1. General and Materials.

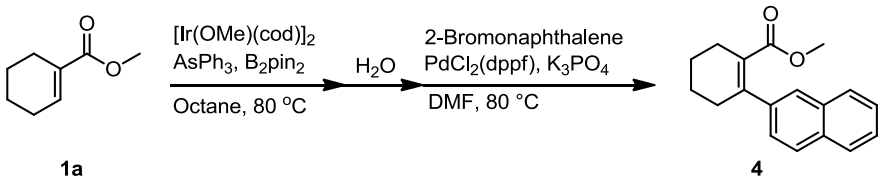
Materials were obtained from commercial suppliers and purified by standard procedures unless otherwise noted. Solvents were also purchased from commercial suppliers, degassed via N_2 bubbling, and further dried over molecular sieves (MS 4Å). NMR spectra were recorded on JEOL JNM-ECX400P and JNM-ECS400 spectrometer (^{1}H: 400 MHz and ^{13}C: 100 MHz). Tetramethylsilane (^{1}H) and $CDCl_3$ (^{13}C) were employed as external standards, respectively. $[Ir(OMe)(cod)]_2$ was synthesized according to the reported procedure.[1] Tetradecane was used as an internal standard to determine GC yield. GLC analyses were conducted with a Shimadzu GC-2014 or GC-2025 equipped with ULBON HR-1 glass capillary column (Shinwa Chemical Industries) and a FID detector. Elemental analyses and high-resolution mass spectra were recorded at the Center for Instrumental Analysis, Hokkaido University.

2. General Experimental Procedures.

A Representative Procedure for the Iridium(I)-Catalyzed Vinylic C–H Borylation of 1a (Table 1).

$[Ir(OMe)(cod)]_2$ (4.97 mg, 0.0075 mmol) and bis(pinacolato)diboron (B_2pin_2) (**2**) (140 mg, 0.55 mmol), $AsPh_3$(triphenylarsine) (9.19 mg, 0.030 mmol) were placed in an oven-dried two neck flask. The flask was connected to a vacuum/nitrogen manifold through a rubber tube. It was evacuated and then backfilled with nitrogen. This cycle was repeated three times. Octane (3 mL) was added in the flask through the rubber septum, and stirred at room temperature for 10 min. Then, **1a** (70.1 mg, 0.5 mmol) was added to the reaction mixture, and stirred at 80 or 120 °C. After the reaction was complete, the reaction mixture was concentrated and purified by flash column chromatography (SiO_2, EtOAc/hexane, 1:99–5:95) to give the corresponding alkenylboronate **3a** as a colorless oil.

The Procedure for One-pot Synthesis of 4.

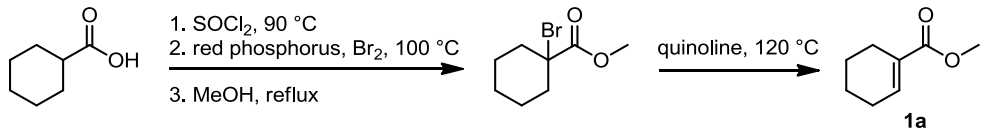


$[Ir(OMe)(cod)]_2$ (49.7 mg, 0.15 mmol) and B_2pin_2 (**2**) (1.40 g, 5.5 mmol), $AsPh_3$ (91.9 mg, 0.3 mmol) were placed in an oven-dried two neck flask. The flask was connected to a vacuum/nitrogen manifold through a rubber tube. It was evacuated and then backfilled with nitrogen. This cycle was repeated three times. Octane (15 mL) was added in the flask through the rubber septum *via* a syringe, and stirred at room temperature for 10 min. Then, **1a** (701 mg, 5.0 mmol) was added to the reaction

mixture, and stirred at 80 °C for 16 h. The reaction mixture was cooled to r.t., and H_2O (1.5 ml) was added and stirred for 10 min. Without purification, $PdCl_2$(dppf) (92.0 mg, 0.125 mmol), K_3PO_4 (1.59 g, 7.50 mmol), and 2-bromonaphthalene (518 mg, 2.50 mmol) were added to the reaction mixture and stirred at 80 °C for 8 h. After the reaction was complete, the reaction mixture was cooled to r.t. and extracted with EtOAc three times. The combined organic layer was dried over $MgSO_4$. After filtration, the solvents were removed by evaporation. The crude product was purified by flash column chromatography to obtain **4** (271.3 mg, 47%(78% GC yield)) as a syrup. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.75–1.85 (m, 4H), 2.44–2.55 (m, 4H), 3.37 (s, 3H), 7.28 (dd, *J* = 7.0, 1.8 Hz, 1H), 7.42–7.48 (m, 2H), 7.58–7.62 (m, 1H), 7.77–7.82 (m, 3H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.9 (*C*H_2), 22.5 (*C*H_2), 26.7 (*C*H_2), 32.6 (*C*H_2), 51.2 (*C*H_3), 125.0 (*C*H), 125.59 (*C*H), 125.64 (*C*H), 125.9 (*C*H), 127.4 (*C*H), 127.6 (*C*H), 127.9 (*C*H), 128.0 (*C*), 132.4 (*C*), 133.2 (*C*), 140.8 (*C*). 145.7 (*C*), 170.3 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{18}H_{18}O_2Na$, 289.11990; found, 289.12018.

3. Preparation of Substrates.

Preparation of methyl cyclohex-1-enecarboxylate (1a).[2]



1a

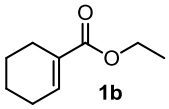
In a vacuum dried three-necked, 500 mL, round bottomed flask, cyclohexanecarboxylic acid (50.3 mL, 400 mmol) and thionyl chloride (36.3 mL, 500 mL) was added and stirred at 90 °C for 2 h. Then the reaction mixture was cooled to 80 °C and red phosphorus (0.65 g) was added with stirring. Bromine (25.8 mL, 500 mmol) was added dropwise as temperature was maintained below 100 °C. The reaction mixture was heated at 100 °C for an additional 5 h and then cooled to 0 °C and dry methanol (85.0 mL, 2.10 mol) was added dropwise. The reaction mixture was heated to reflux for 1 h. After that, the reaction mixture was quenched by addition of ice-cold water and extracted with Et_2O four times. The combined organic layer was washed with 1M $Na_2S_2O_3$ aq. once and saturated $NaHCO_3$ aq. three times and saturated NaCl aq. once. The combined organic layer was dried over $MgSO_4$. After filtration, the solvents were removed by evaporation. The crude product was purified by vacuum distillation to obtain methy 1-bromocyclohexanecarboxylate (86.5 g, 392 mmol, 98%) as a colorless oil.

In a vacuum dried 300 mL of a round bottomed flask, methyl 1-bromocyclohexanecarboxylate (86.2 g, 390 mmol) and quinoline (74.0 mL, 624 mmol) was added and the flask was heated to 120 °C for 2 h under nitrogen atmosphere. After 15 min of heating, a slight exothermic reaction was noted and the mixture separated into two layers. The reaction mixture was cooled and quenched by

addition of 20% HCl aq. and extracted with hexane four times. The combined organic layer was washed with 10% HCl aq. and saturated $NaHCO_3$ aq. and saturated NaCl aq. and was dried over $MgSO_4$. After filtration, the solvents were removed by evaporation. The crude product was purified by vacuum distillation to obtain **1a** (37.8 g, 270 mmol, 69%) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.55–1.73 (m, 4H), 2.14–2.32 (m, 4H), 3.73 (s, 3H), 6.95–7.00 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 21.9 (*C*H_2), 24.0 (*C*H_2), 25.6 (*C*H_2), 51.3 (*C*H_3), 130.1 (*C*), 139.6 (*C*H), 167.9 (*C*). HRMS-ESI (m/z): $[M]^+$ calcd for $C_8H_{12}O_2$, 140.08373; found, 140.08332.

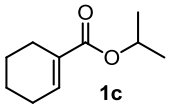
Preparation of ethyl cyclohex-1-enecarboxylate (1b).



1b

1b (5.94 g, 38.5 mmol, 39%, colorless oil) was prepared from cyclohexanecarboxylic acid (12.8 g, 100 mmol) and ethanol (24.2 g, 525 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.29 (t, *J* = 7.4 Hz, 3H), 1.56–1.68 (m, 4H), 2.16–2.28 (m, 4H), 4.18 (q, *J* = 7.2 Hz, 2H), 6.97–7.00 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 13.7 (*C*H_3), 21.0 (*C*H_2), 21.6 (*C*H_2), 23.6 (*C*H_2), 25.2 (*C*H_2), 59.5 (*C*H_2), 129.9 (*C*), 138.7 (*C*H), 166.8 (*C*). HRMS-EI (m/z): $[M]^+$ calcd for $C_9H_{14}O_2$, 154.09938; found, 154.09907.

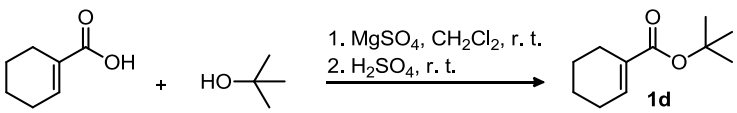
Preparation of isopropyl cyclohex-1-enecarboxylate (1c).



1c

1c (2.44 g, 14.5 mmol, 73%, colorless oil) was prepared from cyclohexanecarboxylic acid (2.56 g, 20.0 mmol) and propan-2-ol (6.01 g, 100 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.26 (d, *J* = 6.4 Hz, 6H), 1.56–1.68 (m, 4H), 2.15–2.27 (m, 4H), 5.06 (sep, *J* = 6.2 Hz, 1H), 6.94–6.97 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.4 (*C*H_2), 21.8 (*C*H_3), 22.0 (*C*H_2), 24.0 (*C*H_2), 25.6 (*C*H_2), 67.1 (*C*H), 130.7 (*C*), 138.9 (*C*H), 167.0 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{10}H_{16}O_2Na$, 191.10425; found, 191.10468.

Preparation of *tert*-Butyl cyclohex-1-enecarboxylate (1d).[3]

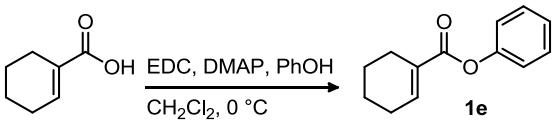


$MgSO_4$ (4.81 g, 40.0 mmol) was placed in an oven-dried two neck flask. The flask was connected

to a vacuum/nitrogen manifold through a rubber tube, evacuated and backfilled with nitrogen. CH_2Cl_2 (40 mL) was added in the flask through the rubber septum. Then, H_2SO_4 (0.53 mL, 10.0 mmol) was added dropwise at room temperature. After the addition of H_2SO_4 was complete, cyclohex-1-enecarboxylic acid (1.26 g, 10.0 mmol) and 2-methylpropan-2-ol (3.71 g, 50.0 mmol) was added and stirred at room temperature. The reaction was quenched by addition of saturated $NaHCO_3$ aq. (75 mL) and extracted with CH_2Cl_2 three times. The combined organic layer was dried over $MgSO_4$. After filtration, the solvents ware removed by evaporation. The crude product was purified by flash column chromatography to obtain **1d** (0.773 g, 4.24 mmol, 42%) as a colorless oil.

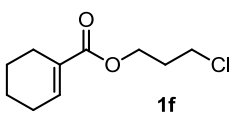
^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.48 (s, 9H), 1.55–1.67 (m, 4H), 2.15–2.23 (m, 4H), 6.87–6.90 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.4 (*C*H_2), 22.0 (*C*H_2), 24.0 (*C*H_2), 25.5 (*C*H_2), 27.9 (*C*H_3), 79.4 (*C*), 131.6 (*C*), 138.1 (*C*H), 166.7 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{11}H_{18}O_2Na$, 201.11990; found, 205.12001.

Preparation of phenyl cyclohex-1-enecarboxylate (1e).[4]



In a vacuum dried 300 mL of a round bottomed flask, cyclohex-1-enecarboxylic acid (2.52 g, 20.0 mmol) and phenol (2.07 g, 22.0 mmol) were dissolved in dry CH_2Cl_2 (110 mL) and the flask was cooled to 0 °C under nitrogen atmosphere. 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide (EDC) (4.60 g, 24.0 mmol) and *N*,*N*-dimethyl-4-aminopyridine (DMAP) (0.244 g, 2.0 mmol) were then added portion wise. After stirred for 14 h at room temperature, the reaction mixture was quenched by addition of saturated NH_4Cl aq. and extracted with CH_2Cl_2 three times. The combined organic layer was then dried over $MgSO_4$. After filtration, the solvents were removed by evaporation. The crude product was purified by flash column chromatography to obtain **1e** (3.40 g, 16.8 mmol, 84%) as a solid. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.63–1.76 (m, 4H), 2.24–2.31 (m, 2H), 2.35–2.43 (m, 2H), 7.10 (d, *J* = 7.2 Hz, 2H), 7.20–7.26 (m, 2H), 7.38 (t, *J* = 9.0 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 22.0 (*C*H_2), 24.2 (*C*H_2), 26.0 (*C*H_2), 121.7 (*C*H), 125.5 (*C*H), 129.3 (*C*H), 129.8 (*C*), 141.9 (*C*H), 151.1 (*C*), 166.0 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{13}H_{14}O_2Na$, 255.08860; found, 225.08847.

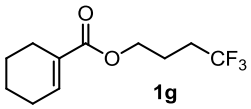
Preparation of 3-chloropropyl cyclohex-1-enecarboxylate (1f).



1f (1.60 g, 7.9 mmol, 79%, colorless oil) was prepared from cyclohex-1-enecarboxylic acid (1.26 g,

10.0 mmol) and 3-chloropropan-1-ol (1.04 g, 11.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.57–1.69 (m, 4H), 2.14 (quint, *J* = 6.2 Hz, 2H), 2.18–2.27 (m, 4H), 3.64 (t, *J* = 6.4 Hz, 2H), 4.28 (t, *J* = 6.0 Hz, 2H), 6.98–7.01 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.2 (*C*H_2), 21.8 (*C*H_2), 23.9 (*C*H_2), 25.5 (*C*H_2), 31.5 (*C*H_2), 41.1 (*C*H_2), 60.6 (*C*H_2), 129.9 (*C*), 139.7 (*C*H), 167.0 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{10}H_{15}ClO_2Na$, 225.06528; found, 225.06545.

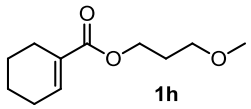
Preparation of 4,4,4-trifluorobutyl cyclohex-1-enecarboxylate (1g).



1g

1g (0.885 g, 3.75 mmol, 75%, colorless oil) was prepared from cyclohex-1-enecarboxylic acid (0.57 g, 4.5 mmol) and 4,4,4-trifluorobutan-1-ol (0.64 g, 5.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.57–1.69 (m, 4H), 1.91–1.98 (m, 2H), 2.14–2.27 (m, 6H), 4.19 (t, *J* = 6.2 Hz, 2H), 6.99–7.01 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 21.6 (d, $^{3}J_{C-F}$ = 2.0 Hz, *C*H_2), 21.9 (*C*H_2), 24.0 (*C*H_2), 25.7 (*C*H_2), 30.7 (q, $^{2}J_{C-F}$ = 28.7 Hz, *C*H_2), 62.2 (*C*H_2), 126.9 (q, $^{1}J_{C-F}$ = 274 Hz, *C*), 129.9 (*C*), 140.0 (*C*H), 167.1 (*C*). HRMS-APCl (m/z): $[M+H]^+$ calcd for $C_{11}H_{16}F_3O_2$, 237.10969; found, 237.11000.

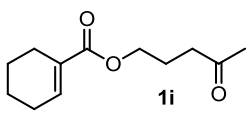
Preparation of 3-methoxypropyl cyclohex-1-enecarboxylate (1h).



1h

1h (3.76 g, 19.0 mmol, 95%, colorless oil) was prepared from cyclohex-1-enecarboxylic acid (2.52 g, 20.0 mmol) and 3-methoxypropan-1-ol (1.98 g, 22.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.57–1.69 (m, 4H), 1.94 (quint, *J* = 6.4 Hz, 2H), 2.17–2.31 (m, 4H), 3.35 (s, 3H), 3.47 (t, *J* = 6.4 Hz, 2H), 4.21 (t, *J* = 6.4 Hz, 2H), 6.98–7.00 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.2 (*C*H_2), 21.8 (*C*H_2), 23.8 (*C*H_2), 25.4 (*C*H_2), 28.8 (*C*H_2), 58.3 (*C*H_3), 61.0 (*C*H_2), 68.9 (*C*H_2), 130.0 (*C*), 139.2 (*C*H), 167.1 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{11}H_{18}O_3Na$, 221.11482; found, 221.11446.

Preparation of 4-oxopentyl cyclohex-1-enecarboxylate (1i).

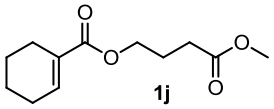


1i

1i (0.836 g, 4.0 mmol, 40%, colorless oil) was prepared from cyclohex-1-enecarboxylic acid (1.26 g,

10.0 mmol) and 5-hydroxypentan-2-one (1.02 g, 10.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.57–1.69 (m, 4H), 1.95 (quint, *J* = 7.0 Hz, 2H), 2.17 (s, 3H), 2.17–2.26 (m, 4H), 2.54 (t, *J* = 7.6 Hz, 2H), 4.13 (t, *J* = 6.4 Hz, 2H), 6.96–6.99 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 21.9 (*C*H_2), 22.7 (*C*H_2), 23.9 (*C*H_2), 25.6 (*C*H_2), 29.8 (*C*H_3), 39.8 (*C*H_2), 63.1 (*C*H_2), 130.0 (*C*), 139.6 (*C*H), 167.3 (*C*), 207.6 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{12}H_{18}O_3Na$, 233.11482; found, 233.11434.

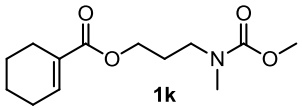
Preparation of 4-methoxy-4-oxobutyl cyclohex-1-enecarboxylate (1j).



1j

1j (1.01 g, 4.47 mmol, 47%, colorless oil) was prepared from cyclohex-1-enecarboxylic acid (1.26 g, 10.0 mmol) and methyl 4-hydroxybutanoate (1.30 g, 11.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.57–1.68 (m, 4H), 2.01 (quint, *J* = 7.2 Hz, 2H), 2.15–2.28 (m, 4H), 2.43 (t, *J* = 7.6 Hz, 2H), 3.69 (s, 3H), 4.16 (t, *J* = 6.4 Hz, 2H), 6.97–6.99 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.4 (*C*H_2), 22.0 (*C*H_2), 24.0 (*C*H_2), 24.1 (*C*H_2), 25.7 (*C*H_2), 30.7 (*C*H_2), 51.6 (*C*H_3), 63.1 (*C*H_2), 130.1 (*C*), 139.8 (*C*H), 167.4 (*C*), 173.3 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{12}H_{18}O_4Na$, 249.10973; found, 249.11012.

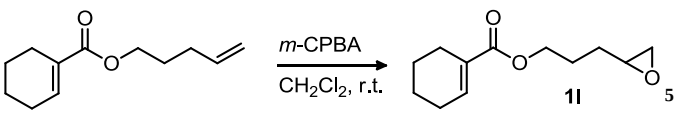
Preparation of 3-((methoxycarbonyl)(methyl)amino)propyl cyclohex-1-enecarboxylate (1k).



1k

1k (1.06 g, 4.13 mmol, 41%, colorless oil) was prepared from cyclohex-1-enecarboxylic acid (1.26 g, 10.0 mmol) and methyl (3-hydroxypropyl)(methyl)carbamate (1.62 g, 11.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.54–1.73 (m, 4H), 1.82–1.97 (m, 2H), 2.19–2.28 (m, 4H), 2.85–2.97 (m, 3H), 3.29–3.44 (m, 2H), 3.68 (s, 3H), 4.08–4.21 (m, 2H), 6.98–7.01 (m, 1H). ^{13}C NMR (100 MHz, C_6D_6, 50 °C, δ): 22.3 (*C*H_2), 22.9 (*C*H_2), 25.1 (*C*H_2), 26.3 (*C*H_2), 28.1 (*C*H_2), 34.7 (*C*H_3), 46.6 (*C*H_2), 52.6 (*C*H_3), 62.3 (*C*H_2), 131.4 (*C*), 139.6 (*C*H), 157.1 (*C*), 167.3 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{13}H_{21}O_4NNa$, 278.13628; found, 278.13566.

Preparation of 3-(oxiran-2-yl)propyl cyclohex-1-enecarboxylate (1l).

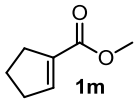


1l

Pent-4-en-1-yl cyclohex-1-enecarboxylate (1.38 g, 7.00 mmol, 71%) was prepared from

cyclohex-1-enecarboxylic acid (1.26 g, 10.0 mmol) and pent-4-en-1-ol (0.947 g, 11.0 mmol) according to the procedure described for phenyl cyclohex-1-enecarboxylate (**4e**). *m*-Chloroperoxybenzoic acid (1.45 g, 8.40 mmol) was placed in an oven-dried 200 mL of a round bottomed flask. The flask was connected to a vacuum/nitrogen manifold through a rubber tube, evacuated and backfilled with nitrogen. The solution of pent-4-en-1-yl cyclohex-1-enecarboxylate (1.38 g, 7.00 mmol) and dry CH_2Cl_2 (70 mL) was added dropwise to the flask. After the reaction was complete, the reaction mixture was extracted with CH_2Cl_2 and saturated $NaHCO_3$ aq. three times. The crude mixture was purified by flash column chromatography to obtain **1l** (0.703 g, 3.34 mmol, 48%) as a colorless oil. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.57–1.72 (m, 6H), 1.76–1.92 (m, 2H), 2.15–2.26 (m, 4H), 2.48–2.50 (m, 1H), 2.77 (t, *J* = 4.4 Hz, 1H), 2.93–2.98 (m, 1H), 4.18 (t, *J* = 6.6 Hz, 2H), 6.97–7.00 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.4 (*C*H_2), 22.0 (*C*H_2), 24.1 (*C*H_2), 25.2 (*C*H_2), 25.7 (*C*H_2), 29.1 (*C*H_2), 47.0 (*C*H_2), 51.7 (*C*H), 63.6 (*C*H_2), 130.2 (*C*), 139.7 (*C*H), 167.5 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{12}H_{18}O_3Na$, 233.11482; found, 233.11494.

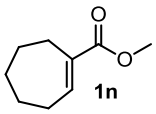
Preparation of methyl cyclopent-1-enecarboxylate (1m).



1m (7.33 g, 58.2 mmol, 58%, colorless oil) was prepared from cyclopentanecarboxylic acid (11.4 g, 100 mmol) and methanol (21.3 mL, 525 mmol) according to the procedure described above.

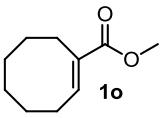
^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.96 (quint, *J* = 7.6 Hz, 2H), 2.42–2.61 (m, 4H), 3.74 (s, 3H), 6.77–6.79 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 22.8 (*C*H_2), 31.0 (*C*H_2), 33.0 (*C*H_2), 50.9 (*C*H_3), 136.1 (*C*), 143.4 (*C*H), 165.3 (*C*). HRMS-APCl (m/z): $[M+H]^+$ calcd for $C_7H_{11}O_2$, 127.07536; found, 127.07559.

Preparation of methyl cyclohept-1-enecarboxylate (1n).



1n (1.28 g, 8.30 mmol, 59%, colorless oil) was prepared from cycloheptanecarboxylic acid (1.99 g, 14.0 mmol) and methanol (2.24 g, 70.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.49–1.57 (m, 4H), 1.75–1.81 (m, 2H), 2.29 (dt, *J* = 6.3, 3.2 Hz, 2H), 2.51–2.54 (m, 2H), 3.72 (s, 3H), 7.18 (t, *J* = 7.0 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 25.6 (*C*H_2), 26.1 (*C*H_2), 27.2 (*C*H_2), 28.6 (*C*H_2), 31.9 (*C*H_2), 51.5 (*C*H_3), 136.3 (*C*), 144.3 (*C*H), 168.4 (*C*). HRMS-EI (m/z): $[M]^+$ calcd for $C_9H_{14}O_2$, 154.09938; found, 154.09963.

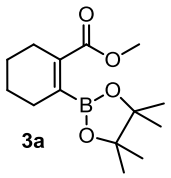
Preparation of (*E*)-methyl cyclooct-1-enecarboxylate (1o).



1o (0.972 g, 5.78 mmol, 58%, colorless oil) was prepared from cyclooctanecarboxylic acid (1.56 g, 10.0 mmol) and methanol (1.67 g, 52.0 mmol) according to the procedure described above. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.43–1.51 (m, 4H), 1.54–1.62 (m, 4H), 2.28 (dt, *J* = 8.8, 4.0 Hz, 2H), 2.45–2.48 (m, 2H), 3.73 (s, 3H), 6.99 (t, *J* = 8.6 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 24.5 (CH_2), 25.7 (CH_2), 26.3 (CH_2), 27.0 (CH_2), 28.8 (CH_2), 28.9 (CH_2), 51.3 (CH_3), 132.9 (*C*), 142.3 (*C*H), 167.8 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{10}H_{16}O_2Na$, 191.10425; found, 191.10465.

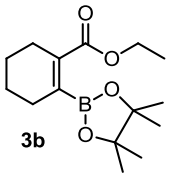
4. Characterization of Borylation Products.

Methyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3a).



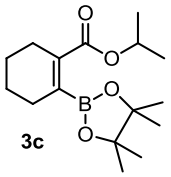
Product **3a** (125.3 mg, 87% Isolated yield, 99% GC yield) was obtained from **1a** (70.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.34 (s, 12H), 1.54–1.66 (m, 4H), 2.20–2.24 (m, 4H), 3.74 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.2 (CH_2), 21.6 (CH_2), 24.0 (CH_2), 24.6 (CH_3), 27.8 (CH_2), 51.6 (CH_3), 83.2 (*C*), 133.6 (*C*), 147.6 (br, B–*C*), 169.2 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{14}H_{23}BO_4Na$, 288.16179; found, 288.16138.

Ethyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3b).



Product **3b** (87% GC yield) was obtained from **1b** (77.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.27 (t, *J* = 7.2 Hz, 3H), 1.33 (s, 12H), 1.54–1.66 (m, 4H), 2.17–2.27 (m, 4H), 4.21 (q, *J* = 7.2 Hz, 2H).^{13}C NMR (100 MHz, $CDCl_3$, δ): 13.9 (CH_3), 21.1 (CH_2), 21.6 (CH_2), 23.8 (CH_2), 24.4 (CH_3), 27.6 (CH_2), 60.4 (CH_2), 83.0 (*C*), 133.8 (*C*), 148.1 (br, B–*C*), 168.8 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{15}H_{25}BO_4Na$, 302.17744; found, 302.17752.

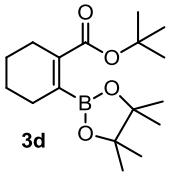
Isopropyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3c).



3c

Product **3c** (77% GC yield) was obtained from **1c** (84.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.24 (d, *J* = 6.6 Hz, 6H), 1.33 (s, 12H), 1.54–1.68 (m, 4H), 2.15–2.25 (m, 4H), 5.07 (sep, *J* = 6.6 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.2 (*C*H_2), 21.6 (*C*H_2), 21.6 (*C*H_3), 23.7 (*C*H_2), 24.5 (*C*H_3), 27.6 (*C*H_2), 67.8 (*C*H), 82.9 (*C*), 134.3 (*C*), 148.4 (br, B–*C*), 168.7 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{16}H_{27}BO_4Na$, 316.19309; found, 316.19331.

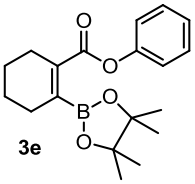
tert-Butyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3d).



3d

Product **3d** (85% GC yield) was obtained from **1d** (91.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.20–1.27 (m, 1H), 1.32 (s, 11H), 1.46 (s, 9H), 1.54–1.63 (m, 4H), 2.12–2.22 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.4 (*C*H_2), 21.9 (*C*H_2), 24.0 (*C*H_2), 24.7 (*C*H_3), 27.5 (*C*H_2), 28.0 (*C*H_3), 80.8 (*C*), 82.9 (*C*H), 135.8 (*C*), 148.6 (br, B–*C*), 169.2 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{17}H_{29}BO_4Na$, 330.20874; found, 330.20853.

Phenyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3e).

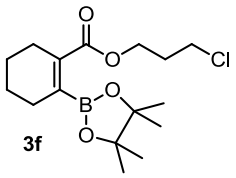


3e

Product **3e** (96% GC yield) was obtained from **1e** (101 mg, 0.50 mmol) as a powder, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.24 (s, 12H), 1.61–1.74 (m, 4H), 2.29–2.41 (m, 4H), 7.11 (d, *J* = 8.0 Hz, 2H), 7.21 (t, *J* = 7.6 Hz, 1H), 7.36 (t, *J* = 8.2 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 21.8 (*C*H_2), 24.6 (*C*H_2), 24.8 (*C*H_3), 28.4 (*C*H_2), 83.7 (*C*), 121.9 (*C*H), 125.6 (*C*H), 129.2 (*C*H), 133.7 (*C*), 149.0 (br, B–*C*), 150.8 (*C*), 166.6 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{19}H_{25}BO_4Na$, 350.17744;

found, 350.17718.

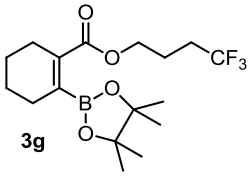
3-Chloropropyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3f).



3f

Product **3f** (86% GC yield) was obtained from **1f** (101 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.20–1.28 (m, 2H), 1.34 (s, 10H), 1.55–1.66 (m, 4H), 2.12 (quint, *J* = 6.4 Hz, 2H), 2.19–2.26 (m, 4H), 3.61 (t, *J* = 6.6 Hz, 2H), 4.29 (t, *J* = 6.4 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.2 (*C*H_2), 21.7 (*C*H_2), 24.0 (*C*H_2), 24.6 (*C*H_3), 27.9 (*C*H_2), 31.6 (*C*H_2), 41.1 (*C*H_2), 61.3 (*C*H_2), 83.3 (*C*), 133.6 (*C*), 148.9 (br, B–*C*), 168.7 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{16}H_{26}BO_4ClNa$, 350.15412; found, 350.15387.

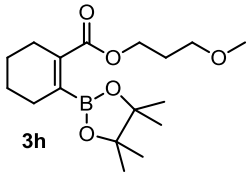
4,4,4-Trifluorobutyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3g).



3g

Product **3g** (93% GC yield) was obtained from **1g** (118 mg, 0.50 mmol) as a powder, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.17–1.27 (m, 1H), 1.33 (s, 11H), 1.55–1.69 (m, 4H), 1.89–1.96 (m, 2H), 2.12–2.25 (m, 6H), 4.20 (t, *J* = 6.4 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.1 (*C*H_2), 21.4 (*C*H_2), 21.6 (*C*H_2), 23.9 (*C*H_2), 24.5 (*C*H_3), 27.8 (*C*H_2), 30.5 (q, $^{2}J_{C-F}$ = 29.5 Hz, *C*H_2), 62.7 (*C*H_2), 83.2 (*C*), 126.7 (q, $^{1}J_{C-F}$ = 277 Hz, *C*), 133.5 (*C*), 149.2 (br, B–*C*), 168.6 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{17}H_{26}BO_4F_3Na$, 384.18048; found, 384.17999.

3-Methoxypropyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3h).

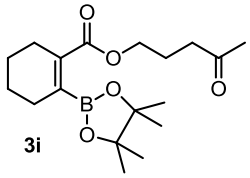


3h

Product **3h** (83% GC yield) was obtained from **1h** (99.1 mg, 0.50 mmol) as an oil, according to the

general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.17–1.26 (m, 1H), 1.33 (s, 11H), 1.54–1.69 (m, 4H), 1.91 (quint, *J* = 6.4 Hz, 2H), 2.20–2.24 (m, 4H), 3.33 (s, 3H), 3.44 (t, *J* = 6.4 Hz, 2H), 4.23 (t, *J* = 6.6 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 21.7 (*C*H_2), 24.0 (*C*H_2), 24.6 (*C*H_3), 27.8 (*C*H_2), 28.8 (*C*H_2), 58.5 (*C*H_3), 61.7 (*C*H_2), 69.0 (*C*H_2), 83.2 (*C*H), 133.9 (*C*), 148.6 (br, B–*C*), 169.0 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{17}H_{29}BO_5Na$, 346.20366; found, 346.20410.

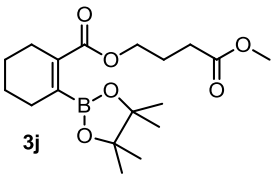
4-Oxopentyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3i).



3i

Product **3i** (65% GC yield) was obtained from **1i** (105 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.18–1.26 (m, 1H), 1.33 (s, 11H), 1.55–1.66 (m, 4H), 1.93 (quint, *J* = 6.6 Hz, 2H), 2.15 (s, 3H), 2.18–2.27 (m, 4H), 2.51 (t, *J* = 7.4 Hz, 2H), 4.15 (t, *J* = 6.4 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.2 (*C*H_2), 21.7 (*C*H_2), 22.6 (*C*H_2), 24.0 (*C*H_2), 24.6 (*C*H_3), 27.8 (*C*H_2), 29.8 (*C*H_3), 39.6 (*C*H_2), 63.7 (*C*H_2), 83.2 (*C*), 133.7 (*C*), 148.8 (br, B–*C*), 168.9 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{18}H_{29}BO_5Na$, 358.20366; found, 358.20419.

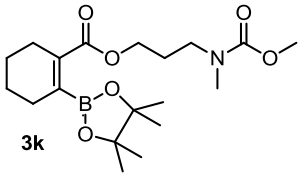
4-Methoxy-4-oxobutyl
2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3j).



3j

Product **3j** (74% GC yield) was obtained from **1j** (113 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.17–1.26 (m, 1H), 1.33 (s, 11H), 1.56–1.66 (m, 4H), 1.98 (quint, *J* = 6.8 Hz, 2H), 2.19–2.24 (m, 4H), 2.41 (t, *J* = 7.4 Hz, 2H), 3.68 (s, 3H), 4.17 (t, *J* = 6.4 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.1 (*C*H_2), 21.6 (*C*H_2), 23.7 (*C*H_2), 23.9 (*C*H_2), 24.5 (*C*H_3), 30.2 (*C*H_2), 51.3 (*C*H_3), 63.5 (*C*H_2), 83.2 (*C*), 133.6 (*C*), 148.7 (br, B–*C*), 168.8 (*C*), 173.0 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{18}H_{29}BO_6Na$, 374.19857; found, 374.19894.

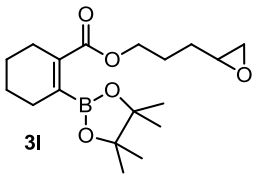
3-((Methoxycarbonyl)(methyl)amino)propyl
2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3k).



3k

Product **3k** (72% GC yield) was obtained from **1k** (128 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.17–1.27 (m, 2H), 1.33 (s, 10H), 1.59–1.69 (m, 4H), 1.81–1.95 (m, 2H), 2.17–2.28 (m, 4H), 2.85–2.94 (m, 3H), 3.28–3.40 (m, 2H), 3.68 (s, 3H), 4.10–4.16 (m, 2H). ^{13}C NMR (100 MHz, C_6D_6, 50 ℃, δ): 22.3 (*C*H_2), 22.8 (*C*H_2), 25.2 (*C*H_2), 25.6 (*C*H_3), 28.0 (*C*H_2), 29.0 (*C*H_2), 34.7 (*C*H_3), 46.7 (*C*H_2), 52.7 (*C*H_3), 62.7 (*C*H_2), 83.7 (*C*), 134.4 (*C*), 149.8 (br, B–*C*), 157.1 (*C*), 169.3 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{19}H_{32}BO_6NNa$, 403.22512; found, 403.22465.

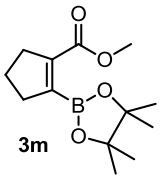
3-(Oxiran-2-yl)propyl
2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohex-1-enecarboxylate (3l).



3l

Product **3l** (79% GC yield) was obtained from **1l** (105 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.17–1.27 (m, 1H), 1.33 (s, 11H), 1.53–1.71 (m, 6H), 1.74–1.88 (m, 2H), 2.19–2.24 (m, 4H), 2.49 (dd, *J* = 5.1, 2.6 Hz, 1H), 2.76 (t, *J* = 4.6 Hz, 1H), 2.92–2.97 (m, 1H), 4.14–4.25 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 21.3 (*C*H_2), 21.8 (*C*H_2), 24.1 (*C*H_2), 24.7 (*C*H_3), 25.1 (*C*H_2), 27.9 (*C*H_2), 29.0 (*C*H_2), 47.0 (*C*H_2), 51.7 (*C*H), 64.2 (*C*H_2), 83.4 (*C*), 133.9 (*C*), 148.9 (br, B–*C*), 169.1 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{18}H_{29}BO_5Na$, 358.20366; found, 358.20327.

Methyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclopent-1-enecarboxylate (3m).

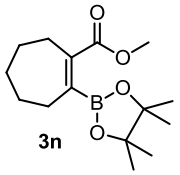


3m

Product **3m** (20% GC yield) was obtained from **1m** (63.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.26–1.27 (m, 1H), 1.34 (s, 11H), 1.94 (quint, *J* = 8.0 Hz, 2H), 2.61 (t, *J* = 7.6 Hz, 4H), 3.73 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 24.0 (*C*H_2), 24.6 (*C*H_3), 33.3 (*C*H_2), 37.5 (*C*H_2), 51.3 (*C*H_3), 83.8 (*C*), 142.2 (*C*), 148.7 (br, B–*C*), 166.0 (*C*). HRMS-APCl (m/z): $[M+H]^+$ calcd for $C_{13}H_{22}BO_4$,

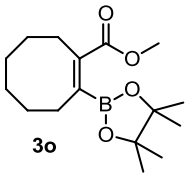
252.16420; found, 252.16463.

Methyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclohept-1-enecarboxylate (3n).



Product **3n** (43% GC yield) was obtained from **1n** (77.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.19–1.27 (m, 1H), 1.33 (s, 11H), 1.46–1.59 (m, 4H), 1.75–1.81 (m, 2H), 2.32–2.34 (m, 2H), 2.50–2.55 (m, 2H), 3.77 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 24.7 (*C*H_3), 25.66 (*C*H_2), 25.69 (*C*H_2), 27.3 (*C*H_2), 31.0 (*C*H_2), 32.2 (*C*H_2), 52.4 (*C*H_3), 82.8 (*C*), 139.7 (*C*), 157.0 (br, B–*C*), 170.9 (*C*). HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{15}H_{25}BO_4Na$, 302.17744; found, 302.17709.

(*E*)-Methyl 2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)cyclooct-1-enecarboxylate (3o).



Product **3o** (35% GC yield) was obtained from **1o** (84.1 mg, 0.50 mmol) as an oil, according to the general procedure for the iridium(I)-catalyzed vinylic C–H borylation. ^{1}H NMR (400 MHz, $CDCl_3$, δ): 1.17–1.28 (m, 1H), 1.33 (s, 11H), 1.43–1.69 (m, 8H), 2.35 (t, *J* = 6.2 Hz, 2H), 2.44 (t, *J* = 6.0 Hz, 2H), 3.76 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$, δ): 24.7 (*C*H_3), 24.9 (*C*H_2), 26.20 (*C*H_2), 26.22 (*C*H_2), 28.7 (*C*H_2), 29.0 (*C*H_2), 29.7 (*C*H_2), 52.1 (*C*H_3), 83.1 (*C*), 136.9 (*C*), 170.1 (*C*). The carbon directly attached to the boron atom was not detected, likely due to quadropolar relaxation. HRMS-ESI (m/z): $[M+Na]^+$ calcd for $C_{16}H_{27}BO_4Na$, 316.19309; found, 316.19282.

