Supporting Information

Gold or No Gold: One-Pot Synthesis of Tetrahydrobenz[b]azepin-4-ones from tertiary *N*-(But-3-ynyl)anilines

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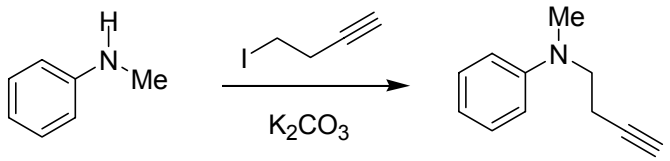
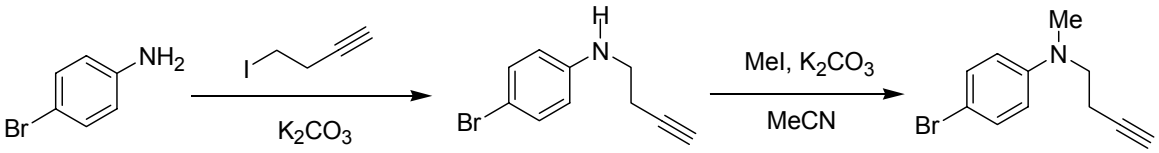
General. Ethyl acetate (ACS grade), hexanes (ACS grade) and diethyl ether (ACS grade) were purchased from Fisher Scientific and used without further purification. Anhydrous dichloromethane (HPLC grade) was purified by distillation over calcium hydride. Anhydrous tetrahydrofuran in Pure-Pac™ from Aldrich was used directly without further purification. Commercially available reagents were used without further purification. Reactions were monitored by thin layer chromatography (TLC) using whatman precoated silica gel plates. Flash column chromatography was performed over silicycle silica gel (230-400 mesh). ^{1}H NMR and ^{13}C NMR spectra were recorded on a Varian 500 MHz Unity plus spectrometer and a Varian 400 MHz spectrometer using residue solvent peaks as internal standards. Infrared spectra were recorded with a Perkin Elmer FT-IR spectrum 2000 spectrometer and are reported in reciprocal centimeter (cm^{-1}). Mass spectra were recorded with Waters micromass ZQ detector using electron spray method.



4

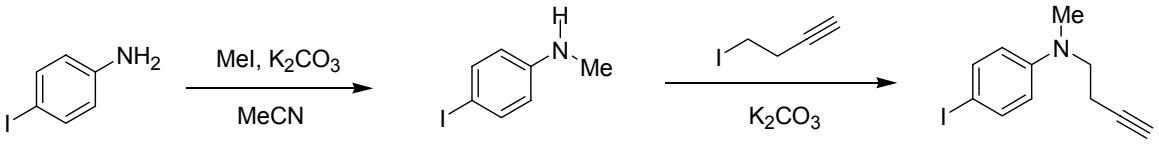
4-Iodobut-1-yne (1 mmol) was added to a mixture of *N*-methylaniline (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 80 ℃ for 6 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 10:1) to afford compound **4** in 72 % yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.22 – 7.26 (m, 2H), 6.70 – 6.73 (m, 3H), 3.56 (t, 2H, *J* = 7.2 Hz), 2.96 (s, 3H), 2.69 (td, 2H, *J* = 7.2, 2.8 Hz), 1.99 (t, 1H, *J* = 2.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 148.4, 129.3, 116.6, 112.2, 82.2, 69.6, 51.8, 38.4, 16.4; IR (neat):3289, 2911, 2115, 1601, 1501, 1356, 1282, 1228, 1356, 1193, 1115, 1037, 991; MS (ES^+) Calculated for $[C_{11}H_{14}N]^+$: 160.1; Found: 160.0.



6a

4-Iodobut-1-yne (1 mmol) was added to a mixture of 4-bromophenylamine (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 80 ℃ overnight and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford (4-bromophenyl)but-3-ynylamine.

Iodomethane (2 mmol) was added to a mixture of (4-bromophenyl)but-3-ynylamine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was heated at 60 ℃ overnight and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford compound **6a** in 45 % yield in 2 steps. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.30 (d, 2H, J = 9 Hz), 6.57 (d, 2H, J = 9 Hz), 3.53 (t, 2H, J = 7 Hz), 2.95 (s, 3H), 2.41 (td, 2H, J = 7.5, 2.5 Hz), 2.00 (t, 1H, J = 2.5 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 147.4, 131.9, 113.8, 108.5, 81.8, 69.9, 51.7, 38.5, 16.4; IR (neat): 3293, 2914, 2360, 1590, 1497, 1365, 1189, 1113; MS (ES^+) Calculated for $[C_{11}H_{13}BrN]^+$: 238.0; Found: 237.8.

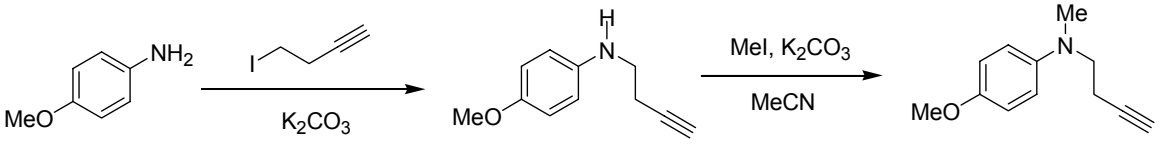


6b

Iodomethane (1 mmol) was added to a mixture of 4-iodophenylamine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was heated at 80 ℃ overnight and then cooled to room temperature. The reaction mixture was diluted with

CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford (4-iodo-phenyl)methylamine.

4-Iodobut-1-yne (1 mmol) was added to a mixture of (4-iodo-phenyl)-methylamine (1 mmol) and K_2CO_3 (1 mmol) without solvents. The reaction was heated at 80 ℃ for 2d and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford compound 6b in 35 % yield in 2 steps. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45 (d, 2H, J = 9.2 Hz), 6.46 (d, 2H, J = 9.2 Hz), 3.51 (t, 2H, J = 7.2 Hz), 2.94 (s, 3H), 2.40 (td, 2H, J = 7.2, 2.8 Hz), 2.00 (t, 1H, J = 2.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 147.8, 137.7, 114.3, 81.8, 77.4, 69.9, 51.5, 38.4, 16.3; IR (neat): 3294, 2927, 2347, 2117, 1589, 1495, 1374, 1194, 1114, 963, 875, 824; MS (ES^+) Calculated for $[C_{11}H_{13}IN]^+$: 286.0; Found: 285.9.



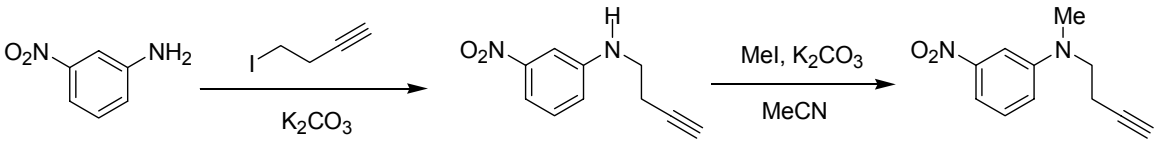
6c

4-Iodobut-1-yne (1 mmol) was added to a mixture of 4-methoxyphenylamine (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 80 ℃ for 5 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1) to afford but-3-ynyl(4-methoxyphenyl)amine.

Iodomethane (1.2 mmol) was added to a mixture of but-3-ynyl-(4-methoxyphenyl)-amine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was heated at 60 ℃ overnight and then cooled to room temperature. The reaction mixture was

diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford compound **6c** in 28 % yield in 2 steps.

^{1}H NMR (500 MHz, $CDCl_3$) δ 6.84 (d, 2H, *J* = 9 Hz), 6.71 (d, 2H, *J* = 9 Hz), 3.76 (s, 3H), 3.48 (t, 2H, *J* = 7.5 Hz), 2.90 (s, 3H), 2.39 (td, 2H, *J* = 7.5, 2.5 Hz), 1.99 (t, 1H, *J* = 2.5 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 151.9, 143.4, 114.8, 114.5, 82.4, 69.5, 55.8, 52.9, 38.9, 16.2; IR (neat): 3296, 2926, 2862, 1605, 1496, 1450, 1403, 1246, 1051; MS (ES^+) Calculated for $[C_{12}H_{16}NO]^+$: 190.1; Found: 190.0.

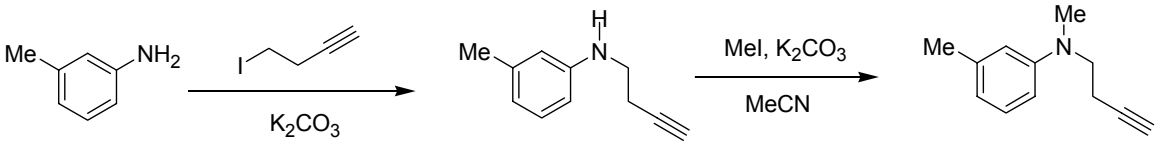


6d

4-Iodobut-1-yne (1 mmol) was added to a mixture of 3-nitrophenylamine (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 90 ℃ for 2 d and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 15:1) to afford but-3-ynyl(3-nitrophenyl)amine.

Iodomethane (4mmol) was added to a mixture of but-3-ynyl-(3-nitrophenyl)amine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was heated at 80 ℃ for 1 d and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford compound **6d** in 62 % yield in 2 steps. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.49- 7.53 (m, 2H), 7.33 (t, 1H, *J* = 8.5

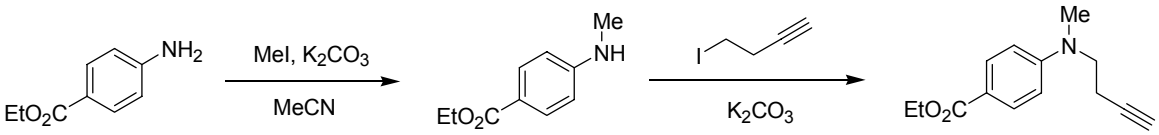
Hz), 6.97 (dd, 1H, J = 8, 2.5 Hz), 3.63 (t, 2H, J = 7 Hz), 3.07 (s, 3H), 2.47 (td, 2H, J = 7, 2.5 Hz), 2.02 (t, 1H, J = 2.5 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 149.7,149.0, 129.7, 117.4, 110.9, 106.0, 81.4, 70.2, 51.4, 38.7, 16.6; IR (neat):3293, 2910, 2360, 2118, 1617, 1525, 1345, 1228, 1198, 1122, 991, 846; MS (ES^+) Calculated for $[C_{11}H_{12}N_2O_2Na]^+$: 227.1; Found: 226.9.



6e

4-Iodobut-1-yne (1 mmol) was added to a mixture of *m*-toluidine (3 mmol) and K_2CO_3 (3 mmol) without solvents. The reaction was heated at 60 ℃ for 4 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford but-3-ynyl-*m*-tolylamine.

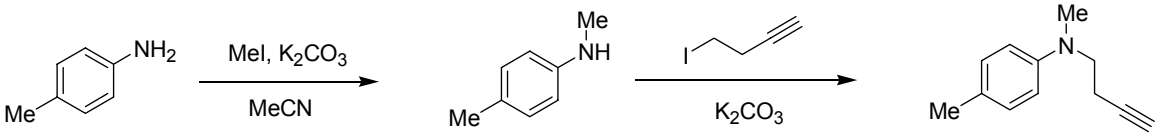
Iodomethane (1.2 mmol) was added to a mixture of but-3-ynyl-m-tolylamine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was stirred at room temperature for 1 d. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford compound **6e** in 45 % yield in 2 steps. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.13 (t, 1H, J = 9.0 Hz), 6.53- 6.56 (m, 3H), 3.55 (t, 2H, J = 7.2 Hz), 2.97 (s, 3H), 2.43 (td, 2H, J = 7.6, 2.8 Hz), 2.32 (s, 3H), 2.00 (t, 1H, J = 2.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 148.5, 139.0, 129.1, 117.6, 113.0, 109.4, 82.3, 69.6, 51.8, 38.5, 21.9, 16.4; IR (neat): 3289, 2910, 2360, 2115, 1601, 1495, 1358, 1172, 1089, 1042, 998 ; MS (ES^+) Calculated for $[C_{12}H_{16}N]^+$: 174.1; Found: 174.0.



6f

Iodomethane (1.2 mmol) was added to a mixture of 4-aminobenzoicacid ethylester (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was heated at 80 ℃ for 6 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 10:1) to afford ethyl 4-methylaminobenzoate.

4-Iodobut-1-yne (1.2 mmol) was added to a mixture of 4-methylamino-benzoicacid ethylester (1 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 90 ℃ for 4 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 10:1) to afford compound **6f** in 31 % yield in 2 steps. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.91 (d, 2H, *J* = 9 Hz), 6.65 (d, 2H, *J* = 9 Hz), 4.32 (q, 2H, *J* = 7 Hz), 3.61 (t, 2H, *J* = 7 Hz), 3.06 (s, 3H), 2.46 (td, 2H, *J* = 7, 3 Hz), 2.01 (t, 1H, *J* = 3 Hz), 1.36(t, 3H, *J* = 7 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 166.8, 151.5, 131.4, 117.8, 110.6, 81.5, 70.1, 60.1, 51.2, 38.6, 16.7, 14.1; IR (neat): 3289, 2977, 2368, 2114, 1699, 1604, 1523, 1384, 1276, 1183, 1106, 1026, 961, 827; MS (ES^+) Calculated for $[C_{14}H_{17}NO_2Na]^+$: 254.1; Found: 253.9.

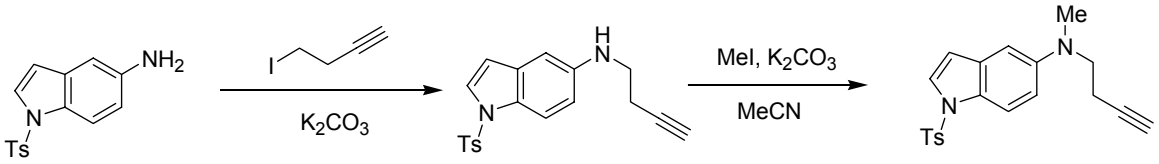


6g

Iodomethane (1.2 mmol) was added to a mixture of *p*-toluidine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was stirred at room temperature overnight.. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol),

and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 10:1) to afford methyl-*p*-tolylamine.

4-Iodobut-1-yne (1.2 mmol) was added to a mixture of methyl-*p*-tolylamine (1 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 90 ℃ for 4 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 50:1, then hexanes: ethyl acetate = 25:1) to afford compound **6g** in 49 % yield in 2 steps. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.04 (d, 2H, J = 7.2 Hz), 6.64 (d, 2H, J = 7.2 Hz), 3.52 (t, 2H, J = 7.2 Hz), 2.93 (s, 3H), 2.41 (td, 2H, J = 7.2, 2.8 Hz), 2.25 (s, 3H), 1.98 (t, 1H, J = 2.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 146.4, 129.8, 125.9, 112.6, 82.3, 69.5, 52.1, 38.5, 20.2, 16.2; IR (neat): 3301, 2914, 2368, 2113, 1617, 1519, 1356, 1185, 1111, 1039; MS (ES^+) Calculated for $[C_{12}H_{16}N]^+$: 174.1; Found: 174.0.

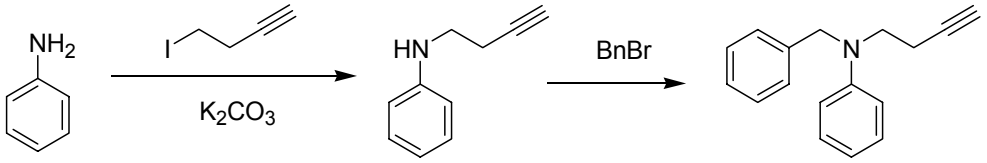


6h

4-Iodobut-1-yne (1.2 mmol) was added to a mixture of 1-(toluene-4-sulfonyl)-1*H*-indol-5-ylamine (1 mmol) and K_2CO_3 (1 mmol) without solvents. The reaction was heated at 60 ℃ overnight and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 7:1) to afford but-3-ynyl[1-(toluene-4-sulfonyl)-1*H*-indol-5-yl]amine.

Iodomethane (1.2 mmol) was added to a mixture of but-3-ynyl-[1-(toluene-4-sulfonyl)-1*H*-indol-5-yl]-amine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was stirred at 60 ℃ overnight and then cooled to room temperature.

The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 5:1) to afford compound **6h** in 50 % yield in 2 steps. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.82 (d, 1H, J = 9.2 Hz), 7.71 (d, 2H, J = 8 Hz), 7.43 (d, 1H, J = 3.6 Hz), 7.18 (d, 2H, J = 8 Hz), 6.82 (dd, 1H, J = 9.2, 2.4 Hz), 6.75 (d, 2H, J = 2.4 Hz), 6.51 (d, 1H, J = 3.6 Hz), 3.54 (t, 2H, J = 7.2 Hz), 2.95 (s, 3H), 2.40 (td, 2H, J = 7.2, 2.4 Hz), 2.32 (s, 3H), 1.98 (t, 1H, J = 2.4 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ145.7, 144.6, 135.4, 132.2, 129.8, 127.0, 126.8, 126.7, 114.3, 112.0, 109.3, 103.7, 82.2, 69.7, 52.8, 39.0, 21.5, 16.4; IR (neat): 3294, 2925, 2861, 2345, 2115, 1612, 1558, 1495, 1366, 1259, 1132, 1050, 876, 824; MS (ES^+) Calculated for $[C_{20}H_{21}N_2O_2S]^+$: 353.1; Found: 353.4.

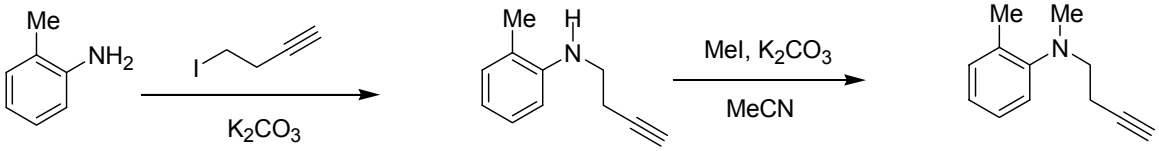


6i

4-Iodobut-1-yne (1 mmol) was added to a mixture of aniline (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 80 ℃ for 6 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford but-3-ynylphenylamine.

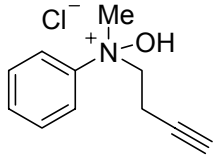
Benzyl bromide (1.2 mmol) was added to a mixture of but-3-ynylphenylamine (2 mmol) without solvents. The reaction was heated at 60 ℃ for 20 min. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 50:1) to afford compound **6i** in 43 % yield in 2 steps. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.18 – 7.31 (m, 7H), 6.69– 6.72 (m, 3H), 4.60 (s, 2H), 3.65 (t, 2H, J = 7.6 Hz), 2.52 (td, 2H, J = 7.6, 2.8 Hz), 2.00 (t, 1H, J = 2.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 147.7, 138.6, 129.3, 128.6, 126.9, 126.5, 116.7,

112.2, 82.0, 69.8, 54.5, 50.2, 29.7, 17.0; IR (neat): 3278, 2918, 2360, 1595, 1504, 1449, 1360, 1246, 1213, 1165, 1026, 996; MS (ES^+) Calculated for $[C_{17}H_{18}N]^+$: 236.1; Found: 235.9.



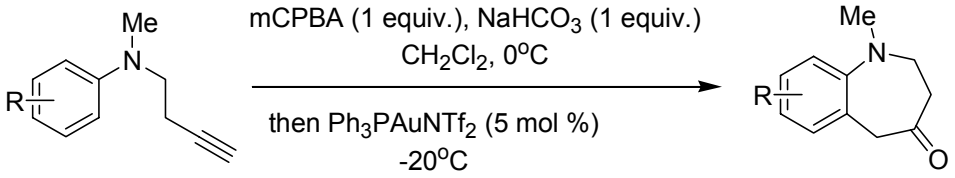
4-Iodobut-1-yne (1 mmol) was added to a mixture of *o*-toluidine (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 60 ℃ for 2 d and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 15:1) to afford but-3-ynyl-*o*-tolylamine.

Iodomethane (1.2 mmol) was added to a mixture of but-3-ynyl-*o*-tolylamine (1 mmol) and K_2CO_3 (1 mmol) in anhydrous acetonitrile (5 mL/ mmol). The reaction was heated at 80 ℃ overnight and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 15:1) to afford desired product in 53 % yield in 2 steps. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.16- 7.21 (m, 2H), 7.07 (d, 1H, J = 7.5), 7.00 (t, 1H, J = 7), 3.14 (t, 2H, J = 7.5 Hz), 2.74 (s, 3H), 2.40 (td, 2H, J = 7.5, 2.5 Hz), 2.35 (s, 3H), 1.98 (t, 1H, J = 2.5 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 151.1, 133.4, 131.1, 126.3, 123.3, 120.2, 82.6, 69.1, 54.8, 41.6, 18.2, 17.3;IR (neat): 3297, 2936, 2115, 1599, 1493, 1369, 1169, 1094, 1037, 944; MS (ES^+) Calculated for $[C_{12}H_{16}N]^+$: 174.1; Found: 174.0.



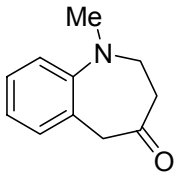
*m*CPBA (1 equiv.) was added into a solution of a N-(but-3-ynyl)aniline (1 equiv.) and $NaHCO_3$ (1 equiv.) in CH_2Cl_2 (0.05 M) under N_2 at 0 ℃. The reaction was stirred at 0 ℃ for 0.5 h. The N-oxide purified directly through silica gel flash column chromatography (eluents: DCM: MeOH = 2: 1). The anhydrous hydrogen chloride gas was bubbled into the eluent containing N-oxide then concentrated under vacuum to afford the desired product in 80 % yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.94- 7.92 (m, 2H), 7.67- 7.57 (m, 3H), 4.71- 4.63 (m, 1H), 4.44-4.36 (m, 1H), 4.21 (s, 3H), 2.92- 2.85 (m, 1H), 2.41- 2.34 (m, 1H), 2.03 (t, 1H, *J* = 2.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ145.8,131.1, 130.4, 120.0, 77.1, 72.0, 69.2, 60.2, 13.9; IR (neat):2923, 2859, 2253, 1713, 1605, 1555, 1497, 1452, 1401; MS (ES^+) Calculated for $[C_{11}H_{14}NO]^+$: 176.1; Found: 176.1.

General procedure A: Preparation of tetrahydrobenz[*b*]azepin-4-ones



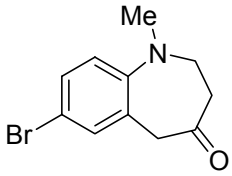
6 **7**

*m*CPBA (0.2 mmol) was added into a solution of a *N*-(but-3-ynyl)aniline (0.2 mmol) and $NaHCO_3$ (0.2 mmol) in CH_2Cl_2 (0.05 M) under N_2 at 0 ℃. The N-oxide formation was monitored by TLC. After completion of the N-oxide formation, Ph3PAuNTf$_2$ (5 mol %) was added into the reaction at -20 ℃. Upon completion, the reaction was diluted with CH_2Cl_2 (25 mL) and washed with 5 % aqueous $Na_2S_2O_3$ (10 mL), 10 % aqueous $NaHCO_3$ (10 mL) and water. The organic layer was washed with brine, dried with $MgSO_4$, and concentrated under *vacuum*. The residue was purified through silica gel flash column (eluents: hexanes: ethyl acetate = 15:1).



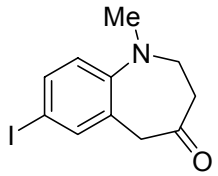
5

Compound **5** was prepared in 79 % yield according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.27 (t, 1H, *J* = 6 Hz), 7.08 (d, 1H, *J* = 7.5 Hz), 7.01 (d, 1H, *J* = 8 Hz), 7.00 (t, 1H, *J* = 6.5 Hz), 3.68(s, 2H), 3.26 (t, 2H, *J* = 6.5 Hz), 2.87 (s, 3H), 2.55 (t, 2H, *J* = 6.5 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 208.8, 149.3, 129.6, 129.4, 128.3, 122.2, 118.2, 53.9, 48.7, 41.6, 41.5; IR (neat): 2940, 2806, 2360, 1716, 1651, 1554, 1495, 1465, 1323, 1183, 1052; MS (ES^+) Calculated for $[C_{11}H_{13}ONa]^+$: 198.1; Found: 198.0.



7a

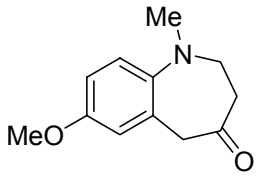
Compound **7a** was prepared in 73 % yield according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 (dd, 1H, *J* = 8.8, 2.4 Hz), 7.21 (d, 1H, *J* = 2.4 Hz), 6.86 (d, 1H, *J* = 8.4 Hz), 3.64 (s, 2H), 3.26 (t, 2H, *J* = 6.8 Hz), 2.85 (s, 3H), 2.55 (t, 2H, *J* = 6.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 207.5, 148.3, 132.3, 131.3, 131.1, 119.8, 114.5, 53.6, 48.3, 41.6, 41.3; IR (neat): 2951, 2810, 2364, 2334, 1718, 1491, 1324, 1271, 1098; MS (ES^+) Calculated for $[C_{11}H_{12}BrNONa]^+$: 276.0; Found: 275.9.



7b

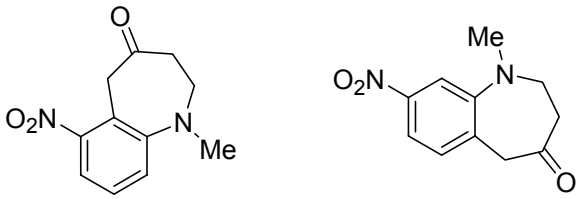
Compound **7b** was prepared in 68 % yield according to the general procedure A. The reaction time is 2 h for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR

(400 MHz, $CDCl_3$) δ 7.36 (d, 1H, *J* = 8.4 Hz), 7.38 (s, 1H), 6.74 (d, 1H, *J* = 8.4 Hz), 3.63 (s, 2H), 3.28 (t, 2H, *J* = 7.2 Hz), 2.85 (s, 3H), 2.56 (t, 2H, *J* = 7.2 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 207.4, 149.0, 138.1, 137.2, 131.3, 120.2, 84.6, 53.5, 48.1, 41.5, 41.4; IR (neat): 2934, 2856, 2364, 2334, 1717, 1491, 1322, 1269, 1093; MS (ES^+) Calculated for $[C_{11}H_{13}INO]^+$: 302.0; Found: 301.7.



7c

Compound **7c** was prepared in 73 % yield according to the general procedure A. The reaction time is 15 min for the formation of N-oxide and 15 min for Au catalysis. ^{1}H NMR (400 MHz, $CDCl_3$) δ 6.98 (d, 1H, *J* = 6 Hz), 6.81 (dd, 1H, *J* = 8.8, 3.2 Hz), 6.69 (d, 1H, *J* = 2.8 Hz), 3.78 (s, 3H), 3.62 (s, 2H), 3.15 (t, 2H, *J* = 6.4 Hz), 2.81 (s, 3H), 2.51 (t, 2H, *J* = 6.4 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 209.2, 155.2, 142.7, 131.9, 119.3, 115.5, 112.7, 55.5, 54.9, 48.6, 41.9, 41.4; IR (neat): 2940, 2799, 1716, 1608, 1501, 1252, 1124, 1042; MS (ES^+) Calculated for $[C_{12}H_{15}NO_2Na]^+$: 228.1; Found: 227.9.

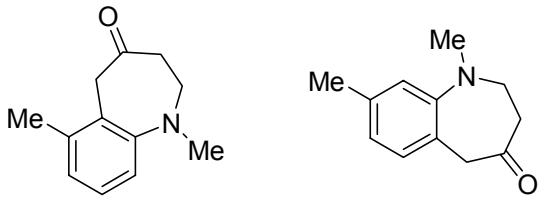


ortho- ***para-***

7d

Compound **7d** was prepared in 58 % yield (*ortho: para*= 1.35 :1) according to the general procedure A. The reaction time is 2 h for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.79 (d, 1H, *para*, *J* = 2 Hz,), 7.77 (dd, 1H, *para, J* = 8, 2 Hz), 7.44 (d, 1H, *ortho*, *J* = 8 Hz), 7.37 (t, 1H, *ortho, J* = 8 Hz), 7.23 (d, 1H, *para, J* = 7.5 Hz), 7.20 (d, 1H, *ortho, J* = 8 Hz), 3.83 (s, 3H, *ortho*), 3.81 (s, 3H, *para*), 3.41 (t, 2H, *para*, *J* = 6 Hz), 3.35 (t, 2H, *ortho, J* = 6.8 Hz), 2.99 (s, 3H, *para*), 2.93 (s, 3H, *ortho*),

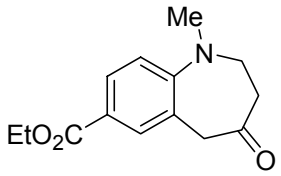
2.61 (t, 2H, *para, J* = 6.4), 2.59 (t, 2H, *ortho, J* = 6.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 205.7, 204.7, 151.0, 150.5, 150.1, 148.4, 135.2, 130.3, 128.4, 123.6, 122.4, 1117.3, 116.4, 112.5, 53.2, 52.9, 48.8, 43.7, 41.7, 41.6, 41.5, 40.8; IR (neat): 2914, 2855, 2360, 1718, 1525, 1345, 1109; MS (ES^+) Calculated for $[C_{12}H_{15}NO_2Na]^+$: 228.1; Found: 227.9.



ortho ***para***

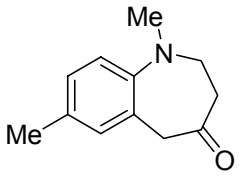
7e

Compound **7e** was prepared in 70 % yield (*ortho: para*= 1:1) according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.17 (t, 1H,*ortho*, *J* = 7.6 Hz), 6.96 (d, 1H, *para, J* = 7.6 Hz), 6.91 (d, 1H, *J* = 8 Hz), 6.88 (d, 1H, *J* = 7.6 Hz), 6.83 (s, 3H, *para*), 6.76 (d, 1H, *para*, *J* = 7.6 Hz), 3.71 (s, 2H), 3.64 (s, 2H, *para*), 3.25 (t, 2H, *para*, *J* = 6.8 Hz), 3.21 (t, 2H, *J* = 6 Hz), 2.86 (s, 3H, *para*), 2.85 (s, 3H), 2.55 (t, 2H, *para*, *J* = 6.8 Hz), 2.50 (t, 2H, *J* = 6 Hz), 2.34 (s, 3H, *para*), 2.29 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 209.2, 208.8, 149.5, 149.1, 138.1,136.2, 129.4, 128.7, 126.3, 124.7, 122.8, 119.0, 116.3, 54.0, 48.3, 44.3, 41.9, 41.6, 41.5, 40.9, 21.4, 20.4; IR (neat): 2925, 2806, 2360, 1718, 1577, 1454, 1324, 1174; MS (ES^+) Calculated for $[C_{12}H_{15}NONa]^+$: 212.1; Found: 211.9.
Compound *Para*- 7e: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.17 (t, 1H, *J* = 7.6 Hz), 6.91 (d, 1H, *J* = 8 Hz), 6.88 (d, 1H, *J* = 7.6 Hz), 3.71 (s, 2H), 3.21 (t, 2H, *J* = 6 Hz), 2.85 (s, 3H), 2.50 (t, 2H, *J* = 6 Hz), 2.29 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 208.8, 149.5, 136.2, 128.7, 127.5, 124.7, 116.3, 54.0, 44.3, 41.9, 40.9, 20.4; IR (neat): 2925, 2806, 2360, 1718, 1577, 1454, 1324, 1174; MS (ES^+) Calculated for $[C_{12}H_{15}NONa]^+$: 212.1; Found: 211.9.



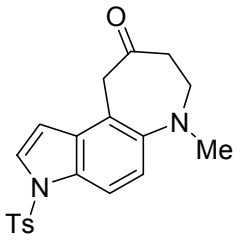
7f

Compound **7f** was prepared in 40 % yield according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.90 (dd, 1H, *J* = 8.4, 2.4 Hz), 7.72 (d, 1H, *J* = 2 Hz), 6.89 (d, 1H, *J* = 8.4 Hz), 4.34 (q, 2H, *J* = 7.2 Hz) 3.80 (s, 2H), 3.50 (t, 2H, *J* = 6 Hz), 2.99 (s, 3H), 2.64 (t, 2H, *J* = 6.4 Hz), 1.37 (t, 3H, *J* = 7.2 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 207.1, 166.4, 152.9, 131.7, 130.2, 125.3, 122.2, 116.4, 60.6, 52.2, 48.9, 41.7, 41.4, 14.4; IR (neat): 2914, 2360, 2338, 1705, 1603, 1508, 1363, 1274, 1183, 1113, 1029; MS (ES^+) Calculated for $[C_{14}H_{17}NO_3Na]^+$: 270.1; Found: 269.9.

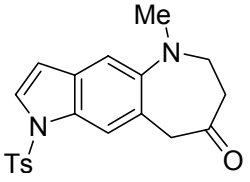


7g

Compound **7g** was prepared in 70 % yield according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.07 (dd, 1H, *J* = 8.4, 1.6 Hz), 6.91- 6.94 (m, 2H), 3.63 (s, 2H), 3.20 (t, 2H, *J* = 6.8 Hz), 2.83 (s, 3H), 2.53 (t, 2H, *J* = 6.8 Hz), 2.28 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 209.2, 146.9, 131.8, 130.3, 129.7, 128.7, 118.1, 54.4, 48.6, 41.7, 41.5, 20.5; IR (neat): 2940, 2364, 2323, 1718, 1504, 1326, 1274, 1178, 1089, 1035; MS (ES^+) Calculated for $[C_{12}H_{15}NONa]^+$: 212.1; Found: 211.9.

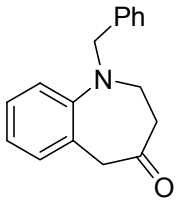


ortho-**7h**



para-**7h'**

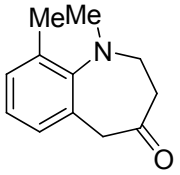
Compound *ortho*-**7h** and *para*-**7h** was prepared in 65 % yield in a 1:1 separable mixture according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. For compound *ortho*-**7h** : ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 (d, 2H, *J* = 8.8 Hz), 7.74 (d, 2H, *J* = 8.8 Hz), 7.54 (d, 2H, *J* = 3.6 Hz), 7.21 (d, 2H, *J* = 8.8 Hz), 7.05 (d, 2H, *J* = 5.2 Hz), 6.58 (d, 2H, *J* = 3.6 Hz), 3.78 (s, 2H), 3.23 (t, 2H, *J* = 6.8 Hz), 2.86 (s, 3H), 2.50 (t, 2H, *J* = 6.8 Hz), 2.34 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 208.6, 144.9, 135.3, 130.8, 130.6, 129.9, 127.0, 126.8, 121.6, 116.1, 112.7, 107.1, 54.7, 44.3, 42.0, 41.6, 21.6; IR (neat): 2926, 2861, 2381, 2345, 2327, 1714, 1597, 1558, 1495, 1451, 1369, 1272, 1172, 1142, 1050, 876, 824; MS (ES^+) Calculated for $[C_{20}H_{20}N_2O_3SNa]^+$: 391.1; Found: 391.4. For compound *para*-**7h**: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.74 (d, 2H, *J* = 8.4 Hz), 7.71 (s, 1H), 7.49 (d, 1H, *J* = 3.6 Hz), 7.22 (d, 2H, *J* = 8.8 Hz), 7.17 (s, 1H), 6.57 (d, 1H, *J* = 3.6 Hz), 3.73 (s, 2H), 3.14 (t, 2H, *J* = 6.8 Hz), 2.84 (s, 3H), 2.47 (t, 2H, *J* = 6.8 Hz), 2.34 (s, 3H); ^{13}C NMR (125 MHz,$CDCl_3$)δ 209.1, 145.8, 144.9, 135.4, 130.8, 129.9, 128.7, 126.8, 126.4, 114.0, 110.8, 108.8, 54.7, 49.1, 42.1, 41.1, 21.6; IR (neat): 2925, 2861, 2382, 2347, 2081, 1713, 1607, 1557, 1495, 1451, 1371, 1260, 1172, 1120, 1092, 105, 875, 824; MS (ES^+) Calculated for $[C_{20}H_{20}N_2O_3SNa]^+$: 391.1; Found: 391.2.



7i

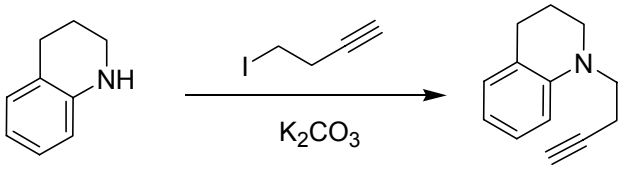
Compound **7i** was prepared in 69 % yield according to the general procedure A. The reaction time is 2h for the formation of N-oxide and 30 min for Au catalysis.^{1}H NMR (500 MHz, $CDCl_3$) δ 7.31- 7.36 (m, 4H), 7.23- 7.27 (m, 2H), 7.12 (d, 1H, *J* = 7.5 Hz), 7.07 (d, 1H, *J* = 8.0 Hz), 6.97 (td, 1H, *J* = 7.5, 1 Hz), 4.34 (s, 2H), 3.29 (s, 2H), 3.23 (t, 2H, *J* = 7 Hz), 2.53 (s, 3H), 2.53 (t, 2H, *J* = 7 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 208.6, 149.1, 138.4, 129.8, 129.4, 128.6, 128.4, 128.0, 127.3, 122.5, 119.4, 58.2, 50.9, 48.9, 41.6;

IR (neat): 2918, 2843, 2360, 2334, 1716, 1495, 1365, 1224; MS (ES^+) Calculated for $[C_{17}H_{17}NONa]^+$: 274.1; Found: 273.9.



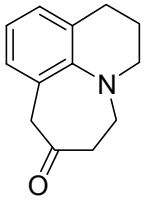
9

Compound **9** was prepared in 20 % yield according to the general procedure A. The reaction time is 1 h for the formation of N-oxide and 30 min for Au catalysis. For compound **8**: ^1H NMR (400 MHz, $CDCl_3$) δ 7.16- 7.23 (m, 2H), 7.05 (s, 1H), 7.03 (s, 1H), 3.22 (t, 4H, *J* = 6 Hz), 2.61 (t, 2H, *J* = 6 Hz), 2.39 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 208.9, 147.0, 135.5, 131.7, 131.1, 130.8, 124.2, 51.0, 49.2, 41.3, 40.9, 19.2.



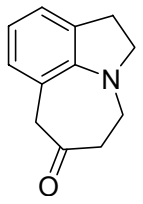
10

4-Iodobut-1-yne (1 mmol) was added to a mixture of 1,2,3,4-Tetrahydro-quinoline (2 mmol) and K_2CO_3 (2 mmol) without solvents. The reaction was heated at 60 ℃ for 4 h and then cooled to room temperature. The reaction mixture was diluted with CH_2Cl_2 (10 mL/ mmol), and the solid was filtered off. The filtrate was concentrated under *vacuum*, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 25:1, then hexanes: ethyl acetate = 15:1) to afford compound in 72 % yield. ^1H NMR (400 MHz, $CDCl_3$) δ 7.03 (t, 1H, *J* = 7.2 Hz), 7.03 (d, 1H, *J* = 7.2 Hz), 6.60– 6.56 (m, 2H), 3.48 (t, 2H, *J* = 7.6 Hz), 3.33 (t, 2H, *J* = 5.6 Hz), 2.74 (t, 2H, *J* = 6.4 Hz), 2.45 (td, 2H, *J* = 8.4 Hz, *J* = 2.4 Hz), 1.99 (t, 1H, *J* = 2.4 Hz), 1.97–1.92 (m, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 144.3, 129.3, 127.2, 122.5, 116.0, 110.3, 82.4, 69.5, 50.4, 49.6, 28.0, 22.1, 15.9; IR (neat): 3288, 2926, 1600, 1450, 1344; MS (ES^+) Calculated for $[C_{13}H_{16}N]^+$: 186.1; Found: 186.0.

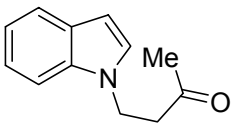


11

Compound **11** was prepared in 57 % yield according to the general procedure A, (2-biphenyl)^{t}Bu$_2$PAuNTf$_2$ was used. The reaction temperature for Au-catalysis was room temperature and the reaction time was 40 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 6.97 (d, 1H, J = 7.2 Hz), 6.87 (d, 1H, J = 6.4 Hz), 6.80-6.76 (m, 1H), 3.73 (s, 2H), 3.43 (t, 2H, J = 6.4 Hz), 3.20 (t, 2H, J = 5.6 Hz), 2.77 (t, 2H, J = 6.4 Hz), 2.63 (t, 2H, J = 6.4 Hz), 1.90–1.84(m, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 208.6, 144.8, 128.6, 128.5, 128.0, 126.3, 120.5, 52.0, 51.7, 49.1, 42.0, 27.8, 19.4; IR (neat): 2936, 2855, 1718, 1595, 1491, 1450, 1317; MS (ES$^+$) Calculated for $[C_{13}H_{15}NNaO]^+$: 224.1; Found: 224.1.



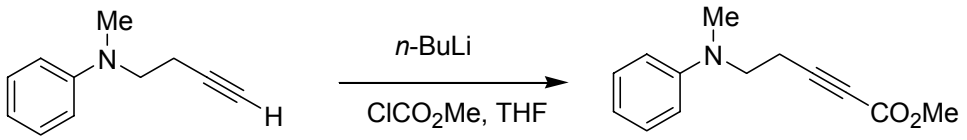
13



14

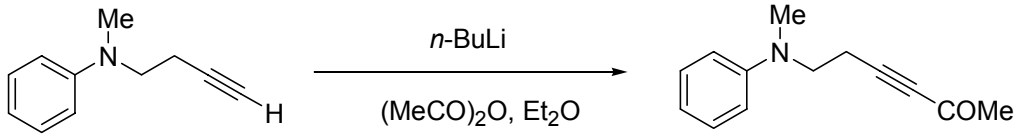
Compound **13** was isolated in 40 % yield along with **14** (26 % yield) according to the general procedure A, (2-biphenyl)^{t}Bu$_2$PAuNTf$_2$ was used. The reaction temperature for Au-catalysis was room temperature and the reaction time was 30 min. From compound **13**: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.00 (d, 1H, J = 7.2 Hz), 6.78 (d, 1H, J = 7.6 Hz), 6.67-6.63 (m, 1H), 3.90 (s, 2H), 3.43-3.39 (m, 4H), 2.93 (t, 2H, J = 8.4 Hz), 2.83 (t, 2H, J = 5.6 Hz);^{13}C NMR (125 MHz, $CDCl_3$) δ 207.1, 150.1, 131.0, 128.8, 123.4, 119.2, 114.2, 56.0, 47.9, 45.8, 44.6, 28.7; IR (neat): 2926, 2855, 1713, 1602, 1558, 1494, 1452; MS (ES$^+$) Calculated for $[C_{12}H_{13}NNaO]^+$: 210.1; Found: 209.9. For compound **14** was isolated in 26 % yield when making the compound **13** according to the general procedure A. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.62 (d, 1H, J = 8 Hz), 7.33 (d, 1H, J = 8.4 Hz), 7.25-7.19 (m, 1H), 7.13-7.08 (m, 2H), 6.47 (d, 1H, J = 2.8 Hz), 4.42 (t, 2H, J = 6.4 Hz), 2.94 (t, 2H, J = 6.4 Hz), 2.10 (s, 3H);^{13}C NMR (125 MHz, $CDCl_3$) δ 206.2, 135.5, 128.7, 128.2,

121.5, 121.1, 119.4, 109.0, 101.4, 43.4, 40.5, 30.4; IR (neat): 2923, 2855, 1711, 1607, 1489, 1453, 1399; MS (ES^+) Calculated for $[C_{12}H_{13}NNaO]^+$: 210.1; Found: 209.9.



