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Supporting Information

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Improving Quantum Efficiencies of Siloles and Silole-derived Butadiene Chromophores through Structural Tuning

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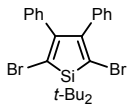
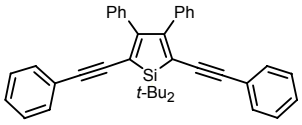
Experimental Section

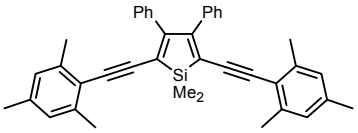
Materials and Methods: ^{1}H and ^{13}C NMR spectra were recorded using a Varian Unity Plus 300 or 400 spectrometer. Chemical shifts (δ) are expressed in ppm downfield from tetramethylsilane using the residual protonated solvent as an internal standard (chloroform-*d*, ^{1}H 7.26 ppm and ^{13}C 77.00 ppm; benzene-d_6, ^{1}H 7.20 ppm and ^{13}C 128.00 ppm). Coupling constants are expressed in hertz. HRMS (CI, FAB) were obtained with a VG analytical ZAB2-E instrument. UV-vis spectra were recorded using a Perkin Elmer Instruments Lambda 35 spectrometer. Emission spectra were recorded using a QuantaMaster Photon Technology International fluorometer. Thin-layer chromatography (TLC) was performed on EM 250 silica gel 60 F254 plates. Column chromatography was performed with silica gel 60. Et_3N was distilled from CaH_2 under an N_2 atmosphere prior to use. THF was distilled from sodium and benzophenone under an N_2 atmosphere prior to use. $ZnCl_2$ was flame-dried in vacuo and stored under Ar. For reactions involving lithium naphthalenide (LiNaph), THF was degassed with argon prior to use. LiNaph solutions were titrated according to a literature method.[1] bis(Phenylethynyl)dimethylsilane **8** and bis(phenylethynyl)di-*tert*-butylsilane **6** were prepared from lithium phenylacetylide and Me_2SiCl_2 or *t*-$Bu_2Si(OTf)_2$, respectively. All other chemicals were of reagent quality and used as obtained from commercial sources. Reactions were carried out under an inert atmosphere (dry argon) when necessary. All reactions were protected from light using aluminum foil. All recrystallizations were allowed to cool in the absence of light.



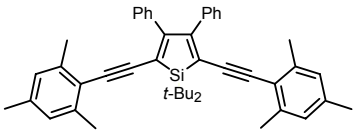
General Procedure for cross-couplings utilizing 2,5-dibromo-1,1-di-*tert*-butyl-3,4-diphenylsilole (7): A solution of bis(phenylethynyl)di-*tert*-butylsilane **6** (3.45 g, 10.0 mmol) was added dropwise into a solution of LiNaph[2] (47 mL, 0.85 M, 40.0 mmol, 4.0 equiv) at RT. The solution was cooled to –10 °C (internal reaction temperature) and $ZnCl_2$ dissolved in THF (50 mL, 1.0 M, 50.0 mmol, 5.0 equiv) was added via syringe in one portion. The fine black suspension was stirred for 20 min then added quickly via cannula into a solution of *N*-bromosuccinimide (4.98 g, 28.0 mmol, 2.8 equiv) in THF (30 mL) at –40 °C. The flask was protected from light using foil. After stirring for 2 h at –40 °C, the cold mixture was poured into half-saturated NH_4Cl solution (60 mL) and extracted with EtOAc (2 x 100 mL). The combined organics were washed successively with half-saturated $Na_2S_2O_3$ (1 x 50 mL), H_2O (1 x 100 mL), brine (2 x 50 mL), dried ($MgSO_4$), and filtered through a pad of silica gel (9 cm dia x 5 cm, 5% CH_2Cl_2/hexanes). The mixture was concentrated under vacuum, purged with argon, and THF (100 mL) was added via syringe. The solution of dibromosilole was used directly in subsequent cross-coupling reactions without further purification.



1,1-Di-*tert*-butyl-2,5-bis(phenylethynyl)-3,4-diphenylsilole (1b): A solution of **7** was prepared from silane **6** (689 mg, 2.00 mmol) according to the general procedure. To the THF solution of **7** was added Et_3N (5 mL) via syringe followed by $Pd(PPh_3)_4$ (231 mg, 0.20 mmol), solid $ZnCl_2$ (581 mg, 5.00 mmol), and (phenyl)acetylene (0.46 mL, 4.40 mmol). The reaction mixture was placed in an oil bath at 60 °C and monitored by TLC and GC. Upon completion (ca 16 h), the reaction mixture was removed from the oil bath, allowed to cool to RT, and poured into hexanes (20 mL). The yellow suspension was filtered through a pad of silica gel (5 cm dia x 4 cm, 50% CH_2Cl_2/hexanes) and concentrated. Recrystallization of the solid residue from hot hexanes/*i*-PrOH gave 862 mg (79%) of the desired product as a yellow solid: mp 188-190 °C (dec); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.31-7.20 (m, 20H), 1.39 (s, 18H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.6, 137.9, 131.3, 129.3, 128.2, 127.8, 127.3, 127.2, 124.6, 122.4, 100.6, 91.6, 28.2, 20.8; HRMS m/z calcd for $C_{40}H_{38}Si$ [M^+] 546.2743, found 546.2769.

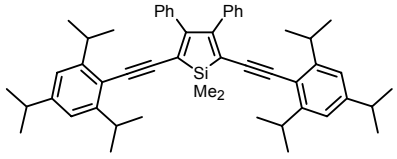


1,1-Dimethyl-2,5-bis[(2,4,6-trimethylphenyl)ethynyl]-3,4-diphenylsilole (4a): Dibromosilole **3**[2] (697 mg, 1.66 mmol) was dissolved in THF (7 mL) and Et_3N (5 mL). To the solution was added $Pd(PPh_3)_4$ (192 mg, 0.17 mmol), $ZnCl_2$ (566 mg, 4.15 mmol) and (2,4,6-trimethylphenyl)acetylene (598 mg, 4.15 mmol). The solution was placed in an oil bath at 40 °C and monitored by TLC and GC. Upon completion (ca 6h), the reaction mixture was removed from the oil bath, allowed to cool to RT, and diluted with hexanes (20 mL). The suspension was filtered through a pad of silica gel (5 cm dia x 4 cm, 50% CH_2Cl_2/hexanes) and concentrated. Recrystallization of the solid residue from CH_2Cl_2/MeOH provided 739 mg (81%) of the desired product as a light yellow powder. The mother liquor was concentrated and recrystallization of the solid residue provided an additional 70 mg (809 mg total, 89%) of silole **4a**: mp 195-198 °C (dec); ^{1}H NMR (400 MHz, C_6D_6) δ 7.48-7.46 (m, 4H), 7.09-7.01 (m, 6H), 6.75 (s, 4H), 2.41 (s, 12H), 2.11 (s, 6H), 0.67 (s, 6H); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.21-7.16 (m, 10H), 6.82 (s, 4H), 2.261 (s, 12H), 2.255 (s, 6H), 0.57 (s, 6H); ^{13}C NMR (100 MHz, C_6D_6) δ 159.7, 140.1, 138.0, 137.6, 129.3, 127.5, 127.4, 127.2, 124.1, 121.0, 98.0, 97.5, 21.3, 21.0, -4.9; HRMS m/z calcd for $C_{40}H_{39}Si$ [M+H^+] 547.2821, found 547.2811.

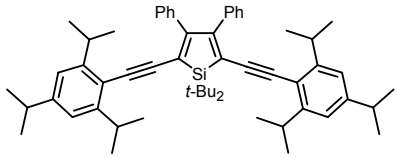


1,1-Di-*tert*-butyl-2,5-bis[(2,4,6-trimethylphenyl)ethynyl]-3,4-diphenylsilole (4b): A solution of **7** was prepared from silane **6** (861 mg, 2.50 mmol) according to the general procedure. To the THF solution of **7** was added Et_3N (5 mL) via syringe followed by $Pd(PPh_3)_4$ (87 mg, 0.08 mmol), solid $ZnCl_2$ (852 mg, 6.25 mmol), and (2,4,6-trimethylphenyl)acetylene (901 mg, 6.25 mmol). The reaction mixture was placed in an oil bath at 60 °C and monitored by TLC and GC. Upon completion (ca 24 h), the reaction mixture was removed from the oil bath, allowed to cool to RT, and poured into hexanes (25 mL). The yellow suspension was filtered through a pad of silica gel (5 cm dia x 4 cm, 50% CH_2Cl_2/hexanes) and concentrated. The crude material was recrystallized from hot hexanes/*i*-PrOH to provide a bright yellow powder. The yellow powder was triturated with *i*-PrOH and collected by vacuum filtration to provide 1.24 g (79%) of the desired product: mp 217-218 °C (dec); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.16-7.06 (m, 10H), 6.77 (s, 4H), 2.23 (s, 6H), 2.10 (s, 12H), 1.37 (s, 18H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.4, 140.3, 138.9, 137.4, 128.9, 127.52, 127.46, 126.8, 122.1,

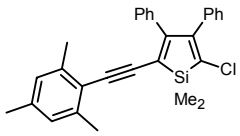
121.2, 99.0, 98.0, 28.4, 21.2, 21.0, 20.2; HRMS m/z calcd for $C_{46}H_{50}Si$ [M^+] 630.3682, found 630.3693.



1,1-Dimethyl-2,5-bis[(2,4,6-triisopropylphenyl)ethynyl]-3,4-diphenylsilole (5a): Dibromosilole **3** (130 mg, 0.31 mmol) was dissolved in THF (4 mL) and Et_3N (1 mL). To the reaction mixture was added $Pd(PPh_3)_4$ (36 mg, 0.03 mmol), solid $ZnCl_2$ (106 mg, 0.78 mmol), and (2,4,6-triisopropylphenyl)acetylene (156 mg, 0.68 mmol). The reaction was placed in an oil bath at 40 °C and stirred for 12 h. The reaction mixture was then removed from the oil bath, allowed to cool, and poured into hexanes (10 mL). The yellow suspension was filtered through a pad of silica gel (3 cm dia x 2 cm, 50% CH_2Cl_2/hexanes) and concentrated. Recrystallization of the solid residue from hot THF/EtOH mixture (1:3, v/v) provided 182 mg (82%) of the desired product as an orange crystalline solid: mp 220-225 °C (dec); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.21 (s, 10H), 6.96 (s, 4H), 3.39 (sept, J = 6.8 Hz, 4H), 2.89 (sept, J = 6.8 Hz, 2H), 1.26 (d, J = 6.8 Hz, 12H), 1.21 (d, J = 6.8 Hz, 24H), 0.61 (s, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 159.6, 150.5, 149.1, 138.3, 129.3, 127.3, 127.1, 124.1, 120.2, 119.5, 97.3, 97.1, 34.5, 31.7, 23.9, 23.2, -5.0; HRMS m/z calcd for $C_{52}H_{62}Si$ [M^+] 714.4621, found 714.4626.

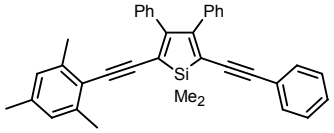


1,1-Di-*tert*-butyl-2,5-bis[(2,4,6-triisopropylphenyl)ethynyl]-3,4-diphenylsilole (5b): A solution of **7** was prepared from **6** (861 mg, 2.50 mmol) according to the general procedure. To the THF solution of **7** was added Et_3N (5 mL) via syringe followed by $Pd(PPh_3)_4$ (87 mg, 0.03 mmol), solid $ZnCl_2$ (852 mg, 6.25 mmol), and (2,4,6-trimethylphenyl)acetylene (901 mg, 6.25 mmol). The reaction mixture was placed in an oil bath at 60 °C and monitored by TLC and GC. Upon completion (ca 24 h), the dark red reaction mixture was removed from the oil bath, allowed to cool to RT, and poured into hexanes (25 mL). The orange suspension was filtered through a pad of silica gel (5 cm dia x 4 cm, 50% CH_2Cl_2/hexanes) and concentrated. The crude material was recrystallized from hot Et_2O/MeOH to provide 1.47 g (74%) of the desired compound as red-orange crystals: mp 218-220 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.16-7.13 (m, 6H), 7.06-7.03 (m, 4H), 6.88 (s, 4H), 3.18 (sept, J = 6.8 Hz, 4H), 2.83 (sept, J = 6.8 Hz, 2H), 1.35 (s, 18H), 1.20 (d, J = 6.8 Hz, 12H), 1.03 (J = 6.8 Hz, 24H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.3, 150.7, 148.8, 139.1, 129.1, 127.3, 126.8, 122.1, 120.2, 119.7, 98.3, 97.0, 34.5, 31.3, 28.3, 23.9 23.4, 20.4; HRMS m/z calcd for $C_{58}H_{74}Si$ [M^+] 798.5560, found 798.5584; Anal calcd for $C_{58}H_{74}Si$ C 87.15 H 9.33, found C 87.26 H 8.40.

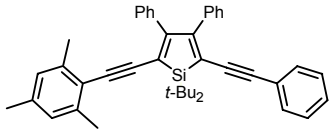


2-Chloro-1,1-dimethyl-5-[(2,4,6-trimethylphenyl)ethynyl]-3,4-diphenylsilole (10): A solution of chloroiodosilole **9** in THF (50 mL) was prepared from silane **8** (1.74 g, 6.67 mmol) according to the literature procedure.[2] To the solution was added Et_3N (15 mL), $Pd(PPh_3)_4$ (335 mg, 0.29 mmol), solid $ZnCl_2$ (1.19 g, 8.70 mmol), and (2,4,6,-trimethylphenyl)acetylene (750 mg, 5.20 mmol). The reaction mixture was placed in an oil bath at 40 °C and stirred for 8 h. The mixture was then removed from the oil bath, allowed to cool, and poured into hexanes (50 mL). The yellow suspension was filtered through a silica gel plug (5 cm dia x 4 cm, 30% CH_2Cl_2/hexanes). The filtrate was concentrated and flash chromatography on silica gel (10% →

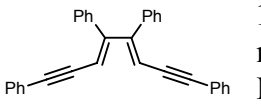
20% CH_2Cl_2/hexanes gradient) provided 2.29 g of a yellow powder. The powder was recrystallized from hot Et_2O/MeOH to provide 2.12 g (72% based on **8**, 93% based on ethynylarene) of the desired product as light yellow needles: mp 130-133 °C; R_f 0.31 (20% CH_2Cl_2/hexanes); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.24-7.12 (m, 8H), 7.05-7.03 (m, 2H), 6.81 (s, 2H), 2.25 (s, 3H), 2.24 (s, 6H), 0.53 (s, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 158.8, 153.8, 140.0, 137.7, 137.58, 137.64, 134.7, 129.4, 129.1, 127.54, 127.52, 127.4, 127.3, 121.3, 120.9, 96.8, 96.7, 21.3, 21.0, -5.6 (1 C not observed); HRMS m/z calcd for $C_{29}H_{27}SiCl$ [M^+] 438.1571, found 438.1564; Anal calcd for $C_{29}H_{27}SiCl$ C 79.33 H 6.20, found C 79.41 H 6.58.



1,1-Dimethyl-2-[(2,4,6-trimethylphenyl)ethynyl]-5-phenylethynyl-3,4-diphenylsilole (11a): Chlorosilole **10** (110 mg, 0.25 mmol) was dissolved in THF (3 mL) and Et_3N (1 mL). To the solution was added $Pd(PPh_3)_4$ (9 mg, 0.008 mmol), solid $ZnCl_2$ (51 mg, 0.38 mmol), and (phenyl)acetylene (32 μL, 0.30 mmol). The reaction mixture was placed in an oil bath at 70 °C for 9 h. The mixture was then removed from the oil bath, allowed to cool, and poured into hexanes (10 mL). The yellow suspension was filtered through a silica gel plug (3 cm dia x 2 cm, 30% CH_2Cl_2/hexanes) and concentrated. Recrystallization of the solid residue from CH_2Cl_2/MeOH provided 109 mg (86%) of the desired product as a yellow solid. mp 152-155 °C (dec); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36-7.20 (m, 15H), 6.86 (s, 2H), 2.31 (s, 6H), 2.29 (s, 3H), 0.61 (s, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 161.8, 159.3, 140.1, 137.9, 137.69, 137.66, 131.5, 129.4, 129.3, 128.2, 127.7, 127.5, 127.39, 127.36, 127.21, 127.17, 124.8, 124.4, 123.0, 121.0, 99.0, 98.2, 97.4, 90.2, 21.3, 21.0, -5.0; HRMS m/z calcd for $C_{37}H_{32}Si$ [M^+] 504.2273, found 504.2253.

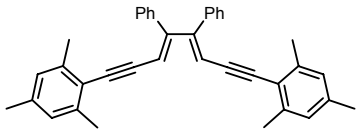


1,1-Di-*tert*-butyl-2-[(2,4,6-trimethylphenyl)ethynyl]-5-phenylethynyl-3,4-diphenylsilole (11b): 2-Bromo-1,1-di-*tert*-butyl-5-phenylethynyl-3,4-diphenylsilole **12**[3] (300 mg, 0.57 mmol) was dissolved in THF (5 mL) and Et_3N (1 mL). To the solution was added $Pd(PPh_3)_4$ (20 mg, 0.017 mmol), solid $ZnCl_2$ (117 mg, 0.86 mmol), and (2,4,6-trimethylphenyl)acetylene (99 mg, 0.68 mmol). The reaction mixture was placed in an oil bath at 50 °C for 13 h. The mixture was then removed from the oil bath, allowed to cool, and poured into hexanes (15 mL). The yellow suspension was filtered through a silica gel plug (3 cm dia x 2 cm, 30% CH_2Cl_2/hexanes) and concentrated. Recrystallization of the solid residue from hot hexanes/*i*-PrOH provided 269 mg (80%) of the desired product as a yellow solid: mp 194-195 °C (dec); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32-7.15 (m, 15H), 6.83 (s, 2H), 2.28 (s, 3H), 2.18 (s, 6H), 1.43 (s, 18H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.0, 162.9, 140.3, 138.9, 137.9, 137.4, 131.2, 129.2, 129.0, 128.2, 127.7, 127.6, 127.5, 127.14, 127.09, 127.0, 124.6, 122.9, 121.7, 100.4, 98.9, 98.3, 91.7, 28.3, 21.2, 21.0, 20.5; HRMS m/z calcd for $C_{43}H_{44}Si$ [M^+] 588.3212, found 588.3222.

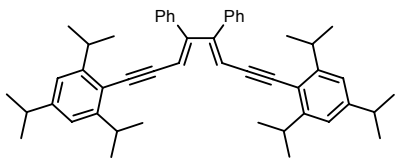


1,4,5,8-Tetraphenylocta-3,5-diene-1,7-diyne (1c): Silole **1a** (81 mg, 0.17 mmol) was dissolved in THF (3 mL) and treated with Bu_4NF (0.35 mL, 1.0 M in THF, 0.35 mmol). The reaction mixture was stirred at RT for ca 10 min, and the resulting yellow slurry was poured into CH_2Cl_2 (5 mL) .The solution was filtered through a thin pad of silica (3 cm dia x 2 cm, 5% CH_2Cl_2/hexanes), concentrated and recrystallized from hexanes to provide 46 mg (67%) of the desilylated product. The mother liquor was concentrated

and recrystallization of the solid residue provided an additional 14 mg (60 mg total, 97%) of **1c** as a yellow powder: mp 192-193 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53-7.38 (m, 10H), 7.23-7.18 (m, 6H), 7.13-7.09 (m, 4H), 5.78 (s, 2H); ^{13}C NMR (100 MHz, C_6D_6) δ 153.5, 138.1, 131.3, 130.0, 128.2, 128.1, 128.0, 127.9, 123.4, 112.6, 97.8, 89.1; HRMS m/z calcd for $C_{32}H_{23}$ [M+H$^+$] 407.1800, found 407.1785; Anal calcd for $C_{32}H_{22}$ C 94.55 H 5.45, found C 94.55 H 5.89.

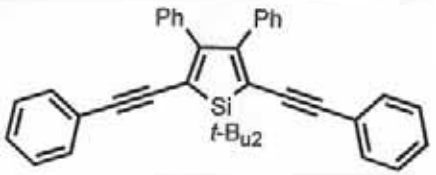


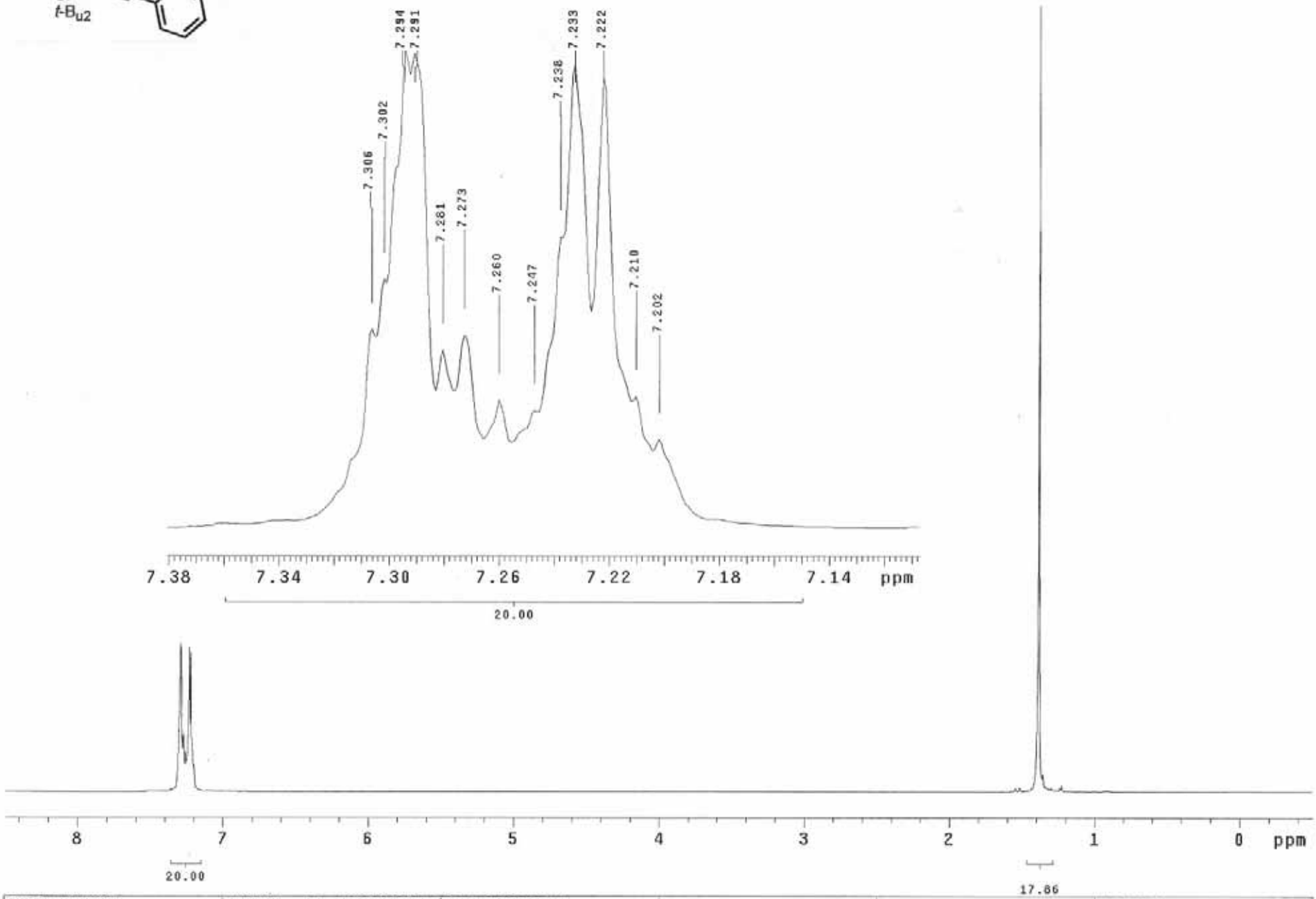
1,8-Bis(2,4,6-trimethylphenyl)-4,5-diphenylocta-3,5-diene-1,7-diyne (4c): In the same manner as **1c**, compound **4c** was prepared from silole **4a** (64 mg, 0.12 mmol). Recrystallization of the solid residue from CH_2Cl_2/MeOH gave 57 mg (97%) of the desilylated product as a yellow powder: mp >250 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45-7.35 (m, 10H), 6.72 (s, 4H), 5.76 (s, 2H), 2.20 (s, 6H), 1.96, (s, 12H); ^{13}C NMR (125 MHz, C_6D_6) δ 152.6, 140.3, 138.9, 137.8, 129.8, 128.5, 127.7, 127.4, 120.2, 113.3, 96.5, 96.4, 21.2, 20.5; HRMS m/z calcd for $C_{38}H_{35}$ [M+H$^+$] 491.2739, found 491.2724.



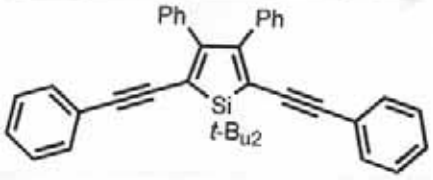
1,8-Bis(2,4,6-triisopropylphenyl)-4,5-diphenylocta-3,5-diene-1,7-diyne (5c): In the same manner as **1c**, compound **5c** was prepared from silole **5a** (90 mg, 0.13 mmol). The reaction mixture remained homogenous and reaction time was ca 2 min. Recrystallization of the solid residue from Et_2O/MeOH gave 82 mg (96%) of the desilylated product as a yellow powder: mp >250 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.51-7.40 (m, 10H), 6.84 (s, 4H), 5.72 (s, 2H), 2.90 (sept, J = 6.8 Hz, 4H), 2.81 (sept, J = 6.8 Hz, 2H) 1.18 (d, J = 6.8 Hz, 12H), 1.01 (d, J = 6.8 Hz, 24H); ^{13}C NMR (125 MHz, C_6D_6) δ 152.1, 150.8, 149.2, 138.8, 130.0, 128.3, 127.6, 120.1, 118.5, 113.4, 95.9, 34.5, 31.2, 23.8, 23.3 (1 C not observed); HRMS m/z calcd for $C_{50}H_{58}$ [M$^+$] 658.4539, found 658.4562.

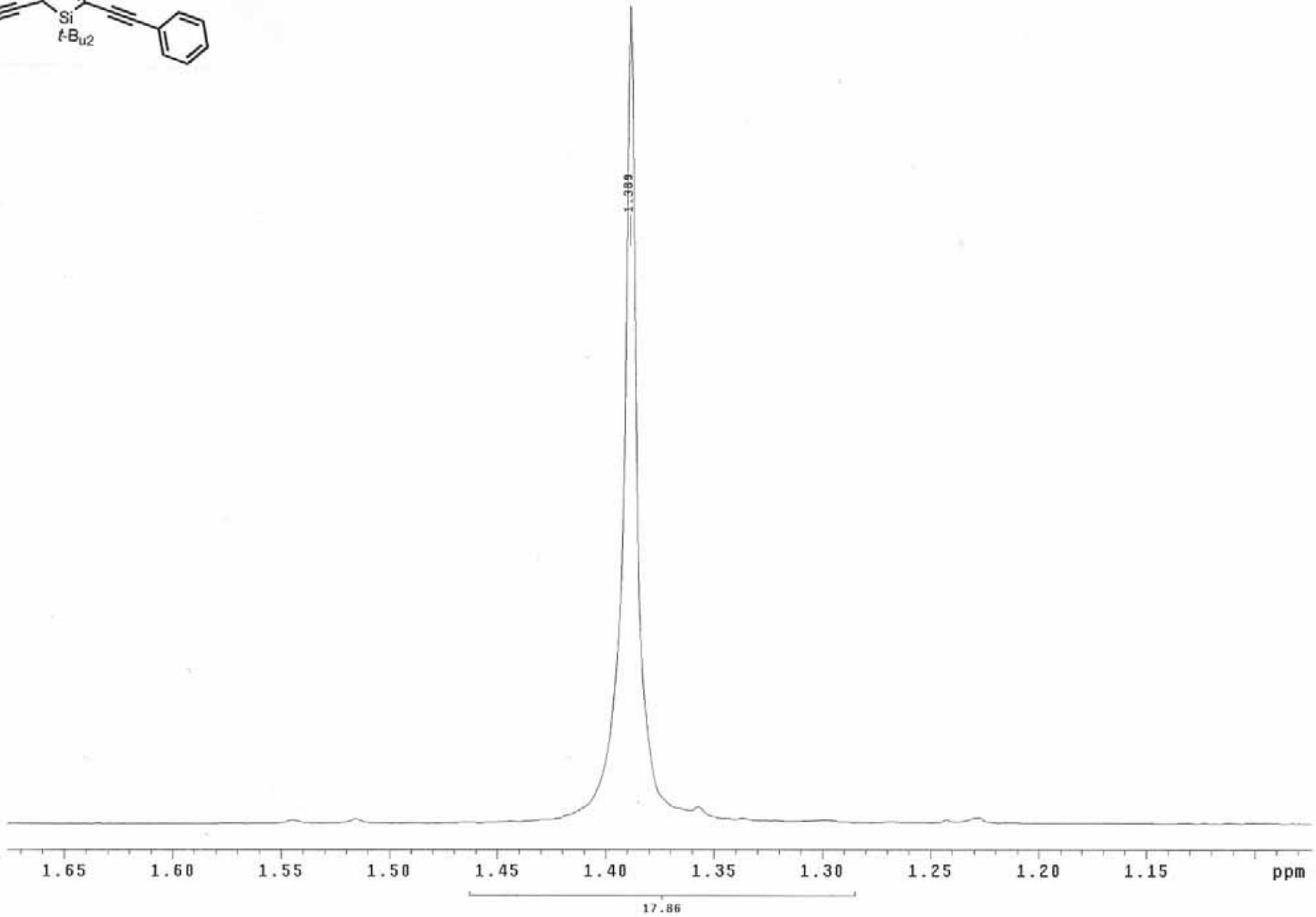
[1] C. G. Screttas, Micha-Screttas, M. *J. Organomet. Chem.* **1983**, *252*, 263-265.
[2] A. J.Boydston, Y. Yin, B. L. Pagenkopf, *J. Am. Chem. Soc.* **2004**, *126*, 3724-3725.
[3] Obtained as a byproduct from a synthesis of **1b**.



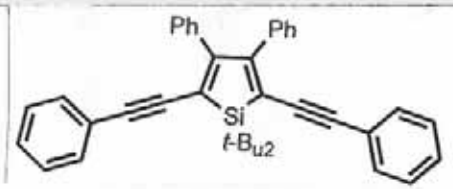


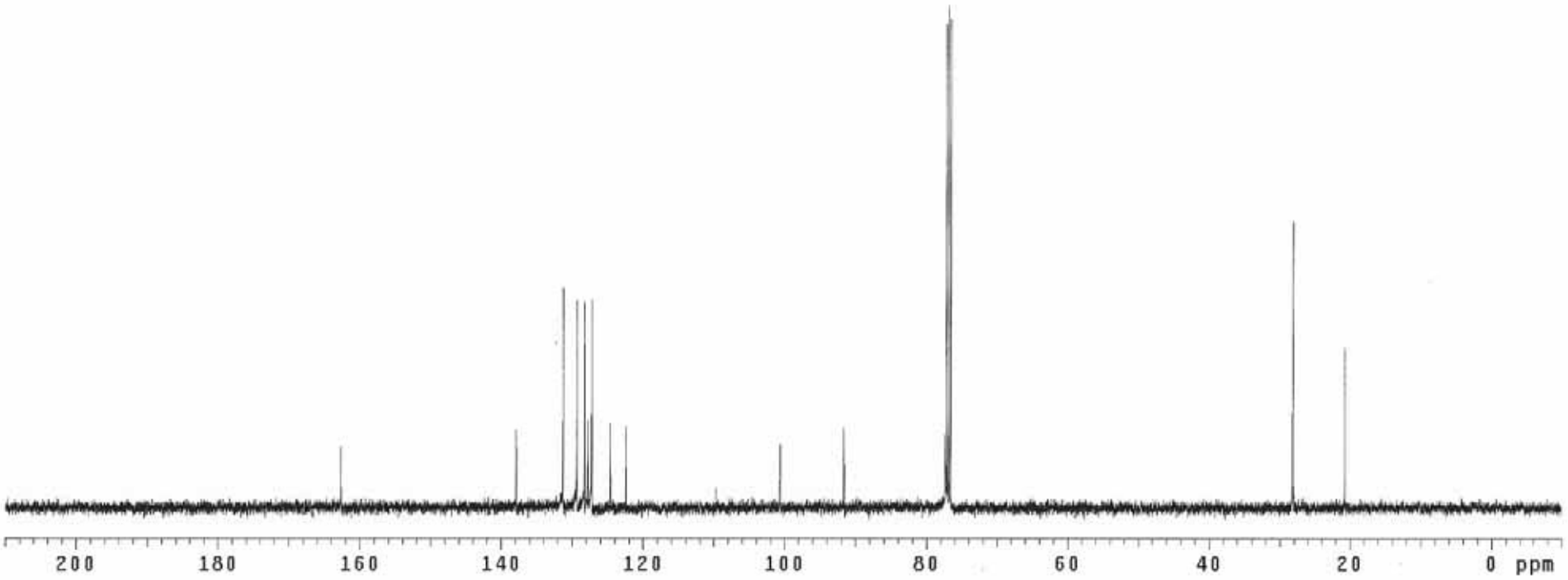
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 6 repetitions	OBSERVE H1, 400.2669781	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB39Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



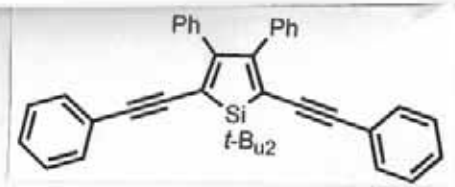


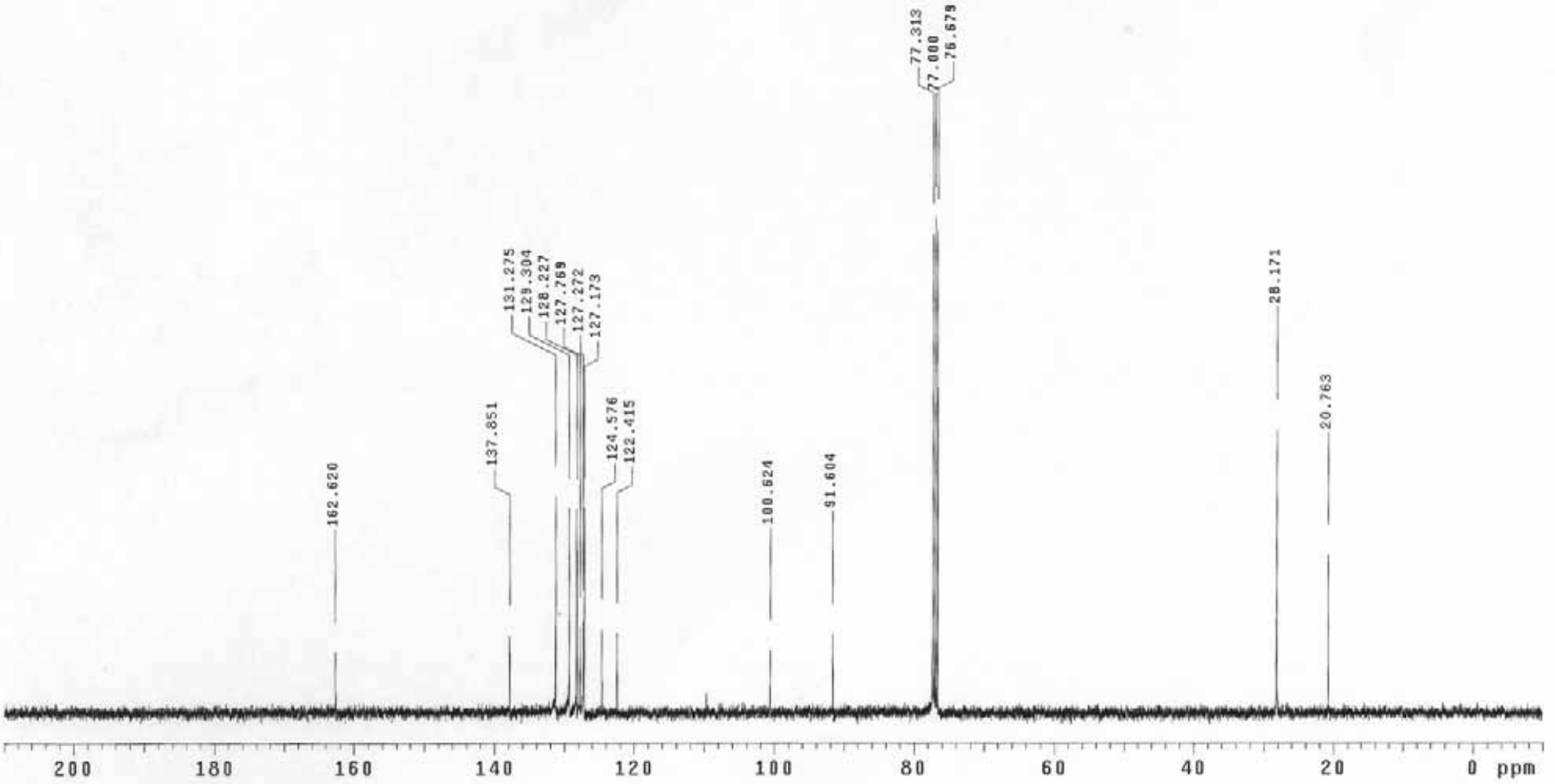
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 6 repetitions	OBSERVE H1, 400.2669781	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB39Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



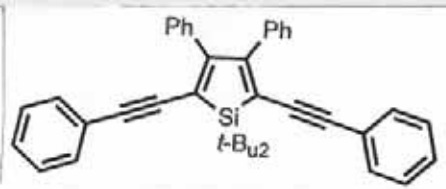


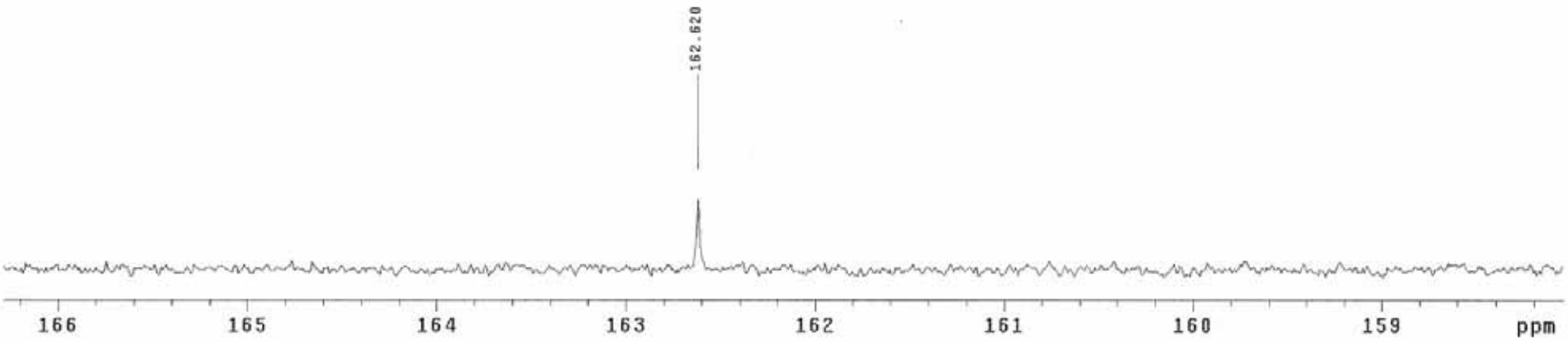
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 192 repetitions	OBSERVE C13, 100.6472164 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 10 minutes			9AB39-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



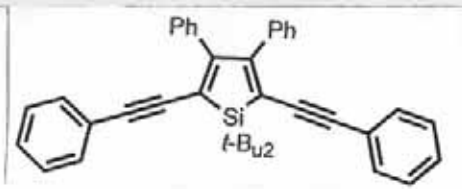


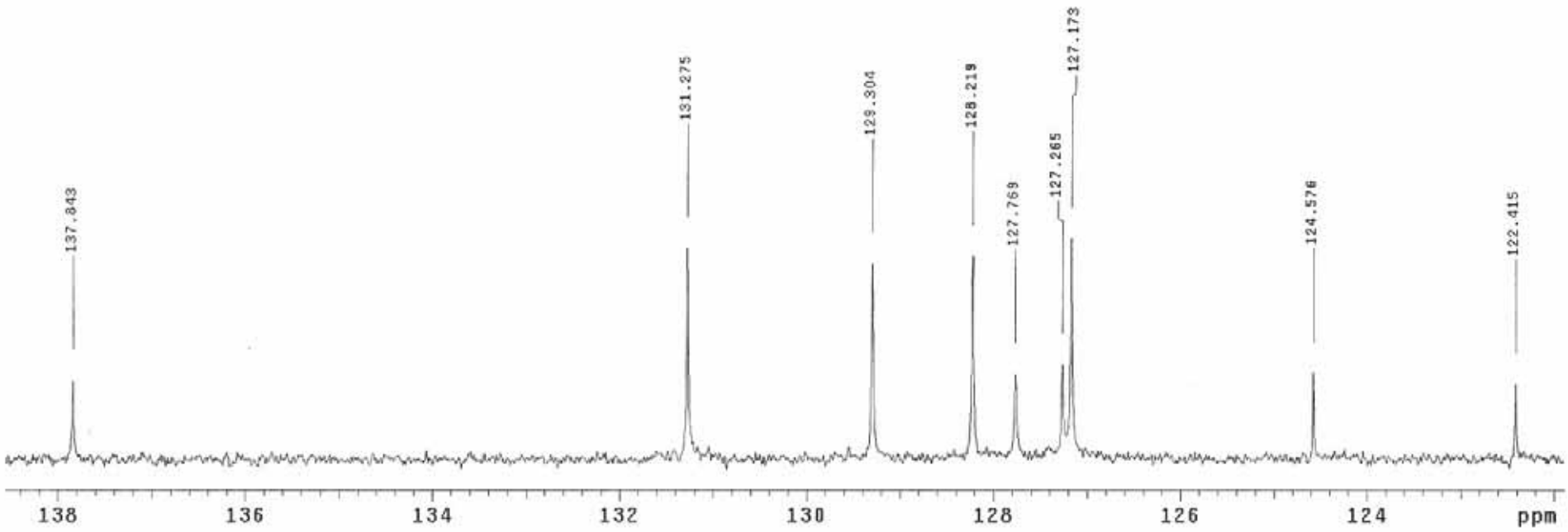
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 191 repetitions	OBSERVE C13, 100.6472164 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 10 minutes			9AB39-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



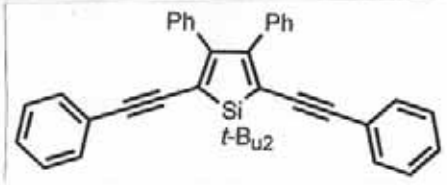


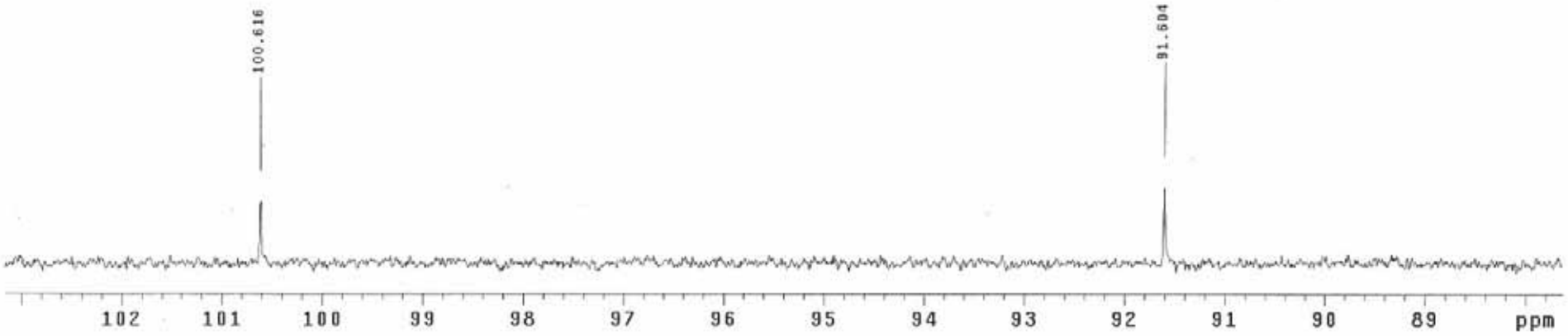
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 204 repetitions	OBSERVE C13, 100.6472164 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 11 minutes			9AB39-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



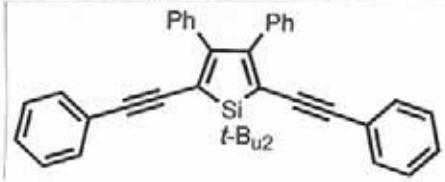


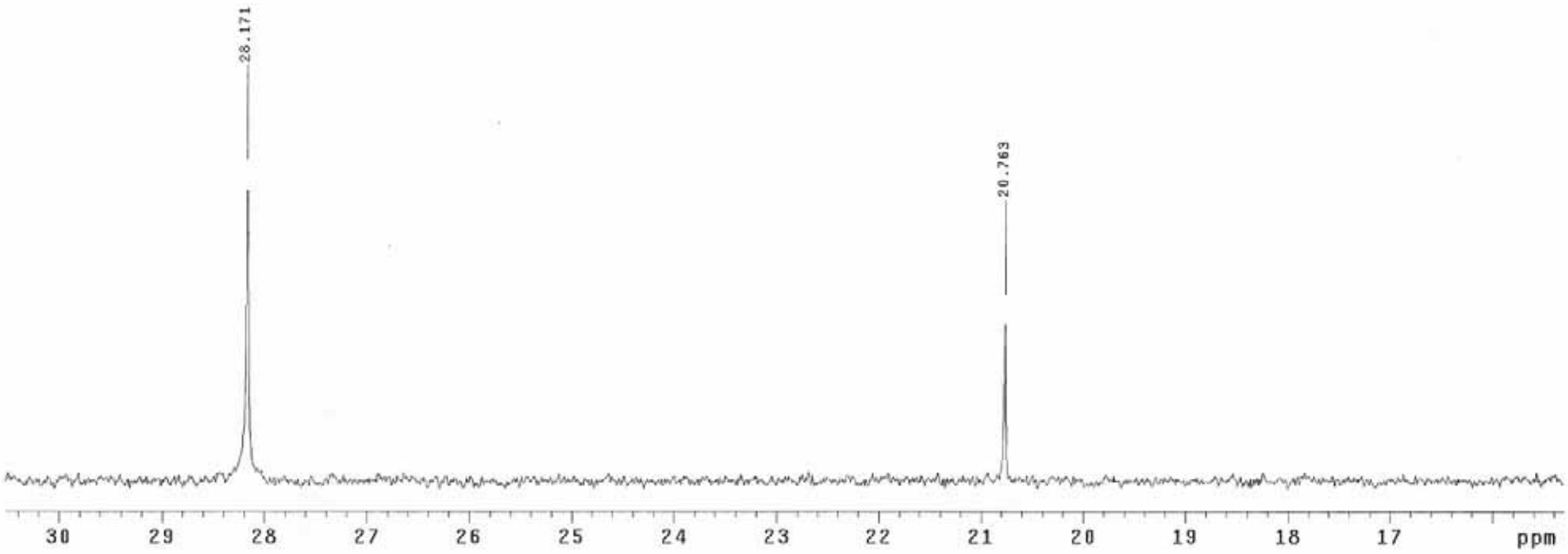
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 202 repetitions	OBSERVE C13, 100.6472164 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 11 minutes			9AB39-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr8"



