General. All commercially available reagents were used without further purification. All solvents were used after distillation. Tetrahydrofuran (THF), diethyl ether and toluene were refluxed over and distilled from sodium-benzophenone ketyl. Dichloromethane was refluxed over and distilled from P2O5. Dimethylformamide (DMF) was distilled from CaH2 under reduced pressure. Preparative separation was performed by column chromatography on silica gel. 1H NMR and 13C NMR spectra were recorded on a 400MHz spectrometer and chemical shifts were represented as δ-values relative to the internal standard TMS. IR spectra were recorded on a FT-IR Spectrometer. High-resolution mass spectra (HRMS) were measured on a ESI-TOF MS.

(trans)-2-[(1S,2R,4S)-4-Hydroxy-1,2-epoxy-2,6,6-trimethylcyclohexyl]-1-iodoethylene (9). To a solution of iodine (1.28 g, 5.04 mmol), Na2CO3 (1.07 g, 10.1 mmol) in dichloromethane (25.2 mL) was added dropwise a solution of stannane 8 (1.19 g, 2.52 mmol) in dichloromethane (3 mL) at 0 oC. After being stirred for 15 min at 0 °C, the mixture was poured into a saturated aqueous Na2S2O3 solution, and then extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO4, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 10% to 50% ethyl acetate in hexane) afforded iodide 9 (764 mg, 98%) as a colorless oil: [α]23D –82.0 (c 0.99, CHCl3); IR (KBr disk, cm-1) 3449, 2963, 2870, 1695, 1466, 1303, 1184, 1122, 1047, 953, 914; 1H NMR (CDCl3, 400 MHz) δ 6.75 (d, J =14.2 Hz, 1H), 6.25 (d, J =14.2, 1H), 3.85 (m, 1H), 2.34 (ddd, J =14.7, 5.0, 1.8 Hz, 1H), 1.60 (m, 2H), 1.21 (ddd, J =11.9, 11.9 Hz, 1H), 1.21 (s, 3H), 1.14 (s, 3H), 0.97 (s, 3H); 13C NMR (CDCl3, 100 MHz) δ 142.1, 79.7, 72.7, 66.6, 64.3, 47.1, 40.9, 35.1, 29.6, 25.0, 20.2.

(2E,4E)-5-[(1’S,2’R,4’S)-4’-Hydroxy-1’,2’-epoxy-2’,6’,6’-trimethylcyclohexa-1’-yl]-3-methylpenta-2,4-diene-1-ol (11). To a solution of vinyl iodide 9 (71 mg, 0.23 mmol) and stannane 10 (208 mg, 0.58 mmol) in DMF (1.15 mL) was added bis(acetonitrile)dichloropalladium(II) (3 mg, 0.012 mmol) and lithium chloride (19 mg, 0.46 mmol). After being stirred for 20 min at room temperature, the reaction mixture was poured into water, and then extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO4, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 30% to 60% ethyl acetate in hexane) afforded alcohol 11 (50 mg, 86%) as a white solid: [α]25D –62.9 (c 1.14, MeOH); IR (KBr disk, cm-1) 3449, 2963, 2870, 1695,
1466, 1303, 1184, 1122, 1047, 953, 914; 1H NMR (CDCl3, 400 MHz) δ 6.20 (d, J = 15.6 Hz, 1H), 5.85 (d, J = 15.6, 1H), 5.65 (t, J = 6.9 Hz, 1H), 4.26 (d, J = 6.4 Hz, 2H), 3.86 (m, 1H), 2.34 (ddd, J = 14.2, 3.2, 1.9 Hz, 1H), 1.78 (s, 3H), 1.58 (m, 2H), 1.21 (dd, J = 12.9, 10.6 Hz, 1H), 1.15 (s, 3H), 1.11 (s, 3H), 0.94 (s, 3H); 13C NMR (CDCl3, 100 MHz) δ 137.0, 135.6, 130.6, 124.8, 70.4, 67.1, 64.5, 59.6, 47.4, 41.2, 35.5, 29.9, 25.1, 20.2, 13.0; ESI-HRMS m/z calcd for C15H24O3Na (M+Na)+ 275.1623, found 275.1610.