4 **15a**

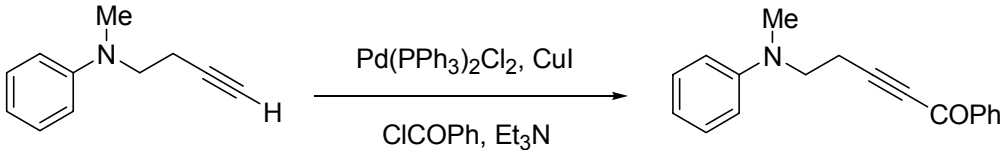
Compound **4** (1 mmol) was dissolved in THF (5 mL), and the resulting solution was cooled to -78 ºC in a dry ice-acetone bath. *n*-BuLi (1.2 mmol) was added drop-wise over 3 minutes. After stirring at -78 ºC for 0.5 h, The resulting mixture was stirred at -78 ºC for another 0.5 h. Methyl chloroformate (1.2 mmol) was added in one portion. The reaction was allowed to warm to room temperature and stirred for 1 h. The reaction mixture was then quenched with sat. aqueous NH_4Cl. The organic layer was separated. The aqueous layer was extracted with diethyl ether (2 x 10 mL). The combined organic layers was washed with brine (25 mL), dried upon $MgSO_4$, filtered and concentrated. The residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 2:1) to yield the desired compound **15a** in 60 % yield. ^1H NMR (400 MHz, $CDCl_3$) δ 7.27– 7.23 (m, 2H), 6.76– 6.70 (m, 3H), 3.77 (s, 3H), 3.63 (t, 2H, J = 7.2 Hz), 2.99 (s, 3H), 2.58 (t, 2H, J = 7.2 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 154.0, 148.0, 129.4, 117.0, 112.3, 87.2, 74.0, 52.6, 50.8, 38.5, 16.6; IR (neat): 3028, 2926, 2236, 1715, 1598, 1502, 1433, 1356, 1258; MS (ES^+) Calculated for $[C_{13}H_{15}NNaO_2]^+$: 240.1; Found: 240.1.



4 **15b**

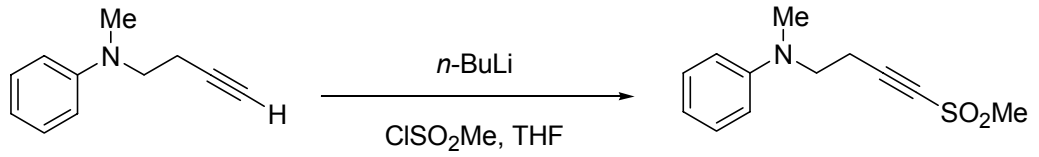
Compound **4**(1 mmol) was dissolved in Et_2O (5 mL), and the resulting solution was cooled down to -78^oC in a dry ice-acetone bath. *n*-BuLi (1.1 mmol) was added drop-wise over 5 minutes. After stirring at -78 ^oC for 0.5 h. The resulting mixture was stirred at -

78°C for another 0.5 h. Acetyl chloride (12 mmol) was added in one portion. The reaction was allowed to warm to room temperature and stirred for 6 hours. The reaction mixture was then quenched with sat. aqueous NH_4Cl. The organic layer was separated. The aqueous layer was extracted with diethyl ether (2 x 10 mL). The combined organic layers was washed with brine (25 mL), dried upon $MgSO_4$, filtered and concentrated. The residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 2:1) to yield the desired compound **15b** in 60 % yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.27– 7.23 (m, 2H), 6.76– 6.71 (m, 3H), 3.63 (t, 2H, *J* = 7.2 Hz), 2.99 (s, 3H), 2.61 (t, 2H, *J* = 7.2 Hz), 2.29 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 184.6, 148.1, 129.4, 117.0, 112.3, 91.2, 82.3, 50.9, 38.4, 32.6, 16.9; IR (neat): 2923, 2859, 2209, 1674, 1602, 1499, 1356, 1229; MS (ES^+) Calculated for $[C_{13}H_{15}NNaO]^+$: 224.1; Found: 224.1.



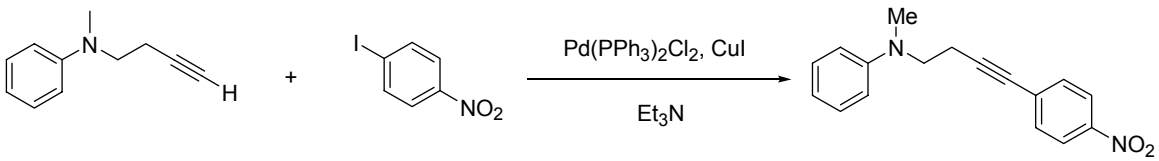
4 **15c**

To a solution of anhydrous Et_3N (2 mL) was successively added copper iodide (0.05 mmol), dichlorobis(triphenylphosphine)palladium (0.05 mmol). Under nitrogen, compound **4** (1.32 mmol) and benzoyl chloride (1.5 mmol) were added in succession. The resulting mixture was stirred at room temperature for 8 h. The reaction was quenched by filtration through a pad of silica gel using ethyl acetate as eluent. The filtrate was concentrated, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 2:1) to yield the desired compound **15c** in 52 % yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.10 (d, 2H, *J* = 6.8 Hz), 7.59 (t, 1H, *J* = 7.2 Hz), 7.45 (t, 2H, *J* = 7.6 Hz), 7.27 (t, 2H, *J* = 8.8 Hz), 6.77– 6.33 (m, 3H), 3.72 (t, 2H, *J* = 6.8 Hz), 3.02 (s, 3H), 2.75 (t, 2H, *J* = 6.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 177.9, 148.1, 136.6, 134.0, 129.5, 129.4, 128.5, 117.0, 112.4, 93.9, 80.7, 50.9, 38.4, 17.3; IR (neat): 3058, 2920, 2196, 1642, 1598, 1502, 1452, 1263; MS (ES^+) Calculated for $[C_{18}H_{17}NNaO]^+$: 286.1; Found: 286.1.



4 **15d**

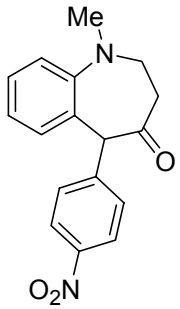
Ccompound **4** (2 mmol) was dissolved in THF (7 mL), and the resulting solution was cooled down to -78°C in a dry ice-acetone bath. *n*-BuLi (3 mmol) was added drop-wise over 3 minutes. After stirring at -78 ℃ for 1 h. Methanesulfonyl chloride (2.4 mmol) was added in dropwise. The reaction was allowed to warm to room temperature and stirred for overnight. The reaction mixture was then quenched with sat. aqueous NH_4Cl. The organic layer was separated. The aqueous layer was extracted with diethyl ether (2 x 10 mL). The combined organic layers was washed with brine (25 mL), dried upon $MgSO_4$, filtered and concentrated. The residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 2:1) to yield the desired compound **15d** in 18 % yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.28- 7.24 (m, 2H), 6.77- 6.71 (m, 3H), 3.67 (t, 2H, *J* = 6.8 Hz), 3.08 (s, 3H), 2.99 (s, 3H), 2.67 (t, 2H, *J* = 6.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 184.6, 148.1, 129.4, 117.0, 112.3, 91.2, 82.3, 50.9, 38.4, 32.6, 16.9; IR (neat): 3018, 2923, 2862, 2202, 1600, 1502, 1450, 1322, 1148; MS (ES^+) Calculated for $[C_{12}H_{15}NNaO_2S]^+$: 260.1; Found: 260.0.



4

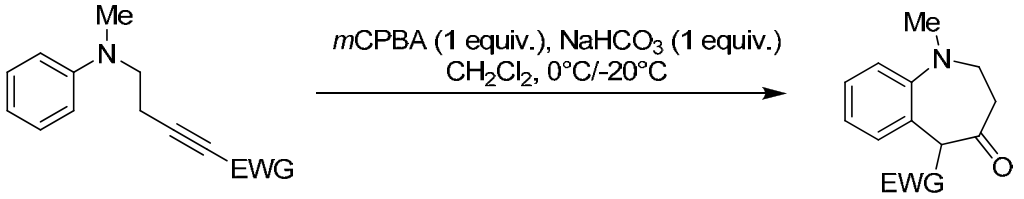
To a solution of anhydrous Et_3N (2 mL) was successively added copper iodide(0.03 mmol), dichlorobis(triphenylphosphine)palladium (0.015 mmol). Under nitrogen, compound **4** (0.3 mmol) and 1-iodo-4-nitro-benzene (0.3 mmol) were added in succession. The resulting mixture was stirred at 80 ℃ for 10 min. The reaction was cooled down to room temperature and quenched by filtration through a pad of silica gel using ethyl acetate as eluent. The filtrate was concentrated, and the residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate = 2:1) to yield the desired compound in 71 % yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.15 (d, 2H, *J* =

7.2 Hz), 7.47 (d, 2H, *J* = 7.2 Hz), 7.28– 7.24 (m, 2H), 6.78– 6.72 (m, 3H), 3.68 (t, 2H, *J* = 7.2 Hz), 3.03 (s, 3H), 2.71 (t, 2H, *J* = 7.2 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 148.4, 146.8, 132.2, 130.7, 129.3, 123.5, 116.8, 112.3, 94.0, 80.6, 51.5, 38.4, 17.7; IR (neat): 2923, 2855, 2219, 1593, 1506, 1342; MS (ES^+) Calculated for $[C_{17}H_{16}N_2O_2H]^+$: 281.1; Found: 281.1.

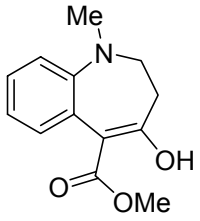


The above compound was prepared in 44 % yield according to the general procedure A. The reaction time is 30 min for the formation of N-oxide and 30 min for Au catalysis. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.13 (d, 2H, *J* = 9.2 Hz), 7.38-7.33 (m, 3H), 7.20 (d, 1H, *J* = 7.6 Hz), 7.08-7.04 (m, 2H), 4.75 (s, 1H), 3.42–3.35 (m, 1H), 3.18-3.13 (m, 1H), 2.96–2.89(m, 1H), 2.84 (s, 3H), 2.56–2.51 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 207.8, 148.2, 146.2, 133.8, 130.4, 130.0, 129.4, 124.0, 123.4, 120.1, 63.5, 56.0, 41.7, 39.9; IR (neat): 2933, 2859, 1716, 1600, 1517, 1491, 1447, 1346; MS (ES^+) Calculated for $[C_{17}H_{16}N_2NaO_3]^+$: 319.1; Found: 319.0.

General procedure B: Preparation of EWG substituted tetrahydrobenz[*b*]azepin-4-ones

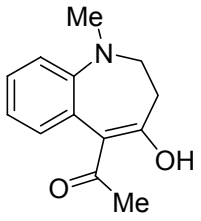


*m*CPBA (0.2 mmol) was added into a solution of a *N*-(but-3-ynyl)aniline (0.2 mmol) and $NaHCO_3$ (0.2 mmol) in CH_2Cl_2 (0.05 M) under N_2 at 0 ℃. The product formation was monitored by TLC. Upon completion, Upon completion, the reaction mixture was diluted with CH_2Cl_2 (25 mL) and washed with 5 % aqueous $Na_2S_2O_3$ (10 mL), 10 % aqueous $NaHCO_3$ (10 mL), water and brine. The organic layer was dried with $MgSO_4$, and concentrated under *vacuum*. The residue was purified through silica gel flash column chromatography (eluents: hexanes: ethyl acetate= 2:1).



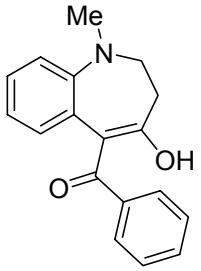
16a

Compound **16a** was prepared in 73% yield according to the general procedure B, reaction time is 30 min. ^{1}H NMR (500 MHz, $CDCl_3$) δ 13.01(s, 1H), 7.29 (d, 1H, J = 7.5 Hz), 7.26-7.22 (m, 1H), 7.06-7.01 (m, 2H), 3.76(s, 3H), 3.48-3.45 (m, 1H), 2.80 (s, 3H), 2.34 (t, 2H, J = 7 Hz); ^{13}C NMR (125 MHz, $CDCl_3$) δ 177.1, 171.8, 147.6, 131.2, 128.9, 127.5, 121.6, 118.8, 100.3, 62.2, 52.0, 41.4, 32.2; IR (neat): 2936, 2859, 1646, 1612, 1491, 1443, 1341, 1224; MS (ES^+) Calculated for $[C_{13}H_{15}NNaO_3]^+$: 256.1; Found: 256.0.



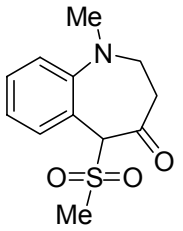
16b

Compound **16b** was prepared in 76% yield according to the general procedure B, the reaction time was 60 min. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.29-7.26(m, 1H), 7.11-7.03(m, 3H), 3.67-3.55(m, 1H), 3.05-2.99 (m, 1H), 2.79(s, 3H), 2.65-2.55 (m, 1H), 2.29-2.23 (m, 1H), 2.10 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 197.6, 184.7, 148.3, 131.0, 130.6, 128.1, 122.3, 118.9, 112.5, 59.1, 41.4, 37.6, 22.3; IR (neat): 2926, 2859, 1602, 1494, 1450, 1405, 1268; MS (ES^+) Calculated for $[C_{13}H_{15}NNaO_2]^+$: 240.1; Found: 240.0.



16c

Compound **16c** was prepared in 82 % yield according to the general procedure B, the reaction time was 1 h. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32-7.27 (m, 1H), 7.22-7.16 (m, 5H), 7.08 (d, 1H, *J* = 8 Hz), 6.71-6.67 (m, 1H), 6.62 (d, 1H, *J* = 7.6Hz), 3.91-3.86 (m, 1H), 3.15-3.11 (m, 1H), 2.89 (s, 3H), 2.78-2.71 (m, 1H), 2.44-2.41 (m, 1H); ^{13}C NMR (125 MHz,$CDCl_3$)δ 198.8, 180.4, 148.2, 135.5, 132.1, 131.4, 130.4, 129.5, 128.1, 127.6, 122.2, 118.5, 111.7, 58.9, 41.3, 37.9; IR (neat): 2930, 2808, 1725, 1600, 1560, 1494, 1455, 1403, 1334; MS (ES^+) Calculated for $[C_{18}H_{17}NNaO_2]^+$: 302.1; Found: 302.0.



16d

Compound **16d** was prepared in 63 % yield according to the general procedure B, the reaction temperature was -20 ℃ and reaction time was 4 h. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.47-7.43(m, 1H), 7.39(d, 1H, *J* = 8 Hz), 7.19-7.15(m, 2H), 4.65(s, 1H), 3.52-3.45(m, 1H), 3.07-3.02 (m, 1H), 2.99(s, 3H), 2.89-2.83 (m, 1H), 2.79(s, 3H), 2.57-2.52 (m, 1H);^{13}C NMR (125 MHz, $CDCl_3$) δ 201.6, 148.8, 133.8, 131.5, 125.4, 124.4, 120.3, 79.1, 55.9, 41.4, 40.8, 40.5; IR (neat): 2930, 2862, 1720, 1600, 1556, 1492, 1453, 1403; MS (ES^+) Calculated for $[C_{12}H_{15}NNaO_3S]^+$: 276.1; Found: 276.0.

cuili-1-165-2-1H

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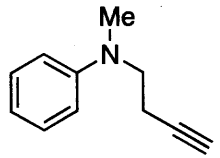
File: 1301.fid

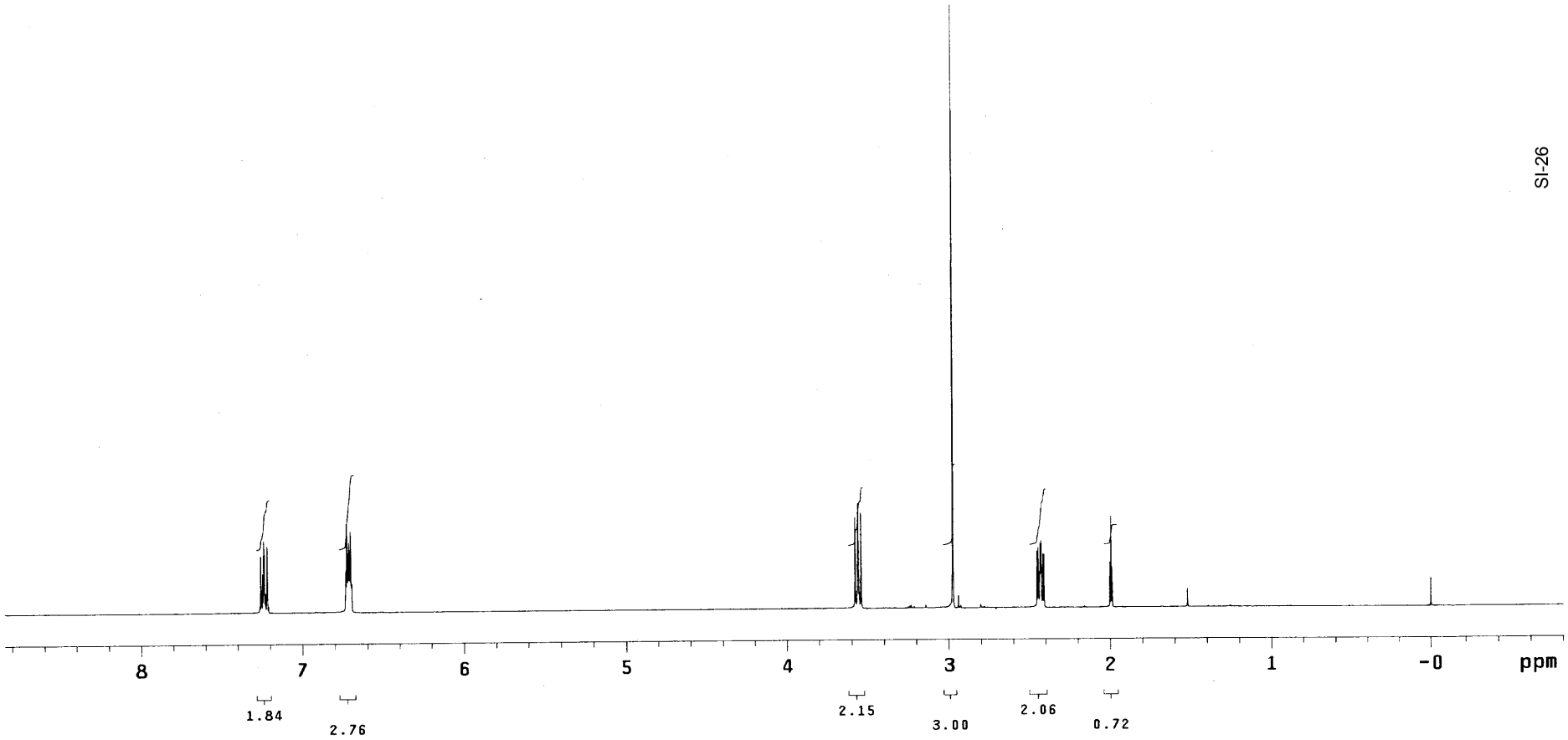
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Sample #13, Operator: licui
File: 1301
VNMRS-400 "nmr400.localdomain"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
8 repetitions
OBSERVE H1, 399.8626887 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 0 min, 31 sec



4



cuili-methylamine

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File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul

Solvent: cdcl3
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Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
19456 repetitions
OBSERVE C13, 125.6732818 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
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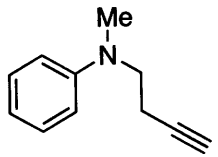
Total time 16 hr, 2 min, 14 sec



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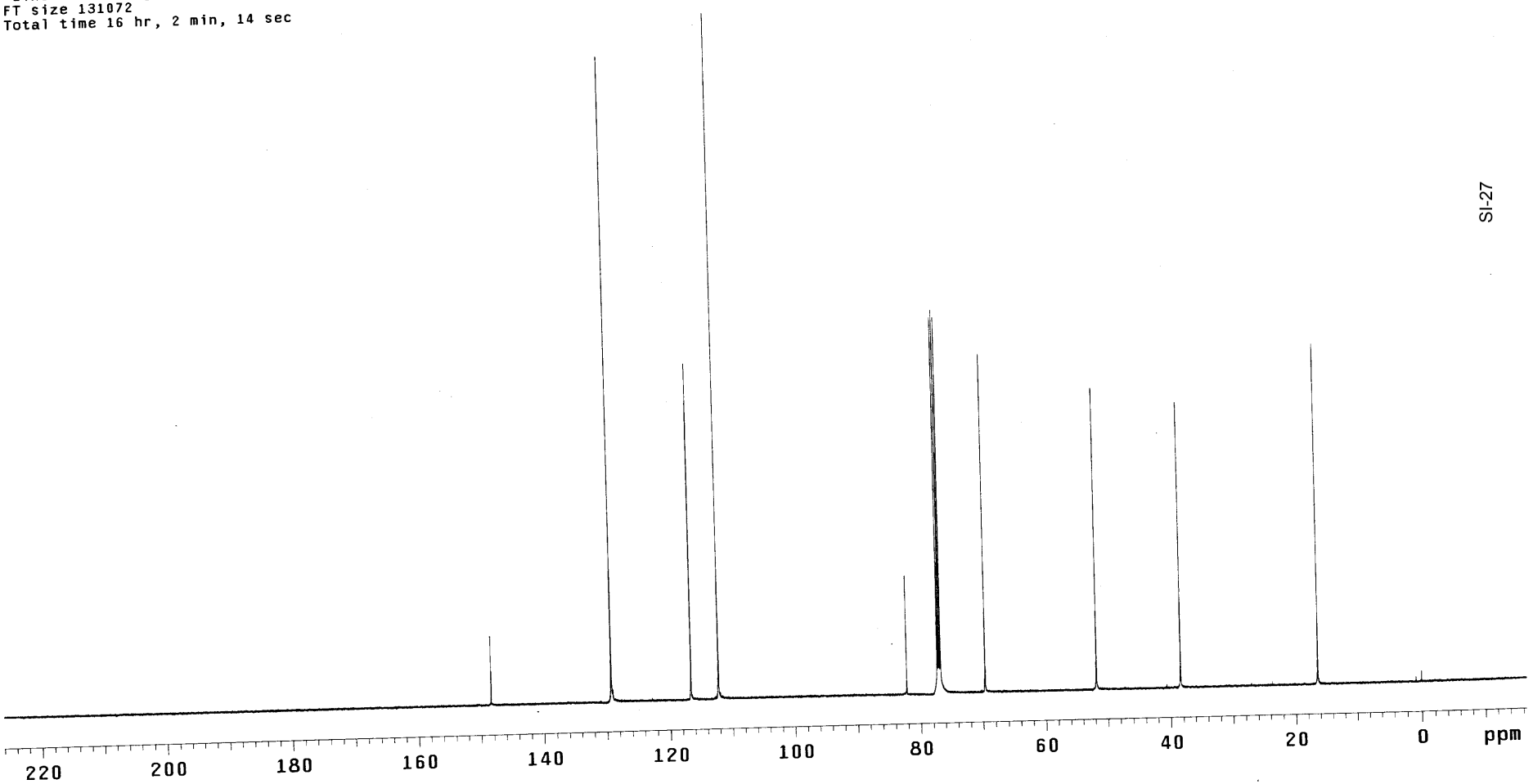

cuili-138-2-1H

File: cuili-138-2-1H

Pulse Sequence: s2pul

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Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-138-2-1H
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
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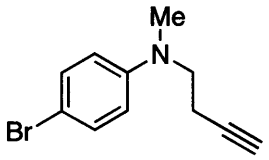
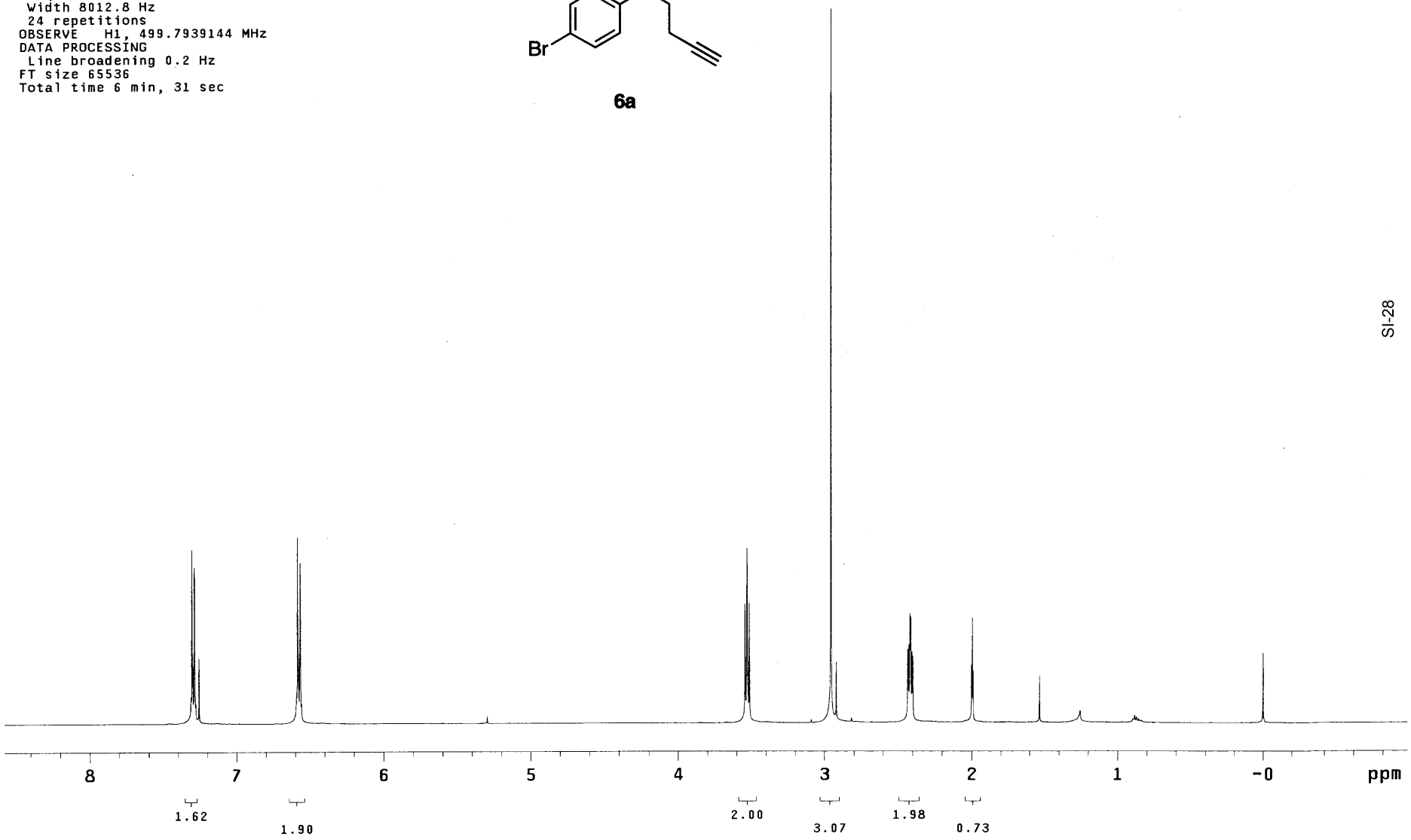
24 repetitions
OBSERVE H1, 499.7939144 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 6 min, 31 sec



6a



cuili-138-2-1H

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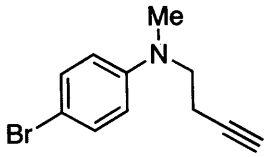
Sample id : tmpstudy

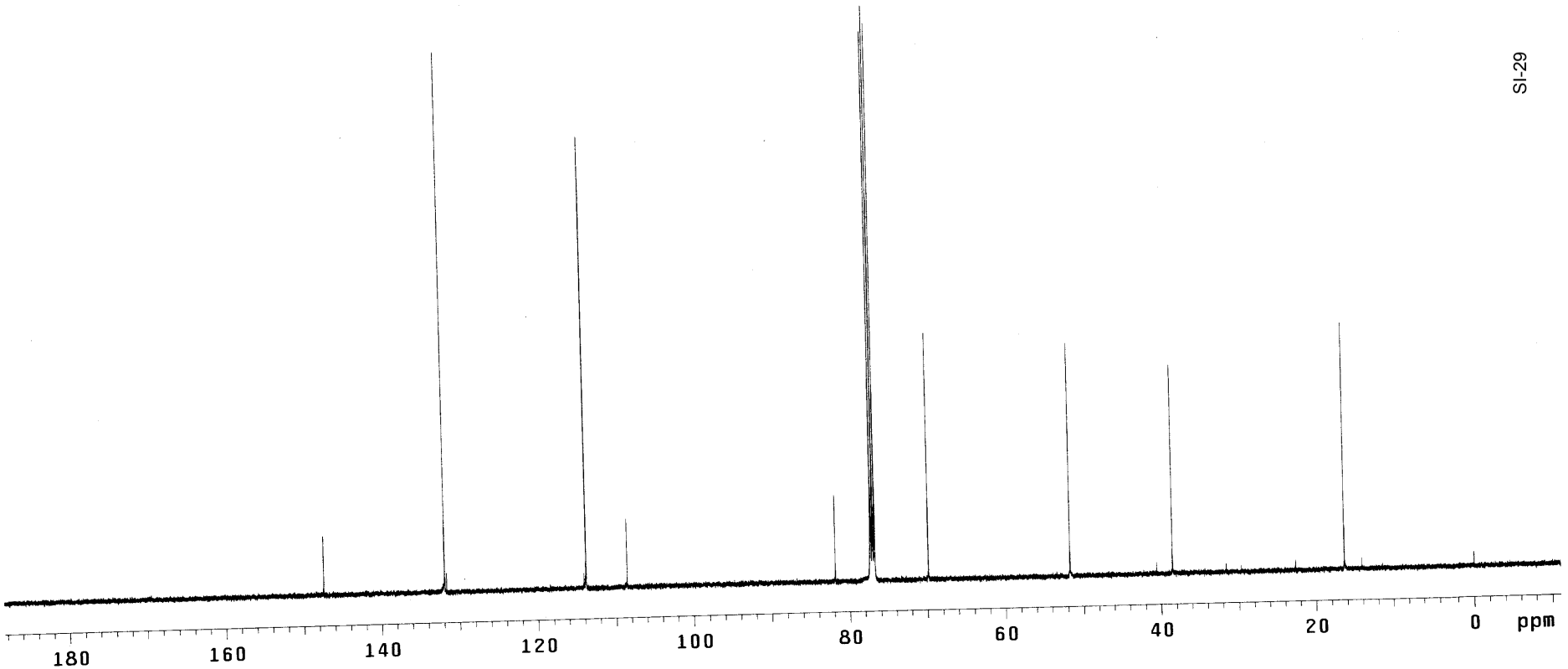
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-138-2-13C
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
6912 repetitions
OBSERVE C13, 125.6732795 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 160 hr, 22 min, 28 sec



6a



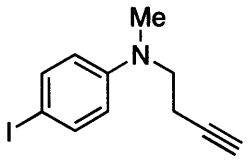
cuili-149-1

Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.27_04
File : /mnt/argenta/mr400/data/Zhang/yupeng1/2008-11-27-H-1.fid
Sample id : tmpstudy

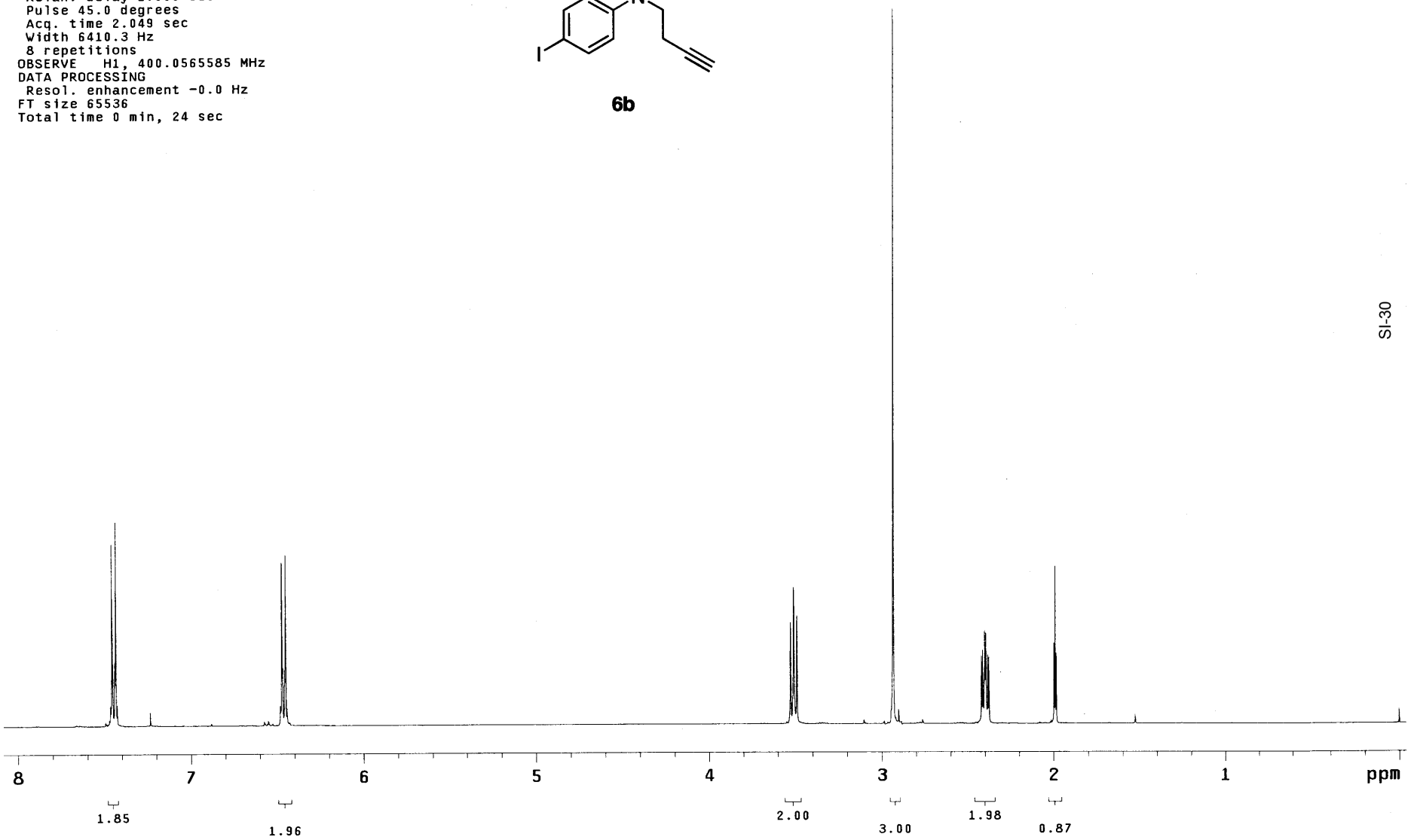
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: 2008-11-27-H-1
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
8 repetitions
OBSERVE H1, 400.0565585 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 0 min, 24 sec



6b

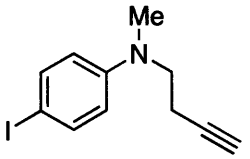


Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.30_03
File : /mnt/argenta/nmr500/data/Zhang/yupeng2/2008-11-30-C13-1.fid
Sample id : tmpstudy

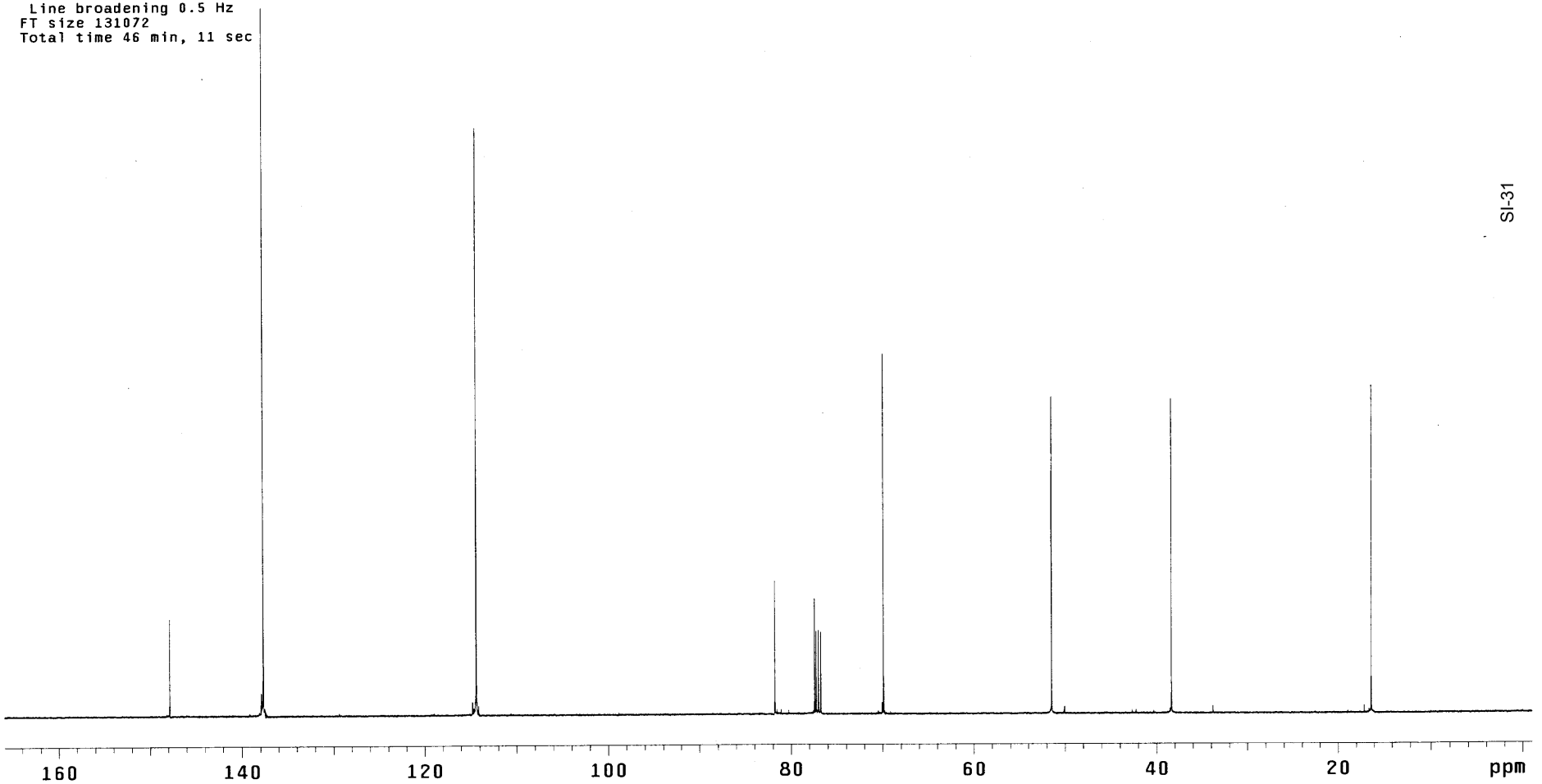
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: 2008-11-30-C13-1
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
552 repetitions
OBSERVE C13, 125.6732930 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 46 min, 11 sec



6b

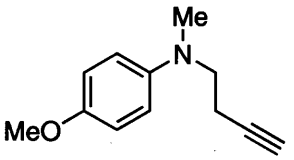


cuili-138-1-1H

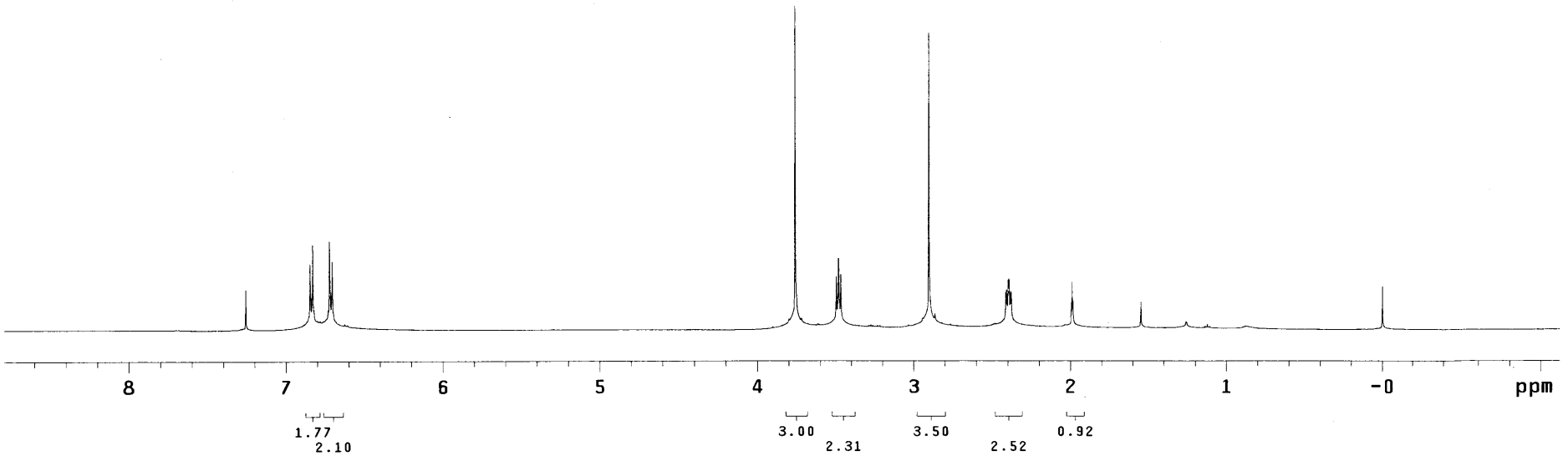
Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09
File : /mnt/argenta/nmr500/data/Zhang/licui/cuili-138-1-1H.fid
Sample id : tmpstudy
Sample : 4-hydroxy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-138-1-1H
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 8012.8 Hz
44 repetitions
OBSERVE H1, 499.7939153 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 6 min, 31 sec



