Supporting information

Asymmetric Oxidative Lewis Base Catalysis – Unifying Iminium and Enamine Organocatalysis with Oxidations

Magnus Rueping,* Henrik Sundén, Lukas Hubener, Erli Sugiono

Institute of Organic Chemistry, RWTH Aachen University, Landoltweg 1, D-52074 Aachen
Magnus.Rueping@rwth-aachen.de

General: Unless otherwise noted, all materials were obtained from commercial suppliers and used without further purification. Solvents for extraction and chromatography were technical grade and distilled prior to use. Solvents used in reaction were reagent grade and distilled from the indicated drying agents: CH_2Cl_2 and $CHCl_3$ (CaH_2). MnO_2 was dried in a glassware oven at 120 ºC for two days. Amine catalysts 2-(bis(3,5-bis(trifluoromethyl)phenyl)(trimethylsilyloxy)methyl)pyrrolidine and 2-(diphenyl(trimethylsilyloxy)methyl)pyrrolidine and NHC-catalyst were prepared as described in the literature.[1, 2] For thin-layer chromatography (TLC), silica gel coated aluminium plates (Merck, silica gel 60 F254) were used and chromatograms were visualised by irradiation with UV light at 254 nm and Cerium Molybdate stain. Column chromatography was performed using Merck silica gel 60 (particle size 0.040-0.063 mm). Solvents mixtures are understood as volume/volume. ^{1}H-NMR and ^{13}C-NMR were recorded on a Bruker AV 300 or AM 250 XP spectrometers in $CDCl_3$. Data are reported in the following order: chemical shift (δ) in ppm; multiplicities (bs (broadened singlet), s (singlet), d (doublet), t (triplet), q (quartet), m (multiplet)); coupling constants (J) are in Hertz (Hz). MS-EI (70 eV) were recorded on a GC-MS Shimadzu QP2010 machine (column: Equity®-5, length × I.D. 30 m × 0.25 mm, df 0.25 m, lot # 28089-U, Supelco). IR spectra were recorded on a Jasco FT/IR-420 spectrometer and are reported in terms of frequency of absorption (cm^{-1}).The enantiomeric excesses were determined by HPLC analysis using a chiral stationary phase column (Daicel Co. CHIRALCEL OD-H, AD-H and AS-H; eluent: hexane / 2-propanol), by comparing the samples with the corresponding racemic mixtures. Optical rotations were measured on a Perkin Elmer 241 polarimeter.

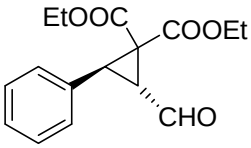
General procedure A. Cyclopropanation of allylic alcohols. To a vial containing the reaction solvent (1.0 ml) and triethyl amine (0.7 equiv., 0.14 mmol) were subsequently added allylic alcohol (1.0 equiv., 0.2 mmol), MnO_2 (10.0 equiv., 2.0 mmol) and diethyl bromomalonate (1.3 equiv., 0.26 mmol). When the appropriate temperature was reached TMS-prolinol catalyst (0.2 equiv., 0.04 mmol) was added and the reaction was left to stir for 18h. The reaction mixture was directly purified by column chromatography on silica gel (hexane:ethyl acetate) to afford the chiral cyclopropane derivative.

General procedure B. Malonate addition to allylic alcohols. To a vial containing ethanol (1.0 ml) were subsequently added allylic alcohol (1.0 equiv., 0.2 mmol), MnO_2 (10 equiv., 2.0 mmol), dimethyl malonate (1.3 equiv., 0.26 mmol) and TMS-prolinol catalyst (0.2 equiv., 0.04 mmol) and left to stir for 3 days. The reaction mixture was directly purified by column chromatography on silica gel (hexane:ethyl acetate) to afford the chiral aldehyde derivative.

Procedure C. Oxidative esterification of formyl cyclopropanes. To a 0.2 M solution of cyclopropane in ethanol were subsequently added MnO_2 (15.0 equiv.), NHC-carbene (0.3 equiv.) and DBU (0.3 equiv.). The reaction was stirred at room temperature until full conversion could be established by crude ^{1}H NMR (21h). The reaction mixture was directly purified by column chromatography on silica gel (hexane:ethyl acetate) to afford the desired ester.

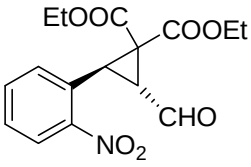
Procedure D. Oxidation of the malo-aldehydes to the carboxylic esters. Representative procedure: (*R*)-dimethyl 2-(3-oxo-1-phenylpropyl)malonate was diluted with 2.0 ml *t*-BuOH and 2.0 ml 1 M NaH_2PO_4 (aq.). 2.0 ml 1 M $KMnO_4$ were added successively. After 5 min of vigorous stirring 5.0 ml saturated $NaHSO_3$ was added and the pH was adjusted to roughly 3 with 1 M HCl. The resulting mixture was extracted 3 times with 10 mL EtOAc, the combined organic layers were washed with 10 ml of water and 10 ml of brine, and dried over Na_2SO_4. The organic layer was concentrated in vacuum and the residual acid was dissolved in 2.0 ml toluene and 3.0 ml MeOH. $TMSCHN_2$ (2.0 M in n-hexane) was added dropwise until the yellow colour persisted. The solution was stirred for an additional 10 min and quenched with a drop of concentrated AcOH. The solvents were evaporated under vacuum. The crude product was subjected to silica gel chromatography (hexane: ethyl acetate) to give the desired product.

(2*R*,3*S*)-Diethyl 2-formyl-3-phenylcyclopropane-1,1-dicarboxylate



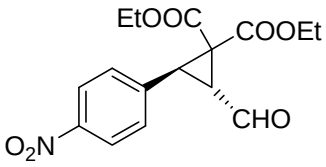
was synthesized using general procedure A. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.46 (d, 1H, J = 4.8 Hz), 7.31-7.22 (m, 5H), 4.35-4.22 (m, 2H), 3.93 (dq, 2H, J = 1.2, 7.2 Hz), 3.83 (d, 1H, J = 7.4 Hz), 3.37 (dd, 1H, J = 4.7, 7.5 Hz), 1.30 (t, 3H, J = 7.1 Hz), 0.93 (t, 3H, J = 7.1 Hz). ^{13}C NMR (100 MHz, $CDCl_3$): δ = 196.0, 166.0, 164.6, 132.3, 128.6, 128.4, 128.0, 62.4, 62.0, 44.7, 38.2, 35.3, 14.0, 13.7. MS-EI: m/z (%) = 291.2 (0.1), 290.2 (0.1), 262.1 (12) 261.1 (53), 245.0 (2), 233.1 (6), 217.1 (9), 216.1 (30), 188.1 (8), 187.1 (43), 173.1 (9), 171.1 (18), 170.1 (47), 160.1 (7), 159.1 (12), 145.1 (12), 131.1 (14), 116.1 (36), 115.1 (100), 105.1 (19), 91.1 (20), 77.1 (12). IR (NaCl): $\tilde{\nu}$ = 2983, 2742, 1730, 1448, 1369, 1288, 1217, 1184, 1144, 1019, 862, 749, 698. $[\alpha]_D^{RT}$ = -49.3 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=85/15, flow rate=0.6 mL·min^{-1}, λ=210 nm; major enantiomer t_R=10.8 min and minor enantiomer: t_R=12.4 min.

(2R,3S)-Diethyl 2-Formyl-3-(2-nitrophenyl)-cyclopropane-1,1-dicarboxylate



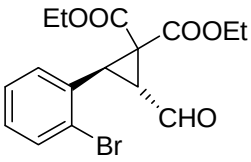
was synthesized using general procedure A. ^{1}H NMR (250 MHz, $CDCl_3$): δ = 9.52 (d, 1H, J = 4.7 Hz), 8.06 (dd, 1H, J = 1.3, 8.0 Hz), 7.59 (td, 1H, J=1.4, 7.5 Hz), 7.49 (t, 1H, J = 7.6 Hz), 7.36 (d, 1H, J = 7.6 Hz), 4.42-4.20 (m, 3H), 4.00-3.83 (m, 2H), 3.22 (dd, 1H, J = 4.7, 7.8 Hz), 1.31 (t, 3H, J = 7.1 Hz), 0.99 (t, 3H, J = 7.1 Hz). ^{13}C NMR (62.9 MHz, $CDCl_3$): δ = 195.6, 165.5, 164.7, 149.7, 133.3, 131.2, 129.3, 128.4, 125.0, 62.6, 62.4, 43.5, 38.8, 33.9, 14.0, 13.6. MS-EI: m/z (%) = 336.1 (0.8), 306.1 (3), 290.1 (4), 272.1 (2), 261.1 (11), 244.0 (19), 216.0 (35), 215.0 (37), 201.1 (11), 200.0 (22), 288.0 (34), 172.1 (46), 170.1 (32), 160.1 (29), 155.1 (22), 144,1 (46), 135.1 (81), 116.1 (54), 115.1 (52), 104.1 (43), 92.1 (65), 91.1 (100), 79.0 (73), 77.1 (71). IR (NaCl): $\tilde{\nu}$ = 2984, 2744, 1730, 1611, 1577, 1530, 1349, 1289, 1217, 1187, 1146, 1018, 855, 790, 740, 702. $[\alpha]_D^{RT}$ = +30.1 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=65/35, flow rate=0.6 mL·min^{-1}, converted to the corresponding enone with Ph_3P=CHCOPh, λ=220 nm): major enantiomer t_R=16.6 min and minor enantiomer t_R=29.6 min.

(2*R*,3*S*)-Diethyl 2-formyl-3-(4-nitrophenyl)cyclopropane-1,1-dicarboxylate



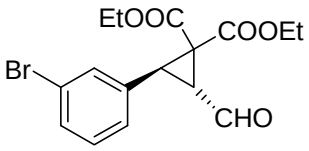
was synthesized using general procedure A. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.53 (d, 1H, J = 4.1 Hz), 8.17 (d, 1H, J = 8.8 Hz), 7.43 (d, 2H, J = 8.9 Hz), 4.36-4.24 (m, 2H), 4.04-3.91 (m, 2H), 3.84 (d, 1H, J = 7.5 Hz), 3.43 (dd, 1H, J = 4.1 Hz, 7.5 Hz), 1.31 (t, 3H, J = 7.1 Hz), 1.01 (t, 3H, J = 7.1 Hz). ^{13}C NMR (100 MHz, $CDCl_3$): δ = 194.9, 165.3, 164.2, 147.6, 139.8, 129.6, 123.5, 62.7, 62.4, 45.0, 39.0, 34.54, 14.o0, 13.8. MS-EI: m/z (%) = 336.1 (0.9), 307.1 (18), 106.1 (67), 2901. (4), 278.1 (29), 262.1 (23), 261.1 (100), 250.0 (12), 232.0 (79), 218.1 (20), 216.1 (20), 205.0 (32), 190.1 (16), 170.1 (15), 159.1 (20), 143.1 (20), 131.1 (31), 115.1 (91), 102.1 (28), 89.1 (16), 77.0 (19). IR (NaCl): $\tilde{\nu}$ = 2984, 2859, 2744, 2456, 1723, 1603, 1523, 1465, 1445, 1391, 1369, 1349, 1297, 1220, 1185, 1015, 855, 757, 695. $[\alpha]_D^{RT}$ = -38.4 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=60/40, flow rate=0.6 mL·min^{-1}, λ=210 nm; minor enantiomer t_R=19.2 min and major enantiomer t_R=23.7 min.

(2R,3S)-Diethyl 2-Formyl-3-(2-bromo)-cyclopropane-1,1-dicarboxy-late



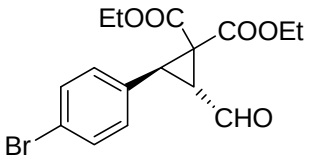
was synthesized using general procedure A. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.47 (d, 1H, J=4.7 Hz), 7.56 (dd, 1H, J = 1.3, 7.9 Hz), 7.25 (td, 1H, J = 1.3, 7.5 Hz), 7.18-7.11 (m, 2H), 4.37-4.24 (m, 2H), 3.96 (q, 2H, J = 7.1 Hz), 3.85 (d, 1H, J = 7.7 Hz), 3.36 (dd, 1H, J = 4.7, 7.7 Hz), 1.31 (t, 3H, J = 7.1 Hz), 0.96 (t, 3H, J = 7.1 Hz). ^{13}C NMR (75.5 MHz, $CDCl_3$): δ = 195.7, 165.6, 164.6, 132.8, 132.3, 129.7, 129.5, 128.1, 126.0, 62.4, 62.0, 44.1, 38.7, 36.3, 14.0, 13.6. MS-EI: m/z (%) = 370.9 (1.0), 368.9 (0.9), 341.0 (85), 339.0 (83), 325.0 (4), 323.0 (5), 313.0 (14), 311.0 (14), 296.0 (38), 294.0 (39), 267.0 (41), 265.0 (43), 215.1 (100), 185.0 (17), 183.0 (17), 159.1 (54), 131.1 (31), 115.1 (87), 102.1 (19). IR (NaCl): $\tilde{\nu}$ = 2982, 2742, 1731, 1369, 1290, 1217, 1186, 1144, 1027, 862, 753. $[\alpha]_D^{RT}$ = -36.9 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=98/2, flow rate=0.6 mL·min^{-1}, converted to the corresponding enone with Ph_3P=CHCOPh, λ=220 nm; minor enantiomer t_R=48.8 min and major enantiomer t_R=54.5 min.

(2*R*,3*S*)-Diethyl 2-(3-bromophenyl)-3-formylcyclopropane-1,1-dicarboxylate



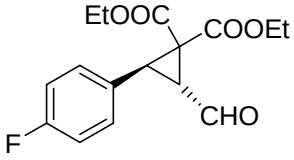
was synthesized using general procedure A. ^{1}H NMR (300 MHz, $CDCl_3$,): δ = 9.47 (d, 1H, J = 4.5 Hz), 7.41 (m, 2H), 7.17 (m, 2H), 4.36-4.21 (m, 2H), 3.98 (q, 2H, J = 7.1 Hz), 3.78 (d, 1H, J = 7.3 Hz), 3.35 (dd, 1H, J = 4.5 Hz, 7.5 Hz), 1.30 (t, 3H, J = 7.1 Hz), 1.00 (t, 3H, J = 7.1 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 195.5, 165.67, 164.4, 134.6, 131.8, 131.2, 129.9, 127.2, 122.4, 62.6, 61.2, 44.7, 38.0, 34.5, 14.0, 13.8. MS-EI: m/z (%) = 371.0 (0.4), 369.0 (0.3), 341.0 (57), 339.0 (56), 313.0 (11), 311.0 (11), 296.0 (39), 294.0 (39), 267.0 (42), 265.0 (43), 251.0 (13), 250.0 (13), 215.1 (11), 195.0 (20), 193.0 (10), 172.1 (20), 159.2 (22), 143.1 (32), 15.1 (100), 102.1 (17). IR (NaCl): $\tilde{\nu}$ = 2982, 2741, 1733, 1597, 1567, 1370, 1292, 1218, 1185, 1023, 864, 758, 691. $[\alpha]_D^{RT}$ = -34.3 (c = 1 in $CHCl_3$). HPLC conditions: OD-H column, n-hexane/2-propanol=90/10, flow rate=0.6 mL·min^{-1}, λ=210 nm; major enantiomer t_R=14.3 min and minor enantiomer t_R=24.1 min.

(2*R*,3*S*)-Diethyl 2-(4-bromophenyl)-3-formylcyclopropane-1,1-dicarboxylate



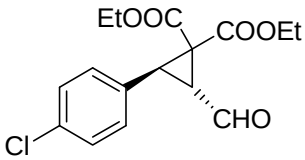
was synthesized using general procedure A. ^{1}H NMR (250 MHz, $CDCl_3$,): δ = 9.46 (d, 1H, J = 4.5 Hz), 7.42 (d, 2H, J = 8.5 Hz), 7.12 (d, 2H, J = 8.2 Hz), 4.36-4.20 (m, 2H), 4.03-3.89 (m, 2H), 3.74 (d, 1H, J = 7.5 Hz), 3.33 (dd, 1H, J = 4.5, 7.5 Hz), 1.29 (t, 3H, J = 7.1 Hz), 0.99 (t, 3H, J = 7.1 Hz). ^{13}C NMR (62.9 MHz, $CDCl_3$): δ=195.6, 165.7, 164.4, 131.5, 131.3, 130.2, 122.1, 62.5, 62.2, 44.7, 38.0, 34.6, 14.0, 13.8. MS-EI: m/z (%) = 371.0 (1.0), 369.0 (1), 341.0 (100), 339.0 (100), 313.0 (13), 311.0 (13), 296.0 (55), 294.0 (55), 267.0 (65), 265.0 (66), 250.0 (30), 248.0 (30), 215.1 (36), 195.0 (20), 193.0 (18), 172.1 (20), 170.0 (20), 159.1 (35), 143.1 (40), 131.1 (25), 115.1 (73), 102.1 (16). IR (NaCl): $\tilde{\nu}$ = 2982, 2742, 1731, 1492, 1392, 1369, 1289, 1217, 1182, 1011, 838, 757. $[\alpha]_D^{RT}$ = -46.0 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=95/5, flow rate=0.6 mL·min^{-1}, converted to the corresponding enone with Ph_3P=CHOPh, λ=220 nm; minor enantiomer t_R=32.7 min and major enantiomer t_R=36.9 min and.

(2*R*,3*S*)-Diethyl 2-(4-fluorophenyl)-3-formylcyclopropane-1,1-dicarboxylate



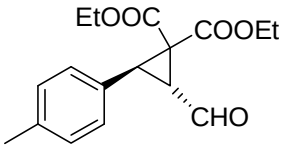
was synthesized using general procedure A. ^{1}H NMR (250 MHz, $CDCl_3$): δ=9.46 (d, 1H, J = 4.6 Hz), 7.26-7.18 (m, 2H), 7.04-6.93 (m, 2H), 4.36-4.20 (m, 2H), 4.02-3.88 (m, 2H), 3.78 (d, 1H, J = 7.1 Hz), 3.34 (dd, 1H, J = 4.6, 7.5 Hz), 1.30 (t, 3H, J = 7.5 Hz), 0.98 (t, 3H, J = 7.1 Hz). ^{13}C NMR (75.5 MHz, $CDCl_3$): δ = 195.6, 165.8, 164.5, 161.5 (d, J_{CF} = 247.3 Hz), 130.3 (d, J_{CF} = 8.3 Hz), 128.0 (d, J = 3.3 Hz), 115.4 (d, J = 21.7 Hz), 62.5, 62.1, 44.7, 38.3, 34.5, 14.00, 13.8. ^{19}F NMR (282 MHz, $CDCl_3$): δ = -113.78 (m). MS-EI: m/z (%) = 309.2 (0.2), 308.2 (0.1), 280.2 (11), 279.2 (57), 263.1 (2), 251.1 (8), 235.1 (10), 234.1 (40), 217.0 (3), 205.1 (53), 188.1 (48), 177.1 (15), 163.1 (10), 162.1 (11), 149.1 (10), 133.1 (100), 123.1 (27), 109.1 (20). IR (NaCl): $\tilde{\nu}$ = 2984, 2743, 1731, 1606, 1515, 1370, 1290, 1220, 1016, 850, 841, 788. $[\alpha]_D^{RT}$ = -47.7 (c=1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=90/10, flow rate=0.6 mL·min^{-1}, λ=210 nm; major enantiomer t_R=15.6 min and minor enantiomer: t_R=16.9 min.

(2*R*,3*S*)-Diethyl 2-Formyl-3-(4-chloro-phenyl)-cyclopropane-1,1-dicarboxylate



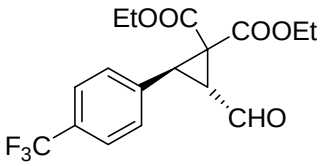
was synthesized using general procedure A. ^{1}H NMR (250 MHz, $CDCl_3$): δ = 9.47 (d, 1H, J = 4.5 Hz), 7.28 (d, 2H, J = 8.4 Hz), 7.18 (d, 2H, J = 8.5 Hz), 4.37-4.20 (m, 2H), 4.04-3.89 (m, 2H), 3.77 (d, 1H, J = 7.5 Hz), 3.34 (dd, 1H, J = 4.5, 7.5 Hz), 1.30 (t, 3H, J = 7.1 Hz), 1.00 (t, 3H, J = 7.1 Hz). ^{13}C NMR (62.9 MHz, $CDCl_3$): δ = 195.7, 165.8, 164.4, 134.0, 130.8, 129.9, 128.6, 62.6, 62.2, 44.7, 38.1, 34.6, 14.0, 13.8. MS-EI: m/z (%) = 325.0 (0.9), 297.1 (39), 295.1 (100), 279.0 (5), 267.0 (16), 252.0 (23), 250.0 (62), 223.0 (30), 221.0 (83), 204.0 (73), 193.0 (18), 179.0 (12), 178.0 (13), 151.0 (20), 149.0 (53), 139.0 (25), 115.1 (68). IR (NaCl): $\tilde{\nu}$ = 2983, 2742, 1731, 1496, 1369, 1290, 1218, 1183, 1093, 1015, 839, 757. $[\alpha]_D^{RT}$ = -48.4 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=98/2, flow rate=0.6 mL·min^{-1}, converted to the corresponding enone with Ph_3P=CHCOPh, λ=220 nm; minor enantiomer t_R=53.2 min and major enantiomer t_R=63.4 min.

(2*R*,3*S*)-Diethyl 2-Formyl-3-*p*-tolyl-cyclopropane-1,1-dicarboxylate



was synthesized using general procedure A. ^{1}H NMR (250 MHz, $CDCl_3$): δ = 9.44 (d, 1H, *J* = 4.8 Hz), 7.15-7.06 (m, 4H), 4.36-4.20 (m, 2H), 4.01-3.87 (m, 2H), 3.78 (d, 1H, *J* = 7.5 Hz), 3.34 (dd, 1H, *J* = 4.8, 7.5 Hz), 2.30 (s, 3H), 1.30 (t, 3H, *J* = 7.1 Hz), 0.97 (t, 3H, *J* = 7.1 Hz). ^{13}C NMR (62.9 MHz, $CDCl_3$): δ = 196.2, 166.1, 164.6, 137.7, 129.1, 129.0, 128.4, 62.4, 61.9, 44.7, 38.3, 35.1, 21.1, 14.0, 13.7. MS-EI: m/z (%) = 305.1 (0.5), 304.1 (0.4), 276.1 (21), 275.1 (78), 259.1 (5), 247.1 (4), 230.1 (47), 213.1 (4), 201.1 (64), 185.0 (26), 184.0 (100), 173.1 (12), 1581. (10), 145.1 (10), 129.1 (56), 128.1 (33), 119.1 (21), 115.1 (20), 105.1 (12), 91.1 (12). IR (NaCl) $\tilde{\nu}$ = 2981, 2740, 1731, 1519, 1465, 1446, 1391, 1369, 1288, 1218, 1179, 1145, 1020, 863, 836, 809, 771, 560. $[\alpha]_D^{RT}$ = -48.7 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=98/2, flow rate=0.6 mL·min^{-1}, converted to the corresponding enone with Ph_3P=CHCOPh, λ=254 nm; minor enantiomer t_R=39.8 min and major enantiomer t_R=47.1 min.

(2*R*,3*S*)-Diethyl 2-Formyl-3-(4-trifluoromethyl-phenyl)-cyclo-propane-1,1-dicarboxylate



was synthesized using general procedure A. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.50 (d, 1H, *J* = 4.4 Hz), 7.56 (d, 2H, *J* = 8.2 Hz), 7.37 (d, 2H, *J* = 8.2 Hz), 4.36-4.22 (m, 2H), 4.02-3.89 (m, 2H), 3.84 (d, 1H, *J* = 7.5 Hz), 3.41 (dd, 1H, *J* = 4.4, 7.5 Hz), 1.30 (t, 3H, *J* = 7.1 Hz), 0.96 (t, 3H, *J* = 7.1 Hz). ^{13}C NMR (75.5 MHz, $CDCl_3$): δ = 195.3, 165.6, 164.4, 136.5 (m), 130.3 (q, $^{2}J_{CF}$ = 32.7 Hz), 129.0, 125.4 (q, $^{3}J_{CF}$ = 3.8 Hz), 123.9 (q, $^{1}J_{CF}$ = 272.1 Hz), 62.6, 62.2, 44.8, 37.9, 34.7, 14.0, 13.7. ^{19}F NMR (282 MHz, $CDCl_3$): δ [ppm] = -62.75 (s). MS-EI: m/z (%) = 359.1 (3), 339.1 (5), 330.1 (34). 329.1 (100). 313.1 (8), 301.1 (24), 285.1 (25), 284.1 (89), 273.0 (7), 255.0 (100), 238.0 (50), 228.0 (29), 213.1 (16), 183.1 (44), 173.0 (22), 159.1 (15), 133.1 (20), 115.1 (55). IR (NaCl): $\tilde{\nu}$ = 2985, 2743, 1731, 1620, 1370, 1327, 1299, 1220, 1168, 1127, 1068, 1018, 855, 759. $[\alpha]_D^{RT}$ = -37.6 (c = 1 in $CHCl_3$). HPLC conditions: AS-H column, n-hexane/2-propanol=95/5, flow rate 0.6 mL·min^{-1}, converted to the corresponding enone with Ph_3P=CHCOPh, λ=220 nm); minor enantiomer t_R=22.6 min and major enantiomer t_R=27.7.

(*R*)-dimethyl 2-(3-oxo-1-phenylpropyl)malonate 6a

Was synthesized using general procedure B (72h). ^{1}H NMR (300 MHz, $CDCl_3$,): δ = 9.60 (t, 1H, J = 1.9 Hz), 7.28-722 (m, 5H), 4.07-4.00 (m, 1H), 3.76 (d, 1H, J= 10.6 Hz) 3.75 (s, 3H), 3.50 (s, 3H), 2.95-2.91 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 199.9, 168.4, 167.8, 139.8, 128.8, 128.0, 127.6, 57.3, 52.7, 52.4, 47.2, 39.6; IR (NaCl): $\tilde{\nu}$ =3032, 2955, 1731, 1455, 1435, 1258, 1200, 1241, 1156, 701 cm^{-1}; MS-EI: *m/z*(%):265 (0.4) $[M+H]^+$, 264 (0.1) $[M]^{+\bullet}$, 236 (8), 187 (3), 173 (11), 144 (13), 133 (25), 132 (100), 131 (33) , 117 (15), 115 (24), 104 (38), 105 (40),13 (24), 100 (16), 91 (13), 78 (12), 77 (21), 59 (15); $[\alpha]_D^{RT}$ = -6.5 (c = 1.0 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=90/10, flow rate=1.0 mL min^{-1}, converted to the corresponding methyl ester according to procedure D λ=254 nm. major enantiomer t_R=12.9 min and minor enantiomer: t_R=15.3 min.

(*R*)-dimethyl 2-(1-(4-nitrophenyl)-3-oxopropyl)malonate 6b

Was synthesized using general procedure B (65h). ^{1}H NMR (300 MHz, $CDCl_3$,): δ = 9.62 (t, 1H, J = 0.9 Hz), 8.15 (d, 1H, J = 8.8 Hz), 7.44 (d, 1H, J = 8.8 Hz), 4.13 (dt, 1H, J =5.1, 9.0 Hz), 3.78 (d, 1H, J = 9.4 Hz) 3.75 (s, 3H), 3.54 (s, 3H), 3.11-2.94 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 198.4, 167.8, 164.4, 147.6, 147.2, 129.2, 123.8, 56.3, 52.9, 52.7, 46.9, 38.8; IR (NaCl): $\tilde{\nu}$ =3032, 2955, 1731, 1496, 1455, 1435, 1258, 1200, 1156, 701 cm^{-1}; MS-EI: *m/z*(%): 310 (0.1) $[M+H]^+$, 132 (100), 115 (13), 101 (12), 100 (22), 77 (11), 59 (12);$[\alpha]_D^{RT}$ = -21.2 (c = 1.0 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=80/20, flow rate=1.0 mL min^{-1}, converted to the corresponding methyl ester according to procedure D, λ=254 nm. major enantiomer t_R=18.3 min and minor enantiomer: t_R=30.4 min.

(*R*)-dimethyl 2-(1-(2-nitrophenyl)-3-oxopropyl)malonate 6c

Was synthesized using general procedure B (65h). ^{1}H NMR (300 MHz, $CDCl_3$,): δ = 9.67 (t, 1H, J = 1.5 Hz), 7.80 (dd, 1H, J = 1.3, 8.0 Hz), 7.55 (m, 1H) 7.41 (m, 2H) 4.58 (dt, 1H, J = 5.4, 8.6 Hz), 3.97 (d, 1H, J = 8.9 Hz) 3.73 (s, 3H), 3.58 (s, 3H), 3.15-2.97 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 199.2, 168.0, 164.5, 134.6, 132.9, 129.0, 128.3, 124.8, 56.0, 52.8, 52.8, 46.6, 33.2; IR (NaCl): $\tilde{\nu}$ =3473, 2995, 2848, 1734, 1528, 1435, 1355, 1251, 1160 cm^{-1}; MS-EI: *m/z*(%): 309 (1.1) $[M]^{+\bullet}$, 293 (18), 261 (23), 219 (51), 177 (15), 162 (16), 161 (100), 146 (10), 135 (12), 134 (38), 132 (16), 131 (13), 130 (23), 120 (11), 118 (13), 116 (12), 115 (22), 105 (11), 104 (19), 103 (16), 92 (11), 91 (18), 89 (10), 77 (22), 59 (48); $[\alpha]_D^{RT}$ = +83.1 (c

= 1.0 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=80/20, flow rate=1.0 mL min^{-1}, converted to the corresponding methyl ester according to procedure D, λ=254 nm. major enantiomer t_R=13.5 min and minor enantiomer: t_R=23.3 min.

(*R*)-dimethyl 2-(3-oxo-1-p-tolylpropyl)malonate 6d

Was synthesized using general procedure B (72h). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.58 (t, 1H, J = 1.9 Hz), 7.13-7.07 (m, 4H), 4.20-3.94 (m, 1H), 3.73 (s, 3H), 3.72 (d, 1H, J = 8.9 Hz), 3.51 (s, 3H), 2.96-2.80 (m, 2H), 2.29 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 200.1, 168.4, 167.9, 137.2, 136.6, 129.5, 127.8, 57.4, 52.7, 52.4, 47.3, 39.2, 21.0; IR (NaCl): $\tilde{\nu}$ =3441, 3026, 2954, 1734, 1514, 1435, 1436, 1195, 1156, 820 cm^{-1}; MS-EI: *m/z*(%):278 (0.8) $[M]^{+\bullet}$, 187 (12), 158 (11), 147 (26), 132 (26), 131 (20), 129 (10), 119 (49), 118 (100) , 117 (25), 115 (20), 91 (27), 59 (12); $[\alpha]_D^{RT}$ = -10.2 (c = 1.0 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=90/10, flow rate=0.6 mL min^{-1}, converted to the corresponding methyl ester according to procedure D, λ=220 nm. major enantiomer t_R=12.2 min and minor enantiomer: t_R=15.1 min.

(*R*)-dimethyl 2-(1-(4-bromophenyl)-3-oxopropyl)malonate 6e

Was synthesized using general procedure B (69h). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.59 (t, 1H, J = 1.7 Hz), 7.41 (d, 2H, J = 8.5 Hz) 7.12 (d, 2H, J = 8.4 Hz), 4.03-3.95 (m, 1H), 3.73 (s, 3H), 3.71 (d, 1H, J = 9.6 Hz), 3.53 (s, 3H), 3.51 (s, 3H), 3.00-2.83 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 199.3, 168.1, 167.6, 138.9, 131.8, 129.8, 121.5, 56.9, 52.8, 52.5, 47.1, 38.8; IR (NaCl): $\tilde{\nu}$ =3006, 2954, 1731, 1489, 1436, 1257, 1200, 1157, 1011 cm^{-1}; MS-EI: *m/z*(%): 344 (0.2) $[M]^{+\bullet}$, 342 (0.3) $[M]^{+\bullet}$, 254 (4), 253 (6), 211 (8), 184 (9), 184 (9), 132 (100), 131 (13), 116 (13), 115 (15), 104 (27), 103 (19), 102 (16), 101 (9), 100 (12), 77 (11), 59 (16); $[\alpha]_D^{RT}$ = -2.7 (c = 0.7 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=90/10, flow rate=1.0 mL min^{-1}, converted to the corresponding methyl ester according to procedure D, λ=220 nm. major enantiomer t_R=15.6 min and minor enantiomer: t_R=20.9 min.

