Supporting Information

Manganese-Catalyzed Aerobic Dehydrogenative Cyclization toward Ring-Fused Indole Skeletons

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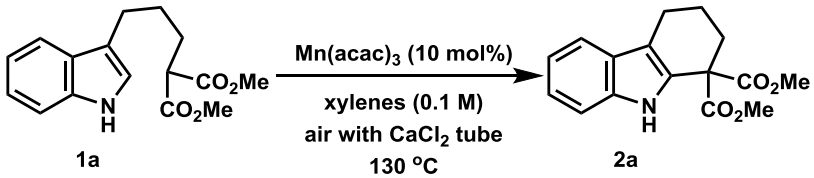
1. General Method

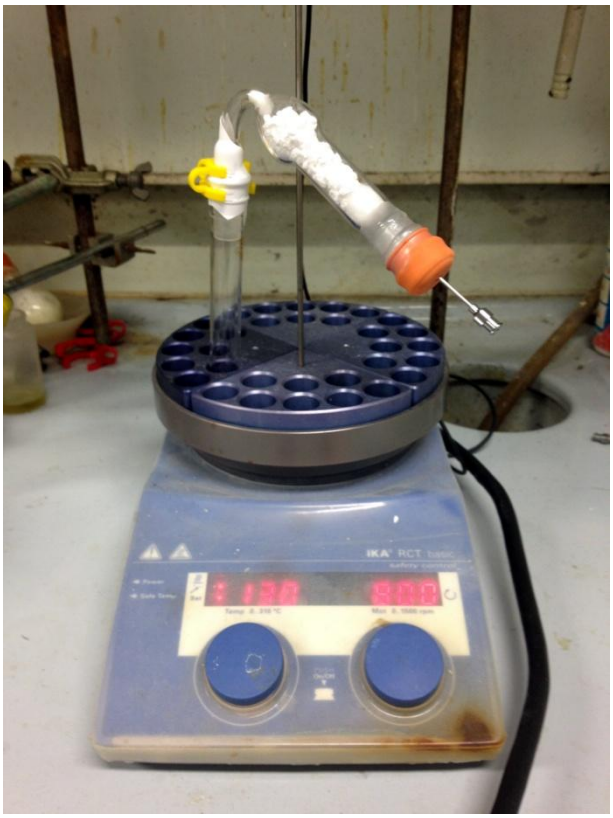
^{1}H NMR spectra were recorded on a JEOL JNM-LA500 spectrometer operating at 500 MHz for ^{1}H NMR and 125.65 MHz for ^{13}C NMR. Chemical shifts were reported downfield from TMS (δ = 0 ppm) for ^{1}H NMR. For ^{13}C NMR, chemical shifts were reported in the scale relative to the solvent used as an internal reference. ESI-mass spectra were measured on a JEOL JMS-T100LC AccuTOF spectrometer (for HRMS). Column chromatographies were performed with silica gel Merck 60 (230-400 mesh ASTM). Indoles **1a-i** were prepared as described in this Supporting Information. Other reagents were purchased from Aldrich, TCI (Tokyo Chemical Industry Co., Ltd.), Kanto Chemical Co., Inc., and Wako Pure Chemical Industries, Ltd. and used without further purification.

2. General Procedure for Construction of Ring-Fused Indole Skeleton



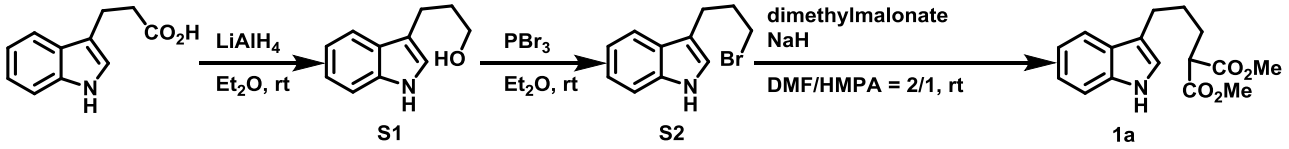
1a **2a**

1a (30 mg, 0.104 mmol), $Mn(acac)_3$ (3.7 mg, 0.0105 mmol) and xylenes (1.0 mL) were added in a flamed-dried test tube. The three-way cock was changed to $CaCl_2$ tube and the mixture was stirred at 130 ^{o}C by using heat block under air for 15 h. The mixture was directly purified by flash column chromatography (silica gel, hexane/ethyl acetate = 4:1) to afford **2a** (84% yield). All entries were performed with the same procedure except for purification process (varied eluent systems were used). Typical reaction setup is as photographed below.



3. Substrate Synthesis

dimethyl 2-(3-(1H-indol-3-yl)propyl)malonate (1a)



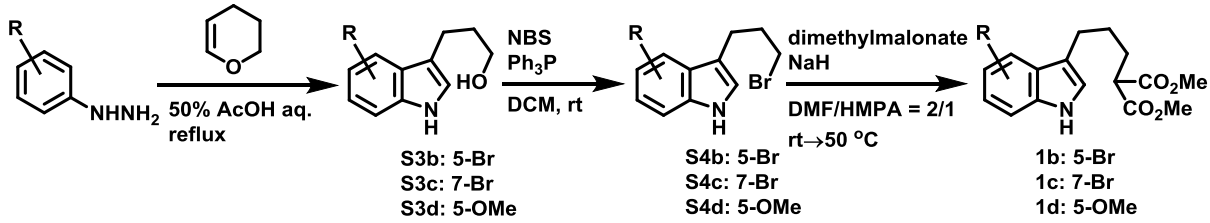
According to the reported procedure[1], **S2** was obtained in 41% yield (for 2 steps). .

Then, DMF (12 mL), HMPA (15 mL), sodium hydride (467 mg, 0.0195 mol) and dimethylmalonate (2.53g, 0.0192 mol) were added in a flamed-dried flask and the reaction mixture was stirred at room temperature for 90 min. Then, the reaction mixture was added in a flamed-dried flask which was filled with **S2** (3.85 g, 0.0162 mol), DMF (19 mL) and HMPA (2.0 mL). The reaction mixture was stirred at room temperature for 14 h. The reaction mixture was diluted with ethyl acetate and the organic phase was washed with water, dried over Na_2SO_4, filtered and evaporated to give crude **1a**. Crude **1a** was purified by silica gel column chromatography (hexane/ethyl acetate=4/1) to give pure **1a** in 57% yield (2.67 g) as yellow oil.

dimethyl 2-(3-(5-bromo-1H-indol-3-yl)propyl)malonate (1b)

dimethyl 2-(3-(7-bromo-1H-indol-3-yl)propyl)malonate (1c)

dimethyl 2-(3-(5-methoxy-1H-indol-3-yl)propyl)malonate (1d)

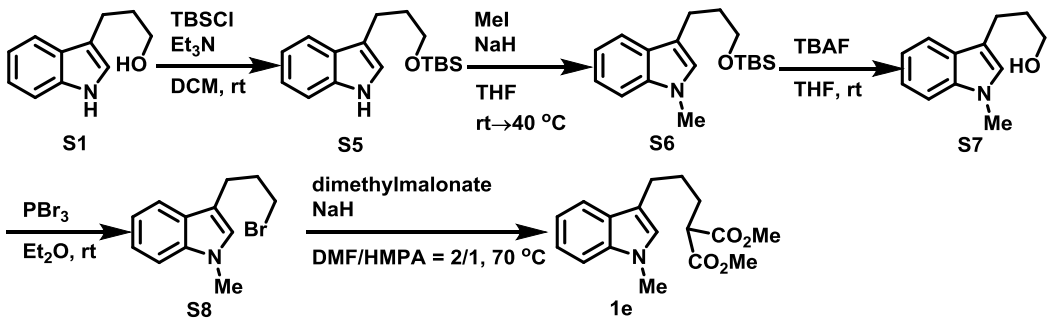


According to the reported procedure[2], **S3b**, **S3c** and **S3d** were obtained in 72%, 64% and 8% yield, respectively.

Then, **S3b** (3.41 g, 0.0134 mol), dichloromethane (13.5 mL), triphenylphosphine (5.27 g, 0.0201 mol) and *N*-bromosuccineimide (3.58 g, 0.0201 mol) were added in a flamed-dried flask and the reaction mixture was stirred at room temperature for 21 h. The organic phase was evaporated and the residue was purified by silica gel column chromatography (hexane/ethyl acetate = 10/1 → 3/1) to give **S4b** in 66% yield (2.81 g) as yellow oil. Using the same procedure as that for **S4b**, **S4c** and **S4d** were obtained in 36% and 50% yield, respectively.

Then, using the same procedure as that for **1a**, **1b**, **1c** and **1d** were obtained in 63%, 63% and 52% yield as yellow oil, respectively.

dimethyl 2-(3-(1-methyl-1H-indol-3-yl)propyl)malonate (1e)



S1 (5.54 g, 0.0316 mol), DCM (160 mL), TBSCl (5.72 g, 0.0380 mol) and Et_3N (6.2 mL, 0.0443 mol) were added in a flamed-dried flask and the reaction mixture was stirred at room temperature for 18.5 h. The reaction was quenched with sat. NH_4Cl aq. The organic phase was washed with brine, dried over Na_2SO_4, filtered and evaporated to give crude **S5**. Crude **S5** was purified by silica gel column chromatography (hexane/ethyl acetate=8/1) to give **S5** in 79% (7.21 g) as red oil.

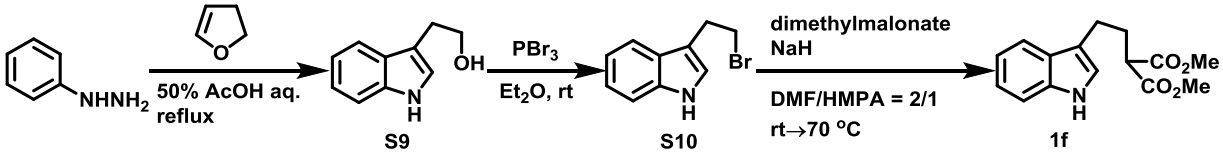
S5 (2.00 g, 6.91 mmol), sodium hydride (249 mg, 10.4 mmol) and THF (23 mL) were added in a flamed-dried flask at 0 °C and the reaction mixture was stirred at room temperature for 90 min. Then, methyl iodide (560 μL, 9.00 mmol) was added in the reaction at 0 °C and the reaction mixture was stirred at room temperature for 14.5 h. The reaction was quenched with sat. NH_4Cl aq. Products were extracted with diethylether. The combined organic layers were washed with sat. $NaHCO_3$ aq., dried over Na_2SO_4, filtered and evaporated to give crude **S6**. Crude **S6** was purified by silica gel column chromatography (hexane/ethyl acetae=30/1) to give **S6** in 41% yield (1.19 g) as brown oil.

S6 (1.19 g, 0.00392 mol), THF (13 mL) and 1 M TBAF in THF (7.8 mL, 0.00780 mol) were added in a flamed-dried flask at 0 °C and the reaction mixture was stirred at room temperature for 17 h. The reaction mixture was diluted with ethyl acetate and the organic phase was washed with sat. NH_4Cl aq., dried over Na_2SO_4, filtered and evaporated to give crude **S7**. Crude **S7** was purified by silica gel column chromatography (hexane/ethyl acetate=2/1) to give **S7** in 97% yield (717 mg) as yellow oil.

Using the same procedure as that for **S8** was obtained in 45% yield as yellow oil.

Then, using the same procedure as that for **1a** except for the purification method from silica column chromatography to preparative thin layer chromatography, **1e** was obtained in 8% yield as yellow oil.

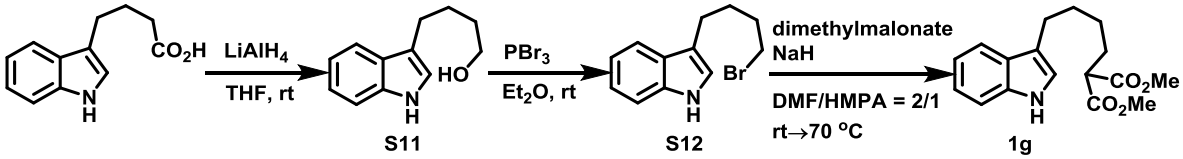
dimethyl 2-(2-(1H-indol-3-yl)ethyl)malonate (1f)



According to the reported procedure[2], **S9** was obtained in 46% yield as yellow oil.

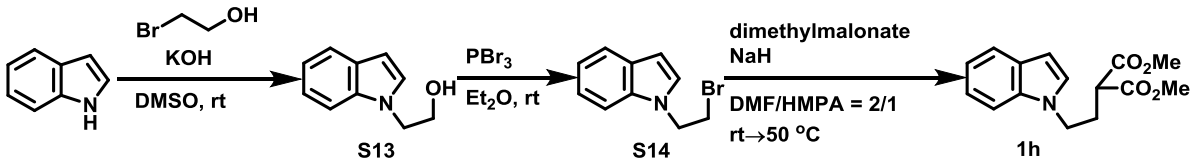
Then, using the same procedure as that for **1a**, **1f** was obtained in 43% yield as yellow oil (for 2 steps).

dimethyl 2-(4-(1H-indol-3-yl)butyl)malonate (1g)



Using the same procedure as that for **1a**, **1g** was obtained in 7% yield as yellow oil (for 3 steps).

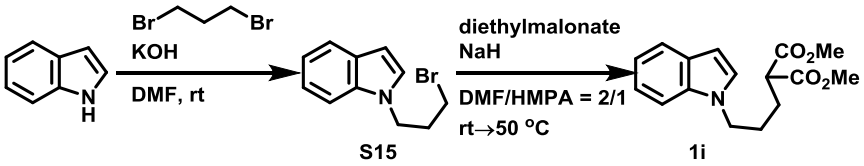
dimethyl 2-(3-(1H-indol-1-yl)propyl)malonate (1h)



According to the procedure[3], **S13** was obtained in 92% yield as yellow oil.

Then, using the same procedure as that for **1a**, **1h** was obtained in 2% yield as yellow oil (for 2 steps).

dimethyl 2-(2-(1H-indol-1-yl)ethyl)malonate (1i)

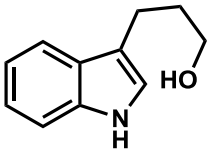


According to the procedure[4], **S15** was obtained in 88% yield as yellow oil.

Then, using the same procedure as that for **1a**, **1i** was obtained in 35% yield as that yellow oil.

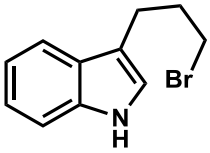
4. Characterization of Synthetic Intermediates

3-(*1H*-indol-3-yl)propan-1-ol (S1)



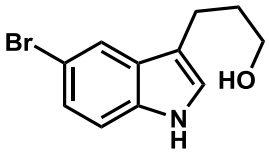
^{1}H NMR ($CDCl_3$): δ = 7.83 (1H, s), 7.73-7.48 (1H, m), 7.38-6.98 (3H, m), 6.89 (1H, s), 3.65 (2H, t, *J* = 6.1 Hz), 2.75 (2H, t, *J* = 6.1 Hz), 2.11 (1H, s); ^{13}C NMR ($CDCl_3$): δ = 136.37, 127.39, 121.74, 121.51, 119.00, 118.79, 115.54, 111.21, 62.44, 32.84, 21.30; HRMS (ESI): m/z calcd for $C_{11}H_{13}NONa$ $[M+Na]^+$ 198.0895. Found 198.0888.

3-(3-bromopropyl)-*1H*-indole (S2)



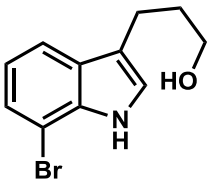
^{1}H NMR ($CDCl_3$): δ = 7.86-7.26 (2H, m), 7.20-6.96 (3H, m), 6.80 (1H, d, *J*= 2.3 Hz), 3.26 (2H, t, *J* = 5.8 Hz), 2.80 (2H, t, *J* = 6.1 Hz), 2.40-1.83 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 136.39, 127.35, 122.10, 121.86, 119.37, 118.88, 114.60, 111.26, 33.94, 32.94, 23.40; HRMS (ESI): m/z calcd for $C_{11}H_{12}BrNNa$ $[M+Na]^+$ 260.0051. Found 260.0040.

3-(5-bromo-*1H*-indol-3-yl)propan-1-ol (S3b)



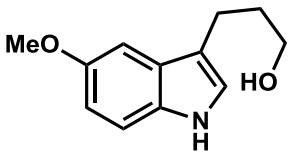
NMR spectra of the obtained product were consistent with the reported one[5].

3-(7-bromo-*1H*-indol-3-yl)propan-1-ol (S3c)



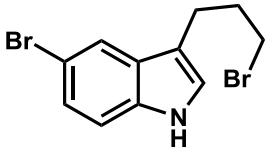
^{1}H NMR ($CDCl_3$): δ = 7.56 (1H, d, *J* = 8.2 Hz), 7.34 (1H, d, *J* = 8.2 Hz), 7.07 (1H, s), 6.99 (1H, t, *J* = 8.2 Hz), 3.73 (2H, t, *J* = 6.1 Hz), 2.85 (2H, t, *J* =8.2 Hz), 1.99 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 135.10, 128.81, 124.33, 122.09, 120.41, 118.22, 117.26, 104.84, 62.47, 32.90, 21.53; HRMS (ESI): m/z calcd for $C_{11}H_{12}BrNONa$ $[M+Na]^+$ 276.0000. Found 276.0013.

3-(5-methoxy-*1H*-indol-3-yl)propan-1-ol (S3d)



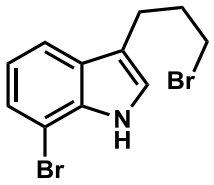
NMR spectra of the obtained product were consistent with the reported one[5].

5-bromo-3-(3-bromopropyl)-*1H*-indole (S4b)



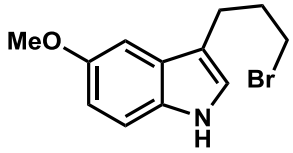
^{1}H NMR ($CDCl_3$): δ = 7.22 (1H, s), 7.27-7.24 (2H, m), 7.05 (1H, s), 3.45 (2H, t, *J* = 6.3 Hz), 2.90 (2H, t, *J* = 8.2 Hz), 2.22 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 135.07, 128.59, 124.44, 122.43, 120.59, 118.17, 115.95, 104.88, 33.70, 32.85, 23.54; HRMS (ESI): m/z calcd for $C_{11}H_{11}Br_2NNa$ $[M+Na]^+$ 337.9156 (51%), 339.9136 (100%). Found 339.9141.

7-bromo-3-(3-bromopropyl)-*1H*-indole (S4c)



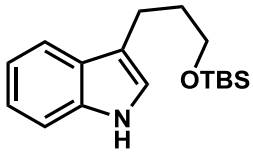
^{1}H NMR ($CDCl_3$): δ = 7.56 (1H, d, *J* = 8.2 Hz), 7.35 (1H, d, *J* = 7.1 Hz), 7.10 (1H, s), 7.00 (1H, t, *J* = 8.2 Hz), 3.43 (2H, t, *J* = 7.3 Hz), 2.93 (2H, t, *J* = 7.2 Hz), 2.24 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 135.07, 128.59, 124.44, 122.43, 120.59, 118.16, 115.95, 104.88, 33.70, 32.85, 23.54; HRMS (ESI): m/z calcd for $C_{11}H_{11}Br_2NNa$ $[M+Na]^+$ 337.9156 (51%), 339.9136 (100%). Found 339.9130.

3-(3-bromopropyl)-5-methoxy-*1H*-indole (S4d)



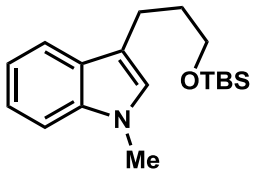
^{1}H NMR ($CDCl_3$): δ = 7.24 (1H, m), 7.05-7.02 (2H, m), 6.88 (1H, d, *J* = 6.2 Hz), 3.86 (3H, s), 3.45 (2H, t, *J* = 6.2 Hz), 2.91 (2H, t, *J* = 7.1 Hz), 2.23 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 154.04, 131.62, 127.86, 122.71, 114.46, 112.29, 111.99, 100.84, 56.09, 34.00, 32.96, 23.40; HRMS (ESI): m/z calcd for $C_{12}H_{14}BrNONa$ $[M+Na]^+$ 290.0157. Found 290.0166.

3-(3-((*tert*-butyldimethylsilyl)oxy)propyl)-*1H*-indole (S5)



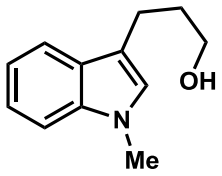
^{1}H NMR ($CDCl_3$): δ = 7.61 (1H, d, *J* = 8.1 Hz), 7.35 (1H, d, *J* = 8.5 Hz), 7.18 (1H, t, *J* = 7.2 Hz), 7.11 (1H, t, *J* = 8.2 Hz), 6.99 (1H, s), 3.70 (2H, t, *J* = 6.3 Hz), 2.82 (2H, t, *J* = 8.2 Hz), 1.94 (2H, m), 0.92 (9H, s), 0.065 (6H, s); ^{13}C NMR ($CDCl_3$): δ = 136.43, 127.67, 121.89, 121.31, 119.13, 119.05, 116.35, 111.16, 62.91, 33.29, 26.13, 21.41, 18.49, -5.09; HRMS (ESI): m/z calcd for $C_{17}H_{27}NOSiNa$ $[M+Na]^+$ 312.1760. Found 312.1750.

3-(3-((*tert*-butyldimethylsilyl)oxy)propyl)-1-methyl-*1H*-indole (S6)



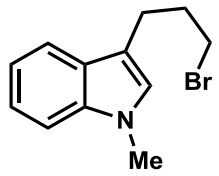
^{1}H NMR ($CDCl_3$): δ = 7.60 (1H, d, *J* = 7.1 Hz), 7.30 (1H, d, *J* = 8.5 Hz), 7.19 (1H, t, *J* = 7.1 Hz), 7.07 (1H, t, *J* = 6.7 Hz), 6.83 (1H, s), 3.74 (3H, s), 3.69 (2H, t, *J* = 6.2 Hz), 2.80 (2H, t, *J* = 7.6 Hz), 1.92 (2H, m), 0.92 (9H, s), 0.064 (6H, s); ^{13}C NMR ($CDCl_3$): δ = 137.17, 128.10, 126.17, 121.52, 119.20, 118.59, 115.02, 109.17, 62.89, 33.60, 32.59, 26.14, 21.37, 18.49, -5.08; HRMS (ESI): m/z calcd for $C_{18}H_{19}NOSiNa$ $[M+Na]^+$ 326.1916. Found 326.1925.

3-(1-methyl-*1H*-indol-3-yl)propan-1-ol (S7)



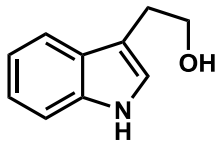
^{1}H NMR ($CDCl_3$): δ = 7.60 (1H, d, *J* = 8.2 Hz), 7.28 (1H, d, *J* = 8.2 Hz), 7.22 (1H, t, *J* = 7.1 Hz), 7.10 (1H, t, *J* = 7.1 Hz), 6.85 (1H, s), 3.72 (2H, t, *J* = 6.4 Hz), 2.85 (2H, t, *J* = 7.2 Hz), 1.98 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 137.11, 127.90, 126.23, 121.53, 119.02, 118.63, 114.47, 109.21, 62.54, 33.18, 32.53, 21.30; HRMS (ESI): m/z calcd for $C_{12}H_{15}NONa$ $[M+Na]^+$ 212.1051. Found 212.1048.

3-(3-bromopropyl)-1-methyl-*1H*-indole (S8)



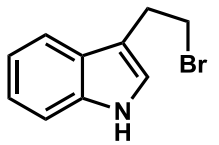
^{1}H NMR ($CDCl_3$): δ = 7.60 (1H, d, *J* = 8.1 Hz), 7.29 (1H, d, *J* = 8.1 Hz), 7.23 (1H, d, *J* = 6.7 Hz), 7.11 (1H, d, *J* = 6.7 Hz), 6.89 (1H, s), 3.75 (3H, s), 3.44 (2H, t, *J* = 5.8 Hz), 2.93 (2H, t, *J* = 6.7 Hz), 2.23 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 137.21, 127.84, 126.76, 121.70, 119.02, 118.83, 113.12, 109.35, 33.97, 33.24, 32.73, 23.37; HRMS (ESI): m/z calcd for $C_{12}H_{14}BrNNa$ $[M+Na]^+$ 274.0207. Found 274.0198.

2-(*1H*-indol-3-yl)ethan-1-ol (S9)



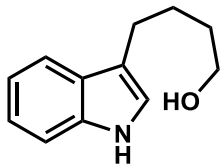
^{1}H NMR ($CDCl_3$): δ = 7.63 (1H, d, *J* = 8.1 Hz), 7.36 (1H, d, *J* = 8.1 Hz), 7.20 (1H, t, *J* = 6.2 Hz), 7.13 (1H, t, *J* = 6.1 Hz), 7.05 (1H, s), 4.35 (2H, t, *J* = 6.3 Hz), 3.10 (2H, t, *J* = 6.3 Hz); ^{13}C NMR ($CDCl_3$): δ = 136.45, 127.41, 122.71, 122.10, 119.39, 118.81, 112.02, 111.36, 62.59, 28.69; HRMS (ESI): m/z calcd for $C_{10}H_{11}NONa$ $[M+Na]^+$ 184.0738. Found 184.0732.

3-(2-bromoethyl)-*1H*-indole (S10)



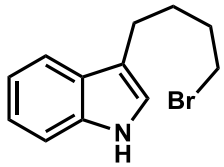
^{1}H NMR ($CDCl_3$): δ = 7.59 (1H, d, *J* = 8.1 Hz), 7.38 (1H, d, *J* = 8.1 Hz), 7.21 (1H, t, *J* = 7.0 Hz), 7.14 (1H, t, *J* = 7.0 Hz), 7.10 (1H, s), 3.64 (2H, t, *J* = 8.2 Hz), 3.34 (2H, t, *J* = 8.2 Hz); ^{13}C NMR ($CDCl_3$): δ = 136.17, 127.00, 122.36, 122.30, 119.67, 118.56, 113.49, 111.39, 33.06, 29.37; HRMS (ESI): m/z calcd for $C_{10}H_{10}BrNNa$ $[M+Na]^+$ 245.9894. Found 245.9894.

4-(*1H*-indol-3-yl)butan-1-ol (S11)



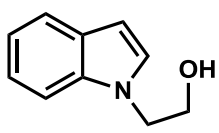
^{1}H NMR ($CDCl_3$): δ = 7.61 (1 H, d, *J* = 8.1 Hz), 7.35 (1H, d, *J* = 8.1 Hz), 7.18 (1H, t, *J* = 6.3 Hz), 7.11 (1H, t, *J* = 6.3 Hz), 6.99 (1H, s), 3.68 (2H, t, *J* = 5.6 Hz), 2.81 (2H, t, *J* = 6.8 Hz), 1.84-1.64 (4H, m); ^{13}C NMR ($CDCl_3$): δ = 136.29, 127.37, 121.52, 121.46, 118.79, 118.73, 115.92, 62.50, 32.36, 26.19, 24.76; HRMS (ESI): m/z calcd for $C_{12}H_{15}NONa$ $[M+Na]^+$ 212.1051. Found 212.1044.

3-(4-bromobutyl)-*1H*-indole (S12)



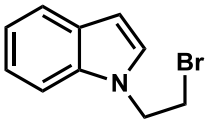
^{1}H NMR ($CDCl_3$): δ = 7.59 (1H, d, *J* = 8.1 Hz), 7.35 (1H, d, *J* = 8.1 Hz), 7.19 (1H, t, *J* = 6.8 Hz), 7.11 (1H, t, *J* = 6.8 Hz), 6.99 (1H, s), 3.45 (2H, t, *J* = 5.1 Hz), 2.80 (2H, t, *J* = 7.1 Hz), 1.99-1.85 (4H, m); ^{13}C NMR ($CDCl_3$): δ = 136.44, 127.55, 122.09, 121.34, 119.32, 119.00, 116, 21, 111.22, 34.04, 32.69, 28.72, 24.40; HRMS (ESI): m/z calcd for $C_{12}H_{14}BrNNa$ $[M+Na]^+$ 274.0207. Found 274.0194.

2-(*1H*-indol-1-yl)ethan-1-ol (S13)



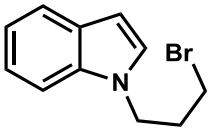
NMR spectra of the obtained product were consistent with the reported one[3].

1-(2-bromoethyl)-*1H*-indole (S14)



NMR spectra of the obtained product were consistent with the reported one[6].

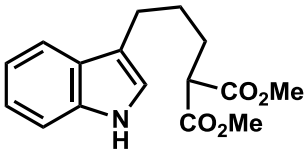
1-(3-bromopropyl)-*1H*-indole (S15)



NMR spectra of the obtained product were consistent with the reported one[4].

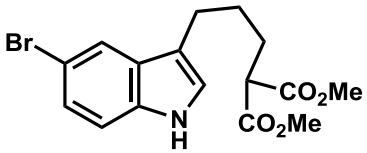
5. Characterization of Starting and Target Compounds

dimethyl 2-(3-(*1H*-indol-3-yl)propyl)malonate (1a)



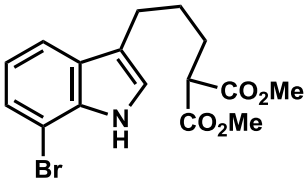
^{1}H NMR ($CDCl_3$): δ = 7.57 (1H, d, *J* = 8.0 Hz), 7.35 (1H, d, *J* = 8.0 Hz), 7.18 (1H, t, *J* = 8.2 Hz), 7.11 (1H, t, *J* = 8.2 Hz), 6.99 (1H, s), 3.71 (6H, s), 3.41 (1H, t, *J* = 3.2 Hz), 2.79 (2H, t, *J* = 6.7 Hz), 2.02 (2H, t, *J* = 6.7 Hz), 1.75 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.06, 136.45, 127.46, 121.95, 121.45, 119.20, 118.88, 115.79, 111.21, 52.57, 51.70, 28.79, 27.80, 24.84; HRMS (ESI): m/z calcd for $C_{16}H_{19}NO_4Na$ $[M+Na]^+$ 312.1212. Found 312.1225.

dimethyl 2-(3-(5-bromo-*1H*-indol-3-yl)propyl)malonate (1b)



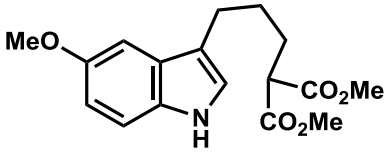
^{1}H NMR ($CDCl_3$): δ = 7.68 (1H, s), 7.24-7.21 (2H, m), 6.99 (1H, s), 3.73 (6H, s), 3.41 (1H, t, *J* = 7.2 Hz), 2.74 (2H, t, *J* = 7.2 Hz), 2.00 (2H, m), 1.73 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.06, 135.05, 129.22, 124.70, 122.78, 121.45, 115.42, 112.70, 112.43, 52.63, 51.61, 28.68, 27.65, 24.63; HRMS (ESI): m/z calcd for $C_{16}H_{18}BrNO_4Na$ $[M+Na]^+$ 390.0317. Found 390.0307.

dimethyl 2-(3-(7-bromo-*1H*-indol-3-yl)propyl)malonate (1c)



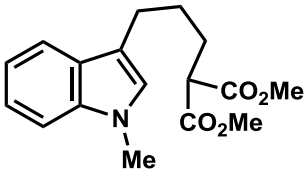
^{1}H NMR ($CDCl_3$): δ = 7.52 (1H, d, *J* = 8.6 Hz), 7.34 (1H, d, *J* = 8.2 Hz), 7.05 (1H, s), 6.99 (1H, dd, *J* = 8.6 Hz), 3.72 (6H, s), 3.40 (1H, t, *J* = 7.3 Hz), 2.77 (2H, t, *J* = 7.2 Hz), 2.01 (2H, m), 1.73 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 169.96, 135.08, 128.70, 124.30, 122.10, 120.40, 118.15, 117.10, 104.81, 52.59, 51.63, 28.69, 27.73, 25.96; HRMS (ESI): m/z calcd for $C_{16}H_{18}BrNO_4Na$ $[M+Na]^+$ 390.0317. Found 390.0312.

dimethyl 2-(3-(5-methoxy-*1H*-indol-3-yl)propyl)malonate (1d)



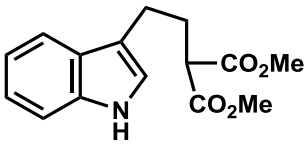
^{1}H NMR ($CDCl_3$): δ = 7.25 (1H, m), 7.00 (1H, d, *J* = 20 Hz), 6.84 (1H, d, *J* = 6.1 Hz), 3.87 (3H, s), 3.72 (6H, s), 3.42 (1H, t, *J* = 8.1 Hz), 2.76 (2H, t, *J* = 7.2 Hz), 2.03 (2H, m), 1.74 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.06, 153.95, 131.63, 127.84, 122.29, 115.64, 112.18, 111.92, 100.84, 56.07, 52.60, 51.72, 28.81, 27.69, 24.88; HRMS (ESI): m/z calcd for $C_{17}H_{21}NO_4Na$ $[M+Na]^+$ 342.1317. Found 342.1327.

dimethyl 2-(3-(1-methyl-*1H*-indol-3-yl)propyl)malonate (1e)



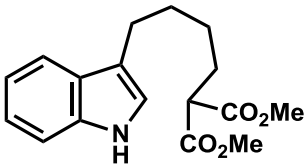
^{1}H NMR ($CDCl_3$): δ = 7.60 (1H, d, *J* = 7.1 Hz), 7.30 (1H, d, *J* = 8.5 Hz), 7.19 (1H, t, *J* = 7.1 Hz), 7.07 (1H, t, *J* = 6.7 Hz), 6.83 (1H, s), 3.74 (3H, s), 3.69 (2H, t, *J* = 6.2 Hz), 2.80 (2H, t, *J* = 7.6 Hz), 1.92 (2H, m), 0.92 (9H, s), 0.064 (6H, s) ; ^{13}C NMR ($CDCl_3$): δ = 170.00, 137.12, 127.84, 126.26, 121.53, 118.63, 114.35, 109.22, 52.52, 51.70, 32.63, 28.78, 28.05, 24.77; HRMS (ESI): m/z calcd for $C_{17}H_{21}NO_4Na$ $[M+Na]^+$ 326.1368. Found 326.1355.

dimethyl 2-(2-(*1H*-indol-3-yl)ethyl)malonate (1f)



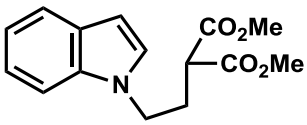
^{1}H NMR ($CDCl_3$): δ = 7.60 (1H, d, *J* = 8.0 Hz), 7.35 (1H, d, *J* = 8.0 Hz), 7.18 (1H, t, *J* = 7.0 Hz), 7.13 (1H, t, *J* = 7.0 Hz), 7.01 (1H, s), 3.72 (6H, s), 3.46 (1H, t, *J* = 8.3 Hz), 2.82 (2H, t, *J* = 8.3 Hz), 2.33 (2H, q, *J* = 7.1 Hz); ^{13}C NMR ($CDCl_3$): δ = 170.07, 136.41, 127.25, 121.25, 119.95, 118.77, 114.34, 111.25, 52.53, 52.42, 51.20, 29.31, 22.86; HRMS (ESI): m/z calcd for $C_{15}H_{17}NO_4Na$ $[M+Na]^+$ 298.1055. Found 298.1068.

dimethyl 2-(4-(*1H*-indol-3-yl)butyl)malonate (1g)



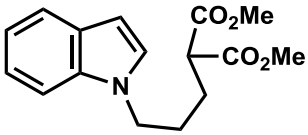
^{1}H NMR ($CDCl_3$): δ = 7.58 (1H, d, *J* = 8.2 Hz), 7.35 (1H, d, *J* = 8.1 Hz), 7.17 (1H, t, *J* = 8.1 Hz), 7.10 (1H, t, *J* = 8.1 Hz), 6.97 (1H, s), 3.72 (6H, s), 3.36 (1H, t, *J* = 7.4 Hz), 2.76 (2H, t, *J* = 7.2 Hz), 1.97 (2H, m), 1.74 (2H, m), 1.42 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.11, 136.45, 127.58, 121.93, 121.28, 119.17, 118.49, 116.49, 111.17, 52.57, 51.80, 29.73, 28.84, 27.30, 24.90; HRMS (ESI): m/z calcd for $C_{17}H_{21}NO_4Na$ $[M+Na]^+$ 326.1368. Found 326.1369.

dimethyl 2-(2-(*1H*-indol-1-yl)ethyl)malonate (1h)



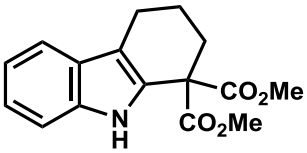
^{1}H NMR ($CDCl_3$): δ = 7.62 (1H, d, *J* = 7.5 Hz), 7.33 (1H, d, *J* = 8.1 Hz), 7.22 (1H, t, *J* = 8.0 Hz), 7.11 (1H, t, *J* = 7.1 Hz), 7.07 (1H, s), 6.50 (1H, s), 4.23 (2H, t, *J* = 7.1 Hz), 3.73 (6H, s), 3.31 (1H, t, *J* = 7.1 Hz), 2.44 (2H, dt, *J* = 7.1, 7.1 Hz); ^{13}C NMR ($CDCl_3$): δ = 169.20, 135.92, 128.70, 127.77, 121.71, 121.06, 119.55, 109.31, 101.72, 52.72, 48.74, 43.72, 29.28; HRMS (ESI): m/z calcd for $C_{15}H_{17}NO_4Na$ $[M+Na]^+$ 298.1055. Found 298.1044.

dimethyl 2-(3-(*1H*-indol-1-yl)propyl)malonate (1i)



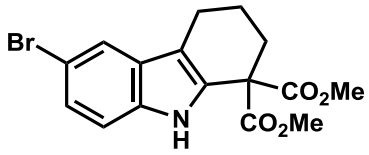
^{1}H NMR ($CDCl_3$): δ = 7.63 (1H, d, *J* = 8.0 Hz), 7.32 (1H, d, *J* = 8.0 Hz), 7.20 (1H, t, *J* = 7.4 Hz), 7.09 (1H, m), 6.49 (1H, s), 4.15 (2H, t, *J* = 7.2 Hz), 3.70 (6H, s), 3.34 (1H, t, *J* = 7.2 Hz), 1.91 (4H, m); ^{13}C NMR ($CDCl_3$): δ = 169.53, 135.92, 128.74, 127.77, 121.59, 121.11, 119.42, 109.32, 101.38, 52.68, 51.22, 45.96, 27.94, 26.26; HRMS (ESI): m/z calcd for $C_{16}H_{19}NO_4Na$ $[M+Na]^+$ 312.1212. Found 312.1202.

dimethyl 2,3,4,9-tetrahydro-*1H*-carbazole-1,1-dicarboxylate (2a)



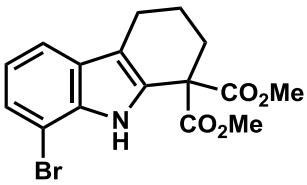
^{1}H NMR ($CDCl_3$): δ = 7.52 (1H, d, *J* = 7.6 Hz), 7.34 (1H, d, *J* = 8.5 Hz), 7.19 (1H, t, *J* = 5.8 Hz), 7.01 (1H, t, *J* = 7.2 Hz), 3.78 (6H, s), 2.77 (2H, t, *J* = 6.3 Hz), 2.46 (2H, m), 1.97 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.61, 136.29, 127.29, 126.70, 122.66, 119.39, 118.84, 113.90, 111.15, 55.36, 53.28, 31.09, 20.75, 20.59; HRMS (ESI): m/z calcd for $C_{16}H_{17}NO_4Na$ $[M+Na]^+$ 310.1055. Found 310.1069.

dimethyl 6-bromo-2,3,4,9-tetrahydro-*1H*-carbazole-1,1-dicarboxylate (2b)