6c



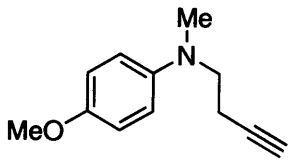
cuili-138-1-13C

File: cuili-138-1-13C

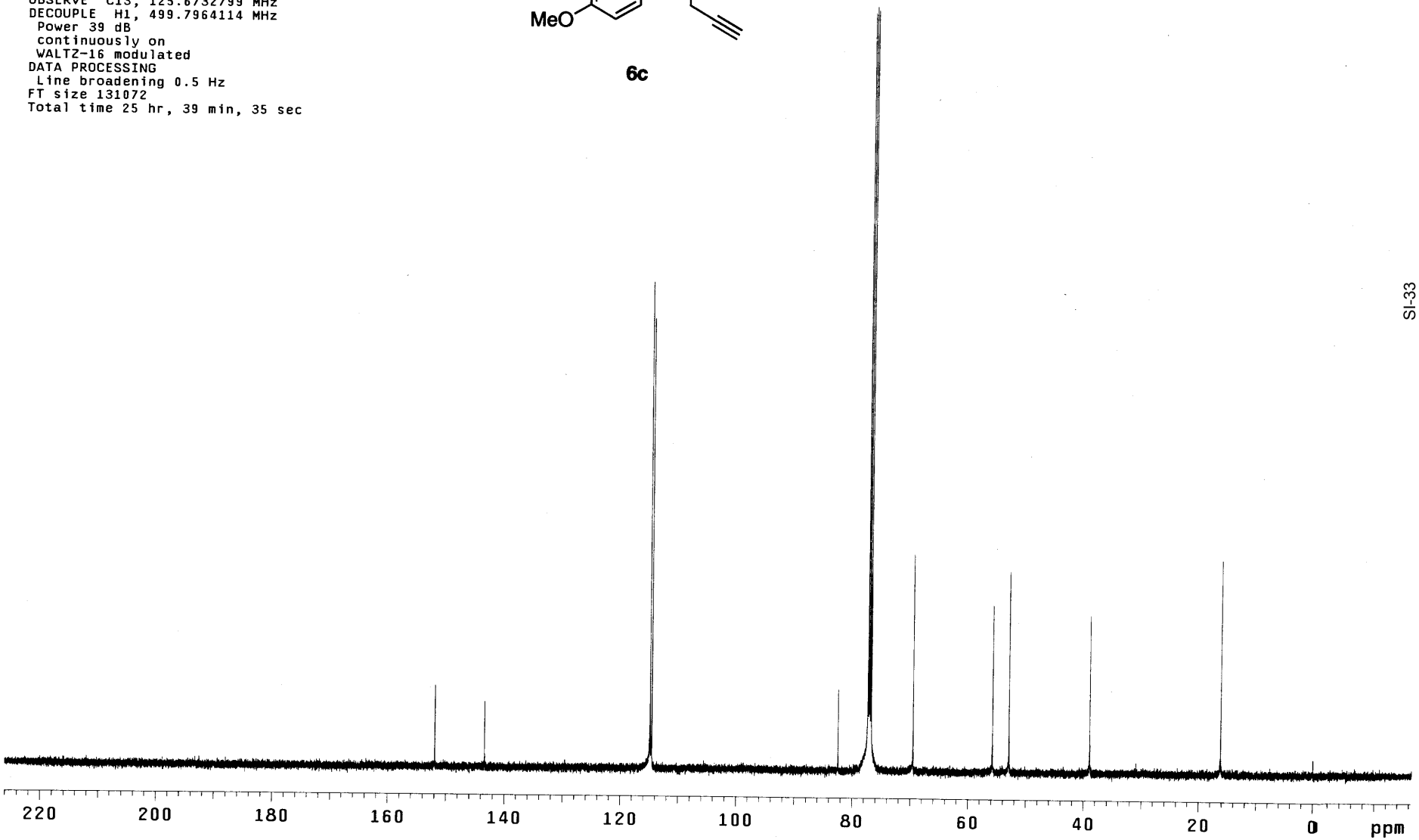
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-138-1-13C
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
11200 repetitions
OBSERVE C13, 125.6732799 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 25 hr, 39 min, 35 sec



6c



cuili-11242008-mNO2-1H

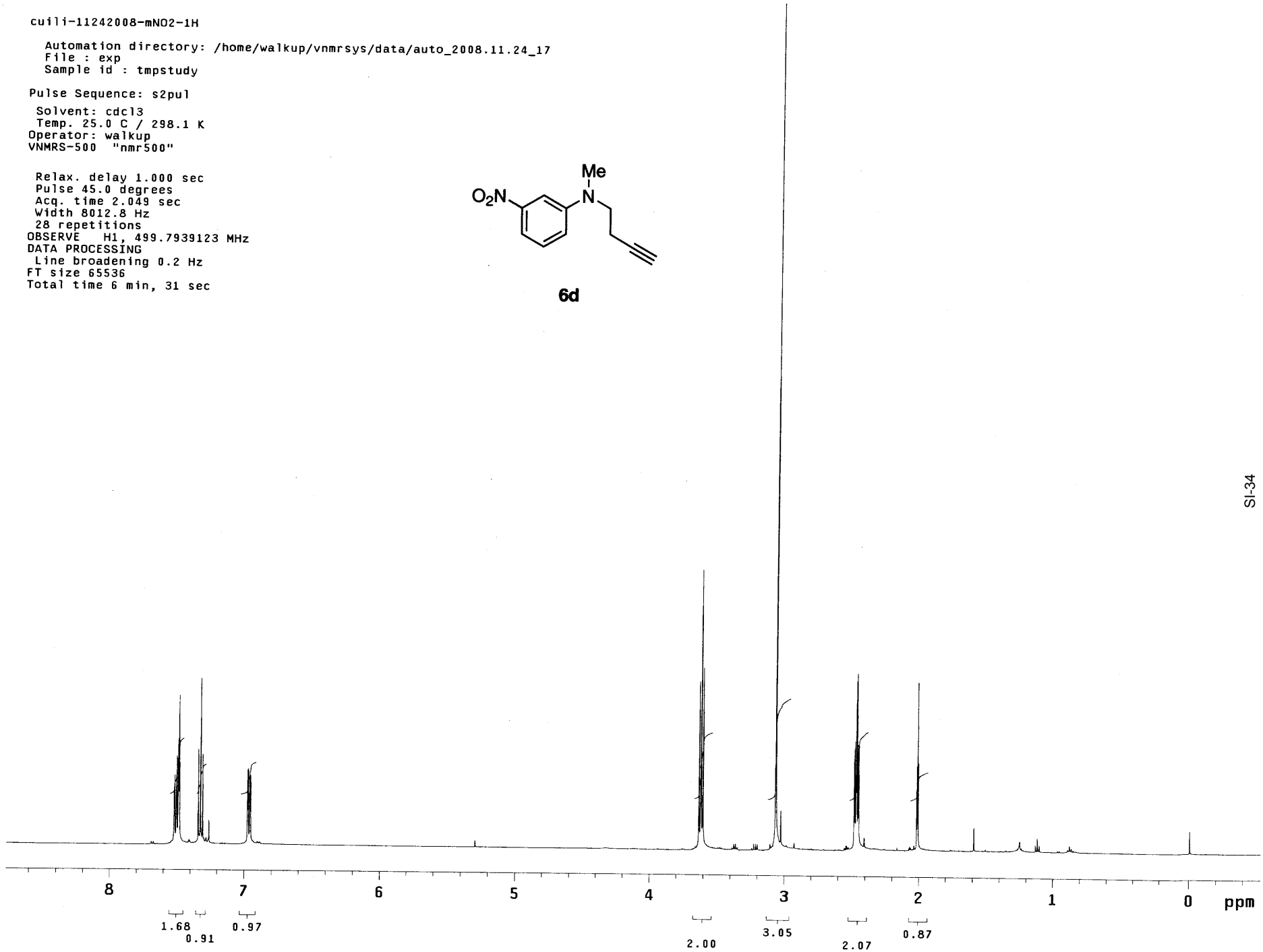
Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.24_17
File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 8012.8 Hz
28 repetitions
OBSERVE H1, 499.7939123 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 6 min, 31 sec

6d

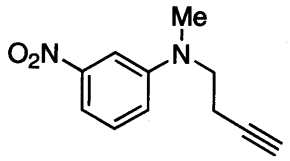


cuili-11242008-mNO2-1H

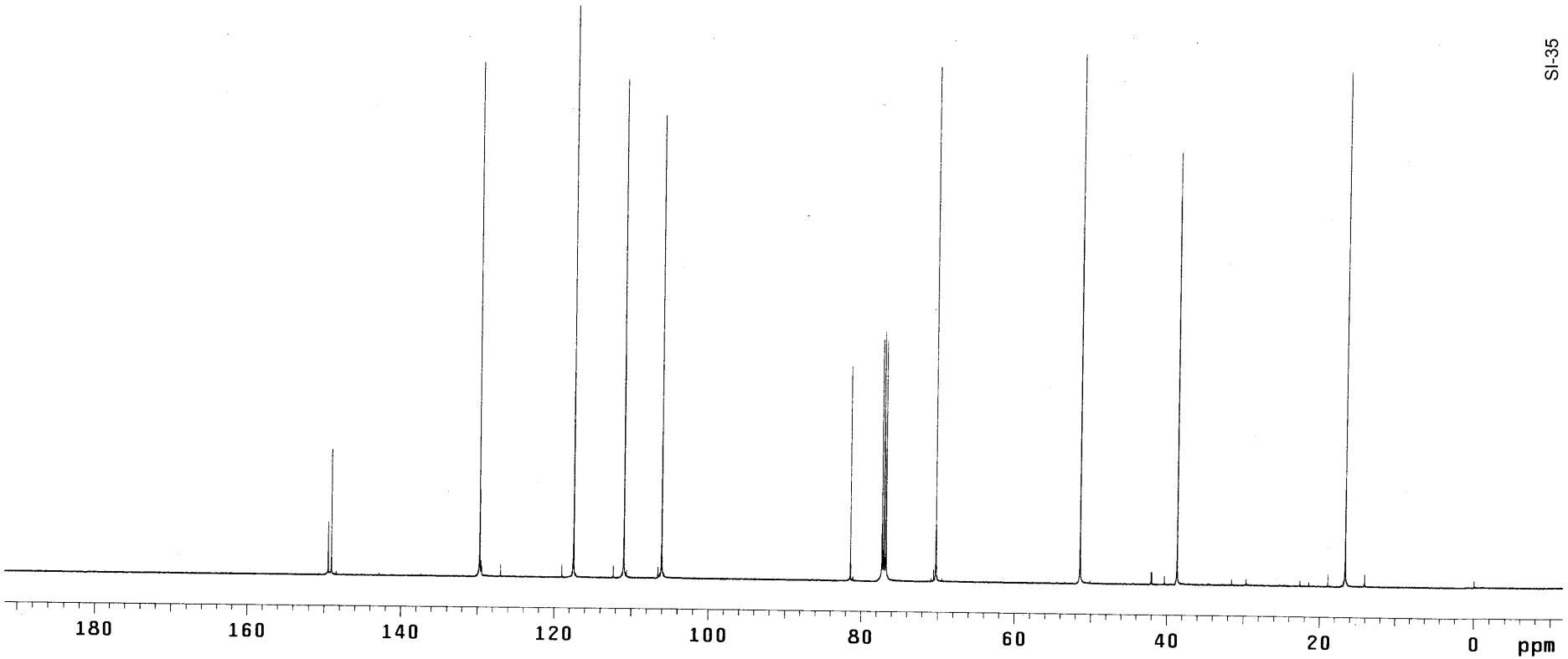
Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.24_17
File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
16640 repetitions
OBSERVE C13, 125.6732841 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 12 hr, 49 min, 47 sec



6d

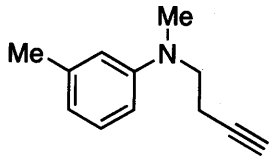


cuili-139-1

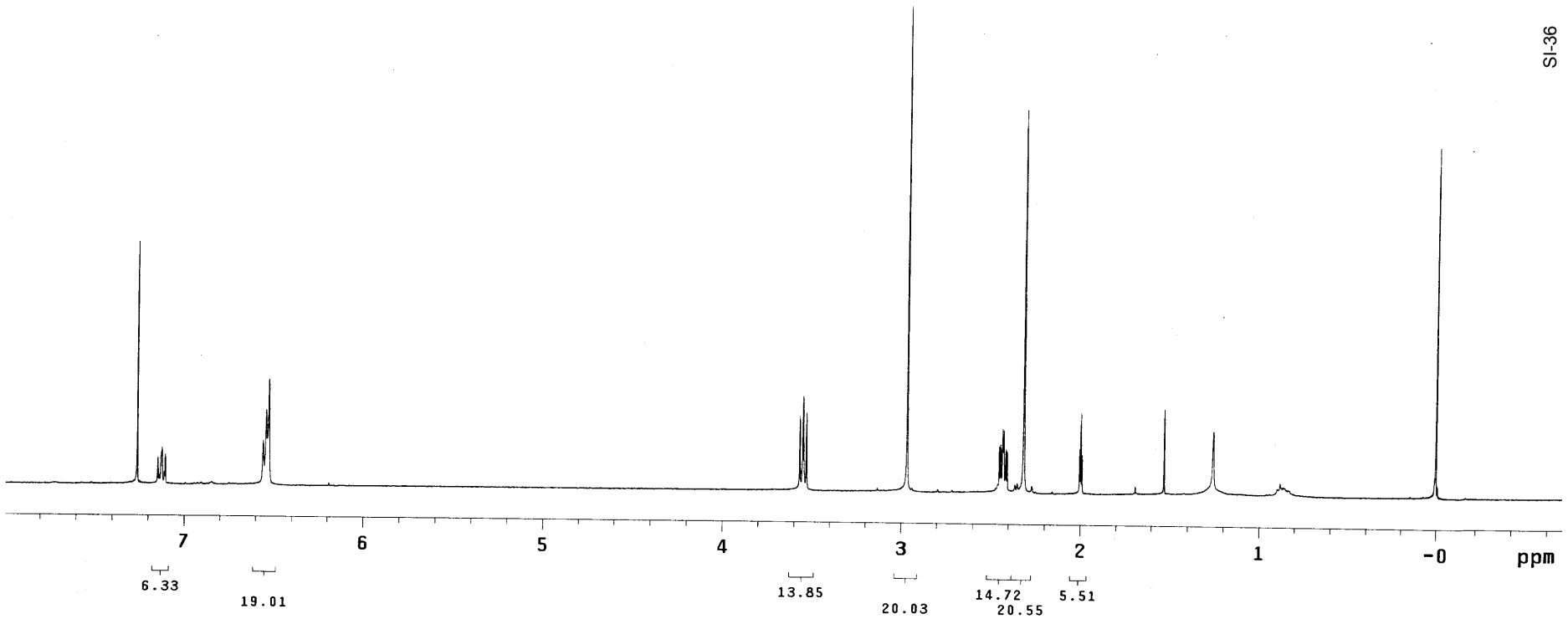
Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09_16
File : /mnt/argenta/mr400/data/Zhang/licui/cuili-139-1-1H.fid
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-139-1-1H
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
40 repetitions
OBSERVE H1, 400.0565508 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 6 min, 31 sec



6e



cuili-139-1-13C

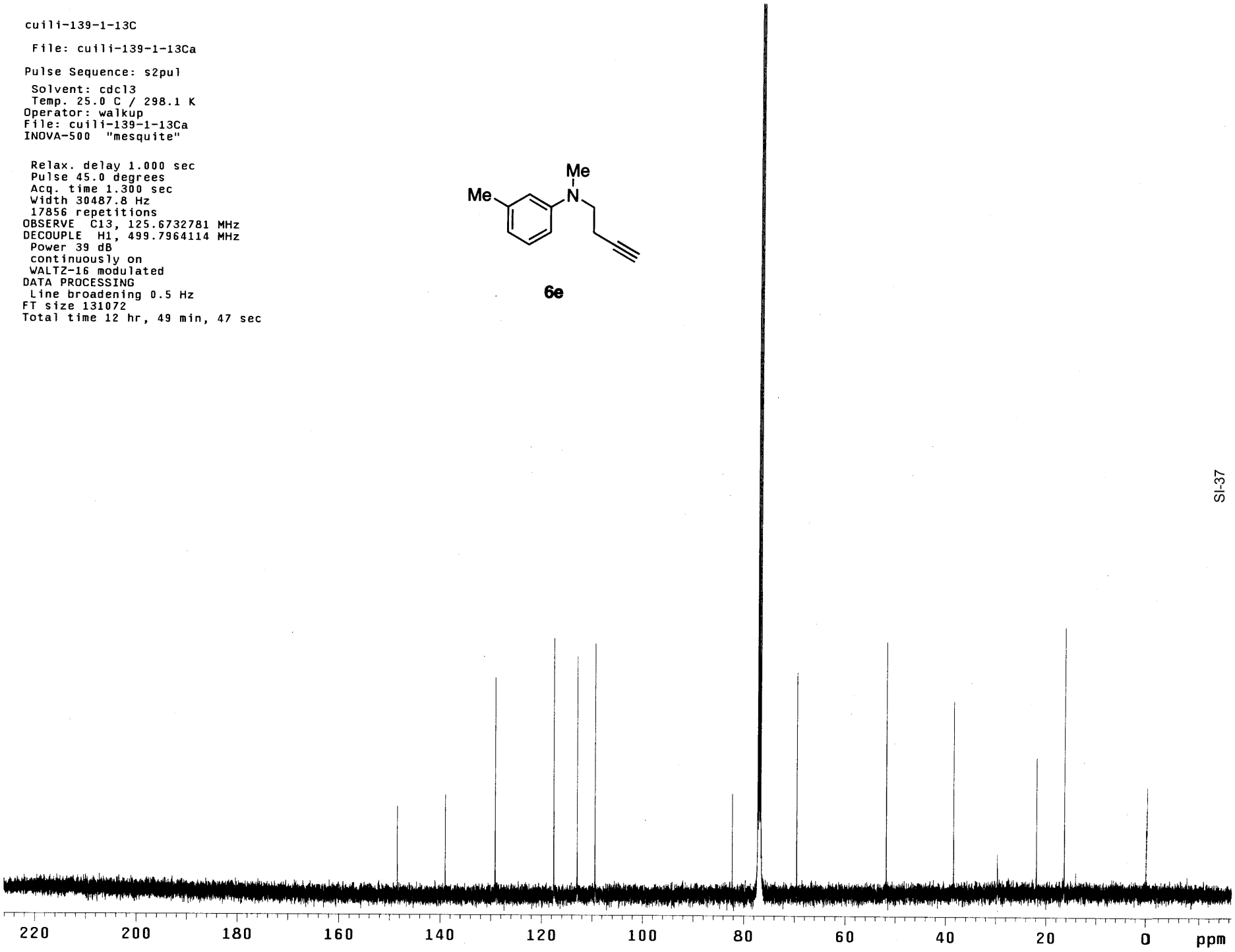
File: cuili-139-1-13Ca

Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-139-1-13Ca
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
17856 repetitions
OBSERVE C13, 125.6732781 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 12 hr, 49 min, 47 sec

6e



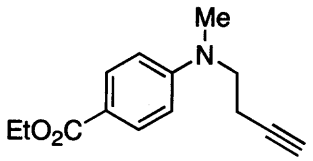
cuili-155-1-1H

Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.30_04
File : exp
Sample id : tmpstudy

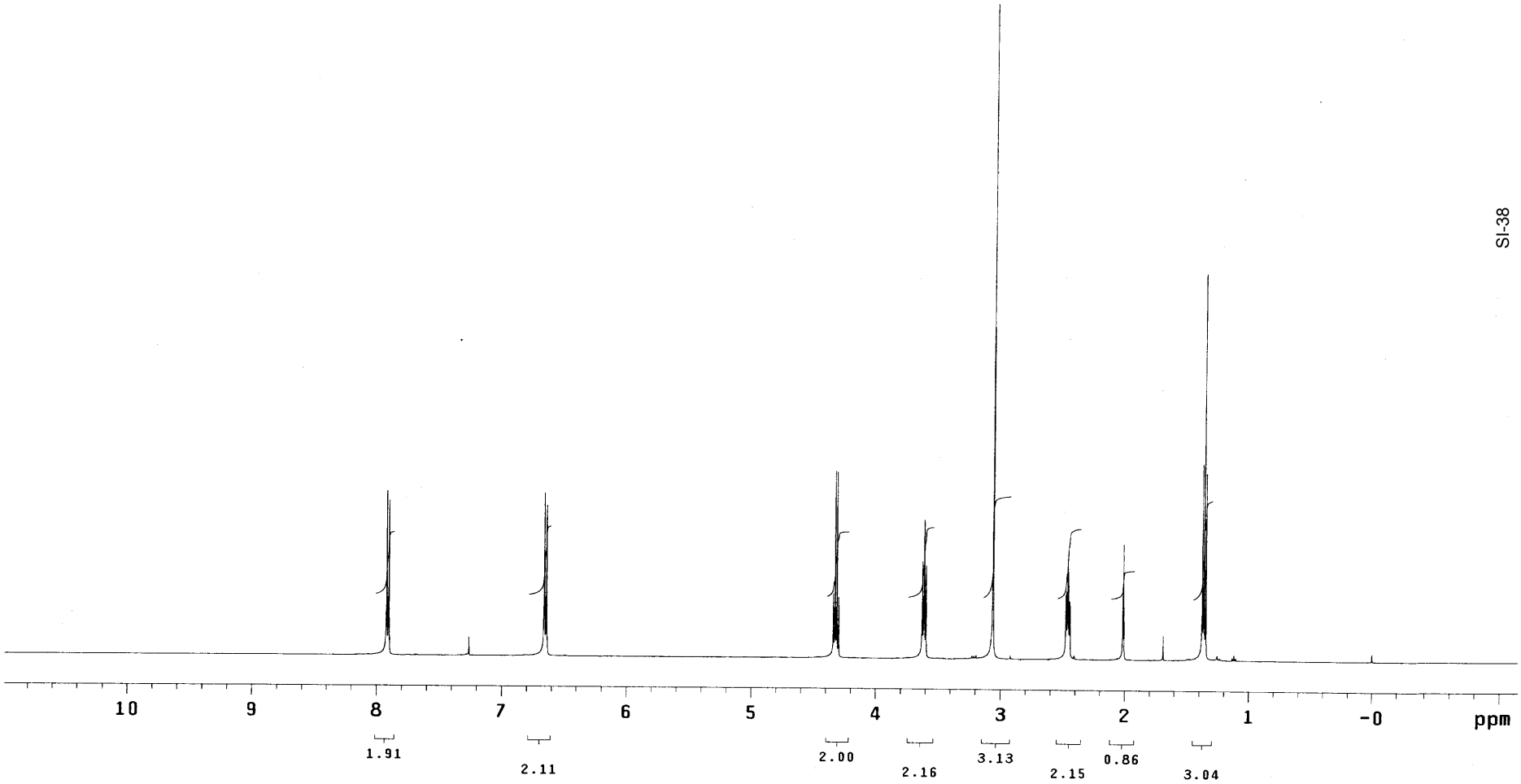
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 8012.8 Hz
28 repetitions
OBSERVE H1, 499.7939127 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 6 min, 31 sec



6f

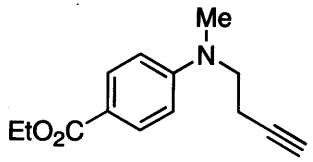


cuili-155-1-13C

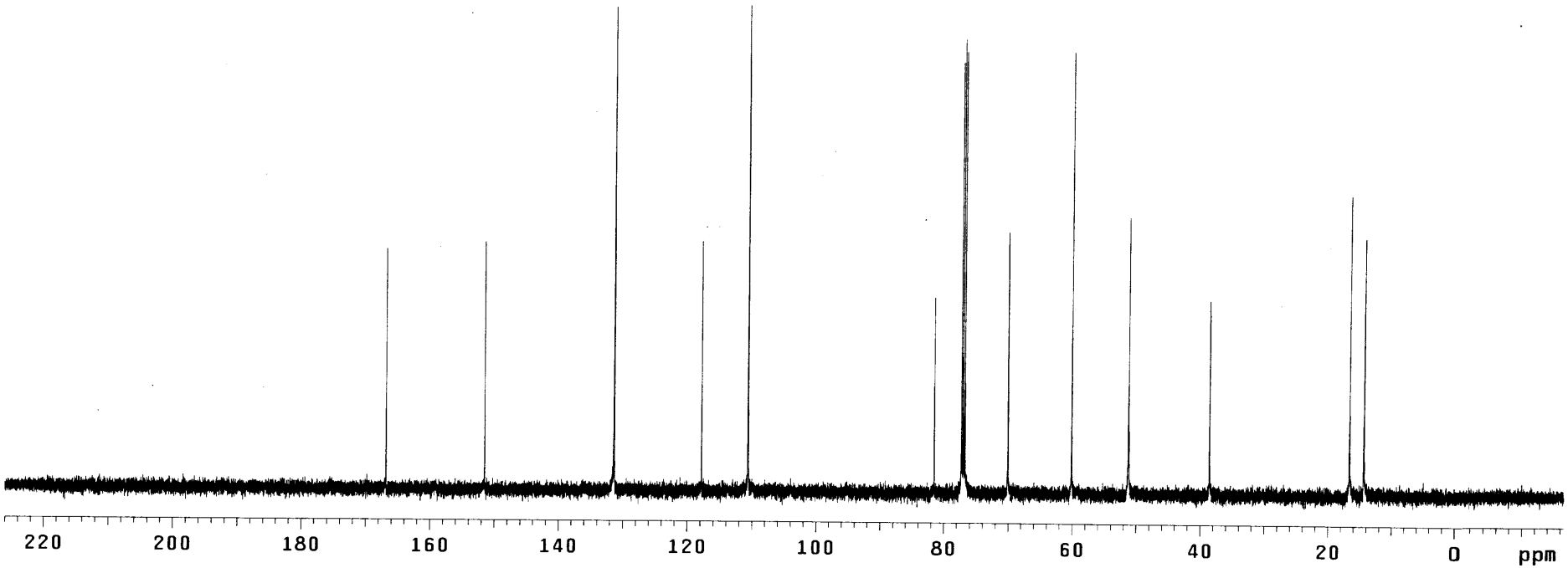
Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.02
File : exp
Sample id : tmpstudy
Sample : PMBr in CDCl3

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
378 repetitions
OBSERVE C13, 125.6732846 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 38 min, 29 sec



6f



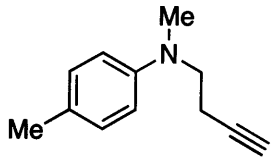
cuili-164-2-1H

Sample: cuili-146-2-1H
Sample ID: s_20081208_05
File: 0501.fid

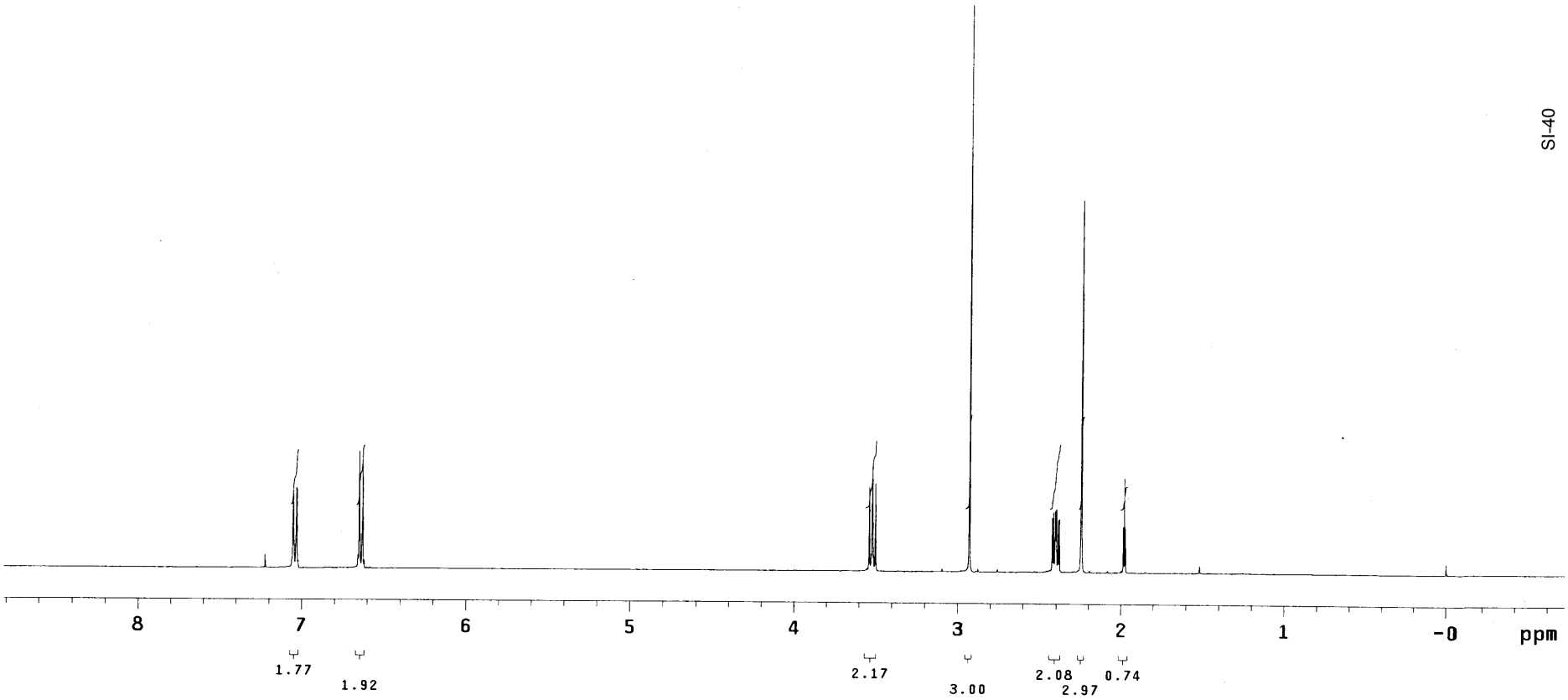
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Sample #5, Operator: licui
File: 0501
VNMRS-400 "nmr400.localdomain"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
8 repetitions
OBSERVE H1, 399.8626975 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 0 min, 31 sec



6g



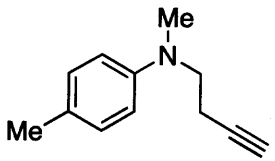
cuili-1-164-1-13C

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.08_01
File : exp
Sample id : tmpstudy

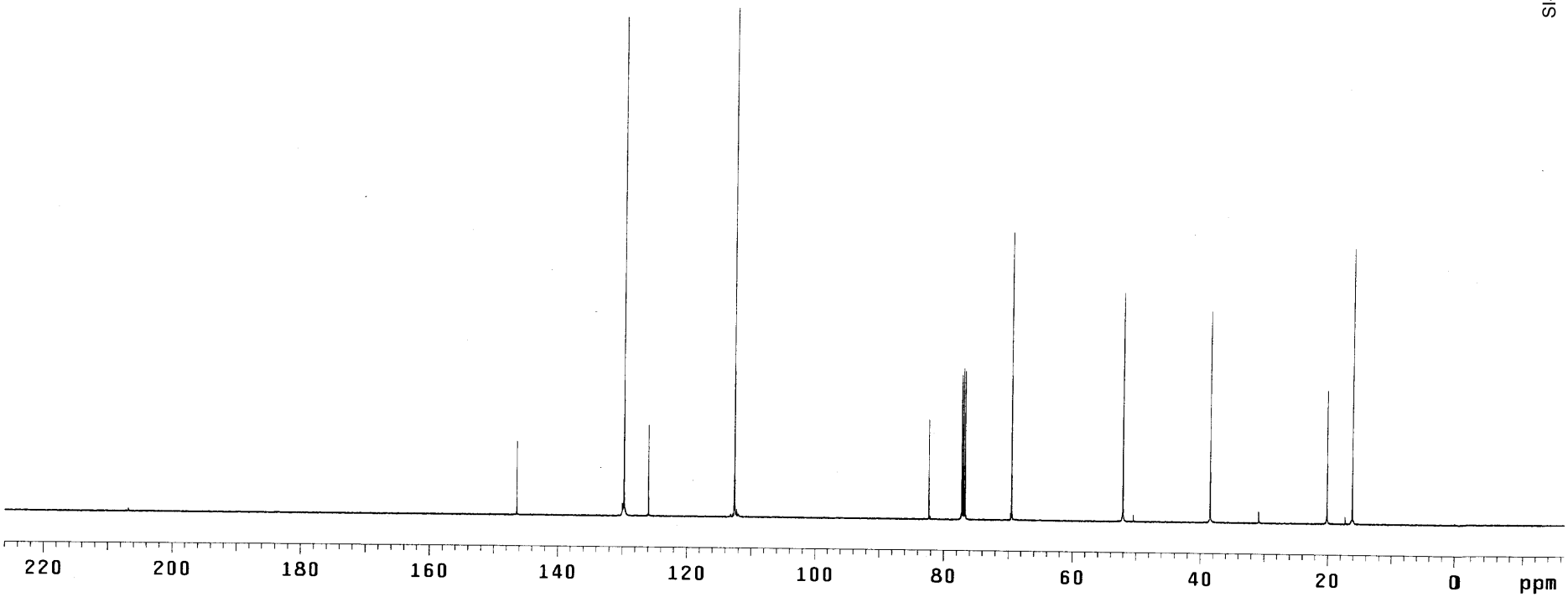
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
5824 repetitions
OBSERVE C13, 125.6732855 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 12 hr, 49 min, 47 sec



6g



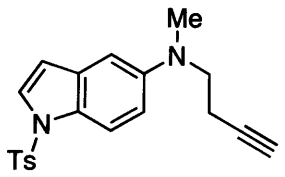
pengyu-2008-12-05-H-3

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.05_07
File : exp
Sample id : tmpstudy

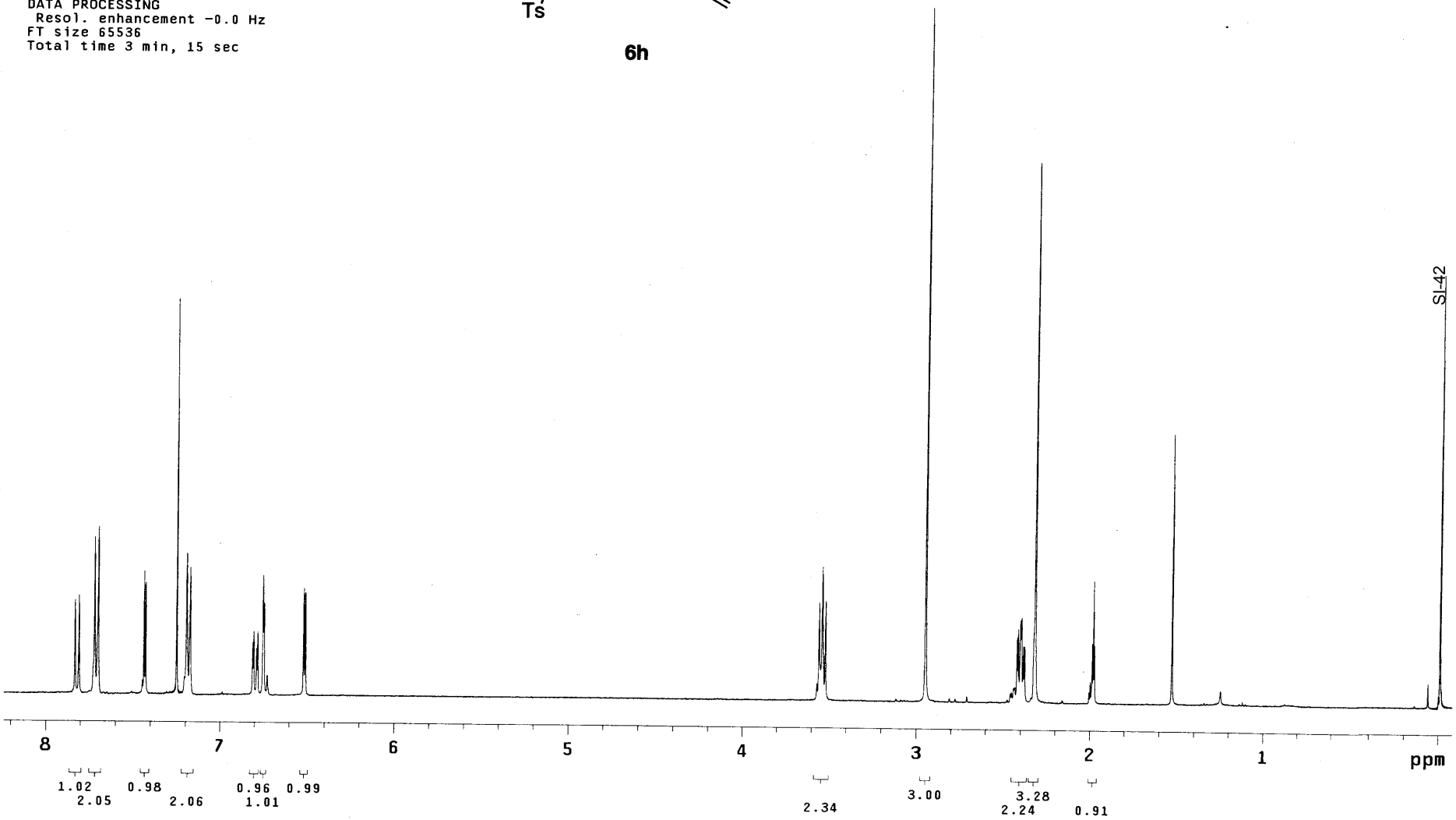
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
64 repetitions
OBSERVE H1, 400.0565537 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 3 min, 15 sec



6h



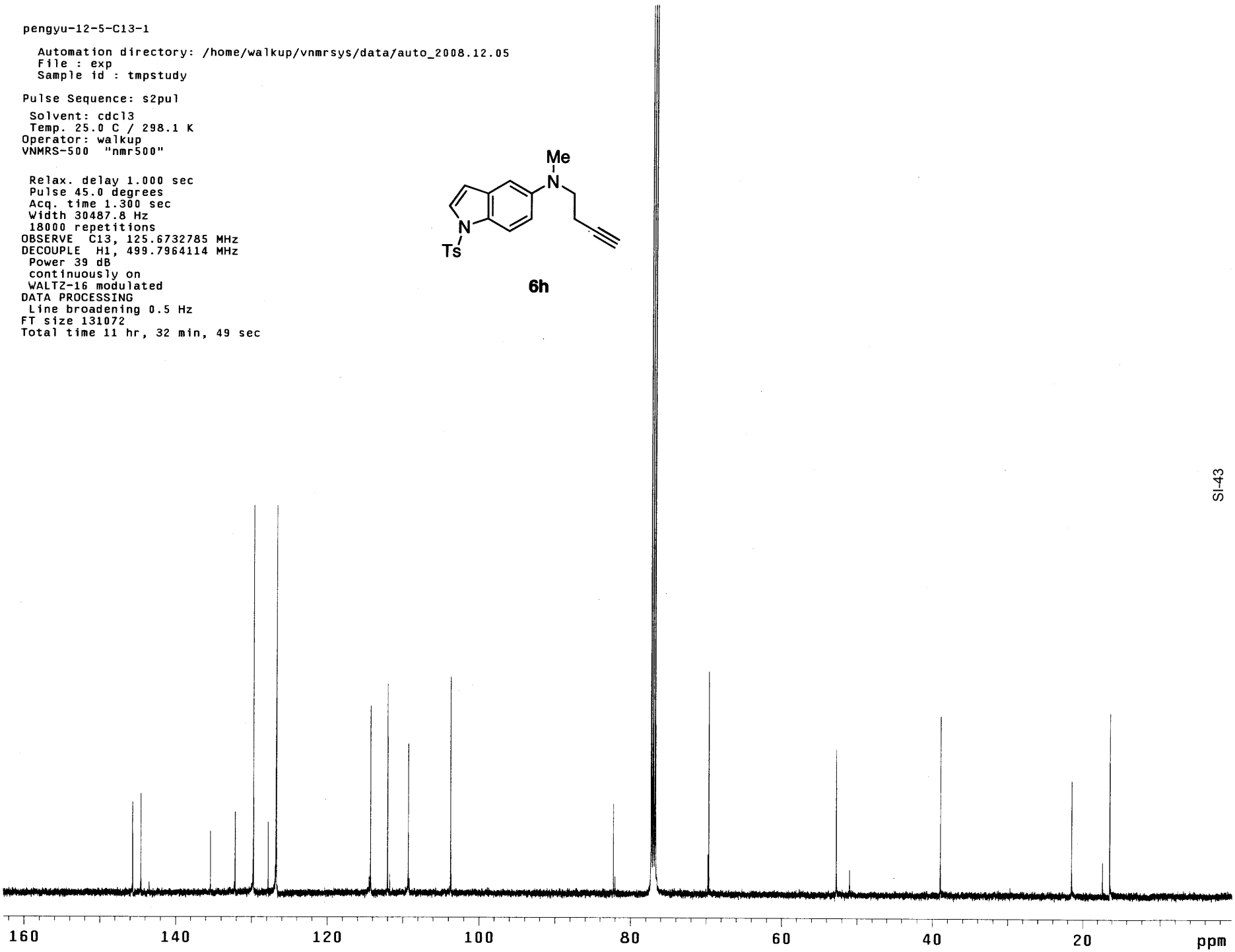
pengyu-12-5-C13-1

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.05
File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
18000 repetitions
OBSERVE C13, 125.6732785 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 11 hr, 32 min, 49 sec

