

Supporting Information

Chemo- and Regioselective Oxygenation of C(sp³)-H Bonds in Aliphatic Alcohols Using a Covalently Bound Directing Activator and Atmospheric Oxygen

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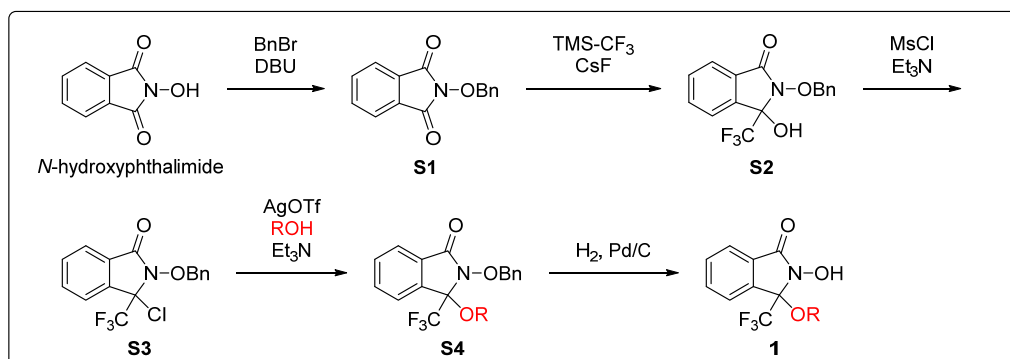
1. General method

^1H NMR spectra were recorded on JEOL ECX-500 (500.16 MHz for ^1H NMR and 125.77 MHz for ^{13}C NMR), and JEOL ECS-400 (391.78 MHz for ^1H NMR, 98.52 MHz for ^{13}C NMR, 125.70 MHz for ^{11}B NMR, and 368.64 MHz for ^{19}F NMR) spectrometers. Chemical shifts were reported downfield from tetramethylsilane ($\delta = 0$ ppm) for ^1H NMR. For ^1H and ^{13}C NMR, chemical shifts were reported in the scale relative to the solvent used as an internal reference ($\delta = 7.26$ and 77.00 ppm (CDCl_3), 2.04 and 29.80 ppm ($\text{acetone-}d_6$); ^1H and ^{13}C NMR respectively). Chemical shifts for ^{11}B NMR and ^{19}F NMR were reported in the scale relative to $\text{PhB}(\text{OH})_2$ ($\delta = 31.00$ ppm) and C_6F_6 ($\delta = -164.90$ ppm) respectively as an external standard. Infrared (IR) spectra were recorded on a JASCO FT/IR 410 Fourier transform infrared spectrophotometer. ESI-MS spectra were measured on a Waters ZQ4000 spectrometer (for LRMS), and a JEOL JMS-T100LC AccuTOF spectrometer (for HRMS). Column chromatography was performed with silica gel Merck 60 (230-400 mesh ASTM). Gel permeation chromatography (GPC) purification was conducted on a Japan Analytical Industry Co., Ltd. LC9210NEXT equipped with JAIGEL-1H and JAIGEL-2H, and CHCl_3 was used as an eluent. HPLC was conducted by JASCO HPLC systems (pump: PU-2080; detector: UV-2075, measured at 254 nm). All reactions other than substrates synthesis were carried out in normal solvents without any purification (purchased from Aldrich or Wako Pure Chemical Industries, Ltd.) unless otherwise noted. Reagents whose preparations are not described in this manuscript were purchased from Aldrich, Tokyo Chemical Industry Co., Ltd. (TCI), Kanto Chemical Co., Inc., and Wako Pure Chemical Industries, Ltd., and used without further purification except for triethylamine, which was distilled from CaH_2 . NMR yields were calculated by ^1H NMR of crude products using 1,1,2,2-tetrachloroethane as an internal standard. The oxygenated compounds **2a**, **2d** + **2d'**, **2h**, **2i**, **2k**, **2m**, and **2s** were isolated by silica gel column chromatography (eluent: hexane/EtOAc); other products were isolated by preparative TLC (eluent: hexane/EtOAc).

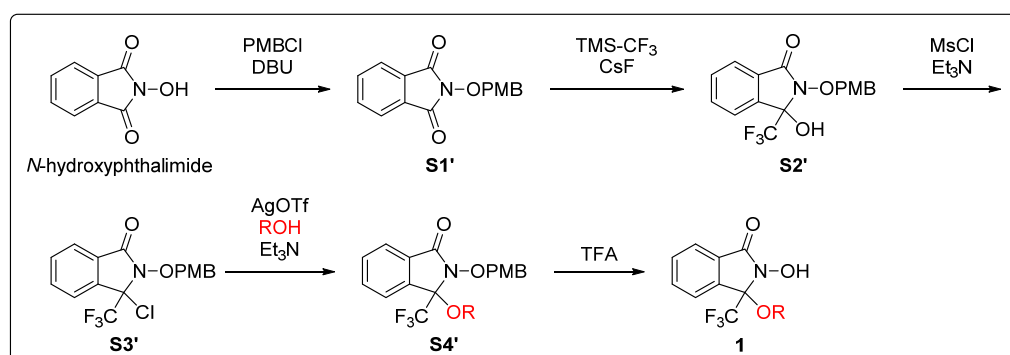
1.69 (dt, 1H, $J = 14.9$ Hz, 4.1 Hz), 1.37 (s, 3H), 1.25 (s, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 164.9, 134.4, 133.0, 131.6, 130.3, 124.1, 124.0, 121.8 (q, $J = 286.7$ Hz), 90.9 (q, $J = 32.4$ Hz), 70.7, 60.8, 40.9, 30.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3395, 3172, 2972, 1722, 1470, 1381, 1305, 1199; LRMS (ESI): m/z 342 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{14}\text{H}_{16}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 342.0924, Found 342.0921.

3. Typical synthetic procedure for directing-activator-anchored alcohols

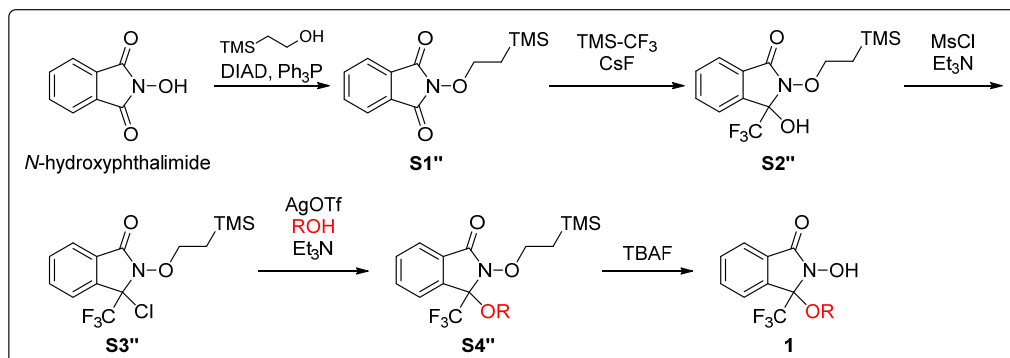
Procedure A: for all the substrates except for ones listed bellow



Procedure B: for **1o**, **1v**, **1x**, **1aa**, **1ab**, **1ac** and **1ad**



Procedure C: for **1p**



Typical experimental procedure for Procedure A: *O*-benzyl-*N*-hydroxyphthalimide (**S1**)

To a stirred mixture of *N*-hydroxyphthalimide (97.8 g, 600 mmol, 1 eq) and benzyl bromide (79 mL, 660 mmol, 1.1 eq) in DMF (1.2 L, 0.5 M) was added DBU (108 mL, 720 mmol, 1.2 eq) over 30 minutes at ambient temperature. After completion of the addition, 2.4 L of HCl (1 N in water) was added, and the white precipitate was filtered off and washed with water to afford wet **S1**. Azeotropic removal of remained water with toluene (twice) afforded **S1** as white solid (147.6 g, 97% yield).

^1H NMR (500 MHz, CDCl_3) δ : 7.80 (dd, 2H, $J = 2.9$ Hz, 5.2 Hz), 7.72 (dd, 2H, $J = 2.9$ Hz, 5.2 Hz), 7.53 (dd, 2H, $J = 4.0$ Hz, 7.5 Hz), 7.36-7.40 (m, 3H), 5.21 (s, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 163.4, 134.4, 133.6, 129.8, 129.3, 128.8, 128.5, 123.4, 79.8; IR (KBr, cm^{-1}) ν : 3076, 3034, 2954, 2887, 1789, 1731, 1464; LRMS (ESI): m/z 276 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{15}\text{H}_{11}\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 276.0631,

Found 276.0630.

***N*-benzyloxy-3-hydroxy-3-trifluoromethyl-isoindolinone (S2)**

To a stirred mixture of **S1** (139 g, 550 mmol, 1 eq) and TMSCF₃ (98 mL, 660 mmol, 1.2 eq) in dry DMF (550 mL, 1 M) was added CsF (100 g, 660 mmol, 1.2 eq) at 0 °C, and the reaction mixture was stirred for one hour. 1 N HCl aq. (500 mL) was added and the mixture was extracted with ethyl acetate/hexane (1/1). The organic layer was washed with water and saturated NaCl aq. solution, and dried over Na₂SO₄. The solution was passed through short silica gel pad and evaporation of the solvent afforded **S2** as light yellow solid (169.3 g, 95% yield). **S2** was used in the next step without further purification.

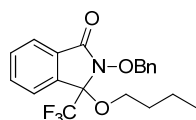
¹H NMR (500 MHz, acetone-*d*₆) δ: 7.78-7.85 (m, 3H), 7.72-7.76 (m, 1H), 7.59 (d, 2H, *J* = 7.5 Hz), 7.37-7.45 (m, 3H), 5.34 (d, 1H, *J* = 9.8 Hz), 5.22 (d, 1H, *J* = 9.8 Hz); ¹³C NMR (126 MHz, acetone-*d*₆) δ: 164.9, 139.1, 136.0, 134.5, 132.5, 130.2, 130.0, 129.5, 129.1, 125.0, 124.2, 123.9 (q, *J* = 286.7 Hz), 88.0 (q, *J* = 32.4 Hz), 80.5; ¹⁹F NMR (369 MHz, acetone-*d*₆) δ: -79.5; IR (KBr, cm⁻¹) ν: 3223, 3031, 1719, 1618, 1470, 1378, 1261, 1195; LRMS (ESI): *m/z* 346 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₆H₁₂F₃NO₃Na [M+Na]⁺ 346.0662, Found 346.0674.

***N*-benzyloxy-3-chloro-3-trifluoromethyl-isoindolinone (S3)**

To a stirred mixture of **S2** (169 g, 523 mmol, 1 eq) and triethylamine (117 mL, 836 mmol, 1.6 eq) in CH₂Cl₂ (45 mL, 1 M) was added methanesulfonyl chloride (61 mL, 784 mmol, 1.5 eq) at 0 °C. The mixture was stirred for three hours before water was added. The separated organic layer was washed with water and saturated NaCl aq. solution, and dried over Na₂SO₄. The solution was passed through short silica gel pad, and evaporation of the solvent afforded **S3** as light yellow liquid (179 g, 100% yield). For practical use, **S3** is stored as 1 M solution in heptane, or **S3** is solidified by seeding.

¹H NMR (400 MHz, CDCl₃) δ: 7.90 (d, 1H, *J* = 7.2 Hz), 7.71-7.76 (m, 2H), 7.63-7.70 (m, 1H), 7.55-7.61 (m, 2H), 7.37-7.46 (m, 3H), 5.41 (d, 1H, *J* = 9.4 Hz), 5.25 (d, 1H, *J* = 9.4 Hz); ¹³C NMR (126 MHz, CDCl₃) δ: 164.5, 137.9, 134.2, 133.9, 131.8, 129.6, 129.1, 128.5, 127.3, 124.4, 124.1, 121.7 (q, *J* = 284.3 Hz), 79.7, 79.5 (q, *J* = 36.4 Hz); ¹⁹F NMR (369 MHz, CDCl₃) δ: -75.8; IR (neat, cm⁻¹) ν: 1755, 1469, 1258, 1197; LRMS (ESI): *m/z* 364 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₆H₁₁ClF₃NO₂Na [M+Na]⁺ 364.0323, Found 364.0325.

***N*-benzyloxy-3-butoxy-3-trifluoromethyl-isoindolinone (S4a)**

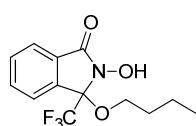


To a light-protected mixture of AgOTf (6.9 g, 26.7 mmol, 1.5 eq), 1-butanol (2.0 mL, 21.4 mmol, 1.2 eq), and triethylamine (3.2 mL, 23.1 mmol, 1.3 eq) in toluene (17.8 mL) was added **S3** (1 M solution in toluene, 17.8 mL, 17.8 mmol, 1 eq) at ambient temperature. The reaction mixture was stirred overnight and saturated NaCl aq. solution was added. After filtration over Celite pad to remove the silver salts, the organic layer was separated, washed with water and saturated NaCl aq. solution, and dried over Na₂SO₄.

Evaporating the solvent afforded the crude oily liquid. Purification by silica gel column chromatography (hexane/EtOAc = 10/1) afforded **S4a** (R = Bu) as slightly yellow liquid (5.7 g, 84%).

^1H NMR (500 MHz, CDCl_3) δ : 7.90 (d, 1H, $J = 7.7$ Hz), 7.69 (dd, 1H, $J = 6.9$ Hz, 7.8 Hz), 7.60-7.66 (m, 2 H), 7.57 (d, 2H, $J = 6.9$ Hz), 7.35-7.43 (m, 3H), 5.32 (d, 1H, $J = 9.8$ Hz), 5.16 (d, 1H, $J = 9.8$ Hz), 3.28 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 2.95 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 1.44-1.59 (m, 2H), 1.23-1.39 (m, 2H), 0.83 (t, 3H, $J = 7.2$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 135.3, 134.6, 133.4, 131.6, 130.0, 129.3, 128.8, 128.4, 124.2, 124.1, 122.2 (q, $J = 286.7$ Hz), 91.0 (q, $J = 32.4$ Hz), 79.1, 63.8, 31.0, 18.9, 13.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 2960, 1746, 1468, 1294, 1195; LRMS (ESI): m/z 402 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{20}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 402.1288, Found 402.1284.

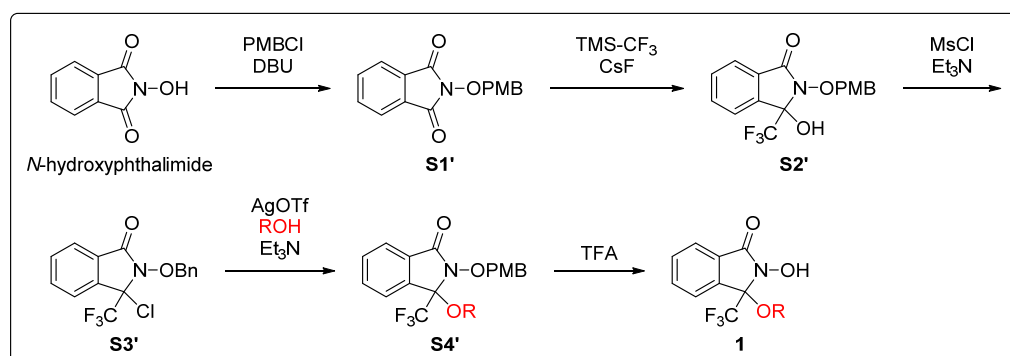
3-butoxy-*N*-hydroxy-3-trifluoromethyl-isoindolinone (**1a**)



A stirred mixture of **S4a** (2.6 g, 6.8 mmol, 1 eq) and Pd/C (10 wt%, 362 mg, 0.34 mmol, 0.05 eq) in ethanol (14 mL, 0.5 M) was exposed to H_2 (balloon pressure) at ambient temperature. The reaction mixture was stirred for two hours and then H_2 was removed. Filtration over Celite pad and evaporation of the filtrate afforded a crude oily liquid. Purification by silica gel column chromatography (hexane/EtOAc = 4/1) afforded **1a** as slightly orange liquid. The liquid was gradually solidified into white solid (1.8 g, 92%).

^1H NMR (500 MHz, CDCl_3) δ : 9.88 (s, 1H), 7.79 (d, 1H, $J = 7.8$ Hz), 7.66 (dd, 1H, $J = 7.4$ Hz, 6.9 Hz), 7.61 (d, 1H, $J = 7.4$ Hz), 7.60 (dd, 1H, $J = 6.9$ Hz, 7.8 Hz), 3.43 (dt, 1H, $J = 8.6$ Hz, 6.6 Hz), 2.98 (dt, 1H, $J = 8.6$ Hz, 6.6 Hz), 1.54-1.68 (m, 2H), 1.29-1.46 (m, 2H), 0.88 (t, 3H, $J = 7.2$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.9, 135.3, 133.2, 131.5, 130.0, 124.0, 123.8, 121.9 (q, $J = 286.7$ Hz), 91.0 (q, $J = 32.4$ Hz), 64.1, 31.1, 19.0, 13.7; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (KBr, cm^{-1}) ν : 3435, 3136, 2964, 1878, 1719, 1472, 1305, 1201; LRMS (ESI): m/z 312 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{13}\text{H}_{14}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 312.0818, Found 312.0831.

Typical experimental procedure for Procedure B



O-(4-methoxybenzyl)-*N*-hydroxyphthalimide (**S1'**)

To a stirred mixture of *N*-hydroxyphthalimide (8.16 g, 50 mmol, 1 eq) and DBU (9.7 mL, 65 mmol, 1.3 eq) in DMF (50 mL, 1 M) was added 4-methoxybenzyl chloride (6.6 mL, 55 mmol, 1.1 eq) at 0 °C. After two hours, 100 mL of HCl (1 N in water) was added. White precipitate was filtered off, washed with cold water, and then dissolved in CH₂Cl₂. Drying the solution over Na₂SO₄ and evaporating the solvent afforded **S1'** as white solid (11.0 g, 78% yield).

¹H NMR (500 MHz, CDCl₃) δ: 7.79 (dd, 2H, *J* = 5.4 Hz, 3.2 Hz), 7.72 (dd, 2H, *J* = 5.4 Hz, 3.2 Hz), 7.44 (d, 2H, *J* = 8.6 Hz), 6.88 (d, 2H, *J* = 8.6 Hz), 5.14 (s, 2H), 3.79 (s, 3H); ¹³C NMR (126 MHz, CDCl₃) δ: 163.5, 160.4, 134.3, 131.6, 128.9, 125.8, 123.4, 113.9, 79.4, 55.2; IR (KBr, cm⁻¹) ν: 2945, 1725, 1611, 1516, 1386, 1259; LRMS (ESI): *m/z* 306 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₆H₁₃NO₄Na [M+Na]⁺ 306.0737, Found 306.0745.

3-hydroxy-*N*-((4-methoxybenzyl)oxy)-3-(trifluoromethyl)isoindolinone (**S2'**)

The same procedure as the conversion of **S1** to **S2** afforded **S2'** as light yellow solid (13 g, 97%) from 11 g of **S1'**. **S2'** was also used in the next step without further purification.

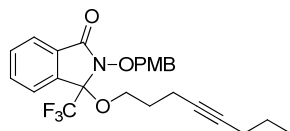
¹H NMR (500 MHz, acetone-*d*₆) δ: 7.76-7.84 (m, 3H), 7.70-7.75 (m, 1H), 7.51 (d, 2H, *J* = 8.0 Hz), 6.97 (d, 2H, *J* = 8.0 Hz), 5.26 (d, 1H, *J* = 9.2 Hz), 5.14 (d, 1H, *J* = 9.2 Hz), 3.82 (s, 3H); ¹³C NMR (126 MHz, acetone-*d*₆) δ: 164.8, 161.1, 139.2, 134.4, 132.4, 132.0, 130.2, 128.1, 124.9, 124.2, 123.9 (q, *J* = 286.7 Hz), 114.5, 88.0 (q, *J* = 32.8 Hz), 80.2, 55.5; ¹⁹F NMR (369 MHz, acetone-*d*₆) δ: -79.5; IR (KBr, cm⁻¹) ν: 3233, 1703, 1616, 1517, 1254, 1200; LRMS (ESI): *m/z* 376 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₇H₁₄F₃NO₄Na [M+Na]⁺ 376.0767, Found 376.0773.

3-chloro-*N*-((4-methoxybenzyl)oxy)-3-(trifluoromethyl)isoindolinone (**S3'**)

The same procedure as the conversion of **S2** to **S3** afforded **S3'** as yellow solid (11 g, 79%) from 13 g of **S2'**.

¹H NMR (400 MHz, CDCl₃) δ: 7.89 (d, 1H, *J* = 7.6 Hz), 7.62-7.77 (m, 3H), 7.50 (d, 2H, *J* = 8.5 Hz), 6.94 (d, 2H, *J* = 8.5 Hz), 5.33 (d, 1H, *J* = 9.0 Hz), 5.17 (d, 1H, *J* = 9.0 Hz), 3.82 (s, 3H); ¹³C NMR (100 MHz, CDCl₃) δ: 164.5, 160.3, 137.9, 134.1, 131.8, 131.5, 127.4, 126.2, 124.4, 124.1, 121.7 (q, *J* = 284.4 Hz), 113.9, 79.6 (q, *J* = 36.3 Hz), 79.4, 55.2; ¹⁹F NMR (369 MHz, CDCl₃) δ: -75.7; IR (KBr, cm⁻¹) ν: 1755, 1612, 1517, 1199; LRMS (ESI): *m/z* 394 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₇H₁₃ClF₃NO₃Na [M+Na]⁺ 394.0428, Found 394.0425.

N-((4-methoxybenzyl)oxy)-3-(oct-4-yn-1-yloxy)-3-trifluoromethyl-isoindolinone (**S4'aa**)

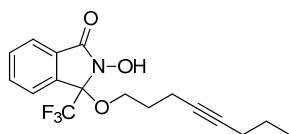


The same procedure as the conversion of **S3** to **S4a** afforded **S4'aa** as light yellow liquid (256.6 mg, 60%) from 116.1 mg of **S3'**.

¹H NMR (400 MHz, CDCl₃) δ: 7.87-7.92 (m, 1H), 7.60-7.71 (m, 3H), 7.45-7.51 (m, 2H), 6.90-6.95 (m,

2H), 5.25 (d, 1H, $J = 9.4$ Hz), 5.08 (d, 1H, $J = 9.4$ Hz), 3.82 (s, 3H), 3.38 (dt, 1H, $J = 8.5$ Hz, 5.7 Hz), 3.04-3.13 (m, 1H), 2.17-2.29 (m, 2H), 1.95-2.01 (m, 2H), 1.61-1.80 (m, 2H), 1.32-1.42 (m, 2H), 0.86 (t, 3H, $J = 7.4$ Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.3, 160.0, 134.9, 133.2, 131.5, 131.0, 130.0, 126.7, 124.2, 123.9, 122.0 (q, $J = 286.4$ Hz), 113.6, 90.9 (q, $J = 32.9$ Hz), 80.7, 78.7, 78.5, 62.3, 55.0, 28.3, 22.1, 20.4, 15.0, 13.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2960, 1744, 1613, 1516, 1468, 1252, 1186; LRMS (ESI): m/z 484 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{25}\text{H}_{26}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 484.1706, Found 484.1707.

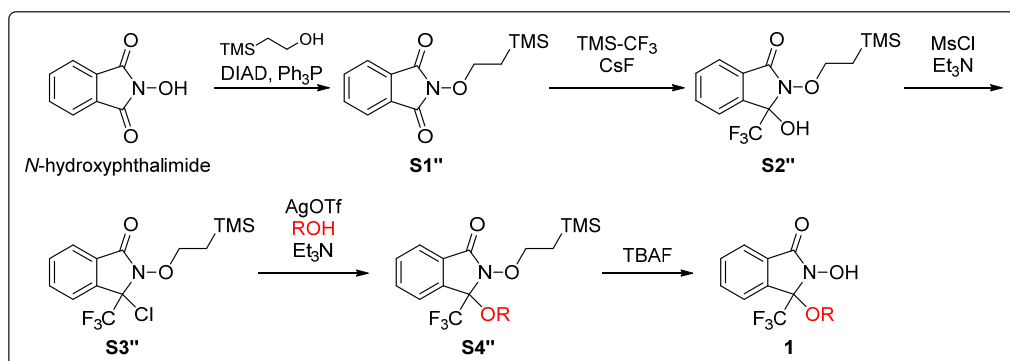
N-hydroxy-3-(oct-4-yn-1-yloxy)-3-trifluoromethyl-isoindolinone (**1aa**)



To a stirred mixture of **S4'aa** (250 mg, 0.54 mmol, 1 eq), pentamethylbenzene (326 mg, 2.2 mmol, 4 eq; a cation scavenger¹) in CH_2Cl_2 (3 mL, 0.2 M) was added trifluoroacetic acid (267 μL , 10 wt% to the solvent). After half a day, saturated NaHCO_3 aq. solution was added. The organic layer was washed with water and saturated NaCl aq. solution, and dried over Na_2SO_4 . Evaporating the solvent afforded a crude liquid. Purification by silica gel column chromatography (hexane/ $\text{EtOAc} = 3/1$) afforded **1aa** (R = oct-4-yn-1-yl) as yellow liquid (151 mg, 82%).

^1H NMR (500 MHz, CDCl_3) δ : 9.28 (brs, 1H), 7.82 (d, 1H, $J = 6.9$ Hz), 7.57-7.68 (m, 3H), 3.44-3.50 (m, 1H), 3.13-3.18 (m, 1H), 2.29-2.34 (m, 2H), 1.72-1.85 (m, 2H), 1.37-1.45 (m, 2H), 0.88 (t, 3H, $J = 7.4$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.4, 135.0, 133.1, 131.5, 130.1, 124.2, 123.9, 121.9 (q, $J = 286.7$ Hz), 90.9 (q, $J = 33.2$ Hz), 81.3, 79.0, 62.5, 28.2, 22.3, 20.6, 15.1, 13.4; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3419, 2962, 1718, 1469, 1192; LRMS (ESI): m/z 364 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{17}\text{H}_{18}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 364.1131, Found 364.1138.

Typical experimental procedure for Procedure C



2-(2-(trimethylsilyl)ethoxy)isoindoline-1,3-dione (**S1''**)

¹ K. Okano, K.-i. Okuyama, T. Fukuyama, H. Tokuyama *Synlett* **2008**, 1977-1980.

To a stirred mixture of *N*-hydroxyphthalimide (24.5 g, 150 mmol, 1 eq), 2-trimethylsilyl ethanol (21.4 mL, 150 mmol, 1 eq), and Ph₃P (43.3 g, 165 mmol, 1.1 eq) in anhydrous CHCl₃ (300 mL, 0.5 M) was added dropwise diethyl azodicarboxylate (2.2 M in toluene, 72 mL, 157 mmol, 1.05 eq) at 0 °C. After completion of the addition, the cold bath was removed and the mixture was allowed to stir at room temperature for about 12 hours. The reaction mixture was diluted with hexane/Et₂O (5/1) and was passed through SiO₂. Evaporation of the solvent afforded a crude mixture. Purification by silica gel column chromatography (hexane/ Et₂O = 5/1) afforded **S1''** as gray solid (24.6 g, 62% yield).

¹H NMR (500 MHz, CDCl₃) δ: 7.81 (dd, 2H, *J* = 5.4 Hz, 3.2 Hz), 7.72 (dd, 2H, *J* = 5.4 Hz, 3.2 Hz), 4.23-4.28 (m, 2H), 1.16-1.22 (m, 2H), 0.04 (s, 9H); ¹³C NMR (126 MHz, CDCl₃) δ: 163.8, 134.3, 129.0, 123.4, 76.4, 17.0, -1.51; IR (neat, cm⁻¹) ν: 2953, 1790, 1723, 1467, 1383; LRMS (ESI): *m/z* 286 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₃H₁₇NO₃SiNa [M+Na]⁺ 286.0870, Found 286.0869.

3-hydroxy-3-(trifluoromethyl)-2-(2-(trimethylsilyl)ethoxy)isoindolin-1-one (**S2''**)

The same procedure as the conversion of **S1** to **S2** afforded **S2''** as yellow solid (22.2 g, 71%) from 24.6 g of **S1''**.

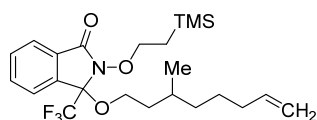
¹H NMR (500 MHz, CDCl₃) δ: 7.75 (d, 1H, *J* = 7.4 Hz), 7.68 (d, 1H, *J* = 7.4 Hz), 7.63 (td, 1H, *J* = 7.4 Hz, 1.1 Hz), 7.57 (td, 1H, *J* = 7.4 Hz, 1.1 Hz), 4.88 (brs, 1H), 4.33-4.40 (m, 1H), 4.13-4.20 (m, 1H), 1.04-1.17 (m, 2H), 0.03 (s, 9H); ¹³C NMR (126 MHz, CDCl₃) δ: 166.5, 137.8, 133.6, 131.5, 128.9, 124.2, 123.9, 122.6 (q, *J* = 286.7 Hz), 86.3 (q, *J* = 33.6 Hz), 76.1, 17.1, -1.56; ¹⁹F NMR (369 MHz, CDCl₃) δ: -79.6; IR (KBr, cm⁻¹) ν: 3125, 2957, 1698, 1473, 1380, 1254, 1203, 1174; LRMS (ESI): *m/z* 356 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₄H₁₈F₃NO₃SiNa [M+Na]⁺ 356.0900, Found 356.0903.

3-chloro-3-(trifluoromethyl)-2-(2-(trimethylsilyl)ethoxy)isoindolin-1-one (**S3''**)

The same procedure as the conversion of **S2** to **S3** afforded **S3''** as yellow liquid (23.4 g, 100%) from 22.2 g of **S2''**.

¹H NMR (500 MHz, CDCl₃) δ: 7.85 (d, 1H, *J* = 7.4 Hz), 7.67-7.74 (m, 2H), 7.62-7.66 (m, 1H), 4.42-4.50 (m, 1H), 4.28-4.35 (m, 1H), 1.13-1.23 (m, 2H), 0.06 (s, 9H); ¹³C NMR (126 MHz, CDCl₃) δ: 164.5, 138.0, 134.0, 131.8, 127.6, 124.3, 124.1, 121.7 (q, *J* = 284.3 Hz), 79.6 (q, *J* = 36.4 Hz), 76.0, 17.1, -1.54; ¹⁹F NMR (369 MHz, CDCl₃) δ: -75.9; IR (neat, cm⁻¹) ν: 1757, 1469, 1252, 1196; LRMS (ESI): *m/z* 374 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₄H₁₇ClF₃NO₂SiNa [M+Na]⁺ 374.0561, Found 374.0567.

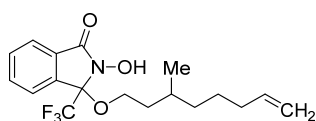
3-((3-methyloct-7-en-1-yl)oxy)-3-trifluoromethyl-*N*-(2-(trimethylsilyl)ethoxy)-isoindolinone (**S4''p**, diastereomixture)



The same procedure as the conversion of **S3** to **S4a** afforded **S4''p** as colorless liquid (670.6 mg, 83%) from 619.1 mg of **S3''**.

^1H NMR (500 MHz, CDCl_3) δ : 7.87 (d, 1H + 1H, $J = 6.9$ Hz), 7.60-7.69 (m, 2H + 2H), 7.58 (d, 1H + 1H, $J = 7.4$ Hz), 5.72-5.82 (m, 1H + 1H), 4.90-5.00 (m, 2H + 2H), 4.33-4.40 (m, 1H + 1H), 4.15-4.22 (m, 1H + 1H), 3.30-3.38 (m, 1H + 1H), 2.93-3.01 (m, 1H + 1H), 1.95-2.05 (m, 2H + 2H), 1.49-1.68 (m, 2H + 2H), 1.00-1.44 (m, 7H + 7H), 0.81 (d, 3H, $J = 6.9$ Hz), 0.77 (d, 3H, $J = 6.3$ Hz), 0.06 (s, 9H + 9H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.52, 165.56, 138.93, 138.91, 135.3, 135.2, 133.2, 131.5, 130.3, 124.12, 124.07, 122.1 (q, $J = 286.1$ Hz), 114.31, 114.28, 90.8 (q, $J = 32.7$ Hz), 75.2, 62.4, 36.4, 36.1, 36.0, 35.9, 33.9, 29.5, 29.4, 26.1, 19.6, 19.3, 17.08, 17.05, -1.5; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.3; IR (neat, cm^{-1}) ν : 3078, 2953, 1747, 1641, 1615, 1468, 1187; LRMS (ESI): m/z 480 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{23}\text{H}_{34}\text{F}_3\text{NO}_3\text{SiNa}$ $[\text{M}+\text{Na}]^+$ 480.2152, Found 480.2153.

***N*-hydroxy-3-((3-methyloct-7-en-1-yl)oxy)-3-trifluoromethyl-isoindolinone (1p, diastereomixture)**

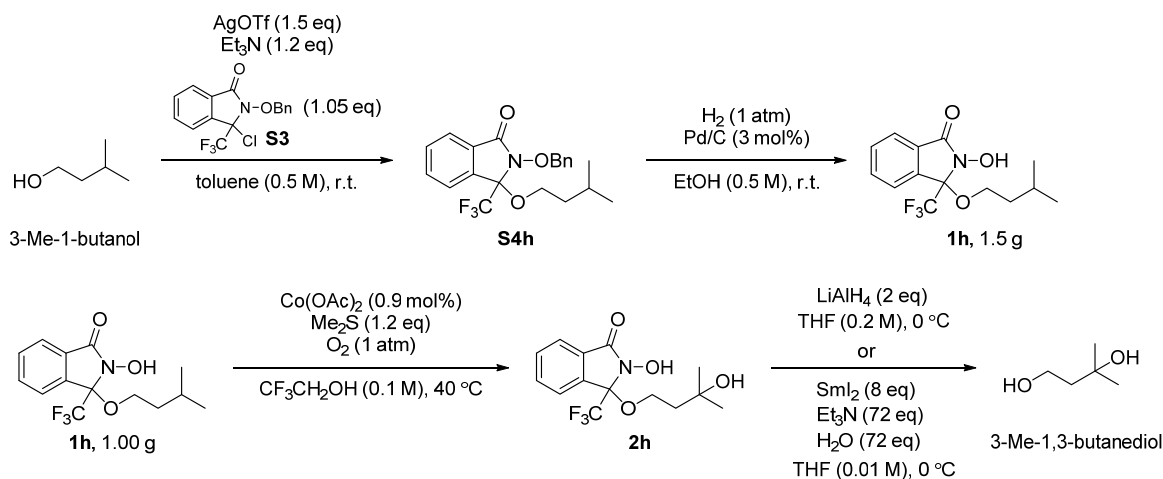


To a stirred mixture of **S4''p** (642 mg, 1.4 mmol, 1 eq) in THF (3 mL, 0.5 M) was added tetrabutylammonium fluoride trihydrate (1.3 g, 4.2 mmol, 3 eq). After three hours, saturated NH_4Cl aq. solution was added. The organic layer was washed with water and saturated NaCl aq. solution, and dried over Na_2SO_4 . Evaporating the solvent afforded the crude liquid. Purification by silica gel column chromatography (hexane/EtOAc = 3/1) afforded **1p** ($R = 3\text{-methyloct-7-en-1-yl}$) as colorless liquid (470 mg, 93%).

^1H NMR (400 MHz, CDCl_3) δ : 9.69 (brs, 1H), 9.68 (brs, 1H), 7.77-7.82 (m, 1H + 1H), 7.57-7.69 (m, 3H + 3H), 5.72-5.85 (m, 1H + 1H), 4.90-5.02 (m, 2H + 2H), 3.42-3.51 (m, 1H + 1H), 2.95-3.05 (m, 1H + 1H), 1.95-2.05 (m, 2H + 2H), 1.51-1.75 (m, 2H + 2H), 1.18-1.49 (m, 4H + 4H), 1.02-1.18 (m, 1H + 1H), 0.85 (d, 3H, $J = 6.3$ Hz), 0.80 (d, 3H, $J = 6.7$ Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.8, 139.02, 138.99, 135.31, 135.30, 133.2, 131.5, 130.0, 124.0, 123.9, 121.9 (q, $J = 286.1$ Hz), 91.0 (q, $J = 32.9$ Hz), 62.68, 62.66, 36.4, 36.2, 36.0, 35.9, 33.95, 33.91, 29.5, 29.4, 26.14, 26.13, 19.5, 19.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.6; IR (neat, cm^{-1}) ν : 3148, 2930, 1718, 1470, 1306, 1200; LRMS (ESI): m/z 380 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{22}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 380.1444, Found 380.1457.

4. The procedure for gram-scale oxidation and the removal of the directing activator

There is difference from the typical procedure in the equivalent of the reagents.



***N*-benzyloxy-3-isopentyloxy-3-trifluoromethyl-isoindolinone (S4h)**

To a light-protected round-bottom flask (dried by heat gun under reduced pressure) were added AgOTf (2.16 g, 8.39 mmol, 1.5 eq), dry toluene (11 mL, 0.5 M), 3-methyl-1-butanol (609 μ L, 5.59 mmol, 1 eq), triethylamine (930 μ L, 6.71 mmol, 1.2 eq), and finally dry toluene solution of **S3** (about 3 mL, 5.87 mmol, 1.05 eq) at ambient temperature. The reaction mixture was stirred overnight and saturated NaCl aq. solution was added. After filtration over Celite pad to remove the silver salts, the organic layer was washed with water and saturated NaCl aq. solution, and dried over Na₂SO₄. Evaporating the solvent afforded the crude oily liquid. Purification by silica gel column chromatography (hexane/EtOAc = 10/1) afforded **S4h** (R = isopentyl) as slightly yellow liquid (2.17 g, 97%).

¹H NMR (500 MHz, CDCl₃) δ : 7.91 (d, 1H, *J* = 7.5 Hz), 7.69 (dd, 1H, *J* = 7.2 Hz, 8.1 Hz), 7.61-7.67 (m, 2H), 7.57 (d, 2H, *J* = 6.3 Hz), 7.35-7.43 (m, 3H), 5.33 (d, 1H, *J* = 9.7 Hz), 5.16 (d, 1H, *J* = 9.7 Hz), 3.31 (dt, 1H, *J* = 9.2 Hz, 6.3 Hz), 2.98 (dt, 1H, *J* = 9.2 Hz, 6.3 Hz), 1.62-1.72 (m, 1H), 1.35-1.50 (m, 2H), 0.81 (d, 3H, *J* = 6.6 Hz), 0.79 (d, 3H, *J* = 6.6 Hz); ¹³C NMR (126 MHz, CDCl₃) δ : 165.6, 135.3, 134.6, 133.4, 131.6, 130.0, 129.3, 128.8, 128.4, 124.1, 122.2 (q, *J* = 286.7 Hz), 90.9 (q, *J* = 32.4 Hz), 79.1, 62.5, 37.7, 24.7, 22.4, 22.2; ¹⁹F NMR (369 MHz, CDCl₃) δ : -78.1; IR (neat, cm⁻¹) ν : 2957, 1745, 1643, 1468, 1190; LRMS (ESI): *m/z* 416 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₂₁H₂₂F₃NO₃Na [M+Na]⁺ 416.1444, Found 416.1456.

***N*-hydroxy-3-isopentyloxy-3-trifluoromethyl-isoindolinone (1h)**

A stirred mixture of **S4h** (2.17 g, 5.39 mmol, 1 eq) and Pd/C (10 wt%, 170 mg, 0.16 mmol, 0.03 eq) in ethanol (11 mL, 0.5 M) was exposed to H₂ (balloon pressure) at ambient temperature. The reaction mixture was stirred for two hours and then H₂ was removed. Filtration over Celite pad and evaporation of the filtrate afforded the crude oily liquid. Purification by silica gel column chromatography (hexane/EtOAc = 4/1) afforded **1h** as slightly orange liquid. The liquid was gradually solidified into white solid (1.56 g, 95%).

¹H NMR (500 MHz, CDCl₃) δ : 9.93 (brs, 1H), 7.79 (d, 1H, *J* = 6.9 Hz), 7.65-7.69 (m, 1H), 7.58-7.62 (m, 2H), 3.47 (dt, 1H, *J* = 9.2 Hz, 6.9 Hz), 3.00 (dt, 1H, *J* = 9.2 Hz, 6.9 Hz), 1.69-1.78 (m, 1H), 1.45-1.59 (m, 2H), 0.88 (d, 3H, *J* = 6.9 Hz), 0.83 (d, 3H, *J* = 6.9 Hz); ¹³C NMR (126 MHz, CDCl₃) δ : 165.9, 135.3, 133.2, 131.5, 130.0, 124.0, 123.9, 121.9 (q, *J* = 286.7 Hz), 91.0 (q, *J* = 33.6 Hz), 62.8, 37.8, 24.8, 22.6,

22.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (KBr, cm^{-1}) ν : 3137, 2959, 1718, 1507, 1472, 1194; LRMS (ESI): m/z 326 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{14}\text{H}_{16}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 326.0975, Found 326.0966.

***N*-hydroxy-3-(3-hydroxy-3-methylbutoxy)-3-trifluoromethyl-isoindolinone (2h)**

To a round-bottom flask were added **1h** (1.00 g, 3.30 mmol, 1 eq) and TFE (33 mL, 0.1 M). Me_2S (289 μL , 3.96 mmol, 1.2 eq) was added after replacing the air inside the tube with O_2 (1 atm, balloon) and finally $\text{Co}(\text{OAc})_2$ (0.5 M solution in DMSO, 59.4 μL , 0.0297 mmol, 0.9 mol%) was added. The mixture was stirred at 40 $^\circ\text{C}$ and after **1h** was consumed, which was checked on TLC, TFE was removed by evaporation and then EtOAc was added. The EtOAc solution was passed through silica gel to remove the metal and DMSO, and EtOAc was removed from the filtrate by evaporation. The residue was dried under reduced pressure to afford the crude mixture. Purification by silica gel column chromatography (EtOAc/hexane = 1/1) afforded **2h** as a colorless sticky liquid (840 mg, 80%).

Removal of directing activator

LiAlH_4 conditions

To a round-bottom flask (dried by heat gun under reduced pressure) were added **2h** (840 mg, 2.3 mmol, 1 eq) and dry THF (13 mL, 0.2 M), and the mixture was cooled at -78 $^\circ\text{C}$. LiAlH_4 (200 mg, 2 eq) was added to the reaction mixture in three portions (65 mg; 70 mg; 65 mg), and 15 minutes later the reaction temperature was raised to 0 $^\circ\text{C}$. Two hours later water (200 μL), 4 M NaOH aq. (200 μL), and water (600 μL) were added successively to the reaction mixture, with vigorous stirring. Insoluble materials were removed by filtration over Celite pad and the filtrate was dried under reduced pressure to obtain the crude mixture. Purification by silica gel column chromatography (hexane/EtOAc = 1/2) and Kugelrohr distillation afforded 3-methyl-1,3-butanediol as colorless liquid (221 mg, 81%).

^1H NMR (500 MHz, CDCl_3) δ : 3.90 (t, 2H, $J = 5.7$ Hz), 2.22 (bs, 2H), 1.75 (t, 2H, $J = 5.7$ Hz), 1.30 (s, 6H); LRMS (ESI): m/z 127 $[\text{M}+\text{Na}]^+$: identical to a commercial material.

SmI_2 conditions²

To a flask containing **2i** (18.0 mg, 0.05 mmol, 1 eq) were added SmI_2 in THF (freshly prepared just before use as reported,³ 4 mL, ca. 0.4 mmol, 8 eq), Et_3N (500 μL , 3.6 mmol, 72 eq), and water (65 μL , 36 mmol, 72 eq) at room temperature under argon atmosphere. After three hours, excess SmI_2 was oxidized by bubbling air through the reaction mixture. Filtration over Celite pad and evaporation of the filtrate afforded the crude mixture (69.4 mg, 84% NMR yield).

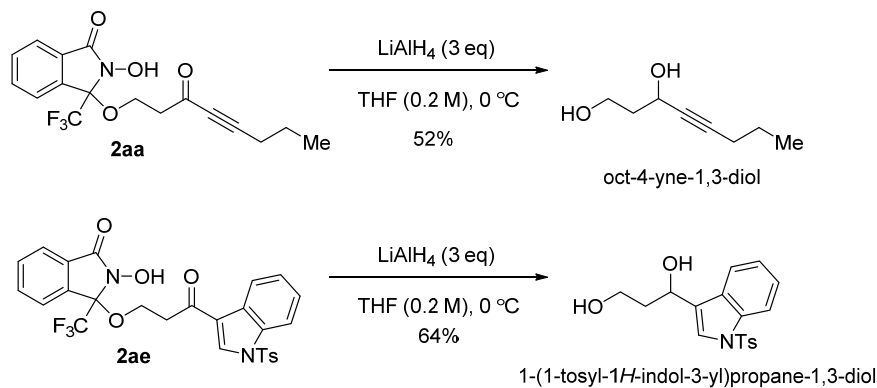
^1H NMR (500 MHz, CDCl_3) δ : 3.82 (t, 2H, $J = 5.7$ Hz), 3.71 (s, 12H), 3.23 (s, 1H), 1.68 (t, 2H, $J = 5.7$ Hz), 1.52-1.62 (m, 4H), 1.35-1.50 (m, 5H), 1.23-1.32 (m, 1H); LRMS (ESI): m/z 167 $[\text{M}+\text{Na}]^+$: identical to a

² M. Szostak, M. Spain, A. J. Eberhart, D. J. Procter *J. Am. Chem. Soc.* **2014**, *136*, 2268-2271.

³ M. Szostak, M. Spain, D. J. Procter *J. Org. Chem.* **2012**, *77*, 3049-3059.

reported data⁴.

Removal of directing activator from **2aa** and **2ae** is also successfully demonstrated.



oct-4-yne-1,3-diol: ¹H NMR (500 MHz, CDCl₃) δ: 4.64 (s, 1H), 3.94–4.02 (m, 1H), 3.81–3.89 (m, 1H), 2.51 (s, 1H), 2.19 (td, 2H, *J* = 7.2 Hz, 1.9 Hz), 2.17 (s, 1H), 1.88–2.02 (m, 2H), 1.49–1.57 (m, 2H), 0.98 (t, 3H, *J* = 7.4 Hz); ¹³C NMR (126 MHz, acetone-*d*₆) δ: 84.2, 83.3, 60.3, 59.5, 42.0, 22.9, 21.0, 13.6; IR (neat, cm⁻¹) ν: 3347, 2961, 1717, 1430, 1050; LRMS (ESI): *m/z* 165 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₈H₁₄O₂Na [M+Na]⁺ 165.0886, Found 165.0886.

1-(1-(tosyl-1*H*-indol-3-yl)propane-1,3-diol: ¹H NMR (500 MHz, CDCl₃) δ: 7.98 (d, 1H, *J* = 8.6 Hz), 7.77 (d, 2H, *J* = 8.0 Hz), 7.60 (d, 1H, *J* = 8.0 Hz), 7.55 (s, 1H), 7.30–7.34 (m, 1H), 7.20–7.25 (m, 3H), 5.20–5.25 (m, 1H), 3.85–3.95 (m, 2H), 2.99 (s, 1H), 2.34 (s, 3H), 2.27 (s, 1H), 2.06–2.20 (m, 2H); ¹³C NMR (126 MHz, CDCl₃) δ: 145.0, 135.5, 135.2, 129.9, 128.6, 126.8, 125.6, 124.9, 123.2, 122.7, 120.2, 113.8, 68.0, 61.4, 38.4, 21.6; IR (neat, cm⁻¹) ν: 3375, 2925, 1597, 1447, 1367, 1276, 1173; LRMS (ESI): *m/z* 368 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₈H₁₉NO₄SNa [M+Na]⁺ 368.0927, Found 368.0908.

⁴ T. He, W.-C. Gao, W.-K. Wang, C. Zhang *Adv. Synth. Catal.* **2014**, 356, 1113-1118.

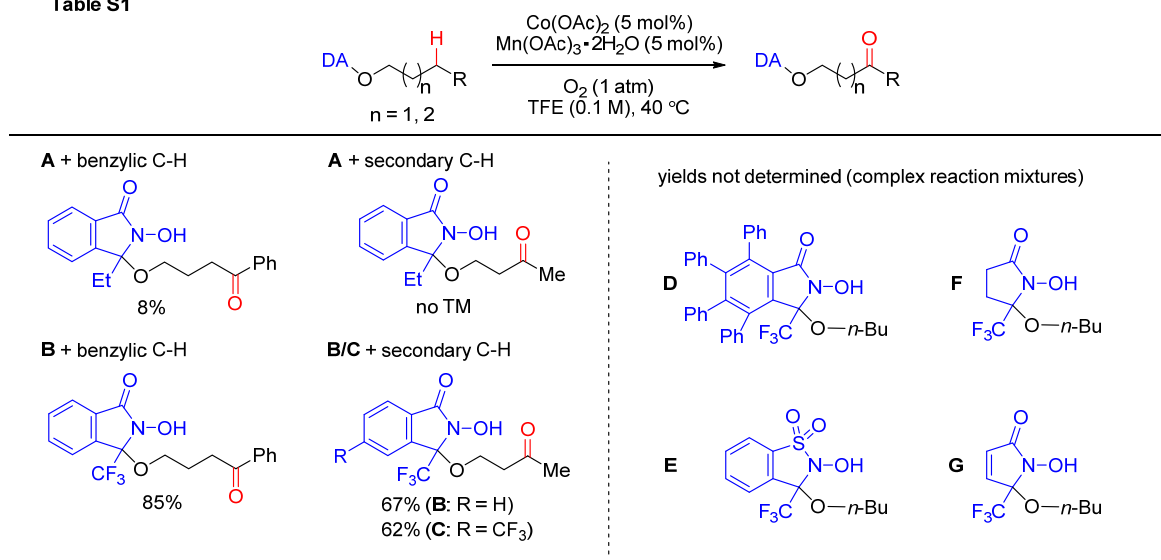
5. Experimental details

5.1. Optimization of the oxygenation conditions

5.1.1. Investigation of Directing Activator (DA)

We synthesized several DA (**A-G**) bound-alcohols and compared their reactivity under condition A [Co(OAc)₂ (5 mol%), Mn(OAc)₃·2H₂O (5 mol%) in 2,2,2-trifluoroethanol (TFE, 0.1 M) under O₂ (1 atm) at 40 °C] (Table S1).

Table S1



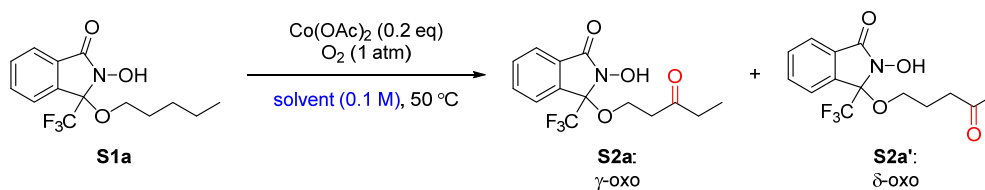
With **A**, benzylic C–H oxygenation produced the corresponding phenyl ketone product in only 8% yield. A more challenging methylene C(*sp*³)–H oxygenation did not proceed at all. In both cases, the efficiency of the C–H oxygenation was much lower than that of *N*-hydroxyphthalimide itself. Because the reactivity of *N*-oxyl radicals is in accord with their electron-deficiency, we next designed **B** bearing a CF₃ group at the α -carbon of the nitrogen atom to enhance the reactivity of the DA. As a result, **B** promoted simple methylene C(*sp*³)–H oxygenation to produce γ -oxo product in 67% yield. Although the α -C(*sp*³)–H bond adjacent to the ether oxygen atom is the innate reactive site, the less reactive γ -C(*sp*³)–H was predominantly oxygenated. Under the same conditions, benzylic C(*sp*³)–H oxygenation also proceeded well (85% yield). Introducing an additional CF₃ substituent at the benzene ring (**C**), however, did not further improve the yield. Additional structural modifications (**D**, **E**, **F**, or **G**) were not successful, resulting in complex mixtures and/or decomposition of the DA during the reaction. Thus, **B** proved to be the best DA.

5.1.2. Secondary C(*sp*³)–H oxygenation

Solvents, metal salts, and additives were screened for higher yields of secondary C(*sp*³)–H oxygenation. Tested additives such as some acids, bases, molecular sieves, and reductants all brought no improvements.

The screening of the solvents for 1-pentanol oxygenation is shown below. As shown in Table S2, TFE (2,2,2-trifluoroethanol) and HFIP (1,1,1,3,3,3-hexafluoroisopropanol) accelerated the reaction to almost the same degree and produced almost the same yields, so the cheaper TFE was employed as the best solvent.

Table S2

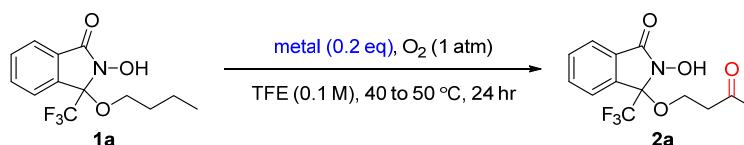


solvent	B2ba [%]	B2bb [%]	rxn time [hr]
MeCN	7	4	19
MeOH	0	0	19
EtOH	4	2	19
TFE	12	12	2.5
HFIP	12	16	2.5
CF_3Ph	12	5	19
EtOAc	4	1	19
MeO ^t Bu	3	3	19

(NMR yield)

Then, metal salts were screened using **B**-anchored 1-butanol instead of **B**-anchored 1-pentanol because **B**-anchored 1-butanol gave only one regioisomer and made the analysis easier.

Table S3



metal	NMR yield	metal	NMR yield
$\text{Co}(\text{OAc})_2$	40	$\text{Cu}(\text{OTf})_2$	0
$\text{Co}(\text{acac})_2$	0	FeCl_2	0
$\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	7	FeCl_3	0
$\text{Mn}(\text{OAc})_2$	3	$\text{Fe}(\text{OTf})_2$	0
$\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$	36	$\text{Fe}(\text{OTf})_3$	0
MnBr_2	0	$\text{Fe}(\text{OAc})_2$	0
$\text{Mn}(\text{acac})_2$	0	$\text{Fe}(\text{OH})(\text{OAc})_2$	0
$\text{Mn}(\text{OTf})_2$	5	no metal	0
CuOAc	0	$\text{Co}(\text{OAc})_2 + \text{Mn}(\text{OAc})_2$ (1:1)	16
$\text{Cu}(\text{OAc})_2$	0	$\text{Co}(\text{OAc})_2 + \text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ (1:1)	67
CuBr	0	$\text{Co}(\text{acac})_2 + \text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ (1:1)	50
$\text{CuOTf} \cdot 0.5\text{PhH}$	0	$\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O} + \text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ (1:1)	41

As shown in Table S3, the combination of $\text{Co}(\text{OAc})_2$ and $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ produced the best result. The role of $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ is not clear, but we suppose that the main role of $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ is to trap reversibly reactive intermediates such as peroxy radicals and alkoxy radicals to suppress unfavorable side reactions, considering the fact that the reaction rate became lower by adding $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ than when $\text{Co}(\text{OAc})_2$ alone was used as a metal source even though $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ itself was able to catalyze the reaction.

The 1-butanol oxygenation was conducted at 30, 40, or 50 °C. The reaction didn't complete at 30 °C, and became slightly complicated at 50 °C compared to that at 40 °C. Therefore, 40 °C was revealed to be the best reaction temperature.

Then, the optimal conditions for secondary $\text{C}(\text{sp}^3)\text{-H}$ oxygenation were these:

$\text{Co}(\text{OAc})_2$ (5 mol%), $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ (5 mol%), O_2 (1 atm), TFE (0.1 M), 40 °C.

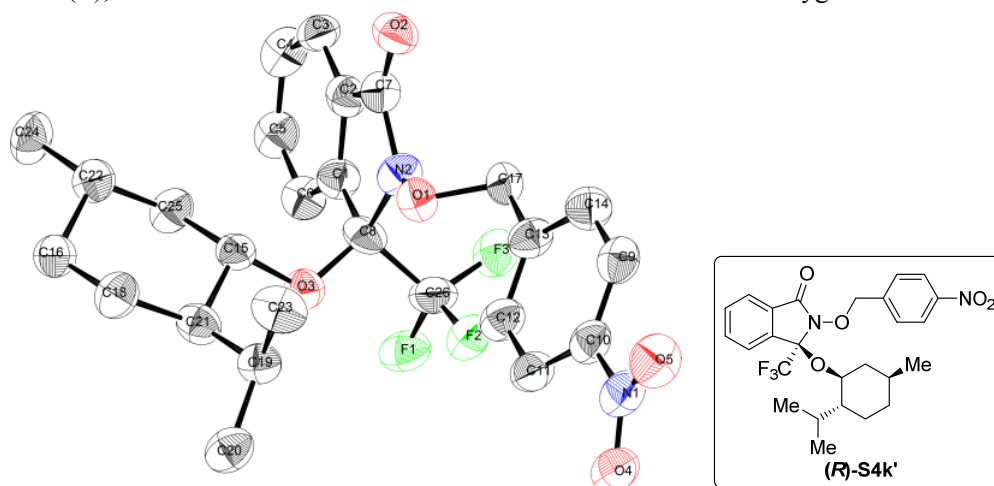
5.1.3. Tertiary C(sp³)-H oxygenation

Although 67% NMR yield was obtained for 1-butanol oxygenation under condition A, the reaction became complicated and only 20% NMR yield was obtained for 3-methyl-1-butanol oxygenation (**1h**) under the same conditions. It was probably because condition A was too harsh for tertiary C(sp³)-H oxygenation, so the reaction conditions had to be refined for higher yields. The goal was accomplished by reducing the amount of the metal salts. Lower reaction temperatures and different solvents were not effective. The best reaction conditions were these:

Co(OAc)₂ (1 mol%), Me₂S (1.2 eq), O₂ (1 atm), TFE (0.1 M), 40 °C.

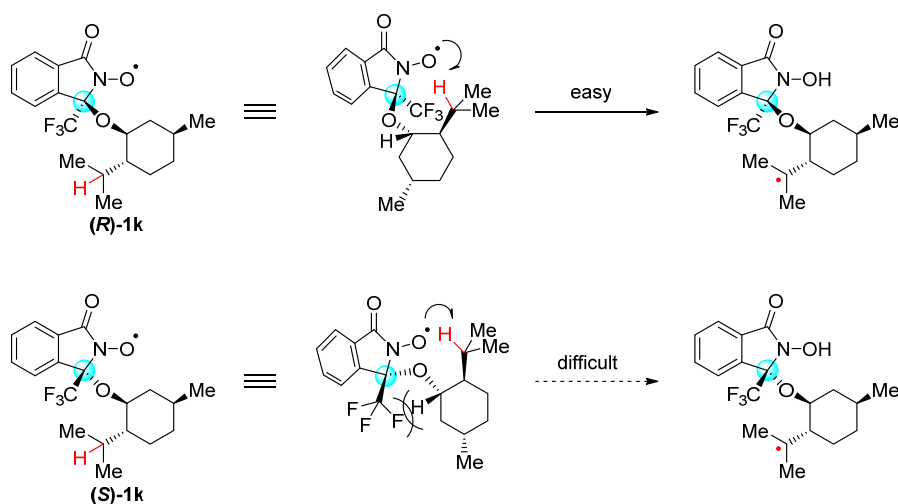
5.2. Absolute configuration of DA-anchored (+)-menthol (**1k**)

X-ray analysis of less polar diastereomer of *O*-(4-nitrobenzyl)-**1k** was conducted to determine the absolute configuration of DA-anchored (+)-menthol. The configuration of the hemiaminal center was revealed to be (*R*), which accords with that of reactive isomer in aerobic C-H oxygenation.



Crystallization procedure: less polar diastereomer of *O*-(4-nitrobenzyl)-**1k** was dissolved in MeCN and the solvent was gradually evaporated under air at room temperature. After a few days a needle crystal was obtained.

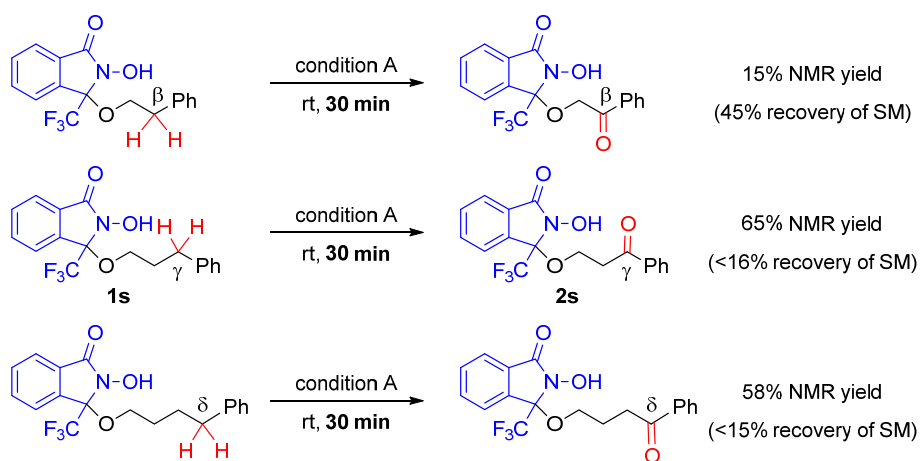
The supposed reason for the difference in the reactivity is depicted in the figure below.



According to molecular modeling, there is no steric repulsion during the abstraction of the red hydrogen in **(R)-1k** and it proceeds smoothly; whereas in the case of **(S)-1k** there is a steric repulsion between CF_3 and the axial α -hydrogen of the oxygen atom in menthol that makes it difficult for the *N*-oxyl radical to access the red hydrogen.

5.3. Comparison of reaction speed in benzylic C–H oxygenation

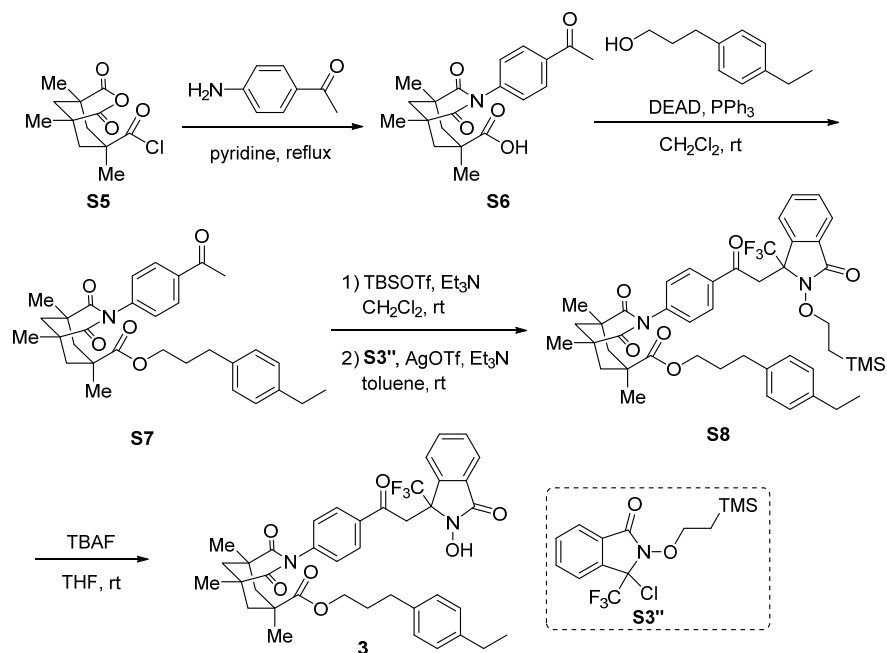
The chemical yield after 30 min was compared for β -, γ -, and δ -C–H oxygenation. Reaction speed of β -C–H oxygenation is significantly slower than γ - and δ -C–H oxygenation. The difference between γ - and δ -C–H oxygenation is, however, not large. This low γ/δ selectivity is a current limitation of our method.



condition A: $\text{Co}(\text{OAc})_2$ (5 mol%), $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ (5 mol%), O_2 (1 atm), TFE (0.1 M)

6. Selective ultra-remote C-H oxygenation

6.1. Synthesis of substrate 3



Synthetic procedure from S5 to S6

To a round bottom flask were added **S5**⁵ (2.15 g, 8.3 mmol), *p*-acetylaniline (1.07 g, 7.9 mmol) and pyridine (42 mL, 0.2 M). The mixture was stirred at reflux for 18 h. Pyridine was removed by evaporation. The obtained crude mixture was purified by silica gel column chromatography (EtOAc/hexane = 2/1) to afford **S6** with inseparable byproducts as a colorless sticky liquid (2.98 g). This mixture was used for next step.

Synthetic procedure from S6 to S7

To a round bottom flask were added acid impure **S6** (566 mg, ca. 1.6 mmol), 3-(4-ethylphenyl)propan-1-ol (286 mg, 1.74 mmol), diethyl azodicarboxylate (2.5 M solution in toluene, 0.759 mL, 1.90 mmol), PPh₃ (456 mg, 1.90 mmol) and CH₂Cl₂ (8.7 mL, 0.2 M). The mixture was stirred at room temperature for 2.5 h, followed by all the volatiles were removed by evaporation. The obtained crude mixture was purified by silica gel column chromatography (EtOAc/hexane = 1/2) to afford **S7** as a colorless sticky liquid (532 mg, 69%, 2 steps).

¹H NMR (392 MHz, CD₃OD) δ : 7.99 (d, 2H, $J = 8.1$ Hz), 7.27 (d, 2H, $J = 8.1$ Hz), 7.01 (d, 2H, $J = 7.6$ Hz), 6.96 (d, 2H, $J = 7.6$ Hz), 3.99 (t, 2H, $J = 6.1$ Hz), 2.71 (d, 2H, $J = 13.9$ Hz), 2.60 (s, 3H), 2.51-2.60 (m, 2H+2H), 2.24 (d, 1H, $J = 13.5$ Hz), 1.70-1.80 (m, 2H), 1.58 (d, 1H, $J = 13.5$ Hz), 1.42 (d, 2H, $J = 13.9$ Hz), 1.30 (s, 3H), 1.27 (s, 3H), 1.18 (t, 3H, $J = 7.6$ Hz); ¹³C NMR (126 MHz, CDCl₃) δ : 197.6, 176.1, 176.1,

⁵ (a) Q. Ye, I. V. Komarov, A. J. Kirby, M. Jones, Jr. *J. Org. Chem.* **2002**, *67*, 9288-9294. (b) T. J. Dale, J. Rebek, Jr. *J. Am. Chem. Soc.* **2006**, *128*, 4500-4501.

142.0, 140.2, 138.4, 136.3, 128.9, 128.8, 128.4, 128.0, 64.9, 44.3, 44.0, 31.7, 31.1, 30.1, 28.5, 26.8, 26.1, 15.8; IR (neat, cm^{-1}) ν : 2964, 1721, 1689, 1602, 1460, 1357, 1321, 1265, 1174; LRMS (ESI): m/z 526 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{31}\text{H}_{37}\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 526.2564, Found 526.2541.

Synthetic procedure from S7 to S8

To solution of ketone **S7** (288 mg, 0.588 mmol) in CH_2Cl_2 (2.94 mL, 0.2 M) were added triethylamine (0.590 mL, 4.23 mmol) and TBSOTf (0.494 mL, 2.82 mmol). The mixture was stirred at room temperature for 40 min. After ketone was consumed, which was checked on TLC, pentane and H_2O were added. The organic layer was separated and washed with 10% aqueous CuSO_4 solution and 5% NaHCO_3 aq. solution, and then dried over Na_2SO_4 . Filtration followed by evaporating the solvent at room temperature afforded the crude mixture containing the corresponding enol silyl ether.

To a round bottom flask were added the all amount of the crude mixture, **S3''** (0.394 mL, 1.18 mmol), Et_3N (0.246 mL, 1.76 mmol) and toluene (5.88 mL, 0.1 M), followed by AgOTf (376 mg, 1.47 mmol). The mixture was stirred at room temperature for 18 h, and saturated NaCl aq. solution was added. After filtration over Celite pad to remove the silver salts, the organic layer was separated and washed with water and saturated NaCl aq. solution, and dried over Na_2SO_4 . After filtration, all the volatiles were removed by evaporation. The obtained crude mixture was purified by silica gel column chromatography ($\text{EtOAc}/\text{hexane} = 2/5$) to afford **S8** as colorless sticky liquid (421 mg, 87% yield).

^1H NMR (500 MHz, CD_3OD) δ : 7.85-7.90 (m, 1H), 7.84 (d, 2H, $J = 8.6$ Hz), 7.60-7.66 (m, 3H), 7.22 (d, 2H, $J = 8.6$ Hz), 7.00 (d, 2H, $J = 8.0$ Hz), 6.96 (d, 2H, $J = 8.0$ Hz), 4.60 (brs, 1H), 4.37-4.43 (m, 1H), 4.09-4.20 (m, 3H), 3.91-3.97 (m, 2H), 2.69 (d, 2H, $J = 13.7$ Hz), 2.54 (q, 2H, $J = 7.4$ Hz), 2.49 (t, 2H, $J = 7.4$ Hz), 2.21 (d, 1H, $J = 13.2$ Hz), 1.67-1.73 (m, 2H), 1.56 (d, 1H, $J = 13.2$ Hz), 1.39 (d, 2H, $J = 13.7$ Hz), 1.28 (s, 6H), 1.25 (s, 3H), 1.16 (t, 3H, $J = 7.4$ Hz), 0.90-1.10 (m, 2H), -0.01 (s, 9H); ^{13}C NMR (126 MHz, CD_3OD) δ : 194.4, 178.3, 178.3, 178.0, 170.9, 143.1, 142.4, 140.00, 139.8, 137.2, 134.7, 131.9, 131.5, 130.4, 129.6, 129.3, 129.0, 126.1 (q, $J = 283.1$ Hz), 124.9, 124.3, 76.4, 69.0 (q, $J = 30.1$ Hz), 66.1, 44.9, 43.9, 43.6, 42.05, 42.03, 32.8, 31.40, 31.36, 29.6, 26.3 17.9, 16.5, -1.25; ^{19}F NMR (369 MHz, CDCl_3) δ : -76.1; IR (neat, cm^{-1}) ν : 2963, 1733, 1693, 1602, 1463, 1356, 1321, 1273, 1178, 1092; LRMS (ESI): m/z 841 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{43}\text{H}_{53}\text{F}_3\text{N}_2\text{O}_7\text{SiNa}$ $[\text{M}+\text{Na}]^+$ 841.3466, Found 841.3436.

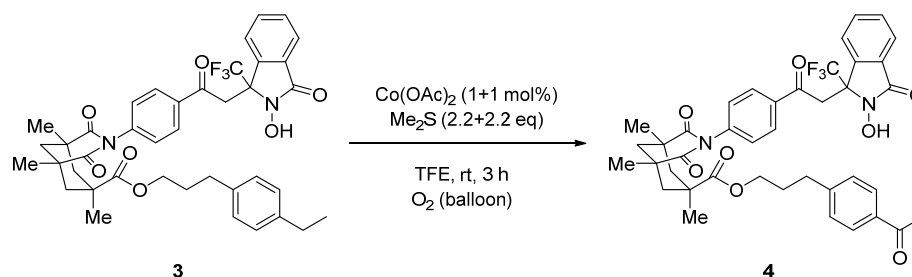
Synthetic procedure from S8 to 3

To a solution of **S8** (421 mg, 0.514 mmol) in THF (0.590 mL, 4.23 mmol) was added tetrabutylammonium fluoride (1.0 M solution in THF, 1.54 mL, 1.54 mmol). The mixture was stirred at room temperature. After **S8** was consumed, which was checked on TLC, water was added. The organic layer was separated and the water layer was extracted by EtOAc two times. The combined organic layer was dried over Na_2SO_4 . After filtration, all the volatiles were removed by evaporation. The obtained crude mixture was purified by silica gel column chromatography ($\text{EtOAc}/\text{hexane} = 2/3$) to afford **3** as colorless sticky liquid (287 mg, 78% yield)

^1H NMR (500 MHz, CD_3OD) δ : 7.85-7.90 (m, 3H), 7.57-7.65 (m, 3H), 7.22 (d, 2H, $J = 8.0$ Hz), 7.01 (d,

2H, $J = 8.0$ Hz), 6.96 (d, 2H, $J = 8.0$ Hz), 4.17-4.22 (m, 2H), 3.96 (t, 2H, $J = 6.3$ Hz), 2.69 (d, 2H, $J = 13.7$ Hz), 2.55 (q, 2H, $J = 7.7$ Hz), 2.21 (d, 1H, $J = 13.2$ Hz), 1.68-1.75 (m, 2H), 1.56 (d, 1H, $J = 13.2$ Hz), 1.40 (d, 2H, $J = 13.7$ Hz), 1.28 (s, 6H), 1.16 (t, 3H, $J = 7.7$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 193.4, 176.30, 176.27, 168.1, 147.25, 142.21, 141.1, 138.6, 137.7, 135.8, 133.1, 130.7, 129.3, 129.1, 128.9, 128.6, 128.2, 128.0, 125.7, 124.5 (q, $J = 289.5$ Hz), 123.4, 121.1, 68.2 (q, $J = 27.2$ Hz), 65.1, 44.6, 44.5, 44.1, 42.5, 41.2, 34.5, 32.0, 31.2, 30.3, 30.1, 28.7, 26.3, 16.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -75.8; IR (neat, cm^{-1}) ν : 3420, 2930, 1725, 1692, 1600, 1321, 1273, 1176, 1091; LRMS (ESI): m/z 741 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{40}\text{H}_{41}\text{F}_3\text{N}_2\text{O}_7\text{Na}$ $[\text{M}+\text{Na}]^+$ 741.2758, Found 741.2794.

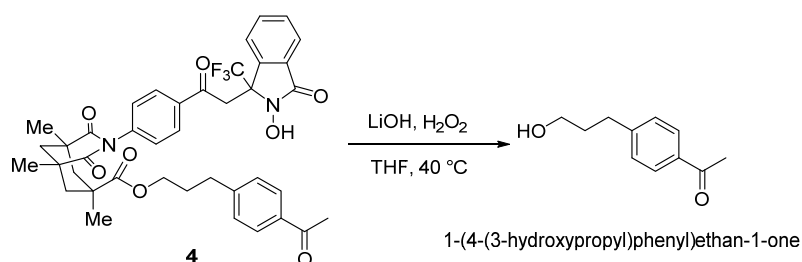
6.2. Oxygenation of **3** (ultra-remote position-selective aerobic C-H oxygenation)



To a test tube were added **3** (30.0 mg, 41.7 μmol) and TFE (0.42 mL, 0.1 M). Me_2S (6.71 μL , 91.8 μmol) was added after replacing the air inside the tube with O_2 (1 atm, balloon), and finally $\text{Co}(\text{OAc})_2$ (0.2 M solution in DMSO, 2.1 μL , 0.42 μmol) was added. The mixture was stirred at room temperature. After 1.5 h, $\text{Co}(\text{OAc})_2$ (0.2 M solution in DMSO, 2.1 μL , 0.42 μmol) and Me_2S (6.71 μL , 91.8 μmol) were added. After **3** was consumed, which was checked on TLC, TFE was removed by evaporation and water was added. The aqueous layer was extracted by EtOAc three times. The combined organic layer was dried over Na_2SO_4 . After filtration, all the volatiles were removed by evaporation. The yield was determined as 66% by ^1H NMR of the crude mixture with 1,1,2,2-tetrachloroethane as the internal standard. Purification by neutral silica gel column chromatography (EtOAc/hexane = 2/3) afforded **4** as a white solid (16.3 mg, 53%).

^1H NMR (500 MHz, CD_3OD) δ : 7.80-7.88 (m, 3H), 7.78 (d, 2H, $J = 8.0$ Hz), 7.55-7.65 (m, 3H), 7.23 (d, 2H, $J = 8.0$ Hz), 7.18 (d, 2H, $J = 8.0$ Hz), 4.10-4.16 (m, 2H), 3.92-4.00 (m, 2H), 2.68 (d, 1H, $J = 14.3$ Hz), 2.61 (t, 2H, $J = 7.4$ Hz), 2.51 (s, 3H), 2.15-2.23 (m, 1H), 1.70-1.79 (m, 2H), 1.57 (d, 1H, $J = 13.2$ Hz), 1.40 (d, 1H, $J = 14.3$ Hz), 1.28 (s, 6H), 1.25 (s, 3H); ^{13}C NMR (126 MHz, CD_3OD) δ : 200.3, 178.0, 177.6, 169.2, 148.7, 142.0, 137.1, 136.0, 133.7, 132.2, 131.0, 130.0, 129.7, 129.5, 129.0, 125.7 (d, $J = 278.3$ Hz), 124.3, 123.9, 65.6, 44.5, 43.5, 43.2, 41.7, 34.9, 32.8, 31.0, 30.6, 30.5, 29.3, 26.5, 25.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -75.5; IR (neat, cm^{-1}) ν : 3432, 2929, 1690, 1605, 1463, 1358, 1321, 1273, 1178, 1093; LRMS (ESI): m/z 755 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{40}\text{H}_{39}\text{F}_3\text{N}_2\text{O}_8\text{Na}$ $[\text{M}+\text{Na}]^+$ 755.2551, Found 755.2537.

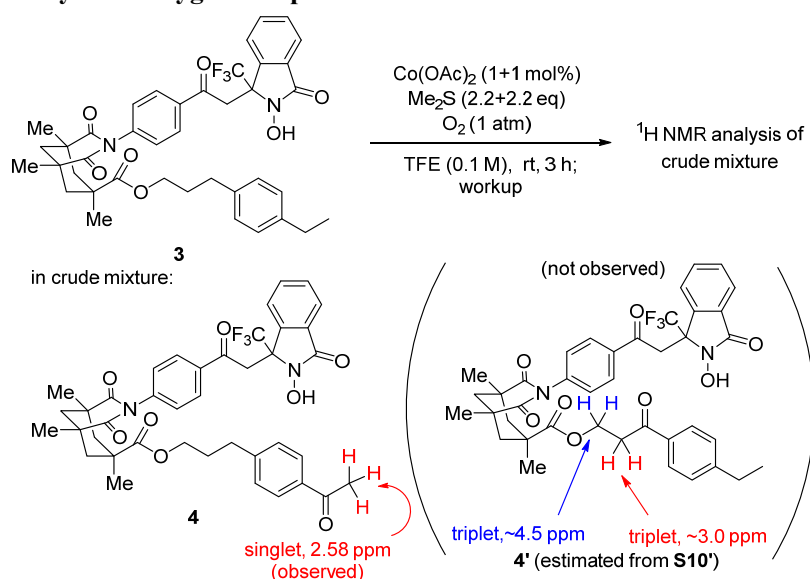
6.3. Removal of directing activator



To a test tube were added **4** (2.8 mg, 3.8 μmol) and THF/ H_2O (3/1, 80 μL , 0.05 M). To the mixture were added LiOH (1 M solution in H_2O , 20 μL , 20 μmol) and H_2O_2 (10 M in H_2O , 3.2 μL , 32 μmol). After stirring for 21 h, LiOH (1 M solution in H_2O , 20 μL , 20 μmol) and H_2O_2 (10 M in H_2O , 3.2 μL , 32 μmol) were further added. The mixture was stirred at 40 $^\circ\text{C}$ for 24 h. After **4** was consumed, which was checked on TLC, water was added. The aqueous layer was extracted by EtOAc three times. The combined organic layer was dried over Na_2SO_4 . After filtration, all the volatiles were removed by evaporation to afford the crude mixture. The yield was determined to be 79% by ^1H NMR of the obtained crude mixture with 1,1,2,2-tetrachloroethane as the internal standard.

^1H NMR (500 MHz, CDCl_3) δ : 7.89 (d, 2H, $J = 8.0$ Hz), 7.30 (d, 2H, $J = 8.0$ Hz), 3.68 (t, 2H, $J = 6.3$ Hz), 2.78 (t, 2H, $J = 2.78$ Hz), 2.59 (s, 3H), 1.85-1.95 (m, 2H), LRMS (ESI): m/z 201 $[\text{M}+\text{Na}]^+$; identical to a reported data.⁶

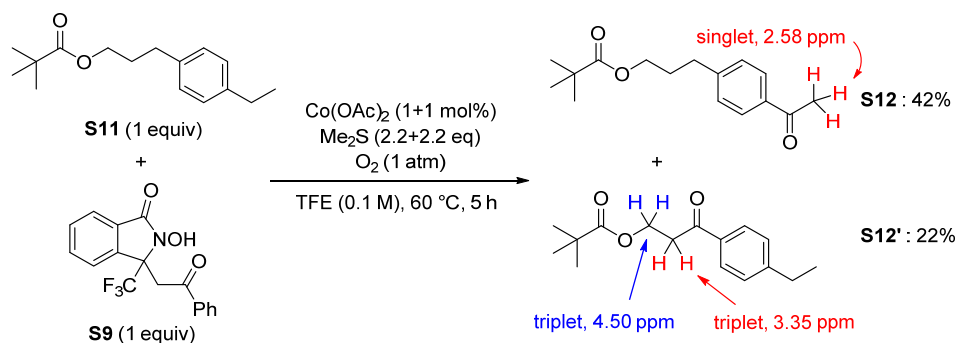
6.4. Structural analysis of oxygenated products



After aerobic oxygenation of **3**, ^1H NMR chart of the crude mixture was carefully analyzed. No triplet peak was observed around 3.00-3.50 ppm, which corresponds to the α -methylene protons of phenyl ketone **4'** (marked in red in **4'** of the above scheme), while a singlet peak at 2.58 ppm was observed, which corresponds to the α -methyl protons of phenyl ketone of **4** (marked in red in **4**). For comparison, oxidized

⁶ Z.-L. Shen, K. K. Goh, Y.-S. Yang, Y.-C. Lai, C. H. A. Wong, H.-L. Cheong, T.-P. Loh, *Angew. Chem. Int. Ed.* **2011**, *50*, 511.

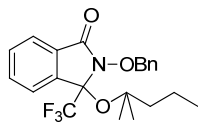
products of model substrate **S11** afforded α -methylene protons of phenyl ketone **S12'** observed at 3.35 ppm as triplet (marked in red in **S12'** of the scheme below), and α -methyl protons of ketone **S12** observed at 2.58 ppm as singlet (marked in red in **S12**). This fact indicates that regioisomer **4'** did not generate at all. Thus, we concluded that the oxygenation of **3** occurred exclusively at the remote benzylic position. The intermolecular oxygenation of model compound **S11** produced a 2 : 1 regiomixture of **S12** and **S12'** at 60 °C. This result, combined with the contrasting and exclusive remote-regioselectivity in oxygenation of **3**, further supported the notion that oxygenation of **3** proceeded in an intramolecular manner controlled by the “long-arm linker” directing activator.



7. Analytical data

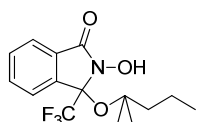
Full spectroscopic data were described for **S4**, **1**, and **2** related to Table 1.

N-benzyloxy-3-((2-methylpentan-2-yl)oxy)-3-trifluoromethyl-isoindolinone (**S4b**)



colorless liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.88 (dd, 1H, $J = 6.0$ Hz, 2.0 Hz), 7.61-7.73 (m, 3H), 7.56 (d, 2H, $J = 6.9$ Hz), 5.45 (d, 1H, $J = 9.2$ Hz), 5.06 (d, 1H, $J = 9.2$ Hz), 1.32-1.50 (m, 4H), 1.03 (s, 3H), 0.93 (s, 3H), 0.79-0.84 (m, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.1, 137.3, 134.8, 132.6, 131.4, 130.3, 129.2, 128.6, 128.4, 125.4, 123.9, 122.7 (q, $J = 286.0$ Hz), 89.1 (q, $J = 32.3$ Hz), 82.3, 78.5, 46.1, 27.3, 26.0, 16.9, 14.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -79.7; IR (neat, cm^{-1}) ν : 2961, 1739, 1646, 1190; LRMS (ESI): m/z 430 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{24}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 430.1601, Found 430.1620.

N-hydroxy-3-((2-methylpentan-2-yl)oxy)-3-trifluoromethyl-isoindolinone (**1b**)



reddish solid; ^1H NMR (500 MHz, CDCl_3) δ : 9.95 (brs, 1H), 7.78 (d, 1H, $J = 7.3$ Hz), 7.66 (d, 1H, $J = 7.3$ Hz), 7.61 (dd, 1H, $J = 7.3$ Hz, 7.3 Hz), 7.57 (dd, 1H, $J = 7.3$ Hz, 7.3 Hz), 1.40-1.55 (m, 4H), 1.15 (s, 3H), 0.96 (s, 3H), 0.90 (t, 3H, $J = 6.6$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.4, 137.6, 132.5, 131.2, 129.8, 125.2, 123.7, 122.1 (q, $J = 288.2$ Hz), 89.9 (q, $J = 32.3$ Hz), 82.6, 46.2, 27.2, 26.2, 17.1, 14.4; ^{19}F NMR (369 MHz, CDCl_3) δ : -79.5, -79.7 (rotamers); IR (KBr, cm^{-1}) ν : 3159, 2962, 1718, 1473, 1391, 1373, 1192; LRMS (ESI): m/z 340 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{15}\text{H}_{18}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 340.1131, Found 340.1117.

the mixture of

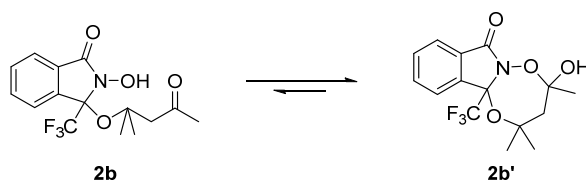
N-hydroxy-3-((2-methyl-4-oxopentan-2-yl)oxy)-3-trifluoromethyl-isoindolinone (**2b**)

and

4-hydroxy-2,2,4-trimethyl-11b-(trifluoromethyl)-3,4-dihydro-2*H*-[1,4,2]dioxazepino[3,2-*a*]isoindol-7(11*bH*)-one (**2b'**; diastereomixture)

Starting material **1b** (31.7 mg, 0.1 mmol) was oxygenated under condition A of section 2, and **2b'** (20.7 mg, 0.062 mmol) was isolated as described in the General method (62% yield).

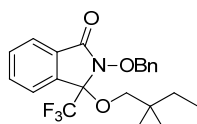
2b easily cyclizes to form **2b'** and the equilibrium position lies far to the right.



No peaks of **2b** were detected in NMR spectra when the solvent was CDCl₃; the peaks of **2b** could be slightly detected when the solvent was acetone-*d*₆ as shown below (CDCl₃ should be avoided to take a ¹³C NMR spectrum because **2b'** doesn't dissolve in CDCl₃ very much).

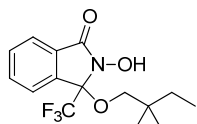
white solid; ¹H NMR (500 MHz, acetone-*d*₆; underlined chemical shifts for **2b**) δ: 9.47 (s, 1H), 7.68-7.86 (m, 4H + 4H), 5.68-5.71 (m, 1H), 2.81 (d, 1H, *J* = 14.9 Hz), 2.72 (d, 1H, *J* = 14.9 Hz), 2.23 (d, 1H, *J* = 14.9 Hz), 2.21 (s, 3H), 2.10 (d, 1H, *J* = 14.9 Hz), 1.60 (s, 3H), 1.31 (s, 3H), 1.18 (s, 3H), 1.12 (s, 3H), 1.11 (s, 3H); ¹³C NMR (126 MHz, acetone-*d*₆; underlined chemical shifts for **2b**; wavylined shifts for **2b** or **2b'**; dashed-lined shifts for both **2b** and **2b'**; two shifts in brackets derived from "the same" carbon of the diastereomers) δ: 207.4, 164.0, 163.5, 139.8, 137.8, 134.1, 133.6, 132.6, 132.0, 131.5, 130.4, 126.6, 124.7, 124.2, 124.1, 123.6 (q, *J* = 288.5 Hz), [107.8, 107.7], 90.3 (q, *J* = 31.7 Hz), 56.1, 52.8, 33.9, 32.1, 28.2, [27.6, 27.5], 26.1, 25.6; ¹⁹F NMR (369 MHz, CDCl₃; underlined chemical shifts for **2b**) δ: -79.1, -79.7; IR (KBr, cm⁻¹) ν: 3460, 2985, 1730, 1469, 1250, 1191; LRMS (ESI): *m/z* 354 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₅H₁₆F₃NO₄Na [M+Na]⁺ 354.0924, Found 354.0924.

***N*-benzyloxy-3-(2,2-dimethylbutoxy)-3-trifluoromethyl-isoindolinone (S4c)**



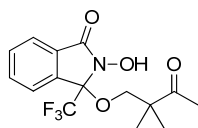
colorless liquid; ¹H NMR (500 MHz, CDCl₃) δ: 7.91 (d, 1H, *J* = 7.4 Hz), 7.70 (dd, 1H, *J* = 7.4 Hz, 7.4 Hz), 7.65 (dd, 1H, *J* = 7.4 Hz, 7.4 Hz), 7.60 (d, 1H, *J* = 7.4 Hz), 7.55 (d, 2H, *J* = 7.4 Hz), 7.35-7.43 (m, 3H), 5.34 (d, 1H, *J* = 9.2 Hz), 5.14 (d, 1H, *J* = 9.2 Hz), 3.05 (d, 1H, *J* = 8.3 Hz), 2.58 (d, 1H, *J* = 8.3 Hz), 1.29 (q, 2H, *J* = 7.5 Hz), 0.84 (s, 3H), 0.82 (s, 3H), 0.73 (t, 3H, *J* = 7.5 Hz); ¹³C NMR (126 MHz, CDCl₃) δ: 165.7, 135.4, 134.6, 133.4, 131.6, 130.1, 129.2, 128.7, 128.4, 124.15, 124.13, 122.3 (q, *J* = 286.3 Hz), 90.8 (q, *J* = 32.3 Hz), 79.0, 71.7, 34.1, 31.1, 23.8, 23.7, 8.0; ¹⁹F NMR (369 MHz, CDCl₃) δ: -78.3; IR (neat, cm⁻¹) ν: 2965, 1747, 1468, 1294, 1190; LRMS (ESI): *m/z* 430 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₂₂H₂₄F₃NO₃Na [M+Na]⁺ 430.1601, Found 430.1614.

3-(2,2-dimethylbutoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (1c)



white solid; ¹H NMR (500 MHz, CDCl₃) δ: 9.89 (brs, 1H), 7.79 (d, 1H, *J* = 7.4 Hz), 7.66 (dd, 1H, *J* = 7.4 Hz, 7.4 Hz), 7.56-7.62 (m, 2H), 3.16 (d, 1H, *J* = 8.0 Hz), 2.61 (d, 1H, *J* = 8.0 Hz), 1.29-1.40 (m, 2H), 0.91 (s, 3H), 0.88 (s, 3H), 0.81 (t, 3H, *J* = 7.4 Hz); ¹³C NMR (126 MHz, CDCl₃) δ: 165.8, 135.3, 133.2, 131.4, 130.0, 124.0, 123.8, 122.0 (q, *J* = 287.1 Hz), 90.9 (q, *J* = 32.8 Hz), 71.8, 34.1, 31.2, 23.8, 23.7, 8.1; ¹⁹F NMR (369 MHz, CDCl₃) δ: -78.6; IR (KBr, cm⁻¹) ν: 3168, 2964, 2883, 1721, 1525, 1473, 1382, 1311, 1203; LRMS (ESI): *m/z* 340 [M+Na]⁺; HRMS (ESI): *m/z* calcd for C₁₅H₁₈F₃NO₃Na [M+Na]⁺ 340.1131, Found 340.1117.

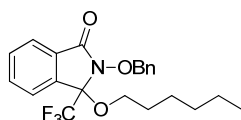
3-(2,2-dimethyl-3-oxobutoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (2c)



Starting material **1c** (31.7 mg, 0.1 mmol) was oxygenated under condition A of section 2, and **2c** (17.7 mg, 0.053 mmol) was isolated as described in the General method (53% yield).

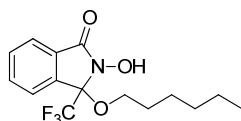
white solid; ^1H NMR (400 MHz, CDCl_3) δ : 9.17 (brs, 1H), 7.84 (d, 1H, $J = 7.2$ Hz), 7.54-7.70 (m, 3H), 3.49 (d, 1H, $J = 8.7$ Hz), 2.87 (d, 1H, $J = 8.7$ Hz), 2.23 (s, 3H), 1.23 (s, 3H), 1.11 (s, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 213.4, 164.6, 134.2, 133.2, 131.7, 130.2, 124.1, 121.7 (q, $J = 286.1$ Hz), 90.5 (q, $J = 34.1$ Hz), 69.0, 47.9, 25.8, 22.0, 21.7; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (KBr, cm^{-1}) ν : 3138, 2941, 1709, 1471, 1304, 1199; LRMS (ESI): m/z 354 [$\text{M}+\text{Na}$] $^+$; HRMS (ESI): m/z calcd for $\text{C}_{15}\text{H}_{16}\text{F}_3\text{NO}_4\text{Na}$ [$\text{M}+\text{Na}$] $^+$ 354.0924, Found 354.0924.

N-benzyloxy-3-hexoxy-3-trifluoromethyl-isoindolinone (S4d)



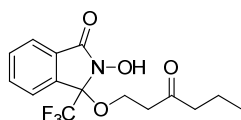
light yellow liquid; ^1H NMR (400 MHz, CDCl_3) δ : 7.90 (d, 1H, $J = 6.7$ Hz), 7.59-7.72 (m, 3H), 7.53-7.58 (m, 2H), 7.35-7.43 (m, 3H), 5.31 (d, 1H, $J = 9.9$ Hz), 5.14 (d, 1H, $J = 9.9$ Hz), 3.25 (dt, 1H, $J = 8.7$ Hz, 6.5 Hz), 2.93 (dt, 1H, $J = 8.7$ Hz, 6.5 Hz), 1.47-1.57 (m, 2H), 1.13-1.34 (m, 6H), 0.82 (t, 3H, $J = 7.0$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 135.3, 134.6, 133.4, 131.6, 130.0, 129.3, 128.8, 128.4, 124.2, 124.1, 122.2 (q, $J = 285.9$ Hz), 91.0 (q, $J = 32.8$ Hz), 79.1, 64.2, 31.3, 28.9, 25.4, 22.4, 13.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 2934, 1746, 1468, 1294, 1188; LRMS (ESI): m/z 430 [$\text{M}+\text{Na}$] $^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{24}\text{F}_3\text{NO}_3\text{Na}$ [$\text{M}+\text{Na}$] $^+$ 430.1601, Found 430.1604.

3-hexoxy-*N*-hydroxy-3-trifluoromethyl-isoindolinone (1d)



light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.88 (brs, 1H), 7.79 (d, 1H, $J = 6.9$), 7.66 (dd, 1H, $J = 6.9$ Hz, 7.5 Hz), 7.60 (d, 1H, $J = 6.9$ Hz), 7.59 (dd, 1H, $J = 6.9$ Hz, 7.5 Hz), 3.42 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 2.97 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 1.56-1.67 (m, 2H), 1.19-1.41 (m, 6H), 0.86 (t, 3H, $J = 6.9$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.9, 135.3, 133.2, 131.4, 130.0, 124.0, 123.8, 121.9 (q, $J = 286.7$ Hz), 91.0 (q, $J = 32.4$ Hz), 64.4, 31.4, 29.0, 25.4, 22.5, 13.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (neat, cm^{-1}) ν : 3141, 2935, 1718, 1470, 1200; LRMS (ESI): m/z 340 [$\text{M}+\text{Na}$] $^+$; HRMS (ESI): m/z calcd for $\text{C}_{15}\text{H}_{18}\text{F}_3\text{NO}_3\text{Na}$ [$\text{M}+\text{Na}$] $^+$ 340.1131, Found 340.1117.

***N*-hydroxy-3-((3-oxohexyl)oxy)-3-trifluoromethyl-isoindolinone (2d)**



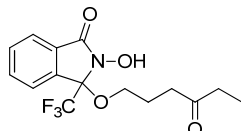
Starting material **1d** (95.2 mg, 0.3 mmol) was oxygenated under condition A of section 2, and regiomixture of **2d** + **2d'** (41.0 mg, 0.12 mmol) was obtained according to the procedure described in the General method (41% combined yield).

HPLC purification was required for the separation of the oxygenation products of 1-hexanol, γ -oxo- (**2d**) and δ -oxo-1-hexanol (**2d'**), which were not separable by normal silica gel column chromatography.

column: Inertsil® Diol ϕ 20 mm x 250 mm
eluent: hexane/CHCl₃ = 2/1
flow rate: 9.5 mL/min
RT: 46 min (**2d**), 83 min (**2d'**)

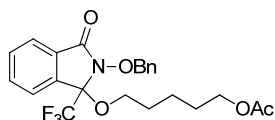
light yellow liquid; ¹H NMR (400 MHz, CDCl₃) δ : 8.99 (brs, 1H), 7.85 (d, 1H, J = 7.2 Hz), 7.56-7.67 (m, 3H), 3.52-3.60 (m, 1H), 3.21-3.28 (m, 1H), 2.81-2.91 (m, 1H), 2.61-2.69 (m, 1H), 2.44 (t, 2H, J = 7.2 Hz), 1.54-1.65 (m, 2H), 0.89 (t, 3H, J = 7.4 Hz); ¹³C NMR (100 MHz, CDCl₃) δ : 210.7, 163.9, 133.9, 133.0, 131.6, 130.4, 124.1, 121.7 (q, J = 286.3 Hz), 90.5 (q, J = 34.1 Hz), 57.9, 45.1, 41.1, 17.0, 13.4; ¹⁹F NMR (369 MHz, CDCl₃) δ : -78.2; IR (neat, cm⁻¹) ν : 3219, 2964, 1717, 1469, 1302, 1198; LRMS (ESI): m/z 354 [M+Na]⁺; HRMS (ESI): m/z calcd for C₁₅H₁₆F₃NO₄Na [M+Na]⁺ 354.0924, Found 354.0929.

***N*-hydroxy-3-((4-oxohexyl)oxy)-3-trifluoromethyl-isoindolinone (2d')**



light yellow liquid; ¹H NMR (400 MHz, CDCl₃) δ : 9.50 (brs, 1H), 7.83 (d, 1H, J = 7.6 Hz), 7.55-7.68 (m, 3H), 3.25-3.32 (m, 1H), 3.07-3.14 (m, 1H), 2.54-2.69 (m, 2H), 2.48 (q, 2H, J = 7.3 Hz), 1.80-2.00 (m, 2H), 1.04 (t, 3H, J = 7.3 Hz); ¹³C NMR (126 MHz, CDCl₃) δ : 212.5, 165.2, 134.8, 133.2, 131.6, 130.1, 124.1, 124.0, 121.9 (q, J = 286.7 Hz), 90.8 (q, J = 33.2 Hz), 62.8, 38.3, 35.9, 23.4, 7.7; ¹⁹F NMR (369 MHz, CDCl₃) δ : -78.3; IR (neat, cm⁻¹) ν : 3218, 2925, 1716, 1469, 1190; LRMS (ESI): m/z 354 [M+Na]⁺; HRMS (ESI): m/z calcd for C₁₅H₁₆F₃NO₄Na [M+Na]⁺ 354.0924, Found 354.0929.

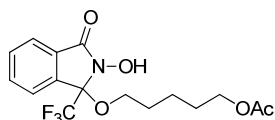
5-((*N*-benzyloxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)pentyl acetate (S4e)



light yellow liquid; ¹H NMR (500 MHz, CDCl₃) δ : 7.89 (d, 1H, J = 7.5 Hz), 7.69 (ddd, 1H, 1.2 Hz, 7.5 Hz, 7.5 Hz), 7.63 (ddd, 1H, J = 1.2 Hz, 7.5 Hz, 7.5 Hz), 7.60 (d, 2H, J = 7.5 Hz), 7.52-7.56 (m, 2H), 7.34-7.41

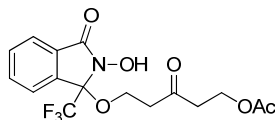
(m, 3H), 5.31 (d, 1H, $J = 9.8$ Hz), 5.12 (d, 1H, $J = 9.8$ Hz), 3.96 (t, 2H, $J = 6.3$ Hz), 3.23 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 2.93 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 1.50-1.57 (m, 4H), 1.30-1.38 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 171.0, 165.6, 135.2, 134.5, 133.5, 131.6, 130.0, 129.3, 128.8, 128.4, 124.1, 122.2 (q, $J = 285.5$ Hz), 90.8 (q, $J = 33.6$ Hz), 79.1, 64.1, 63.7, 28.5, 28.0, 22.2, 20.8; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 2951, 1741, 1469, 1367, 1244, 1189; LRMS (ESI): m/z 474 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{23}\text{H}_{24}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 474.1499, Found 474.1496.

5-((*N*-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)pentyl acetate (**1e**)



light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.76 (brs, 1H), 7.80 (d, 1H, $J = 7.5$ Hz), 7.66 (ddd, 1H, $J = 1.2$ Hz, 7.5 Hz, 7.5 Hz), 7.60 (dd, 2H, $J = 7.5$ Hz, 7.5 Hz), 4.06 (t, 2H, $J = 6.9$ Hz), 3.40 (dt, 1H, $J = 9.2$ Hz, 6.3 Hz), 2.98 (dt, 1H, $J = 9.2$ Hz, 6.3 Hz), 2.02 (s, 3H), 1.57-1.67 (m, 4H), 1.34-1.50 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 171.5, 165.7, 135.1, 133.2, 131.5, 130.0, 124.0, 123.9, 121.9 (q, $J = 285.5$ Hz), 90.9 (q, $J = 33.6$ Hz), 64.3, 63.9, 28.5, 28.1, 22.2, 20.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (neat, cm^{-1}) ν : 3175, 2955, 1736, 1470, 1241, 1198; LRMS (ESI): m/z 384 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{18}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 384.1029, Found 384.1039.

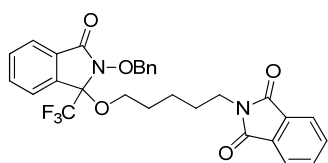
5-((*N*-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)-3-oxopentyl acetate (**2e**)



Starting material **1e** (36.1 mg, 0.1 mmol) was oxygenated under condition A of section 2, and **2e** (13.8 mg, 0.037 mmol) was isolated as described in the General method (37% yield).

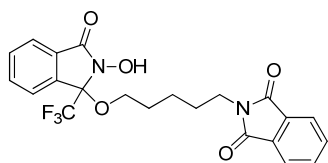
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 8.58 (brs, 1H), 7.88 (d, 1H, $J = 7.4$ Hz), 7.58-7.69 (m, 3H), 4.34 (t, 2H, $J = 6.0$ Hz), 3.59 (dt, 1H, $J = 3.4$ Hz, 9.5 Hz), 3.26-3.30 (m, 1H), 2.93 (ddd, 1H, $J = 18.3$ Hz, 3.4 Hz, 1.8 Hz), 2.83 (t, 2H, $J = 6.0$ Hz), 2.70 (ddd, 1H, $J = 18.3$ Hz, 3.4 Hz, 1.8 Hz), 2.02 (s, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 207.4, 170.9, 163.9, 133.9, 133.0, 131.8, 130.4, 124.2, 124.1, 121.7 (q, $J = 286.7$ Hz), 90.5 (q, $J = 33.6$ Hz), 58.8, 57.7, 41.9, 41.6, 20.7; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3302, 2955, 1738, 1469, 1370, 1191; LRMS (ESI): m/z 398 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{16}\text{F}_3\text{NO}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 398.0822, Found 398.0808.

2-(5-((2-(benzyloxy)-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)pentyl)isoindoline-1,3-dione (**S4f**)



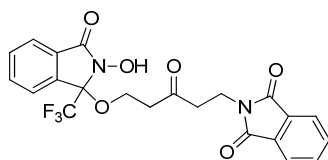
light yellow solid; ^1H NMR (500 MHz, CDCl_3) δ : 7.88 (d, 1H, $J = 7.4$ Hz), 7.78-7.83 (m, 2H), 7.66-7.72 (m, 3H), 7.58-7.65 (m, 2H), 7.54 (d, 2H, $J = 6.9$ Hz), 7.31-7.40 (m, 3H), 5.29 (d, 1H, $J = 9.7$ Hz), 5.12 (d, 1H, $J = 9.7$ Hz), 3.60 (t, 2H, $J = 7.2$ Hz), 3.20-3.26 (m, 1H), 2.88-2.94 (m, 1H), 1.48-1.64 (m, 4H), 1.23-1.39 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 168.3, 165.6, 135.2, 134.6, 133.8, 133.5, 132.0, 131.6, 129.9, 129.3, 128.8, 128.4, 124.2, 124.1, 123.1, 122.1 (q, $J = 286.0$ Hz), 90.9 (q, $J = 32.9$ Hz), 79.1, 63.7, 37.6, 28.4, 28.1, 23.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (KBr, cm^{-1}) ν : 3463, 3038, 2948, 2893, 1742, 1707, 1607, 1194; LRMS (ESI): m/z 561 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{29}\text{H}_{25}\text{F}_3\text{N}_2\text{O}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 561.1608, Found 561.1587.

2-(5-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)pentyl)isoindoline-1,3-dione (1f)



white solid; ^1H NMR (400 MHz, acetone- d_6) δ : 9.55 (brs, 1H), 7.66-7.84 (m, 8H), 3.61 (t, 2H, $J = 7.2$ Hz), 3.36-3.44 (m, 1H), 2.95-3.04 (m, 1H), 1.55-1.71 (m, 4H), 1.28-1.48 (m, 2H); ^{13}C NMR (100 MHz, acetone- d_6) δ : 168.7, 164.6, 135.7, 134.9, 134.1, 132.9, 132.6, 131.5, 125.1, 124.2, 123.6, 123.3 (q, $J = 286.6$ Hz), 91.4 (q, $J = 31.9$ Hz), 64.2, 38.1, 29.2, 28.7, 23.8; ^{19}F NMR (369 MHz, acetone- d_6) δ : -78.7; IR (KBr, cm^{-1}) ν : 3524, 3368, 2940, 2889, 2712, 1731, 1699, 1200; LRMS (ESI): m/z 471 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{19}\text{F}_3\text{N}_2\text{O}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 471.1138, Found 471.1119.

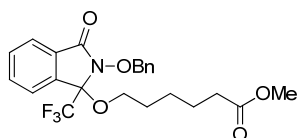
2-(5-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)-3-oxopentyl)isoindoline-1,3-dione (2f)



Starting material **1f** (89.7 mg, 0.2 mmol) was oxygenated under condition A of section 2, and **2f** (30.9 mg, 0.067 mmol) was isolated as described in the General method (33% yield).

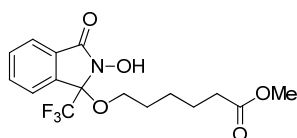
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 8.32 (brs, 1H), 7.89 (dd, 1H, $J = 6.3$ Hz, 1.1 Hz), 7.84 (dd, 2H, $J = 3.1$ Hz, 5.6 Hz), 7.72 (dd, 2H, $J = 3.1$ Hz, 5.6 Hz), 7.58-7.69 (m, 3H), 3.98 (t, 2H, $J = 7.2$ Hz), 3.57 (dt, 1H, $J = 2.9$ Hz, 9.7 Hz), 3.23-3.28 (m, 1H), 2.91-3.02 (m, 3H), 2.67-2.75 (m, 1H); ^{13}C NMR (126 MHz, CDCl_3) δ : 207.7, 168.1, 163.8, 134.1, 133.9, 133.0, 131.8, 131.7, 130.4, 124.2, 124.1, 123.4, 121.7 (q, $J = 286.6$ Hz), 90.5 (q, $J = 33.6$ Hz), 57.7, 41.3, 41.2, 32.7; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3222, 2950, 1714, 1469, 1397, 1374, 1191; LRMS (ESI): m/z 485 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{17}\text{F}_3\text{N}_2\text{O}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 485.0931, Found 485.0941.

methyl 6-((2-(benzyloxy)-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)hexanoate (S4g)



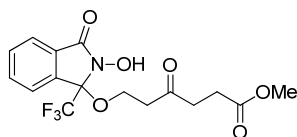
colorless liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.89 (d, 1H, $J = 7.4$ Hz), 7.58-7.71 (m, 3H), 7.52-7.57 (m, 2H), 7.34-7.42 (m, 3H), 5.31 (d, 1H, $J = 9.5$ Hz), 5.13 (d, 1H, $J = 9.5$ Hz), 3.63 (s, 3H), 3.20-3.26 (m, 1H), 2.90-2.96 (m, 1H), 2.22 (t, 2H, $J = 7.4$ Hz), 1.47-1.58 (m, 4H), 1.24-1.36 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 173.9, 165.6, 135.2, 134.6, 133.5, 131.6, 130.0, 129.3, 128.8, 128.4, 124.2, 124.1, 122.1 (q, $J = 286.0$ Hz), 90.1 (q, $J = 32.9$ Hz), 79.1, 63.8, 51.4, 33.7, 28.6, 25.3, 24.4; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 2950, 1741, 1468, 1194; LRMS (ESI): m/z 474 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{23}\text{H}_{24}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 474.1499, Found 474.1515.

methyl 6-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)hexanoate (1g)



red liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.71 (brs, 1H), 7.81 (d, 1H, $J = 7.4$ Hz), 7.63-7.68 (m, 1H), 7.56-7.62 (m, 2H), 3.64 (s, 3H), 3.36-3.42 (m, 1H), 2.95-3.01 (m, 1H), 2.29 (t, 2H, $J = 7.4$ Hz), 1.55-1.66 (m, 4H), 1.30-1.46 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 174.4, 165.6, 135.0, 133.2, 131.5, 130.0, 124.0, 123.9, 121.9 (q, $J = 286.7$ Hz), 90.9 (q, $J = 32.8$ Hz), 63.8, 51.6, 33.8, 28.5, 25.2, 24.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3177, 2951, 1719, 1469, 1303, 1199; LRMS (ESI): m/z 384 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{18}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 384.1029, Found 384.1029.

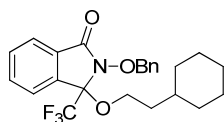
methyl 6-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)-4-oxohexanoate (2g)



Starting material **1g** (72.3mg, 0.2 mmol) was oxygenated under condition A of section 2, and **2g** (22.2 mg, 0.059 mmol) was isolated as described in the General method (30% yield).

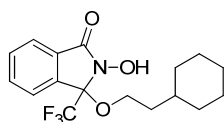
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 8.60 (brs, 1H), 7.88 (d, 1H, $J = 8.0$ Hz), 7.57-7.68 (m, 3H), 3.67 (s, 3H), 3.57 (dt, 1H, $J = 2.5$ Hz, 9.6 Hz), 3.24-3.29 (m, 1H), 2.97 (ddd, 1H, $J = 18.3$ Hz, 10.0 Hz, 3.7 Hz), 2.62-2.87 (m, 4H), 2.55-2.62 (m, 1H); ^{13}C NMR (126 MHz, CDCl_3) δ : 208.8, 173.1, 163.7, 133.8, 132.9, 131.7, 130.5, 124.2, 124.1, 121.2 (q, $J = 286.6$ Hz), 90.5 (q, $J = 33.6$ Hz), 57.8, 52.0, 41.4, 37.5, 27.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3222, 2954, 1718, 1197; LRMS (ESI): m/z 398 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{16}\text{F}_3\text{NO}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 398.0822, Found 398.0804.

N-benzyloxy-3-(2-cyclohexylethoxy)-3-trifluoromethyl-isoindolinone (S4i)



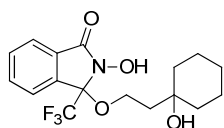
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.90 (d, 1H, 7.5 Hz), 7.67-7.72 (m, 1H), 7.60-7.66 (m, 2H), 7.57 (dd, $J = 1.2$ Hz 8.1 Hz), 7.35-7.43 (m, 3H), 5.33 (d, 1H, $J = 9.7$ Hz), 5.15 (d, 1H, $J = 9.7$ Hz), 3.31 (dd, 1H, $J = 8.6$ Hz, 6.9 Hz), 2.99 (dd, 1H, $J = 8.6$ Hz, 6.9 Hz), 1.50-1.65 (m, 5H), 1.40-1.45 (m, 2H), 1.26-1.38 (m, 1H), 1.02-1.20 (m, 3H), 0.74-0.83 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 135.3, 134.6, 133.4, 131.6, 130.0, 129.3, 128.8, 128.4, 124.13, 124.10, 122.2 (q, $J = 287.6$ Hz), 90.9 (q, $J = 33.6$ Hz), 79.1, 62.1, 36.4, 34.1, 33.2, 33.05, 33.02, 26.3, 26.05, 25.96; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 2924, 1746, 1664, 1468, 1295, 1189; LRMS (ESI): m/z 456 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{26}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 456.1757, Found 456.1754.

3-(2-cyclohexylethoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (**1i**)



white solid; ^1H NMR (500 MHz, CDCl_3) δ : 9.87 (s, 1H), 7.79 (d, 1H, $J = 8.0$ Hz), 7.66 (dd, 1H, $J = 8.0$ Hz, 7.4 Hz), 7.57-7.62 (m, 2H), 3.47 (dt, 1H, $J = 8.0$ Hz, 6.9 Hz), 3.00 (dt, 1H, $J = 8.0$ Hz, 6.9 Hz), 1.47-1.69 (m, 6H), 1.32-1.43 (m, 1H), 1.05-1.28 (m, 4H), 0.88-0.90 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.9, 135.3, 133.2, 131.4, 130.0, 124.0, 123.9, 121.9 (q, $J = 286.7$ Hz), 91.0 (q, $J = 32.4$ Hz), 62.4, 36.4, 34.2, 33.2, 33.0, 26.4, 26.2, 26.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (KBr, cm^{-1}) ν : 3176, 3114, 2933, 2854, 1721, 1452, 1309, 1185; LRMS (ESI): m/z 366 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{17}\text{H}_{20}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 366.1288, Found 366.1277.

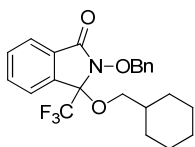
N-hydroxy-3-(2-(1-hydroxycyclohexyl)ethoxy)-3-trifluoromethyl-isoindolinone (**2i**)



Starting material **1i** (1.02 g, 2.97 mmol) was oxygenated under condition B of section 2, and **2i** (597 mg, 1.66 mmol) was isolated as described in the General method (56% yield).

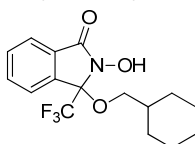
white solid; ^1H NMR (500 MHz, CDCl_3) δ : 9.42 (s, 1H), 7.88 (d, 1H, $J = 7.5$ Hz), 7.58-7.68 (m, 3H), 3.53 (dt, 1H, $J = 3.4$ Hz, 9.8 Hz), 3.27-3.33 (m, 1H), 1.96 (ddd, 1H, $J = 4.6$ Hz, 5.7 Hz, 14.9 Hz), 1.84-1.91 (m, 1H), 1.22-1.66 (m, 10H); ^{13}C NMR (126 MHz, acetone- d_6) δ : 164.2, 135.6, 133.9, 132.7, 131.8, 125.2, 124.3, 123.3 (q, $J = 285.5$ Hz), 91.4 (q, $J = 32.4$ Hz), 70.7, 61.0, 41.4, 38.6, 38.5, 26.4, 22.7; ^{19}F NMR (369 MHz, acetone- d_6) δ : -78.8; IR (KBr, cm^{-1}) ν : 3321, 2933, 2857, 2771, 1720, 1473, 1193; LRMS (ESI): m/z 382 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{17}\text{H}_{20}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 382.1237, Found 382.1249.

N-benzyloxy-3-cyclohexylmethoxy-3-trifluoromethyl-isoindolinone (**S4j**)



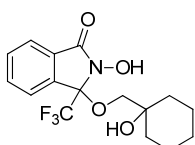
light yellow liquid; $^1\text{H NMR}$ (400 MHz, CDCl_3) δ : 7.90 (d, 1H, $J = 7.6$ Hz), 7.69 (ddd, 1H, $J = 1.3$ Hz, 7.6 Hz, 7.6 Hz), 7.64 (dd, 1H, $J = 7.6$ Hz, 7.6 Hz), 7.54-7.62 (m, 3H), 7.35-7.44 (m, 3H), 5.32 (d, 1H, $J = 9.9$ Hz), 5.26 (d, 1H, $J = 9.9$ Hz), 3.11 (dd, 1 H, $J = 6.3$ Hz, 8.5 Hz), 2.71 (dd, 1H, $J = 6.7$ Hz, 8.5 Hz), 1.71-1.82 (m, 1H), 1.50-1.71 (m, 5H), 1.02-1.28 (m, 3H), 0.76-0.89 (m, 2H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ : 165.6, 135.3, 134.6, 133.4, 131.6, 130.0, 129.3, 128.7, 128.4, 124.2, 124.1, 122.2 (q, $J = 285.6$ Hz), 90.9 (q, $J = 32.0$ Hz), 79.0, 69.2, 37.3, 29.7, 29.4, 26.3, 25.6, 25.5; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2927, 1746, 1648, 1291, 1187; LRMS (ESI): m/z 442 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{23}\text{H}_{24}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 442.1601, Found 442.1620.

3-cyclohexylmethoxy-*N*-hydroxy-3-trifluoromethyl-isoindolinone (1j)



white solid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 9.86 (brs, 1H), 7.89 (d, 1H, $J = 7.5$ Hz), 7.66 (dd, 1H, $J = 7.5$ Hz, 7.5 Hz), 7.60 (dd, 2H, $J = 7.5$ Hz, 7.5 Hz), 3.24 (dd, 1H, $J = 6.3$ Hz, 8.1 Hz), 2.73 (dd, 1H, $J = 7.5$ Hz, 7.5 Hz), 1.62-1.82 (m, 6H), 1.18-1.30 (m, 2H), 1.07-1.18 (m, 1H), 0.81-0.98 (m, 2H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 165.8, 135.3, 133.2, 131.4, 130.0, 124.1, 123.8, 121.9 (q, $J = 285.5$ Hz), 91.0 (q, $J = 33.6$ Hz), 69.5, 37.3, 29.7, 29.4, 26.4, 25.7, 25.6; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.5; IR (KBr, cm^{-1}) ν : 3117, 2925, 2856, 1708, 1473, 13990, 1309, 1184; LRMS (ESI): m/z 352 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{18}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 352.1131, Found 352.1118.

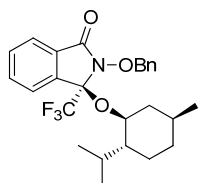
N-hydroxy-3-((1-hydroxycyclohexyl)methoxy)-3-trifluoromethyl-isoindolinone (2j)



Starting material **1j** (32.9 mg, 0.1 mmol) was oxygenated under condition B of section 2, and **2j** (9.2 mg, 0.027 mmol) was isolated as described in the General method (27% yield).

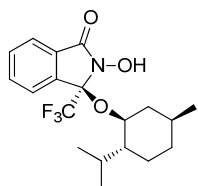
white solid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 8.97 (brs, 1H), 7.84 (d, 1H, $J = 6.9$ Hz), 7.61-7.70 (m, 3H), 3.33 (d, 1H, $J = 11.5$ Hz), 2.99 (d, 1H, $J = 11.5$ Hz), 1.89-1.97 (m, 1H), 1.48-1.70 (m, 5H), 1.39-1.48 (m, 2H), 1.24-1.34 (m, 2H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ : 163.9, 134.7, 133.0, 131.6, 130.8, 124.0, 123.8, 121.9 (q, $J = 286.6$ Hz), 91.0 (q, $J = 33.2$ Hz), 73.4, 71.6, 34.1, 32.7, 25.6, 21.5; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 3318, 2936, 2861, 1723, 1469, 1298, 1191; LRMS (ESI): m/z 368 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{18}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 368.1080, Found 368.1092.

(R)-N-benzyloxy-3-(((1S,2R,5S)-2-isopropyl-5-methylcyclohexyl)oxy)-3-trifluoromethyl-isoindolinone ((R)-S4k)



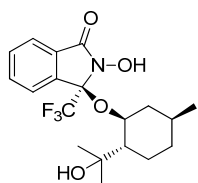
white solid; ^1H NMR (500 MHz, CDCl_3) δ : 7.88 (dd, 1H, $J = 1.7$ Hz, 6.3 Hz), 7.67-7.71 (m, 1H), 7.59-7.67 (m, 2H), 7.55 (dd, 2H, $J = 1.7$ Hz, 7.4 Hz), 7.36-7.42 (m, 3H), 5.46 (d, 1H, $J = 8.6$ Hz), 5.01 (d, 1H, $J = 8.6$ Hz), 3.40 (dt, 1H, $J = 4.6$ Hz 10.4 Hz), 2.31-2.41 (m, 1H), 1.43-1.55 (m, 2H), 1.22-1.29 (m, 1H), 0.90-1.01 (m, 1H), 0.75-0.84 (m, 2H), 0.79 (d, 3H, $J = 6.9$ Hz), 0.58-0.71 (m, 2H), 0.54 (d, 1H, $J = 6.9$ Hz), 0.33 (d, 3H, $J = 6.9$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 164.7, 138.1, 134.0, 132.9, 131.3, 130.0, 129.0, 128.9, 128.3, 124.7, 123.8, 122.7 (q, $J = 286.7$ Hz), 89.1 (q, $J = 33.6$ Hz), 78.6, 76.0, 48.6, 42.5, 33.7, 31.1, 24.4, 22.8, 22.0, 21.4, 16.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.3; IR (KBr, cm^{-1}) ν : 3037, 2954, 2931, 2863, 1740, 1616, 1187; LRMS (ESI): m/z 484 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{26}\text{H}_{30}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 484.2070, Found 484.2088.