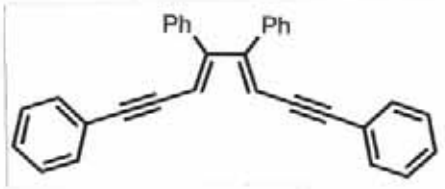


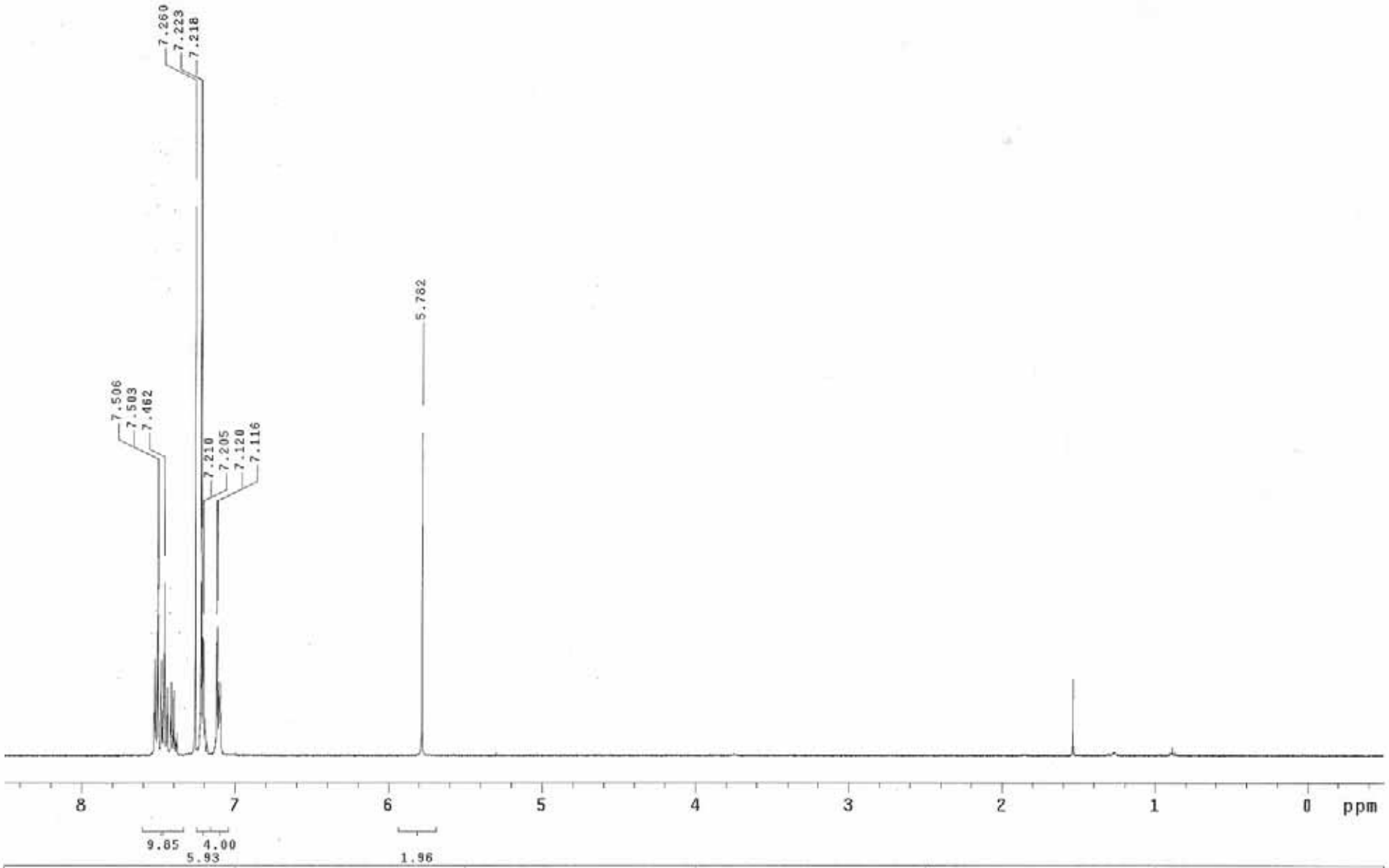
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 209 repetitions	OBSERVE C13, 100.6472164 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 11 minutes			9AB39-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



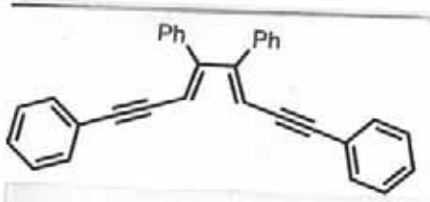


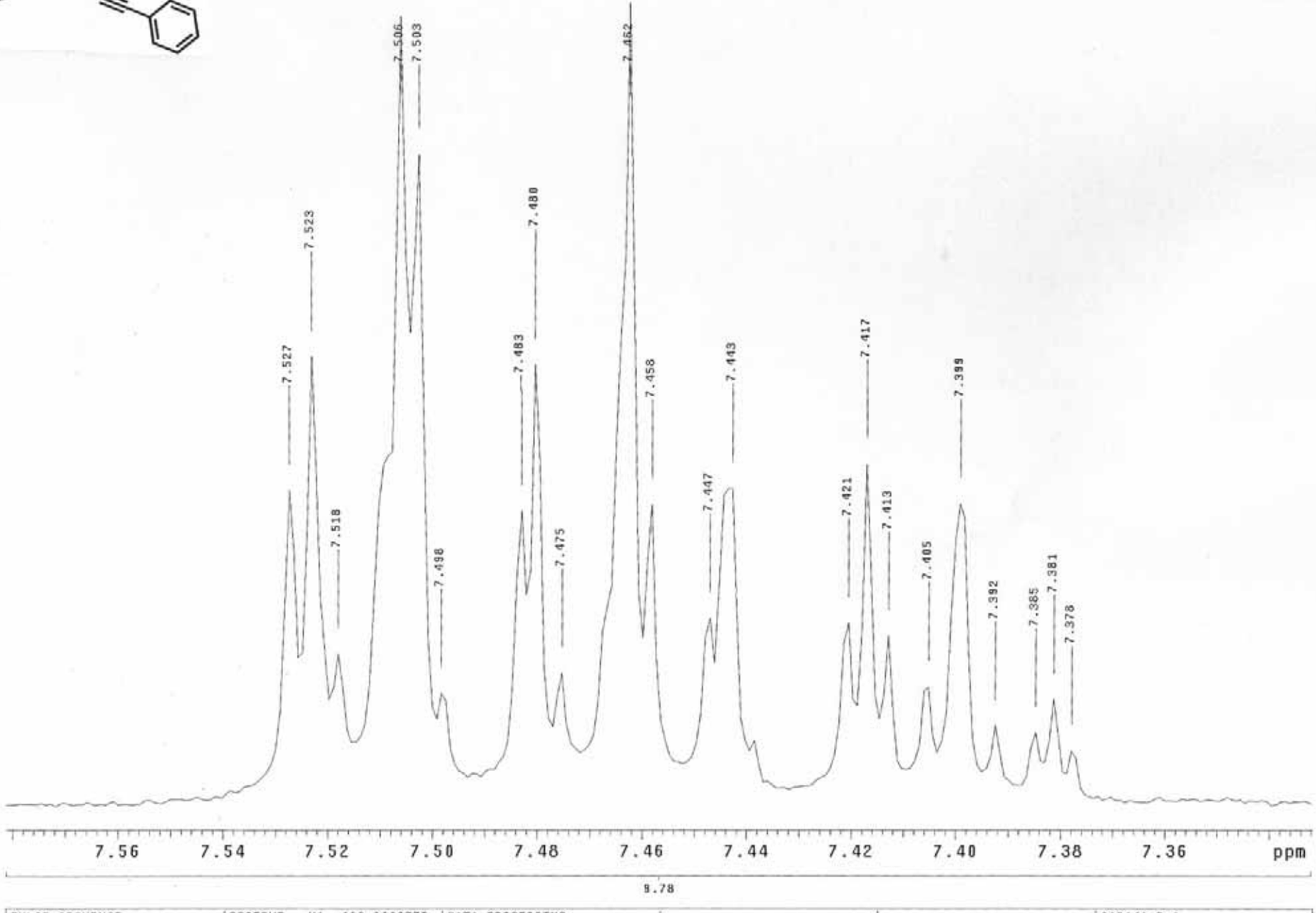
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 211 repetitions	OBSERVE C13, 100.6472164 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 11 minutes			9AB39-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



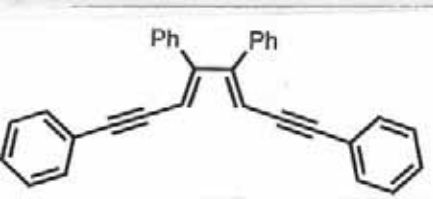


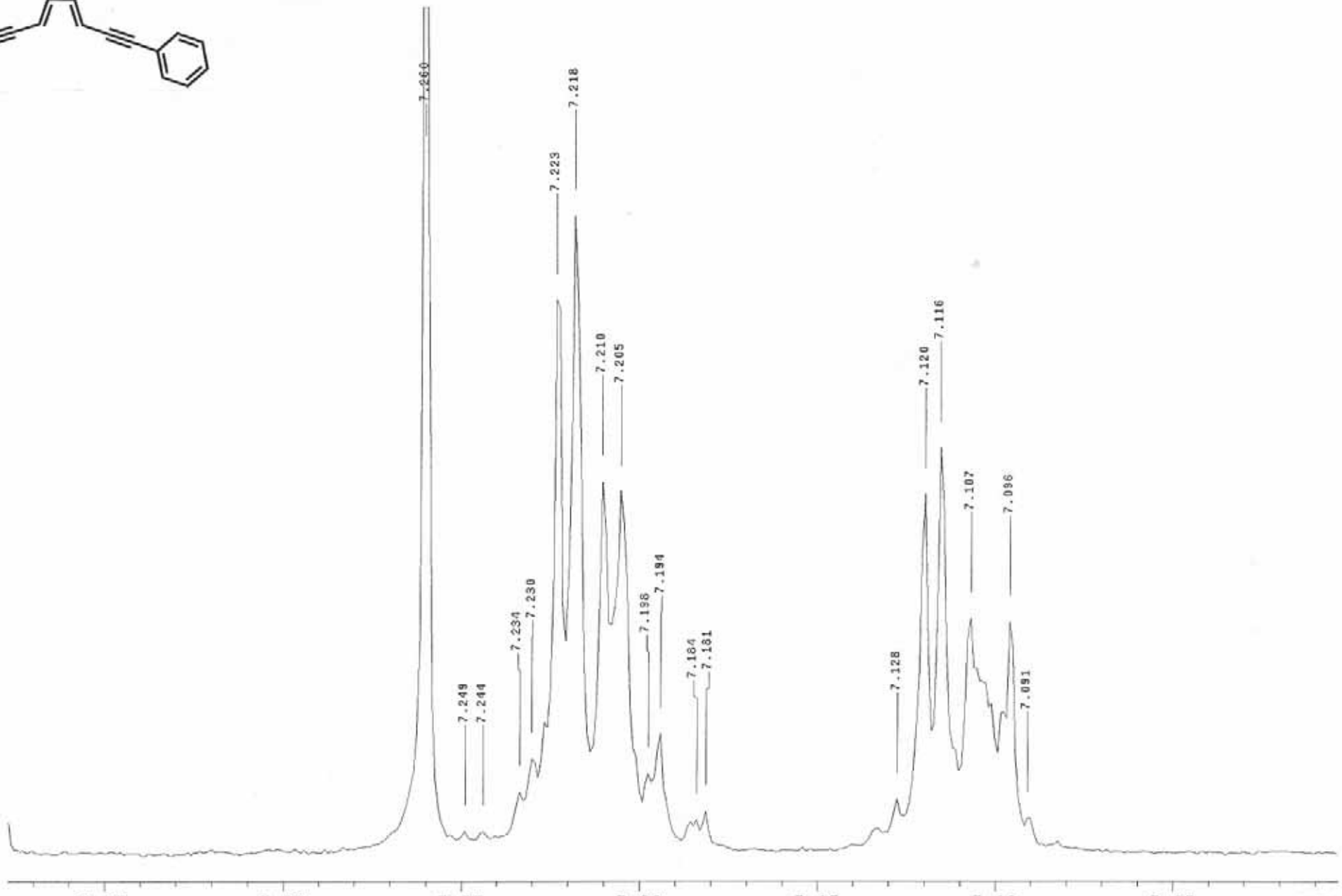
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 18 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB14A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

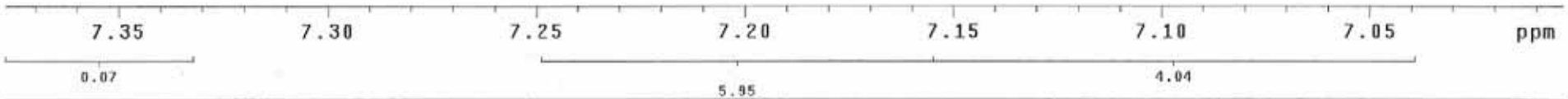




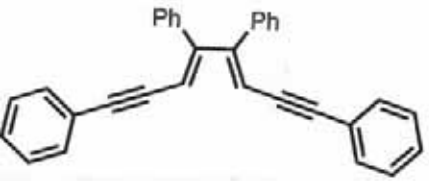
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 30 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB14A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

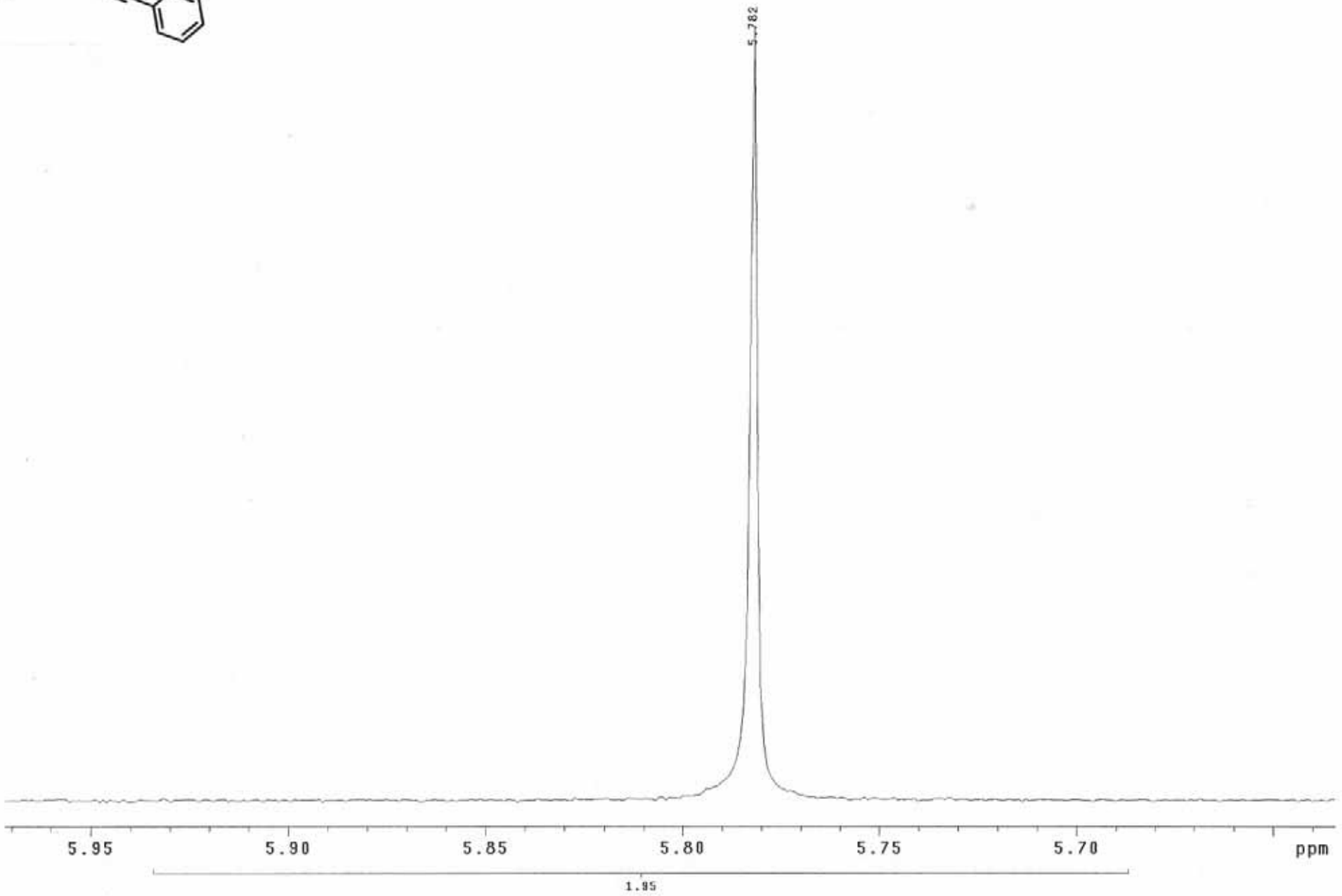




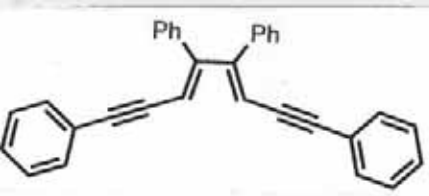


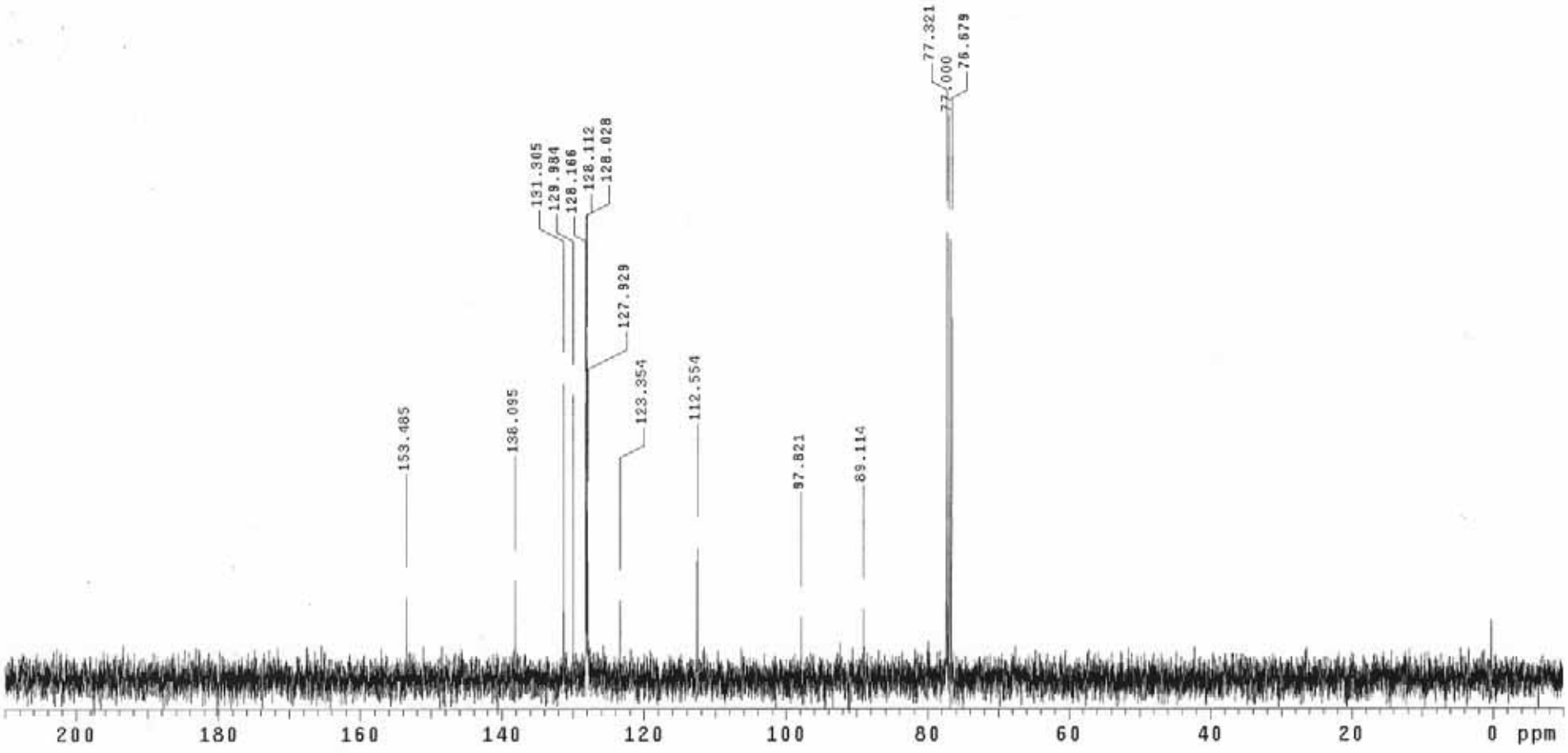
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 34 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB14A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



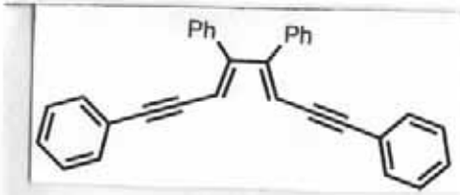


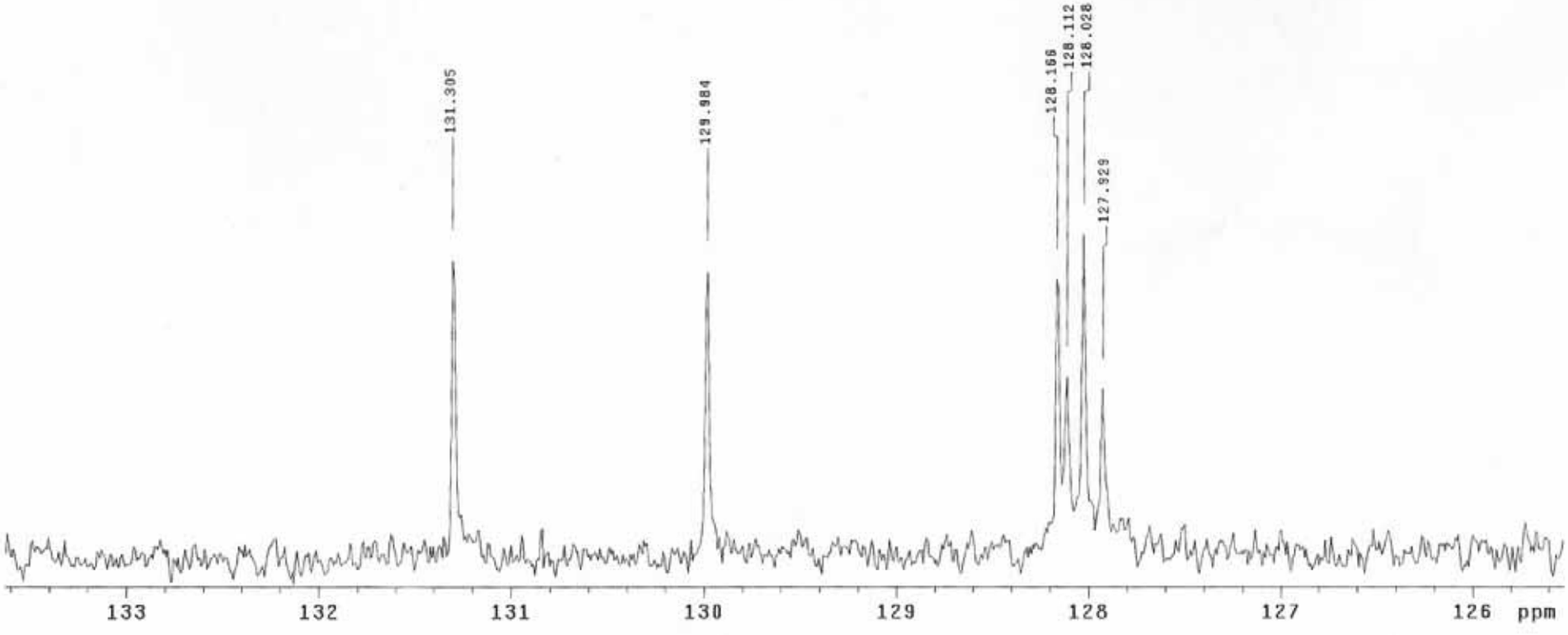
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 36 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB14A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



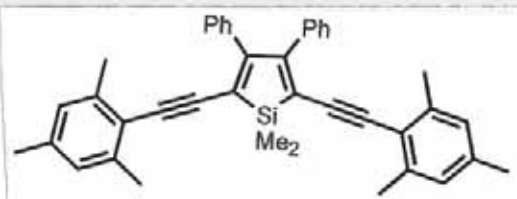


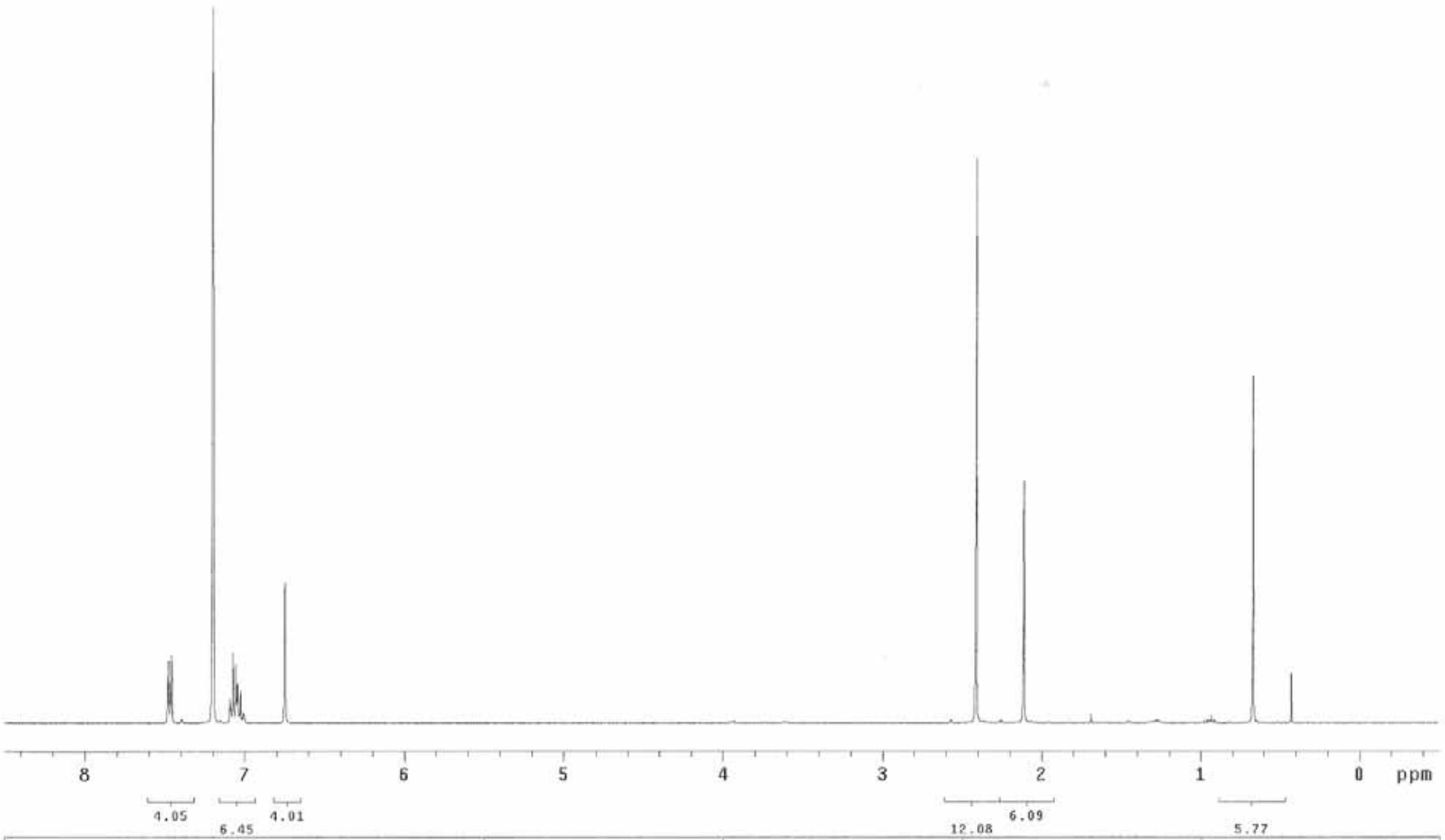
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 19 repetitions	OBSERVE C13, 100.6472187 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 1 minute			9AB14A-crude-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



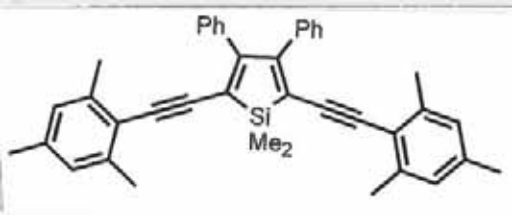


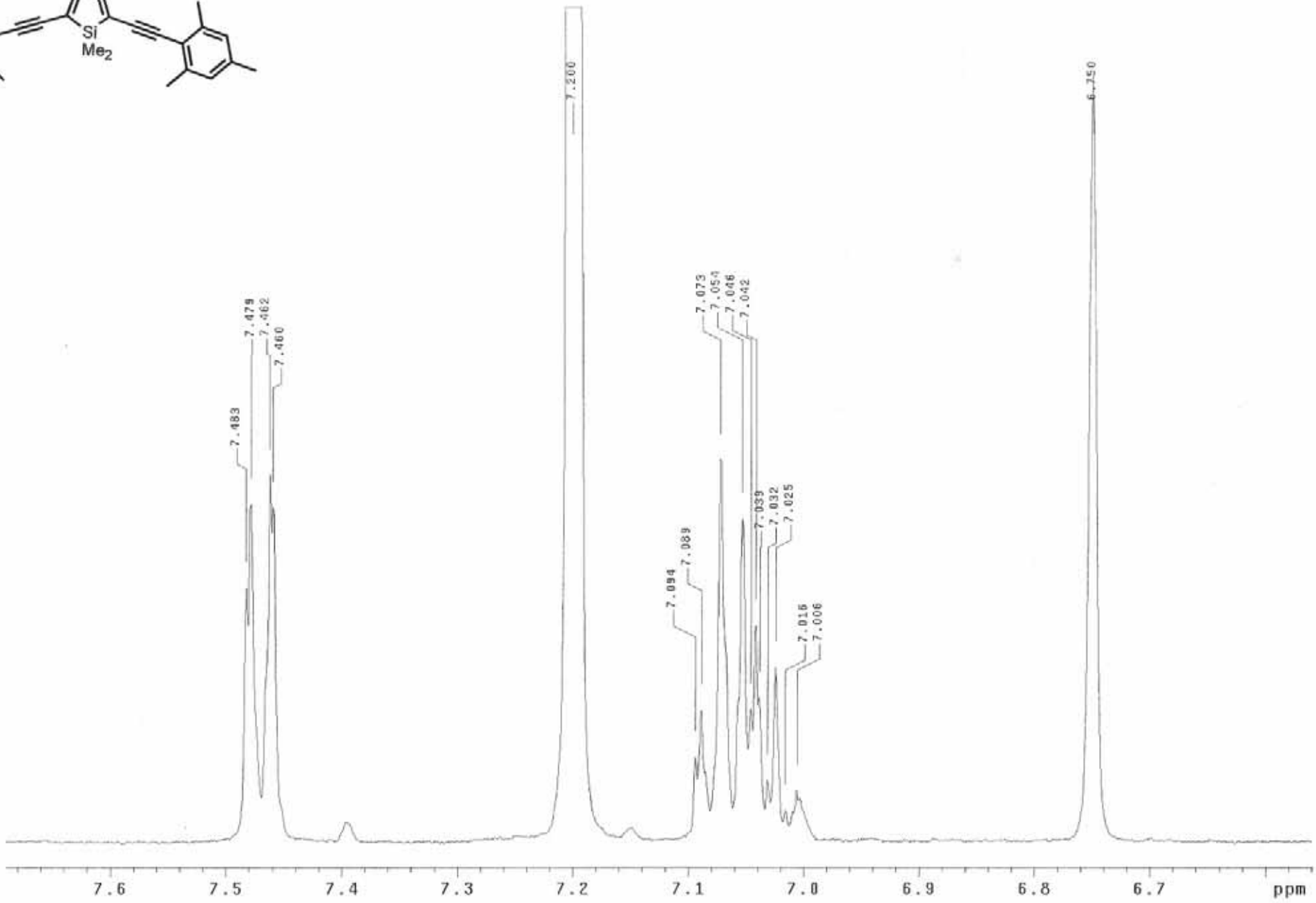
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 22 repetitions	OBSERVE C13, 100.6472187 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 1 minute			9AB14A-crude-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



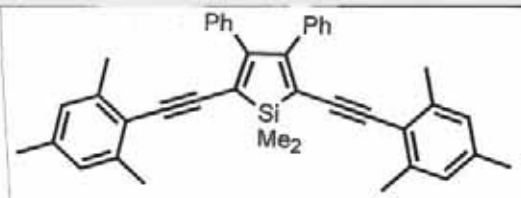


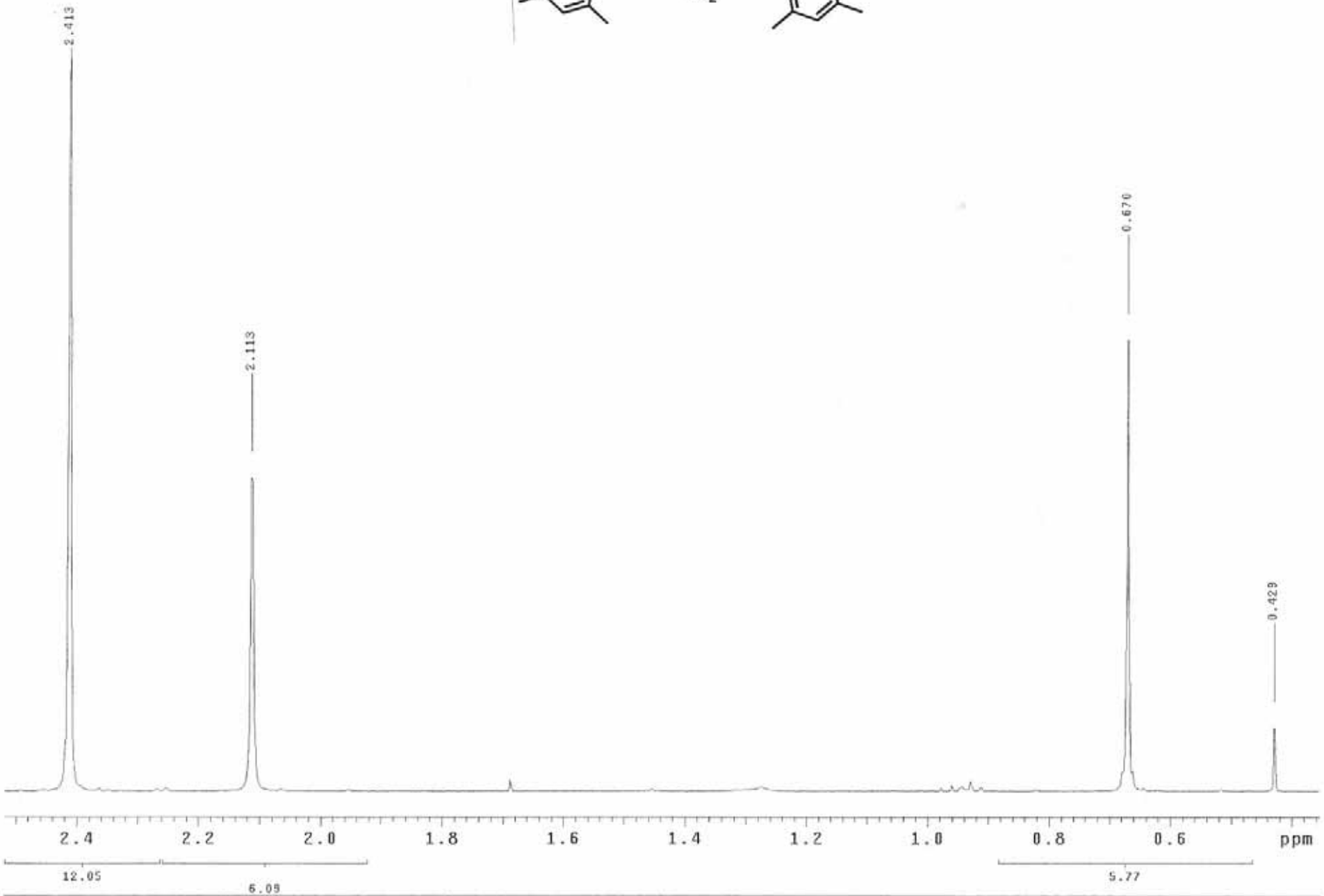
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 29 repetitions	OBSERVE H1, 400.2669811	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB1-Rx1 Pulse Sequence: s2pul Solvent: Benzene Ambient temperature Mercury-400 "nmr6"



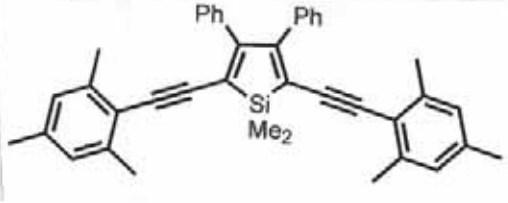


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 31 repetitions	OBSERVE H1, 400.2669811	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB1-Rx1 Pulse Sequence: s2pul Solvent: Benzene Ambient temperature Mercury-400 "nmr6"

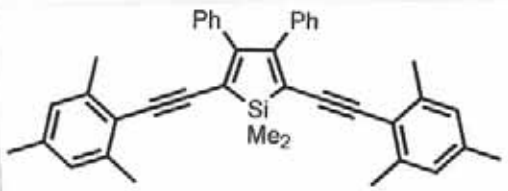


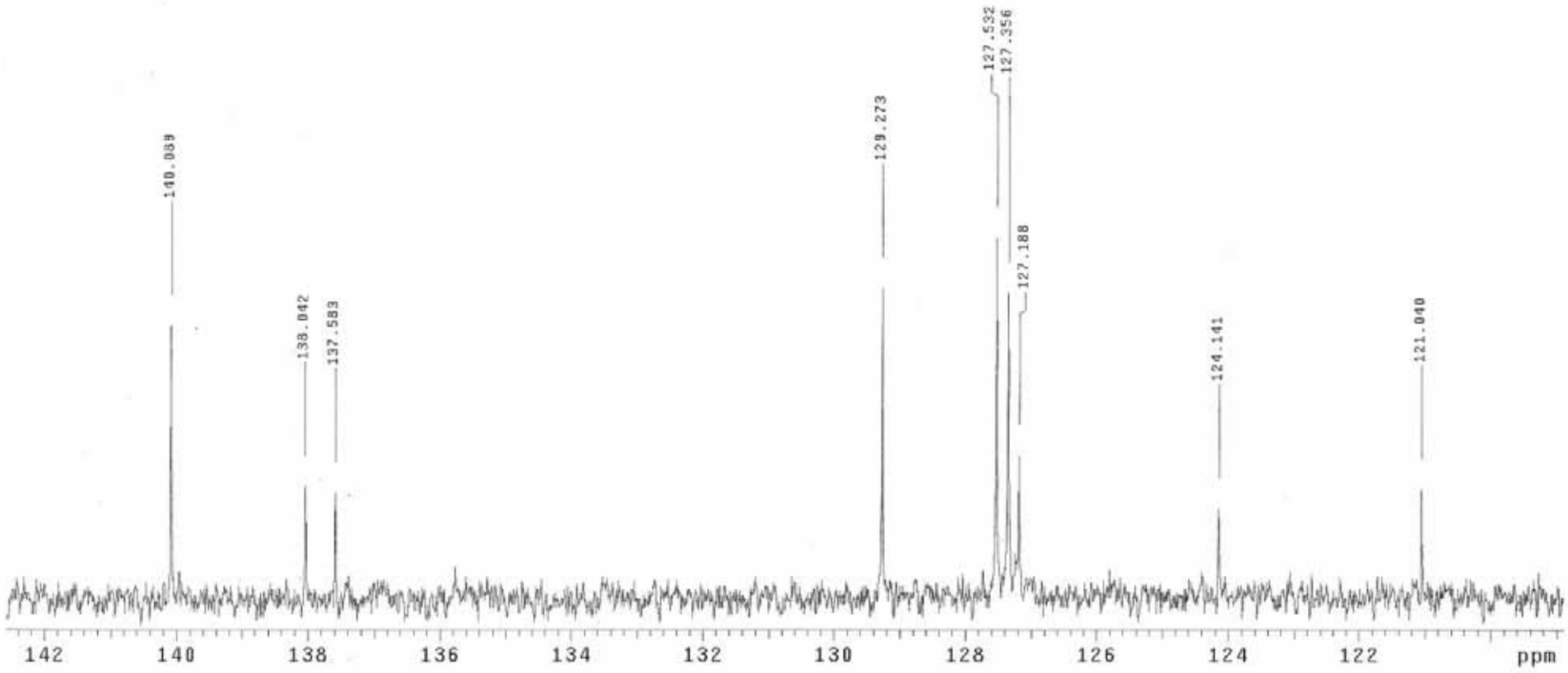


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 36 repetitions	OBSERVE H1, 400.2669811	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9A81-Rx1 Pulse Sequence: s2pul Solvent: Benzene Ambient temperature Mercury-400 "nmr6"

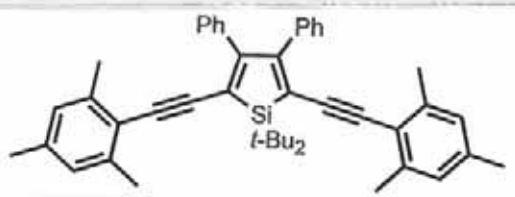


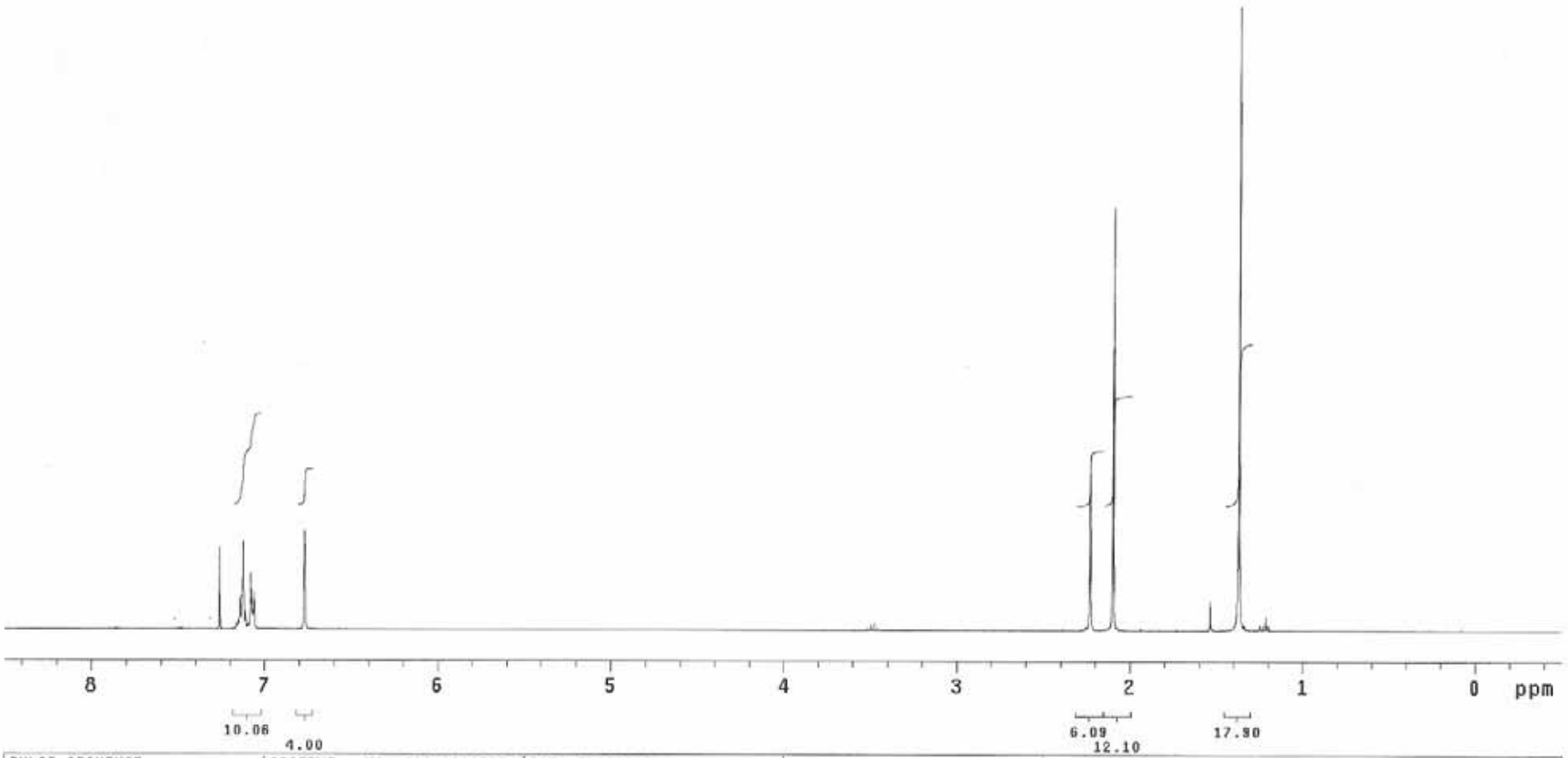
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25180.9 Hz 122 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 6 minutes			9AB1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



