

Supplementary Information (35 pages)

**Highly Selective and Practical Hydrolytic Oxidation of Organosilanes to Silanols
Catalyzed by a Ruthenium Complex**

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General. ^1H - and ^{13}C NMR spectra were measured on Bruker DPX 250 (^1H NMR: 250 MHz, ^{13}C NMR: 62.5 MHz) with CDCl_3 as the solvent. Optical rotation of the optically active silane and silanol was measured on Jasco DIP-140 Digital polarimeter. Commercially available solvents were purified by standard procedures. $\text{RuCl}_3\text{-H}_2\text{O}$, $\text{RuCl}_2(\text{PPh}_3)_3$, $\text{Ru}(\text{cod})\text{Cl}_2$, $\text{Ru}_3(\text{CO})_{12}$, $\text{RhCl}(\text{PPh}_3)_3$, $\text{RuH}_2(\text{PPh}_3)_4$, $[\text{RuCl}_2(\text{benzene})]_2$, and $[\text{RuCl}_2(p\text{-cymene})]_2$ were purchased from Aldrich Co., and used as obtained without further purification. Dimethylphenylsilane, triethylsilane, dimethyloctadecylsilane, and triisobutylsilane were purchased from Fluka Co., and diphenylmethyilsilane, diphenylsilane, and triphenylsilane from Aldrich Co. Silanes in entries 9~17 (Table 2) were prepared according to a typical procedure as described below. Silanes in entries 18~19 (Table 2) were prepared from a reported procedure.^{6d}

A Typical Procedure for the alkenyl- and alkynylsilanes (entries 9~17 in Table 2): To a solution of 1-hexyne (246 mg, 3.0 mmol) in diethyl ether (5 mL) was slowly added butyllithium (1.6 M in hexane, 2.1 mL, 3.3 mmol) at -78°C , and the solution was stirred for 30 min at the same temperature, after which a sloution of chlorodimethylsilane (830 mg, 8.8 mmol) in diethyl ether (16 mL) was added. The resulting reaction mixture was allowed to warm up to room temperature over 1 h with stirring. The crude product was extracted with diethyl ether (20 mL x 2), washed with brine (30 mL x 2), and dried over MgSO_4 . Column chromatography on silica gel (hexane) afforded the analytically pure product, dimethyl(1-hexynyl)silane (435 mg, 85%): ^1H NMR (250 MHz, CDCl_3) δ 4.03 (1H, m), 2.16 (2H, t, J = 6.9 Hz), 1.47–1.29 (4H, m), 0.84 (3H, t, J = 7.0 Hz), 0.16 (6H, d, J = 3.7 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 109.6, 81.6, 31.0, 22.3, 20.0, 13.9, -2.4; IR (CH_2Cl_2) cm^{-1} 2965, 2871, 2138, 1712, 1257; HRMS (EI) calcd for $\text{C}_8\text{H}_{16}\text{Si}$ 140.1022, found 140.1013.

Dimethyl(phenylethynyl)silane⁷ (Table 2, entry 9): ^1H NMR (250 MHz, CDCl_3) δ 7.48–7.44 (2H, m), 7.30–7.25 (3H, m), 4.28 (1H, m), 0.32 (6H, d, J = 3.7 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 132.4, 129.1, 128.7, 123.3, 106.9, 91.5, -2.5; IR (CH_2Cl_2) cm^{-1} 2965, 2160, 1488, 1252, 1222.

Diisopropyl(phenylethynyl)silane (Table 2, entry 10): ^1H NMR (250MHz, CDCl_3) δ 7.53–7.50 (2H, m), 7.35–7.29 (3H, m), 3.86 (1H, s), 1.17–1.15 (14H, m); ^{13}C NMR (62.5 MHz, CDCl_3) δ 132.6, 129.1, 128.7, 123.6, 108.4, 88.3, 19.0, 18.8, 11.4; HRMS (EI) calcd for $\text{C}_{14}\text{H}_{20}\text{Si}$ 216.1334, found 216.1338.

Dimethyl(2-trimethylsilylethynyl)silane (Table 2, entry 11): ^1H NMR (250 MHz, CDCl_3) δ 4.18 (1H, m), 0.30 (6H, d, J = 3.8 Hz), 0.24 (9H, s); ^{13}C NMR (62.5 MHz, CDCl_3) δ 116.1, 110.9, 0.2, -2.7; IR (CH_2Cl_2) cm^{-1} 2961, 2133, 1639, 1256; HRMS (EI) calcd for $\text{C}_7\text{H}_{16}\text{Si}_2$ 156.0791, found 156.0793.

Dimethyl(5-chloropentynyl)silane (Table 2, entry 13): ^1H NMR (250 MHz, CDCl_3) δ 4.13 (1H, m), 3.68 (2H, t, J = 6.4 Hz), 2.46 (2H, t, J = 6.8 Hz), 2.0 (2H, m), 0.25 (6H, d, J = 3.0 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 107.1, 83.1, 43.9, 31.6, 17.7, -2.5; IR (CH_2Cl_2) cm^{-1} 2963, 2178, 2140, 1252, 1043; MS (EI) 155 (8.1), 149 (10.5), 140 (72.8), 125 (17.0), 113 (30.2), 97 (44.0), 91 (36.8), 83 (53.6), 71 (59.6), 69 (51.5), 57 (100.0).

Dimethyl[(1-cyclohexenyl)ethynyl]silane (Table 2, entry 14): ^1H NMR (250 MHz, CDCl_3) δ 6.20 (1H, bs), 4.18 (1H, m), 2.10 (4H, m), 1.59 (4H, m), 0.25 (2H, d, J = 3.7 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 137.0, 121.0, 109.1, 88.2, 29.3, 26.0, 22.6, 21.8, -2.4; IR (CH_2Cl_2) cm^{-1} 2935, 2852, 2139, 1438, 1252; HRMS (EI) calcd for $\text{C}_{10}\text{H}_{16}\text{Si}$ 164.1022, found 164.1029.

Dimethyl(2-thienyl)silane (Table 2, entry 15): ^1H NMR (250 MHz, CDCl_3) δ 7.59 (1H, d, J = 4.6 Hz), 7.30 (1H, d, J = 3.2 Hz), 7.18 (1H, m), 4.58 (1H, m), 0.38 (6H, d, J = 3.7 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 136.7, 135.5, 131.5, 128.7, -2.3; IR (CH_2Cl_2) cm^{-1} 2961, 2129, 1639, 1253; HRMS (EI) calcd for $\text{C}_6\text{H}_{10}\text{SSi}$ 142.0273, found 142.0290.

(E)-Dimethyl(2-phenylethenyl)silane^{4a} (Table 2, entry 16): ^1H NMR (250 MHz, CDCl_3) δ 7.45–7.25 (5H, m), 7.02 (1H, d, J = 19.0 Hz), 6.50 (1H, dd, J = 19.0, 2.6 Hz), 4.23 (1H, m), 0.25 (6H, d, J = 3.7 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 145.8, 138.6, 129.0, 128.6, 126.9, 126.5, -3.5.

Diphenyl(2-methyl-1-propenyl)silane (Table 2, entry 17): ^1H NMR (250 MHz, CDCl_3) δ 7.61–7.55 (4H, m), 7.39–7.34 (6H, m), 5.55 (1H, d, J = 4.9 Hz), 5.23 (1H, m), 1.98 (3H, d, J = 3.7 Hz), 1.87 (3H, d, J = 4.4 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 157.4, 135.7, 135.5, 129.9, 128.4, 117.2, 30.0, 24.3; IR (CH_2Cl_2) cm^{-1} 3067, 3013, 2136, 1429, 1122; HRMS (EI) calcd for $\text{C}_{16}\text{H}_{18}\text{Si}$ 138.1178, found 138.1179.

(+/-)-Methyl(α -naphthyl)phenylsilane^{6d} (Table 2, entry 18): ^1H NMR (250 MHz, CDCl_3) δ 8.36–8.32 (1H, m), 8.13–7.98 (3H, m), 7.84–7.81 (2H, m), 7.70–7.51 (6H, m), 5.66 (1H, m), 1.01 (1H, d, J = 3.8 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 137.5, 135.8, 135.6, 135.3, 133.8, 133.7, 130.9, 129.9, 129.3, 128.4, 128.3, 126.5, 126.0, 125.6, -4.1.

(+)-Methyl(α -naphthyl)phenylsilane^{6d} (Table 2, entry 19): ^1H NMR (250 MHz, CDCl_3) δ 8.14–8.10 (1H, m), 7.98–7.79 (3H, m), 7.66–7.62 (2H, m), 7.55–7.39 (6H, m), 5.43 (1H, m), 0.83 (3H, d, J = 3.8 Hz); ^{13}C NMR (62.5 MHz, CDCl_3) δ 137.5, 135.8, 135.7, 135.3, 133.8, 133.7, 130.9, 130.0, 129.3, 128.5, 128.4, 126.5, 126.0, 125.6, -4.1.

A Typical Procedure for the hydrolytic oxidation of silane to silanol catalyzed by 1 is described in the text as a footnote (footnote number 10).

Dimethylphenylsilanol^{6d} (Table 2, entry 1): ^1H NMR (250 MHz, CDCl_3) δ 7.59–7.52 (2H, m), 7.50–7.35 (3H, m), 2.24 (1H, bs), 0.33 (6H s).

Diphenylmethylsilanol^{6a} (Table 2, entry 3): ^1H NMR (250 MHz, CDCl_3) δ 7.41–7.39 (4H, m), 7.22–7.12 (6H, m), 3.57 (1H, bs), 0.41 (3H, s).

Diphenylsilanediol⁷ (Table 2, entry 4): ^1H NMR (250 MHz, CDCl_3) δ 7.76–7.73 (4H, m), 7.49–7.39 (6H, m), 2.87 (2H, bs).

Triethylsilanol^{6a} (Table 2, entry 5): ¹H NMR (250 MHz, CDCl₃) δ 1.00 (1H, bs), 0.42 (9H, t, *J* = 3.6 Hz), 0.25 (6H, q, *J* = 3.6 Hz).

Dimethyloctadecylsilanol (Table 2, entry 6): ¹H NMR (250 MHz, CDCl₃) δ 2.07 (1H, bs), 1.18–1.14 (34H, m), 0.75 (3H, t, *J* = 6.7 Hz), 0.45 (2H, m), 0.00 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 34.0, 32.4, 30.2, 30.1, 29.9, 23.7, 23.2, 18.3, 14.6, 0.2; IR (CH₂Cl₂) cm⁻¹ 3246 (br), 2919, 2850, 2361, 1464; HRMS (EI) calcd for C₂₀H₄₄OSi 328.3163, found 328.3152.

Tripheylsilanol^{6d} (Table 2, entry 7): ¹H NMR (250 MHz, CDCl₃) δ 7.52–7.49 (6H, m), 7.37–7.21 (9H, m), 2.79 (1H, bs).

Triisobutylsilanol (Table 2, entry 8): ¹H NMR (250 MHz, CDCl₃) δ 1.85 (3H, m), 1.34 (1H, bs), 0.95 (18H, d, *J* = 6.5 Hz), 0.61 (6H, d, *J* = 6.9 Hz); ¹³C NMR (62.5 MHz, CDCl₃) δ 27.5, 26.8, 24.7; IR (CH₂Cl₂) cm⁻¹ 3432 (br), 2955, 1650, 1464, 1218; HRMS (EI) calcd for C₁₂H₂₈OSi 216.1909, found 216.1906.

Dimethyl(phenylethyynyl)silanol⁷ (Table 2, entry 9): ¹H NMR (250 MHz, CDCl₃) δ 7.49–7.45 (2H, m), 7.36–7.25 (3H, m), 2.55 (1H, bs), 0.38 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 132.5, 129.3, 128.7, 122.9, 105.2, 93.1, 2.0; IR (CH₂Cl₂) cm⁻¹ 3339 (br), 2964, 2160, 1489, 1257.

Diisopropyl(phenylethyynyl)silanol (Table 2, entry 10): ¹H NMR (250 MHz, CDCl₃) δ 7.50–7.46 (2H, m), 7.32–7.26 (3H, m), 2.26 (1H, bs), 1.15–1.02 (14H, m); ¹³C NMR (62.5 MHz, CDCl₃) δ 132.6, 129.3, 128.7, 123.1, 106.6, 90.2, 17.5, 17.3, 13.7; IR (CH₂Cl₂) cm⁻¹ 3360 (br), 2946, 2159, 1463, 1028; HRMS (EI) calcd for C₁₄H₂₀OSi 232.1283, found 232.1281.

Dimethyl(2-trimethylsilylethyynyl)silanol (Table 2, entry 11): ¹H NMR (250 MHz, CDCl₃) δ 1.69 (1H, bs), 0.30 (6H, s), 0.18 (9H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 116.1, 110.9, 0.6, -2.6; IR (CH₂Cl₂) cm⁻¹ 3445, 2963, 1637, 1053; HRMS (EI) calcd for C₇H₁₆OSi₂ 172.0740, found 172.0717.

Dimethyl(1-hexynyl)silanol (Table 2, entry 12): ¹H NMR (250 MHz, CDCl₃) δ 2.23 (2H, t, *J* = 6.9 Hz), 1.57–1.36 (5H, m), 0.91 (3H, t, *J* = 7.0 Hz), 0.27 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 108.1, 83.8, 30.9, 22.3, 19.8, 14.0, 2.0; IR (CH₂Cl₂) cm⁻¹ 3306 (br), 2962, 2936, 2177, 1256; HRMS (EI) calcd for C₈H₁₆OSi 156.0971, found 156.0967.

Dimethyl(5-chloropentynyl)silanol (Table 2, entry 13): ¹H NMR (250 MHz, CDCl₃) δ 3.65 (2H, t, *J* = 6.3 Hz), 2.43 (3H, t, *J* = 6.8 Hz), 1.98 (2H, m), 0.28 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 131.5, 110.8, 49.1, 36.7, 22.7, 7.2; IR (CH₂Cl₂) cm⁻¹ 3306 (br), 2962, 2177, 1256; MS (EI) 169 (6.1), 167 (14.0), 133 (11.5), 123 (5.7), 95 (6.5), 74 (5.8), 73 (100.0).

Dimethyl[(1-cyclohexenyl)ethynyl]silanol (Table 2, entry 14): ¹H NMR (250 MHz, CDCl₃) δ 6.22 (1H, bs), 2.12 (4H, m), 1.99 (1H, bs), 1.60 (4H, m), 0.30 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 137.6, 120.7, 107.4, 90.0, 29.2, 26.1, 22.5, 21.7, 2.0; IR (CH₂Cl₂) cm⁻¹ 3433 (br), 2938, 2148, 1639, 1256; HRMS (EI) calcd for C₁₀H₁₆OSi 180.0971, found 180.0973.

Dimethyl(2-thienyl)silanol (Table 2, entry 15): ¹H NMR (250 MHz, CDCl₃) δ 7.64 (1H, d, *J* = 4.6 Hz), 7.37 (1H, d, *J* = 3.3 Hz), 7.20 (1H, m), 2.18 (1H, bs), 0.46 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 139.0, 135.1, 131.5, 128.6, 1.3; IR (CH₂Cl₂) cm⁻¹ 3339 (br), 2962, 1256, 1086; HRMS (EI) calcd for C₆H₁₀OSi 158.0222, found 158.0221.

(E)-Dimethyl(2-phenylethenyl)silanol^{4a} (Table 2, entry 16): ¹H NMR (250 MHz, CDCl₃) δ 7.44–7.23 (5H, m), 6.95 (1H, d, *J* = 19.3 Hz), 6.47 (1H, d, *J* = 19.2 Hz), 2.45 (1H, bs), 0.35 (6H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 145.6, 138.4, 129.0, 128.8, 128.0, 127.0, 0.54; IR (CH₂Cl₂) cm⁻¹ 3264 (br), 2960, 1604, 1253.