(*R*)-dimethyl 2-(1-(2,4-dimethylphenyl)-3-oxopropyl)malonate 6f

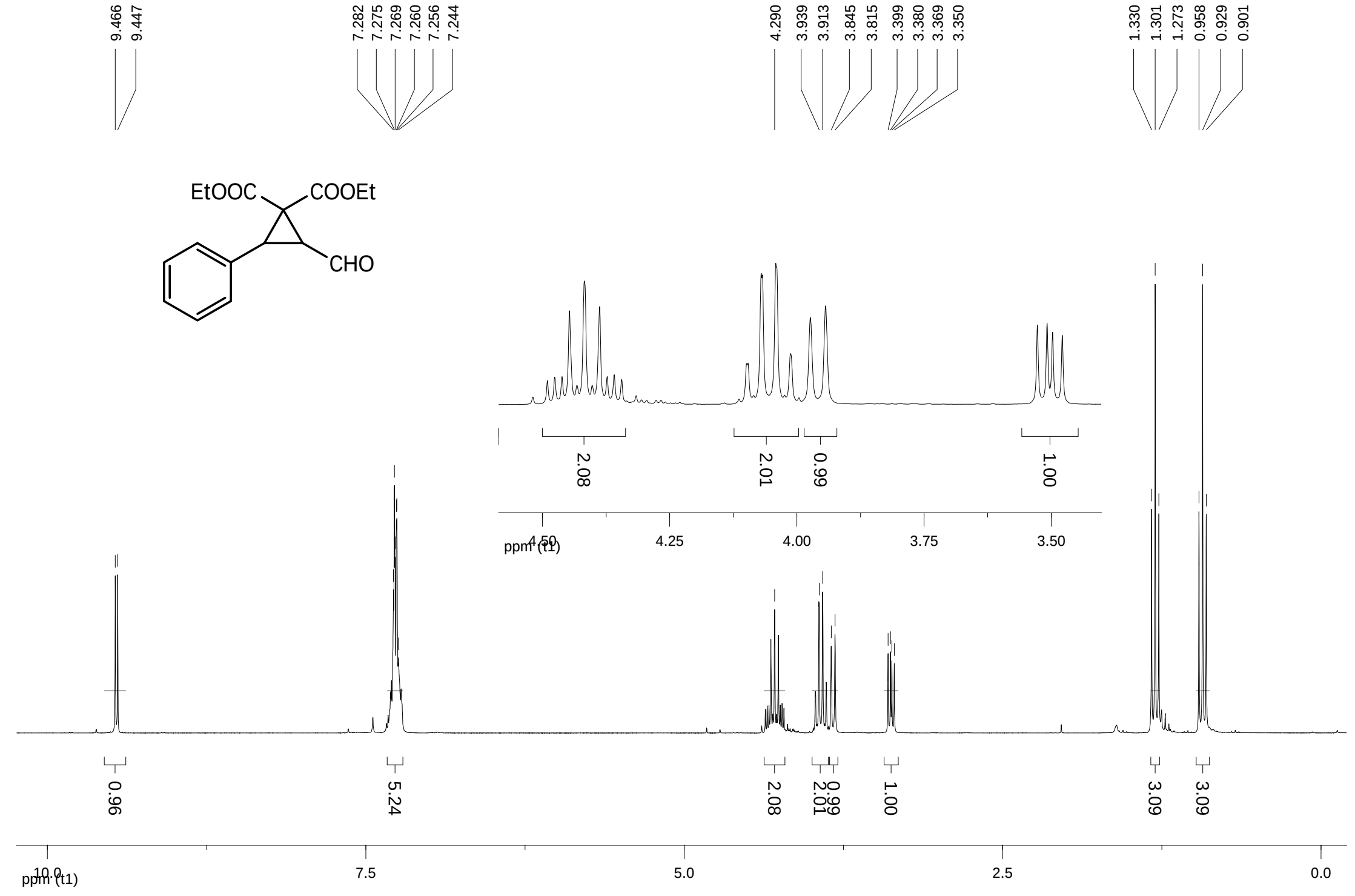
Was synthesized using general procedure B (69h). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.55 (t, 1H, J = 1.8 Hz), 7.01-6.93 (m, 3H), 4.29-4.21 (m, 1H), 3.75 (d, 1H, J = 2.8 Hz), 3.74 (s, 3H), 3.49 (s, 3H), 3.51 (s, 3H), 2.95-2.80 (m, 2H), 2.41 (s, 3H), 2.25 (s, 3H) ; ^{13}C NMR (100 MHz, $CDCl_3$): δ = 200.0, 168.6, 167.9, 136.6, 136.2, 135.1, 131.6, 127.1, 126.2, 56.9, 52.6, 52.3,

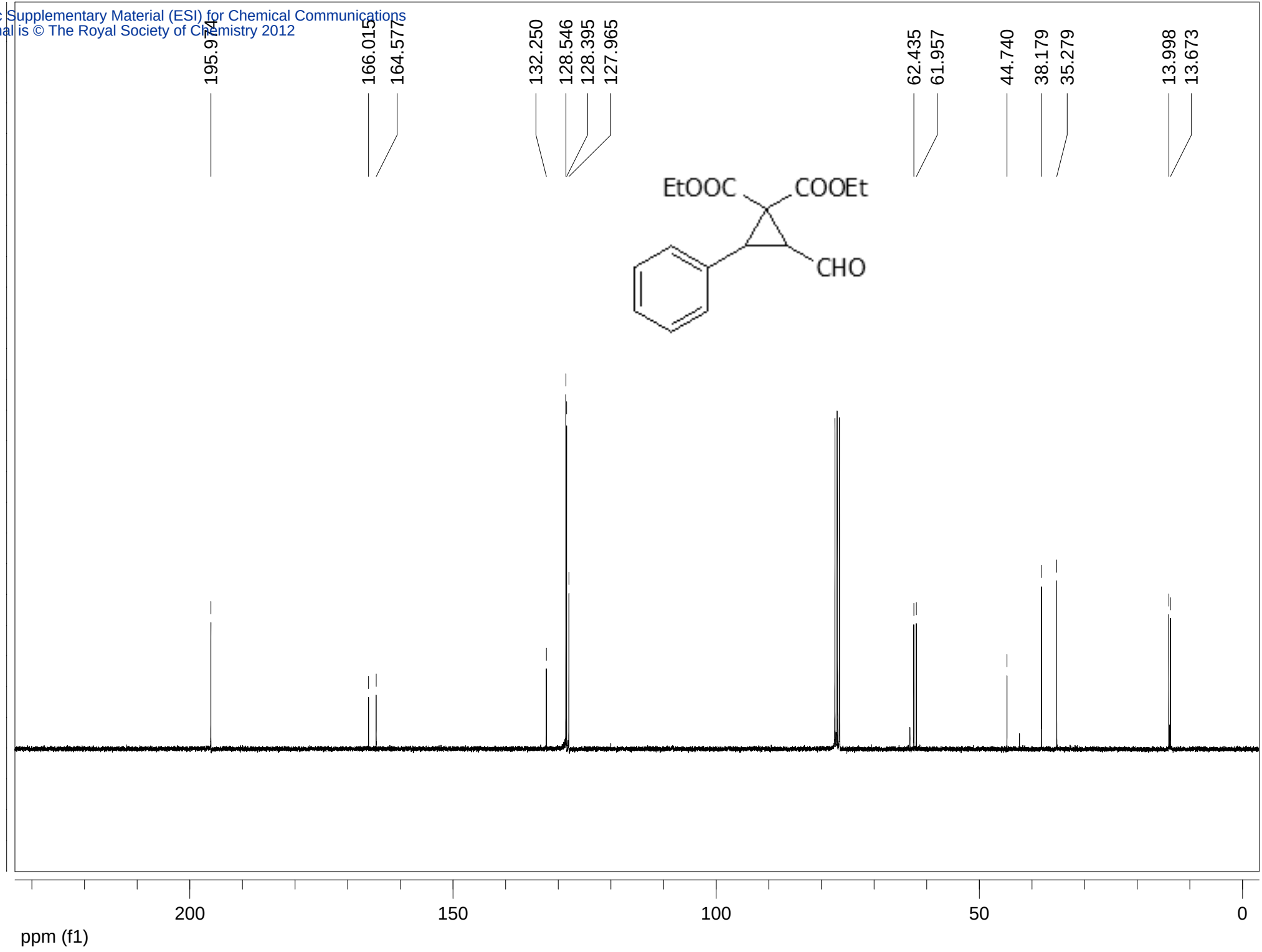
47.9, 34.1, 20.9, 19.6; IR (NaCl): $\tilde{\nu}$ =3475, 3012, 2954, 2925, 1731, 1434, 1281, 1258, 1157, 1026, 756 cm^{-1}; MS-EI: *m/z*(%):292 (1.3) $[M]^{+\bullet}$, 161 (13), 149 (11), 145 (22), 143 (15), 142 (51), 133 (70), 132 (100), 131 (18), 130 (13), 129 (16), 128 (10), 117 (22), 116 (10), 115 (20), 105 (16), 91 (23), 59 (13); $[\alpha]_D^{RT}$ = -6.6 (*c* = 1.0 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=90/10, flow rate=0.6 mL min^{-1}, converted to the corresponding methyl ester according to procedure D, λ=220 nm. major enantiomer t_R=13.3 min and minor enantiomer: t_R=14.4 min.

(2R,3S)-triethyl 3-phenylcyclopropane-1,1,2-tricarboxylate 8a

Was synthesized using general procedure C. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 7.27 (m, 5H), 4.35-4.13 (m, 4H) 3.93 (dq, 2H, *J* = 0.8, 7.2 Hz), 3.64 (d, 1H, *J* = 7.5 Hz), 3.23 (d, 1H, *J* = 7.5 Hz), 1.30 (t, 1H, *J* = 7.4 Hz), 1.30 (t, 1H, *J* = 7.4 Hz), 0.94 (t, 1H, *J* = 7.1 Hz); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.0, 165.9, 165.3, 133.1, 128.7, 128.2, 127.6, 62.0, 61.8, 61.5, 44.3, 35.7, 31.0, 14.2, 14.0, 13.7; IR (NaCl): $\tilde{\nu}$ = 3469, 3030, 2954, 1737, 1437, 1282, 1252, 1142, 755, 698 cm^{-1}; MS-EI: *m/z*(%): 334 (6) $[M]^{+\bullet}$, 233 (37), 202 (22), 173 (25), 171 (15), 107 (36), 145 (22), 131 (13), 129 (15), 116 (17), 115 (100), 114 (11), 103 (10), 91 (12), 99 (10), 77 (11), 59 (20);$[\alpha]_D^{RT}$ = -84.5 (*c* = 1.0 in $CHCl_3$); HPLC conditions: AD-H column, n-hexane/2-propanol=90/10, flow rate=1.0 mL min^{-1}, λ=220 nm. major enantiomer t_R=7.9 min and minor enantiomer: t_R=12.0 min (95% ee).

1. Marigo, M.; Wabnitz, T. C.; Fielenbach, D.; Jorgensen, K. A. *Angew. Chem., Int. Ed. Engl.* **2005**, 44, 794.
2. Mirzaei, Y. R.; Twamley, B.; Shreeve, J. n. M. *J. Org. Chem.* **2002**, 67, 9340.
3. Brandau, S.; Landa, A.; Franzen, J.; Marigo, M.; Jorgensen, K. A. *Angew. Chem., Int. Ed. Engl.* **2006**, 45, 4305.





Chromatogram : hs12304_b_ASH_8515_flow06_3

Method: HPLC2_ASH_8515_flow06_acq40_210nm
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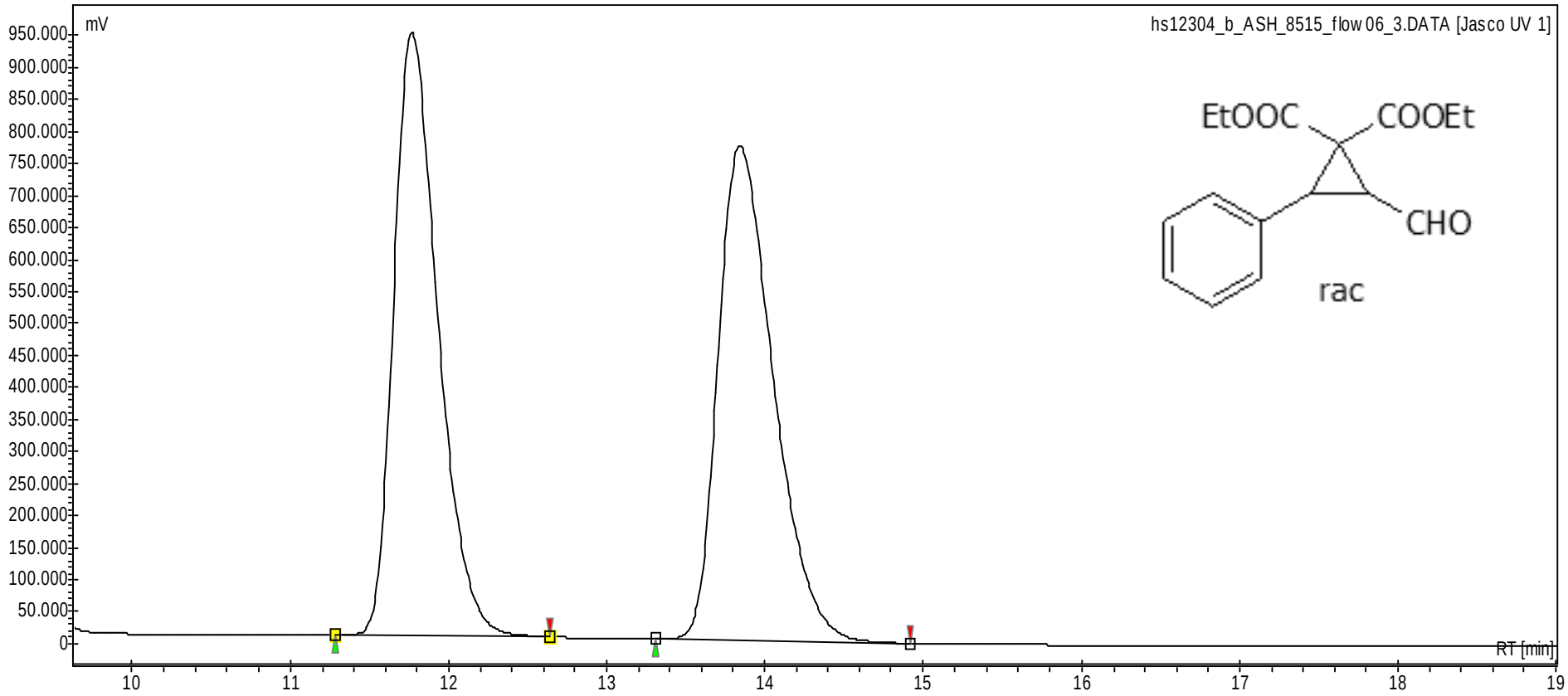
Date: 30.04.2008 14:59:07



hs12304_b_ASH_8515_flow06_3.DATA [Jasco UV 1]

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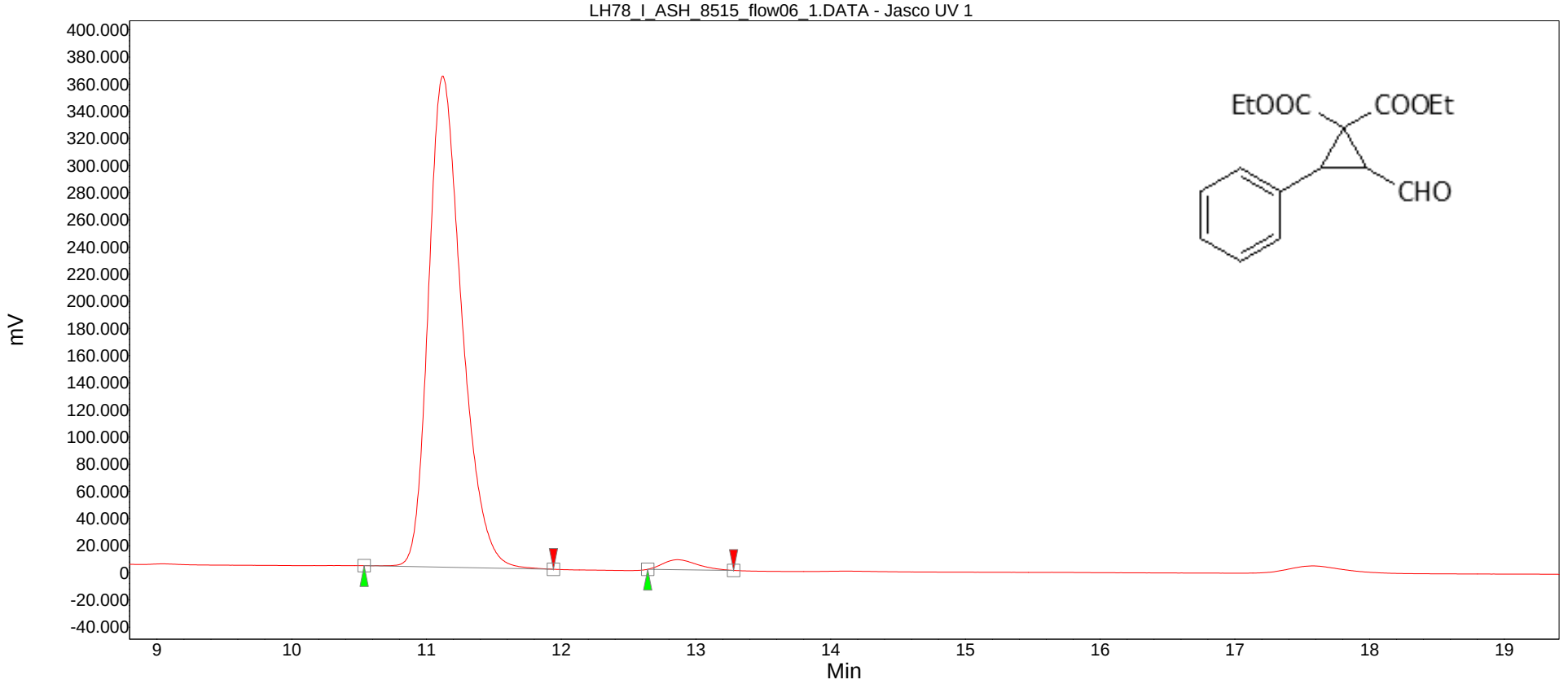
2	13,306	13,842	14,917	50,669
Total				100,000

Chromatogram : LH78_I_ASH_8515_flow06_1

Method: HPLC2_ASH_8515_flow06_acq40_210nm
Data file: LH78_I_ASH_8515_flow06_1.DATA
Date: 12.05.2008 16:42:17



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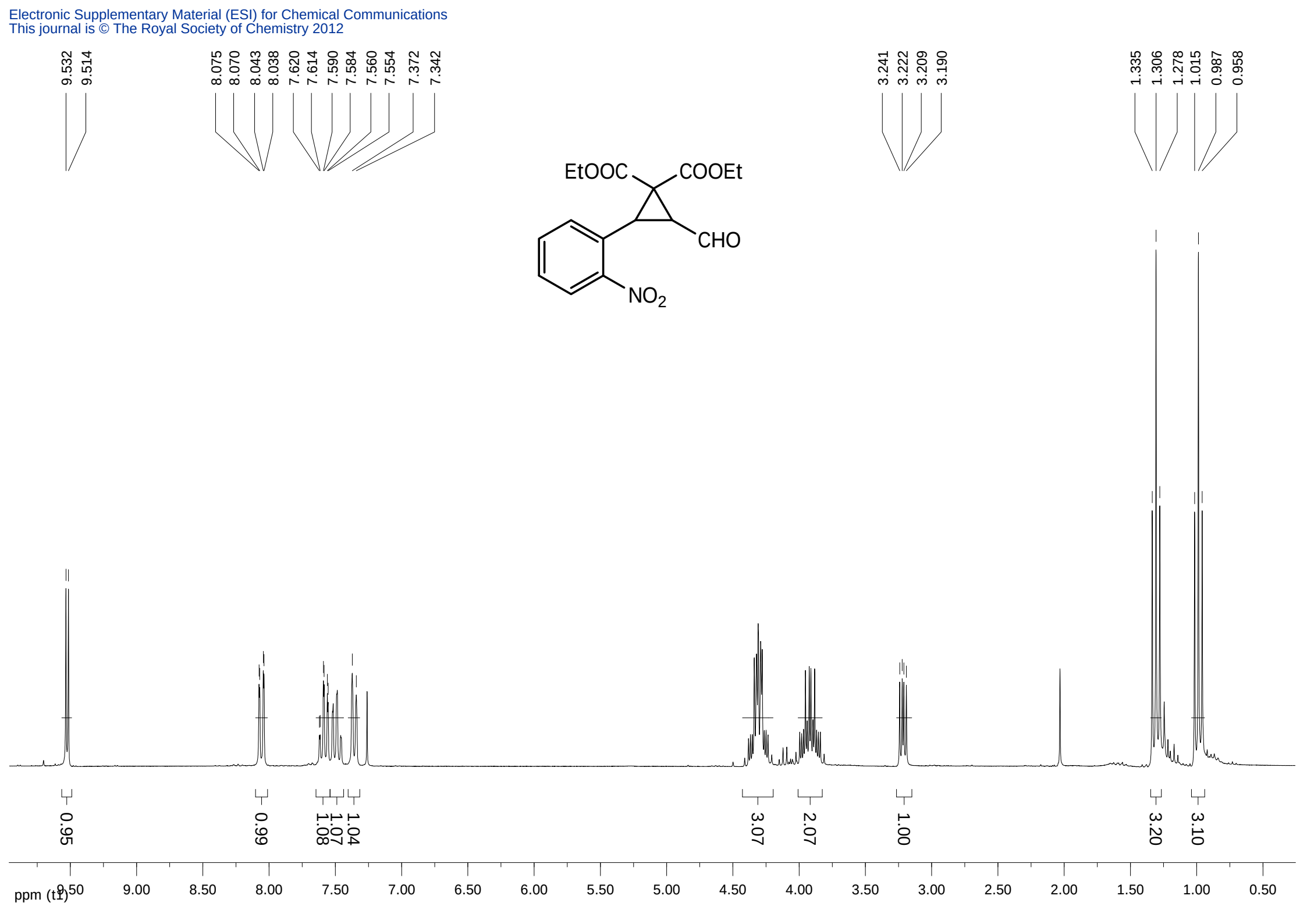
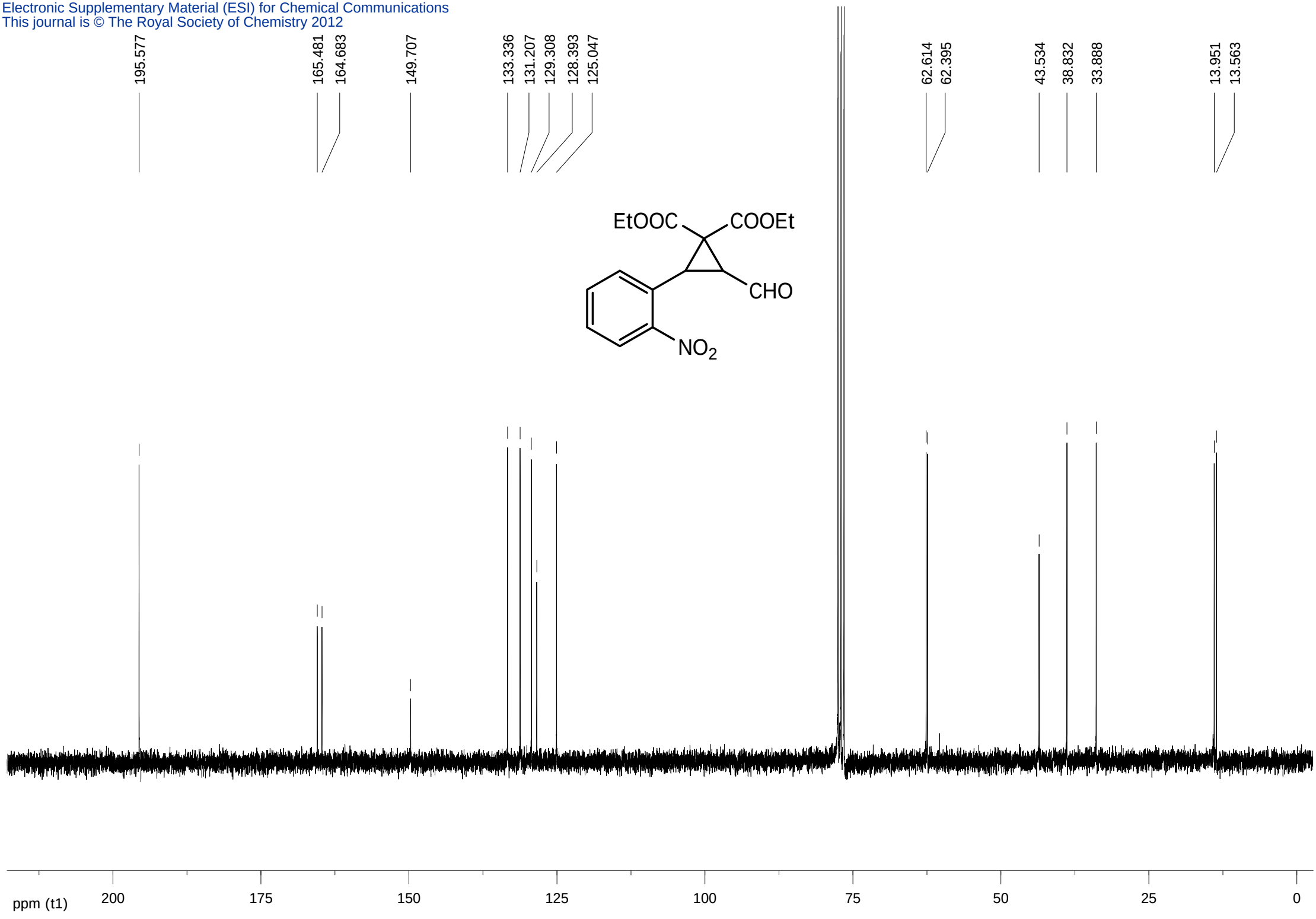
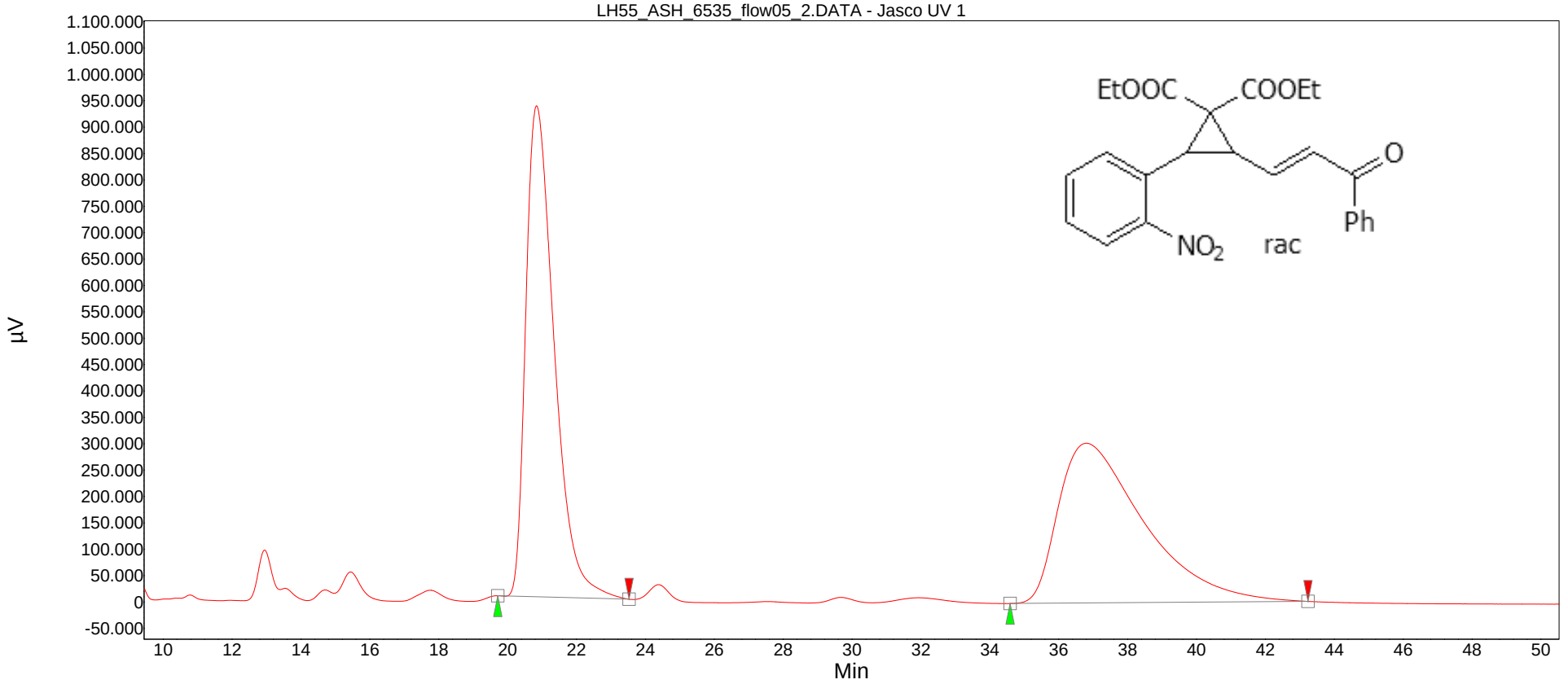
2	12,642	12,867	13,279	2,046
Total				100,000





Chromatogram : LH55_ASH_6535_flow05_2

Method: HPLC1_ASH_6535_flow05_acq_90
Data file: LH55_ASH_6535_flow05_2.DATA
Date: 25.03.2008 13:02:34



Index	Start	Time	End	Area %
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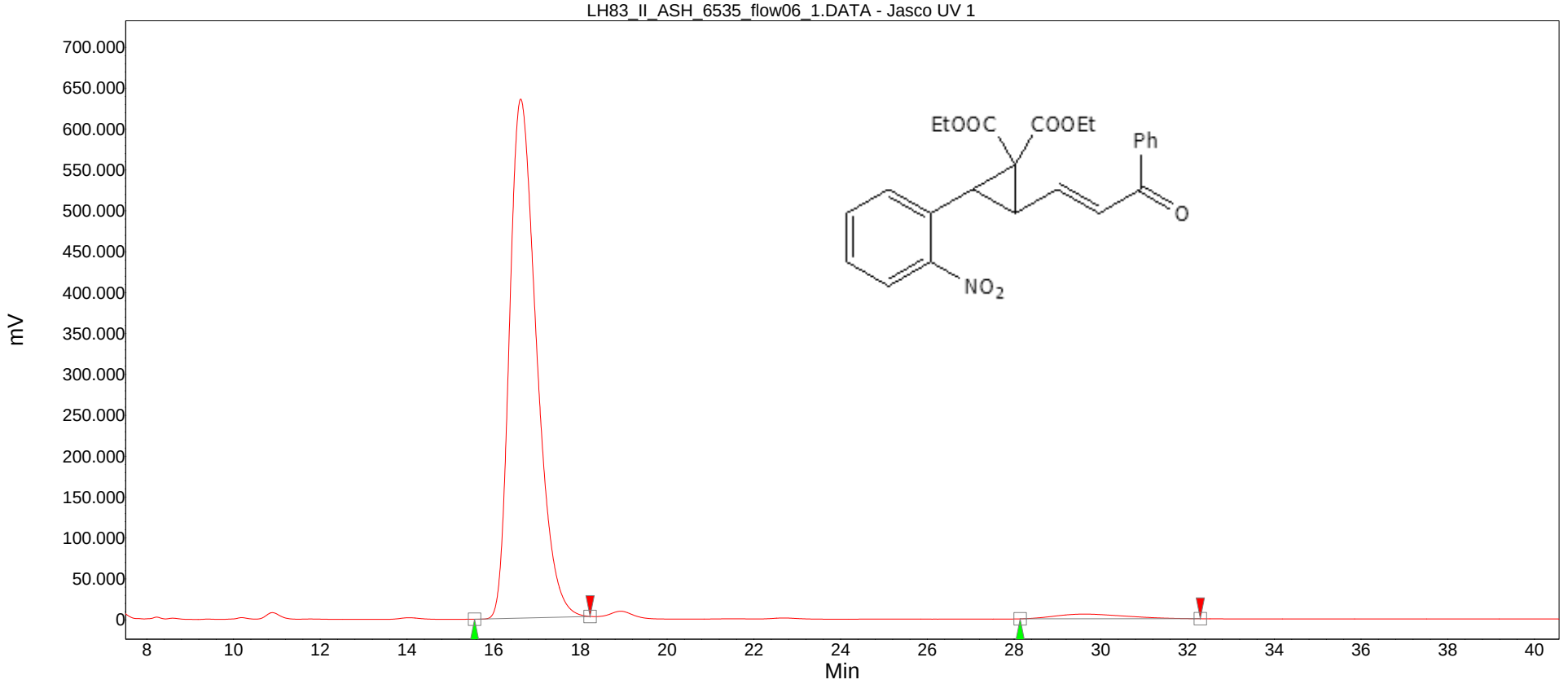
1	19,711	20,842	23,523	50,489
2	34,587	36,808	43,233	49,511
Total				100,000

Chromatogram : LH83_II_ASH_6535_flow06_1

Method: HPLC2_ASH_6535_flow06_acq60
Data file: LH83_II_ASH_6535_flow06_1.DATA
Date: 15.05.2008 20:55:03