(3E,5E)-6-[(1'S,2'R,4'S)-4'-Hydroxy-1',2'-epoxy-2',6',6'-trimethylcyclohex-1'-yl]-4-methylhexa-1,3,5-triene (6). A mixture of diene alcohol 11 (74 mg, 0.29 mmol) and manganese dioxide (1.17 g) in diethyl ether (2.35 mL) was stirred at room temperature for 20 min. The precipitate was filtered through a pad of Celite, and the filtrate was concentrated in vacuo to afford crude aldehyde, which was used in the next reaction without further purification.

To a suspension of methyltriphenylphosphonium bromide (314 mg, 0.88 mmol) in THF (1.32 mL) was added dropwise sodium bis(trimethylsilyl)amide (1.0M in THF, 0.88 mL, 0.88 mmol) at 0 °C. After the mixture was stirred for 5 min at 0 °C, a solution of the crude aldehyde obtained above in THF (0.30 mL) was added. After being stirred for 5 min at room temperature, the resulting mixture was poured into water, and extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO₄, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 10% to 50% ethyl acetate in hexane) afforded triene 6 (47 mg, 72%) as a white solid: [α]D25 –52.6 (c 0.77, CHCl₃); IR (KBr disk, cm⁻¹) 3451, 2963, 2929, 2367, 1655, 1560, 1420, 1381, 1217, 985, 906, 758; 1H NMR (CDCl3, 400 MHz) δ 6.69 (dddd, J = 17.0, 10.1, 6.4, 0.9 Hz, 1H), 6.25 (d, J = 15.6, 1H), 6.09 (d, J = 11.5 Hz, 1H), 5.89 (d, J = 15.1 Hz, 1H), 5.25 (d, J = 16.9 Hz, 1H), 5.14 (d, J = 10.0 Hz, 1H), 3.90 (m, 1H), 2.37 (ddd, J = 13.7, 5.1, 2.0 Hz, 1H), 1.88 (s, 3H), 1.62 (m, 2H), 1.24 (dd, J = 12.8, 11.0 Hz, 1H), 1.18 (s, 3H), 1.14 (s, 3H), 0.97 (s, 3H); 13C NMR (CDCl3, 100 MHz) δ 137.4, 135.0, 133.4, 132.0, 124.8, 118.2, 70.5, 67.2, 64.6, 47.5, 41.3, 35.6, 29.9, 25.2, 20.3, 13.1; ESI-HRMS m/z calcd for C16H24O2Na (M+Na)+ 271.1674, found 271.1662.

C30-violaxanthin derivative (3). To a solution of triene 6 (16 mg, 0.064 mmol) in toluene (0.65 mL) was added Grubbs second-generation catalyst (3 mg, 0.003 mmol). After being stirred for 15 min at 45 °C, the reaction mixture was poured into water, and then extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO₄, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 30% to 60%
ethyl acetate in hexane) afforded C30-violaxanthin derivative 3 (8 mg, 53%) as a yellow oil: $\alpha_2^D -47.4$ (c 0.65, CHCl$_3$); IR (neat, cm$^{-1}$) 3570, 3451, 3019, 2964, 1660, 1626, 1215, 976, 758; $^1$H NMR (CDCl$_3$, 400 MHz) $\delta$ 6.58 (dd, $J = 7.8$, 2.8 Hz, 1H), 6.27 (d, $J = 15.6$, 1H), 6.19 (d, $J = 9.7$ Hz, 1H), 5.89 (d, $J = 15.6$ Hz, 1H), 3.90 (m, 1H), 2.38 (ddd, $J = 14.2$, 5.0, 1.8 Hz, 1H), 1.90 (s, 3H), 1.62 (m, 2H), 1.22 (dd, $J = 12.8$, 11.0 Hz, 1H), 1.18 (s, 3H), 1.14 (s, 3H), 0.97 (s, 3H); $^{13}$C NMR (CDCl$_3$, 100 MHz) $\delta$ 137.4, 135.0, 133.4, 132.0, 124.8, 118.2, 70.5, 67.2, 64.6, 47.5, 41.3, 35.6, 29.9, 25.2, 20.3, 13.1; ESI-HRMS m/z calcd for C$_{30}$H$_{44}$O$_{4}$Na (M+Na)$^+$ 491.3137, found 491.3151.

