Melting points were determined on a Fisher-Johns microscope melting point apparatus and are not corrected. ^{1}H NMR spectra were recorded at 300 MHz and are expressed as ppm downfield from tetramethylsilane as an internal standard.

2,2-Dimethylhex-4-ynylamine (17a). A solution of 1.50 g (10.8 mmol) of alkyne amide **16a** in 25 mL anhydrous dimethylether was added slowly to a slurry of 1.64 g (43.2 mmol) of $LiAlH_4$ in 75 mL of dimethylether. After addition was complete, the reaction was heated at reflux for a period of 4 h, cooled to RT, and carefully quenched by sequential addition of 2.5 mL of water, 2.5 mL of 5 N NaOH, and 10 mL of water. The mixture was stirred at RT until a precipitate formed, and then the ether layer was decanted. The precipitate was extracted with 3 x 50 mL of ether. The combined extracts and decanted ether were washed with brine, dried over anhydrous K_2CO_3 overnight, and concentrated under reduced pressure to afford 1.34 g (99%) of **17a** as a clear oil; IR (neat) 3387, 3310, 2959, 2921, 1584, 1471, 1364, 1321 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$) δ 0.91 (s, 6H), 1.78 (t, J = 2.4 Hz, 3H), 2.03 (d, J = 2.5 Hz, 2H), 2.51 (s, 2H); MS (EI) m/z (%) 126 (M^++H, 38), 125 (M^+, 5), 110 (100); HRMS (EI) Calcd for $C_8H_{15}N$: 125.1204. Found: 125.1204.

2,2-Dimethylpent-4-ynylamine (17b). This material was prepared in 99% yield from 1.00 g (8.0 mmol) of alkyne amide **16b** and 1.21 g (32 mmol) of $LiAlH_4$ in 100 mL of anhydrous ether, following an identical procedure to that described above for **17a**; IR (neat) 3304, 2960, 2871, 2115, 1675, 1604, 1472, 1367 cm^{-1}; ^{1}H NMR (300 MHz, $CDCl_3$) δ 0.95 (s, 6H), 2.00 (s, 1H), 2.15 (s, 2H), 2.60 (s, 2H).

3,3-Dimethylpent-4-ynylamine (17c). This material was prepared in 75% yield from 1.50 g (12 mmol) of alkyne amide **16c** and 1.80 g (48 mmol) of $LiAlH_4$ in 100 mL of anhydrous ether, following an identical procedure to that described above for **17a**; ^{1}H NMR (300 MHz, $CDCl_3$) δ 1.21 (s, 6H), 1.57 (t, J = 9.0 Hz, 2H), 2.09 (s, 1H), 2.86 (t, J = 9.0 Hz, 2H).

3,3-Dimethylhex-4-ynylamine (17d). This material was prepared in 91% yield from 432 mg (3.11 mmol) of alkyne amide **16d** and 708 mg (18.6 mmol) of $LiAlH_4$ in 100 mL of anhydrous ether, following an identical procedure to that described above for

17a; IR (neat) 3342, 2966, 2919, 1672, 1566, 1467, 1343 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$) δ 1.17 (s, 6H), 1.52 (t, *J* = 9.0 Hz, 2H), 1.78 (s, 3H), 2.85 (t, *J* = 9.0 Hz, 2H).

2-((4,4-Dimethylpyrrolidin-2-ylidene)ethyl)-3,3,5-trimethyl-1-pyrroline-5-carbonitrile (19a). A solution of 51.3 mg (0.180 mmol) of imidoyl triflate **18**,[6a] 33.9 mg (0.270 mmol) of acetylenic amine **17a**, 62.0 mg (0.270 mmol) of triethylbenzylammonium chloride, 8.4 mg (0.036 mmol) of tri-2-furylphosphine, and 0.255 mL (1.85 mmol) of triethylamine in 5 mL of Ch_3CN was degassed with argon for 5 min, and was then treated with 18.6 mg (0.018 mmol) of $Pd_2(dba)_3.CHCl_3$ under an argon atmosphere. The reaction was then heated to 80 °C, with vigorous stirring, for a period of 45 min, and then concentrated to dryness. The residue was diluted with 100 mL of CH_2Cl_2, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by flash chromatography (silica gel, EtOAc:hexane:Et_3N = 10:90:1, to 30: 90 :1) to give 32 mg (70%) of **19a** as a yellow solid, mp 108-9 °C; R_f 0.39-0.28 (33% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.15 (s, 3H), 1.16 (s, 3H), 1.36 (s, 3H), 1.43 (s, 3H), 1.66 (s, 3H), 1.84 (s, 3H), 1.77/1.81/2.34/2.39 (AB, *J* = 13.5 Hz, 2H), 2.39/2.44/2.45/2.50 (AB, *J* = 15.0 Hz, 2H), 3.34 (s, 2H), 10.1 (br s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 14.9, 26.3, 28.0, 28.1, 28.2, 29.6, 36.7, 47.5, 51.0, 54.3, 61.9, 62.1, 87.2, 124.9, 164.1, 180.3; MS (EI) m/z (%) 259 (M^+, 58), 258 (85), 244 (100); HRMS (EI) Calcd for $C_{16}H_{25}N_3$: 259.2048. Found: 259.2046.

2-((4,4-Dimethylpyrrolidin-2-ylidene)methyl)-3,3,5-trimethyl-1-pyrroline-5-carbonitrile (19b). A solution of 52.0 mg (0.185 mmol) of imidoyl triflate **18**, 31.0 mg (0.277 mmol) of acetylenic amine **17b**, and 0.260 mL (1.85 mmol) of Et_3N in 3 mL of THF was degassed with argon for 5 min, and was then treated with a solution of 21.0 mg (0.018 mmol) of $Pd(Ph_3P)_4$ in 2 mL of THF under an argon atmosphere. After stirring an additional 20 h at RT, the reaction mixture was diluted with 100 mL of CH_2Cl_2, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by flash chromatography (silica gel, EtOAc:hexane:Et_3N = 20:100:1) to give 36.0 mg (80%) of **19b** as a white crystal, mp 116-17 °C; R_f 0.64 (33% EtOAc/hexane); IR (neat) 3248, 2955, 2872, 2226, 1619, 1525, 1307, 1184 cm^{-1}; ^1H NMR (300 MHz, $CDCl_3$) δ 1.16 (s, 6H), 1.18 (s, 3H), 1.27 (s, 3H), 1.66 (s, 3H), 1.68/1.72/2.33/2.37 (AB, *J* = 13.0 Hz,

2H), 2.41 (s, 2H), 3.31 (s, 2H), 4.48 (s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 27.3, 27.4, 27.6, 28.1, 29.6, 37.5, 47.3, 50.7, 51.3, 60.5, 64.4, 78.4, 125.0, 163.7, 182.9; MS (EI) m/z (%) 245 (M^+, 30), 230 (100); Anal. Calcd for $C_{15}H_{23}N_3$: C, 73.43; H, 9.45; N, 17.12. Found: C, 73.20; H, 9.52; N, 16.87.

3,3,5-Trimethyl-2-(pyrrolidin-2-ylidenemethyl)-1-pyrroline-5-carbonitrile (19e). This material was prepared in 85% yield from 78 mg (0.28 mmol) of imidoyl triflate **18** and 34 mg (0.41 mmol) of pent-4-ynylamine (**17e**)[a] following an identical procedure to that described above for **19b**. Chromatography (silica gel, EtOAc:hexane:Et_3N = 20:100:1) gave 51 mg (85%) of **19e** as a white solid, mp 110-11 °C; R_f 0.41 (33% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.19 (s, 3H), 1.28 (s, 3H), 1.66 (s, 3H), 1.69/1.74/2.34/2.38 (AB, J = 13.2 Hz, 2H), 2.00 (quint., J = 7.3 Hz, 2H), 2.64 (t, J = 7.7 Hz, 2H), 3.59 (t, J = 6.9 Hz, 2H), 4.56 (s, 1H).

a: Fukuda, Y.; Matsubara, S.; Utimoro, K. *J. Org. Chem.* **1991**, *56*, 5812.

4,4,5-trimethyl-2-((trifluoromethyl)sulfonyloxy)-1-pyrroline-5-carbonitrile (20). A solution of 173 mg (1.14 mmol) of 2,3,3-trimethyl-5-oxopyrrolidine-2-carbonitrile,[6a] 700 mg (3.41 mmol) of 2,6-di-*t*-butyl-4-methylpyridine, and 0.379 mL (2.28 mmol) of triflic anhydride in 5 mL of CH_2Cl_2 was stirred at 0 °C under nitrogen for 20 min. The reaction mixture was poured into 50 mL of a solvent combination consisting of hexane, EtOAc and Et_3N in a ratio of 75:25:1. After concentrating under reduced pressure, the residue was chromatographed on silica gel which had been pretreated with eluent (EtOAc:hexane:Et_3N = 10:90:1, to 25:75:1) to afford 197 mg (61%) of imidoyl triflate **20** as a pale yellow oil; R_f 0.67 (33% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.20 (s, 3H), 1.42 (s, 3H), 1.58 (s, 3H), 2.68/2.74/2.78/2.84 (AB, J = 17.3 Hz, 2H).

2-((4,4-Dimethylpyrrolidin-2-ylidene)ethyl)-4,4,5-trimethyl-1-pyrroline-5-carbonitrile (21a). A solution of 90 mg (0.32 mmol) of imidoyl triflate **20**, 60 mg (0.48 mmol) of acetylenic amine **17a**, 111 mg (0.48 mmol) of triethylbenzylammonium chloride, 15 mg (0.0063 mmol) of tri-2-furylphosphine, and 0.46 mL (3.2 mmol) of triethylamine in 10 mL of Ch_3CN was degassed with argon for 5 min, and was then treated with 29 mg (0.032 mmol) of $Pd_2(dba)_3$ under an argon atmosphere. The reaction was then heated to 80 °C, with vigorous stirring, for a period of 1.5 h, and

then concentrated to dryness. The residue was diluted with 100 mL of CH_2Cl_2, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by flash chromatography (silica gel) to give 43 mg (52%) of **21a** (EtOAc:hexane:Et_3N = 20:100:1) as a yellow solid, and 31 mg (37%) of byproduct **22a** (EtOAc:hexane:Et_3N = 30:90:1).

21a: mp 86-7 °C; R_f 0.23 (25% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.06 (s, 3H), 1.17 (s, 3H), 1.18 (s, 3H), 1.33 (s, 3H), 1.51 (s, 3H), 1.74 (s, 3H), 2.43 (s, 2H), 2.52/2.57/2.63/2.68 (AB, J = 16.2 Hz, 2H), 3.30/3.33/3.34/3.37 (AB, J = 9.0 Hz, 2H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 15.6, 22.5, 23.2, 26.1, 27.8 (two signals), 37.0, 43.3, 46.5, 50.3, 61.2, 73.2, 88.0, 123.0, 160.8, 175.6; MS (EI) m/z (%) 259 (M^+, 21), 258 (M^+-H, 100); HRMS (EI) Calcd for $C_{16}H_{24}N_3$ (M-H): 258.1970. Found: 258.1966.

2-((3,3-Dimethylpyrrolidin-2-ylidene)methyl)-4,4,5-trimethyl-1-pyrroline-5-carbonitrile (21c). A solution of 270 mg (0.950 mmol) of imidoyl triflate **20**, 127 mg (1.14 mmol) of acetylenic amine **17c**, and 1.23 mL (9.50 mmol) of Et_3N in 20 mL of THF was degassed with argon for 5 min, and was then treated with a solution of 109 mg (0.095 mmol) of $Pd(Ph_3P)_4$ in 5 mL of THF under an argon atmosphere. After stirring an additional 16 h at RT, the reaction mixture was diluted with 150 mL of CH_2Cl_2, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by flash chromatography (silica gel, EtOAc:hexane:Et_3N = 10:100:1, to 50:50:1) to give 72 mg (31%) of **21c** as a yellow solid and 146 mg (62%) of byproduct **22c** as a yellow oil.