References

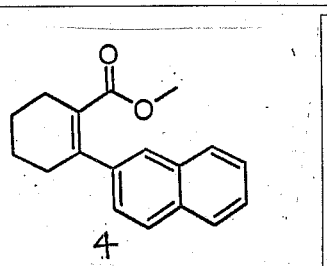
1. R.Uson, L. A. Oro, J. A. Cabeza, *Inorg. Synth.*, **2007**, *23*, 126–130.

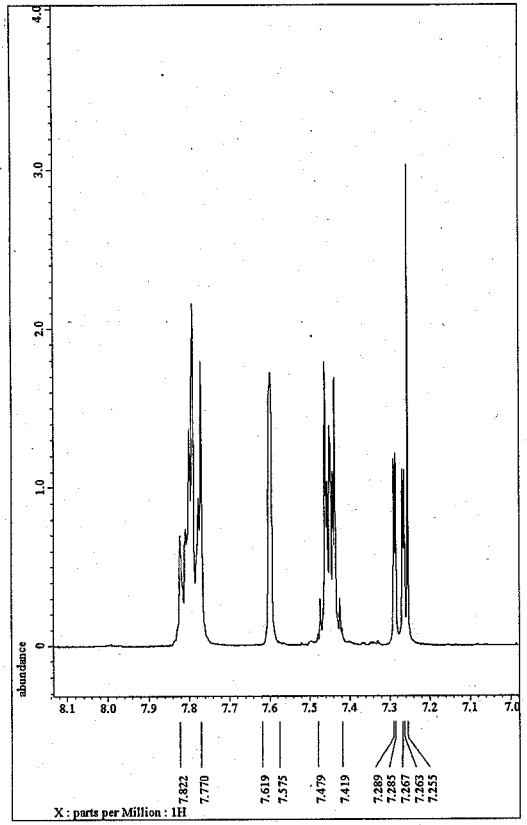
2. W. D. Munslow, W. Reusch, *J. Org. Chem.*, **1982**, *47*, 5096–5099.

3. S. W. Wright, D. L. Hageman, A. S. Wright, L. D. McClure, *Tetrahedron Lett.*, **1997**, *42*, 7345–7348.

4. S. Collon, C. Kouklovsky, Y. Langlois, *Eur. J. Org. Chem.*, **2002**, 3566–3572.

5. X.Lusinchi, G. Hanguet, *Tetrahedron*, **1997**, *43*, 13727–13738.





JEOL RESONANCE

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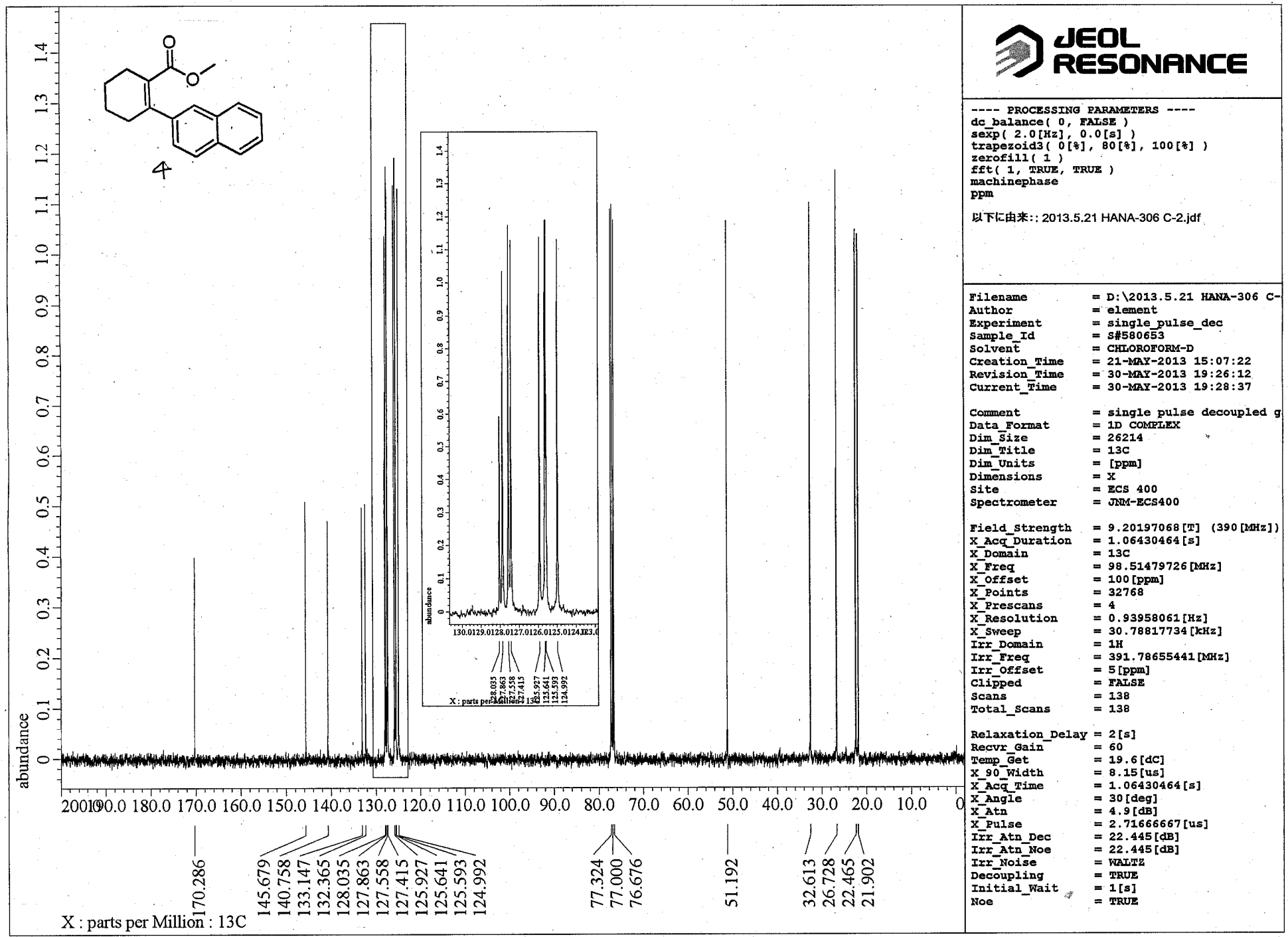
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.5.21 HANA-306-2.jdf
```

Filename	= D:\2013.5.21 HANA-306-4.
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#566093
Solvent	= CHLOROFORM-D
Creation_Time	= 21-MAY-2013 14:37:23
Revision_Time	= 30-MAY-2013 23:55:20
Current_Time	= 30-MAY-2013 23:56:22
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 16384
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 2.78790144[s]
X_Domain	= 1H
X_Freq	= 391.78655441[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.35869274[Hz]
X_Sweep	= 5.87682181[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 391.78655441[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 42
Temp_Get	= 19[dC]
X_90_Width	= 10.8[us]
X_Acq_Time	= 2.78790144[s]
X_Angle	= 45[deg]
X_Atn	= 1.9[dB]
X_Pulse	= 5.4[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.5.21 HANA-306 C-2.jdf
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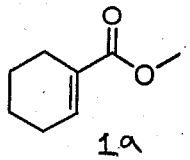
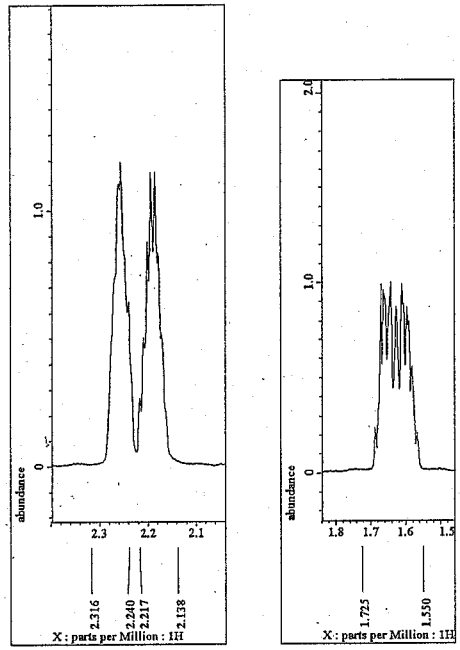
Filename	= D:\2013.5.21 HANA-306 C-
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#580653
Solvent	= CHLOROFORM-D
Creation_Time	= 21-MAY-2013 15:07:22
Revision_Time	= 30-MAY-2013 19:26:12
Current_Time	= 30-MAY-2013 19:28:37
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 1.06430464[s]
X_Domain	= 13C
X_Freq	= 98.51479726[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.93958061[Hz]
X_Sweep	= 30.78817734[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 138
Total_Scans	= 138
Relaxation_Delay	= 2[s]
Recvr_Gain	= 60
Temp_Get	= 19.6[dC]
X_90_Width	= 8.15[us]
X_Acq_Time	= 1.06430464[s]
X_Angle	= 30[deg]
X_Atn	= 4.9[dB]
X_Pulse	= 2.71666667[us]
Irr_Atn_Dec	= 22.445[dB]
Irr_Atn_Noe	= 22.445[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



1a



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2011.11.4-2-9.jdf
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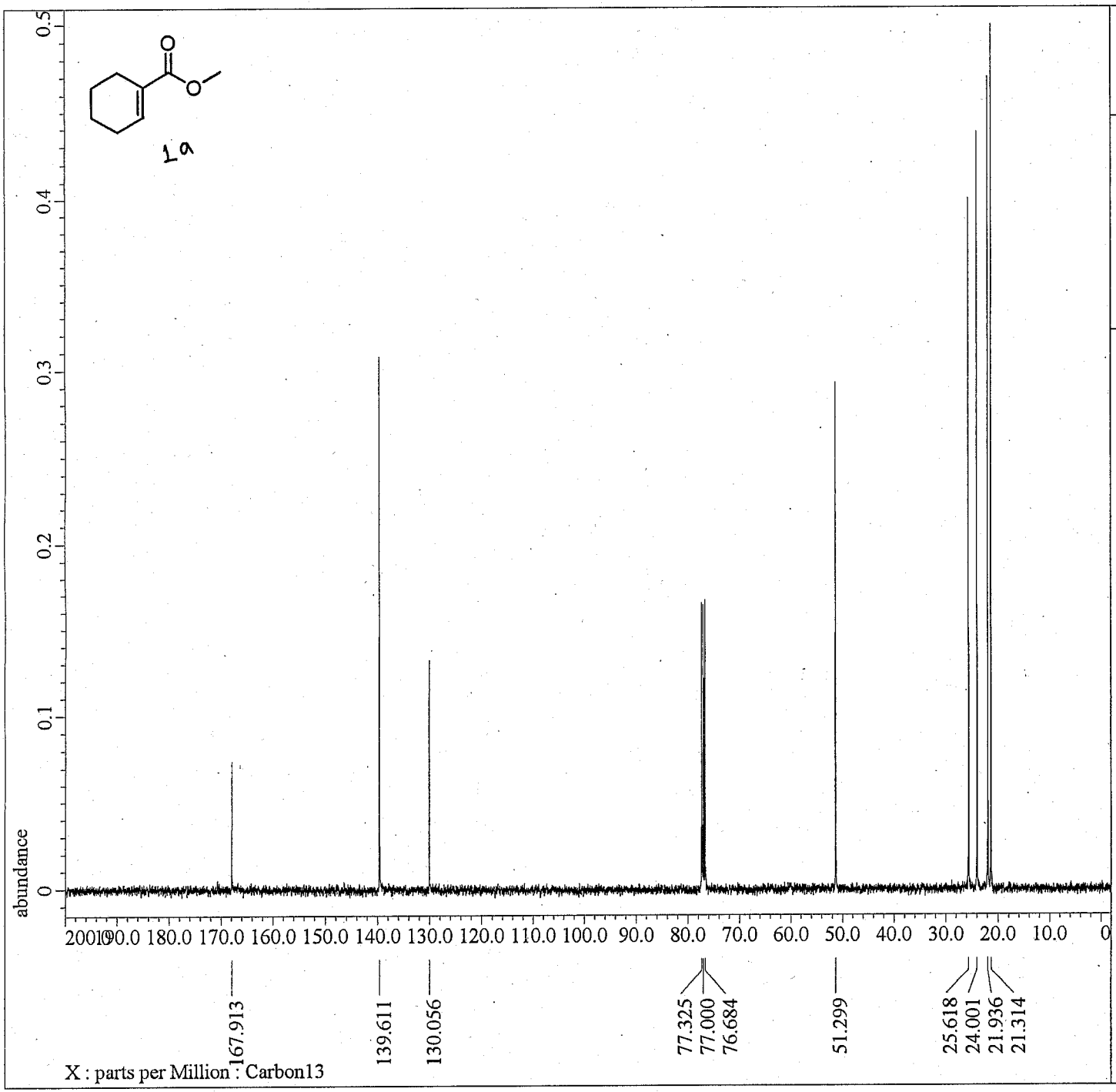
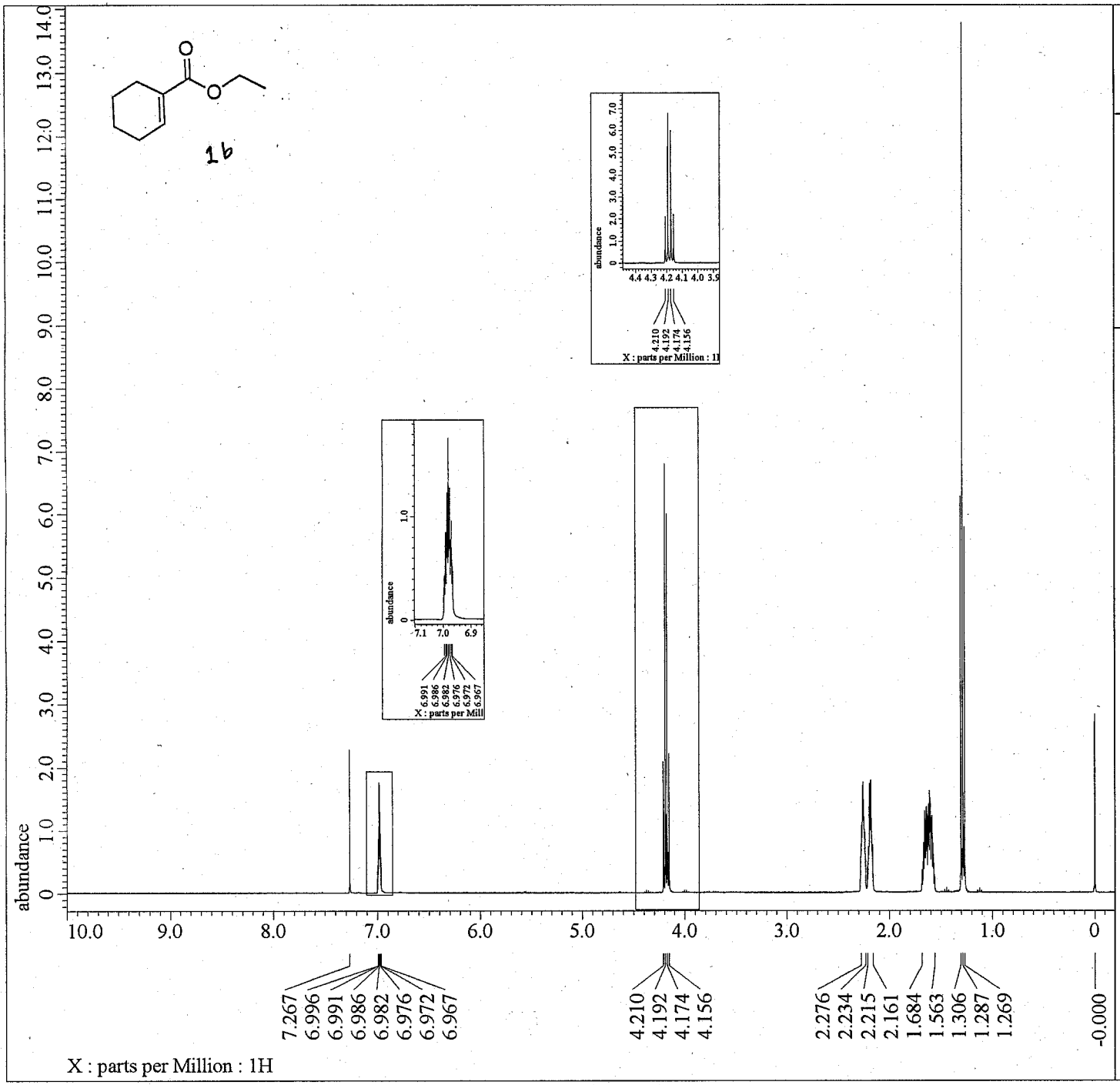
Filename	= H:\2011.11.4-2-11.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#356276
Solvent	= CHLOROFORM-D
Creation_Time	= 4-NOV-2011 09:41:40
Revision_Time	= 27-APR-2013 17:00:19
Current_Time	= 27-APR-2013 17:03:10
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 13107
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 34
Temp_Get	= 21.3[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

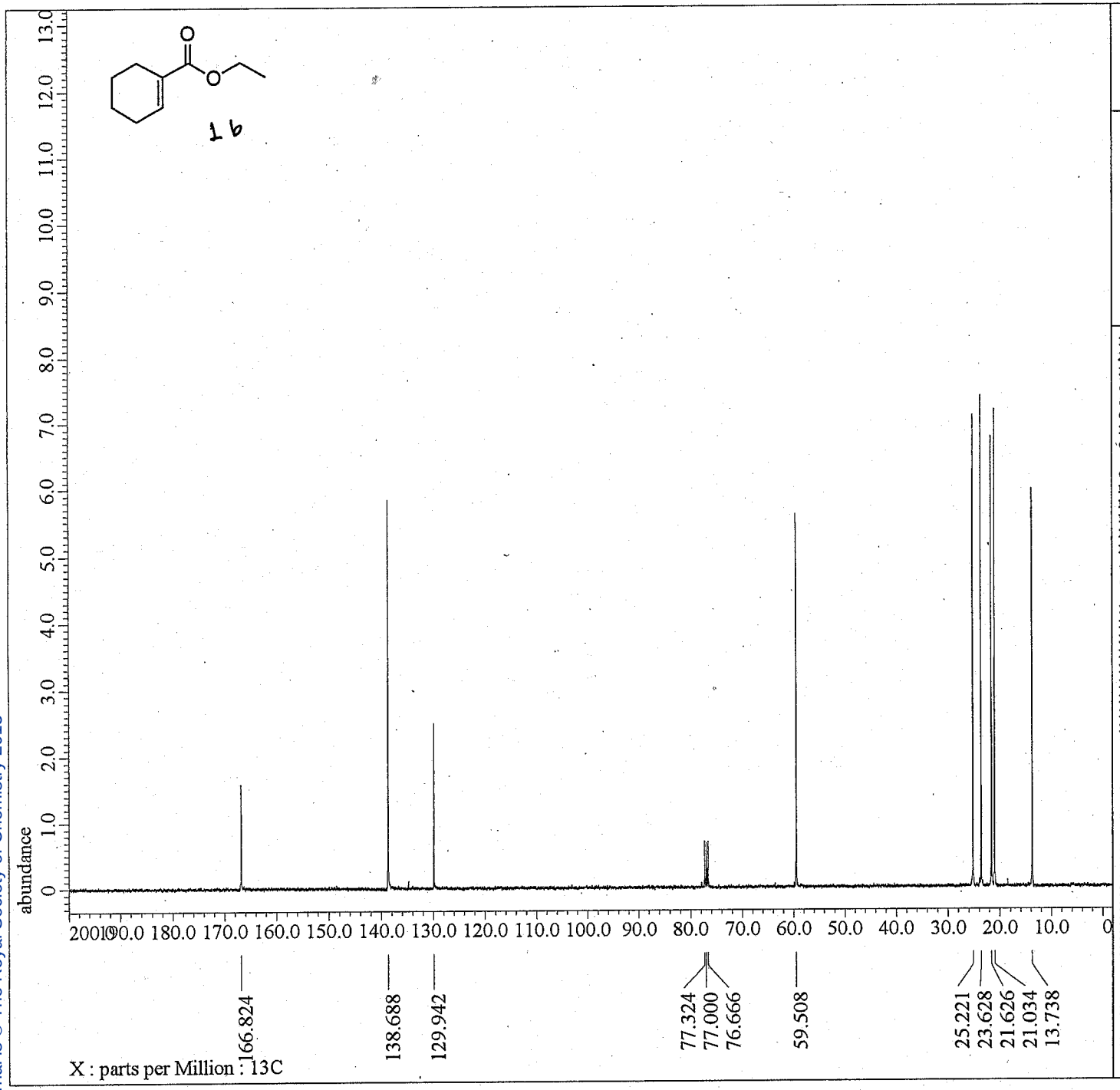
Filename	= H:\2013.5.1 Me-C-3_carbo
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2013.5.1 Me-C-3
Solvent	= CHLOROFORM-D
Creation_Time	= 1-MAY-2013 19:10:49
Revision_Time	= 1-MAY-2013 19:21:41
Current_Time	= 1-MAY-2013 20:32:37
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21120
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 253.0
Total_Scans	= 253.0
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 20.5[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\2012.11.7 HANA-227-9.
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#695949
Solvent	= CHLOROFORM-D
Creation_Time	= 7-NOV-2012 18:52:44
Revision_Time	= 18-APR-2013 16:46:48
Current_Time	= 30-MAY-2013 21:30:03
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 11142
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.7590656[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.36244155[Hz]
X_Sweep	= 5.93824228[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 44
Temp_Get	= 403.1[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.7590656[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
reference( 77.35808[ppm], 77[ppm] )

以下に由来:: 2013.4.24 Et-C-7.jdf
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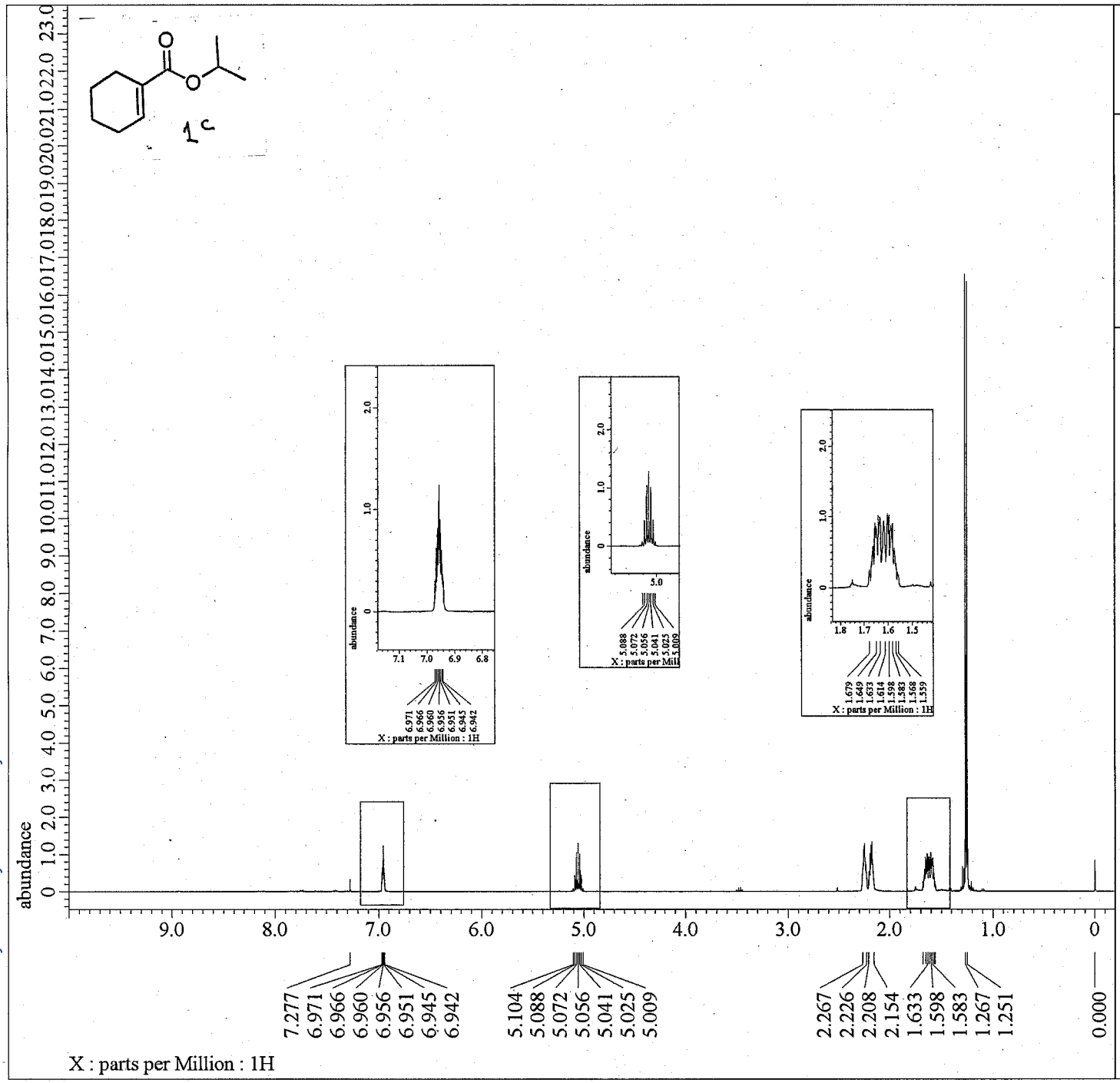
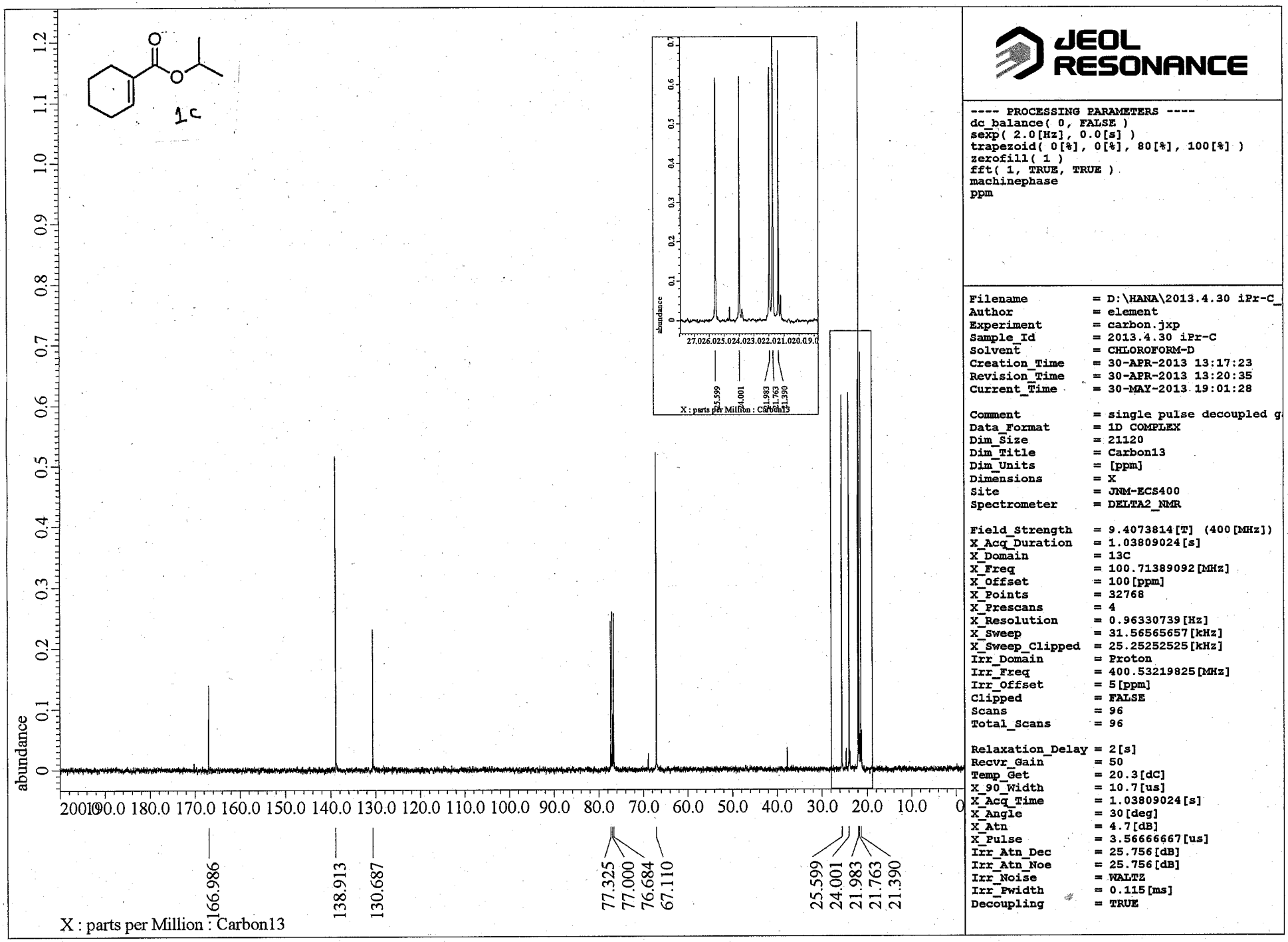
```
Filename          = E:\HANA\2013.4.24 Et-C-1
Author            = element
Experiment        = single_pulse_dec
Sample_Id         = S#496506
Solvent           = CHLOROFORM-D
Creation_Time     = 24-APR-2013 12:45:51
Revision_Time     =  1-MAY-2013 17:38:45
Current_Time      =  1-MAY-2013 17:39:18

Comment           = single pulse decoupled g
Data_Format       = 1D COMPLEX
Dim_Size          = 26214
Dim_Title         = 13C
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T] (390[MHz])
X_Acq_Duration    = 1.06430464[s]
X_Domain          = 13C
X_Freq            = 98.51479726[MHz]
X_Offset          = 100[ppm]
X_Points          = 32768
X_Prescans        = 4
X_Resolution      = 0.93958061[Hz]
X_Sweep           = 30.78817734[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 38
Total_Scans       = 38

Relaxation_Delay  = 2[s]
Recvr_Gain        = 60
Temp_Get          = 20.8[dC]
X_90_Width        = 8.15[us]
X_Acq_Time        = 1.06430464[s]
X_Angle           = 30[deg]
X_Atn             = 4.9[dB]
X_Pulse           = 2.71666667[us]
Irr_Atn_Dec       = 22.445[dB]
Irr_Atn_Noe       = 22.445[dB]
Irr_Noise         = WALTZ
Decoupling        = TRUE
Initial_Wait      = 1[s]
Noe               = TRUE
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

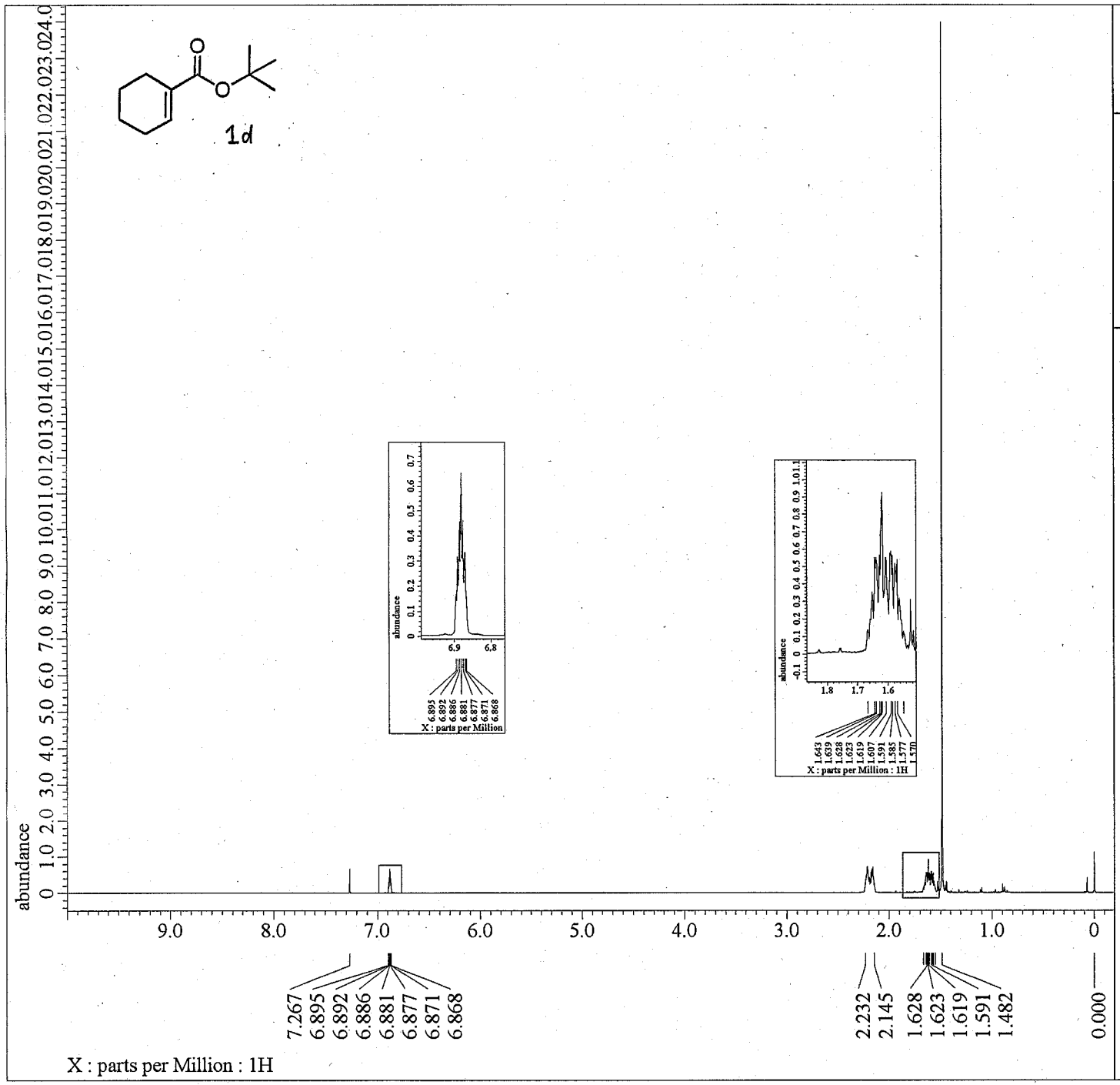
Filename	= D:\2012.5.24 HANA-040 -6
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#566128
Solvent	= CHLOROFORM-D
Creation_Time	= 24-MAY-2012 15:23:42
Revision_Time	= 18-APR-2013 21:01:51
Current_Time	= 31-MAY-2013 00:04:25
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8914
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 30
Temp_Get	= 402.4[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

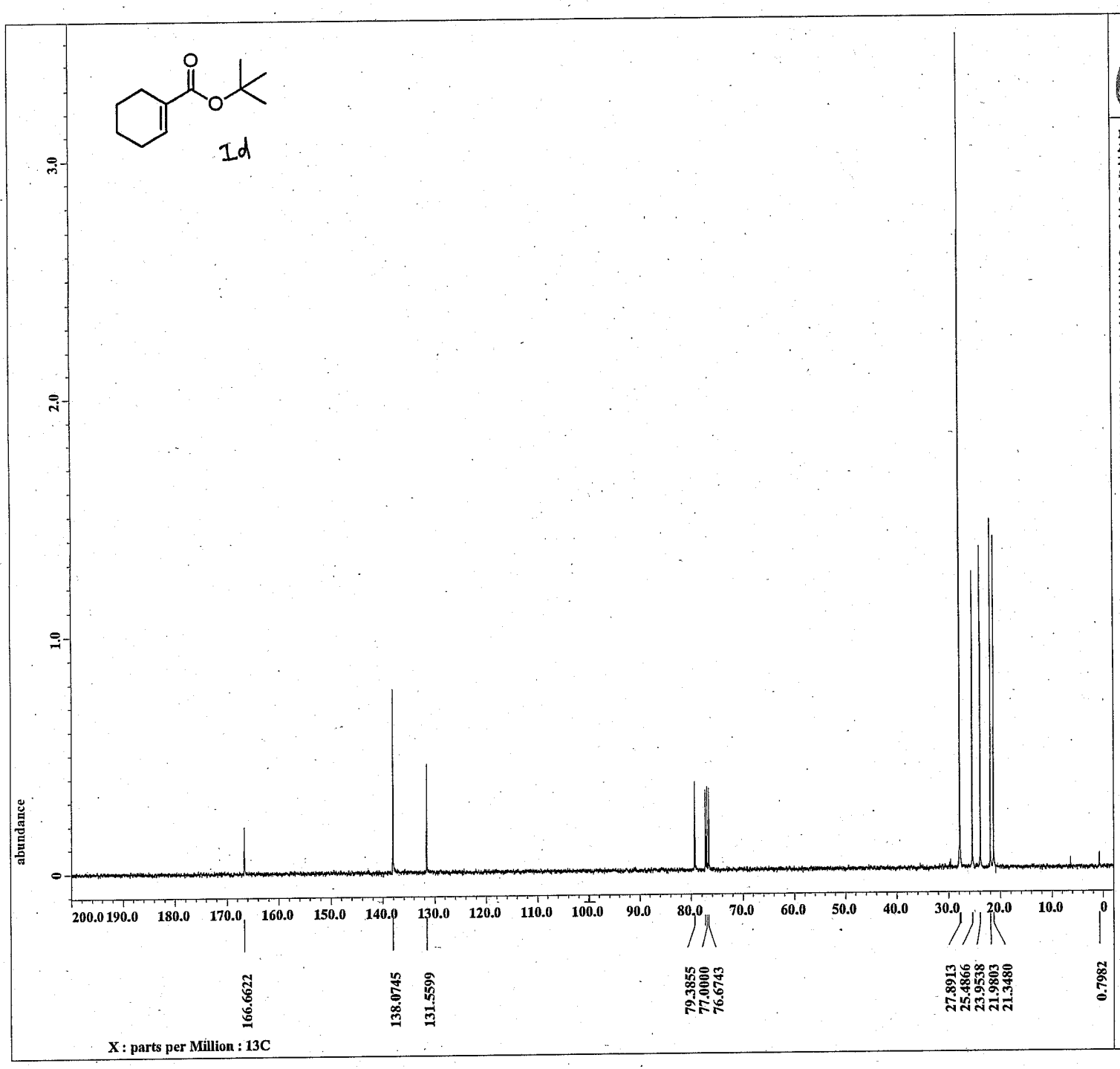
Filename	= D:\HANA\2013.4.30 iPr-C_
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2013.4.30 iPr-C
Solvent	= CHLOROFORM-D
Creation_Time	= 30-APR-2013 13:17:23
Revision_Time	= 30-APR-2013 13:20:35
Current_Time	= 30-MAY-2013 19:01:28
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21120
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 96
Total_Scans	= 96
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 20.3[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE