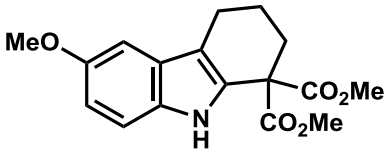
^{1}H NMR (CD_3OD): δ = 7.55 (1H, s), 7.26 (1H, d, *J* = 8.6 Hz), 7.17 (1H, d, *J* = 8.6 Hz), 3.77 (6H, s), 2.70 (2H, t, *J* = 5.8 Hz), 2.41 (2H, m), 1.93 (2H, m), 1.25 (2H, t, *J* = 7.5 Hz); ^{13}C NMR ($CDCl_3$): δ = 170.35, 134.86, 128.69, 128.45, 125.37, 121.48, 113.51, 112.63, 112.54, 55.29, 53.38, 31.02, 30.91, 20.58, 20.44; HRMS (ESI): m/z calcd for $C_{16}H_{16}BrNO_4Na$ $[M+Na]^+$ 388.0160. Found 388.0136.

dimethyl 8-bromo-2,3,4,9-tetrahydro-*1H*-carbazole-1,1-dicarboxylate (2c)



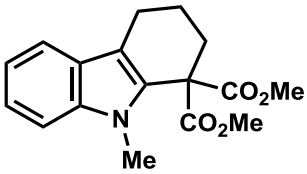
^{1}H NMR ($CDCl_3$): δ = 7.45 (1H, d, *J* = 8.0 Hz), 7.34 (1H, d, *J* = 7.5 Hz), 6.99 (1H, t, *J* = 8.0 Hz), 3.81 (1H, s), 2.74 (2H, t, *J* = 6.3 Hz), 2.46 (2H, m), 1.96 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.31, 135.05, 128.16, 127.94, 125.07, 120.61, 118.10, 115.17, 104.74, 55.33, 53.44, 31.07, 20.93, 20.44; HRMS (ESI): m/z calcd for $C_{16}H_{16}BrNO_4Na$ $[M+Na]^+$ 388.0160. Found 388.0143.

dimethyl 6-methoxy-2,3,4,9-tetrahydro-*1H*-carbazole-1,1-dicarboxylate (2d)



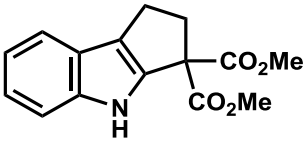
^{1}H NMR ($CDCl_3$): δ = 7.24 (1H, d, *J* = 8.6 Hz), 6.94 (1H, s), 6.86 (1H, d, *J* = 6.3 Hz), 3.85 (3H, s), 3.78 (6H, s), 2.71 (2H, t, *J* = 6.3 Hz), 2.45 (2H, m), 1.97 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 170.62, 154.07, 131.49, 128.08, 127.04, 113.64, 112.86, 111.96, 100.79, 56.10, 55.44, 53.30, 31.09, 31.09, 20.84, 20.60; HRMS (ESI): m/z calcd for $C_{17}H_{19}BrNO_5Na$ $[M+Na]^+$ 340.1161 Found 340.1165.

dimethyl 9-methyl-2,3,4,9-tetrahydro-*1H*-carbazole-1,1-dicarboxylate (2e)



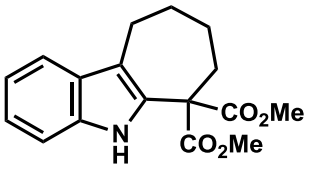
^{1}H NMR ($CDCl_3$): δ = 7.51 (1H, d, *J* = 8.1 Hz), 7.31 (1H, d, *J* = 8.6 Hz), 7.24 (1H, d, *J* = 7.5 Hz), 7.10 (1H, t, *J* = 8.1 Hz), 3.78 (6H, s), 3.64 (3H, s), 2.81 (2H, t, *J* = 6.3 Hz), 2.50 (2H, m), 1.95 (2H, m); ^{13}C NMR ($CDCl_3$): δ = 171.24, 137.89, 129.91, 126.06, 122.44, 119.10, 118.83, 112.68, 109.19, 56.23, 53.19, 33.89, 31.03, 21.04, 20.64 ; HRMS (ESI): m/z calcd for $C_{17}H_{19}NO_4Na$ $[M+Na]^+$ 324.1212. Found 324.1222.

dimethyl 1,4-dihydrocyclopenta[b]indole-3,3(*2H*)-dicarboxylate (2f)



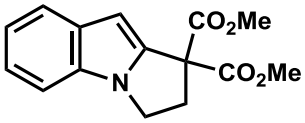
^{1}H NMR ($CDCl_3$): δ = 7.47 (1H, d, *J* = 8.0 Hz), 7.36 (1H, d, *J* = 8.0 Hz), 7.18 (1H, t, *J* = 7.5 Hz), 7.10 (1H, t, *J* = 6.9 Hz), 3.77 (1H, s), 3.11 (2H, t, *J* = 5.8 Hz), 2.94 (2H, t, *J* = 6.9 Hz), 2.94 (2H, t, *J* = 6.3Hz); HRMS (ESI): m/z calcd for $C_{15}H_{15}NO_4Na$ $[M+Na]^+$ 296.0899. Found 296.0898.

dimethyl 7,8,9,10-tetrahydrocyclohepta[b]indole-6,6(*5H*)-dicarboxylate (2g)



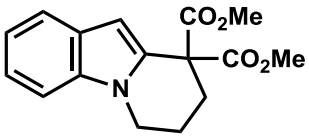
^{1}H NMR ($CDCl_3$): δ = 7.52 (1H, d, *J* = 8.0 Hz), 7.30 (1H, 1H, *J* = 8.0 Hz), 7.16 (1H, t, *J* = 5.8 Hz), 7.10 (1H, t, *J* = 6.9 Hz), 3.80 (1H, s), 2.85 (2H, m), 2.54 (2H, m), 1.93-1.82 (4H, m); HRMS (ESI): m/z calcd for $C_{17}H_{19}NO_4Na$ $[M+Na]^+$ 324.1212. Found 324.1196.

dimethyl 2,3-dihydro-*1H*-pyrrolo[1,2-a]indole-1,1-dicarboxylate (2h)



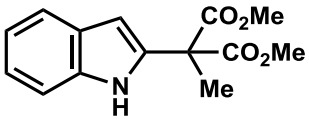
NMR spectra of the obtained product were consistent with the reported one[7].

dimethyl 7,8-dihydropyrido[1,2-a]indole-9,9(*6H*)-dicarboxylate (2i)



NMR spectra of the obtained product were consistent with the reported one[7].

dimethyl 2-(*1H*-indol-2-yl)-2-methylmalonate (4)



^{1}H NMR ($CDCl_3$): δ = 9.00 (1H, s), 7.59 (1 H, d, *J* = 8.1 Hz), 7.39 (1H, d, *J* = 8.1 Hz), 7.21 (1H, t, *J* = 6.9 Hz), 7.10 (1H, t, *J* = 6.9 Hz), 3.79 (1H, s), 1.98 (1H, s); ^{13}C NMR ($CDCl_3$): δ = 170.98, 136.44, 134.53, 127.57, 122.53, 120.73, 120.01, 111.23, 101.64, 54.44, 53.43, 21.20;HRMS (ESI): m/z calcd for $C_{14}H_{15}NO_4Na$ $[M+Na]^+$ 284.0899. Found 284.0885.

6. References

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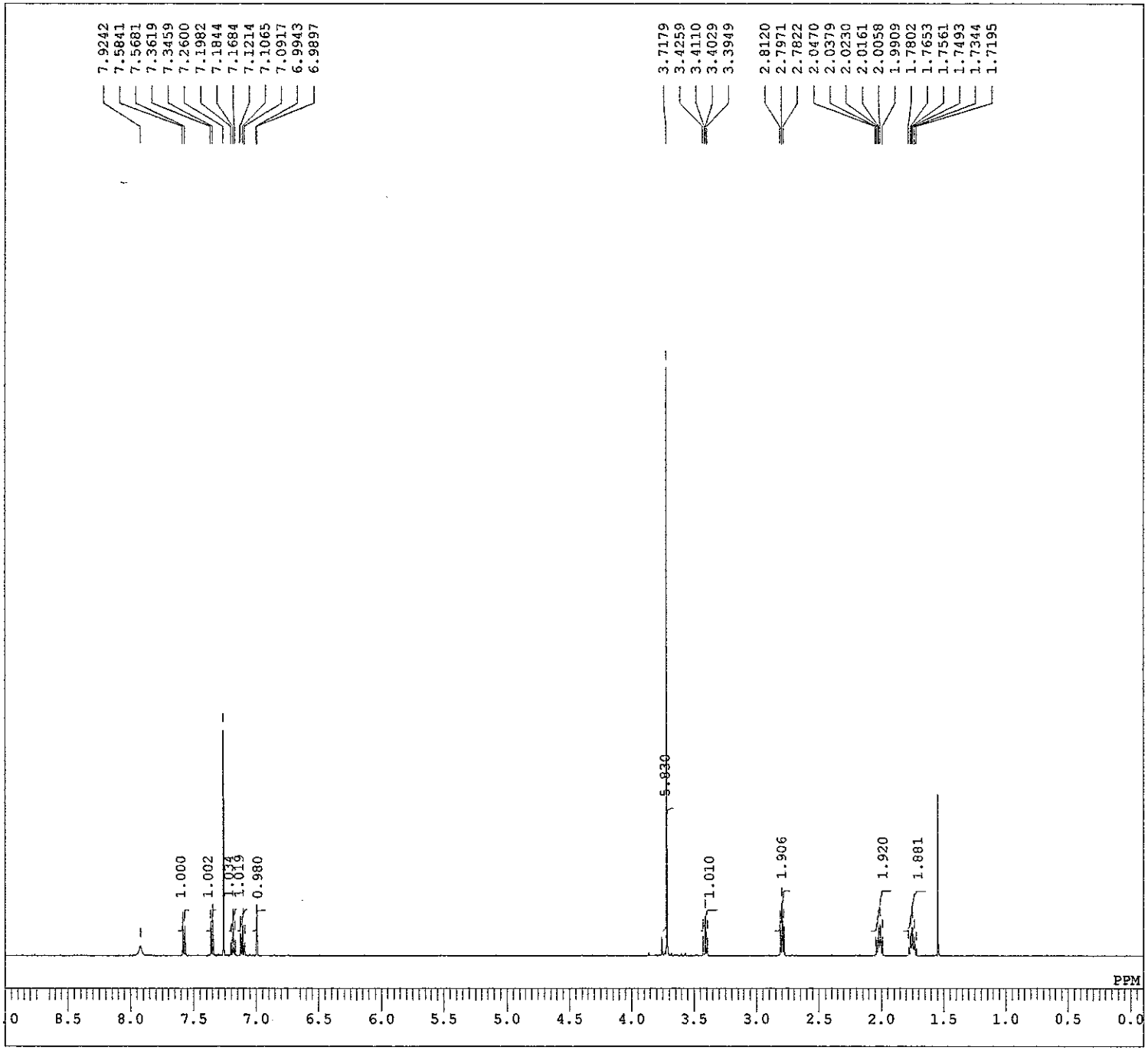

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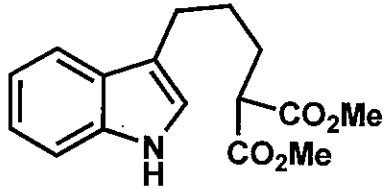
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	7
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.6 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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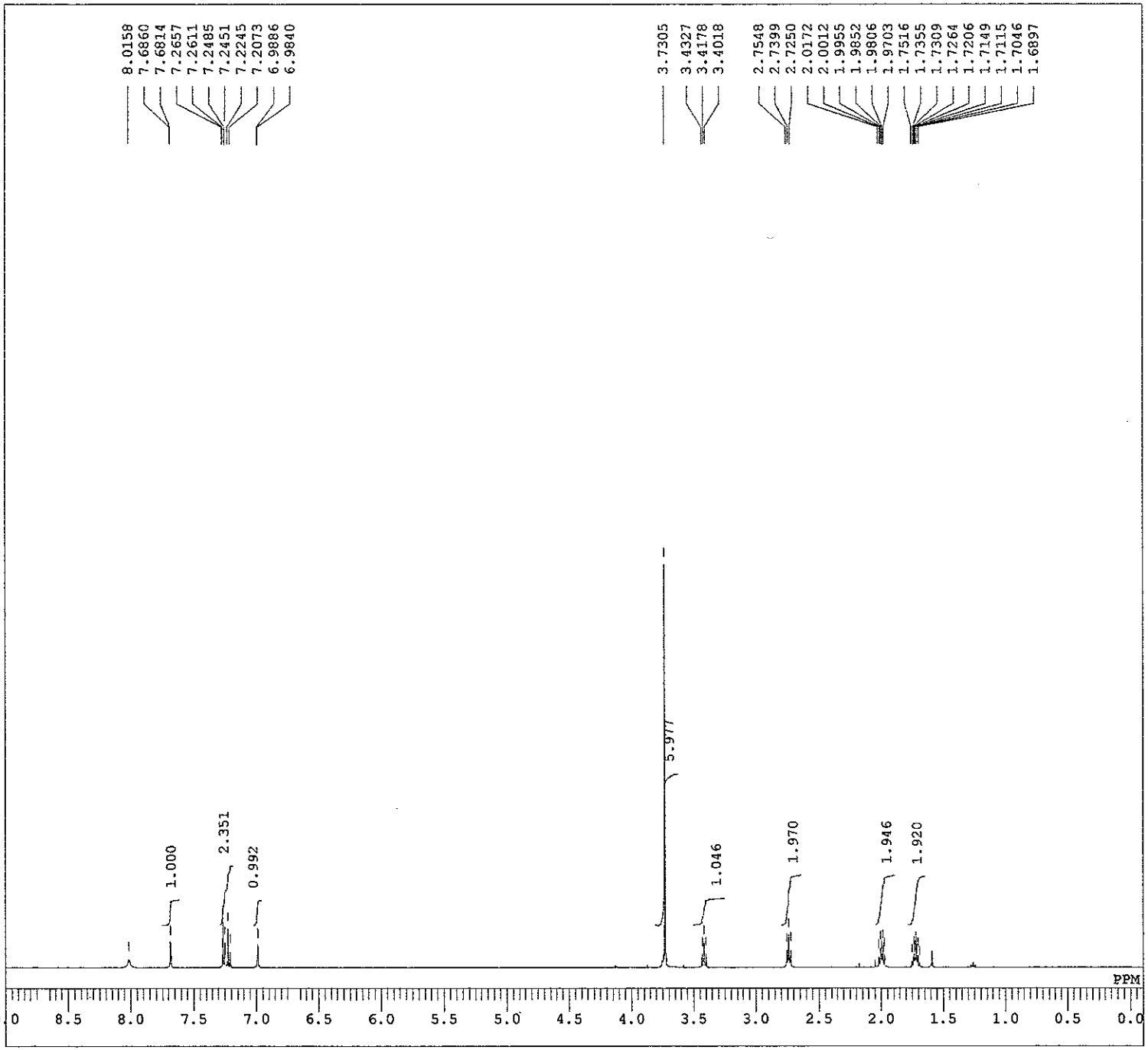

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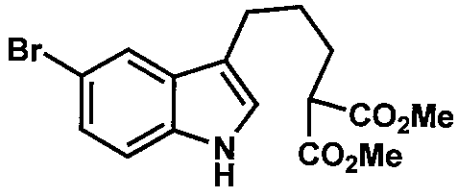
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	8
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	38



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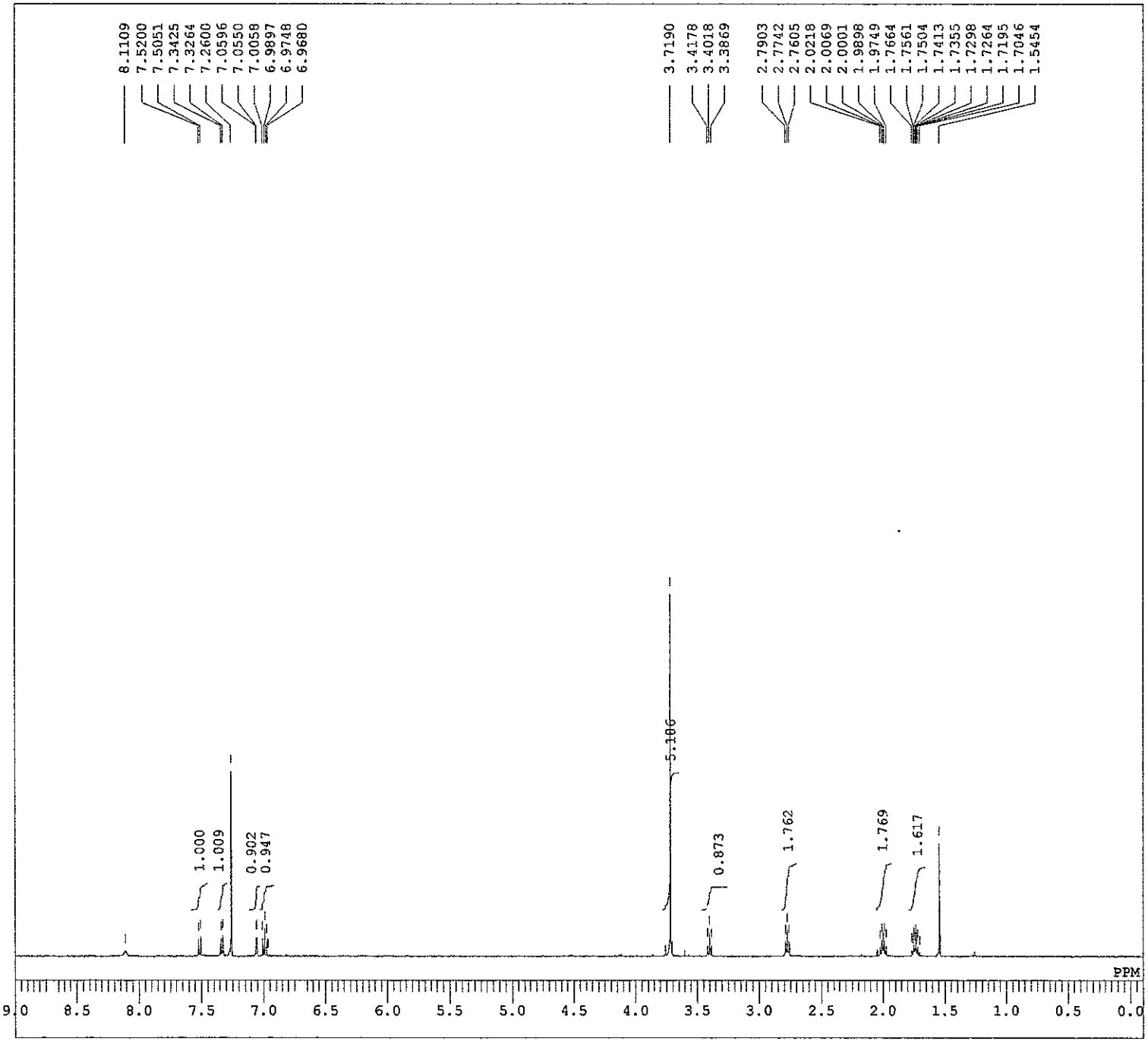

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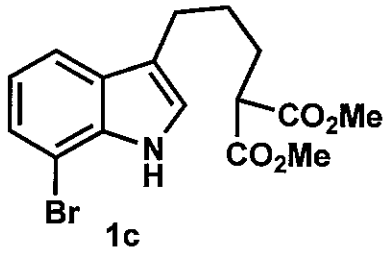
POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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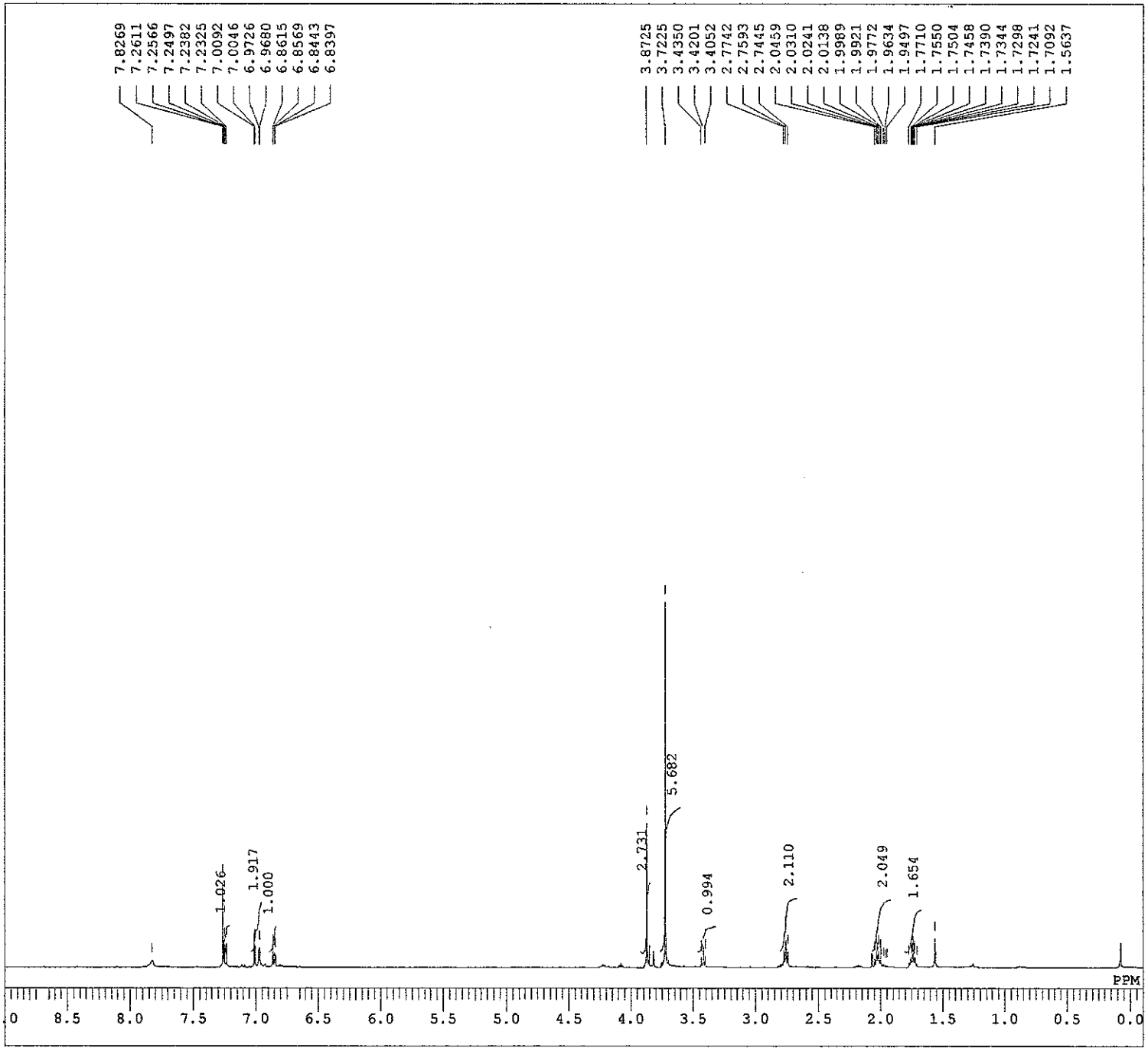

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OBFIN	6.01 Hz
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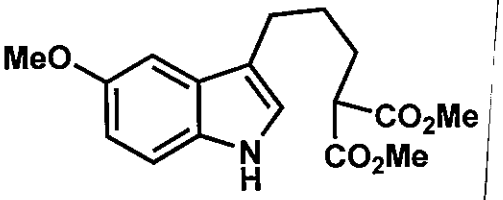
FREQU	7507.51 Hz
SCANS	16
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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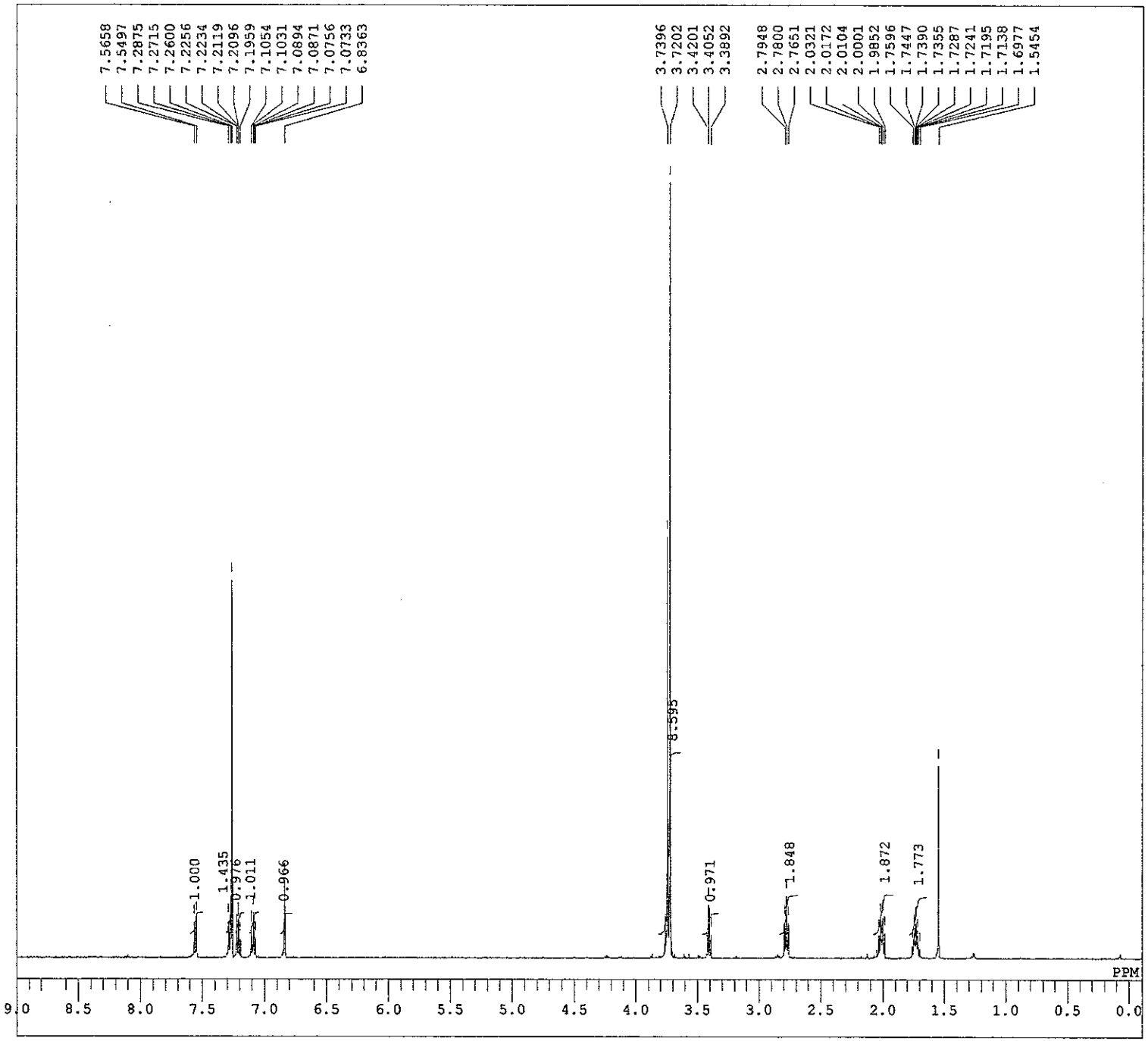

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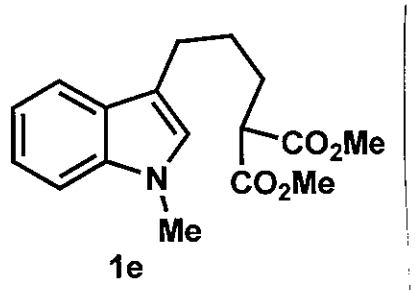
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.6 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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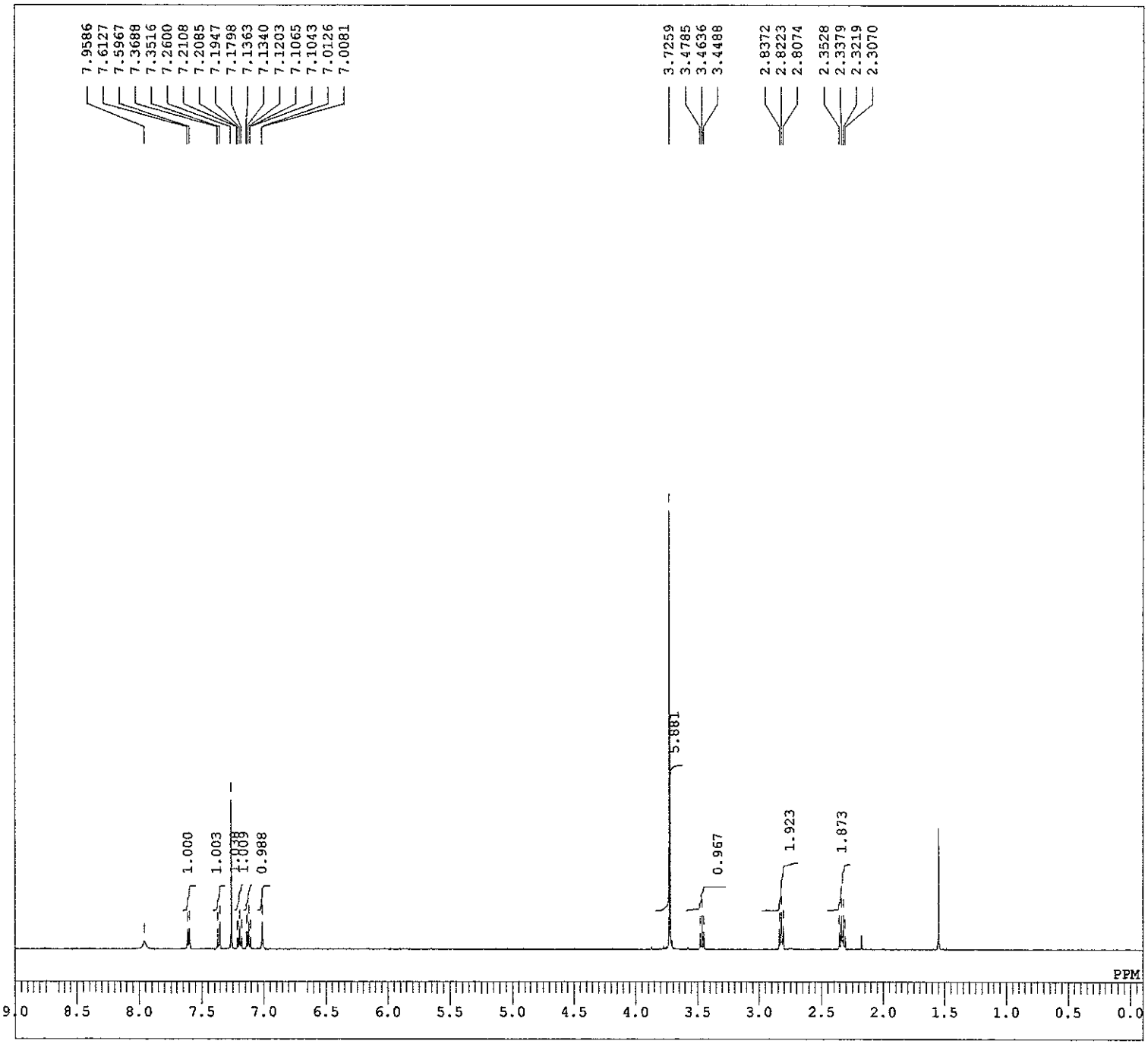

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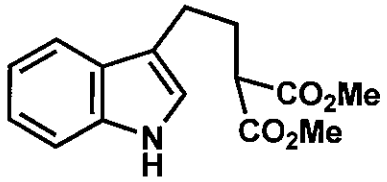
POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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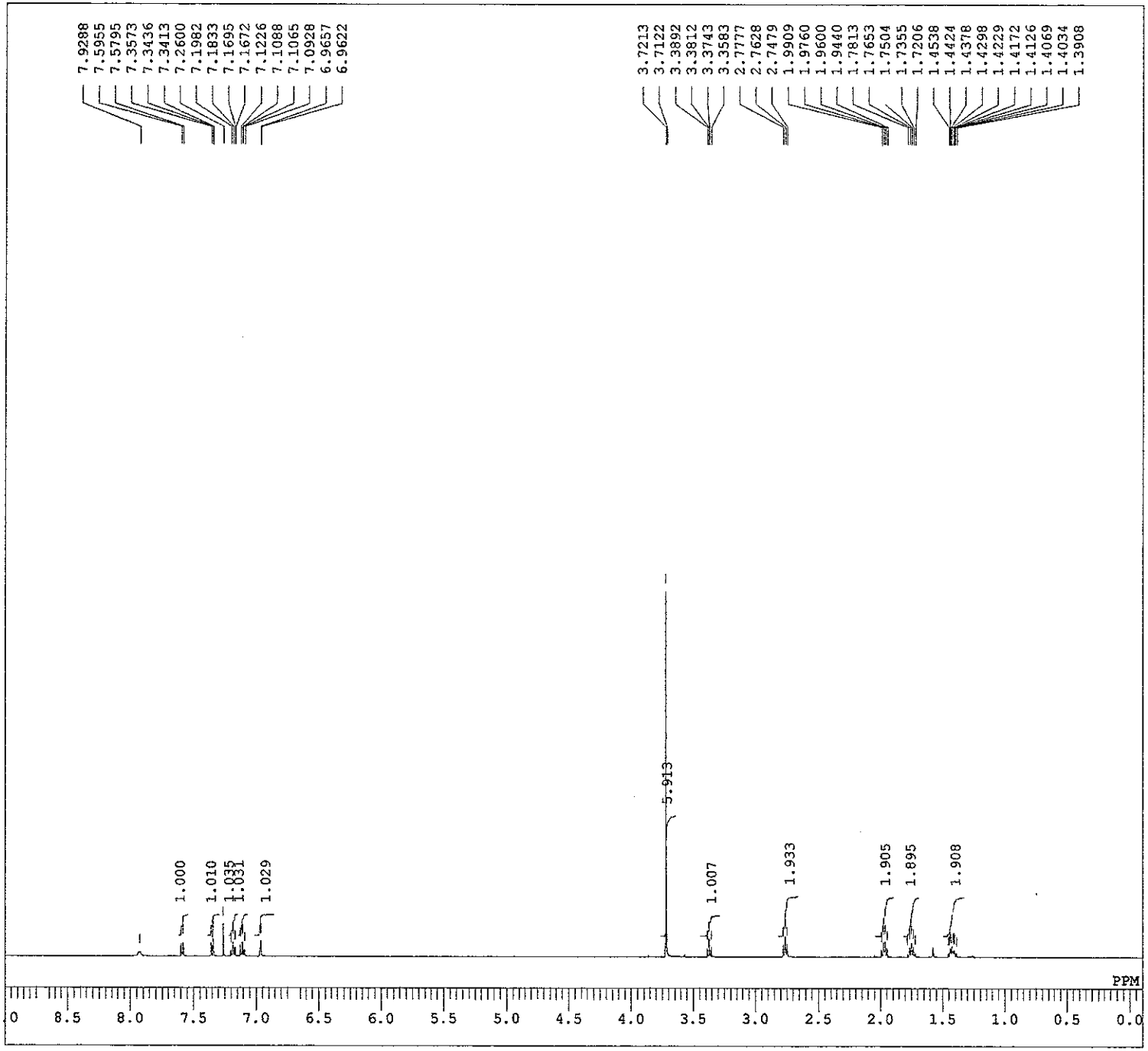

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POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
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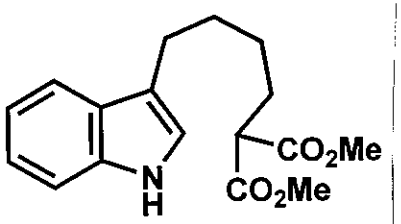
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	38



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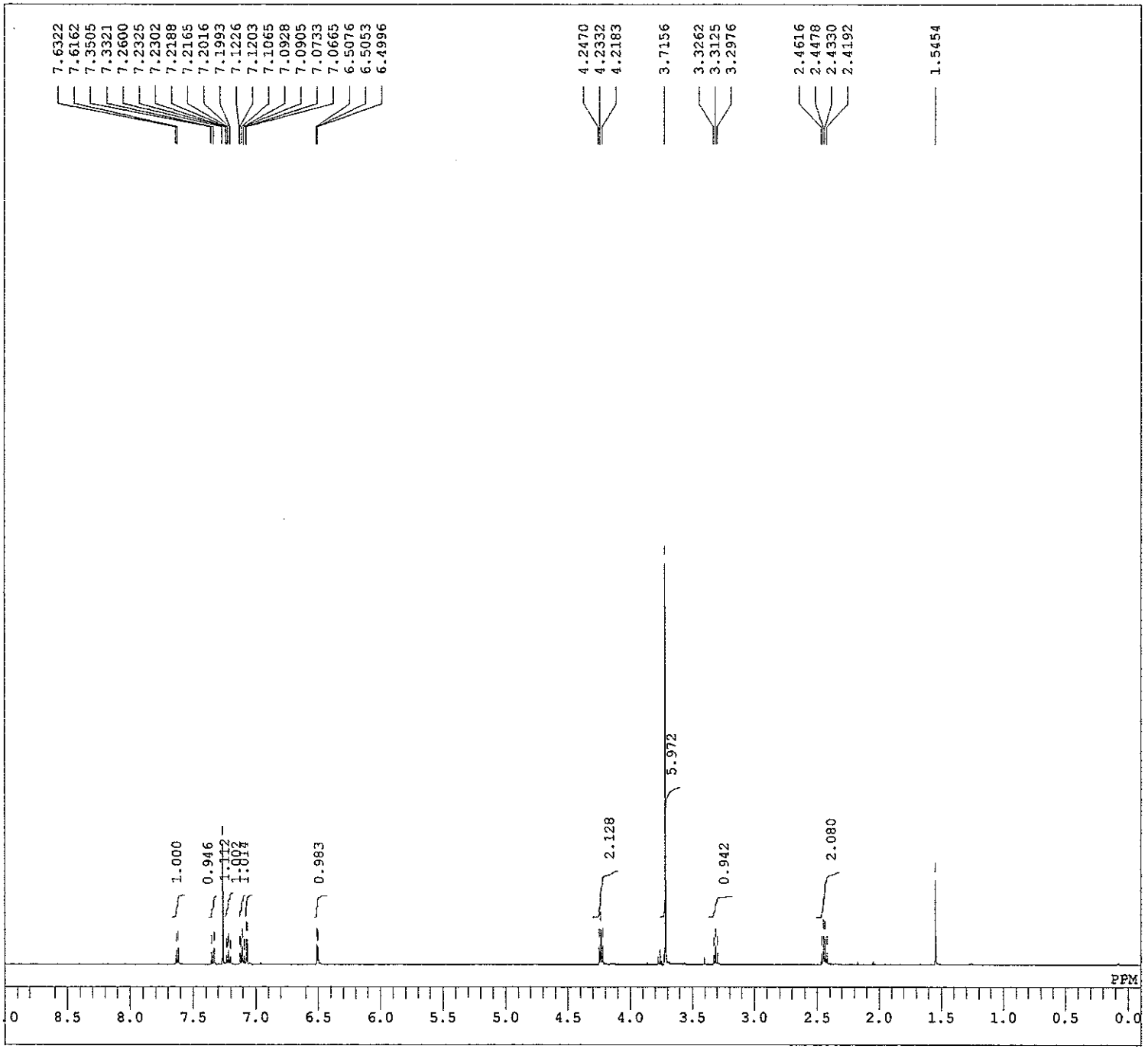