21c: mp 89-90 °C; R_f 0.51 (25% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.05 (s, 3H), 1.21 (s, 3H), 1.22 (s, 3H), 1.33 (s, 3H), 1.52 (s, 3H), 1.85 (t, J = 6.6 Hz, 2H), 2.44/2.50/2.61/2.66 (AB, J = 16.2 Hz, 2H), 3.54 (t, J = 6.6 Hz, 2H), 4.50 (s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 22.4, 23.1, 25.8, 27.1, 27.2, 38.6, 43.4, 43.8, 44.6, 52.0, 73.7, 79.1, 123.0, 170.4, 176.0; MS (EI) m/z (%) 245 (M^+, 51), 230 (100); HRMS (EI) Calcd for $C_{15}H_{23}N_3$: 245.1892. Found: 245.1892.

22c: R_f 0.10 (25% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.03 (s, 3H), 1.26 (s, 6H), 1.32 (s, 3H), 1.49 (s, 3H), 1.69 (t, J = 6.0 Hz, 2H), 2.15 (s, 1H), 2.22/2.2.28/2.55/2.61 (AB, J = 18.0 Hz, 2H), 3.47 (br m, 2H), 4.59 (br s, 1H).

2-((3,3-Dimethylpyrrolidin-2-ylidene)ethyl)-4,4,5-trimethyl-1-pyrroline-5-carbonitrile (21d). A stirring solution of 25 mg (0.086 mmol) of

imidoyl chloride **27d**[6b] in 3 mL of THF was cooled to -78 °C under nitrogen, and was then treated with 0.10 mL (0.10 mmol) of 1.0 M lithium triethylboronhydride (super-hydride) in THF. After stirring an additional 1.5 h at -78 °C, the solution was quenched with sat'd $NaHCO_3$ at RT for 10 min. The reaction mixture was then extracted with 2 x 30 mL of CH_2Cl_2. The combined organic phases were dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by flash chromatography (silica gel, EtOAc:hexane: Et_3N = 25:75:1) to give 12 mg (53%) of **21d** as a pale yellow oil; R_f 0.39 (25% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.06 (s, 3H), 1.34 (s, 6H), 1.37 (s, 3H), 1.53 (s, 3H), 1.86 (s, 3H), 1.89 (t d, J = 6.9 Hz, J = 3.0 Hz, 2H), 2.56/2.61/2.67/2.72 (AB, J = 16.2 Hz, 2H), 3.48 (t, J = 6.9 Hz, 2H). MS (EI) m/z (%) 259 (M^+, 21), 258 (100); HRMS (EI) Calcd for $C_{16}H_{24}N_3$ (M-H): 258.1970. Found: 258.1973.

2-((3,3-Dimethylhex-4-ynyl)amino)-4,4,5-trimethyl-1-pyrroline-5-carbonitrile (22d). A solution of 31 mg (0.11 mmol) of imidoyl triflate **20**, 20 mg (0.16 mmol) of acetylenic amine **17d**, 37 mg (0.16 mmol) of triethylbenzylammonium chloride, and 0.15 mL (1.1 mmol) of triethylamine in 4 mL of CH_3CN was heated to 80 °C, with vigorous stirring, for a period of 12 h. The reaction mixture was then concentrated to dryness. The residue was diluted with 100 mL of CH_2Cl_2, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was then purified by flash chromatography (silica gel, EtOAc:hexane:Et_3N = 30:90:1) to give 20 mg (70%) of **22d** as a yellow oil; R_f 0.12 (28% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.02 (s, 3H), 1.19 (s, 6H), 1.31 (s, 3H), 1.48 (s, 3H), 1.62 (t, J = 7.5 Hz, 2H), 1.78 (s, 3H), 2.21/2.26/2.55/2.60 (AB, J = 15.0 Hz, 2H), 3.41 (br m, 2H), 4.70 (br s, 1H); MS (EI) m/z (%) 244 (M^+-CH_3, 22), 217 (M^+-CH_3-HCN, 80).

2-((3,3-Dimethyl-2-methylthio(1-pyrrolin-5-ylidene))methyl)-3,3,5-trimethyl-1-pyrroline-5-carbonitrile (24). A solution of 400 mg (1.54 mmol) of semicorrin **23**[6a] in 50 mL of THF was treated with 412 mg (0.93 mmol) of P_4S_{10}, and the resulting suspension was heated at 75 °C for 12 hr. The reaction was then diluted with 100 mL of CH_2Cl_2, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was purified by flash chromatography (silica gel, EtOAc:hexane = 25:75) to give 332 mg (78%) of

thiolactam as a yellow solid. ^{1}H NMR (300 MHz, $CDCl_3$) δ 1.25 (s, 3H), 1.32 (s, 3H), 1.38 (s, 3H), 1.40 (s, 3H), 1.76 (s, 3H), 1.79/1.83/2.44/2.49 (AB, J = 13.5 Hz, 2H), 2.88 (s, 2H), 5.13 (s, 1H).

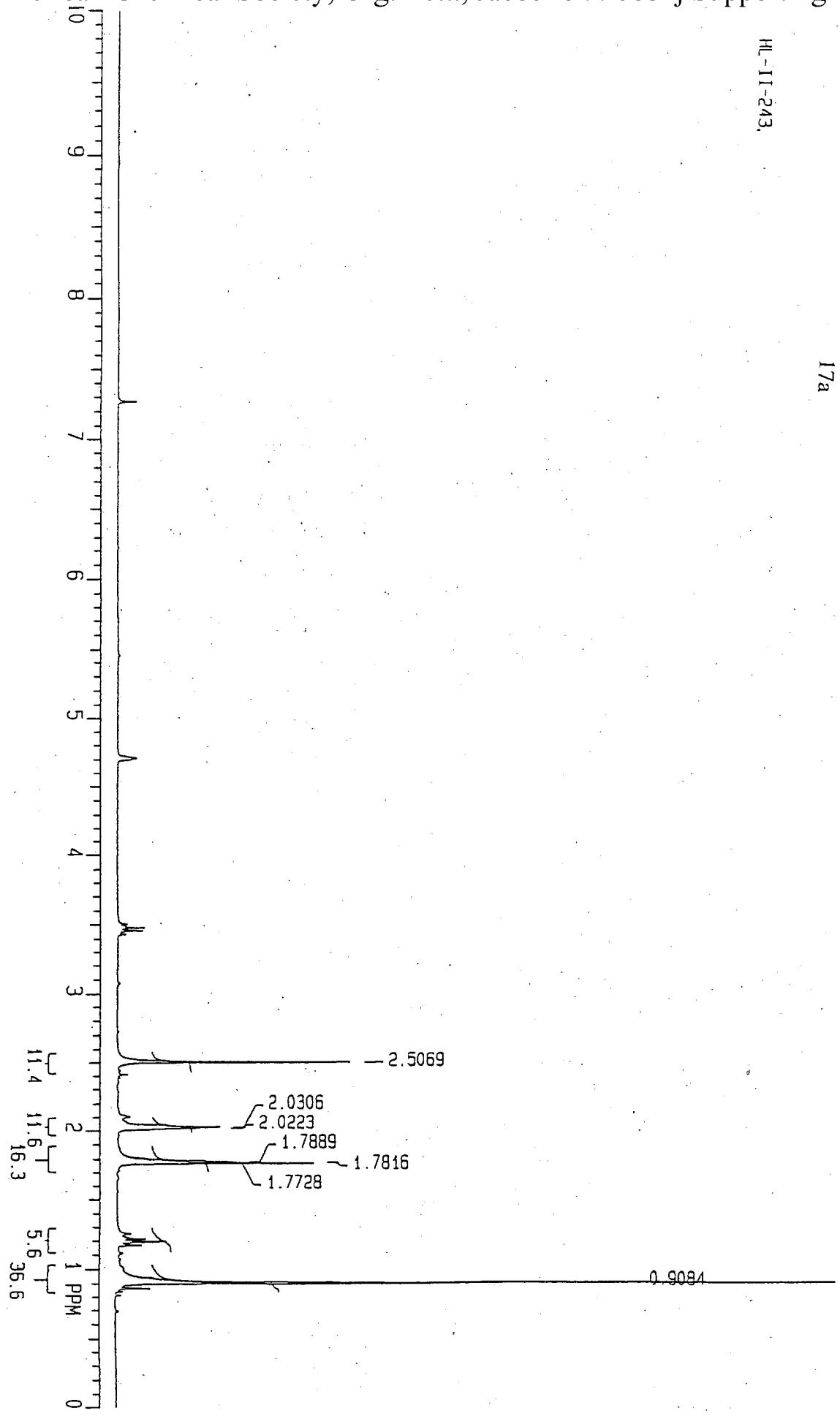
A stirring solution of 96 mg (0.35 mmol) of thiolactam and 0.108 mL (1.75 mmol) of methyl iodide in 16 mL of THF was treated with 0.261 mL (1.75 mmol) at RT under nitrogen for a period of 16 h. The resulting white precipitate was then filtered, and the filtrate was diluted with 100 mL of EtOAc, washed with sat'd $NaHCO_3$ and sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. The residue was chromatographed on silica gel (EtOAc:hexane:Et_3N = 20:100:1) to afford 87 mg (87%) of thioiminoester **24** as a pale yellow solid, mp 106-8 °C; R_f 0.23 (25% EtOAc/hexane); ^{1}H NMR (300 MHz, $CDCl_3$) δ 1.26 (s, 3H), 1.31 (s, 9H), 1.71 (s, 3H), 1.78/1.82/2.41/2.45 (AB, J = 13.2 Hz, 2H), 2.58 (s, 3H), 3.00/3.06/3.10/3.16 (AB d, J = 19.2 Hz, J = 2.4 Hz, 2H), 6.11 (t, J = 2.4 Hz, 1H). MS (EI) m/z (%) 289 (M^+, 40), 274 (100); HRMS (EI) Calcd for $C_{16}H_{23}N_3S$: 289.1612. Found: 289.1613.

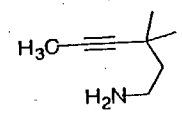
2-((2-((2-((3,3-Dimethylpyrrolidin-2-ylidene)methyl)-4,4-dimethyl(1-pyrrolin-5-ylidene))methylthio)-4,4-dimethyl(1-pyrrolin-5-ylidene))ethyl)-4,4,5-trimethyl-1-pyrroline-5-carbonitrile (30). A solution of 23 mg (0.093 mmol) of reduced semicorrin **21c** in 0.5 mL of anhydrous *t*-BuOH was treated with 0.14 mL (0.14 mmol) of 1.0 M *t*-BuOK/*t*-BuOH under nitrogen with stirring. The reaction was then heated at 50 °C for 10 min, cooled to RT, and concentrated under reduced pressure. The residue was taken up in ether, washed with sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. Flash chromatography (silica gel, EtOAc:hexane:Et_3N = 10:90:1, to 25:75:1) then gave 12 mg (59%) of **29** as a pale yellow oil, which was used immediately due to its instability; ^{1}H NMR (300 MHz, $CDCl_3$) δ 1.21 (s, 3H), 1.23 (s, 3H), 1.29 (s, 6H), 1.84 (t, J = 6.9 Hz, 2H), 2.59 (s, 2H), 3.60 (t, J = 6.6 Hz, 2H), 4.21 (s. 1H), 4.64 (s, 1H), 4.71 (s, 1H).

A solution of 14.0 mg (0.0494 mmol) of thiolactam **28**[6b] and 9.8 mg (0.0450 mmol) of enamine **29** in 3 mL of anhydrous CH_3CN was treated with 10.0 mg (0.0450 mmol) of *N*-iodosuccinimide, followed by 0.027 mL (0.18 mmol) of 1,8-diazabicyclo-[5,4,0]undec-7-ene at RT under argon (vigorous stirring). After stirring an additional 4 hr at RT, the resulting dark brown solution was concentrated to dryness under reduced pressure. The residue was then dissolved in 60 mL of CH_2Cl_2, washed with sat'd brine, dried over anhydrous Na_2SO_4, filtered, and concentrated under reduced pressure. Flash

chromatography (silica gel, EtOAc:hexane:Et_3N = 10:90:1, to 25:75:1) then gave 10.1 mg (48%) of vinyl sulfide **30** as a yellow oil; R_f 0.56 (25% EtOAc/hexane); ^1H NMR (300 MHz, $CDCl_3$) δ 1.10 (s, 3H), 1.24 (s. 6H), 1.27 (s, 3H), 1.29 (s, 3H), 1.30 (s, 3H), 1.42 (s, 3H), 1.43 (s, 3H), 1.54 (s, 3H), 1.90 (t, J = 6.9 Hz, 2H), 2.14 (s, 3H), 2.68 (s, 2H), 2.77 (s, 2H), 3.28 (s, 2H), 3.65 (t, J = 6.9 Hz, 2H), 4.73 (s, 1H), 5.85 (s, 1H); ^{13}C NMR (75 MHz, $CDCl_3$) δ 14.7, 21.7, 23.0, 26.6, 26.9, 27.3, 27.4, 29.5, 38.5, 41.1, 43.9, 44.0, 44.4, 45.4, 52.1, 55.3, 55.4, 73.2, 81.0, 92.2, 117.7, 121.9, 168.0, 168.4, 172.6, 175.5, 176.1, 180.2; MS (EI) m/z (%) 505 (M^+, 4); HRMS (EI) Calcd for $C_{30}H_{43}N_5S$: 505.3239. Found: 505.3246.