JEOL RESONANCE

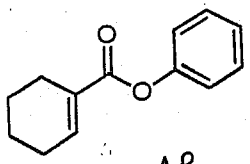
```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\2012.7.1 HANA-091-7.j
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#856225
Solvent	= CHLOROFORM-D
Creation_Time	= 1-JUL-2012 23:27:38
Revision_Time	= 18-APR-2013 21:09:39
Current_Time	= 30-MAY-2013 21:28:13
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8914
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 34
Temp_Get	= 401.2[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL

Filename	= 2012.7.1 HANA-091 C-3
Author	= element
Experiment	= single_pulse_dec
Sample_id	= S#859660
Solvent	= CHLOROFORM-D
Creation_time	= 1-JUL-2012 23:34:39
Revision_time	= 2-OCT-2012 16:22:48
Current_time	= 2-OCT-2012 16:22:58
Comment	= single pulse decouple
Data_format	= 1D COMPLEX
Dim_size	= 26214
Dim_title	= 13C
Dim_units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_strength	= 9.2982153[T] (400[MHz
X_acq_duration	= 1.048576[s]
X_domain	= 13C
X_freq	= 99.54517646[MHz]
X_offset	= 100[ppm]
X_points	= 32768
X_prescans	= 4
X_resolution	= 0.95367432[Hz]
X_sweep	= 31.25[kHz]
Irr_domain	= 1H
Irr_freq	= 395.88430144[MHz]
Irr_offset	= 5[ppm]
Clipped	= FALSE
Mod_return	= 1
Scans	= 52
Total_scans	= 52
X_90_width	= 9.5[us]
X_acq_time	= 1.048576[s]
X_angle	= 30[deg]
X_atn	= 3.4[dB]
X_pulse	= 3.16666667[us]
Irr_atn_dec	= 19.607[dB]
Irr_atn_noe	= 19.607[dB]
Irr_noise	= WALTZ
Decoupling	= TRUE
Initial_wait	= 1[s]
Noe	= TRUE
Noe_time	= 2[s]
Recvr_gain	= 50
Relaxation_delay	= 2[s]
Repetition_time	= 3.048576[s]
Temp_get	= 401.2[dC]

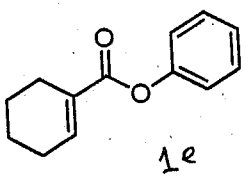


1e

JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\HANA\2013.4.19-1_prot
Author	= element
Experiment	= proton.jxp
Sample_Id	= 2013.4.19-1
Solvent	= CHLOROFORM-D
Creation_Time	= 19-APR-2013 20:12:29
Revision_Time	= 19-APR-2013 20:28:45
Current_Time	= 30-MAY-2013 18:55:21
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8914
Dim_Title	= Proton
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
X_Sweep_Clipped	= 5.93824228[kHz]
Irr_Domain	= Proton
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= Proton
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 50
Temp_Get	= 21.2[dC]
X_90_Width	= 6.8[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1.5[dB]
X_Pulse	= 3.4[us]
Irr_Mode	= Off
Tri_Mode	= Off

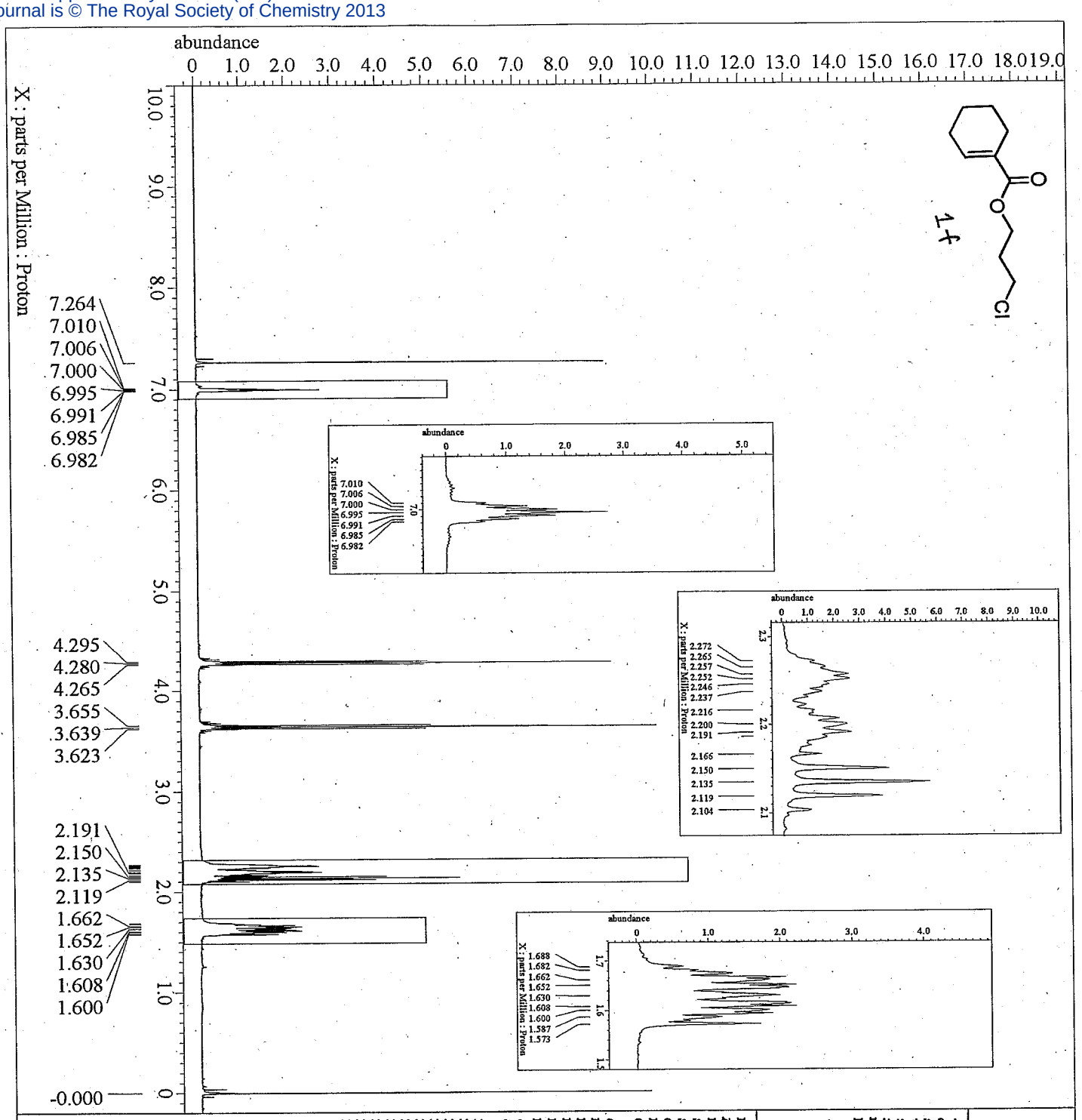


1e

JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.4.28 Ph_carbon-1-1.jdf
```

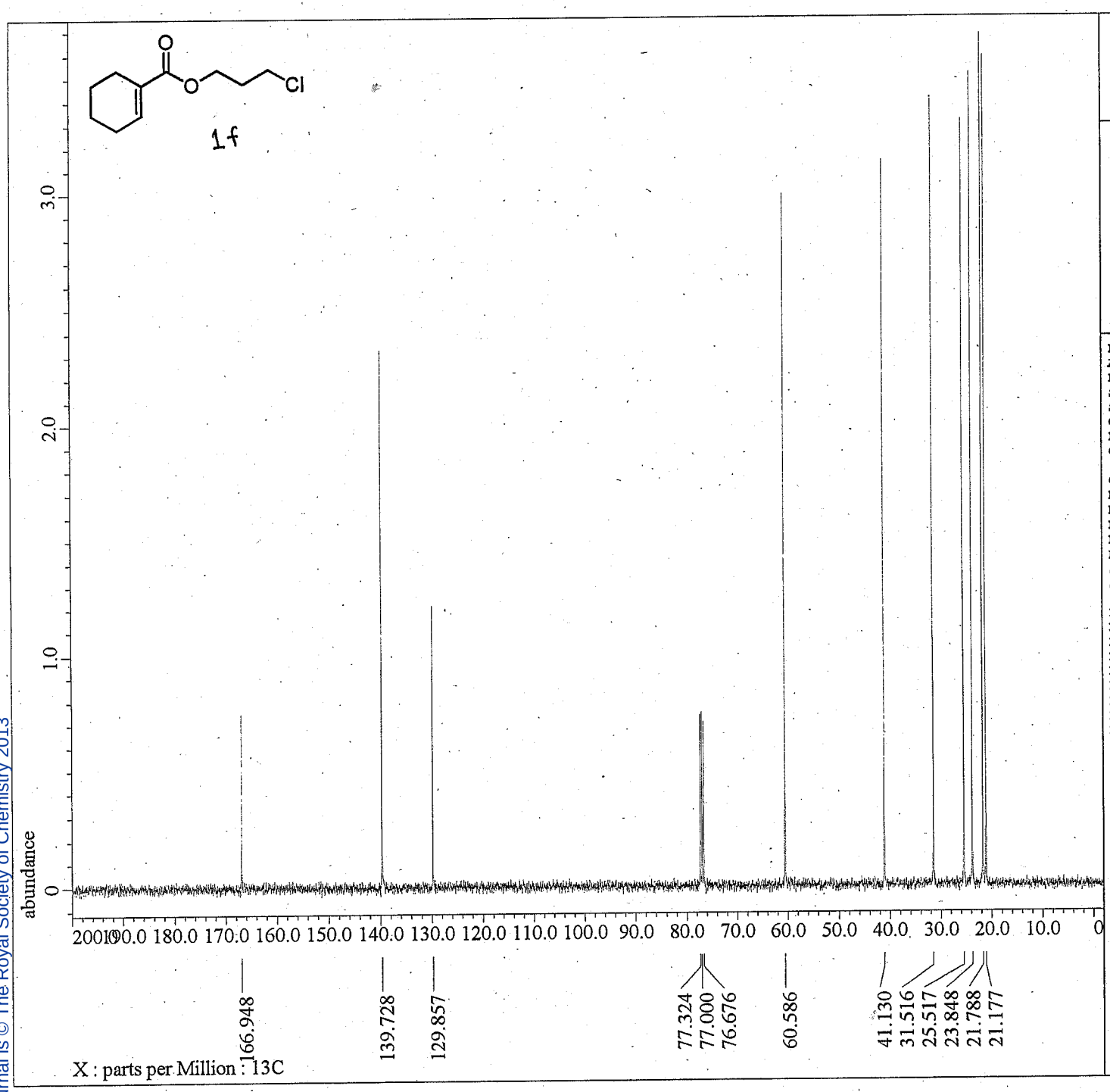
Filename	= 2013.4.28 Ph_carbon-1-3.jd
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2013.4.28 Ph
Solvent	= CHLOROFORM-D
Creation_Time	= 28-APR-2013 15:12:09
Revision_Time	= 28-APR-2013 15:45:26
Current_Time	= 28-APR-2013 15:45:46
Comment	= single pulse decoupled gat
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 431.0
Total_Scans	= 431.0
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 20.5[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[*], 0[*], 80[*], 100[*] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に曲来:: 2013.4.13_proton-1-1.jdf
```

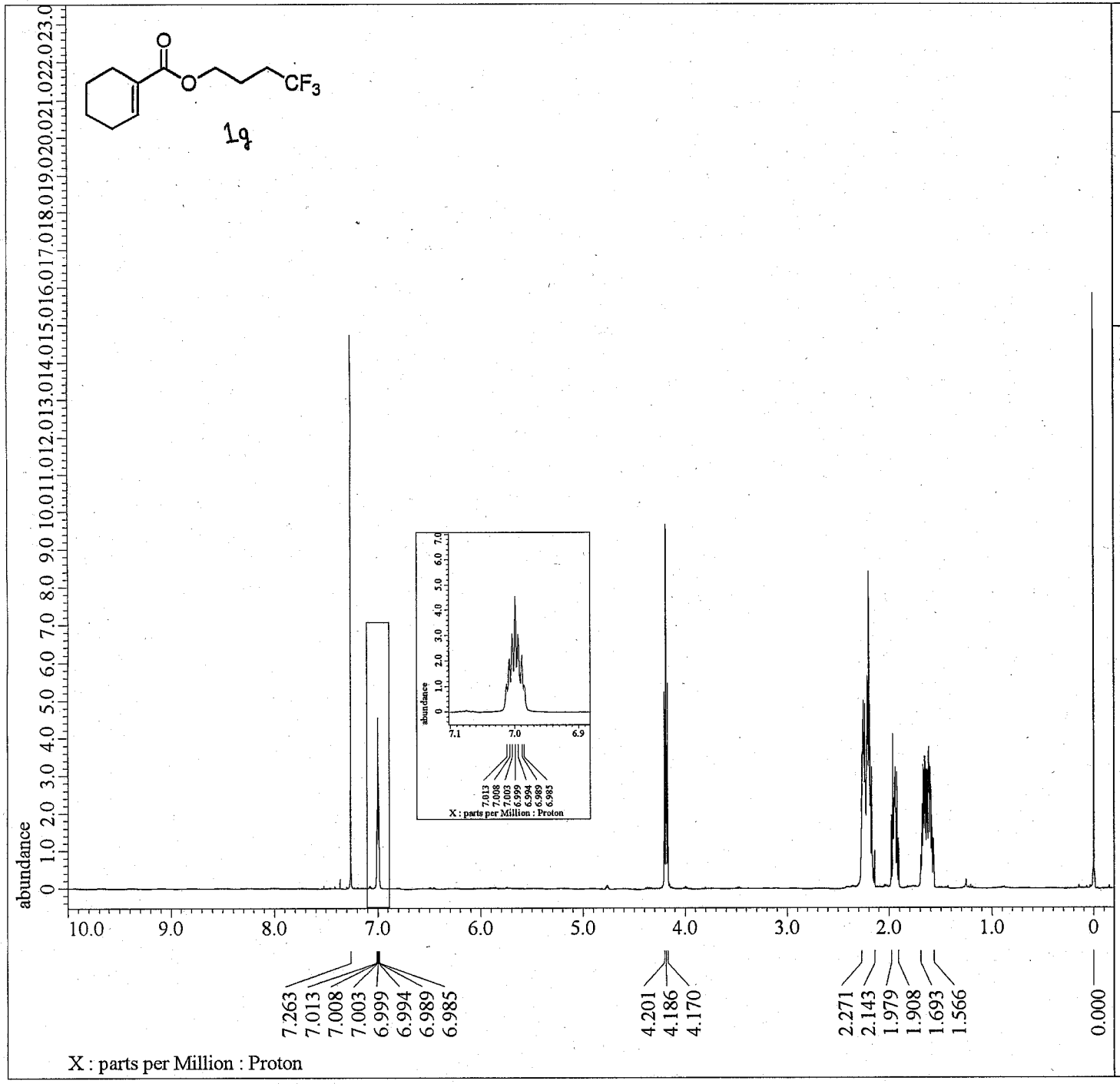
```
Filename          = H:\HANA NMR\HANA\2013.4.
Author            = element
Experiment        = proton.jxp
Sample_Id         = 2013.4.13
Solvent           = CHLOROFORM-D
Creation_Time     = 13-APR-2013 09:46:24
Revision_Time     = 18-APR-2013 22:28:53
Current_Time      = 18-APR-2013 22:30:32

Comment           = single_pulse
Data_Format       = 1D COMPLEX
Dim_Size          = 13107
Dim_Title         = Proton
Dim_Units         = [ppm]
Dimensions        = X
Site              = JNM-ECS400
Spectrometer      = DELTA2_NMR

Field_Strength    = 9.4073814[T] (400[MHz])
X_Acq_Duration    = 2.18103808[s]
X_Domain          = 1H
X_Freq            = 400.53219825[MHz]
X_Offset          = 5[ppm]
X_Points          = 16384
X_Prescans        = 1
X_Resolution      = 0.45849727[Hz]
X_Sweep           = 7.51201923[kHz]
X_Sweep_Clipped   = 6.00961538[kHz]
Irr_Domain        = Proton
Irr_Freq          = 400.53219825[MHz]
Irr_Offset        = 5[ppm]
Tri_Domain        = Proton
Tri_Freq          = 400.53219825[MHz]
Tri_Offset        = 5[ppm]
Clipped           = TRUE
Scans             = 8
Total_Scans       = 8

Relaxation_Delay  = 5[s]
Recvr_Gain        = 50
Temp_Get          = 20.4[dC]
X_90_Width        = 6.5[us]
X_Acq_time        = 2.18103808[s]
X_Angle           = 45[deg]
X_Atn             = 0.8[dB]
X_Pulse           = 3.25[us]
Irr_Mode          = off
Tri_Mode          = off
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.4.13 C-2.jdf
```

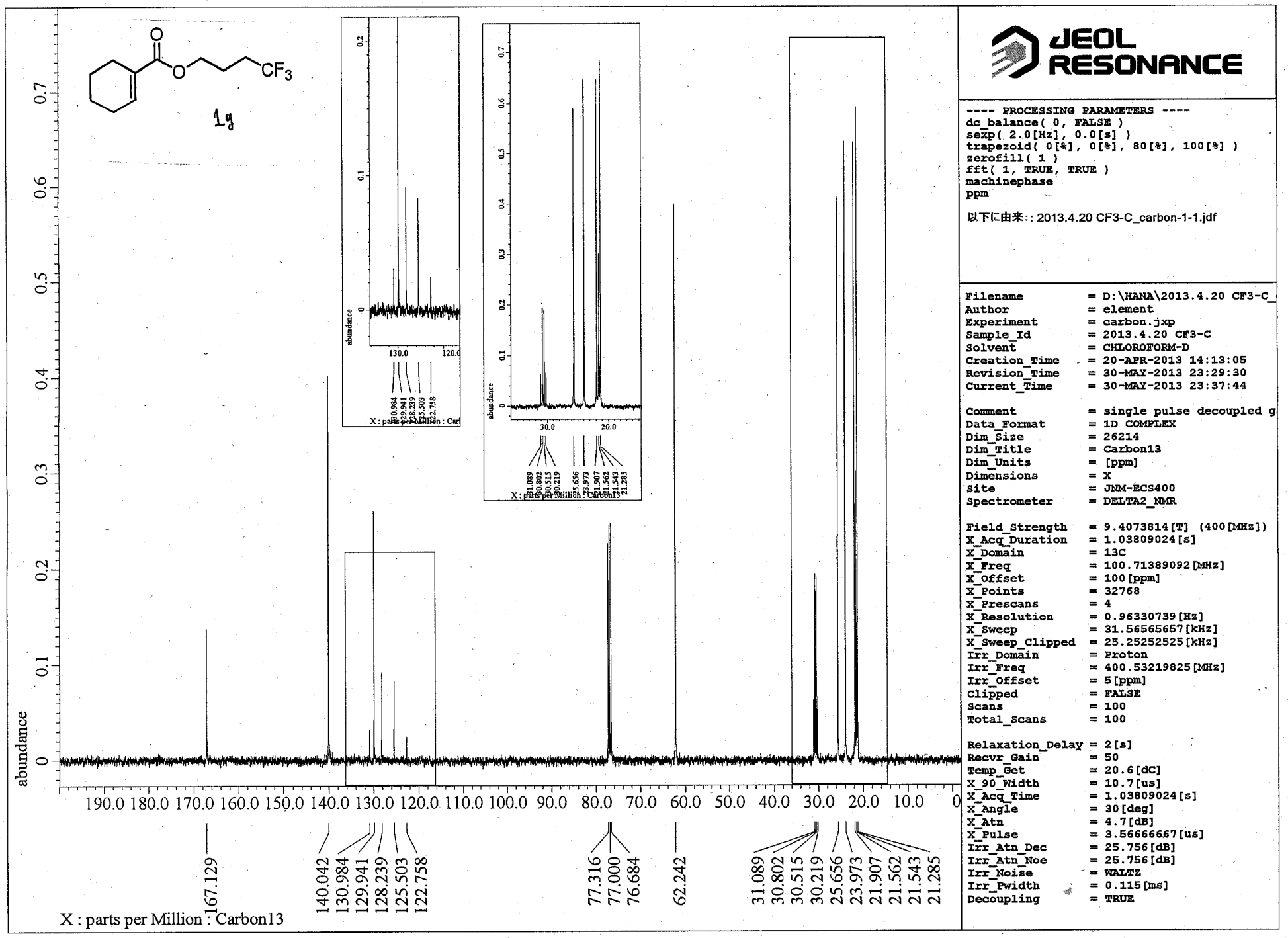
```
Filename          = F:\HANA NMR\2013.4.13 C-
Author            = element
Experiment        = single_pulse_dec
Sample_Id         = S#579370
Solvent           = CHLOROFORM-D
Creation_Time     = 13-APR-2013 15:04:47
Revision_Time     = 18-APR-2013 09:45:20
Current_Time      = 18-APR-2013 10:00:26

Comment           = single pulse decoupled g
Data_Format       = 1D COMPLEX
Dim_Size          = 26214
Dim_Title         = 13C
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T] (390[MHz])
X_Acq_Duration    = 1.06430464[s]
X_Domain          = 13C
X_Freq            = 98.51479726[MHz]
X_Offset          = 100[ppm]
X_Points          = 32768
X_Prescans        = 4
X_Resolution      = 0.93958061[Hz]
X_Sweep           = 30.78817734[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 37
Total_Scans       = 37

Relaxation_Delay  = 2[s]
Recvr_Gain        = 60
Temp_Get          = 20.9[dC]
X_90_Width        = 8.15[us]
X_Acq_Time        = 1.06430464[s]
X_Angle           = 30[deg]
X_Atn             = 4.9[dB]
X_Pulse           = 2.71666667[us]
Irr_Atn_Dec       = 22.445[dB]
Irr_Atn_Noe       = 22.445[dB]
Irr_Noise         = WALTZ
Decoupling        = TRUE
Initial_Wait      = 1[s]
Noe               = TRUE
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

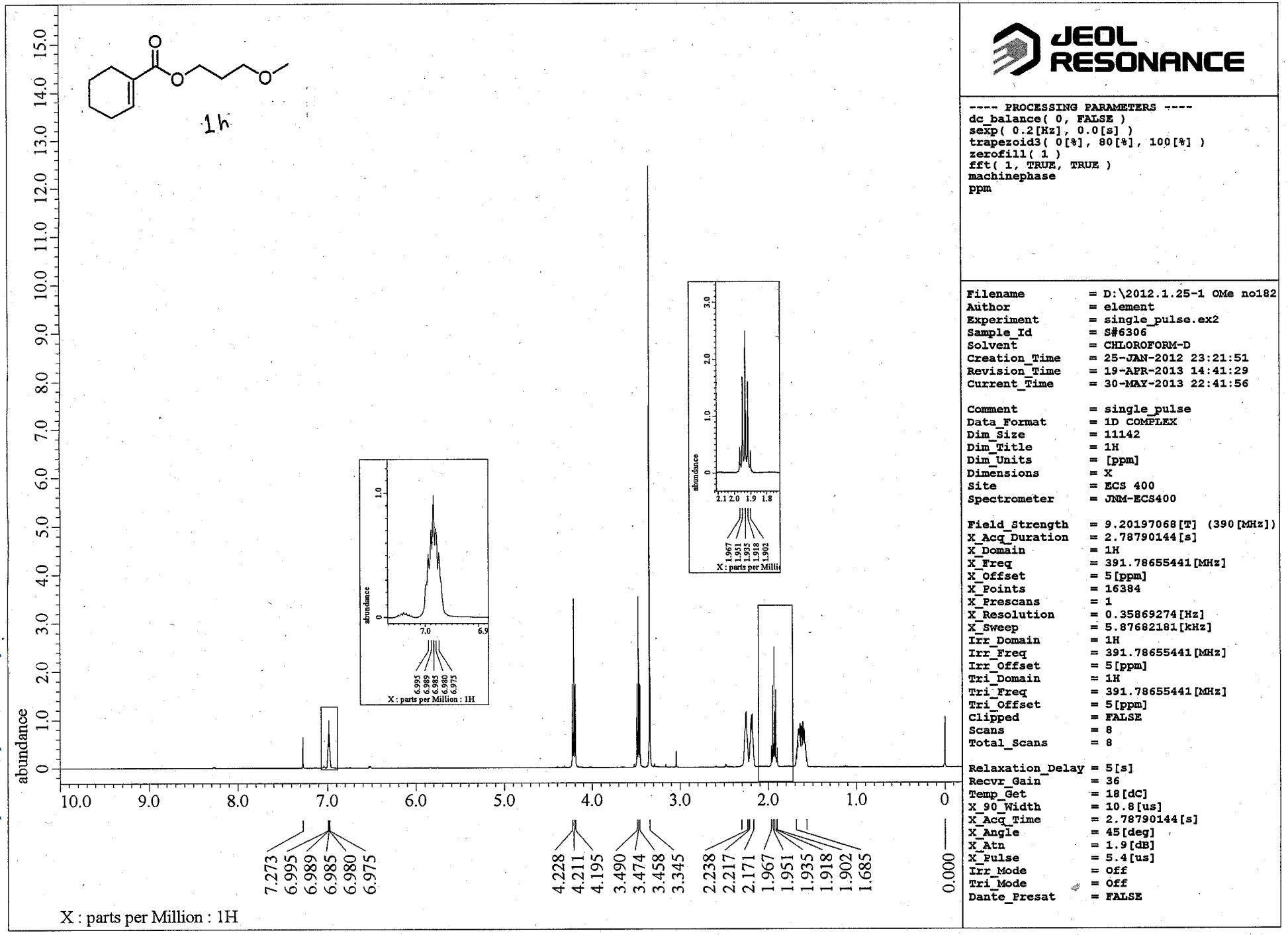
Filename	= D:\HANA\2013.4.20 CF3_pr
Author	= element
Experiment	= proton.jxp
Sample_Id	= 2013.4.20 CF3
Solvent	= CHLOROFORM-D
Creation_Time	= 20-APR-2013 13:54:23
Revision_Time	= 30-MAY-2013 20:09:34
Current_Time	= 30-MAY-2013 21:24:17
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8912
Dim_Title	= Proton
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 2.18103808[s]
X_Domain	= 1H
X_Freq	= 400.53219825[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45849727[Hz]
X_Sweep	= 7.51201923[kHz]
X_Sweep_Clipped	= 6.00961538[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= Proton
Tri_Freq	= 400.53219825[MHz]
Tri_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 50
Temp_Get	= 20.4[dC]
X_90_Width	= 6.5[us]
X_Acq_Time	= 2.18103808[s]
X_Angle	= 45[deg]
X_Atn	= 0.8[dB]
X_Pulse	= 3.25[us]
Irr_Mode	= Off
Tri_Mode	= Off



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.4.20 CF3-C_carbon-1-1.jdf
```

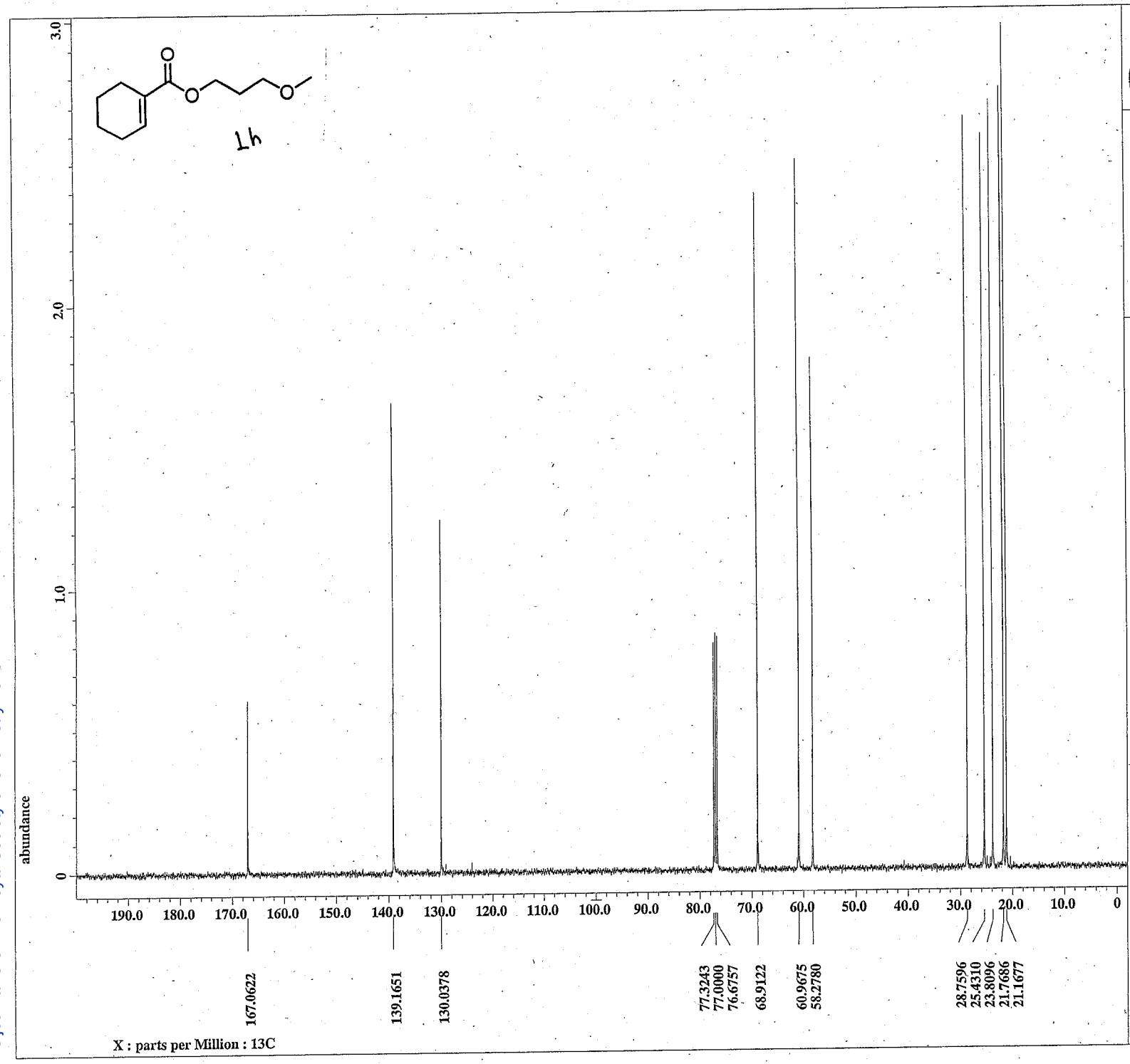
Filename	= D:\HANA\2013.4.20 CF3-C_
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2013.4.20 CF3-C
Solvent	= CHLOROFORM-D
Creation_Time	= 20-APR-2013 14:13:05
Revision_Time	= 30-MAY-2013 23:29:30
Current_Time	= 30-MAY-2013 23:37:44
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 100
Total_Scans	= 100
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 20.6[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

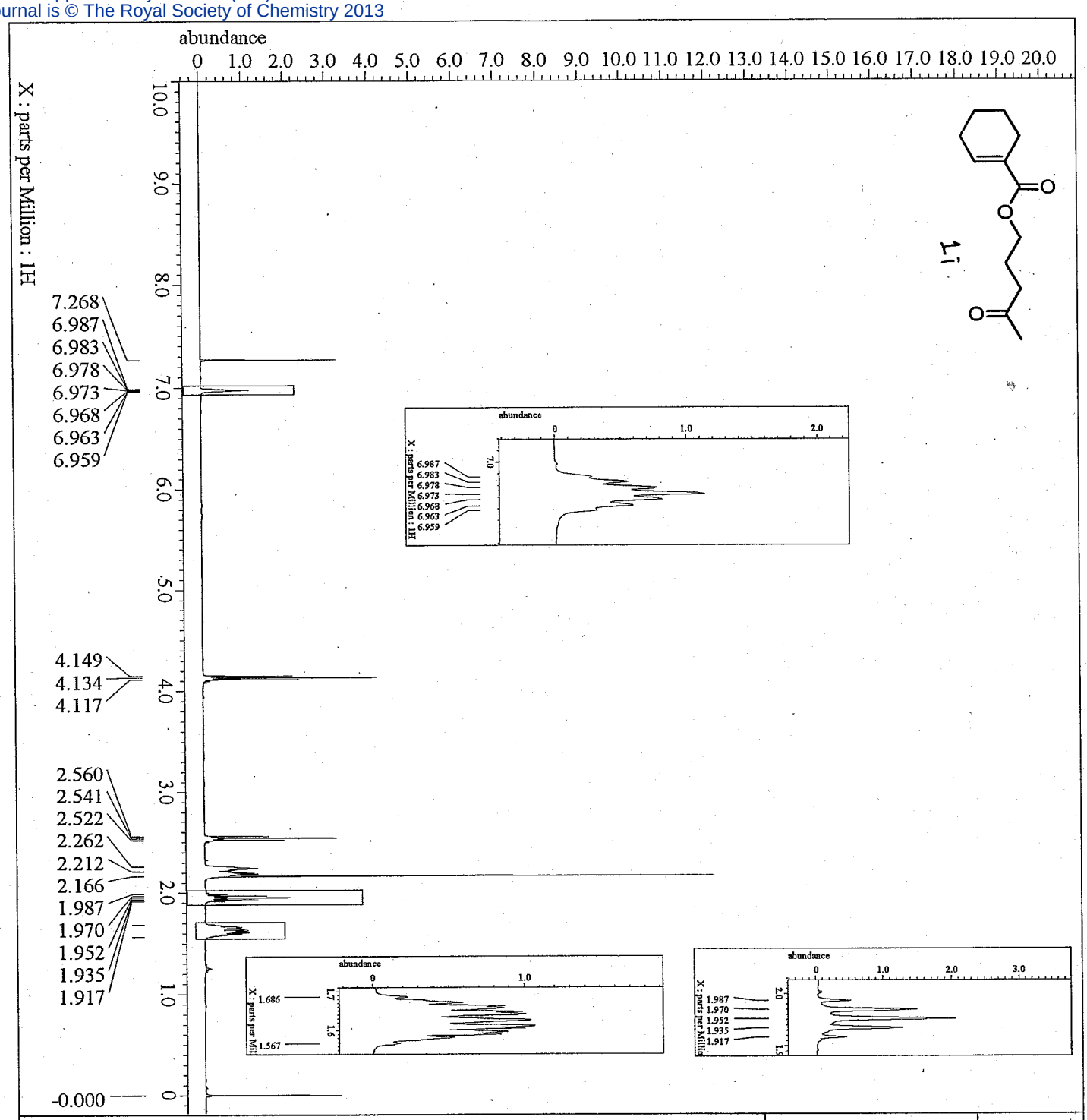
Filename	= D:\2012.1.25-1 OMe no182
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#6306
Solvent	= CHLOROFORM-D
Creation_Time	= 25-JAN-2012 23:21:51
Revision_Time	= 19-APR-2013 14:41:29
Current_Time	= 30-MAY-2013 22:41:56
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 11142
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 2.78790144[s]
X_Domain	= 1H
X_Freq	= 391.78655441[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.35869274[Hz]
X_Sweep	= 5.87682181[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 391.78655441[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 36
Temp_Get	= 18[dC]
X_90_Width	= 10.8[us]
X_Acq_Time	= 2.78790144[s]
X_Angle	= 45[deg]
X_Atn	= 1.9[dB]
X_Pulse	= 5.4[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL

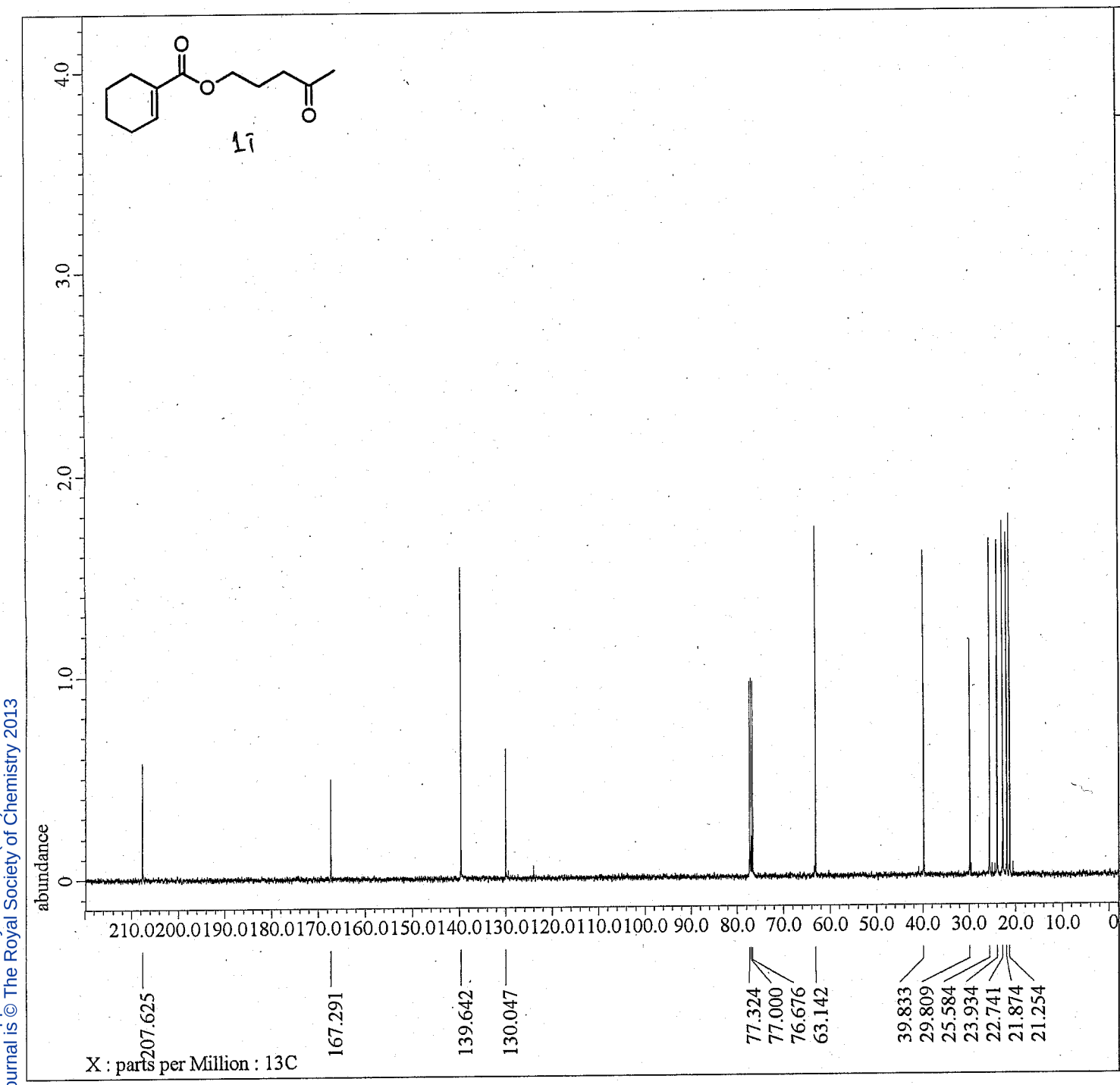
```
---- PROCESSING PARAMETERS ----
dc_balance : 0 : FALSE
sexp : 2.0[Hz] : 0.0[s]
trapezoid3 : 0[%] : 80[%] : 100[%]
zerofill : 1
fft : 1 : TRUE : TRUE
machinephase
ppm