(R)-N-hydroxy-3-(((1S,2R,5S)-2-isopropyl-5-methylcyclohexyl)oxy)-3-trifluoromethyl-isoindolinone ((R)-1k)



reddish solid; ^1H NMR (400 MHz, CDCl_3) δ : 9.74 (brs, 1H), 7.76 (d, 1H, $J = 6.7$ Hz), 7.53-7.67 (m, 3H), 3.64 (dt, 1H, $J = 4.3$ Hz, 10.4 Hz), 2.45-2.57 (m, 1H), 1.58-1.68 (m, 1H), 1.49-1.58 (m, 1H), 1.28-1.43 (m, 1H), 0.87-1.15 (m, 3H), 0.95 (d, 3H, $J = 7.2$ Hz), 0.83 (d, 3H, $J = 6.7$ Hz), 0.59 (d, 3H, $J = 6.7$ Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.7, 138.0, 132.8, 131.2, 128.9, 124.7, 123.6, 122.2 (q, $J = 287.5$ Hz), 90.1 (q, $J = 32.6$ Hz), 76.7, 48.6, 42.8, 33.9, 31.2, 24.9, 23.0, 22.0, 21.4, 15.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (KBr, cm^{-1}) ν : 3198, 2959, 2871, 1719, 1472, 1375, 1290, 1192; LRMS (ESI): m/z 394 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{19}\text{H}_{24}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 394.1601, Found 394.1611.

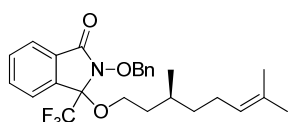
(R)-N-hydroxy-3-(((1S,2S,5S)-2-(2-hydroxypropan-2-yl)-5-methylcyclohexyl)oxy)-3-trifluoromethyl-isoindolinone ((R)-2k)



Starting material (R)-1k (37.1 mg, 0.1 mmol) was oxygenated under condition B of section 2, and (R)-2k (36.2 mg, 0.093 mmol) was isolated as described in the General method (93% yield).

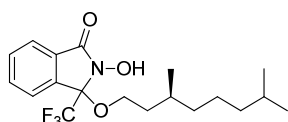
white solid; ^1H NMR (400 MHz, CDCl_3) δ : 10.4 (brs, 1H), 7.80-7.87 (m, 1H), 7.66-7.73 (m, 1H), 7.57-7.64 (m, 2H), 4.26 (brs, 1H), 3.75-3.83 (m, 1H), 1.57-1.67 (m, 1H), 1.51-1.60 (m, 1H), 1.44 (s, 3H), 1.32-1.39 (m, 1H), 1.27 (s, 3H), 0.93-1.13 (m, 2H), 0.72-0.87 (m, 1H), 0.66 (d, 3H, $J = 6.3$ Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 163.6, 135.9, 132.0, 131.5, 130.6, 125.6, 123.8, 122.1 (q, $J = 285.6$ Hz), 90.6 (q, $J = 32.0$ Hz), 74.5, 52.0, 43.1, 33.7, 31.0, 30.9, 27.2, 25.7, 21.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -77.3; IR (KBr, cm^{-1}) ν : 3366, 2974, 2928, 2866, 1726, 1191; LRMS (ESI): m/z 410 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{19}\text{H}_{24}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 410.1550, Found 410.1551.

***N*-benzyloxy-3-(((*S*)-3,7-dimethyloct-6-en-1-yl)oxy)-3-trifluoromethyl-isoindolinone (S4I)**



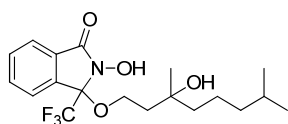
light yellow liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 7.91 (d, 1H + 1H, $J = 7.4$ Hz), 7.60-7.72 (m, 3H + 3H), 7.55-7.59 (m, 2H + 2H), 7.35-7.43 (m, 3H + 3H), 5.31-5.35 (m, 1H + 1H), 5.14-5.18 (m, 1H + 1H), 5.00-5.07 (m, 1H + 1H), 3.27-3.36 (m, 1H + 1H), 2.96-3.03 (m, 1H + 1H), 1.83-2.00 (m, 1H + 1H), 1.68 (s, 3H), 1.67 (s, 3H), 1.48-1.68 (m, 2H + 2H), 1.59 (s, 3H), 1.58 (s, 3H), 1.19-1.40 (m, 2H + 2H), 1.01-1.14 (m, 1H + 1H), 0.75-0.79 (m, 3H + 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 165.5, 135.31, 135.26, 134.6, 133.4, 131.6, 131.2, 131.1, 130.04, 130.02, 129.30, 129.28, 128.8, 128.39, 128.37, 124.5, 124.1, 122.2 (q, $J = 285.1$), 90.93 (q, $J = 32.8$ Hz), 90.90 (q, $J = 32.8$ Hz), 79.1, 77.2, 62.43, 62.40, 36.9, 36.7, 35.9, 35.8, 29.1, 29.0, 25.6, 25.2, 19.4, 19.2, 17.5; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0, -78.1; IR (neat, cm^{-1}) ν : 2925, 1746, 1468, 1294, 1188; LRMS (ESI): m/z 484 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{26}\text{N}_2\text{O}_2\text{Na}$ $[\text{M}+\text{Na}]^+$ 484.2070, Found 484.2062.

3-(((*S*)-3,7-dimethyloctyl)oxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (1I)



light yellow liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 10.1 (brs, 1H + 1H), 7.80 (d, 1H + 1H, $J = 7.5$ Hz), 7.65-7.70 (m, 1H + 1H), 7.58-7.63 (m, 2H + 2H), 3.47-3.55 (m, 1H + 1H), 2.98-3.06 (m, 1H + 1H), 1.61-1.75 (m, 1H + 1H), 1.53-1.61 (m, 1H + 1H), 1.37-1.53 (m, 2H + 2H), 1.15-1.33 (m, 3H + 3H), 1.00-1.15 (m, 3H + 3H), 0.78-0.86 (m, 9H + 9H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.93, 165.92, 135.3, 133.2, 131.5, 130.0, 124.0, 123.9, 121.9 (q, $J = 286.3$ Hz), 91.1 (q, $J = 33.2$ Hz), 62.8, 62.7, 39.2, 39.1, 37.3, 37.0, 36.1, 36.0, 29.61, 29.58, 27.9, 24.6, 24.5, 22.63, 22.61, 22.5, 19.5, 19.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (neat, cm^{-1}) ν : 3154, 2954, 1718, 1469, 1306, 1201; LRMS (ESI): m/z 396 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{19}\text{H}_{26}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 396.1757, Found 396.1768.

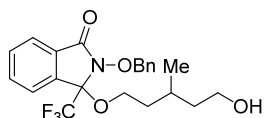
***N*-hydroxy-3-((3-hydroxy-3,7-dimethyloctyl)oxy)-3-trifluoromethyl-isoindolinone (2I)**



Starting material **II** (37.3 mg, 0.1 mmol) was oxygenated under condition B of section 2, and **2I** (21.5 mg, 0.055 mmol) was obtained as a diastereomixture according to the procedure as described in the General method (55% yield).

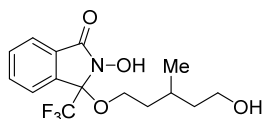
light yellow liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 9.65-9.86 (brs, 1H + 1H), 7.83-7.88 (m, 1H + 1H), 7.58-7.68 (m, 3H + 3H), 3.52-3.60 (m, 1H + 1H), 3.42 (brs, 1H + 1H), 3.24-3.32 (m, 1H + 1H), 1.95-2.03 (m, 1H), 1.87-1.95 (m, 1H), 1.57-1.74 (m, 2H + 2H), 1.40-1.57 (m, 2H + 2H), 1.36 (s, 3H), 1.23-1.38 (m, 2H), 1.18 (s, 3H), 1.07-1.20 (m, 2H + 2H), 0.82-0.88 (m, 6H + 6H); ^{13}C NMR (126 MHz, CDCl_3) δ : 164.8, 134.44, 134.41, 133.0, 131.6, 130.4, 124.15, 124.13, 124.0, 121.8 (q, $J = 284.9$ Hz), 90.9 (q, $J = 34.0$ Hz), 72.7, 72.6, 60.7, 60.6, 43.4, 43.0, 39.28, 39.26, 39.1, 27.8, 27.2, 26.8, 22.54, 22.52, 22.5, 21.8, 21.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3406, 3161, 2954, 1721, 1469, 1383, 1306, 1200; LRMS (ESI): m/z 412 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{19}\text{H}_{26}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 412.1706, Found 412.1701.

***N*-benzyloxy-3-((5-hydroxy-3-methylpentyl)oxy)-3-trifluoromethyl-isoindolinone (S4m)**



colorless liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 7.90 (d, 1H + 1H, $J = 6.9$ Hz), 7.59-7.72 (m, 3H + 3H), 7.53-7.58 (m, 2H + 2H), 7.35-7.43 (m, 3H + 3H), 5.30-5.35 (m, 1H), 5.10-5.14 (m, 1H), 3.49-3.65 (m, 2H), 3.25-3.33 (m, 1H + 1H), 2.94-3.03 (m, 1H + 1H), 1.63-1.73 (m, 1H + 1H), 1.45-1.60 (m, 2H + 2H), 1.24-1.43 (m, 2H + 2H), 0.76-0.80 (m, 3H + 3H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.7, 165.6, 135.25, 135.21, 134.535, 134.525, 133.52, 133.50, 131.7, 130.0, 129.5, 129.45, 129.37, 128.9, 128.8, 128.5, 128.4, 124.2, 124.1, 122.2 (q, $J = 286.1$ Hz), 90.80 (q, $J = 32.9$ Hz), 90.78 (q, $J = 32.9$ Hz), 79.1, 62.3, 62.1, 60.714, 60.705, 39.41, 39.40, 26.5, 26.2, 19.42, 19.35; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3417, 2929, 1742, 1468, 1295, 1189; LRMS (ESI): m/z 446 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{24}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 446.1550, Found 446.1536.

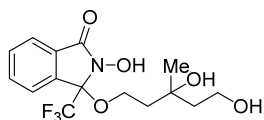
***N*-hydroxy-3-((5-hydroxy-3-methylpentyl)oxy)-3-trifluoromethyl-isoindolinone (1m)**



white solid (diastereomixture); ^1H NMR (400 MHz, $\text{acetone-}d_6$) δ : 7.70-7.88 (m, 4H + 4H), 3.51-3.66 (m, 2H + 2H), 3.37-3.47 (m, 1H + 1H), 3.05-3.19 (m, 1H + 1H), 1.80-1.91 (m, 1H), 1.69-1.80 (m, 1H), 1.40-1.68 (m, 3H + 3H), 1.18-1.31 (m, 1H + 1H), 0.82-0.87 (m, 3H + 3H); ^{13}C NMR (100 MHz, $\text{acetone-}d_6$) δ : 164.7, 135.8, 135.7, 134.1, 134.0, 132.6, 131.7, 131.6, 125.21, 125.19, 125.16, 125.14,

124.30, 124.25, 123.4 (q, $J = 286.1$ Hz), 123.3 (q, $J = 286.1$ Hz), 91.6 (q, $J = 31.9$ Hz), 91.5 (q, $J = 32.4$ Hz), 63.0, 62.6, 60.25, 60.19, 40.3, 39.9, 37.0, 36.9, 27.4, 26.5, 19.99, 19.98; ^{19}F NMR (369 MHz, acetone- d_6) δ : -78.6, -78.8; IR (KBr, cm^{-1}) ν : 3374, 2955, 2775, 1724, 1470, 1304, 1200; LRMS (ESI): m/z 356 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{15}\text{H}_{18}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 356.1080, Found 356.1075.

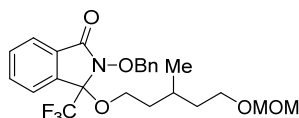
3-((3,5-dihydroxy-3-methylpentyl)oxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (2m)



Starting material **1m** (100 mg, 0.3 mmol) was oxygenated under condition B of section 2, and **2m** (51.6 mg, 0.15 mmol) was obtained as a diastereomixture according to the procedure described in the General method (49% yield).

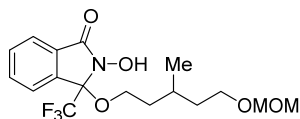
colorless liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 9.73 (brs, 1H), 9.67 (brs, 1H), 7.88 (d, 1H, $J = 7.4$ Hz), 7.58-7.69 (m, 3H + 3H), 3.84-4.03 (m, 2H + 2H), 3.50-3.60 (m, 1H + 1H), 3.25-3.33 (m, 1H + 1H), 2.02-2.10 (m, 1H), 1.88-2.01 (m, 1H + 1H), 1.76-1.83 (m, 1H), 1.64-1.76 (m, 2H + 2H), 1.44 (s, 3H), 1.61 (s, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 164.9, 164.7, 134.4, 134.3, 133.1, 133.0, 131.67, 131.65, 130.4, 130.3, 124.1, 124.0, 121.9 (q, $J = 286.7$ Hz), 90.9 (q, $J = 32.4$ Hz), 90.8 (q, $J = 32.4$ Hz), 73.09, 73.06, 59.34, 59.28, 42.3, 40.3, 39.7, 29.1, 27.3, 26.4; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3391, 2930, 1720, 1469, 1191; LRMS (ESI): m/z 372 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{15}\text{H}_{18}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 372.1029, Found 372.1021.

N-benzyloxy-3-((5-(methoxymethoxy)-3-methylpentyl)oxy)-3-trifluoromethyl-isoindolinone (S4n)



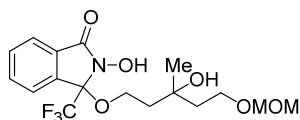
colorless liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 7.89 (d, 1H + 1H, $J = 6.9$ Hz), 7.59-7.71 (m, 3H + 3H), 7.53-7.57 (m, 2H + 2H), 7.33-7.43 (m, 3H + 3H), 5.29-5.33 (m, 1H + 1H), 5.11-5.15 (m, 1H + 1H), 4.56 (s, 2H), 4.55 (s, 2H), 3.42-3.53 (m, 2H + 2H), 3.32 (s, 3H), 3.31 (s, 3H), 3.27-3.35 (m, 1H + 1H), 2.94-3.02 (m, 1H + 1H), 1.47-1.76 (m, 3H + 3H), 1.28-1.42 (m, 2H + 2H), 0.77-0.80 (m, 3H + 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 165.5, 135.3, 135.2, 134.58, 134.56, 133.44, 133.42, 131.6, 130.03, 130.01, 129.33, 129.30, 128.79, 128.77, 128.40, 128.38, 124.2, 124.1, 122.2 (q, $J = 285.1$ Hz), 122.1 (q, $J = 286.7$ Hz), 96.3, 90.9 (q, $J = 32.8$ Hz), 90.8 (q, $J = 33.2$ Hz), 79.1, 65.6, 65.5, 62.2, 55.0, 36.6, 36.4, 35.9, 35.8, 26.71, 26.68, 19.3, 19.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.08, -78.14; IR (neat, cm^{-1}) ν : 2931, 1745, 1468, 1294, 1189; LRMS (ESI): m/z 490 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{28}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 490.1812, Found 490.1799.

N-hydroxy-3-((5-(methoxymethoxy)-3-methylpentyl)oxy)-3-trifluoromethyl-isoindolinone (1n)



colorless liquid (diastereomixture); ^1H NMR (400 MHz, CDCl_3) δ : 9.61 (brs, 1H), 9.36 (brs, 1H), 7.80-7.86 (m, 1H + 1H), 7.56-7.68 (m 3H + 3H), 4.63 (s, 2H), 4.59 (s, 2H), 3.48-3.60 (m, 2H + 2H), 3.35-3.47 (m, 1H + 1H), 3.37 (s, 3H), 3.34 (s, 3H), 3.01-3.15 (m, 1H + 1H), 1.22-1.92 (m, 5H + 5H), 0.84-0.88 (m, 3H + 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.5, 165.4, 135.1, 135.0, 133.13, 133.06, 131.5, 130.2, 130.1, 124.1, 124.0, 123.9, 121.92 (q, $J = 286.7$ Hz), 121.89 (q, $J = 286.7$ Hz), 96.3, 96.2, 91.0 (q, $J = 32.8$ Hz), 90.9 (q, $J = 33.2$ Hz), 65.8, 65.5, 62.6, 61.9, 55.3, 55.1, 36.3, 36.0, 35.9, 35.8, 27.0, 25.9, 19.6, 19.5; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2, -78.5; IR (neat, cm^{-1}) ν : 3172, 2934, 1720, 1469, 1305, 1198; LRMS (ESI): m/z 400 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{17}\text{H}_{22}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 400.1342, Found 400.1331.

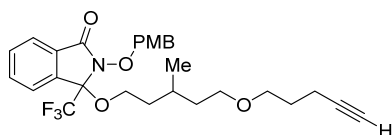
***N*-hydroxy-3-((3-hydroxy-5-(methoxymethoxy)-3-methylpentyl)oxy)-3-trifluoromethyl-isoindoline (2n)**



Starting material **1n** (37.7 mg, 0.1 mmol) was oxygenated under condition B of section 2, and **2n** (25.1 mg, 0.064 mmol) was obtained as a diastereomixture according to the purification procedure described in the General method (64% yield).

colorless liquid (diastereomixture); ^1H NMR (400 MHz, CDCl_3) δ : 9.43 (brs, 1H + 1H), 7.85-7.90 (m, 1H + 1H), 7.56-7.67 (m, 3H + 3H), 4.61 (s, 2H), 4.58-4.60 (m, 2H), 4.44 (brs, 1H), 4.06 (brs, 1H), 3.66-3.87 (m, 2H + 2H), 3.43-3.60 (m, 1H + 1H), 3.38 (s, 3H), 3.34 (s, 3H), 3.24-3.40 (m, 1H + 1H), 1.56-2.13 (m, 4H + 4H), 1.46 (s, 3H), 1.19 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ : 164.0, 163.8, 134.4, 134.2, 132.8, 132.7, 131.6, 131.5, 130.8, 130.7, 124.12, 124.08, 124.0, 122.0 (q, $J = 286.6$ Hz), 121.9 (q, $J = 286.6$ Hz), 96.49, 96.47, 90.8 (q, $J = 32.9$ Hz), 90.6 (q, $J = 32.9$ Hz), 72.5, 72.4, 64.4, 60.2, 60.1, 55.7, 55.6, 41.1, 40.5, 39.8, 39.4, 27.4, 26.5; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1, -78.2; IR (neat, cm^{-1}) ν : 3423, 2937, 1721, 1469, 1191; LRMS (ESI): m/z 416 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{17}\text{H}_{22}\text{F}_3\text{NO}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 416.1291, Found 416.1301.

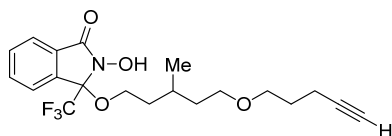
***N*-(4-methoxybenzyl)oxy-3-((3-methyl-5-(pent-4-yn-1-yloxy)pentyl)oxy)-3-trifluoromethyl-isoindoline (S4'o)**



colorless liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 7.88 (d, 1H + 1H, $J = 7.4$ Hz), 7.58-7.70 (m, 3H + 3H), 7.45-7.50 (m, 2H + 2H), 6.91 (d, 2H + 2H, $J = 8.6$ Hz), 5.24 (d, 1H + 1H, $J = 9.7$ Hz), 5.03-5.08 (m, 1H + 1H), 3.81 (s, 3H + 3H), 3.26-3.46 (m, 5H + 5H), 2.93-3.01 (m, 1H + 1H),

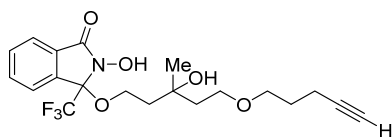
2.21-2.26 (m, 2H + 2H), 1.93 (t, 1H + 1H, $J = 2.6$ Hz), 1.69-1.77 (m, 2H + 2H), 1.44-1.69 (m, 3H + 3H), 1.26-1.42 (m, 2H + 2H), 0.78 (d, 3H, $J = 6.9$ Hz), 0.76 (d, 3H, $J = 6.9$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.5, 165.4, 160.1, 135.30, 135.25, 133.37, 133.35, 131.6, 131.12, 131.10, 130.1, 126.8, 124.2, 124.11, 124.07, 122.2 (q, $J = 286.3$ Hz), 113.8, 90.9 (q, $J = 32.8$ Hz), 90.8 (q, $J = 32.8$ Hz), 83.92, 83.91, 78.8, 69.0, 68.9, 68.8, 68.7, 68.35, 68.33, 62.29, 62.27, 55.2, 36.5, 36.3, 36.0, 35.9, 28.5, 26.83, 26.80, 19.4, 19.3, 15.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.07, -78.13; IR (neat, cm^{-1}) ν : 3301, 2953, 2870, 1743, 1613, 1516, 1468, 1253, 1188, 1113; LRMS (ESI): m/z 542 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{28}\text{H}_{32}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 542.2125, Found 542.2121.

***N*-hydroxy-3-((3-methyl-5-(pent-4-yn-1-yloxy)pentyl)oxy)-3-trifluoromethyl-isoindolinone (1o)**



yellow liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 9.46 (brs, 1H + 1H), 7.80-7.86 (m, 1H + 1H), 7.63-7.67 (m, 1H + 1H), 7.57-7.63 (m, 2H + 2H), 3.31-3.63 (m, 5H + 5H), 3.11-3.18 (m, 1H), 3.04-3.11 (m, 1H), 2.23-2.32 (m, 2H + 2H), 1.91-1.95 (m, 1H + 1H), 1.56-1.95 (m, 5H + 5H), 1.37-1.49 (m, 1H + 1H), 1.27-1.36 (m, 1H), 1.14-1.24 (m, 1H), 0.87 (d, 3H + 3H, $J = 6.3$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 165.4, 135.0, 134.9, 133.1, 133.0, 131.47, 131.45, 130.3, 130.1, 124.2, 124.1, 124.0, 123.9, 121.88 (q, $J = 286.7$ Hz), 121.85 (q, $J = 286.7$ Hz), 91.1 (q, $J = 32.8$ Hz), 91.0 (q, $J = 33.6$ Hz), 83.82, 83.75, 69.5, 69.2, 68.9, 68.6, 68.52, 68.46, 63.0, 61.7, 36.2, 36.1, 36.0, 35.4, 28.3, 28.0, 27.4, 25.4, 19.8, 19.7, 15.1, 15.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -77.6, -78.0; IR (neat, cm^{-1}) ν : 3302, 2932, 2874, 1718, 1469, 1303, 1198; LRMS (ESI): m/z 422 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{24}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 422.1550, Found 422.1564.

***N*-hydroxy-3-((3-hydroxy-3-methyl-5-(pent-4-yn-1-yloxy)pentyl)oxy)-3-trifluoromethyl-isoindolinone (2o)**

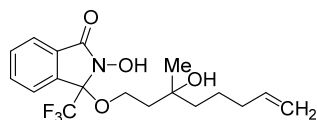


Starting material **1o** (32.0 mg, 0.08 mmol) was oxygenated under condition B of section 2, and **2o** (13.7 mg, 0.033 mmol) was obtained as a diastereomixture according to the purification procedure described in the General method (41% yield).

colorless liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 9.46 (s, 1H), 9.39 (s, 1H), 7.86-7.92 (m, 1H + 1H), 7.57-7.67 (m, 3H + 3H), 4.65 (s, 1H), 4.31 (s, 1H), 3.25-3.76 (m, 6H + 6H), 2.22-2.29 (m, 2H + 2H), 2.02-2.13 (m, 1H), 1.96 (t, 1H, $J = 2.3$ Hz), 1.86-1.96 (m, 1H + 1H), 1.67-1.82 (m, 3H + 4H), 1.55-1.65 (m, 1H + 1H), 1.47 (s, 3H), 1.17 (s, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 163.7, 163.6, 134.3, 134.2, 132.7, 132.6, 131.54, 131.47, 130.9, 130.8, 124.11, 124.07, 124.0, 123.9, 122.0 (q, $J = 286.6$ Hz), 121.9 (q, $J = 286.6$ Hz), 90.5 (q, $J = 32.9$ Hz), 83.4, 83.2, 72.8, 72.5, 70.0, 69.9, 69.0, 68.8, 67.9, 67.8, 60.1,

60.0, 41.2, 40.4, 39.8, 39.2, 28.1, 28.0, 27.6, 26.2, 15.21, 15.18; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3404, 3304, 2936, 2118, 1723, 1469, 1377, 1303, 1198; LRMS (ESI): m/z 438 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{24}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 438.1499, Found 438.1499.

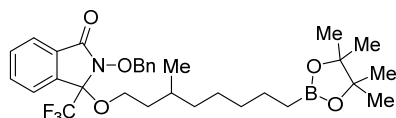
***N*-hydroxy-3-((3-hydroxy-3-methyloct-7-en-1-yl)oxy)-3-trifluoromethyl-isoindolinone (2p)**



Starting material **1p** (14.3 mg, 0.04 mmol) was oxygenated under condition B of section 2, and **2p** (2.8 mg, 0.0075 mmol) was obtained as a diastereomixture according to the purification procedure described in the General method (19% yield).

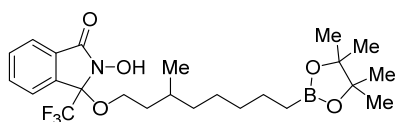
colorless liquid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 9.49 (brs, 1H), 9.43 (brs, 1H), 7.83-7.92 (m, 1H + 1H), 7.58-7.70 (m, 3H + 3H), 5.70-5.87 (m, 1H + 1H), 4.90-5.04 (m, 2H + 2H), 3.50-3.58 (m, 1H + 1H), 3.25-3.33 (m, 1H + 1H), 3.17 (brs, 1H + 1H), 1.86-2.10 (m, 3H + 3H), 1.58-1.72 (m, 2H + 2H), 1.35-1.55 (m, 3H + 3H), 1.36 (s, 3H), 1.19 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ : 164.6, 138.6, 138.4, 134.4, 134.3, 133.0, 131.64, 131.63, 130.4, 124.20, 124.18, 124.1, 121.9 (q, $J = 286.1$ Hz), 121.8 (q, $J = 286.1$ Hz), 114.8, 114.7, 90.89 (q, $J = 33.4$ Hz), 90.86 (q, $J = 33.4$ Hz), 72.8, 72.7, 60.6, 60.5, 42.6, 42.3, 39.3, 39.1, 34.0, 33.9, 27.3, 26.8, 23.4, 23.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3377, 2937, 1719, 1469, 1303, 1190; LRMS (ESI): m/z 396 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{22}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 396.1393, Found 396.1388.

***N*-benzyloxy-3-((3-methyl-8-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)octyl)oxy)-3-trifluoromethyl-isoindolinone (S4q)**



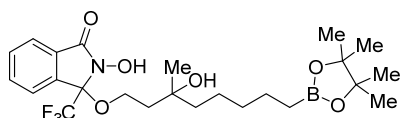
colorless liquid (diastereomixture); ^1H NMR (400 MHz, CDCl_3) δ : 7.89 (d, 1H + 1H, $J = 7.2$ Hz), 7.57-7.72 (m, 2H + 2H), 7.55 (d, 1H + 1H, $J = 6.7$ Hz), 5.25-5.33 (m, 1H + 1H), 5.13 (d, 1H, $J = 9.4$ Hz), 3.23-3.35 (m, 1H + 1H), 2.91-3.01 (m, 1H + 1H), 1.42-1.65 (m, 2H + 2H), 1.22-1.41 (m, 4H + 4H), 1.23 (s, 12H + 12H), 1.10-1.22 (m, 4H + 4H), 0.91-1.08 (m, 1H + 1H), 0.69-0.78 (m, 5H + 5H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.6, 165.5, 135.32, 135.27, 134.6, 133.4, 131.6, 130.05, 130.03, 129.30, 129.27, 128.77, 128.76, 128.40, 128.38, 124.2, 124.1, 122.2 (q, $J = 285.6$ Hz), 91.0 (q, $J = 32.9$ Hz), 90.9 (q, $J = 32.9$ Hz), 82.8, 79.10, 79.07, 62.48, 62.46, 53.4, 36.8, 36.5, 36.0, 35.9, 32.56, 32.55, 29.47, 29.46, 26.53, 26.51, 24.7, 23.9, 19.4, 19.2; ^{11}B NMR (126 MHz, CDCl_3) δ : 36.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0, -78.1; IR (neat, cm^{-1}) ν : 2927, 1747, 1468, 1378, 1195; LRMS (ESI): m/z 598 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{31}\text{H}_{41}\text{BF}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 598.2922, Found 598.2937.

***N*-hydroxy-3-((3-methyl-8-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)octyl)oxy)-3-trifluoromethyl-isoindolinone (1q)**



colorless liquid (diastereomixture); ^1H NMR (400 MHz, CDCl_3) δ : 9.70 (s, 1H), 9.69 (s, 1H), 7.75-7.82 (m, 1H + 1H), 7.55-7.68 (m, 3H + 3H), 3.39-3.50 (m, 1H + 1H), 2.91-3.03 (m, 1H + 1H), 1.47-1.69 (m, 2H + 2H), 1.33-1.47 (m, 3H + 3H), 1.17-1.30 (m, 5H + 5H), 1.23 (s, 12H + 12H), 1.05-1.10 (m, 1H + 1H), 0.70-0.83 (m, 5H + 5H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.8, 135.33, 135.32, 133.2, 131.4, 130.04, 130.01, 123.94, 123.85, 121.9 (q, $J = 285.6$ Hz), 90.92 (q, $J = 32.6$ Hz), 90.91 (q, $J = 32.6$ Hz), 82.93, 82.90, 62.7, 62.6, 36.51, 36.47, 36.1, 36.0, 32.5, 32.3, 29.6, 29.3, 26.5, 26.4, 24.72, 24.69, 23.9, 23.7, 19.5, 19.3; ^{11}B NMR (126 MHz, CDCl_3) δ : 36.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.5; IR (neat, cm^{-1}) ν : 3423, 2927, 1720, 1469, 1378, 1315, 1200; LRMS (ESI): m/z 508 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{35}\text{BF}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 508.2453, Found 508.2443.

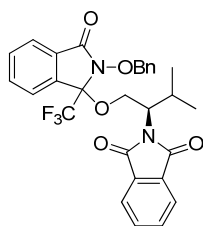
***N*-hydroxy-3-((3-hydroxy-3-methyl-8-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)octyl)oxy)-3-trifluoromethylisoindolinone (2q)**



Starting material **1q** (38.8 mg, 0.08 mmol) was oxygenated under condition B of section 2, and **2q** (18.2 mg, 0.036 mmol) was obtained as a diastereomixture according to the purification procedure described in the General method (45% yield).

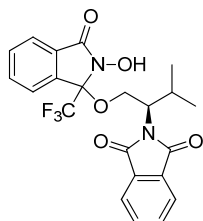
colorless liquid (diastereomixture); ^1H NMR (400 MHz, CDCl_3) δ : 9.45 (brs, 1H), 9.40 (brs, 1H), 7.84-7.90 (m, 1H + 1H), 7.58-7.69 (m, 3H + 3H), 3.46-3.57 (m, 1H + 1H), 3.23-3.33 (m, 1H + 1H), 3.03 (brs, 1H), 2.94 (brs, 1H), 1.84-2.02 (m, 2H + 2H), 1.56-1.70 (m, 2H + 2H), 1.22-1.52 (m, 6H + 6H), 1.33 (s, 3H), 1.24 (s, 12H), 1.23 (s, 12H), 1.16 (s, 3H), 0.71-0.80 (m, 2H + 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 164.53, 164.48, 134.43, 134.41, 132.9, 131.6, 130.5, 124.2, 124.1, 124.0, 121.90 (q, $J = 286.7$ Hz), 121.86 (q, $J = 286.7$ Hz), 90.9 (q, $J = 32.4$ Hz), 90.8 (q, $J = 33.6$ Hz), 82.92, 82.90, 72.9, 72.7, 60.62, 60.59, 43.0, 42.8, 39.3, 39.2, 32.64, 32.59, 29.2, 27.3, 26.7, 24.8, 24.7, 23.8, 23.72, 23.70, 23.5; ^{11}B NMR (126 MHz, CDCl_3) δ : 35.8; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3423, 2933, 1723, 1469, 1374, 1315, 1199; LRMS (ESI): m/z 524 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{35}\text{BF}_3\text{NO}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 524.2402, Found 524.2407.

2-((2R)-1-((*N*-(benzyloxy)-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)-3-methylbutan-2-yl)isoindolin-1,3-dione (S4r)



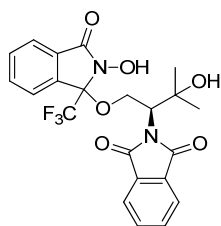
colorless sticky liquid (diastereomixture); ^1H NMR (400 MHz, CDCl_3) δ : 7.85-7.93 (m, 2H + 2H), 7.62-7.80 (m, 5H + 5H), 7.53-7.62 (m, 2H + 2H), 7.27-7.46 (m, 4H + 4H), 5.30 (d, 1H, $J = 10.1$ Hz), 5.14 (d, 1H, $J = 10.1$ Hz), 5.10 (d, 1H, $J = 9.9$ Hz), 4.96 (d, 1H, $J = 9.9$ Hz), 4.00-4.15 (m, 1H + 1H), 3.90-3.96 (m, 1H), 3.60-3.66 (m, 1H), 3.52-3.57 (m, 1H), 3.33-3.38 (m, 1H), 2.22-2.34 (m, 1H), 2.12-2.22 (m, 1H), 0.75-0.86 (m, 6H); ^{13}C NMR (126 MHz, CDCl_3) δ : 168.39, 168.37, 165.5, 165.0, 134.51, 134.49, 134.3, 134.2, 134.0, 133.8, 133.52, 133.50, 131.9, 131.8, 131.5, 131.4, 129.9, 129.7, 129.2, 129.1, 128.8, 128.5, 128.4, 128.2, 124.4, 124.3, 124.2, 124.1, 123.1, 123.0, 121.8 (q, $J = 286.3$ Hz), 90.8 (q, $J = 33.2$ Hz), 90.7 (q, $J = 33.2$ Hz), 79.1, 79.0, 62.5, 61.8, 57.2, 56.7, 27.8, 27.4, 20.0, 19.9, 19.7, 19.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0, -78.3; IR (neat, cm^{-1}) ν : 1747, 1711, 1647, 1468, 1389, 1189; LRMS (ESI): m/z 561 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{29}\text{H}_{25}\text{F}_3\text{N}_2\text{O}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 561.1608, Found 561.1583.

2-((2R)-1-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)-3-methylbutan-2-yl)isoindoline-1,3-dione (1r)



white solid (diastereomixture); ^1H NMR (500 MHz, CDCl_3) δ : 9.04 (brs, 1H), 8.09 (brs, 1H), 7.82-7.89 (m, 3H + 3H), 7.72-7.79 (m, 2H + 2H), 7.57-7.72 (m, 2H + 2H), 7.52-7.57 (m, 1H), 7.30 (d, 1H, $J = 7.5$ Hz), 4.14-4.25 (m, 1H + 1H), 4.08 (dd, 1H, $J = 9.4$ Hz, 9.4 Hz), 3.73-3.77 (m, 1H + 1H), 3.35-3.39 (m, 1H), 2.16-2.33 (m, 1H + 1H), 0.80-0.95 (m, 6H + 6H); ^{13}C NMR (126 MHz, CDCl_3) δ : 169.2, 168.7, 165.4, 165.0, 134.4, 134.3, 134.14, 134.07, 133.3, 133.2, 131.8, 131.7, 131.5, 130.0, 129.9, 124.2, 124.1, 124.0, 123.29, 123.26, 121.5 (q, $J = 286.3$ Hz), 90.8 (q, $J = 33.0$ Hz), 90.7 (q, $J = 33.6$ Hz), 62.3, 61.9, 57.1, 57.0, 28.0, 27.7, 20.0, 19.9, 19.7; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.3, -78.4; IR (KBr, cm^{-1}) ν : 3219, 2968, 1713, 1469, 1390, 1200; LRMS (ESI): m/z 471 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{19}\text{F}_3\text{N}_2\text{O}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 471.1138, Found 471.1120.

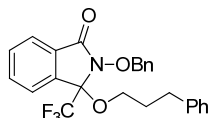
2-((2S)-3-hydroxy-1-((N-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)-3-methylbutan-2-yl)isoindoline-1,3-dione (2r)



Starting material **1r** (89.7 mg, 0.2 mmol) was oxygenated under condition B of section 2, and **2r** (37.5 mg, 0.081 mmol) was obtained as a diastereomixture according to the purification procedure described in the General method (40% yield).

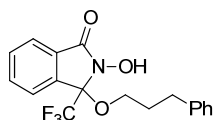
white solid (diastereomixture); $^1\text{H NMR}$ (500 MHz, CDCl_3 ; underlined chemical shifts for one isomer) δ : 9.05 (brs, 1H), 9.05 (brs, 1H), 7.90-7.95 (m, 2H), 7.83-7.88 (m, 1H), 7.83-7.88 (m, 3H), 7.76-7.80 (m, 2H), 7.76-7.80 (m, 2H), 7.61-7.69 (m, 3H), 7.52-7.61 (m, 2H), 7.37 (d, 1H, $J = 7.5$ Hz), 4.66 (brs, 1H), 4.59 (dd, 1H, $J = 7.5$ Hz, 7.5 Hz), 4.40 (dd, 1H, $J = 3.7$ Hz, 8.5 Hz), 4.28 (brs, 1H), 3.94 (dd, 1H, $J = 7.5$ Hz, 9.5 Hz), 3.91 (dd, 1H, $J = 8.5$ Hz, 10.7 Hz), 3.53 (dd, 1H, $J = 3.7$ Hz, 10.7 Hz), 3.45 (dd, 1H, $J = 7.5$ Hz, 9.5 Hz), 1.55 (s, 3H), 1.25 (s, 3H), 1.18 (s, 3H), 1.16 (s, 3H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 164.6, 164.0, 134.8, 134.5, 134.2, 133.7, 133.2, 133.0, 131.9, 131.8, 131.5, 131.2, 130.5, 130.1, 124.4, 124.1, 123.9, 123.8, 121.7 (q, $J = 287.1$ Hz), 121.5 (q, $J = 286.7$ Hz), 90.8 (q, $J = 33.6$ Hz), 90.7 (q, $J = 33.2$ Hz), 72.0, 71.5, 60.8, 60.4, 59.6, 58.1, 28.4, 27.98, 27.96, 27.6; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -77.8, -78.3; IR (KBr, cm^{-1}) ν : 3449, 2979, 1704, 1396, 1199; LRMS (ESI): m/z 487 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{22}\text{H}_{19}\text{F}_3\text{N}_2\text{O}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 487.1087, Found 487.1083.

***N*-benzyloxy-3-(3-phenylpropoxy)-3-trifluoromethyl-isoindolinone (S4s)**



light yellow liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 7.89 (dd, 1H, $J = 6.9$ Hz, 1.2 Hz), 7.62-7.68 (m, 2H), 7.56-7.59 (m, 3H), 7.36-7.44 (m, 3H), 7.19-7.25 (m, 2H), 7.13-7.18 (m, 1H), 7.09-7.12 (m, 2H), 5.31 (d, $J = 9.8$ Hz), 5.14 (d, $J = 9.8$ Hz), 3.29 (dt, $J = 9.2$ Hz, 5.8 Hz), 2.96 (dt, $J = 9.2$ Hz, 5.8 Hz), 2.60-2.71 (m, 2H), 1.78-1.92 (m, 2H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 165.6, 141.1, 135.2, 134.6, 133.4, 131.6, 130.0, 129.4, 128.9, 128.5, 128.4, 128.3, 125.9, 124.2, 124.1, 122.2 (q, $J = 285.5$ Hz), 90.9 (q, $J = 33.6$ Hz), 79.1, 63.1, 31.8, 30.5; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2950, 1744, 1468, 1190; LRMS (ESI): m/z 464 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{25}\text{H}_{22}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 464.1444, Found 464.1450.

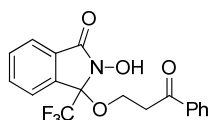
***N*-hydroxy-3-(3-phenylpropoxy)-3-trifluoromethyl-isoindolinone (1s)**



light yellow liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 10.12 (brs, 1H), 7.80 (d, 1H, $J = 7.5$ Hz), 7.67 (dd, 1H, $J = 7.5$ Hz, 7.5 Hz), 7.59-7.63 (m, 2H), 7.30 (dd, 2H, $J = 7.5$ Hz, 7.5 Hz), 7.19-7.23 (m, 3H), 3.35 (dt, 1H, J

= 8.6 Hz, 5.8 Hz), 2.95-3.05 (m, 1H), 2.67-2.77 (m, 2H), 1.90-1.98 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.9, 141.3, 135.0, 133.2, 131.5, 129.8, 128.4, 128.3, 125.8, 124.0, 123.8, 121.9 (q, $J = 285.5$ Hz), 91.0 (q, $J = 33.6$ Hz), 63.4, 31.3, 30.5; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.3; IR (neat, cm^{-1}) ν : 3144, 2948, 1717, 1469, 1305, 1200; LRMS (ESI): m/z 374 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{16}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 374.0975, Found 374.0990.

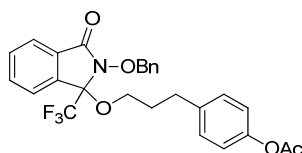
***N*-hydroxy-3-(3-oxo-3-phenylpropoxy)-3-trifluoromethyl-isoindolinone (2s)**



Starting material **1s** (35.1 mg, 0.1 mmol) was oxygenated under condition B of section 2, and **2s** (32.4 mg, 0.089 mmol) was isolated according to the purification procedure described in the General method (89% yield).

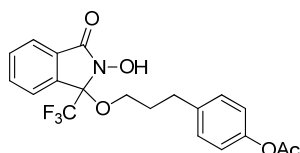
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 8.91 (brs, 1H), 7.98 (d, 2H, $J = 7.5$ Hz), 7.89 (d, 1H, $J = 8.0$ Hz), 7.66-7.70 (m, 1H), 7.59-7.66 (m, 3H), 7.49 (dd, 2H, $J = 7.5$ Hz), 3.77 (dt, 1H, $J = 3.1$ Hz, 9.6 Hz), 3.54 (ddd, 1H, $J = 18.3$ Hz, 9.6 Hz, 3.1 Hz), 3.43 (dt, 1H, $J = 9.6$ Hz, 3.1 Hz), 3.16 (dt, 1H, $J = 18.3$ Hz, 3.1 Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 198.8, 163.6, 135.9, 134.1, 133.9, 132.9, 131.7, 130.6, 128.8, 128.3, 124.2, 124.1, 121.8 (q, $J = 286.6$ Hz), 90.5 (q, $J = 32.9$ Hz), 57.9, 37.2, 29.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3220, 2952, 1718, 1197; LRMS (ESI): m/z 388 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{14}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 388.0767, Found 388.0759.

4-(3-((2-benzyloxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)propyl)phenyl acetate (S4t)



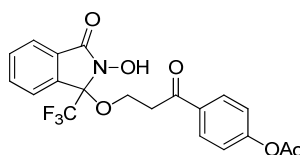
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.88 (d, 1H, $J = 7.4$ Hz), 7.60-7.70 (m, 2H), 7.54-7.58 (m, 3H), 7.34-7.44 (m, 3H), 7.09 (d, 2H, $J = 8.6$ Hz), 6.92 (d, 2H, $J = 8.6$ Hz), 5.32 (d, 1H, $J = 9.7$ Hz), 5.14 (d, 1H, $J = 9.7$ Hz), 3.27 (dt, 1H, $J = 8.6$ Hz, 6.3 Hz), 2.92-2.98 (m, 1H), 2.64 (t, 2H, $J = 7.7$ Hz), 2.28 (s, 3H), 1.76-1.89 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 169.5, 165.6, 148.8, 138.6, 135.1, 134.6, 133.5, 131.7, 129.9, 129.4, 129.3, 128.8, 128.4, 124.2, 124.1, 122.2 (q, $J = 285.5$ Hz), 121.3, 90.9 (q, $J = 33.2$ Hz), 79.1, 63.0, 31.1, 30.3, 21.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2949, 1747, 1194; LRMS (ESI): m/z 522 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{27}\text{H}_{24}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 522.1499, Found 522.1492.

4-(3-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)propyl)phenyl acetate (1t)



reddish sticky liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.78 (brs, 1H), 7.77 (d, 1H, $J = 7.4$ Hz), 7.62-7.66 (m, 1H), 7.53-7.60 (m, 2H), 7.17 (d, 2H, $J = 8.6$ Hz), 6.98 (d, 2H, $J = 8.6$ Hz), 3.40-3.46 (m, 1H), 2.97-3.05 (m, 1H), 2.68-2.78 (m, 2H), 2.28 (s, 3H), 1.85-2.01 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 169.7, 165.8, 148.8, 138.9, 135.0, 133.3, 131.5, 129.9, 129.3, 124.0, 123.9, 121.9 (q, $J = 286.7$ Hz), 121.3, 91.0 (q, $J = 32.8$ Hz), 63.2, 31.2, 30.4, 21.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3425, 1719, 1645, 1196; LRMS (ESI): m/z 432 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{18}\text{F}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 432.1029, Found 432.1011.

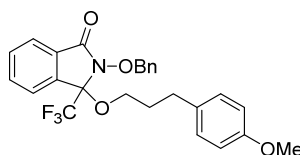
4-(3-((2-hydroxy-3-oxo-1-(trifluoromethyl)isoindolin-1-yl)oxy)propanoyl)phenyl acetate (2t)



Starting material **1t** (53.8 mg, 0.13 mmol) was oxygenated under condition A of section 2, and **2t** (30.0 mg, 0.071 mmol) was isolated according to the purification procedure described in the General method (54% yield).

white solid; ^1H NMR (500 MHz, CDCl_3) δ : 8.97 (brs, 1H), 8.00 (dd, 2H, $J = 8.6$ Hz, 1.1 Hz), 7.86 (d, 1H, $J = 8.0$ Hz), 7.60-7.69 (m, 3H), 7.21 (dd, 2H, $J = 8.6$ Hz, 1.1 Hz), 3.72-3.78 (m, 1H), 3.42-3.51 (m, 2H), 3.13-3.22 (m, 1H), 2.32 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ : 197.5, 168.7, 163.8, 155.0, 134.0, 133.6, 133.0, 131.7, 130.5, 130.0, 124.2, 124.1, 122.0, 121.7 (q, $J = 286.6$ Hz), 90.5 (q, $J = 33.2$ Hz), 58.0, 37.3, 21.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3243, 1719, 1195; LRMS (ESI): m/z 446 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{16}\text{F}_3\text{NO}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 446.0822, Found 446.0825.

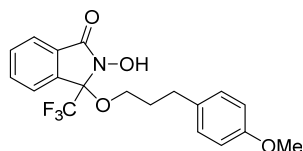
N-benzyloxy-3-(3-(4-methoxyphenyl)propoxy)-3-trifluoromethyl-isoindolinone (S4u)



colorless liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.89 (dd, 1H, $J = 6.3$ Hz, 1.1 Hz), 7.60-7.69 (m, 2H), 7.55-7.60 (m, 3H), 7.35-7.44 (m, 3H), 7.00-7.04 (m, 2H), 6.72-6.67 (m, 2H), 5.31 (d, 1H, $J = 9.7$ Hz), 5.13 (d, 1H, $J = 9.7$ Hz), 3.75 (s, 3H), 3.25-3.32 (m, 1H), 2.92-2.99 (m, 1H), 2.53-2.65 (m, 2H), 1.76-1.89 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.5, 157.8, 135.2, 134.6, 133.4, 133.1, 131.6, 130.0, 129.4, 129.2, 128.8, 128.4, 124.2, 124.1, 122.2 (q, $J = 285.9$ Hz), 113.7, 90.9 (q, $J = 32.8$ Hz), 79.1, 63.0, 55.1, 30.8, 30.7; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2952, 1745, 1613, 1513, 1468, 1188; LRMS

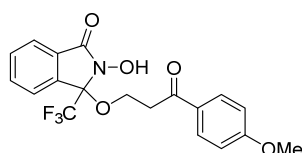
(ESI): m/z 494 $[M+Na]^+$; HRMS (ESI): m/z calcd for $C_{26}H_{24}F_3NO_4Na$ $[M+Na]^+$ 494.1550, Found 494.1547.

***N*-hydroxy-3-(3-(4-methoxyphenyl)propoxy)-3-trifluoromethyl-isoindolinone (1u)**



colorless liquid; 1H NMR (400 MHz, $CDCl_3$) δ : 9.70 (brs, 1H), 7.74-7.79 (m, 1H), 7.55-7.67 (m, 3H), 7.05-7.12 (m, 2H), 6.78-6.85 (m, 2H), 3.78 (s, 3H), 3.40-3.47 (m, 1H), 2.97-3.05 (m, 1H), 2.60-2.74 (m, 2H), 1.83-2.01 (m, 2H); ^{13}C NMR (126 MHz, $CDCl_3$) δ : 165.8, 157.8, 135.1, 133.4, 133.2, 131.5, 129.9, 129.3, 124.1, 123.9, 121.9 (q, $J = 286.7$ Hz), 113.8, 91.0 (q, $J = 32.8$ Hz), 63.4, 55.2, 30.9, 30.8; ^{19}F NMR (369 MHz, $CDCl_3$) δ : -78.4; IR (neat, cm^{-1}) ν : 3422, 3173, 2951, 1717, 1613, 1513, 1301, 1191; LRMS (ESI): m/z 404 $[M+Na]^+$; HRMS (ESI): m/z calcd for $C_{19}H_{18}F_3NO_4Na$ $[M+Na]^+$ 404.1080, Found 404.1074.

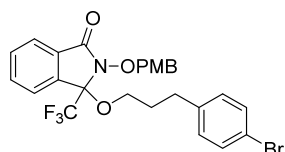
***N*-hydroxy-3-(3-(4-methoxyphenyl)-3-oxopropoxy)-3-trifluoromethyl-isoindolinone (2u)**



Starting material **1u** (38.1 mg, 0.1 mmol) was oxygenated under condition B of section 2, and **2u** (27.7 mg, 0.070 mmol) was isolated according to the purification procedure described in the General method (70% yield).

light yellow solid; 1H NMR (500 MHz, $CDCl_3$) δ : 9.03 (brs, 1H), 7.95 (d, 2H, $J = 8.8$ Hz), 7.90 (d, 1H, $J = 6.9$ Hz), 7.61-7.69 (m, 3H), 6.94 (d, 2H, $J = 8.8$ Hz), 3.87 (s, 3H), 3.74 (td, 1H, $J = 9.7$ Hz, 2.3 Hz), 3.43-3.52 (m, 1H), 3.37-3.43 (m, 1H), 3.04-3.11 (m, 1H); ^{13}C NMR (126 MHz, $CDCl_3$) δ : 197.3, 164.4, 163.8, 134.0, 132.8, 131.7, 130.8, 129.0, 128.4, 124.2, 124.0, 121.8 (q, $J = 287.1$ Hz), 114.0, 90.5 (q, $J = 33.2$ Hz), 57.8, 55.5, 36.7; ^{19}F NMR (369 MHz, $CDCl_3$) δ : -78.1; IR (KBr, cm^{-1}) ν : 3152, 2967, 1739, 1659, 1600, 1184; LRMS (ESI): m/z 418 $[M+Na]^+$; HRMS (ESI): m/z calcd for $C_{19}H_{16}F_3NO_5Na$ $[M+Na]^+$ 418.0873, Found 418.0874.

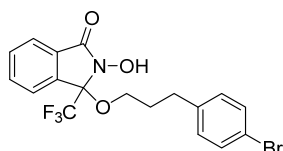
3-(3-(4-bromophenyl)propoxy)-*N*-((4-methoxybenzyl)oxy)-3-trifluoromethyl-isoindolinone (S4'v)



colorless liquid; 1H NMR (400 MHz, $CDCl_3$) δ : 7.85-7.90 (m, 1H), 7.60-7.70 (m, 2H), 7.56 (d, 1H, $J = 7.2$

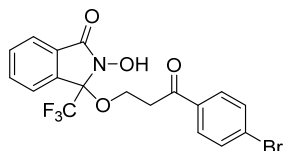
Hz), 7.47-7.52 (m, 2H), 7.25-7.30 (m, 2H), 6.92-6.97 (m, 4H), 5.26 (d, 1H, $J = 9.2$ Hz), 5.04 (d, 1H, $J = 9.2$ Hz), 3.82 (s, 3H), 3.20-3.28 (m, 1H), 2.87-2.95 (m, 1H), 2.52-2.66 (m, 2H), 1.75-1.84 (m, 2H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.5, 160.1, 140.0, 135.1, 133.4, 131.7, 131.28, 131.25, 130.2, 130.0, 126.7, 124.11, 124.05, 122.2 (q, $J = 285.6$ Hz), 119.6, 113.8, 90.7 (q, $J = 32.9$ Hz), 78.8, 62.7, 55.2, 31.1, 30.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 2953, 1742, 1613, 1545, 1253, 1189; LRMS (ESI): m/z 572 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{26}\text{H}_{23}\text{BrF}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 572.0655, Found 572.0671.

3-(3-(4-bromophenyl)propoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (1v)



light orange gum; ^1H NMR (400 MHz, CDCl_3) δ : 9.80 (s, 1H), 7.75 (d, 1H, $J = 7.2$ Hz), 7.53-7.68 (m, 3H), 7.37 (d, 2H, $J = 8.1$ Hz), 7.05 (d, 2H, $J = 8.1$ Hz), 3.37-3.46 (m, 1H), 2.94-3.04 (m, 1H), 2.63-2.76 (m, 2H), 1.83-2.00 (m, 2H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.8, 140.3, 135.0, 133.3, 131.6, 131.4, 130.2, 129.8, 124.0, 123.9, 121.9 (q, $J = 286.6$ Hz), 119.6, 90.9 (q, $J = 33.2$ Hz), 63.2, 31.3, 30.4; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3144, 2950, 1717, 1488, 1305, 1200; LRMS (ESI): m/z 452 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{15}\text{BrF}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 452.0080, Found 452.0098.

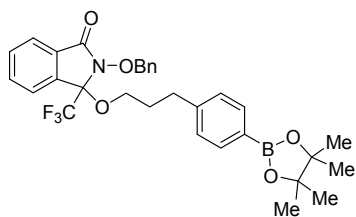
3-(3-(4-bromophenyl)-3-oxopropoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (2v)



Starting material **1v** (17.2 mg, 0.04 mmol) was oxygenated under condition B of section 2, and **2v** (8.3 mg, 0.019 mmol) was isolated according to the purification procedure described in the General method (47% yield).

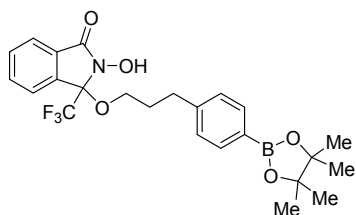
light yellow solid; ^1H NMR (500 MHz, CDCl_3) δ : 8.48 (brs, 1H), 7.93 (dd, 1H, $J = 1.1$ Hz, 6.3 Hz), 7.85 (d, 2H, $J = 8.0$ Hz), 7.61-7.70 (m, 5H), 3.72-3.79 (m, 1H), 3.47-3.56 (m, 1H), 3.38-3.43 (m, 1H), 3.04-3.11 (m, 1H); ^{13}C NMR (126 MHz, CDCl_3) δ : 197.7, 164.0, 134.8, 134.0, 133.0, 132.1, 131.7, 130.4, 129.8, 129.4, 124.2, 124.1, 121.7 (q, $J = 285.9$ Hz), 90.6 (q, $J = 32.8$ Hz), 58.1, 37.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (KBr, cm^{-1}) ν : 3220, 2950, 1720, 1678, 1586, 1469, 1398, 1278, 1120; LRMS (ESI): m/z 466 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{13}\text{BrF}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 465.9872, Found 465.9855.

N-benzyloxy-3-(3-(4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl)propoxy)-3-trifluoromethyl-isoindolinone (S4w)



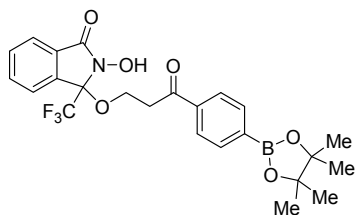
colorless liquid; ^1H NMR (400 MHz, CDCl_3) δ : 7.89 (dd, 1H, $J = 6.5$ Hz, 1.6 Hz), 7.60-7.71 (m, 4H), 7.54-7.60 (m, 3H), 7.35-7.46 (m, 3H), 7.12 (d, 2H, $J = 8.1$ Hz), 5.31 (d, 1H, $J = 9.9$ Hz), 5.14 (d, 1H, $J = 9.9$ Hz), 3.24-3.33 (m, 1H), 2.92-3.00 (m, 1H), 2.58-2.73 (m, 2H), 1.74-1.95 (m, 2H), 1.35 (s, 12H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.6, 144.5, 135.1, 134.9, 134.6, 133.4, 131.6, 130.0, 129.3, 128.8, 128.4, 127.8, 124.2, 124.1, 122.2 (q, $J = 286.1$ Hz), 90.9 (q, $J = 33.0$ Hz), 83.6, 79.1, 63.1, 32.0, 30.3, 24.8; ^{11}B NMR (126 MHz, CDCl_3) δ : 32.8; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2978, 1746, 1612, 1469, 1362, 1195; LRMS (ESI): m/z 590 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{31}\text{H}_{33}\text{BF}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 590.2296, Found 590.2293.

***N*-hydroxy-3-(3-(4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl)propoxy)-3-trifluoromethylisoindolinone (1w)**



white solid; ^1H NMR (400 MHz, CDCl_3) δ : 9.79 (s, 1H), 7.76 (d, 1H, $J = 6.7$ Hz), 7.73 (d, 2H, $J = 8.1$ Hz), 7.54-7.67 (m, 3H), 7.18 (d, 2H, $J = 8.1$ Hz), 3.40-3.49 (m, 1H), 2.96-3.06 (m, 1H), 2.67-2.82 (m, 2H), 1.85-2.05 (m, 2H), 1.35 (s, 12H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.8, 144.8, 135.0, 134.9, 133.2, 131.5, 129.9, 127.9, 124.0, 123.9, 121.9 (q, $J = 286.6$ Hz), 91.0 (q, $J = 33.2$ Hz), 83.7, 63.4, 32.1, 30.4, 24.8; ^{11}B NMR (126 MHz, CDCl_3) δ : 33.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (KBr, cm^{-1}) ν : 3177, 2979, 1719, 1613, 1470, 1362, 1200; LRMS (ESI): m/z 500 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{27}\text{BF}_3\text{NO}_5\text{Na}$ $[\text{M}+\text{Na}]^+$ 500.1827, Found 500.1802.

***N*-hydroxy-3-(3-oxo-3-(4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl)propoxy)-3-trifluoromethylisoindolinone (2w)**

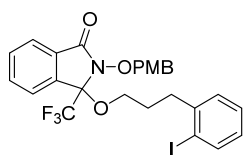


Starting material **1w** (19.1 mg, 0.04 mmol) was oxygenated under condition A of section 2, and **2w** (4.9 mg, 0.010 mmol) was isolated according to the purification procedure described in the General method

(25% yield).

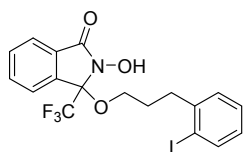
light yellow solid; ^1H NMR (500 MHz, CDCl_3) δ : 8.60 (s, 1H), 7.89-7.97 (m, 5H), 7.61-7.70 (m, 3H), 3.74-3.80 (m, 1H), 3.53-3.61 (m, 1H), 3.38-3.43 (m, 1H), 3.08-3.16 (m, 1H), 1.36 (s, 12H); ^{13}C NMR (100 MHz, CDCl_3) δ : 199.1, 163.6, 137.8, 135.0, 133.9, 132.9, 131.7, 130.7, 127.3, 124.3, 124.1, 121.8 (q, $J = 285.6$ Hz), 90.5 (q, $J = 33.5$ Hz), 84.3, 57.8, 37.4, 24.8; ^{11}B NMR (126 MHz, CDCl_3) δ : 32.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3426, 2979, 1722, 1508, 1469, 1360, 1199; LRMS (ESI): m/z 514 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{25}\text{BF}_3\text{NO}_6\text{Na}$ $[\text{M}+\text{Na}]^+$ 514.1619, Found 514.1621.

3-(3-(2-iodophenyl)propoxy)-*N*-((4-methoxybenzyl)oxy)-3-trifluoromethyl-isoindolinone (S4'x)



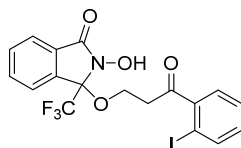
yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.89-7.76 (d, 1H, $J = 7.4$ Hz), 7.61-7.71 (m, 3H), 7.48-7.53 (m, 2H), 7.11-7.18 (m, 2H), 6.90-6.94 (m, 2H), 6.82-6.87 (m, 1H), 5.26 (d, 1H, $J = 9.2$ Hz), 5.06 (d, 1H, $J = 9.2$ Hz), 3.81 (s, 3H), 3.29-3.36 (m, 1H), 2.96-3.02 (m, 1H), 2.67-2.78 (m, 2H), 1.78-1.87 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.5, 160.1, 143.7, 139.5, 135.2, 133.4, 131.7, 131.2, 130.1, 129.4, 128.2, 127.8, 126.8, 124.24, 124.16, 122.2 (q, $J = 286.7$ Hz), 113.9, 100.4, 90.9 (q, $J = 32.8$ Hz), 78.9, 63.1, 55.3, 36.9, 29.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 1742, 1613, 1515, 1467, 1252, 1187; LRMS (ESI): m/z 620 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{26}\text{H}_{23}\text{F}_3\text{INO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 620.0516, Found 620.0514.

N-hydroxy-3-(3-(2-iodophenyl)propoxy)-3-trifluoromethyl-isoindolinone (1x)



light yellow liquid; ^1H NMR (400 MHz, CDCl_3) δ : 9.81 (brs, 1H), 7.79 (d, 2H, $J = 7.6$ Hz), 7.56-7.69 (m, 3H), 7.23-7.29 (m, 2H), 6.83-6.91 (m, 1H), 3.45-3.54 (m, 1H), 3.02-3.10 (m, 1H), 2.76-2.90 (m, 2H), 1.87-2.02 (m, 2H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.7, 143.8, 139.5, 135.1, 133.3, 131.6, 129.9, 129.6, 128.4, 127.9, 124.1, 124.0, 121.9 (q, $J = 286.6$ Hz), 100.4, 91.0 (q, $J = 33.2$ Hz), 63.4, 37.0, 29.3; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3143, 2943, 1716, 1468, 1304, 1192; LRMS (ESI): m/z 500 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{15}\text{F}_3\text{INO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 499.9941, Found 499.9943.

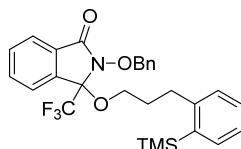
N-hydroxy-3-(3-(2-iodophenyl)-3-oxopropoxy)-3-trifluoromethyl-isoindolinone (2x)



Starting material **1x** (23.9 mg, 0.05 mmol) was oxygenated under condition B of section 2, and **2x** (13.0 mg, 0.026 mmol) was isolated according to the purification procedure described in the General method (53% yield).

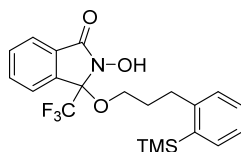
light yellow liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 8.77 (brs, 1H), 7.96 (d, 1H, $J = 7.7$ Hz), 7.88 (d, 1H, $J = 6.9$ Hz), 7.60-7.70 (m, 3H), 7.50 (dd, 1H, $J = 7.7$ Hz, 1.5 Hz), 7.44 (t, 1H, $J = 7.7$ Hz), 7.16 (td, 1H, $J = 7.7$ Hz, 1.5 Hz), 3.79 (td, 1H, $J = 8.9$ Hz, 4.0 Hz), 3.42-3.51 (m, 1H), 3.31-3.42 (m, 1H), 3.13-3.24 (m, 1H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 202.7, 164.3, 142.8, 141.1, 134.1, 133.1, 132.4, 131.8, 130.4, 128.4, 128.2, 124.2, 121.8 (q, $J = 286.7$ Hz), 91.1, 90.7 (q, $J = 33.6$ Hz), 58.4, 40.6; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) v: 3166, 2926, 1715, 1468, 1192; LRMS (ESI): m/z 514 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{13}\text{F}_3\text{INO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 513.9734, Found 513.9727.

***N*-benzyloxy-3-trifluoromethyl-3-(3-(2-(trimethylsilyl)phenyl)propoxy)-isoindolinone (S4y)**



colorless liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 7.93 (d, 1H, $J = 7.4$ Hz), 7.63-7.74 (m, 3H), 7.57 (d, 2H, $J = 6.9$ Hz), 7.47 (dd, 1H, $J = 7.4$ Hz, 1.4 Hz), 7.35-7.43 (m, 3H), 7.26 (td, 1H, $J = 7.4$ Hz, 1.4 Hz), 7.17 (t, 1H, $J = 7.4$ Hz), 7.13 (d, 1H, $J = 7.4$ Hz), 5.35 (d, 1H, $J = 9.2$ Hz), 5.17 (d, 1H, $J = 9.2$ Hz), 3.37-3.43 (m, 1H), 3.03-3.10 (m, 1H), 2.72-2.85 (m, 2H), 1.77-1.90 (m, 2H), 0.31 (s, 9H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 165.6, 147.1, 138.1, 135.2, 134.57, 134.56, 133.5, 131.7, 130.1, 129.4, 129.2, 128.8, 128.4, 125.2, 124.2, 122.2 (q, $J = 285.9$ Hz), 90.9 (q, $J = 33.2$ Hz), 79.2, 63.8, 32.5, 31.7, 0.24; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) v: 1746, 1465, 1188; LRMS (ESI): m/z 536 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{28}\text{H}_{30}\text{F}_3\text{NO}_3\text{SiNa}$ $[\text{M}+\text{Na}]^+$ 536.1839, Found 536.1816.

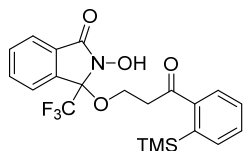
***N*-hydroxy-3-trifluoromethyl-3-(3-(2-(trimethylsilyl)phenyl)propoxy)-isoindolinone (1y)**



colorless liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 10.00 (brs, 1H), 7.84 (d, 1H, $J = 7.4$ Hz), 7.60-7.74 (m, 3H), 7.53 (d, 1H, $J = 7.4$ Hz), 7.34 (t, 1H, $J = 7.4$ Hz), 7.19-7.25 (m, 2H), 3.60-3.66 (m, 1H), 3.14-3.21 (m, 1H), 2.86-3.00 (m, 2H), 1.90-2.07 (m, 2H), 0.39 (s, 9H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 165.9, 147.3, 138.3, 135.2, 134.6, 133.3, 131.5, 130.0, 129.2, 128.5, 125.2, 124.0, 123.9, 121.9 (q, $J = 286.7$ Hz), 91.1 (q,

$J = 32.8$ Hz), 64.0, 32.6, 31.6, 0.27; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4 ; IR (neat, cm^{-1}) ν : 3152, 2953, 1718, 1469, 1200; LRMS (ESI): m/z 446 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{21}\text{H}_{24}\text{F}_3\text{NO}_3\text{SiNa}$ $[\text{M}+\text{Na}]^+$ 446.1370, Found 446.1351.

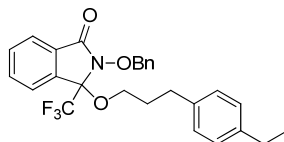
***N*-hydroxy-3-(3-oxo-3-(2-(trimethylsilyl)phenyl)propoxy)-3-trifluoromethyl-isoindolinone (2y)**



Starting material **1y** (98.0 mg, 0.23 mmol) was oxygenated under condition B of section 2, and **2y** (62.6 mg, 0.14 mmol) was isolated according to the purification procedure described in the General method (62% yield).

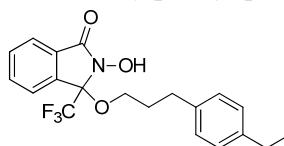
light yellow solid; ^1H NMR (400 MHz, CDCl_3) δ : 8.83 (brs, 1H), 7.88-7.93 (m, 2H), 7.77 (dd, 1H, $J = 7.4$ Hz, 1.1 Hz), 7.60-7.71 (m, 3H), 7.56 (td, 1H, $J = 7.5$ Hz, 1.3 Hz), 7.48 (td, 1H, $J = 7.5$ Hz, 1.3 Hz), 3.79 (td, 1H, $J = 9.4$ Hz, 2.7 Hz), 3.47-3.58 (m, 1H), 3.39-3.47 (m, 1H), 3.16-3.26 (m, 1H), 0.29 (s, 9H); ^{13}C NMR (100 MHz, CDCl_3) δ : 201.3, 163.4, 142.9, 141.5, 136.3, 133.9, 132.9, 132.5, 131.7, 130.7, 129.5, 128.9, 124.3, 124.1, 121.8 (q, $J = 286.6$ Hz), 90.5 (q, $J = 33.5$ Hz), 57.7, 37.9, 0.23; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0 ; IR (KBr, cm^{-1}) ν : 3228, 2953, 1719, 1469, 1200; LRMS (ESI): m/z 460 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{21}\text{H}_{22}\text{F}_3\text{NO}_4\text{SiNa}$ $[\text{M}+\text{Na}]^+$ 460.1162, Found 460.1180.

3-(3-(4-ethylphenyl)propoxy)-*N*-benzyloxy-3-trifluoromethyl-isoindolinone (S4z)



light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.89 (d, 1H, $J = 6.9$ Hz), 7.61-7.68 (m, 2H), 7.55-7.60 (m, 3H), 7.36-7.44 (m, 3H), 7.00-7.06 (m, 4H), 5.30 (d, 1H, $J = 9.5$ Hz), 5.13 (d, 1H, $J = 9.5$ Hz), 3.26-3.32 (m, 1H), 2.94-2.99 (m, 1H), 2.56-2.68 (m, 4H), 1.77-1.92 (m, 2H), 1.21 (t, 3H, $J = 7.7$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.6, 141.8, 138.3, 135.2, 134.6, 133.4, 131.6, 130.1, 129.4, 128.8, 128.5, 128.3, 127.8, 124.3, 124.1, 122.2 (q, $J = 285.5$ Hz), 91.0 (q, $J = 32.8$ Hz), 79.1, 63.2, 31.3, 30.5, 28.4, 15.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0 ; IR (neat, cm^{-1}) ν : 2960, 1745, 1468, 1188; LRMS (ESI): m/z 492 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{27}\text{H}_{26}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 492.1757, Found 492.1767.

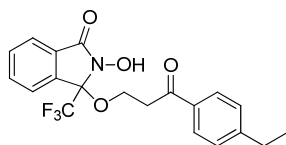
3-(3-(4-ethylphenyl)propoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (1z)



light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.80 (brs, 1H), 7.75 (d, 1H, $J = 6.9$ Hz), 7.59-7.64 (m, 1H), 7.53-7.58 (m, 2H), 7.05-7.12 (m, 4H), 3.41-3.47 (m, 1H), 2.96-3.04 (m, 1H), 2.63-2.75 (m, 2H), 2.60

(q, 2H, $J = 7.7$ Hz), 1.85-2.01 (m, 2H), 1.21 (t, 3H, $J = 7.7$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.8, 141.7, 138.5, 135.1, 133.2, 131.5, 129.9, 128.3, 127.8, 124.1, 123.9, 121.9 (q, $J = 286.7$ Hz), 91.0 (q, $J = 32.8$ Hz), 63.5, 31.4, 30.6, 28.4, 15.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3421, 2962, 1716, 1643, 1200; LRMS (ESI): m/z 402 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{20}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 402.1288, Found 402.1273.

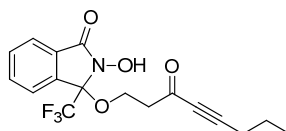
3-(3-(4-ethylphenyl)-3-oxopropoxy)-*N*-hydroxy-3-trifluoromethyl-isoindolinone (2z)



Starting material **1z** (15.2 mg, 0.04 mmol) was oxygenated under condition B of section 2, and **2z** (8.6 mg, 0.022 mmol) was isolated according to the purification procedure described in the General method (55% yield).

light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 8.82 (brs, 1H), 7.89-7.94 (m, 3H), 7.61-7.70 (m, 3H), 7.31 (d, 2H, $J = 8.0$ Hz), 3.73-3.80 (m, 1H), 3.50-3.58 (m, 1H), 3.37-3.43 (m, 1H), 3.05-3.12 (m, 1H), 2.72 (q, 2H, $J = 7.5$ Hz), 1.26 (t, 3H, $J = 7.5$ Hz); ^{13}C NMR (126 MHz, CDCl_3) δ : 198.6, 163.2, 151.5, 133.9, 133.7, 132.8, 131.7, 130.9, 128.7, 128.3, 124.3, 124.0, 121.8 (q, $J = 286.7$ Hz), 90.4 (q, $J = 33.4$ Hz), 57.6, 37.0, 29.0, 15.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1; IR (neat, cm^{-1}) ν : 3433, 1644, 1190; LRMS (ESI): m/z 416 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{20}\text{H}_{18}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 416.1080, Found 416.1088.

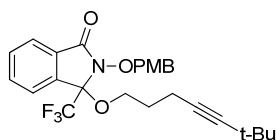
N-hydroxy-3-((3-oxooct-4-yn-1-yl)oxy)-3-trifluoromethyl-isoindolinone (2aa)



Starting material **1aa** (13.7 mg, 0.04 mmol) was oxygenated under condition A of section 2, and **2aa** (6.1 mg, 0.017 mmol) was isolated according to the purification procedure described in the General method (43% yield).

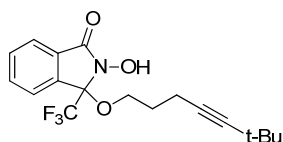
light yellow liquid (unstable); ^1H NMR (400 MHz, CDCl_3) δ : 7.87 (d, 1H, $J = 6.7$ Hz), 7.56-7.71 (m, 3H), 3.62 (dt, 1H, $J = 3.6$ Hz, 9.2 Hz), 3.26-3.34 (m, 1H), 2.97-3.08 (m, 1H), 2.79-2.88 (m, 1H), 2.36 (t, 2H, $J = 7.0$ Hz), 1.55-1.67 (m, 2H), 1.01 (t, 3H, $J = 7.4$ Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 185.7, 164.1, 134.0, 133.1, 131.7, 130.4, 124.2, 121.7 (q, $J = 286.7$ Hz), 97.2, 90.6 (q, $J = 33.2$ Hz), 80.8, 57.7, 44.2, 21.1, 20.9, 13.4; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3215, 2967, 2213, 1720, 1674, 1470, 1191; LRMS (ESI): m/z 378 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{17}\text{H}_{16}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 378.0924, Found 378.0929.

3-((6,6-dimethylhept-4-yn-1-yl)oxy)-*N*-((4-methoxybenzyl)oxy)-3-trifluoromethyl-isoindolinone (S4'ab)



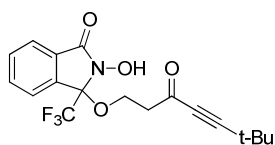
light yellow liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 7.89 (d, 1H, $J = 6.9$ Hz), 7.59-7.71 (m, 3H), 7.49 (d, 2H, $J = 8.6$ Hz), 6.92 (d, 2H, $J = 8.6$ Hz), 5.25 (d, 1H, $J = 9.2$ Hz), 5.08 (d, 1H, $J = 9.2$ Hz), 3.81 (s, 3H), 3.33-3.39 (m, 1H), 3.05-3.12 (m, 1H), 2.15-2.26 (m, 2H), 1.62-1.78 (m, 2H), 1.07 (s, 9H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 165.4, 160.1, 135.2, 133.4, 131.6, 131.1, 130.2, 126.8, 124.3, 124.1, 122.1 (q, $J = 286.3$ Hz), 113.8, 91.0 (q, $J = 33.2$ Hz), 89.6, 78.9, 76.9, 62.6, 55.2, 31.2, 28.6, 27.1, 15.1; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2966, 1746, 1613, 1516, 1468, 1253, 1187; LRMS (ESI): m/z 498 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{26}\text{H}_{28}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 498.1863, Found 498.1855.

3-((6,6-dimethylhept-4-yn-1-yl)oxy)-N-hydroxy-3-(trifluoromethyl)-isoindolinone (**1ab**)



yellow liquid; $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 9.41 (brs, 1H), 7.82 (d, 1H, $J = 7.4$ Hz), 7.57-7.68 (m, 3H), 3.43-3.49 (m, 1H), 3.12-3.17 (m, 1H), 2.29 (t, 2H, $J = 6.9$ Hz), 1.71-1.84 (m, 2H), 1.10 (s, 9H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 165.4, 135.0, 133.2, 131.5, 130.0, 124.1, 123.9, 121.9 (q, $J = 285.5$ Hz), 90.9 (q, $J = 33.2$ Hz), 90.0, 77.1, 62.5, 31.2, 28.4, 27.2, 15.1; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3423, 2968, 1719, 1470, 1200; LRMS (ESI): m/z 378 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{20}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 378.1288, Found 378.1280.

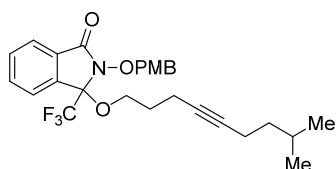
3-((6,6-dimethyl-3-oxohept-4-yn-1-yl)oxy)-N-hydroxy-3-(trifluoromethyl)-isoindolinone (**2ab**)



Starting material **1ab** (18.2 mg, 0.04 mmol) was oxygenated under condition A of section 2, and **2ab** (7.6 mg, 0.021 mmol) was isolated according to the purification procedure described in the General method (47% yield).

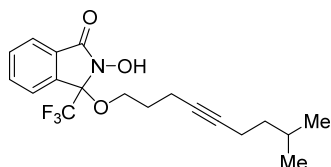
light yellow liquid (unstable); $^1\text{H NMR}$ (500 MHz, CDCl_3) δ : 8.69 (brs, 1H), 7.85-7.88 (m, 1H), 7.59-7.69 (m, 3H), 3.62 (dt, 1H, $J = 4.0$ Hz, 9.2 Hz), 3.27-3.32 (m, 1H), 2.97-3.06 (m, 1H), 2.80-2.87 (m, 1H), 1.27 (s, 9H); $^{13}\text{C NMR}$ (126 MHz, CDCl_3) δ : 185.9, 164.2, 134.1, 133.1, 131.7, 130.4, 124.2, 123.9, 121.7 (q, $J = 286.3$ Hz), 104.3, 90.6 (q, $J = 33.6$ Hz), 79.2, 57.7, 44.2, 29.9, 27.8; $^{19}\text{F NMR}$ (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3196, 2974, 2211, 1719, 1675, 1470, 1199; LRMS (ESI): m/z 392 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{18}\text{H}_{18}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 392.1080, Found 392.1070.

N-((4-methoxybenzyl)oxy)-3-((8-methylnon-4-yn-1-yl)oxy)-3-(trifluoromethyl)-isoindolinone (**S4'ac**)



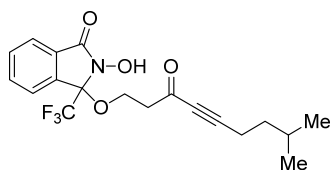
colorless liquid; ^1H NMR (400 MHz, CDCl_3) δ : 7.89 (dd, 1H, $J = 6.5$ Hz, 1.1 Hz), 7.60-7.71 (m, 3H), 7.46-7.52 (m, 2H), 6.90-6.95 (m, 2H), 5.25 (d, 1H, $J = 9.2$ Hz), 5.08 (d, 1H, $J = 9.2$ Hz), 3.82 (s, 3H), 3.34-3.41 (m, 1H), 3.04-3.12 (m, 1H), 2.19-2.26 (m, 2H), 1.96-2.04 (m, 2H), 1.61-1.80 (m, 2H), 1.50-1.60 (m, 1H), 1.24 (q, 2H, $J = 7.2$ Hz), 0.80-0.84 (m, 6H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.4, 160.1, 135.1, 133.3, 131.6, 131.1, 130.2, 126.8, 124.3, 124.1, 122.1 (q, $J = 285.9$ Hz), 113.8, 91.0 (q, $J = 32.9$ Hz), 81.0, 78.9, 78.4, 62.5, 55.2, 37.9, 28.5, 27.1, 22.10, 22.08, 16.6, 15.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 2956, 1744, 1613, 1515, 1468, 1253, 1187; LRMS (ESI): m/z 512 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{27}\text{H}_{30}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 512.2019, Found 512.2003.

***N*-hydroxy-3-((8-methylnon-4-yn-1-yl)oxy)-3-(trifluoromethyl)-isoindolinone (1ac)**



light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.30 (brs, 1H), 7.82 (d, 1H, $J = 7.4$ Hz), 7.58-7.68 (m, 3H), 3.44-3.50 (m, 1H), 3.12-3.18 (m, 1H), 2.29-2.35 (m, 2H), 2.04-2.10 (m, 2H), 1.71-1.85 (m, 2H), 1.53-1.63 (m, 1H), 1.29 (q, 2H, $J = 7.5$ Hz), 0.82-0.86 (m, 6H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.4, 135.0, 133.1, 131.5, 130.1, 124.2, 123.9, 121.9 (q, $J = 286.7$ Hz), 90.9 (q, $J = 33.2$ Hz), 81.5, 78.7, 62.5, 37.9, 28.2, 27.2, 22.1, 16.6, 15.2; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3159, 2956, 1718, 1469, 1305, 1191; LRMS (ESI): m/z 392 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{19}\text{H}_{22}\text{F}_3\text{NO}_3\text{Na}$ $[\text{M}+\text{Na}]^+$ 392.1444, Found 392.1442.

***N*-hydroxy-3-((8-methyl-3-oxonon-4-yn-1-yl)oxy)-3-(trifluoromethyl)-isoindolinone (2ac)**

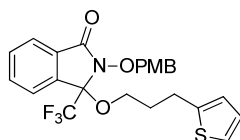


Starting material **1ac** (73.9 mg, 0.2 mmol) was oxygenated under condition A of section 2, and **2ac** (26.0 mg, 0.068 mmol) was isolated according to the purification procedure described in the General method (34% yield).

yellow liquid; ^1H NMR (400 MHz, CDCl_3) δ : 8.77 (brs, 1H), 7.86 (d, 1H, $J = 6.7$ Hz), 7.58-7.69 (m, 3H), 3.62 (td, 1H, $J = 9.0$ Hz, 4.0 Hz), 3.27-3.34 (m, 1H), 2.95-3.05 (m, 1H), 2.84 (td, 1H, $J = 4.7$ Hz, 18.5 Hz), 2.37 (t, 2H, $J = 7.3$ Hz), 1.60-1.73 (m, 1H), 1.47 (q, 2H, $J = 7.3$ Hz), 0.90 (d, 6H, $J = 6.7$ Hz); ^{13}C NMR (100 MHz, CDCl_3) δ : 185.6, 164.3, 134.1, 133.1, 131.7, 130.3, 124.19, 124.16, 121.7 (q, $J = 286.6$ Hz),

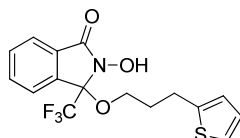
97.3, 90.6 (q, $J = 33.5$ Hz), 80.6, 57.8, 44.2, 36.3, 27.3, 21.9, 17.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.2; IR (neat, cm^{-1}) ν : 3182, 2958, 2212, 1721, 1675, 1469, 1190; LRMS (ESI): m/z 406 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{19}\text{H}_{20}\text{F}_3\text{NO}_4\text{Na}$ $[\text{M}+\text{Na}]^+$ 406.1237, Found 406.1234.

***N*-((4-methoxybenzyl)oxy)-3-(3-(thiophen-2-yl)propoxy)-3-trifluoromethyl-isoindolinone (S4'ad)**



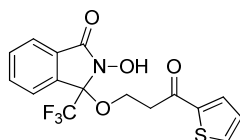
light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 7.89 (d, 1H, $J = 6.9$ Hz), 7.61-7.69 (m, 2H), 7.58 (d, 1H, $J = 7.4$ Hz), 7.50 (d, 2H, $J = 8.6$ Hz), 7.07 (dd, 1H, $J = 5.2$ Hz, 1.1 Hz), 6.92-6.96 (m, 2H), 6.84 (dd, 1H, $J = 5.2$ Hz, 3.4 Hz), 6.69-6.71 (m, 1H), 5.25 (d, 1H, $J = 9.5$ Hz), 5.06 (d, 1H, $J = 9.5$ Hz), 3.82 (s, 3H), 3.28-3.35 (m, 1H), 2.96-3.03 (m, 1H), 2.87 (t, 2H, $J = 7.4$ Hz), 1.83-1.97 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.5, 160.1, 143.8, 135.1, 133.4, 131.6, 131.2, 130.1, 126.8, 126.7, 124.4, 124.2, 124.1, 123.1, 122.2 (q, $J = 285.5$ Hz), 113.8, 90.8 (q, $J = 32.8$ Hz), 78.8, 62.8, 55.2, 30.8, 26.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (neat, cm^{-1}) ν : 3437, 2953, 1742, 1613, 1515, 1253, 1188; LRMS (ESI): m/z 500 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{24}\text{H}_{22}\text{F}_3\text{NO}_4\text{SNa}$ $[\text{M}+\text{Na}]^+$ 500.1114, Found 500.1136.

***N*-hydroxy-3-(3-(thiophen-2-yl)propoxy)-3-trifluoromethyl-isoindolinone (1ad)**



light yellow liquid; ^1H NMR (500 MHz, CDCl_3) δ : 9.66 (brs, 1H), 7.76-7.80 (m, 1H), 7.62-7.67 (m, 1H), 7.56-7.61 (m, 2H), 7.08-7.10 (m, 1H), 6.90 (dd, 1H, $J = 5.2$ Hz, 3.4 Hz), 3.42-3.49 (m, 1H), 3.03-3.09 (m, 1H), 2.97 (t, 2H, $J = 7.4$ Hz), 1.93-2.09 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.8, 144.1, 135.0, 133.3, 131.5, 129.9, 126.7, 124.5, 124.1, 123.9, 123.1, 121.9 (q, $J = 286.3$ Hz), 91.0 (q, $J = 33.2$ Hz), 63.1, 30.9, 26.1; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.4; IR (neat, cm^{-1}) ν : 3158, 2950, 1718, 1469, 1200; LRMS (ESI): m/z 380 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{14}\text{F}_3\text{NO}_3\text{SNa}$ $[\text{M}+\text{Na}]^+$ 380.0539, Found 380.0547.

***N*-hydroxy-3-(3-oxo-3-(thiophen-2-yl)propoxy)-3-trifluoromethyl-isoindolinone (2ad)**

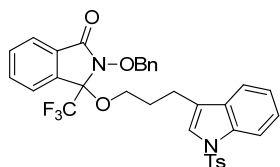


Starting material **1ad** (35.7 mg, 0.1 mmol) was oxygenated under condition A of section 2, and **2ad** (19.4 mg, 0.052 mmol) was isolated according to the purification procedure described in the General method (52% yield).

light yellow solid; ^1H NMR (500 MHz, CDCl_3) δ : 8.79 (brs, 1H), 7.88 (d, 1H, $J = 7.4$ Hz), 7.79 (d, 1H, $J = 4.0$ Hz), 7.72 (d, 1H, $J = 5.2$ Hz), 7.60-7.69 (m, 3H), 7.14-7.17 (m, 1H), 3.75 (dt, 1H, $J = 3.1$ Hz, 9.9 Hz), 3.39-3.49 (m, 2H), 3.10-3.37 (m, 1H); ^{13}C NMR (126 MHz, CDCl_3) δ : 191.3, 163.9, 143.1, 135.0, 134.0,

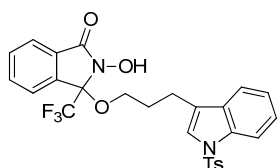
133.2, 133.0, 131.7, 130.5, 128.4, 124.2, 124.1, 121.8 (q, $J = 286.7$ Hz), 90.6 (q, $J = 33.6$ Hz), 58.0, 38.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.1 ; IR (KBr, cm^{-1}) ν : 3178, 2959, 1741, 1637, 1418, 1197; LRMS (ESI): m/z 394 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{16}\text{H}_{12}\text{F}_3\text{NO}_4\text{SNa}$ $[\text{M}+\text{Na}]^+$ 394.0331, Found 394.0337.

***N*-benzyloxy-3-(3-(1-tosyl-1*H*-indol-3-yl)propoxy)-3-trifluoromethyl-isoindolinone (S4ae)**



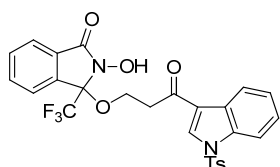
white solid; ^1H NMR (400 MHz, CDCl_3) δ : 7.97 (d, 1H, $J = 8.5$ Hz), 7.88-7.93 (m, 1H), 7.71 (d, 2H, $J = 8.5$ Hz), 7.53-7.70 (m, 5H), 7.34-7.43 (m, 4H), 7.27-7.33 (m, 1H), 7.25 (s, 1H), 7.15-7.22 (m, 3H), 5.35 (d, 1H, $J = 9.7$ Hz), 5.14 (d, 1H, $J = 9.7$ Hz), 3.26-3.35 (m, 1H), 2.96-3.04 (m, 1H), 2.63-2.79 (m, 2H), 2.31 (s, 3H), 1.81-2.00 (m, 2H); ^{13}C NMR (100 MHz, CDCl_3) δ : 165.6, 144.7, 135.2, 135.0, 134.5, 133.6, 131.7, 130.7, 129.8, 129.7, 129.3, 128.8, 128.4, 126.6, 124.6, 124.2, 124.1, 122.9, 122.6, 122.2 (q, $J = 285.2$ Hz), 121.9, 119.3, 113.6, 90.8 (q, $J = 32.9$ Hz), 79.1, 63.0, 28.1, 21.4, 20.9; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0 ; IR (KBr, cm^{-1}) ν : 3064, 2950, 1744, 1448, 1370, 1174; LRMS (ESI): m/z 657 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{34}\text{H}_{29}\text{F}_3\text{N}_2\text{O}_5\text{SNa}$ $[\text{M}+\text{Na}]^+$ 657.1642, Found 657.1631.

***N*-hydroxy-3-(3-(1-tosyl-1*H*-indol-3-yl)propoxy)-3-trifluoromethyl-isoindolinone (1ae)**



white solid; ^1H NMR (500 MHz, CDCl_3) δ : 9.84 (brs, 1H), 7.97 (d, 1H, $J = 8.0$ Hz), 7.73 (d, 3H, $J = 8.0$ Hz), 7.50-7.65 (m, 3H), 7.47 (d, 1H, $J = 8.0$ Hz), 7.28-7.34 (m, 2H), 7.16-7.23 (m, 3H), 3.44-3.50 (m, 1H), 3.02-3.09 (m, 1H), 2.80 (t, 2H, $J = 7.4$ Hz), 2.30 (s, 3H), 1.93-2.10 (m, 2H); ^{13}C NMR (126 MHz, CDCl_3) δ : 165.8, 144.7, 135.3, 135.2, 135.0, 133.4, 131.6, 130.8, 129.8, 126.7, 124.6, 124.0, 123.9, 122.9, 122.8, 122.0, 121.9 (q, $J = 286.7$ Hz), 119.4, 113.6, 91.0 (q, $J = 33.6$ Hz), 63.2, 28.2, 21.4, 21.0; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.3 ; IR (KBr, cm^{-1}) ν : 3117, 2943, 1718, 1448, 1372, 1174; LRMS (ESI): m/z 567 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{27}\text{H}_{23}\text{F}_3\text{N}_2\text{O}_5\text{SNa}$ $[\text{M}+\text{Na}]^+$ 567.1172, Found 567.1165.

***N*-hydroxy-3-(3-oxo-3-(1-tosyl-1*H*-indol-3-yl)propoxy)-3-trifluoromethyl-isoindolinone (2ae)**

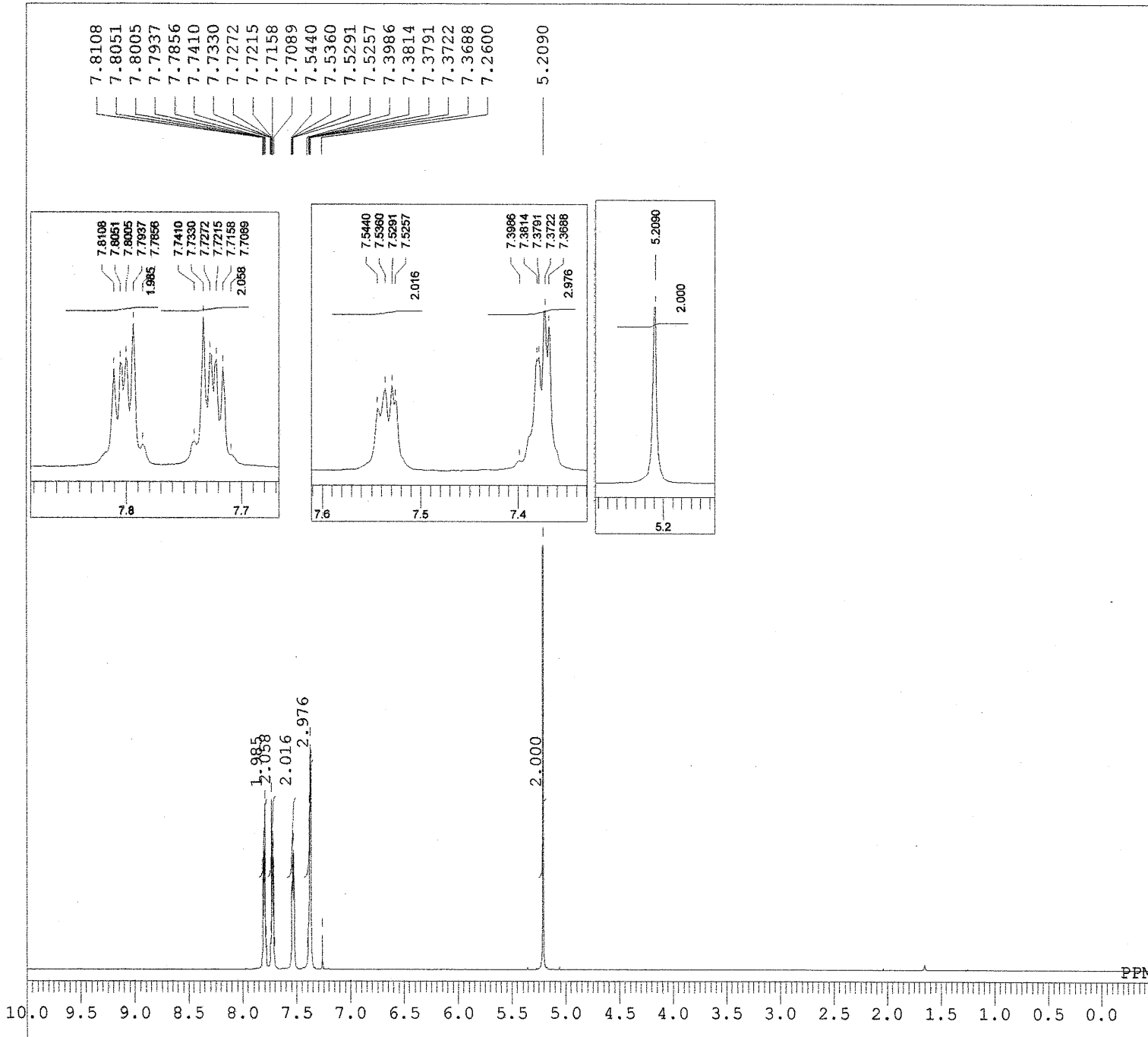


Starting material **1ae** (27.2 mg, 0.05 mmol) was oxygenated under condition A of section 2, and **2ae** (14.8 mg, 0.026 mmol) was isolated according to the purification procedure described in the General

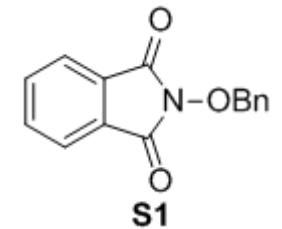
method (53% yield).

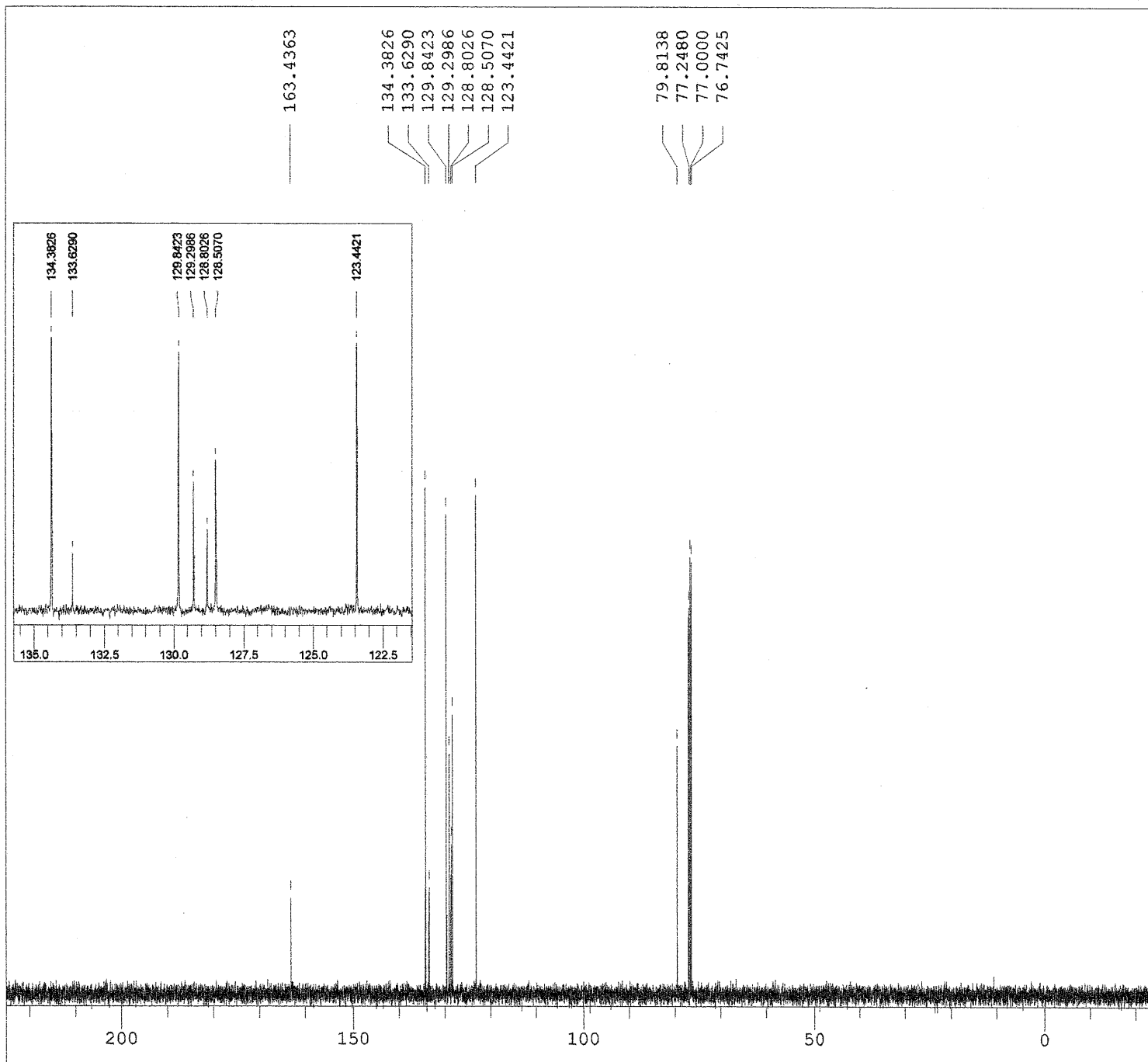
light yellow solid; ^1H NMR (500 MHz, CDCl_3) δ : 9.04 (brs, 1H), 8.32 (s, 1H), 8.24 (d, 1H, $J = 8.0$ Hz), 7.86-7.92 (m, 2H), 7.83 (d, 2H, $J = 8.6$ Hz), 7.58-7.69 (m, 3H), 7.31-7.39 (m, 2H), 7.28 (d, 2H, $J = 8.6$ Hz), 3.76-3.83 (m, 1H), 3.41-3.49 (m, 2H), 3.11-3.20 (m, 1H), 2.35 (s, 3H); ^{13}C NMR (126 MHz, CDCl_3) δ : 194.5, 163.7, 146.2, 134.7, 134.2, 133.9, 132.91, 132.89, 131.7, 130.6, 130.3, 127.2, 127.1, 126.0, 125.1, 124.2, 124.1, 123.0, 121.8 (q, $J = 286.7$ Hz), 120.6, 113.0, 90.5 (q, $J = 32.4$ Hz), 57.8, 38.3, 21.6; ^{19}F NMR (369 MHz, CDCl_3) δ : -78.0; IR (KBr, cm^{-1}) ν : 3135, 2952, 1736, 1656, 1536, 1382, 1178; LRMS (ESI): m/z 581 $[\text{M}+\text{Na}]^+$; HRMS (ESI): m/z calcd for $\text{C}_{27}\text{H}_{21}\text{F}_3\text{N}_2\text{O}_6\text{SNa}$ $[\text{M}+\text{Na}]^+$ 581.0965, Found 581.0978.

O-Bn-NHPI

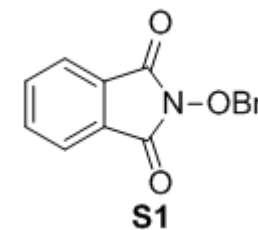


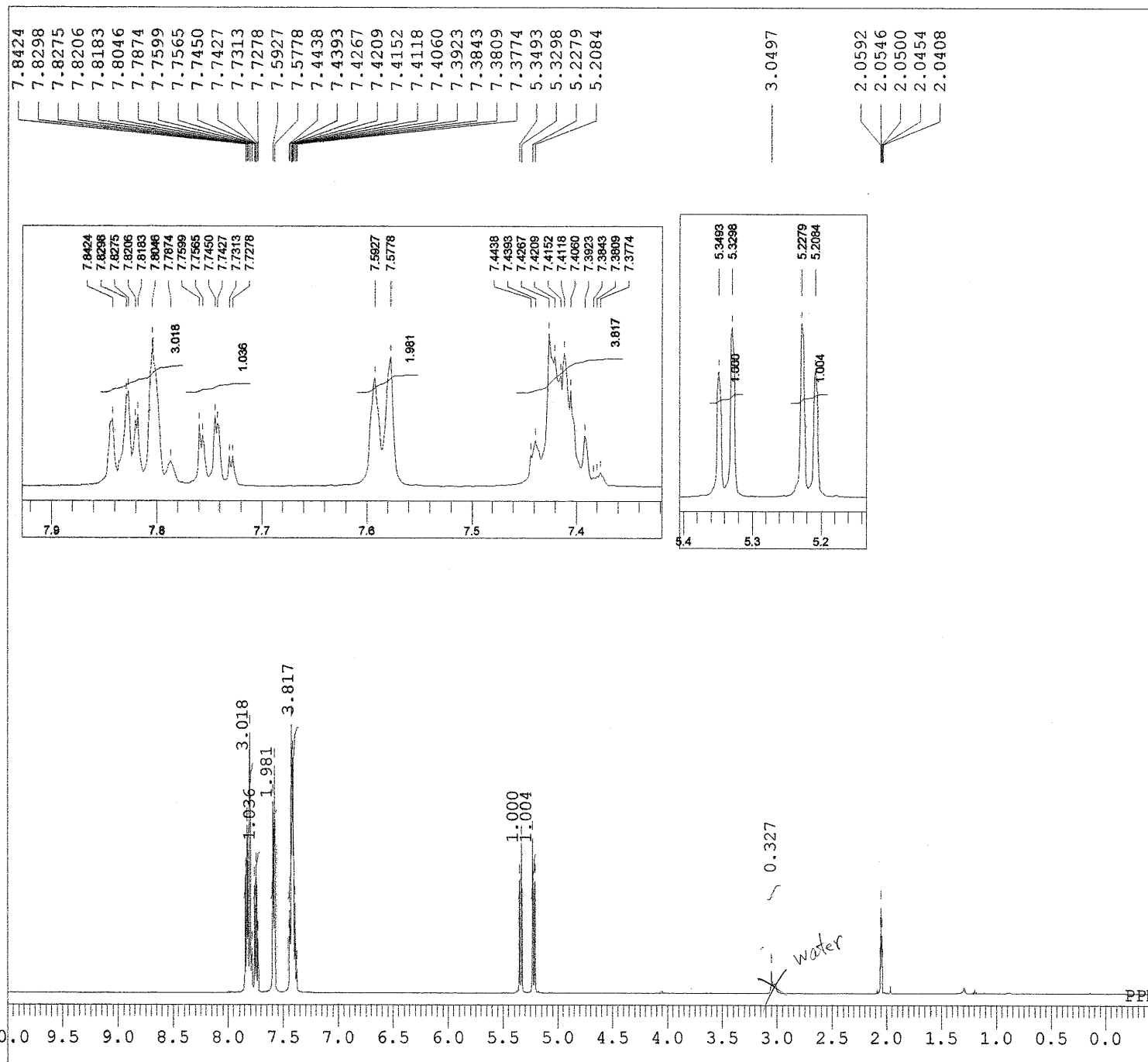
DFILE ozawa03-087_1H.jdf
COMNT O-Bn-NHPI
DATIM 2014-01-31 16:45:47
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.00 Hz
RGAIN 34





DFILE ozawa03-087_13C.jdf
COMNT O-Bn-NHPI
DATIM 2014-01-31 16:46:51
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 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60



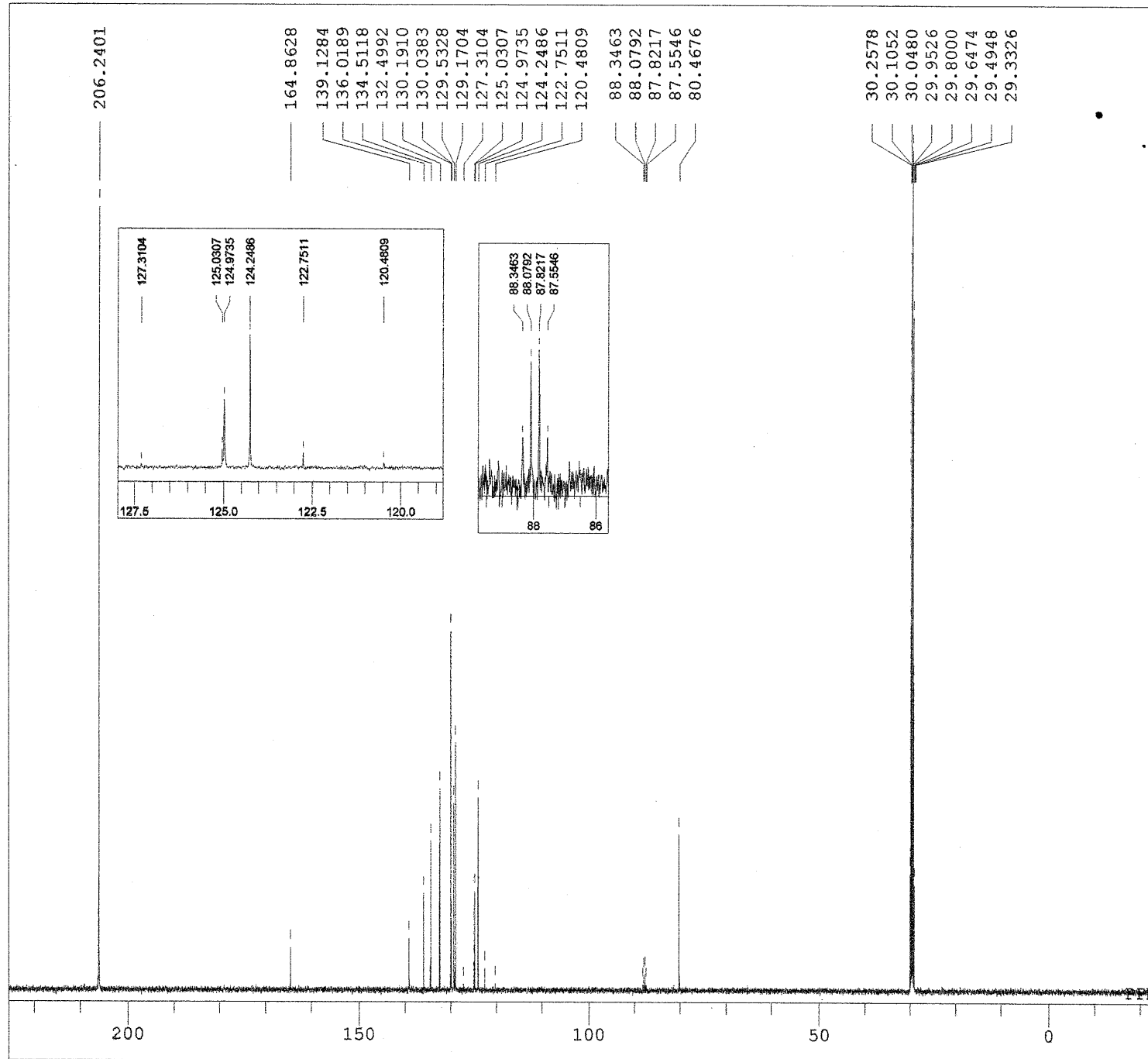


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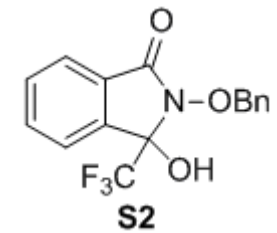
DFILE  ozawa04-026_1H.jdf
COMNT  S2, CF3-OH
DATIM  2014-01-31 21:15:49
OBNUC  1H
EXMOD  proton.jxp
OBFRQ   500.16 MHz
OBSET   2.41 KHz
OBFIN   6.01 Hz
POINT   16384
FREQU   9384.38 Hz
SCANS    4
ACQTM   1.7459 sec
PD       5.0000 sec
PW1     5.55 usec
IRNUC   1H
CTEMP   21.7 c
SLVNT   ACETN
EXREF   2.05 ppm
BF       0.12 Hz
RGAIN   32
    
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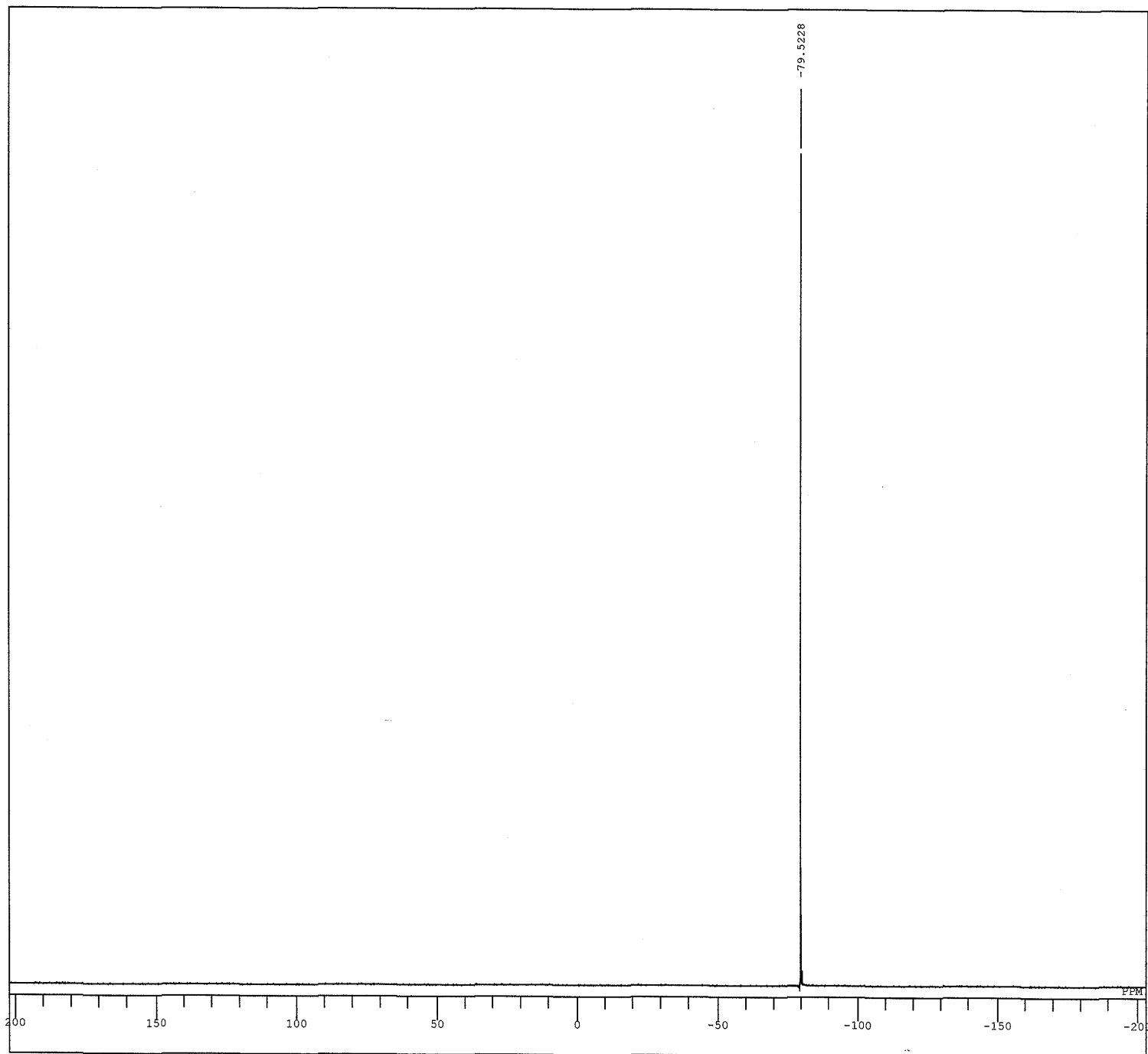


S2, CF3-OH

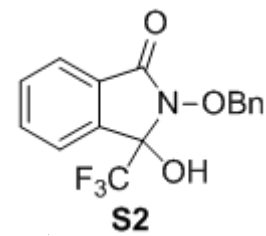


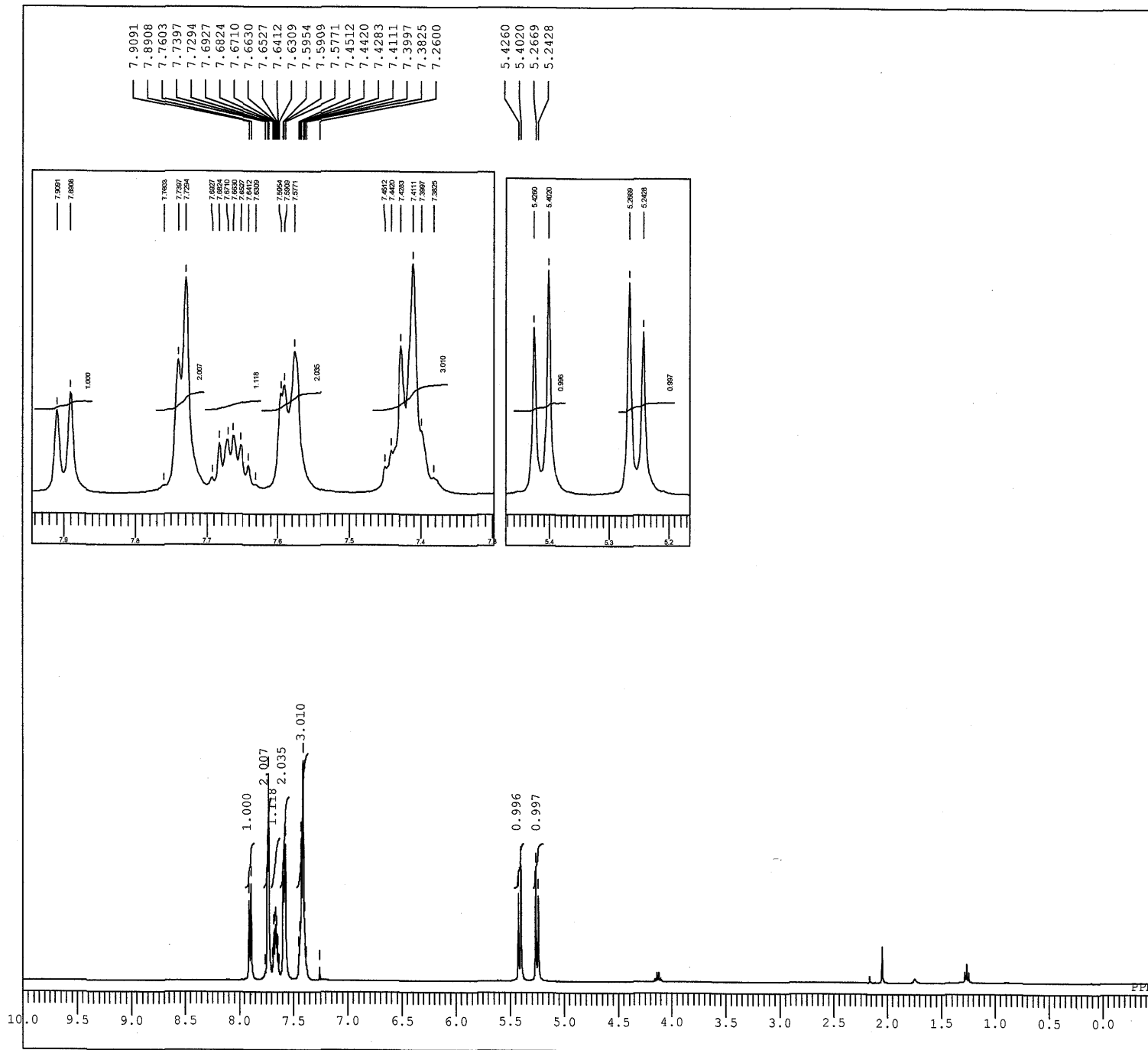
DFILE ozawa04-026_13C.jdf
COMNT S2, CF3-OH
DATIM 2014-01-31 21:16:52
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 176
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 22.1 c
SLVNT ACETN
EXREF 29.80 ppm
BF 1.00 Hz
RGAIN 60



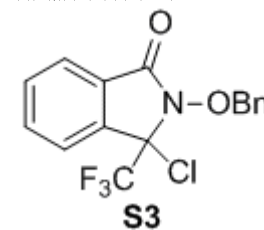


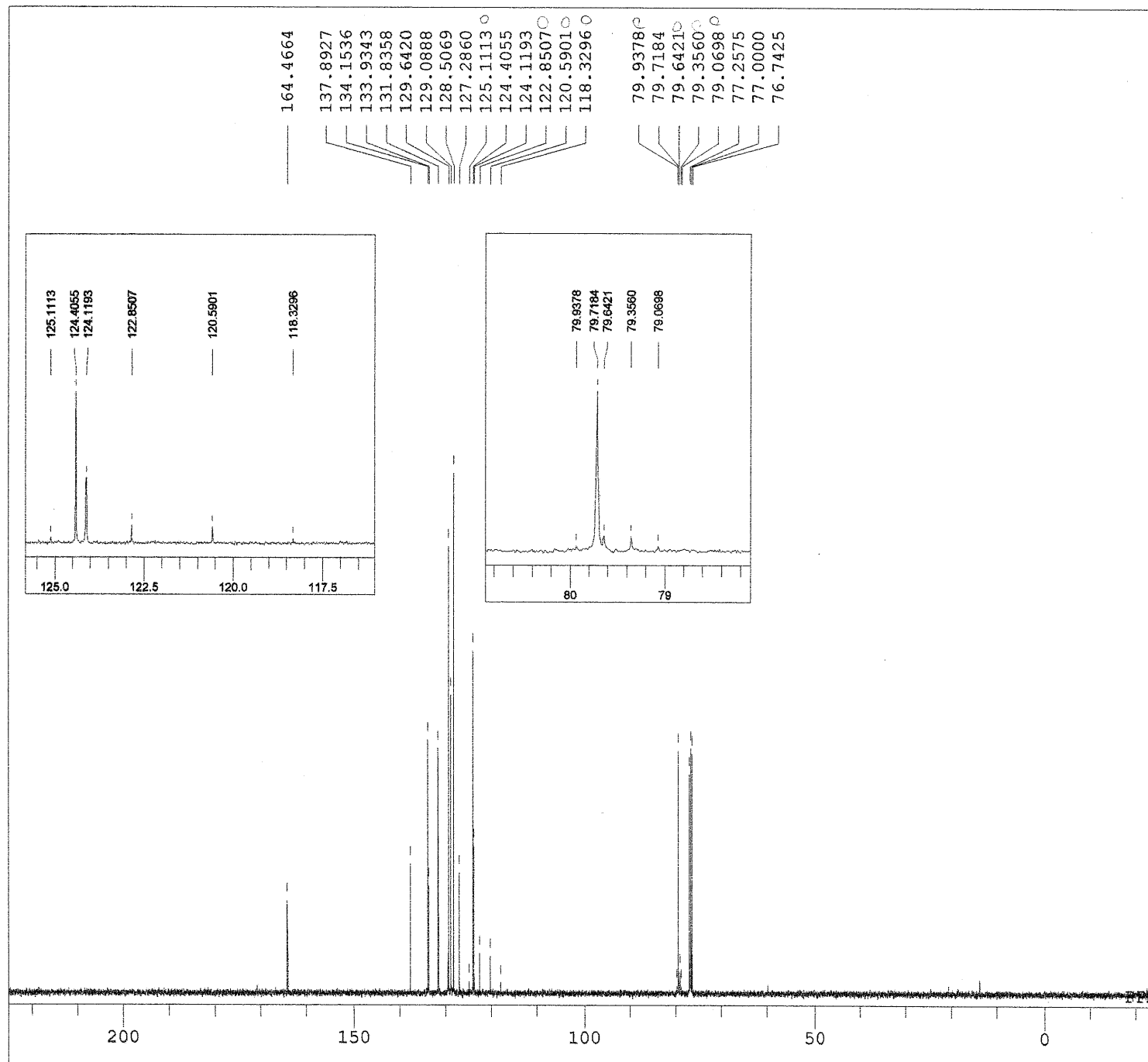
DFILE ozawa04-026_19F.jdf
COMNT S2, CF3-OH
DATIM 31-01-2014 20:52:12
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSFET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 21.3 c
SLVNT ACETN
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46