2-((2-((2-((3,3-Dimethylpyrrolidin-2-ylidene)methyl)-4,4-dimethyl(1-pyrrolin-5-ylidene))methyl)-4,4-dimethyl(1-pyrrolin-5-ylidene))ethyl)-4,4,5-trimethyl-1-pyrroline-5-carbonitrile cadmium chloride (31). A solution of 10.1 mg (0.0198 mmol) of vinyl sulfide **30**, 26.5 mg (0.099 mmol) of triphenylphosphine, and 17 mg (0.20 mmol) of sodium bicarbonate in 3 mL of CH_3CN was degassed with argon, and was treated with vigorous stirring, and protection from light, with 73 mg (0.40 mmol) of $CdCl_2$.[6b] The reaction was then stirred at RT for 24 h under argon, and the resulting solution was concentrated to dryness under reduced pressure. The residue was dissolved in 60 mL of CH_2Cl_2 and washed thoroughly with three portions of sat'd brine. The aqueous phase was back extracted with 3 x 10 mL of CH_2Cl_2. The combined organic extracts were concentrated under reduced pressure, and the dark residue was purified by PTLC (silica gel, EtOAc:hexane = 1:1) to afford 6.8 mg (53%) of **31** as a dark red solid (two tautomers with a ratio of 1:0.6), mp 235-36 °C. R_f 0.22 (50% EtOAc/hexane); UV-Vis (in MeOH) (rel.int.) λ_{max} 274 (56), 330 (100), 516 (49); ^1H NMR (300 MHz, $CDCl_3$) δ 0.92 (s, 4.8 H), 1.19 (s, 1.8H), 1.20 (s, 3H), 1.23 (s, 7.2H), 1.27 (s, 3H), 1.29 (s, 9H), 1.40 (s, 3H), 1.42 (s, 1.8H), 1.45 (app s, 4.8H), 1.52 (s, 3H), 1.67 (s, 1.8H), 1.81 (m, 3.2H), 1.98 (s, 1.8H), 2.02 (s, 3H), 2.45-3.06 (m, 9.6H), 3.94 (m, 0.6H), 4.24 (m, 2.6H), 4.91 (s, 1H), 4.93 (s, 0.6H), 5.02 (s, 1H), 5.12 (s, 0.6H); MS (EI) m/z (%) 474 (M^+-CdCl+2H, 100), 472 (M^+-CdCl, 3); HRMS (EI) Calcd for $C_{30}H_{44}N_5$ (M-CdCl+2H): 474.3597. Found: 474.3595





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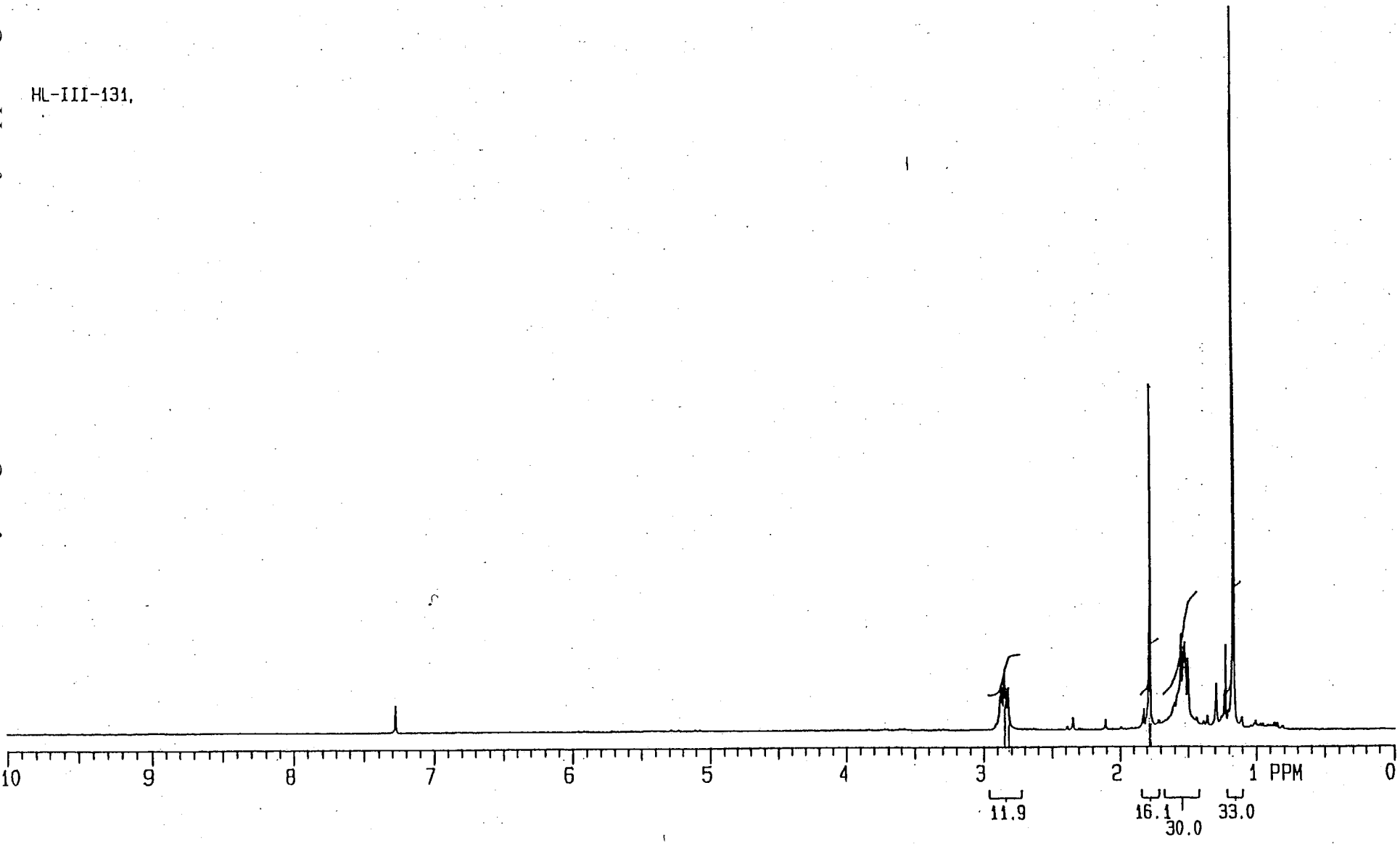
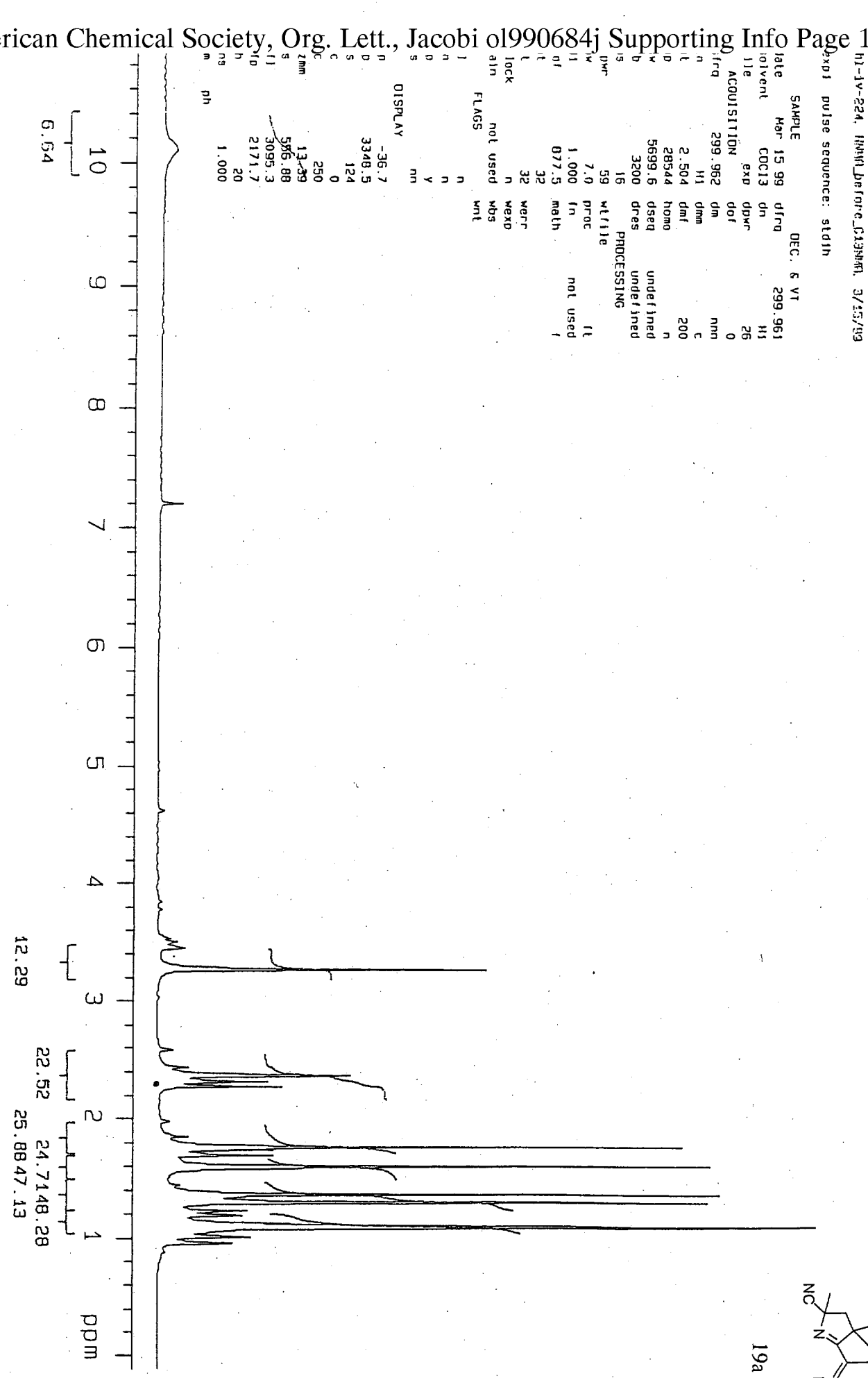
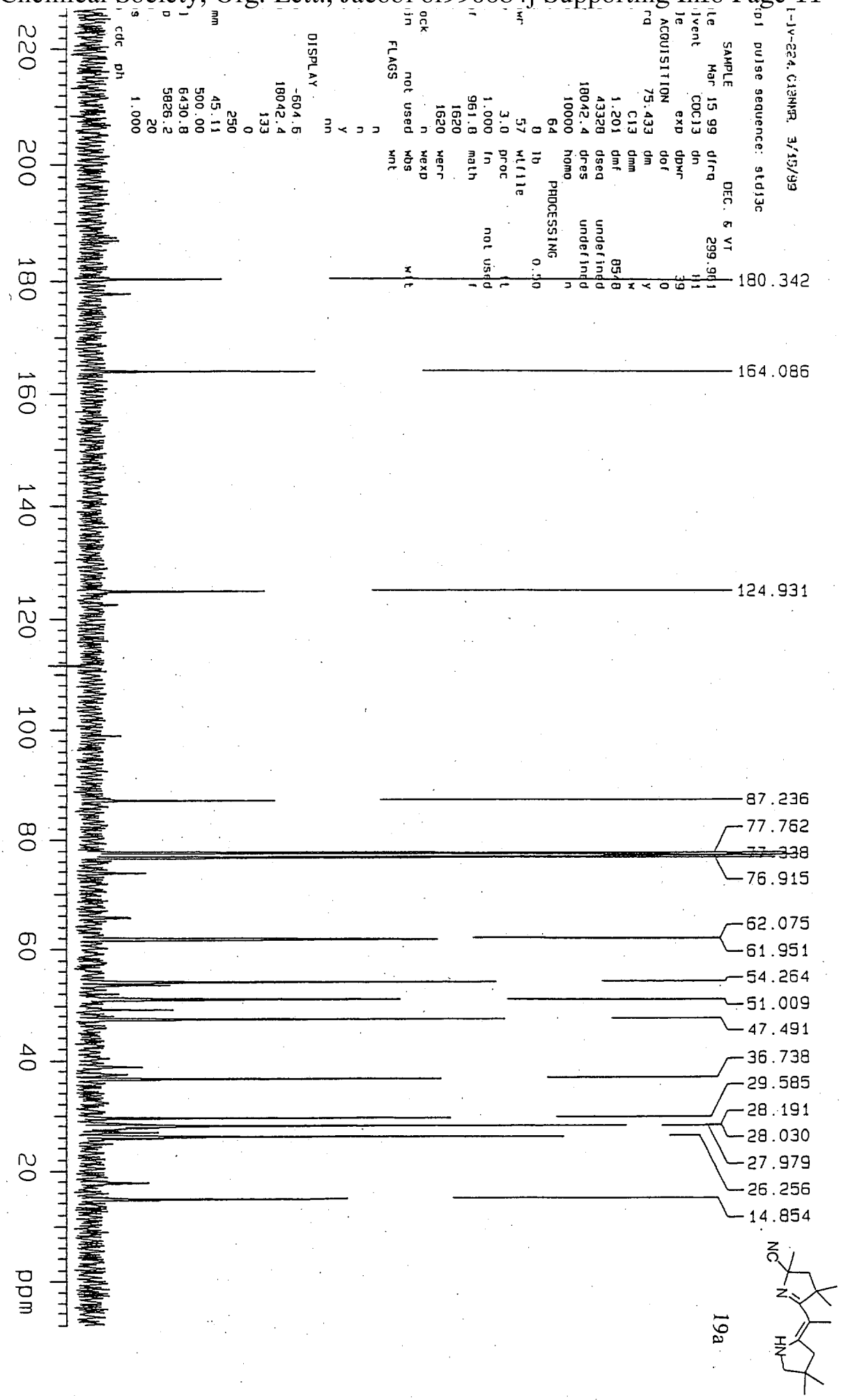
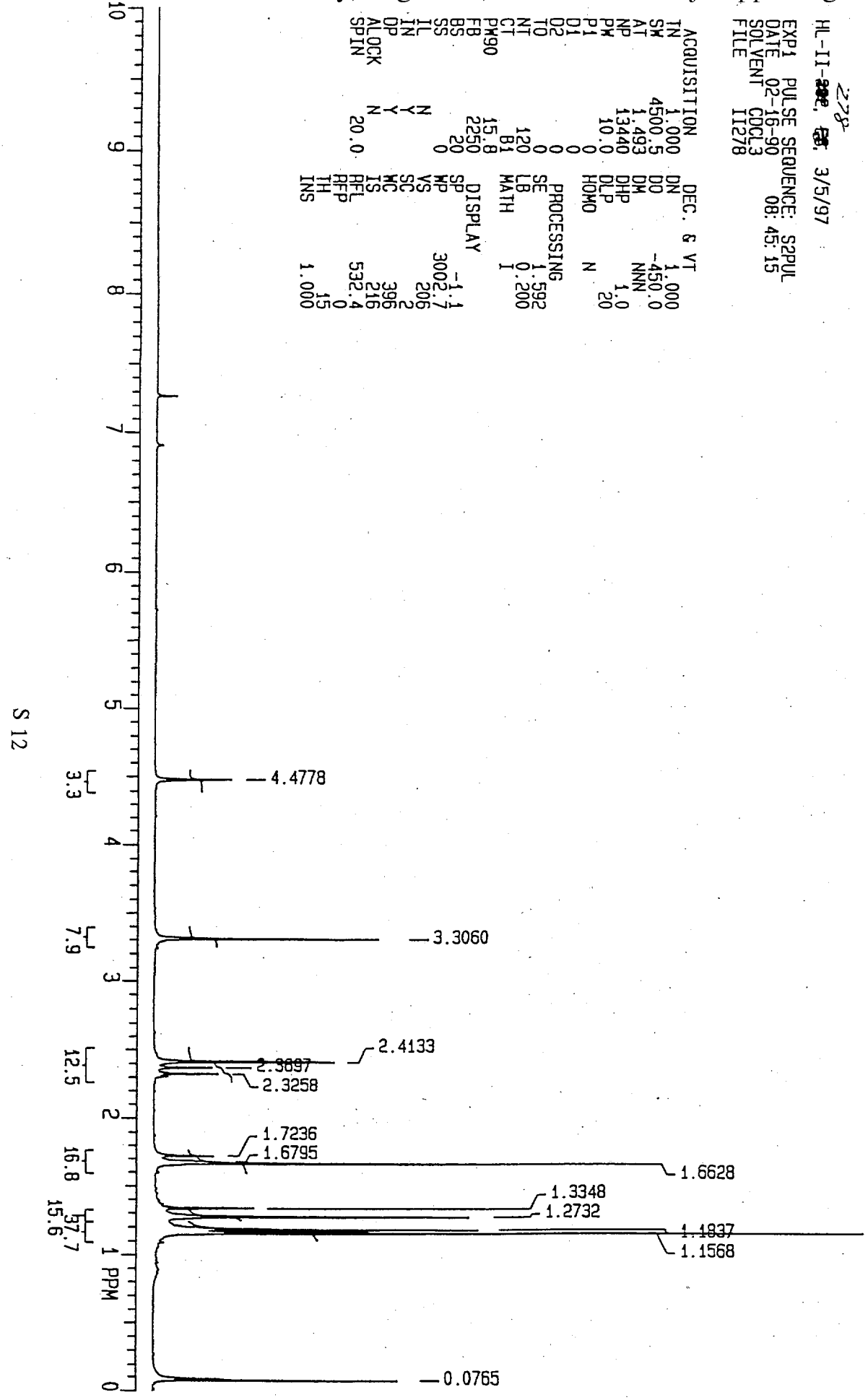