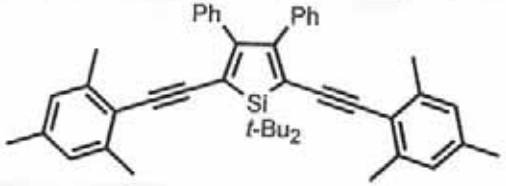


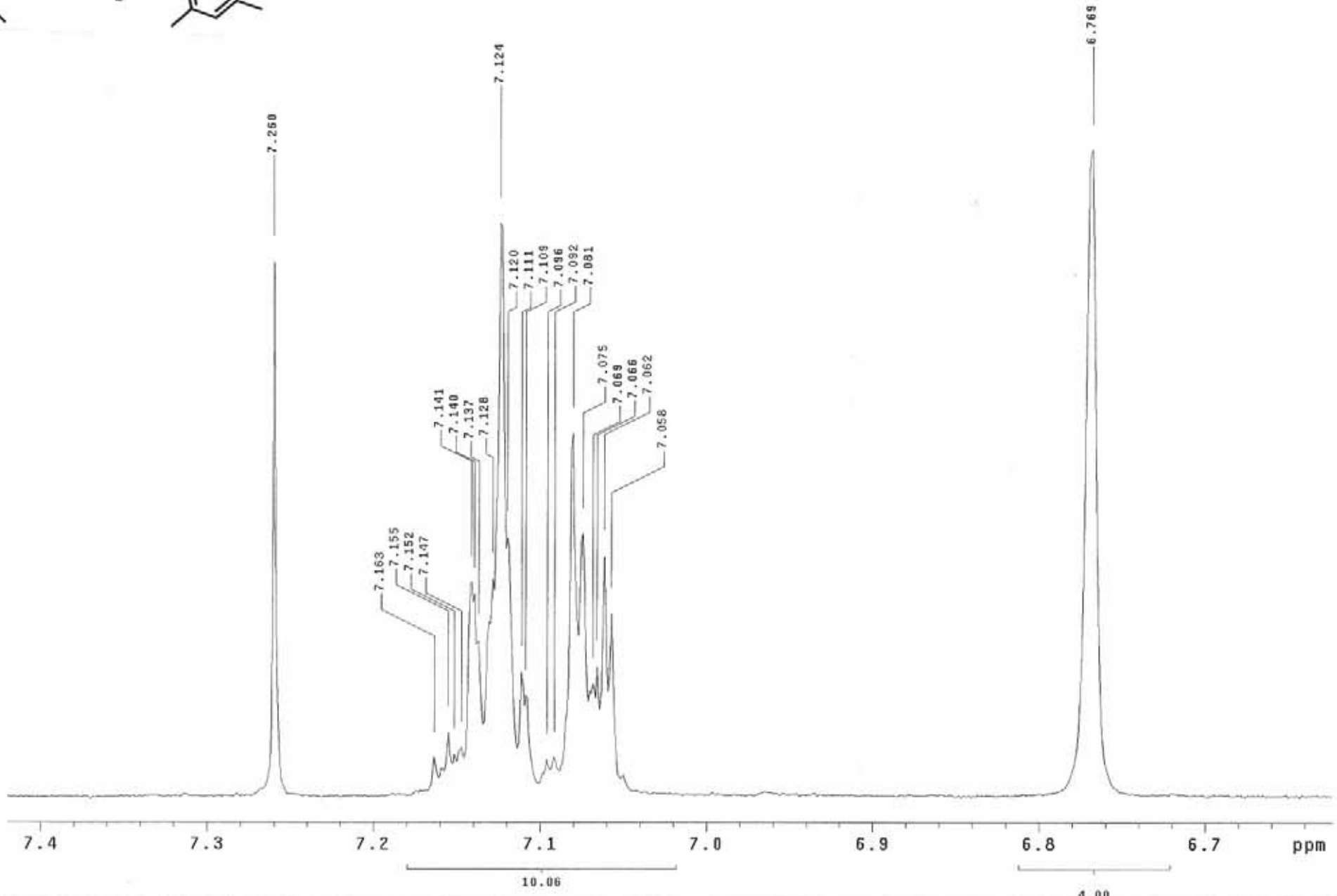
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 133 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 7 minutes			9AB1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



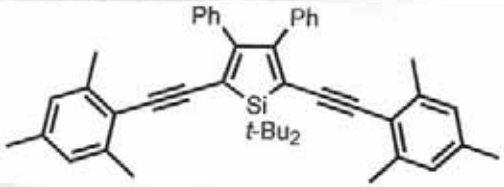


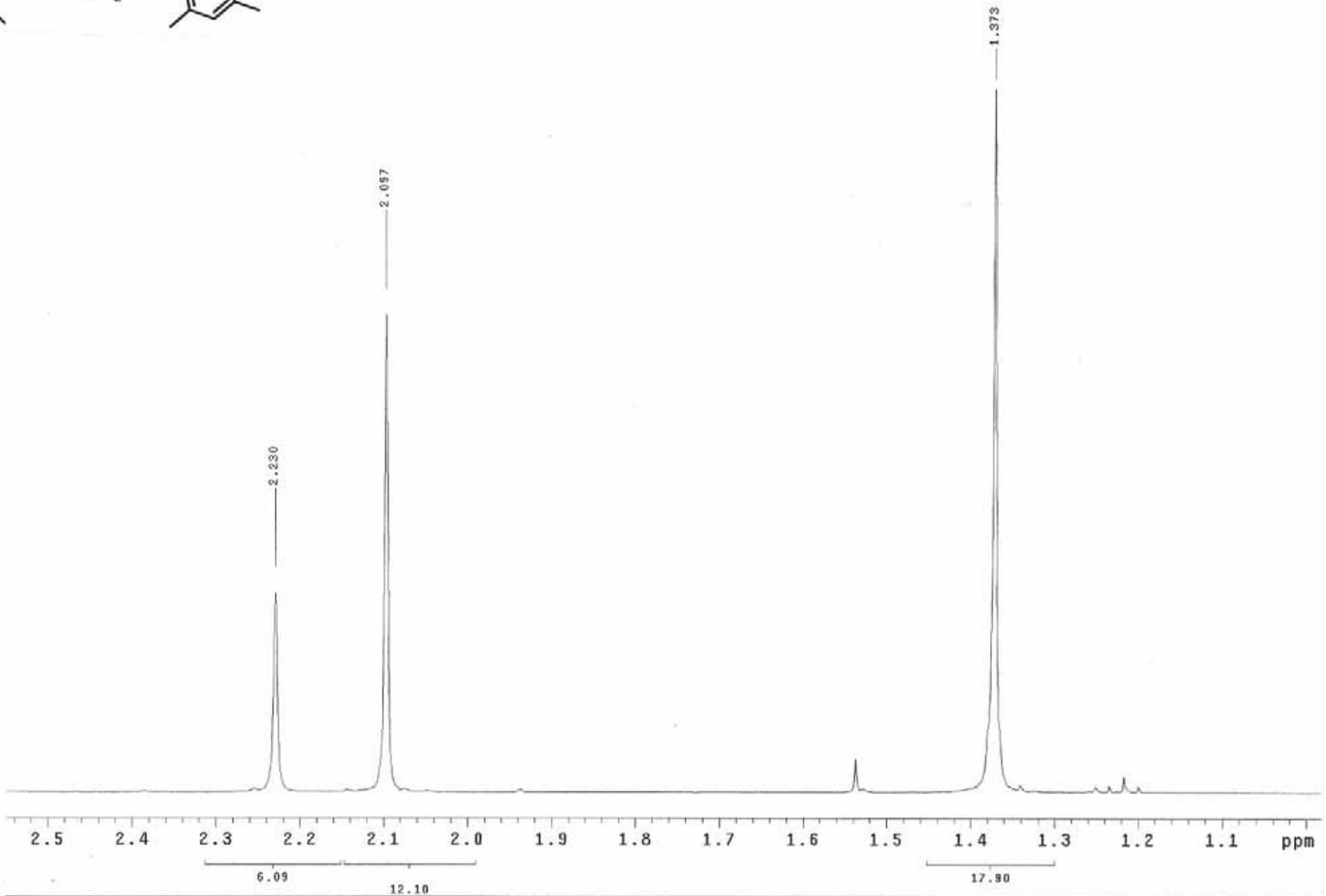
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 11 repetitions	OBSERVE H1, 400.2669775	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB42-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



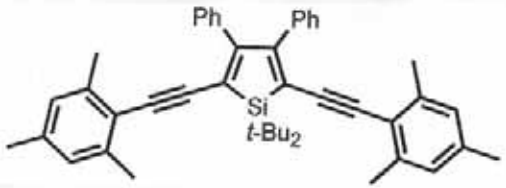


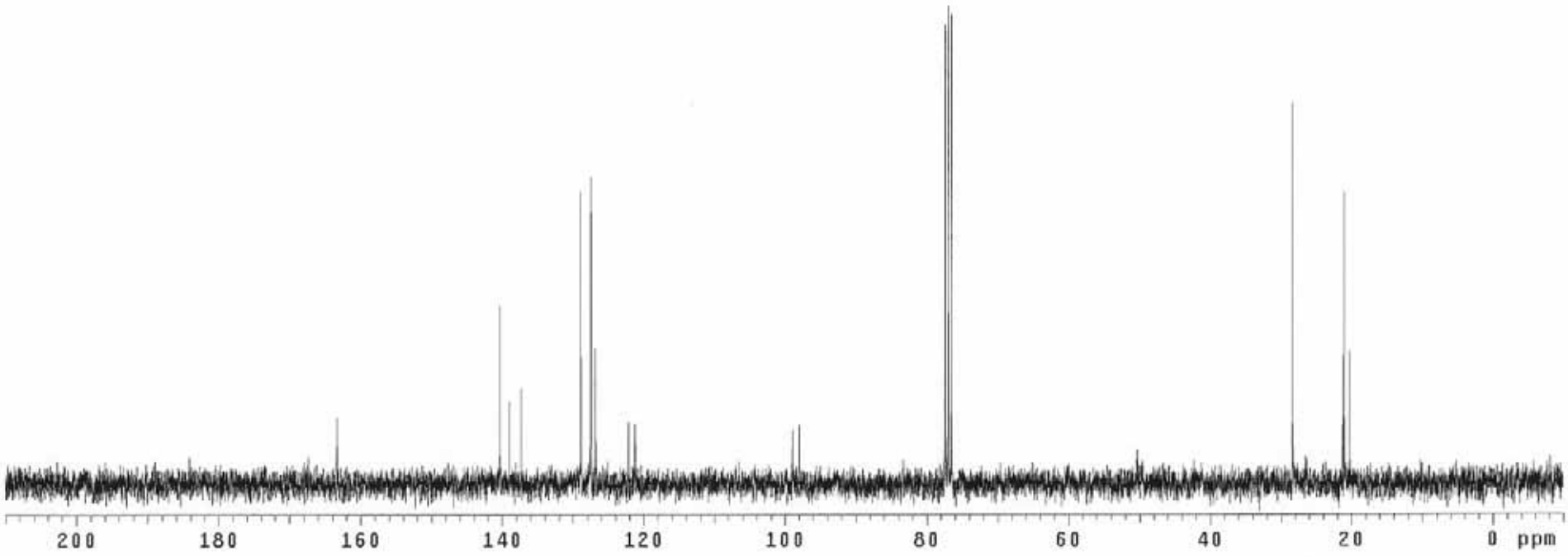
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 11 repetitions	OBSERVE H1, 400.2669775	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB42-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



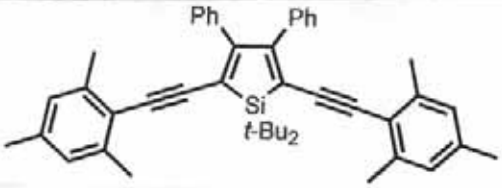


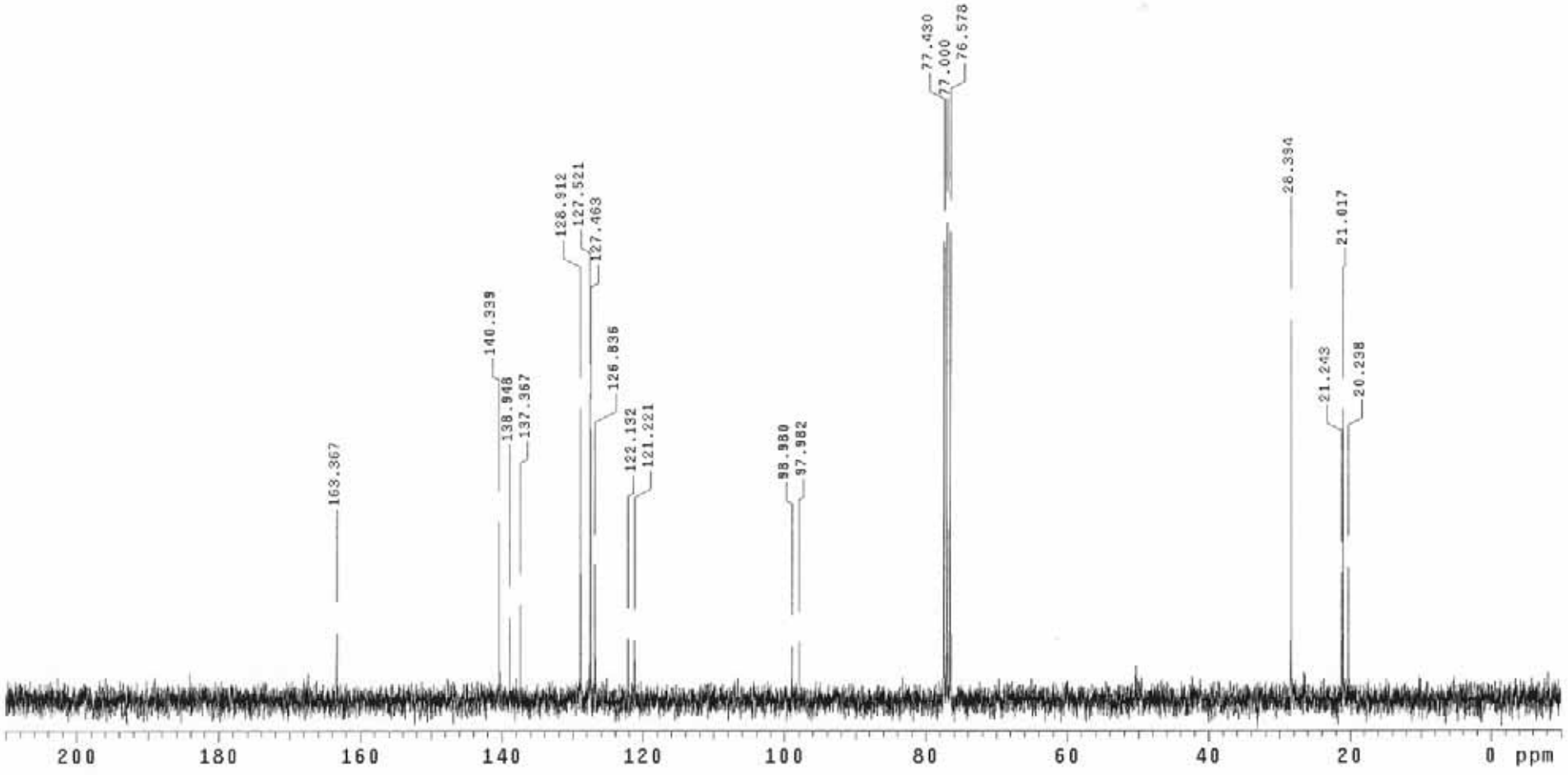
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.858 sec Width 5602.2 Hz 11 repetitions	OBSERVE H1, 400.2669775	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB42-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



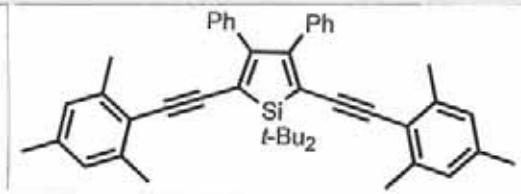


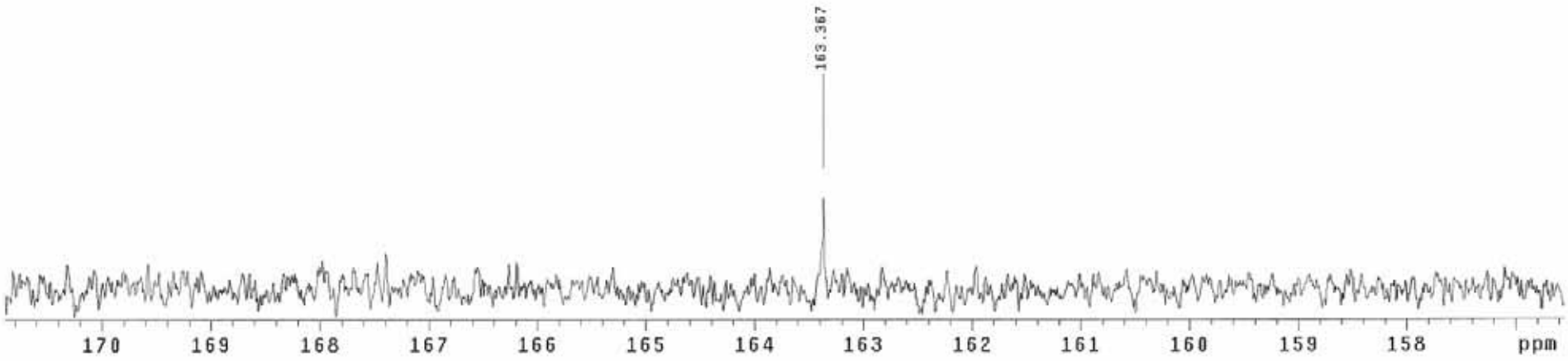
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 38.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 84 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1409259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"



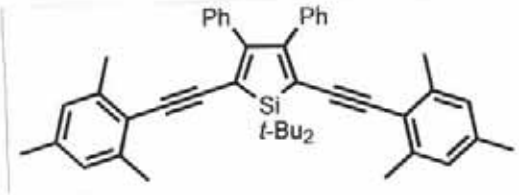


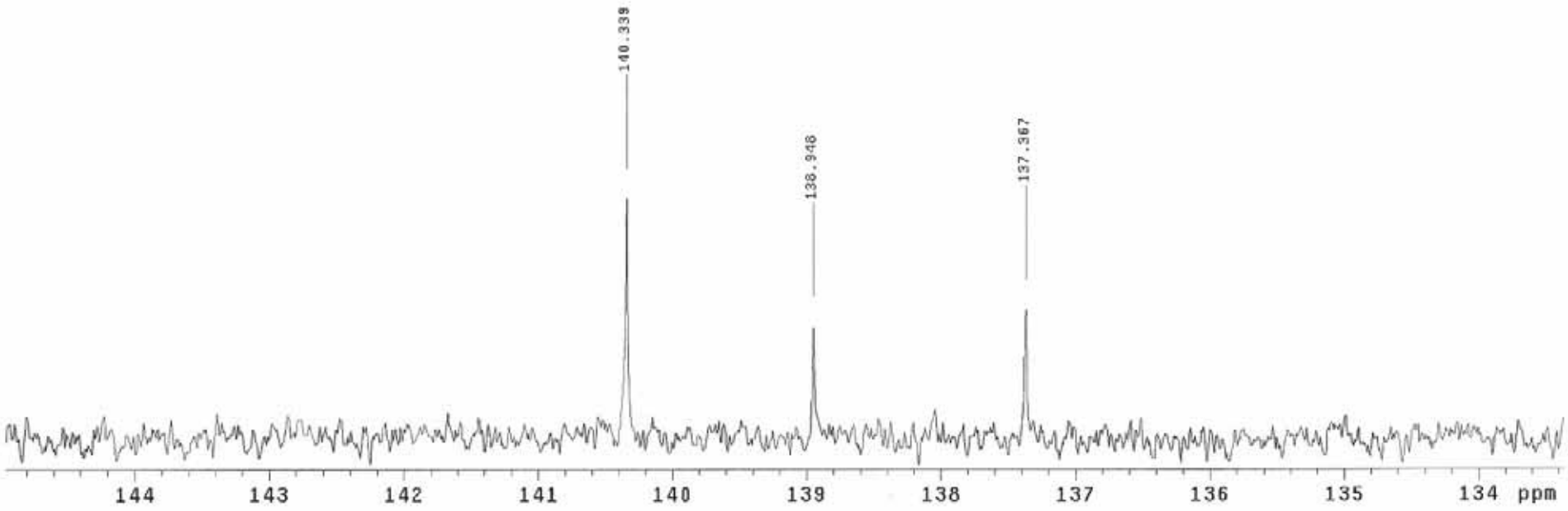
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 36.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 84 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1409259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"



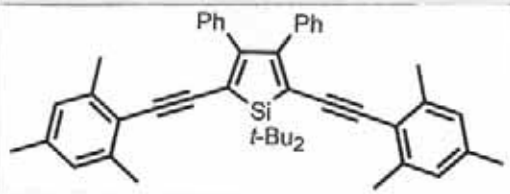


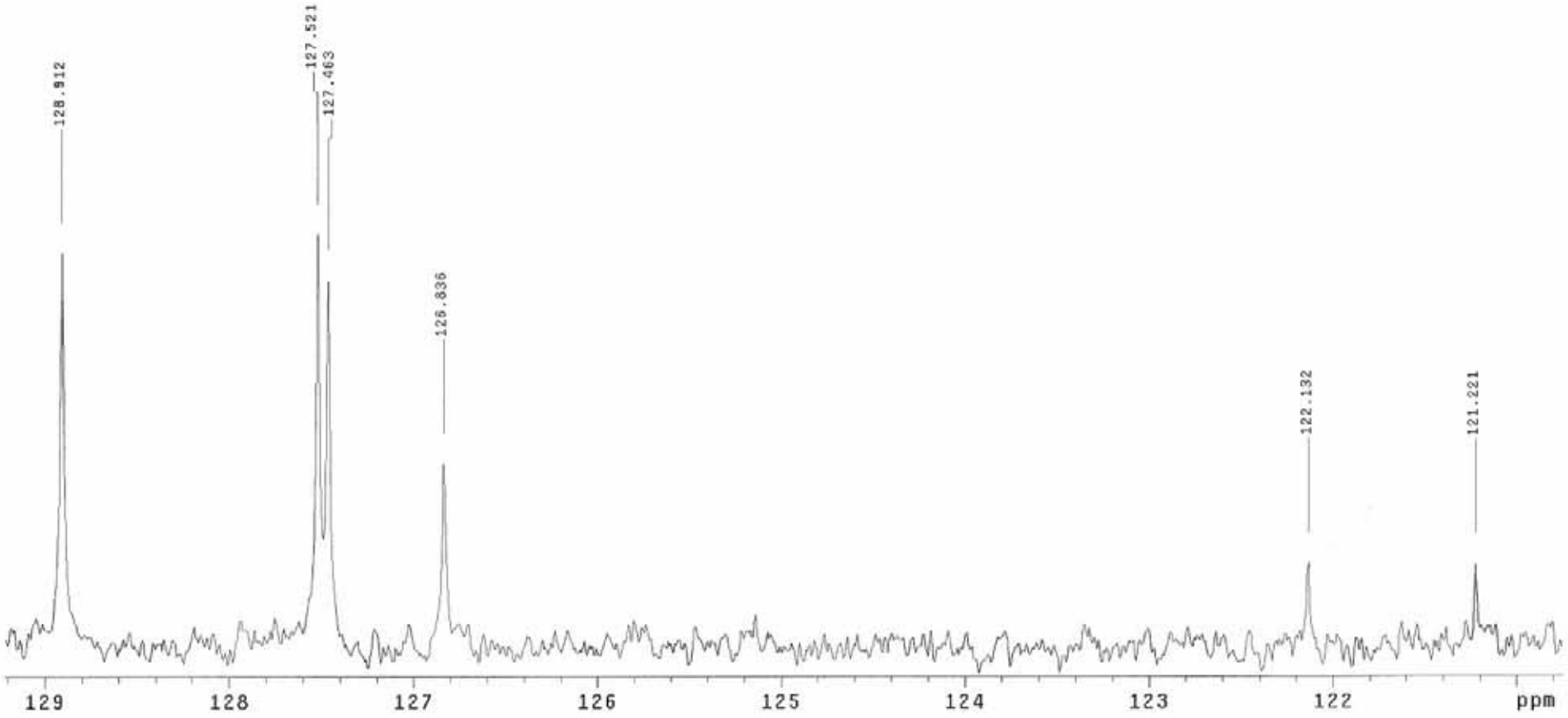
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 36.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 88 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1409259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"



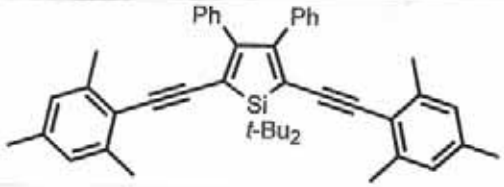


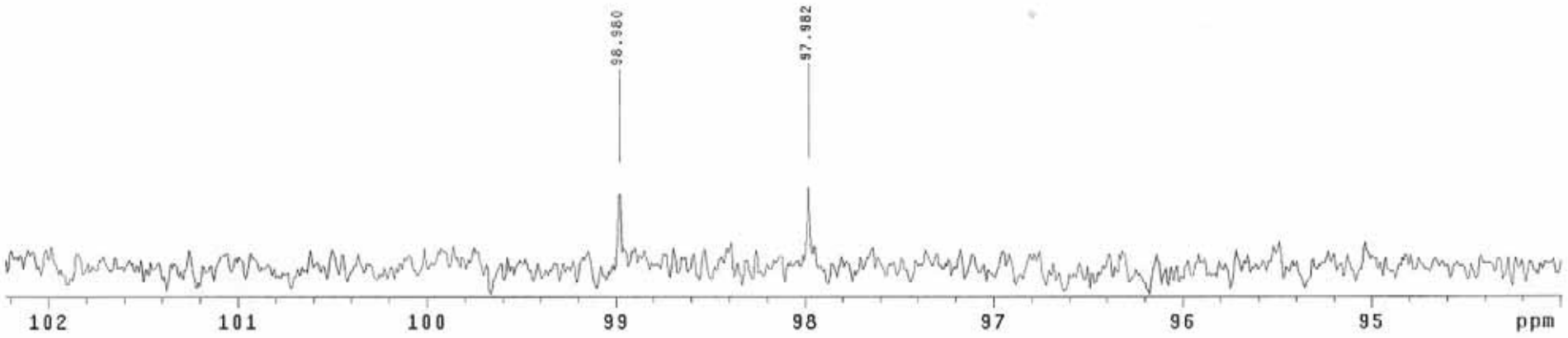
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 38.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 90 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1408259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"



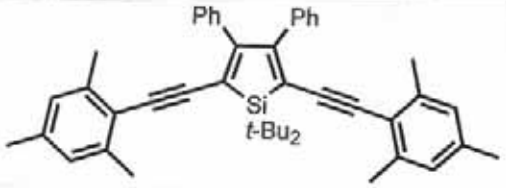


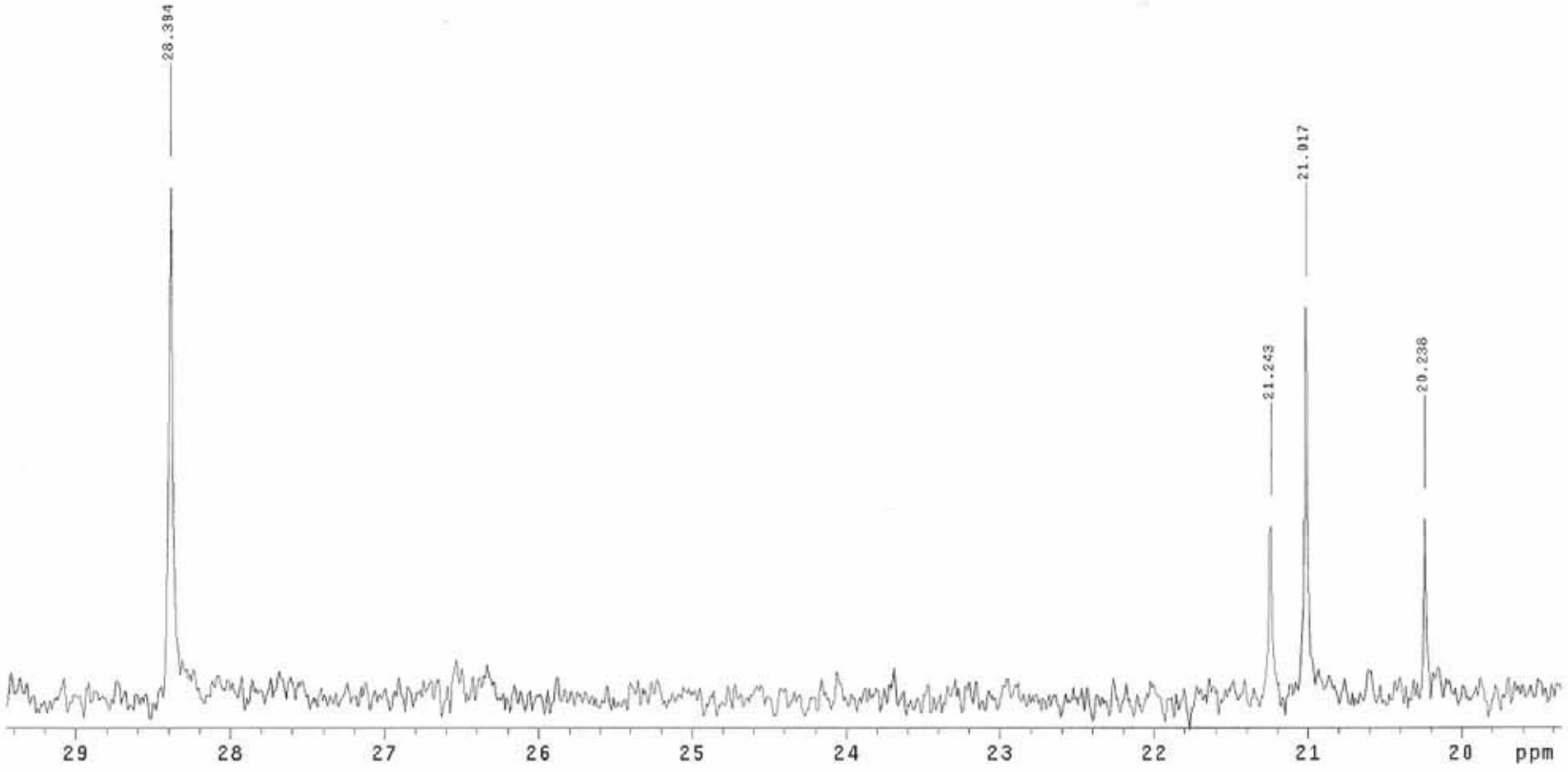
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 36.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 93 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1409259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"



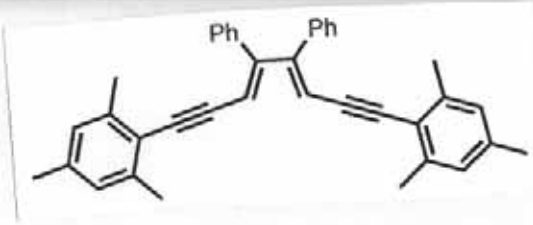


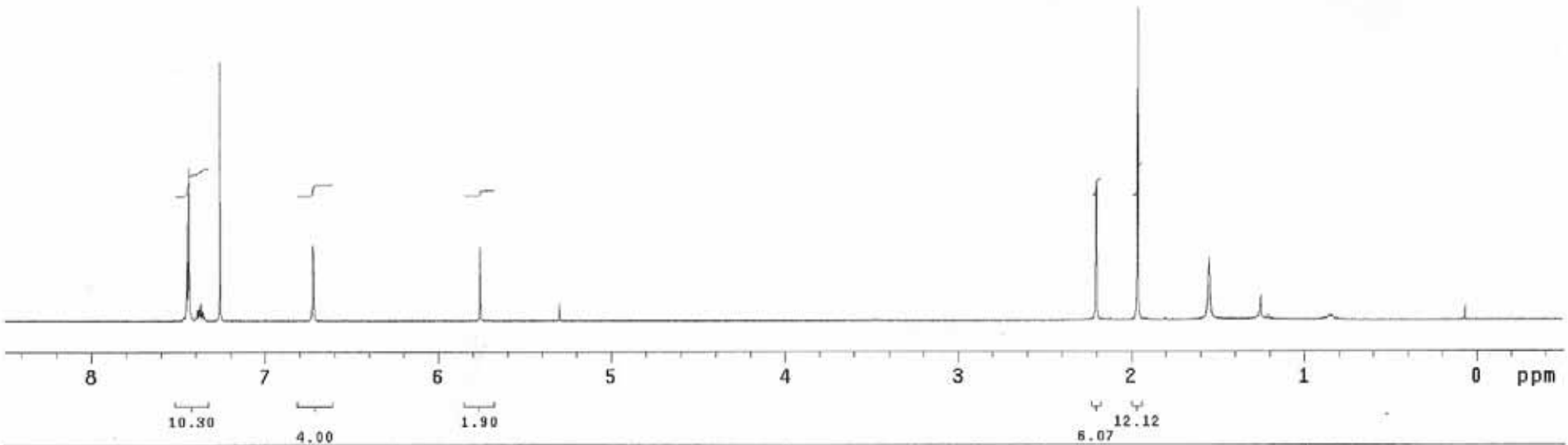
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 36.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 95 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1409259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 6 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"



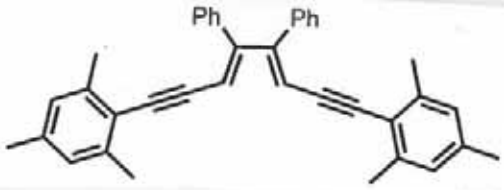


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 36.0 degrees Acq. time 1.777 sec Width 18009.9 Hz 98 repetitions	OBSERVE C13, 75.4700205 DECOUPLE H1, 300.1409259 Power 40 dB continuously on WALTZ-16 modulated Single precision data	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 6 minutes			9AB42-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature UNITYplus-300 "nmr2"

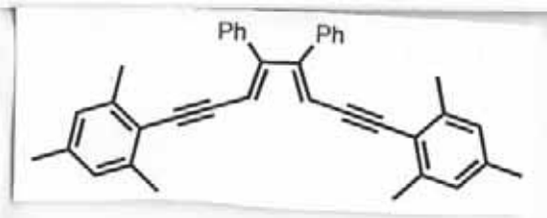


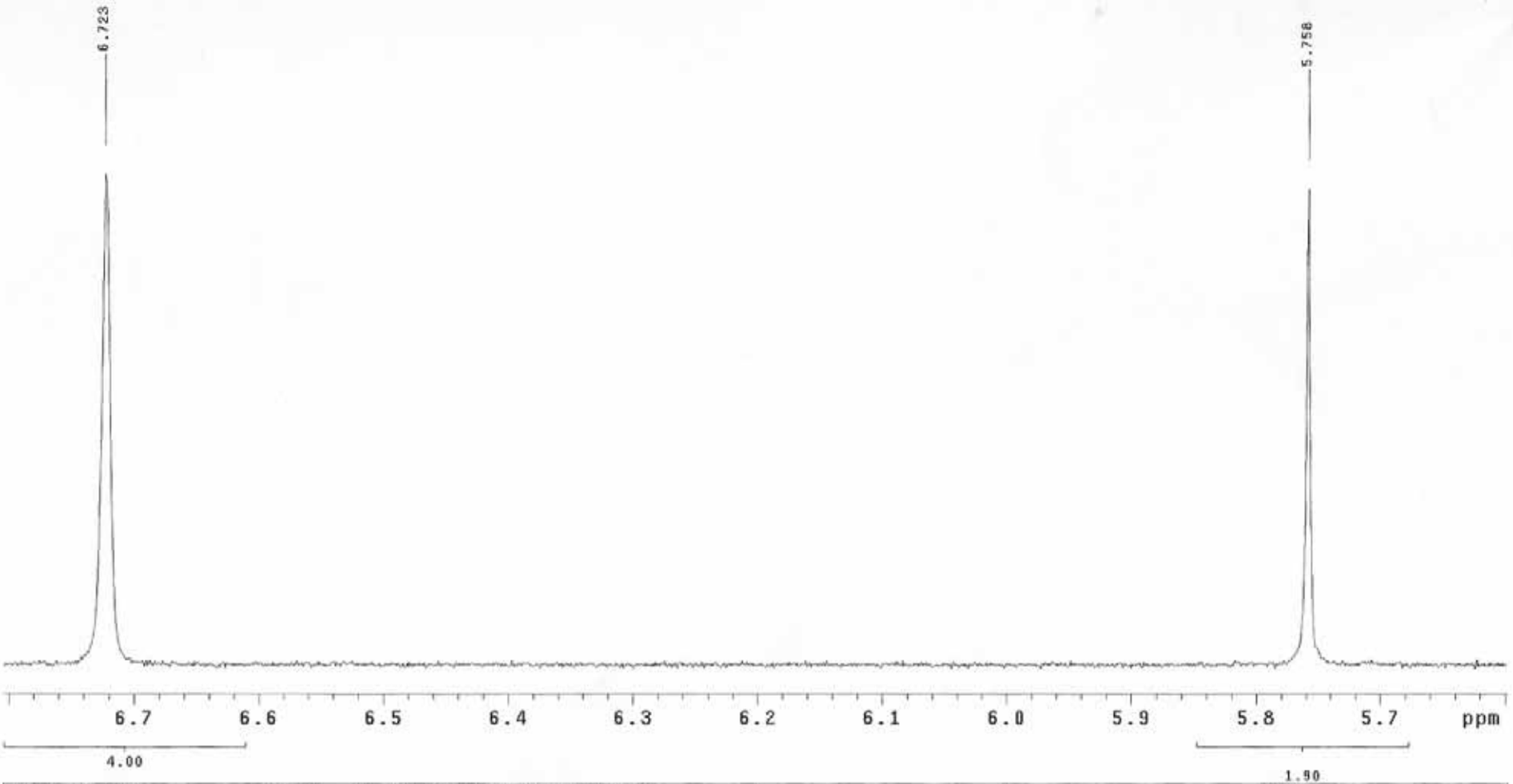


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 30 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			SAB12 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

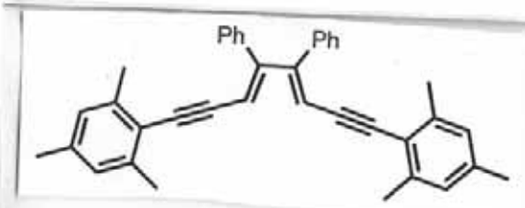


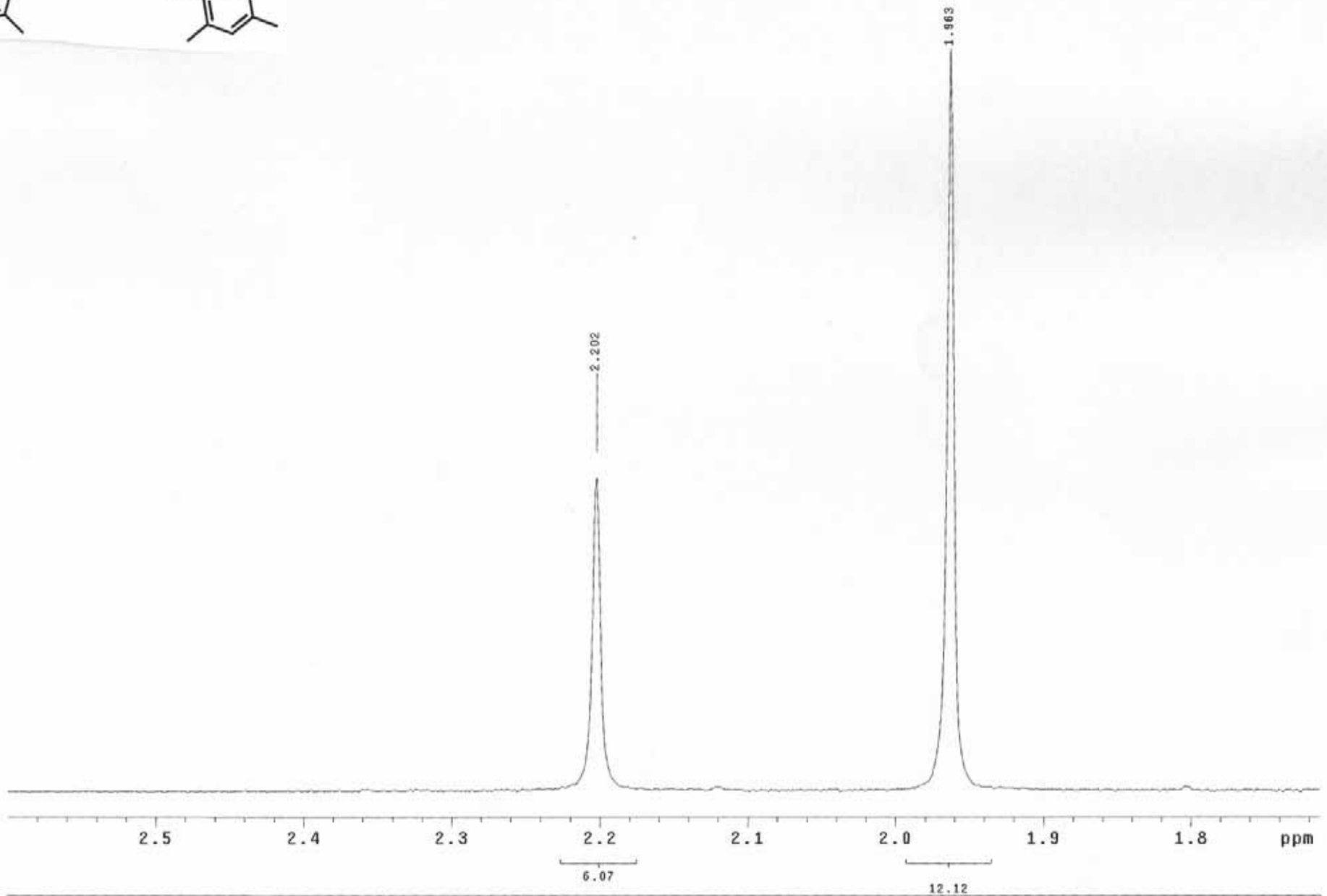
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 34 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB12 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



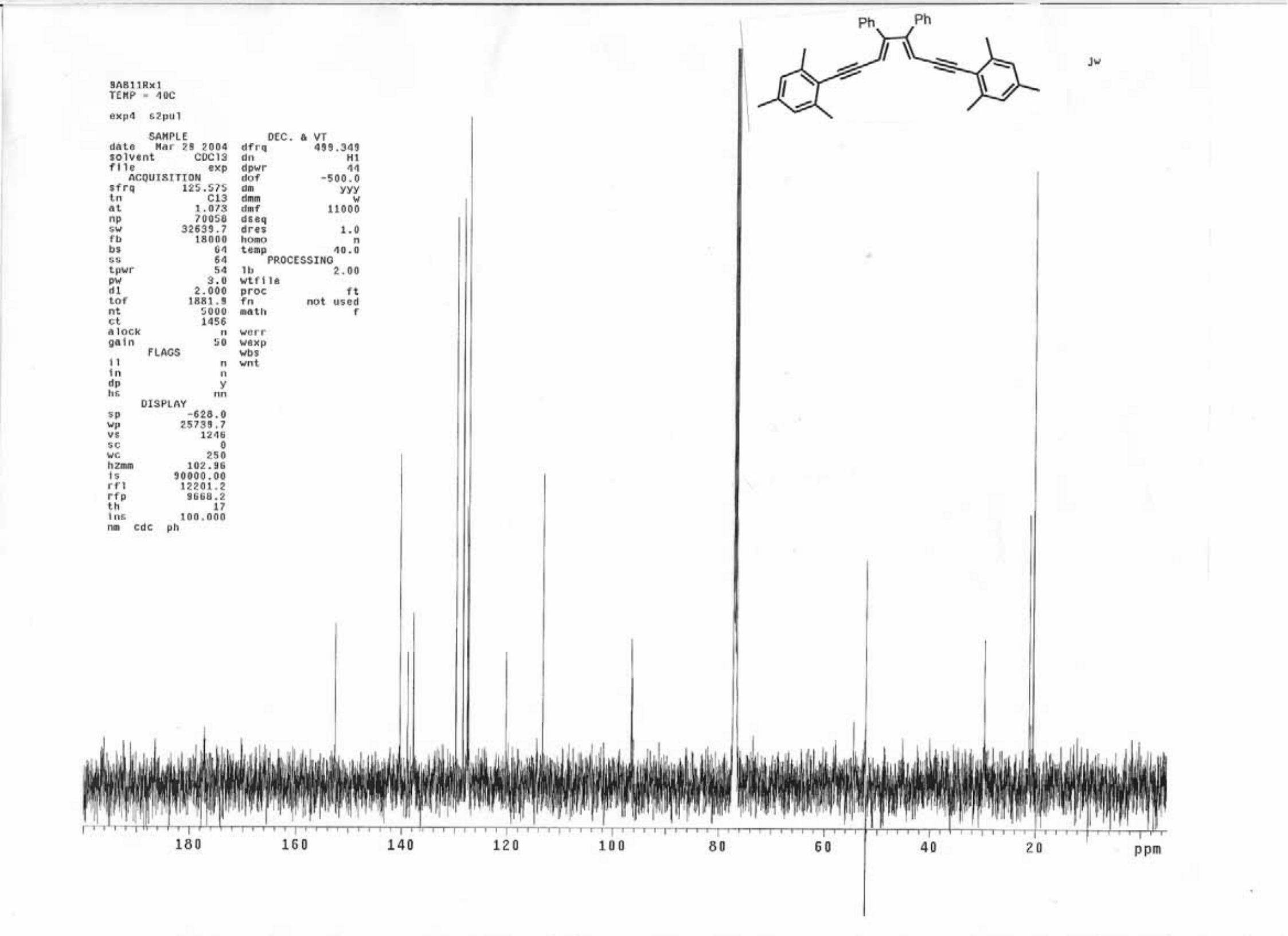


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 36 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB12 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmrG"



