76.575	58.2
18	3882.2	52.752	23.7
19	2981.0	39.889	13.8
20	2380.1	31.528	15.4
21	1599.6	19.543	15.0
22	737.0	9.763	20.1

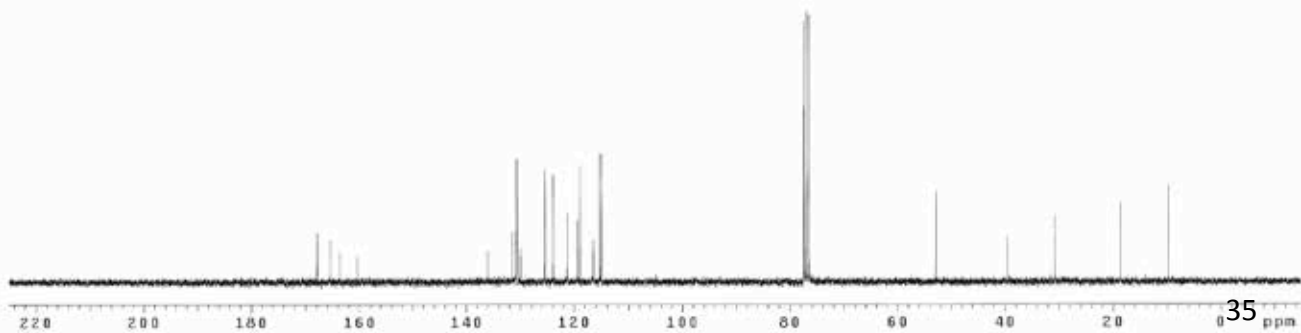


I_mac_181_top
 File: home/franco/cavitt/I_mac_181_top.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: cavitt
 File: I_mac_181_top
 Mercury-300 "r1d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acc. time 3.558 sec
 Width 4893.1 Hz
 50 repetitions
 OBSERVE H1, 300.2237186 MHz
 DATA PROCESSING
 FT size 65536
 Total time 9 min, 34 sec

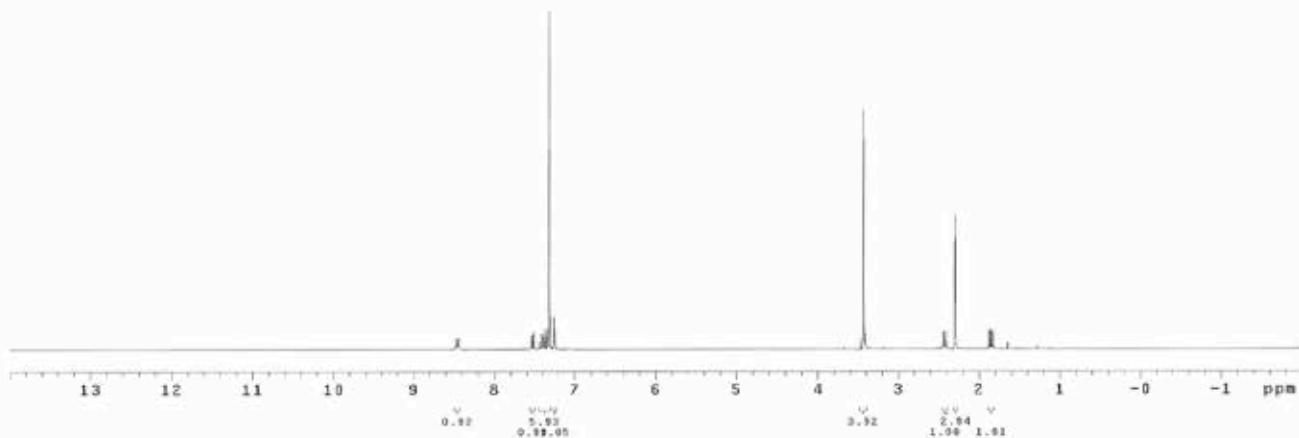
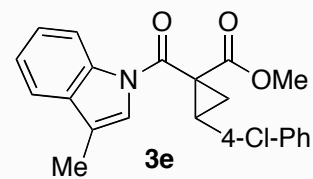


I_mac_181_top_13C
 File: home/franco/cavitt/I_mac_181_top_13C.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: cavitt
 File: I_mac_181_top_13C
 Mercury-300 "r1d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acc. time 1.301 sec
 Width 16115.9 Hz
 500 repetitions
 OBSERVE C13, 75.4813142 MHz
 DECOUPLE H1, 300.2251667 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 25 min, 44 sec

INDEX	FREQUENCY	PPM	HEIGHT
1	12969.0	167.652	11.0
2	12489.0	165.044	9.4
3	12361.9	163.753	6.7
4	12315.8	163.494	5.8
5	10286.0	135.997	6.7
6	9326.0	131.522	11.2
7	8968.5	130.724	27.6
8	8860.2	130.614	27.2
9	8814.4	130.006	5.8
10	8811.0	129.970	7.0
11	8466.3	125.422	25.0
12	8351.0	123.877	23.8
13	8152.7	121.255	15.2
14	8012.7	119.267	19.9
15	8977.3	118.818	24.0
16	8794.8	116.502	5.4
17	8762.6	115.279	26.5
18	8681.0	114.883	28.5
19	8644.9	114.524	26.4
20	8612.4	114.188	60.8
21	8786.7	114.575	58.9
22	8805.5	114.847	20.2
23	2979.4	39.467	10.2
24	2321.0	38.745	14.7
25	1412.2	18.720	17.6
26	737.0	9.763	21.5

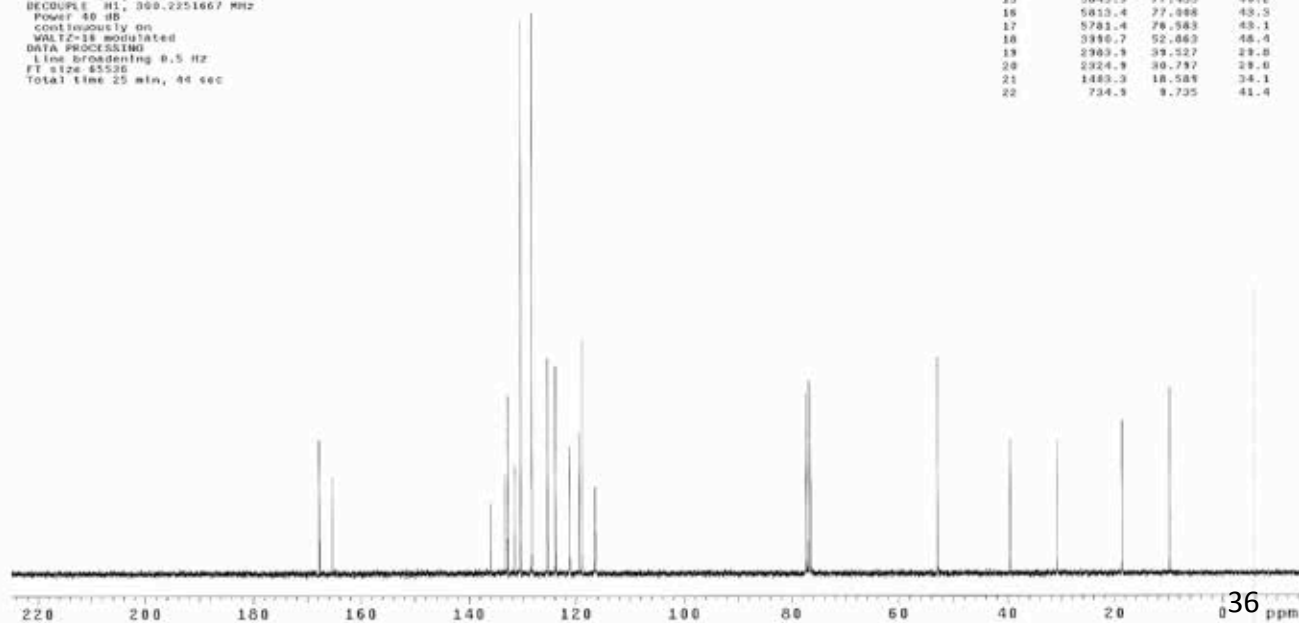


Std Proton parameters
 File: home/franco/cavitt/I_mac_183.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: Cavitt
 File: I_mac_183
 Mercury-300 "r3d2"
 Relax. delay 1.000 sec
 Pulse 39.0 degrees
 Acq. time 3.550 sec
 Width 4853.1 Hz
 12 repetitions
 OBSERVE H1, 300.2257117 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 34 sec

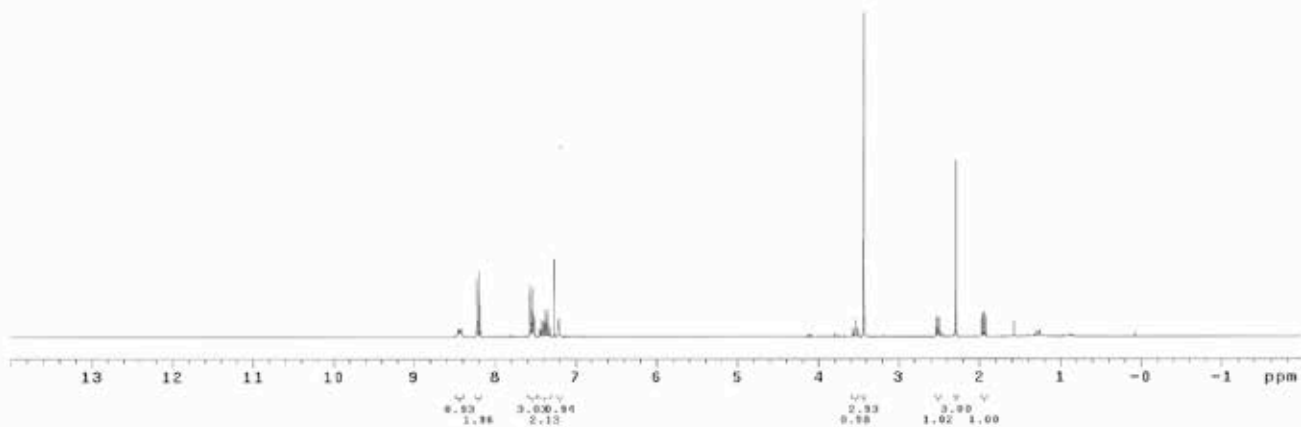
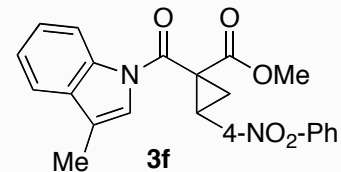


I_mac_183_13C
 File: home/franco/cavitt/I_mac_183_13C.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: Cavitt
 File: I_mac_183_13C
 Mercury-300 "r3d2"
 Relax. delay 1.000 sec
 Pulse 39.0 degrees
 Acq. time 1.381 sec
 Width 18115.3 Hz
 385 repetitions
 OBSERVE C13, 75.4813175 MHz
 DECOUPLE H1, 300.2251667 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 45536
 Total time 25 min, 44 sec

INDEX	FREQUENCY	PPM	HEIGHT
1	12661.1	107.716	29.9
2	12478.1	105.282	21.5
3	10284.5	135.869	15.0
4	10064.3	133.318	22.1
5	10024.5	132.791	39.8
6	8326.7	131.894	24.1
7	8044.3	129.403	124.6
8	5989.5	128.355	126.1
9	4447.3	125.469	46.5
10	3351.2	123.071	46.4
11	3149.4	121.198	20.5
12	3013.9	118.403	31.5
13	8376.3	118.985	52.6
14	8792.2	118.467	19.3
15	5845.5	77.453	48.2
16	5813.4	77.088	43.5
17	5781.4	76.583	43.1
18	3960.7	52.063	48.4
19	2963.9	39.527	29.8
20	2324.9	30.797	29.6
21	1483.3	18.589	34.1
22	734.5	9.735	41.4

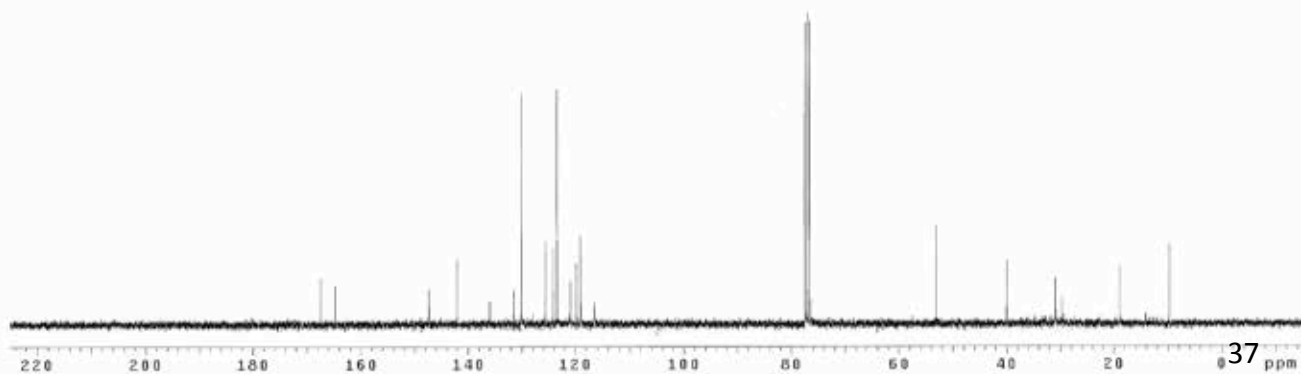


I_mec_190_d
 Nitro_cyclopropyl
 File: home/france/cavitt/I_mec_190_d.fid
 Pulse Sequence: s2pu1
 Solvent: cdcl3
 Ambient temperature
 Operator: Cavitt
 File: I_mec_190_d
 Mercury-300 "r2d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4000.1 Hz
 40 repetitions
 OBSERVE M1, 300.2237110 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 34 sec

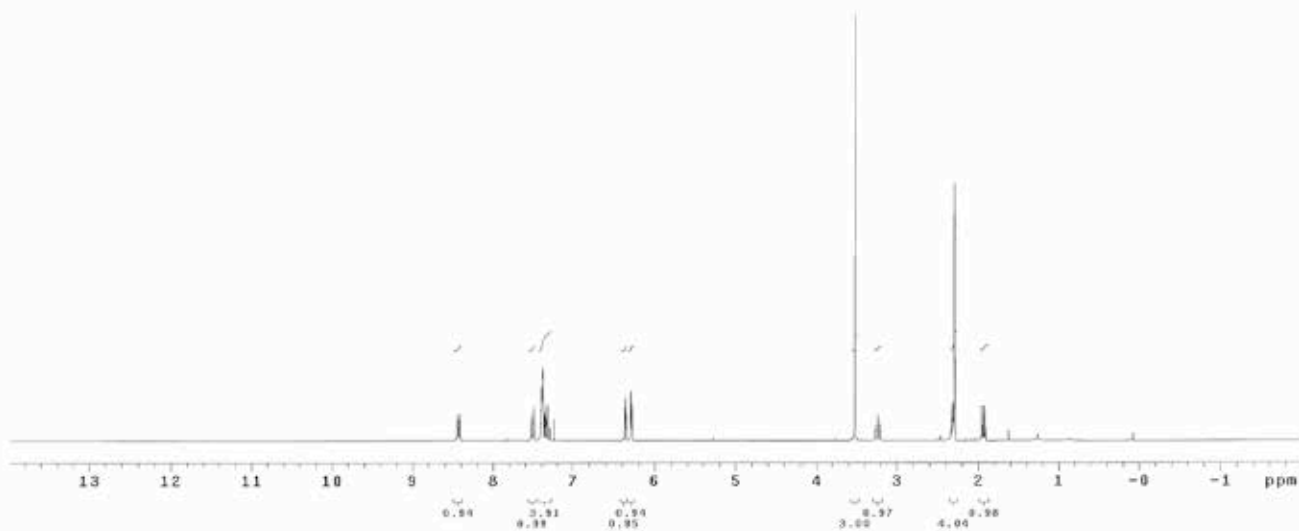
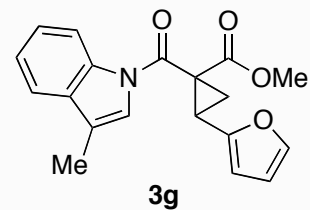


W02
 File: home/france/cavitt/W02.fid
 Pulse Sequence: s2pu1
 Solvent: cdcl3
 Ambient temperature
 Operator: Cavitt
 File: W02
 Mercury-300 "r2d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.321 sec
 Width 10115.3 Hz
 340 repetitions
 OBSERVE C13, 75.4813145 MHz
 DECOUPLE M1, 300.2251007 MHz
 Power 40 dB
 Continuously On
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 32 min, 57 sec

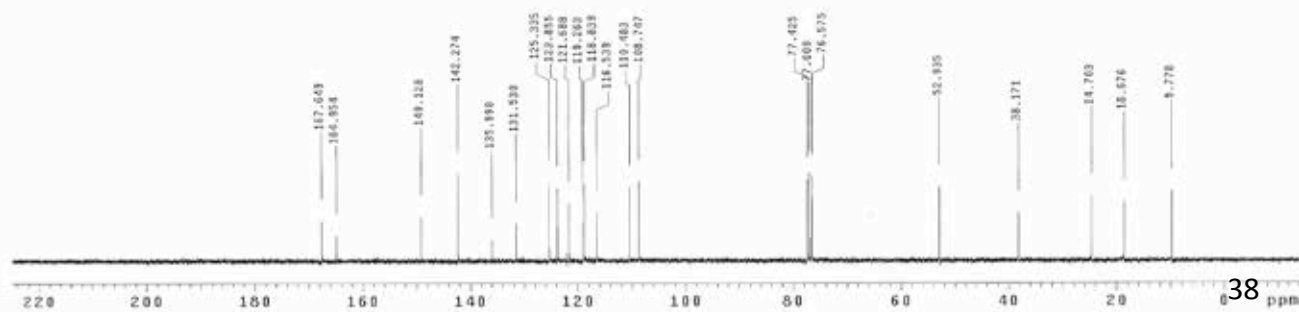
INDEX	FREQUENCY	PPM	HEIGHT
1	12844.7	167.489	19.0
2	12437.4	164.752	8.6
3	11116.6	147.248	7.9
4	10720.6	142.013	14.4
5	10266.7	135.971	5.2
6	9929.1	131.526	7.6
7	9817.4	130.947	51.7
8	9479.6	125.572	18.4
9	9305.7	124.063	17.1
10	8316.8	123.484	52.6
11	8129.6	120.338	9.7
12	8046.2	119.830	13.7
13	8964.8	119.018	13.9
14	8792.4	116.469	4.8
15	5844.6	77.421	67.7
16	5812.5	76.990	69.3
17	5760.4	76.571	68.0
18	4010.8	53.129	21.8
19	2010.4	26.983	14.3
20	2332.8	30.962	19.2
21	2240.5	29.679	6.0
22	1424.6	18.862	12.9
23	738.4	9.781	17.9

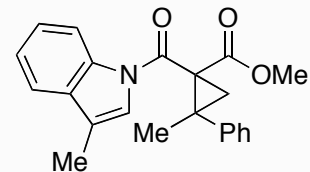


Std Proton parameters
Sample: NB-5-DVP-52-B-H
File: sp
Pulse Sequence: zgpg30
Solvent: cdcl3
Temp: 22.0 C / 295.1 K
Operator: dpatt11
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4863.1 Hz
16 repetitions
OBSERVE F1: 300.2237177 MHz
DATA PROCESSING
F1 size 65526
Total time 1 min, 16 sec



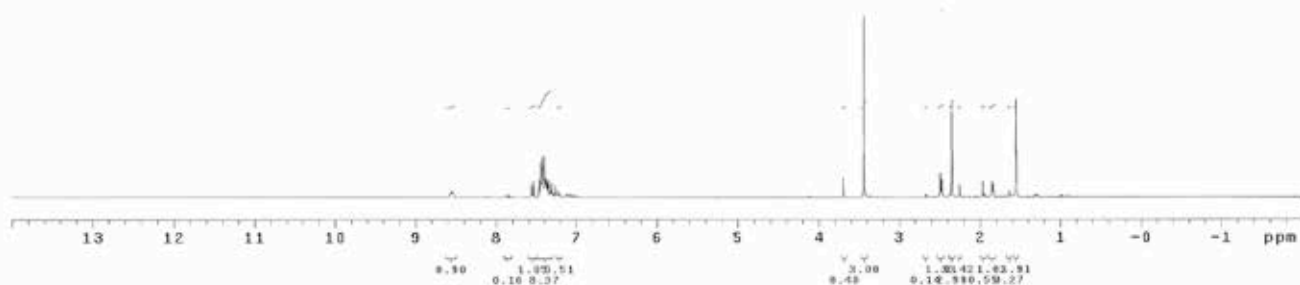
Std Carbon experiment
Sample: NB-5-DVP-52-B-H
File: sp
Pulse Sequence: zgpg30
Solvent: cdcl3
Temp: 22.0 C / 295.1 K
Operator: dpatt11
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.393 sec
Width 18115.9 Hz
112 repetitions
OBSERVE C13: 75.4813175 MHz
DECOUPLE H1: 300.2251667 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 65536
Total time 10 min, 45 sec



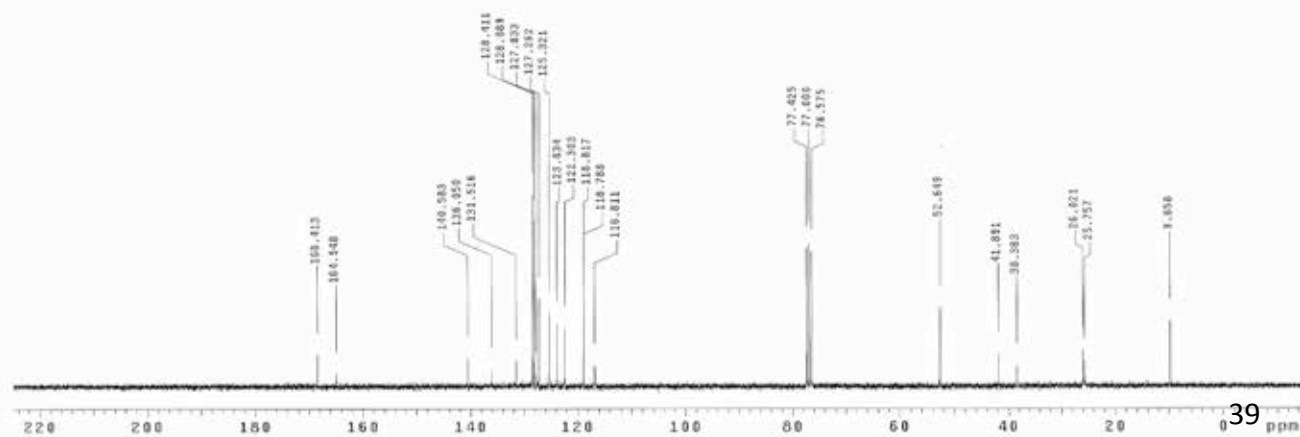


3h
 7.5:1 mixture
 of diastereomers

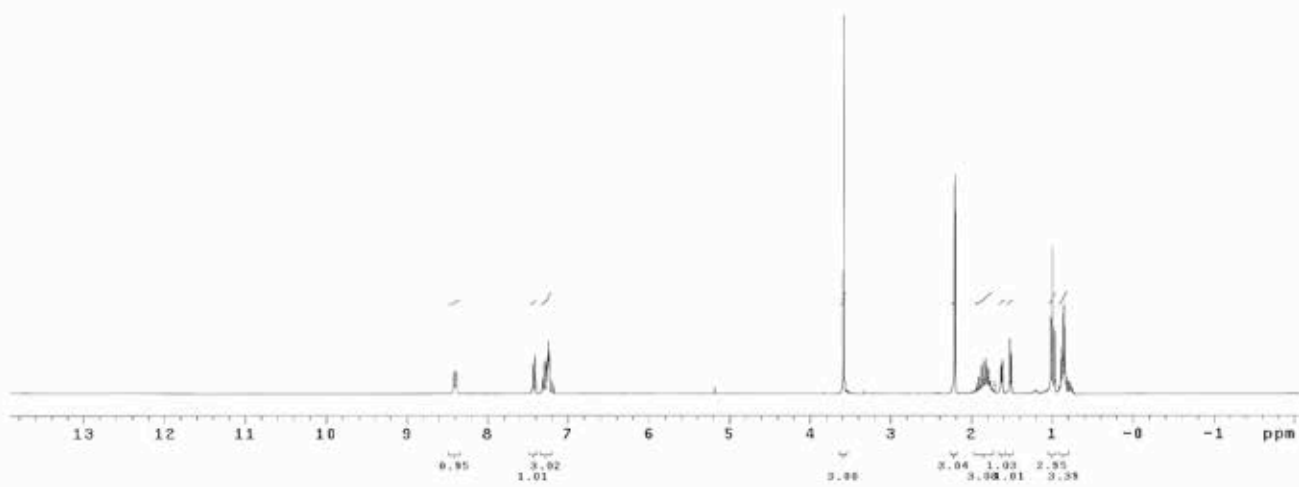
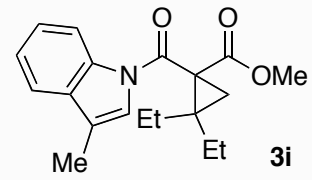
Std Proton parameters
 Sample: NB-5-DVP-40-A-H
 File: hcmw/france/dpat11/NB-5-DVP-40-A-HH.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 30.0 C / 293.1 K
 Operator: dpat11
 File: NB-5-DVP-40-A-HH
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.525 sec
 Width 3803.1 Hz
 16 repetitions
 OBSERVE H1, 300.2237117 MHz
 DATA PROCESSING
 FT size 45526
 Total time 1 min, 18 sec



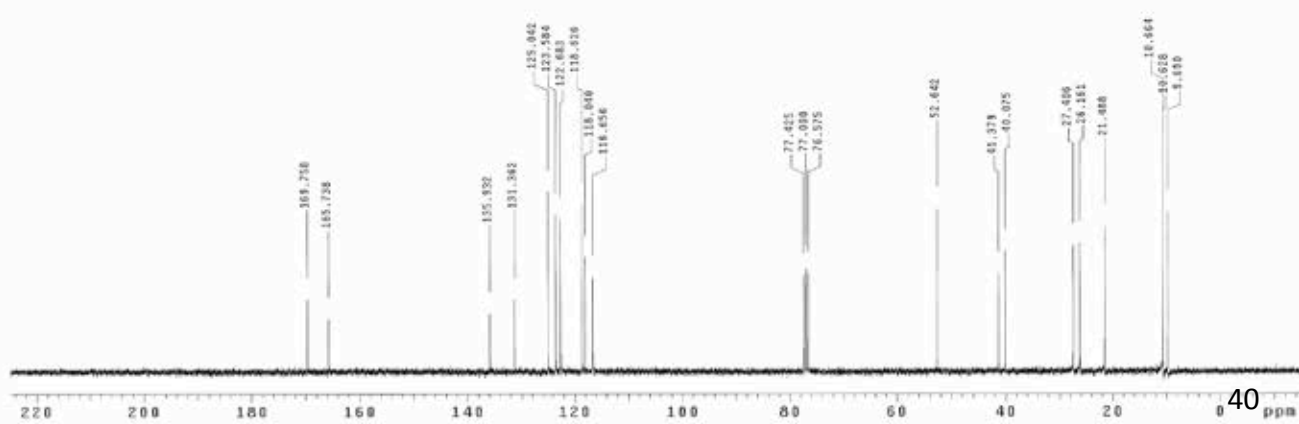
Std Carbon experiment
 File: sp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 22.0 C / 295.1 K
 Operator: dpat11
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.381 sec
 Width 18115.3 Hz
 256 repetitions
 OBSERVE C13, 75.490054 MHz
 DECOUPLE H1, 300.2195461 MHz
 Power 40 dB
 Continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 35536
 Total time 10 min, 45 sec



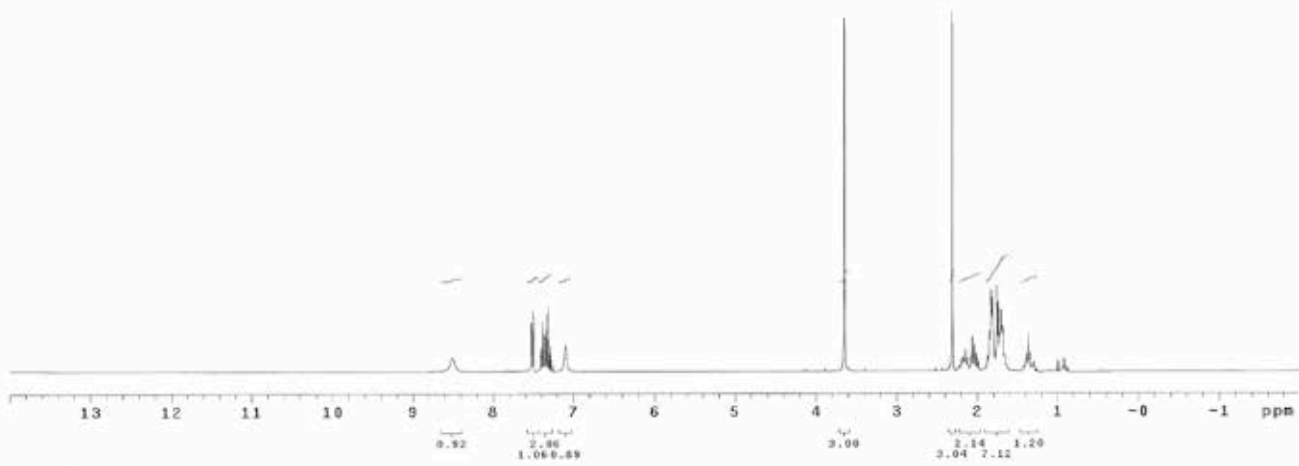
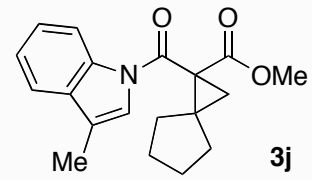
Rh exp CP 2-vinylindazole
 Sample: NH-5-DVP-56-A
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdc13
 Temp: 20.0 C / 283.1 K
 Operator: dpat11
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 0.558 sec
 Width 4863.1 Hz
 16 Reptitions
 OBSERVE F1: 300.2227381 MHz
 DATA PROCESSING
 FT size 85536
 Total time 1 min, 18 sec



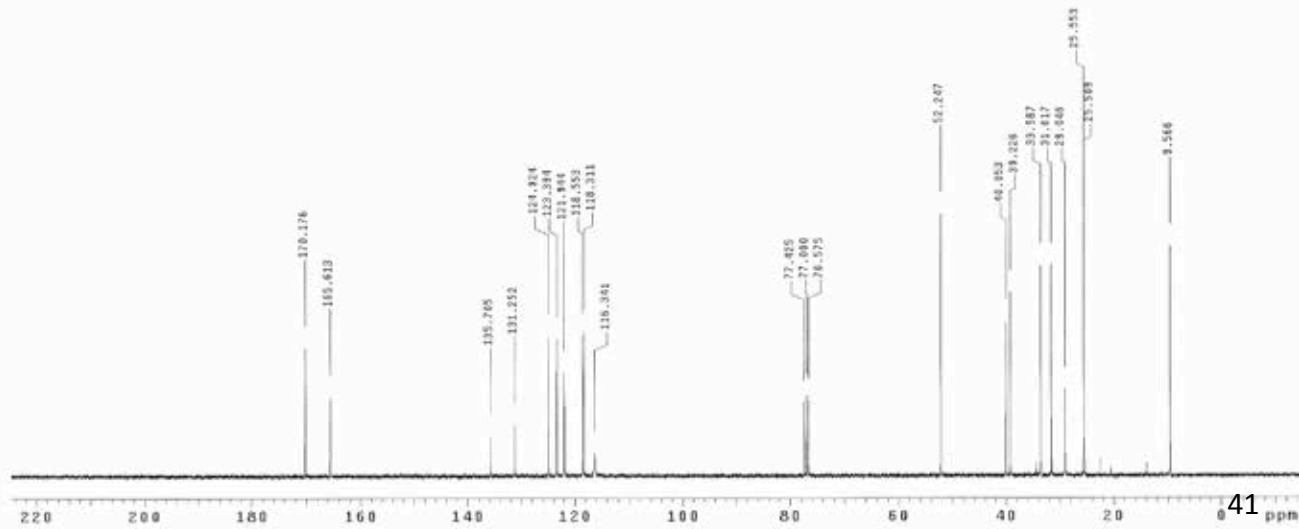
Std Carbon experiment
 Sample: NH-5-DVP-56-A
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdc13
 Temp: 20.0 C / 283.1 K
 Operator: dpat11
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 18117.9 Hz
 80 Reptitions
 OBSERVE F1: 75.4813213 MHz
 DECOUPLE M1: 300.2251667 MHz
 Power 10 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 10 min, 45 sec