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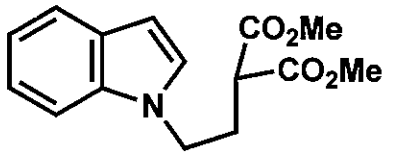
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.0 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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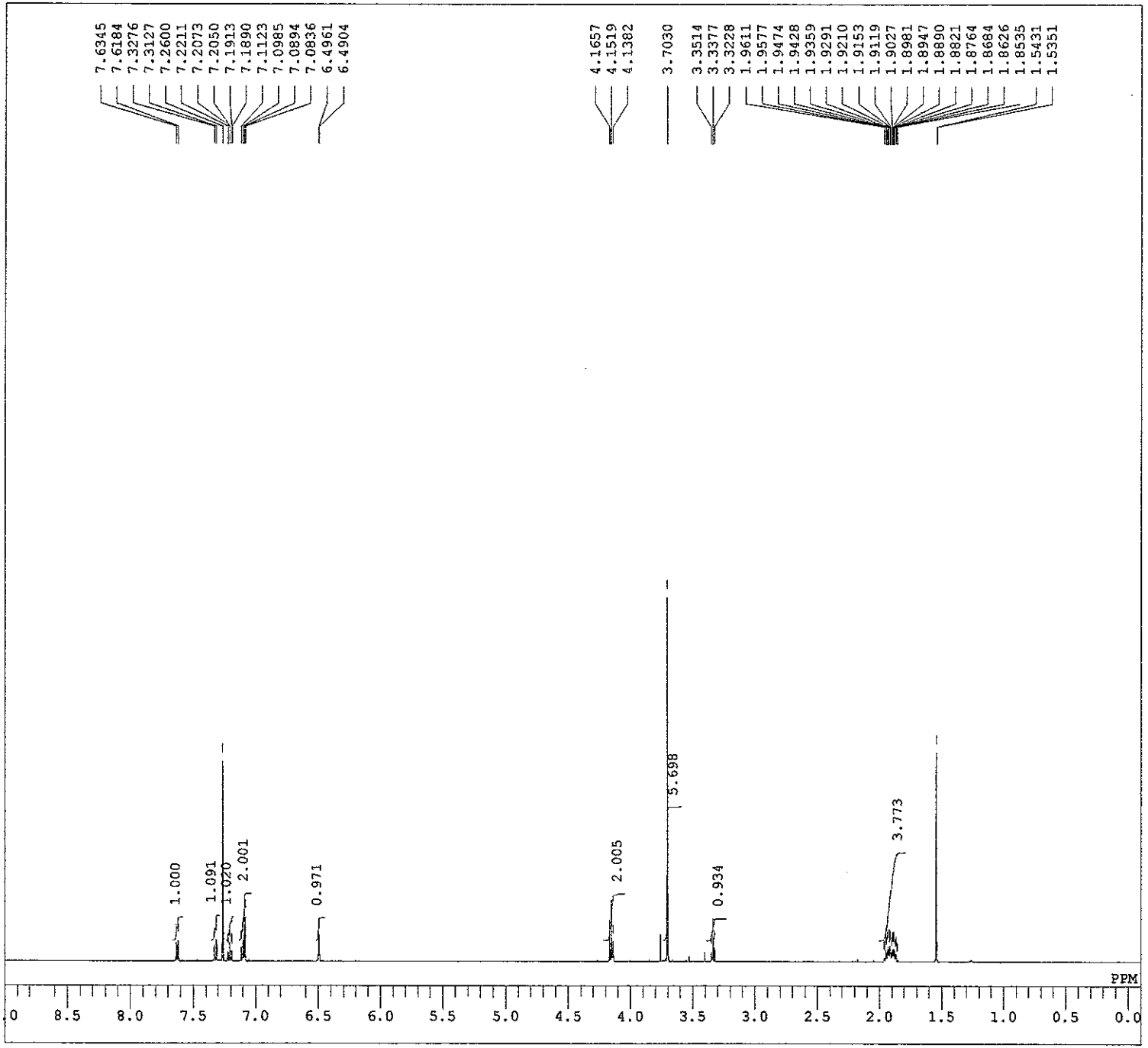

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SCANS	8
ACQTM	1.7459 sec
PD	5.0000 sec
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CTEMP	22.4 c
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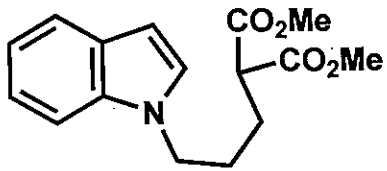
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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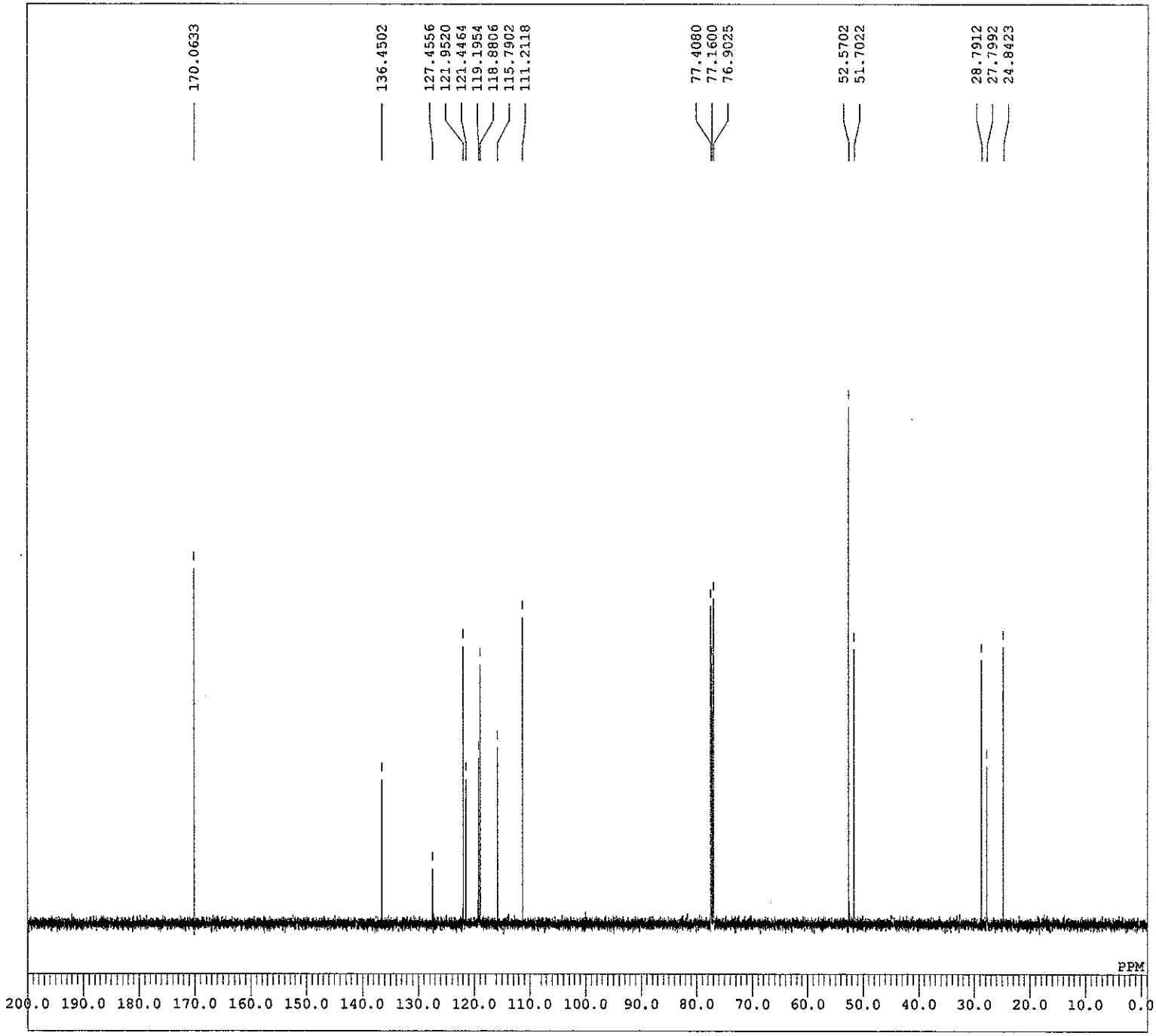


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OBFIN           4.21 Hz
POINT          32767
FREQU       39308.18 Hz
SCANS             70
ACQTM         0.8336 sec
PD            3.0000 sec
PW1             3.40 usec
IRNUC   1H
CTEMP           22.6 c
SLVNT   CDCL3
EXREF          77.16 ppm
BF              0.12 Hz
RGAIN             60
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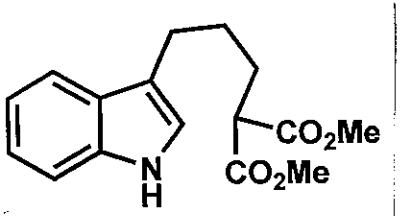

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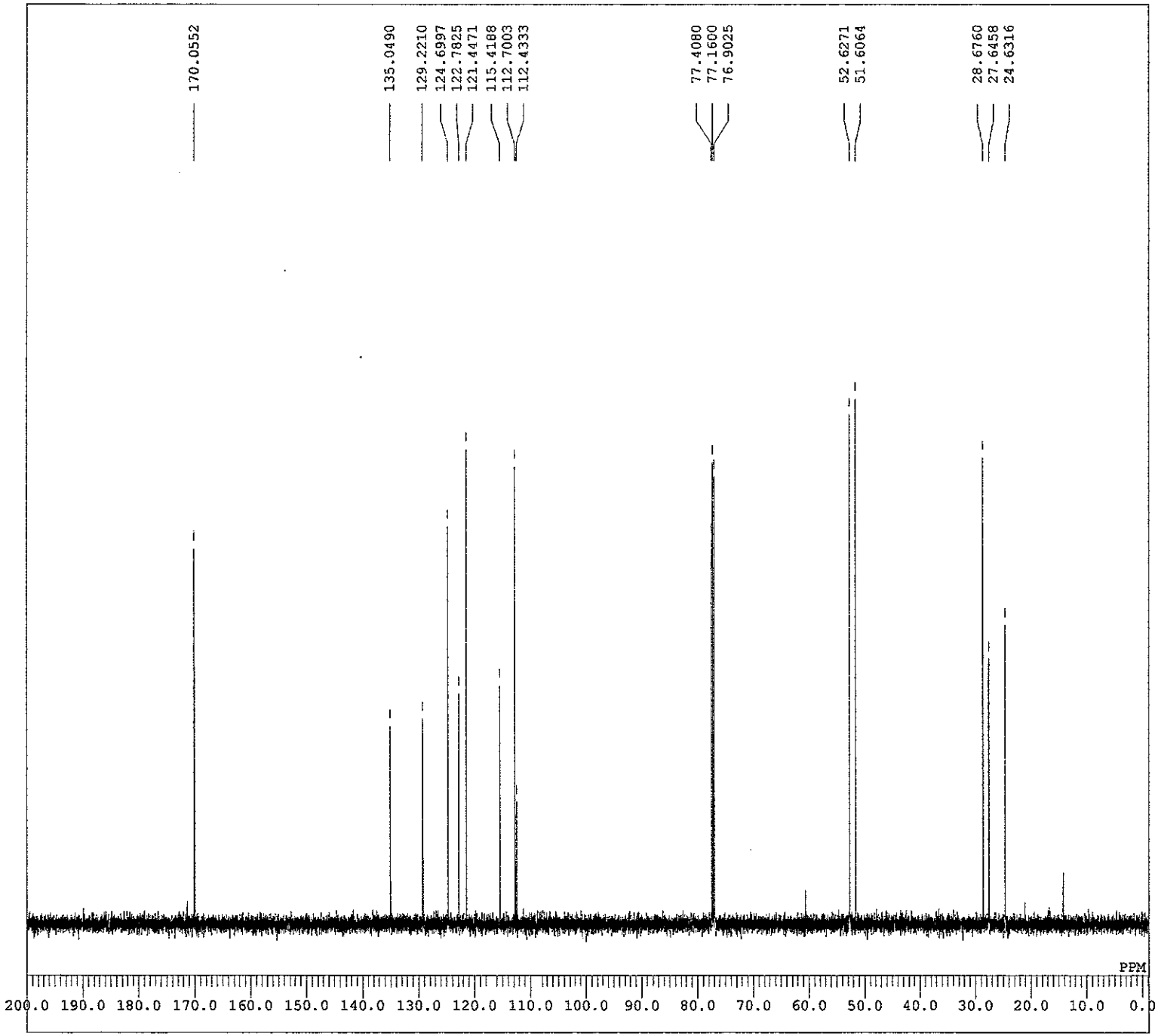

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PD	3.0000 sec
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EXREF	77.16 ppm
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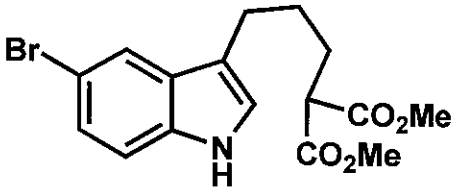
RGAIN	60



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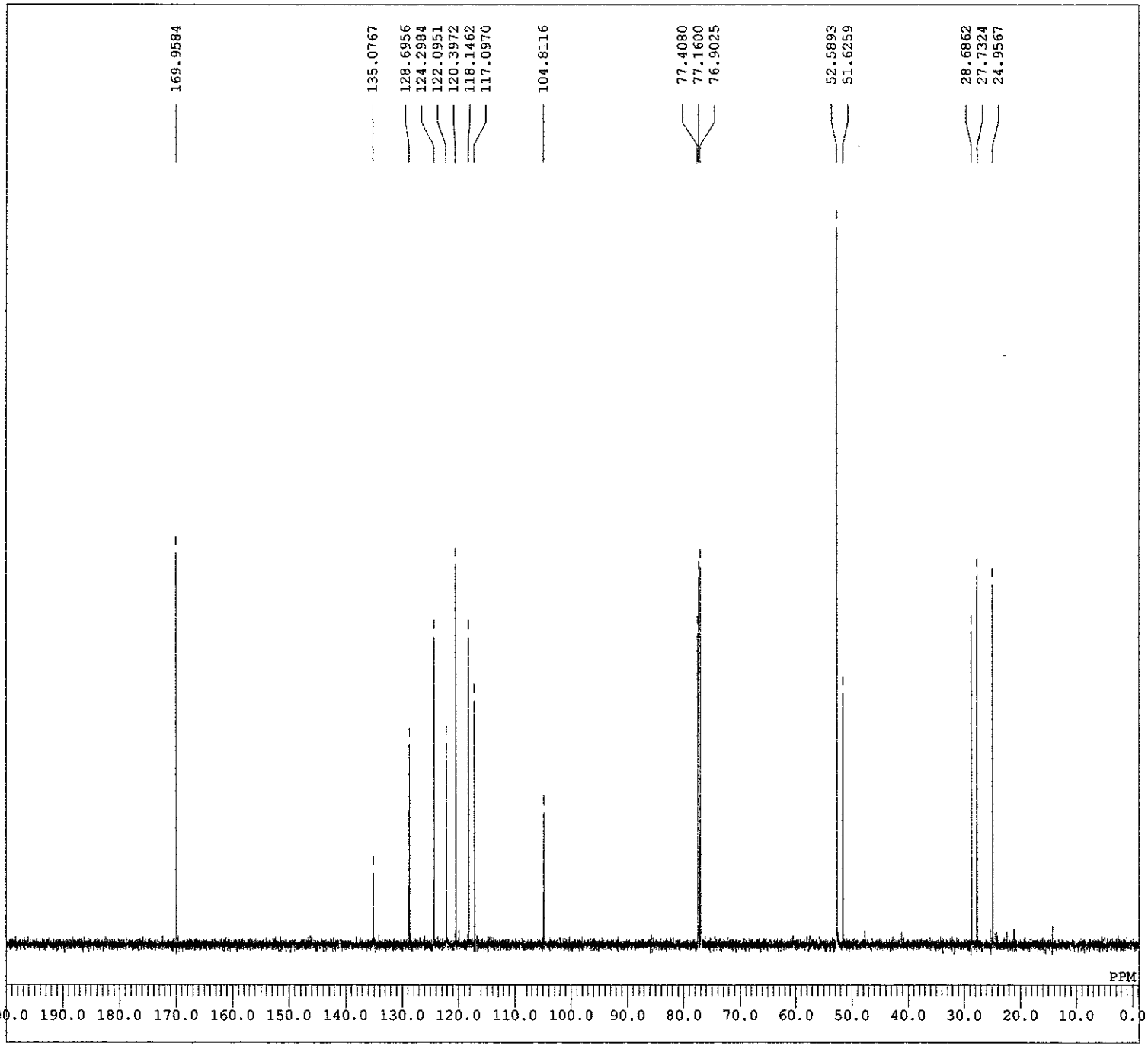

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OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	130
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
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CTEMP	23.1 c
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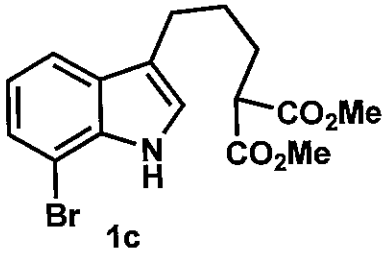
RGAIN	60



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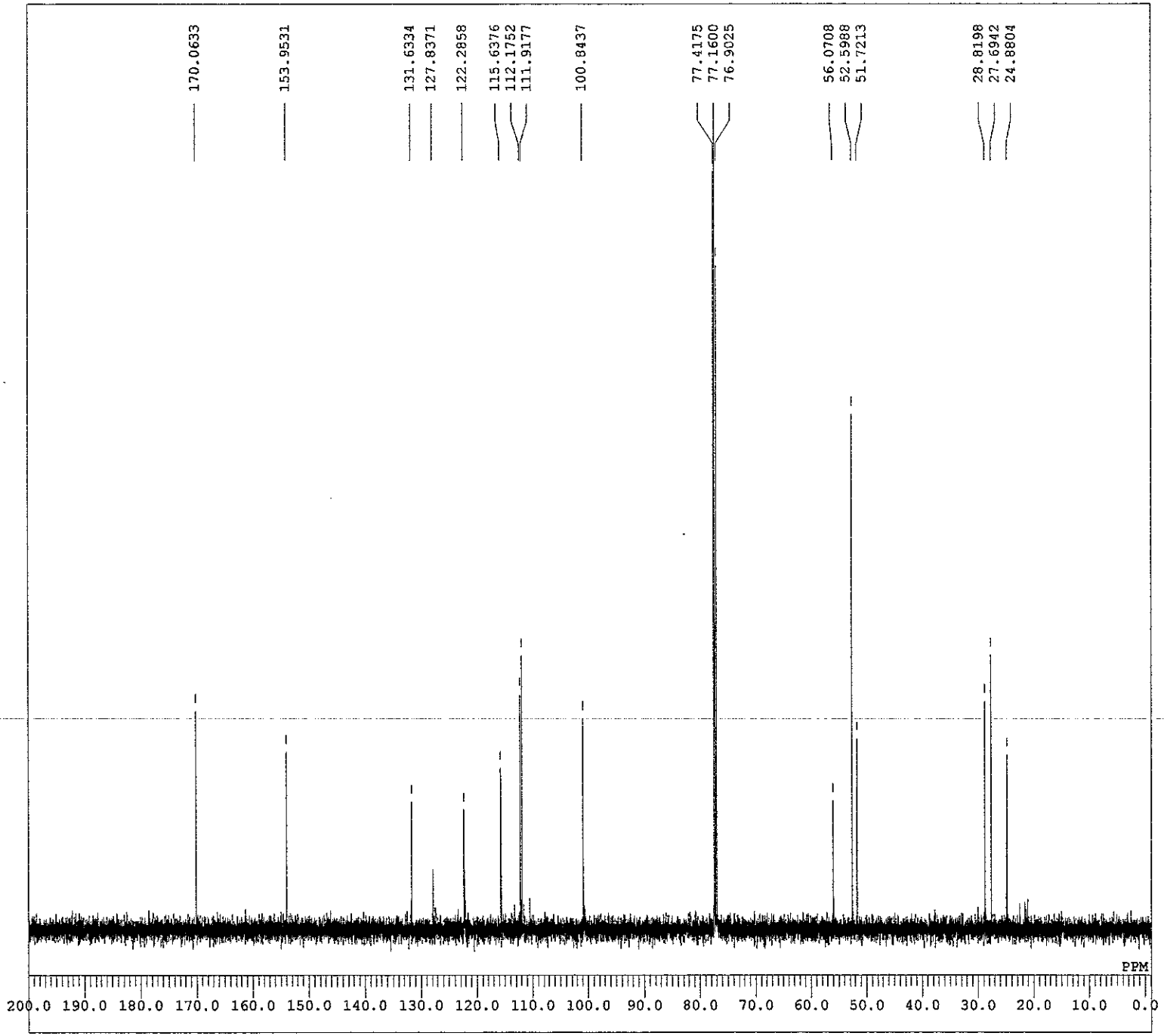

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ACQTM	0.8336 sec
PD	3.0000 sec
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IRNUC	1H
CTEMP	22.6 c
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EXREF	77.16 ppm
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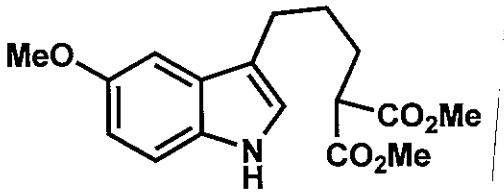
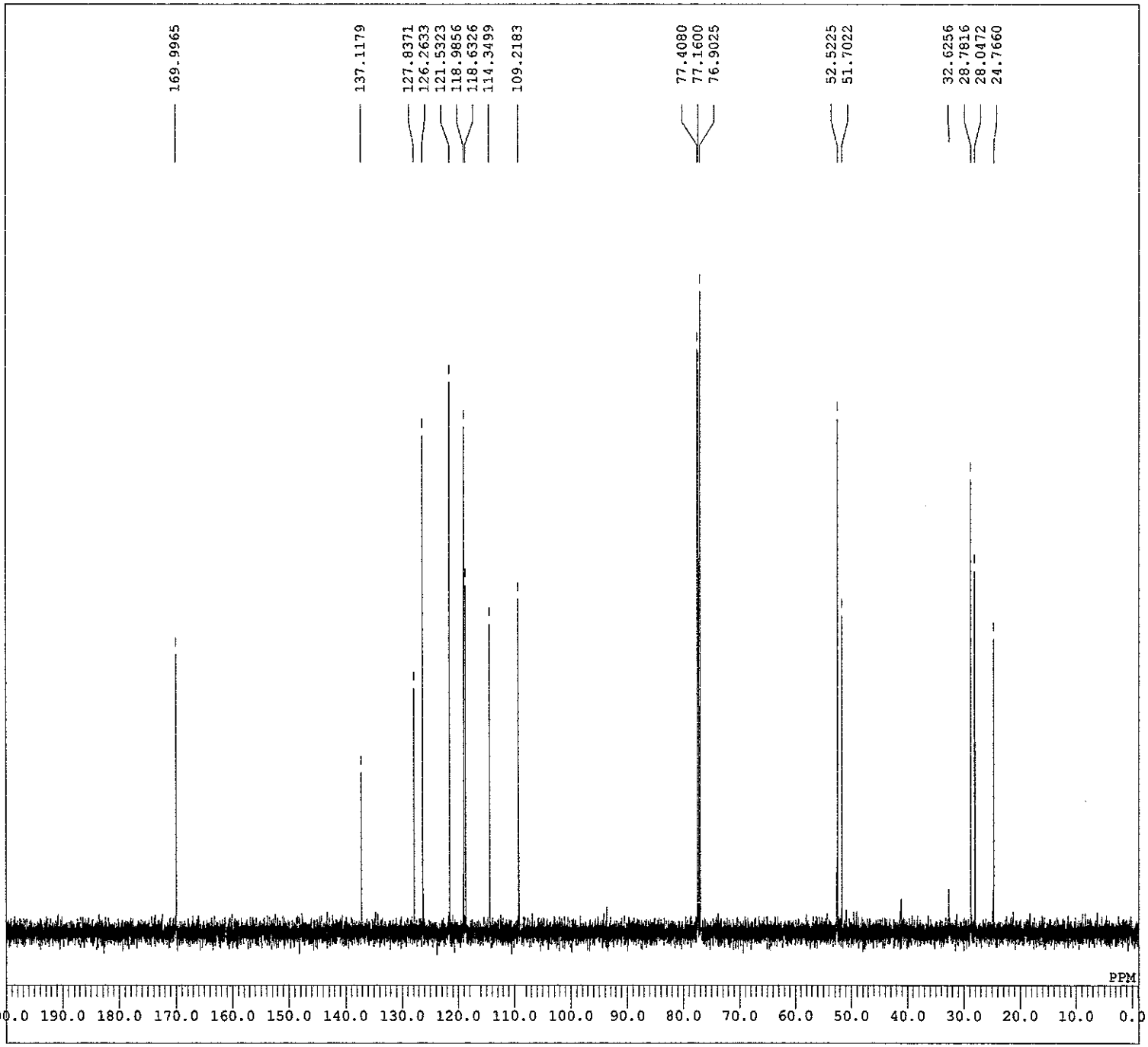


1d



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POINT	32767
FREQU	39308.18 Hz
SCANS	60
ACQTM	0.8336 sec
PD	3.0000 sec
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CTEMP	22.4 c
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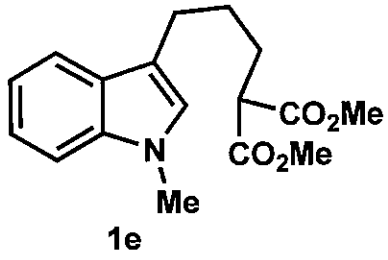
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



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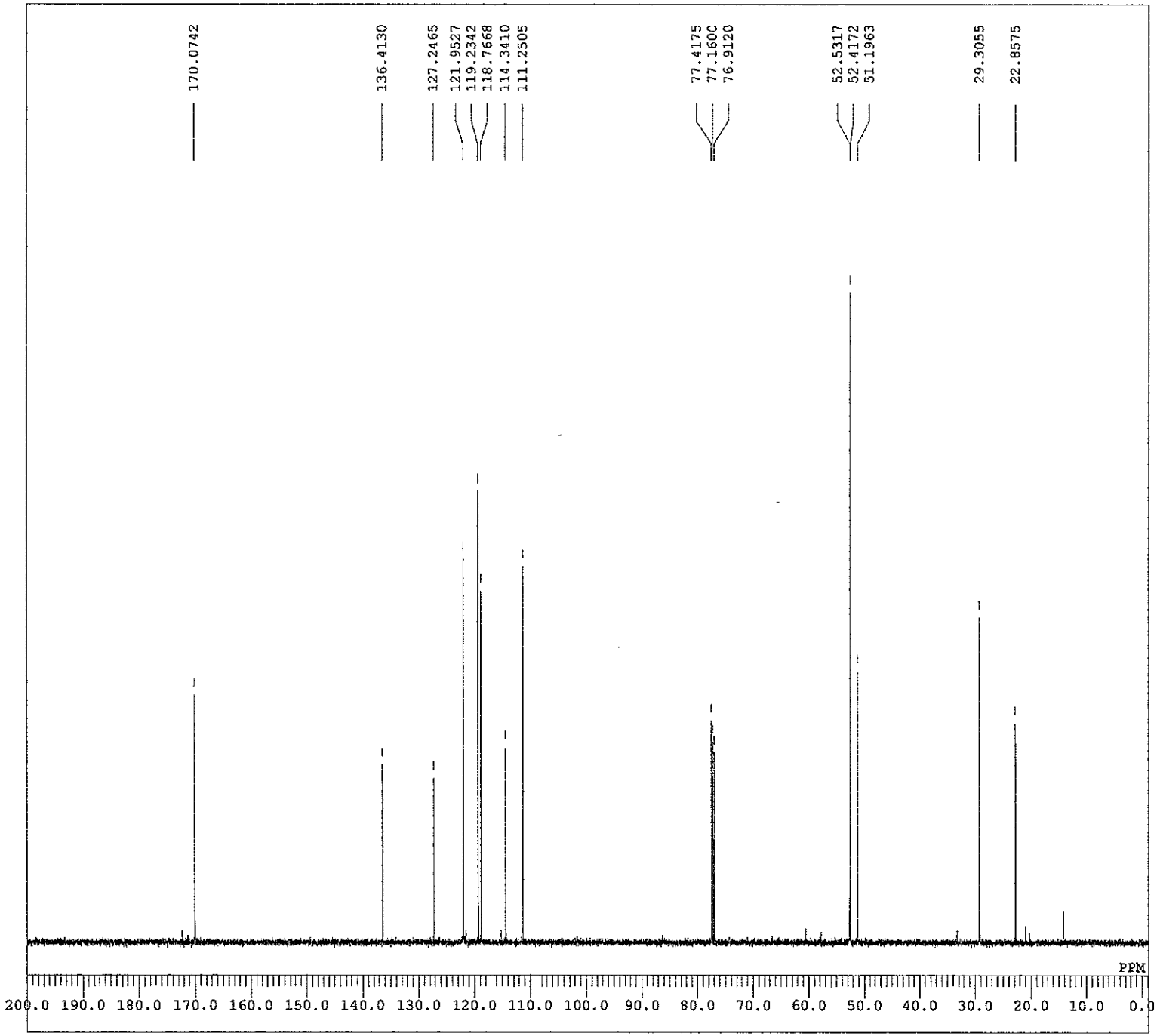


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OBFIN           4.21 Hz
POINT          26214
FREQU       31446.54 Hz
SCANS            100
ACQTM         0.8336 sec
PD            3.0000 sec
PW1             3.40 usec
IRNUC   1H
CTEMP           22.8 c
SLVNT   CDCL3
EXREF          77.16 ppm
BF              0.12 Hz
RGAIN             60
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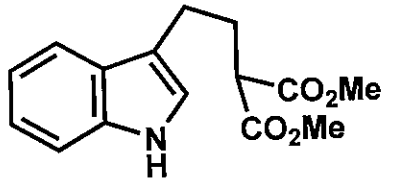

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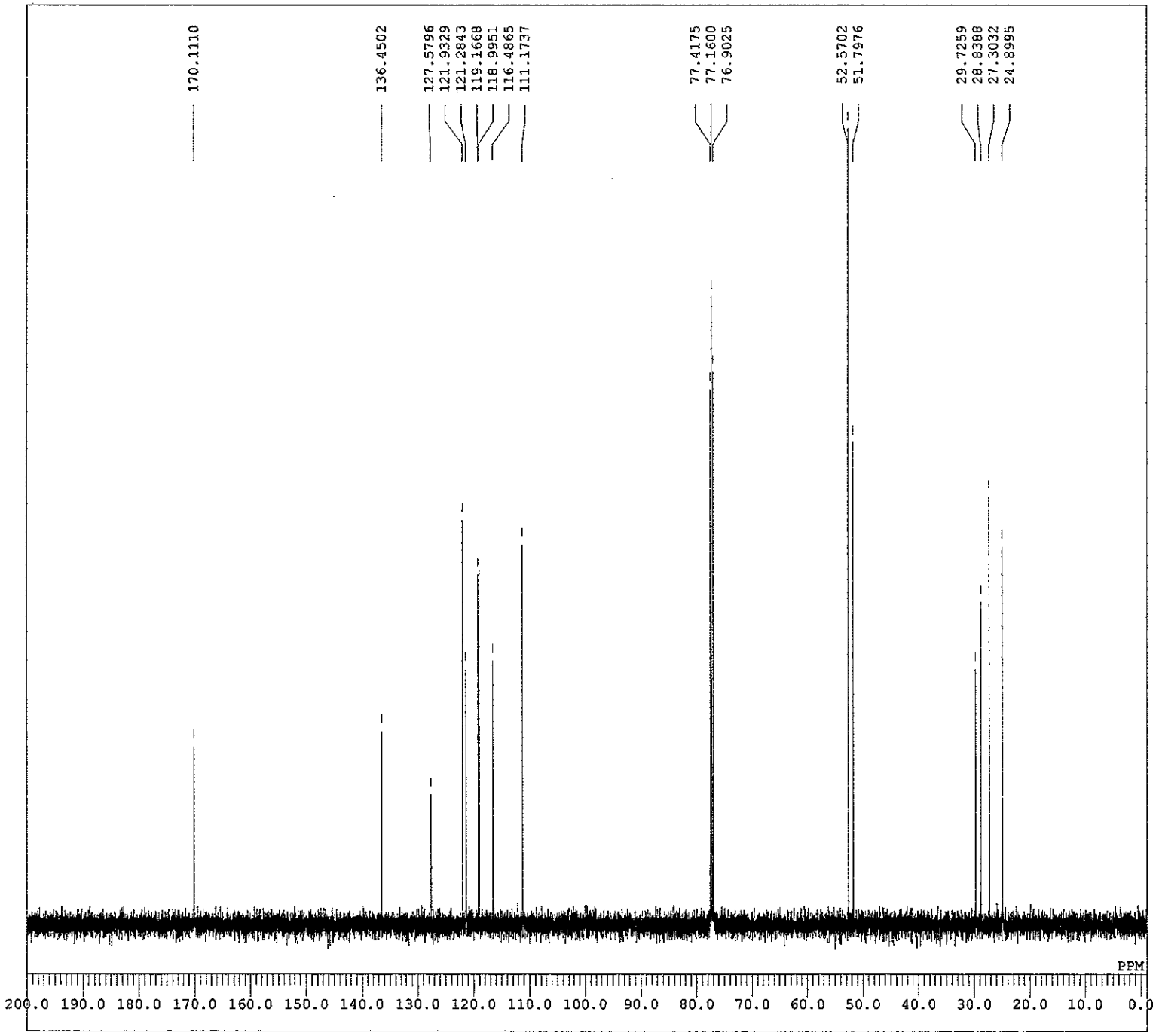
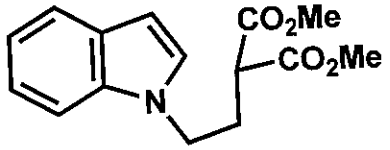
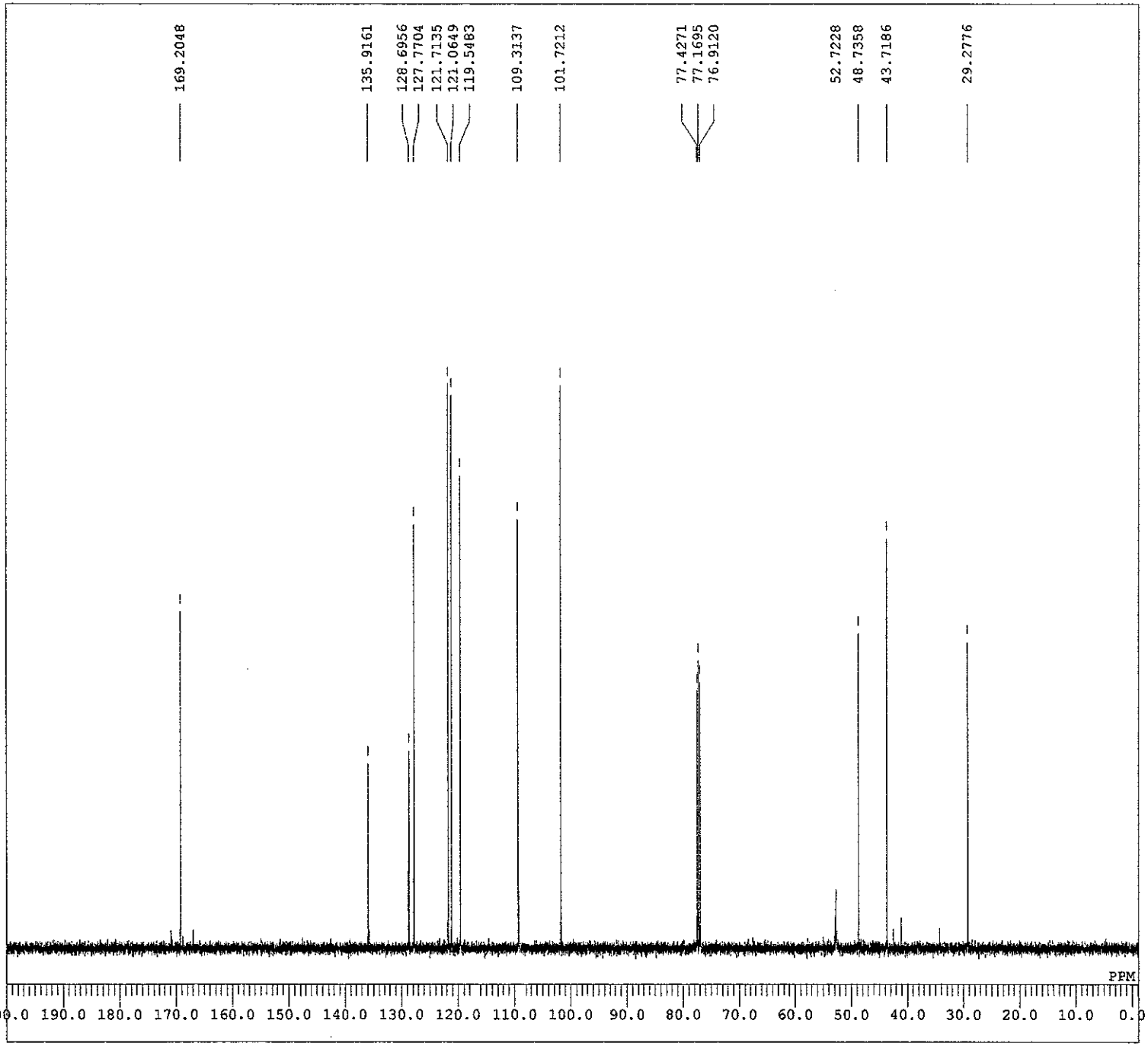


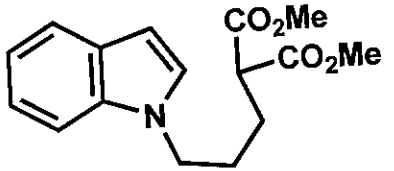
DFILE	JA-7-SM-1-1.als
COMNT	
DATIM	2013-04-15 12:51:47
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	70
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.6 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



1h



DFILE	JA-N-5-SM-13C-1-1.als
COMNT	
DATIM	2013-04-22 22:58:54
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	60
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



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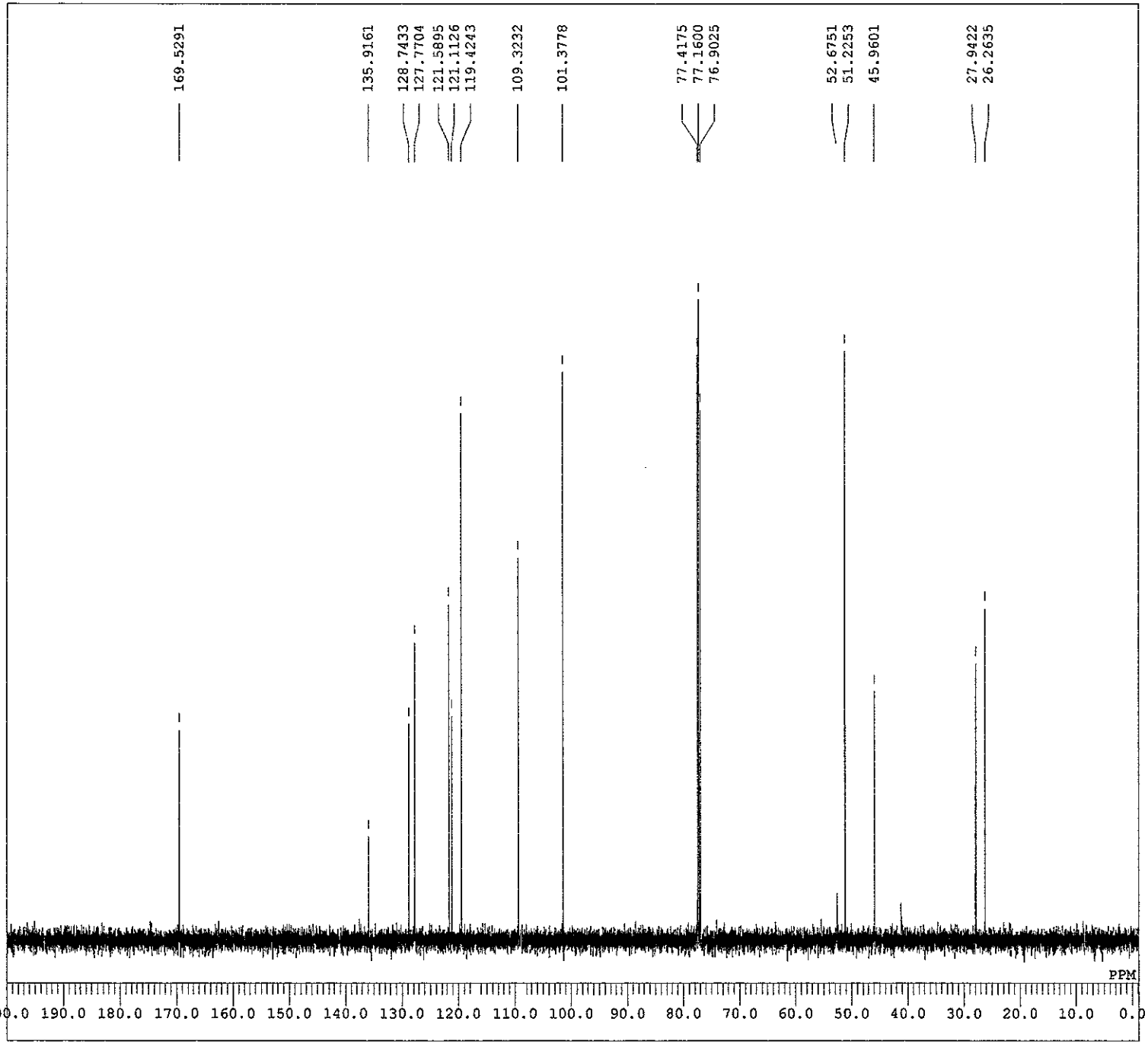
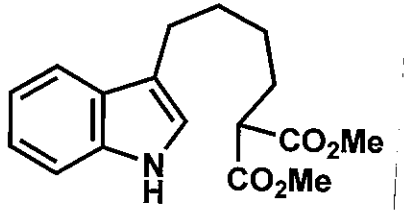