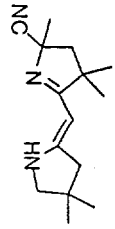
19a

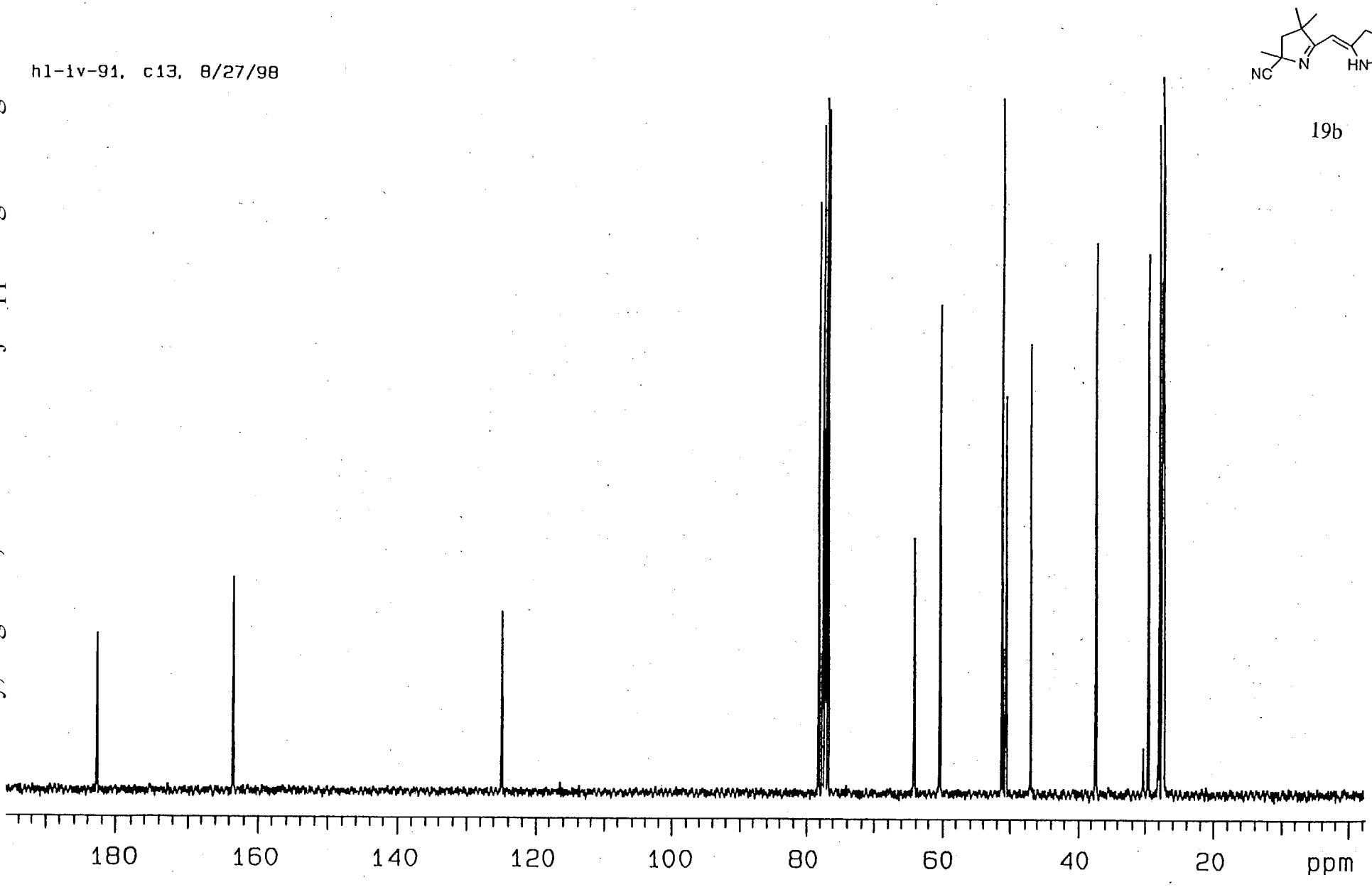


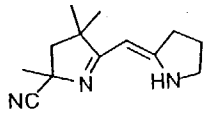
19a



19b



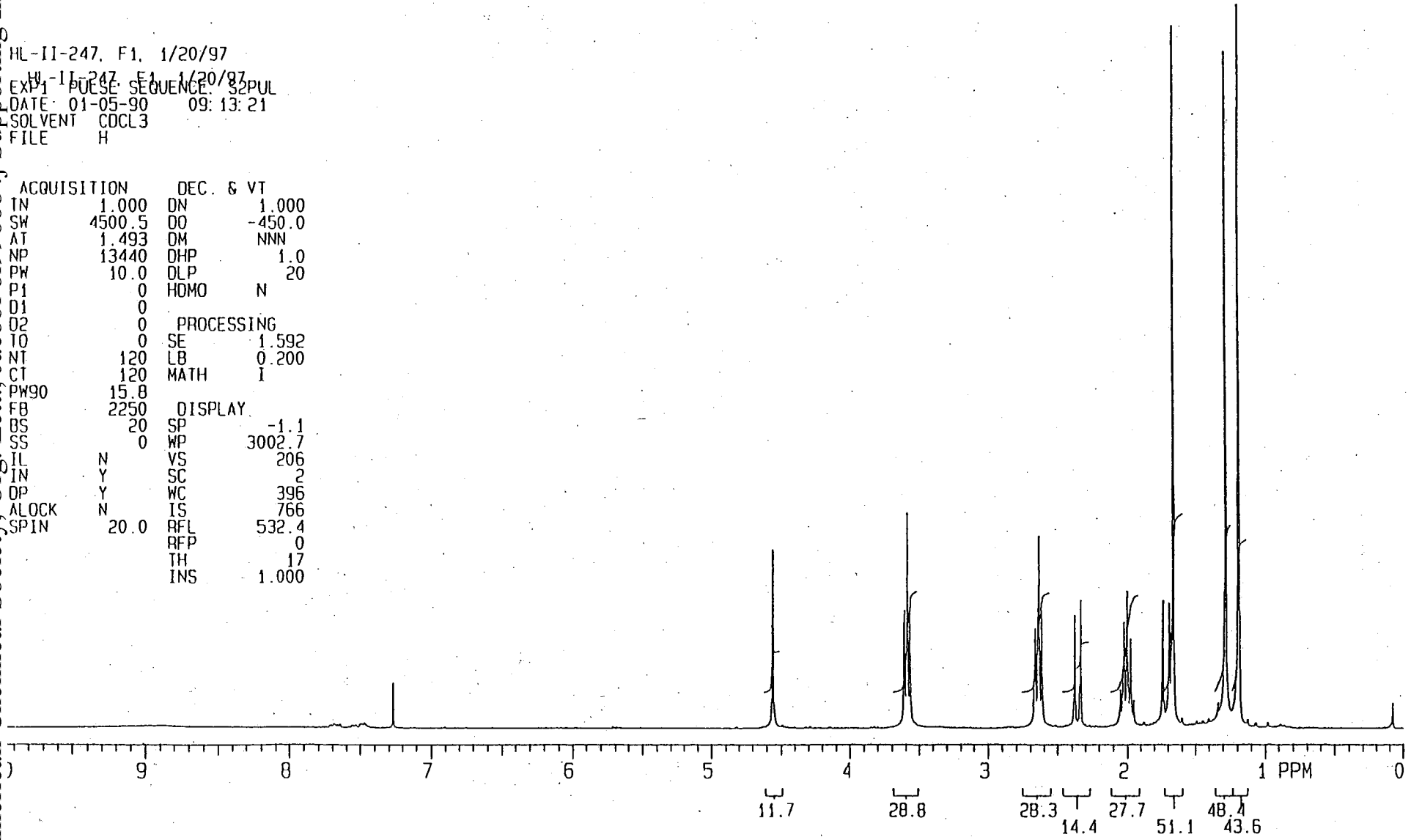


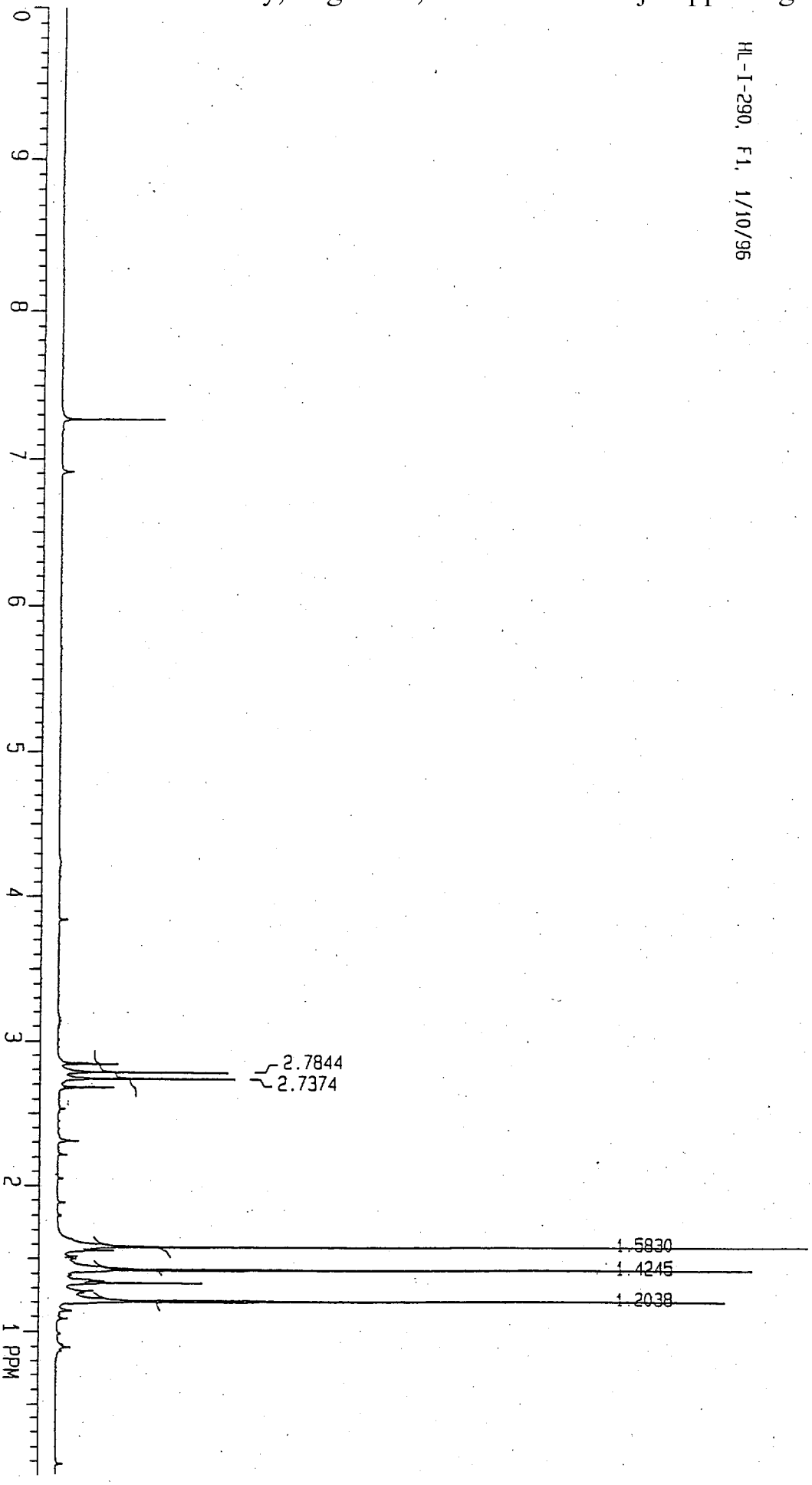


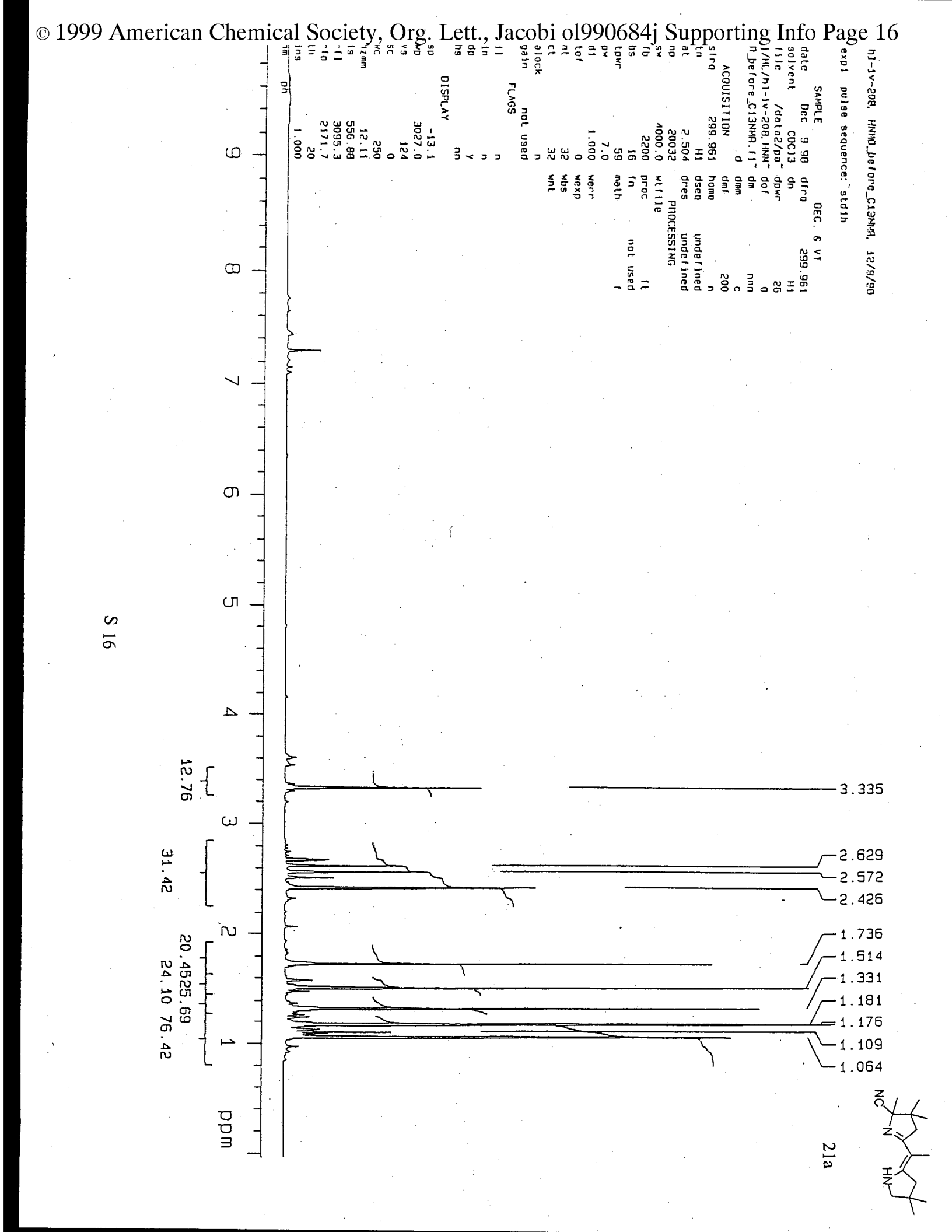
19e

HL-II-247, F1, 1/20/97
HL-II-247, F1, 1/20/97
EXP1 PULSE SEQUENCE: S2PUL
DATE 01-05-90 09:13:21
SOLVENT CDCL3
FILE H