(2E,4E,6E)-7-(Tributylstannyl)-3,7-dimethylhexa-2,4,6-triene-1-ol (13). To a solution of ester 12 (2.08 g, 4.44 mmol) in dichloromethane (44.4 mL) was added dropwise diisobutylaluminium hydride (1.0 M in toluene, 13.3 mL, 13.3 mmol) at –78 °C. After the reaction mixture was stirred for 10 min at the same temperature, aqueous potassium sodium (+)-tartrate tetrahydrate solution was added, and then resulting mixture was extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO$_4$, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 10% to 30% ethyl acetate in hexane in 3% triethyl amine) afforded alcohol 13 (1.60 g, 84%) as a yellow oil: IR (neat, cm$^{-1}$) 3393, 2853, 1714, 1616, 1464, 1373, 1253, 1072, 960, 758; $^1$H NMR (CDCl$_3$, 400 MHz) $\delta$ 6.63 (dd, $J = 15.1$, 10.5 Hz, 1H), 6.26 (dd, $J = 11.0$, 1.4 Hz, 1H), 6.21 (d, $J = 15.6$ Hz, 1H), 5.70 (t, $J = 6.9$ Hz, 1H), 4.31 (t, $J = 5.9$ Hz, 2H), 2.03 (d, $J = 1.4$ Hz, 3H), 1.84 (s, 3H), 1.49 (m, 6H), 1.31 (m, 6H), 0.90 (m, 15H); $^{13}$C NMR (CDCl$_3$, 100 MHz) $\delta$ 145.5, 139.5, 137.4, 136.0, 130.3, 123.5, 59.9, 29.5, 27.8, 20.4, 14.1, 13.0, 9.5.

(2E,4E,6E,8E)-9-[(1'S,2'R,4'S)-4'-Hydroxy-1',2'-epoxy-2',6'-trimethylcyclohexa-1'-yl]-3,7-dimethylnona-2,4,6,8-tetraene-1-ol (14). To a solution of vinyl iodide 9 (308 mg, 0.99 mmol) and stannane 13 (470 mg, 1.10 mmol) in DMF (5.0 mL) was added diisopropylethylamine (0.52 mL, 3.00 mmol), Pd(PPh$_3$)$_4$ (58 mg, 0.050 mmol) and lithium chloride (84 mg, 2.00 mmol). After being stirred for 30 min at 65 °C, the reaction mixture was poured into water, and then extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO$_4$, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 30% to 50% ethyl acetate in hexane) afforded 14 (202 mg, 64%) as a white solid: $\alpha_2^D -26.4$ (c 0.99, MeOH); IR (KBr disk, cm$^{-1}$) 3449, 2963, 2870, 1695, 1466, 1303, 1184, 1122, 1047, 953, 914; $^1$H NMR (CDCl$_3$, 400 MHz) $\delta$ 6.54 (dd, $J = 15.1$, 11.0 Hz, 1H), 6.27 (d, $J = 9.7$ Hz, 1H), 5.89 (d, $J = 15.6$ Hz, 1H), 3.90 (m, 1H), 2.38 (ddd, $J = 14.2$, 5.0, 1.8 Hz, 1H), 1.90 (s, 3H), 1.62 (m, 2H), 1.22 (dd, $J = 12.8$, 11.0 Hz, 1H), 1.18 (s, 3H), 1.14 (s, 3H), 0.97 (s, 3H); $^{13}$C NMR (CDCl$_3$, 100 MHz) $\delta$ 145.5, 139.5, 137.4, 136.0, 130.3, 123.5, 59.9, 29.5, 27.8, 20.4, 14.1, 13.0, 9.5.
Hz, 1H), 6.28 (d, J =15.1, 1H), 6.25 (d, J =14.9 Hz, 1H), 6.12 (d, J =11.5 Hz, 1H), 5.85 (d, J =15.6 Hz, 1H), 5.68 (t, J =6.9 Hz, 1H), 4.28 (d, J =6.8 Hz, 2H), 3.87 (m, 1H), 2.35 (ddd, J =14.2, 5.1, 1.9 Hz, 1H), 1.89 (s, 3H), 1.83 (s, 3H), 1.59 (m, 2H), 1.21 (dd, J =12.9, 10.6 Hz, 1H), 1.16 (s, 3H), 1.12 (s, 3H); 13C NMR (CDCl3, 100 MHz) δ 137.7, 137.5, 137.0, 134.8, 131.9, 131.0, 125.1, 124.3, 70.6, 67.3, 64.6, 59.8, 47.5, 41.3, 35.6, 29.9, 25.2, 20.3, 13.3, 13.0; ESI-HRMS m/z calcd for C20H30O3Na (M+Na)+ 341.2093, found 341.2079.