DFILE	JA-N-6-SM-13C-1-1.als
COMNT	
DATIM	2013-04-22 22:42:52
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	70
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.5 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



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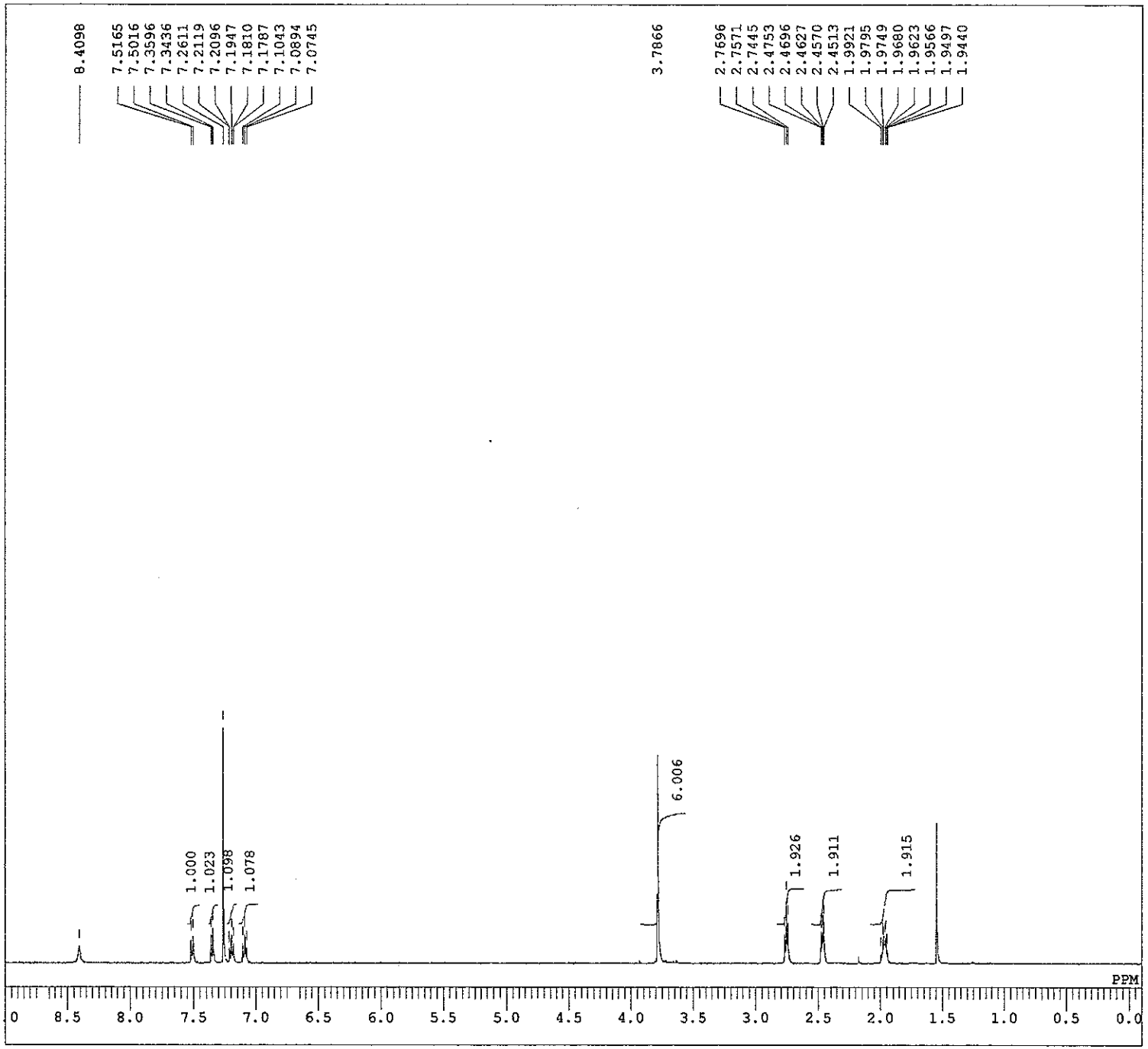
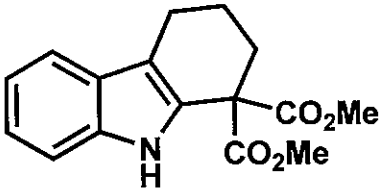


DFILE	JA-6-TM-1-1.als
COMNT	
DATIM	2013-04-21 16:18:31
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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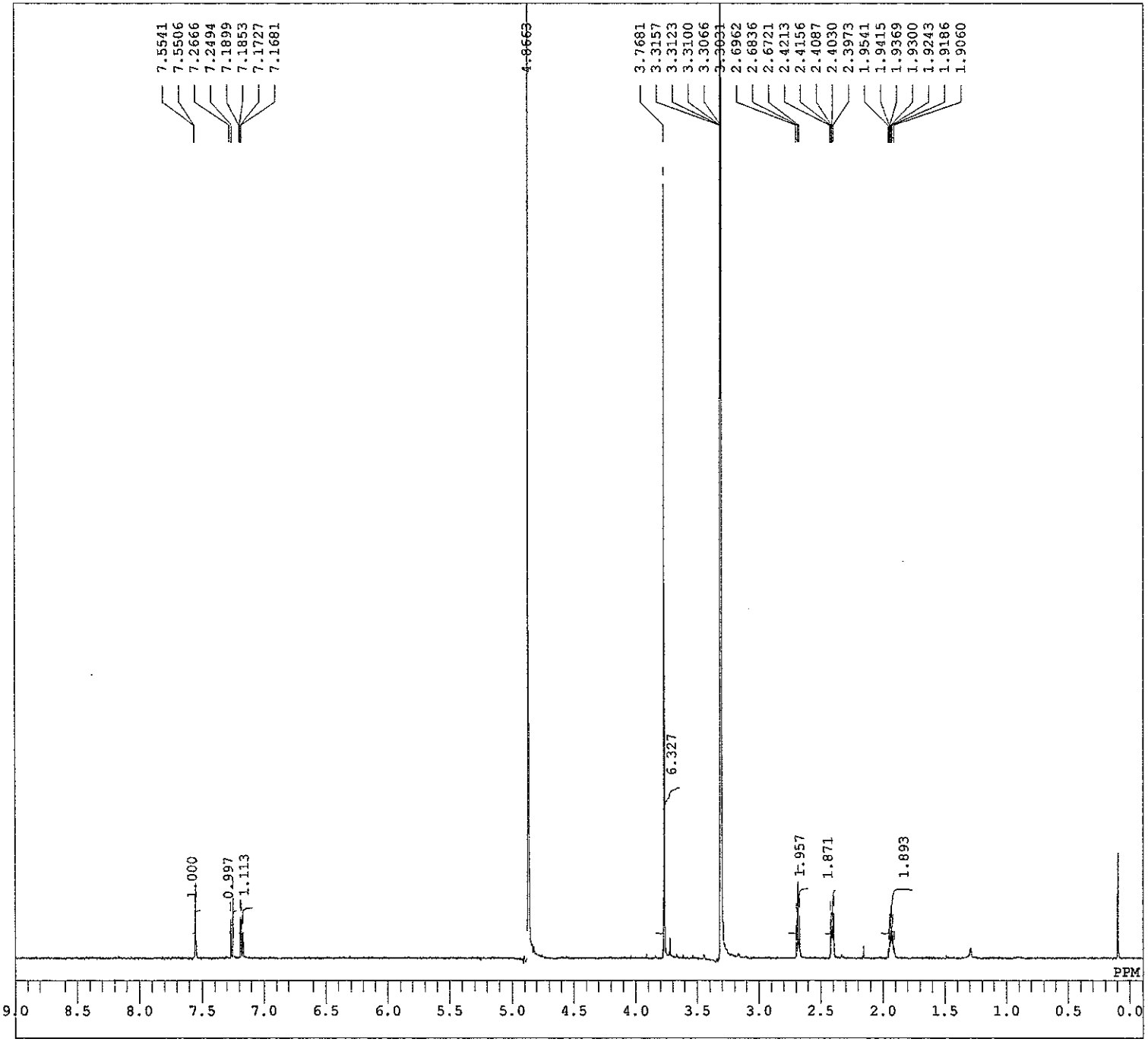
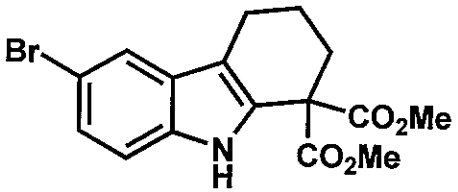
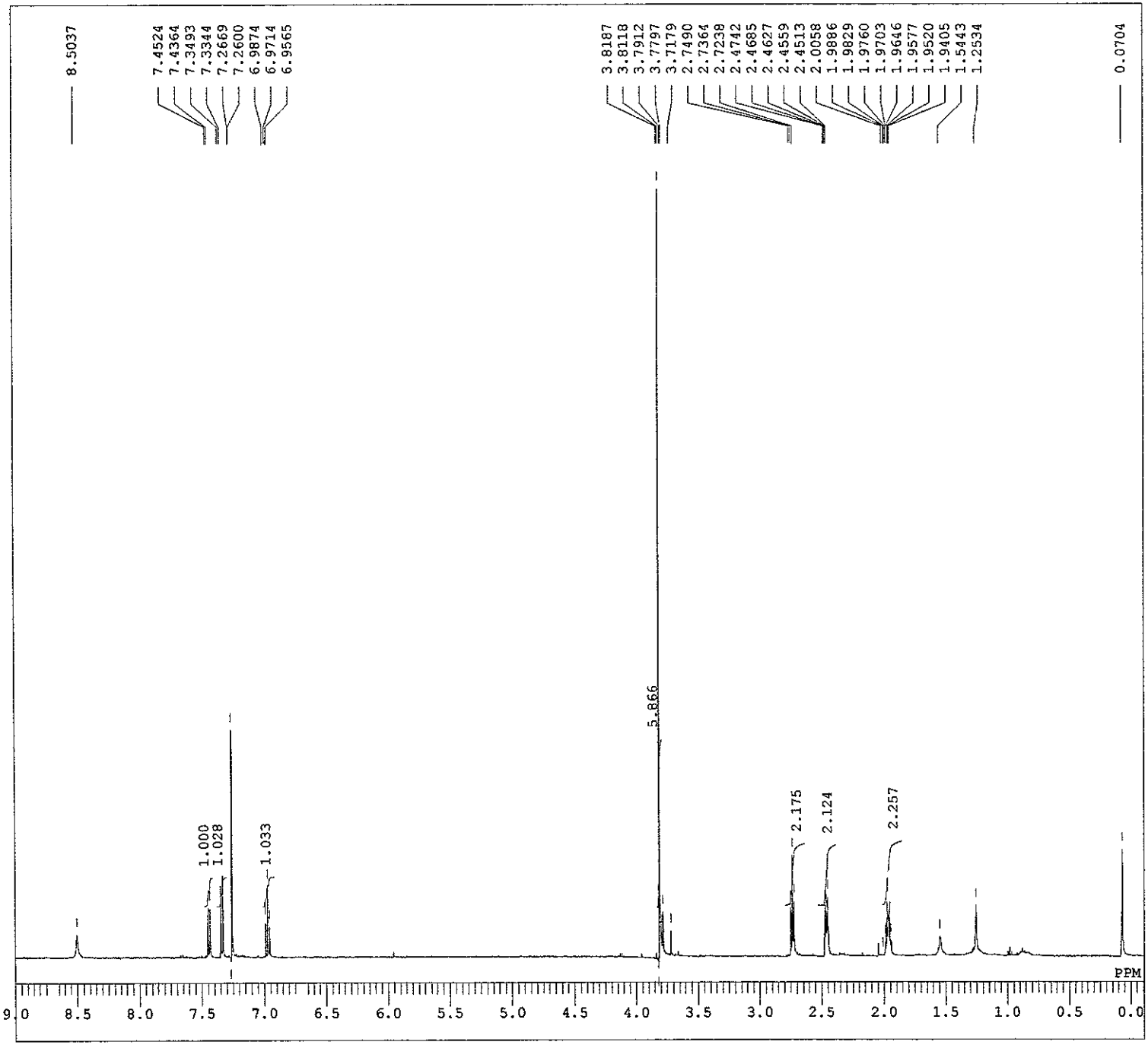


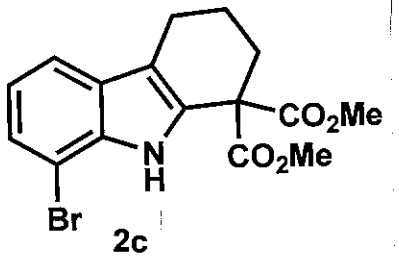
DFILE	JA-5-Br-TM-1H-2-1-1.als
COMNT	
DATIM	2013-04-25 18:18:48
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	8
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CD3OD
EXREF	3.31 ppm
BF	0.12 Hz
RGAIN	40



2b



DFILE	JA-exp510-1-1-1.als
COMNT	
DATIM	2012-12-03 11:44:23
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	8
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	21.0 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	30



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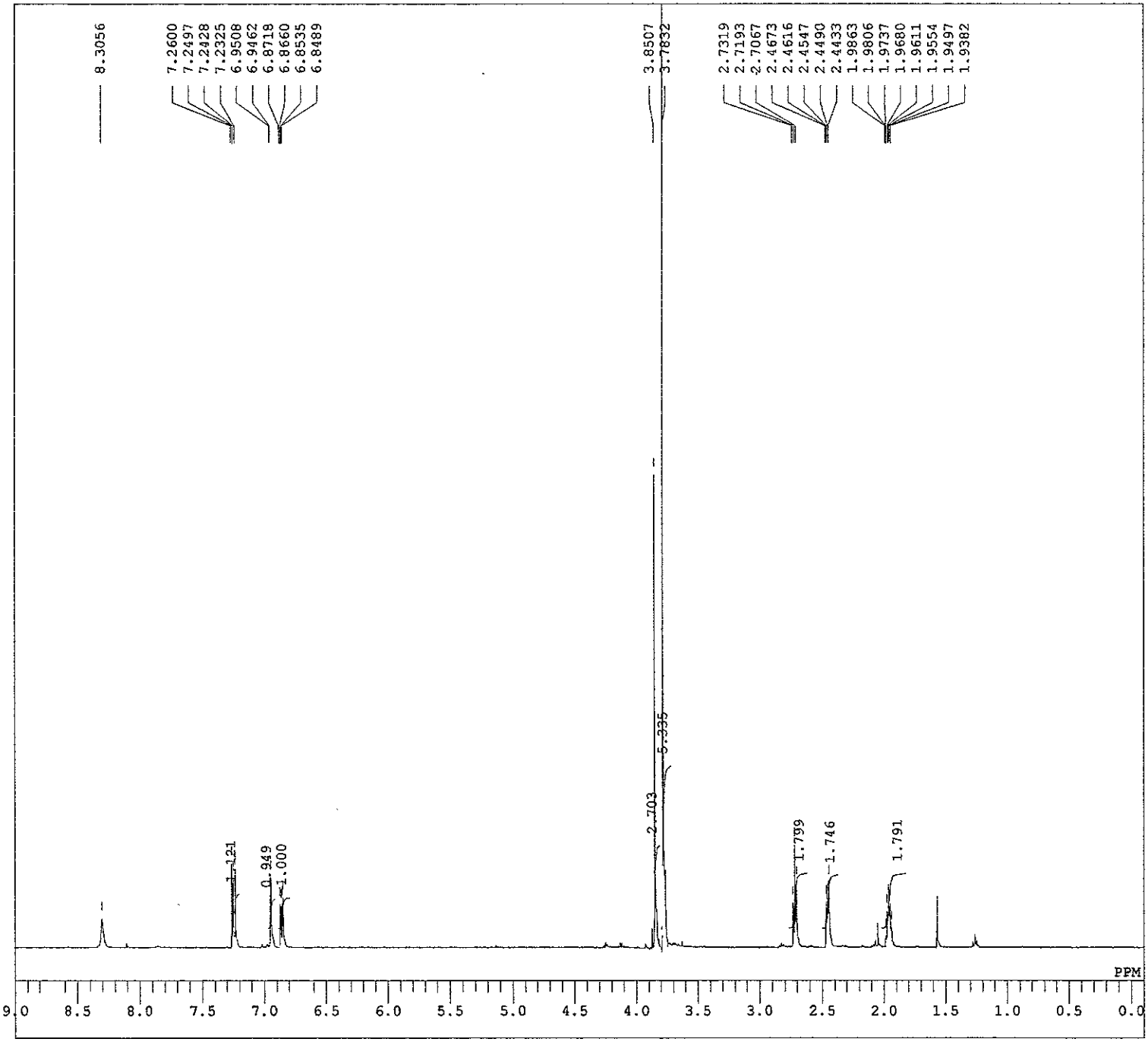
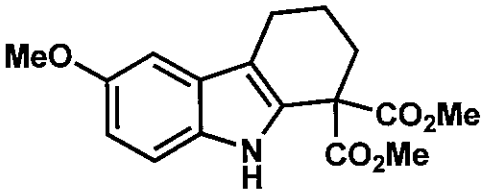


DFILE	JA-5-OMe-TM-1-1.als
COMNT	
DATIM	2013-04-23 21:02:10
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	8
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.2 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	38



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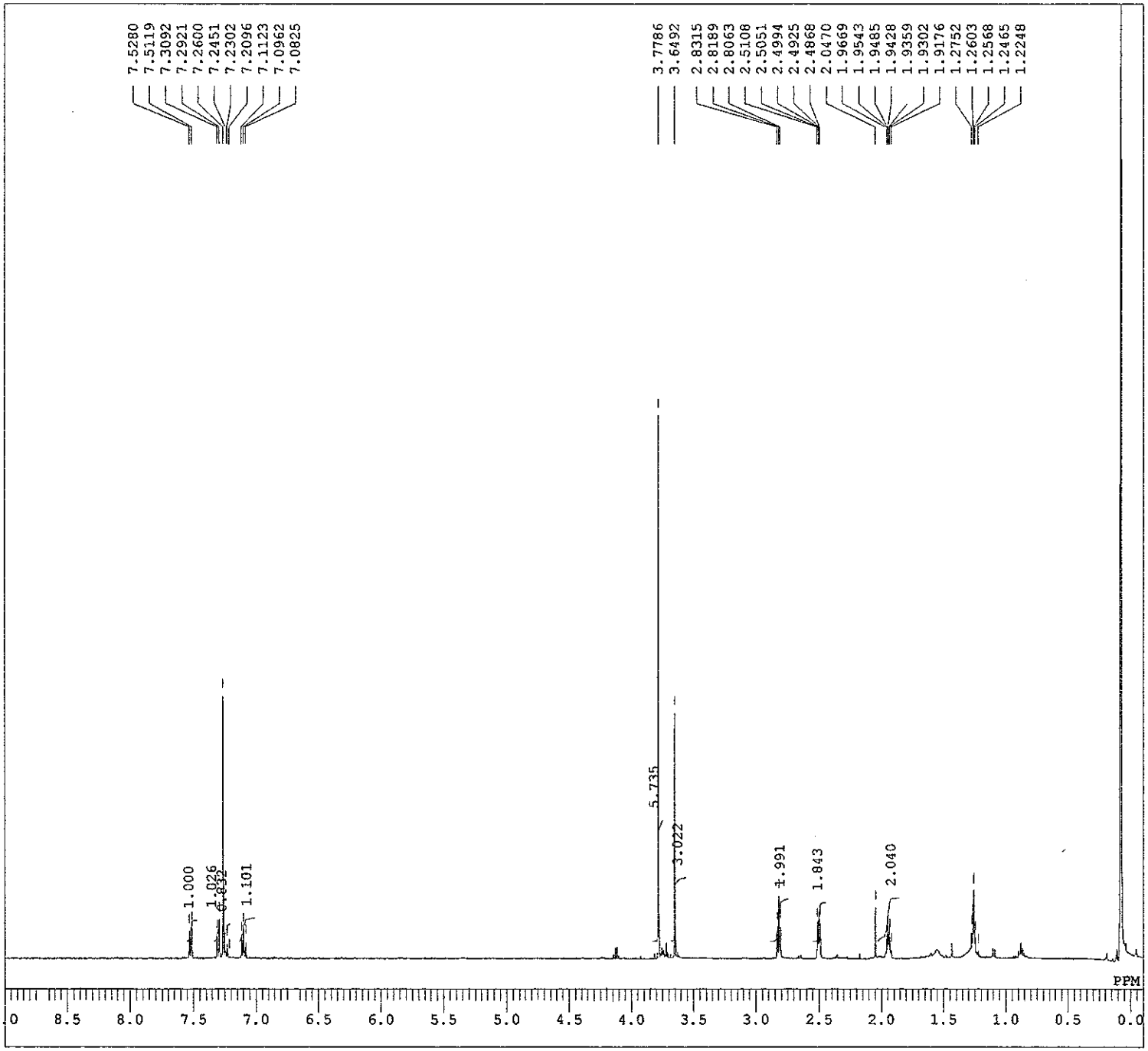
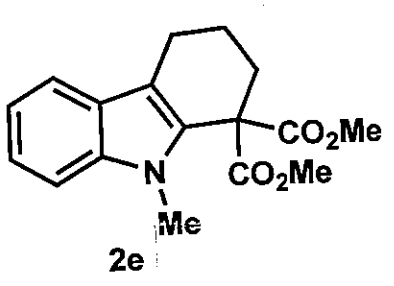
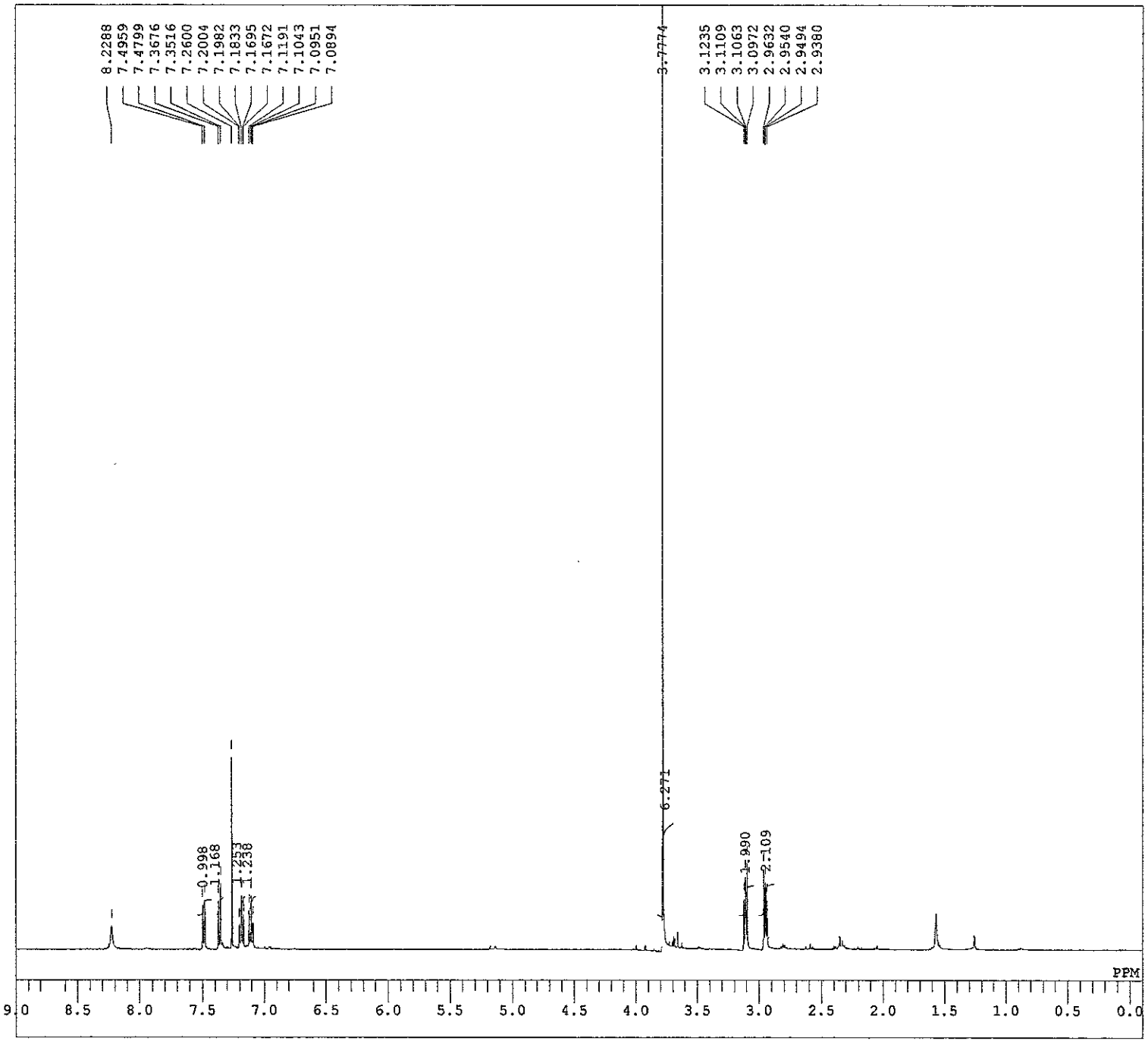


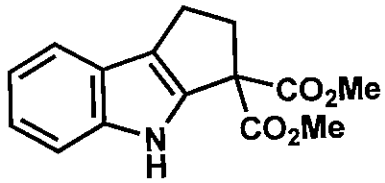
DFILE	JA-exp571-1-1-1.als
COMNT	
DATIM	2013-01-22 17:07:45
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	5
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.6 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	30



2e



DFILE	JA-5-TM-1H-1-1.als
COMNT	
DATIM	2013-04-23 21:07:58
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	10
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.5 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



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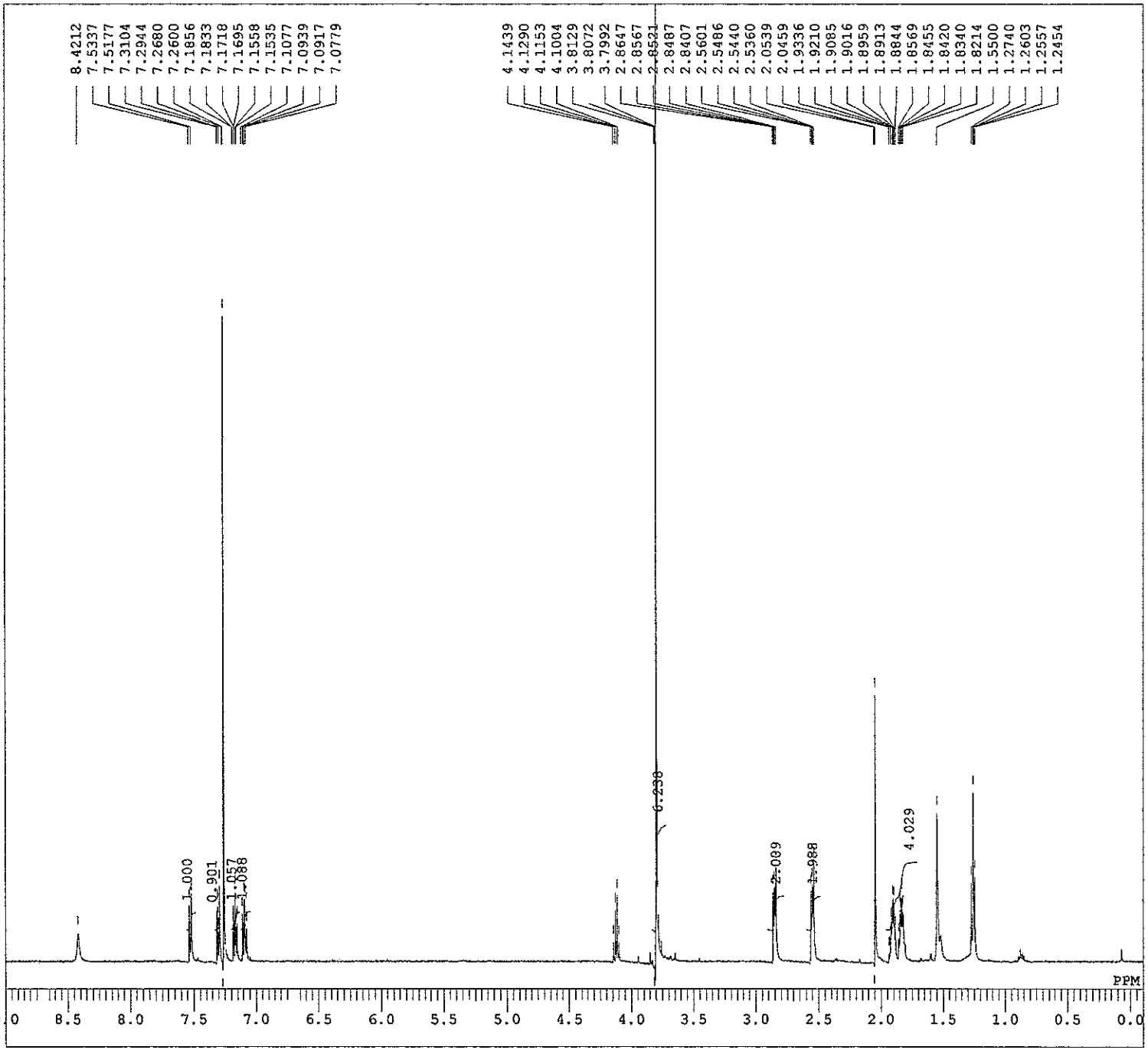
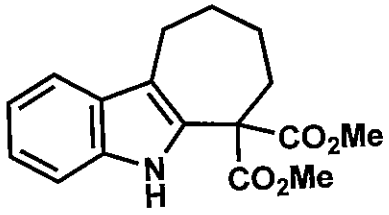
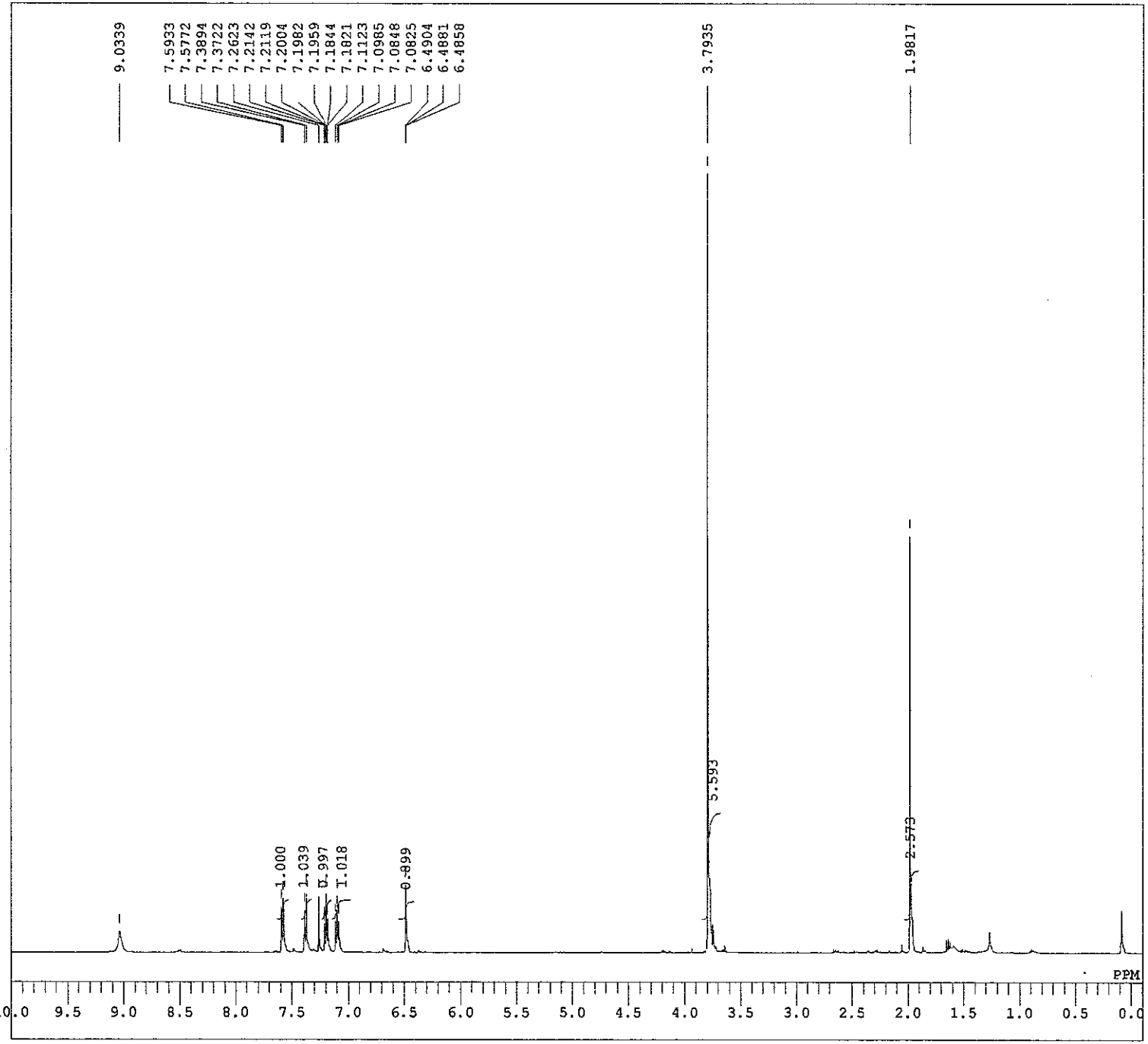


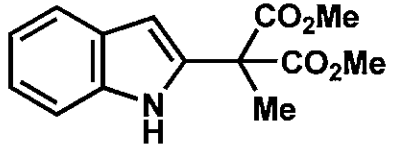
DFILE	JA-exp475-1-1-1.als
COMNT	
DATIM	2012-10-29 17:01:10
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	8
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	30



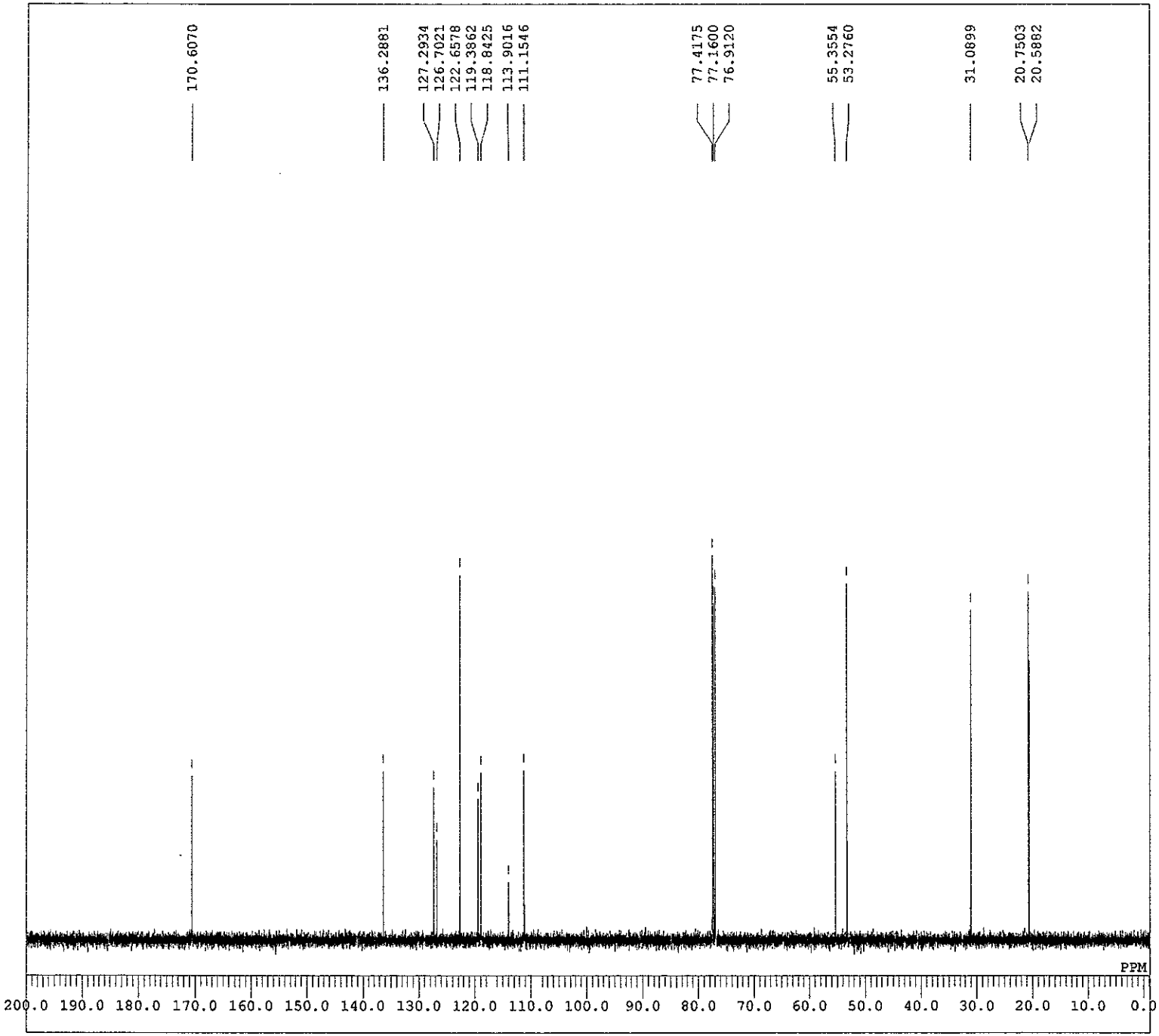
2g



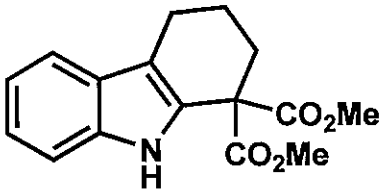
DFILE	JA-inter-1H-1-1.als
COMNT	
DATIM	2013-04-23 20:53:28
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.8 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	36