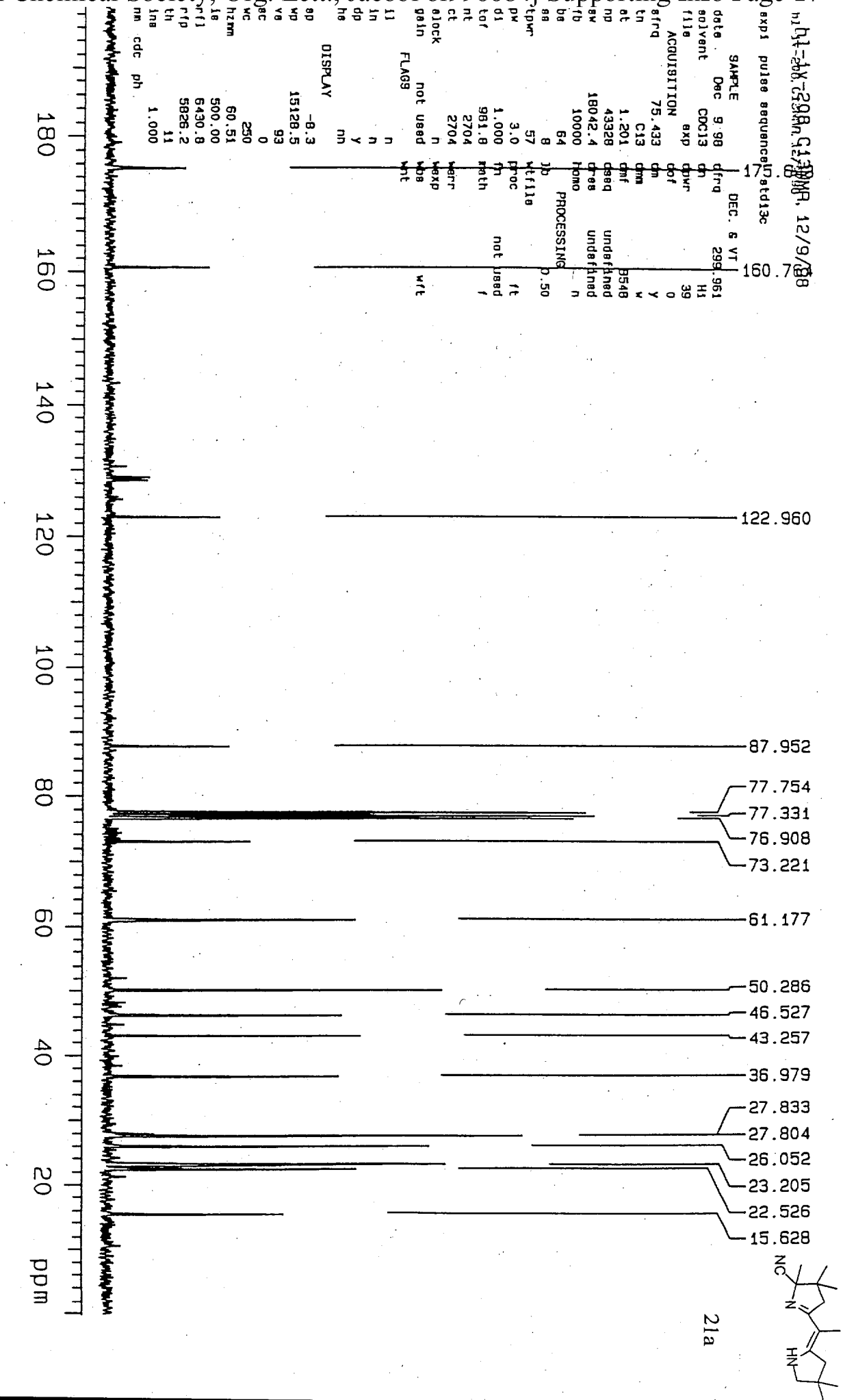
ACQUISITION		DEC. & VT	
IN	1.000	DN	1.000
SW	4500.5	DO	-450.0
AT	1.493	DM	NNN
NP	13440	DHP	1.0
PW	10.0	DLP	20
P1	0	HOMO	N
D1	0		
D2	0	PROCESSING	
TO	0	SE	1.592
NT	120	LB	0.200
CT	120	MATH	I
PW90	15.8		
FB	2250	DISPLAY	
BS	20	SP	-1.1
SS	0	WP	3002.7
IL	N	VS	206
IN	Y	SC	2
DP	Y	WC	396
ALOCK	N	IS	766
SPIN	20.0	RFL	532.4
		RFP	0
		TH	17
		INS	1.000