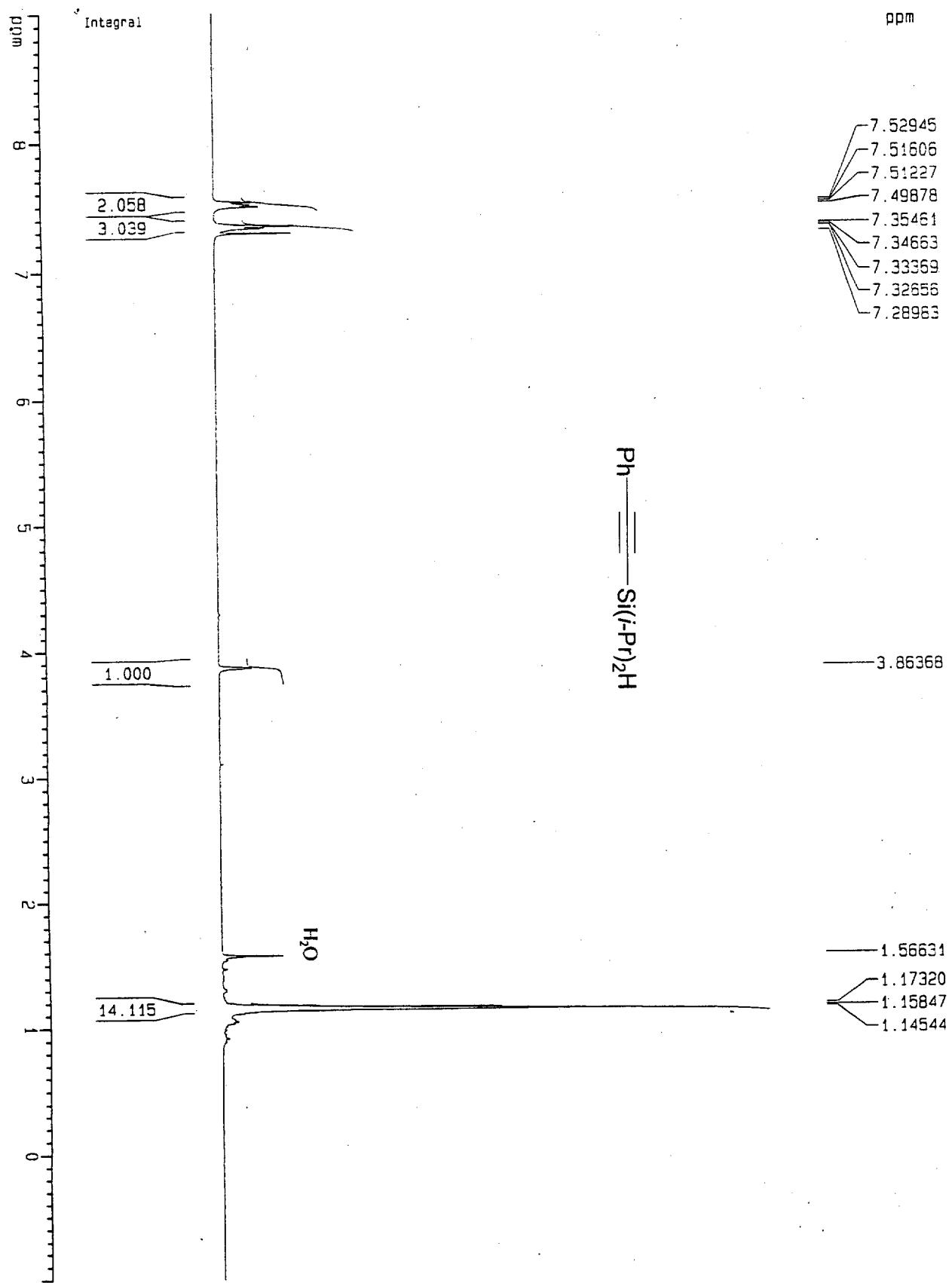
Diphenyl(2-methyl-1-propenyl)silanol (Table 2, entry 17): ¹H NMR (250 MHz, CDCl₃) δ 7.65–7.62 (4H, m), 7.42–7.32 (6H, m), 5.59 (1H, s), 2.36 (1H, bs), 1.95 (3H, s), 1.79 (3H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 158.4, 137.6, 134.8, 130.1, 128.3, 119.8, 30.0, 24.7; IR (CH₂Cl₂) cm⁻¹ 3391 (br), 3067, 1621, 1116; HRMS (EI) calcd for C₁₀H₁₆OSi 254.1127, found 254.1120.

(+/-)-Methyl(α-naphthyl)phenylsilanol^{6d} (Table 2, entry 18): ¹H NMR (250 MHz, CDCl₃) δ 8.14 (1H, m), 7.97–7.83 (3H, m), 7.68–7.66 (2H, m), 7.54–7.40 (6H, m), 2.41 (1H, bs), 0.86 (3H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 138.1, 137.2, 135.2, 135.1, 134.4, 133.8, 131.2, 130.3, 129.3, 128.8, 128.4, 126.4, 125.9, 125.4, 0.45.

(-)-Methyl(α-naphthyl)phenylsilanol^{6d} (Table 2, entry 19): ¹H NMR (250 MHz, CDCl₃) δ 8.16 (1H, m), 7.97–7.83 (3H, m), 7.68–7.65 (2H, m), 7.50–7.29 (6H, m), 2.41 (1H, bs), 0.85 (3H, s); ¹³C NMR (62.5 MHz, CDCl₃) δ 138.1, 137.2, 135.2, 135.1, 134.4, 133.8, 131.2, 130.3, 129.3, 128.8, 128.4, 126.5, 126.0, 125.4, 0.46.

Diisopropyl(phenylethyynyl)silane

(Table 2, entry 10)

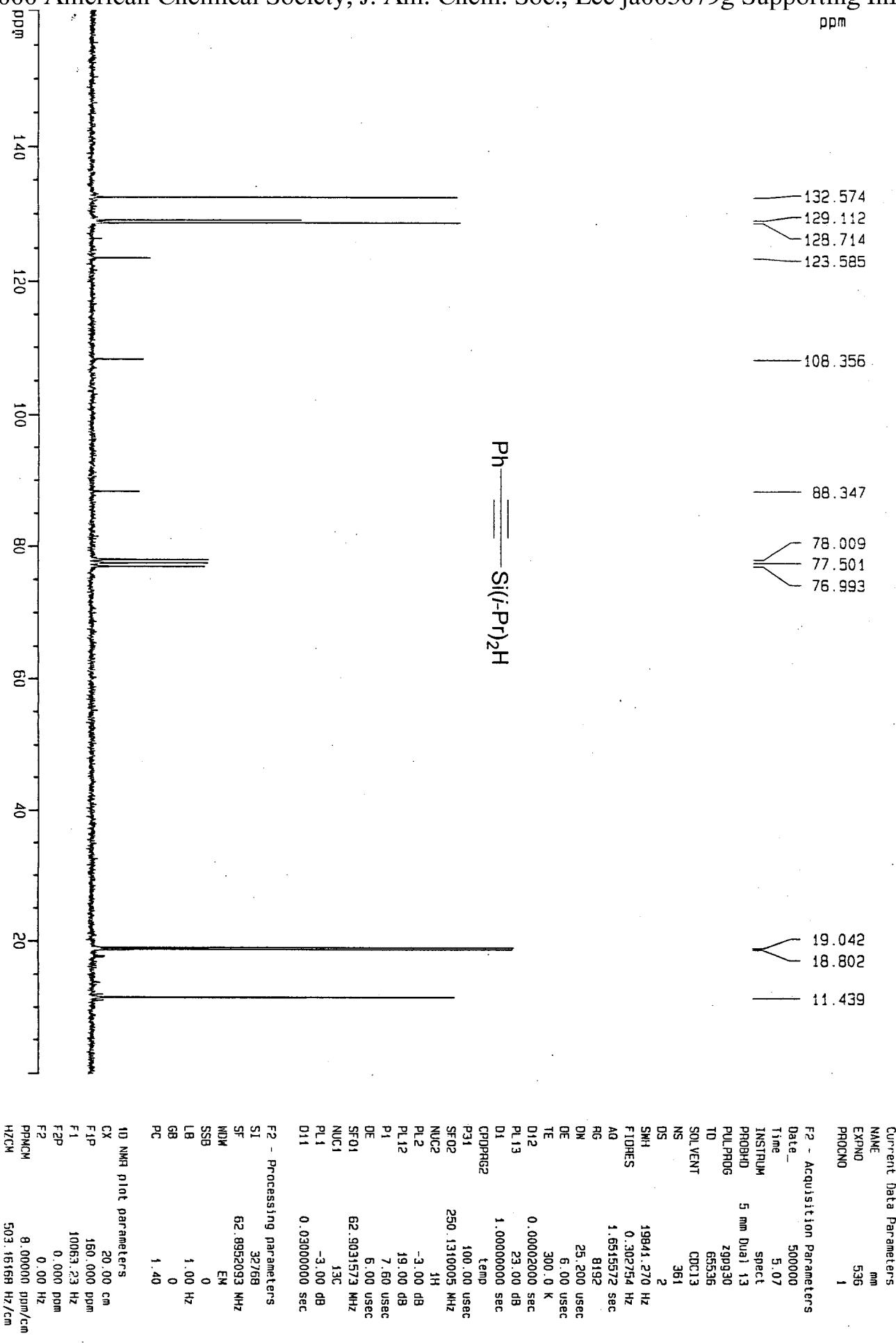


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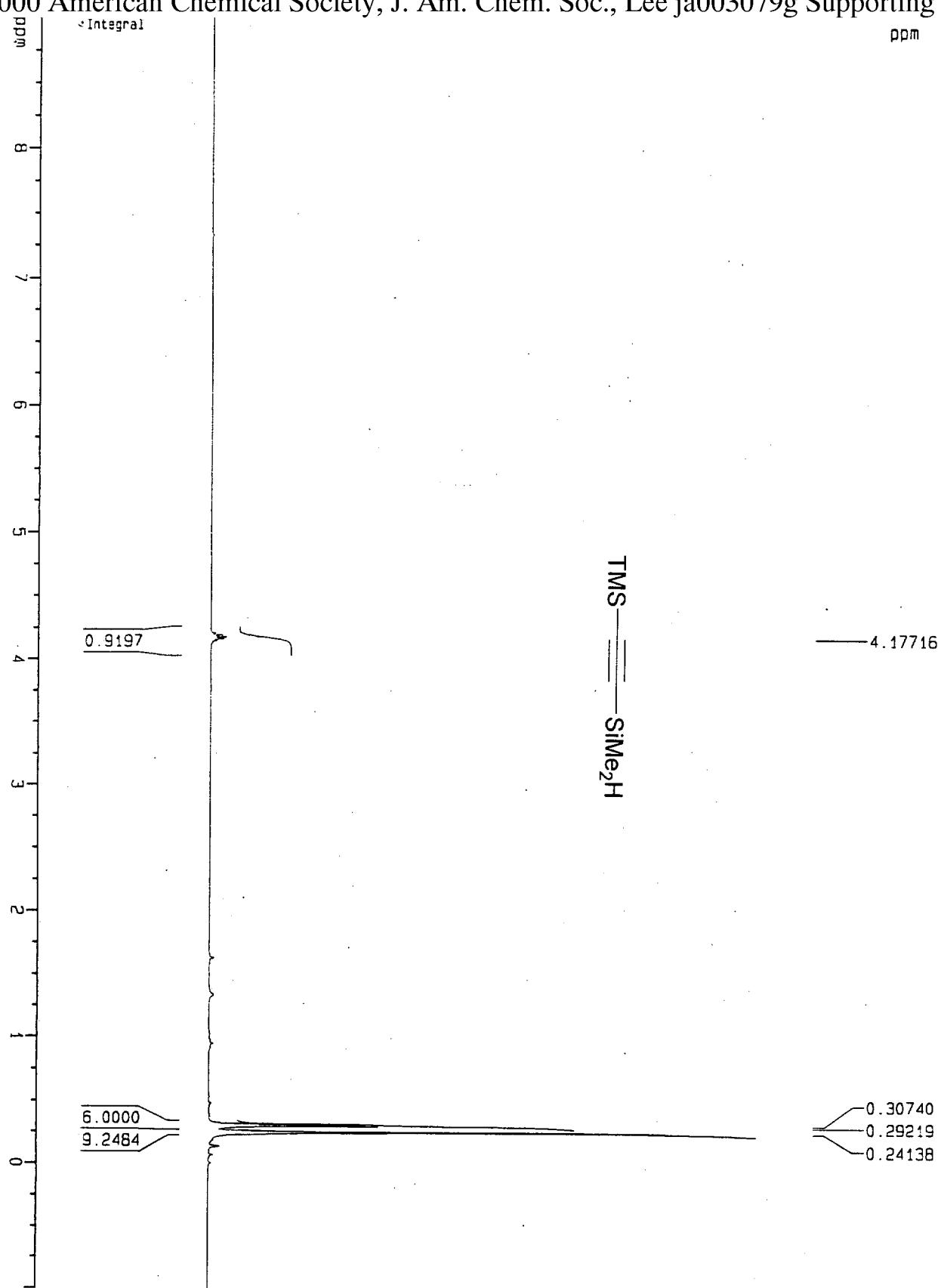
Diisopropyl(phenylethynyl)silane

(Table 2, entry 10)

6



(Table 2, entry 11)



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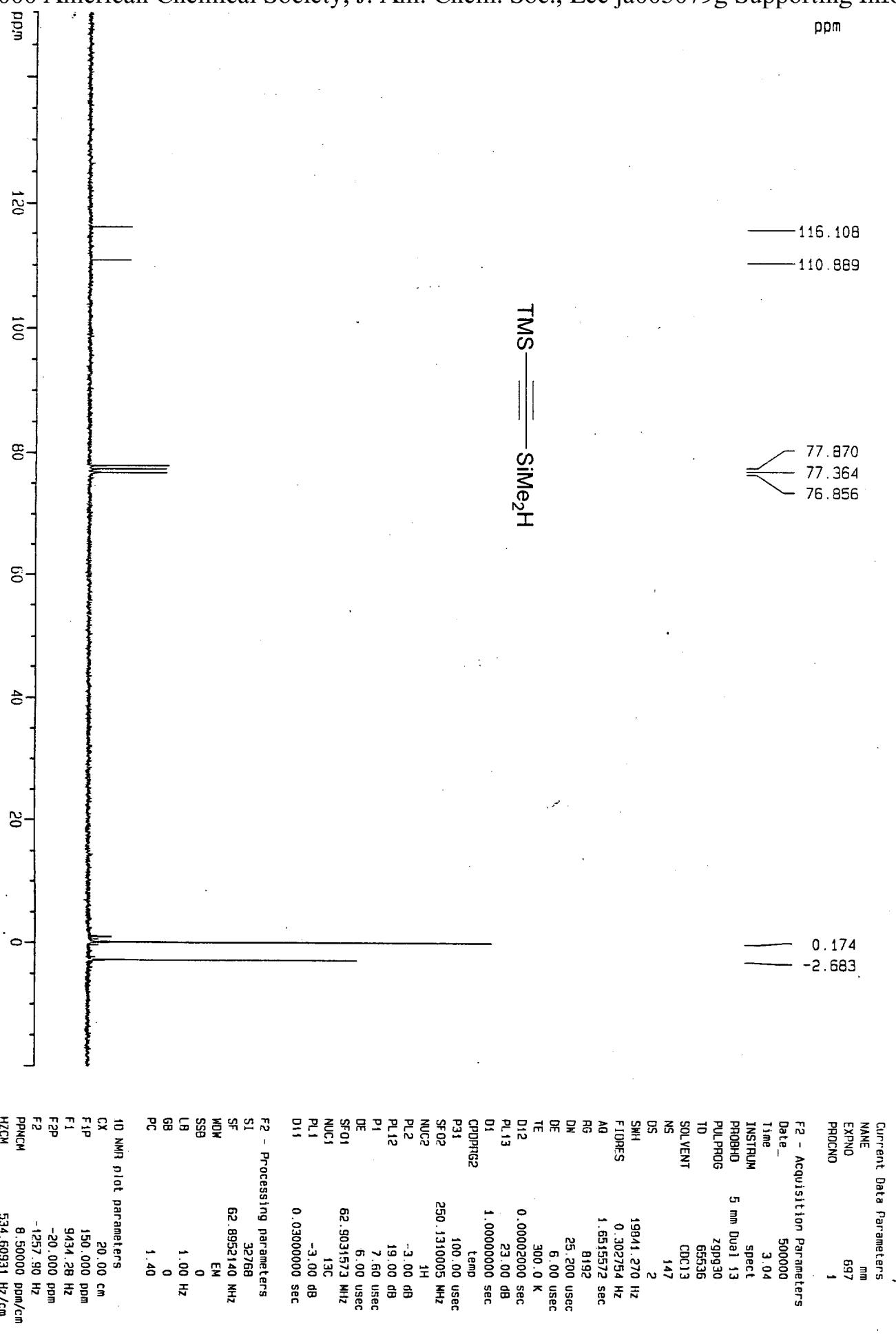
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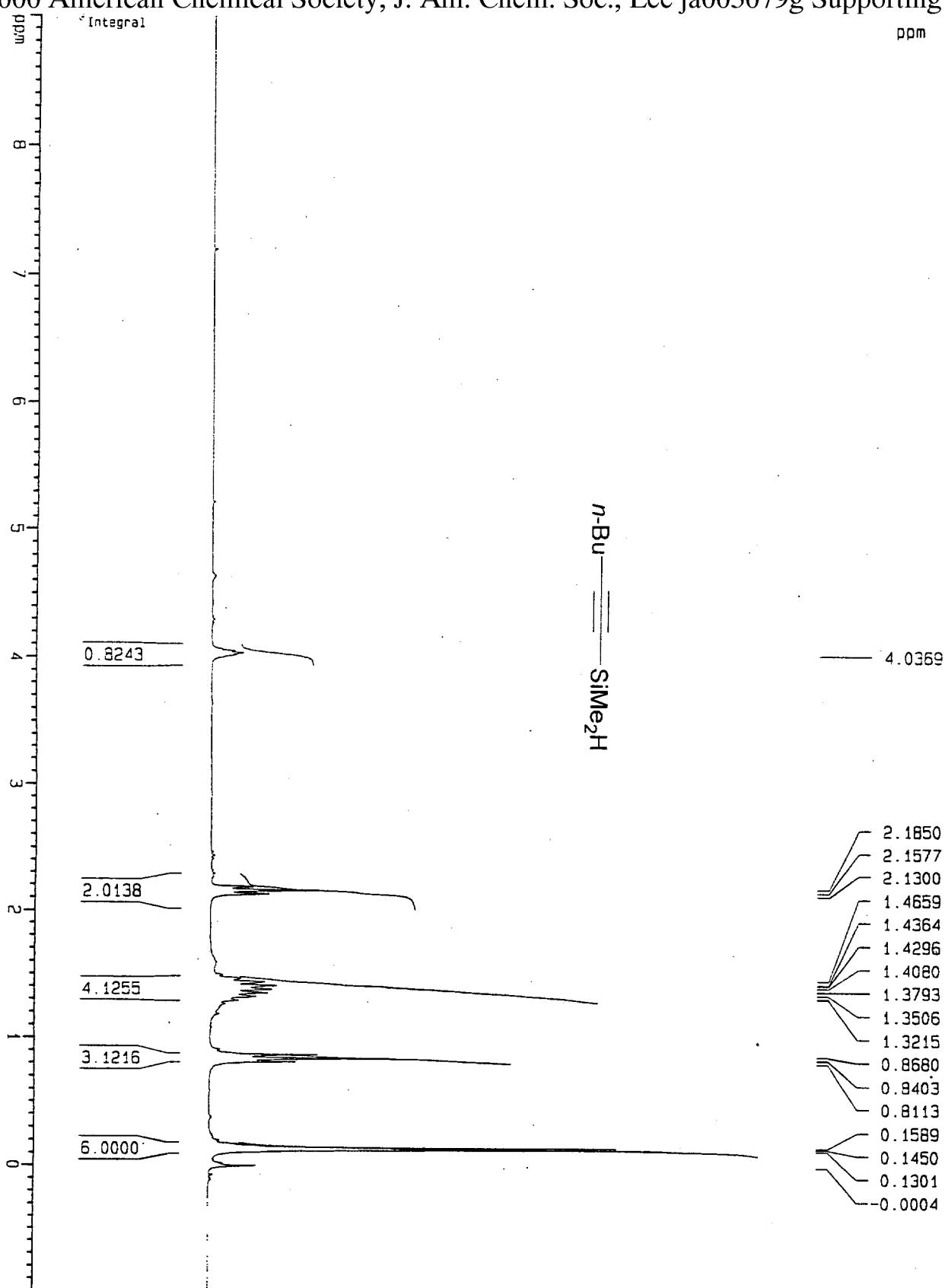
(Table 2, entry 11)