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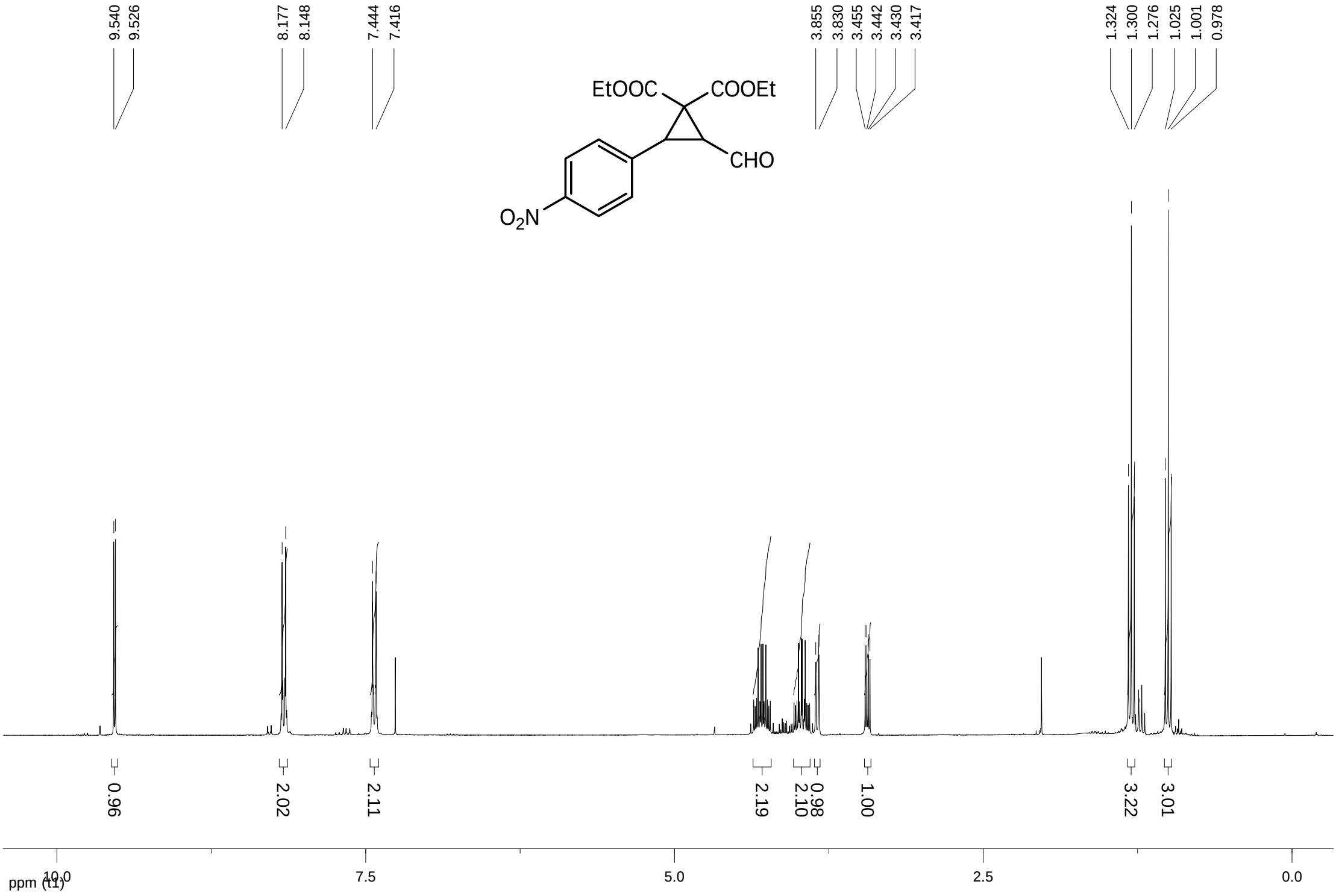
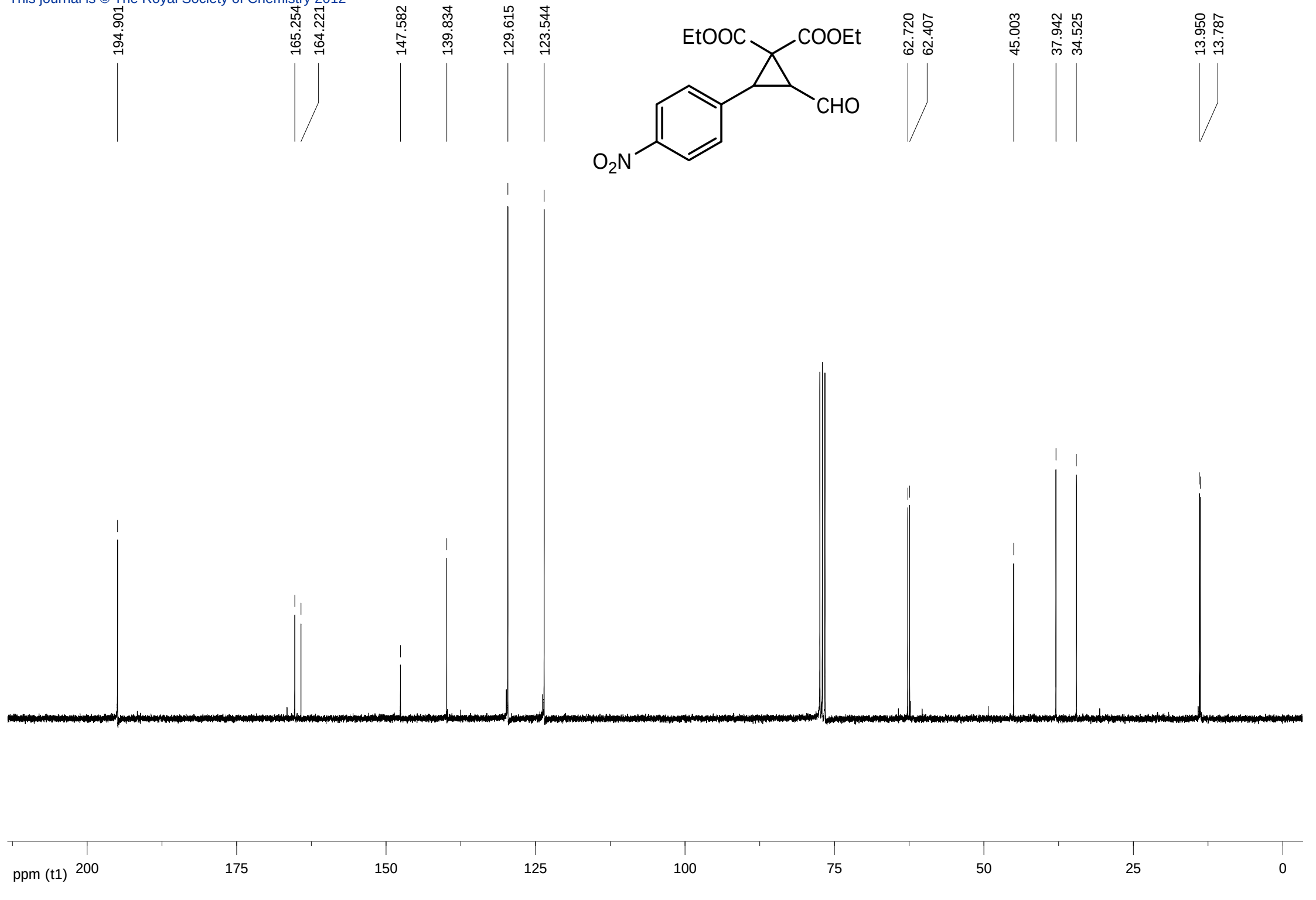
1	15,558	16,625	18,223	97,660
2	28,140	29,625	32,293	2,340
Total				100,000





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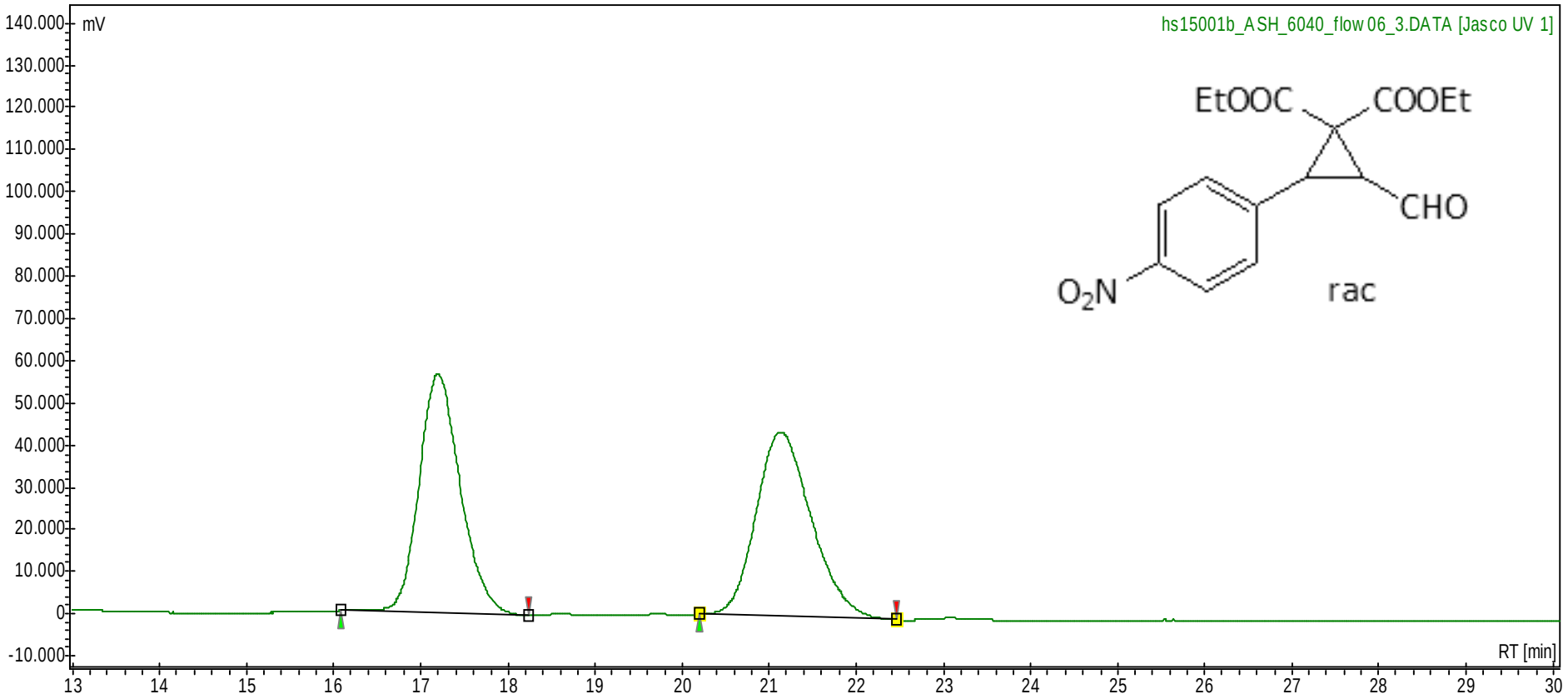
Date: 30.04.2008 16:57:00



hs15001b_ASH_6040_flow06_3.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
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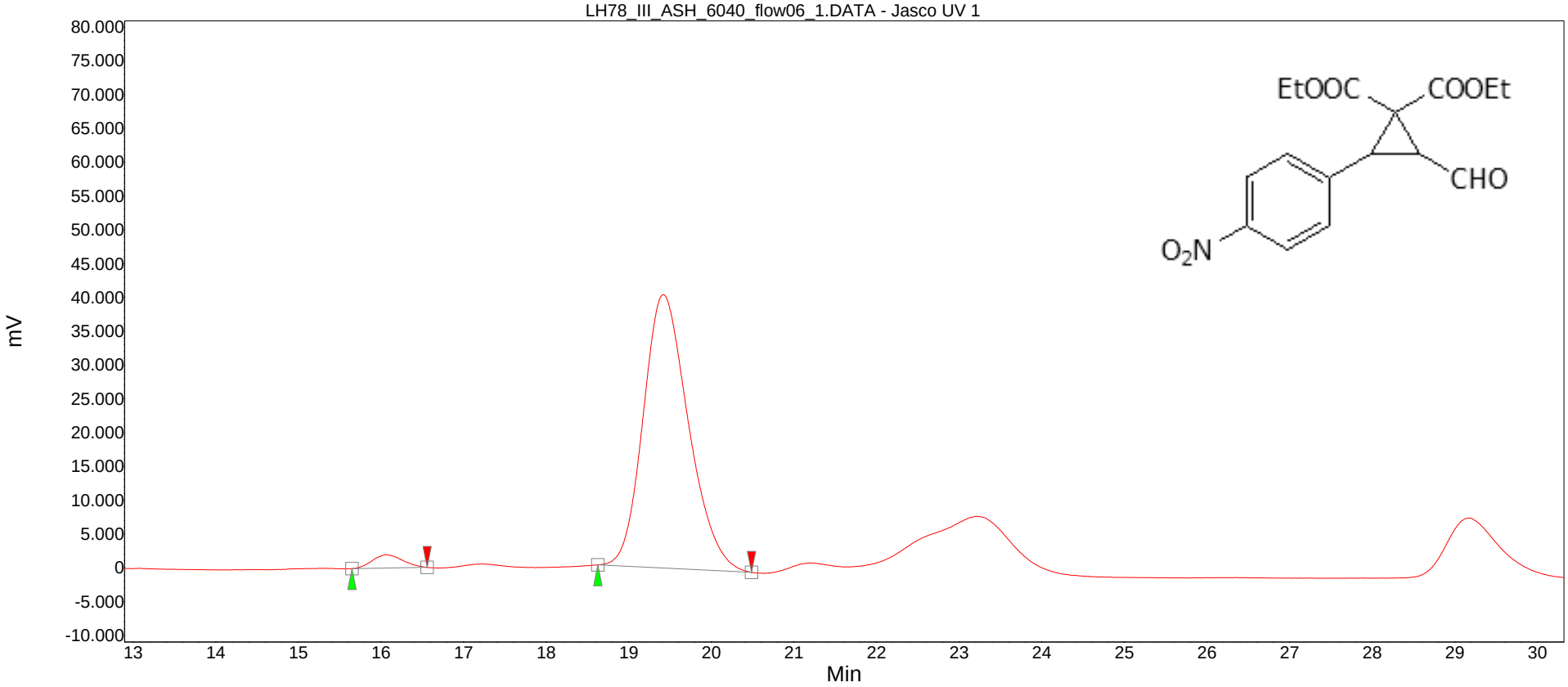
2	16,074	17,192	18,230	49,173
1	20,199	21,133	22,465	50,827
Total				100,000

Chromatogram : LH78_III_ASH_6040_flow06_1

Method: HPLC2_ASH_6040_flow06_acq45_210nm
Data file: LH78_III_ASH_6040_flow06_1.DATA
Date: 12.05.2008 19:32:42



Index	Start	Time	End	Area %
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1	15,649	16,067	16,558	3,132
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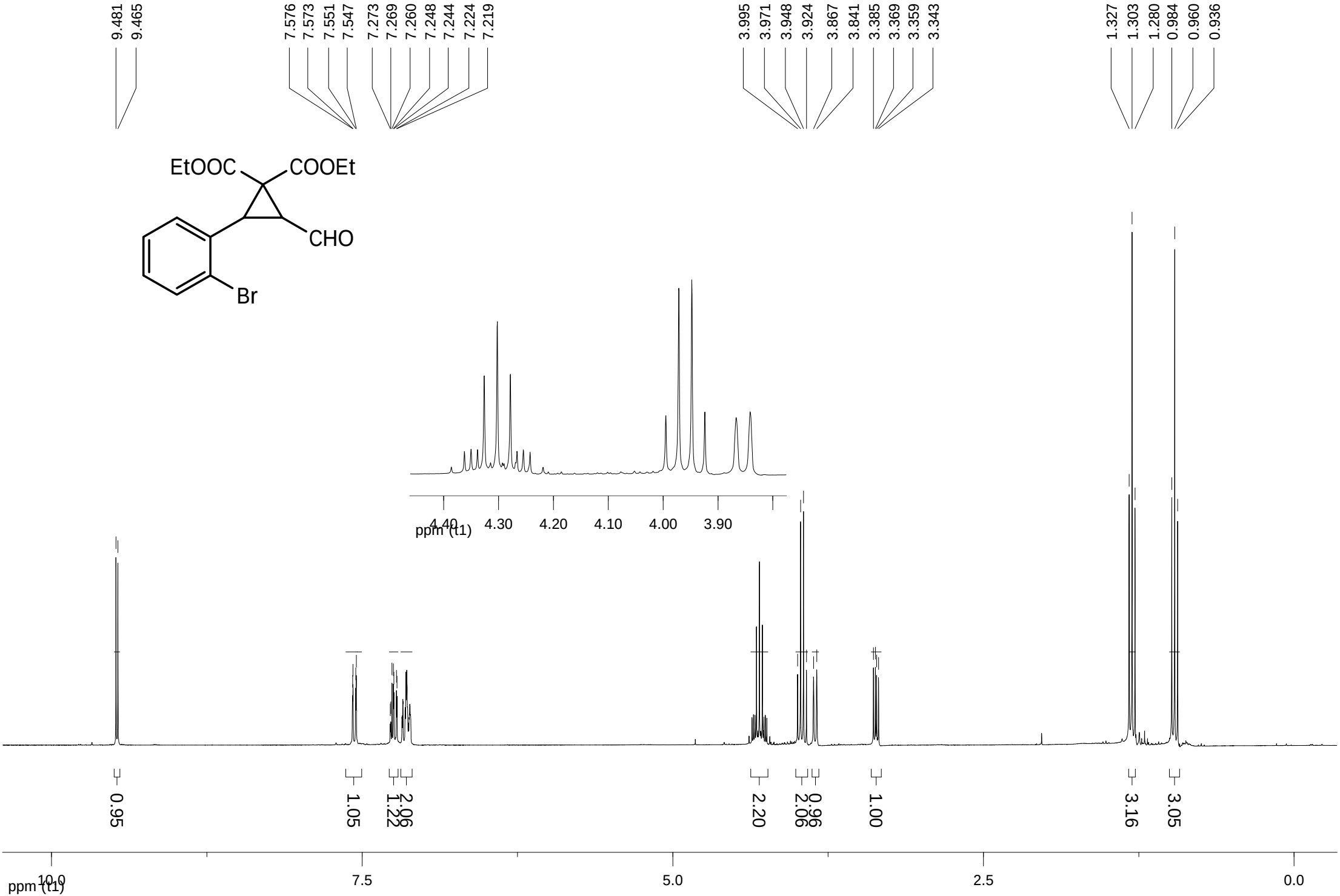
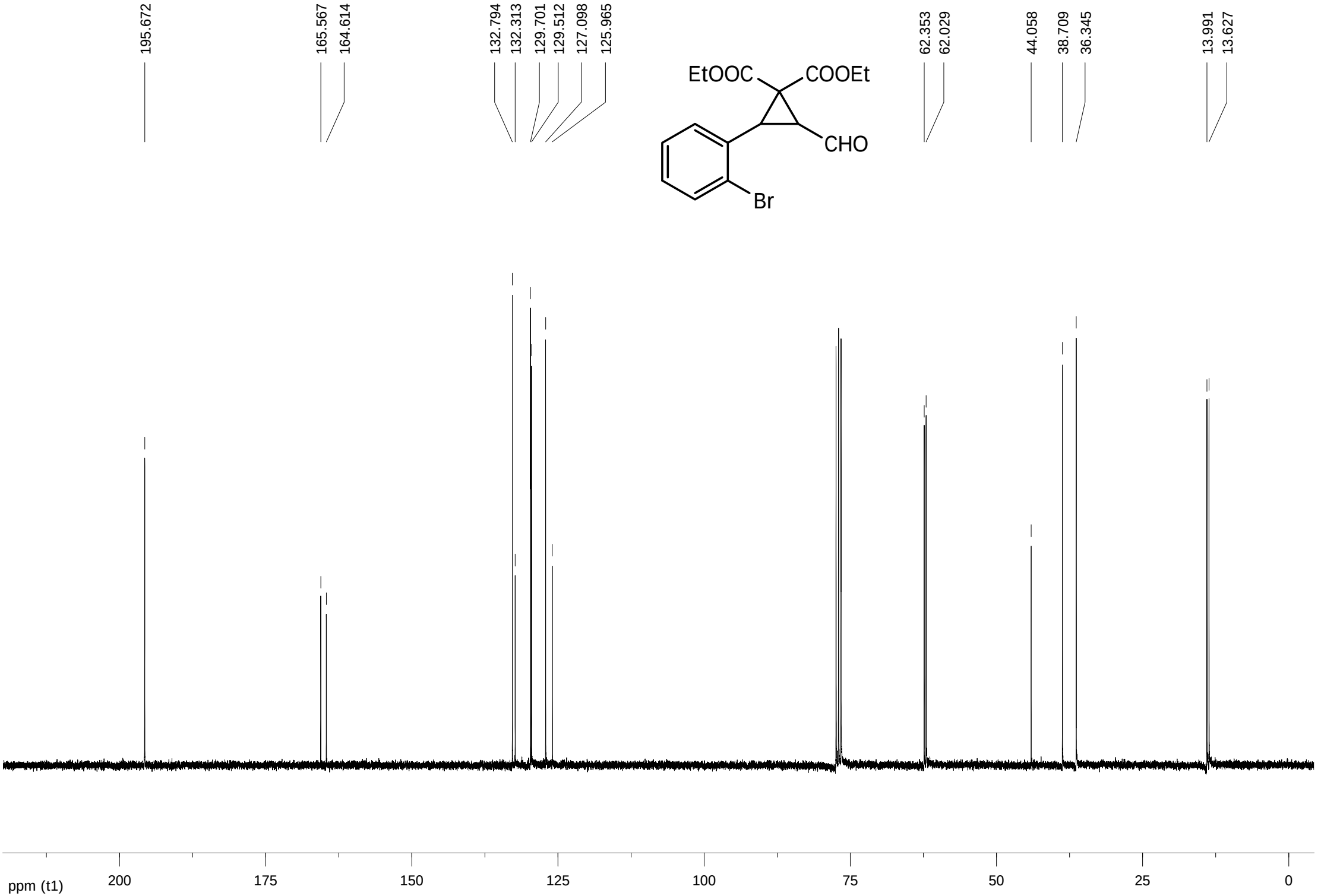
Total				100,000





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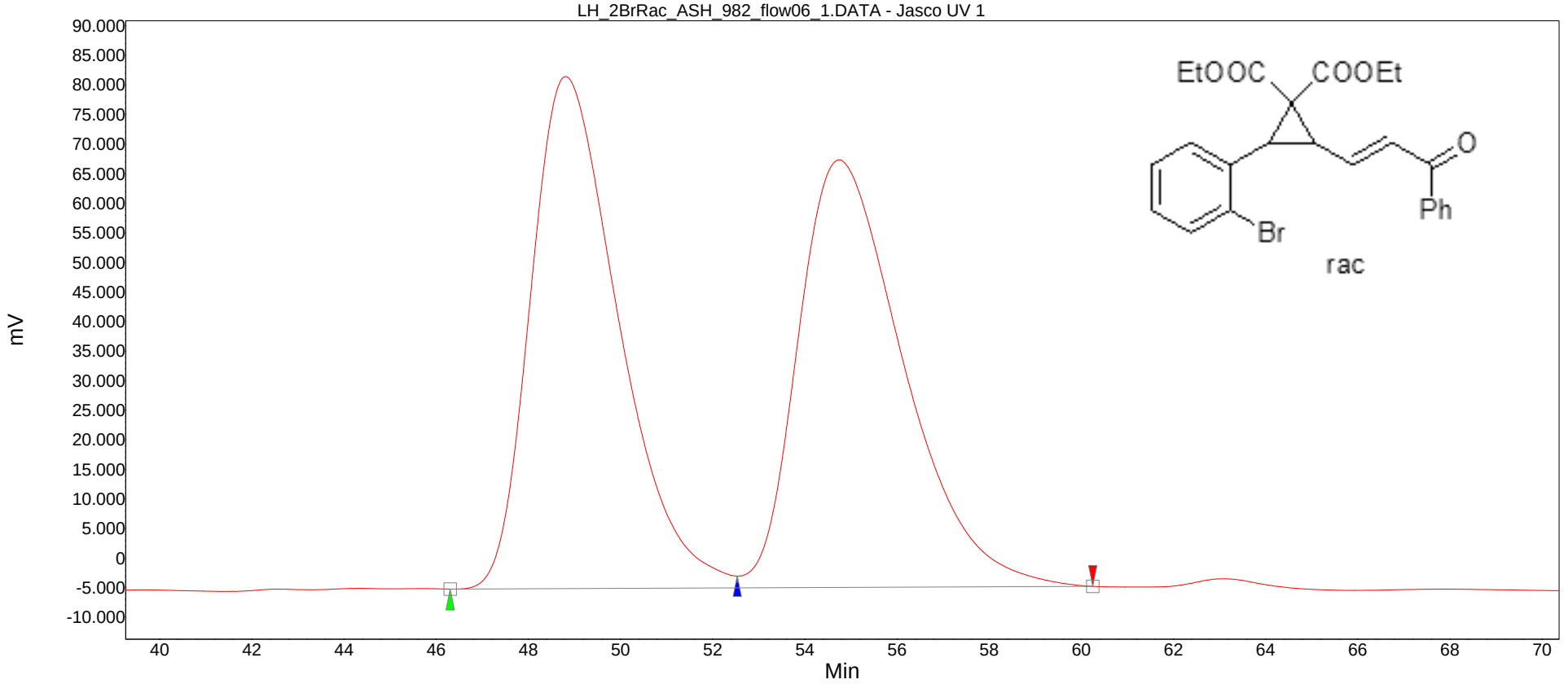
Method: HPLC2_ASH_982_flow06_acq90
Data file: LH_2BrRac_ASH_982_flow06_1.DATA
Date: 21.05.2008 23:31:19



Index	Start	Time	End	Area %
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Total				100,000

Chromatogram : LH_asym2Br_ASH_982_flow06_1

Method: HPLC2_ASH_982_flow06_acq90
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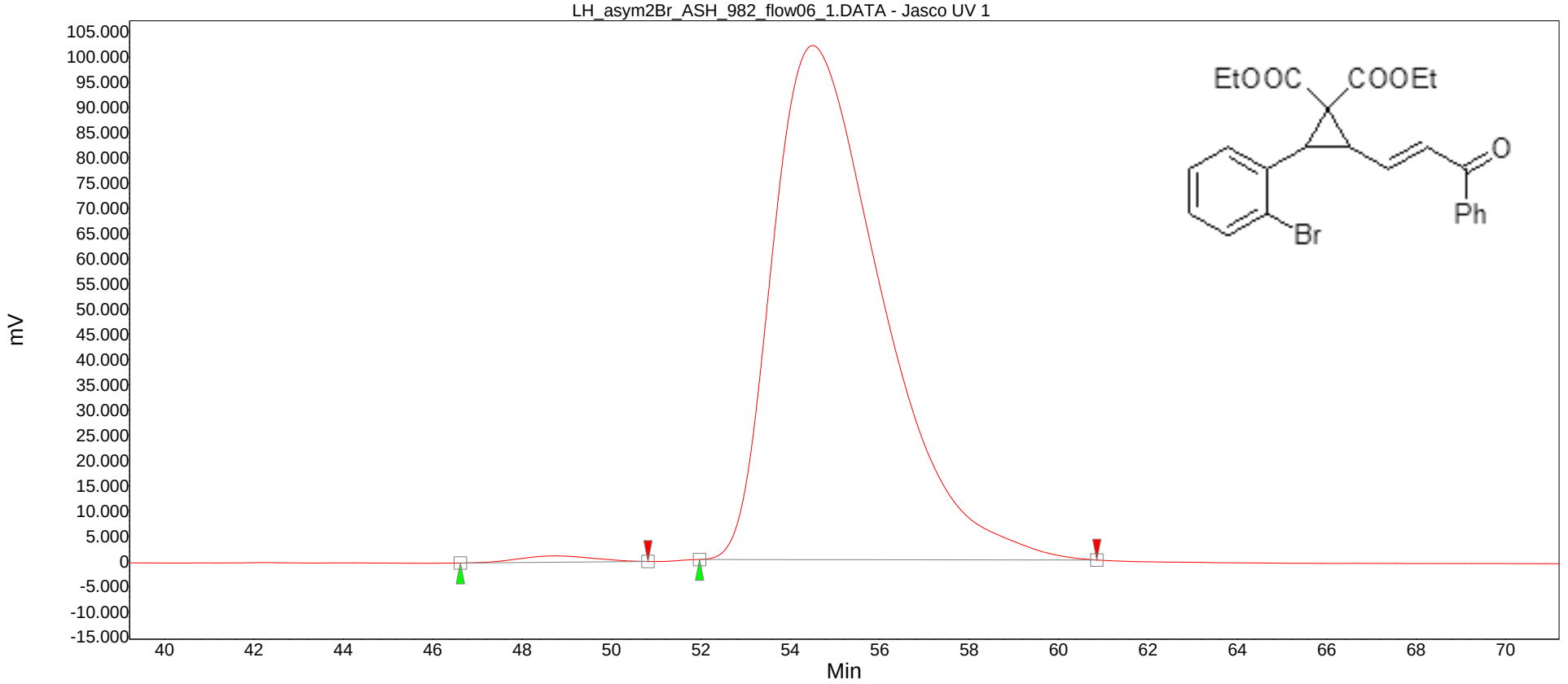

Index	Start	Time	End	Area %
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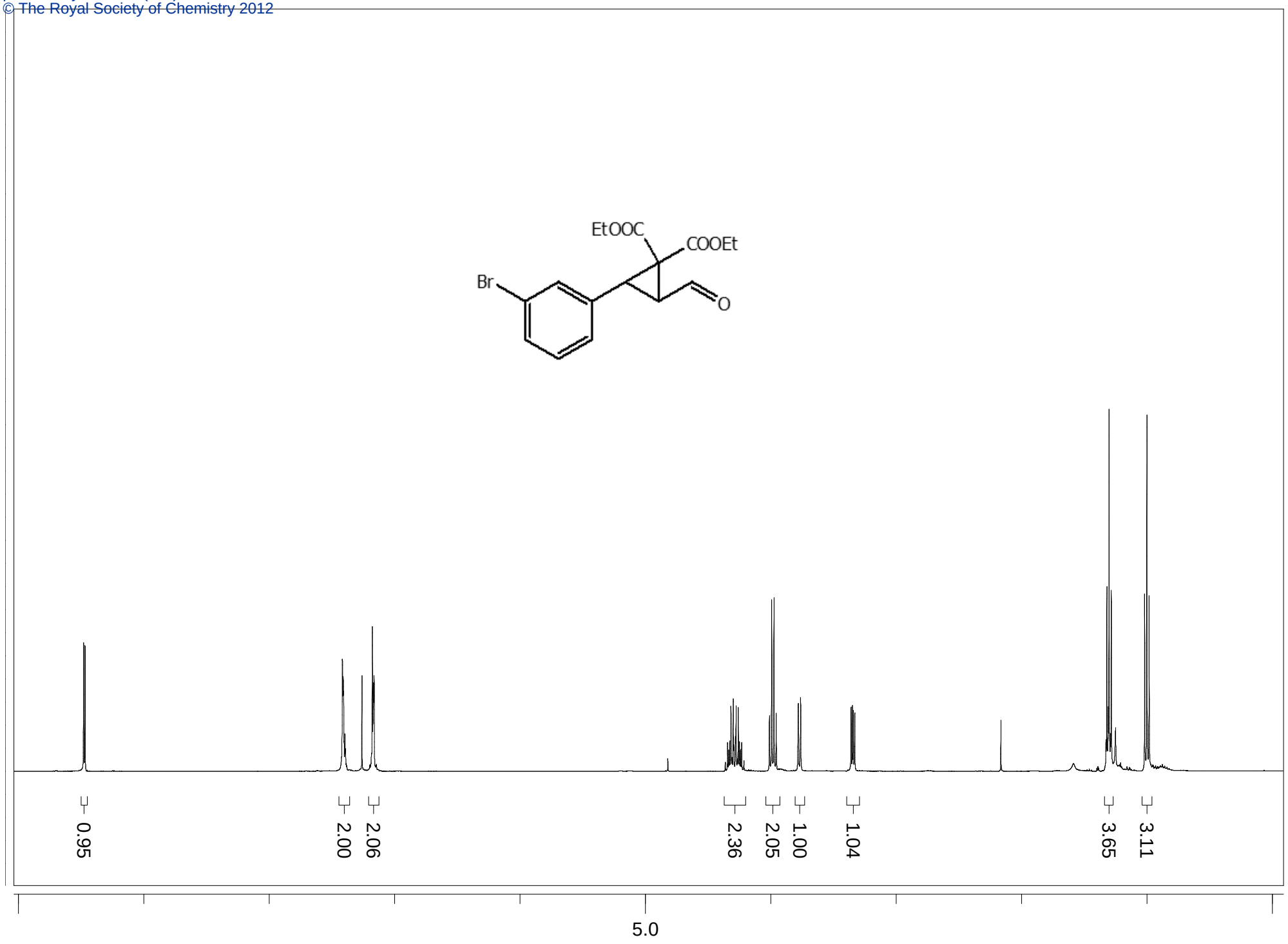
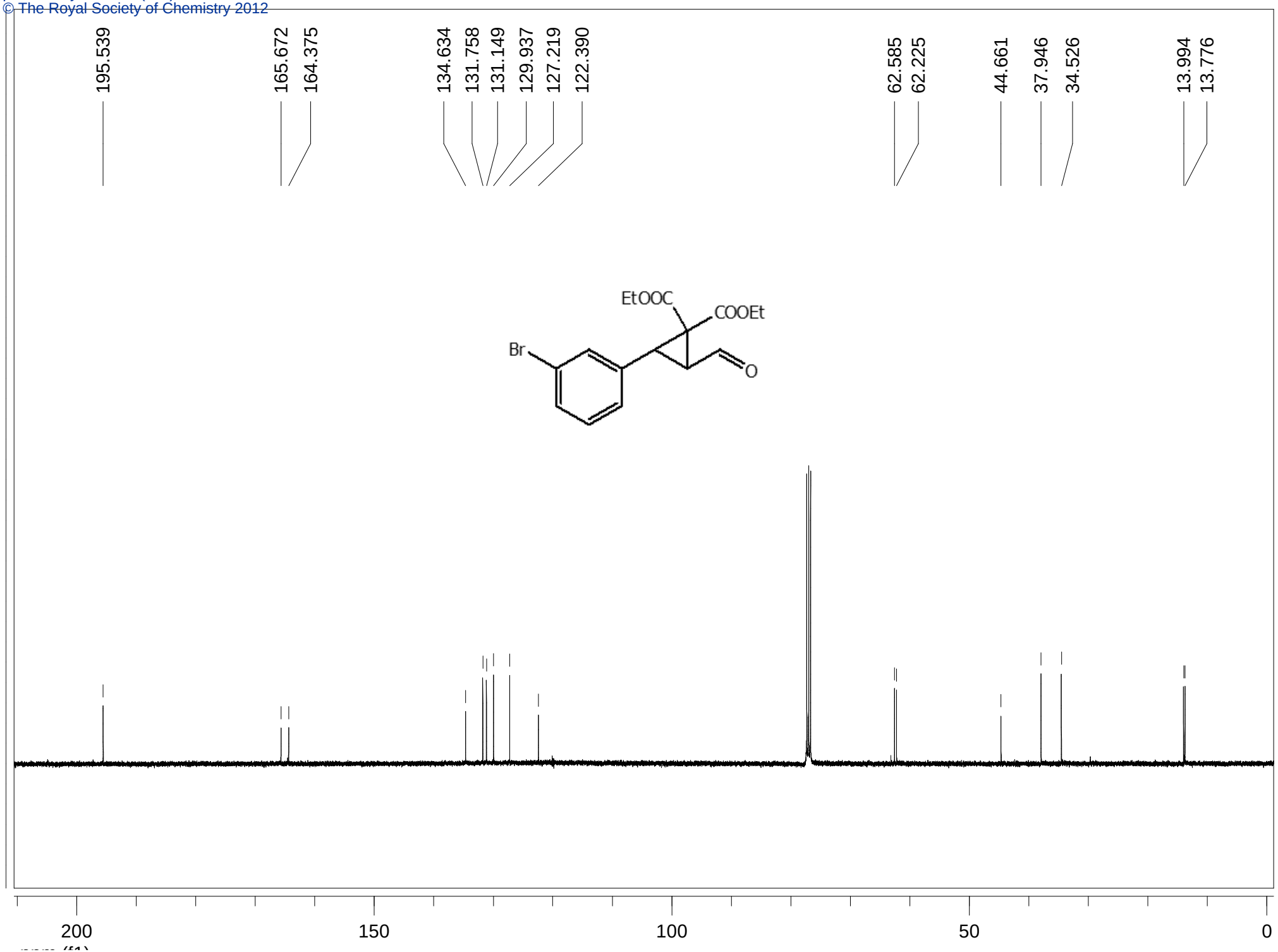
2	51,970	54,500	60,856	99,170
Total				100,000