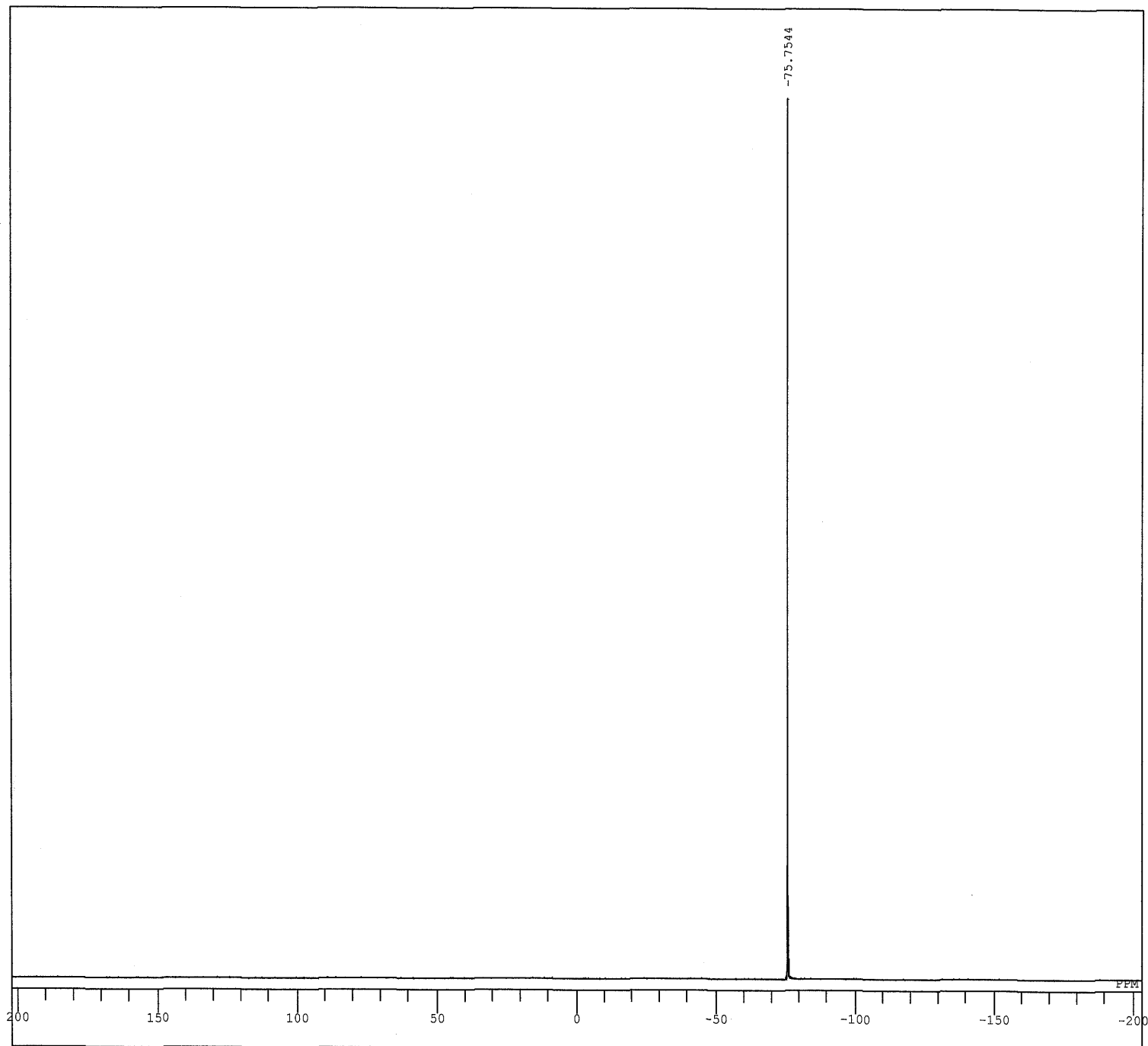
DFILE ozawa04-131_1h.jdf
 COMNT S3, CF3-C1
 DATIM 11-02-2014 20:18:48
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.25 usec
 IRNUC 1H
 CTEMP 21.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 1.00 Hz
 RGAIN 28



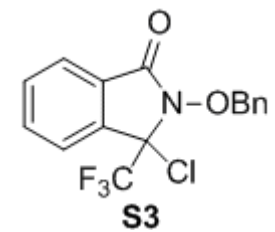


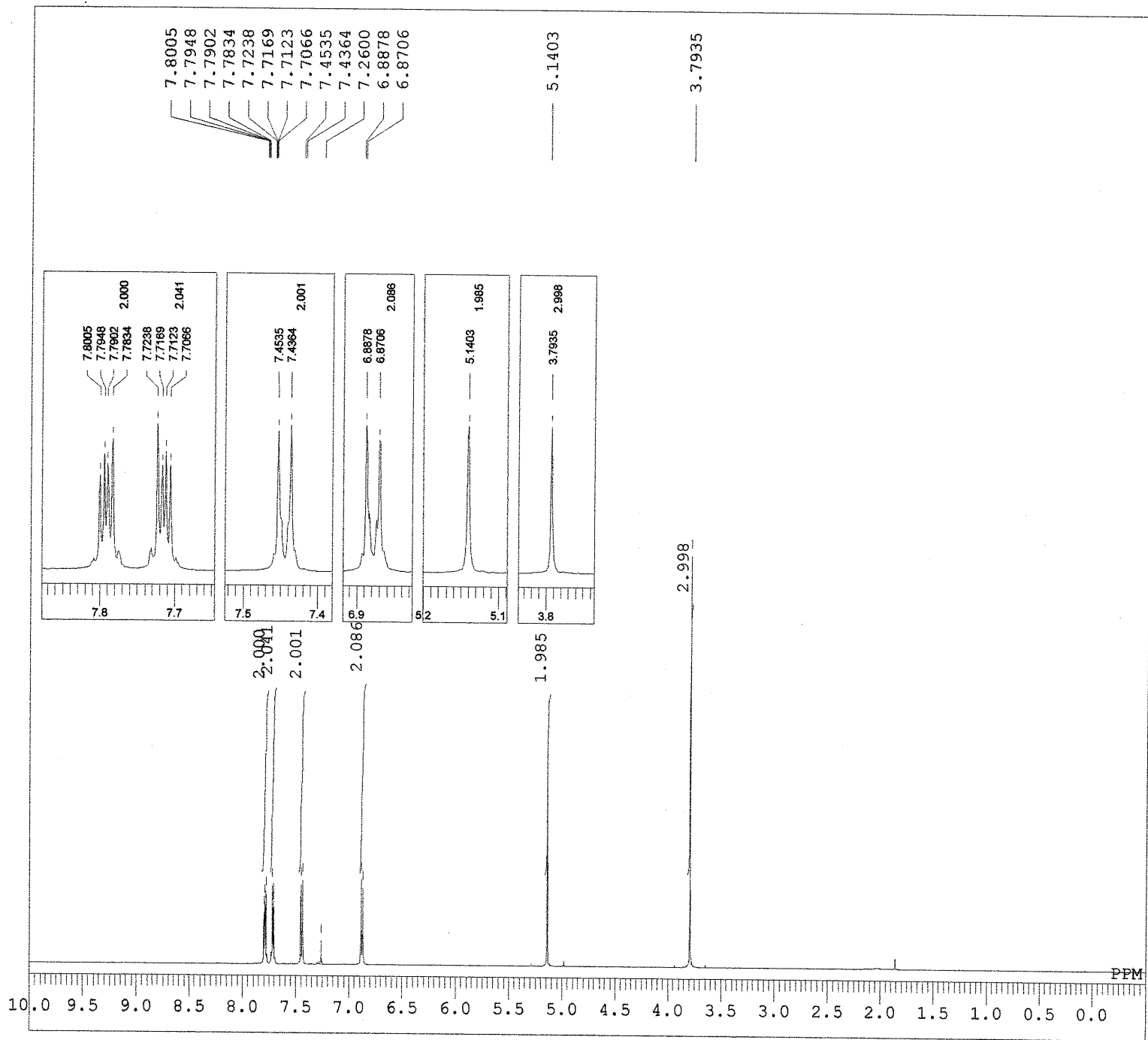
DFILE ozawa04-131_13C.jdf
 COMNT S3, CF3-C1
 DATIM 2014-02-11 20:50:43
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 84
 ACQTM 0.8336 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.6 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 1.00 Hz
 RGAIN 60



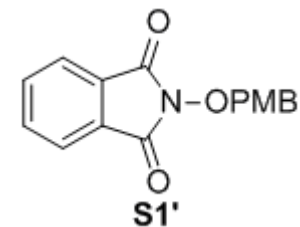


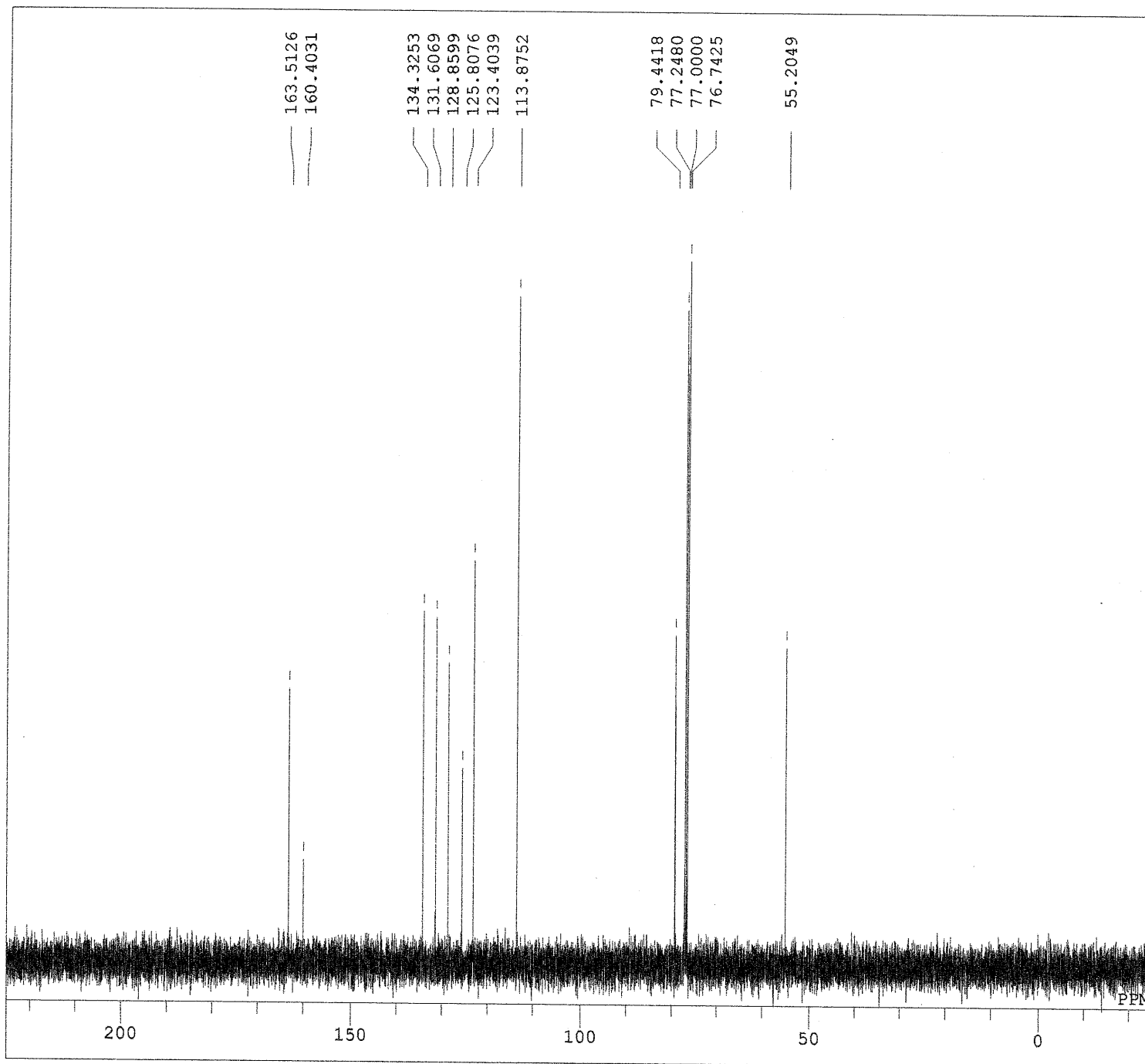
DFILE ozawa04-131_19F.jdf
COMNT S3, CF3-C1
DATIM 11-02-2014 20:16:32
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 1.00 Hz
RGAIN 44





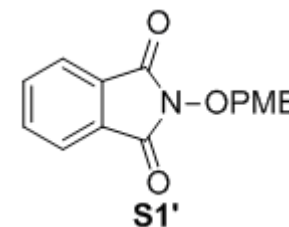
DFILE Ta02-134_1H.jdf
 COMNT PMB-NHPI
 DATIM 2014-08-16 15:28:57
 OBNUC 1H
 EXMOD proton.jxp
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 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 26.3 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 36





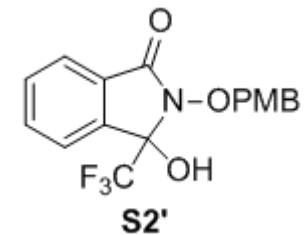
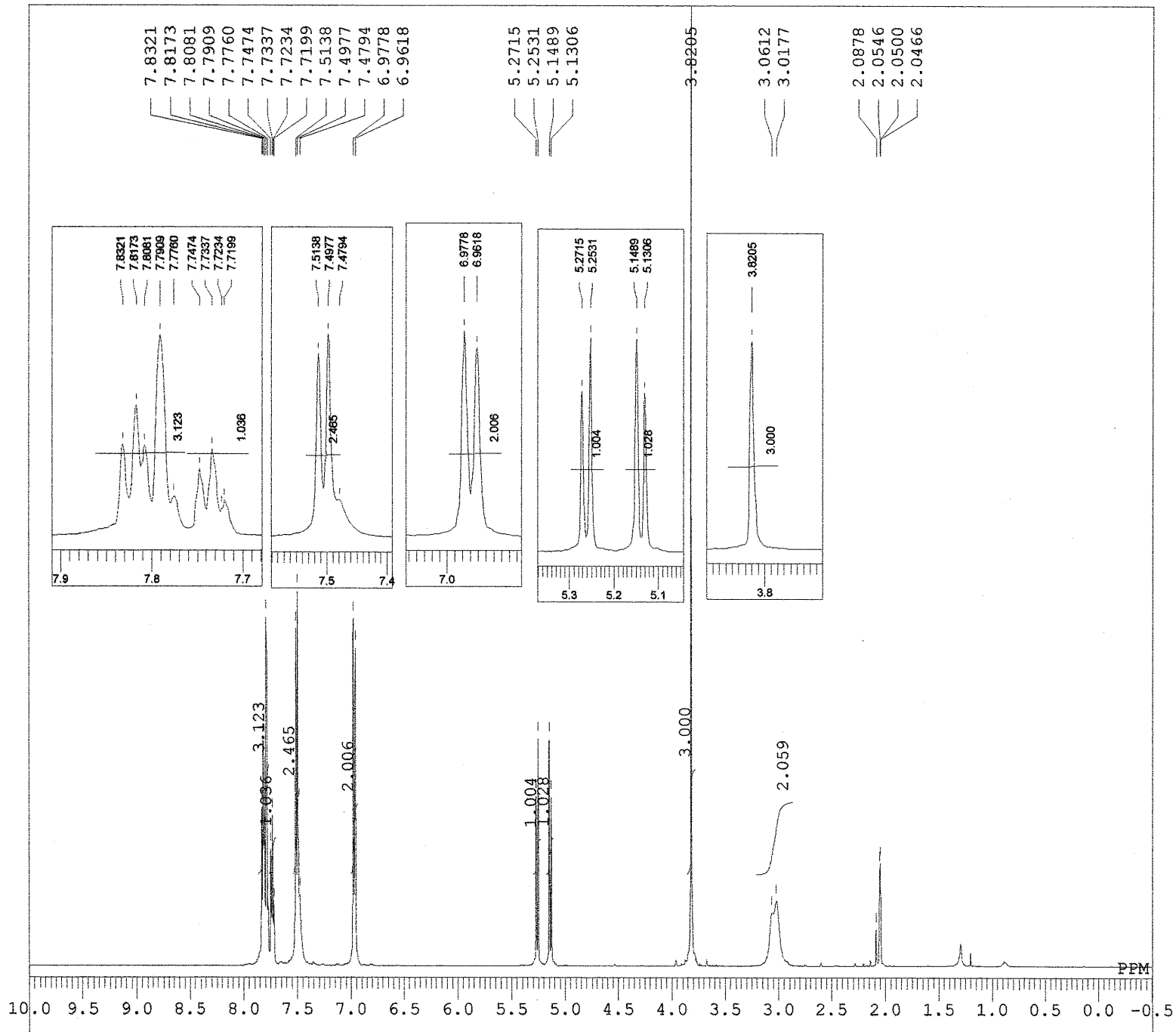
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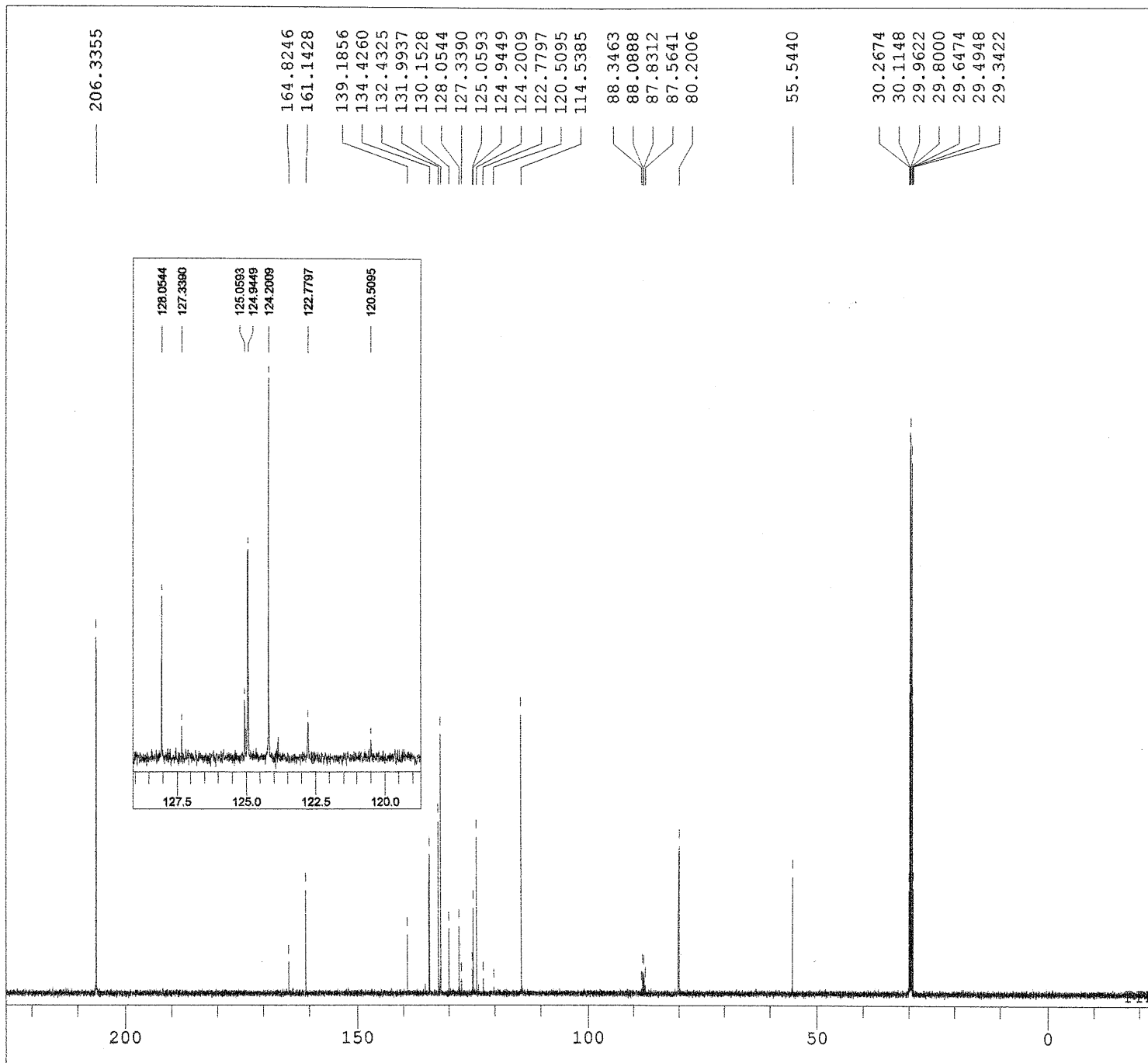
DFILE Ta02-134_13C-.jdf
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DATIM 2014-08-16 15:30:00
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EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 20
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60
    
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```

DFILE  ozawa05-028_1H.als
COMNT  FMB, CF3
DATIM  2014-06-04 19:09:38
OBNUC  1H
EXMOD  proton.jxp
OBFRQ  500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  13107
FREQU  7507.51 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
PW1     5.55 usec
IRNUC  1H
CTEMP  25.2 c
SLVNT  ACETN
EXREF  2.05 ppm
BF      0.12 Hz
RGAIN  30
    
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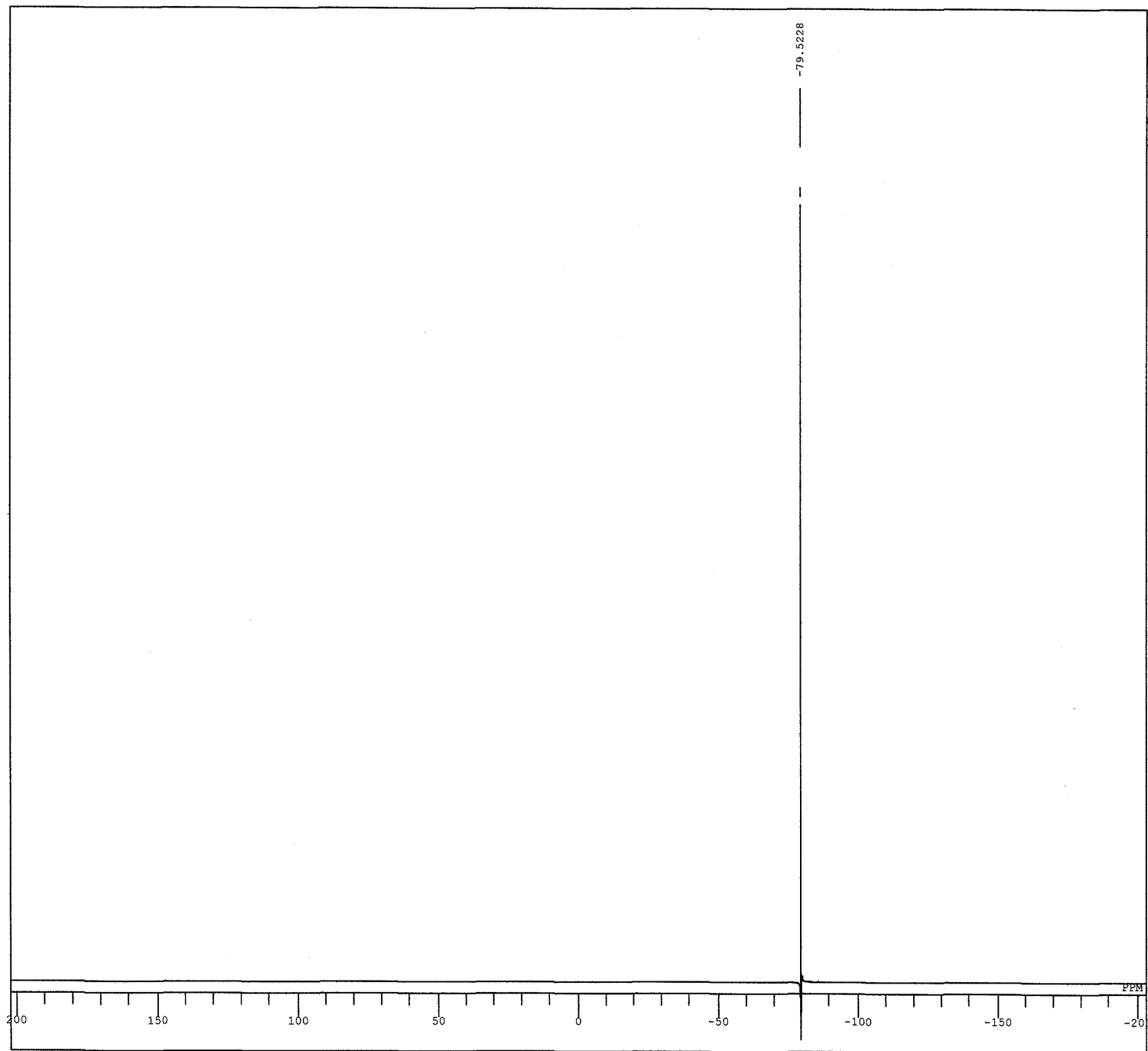




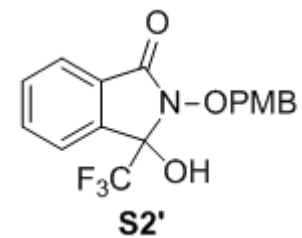
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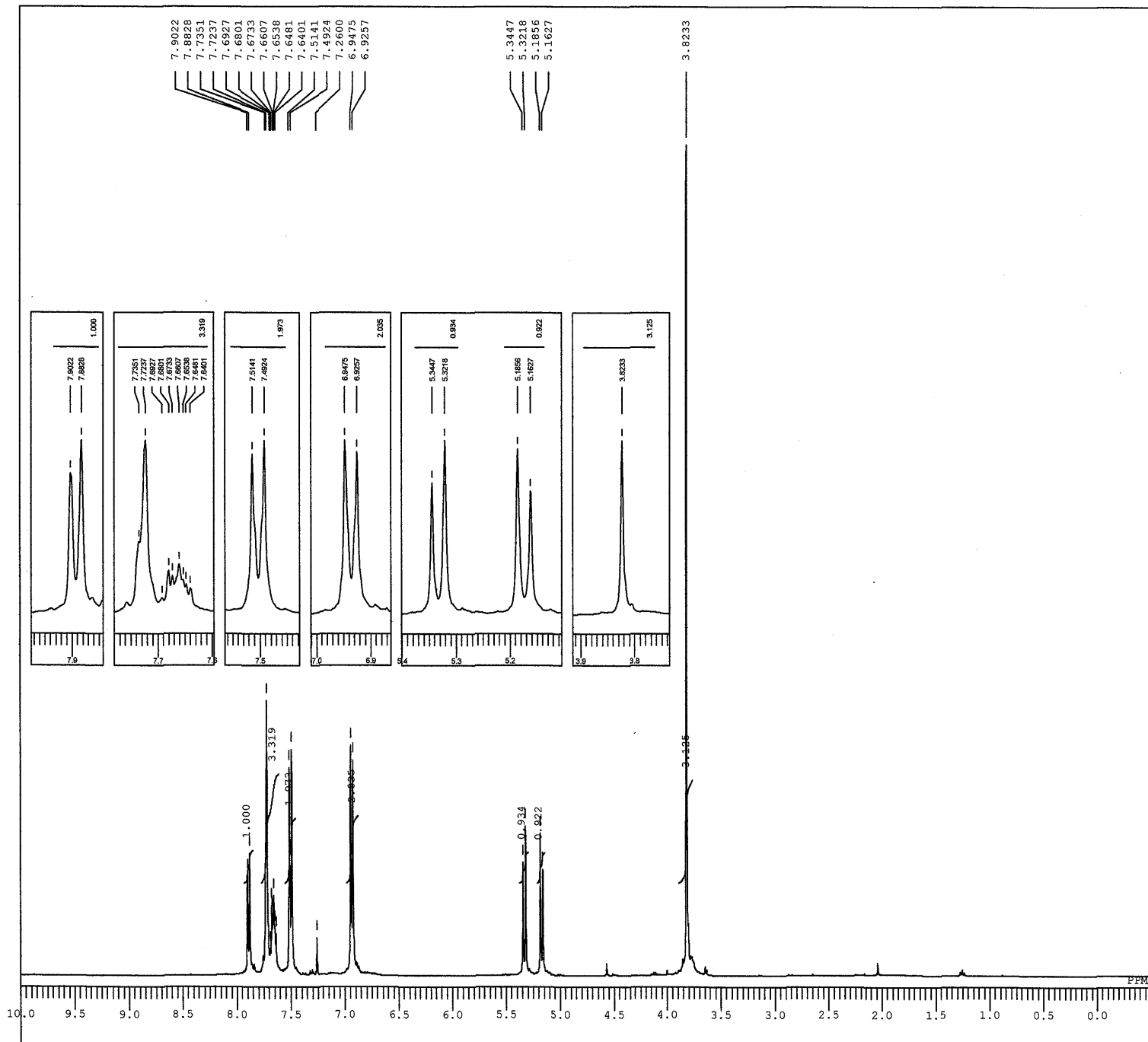
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OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 292
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 25.9 c
SLVNT ACETN
EXREF 29.80 ppm
BF 0.12 Hz
RGAIN 60
    
```





DFILE ozawa05-028_19F.jdf
COMNT PMB, CF3-OH
DATIM 06-06-2014 16:03:34
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSFT 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.0 c
SLVNT ACETN
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48

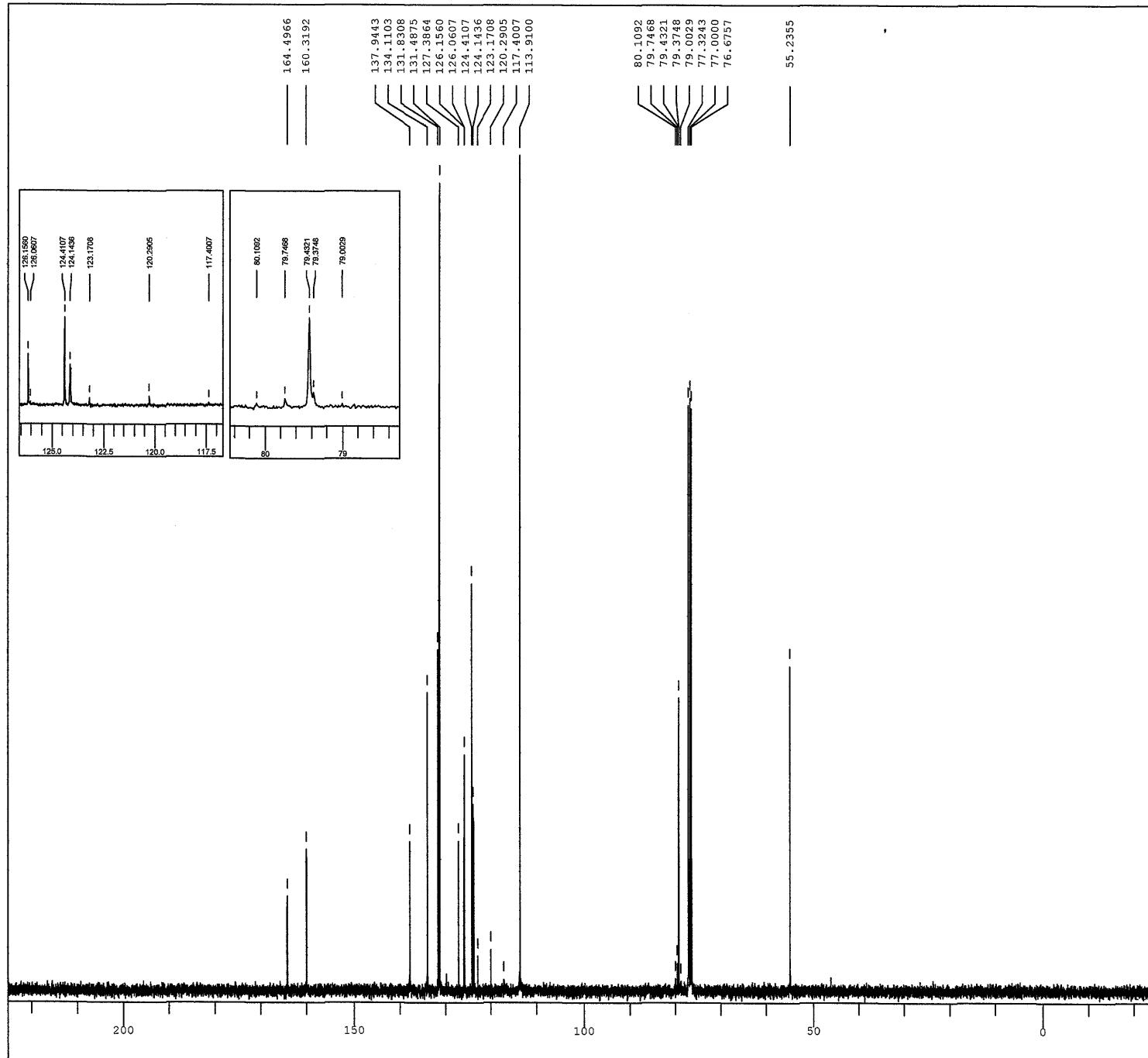




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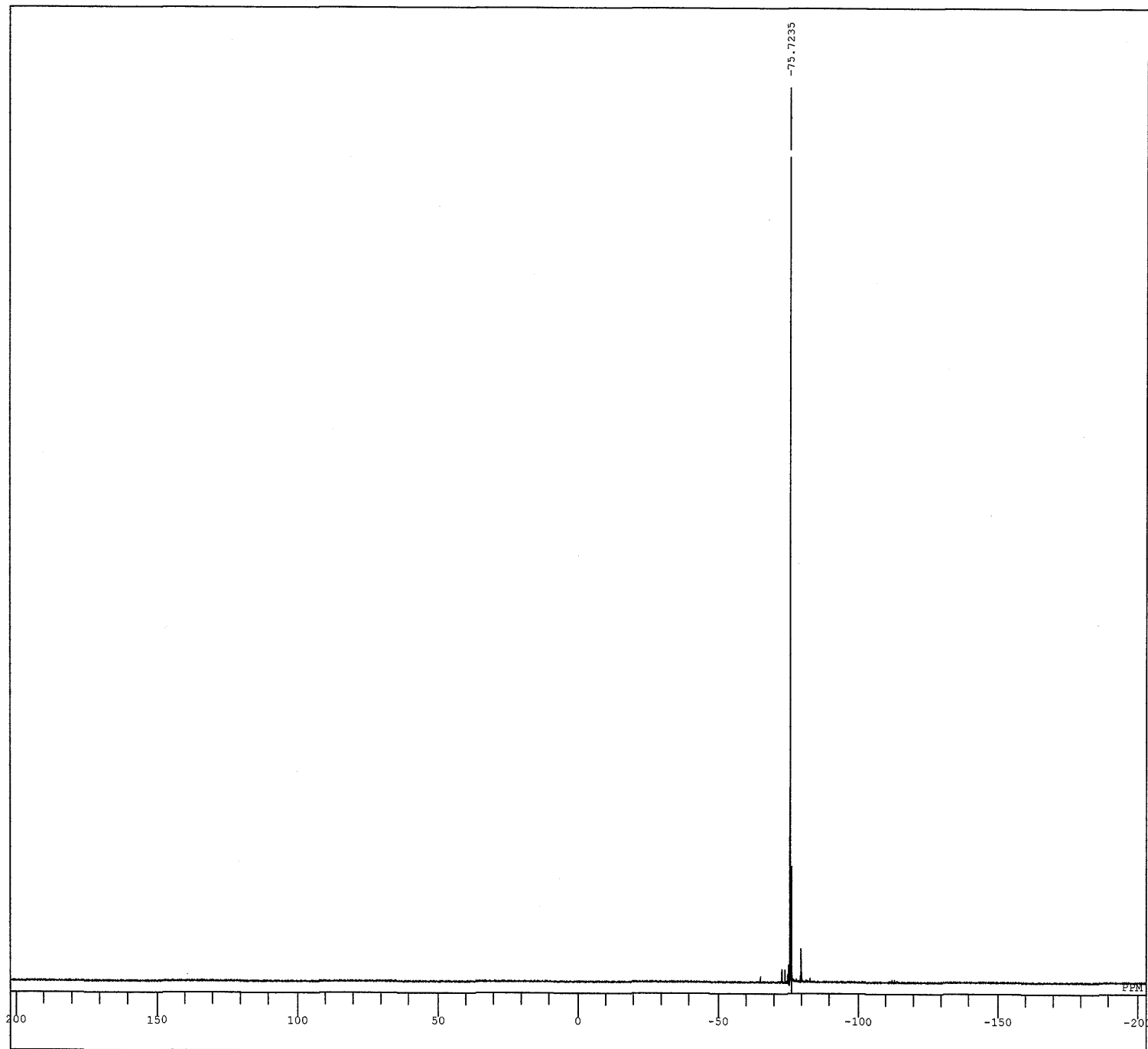
DFILE ozawa05-030_1H.jdf
COMNT CF3-Cl, PMB
DATIM 16-08-2014 12:34:12
OBNUC 1H
EXMOD proton.jxp
OBFREQ 391.78 MHz
OBSETE 8.51 KHz
OBFIN 3.34 Hz
POINT 16384
FREQU 7348.62 Hz
SCANS 4
ACQTM 2.2295 sec
PD 5.0000 sec
PW1 5.25 usec
IRNUC 1H
CTEMP 24.2 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.20 Hz
RGAIN 30
  
```





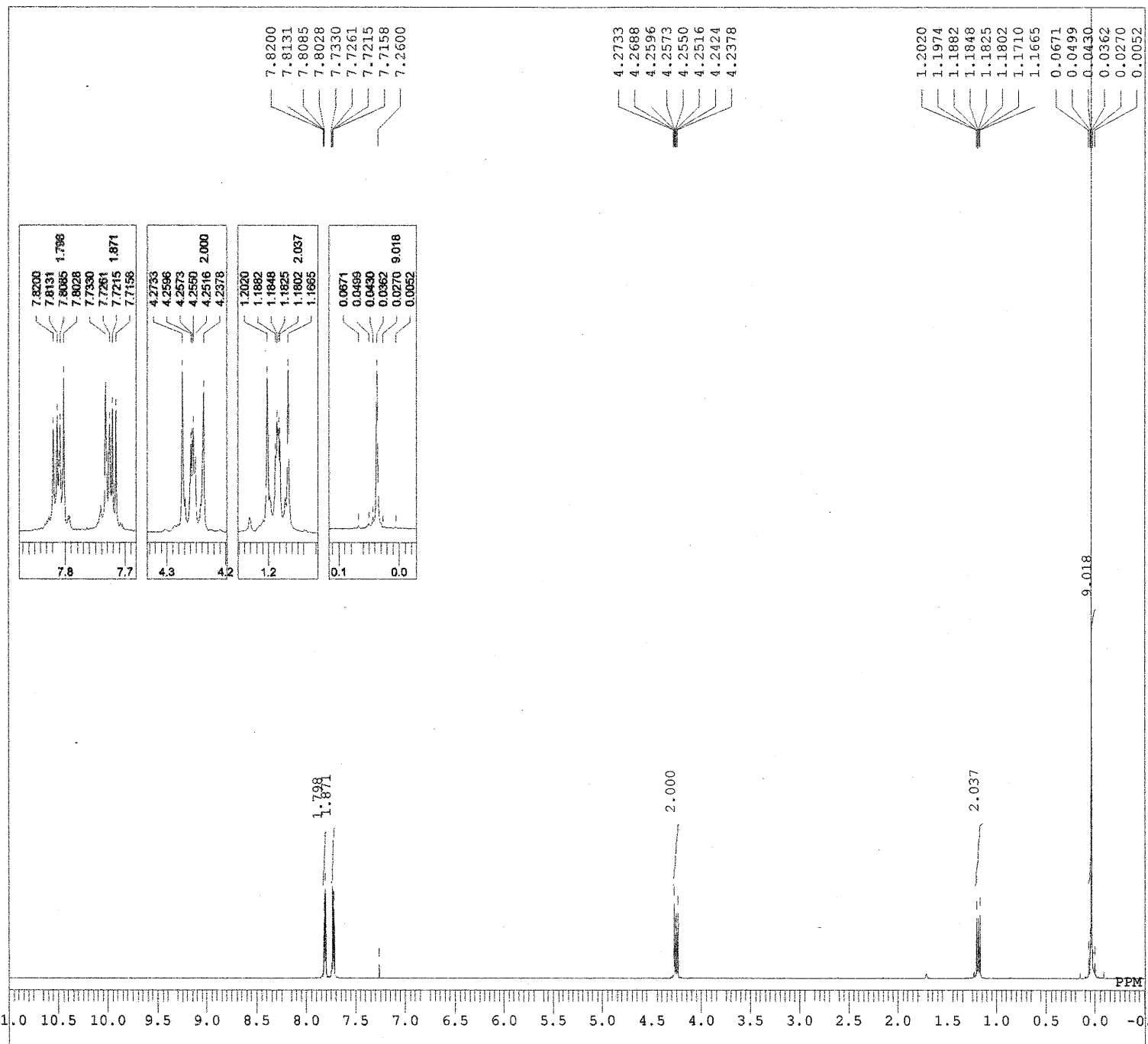
DFILE ozawa05-030_13c.jdf
 COMNT CF3-Cl, PMB
 DATIM 16-08-2014 12:35:19
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 200
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 24.4 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 1.00 Hz
 RGAIN 60





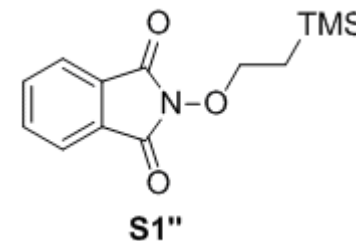
DFILE ozawa05-030_19F.jdf
COMNT CF3-Cl, PMB
DATIM 16-08-2014 12:32:11
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 1.20 Hz
RGAIN 46

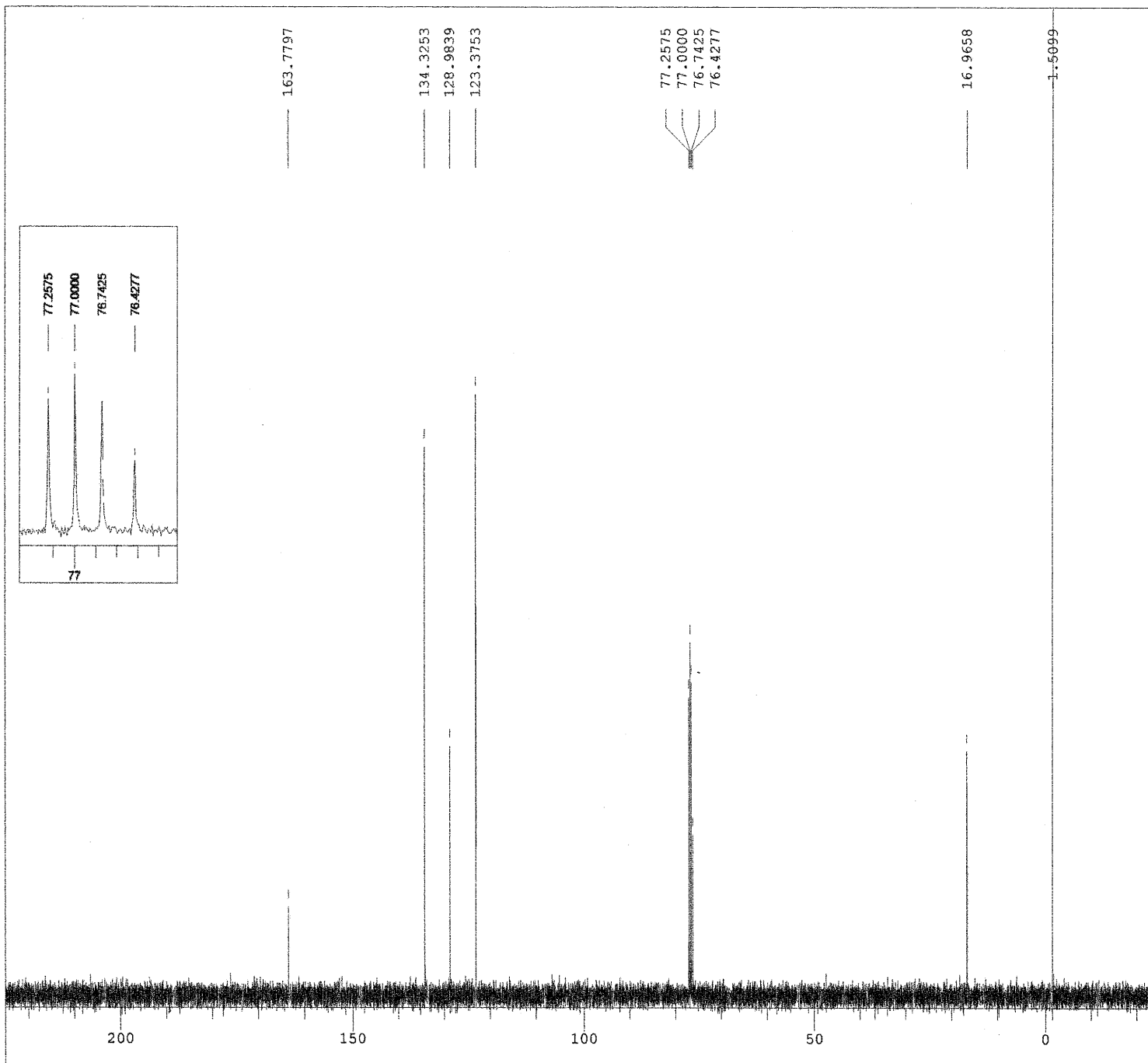




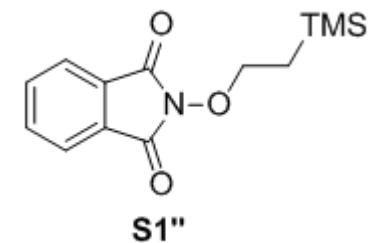
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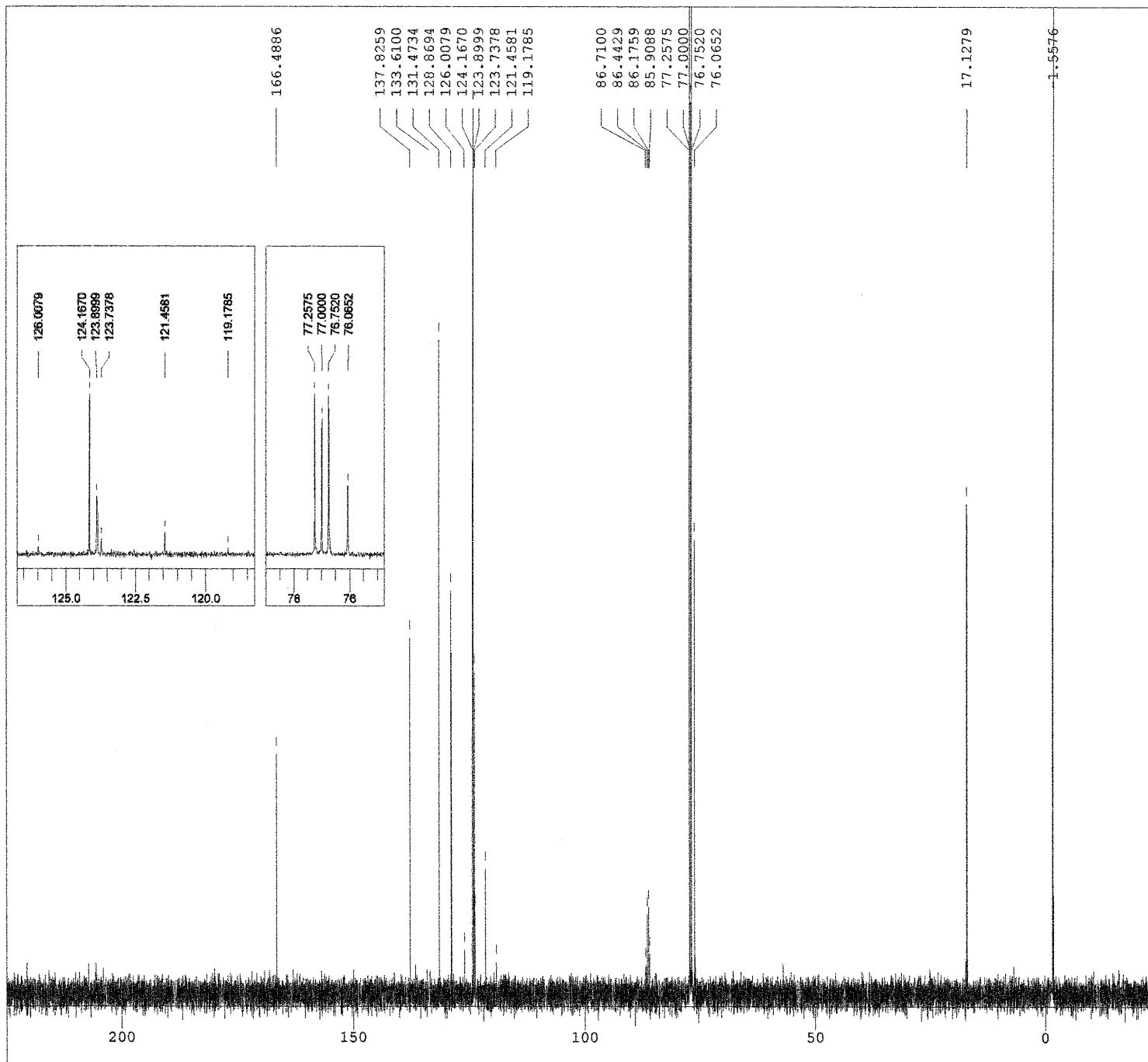
DFILE ozawa07-066_1h.jdf
COMNT TMS-Et-NHPI
DATIM 2015-04-01 10:10:32
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 27.8 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 26
    
```



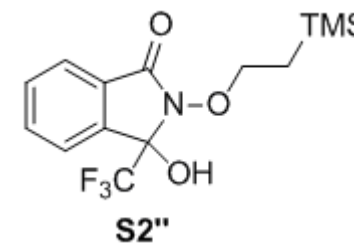


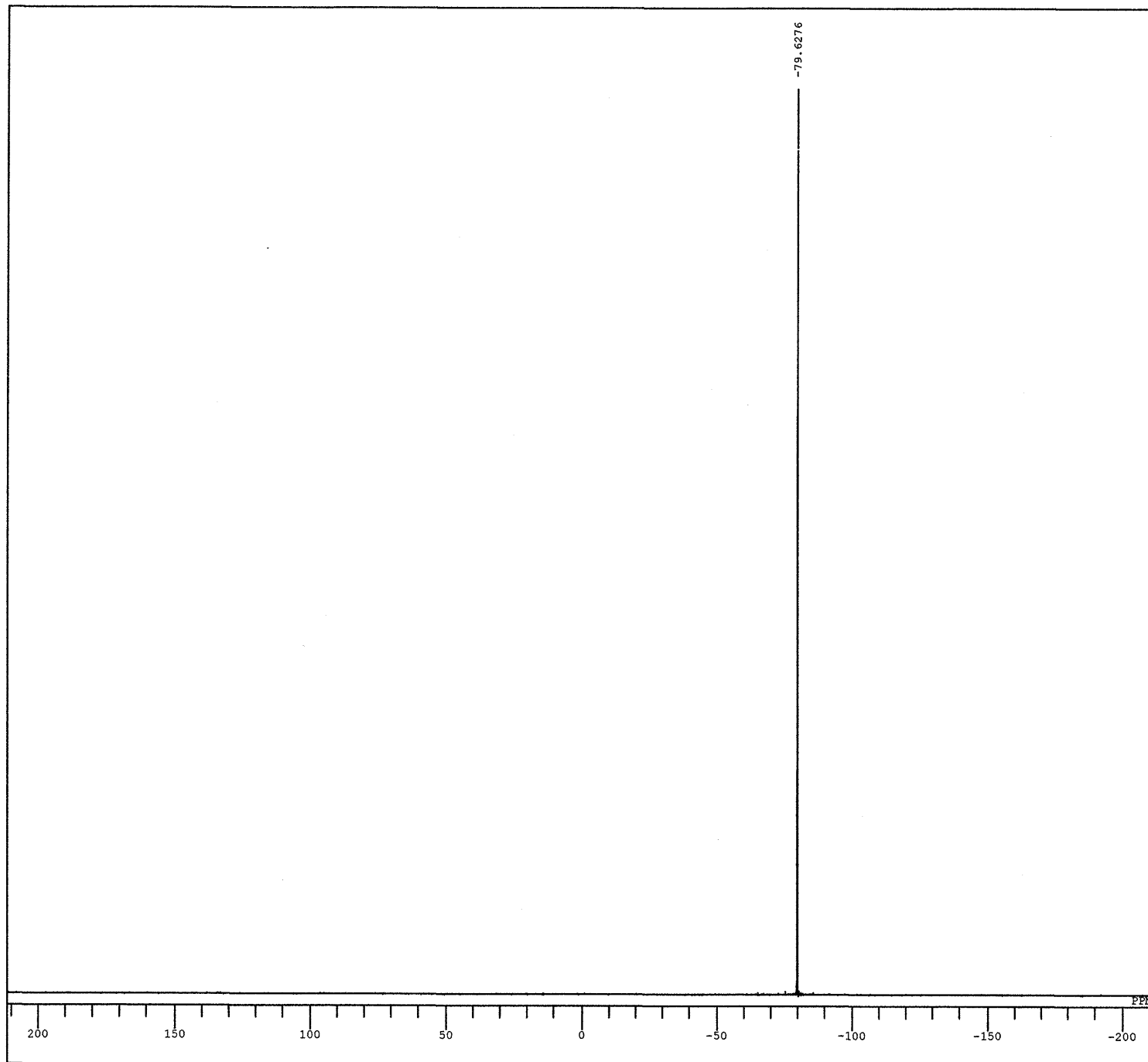
DFILE ozawa07-066_13C.jdf
COMNT TMS-Et-NHPI
DATIM 2015-04-01 10:11:34
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 16
ACQTM 0.8336 sec
PD 2.0000 sec
PWL 3.40 usec
IRNUC 1H
CTEMP 27.9 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



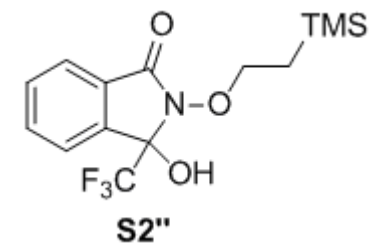


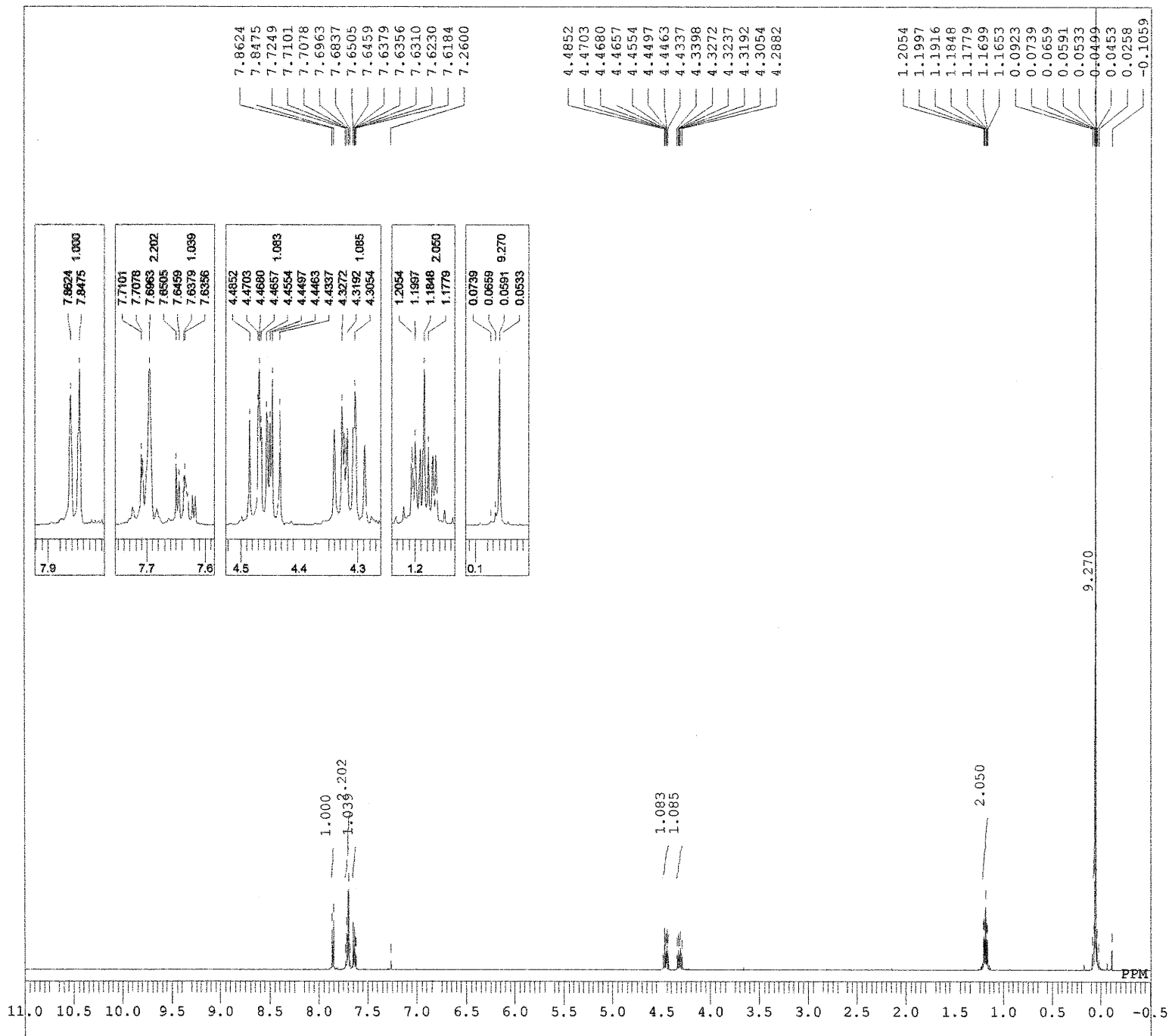
DFILE ozawa06-56_13C.jdf
 COMNT TMS-Et, CF3-OH
 DATIM 2015-04-01 15:16:41
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 180
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 28.4 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



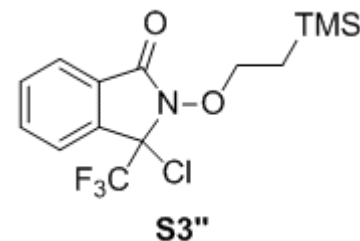


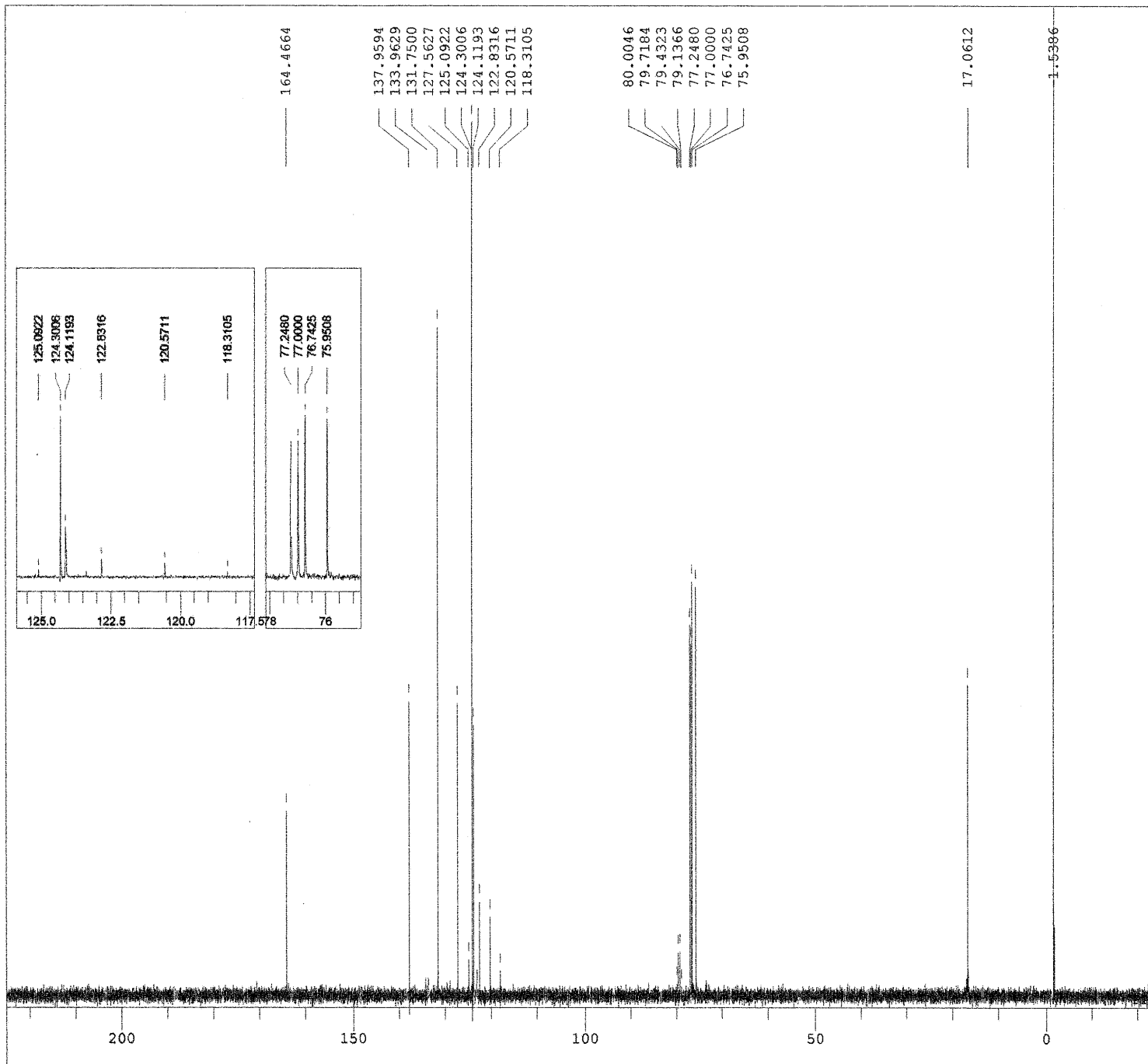
DFILE ozawa07-056_19F.jdf
COMNT TMS-Et, CF3-OH
DATIM 01-04-2015 16:39:46
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREOU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 26.7 c
SLVNT CDCL3
EKREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



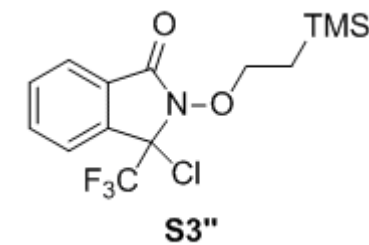


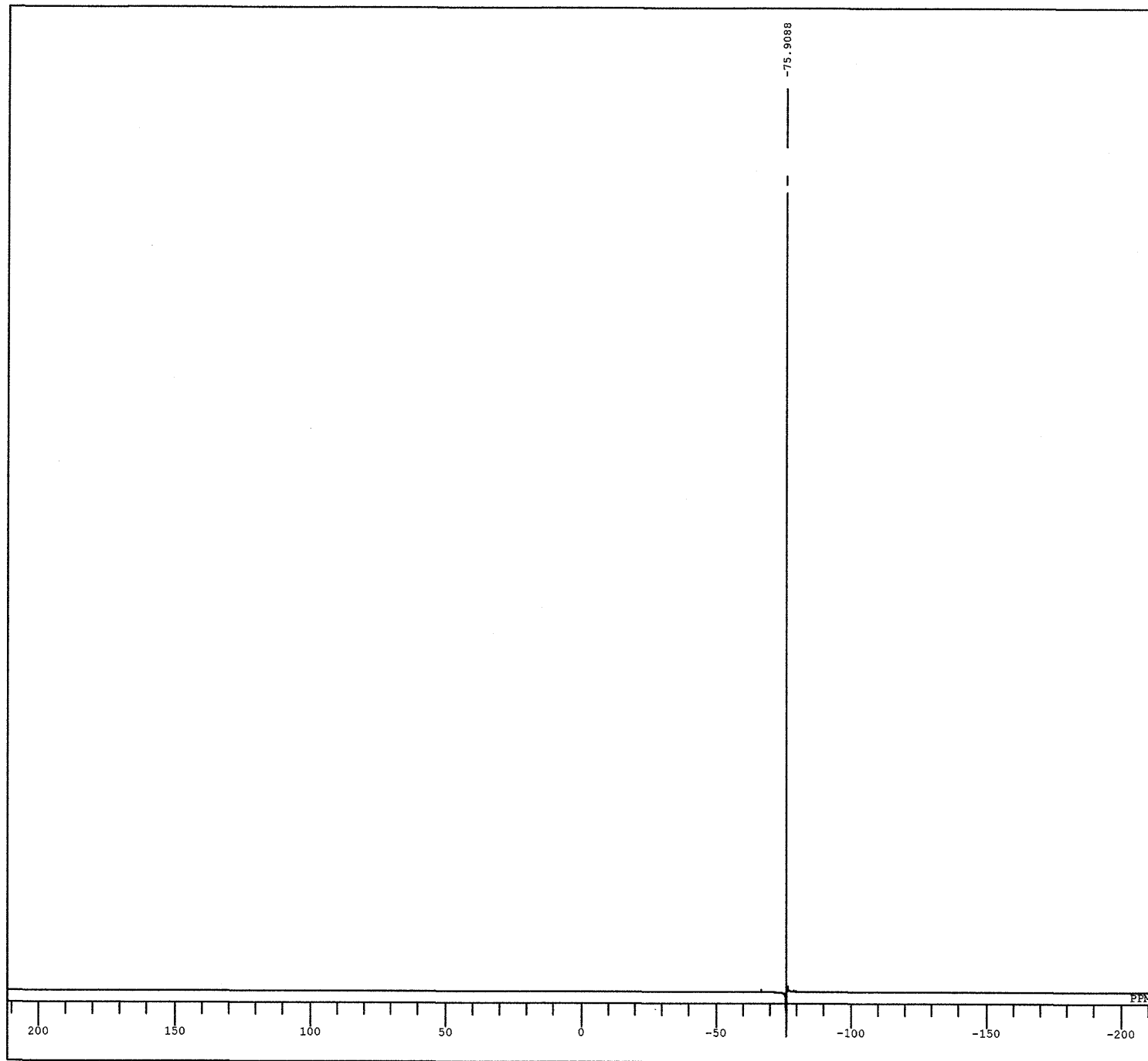
DFILE K008-129_1h.jdf
 COMNT TMS-Et, CF3-C1
 DATIM 2015-04-01 15:06:01
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 27.9 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



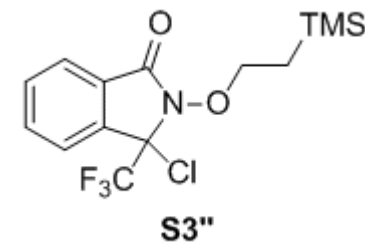


DFILE K008-129_13C.jdf
 COMNT TMS-Et, CF3-Cl
 DATIM 2015-04-01 15:07:04
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 112
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 28.2 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

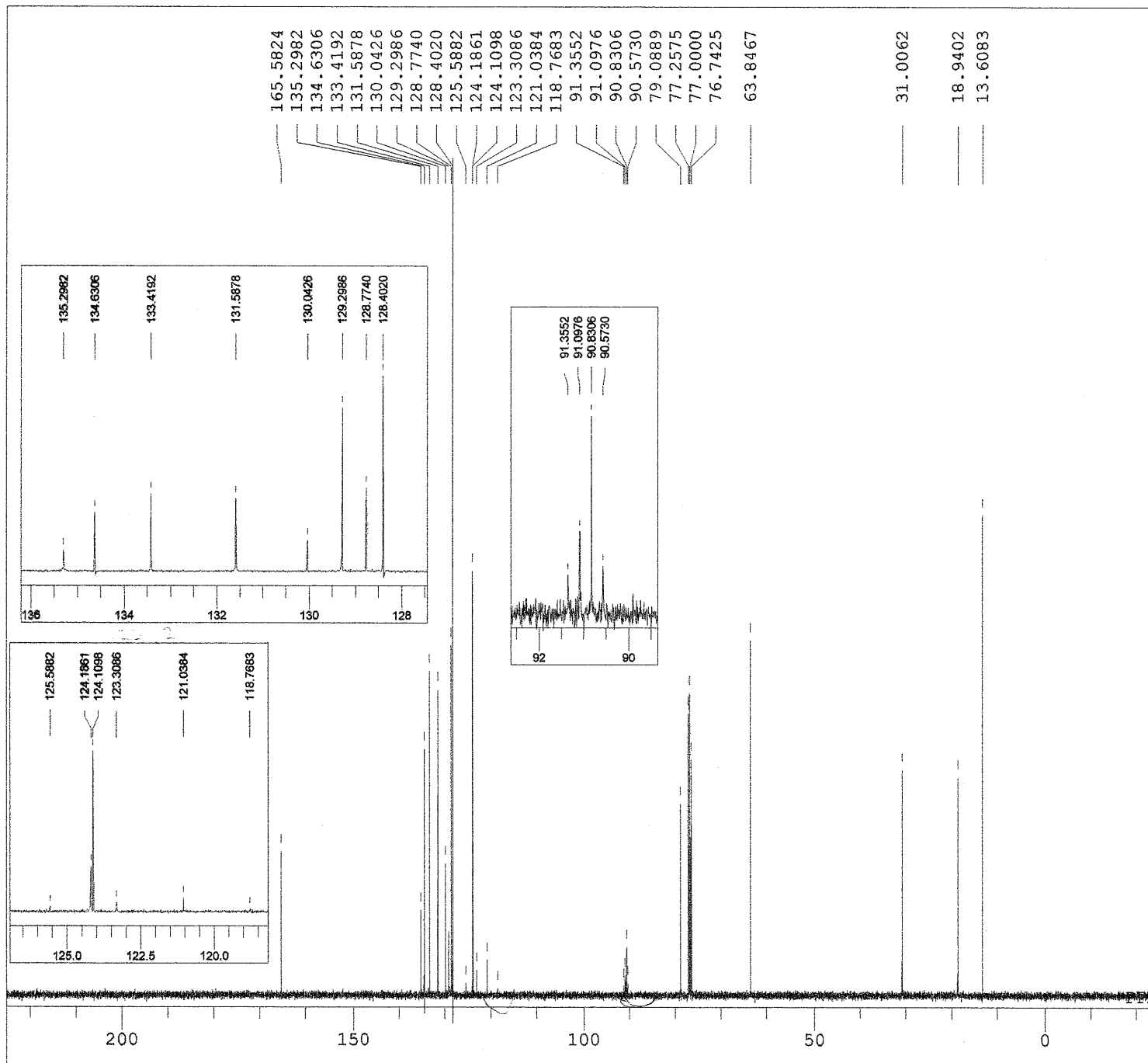




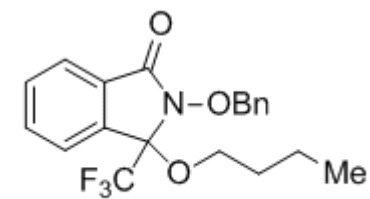
DFILE K008-129 19F.jdf
COMNT TMS-Et, CF3-Cl
DATIM 01-04-2015 16:36:52
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 26.8 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



BuOH, Bn

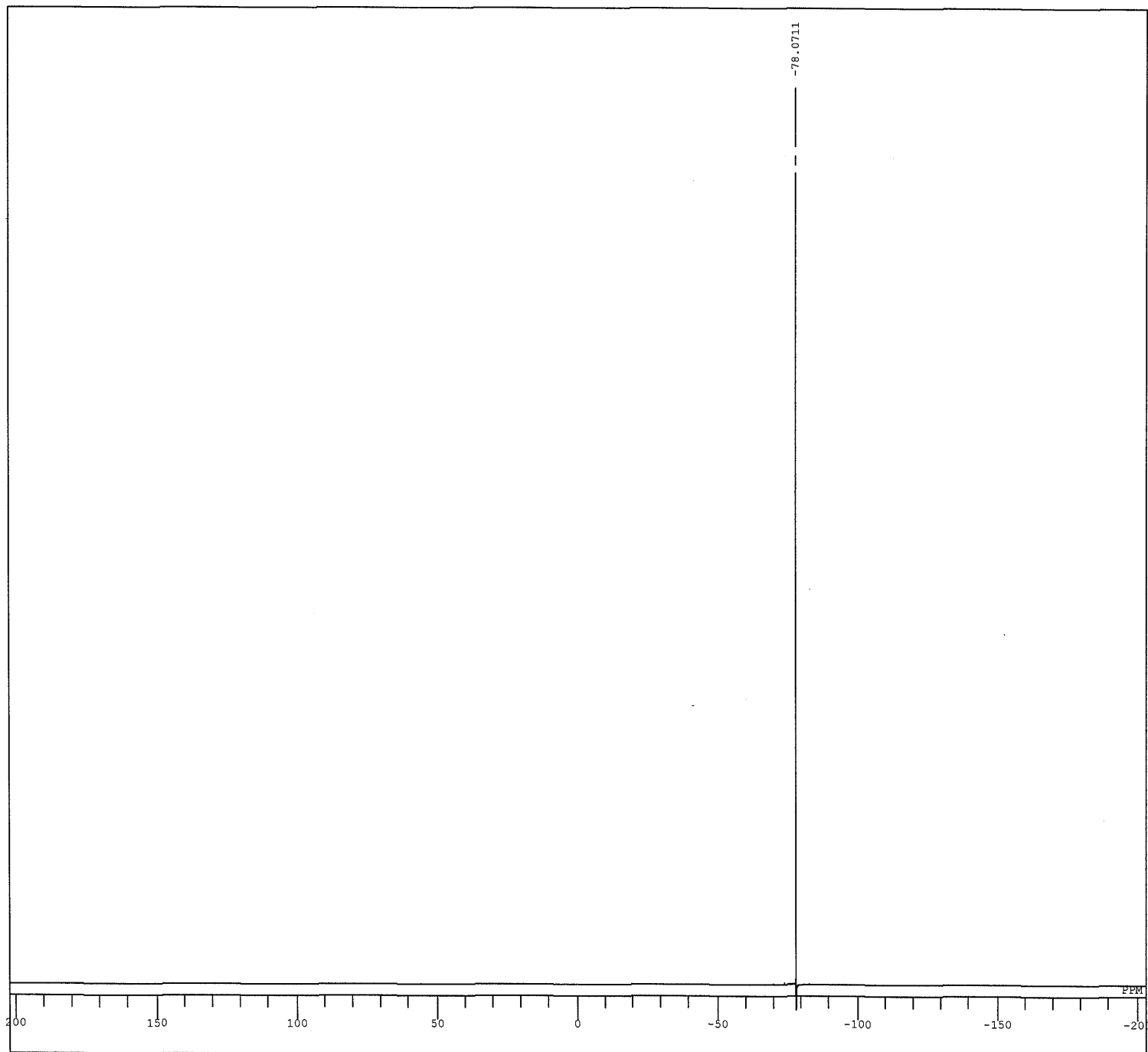


DFILE ozawa04-104_13C.jif
COMNT BuOH, Bn
DATIM 2014-01-16 15:07:01
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 152
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

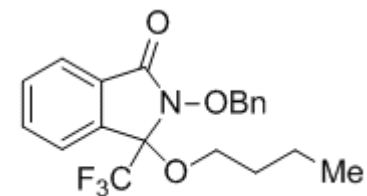


S4a

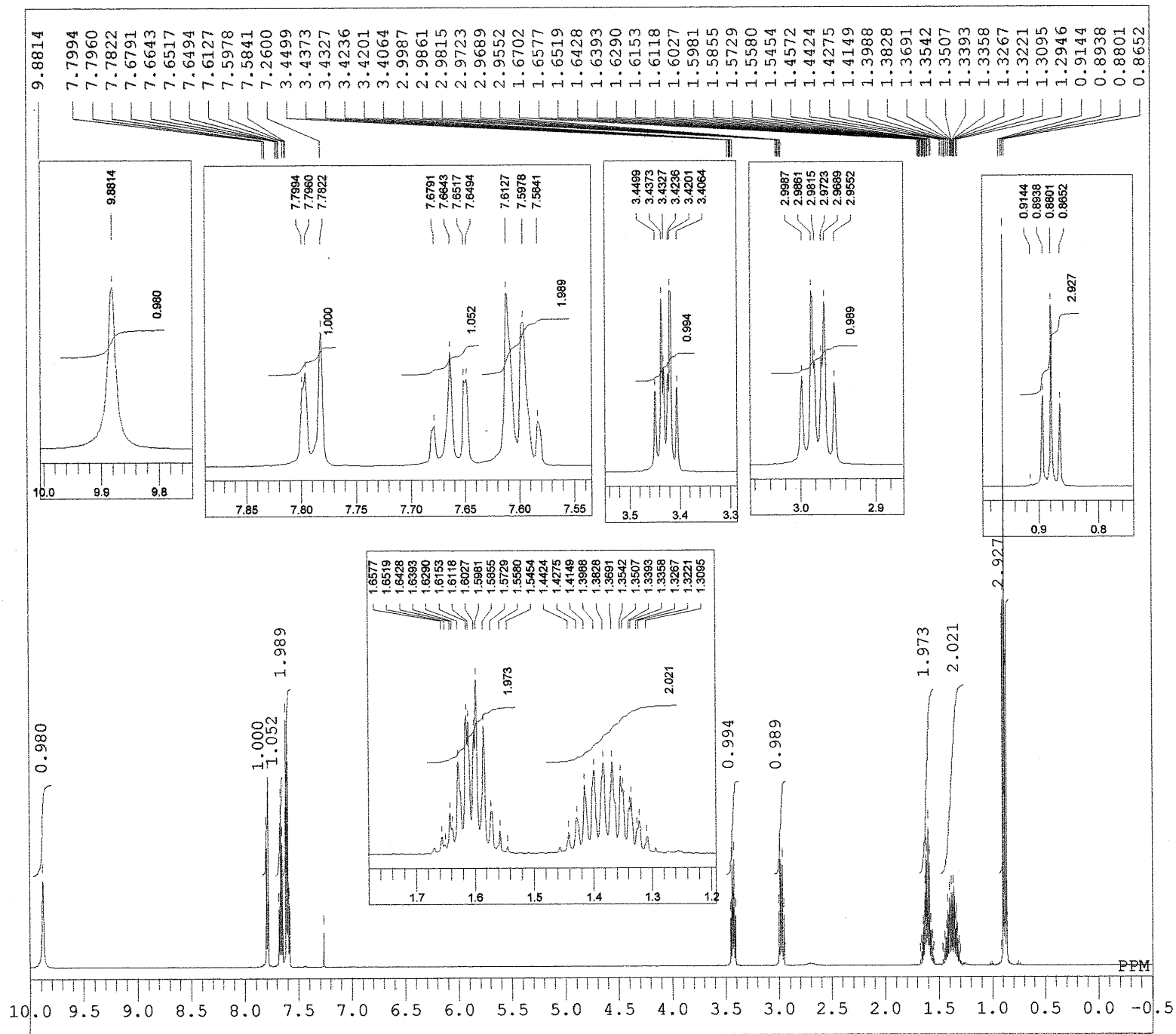
BuOH, Bn



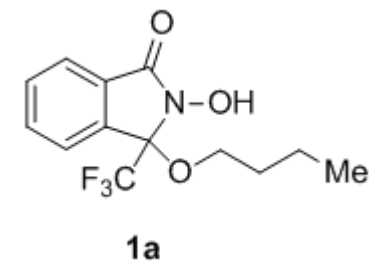
DFILE ozawa04-104_19F.jdf
COMNT BuOH, Bn
DATIM 16-01-2014 15:46:24
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 20.8 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44

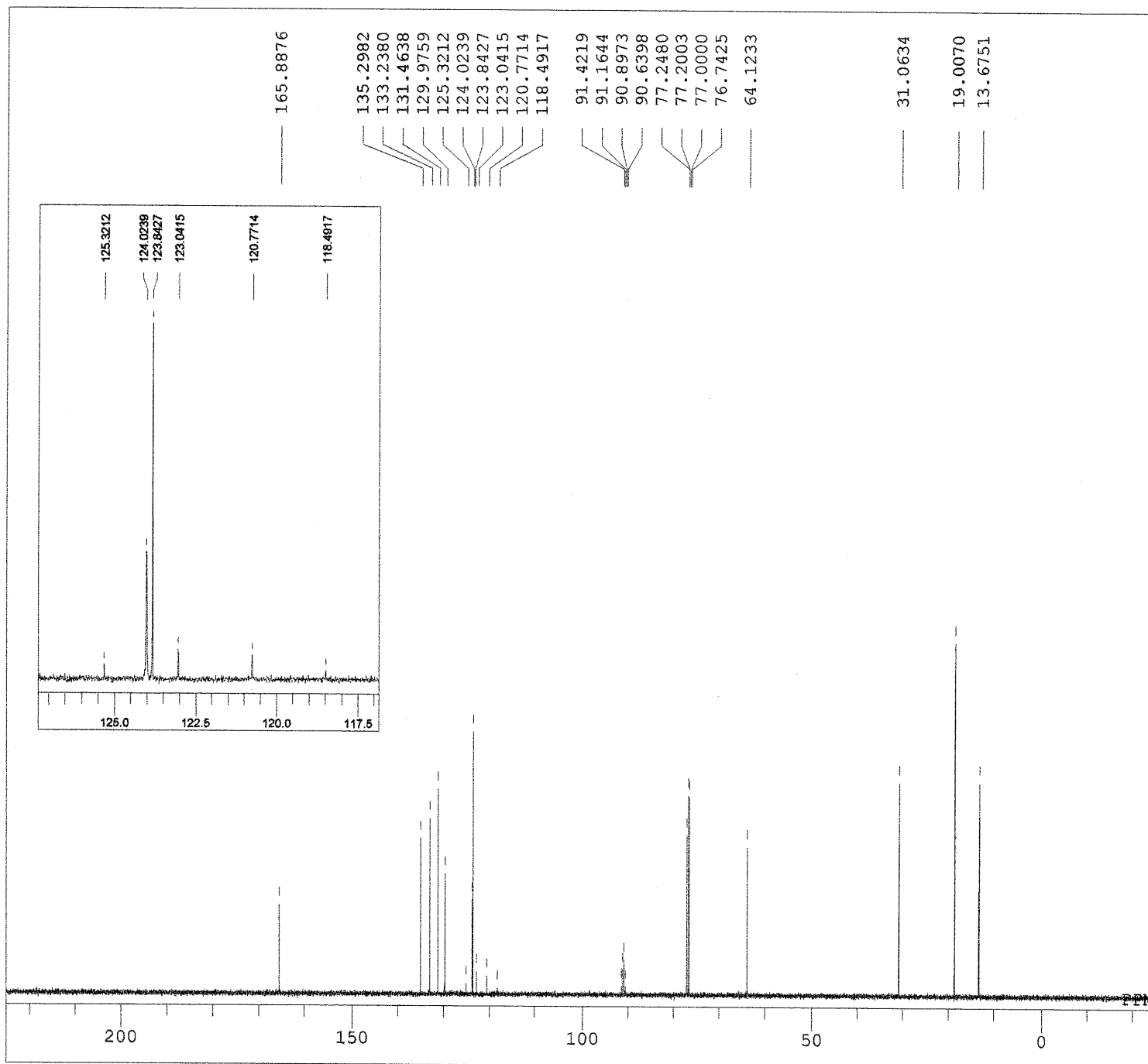


S4a

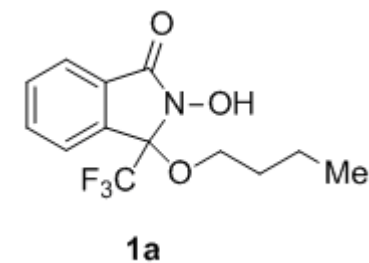


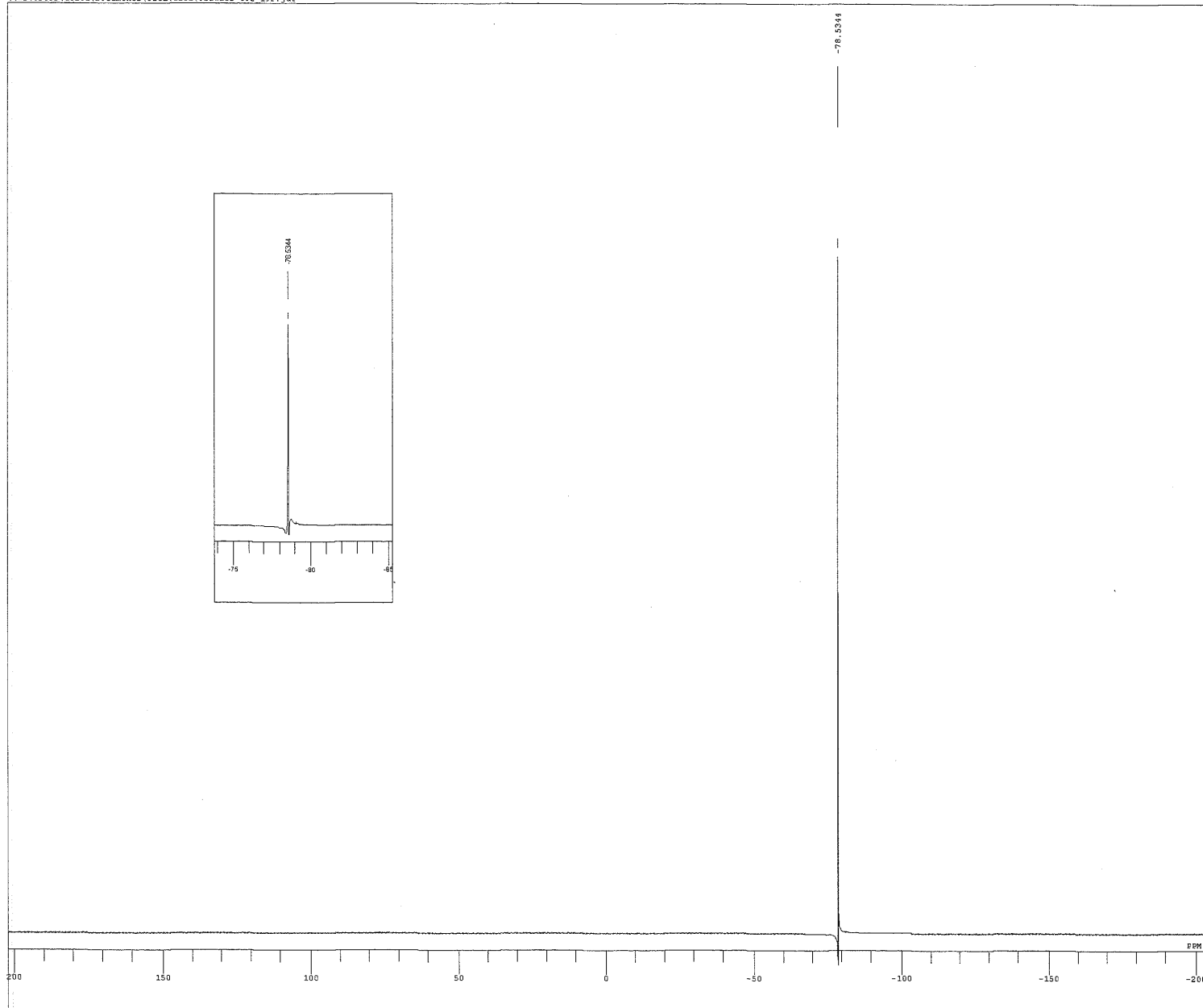
DFILE ozawa03-092_1H.als
 COMNT
 DATIM 2013-11-14 19:52:17
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 22.9 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



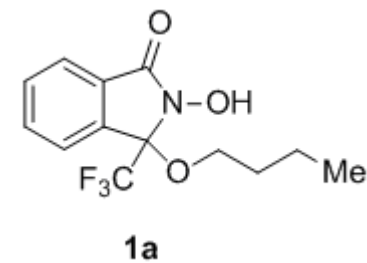


DFILE ozawa03-092_13C.jdf
 COMNT
 DATIM 2013-11-14 19:53:44
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 160
 ACQTM 0.8336 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 23.4 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

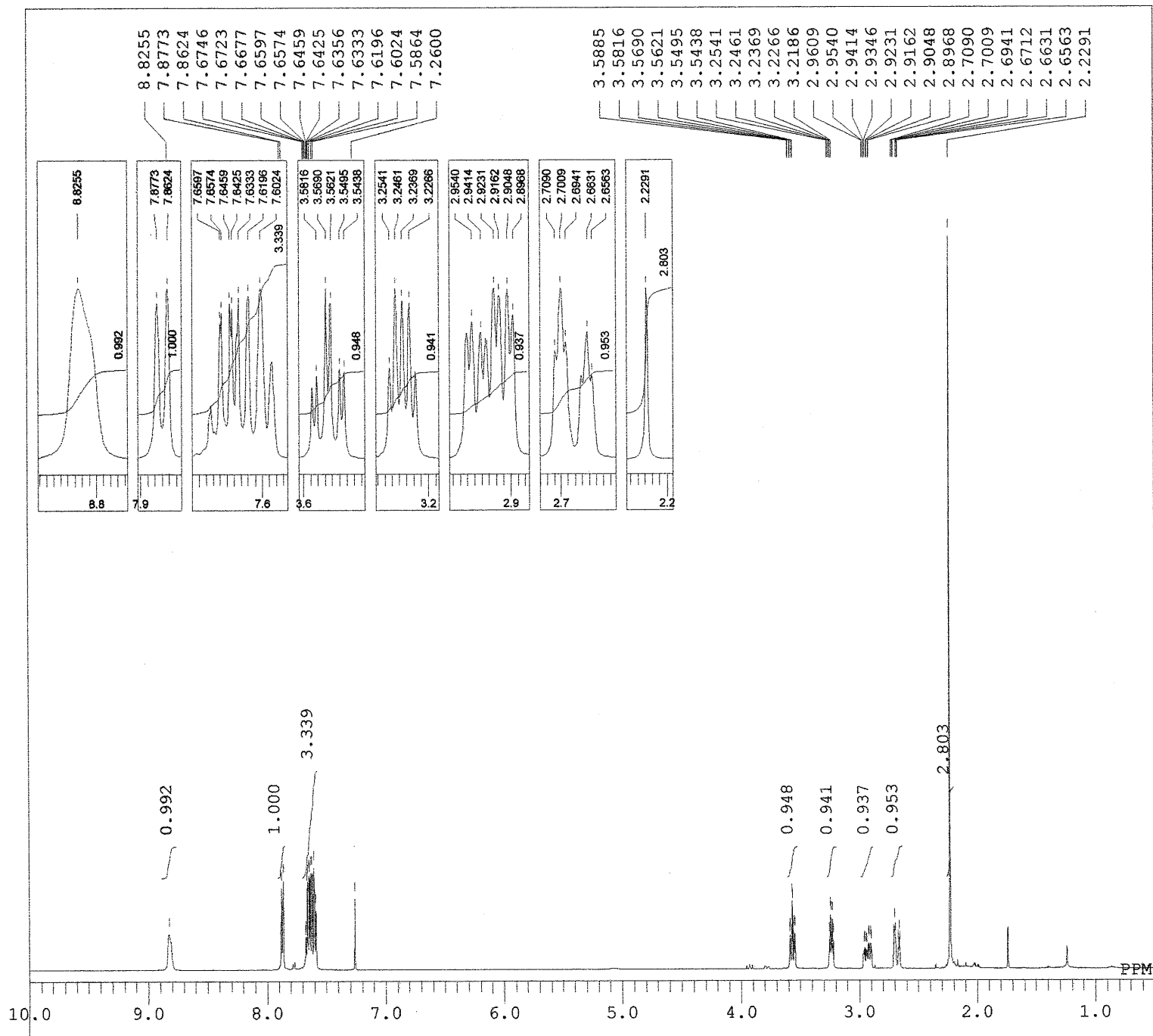




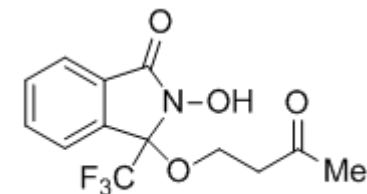
DFILE ozawa03-092_19F.jdf
CQMT
DATIM 14-11-2013 20:23:21
OBNUC 19F
EXMGD proton_3xp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.95 Hz
POINT 16294
FREQU 106567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEHS
SLANT CDCL3 23.0 c
EXREF -164.90 ppm
RF 6.12 Hz
RGAIN 44



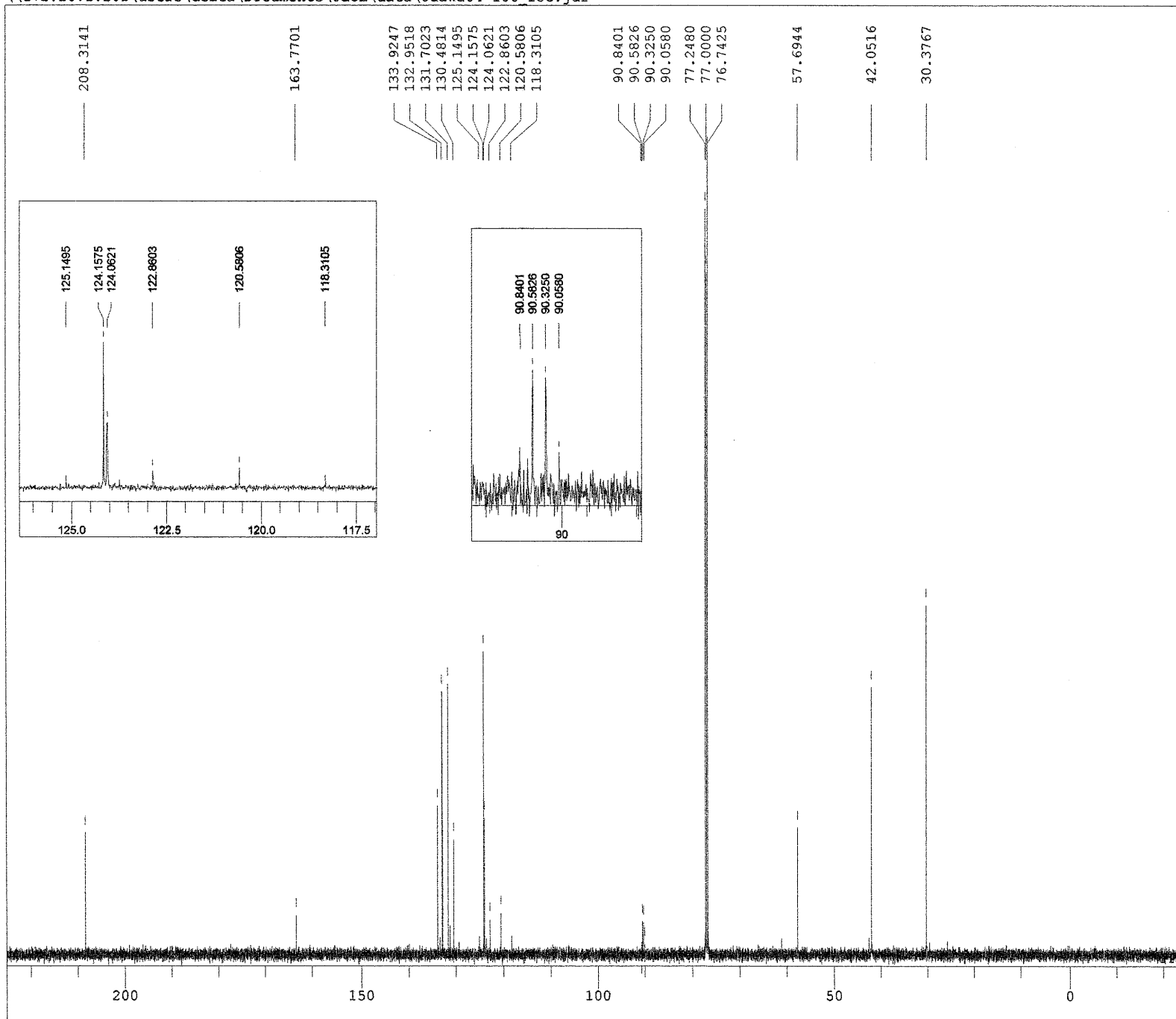
BuOH, [0]



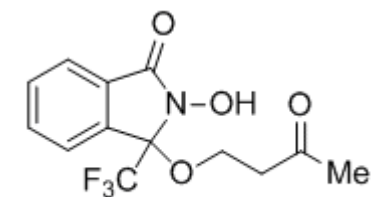
DFILE ozawa04-106_1H.als
COMNT BuOH, [0]
DATIM 2014-01-21 11:59:18
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.51 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.3 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 36



2a

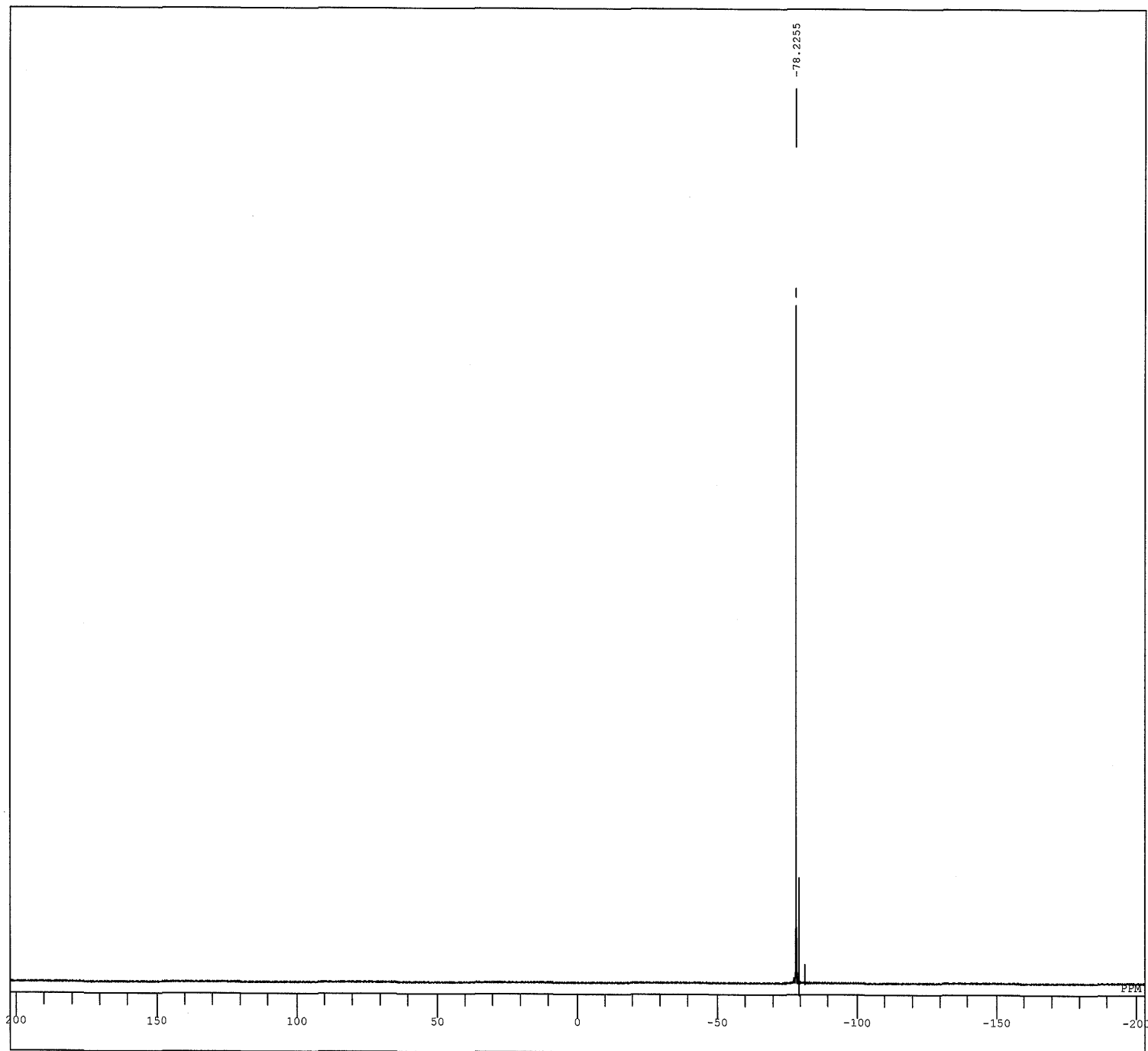


DFILE ozawa04-106_13C.jdf
 COMNT BuOH, O2
 DATIM 2014-01-21 12:00:35
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 400
 ACQTM 0.8336 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

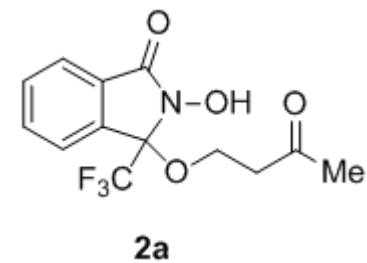


2a

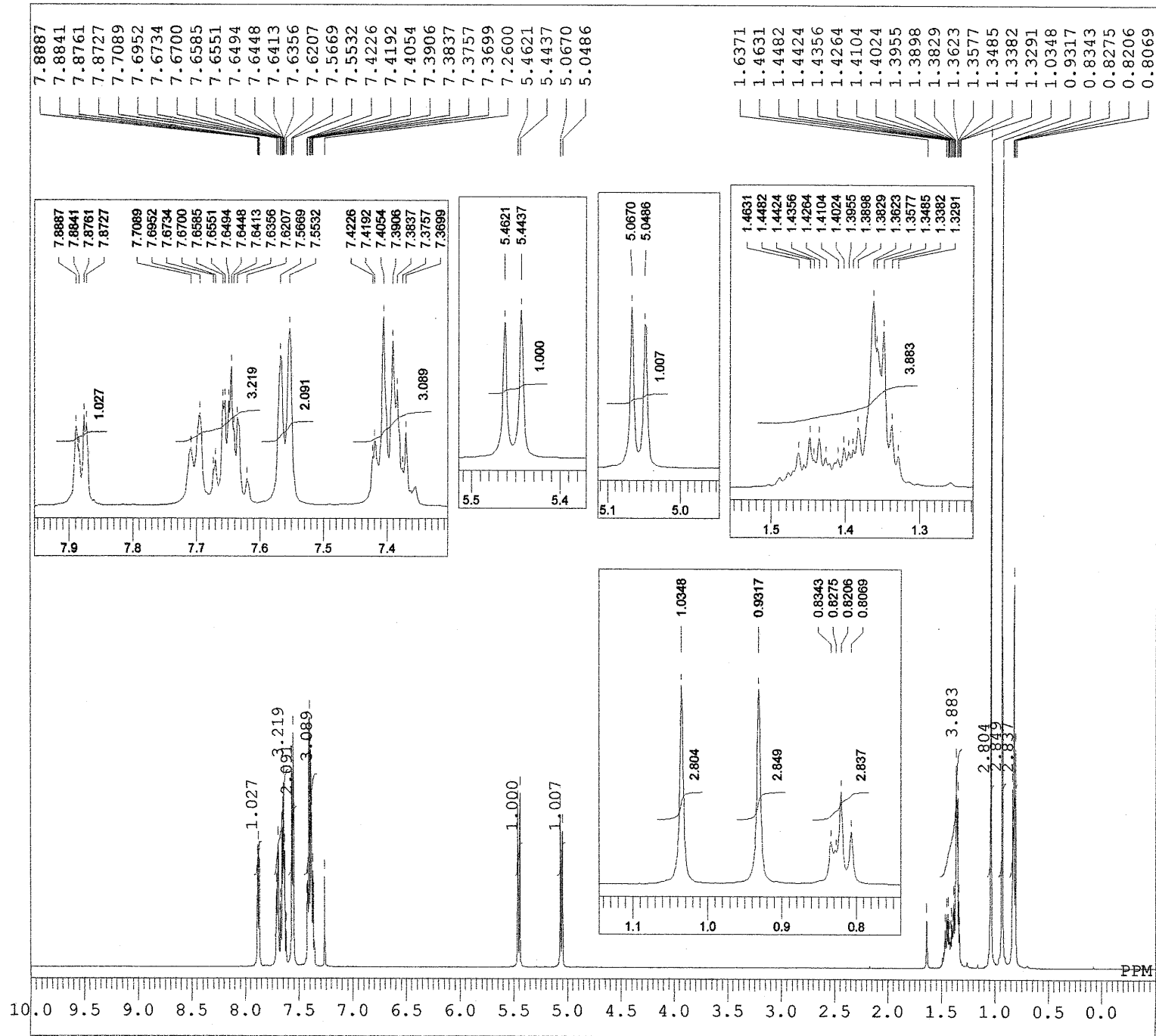
BuOH, [0]



DFILE 2a_ozawa04-106_19F.jdf
COMNT BuOH, [0]
DATIM 21-01-2014 13:09:20
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



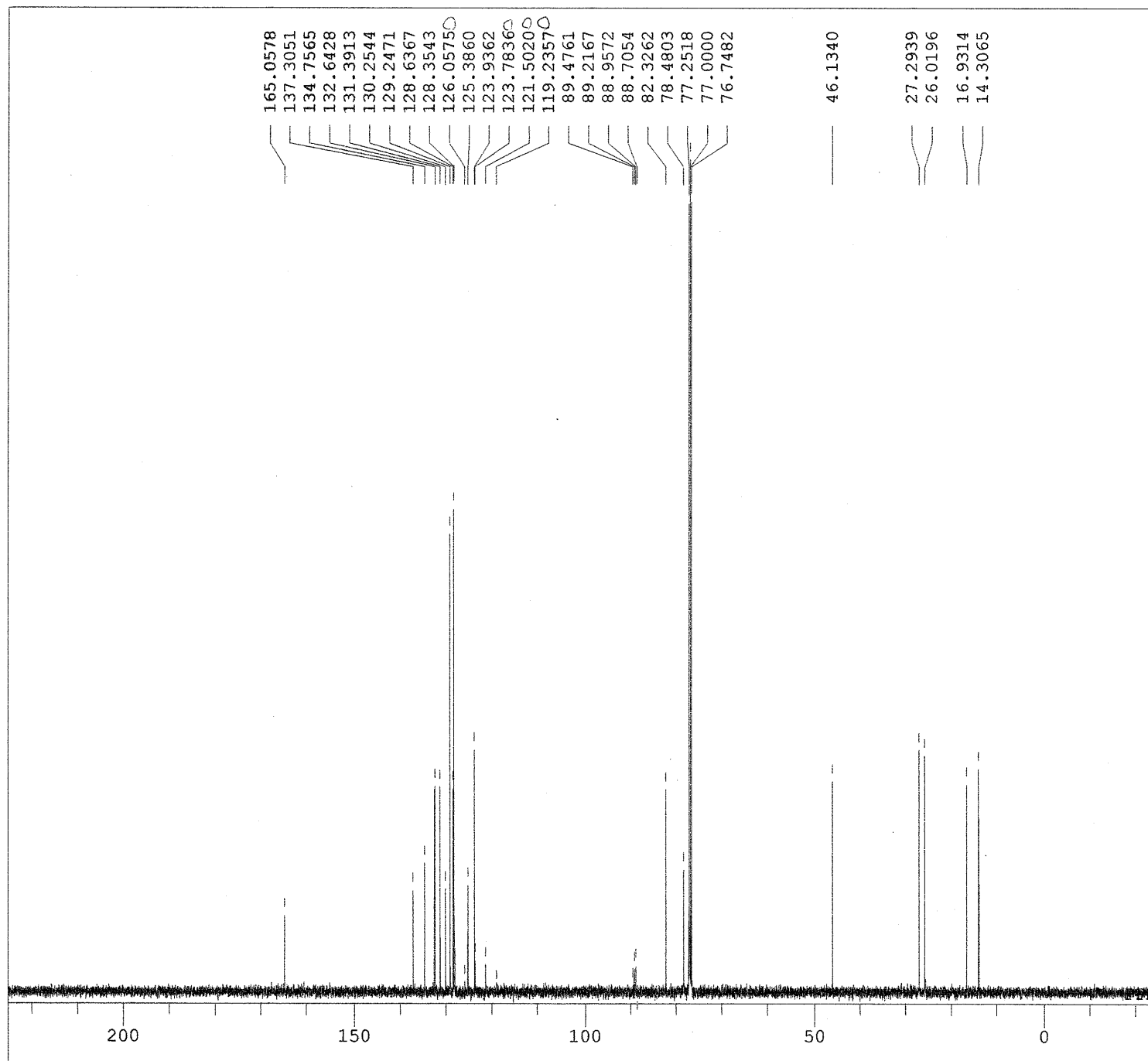
1,1-dMe-BuOH, Bn



DFILE ozawa04-140_1H.jdf
 COMNT 1,1-dMe-BuOH, Bn
 DATIM 2014-03-06 17:19:07
 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 21.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 1.00 Hz
 RGAIN 34

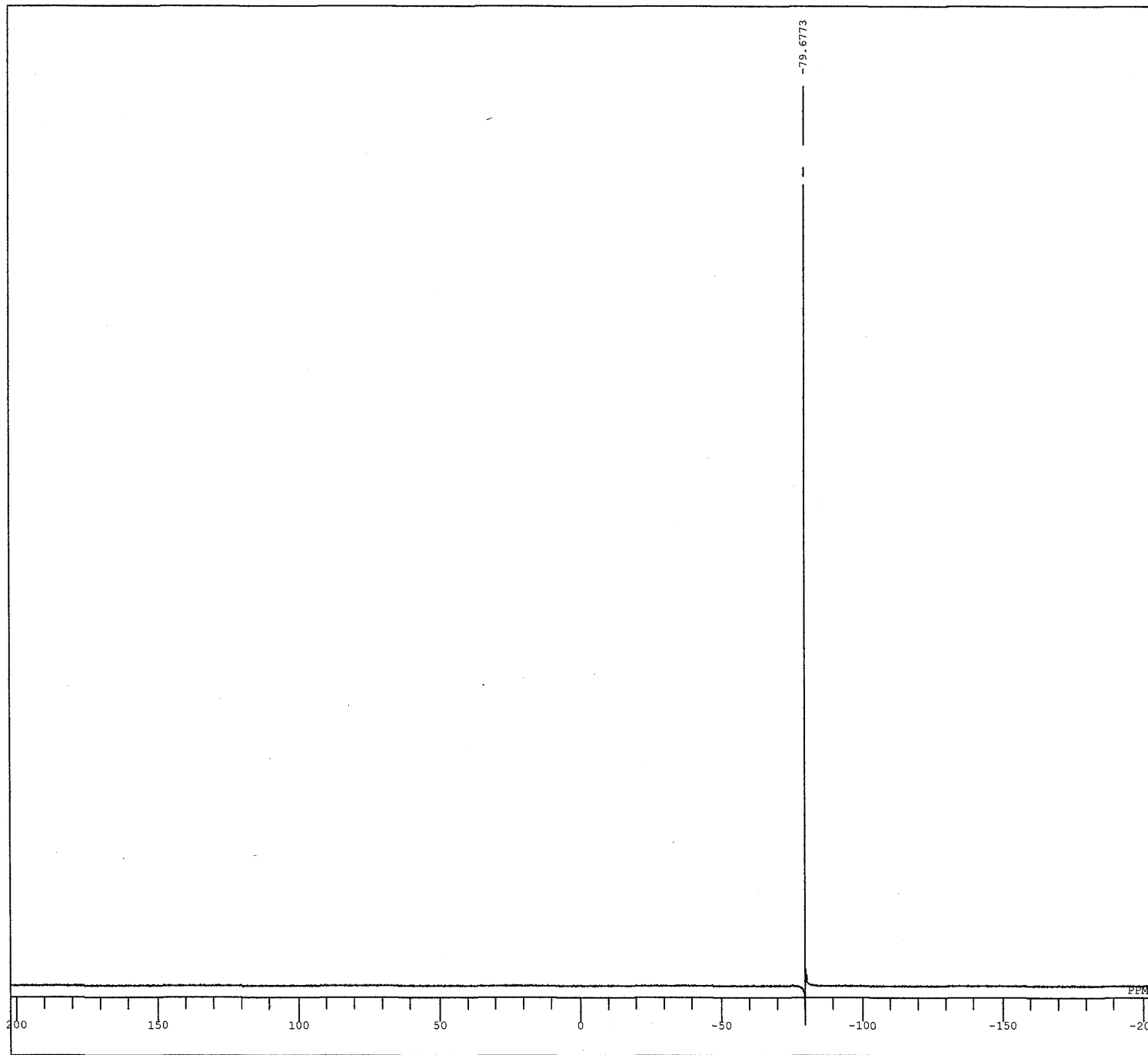


1, 1-dMe-BuOH, Bn

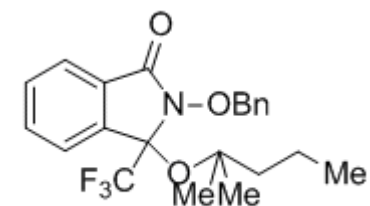


DFILE ozawa04-140_13C.jdf
COMNT 1,1-dMe-BuOH, Bn
DATIM 2014-03-06 17:20:28
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32768
FREQU 31446.54 Hz
SCANS 224
ACQTM 1.0420 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.6 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 72



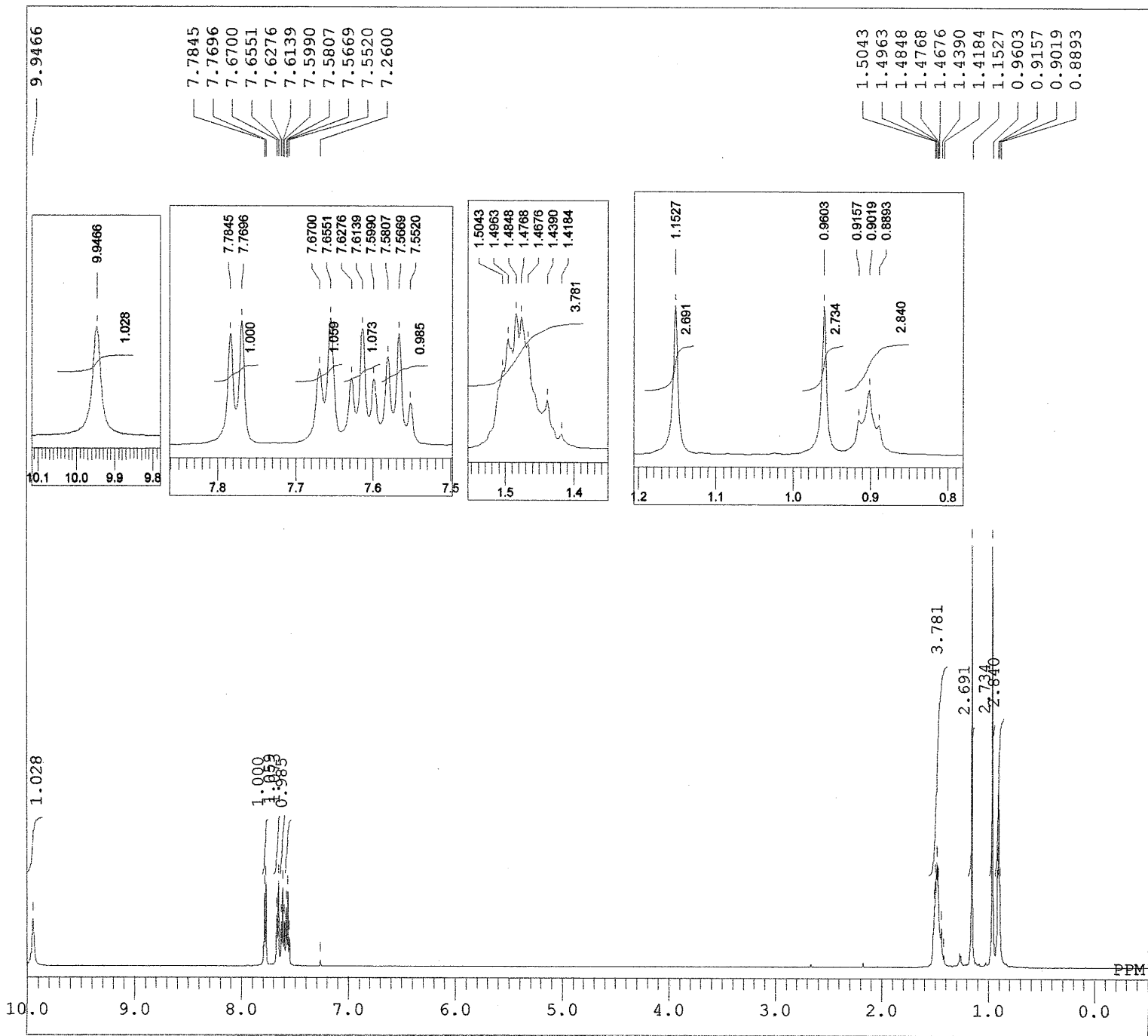


DFILE ozawa04-140_19F.jdf
COMNT 1,1-dMe-BuOH, Bn
DATIM 06-03-2014 20:36:23
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
FD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 21.4 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



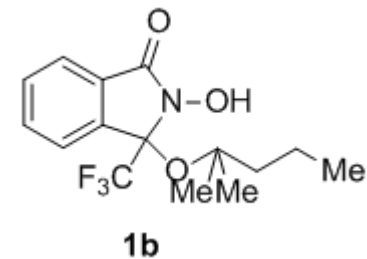
S4b

1, 1-dMe-BuOH, OH

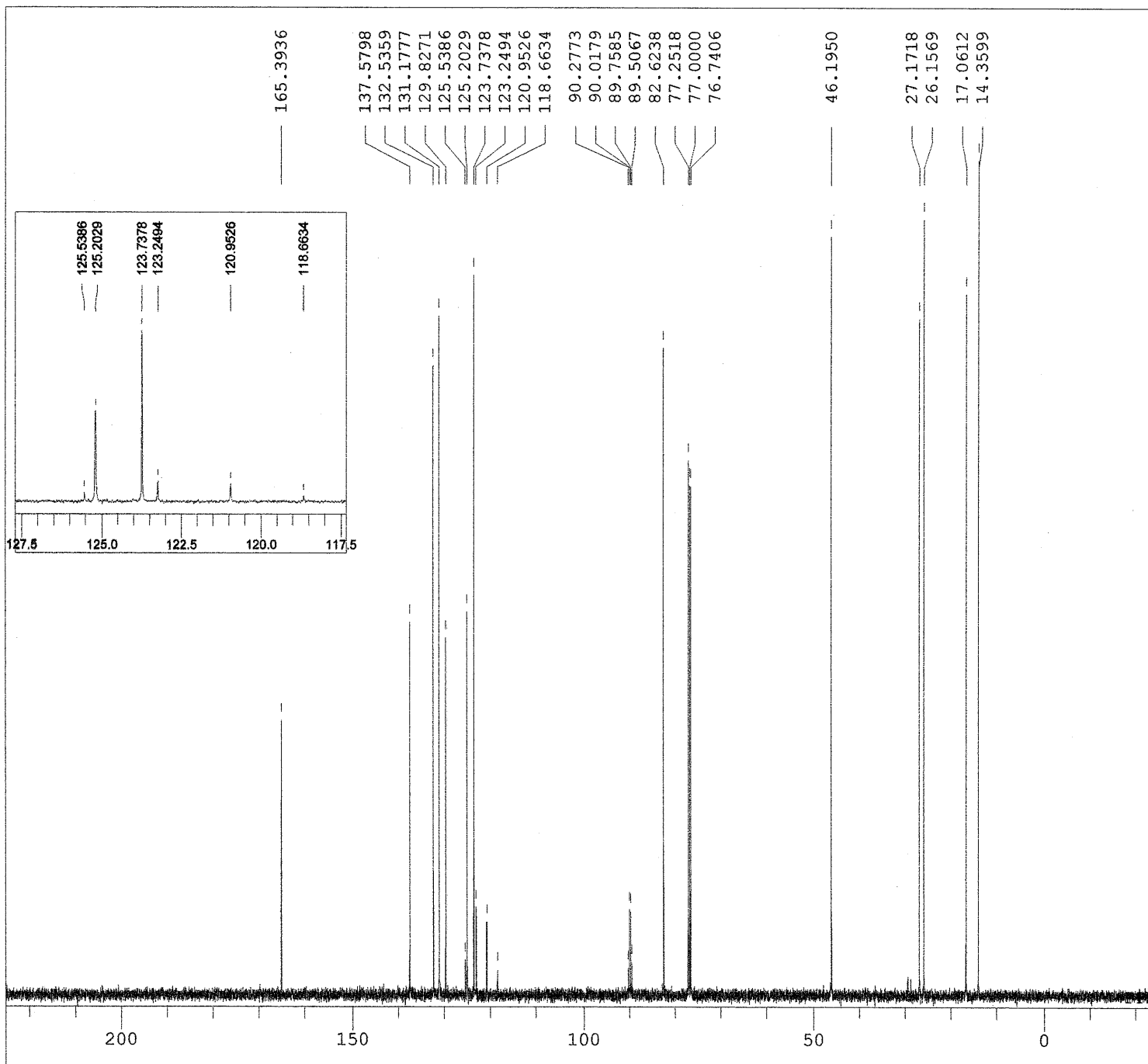


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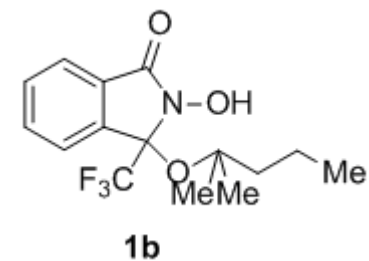
DFILE  ozawa04-143_1H.jdf
COMNT  1,1-dMe-BuOH, OH
DATIM  2014-03-06 17:10:23
OBNUC  1H
EXMOD  proton.jxp
OBFRQ   500.16 MHz
OBSET   2.41 KHz
OBFIN   6.01 Hz
POINT   16384
FREQU   9384.38 Hz
SCANS    4
ACQTM   1.7459 sec
PD       5.0000 sec
PW1      5.55 usec
IRNUC   1H
CTEMP   21.5 c
SLVNT   CDCL3
EXREF   7.26 ppm
BF       1.00 Hz
RGAIN    24
    
```