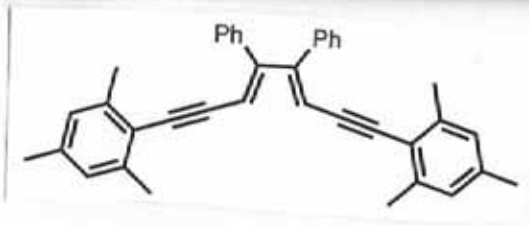


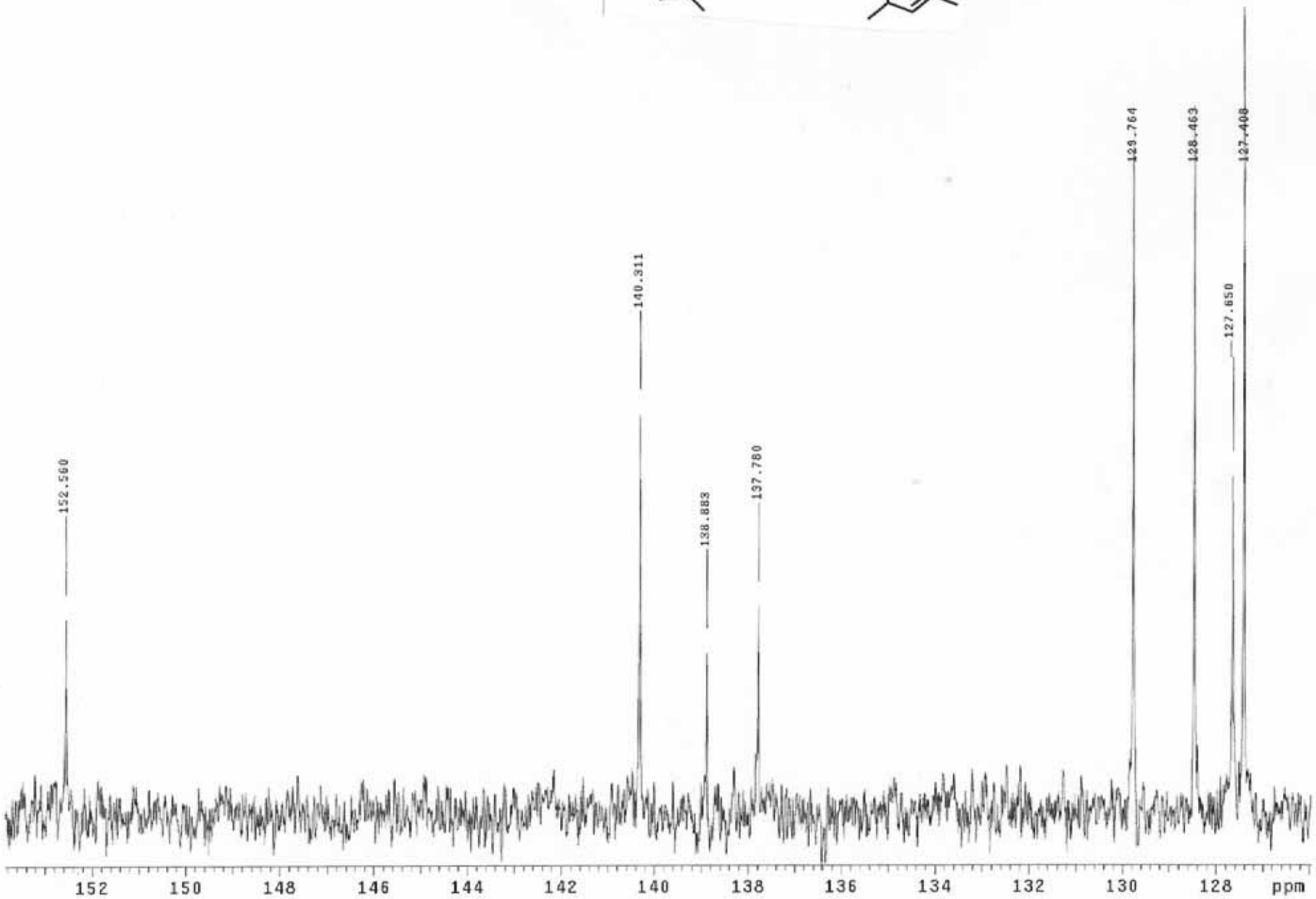
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 37 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB12 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"


Ph
Ph
JW
9A811Rx1
TEMP = 40C
exp4 s2pul
SAMPLE
date Mar 29 2004
solvent CDCl3
file exp
ACQUISITION
sfrq 125.575
tn C13
at 1.073
np 70058
sw 32639.7
fb 18000
bs 64
ss 64
tpwr 54
pw 3.0
d1 2.000
tof 1881.9
nt 5000
ct 1456
alock n
gain 50
FLAGS
il n
in n
dp y
hs nn
DISPLAY
sp -628.0
wp 25739.7
vs 1246
sc 0
wc 250
hzmm 102.96
is 90000.00
rfl 12201.2
rfp 9668.2
th 17
ins 100.000
nm cdc ph
DEC. & VT
dfrq 499.349
dn H1
dpwr 44
dof -500.0
dm yyy
dmm w
dmf 11000
dseq
dres 1.0
homo n
temp 40.0
PROCESSING
lb 2.00
wtfile
proc ft
fn not used
math f
werr
wexp
wbs
wnt
180
160
140
120
100
80
60
40
20
ppm

9AB11Rx1
TEMP = 40C

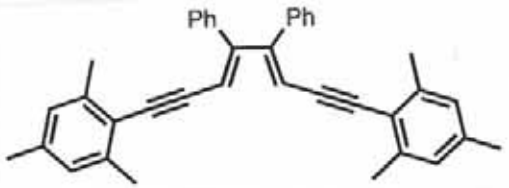
Pulse Sequence: s2pul

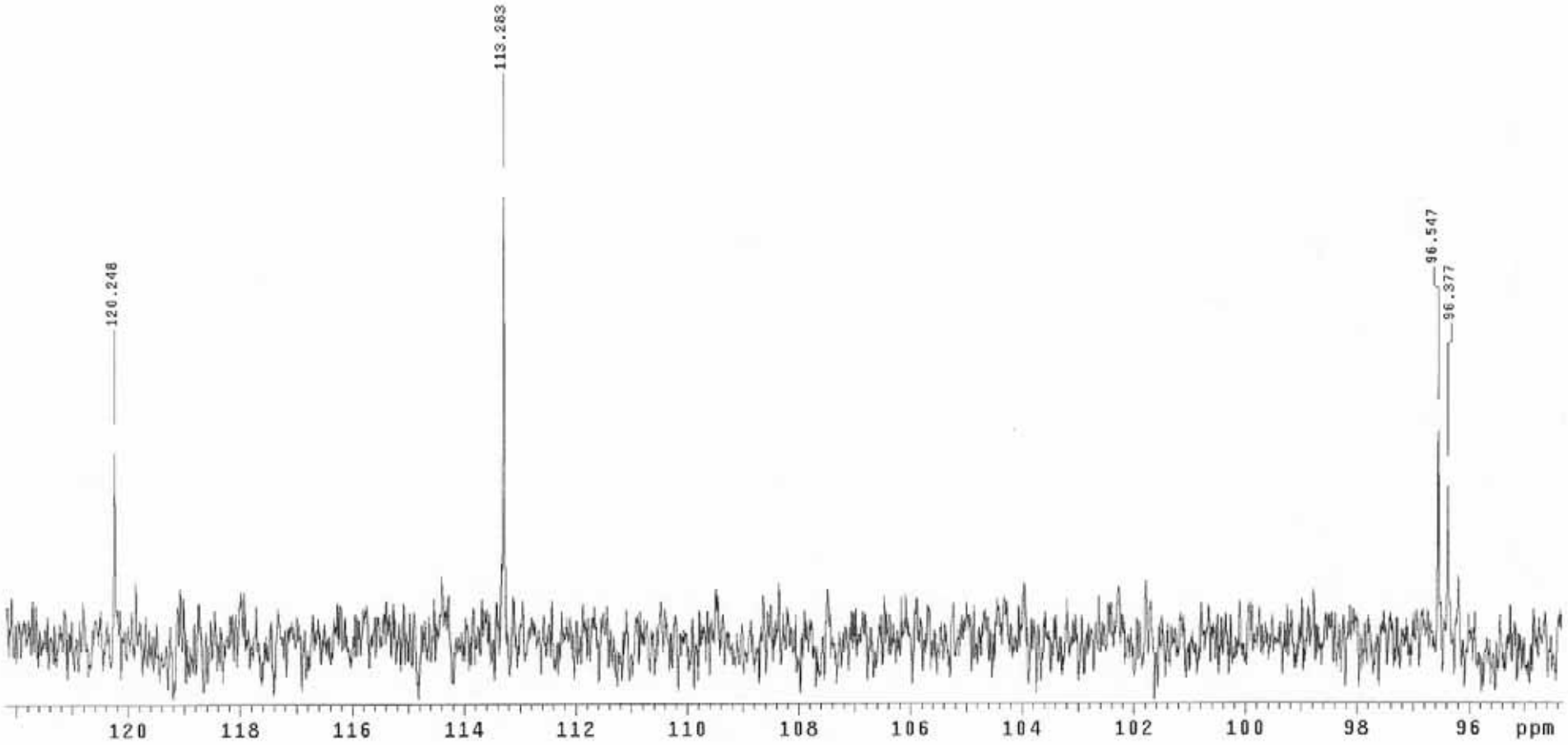




9AB11Rx1
TEMP = 40C

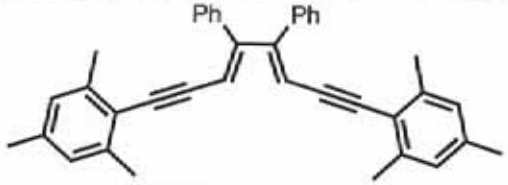
Pulse Sequence: s2pul

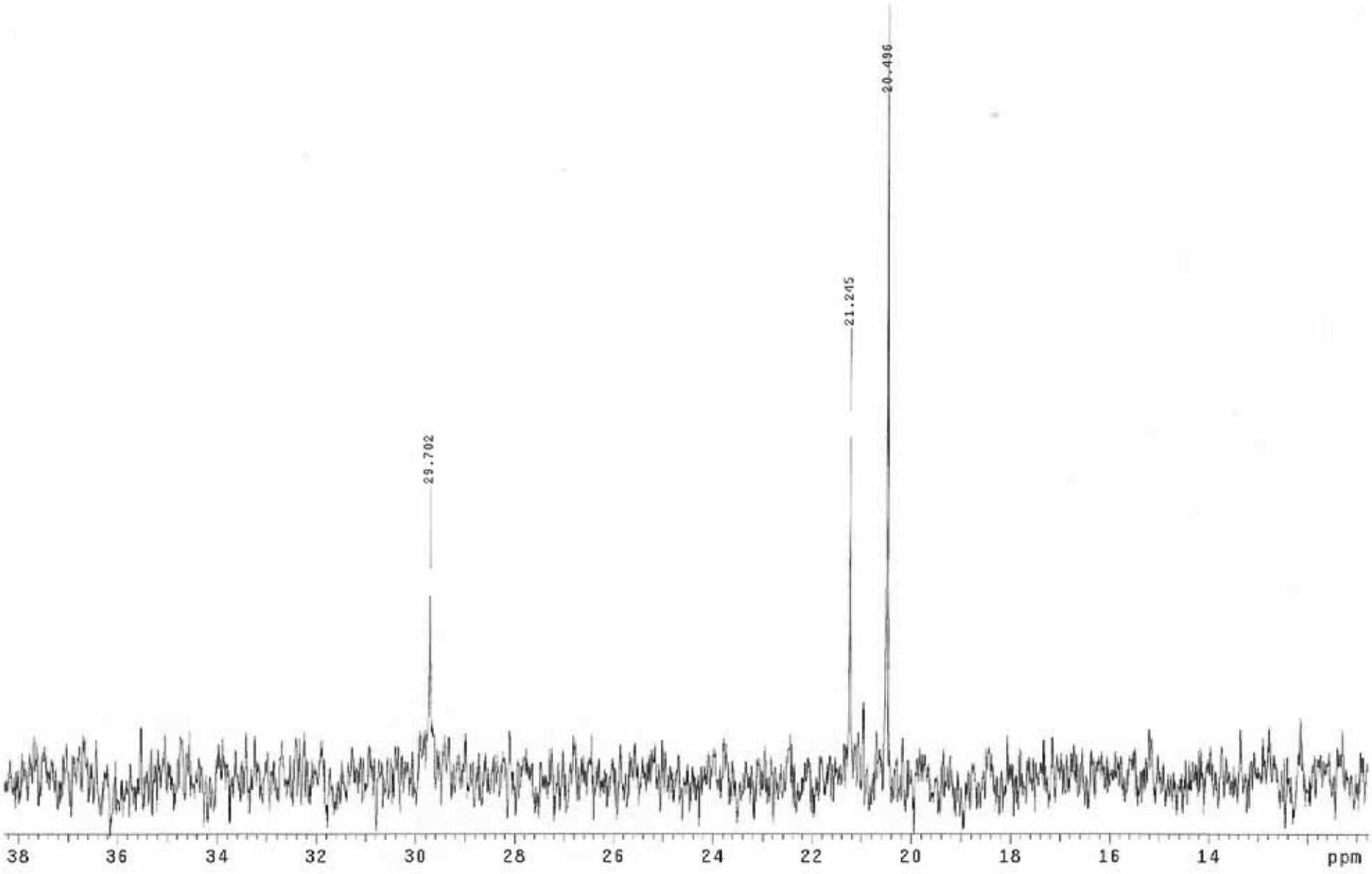


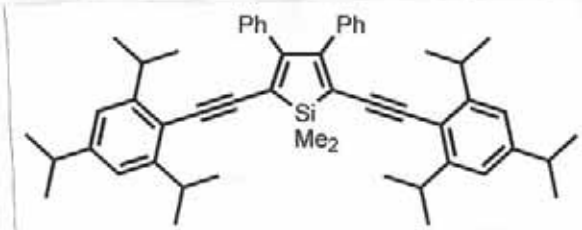


9AB11Rx1
TEMP = 40C

Pulse Sequence: s2pul



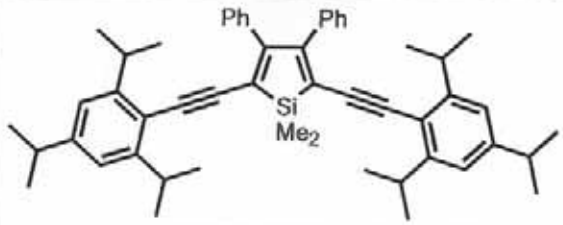


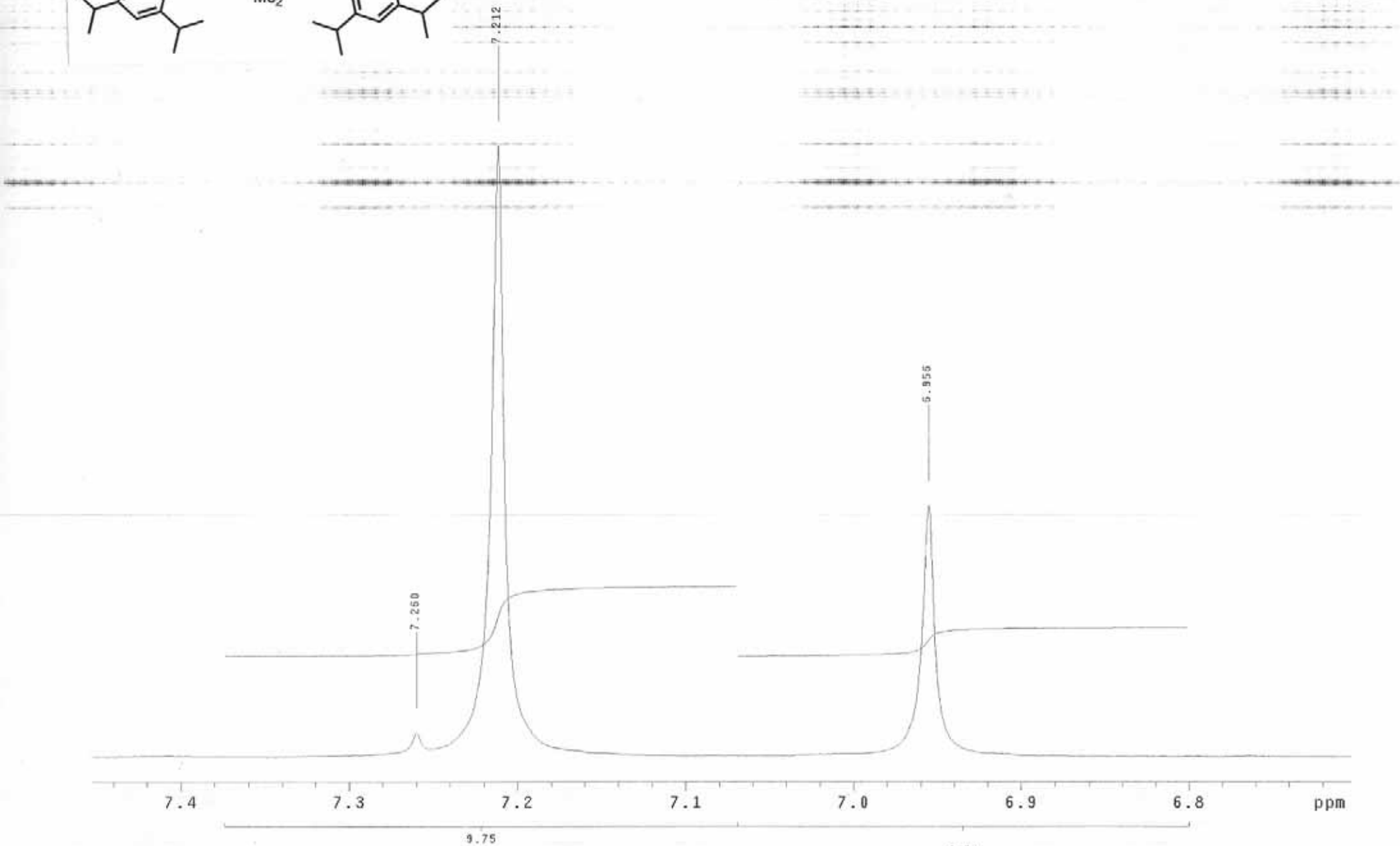


8 7 6 5 4 3 2 1 0 ppm

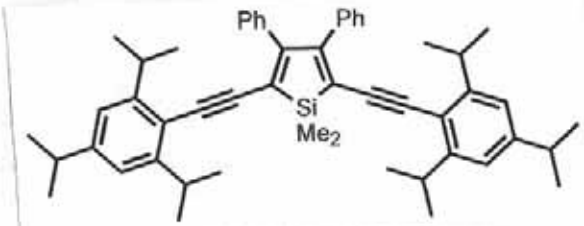
9.75 4.00 3.77 1.91 34.25 5.58

PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 15 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB37A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 15 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB37A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



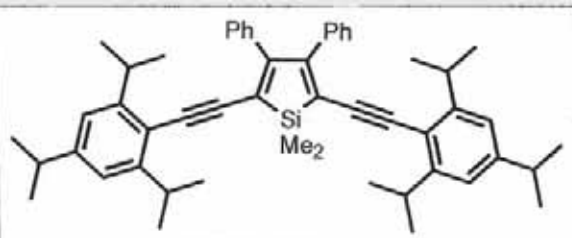
1362.01
1355.17
1348.34
1368.85
1341.50
1170.86
1164.02
1156.84
1150.00
1143.16

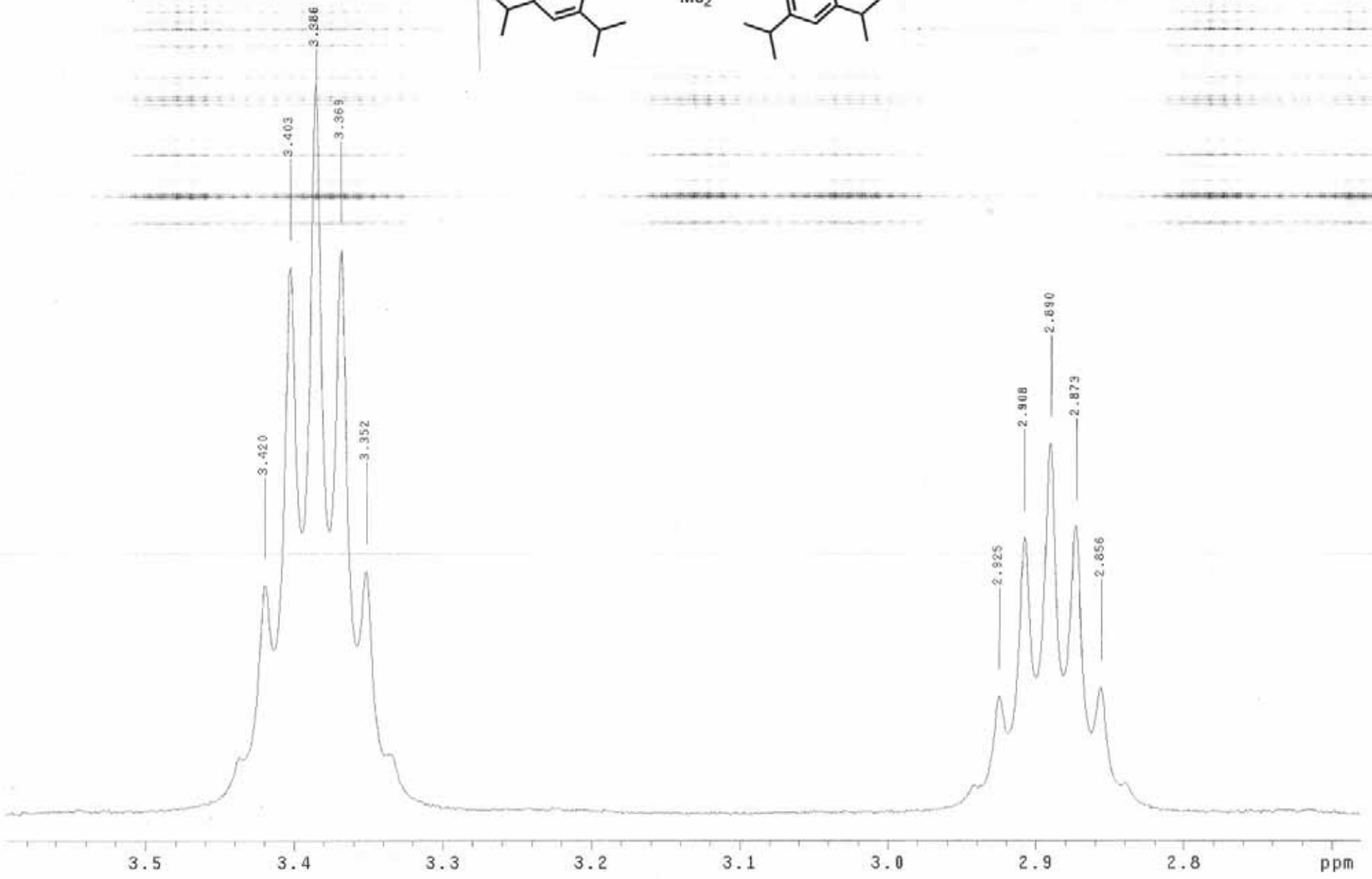
3.5 3.4 3.3 3.2 3.1 3.0 2.9 2.8 ppm

3.77

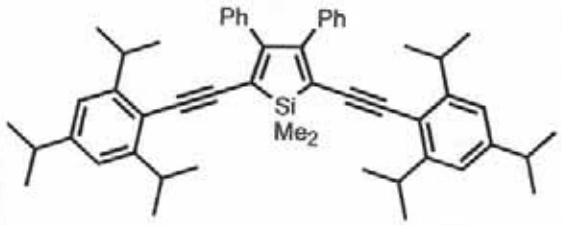
1.91

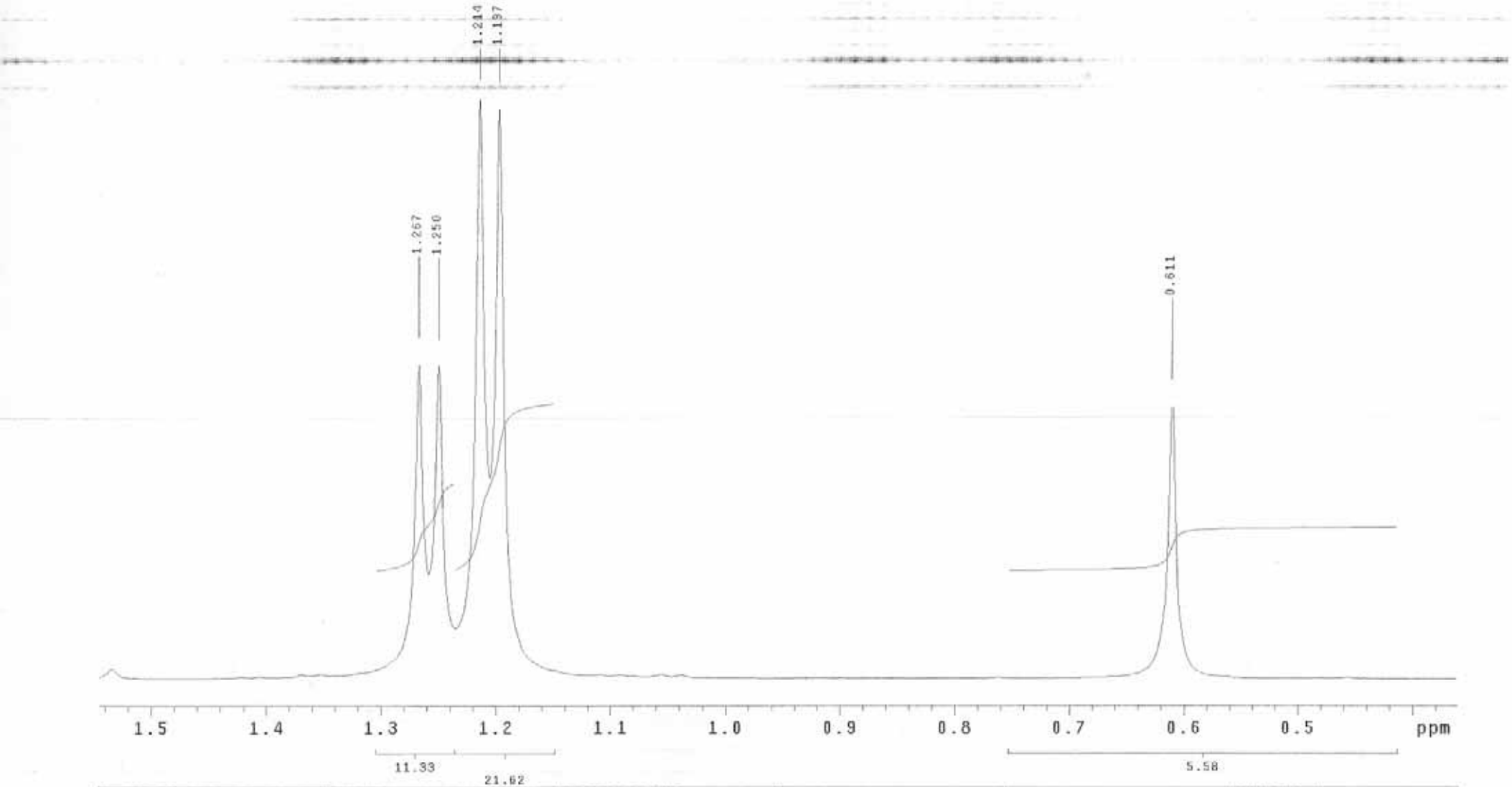
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 15 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB37A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmrG"



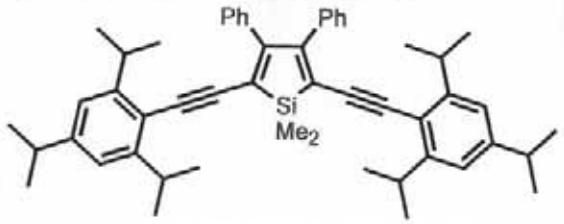


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 15 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB37A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 15 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB37A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

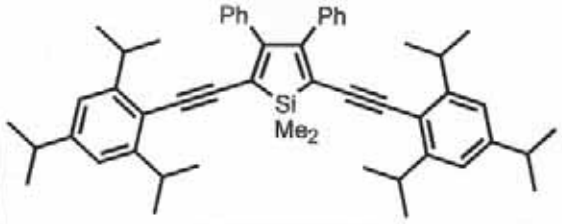


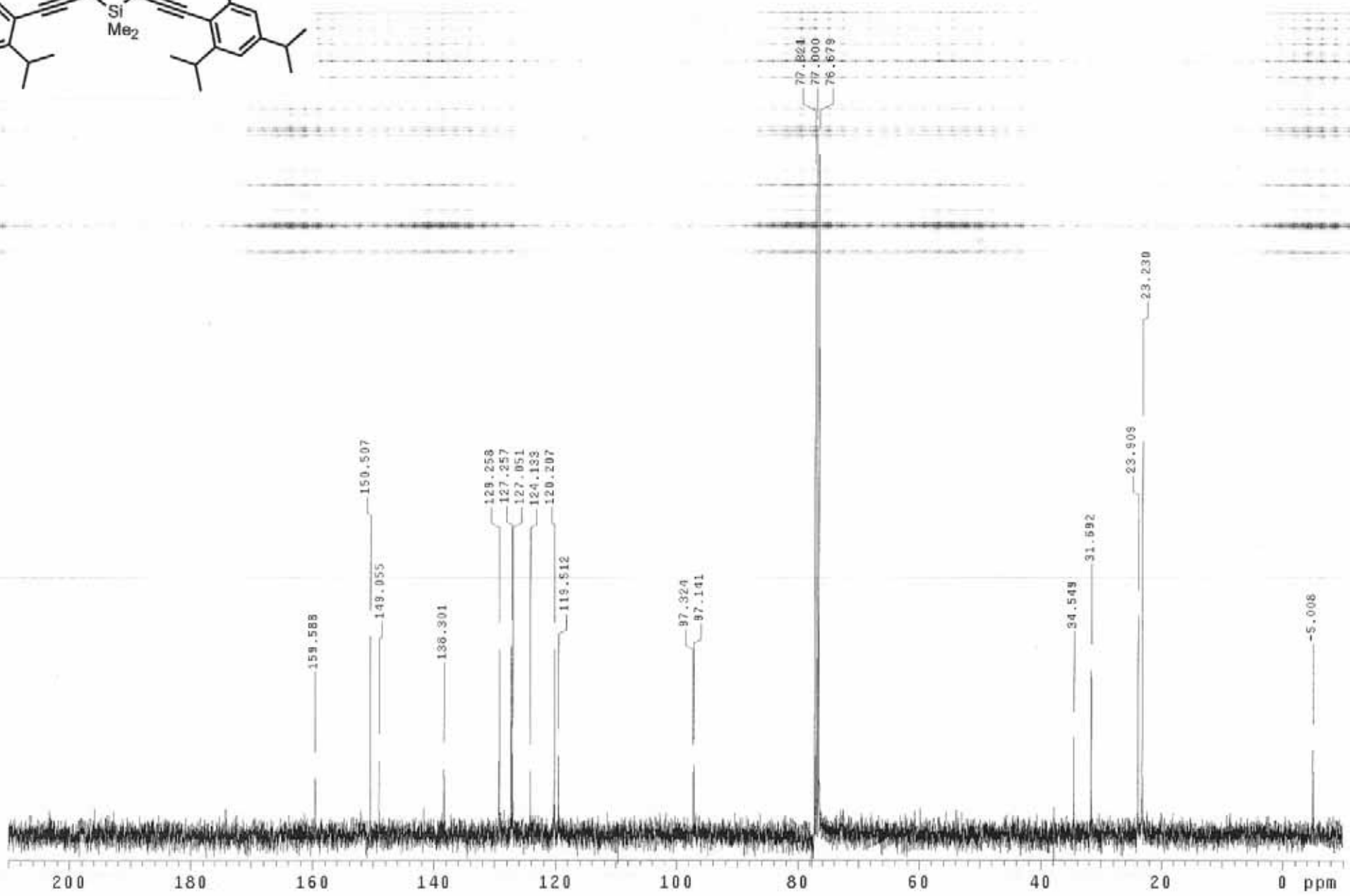
485.93
479.05
507.13
500.29
244.51

1.5 1.4 1.3 1.2 1.1 1.0 0.9 0.8 0.7 0.6 0.5 ppm

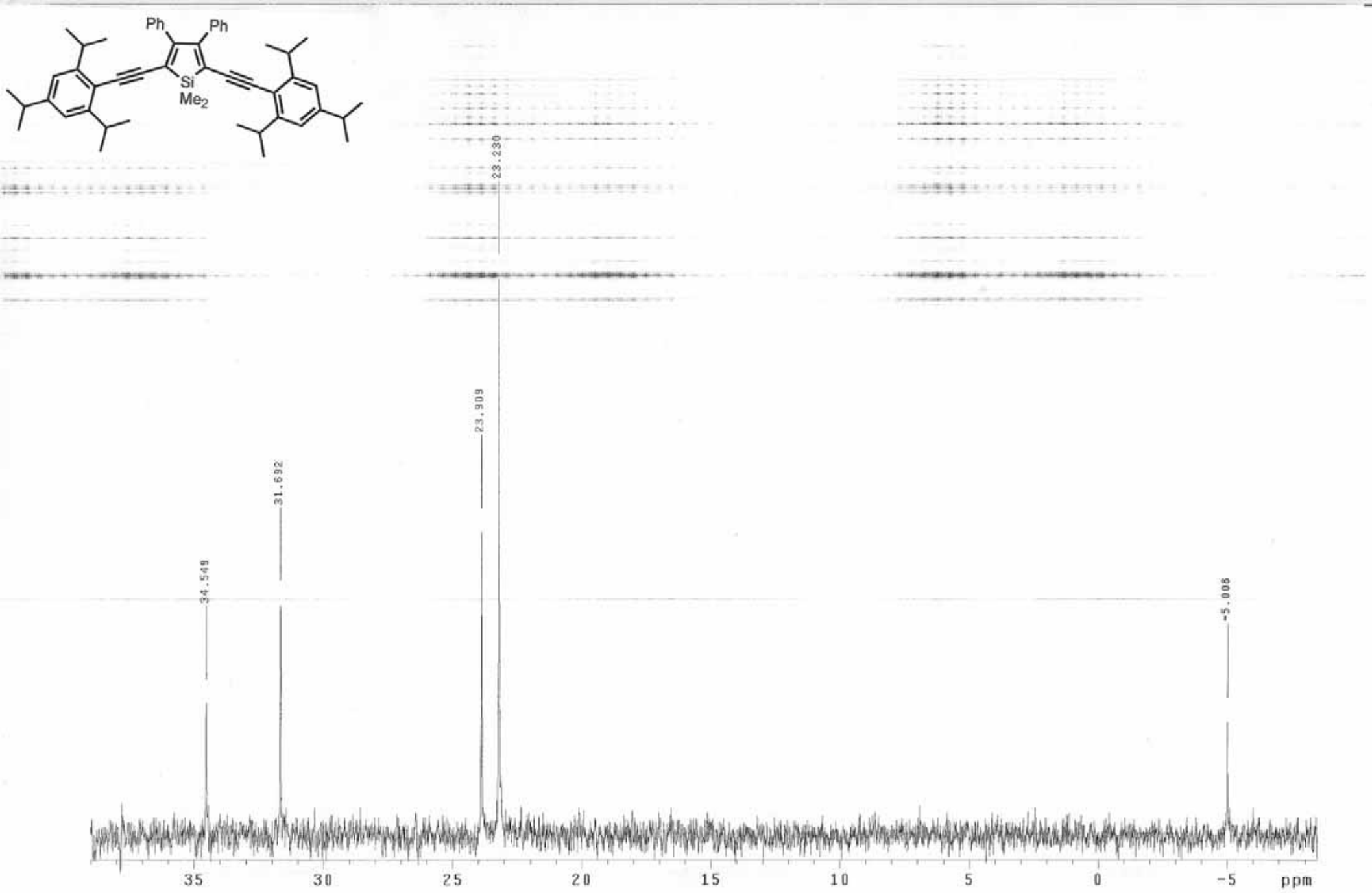
11.33
21.62
5.58

PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 15 repetitions	OBSERVE H1, 400.2689778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB37A-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmrG"

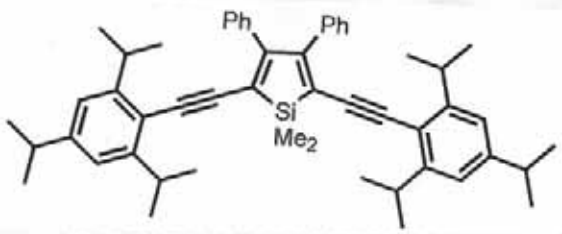


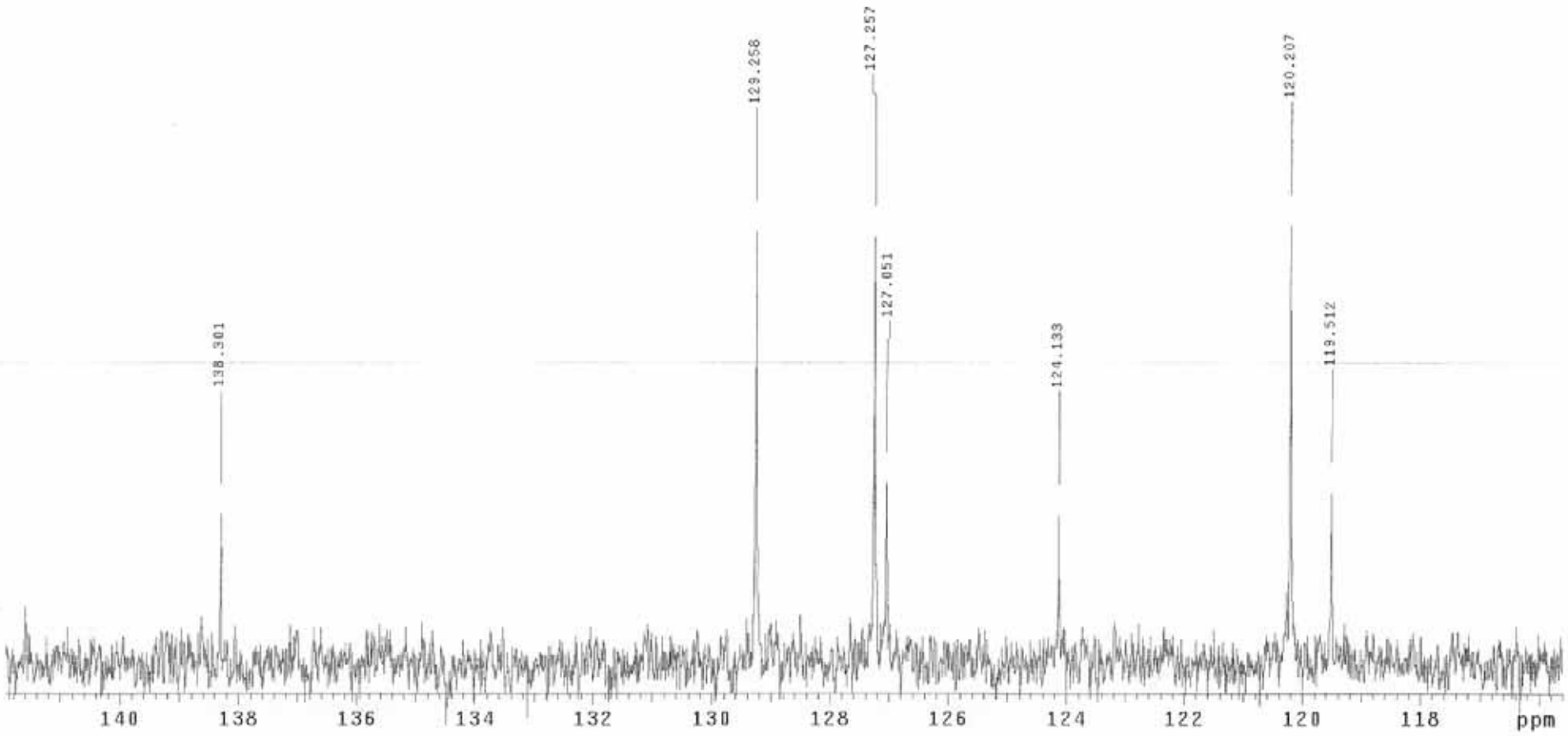


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 82 repetitions	OBSERVE C13, 100.6472149 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 4 minutes			9A837A-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

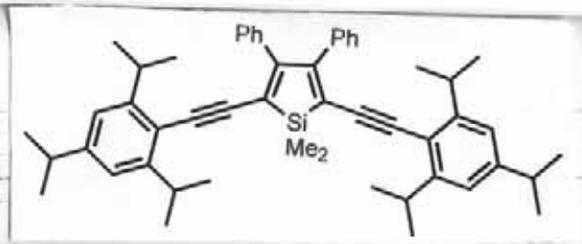


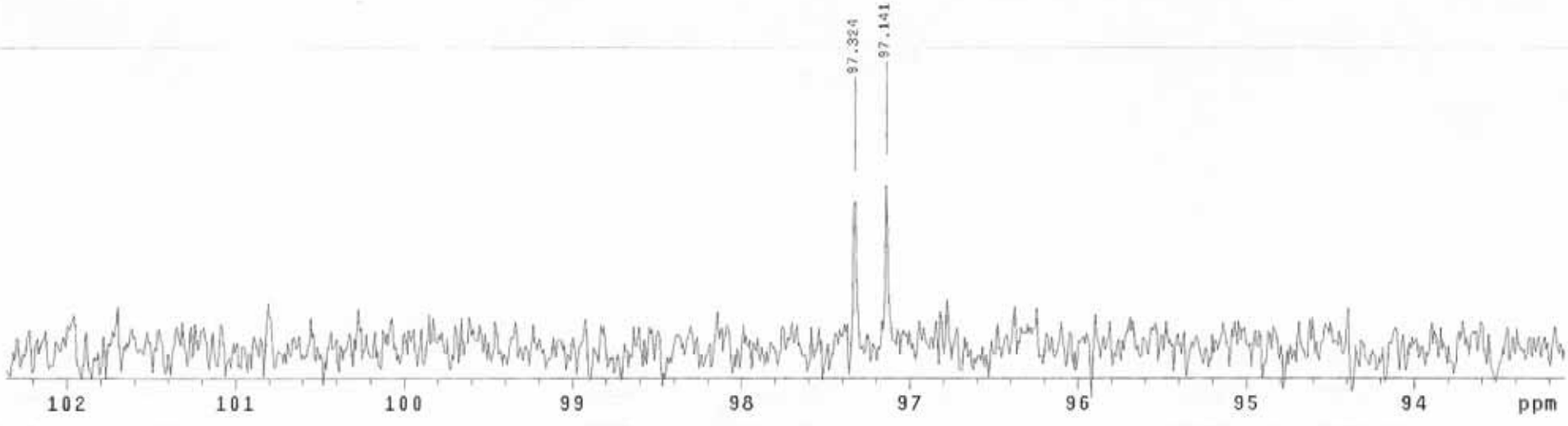
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 99 repetitions	OBSERVE C13, 100.6472149 DECOUPLE H1, 400.2689855 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB37A-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



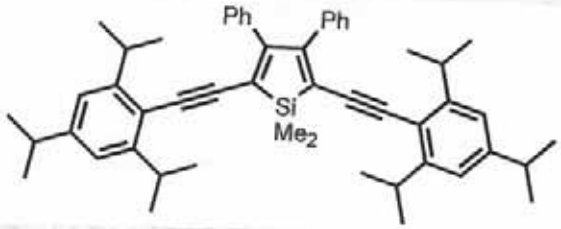


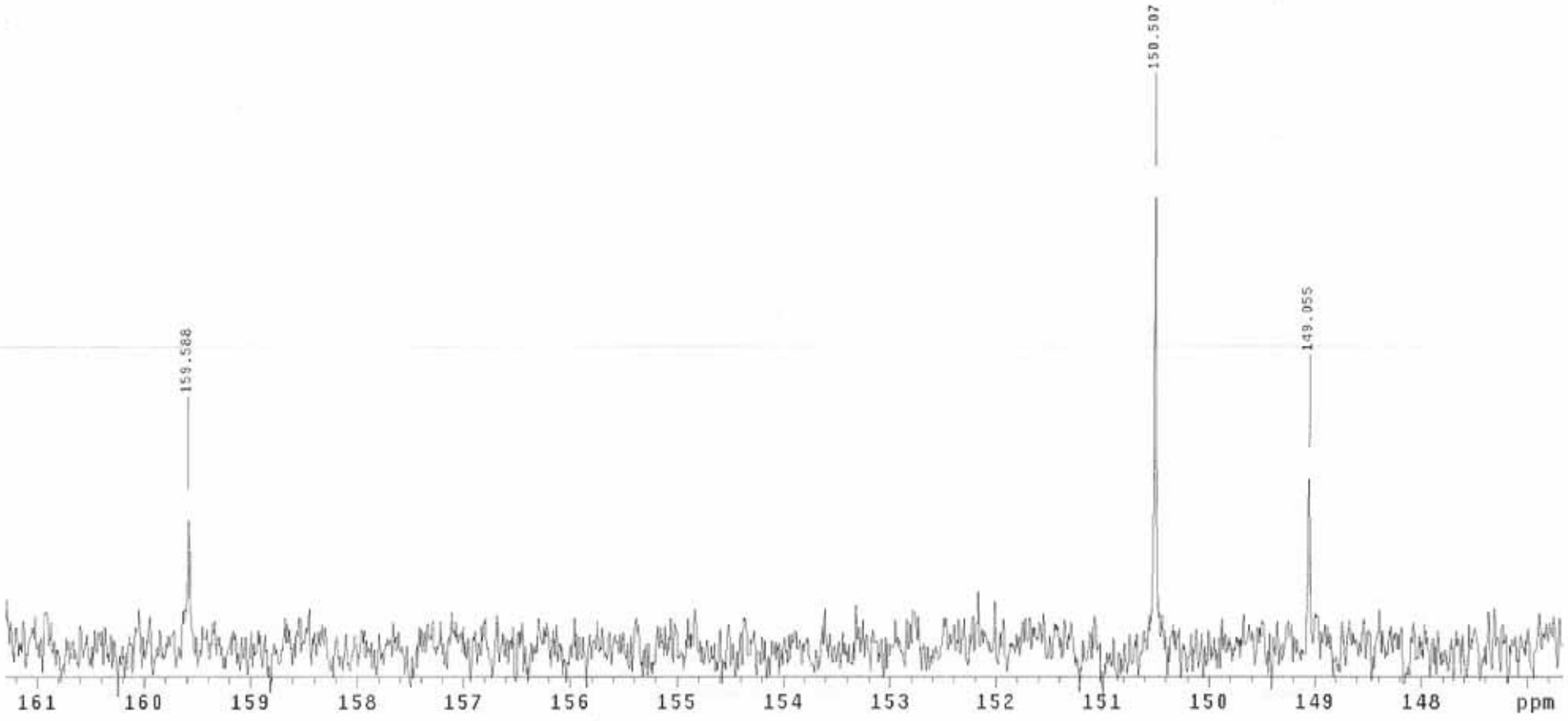
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 91 repetitions	OBSERVE C13, 100.6472149 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB37A-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