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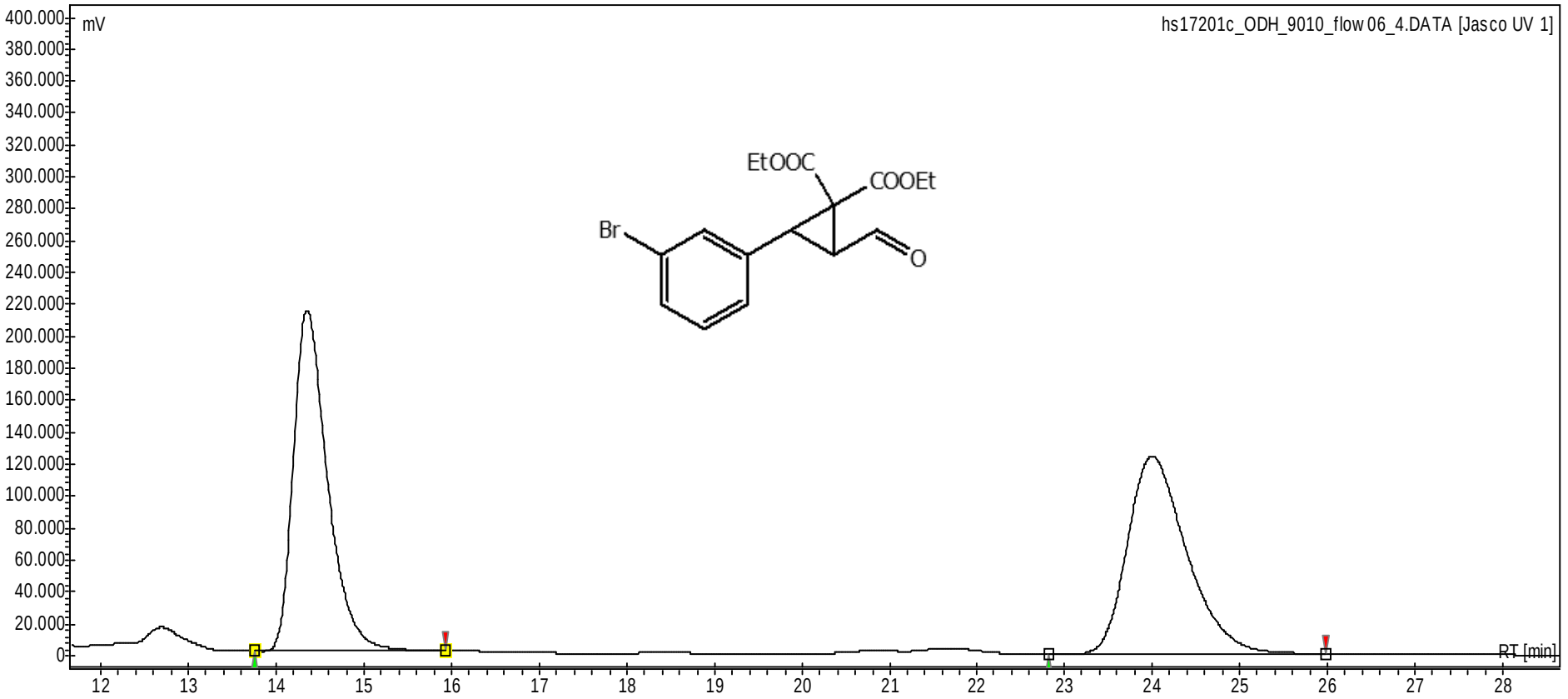
Date: 01.05.2008 22:38:11



hs17201c_ODH_9010_flow06_4.DATA [Jasco UV 1]

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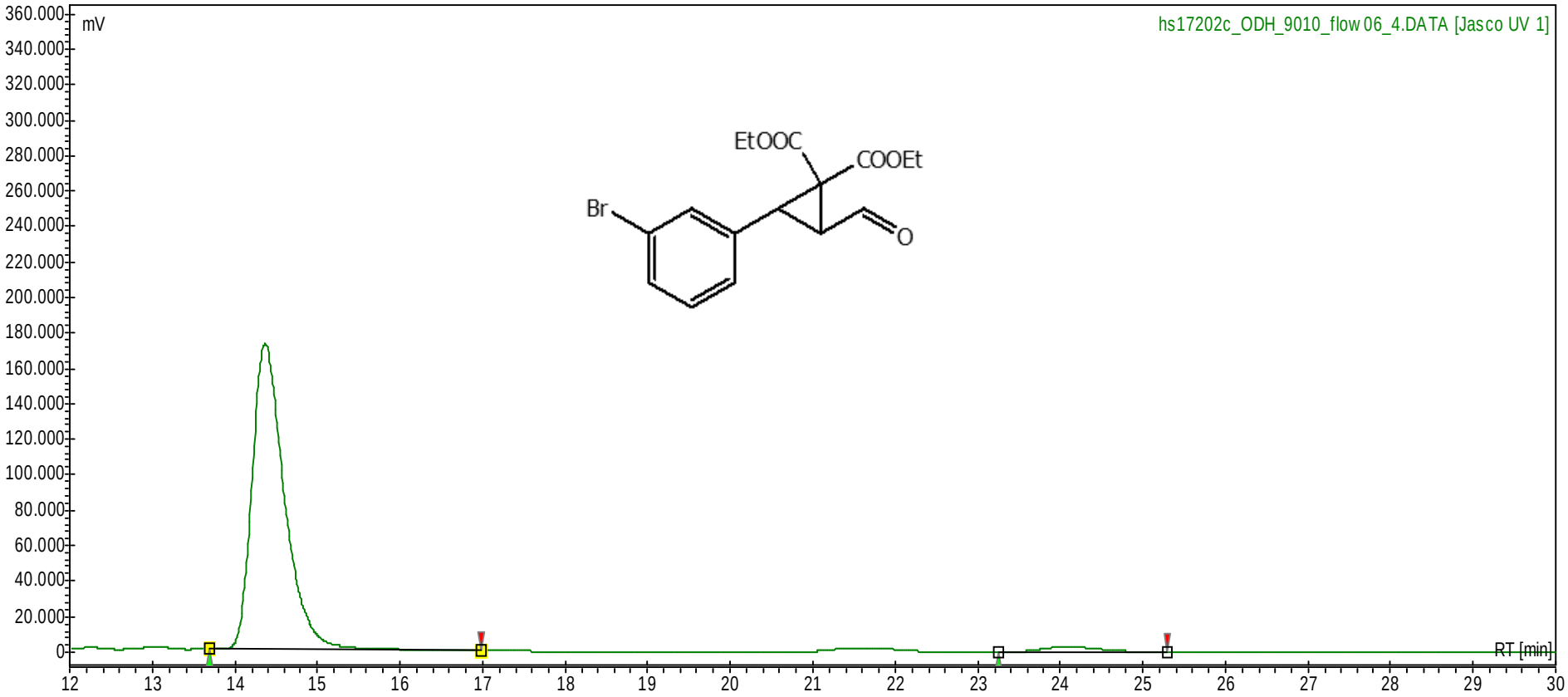
2	22,810	23,992	25,971	50,382
Total				100,000

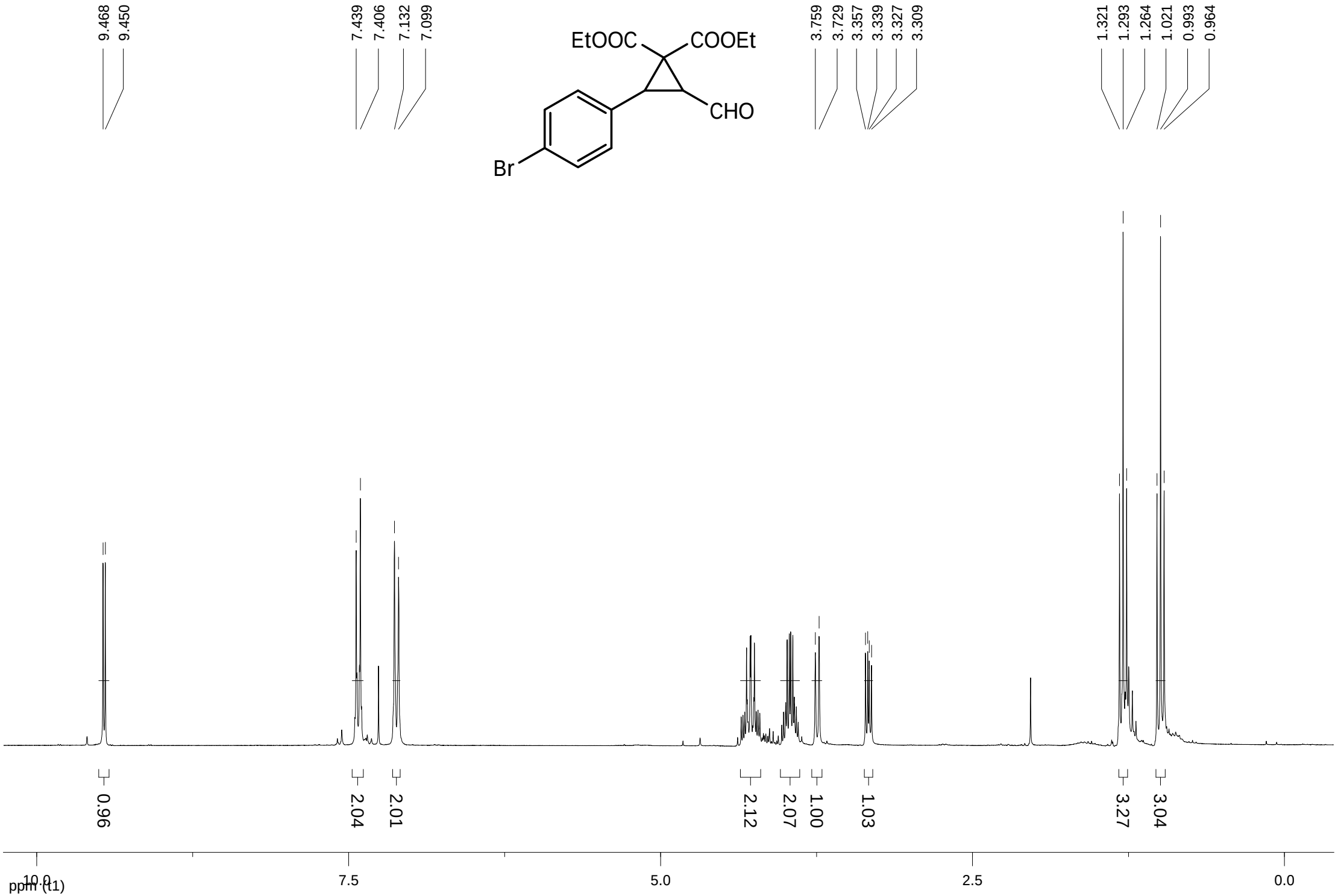
Chromatogram : hs17202c_ODH_9010_flow06_4

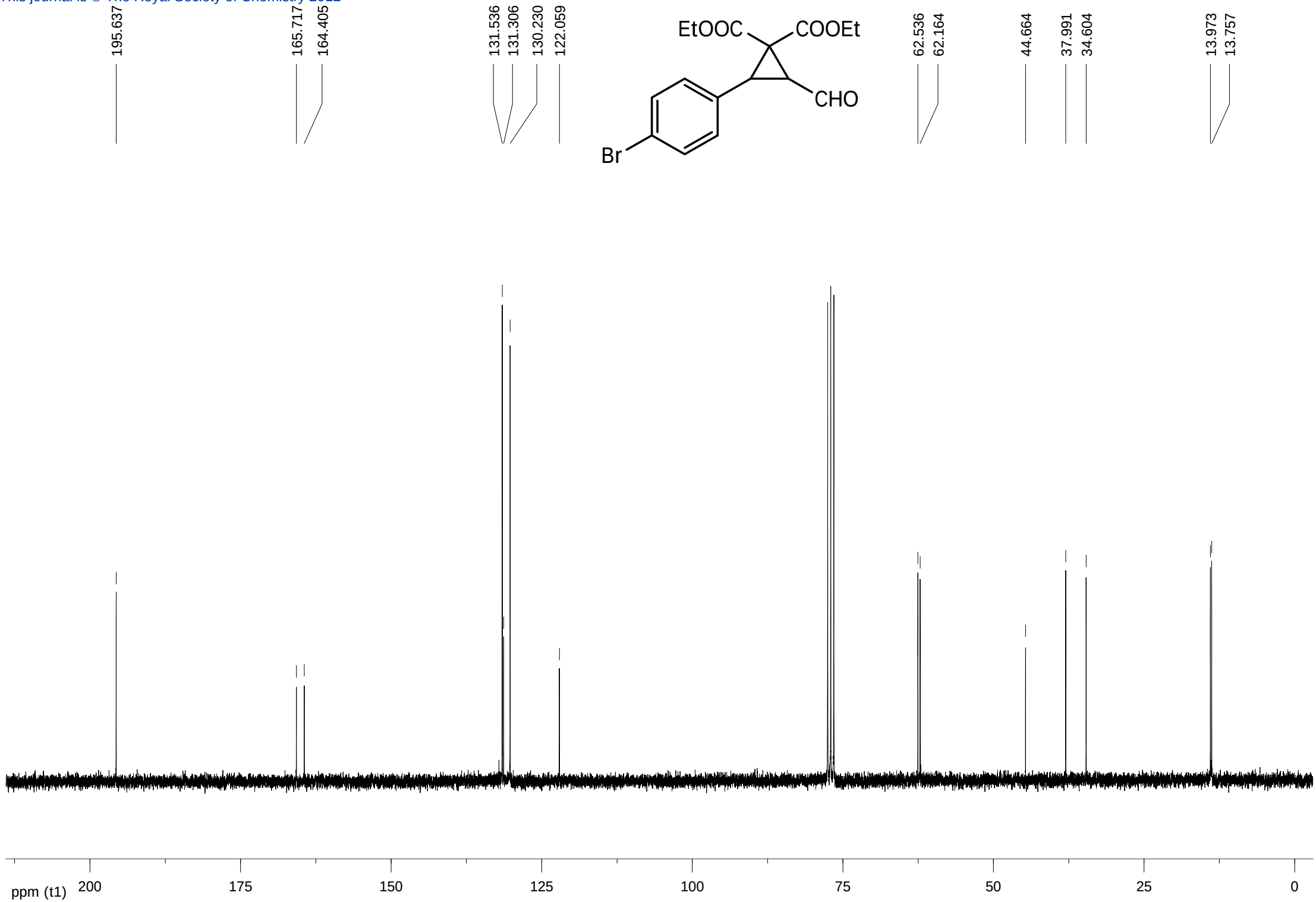
Method: HPLC2_ODH_9010_flow06_acq60_210nm
Data file: hs17202c_ODH_9010_flow06_4.DATA
Date: 01.05.2008 23:40:49



hs17202c_ODH_9010_flow06_4.DATA [Jasco UV 1]

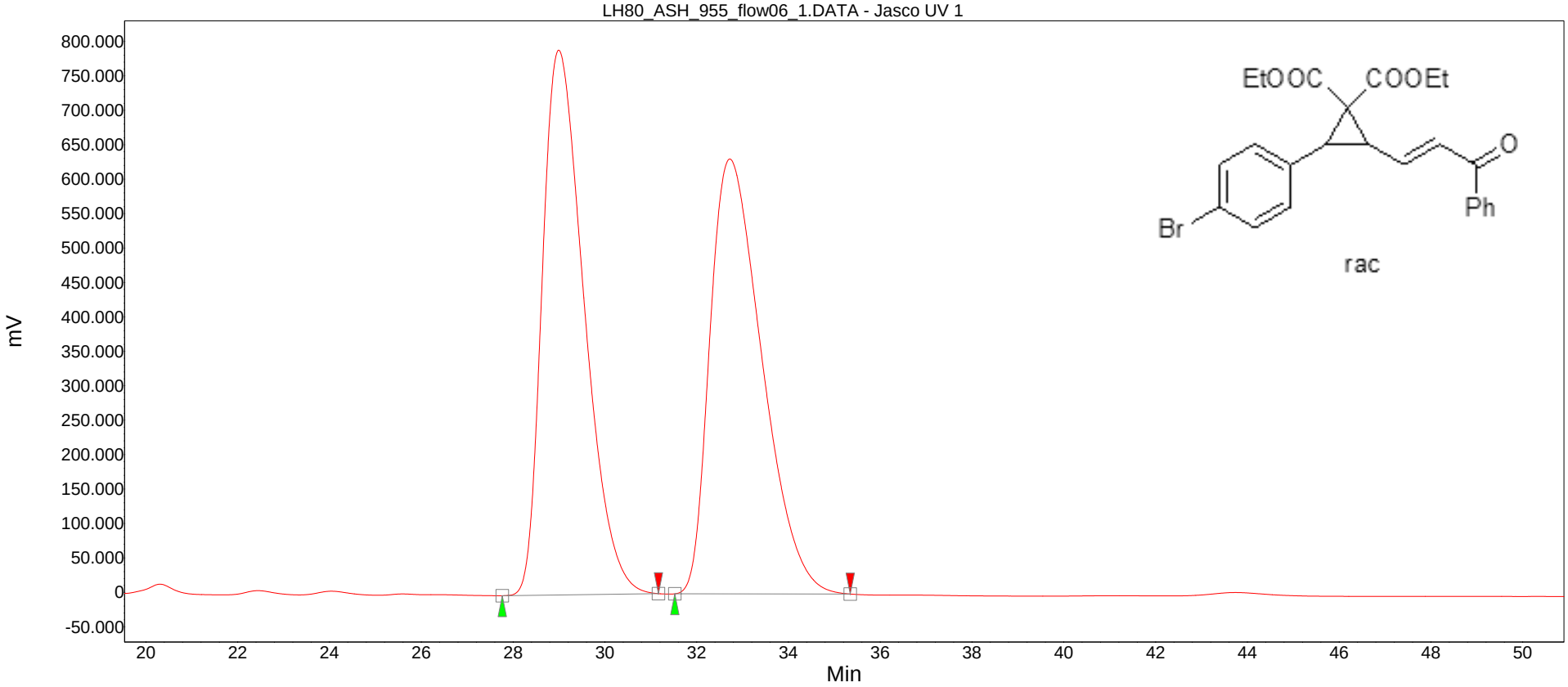
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	13,698	14,367	16,983	96,861
2	23,244	24,075	25,289	3,139
Total				100,000





Chromatogram : LH80_ASH_955_flow06_1

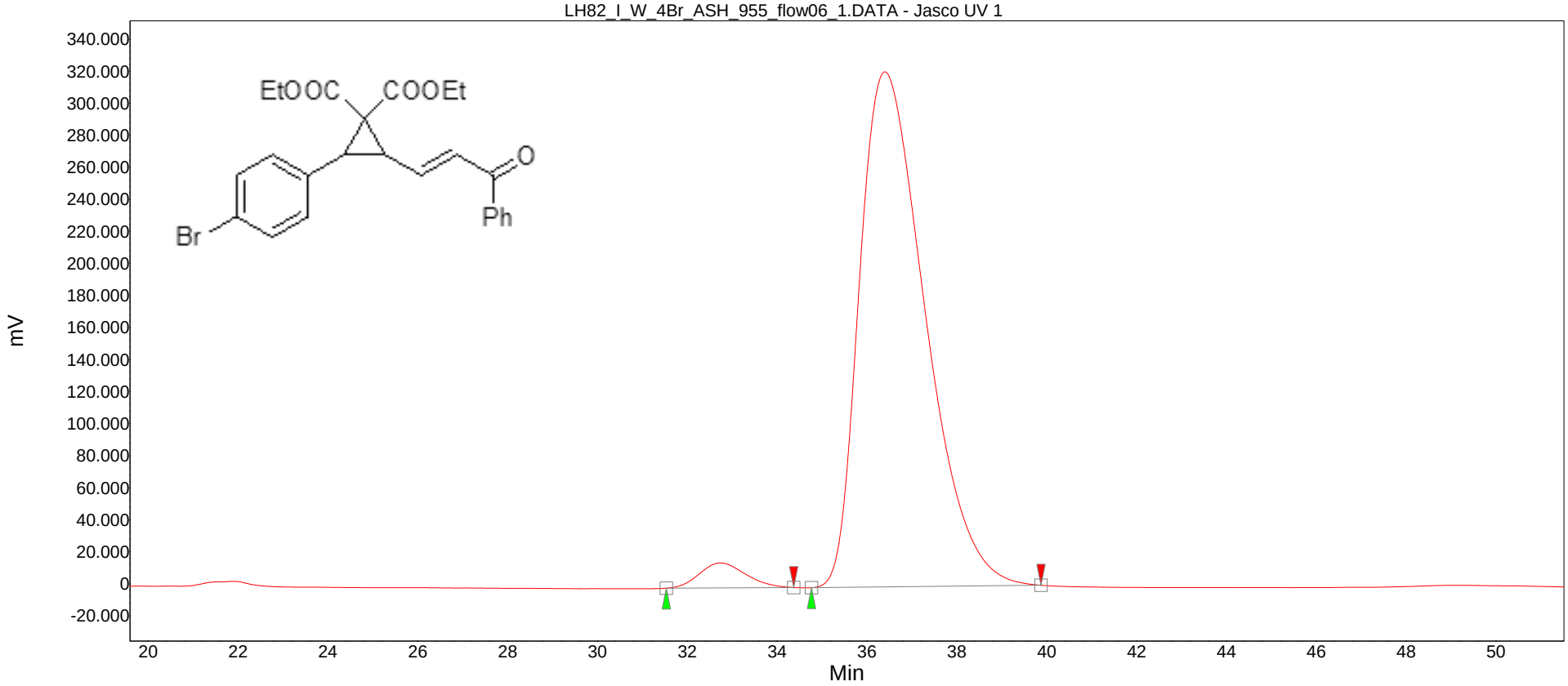
Method: HPLC2_ASH_955_flow06_acq60
Data file: LH80_ASH_955_flow06_1.DATA
Date: 13.05.2008 19:10:44



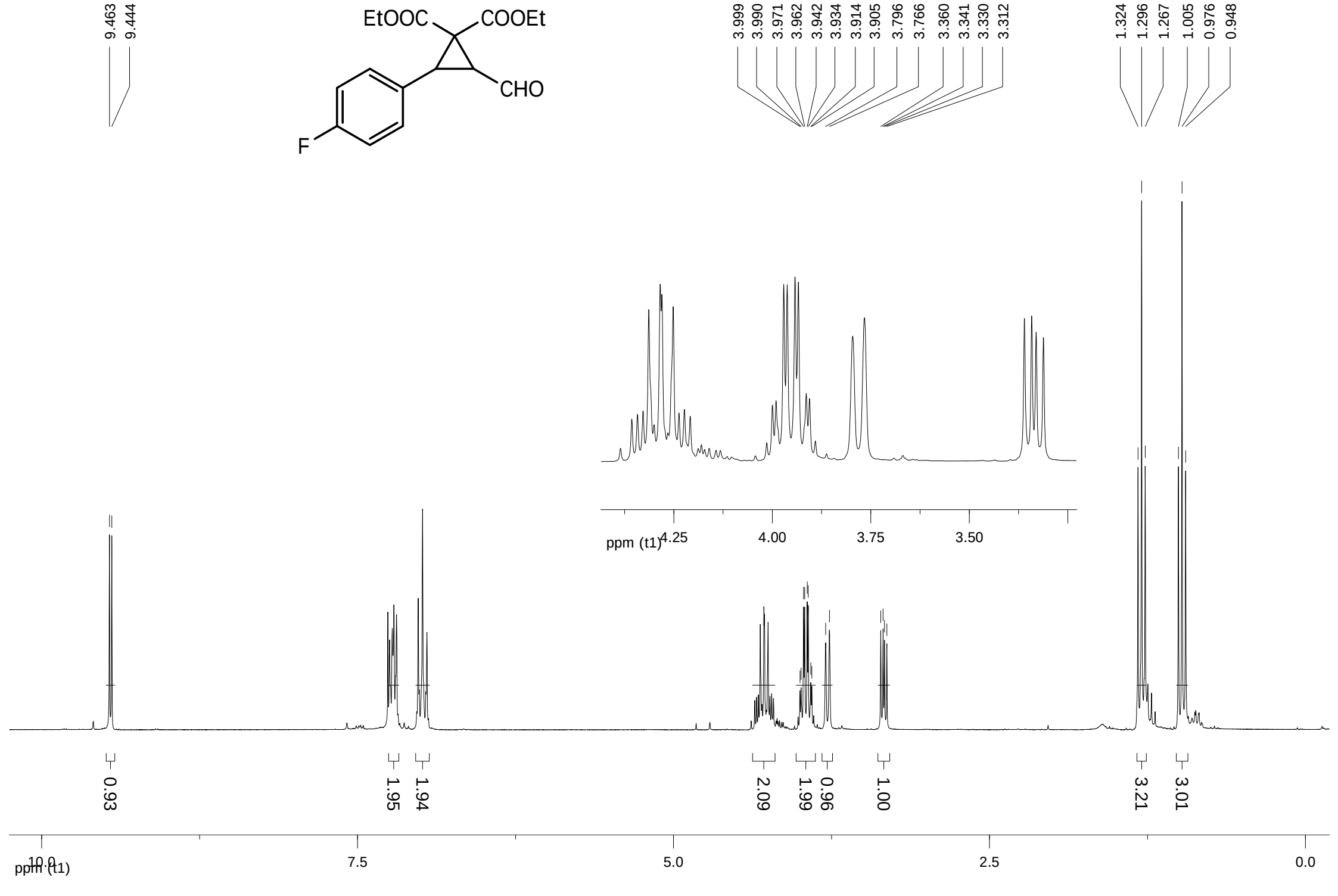
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	27,764	28,992	31,166	50,210
2	31,523	32,725	35,346	49,790
Total				100,000

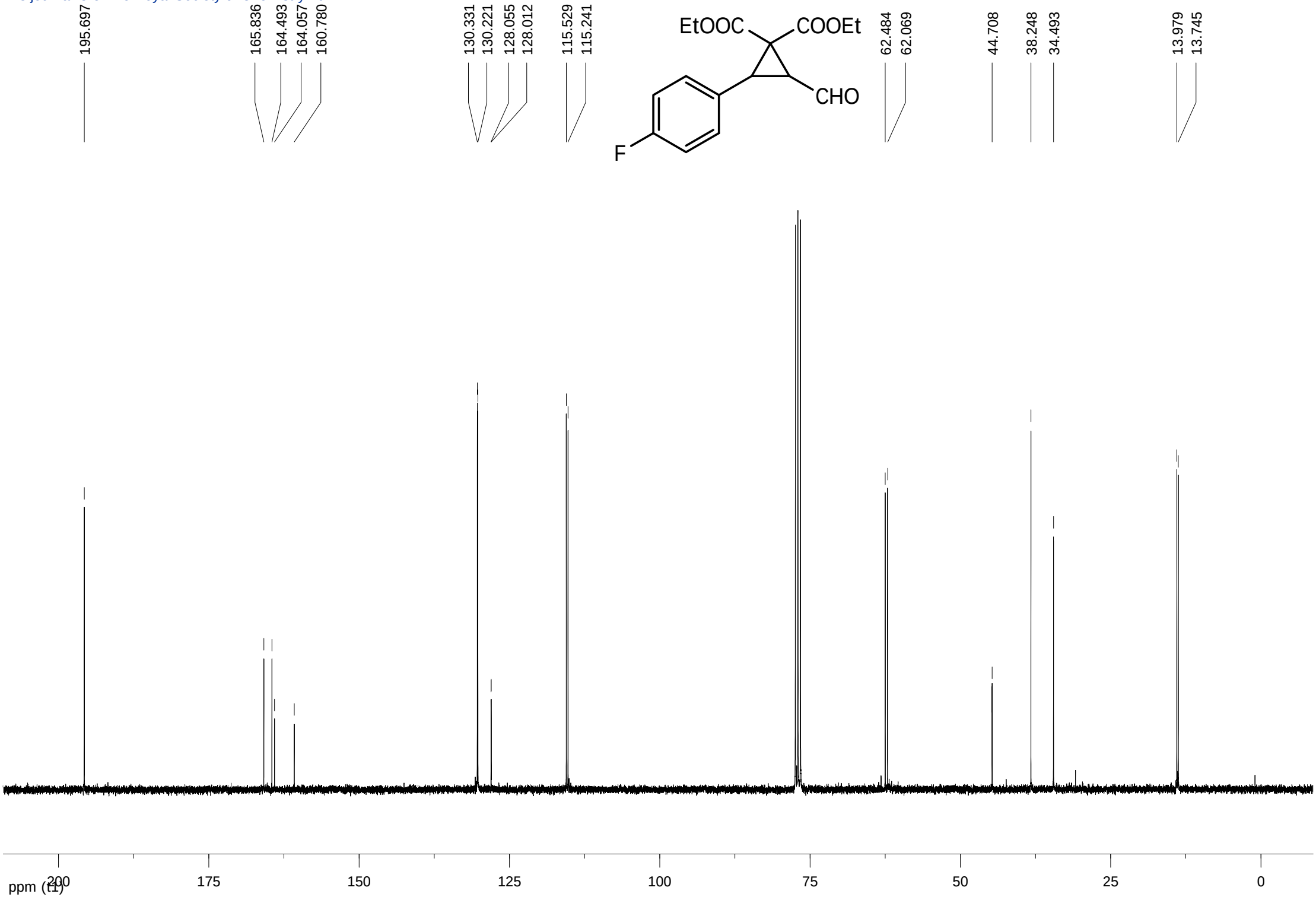
Chromatogram : LH82_I_W_4Br_ASH_955_flow06_1

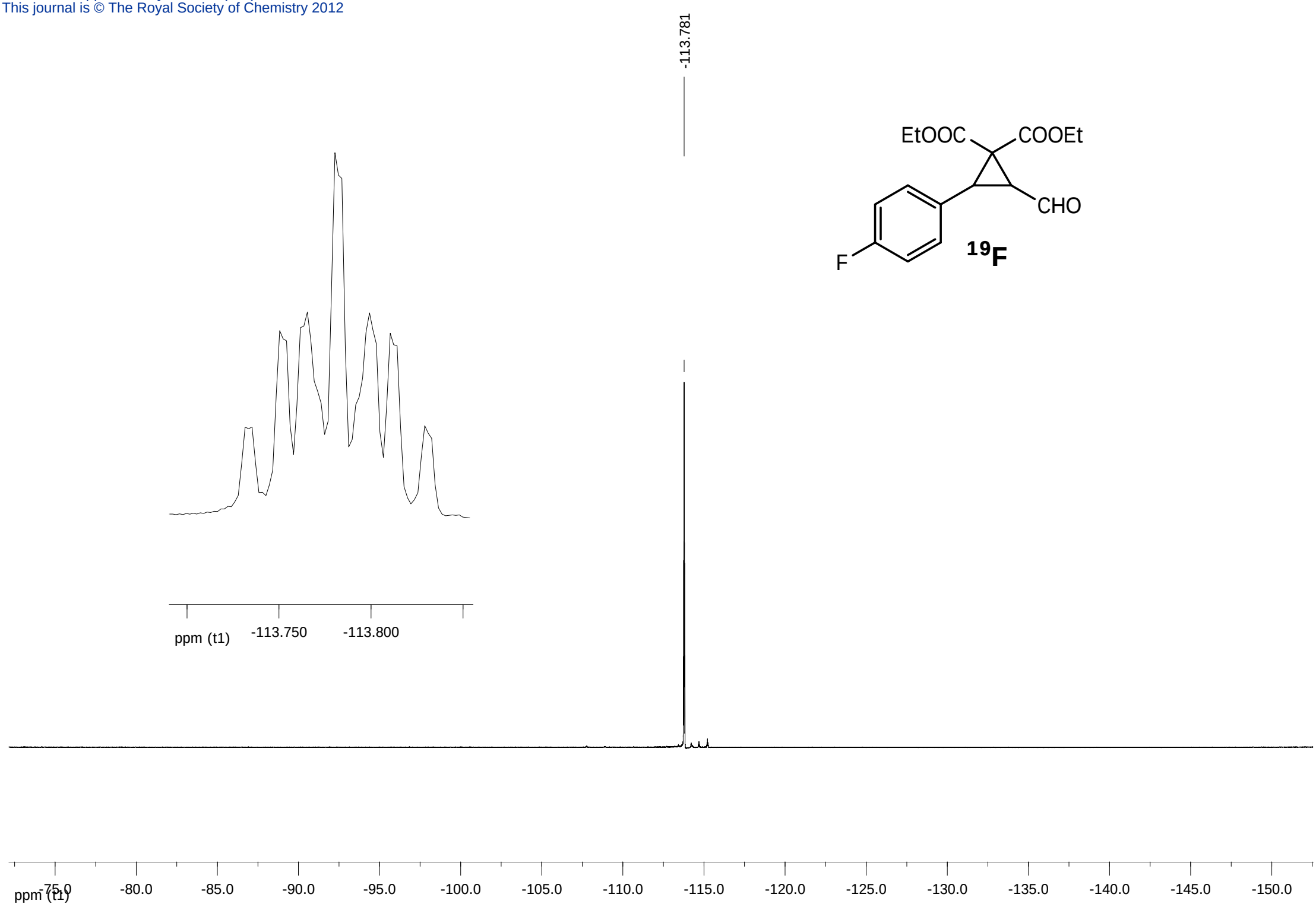
Method: HPLC2_ASH_955_flow06_acq60
Data file: LH82_I_W_4Br_ASH_955_flow06_1.DATA
Date: 19.05.2008 19:58:54



Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	31,530	32,733	34,366	3,290
2	34,761	36,392	39,872	96,710
Total				100,000

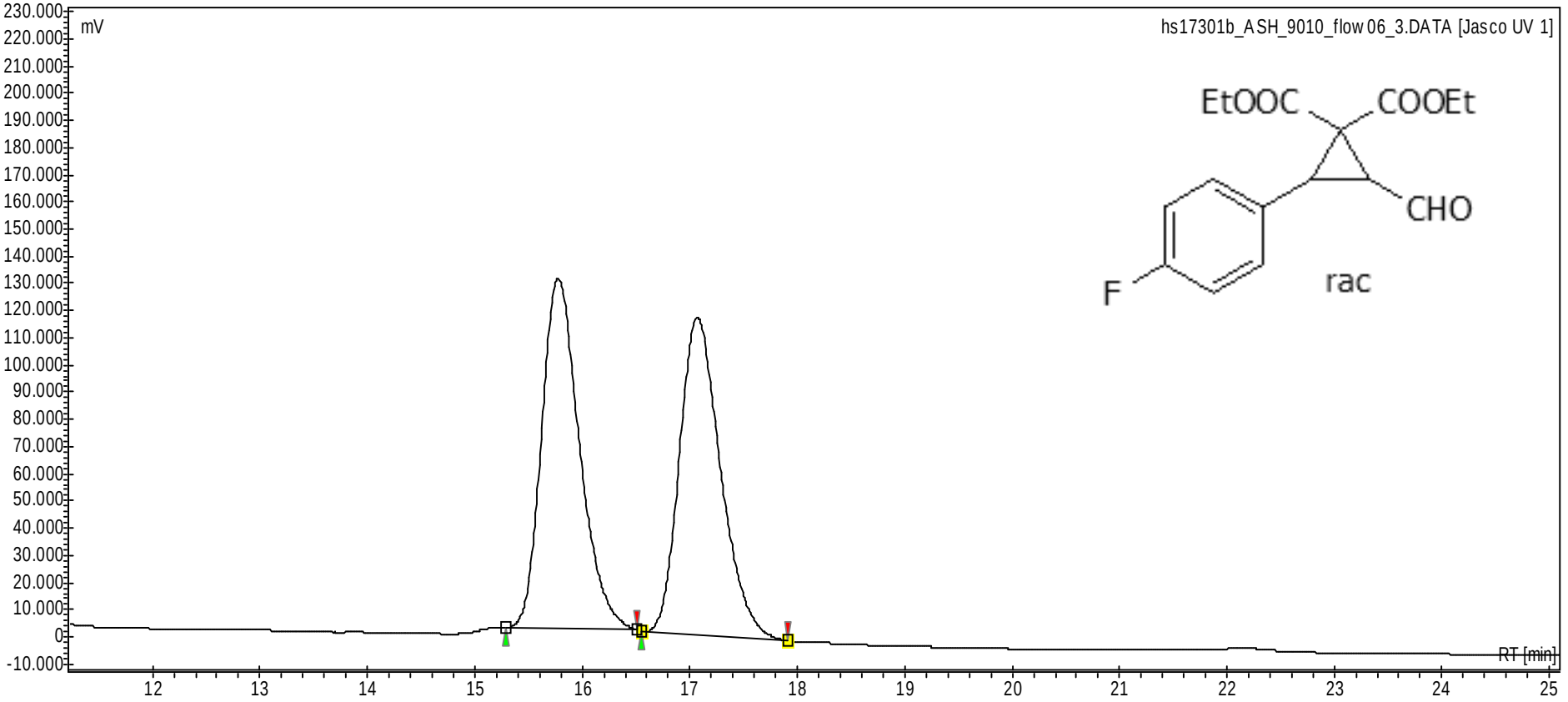






Chromatogram : hs17301b_ASH_9010_flow06_3

Method: HPLC2_ASH_9010_flow06_acq60_210nm
Data file: hs17301b_ASH_9010_flow06_3.DATA
Date: 30.04.2008 18:50:57

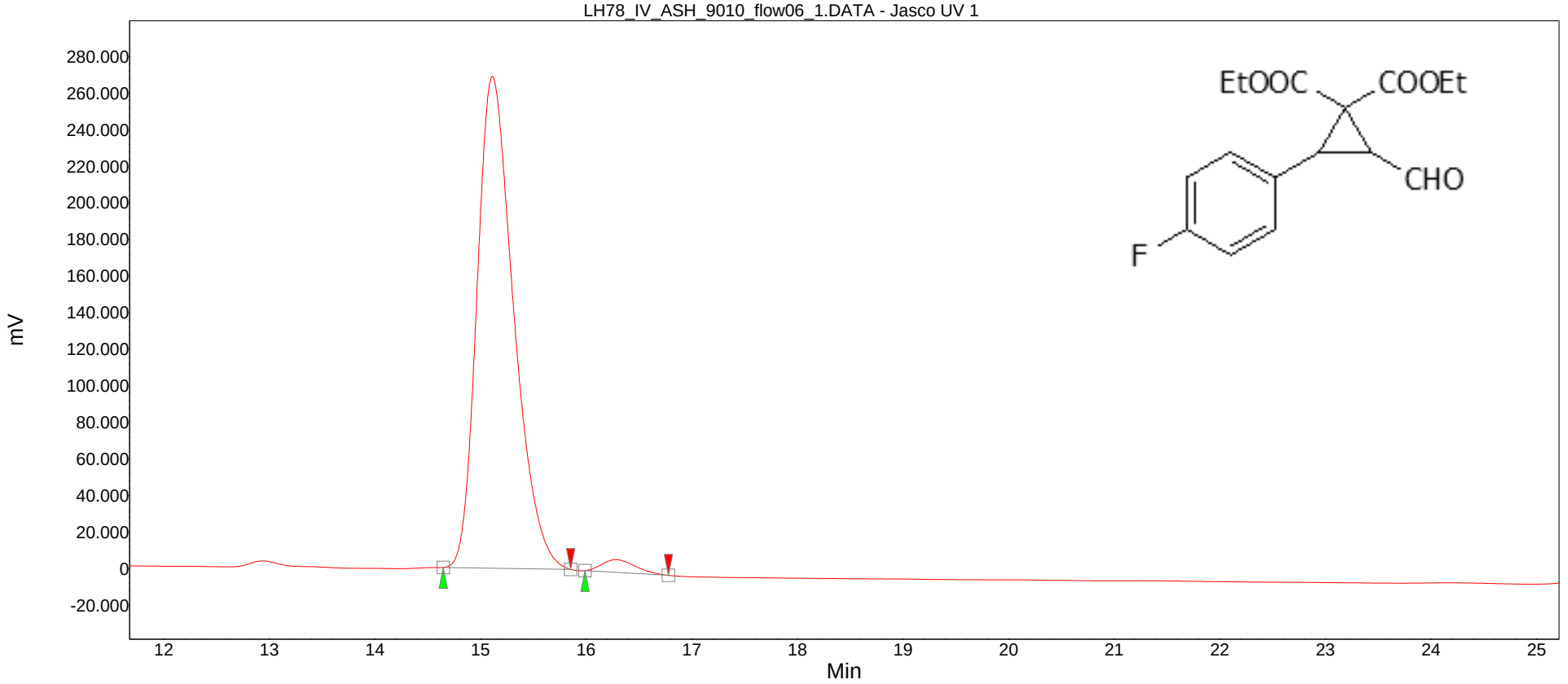


hs17301b_ASH_9010_flow06_3.DATA [Jasco UV 1]

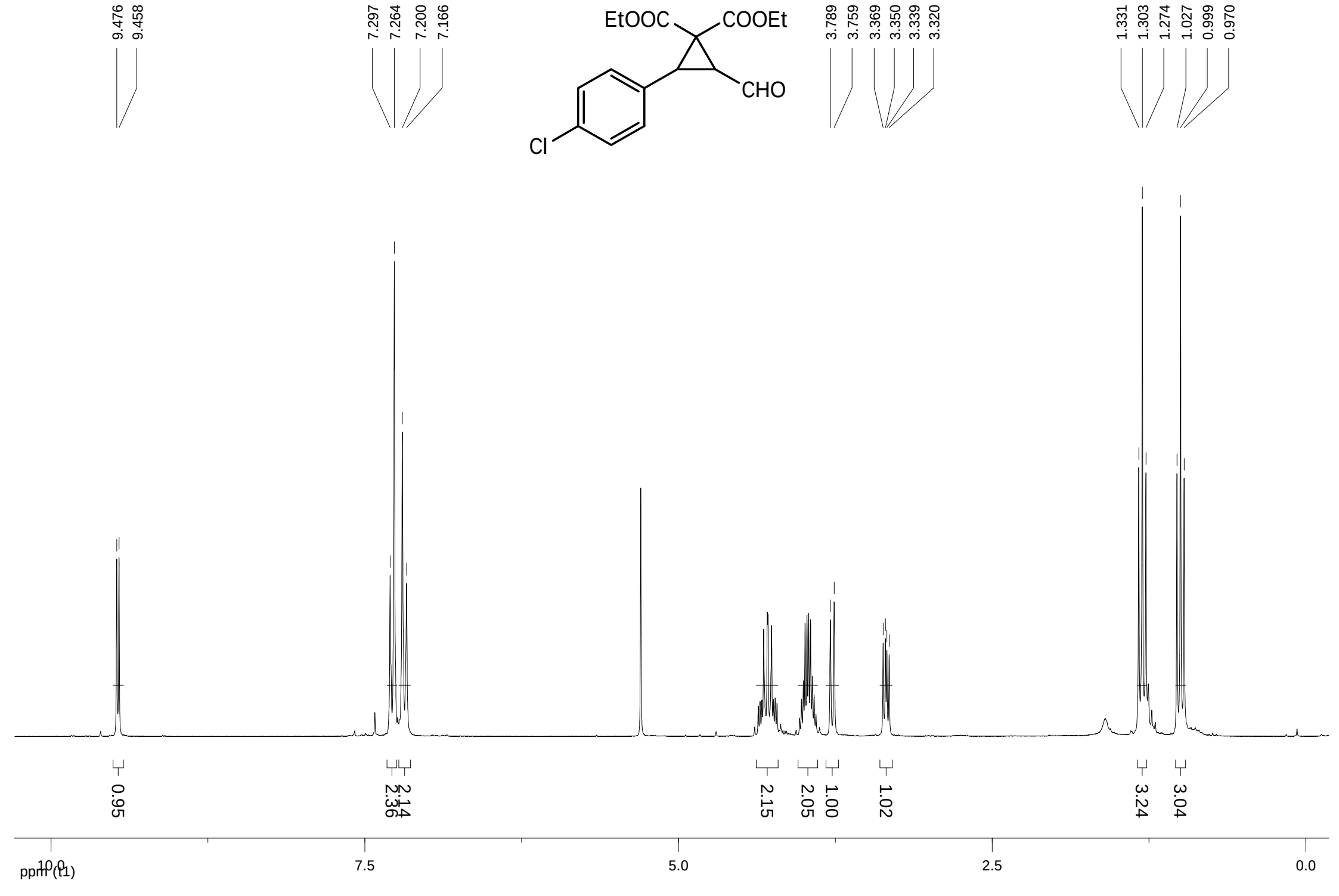
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	15,291	15,775	16,504	50,443
1	16,550	17,075	17,913	49,557
Total				100,000

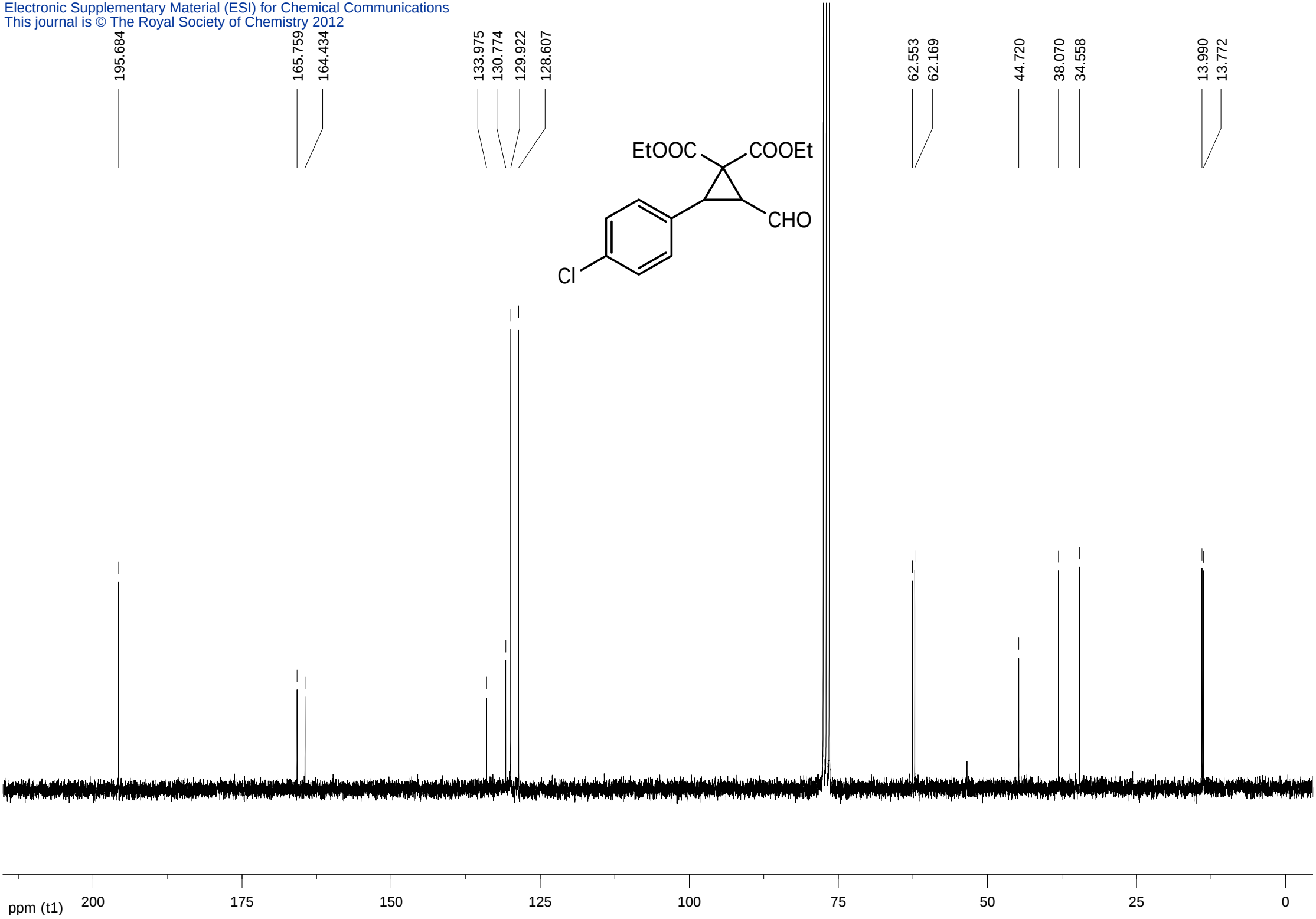
Chromatogram : LH78_IV_ASH_9010_flow06_1

Method: HPLC2_ASH_9010_flow06_acq60_210nm
Data file: LH78_IV_ASH_9010_flow06_1.DATA
Date: 12.05.2008 17:57:28



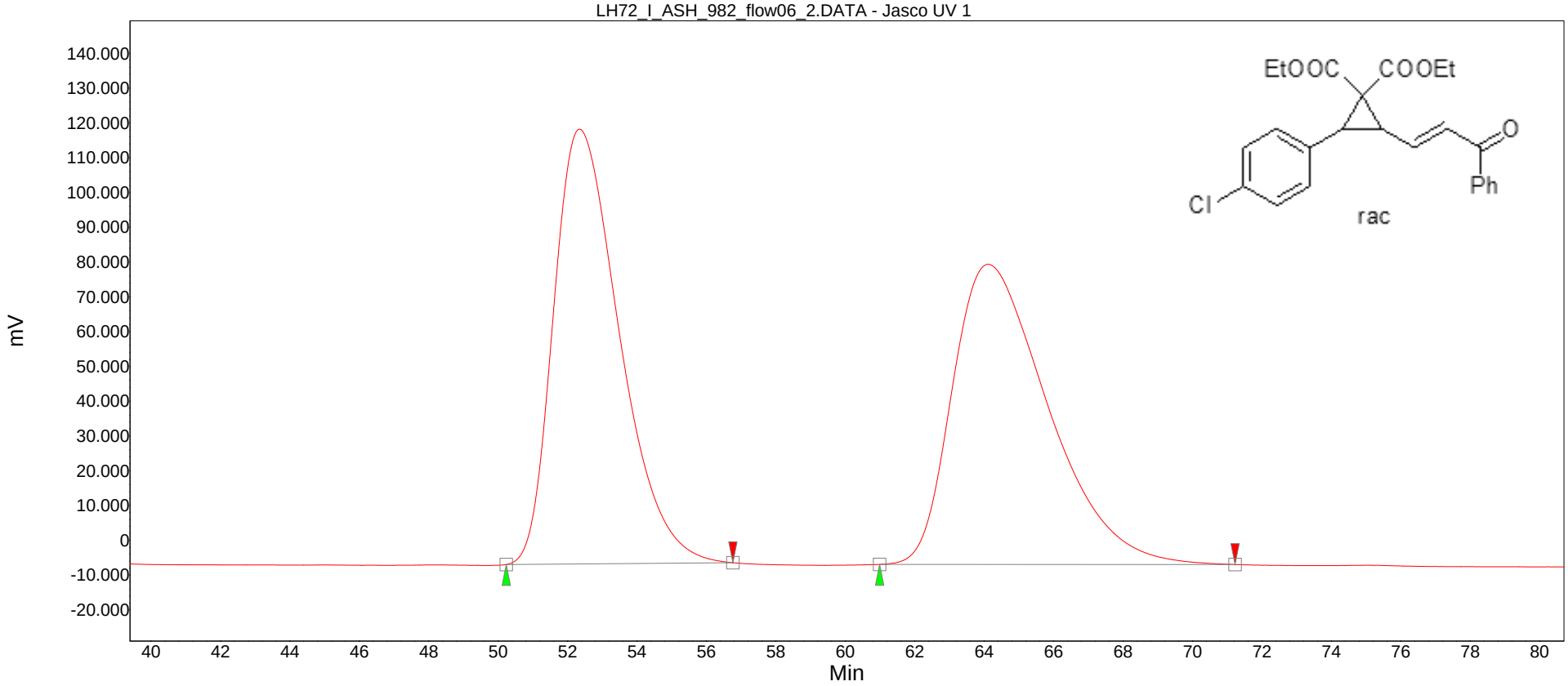
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	14,646	15,108	15,853	97,680
2	15,988	16,292	16,778	2,320
Total				100,000





Chromatogram : LH72_I_ASH_982_flow06_2

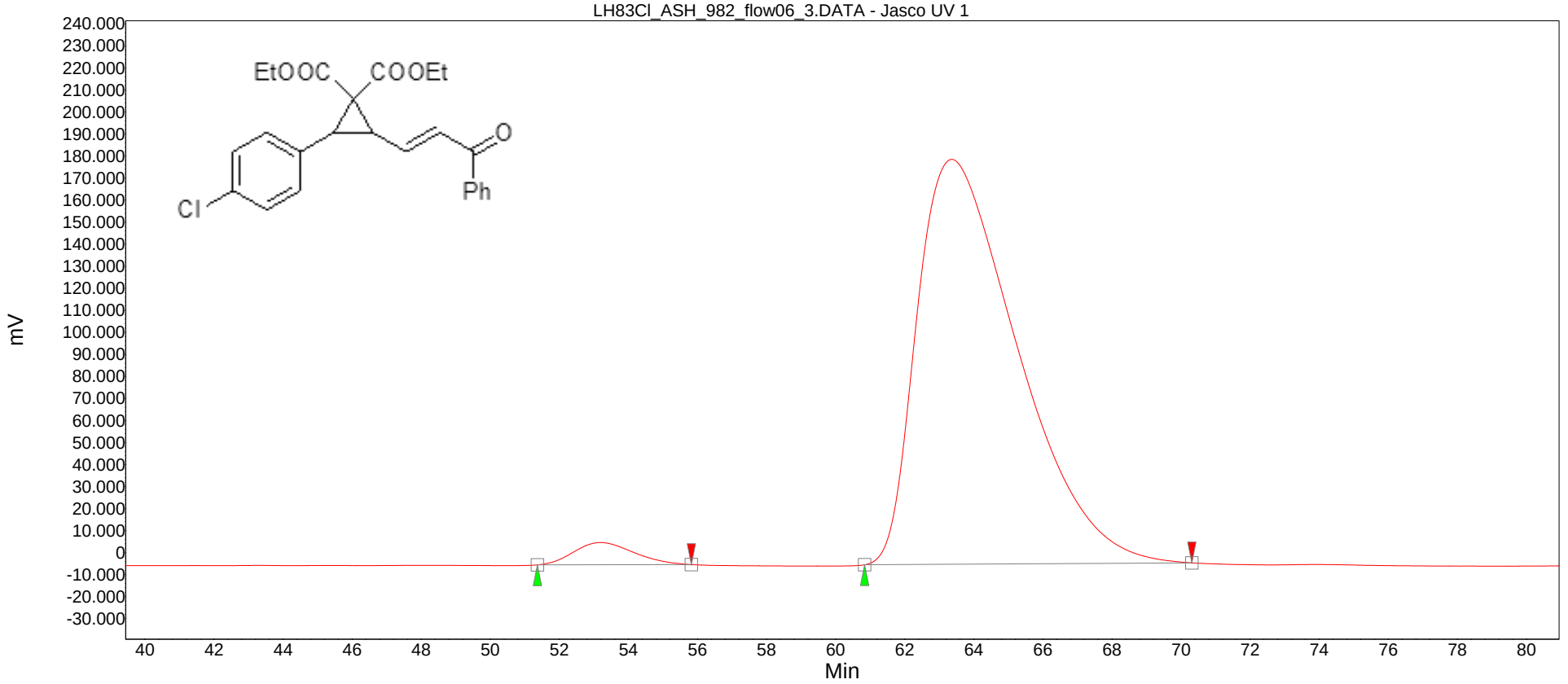
Method: HPLC2_ASH_982_flow06_acq90
Data file: LH72_I_ASH_982_flow06_2.DATA
Date: 25.04.2008 19:35:36



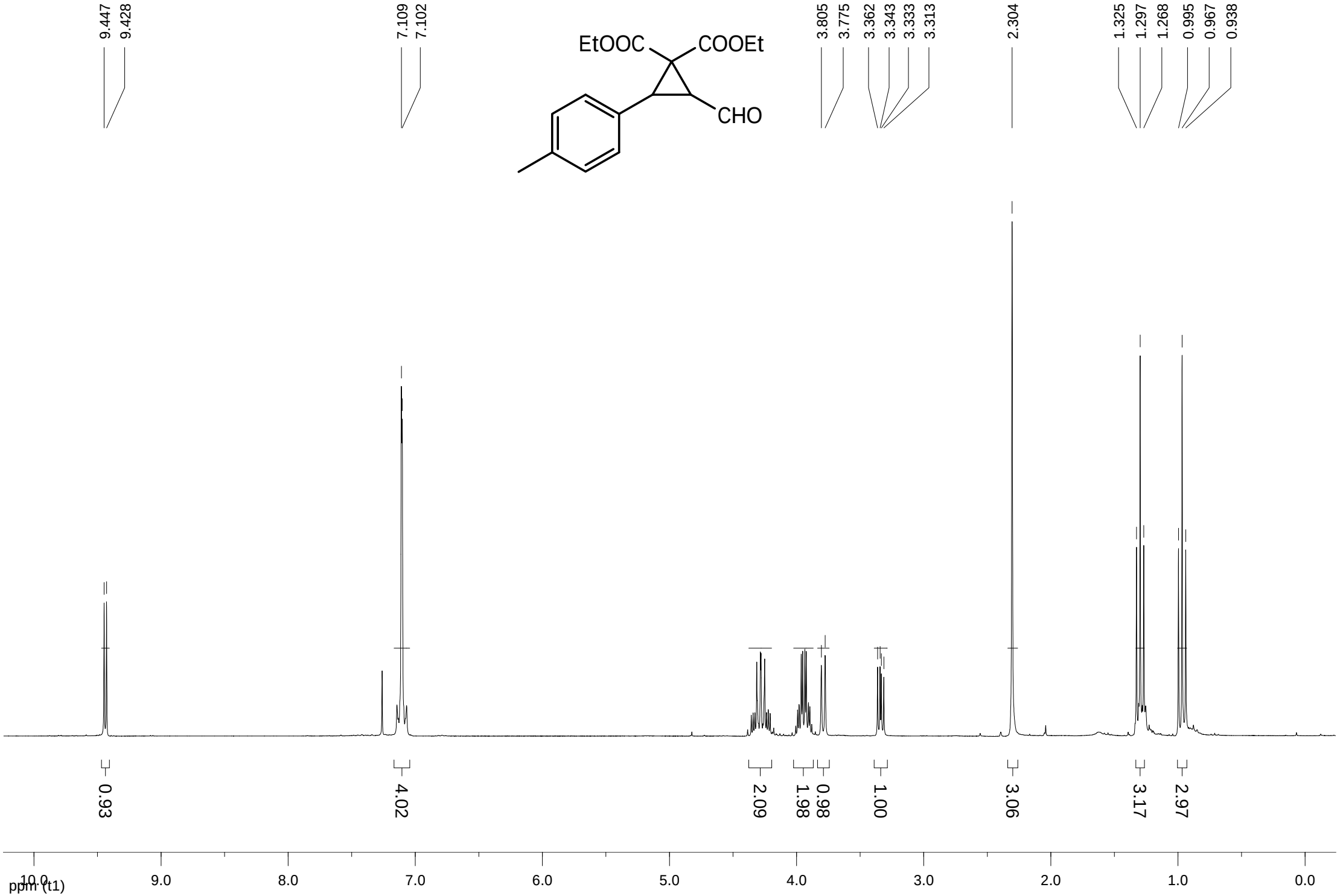
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	50,232	52,342	56,760	49,914
2	60,985	64,108	71,226	50,086
Total				100,000

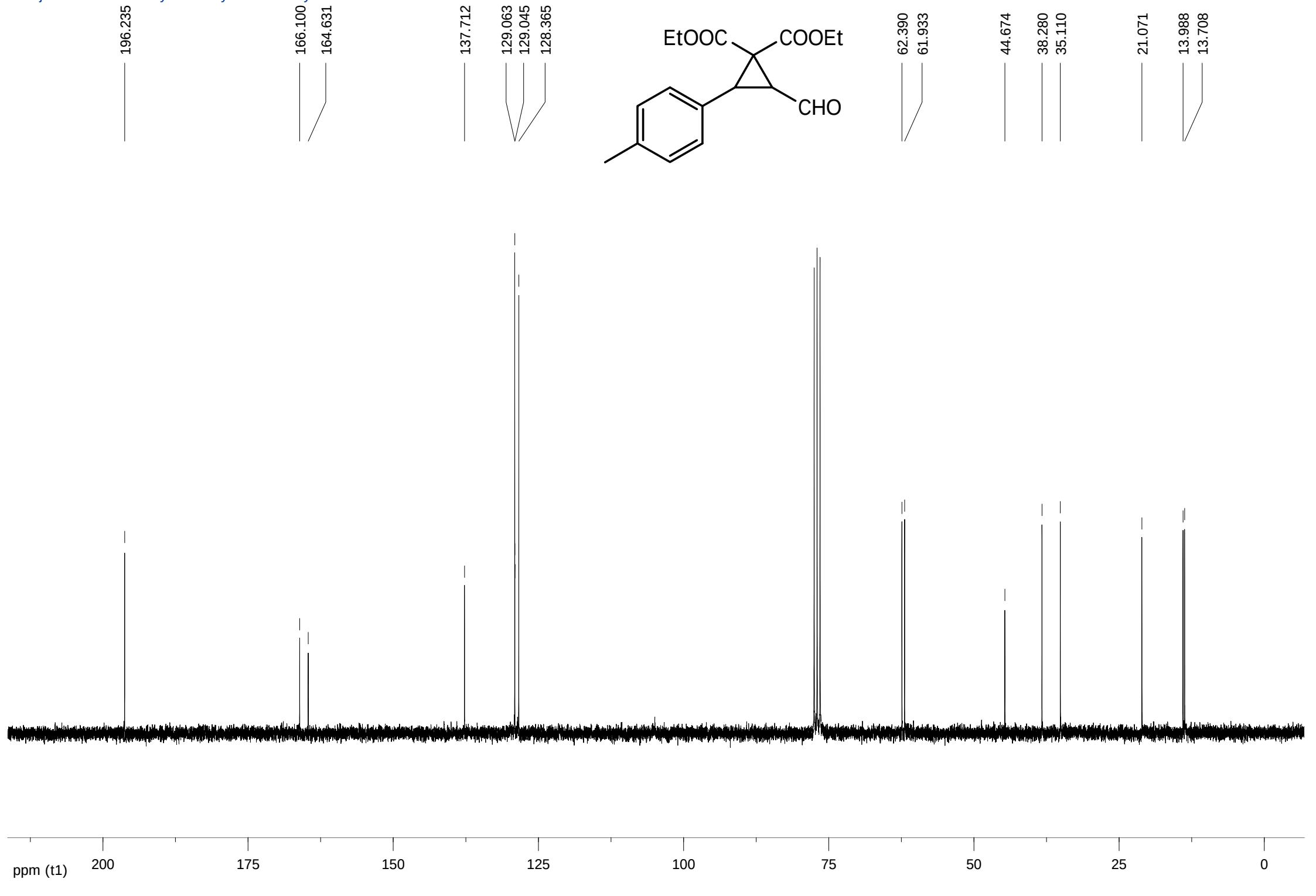
Chromatogram : LH83Cl_ASH_982_flow06_3

Method: HPLC2_ASH_982_flow06_acq90
Data file: LH83Cl_ASH_982_flow06_3.DATA
Date: 21.05.2008 02:34:38



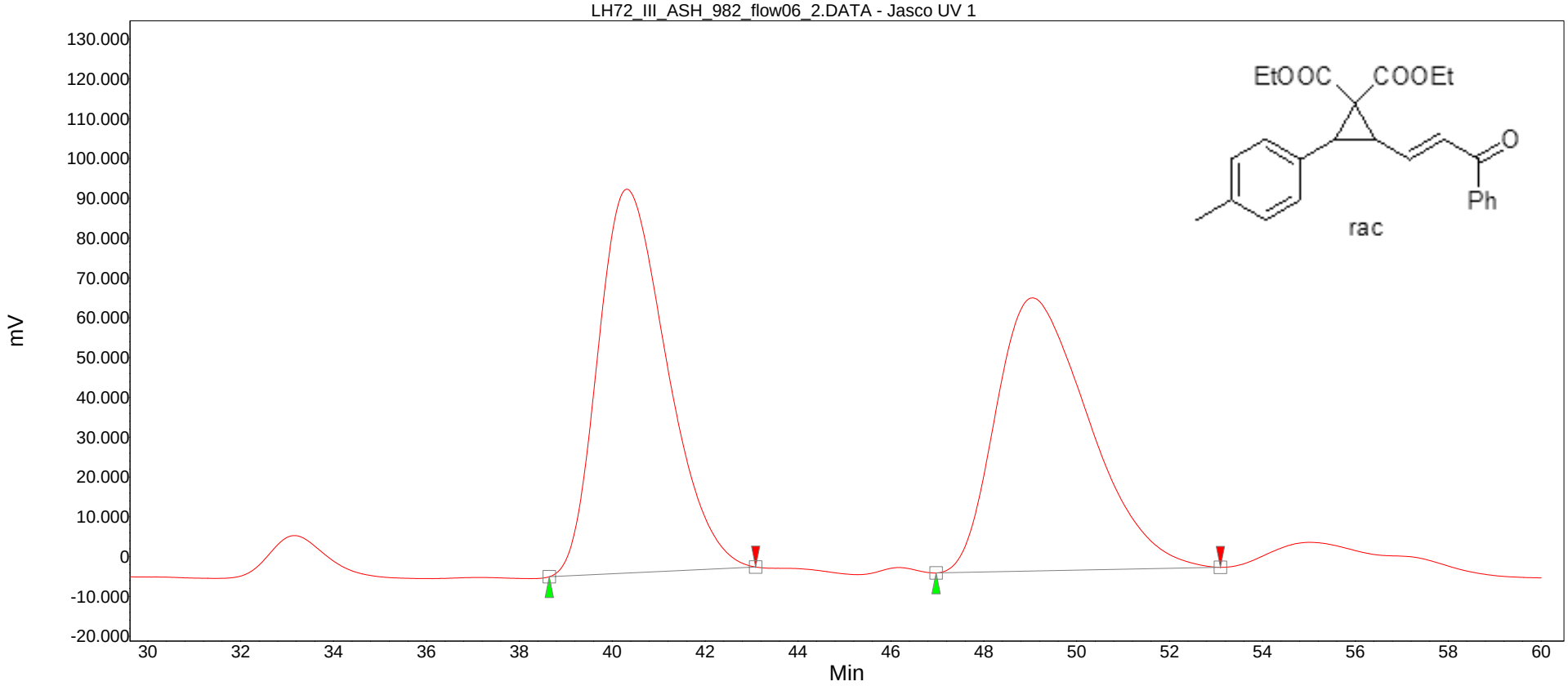
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	51,361	53,183	55,820	3,159
2	60,836	63,358	70,312	96,841
Total				100,000