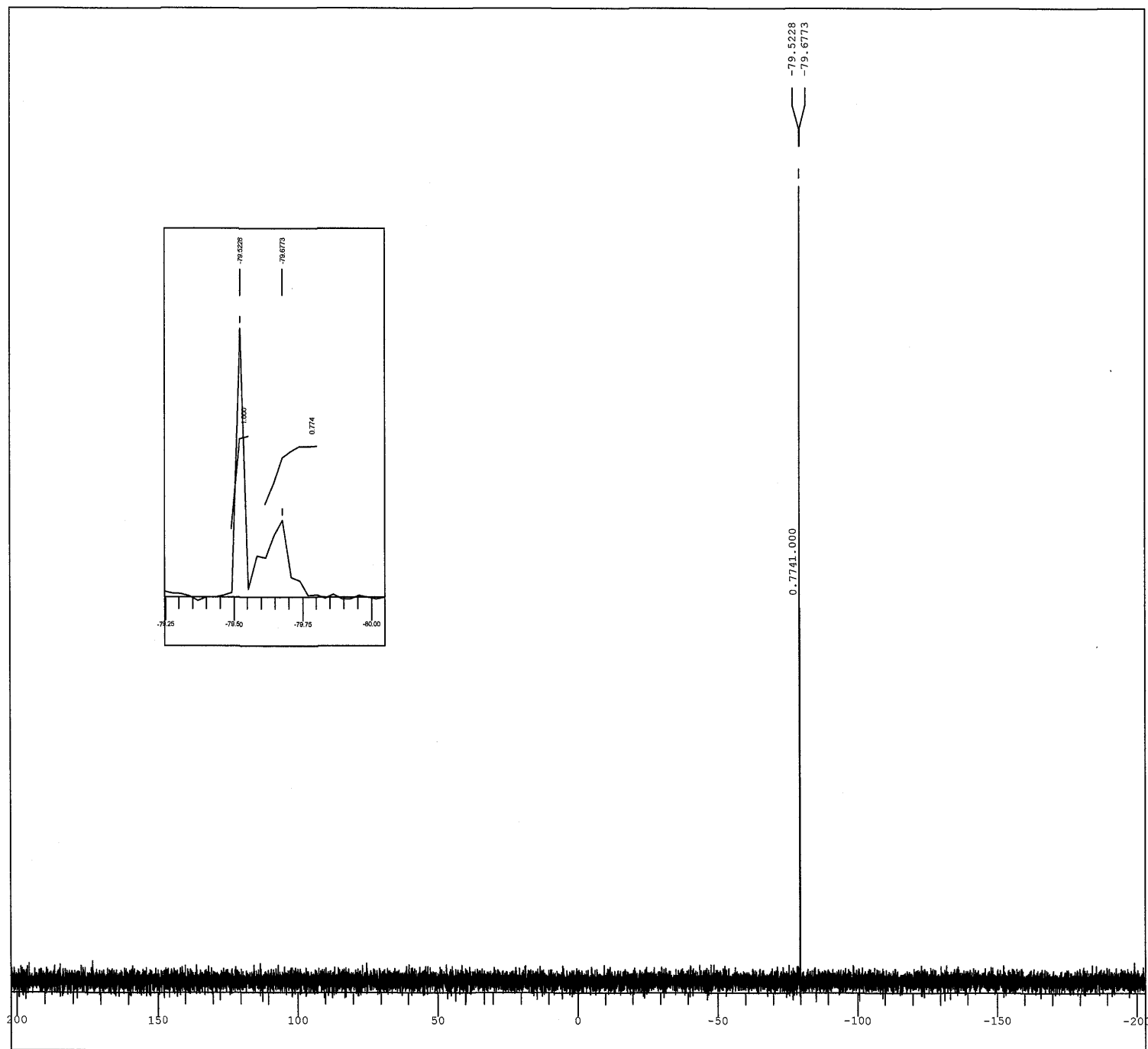
1, 1-dMe-BuOH, OH



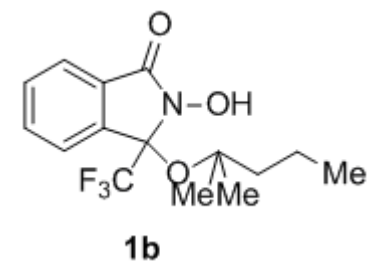
DFILE ozawa04-143_13C.jdf
COMNT 1,1-dMe-BuOH, OH
DATIM 2014-03-06 17:11:34
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32768
FREQU 31446.54 Hz
SCANS 64
ACQTM 1.0420 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 72



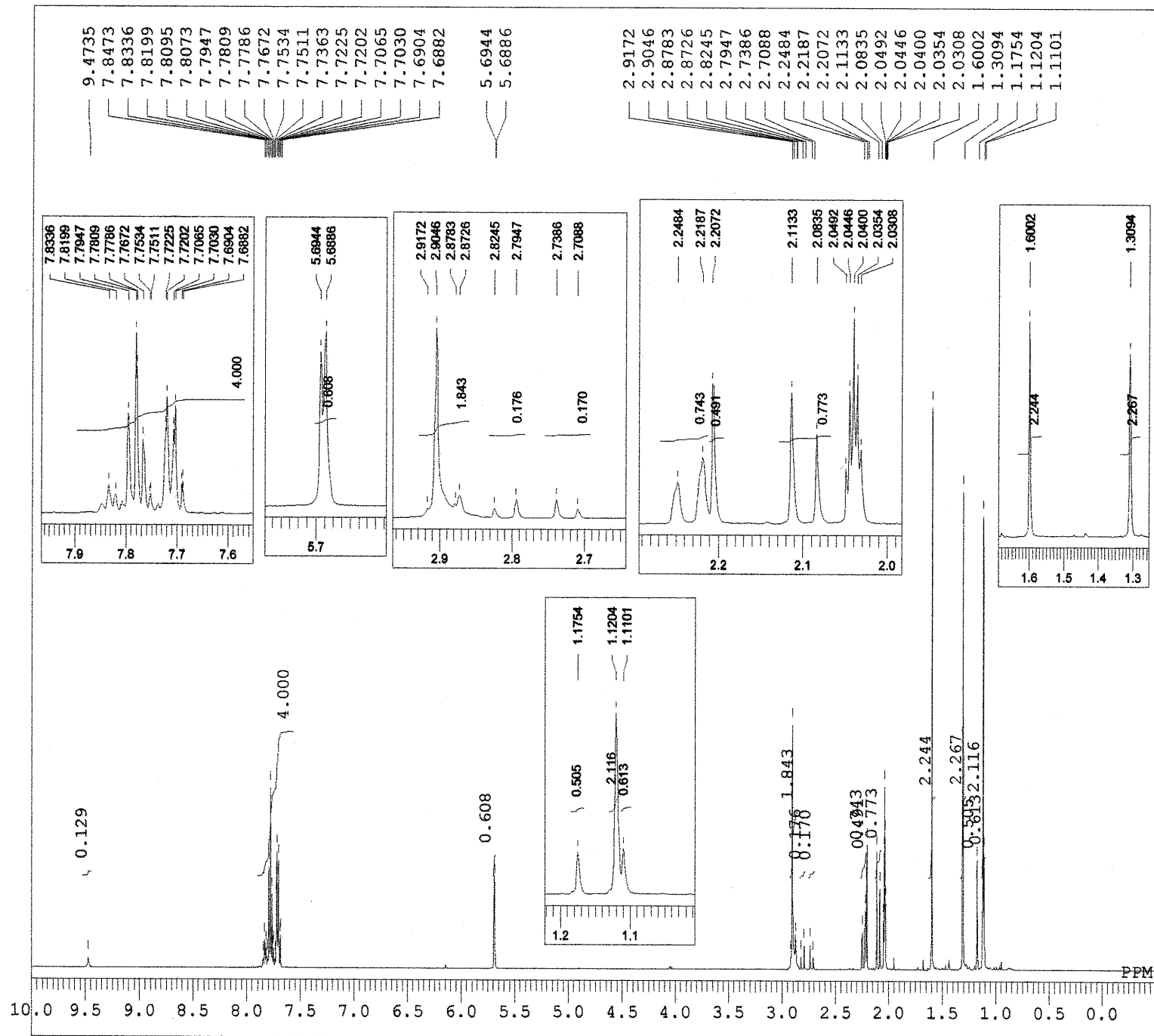
1, 1-dMe-BuOH, OH



DFILE ozawa04-143_19F.jdf
COMNT 1,1-dMe-BuOH, OH
DATIM 07-03-2014 17:33:56
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



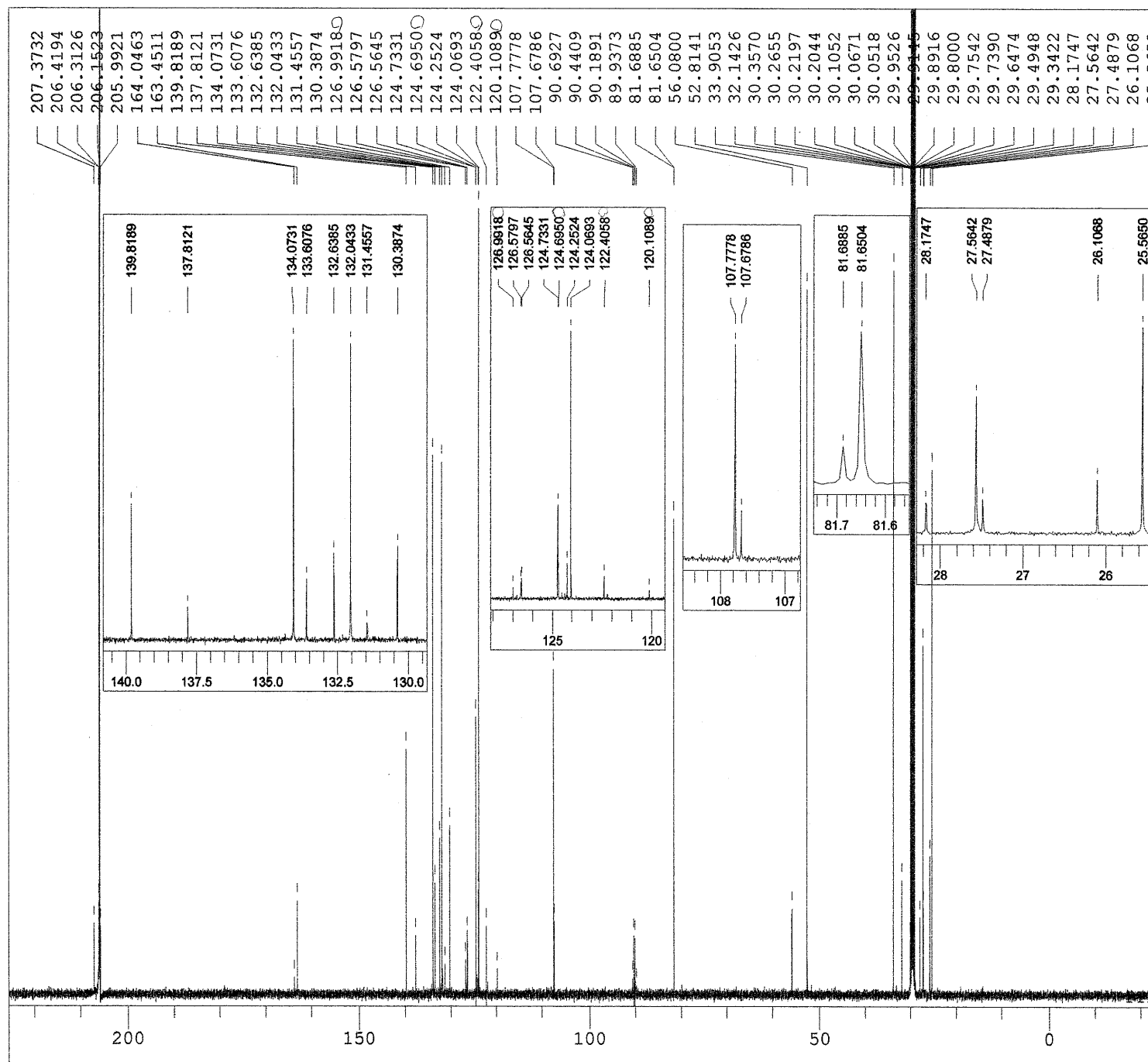
1, 1-dMe-BuOH, [O]



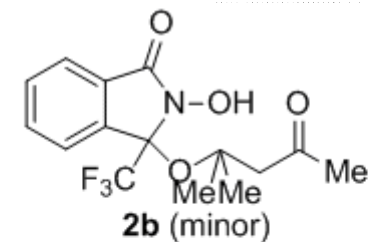
DFILE ozawa04-144 1.als
 COMNT 1,1-dMe-BuOH, [O]
 DATIM 2014-03-09 19:10:36
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 20.8 c
 SLVNT ACETN
 EXREF 2.04 ppm
 BF 0.12 Hz
 RGAIN 36

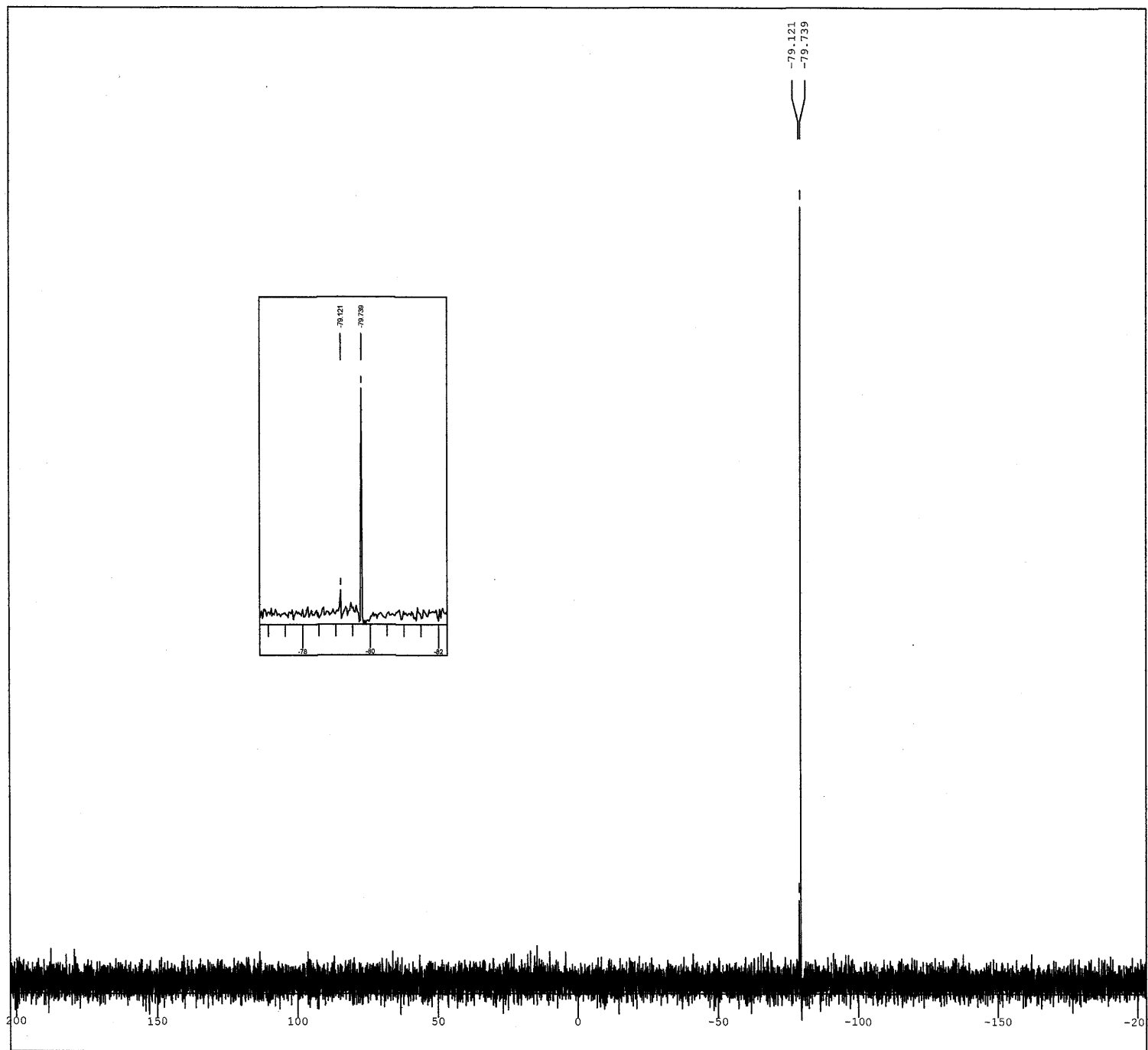


1, 1-dMe-BuOH, [O]

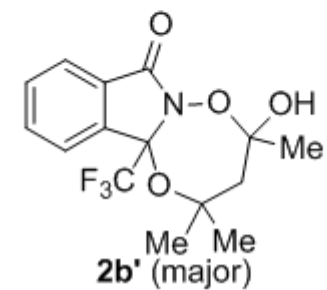
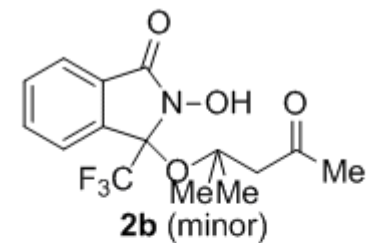


DFILE ozawa04-144_1_13C.jdf
 COMNT 1,1-dMe-BuOH, [O]
 DATIM 2014-03-09 20:54:37
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 31446.54 Hz
 SCANS 12093
 ACQTM 1.0420 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.6 c
 SLVNT ACETN
 EXREF 29.80 ppm
 BF 0.12 Hz
 RGAIN 72

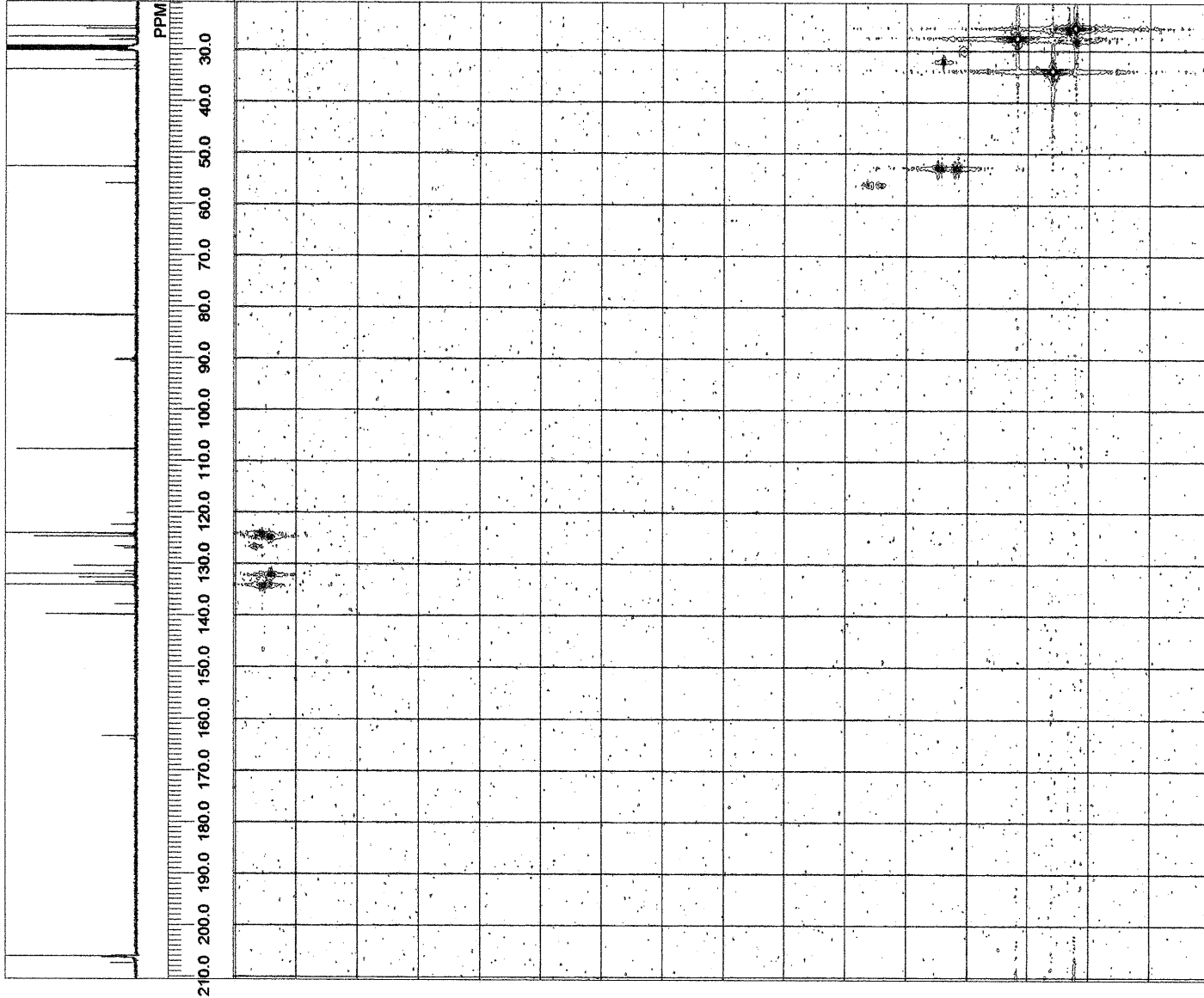
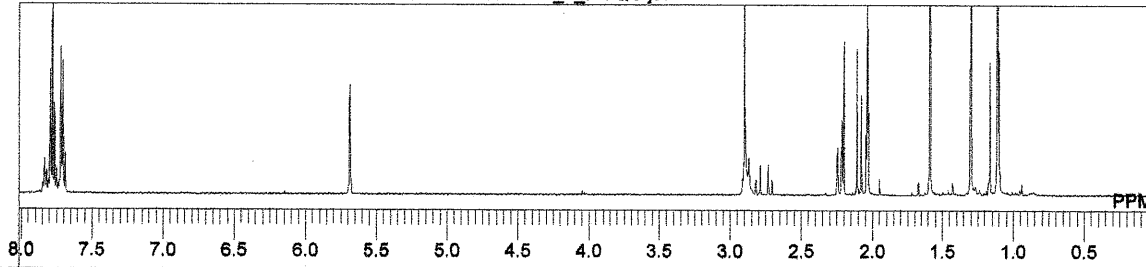




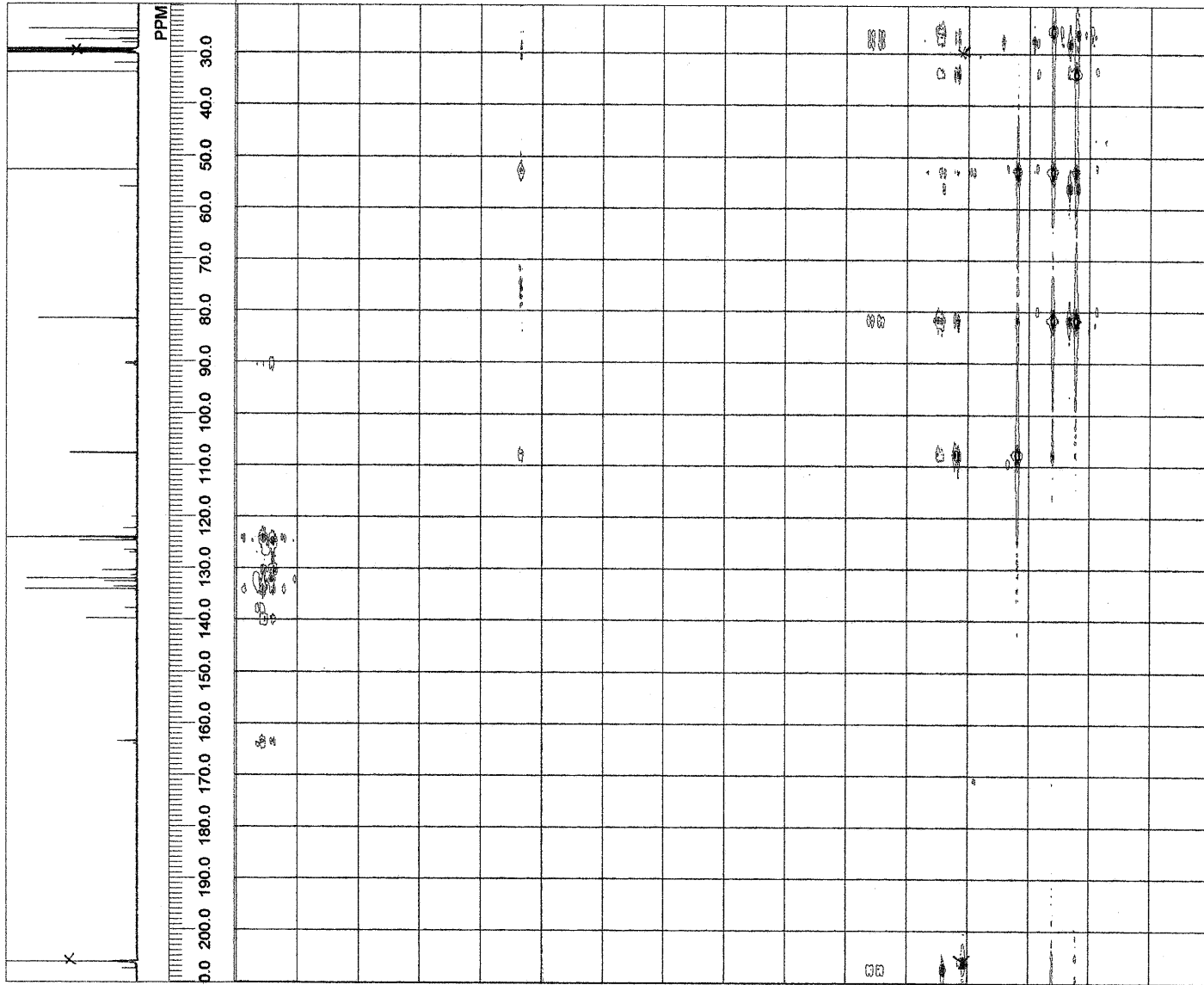
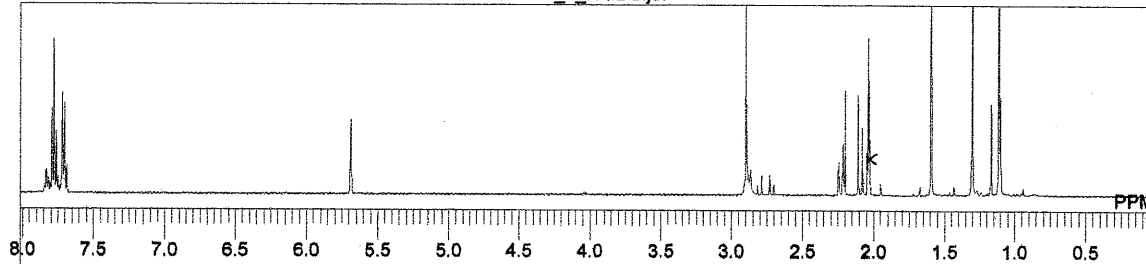
DFILE ozawa04-144_1_19F.jdf
 COMNT 1,1-dMe-BuOH, [O]
 DATIM 11-03-2014 16:28:22
 OBNUC 19F
 EXMOD proton.jxp
 OBFREQ 368.64 MHz
 OBSEF 7.63 KHz
 OBFIN 2.85 Hz
 POINT 16384
 FREQU 186567.17 Hz
 SCANS 4
 ACQTM 0.0878 sec
 PD 5.0000 sec
 PW1 3.90 usec
 IRNUC 19F
 CTEMP 21.0 c
 SLVNT CDCL3
 EXREF -164.90 ppm
 BF 0.12 Hz
 RGAIN 50



\\172.20.1.201\users\delta\Documents\JEOL\data\ozawa04-144_1_HMQC.jdf

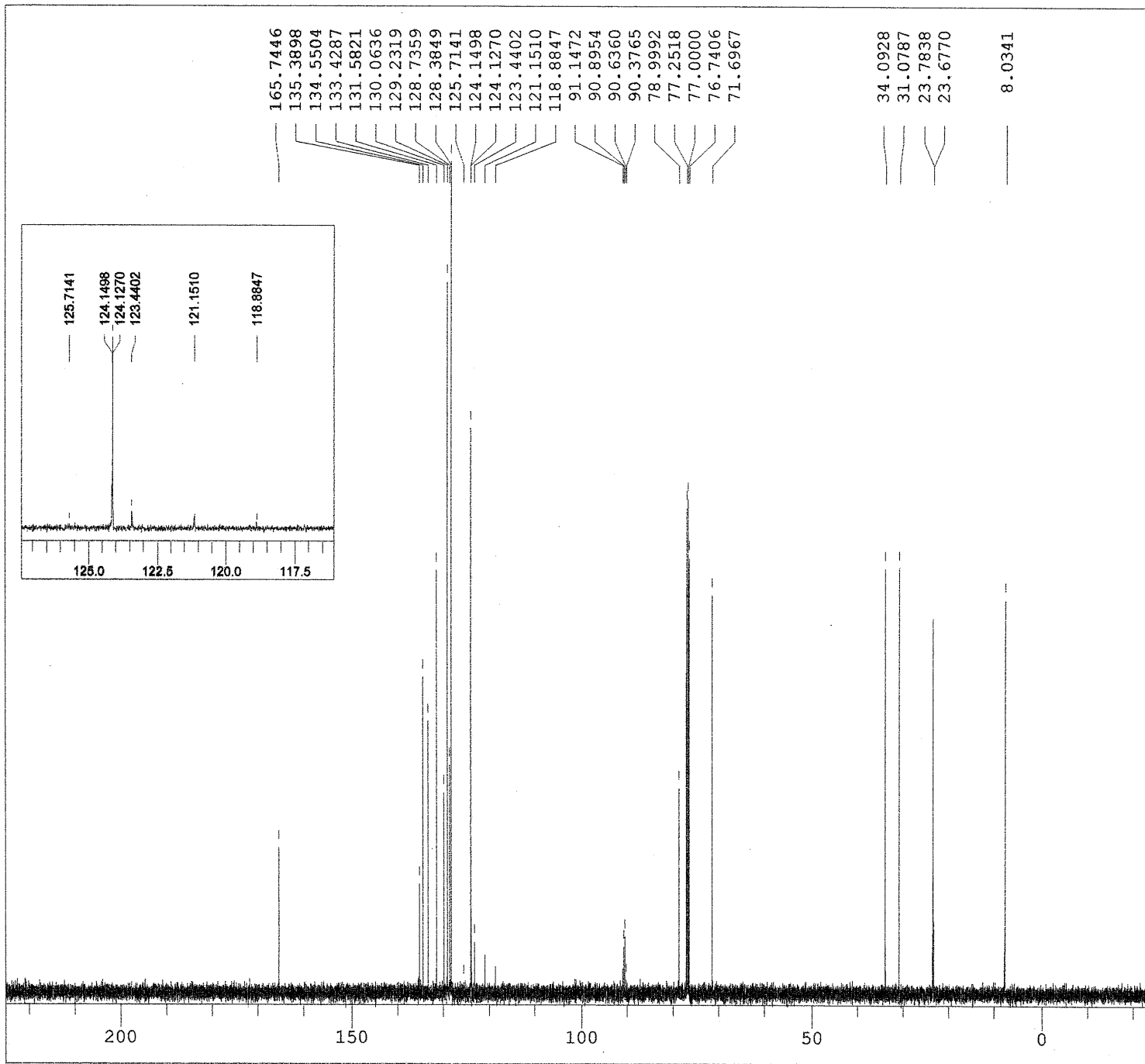


DFILE ozawa04-144_1_HMQC.jdf
COMNT 1,1-dMe-BuOH, [O]
DATIM 10-03-2014 22:58:31
EXMOD hmqc.jxp
OBNUC 1H
OBFREQ 500.16 MHz
OBSET 1.91 KHz
OBFIN 5.85 Hz
POINT 1024
FREQU 5004.00 Hz
CLPNT 512
TODAT 512
CLFRQ 23900.57 Hz
SCANS 4
ACQTM 0.2046 sec
PD 1.5000 sec
PW1 11.10 usec
PW2 0.00 usec
PW3 0.00 usec
PI1 0.0000 msec
PI2 0.0000 msec
PI3 0.0000 msec
IRNUC 13C
CTEMP 21.5 c
SLVNT ACETN
EXREF 2.04 ppm
CLEXR 29.80
RGAIN 90

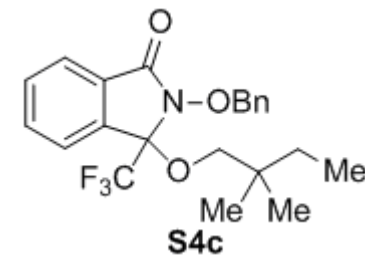


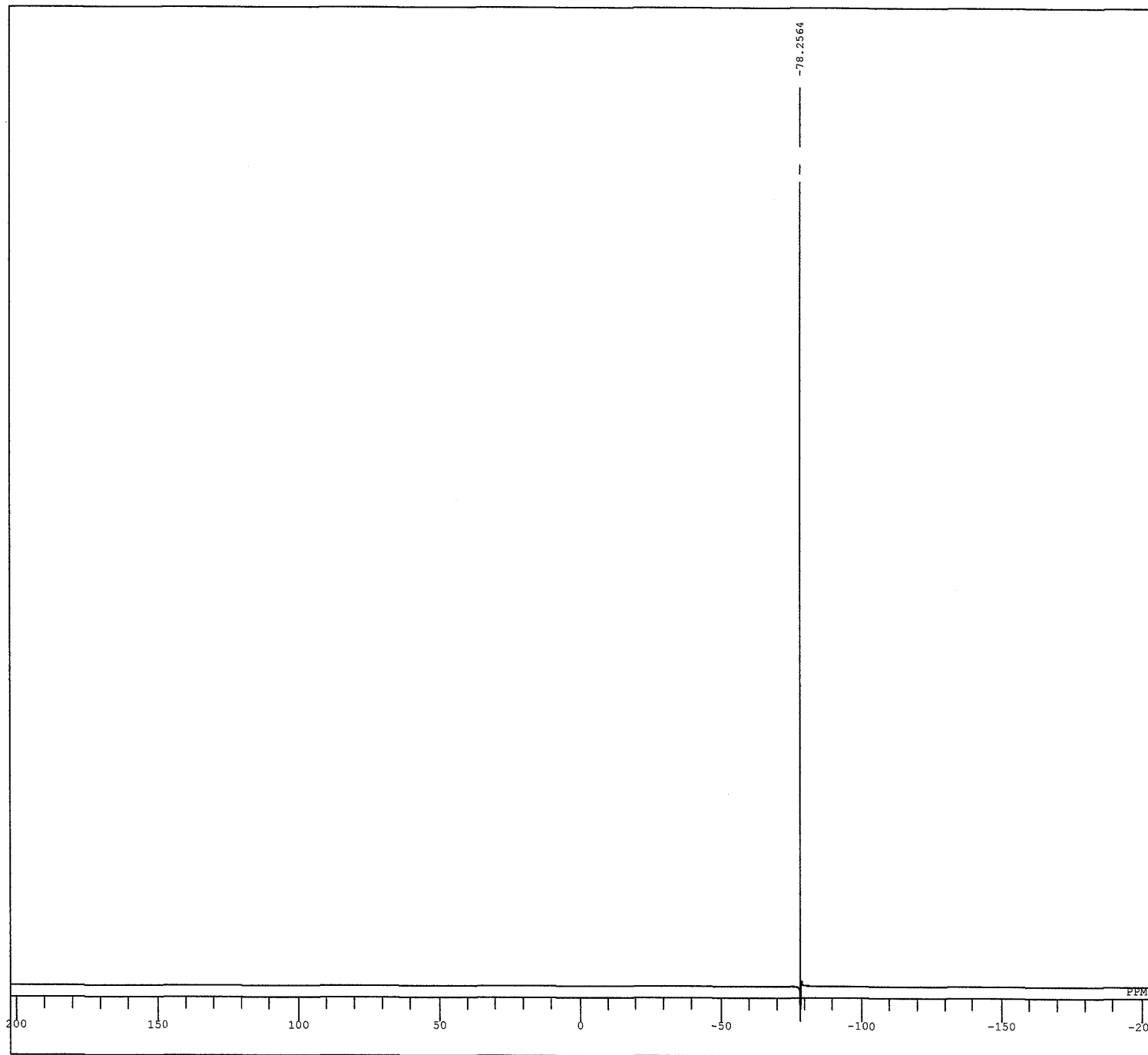
DFILE ozawa04-144_1_HMBC.jdf
 COMNT 1,1-dMe-BuOH, [O]
 DATIM 10-03-2014 23:56:07
 EXMOD hmbc.jpg
 OBNUC 1H
 OBFREQ 500.16 MHz
 OBSET 1.91 KHz
 OBFIN 5.85 Hz
 POINT 2047
 FREQU 5004.00 Hz
 CLPNT 256
 TODAT 256
 CLFRQ 23900.57 Hz
 SCANS 60
 ACQTM 0.4093 sec
 PD 1.5000 sec
 PW1 11.10 usec
 PW2 0.00 usec
 PW3 0.00 usec
 PI1 0.0000 msec
 PI2 0.0000 msec
 PI3 0.0000 msec
 IRNUC 13C
 CTEMP 21.3 c
 SLVNT ACETN
 EXREF 2.04 ppm
 CLEXR 29.80
 RGAIN 90

2,2-dMe-BuOH, Bn



DFILE ozawa04-142_1_13C.jdf
COMNT 2,2-dMe-BuOH, Bn
DATIM 2014-03-06 19:22:14
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32768
FREQU 31446.54 Hz
SCANS 78
ACQTM 1.0420 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 72

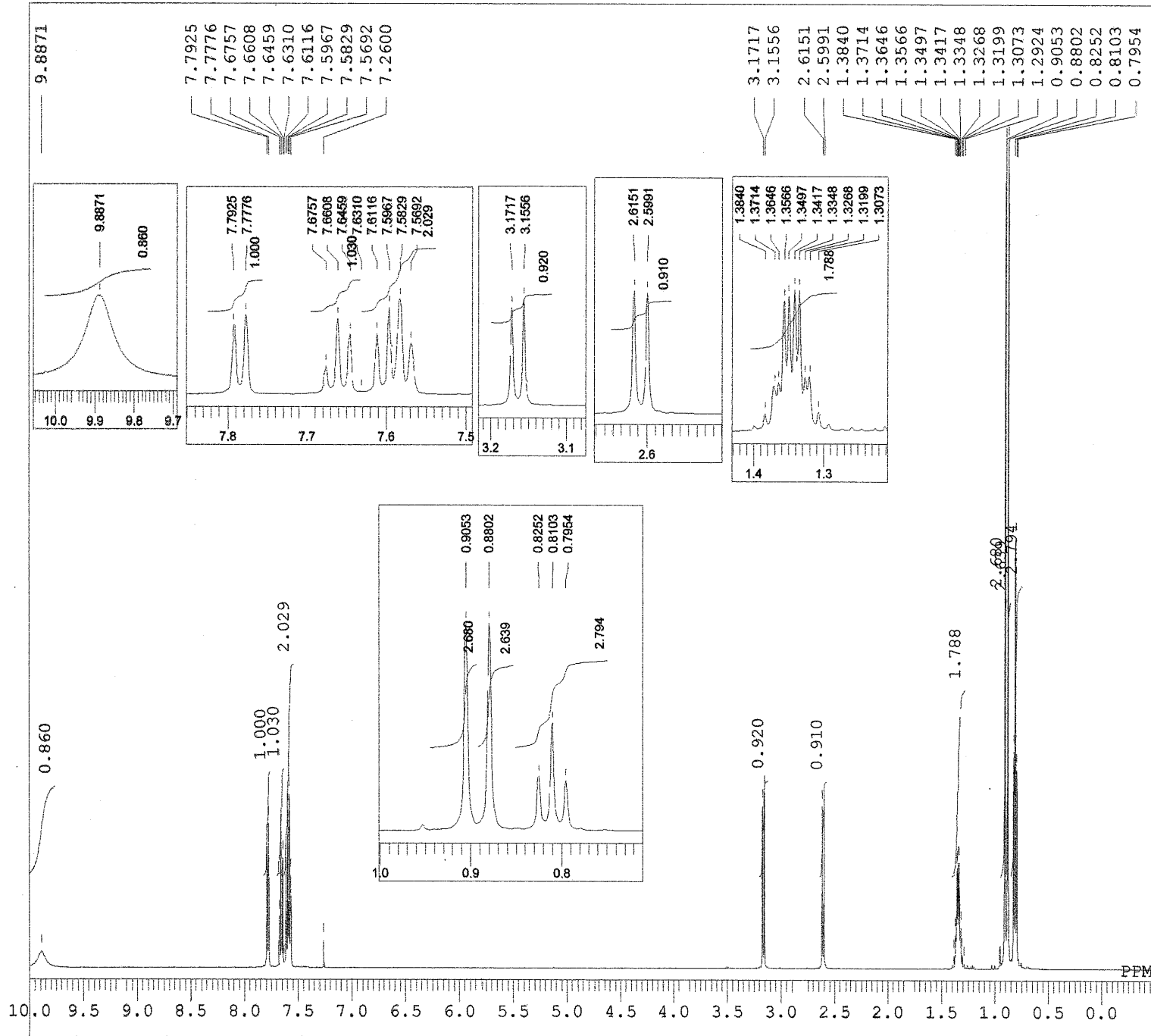




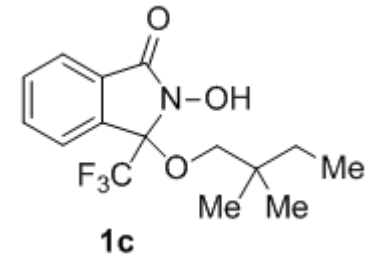
DFILE ozawa04-142_1_19F.jdf
COMNT 2,2-dMe-BuOH, Bn
DATIM 06-03-2014 20:39:07
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 21.4 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46

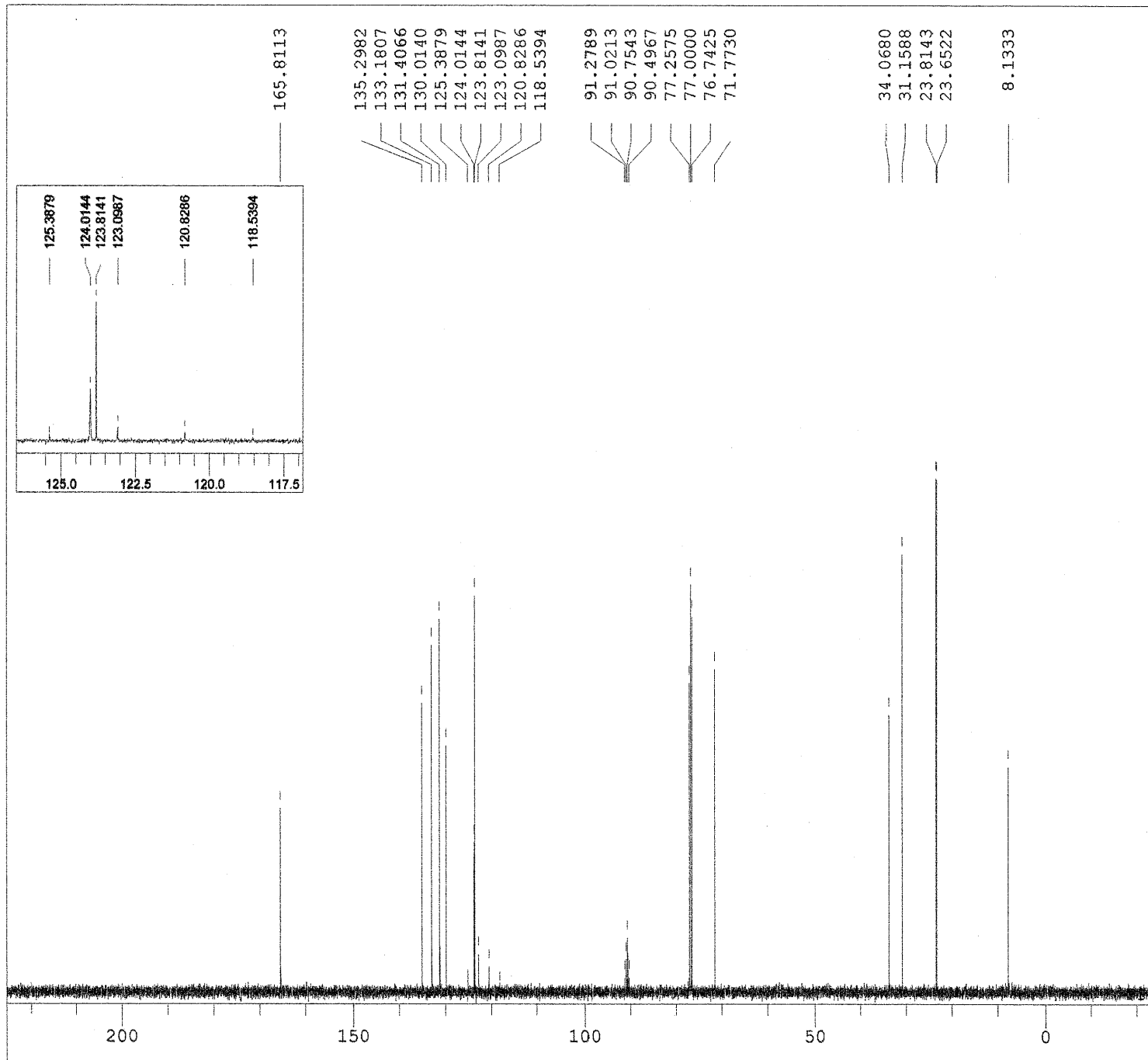


OH

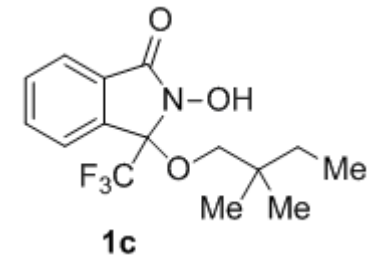


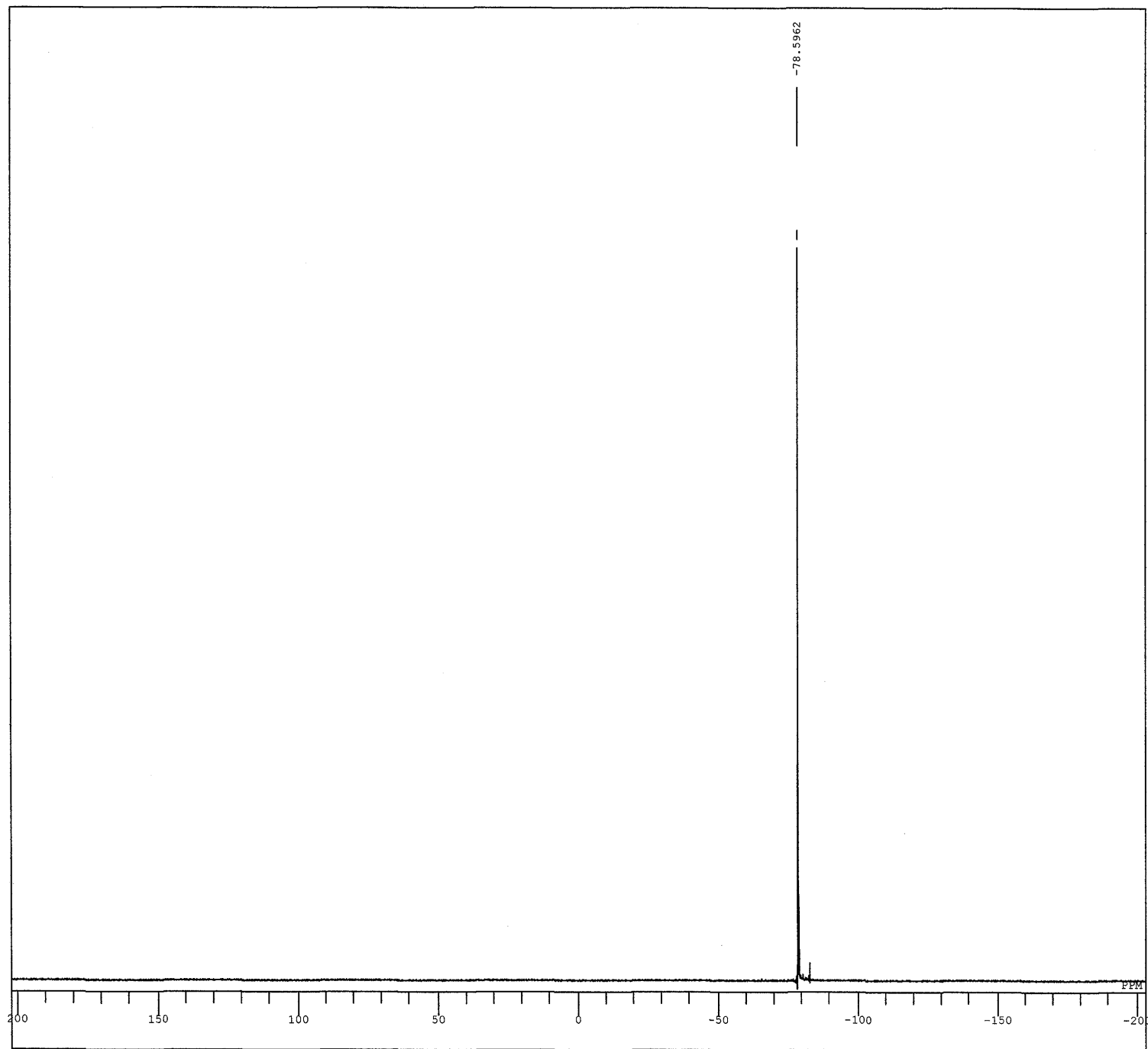
DFILE Ni_2,2-dMe-BuOH_1H.jdf
 COMNT OH
 DATIM 2014-03-03 20:17:29
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 28



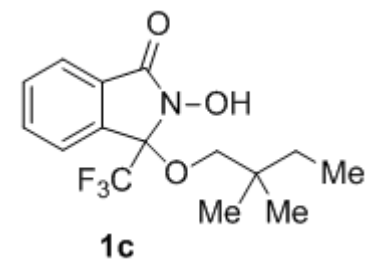


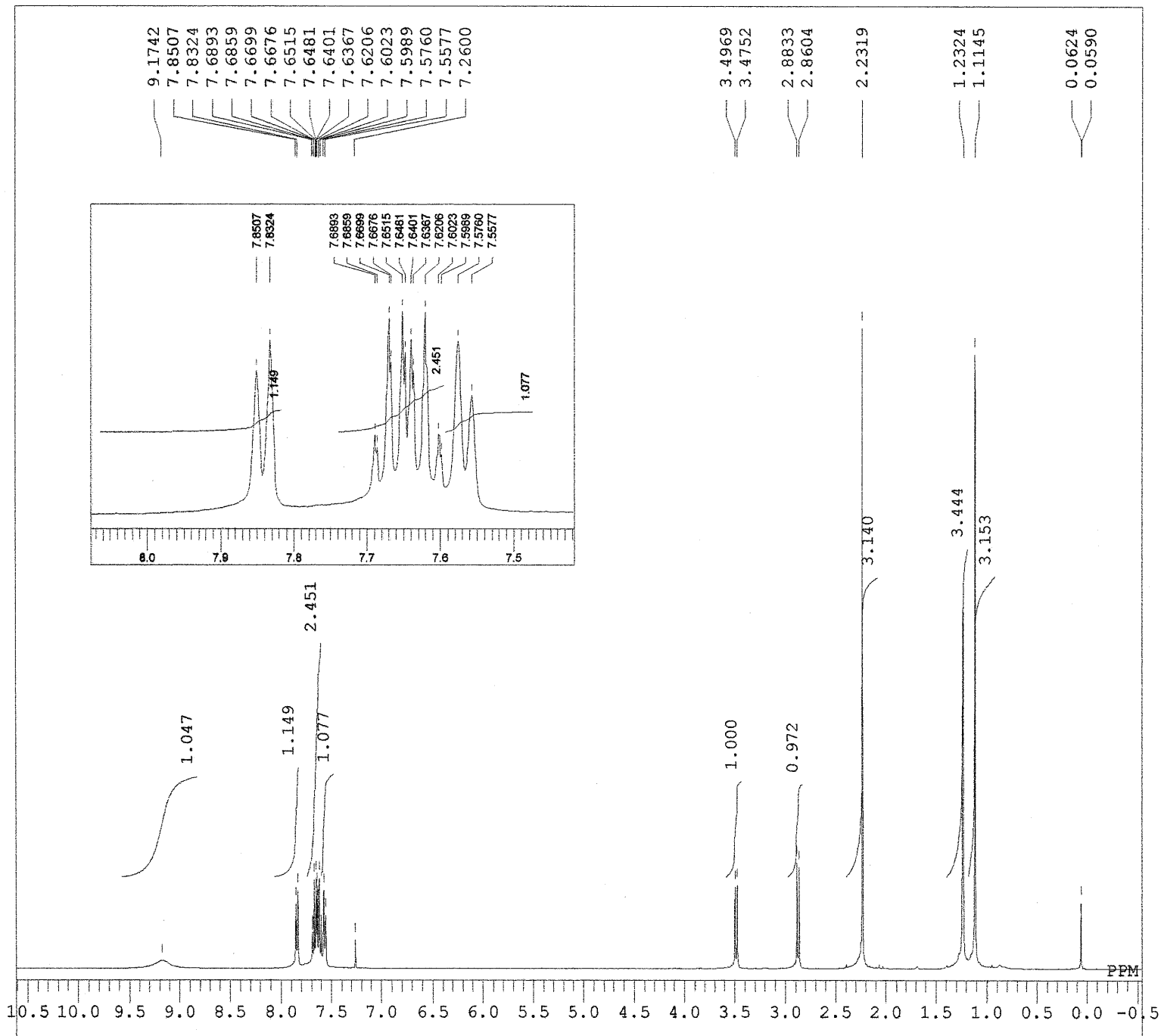
DFILE Ni_2,2-dMe-BuOH_13C.jdf
 COMNT OH
 DATIM 2014-03-03 20:18:32
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 80
 ACQTM 0.8336 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



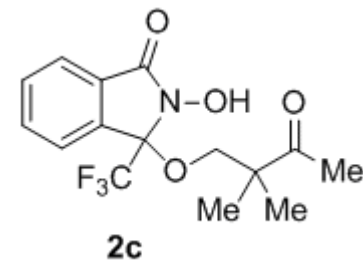


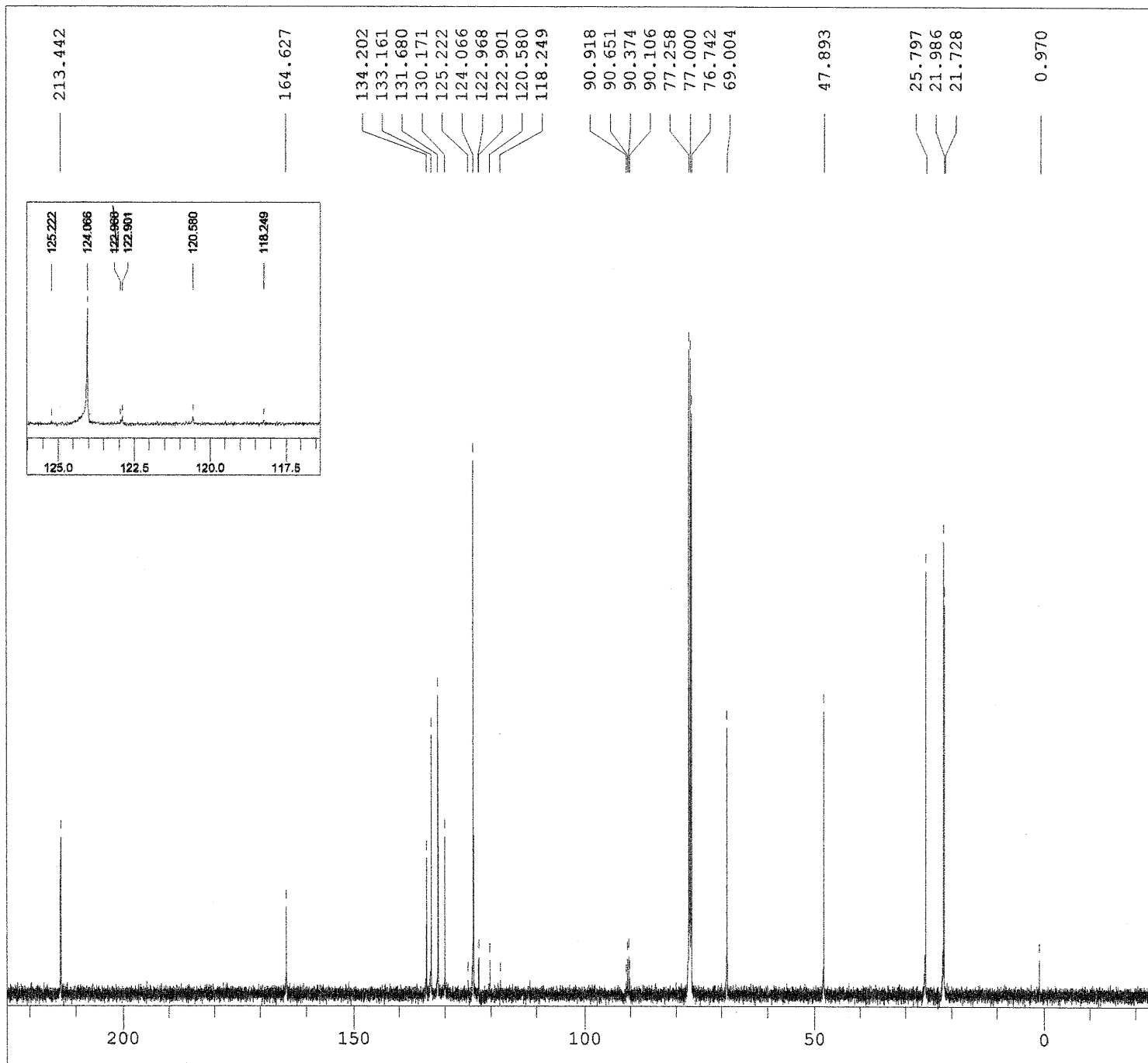
DFILE Ni_2,2-dMe-BuOH_19F.jdf
COMNT OH
DATIM 03-03-2014 20:57:45
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



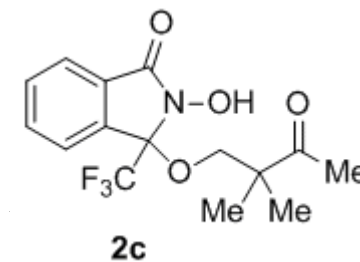


DFILE ni140206-C-K-peak1-H1-1-1.als
 COMNT
 DATIM 06-02-2014 16:27:48
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 13107
 FREQU 5878.90 Hz
 SCANS 18
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.25 usec
 IRNUC 1H
 CTEMP 21.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30

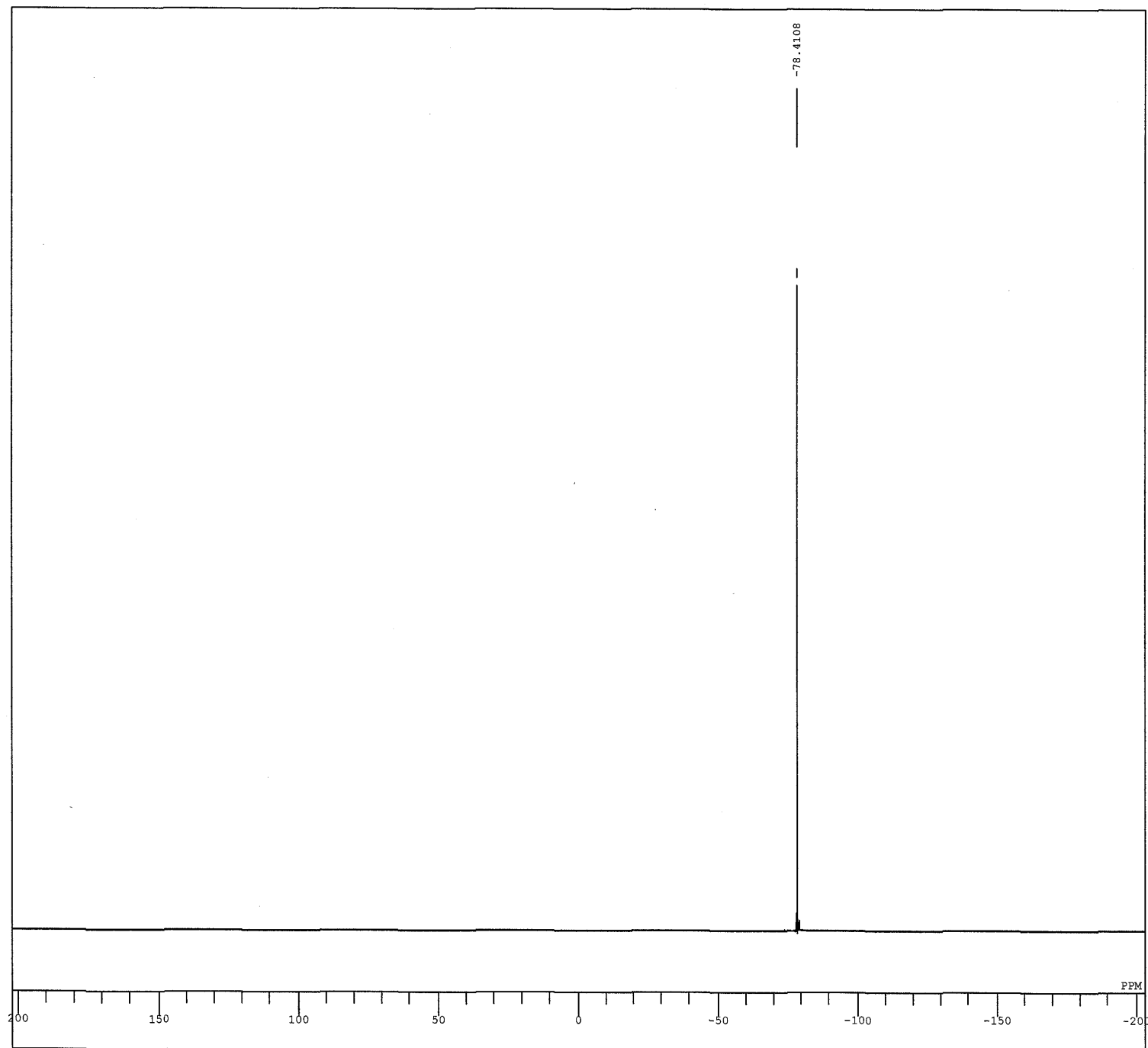
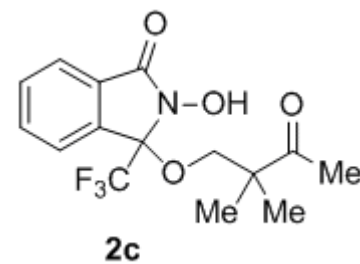


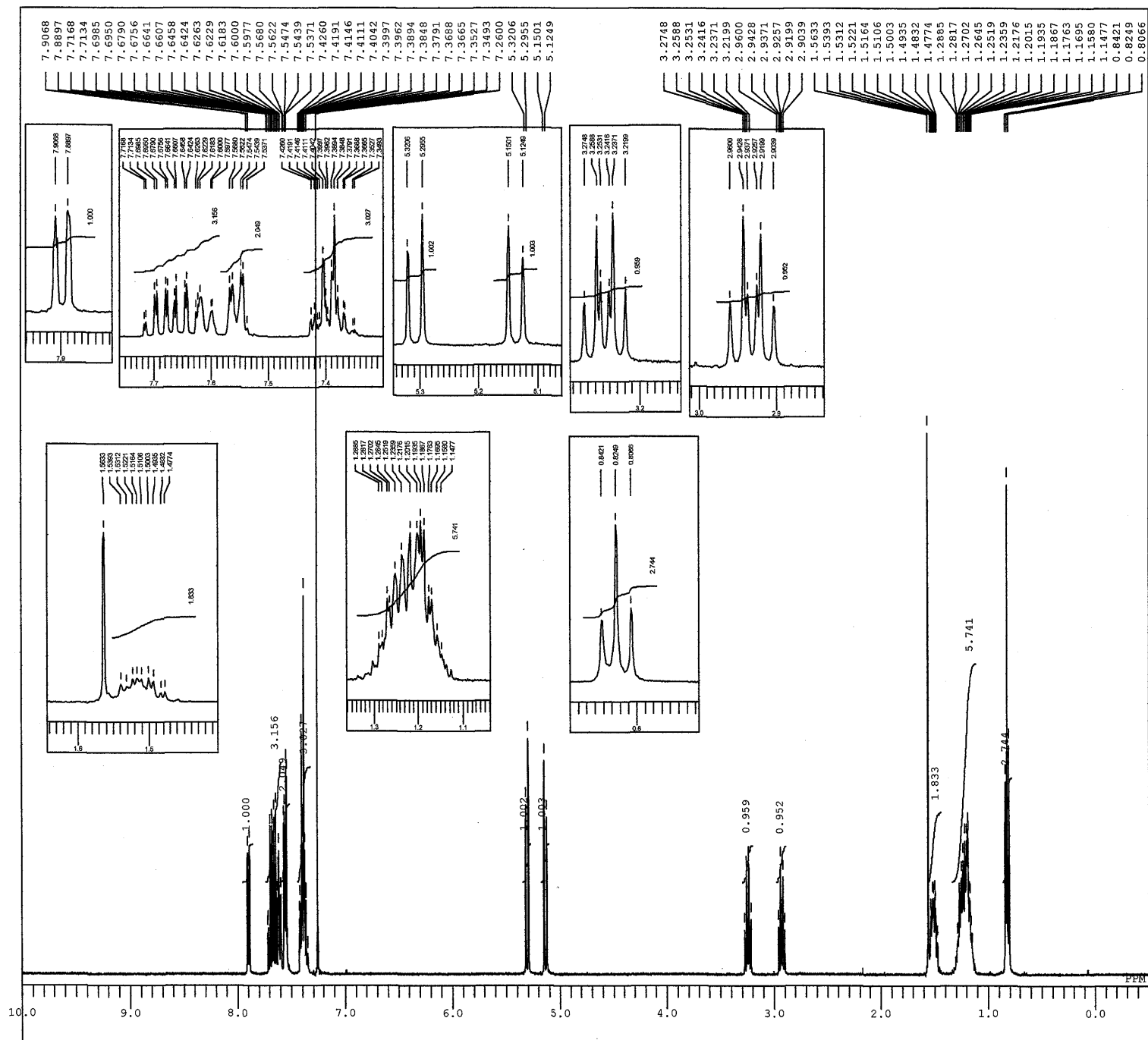


DFILE ni140206-C-K-C13.als
 COMNT
 DATIM 2014-02-03 01:46:38
 OBNUC 13C
 EXMOD single_pulse_dec
 OBFRQ 123.26 MHz
 OBSET 2.31 KHz
 OBFIN 6.71 Hz
 POINT 26214
 FREQU 30863.73 Hz
 SCANS 2236
 ACQTM 0.8493 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 22.7 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.05 Hz
 RGAIN 50

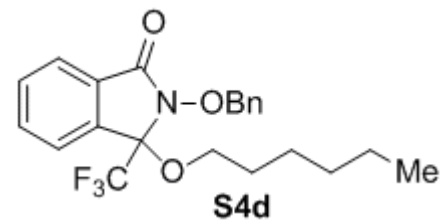


DFILE ni140206-C-K-peak1-F19-1-1.jdf
COMNT
DATIM 06-02-2014 16:32:06
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQIM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46

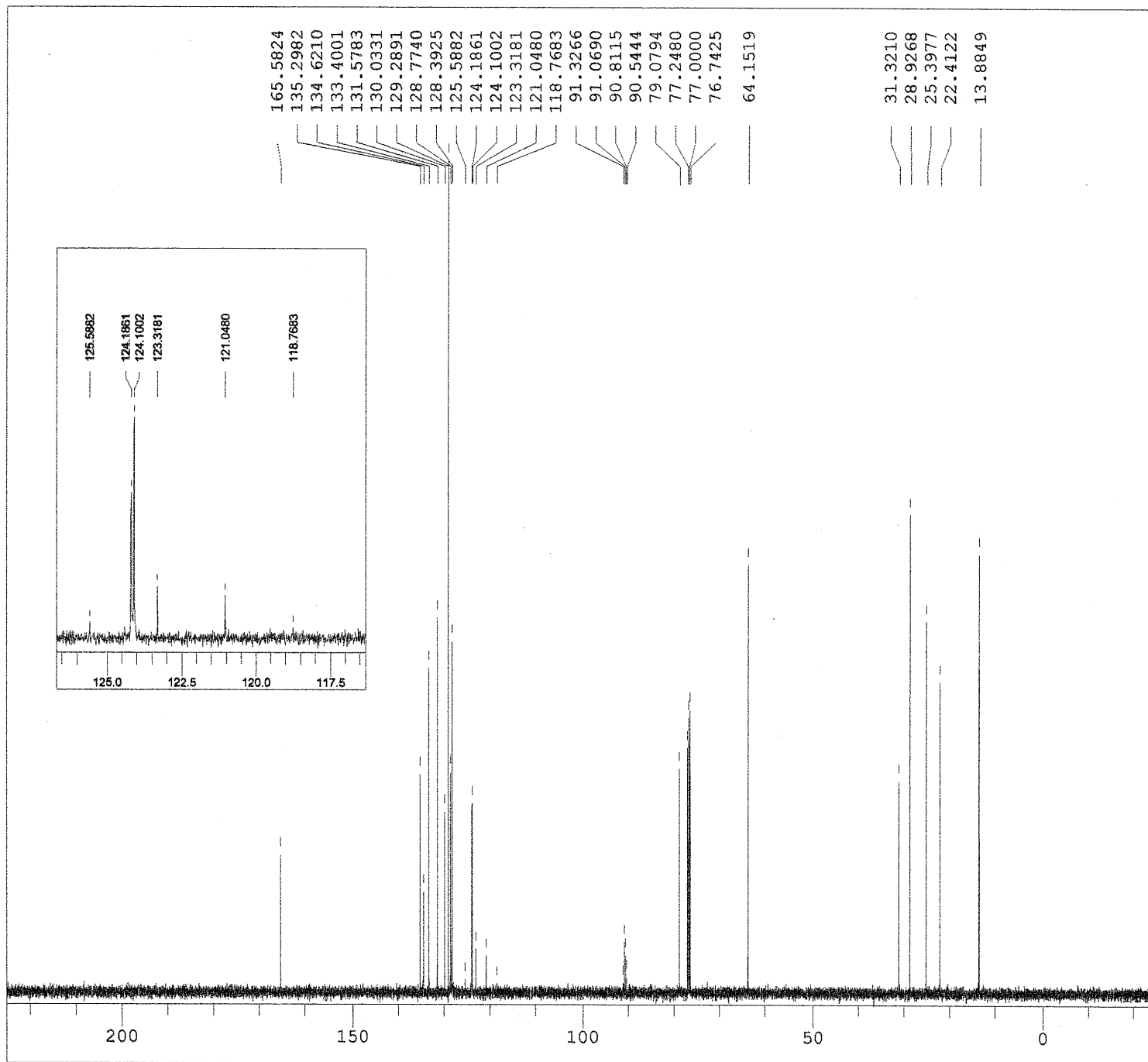




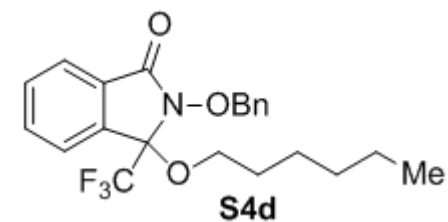
DFILE ozawa04-007_1H.a1s
 COMNT hexOH, Bn
 DATIM 15-03-2014 15:16:19
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 13107
 FREQU 5878.90 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.25 usec
 IRNUC 1H
 CTEMP 21.0 c
 SLVNT CDCl3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 46



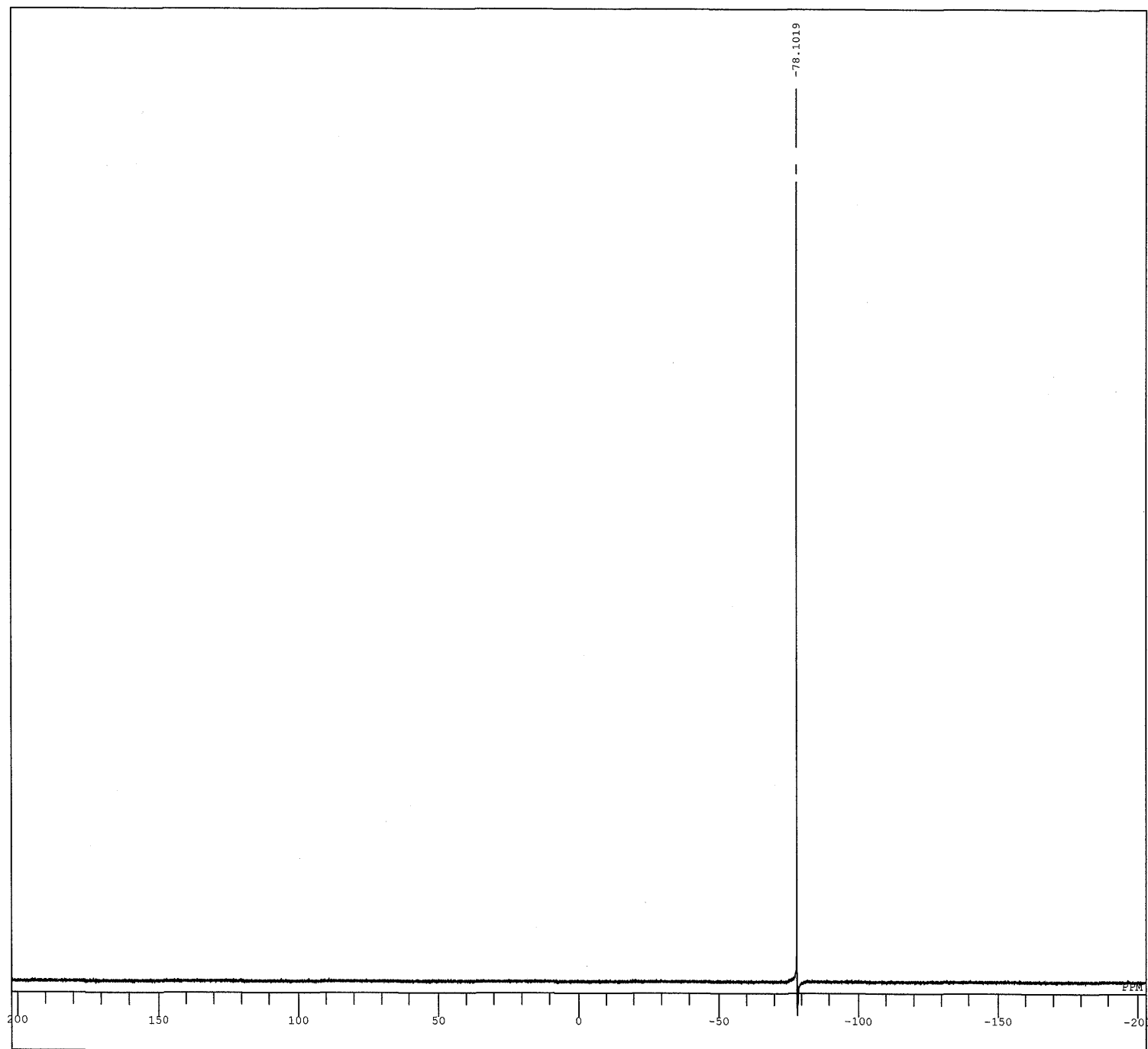
hexOH, Bn



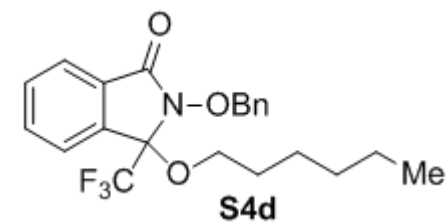
DFILE ozawa04-151_13C.jdf
COMNT hexOH, Bn
DATIM 2014-03-22 19:03:22
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 68
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.6 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



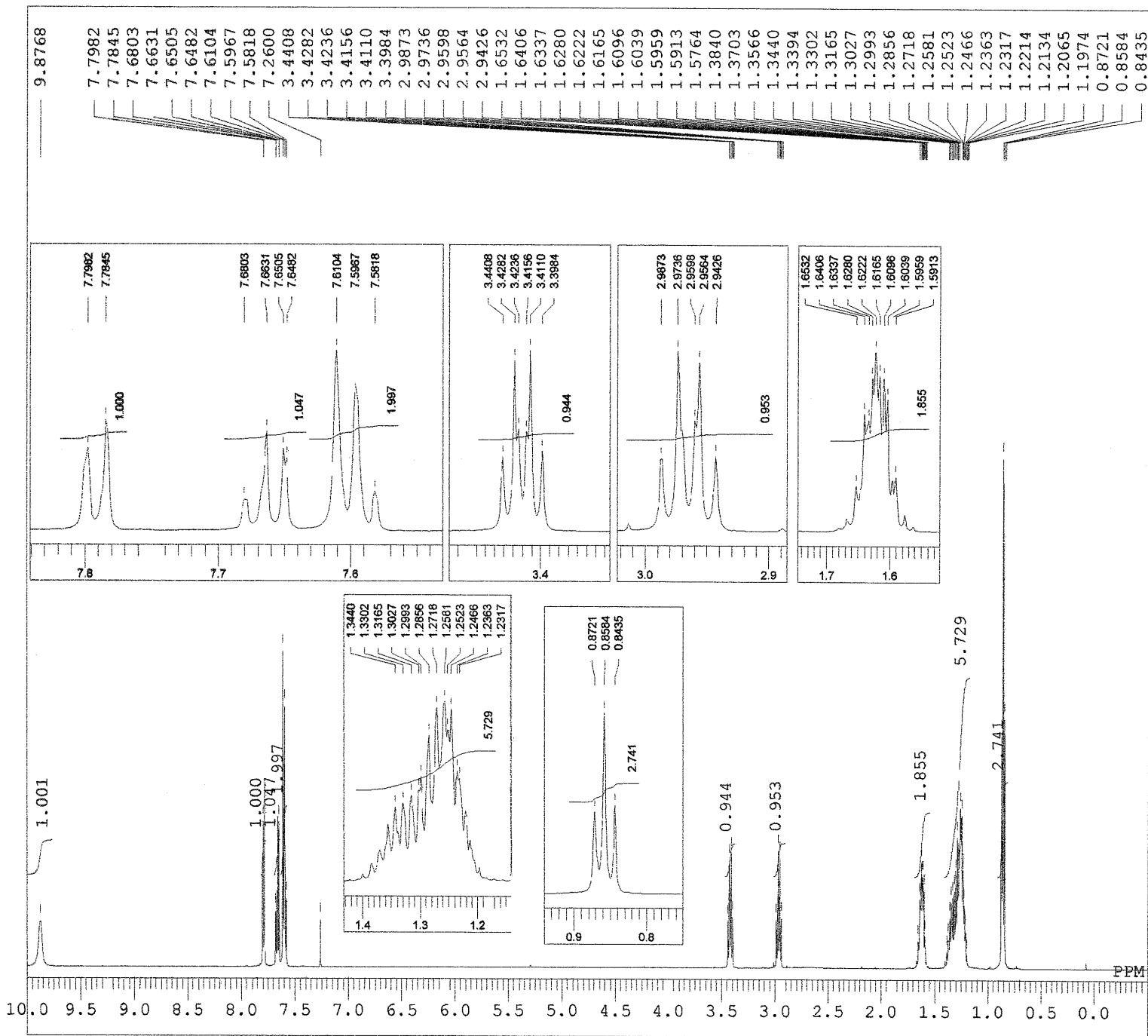
hexOH, Bn



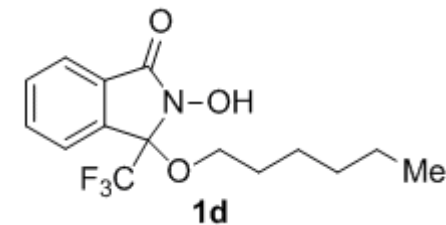
DFILE ozawa04-007_19F.jdf
COMNT hexOH, Bn
DATIM 15-03-2014 15:14:02
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



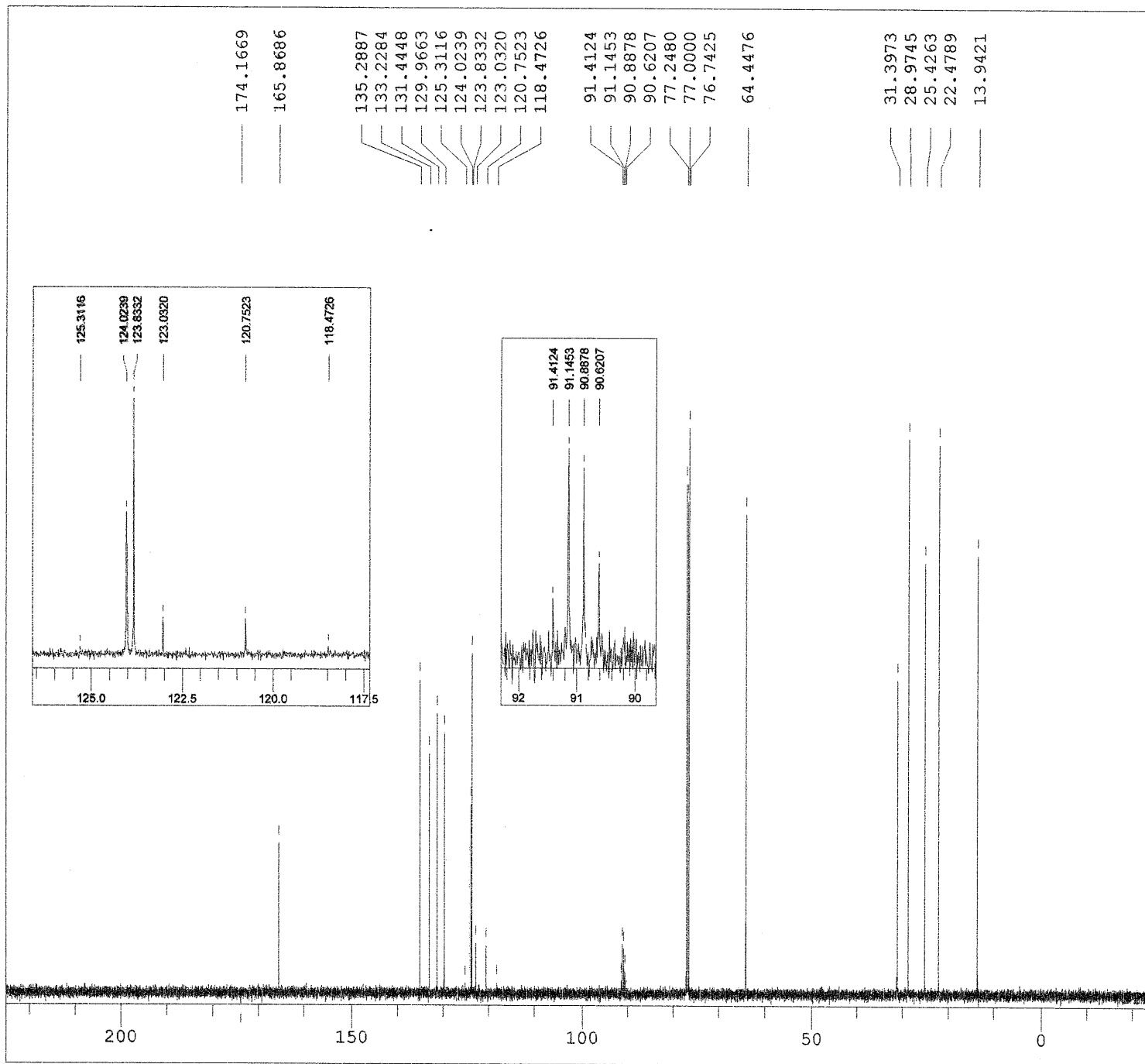
hexOH, OH



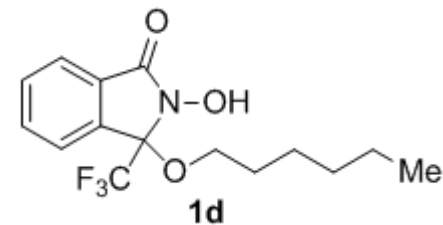
DFILE ozawa04-010_1H.jdf
COMNT hexOH, OH
DATIM 2014-01-17 19:39:58
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.5 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 28



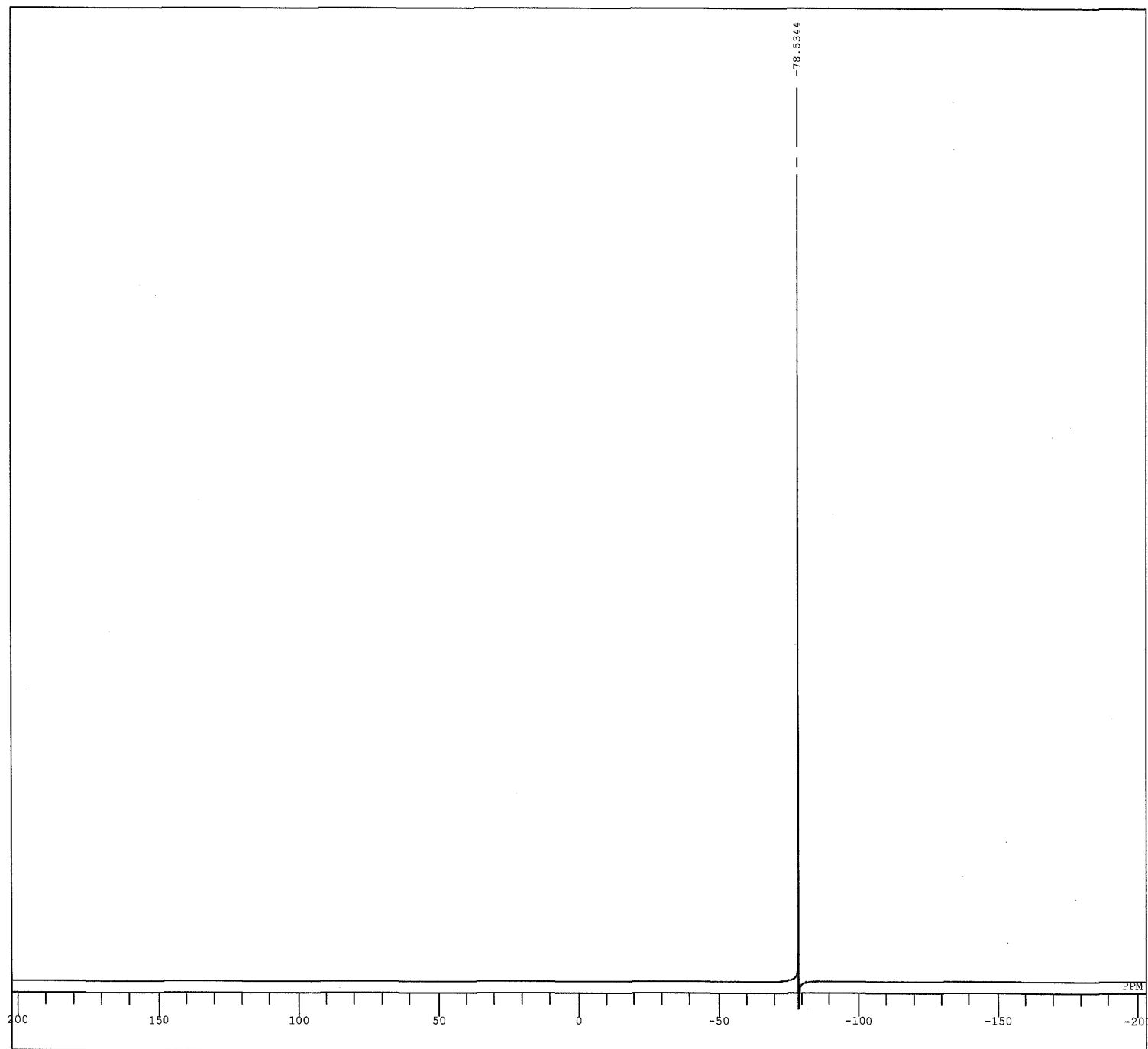
hexOH, OH



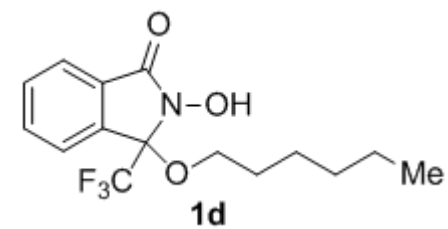
DFILE ozawa04-010_13C.jdf
COMNT hexOH, OH
DATIM 2014-01-17 19:41:00
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 164
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

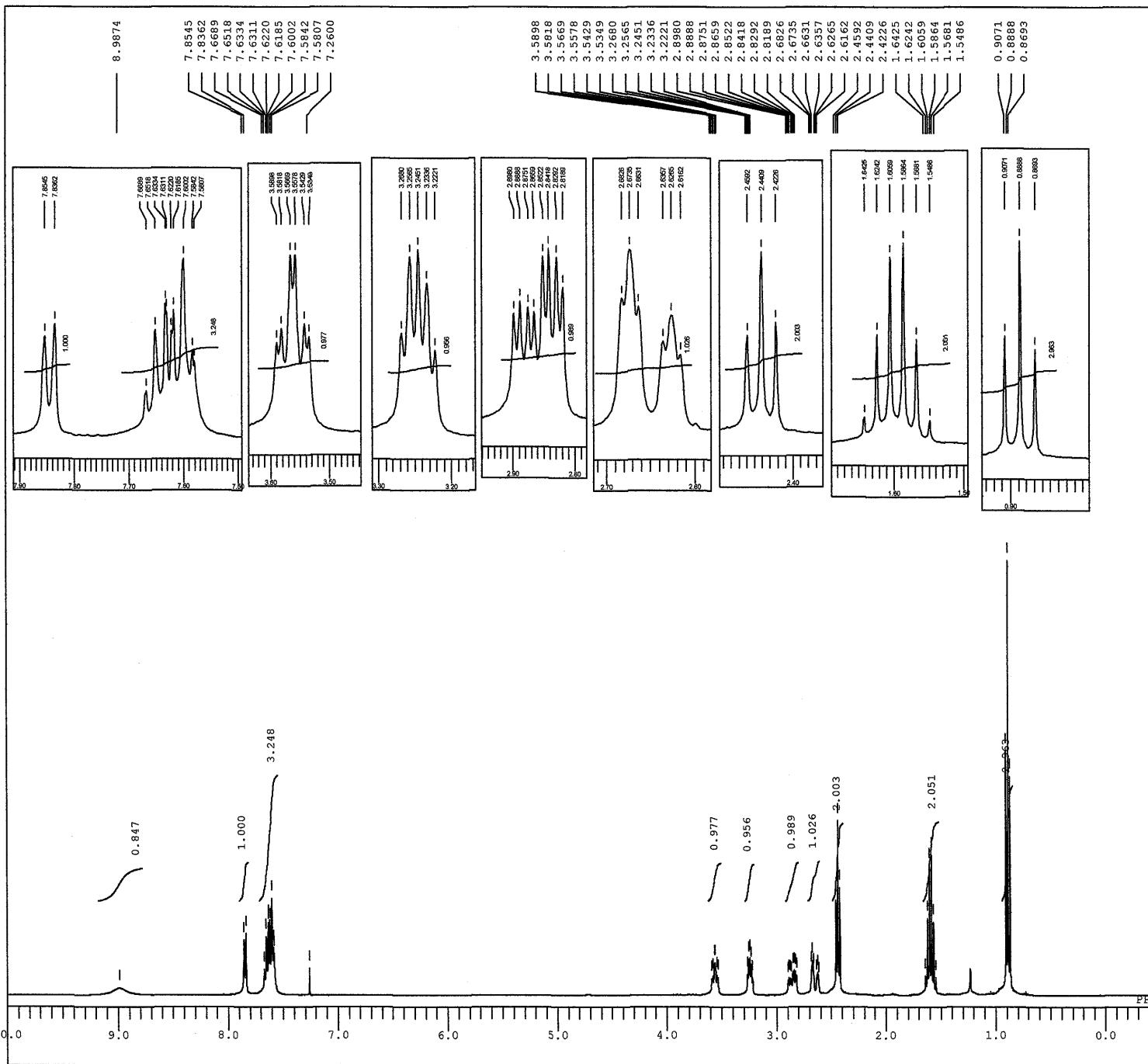


hexanol, OH



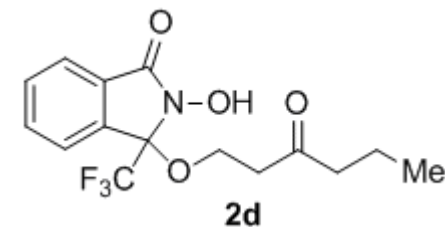
DFILE ozawa04-010_19F.jdf
COMNT hexanol, OH
DATIM 17-01-2014 13:04:22
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



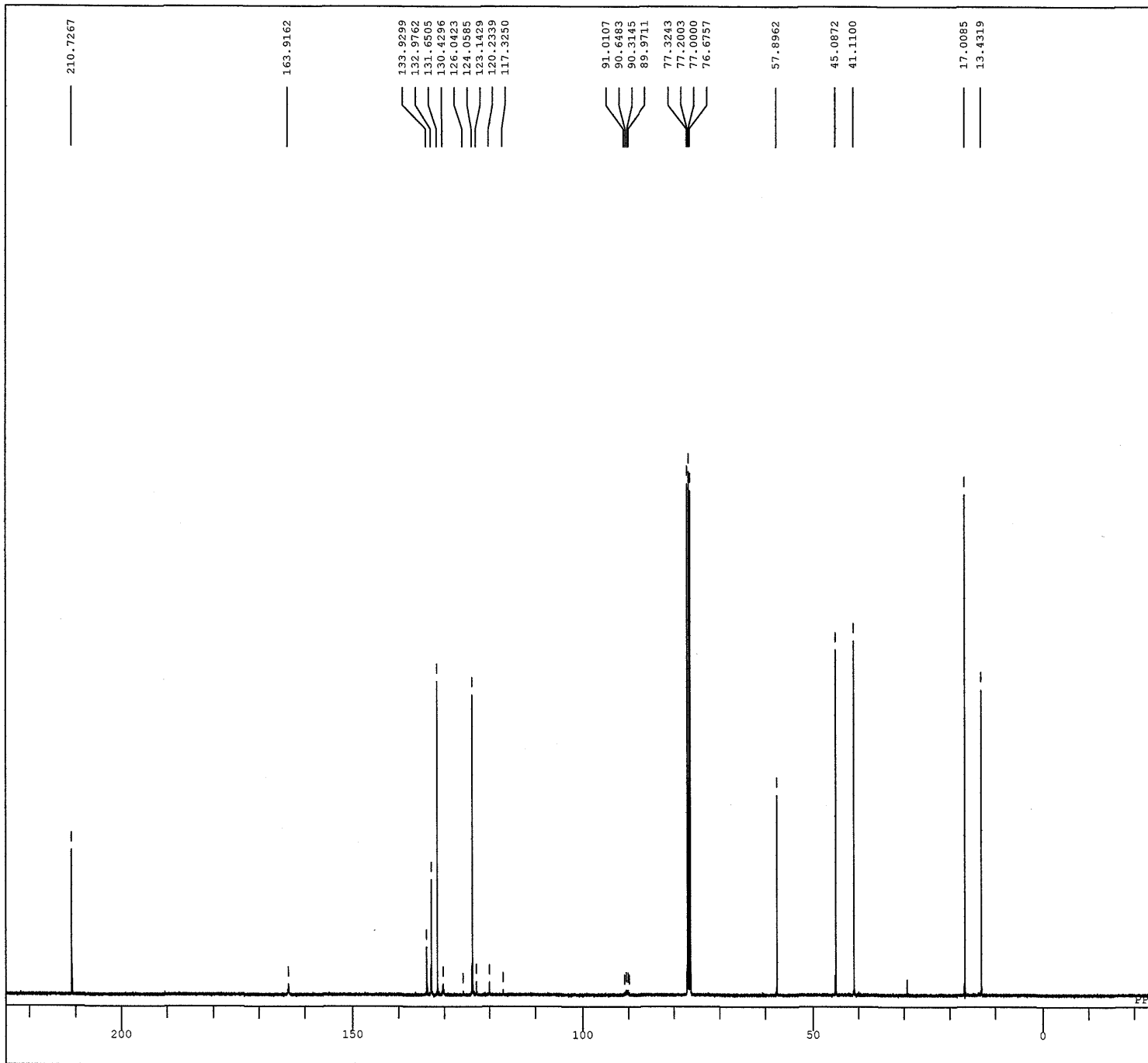


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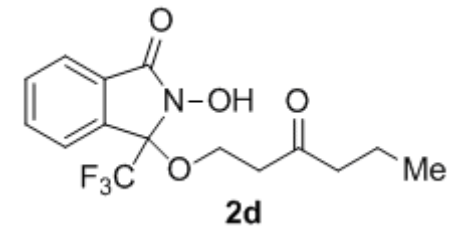
DFILE ozawa05-017_1_1H.jdf
COMNT hex, [O], LP
DATIM 28-05-2014 20:50:45
OBNUC 1H
EXMOD proton.jxp
OBFREQ 391.78 MHz
OBSETE 8.51 KHz
OBFIN 3.34 Hz
POINT 16384
FREQU 7352.94 Hz
SCANS 4
ACQTM 2.2282 sec
PD 5.0000 sec
PW1 5.25 usec
IRNUC 1H
CTEMP 23.6 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 26
    