(3E,5E,7E,9E)-10-[(1'S,2'R,4'S)-4'-Hydroxy-1',2'-epoxy-2',6',6'-trimethylcyclohex-1'-yl]-4,8-dimethyldeca-1,3,5,7,9-pentaene (4). A mixture of alcohol 14 (129 mg, 0.41 mmol) and manganese dioxide (1.62 g) in THF (3.24 mL) was stirred at room temperature for 50 min. The precipitate was filtered through a pad of Celite, and the filtrate was concentrated in vacuo to afford crude aldehyde, which was used in the next reaction without further purification.

To a suspension of methyltriphenylphosphonium bromide (434 mg, 1.22 mmol) in THF (2.03 mL) was added dropwise sodium bis(trimethylsilyl)amide (1.0M in THF, 1.22 mL, 1.22 mmol) at 0 °C. The mixture was stirred for 5 min at -20 °C, and then a solution of crude aldehyde in THF (0.30 mL) was added. After being stirred for 5 min at the same temperature, the resulting mixture was poured into water, and extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO4, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 20% to 50% ethyl acetate in hexane) afforded pentaene 4 (89 mg, 70%) as a yellow solid: [α]24D –14.9 (c 0.20, CHCl3); IR (KBr disk, cm⁻¹) 3449, 3017, 2929, 1655, 1381, 1215, 1045, 908, 758; 1H NMR (CDCl3, 400 MHz) δ 6.71 (dddd, J =16.5, 11.5, 10.1, 1.4 Hz, 1H), 6.59 (d, J =15.1, 11.0 Hz, 1H), 6.33 (d, J =15.1 Hz, 1H), 6.28 (d, J =15.5 Hz, 1H), 6.17 (d, J =11.4 Hz, 1H), 6.13 (d, J =11.0 Hz, 1H), 5.87 (d, J =15.5 Hz, 1H), 5.26 (d, J =16.5 Hz, 1H), 5.14 (d, J =10.0 Hz, 1H), 3.90 (m, 1H), 2.37 (ddd, J =14.2, 5.0, 1.8 Hz, 1H), 1.92 (s, 3H), 1.91 (s, 3H), 1.62 (m, 2H), 1.21 (dd, J =12.9, 10.6 Hz, 1H), 1.18 (s, 3H), 0.97 (s, 3H); 13C NMR (CDCl3, 100 MHz) δ 138.3, 137.6, 136.5, 134.6, 133.6, 132.6, 132.3, 125.2, 124.2, 118.1, 70.6, 67.3, 64.6, 60.7, 53.8, 47.5, 41.3, 35.7, 29.9, 25.2, 21.3, 20.3, 14.5, 13.3, 13.0; ESI-HRMS m/z calcd for C21H30O2Na (M+Na)+ 337.2143, found 337.2150.