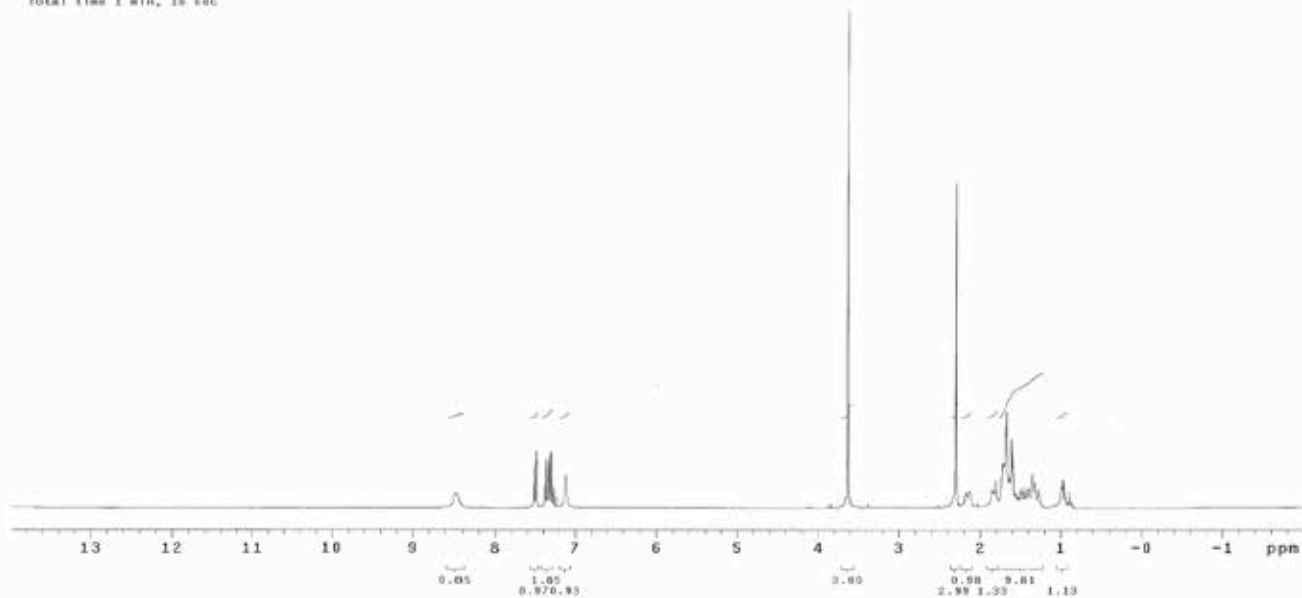
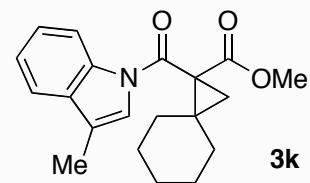
Std Proton parameters
Sample: NS-5-DVP-48-B
File: sp
Pulse Sequence: szpul
Solvent: cdcl3
Temp: 20.0 C / 293.1 K
Operator: dpat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.559 sec
Width 4800.1 Hz
16 repetitions
OBSERVE H1, 300.2297117 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 18 sec



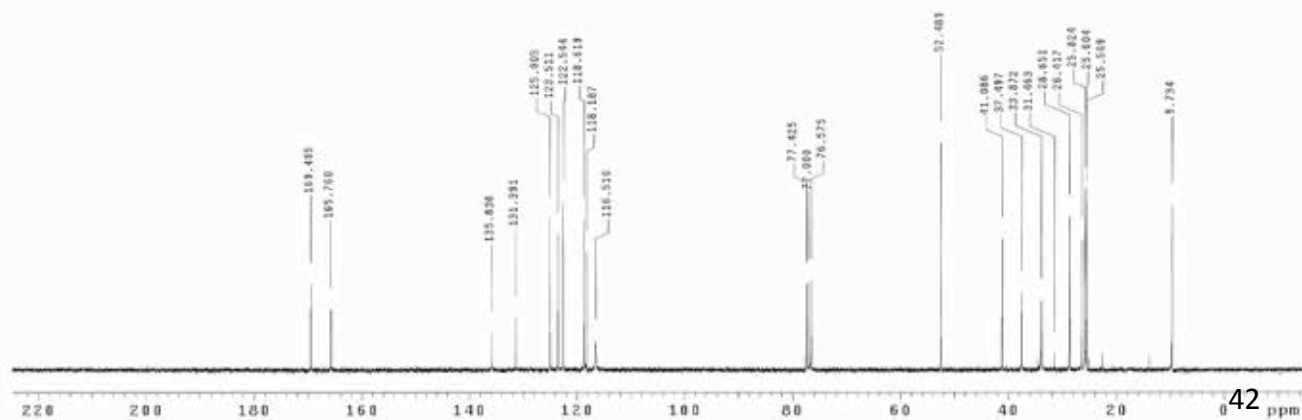
Std Carbon experiment
Sample: NS-5-DVP-48-B
File: sp
Pulse Sequence: szpul
Solvent: cdcl3
Temp: 20.0 C / 293.1 K
Operator: dpat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18115.9 Hz
312 repetitions
OBSERVE C13, 75.4913335 MHz
DECUPLE H1, 300.2251447 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
line broadening 0.5 Hz
FT size 65536
Total time 18 min, 45 sec



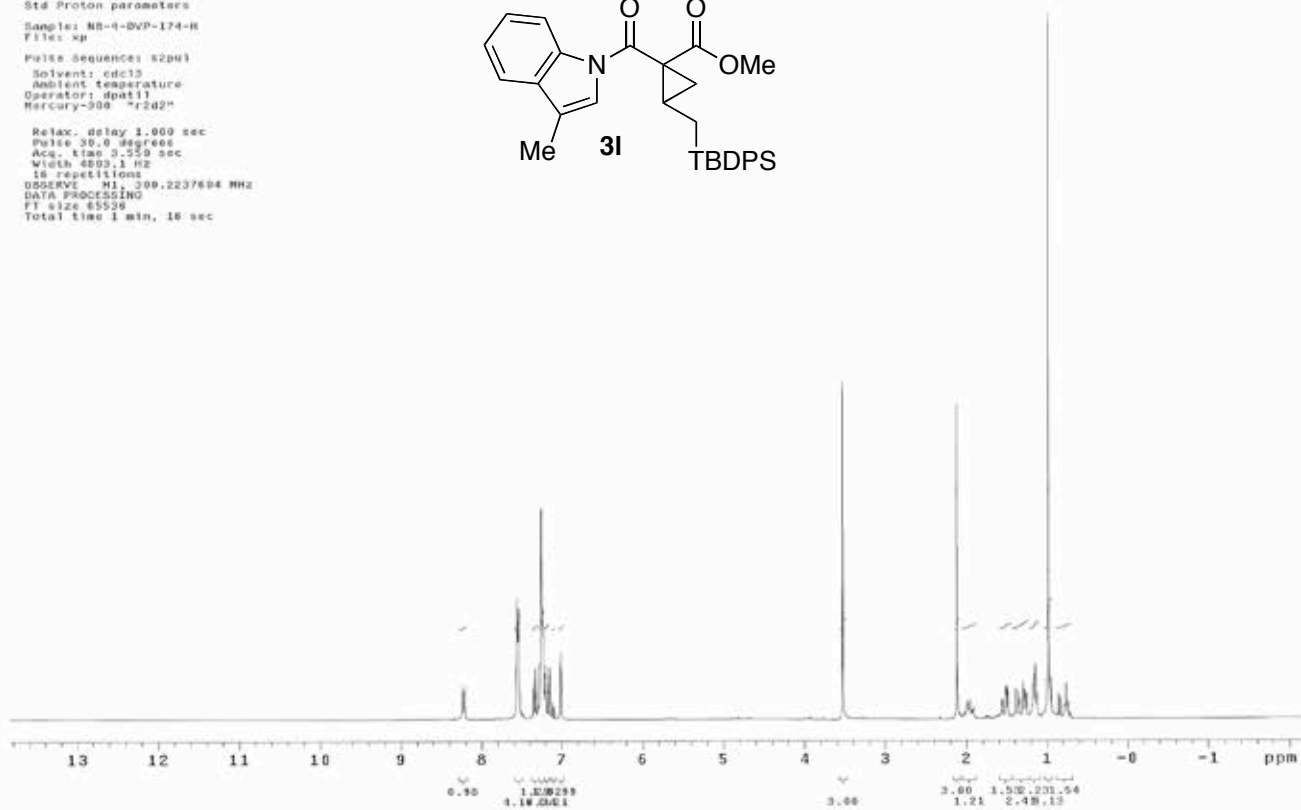
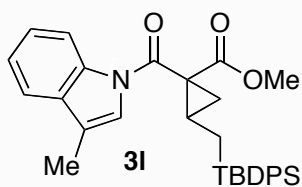
Std Proton parameters
Sample: NB-5-DVP-51-B-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 29.0 C / 293.1 K
Operator: dpatt11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 33.6 degrees
Acq. time 3.559 sec
Width 4893.1 Hz
18 repetitions
OBSERVE H1, 300.2237174 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 18 sec



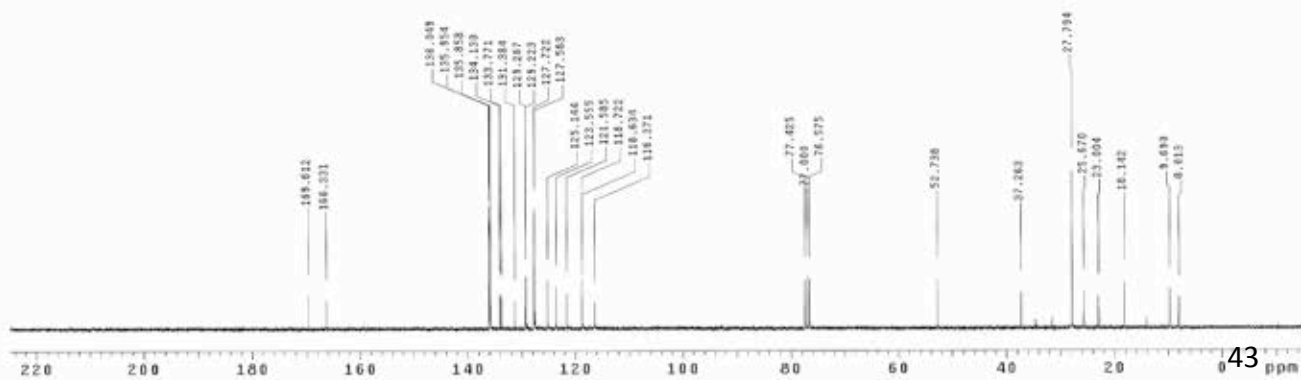
Std Carbon experiment
Sample: NB-5-DVP-51-B-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 29.0 C / 293.1 K
Operator: dpatt11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 33.0 degrees
Acq. time 1.393 sec
Width 16135.9 Hz
308 repetitions
OBSERVE C13, 75.4813242 MHz
DECOUPLE H1, 300.2251667 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 10 min, 45 sec

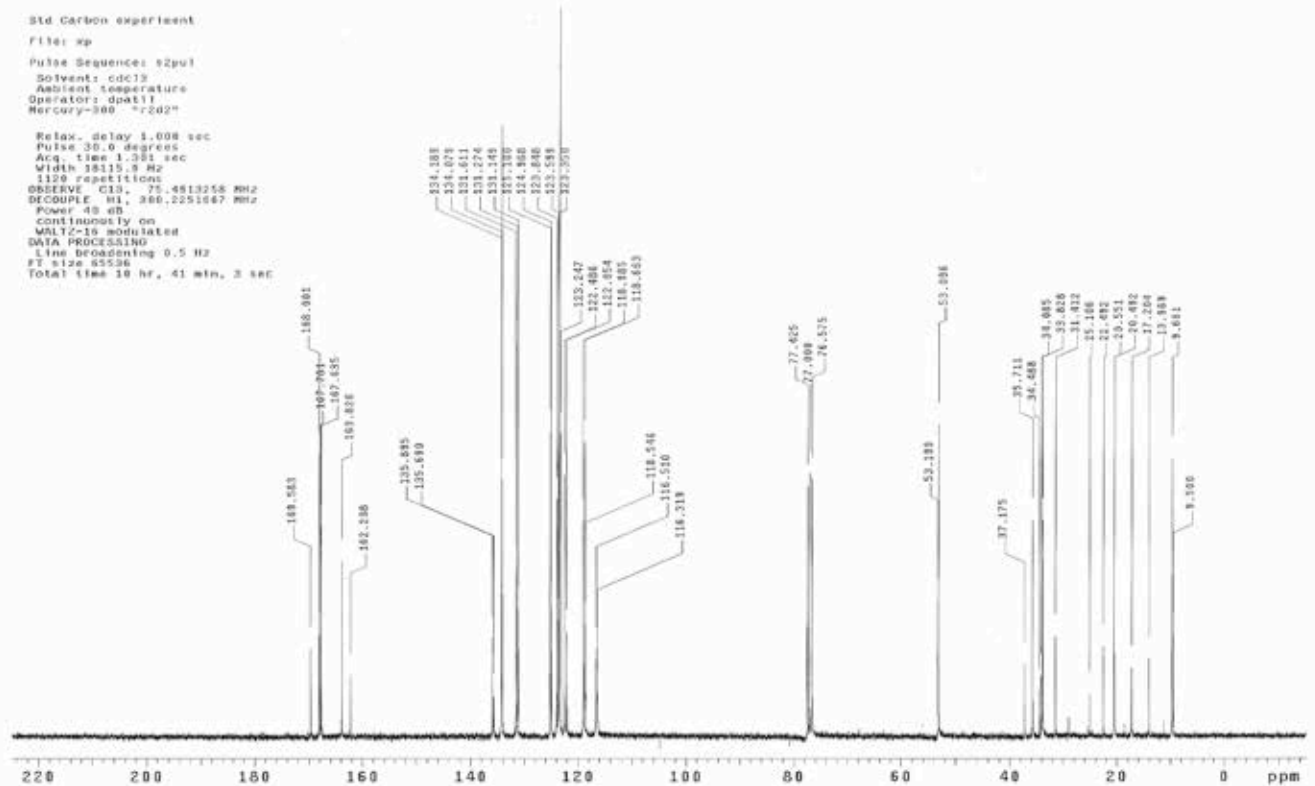
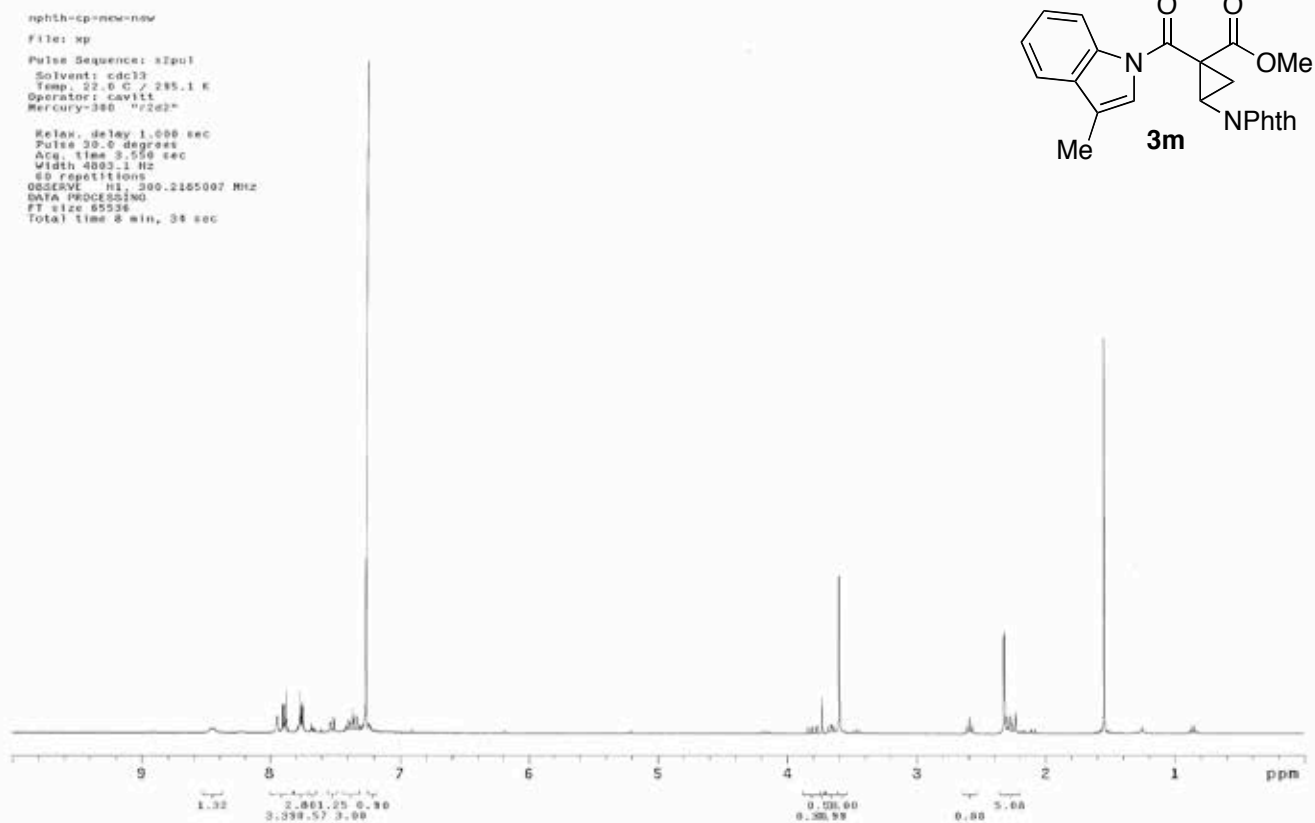


Std Proton parameters
Sample: NB-4-DVP-174-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpaf11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.559 sec
Width 4003.1 Hz
18 repetitions
OBSERVE F1, 300.2237684 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec

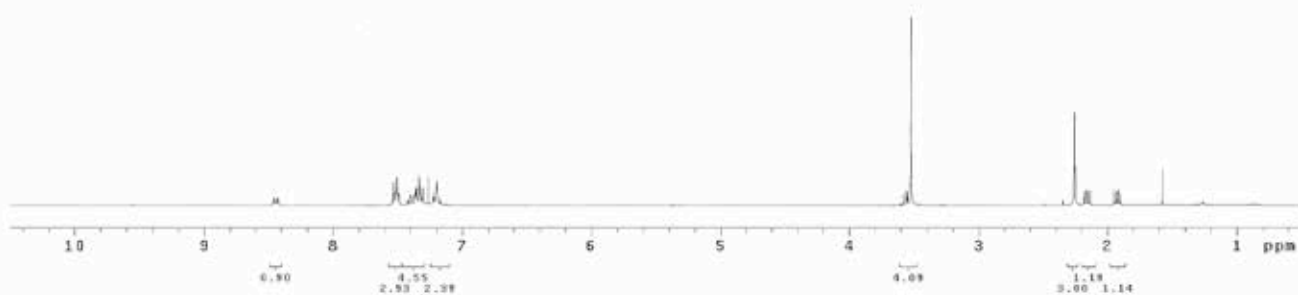
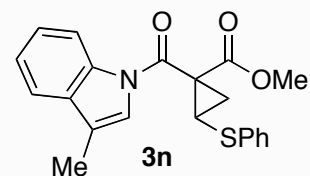


Std Carbon experiment
Sample: NB-4-DVP-174-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpaf11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.381 sec
Width 3811.9 Hz
182 repetitions
OBSERVE G13, 75.4813137 MHz
DECUPLE H1, 399.2251657 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec



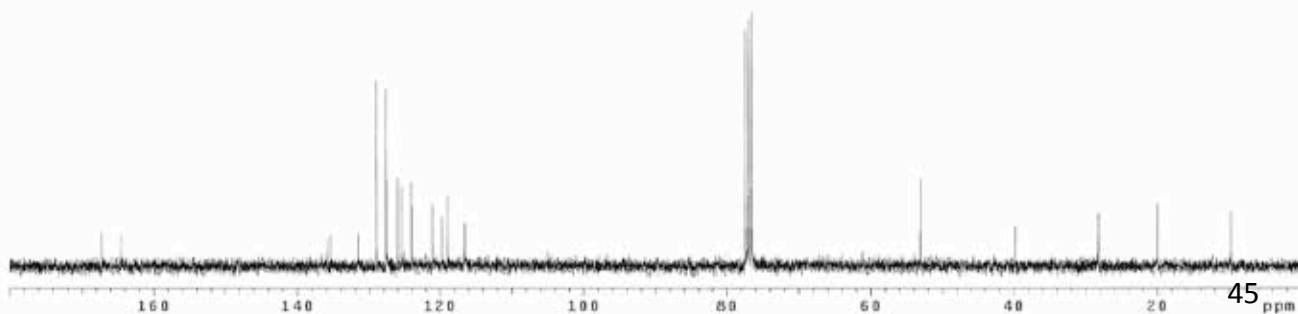


II-MAC-53-H
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4893.1 Hz
 66 repetitions
 OBSERVE H1, 300.2164999 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 34 sec

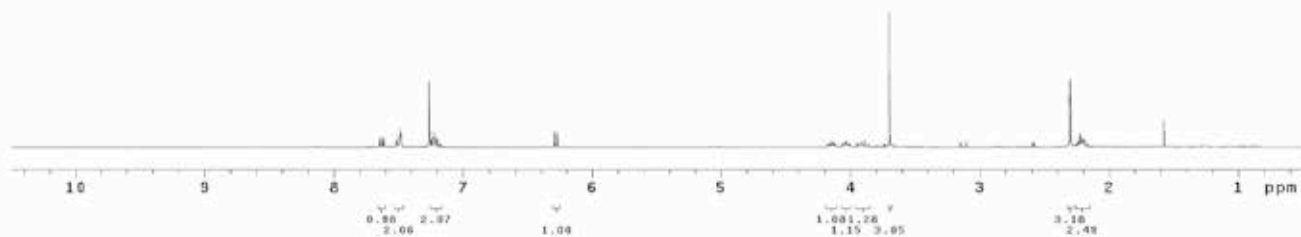
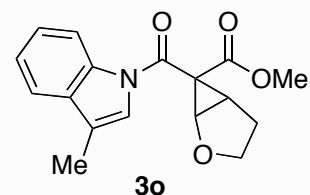


II-MAC-53-C
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.381 sec
 Width 18115.3 Hz
 136 repetitions
 OBSERVE C13, 75.4900041 MHz
 DECOUPLE H1, 300.2164999 MHz
 Power 40 dB
 Continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 45536
 Total time 25 hr, 48 min, 5 sec

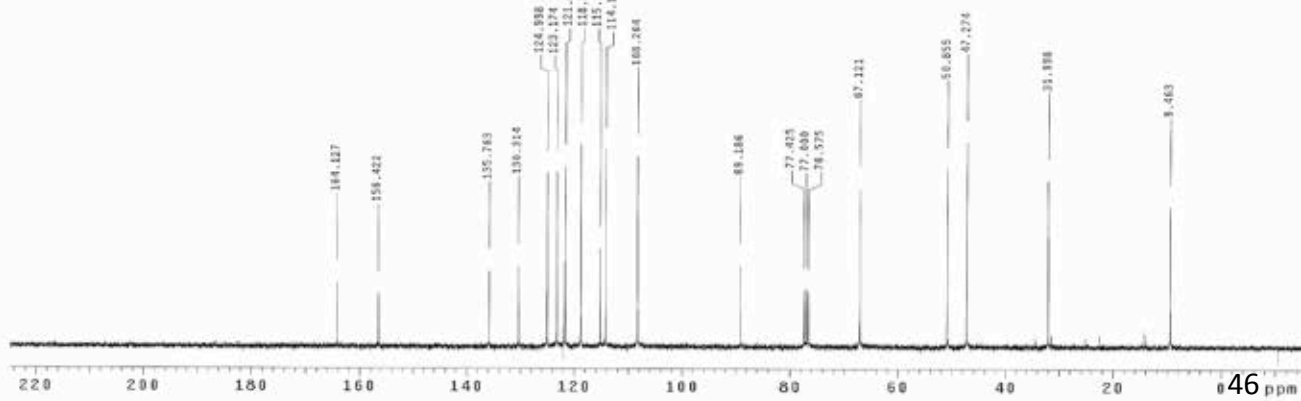
INDEX	FREQUENCY	PPM	HEIGHT
1	12625.7	167.251	7.6
2	12421.7	164.546	7.0
3	10269.6	135.929	5.9
4	10221.6	135.408	6.9
5	8839.0	131.541	7.2
6	8738.2	128.009	41.2
7	8691.2	127.623	38.6
8	8511.5	125.997	28.7
9	8471.7	125.479	17.7
10	8362.0	124.027	16.7
11	8137.8	121.046	13.6
12	8036.6	118.708	10.8
13	8979.7	118.952	15.6
14	8780.3	116.550	9.6
15	5844.4	77.420	53.1
16	5812.9	77.002	55.1
17	5780.8	76.578	56.7
18	4007.3	53.084	18.6
19	2989.4	39.733	8.8
20	2126.1	28.191	11.7
21	1507.0	19.974	14.0
22	794.4	9.758	12.1



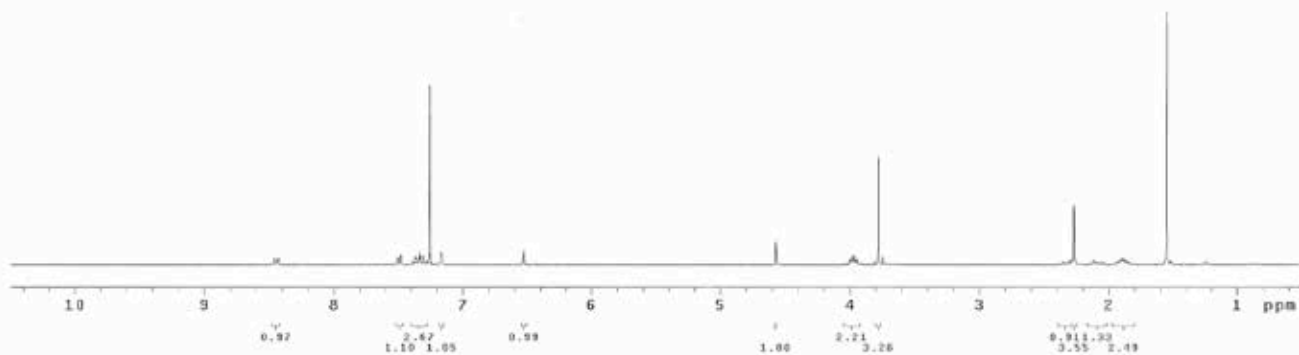
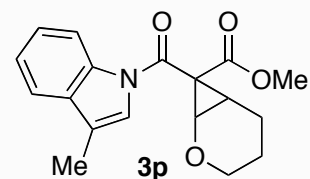
DHF-H-T1
File: home/franco/cavitt/DHF-H-T1.fid
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: cavitt
File: DHF-H-T1
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.350 sec
Width 4883.1 Hz
33 repetitions
OBSERVE H1, 300.2185882 MHz
DATA PROCESSING
F1 size 65536
Total time 8 min, 34 sec



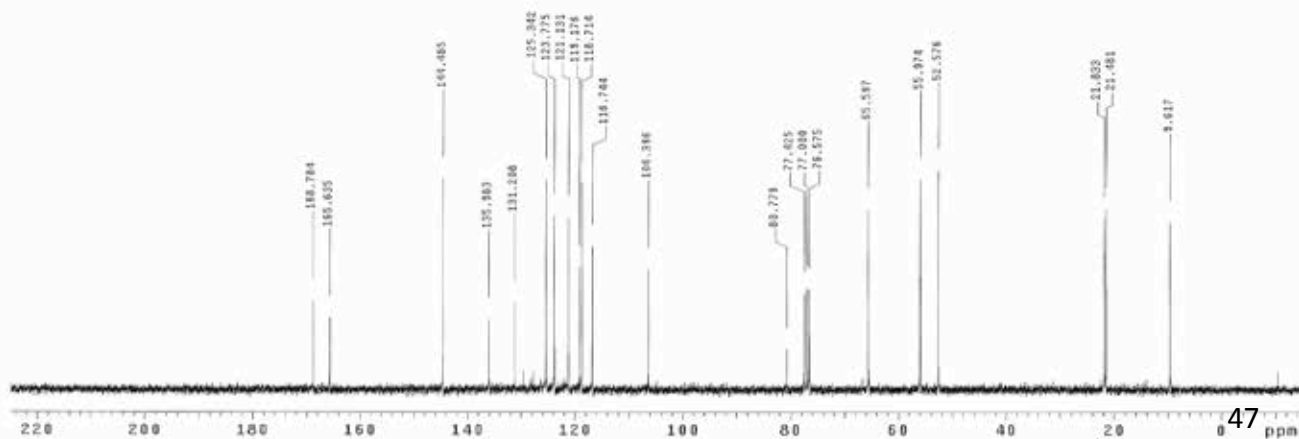
Std Carbon experiment
Sample: NB-4-DVP-186-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: spattl
Mercury-300 "r2d2"
Relax. delay 1.008 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18111.3 Hz
268 repetitions
OBSERVE C13, 75.4013288 MHz
DECOUPLE H1, 300.2251067 MHz
Power 46 dB
continuously on
MULTI-z is modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 45536
Total time 10 min, 45 sec



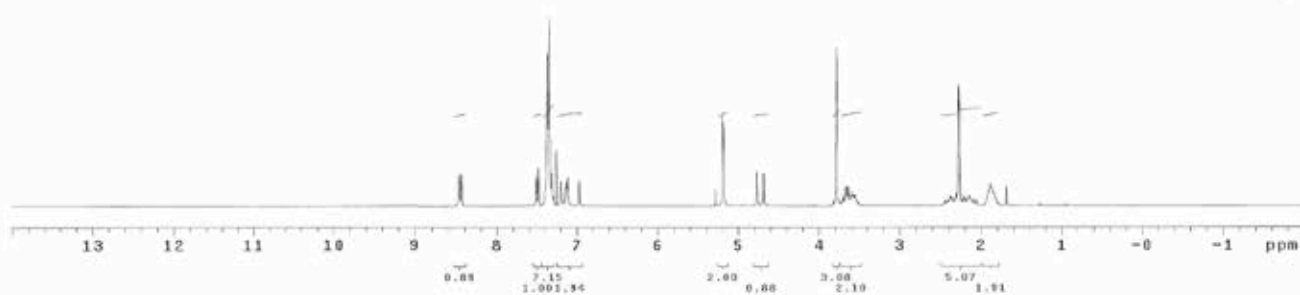
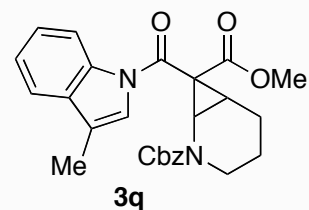
DHP-cp
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: cavilli
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 33.0 degrees
Acq. time 3.550 sec
Width 4883.1 Hz
33 repetitions
OBSERVE H1, 300.2185023 MHz
DATA PROCESSING
F1 size 65536
Total time 8 min, 34 sec