Dimethyl(*t*-hexynyl) silane

(Table 2, entry 12)

9



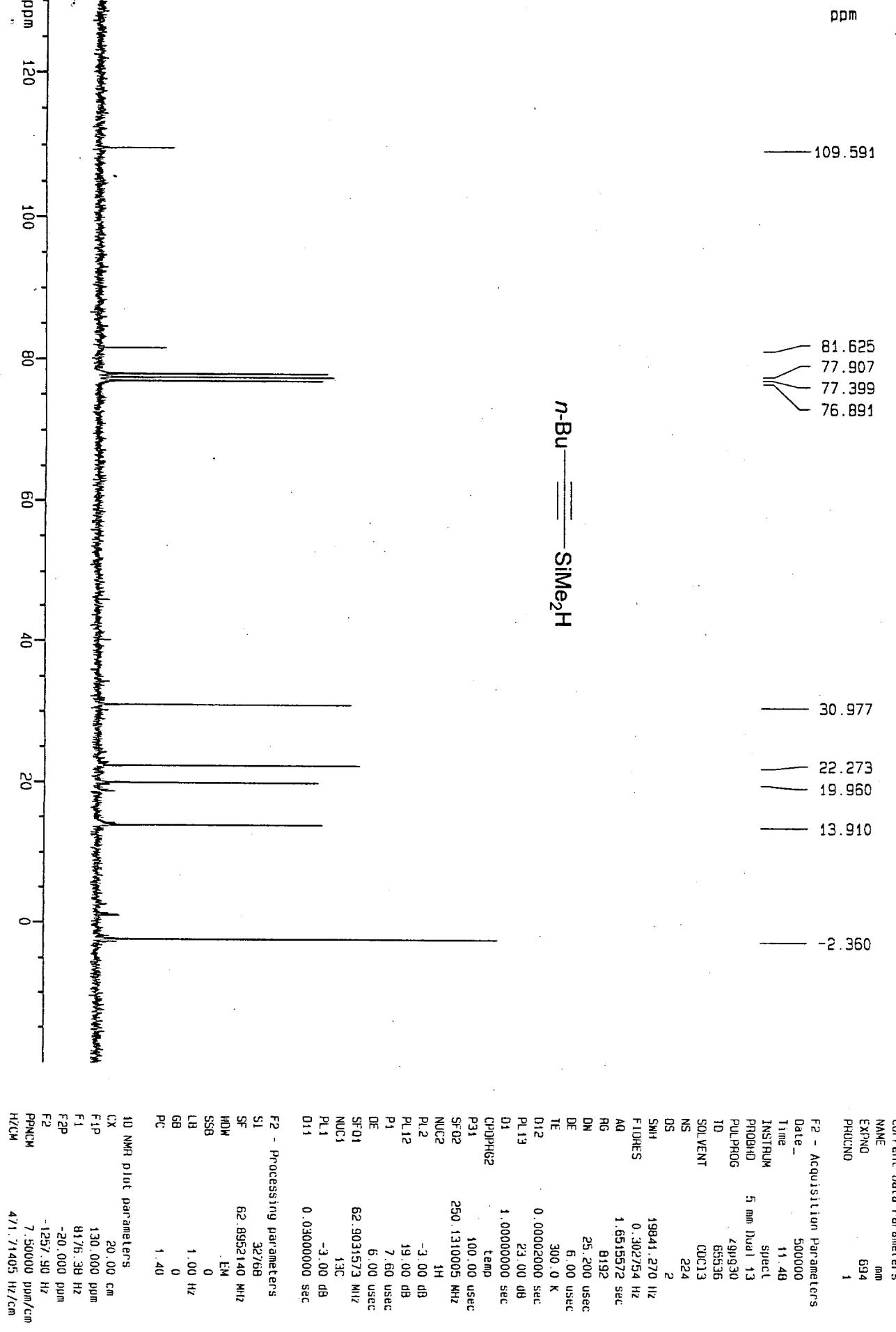
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Dimethyl(1-hexynyl)silane

(Table 2, entry 12)

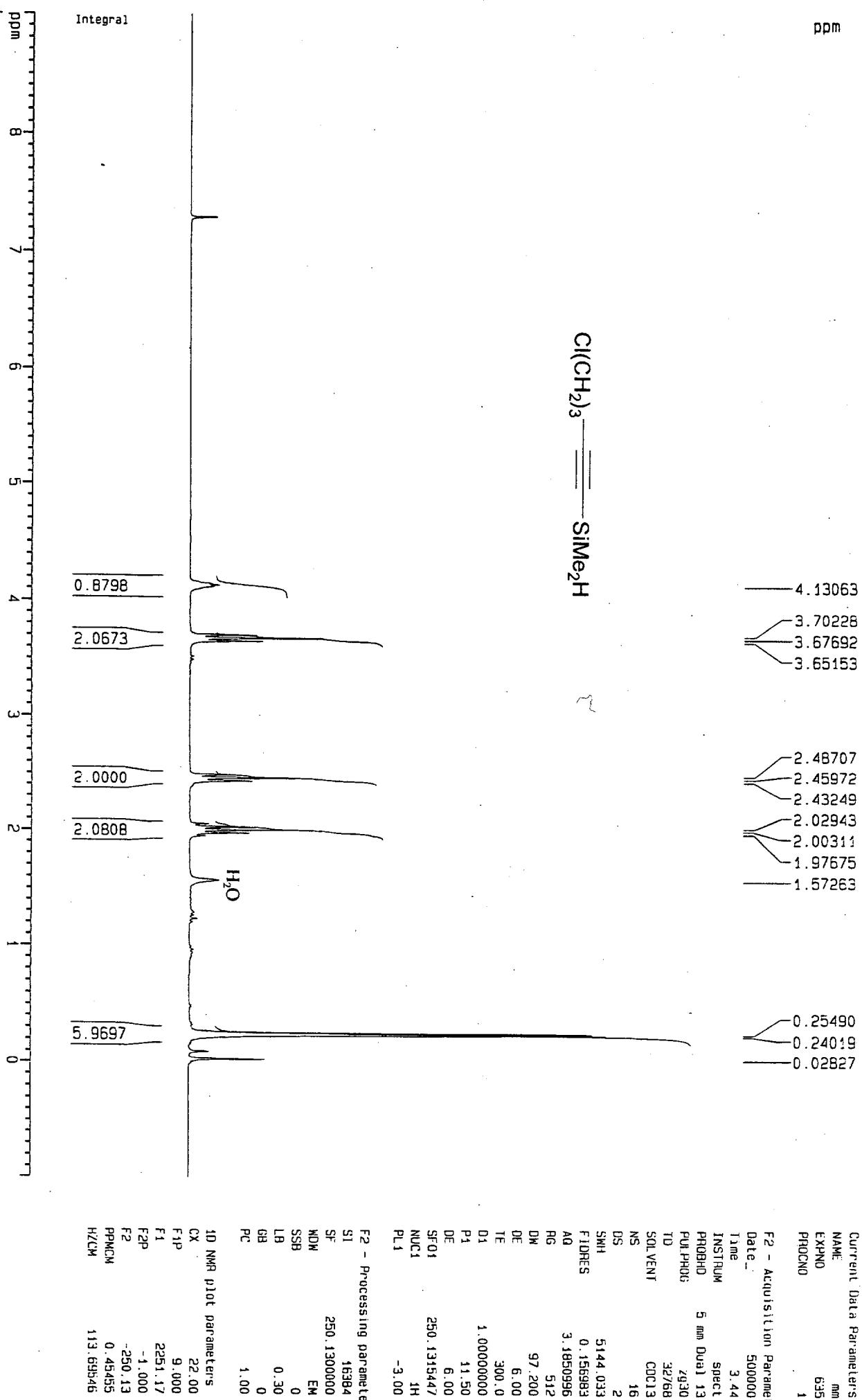
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Dimethyl(5-chloropentynyl)silane

(Table 2, entry 13)

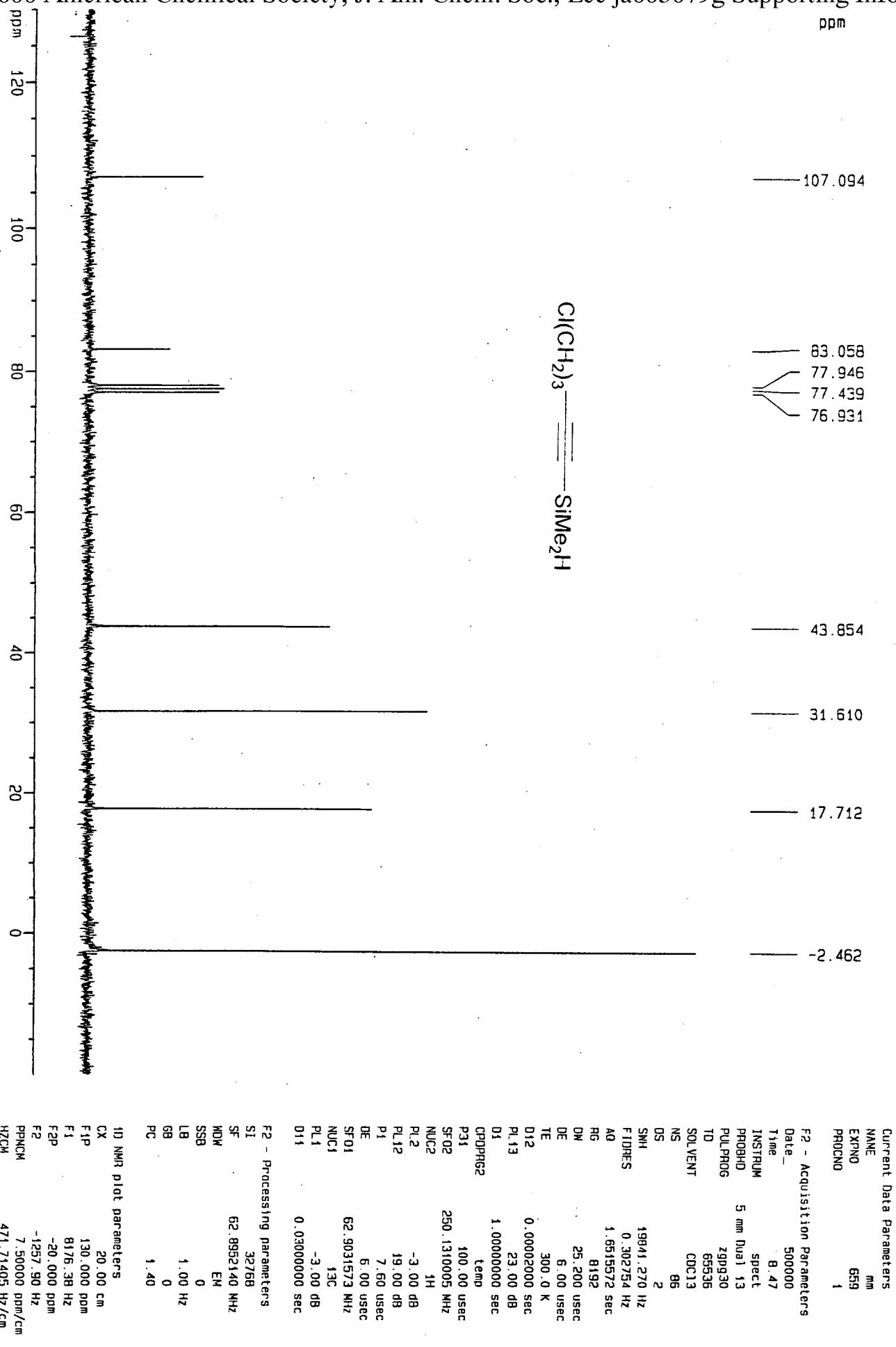
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Dimethyl(5-chloropentynyl)silane

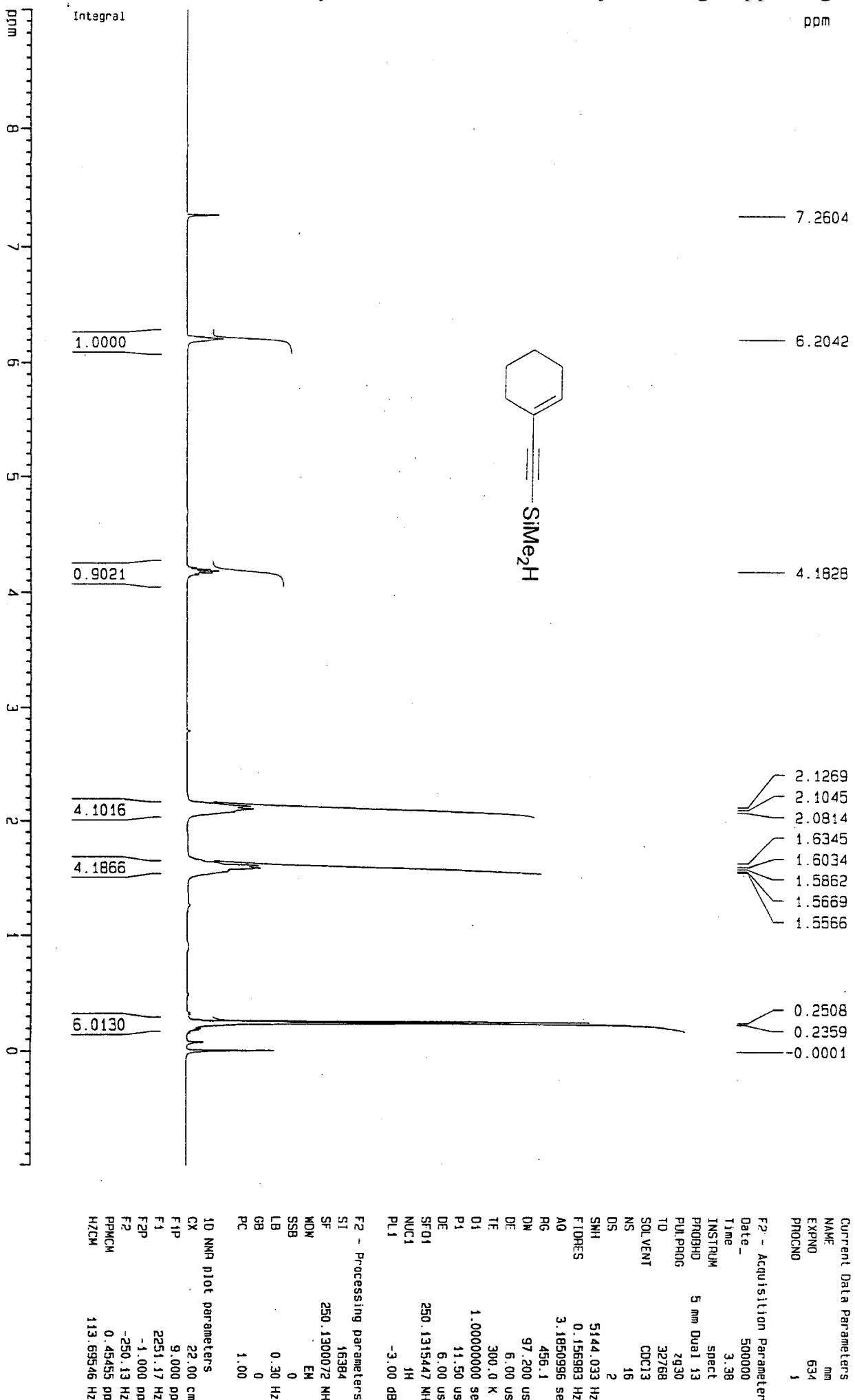
(Table 2, entry 13)