Chromatogram : LH72_III_ASH_982_flow06_2

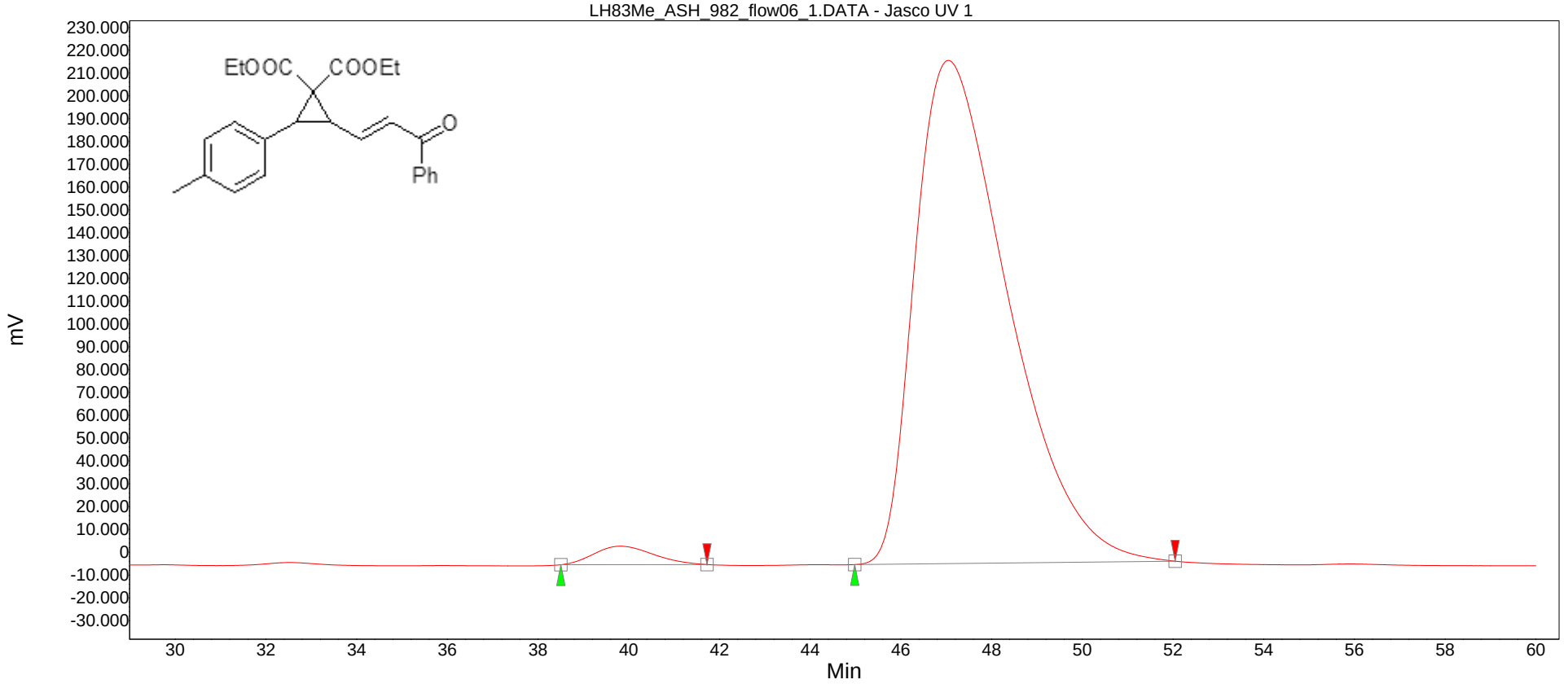
Method: HPLC2_ASH_982_flow06_acq60
Data file: LH72_III_ASH_982_flow06_2.DATA
Date: 30.04.2008 23:36:36



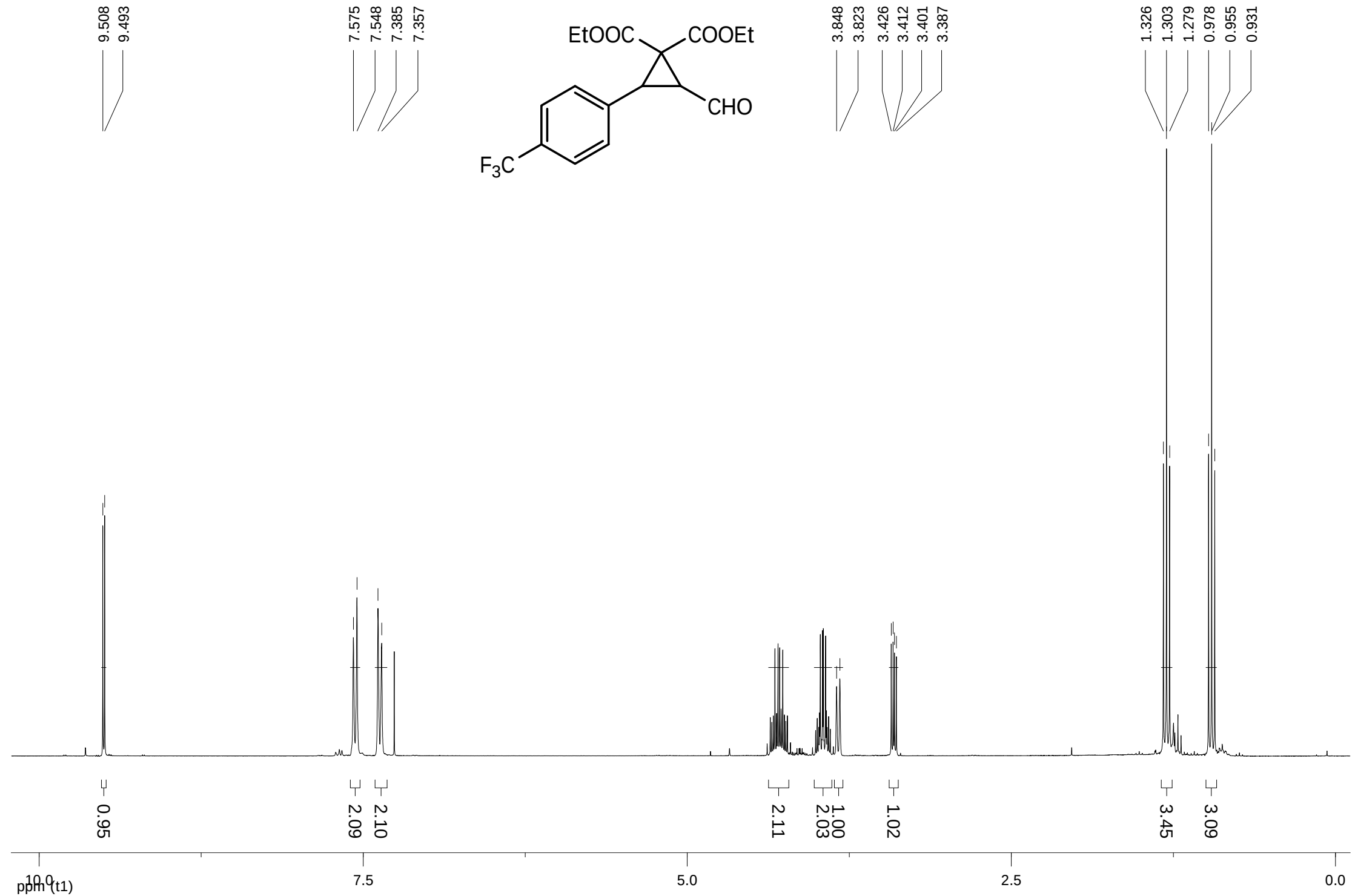
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	38,646	40,317	43,089	50,956
1	46,973	49,042	53,094	49,044
Total				100,000

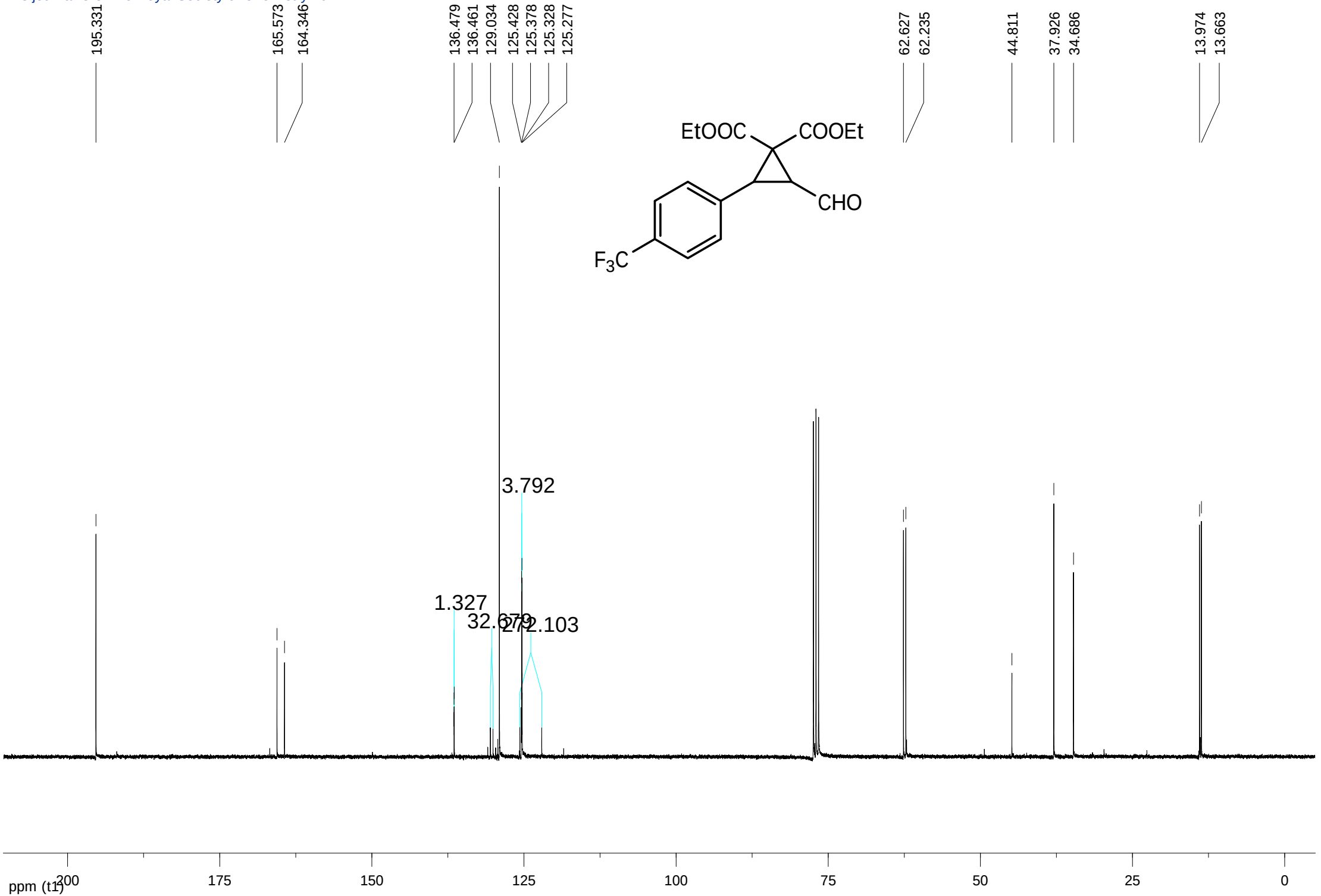
Chromatogram : LH83Me_ASH_982_flow06_1

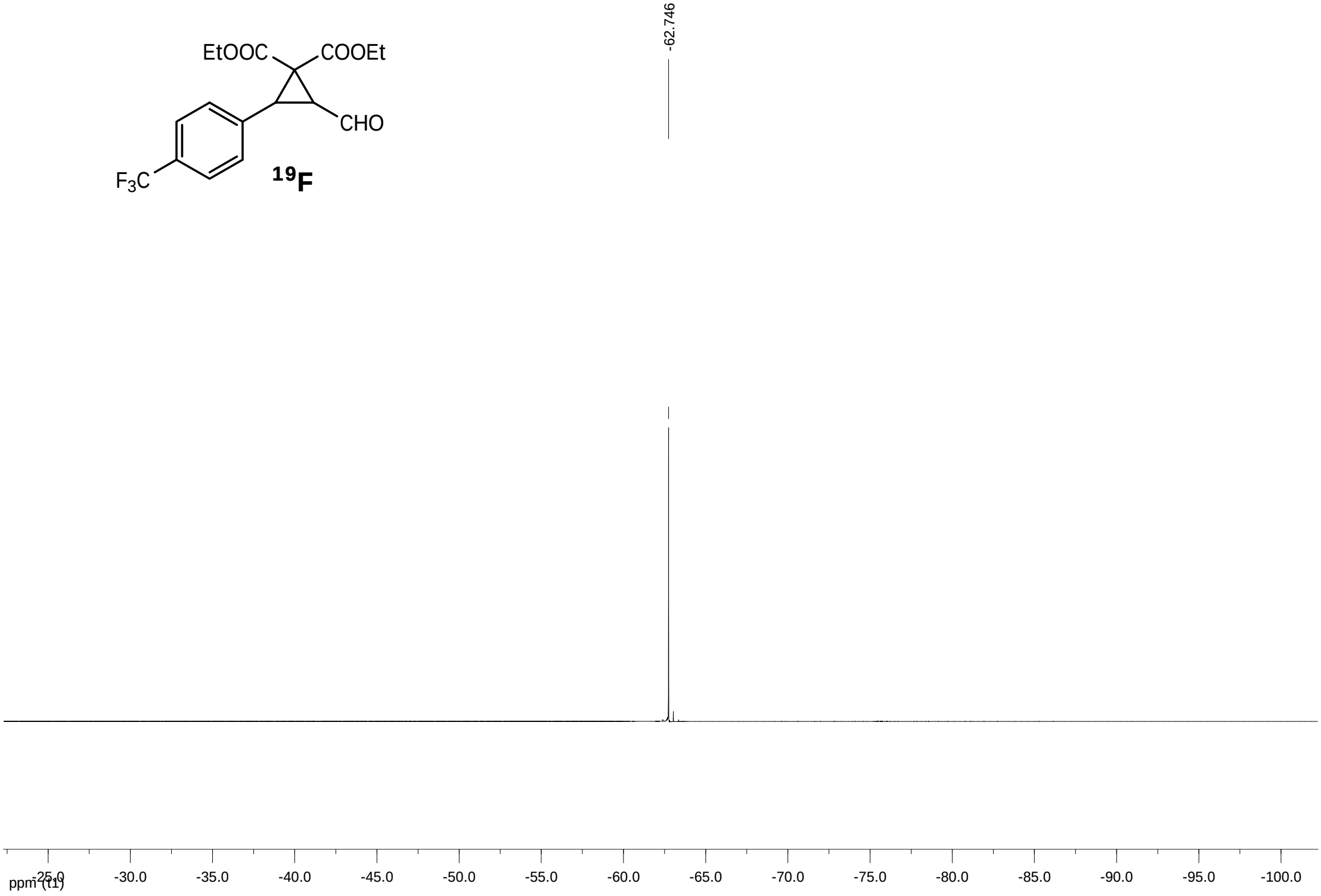
Method: HPLC2_ASH_982_flow06_acq60
Data file: LH83Me_ASH_982_flow06_1.DATA
Date: 19.05.2008 22:36:48



Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	38,501	39,808	41,725	2,281
2	44,981	47,042	52,046	97,719
Total				100,000

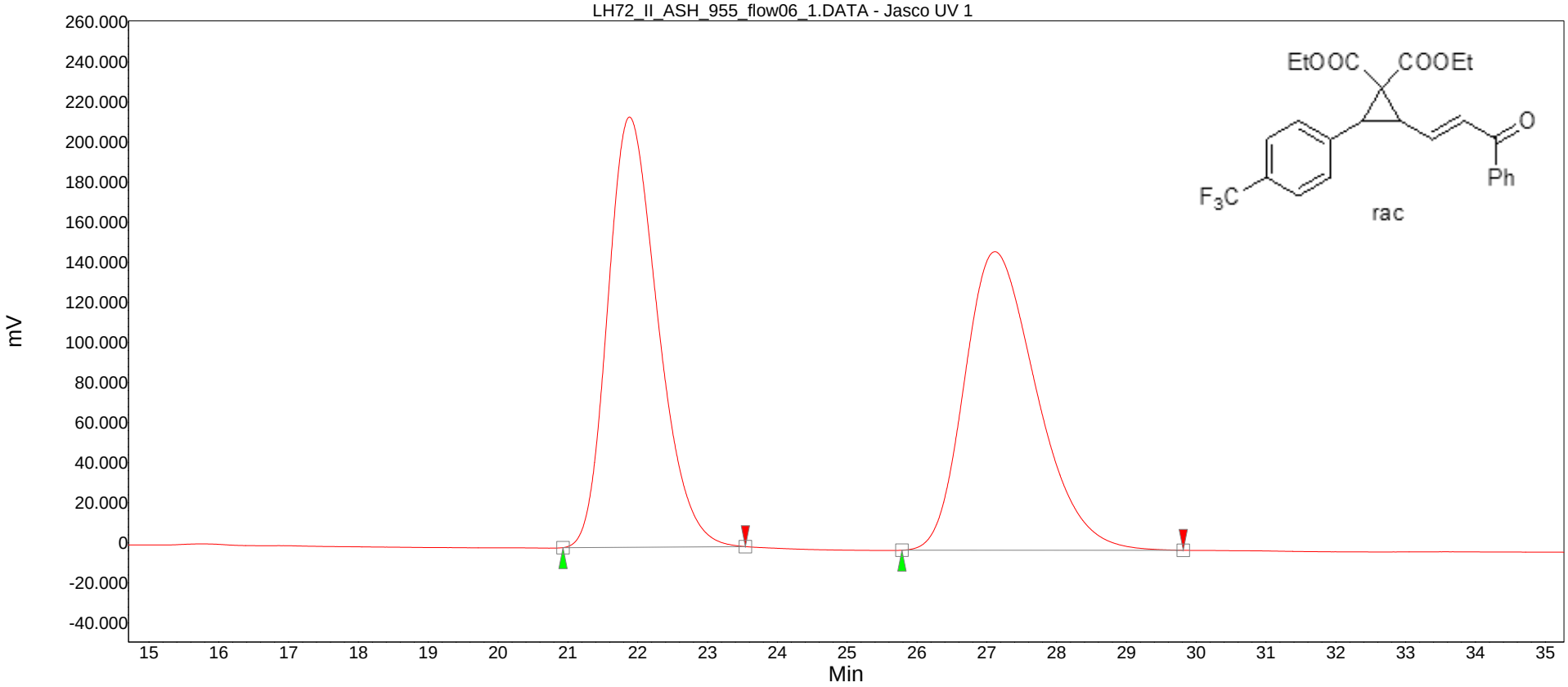






Chromatogram : LH72_II_ASH_955_flow06_1

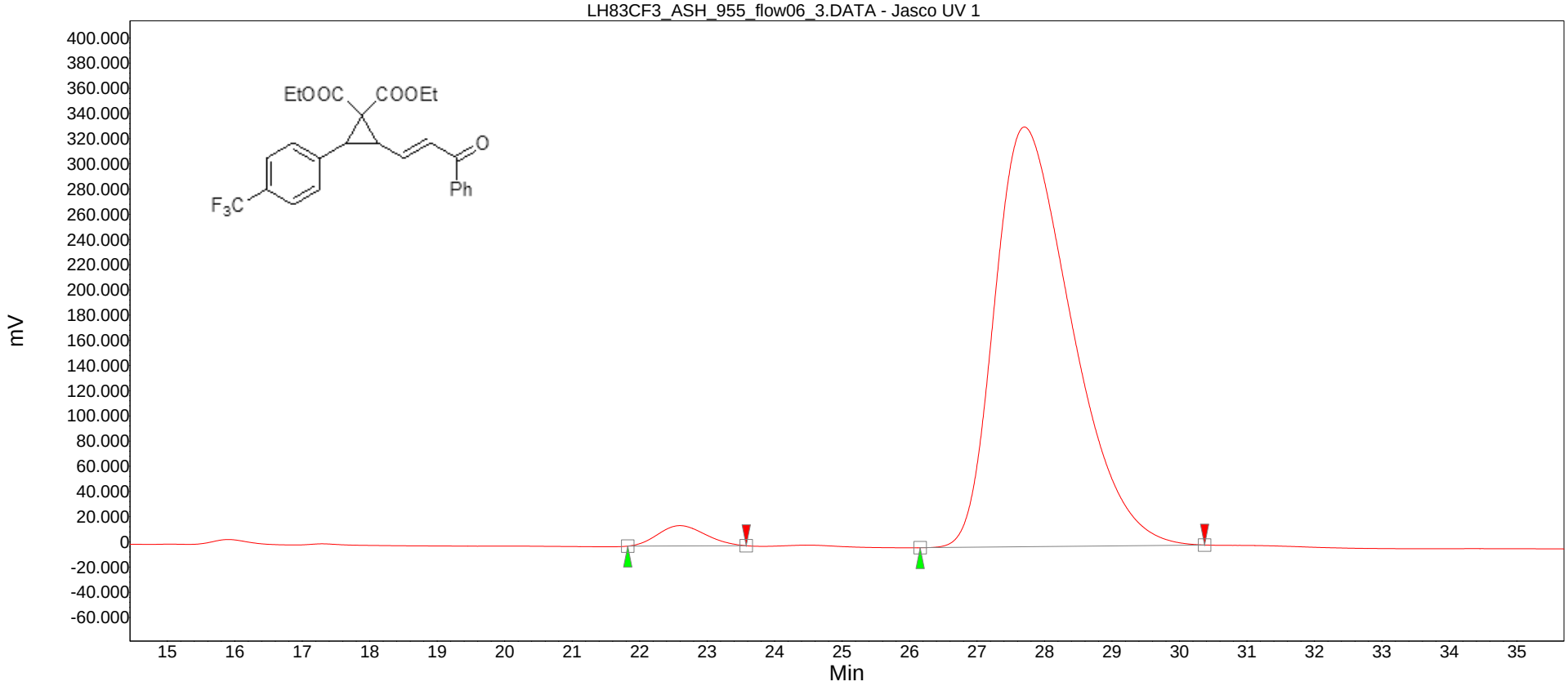
Method: HPLC2_ASH_955_flow06_acq60
Data file: LH72_II_ASH_955_flow06_1.DATA
Date: 25.04.2008 16:57:43



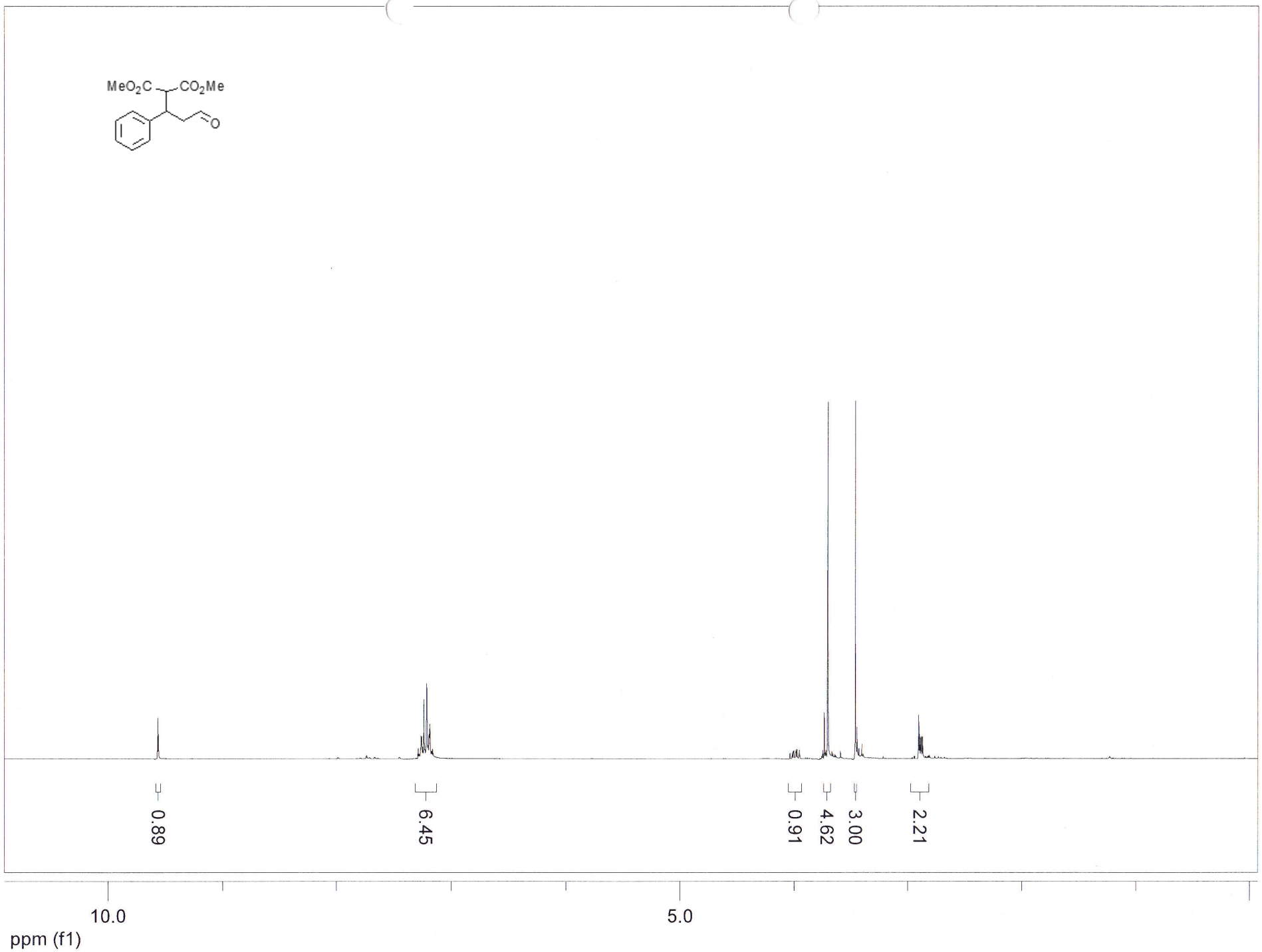
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	20,931	21,883	23,543	50,013
1	25,785	27,117	29,814	49,987
Total				100,000

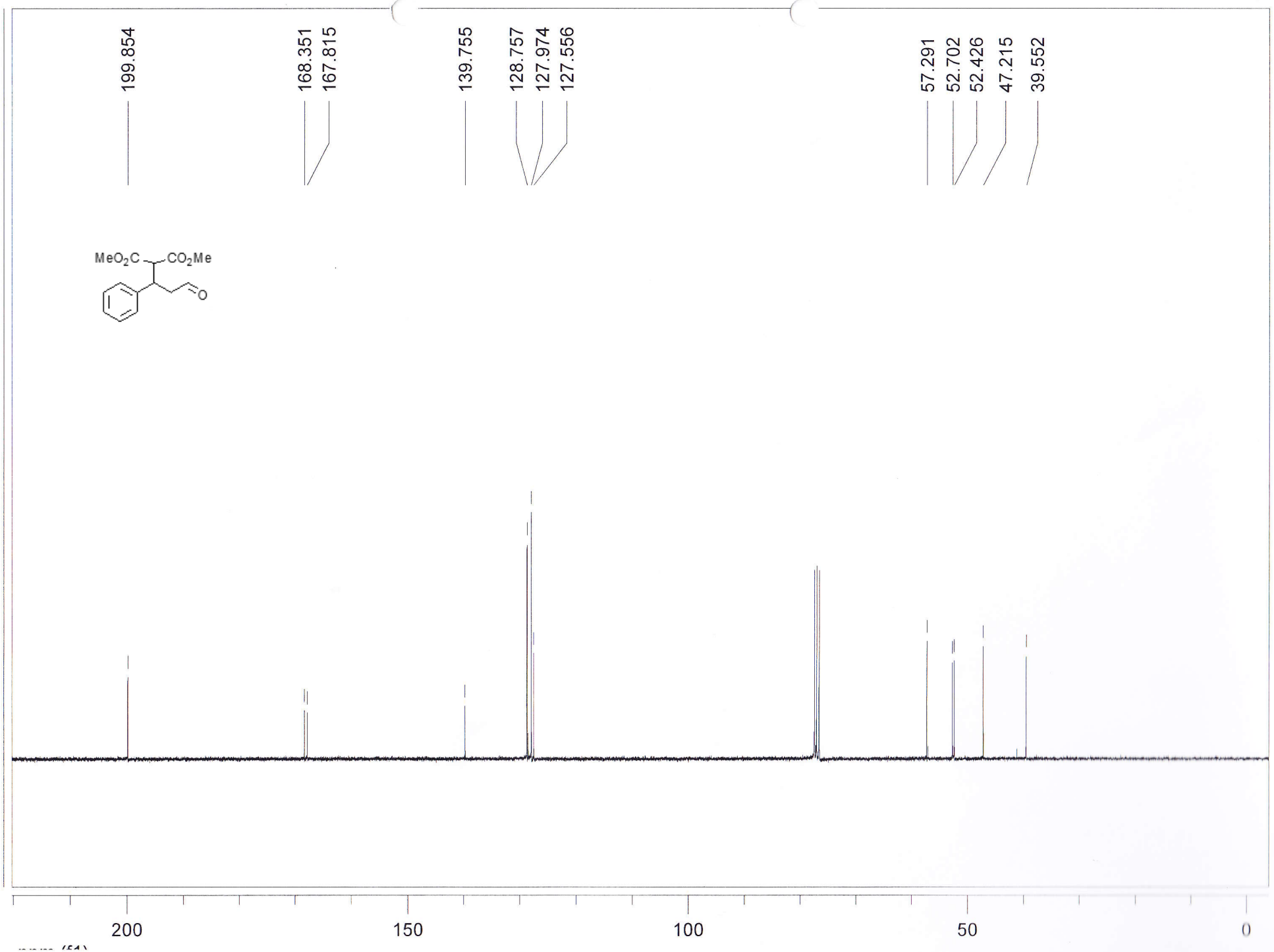
Chromatogram : LH83CF3_ASH_955_flow06_3

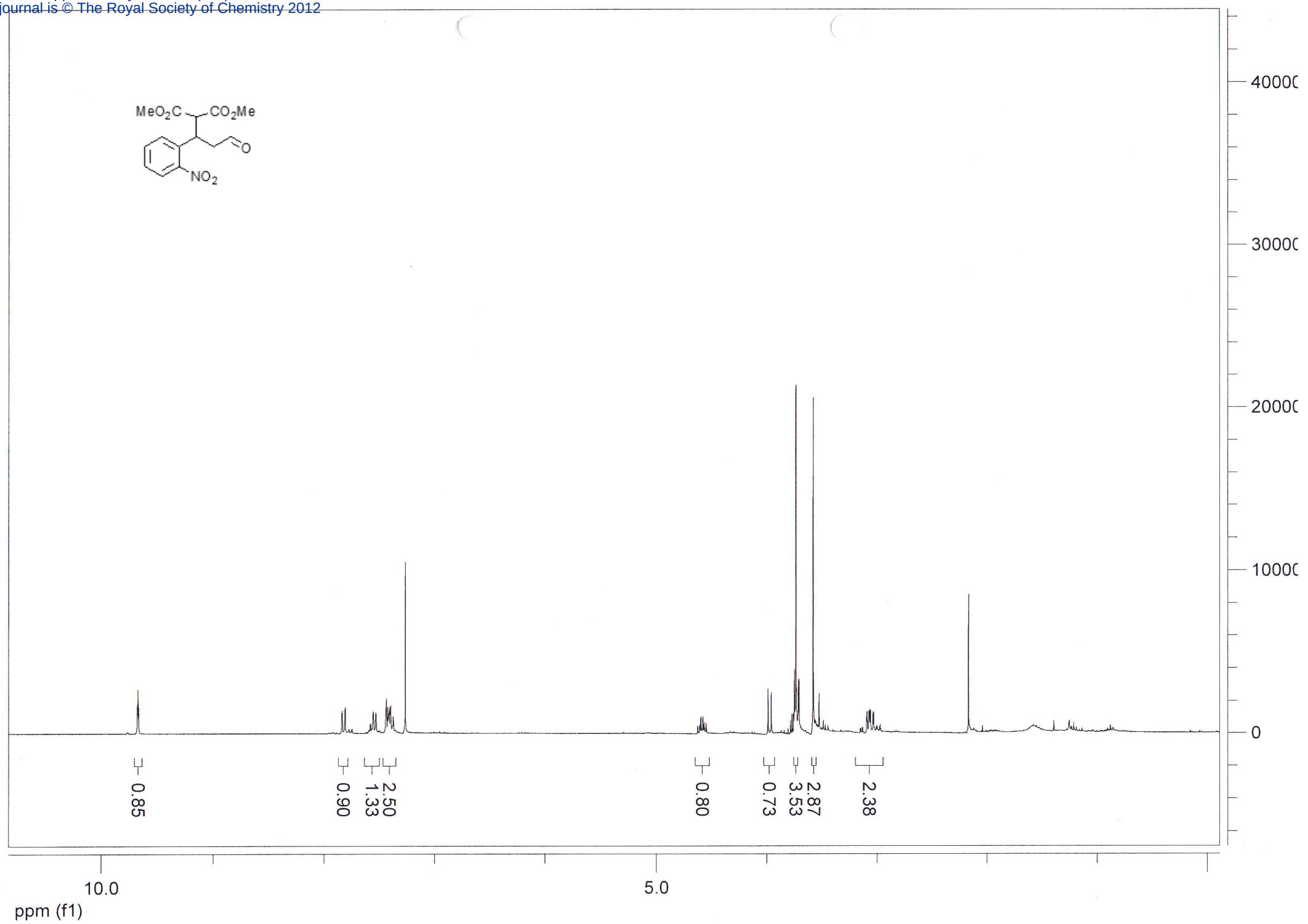
Method: HPLC2_ASH_955_flow06_acq60
Data file: LH83CF3_ASH_955_flow06_3.DATA
Date: 21.05.2008 00:59:25