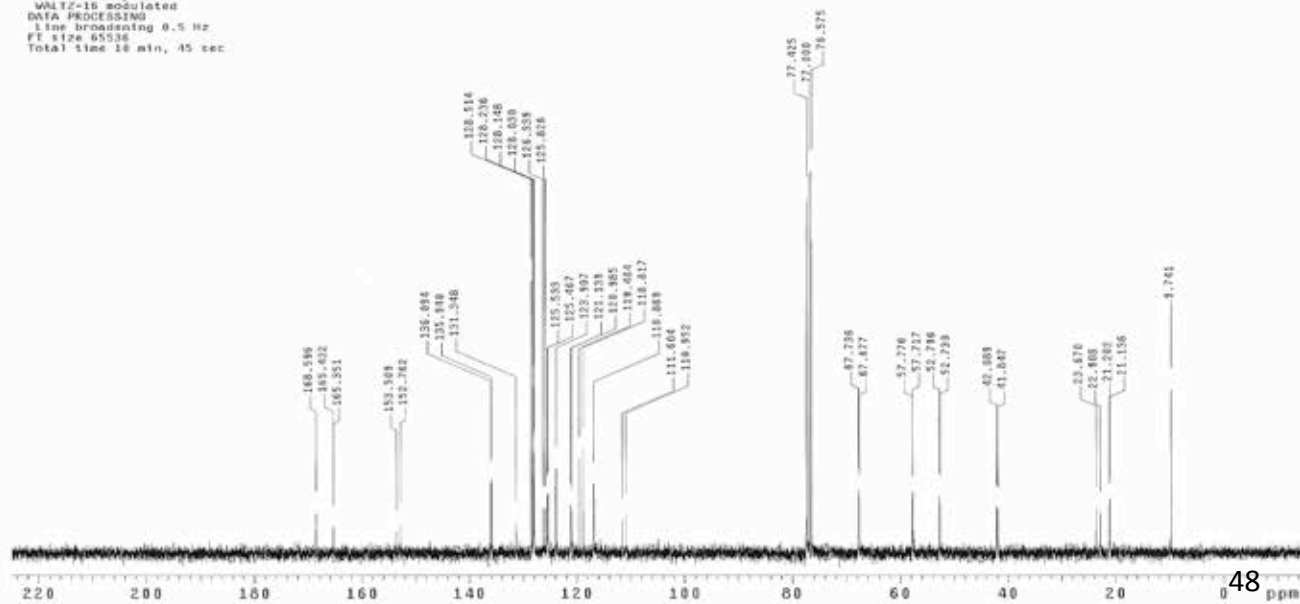
Std Carbon experiment
Sample: NS-4-DVP-161-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpatil
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 33.0 degrees
Acq. time 1.293 sec
Width 18135.0 Hz
102 repetitions
OBSERVE C13, 75.4913242 MHz
DECUPLE H1, 300.2251662 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 65536
Total time 18 hr, 41 min, 3 sec

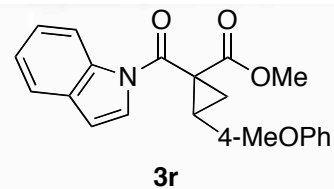


Std Proton parameters
Sample: 3-methylindole-Cbz-CP-N
File: xp
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpatt11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.250 sec
Width 4803.1 Hz
25 repetitions
OBSERVE HI, 300.2185002 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec

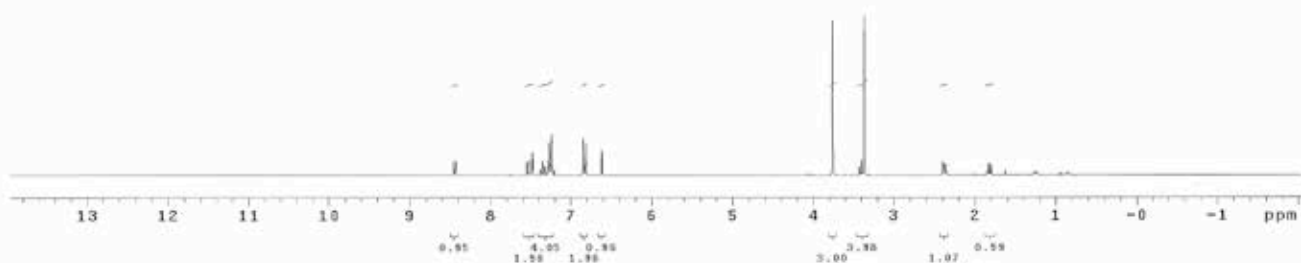


Std Carbon experiment
Sample: 3-methylindole-Cbz-CP-N
File: xp
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpatt11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.301 sec
Width 18135.9 Hz
258 repetitions
OBSERVE C13, 75.4980071 MHz
DECOUPLE HI, 300.2185002 MHz
Power 40 dB
CONTINUOUSLY ON
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 18 min, 45 sec

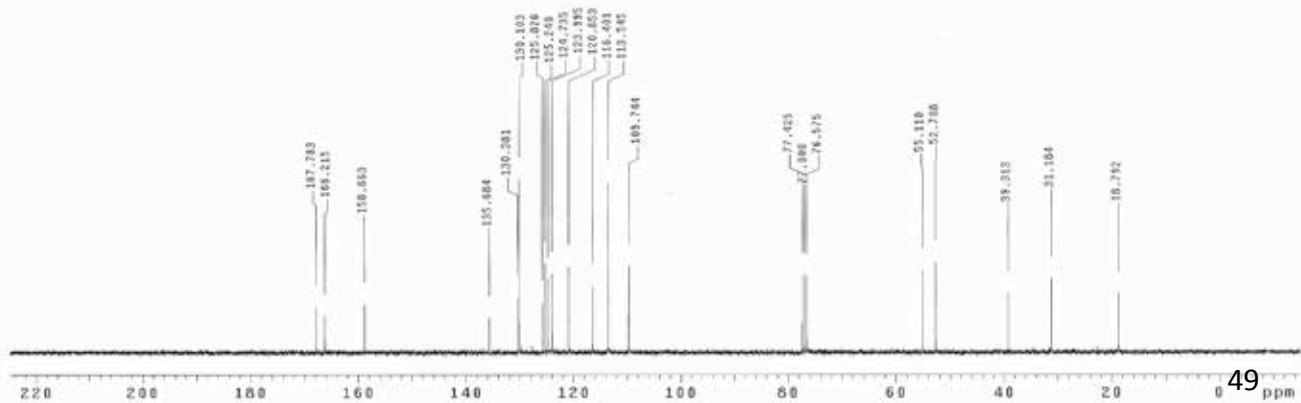




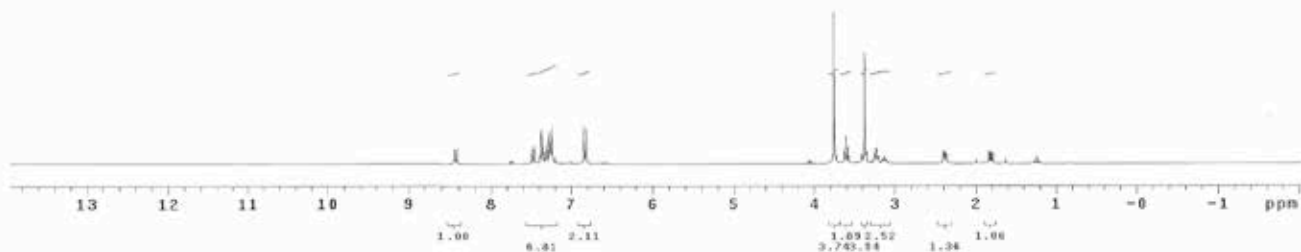
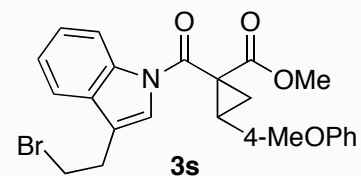
2,3-*non*substituted indole CP
Sample: NB-5-DVP-90-H
File: 90
Pulse Sequence: g2ppl
Solvent: cdcl3
Ambient temperature
Operator: dpatt1
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 udegrees
Acq. time 3.550 sec
Width 5893.1 Hz
16 repetitions
OBSERVE F1: 300.2165182 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec



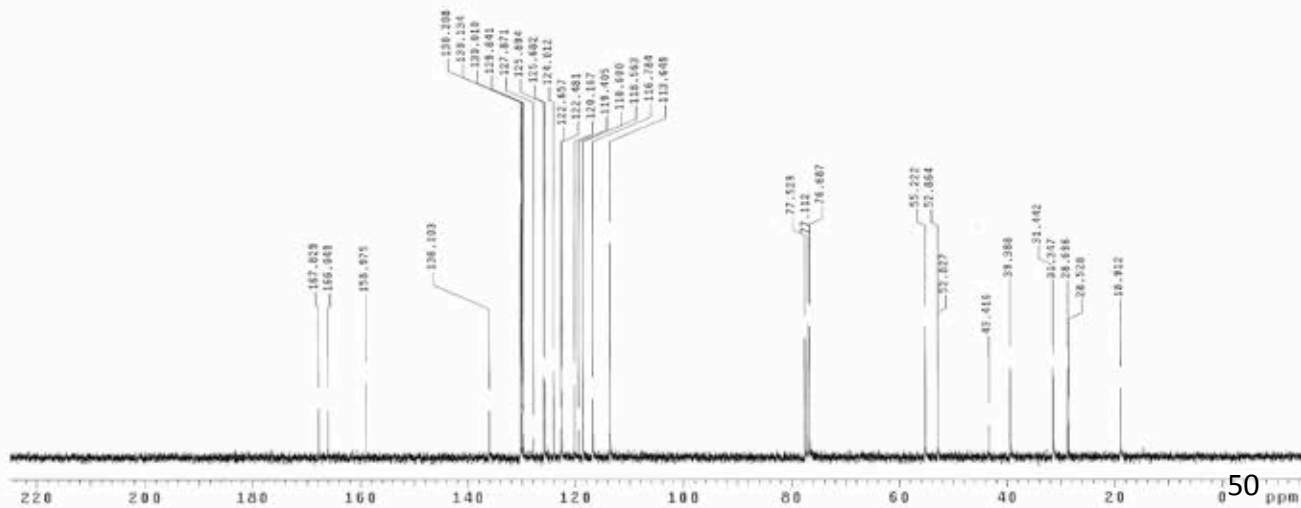
Std Carbon experiment
Sample: NB-5-DVP-90-H
File: 90
Pulse Sequence: g2ppl
Solvent: cdcl3
Ambient temperature
Operator: dpatt1
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 38.0 degrees
Acq. time 1.301 sec
Width 10115.3 Hz
112 repetitions
OBSERVE G13: 75.4508882 MHz
DECOUPLE H1: 300.2199481 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 19 min, 45 sec



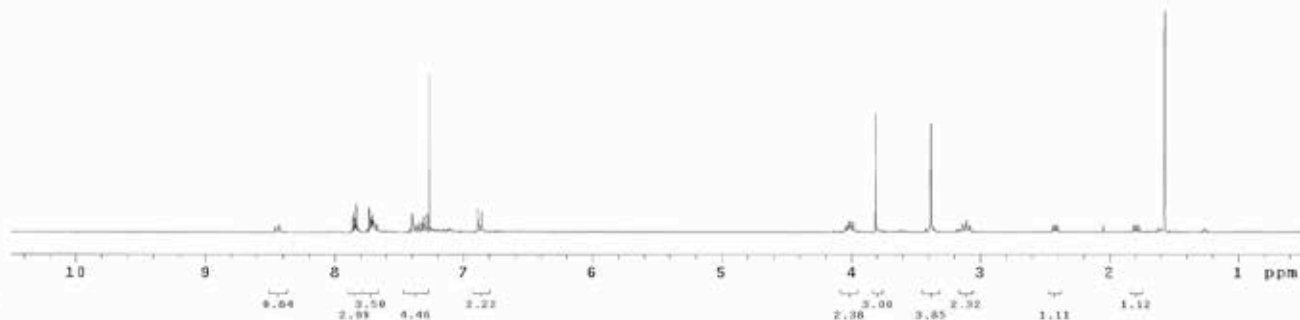
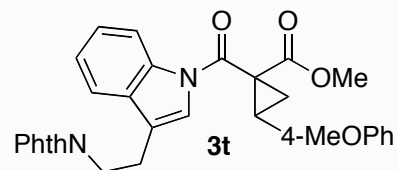
Std Proton parameters
Sample: EtBrindole-CP-N
File: xp
Pulse Sequence: s2pu1
Solvent: cdk13
Ambient temperature
Operator: dpatl1
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 38.0 degrees
Acq. time 3.550 sec
Width 4063.1 Hz
16 repetitions
OBSERVE M1, 300.2185171 MHz
DATA PROCESSING
F1 size 05538
Total time 1 min, 16 sec



Std Carbon experiment
Sample: EtBrindole-CP-N
File: howe/france/dpatl1/4-OMe-EtBrindole-CP-C.fid
Pulse Sequence: s2pu1
Solvent: cdk13
Ambient temperature
Operator: dpatl1
File: 4-OMe-EtBrindole-CP-C
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 38.0 degrees
Acq. time 1.301 sec
Width 10315.9 Hz
80 repetitions
OBSERVE C13, 75.4900019 MHz
DECOUPLE M1, 300.2199401 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 05538
Total time 10 min, 40 sec

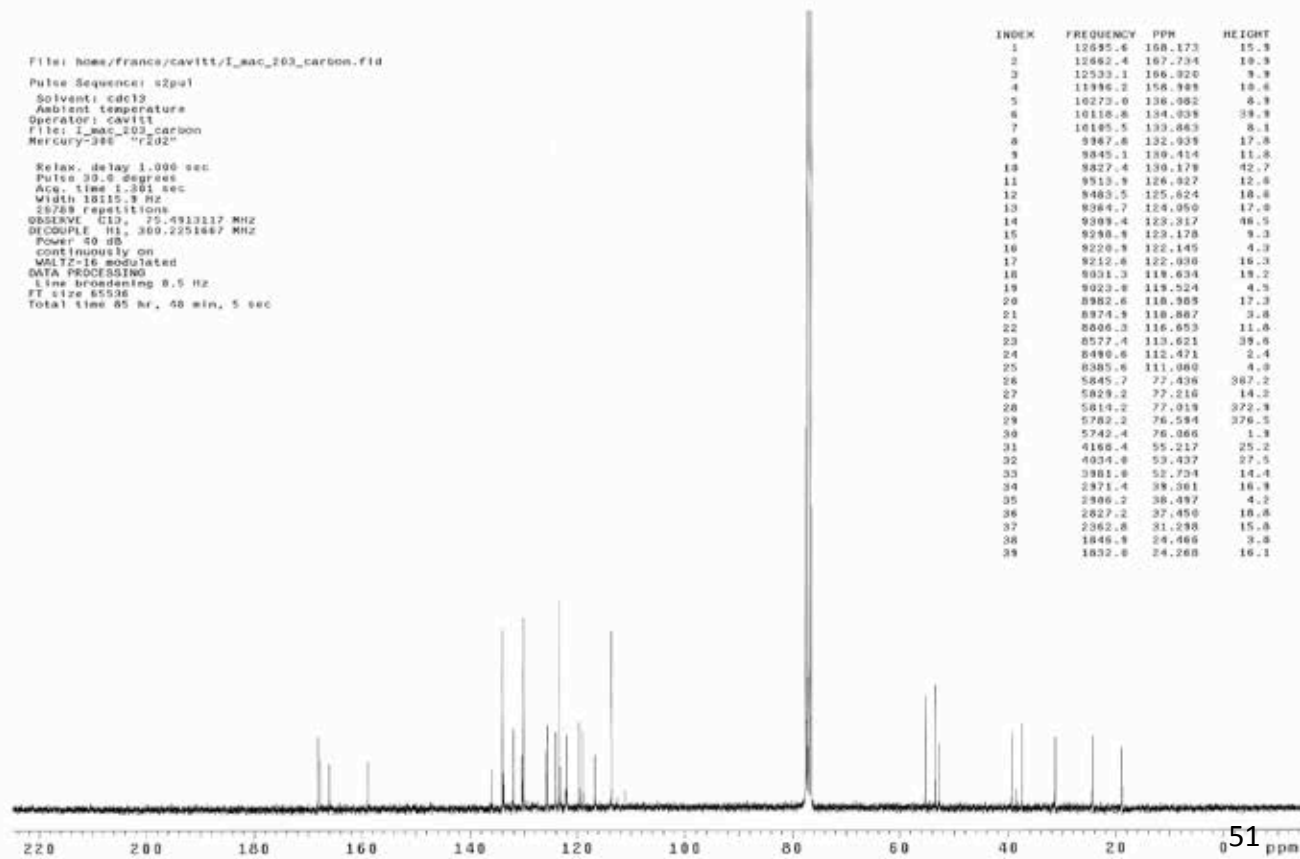


II-MAG-55-H
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4803.1 Hz
 40 repetitions
 OBSERVE H1 300.218487 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 34 sec



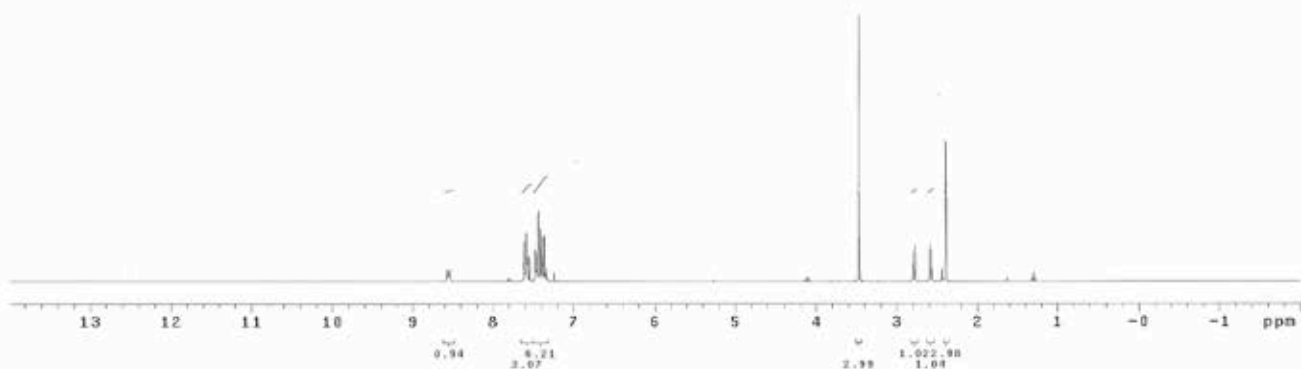
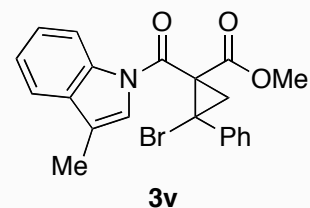
File: home/franca/cavitt/I_mac_203_carbon.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 File: I_mac_203_carbon
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 18217.8 Hz
 28789 repetitions
 OBSERVE C13 75.4913117 MHz
 DECOUPLE H1 300.2251887 MHz
 Power 50 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 8.5 Hz
 FT size 65536
 Total time 85 hr, 48 min, 5 sec

INDEX	FREQUENCY	PPH	HEIGHT
1	12695.6	168.173	15.3
2	12662.4	167.734	19.3
3	12535.1	166.920	9.3
4	11946.2	156.988	18.6
5	10273.0	136.062	8.3
6	10116.8	134.038	39.3
7	10185.5	133.863	8.1
8	9367.8	122.939	17.8
9	9845.1	130.414	11.8
10	8827.4	116.178	42.7
11	9513.9	124.050	12.6
12	8483.5	125.024	18.8
13	8384.7	124.050	17.9
14	9309.4	123.217	46.5
15	9288.9	123.178	9.3
16	8228.9	122.145	4.3
17	8212.6	122.030	16.3
18	8031.3	118.634	19.2
19	9023.8	119.524	4.3
20	8962.6	118.969	17.3
21	8974.9	118.867	3.8
22	8806.3	116.653	11.8
23	8577.4	113.621	39.6
24	8490.6	112.471	2.4
25	8385.8	111.060	4.9
26	5885.7	77.436	387.2
27	5829.2	77.216	14.2
28	5814.2	77.019	372.3
29	5782.2	76.594	376.5
30	5742.4	76.066	1.3
31	4168.4	55.217	25.2
32	4034.8	53.437	27.5
33	3981.8	53.734	14.4
34	2871.4	38.061	18.3
35	2906.2	38.497	4.2
36	2827.2	37.450	18.8
37	2362.8	31.298	15.8
38	1846.9	24.466	3.8
39	1832.8	24.268	16.1



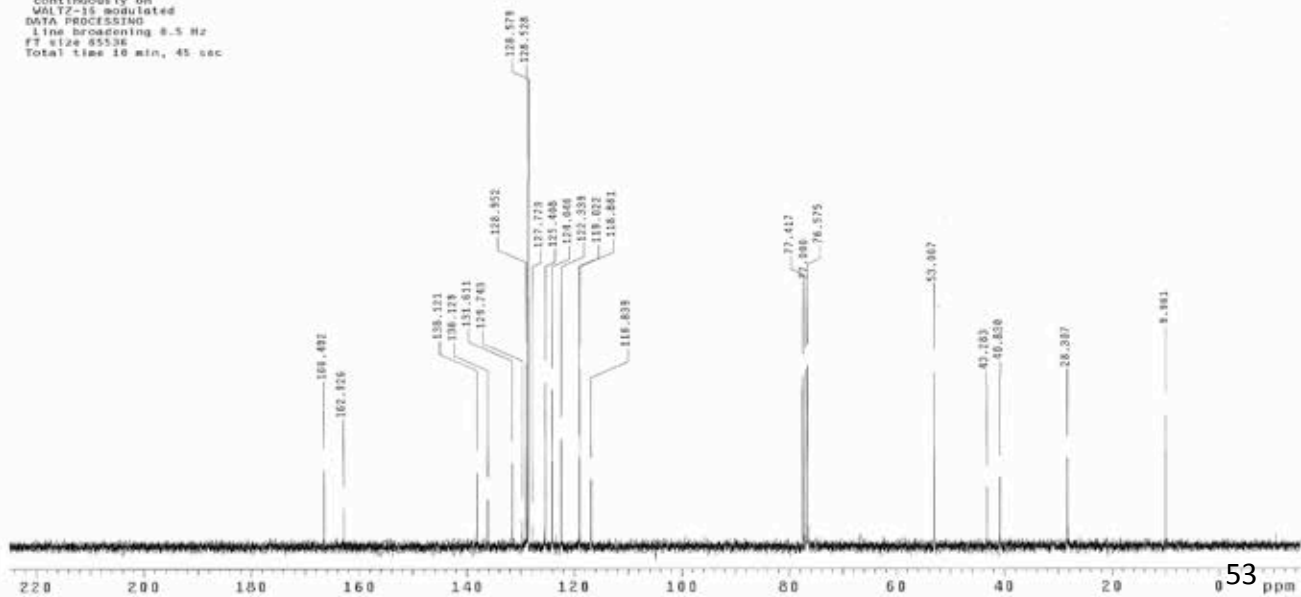
Std Proton parameters

Sample: alpha-bromostyrene-diazot_spot
File: hoes/franco/dpat11/alpha-bromo-styrene-CP-H.fid
Pulse Sequence: szpul
Solvent: cdc13
Acquisition temperature
Operator: dpat11
File: alpha-bromo-styrene-CP-H
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degree
Acq. time 3.559 sec
Width 4803.1 Hz
16 repetitions
OBSERVE H1, 300.2237183 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec



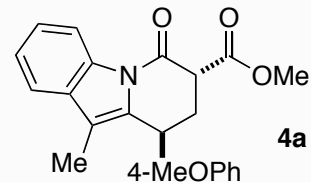
Std Carbon experiment

Sample: alpha-bromostyrene-diazot_spot
File: hoes/franco/dpat11/alpha-bromo-styrene-CP-C.fid
Pulse Sequence: szpul
Solvent: cdc13
Acquisition temperature
Operator: dpat11
File: alpha-bromo-styrene-CP-C
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degree
Acq. time 1.391 sec
Width 18115.9 Hz
64 repetitions
OBSERVE C13, 75.4913208 MHz
DECOUPLE H1, 300.2251667 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 8.5 Hz
FT size 85536
Total time 16 min, 45 sec

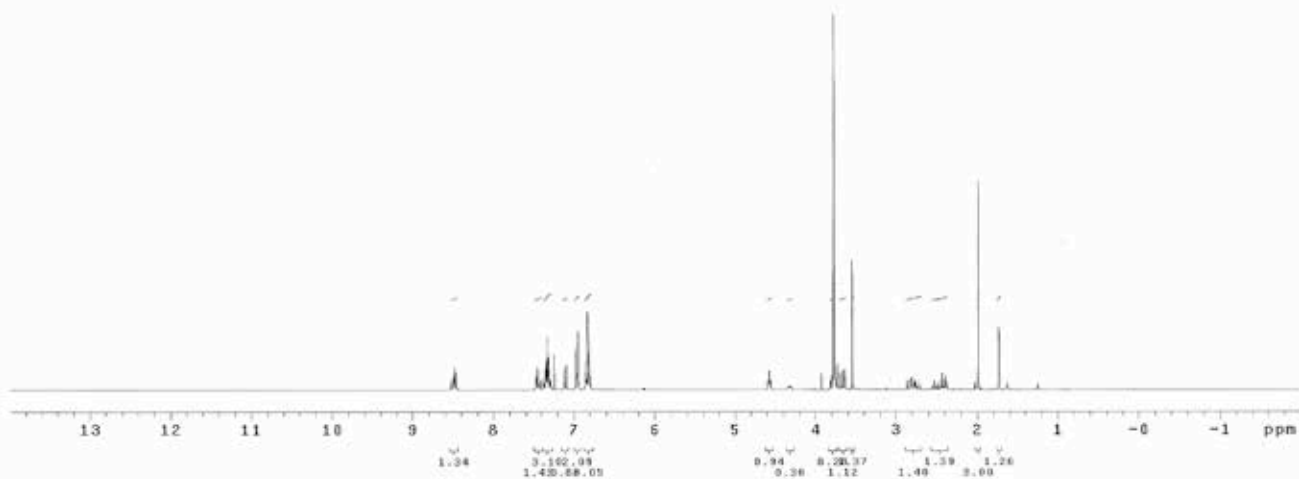


Std Proton parameters
Sample: 4-Mestylene-cyln-B
File: xp
Pulse Sequence: szpul
Solvent: cdcl3
Temp: 22.0 C / 295.1 K
Operator: dpatt1
Mercury-300 "r202"

Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.558 sec
Width 4995.1 Hz
16 repetitions
OBSERVE HI: 300.2185052 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec

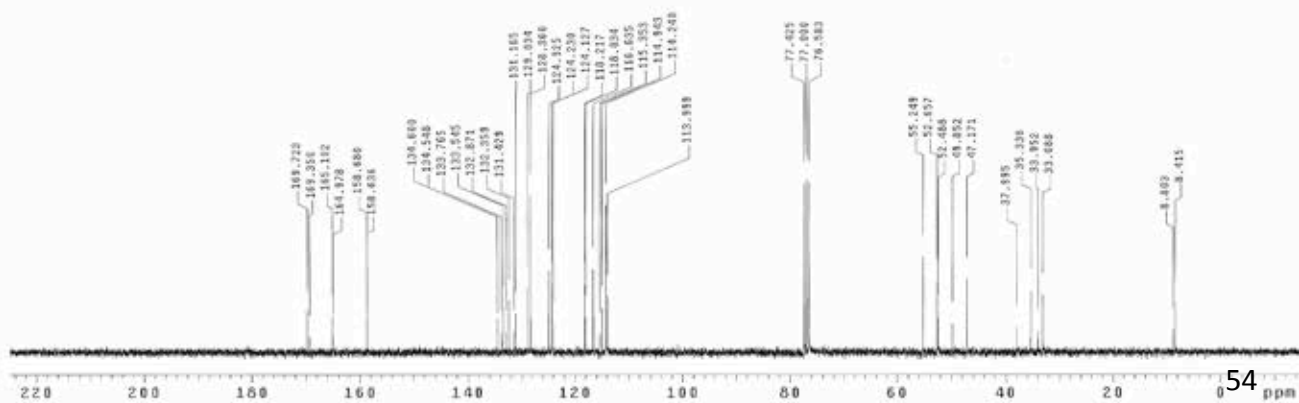


(2.6:1 trans:cis
mixture of diastereomers)

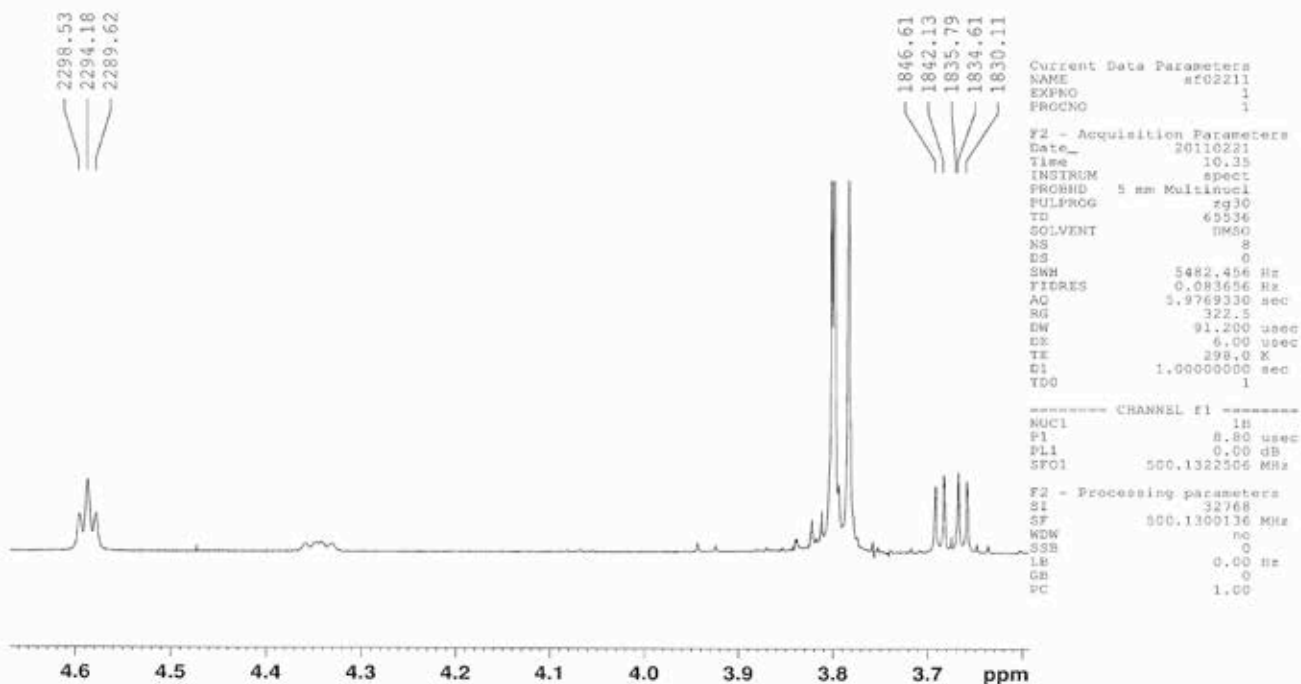


Std Carbon experiment
Sample: 4-Mestylene-cyln-C
File: xp
Pulse Sequence: szpul
Solvent: cdcl3
Temp: 22.8 C / 295.1 K
Operator: dpatt1
Mercury-300 "r202"