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(Table 2, entry 14)

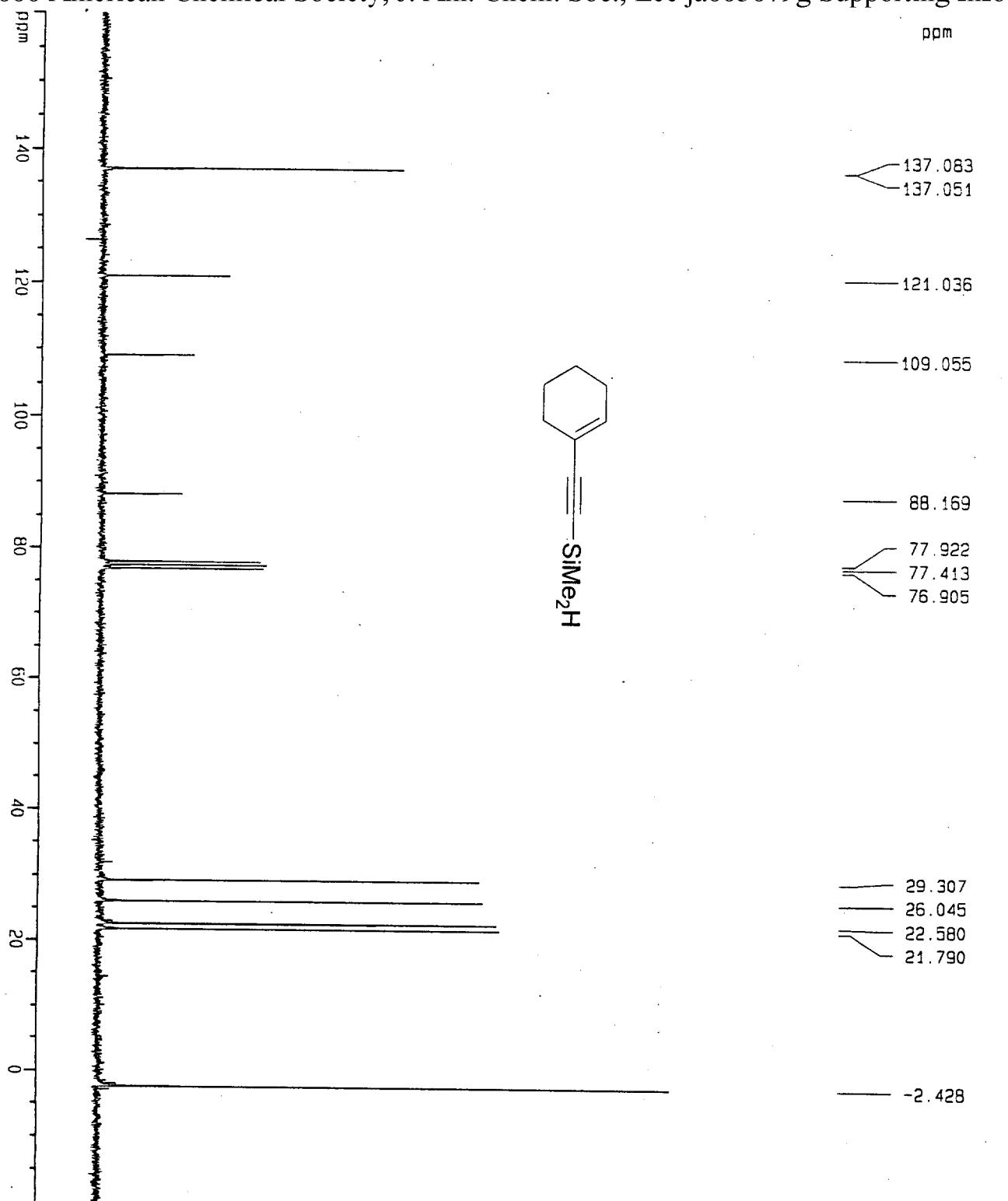
Dimethyl[({1-cyclohexenyl})ethynyl]silane



Dimethyl [(1-cyclohexenyl)ethynyl]silane

(Table 2, entry 14)

14

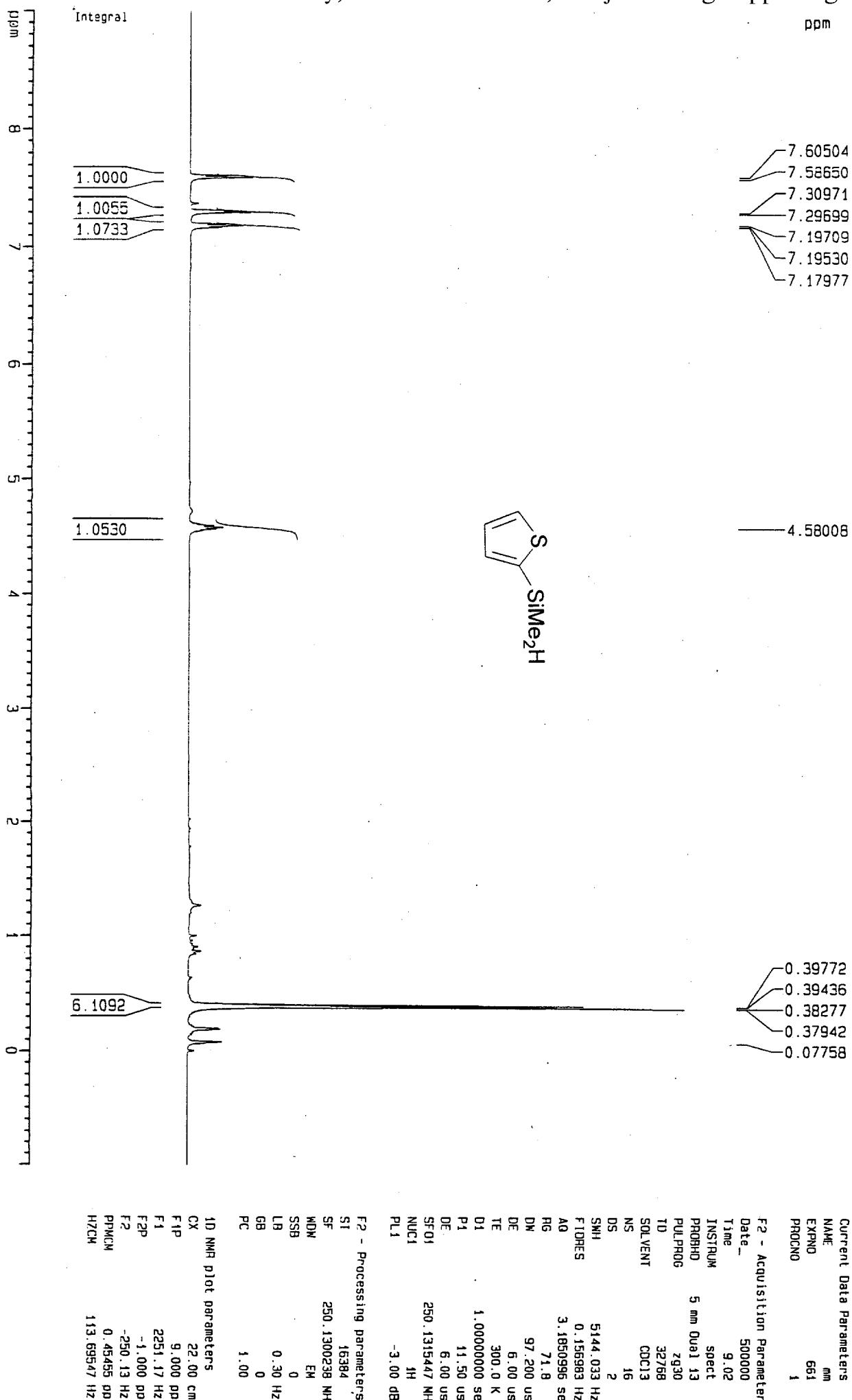


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F1P	160.000 ppm
F1	10053.23 Hz
F2P	-20.000 ppm
F2	-1257.90 Hz
PPCM	9.00000 ppm/cm
HZCM	556.05695 Hz/cm

Dimethyl(2-thienyl)silane

15

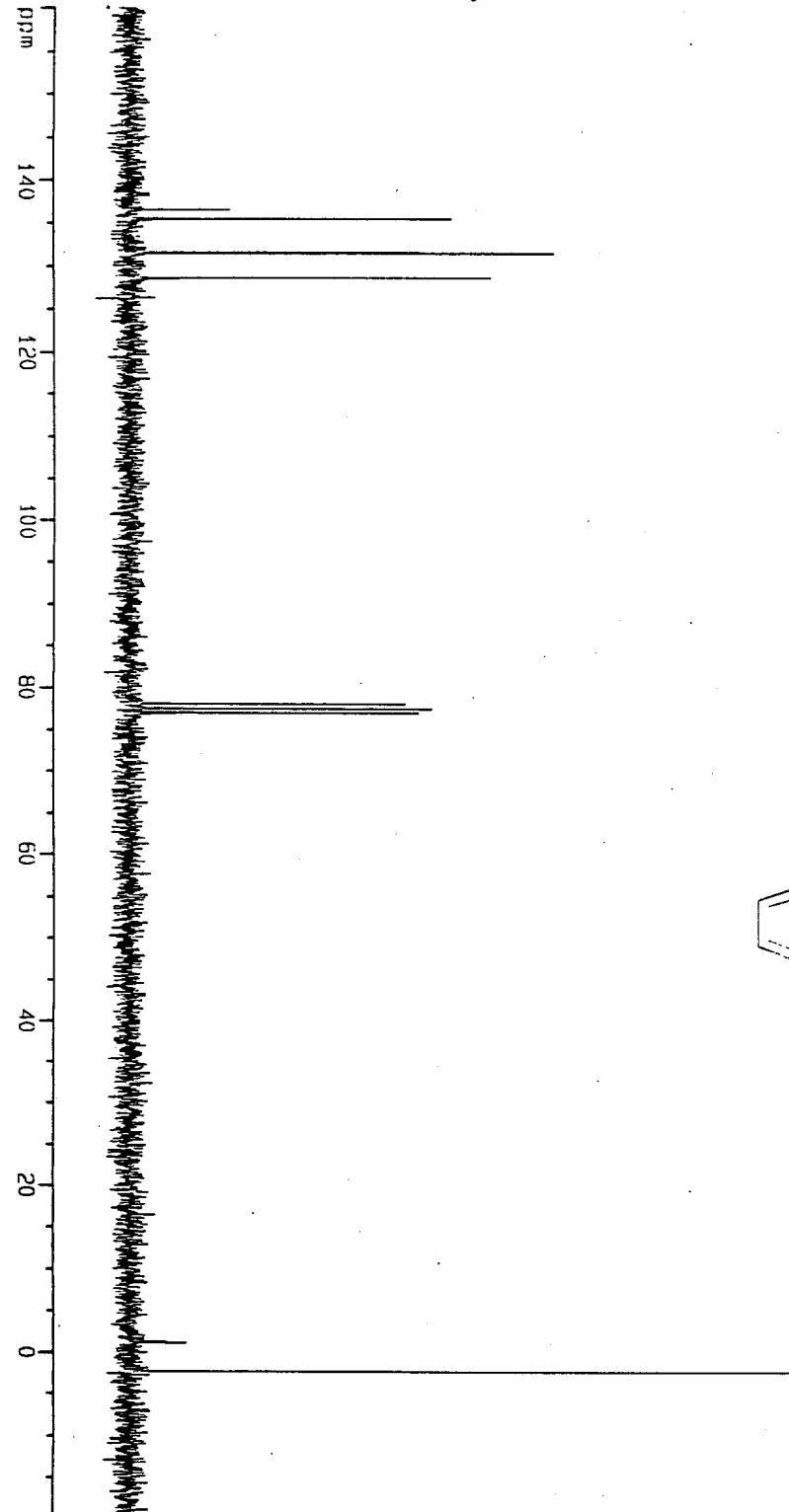
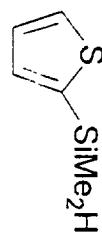
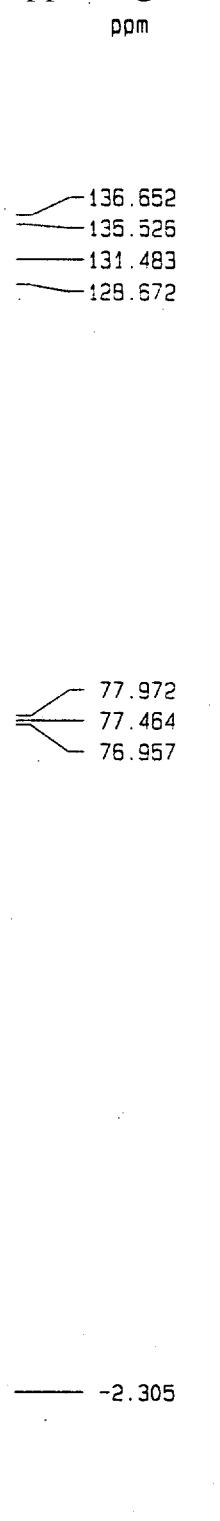
(Table 2, entry 15)



Dimethyl (2-thienyl) silane

16

(Table 2, entry 15)

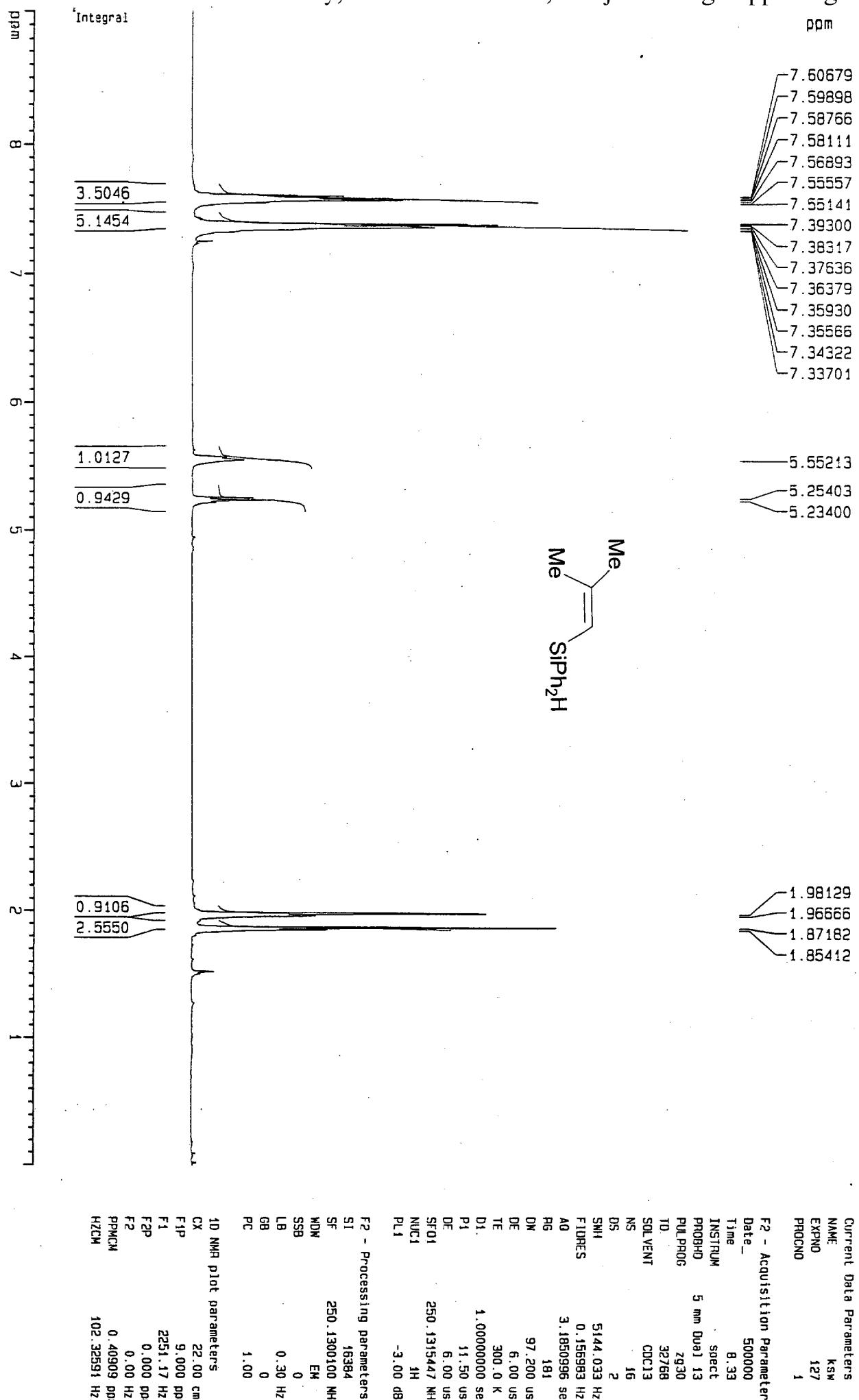


Current Data Parameters	
NAME	mm
EXNO	665
PROCNO	1
F2 - Acquisition Parameters	
Date_	5/00/00
Time	9:32
INSTRUM	spect
PROBID	5 mm Dual 13
PULPROG	zpg930
TD	65536
SOLVENT	CDCl ₃
NS	49
DS	2
SW1	19841.270 Hz
FORES	0.302754 Hz
AQ	1.6515572 sec
RG	8192
DW	25.200 usec
DE	6.00 usec
TE	300.0 K
PI	0.0000200 sec
PL13	23.00 dB
D1	1.0000000 sec
OPDPRG2	temp
PR1	100.00 usec
SF02	250.1310005 MHz
NUC2	¹ H
PL2	-3.00 dB
PL12	19.00 dB
P1	7.60 usec
DE	6.00 usec
SF01	62.9031573 MHz
NUC1	¹³ C
PL1	-3.00 dB
D11	0.0300000 sec
F2 - Processing parameters	
SI	32768
SF	62.8952140 MHz
MOM	EN
SSB	0
LB	1.00 Hz
GB	0
PC	1.40
1D NMR plot parameters	
CX	20.00 cm
CP	160.000 ppm
F1	10063.23 Hz
F2P	-20.000 ppm
F2	-1257.90 Hz
PPMCM	9.00000 ppm/cm
HZCM	566.05695 Hz/cm