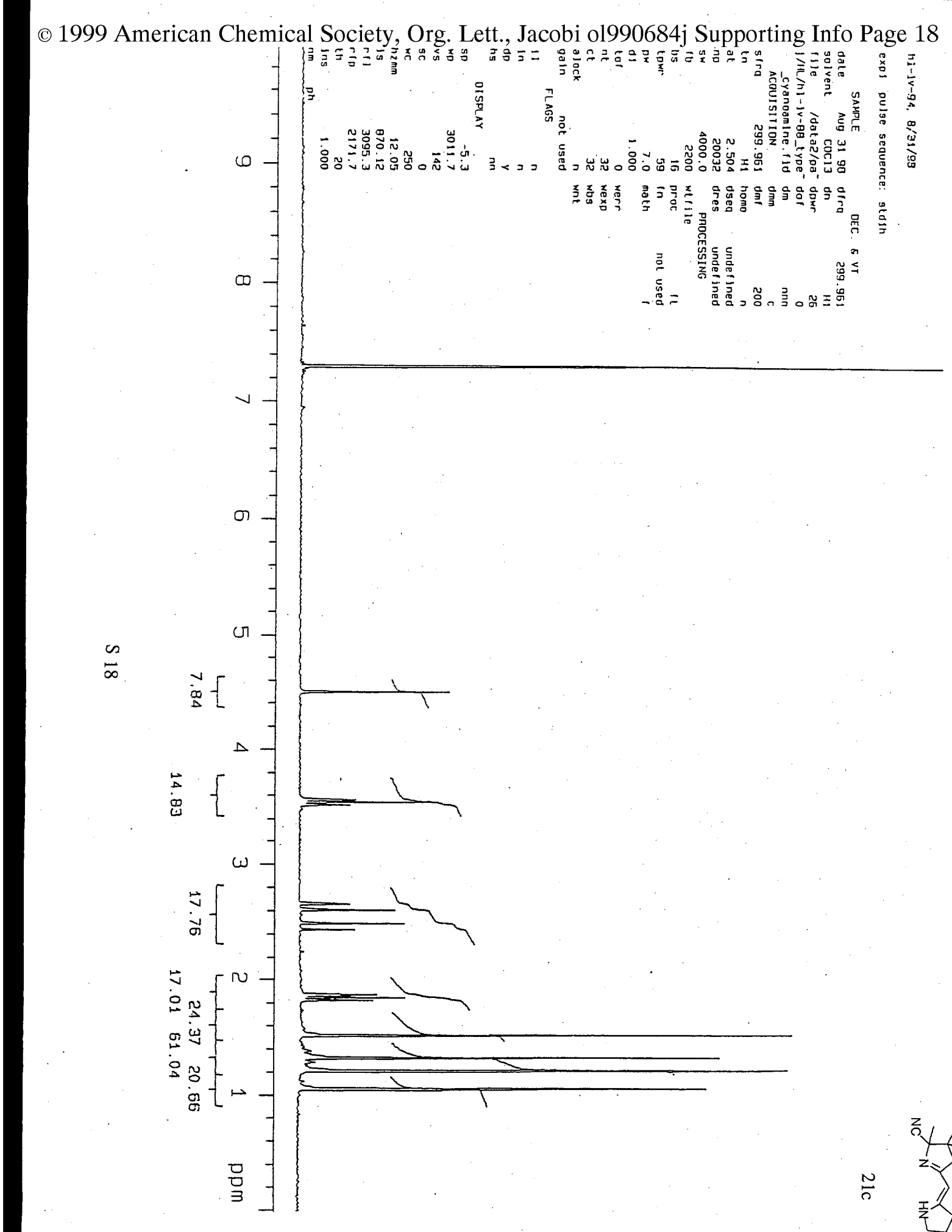


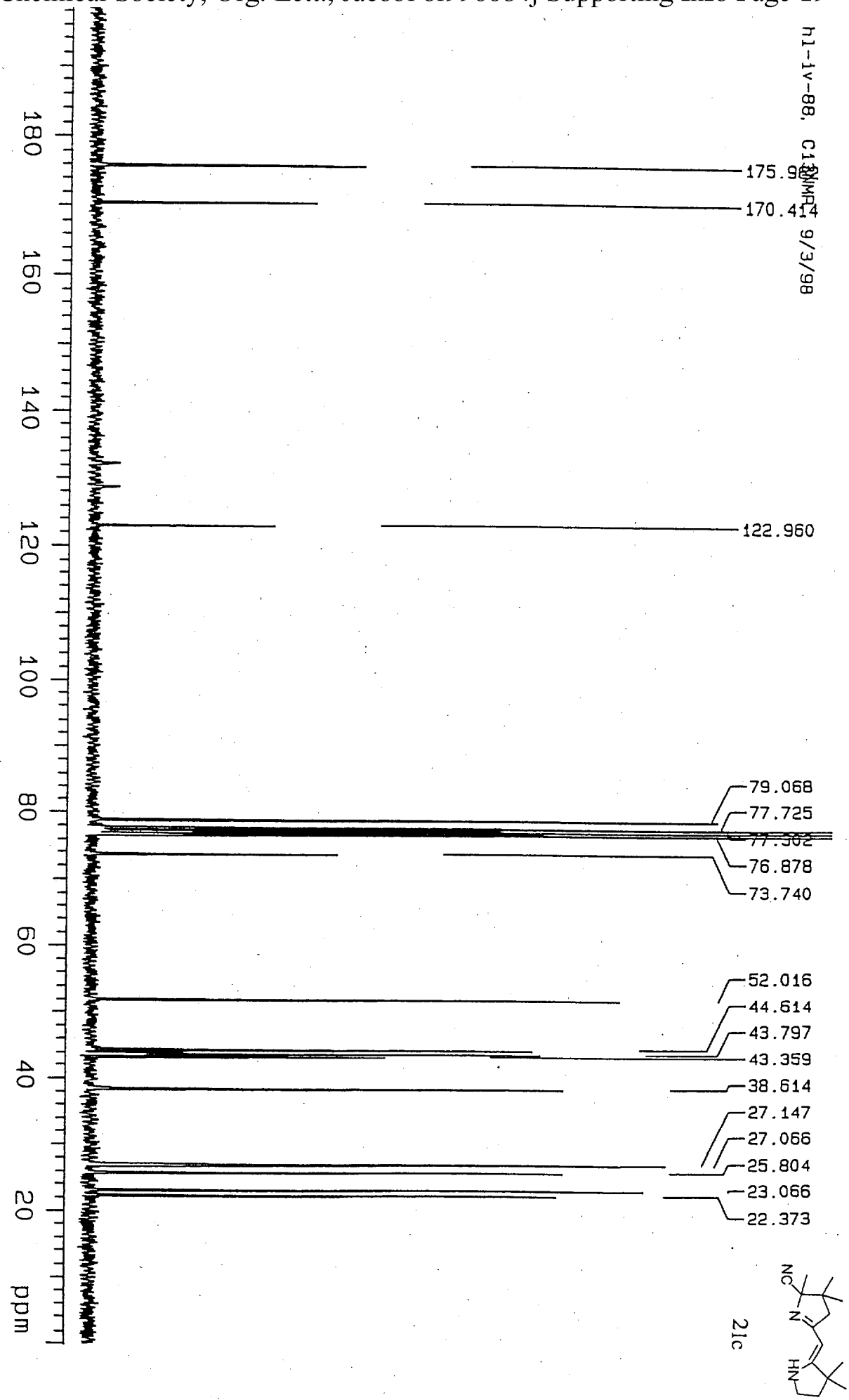




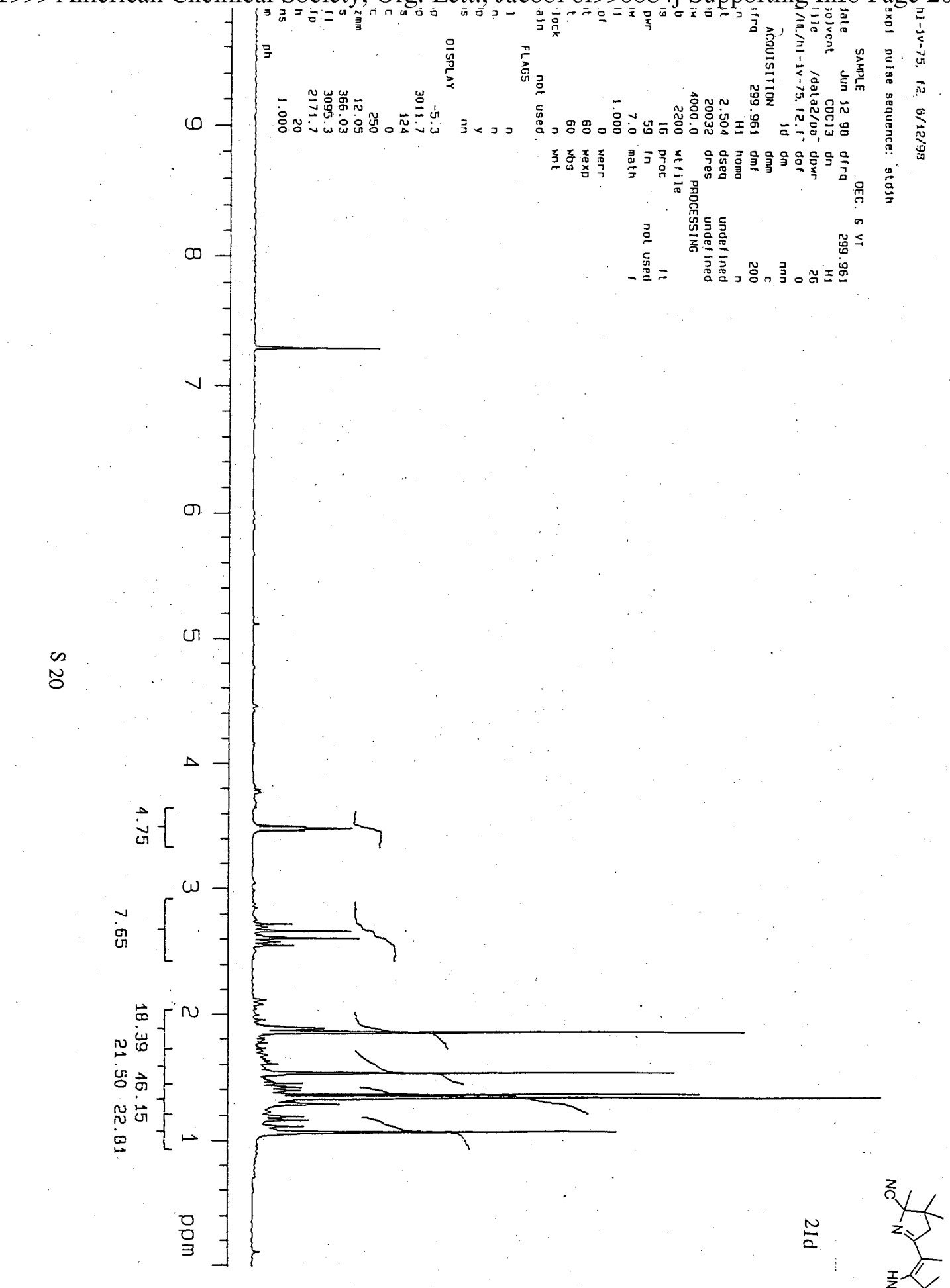
21a

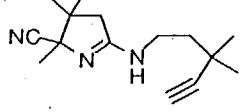






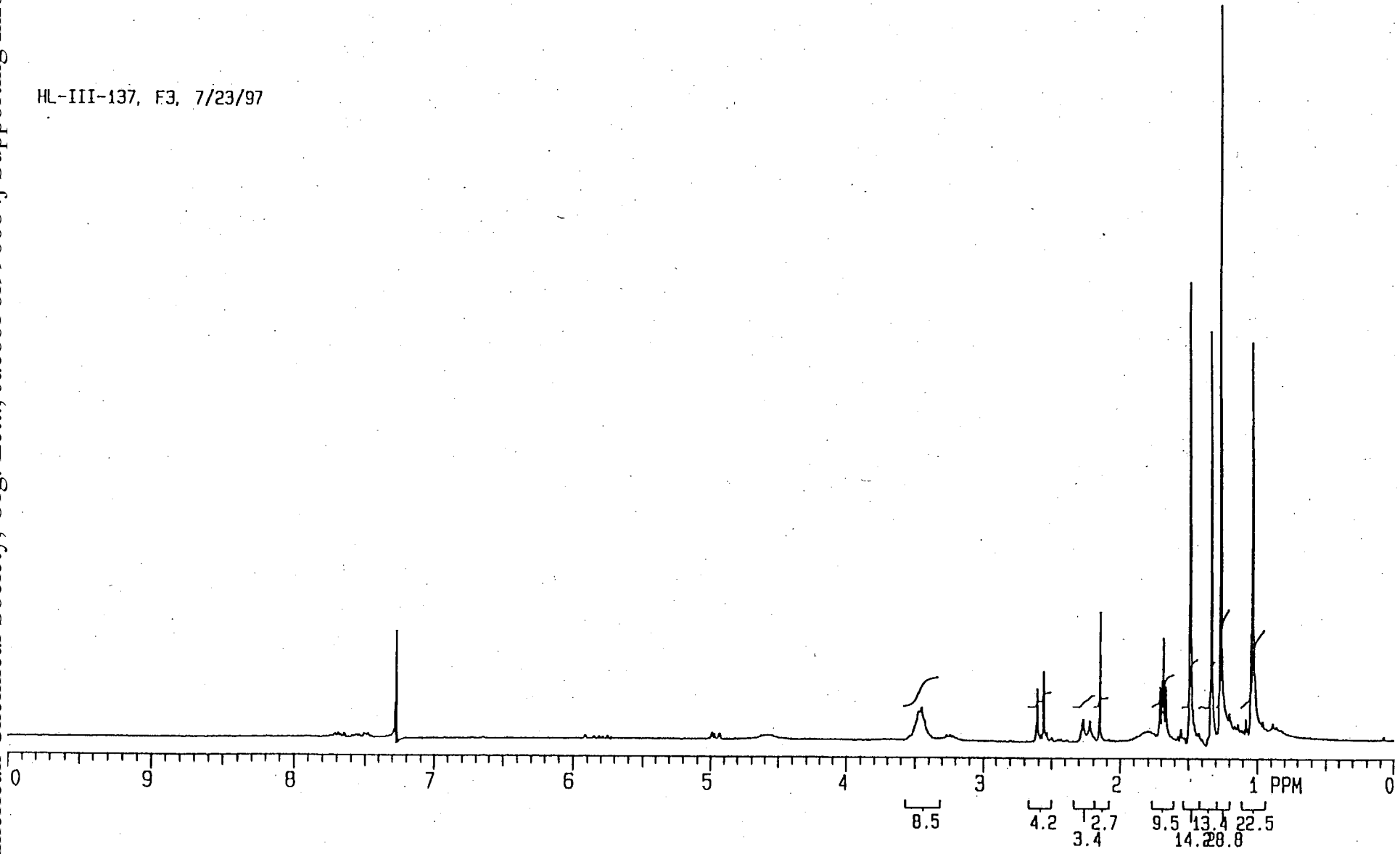
21c

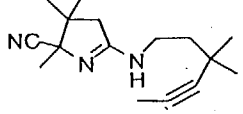




22c

HL-III-137, F3, 7/23/97