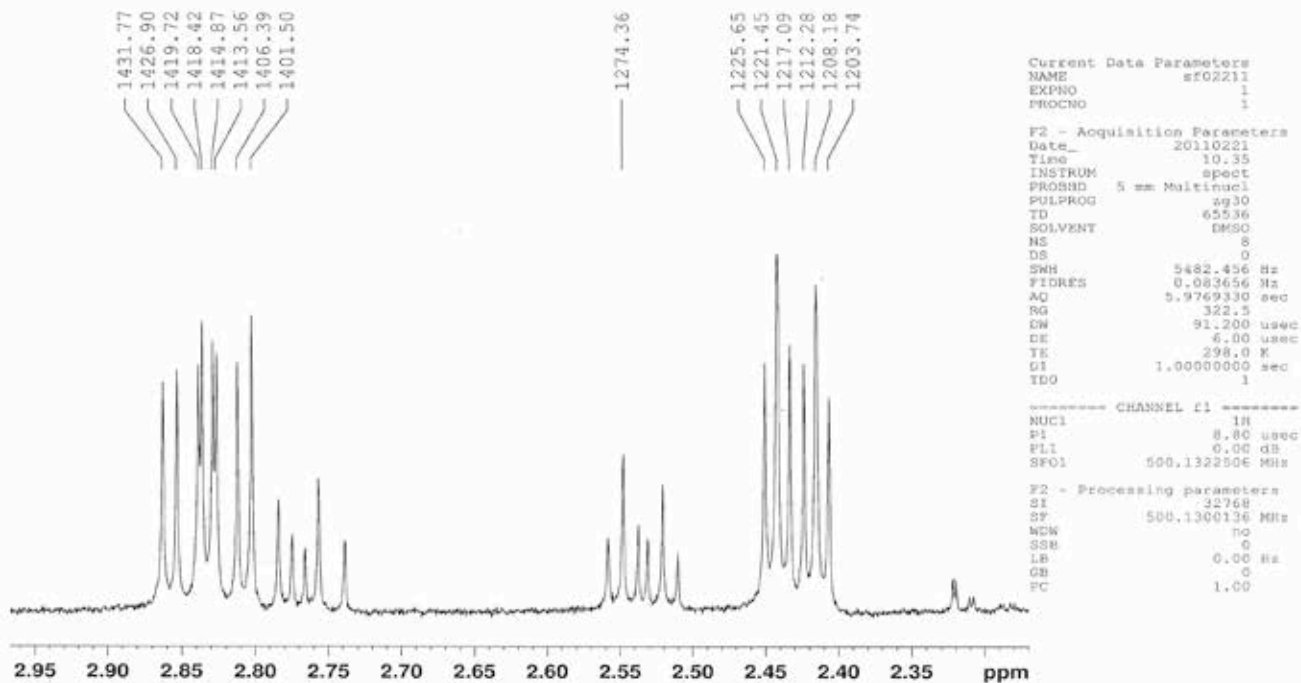
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 16115.3 Hz
280 repetitions
OBSERVE C13: 75.4808654 MHz
DECOUPLE HI: 300.2189481 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
1 line broadcasting 0.5 Hz
FT size 65536
Total time 42 min, 2 sec



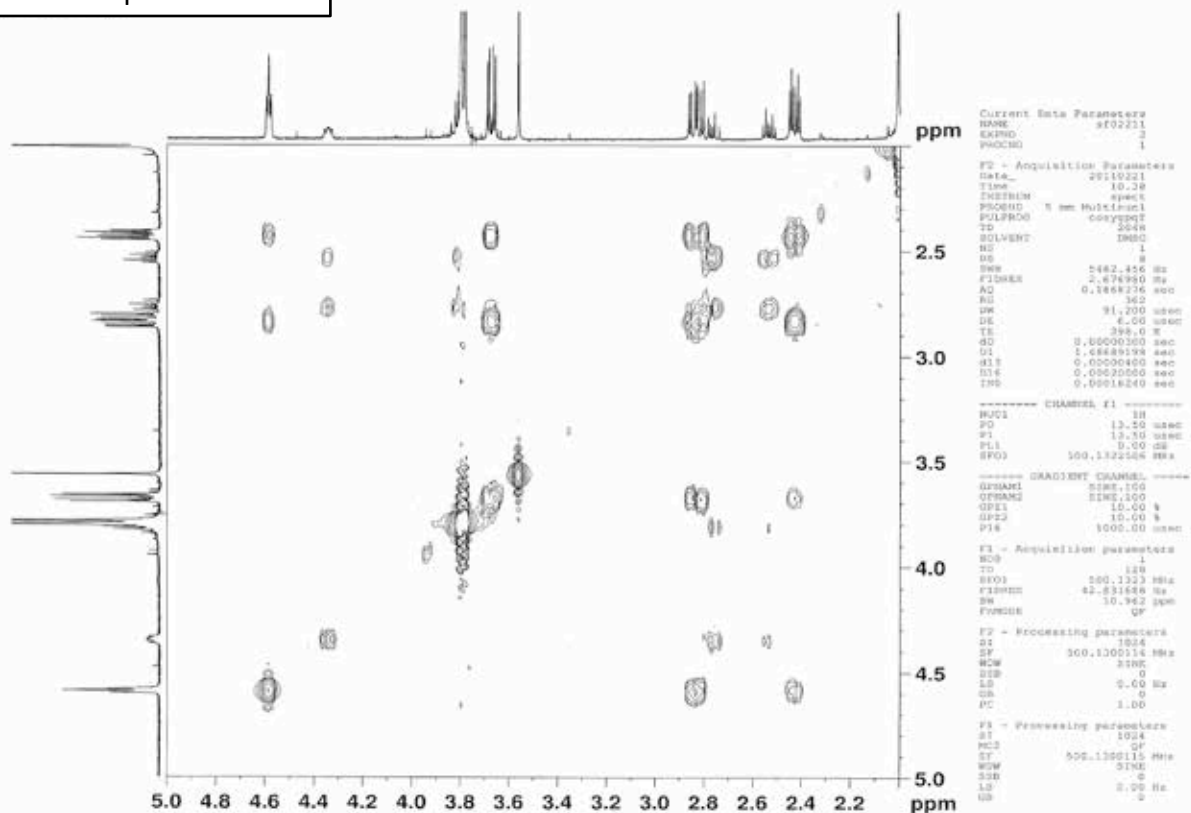
O-ME cyclized



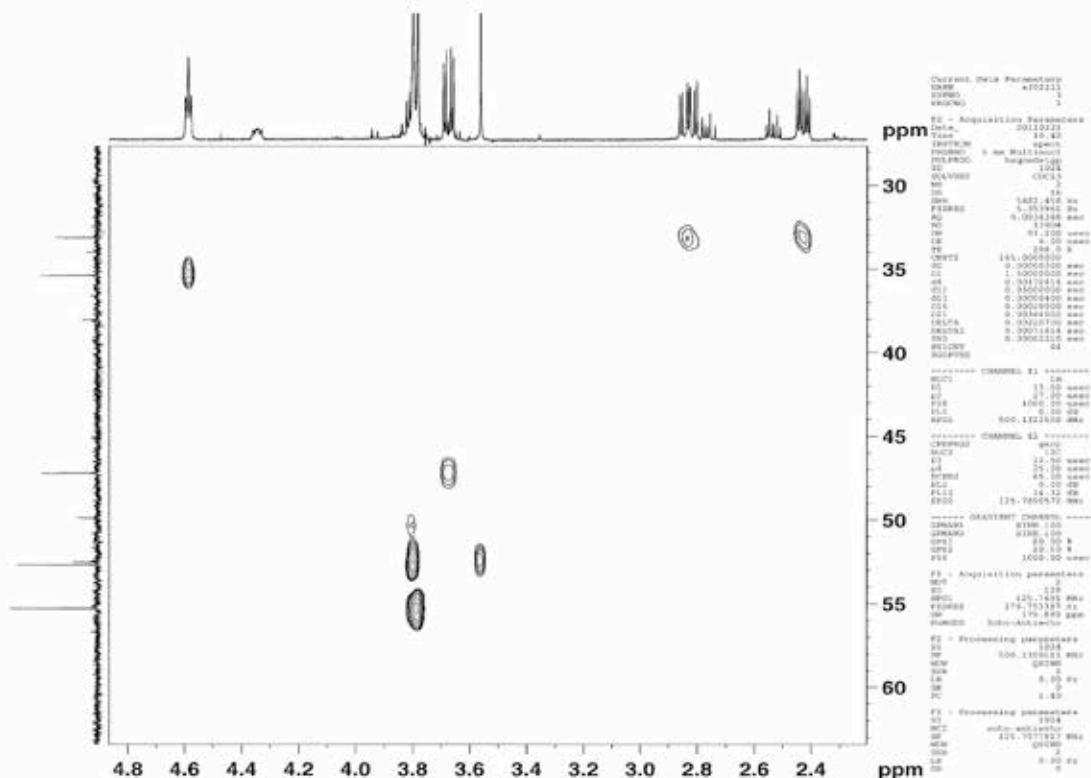
O-ME cyclized



1H_1H COSY Spectrum of 4a

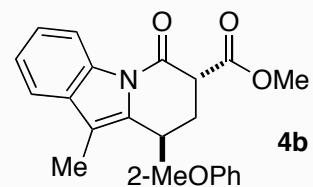


1H_1H COSY Spectrum of 4a

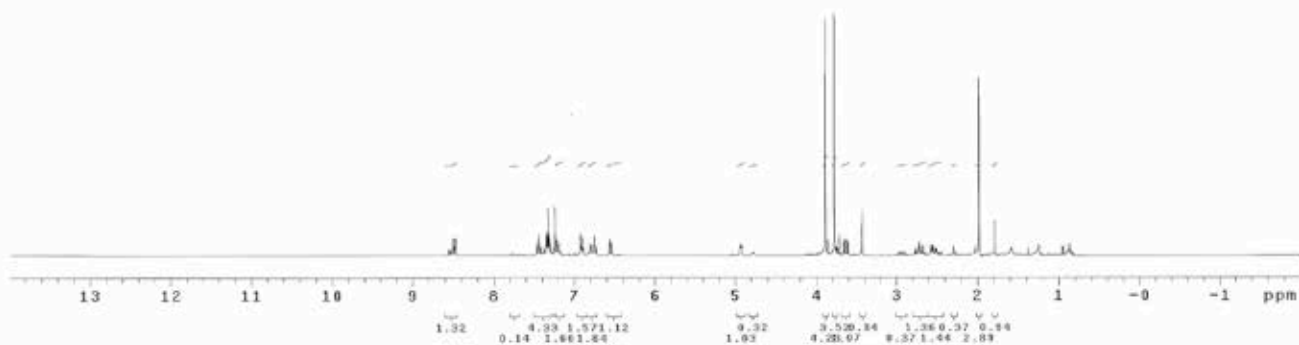


Std Proton parameters
Sample: 2-Methylstyrene-cyclin-new-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: dpat11
Mercury-300 "r2d2"

Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4803.1 Hz
18 repetitions
OBSERVE H1, 300.205655 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec

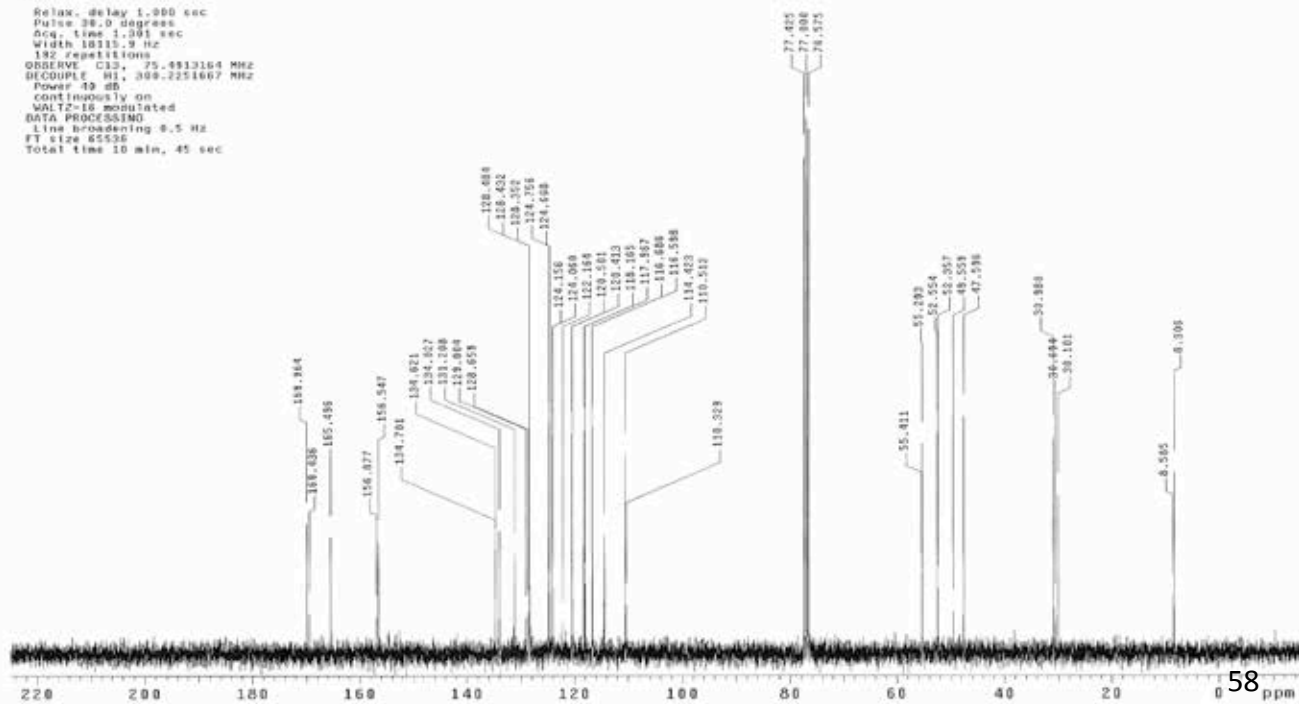


(3.2:1 trans:cis
mixture of diastereomers)

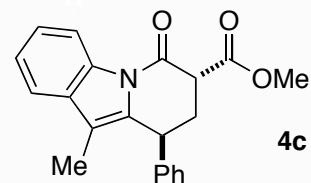


Std Carbon experiment
Sample: NB-5-OVP-55-A-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 32.0 C / 285.1 K
Operator: dpat11
Mercury-300 "r2d2"

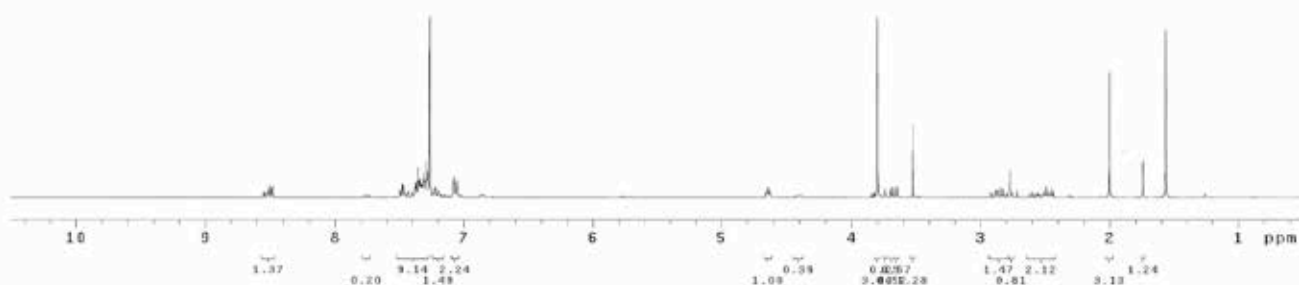
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.001 sec
Width 18115.9 Hz
182 repetitions
OBSERVE C13, 75.4813164 MHz
DECOUPLE H1, 300.2251667 MHz
Power 19 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec



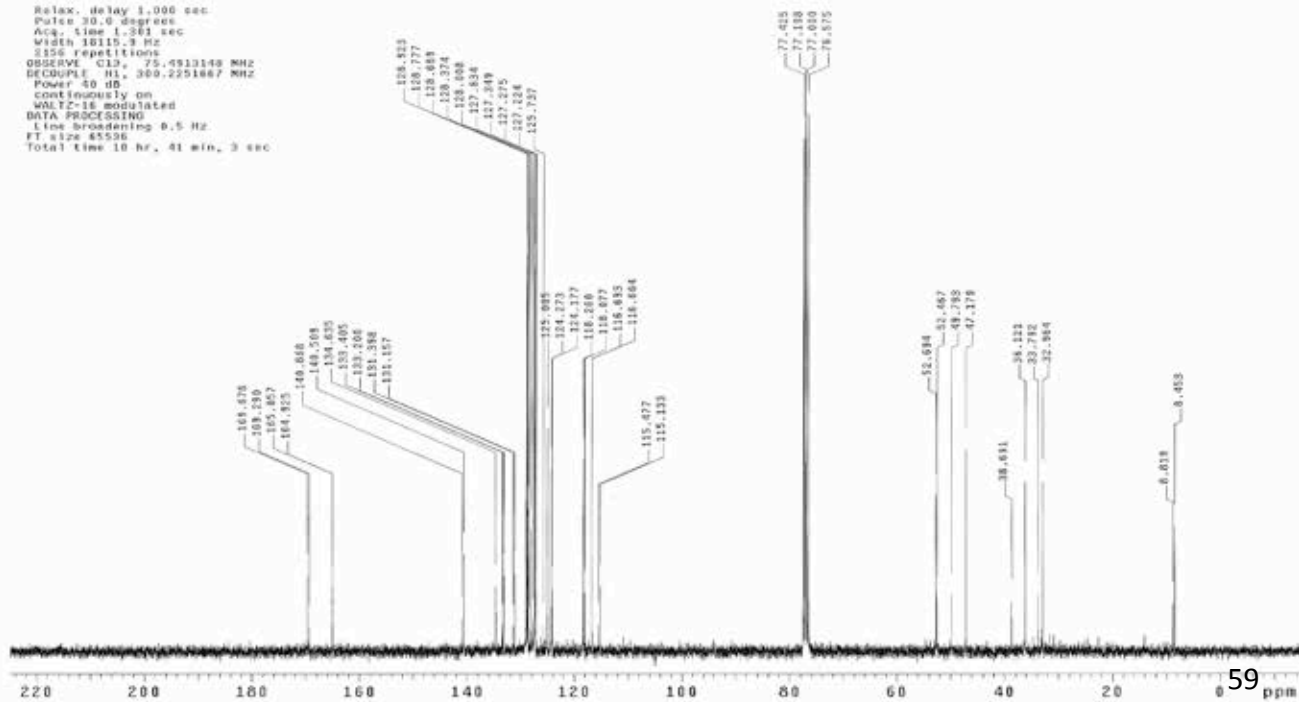
Styrene-cyclized-new
File: xp
Pulse Sequence: s2pu1
Solvent: cdcl3
Ambient Temperature
Operator: caw11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 39.0 degrees
Acq. time 3.550 sec
Width 4882.1 Hz
57 repetitions
OBSERVE H1, 300.2104993 MHz
DATA PROCESSING
FT size 65536
Total time 6 min, 34 sec



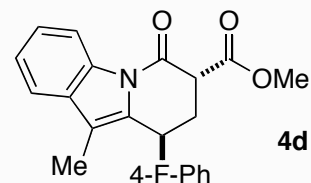
(2.6:1 *trans*:*cis*
mixture of diastereomers)



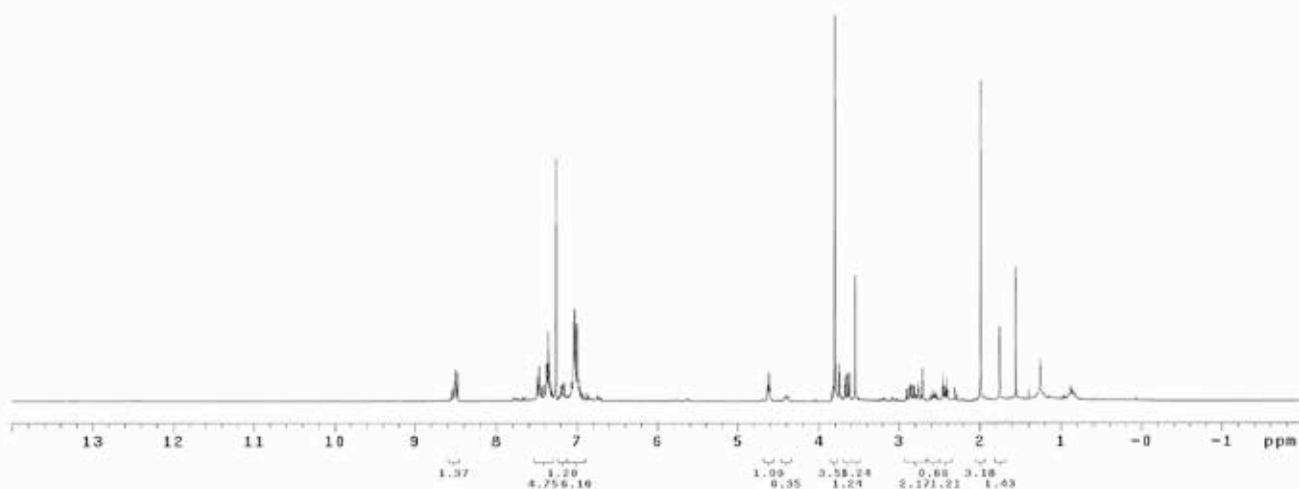
Std Carbon experiment
Sample: NS-4-DVP-263-B-H
File: xp
Pulse Sequence: s2pu1
Solvent: cdcl3
Ambient Temperature
Operator: upat11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.361 sec
Width 10111.3 Hz
2326 repetitions
OBSERVE C13, 75.4913148 MHz
DECOUPLE H1, 300.2251087 MHz
Power 50 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line Broadening 0.5 Hz
FT size 65536
Total time 10 hr, 41 min, 3 sec



Fluoro-cyclized-H
 File: hms/france/cavitt/Fluoro-cyclized-H.fid
 Pulse Sequence: s2pa1
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 File: Fluoro-cyclized-H
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.350 sec
 Width 4800.0 Hz
 47 repetitions
 OBSERVE H1 300.2207110 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 24 sec

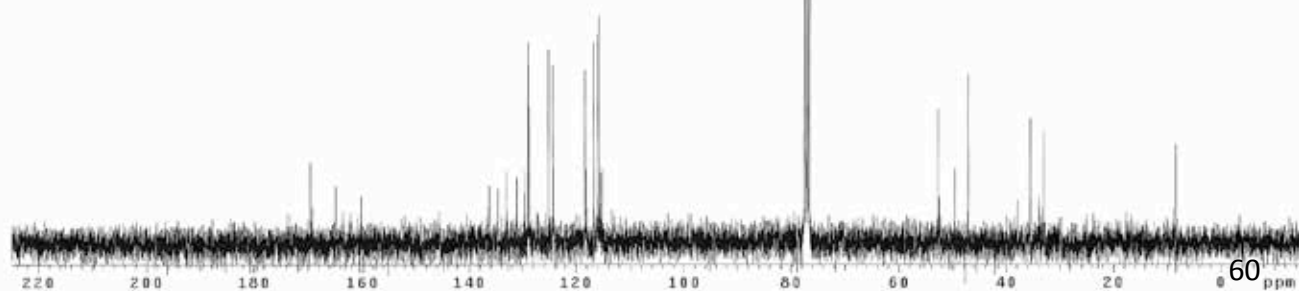


(2.8:1 *trans:cis*
 mixture of diastereomers)

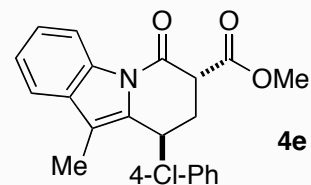


Fluoro-cyclized-C
 File: hms/france/cavitt/Fluoro-cyclized-C.fid
 Pulse Sequence: s2pa1
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 File: Fluoro-cyclized-C
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 16215.0 Hz
 2440 repetitions
 OBSERVE C13 75.4913154 MHz
 DECOUPLE H1 300.2251067 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 85 hr, 48 min, 5 sec

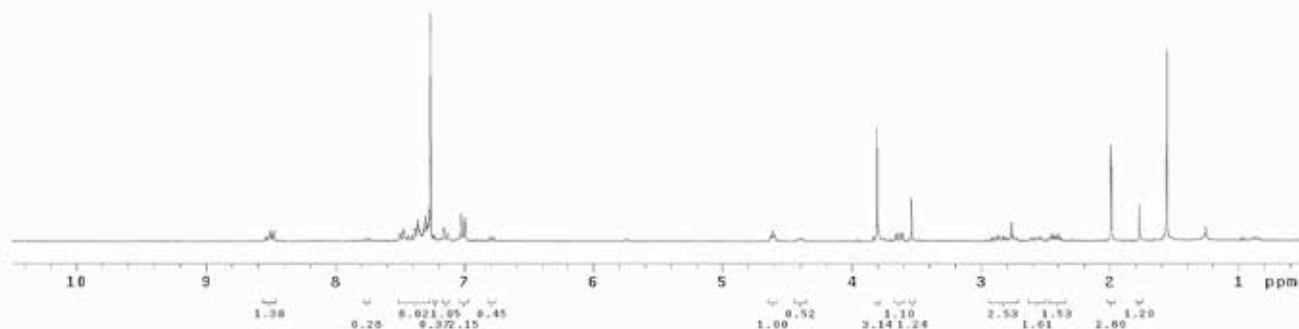
INDEX	FREQUENCY	PPM	HEIGHT
1	12796.9	169.515	17.7
2	12772.6	169.183	7.0
3	12442.6	164.021	12.5
4	12087.0	160.244	10.2
5	10282.5	136.208	12.6
6	10161.5	134.685	12.0
7	10034.3	132.920	16.0
8	9892.8	131.045	14.9
9	9763.3	129.595	11.1
10	9725.0	129.485	16.2
11	9739.7	128.951	23.3
12	9726.9	128.848	44.8
13	9446.1	125.128	43.2
14	9385.6	124.330	29.4
15	9376.6	124.235	16.4
16	9329.7	118.268	38.4
17	9316.4	118.112	16.3
18	8888.1	116.677	44.9
19	8755.0	115.974	46.7
20	8733.4	115.868	58.7
21	8713.6	115.817	15.5
22	8693.7	115.241	16.4
23	5842.6	77.384	403.7
24	5810.5	76.969	431.6
25	5778.4	76.544	415.6
26	3981.1	52.736	29.8
27	3864.0	52.549	18.4
28	3746.7	49.631	16.5
29	3687.4	47.785	-9.3
30	3557.6	47.128	32.5
31	2861.0	37.859	9.3
32	2679.1	35.488	27.7
33	2551.4	33.788	18.2
34	2492.8	33.021	29.4
35	2482.9	33.036	24.9
36	638.6	8.459	21.9



chlor-new
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 Mercury-300 "r2d2"
 Acq. time 1.301 sec
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4800.1 Hz
 66 repetitions
 OBSERVE H1, 300.2104991 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 34 sec



(1.9:1 *trans:cis*
 mixture of diastereomers)

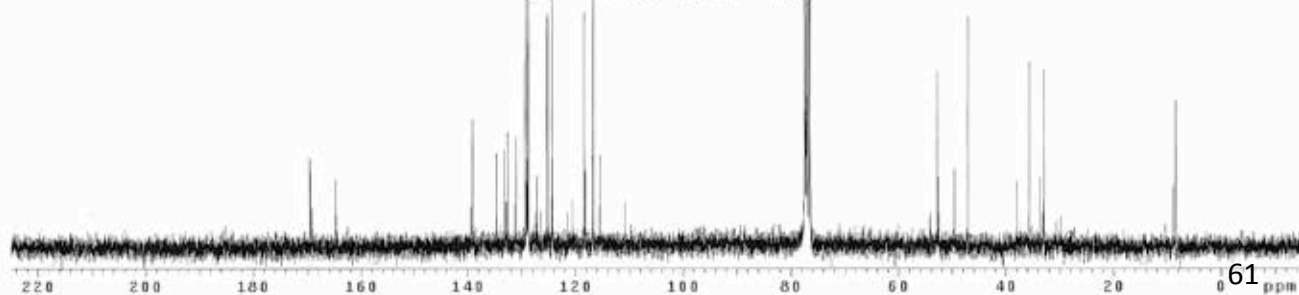


Std Carbon experiment

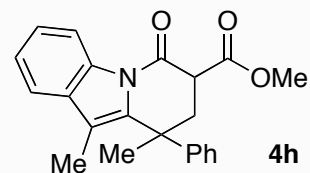
File: home/franco/cavitt/chloro-carbon.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: cavitt
 File: chloro-carbon
 Mercury-300 "r2d2"

Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 10233.3 Hz
 17853 repetitions
 OBSERVE C13, 75.4913123 MHz
 DECOUPLE H1, 300.2251067 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 85 hr, 48 min, 5 sec

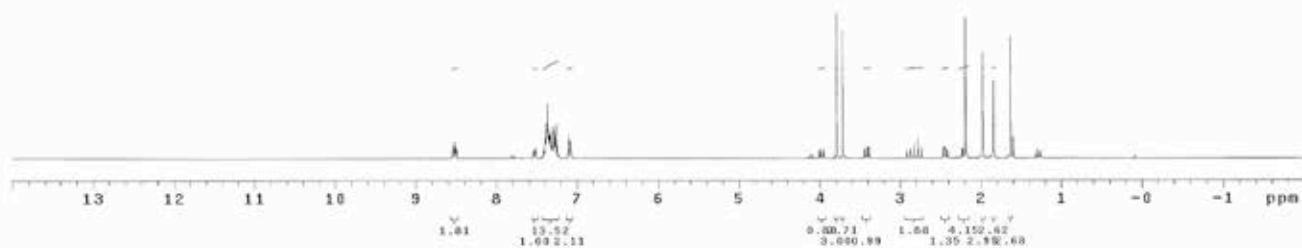
INDEX	FREQUENCY	PPM	HEIGHT	INDEX	FREQUENCY	PPM	HEIGHT
1	12794.5	169.483	19.6	40	3884.2	52.777	39.2
2	12771.3	169.175	8.6	41	3867.1	52.550	15.5
3	12430.8	164.774	15.6	42	3740.3	49.599	17.4
4	12431.0	164.678	7.1	43	3558.0	47.131	51.5
5	10525.0	139.920	8.6	44	2869.7	38.013	14.5
6	10501.8	139.113	28.5	45	2659.3	35.677	41.2
7	10164.0	134.040	20.0	46	2539.6	33.641	15.3
8	10056.0	133.717	21.9	47	2504.0	33.180	7.7
9	10045.7	133.071	9.7	48	2404.9	32.918	39.7
10	10025.2	132.800	10.2	49	2241.1	29.888	8.8
11	10011.4	132.817	25.0	50	875.4	8.848	13.8
12	8807.5	116.240	9.3	51	843.3	8.522	32.5
13	8852.0	131.042	24.4				
14	8767.1	129.360	41.0				
15	8740.6	129.138	124.4				
16	8740.5	129.028	18.6				
17	8733.9	128.941	10.1				
18	8728.4	128.667	45.6				
19	8719.5	128.750	106.1				
20	8635.0	127.288	7.7				
21	8600.1	127.188	35.0				
22	8550.3	126.508	8.0				
23	8455.0	125.220	52.1				
24	8390.0	124.385	56.0				
25	8363.4	124.298	19.7				
26	8176.4	121.529	7.7				
27	8164.7	120.807	19.5				
28	8133.9	118.344	32.4				
29	8121.8	118.182	18.9				
30	8113.0	118.754	20.0				
31	8111.2	116.718	61.7				
32	8128.9	115.641	8.1				
33	8111.1	115.382	20.3				
34	8100.1	118.742	9.7				
35	5844.6	77.420	809.4				
36	5828.0	77.201	33.7				
37	5812.5	76.898	602.2				
38	5781.0	76.578	286.9				
39	4683.2	54.188	7.6				



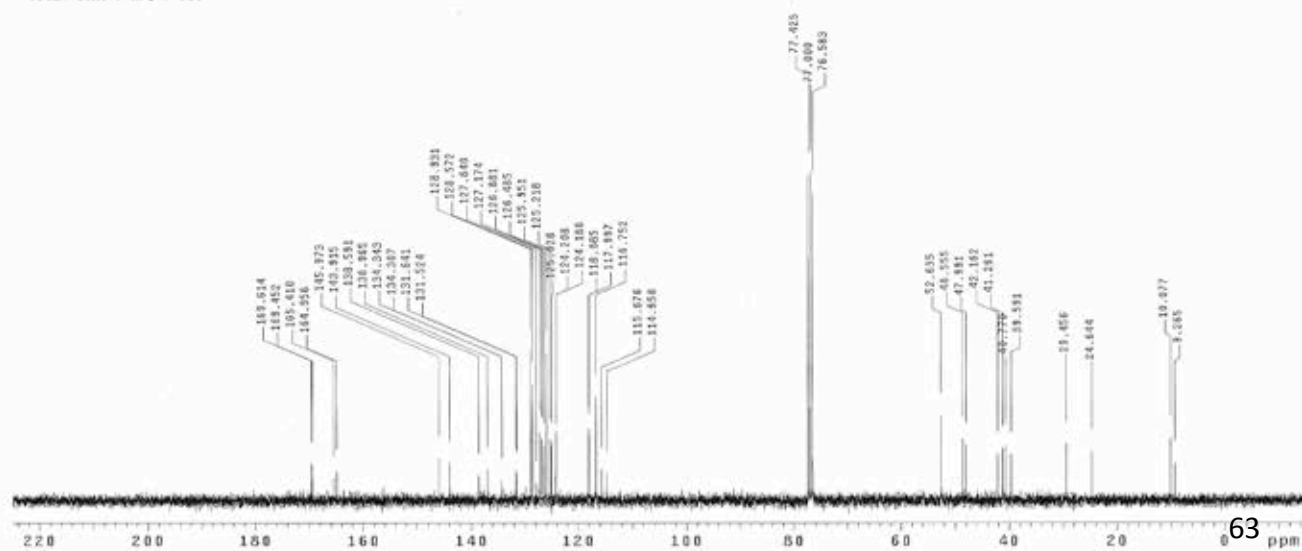
Std Proton parameters
Sample: 1Brindole-diazo-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 25.0 C / 293.1 K
Operator: dpatt11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.350 sec
Width 4003.1 Hz
IS repetitions
OBSERVE H1, 300.2105002 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 10 sec