Diphenyl(2-methyl-1-propenyl)silane

(Table 2, entry 17)

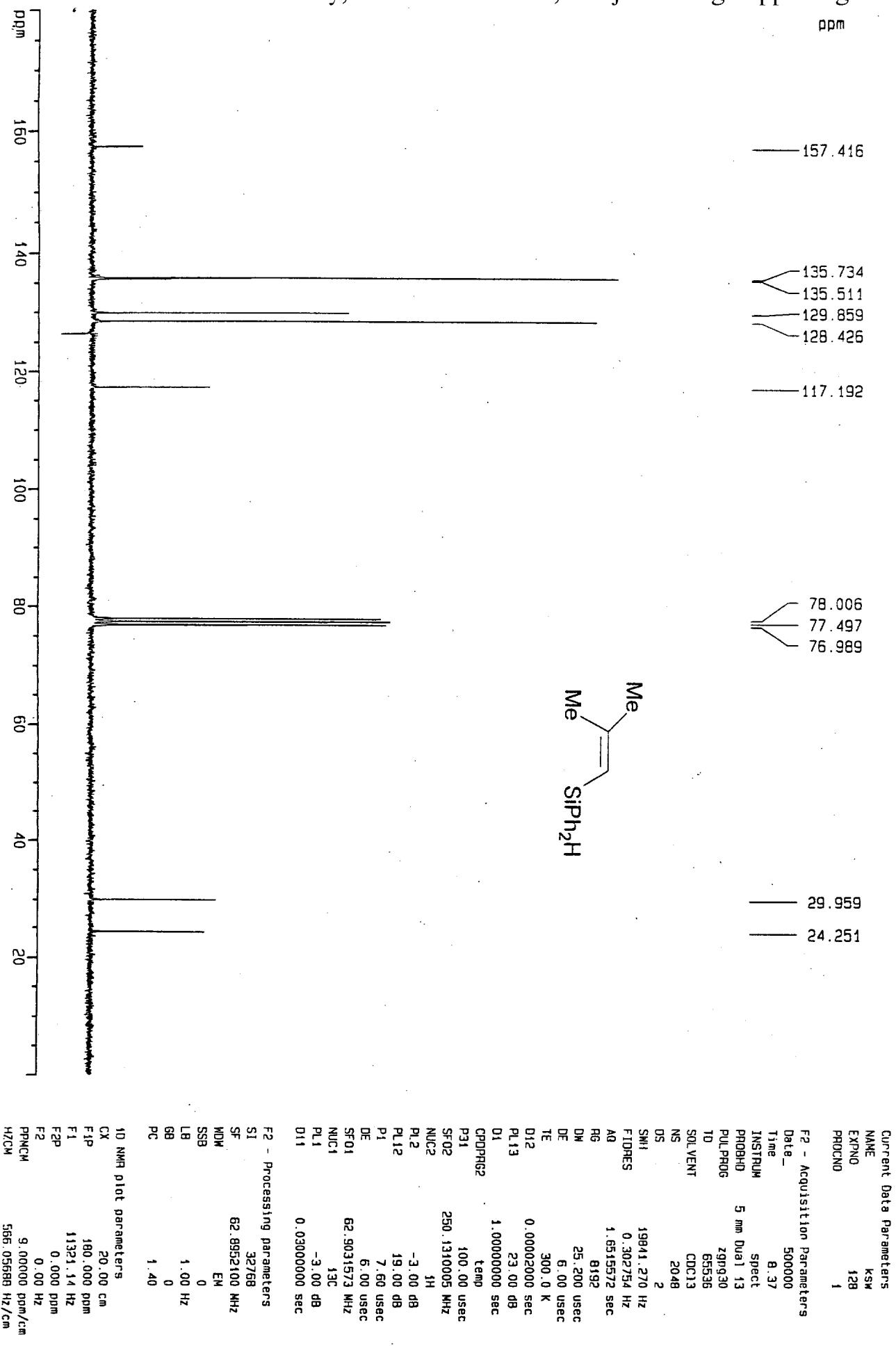
17



Diphenyl(2-methyl-1-propenyl) Silane

18

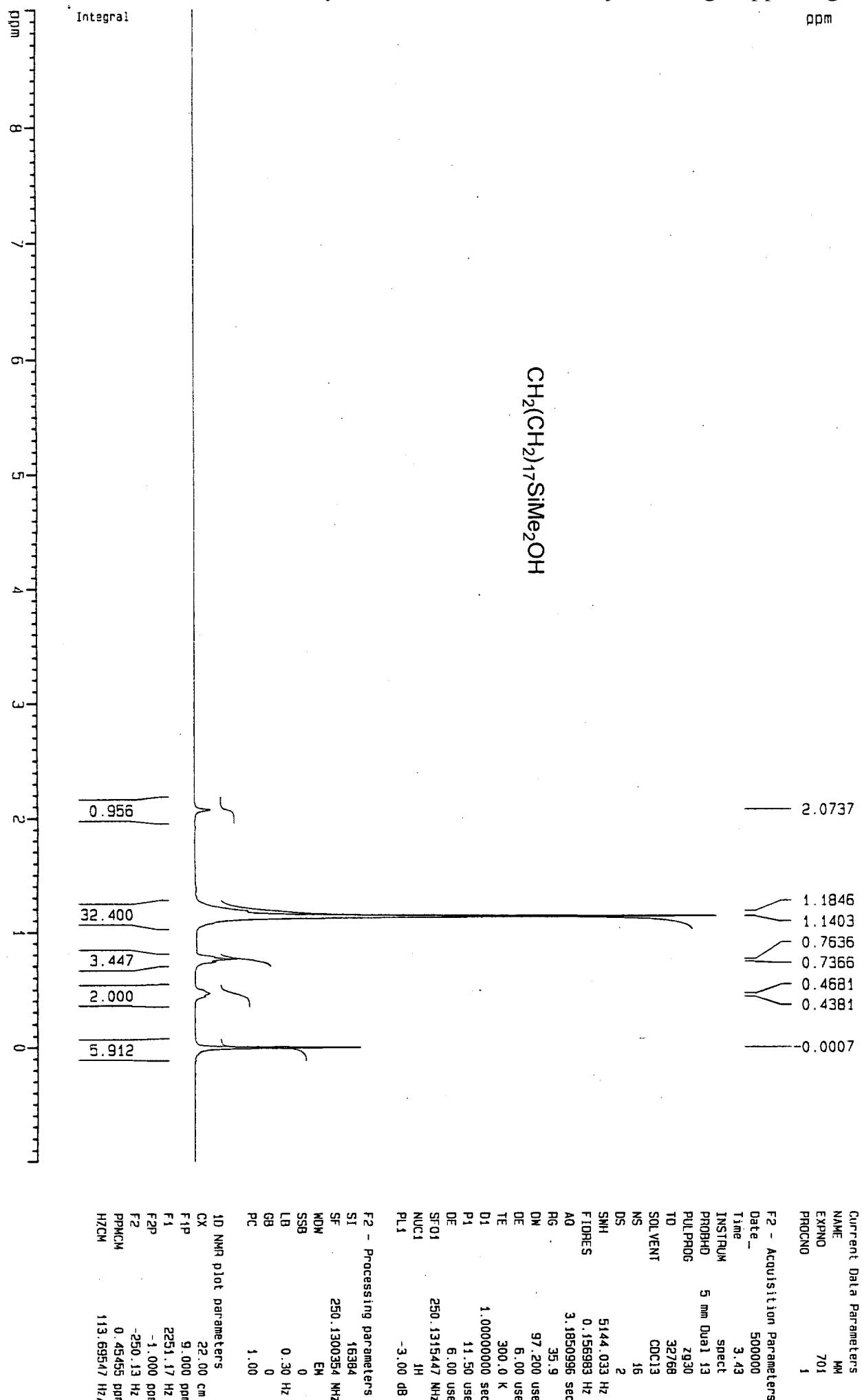
(Table 2, entry 17)



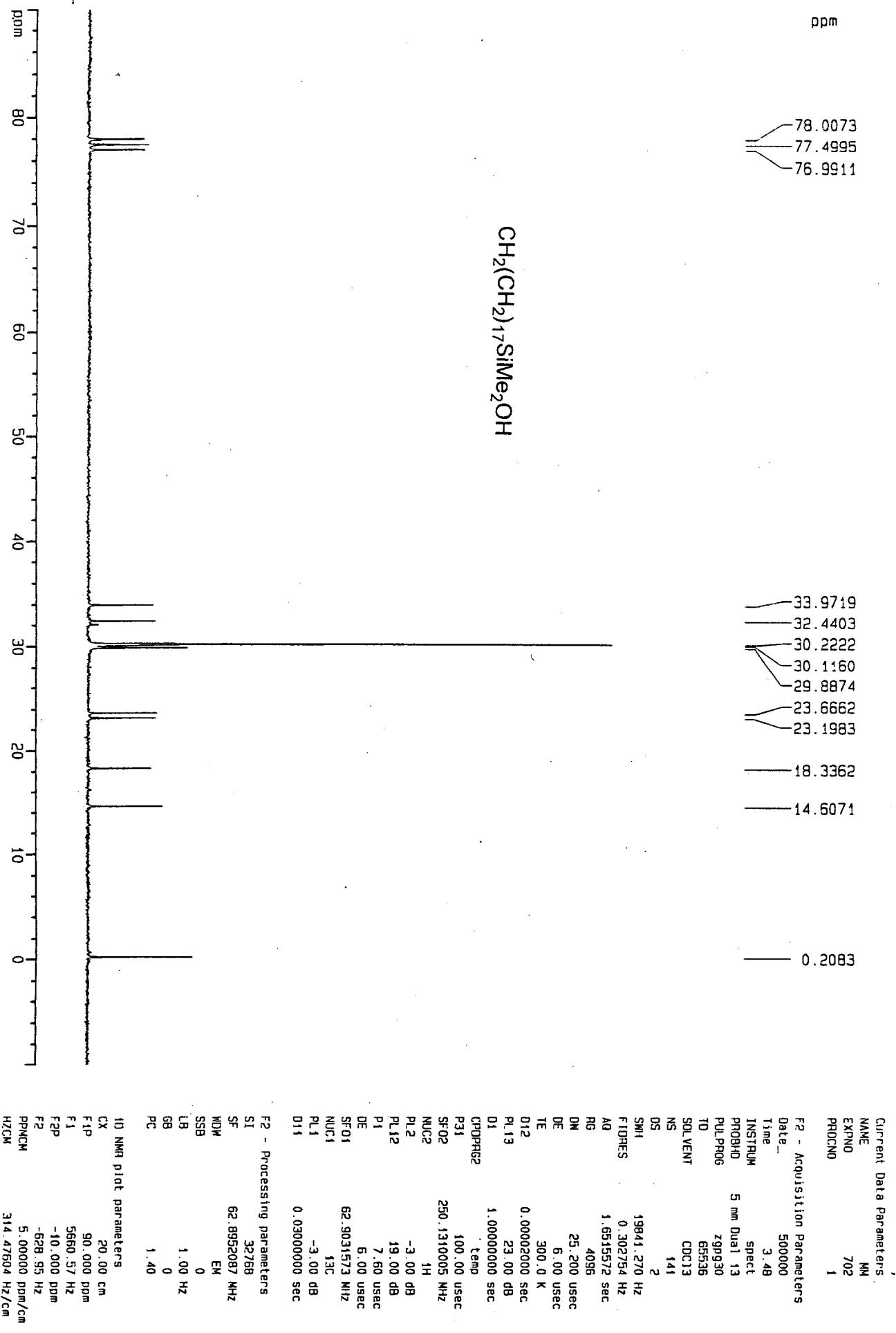
Dimethyloctadecylsilanol

19

(Table 2, entry 6)

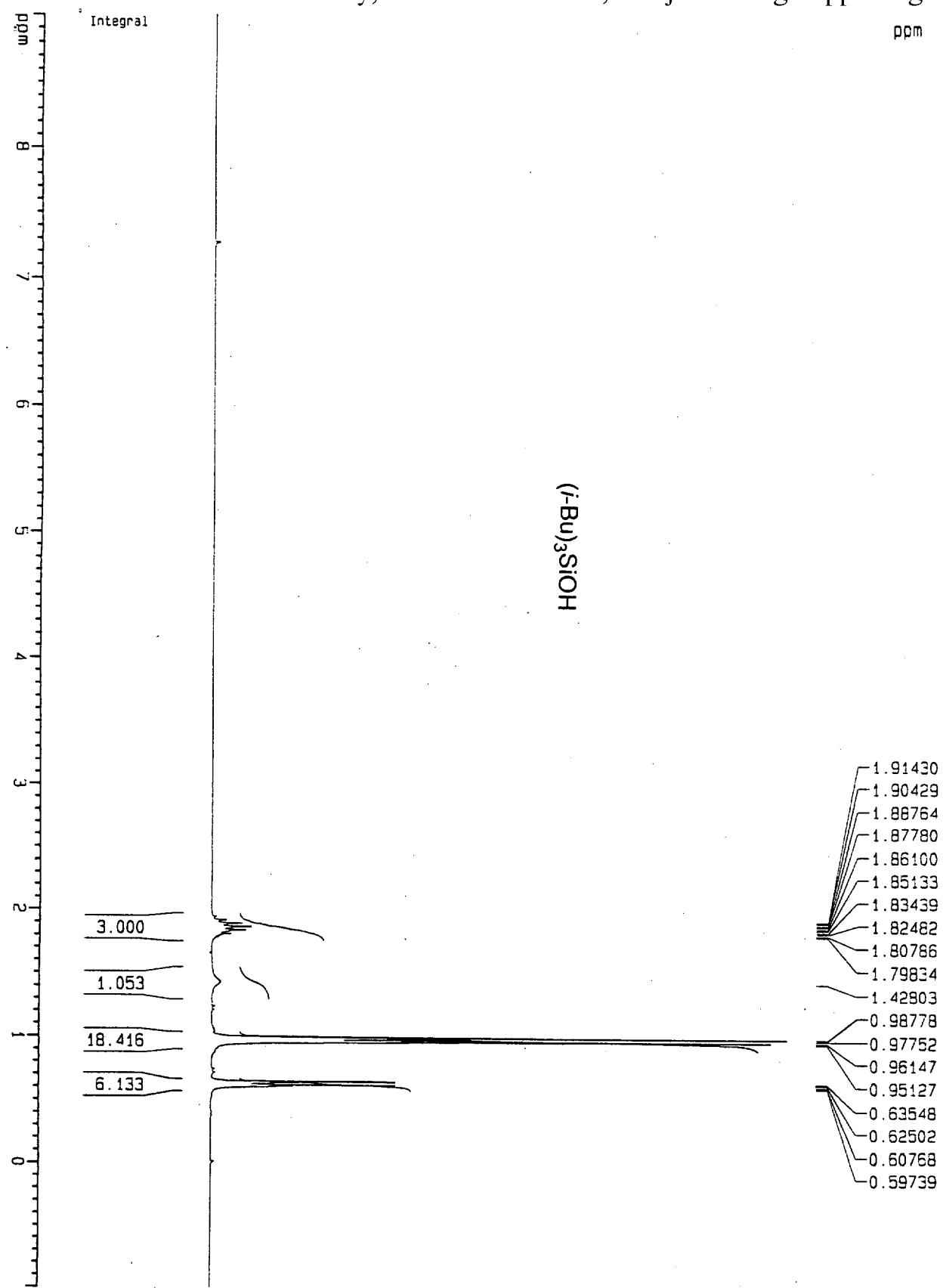


(Table 2, entry 6)



(Table 2, entry 8)

21



Current Data Parameters
NAME mm
EXPNO 722
PROCNO 1

F2 - Acquisition Parameters
Date 500000
Time 1.42
INSTRUM spect
PROBHD 5 mm Dual 13