6h



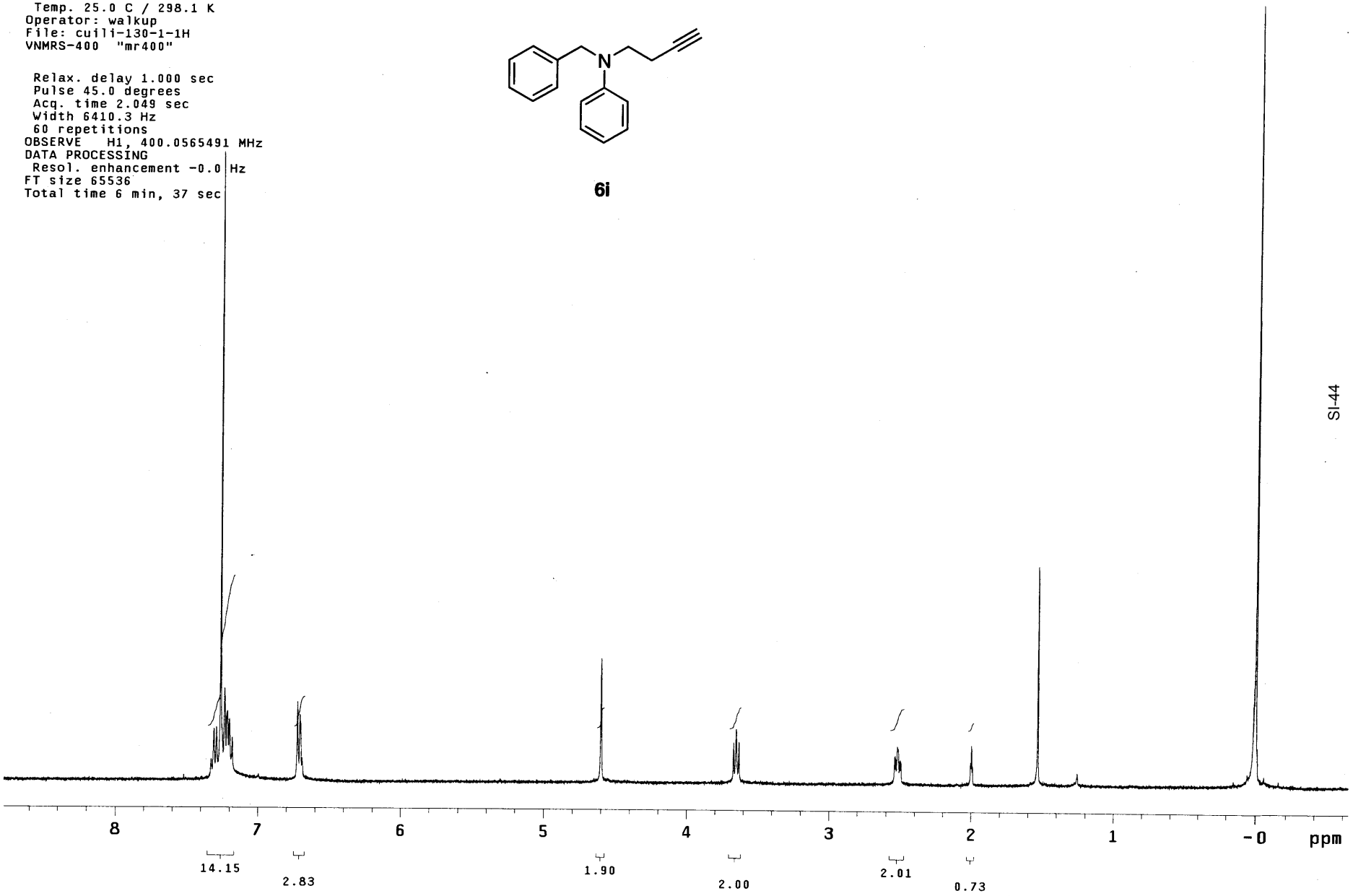
cuili-130-1-1H

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09_16
File : /mnt/argenta/mr400/data/Zhang/licui/cuili-130-1-1H.fid
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-130-1-1H
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
60 repetitions
OBSERVE H1, 400.0565491 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 6 min, 37 sec

6i

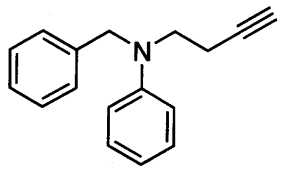


Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09
File : /mnt/argenta/nmr500/data/Zhang/licui/cuili-130-1-13C.fid
Sample id : tmpstudy

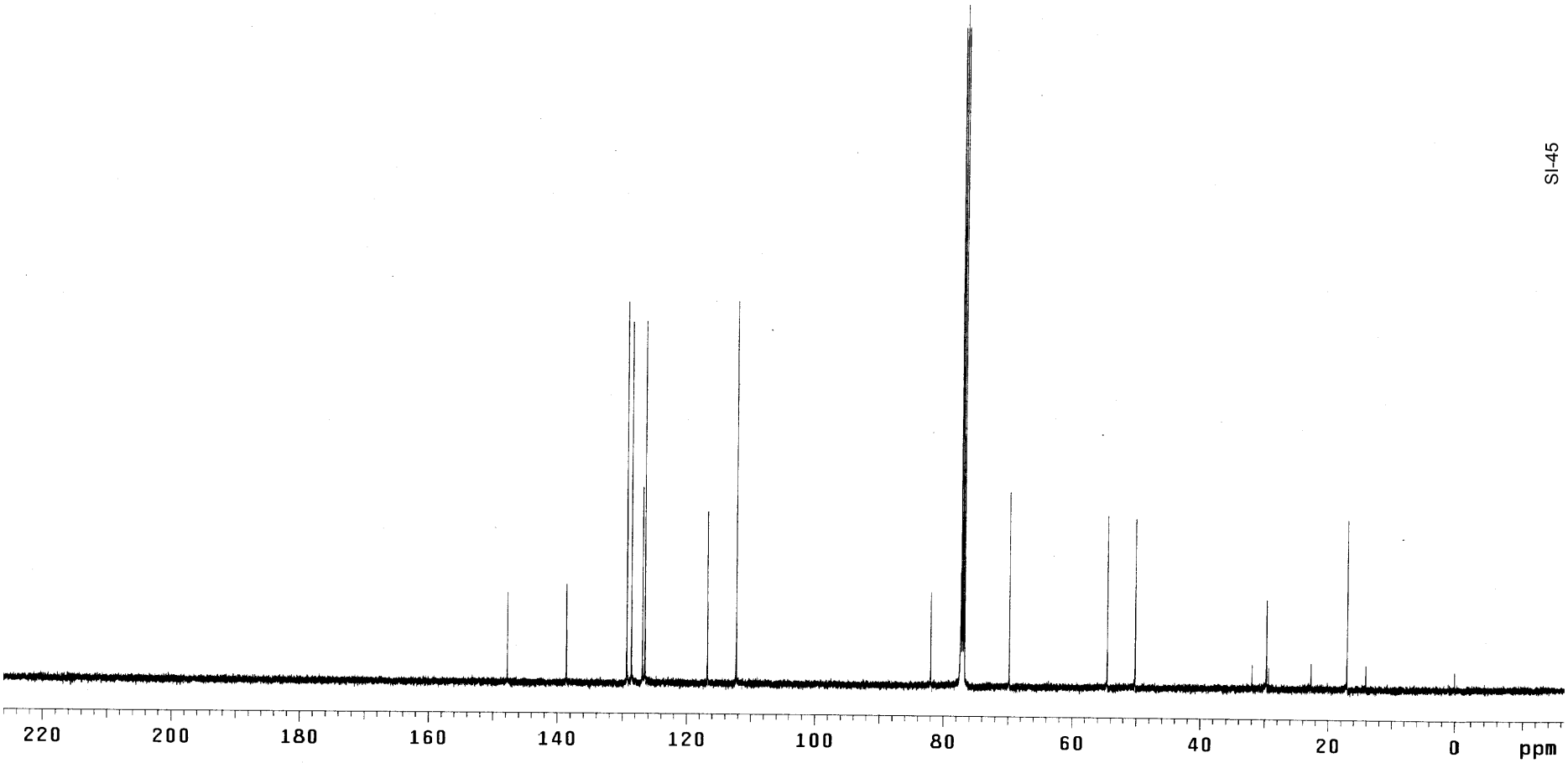
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-130-1-13C
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
4032 repetitions
OBSERVE C13, 125.6732804 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 6 hr, 24 min, 53 sec



6i



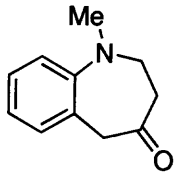
cuili-128-1-1H

File: cuili-128-1-1H

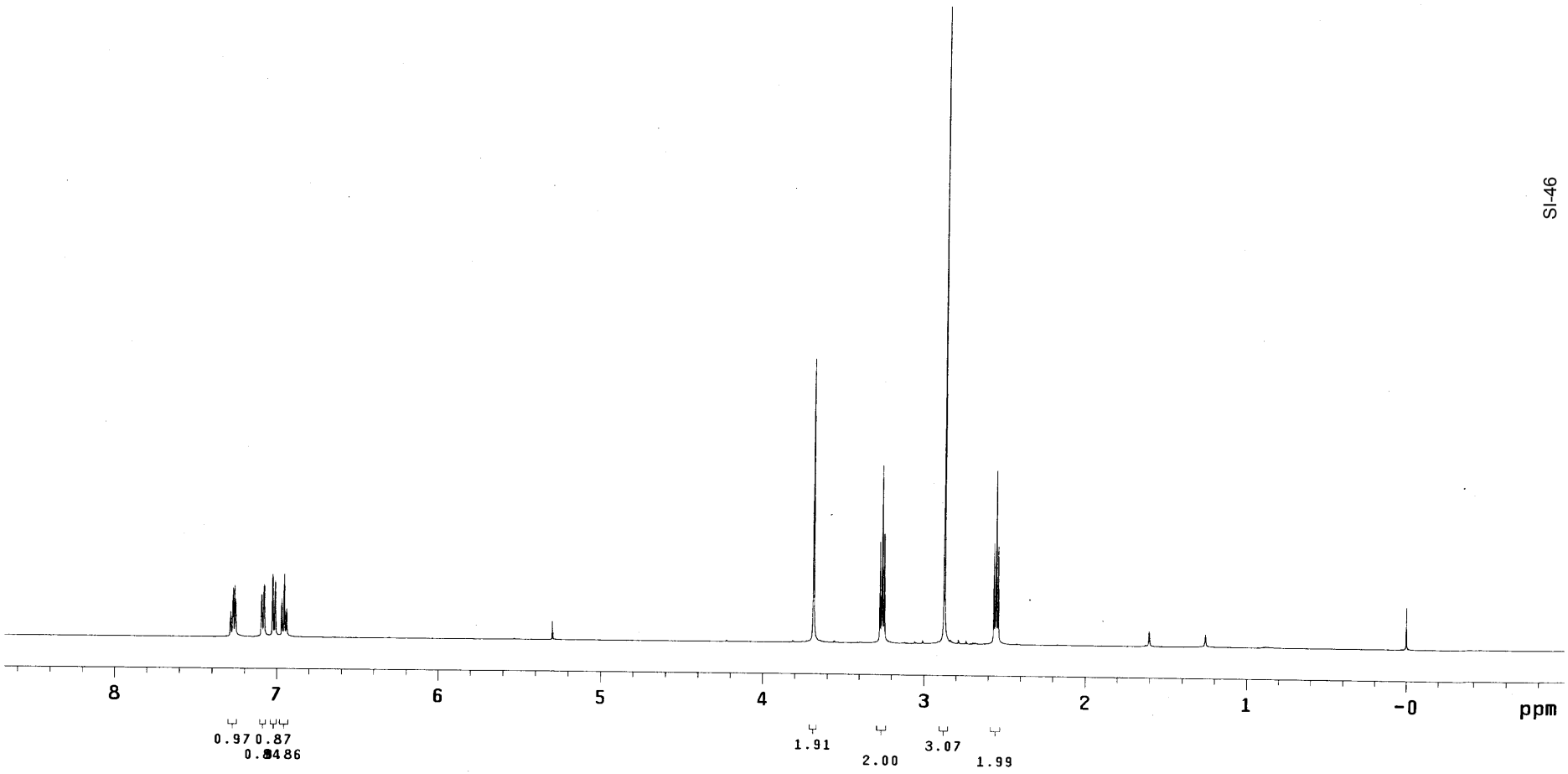
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-128-1-1H
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 8012.8 Hz
40 repetitions
OBSERVE H1, 499.7939104 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 6 min, 31 sec



5

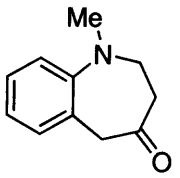


Automation directory: /home/walkup/vnmrsys/data/auto_2008.10.30_01
File : exp
Sample id : tmpstudy

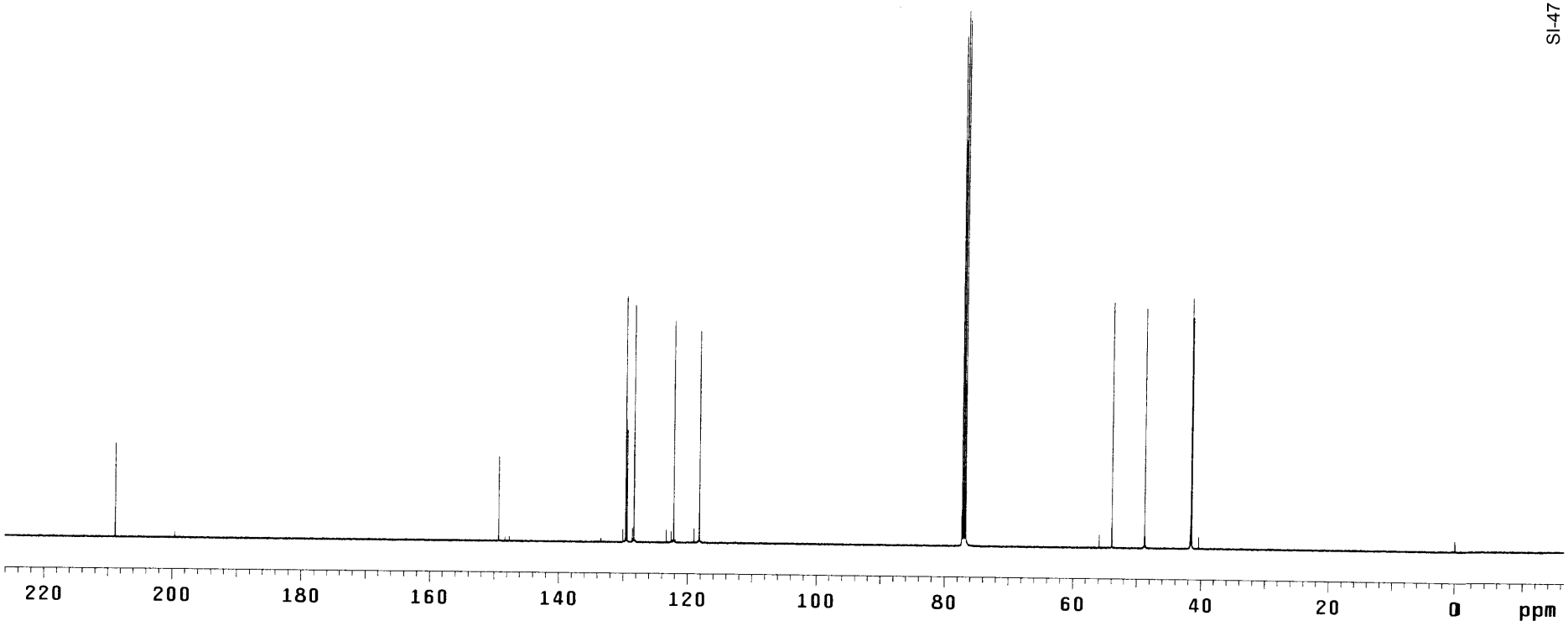
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
18560 repetitions
OBSERVE C13, 125.6732809 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 16 hr, 2 min, 14 sec



5



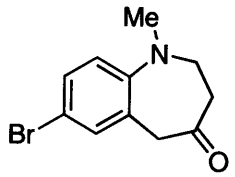
cuili-146-1-1H

Sample: li-146-1-1H
Sample ID: s_6_01
File: guozhu/li-146-1-1H/Proton01.fid

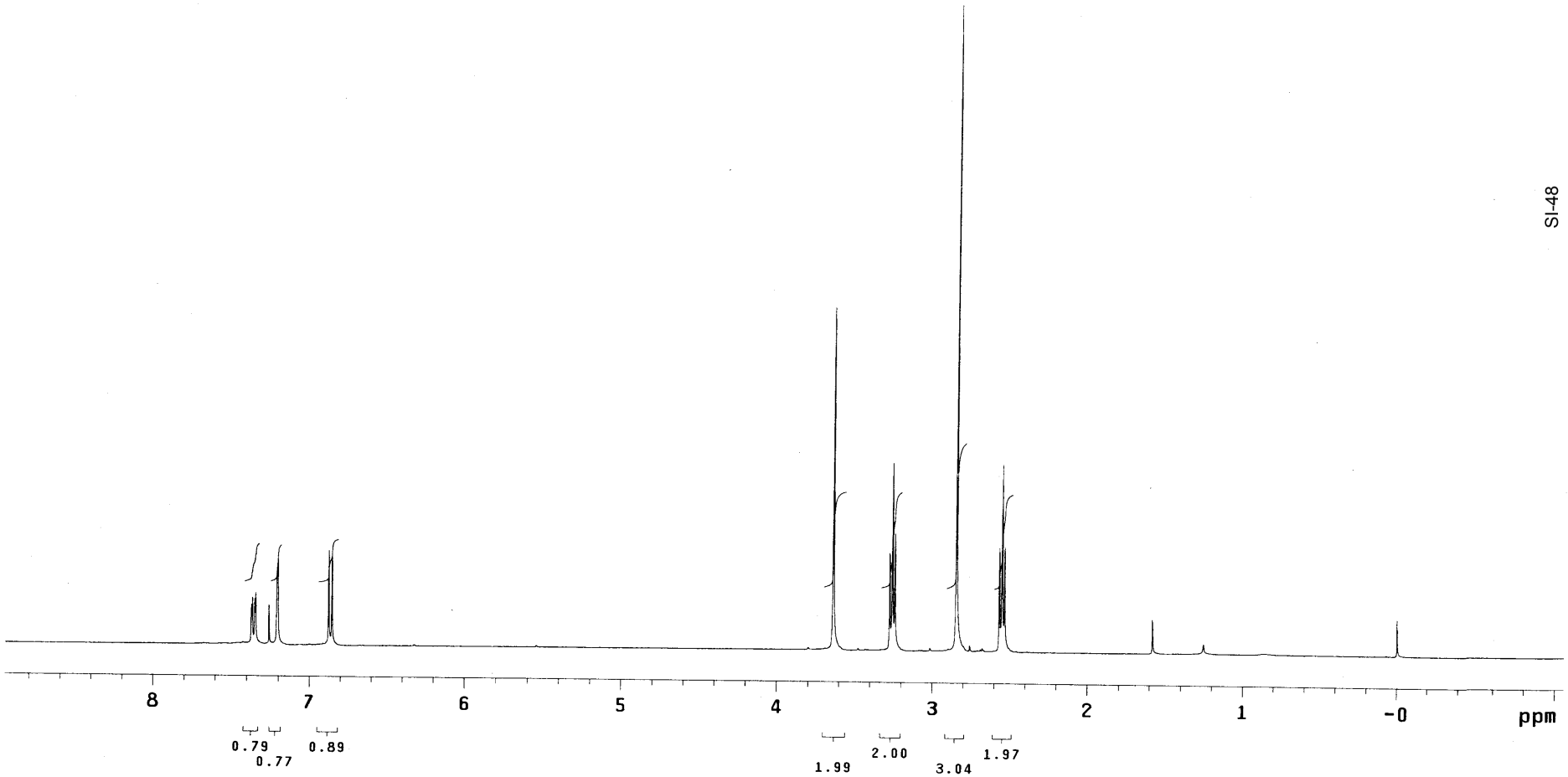
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Sample #6, Operator: guozhu
File: Proton01
VNMRS-400 "nmr400.localdomain"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
16 repetitions
OBSERVE H1, 399.8626810 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 0 min, 55 sec



7a



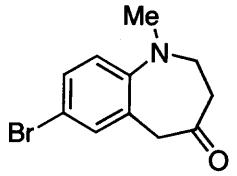
cuili-146-1-13C

File: cuili-146-1-13C

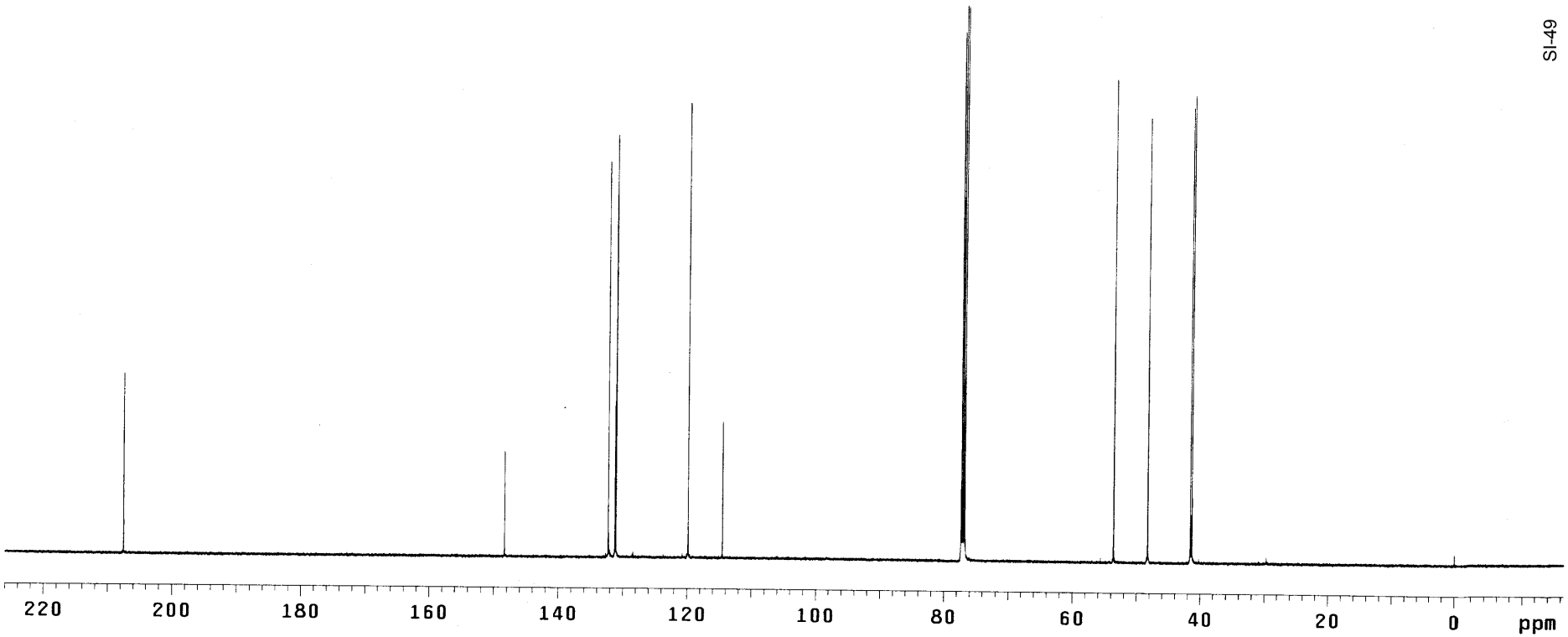
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-146-1-13C
INOVA-500 "redjacket"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
17408 repetitions
OBSERVE C13, 125.6732804 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 12 hr, 49 min, 47 sec



7a

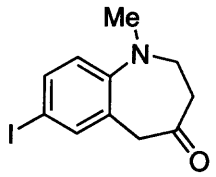


Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.01_12
File : /mnt/argenta/mr400/data/Zhang/yupeng1/2008-12-1-H-1.fid
Sample id : tmpstudy

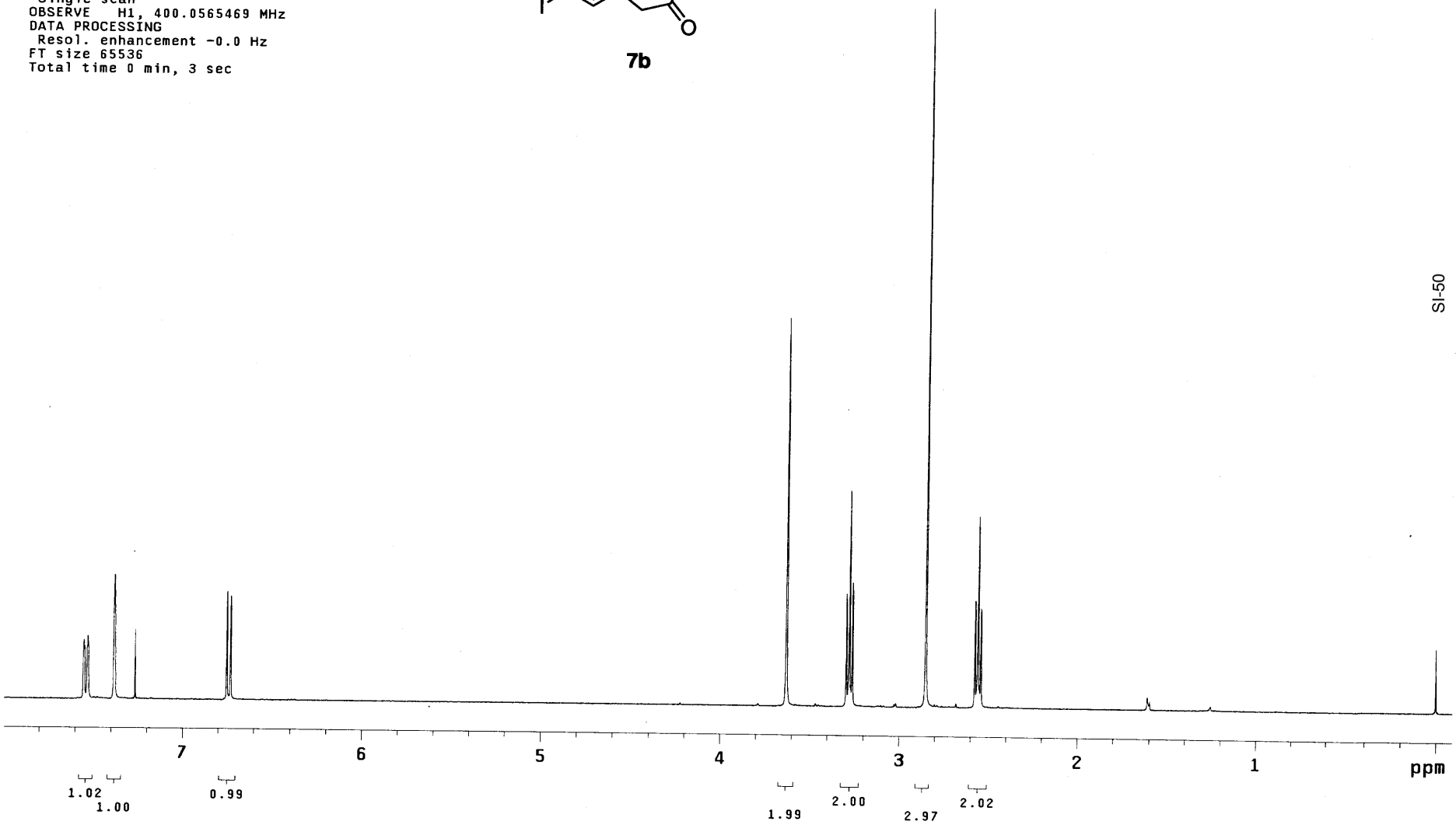
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: 2008-12-1-H-1
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
Single scan
OBSERVE H1, 400.0565469 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 0 min, 3 sec



7b

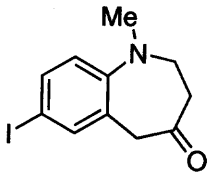


Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.30_04
File : /mnt/argenta/nmr500/data/Zhang/yupeng2/2008-12-1-C13-1.fid
Sample id : tmpstudy
Sample : Diimide

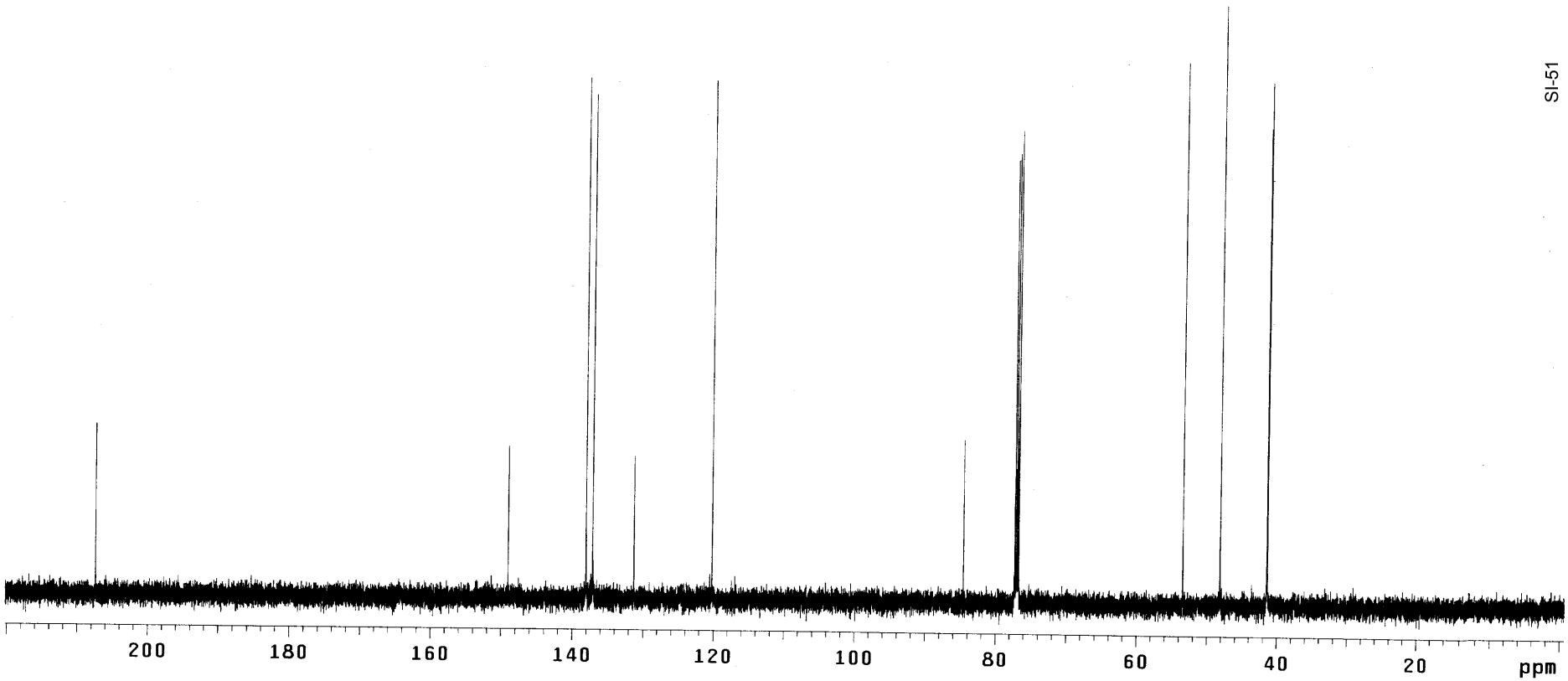
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: 2008-12-1-C13-1
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
168 repetitions
OBSERVE C13, 125.6732818 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 1 hr, 32 min, 22 sec



7b



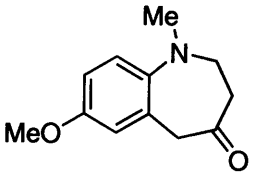
cuili-162-1-1H

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.04_13
File : exp
Sample id : tmpstudy

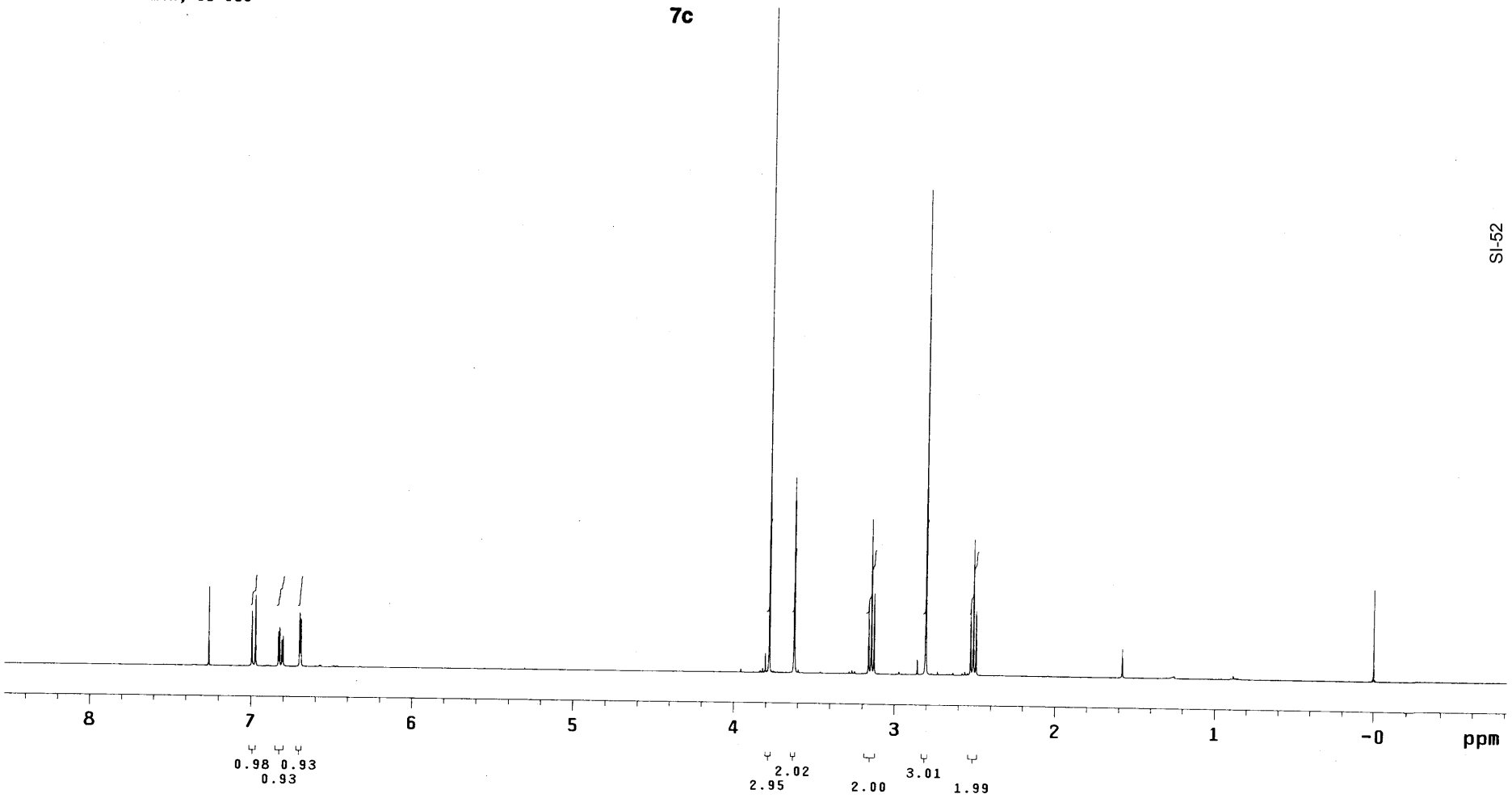
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
36 repetitions
OBSERVE H1, 400.0565489 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 6 min, 31 sec



7c



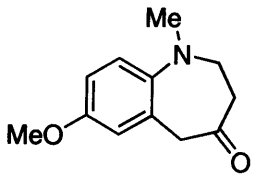
cuili-158-1-13C

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.05
File : exp
Sample id : tmpstudy

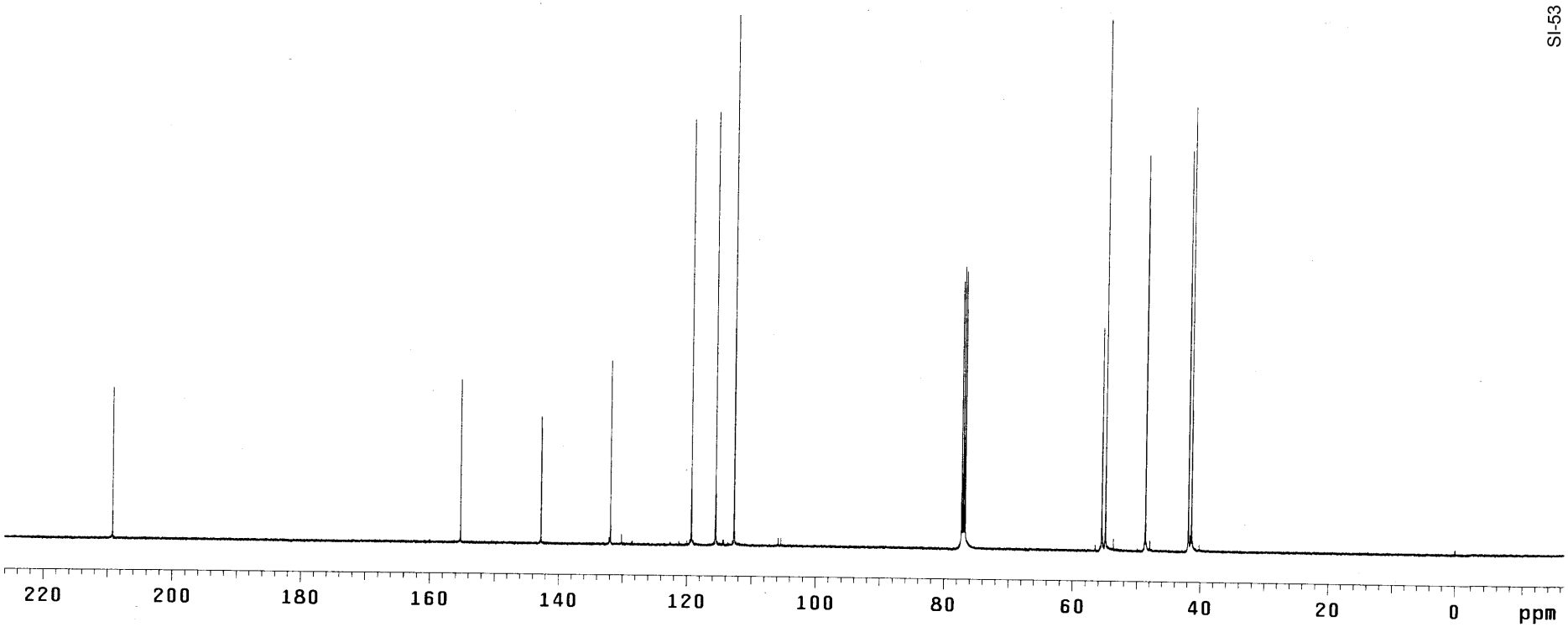
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
8000 repetitions
OBSERVE C13, 125.6732827 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 25 hr, 39 min, 35 sec



7c

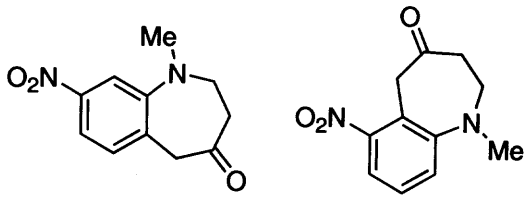


cuili-151-1-F1

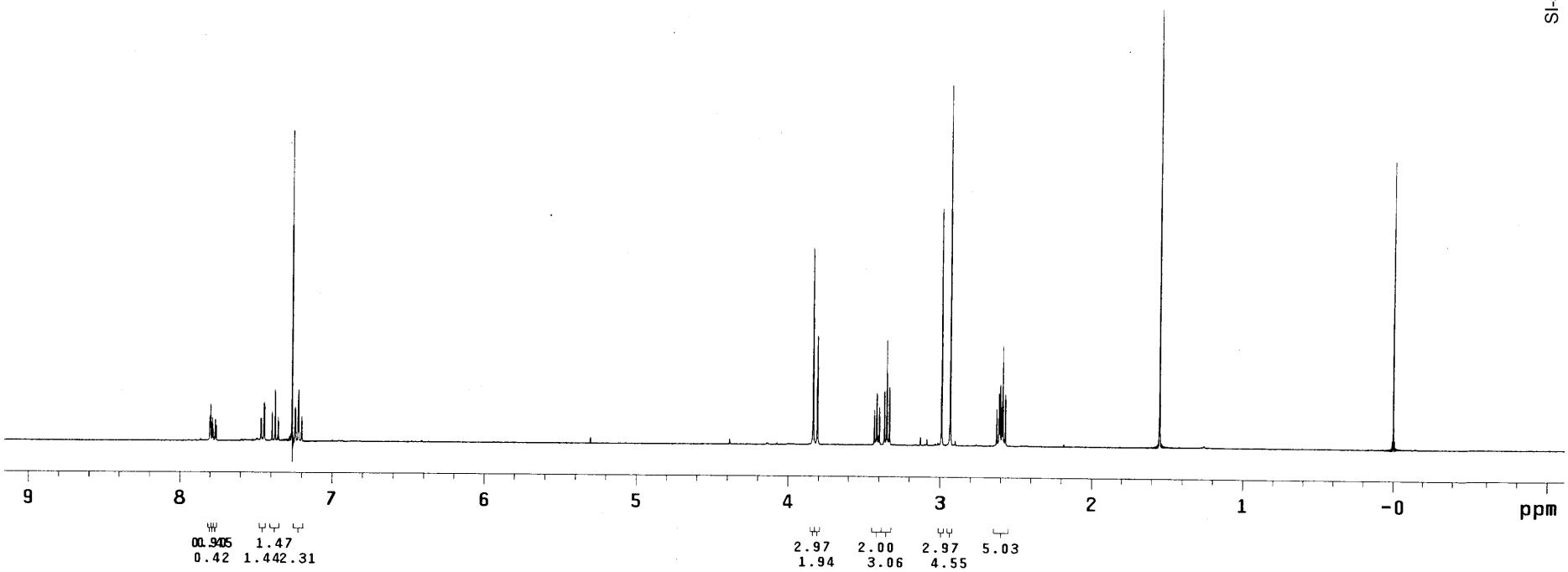
File: cuili-151-1-F1

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-151-1-F1
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
64 repetitions
OBSERVE H1, 400.0565481 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 6 min, 31 sec