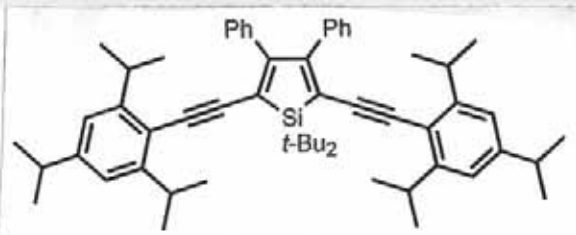


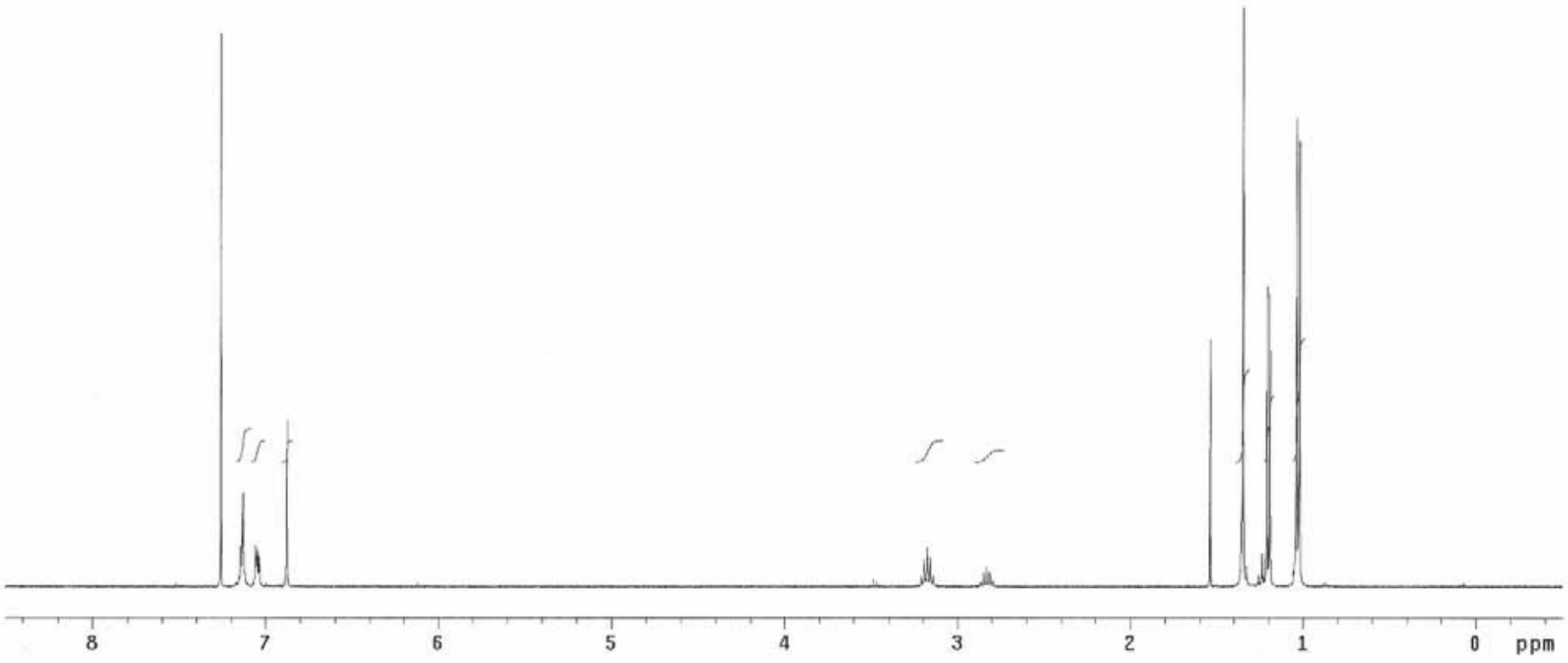
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 93 repetitions	OBSERVE C13, 100.6472148 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 5 minutes			9AB37A-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



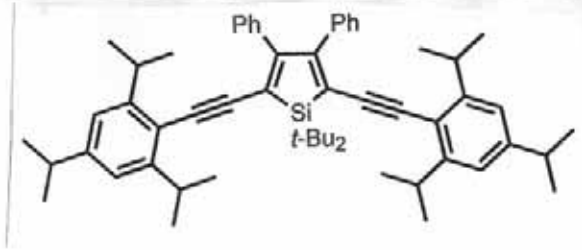


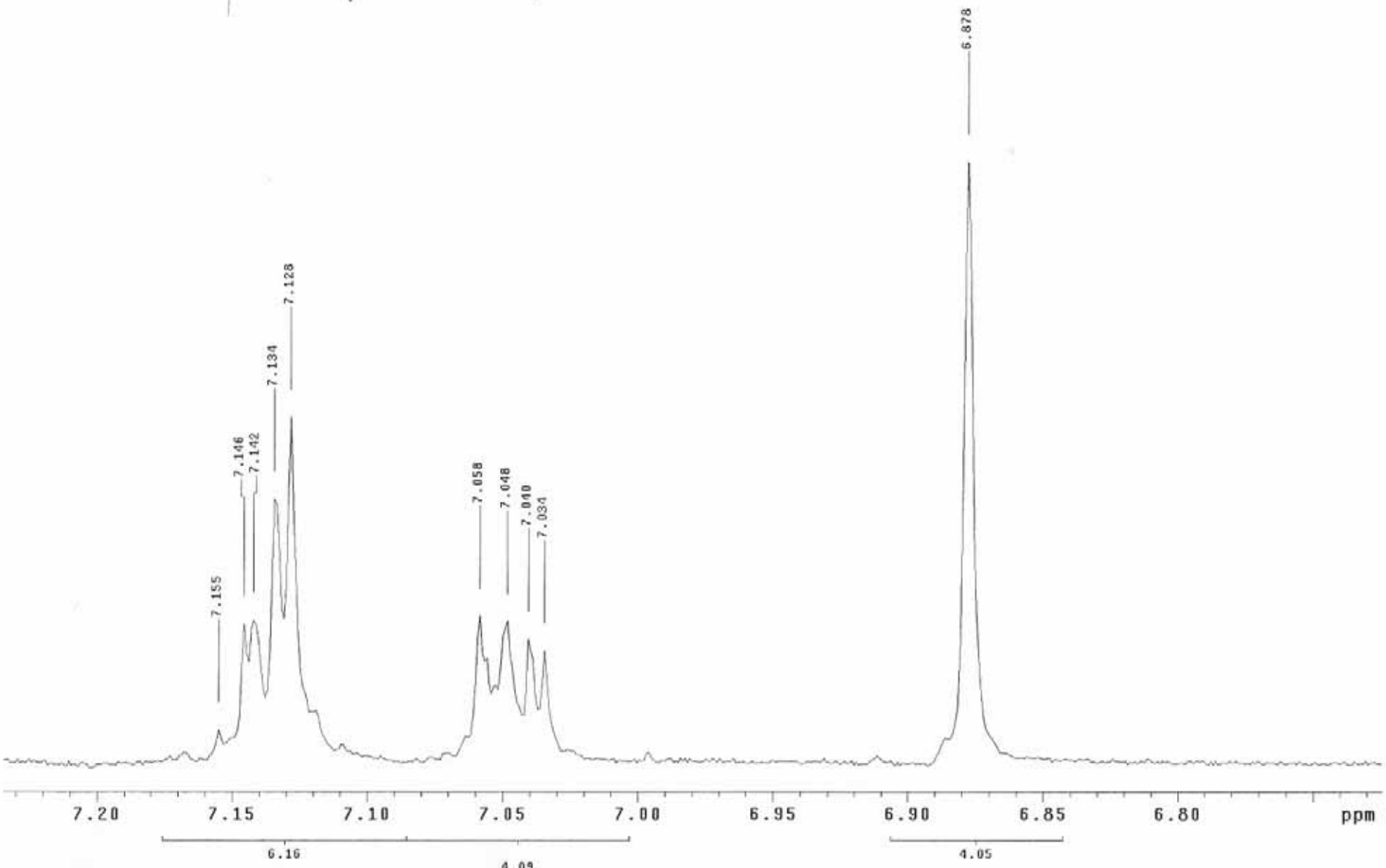
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 87 repetitions	OBSERVE C13, 100.6472149 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 4 minutes			9AB37A-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



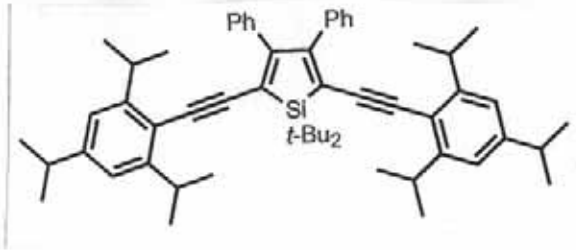


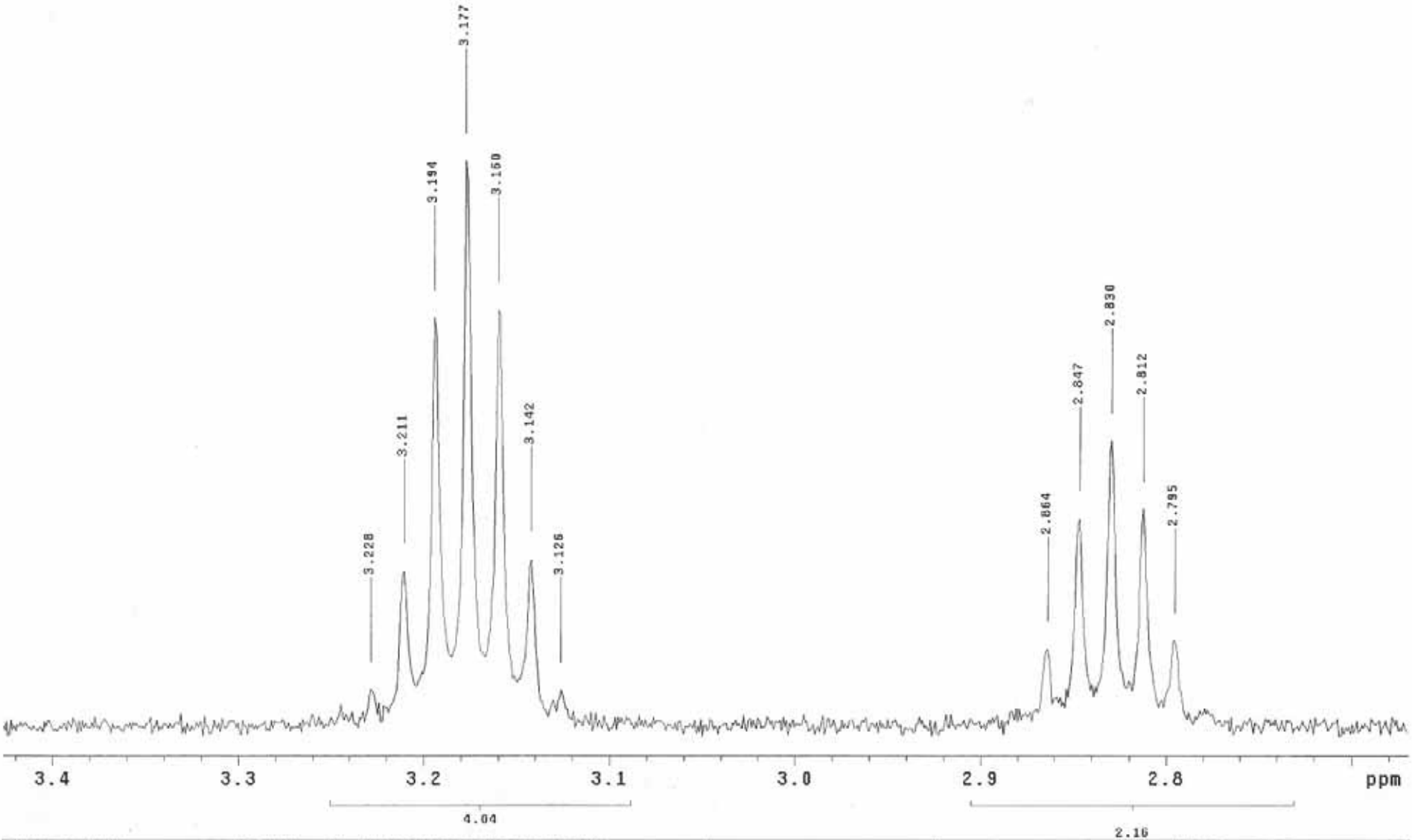
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 26 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB45 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



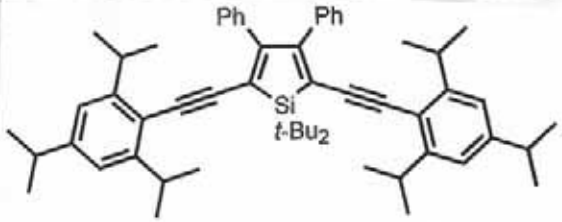


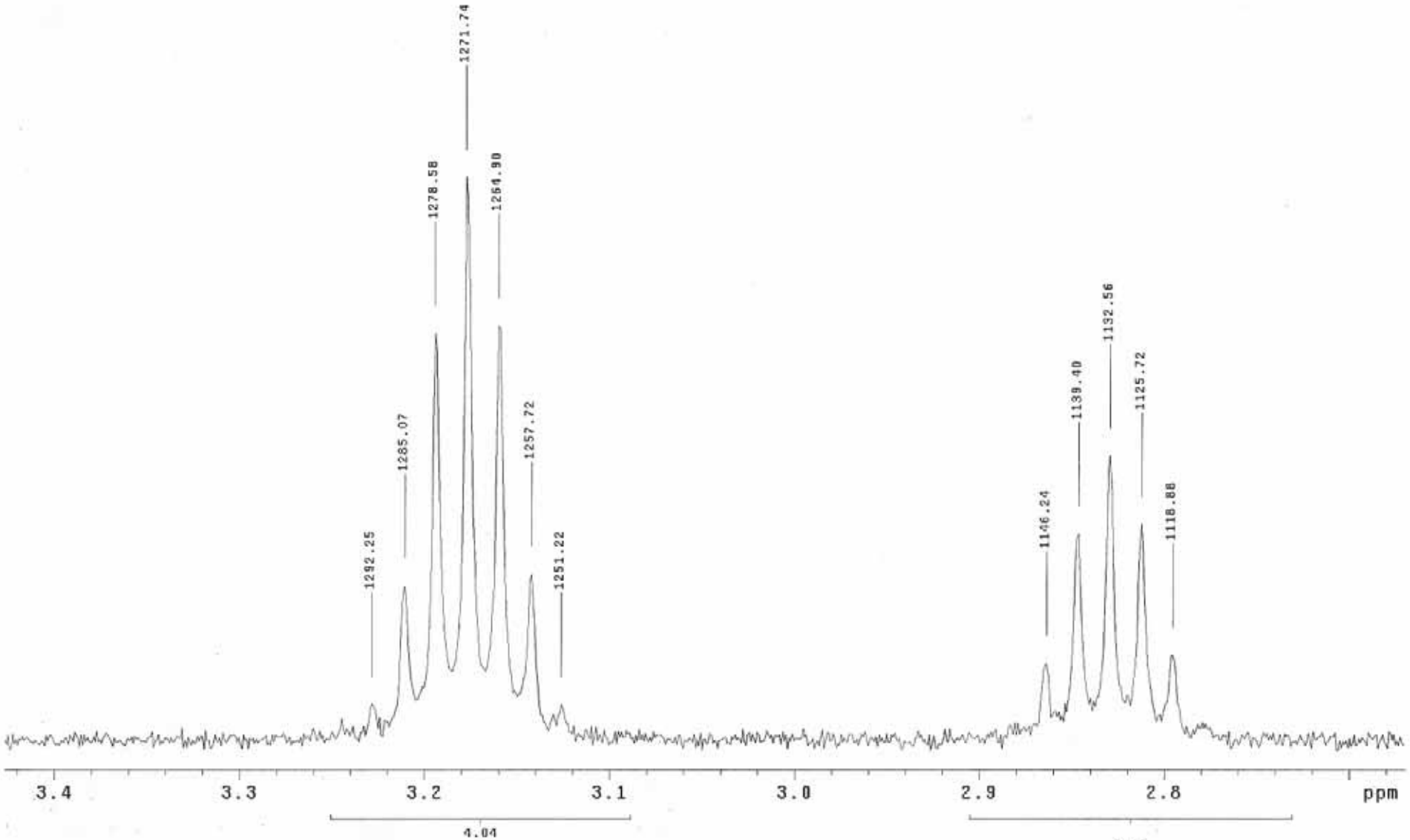
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 30 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB45 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



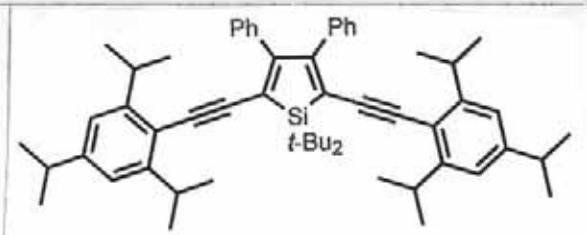


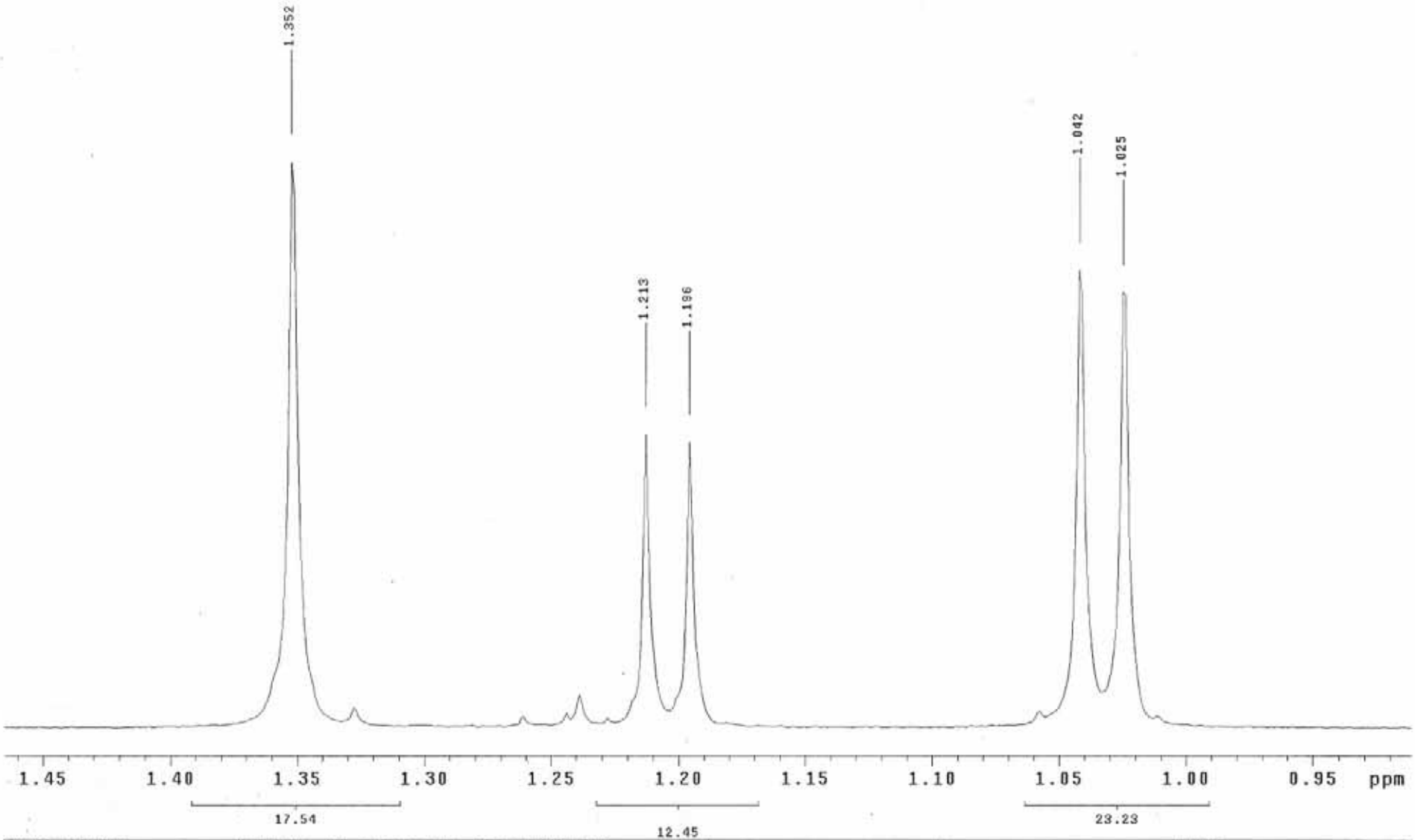
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 35 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB45 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



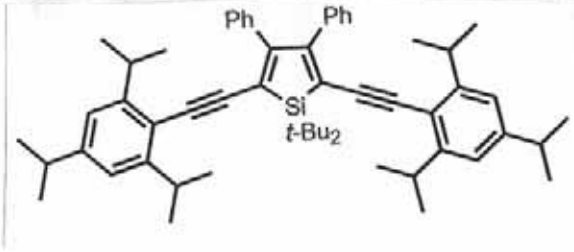


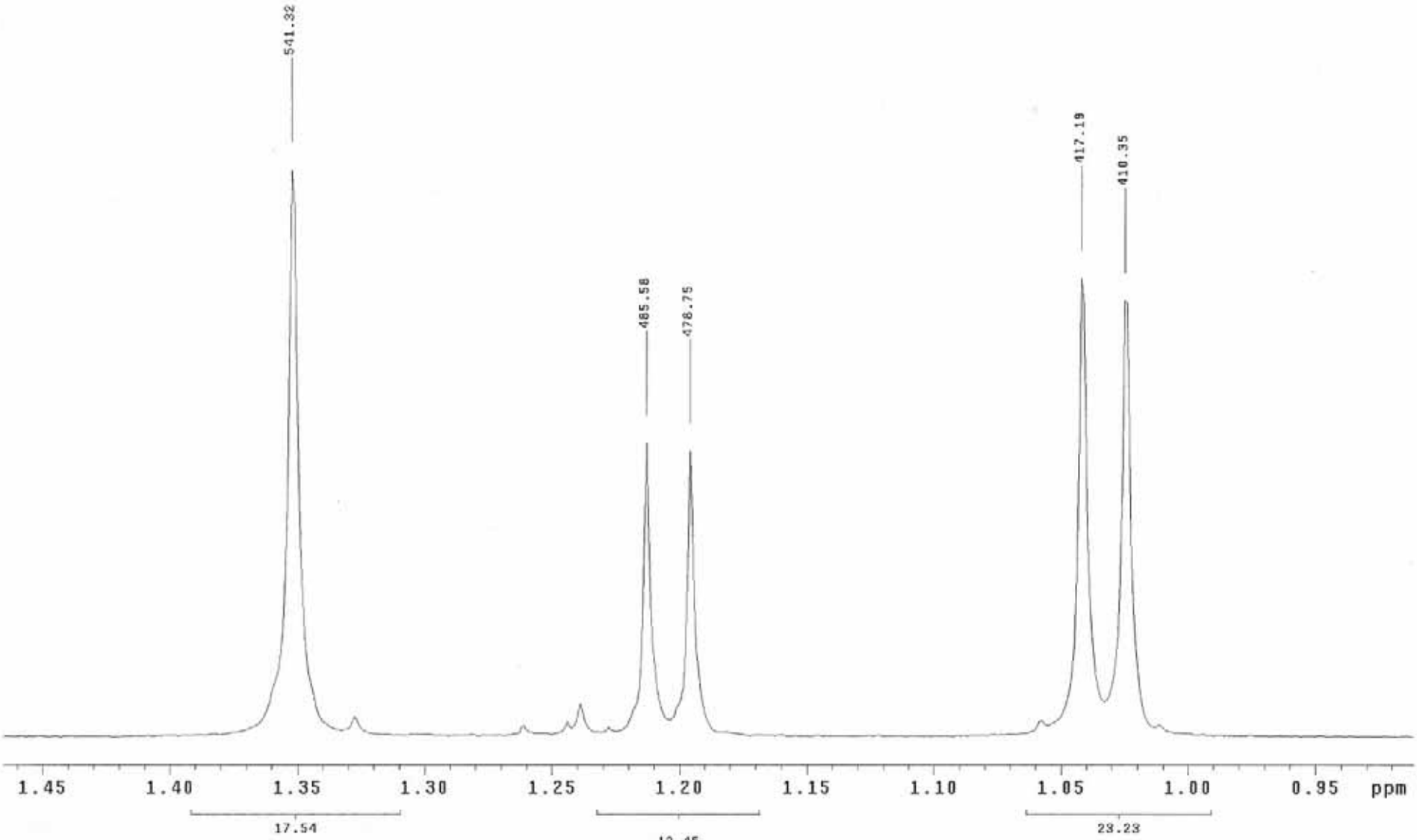
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 38 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB45 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



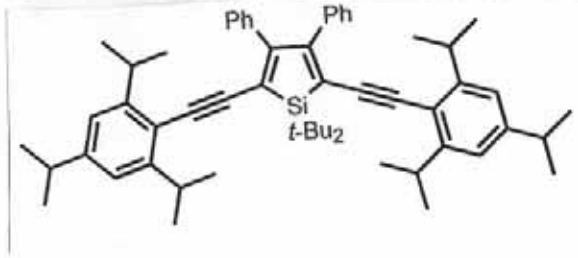


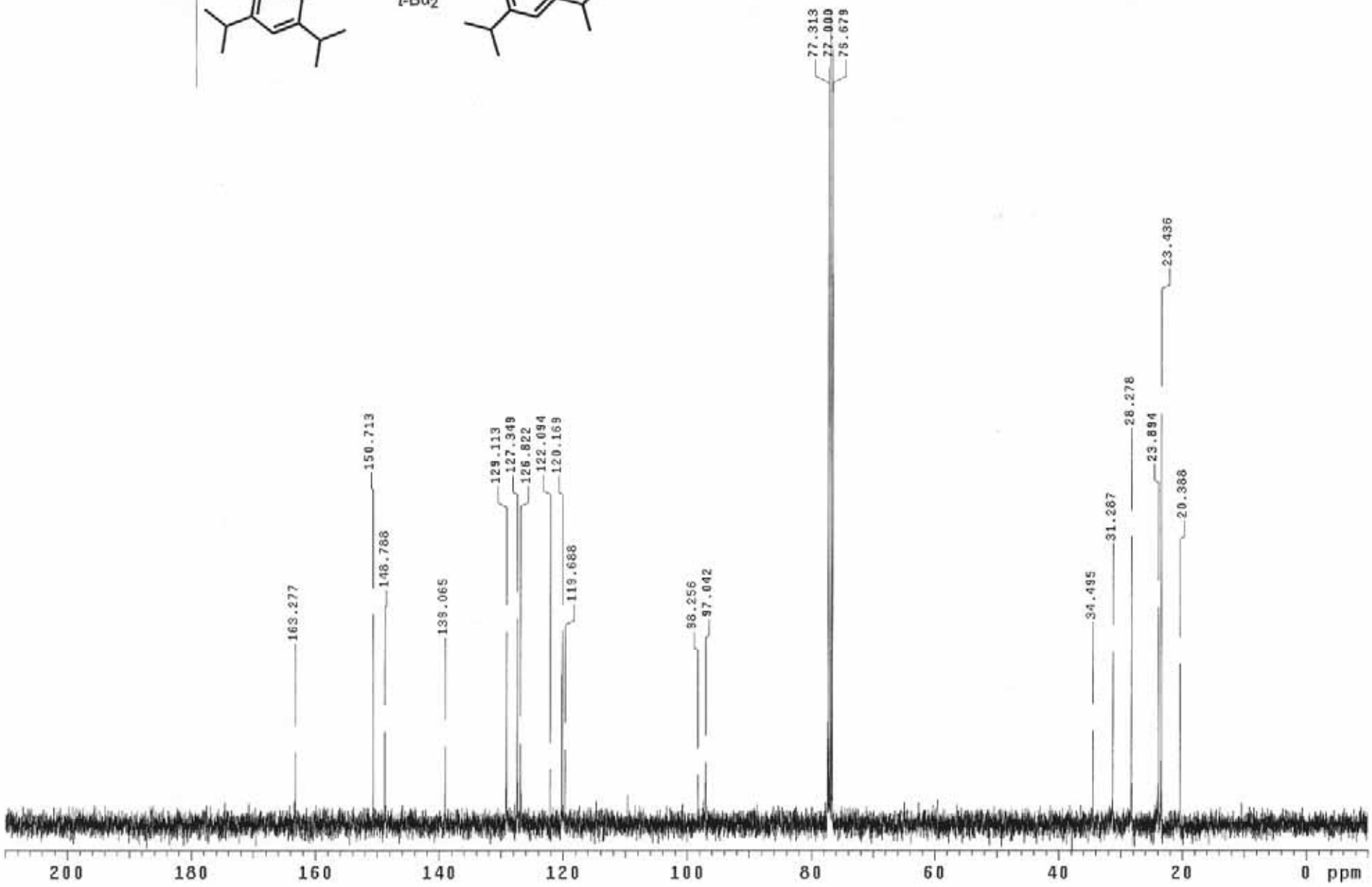
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 42 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB45 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



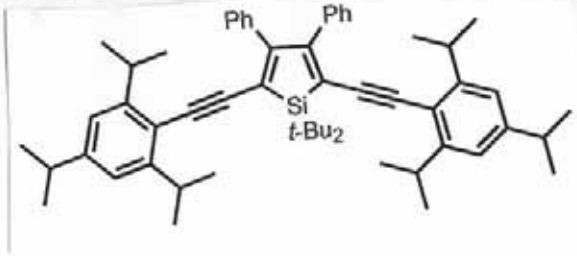


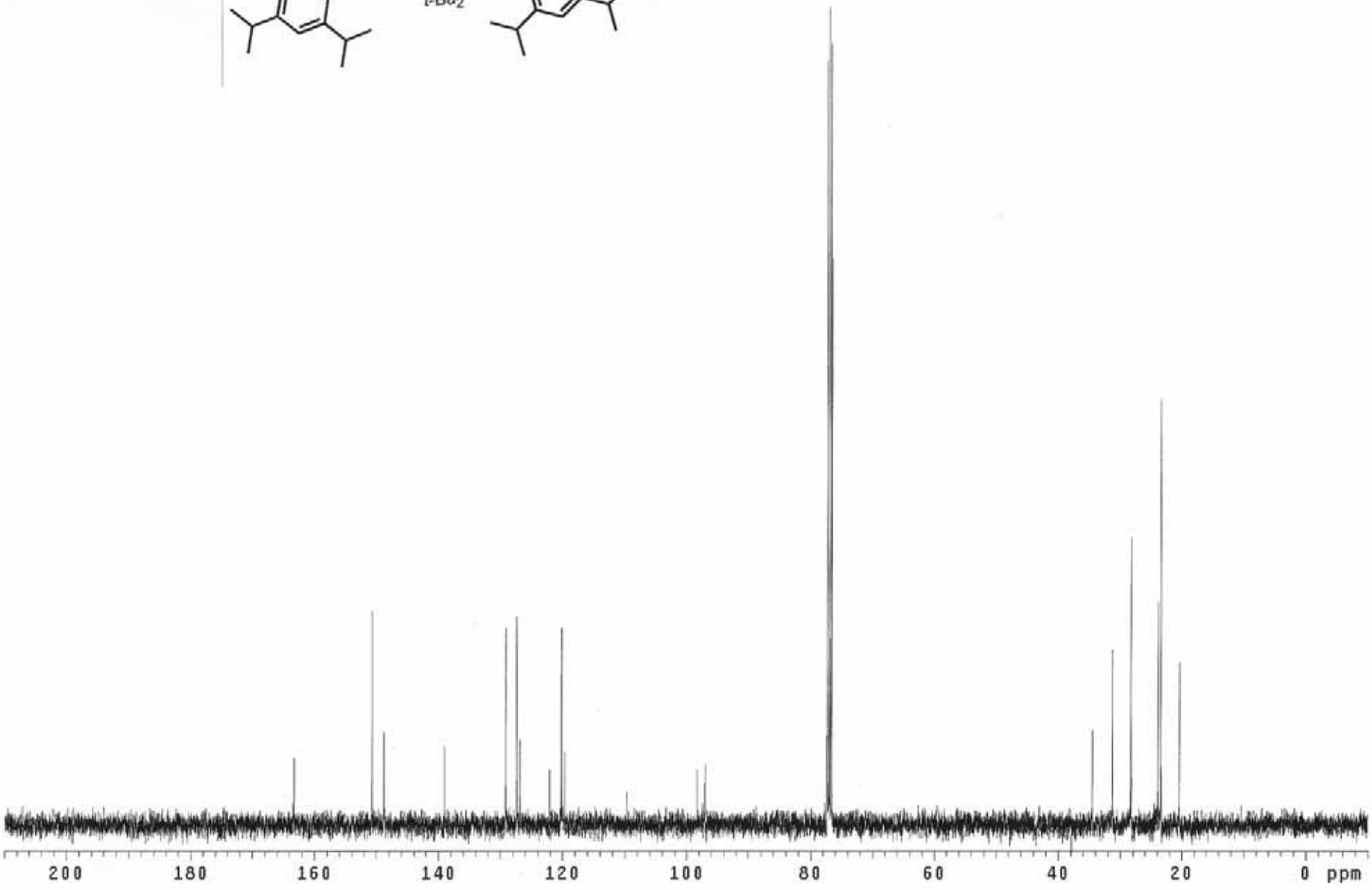
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 44 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB45 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



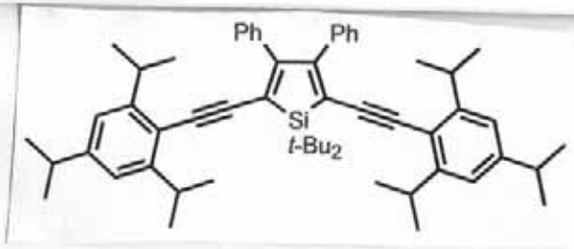


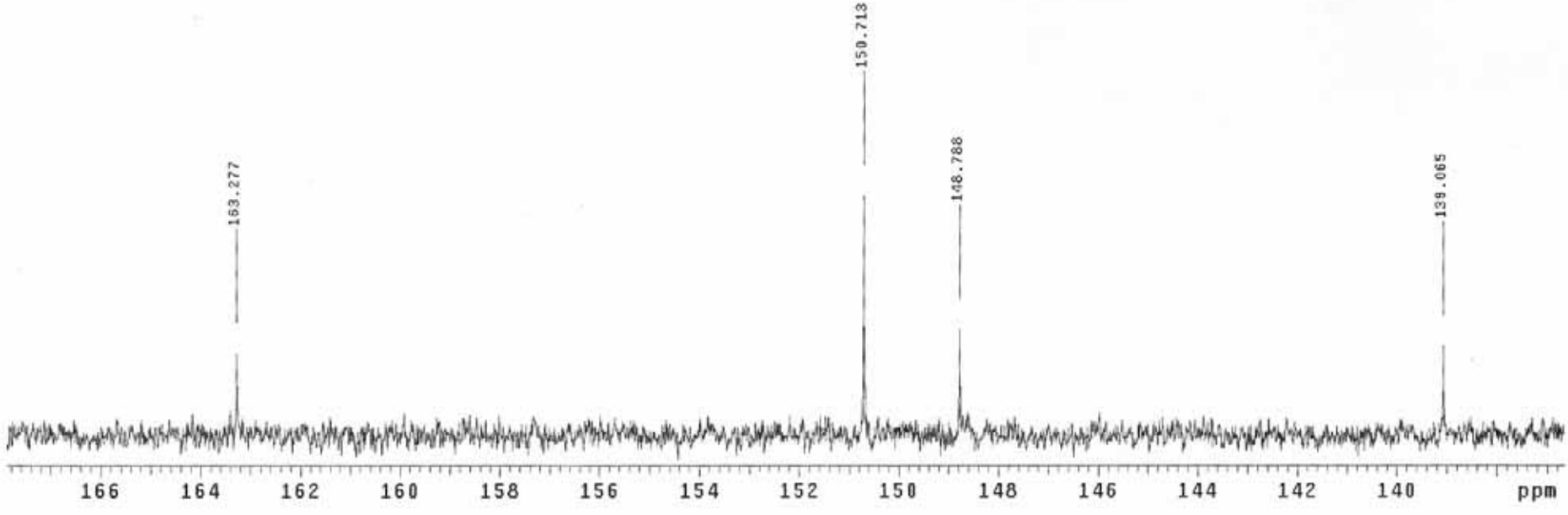
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 121 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 6 minutes			9AB45-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



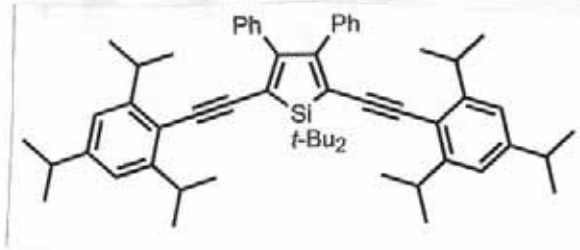


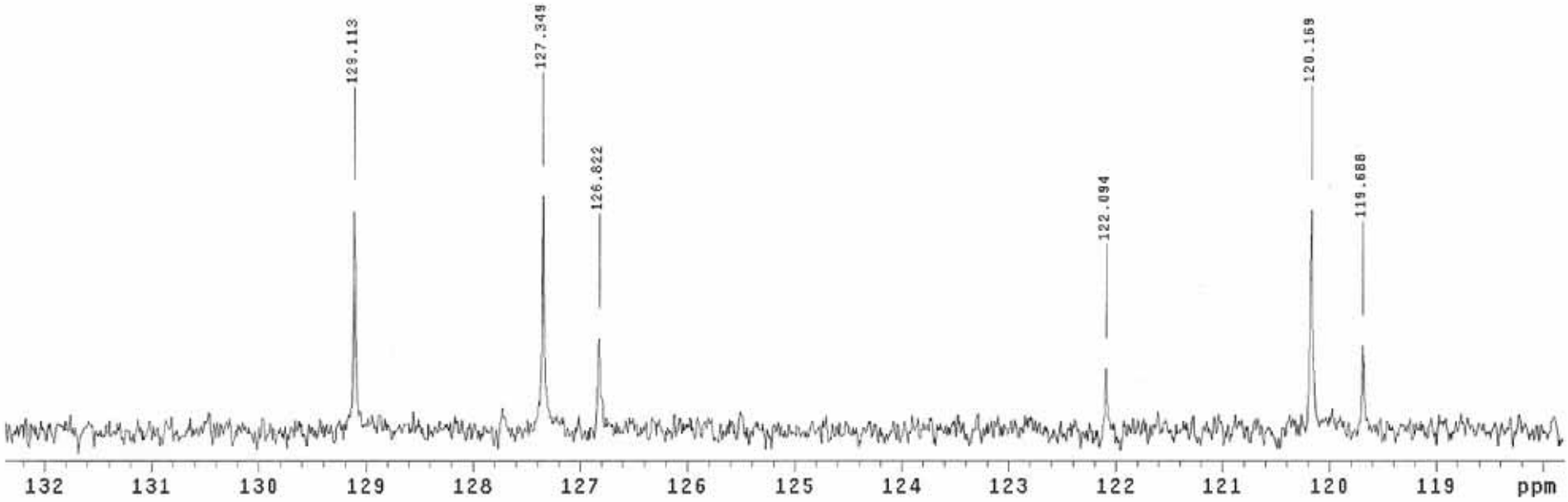
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 144 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 7 minutes			9AB45-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



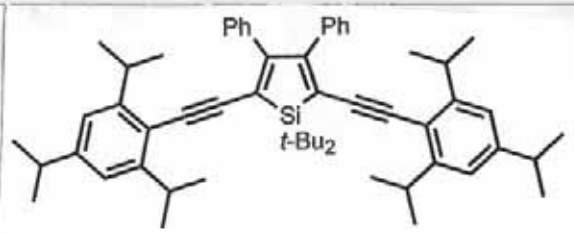


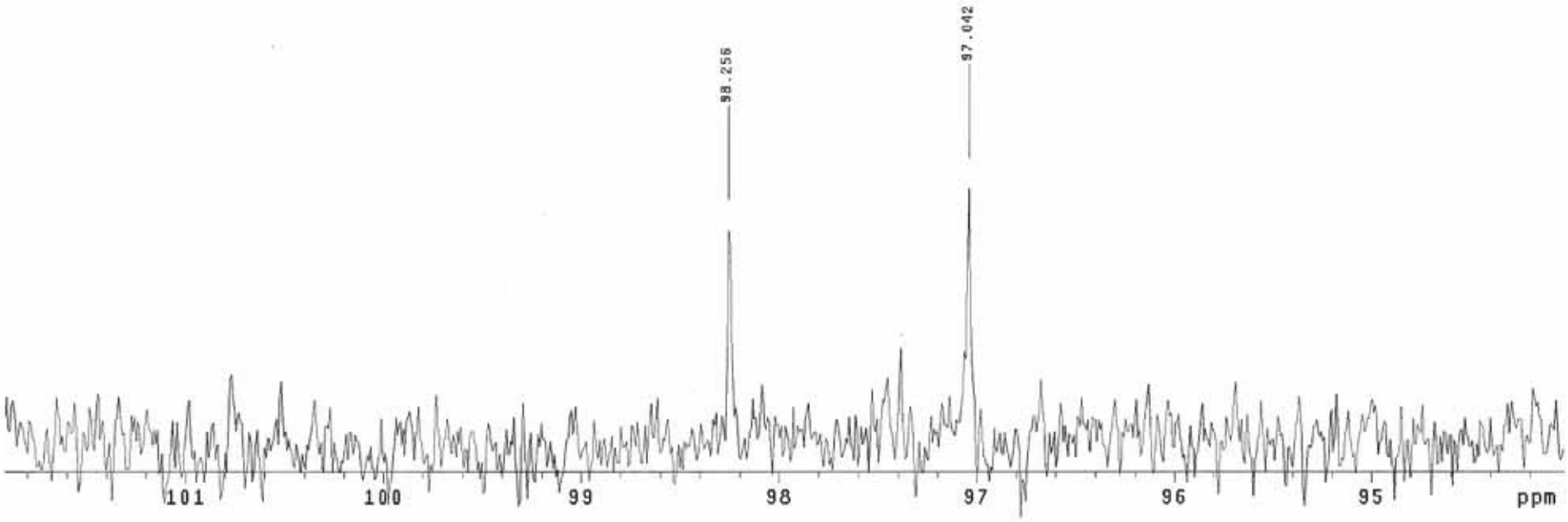
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 127 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 6 minutes			9AB45-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



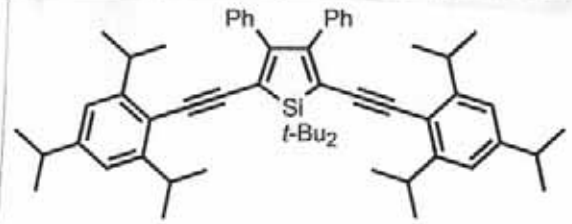


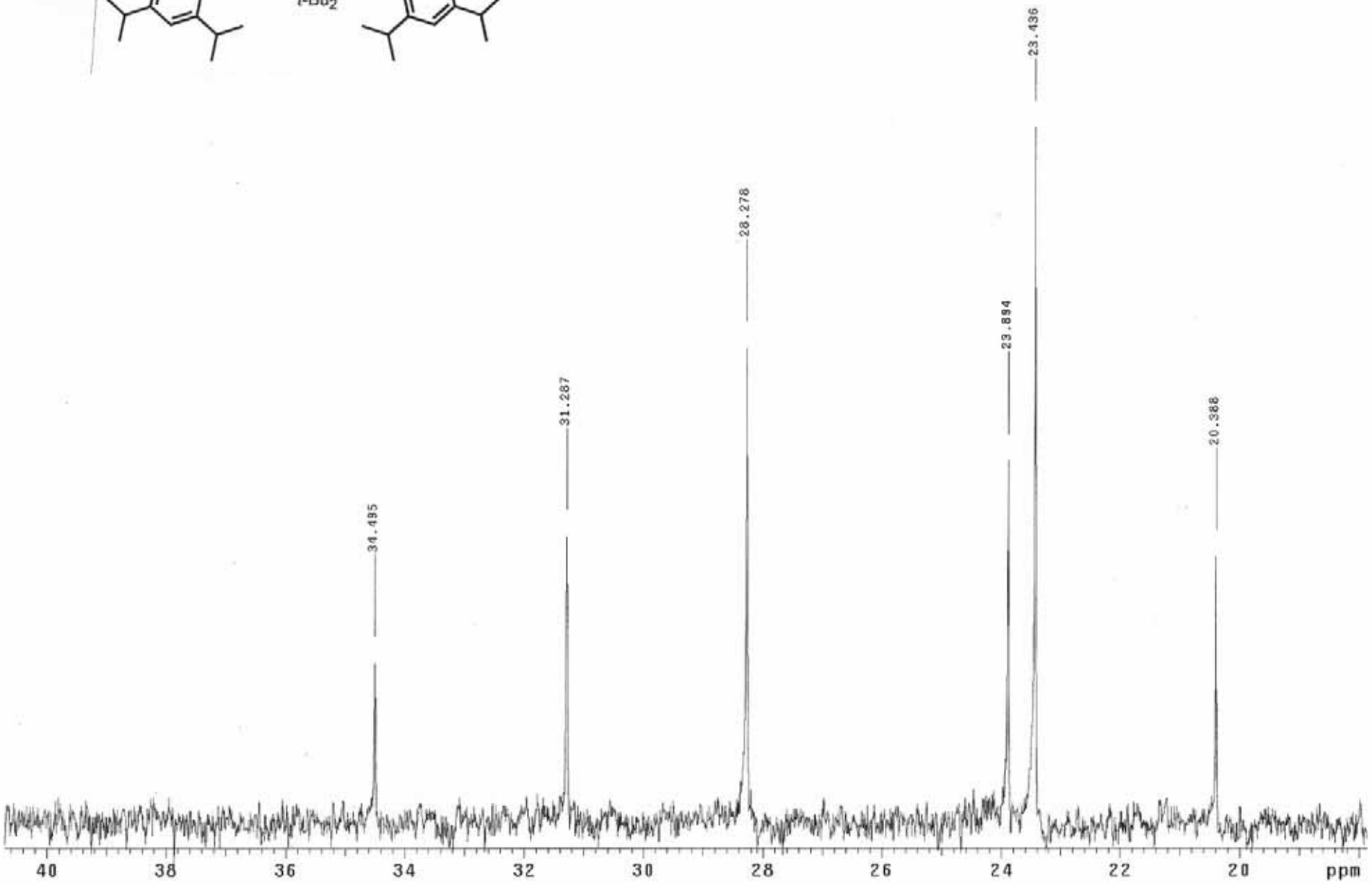
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 130 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 7 minutes			9AB45-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



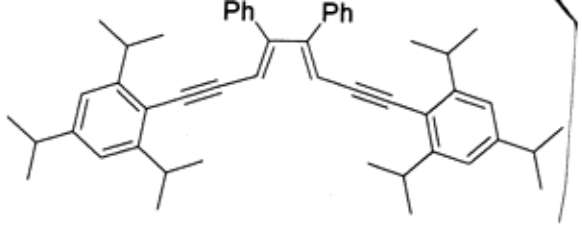


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 136 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 7 minutes			9A845-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