PULPROG zg30
TD 32768
SOLVENT CDCl₃
NS 16

DS 2
SWH 5144.033 Hz
FIDRES 0.156993 Hz
AQ 3.1850986 sec

RG 71.8
DW 97.200 us
DE 6.00 us
TE 300.0 K

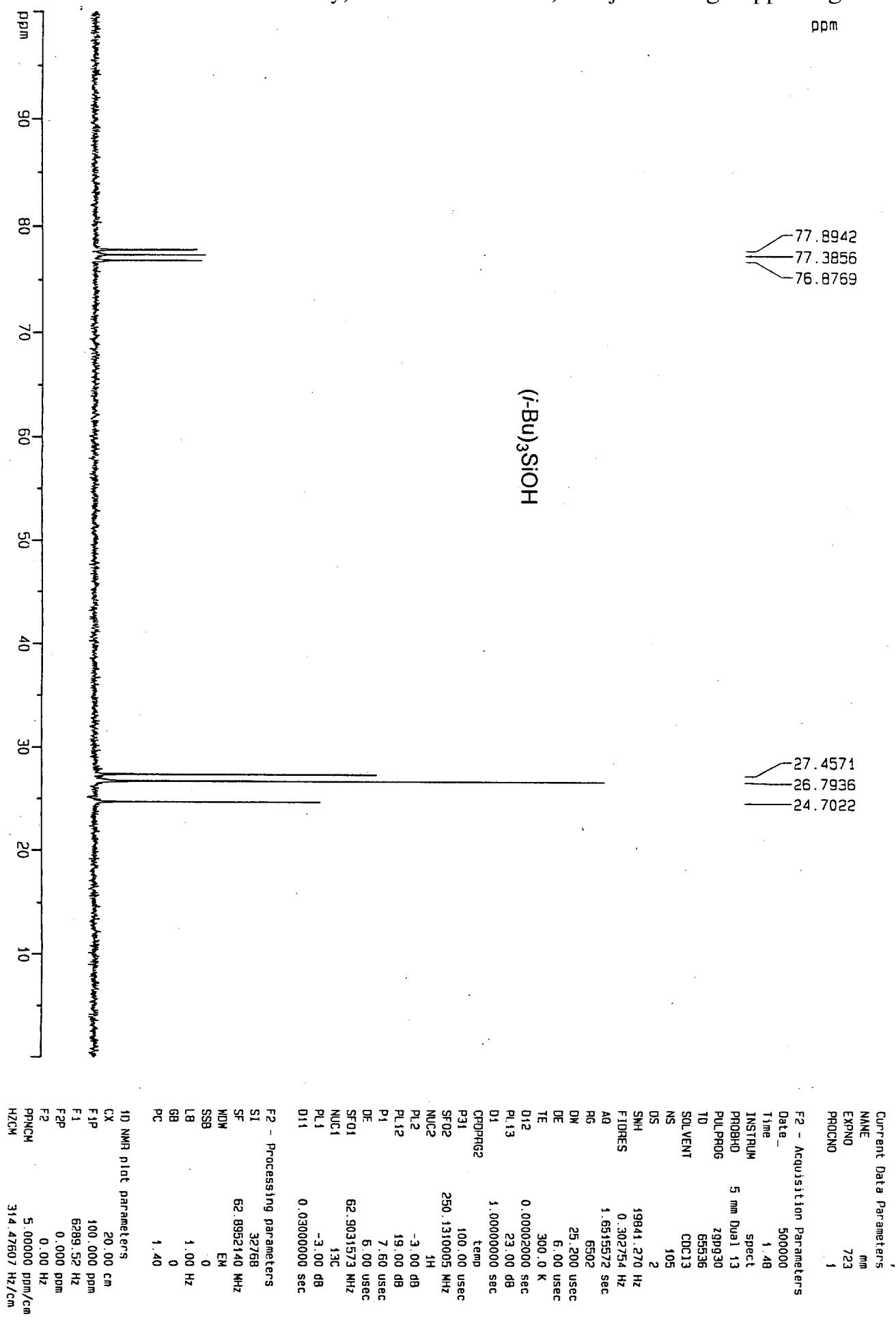
D1 1.0000000 sec
P1 11.50 us
DE 6.00 us
SF 01 250.1315447 MHz

NUC1 ¹H
PL1 1H
PC -3.00 deg

F2 - Processing parameters
SI 16384
SF 250.1300046 MHz
NDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 22.00 cm⁻¹
F1P 9.000 pp
F1 2251.17 Hz
F2P -1.000 pp
F2 -250.13 Hz
PPMCM 0.45455 pp
HZCM 113.65946 Hz

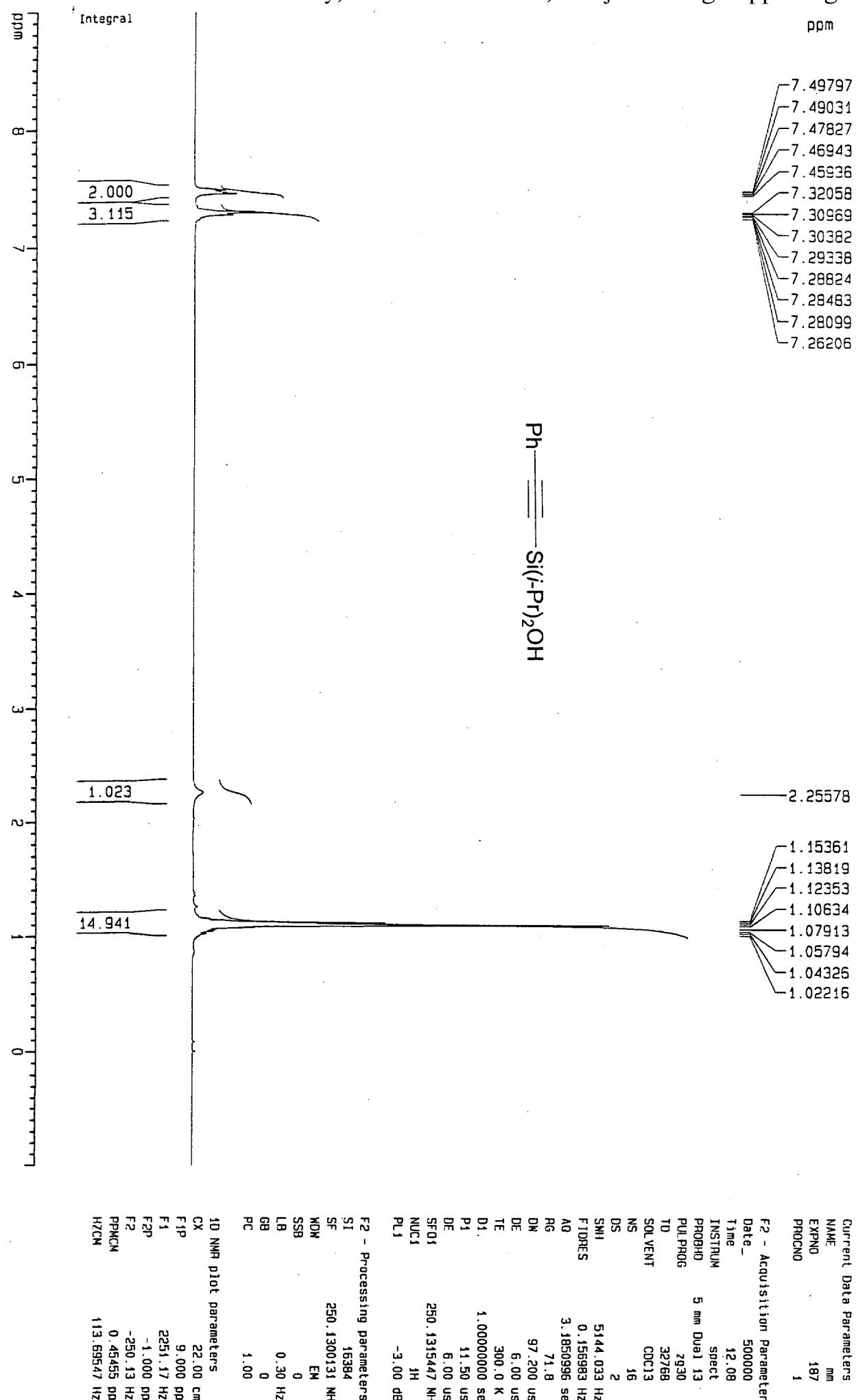
(Table 2, entry 8)



Diisopropyl(phenylethyynyl)silanol

23

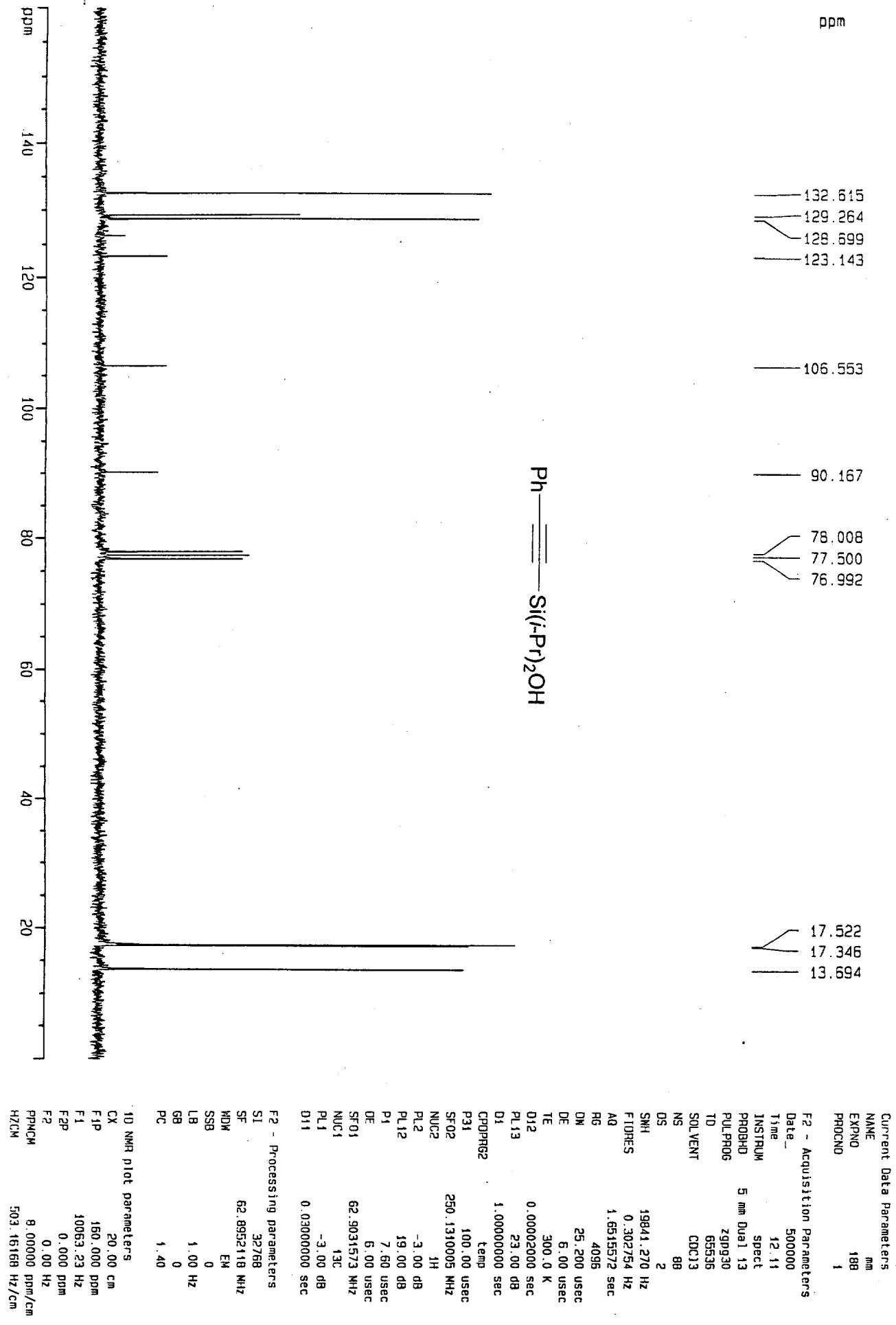
(Table 2, entry 10)



Disopropyl([phenylethynyl])silanol

24

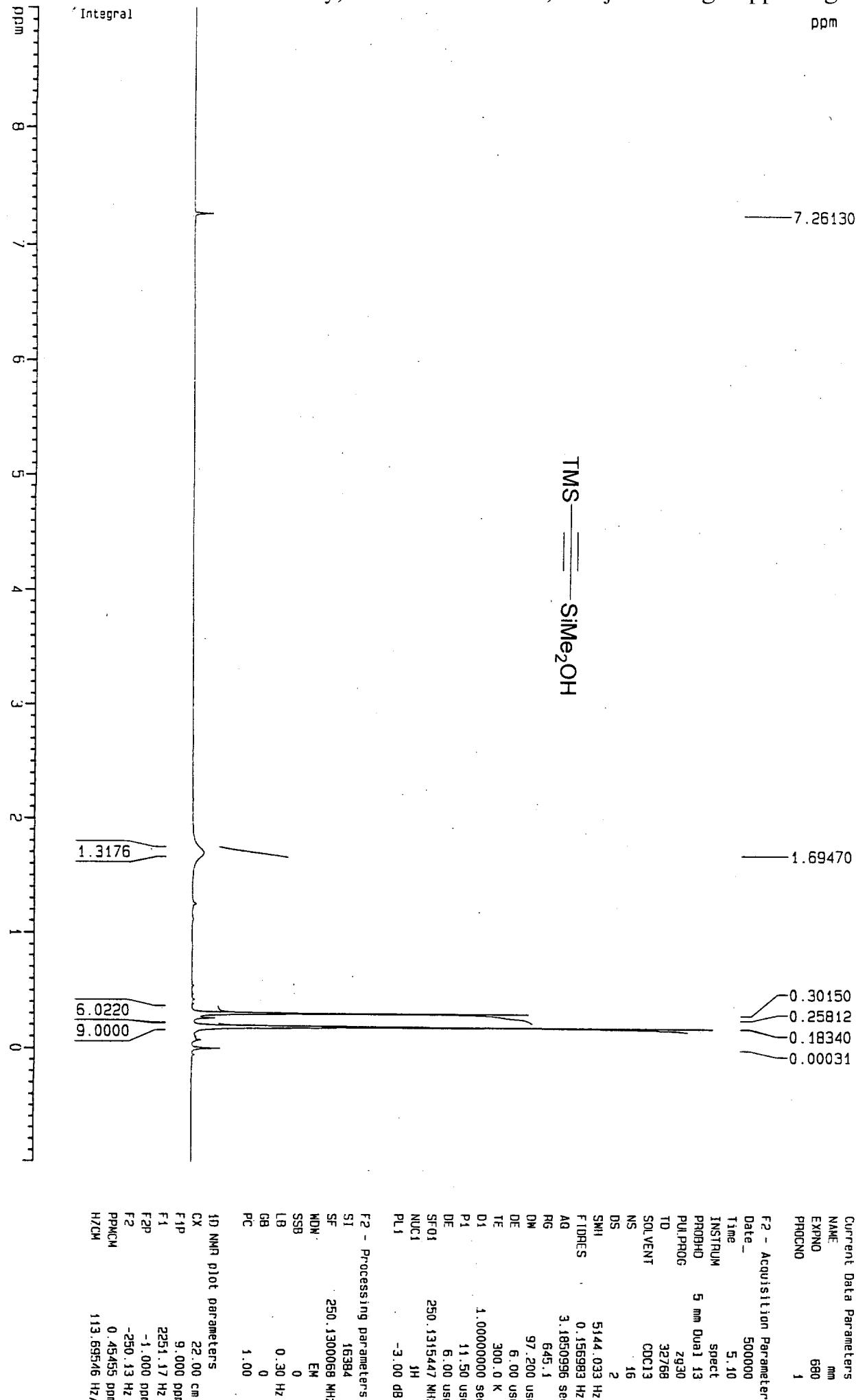
(Table 2, entry 10)