7d



cuili-151-1-1H

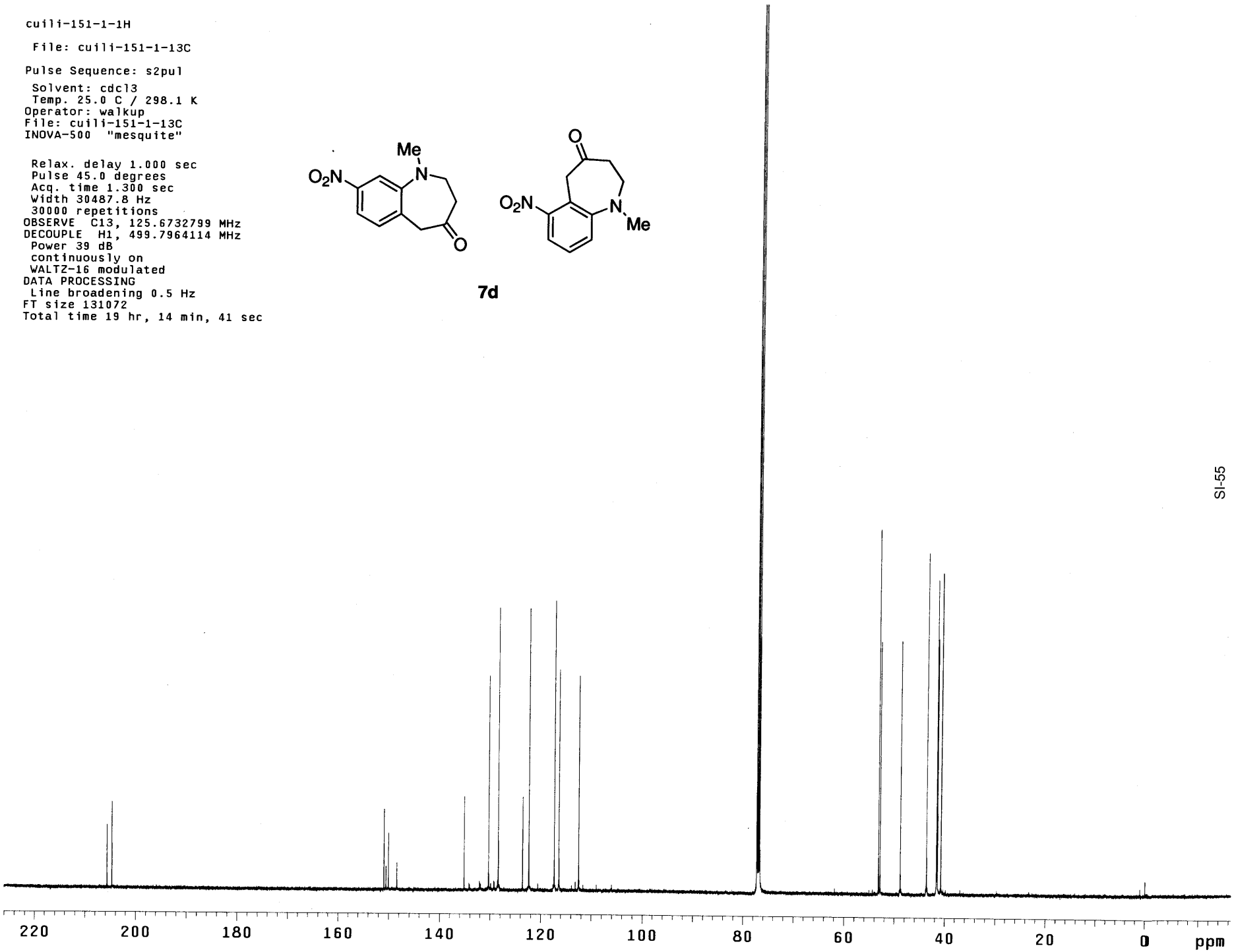
File: cuili-151-1-13C

Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-151-1-13C
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
30000 repetitions
OBSERVE C13, 125.6732799 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 19 hr, 14 min, 41 sec

7d



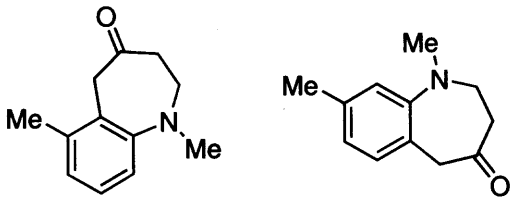
licui-159-1-1H

File: cuili-159-1-1H

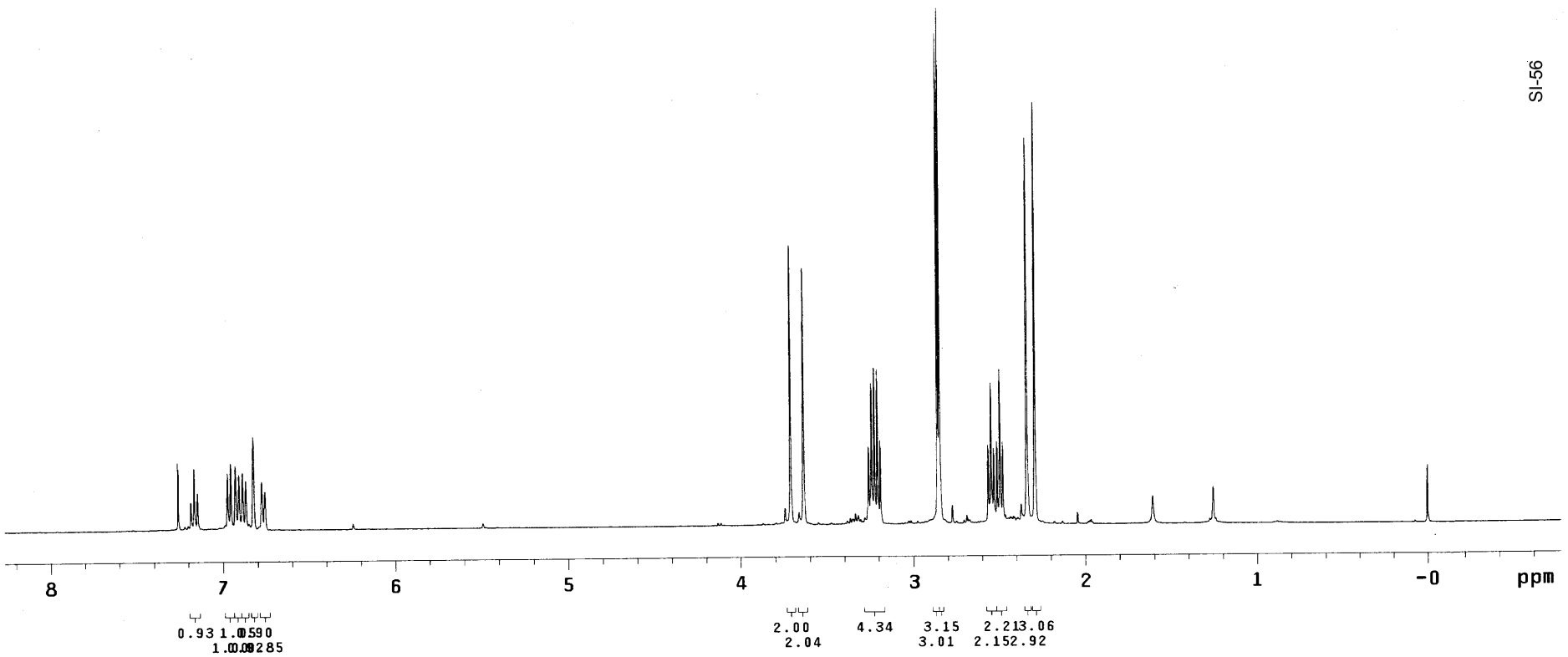
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Sample #17, Operator: licui
File: cuili-159-1-1H
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
8 repetitions
OBSERVE H1, 399.8626810 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 0 min, 30 sec



7e



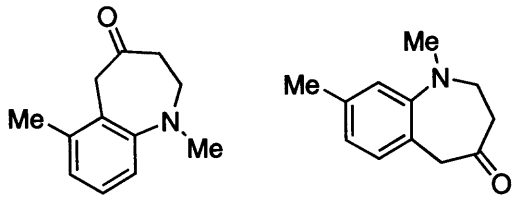
cuili-159-1-13C

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.03_01
File : exp
Sample id : tmpstudy

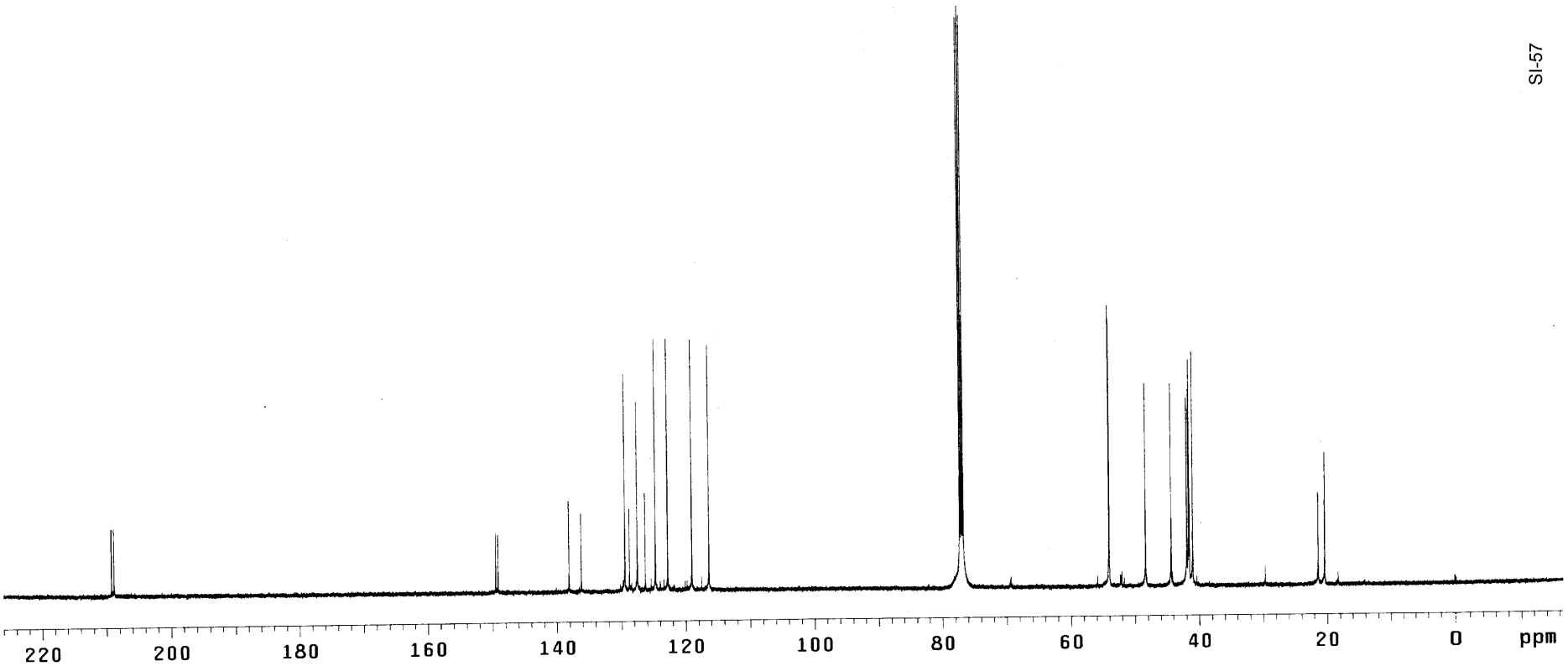
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
20976 repetitions
OBSERVE C13, 125.6732809 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 19 hr, 14 min, 41 sec



7e



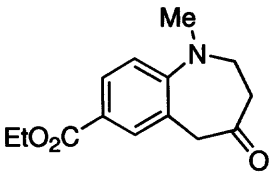
cuili-158-1-1H

File: cuili-158-1-1H

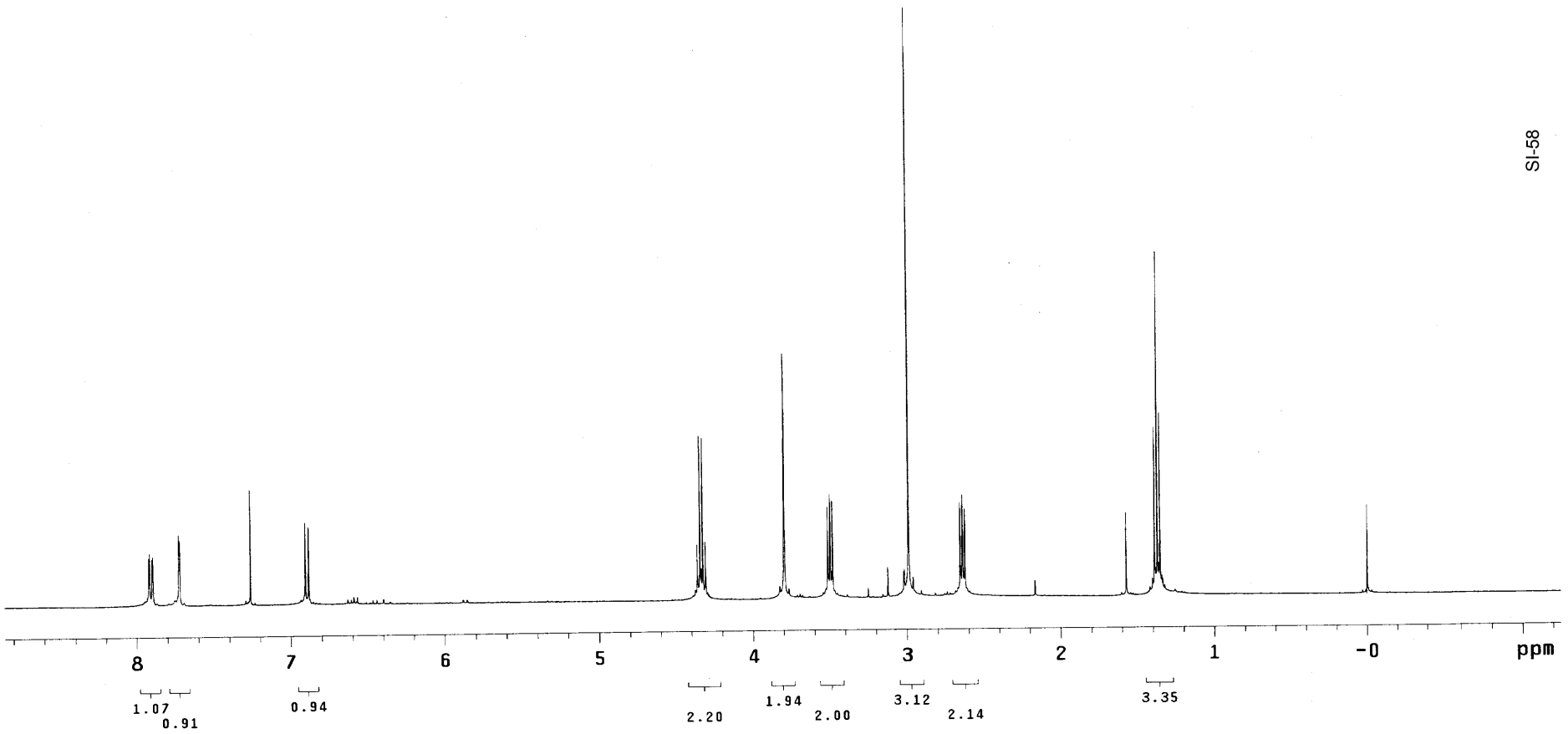
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-158-1-1H
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
52 repetitions
OBSERVE H1, 400.0565483 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 6 min, 31 sec



7f



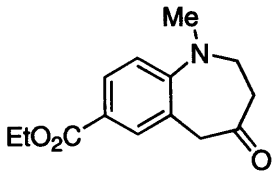
cuili-158-1-13Cb

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.06
File : exp
Sample id : tmpstudy

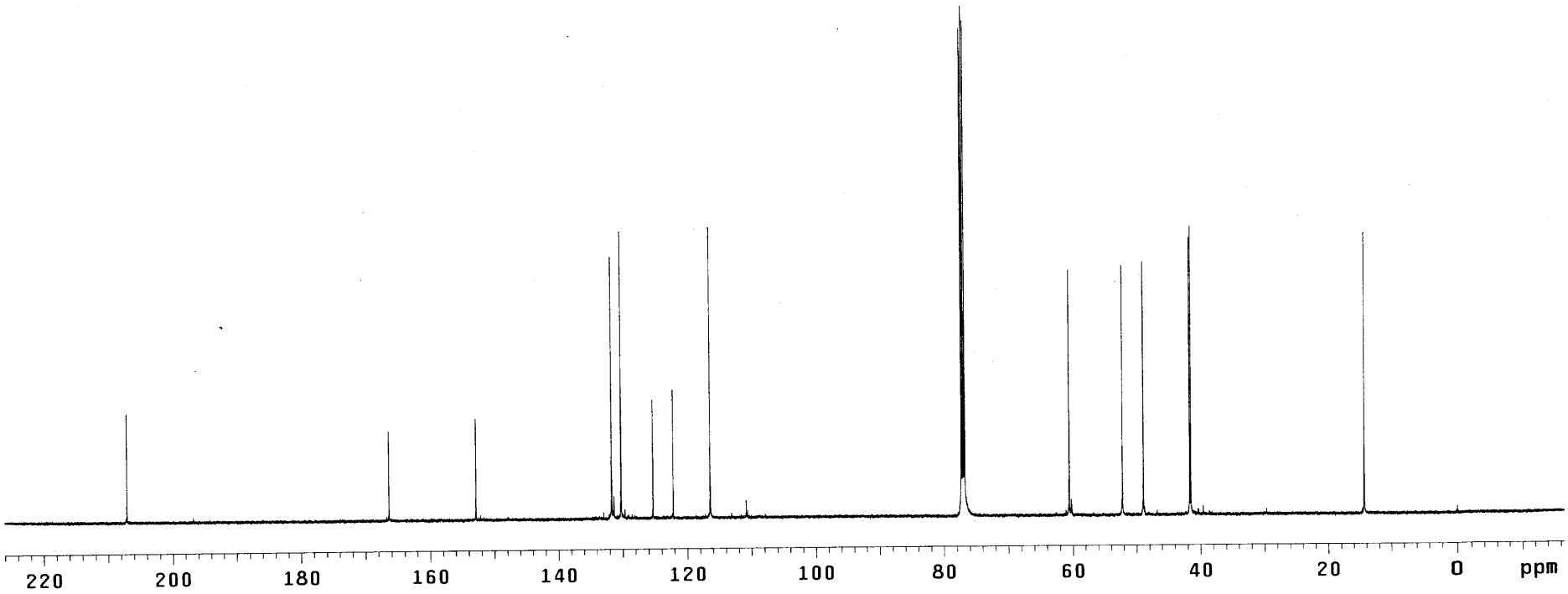
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
22400 repetitions
OBSERVE C13, 125.6732804 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 19 hr, 14 min, 41 sec



7f



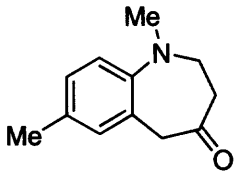
cuili-167-1-1H

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.08_10
File : exp
Sample id : tmpstudy

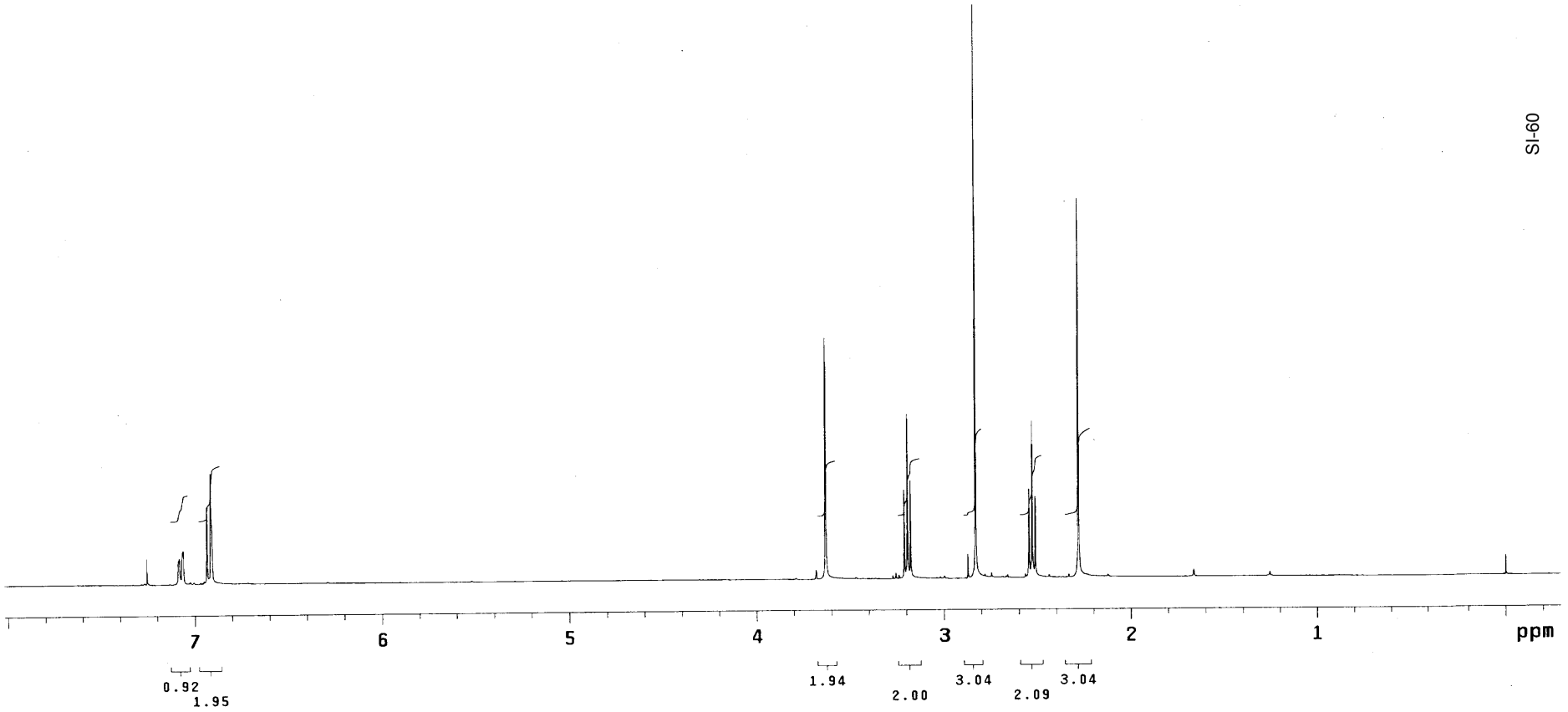
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
36 repetitions
OBSERVE H1, 400.0565506 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 6 min, 31 sec



7g

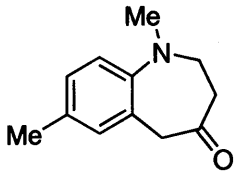


cuili-167-2-13C

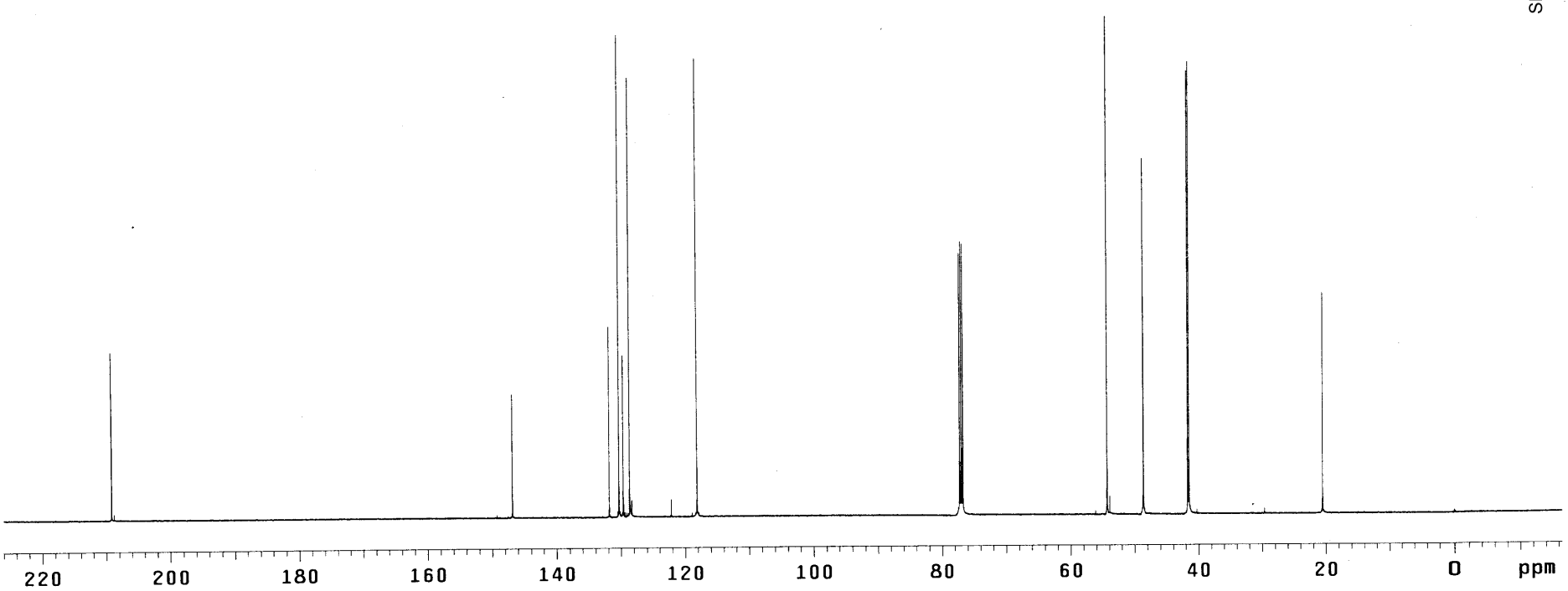
Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.08_01
File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
17856 repetitions
OBSERVE C13, 125.6732832 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 19 hr, 14 min, 41 sec



7g



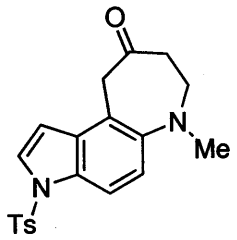
pengyu-2008-12-9-H-3

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09_06
File : exp
Sample id : tmpstudy

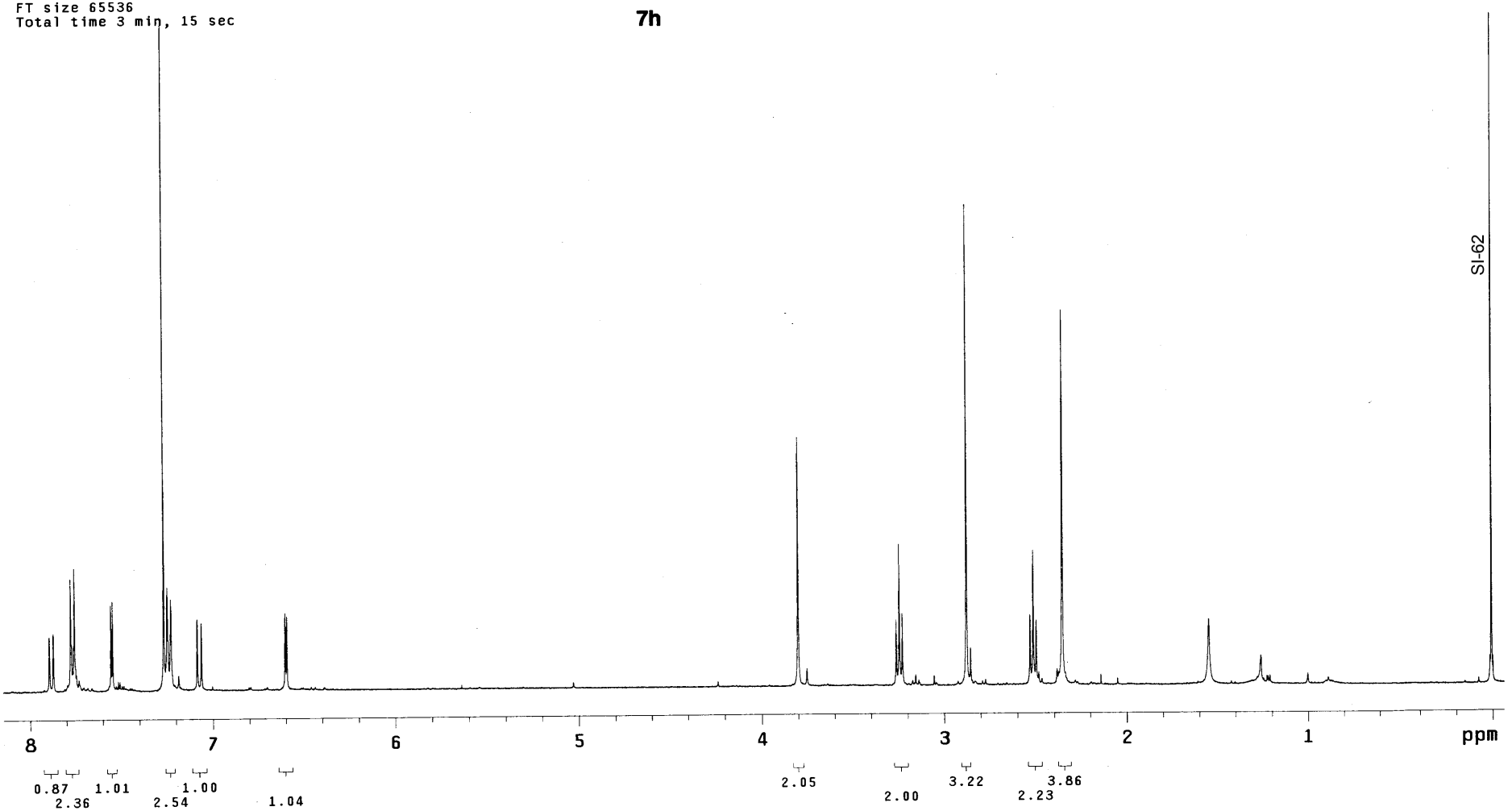
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
64 repetitions
OBSERVE H1, 400.0565460 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 3 min, 15 sec



7h

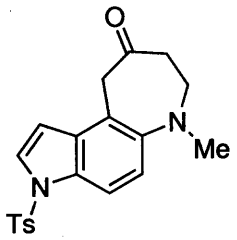


pengyu-12-10-C13-1aph

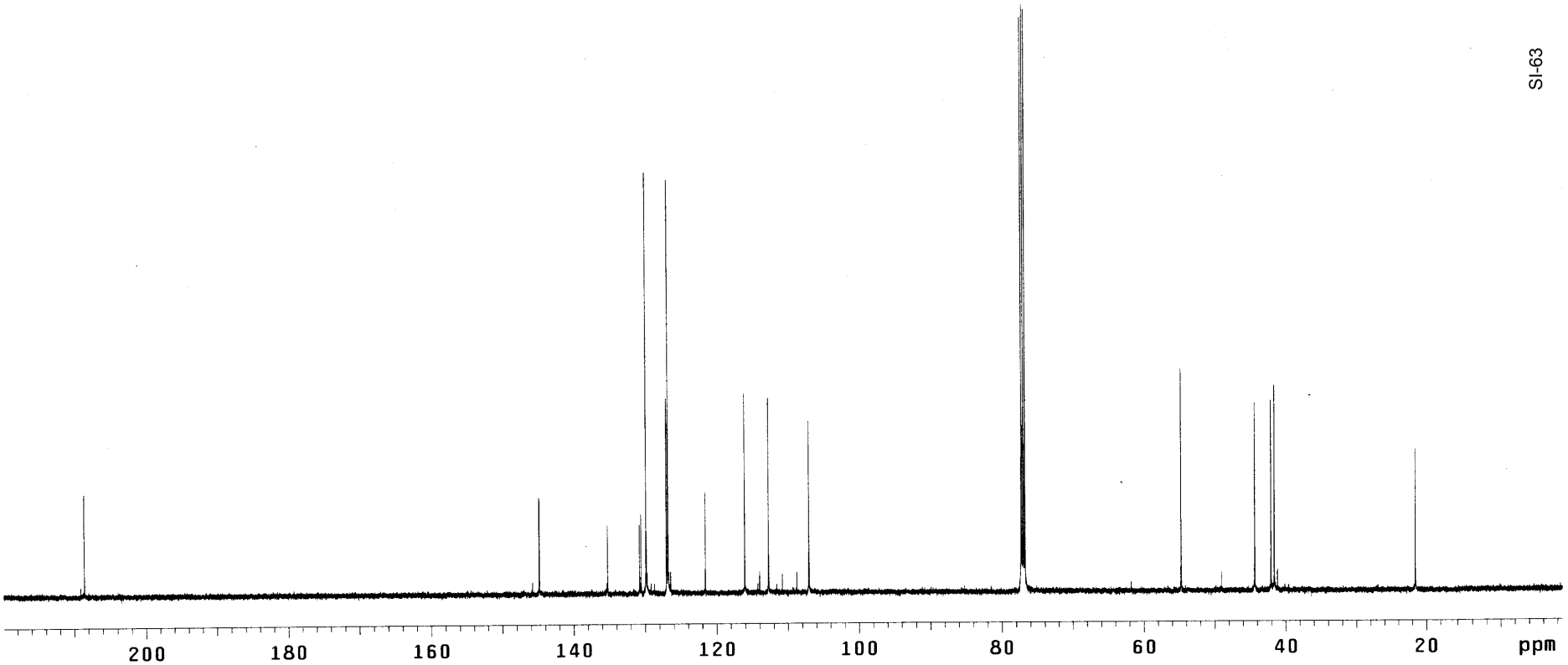
Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09
File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
5696 repetitions
OBSERVE C13, 125.6732799 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 9 hr, 14 min, 15 sec



7h



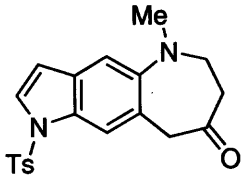
pengyu-2008-12-9-H-1

Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.09_02
File : exp
Sample id : tmpstudy

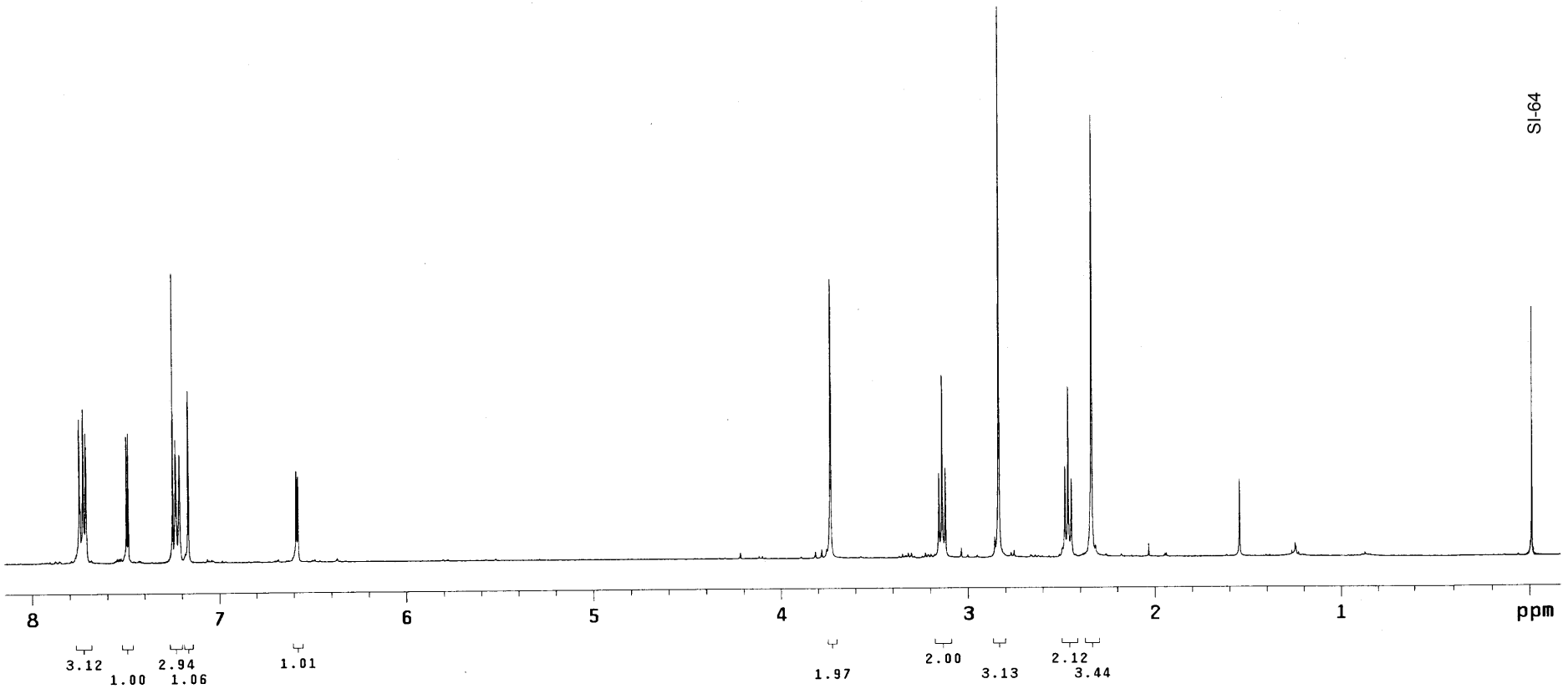
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-400 "mr400"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
64 repetitions
OBSERVE H1, 400.0565537 MHz
DATA PROCESSING
Resol. enhancement -0.0 Hz
FT size 65536
Total time 3 min, 15 sec



7ht



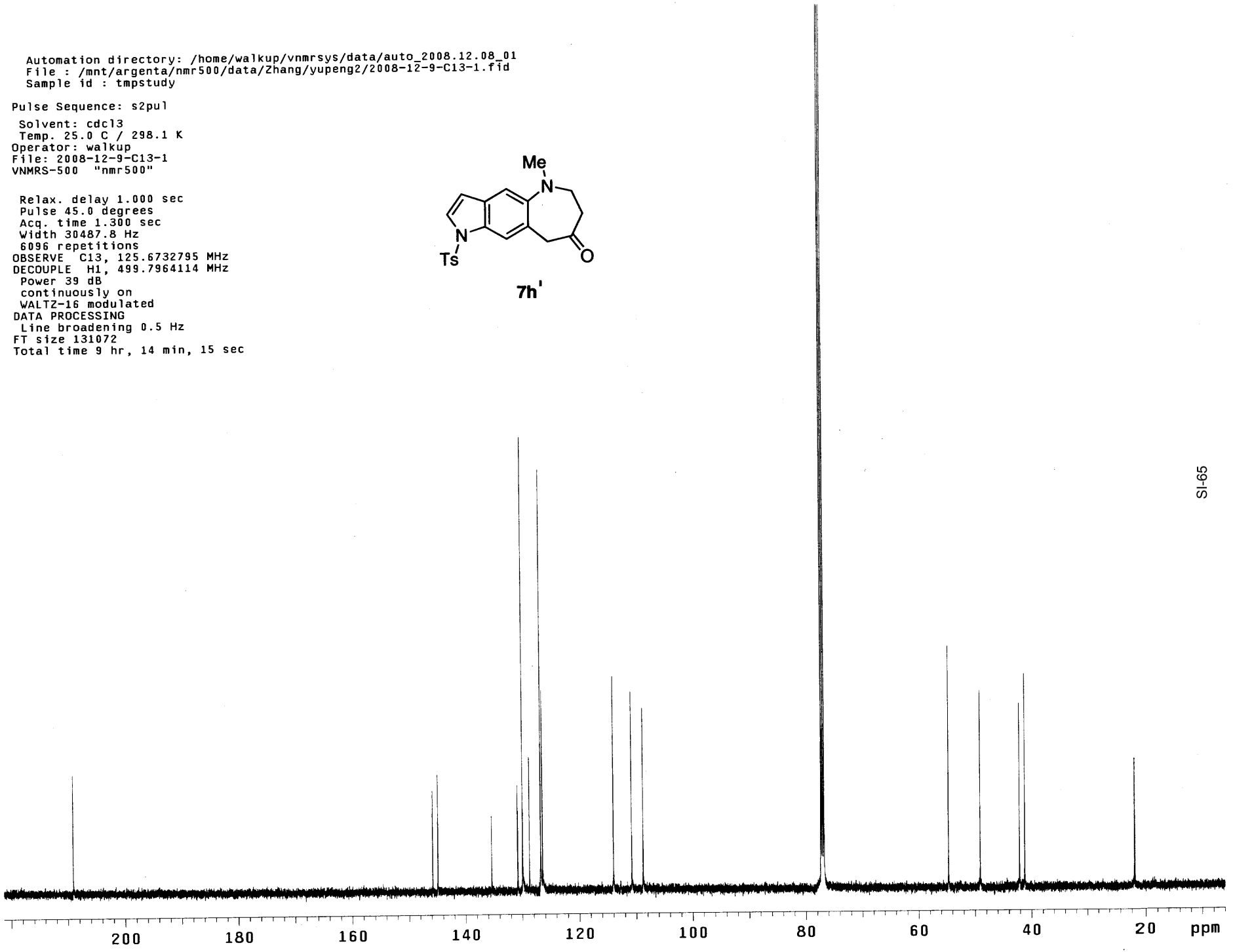
Automation directory: /home/walkup/vnmrsys/data/auto_2008.12.08_01
File : /mnt/argenta/nmr500/data/Zhang/yupeng2/2008-12-9-C13-1.fid
Sample id : tmpstudy

Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: 2008-12-9-C13-1
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
6096 repetitions
OBSERVE C13, 125.6732795 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 9 hr, 14 min, 15 sec

7h'