```



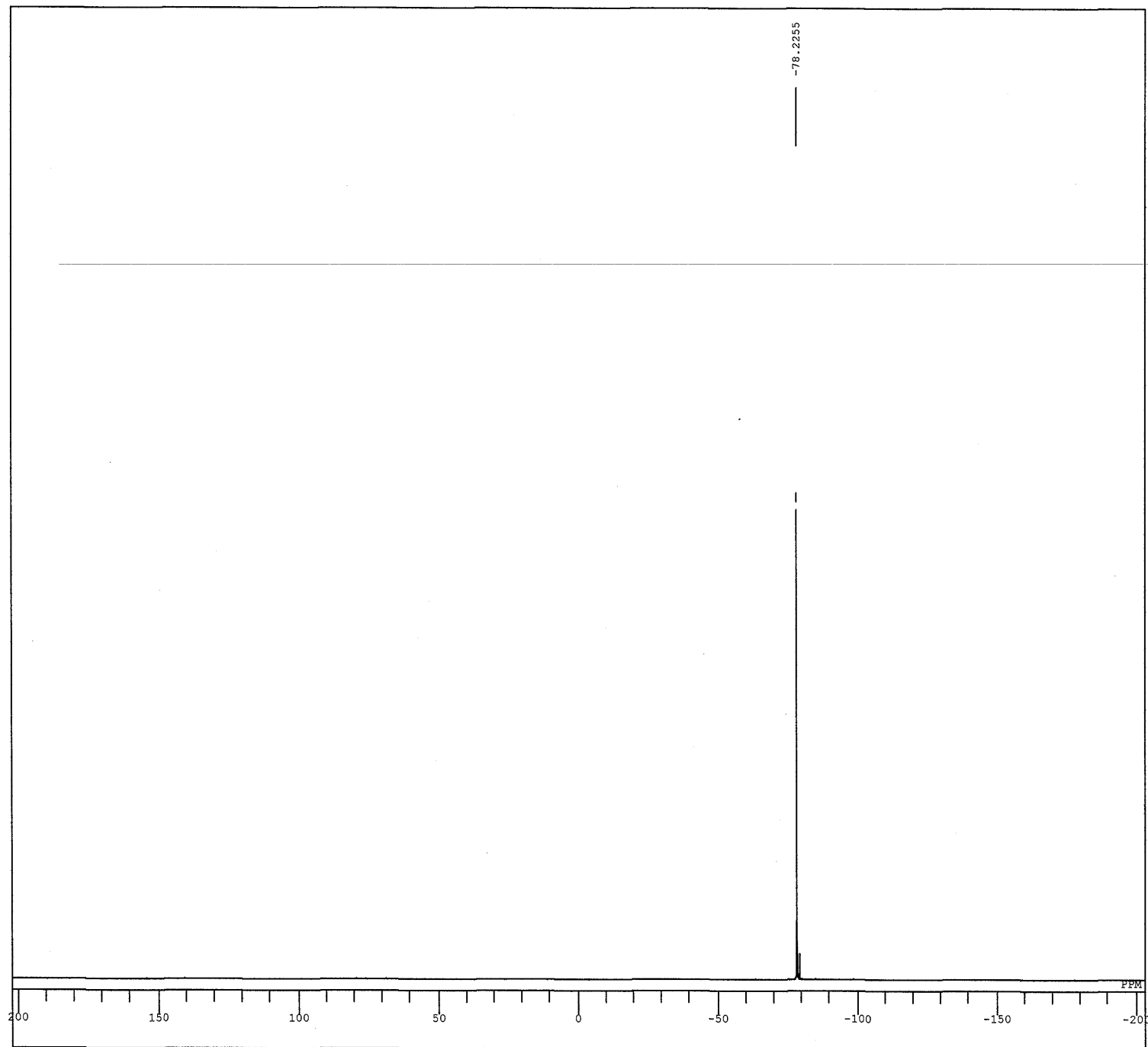
hex, [0], LP



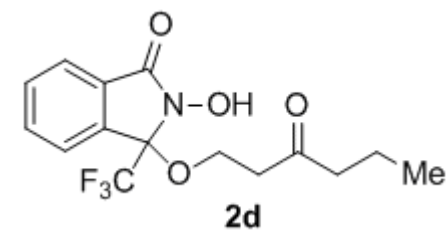
DFILE ozawa05-017_1_13C.als
COMNT hex, [0], LP
DATIM 28-05-2014 23:01:37
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 98.52 MHz
OBSET 4.64 KHz
OBFIN 8.74 Hz
POINT 26214
FREQU 24630.54 Hz
SCANS 7000
ACQTM 1.0643 sec
PD 3.0000 sec
PW1 3.00 usec
IRNUC 1H
CTEMP 23.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



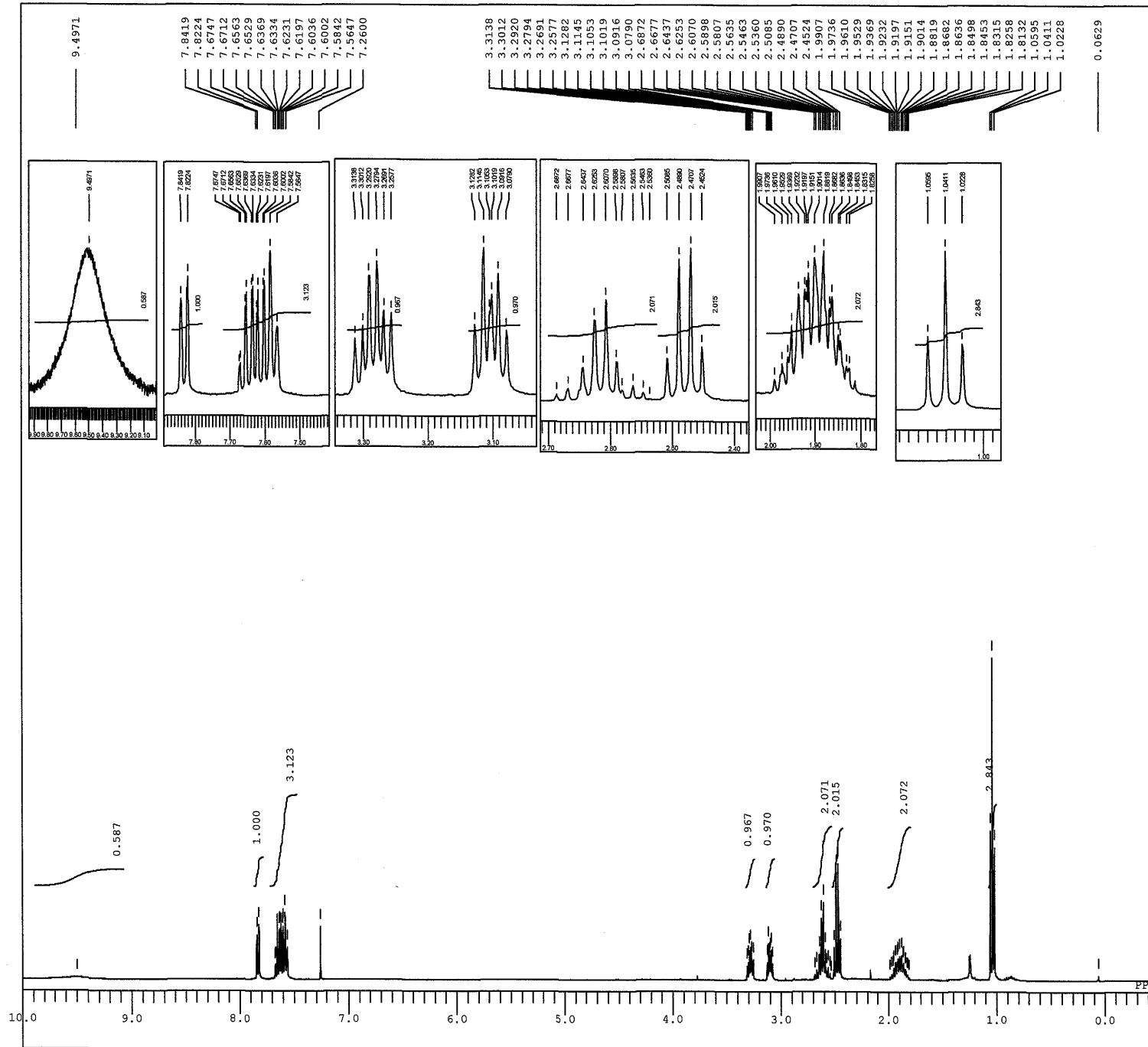
hex, [0], LP



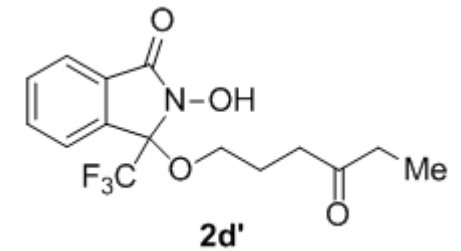
DFILE ozawa05-017_1_19F.jdf
COMNT hex, [0], LP
DATIM 28-05-2014 20:48:29
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 23.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



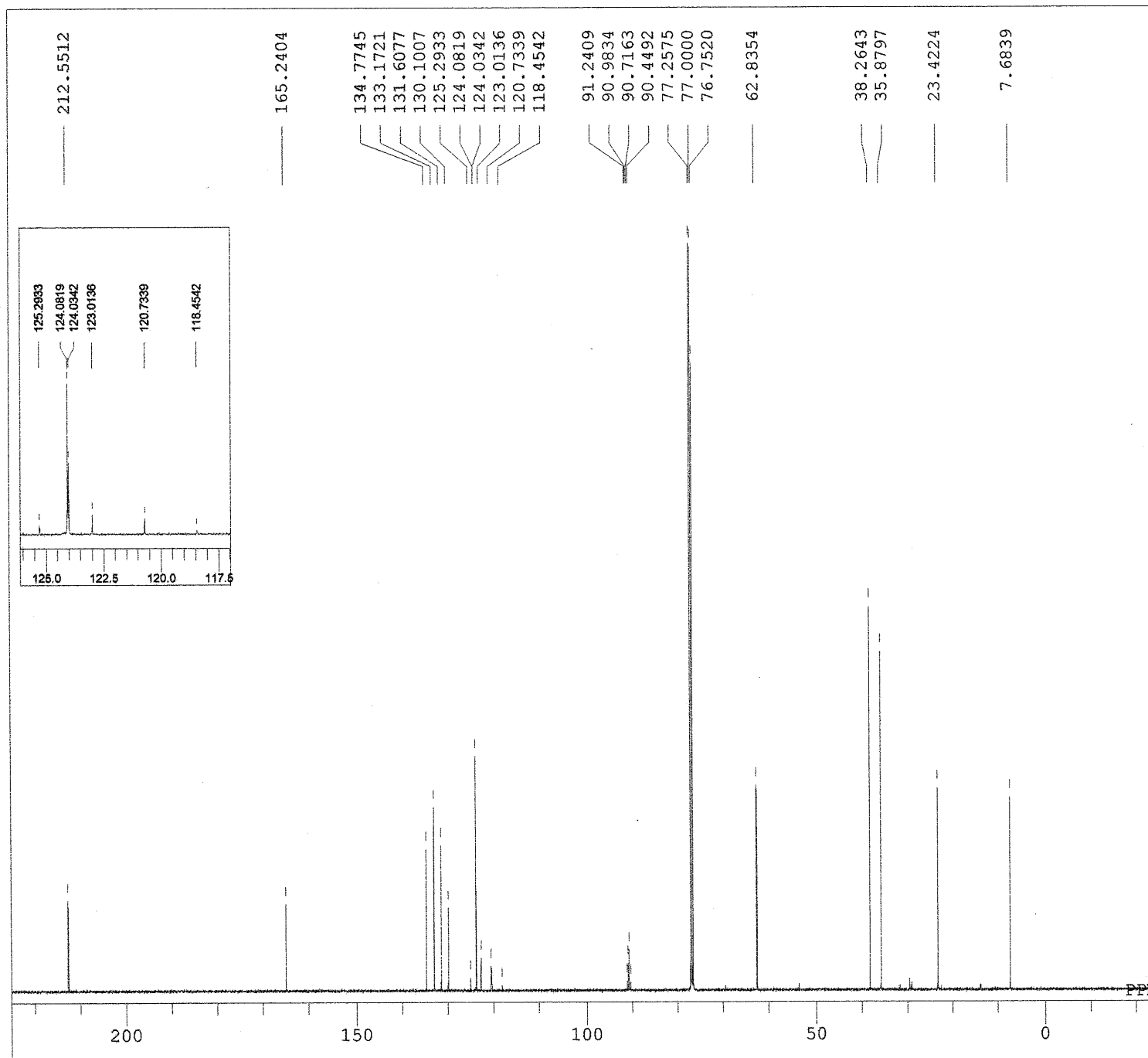
hex, [O], MP



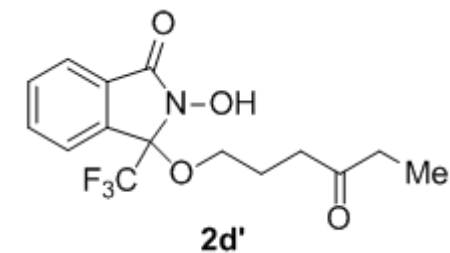
DFILE ozawa05-017_2_1H.jdf
COMNT hex, [O], MP
DATIM 28-05-2014 20:41:38
OBNUC 1H
EXMOD proton.jxp
OBFREQ 391.78 MHz
OBSET 8.51 KHz
OBFIN 3.34 Hz
POINT 16384
FREQ 7352.94 Hz
SCANS 4
ACQTM 2.2282 sec
PD 5.0000 sec
PW1 5.25 usec
IRNUC 1H
CTEMP 23.6 c
SIVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 30



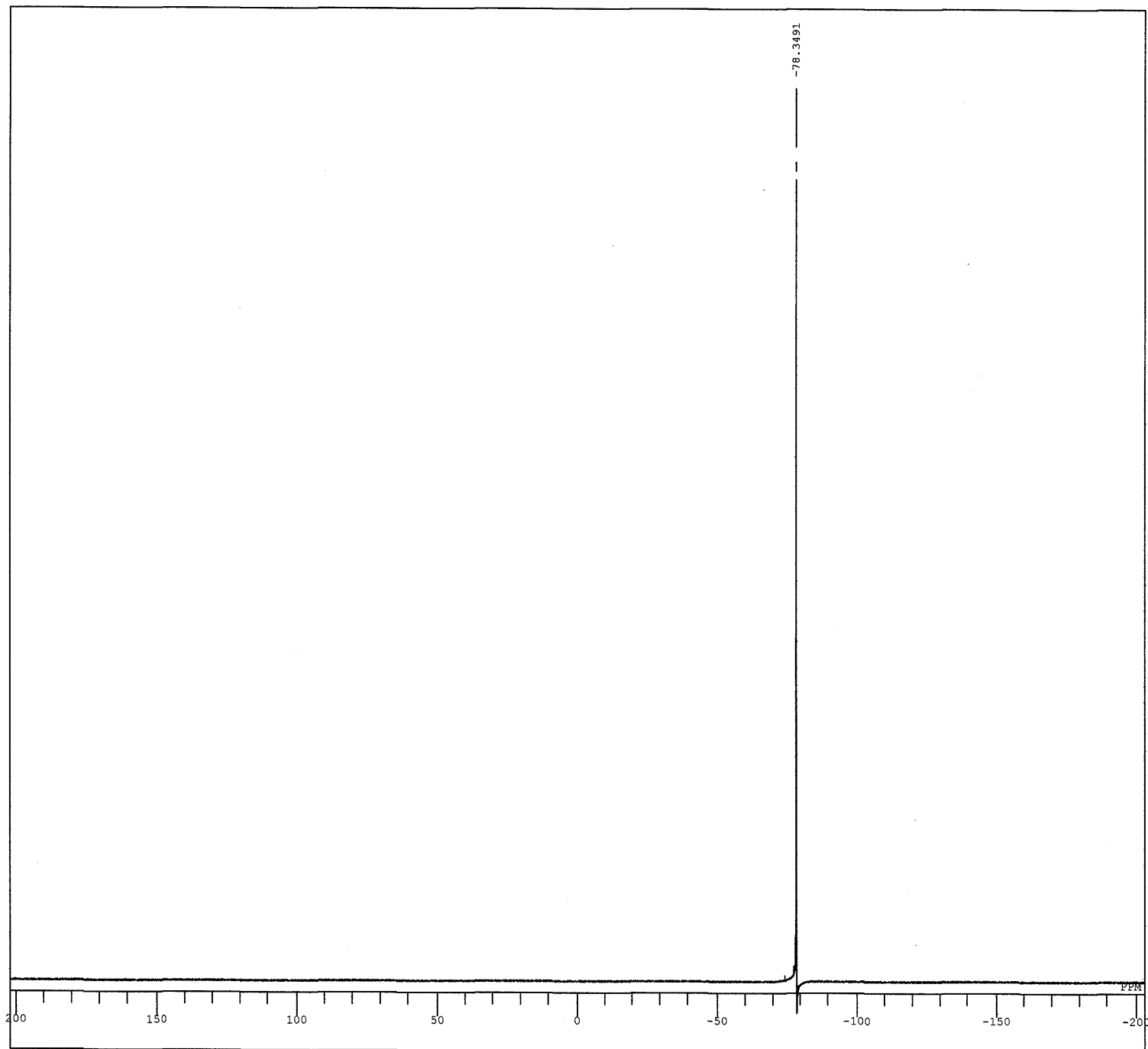
hex, [O], MP



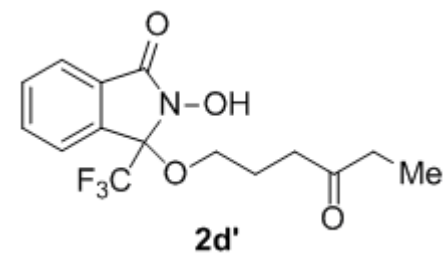
DFILE ozawa05-017_2_13C.als
COMNT hex, [O], MP
DATIM 2014-05-28 22:52:51
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.54 Hz
SCANS 10000
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



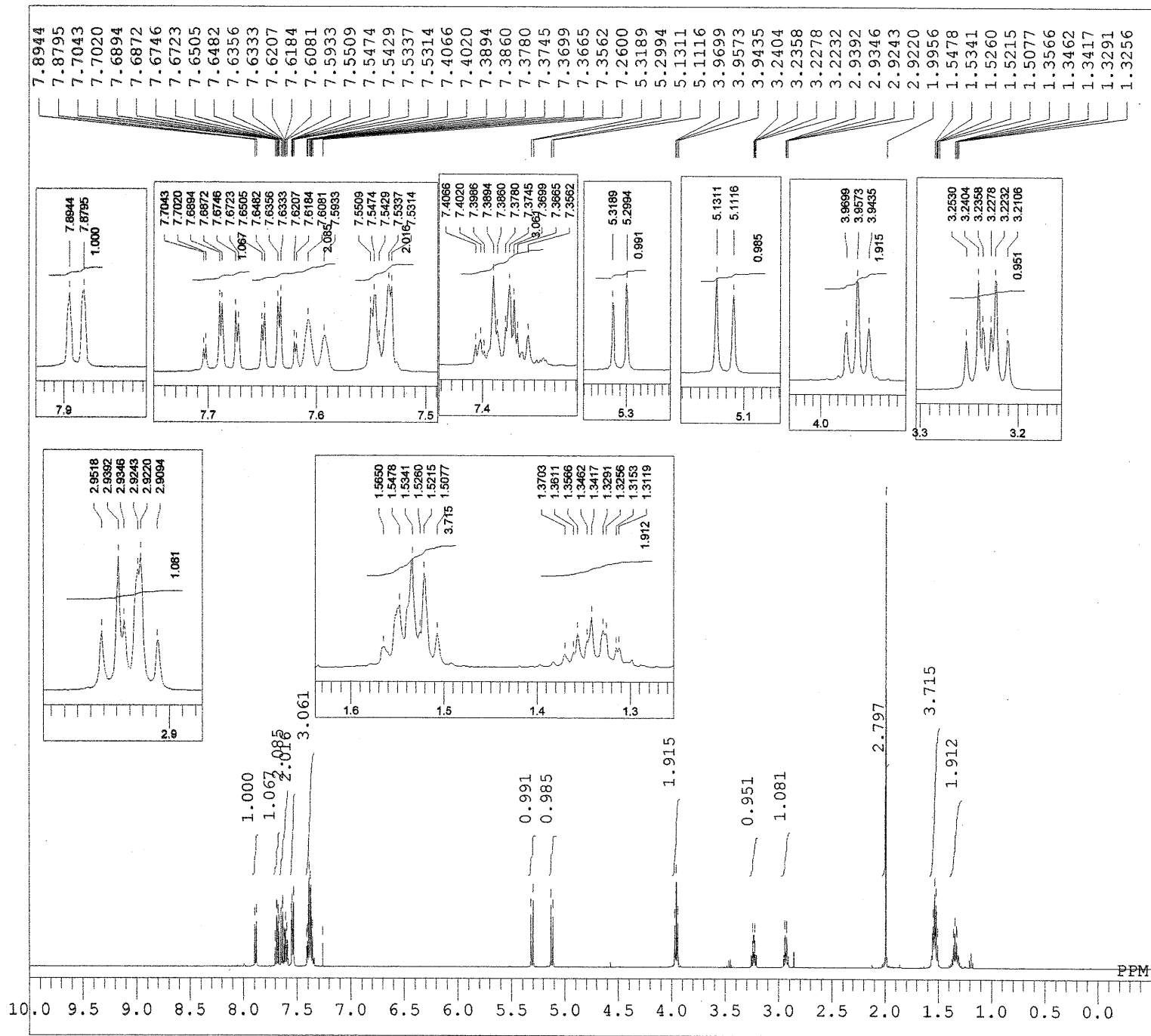
hex, [0], MP



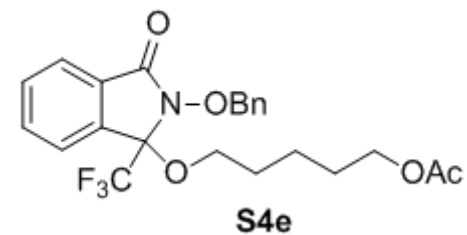
DFILE ozawa05-017_2_19F.jdf
COMNT hex, [0], MP
DATIM 28-05-2014 20:43:43
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 23.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



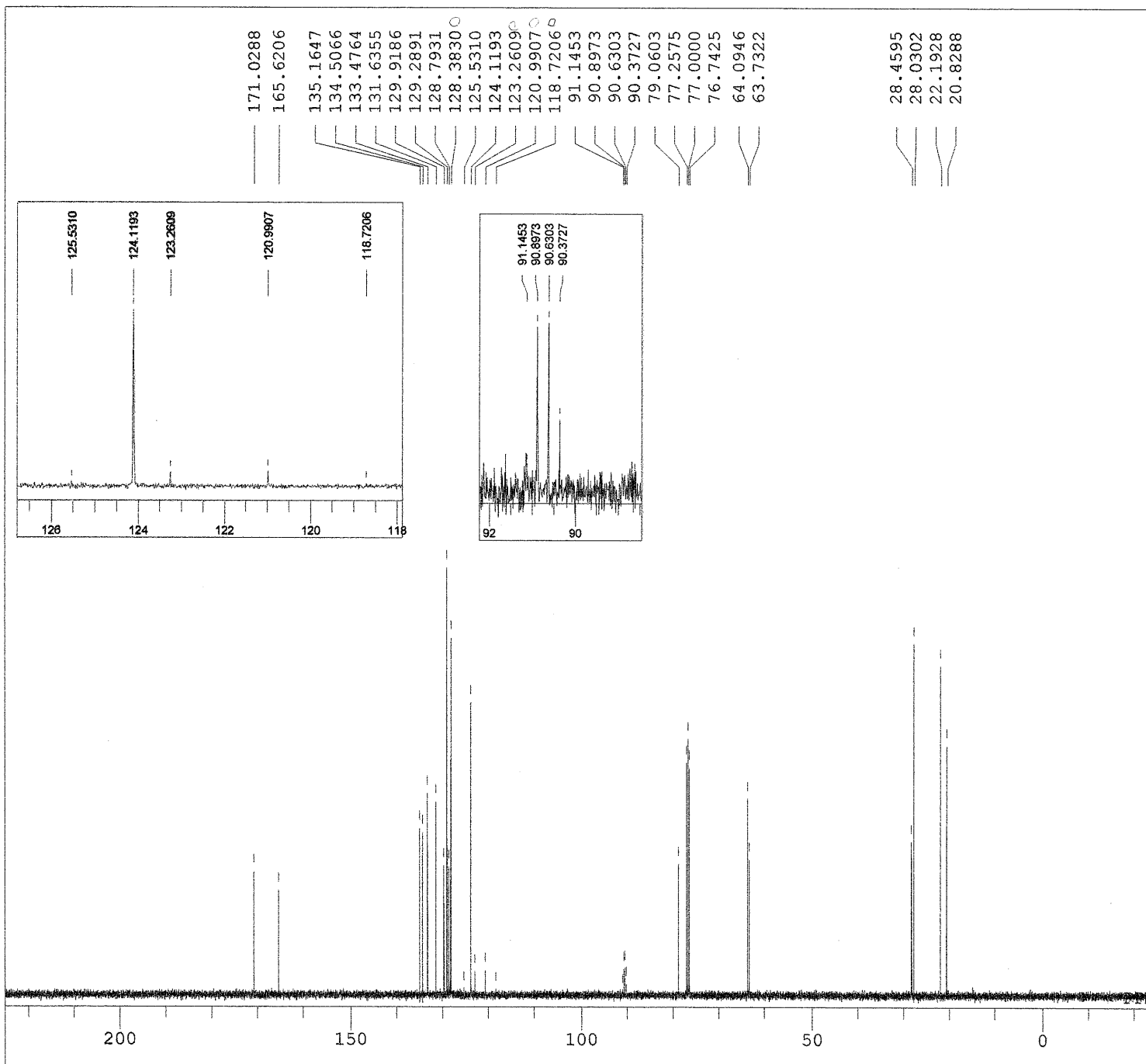
OAc, Bn



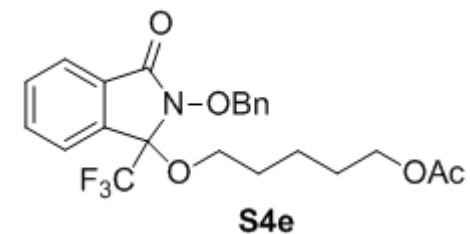
DFILE ozawa04-122_1_C_1H.jdf
 COMNT OAc, Bn
 DATIM 2014-02-02 13:56:54
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 28

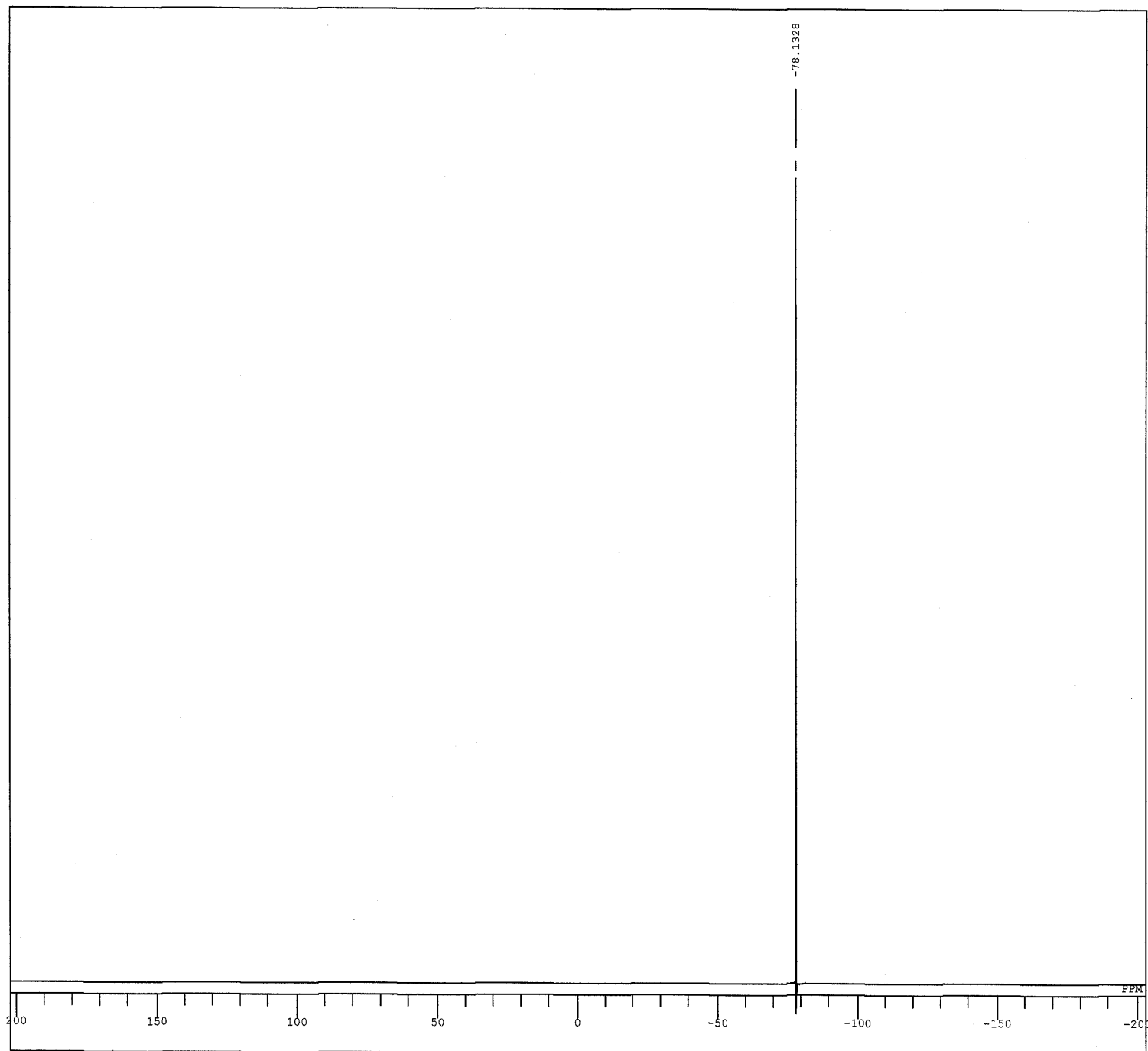


OAc, Bn

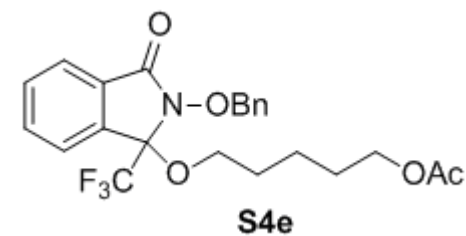


DFILE ozawa04-122_1_C_13C.jdf
COMNT OAc, Bn
DATIM 2014-02-02 13:57:58
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 88
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 22.1 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

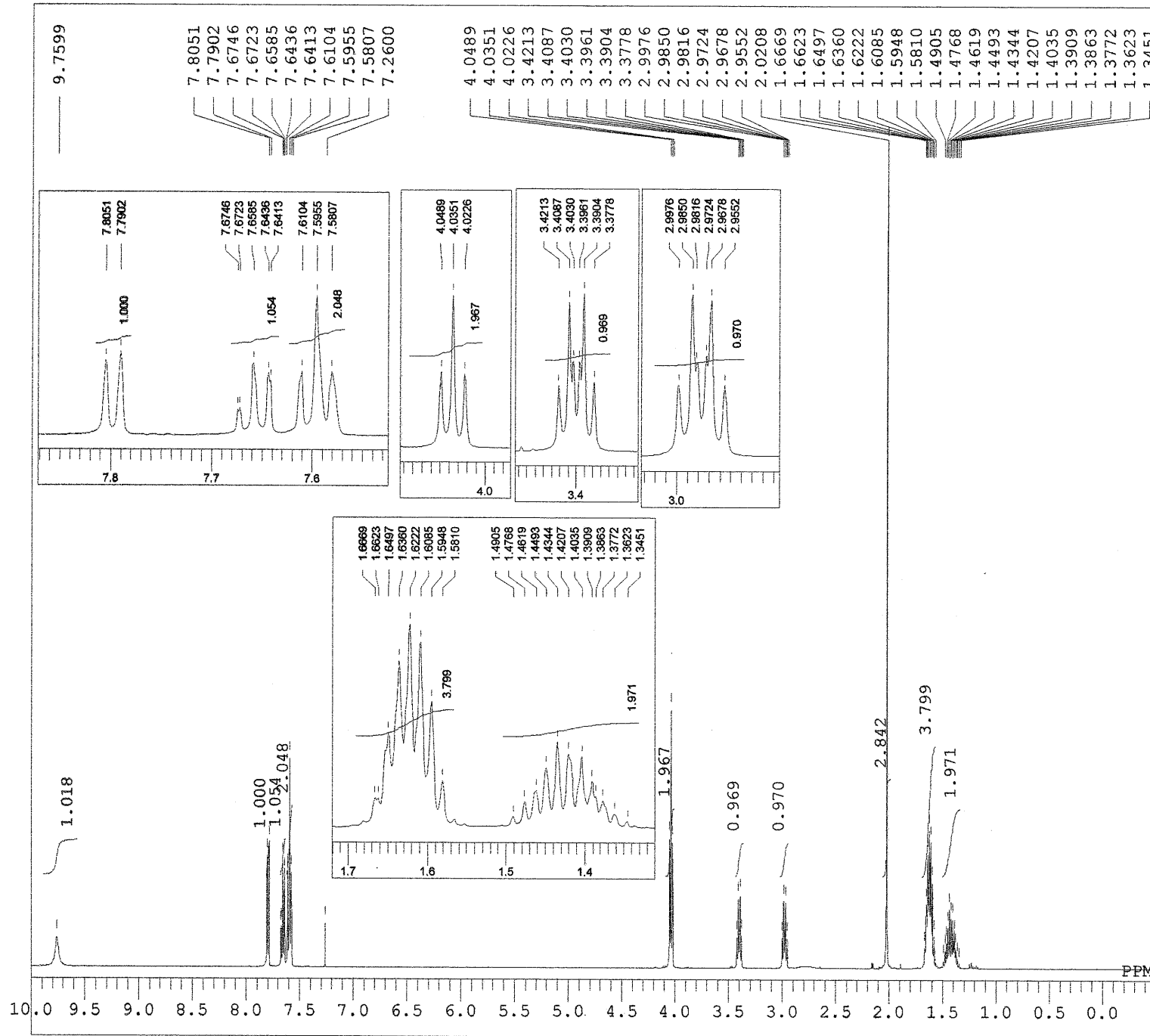




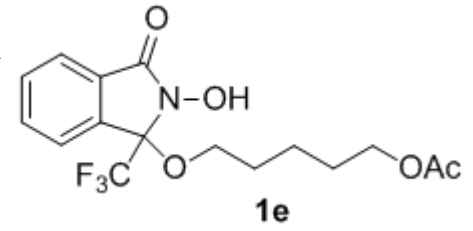
DFILE ozawa04-122_1_C_19F.jdf
COMNT OAc, Bn
DATIM 02-02-2014 14:37:26
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 21.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



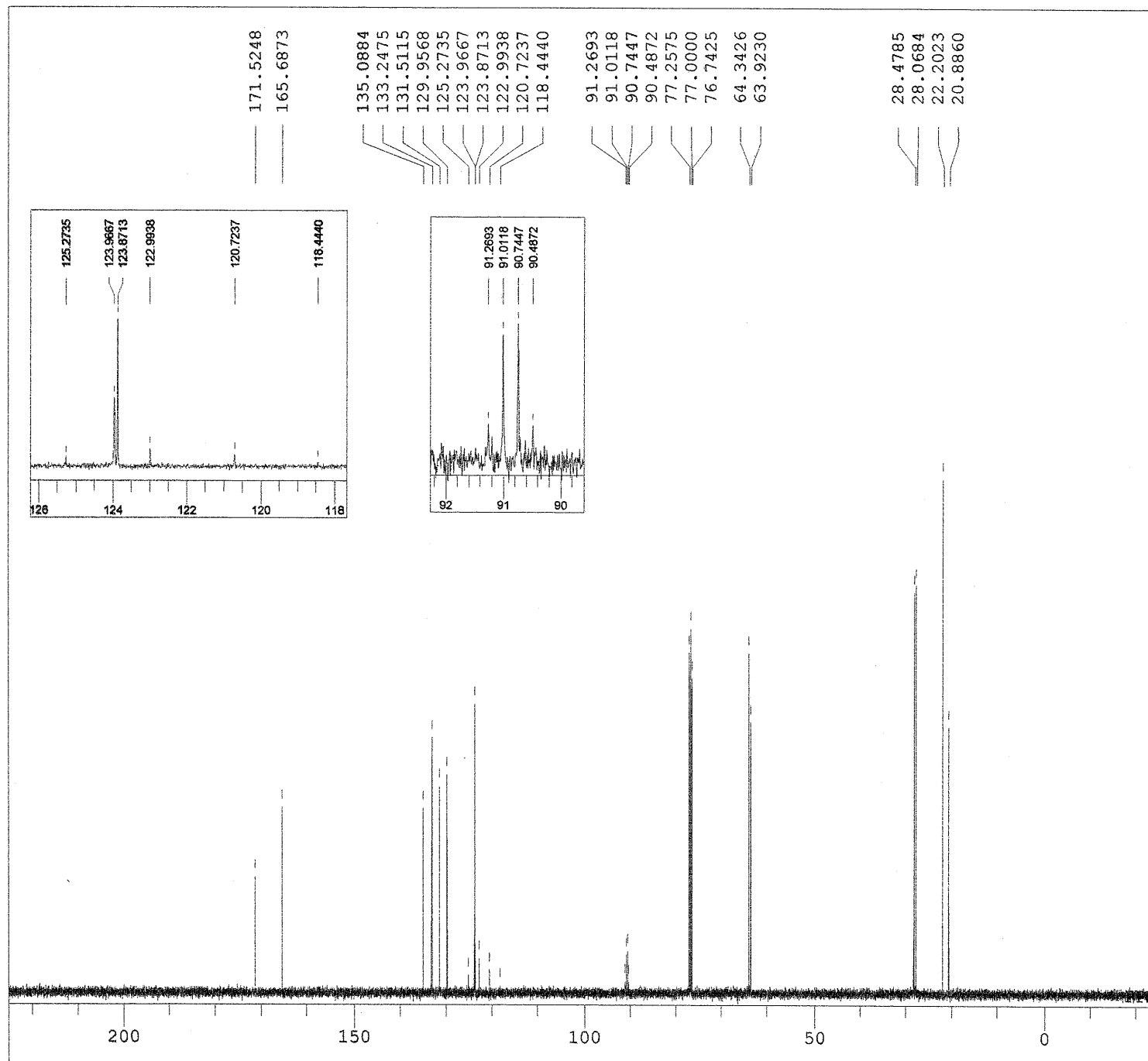
OAc, OH



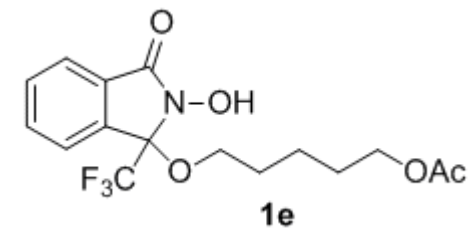
DFILE ozawa04-024_1H.jdf
COMNT OAc, OH
DATIM 2014-02-01 21:14:19
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.2 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 28



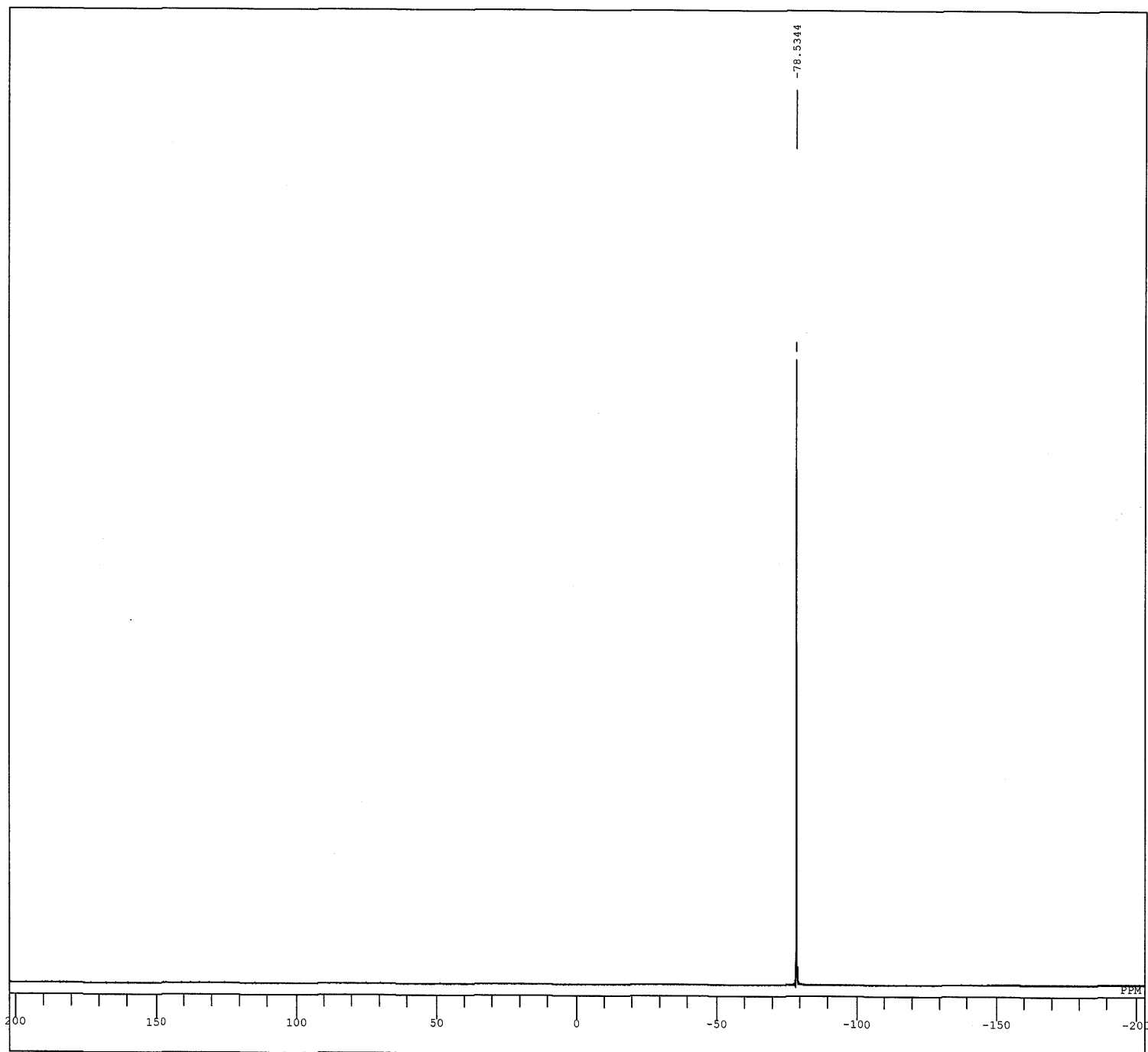
OAc, OH



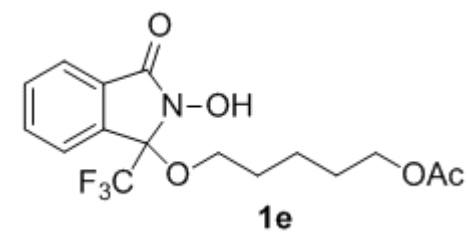
DFILE ozawa04-024_13C.jdf
COMNT OAc, OH
DATIM 2014-02-01 21:15:23
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 112
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.9 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



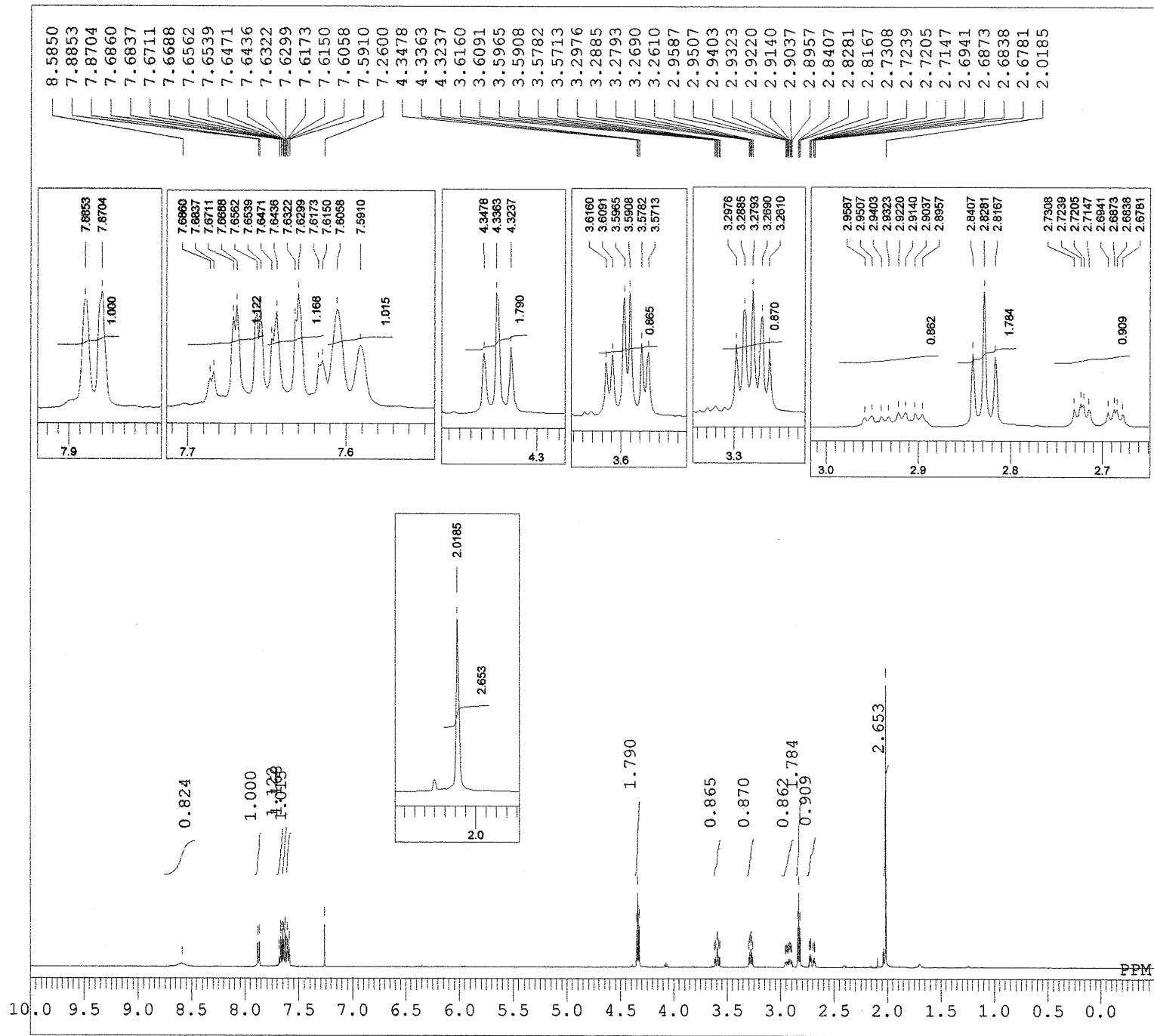
OAc, OH



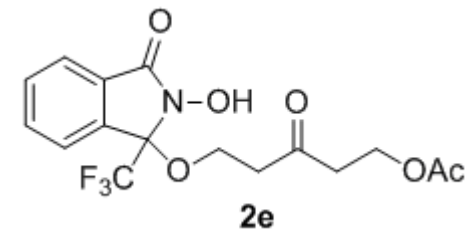
DFILE ozawa04-024_19F.jdf
COMNT OAc, OH
DATIM 01-02-2014 21:41:09
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



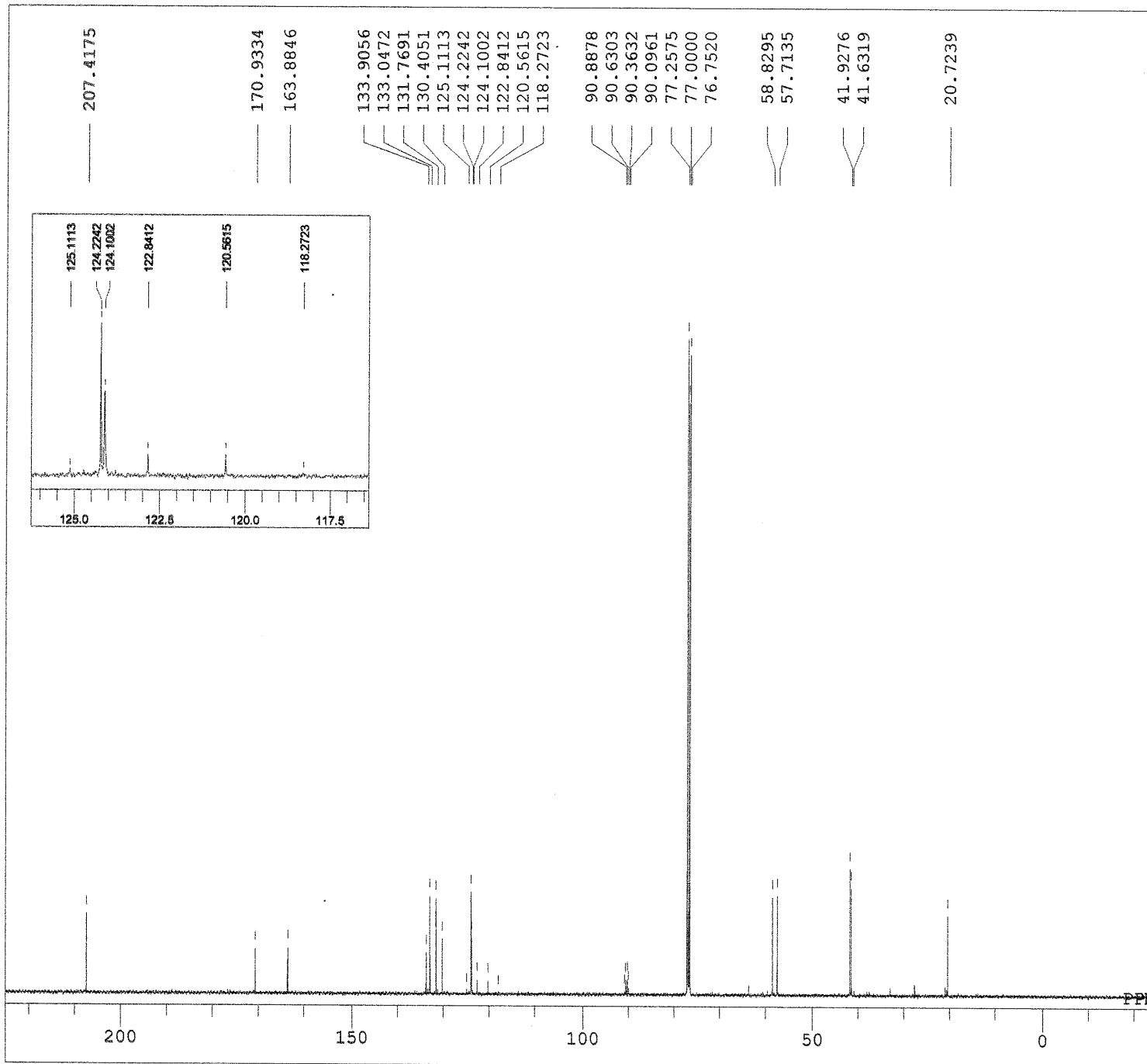
OAc, [O]



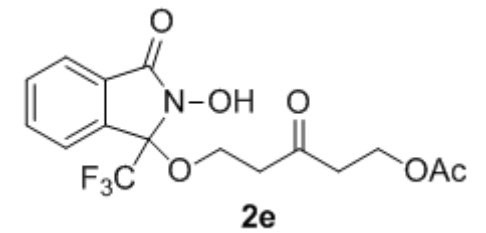
DFILE ozawa04-121_1H.jdf
 COMNT OAc, [O]
 DATIM 2014-02-05 20:43:59
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 22.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 36



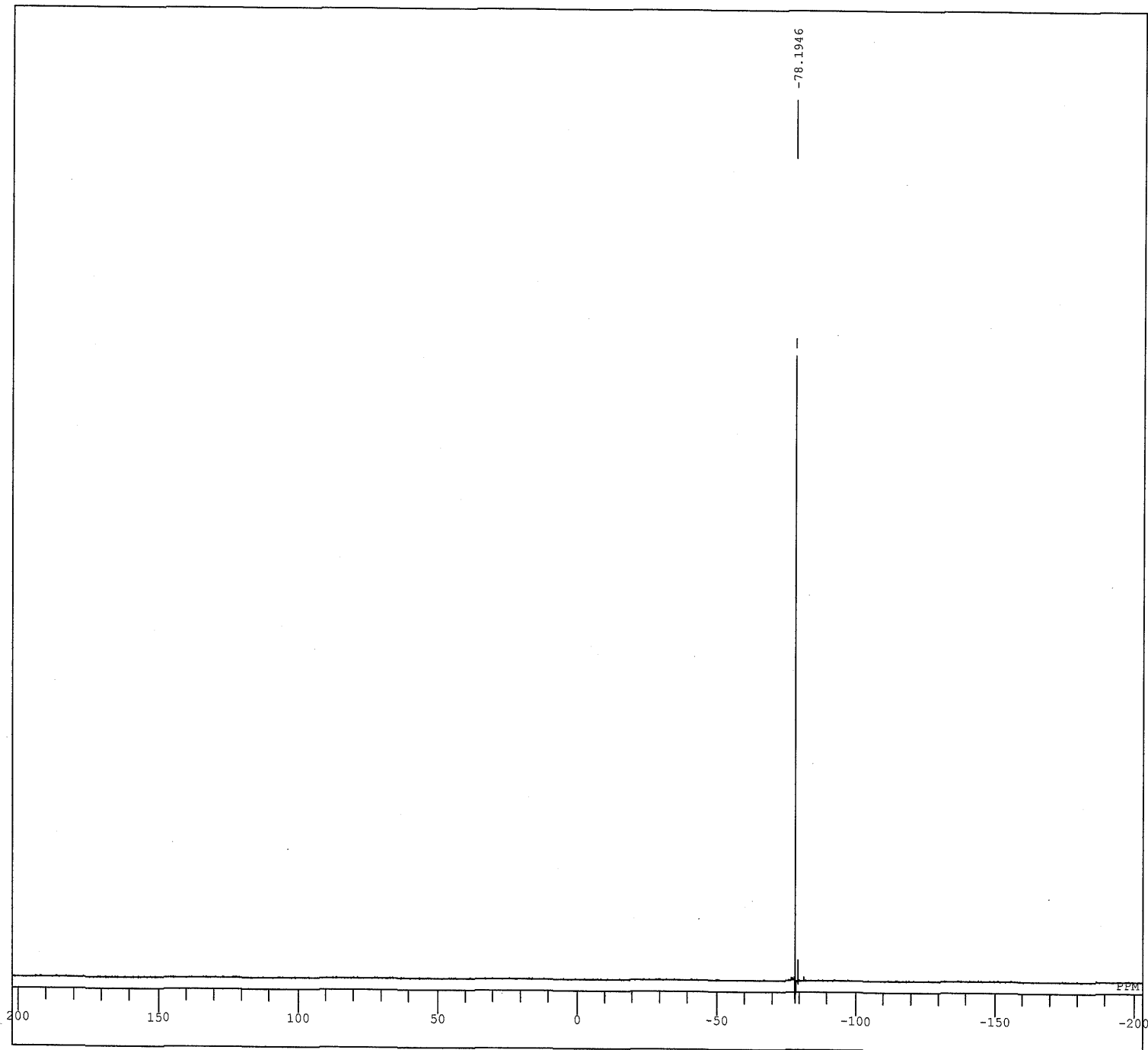
OAc, [O]



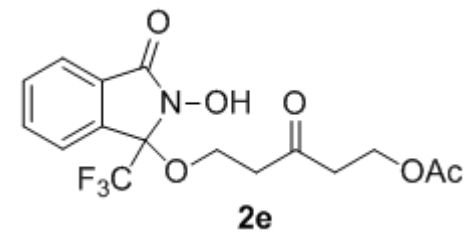
DFILE 2i_ozawa04-121_13C.als
COMNT OAc, [O]
DATIM 2014-02-09 10:14:17
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 2116
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60

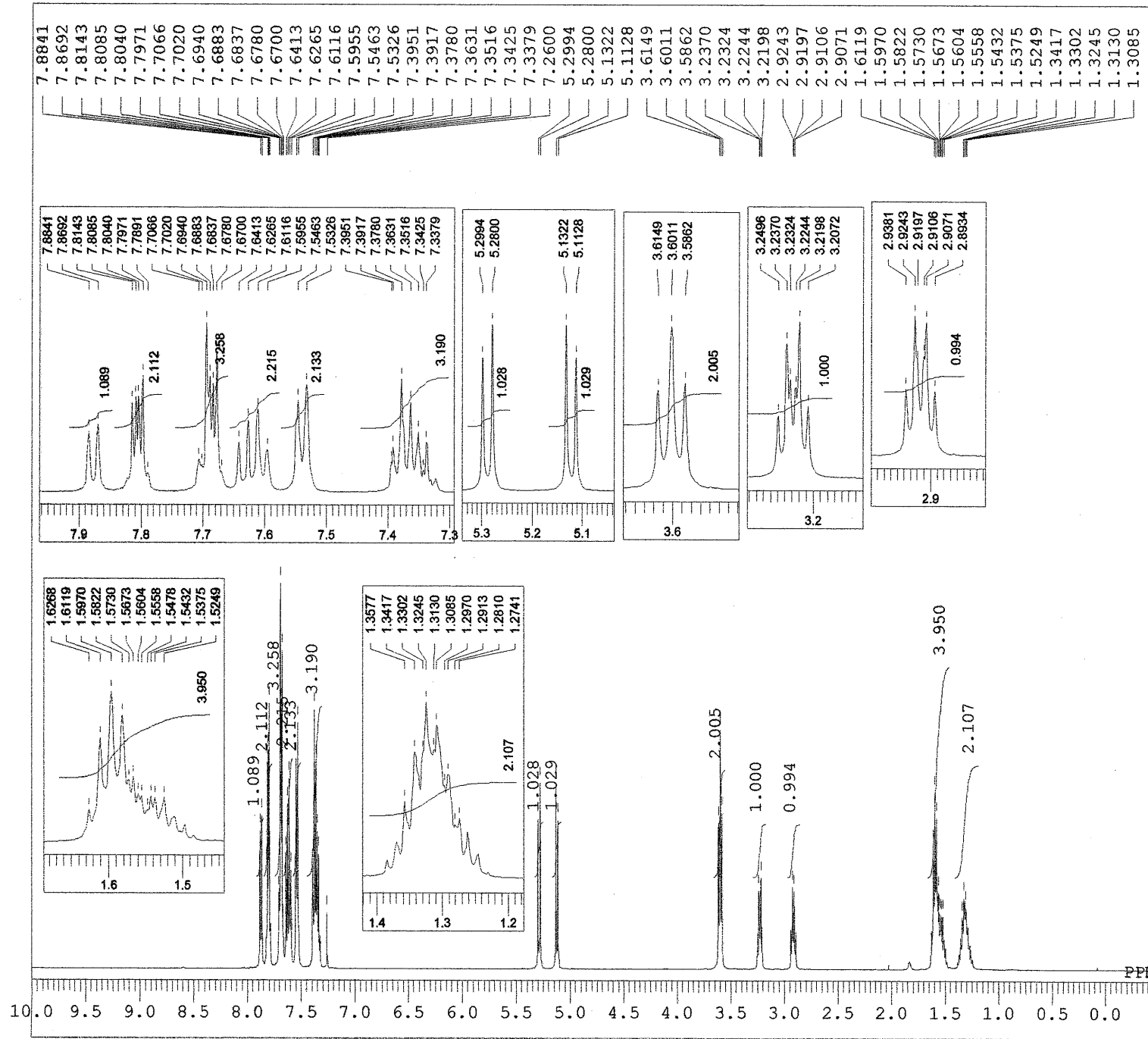


OAc, [0]

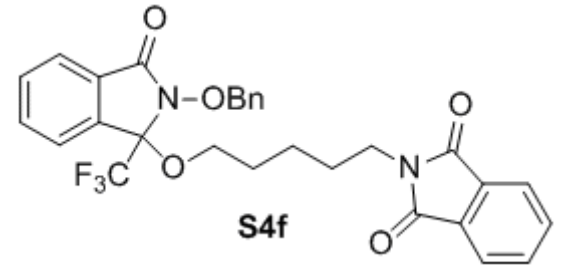


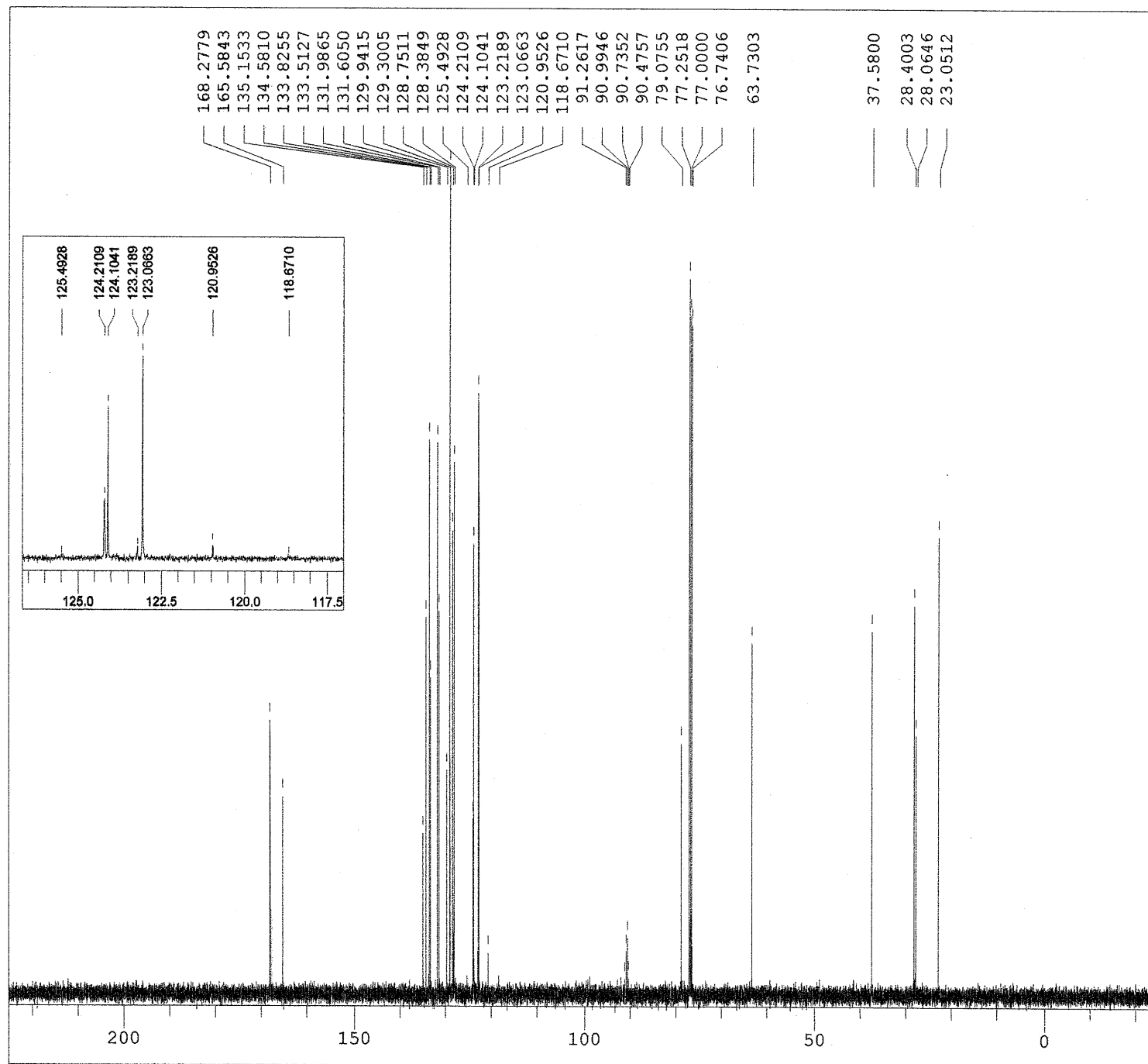
DFILE ozawa04-121_19F.jdf
COMNT OAc, [0]
DATIM 09-02-2014 12:54:25
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.05 Hz
RGAIN 48



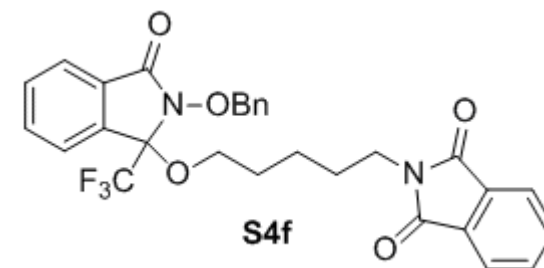


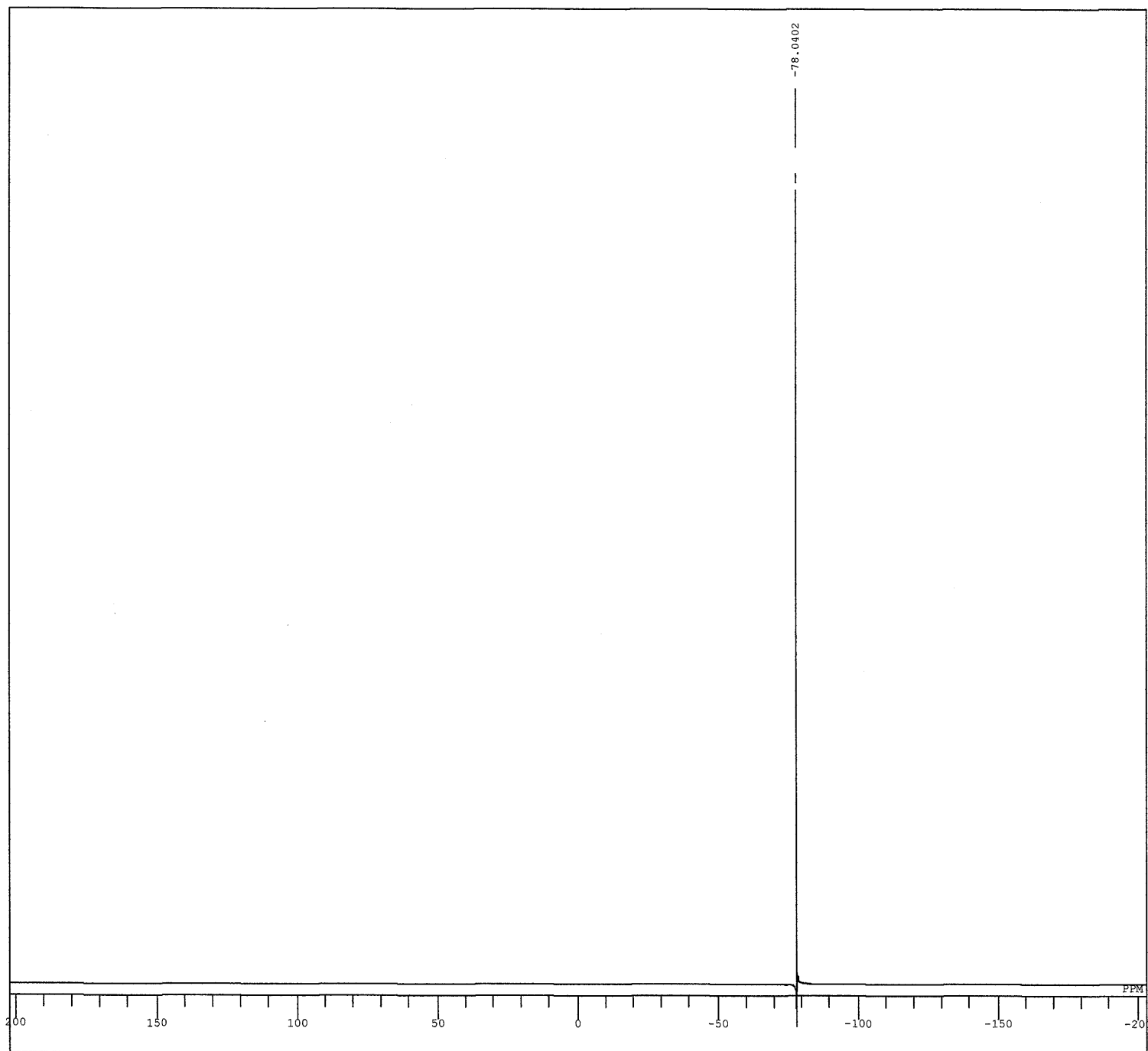
DFILE ozawa04-142_2_1H.jdf
 COMNT C5-NPhth, Bn
 DATIM 2014-03-06 19:38:37
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.6 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30



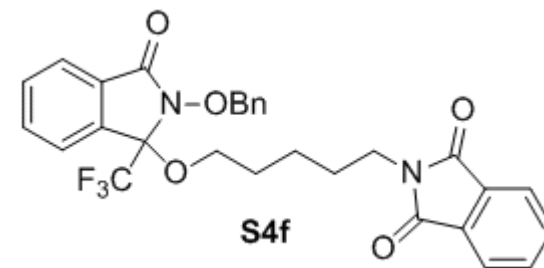


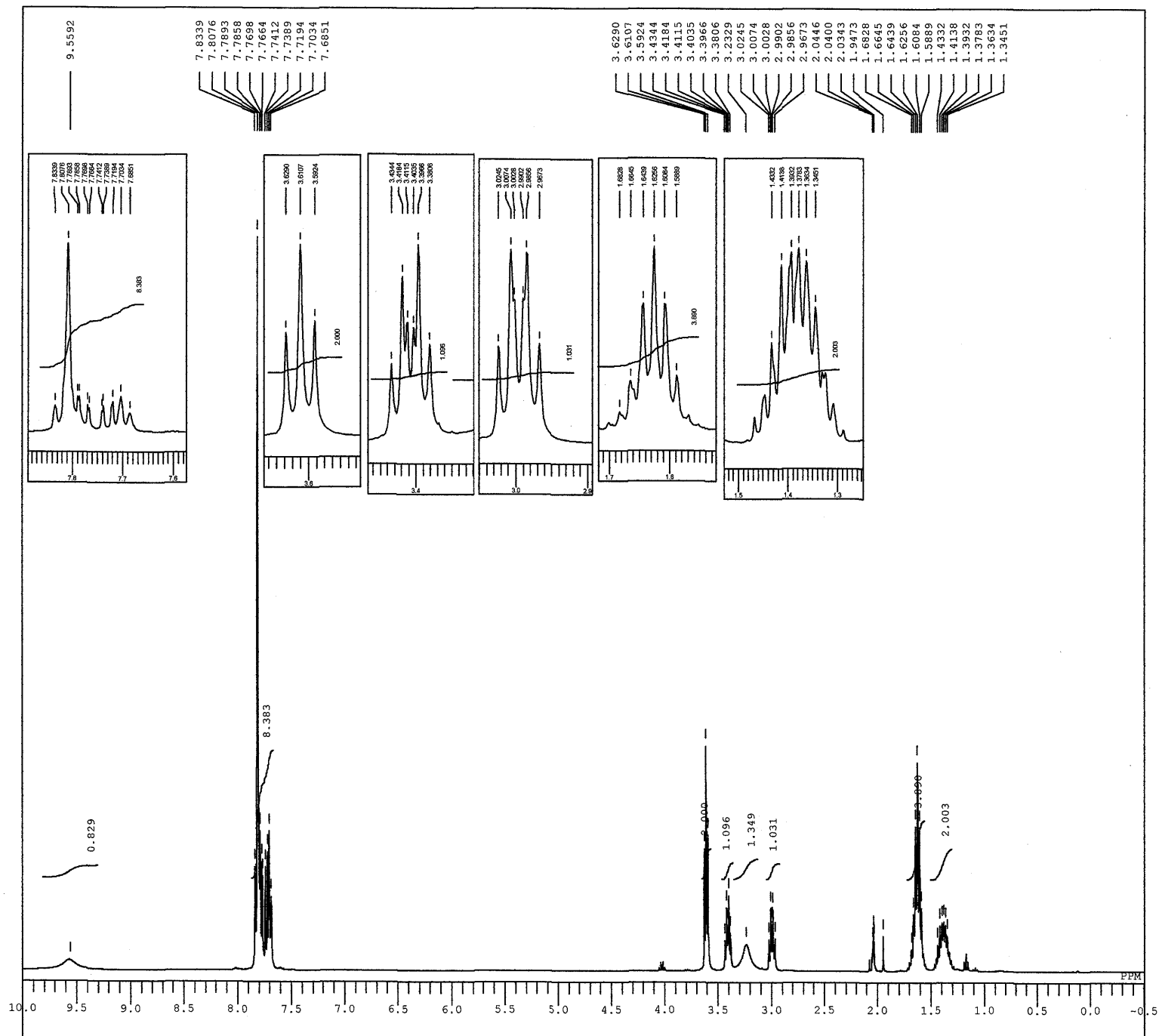
DFILE ozawa04-142_2_13C.jdf
COMNT C5-NPhth, Bn
DATIM 2014-03-06 19:39:56
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32768
FREQU 31446.54 Hz
SCANS 140
ACQTM 1.0420 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 22.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 72



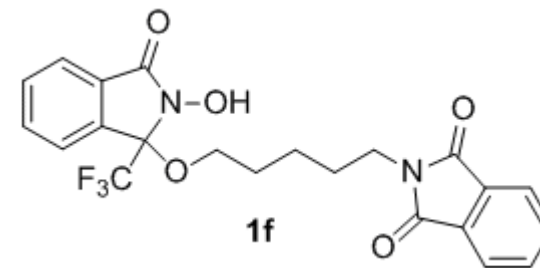


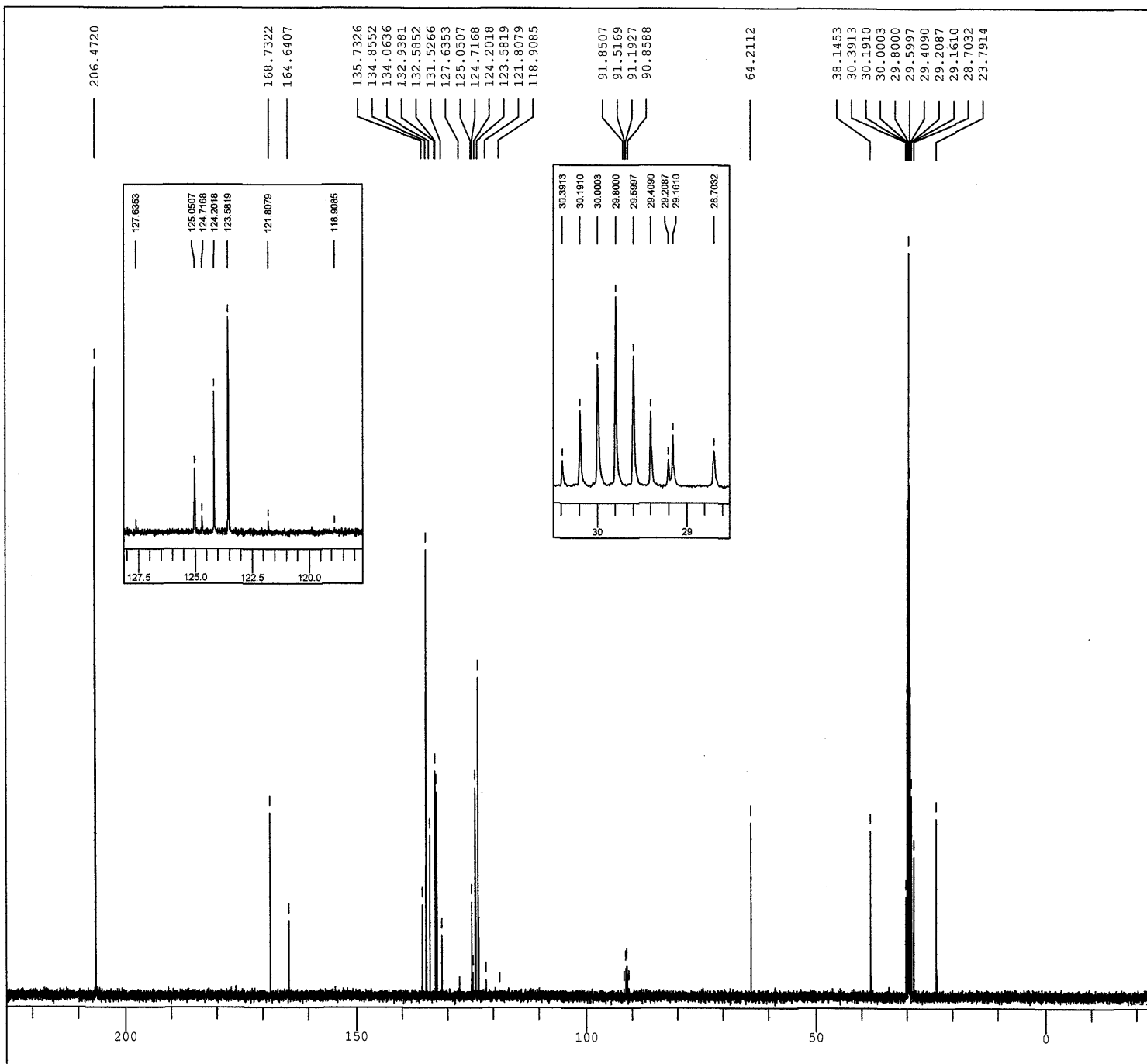
DFILE ozawa04-142_2_19F.jdf
COMNT C5-NPhth, Bn
DATIM 06-03-2014 20:41:53
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46





DFILE Ni-C5-NPhth_1H.jdf
 COMNT OH
 DATIM 03-03-2014 21:37:57
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 391.78 MHz
 OBSET 8.51 KHz
 OBFLN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 FW1 5.25 usec
 IRNUC 1H
 CTEMP 20.9 c
 SLVNT ACETN
 EXREF 2.04 ppm
 BF 0.12 Hz
 RGAIN 22

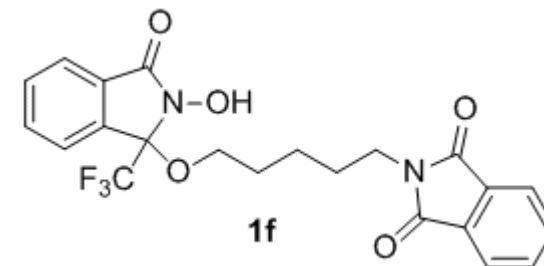


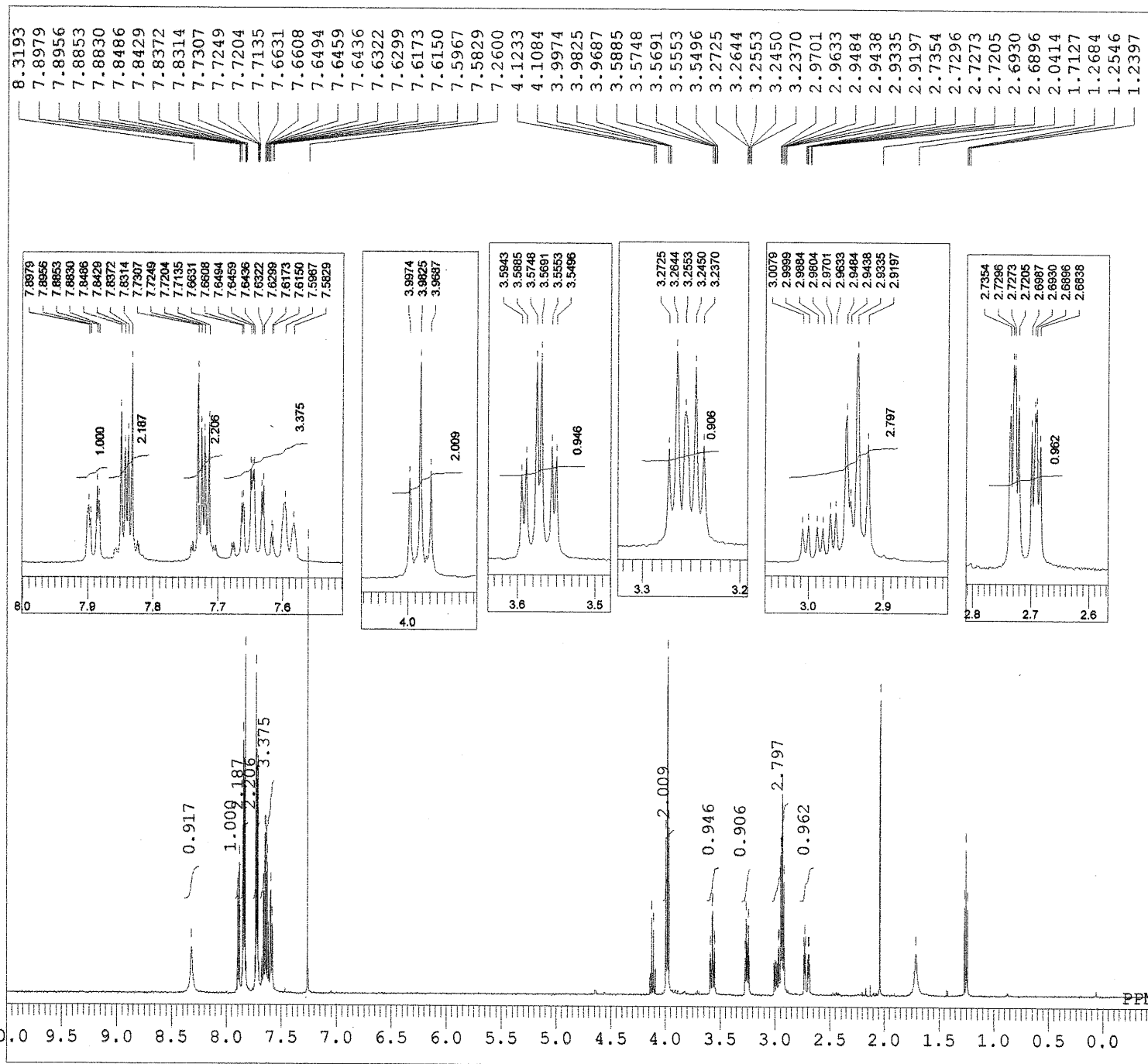


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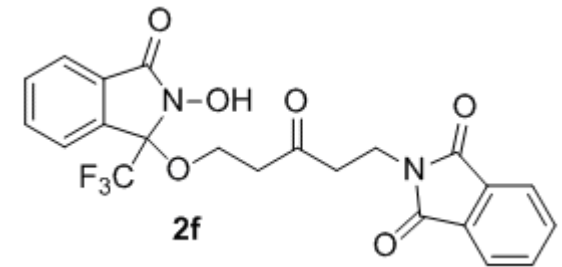
DFILE Ni_C5-NPhth_copy1.jdf
COMNT OH
DATIM 03-03-2014 21:53:04
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 98.52 MHz
OBSET 4.64 KHz
OBFIN 8.74 Hz
POINT 32767
FREQU 30788.18 Hz
SCANS 100
ACQTM 0.0000 sec
PD 3.0000 sec
PW1 3.00 usec
IRNUC 1H
CTEMP 21.6 c
SLVNT ACETN
EXREF 29.80 ppm
BF 0.12 Hz
RGAIN 60

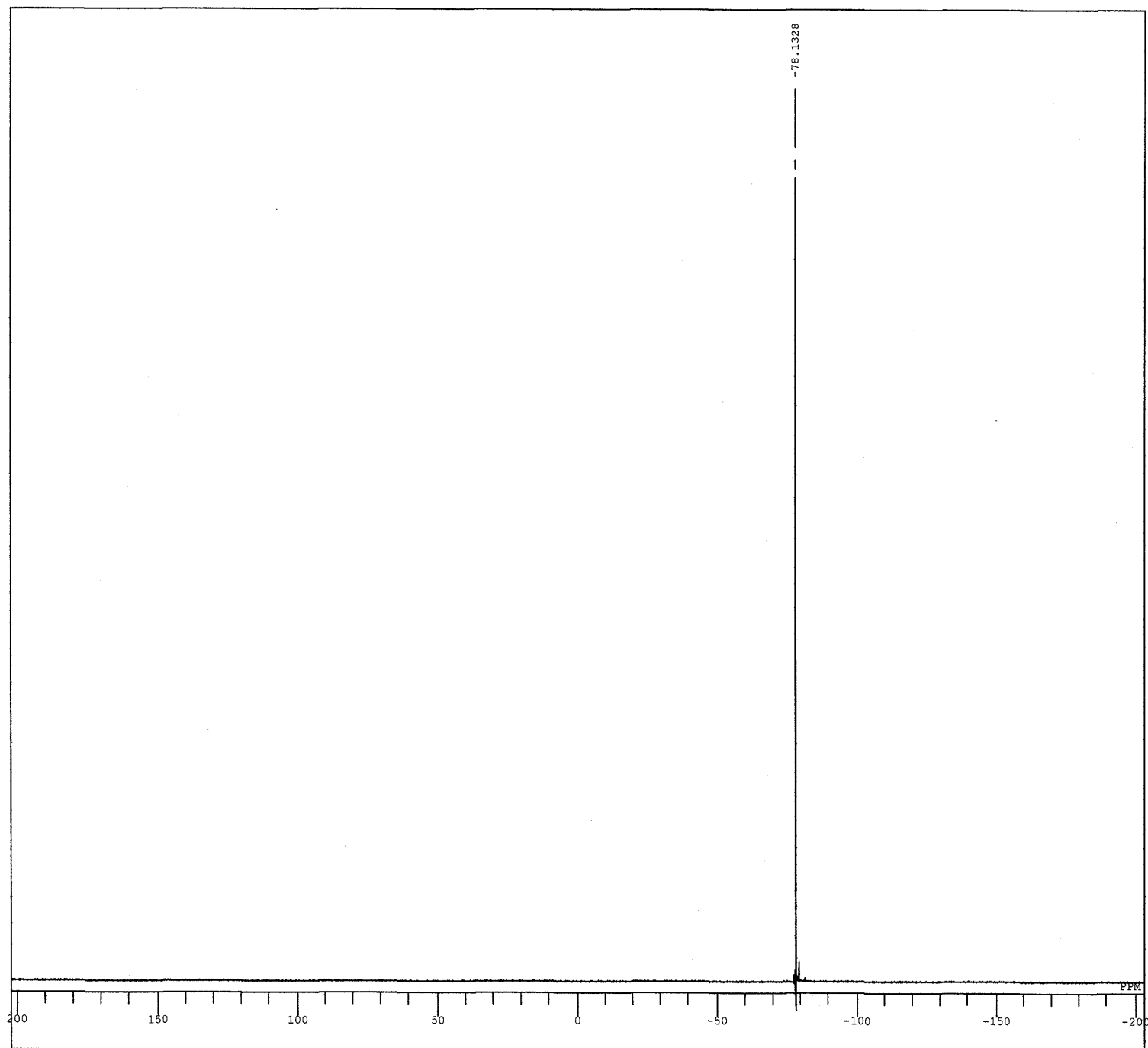
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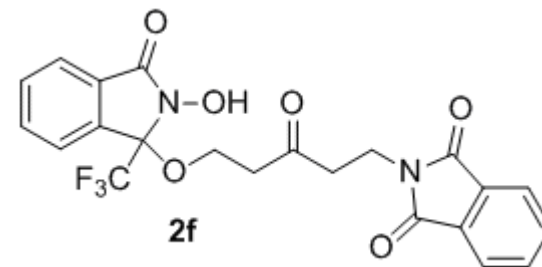


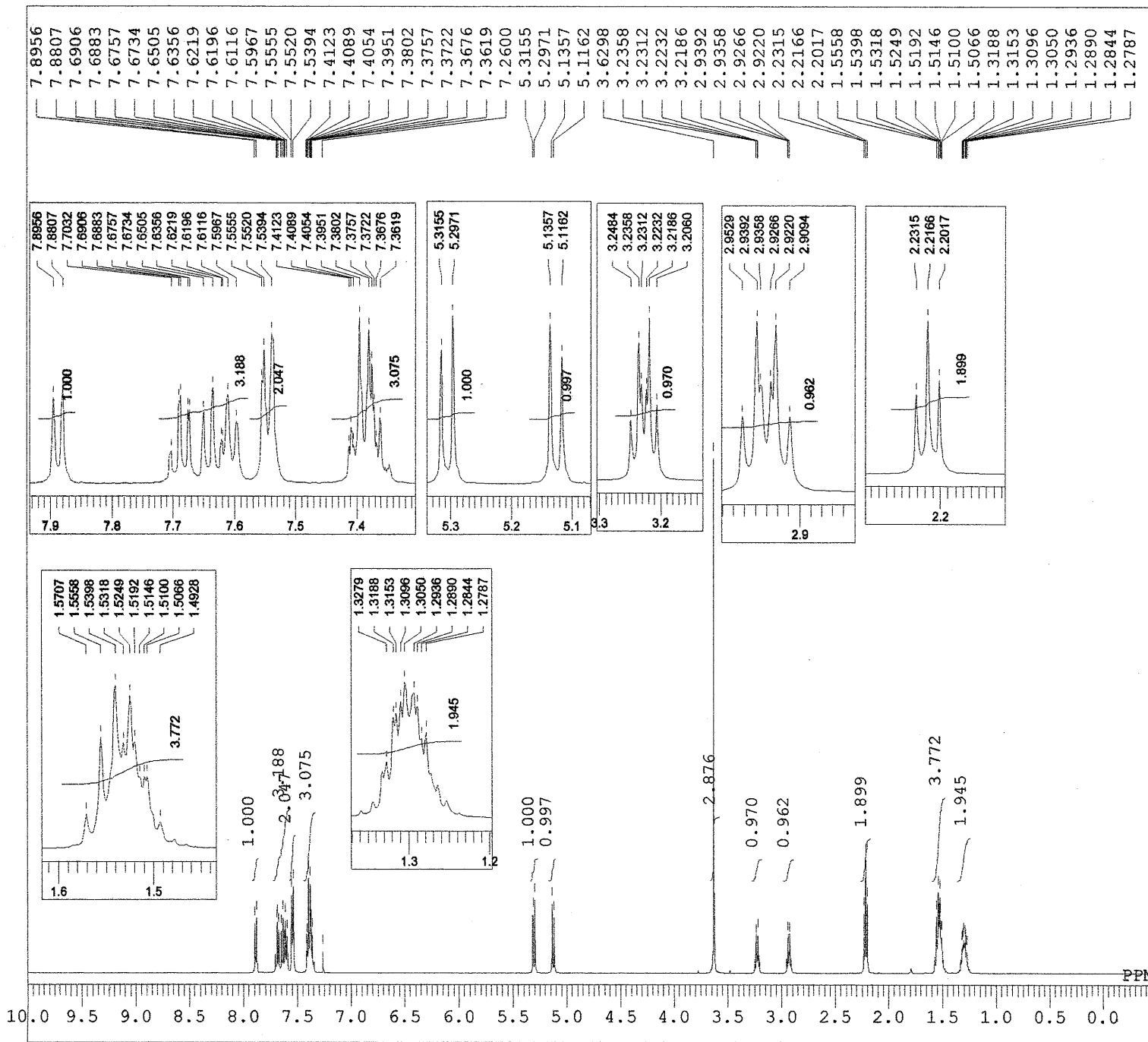
DFILE ozawa04-141_1_1H.jdf
 COMNT C5-NPhth, [O]
 DATIM 2014-03-12 19:02:30
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 20.9 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 40



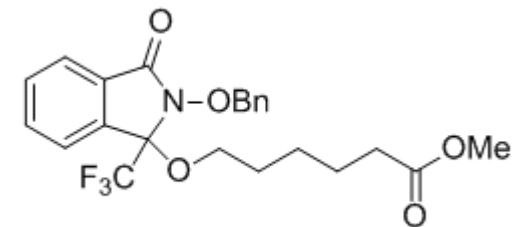


DFILE ozawa04-141_1_19F.jdf
COMNT C5-NPhth, [0]
DATIM 06-03-2014 20:50:21
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.3 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

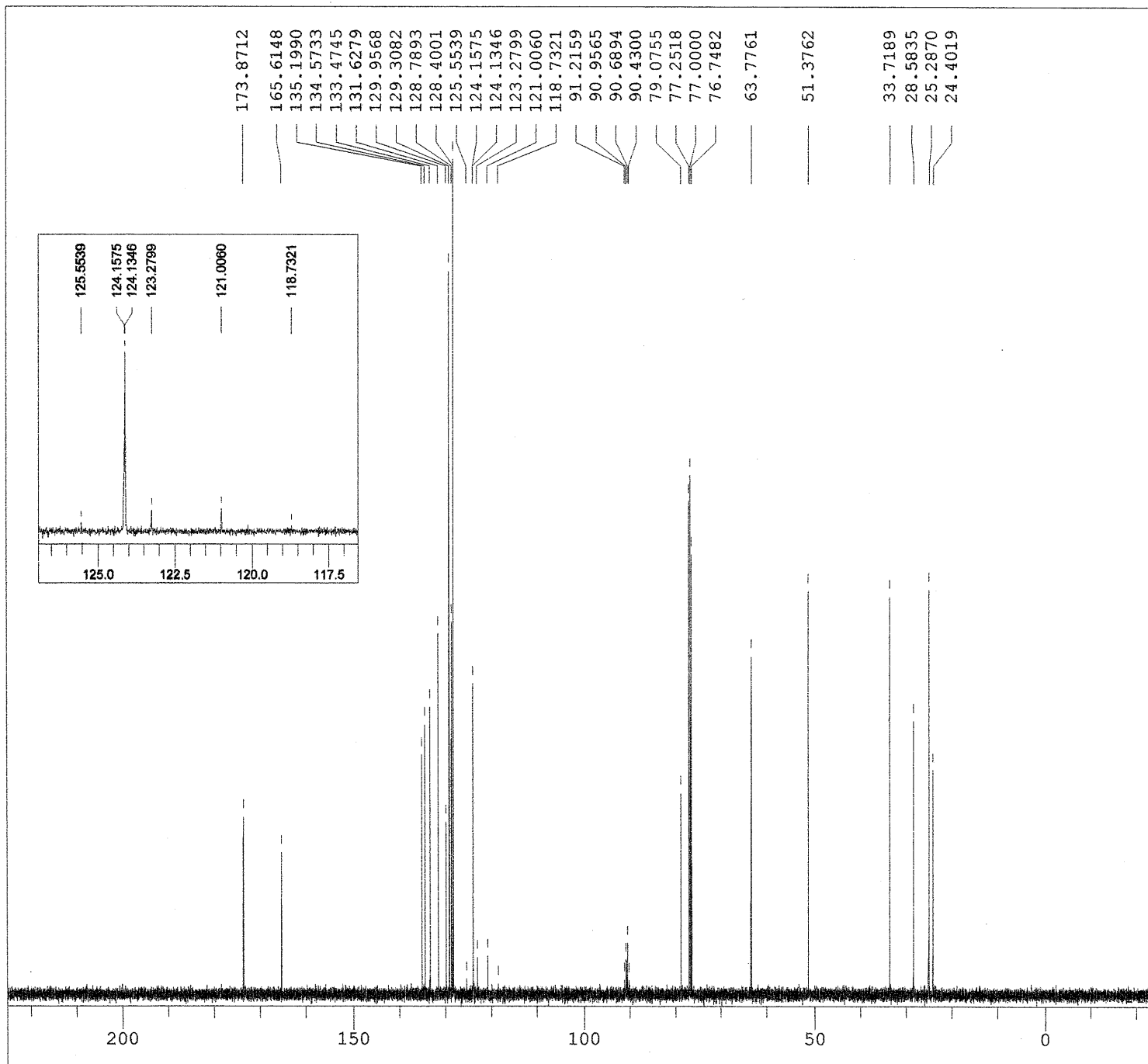




DFILE ozawa04-142_3_1H.jdf
 COMNT C5-CO2Me, Bn
 DATIM 2014-03-06 19:51:58
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30

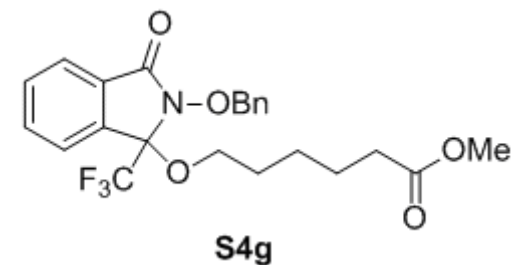


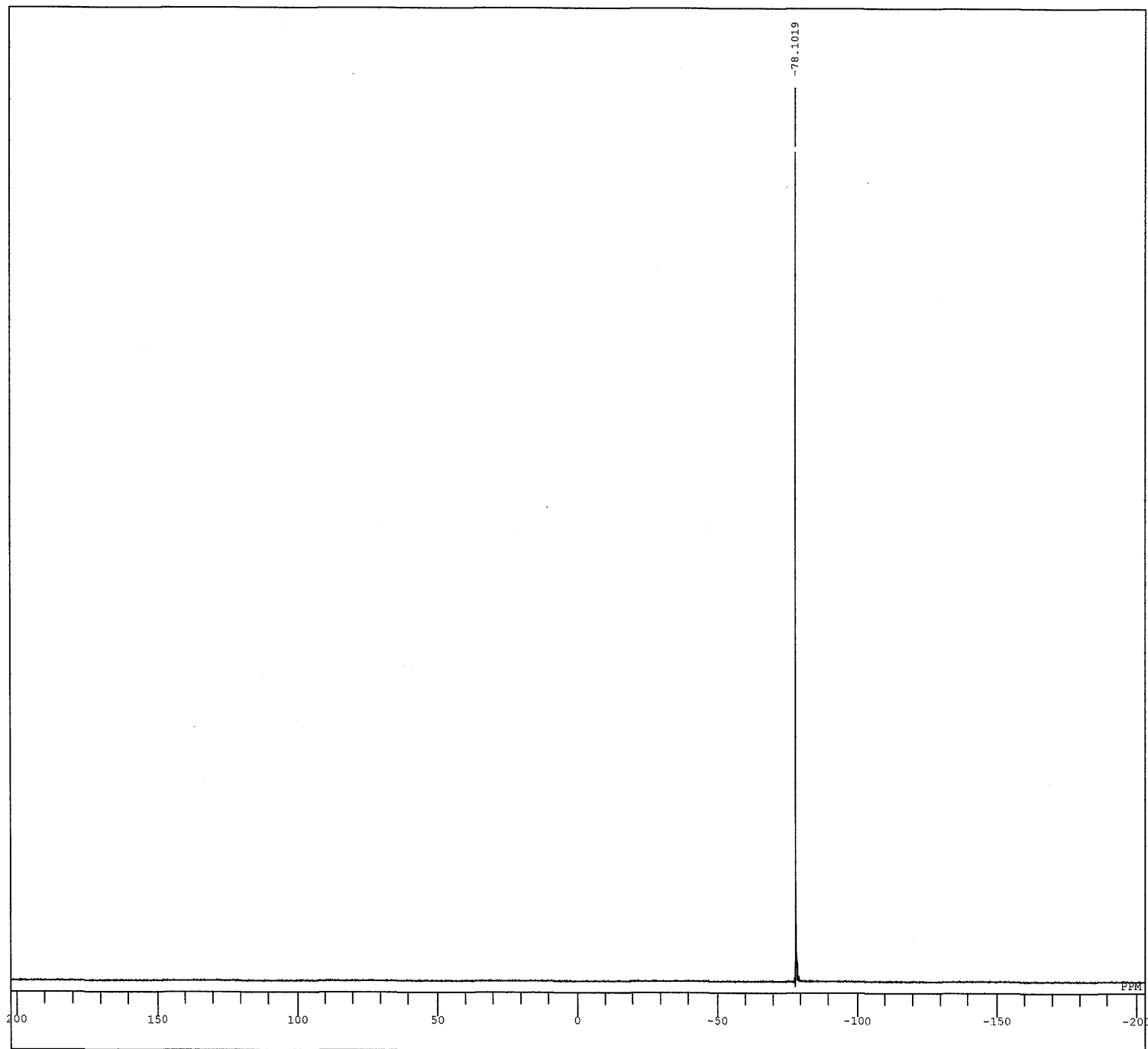
S4g



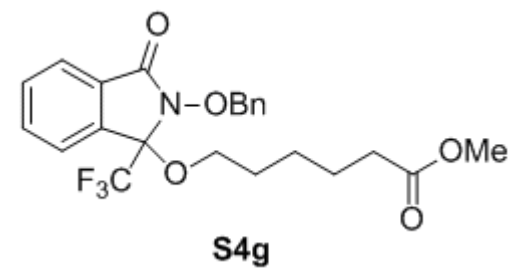
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DFILE  ozawa04-142_3_13C.jdf
COMNT  C5-CO2Me, Bn
DATIM  2014-03-06 19:53:09
OBNUC  13C
EXMOD  carbon.jxp
OBFRQ  125.77 MHz
OBSET  7.87 KHz
OBFIN  4.21 Hz
POINT  32768
FREQU  31446.54 Hz
SCANS  144
ACQTM  1.0420 sec
PD      3.0000 sec
PW1     3.40 usec
IRNUC  1H
CTEMP  21.9 c
SLVNT  CDCL3
EXREF  77.00 ppm
BF      0.12 Hz
RGAIN  72
    
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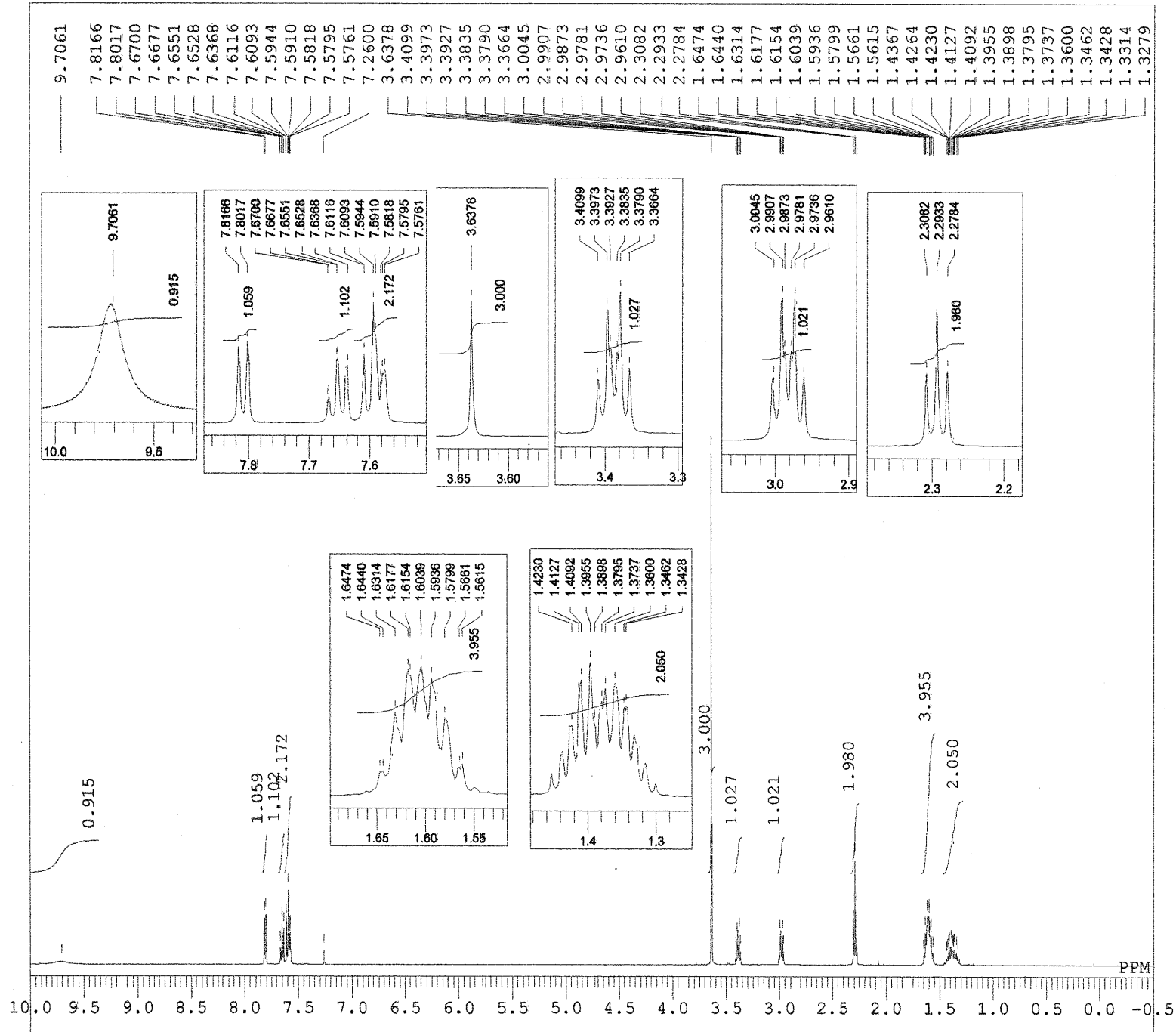




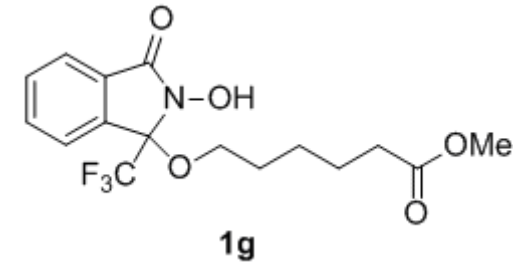
DFILE ozawa04-142_3_19F.jdf
COMNT C5CO2Me, Bn
DATIM 06-03-2014 20:44:46
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44

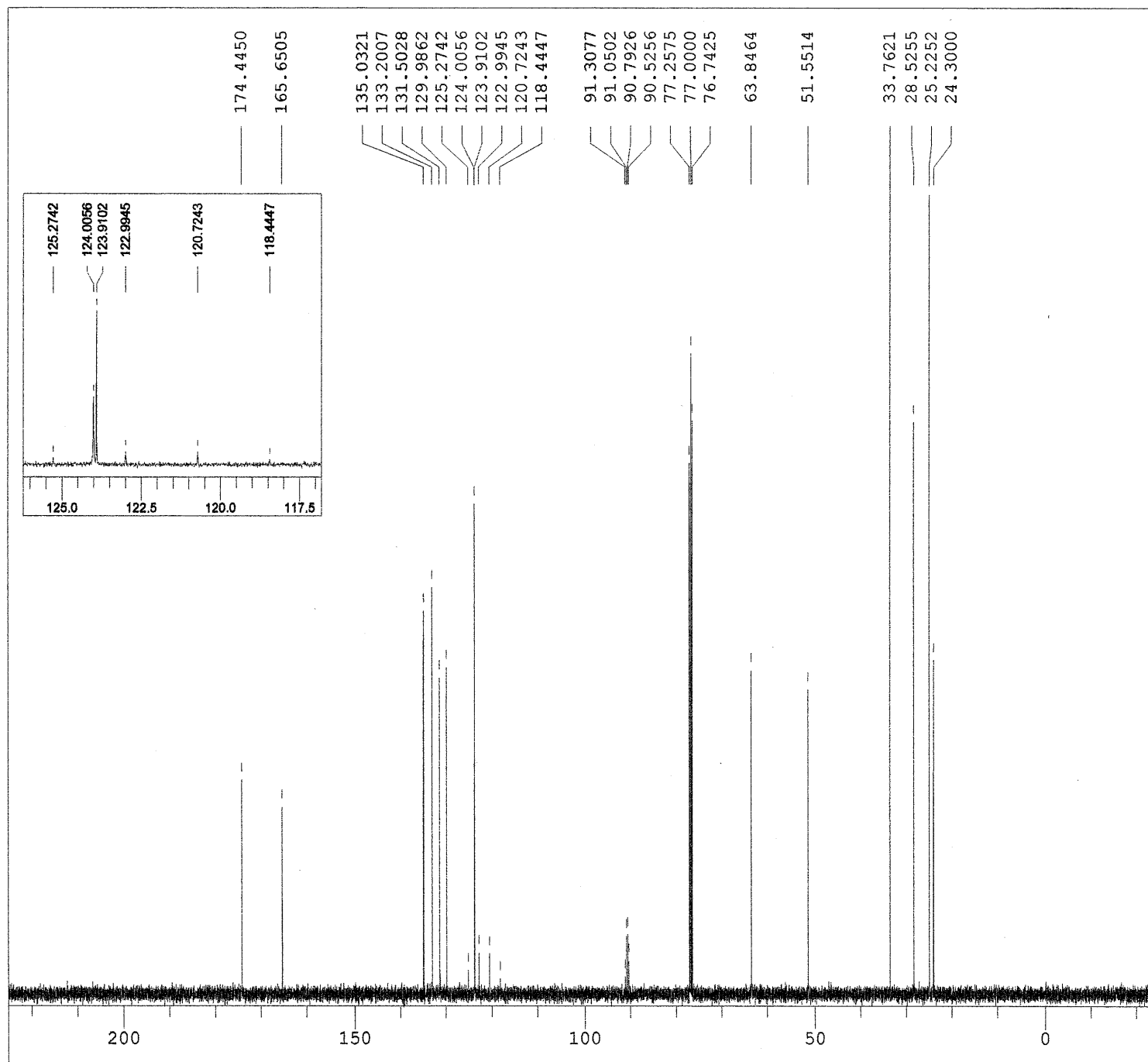


OH



DFILE Ni_C5-CO2Me_1H.jdf
 COMNT OH
 DATIM 2014-03-03 20:26:24
 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 21.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 28

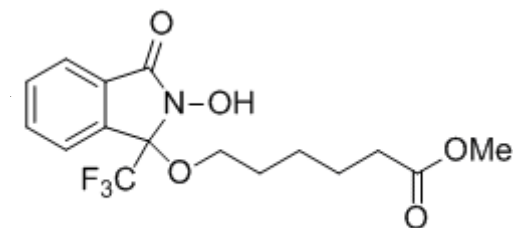




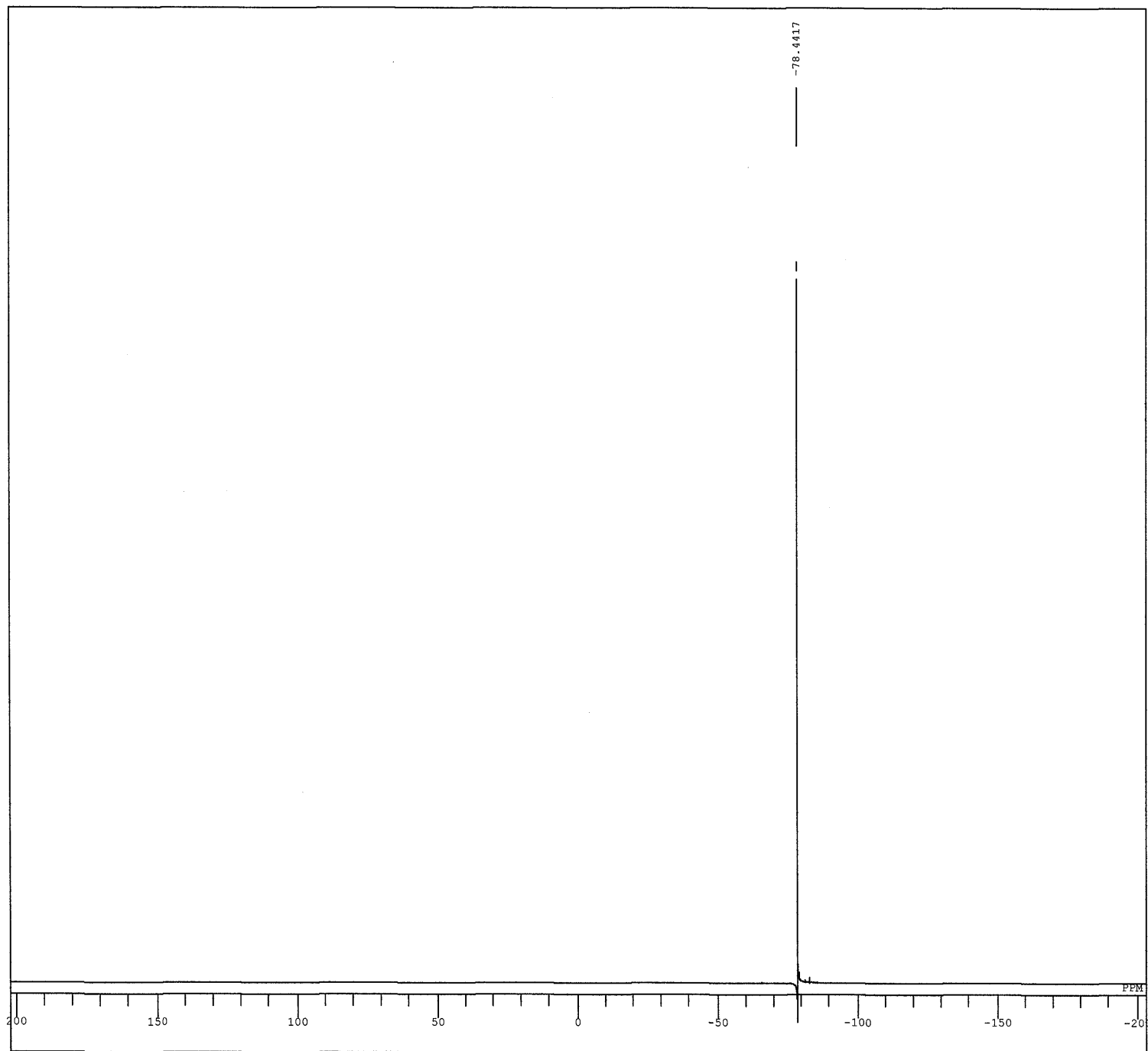
```

DFILE Ni_C5-CO2Me_13C.als
COMNT OH
DATIM 2014-03-03 20:27:27
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.54 Hz
SCANS 124
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

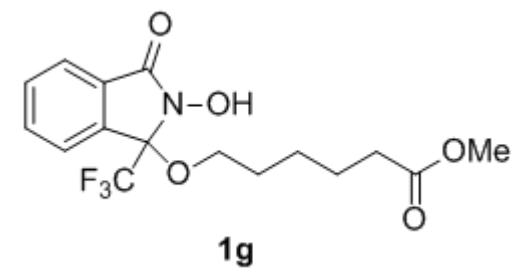
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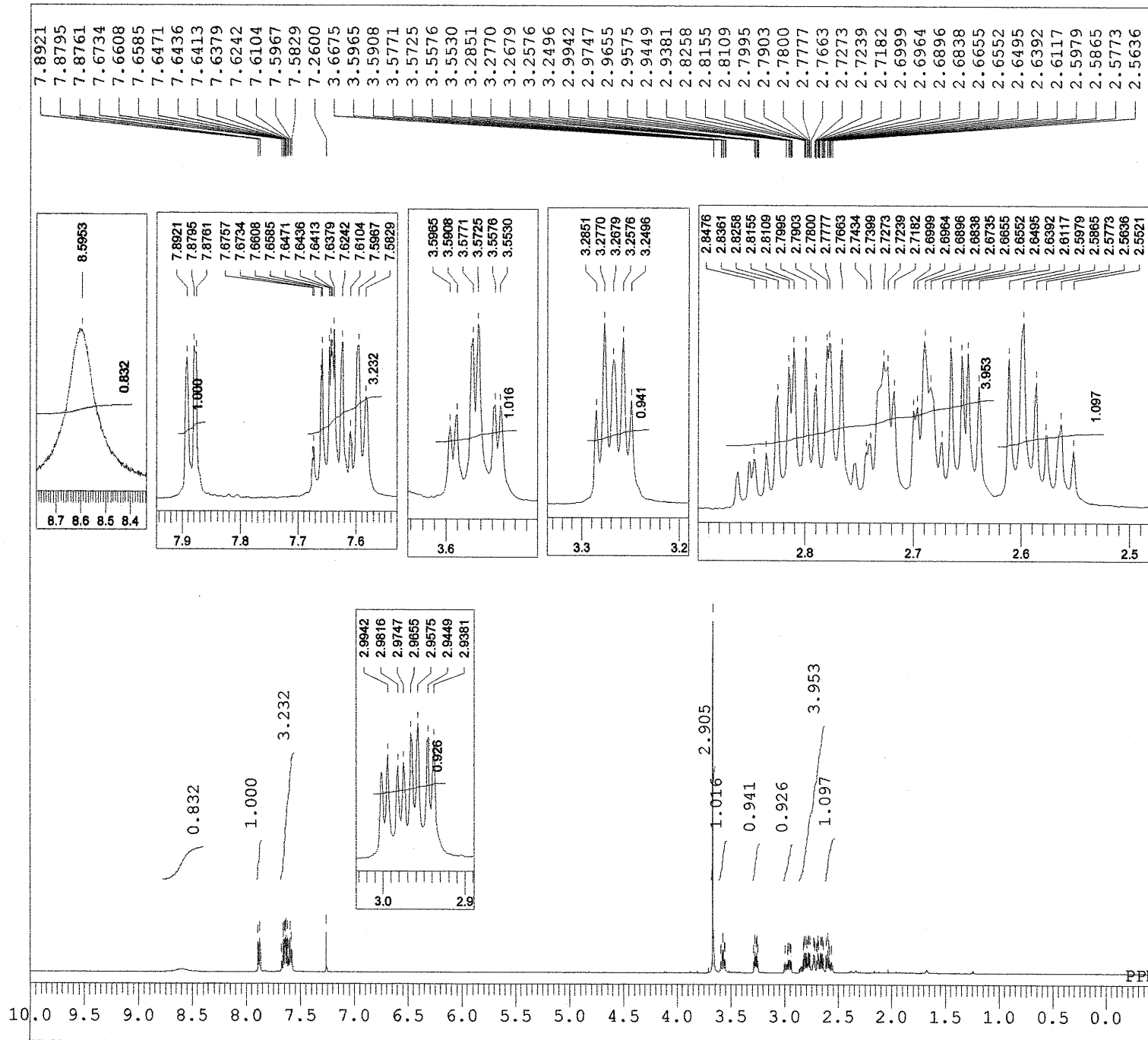


1g

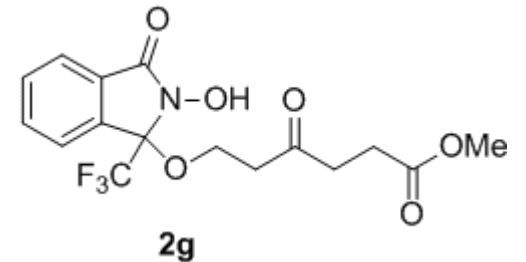


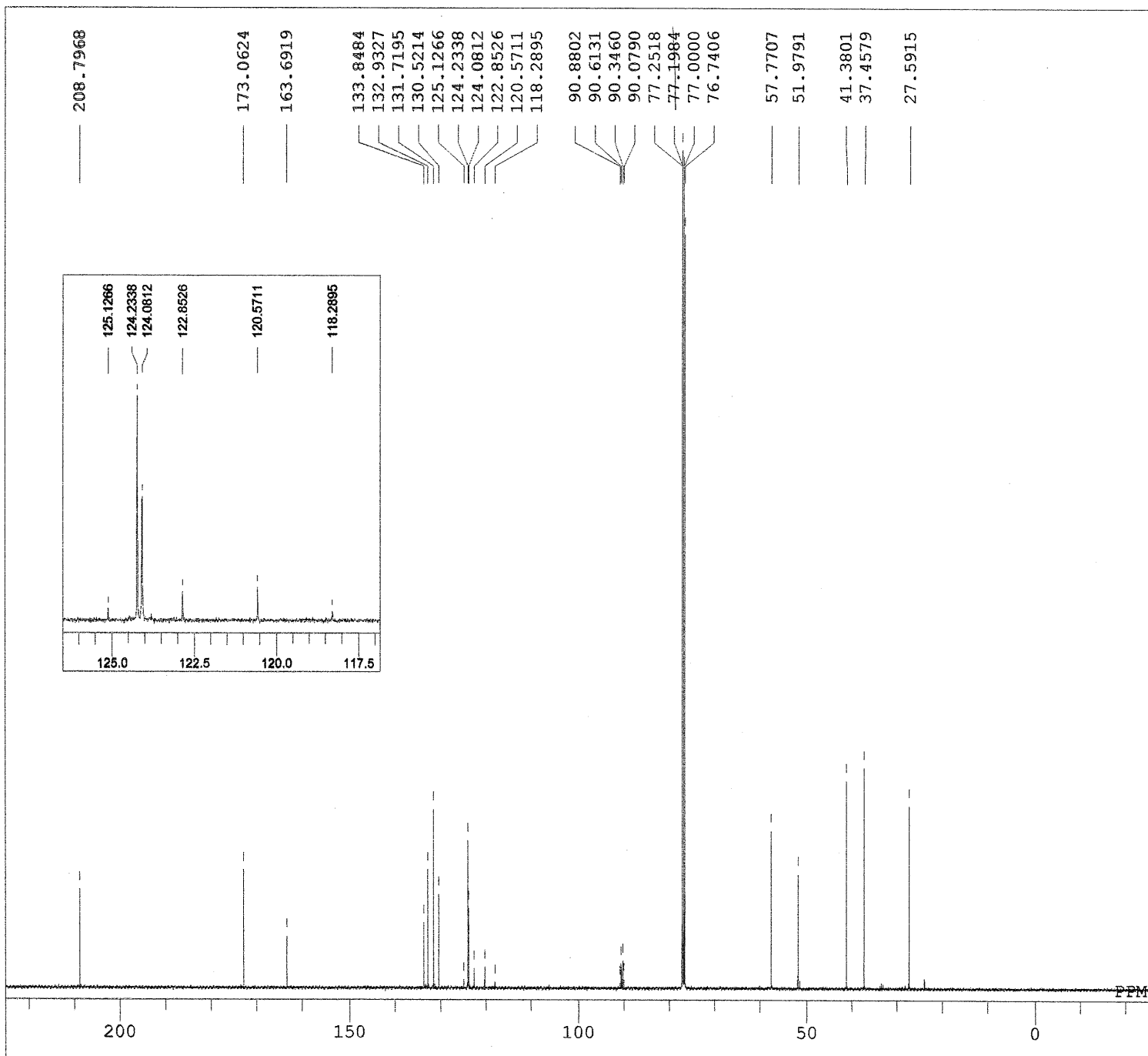
DFILE Ni_C5-CO2Me_19F.jdf
COMNT OH
DATIM 03-03-2014 21:00:27
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQIM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.8 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



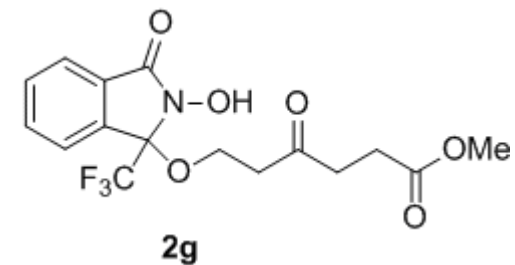


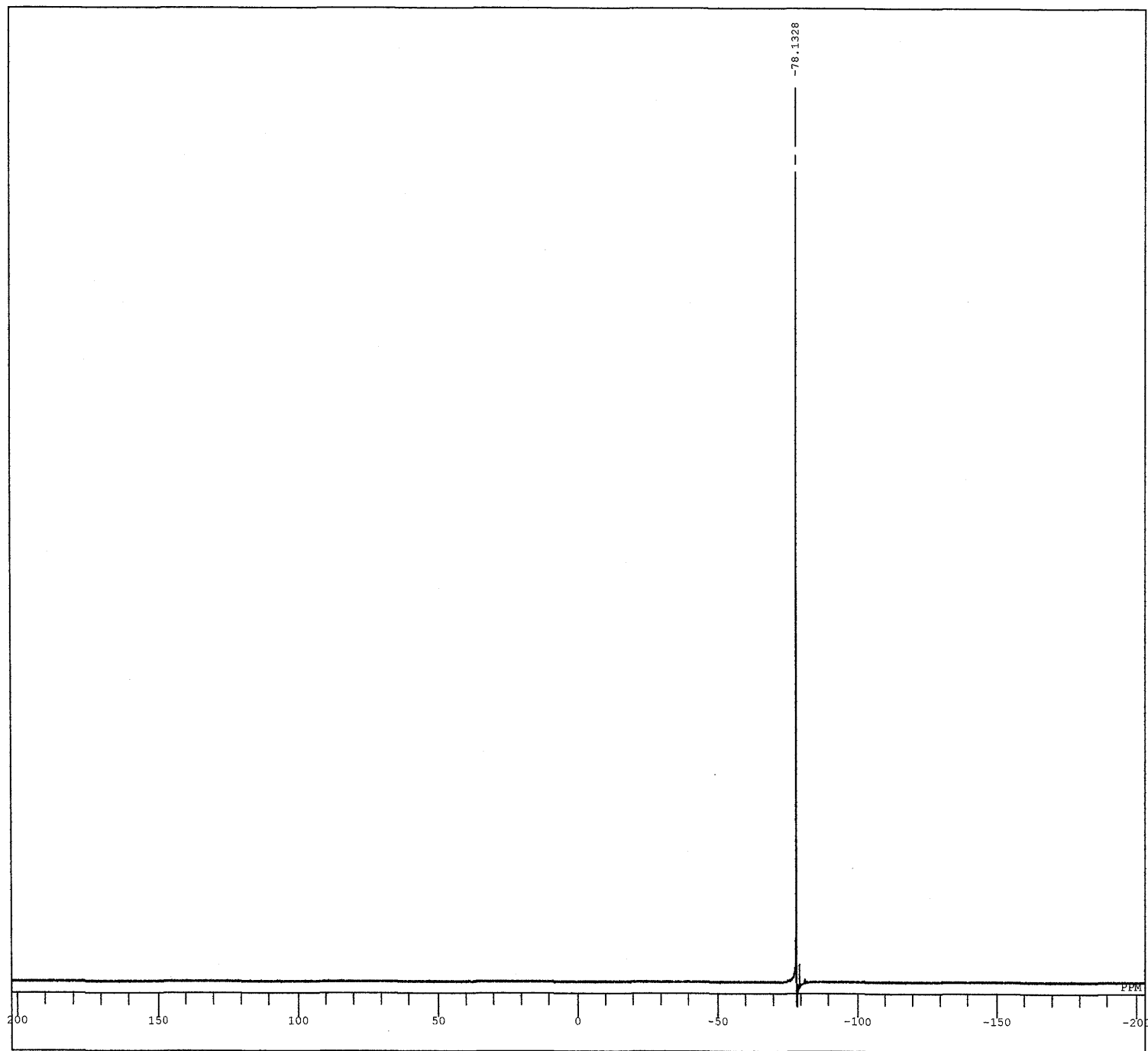
DFILE ozawa04-141_2_1H.jdf
 COMNT C5-CO2Me, [O]
 DATIM 2014-03-06 20:05:37
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.3 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 36



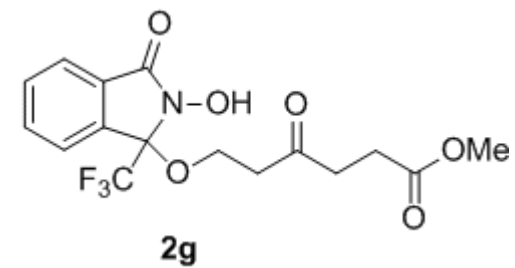


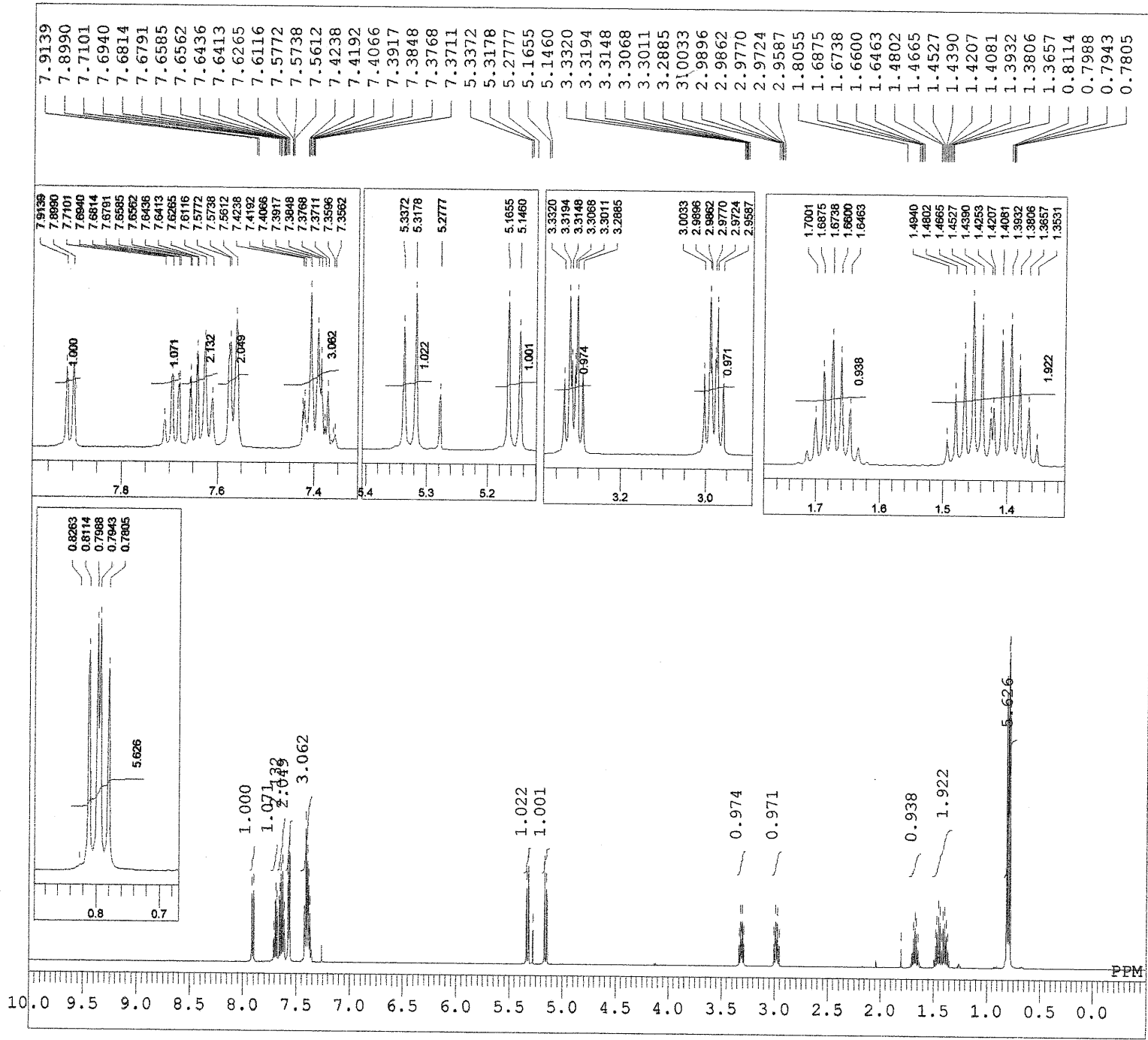
DFILE ozawa04-141_2_13C.jdf
 COMNT C5-CO2Me, [O]
 DATIM 2014-03-06 22:57:01
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 31446.54 Hz
 SCANS 9052
 ACQTM 1.0420 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 74





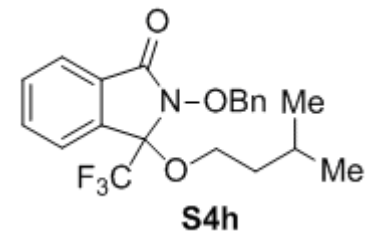
DFILE ozawa04-141_2_19F.jdf
COMNT C5-CO2Me, [O]
DATIM 06-03-2014 20:47:43
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48

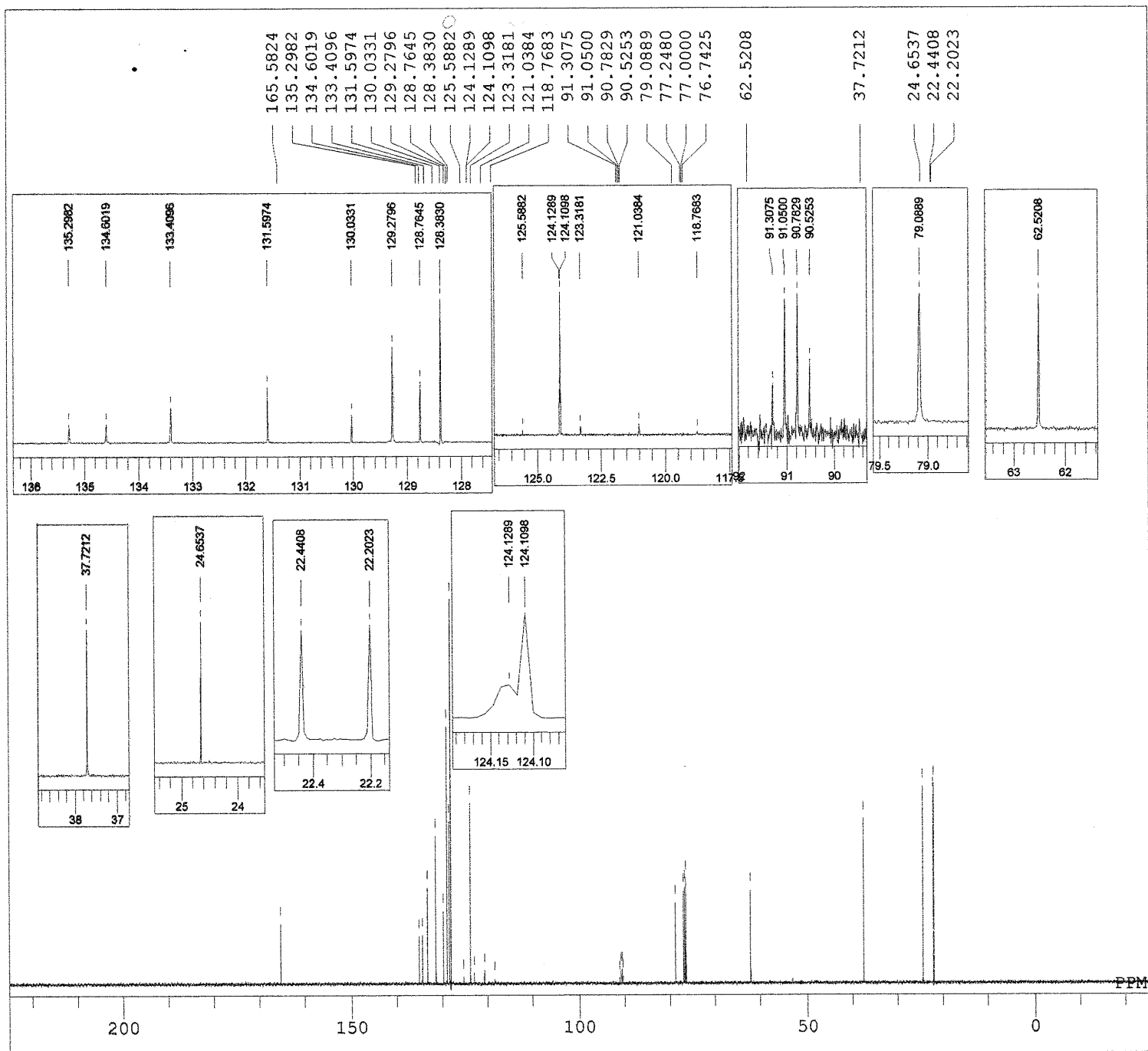




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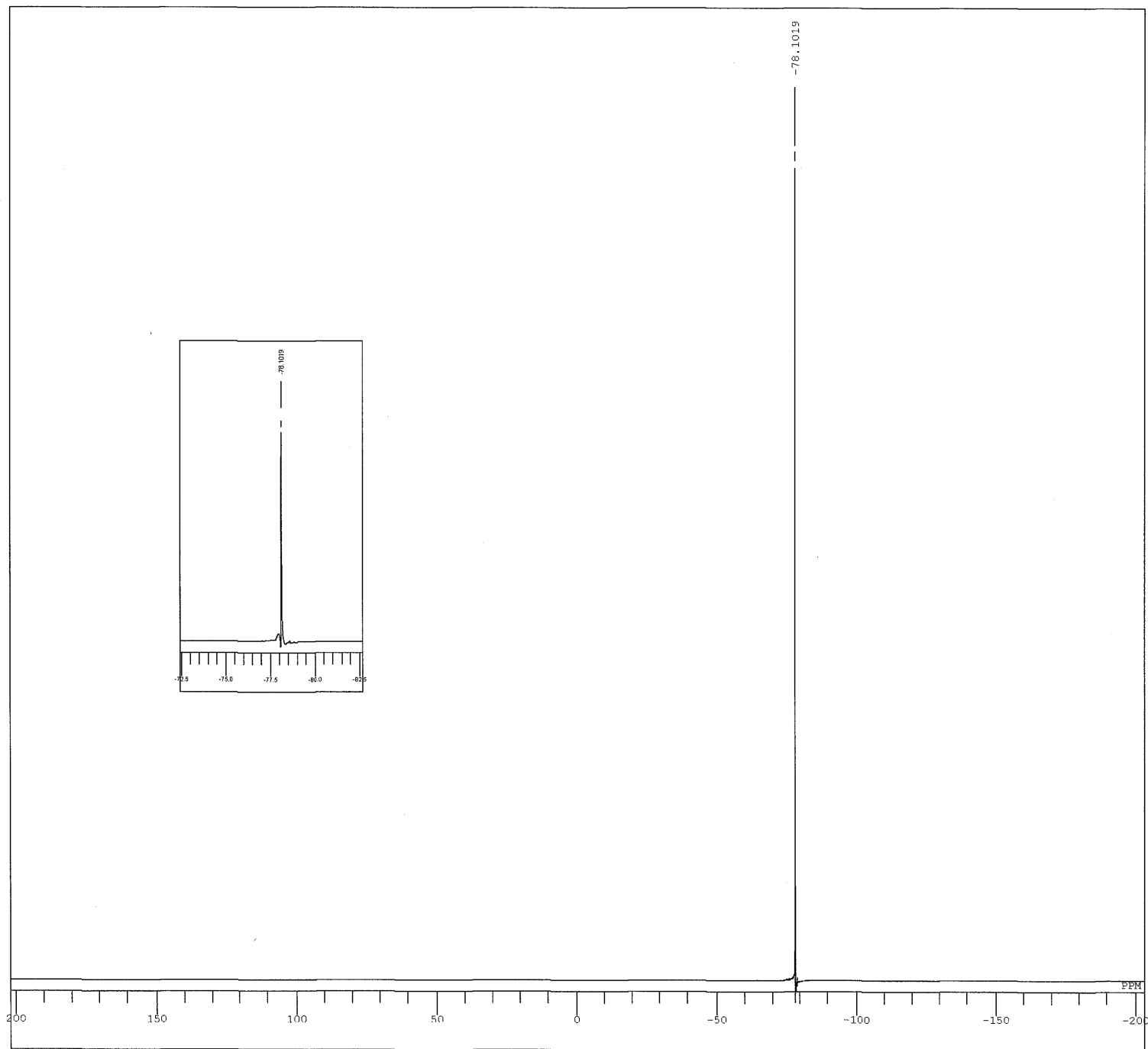
DFILE  ozawa04-053_1_1H.jdf
COMNT  3-MeBuOH
DATIM  2013-11-25 14:22:41
OBNUC  1H
EXMOD  proton.jxp
OBFRQ  500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  16384
FREQU  9384.38 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
PW1     5.55 usec
IRNUC   1H
CTEMP   22.7 c
SLVNT   CDCL3
EXREF   7.26 ppm
BF       0.12 Hz
RGAIN   26
    