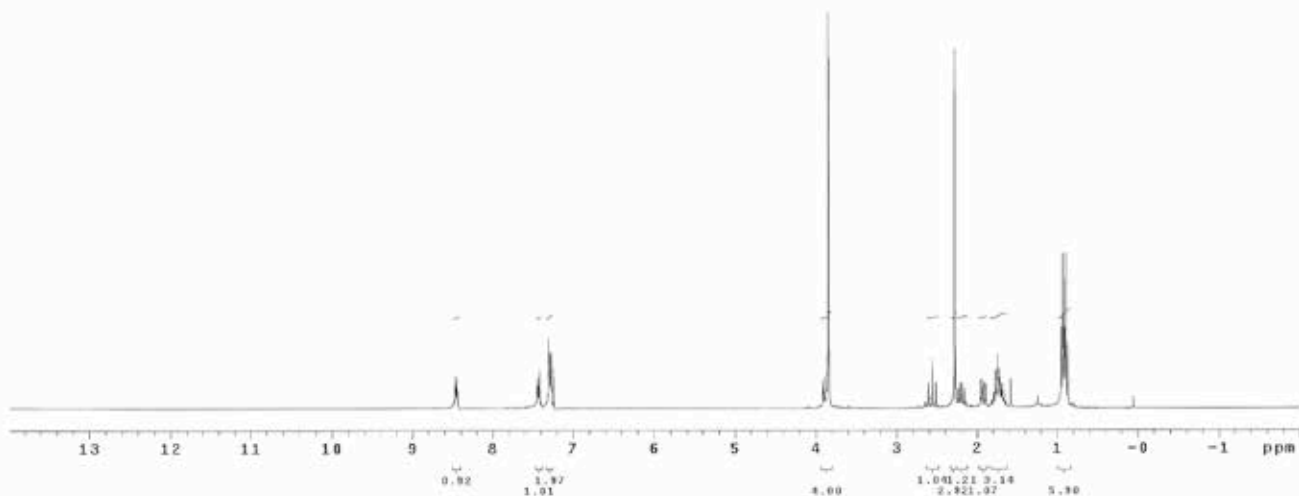
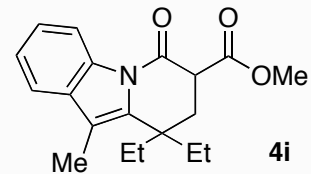
(1:1:1 mixture of diastereomers)



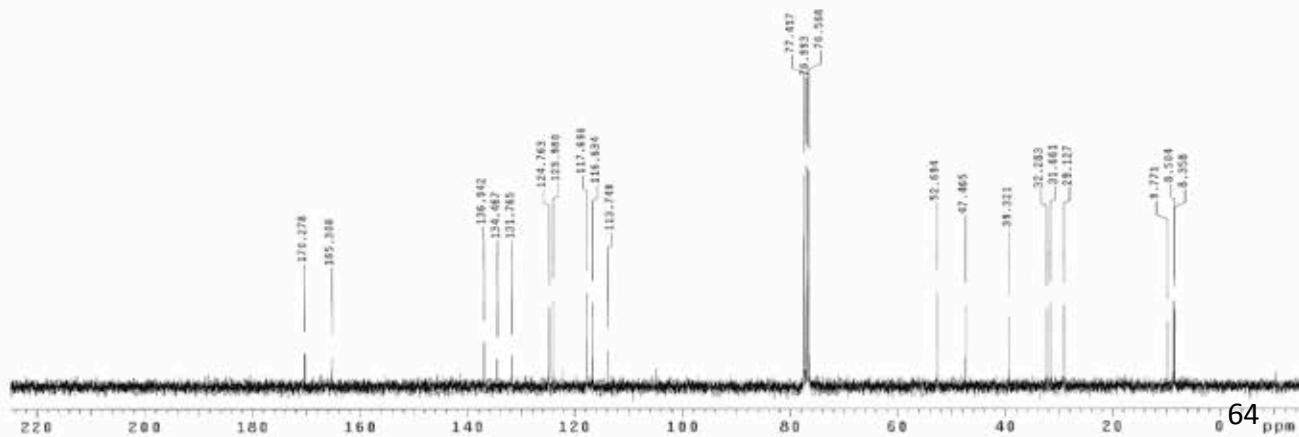
Std Carbon experiment
Sample: 1Brindole-diazo-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 20.0 C / 293.1 K
Operator: dpatt11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 10115.3 Hz
240 repetitions
OBSERVE C13, 75.4000043 MHz
DECOUPLE H1, 300.2100401 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
1 line broadening 0.5 Hz
FT size 65536
Total time 7 hr, 7 sec



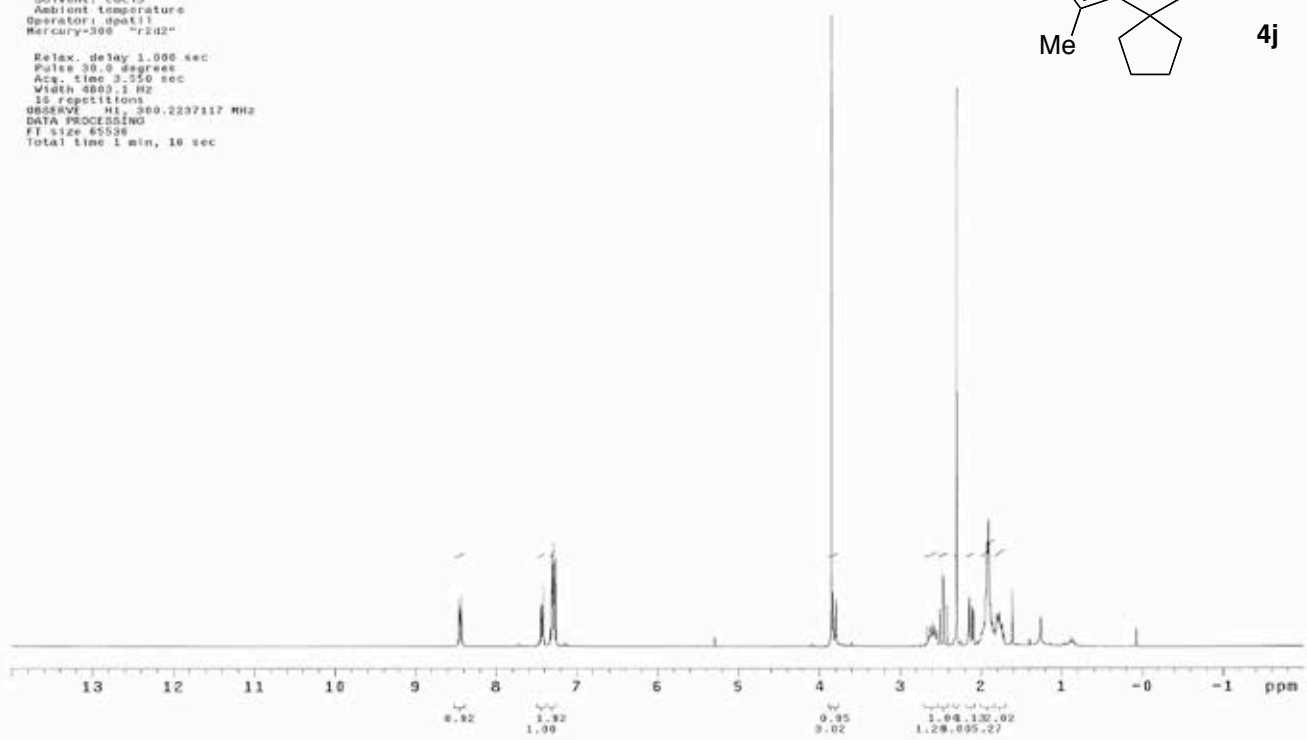
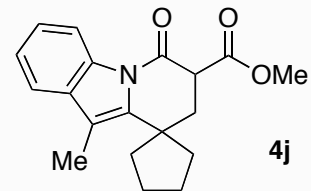
Std Proton parameters
Sample: NB-5-DVP-58-A-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 22.8 C / 285.1 K
Operator: dpat11
Mercury-360 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4803.1 Hz
18 repetitions
OBSERVE H1, 300.2237171 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec



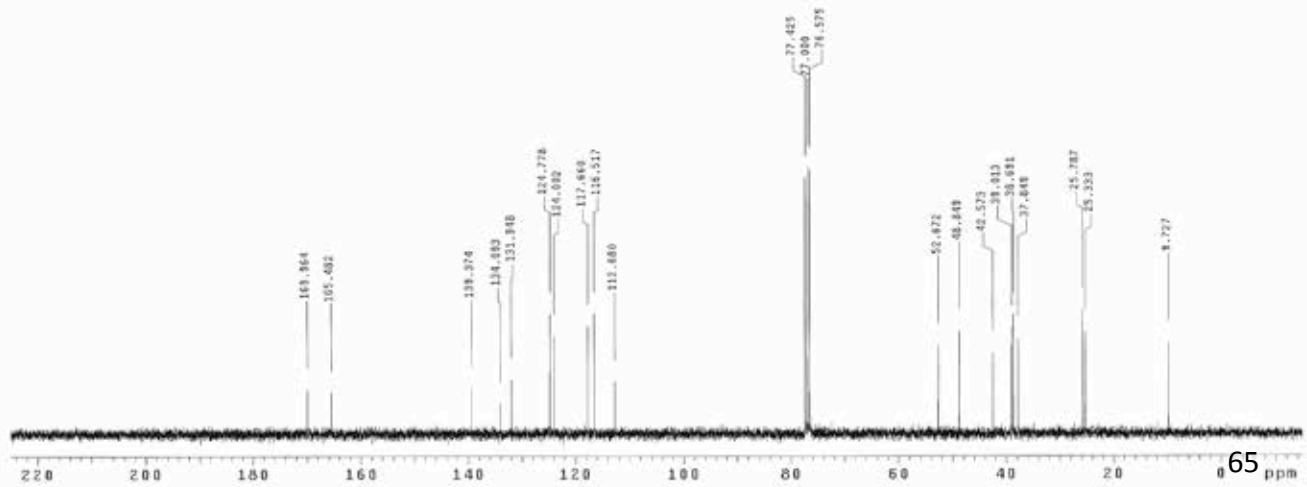
Std Carbon experiment
Sample: NB-5-DVP-58-A-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 22.8 C / 285.1 K
Operator: dpat11
Mercury-360 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18135.9 Hz
144 repetitions
OBSERVE C13, 75.4813148 MHz
DECUPLE H1, 300.2251607 MHz
Power 49 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 8.5 Hz
FT size 65536
Total time 10 min, 45 sec

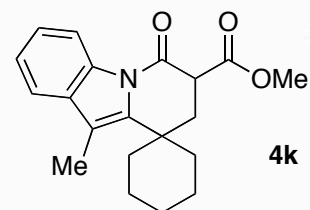


Std Proton parameters
Sample: NB-5-OVP-50-B-M
File: KP
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpat11
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.250 sec
Width 4800.0 Hz
IS repetitions
OBSERVE F1: 300.2237117 MHz
DATA PROCESSING
F1 size 65536
Total time 1 min, 10 sec

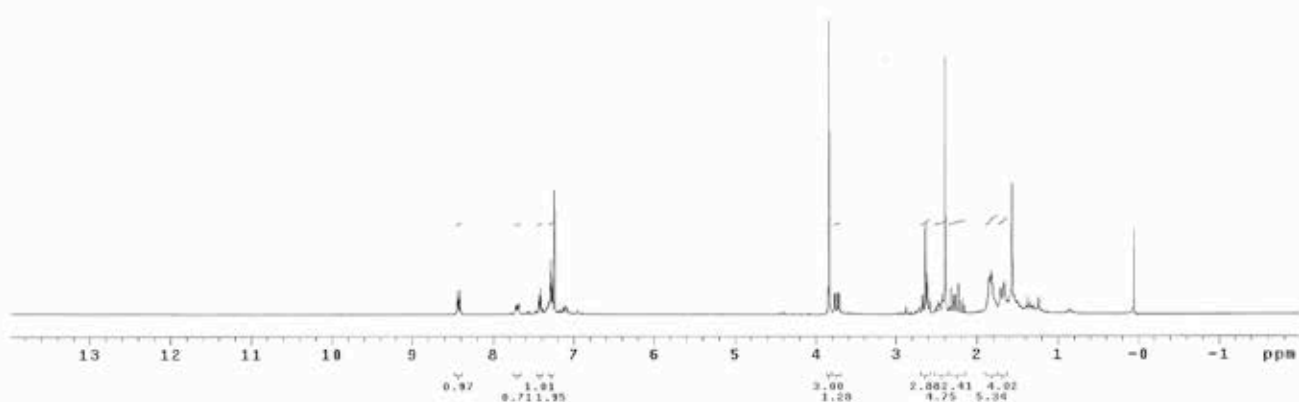


Std Carbon experiment
Sample: NB-5-OVP-50-B-M
File: KP
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpat11
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 16115.0 Hz
256 repetitions
OBSERVE C13: 75.4913148 MHz
DECOUPLE H1: 300.2251007 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 65536
Total time 10 min, 45 sec

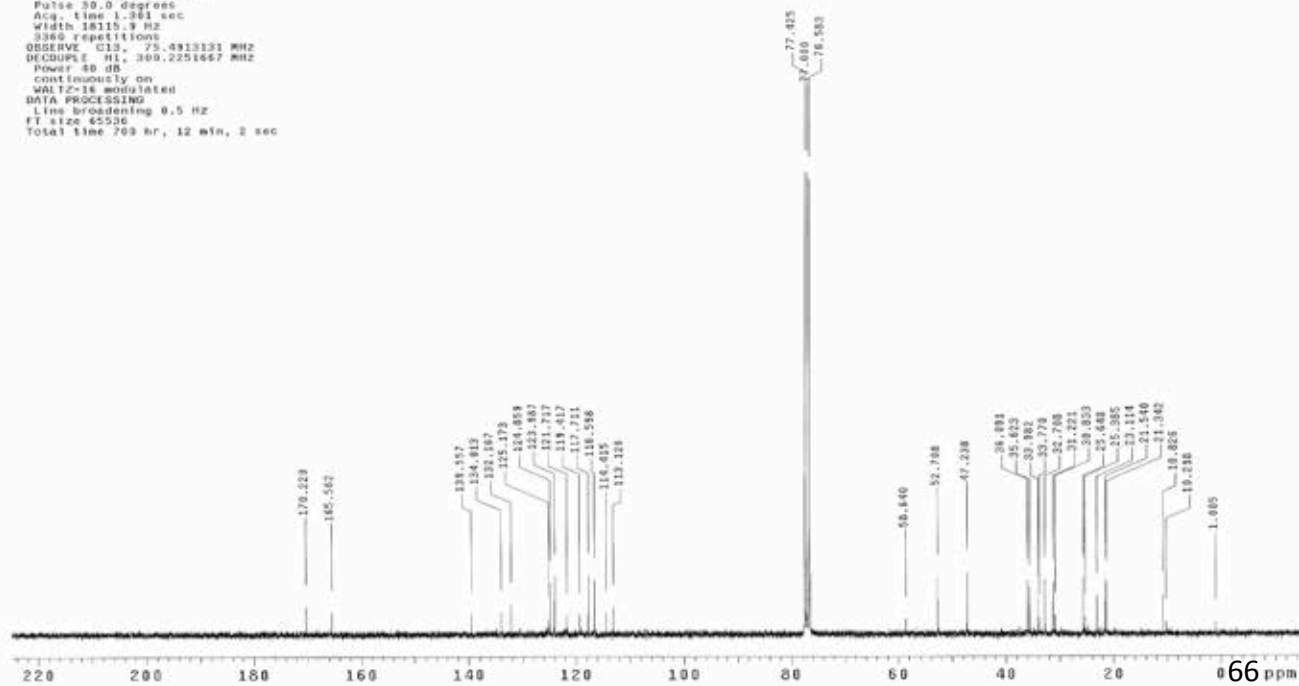




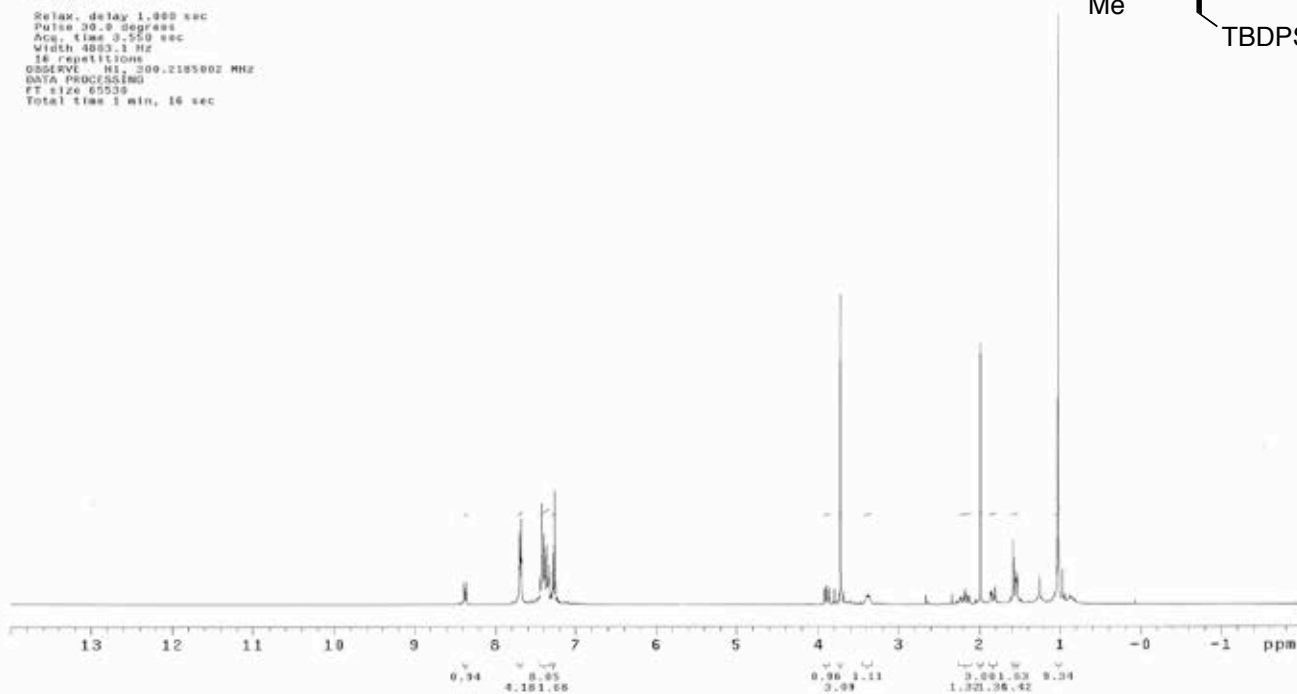
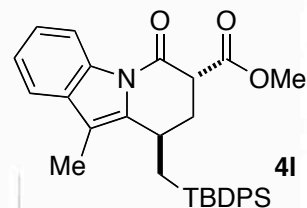
Green cap
 Sample: NB-5-DVP-53-B-H
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 20.0 C / 283.1 K
 Operator: dpat11
 Mercury-300 "r2d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4865.1 Hz
 18 repetitions
 OBSERVE H1, 300.2237170 MHz
 DATA PROCESSING
 FT size 65536
 Total time 1 min, 16 sec



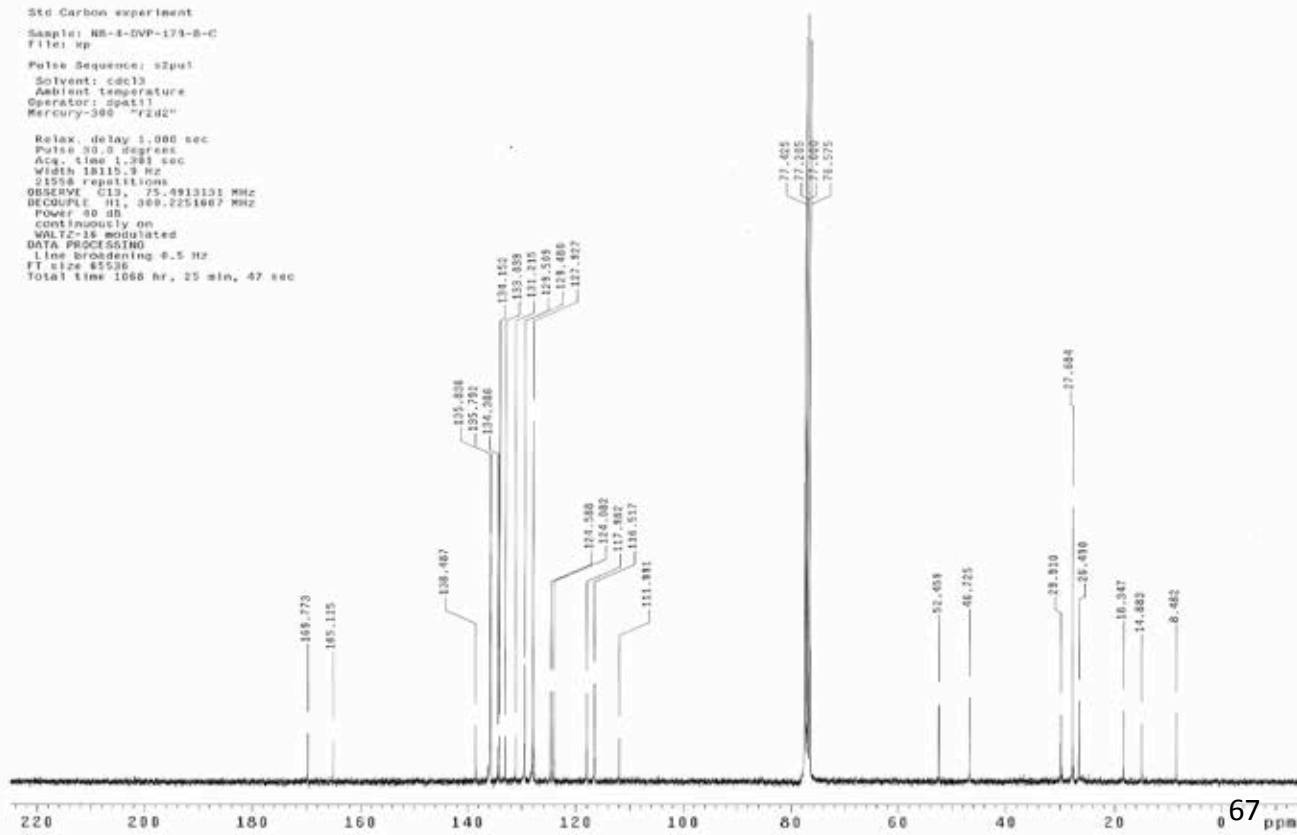
Std Carbon experiment
 Sample: NB-5-DVP-53-B-H
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 20.0 C / 293.1 K
 Operator: dpat11
 Mercury-300 "r2d2"
 Relax, delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.381 sec
 Width 18115.3 Hz
 3260 repetitions
 OBSERVE C13, 75.4913131 MHz
 DECOUPLE H1, 300.2251667 MHz
 Power 50 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 703 hr, 12 min, 2 sec



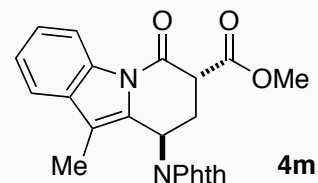
Std Proton parameters
Sample: TBDPS-15a01-H
File: xp
Pulse Sequence: zgpg30
Solvent: cdcl3
Temp: 29.9 C / 283.1 K
Operator: dpat11
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4003.1 Hz
18 repetitions
OBSERVE H1, 300.2185002 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec



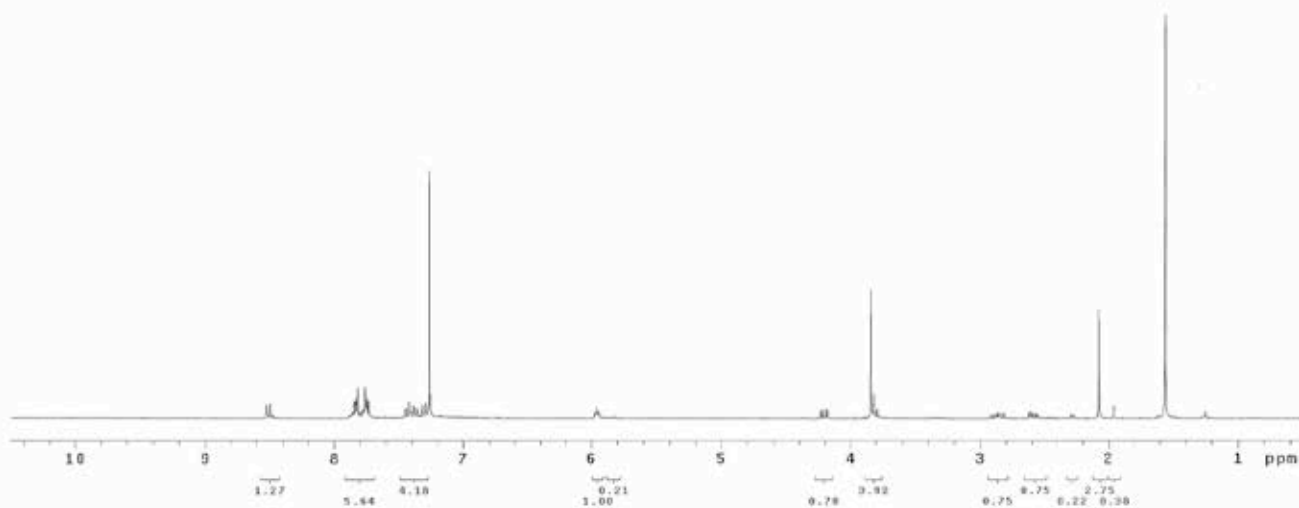
Std Carbon experiment
Sample: HS-4-DVP-173-B-C
File: xp
Pulse Sequence: zgpg30
Solvent: cdcl3
Ambient temperature
Operator: dpat11
Mercury-300 "r202"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.383 sec
Width 18115.3 Hz
3256 repetitions
OBSERVE C13, 75.4913131 MHz
DECUPLE H1, 300.2251007 MHz
Power 50 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 85536
Total time 1056 hr, 25 min, 47 sec



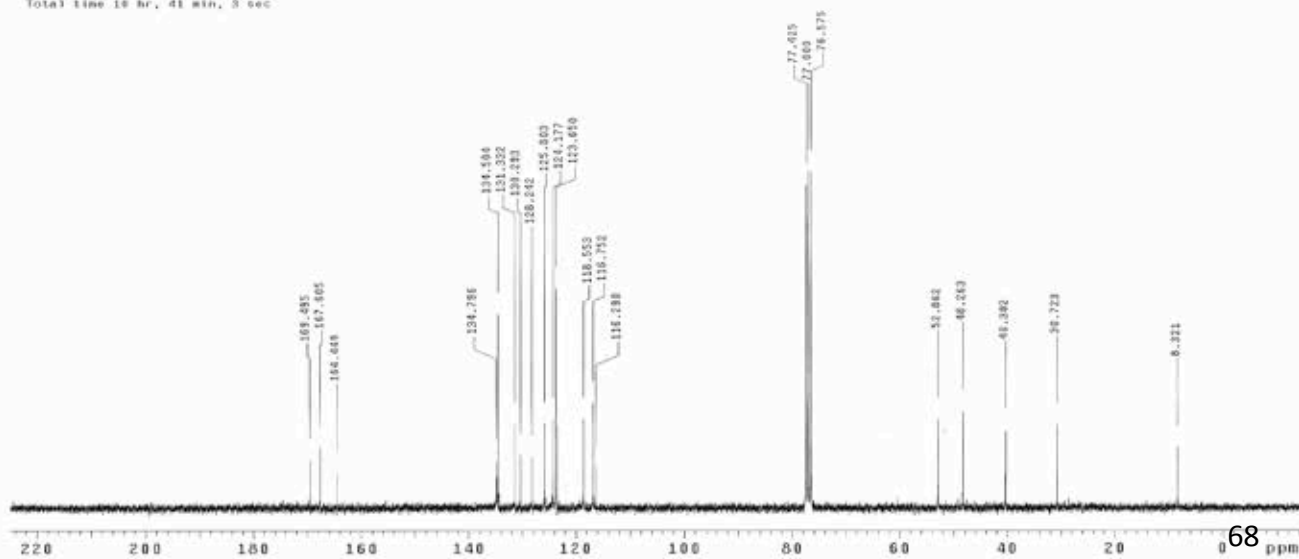
nphth=cyclized=new-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 22.8 C / 295.1 K
Operator: caw15
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4803.1 Hz
65 repetitions
OBSERVE H1, 300.2105000 MHz
DATA PROCESSING
FT size 65536
Total time 8 min, 34 sec



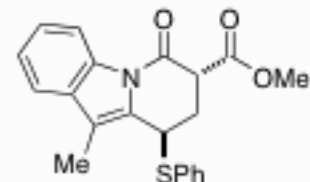
(4.8:1 trans:cis
mixture of diastereomers)



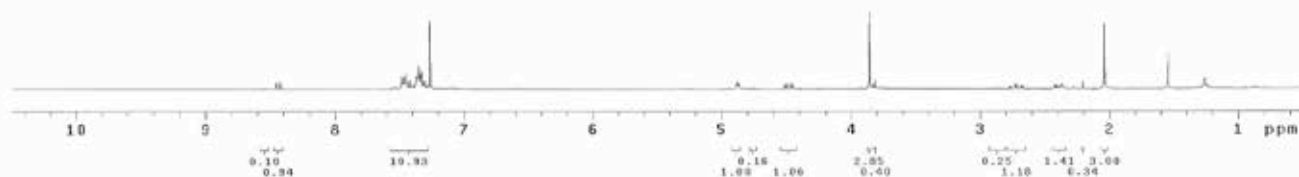
Std Carbon experiment
Sample: NB-4-DVP-200-A-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: spaw11
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.391 sec
Width 16215.3 Hz
1520 repetitions
OBSERVE C13, 75.4915148 MHz
DECOUPLE H1, 300.2251667 MHz
Power 40 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 18 hr, 41 min, 3 sec



Std Proton parameters
 File: hoes/franco/cavitt/thioetherphenyl.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 25.0 C / 296.1 K
 Operator: cavitt
 File: thioetherphenyl
 Mercury-386 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4093.1 Hz
 64 repetitions
 OBSERVE H1, 300.2237100 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 24 sec