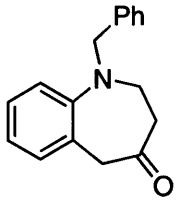
cuili-133-1-1H

File: cuili-133-1-1H

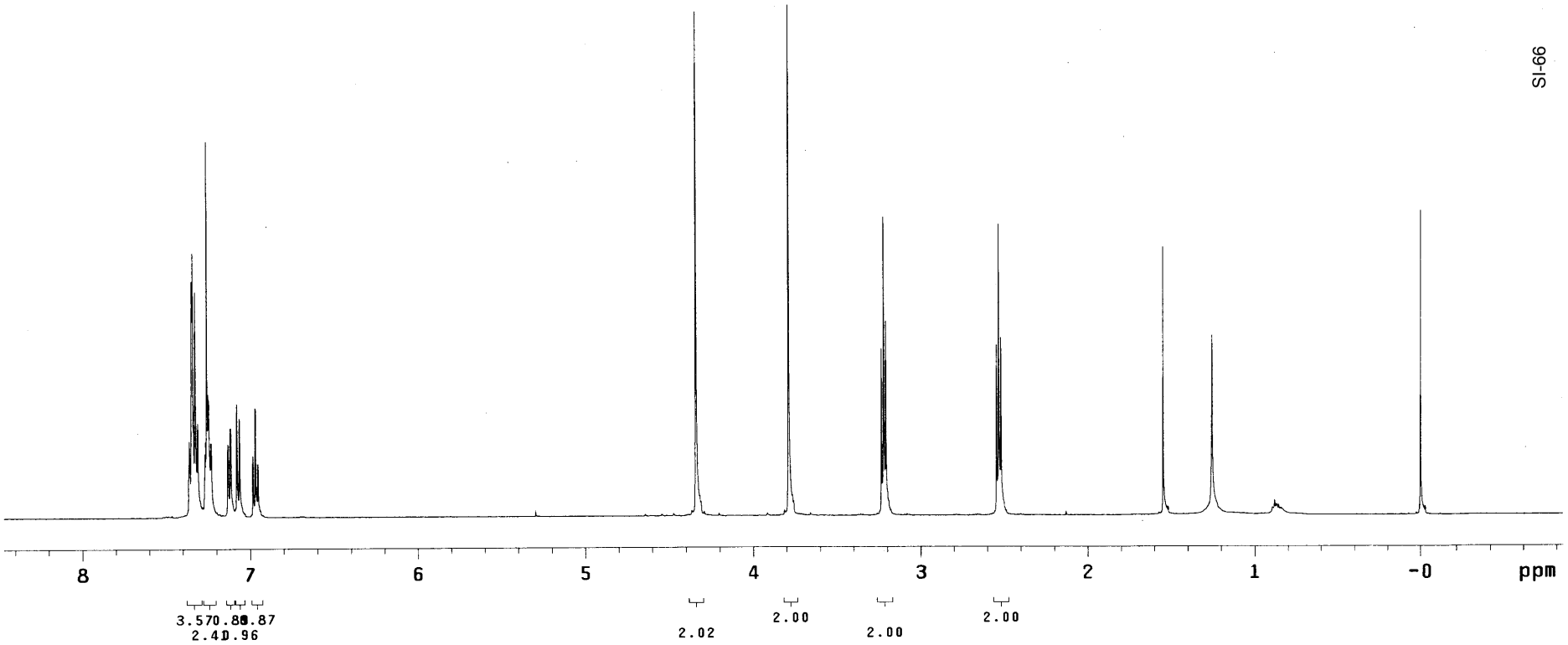
Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-133-1-1H
INOVA-500 "mesquite"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 8012.8 Hz
24 repetitions
OBSERVE H1, 499.7939139 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 6 min, 31 sec



7i



cuili-133-1-13C

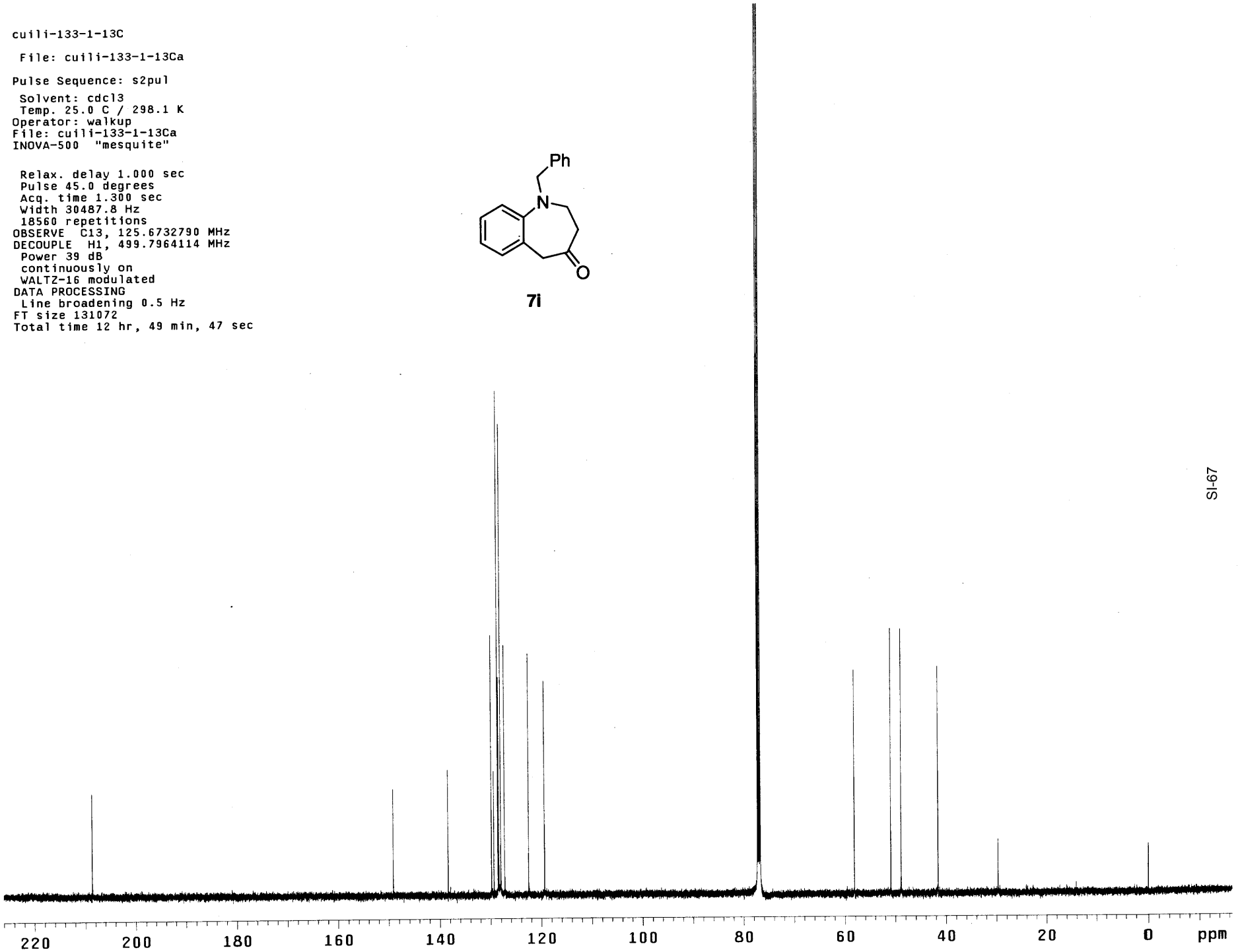
File: cuili-133-1-13Ca

Pulse Sequence: s2pul

Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
File: cuili-133-1-13Ca
INOVA-500 "mesquite"

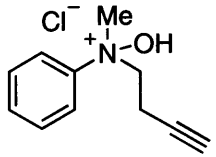
Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
18560 repetitions
OBSERVE C13, 125.6732790 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 12 hr, 49 min, 47 sec

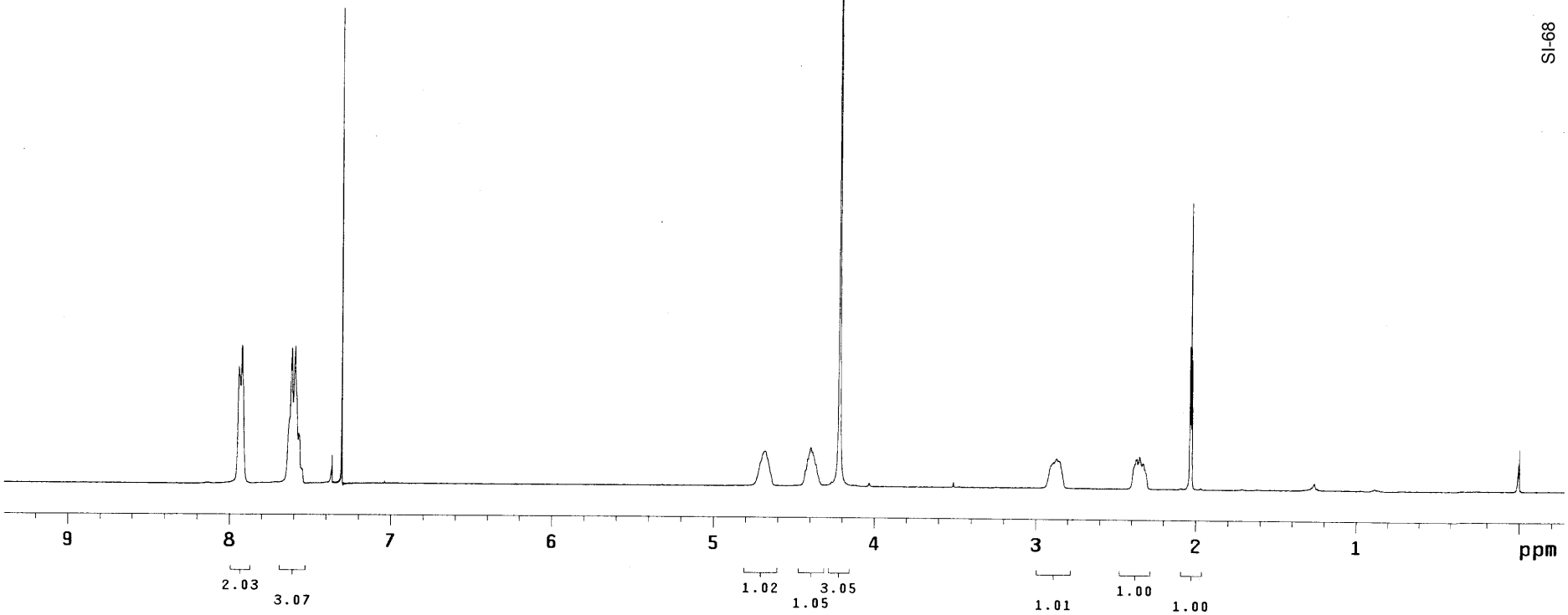
7i



exp1 Proton

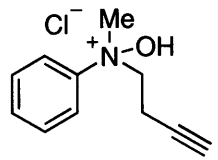
SAMPLE		SPECIAL	
date	Dec 9 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	209-2.fid	alfa	6.600
ACQUISITION		FLAGS	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	PROCESSING	
d1	1.000	fn	65536
nt	8	DISPLAY	
ct	8	sp	-112.1
TRANSMITTER		wp	3870.5
tn	H1	rfl	783.3
sfrq	400.059	rfp	0
tof	399.7	rp	-19.0
tpwr	58	lp	7.5
pw	6.950	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	299
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

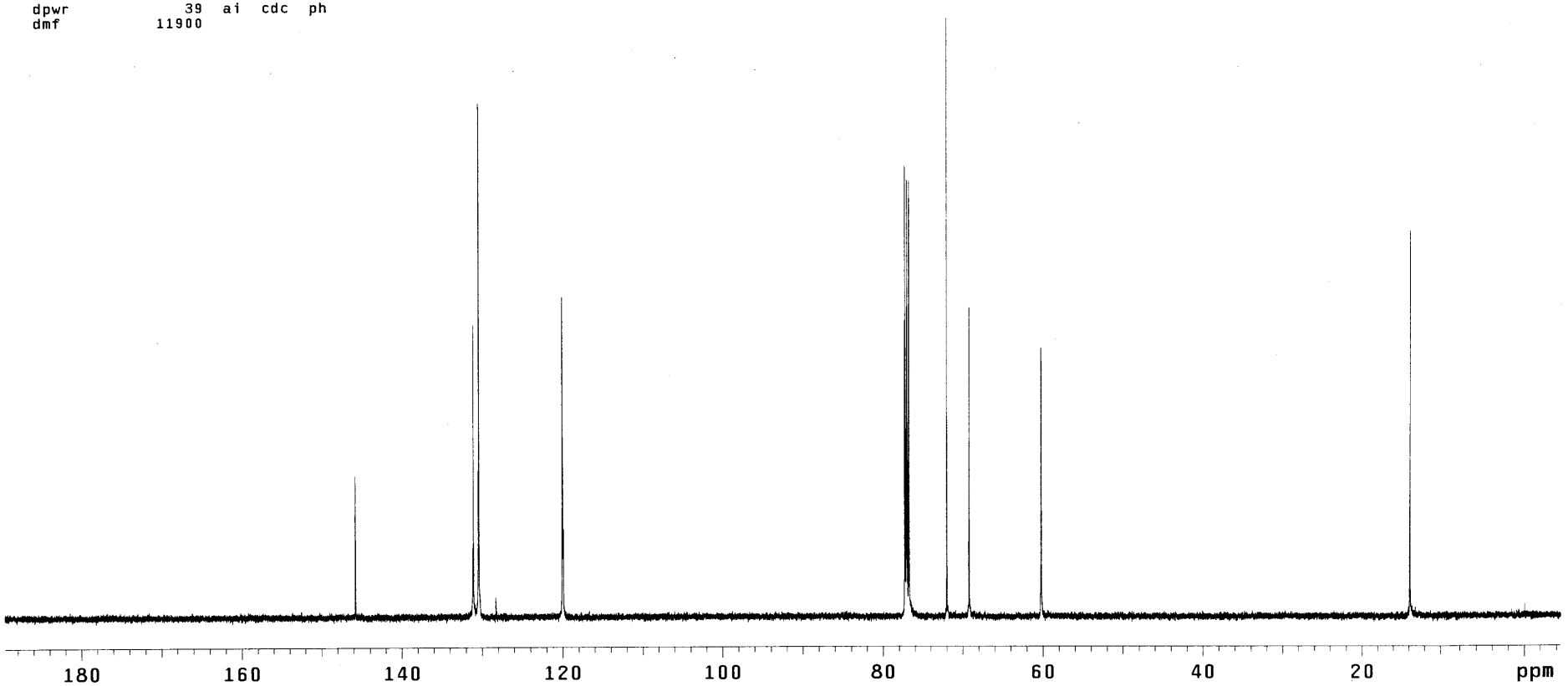




exp1 Carbon

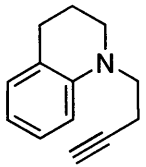
SAMPLE		SPECIAL	
date	Dec 9 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008120~	pw90	9.600
	9-2.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	5100	**DISPLAY**	
TRANSMITTER		sp	-579.1
tn	C13	wp	24410.8
sfrq	125.686	rfl	11757.6
tof	1255.2	rfp	9676.8
tpwr	52	rp	-146.6
pw	4.800	lp	-226.1
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	54947
dmm	w	th	15
dpwr	39	ai cdc ph	
dmf	11900		



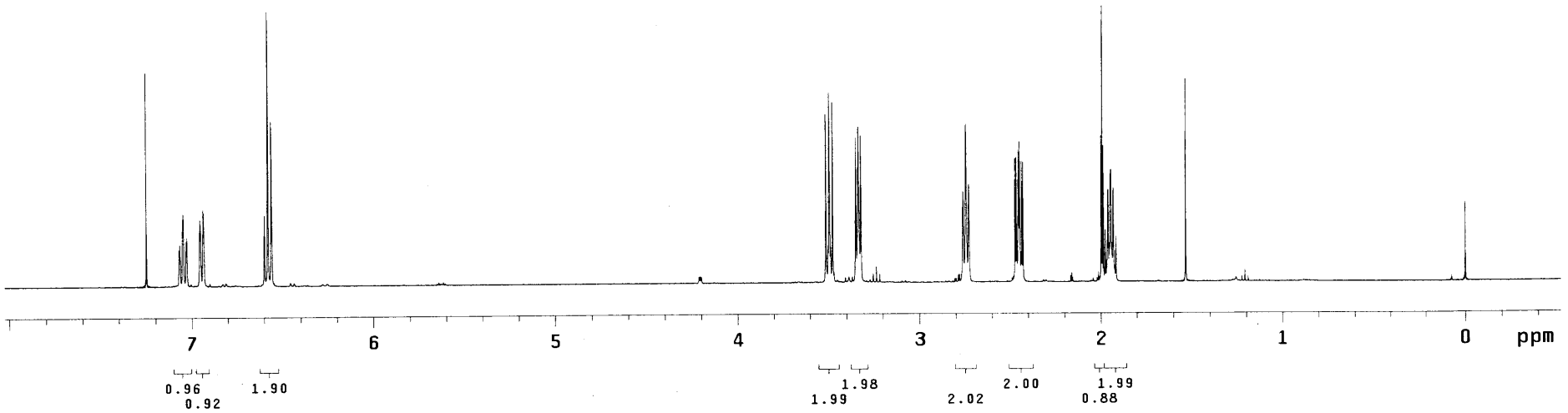


exp91 Proton

SAMPLE		SPECIAL	
date	Nov 30 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	130-2.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	8	**DISPLAY**	
ct	8	sp	-210.7
TRANSMITTER		wp	3421.7
tn	H1	rfl	804.4
sfrq	400.059	rfp	0
tof	399.8	rp	67.0
tpwr	58	lp	4.3
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	381
dm	nnn	th	3
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

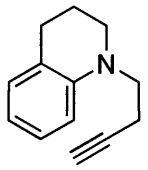


10

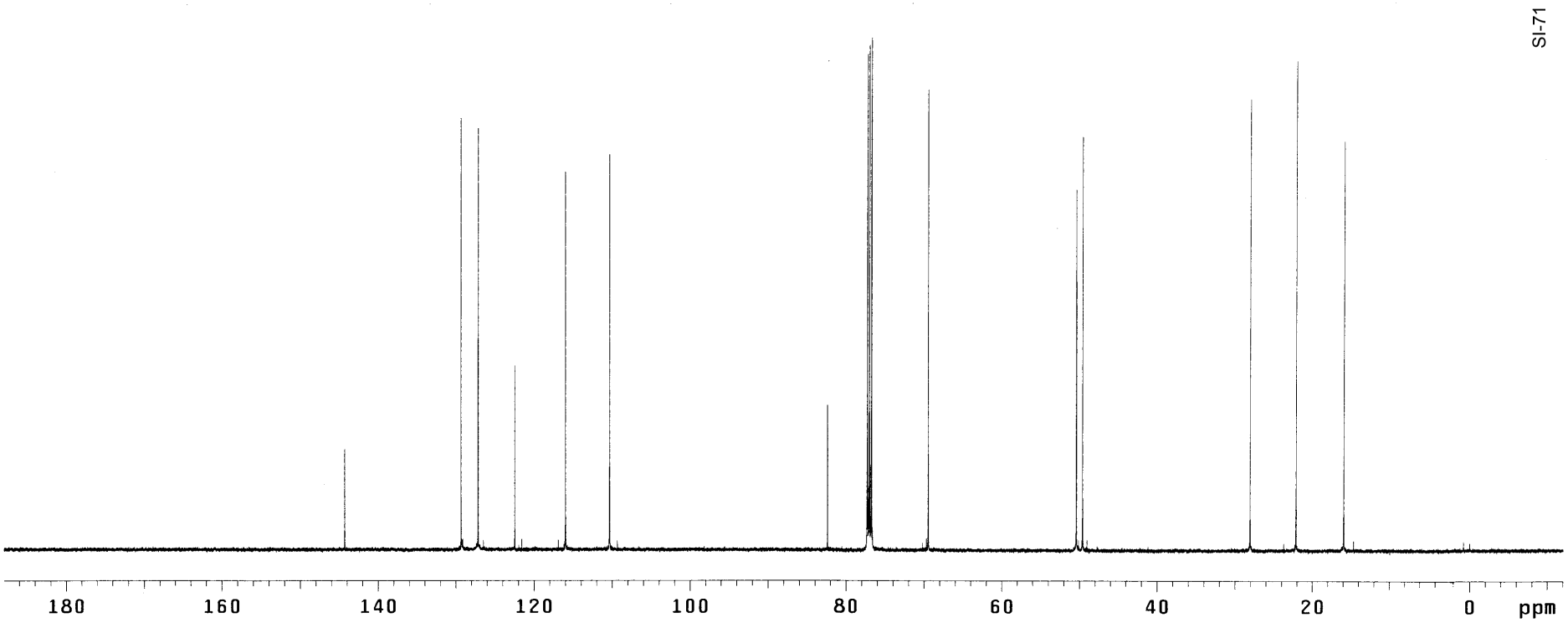


exp1 Carbon

SAMPLE		SPECIAL	
date	Dec 1 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008113~	pw90	9.600
	0-2.fid	alfa	10.000
ACQUISITION		FLAGS	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	PROCESSING	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	7608	DISPLAY	
TRANSMITTER		sp	-1520.7
tn	C13	wp	25144.0
sfrq	125.686	rfl	11756.7
tof	1255.2	rfp	9676.8
tpwr	52	rp	-52.1
pw	4.800	lp	-248.6
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	37168
dmm	w	th	8
dpwr	39	ai cdc ph	
dmf	11900		

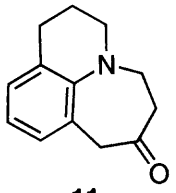


10

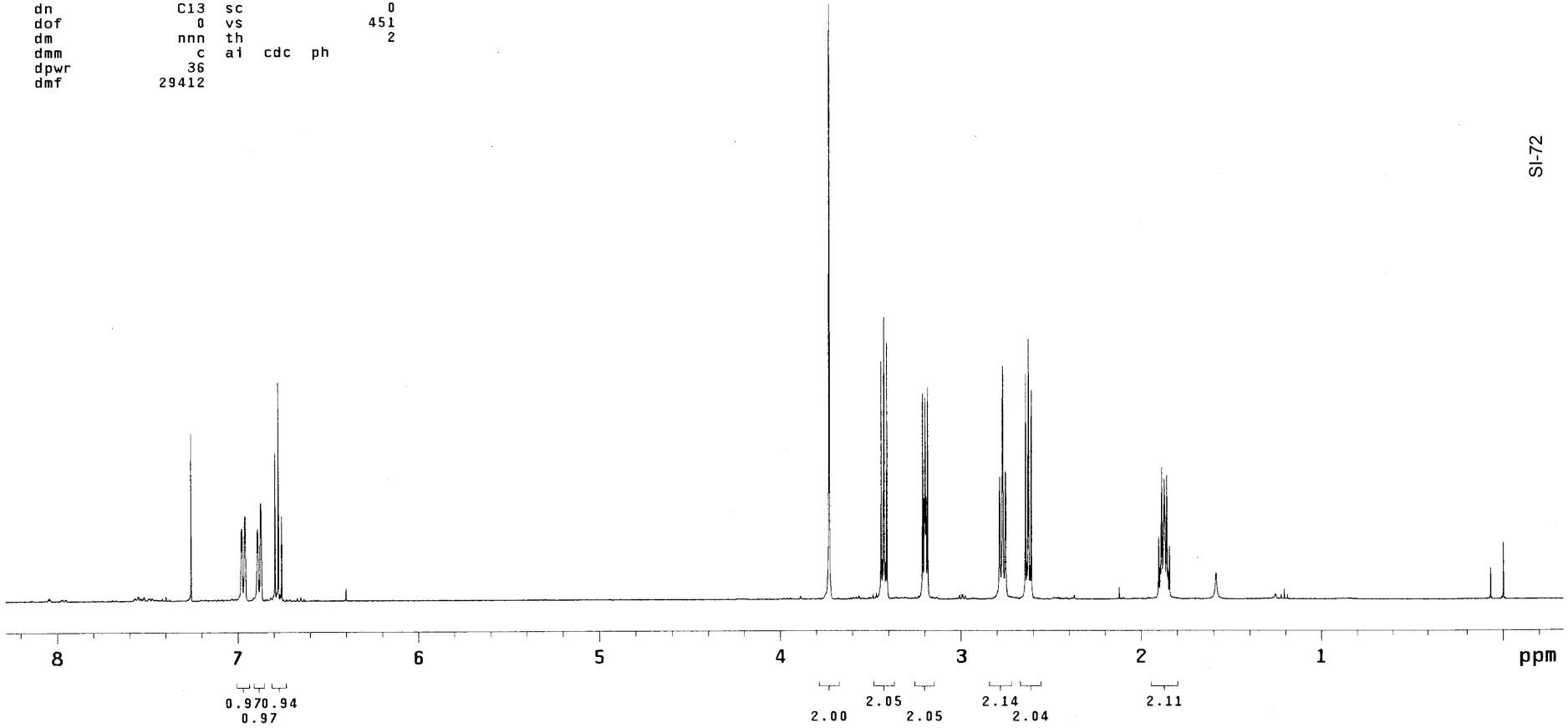


exp93 Proton

SAMPLE		SPECIAL	
date	Dec 1 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	201-4.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	8	**DISPLAY**	
ct	8	sp	-134.2
TRANSMITTER		wp	3448.5
tn	H1	rfl	801.3
sfrq	400.059	rfp	0
tof	399.8	rp	-113.4
tpwr	58	lp	12.5
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	451
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

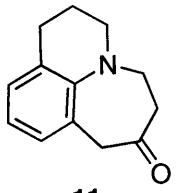


11

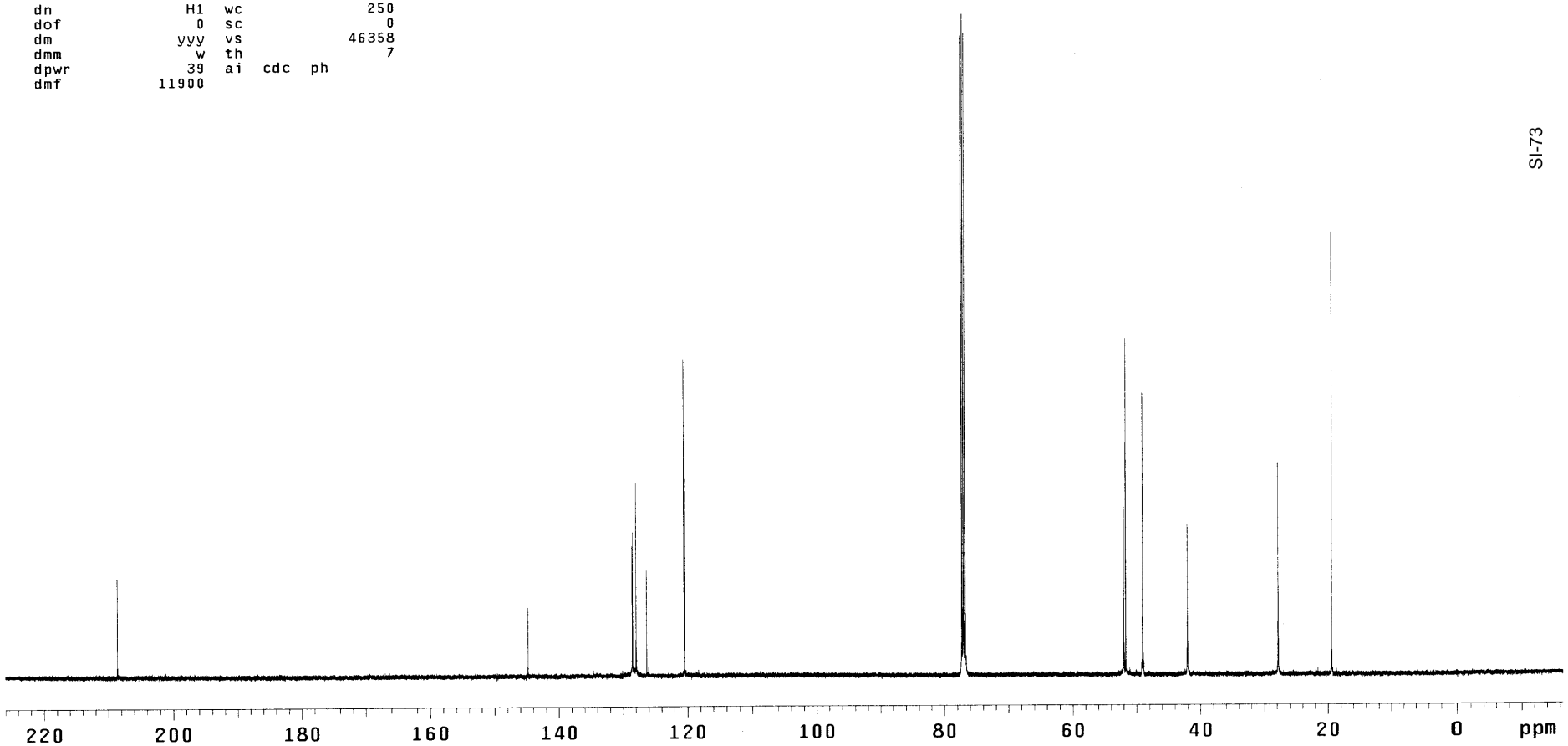


exp1 Carbon

SAMPLE		SPECIAL	
date	Dec 2 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008120~	pw90	9.600
	1-4.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	6648	**DISPLAY**	
TRANSMITTER		sp	-2079.4
tn	C13	wp	30487.3
sfrq	125.686	rfl	11756.7
tof	1255.2	rfp	9676.8
tpwr	52	rp	-39.1
pw	4.800	lp	-256.3
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	46358
dmm	w	th	7
dpwr	39	ai cdc ph	
dmf	11900		

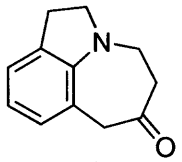


11

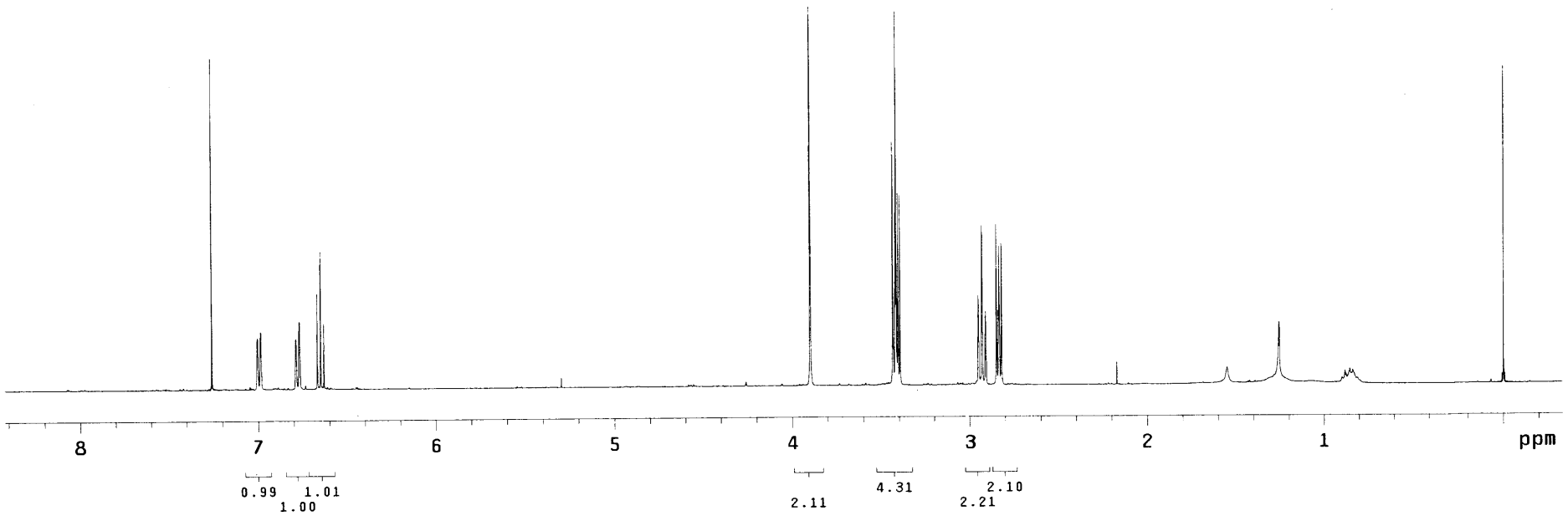


expl Proton

SAMPLE		SPECIAL	
date	Dec 7 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
mr400/data/Zhang/g~		hst	0.008
uozhu/guozhu-20081~		pw90	13.900
	207-1.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	4	**PROCESSING**	
d1	1.000	fn	65536
nt	120	**DISPLAY**	
ct	120	sp	-134.8
TRANSMITTER		wp	3505.0
tn	H1	rfl	801.1
sfrq	400.059	rfp	0
tof	399.8	rp	-19.1
tpwr	58	lp	-3.6
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	837
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		



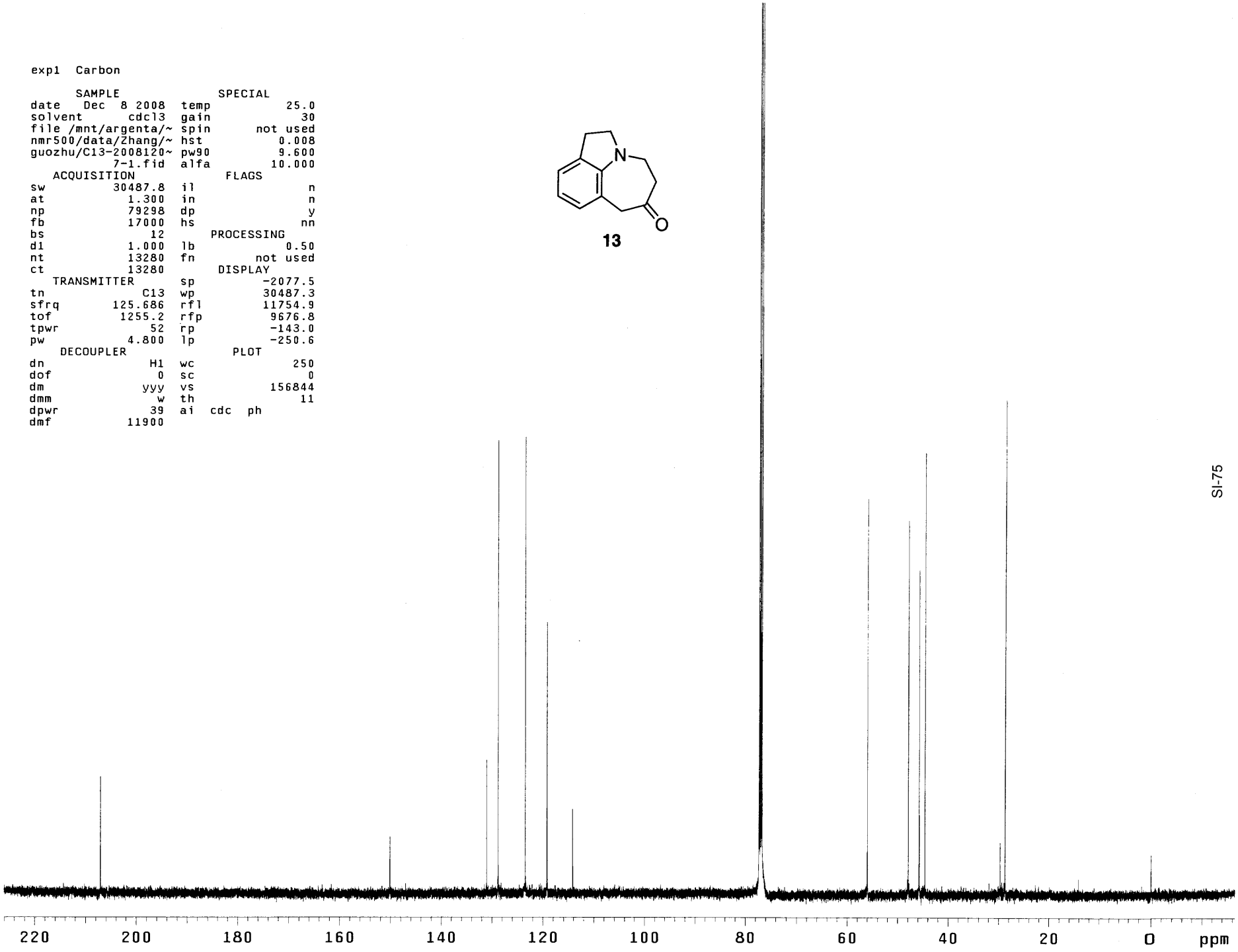
13



exp1 Carbon

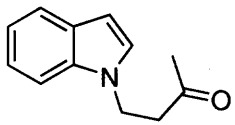
SAMPLE		SPECIAL	
date	Dec 8 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008120~	pw90	9.600
	7-1.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	13280	fn	not used
ct	13280	**DISPLAY**	
TRANSMITTER		sp	-2077.5
tn	C13	wp	30487.3
sfrq	125.686	rfl	11754.9
tof	1255.2	rfp	9676.8
tpwr	52	rp	-143.0
pw	4.800	lp	-250.6
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	156844
dmm	w	th	11
dpwr	39	ai cdc ph	
dmf	11900		

13

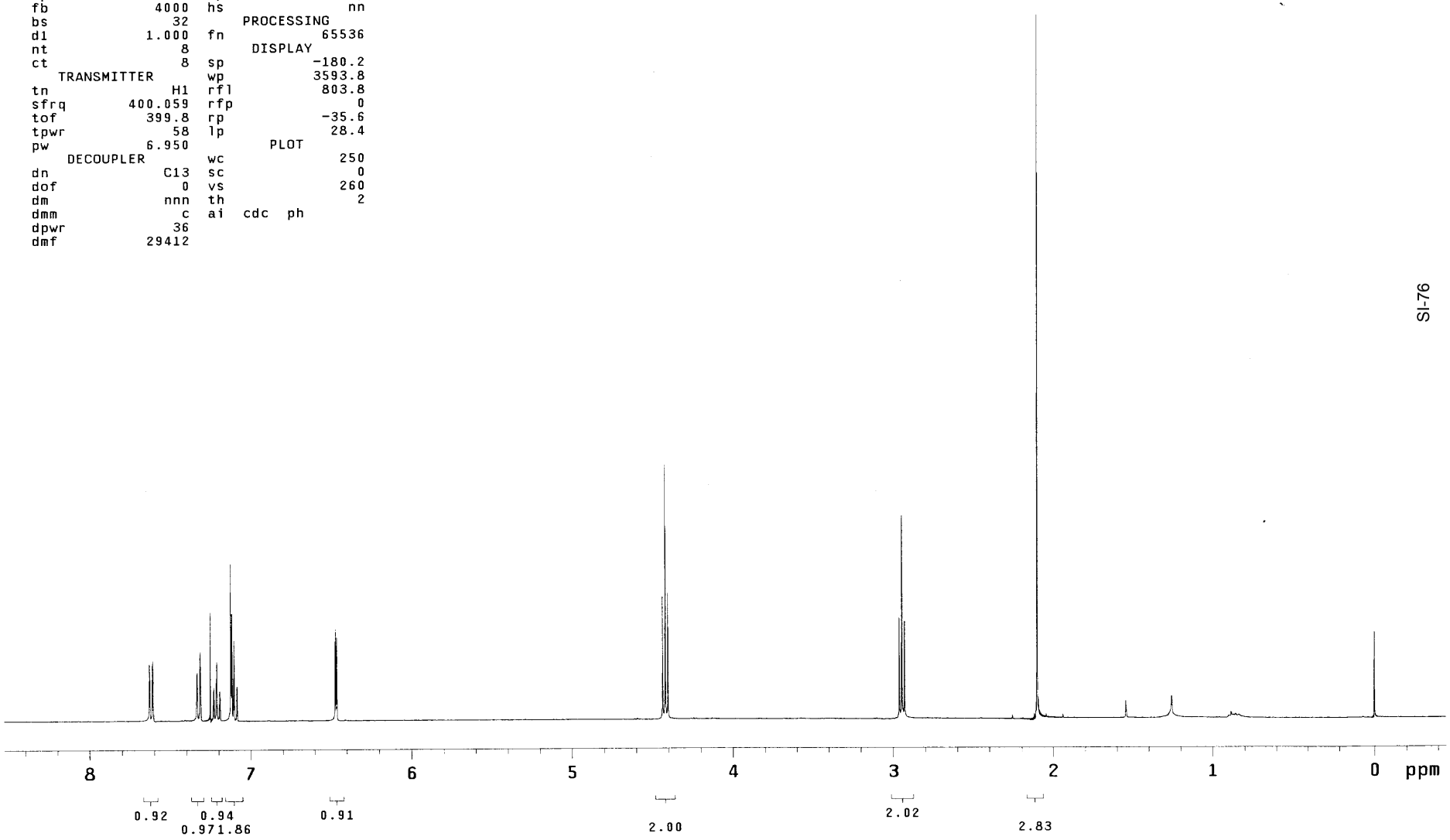


exp1 Proton

SAMPLE		SPECIAL	
date	Dec 7 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	207-3.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	8	**DISPLAY**	
ct	8	sp	-180.2
TRANSMITTER		wp	3593.8
tn	H1	rfl	803.8
sfrq	400.059	rfp	0
tof	399.8	rp	-35.6
tpwr	58	lp	28.4
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	260
dm	nnn	th	2
dmm	c	ai	cdc ph
dpwr	36		
dmf	29412		