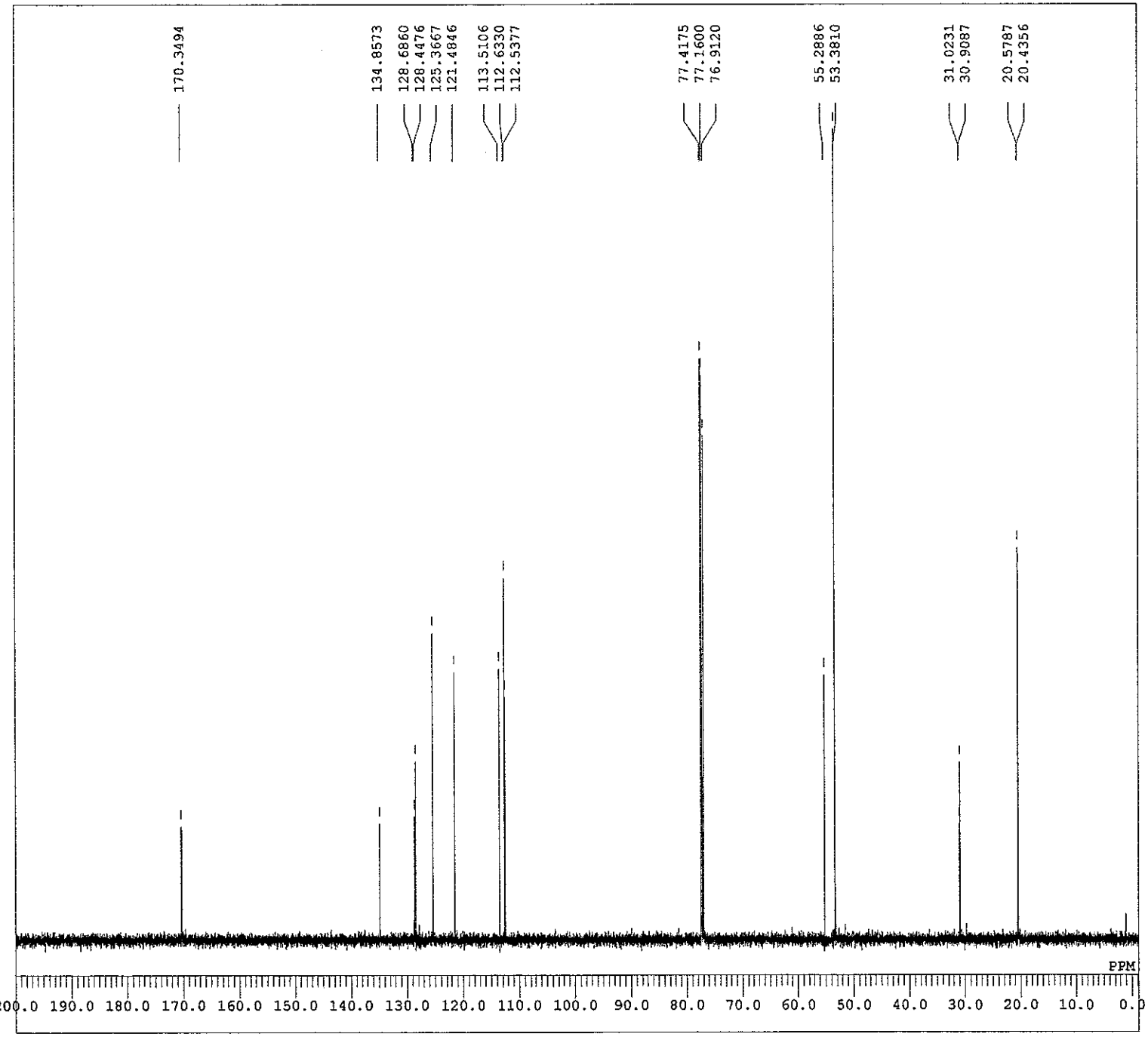
4



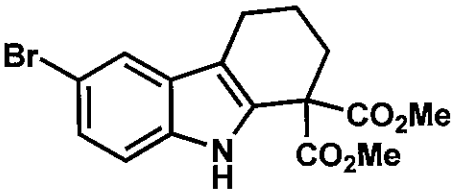
DFILE	JA-6-TM-2-1.als
COMNT	
DATIM	2013-04-21 16:31:40
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	60
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	23.1 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



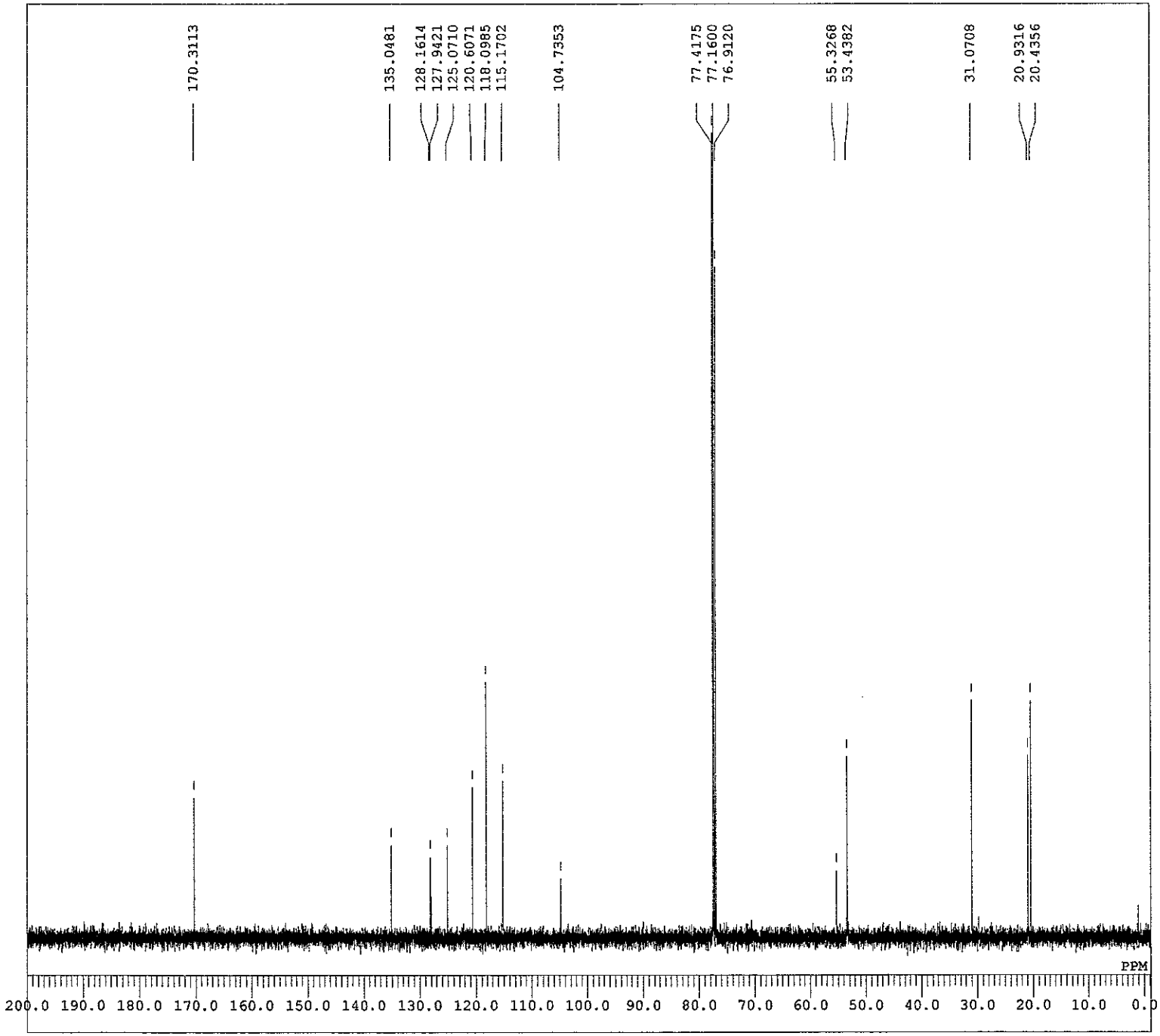
1a



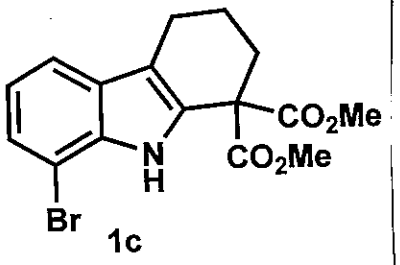
DFILE	JA-5-Br-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:24:26
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	200
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.9 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



1b



DFILE	JA-7-Br-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:42:05
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	120
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



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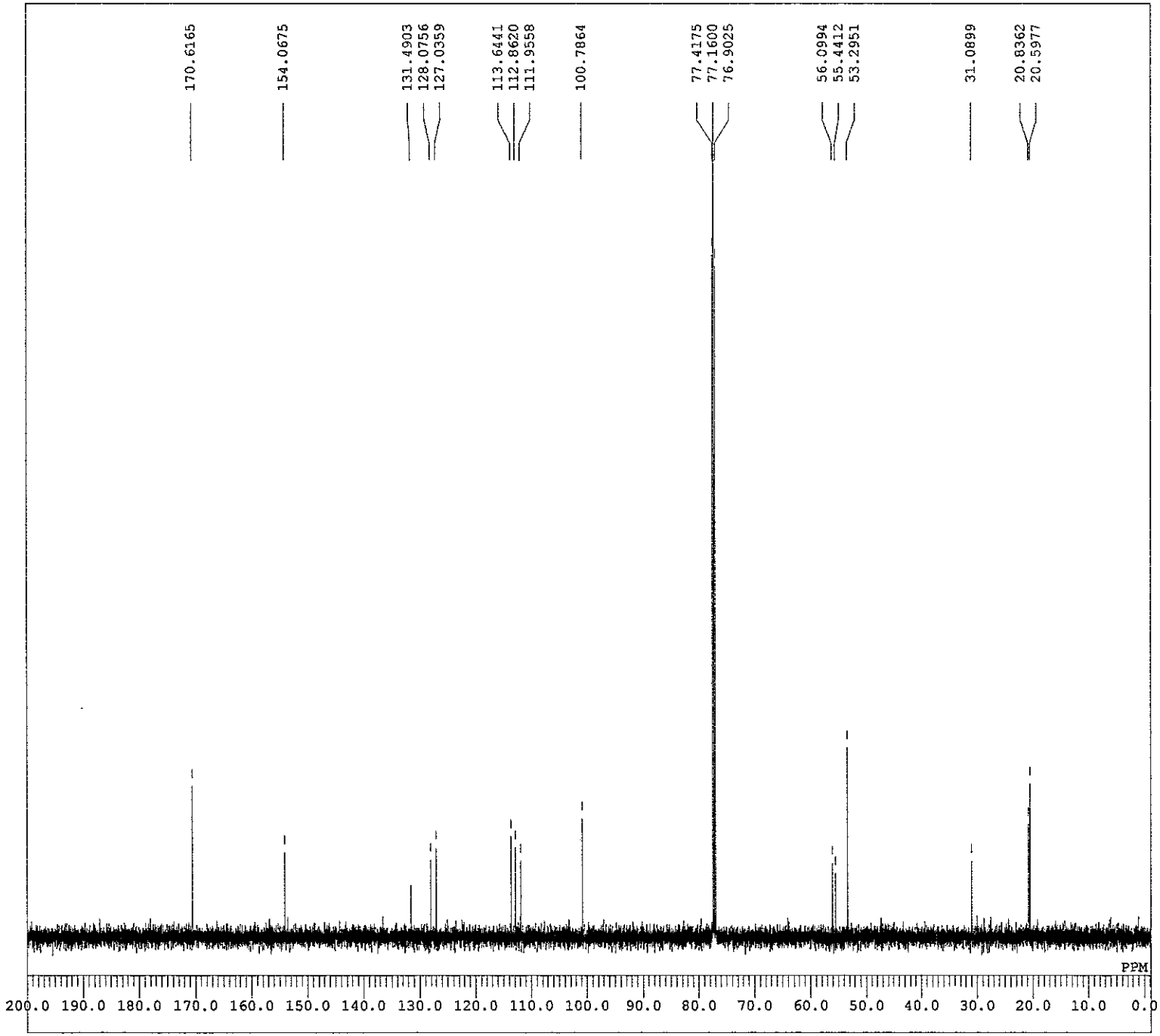
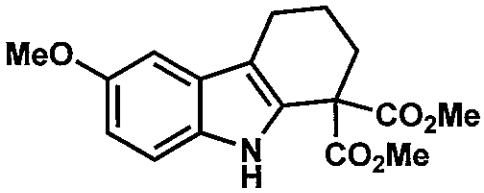
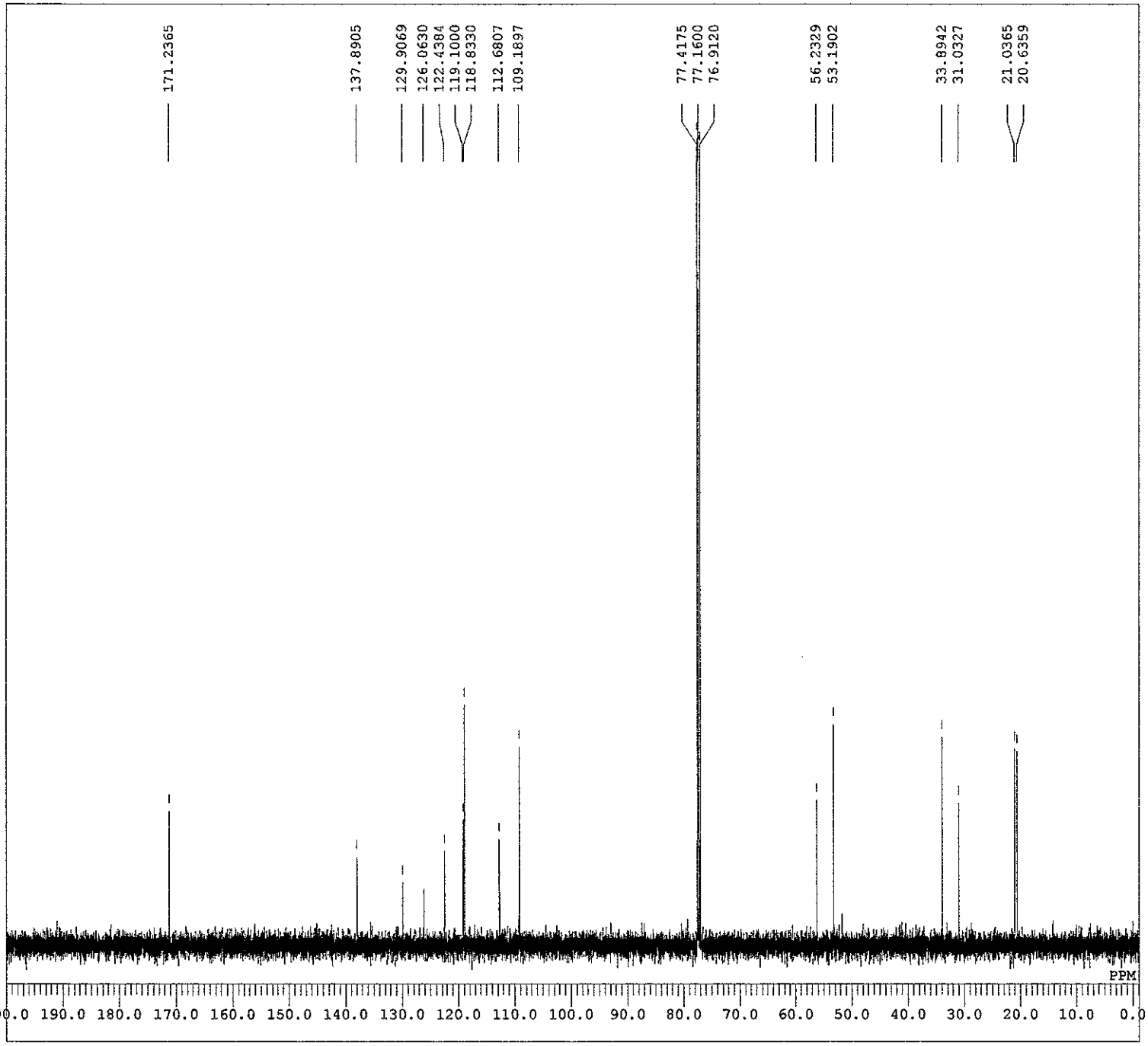


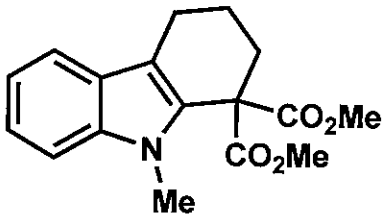
DFILE	JA-5-OMe-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:15:07
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	100
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.8 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



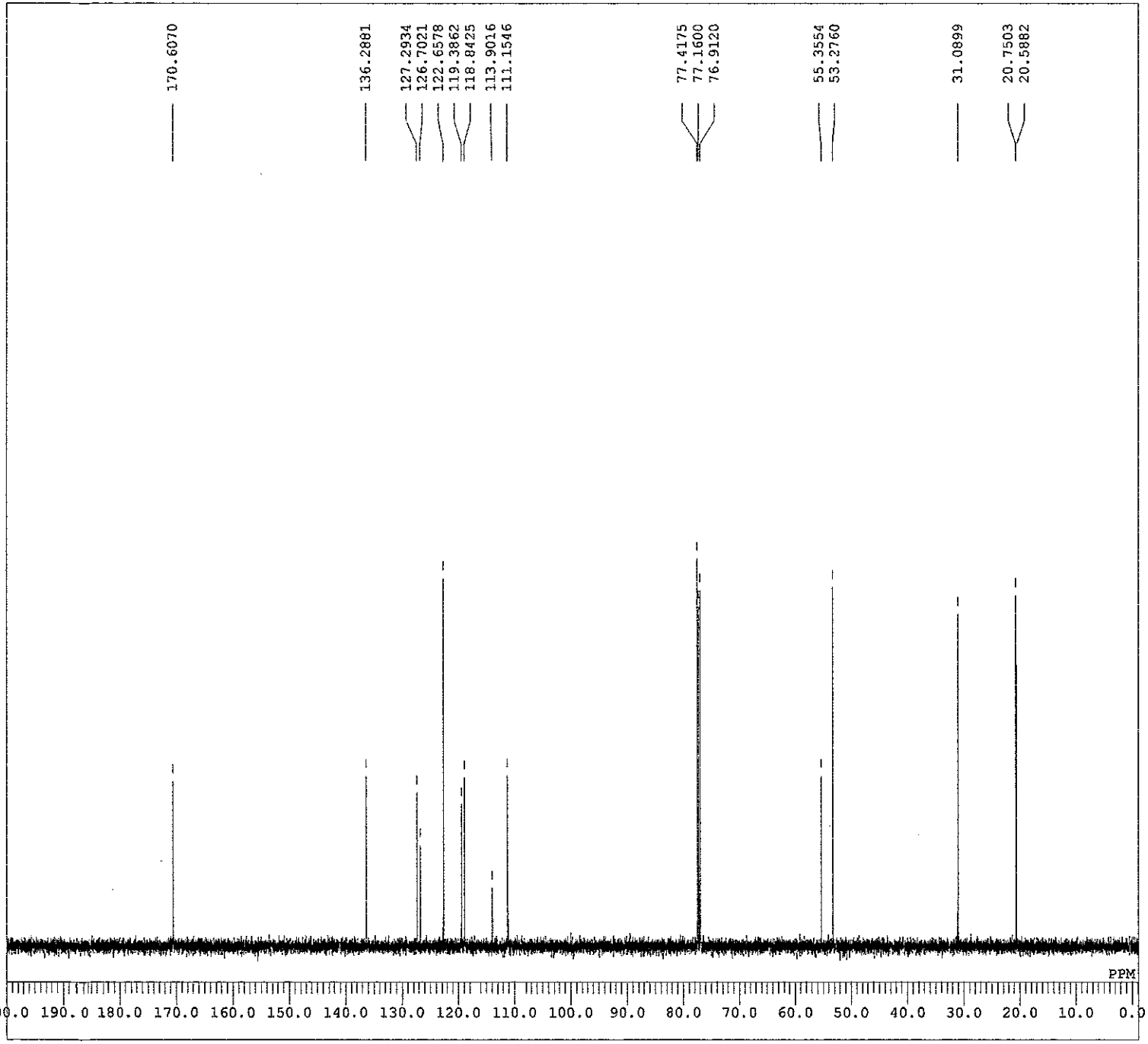
1d



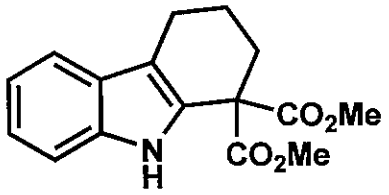
DFILE	JA-N-Me-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:52:35
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	120
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.8 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



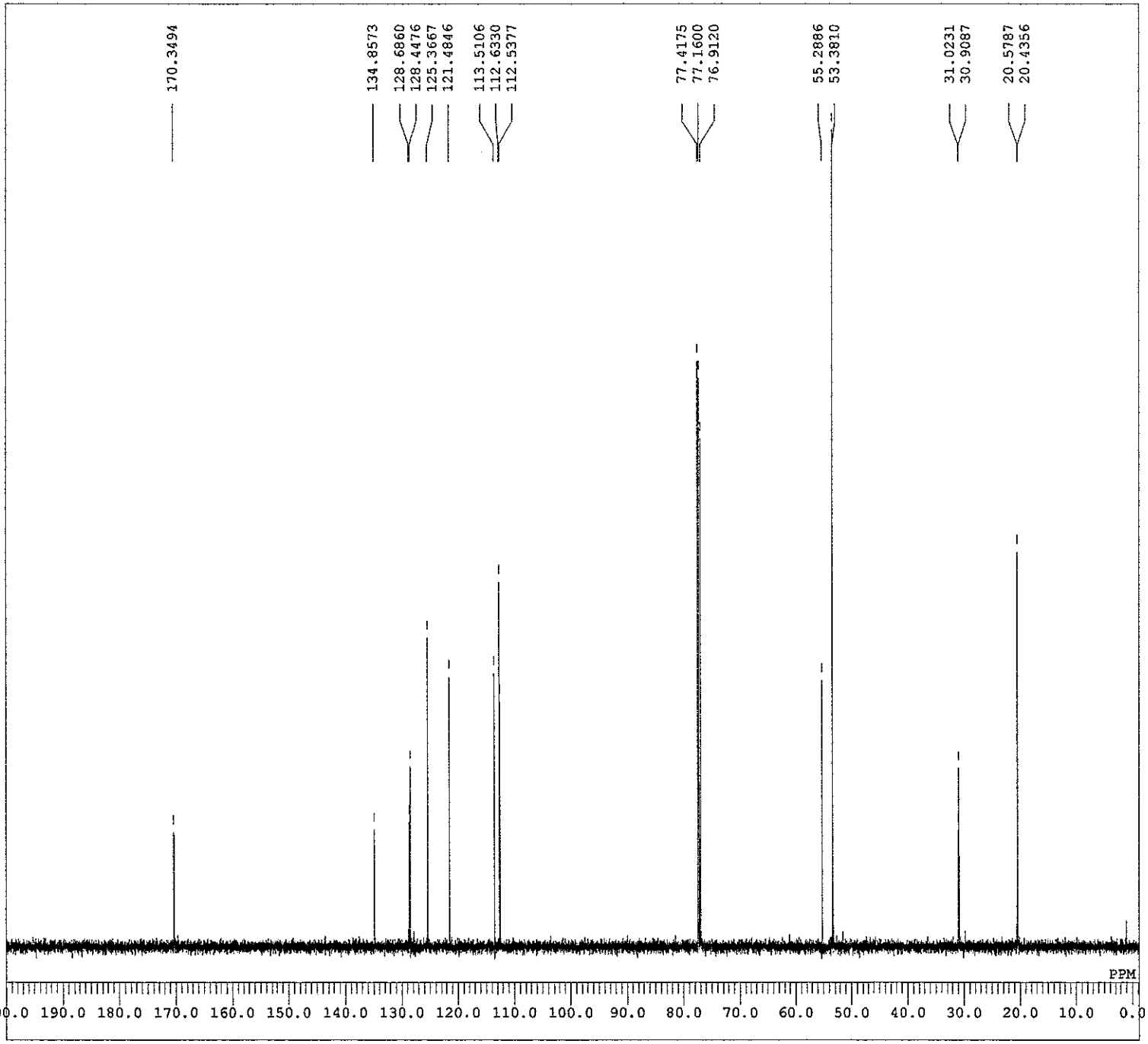
1e



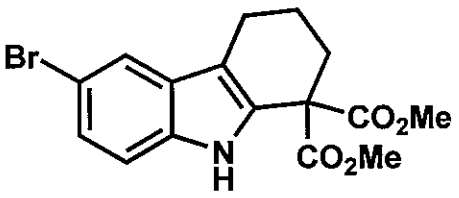
DFILE	JA-6-TM-2-1.als
COMNT	
DATIM	2013-04-21 16:31:40
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	60
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	23.1 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



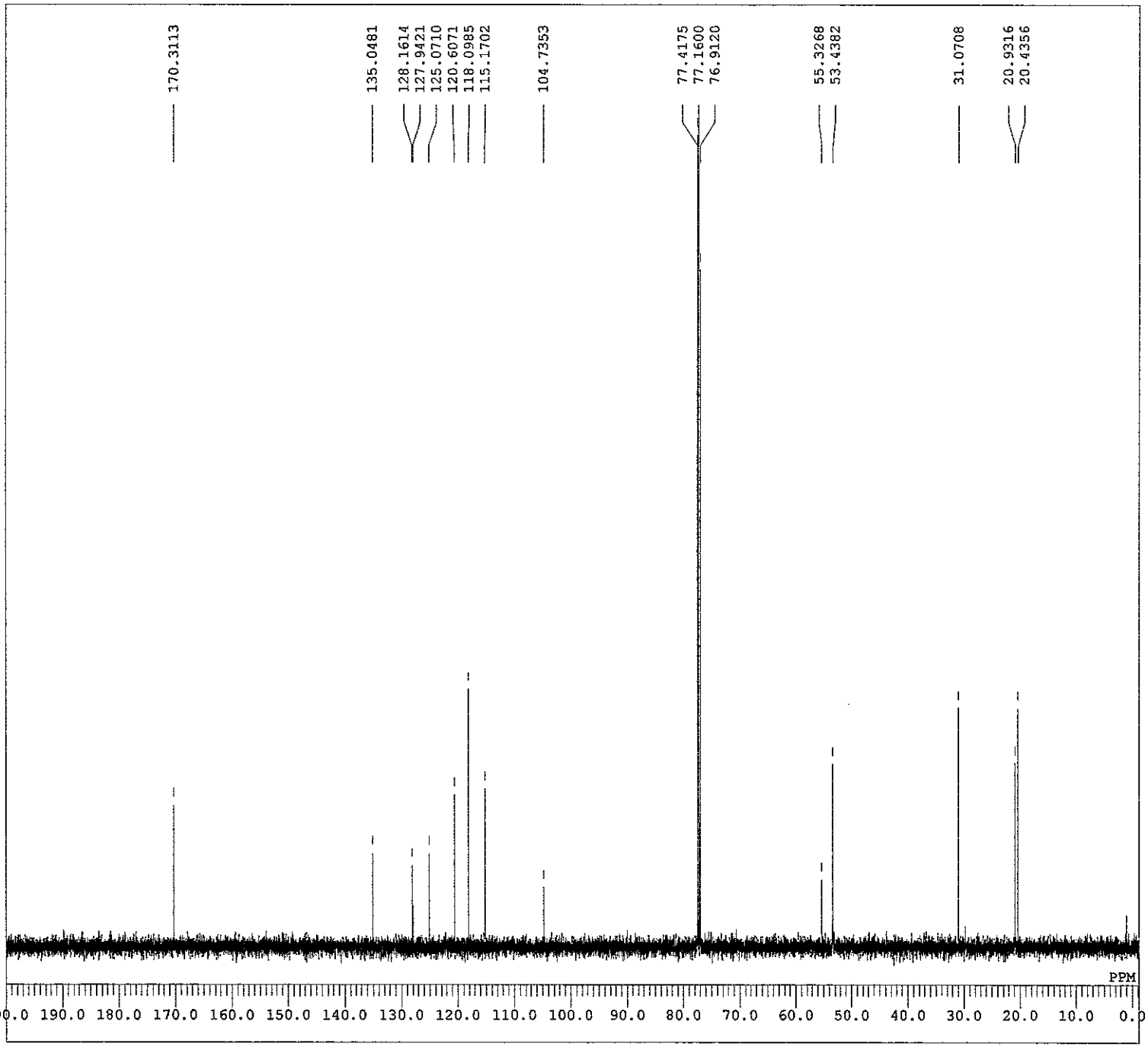
2a



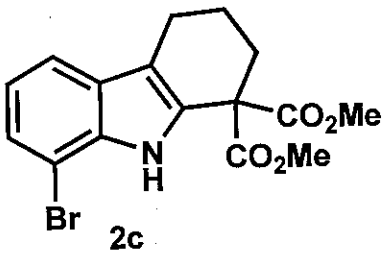
DFILE	JA-5-Br-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:24:26
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	200
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.9 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



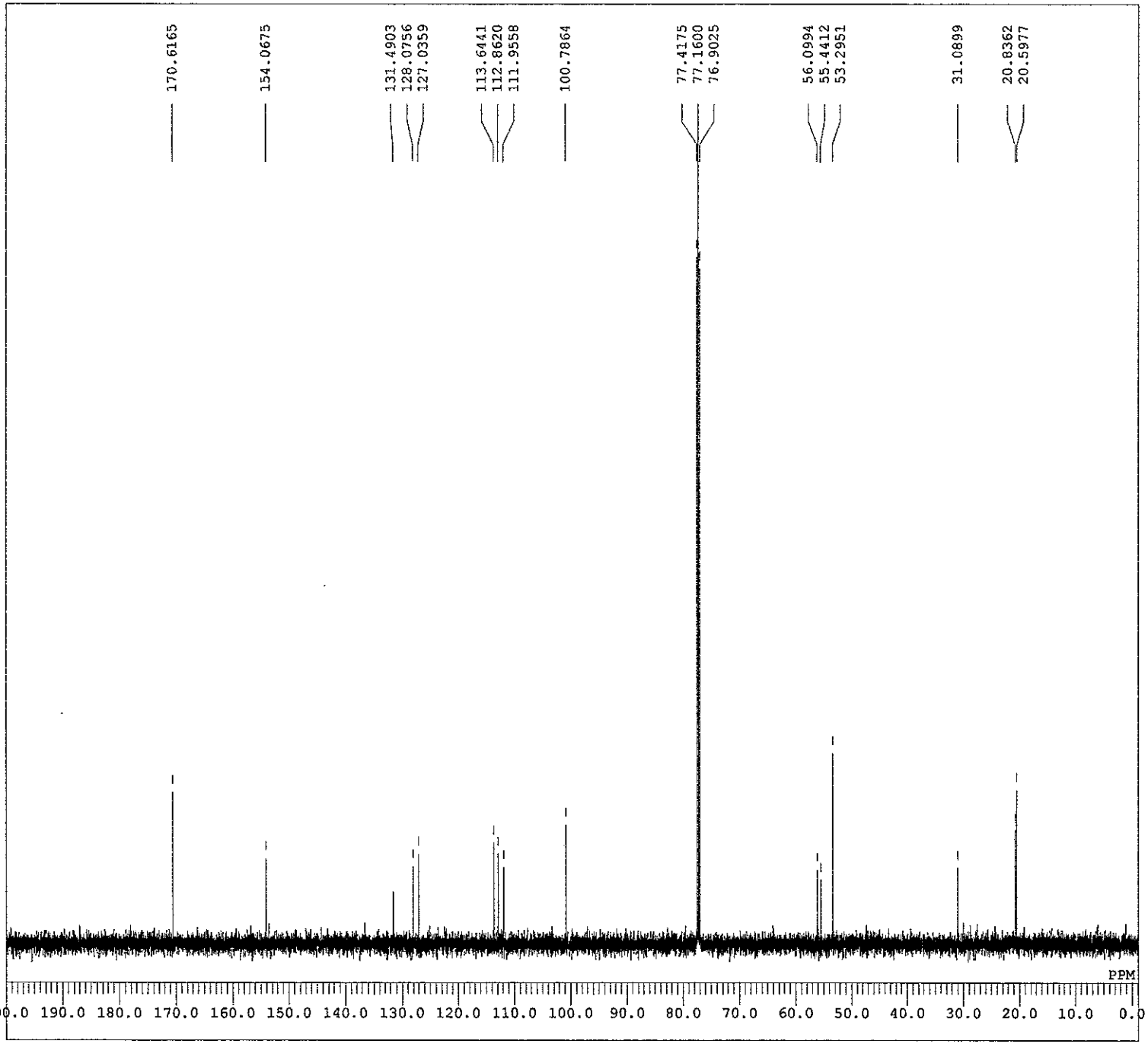
2b



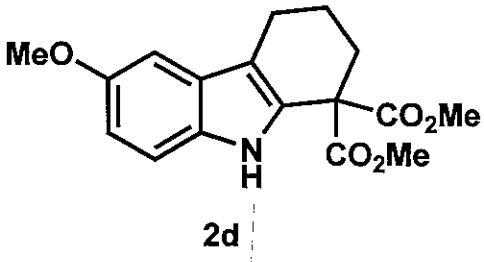
DFILE	JA-7-Br-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:42:05
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	120
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



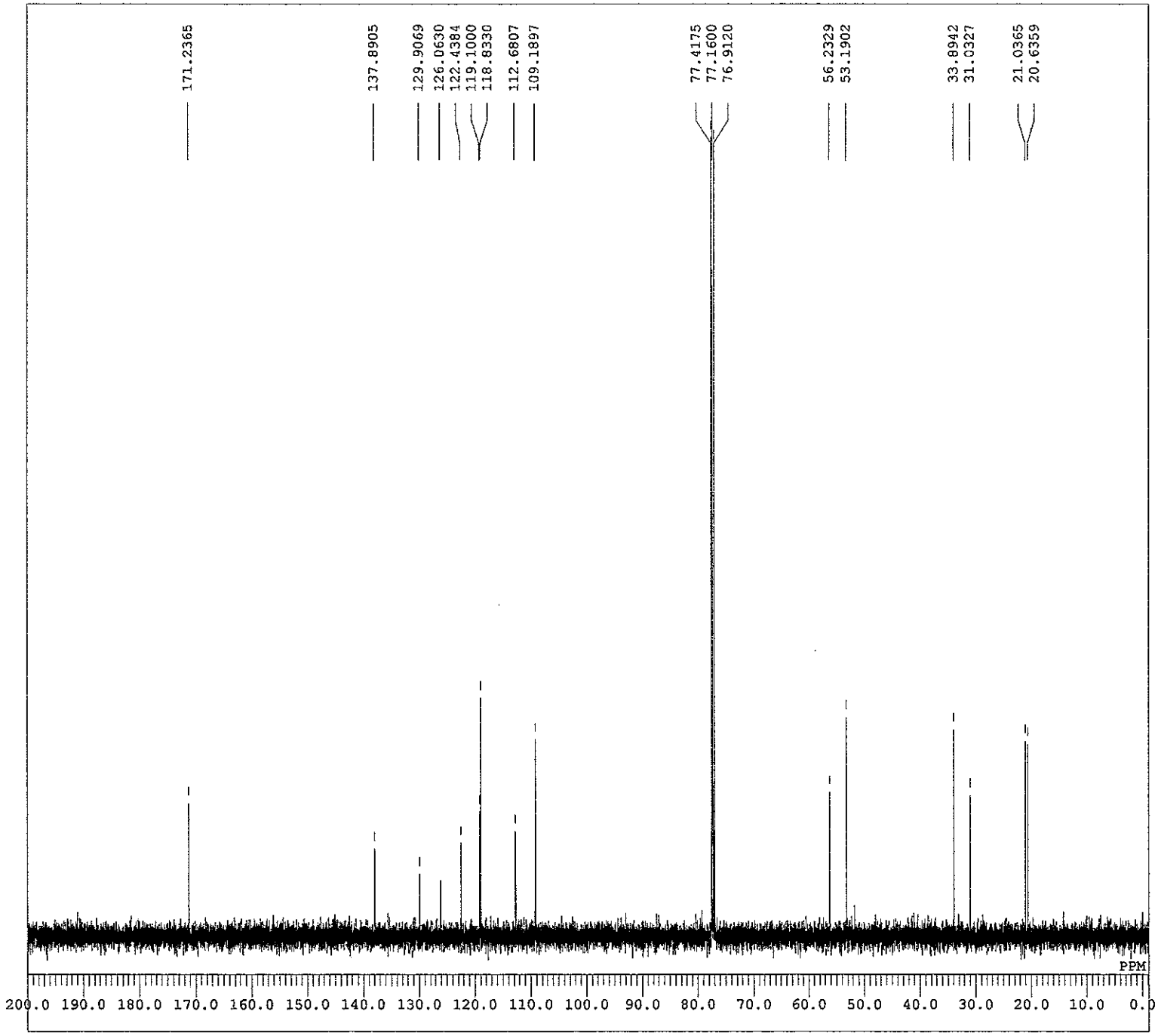
2c



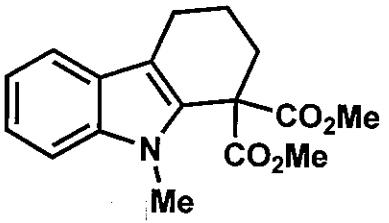
DFILE	JA-5-OMe-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:15:07
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	100
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.8 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



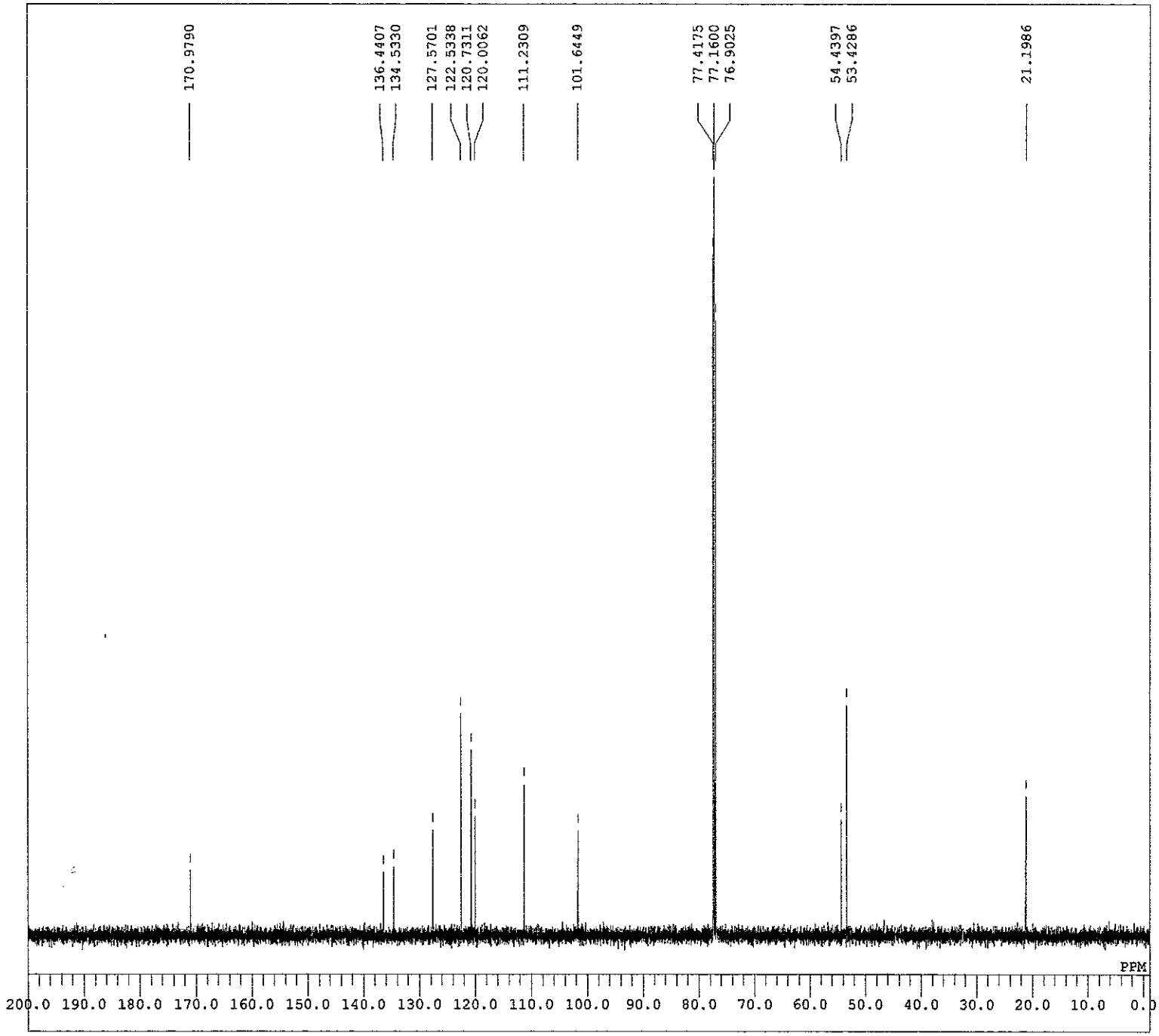
2d



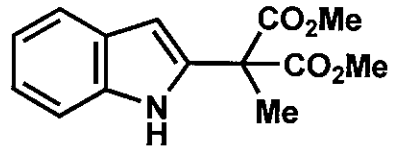
DFILE	JA-N-Me-TM-1-1.als
COMNT	
DATIM	2013-04-15 16:52:35
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	120
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.8 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