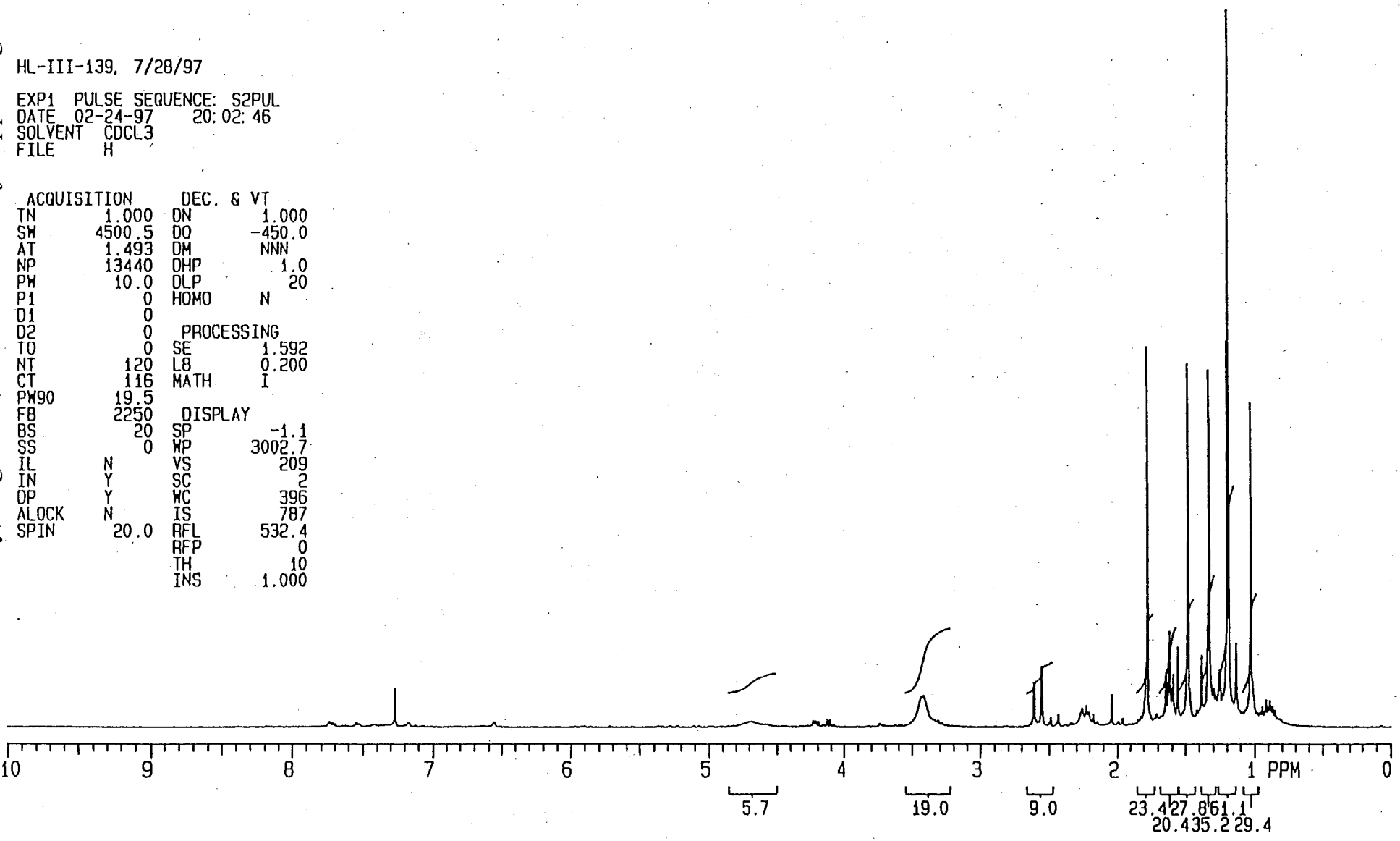


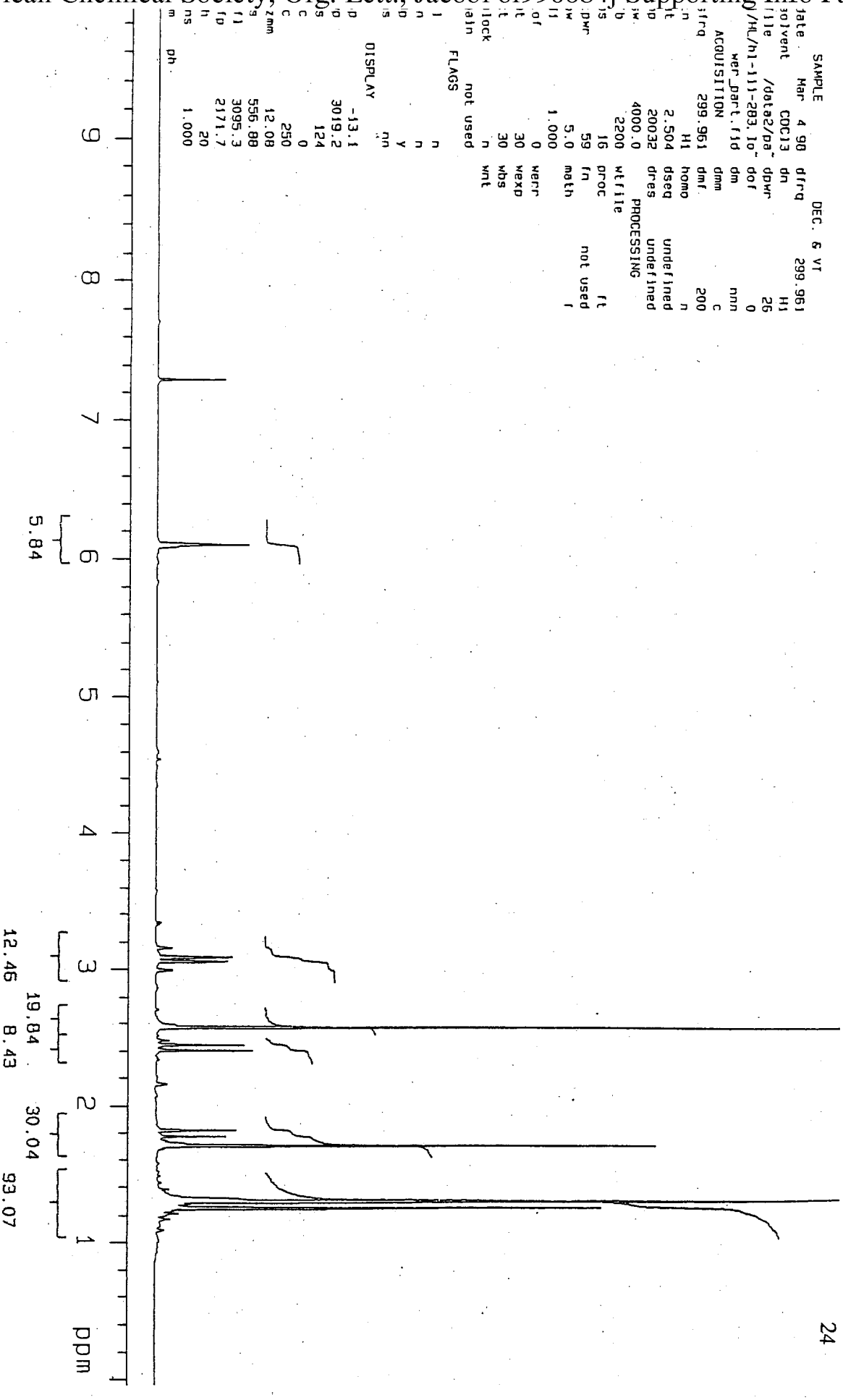
22d

HL-III-139, 7/28/97

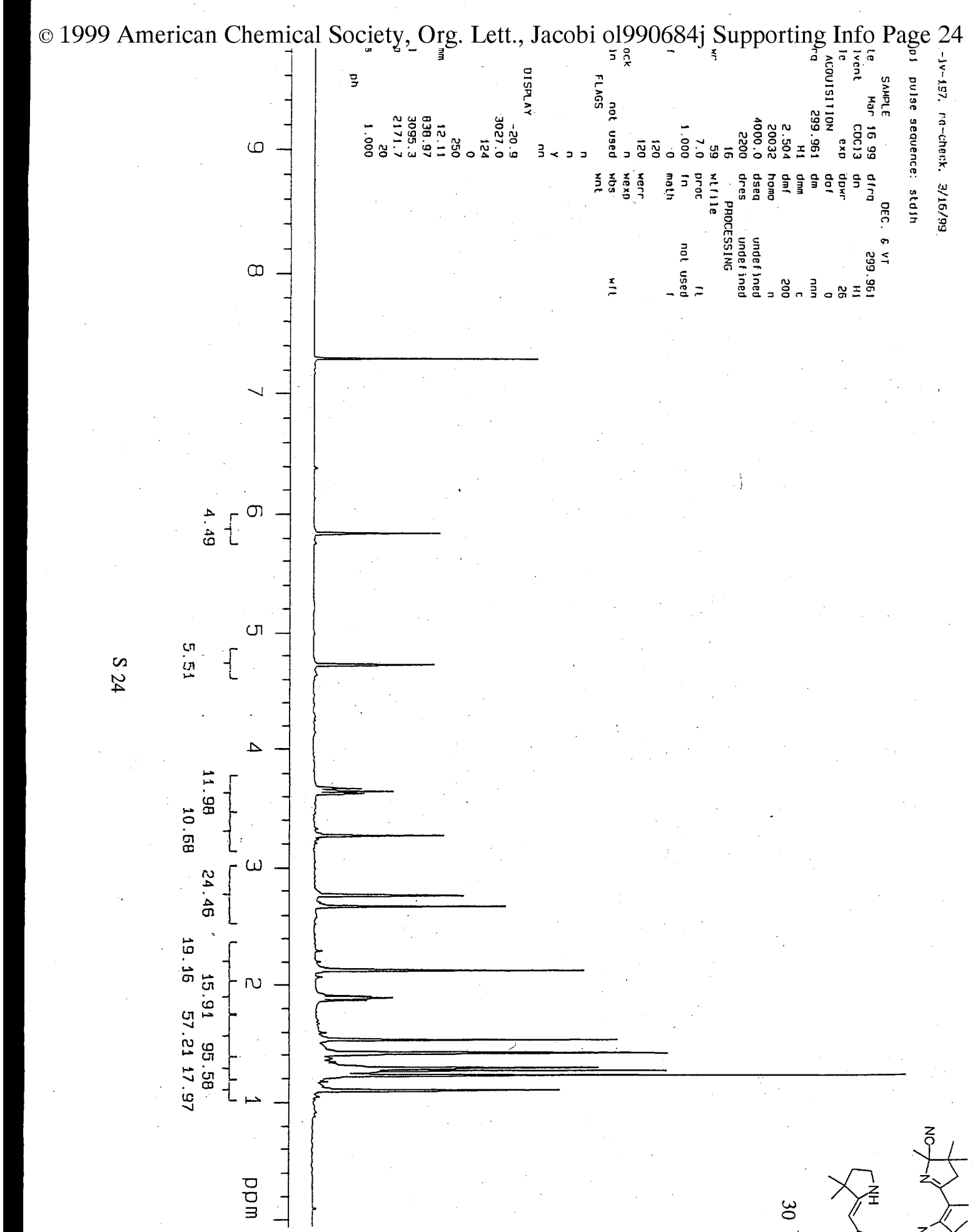
EXP1 PULSE SEQUENCE: S2PUL
DATE 02-24-97 20:02:46
SOLVENT CDCL3
FILE H

ACQUISITION		DEC. & VT	
TN	1.000	DN	1.000
SW	4500.5	DO	-450.0
AT	1.493	DM	NNN
NP	13440	DHP	1.0
PW	10.0	DLP	20
P1	0	HOMO	N