Derived from: 2013.4.22-OME-1.jdf
```

Filename	= 2013.4.22-OME-3.jdf
Author	= element
Experiment	= single_pulse_dec
Sample_id	= S#590636
Solvent	= CHLOROFORM-D
Creation_time	= 22-APR-2013 15:27:47
Revision_time	= 22-APR-2013 16:33:37
Current_time	= 22-APR-2013 16:33:57
Comment	= single pulse decouple
Data_format	= 1D COMPLEX
Dim_size	= 26214
Dim_title	= 13C
Dim_units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_strength	= 9.20197068[T] (390[MH
X_acq_duration	= 1.06430464[s]
X_domain	= 13C
X_freq	= 98.51479726[MHz]
X_offset	= 100[ppm]
X_points	= 32768
X_prescans	= 4
X_resolution	= 0.93958061[Hz]
X_sweep	= 30.78817734[kHz]
Irr_domain	= 1H
Irr_freq	= 391.78655441[MHz]
Irr_offset	= 5[ppm]
Clipped	= FALSE
Mod_return	= 1
Scans	= 142
Total_scans	= 142
X_90_width	= 8.15[us]
X_acq_time	= 1.06430464[s]
X_angle	= 30[deg]
X_atn	= 4.9[dB]
X_pulse	= 2.71666667[us]
Irr_atn_dec	= 22.445[dB]
Irr_atn_noe	= 22.445[dB]
Irr_noise	= WALTZ
Decoupling	= TRUE
Initial_wait	= 1[s]
Noe	= TRUE
Noe_time	= 2[s]
Recvr_gain	= 60
Relaxation_delay	= 2[s]
Repetition_time	= 3.06430464[s]
Temp_get	= 20.5[dC]



JEOL RESONANCE

```
----- PROCESSING PARAMETERS -----
dc_balance( 0, FALSE )
exp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
以下に由来:: 2013.4.29 ketone-2.jdf

Filename                = H:\2013.4.29 ketone-4.jd
Author                  = element
Experiment              = single_pulse.ex2
Sample_Id               = S#447687
Solvent                 = CHLOROFORM-D
Creation_Time           = 29-APR-2013 11:22:51
Revision_Time           = 1-MAY-2013 16:42:13
Current_Time            = 1-MAY-2013 16:46:09

Comment                 = single_pulse
Data_Format             = 1D COMPLEX
Dim_Size                = 16384
Dim_Title               = 1H
Dim_Units               = [ppm]
Dimensions              = X
Site                    = ECS 400
Spectrometer            = JNM-ECS400

Field_Strength          = 9.20197068[T] (390[MHz])
X_Acq_Duration          = 2.78790144[s]
X_Domain                = 1H
X_Freq                  = 391.78655441[MHz]
X_Offset                = 5[ppm]
X_Points                = 16384
X_Prescans              = 1
X_Resolution            = 0.35869274[Hz]
X_Sweep                 = 5.87682181[kHz]
Irr_Domain              = 1H
Irr_Freq                = 391.78655441[MHz]
Irr_Offset              = 5[ppm]
Tri_Domain              = 1H
Tri_Freq                = 391.78655441[MHz]
Tri_Offset              = 5[ppm]
Clipped                 = FALSE
Scans                   = 8
Total_Scans             = 8

Relaxation_Delay        = 5[s]
Recvr_Gain              = 44
Temp_Get                = 20.1[dC]
X_90_Width              = 10.8[us]
X_Acq_Time              = 2.78790144[s]
X_Angle                 = 45[deg]
X_Atn                   = 1.9[dB]
X_Pulse                 = 5.4[us]
Irr_Mode                = off
Tri_Mode                = off
Dante_Presat            = FALSE
```

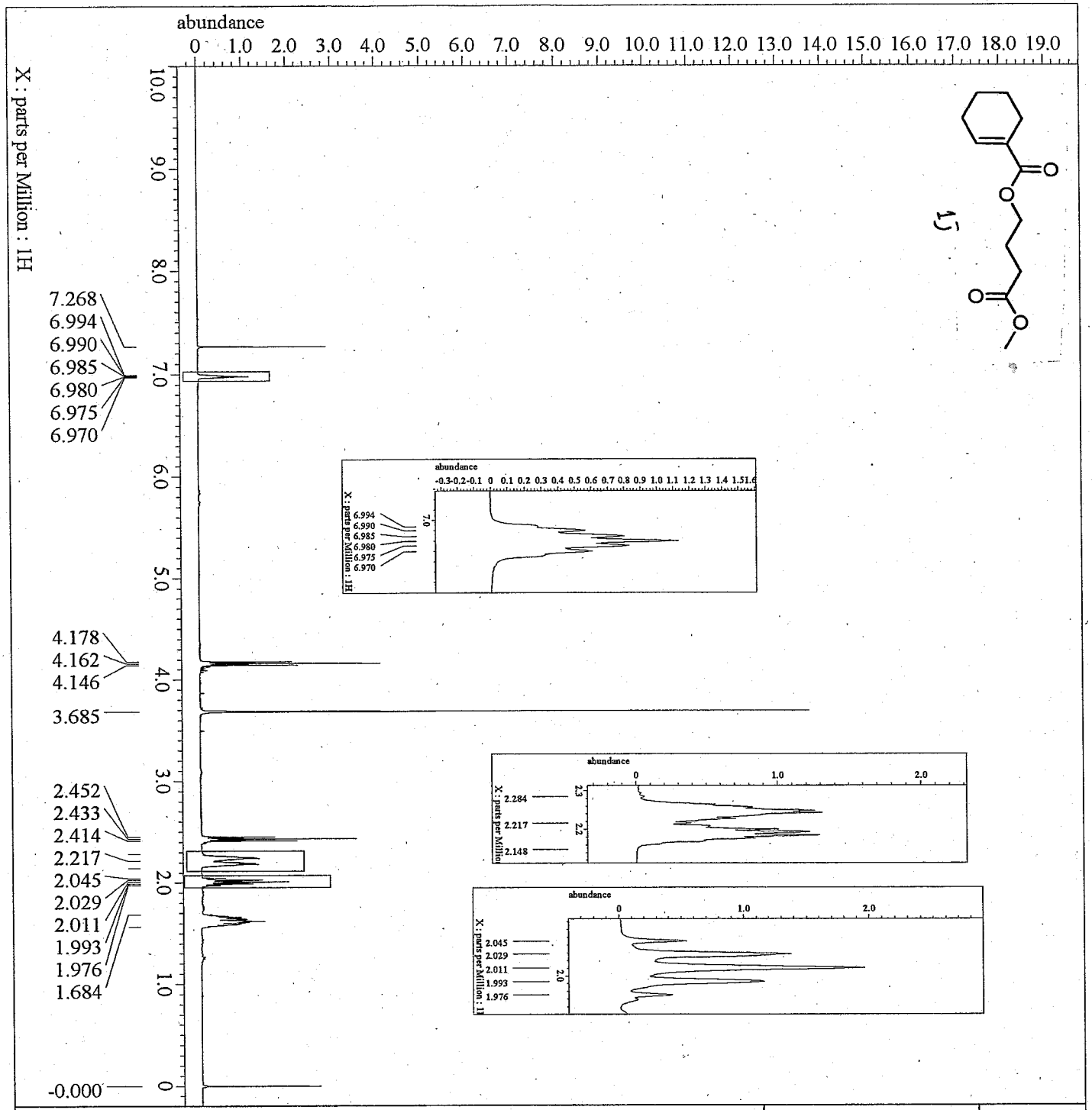


JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

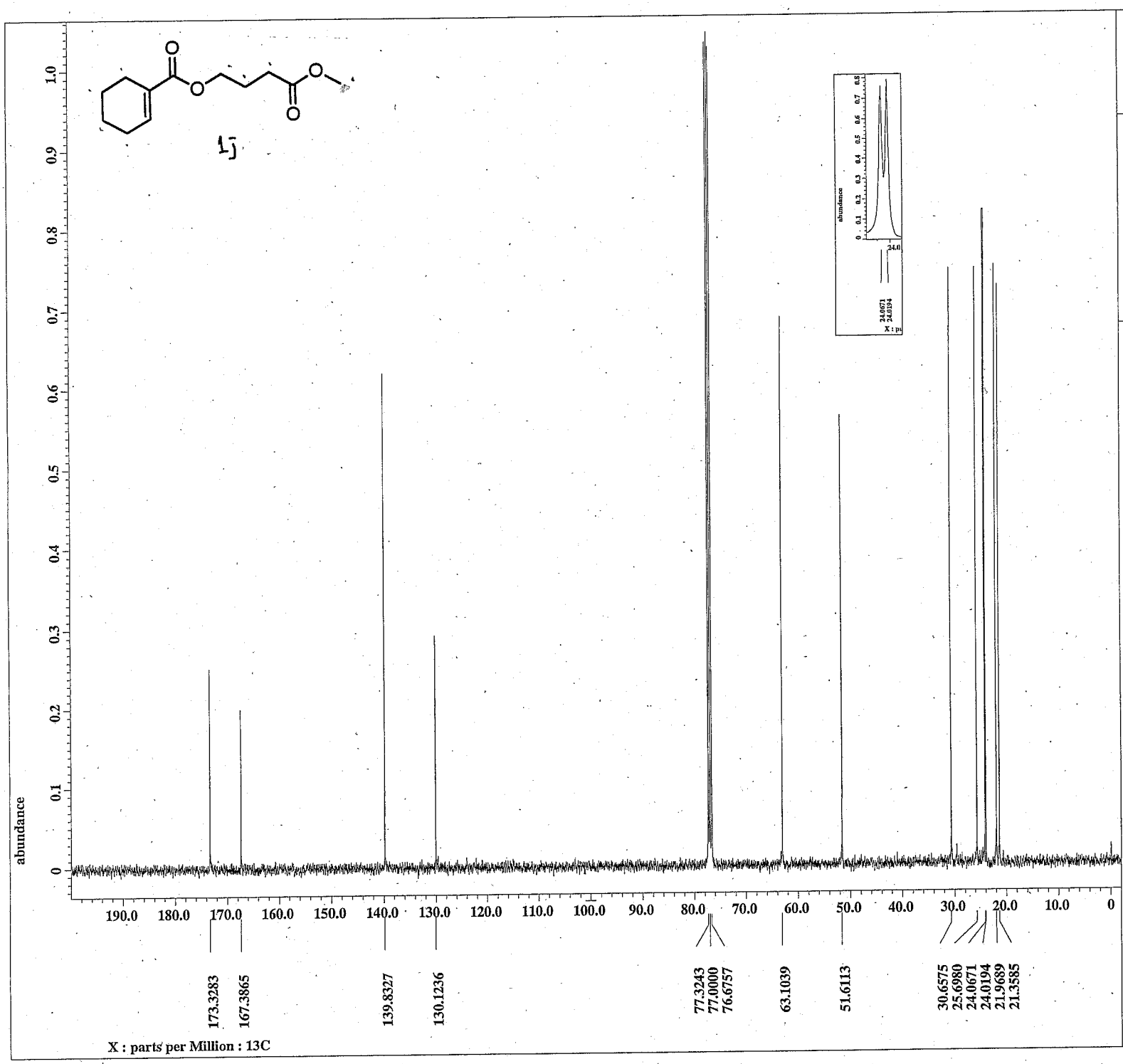
以下に由来:: 2013.4.30 ketone-2.jdf

```
Filename          = H:\2013.4.30 ketone-4.jd
Author            = element
Experiment        = single_pulse_dec
Sample_Id         = S#350981
Solvent           = CHLOROFORM-D
Creation_Time     = 30-APR-2013 08:46:27
Revision_Time     =  1-MAY-2013 17:11:59
Current_Time      =  1-MAY-2013 17:12:15

Comment           = single pulse decoupled g
Data_Format       = 1D COMPLEX
Dim_Size          = 26214
Dim_Title         = 13C
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T] (390[MHz])
X_Acq_Duration    = 1.06430464[s]
X_Domain          = 13C
X_Freq            = 98.51479726[MHz]
X_Offset          = 100[ppm]
X_Points          = 32768
X_Prescans        = 4
X_Resolution      = 0.93958061[Hz]
X_Sweep           = 30.78817734[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 114.0
Total_Scans       = 114.0

Relaxation_Delay  = 2[s]
Recvr_Gain        = 60
Temp_Get          = 20.8[dC]
X_90_Width        = 8.15[us]
X_Acq_Time        = 1.06430464[s]
X_Angle           = 30[deg]
X_Atn             = 4.9[dB]
X_Pulse           = 2.71666667[us]
Irr_Atn_Dec       = 22.445[dB]
Irr_Atn_Noe       = 22.445[dB]
Irr_Noise         = WALTZ
Decoupling        = TRUE
Initial_Wait      = 1[s]
Noe               = TRUE
```



JEOL RESONANCE

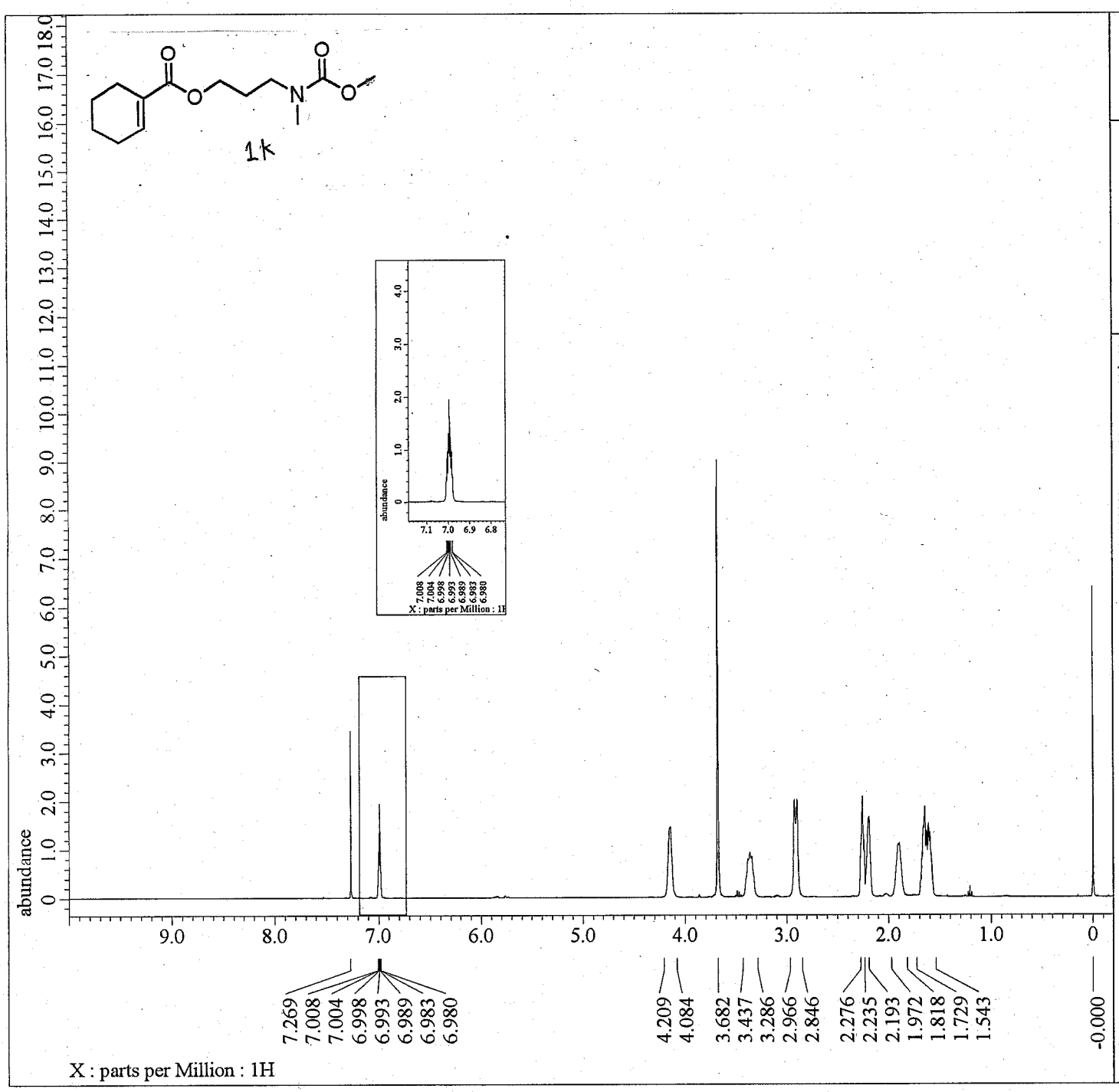
```
----- PROCESSING PARAMETERS -----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
reference( -0.01986[ppm], 0[ppm] )

以下由来:: 2013.5.9 HANA-299-2.jdf

Filename                = E:\2013.5.9 HANA-299-6.j
Author                  = element
Experiment              = single_pulse.ex2
Sample_Id               = s#531408
Solvent                 = CHLOROFORM-D
Creation_Time           = 9-MAY-2013 13:41:00
Revision_Time           = 13-MAY-2013 09:40:42
Current_Time            = 13-MAY-2013 09:44:09

Comment                 = single_pulse
Data_Format             = 1D COMPLEX
Dim_Size                = 16384
Dim_Title               = 1H
Dim_Units               = [ppm]
Dimensions              = X
Site                    = ECS 400
Spectrometer            = JNM-ECS400

Field_Strength          = 9.20197068[T] (390[MHz])
X_Acq_Duration          = 2.78790144[s]
X_Domain                = 1H
X_Freq                  = 391.78655441[MHz]
X_Offset                = 5[ppm]
X_Points                = 16384
X_Prescans              = 1
X_Resolution            = 0.35869274[Hz]
X_Sweep                 = 5.87682181[kHz]
Irr_Domain              = 1H
Irr_Freq                = 391.78655441[MHz]
Irr_Offset              = 5[ppm]
Tri_Domain              = 1H
Tri_Freq                = 391.78655441[MHz]
Tri_Offset              = 5[ppm]
Clipped                 = FALSE
Scans                   = 8
Total_Scans             = 8

Relaxation_Delay        = 5[s]
Recvr_Gain              = 44
Temp_Get                = 19.1[dC]
X_90_Width              = 10.8[us]
X_Acq_Time              = 2.78790144[s]
X_Angle                 = 45[deg]
X_Atn                   = 1.9[dB]
X_Pulse                 = 5.4[us]
Irr_Mode                = Off
Tri_Mode                = Off
Dante_Presat            = FALSE
```



JEOL

```
----- PROCESSING PARAMETERS ----
dc_balance : 0 : FALSE
sexp : 2.0[Hz] : 0.0[s]
trapezoid3 : 0[%] : 80[%] : 100[%]
zerofill : 1
fft : 1 : TRUE : TRUE
machinephase
ppm

Derived from: 2013.5.11 HANA-299-C-1.jdf
```

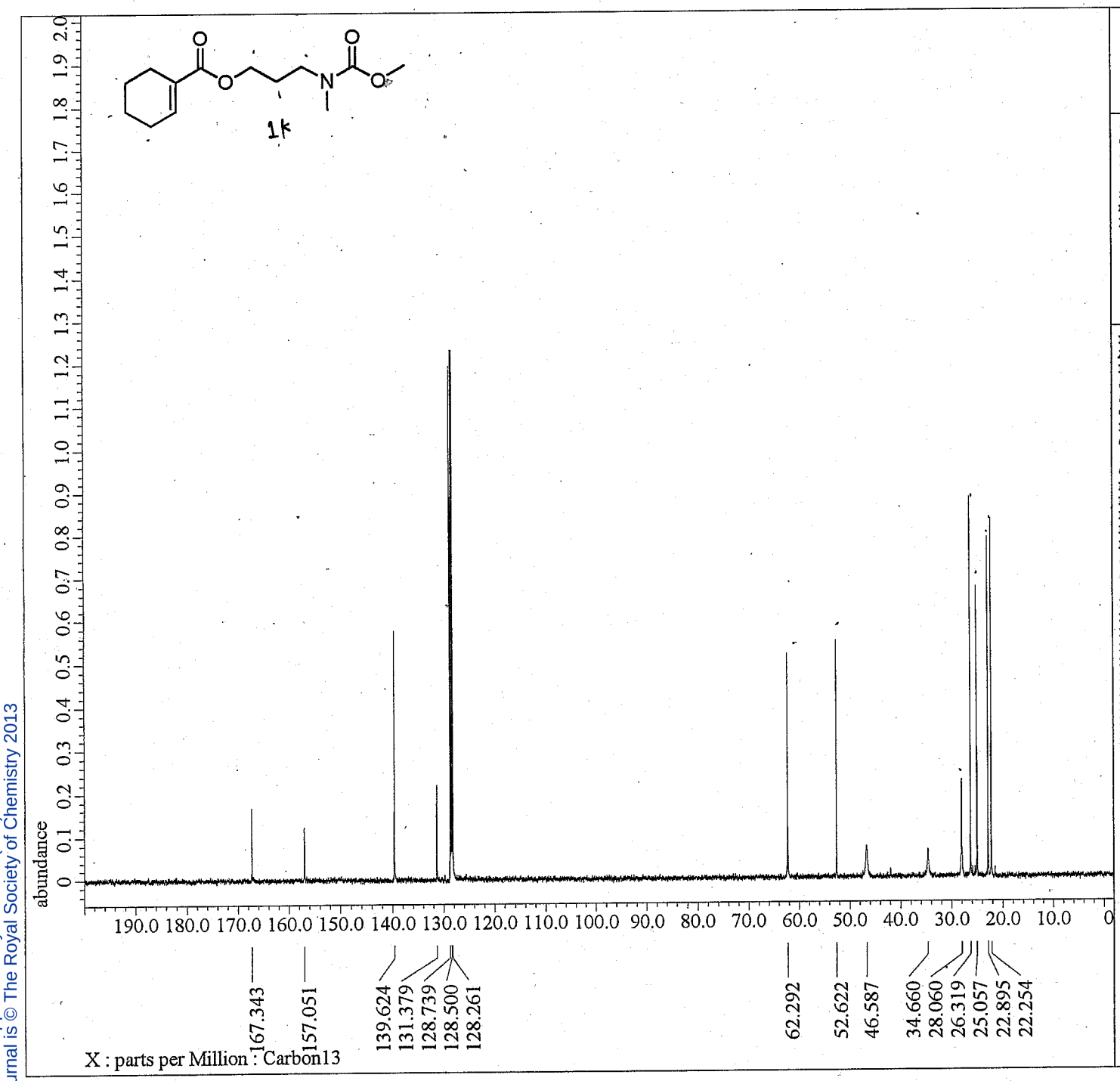
Filename	= 2013.5.11 HANA-299-C-
Author	= element
Experiment	= single_pulse_dec
Sample_id	= S#708565
Solvent	= CHLOROFORM-D
Creation_time	= 11-MAY-2013 18:55:15
Revision_time	= 11-MAY-2013 20:05:17
Current_time	= 11-MAY-2013 20:05:30
Comment	= single pulse decouple
Data_format	= 1D COMPLEX
Dim_size	= 26214
Dim_title	= 13C
Dim_units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_strength	= 9.20197068[T] (390[MH
X_acq_duration	= 1.06430464[s]
X_domain	= 13C
X_freq	= 98.51479726[MHz]
X_offset	= 100[ppm]
X_points	= 32768
X_prescans	= 4
X_resolution	= 0.93958061[Hz]
X_sweep	= 30.78817734[kHz]
Irr_domain	= 1H
Irr_freq	= 391.78655441[MHz]
Irr_offset	= 5[ppm]
Clipped	= FALSE
Mod_return	= 1
Scans	= 409
Total_scans	= 409
X_90_width	= 8.15[us]
X_acq_time	= 1.06430464[s]
X_angle	= 30[deg]
X_atn	= 4.9[dB]
X_pulse	= 2.71666667[us]
Irr_atn_dec	= 22.445[dB]
Irr_atn_noe	= 22.445[dB]
Irr_noise	= WALTZ
Decoupling	= TRUE
Initial_wait	= 1[s]
Noe	= TRUE
Noe_time	= 2[s]
Recvr_gain	= 60
Relaxation_delay	= 2[s]
Repetition_time	= 3.06430464[s]
Temp_get	= 19.3[dC]



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
reference( -0.01822[ppm], 77[ppm] )
reference( 77.0[ppm], 0[ppm] )
reference( -0.0[ppm], 0[ppm] )
reference( -0.0[ppm], 0[ppm] )
```

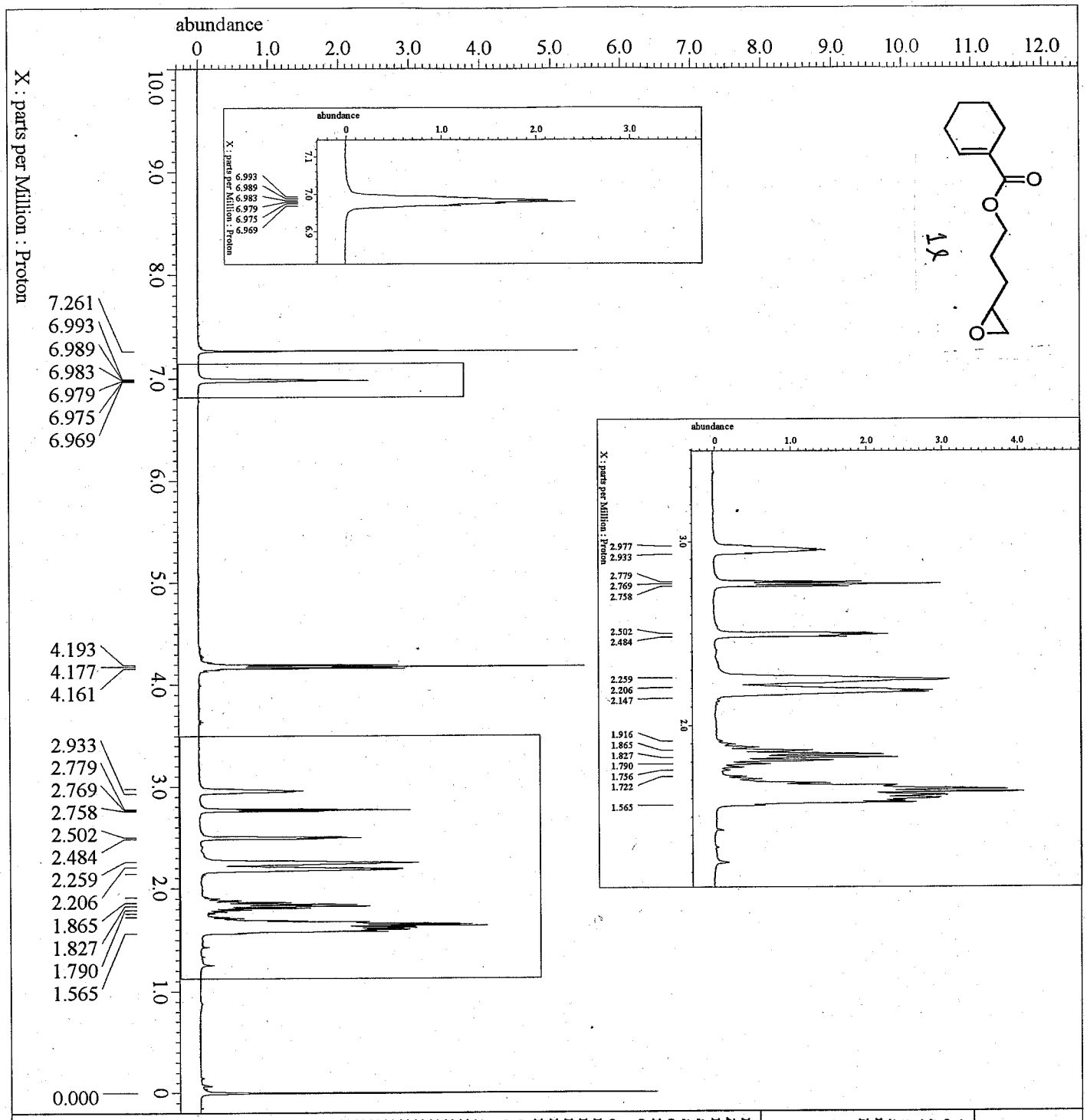
Filename	= D:\2012.11.8 HANA-229-17
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#342952
Solvent	= CHLOROFORM-D
Creation_Time	= 8-NOV-2012 09:03:31
Revision_Time	= 23-APR-2013 14:42:18
Current_Time	= 31-MAY-2013 00:58:16
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8914
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 50
Temp_Get	= 402.0[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.5.1 amide-C_carbon-1-1.jdf
```

Filename	= H:\2013.5.1 amide-C_carb
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2013.5.1 amide-C
Solvent	= BENZENE-D6
Creation_Time	= 1-MAY-2013 11:55:20
Revision_Time	= 1-MAY-2013 16:14:33
Current_Time	= 1-MAY-2013 16:15:00
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 64
Total_Scans	= 64
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 50[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE

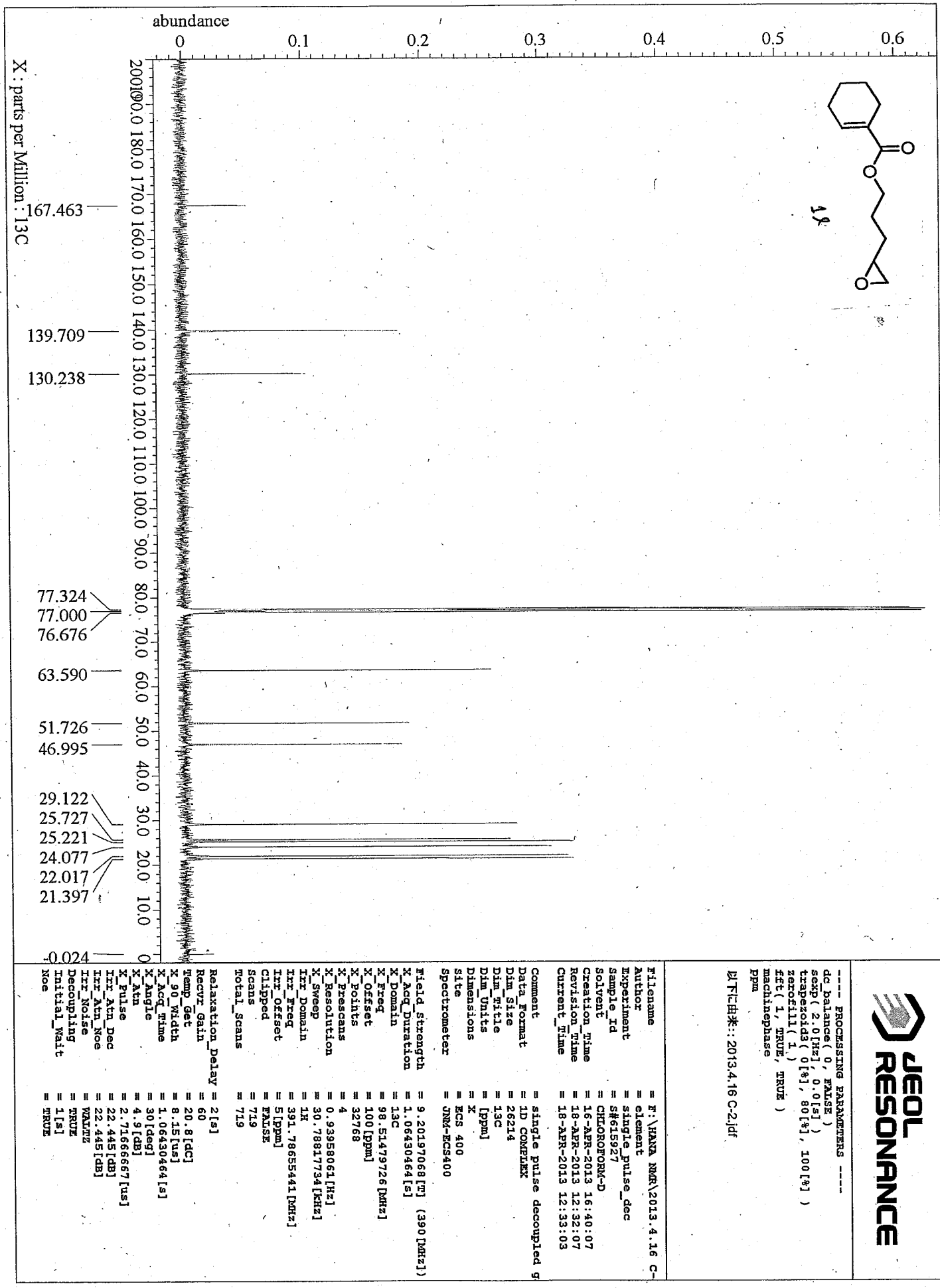


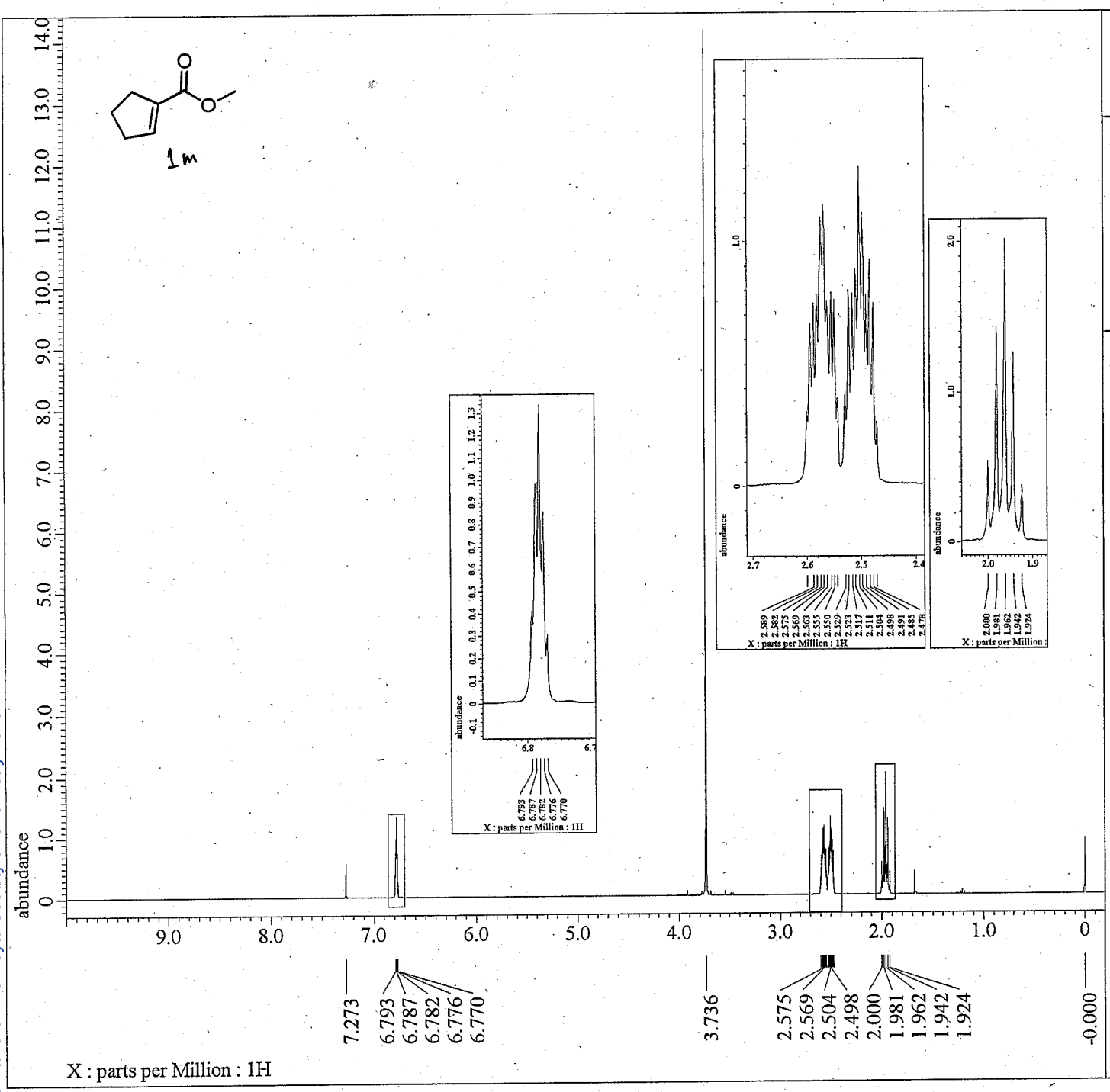
JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

以下に由来::2013.4.16_proton-1-1.jdf

Filename	= D:\HANA\2013.4.16_proton
Author	= element
Experiment	= proton.jxp
Sample_Id	= 2013.4.16
Solvent	= CHLOROFORM-D
Creation_Time	= 16-APR-2013 16:32:34
Revision_Time	= 30-MAY-2013 23:10:32
Current_Time	= 30-MAY-2013 23:15:09
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 13107
Dim_Title	= Proton
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 2.18103808[s]
X_Domain	= 1H
X_Freq	= 400.53219825[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45849727[Hz]
X_Sweep	= 7.51201923[kHz]
X_Sweep_Clipped	= 6.00961538[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= Proton
Tri_Freq	= 400.53219825[MHz]
Tri_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 50
Temp_Get	= 20.9[dC]
X_90_Width	= 6.5[us]
X_Acq_Time	= 2.18103808[s]
X_Angle	= 45[deg]
X_Atn	= 0.8[dB]
X_Pulse	= 3.25[us]
Irr_Mode	= Off
Tri_Mode	= Off


abundance
0
0.1
0.2
0.3
0.4
0.5
0.6
X : parts per Million : 13C
200 190.0 180.0 170.0 160.0 150.0 140.0 130.0 120.0 110.0 100.0 90.0 80.0 70.0 60.0 50.0 40.0 30.0 20.0 10.0 0
167.463
139.709
130.238
77.324
77.000
76.676
63.590
51.726
46.995
29.122
25.727
25.221
24.077
22.017
21.397
-0.024
1f
JEOL RESONANCE
---- PROCESSING PARAMETERS ----
dc_balance(0, FALSE)
sexp(2.0[Hz], 0.0[s])
trapezoid3(0[%], 80[%], 100[%])
zerofill(1)
fft(1, TRUE, TRUE)
machinephase
ppm
以下に由来:: 2013.4.16 C-2.jdf
Filename = F:\HANA NMR\2013.4.16 C-
Author = element
Experiment = single_pulse_dec
Sample_Id = S#615927
Solvent = CHLOROFORM-D
Creation_time = 16-APR-2013 16:40:07
Revision_time = 18-APR-2013 12:32:07
Current_Time = 18-APR-2013 12:33:03
Comment = single pulse decoupled g
Data_Format = 1D COMPLEX
Dim_Size = 26214
Dim_Title = 13C
Dim_Units = [ppm]
Dimensions = X
Site = ECS 400
Spectrometer = JNM-ECS400
Field_Strength = 9.20197068[T] (390[MHz])
X_Acq_Duration = 1.06430464[s]
X_Domain = 13C
X_Freq = 98.51479726[MHz]
X_Offset = 100[ppm]
X_Points = 32768
X_Prescans = 4
X_Resolution = 0.93958061[Hz]
X_Sweep = 30.78817734[kHz]
Irr_Domain = 1H
Irr_Freq = 391.78655441[MHz]
Irr_Offset = 5[ppm]
clipped = FALSE
Scans = 719
Total_Scans = 719
Relaxation_Delay = 2[s]
Recvr_Gain = 60
Temp_Get = 20.8[dC]
X_90_Width = 8.15[us]
X_Acq_time = 1.06430464[s]
X_Angle = 30[deg]
X_Atn = 4.9[dB]
X_Pulse = 2.71666667[us]
Irr_Atn_Dec = 22.445[dB]
Irr_Atn_Noe = 22.445[dB]
Irr_Noise = WALTZ
Decoupling = TRUE
Initial_Wait = 1[s]
Noe = TRUE

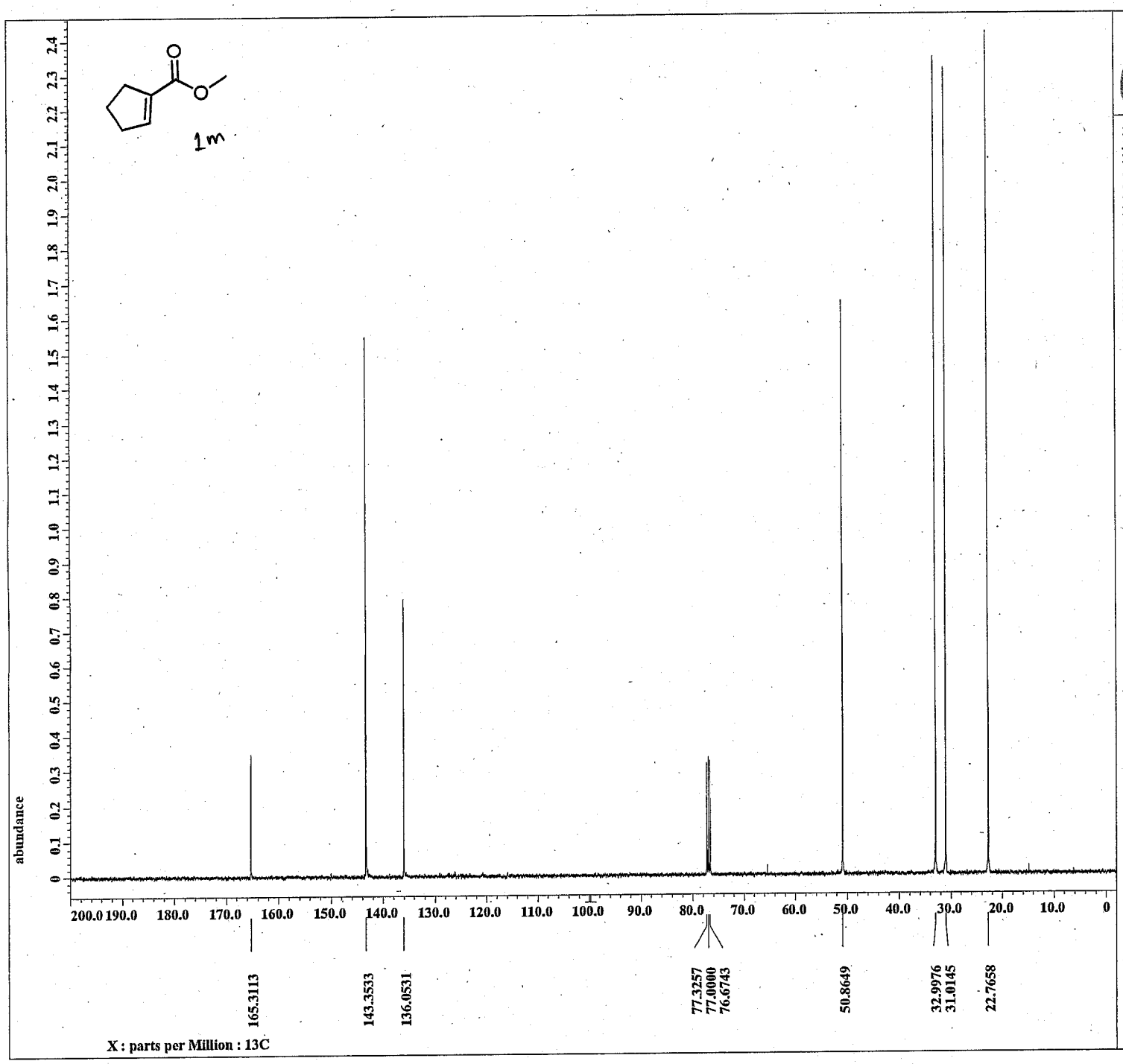


JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

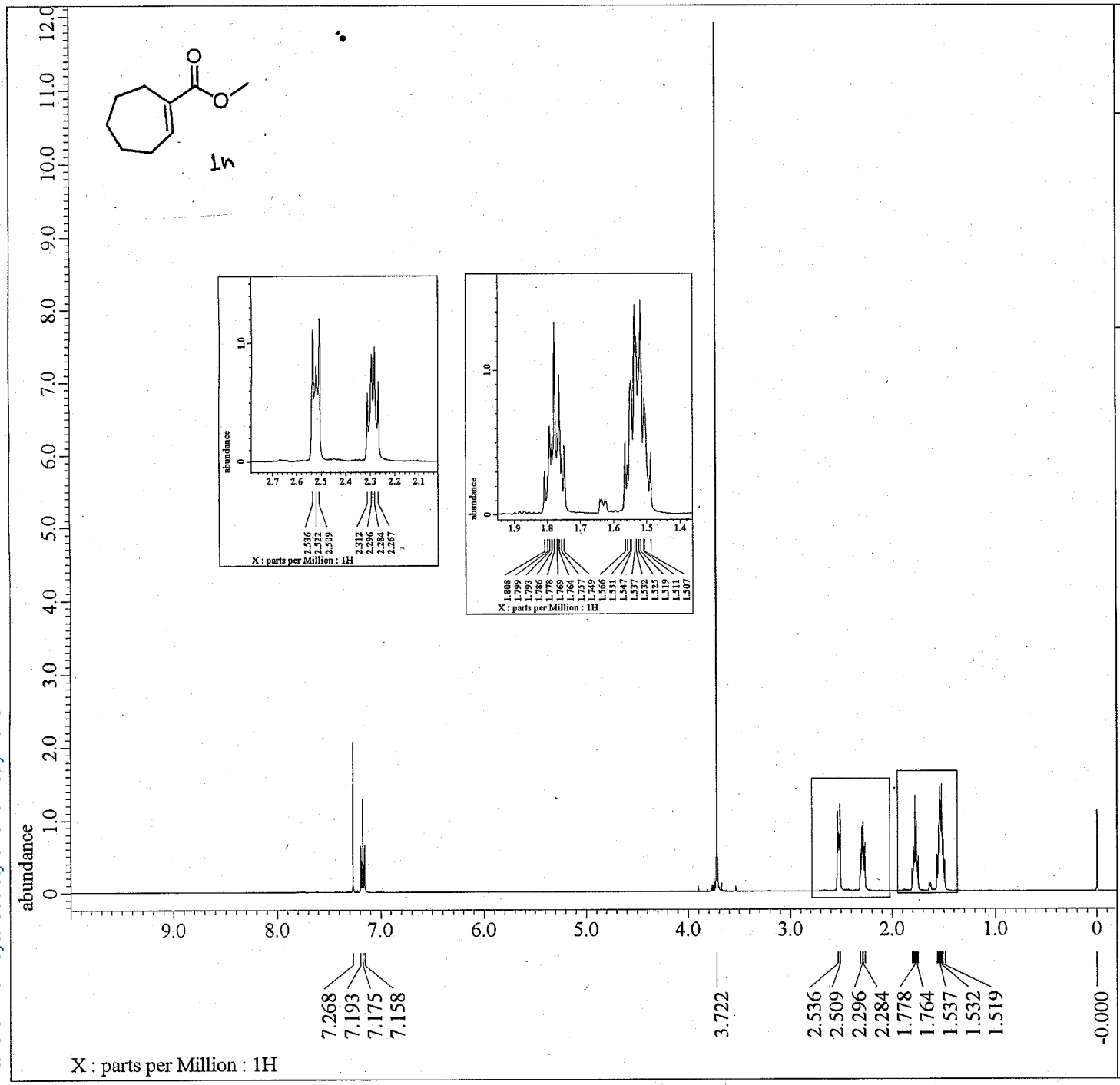
以下に由来:: 2012.5.26 HANA--9.jdf