2e



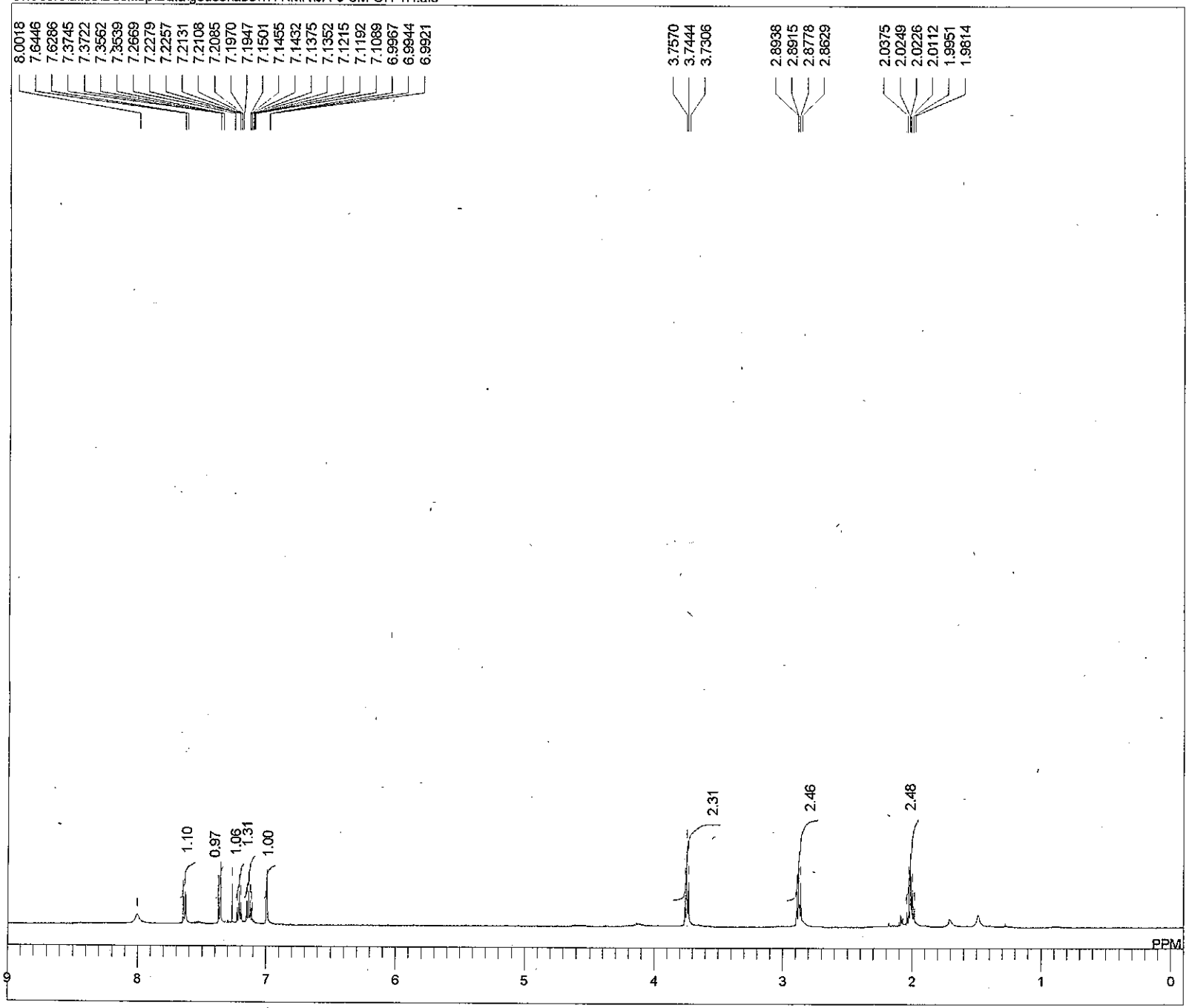
DFILE	JA-inter-TM-13C-1-1.als
COMNT	
DATIM	2013-04-25 15:08:22
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	160
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



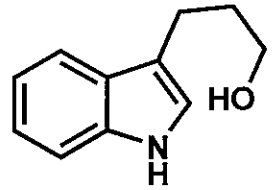
4

JA-6-SM-OH-1H

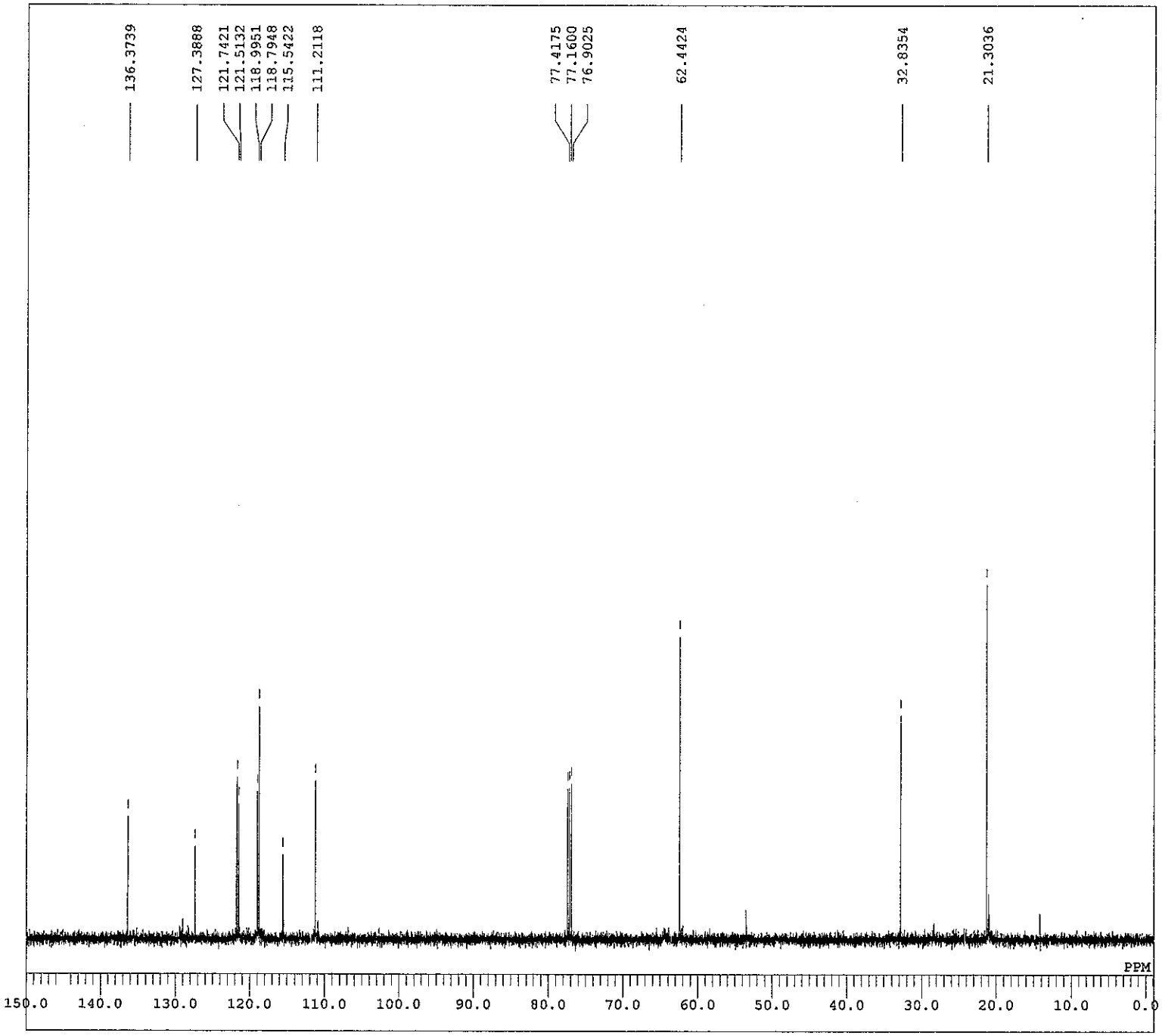
C:\Users\alice\Desktop\Data\gousei\abe\1H NMR\JA-6-SM-OH-1H.als



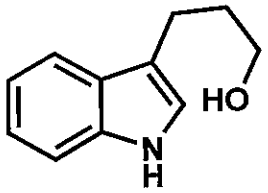
DFILE	JA-6-SM-OH-1H.als
COMNT	JA-6-SM-OH-1H
DATIM	2013-04-30 18:02:39
OBNUC	1H
EXMOD	single_pulse.ex2
OBFRQ	495.13 MHz
OBSET	4.38 KHz
OBFIN	9.64 Hz
POINT	16384
FREQU	9286.78 Hz
SCANS	8
ACQTM	1.7642 sec
PD	5.0000 sec
PW1	6.00 usec
IRNUC	1H
CTEMP	20.8 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.01 Hz
RGAIN	40



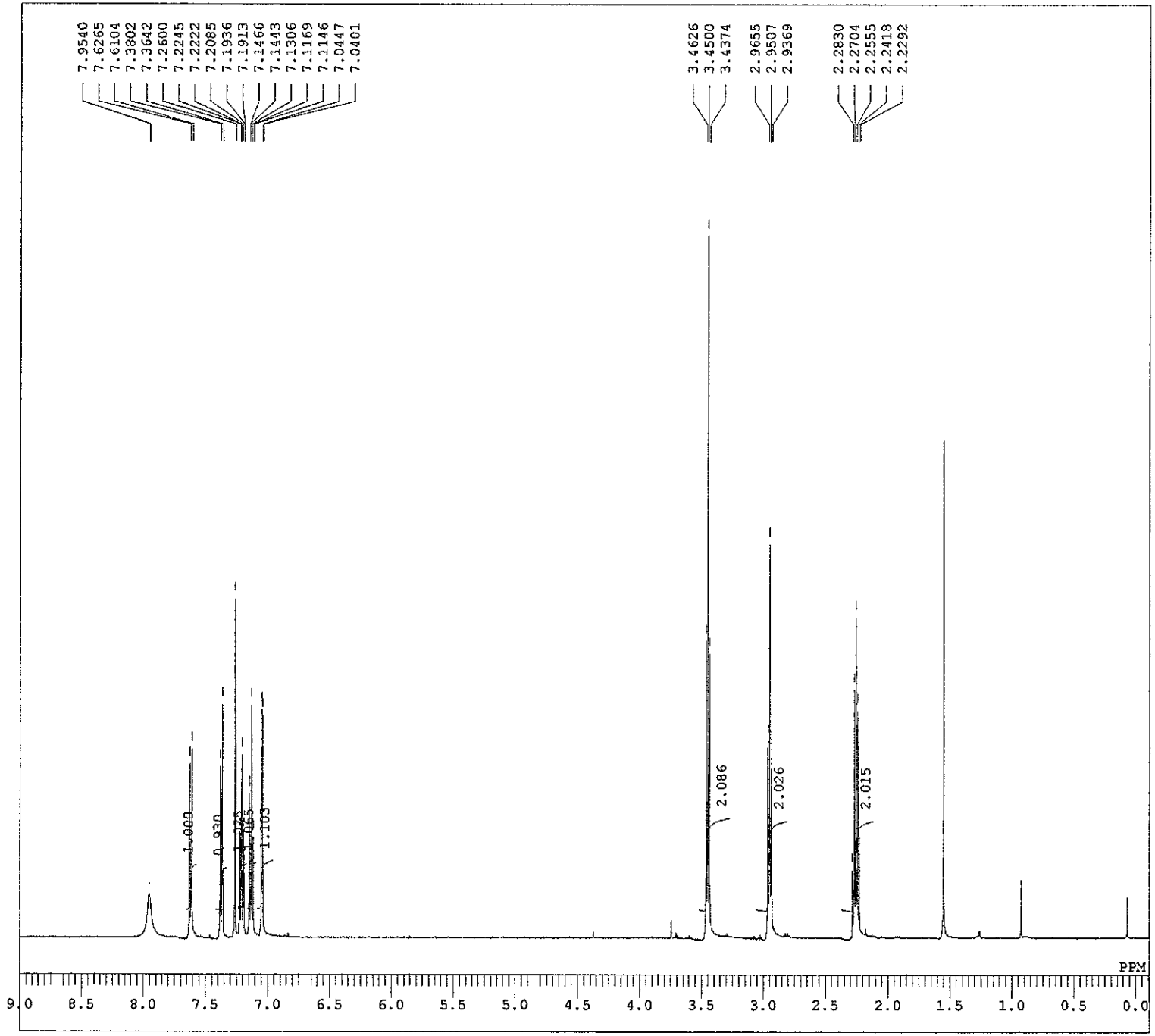
S1



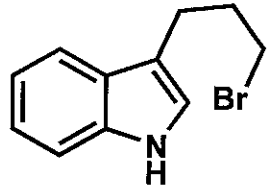
DFILE	JA-6-SM-OH-13C-1-1.als
COMNT	
DATIM	2013-04-29 14:06:46
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	20
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



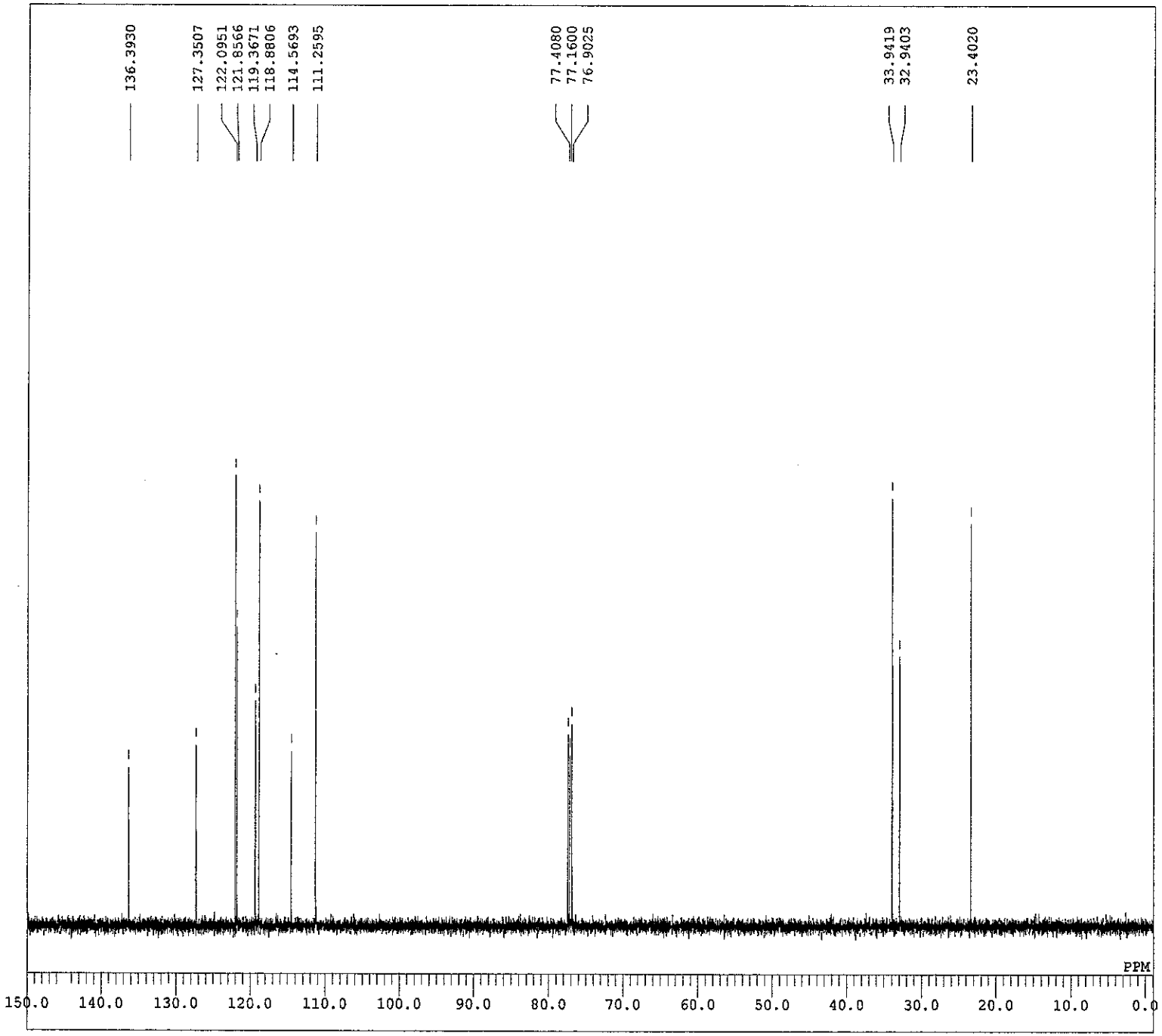
S1



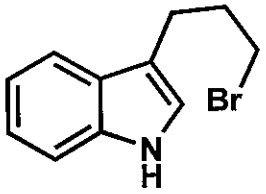
DFILE	JA-6-SM-Br-1-1.als
COMNT	
DATIM	2013-04-29 19:39:21
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	4
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.2 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



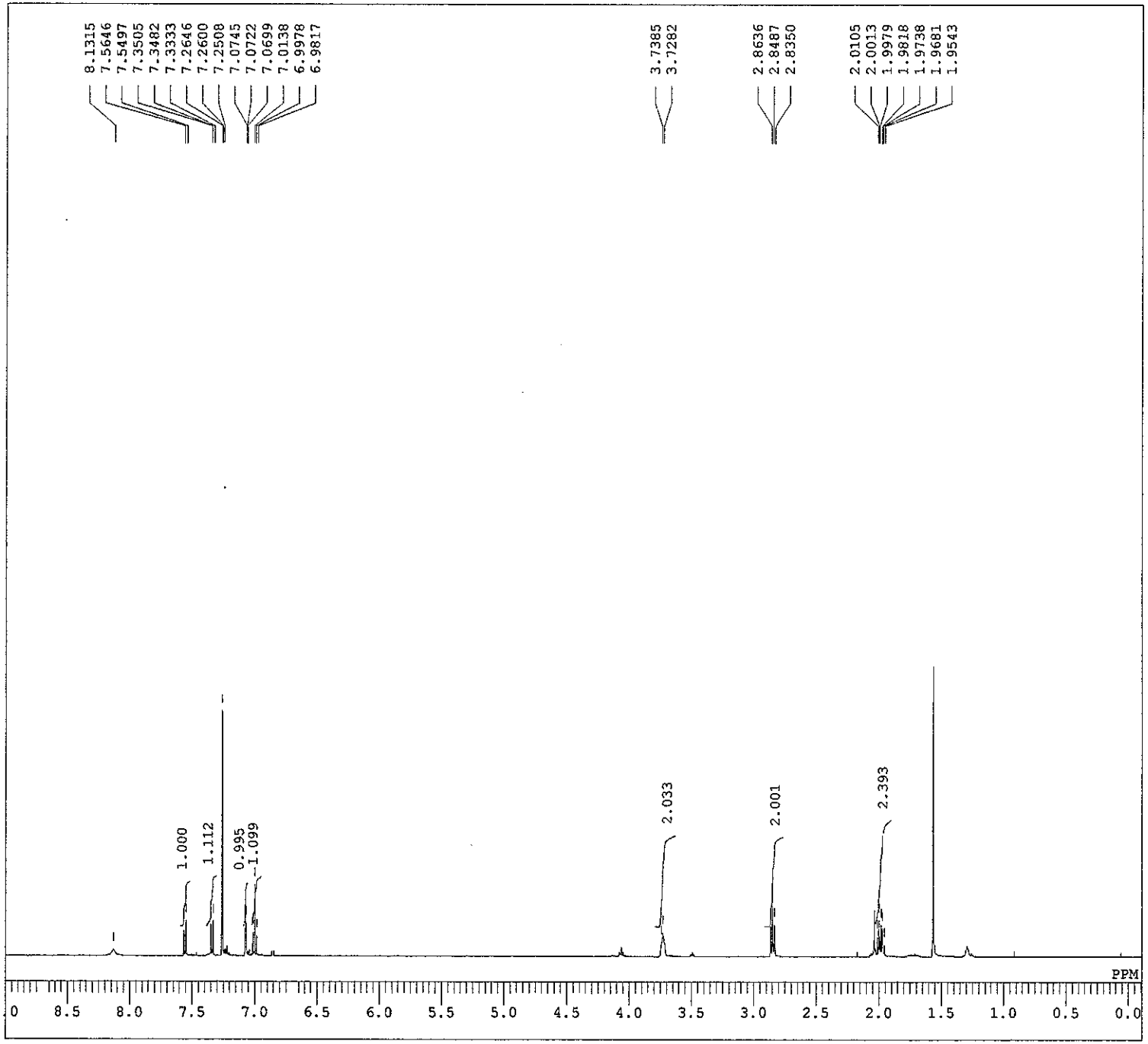
S2



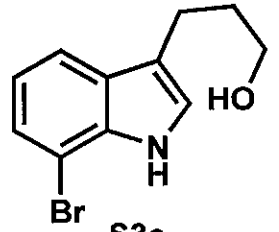
DFILE	JA-6-SM-Br-13C-1-1.als
COMNT	
DATIM	2013-04-30 17:27:24
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	20
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



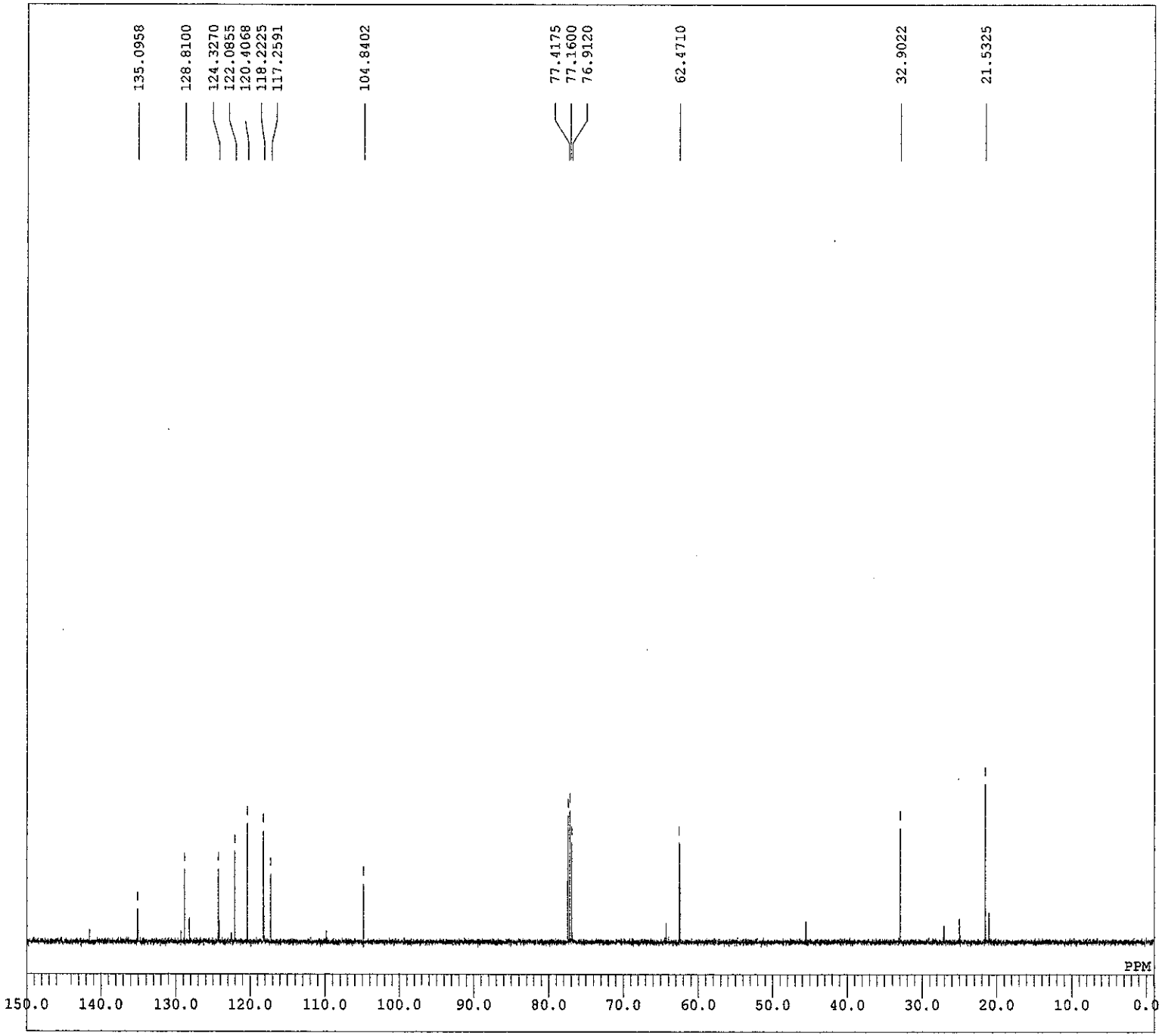
S2



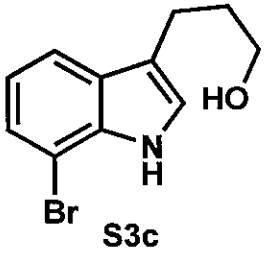
DFILE	JA-7-Br-SM-OH-1H-1-1.als
COMNT	
DATIM	2013-04-30 17:22:15
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	14
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



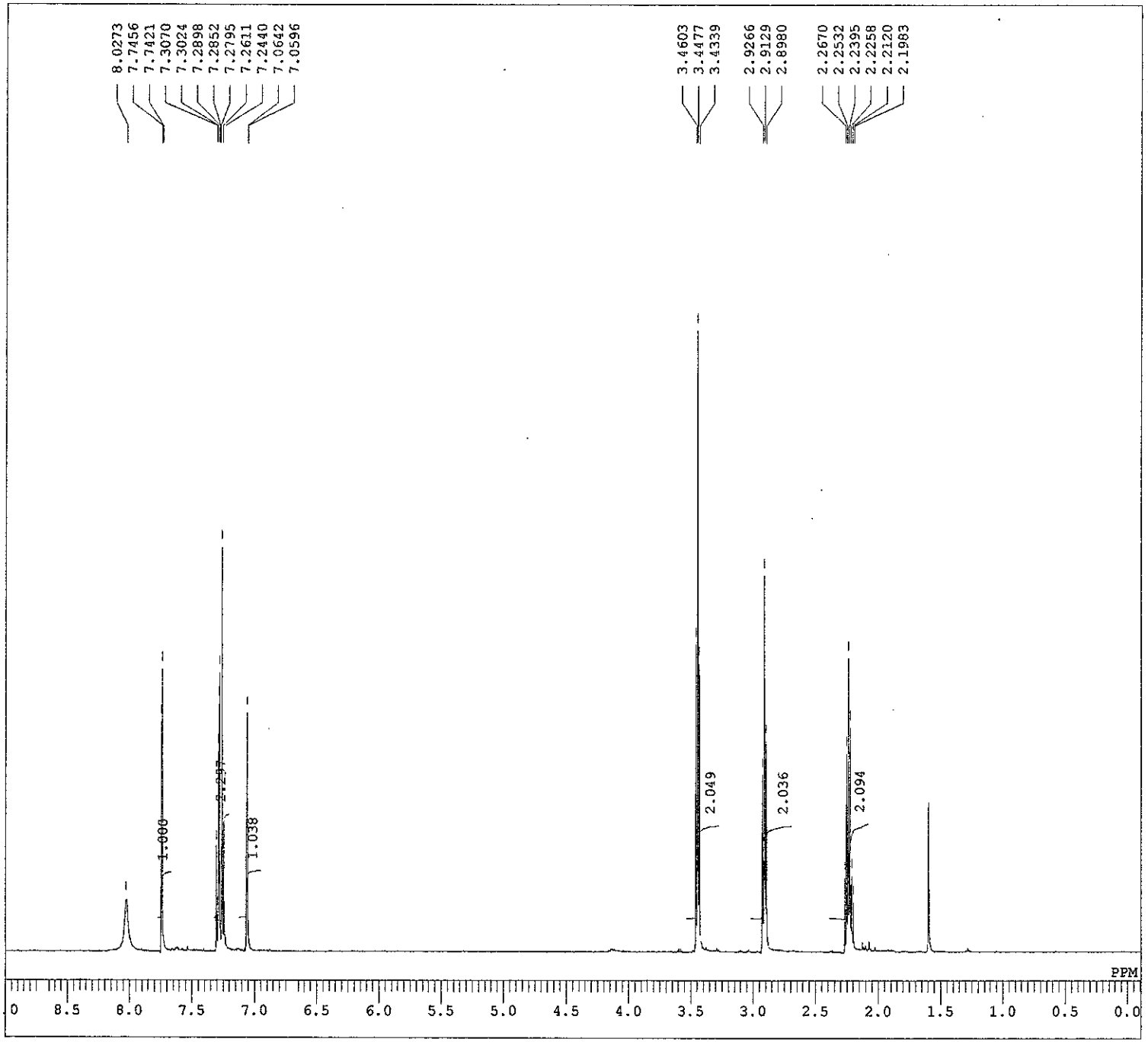
S3c



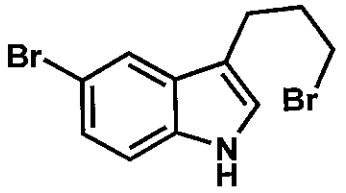
DFILE	JA-7-Br-SM-OH-13C-1-1.als
COMNT	
DATIM	2013-04-30 17:37:26
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	52
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.9 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



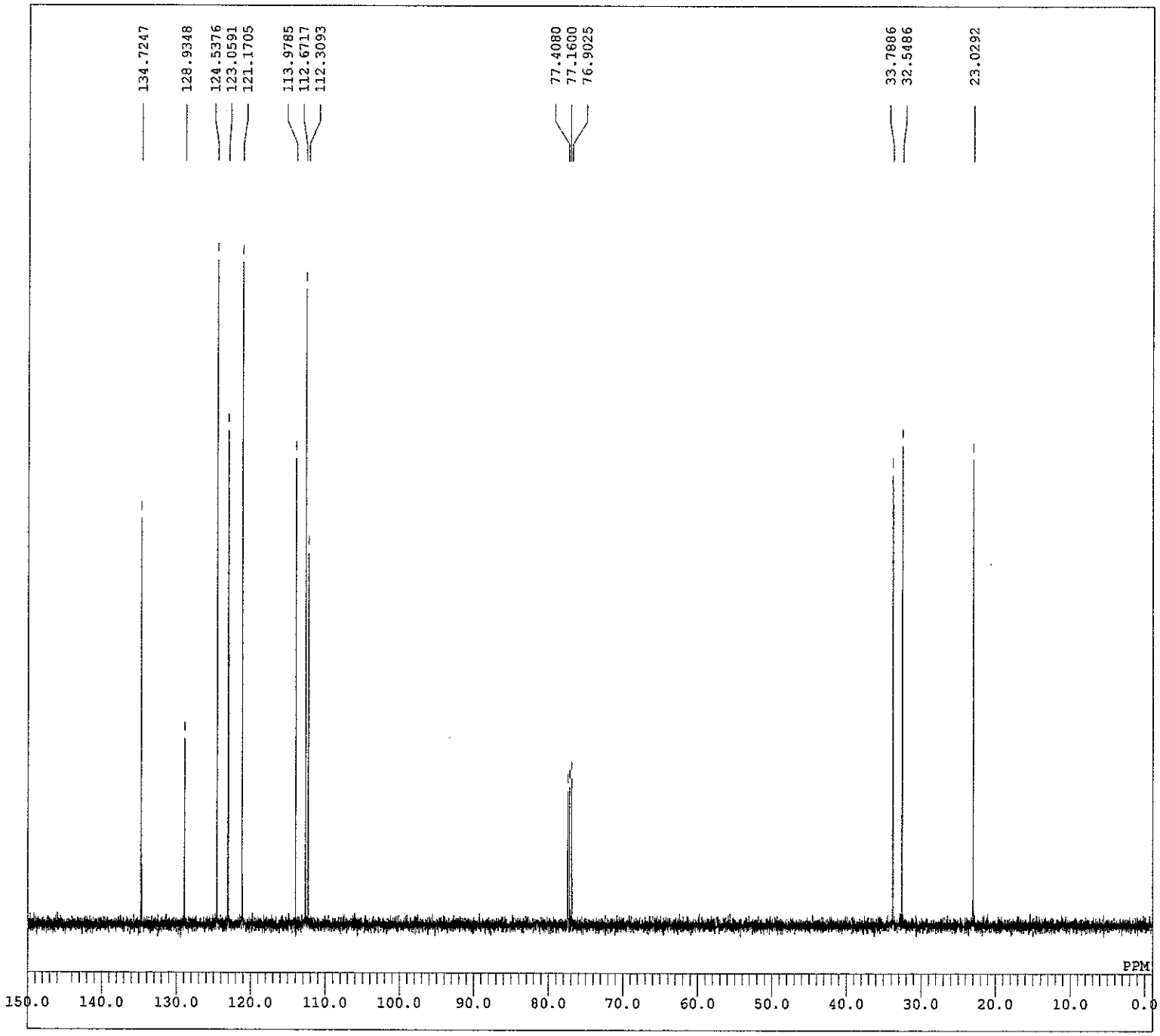
S3c



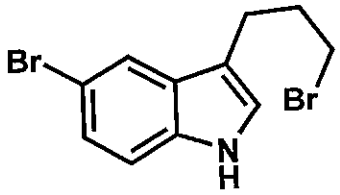
DFILE	JA-5-Br-SM-Br-1H-1-1.als
COMNT	
DATIM	2013-04-30 17:12:45
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	4
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	38



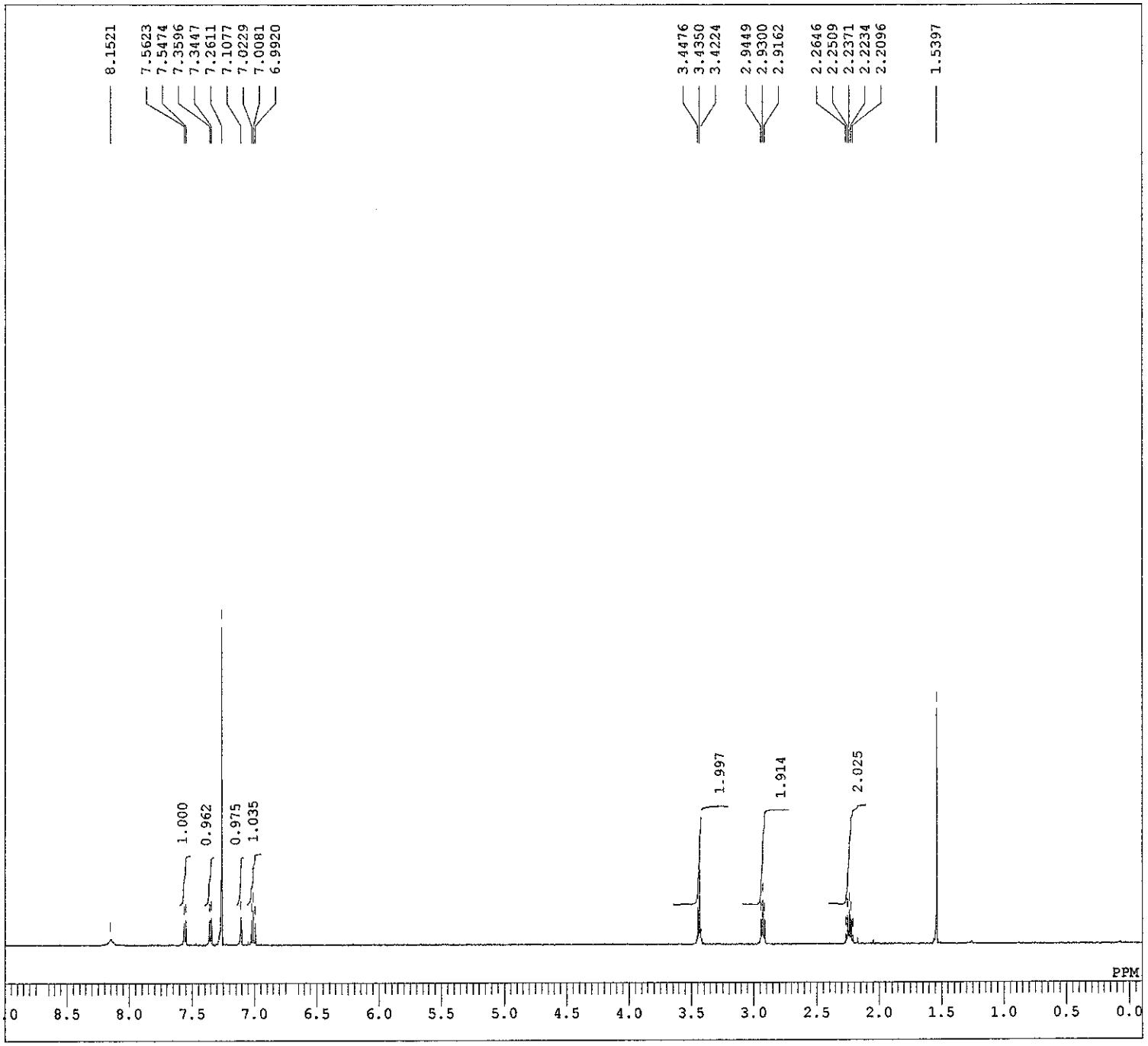
S4b



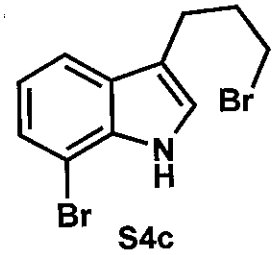
DFILE	JA-5-Br-SM-Br-13C-1-1.als
COMNT	
DATIM	2013-04-30 17:32:42
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	26214
FREQU	31446.54 Hz
SCANS	14
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.6 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