```





DFILE ozawa04-053_1_13C.jdf
 COMNT 3-MeBuOH
 DATIM 2013-11-25 17:29:50
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 140
 ACQTM 0.8336 sec
 PD 3.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 23.5 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

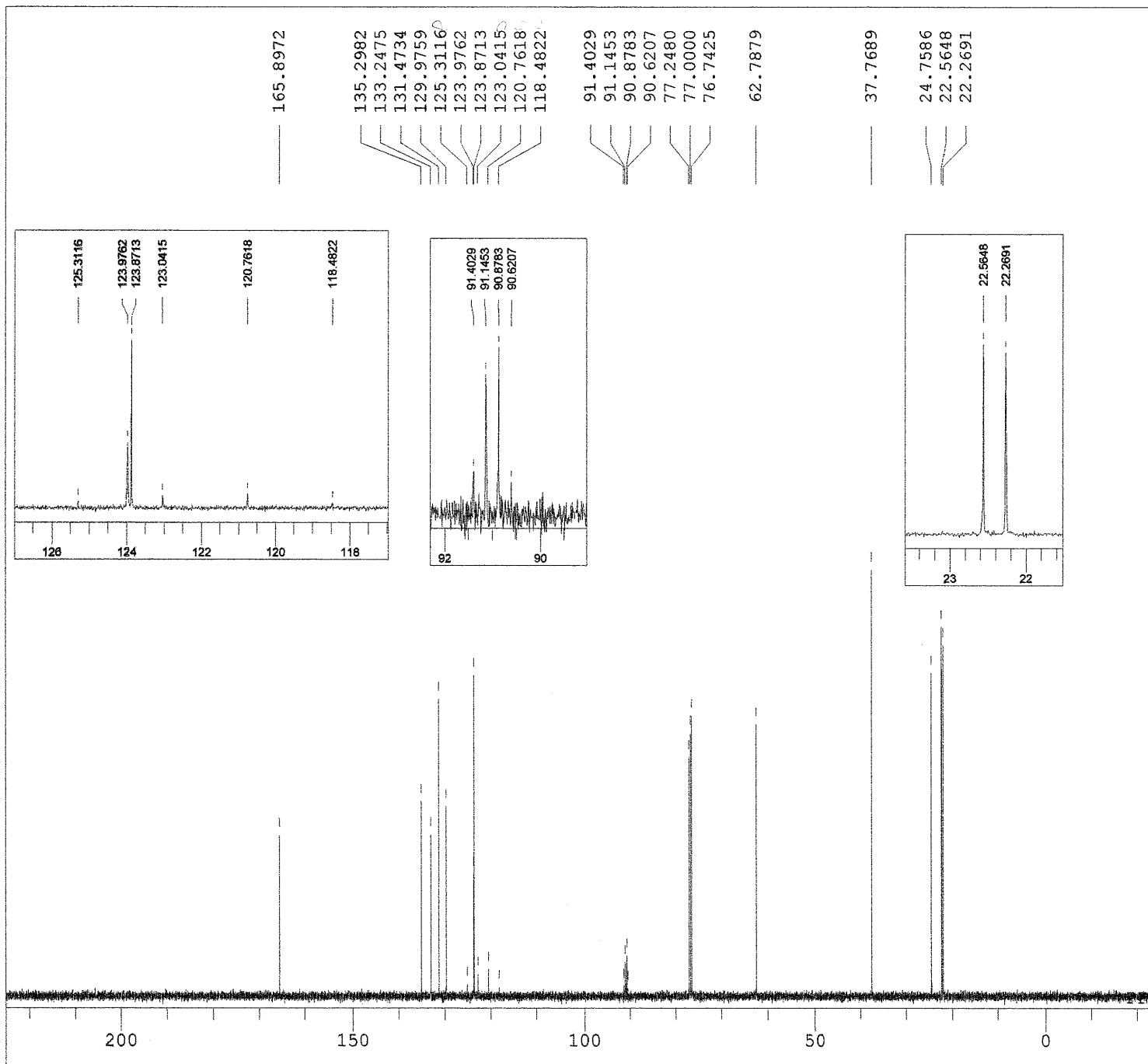




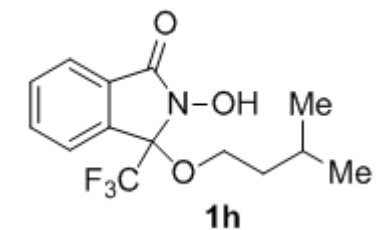
DFILE ozawa04-053_1_19F.jdf
COMNT 3-MeBuOH
DATIM 25-11-2013 13:52:14
OBNUC 19F
EXMOD proton.jpg
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44

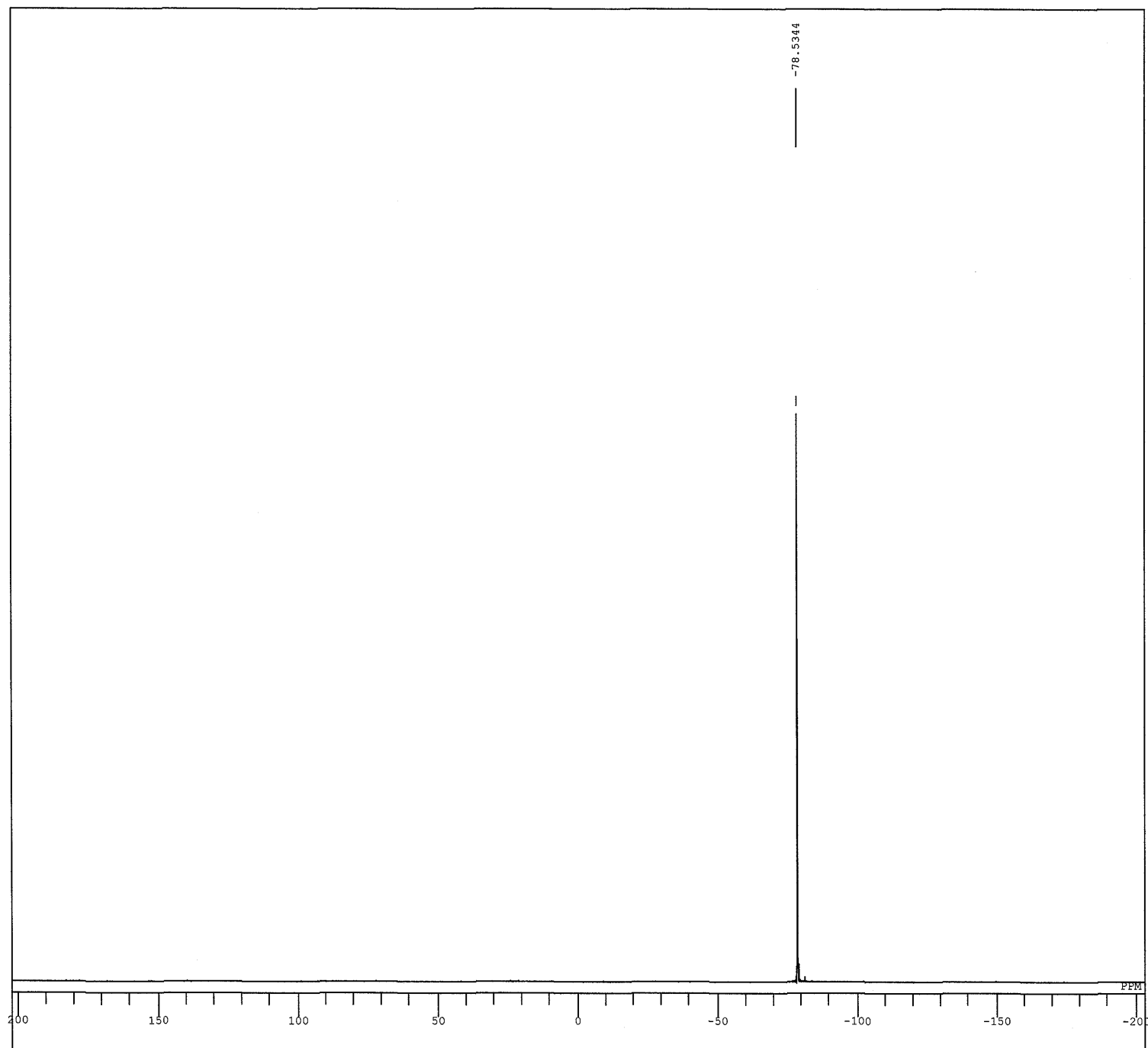


MeBuOH, OH

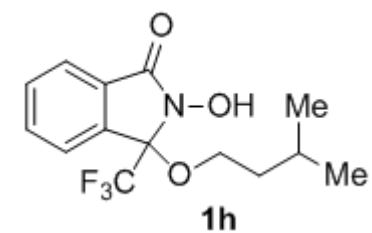


DFILE ozawa04-063rsm_13C.jdf
COMNT MeBuOH, OH
DATIM 2014-01-21 12:35:34
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 100
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

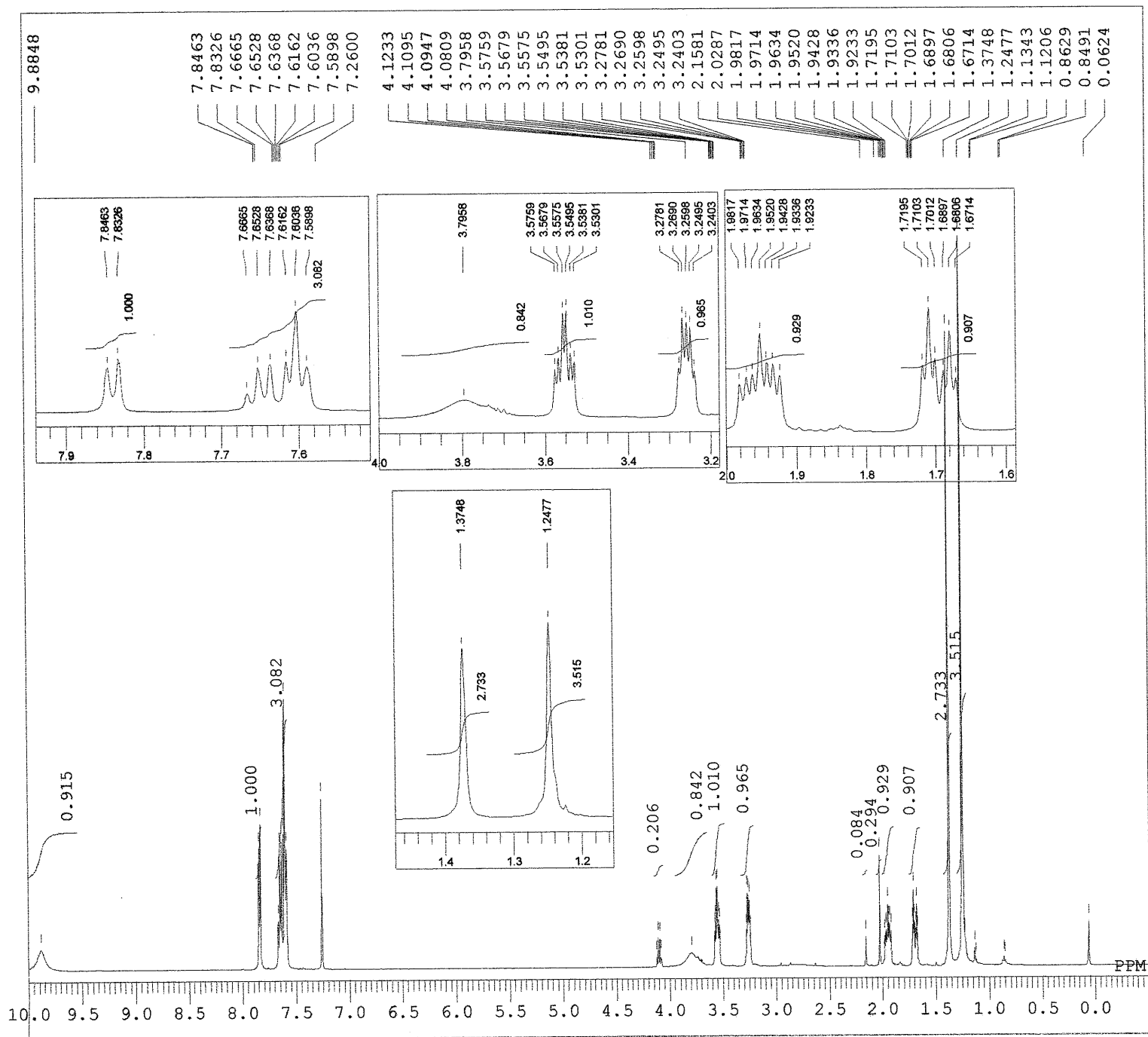




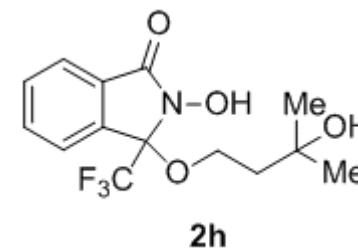
DFILE 1c_ozawa04-63rsm_19F.jdf
COMNT MeBuOH, OH
DATIM 21-01-2014 13:12:14
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 42



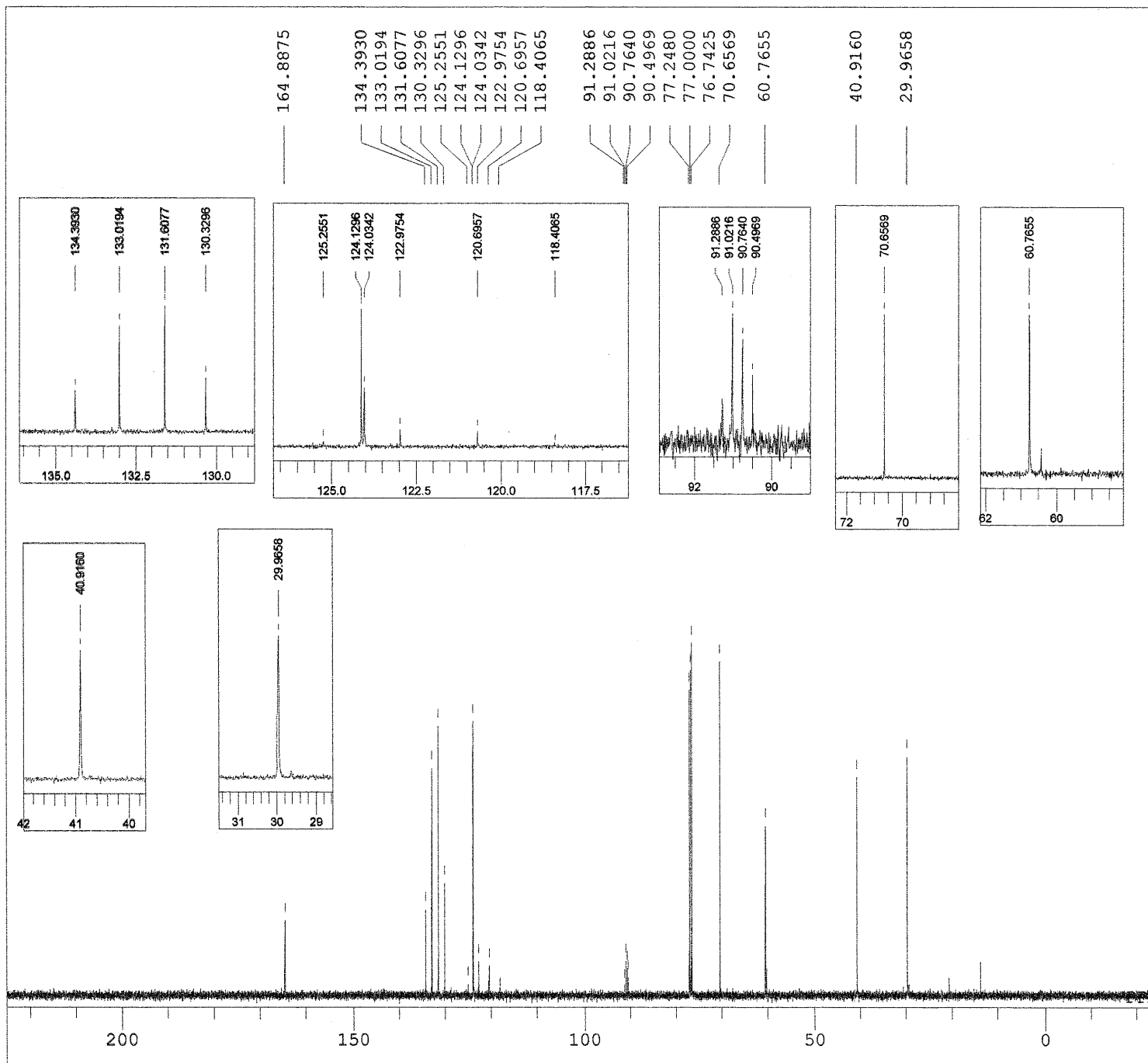
MeBuOH



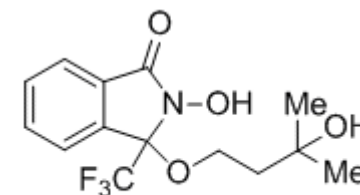
DFILE ozawa04-046.als
COMNT MeBuOH
DATIM 2013-11-16 17:26:53
OBNUC 1H
EXMUD proton.jxp
OBFREQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.51 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 22.8 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.00 Hz
RGAIN 30



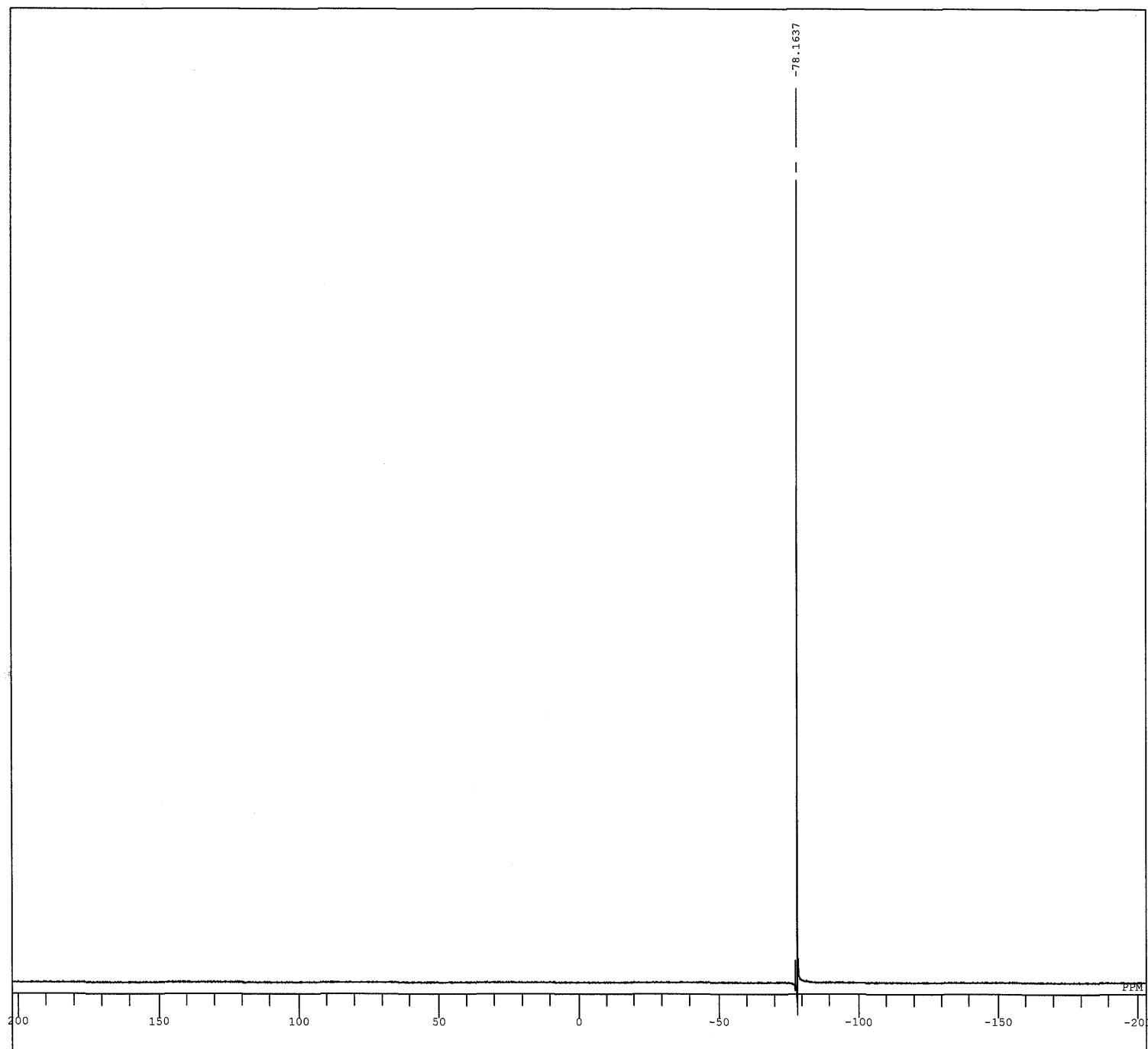
MeBuOH, [O]



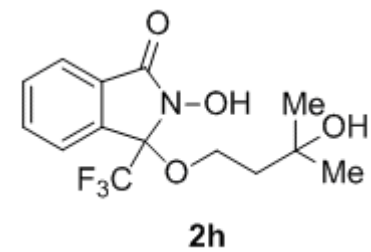
DFILE ozawa04-046_13C.als
COMNT MeBuOH, [O]
DATIM 2013-11-16 18:28:22
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.54 Hz
SCANS 160
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 23.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



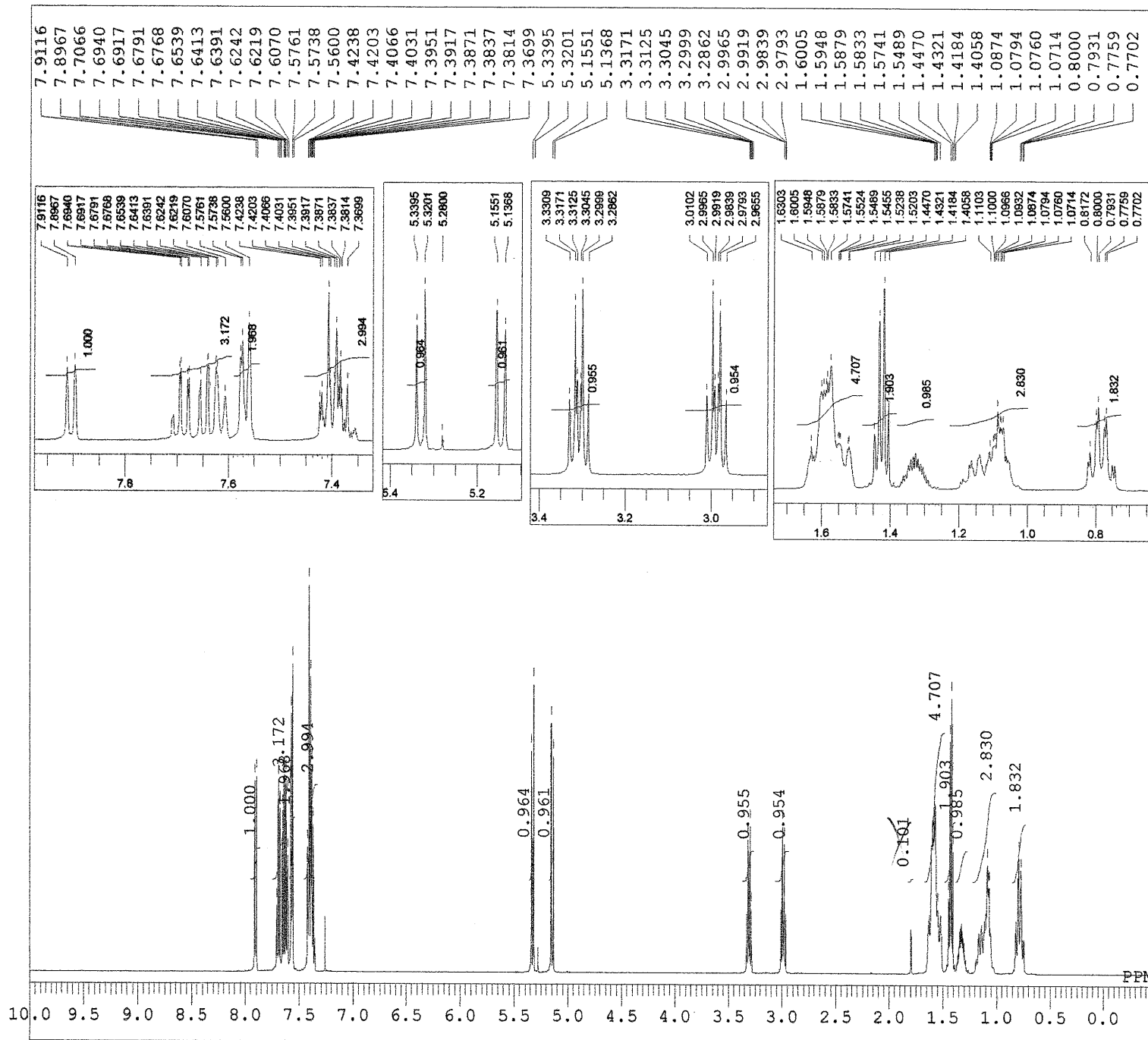
2h



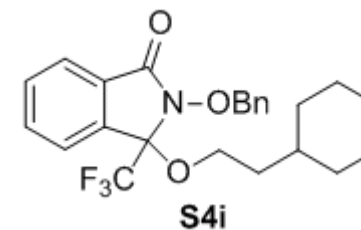
DFILE 2c_ozawa04-095_1_19F.jdf
COMNT MeBuOH, [0]
DATIM 27-01-2014 21:02:12
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



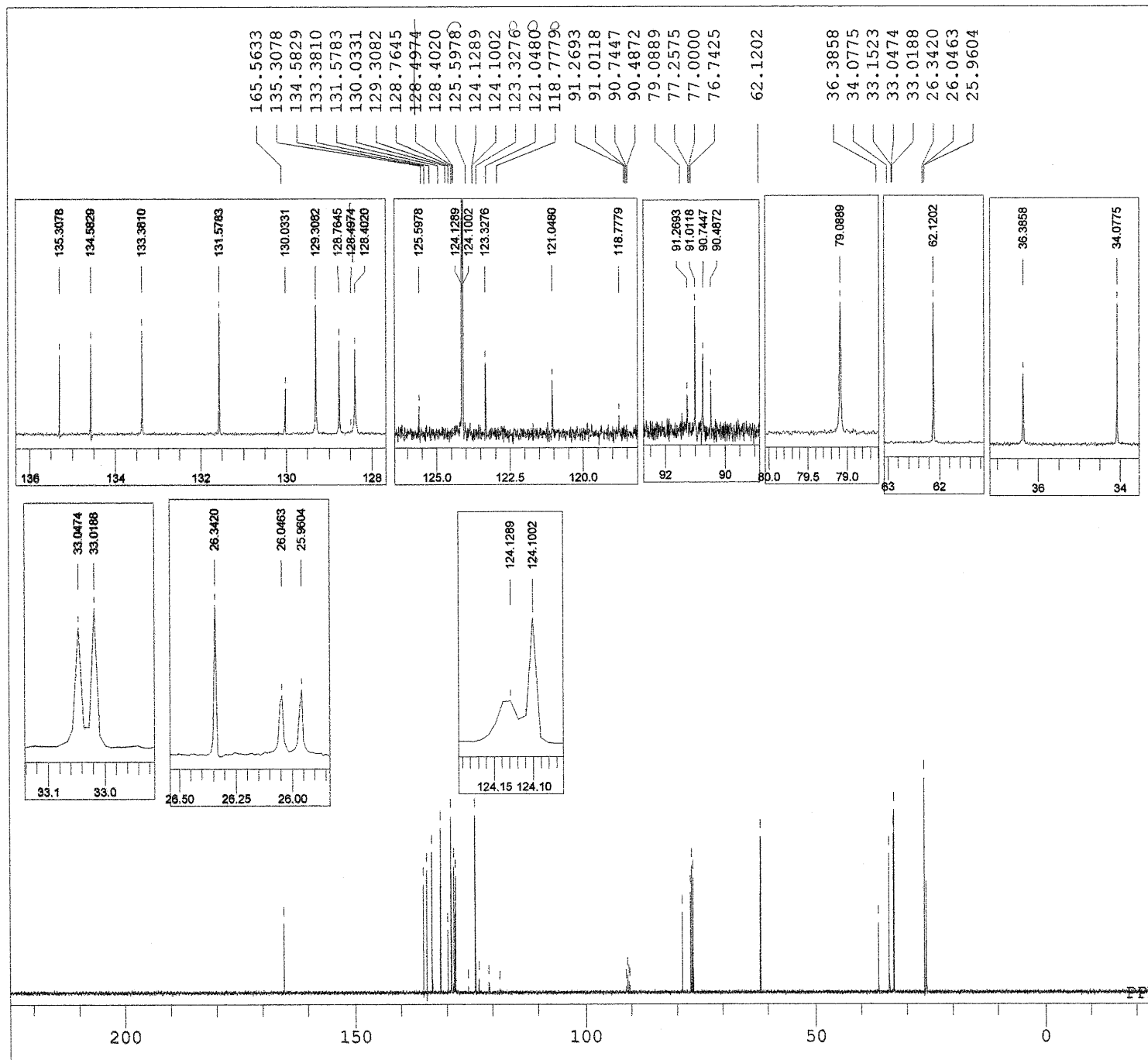
CyEtOH



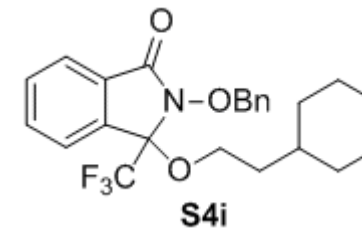
DFILE ozawa04-050_1H.jdf
 COMNT CyEtOH
 DATIM 2013-11-25 14:17:48
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 22.8 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



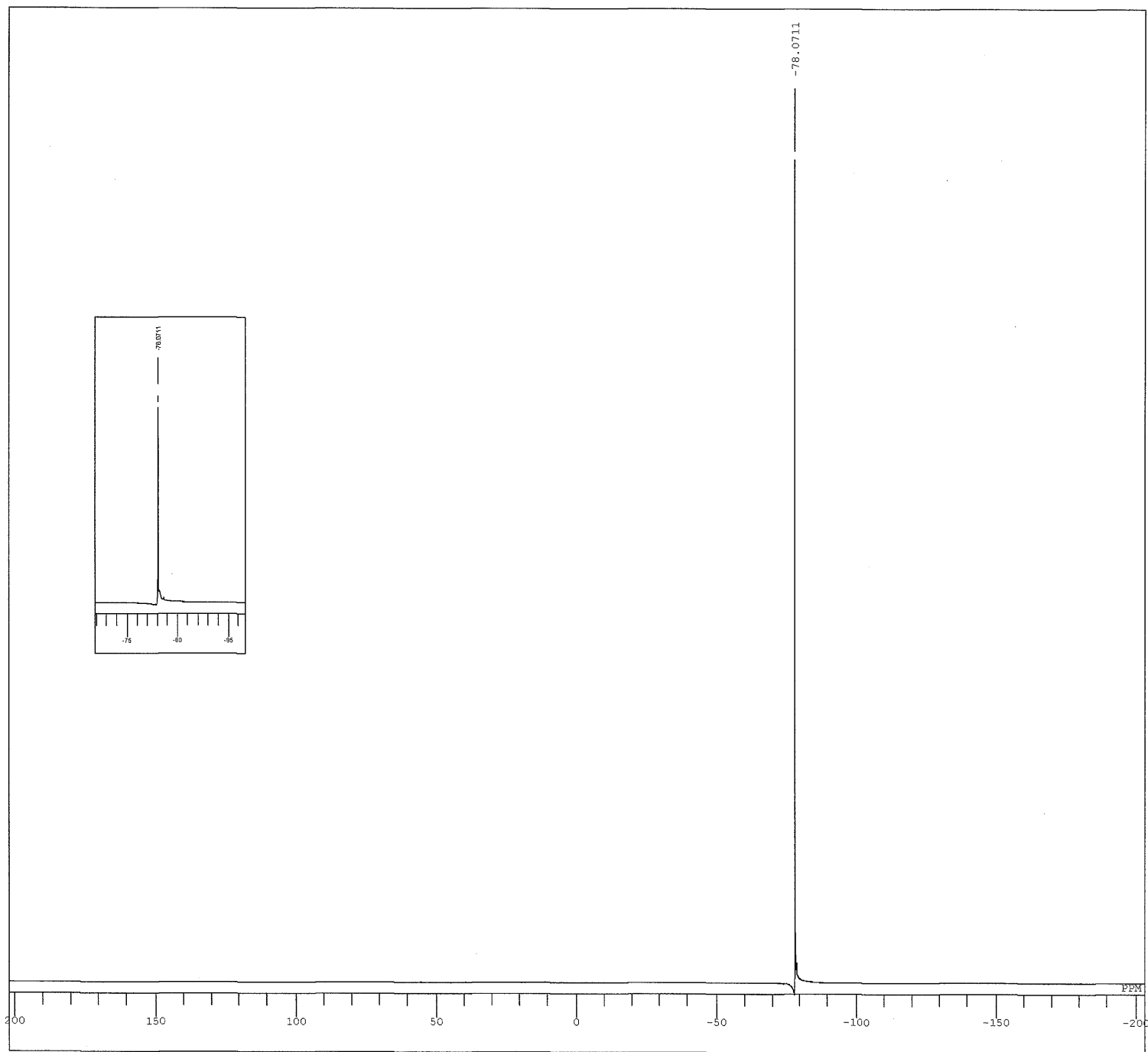
CyEtOH



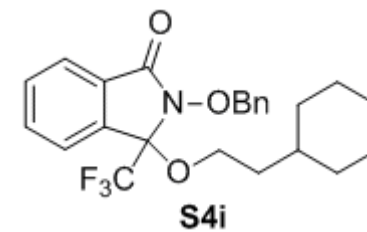
DFILE ozawa04-050_13C.jdf
COMNT CyEtOH
DATIM 2013-11-25 17:16:21
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 140
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 23.0 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



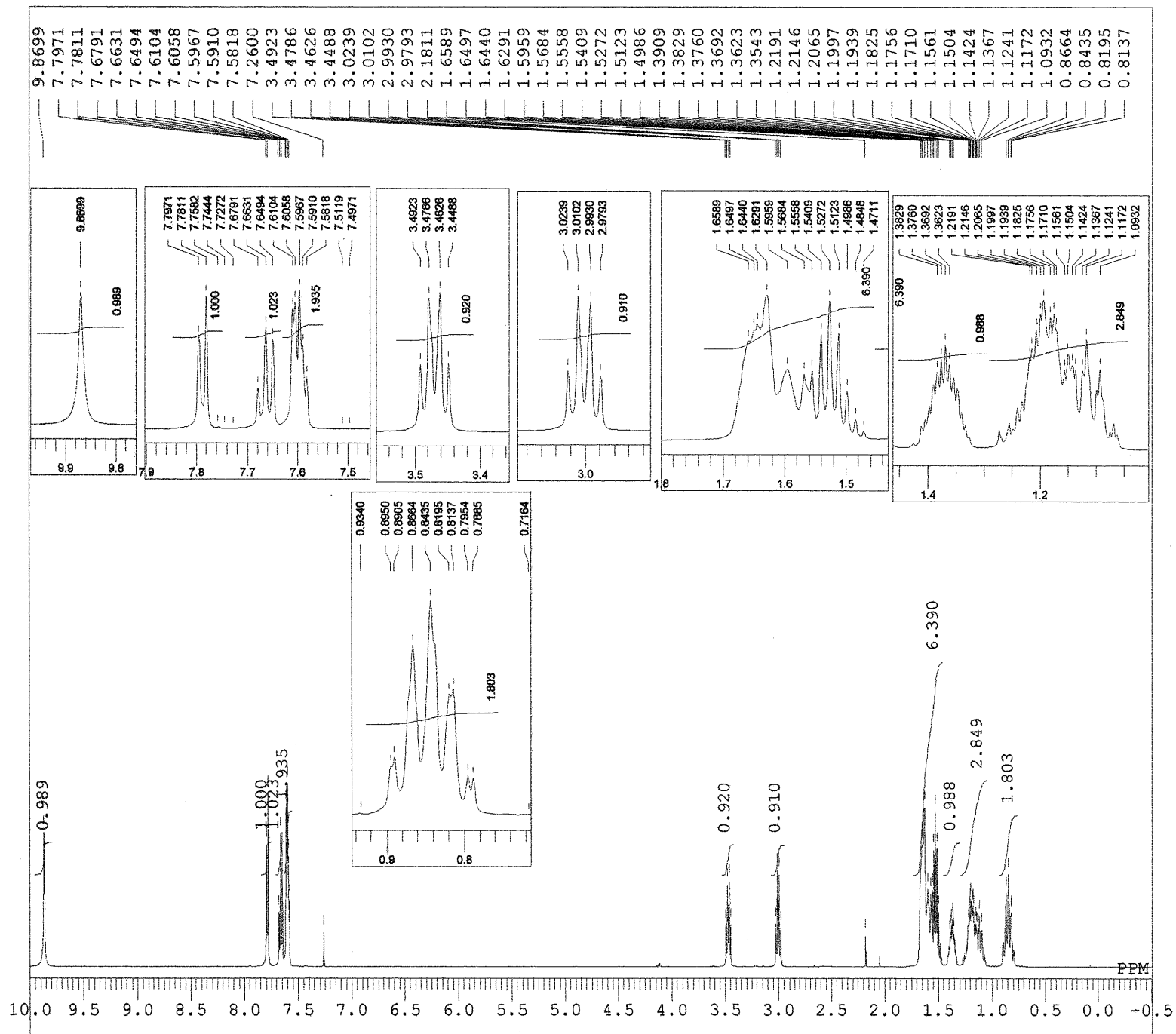
CyEtOH



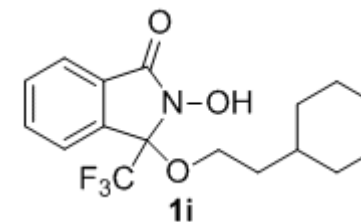
DFILE ozawa04-050_19F.jdf
COMNT CyEtOH
DATIM 25-11-2013 13:45:34
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



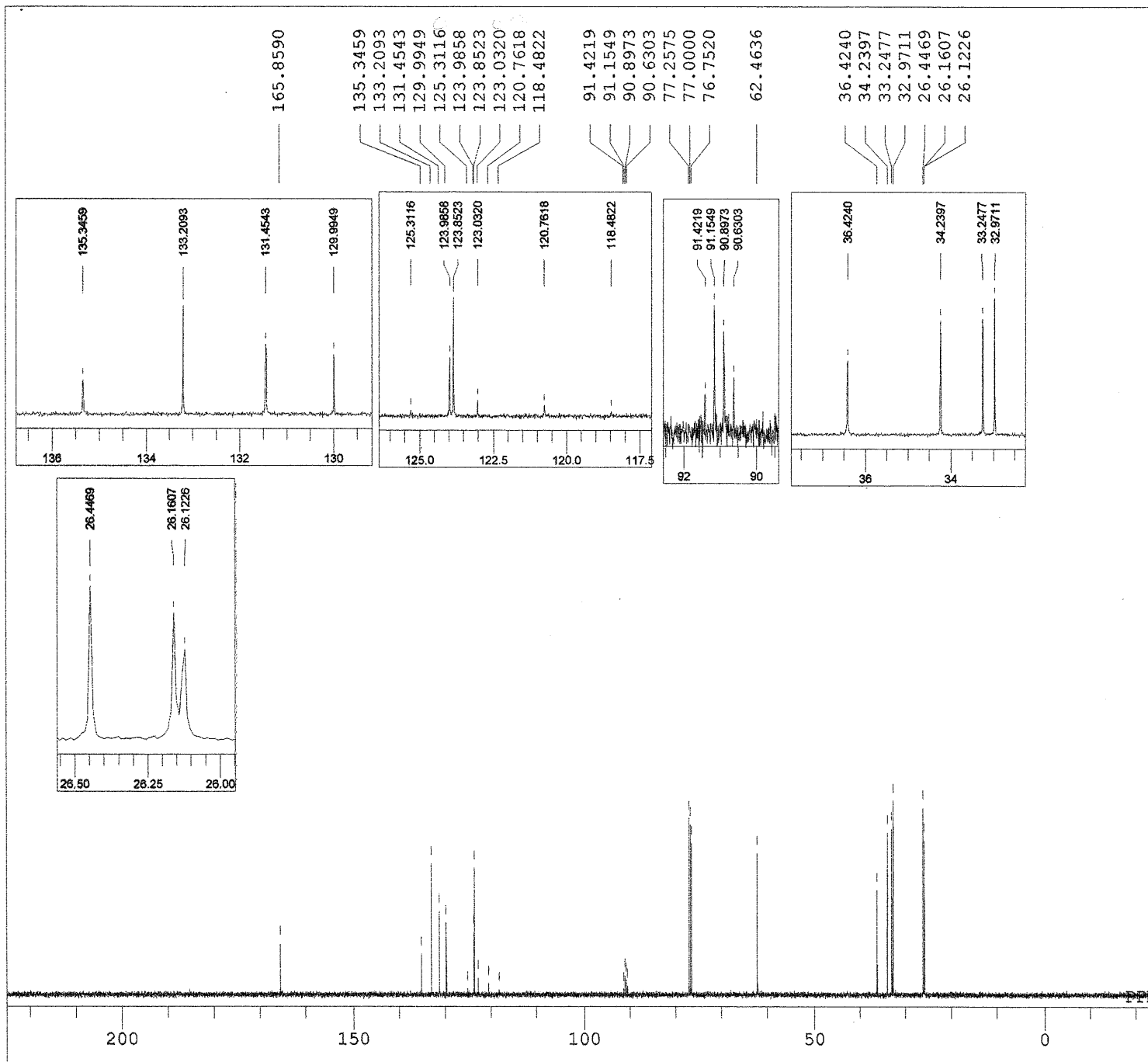
column, CyEtOH



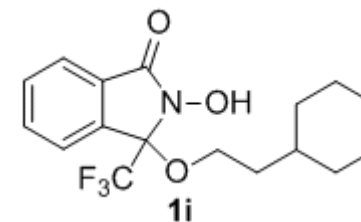
DFILE ozawa04-056_1_1h.jdf
 COMNT column, CyEtOH
 DATIM 2013-11-29 14:27:28
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 22.7 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30



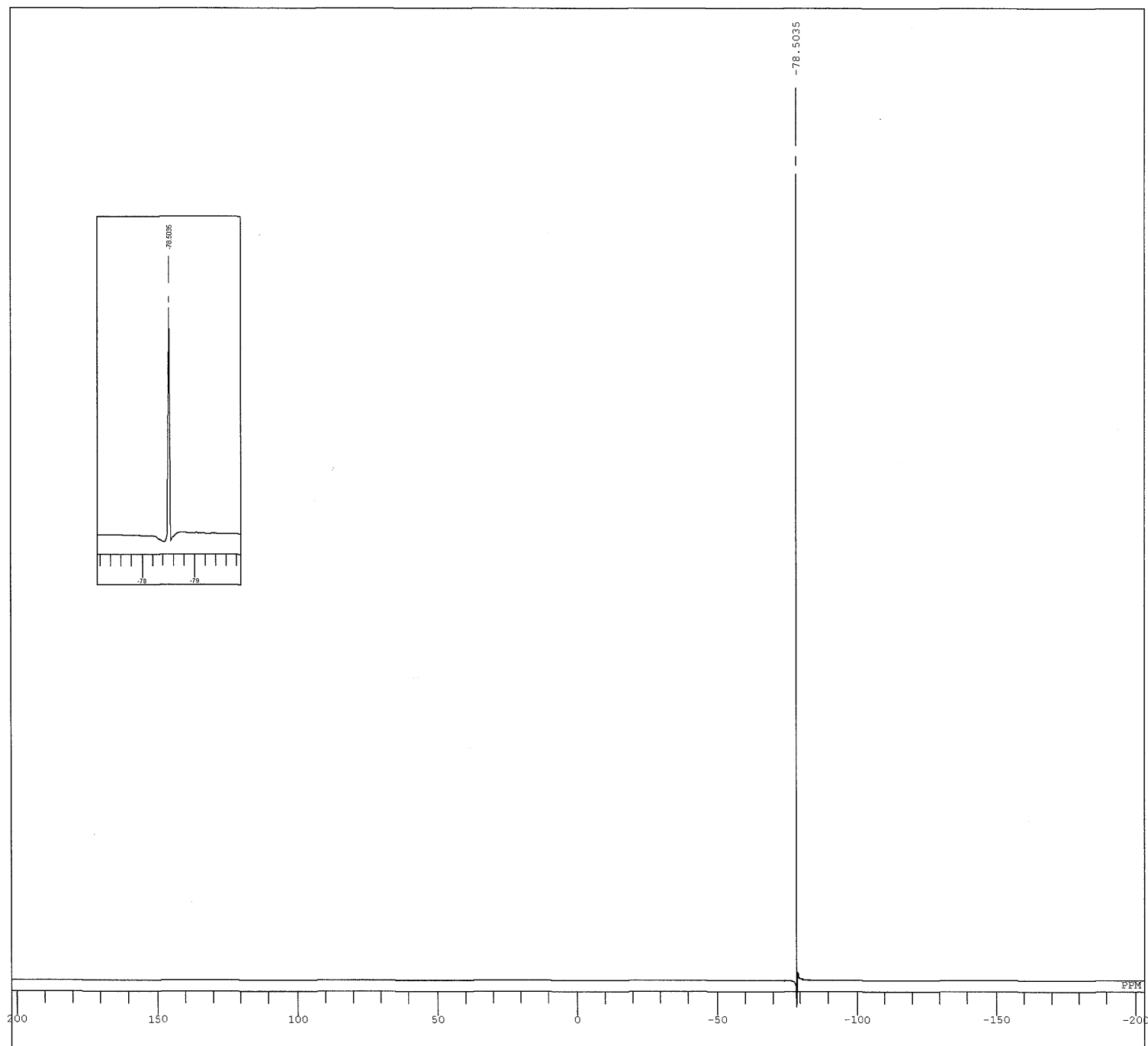
CyEtOH



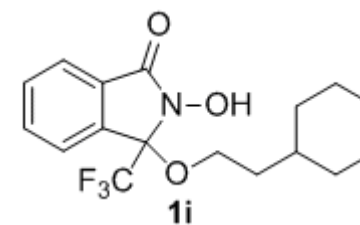
DFILE ozawa04-056_1_13C.jdf
COMNT CyEtOH
DATIM 2013-11-29 14:28:32
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 124
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 22.8 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

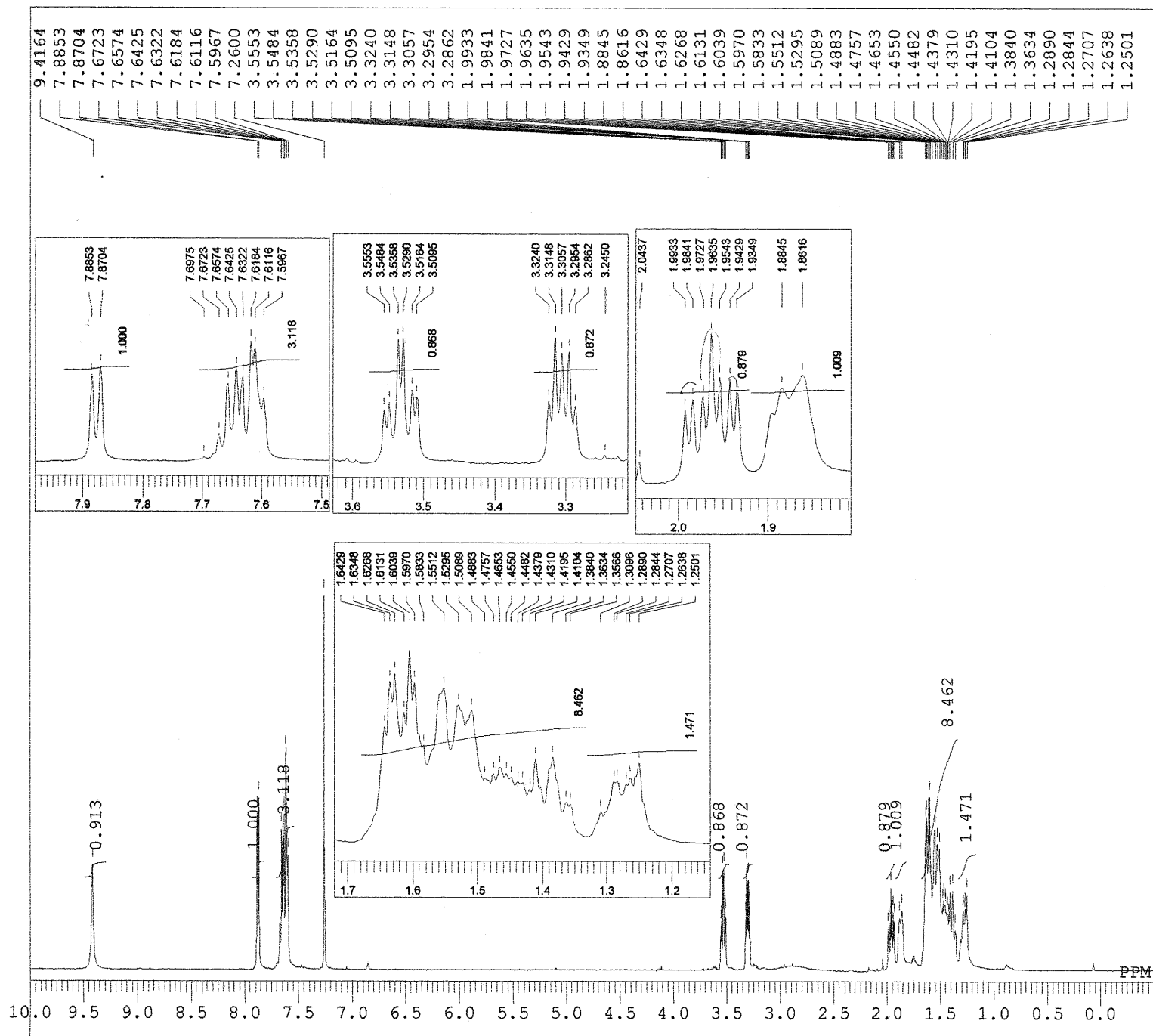


column, CyEtOH



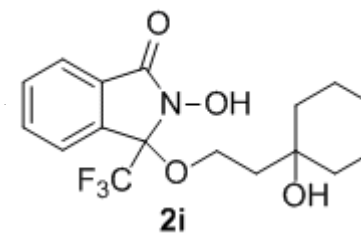
DFILE ozawa04-056_1_19F.jdf
COMNT column, CyEtOH
DATIM 29-11-2013 14:25:48
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.7 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



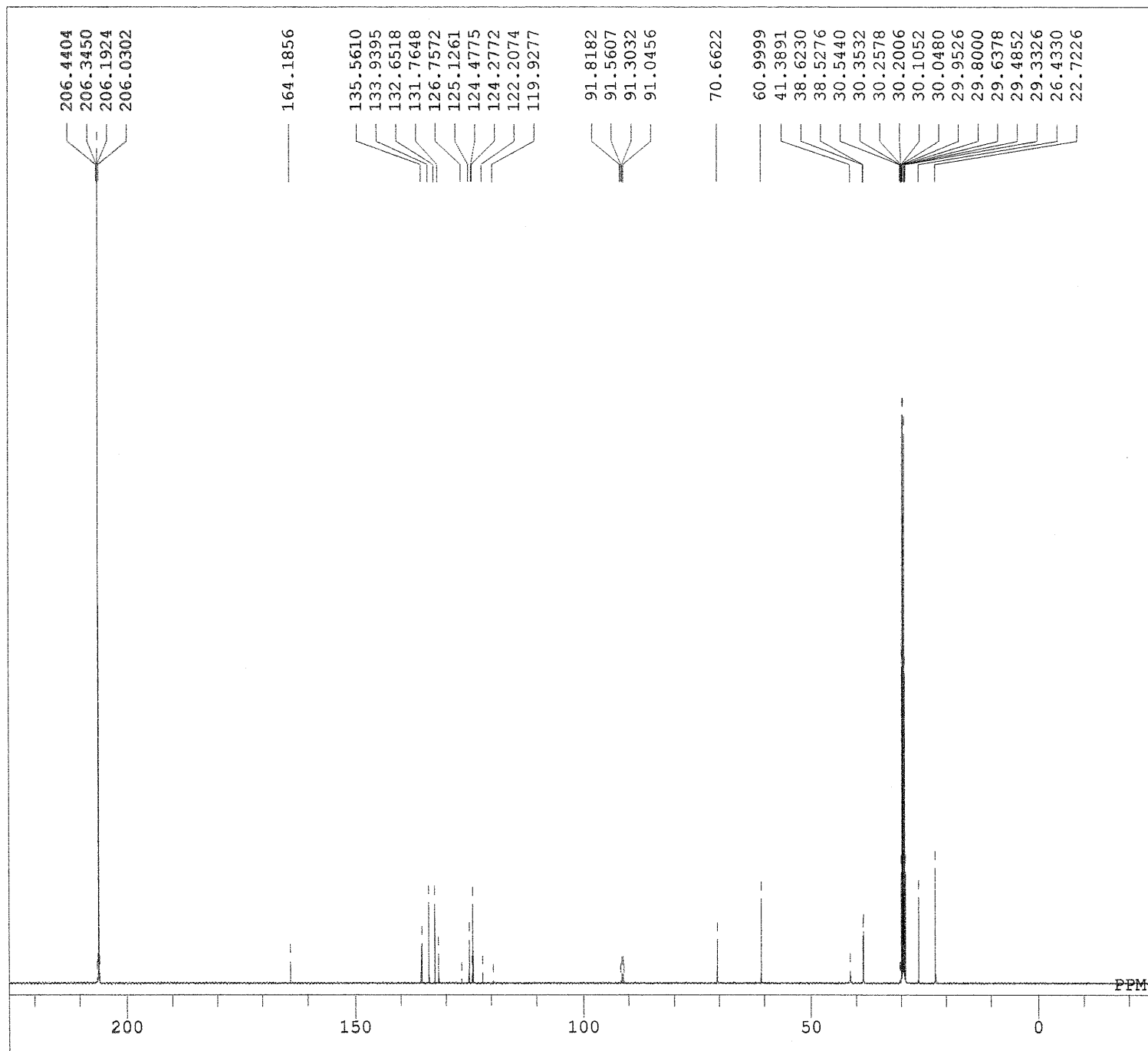


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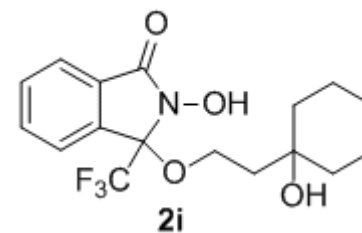
DFILE  ozawa04-095_3_1H.jdf
COMNT  PTLC, CyEtOH, O2
DATIM  2014-01-20 17:45:28
OBNUC  1H
EXMOD  proton.jxp
OBFREQ 500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  16384
FREQU  9384.38 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
FW1     5.55 usec
IRNUC  1H
CTEMP  21.2 c
SLVNT  CDCL3
EXREF  7.26 ppm
BF      1.00 Hz
RGAIN  38
    
```

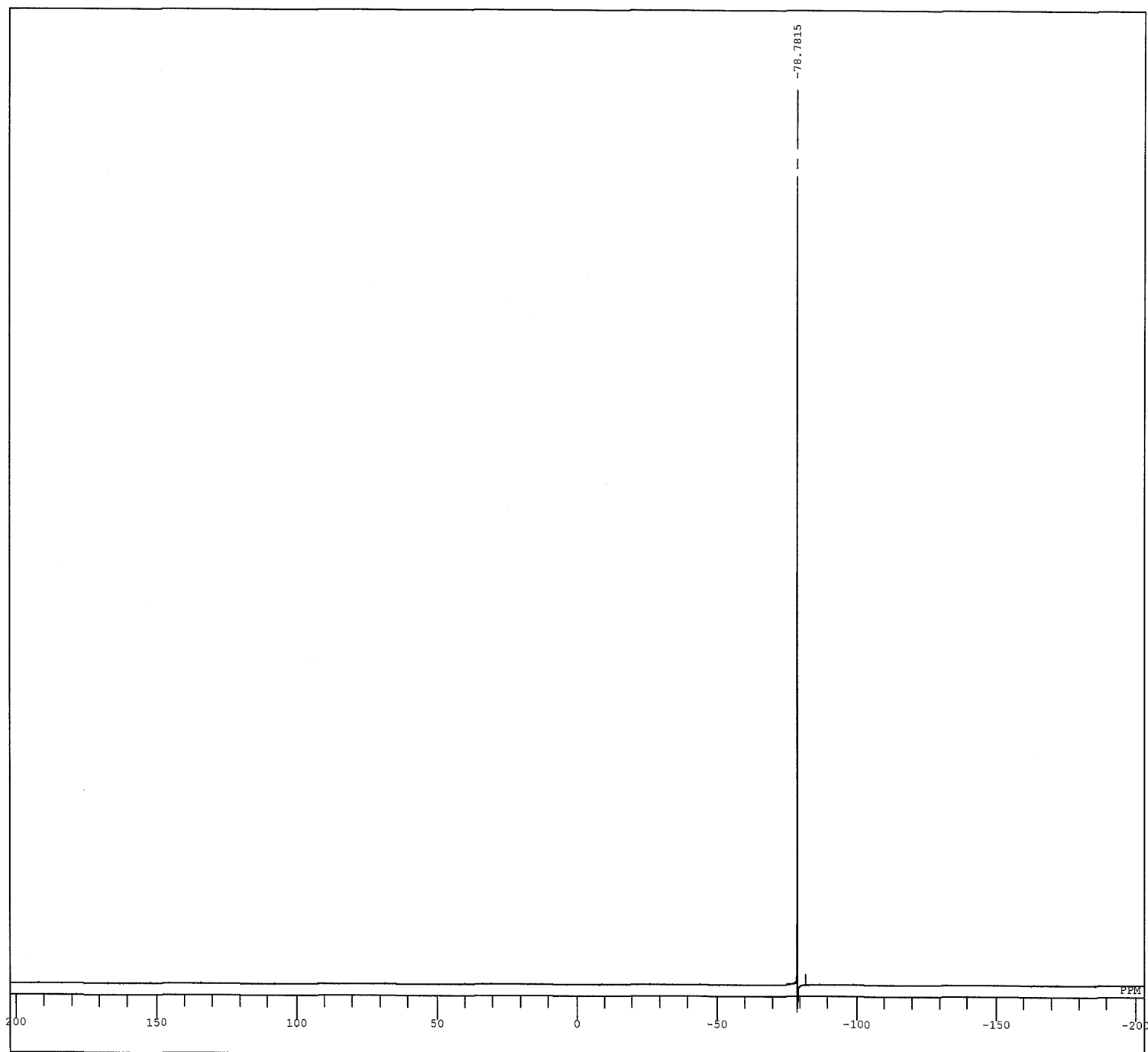


CyEtOH, [0]

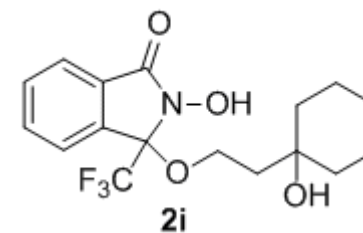


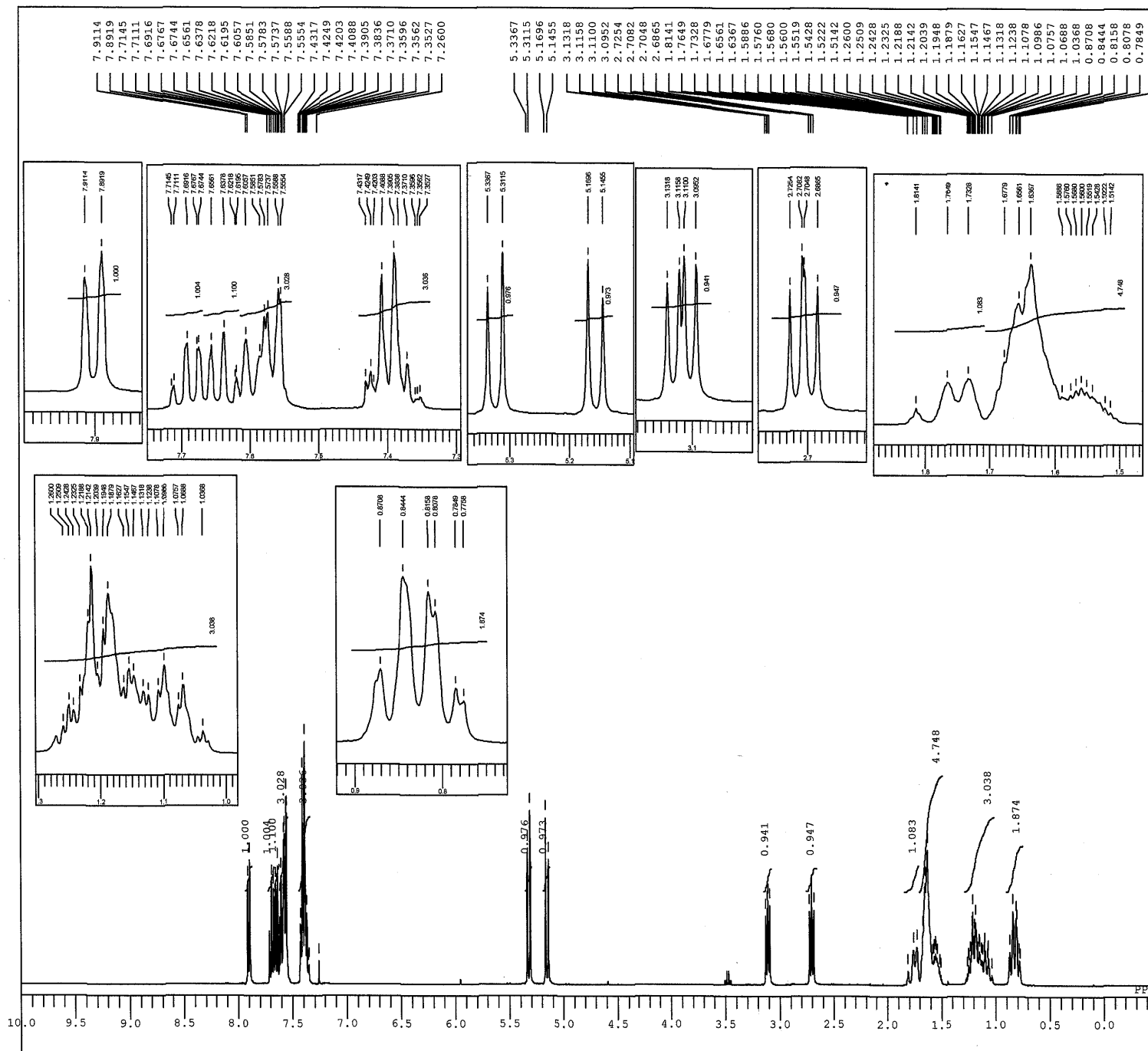
DFILE ozawa04-095_3_13C.jdf
COMNT CyEtOH, [0]
DATIM 2014-01-27 17:41:41
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 1700
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 22.5 c
SLVNT ACETN
EXREF 29.80 ppm
BF 1.00 Hz
RGAIN 60



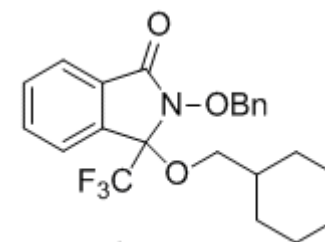


DFILE ozawa04-095_3_19F.jdf
COMNT CyEtOH, [O]
DATIM 27-01-2014 19:53:16
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT ACETN
EXREF -164.90 ppm
BF 0.10 Hz
RGAIN 48

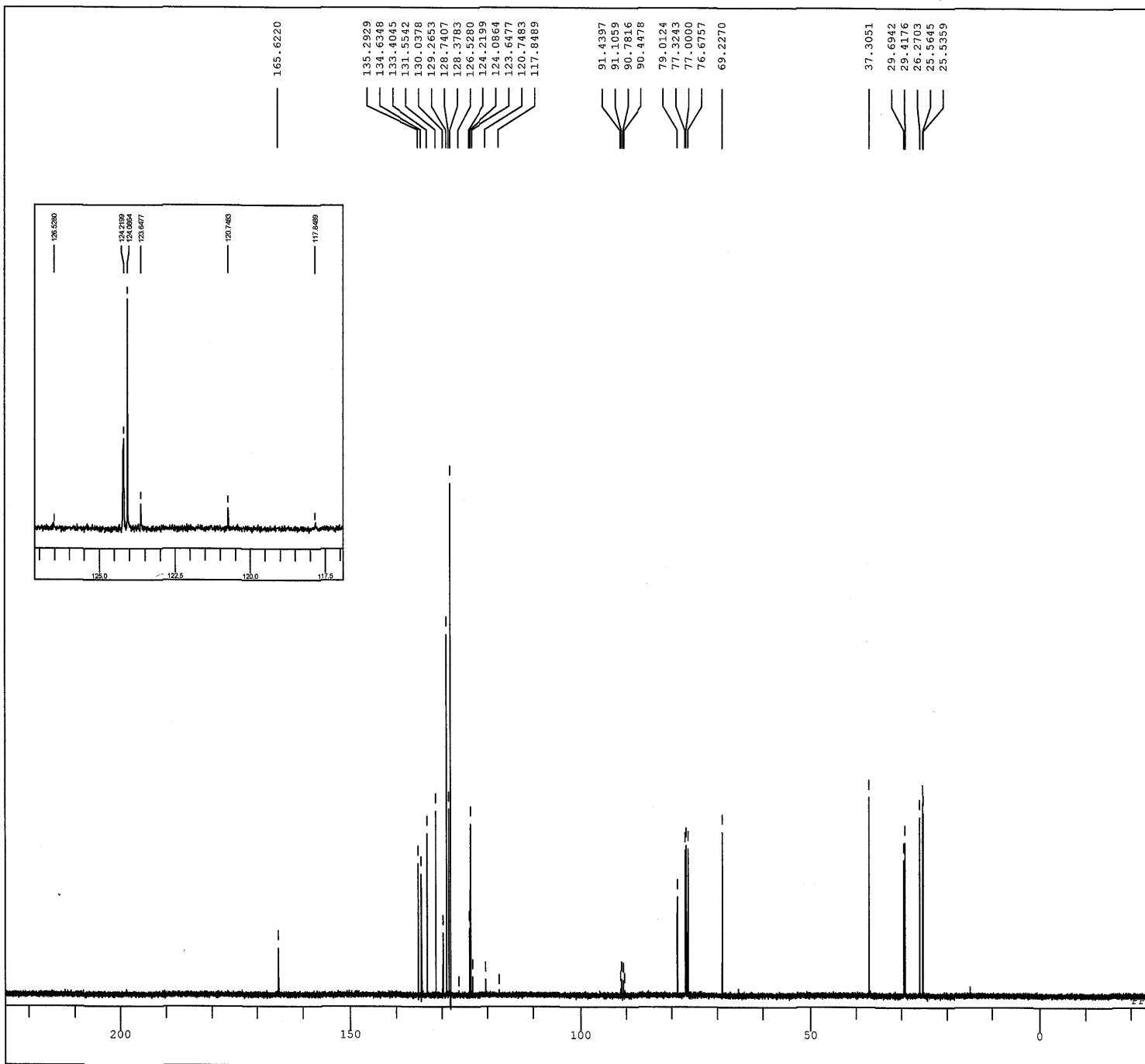




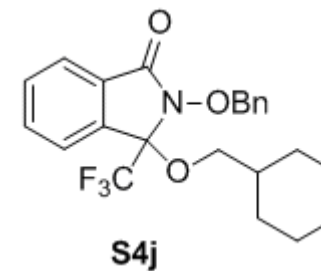
DFILE ozawa04-122_2_1H.jdf
 COMNT CyMeOH, OH
 DATIM 02-02-2014 20:32:38
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.25 usec
 IRNUC 1H
 CTEMP 21.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 22

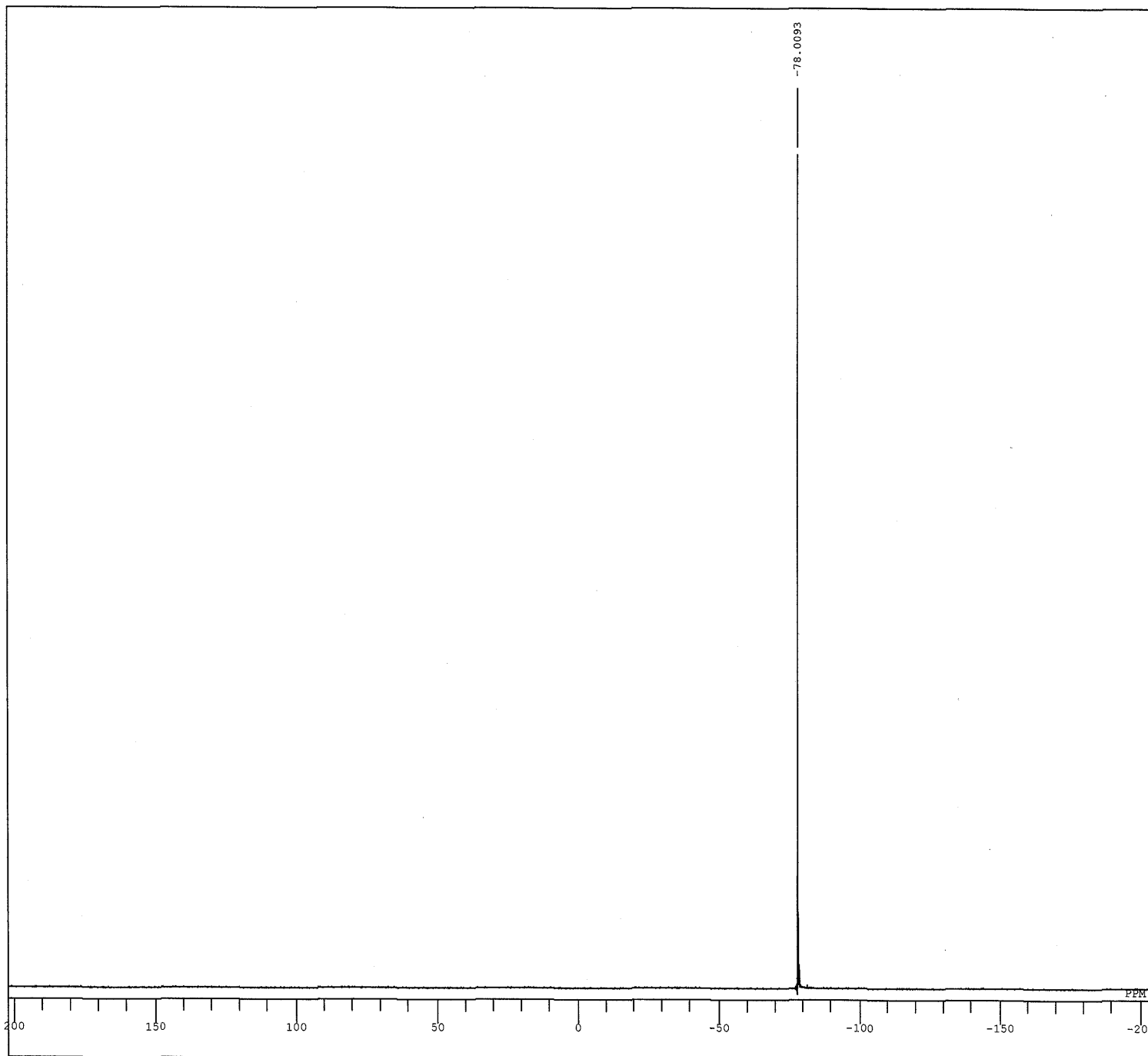


S4j

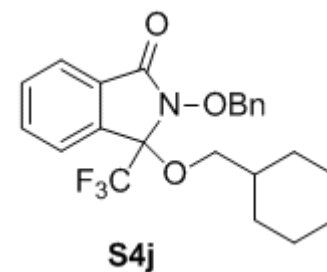


DFILE ozawa04-122_2_13C.jdf
 COMNT CyMeOH, OH
 DATIM 02-02-2014 20:34:01
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 112
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 21.1 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

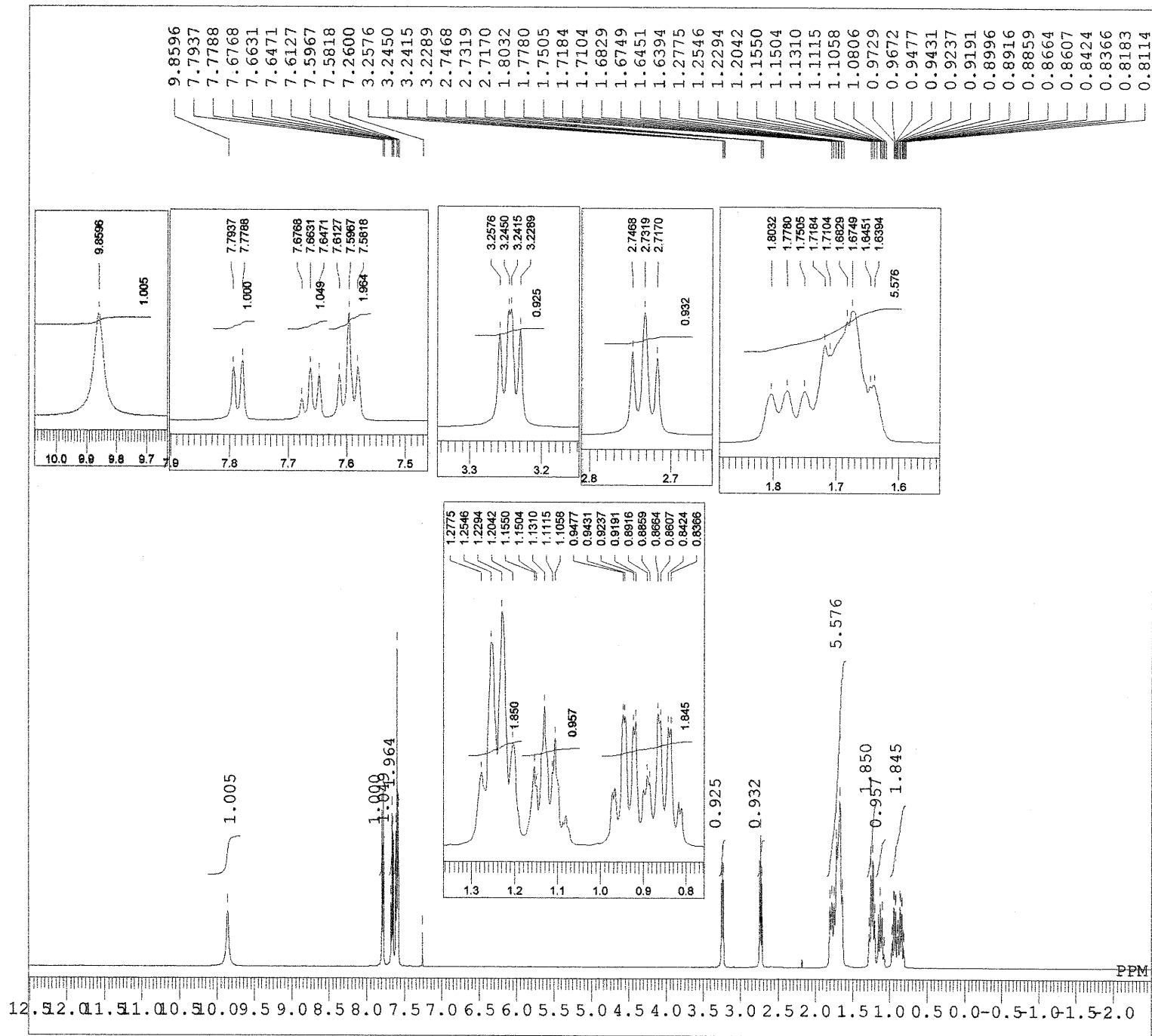




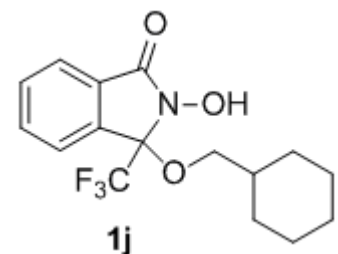
DFILE ozawa04-122_2_C_19F.jdf
COMNT CyMeOH, Bn
DATIM 02-02-2014 14:40:20
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



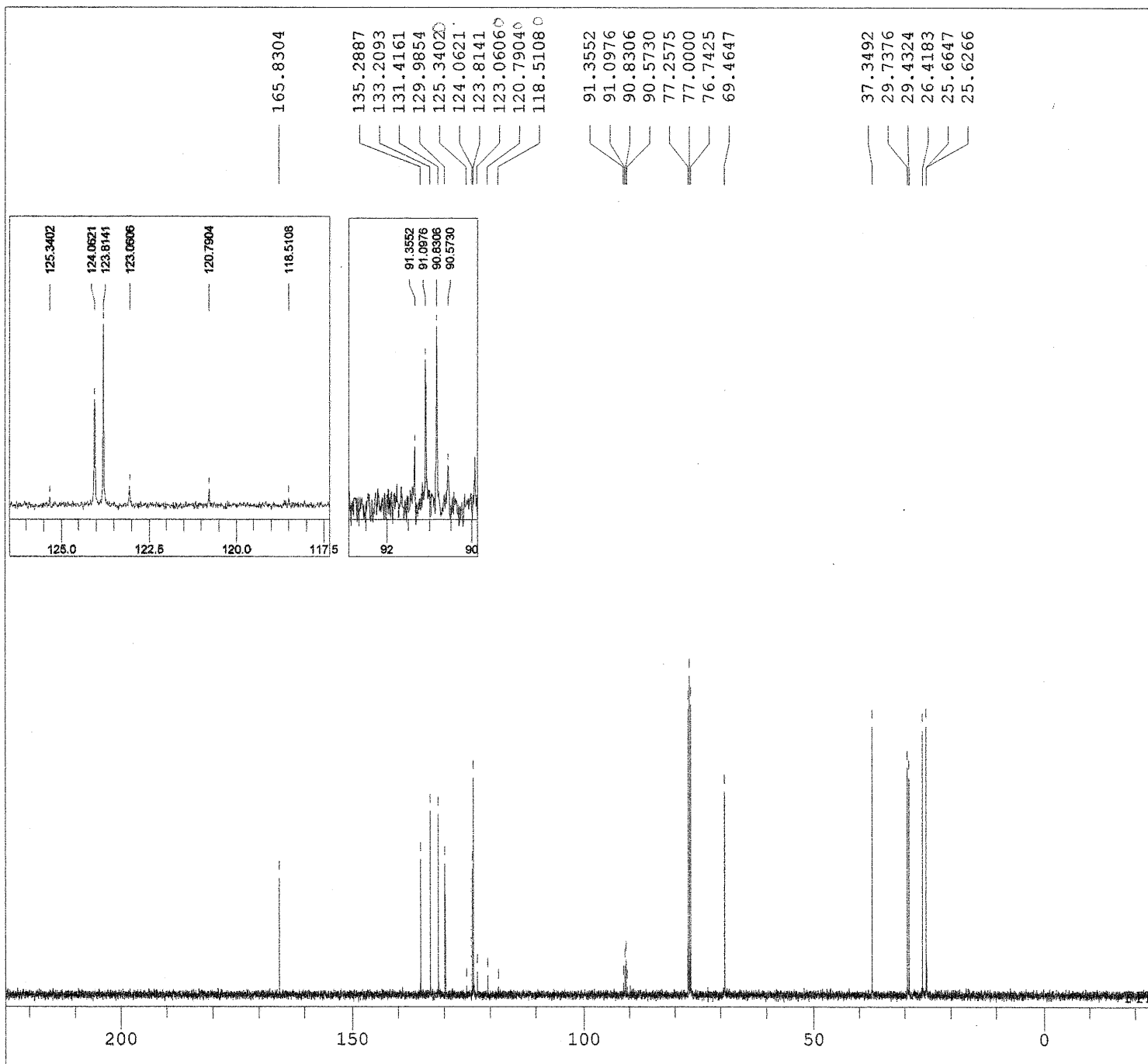
CyMeOH, OH



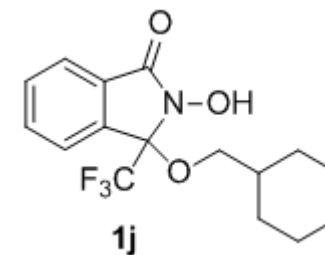
DFILE ozawa04-016_3_1H.jdf
COMNT CyMeOH, OH
DATIM 2014-02-01 19:22:50
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.5 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.00 Hz
RGAIN 30



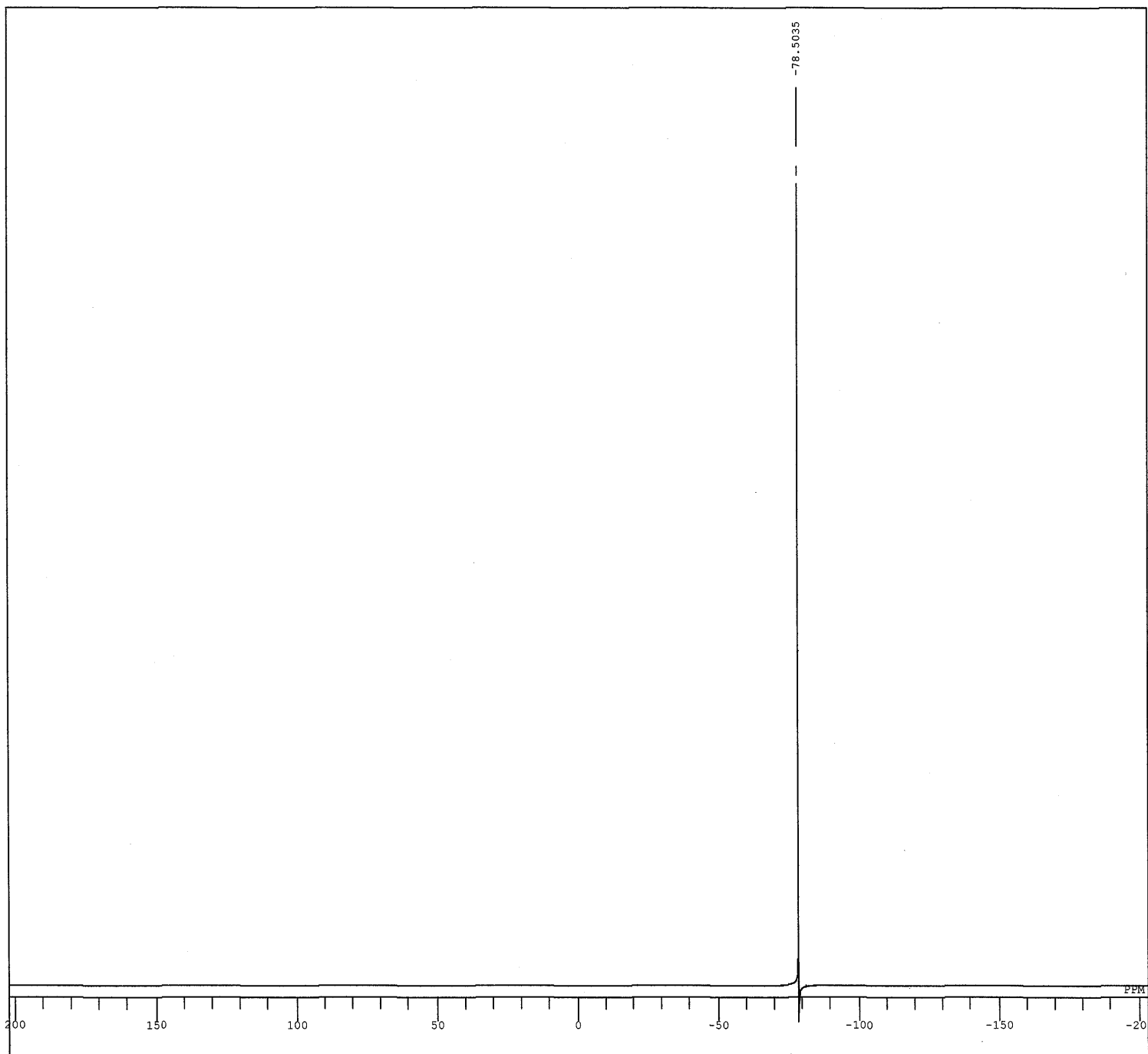
CyMeOH, OH



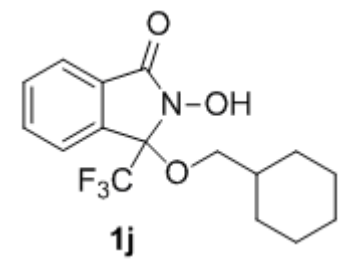
DFILE ozawa04-016_3_13C.jdf
COMNT CyMeOH, OH
DATIM 2014-02-01 19:23:53
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 60
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60



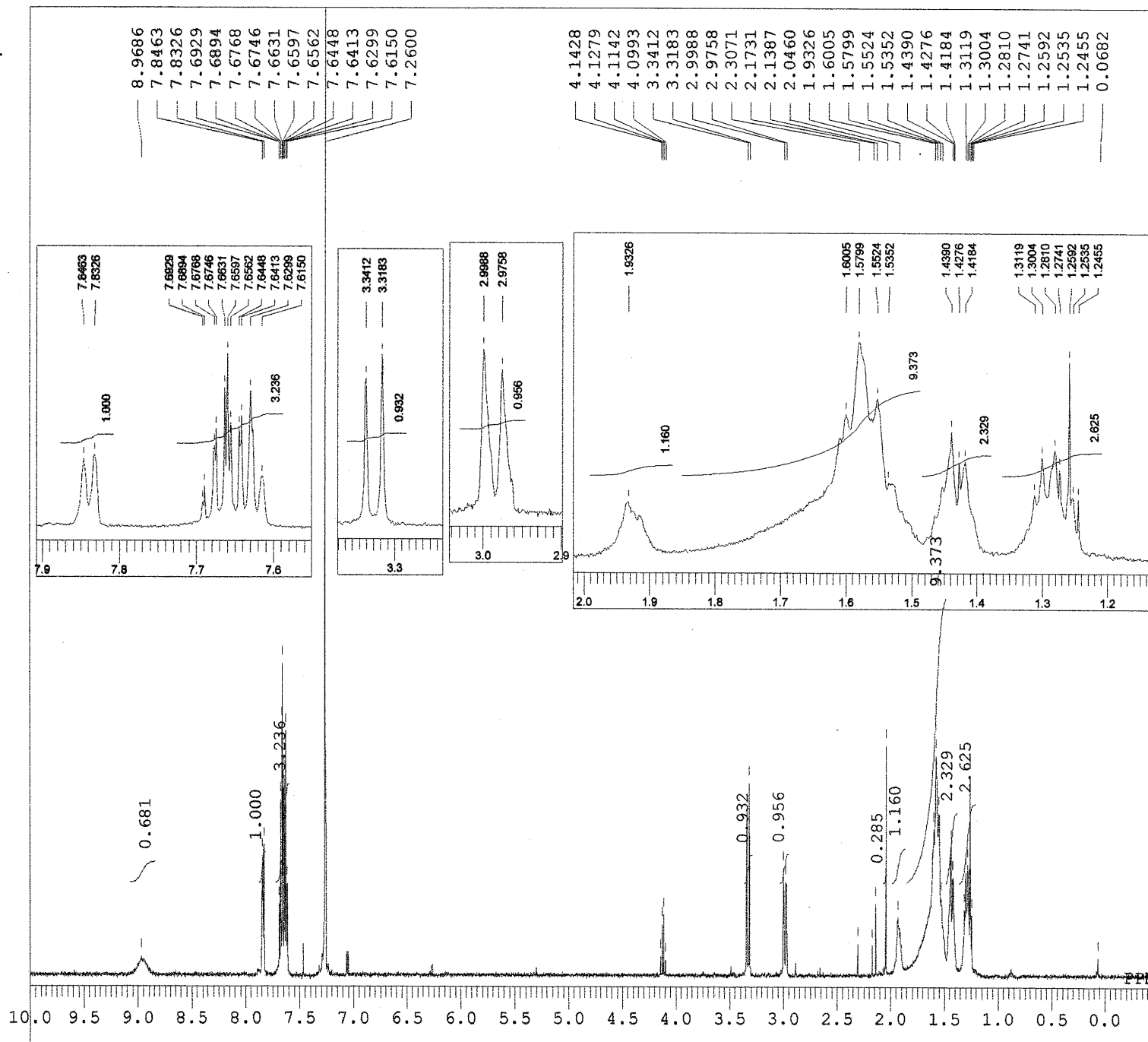
CyMeOH, OH



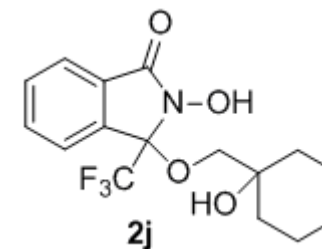
DFILE ozawa04-016_3_19F.jdf
COMNT CyMeOH, OH
DATIM 01-02-2014 19:56:07
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44

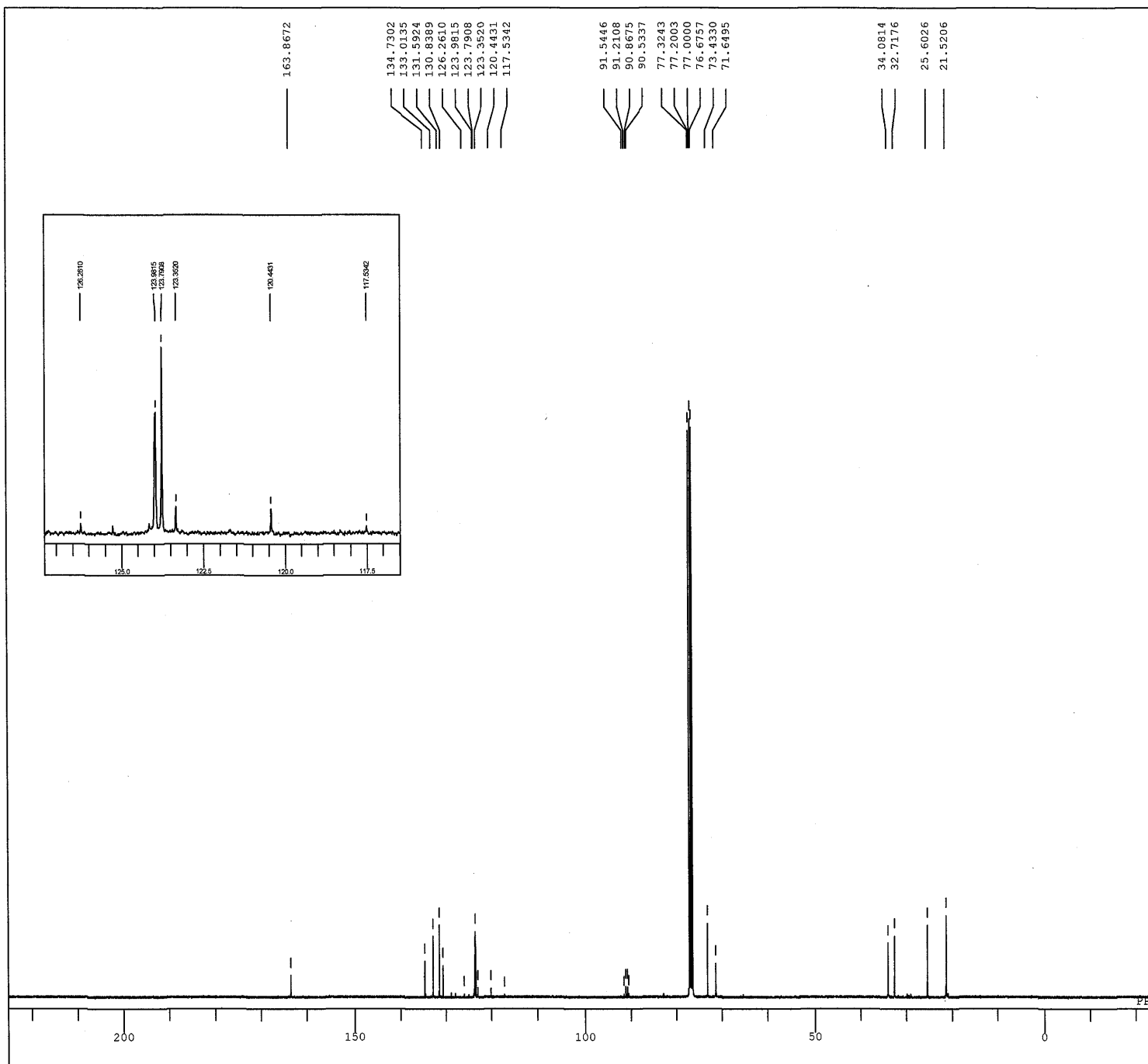


CyMeOH, [0]

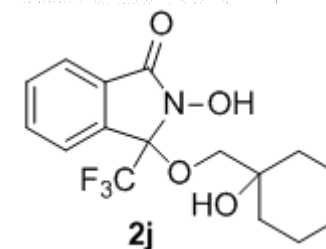


DFILE ozawa04-126_1H.jdf
COMNT CyMeOH, [0]
DATIM 2014-03-11 20:54:32
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 16
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 20.8 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 40

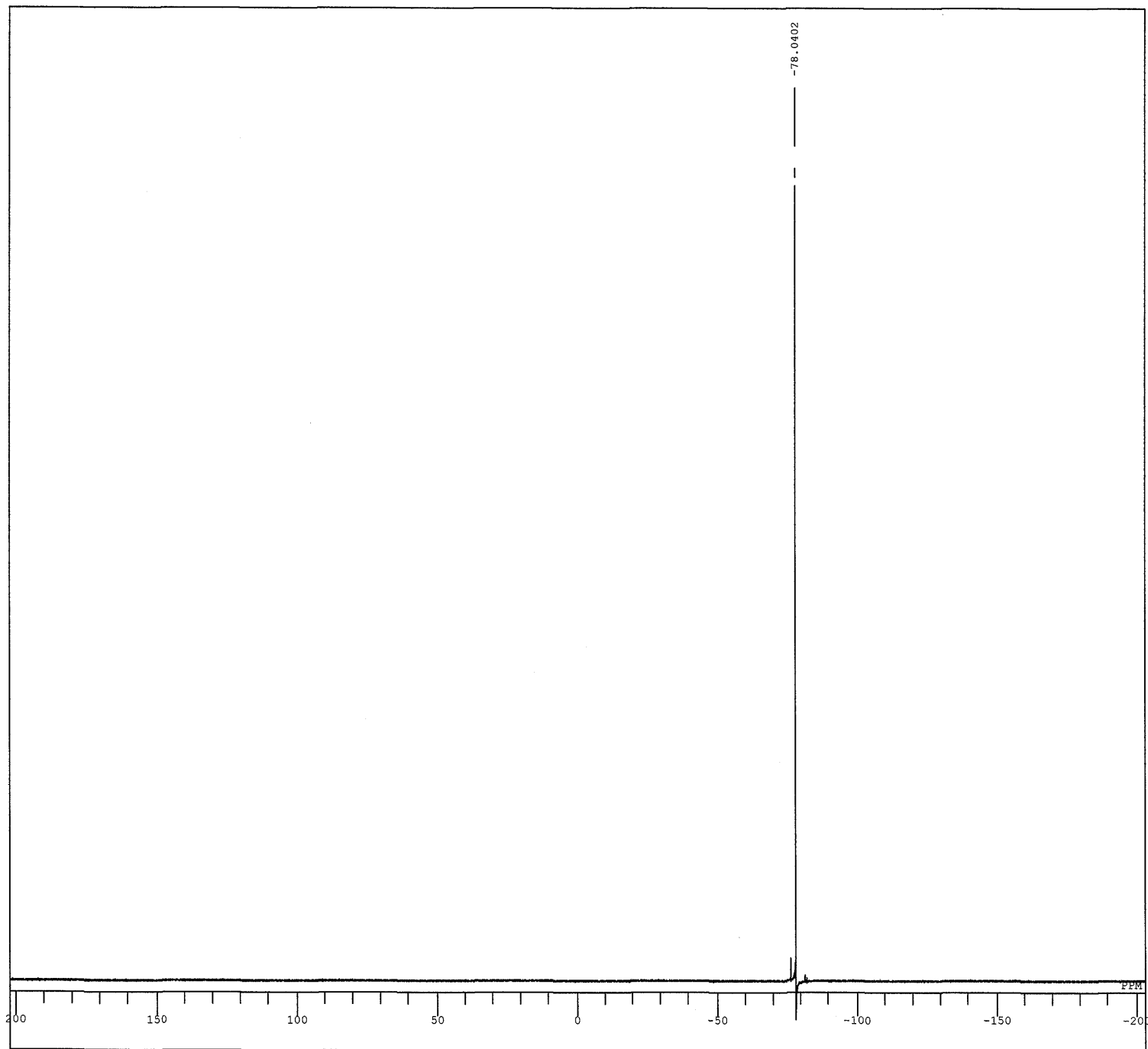




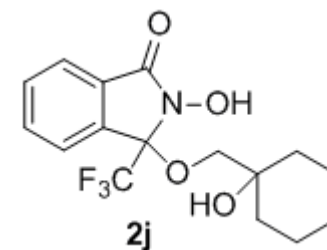
DFILE ozawa04-126_13C.jdf
 CMNT CyMeOH, [0]
 DATIM 07-03-2014 23:10:53
 OBNUC 13C
 EXMDO carbon.jxp
 OBFRO 98.52 MHz
 OBSEF 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 10334
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 21.2 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 1.20 Hz
 RGAIN 60



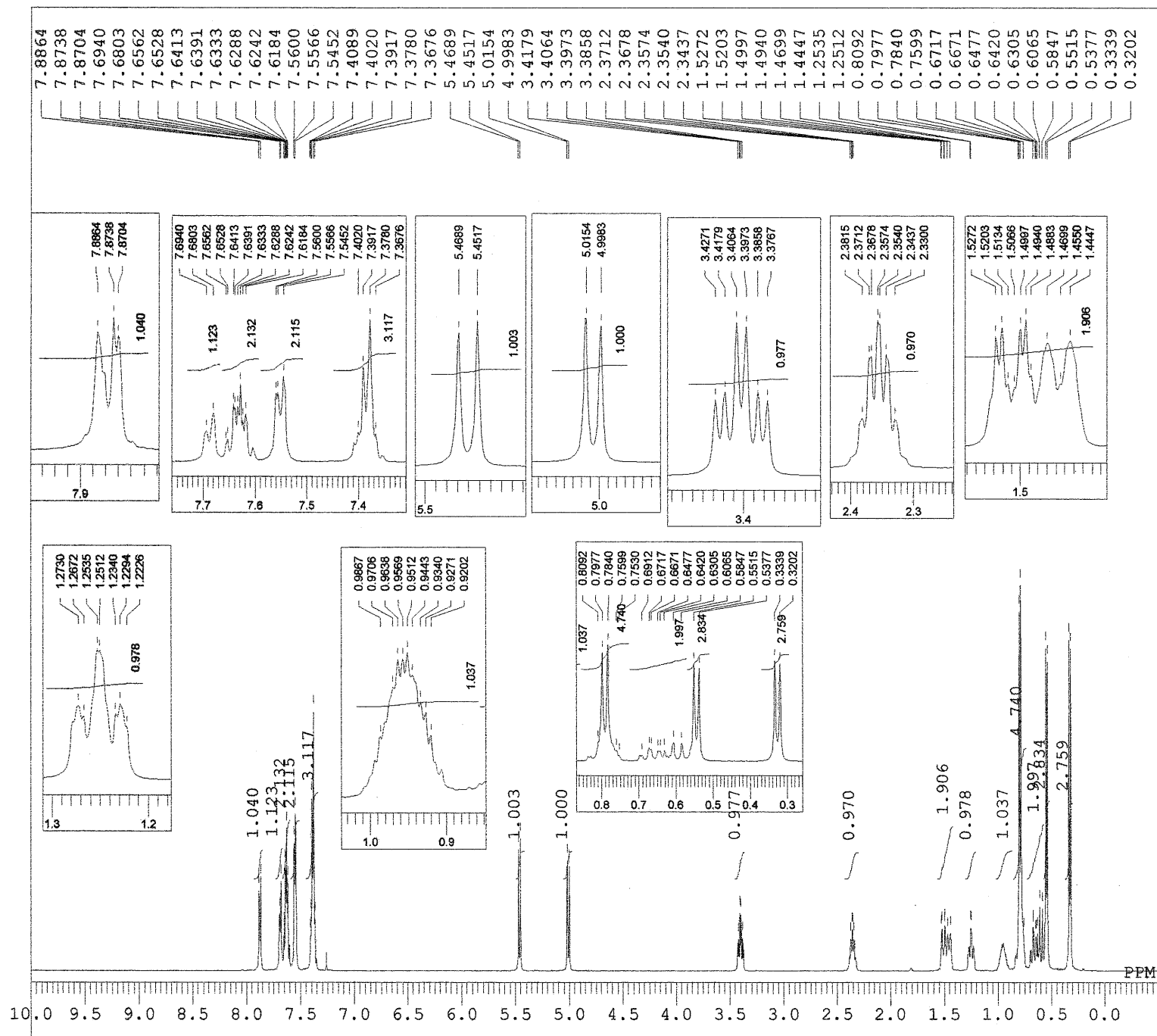
CyMeOH, [0]



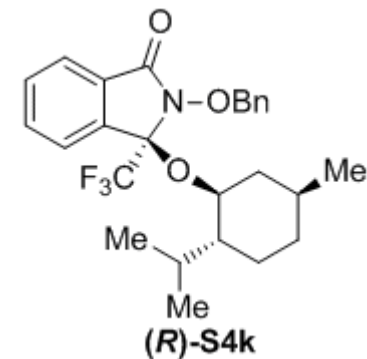
DFILE ozawa04-126_19F.jdf
COMNT CyMeOH, [0]
DATIM 07-03-2014 17:36:34
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.3 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



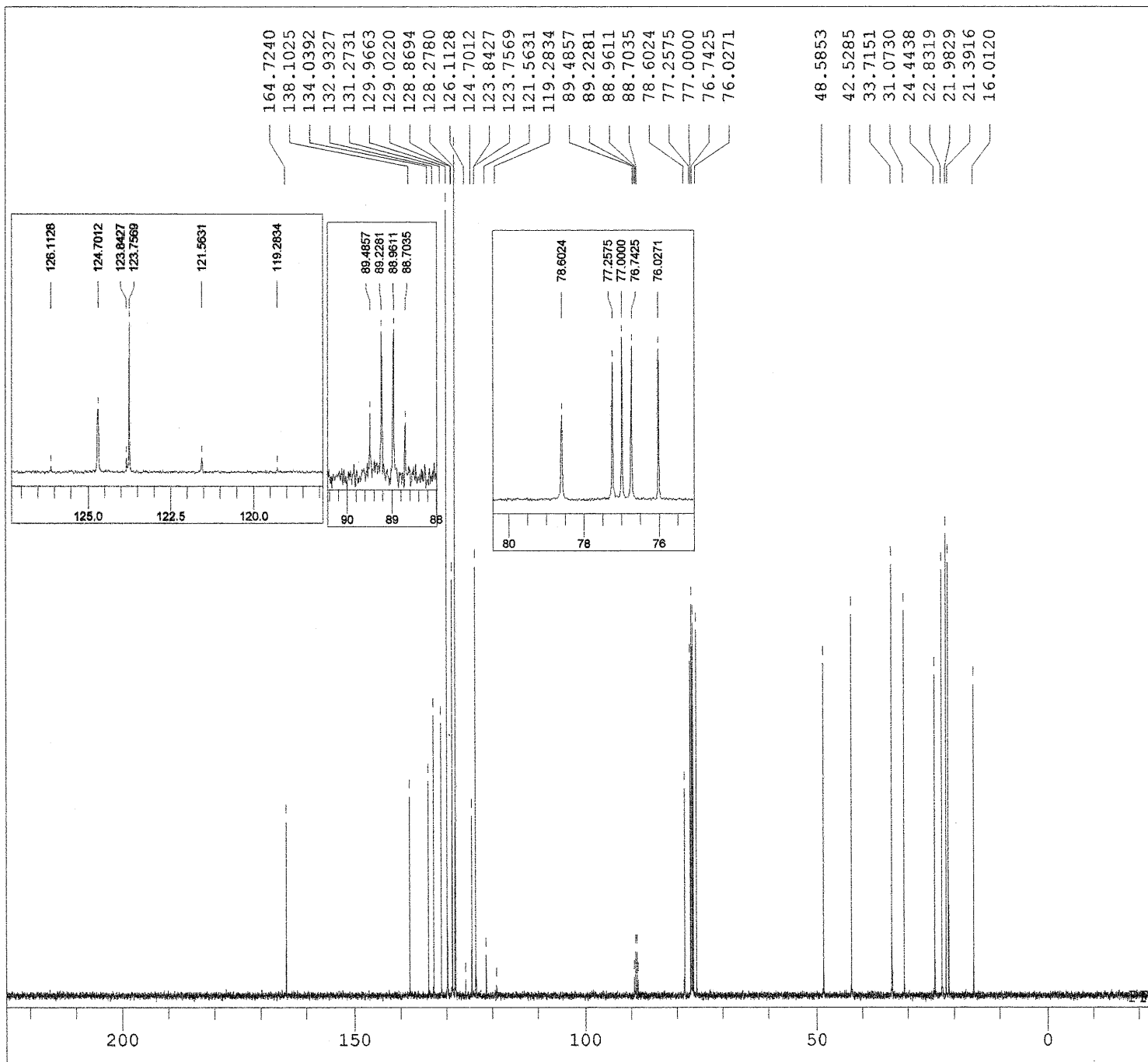
menthol, LP, Bn



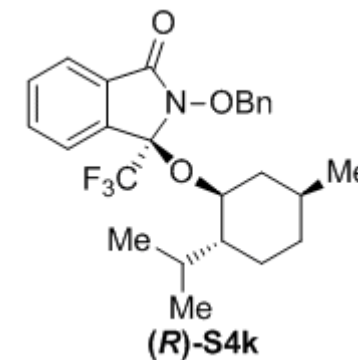
DFILE ozawa04-036_LP_1H.jdf
COMNT menthol, LP, Bn
DATIM 2014-01-30 22:31:28
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.4 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.00 Hz
RGAIN 24

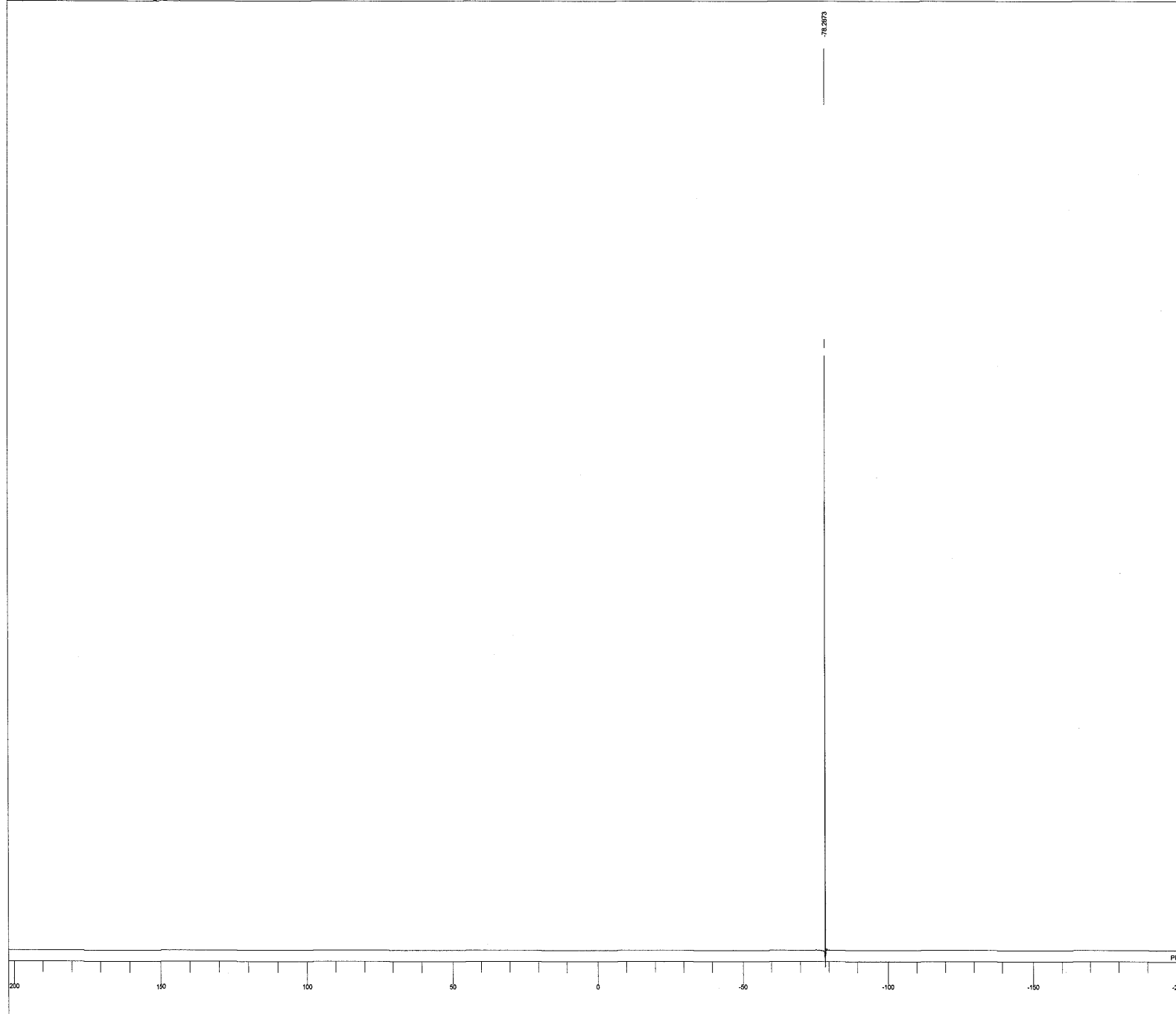


menthol, LP, Bn

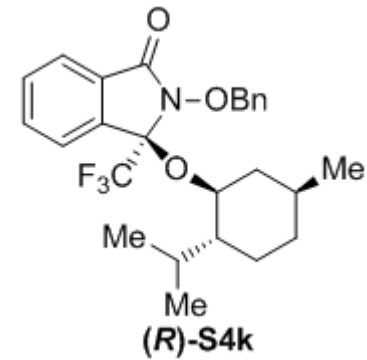


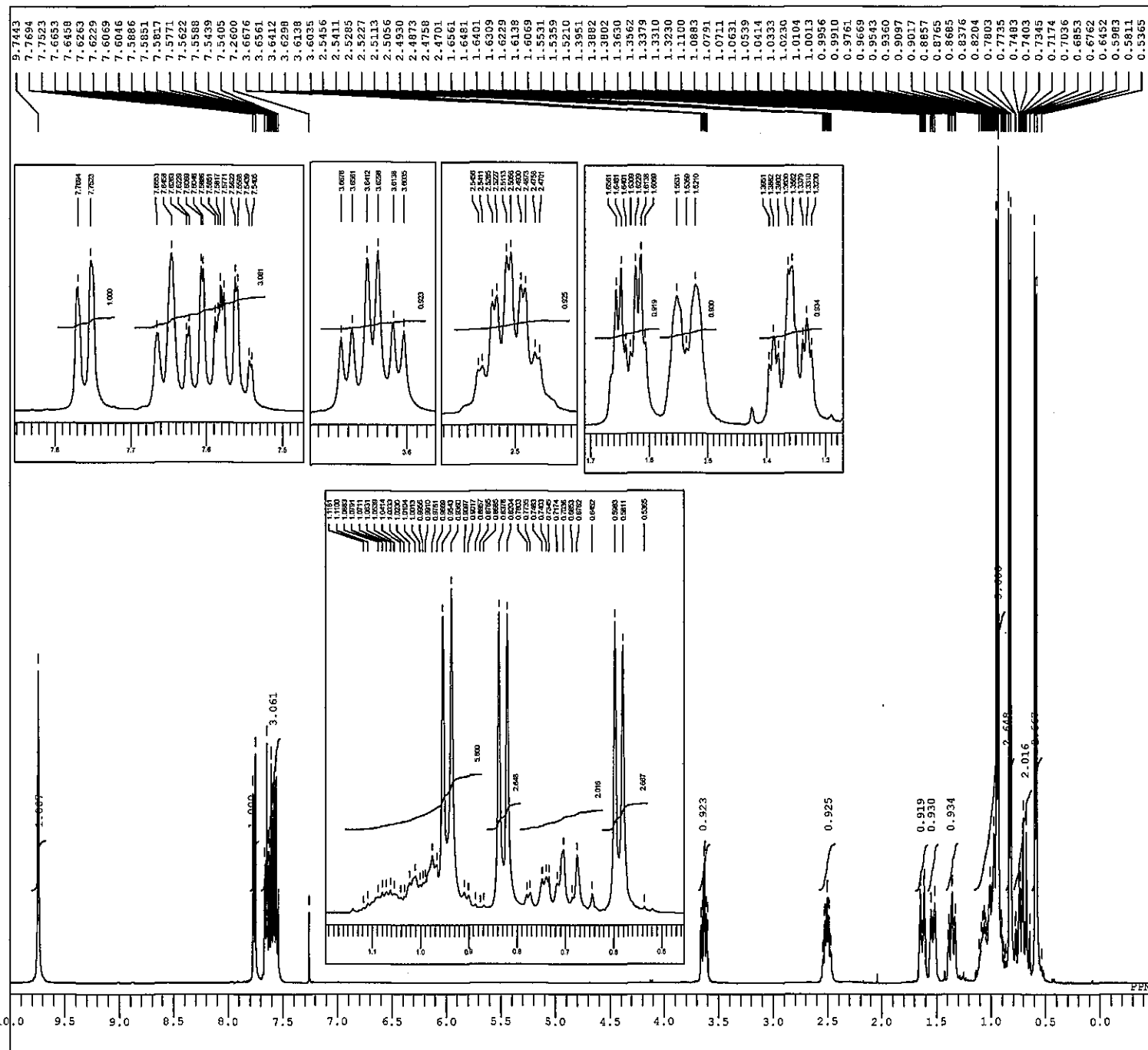
DFILE ozawa04-036_LP_13C.jdf
COMNT menthol, LP, Bn
DATIM 2014-01-30 22:32:32
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 153
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60





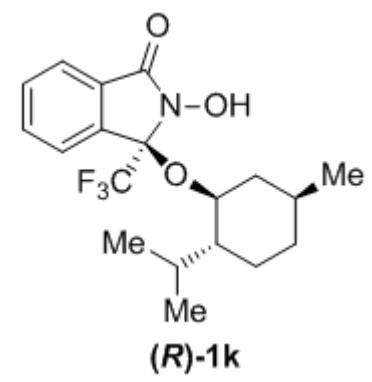
OFIIE o2aw04-038_LP_19F.tif
COMINT menthol, LP, Bn
DATIM 20-01-2014 23:00:05
OBNUC 19F
EXMOD proton 9p
CIBFIC 303.64 MHz
OBSET 7.63 KHz
OIBIN 2.55 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWI 3.50 sec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
RF 0.12 Hz
RGAIN 44

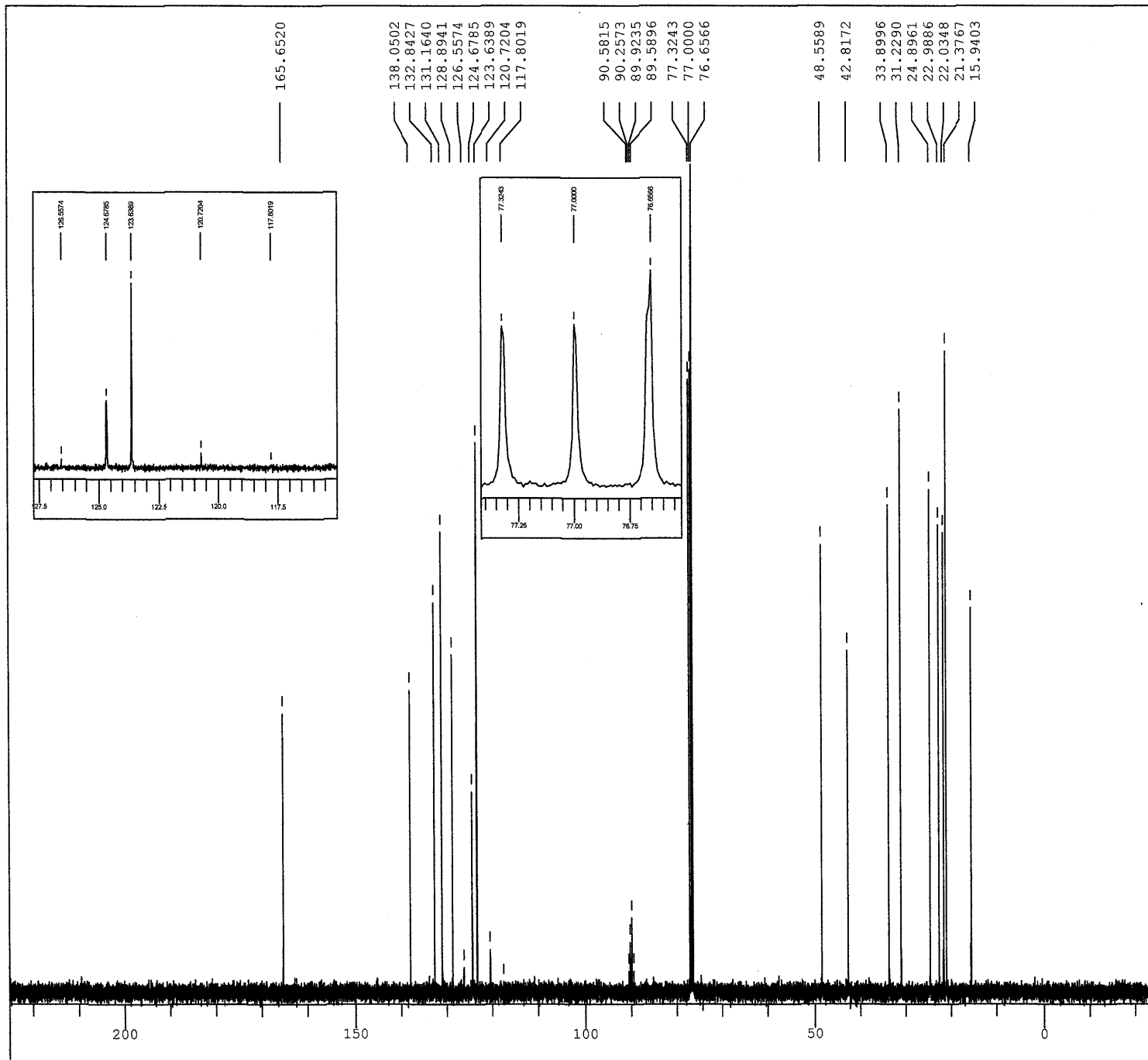




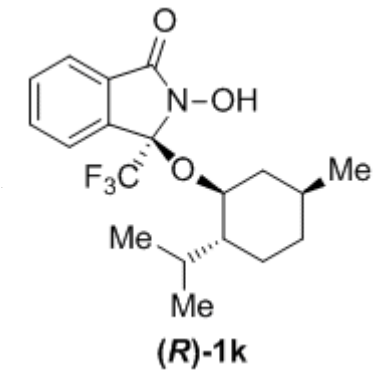
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DFILE ozawa04-016_1_1h.jdf
COMNT menthol, OH, LP
DATIM 06-02-2014 16:11:14
OBNUC 1H
EXMOD proton.jxp
OBFREQ 391.78 MHz
OBSETE 8.51 KHz
OBFIN 3.34 Hz
POINT 16384
FREQU 7348.62 Hz
SCANS 4
ACQTM 2.2295 sec
PD 5.0000 sec
PW1 5.25 usec
IRNUC 1H
CTEMP 21.1 c
SIVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 24
    