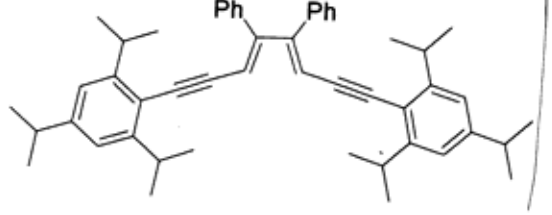
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 140 repetitions	OBSERVE C13, 100.6472141 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 7 minutes			9AB45-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



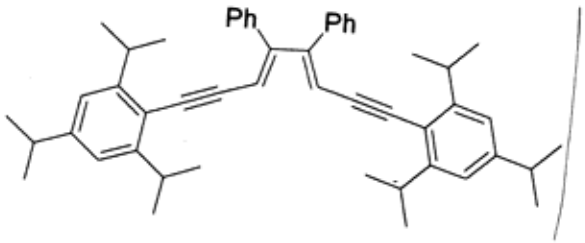
8 7 6 5 4 3 2 1 0 ppm

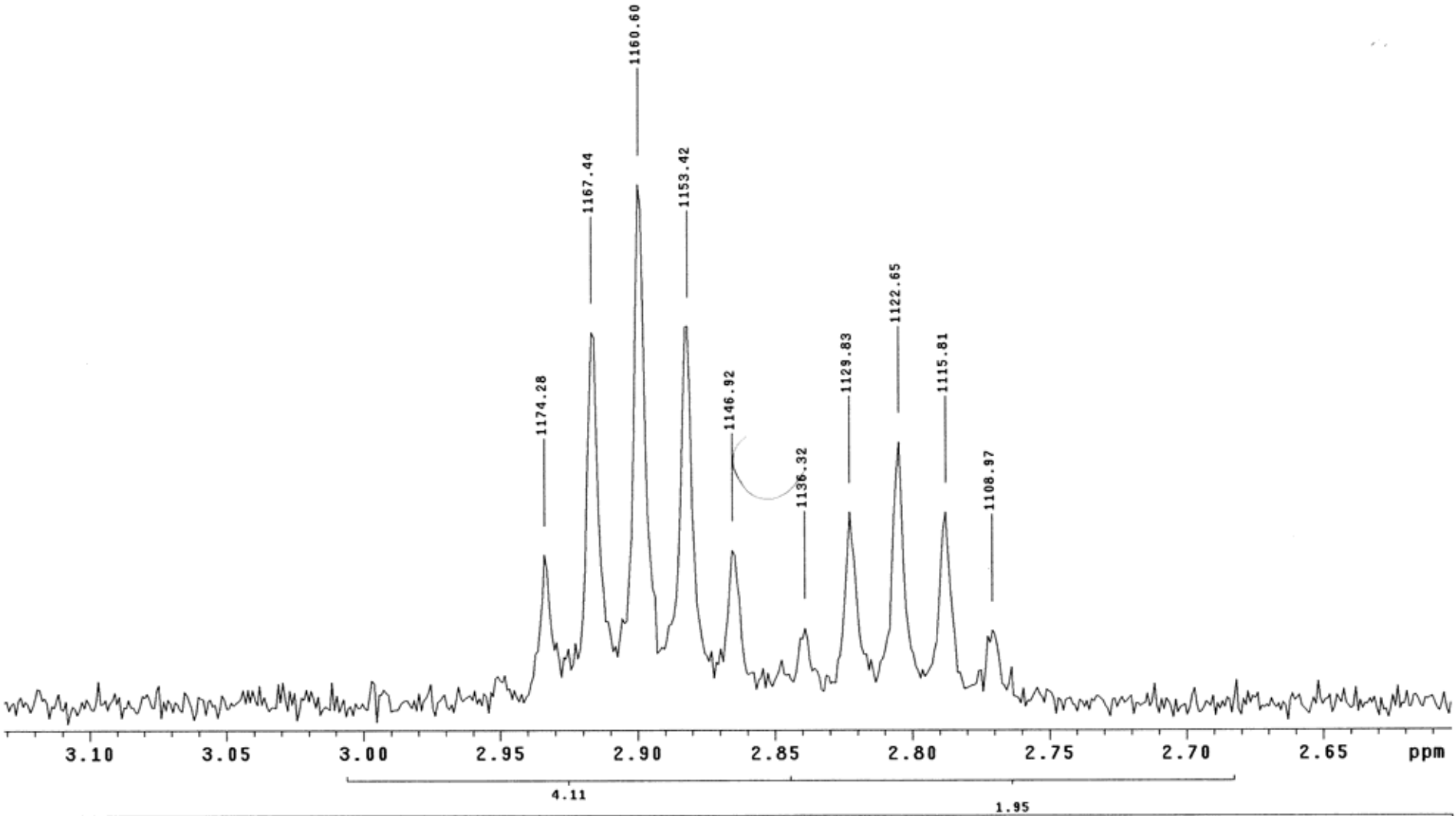
10.59 4.00 1.91 4.11 1.95 14.09 24.63

PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 41 repetitions	OBSERVE H1, 400.2669781	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB37-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB37-Rx1 INOVA-500 "nmrsr"

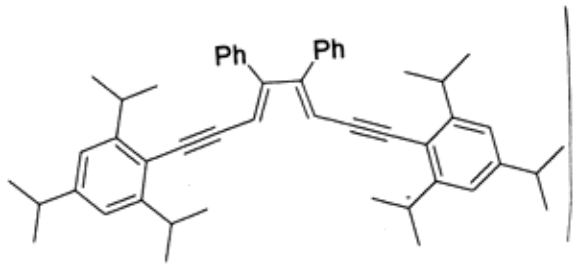


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 41 repetitions	OBSERVE H1, 400.2669781	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB37-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB37-Rx1 INOVA-500 "nmrsr"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 41 repetitions	OBSERVE H1, 400.2669781	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB37-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB37-Rx1 INOVA-500 "nmrsr"

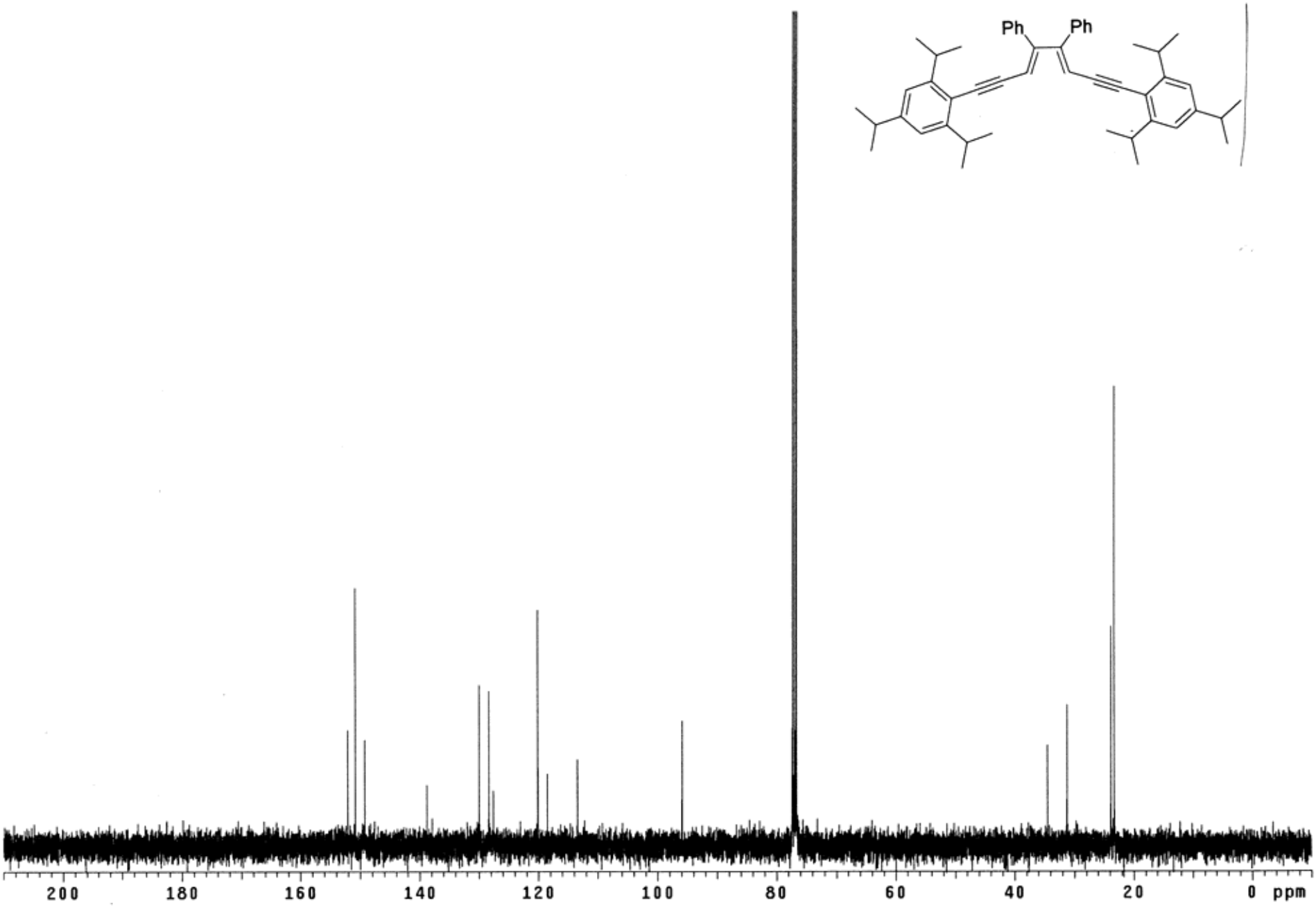


476.69
469.85
408.64
401.81

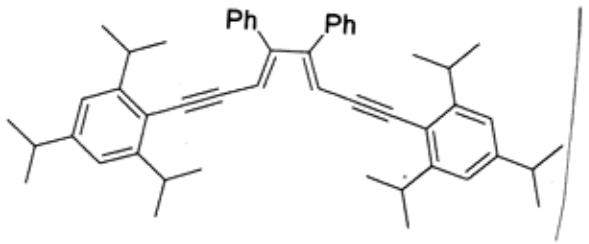
1.20 1.18 1.16 1.14 1.12 1.10 1.08 1.06 1.04 1.02 1.00 ppm

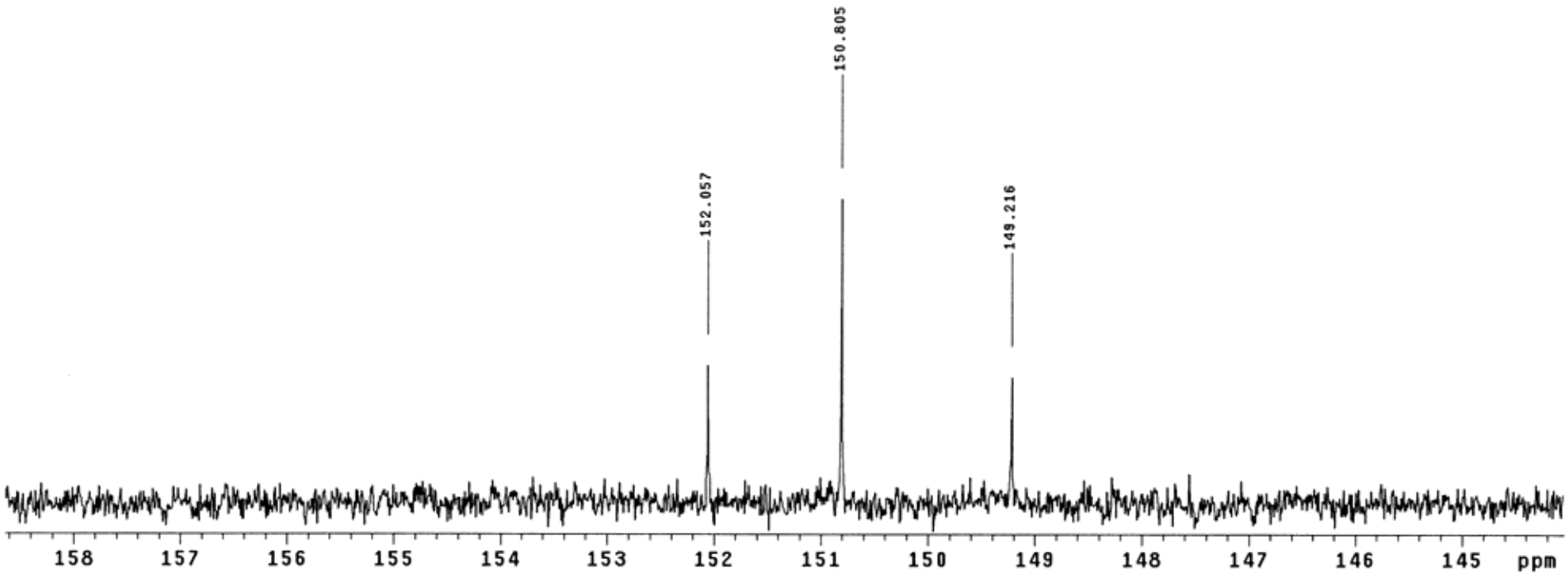
14.09
24.54

PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 41 repetitions	OBSERVE H1, 400.2669781	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB37-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB37-Rx1 INOVA-500 "nmrsr"

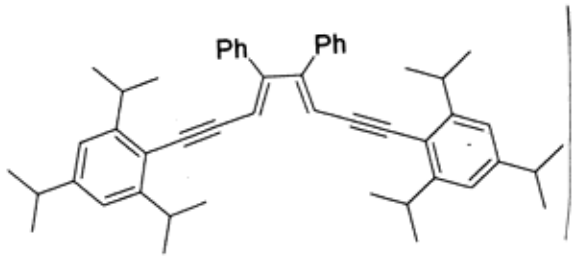


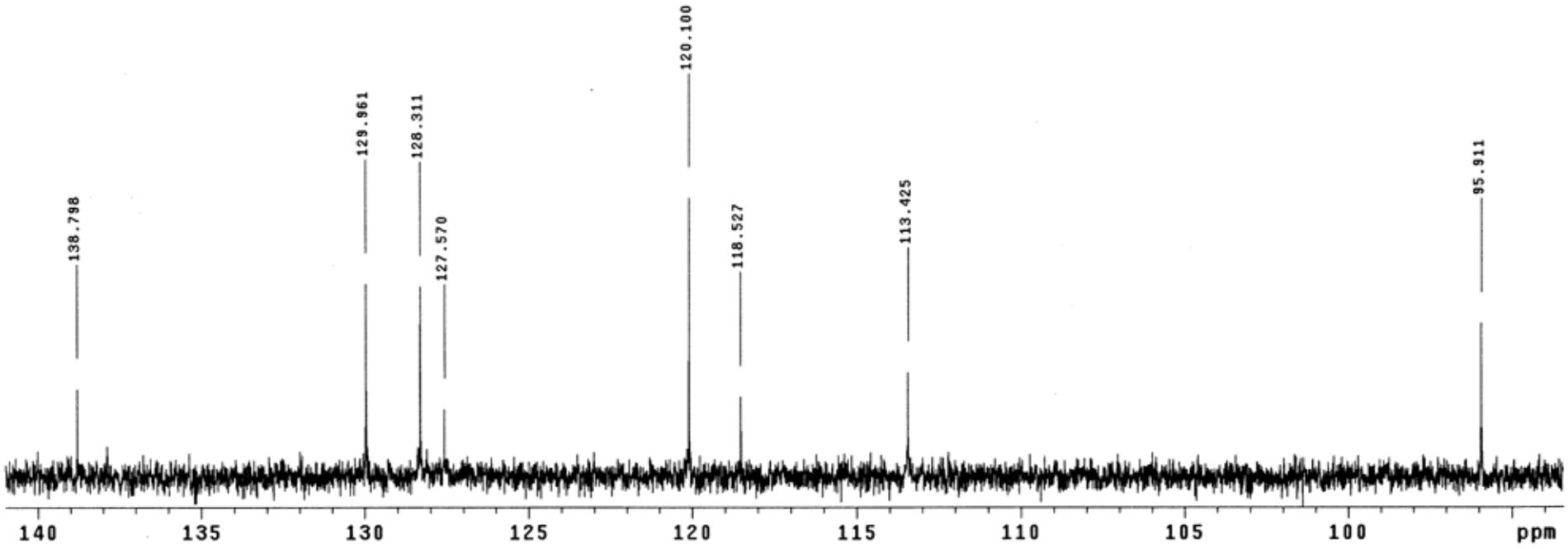
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 342 repetitions	OBSERVE C13, 100.6472126 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 18 minutes			9AB37F-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



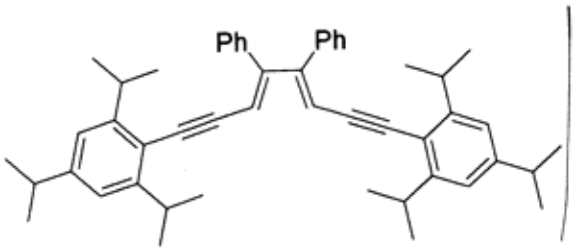


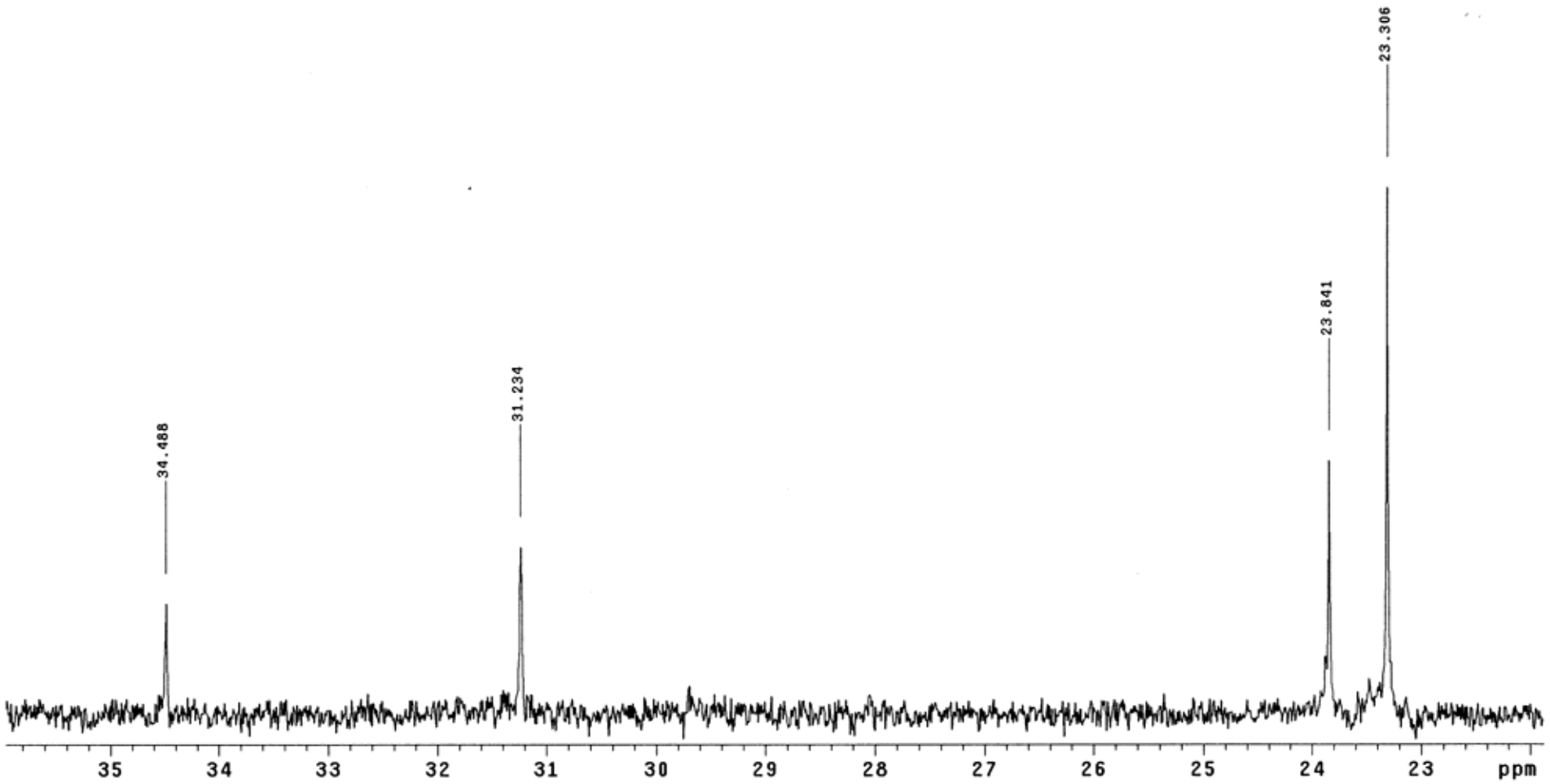
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 345 repetitions	OBSERVE C13, 100.6472126 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 18 minutes			9AB37F-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



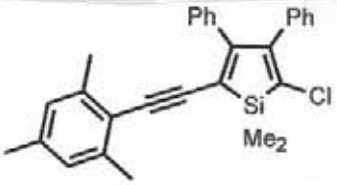


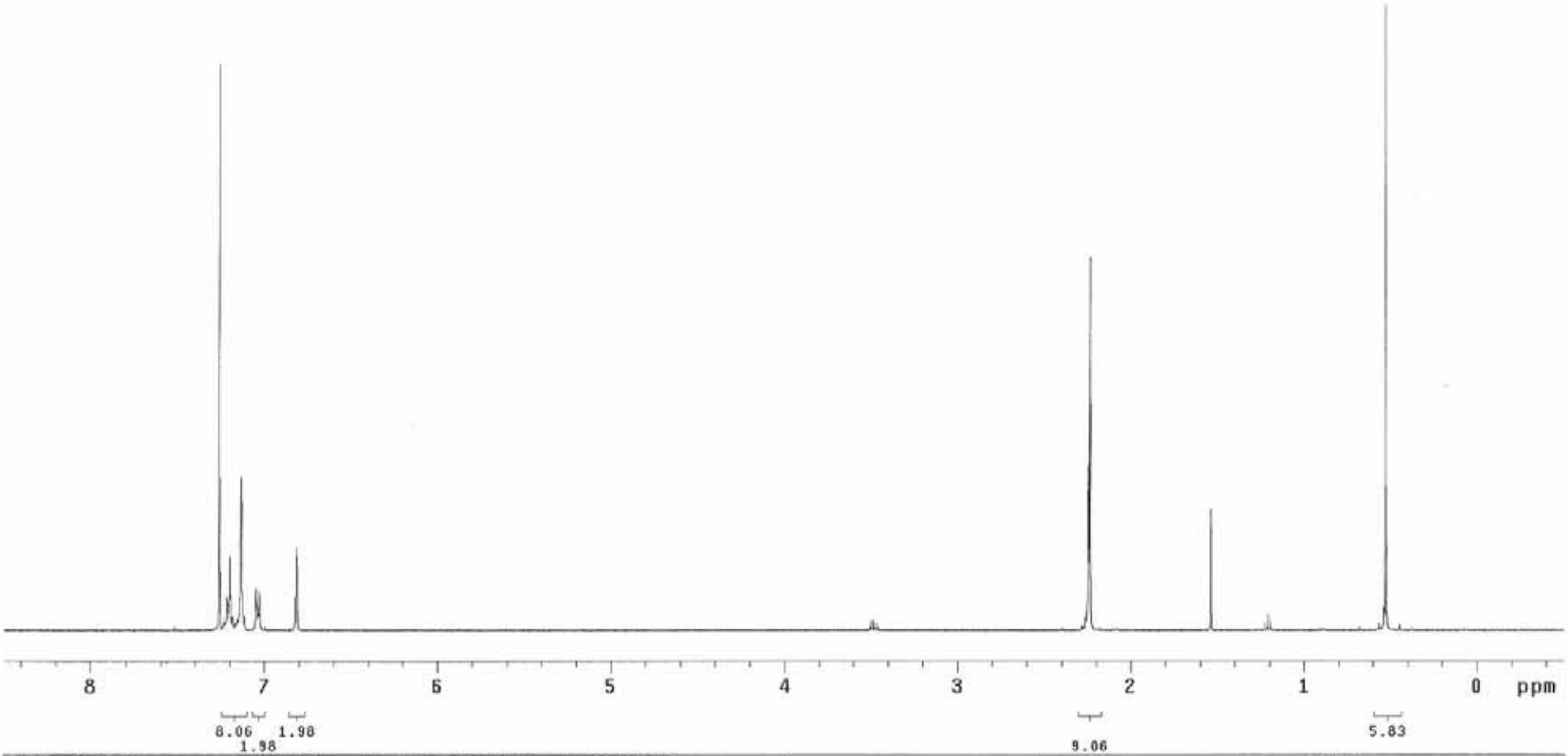
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 400 repetitions	OBSERVE C13, 100.6472126 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 21 minutes			9AB37F-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



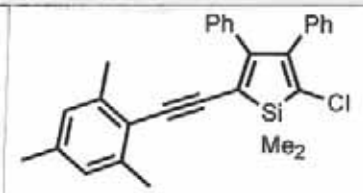


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 403 repetitions	OBSERVE C13, 100.6472126 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 22 minutes			9AB37F-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 29 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB26 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



7.260
7.239
7.230
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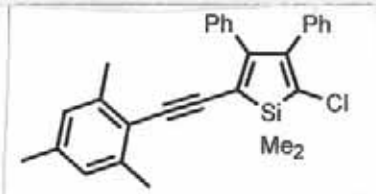
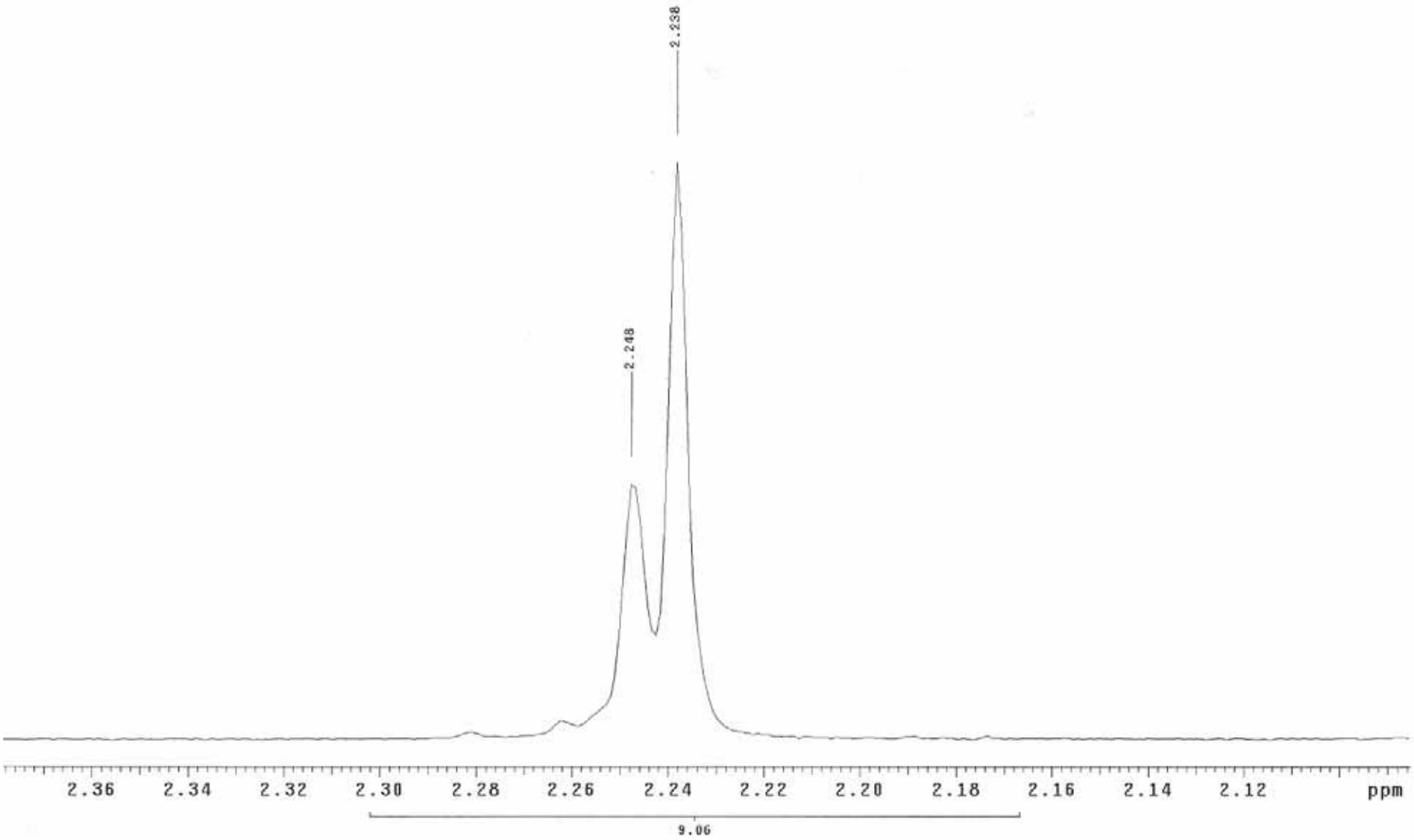
7.195
7.187
7.183
7.170
7.166
7.157
7.155
7.140
7.137
7.133
7.128
7.123
7.115
7.049
7.043
7.039
7.034
7.029
7.026
6.813

7.30 7.25 7.20 7.15 7.10 7.05 7.00 6.95 6.90 6.85 6.80 ppm

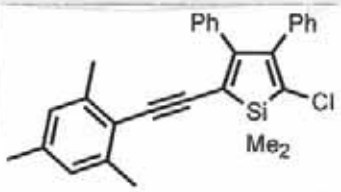
8.06 1.95 1.97

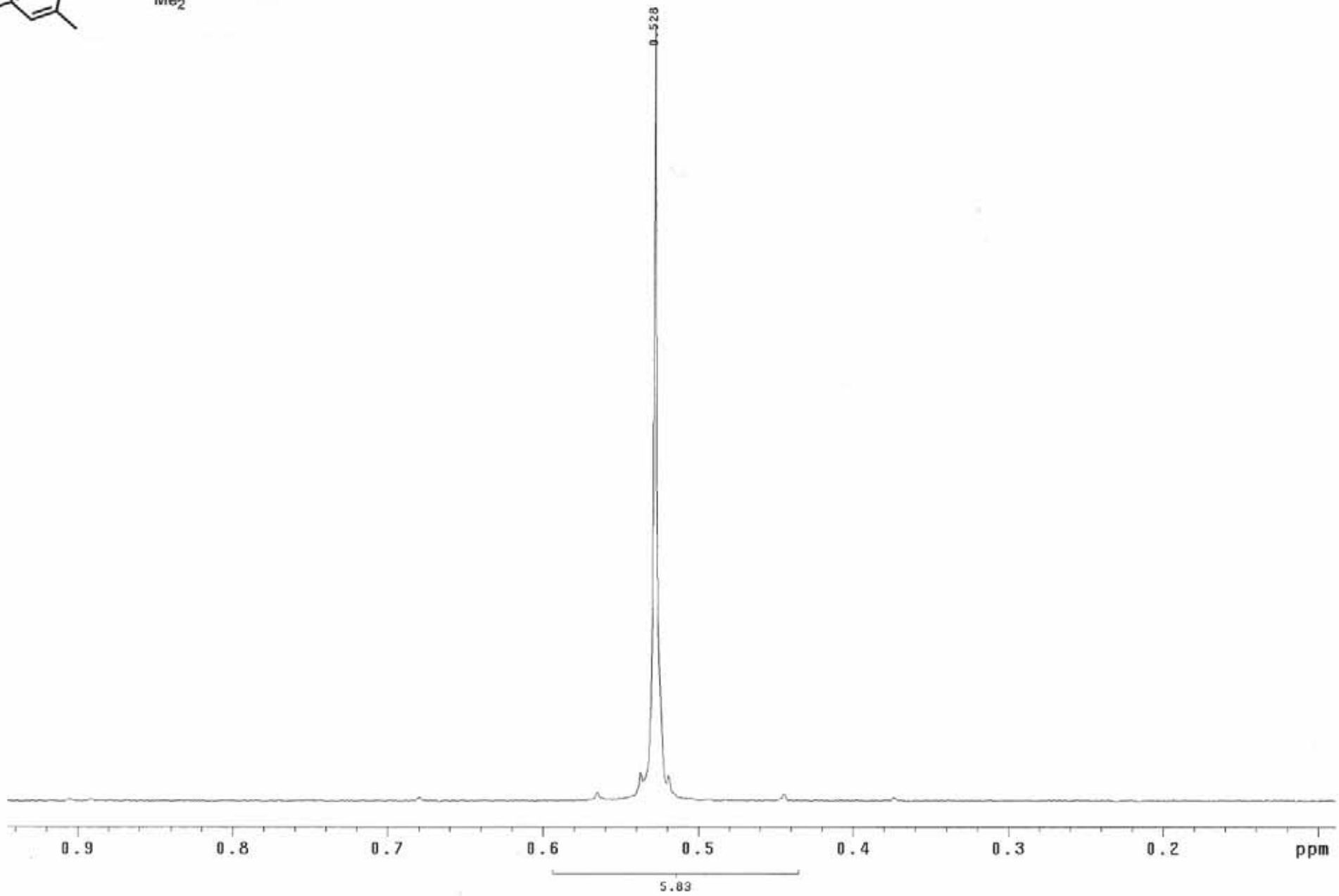
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.8 degrees Acq. time 2.856 sec Width 5602.2 Hz 21 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minutes			9AB26 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "mmr6"



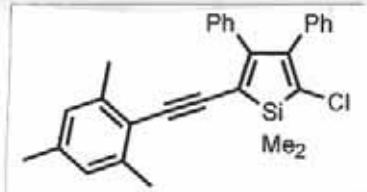


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 32 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 2 minutes			9AB26 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

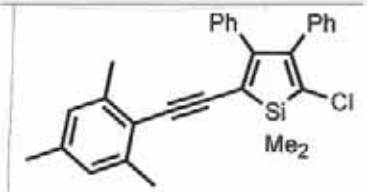


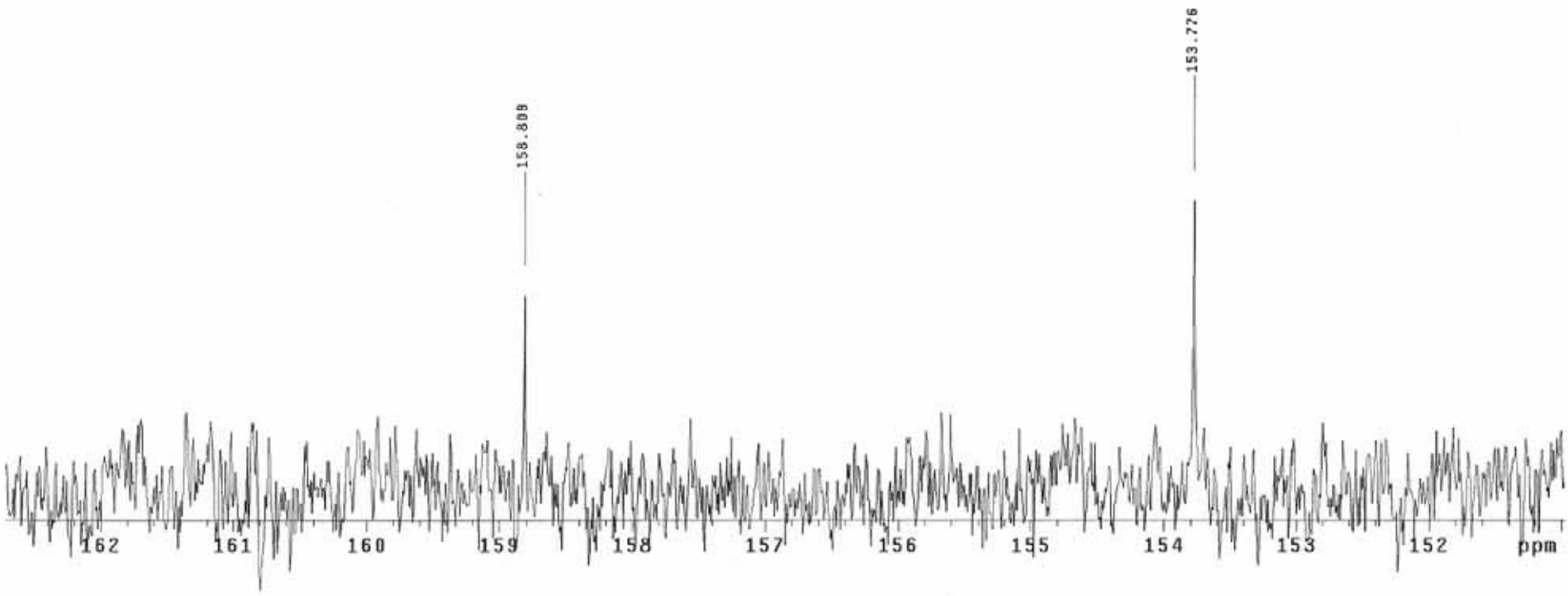


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 38 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 3 minutes			9AB26 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

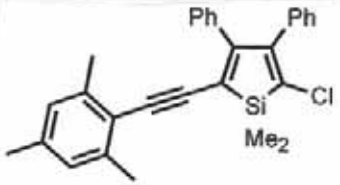


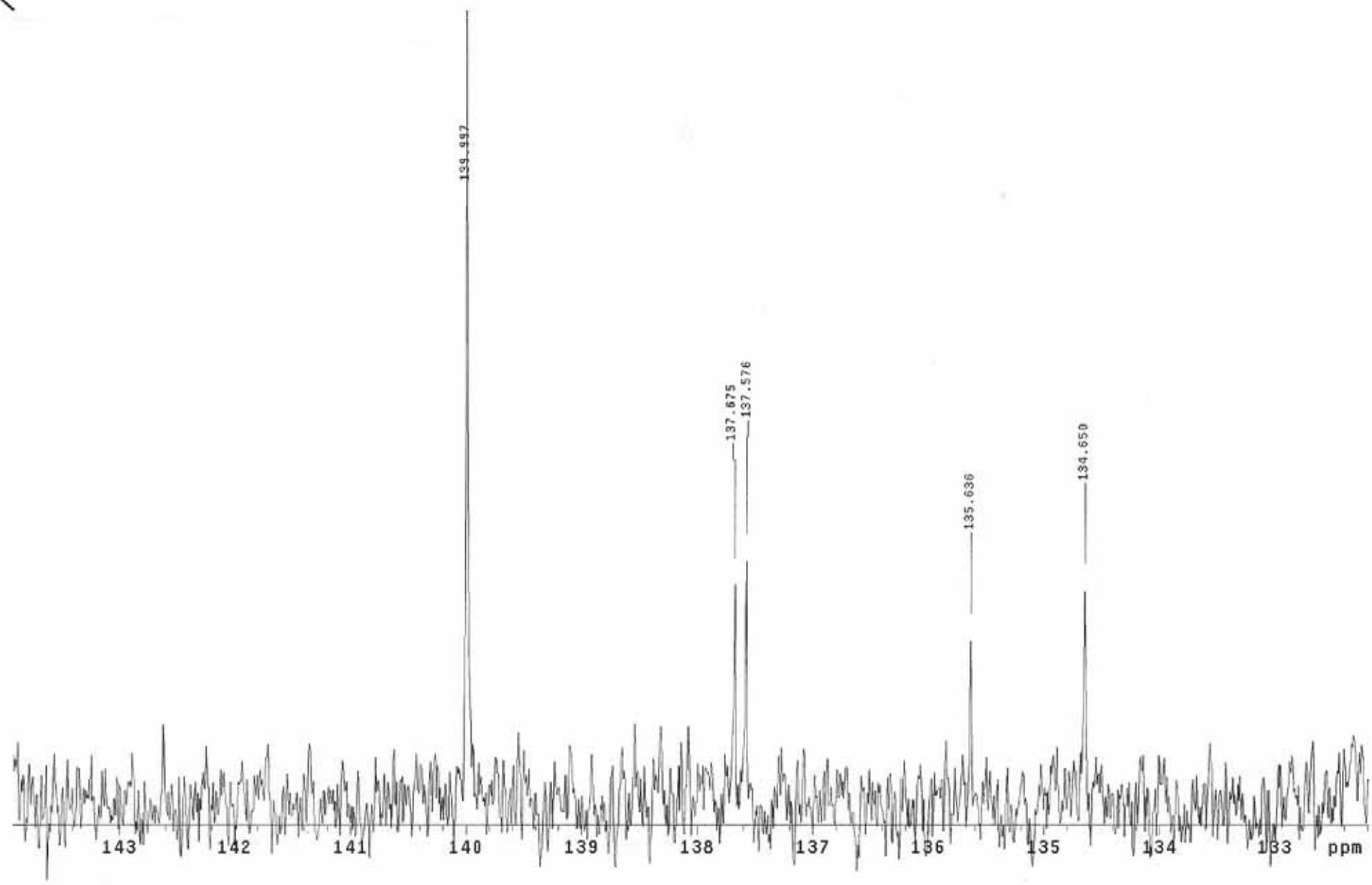
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



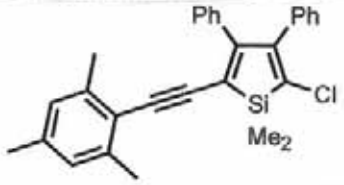


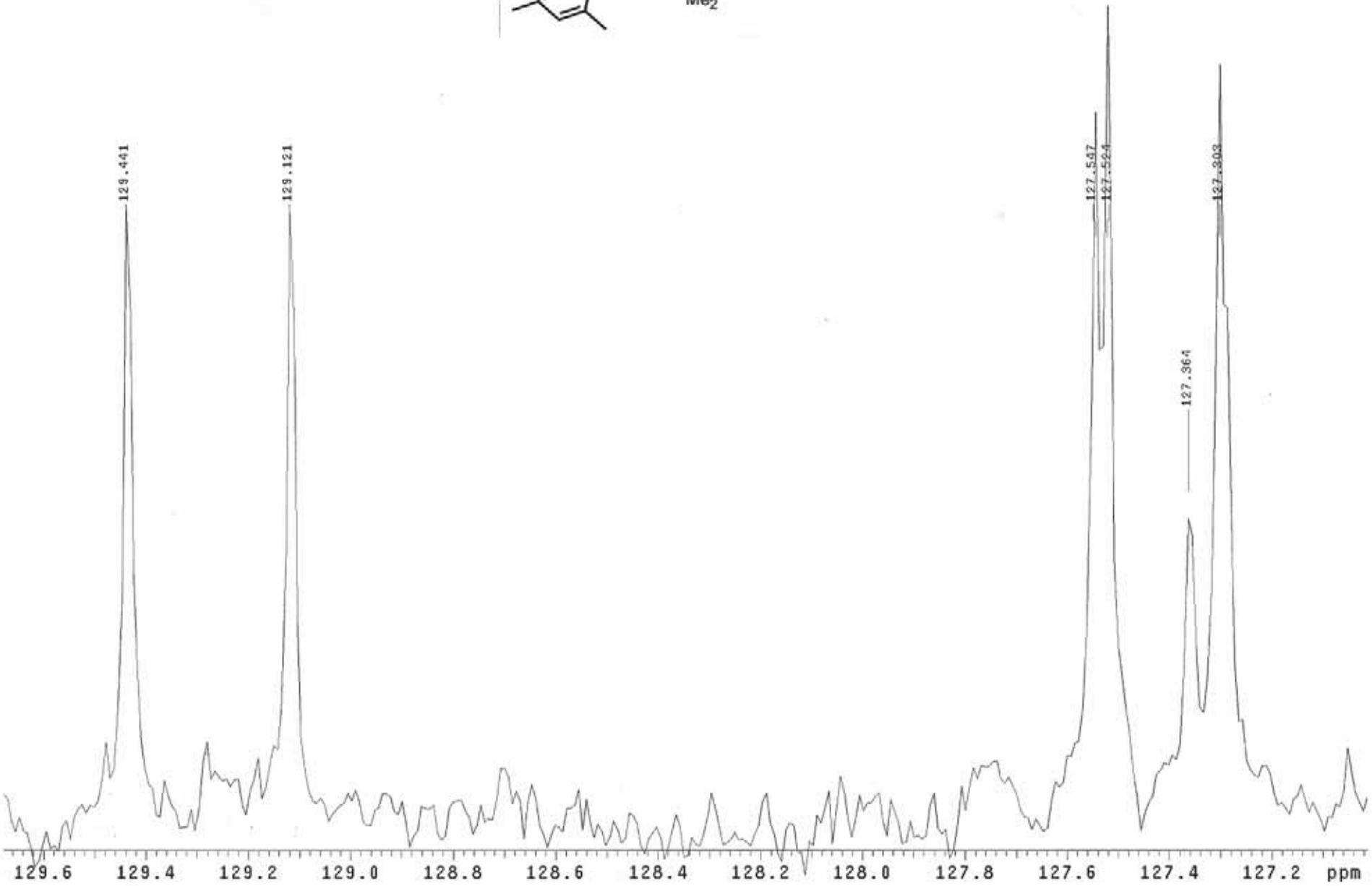
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2688955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



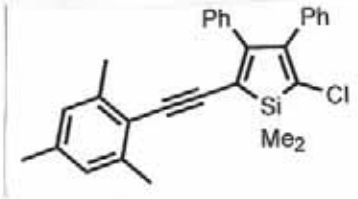


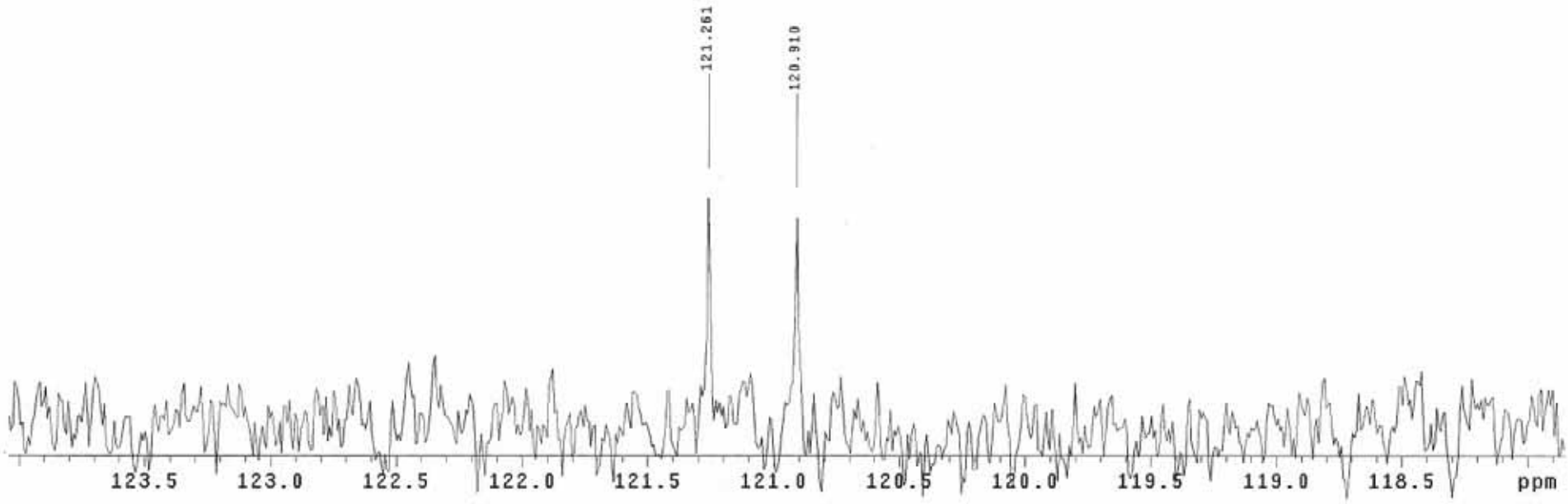
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