D1	0		
D2	0	PROCESSING	
TO	0	SE	1.592
NT	120	LB	0.200
CT	116	MATH	I
PW90	19.5		
FB	2250	DISPLAY	
BS	20	SP	-1.1
SS	0	WP	3002.7
IL	N	VS	209
IN	Y	SC	2
DP	Y	WC	396
ALOCK	N	IS	787
SPIN	20.0	RFL	532.4
		RFP	0
		TH	10
		INS	1.000

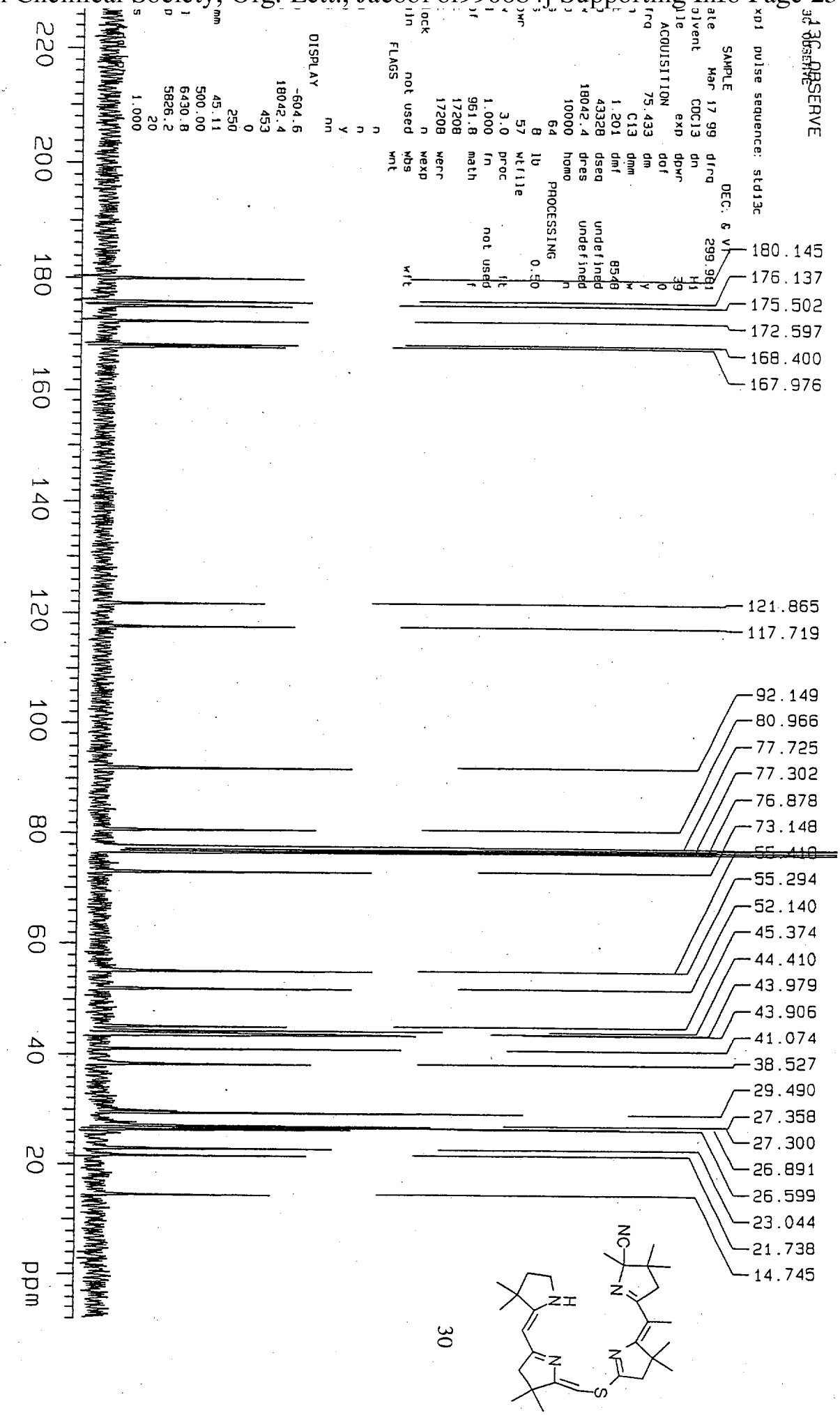


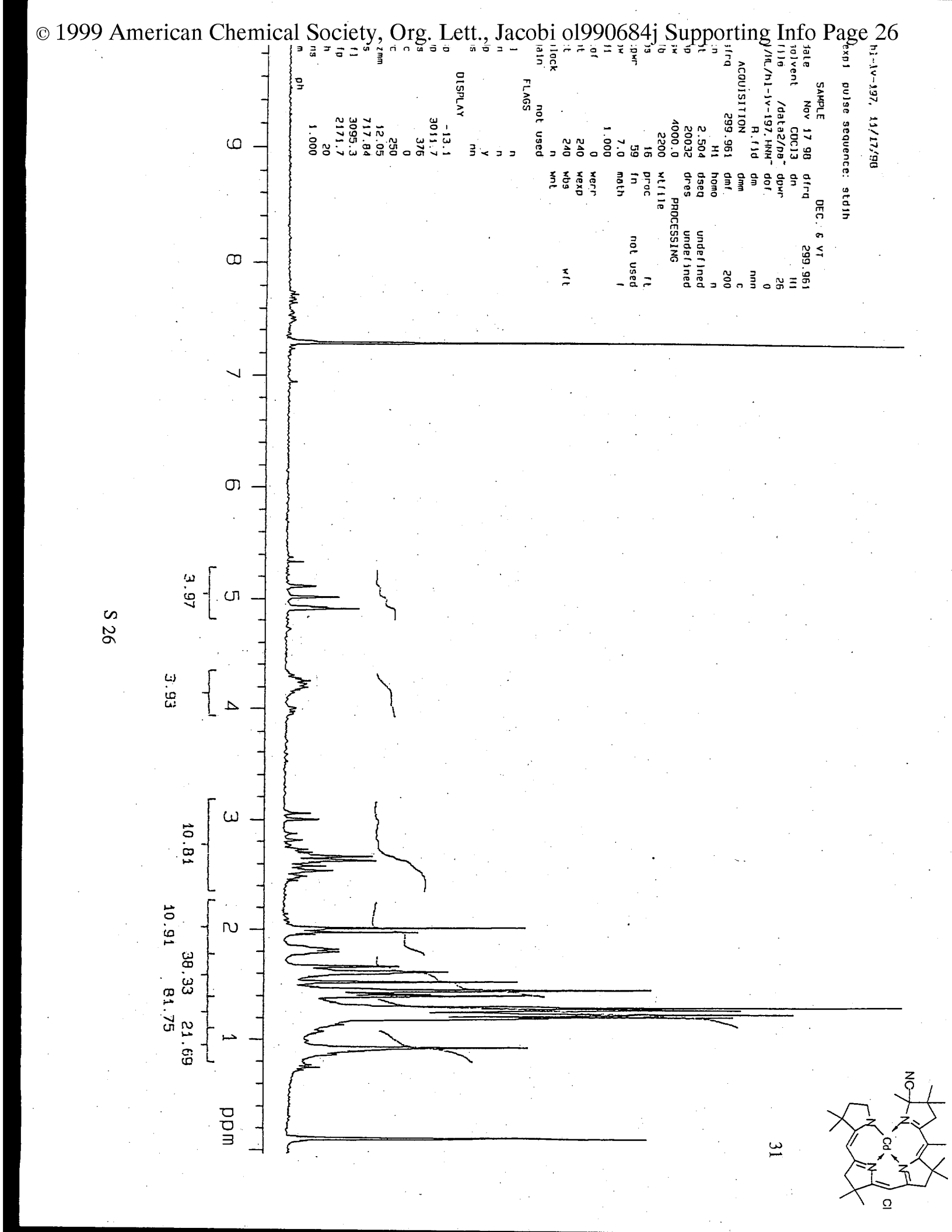


24



30





31