```

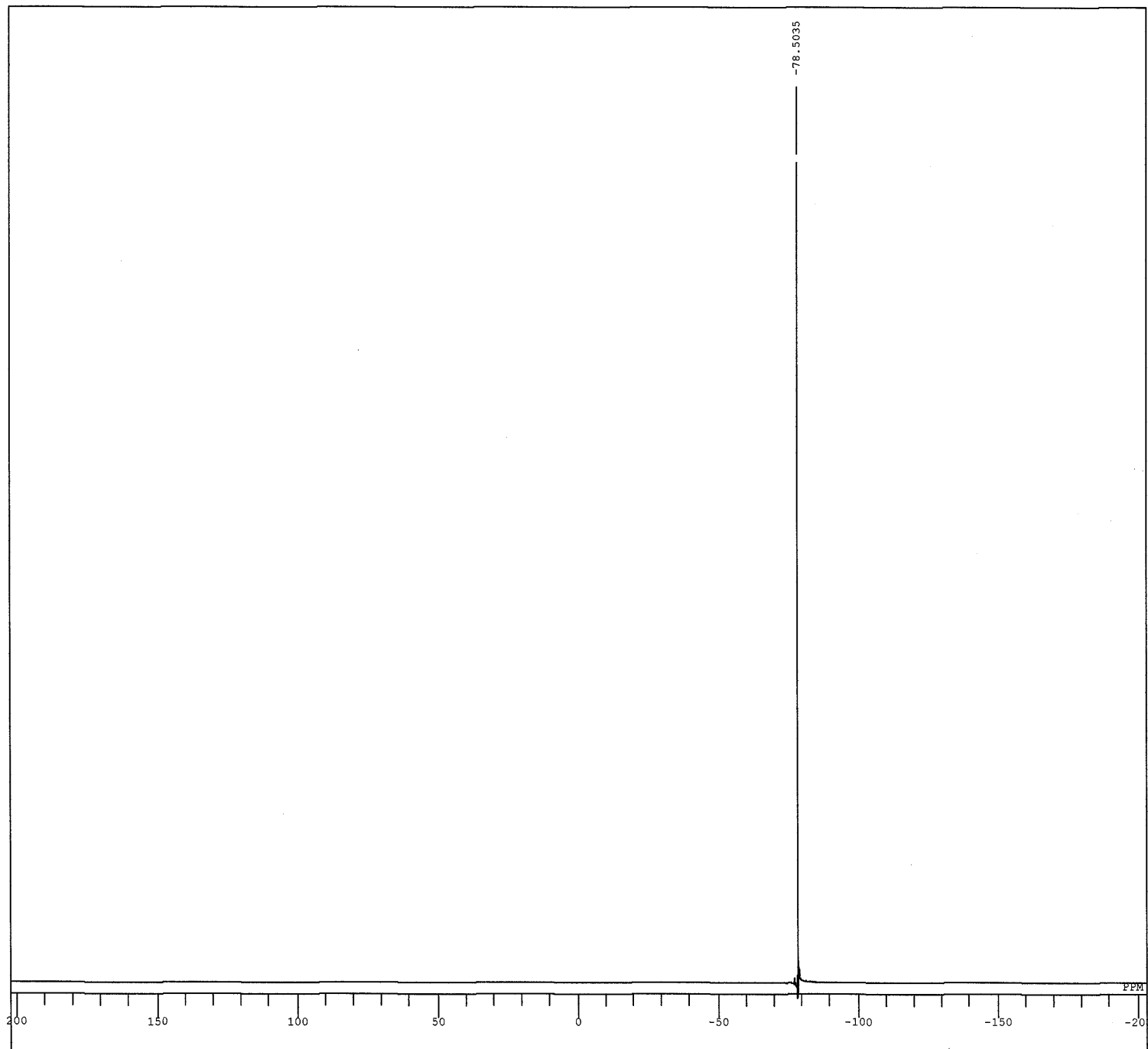




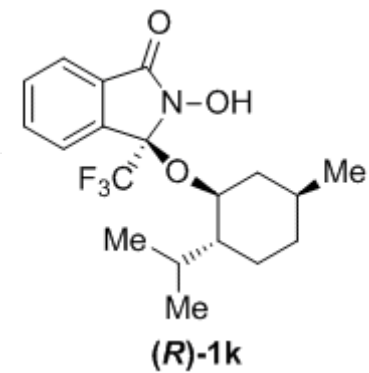
DFILE 1ma_ozawa04-016_1_13C.als
 COMNT menthol, OH, LP
 DATIM 06-02-2014 16:12:38
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 26214
 FREQU 24630.54 Hz
 SCANS 160
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 21.5 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

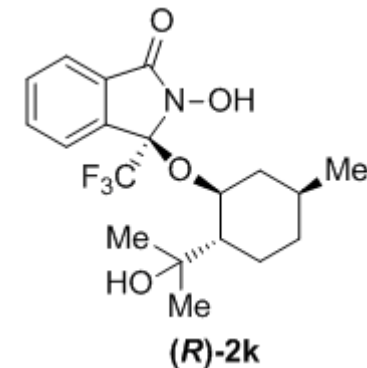
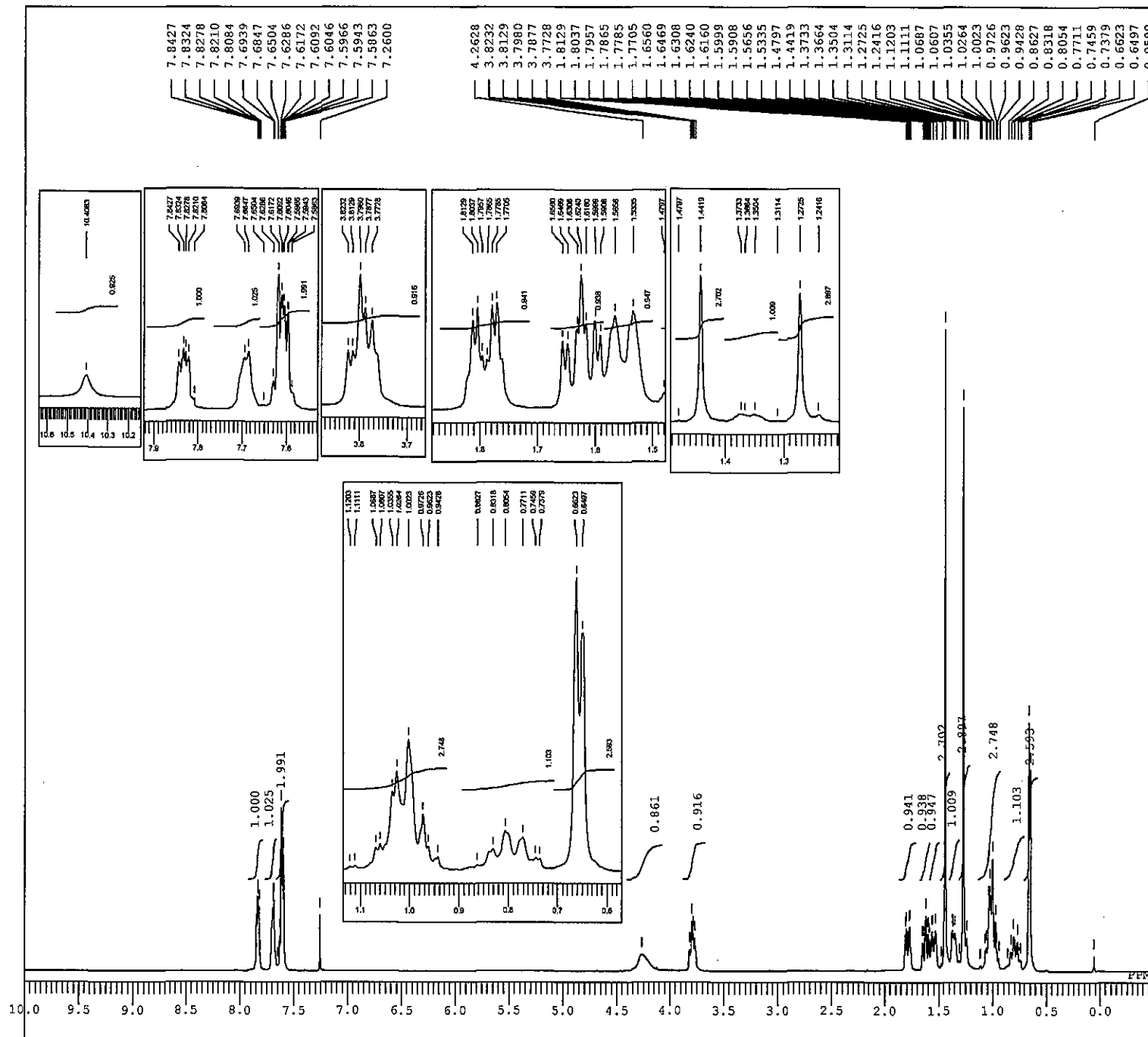


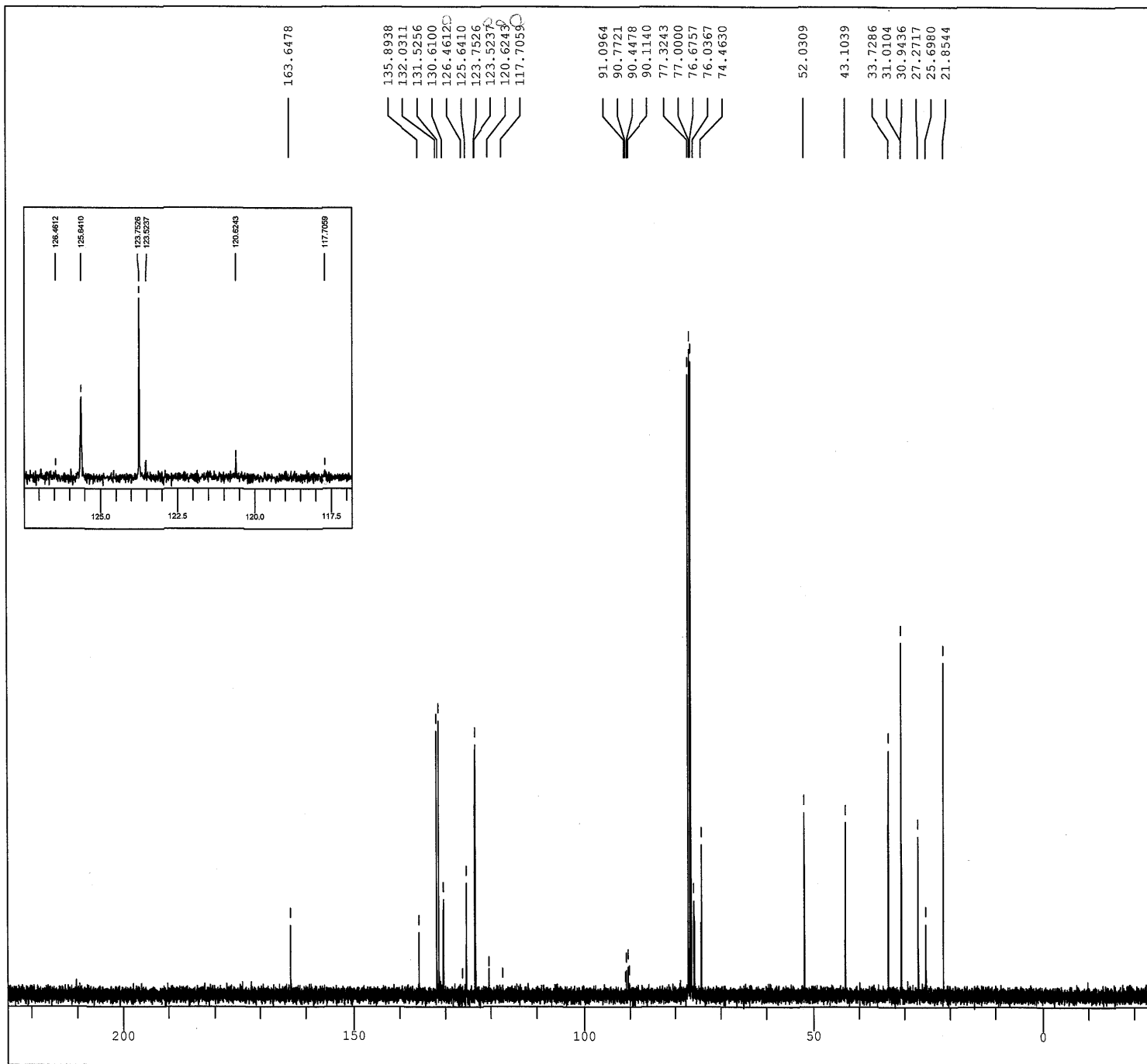
menthol, OH, LP



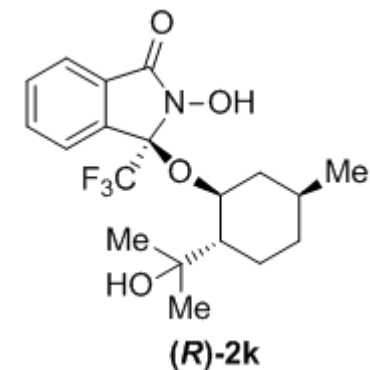
DFILE ozawa04-016_1_19F.jdf
COMNT menthol, OH, LP
DATIM 06-02-2014 16:08:51
OBNUC 19F
EXMOD proton.jxp
OBFQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44

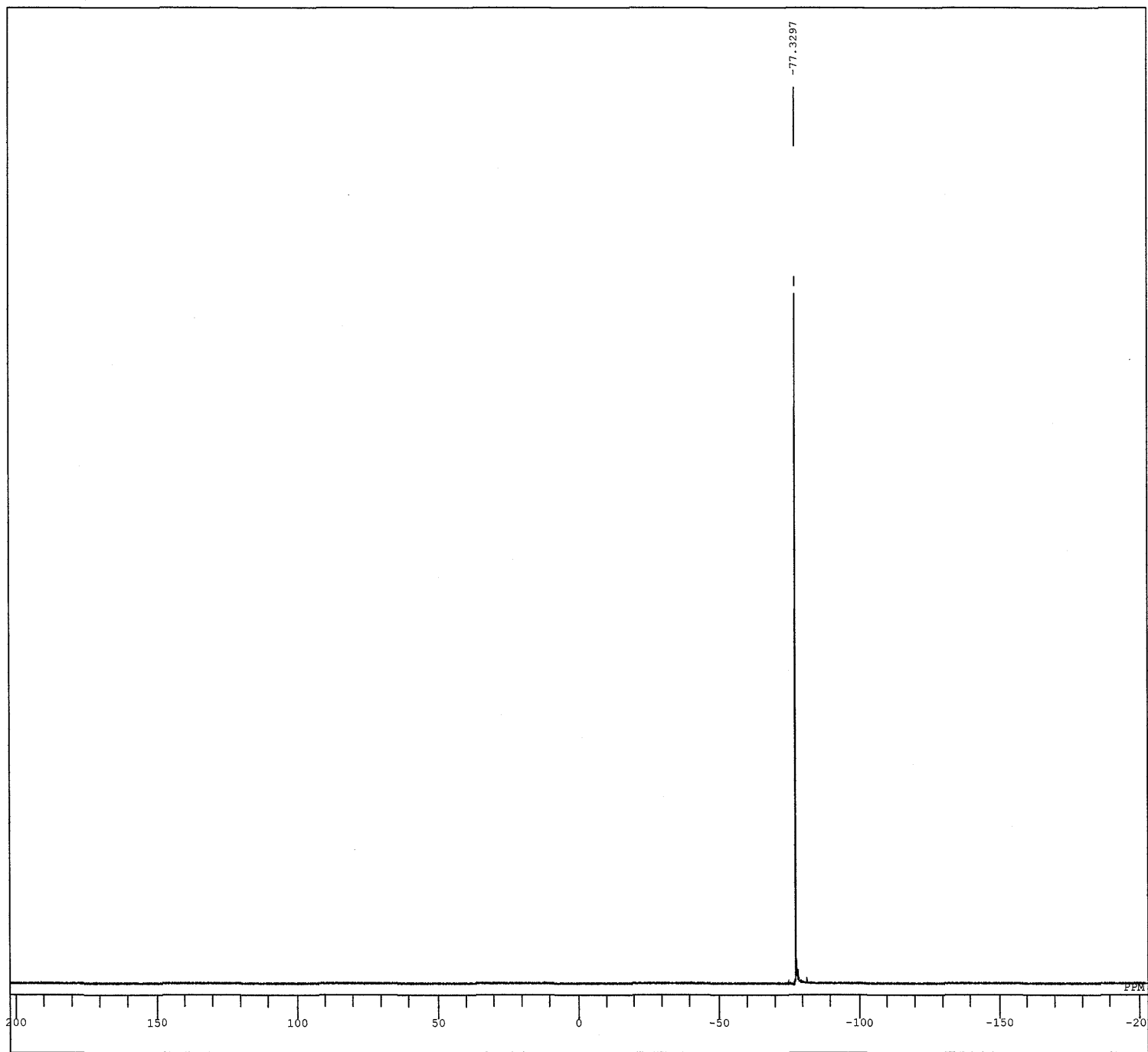




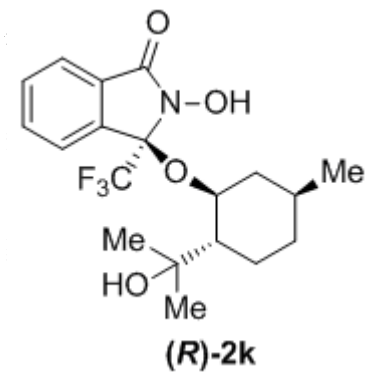


DFILE ozawa04-035_2_13C.jdf
 COMNT menthol, [O], LP
 DATIM 07-02-2014 16:41:07
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 260
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 21.6 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

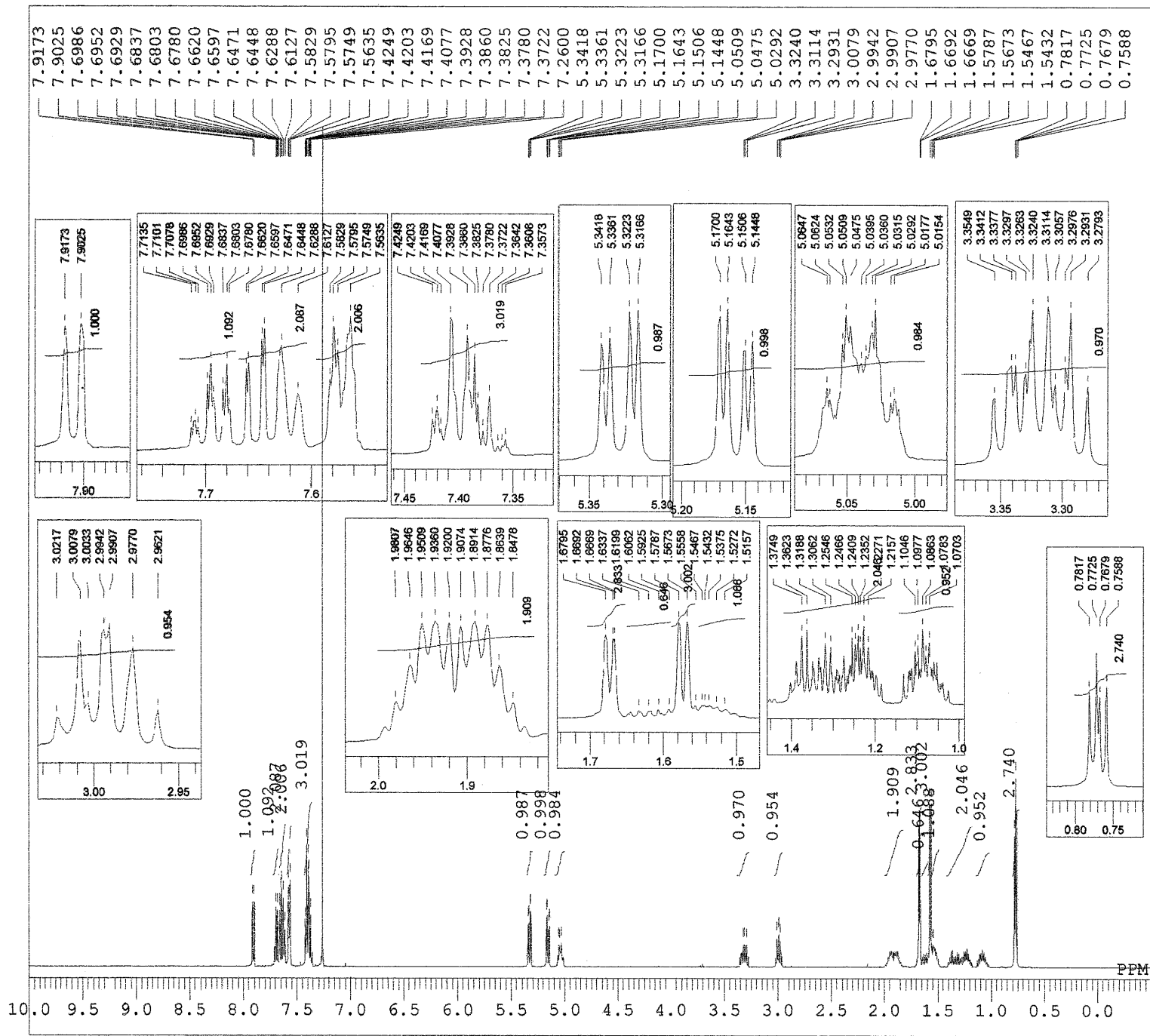




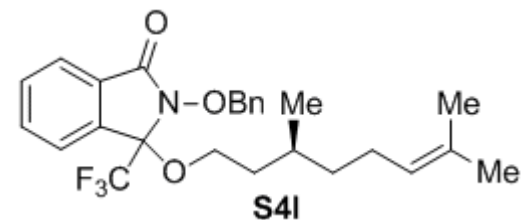
DFILE ozawa04-124_1_19F.jdf
COMNT menthol, [O], LP
DATIM 06-02-2014 19:56:06
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.3 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



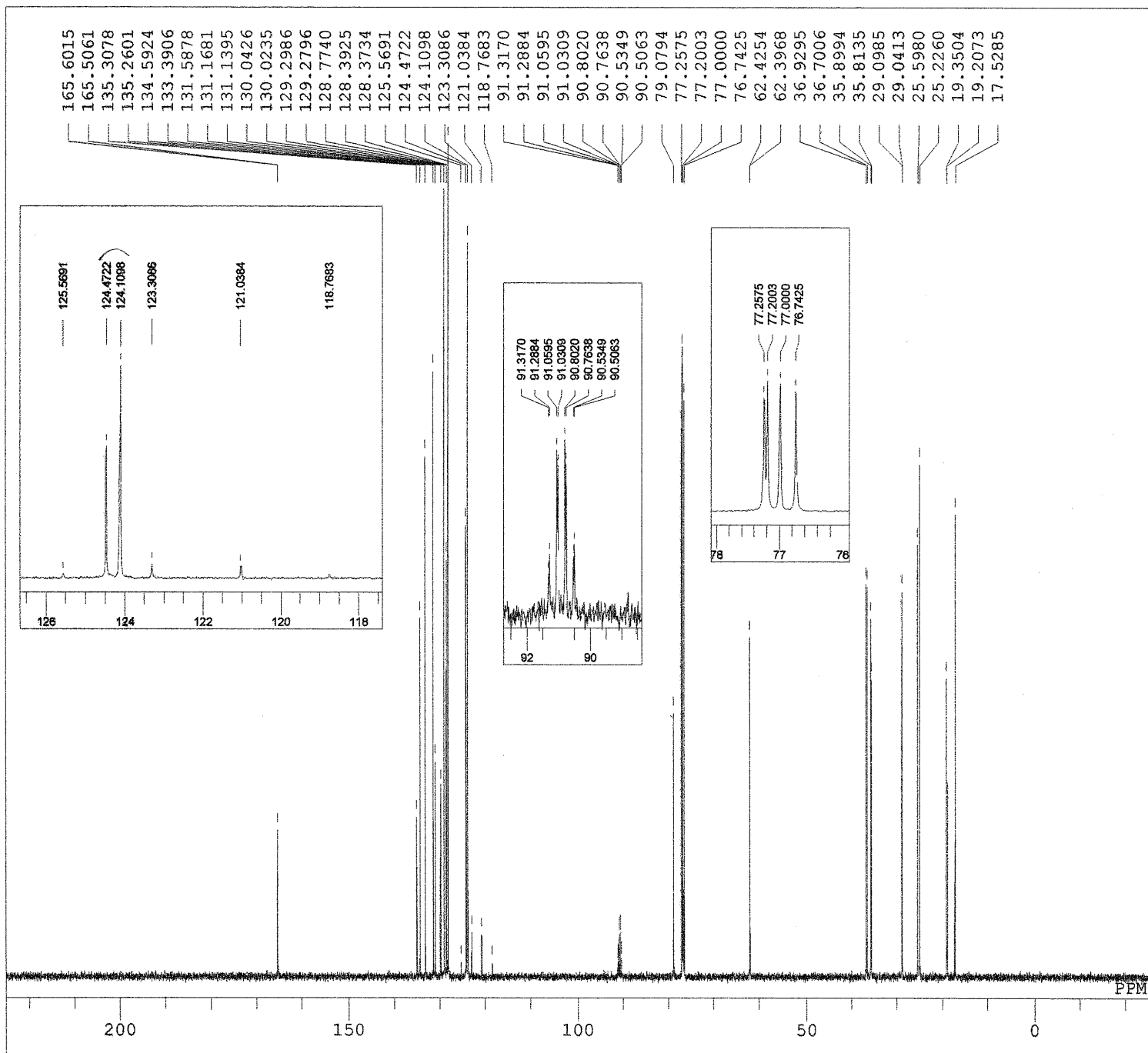
citronellol, Bn



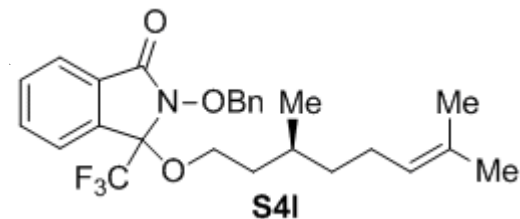
DFILE ozawa04-013_1H.jdf
 COMNT citronello1, Bn
 DATIM 2014-01-16 21:35:28
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 24

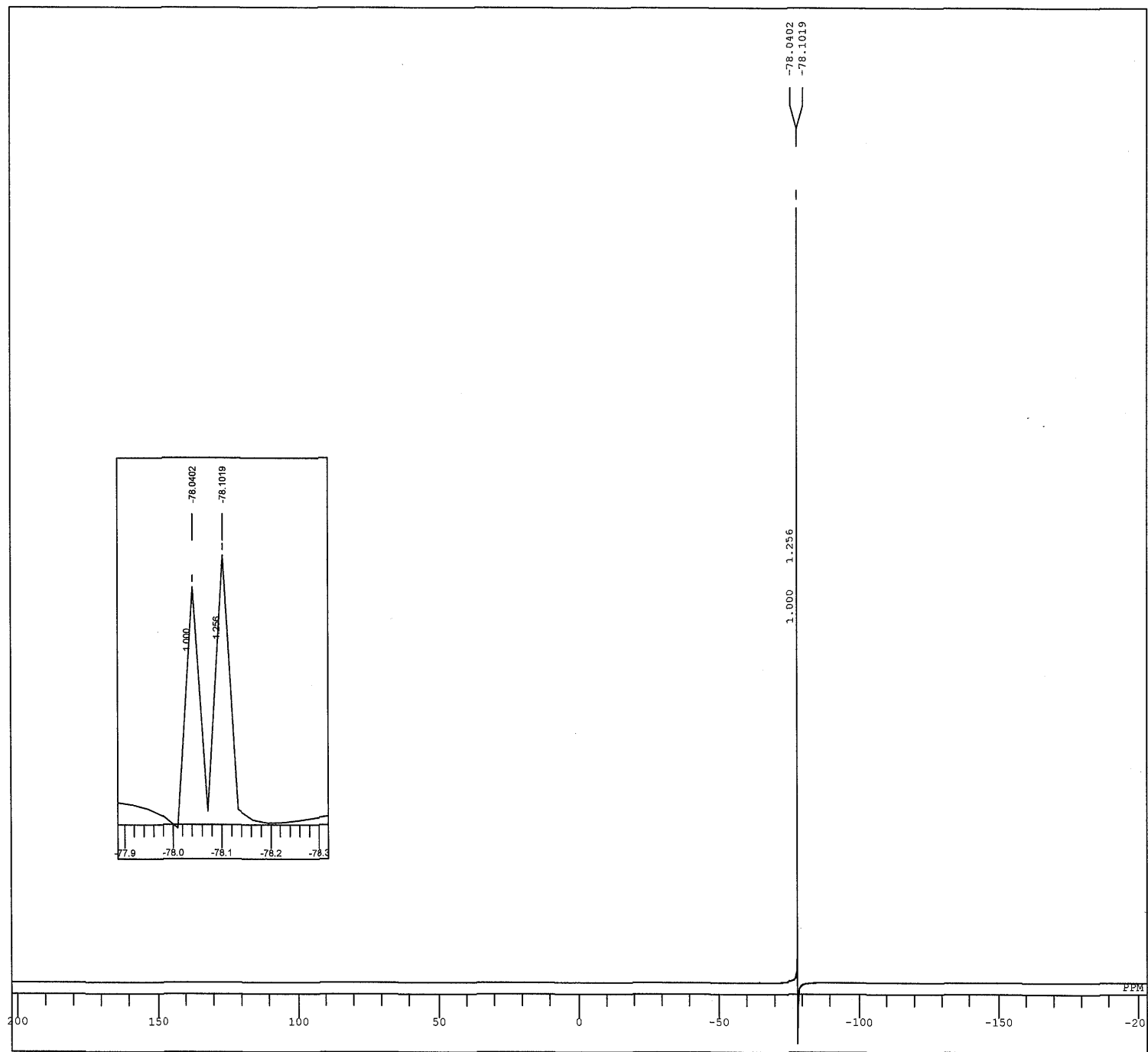


citronellol, Bn



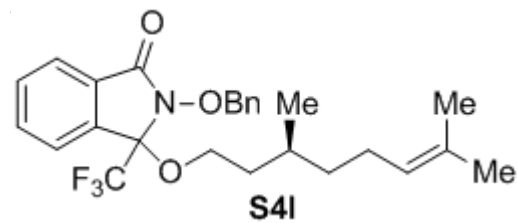
DFILE ozawa04-013_13C.jdf
COMNT citronellol, Bn
DATIM 2014-01-16 21:36:30
OBNUC 13C
EXMOD carbon.jxp
OBFRO 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 352
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60



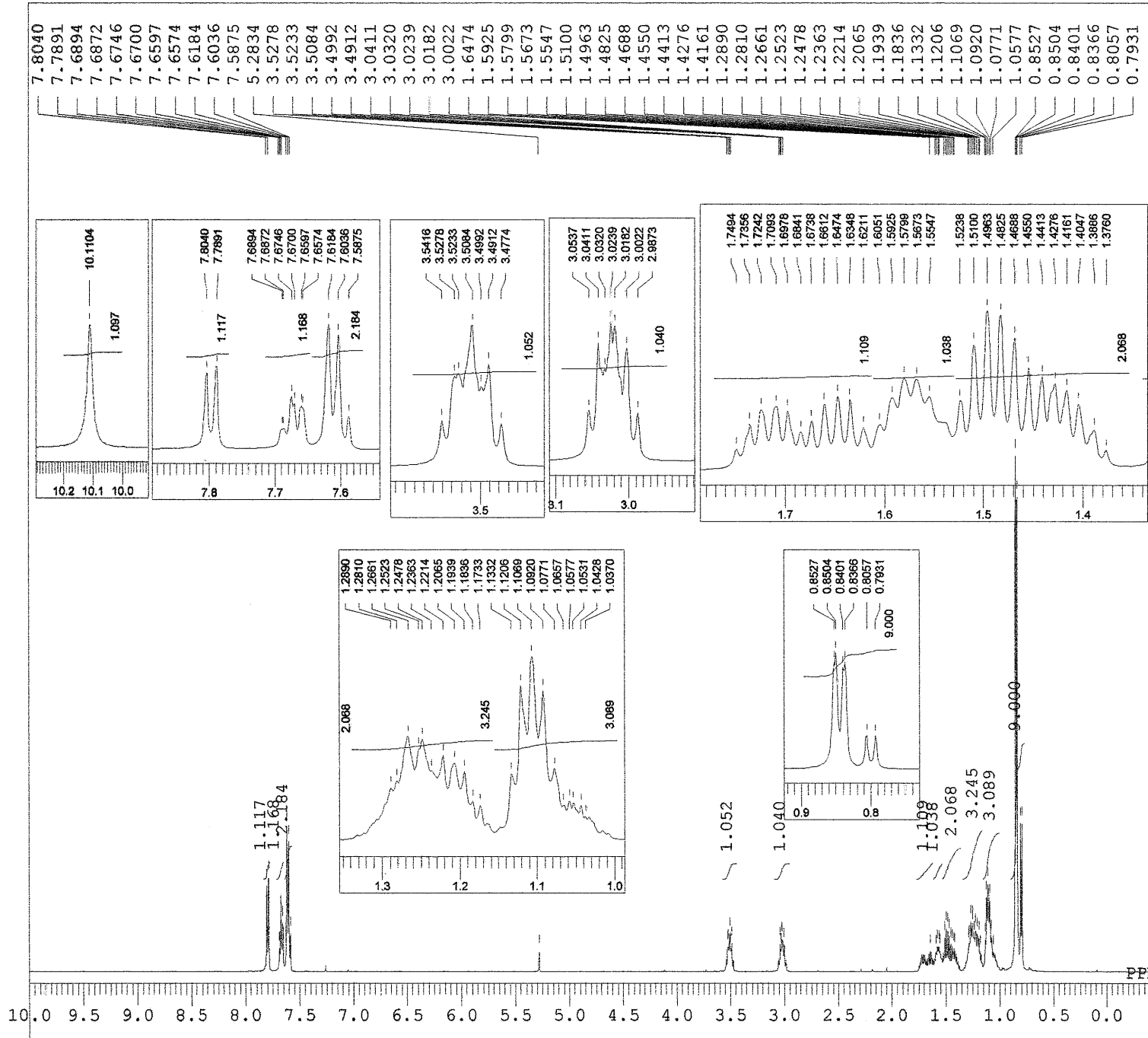


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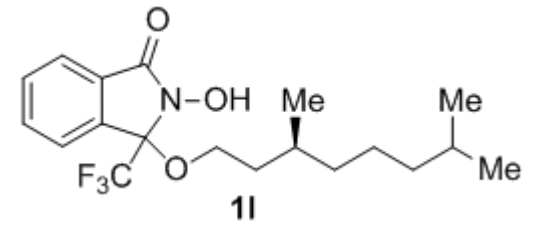
DFILE ozawa04-013 19F.jdf
COMNT citronello1, Bn
DATIM 16-01-2014 22:31:18
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44
    
```



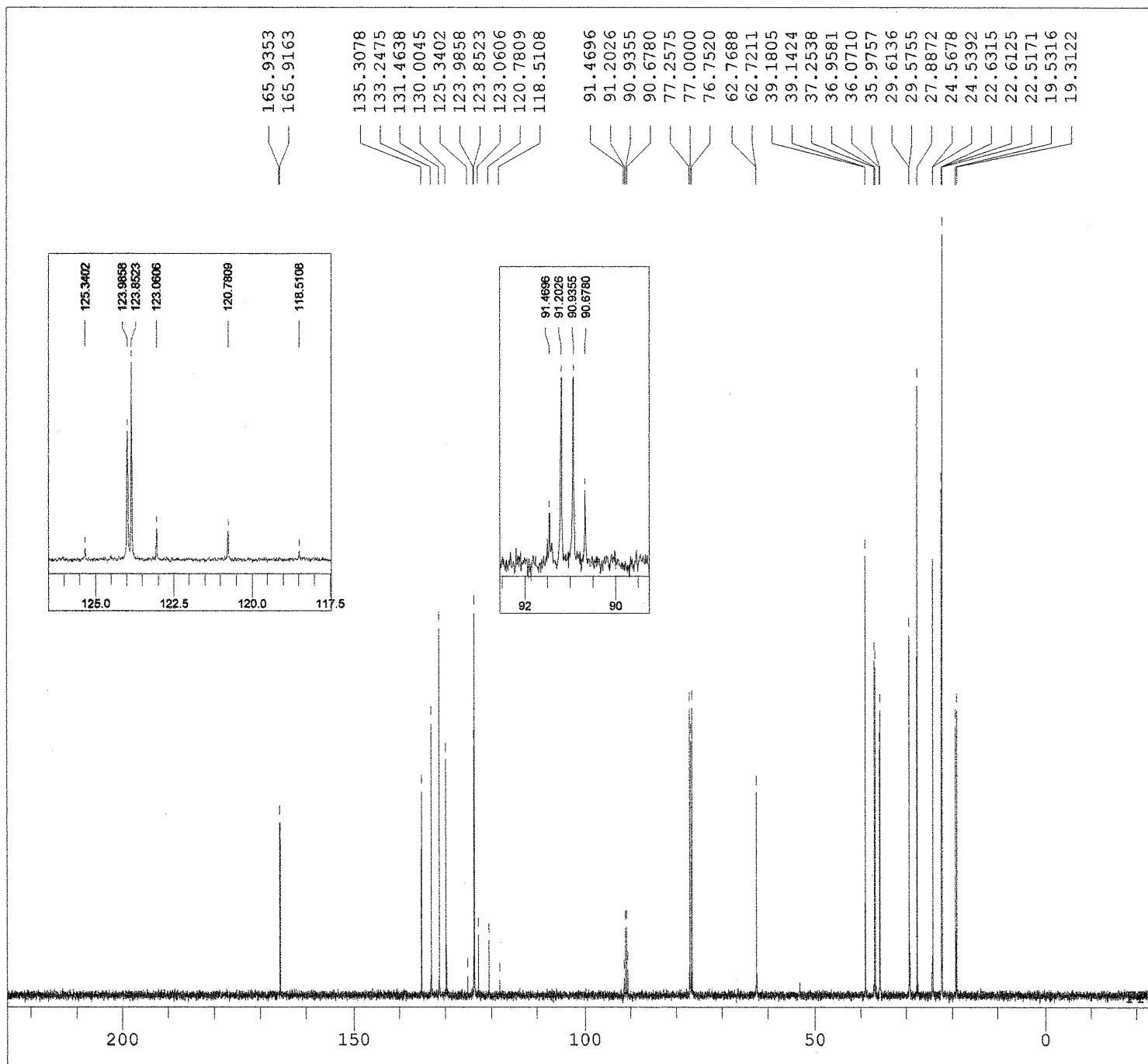
citr., OH



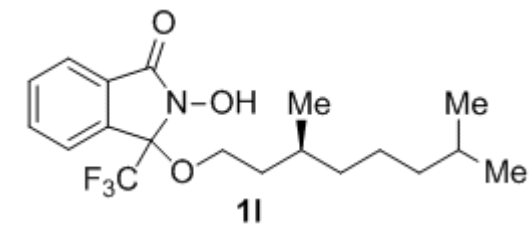
DFILE ozawa04-017_1H.jdf
COMNT citr., OH
DATIM 2014-01-25 17:42:01
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.5 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.00 Hz
RGAIN 20



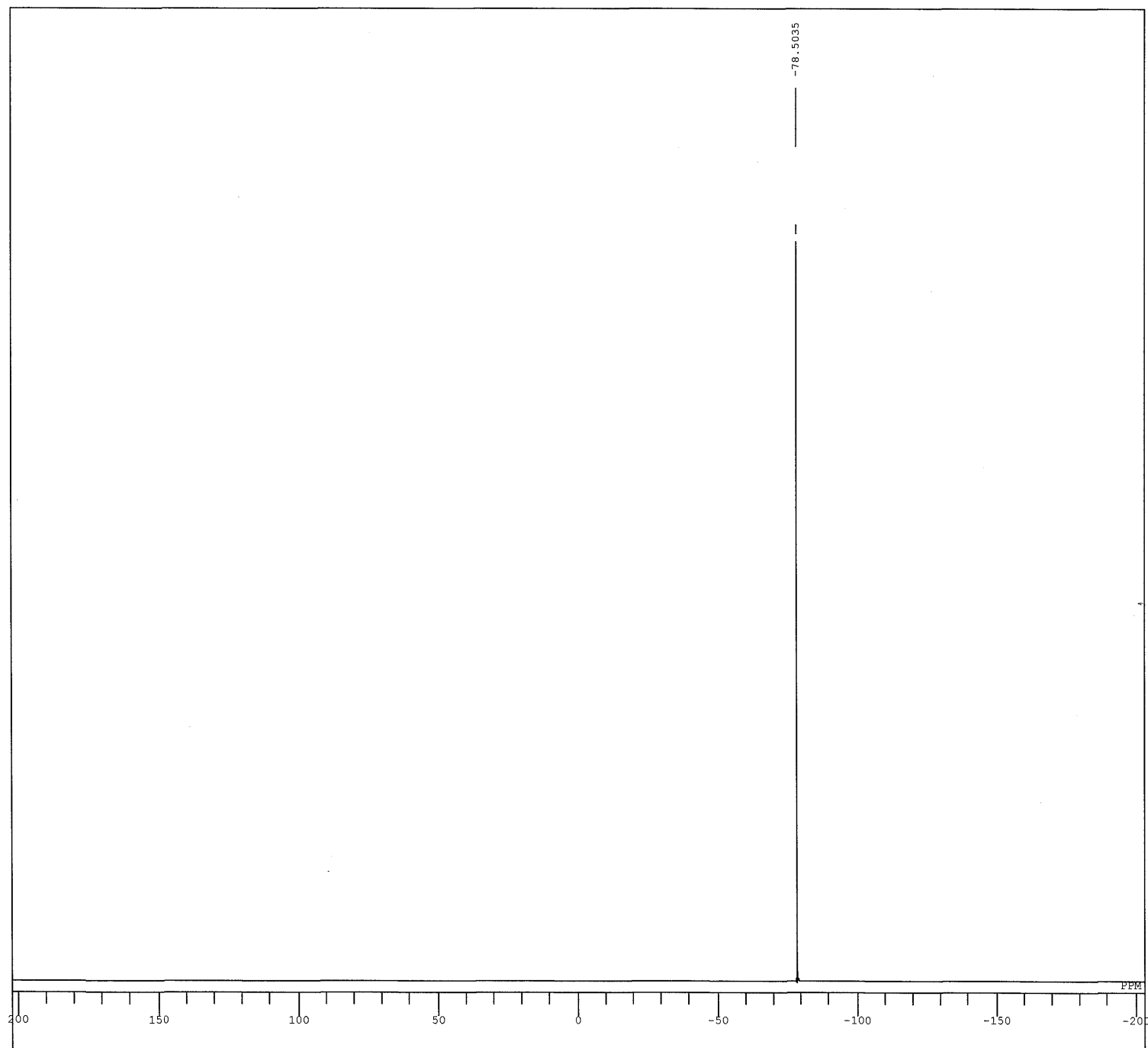
citr., OH



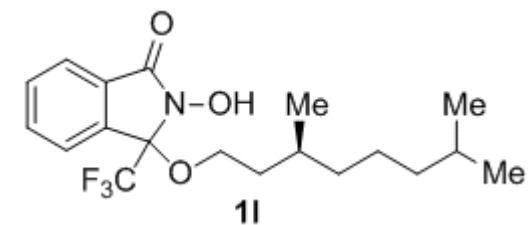
DFILE ozawa04-017_13C.jdf
COMNT citr., OH
DATIM 2014-01-25 17:43:04
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 64
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.9 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60

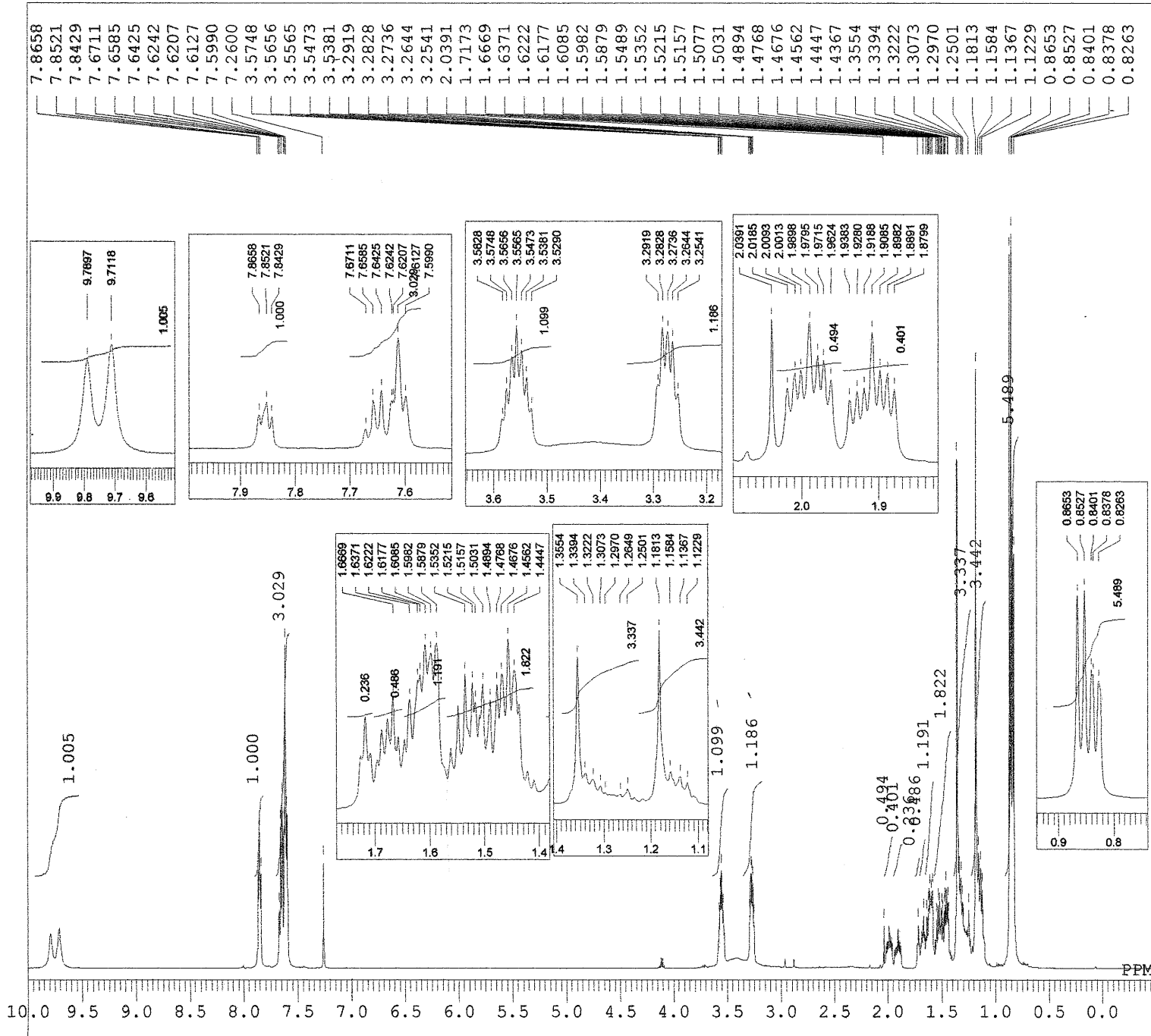


citr., OH

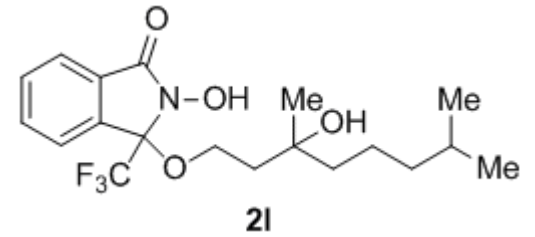


DFILE 1h_ozawa04-017_19F.jdf
COMNT citr., OH
DATIM 25-01-2014 18:16:27
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 40

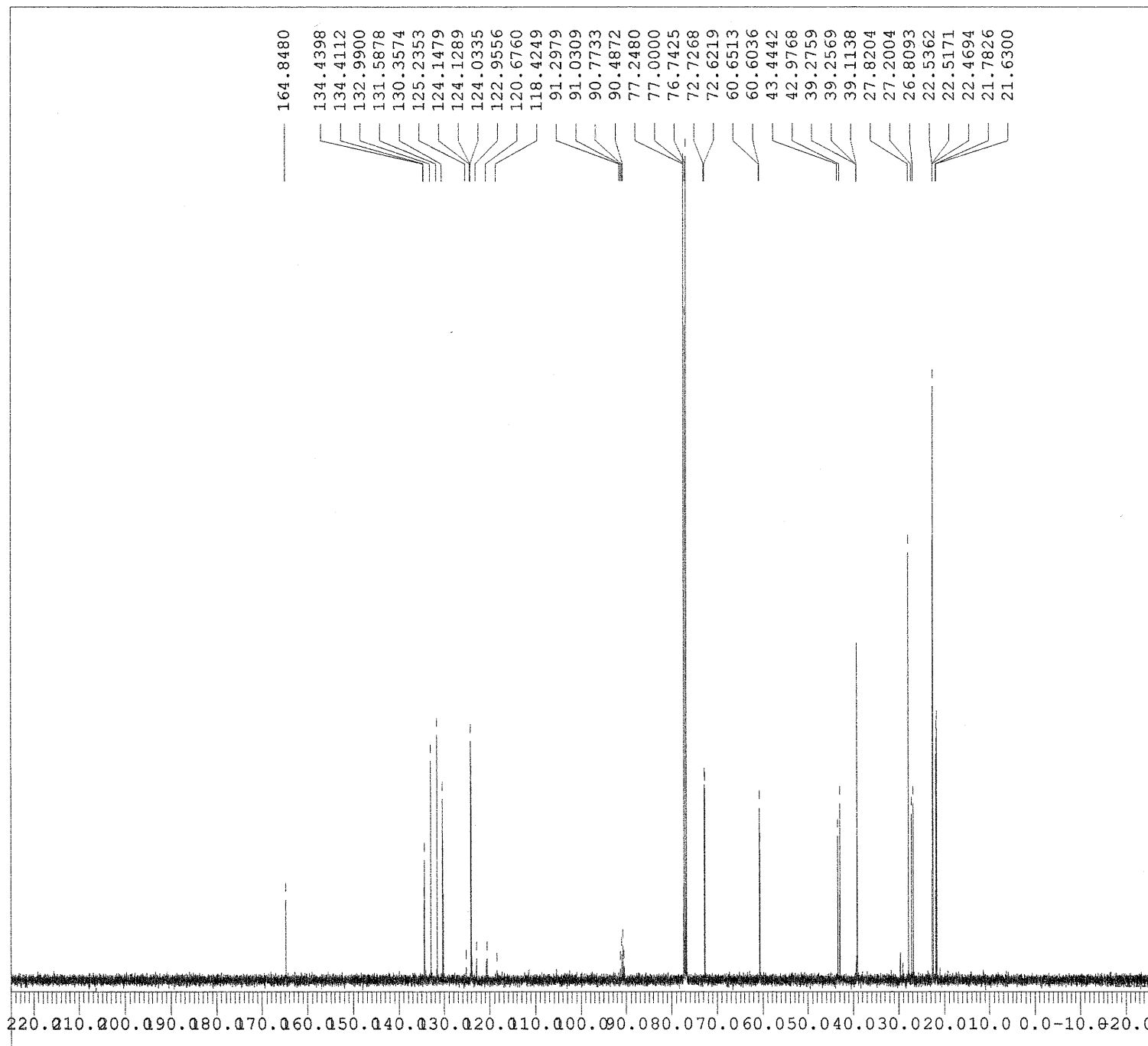




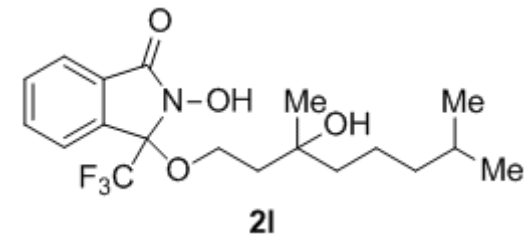
DFILE ozawa04-095_2a_1H.jdf
 COMNT PTLC, citr., 02
 DATIM 2014-01-20 17:38:20
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.0 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 1.00 Hz
 RGAIN 30

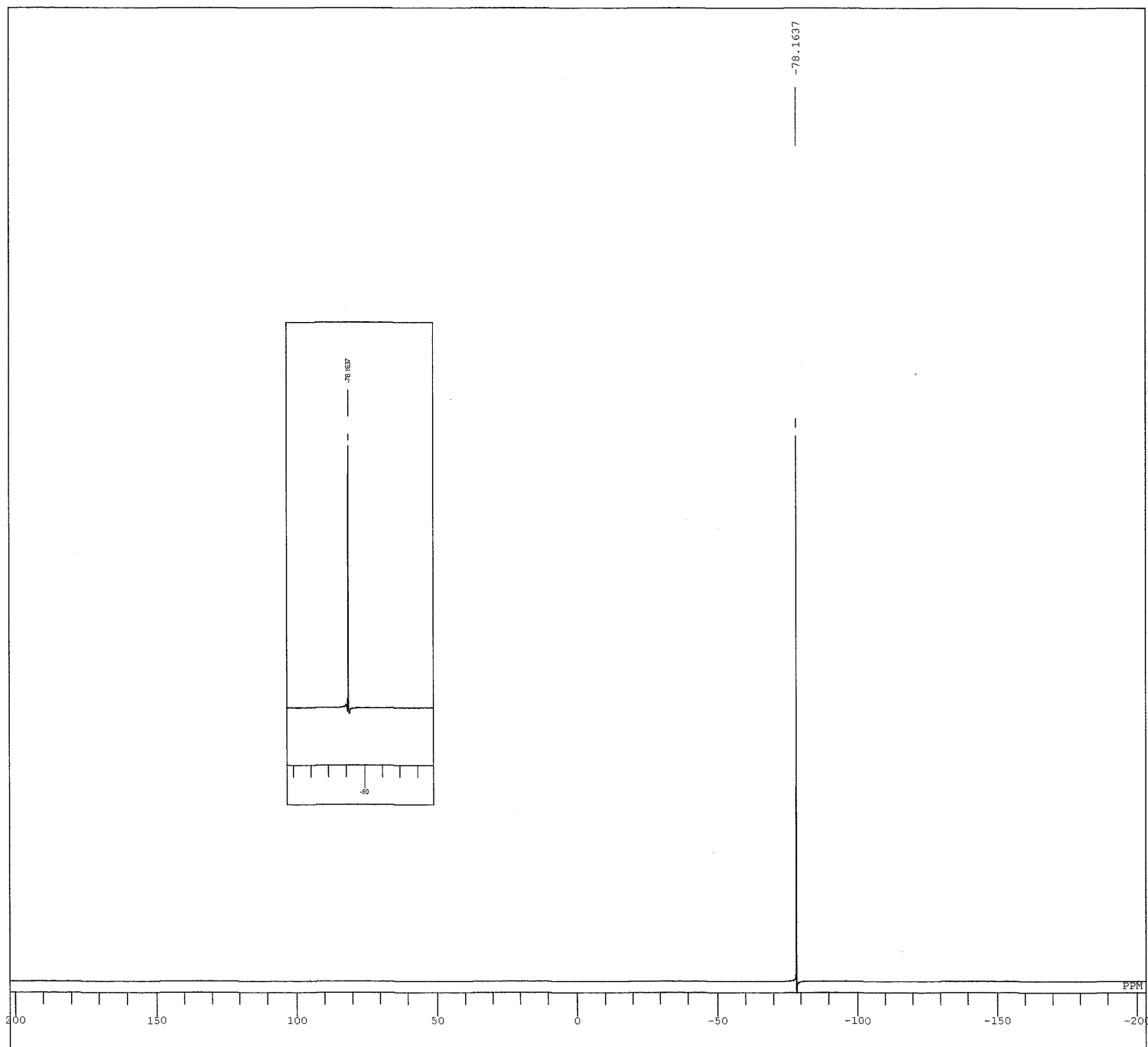


citr., [0]

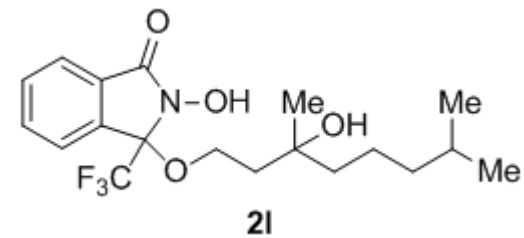


DFILE ozawa04-095_2_13C.jdf
COMNT citr., [0]
DATIM 2014-01-26 13:46:45
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 464
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

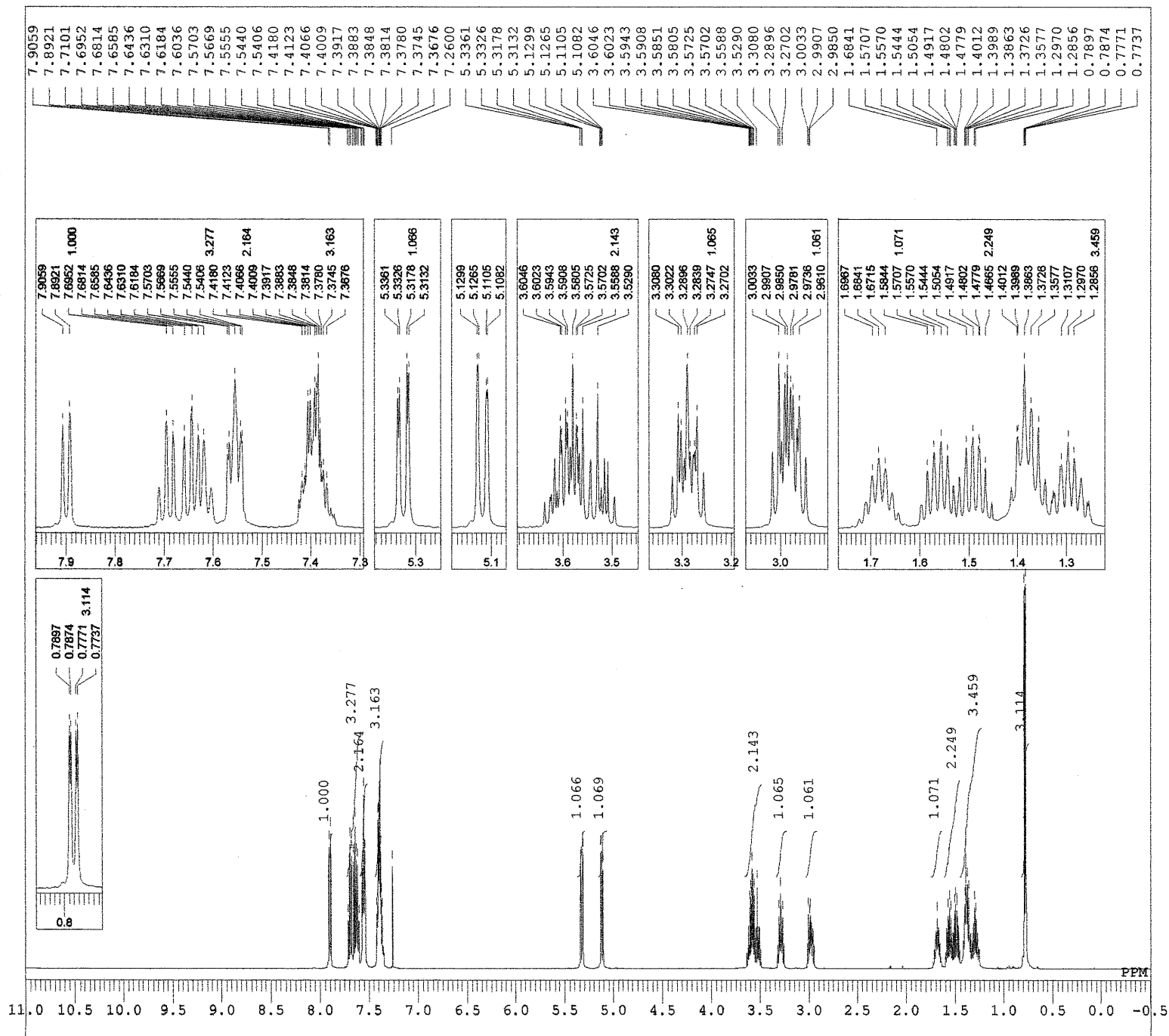




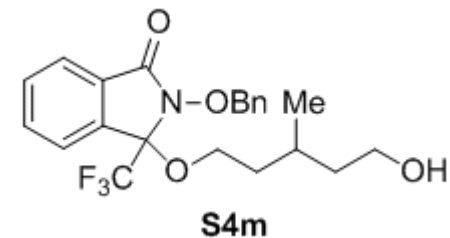
DFILE ozawa04-047_19f.jdf
COMNT citr-H2
DATIM 16-11-2013 13:37:01
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 23.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48

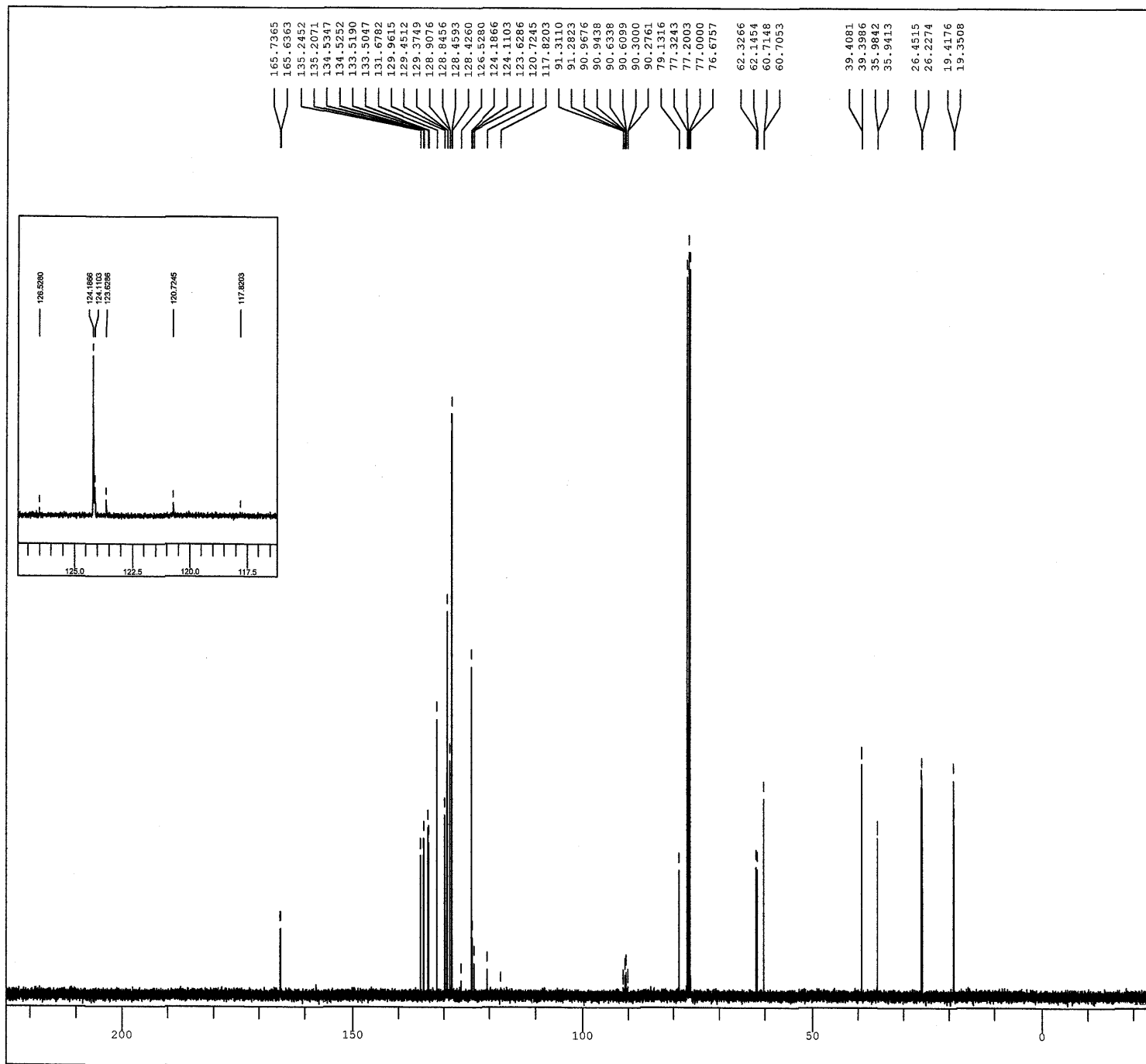


3-Me-1,5-pentdiol

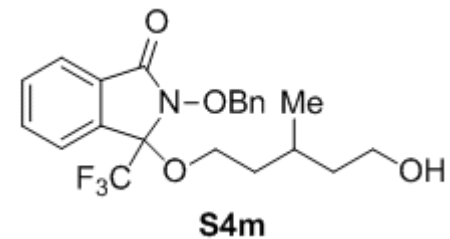


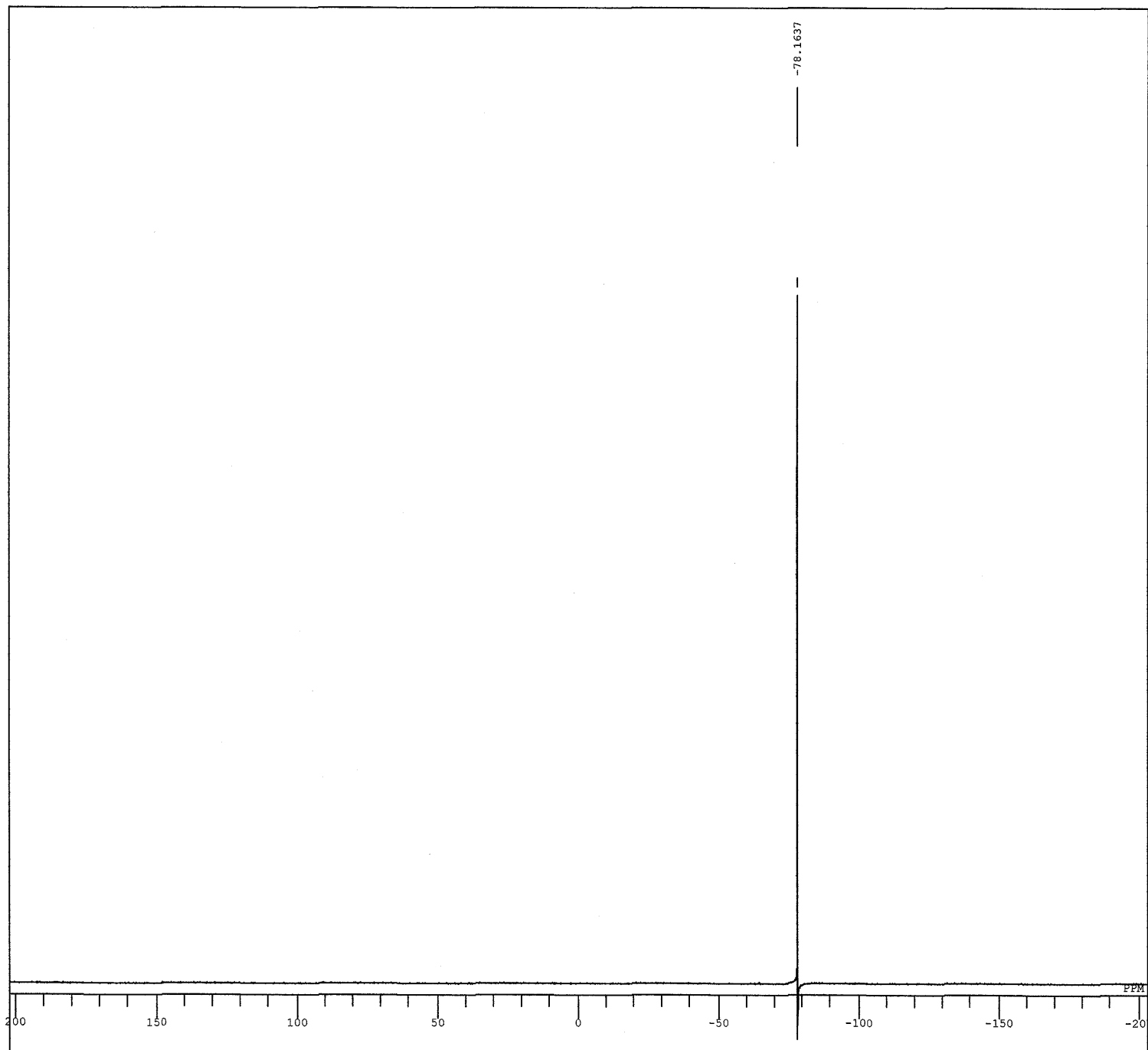
DFILE ozawa06-062_1h.jdf
 COMNT 3-Me-1,5-pentdiol
 DATIM 2014-12-05 15:47:26
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 8
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 25.3 c
 SLVNT CDCl3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30



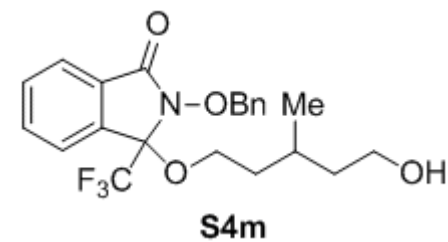


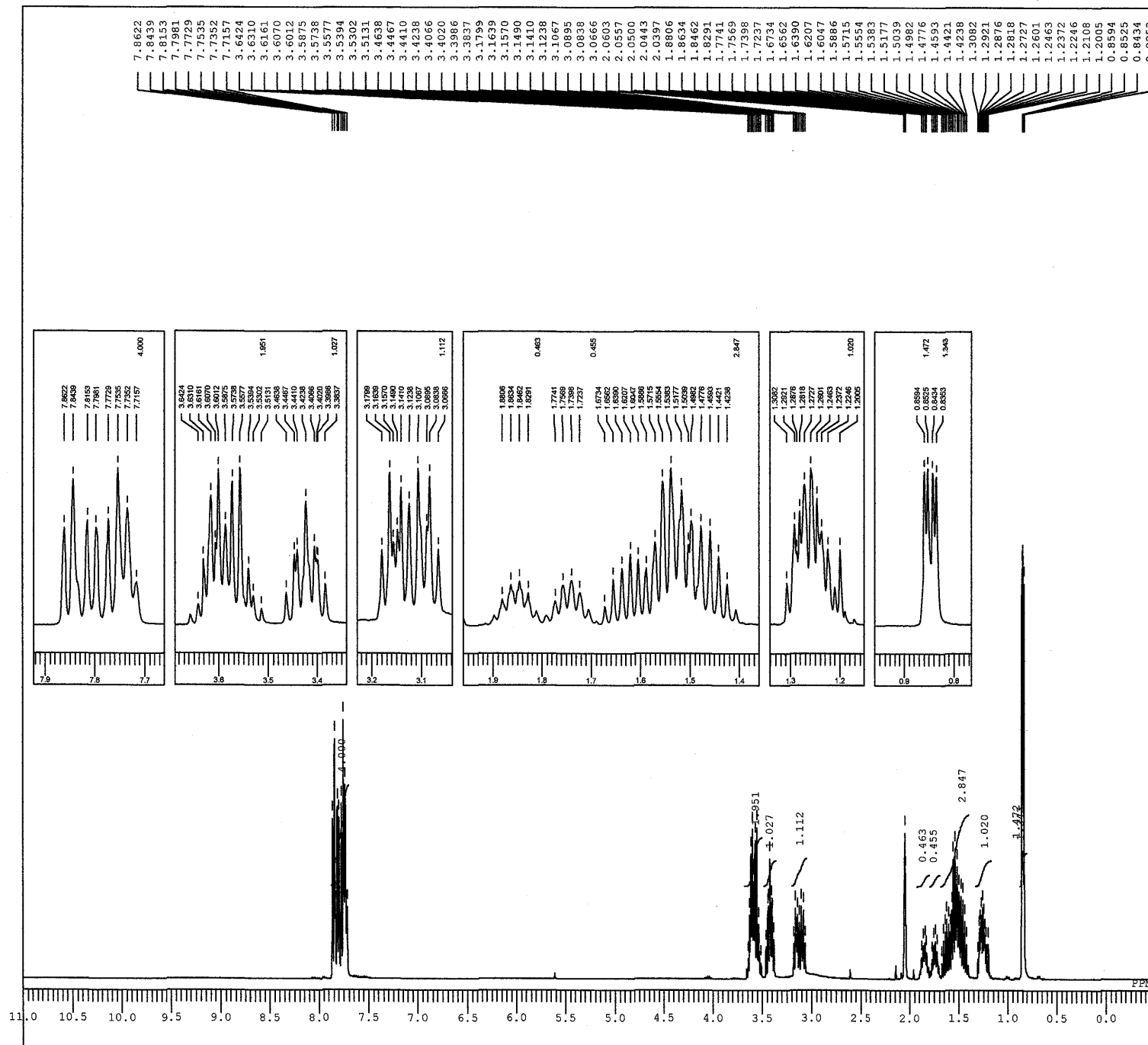
DFILE ozawa06-062_13C.jdf
 COMNT 3-Me-1,5-pentdiol, Bn
 DATIM 06-12-2014 07:55:19
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQU 30788.18 Hz
 SCANS 644
 ACQTM 2.1286 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



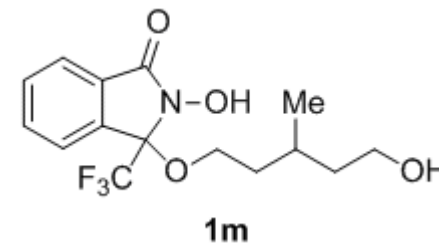


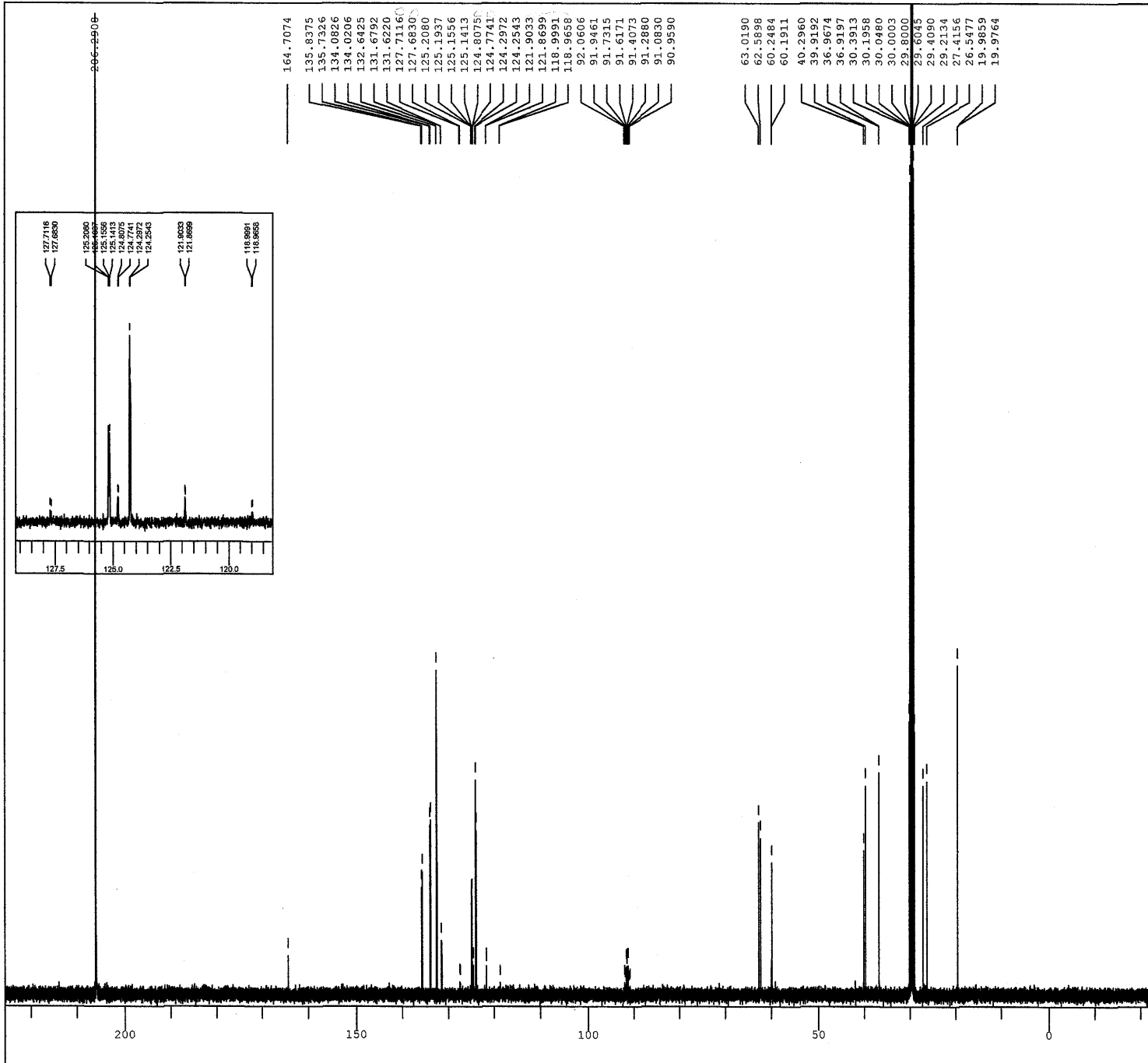
DFILE ozawa06-062_19F.jdf
COMNT 3-Me-1,5-pentdiol
DATIM 06-12-2014 07:52:23
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 22.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



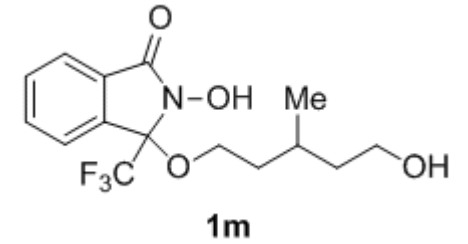


DFILE ozawa06-064 1H.jdf
 COMNT 3-Me-1,5-pentdiol, OH
 DATIM 06-12-2014 09:20:16
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 391.78 MHz
 OBSST 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.07 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT ACETN
 EXREF 2.05 ppm
 BF 0.12 Hz
 RGAIN 30

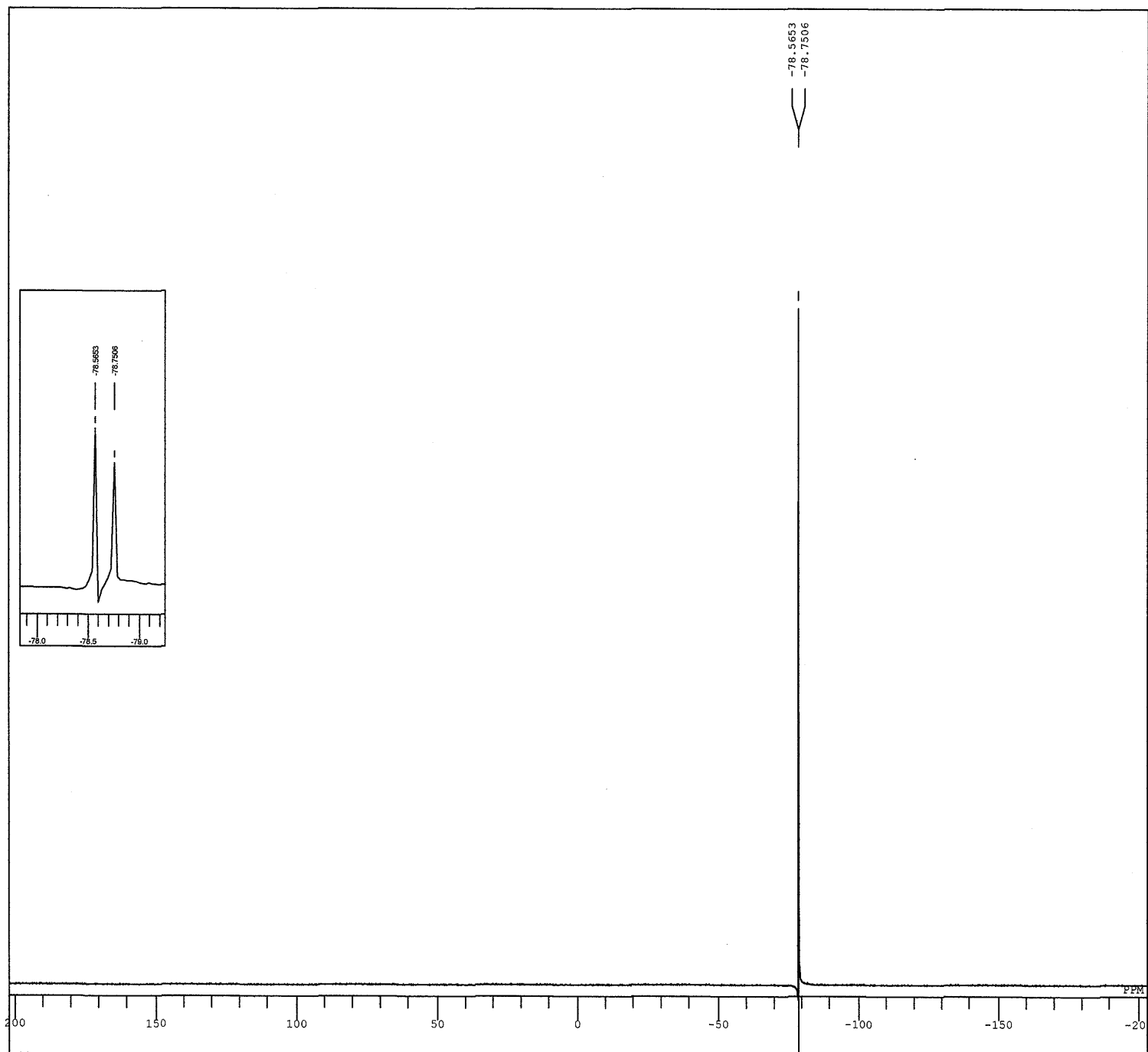




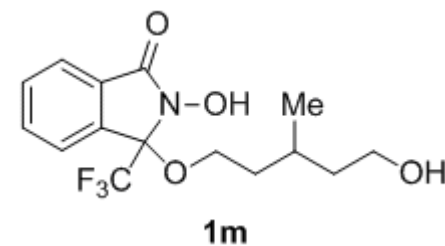
DFILE ozawa06-064_13C.jdf
 COMNT 3-Me-1,5-pentdiol, OH
 DATIM 06-12-2014 09:21:31
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 98.52 MHz
 OBSFT 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQU 30788.18 Hz
 SCANS 536
 ACQTM 2.1286 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.7 c
 SLVNT ACETN
 EXREF 29.80 ppm
 BF 0.12 Hz
 RGAIN 60



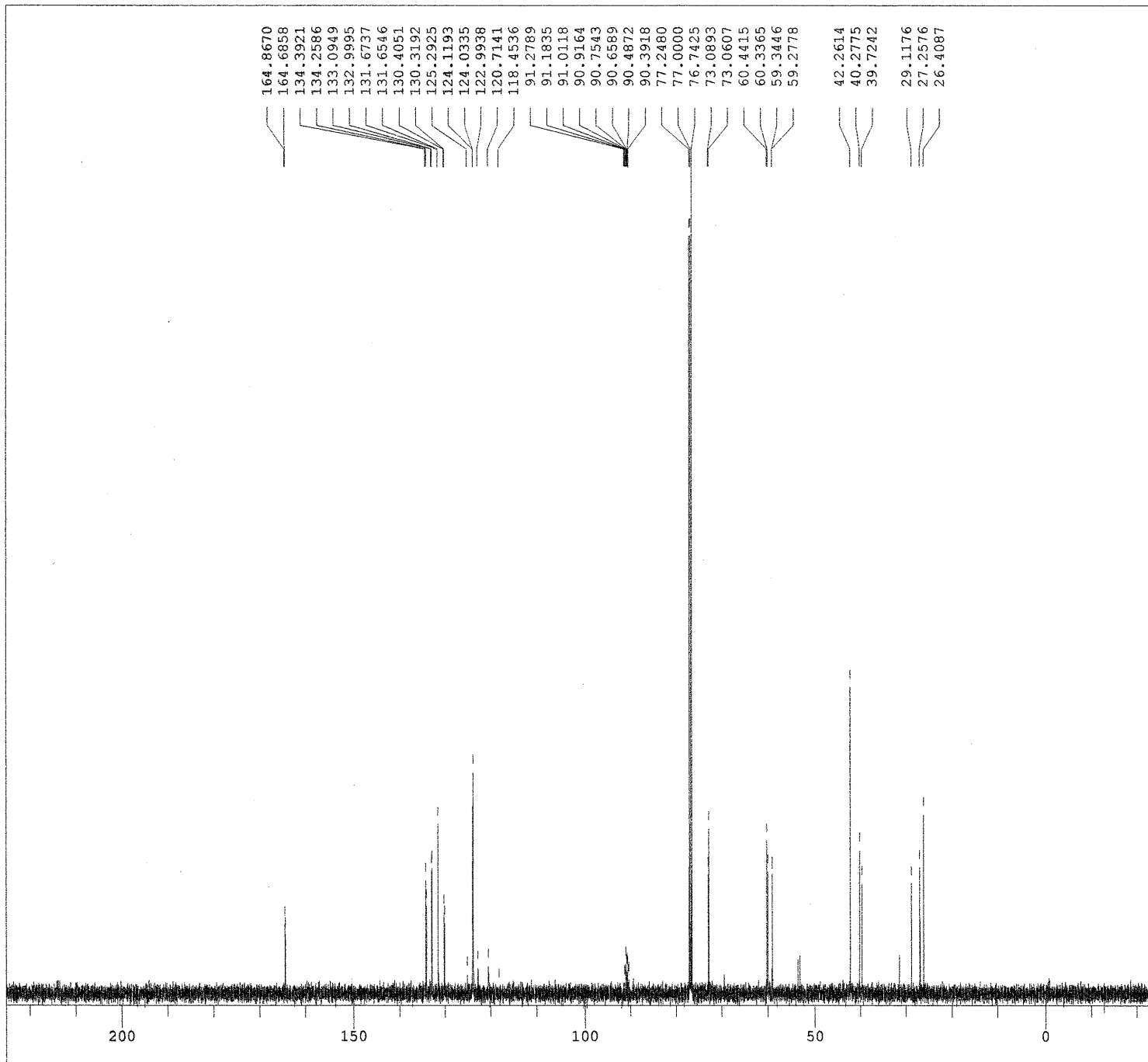
3-Me-1,5-pentdiol, OH



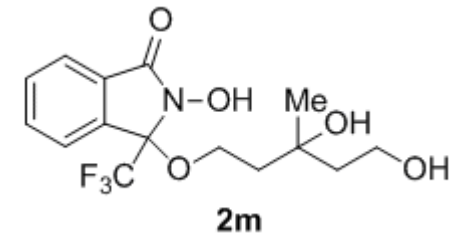
DFILE ozawa06-064_19F.jdf
COMNT 3-Me-1,5-pentdiol, OH
DATIM 06-12-2014 09:18:12
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.9 c
SLVNT ACETN
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46

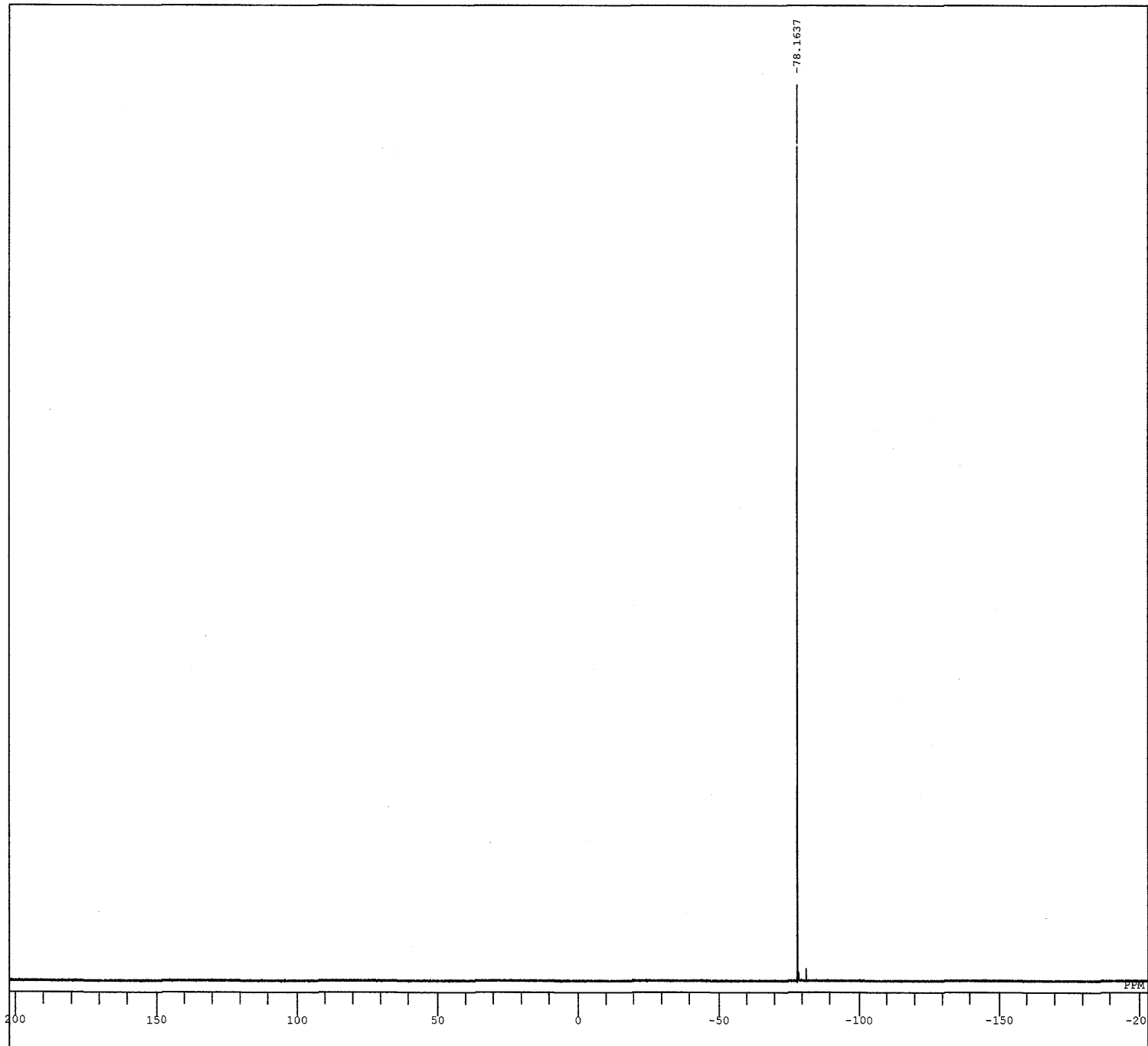


3-Me-1,5-pentdiol, [0]

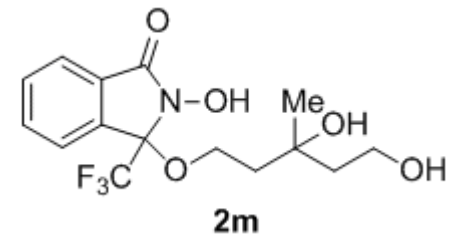


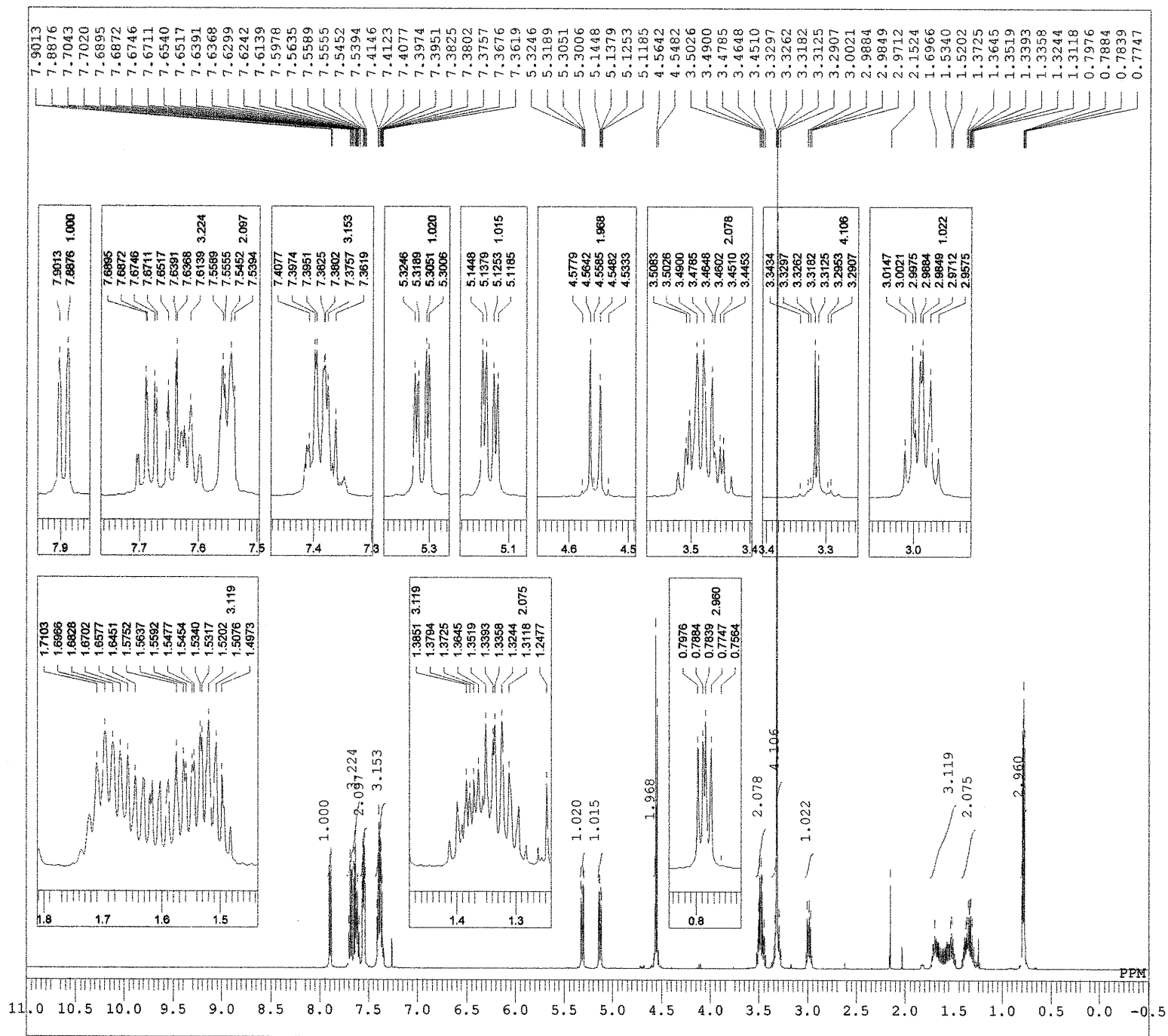
DFILE ozawa06-086_13C.jdf
COMNT 3-Me-1,5-pentdiol, [0]
DATIM 2014-12-05 12:47:59
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 300
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 25.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



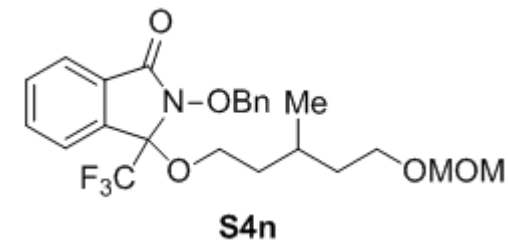


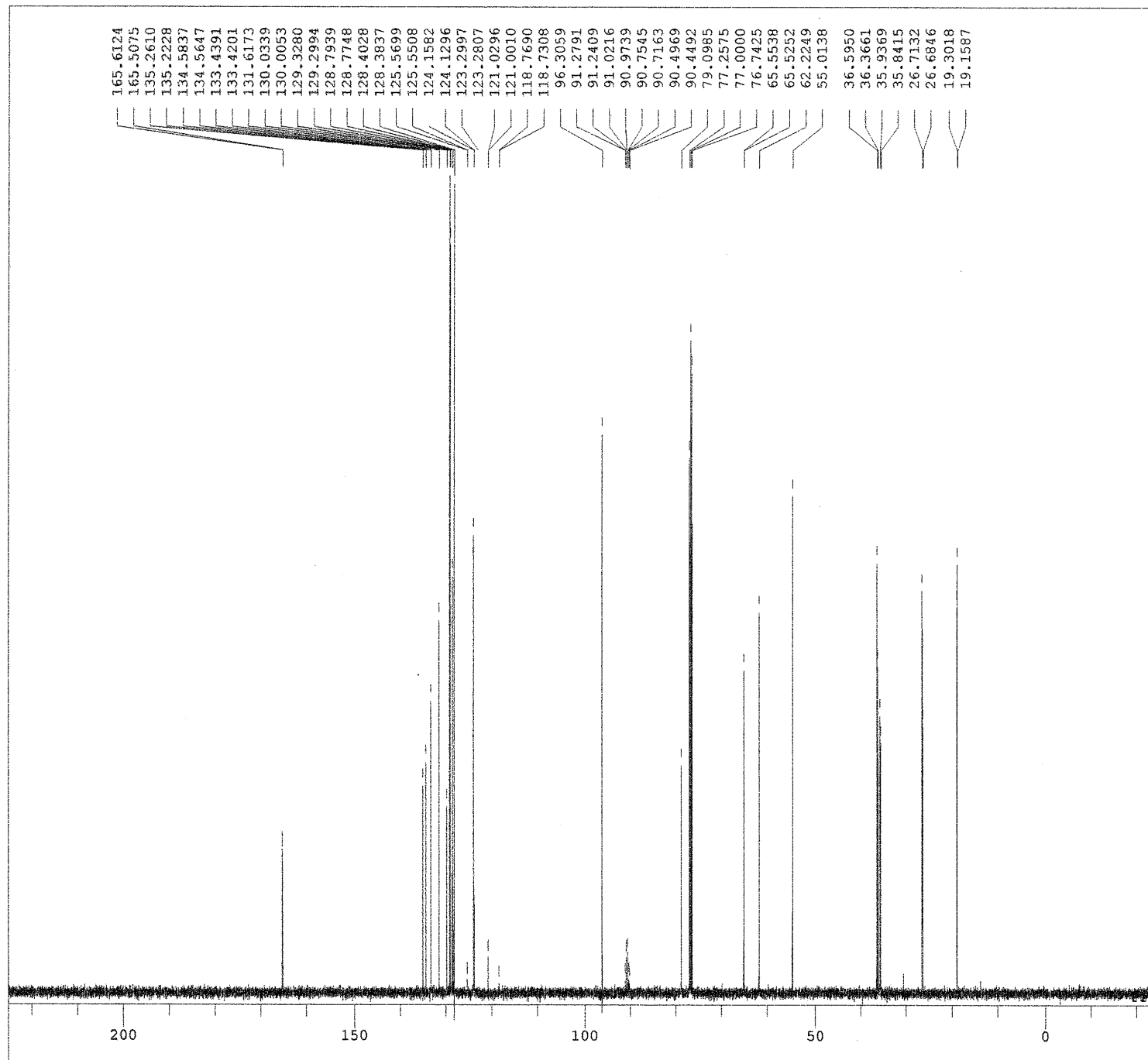
DFILE ozawa06-086_19F.jdf
COMNT 3-Me-1,5-pentdiol, [0]
DATIM 05-12-2014 17:21:06
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWI 3.90 usec
IRNUC 19F
CTEMP 22.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



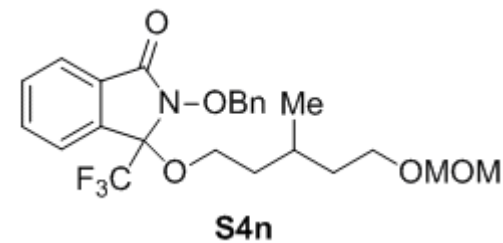


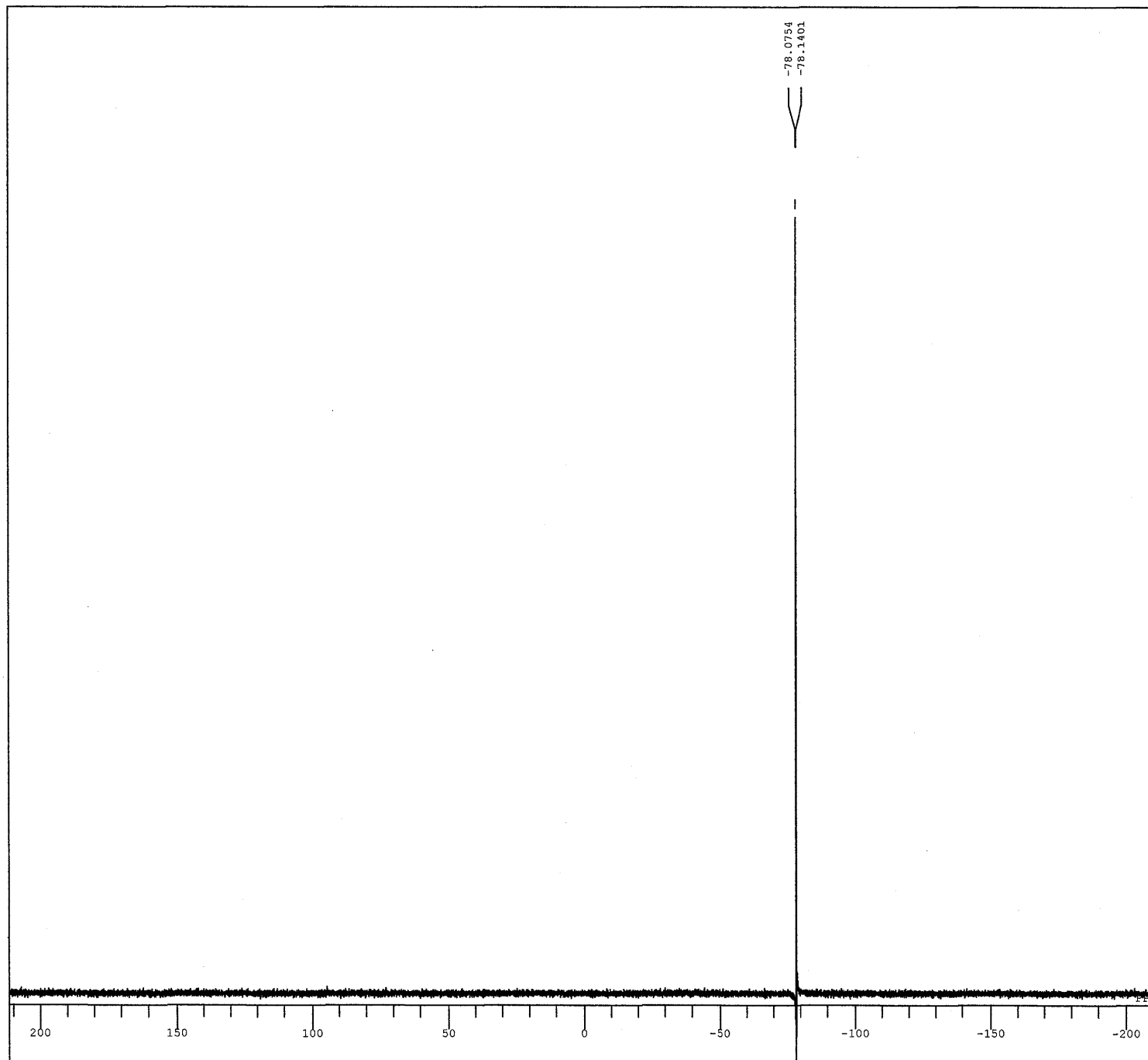
DFILE ozawa07-022_1h.als
 COMNT 3-Me-5-OMOM, Bn
 DATIM 2015-03-02 10:00:34
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 8
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PWL 5.55 usec
 IRNUC 1H
 CTEMP 23.4 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 24



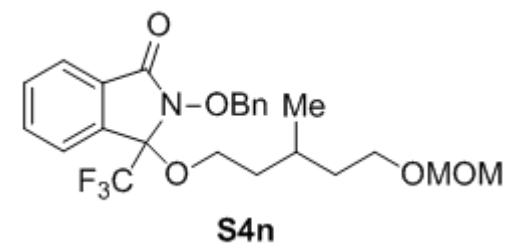


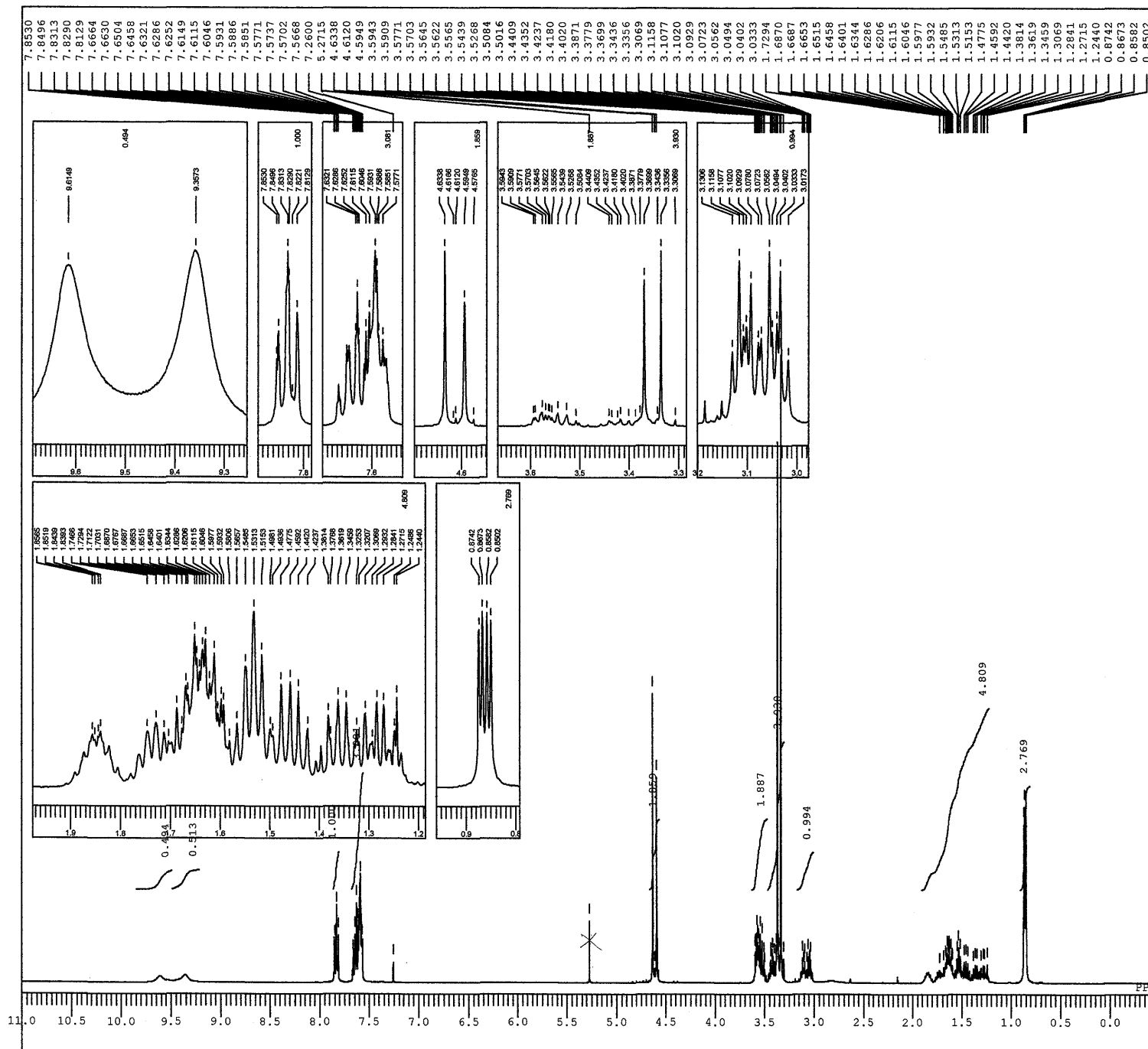
DFILE ozawa07-022_13C.als
 COMNT 3-Me-5-OMOM, Bn
 DATIM 2015-03-02 10:02:04
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 26214
 FREQU 31446.54 Hz
 SCANS 476
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 24.0 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



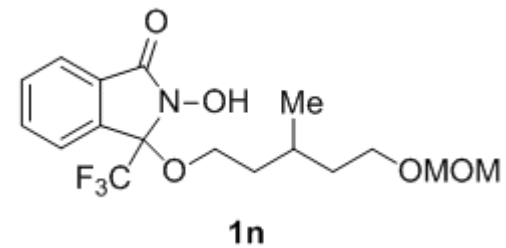


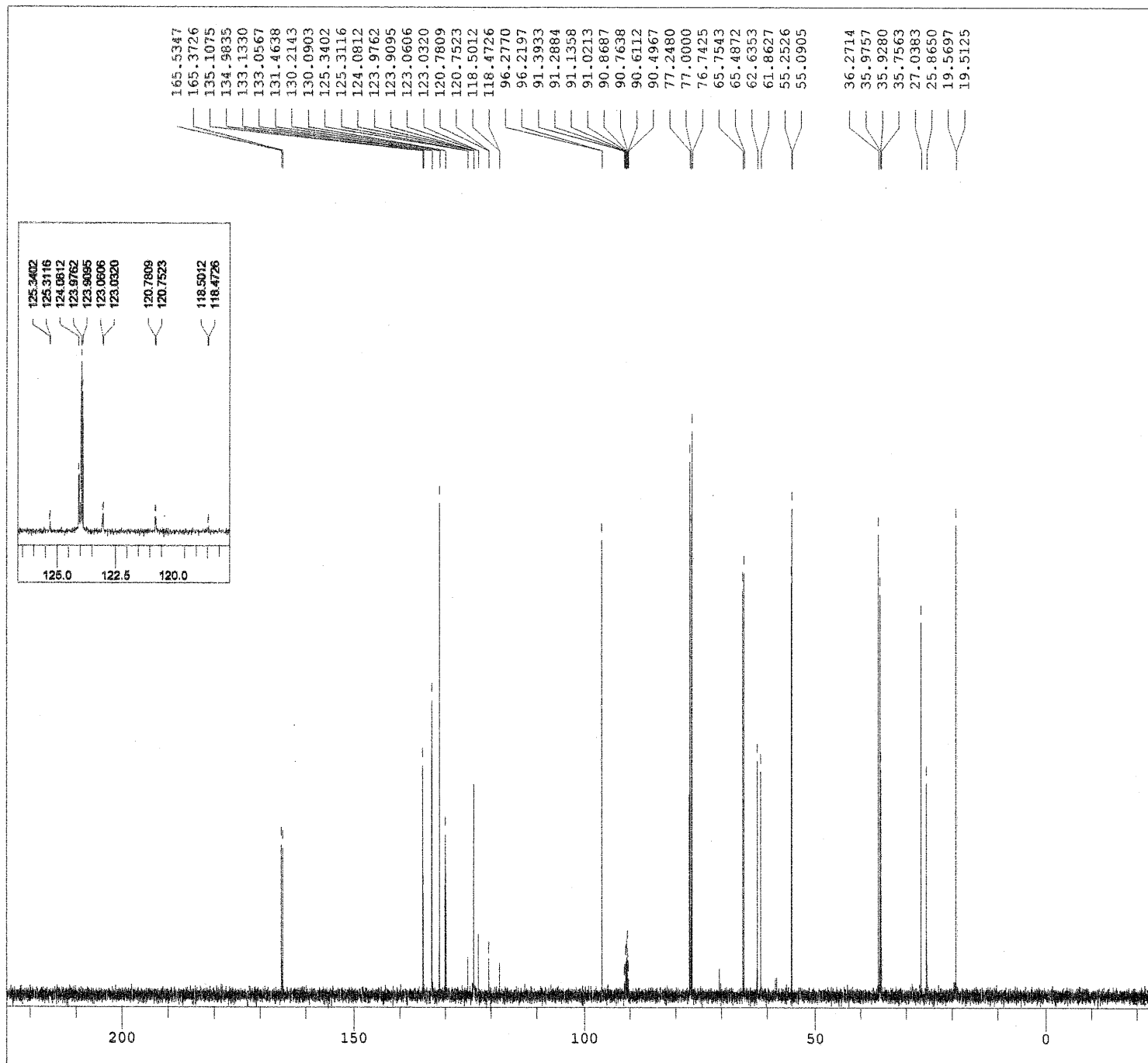
DFILE ozawa07-022_19F.jdf
COMNT 3-Me-5-OMOM, Bn
DATIM 21-03-2015 12:11:35
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



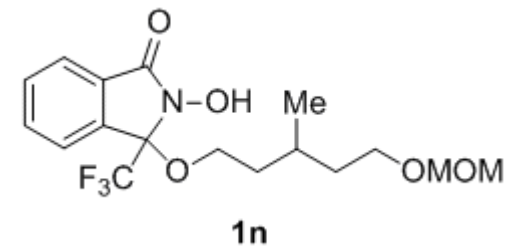


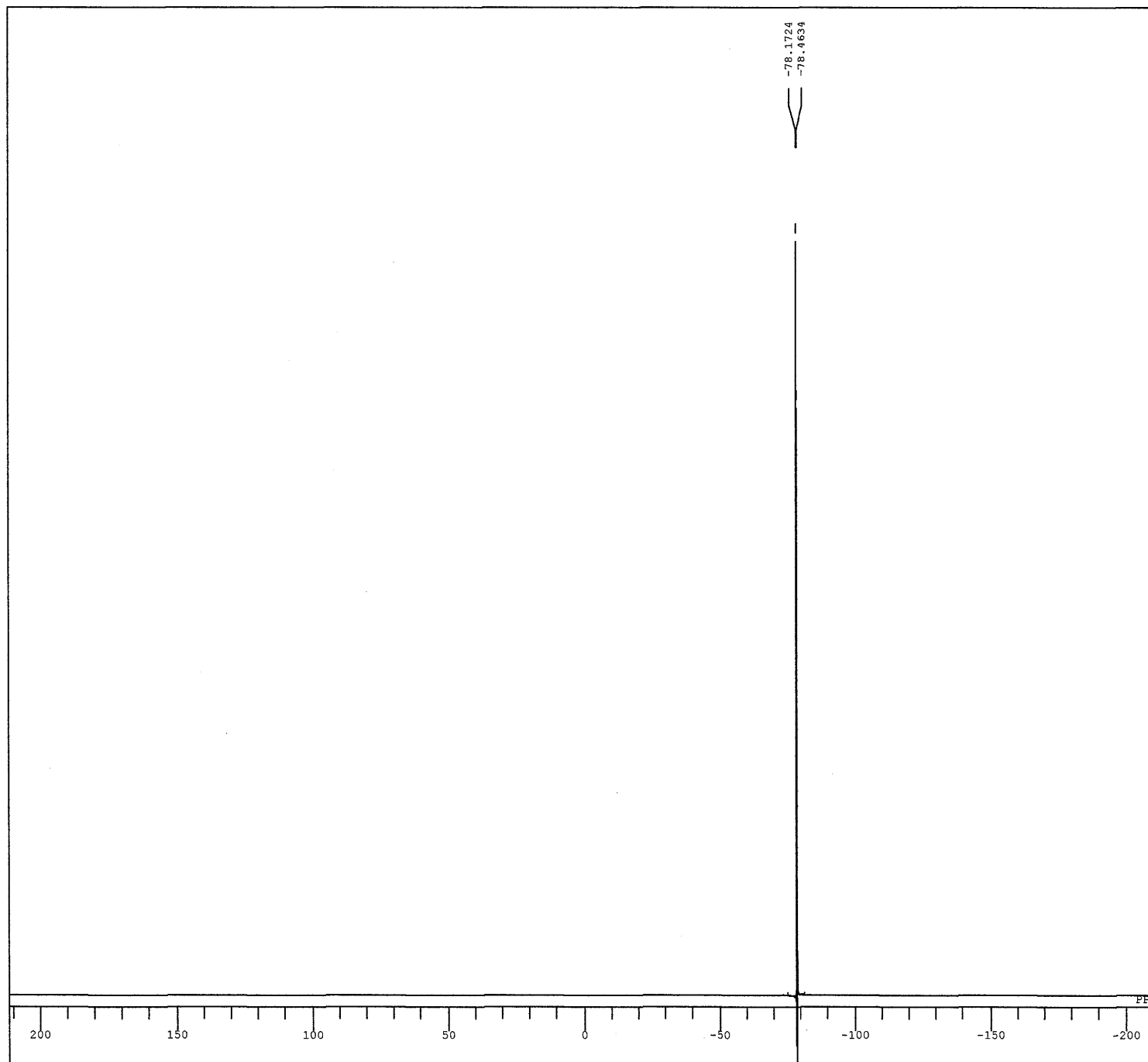
DFILE ozawa07-024 1H.jdf
 COMNT 3-Me-5-OMOM, OH
 DATIM 21-03-2015 12:26:11
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 4.99 usec
 IRNUC 1H
 CTEMP 25.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 22



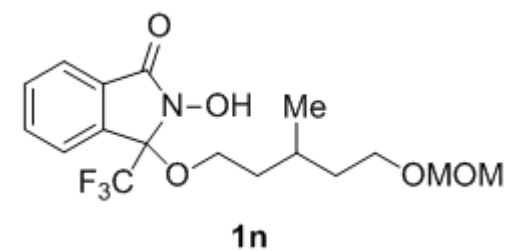


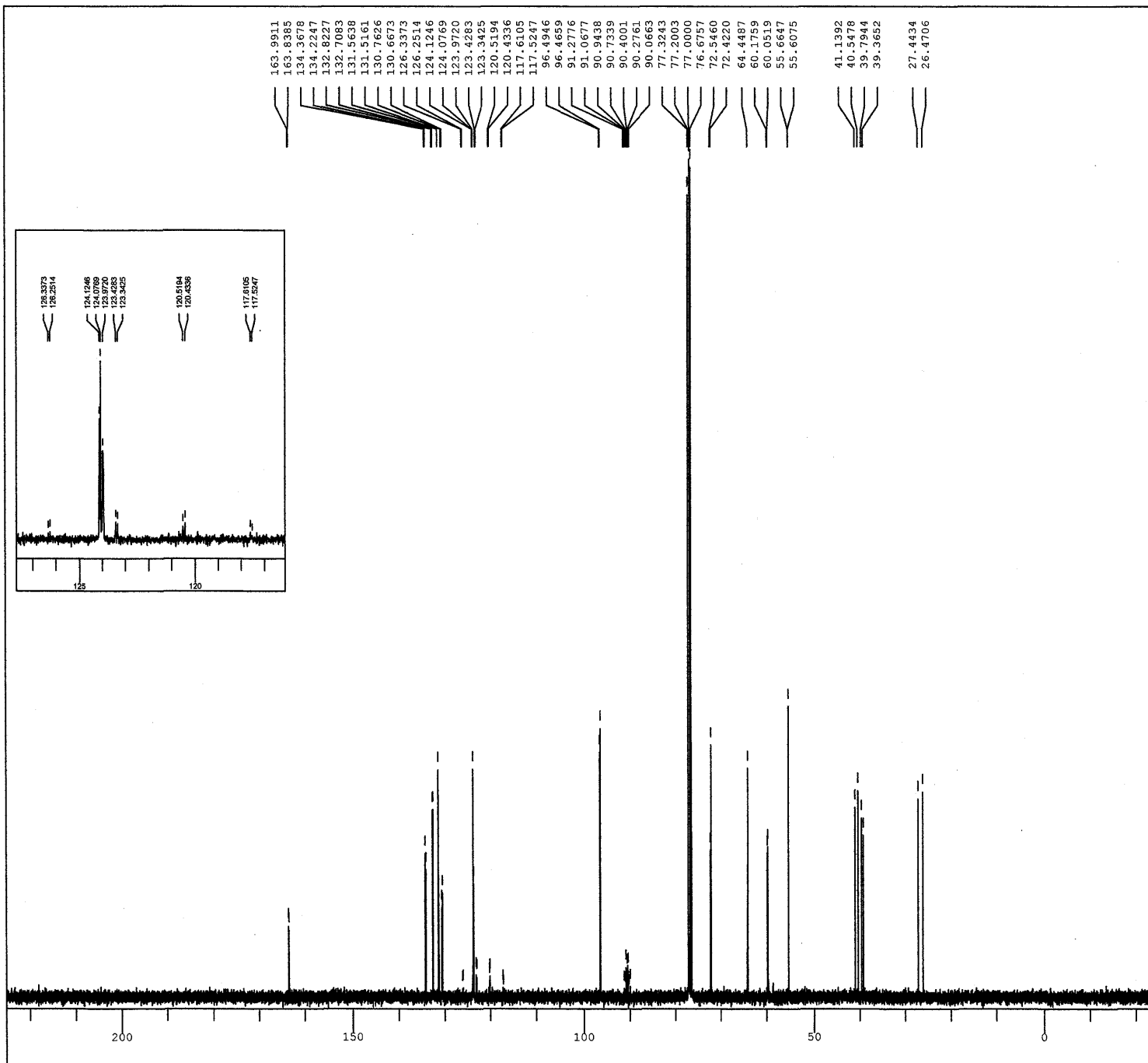
DFILE ozawa07-024_13c.jdf
 COMNT 3-Me-5-OMOM, OH
 DATIM 2015-03-21 12:32:50
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 220
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 26.5 c
 SLVNT CDCl3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



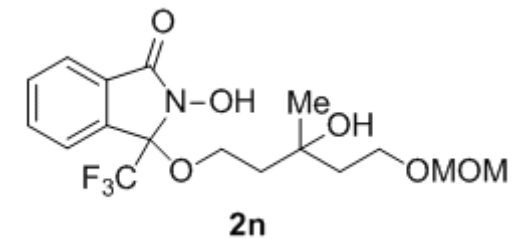


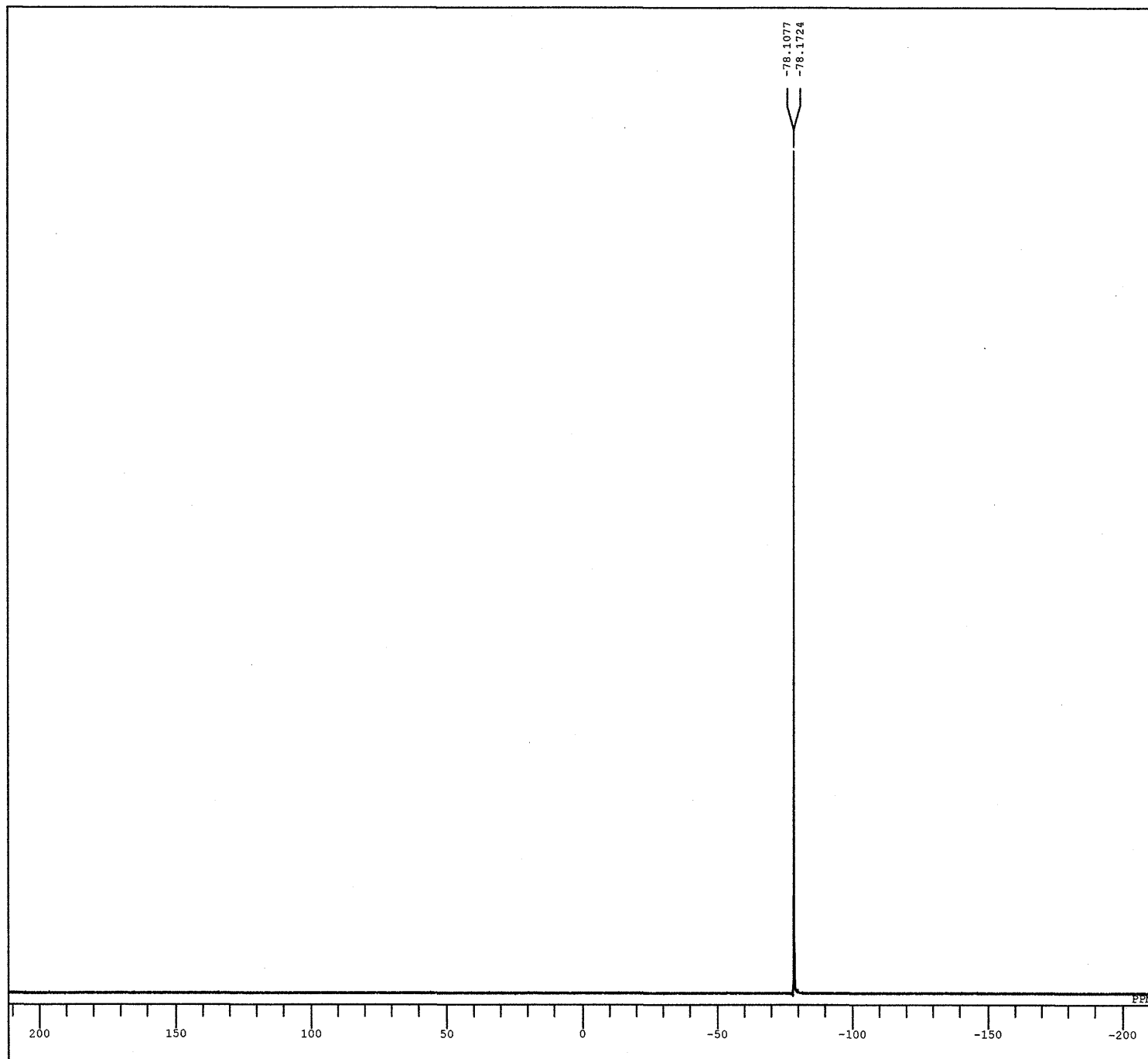
DFILE ozawa07-024 19F.jdf
COMNT 3-Me-5-OMOM. OH
DATIM 21-03-2015 12:22:07
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