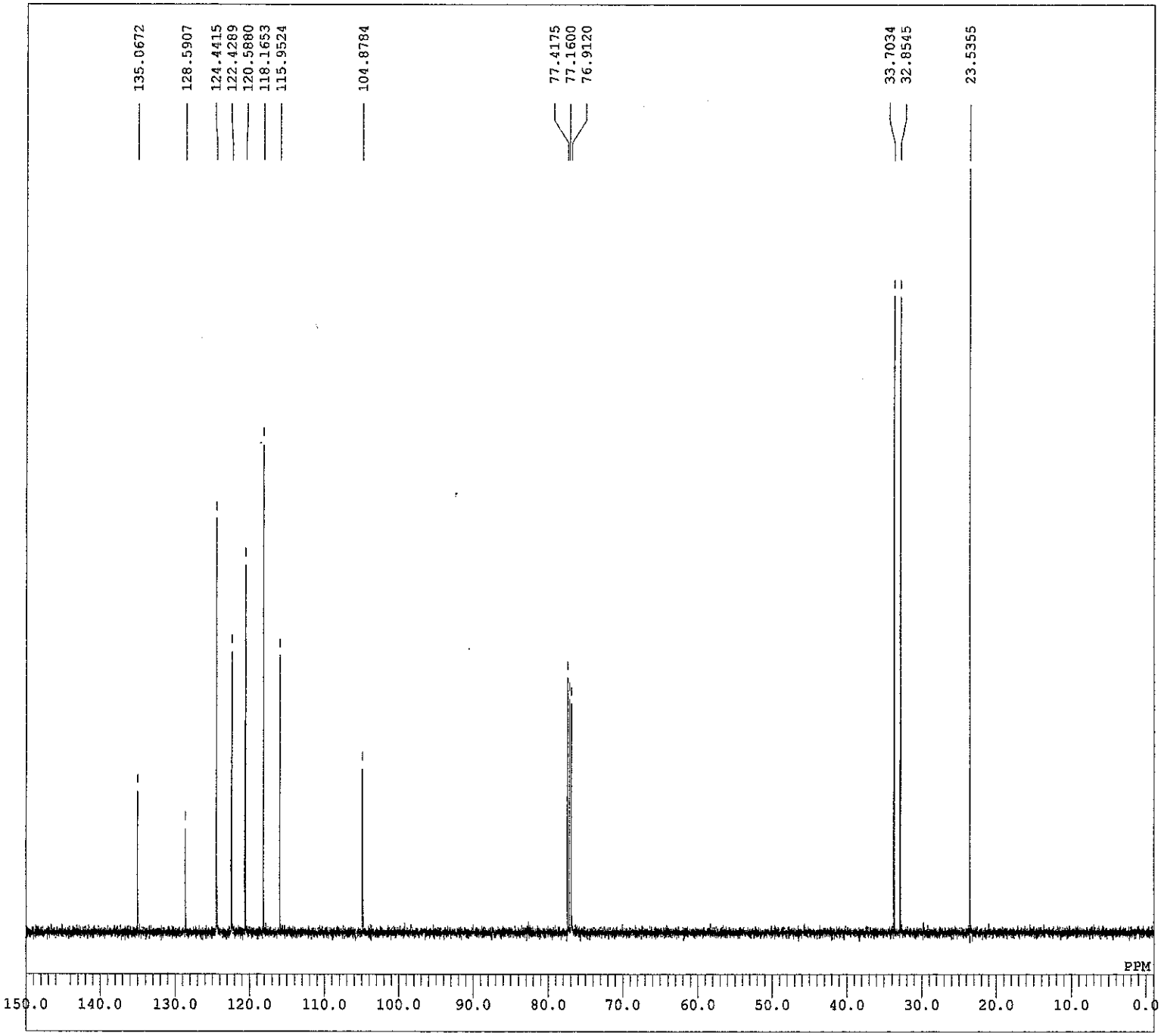
S4b



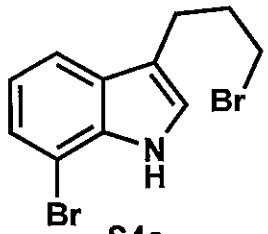
DFILE	JA-7-Br-Br-1-1.als
COMNT	
DATIM	2013-04-22 12:50:28
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	13107
FREQU	7507.51 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



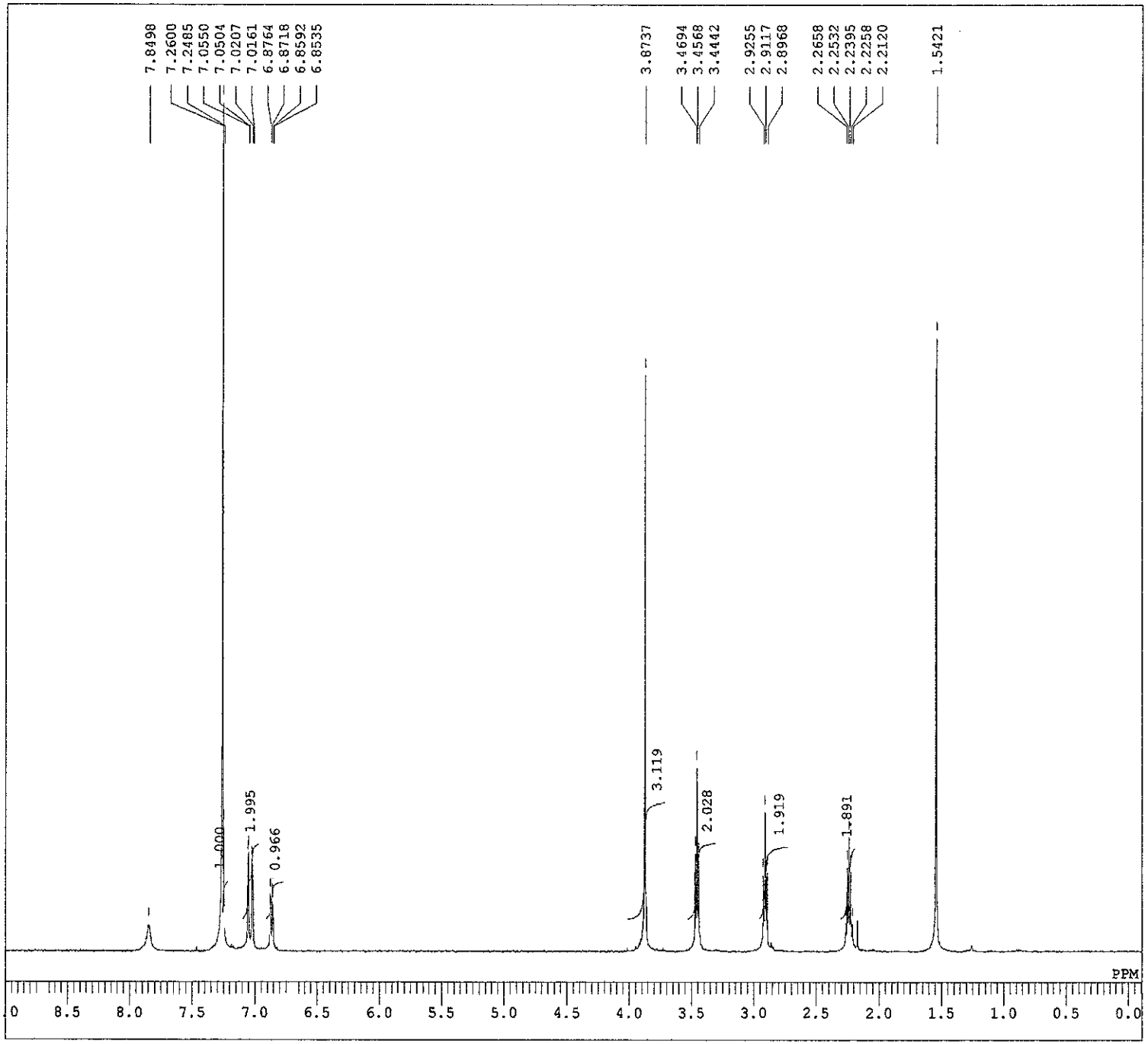
S4c



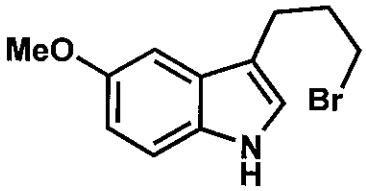
DFILE	JA-7-Br-Br-2-1.als
COMNT	
DATIM	2013-04-22 12:54:34
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	60
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.5 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



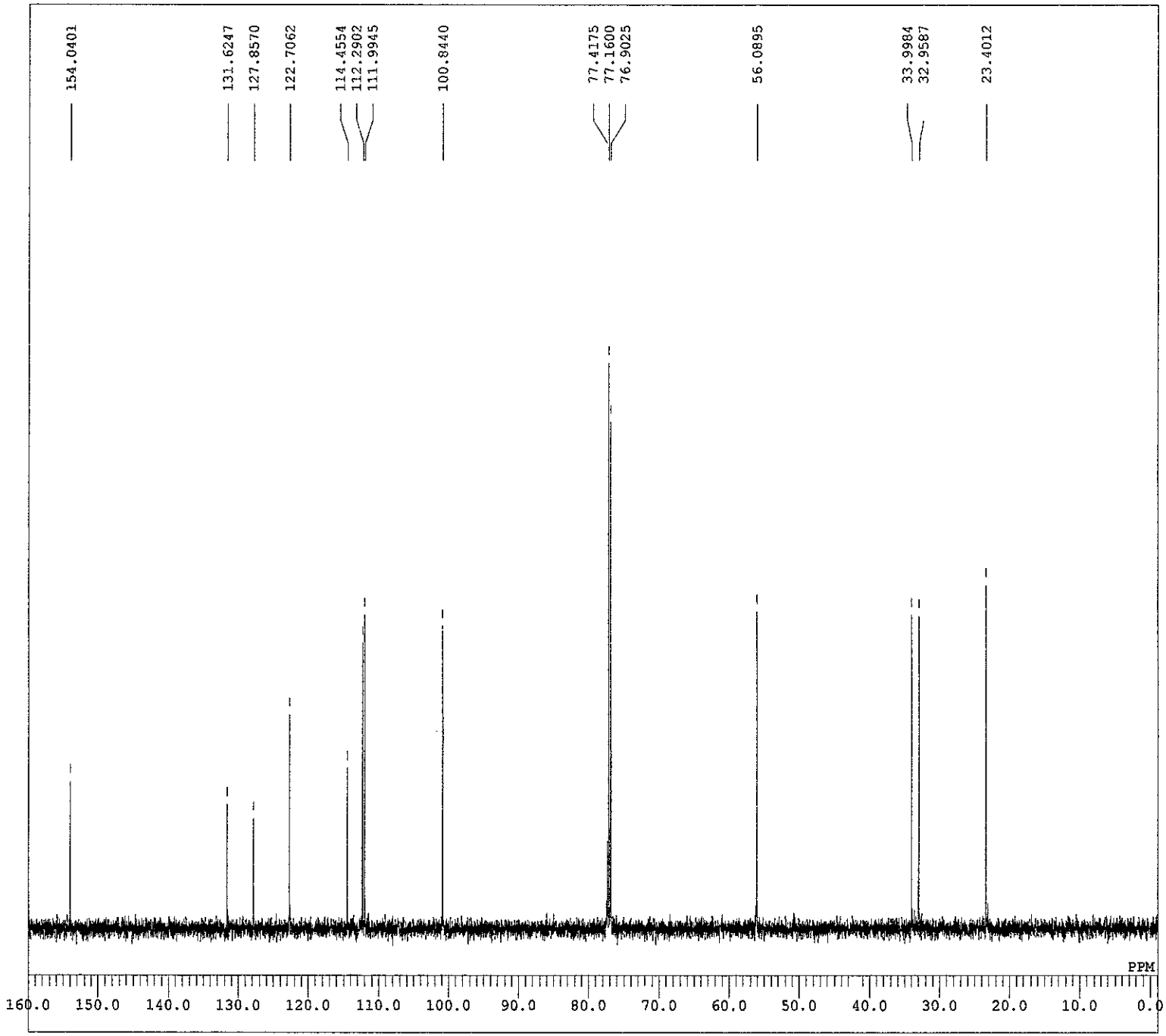
S4c



DFILE	JA-5-OMe-SM-Br-1-1.als
COMNT	
DATIM	2013-05-02 15:16:14
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	14
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	1.00 Hz
RGAIN	40



S4d

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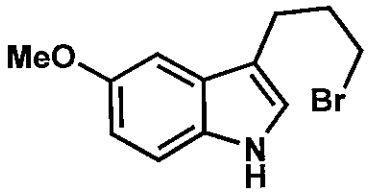
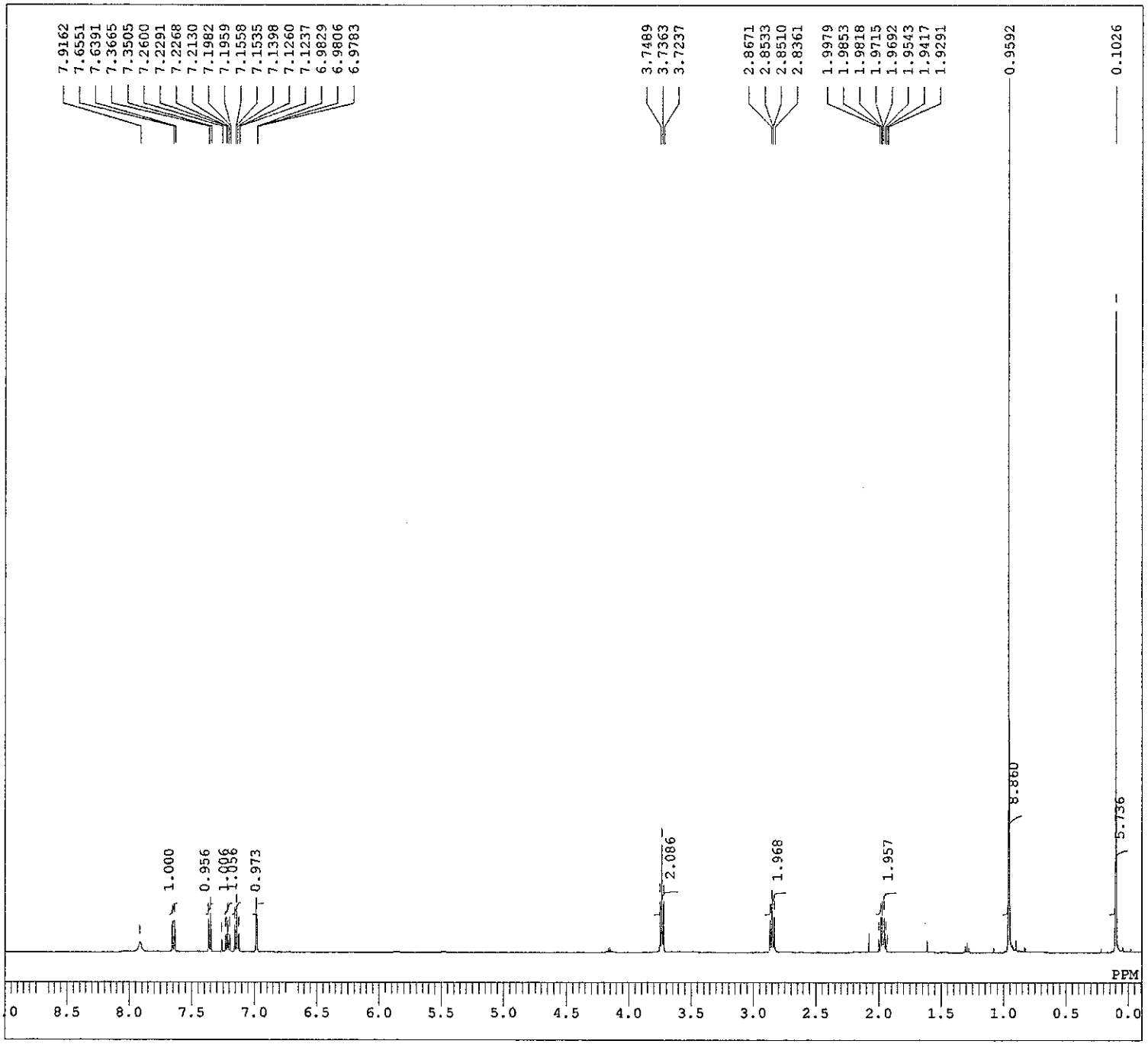
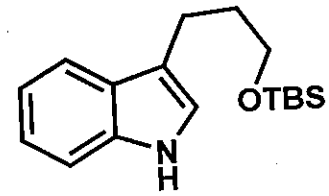
DFILE   JA-5-OMe-Br-13C-1-1.als
COMNT
DATIM   2013-05-02 15:22:40
OBNUC   13C
EXMOD   carbon.jxp
OBFRQ         125.77 MHz
OBSET           7.87 KHz
OBFIN           4.21 Hz
POINT          26214
FREQU       31446.54 Hz
SCANS             60
ACQTM         0.8336 sec
PD            3.0000 sec
PW1             3.40 usec
IRNUC   1H
CTEMP           22.9 c
SLVNT   CDCL3
EXREF          77.16 ppm
BF              1.00 Hz
RGAIN             60
```



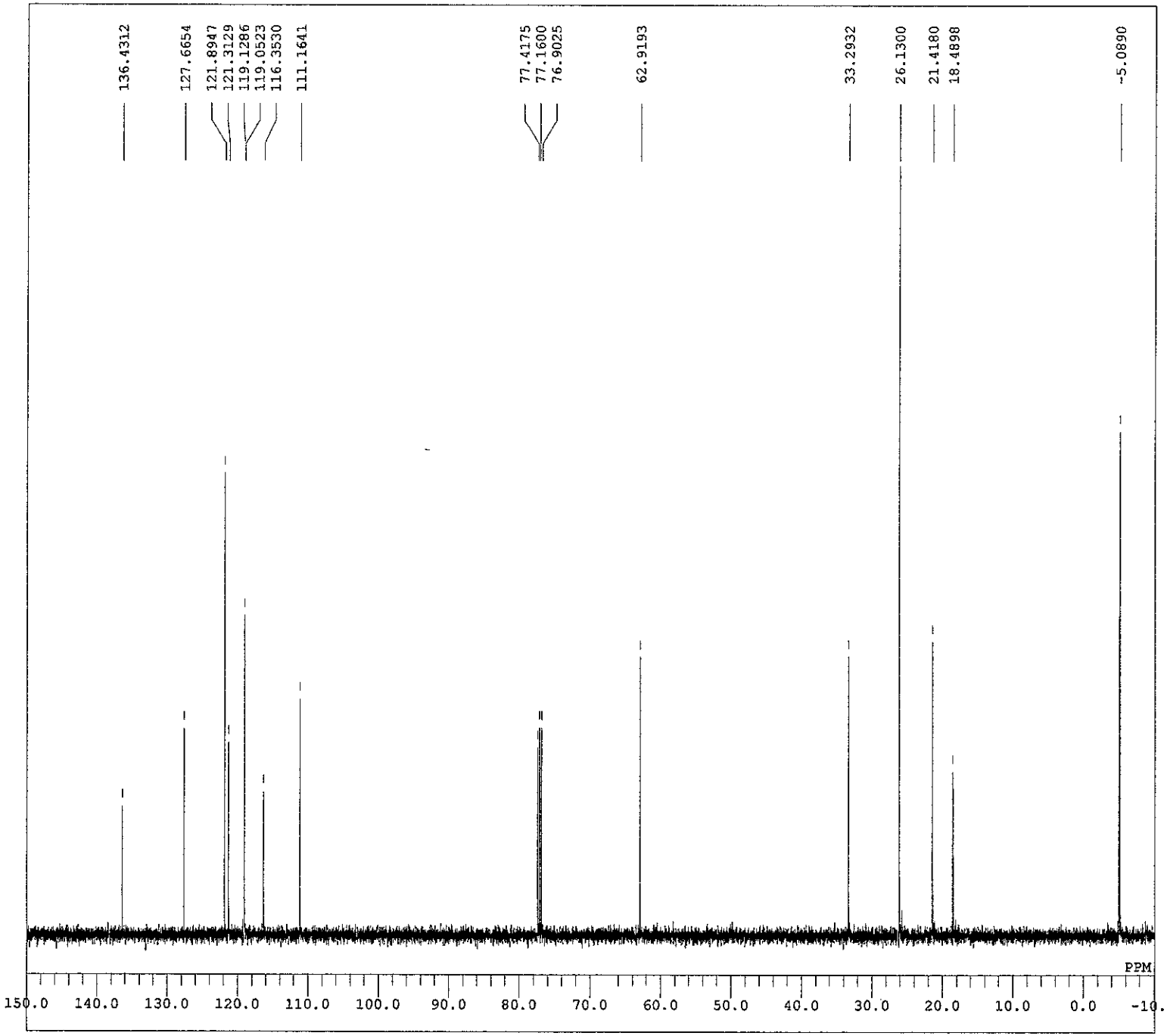
S4d



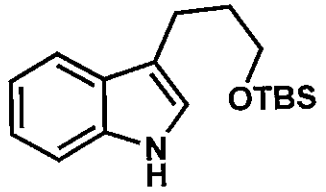
DFILE	JA-6-SM-OTBS-1-1.als
COMNT	
DATIM	2013-04-29 19:54:01
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.5 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	30



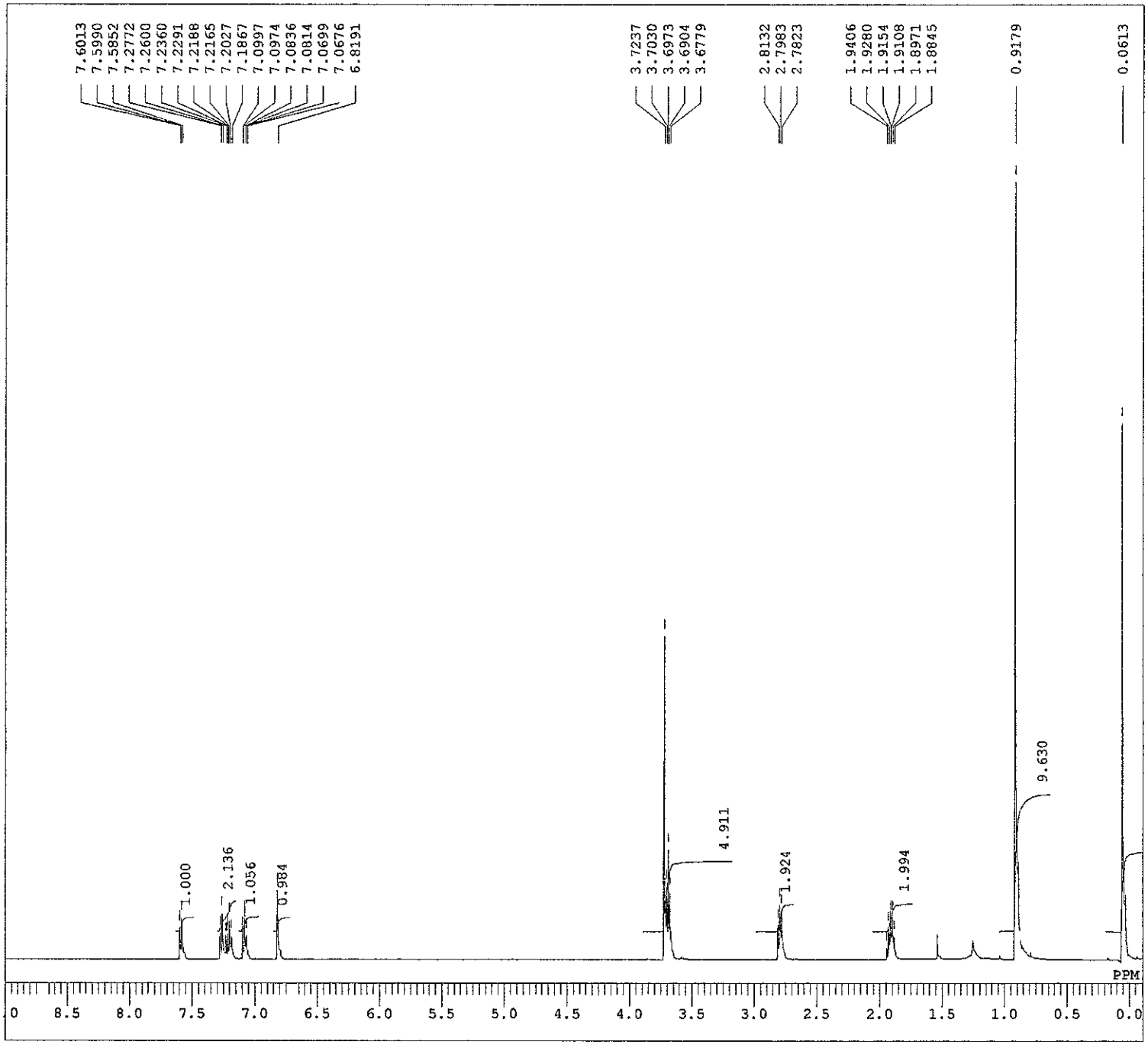
S5



DFILE	JA-6-SM-OTBS-13C-1-1.als
COMNT	
DATIM	2013-04-29 14:24:21
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	20
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.5 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



S5

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DFILE   JA-6-SM-Me-OTBS-1-1.als
COMNT
DATIM   2013-04-29 20:02:41
OBNUC   1H
EXMOD   proton.jxp
OBFRQ         500.16 MHz
OBSET           2.41 KHz
OBFIN           6.01 Hz
POINT          16384
FREQU        9384.38 Hz
SCANS             8
ACQTM          1.7459 sec
PD             5.0000 sec
PW1               5.55 usec
IRNUC   1H
CTEMP            22.2 c
SLVNT   CDCL3
EXREF             7.26 ppm
BF                0.12 Hz
RGAIN               30
```
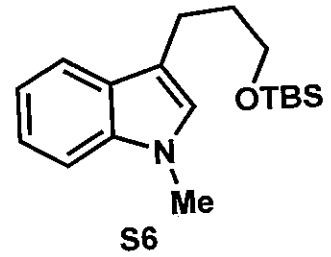
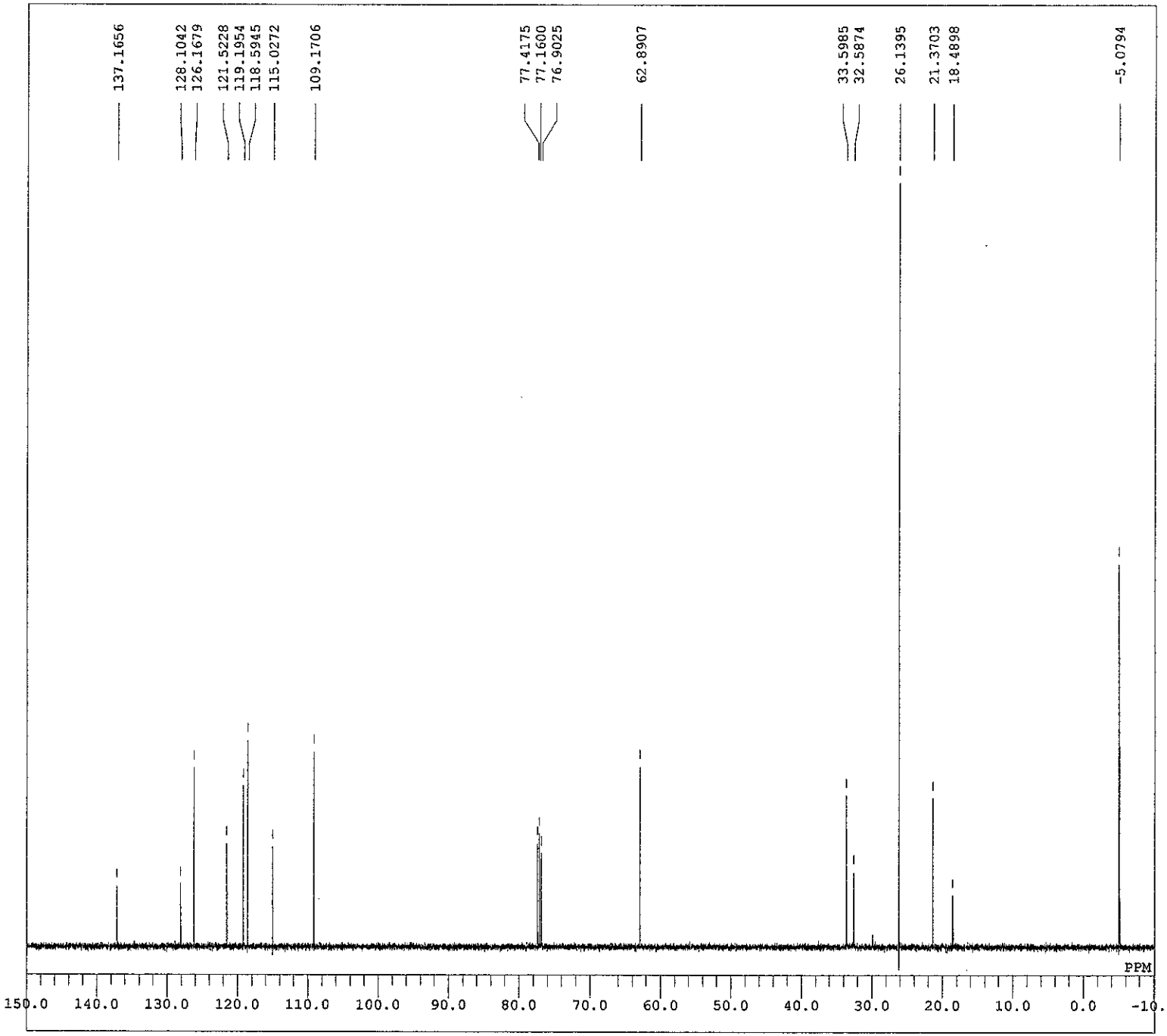
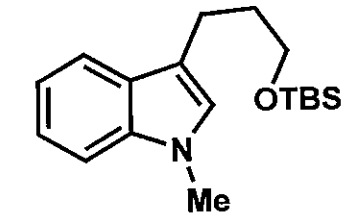



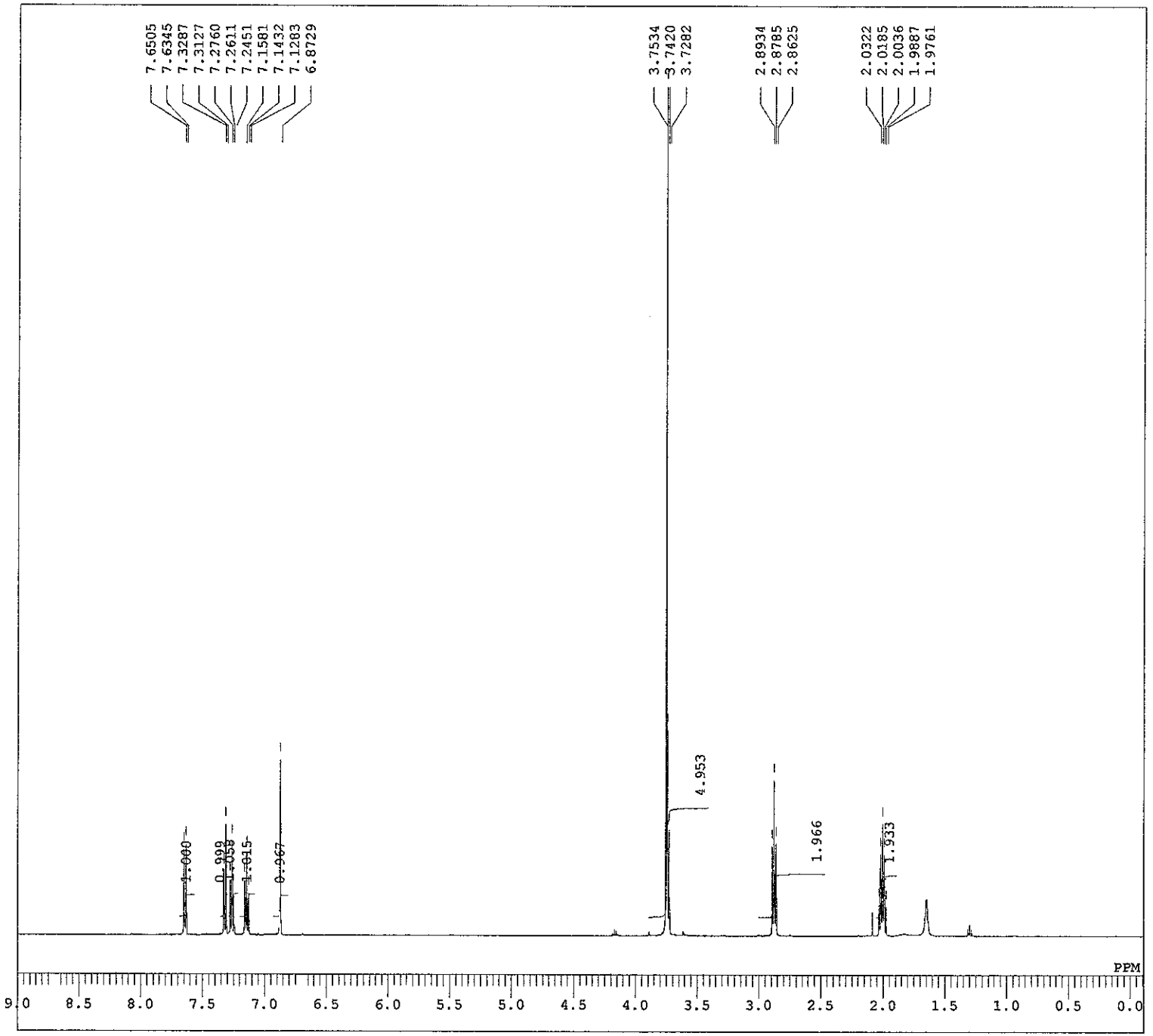
S6



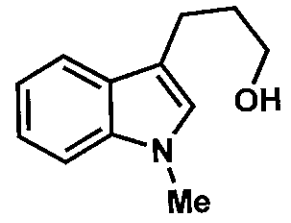
DFILE	JA-6-SM-Me-OTBS-13C-1-1.als
COMNT	
DATIM	2013-04-29 14:29:20
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	20
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



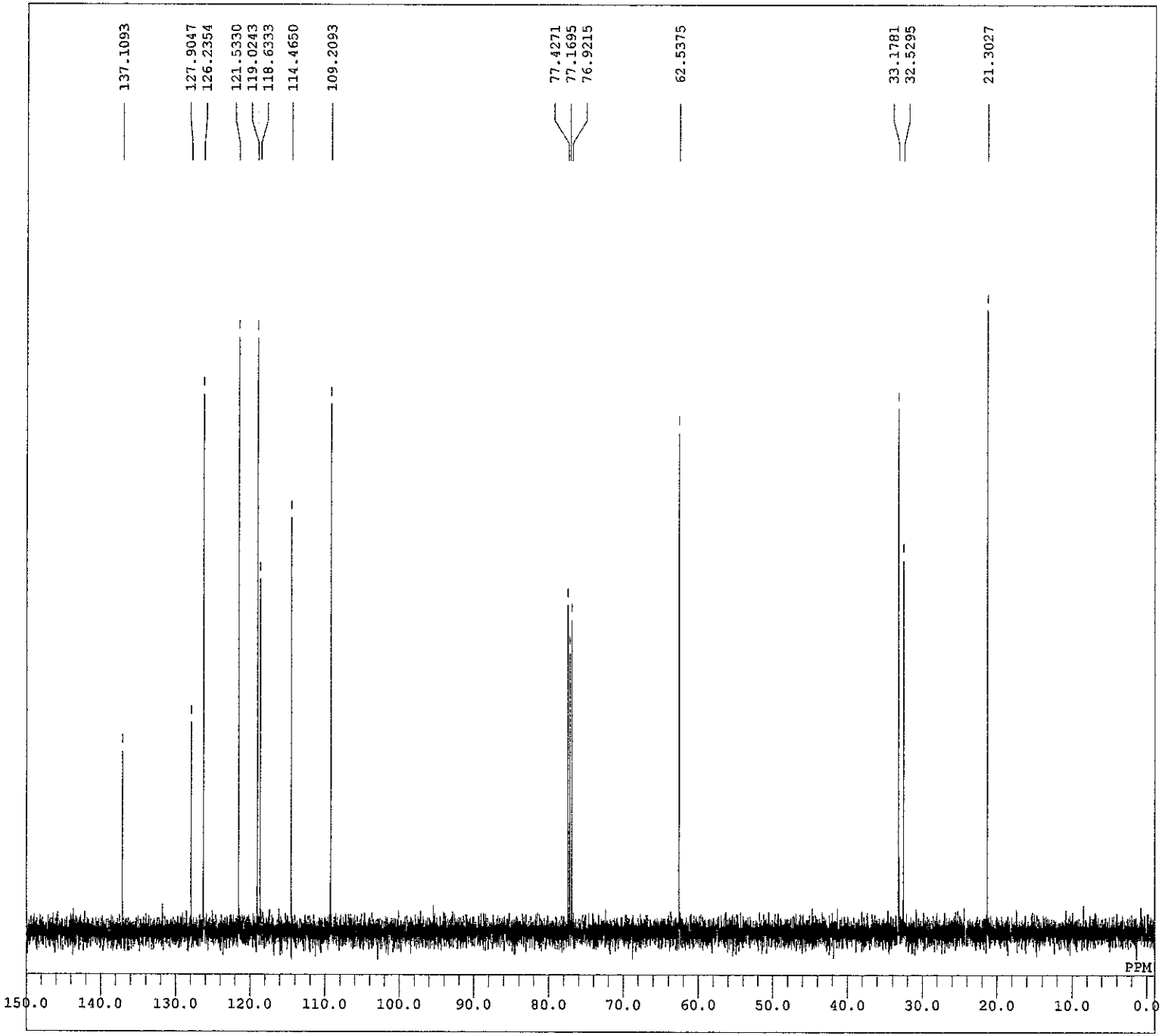
S6



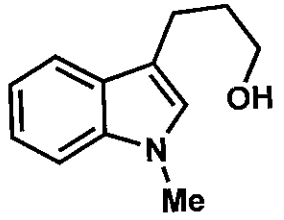
DFILE	JA-6-SM-Me-OH-1-1.als
COMNT	
DATIM	2013-04-29 19:58:39
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	6
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	30



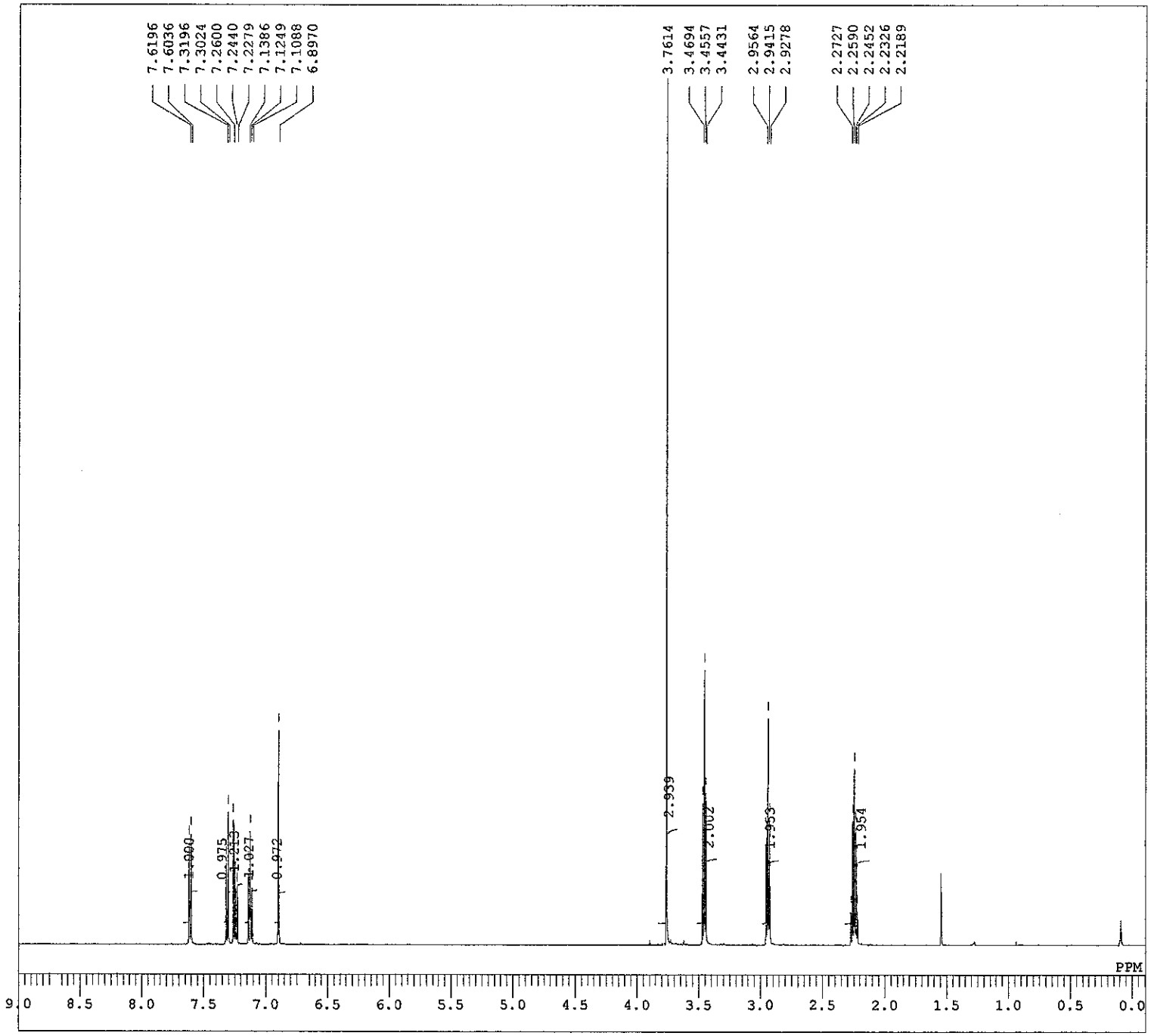
S7



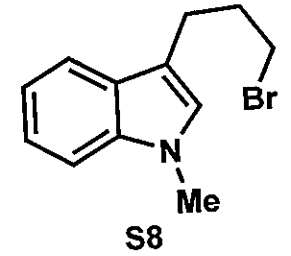
DFILE	JA-6-SM-Me-OH-13C-1-1.als
COMNT	
DATIM	2013-04-29 14:34:09
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	26214
FREQU	31446.54 Hz
SCANS	10
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.1 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60