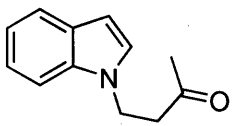


14

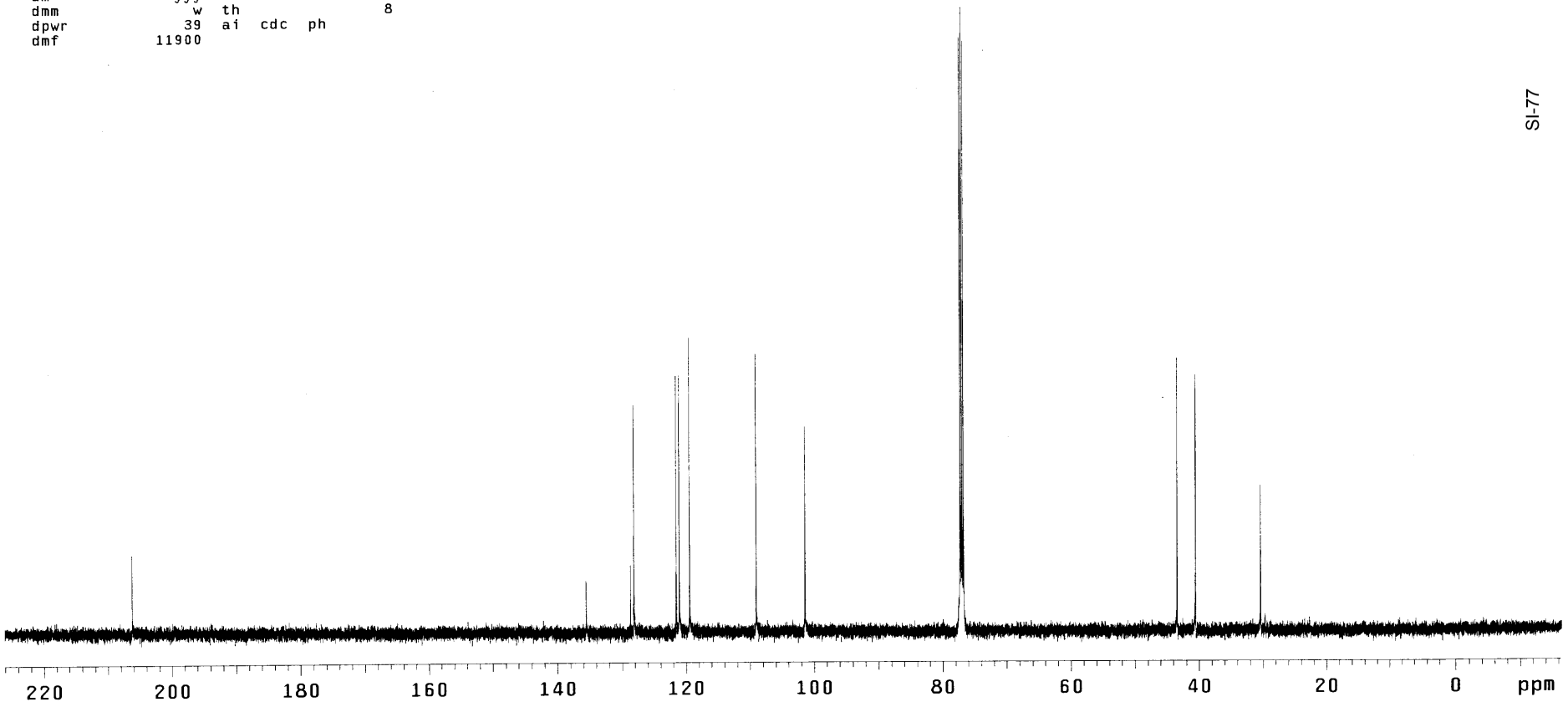


exp1 Carbon

SAMPLE		SPECIAL	
date	Dec 14 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
guozhu/C13-2008120~		pw90	9.600
	7-3.fid	alfa	10.000
ACQUISITION		FLAGS	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	PROCESSING	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	1464	DISPLAY	
TRANSMITTER		sp	-2079.4
tn	C13	wp	30487.3
sfrq	125.686	rfl	11756.7
tof	1255.2	rfp	9676.8
tpwr	52	rp	132.8
pw	4.800	lp	-299.2
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	52948
dmm	w	th	8
dpwr	39	ai cdc ph	
dmf	11900		

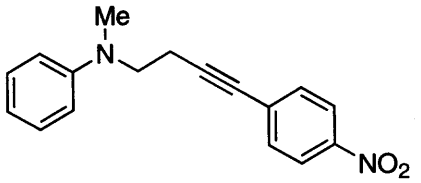


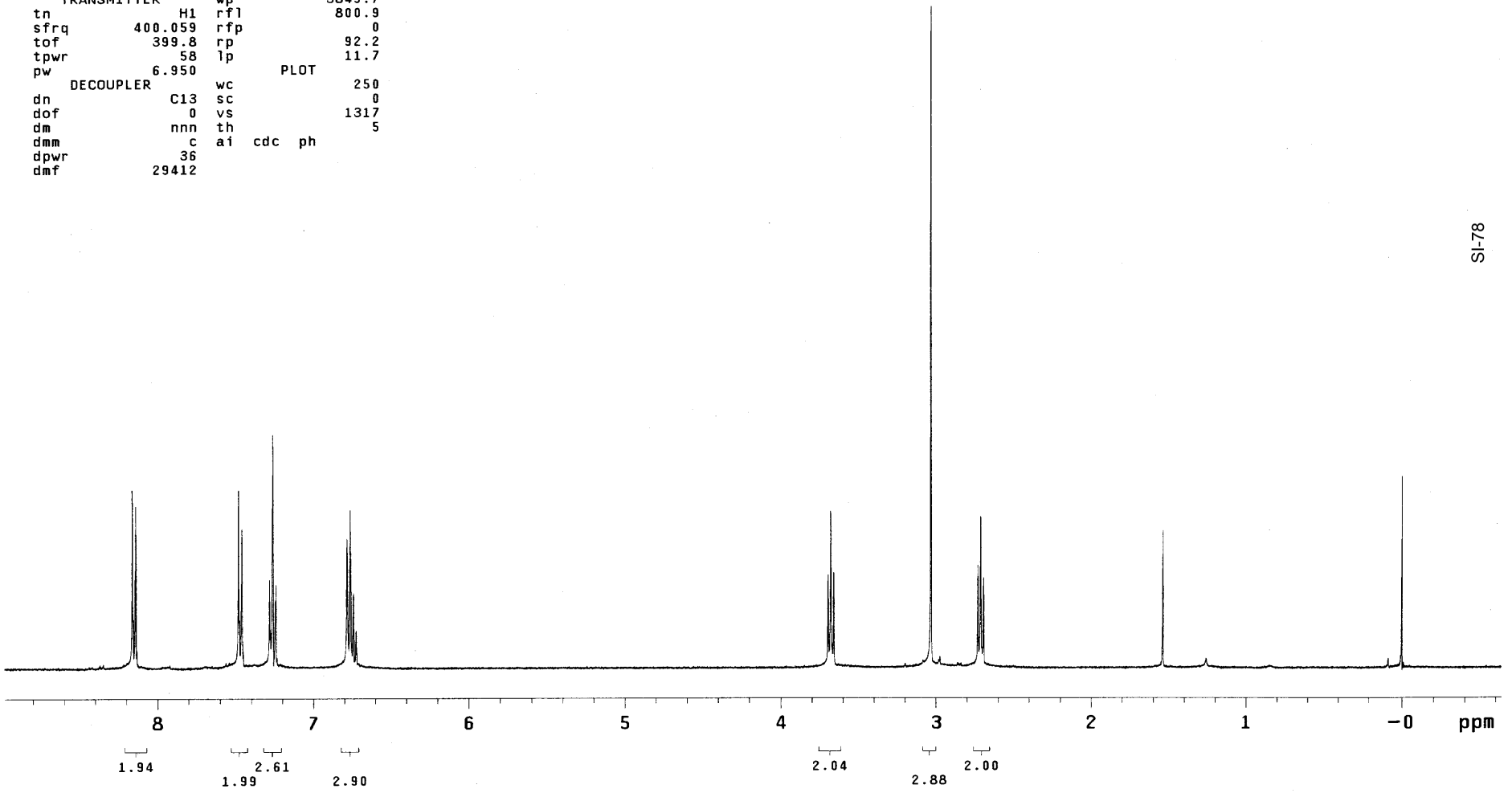
14



exp1 Proton

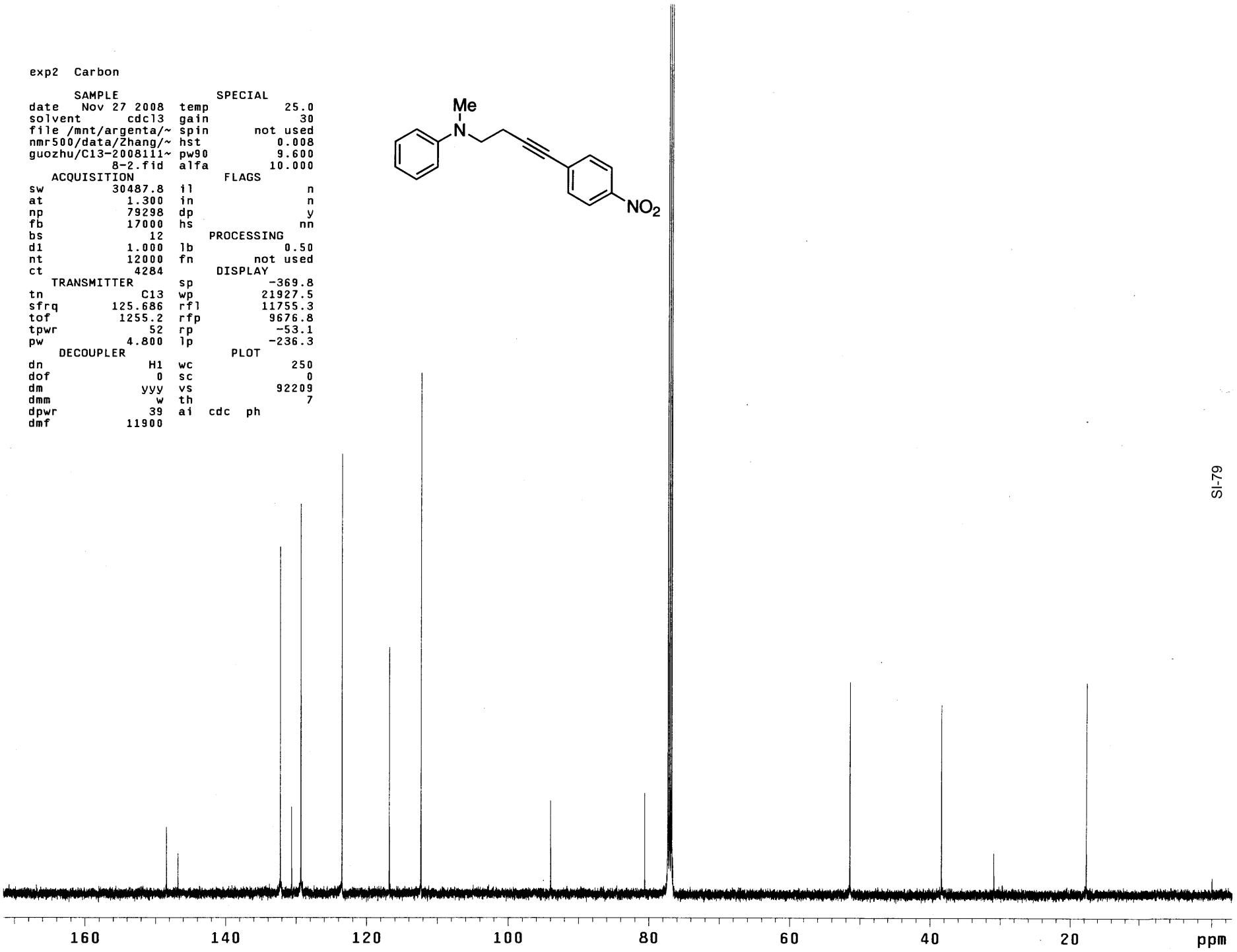
SAMPLE		SPECIAL	
date	Nov 18 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
mr400/data/Zhang/g~		hst	0.008
uozhu/guozhu-20081~		pw90	13.900
	118-2.fid	alfa	6.600
ACQUISITION		FLAGS	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	4	PROCESSING	
d1	1.000	fn	65536
nt	8	DISPLAY	
ct	8	sp	-255.5
TRANSMITTER		wp	3849.7
tn	H1	rfl	800.9
sfrq	400.059	rfp	0
tof	399.8	rp	92.2
tpwr	58	lp	11.7
pw	6.950	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	1317
dm	nnn	th	5
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		





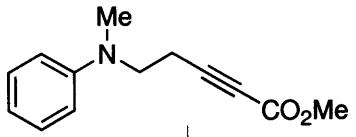
exp2 Carbon

SAMPLE		SPECIAL	
date	Nov 27 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
nmr500/data/Zhang/~		hst	0.008
guozhu/C13-2008111~		pw90	9.600
	8-2.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	4284	**DISPLAY**	
TRANSMITTER		sp	-369.8
tn	C13	wp	21927.5
sfrq	125.686	rfl	11755.3
tof	1255.2	rfp	9676.8
tpwr	52	rp	-53.1
pw	4.800	lp	-236.3
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	92209
dmm	w	th	7
dpwr	39	ai cdc ph	
dmf	11900		

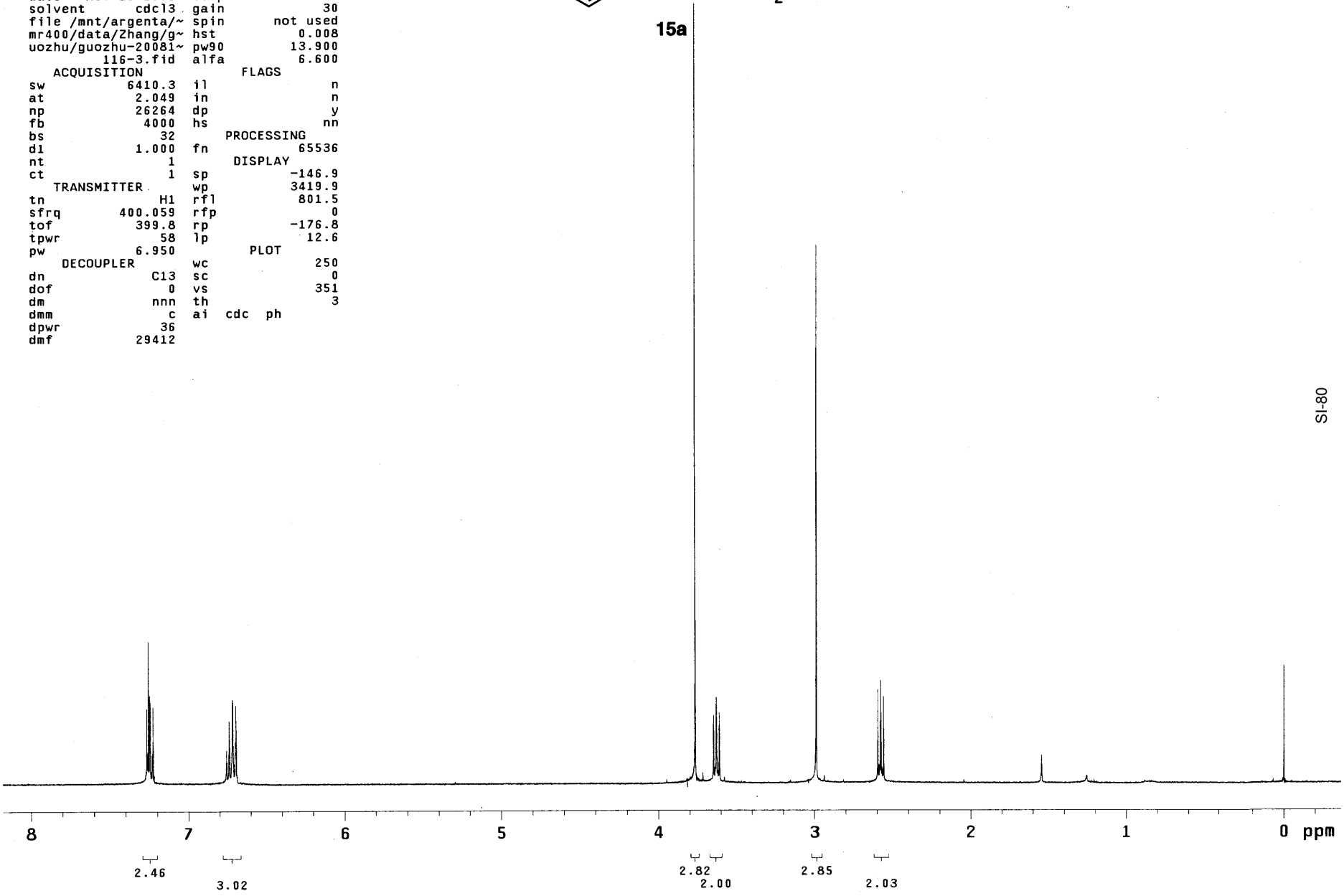


exp1 Proton

SAMPLE		SPECIAL	
date	Nov 16 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	116-3.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	1	**DISPLAY**	
ct	1	sp	-146.9
TRANSMITTER		wp	3419.9
tn	H1	rfl	801.5
sfrq	400.059	rfp	0
tof	399.8	rp	-176.8
tpwr	58	lp	12.6
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	351
dm	nnn	th	3
dmm	c	ai	cdc ph
dpwr	36		
dmf	29412		

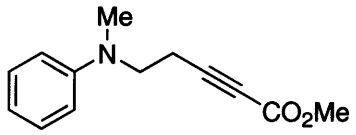


15a

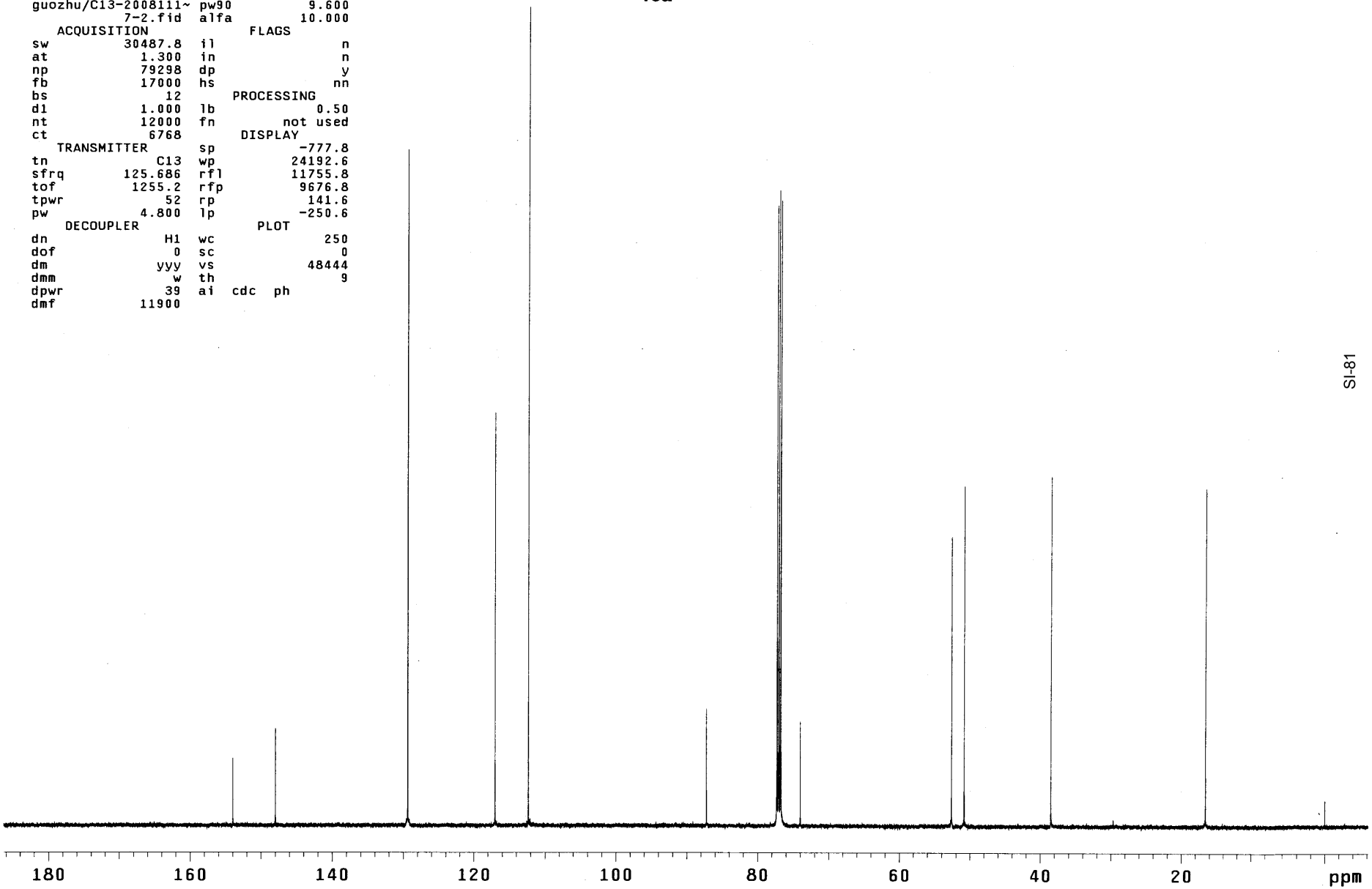


exp1 Carbon

SAMPLE		SPECIAL	
date	Nov 17 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008111~	pw90	9.600
	7-2.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	6768	**DISPLAY**	
TRANSMITTER		sp	-777.8
tn	C13	wp	24192.6
sfrq	125.686	rfl	11755.8
tof	1255.2	rfp	9676.8
tpwr	52	rp	141.6
pw	4.800	lp	-250.6
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	48444
dmm	w	th	9
dpwr	39	ai cdc ph	
dmf	11900		

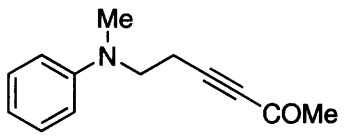


15a

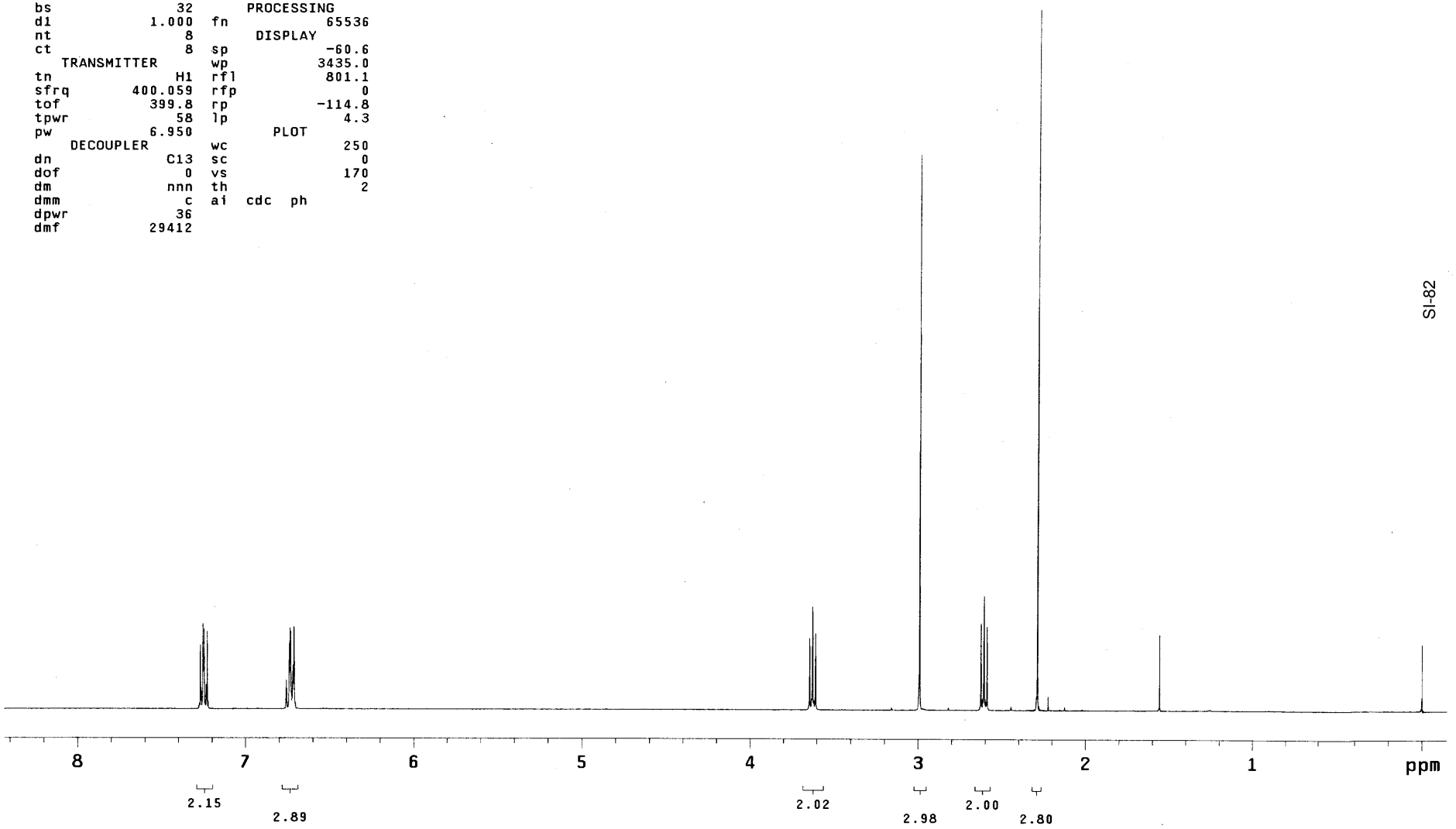


exp1 Proton

SAMPLE		SPECIAL	
date	Nov 25 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	125-1.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	8	**DISPLAY**	
ct	8	sp	-60.6
TRANSMITTER		wp	3435.0
tn	H1	rfl	801.1
sfrq	400.059	rfp	0
tof	399.8	rp	-114.8
tpwr	58	lp	4.3
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	170
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

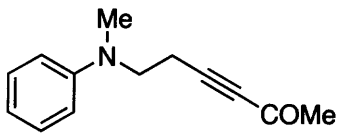


15b

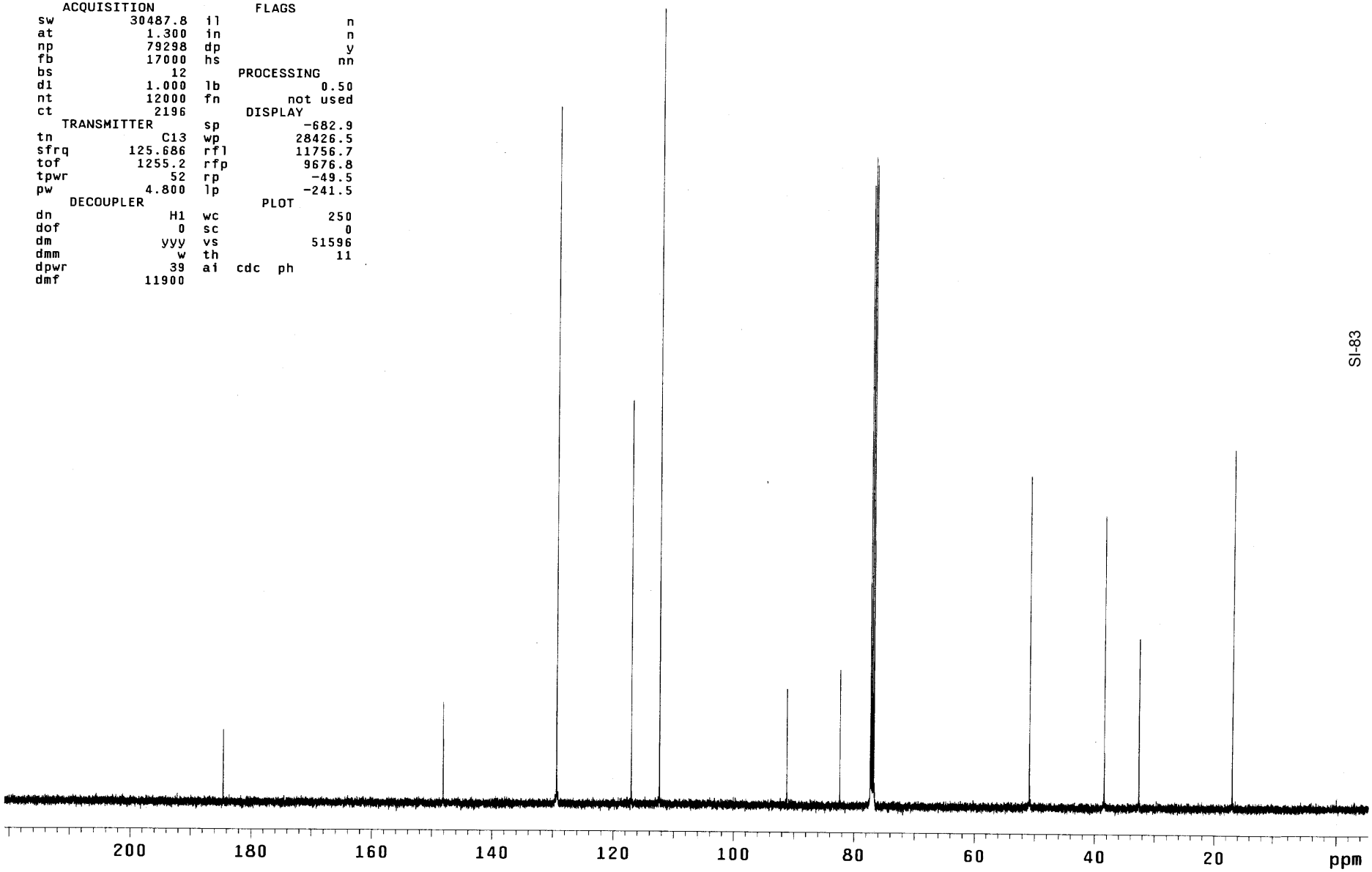


exp2 Carbon

SAMPLE		SPECIAL	
date	Nov 27 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008112~	pw90	9.600
	5-1.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	2196	**DISPLAY**	
TRANSMITTER		sp	-682.9
tn	C13	wp	28426.5
sfrq	125.686	rfl	11756.7
tof	1255.2	rfp	9676.8
tpwr	52	rp	-49.5
pw	4.800	lp	-241.5
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	51596
dmm	w	th	11
dpwr	39	ai	cdc ph
dmf	11900		



15b



exp12 Proton

SAMPLE	
date	Nov 23 2008
solvent	cdcl3
file	/home/walkup/~
vnmrsys/data/auto_~	
2008.11.23/guozhu/~	
Guozhu-20081123-5~~	
1/Proton01.fid	

ACQUISITION	
sw	6410.3
at	2.049
np	26264
fb	4000
bs	32
ss	2
d1	1.000
nt	8
ct	8

TRANSMITTER	
tn	H1
sfrq	399.865
tof	399.9
tpwr	60
pw	6.850

DECOUPLER	
dn	C13
dof	0
dm	nnn
dmm	c
dpwr	33
dmf	29412

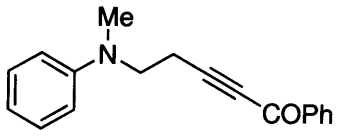
SPECIAL	
temp	25.0
gain	not used
spin	not used
hst	0.008
pw90	13.700
alfa	10.000

FLAGS	
il	n
in	n
dp	y
hs	nn

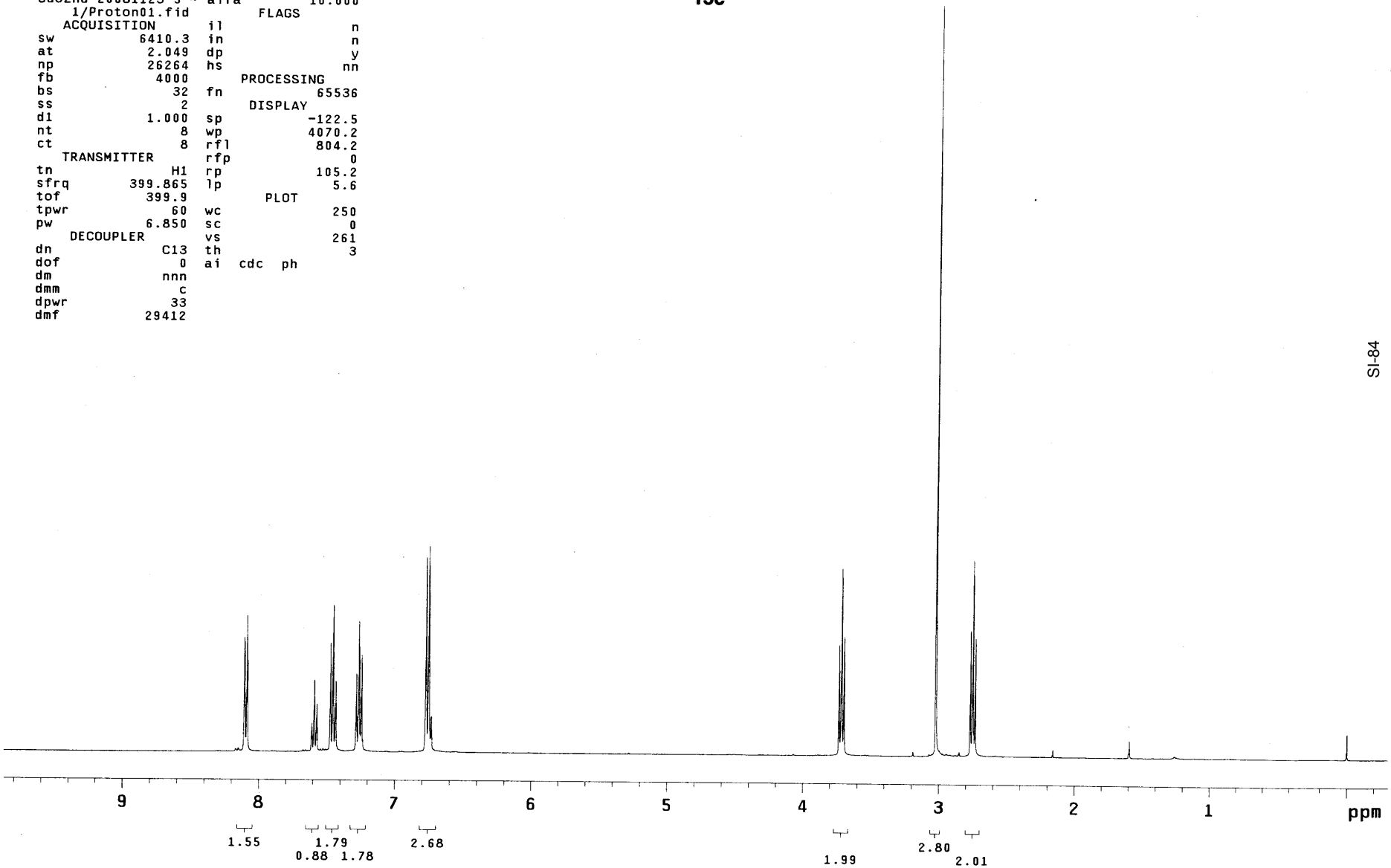
PROCESSING	
fn	65536

DISPLAY	
sp	-122.5
wp	4070.2
rfl	804.2
rfp	0
rp	105.2
lp	5.6

PLOT	
wc	250
sc	0
vs	261
th	3
ai	cdc ph



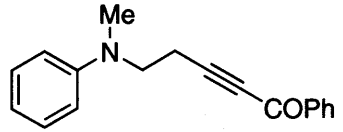
15c



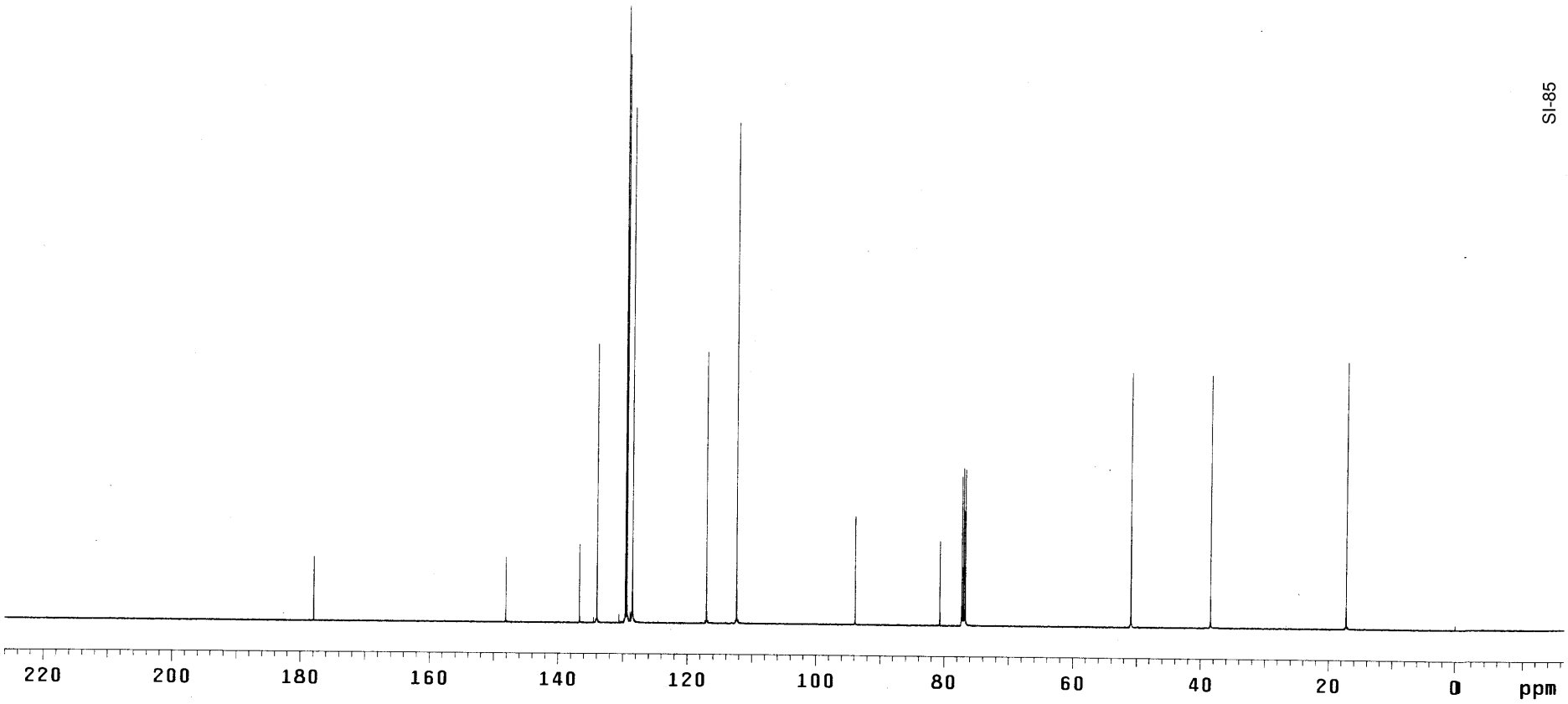
Automation directory: /home/walkup/vnmrsys/data/auto_2008.11.23_04
File : exp
Sample id : tmpstudy

Pulse Sequence: s2pul
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: walkup
VNMRS-500 "nmr500"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.300 sec
Width 30487.8 Hz
4416 repetitions
OBSERVE C13, 125.6732869 MHz
DECOUPLE H1, 499.7964114 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 131072
Total time 7 hr, 41 min, 52 sec



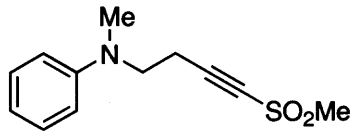
15c



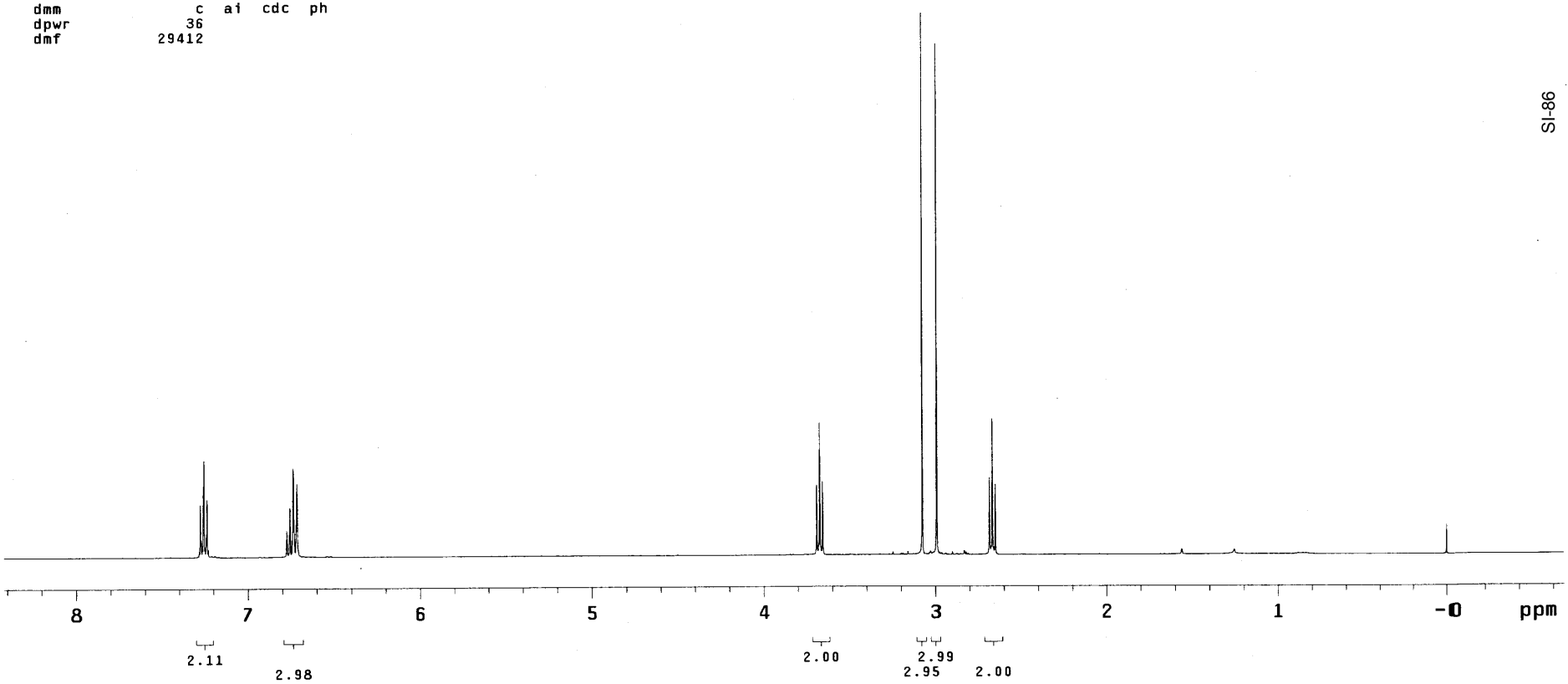
pengyu-2008-12-9-H-4

exp1 Proton

SAMPLE		SPECIAL	
date	Dec 9 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	209-1.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	8	**DISPLAY**	
ct	8	sp	-265.5
TRANSMITTER		wp	3634.1
tn	H1	rfl	802.1
sfrq	400.059	rfp	0
tof	399.8	rp	-17.7
tpwr	58	lp	-0.6
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	104
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