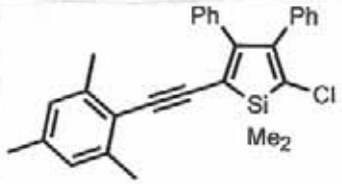


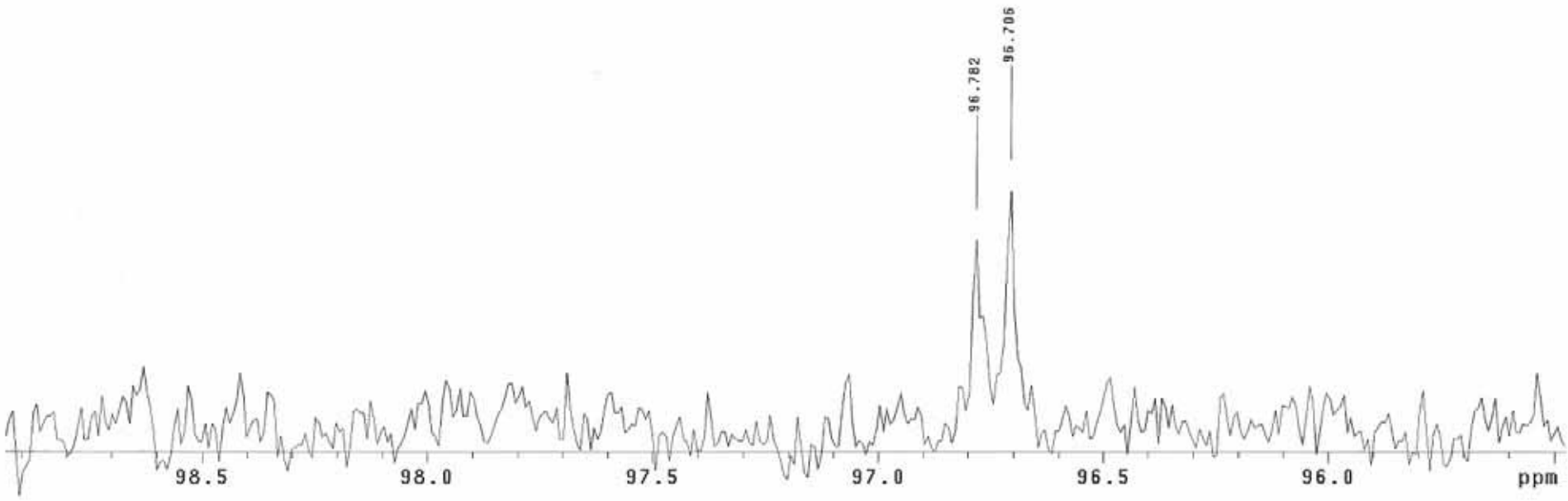
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



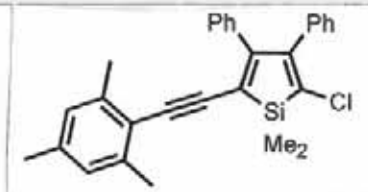


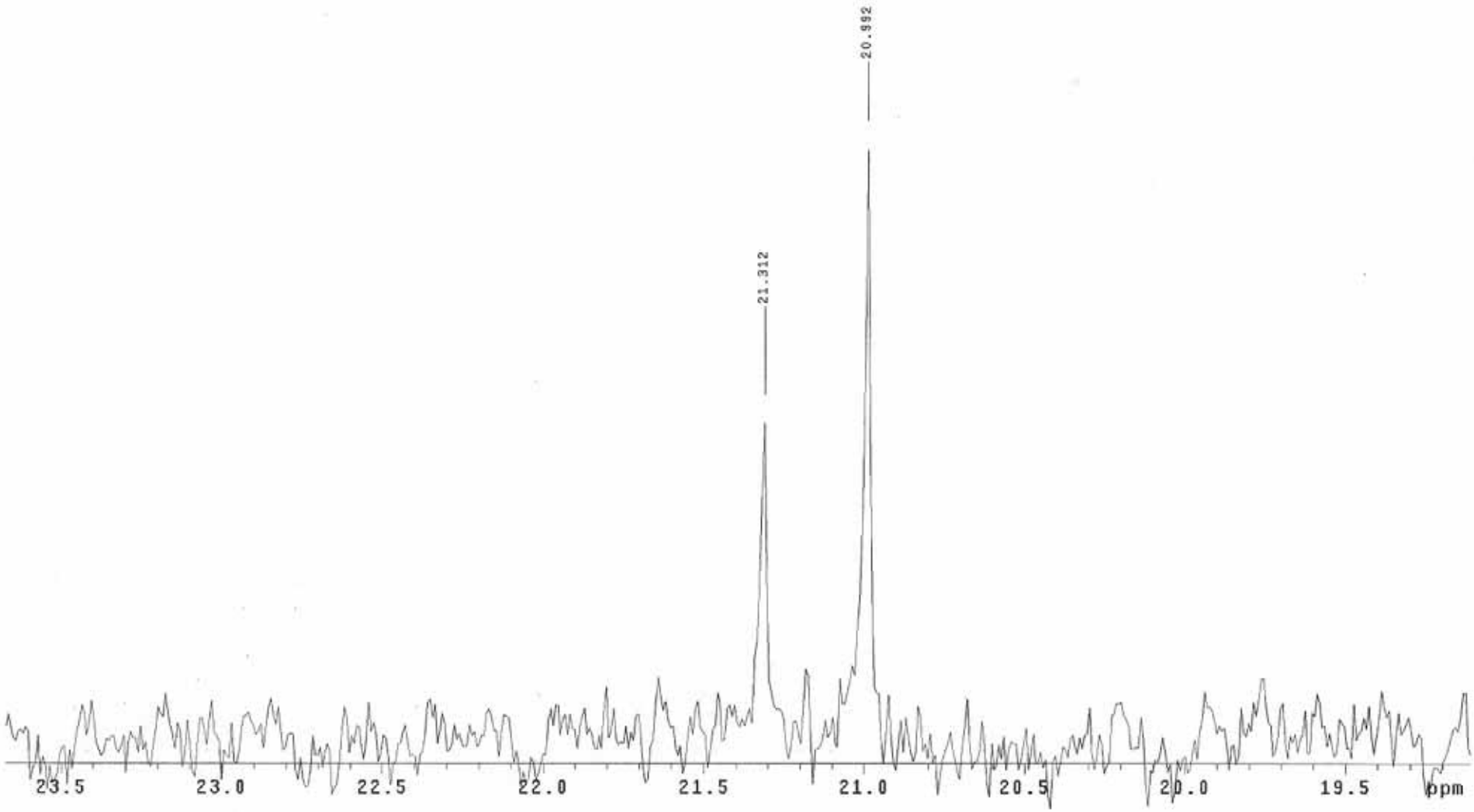
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



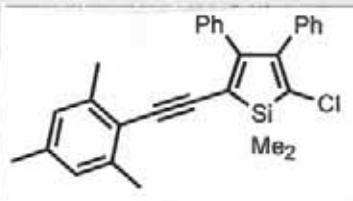


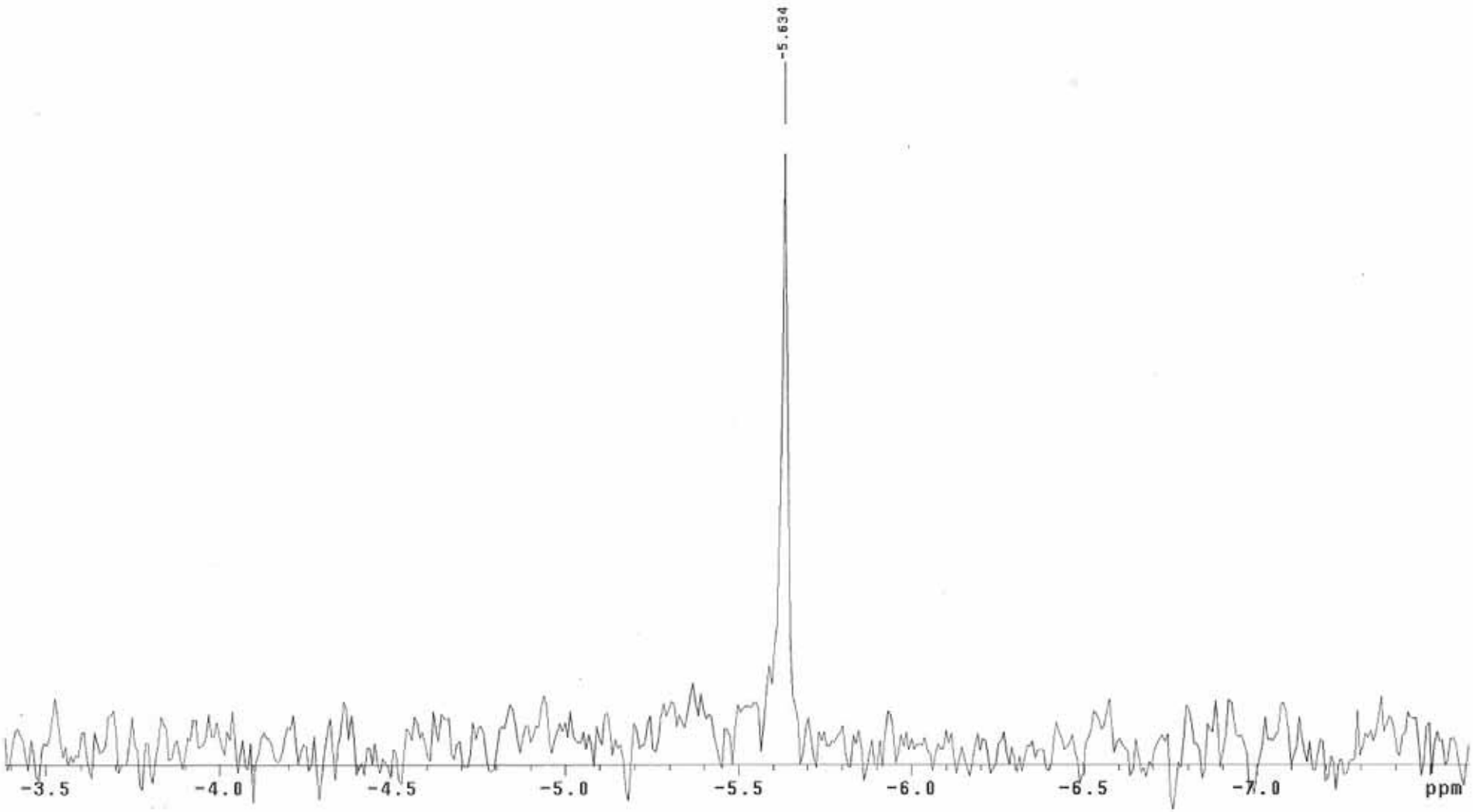
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



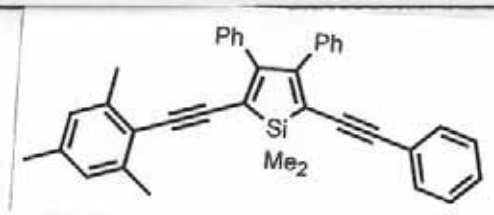


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 630 repetitions	OBSERVE C13, 100.6472133 DECOUPLE H1, 400.2688955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 34 minutes			9AB26-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB26-Rx1-13C Mercury-400 "nmr6"



7.355
7.350
7.334
7.331
7.310
7.297
7.281
7.263
7.248
7.238
7.223
7.215
7.204
7.198
6.859

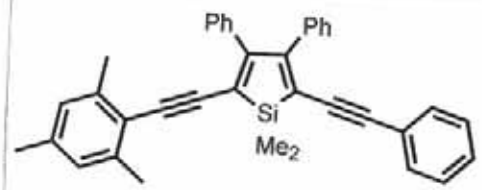
7.4 7.3 7.2 7.1 7.0 6.9 ppm

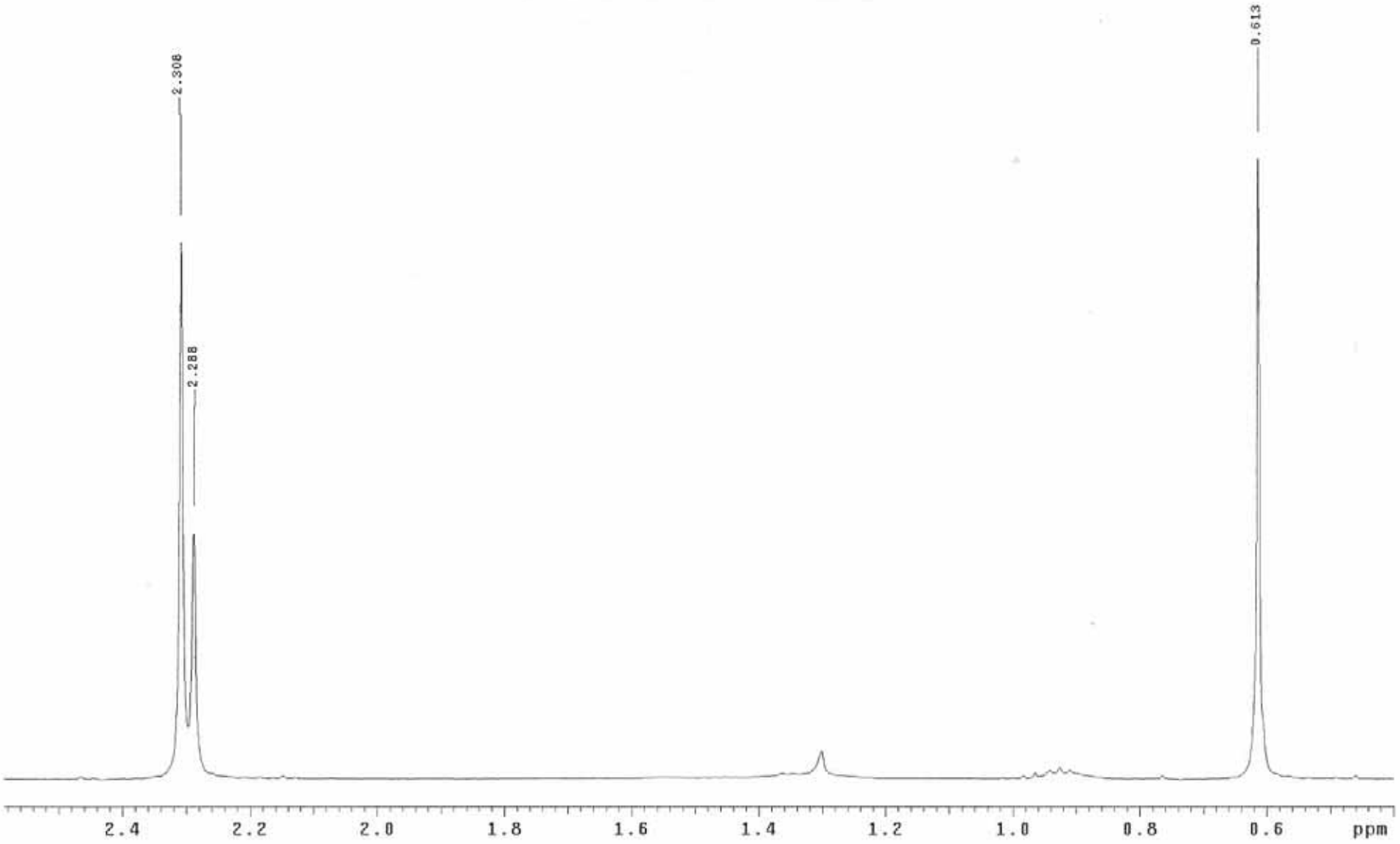
15.16 1.95

8 7 6 5 4 3 2 1 0 ppm

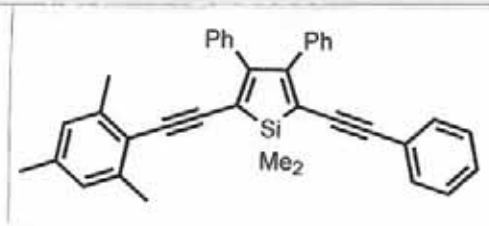
15.16 1.95 9.00 5.71

PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 9 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB32 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

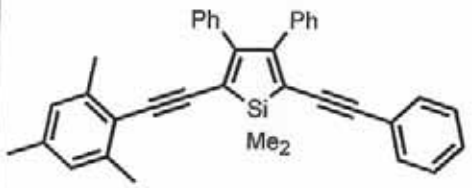


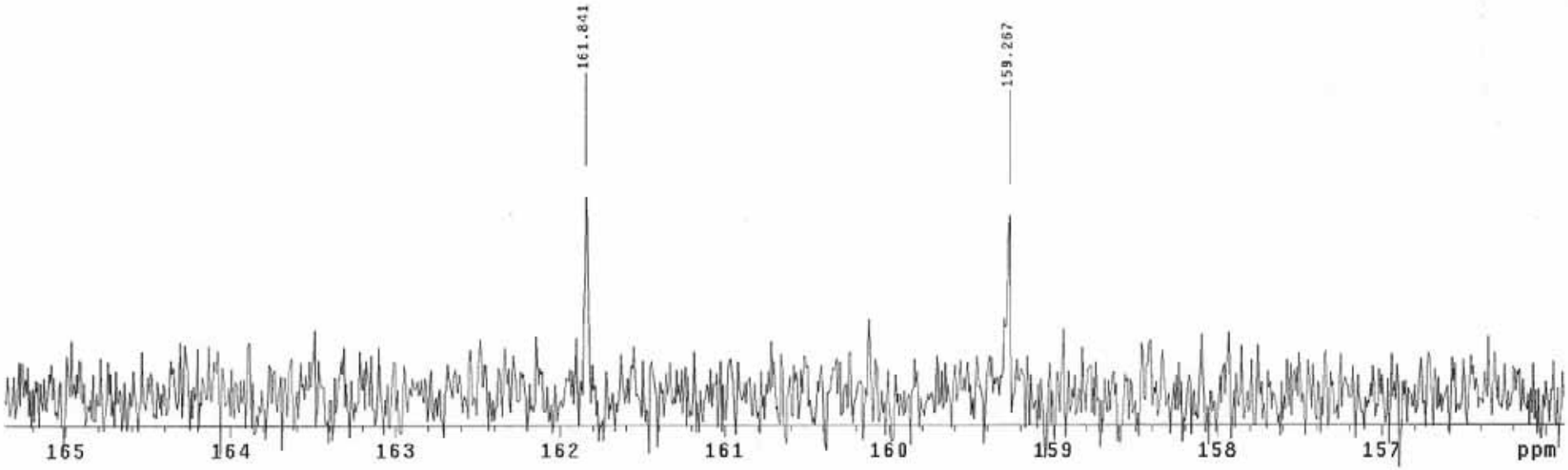


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 9 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB32 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature File: 9AB32 INOVA-500 "nmrsr"

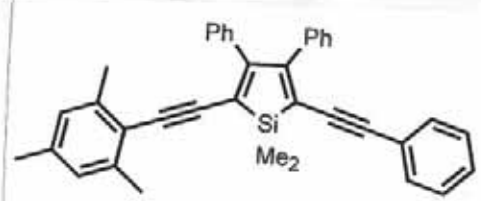


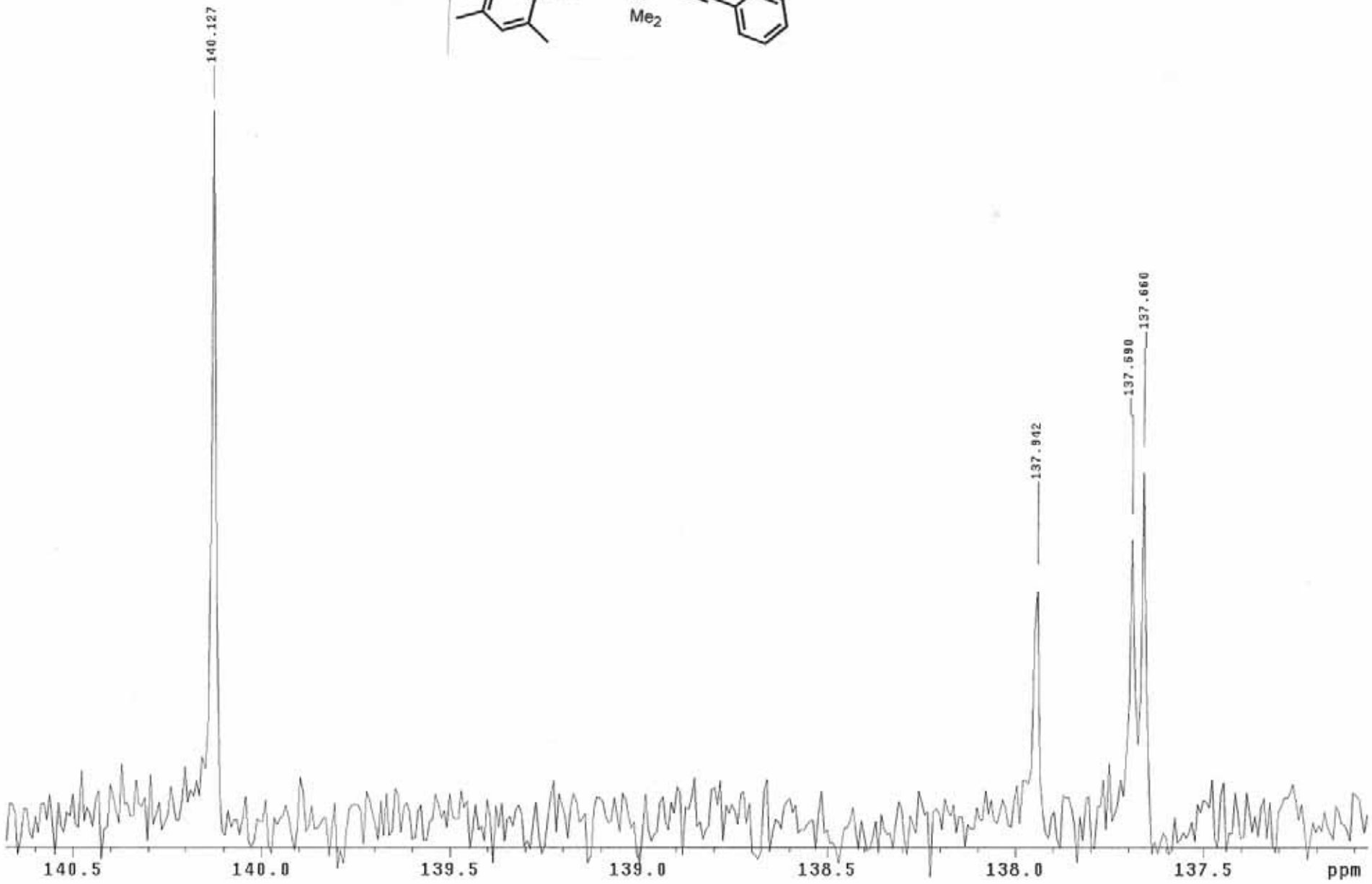
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 196 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 10 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



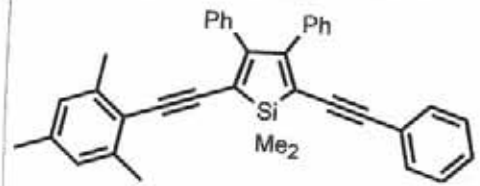


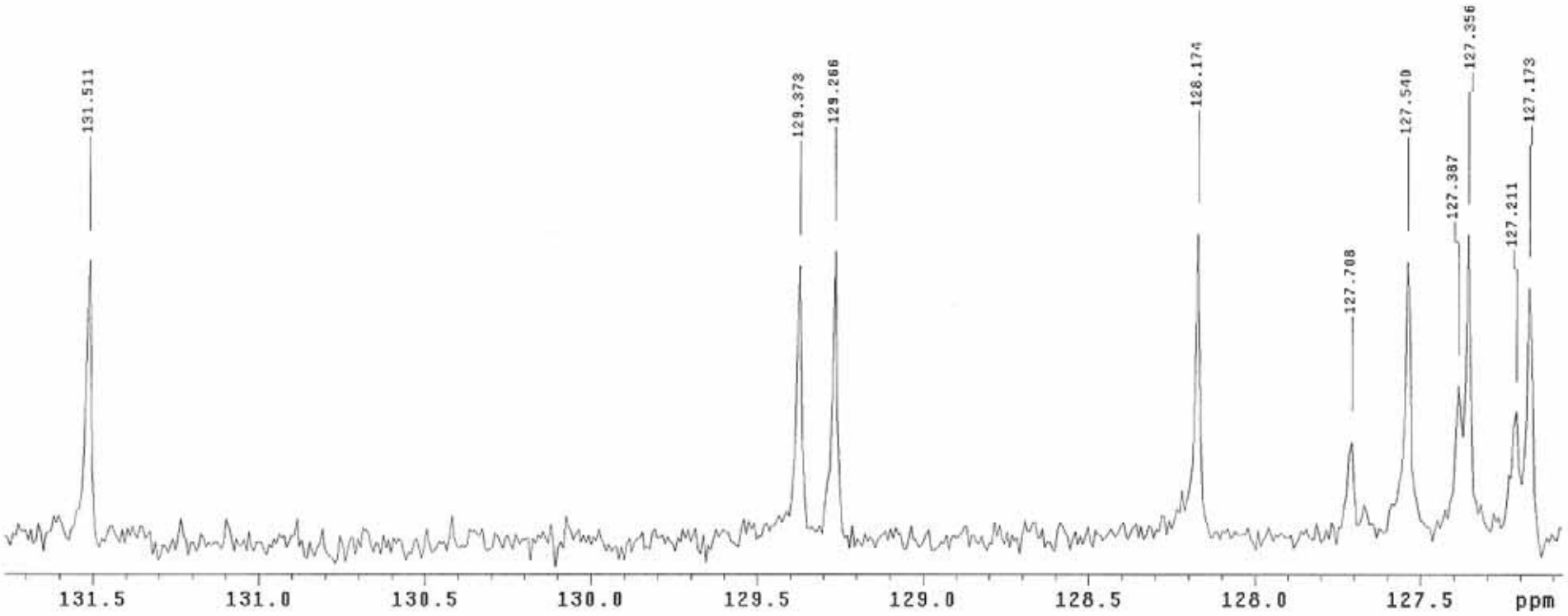
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 166 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2889955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 9 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



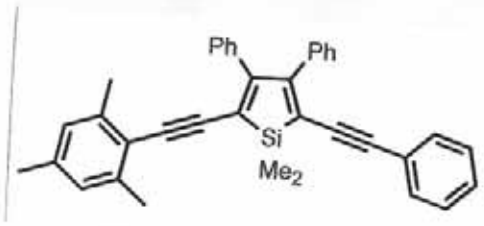


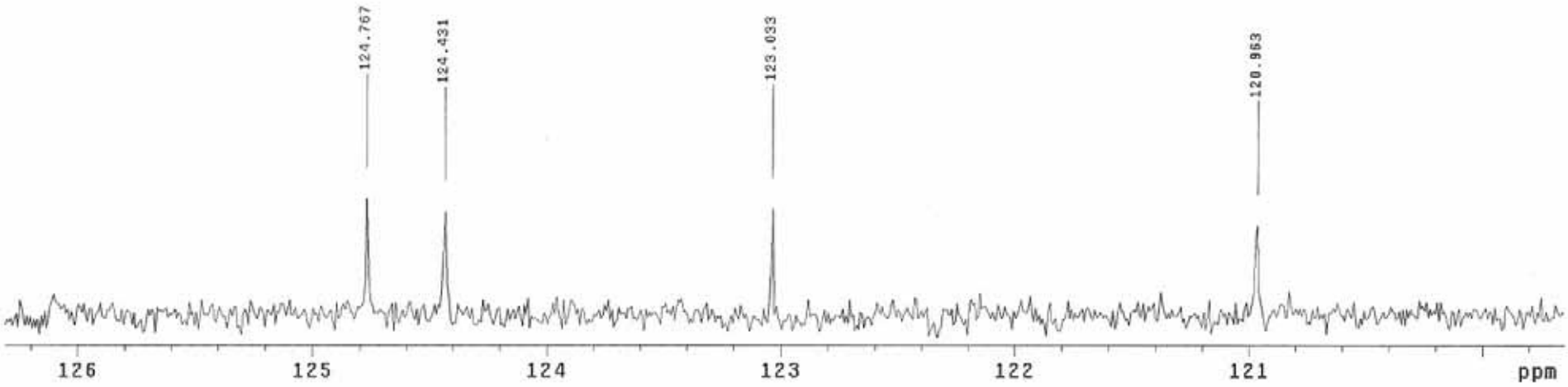
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 169 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 9 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



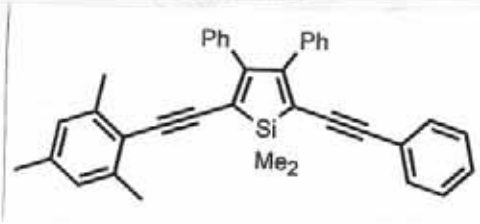


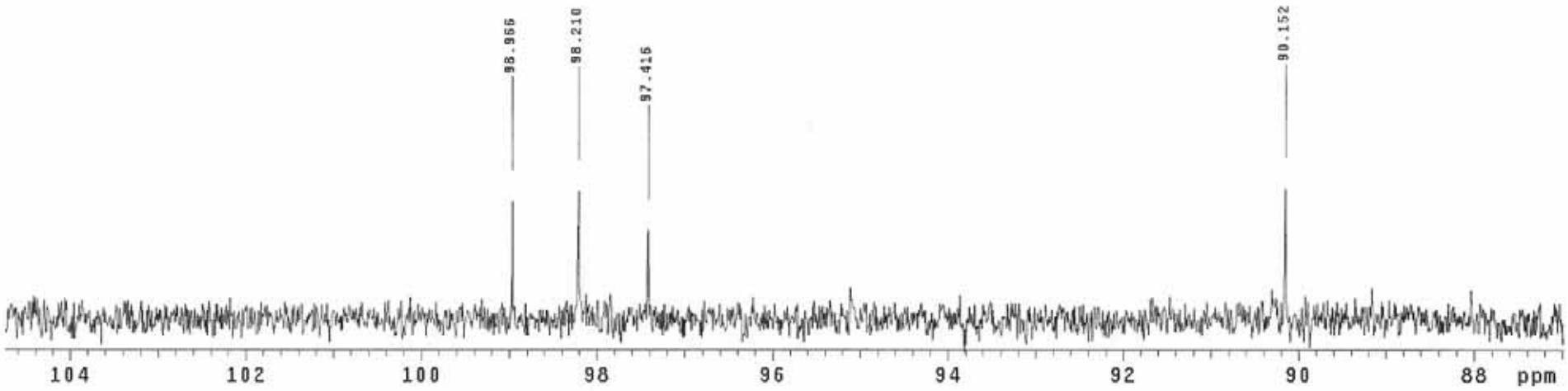
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 174 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 9 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



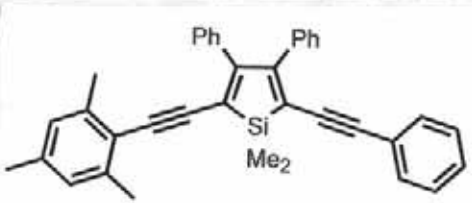


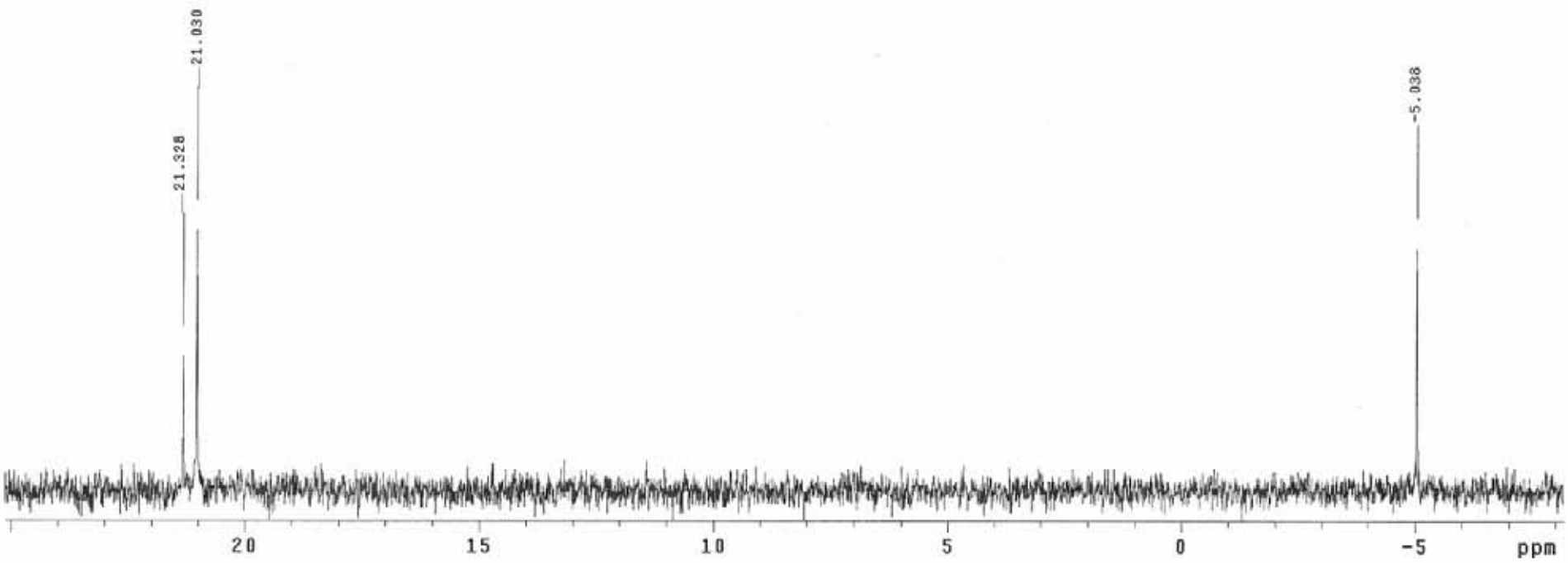
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 177 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 9 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



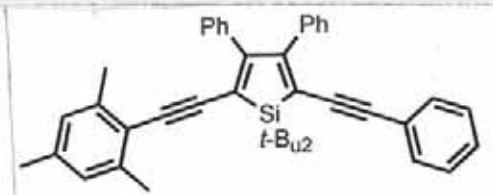


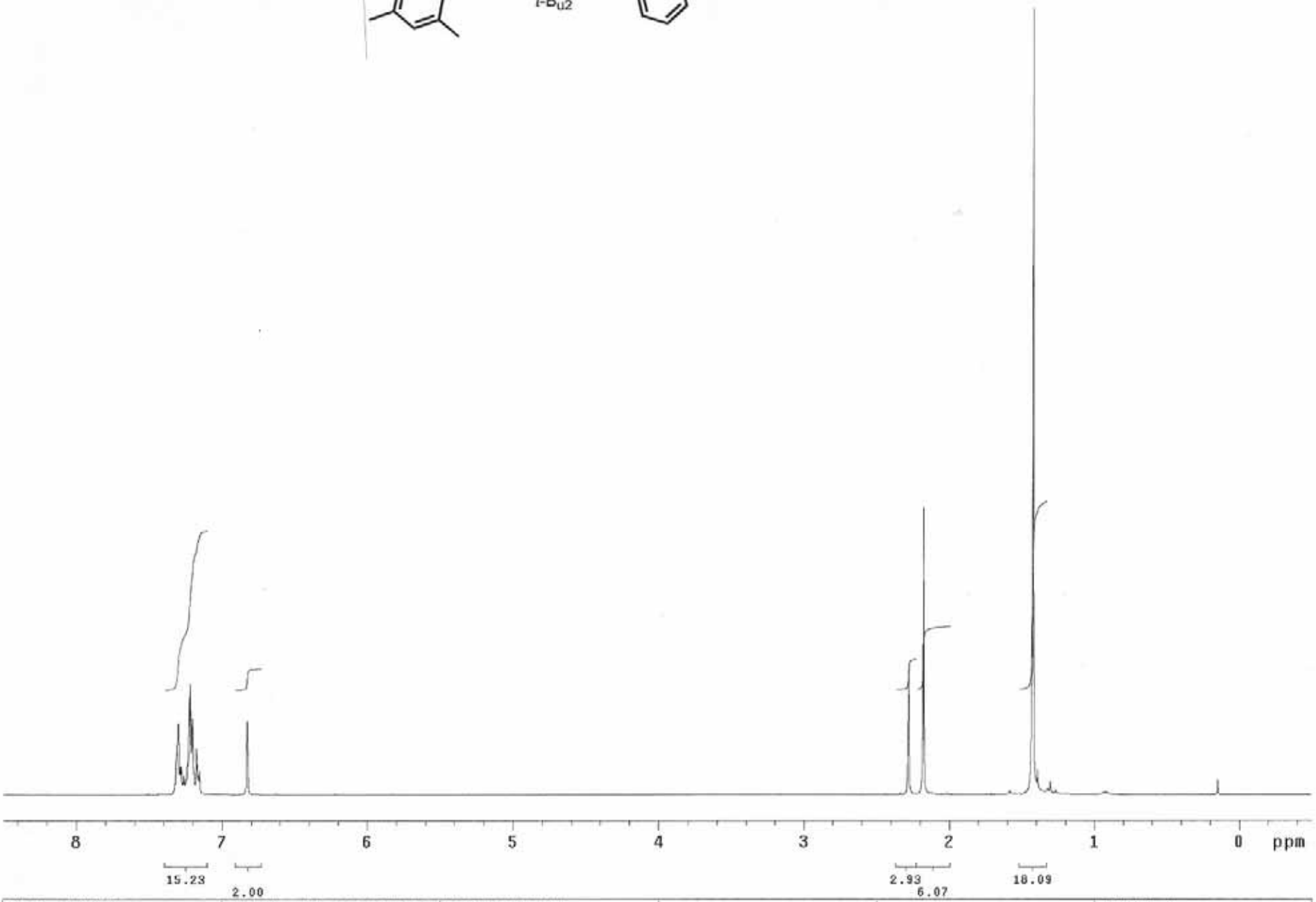
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 181 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 9 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



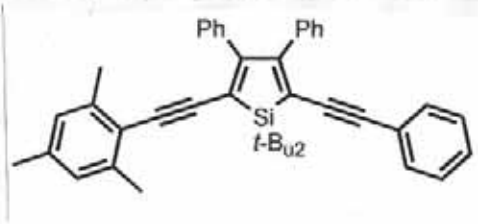


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 189 repetitions	OBSERVE C13, 100.6472179 DECOUPLE H1, 400.2688955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.5 Hz FT size 65536 Total time 10 minutes			9AB32-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.8 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB41-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



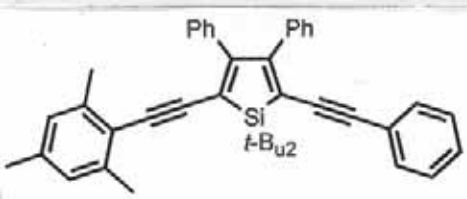
7.308
7.304
7.300
7.288
7.280
7.270
7.267
7.260
7.249
7.243
7.238
7.227
7.219
7.204
7.323
7.316
7.312
7.193
7.175
7.169
7.163
7.156
7.151
6.827

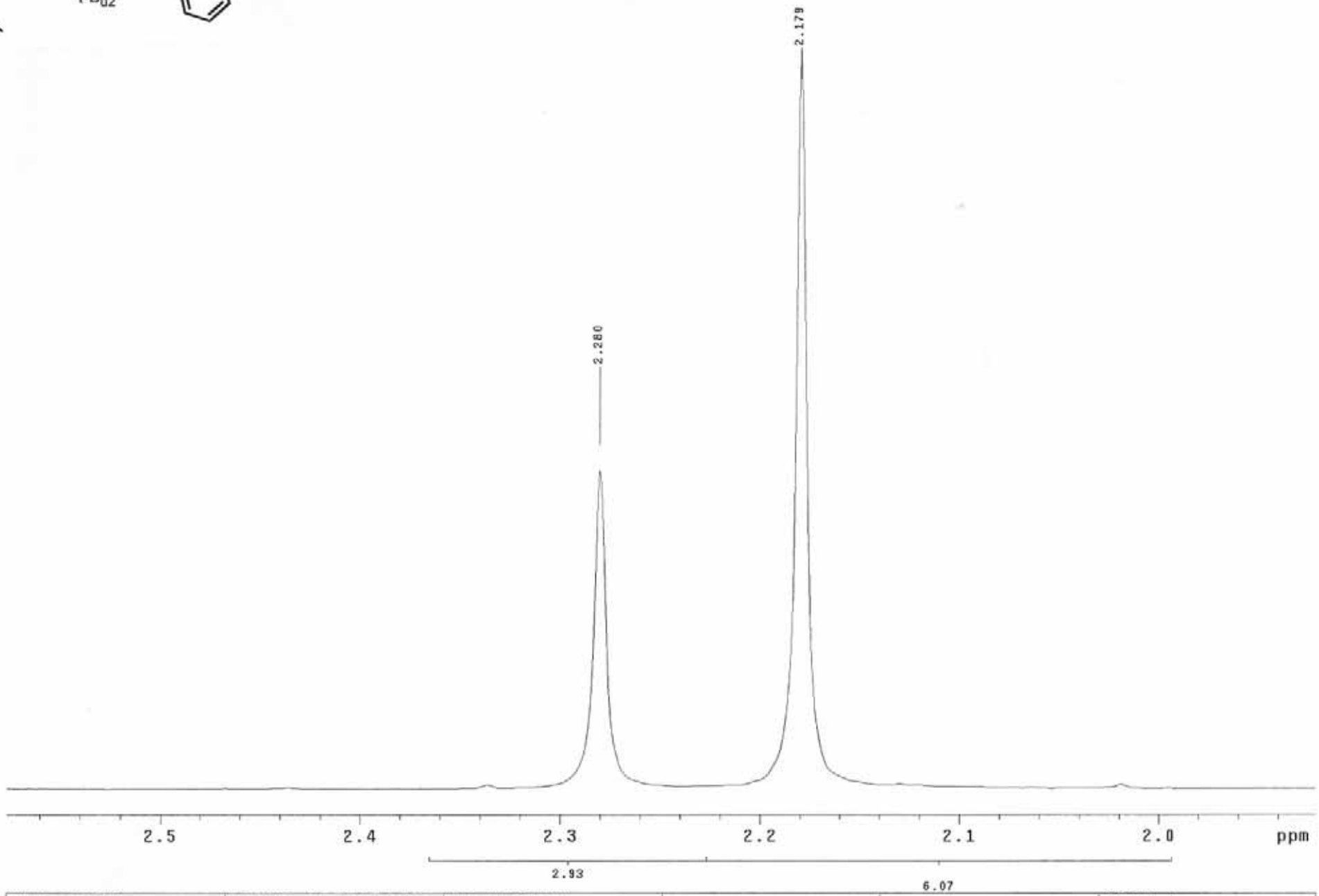
7.3 7.2 7.1 7.0 6.9 6.8 ppm

15.23

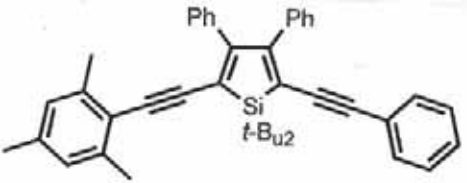
1.99

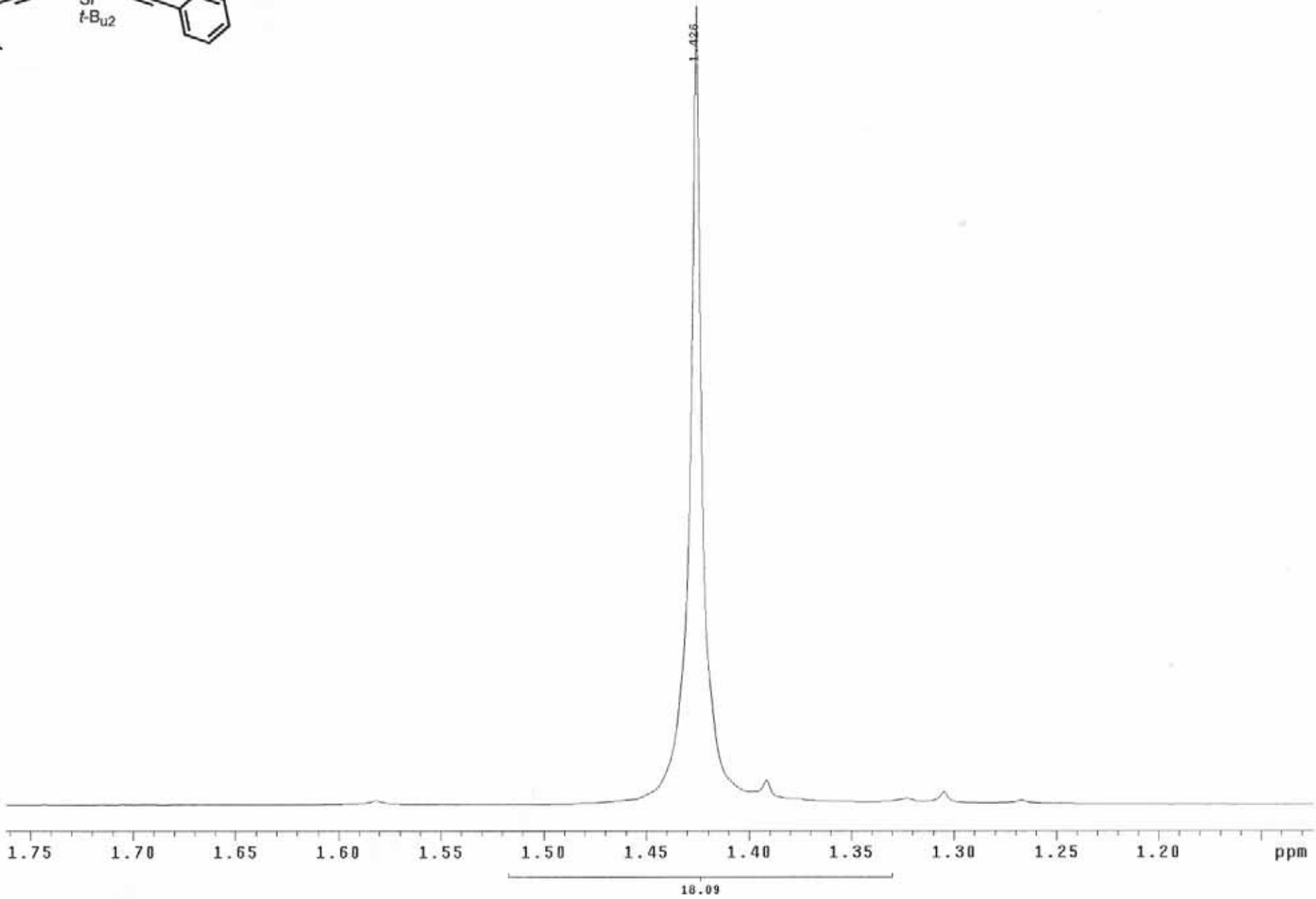
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB41-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