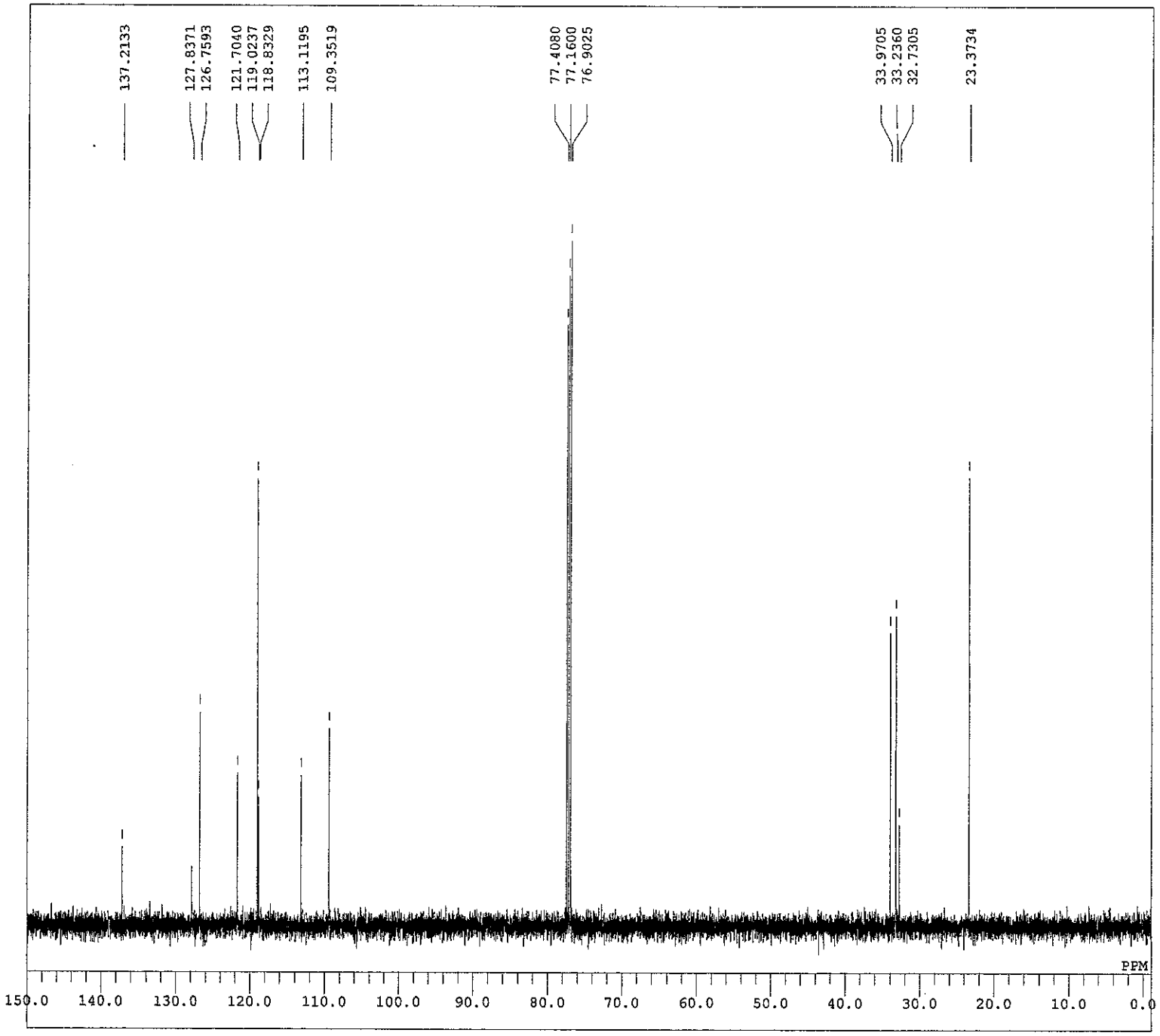
S7



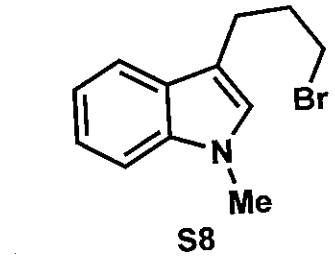
DFILE	JA-6-SM-Me-Br-1-1.als
COMNT	
DATIM	2013-04-29 19:49:44
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	4
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.4 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	36



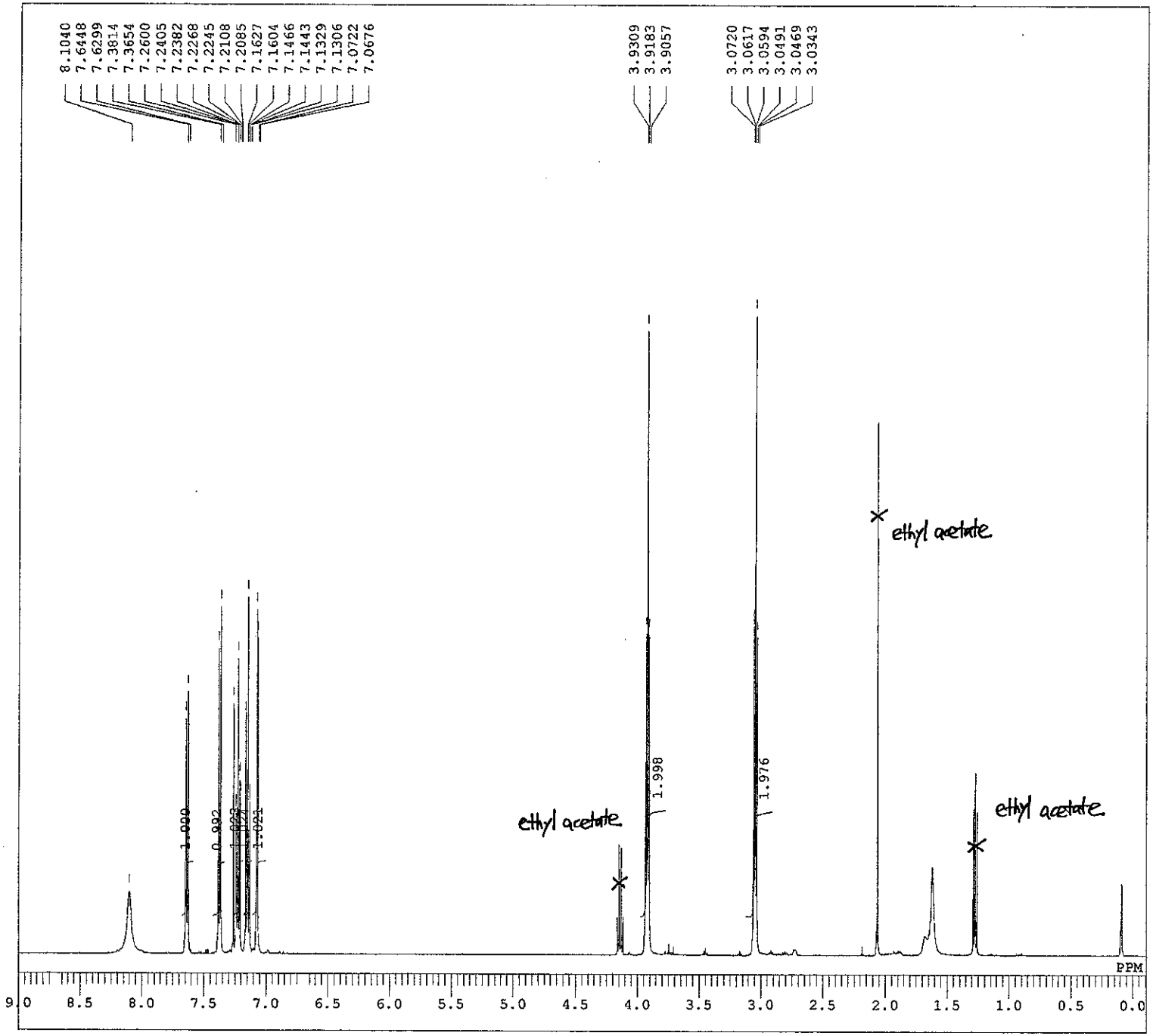
S8



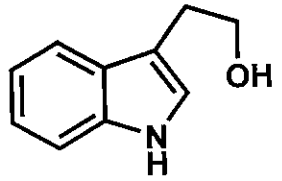
DFILE	JA-6-SM-Me-Br-13C-1-1.als
COMNT	
DATIM	2013-04-29 14:38:45
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	50
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60

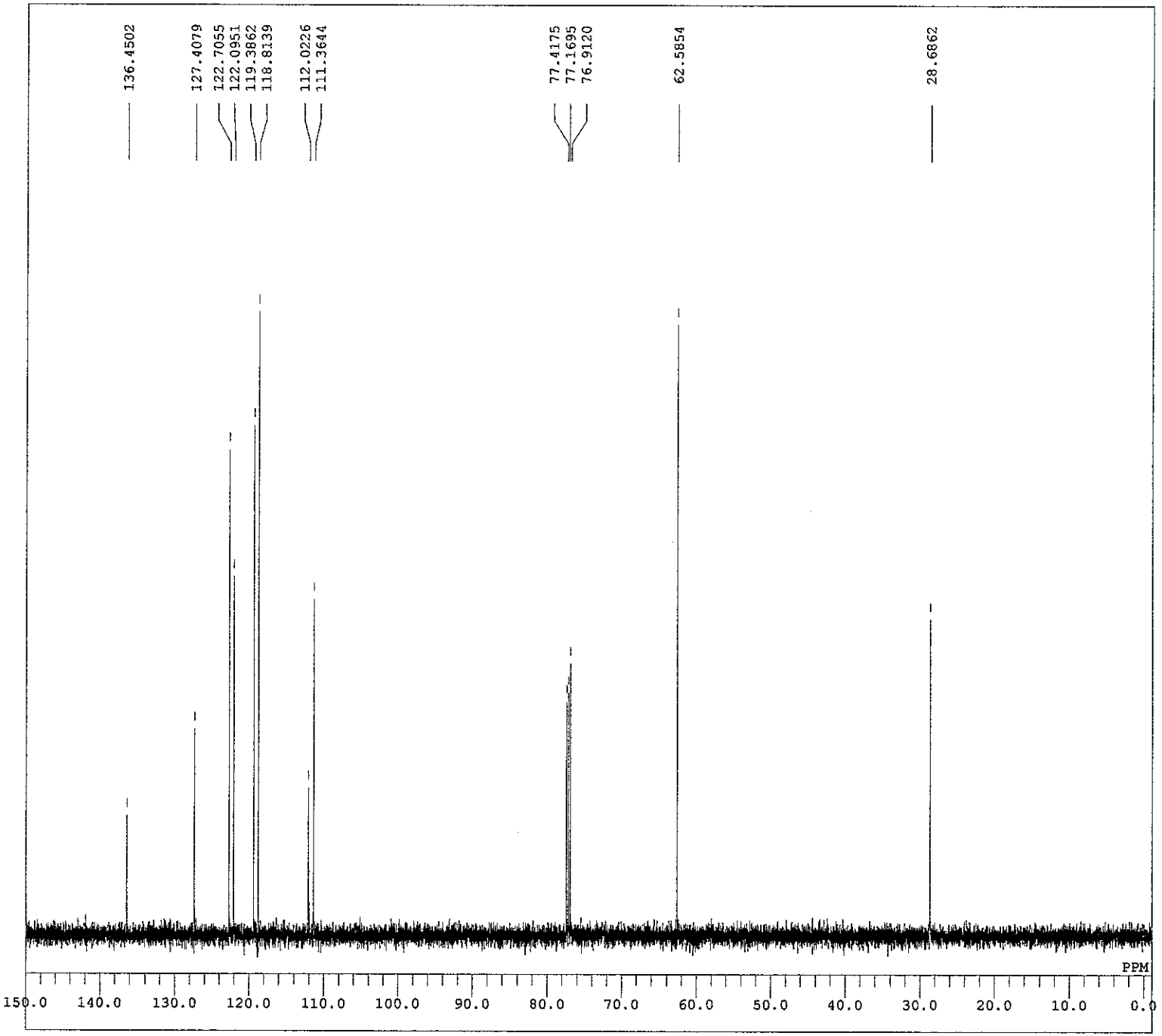


S8

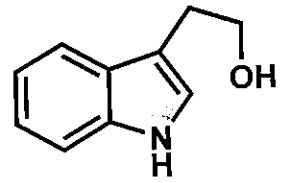


DFILE	JA-5-SM-OH-1-1.als
COMNT	
DATIM	2013-04-29 19:31:11
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	4
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.1 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	36

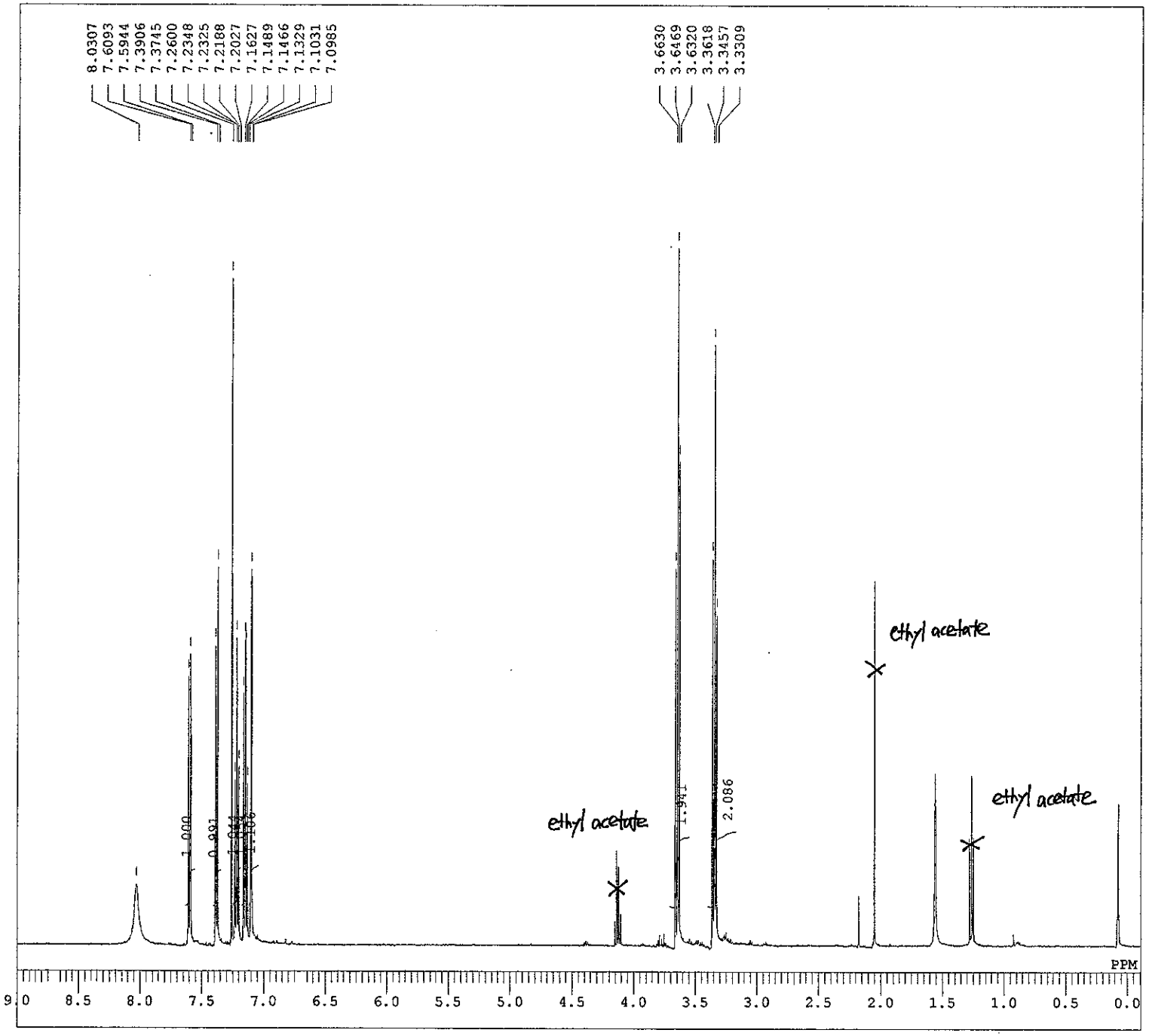




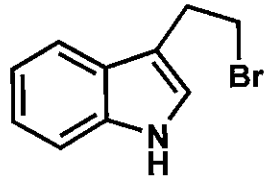
DFILE	JA-5-SM-OH-13C-1-1.als
COMNT	
DATIM	2013-04-29 14:15:15
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	10
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60

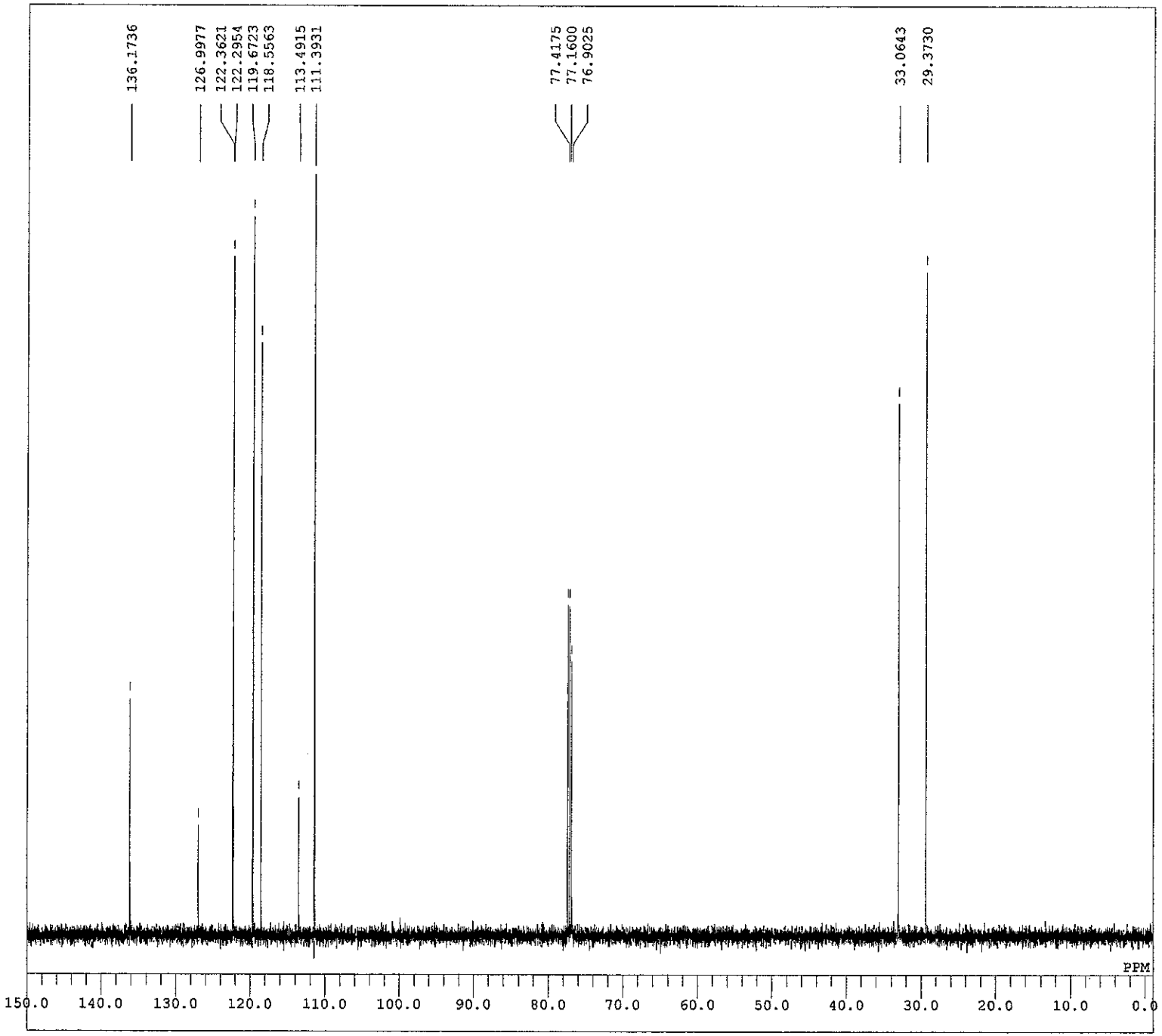


S9

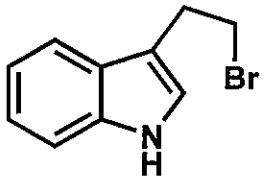


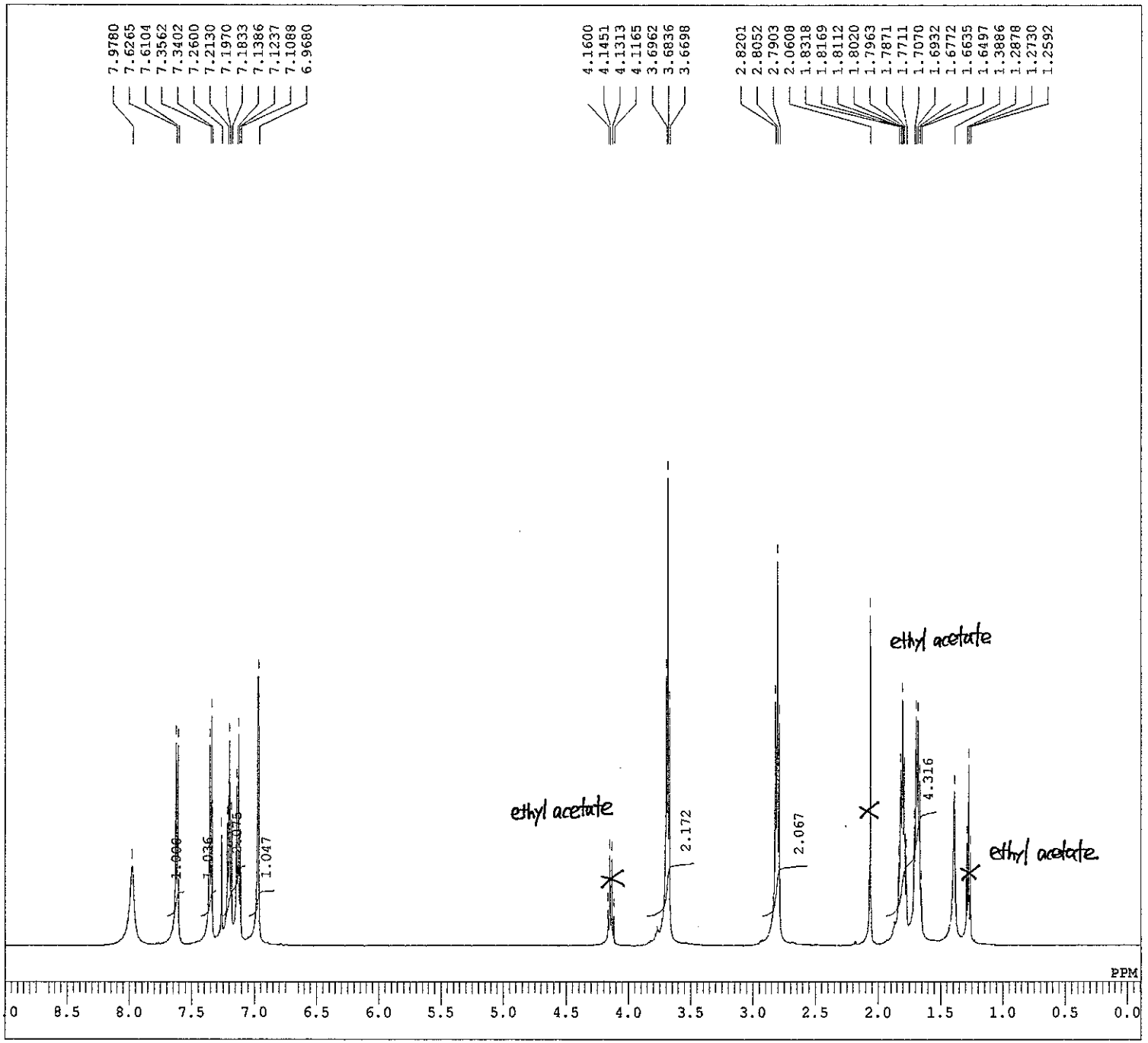
DFILE	JA-5-SM-Br-1-1.als
COMNT	
DATIM	2013-04-29 19:34:59
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	7
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.3 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40



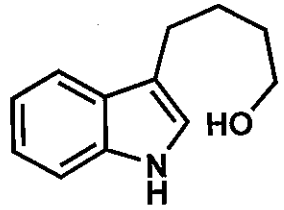


DFILE	JA-5-SM-Br-13C-1-1.als	
COMNT		
DATIM	2013-04-29 14:18:55	
OBNUC	13C	
EXMOD	carbon.jxp	
OBFRQ	125.77	MHz
OBSET	7.87	KHz
OBFIN	4.21	Hz
POINT	32767	
FREQU	39308.18	Hz
SCANS	30	
ACQTM	0.8336	sec
PD	3.0000	sec
PW1	3.40	usec
IRNUC	1H	
CTEMP	22.7	c
SLVNT	CDCL3	
EXREF	77.16	ppm
BF	0.12	Hz
RGAIN	60	

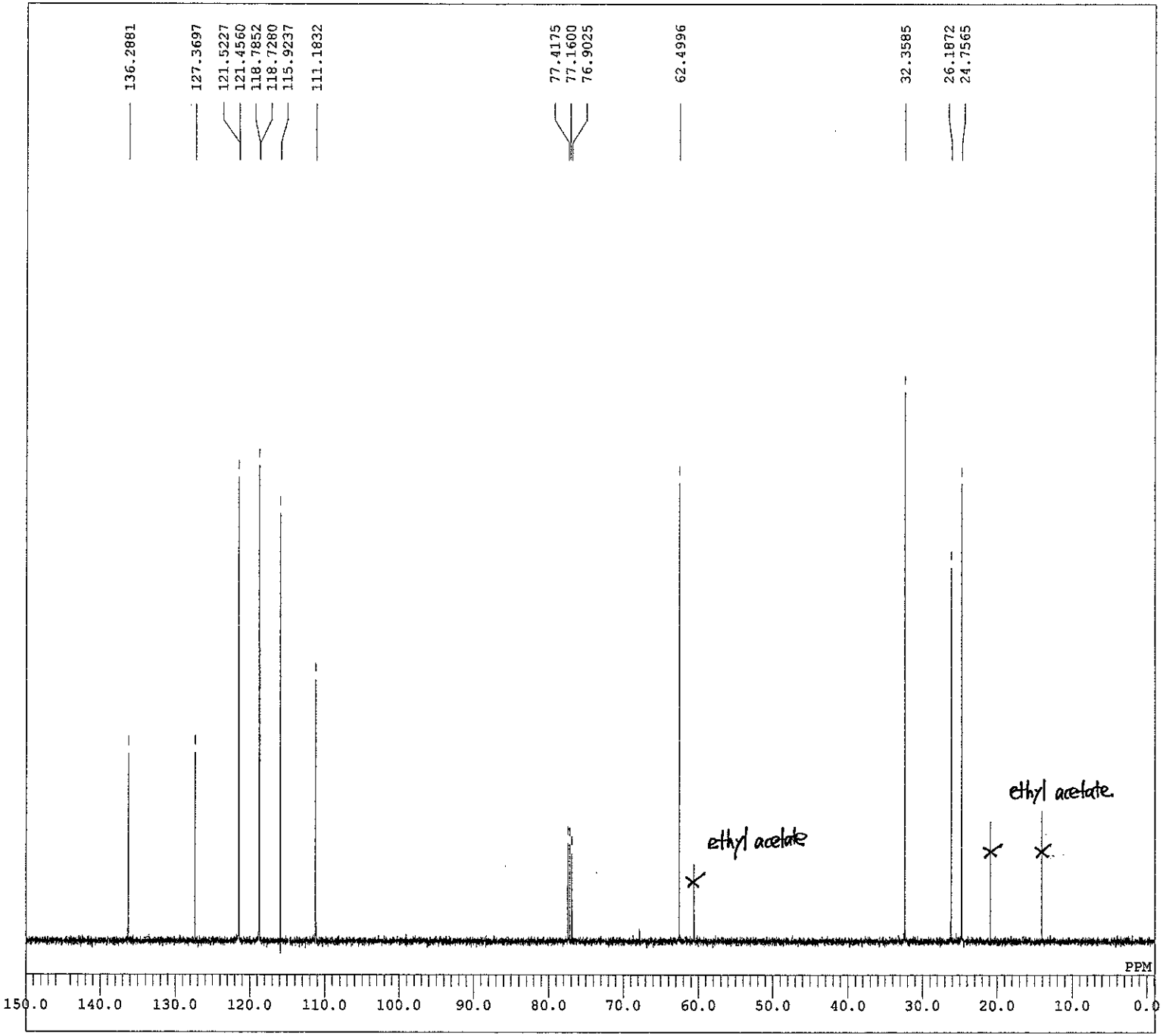




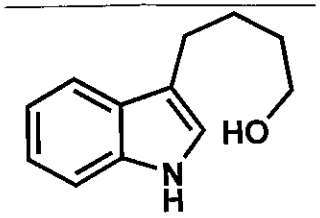
DFILE	JA-7-SM-OH-1H-1-1.als
COMNT	
DATIM	2013-05-02 19:59:50
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	4
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	23.0 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	1.00 Hz
RGAIN	34

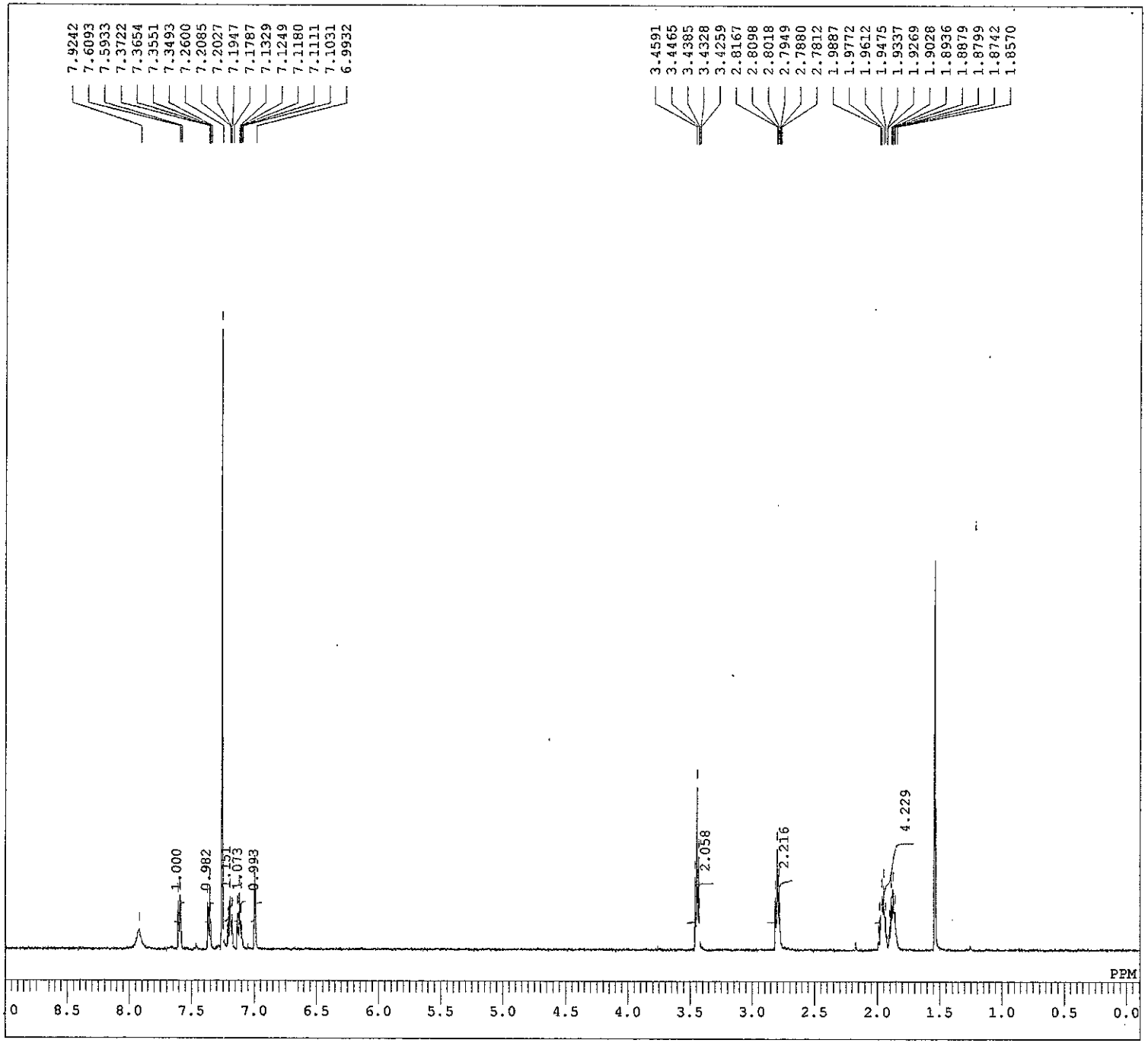


S11

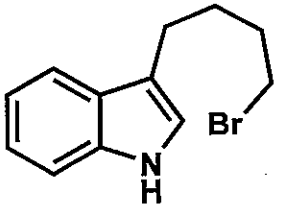


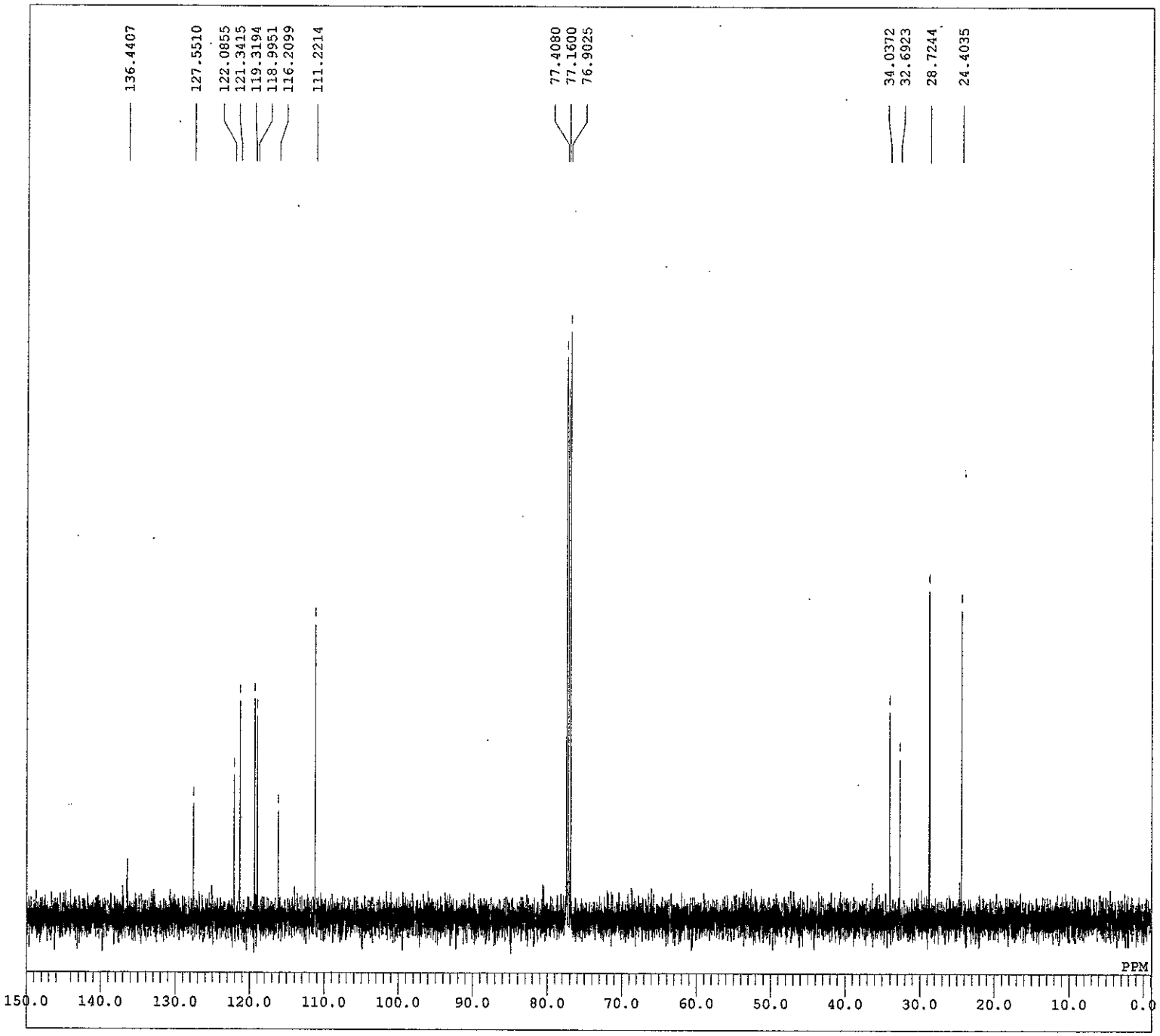
DFILE	JA-7-SM-OH-1-1.als
COMNT	
DATIM	2013-05-02 20:03:38
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	20
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	23.1 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60





DFILE	JA-7-SM-Br-1H-1-1.als
COMNT	
DATIM	2013-05-03 21:38:43
OBNUC	1H
EXMOD	proton.jxp
OBFRQ	500.16 MHz
OBSET	2.41 KHz
OBFIN	6.01 Hz
POINT	16384
FREQU	9384.38 Hz
SCANS	4
ACQTM	1.7459 sec
PD	5.0000 sec
PW1	5.55 usec
IRNUC	1H
CTEMP	22.7 c
SLVNT	CDCL3
EXREF	7.26 ppm
BF	0.12 Hz
RGAIN	40





DFILE	JA-7-SM-Br-13C-1-1.als
COMNT	
DATIM	2013-05-03 21:42:15
OBNUC	13C
EXMOD	carbon.jxp
OBFRQ	125.77 MHz
OBSET	7.87 KHz
OBFIN	4.21 Hz
POINT	32767
FREQU	39308.18 Hz
SCANS	40
ACQTM	0.8336 sec
PD	3.0000 sec
PW1	3.40 usec
IRNUC	1H
CTEMP	23.1 c
SLVNT	CDCL3
EXREF	77.16 ppm
BF	0.12 Hz
RGAIN	60