```
Filename          = H:\2012.5.26 HANA--11.jd
Author            = element
Experiment        = single_pulse.ex2
Sample_Id         = S#335245
Solvent           = CHLOROFORM-D
Creation_Time     = 26-MAY-2012 08:59:09
Revision_Time     = 18-APR-2013 22:20:01
Current_Time      = 18-APR-2013 22:21:10

Comment           = single_pulse
Data_Format       = 1D COMPLEX
Dim_Size          = 13107
Dim_Title         = 1H
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECX 400P
Spectrometer      = DELTA2_NMR

Field_Strength    = 9.2982153[T] (400[MHz])
X_Acq_Duration    = 2.20725248[s]
X_Domain          = 1H
X_Freq            = 395.88430144[MHz]
X_Offset          = 5[ppm]
X_Points          = 16384
X_Prescans        = 1
X_Resolution      = 0.45305193[Hz]
X_Sweep           = 7.42280285[kHz]
Irr_Domain        = 1H
Irr_Freq          = 395.88430144[MHz]
Irr_Offset        = 5[ppm]
Tri_Domain        = 1H
Tri_Freq          = 395.88430144[MHz]
Tri_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 8
Total_Scans       = 8

Relaxation_Delay  = 5[s]
Recvr_Gain        = 34
Temp_Get          = 402.4[dC]
X_90_Width        = 13.5[us]
X_Acq_Time        = 2.20725248[s]
X_Angle           = 45[deg]
X_Atn             = 1[dB]
X_Pulse           = 6.75[us]
Irr_Mode          = Off
Tri_Mode          = Off
Dante_Presat      = FALSE
```



JEOL

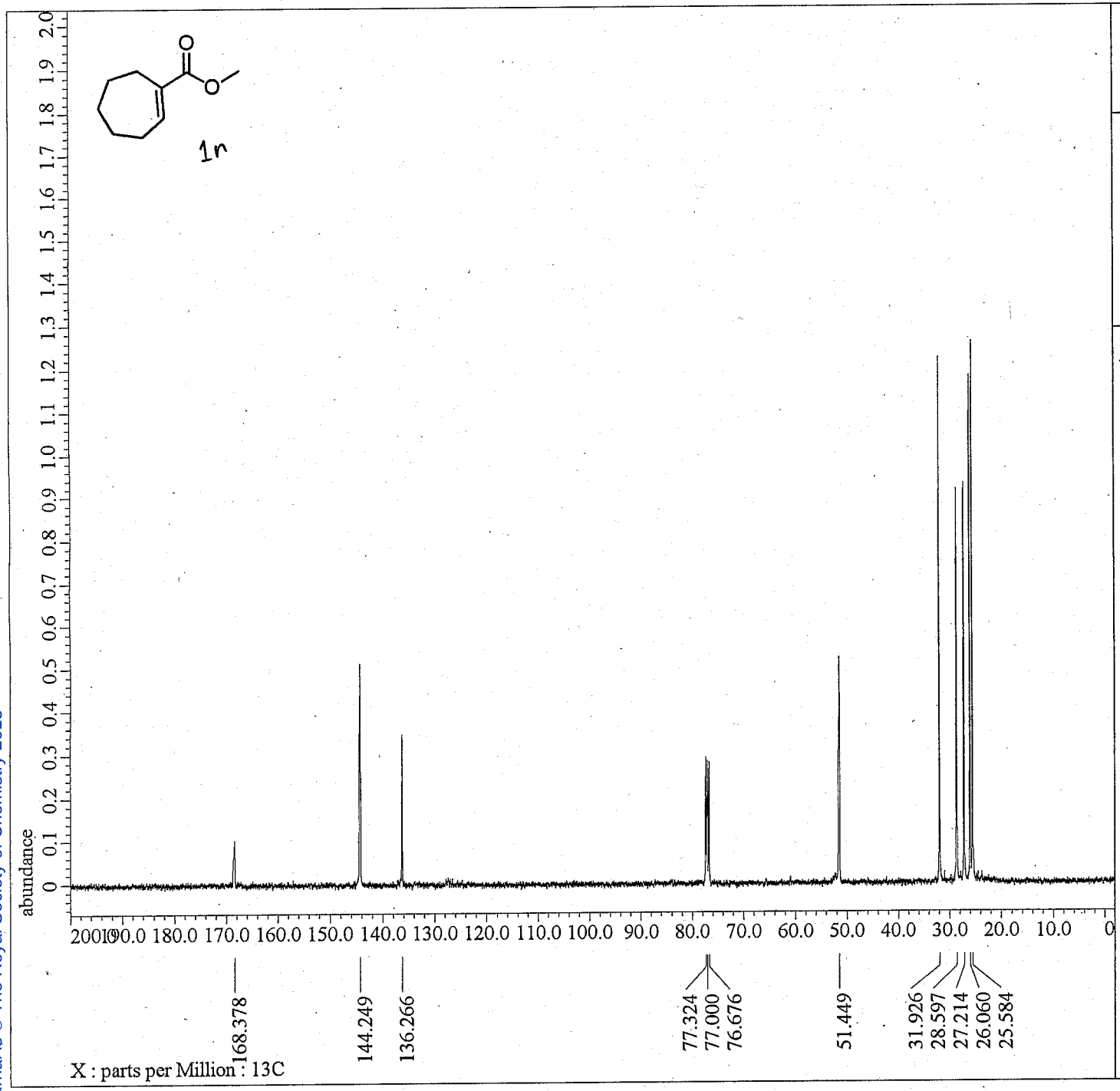
Filename	= 2012.5.26 HANA- C-3.j
Author	= element
Experiment	= single_pulse_dec
Sample_id	= S#338741
Solvent	= CHLOROFORM-D
Creation_time	= 26-MAY-2012 09:11:02
Revision_time	= 2-OCT-2012 00:32:23
Current_time	= 2-OCT-2012 00:32:35
Comment	= single pulse decouple
Data_format	= 1D COMPLEX
Dim_size	= 26214
Dim_title	= 13C
Dim_units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_strength	= 9.2982153[T] (400[MHz
X_acq_duration	= 1.048576[s]
X_domain	= 13C
X_freq	= 99.54517646[MHz]
X_offset	= 100[ppm]
X_points	= 32768
X_prescans	= 4
X_resolution	= 0.95367432[Hz]
X_sweep	= 31.25[kHz]
Irr_domain	= 1H
Irr_freq	= 395.88430144[MHz]
Irr_offset	= 5[ppm]
Clipped	= FALSE
Mod_return	= 1
Scans	= 135
Total_scans	= 135
X_90_width	= 9.5[us]
X_acq_time	= 1.048576[s]
X_angle	= 30[deg]
X_atn	= 3.4[dB]
X_pulse	= 3.16666667[us]
Irr_atn_dec	= 19.607[dB]
Irr_atn_noe	= 19.607[dB]
Irr_noise	= WALTZ
Decoupling	= TRUE
Initial_wait	= 1[s]
Noe	= TRUE
Noe_time	= 2[s]
Recvr_gain	= 50
Relaxation_delay	= 2[s]
Repetition_time	= 3.048576[s]
Temp_get	= 402.3[dC]



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

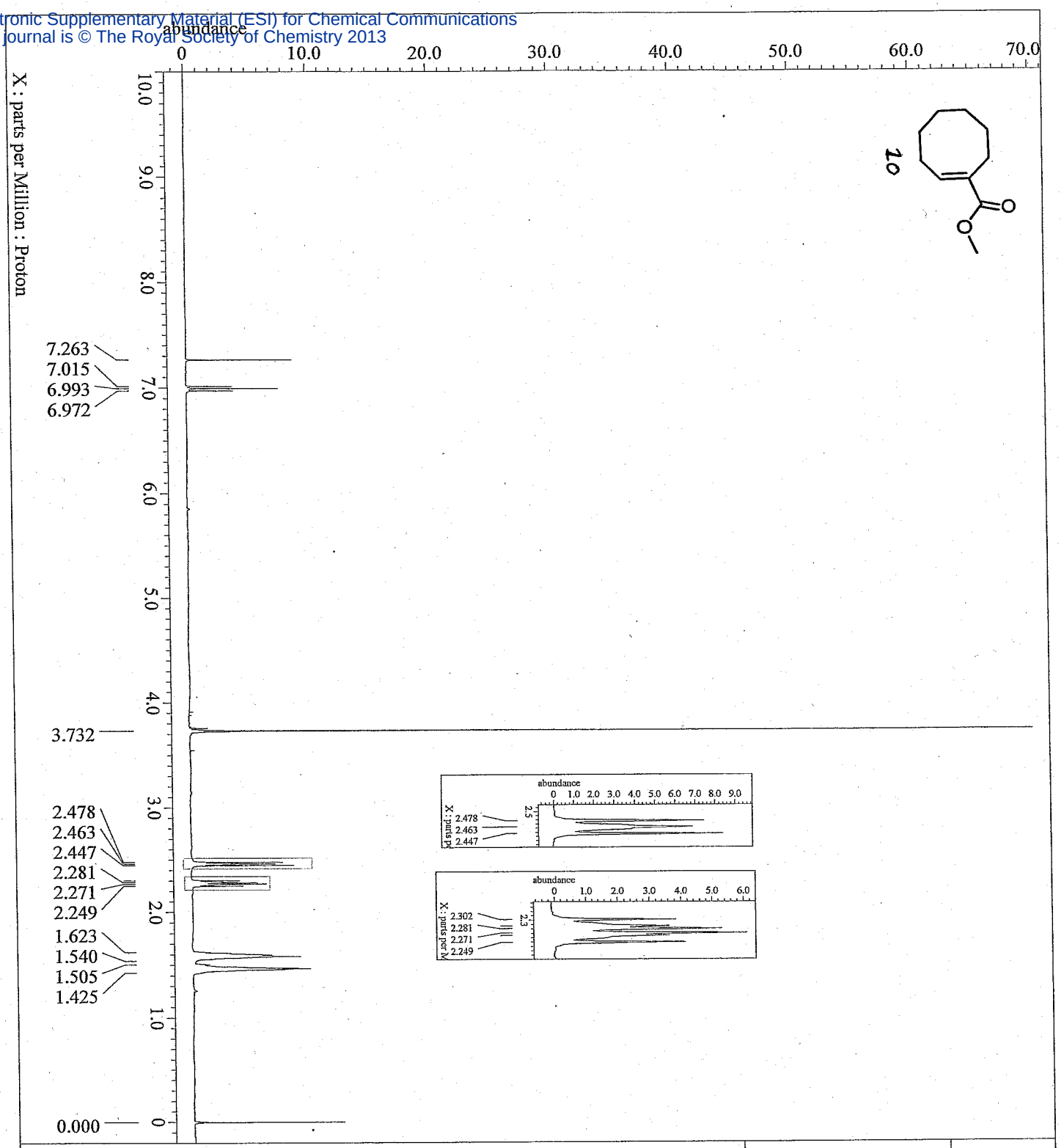
Filename	= D:\2012.6.24 hana-085-11
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#662842
Solvent	= CHLOROFORM-D
Creation_Time	= 25-JUN-2012 18:05:19
Revision_Time	= 18-APR-2013 22:39:02
Current_Time	= 30-MAY-2013 18:14:52
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8914
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 34
Temp_Get	= 401.3[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



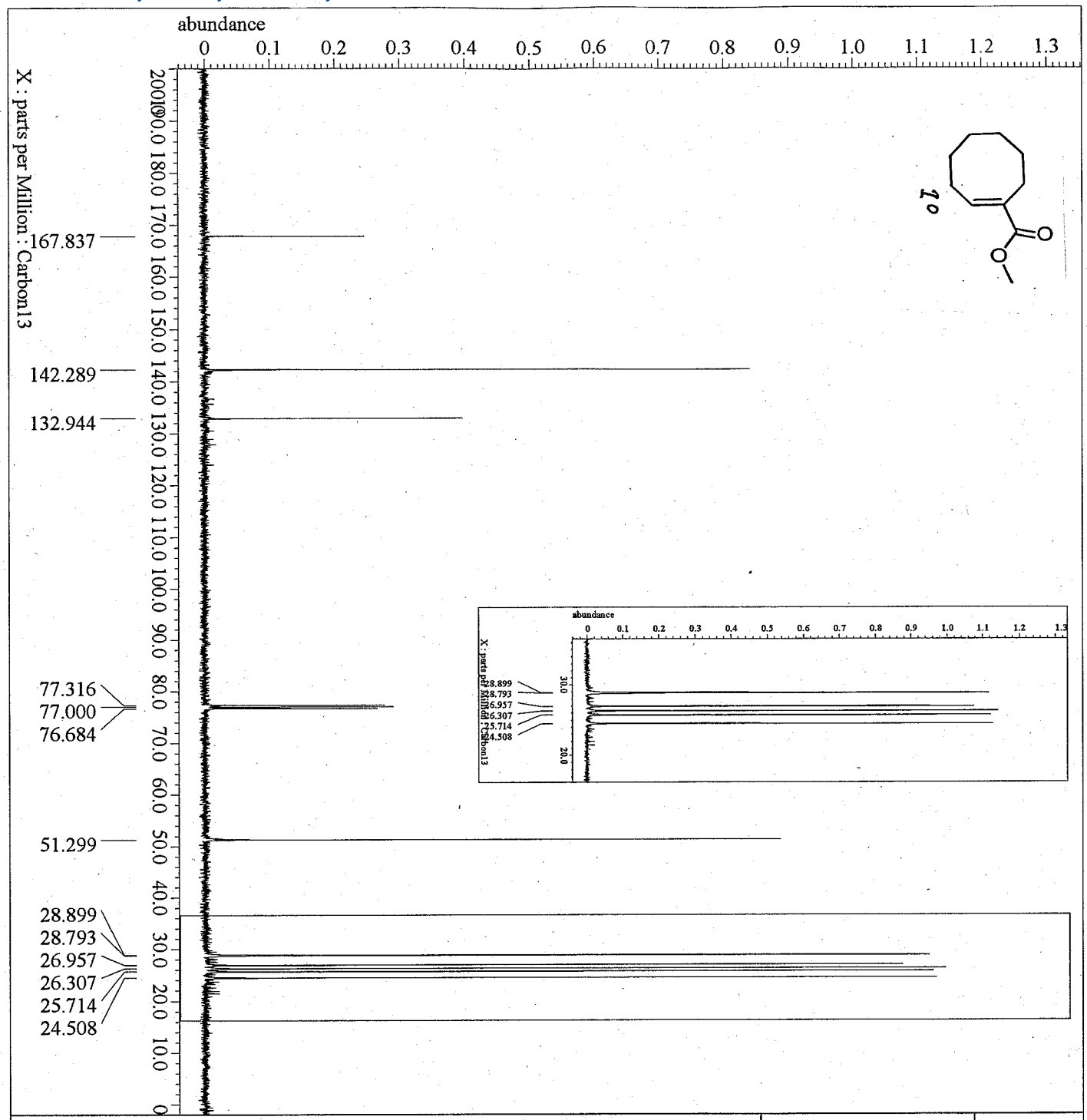
JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.4.29 7-2.jdf
```

```
Filename          = H:\2013.4.29 7-6.jdf
Author            = element
Experiment        = single_pulse_dec
Sample_Id         = S#451659
Solvent           = CHLOROFORM-D
Creation_Time     = 29-APR-2013 11:51:53
Revision_Time     =  1-MAY-2013 16:20:30
Current_Time      =  1-MAY-2013 16:20:33

Comment           = single pulse decoupled g
Data_Format       = 1D COMPLEX
Dim_Size          = 26214
Dim_Title         = 13C
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T]  (390[MHz])
X_Acq_Duration    = 1.06430464[s]
X_Domain          = 13C
X_Freq            = 98.51479726[MHz]
X_Offset          = 100[ppm]
X_Points          = 32768
X_Prescans        = 4
X_Resolution      = 0.93958061[Hz]
X_Sweep           = 30.78817734[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 470
Total_Scans       = 470

Relaxation_Delay  = 2[s]
Recvr_Gain        = 60
Temp_Get          = 20.8[dC]
X_90_Width        = 8.15[us]
X_Acq_Time        = 1.06430464[s]
X_Angle           = 30[deg]
X_Atn             = 4.9[dB]
X_Pulse           = 2.71666667[us]
Irr_Atn_Dec       = 22.445[dB]
Irr_Atn_Noe       = 22.445[dB]
Irr_Noise         = WALTZ
Decoupling        = TRUE
Initial_Wait      = 1[s]
Noe               = TRUE
```



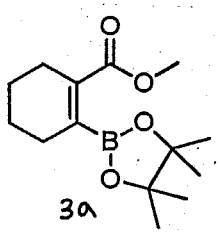

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下由来:: 2013.4.24-8-_proton-1-1.jdf

Filename                = 2013.4.24-8-_proton-1-4.jd
Author                  = element
Experiment              = proton.jxp
Sample_Id               = 2013.4.24-8-
Solvent                 = CHLOROFORM-D
Creation_Time           = 24-APR-2013 09:39:12
Revision_Time           = 24-APR-2013 09:40:00
Current_Time            = 24-APR-2013 09:40:59

Comment                 = single_pulse
Data_Format             = 1D COMPLEX
Dim_Size                = 13107
Dim_Title               = Proton
Dim_Units               = [ppm]
Dimensions              = X
Site                    = JNM-ECS400
Spectrometer            = DELTA2_NMR

Field_Strength          = 9.4073814[T] (400[MHz])
X_Acq_Duration          = 2.18103808[s]
X_Domain                = 1H
X_Freq                  = 400.53219825[MHz]
X_Offset                = 5[ppm]
X_Points                = 16384
X_Prescans              = 1
X_Resolution            = 0.45849727[Hz]
X_Sweep                 = 7.51201923[kHz]
X_Sweep_Clipped         = 6.00961538[kHz]
Irr_Domain              = Proton
Irr_Freq                = 400.53219825[MHz]
Irr_Offset              = 5[ppm]
Tri_Domain              = Proton
Tri_Freq                = 400.53219825[MHz]
Tri_Offset              = 5[ppm]
Clipped                 = TRUE
Scans                   = 8
Total_Scans             = 8

Relaxation_Delay        = 5[s]
Recvr_Gain              = 50
Temp_Get                = 22.1[dC]
X_90_Width              = 6.5[us]
X_Acq_Time              = 2.18103808[s]
X_Atn                   = 45[deg]
X_Angle                 = 0.8[dB]
X_Pulse                 = 3.25[us]
Irr_Mode                = Off
Tri_Mode                = Off
```

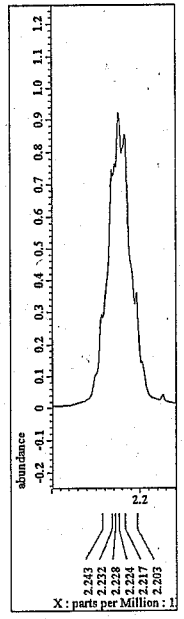


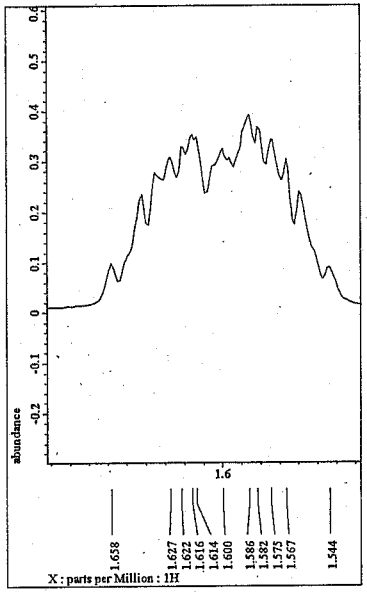
JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\NAWA\2014.4.24-8-C_ca
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2014.4.24-8-C
Solvent	= CHLOROFORM-D
Creation_Time	= 24-APR-2013 10:24:11
Revision_Time	= 24-APR-2013 10:25:29
Current_Time	= 30-MAY-2013 22:58:43
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21120
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 51
Total_Scans	= 51
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 22.1[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE



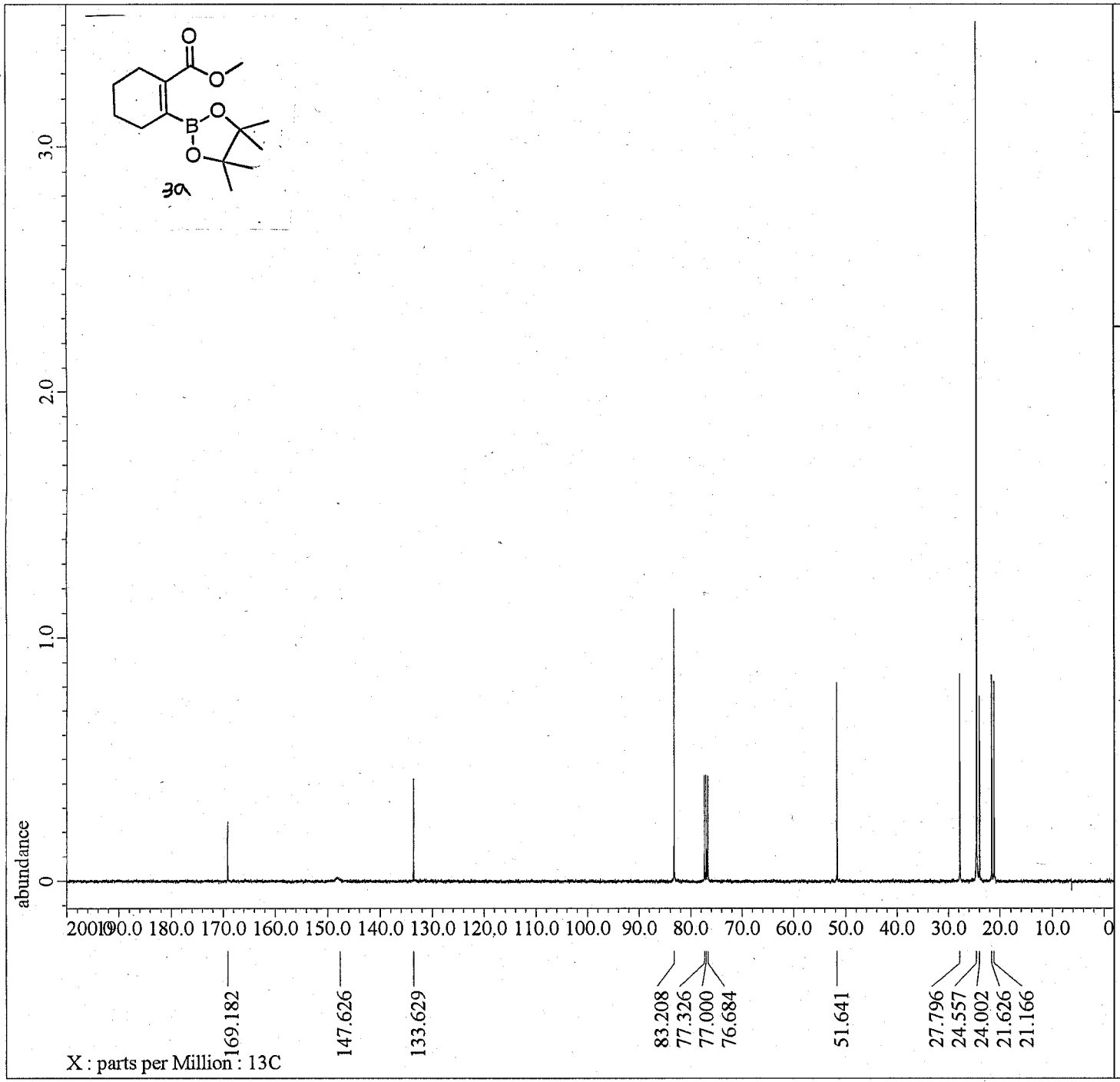




JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.1.31 -1-2.jdf
```

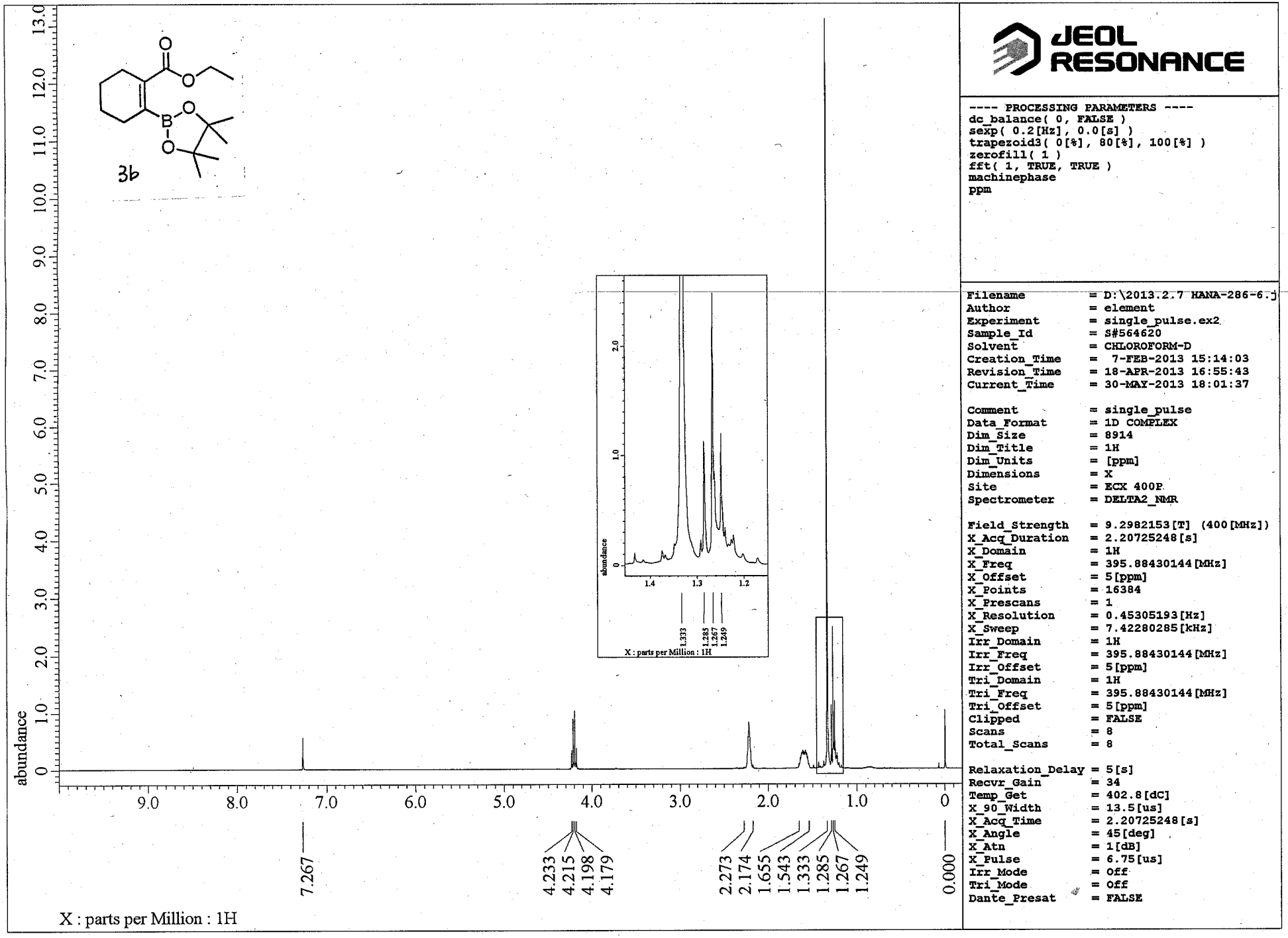
Filename	= H:\2013.1.31 -1-5.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#598561
Solvent	= CHLOROFORM-D
Creation_Time	= 31-JAN-2013 16:10:35
Revision_Time	= 18-APR-2013 20:06:20
Current_Time	= 18-APR-2013 20:08:18
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 13107
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 36
Temp_Get	= 21.6[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

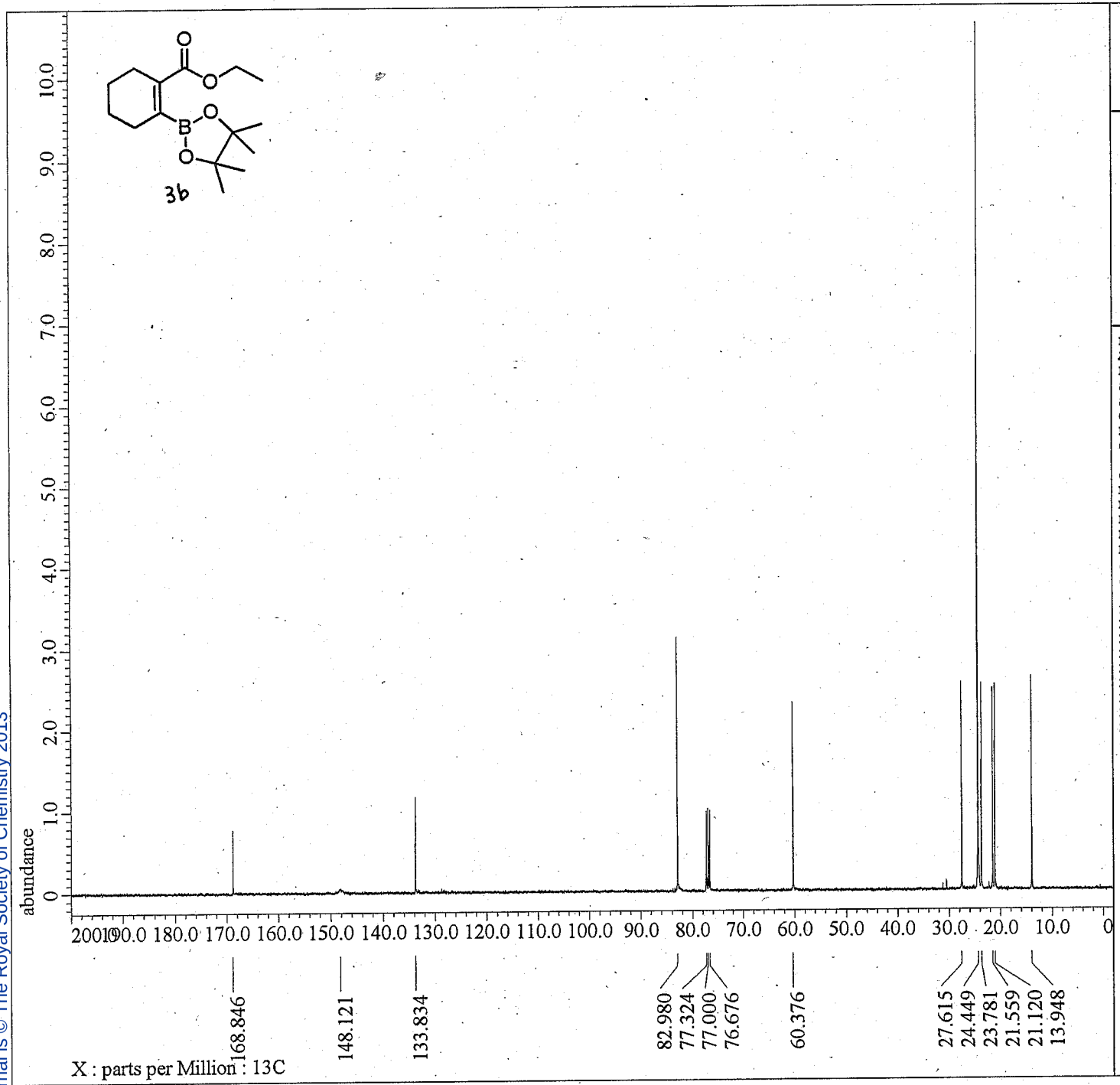
Filename	= D:\2012.3.12-1 no271 C-8
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#384697
Solvent	= CHLOROFORM-D
Creation_Time	= 12-MAR-2012 10:25:04
Revision_Time	= 31-MAY-2013 00:08:59
Current_Time	= 31-MAY-2013 00:09:11
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21086
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 100
Total_Scans	= 100
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 20.6[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