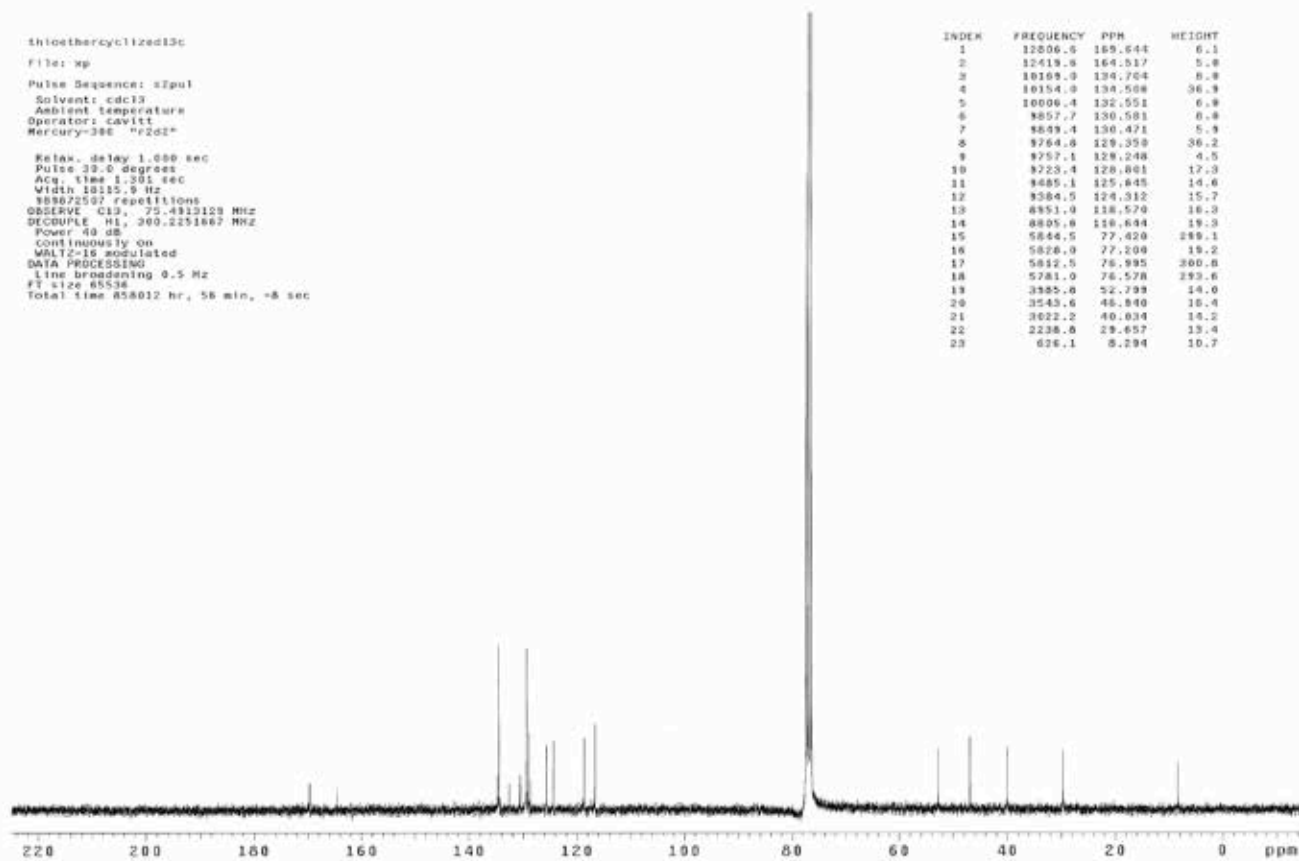


4n
 6.3:1 mixture
 of diastereomers

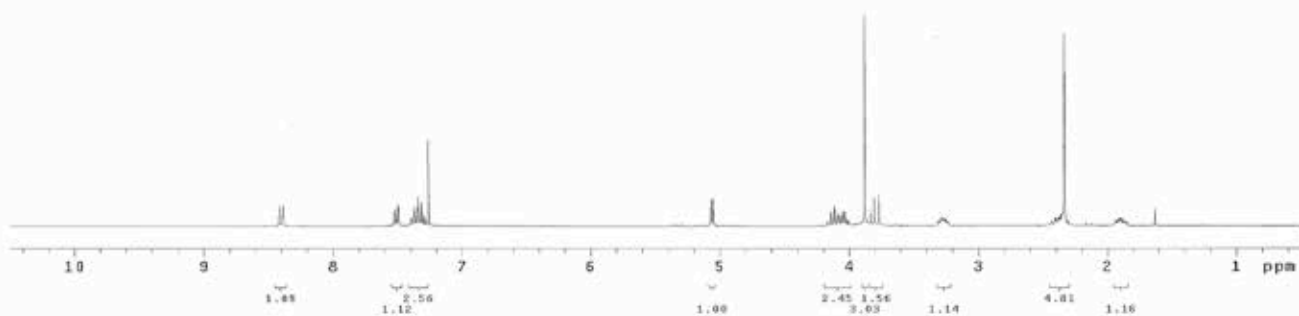
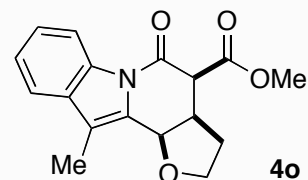


thioethercyclized13c
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: Cavitt
 Mercury-386 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 18125.3 Hz
 108072502 repetitions
 OBSERVE C13, 75.4912129 MHz
 DECOUPLE H1, 200.2251867 MHz
 Power 40 dB
 CONTINUOUSLY ON
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 05:01:2 hr, 58 min, +8 sec

INDEX	FREQUENCY	PPH	HEIGHT
1	12806.6	169.644	6.1
2	12419.0	164.517	5.0
3	10109.0	134.704	8.9
4	10154.0	134.588	36.3
5	10006.4	132.551	6.9
6	9857.7	130.581	6.4
7	8639.4	110.471	5.9
8	8764.0	119.359	36.2
9	8757.1	119.248	4.5
10	8223.4	108.001	17.3
11	8485.1	115.845	14.6
12	8384.5	114.312	15.7
13	8951.0	118.570	16.3
14	8805.0	116.644	19.3
15	5844.5	77.020	289.1
16	5826.0	77.200	18.2
17	5812.5	76.995	300.8
18	5781.0	76.578	293.6
19	3985.0	52.799	14.0
20	3543.6	46.840	16.4
21	3022.2	40.034	15.2
22	2238.0	29.657	13.4
23	626.1	8.294	10.7

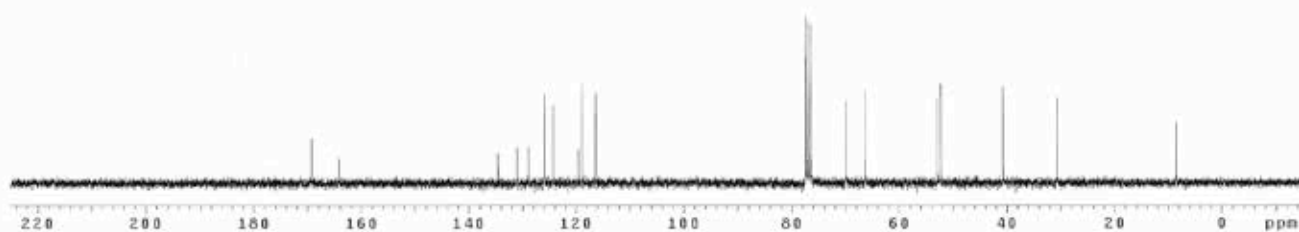


DHF-cyclized-B
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 22.0 C / 285.1 K
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax: delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4003.1 Hz
 50 repetitions
 OBSERVE H1, 300.2104991 MHz
 DATA PROCESSING
 FT size 65335
 Total time 8 min, 34 sec

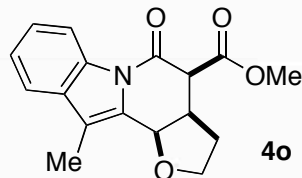
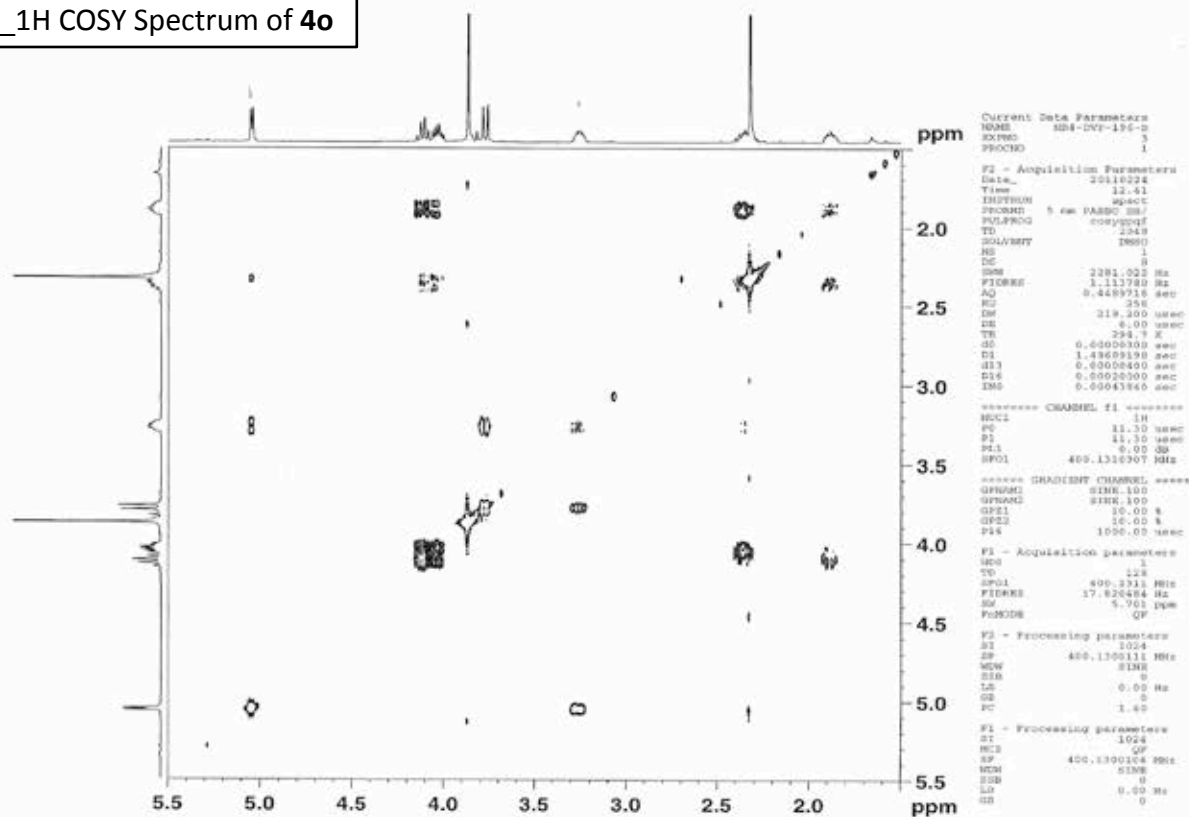


DHF-cyclized-C
 File: xp
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 22.0 C / 285.1 K
 Operator: cavitt
 Mercury-300 "r2d2"
 Relax: delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.391 sec
 Width 30115.3 Hz
 45000269 repetitions
 OBSERVE C13, 75.4900047 MHz
 DECOUPLE H1, 300.2199401 MHz
 Power 43 dB
 Continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 45536
 Total time 85801 hr, 17 min, 28 sec

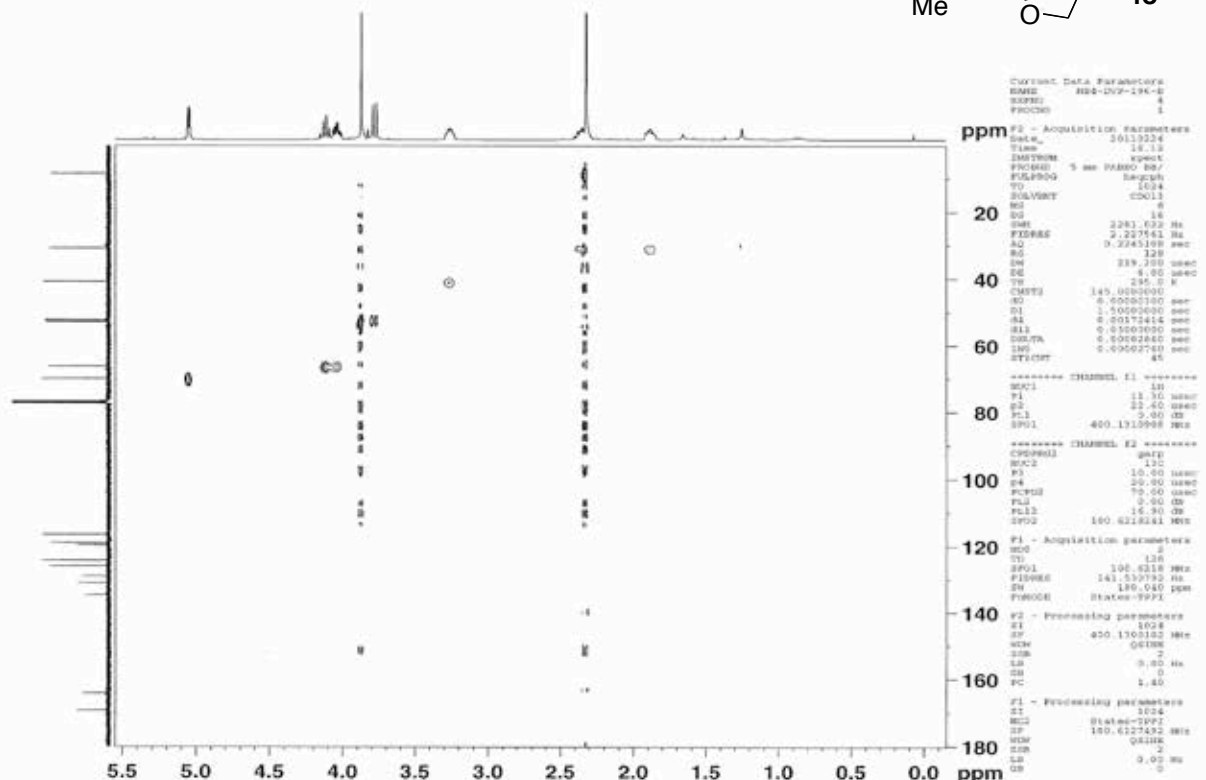
INDEX	FREQUENCY	PPM	HEIGHT
1	12778.8	169.279	10.0
2	12387.4	164.894	5.5
3	10257.2	124.551	6.7
4	9038.5	100.991	7.9
5	8731.0	108.904	6.1
6	8501.5	125.805	18.8
7	8378.8	124.239	17.5
8	8023.3	119.530	7.7
9	8774.1	119.876	22.1
10	8284.7	118.396	20.2
11	5844.4	77.420	37.2
12	5627.3	77.193	5.2
13	5612.3	76.885	36.4
14	5789.8	76.577	35.6
15	5282.7	69.978	10.4
16	5053.5	66.281	21.8
17	3991.2	52.875	18.0
18	3949.2	52.315	22.2
19	3675.2	49.728	21.6
20	2317.8	30.703	19.1
21	642.0	8.505	13.4



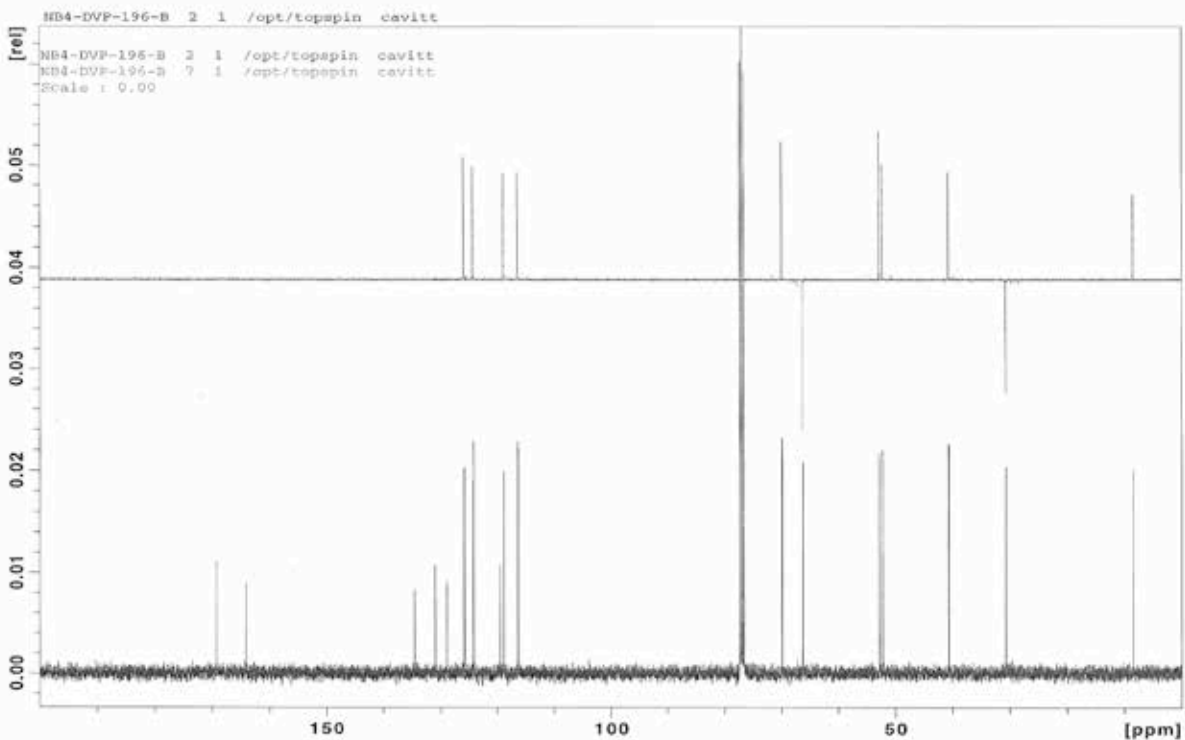
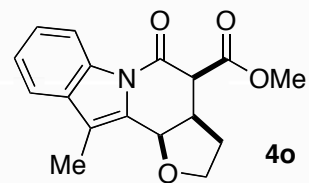
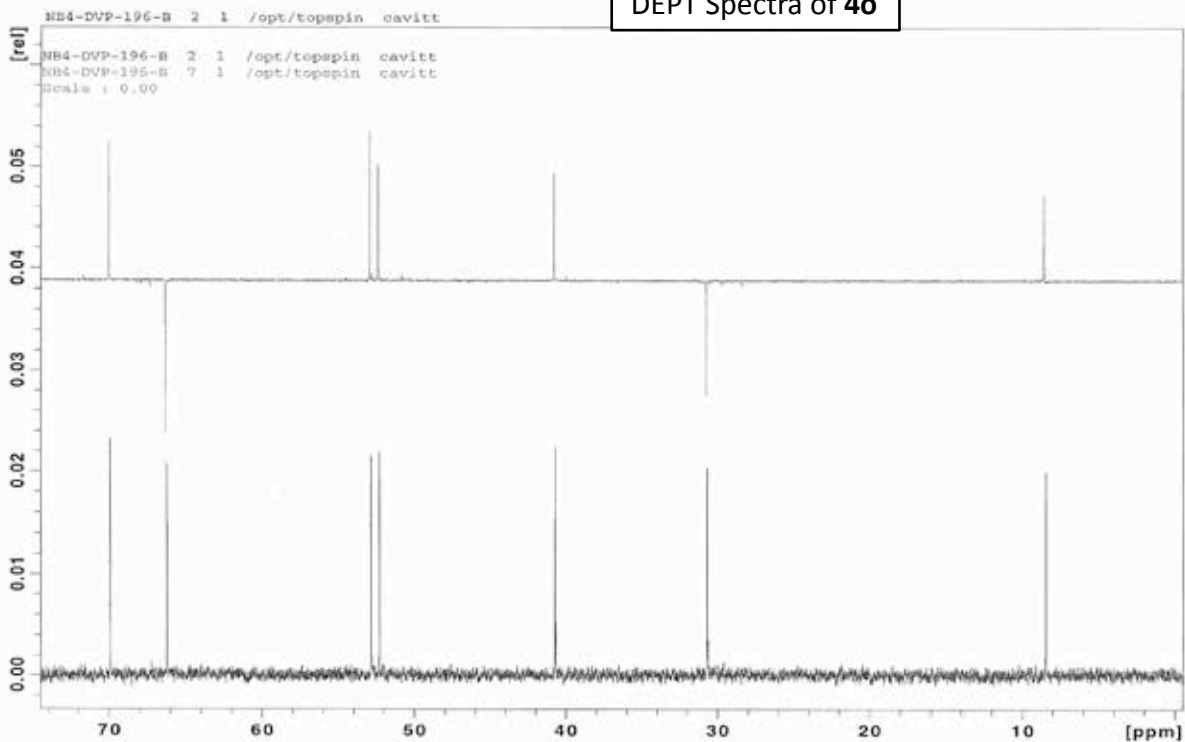
1H_1H COSY Spectrum of 4o



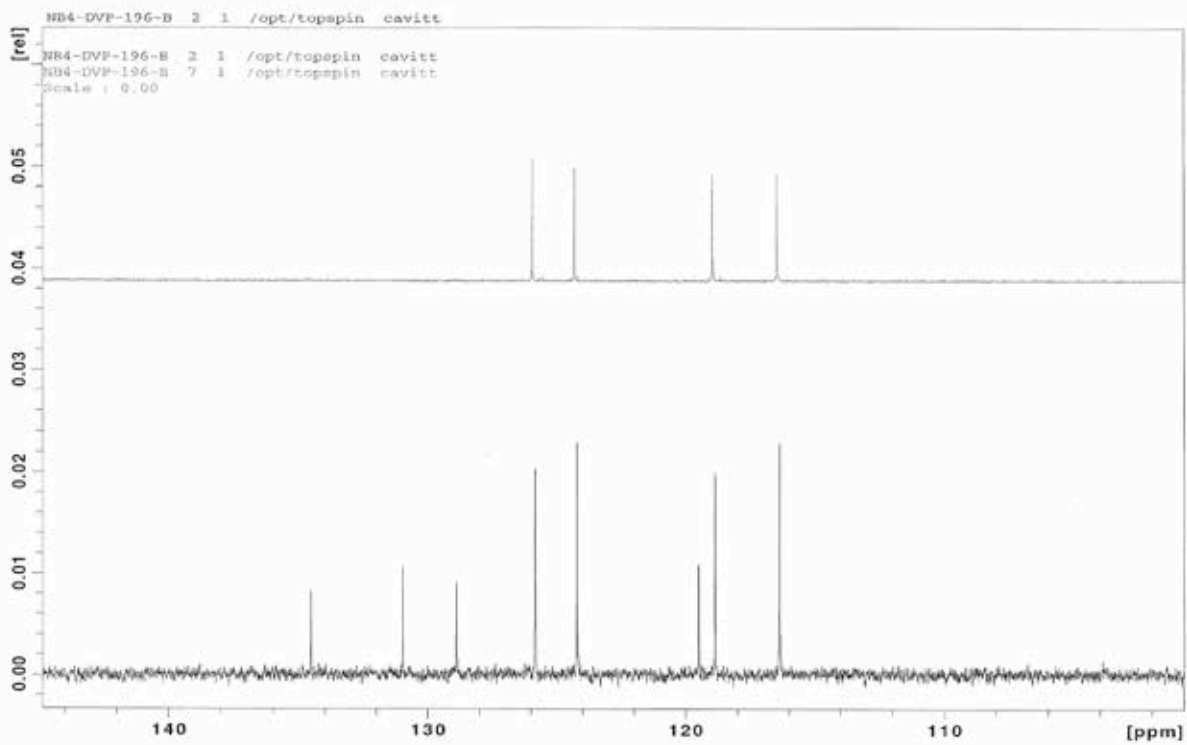
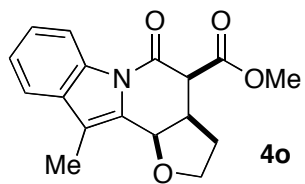
1H_13C HSQC Spectrum of 4o



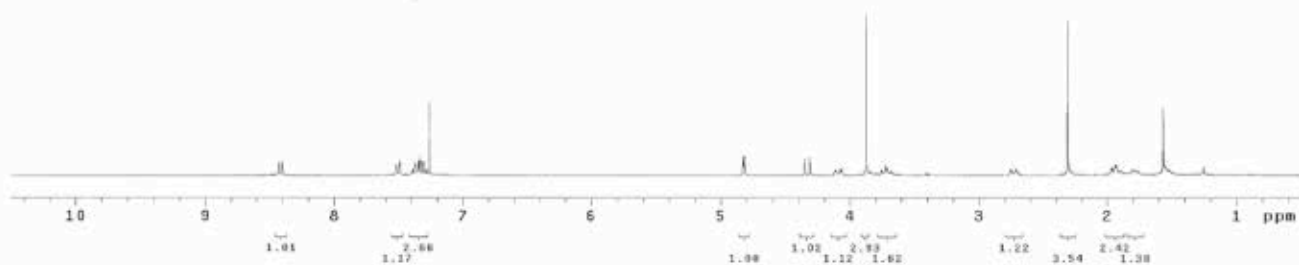
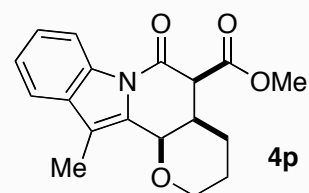
DEPT Spectra of **4o**



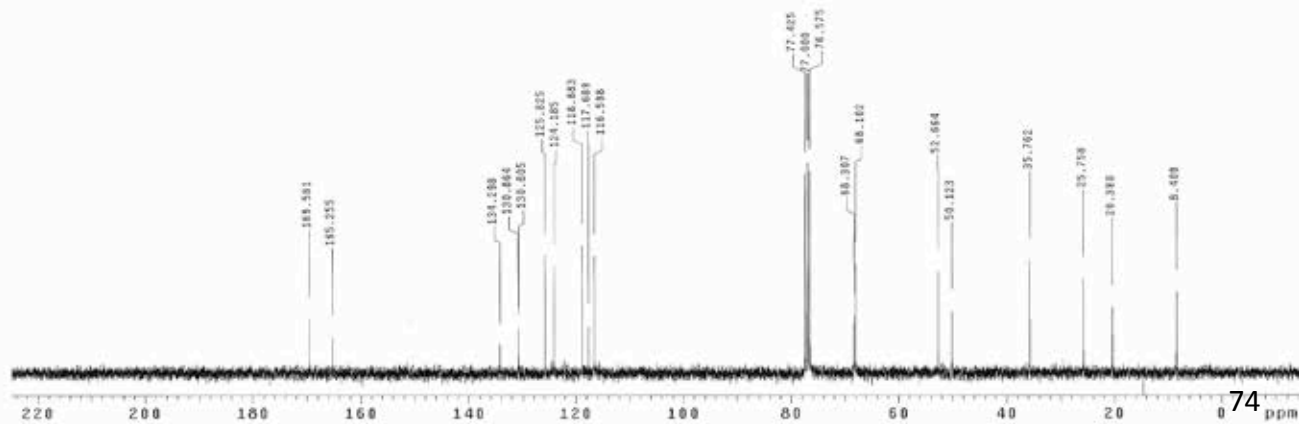
DEPT Spectra of **4o**



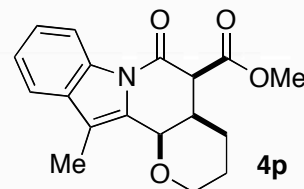
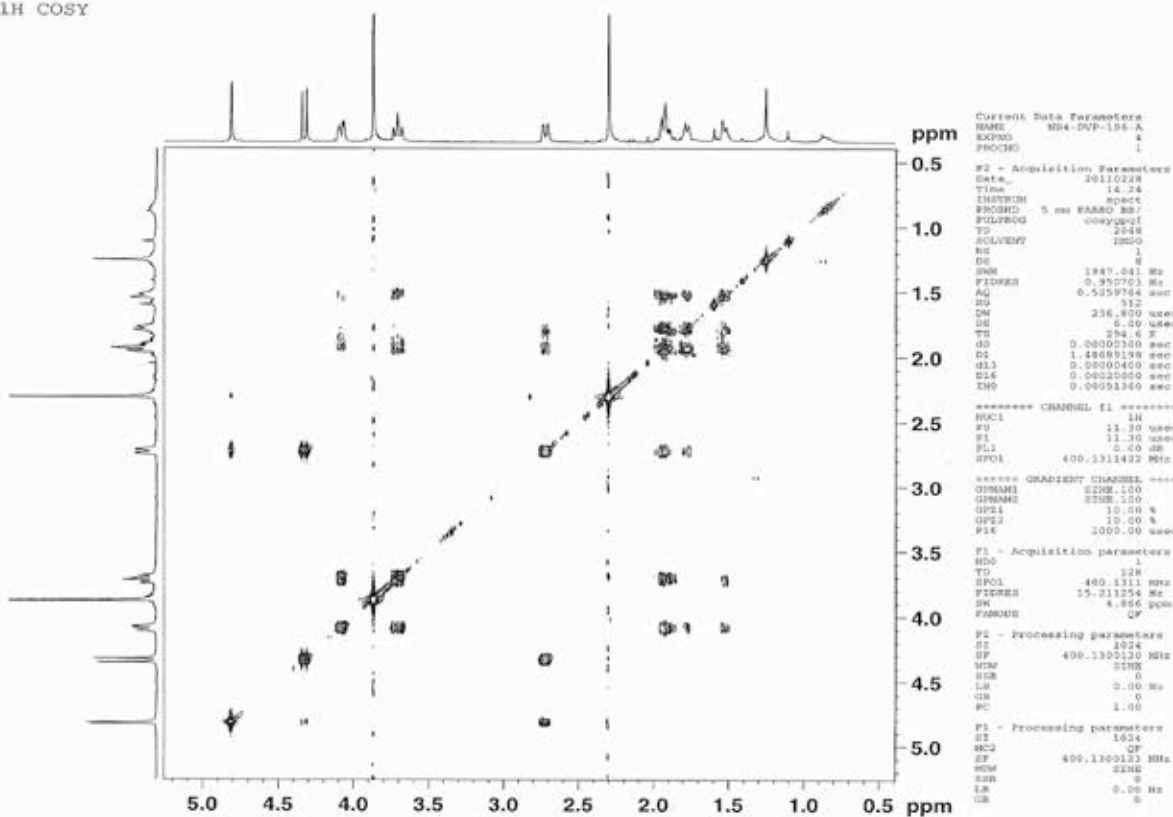
II-MAC-63-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: caw11
Mercury-300 "r2d2"
Acq. time 3.550 sec
Width 4803.1 Hz
55 repetitions
OBSERVE H1, 300.2104335 MHz
DATA PROCESSING
FT size 65536
Total time 8 min, 24 sec



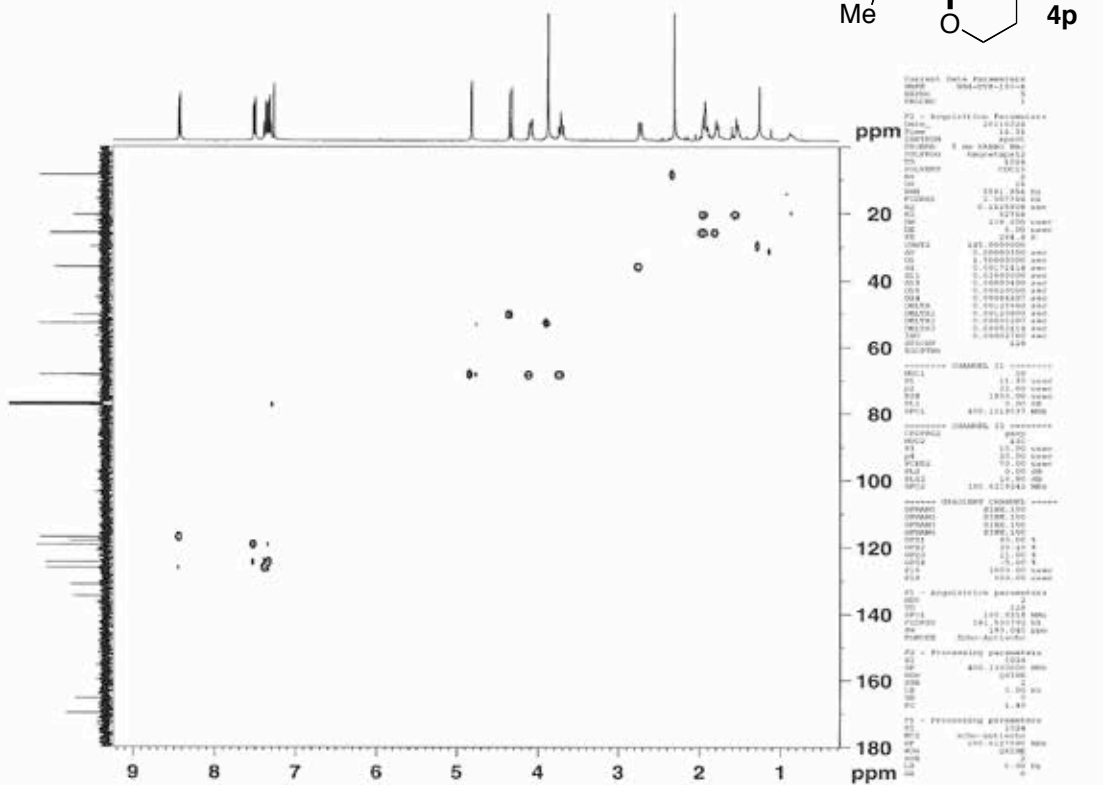
Std Carbon experiment
Sample: MB-4-DVP-156-A-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: dpai1
Mercury-300 "r2d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18115.9 Hz
230 repetitions
OBSERVE C13, 75.4813148 MHz
DECOUPLE H1, 300.2251607 MHz
Power 48 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec



1H-1H COSY

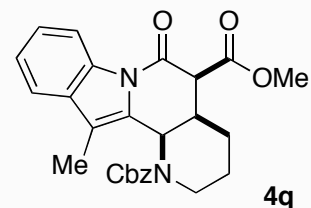


HSQC/GP

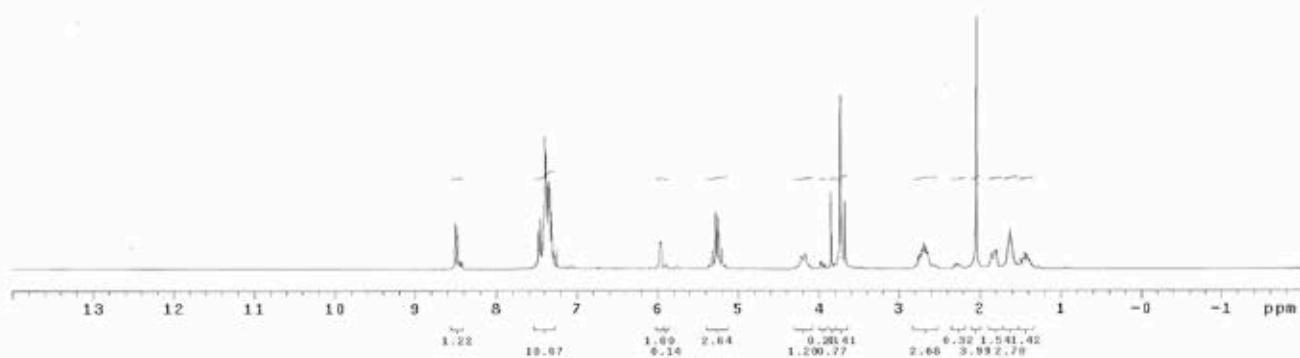


Std Proton parameters
Sample: 3-MeCbz-cyclin-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpatt11
Mercury-300 "r2d2"

Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4893.1 Hz
16 repetitions
OBSERVE H1: 300.2185962 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec

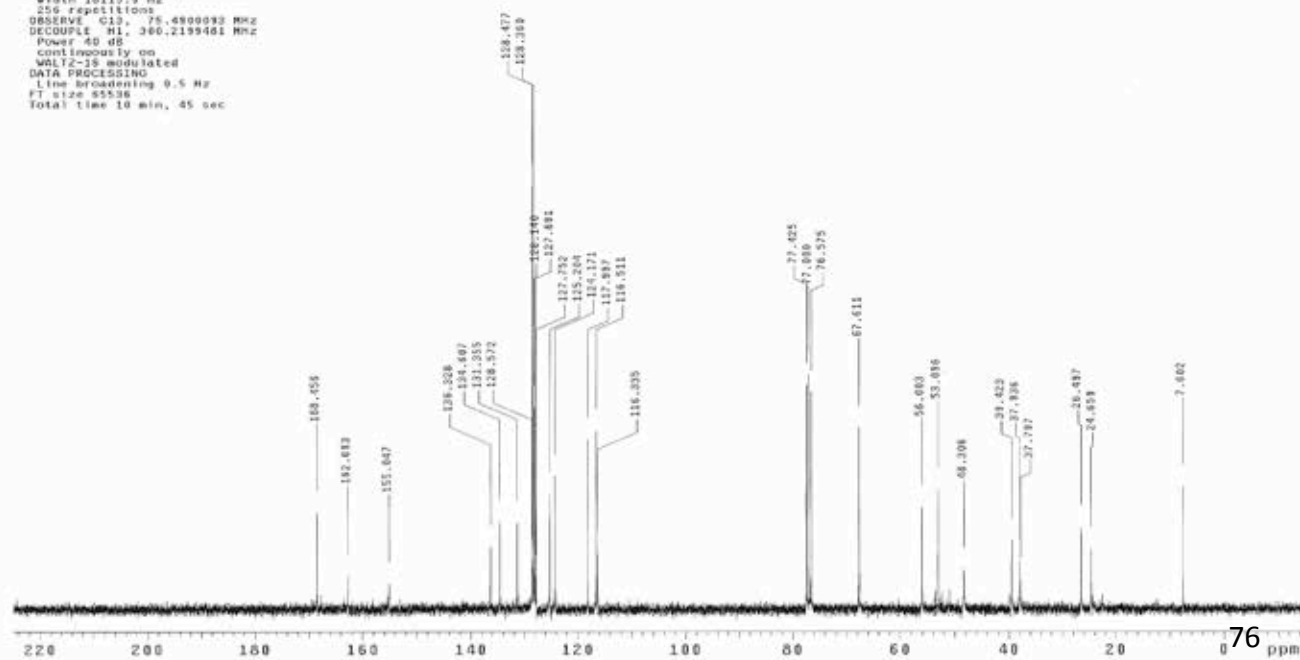


(7.1:1 mixture of diastereomers)

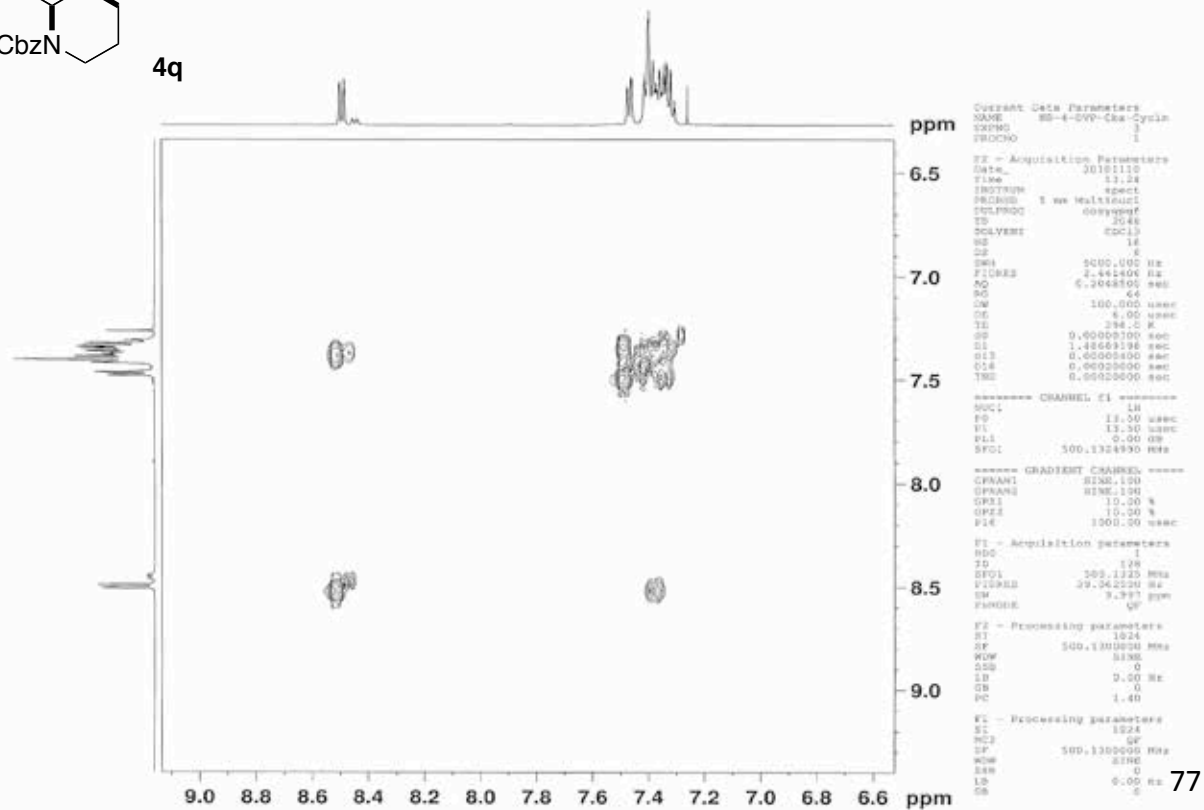
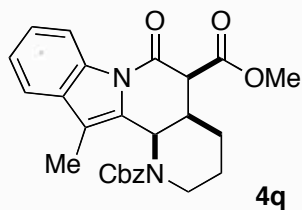
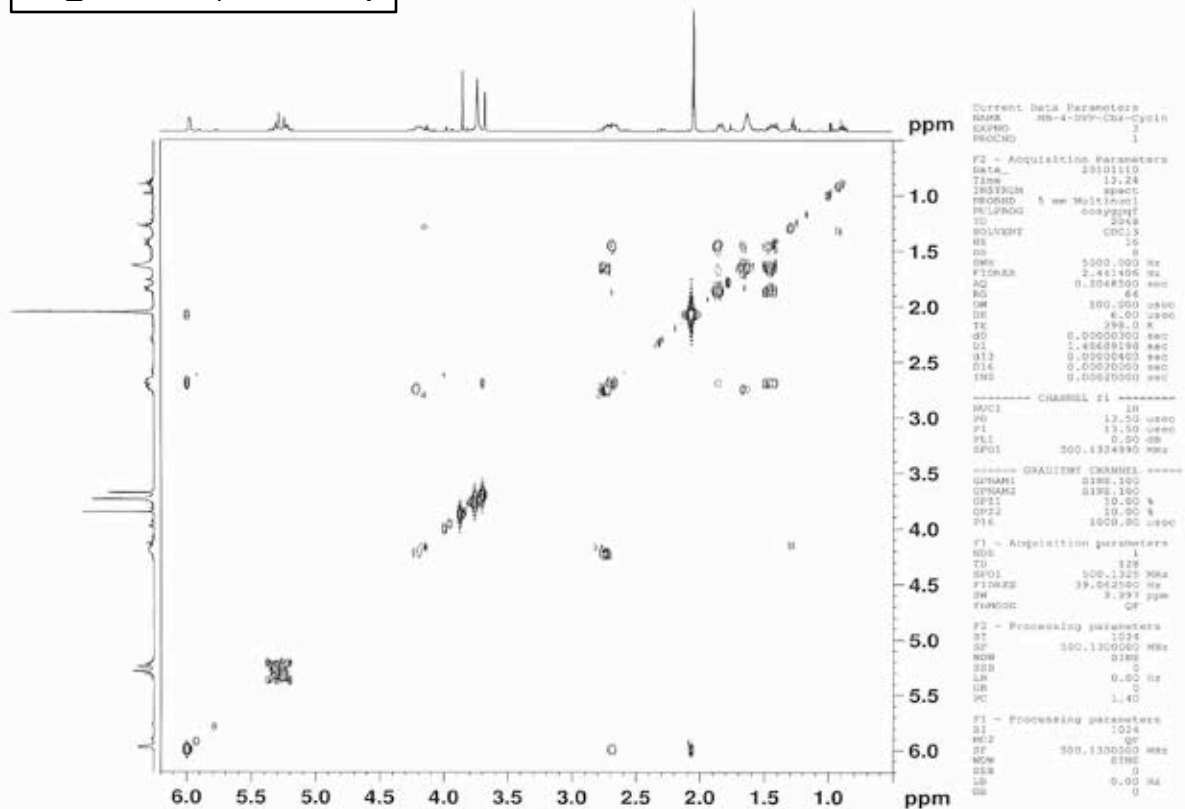


Std Carbon experiment
Sample: 3-MeCbz-cyclin-C
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpatt11
Mercury-300 "r2d2"

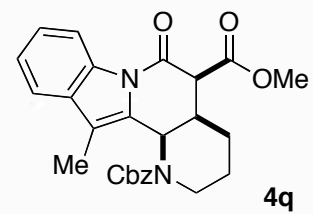
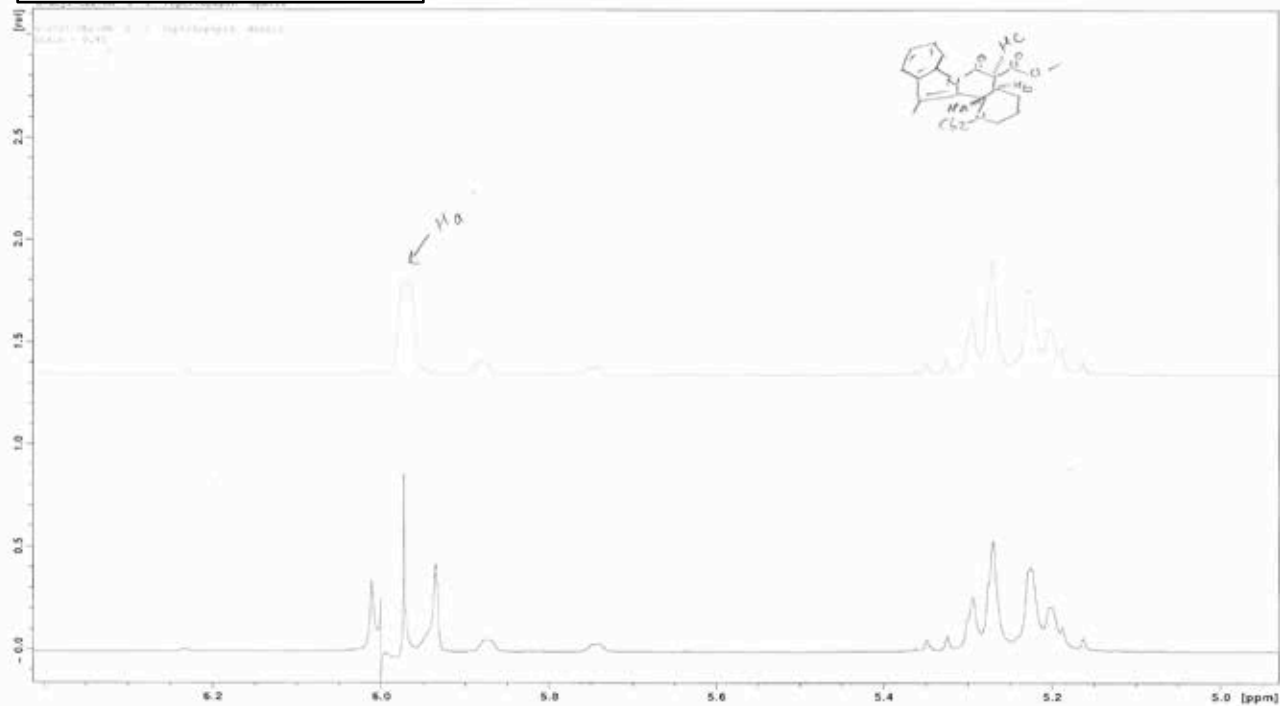
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.331 sec
Width 16115.3 Hz
256 repetitions
OBSERVE C13: 75.4900092 MHz
DECOUPLE H1: 360.2199401 MHz
Power 40 dB
continuous ly on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 55536
Total time 10 min, 45 sec



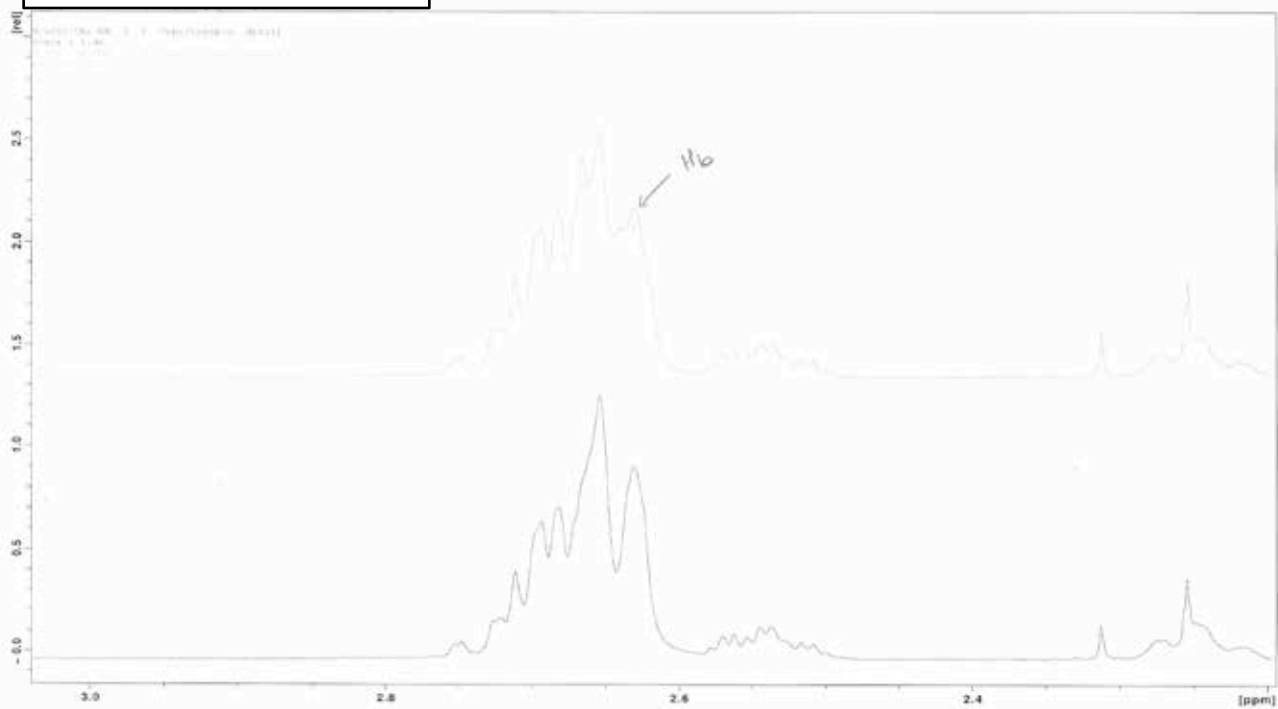
1H_1H COSY Spectra of 4q



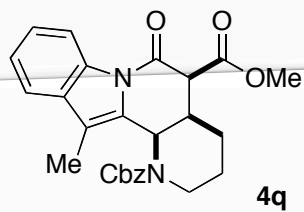
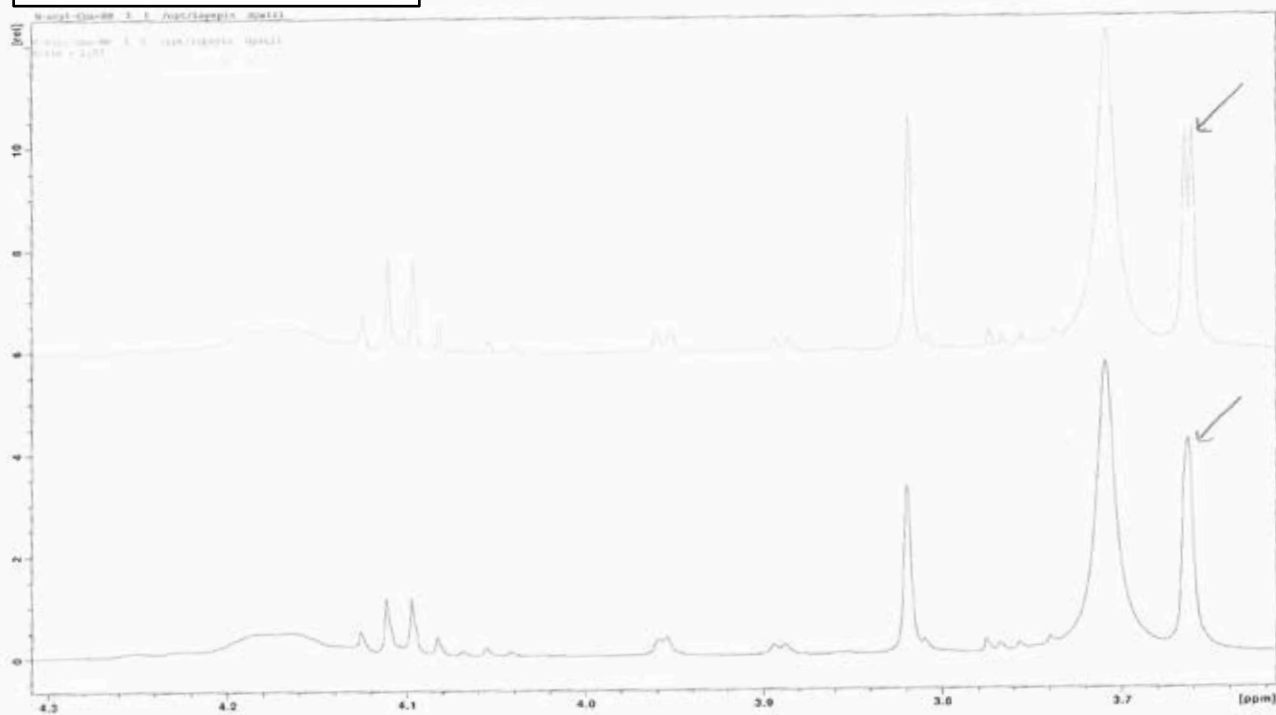
Decoupling Spectrum for **4q**



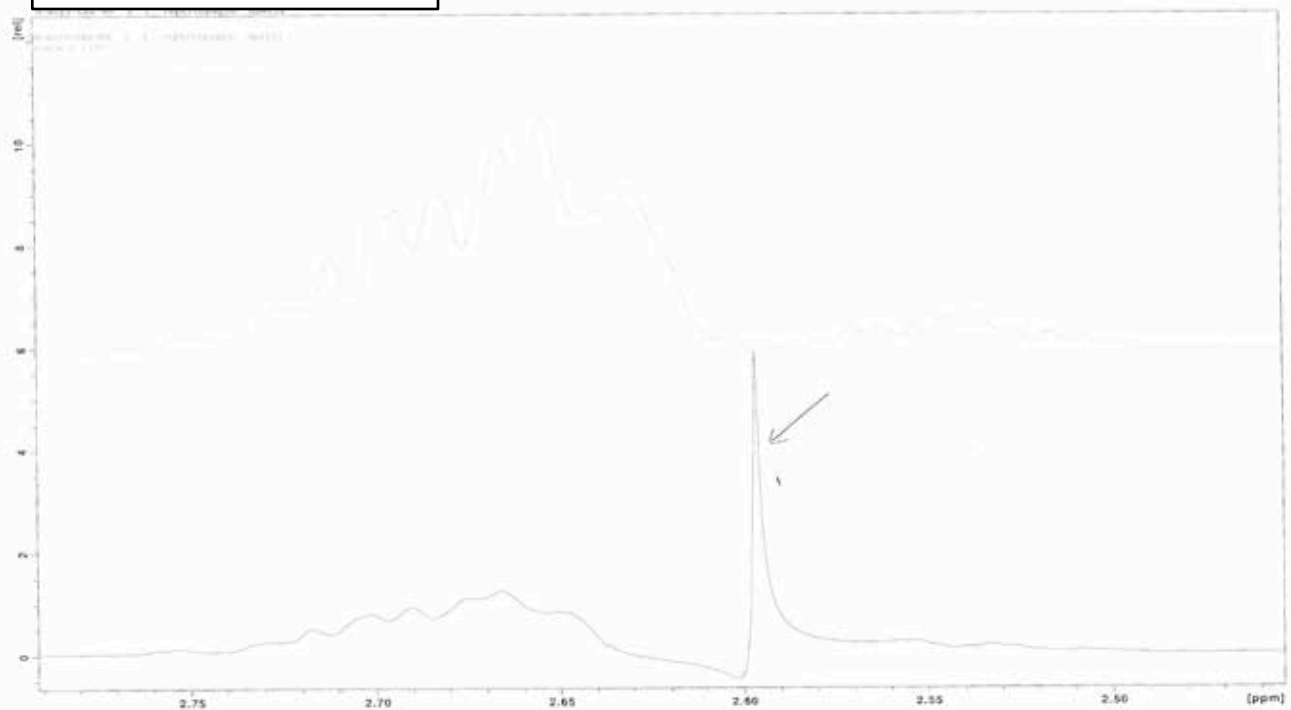
Decoupling Spectrum for **4q**



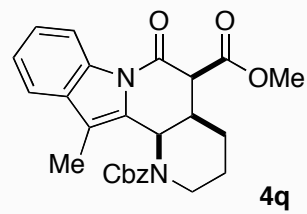
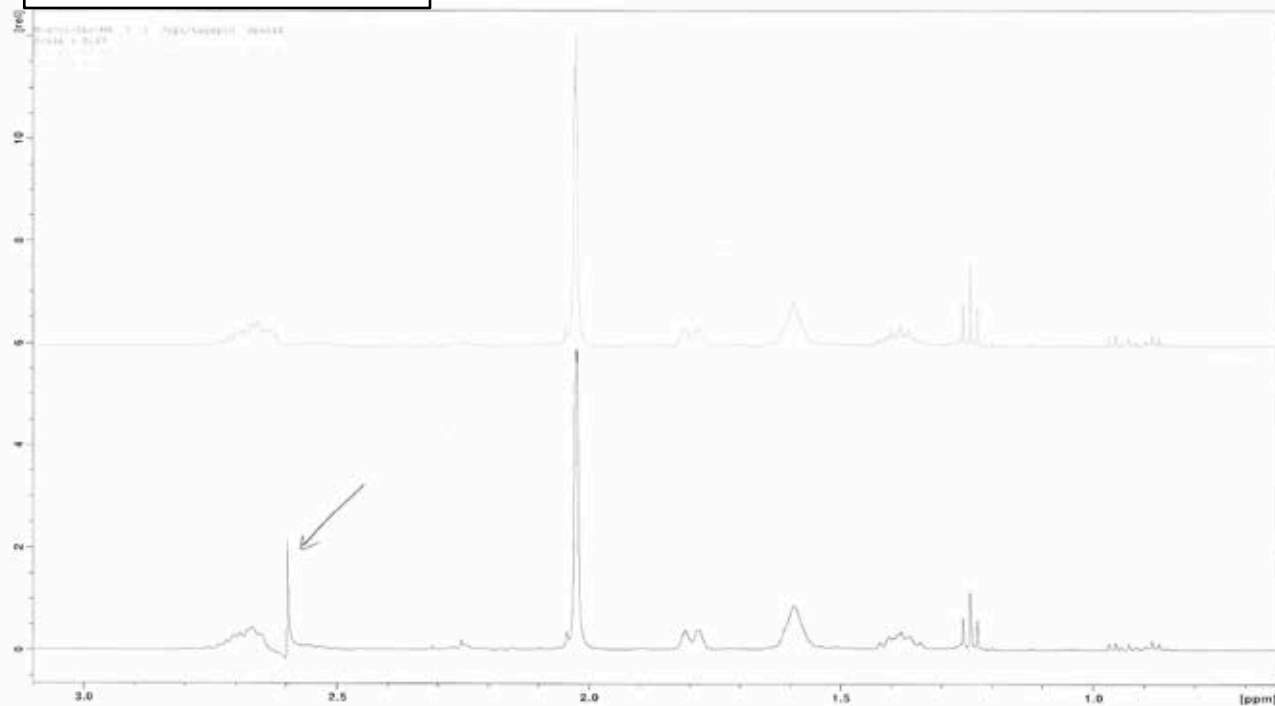
Decoupling Spectrum for **4q**



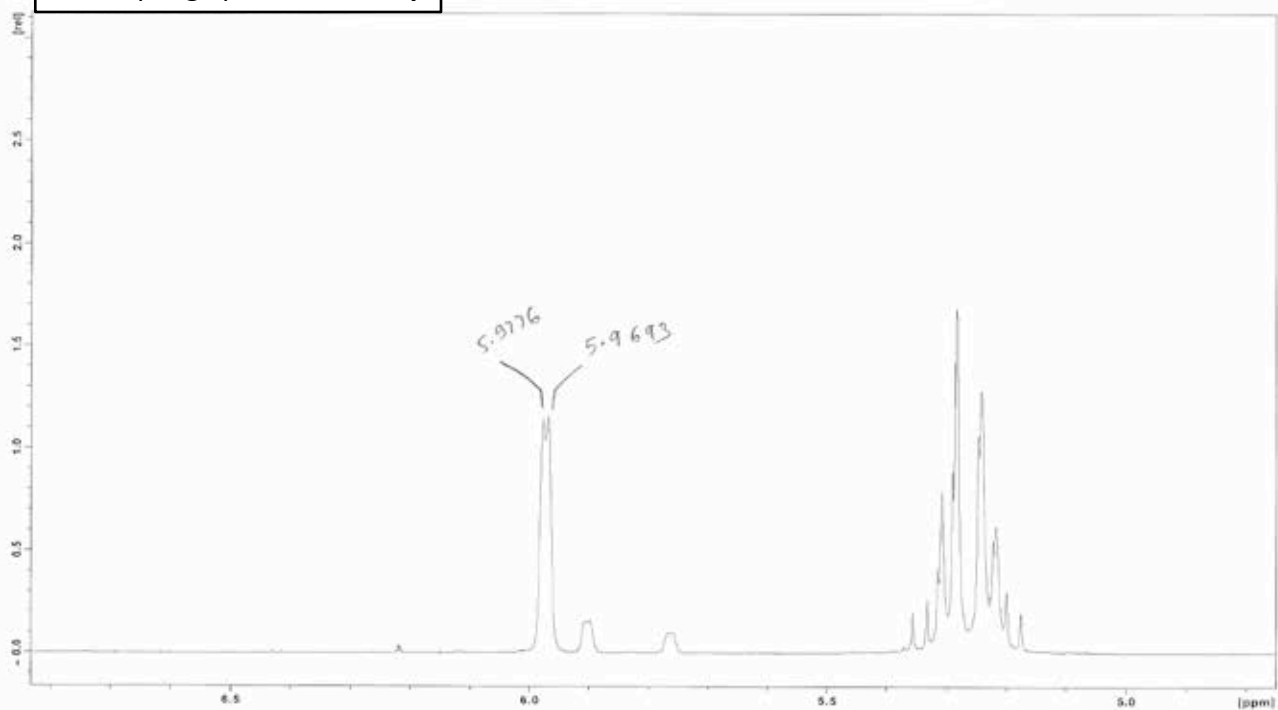
Decoupling Spectrum for **4q**



Decoupling Spectrum for **4q**

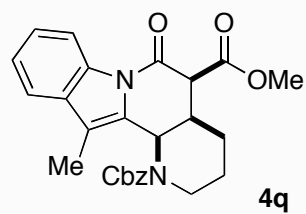
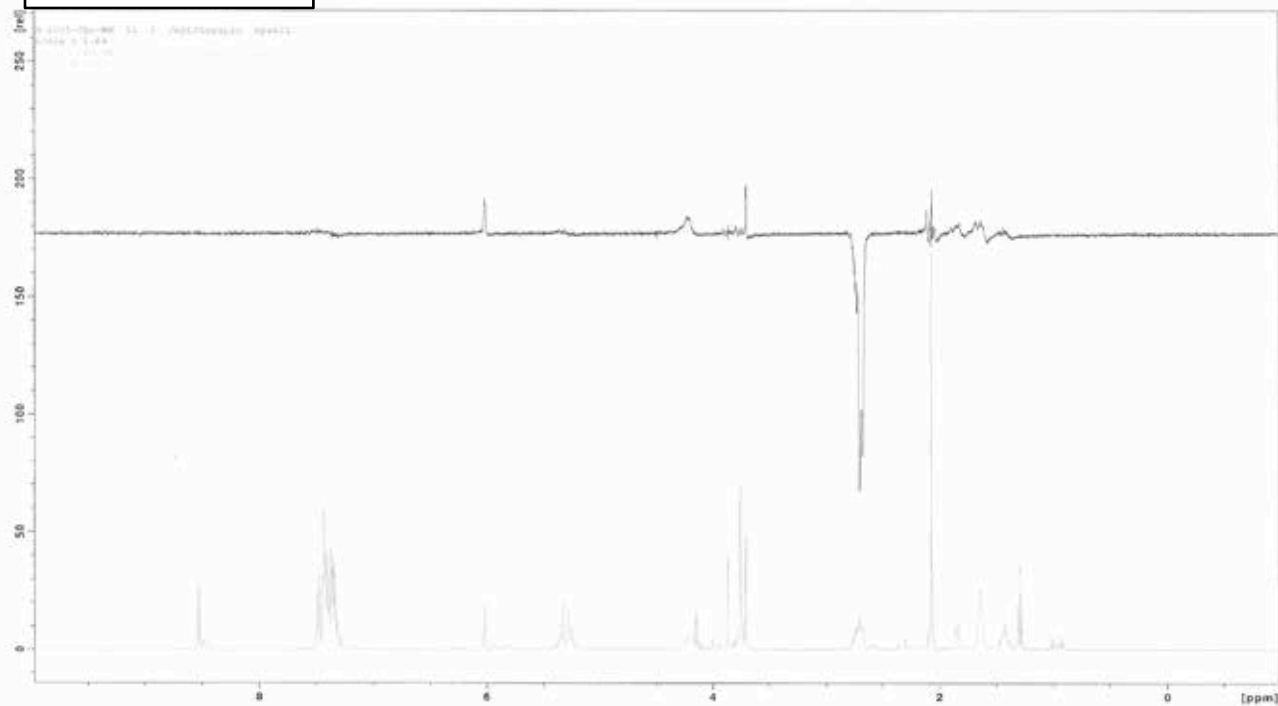


Decoupling Spectrum for **4q**

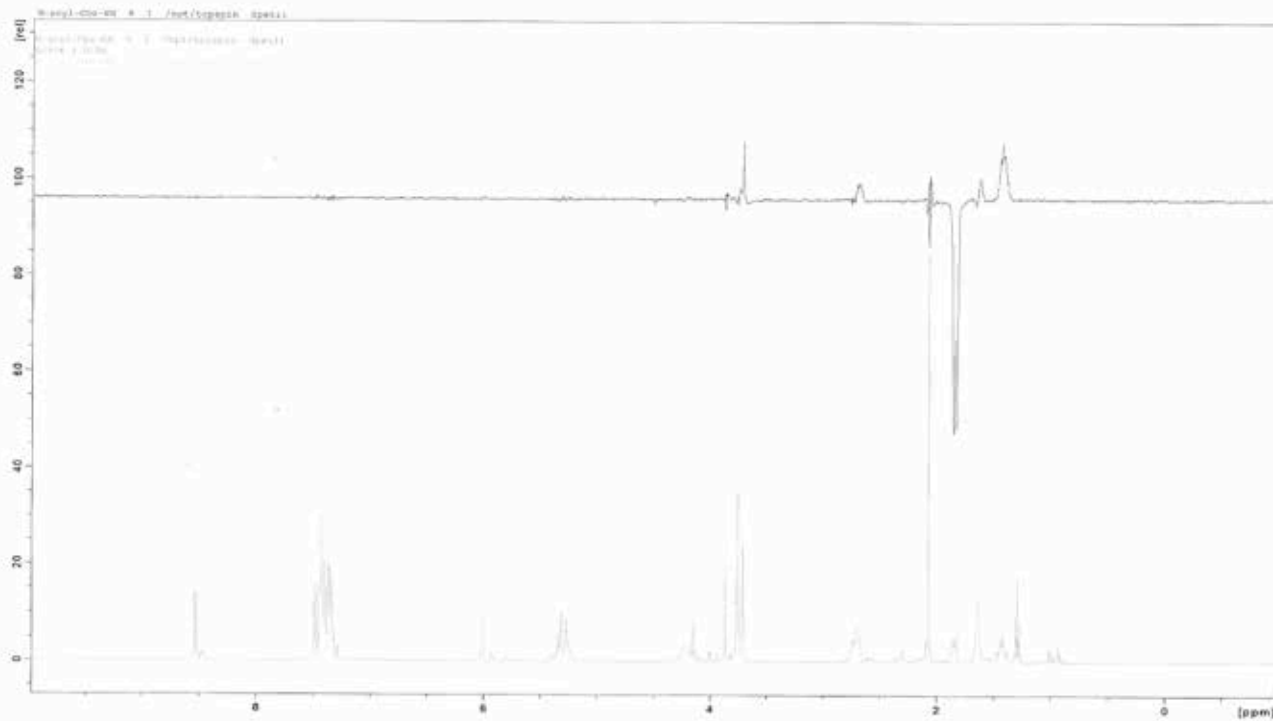


2.70 ppm!