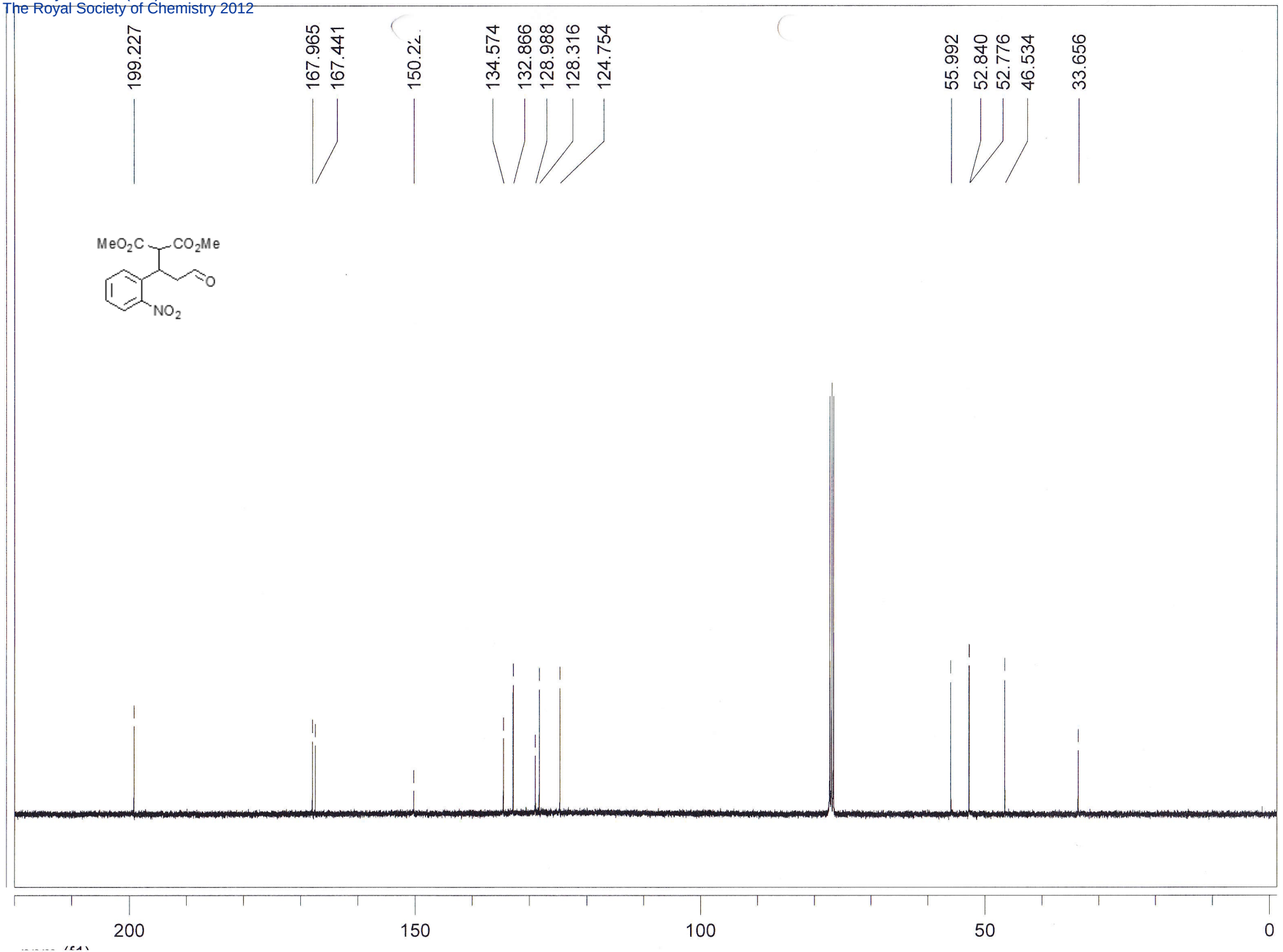


Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	21,823	22,592	23,579	2,883
1	26,157	27,700	30,372	97,117
Total				100,000





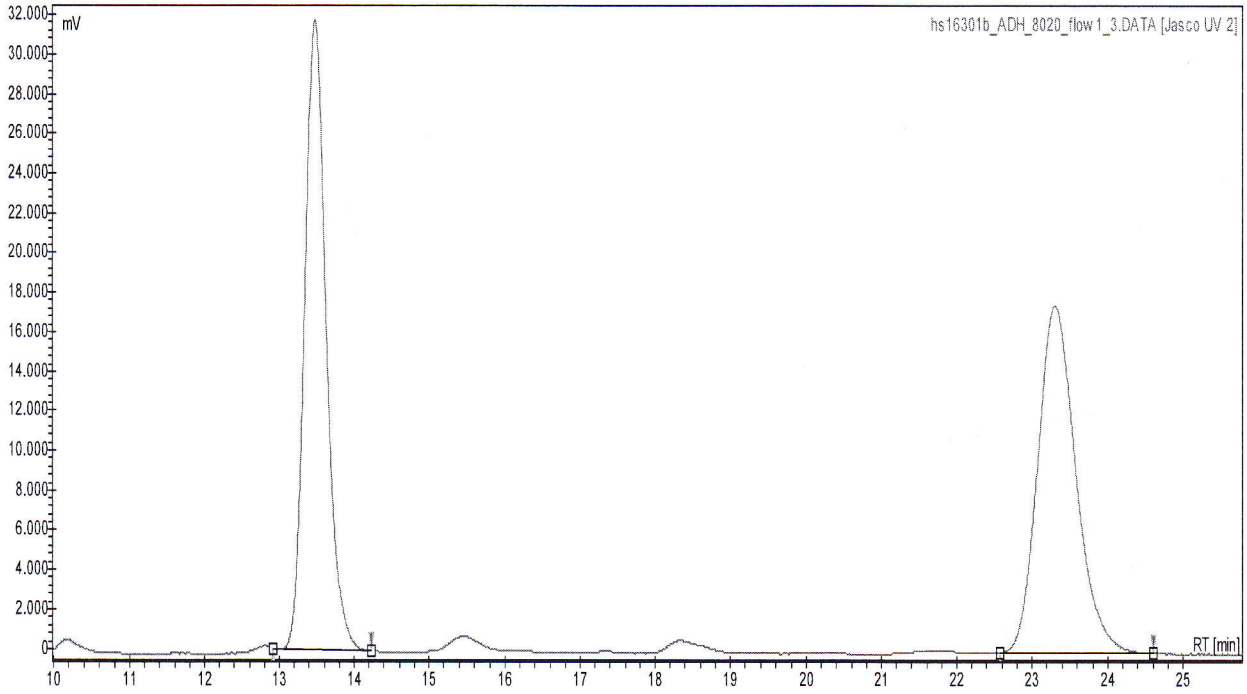




Chromatogram : hs16301b_ADH_8020_flow1_3_channel2

System : Jasco HPLC 2
Method : HPLC2_ADH_8020_flow1_acq30
User : USER1

Acquired : 01.05.2008 12:23:29
Processed : 02.05.2008 10:35:27
Printed : 02.05.2008 10:35:49



Peak results :

hs16301b_ADH_8020_flow1_3.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	12,924	13,475	14,225	50,204
2	22,562	23,308	24,607	49,796
Total				100,000

Group results :

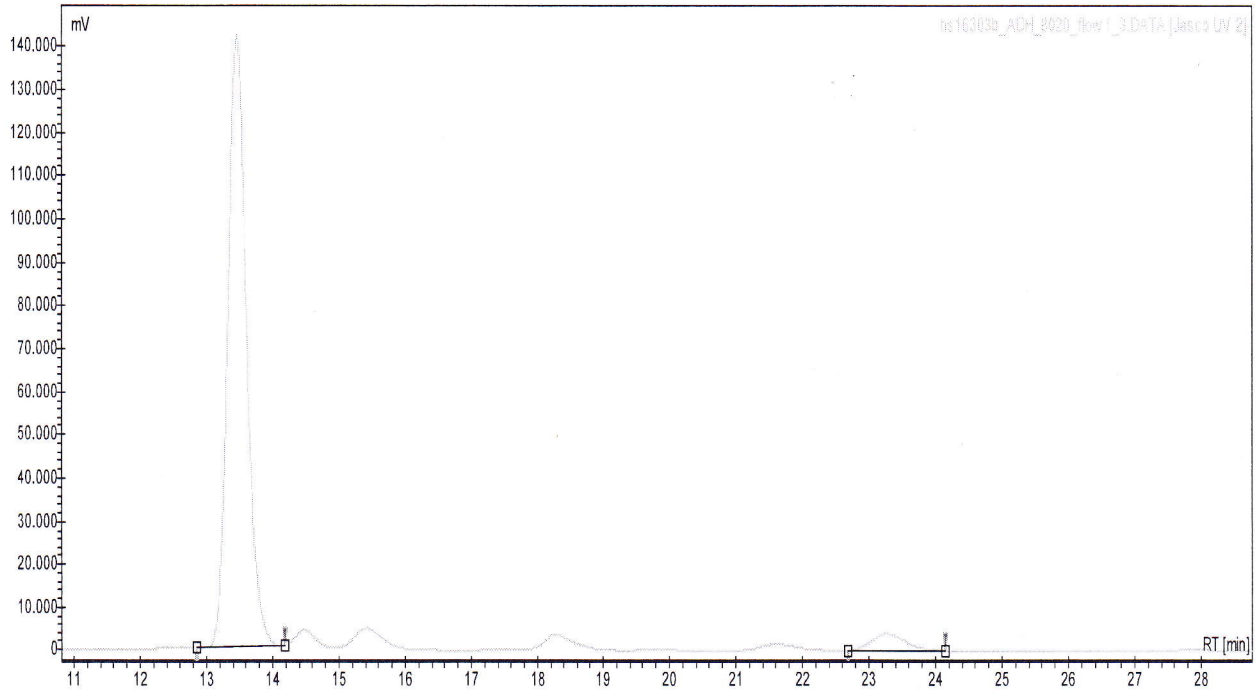
hs16301b_ADH_8020_flow1_3.DATA [Jasco UV 2]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

Chromatogram : hs16303b_ADH_8020_flow1_3_channel2

System : Jasco HPLC 2
Method : HPLC2_ADH_8020_flow1_acq30
User : USER1

Acquired : 01.05.2008 12:56:08
Processed : 02.05.2008 10:37:07
Printed : 02.05.2008 10:38:03



Peak results :

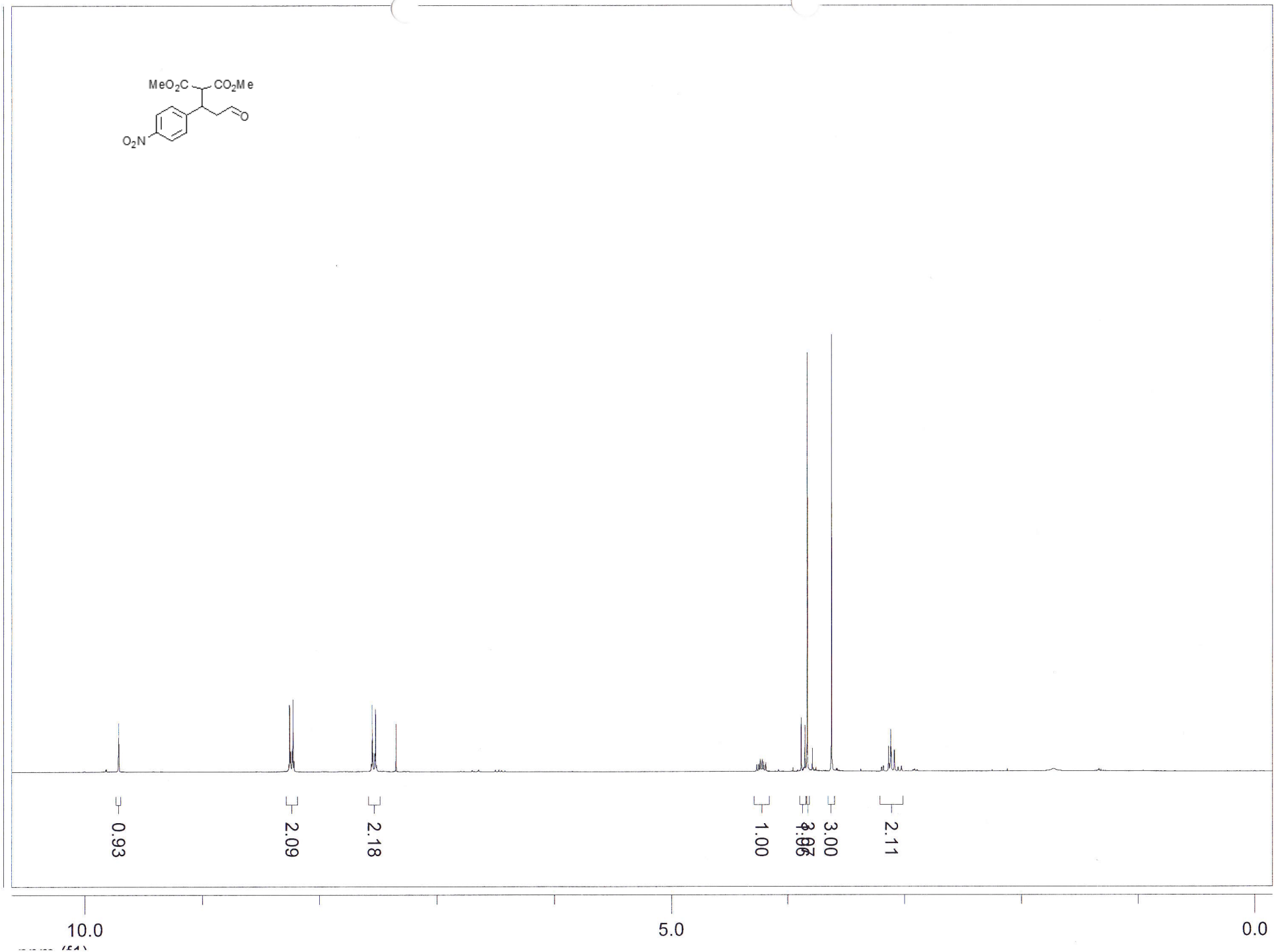
hs16303b_ADH_8020_flow1_3.DATA [Jasco UV 2]

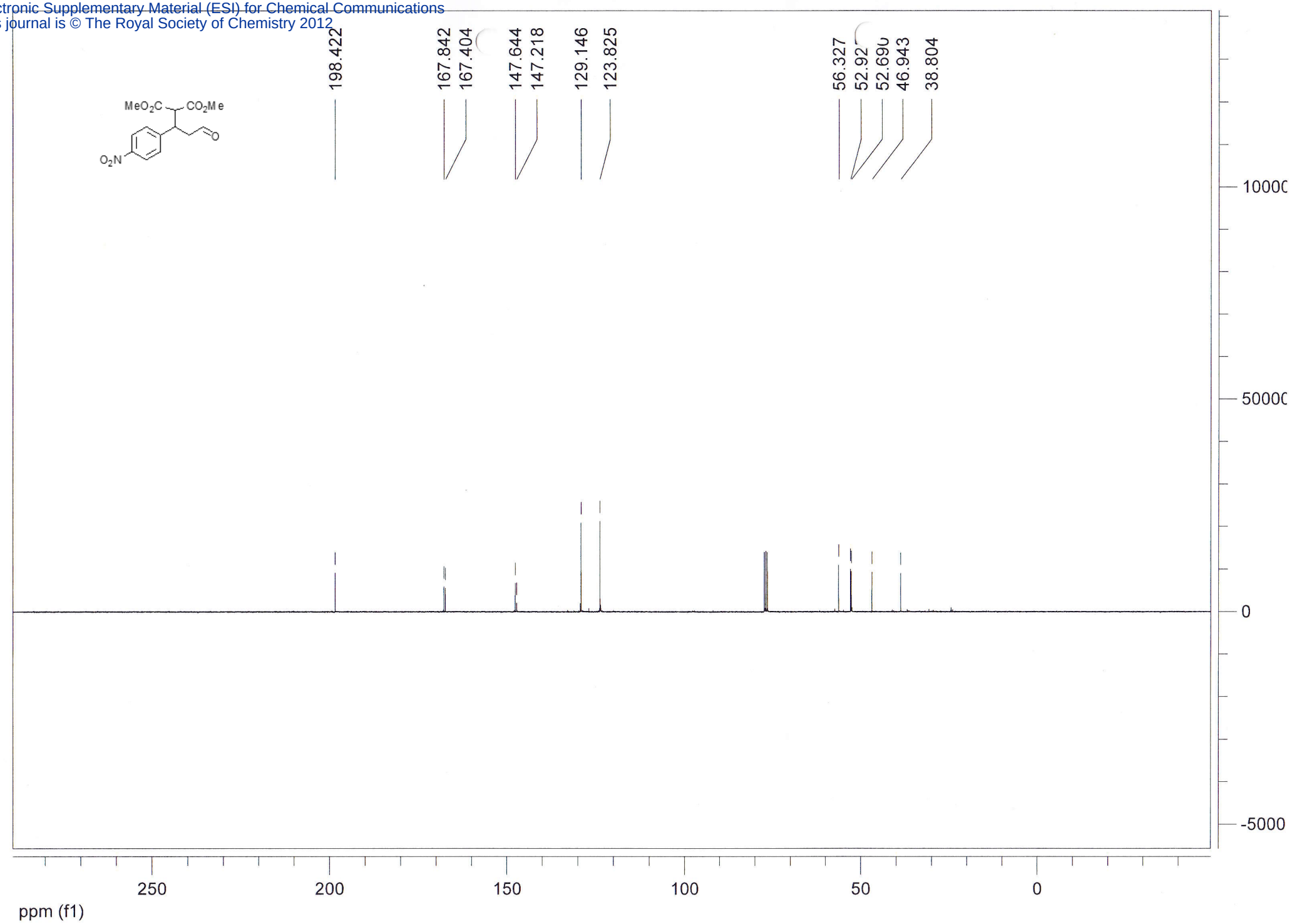
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	12,862	13,467	14,194	95,443
2	22,686	23,267	24,143	4,557
Total				100,000

Group results :

hs16303b_ADH_8020_flow1_3.DATA [Jasco UV 2]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

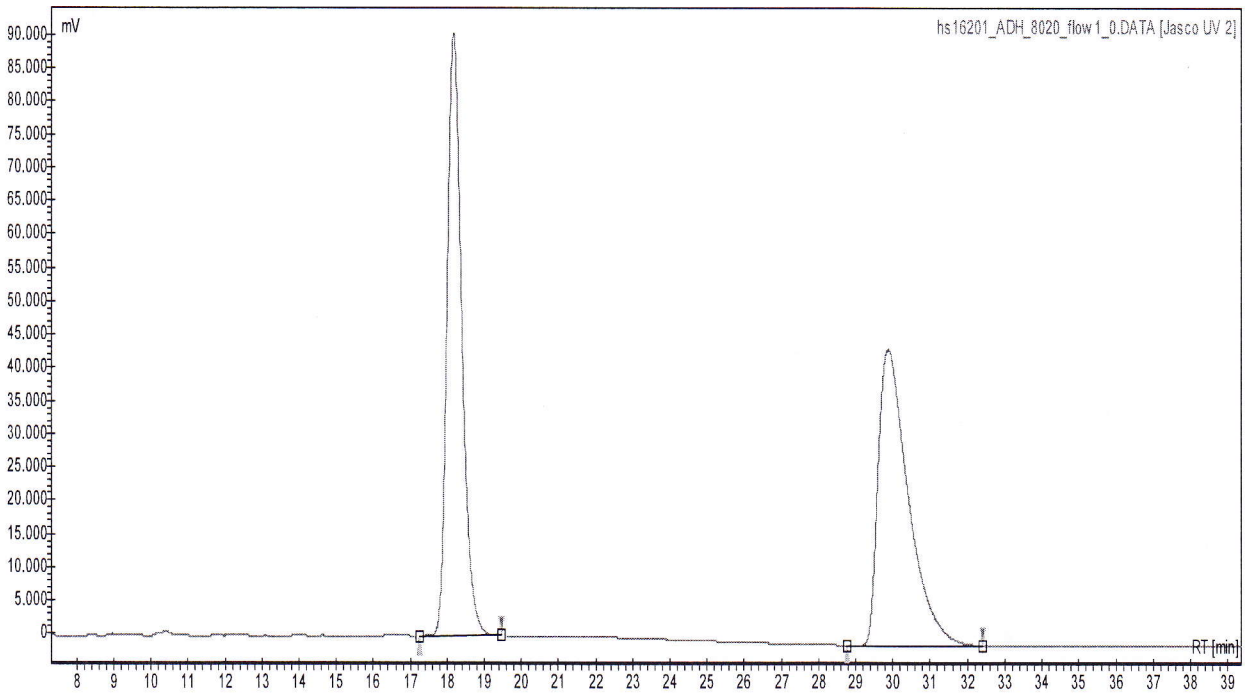




Chromatogram : hs16201_ADH_8020_flow1_0_channel2

System : Jasco HPLC 2
Method : HPLC2_ADH_8020_flow1_acq60
User : USER1

Acquired : 10.04.2008 15:43:37
Processed : 02.05.2008 10:31:38
Printed : 02.05.2008 10:34:21



Peak results :

hs16201_ADH_8020_flow1_0.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	17,231	18,175	19,463	50,162
2	28,760	29,875	32,417	49,838
Total				100,000

Group results :

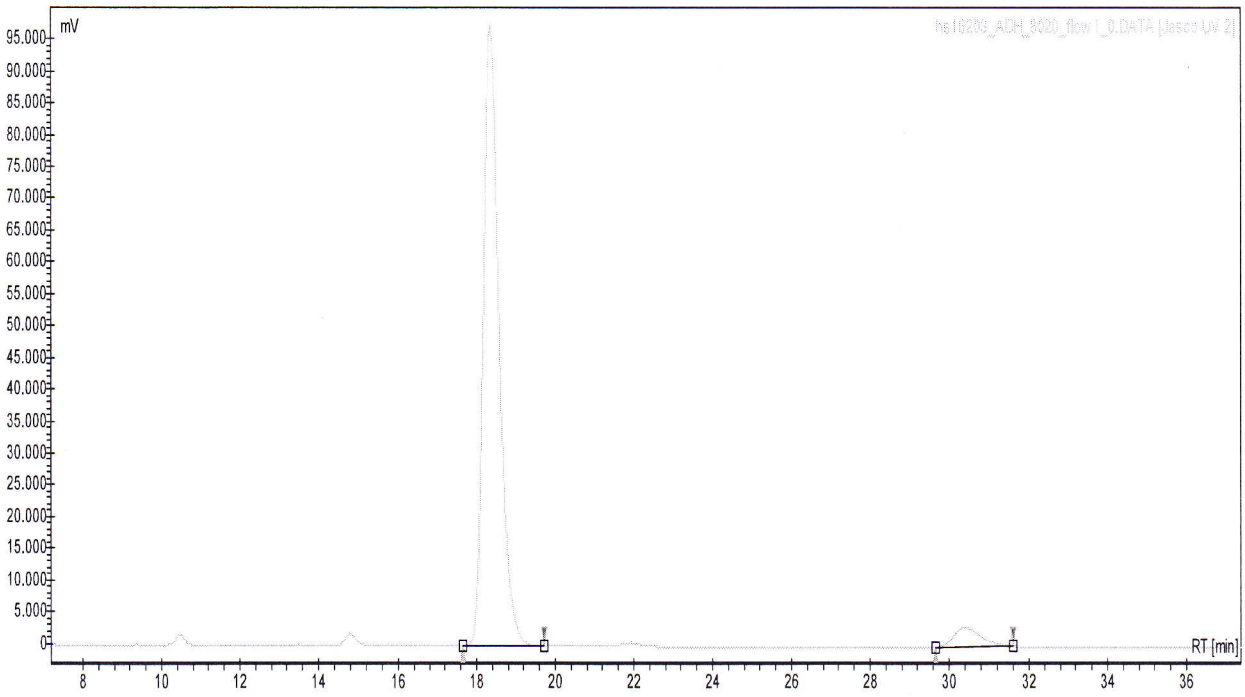
hs16201_ADH_8020_flow1_0.DATA [Jasco UV 2]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

Chromatogram : hs16203_ADH_8020_flow1_0_channel2

System : Jasco HPLC 2
Method : HPLC2_ADH_8020_flow1_acq60
User : USER1

Acquired : 21.04.2008 23:58:28
Processed : 02.05.2008 10:32:22
Printed : 02.05.2008 10:33:16



Peak results :

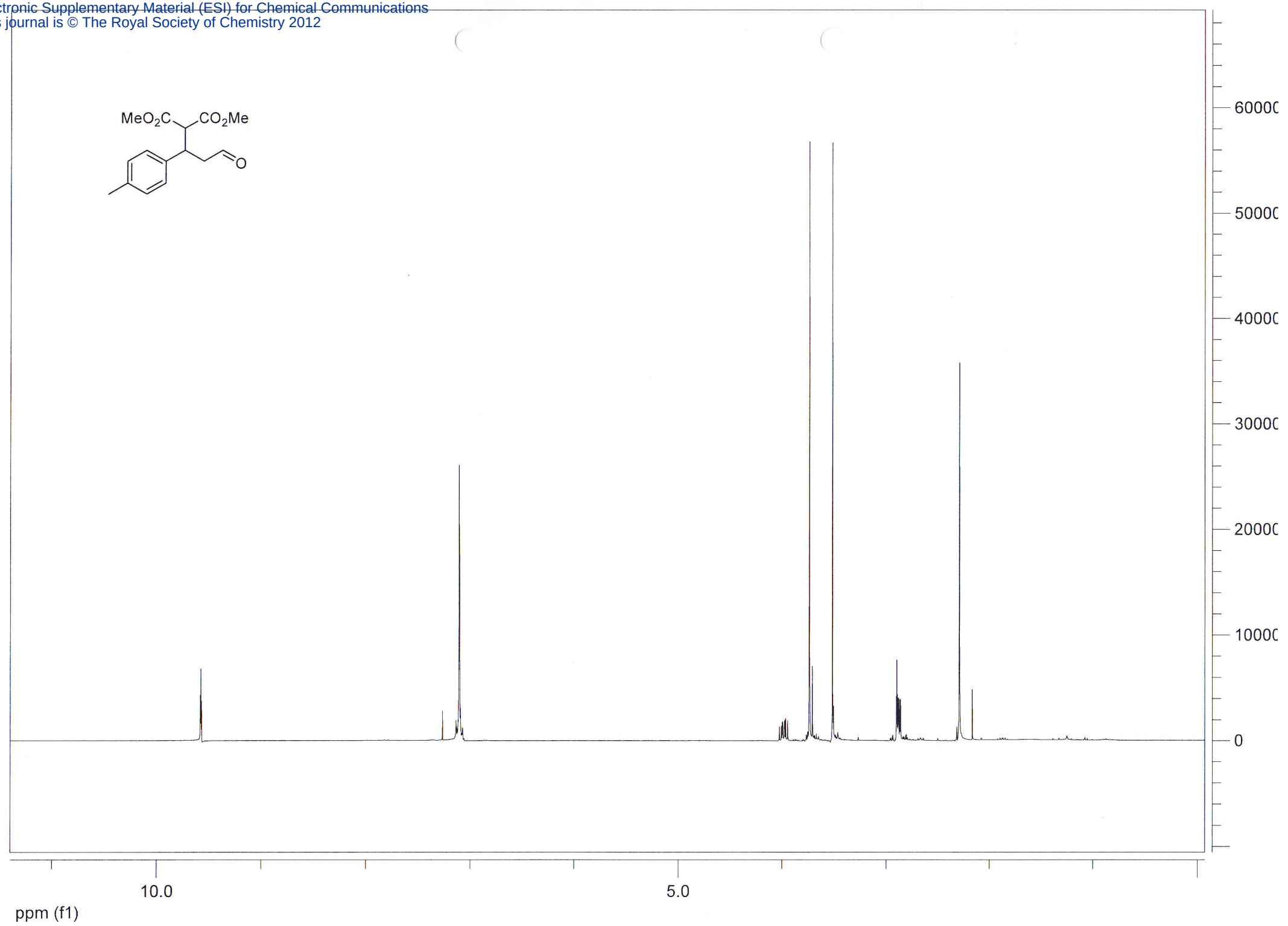
hs16203_ADH_8020_flow1_0.DATA [Jasco UV 2]

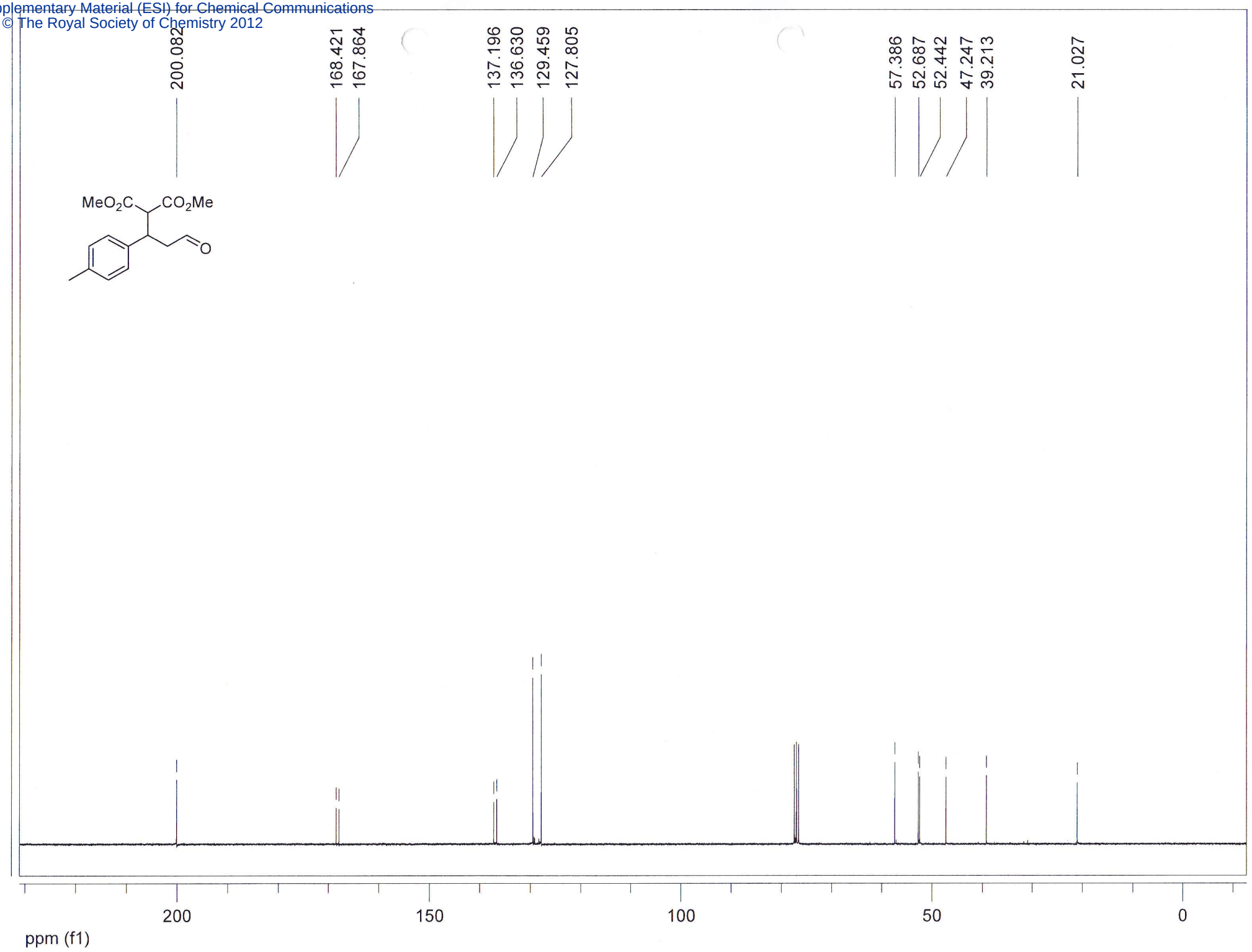
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	17,665	18,367	19,711	94,972
2	29,628	30,400	31,612	5,028
Total				100,000

Group results :

hs16203_ADH_8020_flow1_0.DATA [Jasco UV 2]