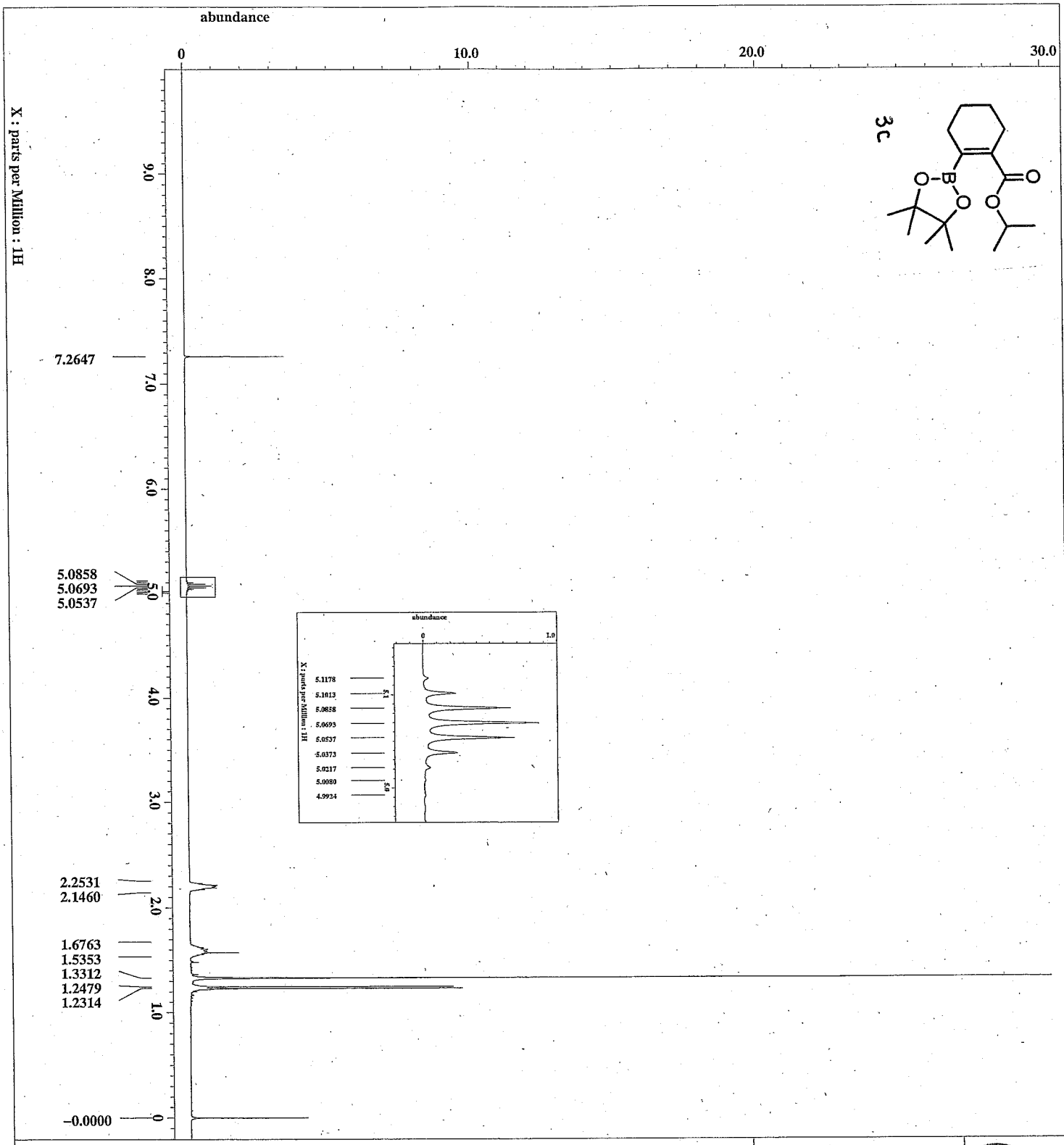
Filename	= D:\2013.2.7 HANA-286-6.j
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#564620
Solvent	= CHLOROFORM-D
Creation_Time	= 7-FEB-2013 15:14:03
Revision_Time	= 18-APR-2013 16:55:43
Current_Time	= 30-MAY-2013 18:01:37
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8914
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.20725248[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45305193[Hz]
X_Sweep	= 7.42280285[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 34
Temp_Get	= 402.8[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.20725248[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



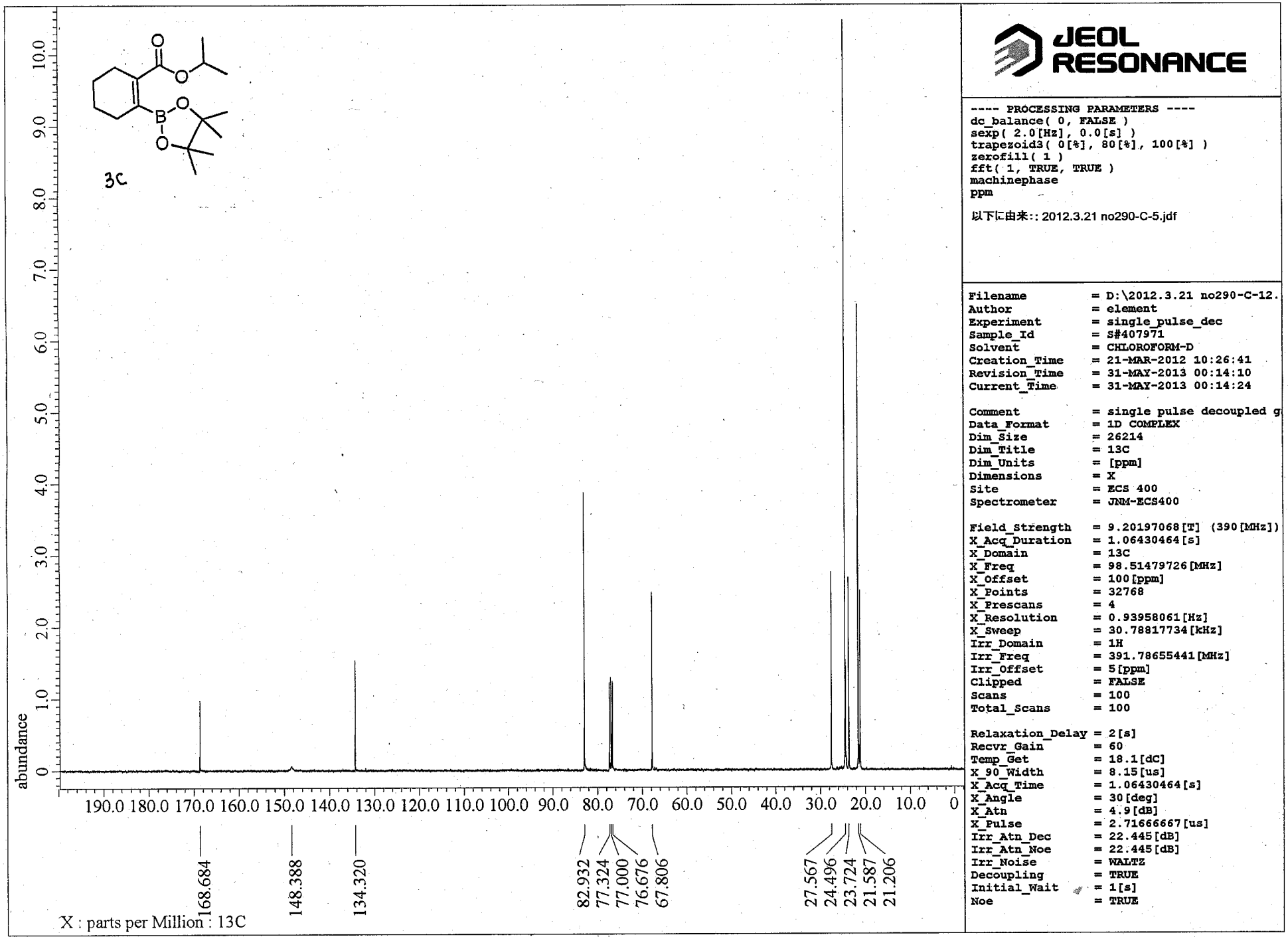
JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2012.3.15 no283C3-4.jdf
```

```
Filename          = H:\2012.3.15 no283C3-6.j
Author            = element
Experiment        = single_pulse_dec
Sample_Id         = S#676601
Solvent           = CHLOROFORM-D
Creation_Time     = 15-MAR-2012 17:55:11
Revision_Time     = 19-APR-2013 12:14:00
Current_Time      = 19-APR-2013 12:14:33

Comment           = single pulse decoupled g
Data_Format       = 1D COMPLEX
Dim_Size          = 26214
Dim_Title         = 13C
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T] (390[MHz])
X_Acq_Duration    = 1.06430464[s]
X_Domain          = 13C
X_Freq            = 98.51479726[MHz]
X_Offset          = 100[ppm]
X_Points          = 32768
X_Prescans        = 4
X_Resolution      = 0.93958061[Hz]
X_Sweep           = 30.78817734[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 100
Total_Scans       = 100

Relaxation_Delay  = 2[s]
Recvr_Gain        = 60
Temp_Get          = 18.4[dC]
X_90_Width        = 8.15[us]
X_Acq_Time        = 1.06430464[s]
X_Angle           = 30[deg]
X_Atn             = 4.9[dB]
X_Pulse           = 2.71666667[us]
Irr_Atn_Dec       = 22.445[dB]
Irr_Atn_Noe       = 22.445[dB]
Irr_Noise         = WALTZ
Decoupling        = TRUE
Initial_Wait      = 1[s]
Noe               = TRUE
```



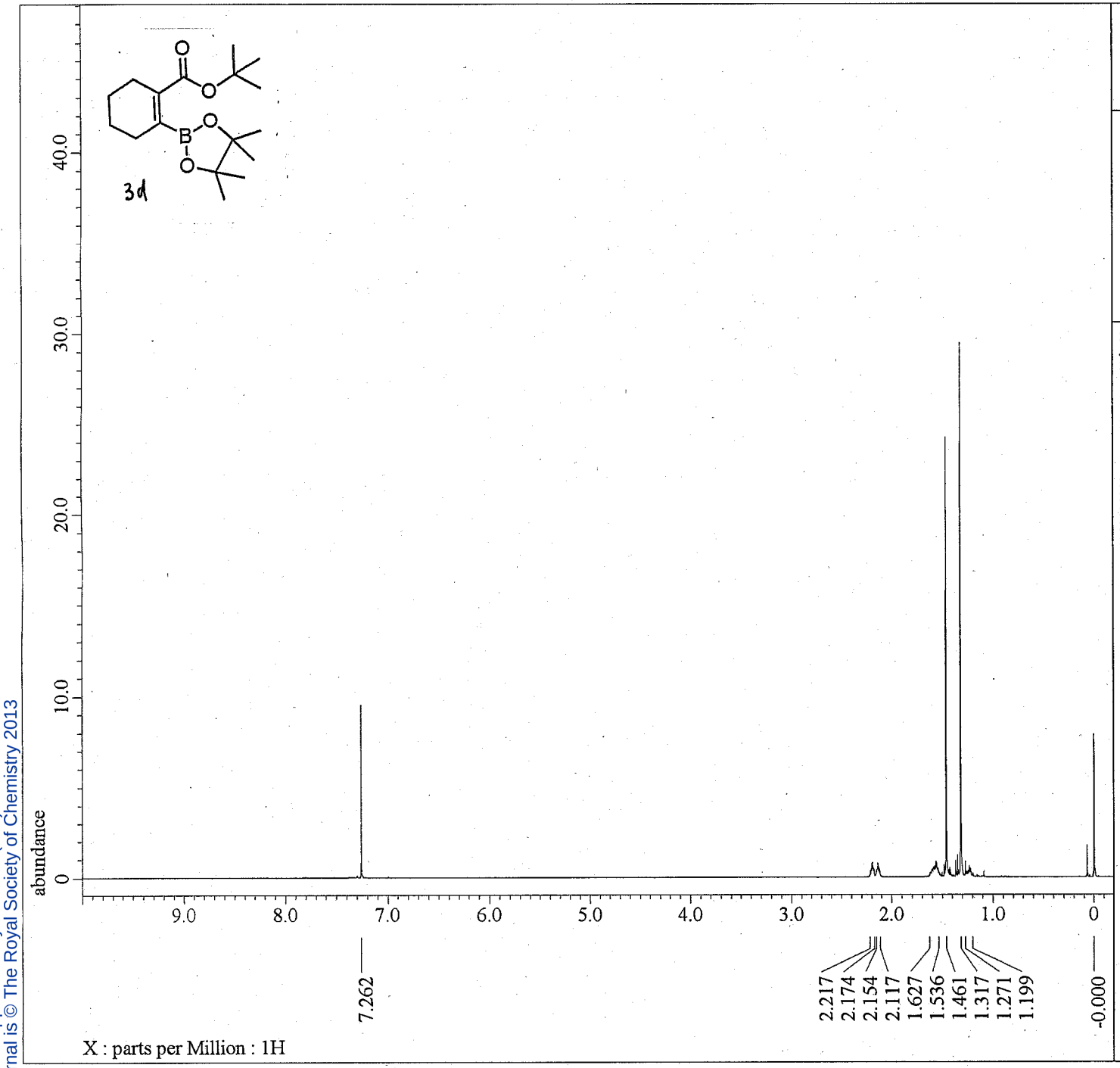

```
---- PROCESSING PARAMETERS ----
dc_balance : 0 : FALSE
sexp : 0.2[Hz] : 0.0[s]
trapezoid3 : 0[%] : 80[%] : 100[%]
zerofill : 1
fft : 1 : TRUE : TRUE
machinephase
ppm

Derived from: 2013.4.23-ipr-1.jdf

Filename                = 2013.4.23-ipr-3.jdf
Author                  = element
Experiment              = single_pulse.ex2
Sample_id               = S#458871
Solvent                 = CHLOROFORM-D
Creation_time           = 23-APR-2013 11:42:18
Revision_time           = 23-APR-2013 12:52:04
Current_time            = 23-APR-2013 12:52:49

Comment                 = single_pulse
Data_format             = 1D COMPLEX
Dim_size                = 16384
Dim_title               = 1H
Dim_units               = [ppm]
Dimensions              = X
Site                    = ECS 400
Spectrometer            = JNW-ECS400

Field_strength          = 9.20197068[T] (390[MH
X_acq_duration          = 2.78790144[s]
X_domain                = 1H
X_freq                  = 391.78655441[MHz]
X_offset                = 5[ppm]
X_points                = 16384
X_prescans              = 1
X_resolution            = 0.35869274[Hz]
X_sweep                 = 5.87682181[kHz]
Irr_domain              = 1H
Irr_freq                = 391.78655441[MHz]
Irr_offset              = 5[ppm]
Tri_domain              = 1H
Tri_freq                = 391.78655441[MHz]
Tri_offset              = 5[ppm]
Clipped                 = FALSE
Mod_return              = 1
scans                   = 8
Total_scans             = 8

X_90_width              = 10.8[us]
X_acq_time              = 2.78790144[s]
X_angle                 = 45[deg]
X_atn                   = 1.9[dB]
X_pulse                 = 5.4[us]
Irr_mode                = off
Tri_mode                = off
Dante_presat            = FALSE
Initial_wait            = 1[s]
Recvr_gain              = 44
Relaxation_delay        = 5[s]
Repetition_time         = 7.78790144[s]
Temp_get                = 20.8[dC]
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2012.3.21 no290-C-5.jdf
```

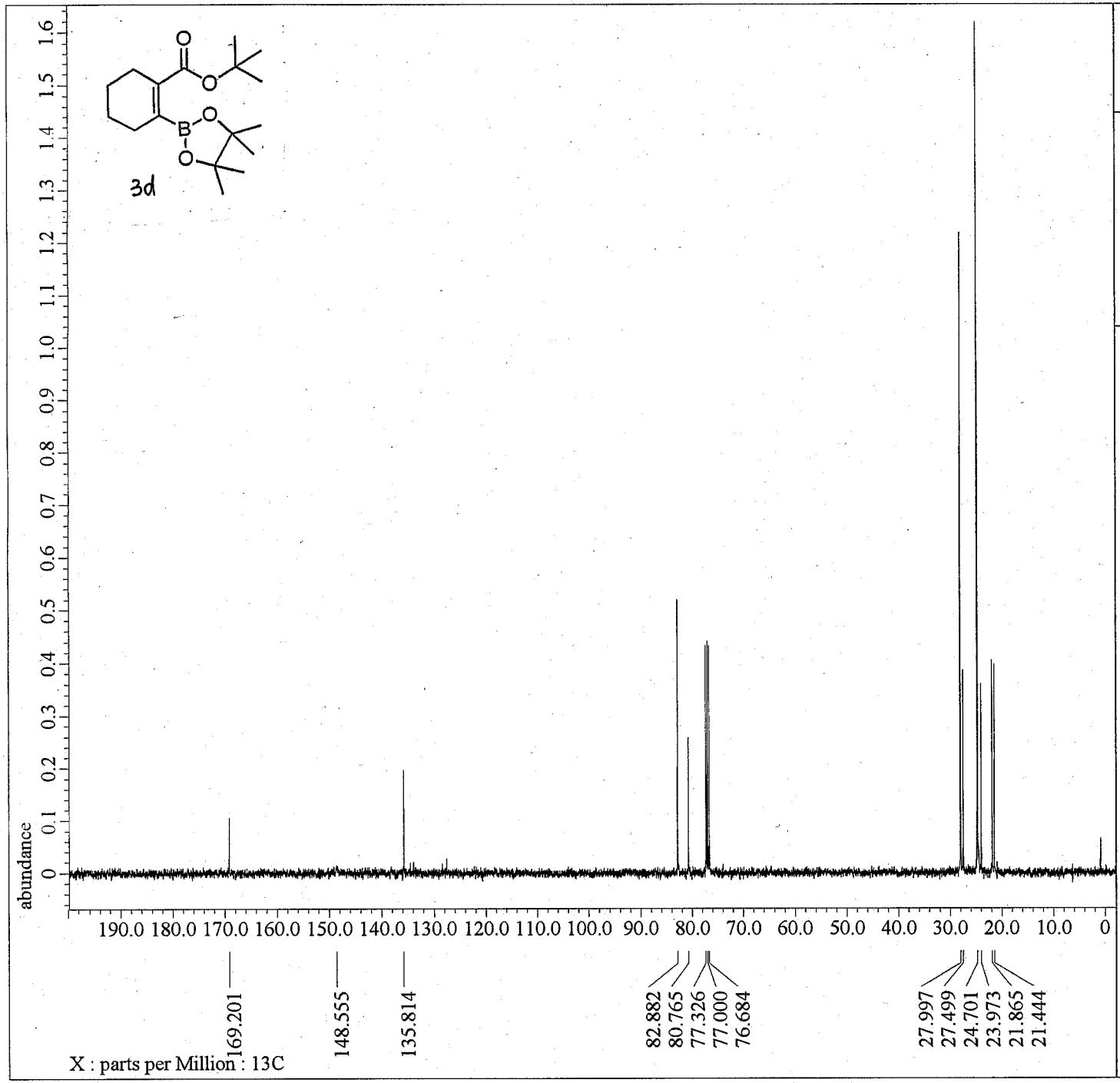
Filename	= D:\2012.3.21 no290-C-12.
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#407971
Solvent	= CHLOROFORM-D
Creation_Time	= 21-MAR-2012 10:26:41
Revision_Time	= 31-MAY-2013 00:14:10
Current_Time	= 31-MAY-2013 00:14:24
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 1.06430464[s]
X_Domain	= 13C
X_Freq	= 98.51479726[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.93958061[Hz]
X_Sweep	= 30.78817734[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 100
Total_Scans	= 100
Relaxation_Delay	= 2[s]
Recvr_Gain	= 60
Temp_Get	= 18.1[dC]
X_90_Width	= 8.15[us]
X_Acq_Time	= 1.06430464[s]
X_Angle	= 30[deg]
X_Atn	= 4.9[dB]
X_Pulse	= 2.71666667[us]
Irr_Atn_Dec	= 22.445[dB]
Irr_Atn_Noe	= 22.445[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

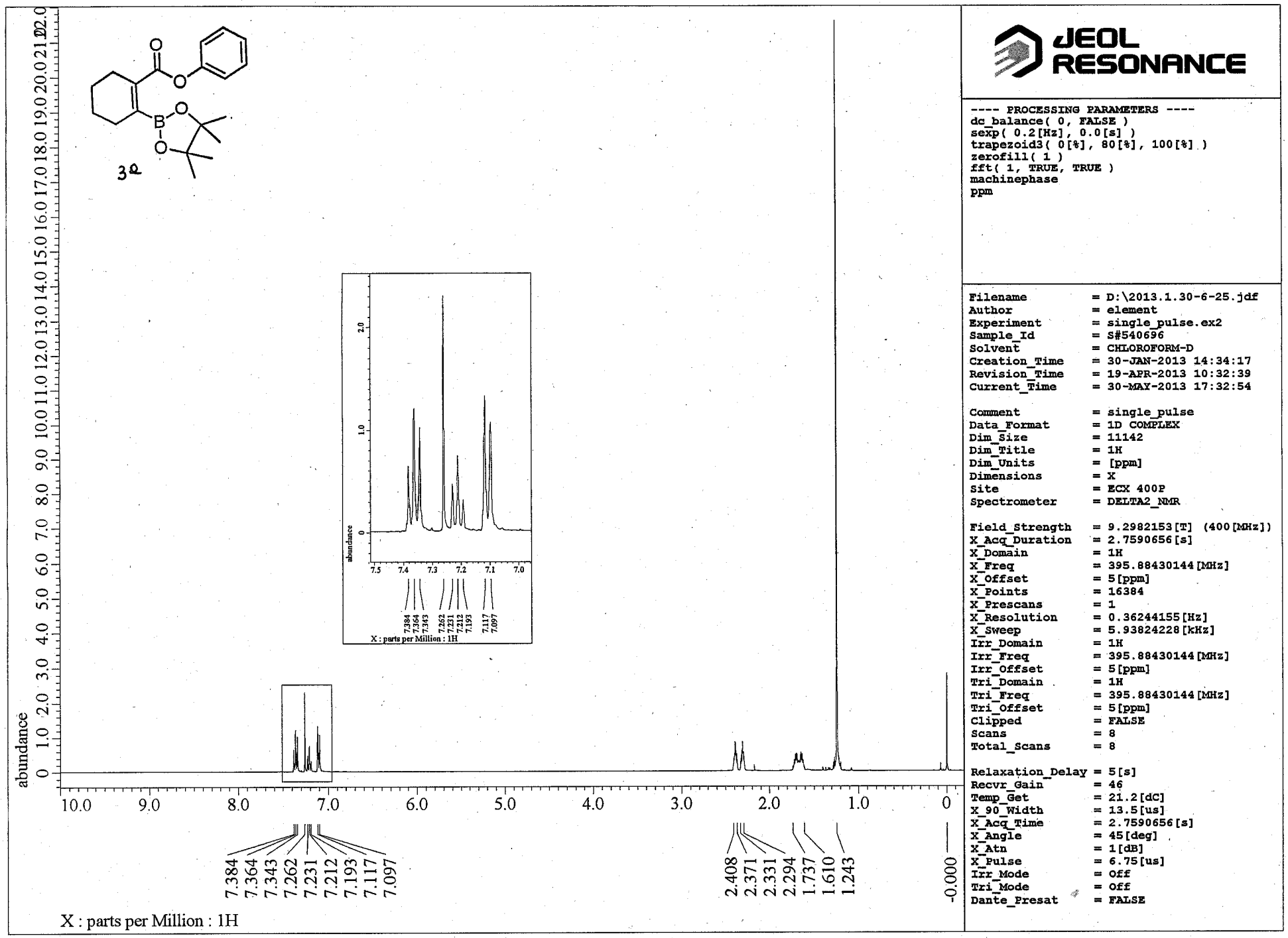
```
Filename          = D:\2013.1.30-8-16.jdf
Author            = element
Experiment        = single_pulse.ex2
Sample_Id         = S#544193
Solvent           = CHLOROFORM-D
Creation_Time     = 30-JAN-2013 14:39:14
Revision_Time     = 30-MAY-2013 17:42:58
Current_Time      = 30-MAY-2013 17:54:21

Comment           = single_pulse
Data_Format       = 1D COMPLEX
Dim_Size          = 8914
Dim_Title         = 1H
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECX 400P
Spectrometer      = DELTA2_NMR

Field_Strength    = 9.2982153[T] (400[MHz])
X_Acq_Duration    = 2.20725248[s]
X_Domain          = 1H
X_Freq            = 395.88430144[MHz]
X_Offset          = 5[ppm]
X_Points          = 16384
X_Prescans        = 1
X_Resolution      = 0.45305193[Hz]
X_Sweep           = 7.42280285[kHz]
Irr_Domain        = 1H
Irr_Freq          = 395.88430144[MHz]
Irr_Offset        = 5[ppm]
Tri_Domain        = 1H
Tri_Freq          = 395.88430144[MHz]
Tri_Offset        = 5[ppm]
Clipped           = TRUE
Scans             = 8
Total_Scans       = 8

Relaxation_Delay  = 5[s]
Recvr_Gain        = 50
Temp_Get          = 21.2[dC]
X_90_Width        = 13.5[us]
X_Acq_Time        = 2.20725248[s]
X_Angle           = 45[deg]
X_Atn             = 1[dB]
X_Pulse           = 6.75[us]
Irr_Mode          = Off
Tri_Mode          = Off
Dante_Presat      = FALSE
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.1.30-8-16.jdf
```

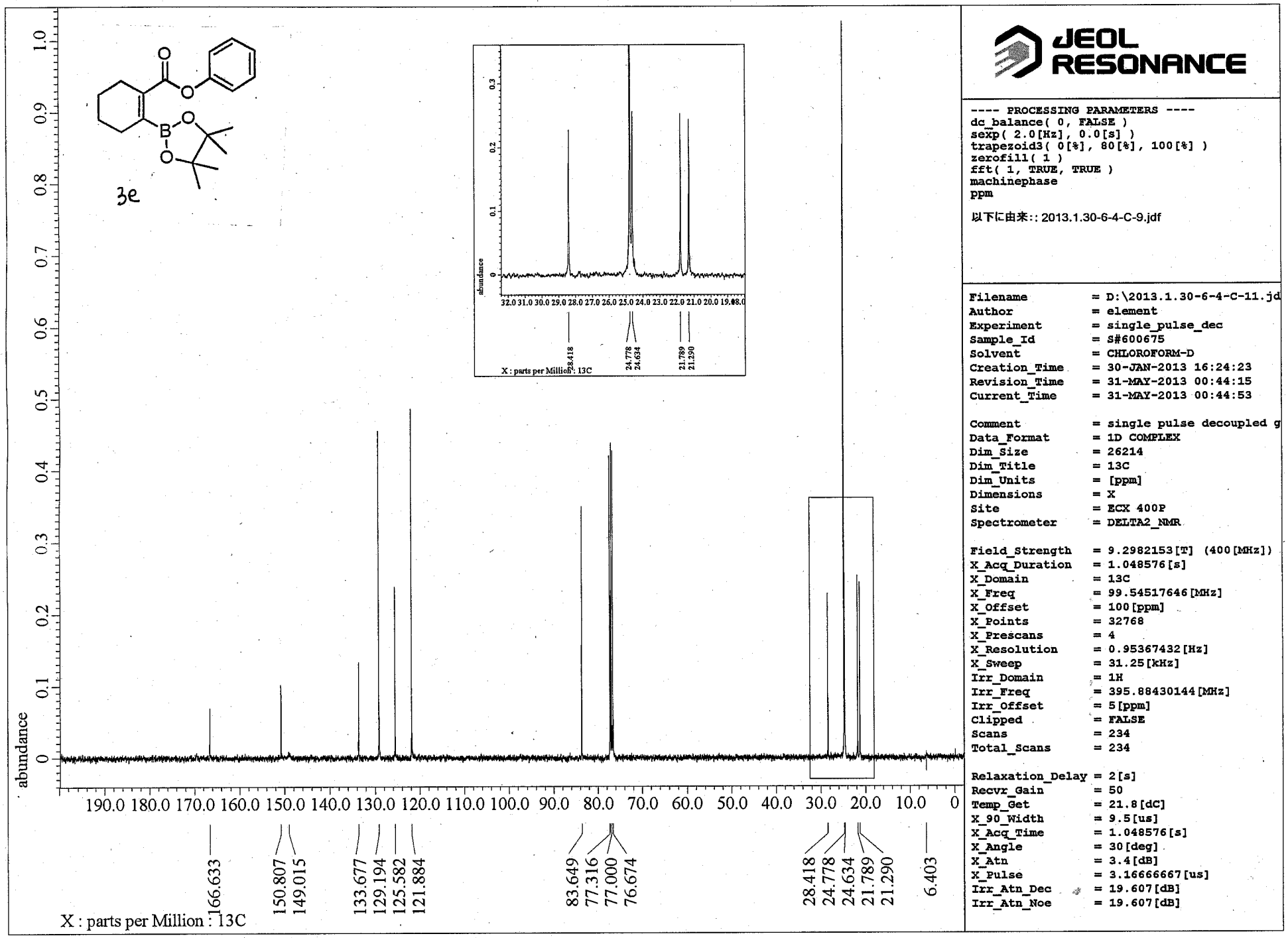
Filename	= D:\2013.1.30-8-18.jdf
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#612711
Solvent	= CHLOROFORM-D
Creation_Time	= 30-JAN-2013 16:35:53
Revision_Time	= 31-MAY-2013 00:21:16
Current_Time	= 31-MAY-2013 00:21:33
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 60
Total_Scans	= 60
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 21.8[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

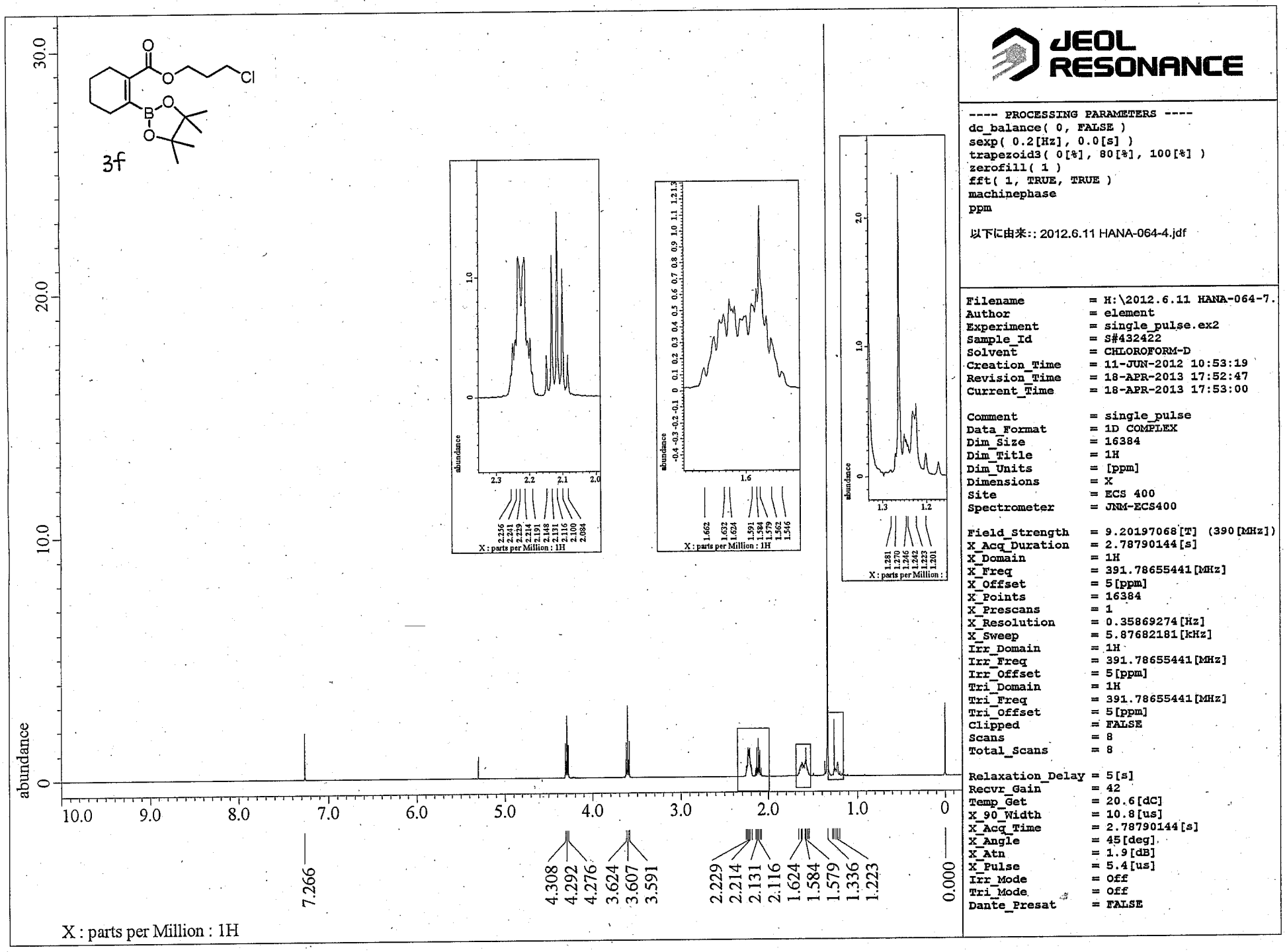
Filename	= D:\2013.1.30-6-25.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#540696
Solvent	= CHLOROFORM-D
Creation_Time	= 30-JAN-2013 14:34:17
Revision_Time	= 19-APR-2013 10:32:39
Current_Time	= 30-MAY-2013 17:32:54
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 11142
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.7590656[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.36244155[Hz]
X_Sweep	= 5.93824228[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 46
Temp_Get	= 21.2[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.7590656[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.1.30-6-4-C-9.jdf
```

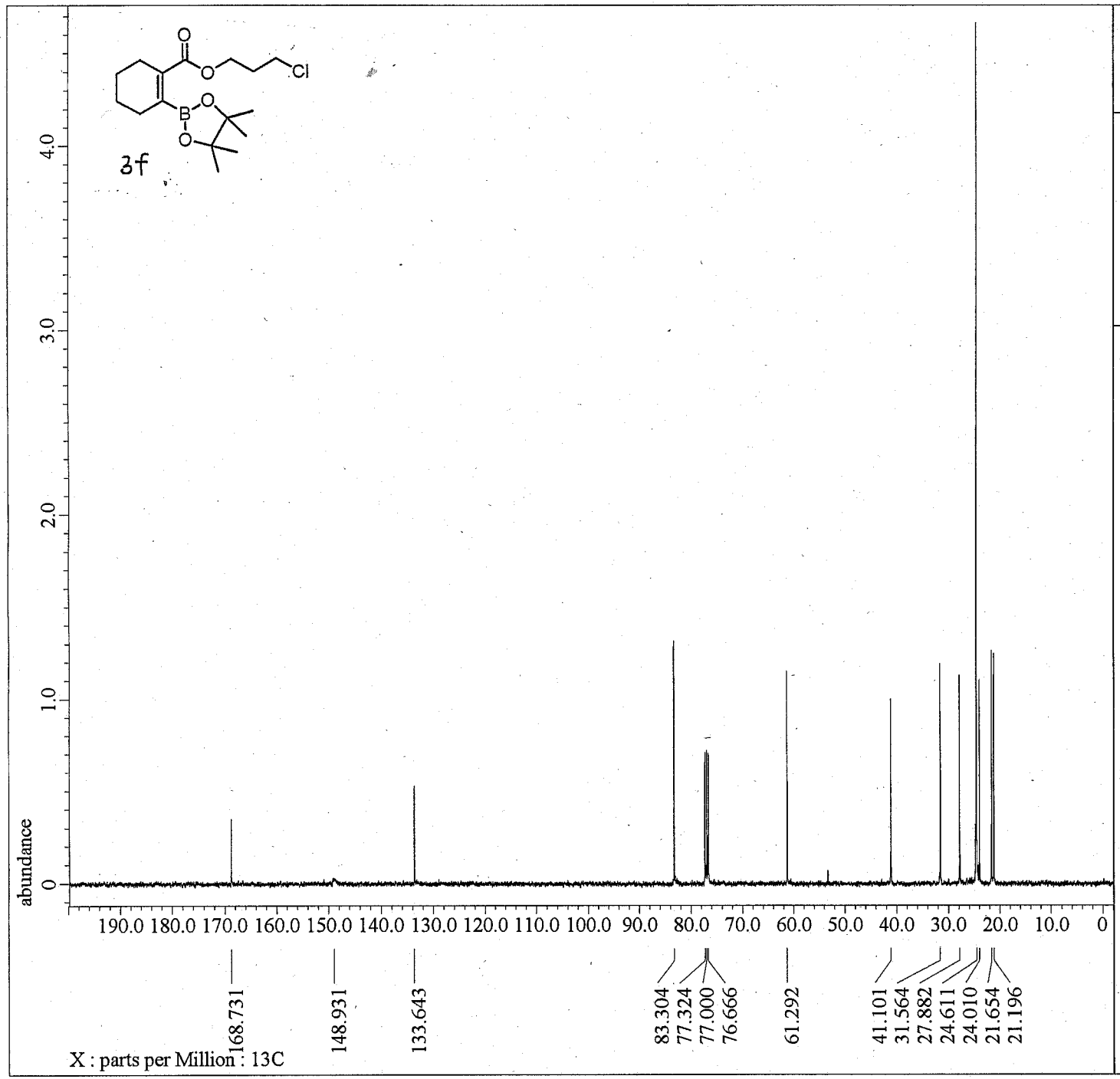
Filename	= D:\2013.1.30-6-4-C-11.jd
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#600675
Solvent	= CHLOROFORM-D
Creation_Time	= 30-JAN-2013 16:24:23
Revision_Time	= 31-MAY-2013 00:44:15
Current_Time	= 31-MAY-2013 00:44:53
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 234
Total_Scans	= 234
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 21.8[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2012.6.11 HANA-064-4.jdf
```

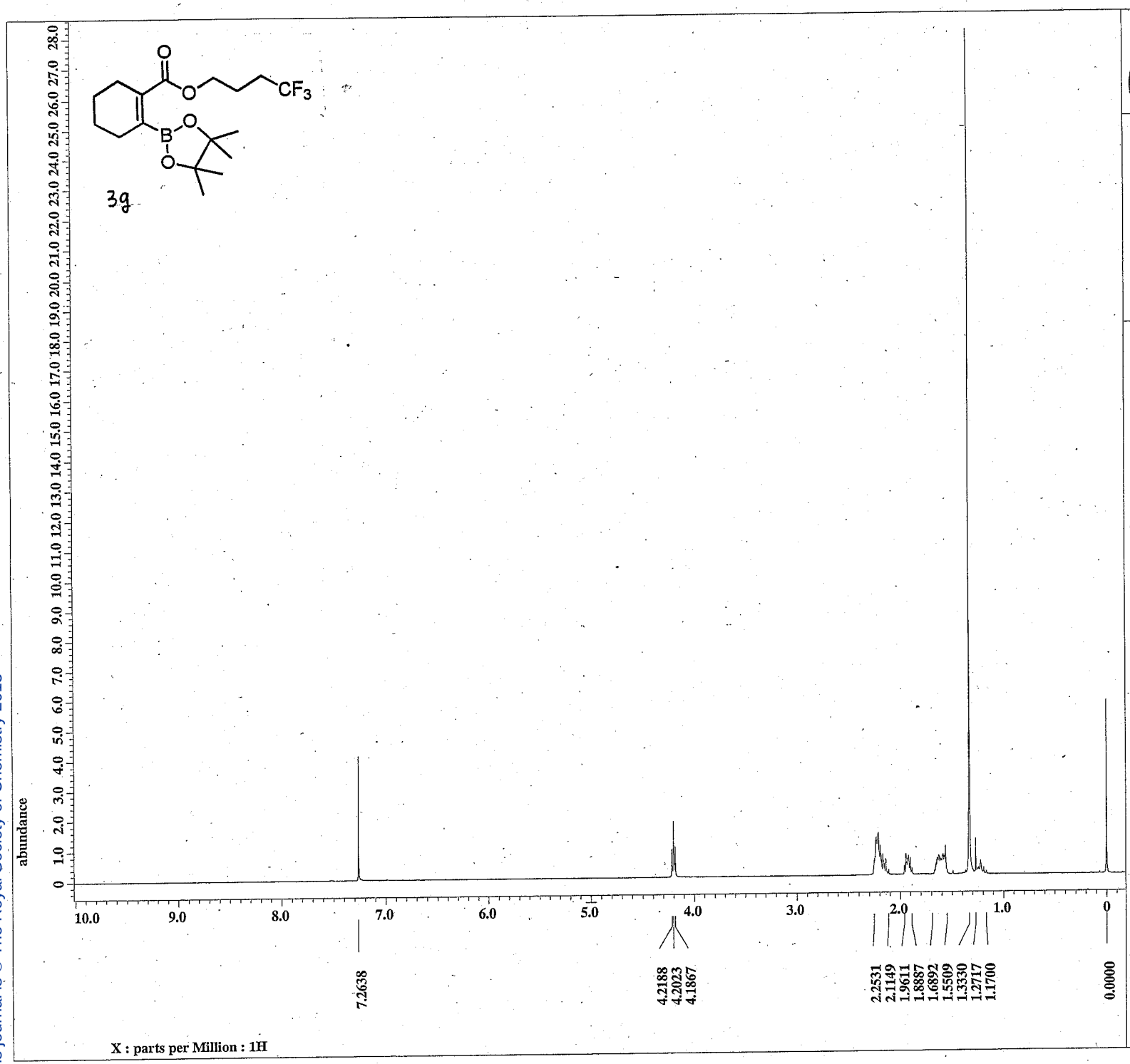
Filename	= H:\2012.6.11 HANA-064-7.
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#432422
Solvent	= CHLOROFORM-D
Creation_Time	= 11-JUN-2012 10:53:19
Revision_Time	= 18-APR-2013 17:52:47
Current_Time	= 18-APR-2013 17:53:00
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 16384
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 2.78790144[s]
X_Domain	= 1H
X_Freq	= 391.78655441[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.35869274[Hz]
X_Sweep	= 5.87682181[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 391.78655441[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 42
Temp_Get	= 20.6[dC]
X_90_Width	= 10.8[us]
X_Acq_Time	= 2.78790144[s]
X_Angle	= 45[deg]
X_Atn	= 1.9[dB]
X_Pulse	= 5.4[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2012.6.11 HANA-064 c-6.jdf
```