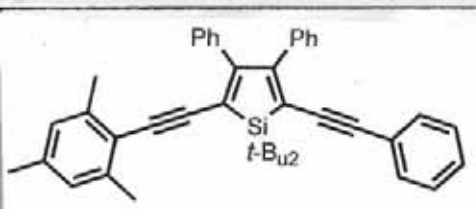


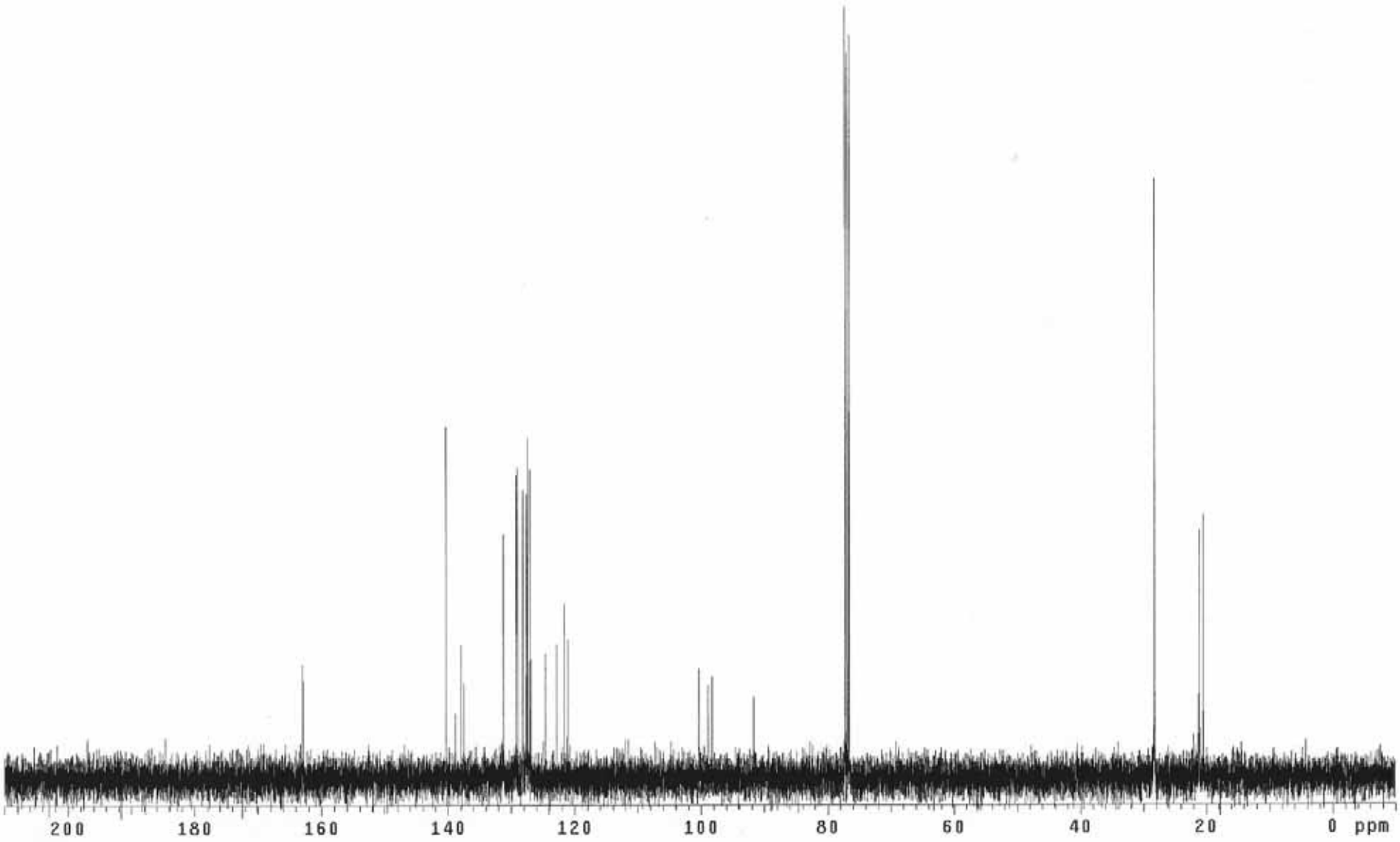
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB41-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



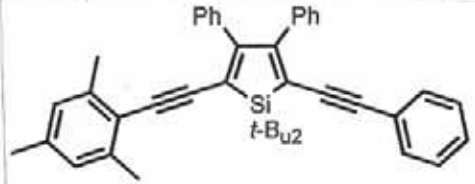


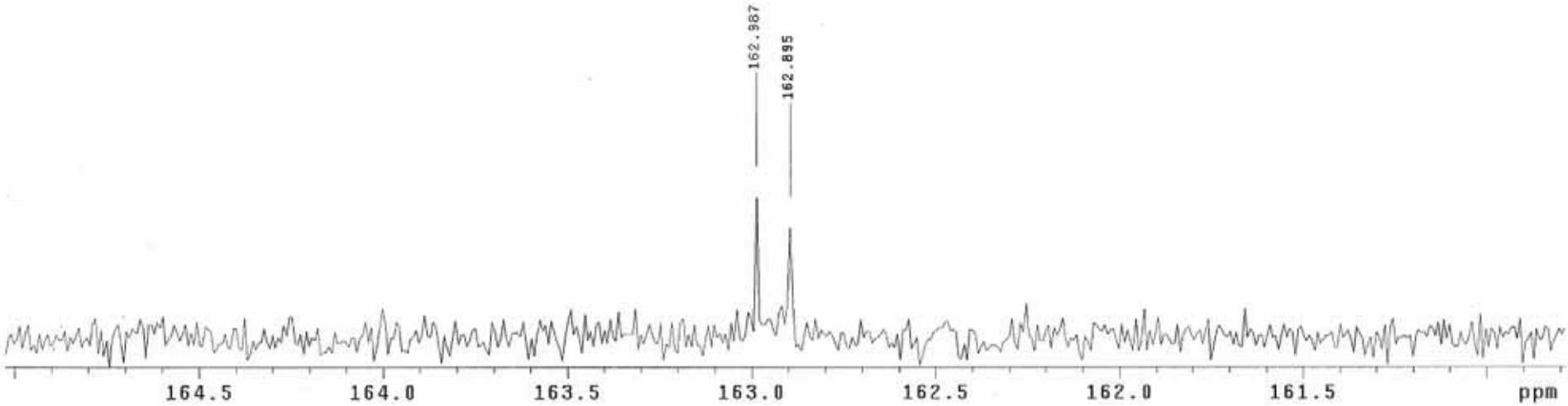
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669778	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB41-Rx1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



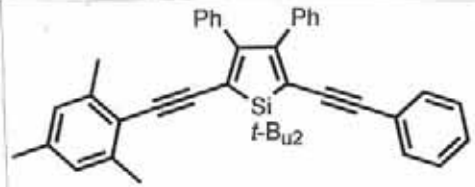


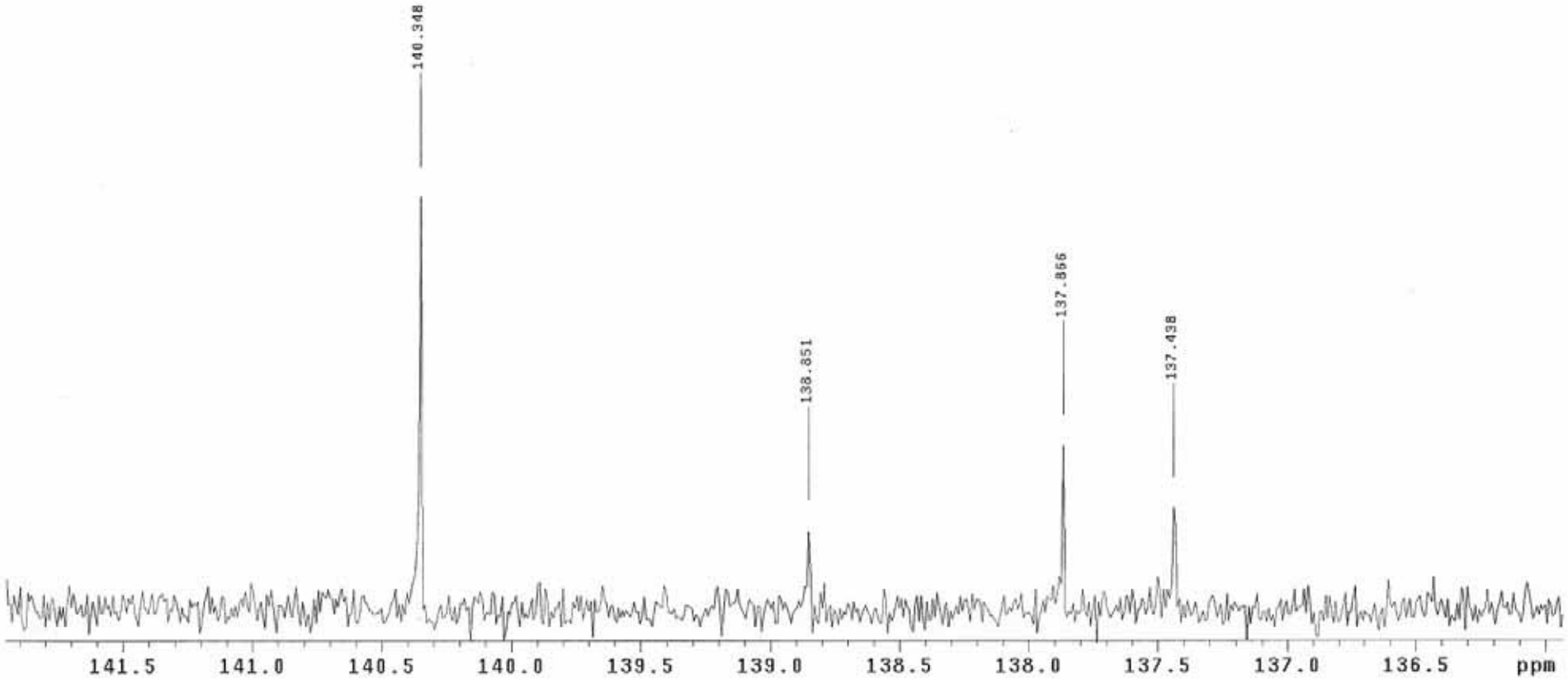
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 90 repetitions	OBSERVE C13, 100.6472202 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.1 Hz FT size 65536 Total time 4 minutes			9AB41-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



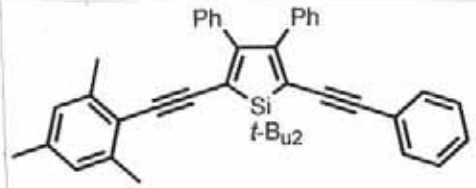


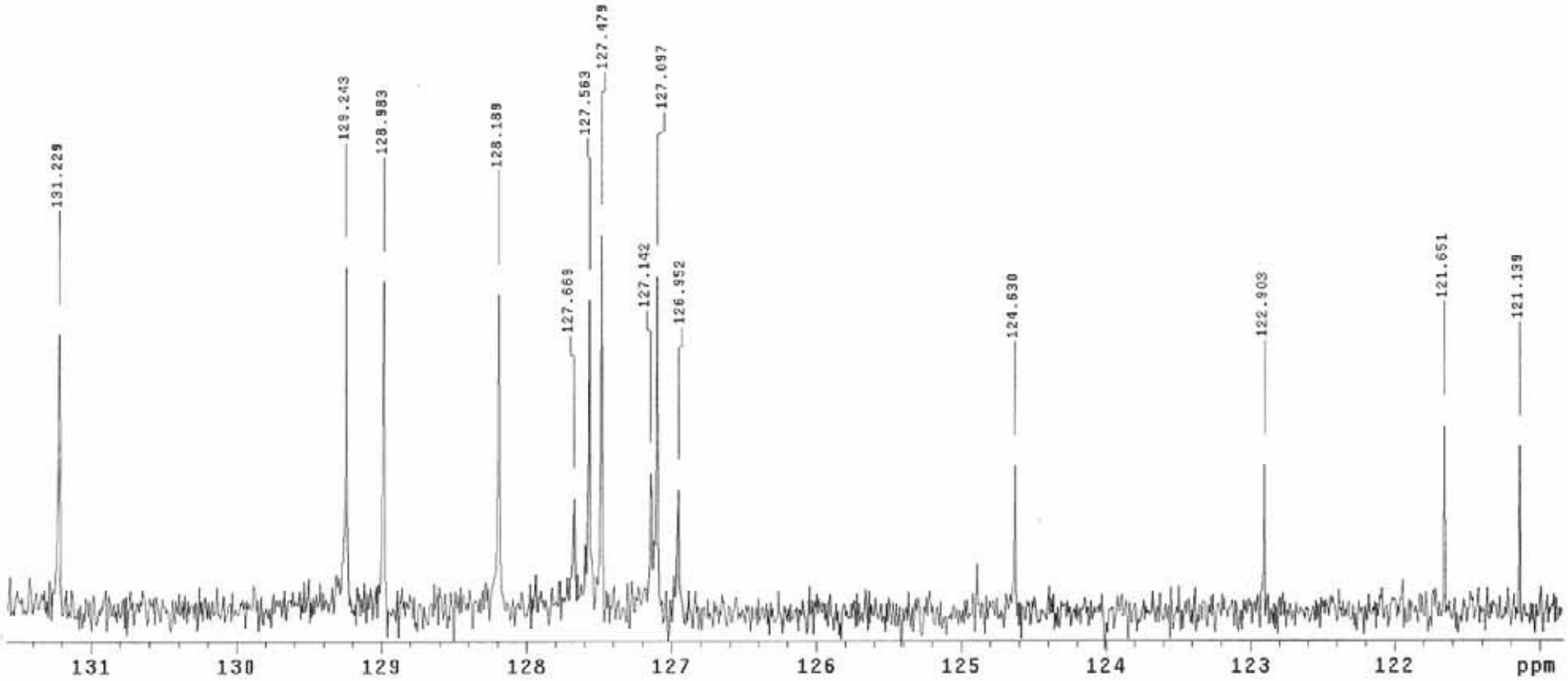
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 95 repetitions	OBSERVE C13, 100.6472202 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.1 Hz FT size 65536 Total time 5 minutes			9AB41-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



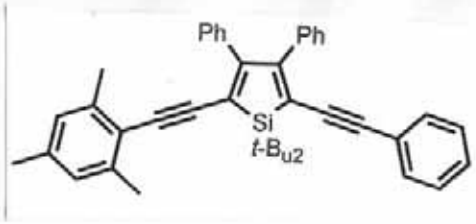


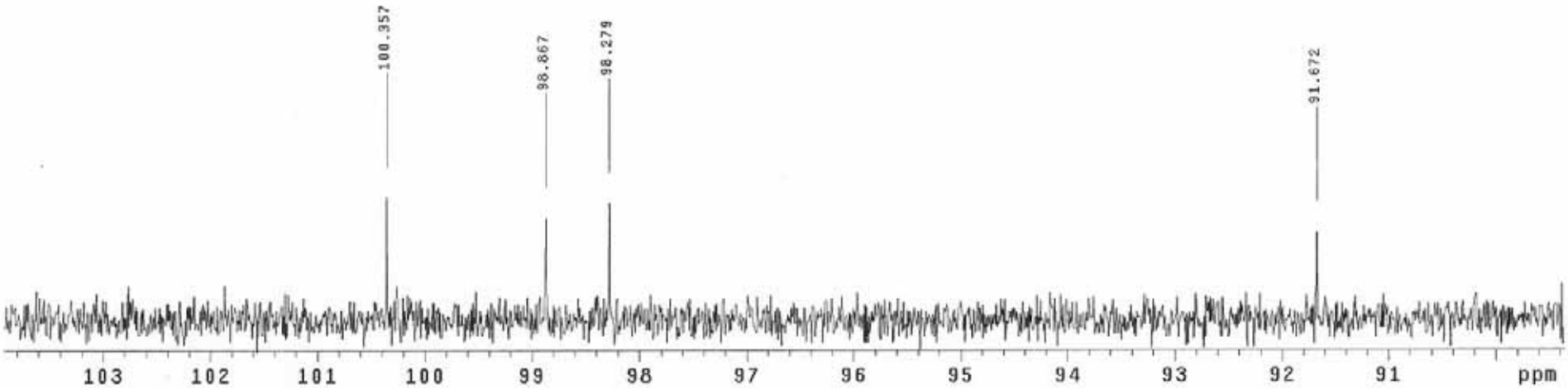
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 97 repetitions	OBSERVE C13, 100.6472202 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.1 Hz FT size 65536 Total time 5 minutes			9AB41-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



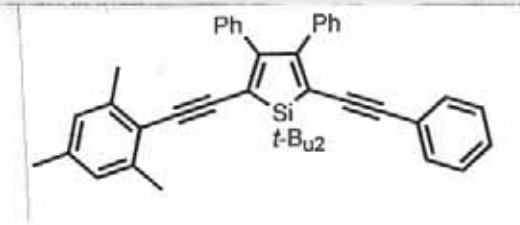


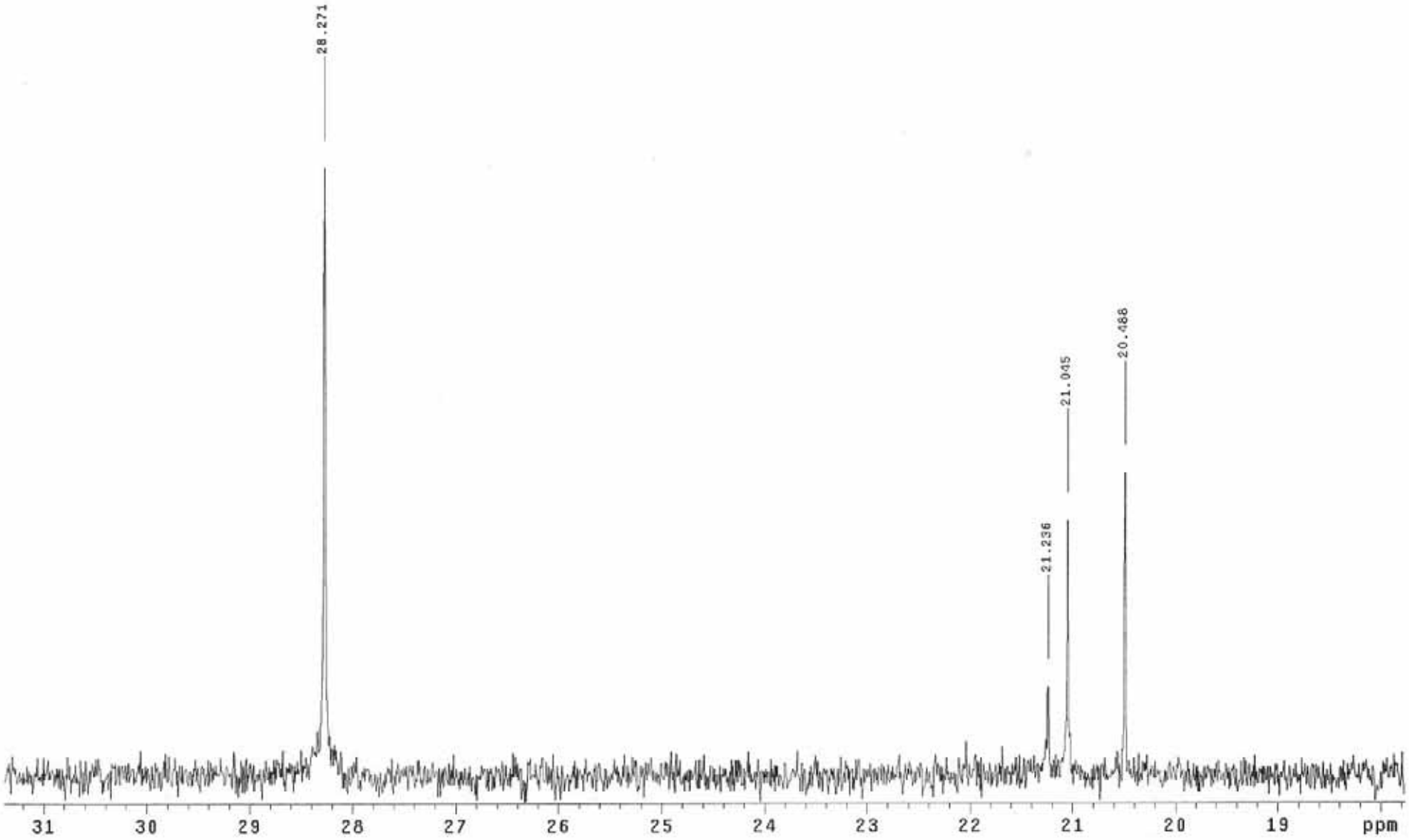
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 101 repetitions	OBSERVE C13, 100.6472202 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.1 Hz FT size 65536 Total time 5 minutes			9AB41-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



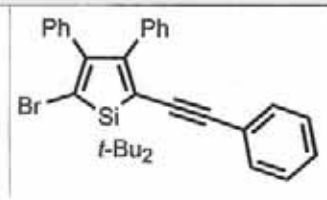


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 103 repetitions	OBSERVE C13, 100.6472202 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.1 Hz FT size 65536 Total time 5 minutes			9AB41-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

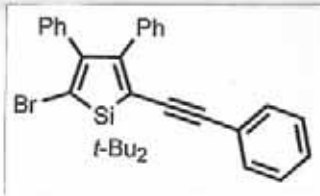


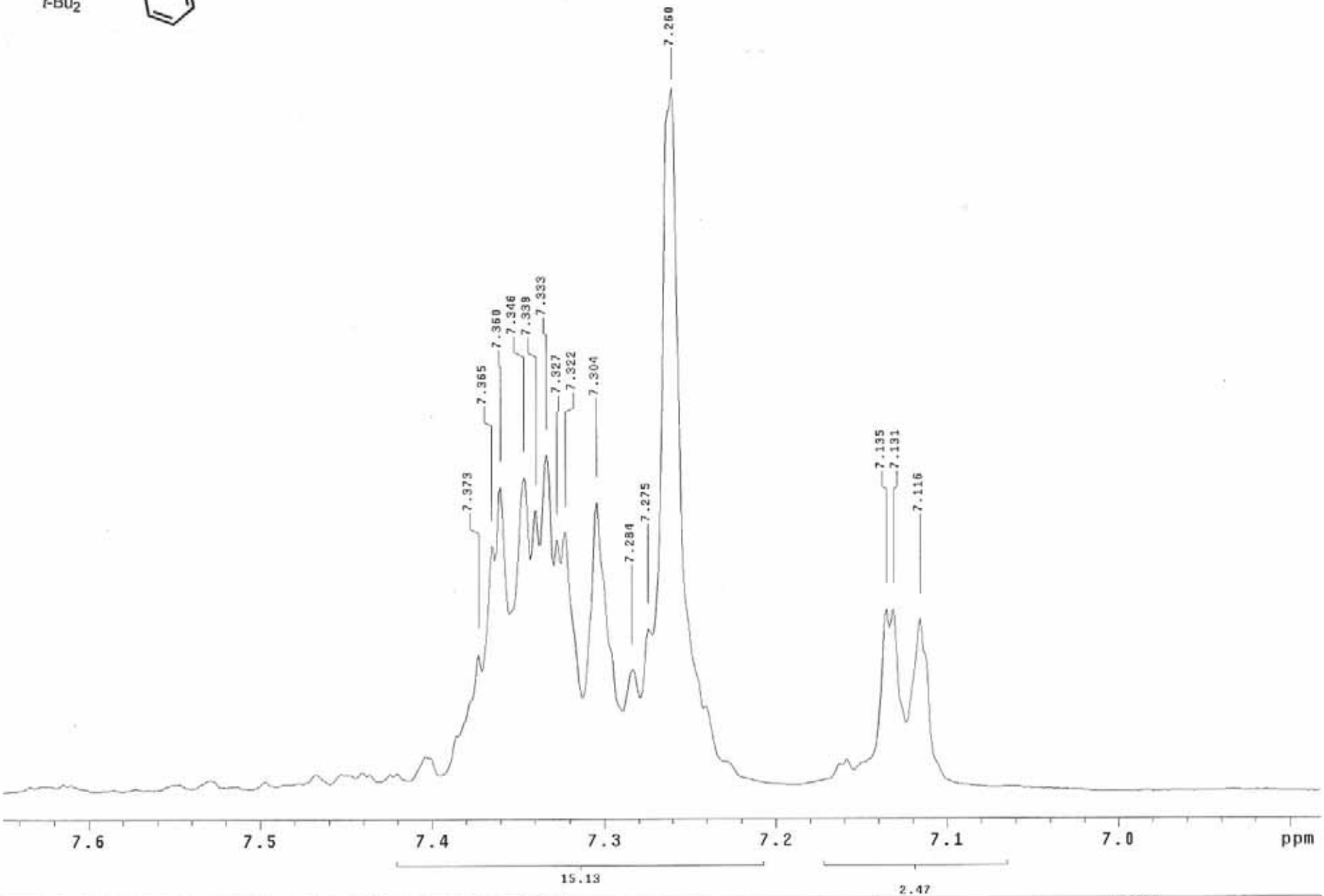


PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 110 repetitions	OBSERVE C13, 100.6472202 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 0.1 Hz FT size 65536 Total time 6 minutes			9AB41-Rx1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"

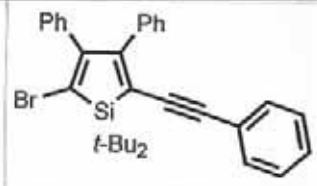


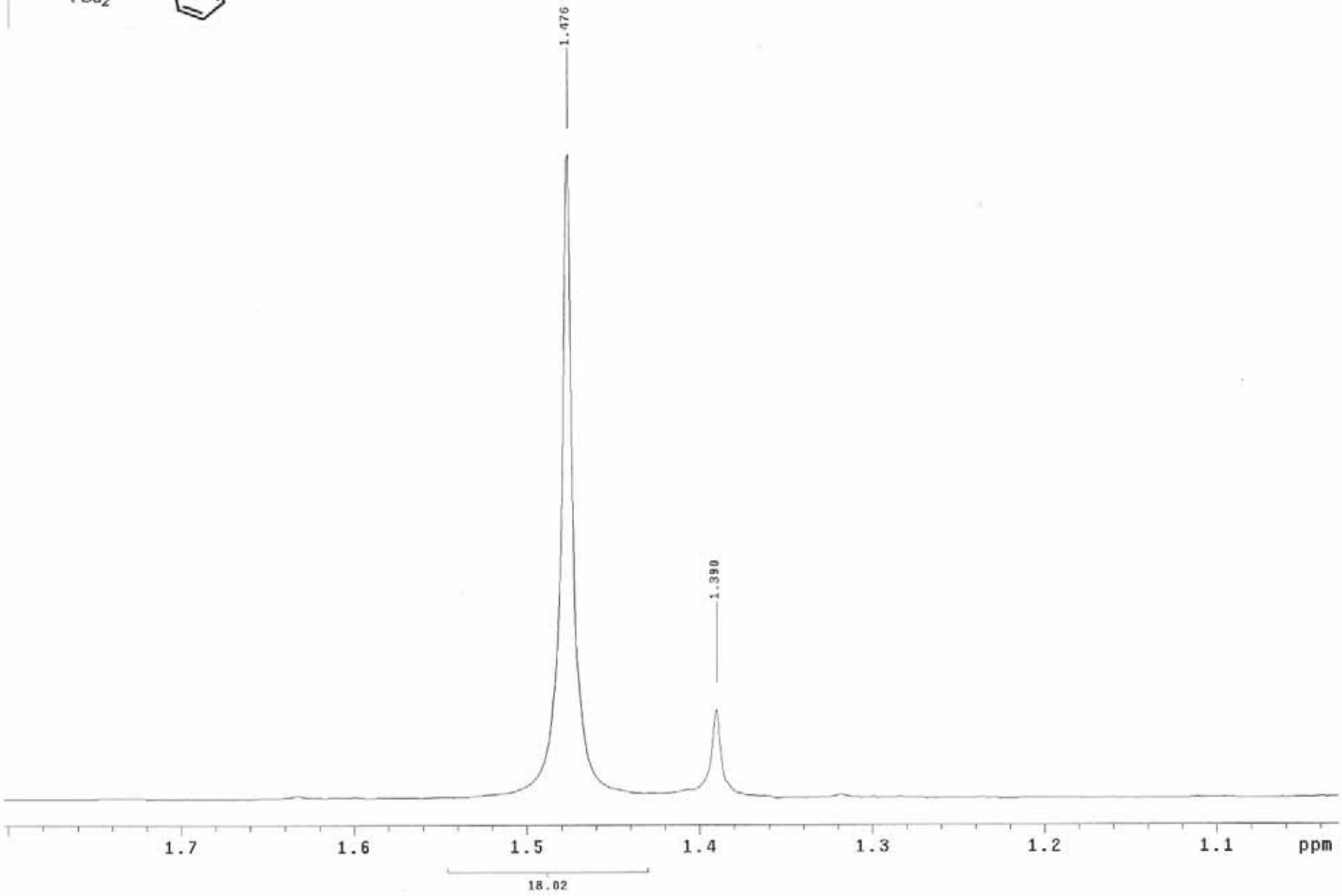
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669784	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB39F1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



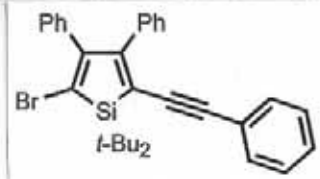


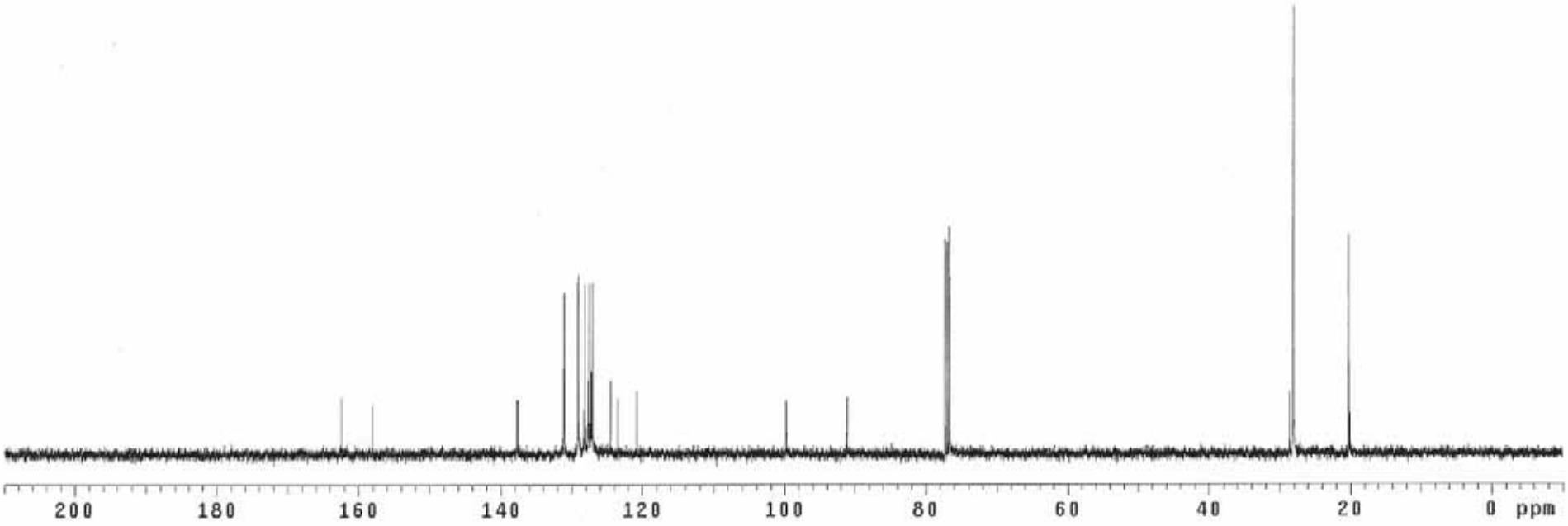
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669757	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			9AB39F1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



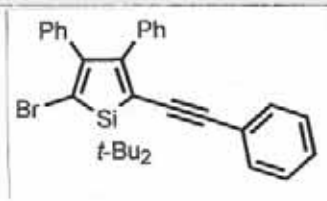


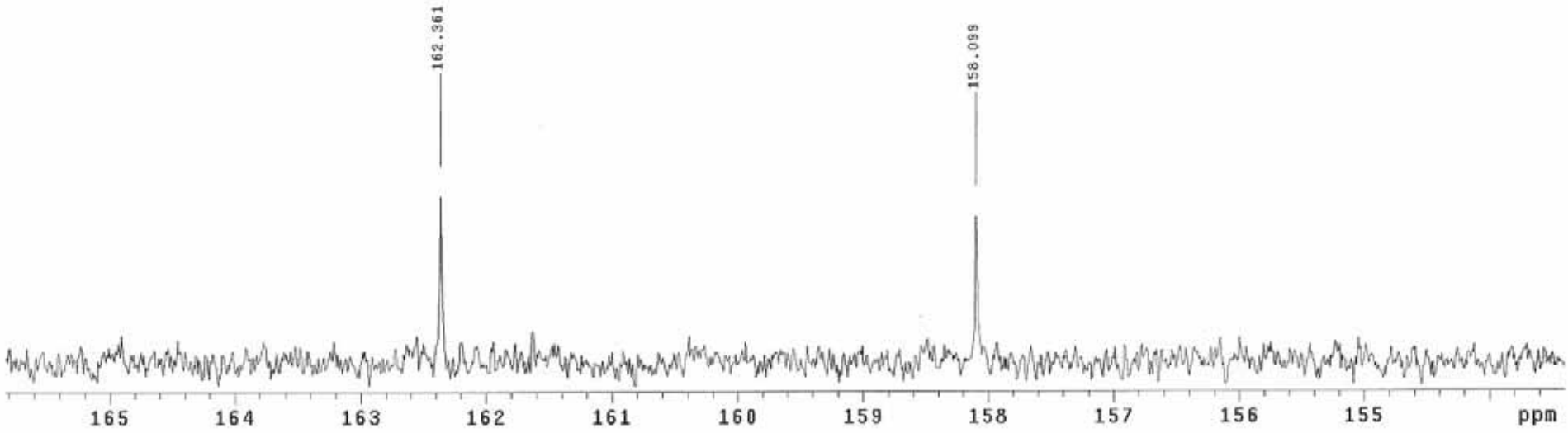
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 15.9 degrees Acq. time 2.856 sec Width 5602.2 Hz 17 repetitions	OBSERVE H1, 400.2669757	DATA PROCESSING Line broadening 0.1 Hz FT size 32768 Total time 1 minute			SAB38F1 Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



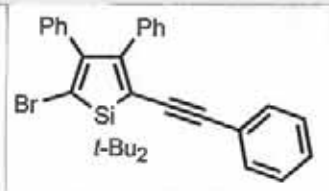


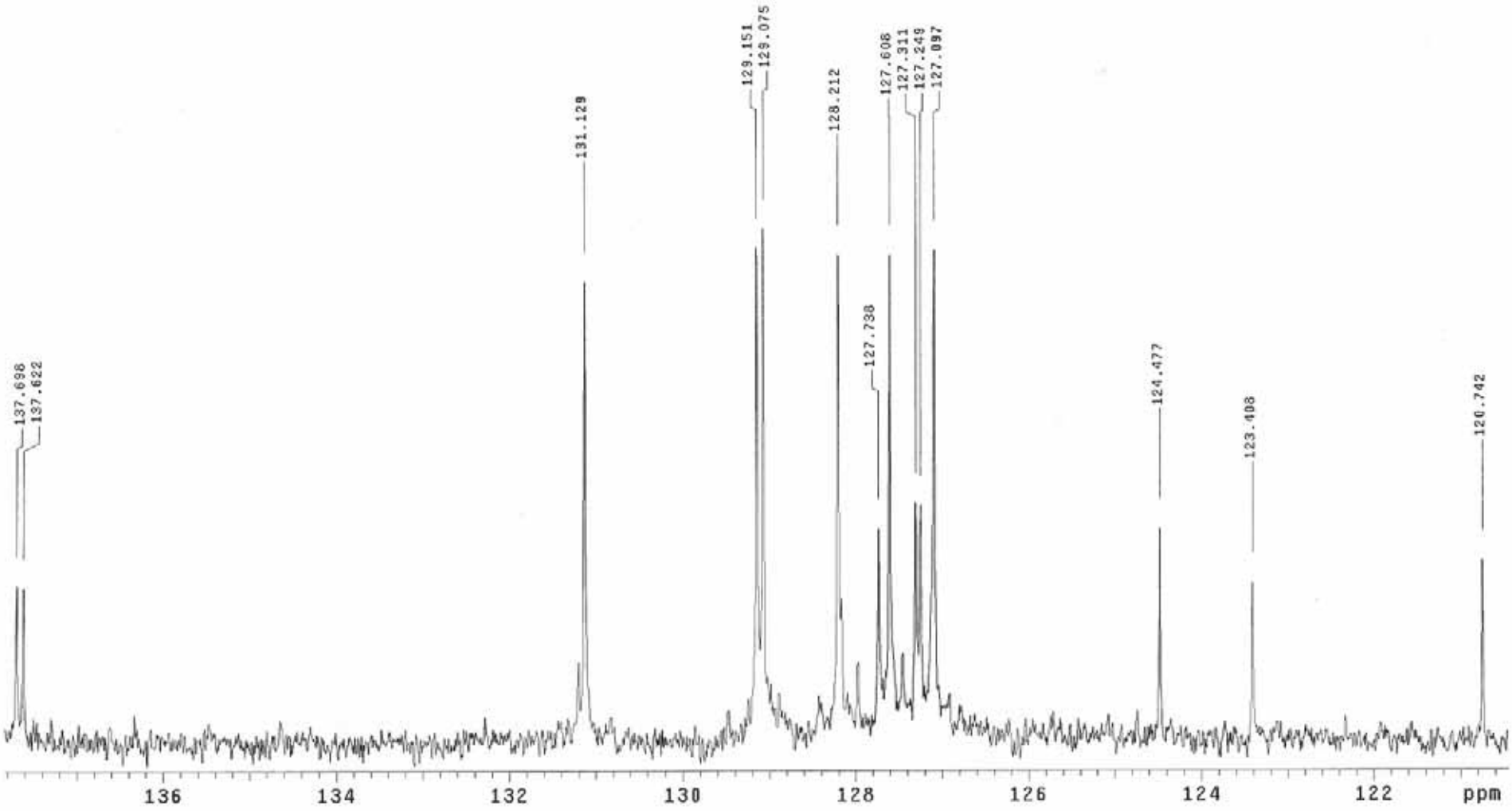
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 47 repetitions	OBSERVE C13, 100.6472287 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 2 minutes			9AB39F1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



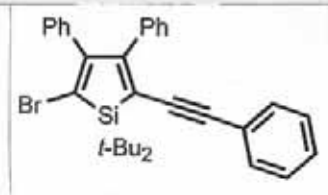


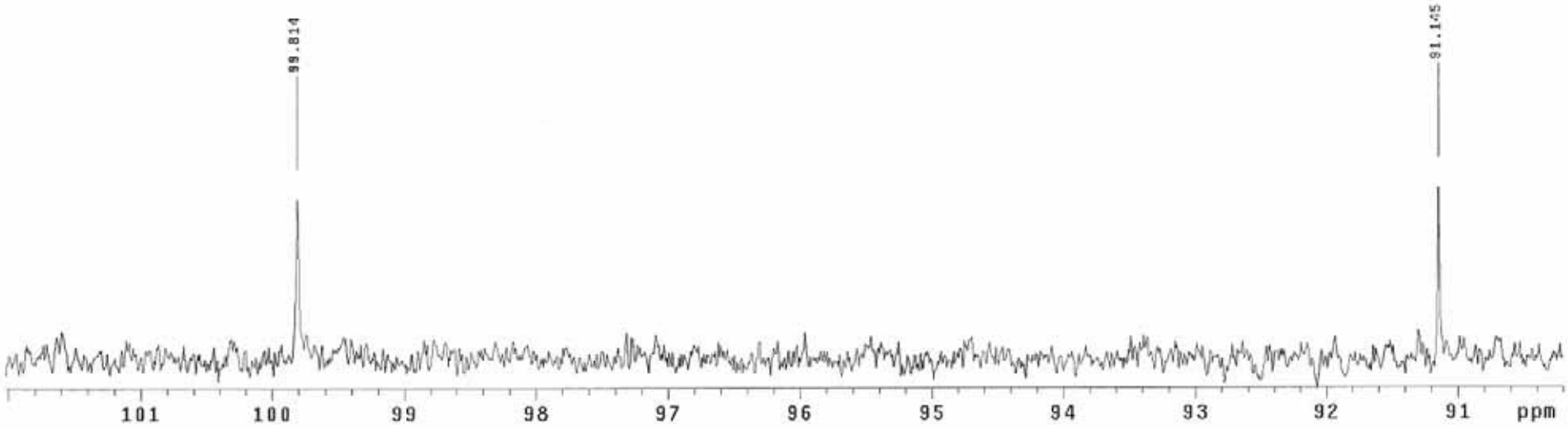
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 47 repetitions	OBSERVE C13, 100.6472287 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 2 minutes			9AB39F1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"



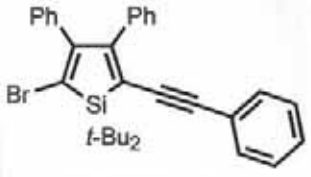


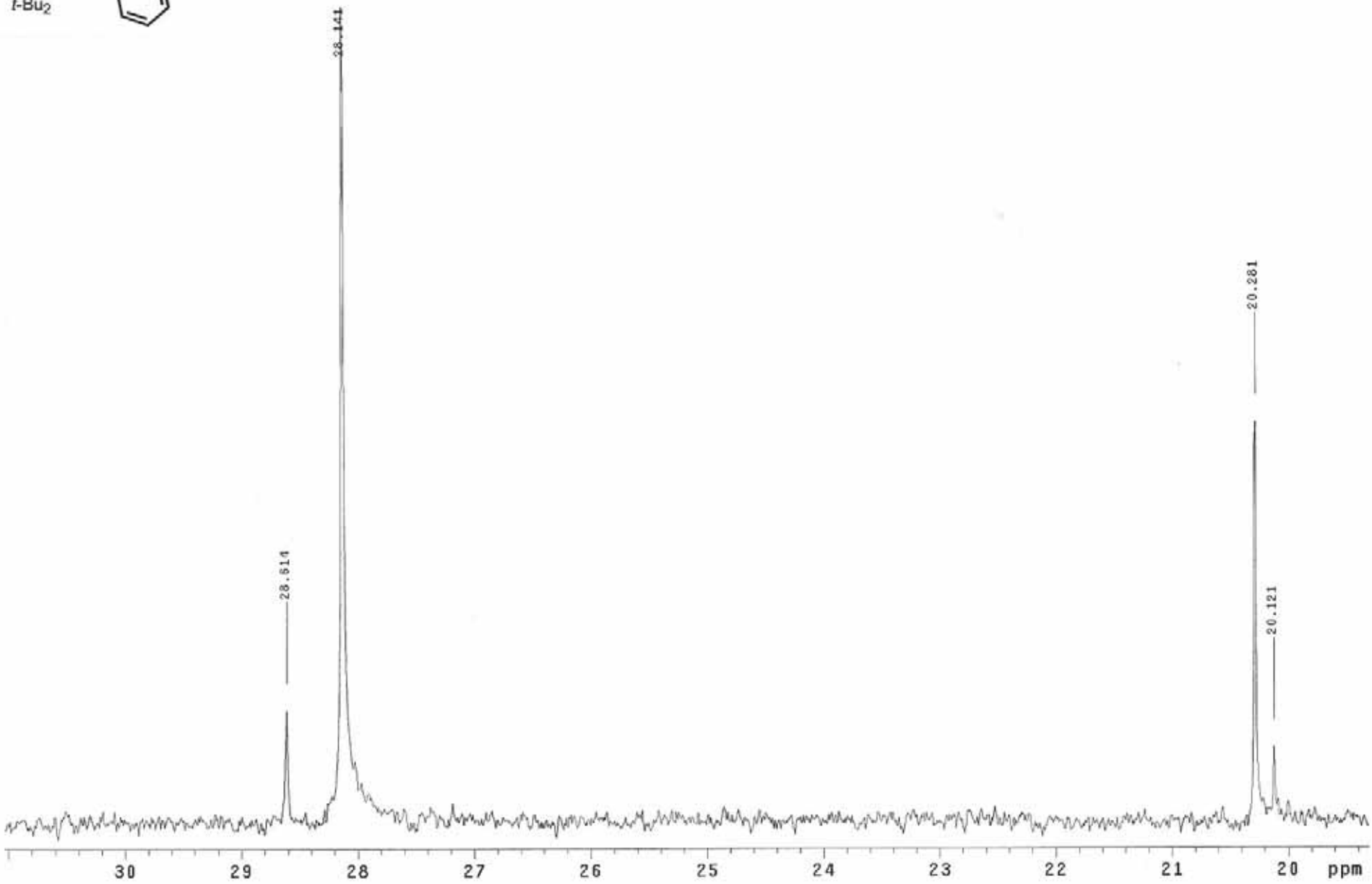
PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 47 repetitions	OBSERVE C13, 100.6472287 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 2 minutes			9AB39F1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 47 repetitions	OBSERVE C13, 100.6472287 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 2 minutes			9AB39F1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"





PULSE SEQUENCE Relax. delay 2.000 sec Pulse 23.3 degrees Acq. time 1.280 sec Width 25188.9 Hz 47 repetitions	OBSERVE C13, 100.6472287 DECOUPLE H1, 400.2689955 Power 38 dB continuously on WALTZ-16 modulated	DATA PROCESSING Line broadening 1.0 Hz FT size 65536 Total time 2 minutes			9AB39F1-13C Pulse Sequence: s2pul Solvent: CDCl3 Ambient temperature Mercury-400 "nmr6"