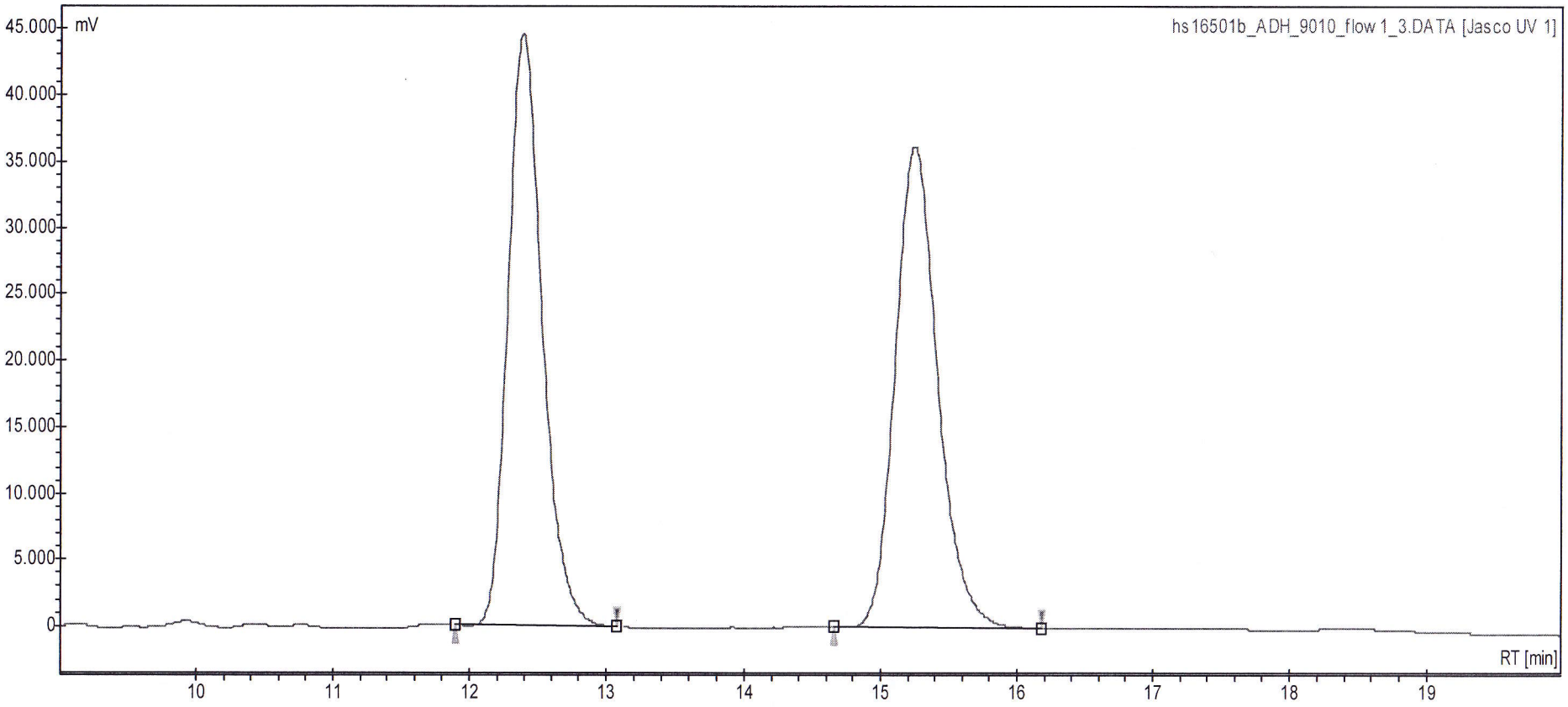
Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00





Chromatogram : hs16501b_ADH_9010_flow1_3

Method:HPLC2_ADH_9010_flow1_acq30
Data file: hs16501b_ADH_9010_flow1_3.DATA
Date: 01.05.2008 14:01:25



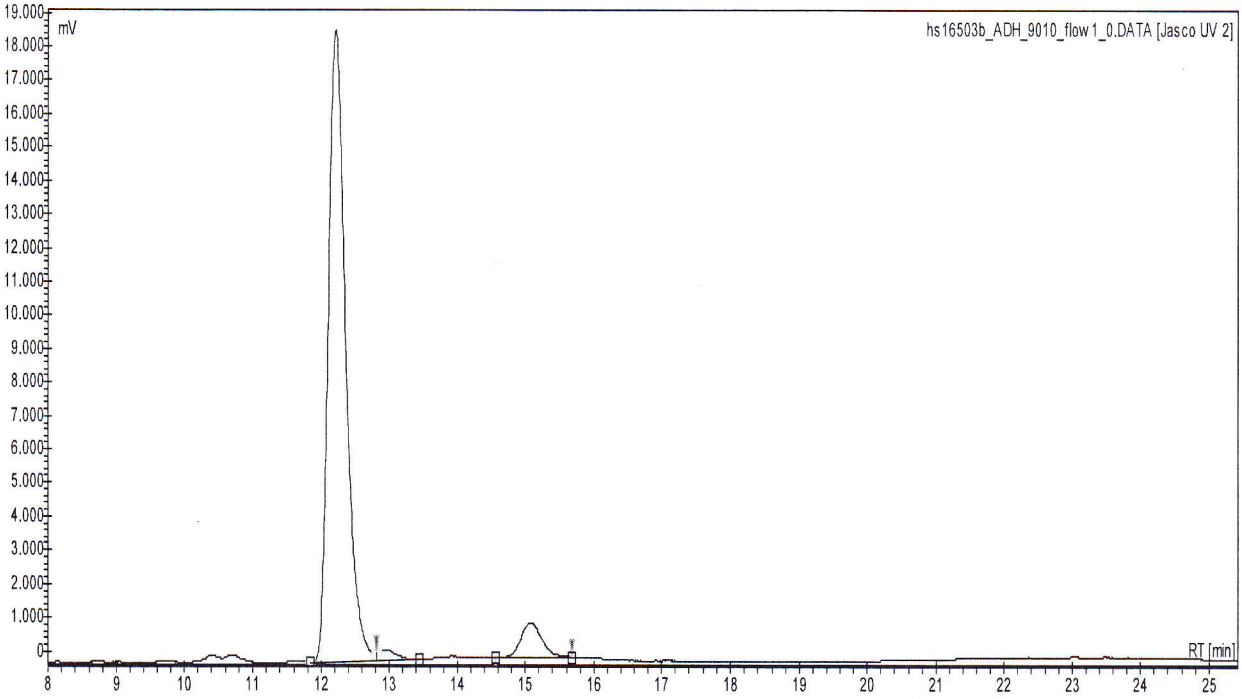
hs16501b_ADH_9010_flow1_3.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	11,901	12,383	13,079	49,864
2	14,659	15,250	16,178	50,136
Total				100,000

Chromatogram : hs16503b_ADH_9010_flow1_0_channel2

System : Jasco HPLC 2
Method : HPLC2_ADH_9010_flow1_acq60
User : USER1

Acquired : 22.04.2008 23:34:30
Processed : 02.05.2008 10:45:18
Printed : 02.05.2008 10:49:04



Peak results :

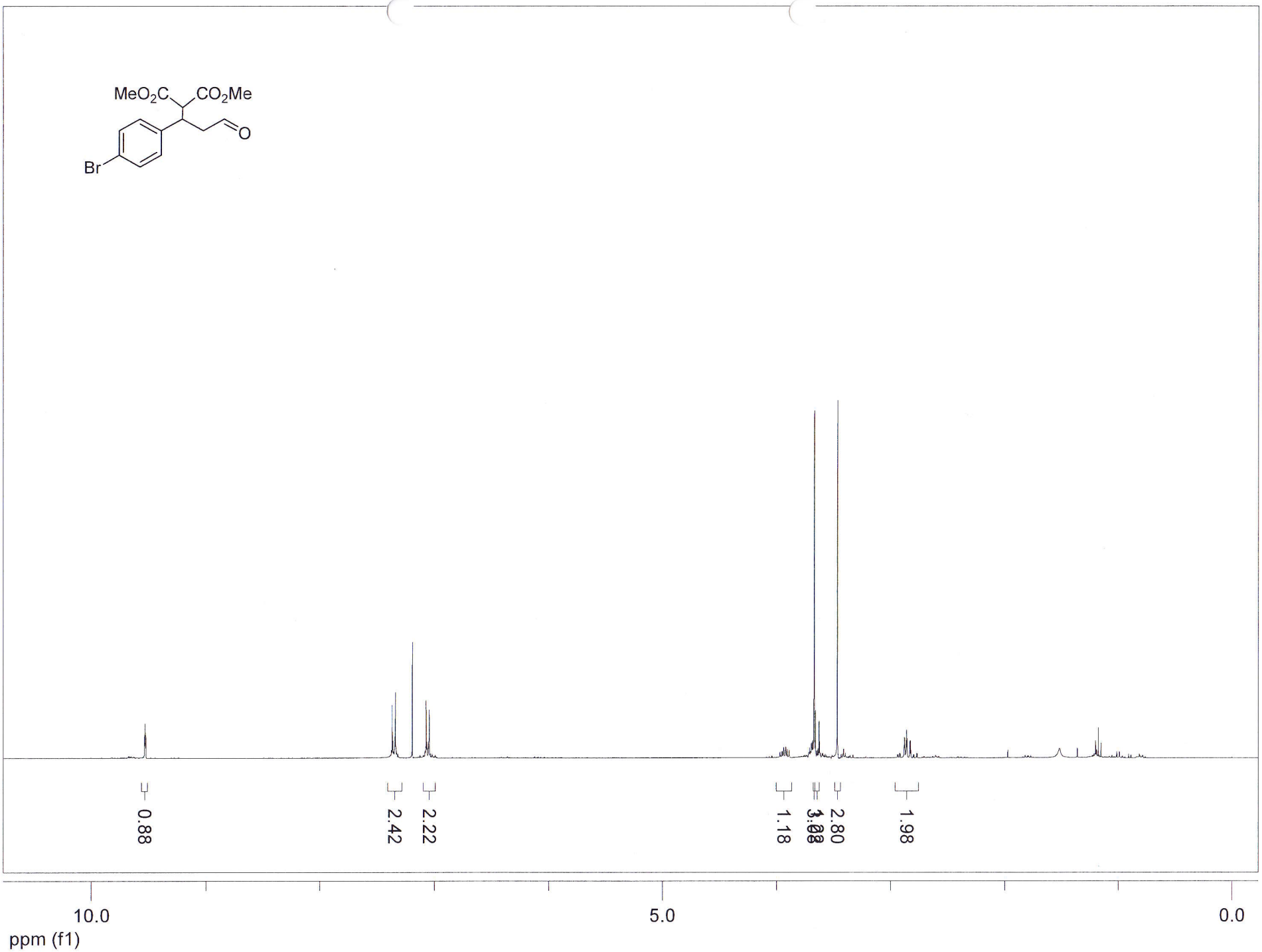
hs16503b_ADH_9010_flow1_0.DATA [Jasco UV 2]

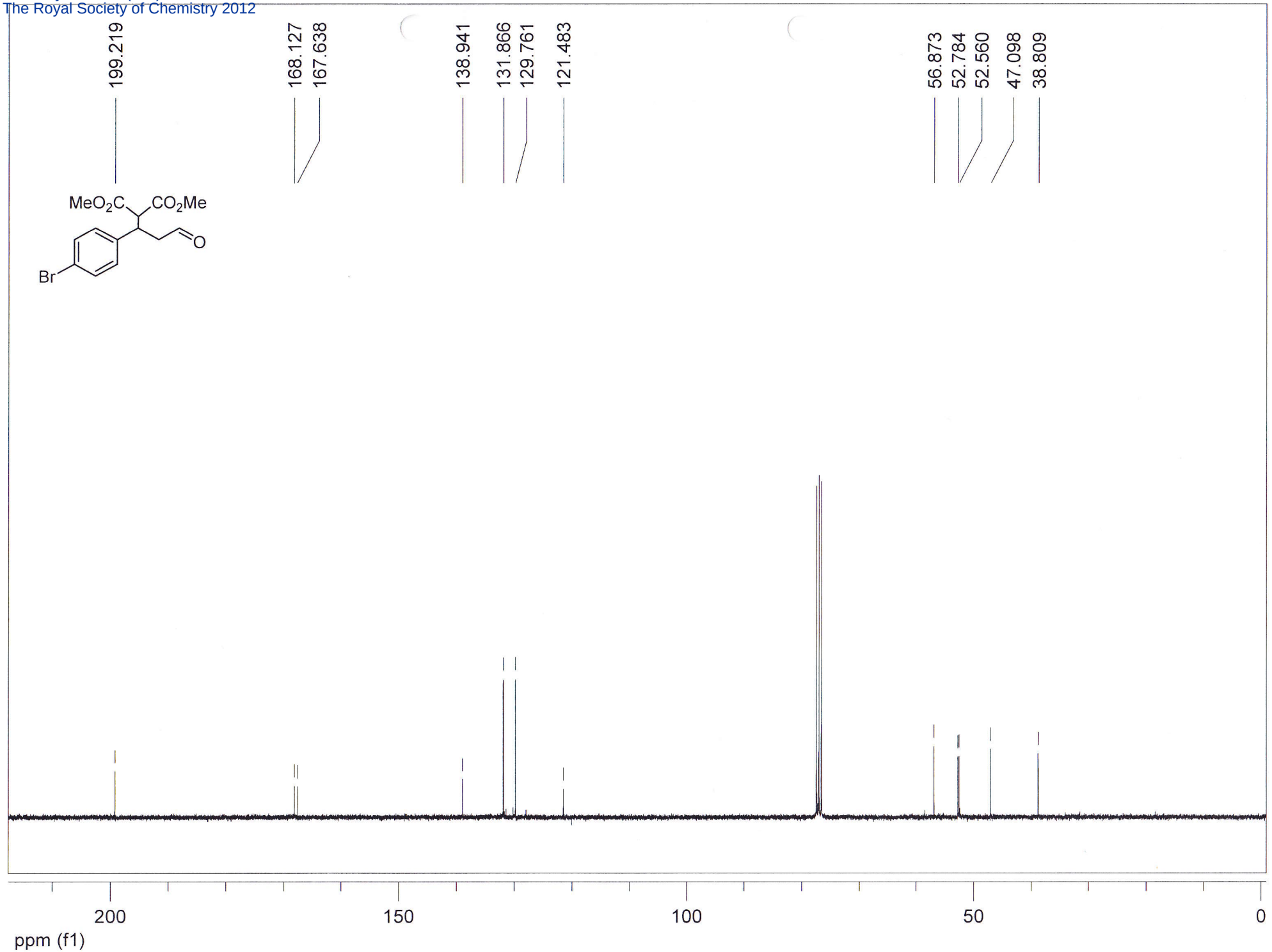
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	11,848	12,217	12,816	93,717
2	14,571	15,075	15,686	6,283
Total				100,000

Group results :

hs16503b_ADH_9010_flow1_0.DATA [Jasco UV 2]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

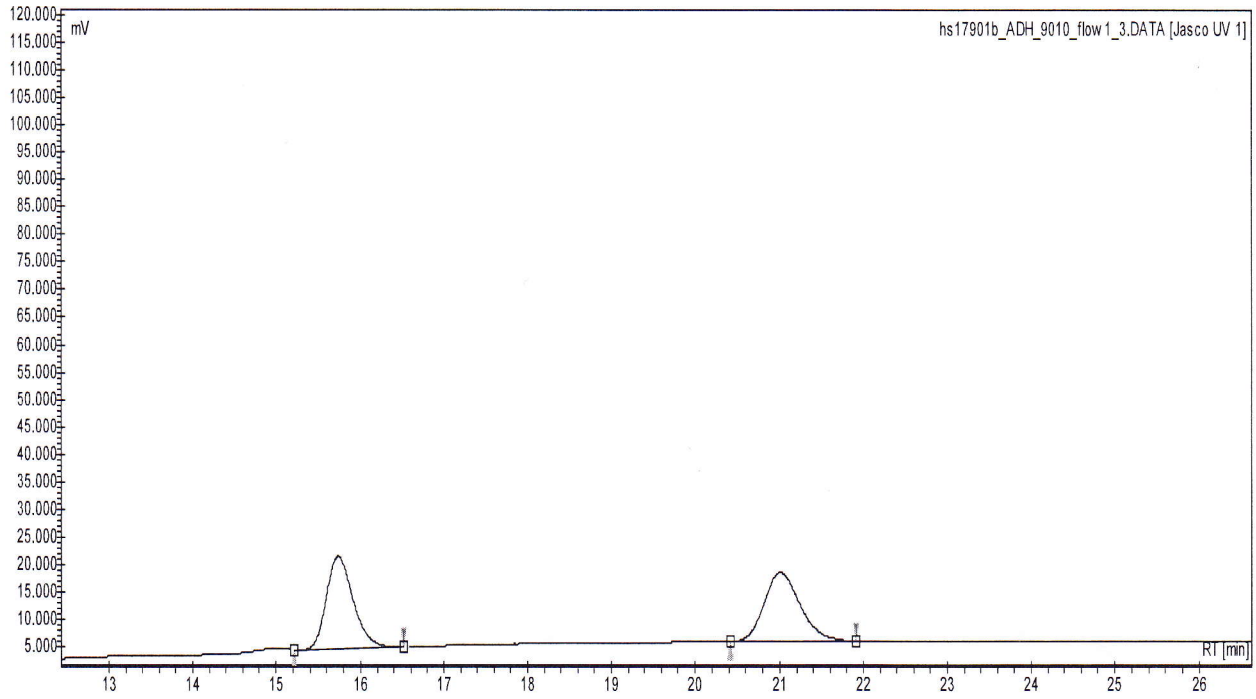




Chromatogram : hs17901b_ADH_9010_flow1_3_channel1

System : Jasco HPLC 2
Method : HPLC2_ADH_9010_flow1_acq30
User : USER1

Acquired : 01.05.2008 16:31:58
Processed : 02.05.2008 10:59:29
Printed : 02.05.2008 11:04:05



Peak results :

hs17901b_ADH_9010_flow1_3.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	15,217	15,733	16,519	49,845
2	20,424	21,017	21,911	50,155
Total				100,000

Group results :

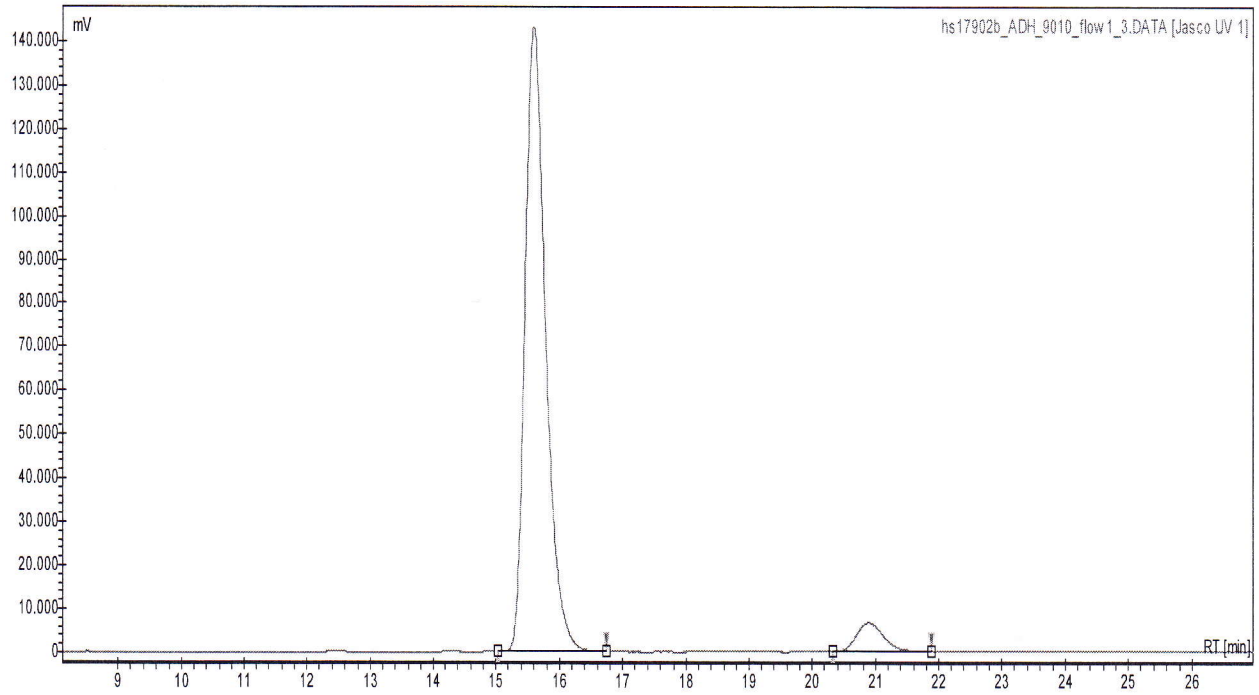
hs17901b_ADH_9010_flow1_3.DATA [Jasco UV 1]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

Chromatogram : hs17902b_ADH_9010_flow1_3_channel1

System : Jasco HPLC 2
Method : HPLC2_ADH_9010_flow1_acq30
User : USER1

Acquired : 01.05.2008 17:04:36
Processed : 02.05.2008 11:00:28
Printed : 02.05.2008 11:01:11



Peak results :

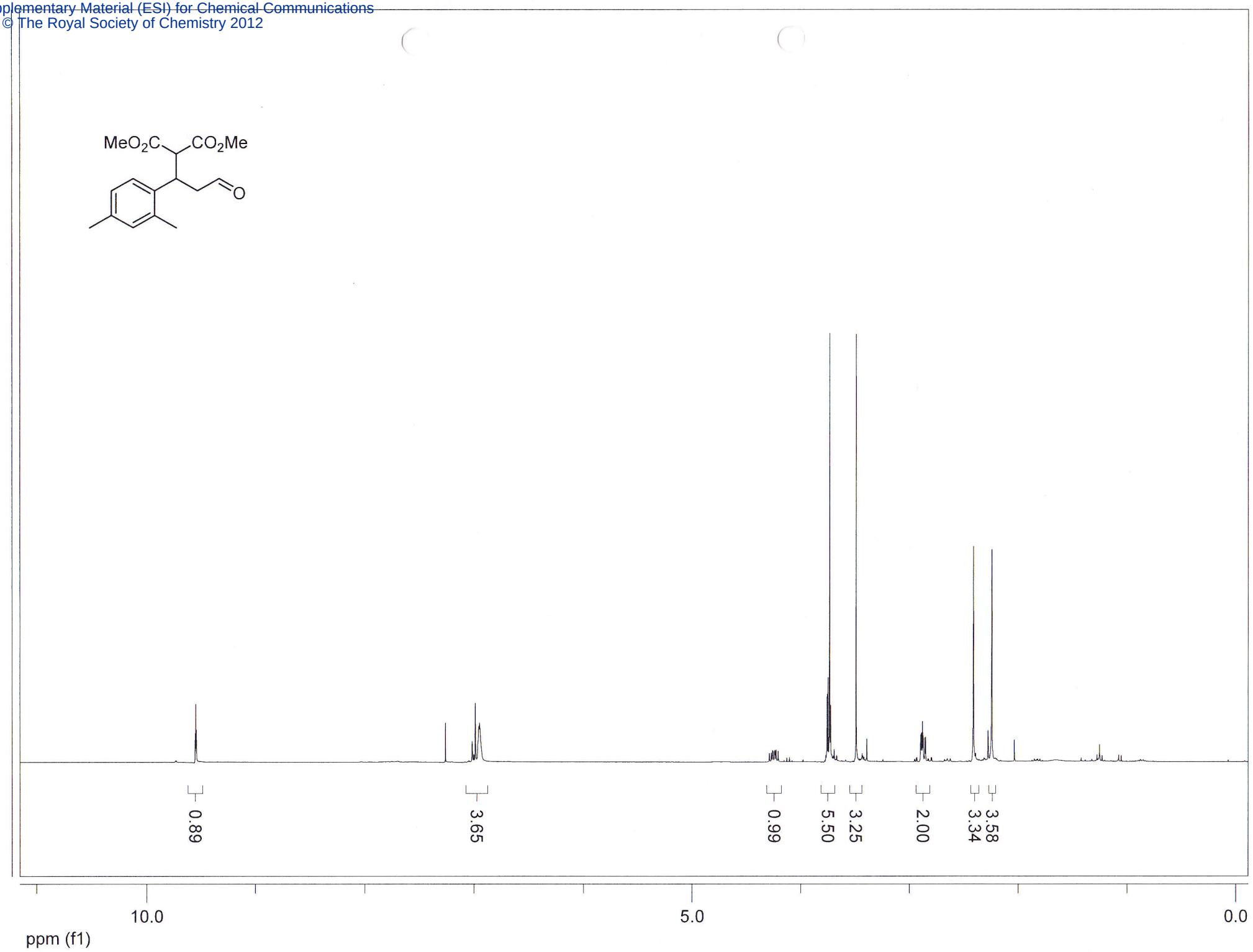
hs17902b_ADH_9010_flow1_3.DATA [Jasco UV 1]

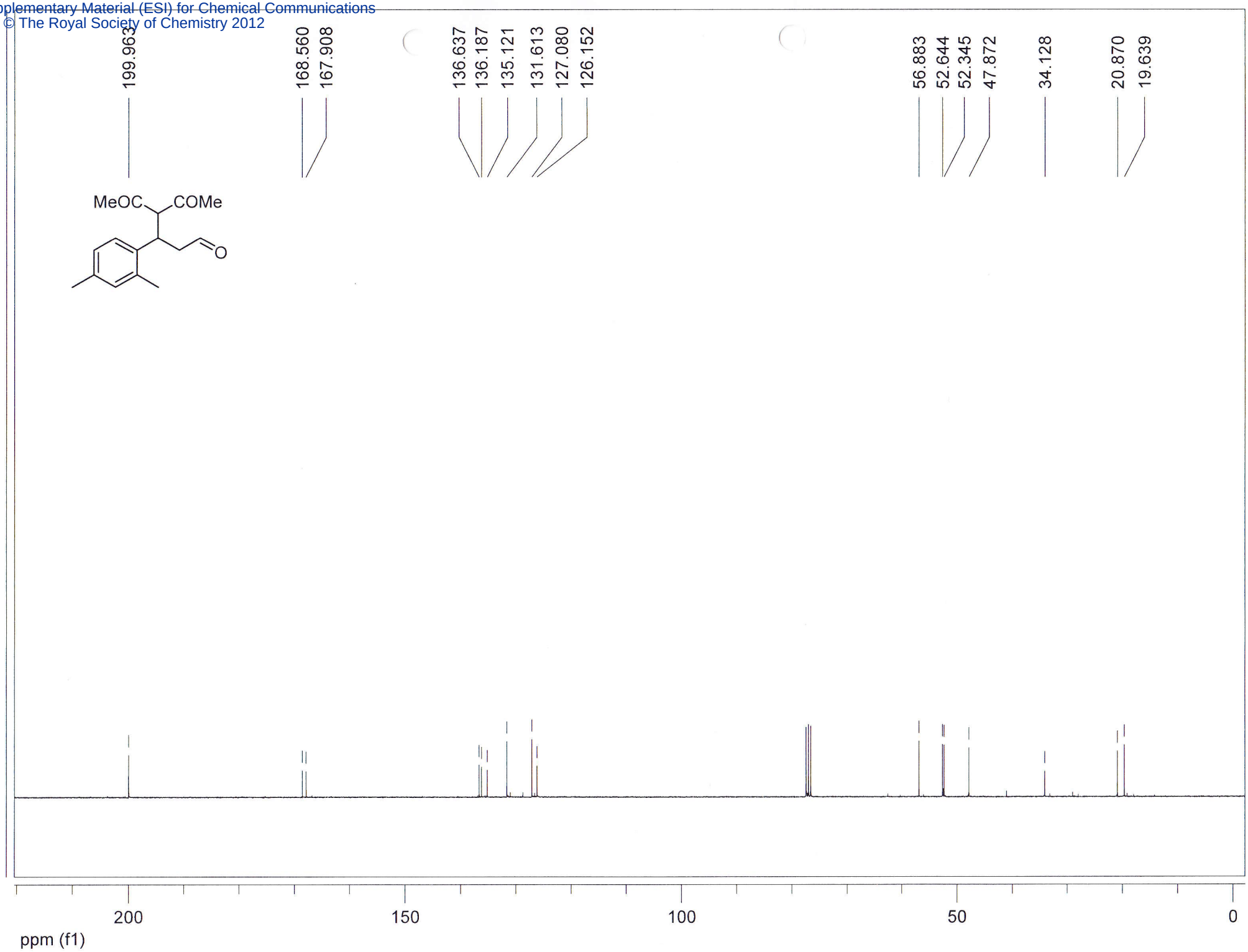
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	15,031	15,592	16,736	94,157
2	20,331	20,900	21,880	5,843
Total				100,000

Group results :

hs17902b_ADH_9010_flow1_3.DATA [Jasco UV 1]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

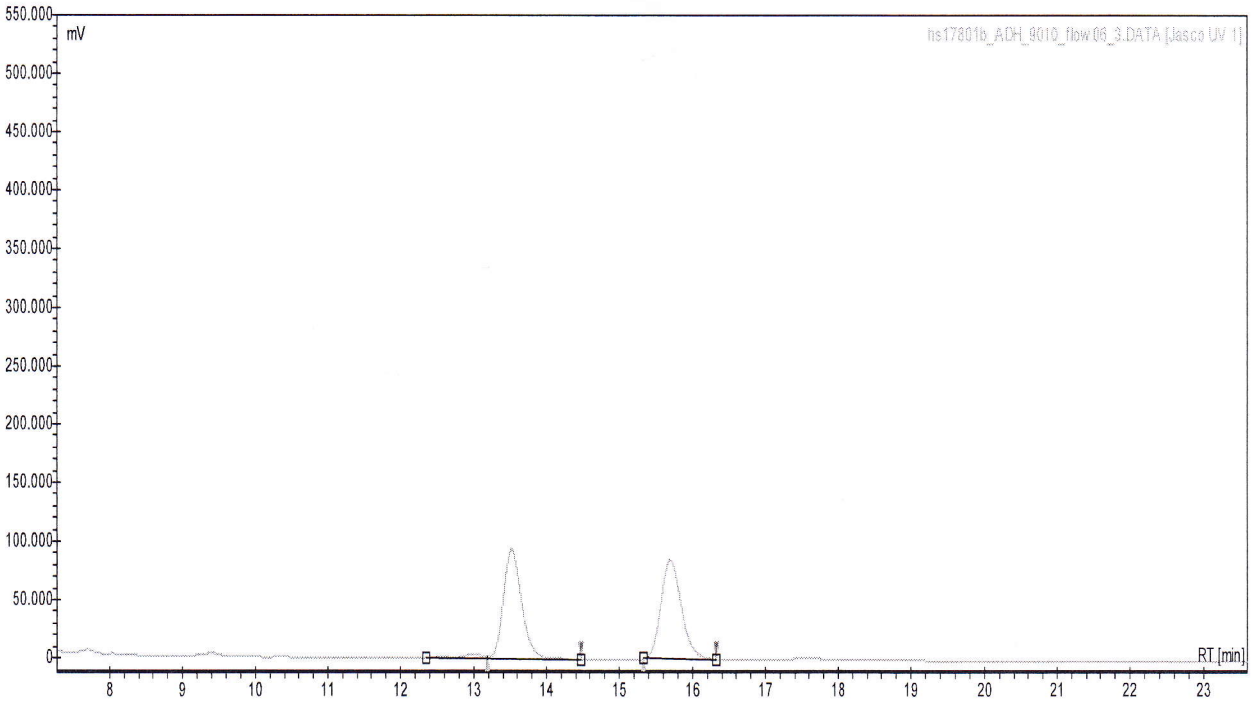




Chromatogram : hs17801b_ADH_9010_flow06_3_channel1

System : Jasco HPLC 2
Method : HPLC2_ADH_9010_flow06_acq40
User : USER1

Acquired : 01.05.2008 15:06:42
Processed : 02.05.2008 10:55:32
Printed : 02.05.2008 10:56:24



Peak results :

hs17801b_ADH_9010_flow06_3.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	13,191	13,525	14,470	49,591
1	15,331	15,700	16,322	50,409
Total				100,000

Group results :

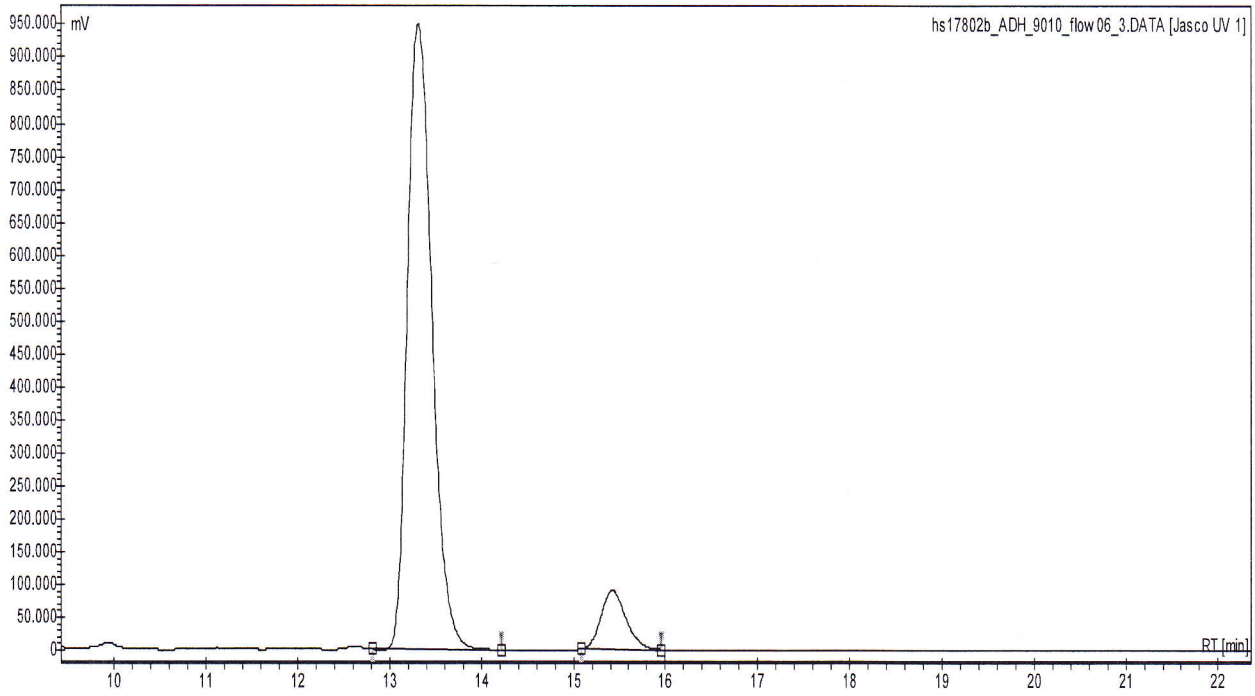
hs17801b_ADH_9010_flow06_3.DATA [Jasco UV 1]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00

Chromatogram : hs17802b_ADH_9010_flow06_3_channel1

System : Jasco HPLC 2
Method : HPLC2_ADH_9010_flow06_acq40
User : USER1

Acquired : 01.05.2008 15:49:21
Processed : 02.05.2008 10:57:05
Printed : 02.05.2008 10:57:54



Peak results :

hs17802b_ADH_9010_flow06_3.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	12,810	13,308	14,215	91,351
2	15,083	15,425	15,950	8,649
Total				100,000

Group results :

hs17802b_ADH_9010_flow06_3.DATA [Jasco UV 1]

Index	Name	Area	Quantity	RF	Resp.
		[mV.Min]	[% Area]		
Total		0,0	0,00		0,00