Dimethyl (2-trimethylsilyl ethynyl) silanol

25

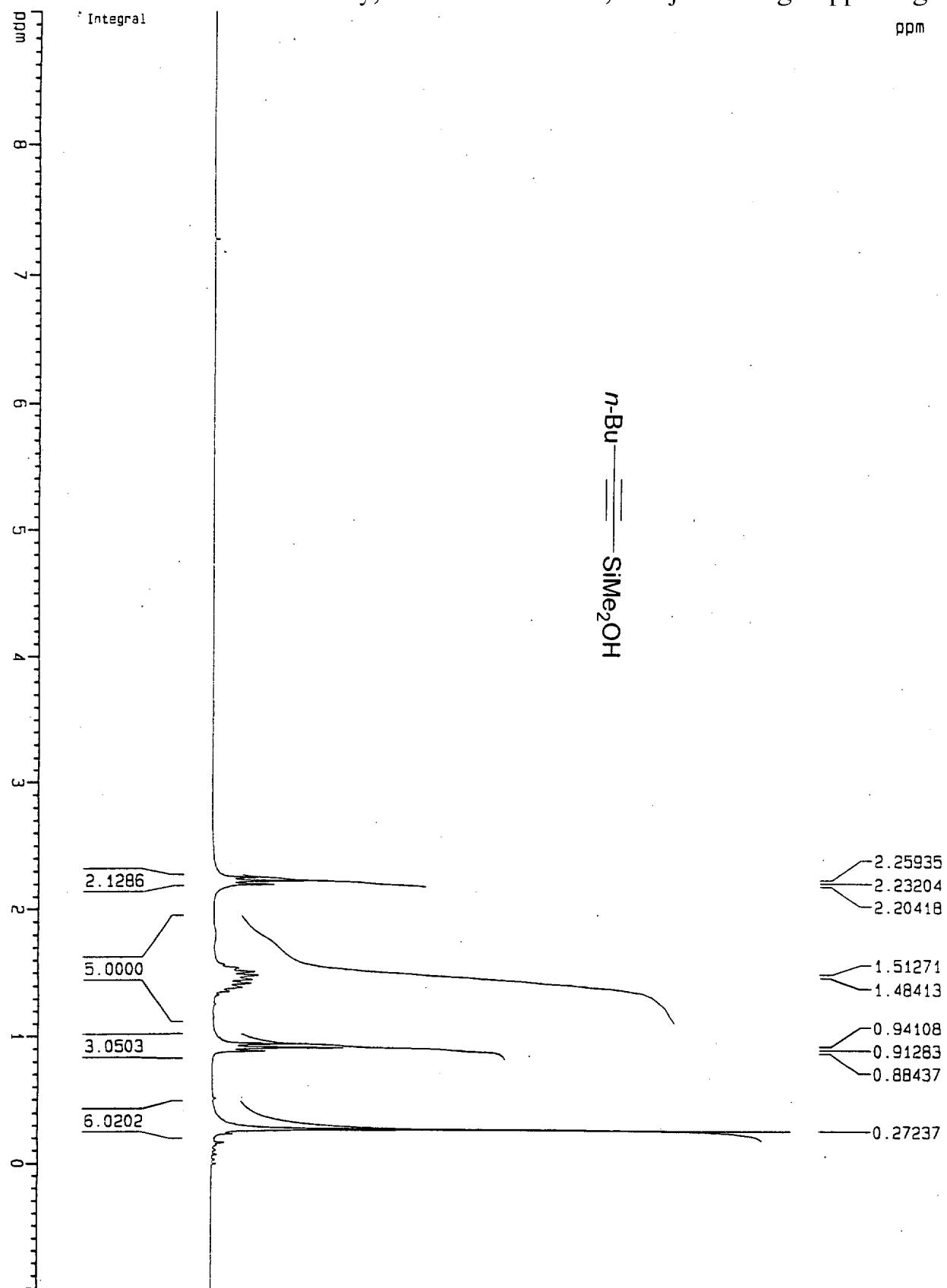
{Table 2, entry 11}



Dimethyl (1-hexynyl) silanol

(Table 2, entry 12)

26



Current Data Parameters
 NAME mm
 EXPNO 688
 PROCNO 1

F2 - Acquisition Parameter
 Date_ 500000
 Time 10.09

INSTRUM spect

PROBHD 5 mm Dual 13

PULPROG 2930

TD 32768

SOLVENT CDCl₃

NS 16

DS 2

SW1 5144.033 Hz

SW2 0.155983 Hz

TDRES 3.1850996 sec

RG 128

DE 97.200 us

DE2 6.00 us

TE 300.0 K

D1 1.0000000 sec

P1 11.50 us

DE2 6.00 us

SF 250.1315447 NH₃

NUC1 ¹H

PL1 -3.00 dB

F2 - Processing parameters

SI 16384

SF 250.1300043 MHz

MDW EM

SSB 0

LB 0

GB 0

PC 1.00

1D NMR plot parameters

CX 22.00 cm

F1P 9.000 ppm

F1 2251.17 Hz

F2P -1.000 ppm

F2 -250.13 Hz

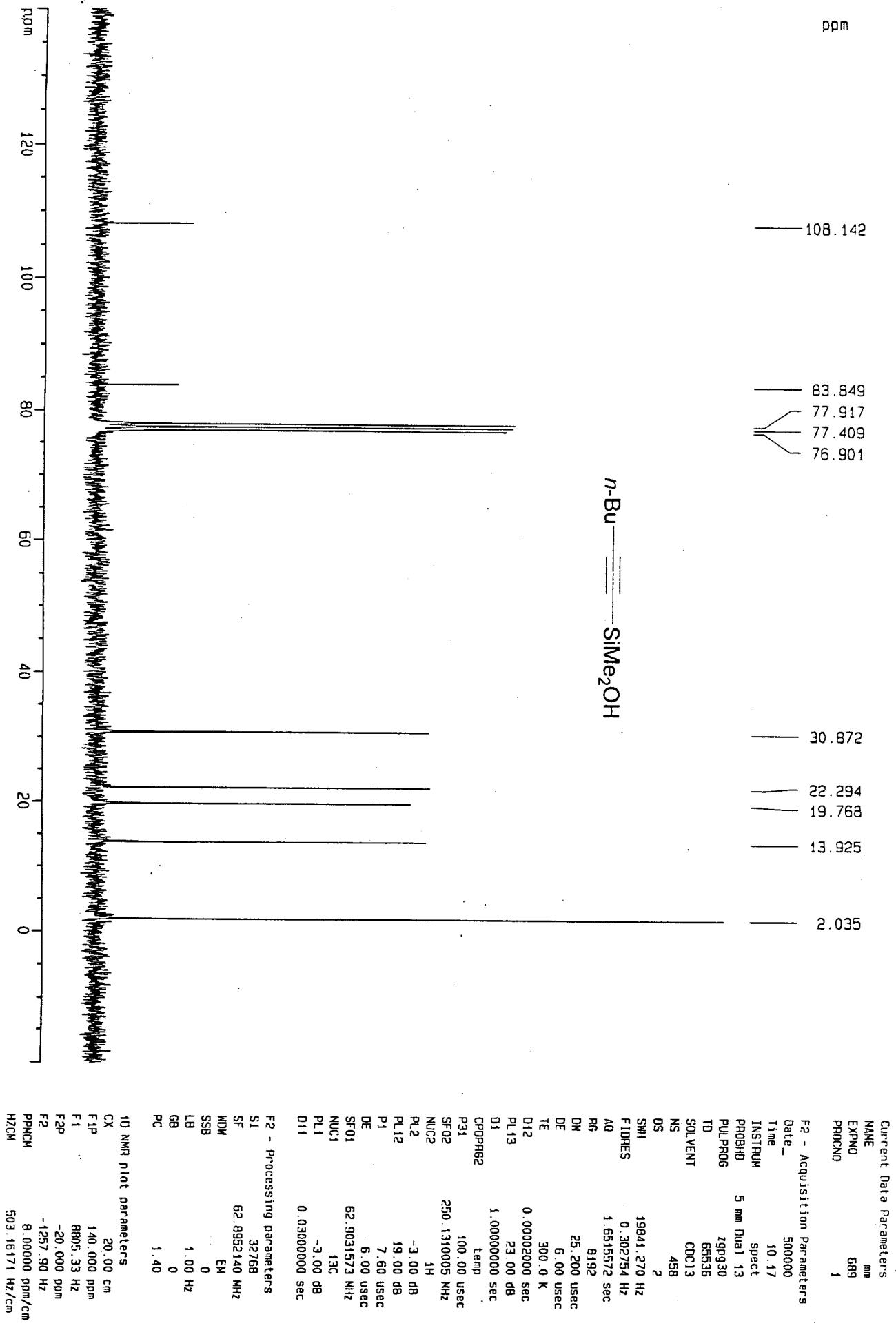
PPMCM 0.45455 ppm

HZCM 113.69546 Hz

Dimethyl(1-hexynyl)silanol

(Table 2, entry 12)

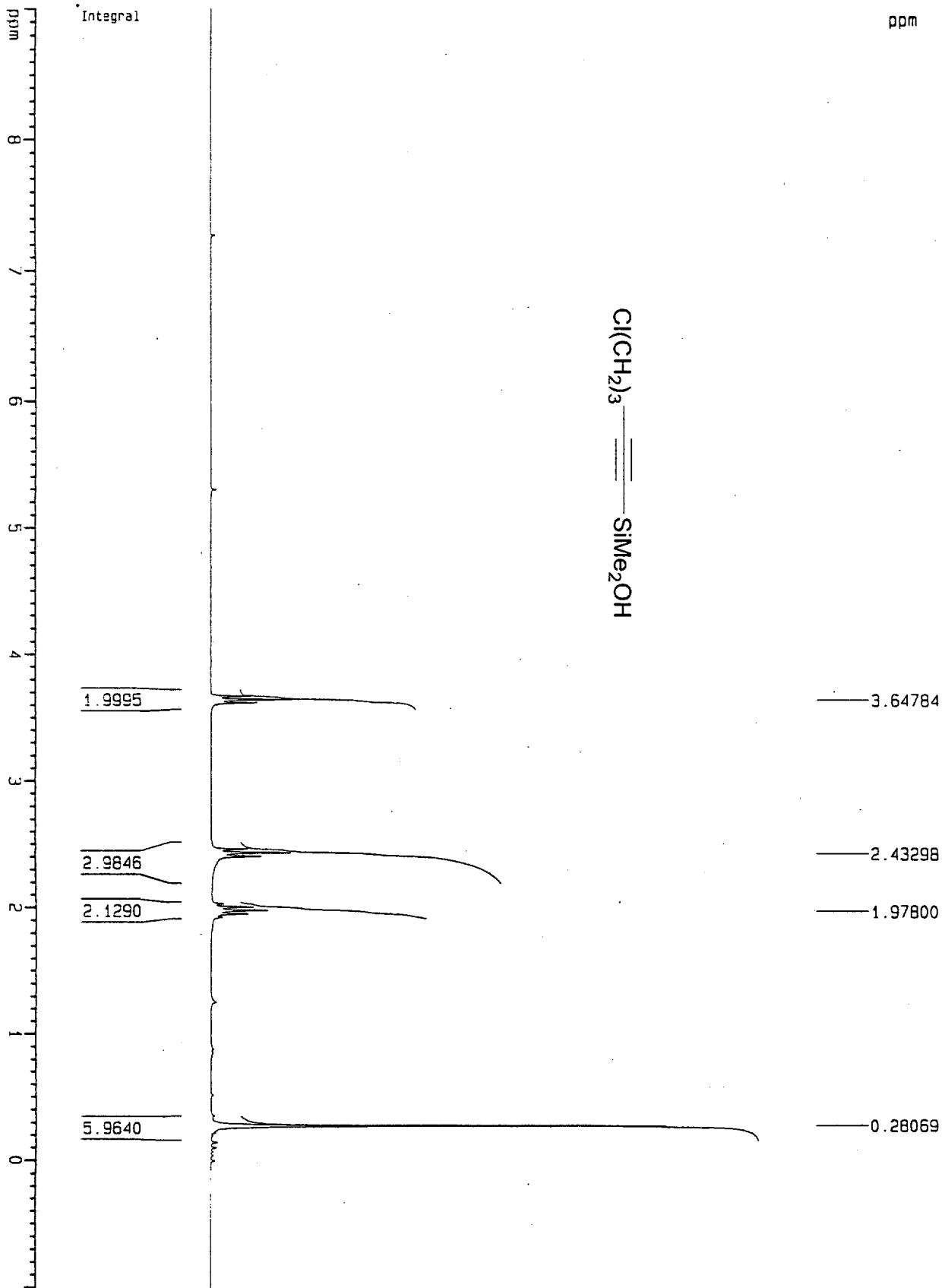
27



Dimethyl (5-chloropentynyl) silanol

28

(Table 2, entry 13)



Current Data Parameters
 NAME mm
 EXPNO 655
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 500000
 Time 7.42
 INSTRUM spect
 PROBHD 5 mm Dual 13
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 5144.033 Hz
 FIDRES 0.156983 Hz
 AQ 3.1650996 sec
 RG 128
 DM 97.200 us
 DE 6.00 us
 TE 300.0 K
 D1 1.0000000 sec
 P1 11.50 us
 DE 6.00 us
 SF01 250.1315447 MHz
 NJC1 1H
 PL1 -3.00 dB

F2 - Processing parameters

SI 16384

SF 250.1300034 MHz

MDW EM

SSB 0

LB 0.30 Hz

GB 0

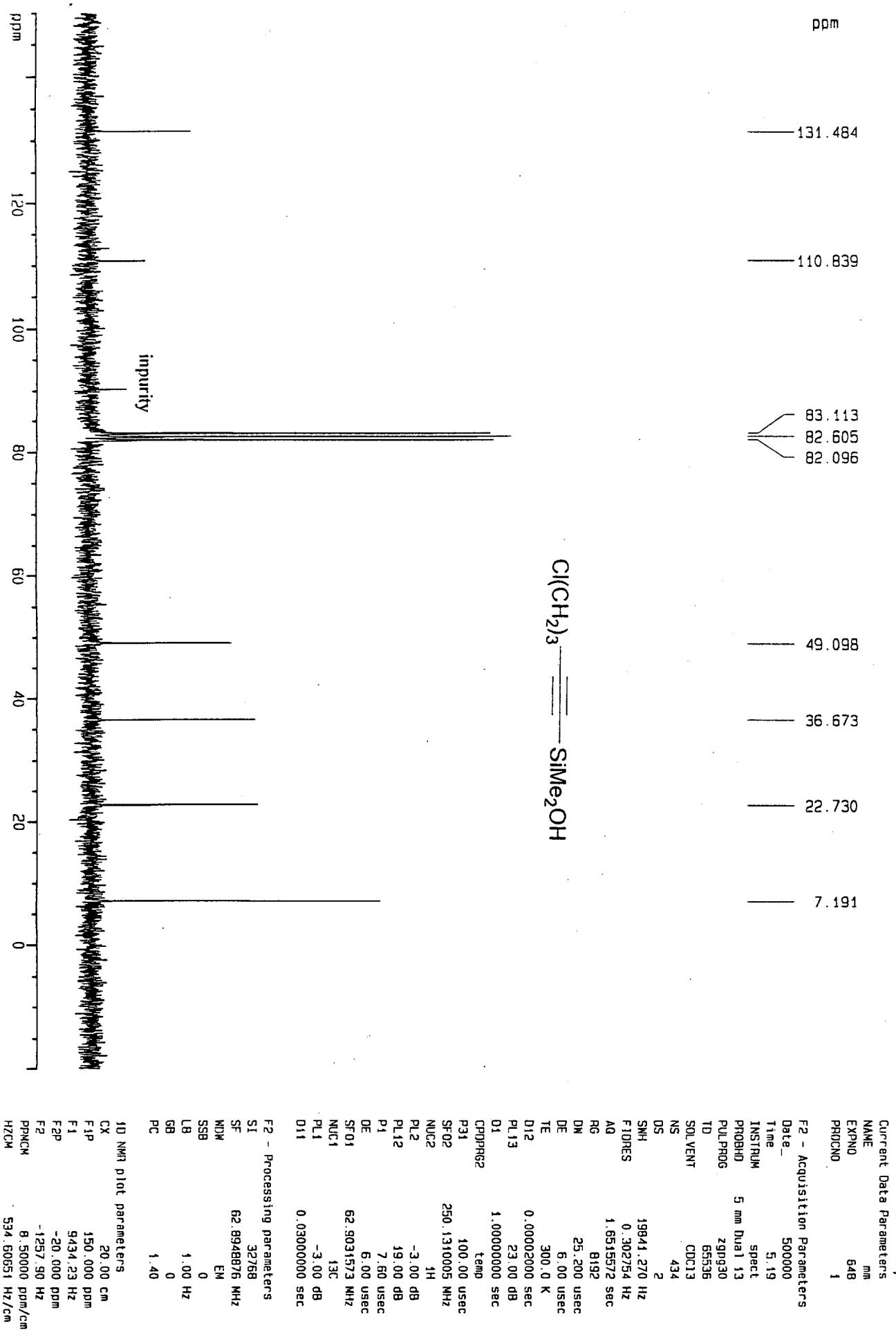
PC 1.00

10 NMR plot parameters
 CX 22.00 cm
 F1P 9.000 pp
 F1 2251.17 Hz
 F2P -1.000 pp
 F2 -250.13 Hz
 FPPM 0.45455 pp
 HZCM 113.65946 Hz

Dimethyl(5-chloropentynyl)silanol

(Table 2, entry 13)