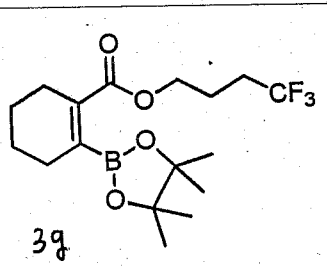
Filename	= D:\2012.6.11 HANA-064 c-
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#437953
Solvent	= CHLOROFORM-D
Creation_Time	= 11-JUN-2012 11:07:17
Revision_Time	= 31-MAY-2013 01:43:03
Current_Time	= 31-MAY-2013 01:43:15
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 1.06430464[s]
X_Domain	= 13C
X_Freq	= 98.51479726[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.93958061[Hz]
X_Sweep	= 30.78817734[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 134
Total_Scans	= 134
Relaxation_Delay	= 2[s]
Recvr_Gain	= 60
Temp_Get	= 20.4[dC]
X_90_Width	= 8.15[us]
X_Acq_Time	= 1.06430464[s]
X_Angle	= 30[deg]
X_Atn	= 4.9[dB]
X_Pulse	= 2.71666667[us]
Irr_Atn_Dec	= 22.445[dB]
Irr_Atn_Noe	= 22.445[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



---- PROCESSING PARAMETERS ----
dc_balance : 0 : FALSE
sexp : 0.2[Hz] : 0.0[s]
trapezoid3 : 0[%] : 80[%] : 100[%]
zerofill : 1
fft : 1 : TRUE : TRUE
machinephase
ppm

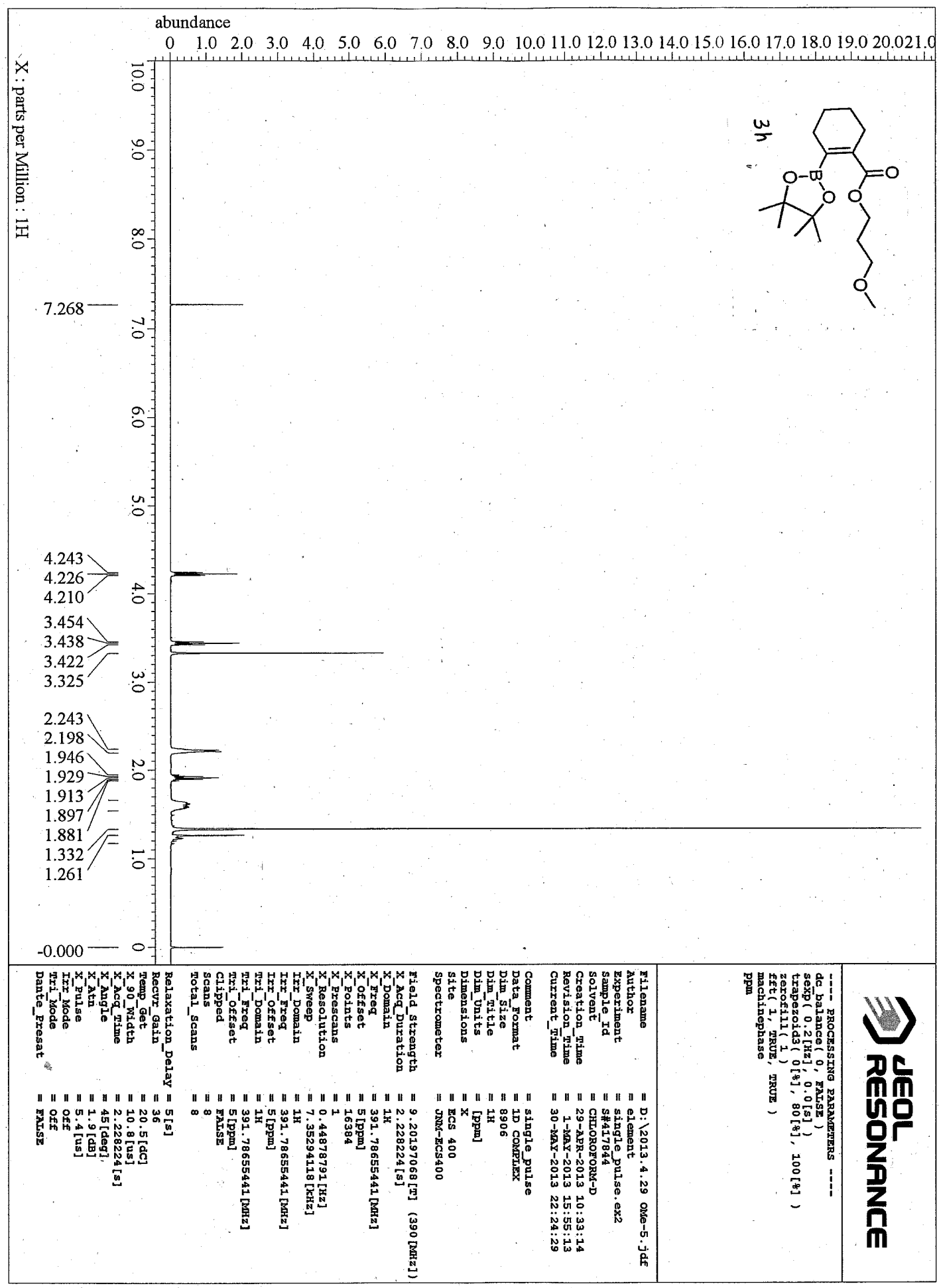
Derived from: 2013.4.19-5-1.jdf

Filename	= 2013.4.19-5-4.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_id	= S#763000
Solvent	= CHLOROFORM-D
Creation_time	= 19-APR-2013 20:09:25
Revision_time	= 19-APR-2013 21:19:34
Current_time	= 19-APR-2013 21:19:41
Comment	= single_pulse
Data_format	= 1D COMPLEX
Dim_size	= 16384
Dim_title	= 1H
Dim_units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_strength	= 9.20197068[T] (390[MH
X_acq_duration	= 2.78790144[s]
X_domain	= 1H
X_freq	= 391.78655441[MHz]
X_offset	= 5[ppm]
X_points	= 16384
X_prescans	= 1
X_resolution	= 0.35869274[Hz]
X_sweep	= 5.87682181[kHz]
Irr_domain	= 1H
Irr_freq	= 391.78655441[MHz]
Irr_offset	= 5[ppm]
Tri_domain	= 1H
Tri_freq	= 391.78655441[MHz]
Tri_offset	= 5[ppm]
Clipped	= FALSE
Mod_return	= 1
Scans	= 8
Total_scans	= 8
X_90_width	= 10.8[us]
X_acq_time	= 2.78790144[s]
X_angle	= 45[deg]
X_atn	= 1.9[dB]
X_pulse	= 5.4[us]
Irr_mode	= Off
Tri_mode	= Off
Dante_presat	= FALSE
Initial_wait	= 1[s]
Recvr_gain	= 50
Relaxation_delay	= 5[s]
Repetition_time	= 7.78790144[s]
Temp_get	= 20.3[dC]




```
---- PROCESSING PARAMETERS ----
dc_balance : 0 : FALSE
sexp : 2.0[Hz] : 0.0[s]
trapezoid3 : 0[%] : 80[%] : 100[%]
zerofill : 1
fft : 1 : TRUE : TRUE
machinephase
ppm

Derived from: 2013.4.28 CF3-1.jdf
```

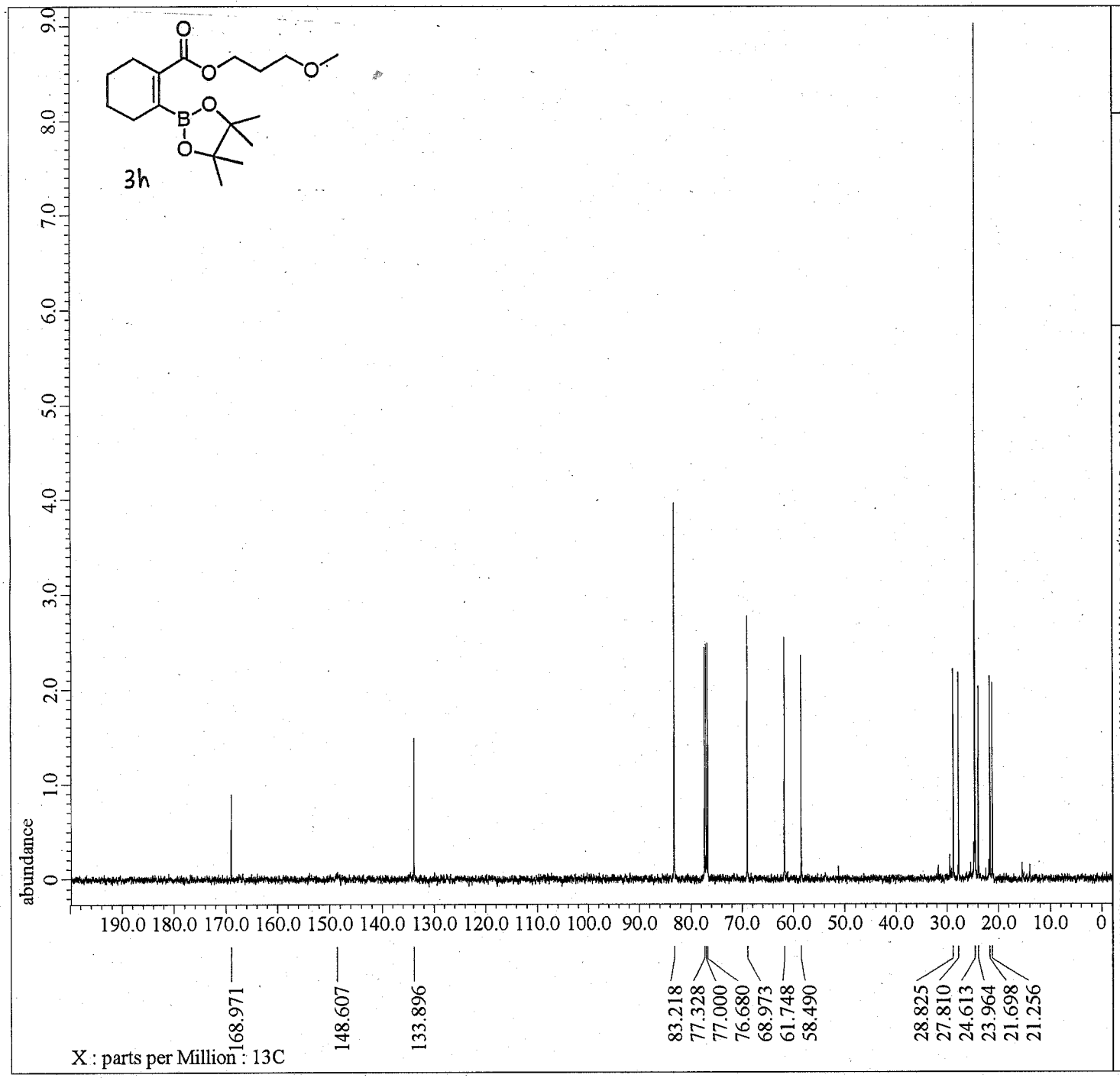
Filename	= 2013.4.28 CF3-3.jdf
Author	= element
Experiment	= single_pulse_dec
Sample_id	= S#611393
Solvent	= CHLOROFORM-D
Creation_time	= 28-APR-2013 16:36:42
Revision_time	= 28-APR-2013 17:17:15
Current_time	= 28-APR-2013 17:18:40
Comment	= single pulse decouple
Data_format	= 1D COMPLEX
Dim_size	= 26214
Dim_title	= 13C
Dim_units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_strength	= 9.2982153[T] (400[MHz
X_acq_duration	= 1.048576[s]
X_domain	= 13C
X_freq	= 99.54517646[MHz]
X_offset	= 100[ppm]
X_points	= 32768
X_prescans	= 4
X_resolution	= 0.95367432[Hz]
X_sweep	= 31.25[kHz]
Irr_domain	= 1H
Irr_freq	= 395.88430144[MHz]
Irr_offset	= 5[ppm]
Clipped	= FALSE
Mod_return	= 1
Scans	= 269
Total_scans	= 269
X_90_width	= 9.5[us]
X_acq_time	= 1.048576[s]
X_angle	= 30[deg]
X_atn	= 3.4[dB]
X_pulse	= 3.16666667[us]
Irr_atn_dec	= 19.607[dB]
Irr_atn_noe	= 19.607[dB]
Irr_noise	= WALTZ
Decoupling	= TRUE
Initial_wait	= 1[s]
Noe	= TRUE
Noe_time	= 2[s]
Recvr_gain	= 48
Relaxation_delay	= 2[s]
Repetition_time	= 3.048576[s]
Temp_get	= 22.3[dC]



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\2013.4.29 OMe-5.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#417844
Solvent	= CHLOROFORM-D
Creation_Time	= 29-APR-2013 10:33:14
Revision_Time	= 1-MAY-2013 15:55:13
Current_Time	= 30-MAY-2013 22:24:29
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8906
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 2.228224[s]
X_Domain	= 1H
X_Freq	= 391.78655441[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.44878791[Hz]
X_Sweep	= 7.35294118[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 391.78655441[MHz]
tri_offset	= 5[ppm]
Clipped	= FALSE
scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr Gain	= 36
Temp_Get	= 20.5[dC]
X_90_Width	= 10.8[us]
X_Acq_Time	= 2.228224[s]
X_Angle	= 45[deg]
X_Atn	= 1.9[dB]
X_Pulse	= 5.4[us]
Irr_Mode	= off
Tri_Mode	= off
Dante_Presat	= FALSE

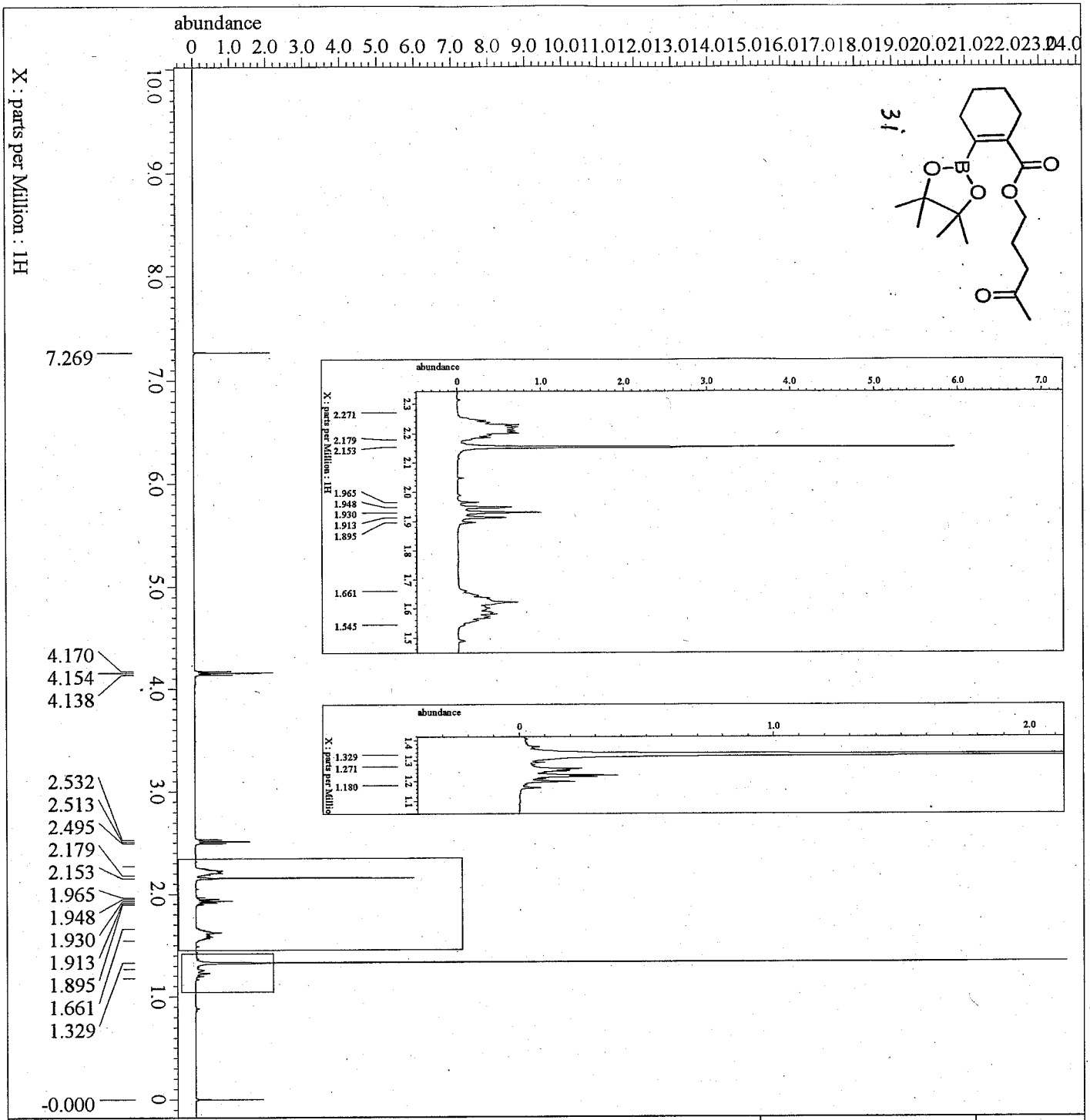


JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

以下に由来:: 2012.11.16 HANA-273 fr6-8 C-7.jdf

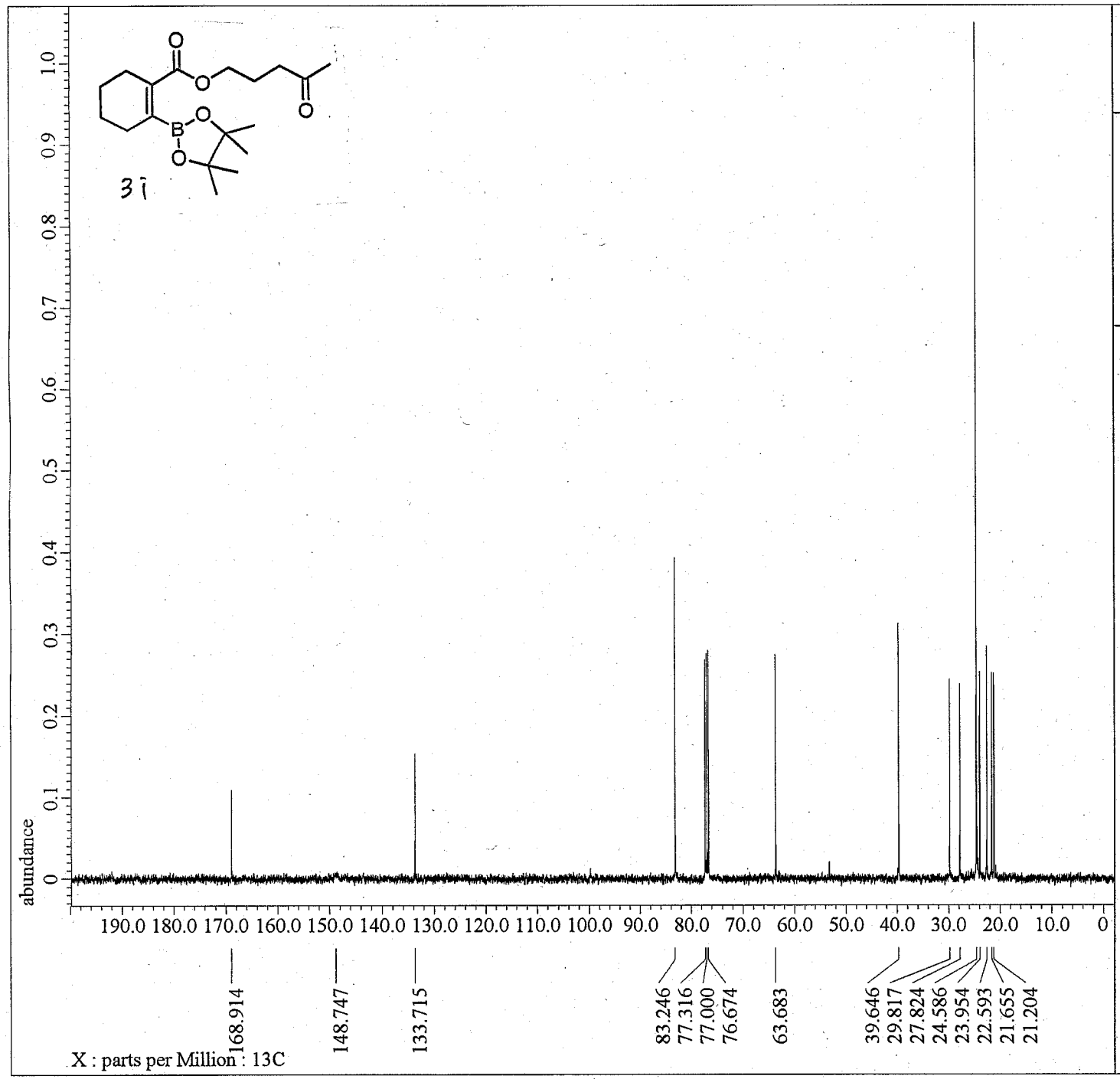
Filename	= D:\2012.11.16 HANA-273 f
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#753196
Solvent	= CHLOROFORM-D
Creation_Time	= 16-NOV-2012 20:30:37
Revision_Time	= 31-MAY-2013 01:40:46
Current_Time	= 31-MAY-2013 01:40:57
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 32768
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.31661824[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.75952161[Hz]
X_Sweep	= 24.88800398[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 66
Total_Scans	= 66
Relaxation_Delay	= 2[s]
Recvr_Gain	= 66
Temp_Get	= 402.8[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.31661824[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
ppm
machinephase
ppm

以下に由来:: 2013.5.1 ketone-3.jdf
```

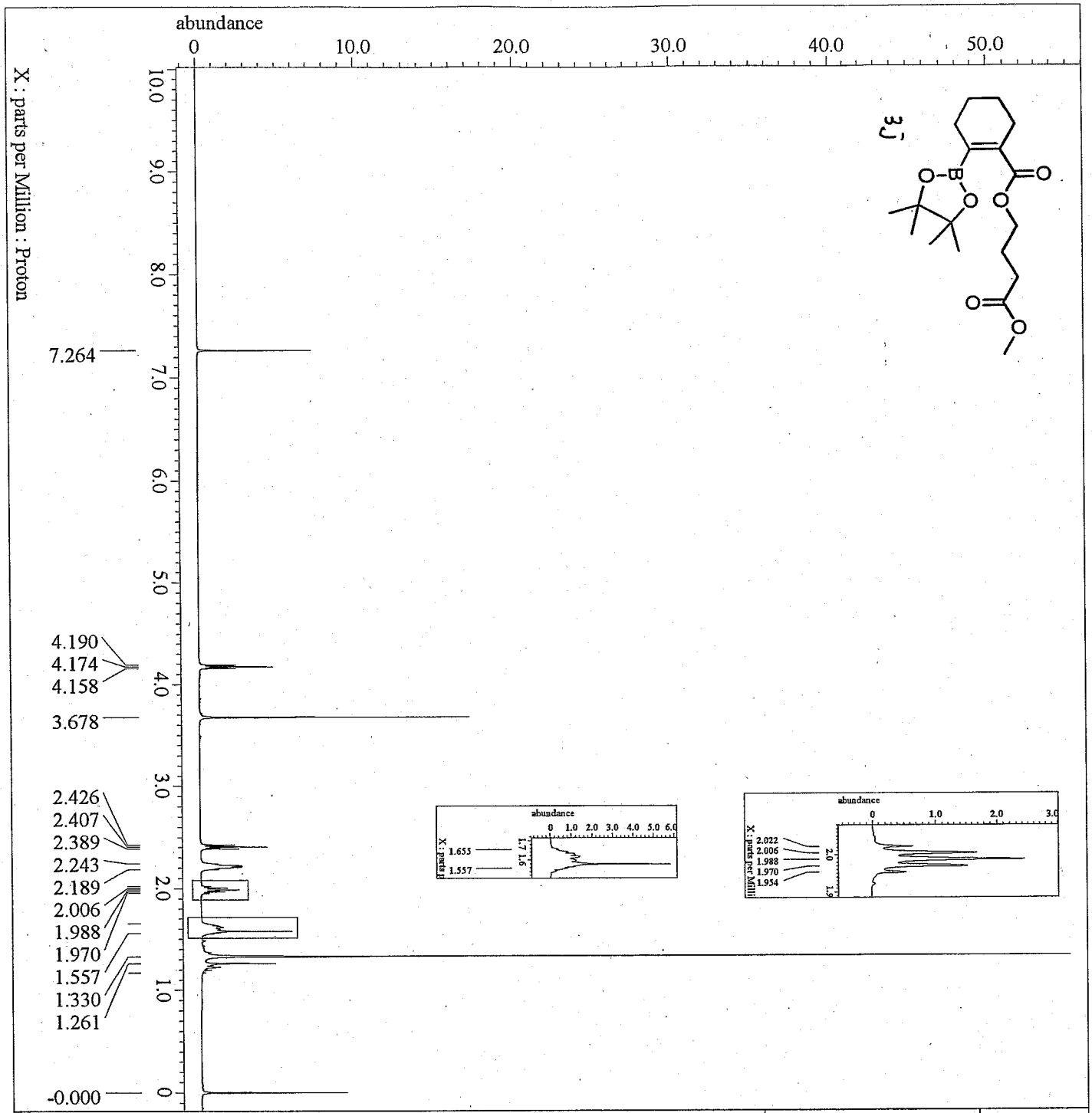
Filename	= D:\2013.5.1 ketone-5.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= s#377583
Solvent	= CHLOROFORM-D
Creation_Time	= 1-MAY-2013 09:25:59
Revision_Time	= 30-MAY-2013 17:08:24
Current_Time	= 30-MAY-2013 17:10:07
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 16384
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 2.78790144[s]
X_Domain	= 1H
X_Freq	= 391.78655441[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.35869274[Hz]
X_Sweep	= 5.87682181[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 391.78655441[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 38
Temp_Get	= 20.2[dC]
X_90_Width	= 10.8[us]
X_Acq_Time	= 2.78790144[s]
X_Angle	= 45[deg]
X_Atn	= 1.9[dB]
X_Pulse	= 5.4[us]
Irr_Mode	= off
Tri_Mode	= off
Date_Presat	= FALSE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2012.7.20 HANA-121-C-8.jdf
```

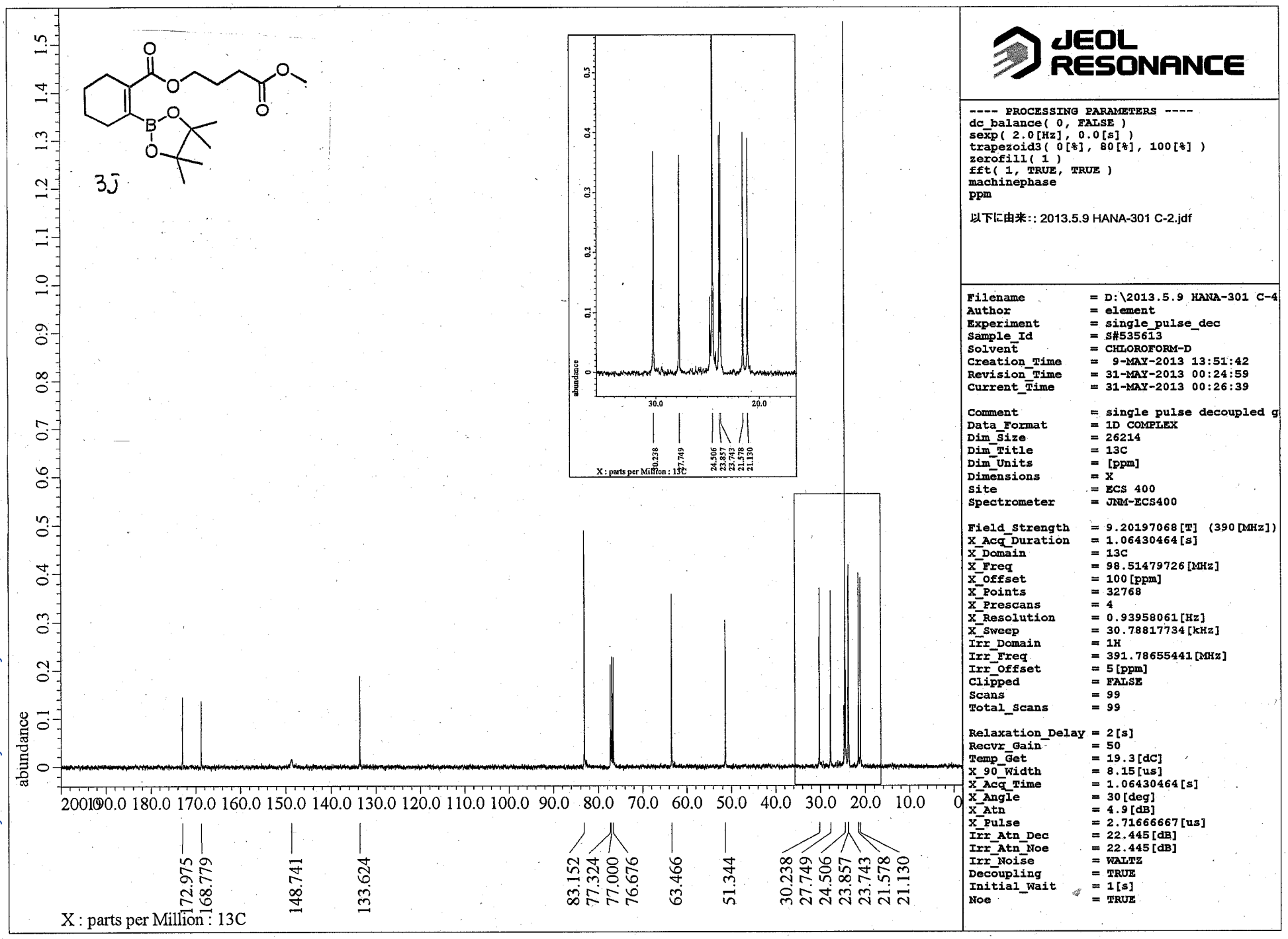
Filename	= D:\2012.7.20 HANA-121-C-
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#412794
Solvent	= CHLOROFORM-D
Creation_Time	= 20-JUL-2012 11:10:41
Revision_Time	= 31-MAY-2013 01:38:21
Current_Time	= 31-MAY-2013 01:38:28
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 49
Total_Scans	= 49
Relaxation_Delay	= 2[s]
Recvr_Gain	= 46
Temp_Get	= 401.3[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

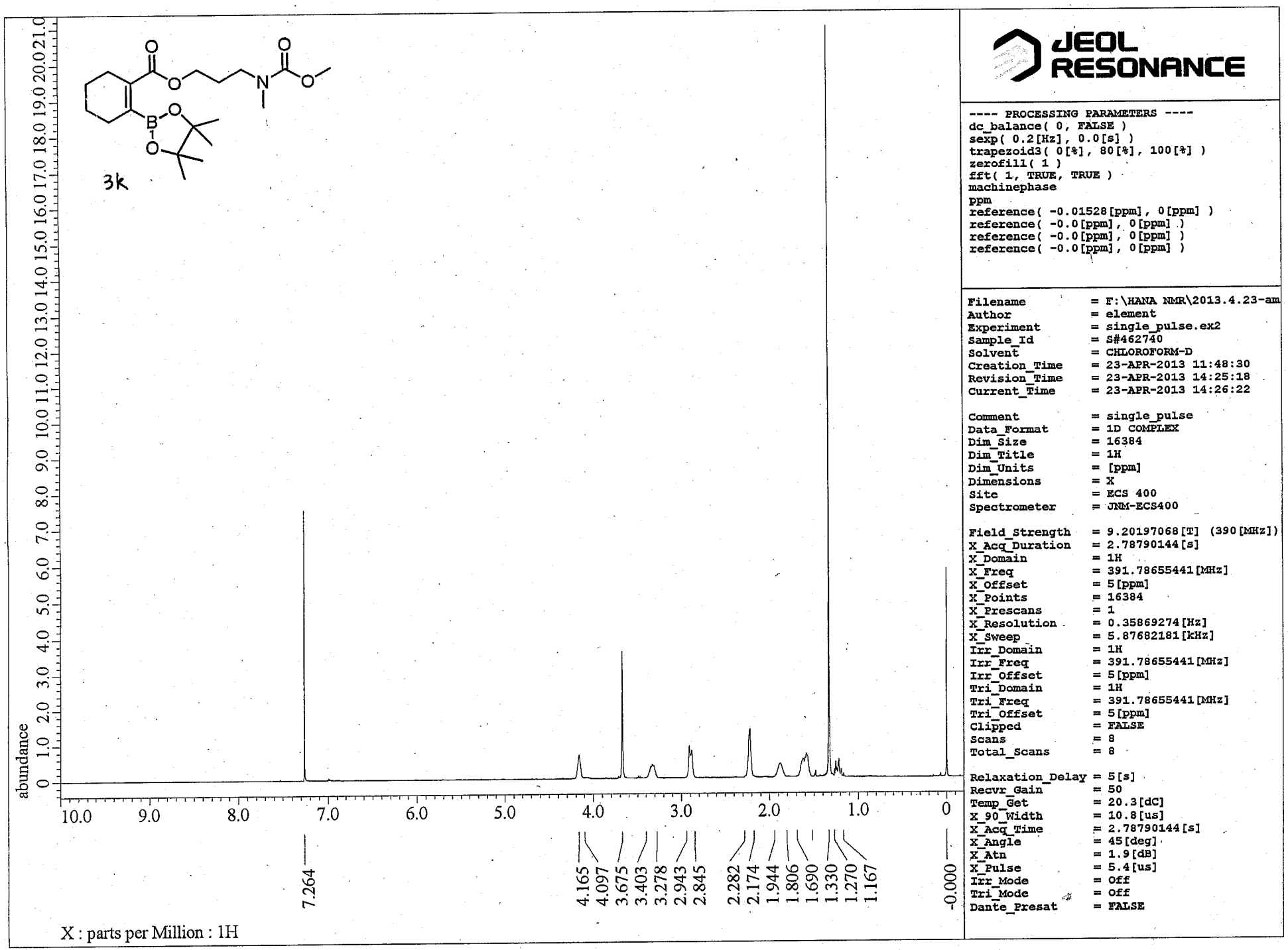
Filename	= D:\2013.5.9 HANA-301_pro
Author	= element
Experiment	= proton.jxp
Sample_Id	= 2013.5.9 HANA-301
Solvent	= CHLOROFORM-D
Creation_Time	= 9-MAY-2013 10:02:46
Revision_Time	= 9-MAY-2013 10:04:39
Current_Time	= 9-MAY-2013 10:21:41
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8912
Dim_Title	= Proton
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 2.18103808[s]
X_Domain	= 1H
X_Freq	= 400.53219825[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45849727[Hz]
X_Sweep	= 7.51201923[kHz]
X_Sweep_Clipped	= 6.00961538[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= Proton
Tri_Freq	= 400.53219825[MHz]
Tri_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 50
Temp_Get	= 20.7[dC]
X_90_Width	= 6.5[us]
X_Acq_Time	= 2.18103808[s]
X_Angle	= 45[deg]
X_Atn	= 0.8[dB]
X_Pulse	= 3.25[us]
Irr_Mode	= off
Tri_Mode	= off