Violaxanthin (1). To a solution of pentaene 4 (27 mg, 0.086 mmol) in toluene (0.86 mL) was added Grubbs second-generation catalyst (7 mg, 0.0086 mmol). After being stirred for 10 min at 60 °C, the reaction mixture was poured into water, and then extracted with ethyl acetate. The
organic layers were combined, washed with brine, dried over MgSO₄, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 30% to 60% ethyl acetate in hexane) afforded violaxanthin (1) (16 mg, 67%) as a crude product in a red film. The separation by preparative HPLC [column: Develosil CN-UG (0.6 x 25 cm); mobile phase: acetone / n-hexane = 1 / 11; flow rate: 2.0 mL / min.; UV detect: 470 nm; retention time: (all-trans-isomer) 40 min., in the dark, was afforded the desired optically active violaxanthin (1) as a red film: IR (neat, cm⁻¹) 3467, 3019, 2928, 1901, 1630, 1469, 1368, 1215, 972, 756; ¹H NMR (CDCl₃, 400 MHz) δ 6.63 (m, 1H), 6.60 (dd, J =15.1, 11.4, 1H), 6.37 (d, J =15.1 Hz, 1H), 6.29 (d, J =15.1 Hz, 1H), 6.28 (m, 1H), 6.19 (d, J =11.0 Hz, 1H), 5.88 (d, J =15.6 Hz, 1H), 3.91 (m, 1H), 2.39 (ddd, J =14.2, 5.1, 1.4 Hz, 1H), 1.96 (s, 3H), 1.93 (s, 3H), 1.61 (m, 2H), 1.23 (m, 1H), 1.19 (s, 3H), 1.15 (s, 3H), 0.98 (s, 3H); ¹³C NMR (CDCl₃, 100 MHz) δ 138.5, 137.7, 136.8, 134.7, 134.7, 133.2, 132.6, 130.5, 125.1, 124.2, 70.7, 67.3, 64.7, 60.8, 47.6, 41.4, 35.7, 29.9, 25.3, 20.4, 14.6, 13.3, 13.1; ESI-HRMS m/z calcd for C₄₀H₅₆O₄Na (M+Na)+ 623.4076, found 623.4073.

(3E, 5E, 7E)-10-[(1’R,2’R,4’S)-2’,4’-Dihydroxy-2’,6’,6’-trimethylcyclohexyldiene]-4,8-dimethyldeca-1,3,5,7,9-pentaene (5). A mixture of allenic alcohol 15 (165 mg, 0.52 mmol) and manganese dioxide (2.07 g) in ethyl acetate (5.18 mL) was stirred at room temperature for 20 min. The precipitate was filtered through a pad of Celite, and the filtrate was concentrated in vacuo to afford crude aldehyde, which was used in the next reaction without further purification. To a suspension of methyltriphenylphosphonium bromide (195 mg, 0.54 mmol) in THF (1.10 mL) was added dropwise sodium bis(trimethylsilyl)amide (1.0M in THF, 0.53 mL, 0.53 mmol) at 0 °C. The mixture was stirred for 5 min at 0 °C, and then a solution of crude aldehyde (69 mg, 0.22 mmol) in THF (0.30 mL) was added. After being stirred for 10 min at the same temperature, the resulting mixture was poured into water, and extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO₄, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 20% to 50% ethyl acetate in hexane) afforded 5 (30 mg, 44%) as a yellow solid: [α]²⁴D –28.1 (c 0.57 CHCl₃); IR (KBr disk, cm⁻¹) 3335, 2926, 1929, 1455, 1439, 1375, 1161, 956; ¹H NMR (CDCl₃, 400 MHz) δ 6.72 (dddd, J =16.5, 10.9, 10.1, 1.4 Hz, 1H), 6.45 (ddd, J =15.1, 11.4 Hz, 1H), 6.30 (d, J =15.1 Hz, 1H), 6.12 (d, J =10.5 Hz, 1H), 6.09 (d, J =10.5 Hz, 1H), 6.02 (s, 1H), 5.26 (d, J =16.5 Hz, 1H), 5.14 (d, J =10.6 Hz, 1H), 4.13 (m, 1H), 2.26 (ddd, J =12.8, 4.1, 2.2 Hz, 1H), 2.00 (m, 1H), 1.93 (m, 1H), 1.92 (s, 3H), 1.79 (s, 3H), 1.35 (s, 3H), 1.33 (s, 3H), 1.06 (s, 3H); ¹³C NMR (CD₃OD, 100 MHz) δ 204.4, 138.9, 138.2, 135.4, 134.1, 133.8, 130.0, 127.2, 119.3, 118.6, 104.6, 74.0, 65.6, 37.5.
Mimulaxanthin (2). To a solution of allenic tetraene 5 (31 mg, 0.099 mmol) in toluene (1.91 mL) was added Grubbs second-generation catalyst (4 mg, 0.0048 mmol) at 4 times at 5 min intervals. After being stirred for 5 min at 60 °C, the reaction mixture was poured into water, and then extracted with ethyl acetate. The organic layers were combined, washed with brine, dried over MgSO₄, filtered and concentrated in vacuo. Purification by silica gel column chromatography (from 50% ethyl acetate in hexane to 15% methanol in chloroform) afforded mimulaxanthin (2) (17 mg, 56%) as a crude product in a red film. The separation by preparative HPLC [column: Develosil CN-UG (0.6 x 25 cm); mobile phase: acetone / n-hexane = 1 / 6; flow rate: 2.0 mL / min.; UVdetect: 468 nm; retention time: (all-trans-isomer) 49 min., in the dark, was afforded the desired optically active mimulaxanthin (2) as a red film: IR (KBr disk, cm⁻¹) 3449, 2926, 2372, 1655, 1458, 1263, 1070, 958; ¹H NMR (CD₃OD, 400 MHz) δ 6.67 (dd, J =7.2, 2.7 Hz, 1H), 6.60 (dd, J =15.1, 11.4, 1H), 6.35 (d, J =15.1 Hz, 1H), 6.27 (d, J =10.1 Hz, 1H), 6.12 (d, J =8.2 Hz, 1H), 6.04 (s, 1H), 4.20 (m, 1H), 2.19 (m, 1H), 1.96 (s, 3H), 1.87 (m, 2H), 1.82 (s, 3H), 1.33 (s, 3H), 1.30 (s, 3H), 1.06 (s, 3H); ¹³C NMR (CD₃OD, 100 MHz) δ 204.6, 139.2, 138.3, 134.5, 133.9, 132.1, 130.3, 126.9, 119.3, 104.7, 74.0, 65.6, 37.5, 33.8, 32.2, 30.4, 28.7, 28.5, 28.1, 15.0, 13.5; ESI-HRMS m/z calcd for C₄₀H₅₆O₄Na (M+Na)⁺ 623.4076, found 623.4063.
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### Supplementary Material (ESI) for Organic & Biomolecular Chemistry