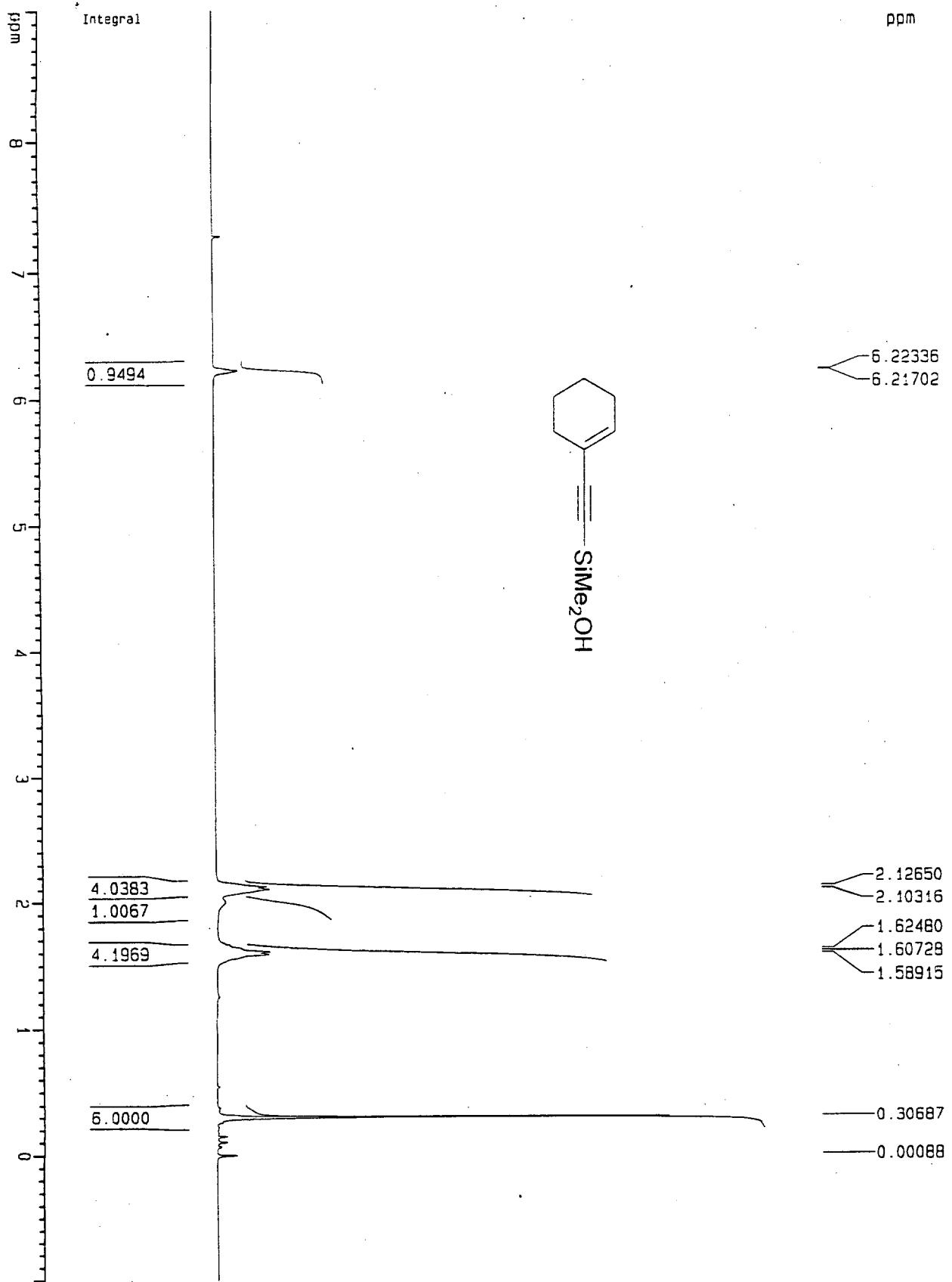
29



Dimethyl[(1-cyclohexenyl)ethynyl]silanol

(Table 2, entry 14)

30



Current Data Parameters
 NAME mm
 EXPNO 653
 PROCNO 1

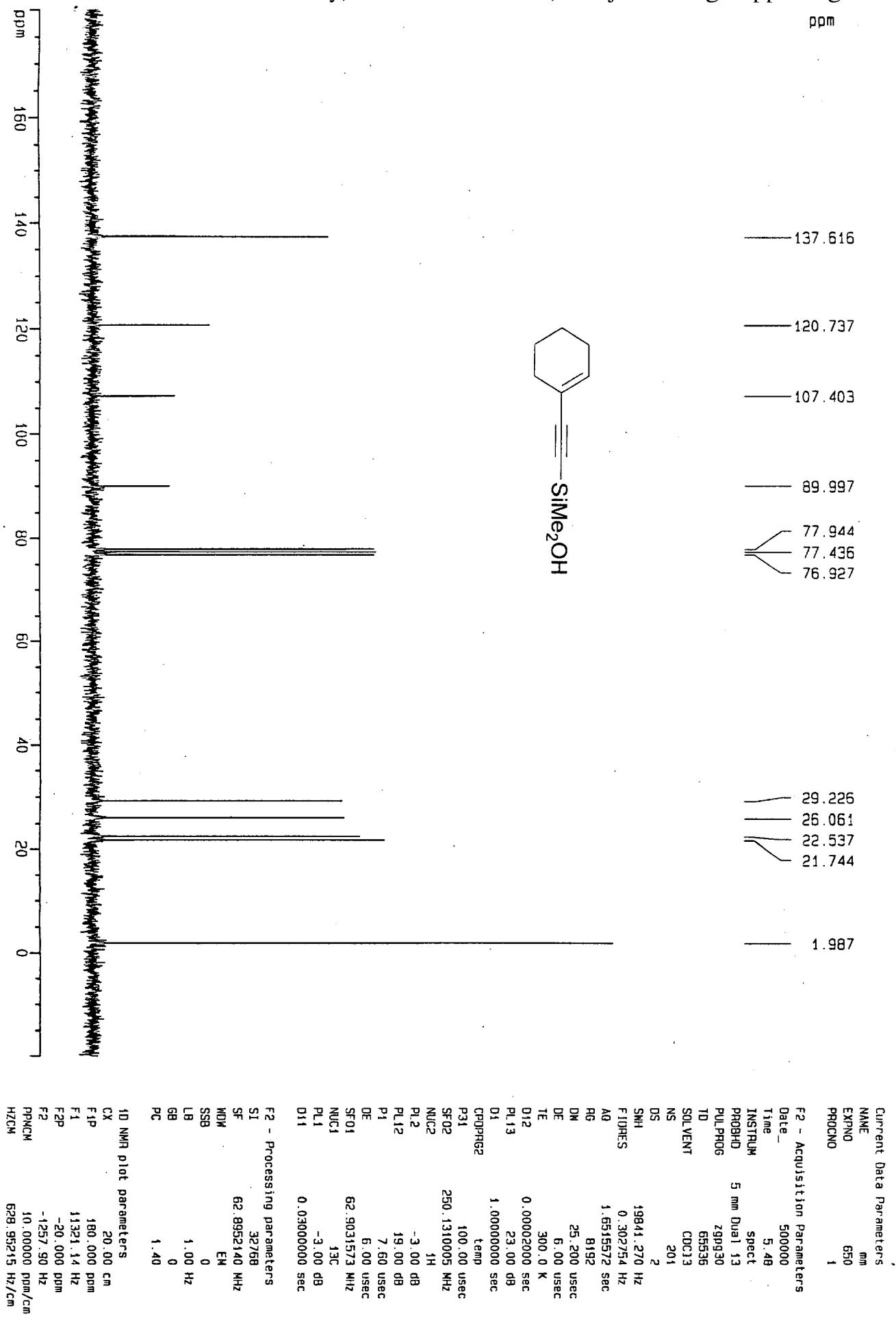
F2 - Acquisition Parameters
 Date 5/00/00
 Time 7:26
 INSTRUM spect
 PROBHD 5 mm Dual f3
 PULPROG zg30
 TD 32768
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 5144.033 Hz
 FIDRES 0.156993 Hz
 AQ 3.105096 sec
 RG 228.1
 DW 97.200 us
 DE 6.00 us
 TF 300.0 K
 D1 1.000000 sec
 P1 11.50 us
 DE 6.00 us
 SF 0.1315447 MHz
 NUC1 1H
 PL1 -3.00 dB

1D NMR plot parameters
 CX 22.00 cm
 F1P 9.000 pi
 F1 2251.17 Hz
 F2P -1.000 pi
 F2 -250.13 Hz
 PPMCM 0.45455 pi
 HZCM 113.69546 Hz

Dimethyl[[(1-cyclohexenyl)ethynyl]silanol]

三

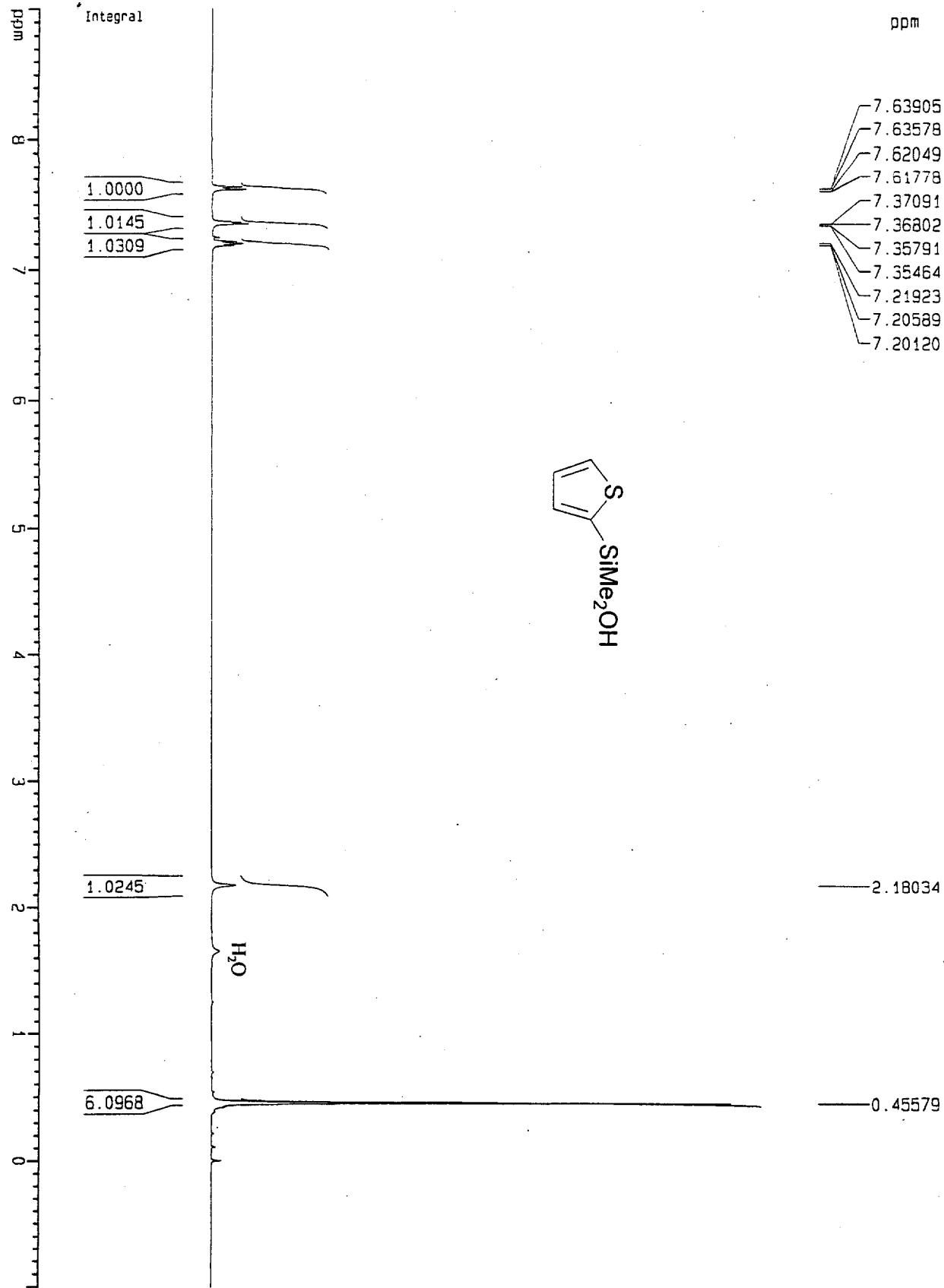
(Table 2, entry 14)



Dimethyl (2-thienyl)silanol

(Table 2, entry 15)

32



Current Data Parameters
NAME mm
EXPNO 671
PROCNO 1

F2 - Acquisition Parameters

Date_ 5/00/00
Time 15:23
INSTRUM spect
PROBHD 5 mm Dual 13

PULPROG 2930

TD 32768

SOLVENT CDCl₃

NS 16

DS 2

SW1 5144.033 Hz

FTURES 0.156983 Hz

AQ 3.1650996 sec

RG 362

DW 97.200 us

DE 6.00 us

TE 300.0 K

D1 1.0000000 sec

P1 11.50 us

DE 6.00 us

SF01 250.1315447 NH

NUC1 1H

PL1 -3.00 dB

F2 - Processing parameters

SI 16384

SF 250.1300097 NH

WDW EM

SSB 0

LB 0.30 Hz

GB 0

PC 1.00

1D NMR plot parameters

CX 22.00 cm

F1P 9.000 pp

F1 2251.17 Hz

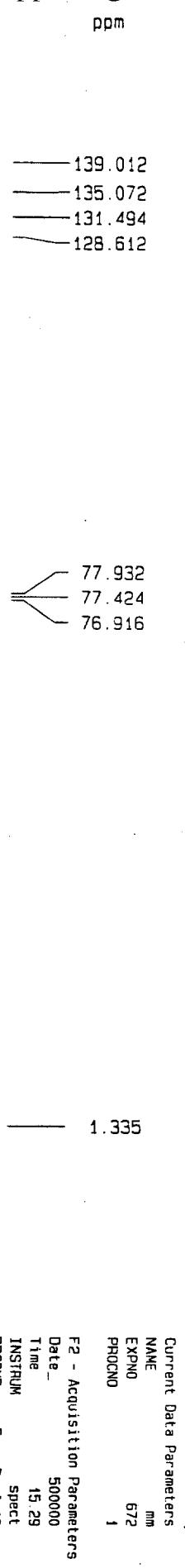
F2P -1.000 pp

F2 -250.13 Hz

PPM 0.45455 pp

HZCM 113.65956 Hz

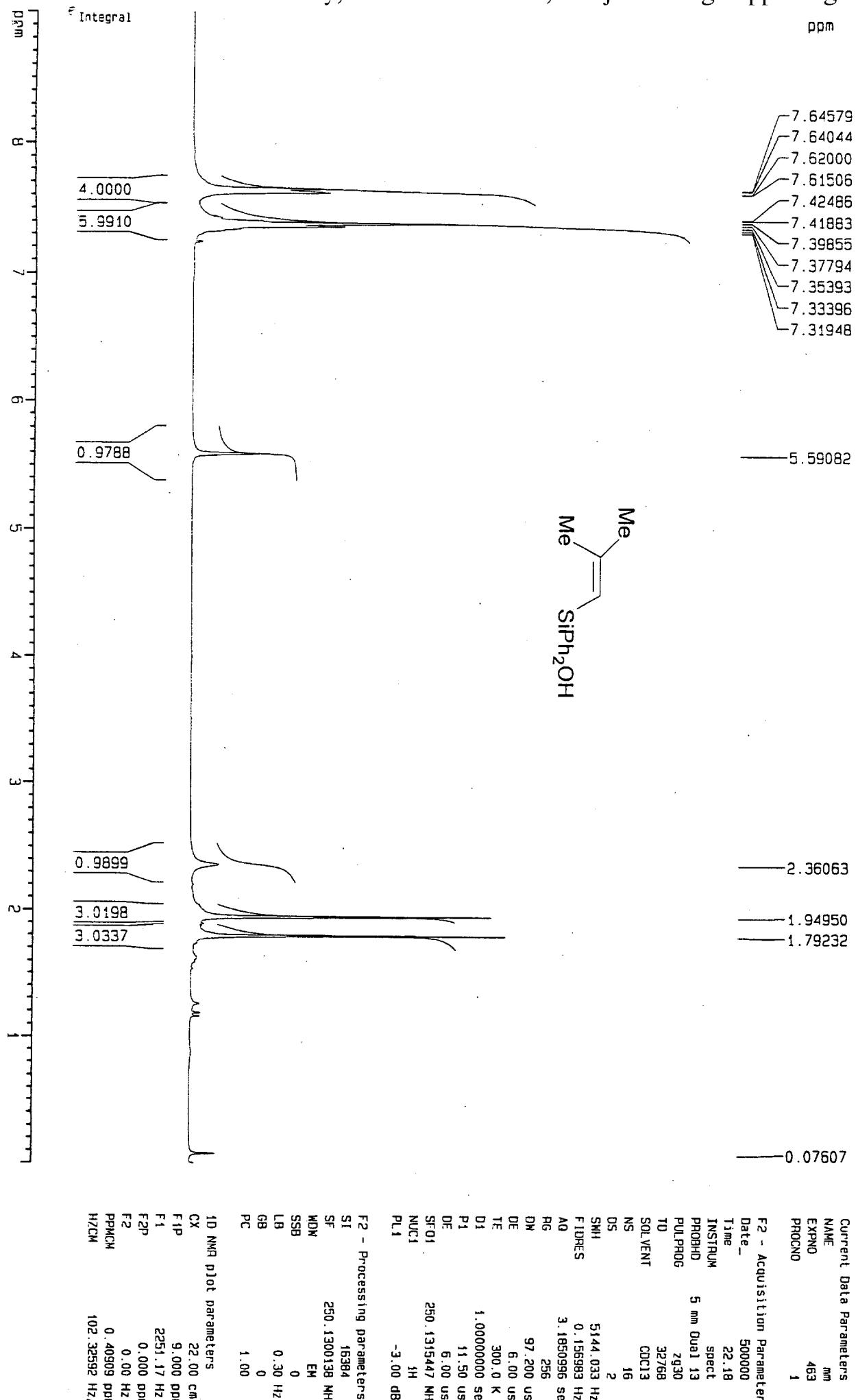
(Table 2, entry 15)



Diphenyl (2-methyl-1-propenyl) silanol

(Table 2, entry 17)

34



(Table 2, entry 17)