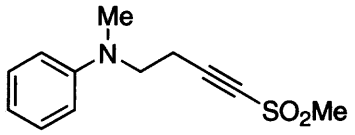


15d

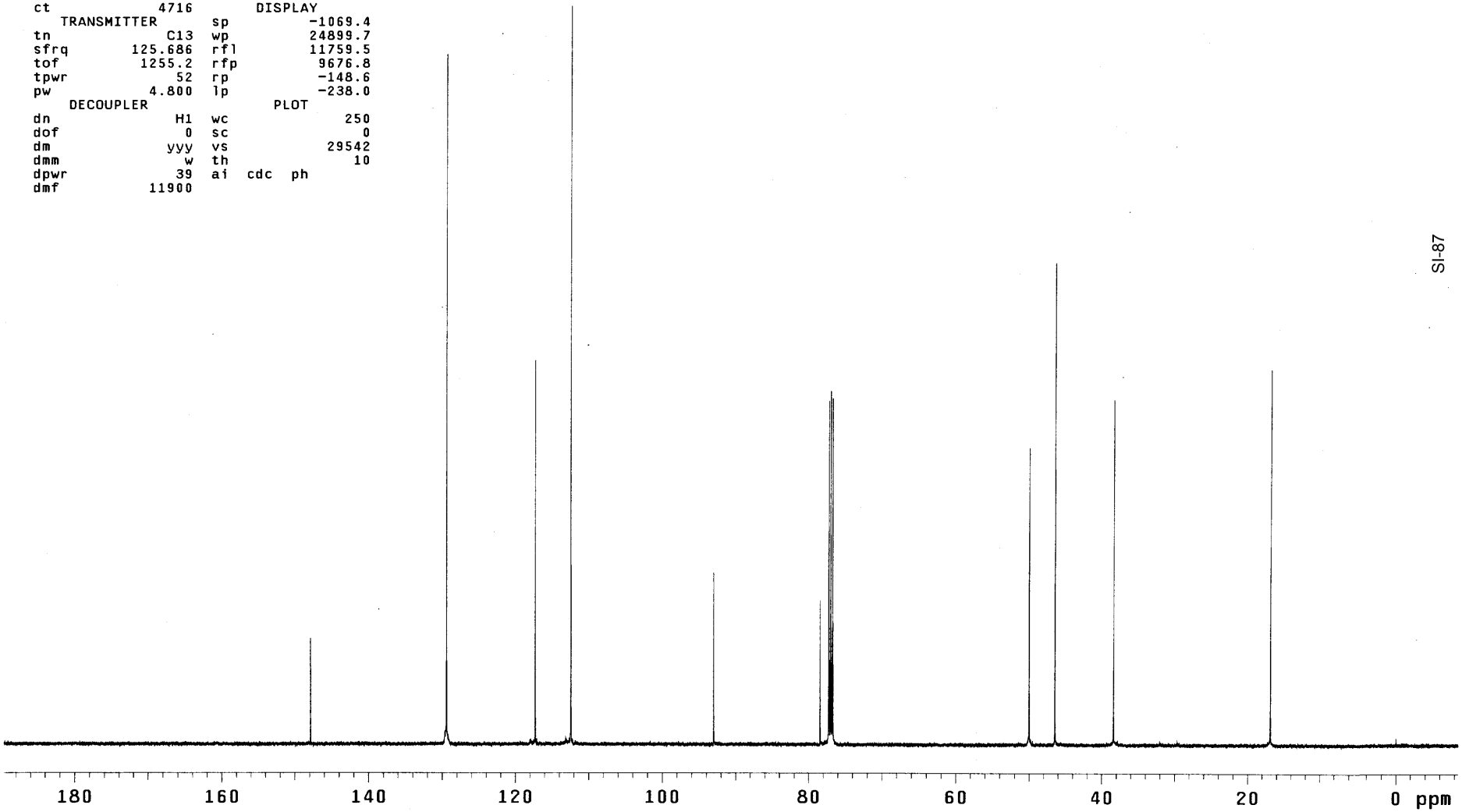


exp1 Carbon

SAMPLE		SPECIAL	
date	Dec 11 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008120~	pw90	9.600
	9-1.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	4716	**DISPLAY**	
TRANSMITTER		sp	-1069.4
tn	C13	wp	24899.7
sfrq	125.686	rfl	11759.5
tof	1255.2	rfp	9676.8
tpwr	52	rp	-148.6
pw	4.800	lp	-238.0
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	29542
dmm	w	th	10
dpwr	39	ai cdc ph	
dmf	11900		

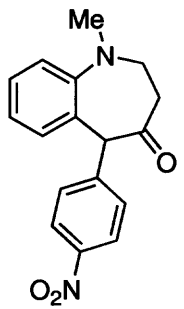


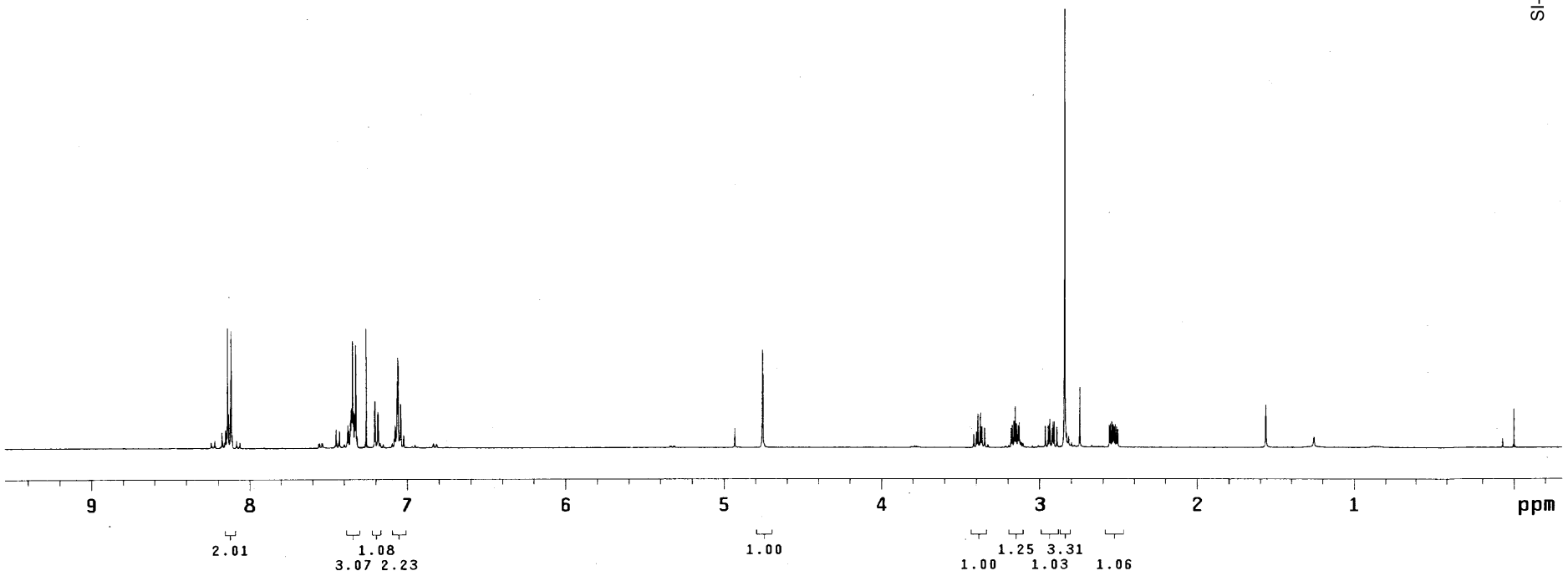
15d



exp1 Proton

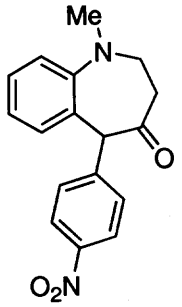
SAMPLE		SPECIAL	
date	Nov 27 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	127-1.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	8	**DISPLAY**	
ct	8	sp	-123.2
TRANSMITTER		wp	3943.4
tn	H1	rfl	800.1
sfrq	400.059	rfp	0
tof	399.8	rp	62.1
tpwr	58	lp	15.1
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	222
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

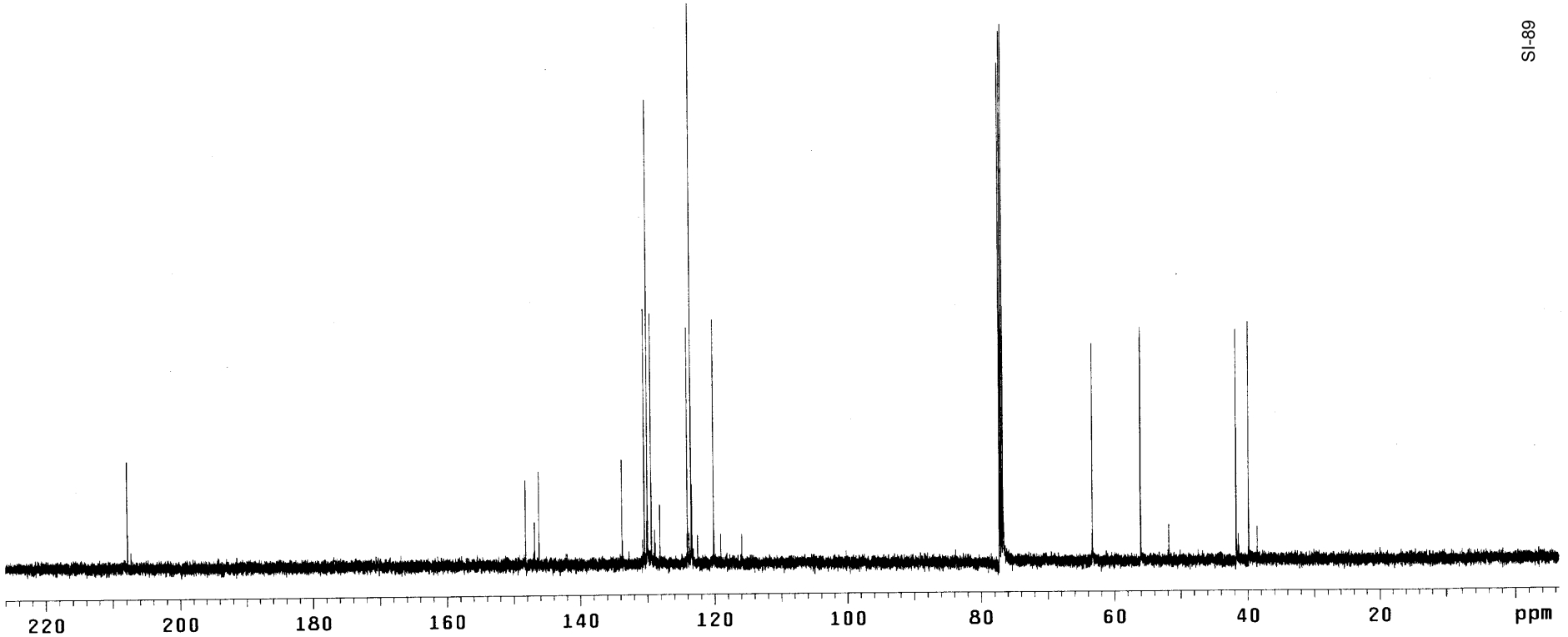




exp1 Carbon

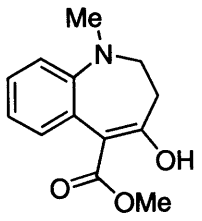
SAMPLE		SPECIAL	
date	Nov 27 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008112~	pw90	9.600
	7-1.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	1128	**DISPLAY**	
TRANSMITTER		sp	-821.9
tn	C13	wp	29229.9
sfrq	125.686	rfl	11756.2
tof	1255.2	rfp	9676.8
tpwr	52	rp	-67.7
pw	4.800	lp	-208.0
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	47609
dmm	w	th	13
dpwr	39	ai	cdc ph
dmf	11900		



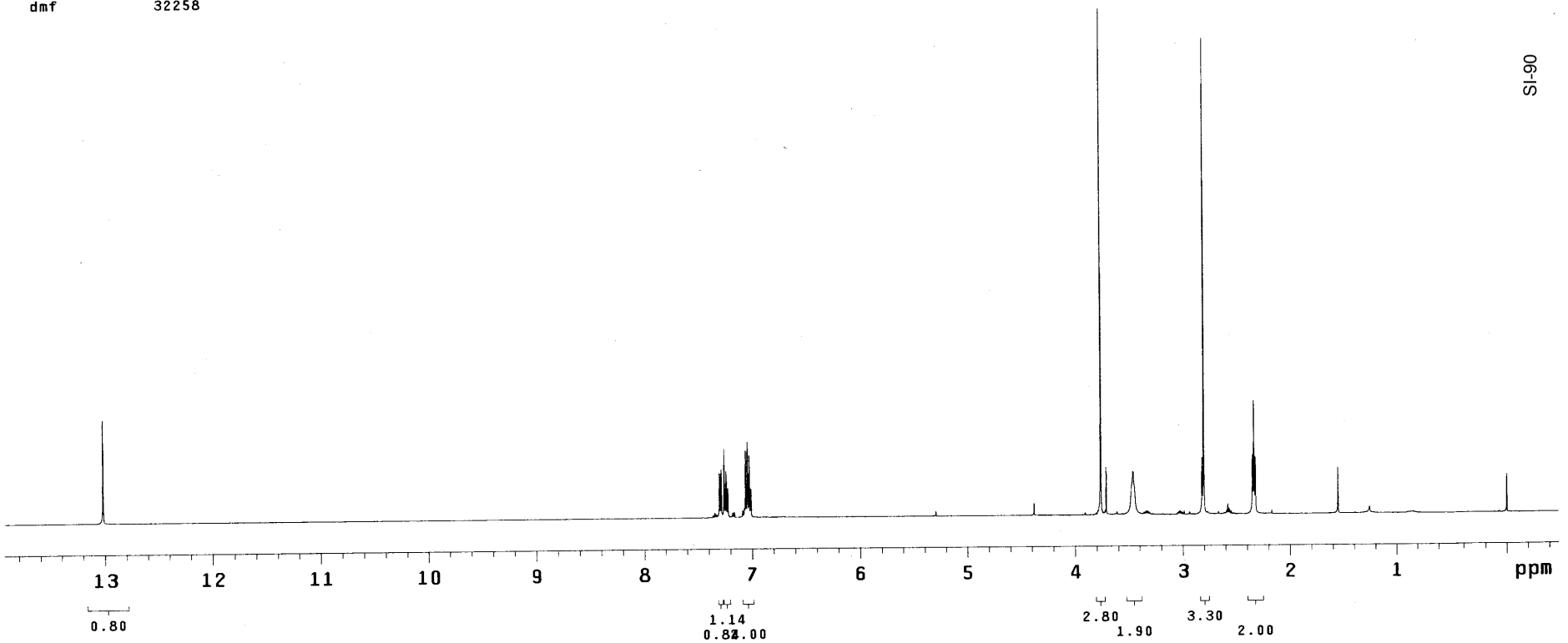


exp1 Proton

SAMPLE		SPECIAL	
date	Nov 24 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/H1-20081124~	pw90	13.400
	-1.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	8012.8	il	n
at	2.049	in	n
np	32830	dp	y
fb	4000	hs	nn
bs	8	**PROCESSING**	
d1	1.000	lb	0.20
nt	8	fn	65536
ct	8	**DISPLAY**	
TRANSMITTER		sp	-243.8
tn	H1	wp	7210.3
sfrq	499.797	rfl	1009.9
tof	499.7	rfp	0
tpwr	55	rp	-82.5
pw	6.700	lp	-33.8
DECOUPLER		**PLOT**	
dn	C13	wc	250
dof	0	sc	0
dm	nnn	vs	115
dmm	c	th	2
dpwr	33	ai cdc ph	
dmf	32258		

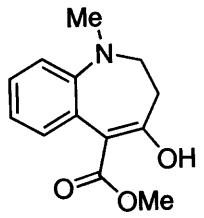


16a

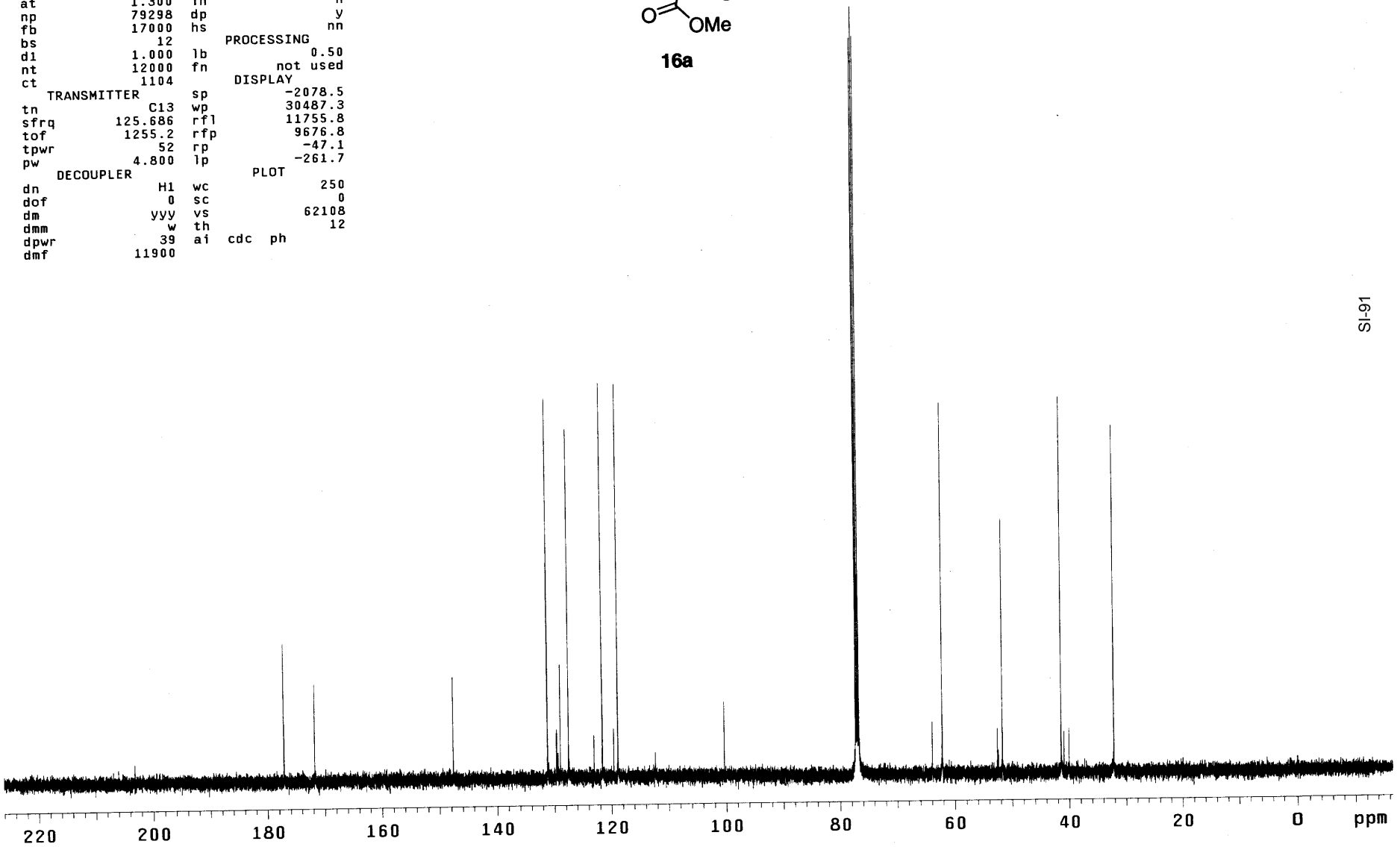


exp2 Carbon

SAMPLE		SPECIAL	
date	Nov 27 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
nmr500/data/Zhang/~		hst	0.008
guozhu/C13-2008112~		pw90	9.600
	4-1.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	1104	**DISPLAY**	
TRANSMITTER		sp	-2078.5
tn	C13	wp	30487.3
sfrq	125.686	rfl	11755.8
tof	1255.2	rfp	9676.8
tpwr	52	rp	-47.1
pw	4.800	lp	-261.7
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	62108
dmm	w	th	12
dpwr	39	ai	cdc ph
dmf	11900		

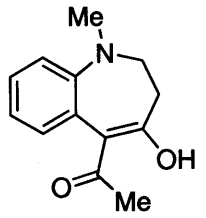


16a

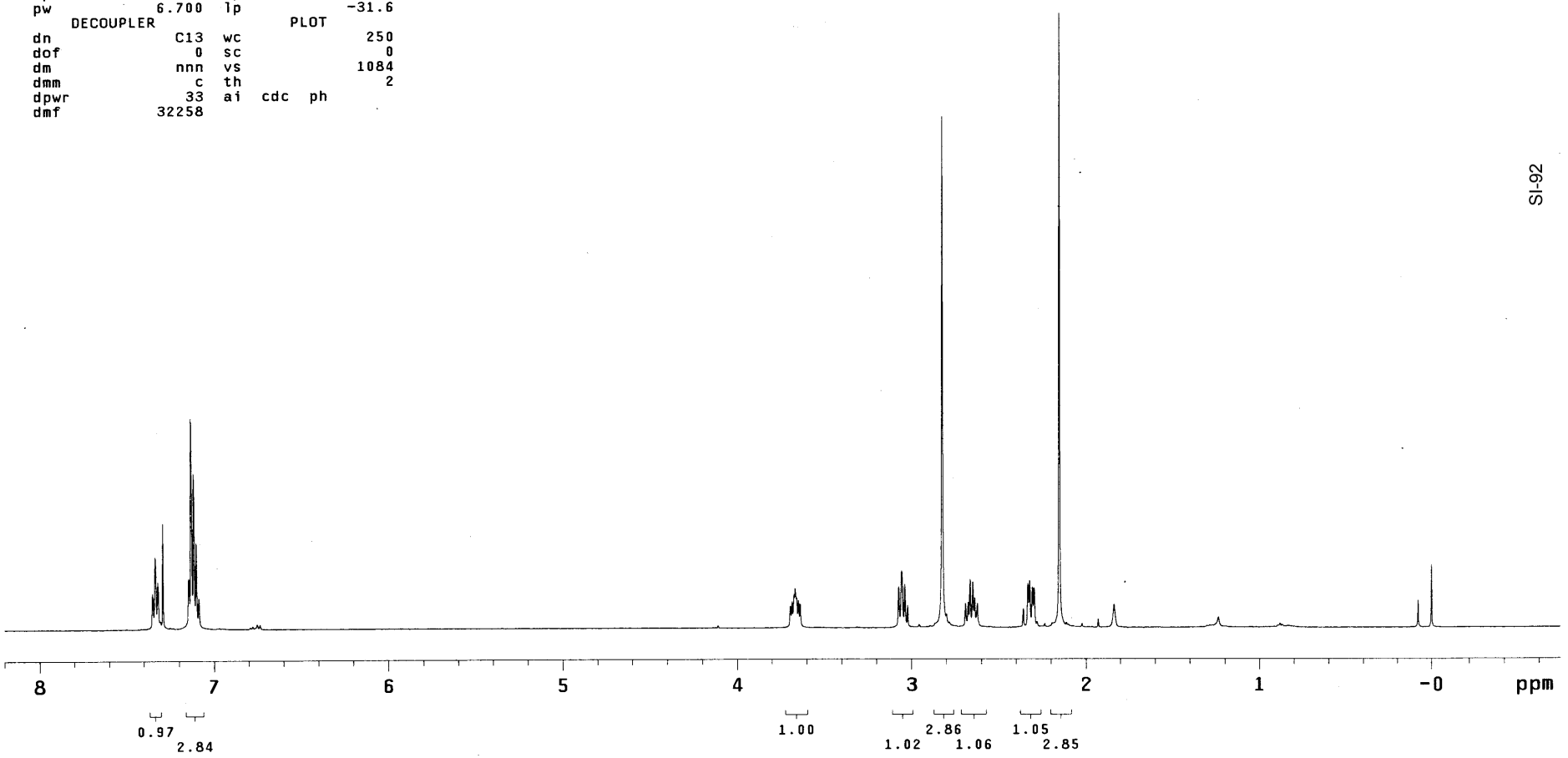


exp1 Proton

SAMPLE		SPECIAL	
date	Dec 11 2008	temp	-40.0
solvent	cdcl3	gain	20
file	/mnt/argenta/~	spin	not used
nmr500/data/Zhang/~		hst	0.008
guozhu/H1-20081211~		pw90	13.400
-4-40degree.fid		alfa	6.600
ACQUISITION		**FLAGS**	
sw	8012.8	il	n
at	2.049	in	n
np	32830	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	lb	0.20
nt	8	fn	65536
ct	8	**DISPLAY**	
TRANSMITTER		sp	-361.9
tn	H1	wp	4460.5
sfrq	499.797	rfl	995.2
tof	499.7	rfp	0
tpwr	55	rp	-112.0
pw	6.700	lp	-31.6
DECOUPLER		**PLOT**	
dn	C13	wc	250
dof	0	sc	0
dm	nnn	vs	1084
dmm	c	th	2
dpwr	33	ai cdc ph	
dmf	32258		

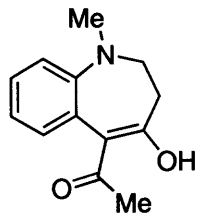


16b

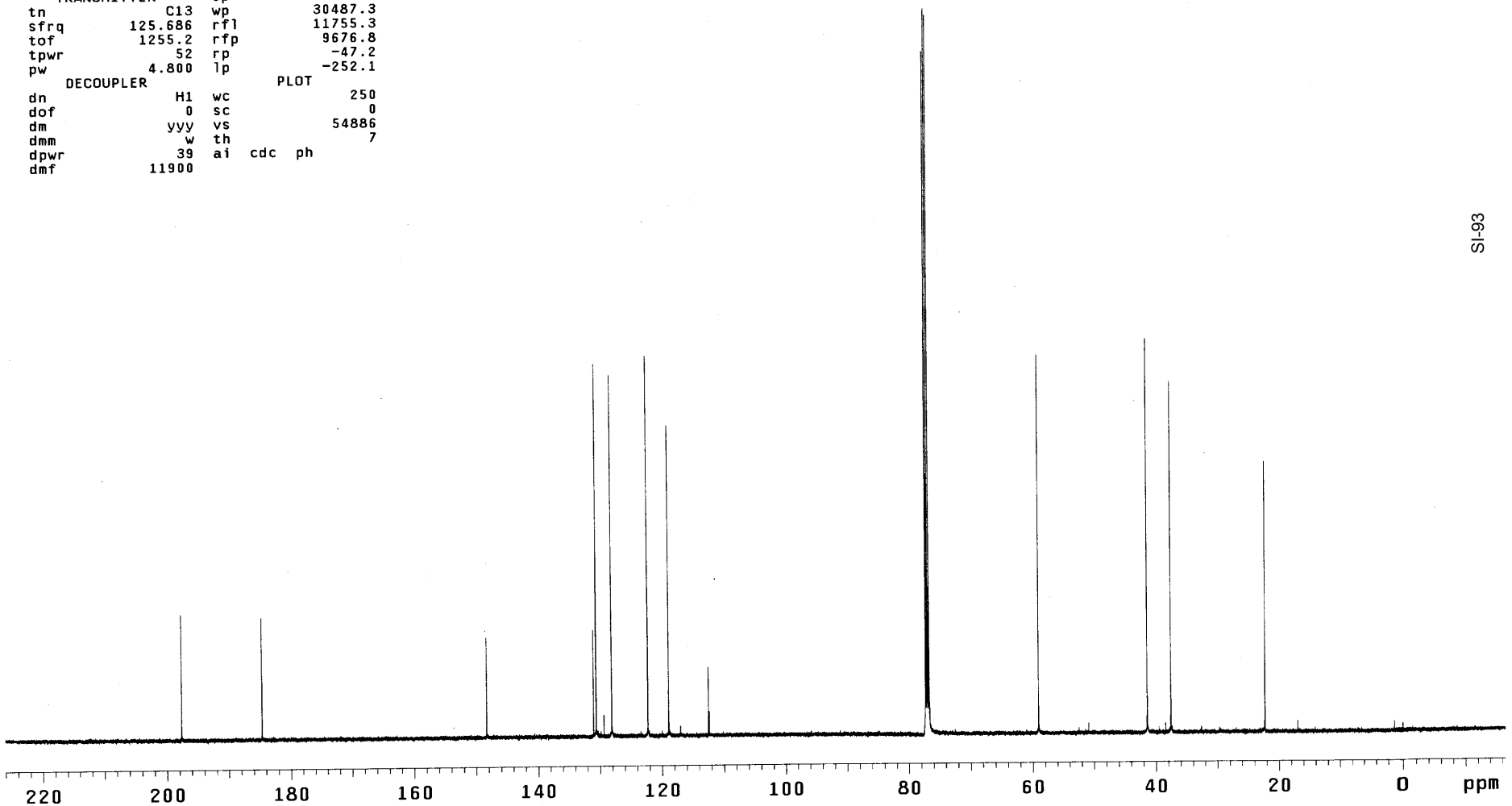


exp1 Carbon

SAMPLE		SPECIAL	
date	Nov 26 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008112~	pw90	9.600
	6-7.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12480	fn	not used
ct	12480	**DISPLAY**	
TRANSMITTER		sp	-2078.0
tn	C13	wp	30487.3
sfrq	125.686	rfl	11755.3
tof	1255.2	rfp	9676.8
tpwr	52	rp	-47.2
pw	4.800	lp	-252.1
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	54886
dmm	w	th	7
dpwr	39	ai	cdc ph
dmf	11900		

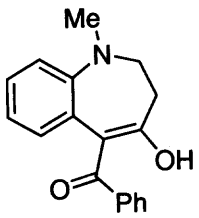


16b

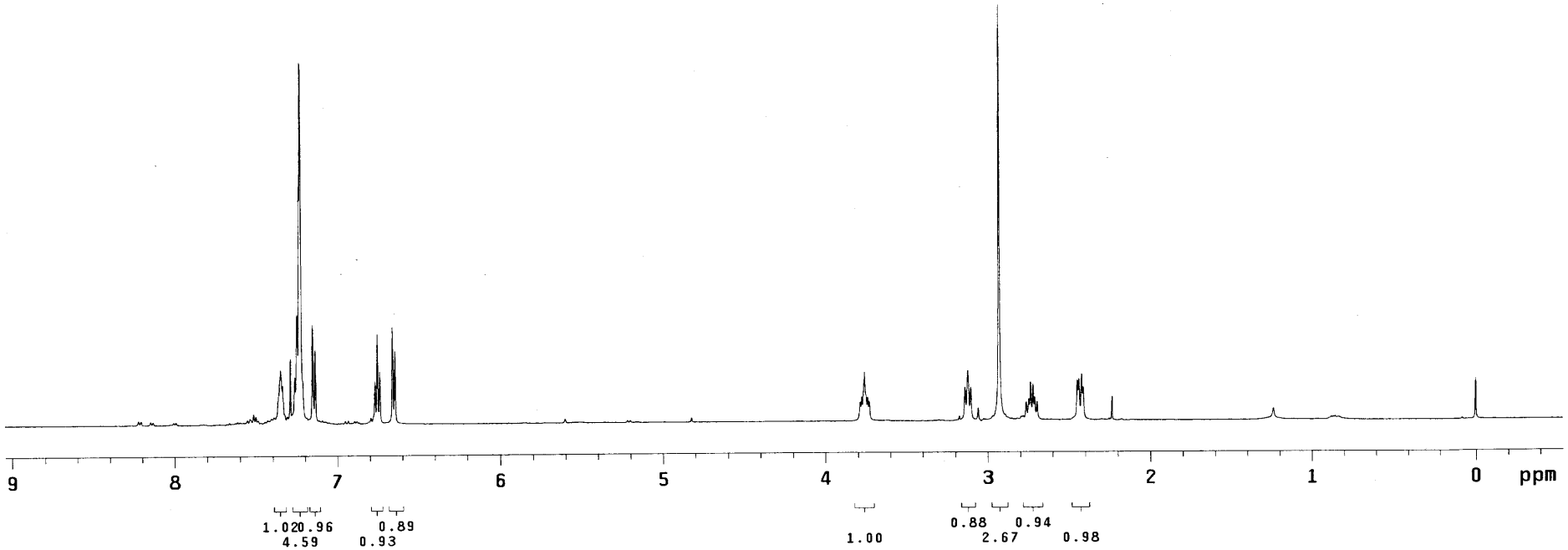


exp2 Proton

SAMPLE		SPECIAL	
date	Dec 11 2008	temp	-40.0
solvent	cdcl3	gain	20
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/H1-20081211~	pw90	13.400
	-3-40degree.fid	alfa	6.600
ACQUISITION		FLAGS	
sw	8012.8	il	n
at	2.049	in	n
np	32830	dp	y
fb	4000	hs	nn
bs	32	PROCESSING	
d1	1.000	lb	0.20
nt	8	fn	65536
ct	8	DISPLAY	
TRANSMITTER		sp	-270.5
tn	H1	wp	4790.9
sfrq	499.797	rfl	995.7
tof	499.7	rfp	0
tpwr	55	rp	-112.8
pw	6.700	lp	-27.7
DECOUPLER		PLOT	
dn	C13	wc	250
dof	0	sc	0
dm	nnn	vs	711
dmm	c	th	2
dpwr	33	ai	cdc ph
dmf	32258		

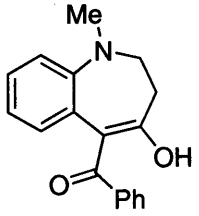


16c

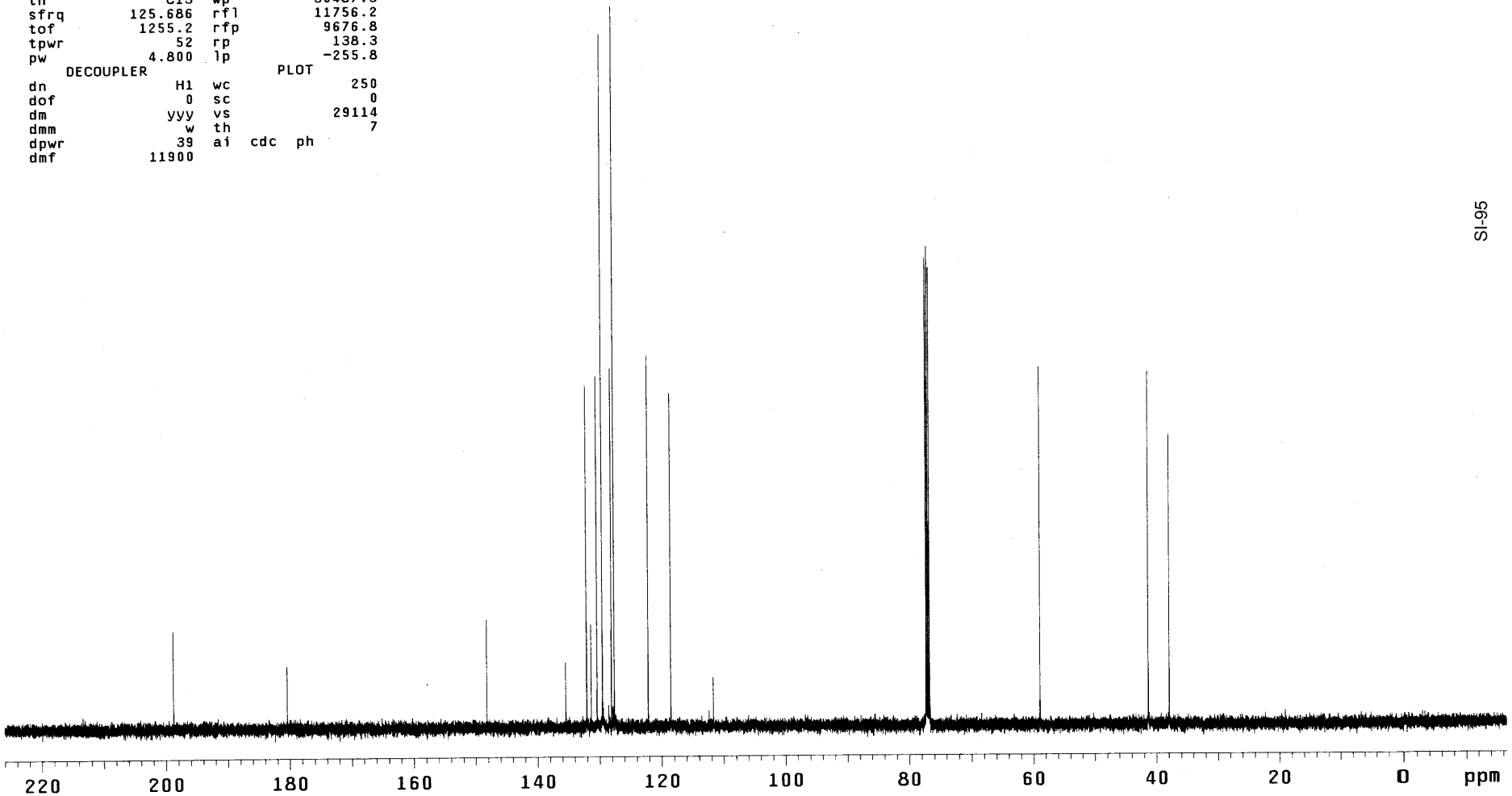


exp2 Carbon

SAMPLE		SPECIAL	
date	Nov 24 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008112~	pw90	9.600
	4-3.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	348	**DISPLAY**	
TRANSMITTER		sp	-2078.9
tn	C13	wp	30487.3
sfrq	125.686	rfl	11756.2
tof	1255.2	rfp	9676.8
tpwr	52	rp	138.3
pw	4.800	lp	-255.8
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	29114
dmm	w	th	7
dpwr	39	ai	cdc ph
dmf	11900		

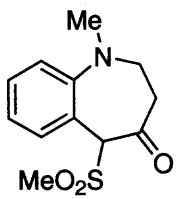


16c

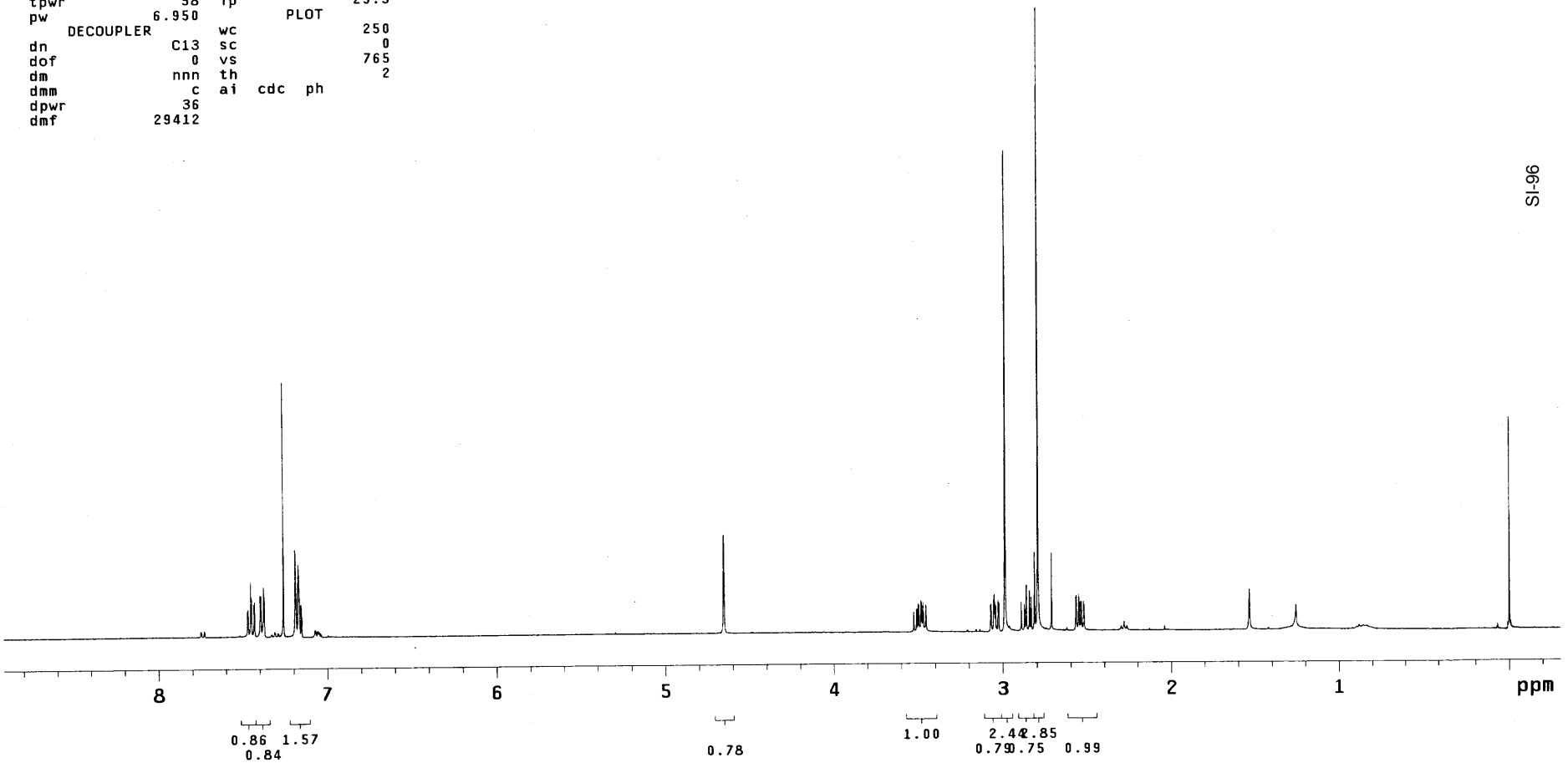


exp20 Proton

SAMPLE		SPECIAL	
date	Dec 10 2008	temp	30.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	mr400/data/Zhang/g~	hst	0.008
	uozhu/guozhu-20081~	pw90	13.900
	210-2.fid	alfa	6.600
ACQUISITION		**FLAGS**	
sw	6410.3	il	n
at	2.049	in	n
np	26264	dp	y
fb	4000	hs	nn
bs	32	**PROCESSING**	
d1	1.000	fn	65536
nt	48	**DISPLAY**	
ct	48	sp	-123.2
TRANSMITTER		wp	3690.9
tn	H1	rfl	799.9
sfrq	400.059	rfp	0
tof	399.8	rp	-21.8
tpwr	58	lp	29.5
pw	6.950	**PLOT**	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	765
dm	nnn	th	2
dmm	c	ai cdc ph	
dpwr	36		
dmf	29412		

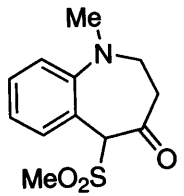


16d



exp1 Carbon

SAMPLE		SPECIAL	
date	Dec 12 2008	temp	25.0
solvent	cdcl3	gain	30
file	/mnt/argenta/~	spin	not used
	nmr500/data/Zhang/~	hst	0.008
	guozhu/C13-2008121~	pw90	9.600
	0-2.fid	alfa	10.000
ACQUISITION		**FLAGS**	
sw	30487.8	il	n
at	1.300	in	n
np	79298	dp	y
fb	17000	hs	nn
bs	12	**PROCESSING**	
d1	1.000	lb	0.50
nt	12000	fn	not used
ct	12000	**DISPLAY**	
TRANSMITTER		sp	-2078.0
tn	C13	wp	30487.3
sfrq	125.686	rfl	11755.3
tof	1255.2	rfp	9676.8
tpwr	52	rp	-148.6
pw	4.800	lp	-237.2
DECOUPLER		**PLOT**	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	58826
dmm	w	th	9
dpwr	39	ai	cdc ph
dmf	11900		



16d