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.5.9 HANA-301 C-2.jdf
```

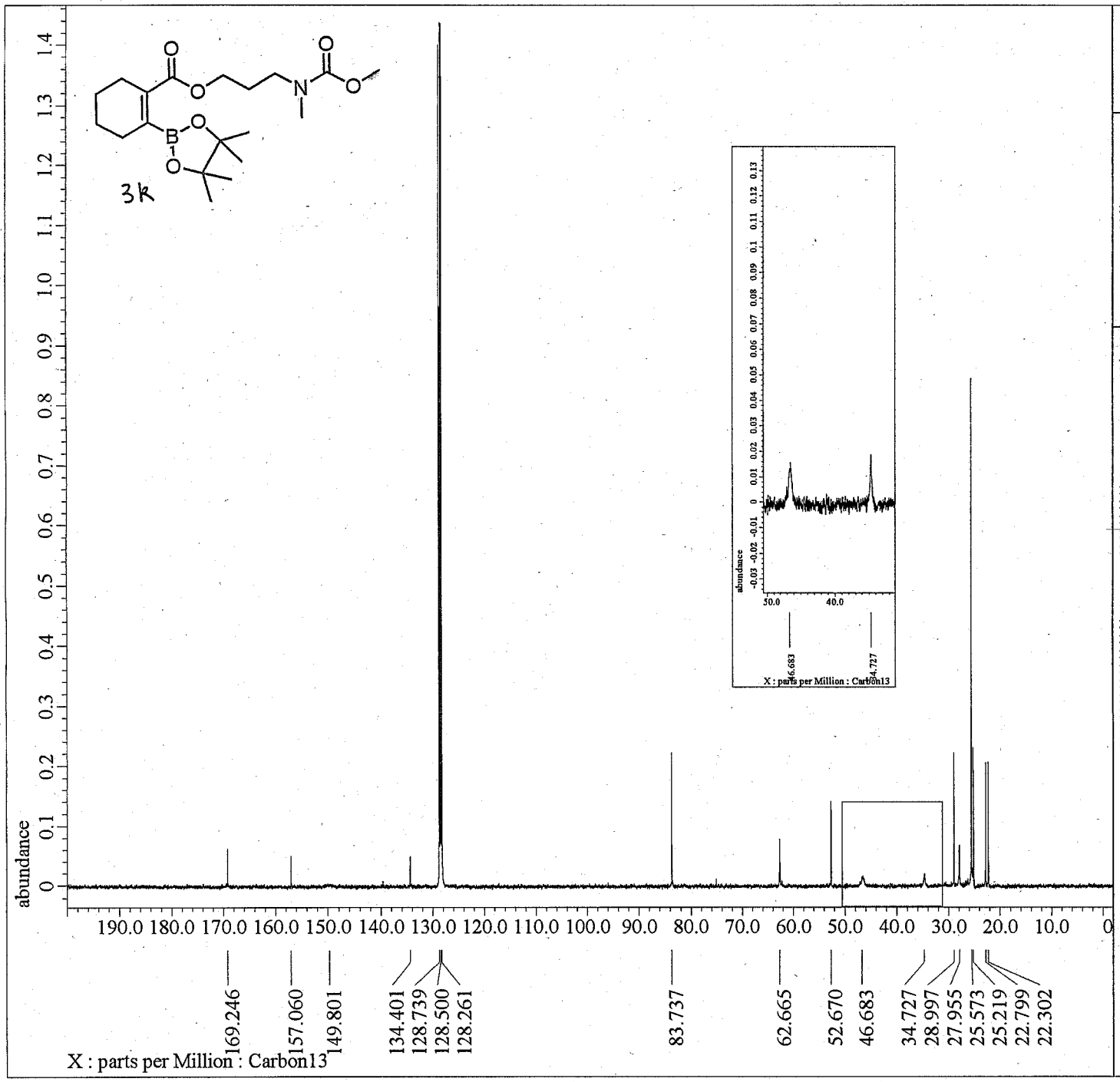
```
Filename          = D:\2013.5.9 HANA-301 C-4
Author            = element
Experiment        = single_pulse_dec
Sample_Id         = S#535613
Solvent           = CHLOROFORM-D
Creation_Time     =  9-MAY-2013 13:51:42
Revision_Time     = 31-MAY-2013 00:24:59
Current_Time      = 31-MAY-2013 00:26:39

Comment           = single pulse decoupled g
Data_Format       = 1D COMPLEX
Dim_Size          = 26214
Dim_Title         = 13C
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T]  (390[MHz])
X_Acq_Duration    = 1.06430464[s]
X_Domain          = 13C
X_Freq            = 98.51479726[MHz]
X_Offset          = 100[ppm]
X_Points          = 32768
X_Prescans        = 4
X_Resolution      = 0.93958061[Hz]
X_Sweep           = 30.78817734[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 99
Total_Scans       = 99

Relaxation_Delay  = 2[s]
Recvr_Gain        = 50
Temp_Get          = 19.3[dC]
X_90_Width        = 8.15[us]
X_Acq_Time        = 1.06430464[s]
X_Angle           = 30[deg]
X_Atn             = 4.9[dB]
X_Pulse           = 2.71666667[us]
Irr_Atn_Dec       = 22.445[dB]
Irr_Atn_Noe       = 22.445[dB]
Irr_Noise         = WALTZ
Decoupling        = TRUE
Initial_Wait      = 1[s]
Noe               = TRUE
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
reference( -0.01528[ppm], 0[ppm] )
reference( -0.0[ppm], 0[ppm] )
reference( -0.0[ppm], 0[ppm] )
reference( -0.0[ppm], 0[ppm] )
```

```
Filename          = F:\HANA NMR\2013.4.23-am
Author            = element
Experiment        = single_pulse.ex2
Sample_Id         = S#462740
Solvent           = CHLOROFORM-D
Creation_Time     = 23-APR-2013 11:48:30
Revision_Time     = 23-APR-2013 14:25:18
Current_Time      = 23-APR-2013 14:26:22

Comment           = single_pulse
Data_Format       = 1D COMPLEX
Dim_Size          = 16384
Dim_Title         = 1H
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T] (390[MHz])
X_Acq_Duration    = 2.78790144[s]
X_Domain          = 1H
X_Freq            = 391.78655441[MHz]
X_Offset          = 5[ppm]
X_Points          = 16384
X_Prescans        = 1
X_Resolution      = 0.35869274[Hz]
X_Sweep           = 5.87682181[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Tri_Domain        = 1H
Tri_Freq          = 391.78655441[MHz]
Tri_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 8
Total_Scans       = 8

Relaxation_Delay  = 5[s]
Recvr_Gain        = 50
Temp_Get          = 20.3[dC]
X_90_Width        = 10.8[us]
X_Acq_Time        = 2.78790144[s]
X_Angle           = 45[deg]
X_Atn             = 1.9[dB]
X_Pulse           = 5.4[us]
Irr_Mode          = Off
Tri_Mode          = Off
Dante_Presat      = FALSE
```

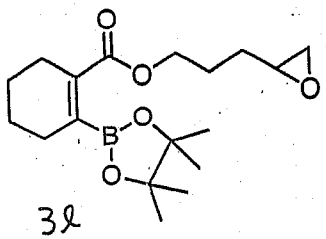


JEOL RESONANCE

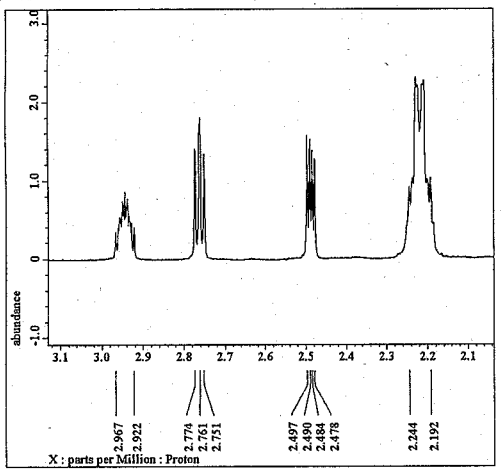
```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

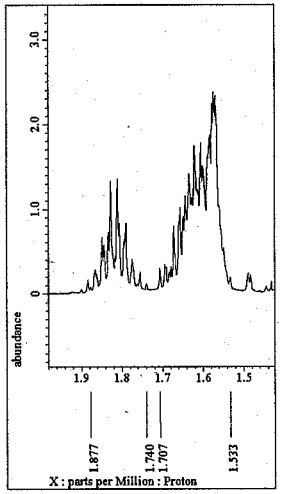
以下に由来:: 2013.4.24-amide-benzene-2_carbon-1-1.

Filename	= D:\HANA\2013.4.24-amide-
Author	= element
Experiment	= carbon.jxp
Sample_Id	= 2013.4.24-amide-benzene-
Solvent	= BENZENE-D6
Creation_Time	= 24-APR-2013 10:01:58
Revision_Time	= 31-MAY-2013 01:48:00
Current_Time	= 31-MAY-2013 01:49:33
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= Carbon13
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 1.03809024[s]
X_Domain	= 13C
X_Freq	= 100.71389092[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.96330739[Hz]
X_Sweep	= 31.56565657[kHz]
X_Sweep_Clipped	= 25.25252525[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 255.0
Total_Scans	= 255.0
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 50[dC]
X_90_Width	= 10.7[us]
X_Acq_Time	= 1.03809024[s]
X_Angle	= 30[deg]
X_Atn	= 4.7[dB]
X_Pulse	= 3.56666667[us]
Irr_Atn_Dec	= 25.756[dB]
Irr_Atn_Noe	= 25.756[dB]
Irr_Noise	= WALTZ
Irr_Pwidth	= 0.115[ms]
Decoupling	= TRUE



3l

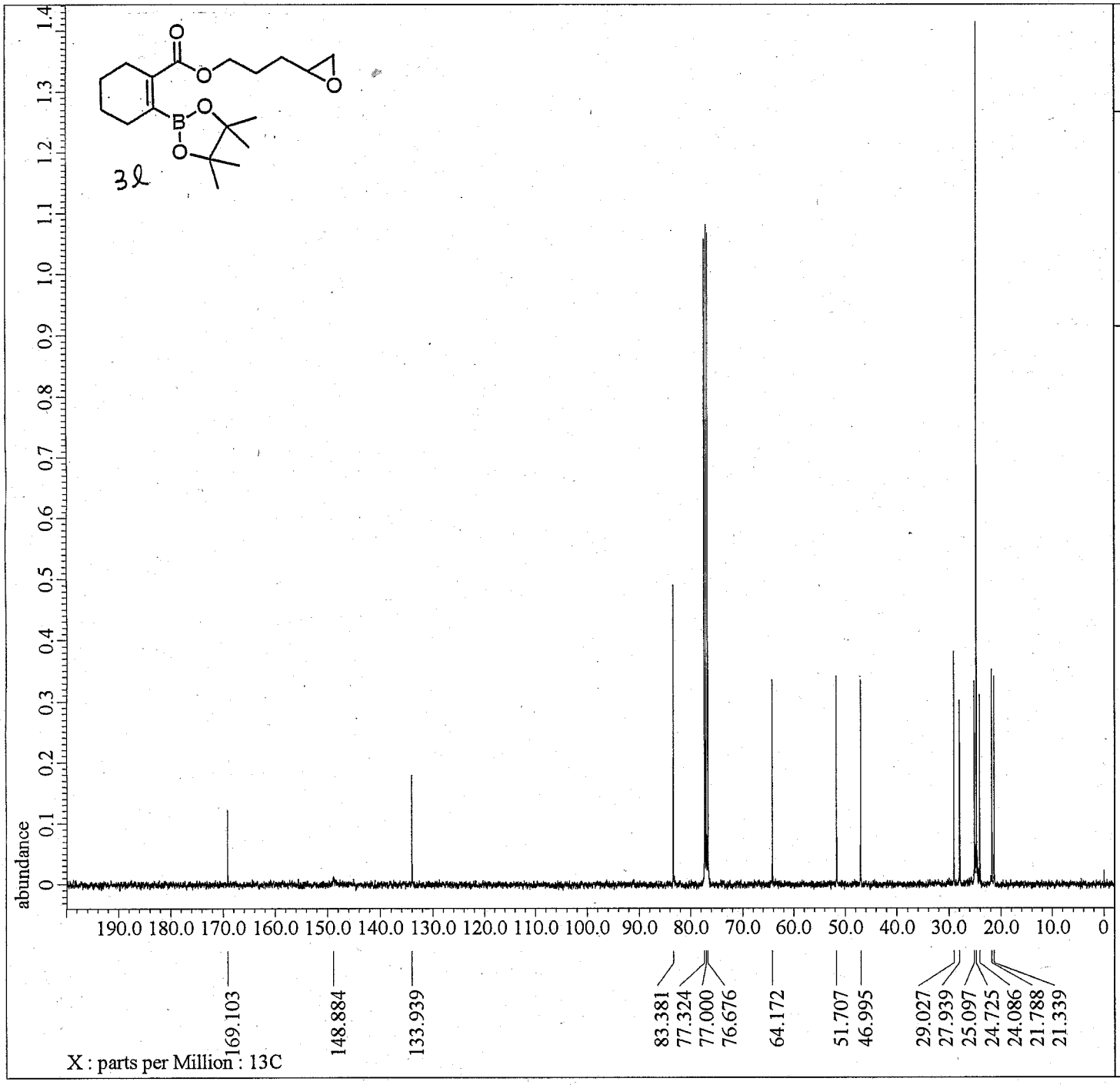




JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid( 0[%], 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

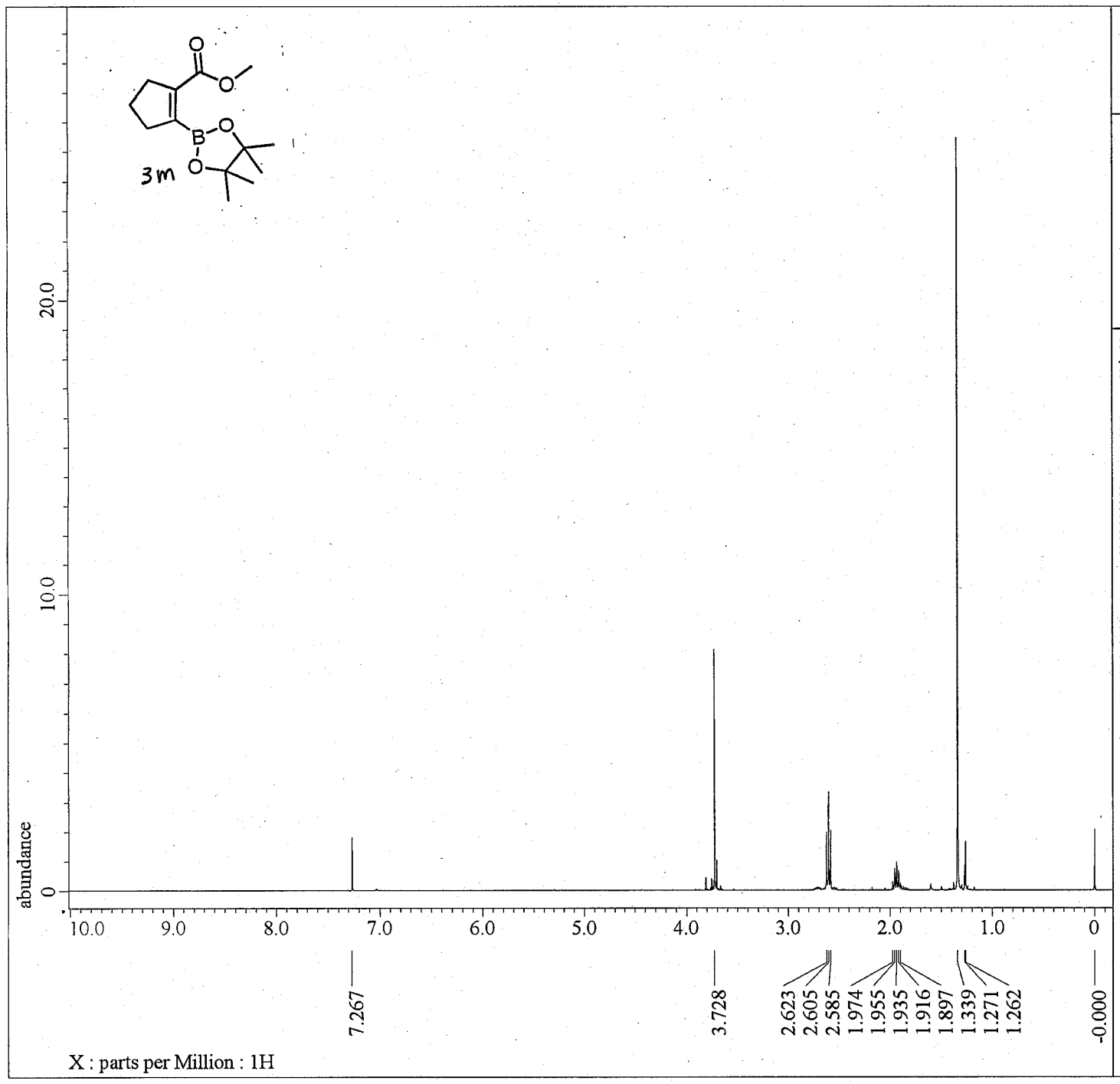
Filename	= D:\2013.4.28 epoxy_proto
Author	= element
Experiment	= proton.jxp
Sample_Id	= 2013.4.28 epoxy
Solvent	= CHLOROFORM-D
Creation_Time	= 28-APR-2013 18:03:07
Revision_Time	= 1-MAY-2013 16:30:34
Current_Time	= 30-MAY-2013 16:36:59
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 8912
Dim_Title	= Proton
Dim_Units	= [ppm]
Dimensions	= X
Site	= JNM-ECS400
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.4073814[T] (400[MHz])
X_Acq_Duration	= 2.18103808[s]
X_Domain	= 1H
X_Freq	= 400.53219825[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.45849727[Hz]
X_Sweep	= 7.51201923[kHz]
X_Sweep_Clipped	= 6.00961538[kHz]
Irr_Domain	= Proton
Irr_Freq	= 400.53219825[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= Proton
Tri_Freq	= 400.53219825[MHz]
Tri_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 50
Temp_Get	= 20.3[dC]
X_90_Width	= 6.5[us]
X_Acq_Time	= 2.18103808[s]
X_Angle	= 45[deg]
X_Atn	= 0.8[dB]
X_Pulse	= 3.25[us]
Irr_Mode	= Off
Tri_Mode	= Off



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.4.29 epoxy C-2.jdf
```

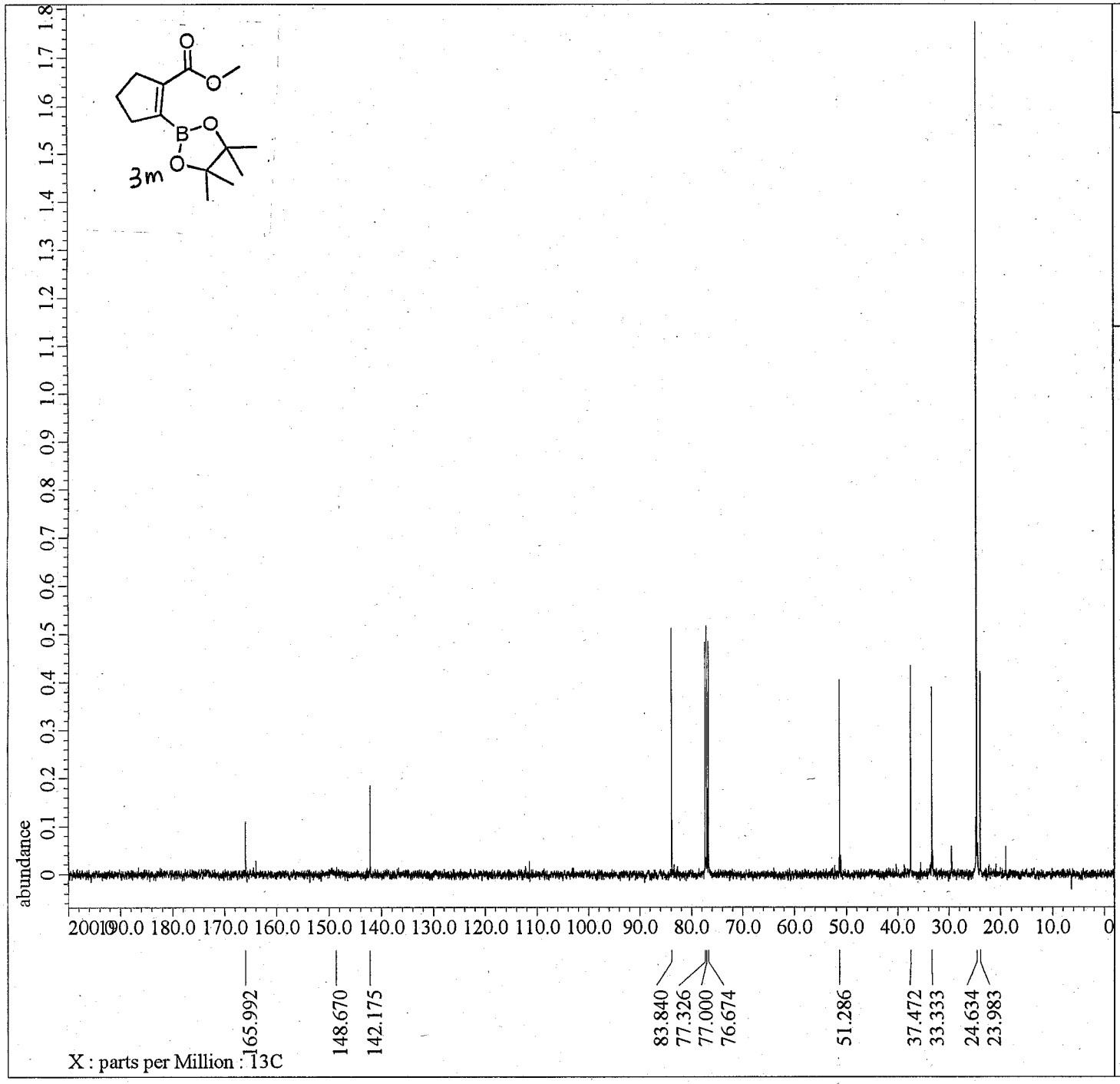
Filename	= D:\2013.4.29 epoxy C-4.j
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#426037
Solvent	= CHLOROFORM-D
Creation_Time	= 29-APR-2013 11:16:36
Revision_Time	= 31-MAY-2013 01:35:06
Current_Time	= 31-MAY-2013 01:35:14
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 26214
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECS 400
Spectrometer	= JNM-ECS400
Field_Strength	= 9.20197068[T] (390[MHz])
X_Acq_Duration	= 1.06430464[s]
X_Domain	= 13C
X_Freq	= 98.51479726[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.93958061[Hz]
X_Sweep	= 30.78817734[kHz]
Irr_Domain	= 1H
Irr_Freq	= 391.78655441[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 615
Total_Scans	= 615
Relaxation_Delay	= 2[s]
Recvr_Gain	= 60
Temp_Get	= 20.8[dC]
X_90_Width	= 8.15[us]
X_Acq_Time	= 1.06430464[s]
X_Angle	= 30[deg]
X_Atn	= 4.9[dB]
X_Pulse	= 2.71666667[us]
Irr_Atn_Dec	= 22.445[dB]
Irr_Atn_Noe	= 22.445[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.1.30-6-16.jdf
```

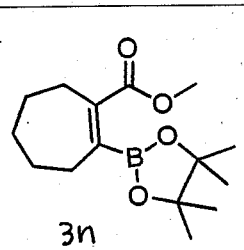
Filename	= D:\2013.1.30-6-27.jdf
Author	= element
Experiment	= single_pulse.ex2
Sample_Id	= S#536629
Solvent	= CHLOROFORM-D
Creation_Time	= 30-JAN-2013 14:27:30
Revision_Time	= 30-MAY-2013 16:30:27
Current_Time	= 30-MAY-2013 16:30:44
Comment	= single_pulse
Data_Format	= 1D COMPLEX
Dim_Size	= 16384
Dim_Title	= 1H
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 2.7590656[s]
X_Domain	= 1H
X_Freq	= 395.88430144[MHz]
X_Offset	= 5[ppm]
X_Points	= 16384
X_Prescans	= 1
X_Resolution	= 0.36244155[Hz]
X_Sweep	= 5.93824228[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Tri_Domain	= 1H
Tri_Freq	= 395.88430144[MHz]
Tri_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 8
Total_Scans	= 8
Relaxation_Delay	= 5[s]
Recvr_Gain	= 42
Temp_Get	= 21.2[dC]
X_90_Width	= 13.5[us]
X_Acq_Time	= 2.7590656[s]
X_Angle	= 45[deg]
X_Atn	= 1[dB]
X_Pulse	= 6.75[us]
Irr_Mode	= Off
Tri_Mode	= Off
Dante_Presat	= FALSE

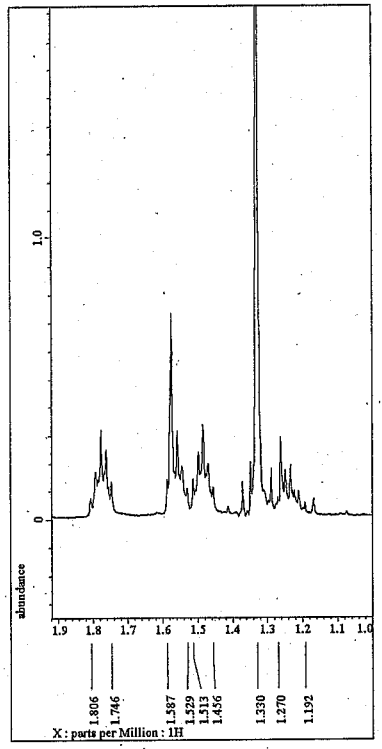


JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\2013.1.30-6-C-8.jdf
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#595537
Solvent	= CHLOROFORM-D
Creation_Time	= 30-JAN-2013 16:06:16
Revision_Time	= 31-MAY-2013 01:33:01
Current_Time	= 31-MAY-2013 01:33:13
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21086
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 46
Total_Scans	= 46
Relaxation_Delay	= 2[s]
Recvr_Gain	= 50
Temp_Get	= 21.7[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



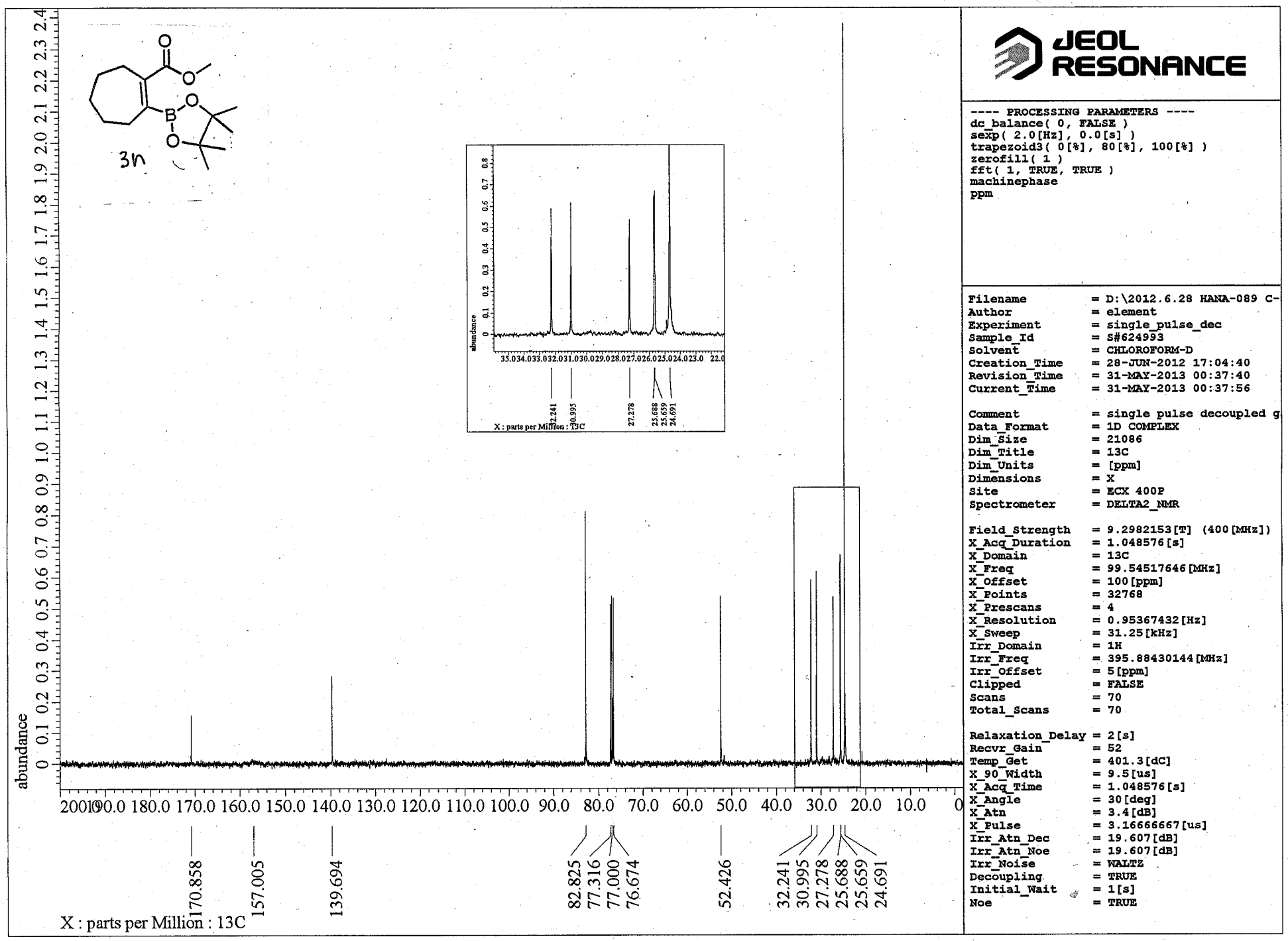


JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

以下に由来:: 2012.6.28 HANA-089-5.jdf

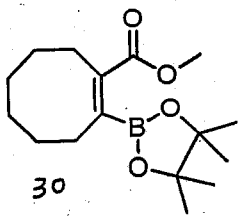
```
Filename          = H:\2012.6.28 HANA-089-8.
Author            = element
Experiment        = single_pulse.ex2
Sample_Id         = S#620242
Solvent           = CHLOROFORM-D
Creation_Time     = 28-JUN-2012 16:54:18
Revision_Time     = 19-APR-2013 15:02:59
Current_Time      = 19-APR-2013 15:05:30

Comment           = single_pulse
Data_Format       = 1D COMPLEX
Dim_Size          = 13107
Dim_Title         = 1H
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECX 400P
Spectrometer      = DELTA2_NMR

Field_Strength    = 9.2982153[T] (400[MHz])
X_Acq_Duration    = 2.20725248[s]
X_Domain          = 1H
X_Freq            = 395.88430144[MHz]
X_Offset          = 5[ppm]
X_Points          = 16384
X_Prescans        = 1
X_Resolution      = 0.45305193[Hz]
X_Sweep           = 7.42280285[kHz]
Irr_Domain        = 1H
Irr_Freq          = 395.88430144[MHz]
Irr_Offset        = 5[ppm]
Tri_Domain        = 1H
Tri_Freq          = 395.88430144[MHz]
Tri_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 8
Total_Scans       = 8

Relaxation_Delay  = 5[s]
Recvr_Gain        = 38
Temp_Get          = 401.3[dC]
X_90_Width        = 13.5[us]
X_Acq_Time        = 2.20725248[s]
X_Angle           = 45[deg]
X_Atn             = 1[dB]
X_Pulse           = 6.75[us]
Irr_Mode          = Off
Tri_Mode          = Off
Dante_Presat      = FALSE
```

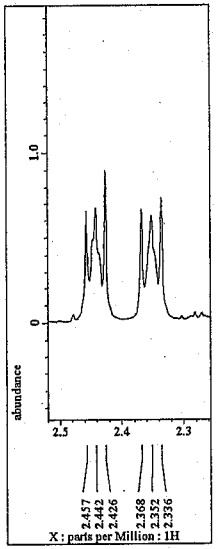


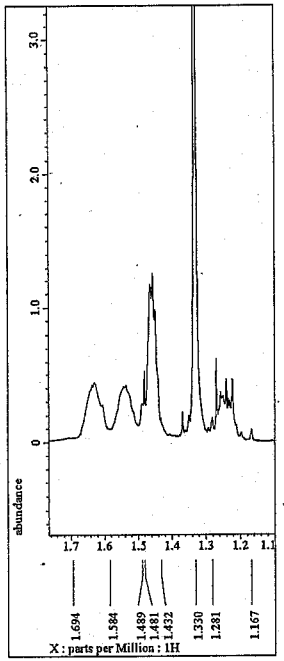
JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\2012.6.28 HANA-089 C-
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#624993
Solvent	= CHLOROFORM-D
Creation_Time	= 28-JUN-2012 17:04:40
Revision_Time	= 31-MAY-2013 00:37:40
Current_Time	= 31-MAY-2013 00:37:56
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21086
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= FALSE
Scans	= 70
Total_Scans	= 70
Relaxation_Delay	= 2[s]
Recvr_Gain	= 52
Temp_Get	= 401.3[dC]
X_90_Width	= 9.5[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 3.16666667[us]
Irr_Atn_Dec	= 19.607[dB]
Irr_Atn_Noe	= 19.607[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE



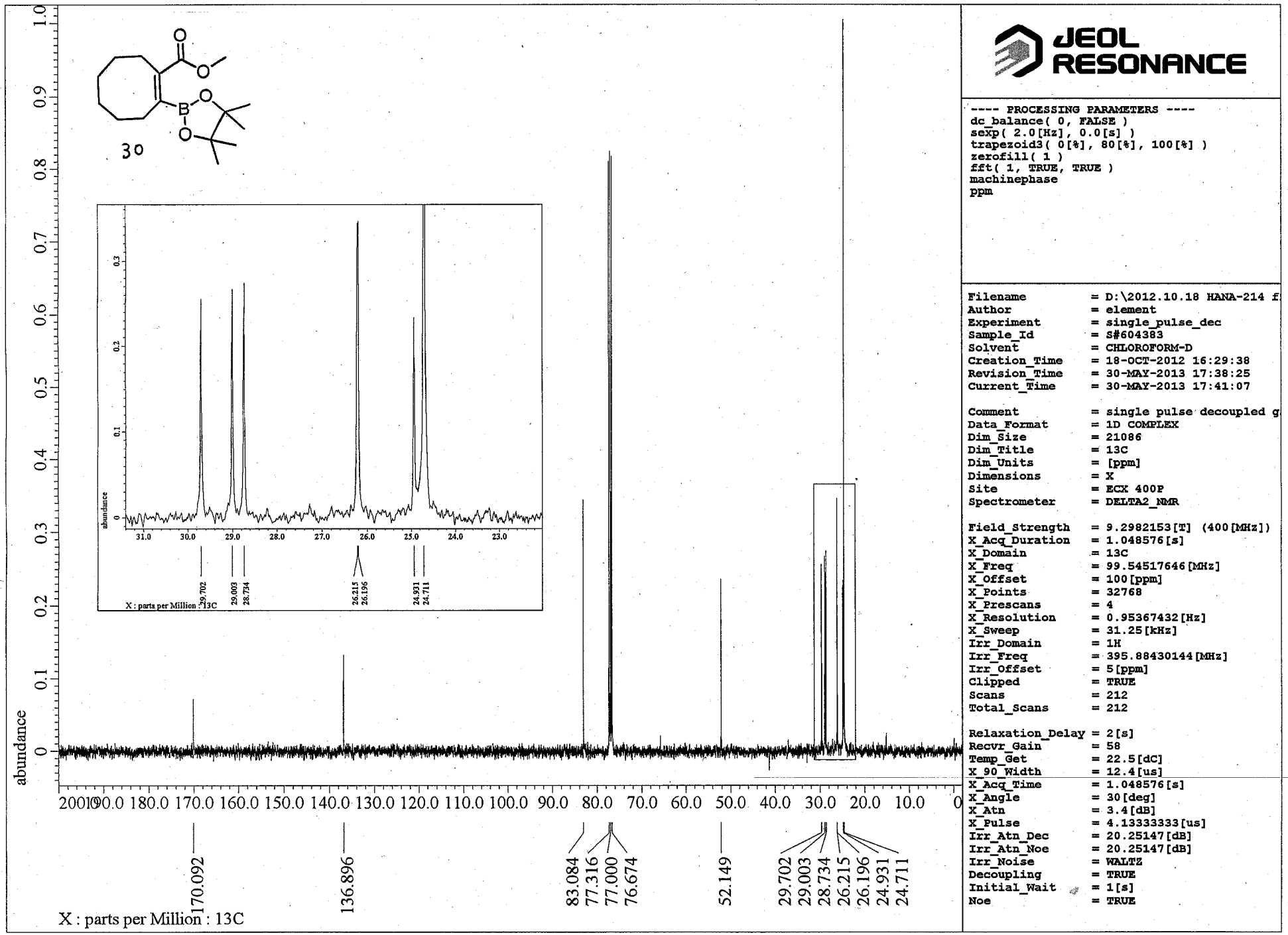




JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 0.2[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm

以下に由来:: 2013.5.1 8-3.jdf
```

```
Filename          = H:\2013.5.1 8-5.jdf
Author            = element
Experiment        = single_pulse.ex2
Sample_Id         = S#373719
Solvent           = CHLOROFORM-D
Creation_Time     =  1-MAY-2013 09:19:33
Revision_Time     =  1-MAY-2013 16:07:28
Current_Time      =  1-MAY-2013 16:09:52

Comment           = single_pulse
Data_Format       = 1D COMPLEX
Dim_Size          = 16384
Dim_Title         = 1H
Dim_Units         = [ppm]
Dimensions        = X
Site              = ECS 400
Spectrometer      = JNM-ECS400

Field_Strength    = 9.20197068[T]  (390[MHz])
X_Acq_Duration    = 2.78790144[s]
X_Domain          = 1H
X_Freq            = 391.78655441[MHz]
X_Offset          = 5[ppm]
X_Points          = 16384
X_Prescans        = 1
X_Resolution      = 0.35869274[Hz]
X_Sweep           = 5.87682181[kHz]
Irr_Domain        = 1H
Irr_Freq          = 391.78655441[MHz]
Irr_Offset        = 5[ppm]
Tri_Domain        = 1H
Tri_Freq          = 391.78655441[MHz]
Tri_Offset        = 5[ppm]
Clipped           = FALSE
Scans             = 8
Total_Scans       = 8

Relaxation_Delay  = 5[s]
Recvr_Gain        = 38
Temp_Get          = 20.7[dC]
X_90_Width        = 10.8[us]
X_Acq_Time        = 2.78790144[s]
X_Angle           = 45[deg]
X_Atn             = 1.9[dB]
X_Pulse           = 5.4[us]
Irr_Mode          = Off
Tri_Mode          = Off
Dante_Presat      = FALSE
```



JEOL RESONANCE

```
---- PROCESSING PARAMETERS ----
dc_balance( 0, FALSE )
sexp( 2.0[Hz], 0.0[s] )
trapezoid3( 0[%], 80[%], 100[%] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinephase
ppm
```

Filename	= D:\2012.10.18 HANA-214 f
Author	= element
Experiment	= single_pulse_dec
Sample_Id	= S#604383
Solvent	= CHLOROFORM-D
Creation_Time	= 18-OCT-2012 16:29:38
Revision_Time	= 30-MAY-2013 17:38:25
Current_Time	= 30-MAY-2013 17:41:07
Comment	= single pulse decoupled g
Data_Format	= 1D COMPLEX
Dim_Size	= 21086
Dim_Title	= 13C
Dim_Units	= [ppm]
Dimensions	= X
Site	= ECX 400P
Spectrometer	= DELTA2_NMR
Field_Strength	= 9.2982153[T] (400[MHz])
X_Acq_Duration	= 1.048576[s]
X_Domain	= 13C
X_Freq	= 99.54517646[MHz]
X_Offset	= 100[ppm]
X_Points	= 32768
X_Prescans	= 4
X_Resolution	= 0.95367432[Hz]
X_Sweep	= 31.25[kHz]
Irr_Domain	= 1H
Irr_Freq	= 395.88430144[MHz]
Irr_Offset	= 5[ppm]
Clipped	= TRUE
Scans	= 212
Total_Scans	= 212
Relaxation_Delay	= 2[s]
Recvr_Gain	= 58
Temp_Get	= 22.5[dC]
X_90_Width	= 12.4[us]
X_Acq_Time	= 1.048576[s]
X_Angle	= 30[deg]
X_Atn	= 3.4[dB]
X_Pulse	= 4.13333333[us]
Irr_Atn_Dec	= 20.25147[dB]
Irr_Atn_Noe	= 20.25147[dB]
Irr_Noise	= WALTZ
Decoupling	= TRUE
Initial_Wait	= 1[s]
Noe	= TRUE