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**Author**: delta

**Experiment**: single_pulse_dec

**Sample_id**: $^{13}$C645689

**Solvent**: CHLOROFORM-D

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**Total_scans**: 122

**X_90_width**: 8.4[us]

**X_acq_time**: 1.04333312[s]

**X_angle**: 45[deg]

**X_atn**: 6.6[db]

**X_pulse**: 4.2[us]

**Irr_atn_dec**: 22.2[db]

**Irr_atn_noe**: 22.2[db]

**Irr_noise**: WALTZ

**Decoupling**: TRUE

**Initial_wait**: 1[s]

**Noe**: TRUE

**Noe_time**: 5[s]

**Recvr_gain**: 50

**Relaxation_delay**: 5[s]

**Repetition_time**: 6.04333312[s]

**Temp_get**: 24.3[dC]
Filename = allenic-olefin-13C-4.
Author = delta
Experiment = single_pulse_dec
Sample_id = 54356983
Solvent = METHANOL-D3
Creation_time = 13-MAY-2009 09:24:45
Revision_time = 3-SEP-2009 13:51:12
Current_Time = 3-SEP-2009 13:52:37

Comment = single pulse decouple
Data_format = 1D COMPLEX
Dim_size = 26214
Dim_title = 13C
Dim_units = [ppm]
Dimensions = X
Site = ECKX400M
Spectrometer = DELTA2_NMR

Field_strength = 9.389766[T] (400[MHz])
X_acq_duration = 1.04333312[s]
X_domain = 13C
X_freq = 100.52530333[MHz]
X_offset = 100[ppm]
X_points = 32768
X_prescans = 4
X_resolution = 0.95846665[Hz]
X_sweep = 31.40703518[kHz]
Irr_domain = 1H
Irr_freq = 399.78219838[MHz]
Irr_offset = 5[ppm]
Irr_clipped = FALSE
Mod_return = 1
Scans = 245
Total_scans = 245
X_90_width = 8.4[us]
X_acq_time = 1.04333312[s]
X_angle = 45[deg]
X_atn = 6.6[db]
X_pulse = 4.2[us]
Irr_atn_dec = 22.2[db]
Irr_atn_noe = 22.2[db]
Irr_noise = WALTZ
Decoupling = TRUE
Initial_wait = 1[s]
Noe = TRUE
Noe_time = 5[s]
Recvr_gain = 56
Relaxation_delay = 5[s]
Repetition_time = 6.04333312[s]
Temp_get = 24.9[dc]