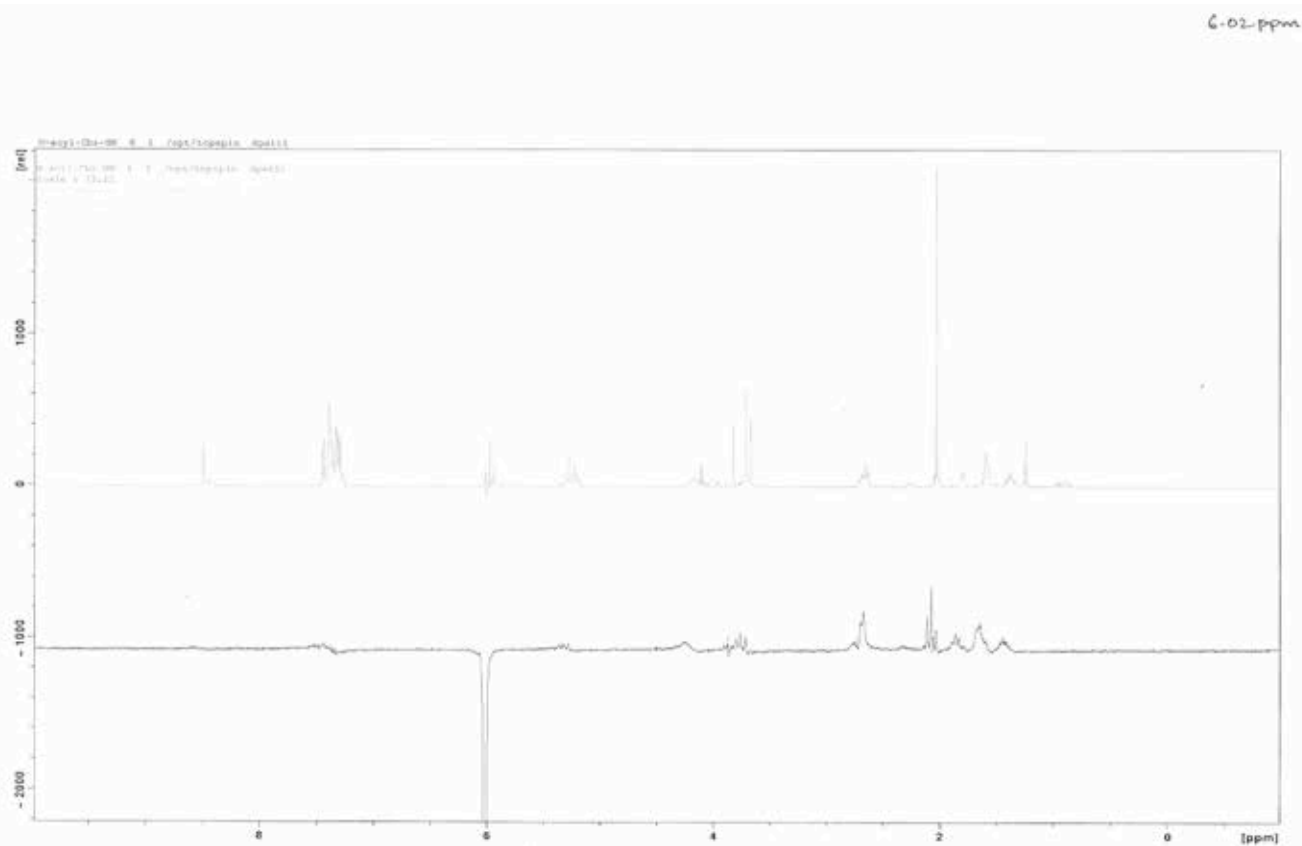
NOE Spectra for **4q**



1.84 ppm!

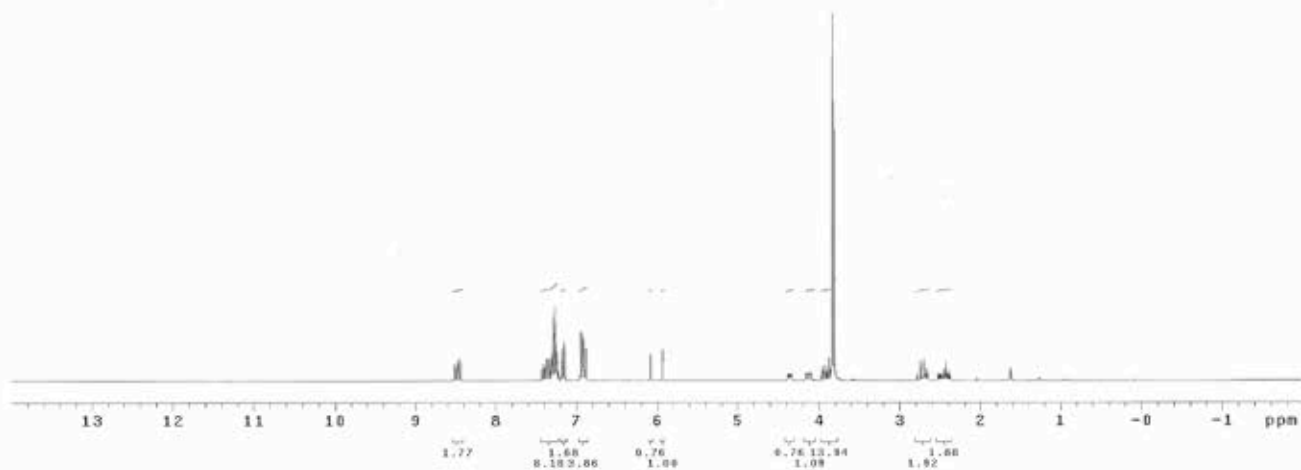
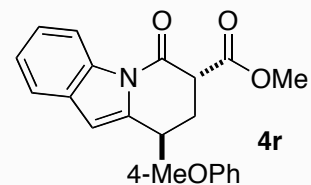


NOE Spectra for **4q**



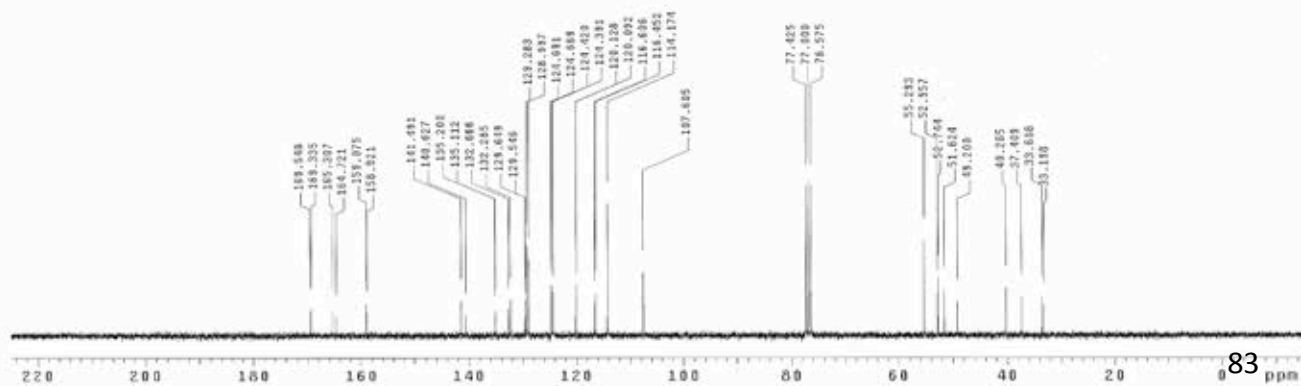
Std Proton parameters
Sample: NR-5-DVP-33-A-H
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: dpat11
Mercury-300 "r2d2"

Relax. delay 1.000 sec
Pulse 39.8 degrees
Acq. time 3.550 sec
Width 4003.1 Hz
18 repetitions
OBSERVE F1, 300.2105010 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 18 sec



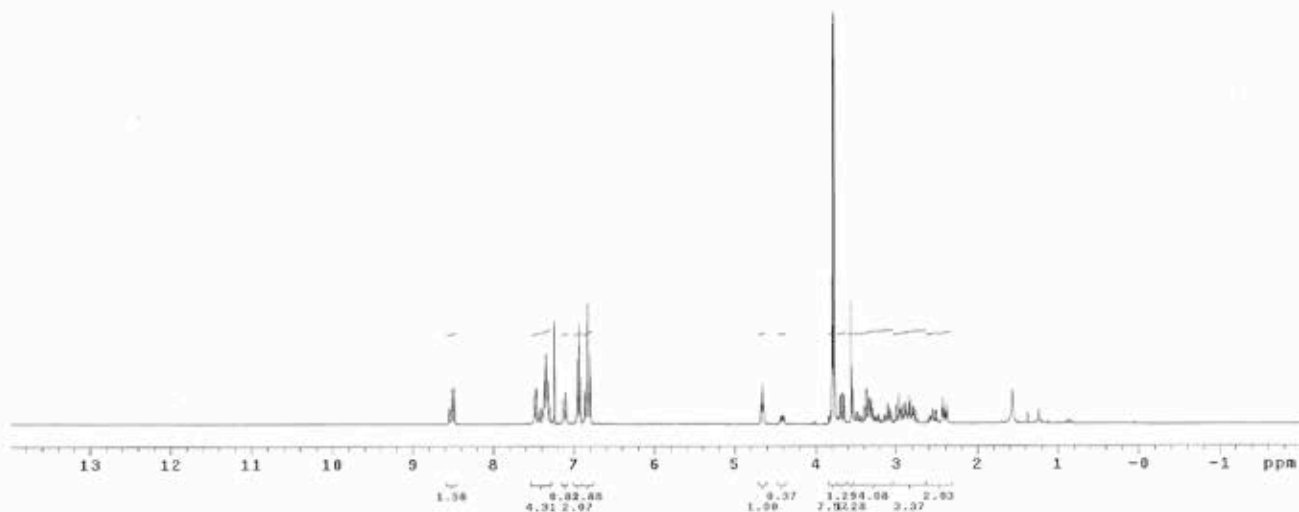
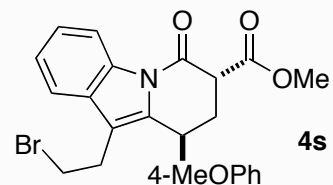
Std Carbon experiment
Sample: NR-5-DVP-33-A-C
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: dpat11
Mercury-300 "r2d2"

Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.381 sec
Width 18117.3 Hz
224 repetitions
OBSERVE G13, 75.4900904 MHz
DECOUPLE H1, 300.2109481 MHz
Power 40 dB
Continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec



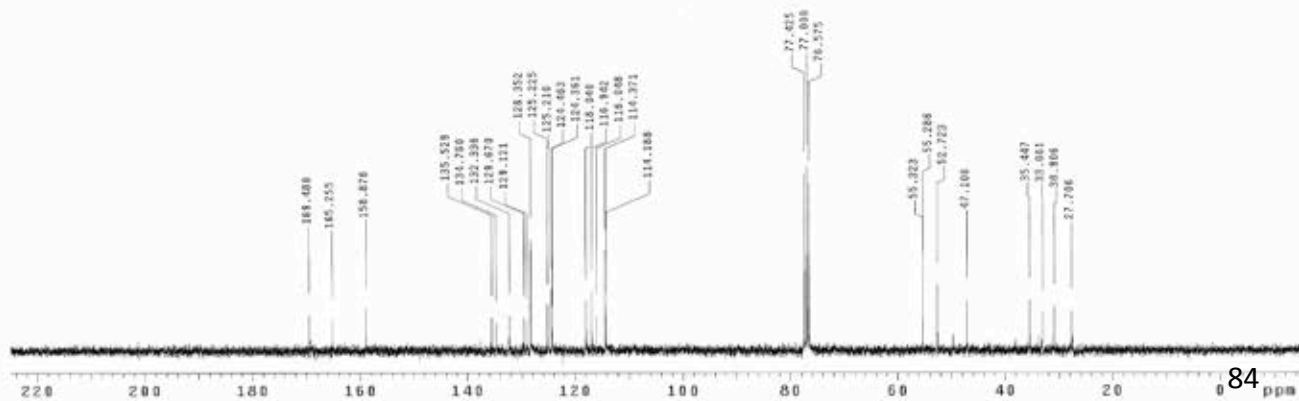
Std Proton parameters
Sample: E1Br-4OMe-CP-Cyclin-H
File: xg
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient temperature
Operator: dpat11
Mercury-300 "r2d2"

Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.550 sec
Width 4063.1 Hz
16 repetitions
OBSERVE H1, 300.2105657 MHz
DATA PROCESSING
FT size 65538
Total time 1 min, 16 sec

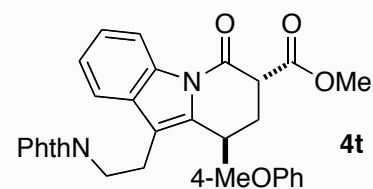


Std Carbon experiment
Sample: NB-5-OVP-59-B-H
File: xg
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 32.0 C / 285.1 K
Operator: dpat11
Mercury-300 "r2d2"

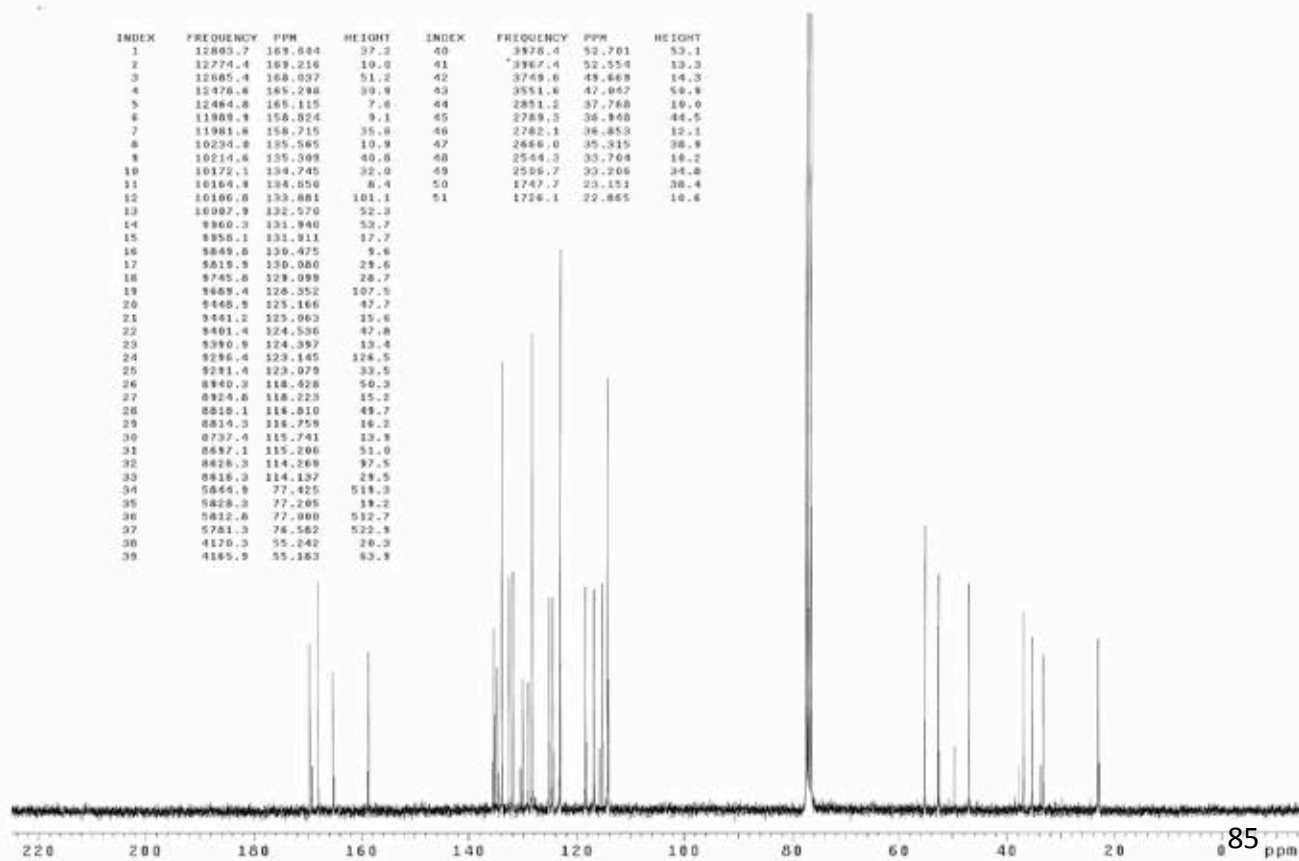
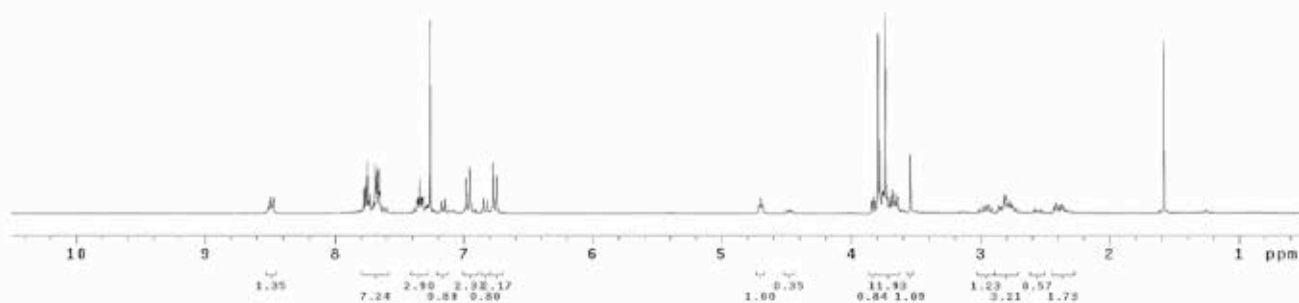
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.091 sec
Width 18117.9 Hz
240 repetitions
OBSERVE C13, 75.4913153 MHz
DECUPLE H1, 300.2251667 MHz
Power 10 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 10 min, 45 sec



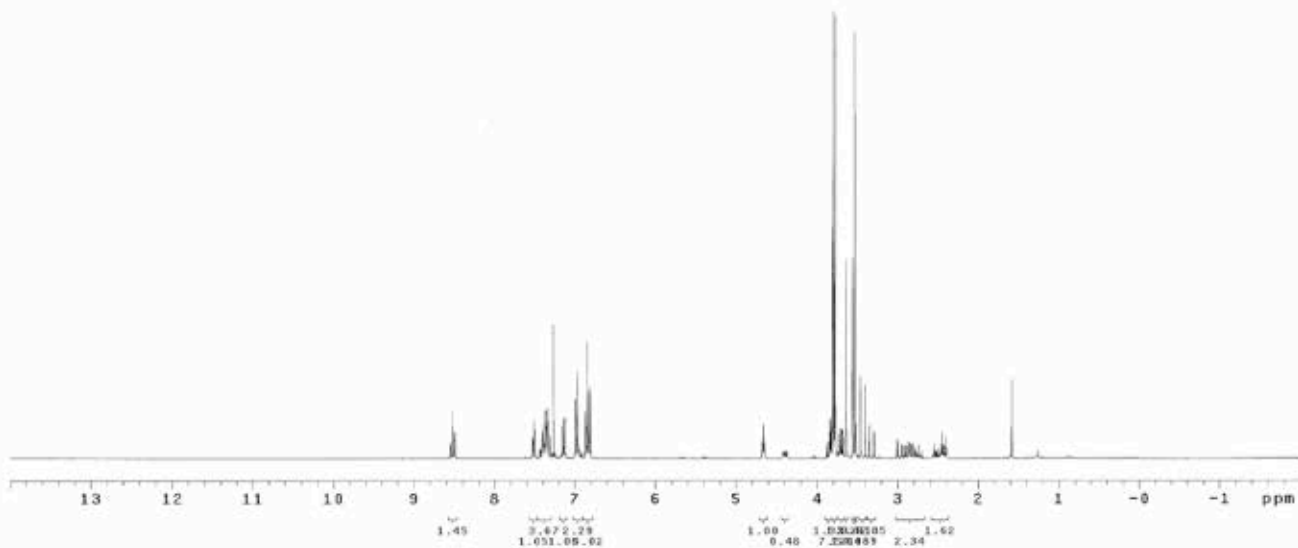
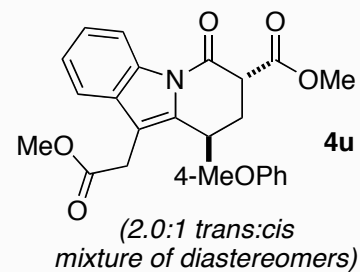
NPhthN-ethyl-cyclized
 F1er xp
 Pulse Sequence: zgpg30
 Solvent: cdcl3
 Ambient temperature
 Operator: cavit
 Mercury-300 "r2d1"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4002.1 Hz
 32 repetitions
 OBSERVE H1, 300.138495 Mhz
 DATA PROCESSING
 FT size 53536
 Total time 8 min, 34 sec



(2.9:1 *trans:cis*
 mixture of diastereomers)

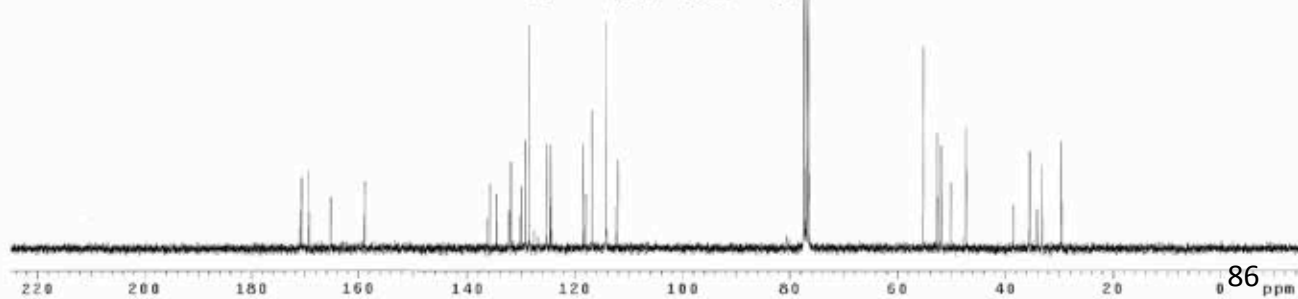


I_mac_205_b
 File: home/franco/cavitt/I_mac_205_b.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: Cavitt
 File: I_mac_205_b
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 3.550 sec
 Width 4003.1 Hz
 21 repetitions
 OBSERVE HI 300.2257108 MHz
 DATA PROCESSING
 FT size 65536
 Total time 8 min, 34 sec

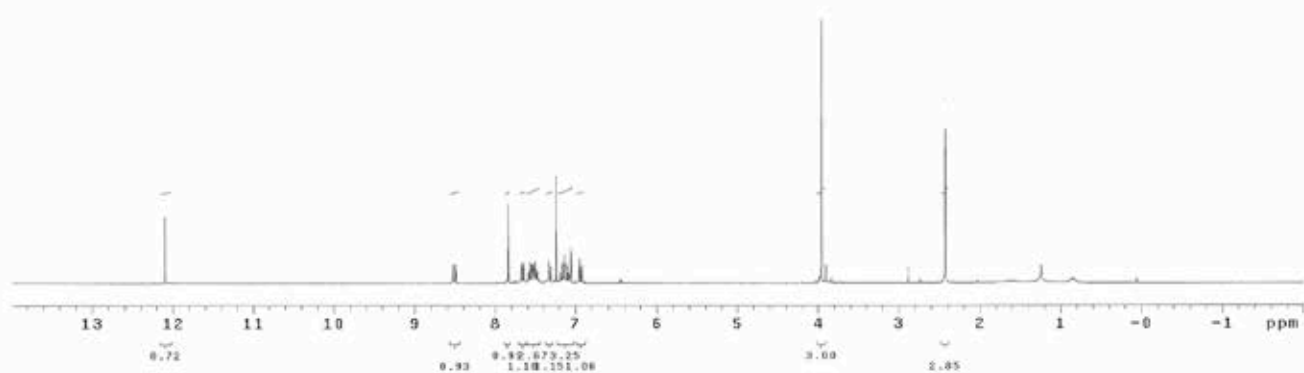
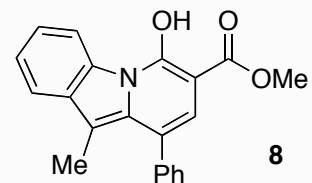


I_mac_205_13C_b
 File: home/franco/cavitt/I_mac_205_13C_b.fid
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: Cavitt
 File: I_mac_205_13C_b
 Mercury-300 "r2d2"
 Relax. delay 1.000 sec
 Pulse 30.0 degrees
 Acq. time 1.301 sec
 Width 16115.9 Hz
 2718 repetitions
 OBSERVE C13 75.4915143 MHz
 DECOUPLE HI 300.2251067 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 42 hr, 54 min, 2 sec

INDEX	FREQUENCY	PPM	HEIGHT	INDEX	FREQUENCY	PPM	HEIGHT
1	12897.3	170.844	8.4	40	3566.7	47.267	27.3
2	12802.3	170.646	15.0	41	2966.3	38.525	9.8
3	12792.8	169.460	17.6	42	2679.4	35.427	21.8
4	12771.8	169.182	6.2	43	2572.1	34.072	8.8
5	12472.1	165.210	11.5	44	2504.7	33.178	16.7
6	11995.5	158.900	7.4	45	2241.5	29.893	23.9
7	11990.6	158.824	14.9	46	2222.2	29.436	10.2
8	10290.5	136.314	6.7				
9	10251.8	135.002	14.5				
10	10162.4	134.630	12.2				
11	10155.4	134.490	5.9				
12	9987.0	132.294	8.6				
13	9356.4	131.820	18.4				
14	8837.2	130.200	7.3				
15	8612.3	128.979	14.0				
16	8755.4	128.225	24.3				
17	8700.8	128.500	50.1				
18	8631.0	127.577	4.1				
19	8455.7	125.256	23.6				
20	8452.0	125.218	32.5				
21	8401.6	124.538	23.2				
22	8381.0	124.288	11.2				
23	8342.7	118.480	33.5				
24	8310.1	118.028	12.2				
25	8014.4	116.761	30.9				
26	8626.4	114.271	58.6				
27	8617.6	114.154	23.5				
28	8481.0	112.345	8.3				
29	8457.8	112.037	18.9				
30	8044.5	77.418	177.6				
31	8027.9	77.200	6.2				
32	8012.4	76.995	182.1				
33	5780.4	76.570	175.5				
34	4173.8	55.288	45.4				
35	3981.9	52.747	25.7				
36	3971.4	52.608	11.7				
37	3928.6	52.014	23.0				
38	3918.3	51.965	11.9				
39	3762.9	50.110	14.7				



Std Proton parameters
Sample: NS-5-DVP-52-A-II
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: dpatt11
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 3.558 sec
Width 4883.1 Hz
16 repetitions
OBSERVE H1, 300.2207170 MHz
DATA PROCESSING
F1 size 85538
Total time 1 min, 10 sec



Std Carbon experiment
Sample: NS-5-DVP-52-A-II
File: xp
Pulse Sequence: s2pul
Solvent: cdcl3
Ambient Temperature
Operator: dpatt11
Mercury-300 "r1d2"
Relax. delay 1.000 sec
Pulse 30.0 degrees
Acq. time 1.301 sec
Width 18115.8 Hz
1312 repetitions
OBSERVE C13, 75.4913131 MHz
DECOUPLE H1, 300.2251667 MHz
Power 60 dB
CONTINUOUSLY ON
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
F1 size 65538
Total time 2 hr, 7 sec