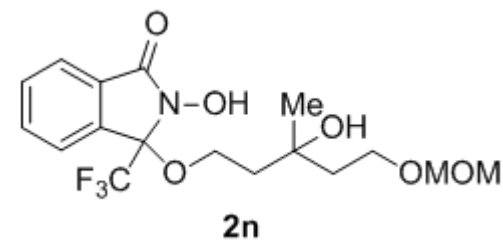


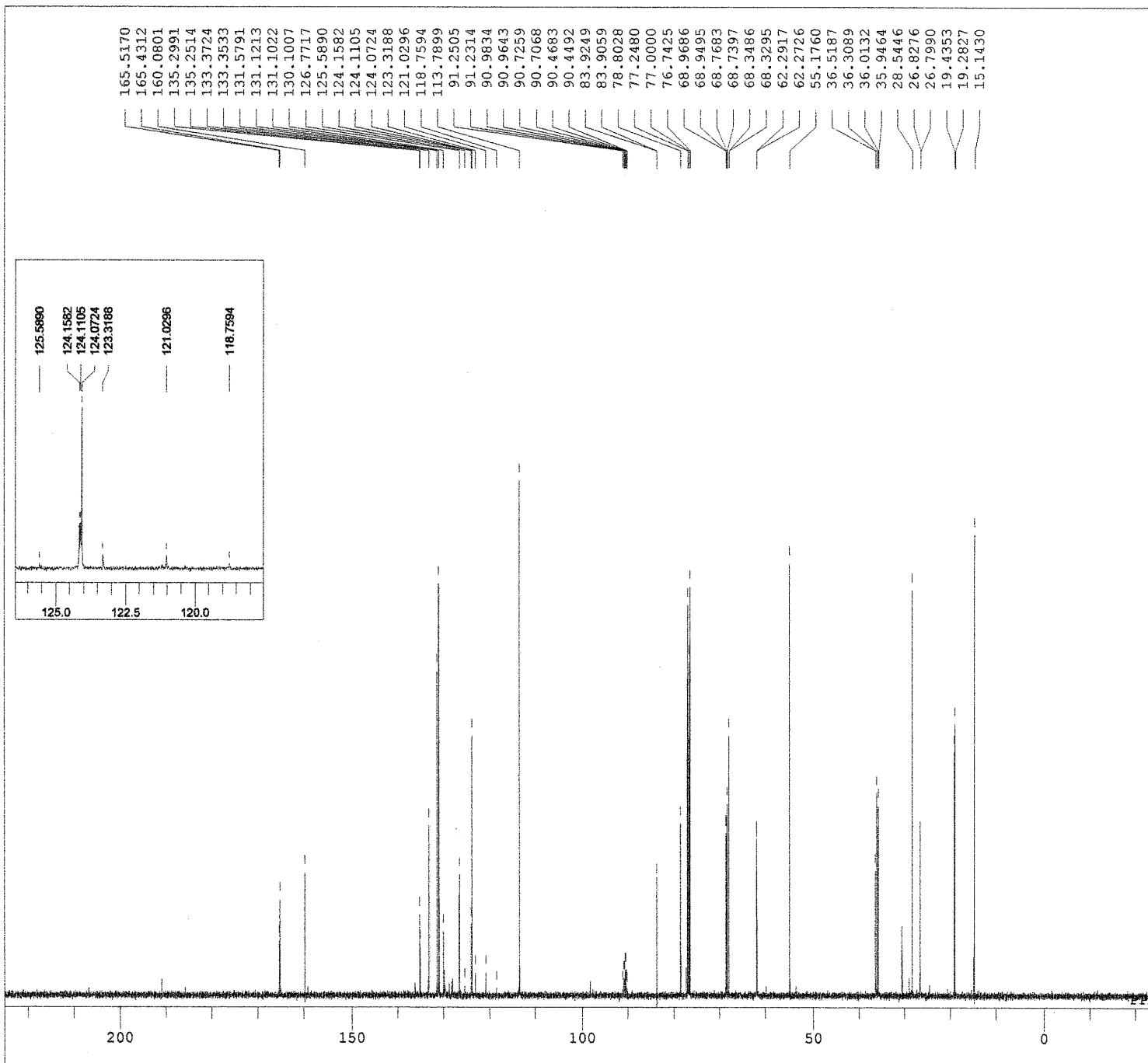
DFILE ozawa07-042_13C.jdf
 COMNT 3-Me-5-OMOM, [0]
 DATIM 21-03-2015 10:36:53
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQ 30788.18 Hz
 SCANS 1100
 ACQTM 1.0643 sec
 PD 2.0000 sec
 PW1 3.16 usec
 IRNUC 1H
 CTEMP 25.4 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60





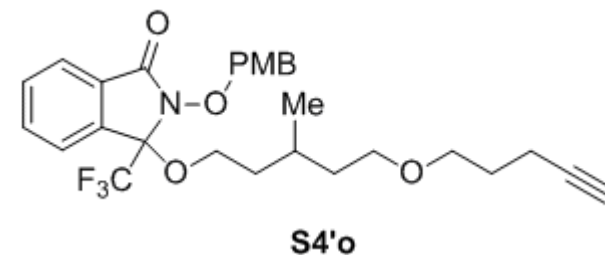
DFILE ozawa07-042_19F.jdf
COMNT 3-Me-5-OMOM, [O]
DATIM 01-04-2015 16:44:15
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 8
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 26.7 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



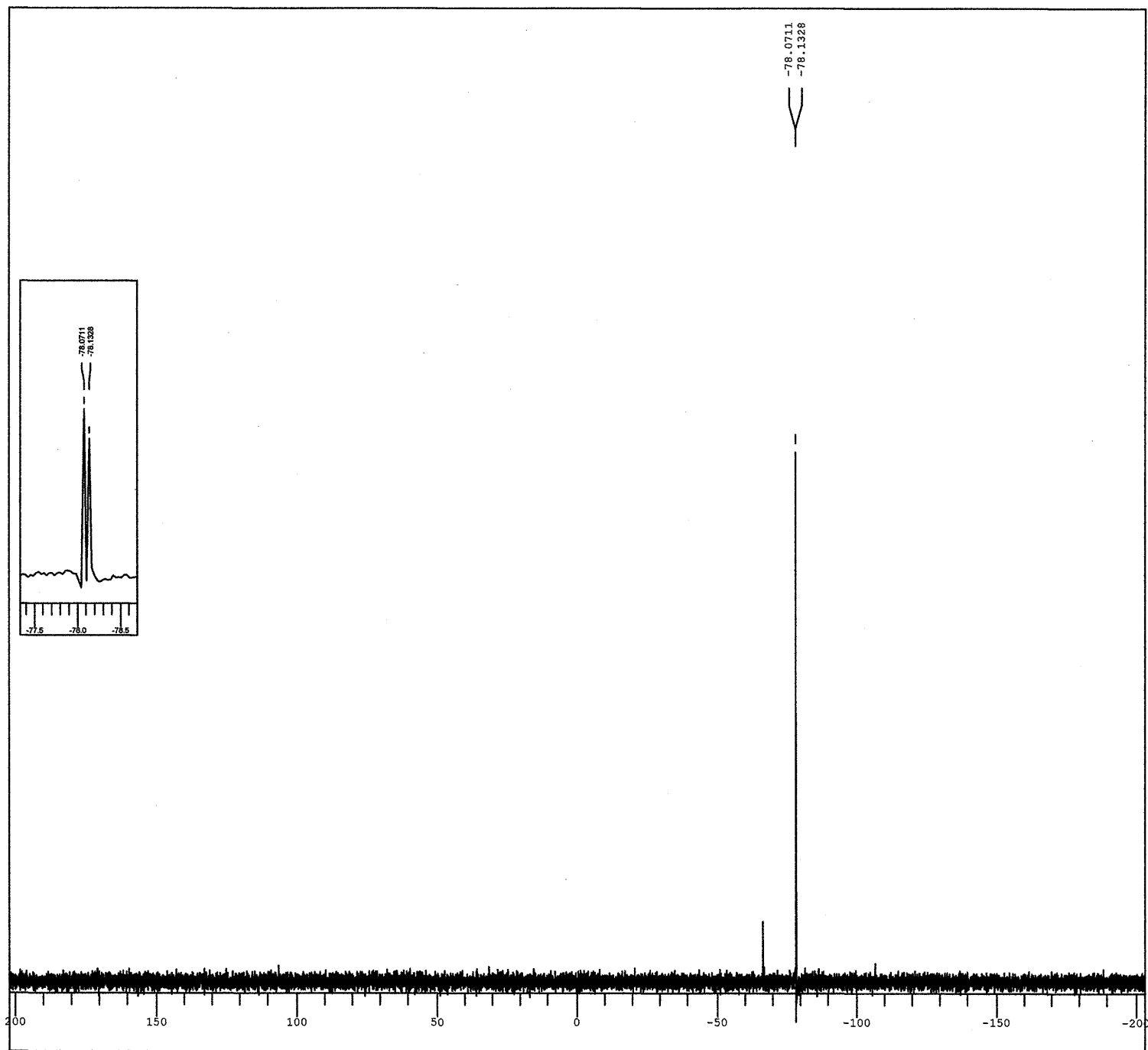


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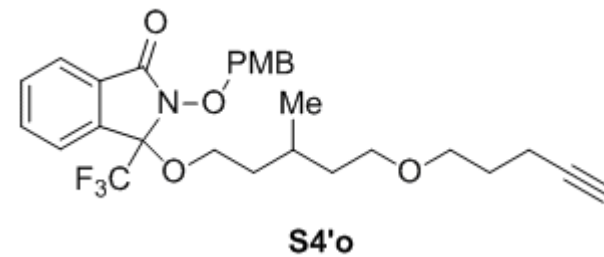
DFILE  ozawa07-085_13C.als
COMNT  3-Me-5-O(4-pentyne), PMB
DATIM  2015-04-13 14:36:59
OBNUC  13C
EXMOD  carbon.jxp
OBFRQ  125.77 MHz
OBSET  7.87 KHz
OBFIN  4.21 Hz
POINT  26214
FREQU  31446.54 Hz
SCANS  600
ACQTM  0.0000 sec
PD      2.0000 sec
PW1     3.40 usec
IRNUC  1H
CTEMP  27.8 c
SLVNT  CDCL3
EXREF  77.00 ppm
BF      0.12 Hz
RGAIN  60
    
```



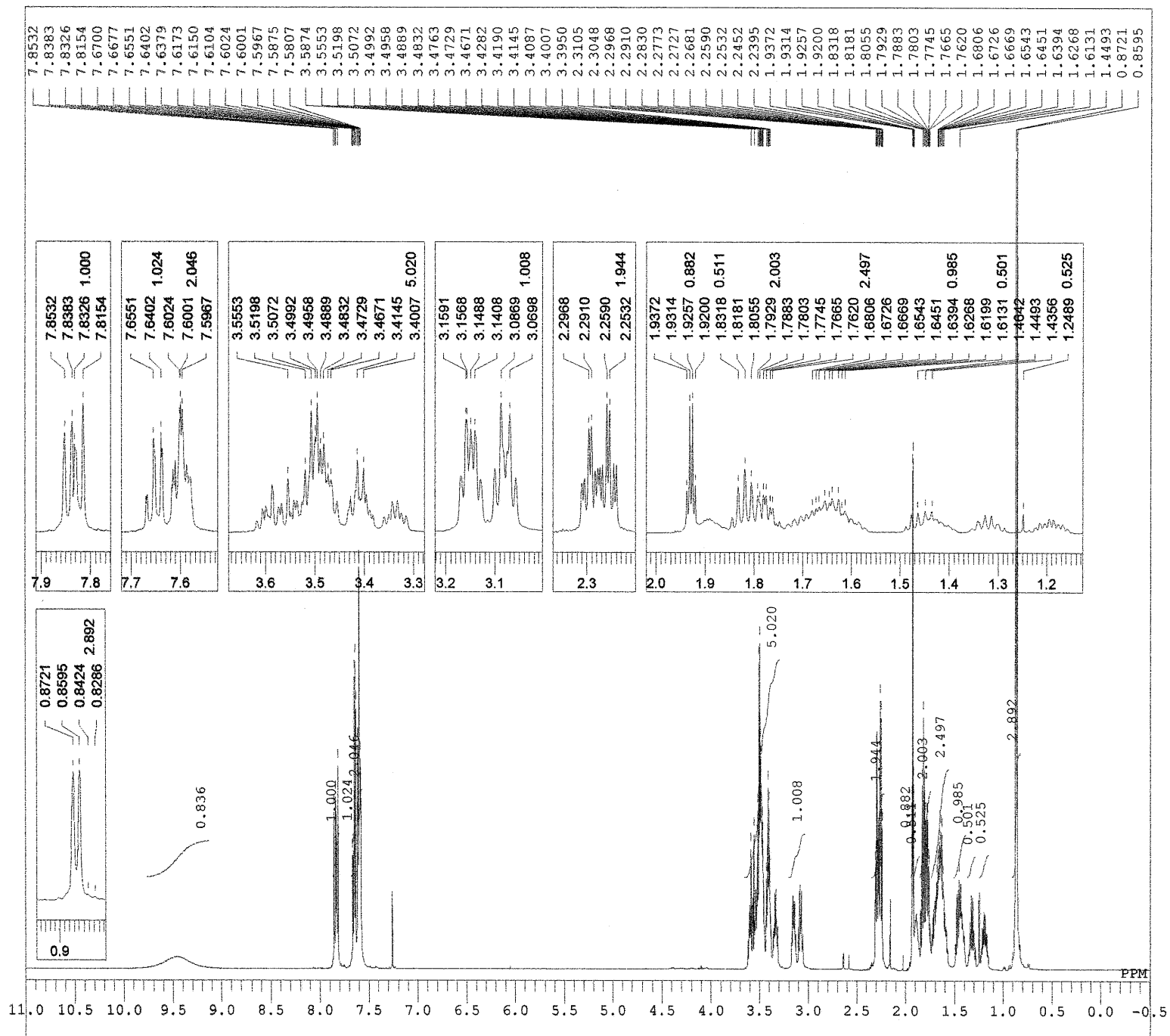
tert-yne, PMB



DFILE ozawa07-085_19F.jdf
COMNT tert-yne, PMB
DATIM 11-05-2015 15:30:50
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

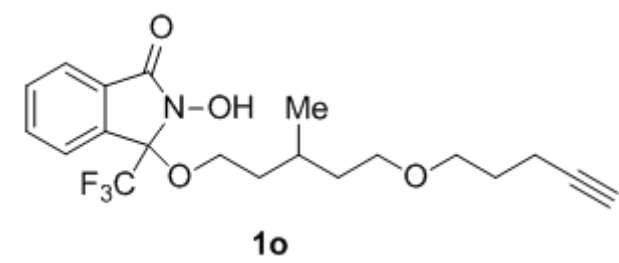


3-Me-5-O(4-pentyne), OH

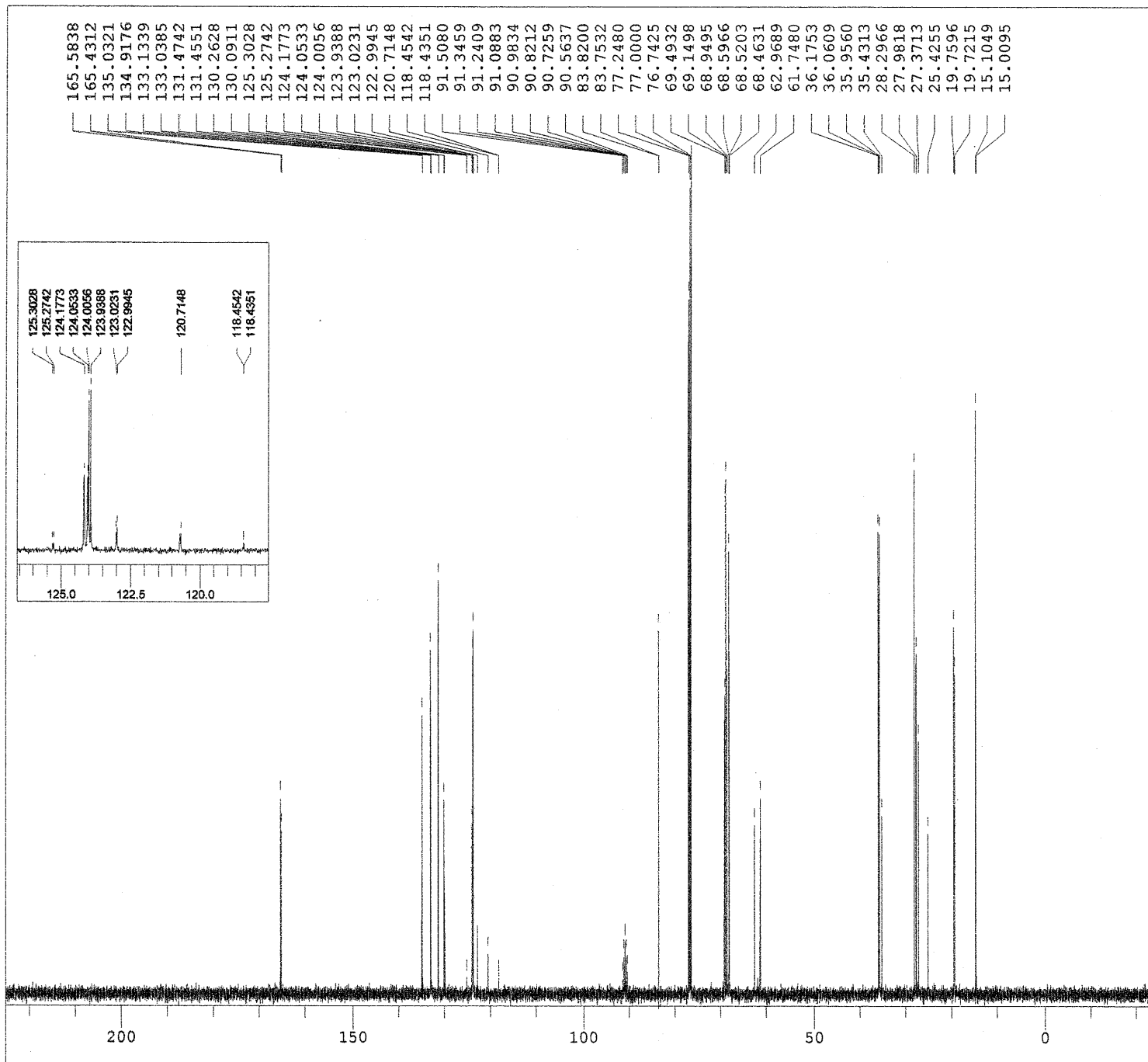


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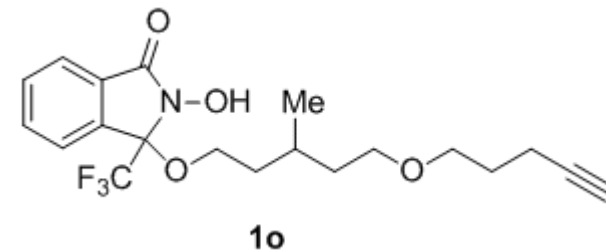
DFILE  ozawa07-099_1h.jdf
COMNT  3-Me-5-O(4-pentyne), OH
DATIM  2015-05-01 10:25:55
OBNUC  1H
EXMOD  proton.jxp
OBFREQ 500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  16384
FREQU  9384.38 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
PWL     5.55 usec
IRNUC  1H
CTEMP  21.1 c
SLVNT  CDCL3
EXREF  7.26 ppm
BF      0.12 Hz
RGAIN  24
    
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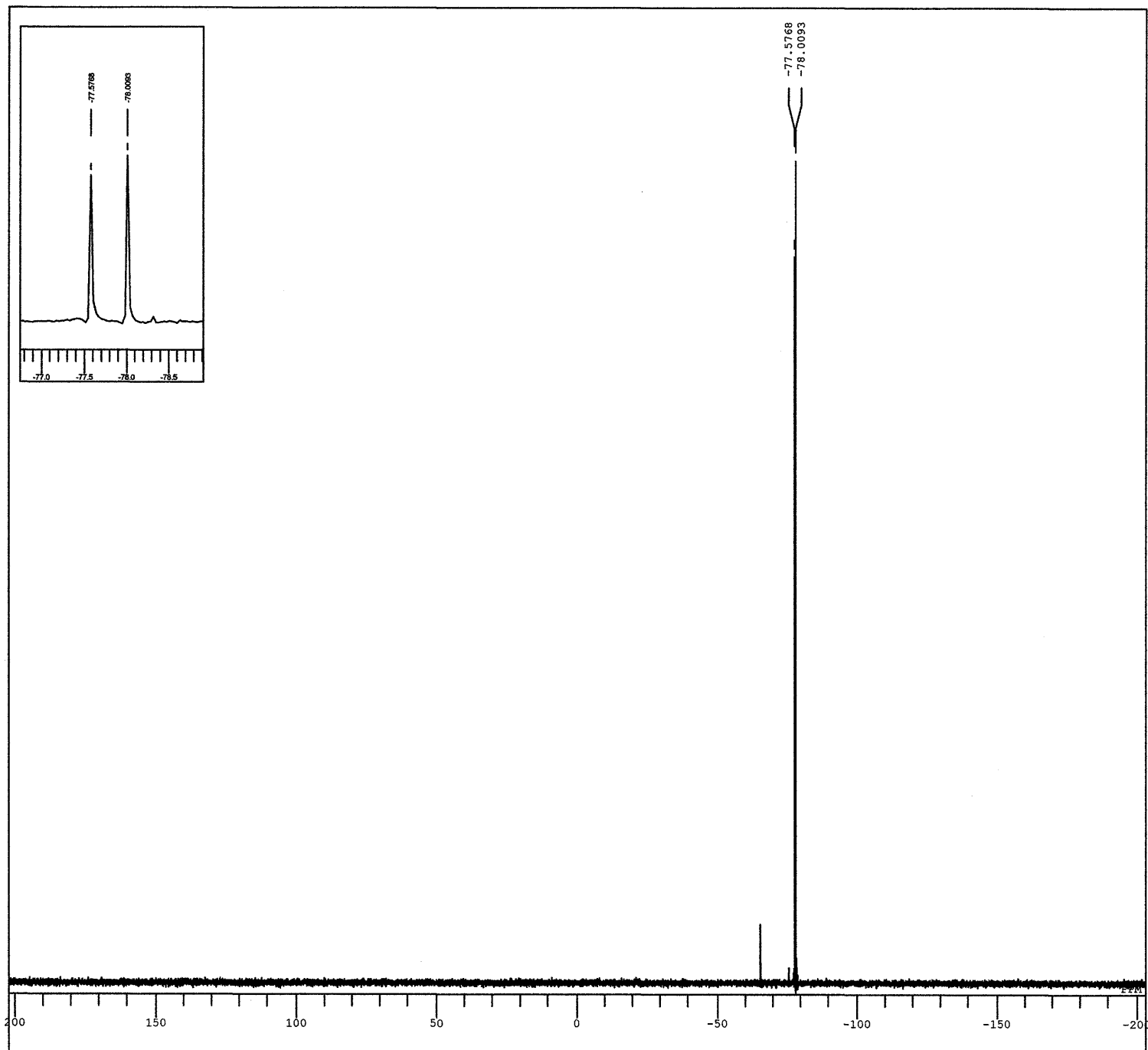
3-Me-5-O(4-pentyne), OH



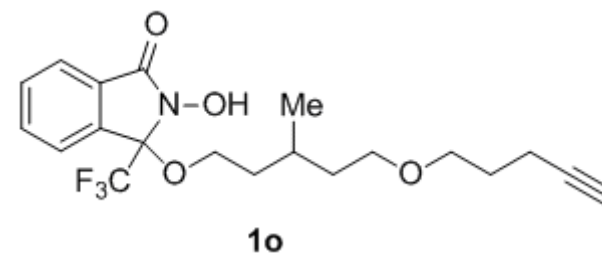
DFILE ozawa07-099_13C.als
COMNT 3-Me-5-O(4-pentyne), OH
DATIM 2015-05-01 10:26:57
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.54 Hz
SCANS 444
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.8 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



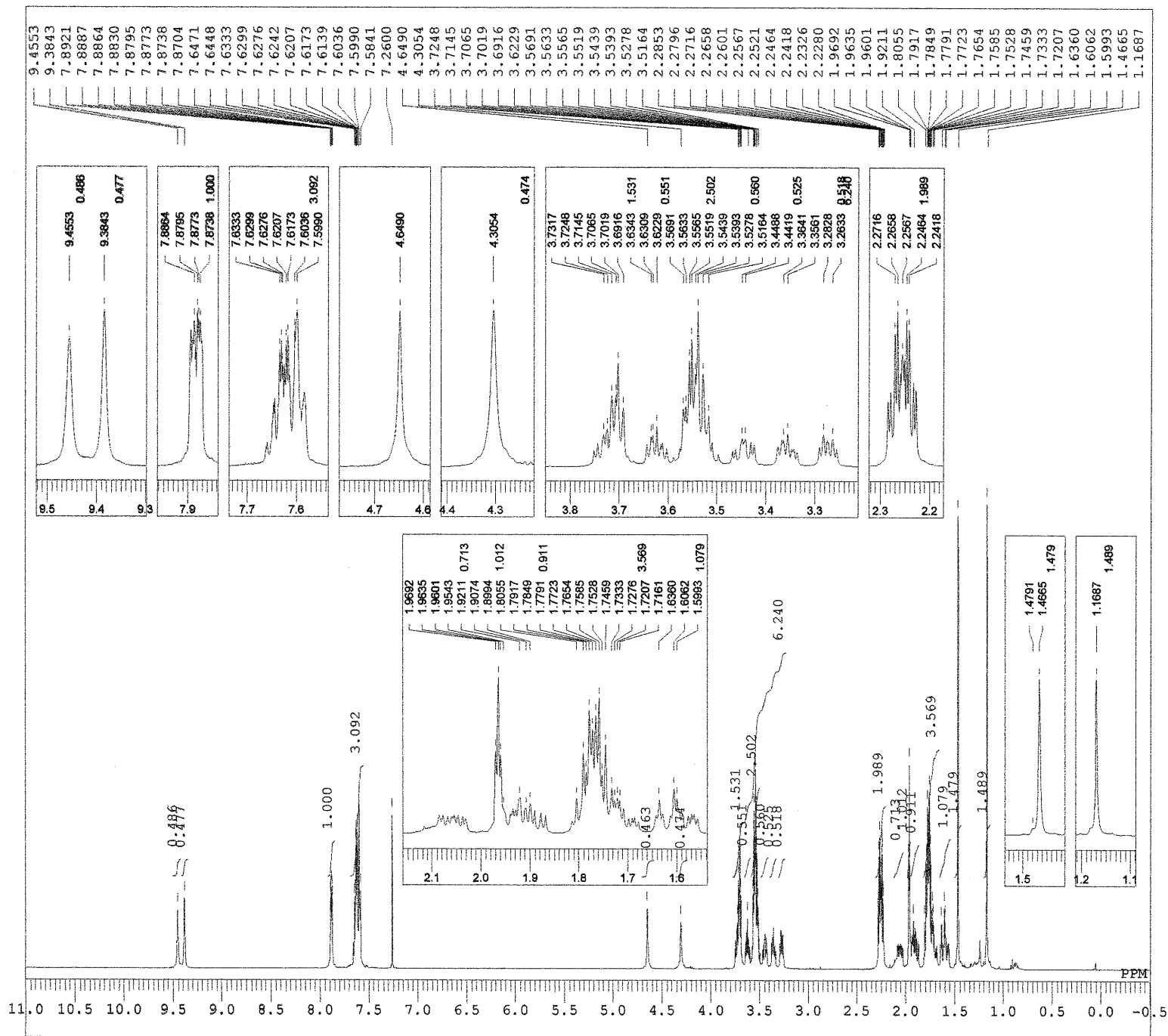
tert-yne, OH



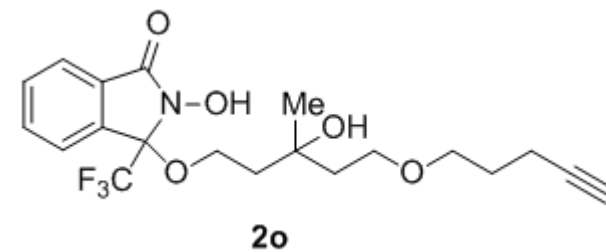
DFILE ozawa07-099_19F.jdf
COMNT tert-yne, OH
DATIM 11-05-2015 15:33:38
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

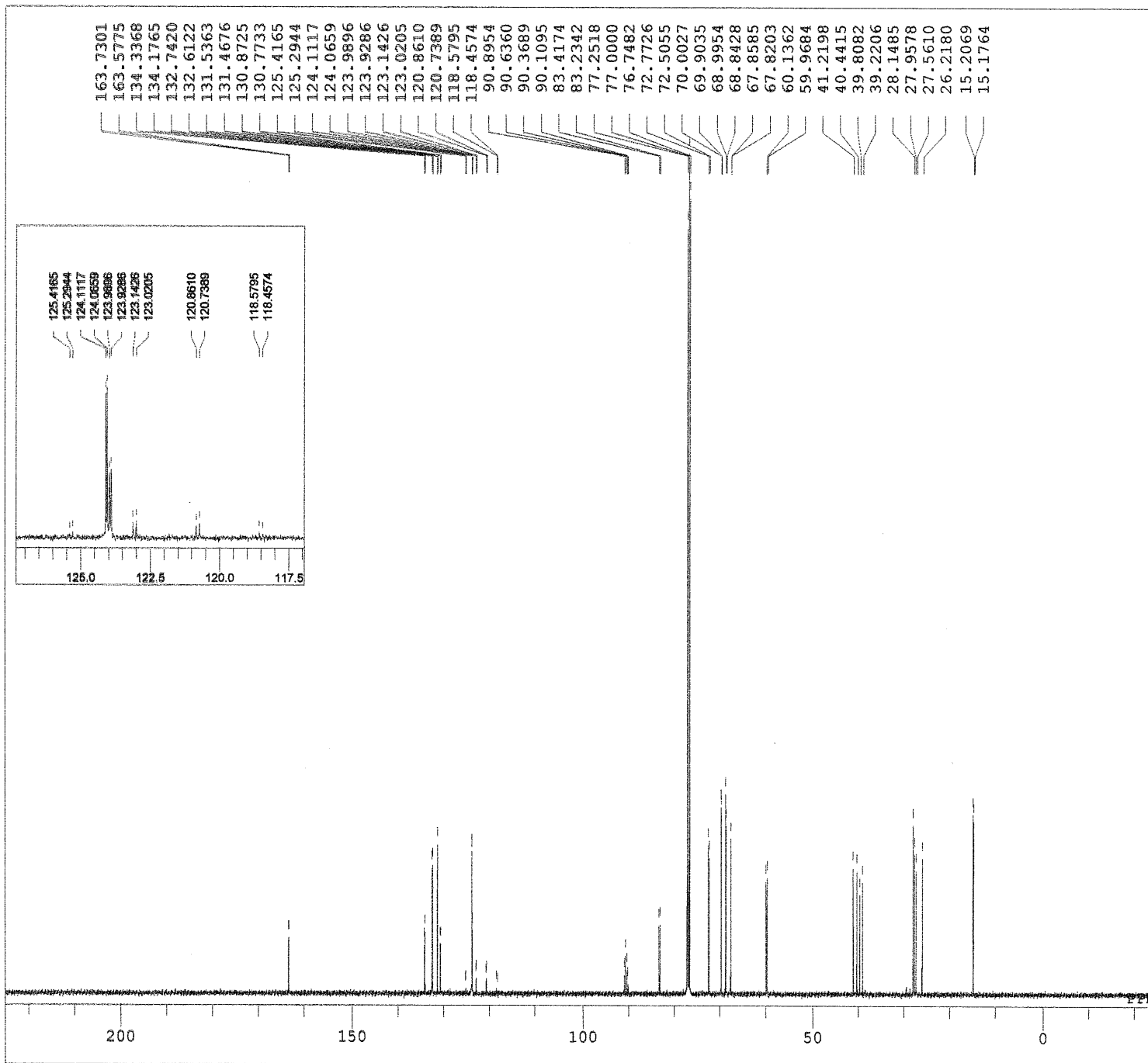


tert-yne, [0]

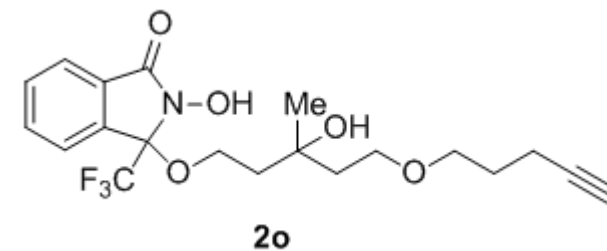


DFILE ozawa07-102_PTL1_1H.jdf
 COMNT tert-yne, [0]
 DATIM 2015-05-11 15:01:17
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 8
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.3 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30

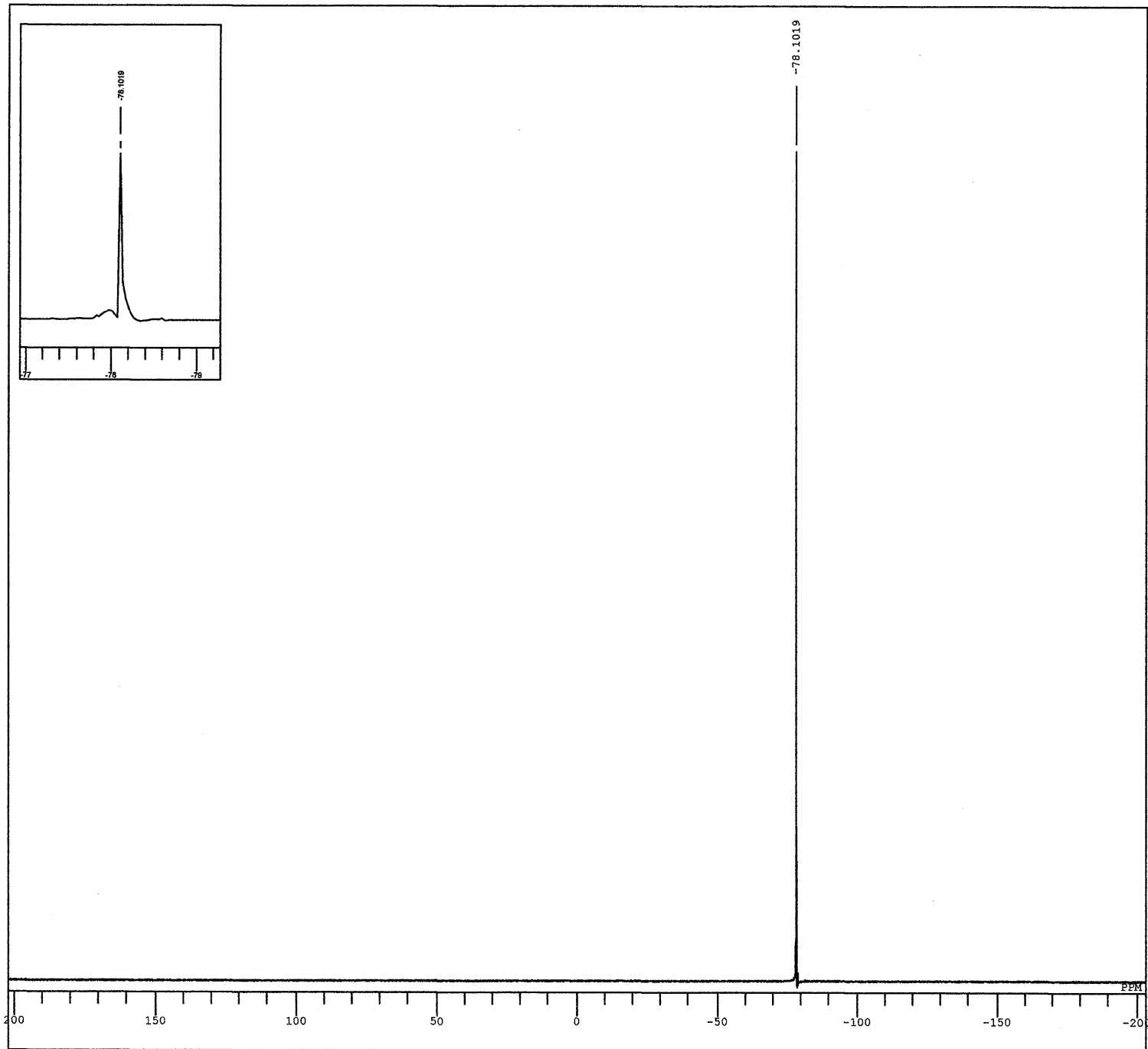




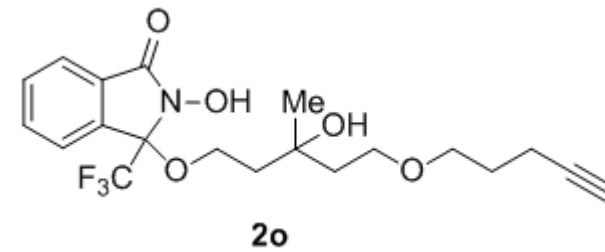
DFILE ozawa07-102_13C.jdf
 COMMT tert-yne, [O]
 DATIM 2015-05-12 17:50:02
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 31446.54 Hz
 SCANS 2662
 ACQTM 1.0420 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.8 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.42 Hz
 RGAIN 72



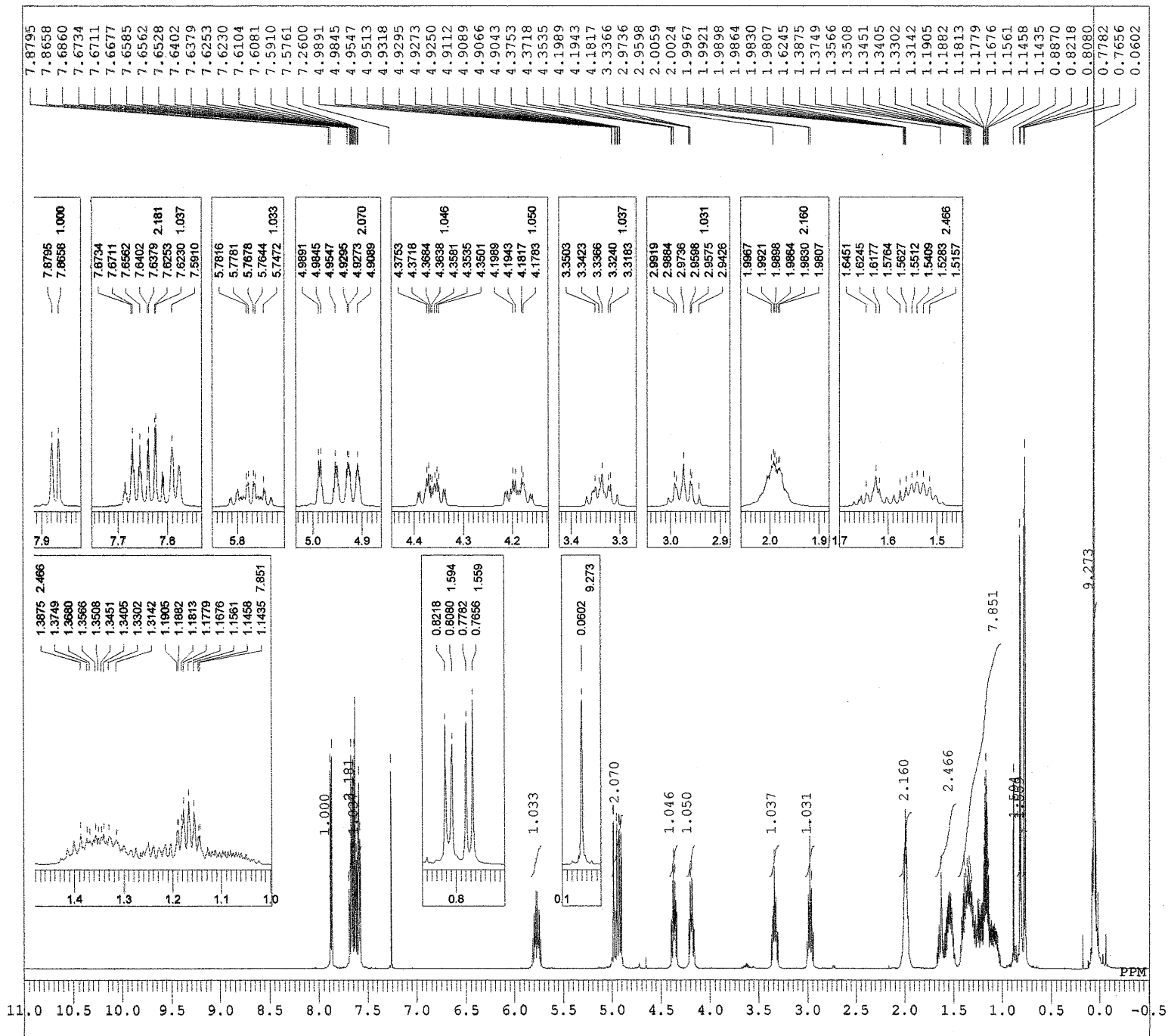
tert-yne, [0]



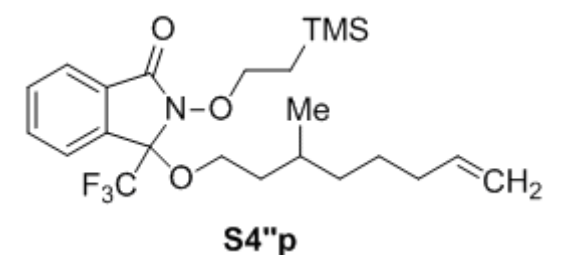
DFILE ozawa07-102_19F.jdf
COMNT tert-yne, [0]
DATIM 11-05-2015 15:37:59
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

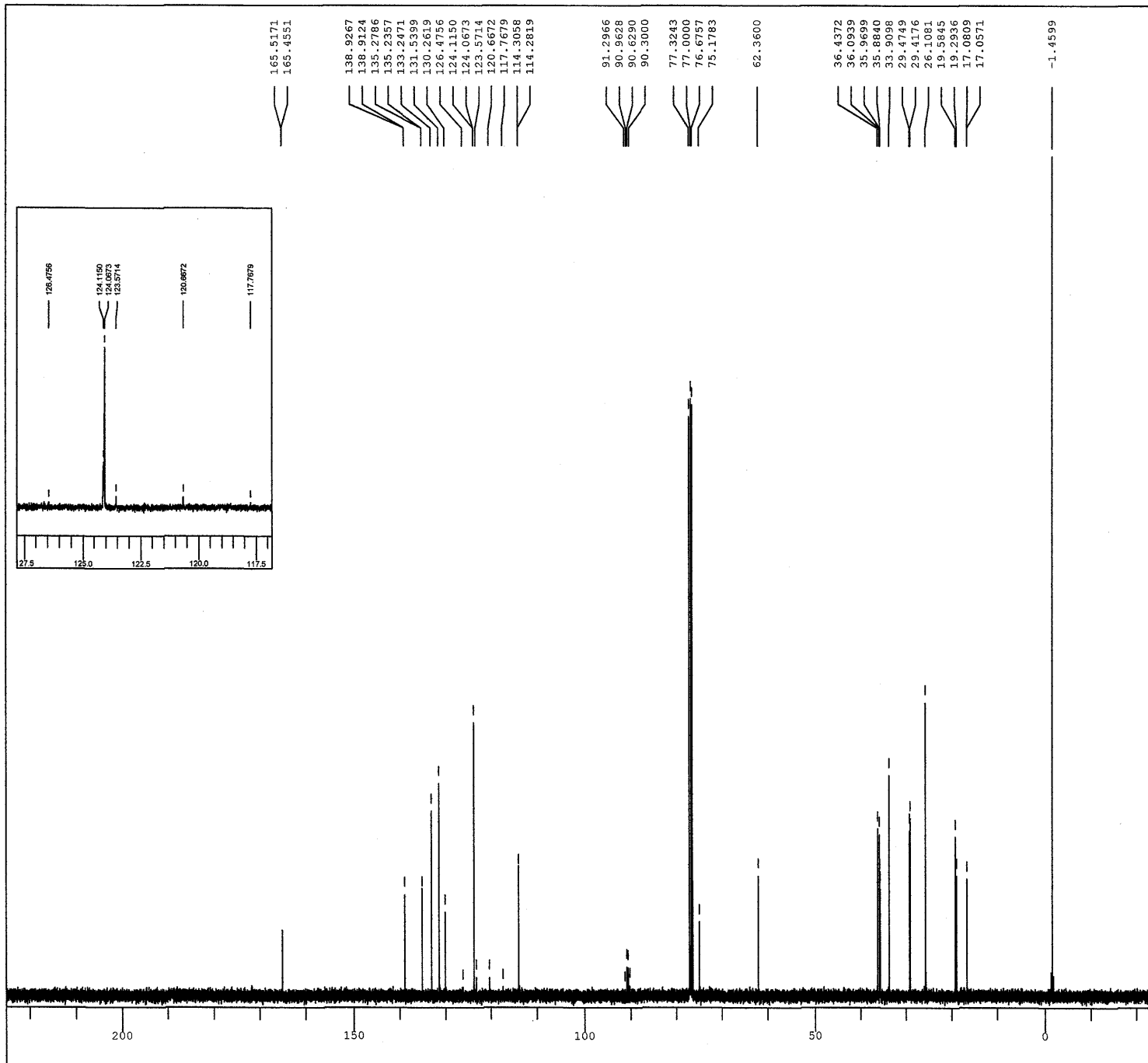


3-Me-7-octenol

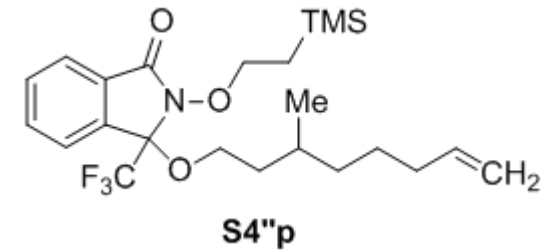


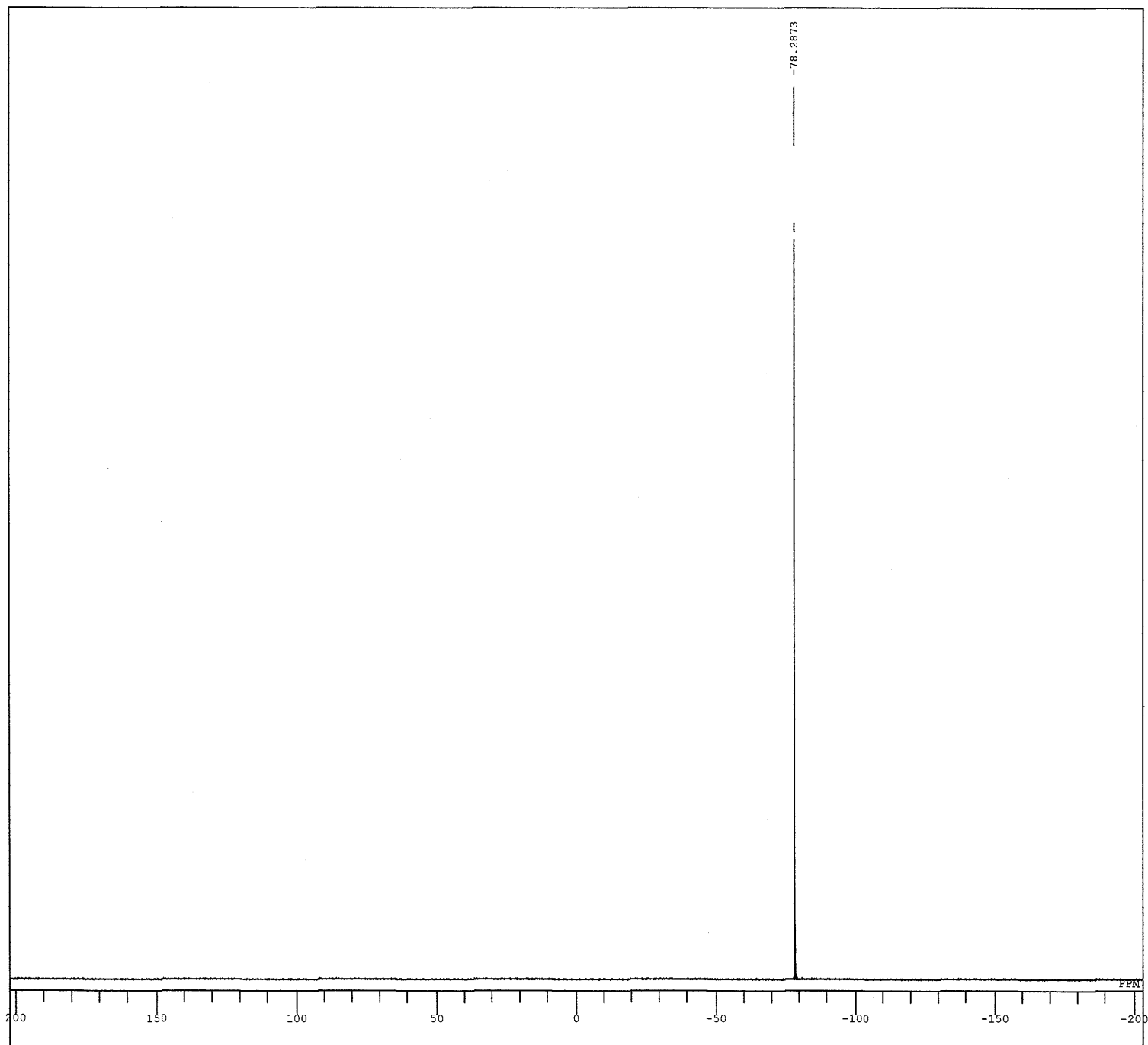
DFILE ozawa06-065_1h.jdf
 COMTM 3-Me-7-octenol
 DATIM 2014-12-05 15:50:55
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 500.16 MHz
 OBSSE 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 8
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 25.5 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 28



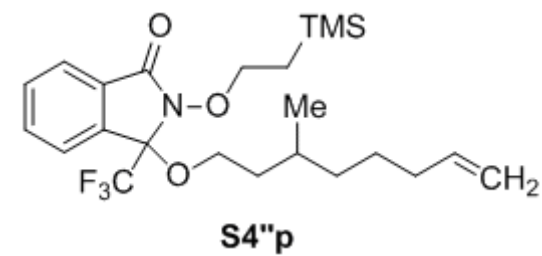


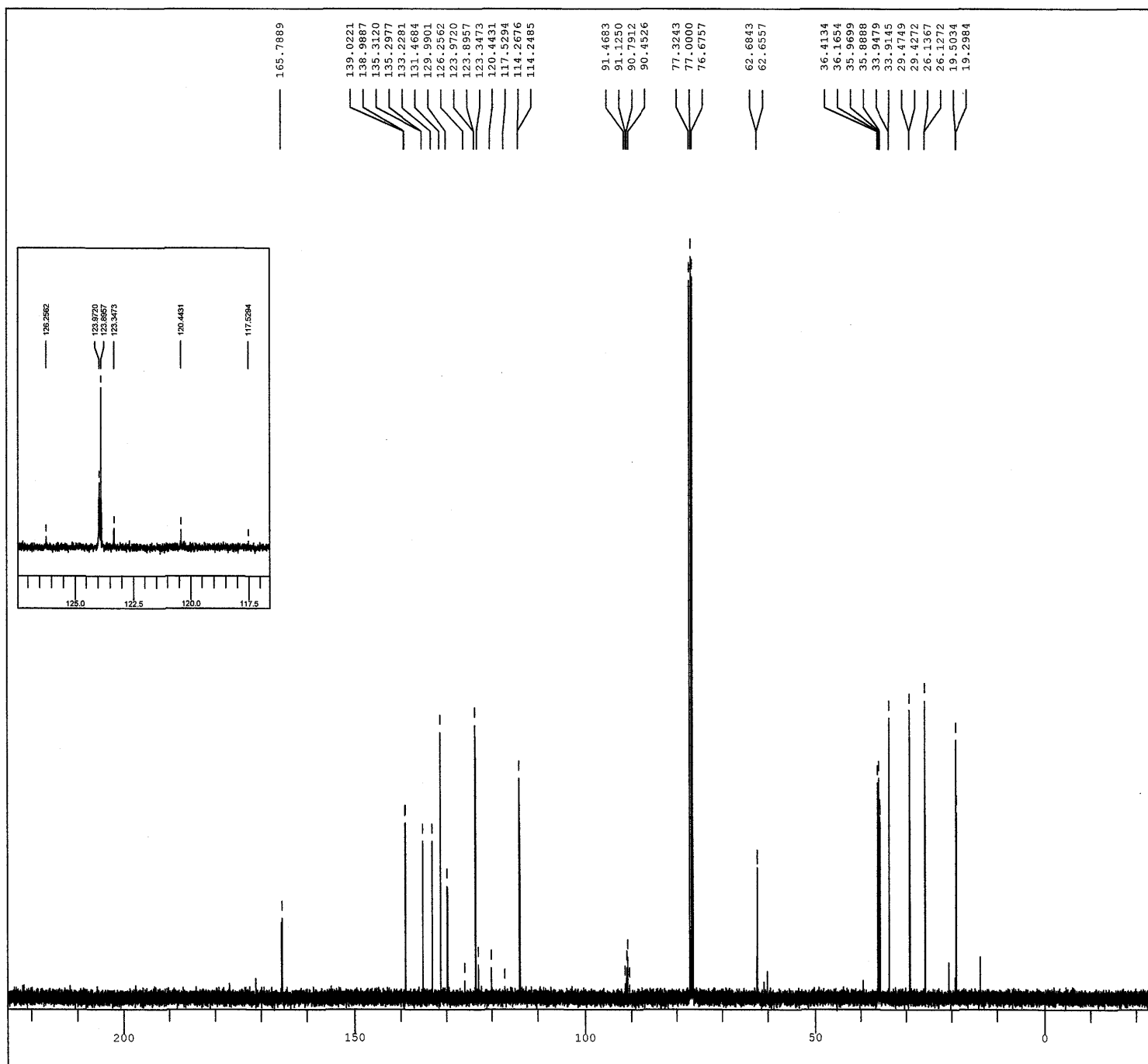
DFILE ozawa06-065_13C.jdf
 COMNT 3-Me-7-octenol
 DATIM 06-12-2014 07:15:47
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQ 30788.18 Hz
 SCANS 452
 ACQTM 2.1286 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



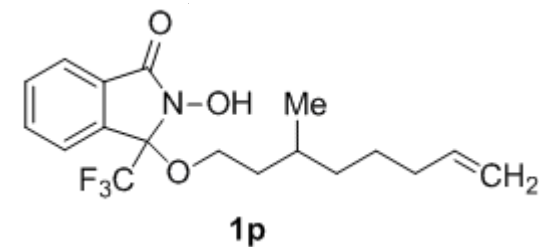


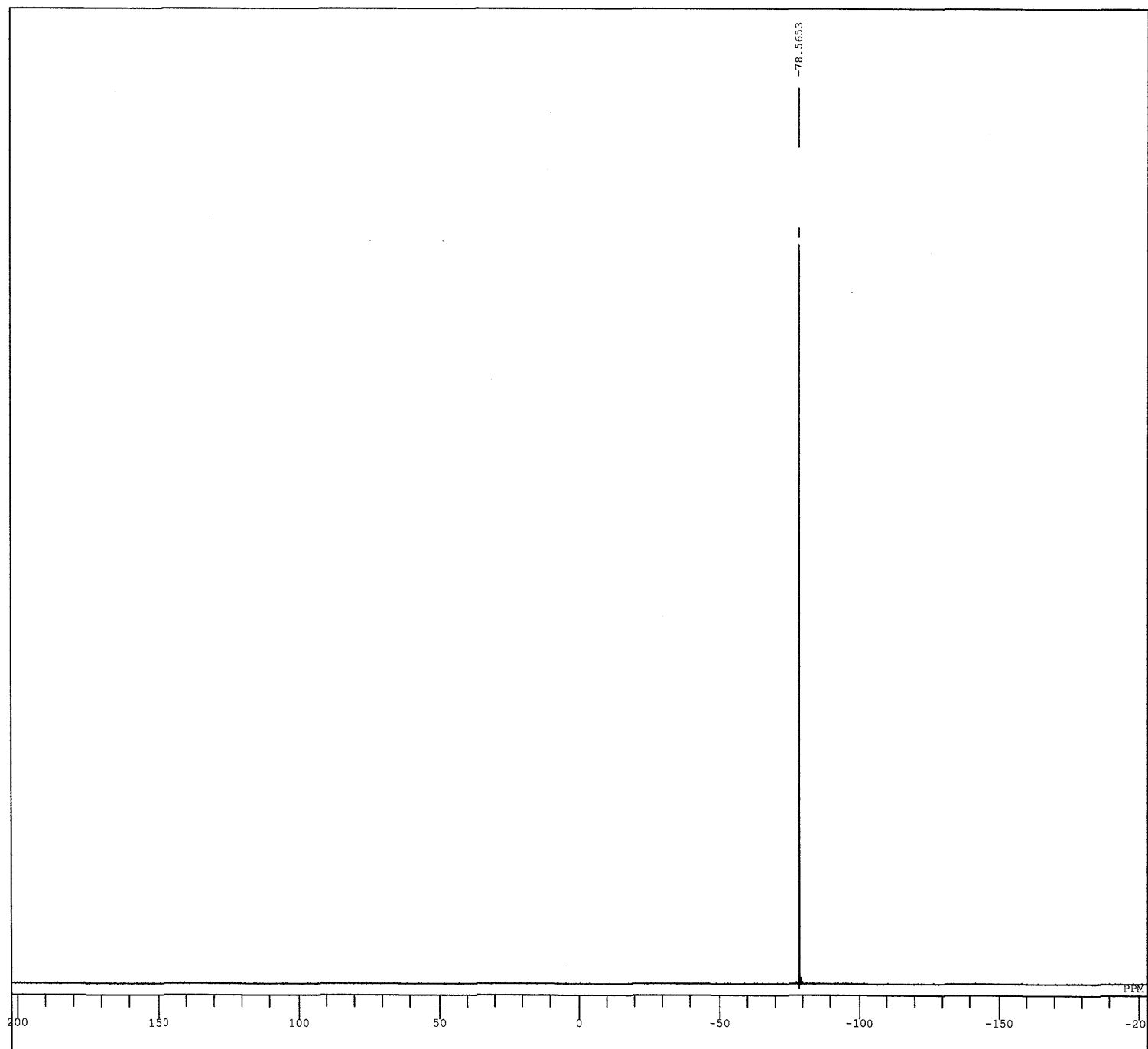
DFILE ozawa06-065_19F.jdf
COMNT 3-Me-7-octenol
DATIM 06-12-2014 07:48:48
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWI 3.90 usec
IRNUC 19F
CTEMP 22.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



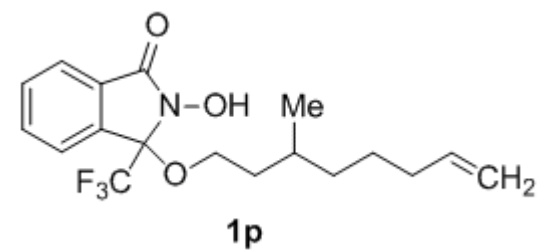


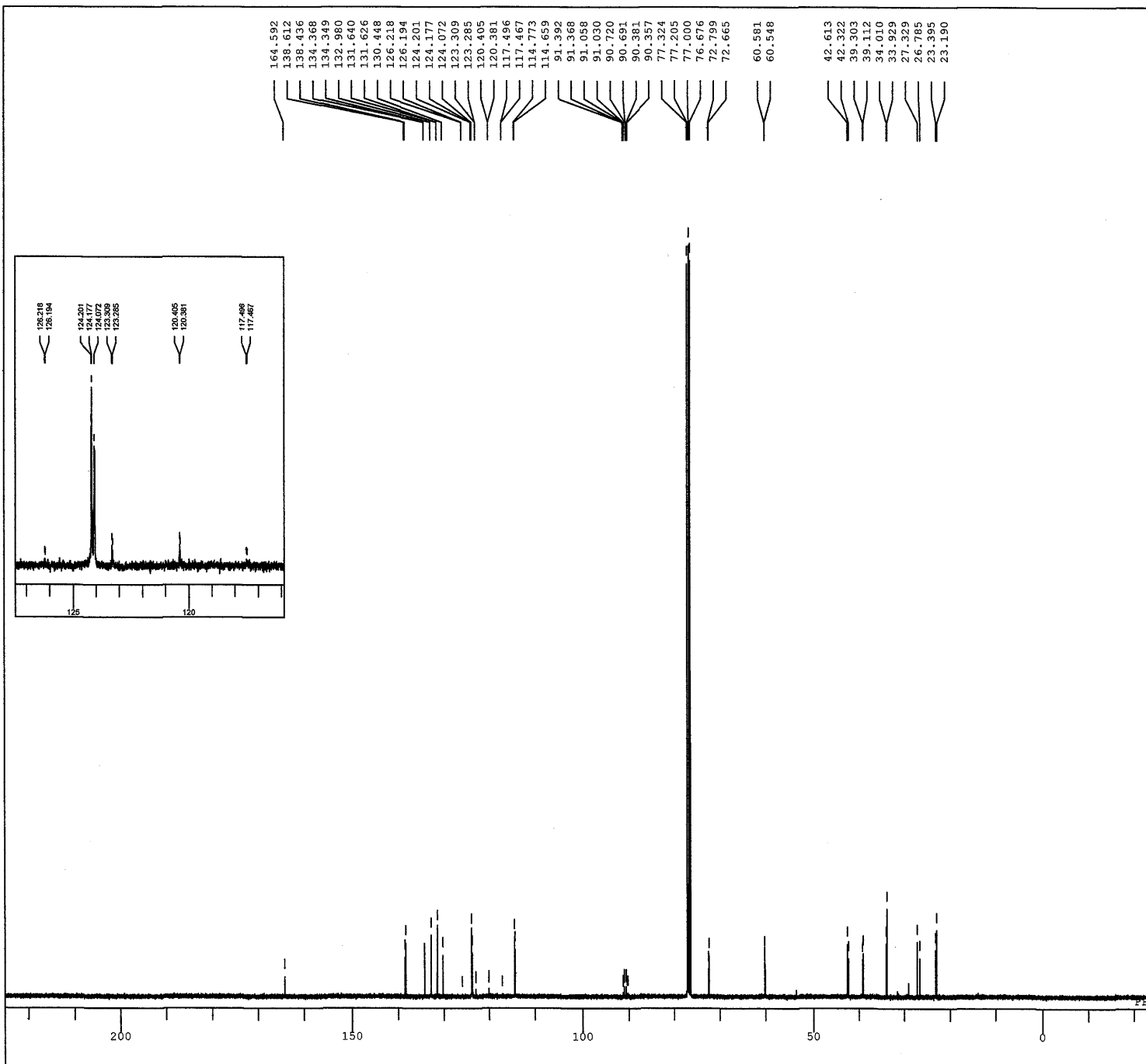
DFILE ozawa06-071_13C.jdf
 COMNT 3-Me-7-octenol, OH
 DATIM 06-12-2014 08:44:07
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQU 30788.18 Hz
 SCANS 404
 ACQTM 2.1286 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



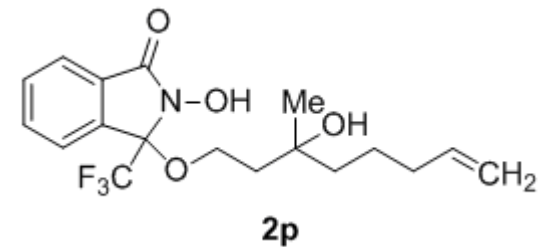


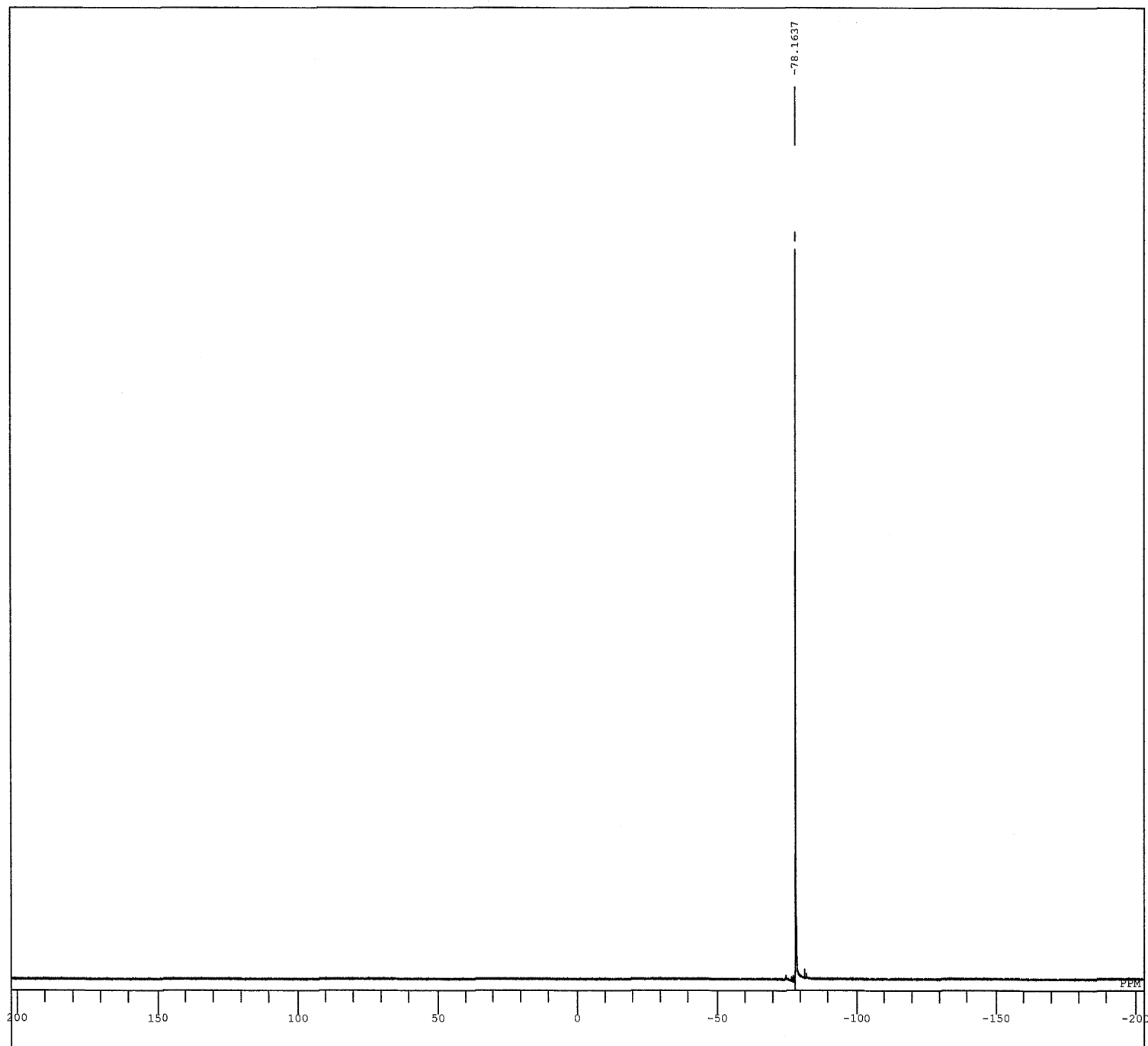
DFILE ozawa06-071_19F.jdf
COMNT 3-Me-7-octenol, OH
DATIM 06-12-2014 09:13:50
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 22.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



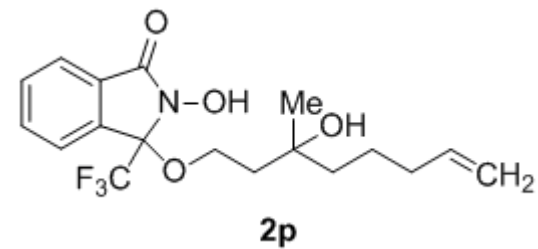


DFILE ozawa060-087_13C.jdf
 COMNT 3-Me-7-octenol, [O]
 DATIM 12-12-2014 19:14:28
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQU 30788.18 Hz
 SCANS 10400
 ACQTM 2.1286 sec
 PD 2.0000 sec
 FWL 3.07 usec
 IRNUC 1H
 CTEMP 22.7 c
 SILVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

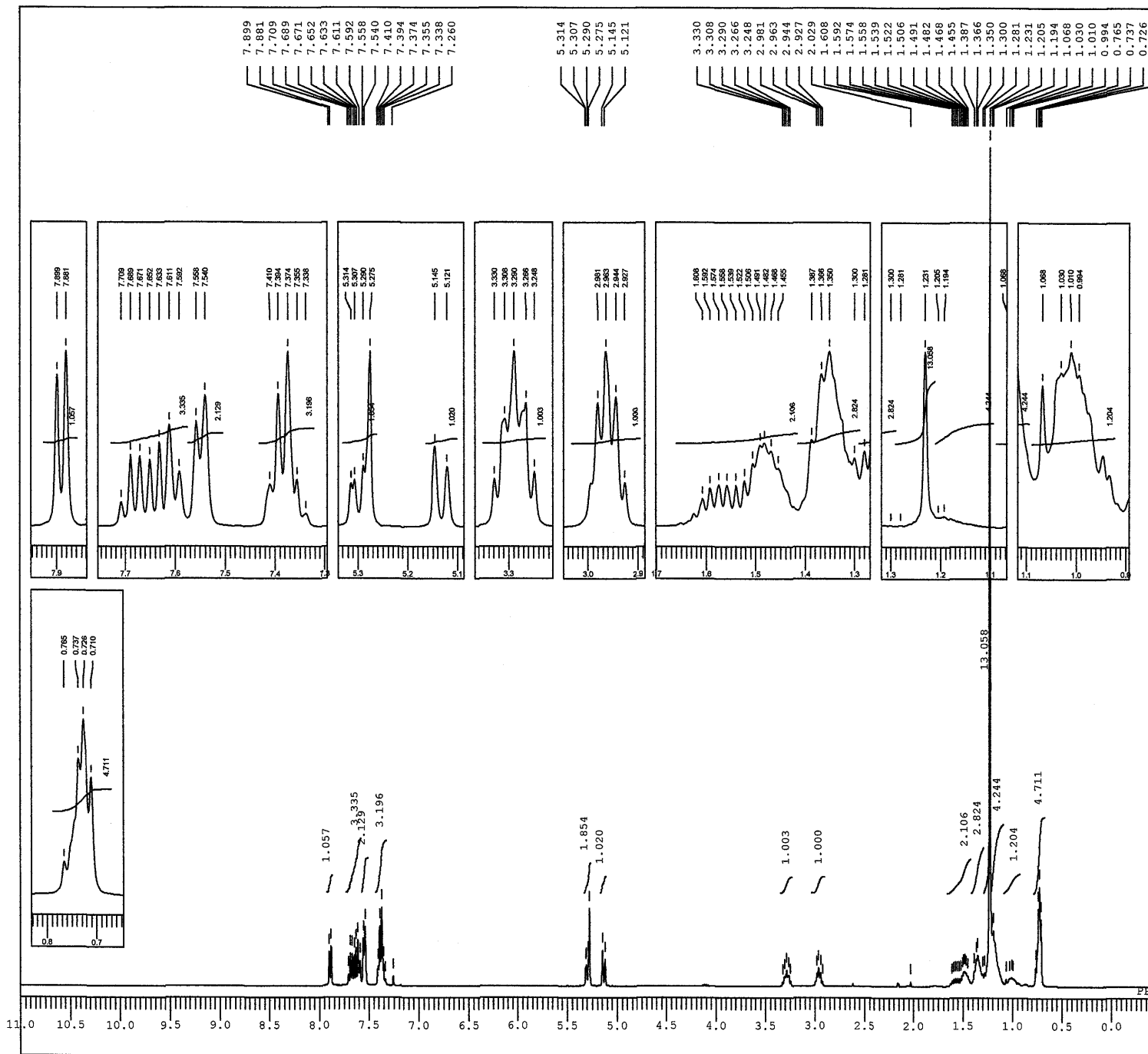




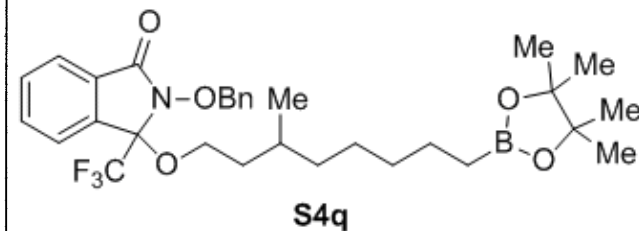
DFILE ozawa06-087_19F.jdf
COMNT 3-Me-7-octenol, [O]
DATIM 09-12-2014 09:04:40
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 12
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 22.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



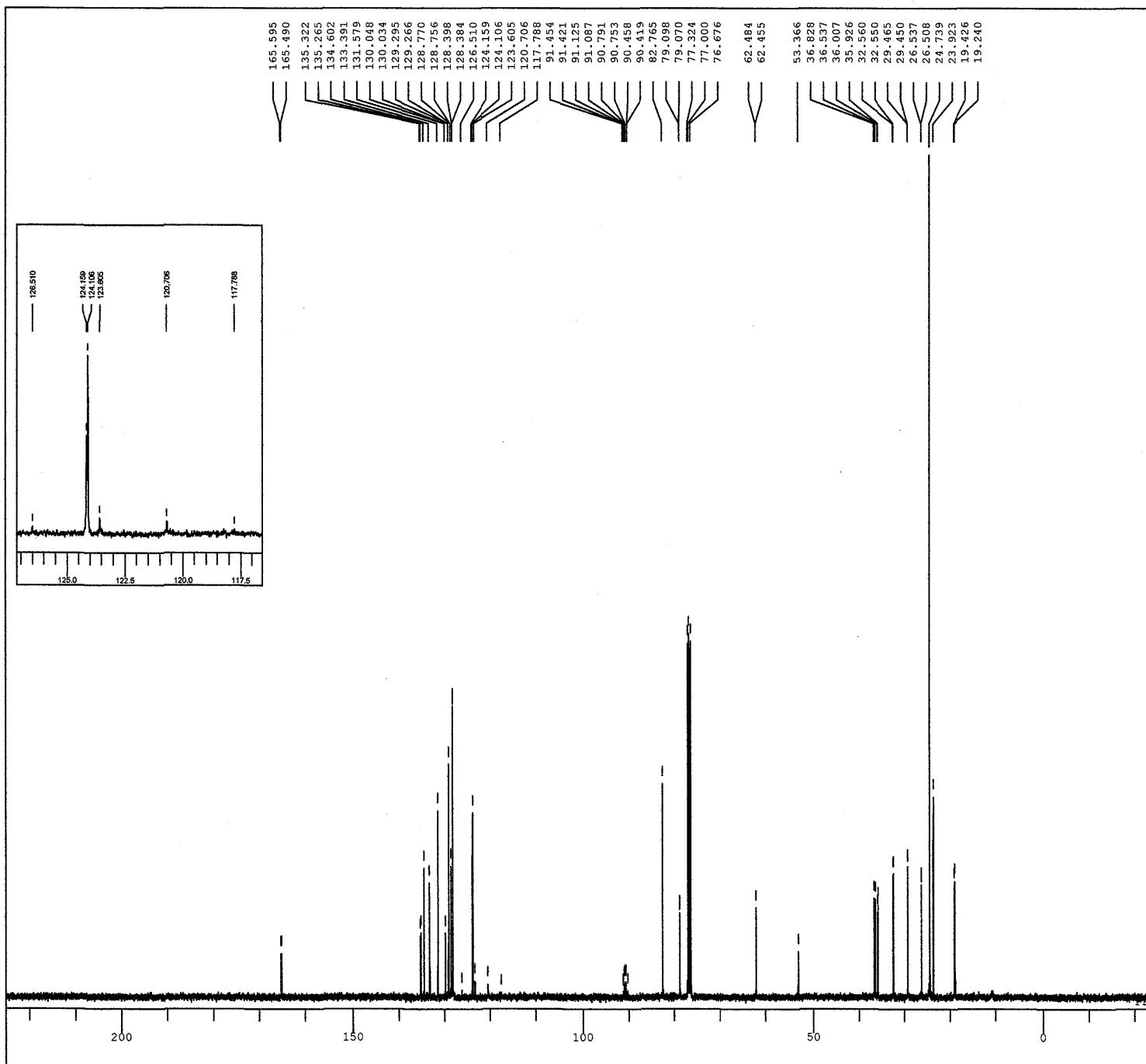
alkyl boronic acid ester, Bn



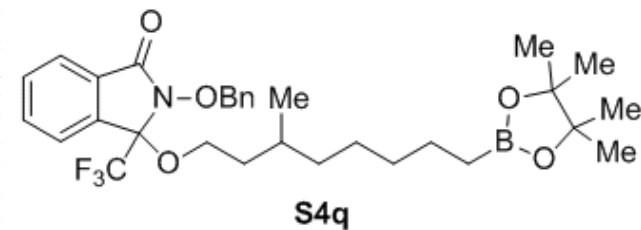
DFILE ozawa06-106 1H.als
 COMNT alkyl boronic acid ester, Bn
 DATIM 18-12-2014 12:55:37
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSFQ 8.51 KHz
 OBFIN 3.34 Hz
 POINT 13107
 FREQU 5878.90 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.07 usec
 IRNUC 1H
 CTEMP 21.8 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 1.00 Hz
 RGAIN 22

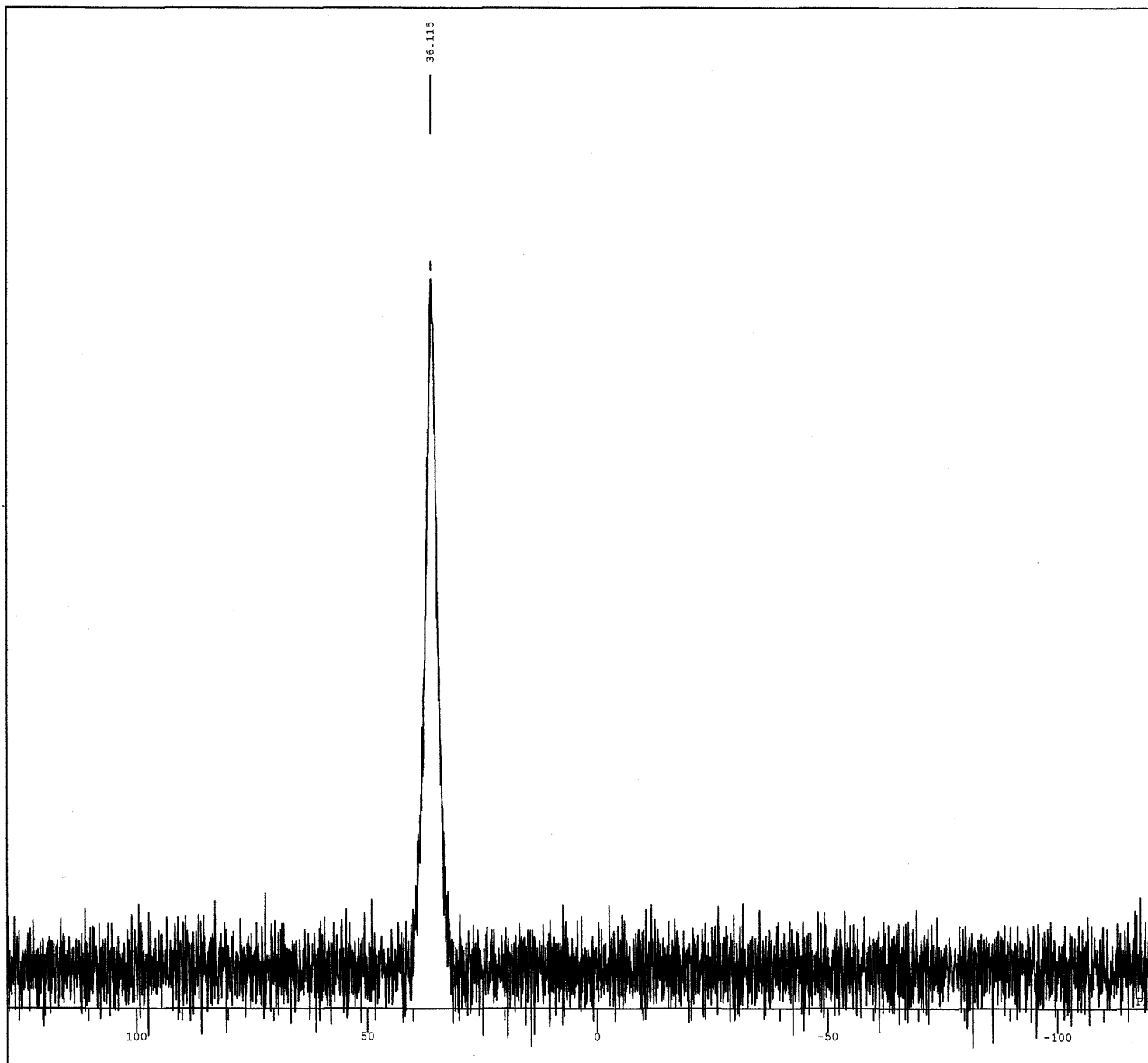


alkyl boronic acid ester, Bn

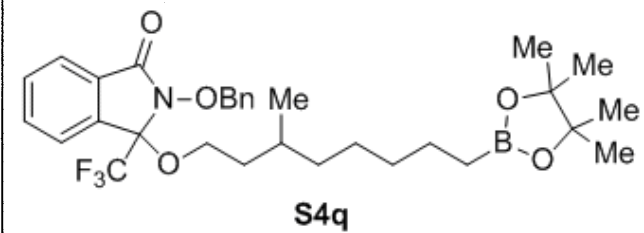


DFILE ozawa06-106 13C.als
COMNT alkyl boronic acid ester, Bn
DATIM 18-12-2014 12:56:45
OBNUC 13C
EXMOD carbon.jxp
OBFRO 98.52 MHz
OBSFT 4.64 KHz
OBFIN 8.74 Hz
POINT 52428
FREQU 24630.54 Hz
SCANS 200
ACQTM 2.1286 sec
PD 2.0000 sec
PW1 3.07 usec
IRNUC 1H
CTEMP 22.1 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 60

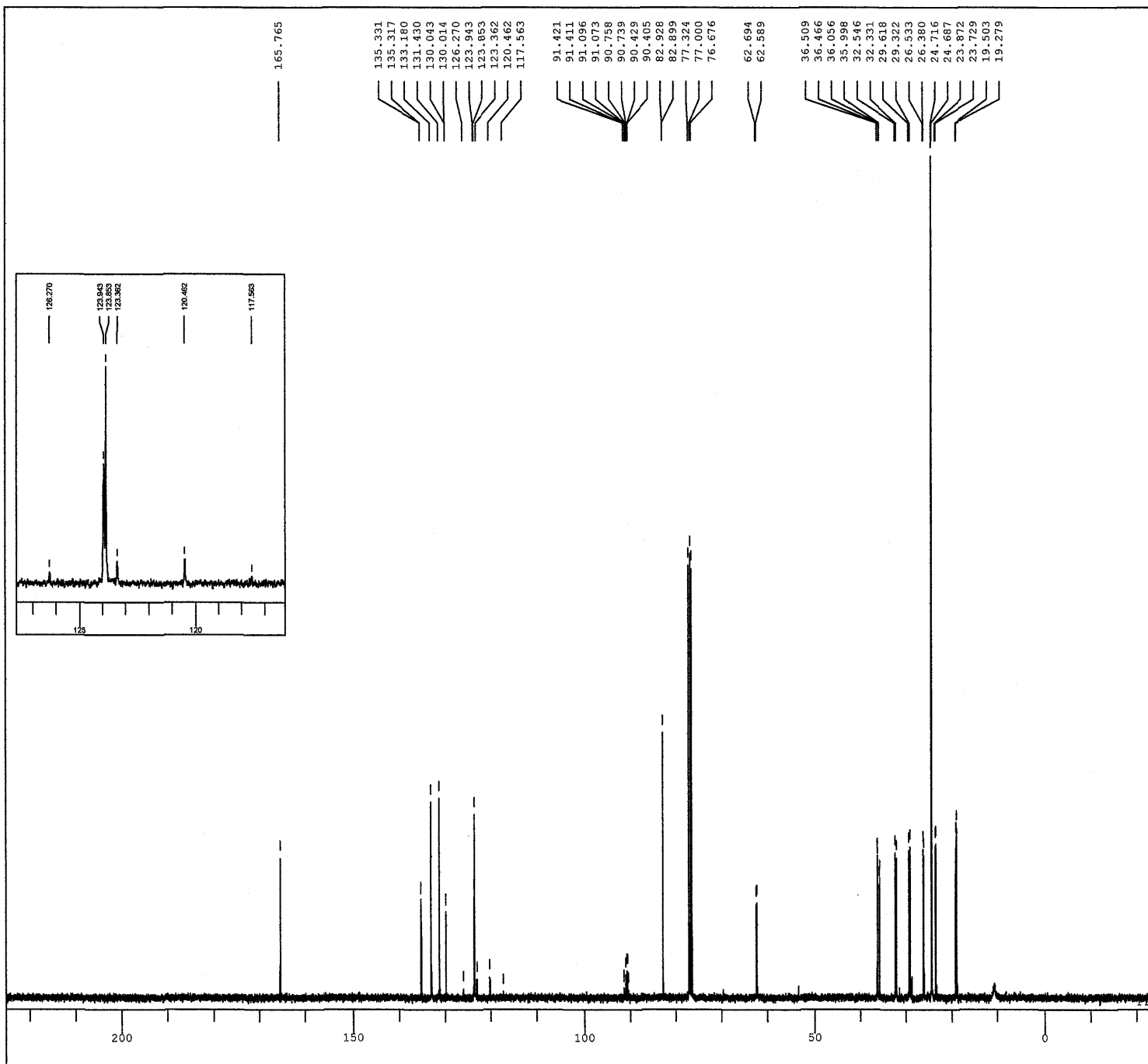




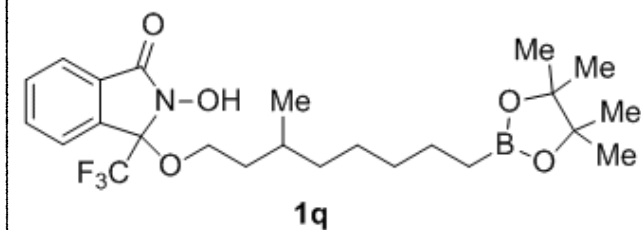
DFILE ozawa06-106_11B.jdf
COMNT alkyl-Bpin, Bn
DATIM 30-12-2014 09:58:14
OBNUC 11B
EXMOD carbon.jxp
CBFRQ 125.70 MHz
CBSST 0.81 KHz
CBFIN 3.25 Hz
POINT 4095
FREQU 39308.18 Hz
SCANS 1000
ACQTM 0.1042 sec
PD 80.0000 sec
PWL 3.98 usec
IRNUC 1H
CTEMP 21.8 c
SLVNT CDCL3
EXREF 31.00 ppm
BF 0.12 Hz
RGAIN 60



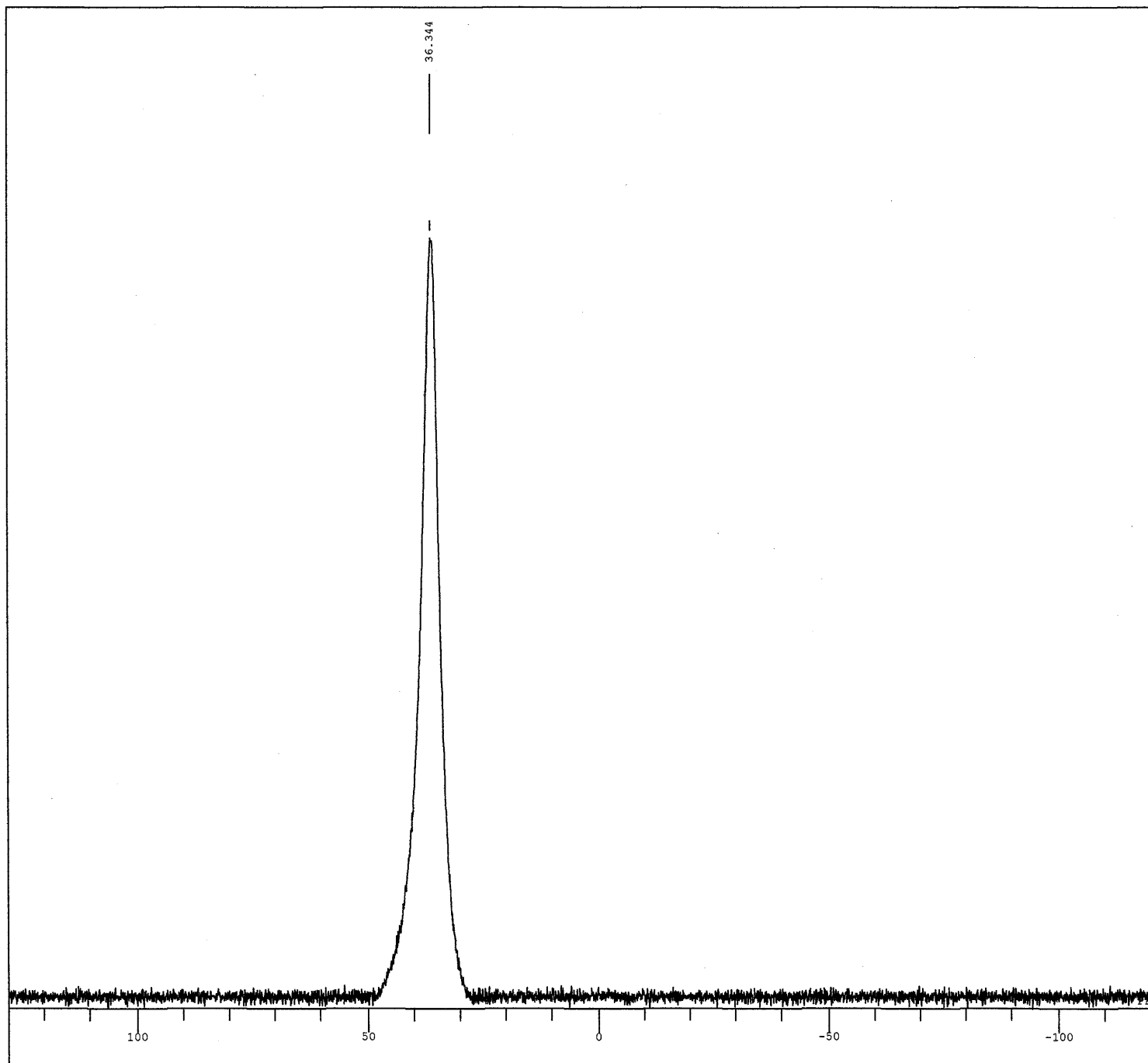
alkyl boronic acid ester, OH



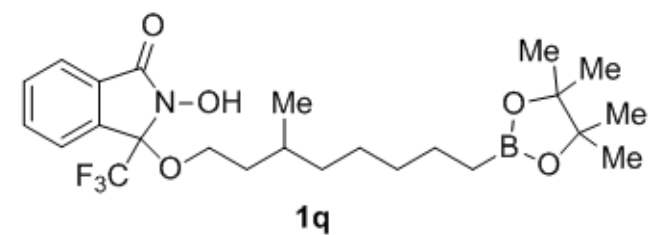
DFILE ozawa06-107_13C.jdf
COMNT alkyl boronic acid ester, OH
DATIM 22-12-2014 17:07:37
OBNUC 13C
EXMOD carbon.jxp
OBFREQ 98.52 MHz
OBSETE 4.64 KHz
OBFIN 8.74 Hz
POINT 65535
FREQU 30788.18 Hz
SCANS 264
ACQTM 2.1286 sec
PD 2.0000 sec
PW1 3.07 usec
IRNUC 1H
CTEMP 22.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 1.00 Hz
RGAIN 58



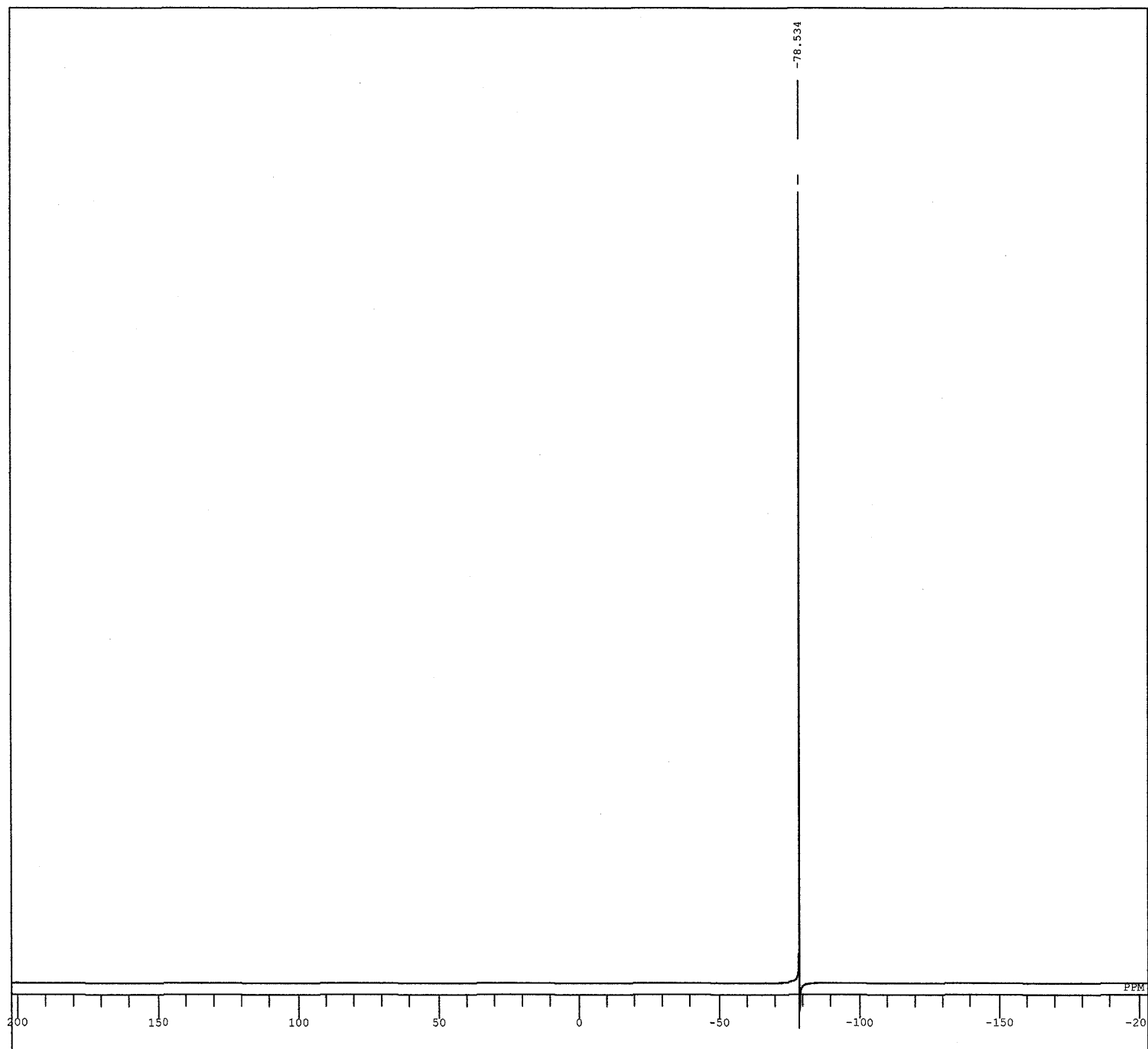
alkyl boronic acid ester, OH



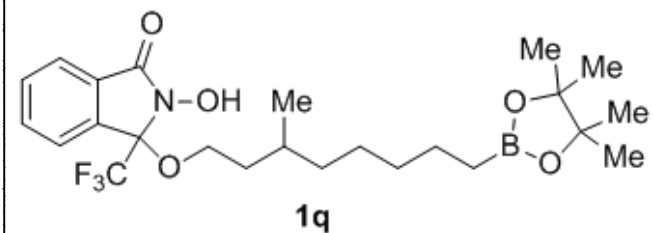
DFILE ozawa06-107 11B.jdf
COMNT alkyl boronic acid ester, OH
DATIM 22-12-2014 17:01:53
OBNUC 11B
EXMOD carbon.jxp
OBFRO 125.70 MHz
OBSFT 0.81 KHz
OBFIN 3.25 Hz
POINT 4095
FREQU 39308.18 Hz
SCANS 500
ACQTM 0.1042 sec
PD 80.0000 sec
PW1 3.98 usec
IRNUC 1H
CTEMP 22.1 c
SLVNT CDCL3
EXREF 31.00 ppm
BF 0.12 Hz
RGAIN 44



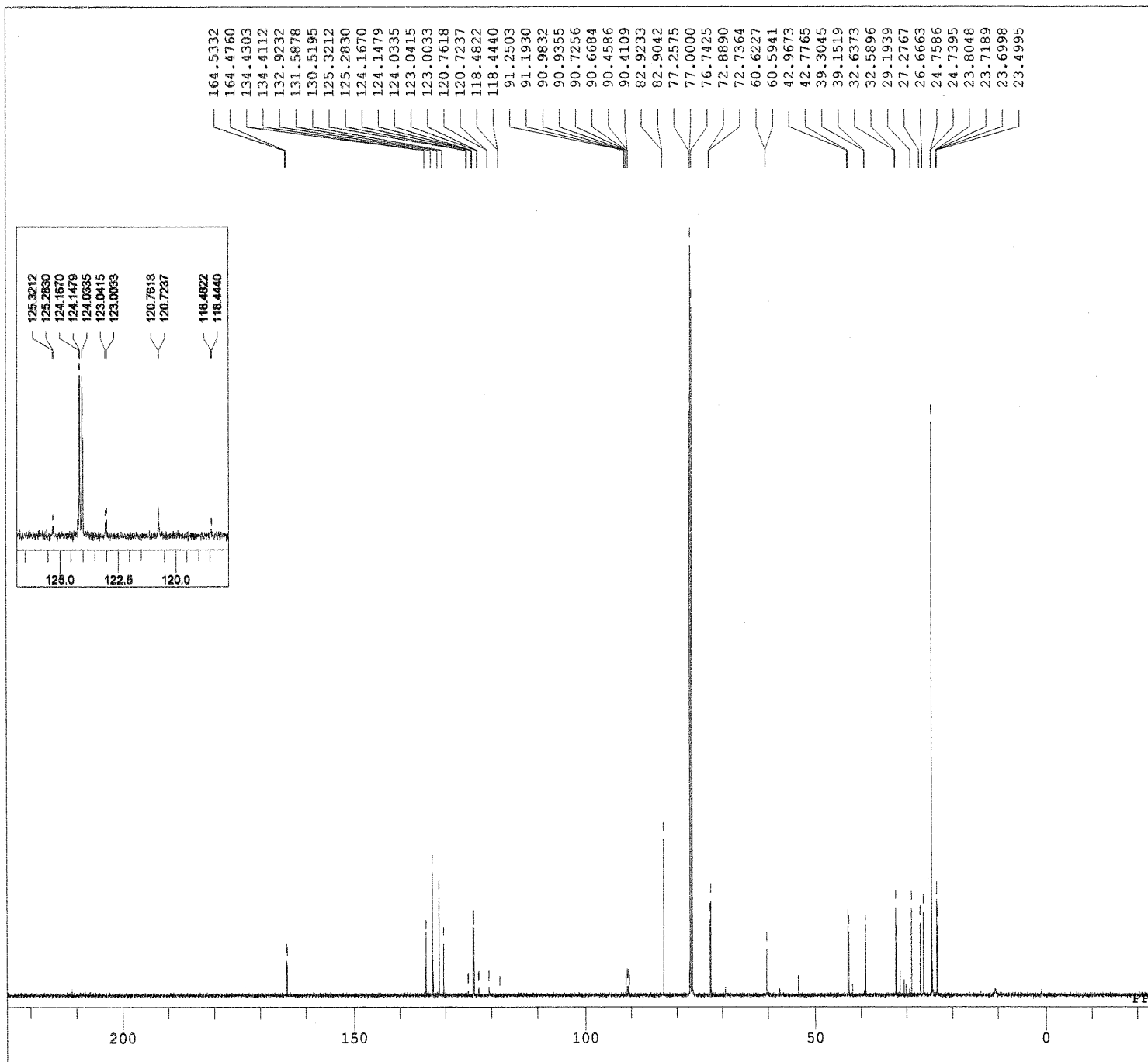
alkyl boronic acid ester, OH



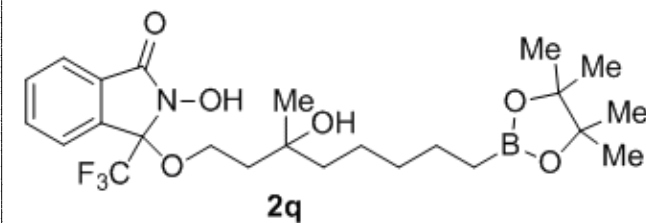
DFILE ozawa06-107 19F.jdf
COMNT alkyl boronic acid ester, OH
DATIM 22-12-2014 16:57:41
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 22.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



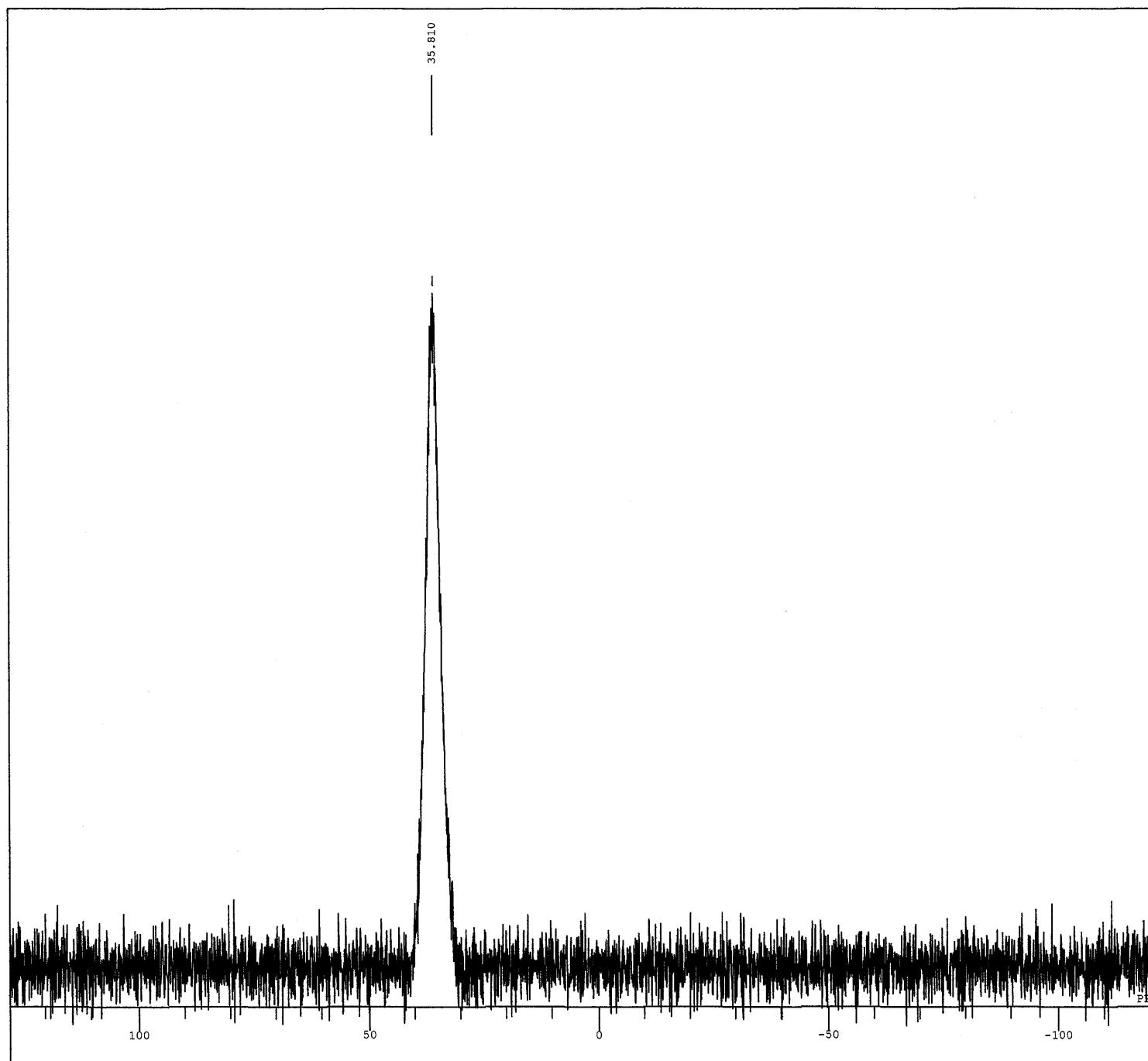
alkyl Bpin, [O]



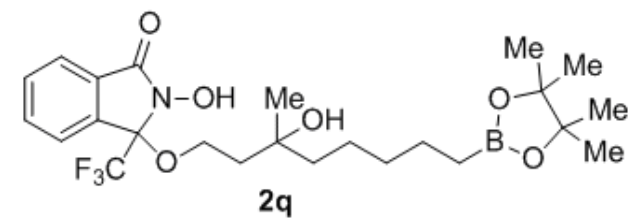
DFILE ozawa06-115_13C.jdf
COMNT alkyl Bpin, [O]
DATIM 2014-12-28 07:52:44
OBNUC 13C
EXMOD carbon.jxp
OBFRO 125.77 MHz
OBSE 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 5120
ACQTM 0.8336 sec
PD 2.0000 sec
PWL 3.40 usec
IRNUC 1H
CTEMP 24.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

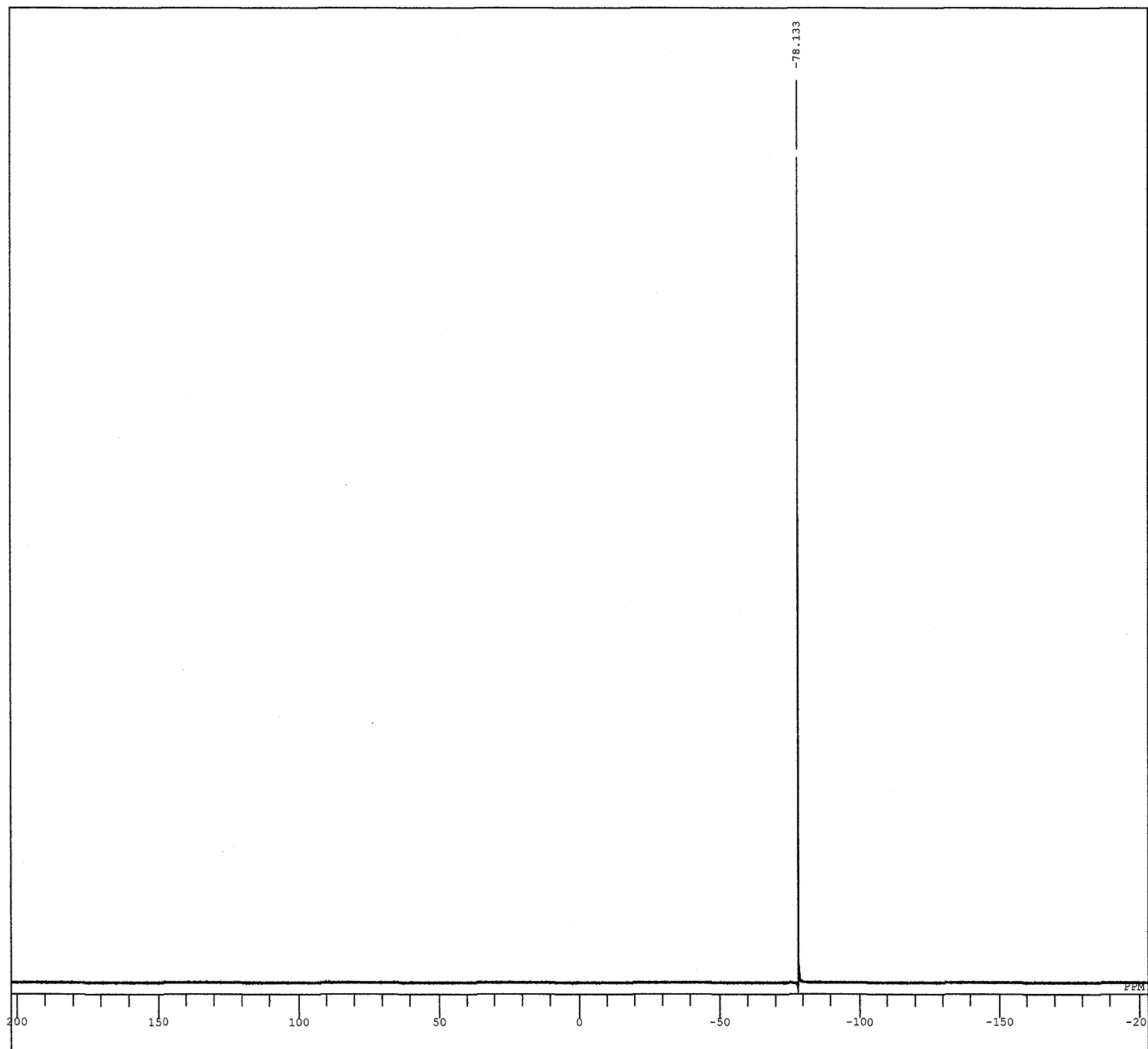


alkyl-Bpin, [0]

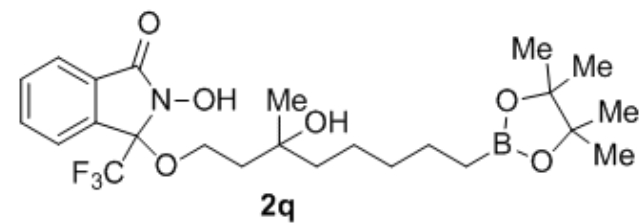


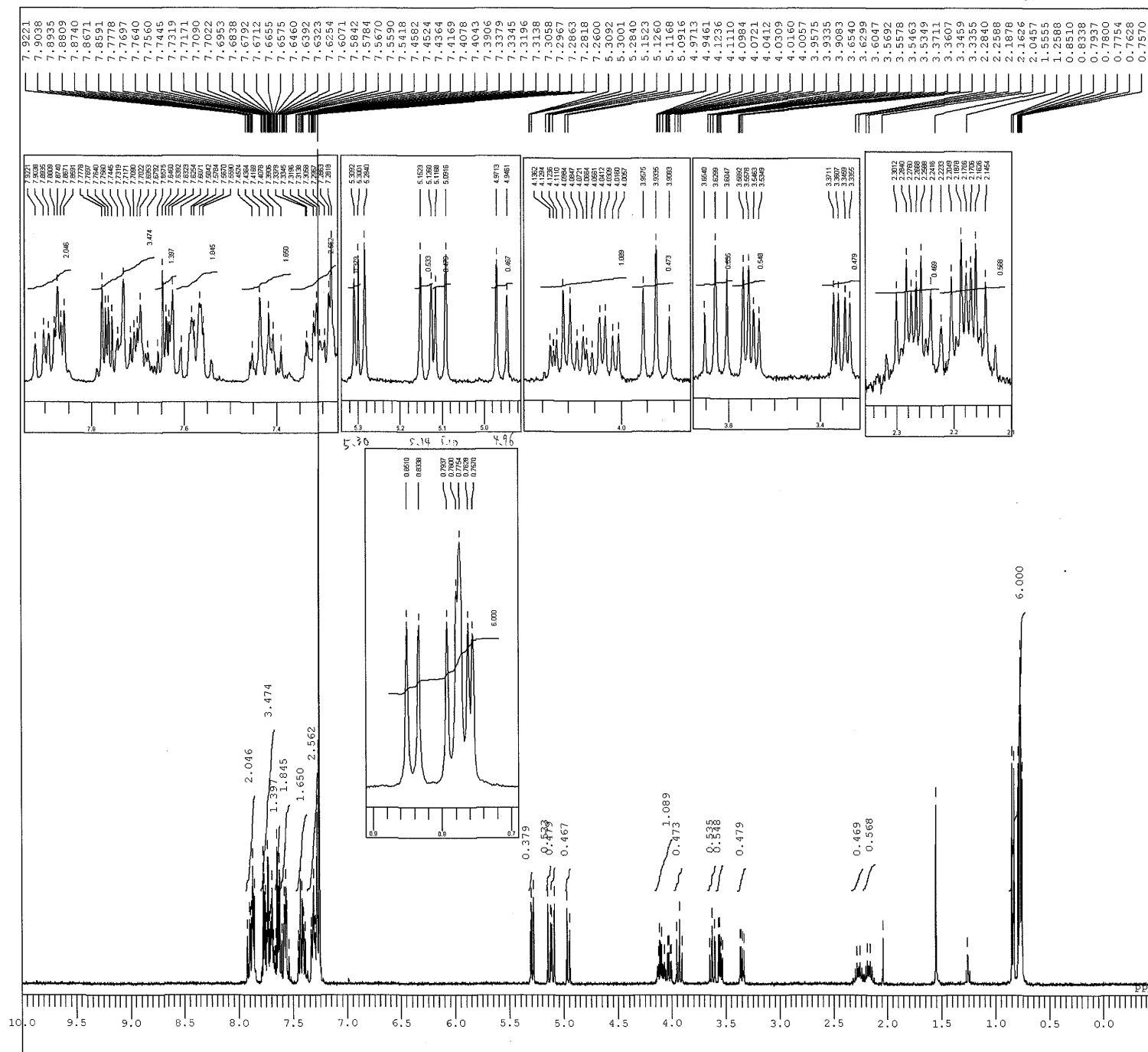
DFILE ozawa06-115_11B.jdf
COMNT alkyl-Bpin, [0]
DATIM 30-12-2014 10:03:48
OBNUC 11B
EXMOD carbon.jxp
OBFREQ 125.70 MHz
OBSETE 0.81 KHz
OBFIN 3.25 Hz
POINT 4095
FREQU 39308.18 Hz
SCANS 500
ACQTM 0.1042 sec
PD 80.0000 sec
PW1 3.98 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 31.00 ppm
BF 0.12 Hz
RGAIN 60





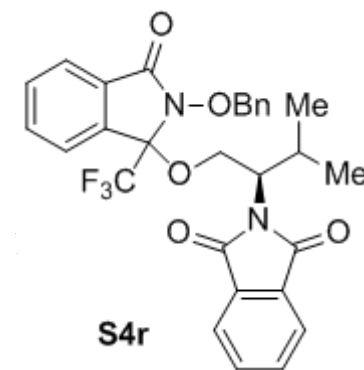
DFILE ozawa06-115 19F.jdf
COMNT alkyl-Bpin, [O]
DATIM 30-12-2014 10:09:12
OBNUC 19F
EXMOD proton.jxp
OBFQ 368.64 MHz
OBSE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQ 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



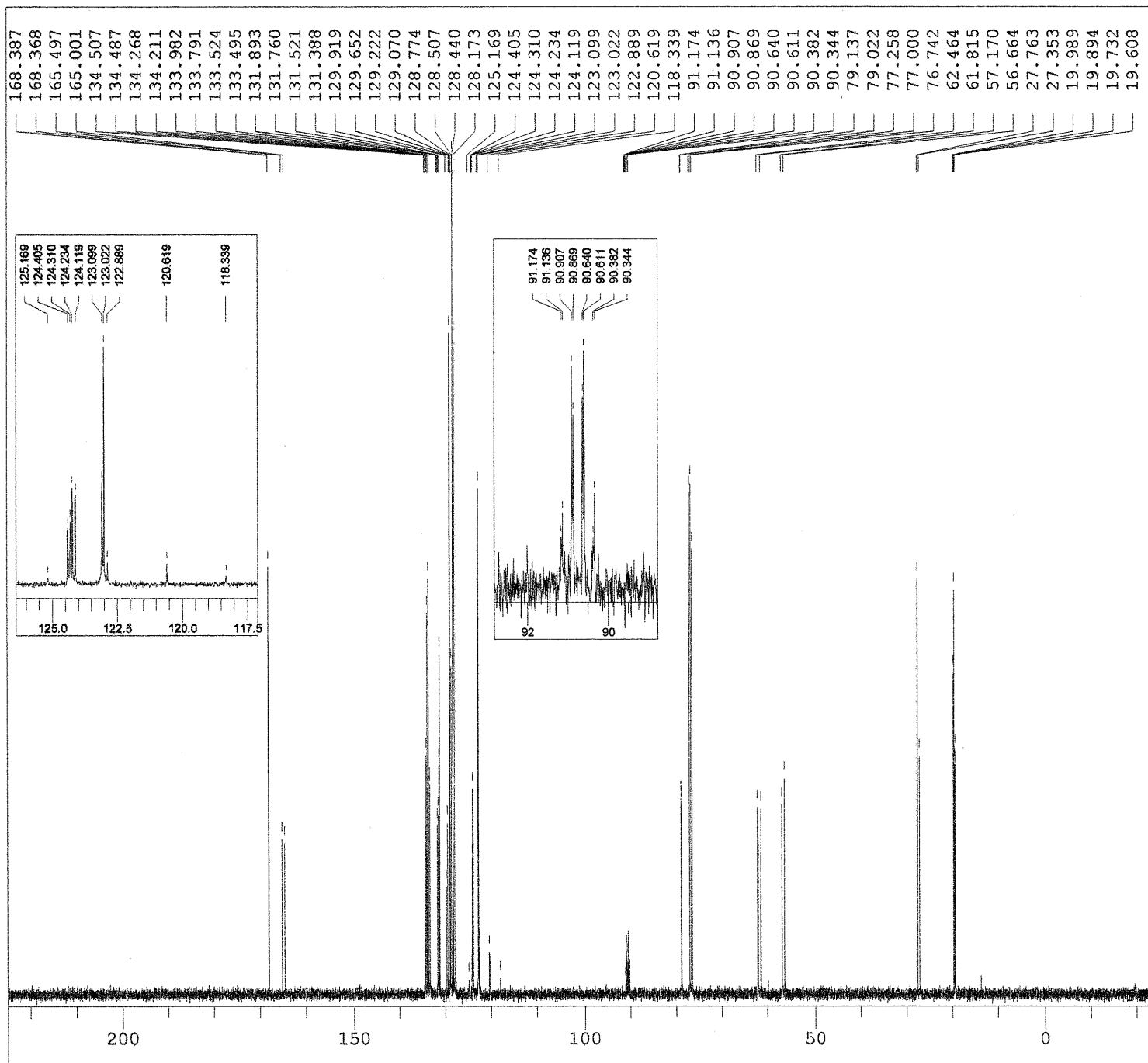


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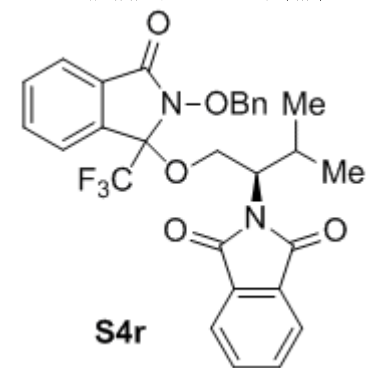
DFILE  ozawa04-060.jdf
COMNT  D-valinol-N-phth
DATIM  02-12-2013 21:20:35
OBNUC  1H
EXMOD  proton.jxp
OBFRQ  391.78 MHz
OBSET  8.51 KHz
OBFIN  3.34 Hz
POINT  16384
FREQU  7352.94 Hz
SCANS  4
ACQTM  2.2282 sec
PD      5.0000 sec
PW1     5.25 usec
IRNUC  1H
CTEMP  21.4 c
SLVNT  CDCL3
EXREF  7.26 ppm
BF      0.12 Hz
RGAIN  48
    
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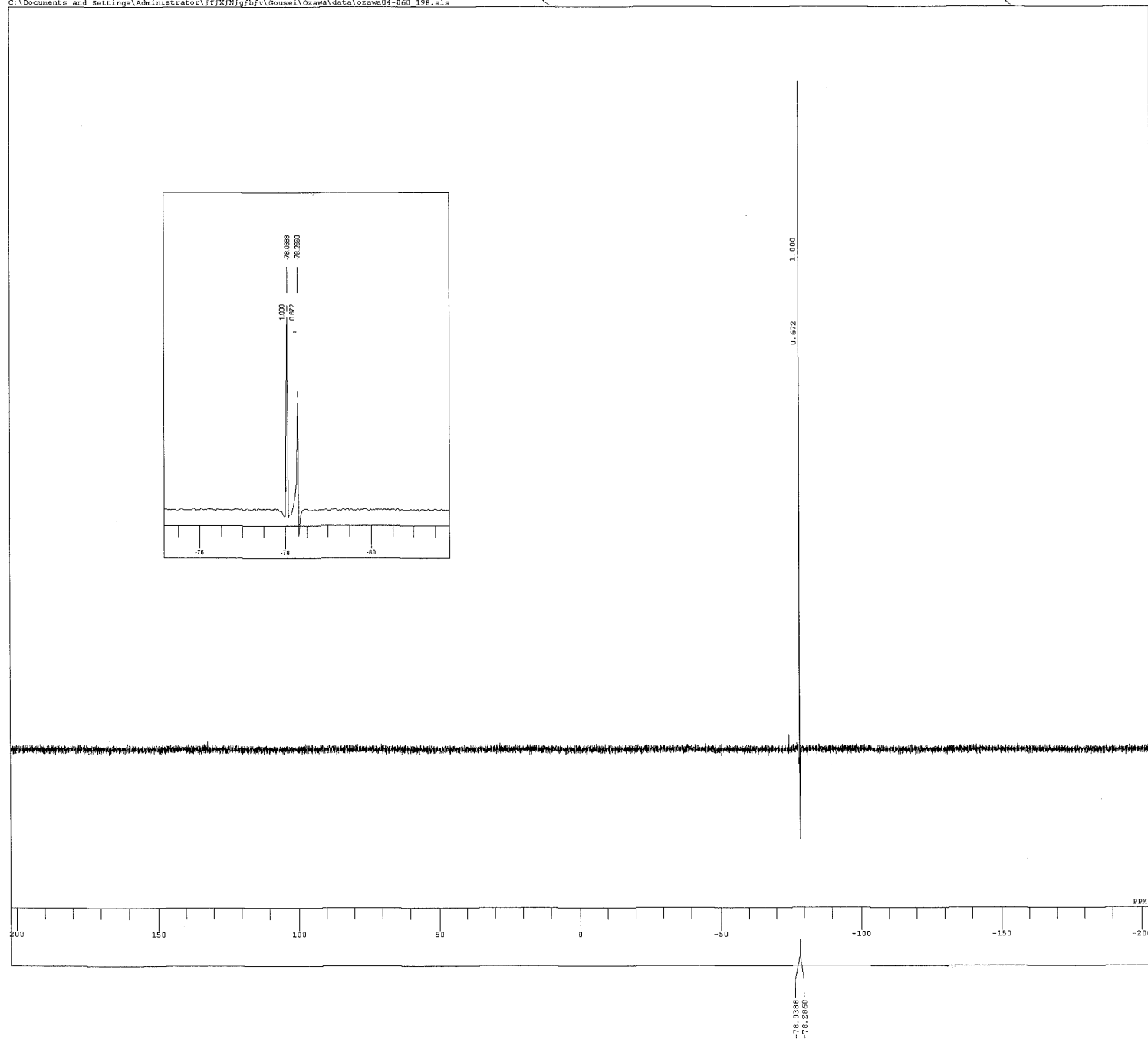


valinol, Bn

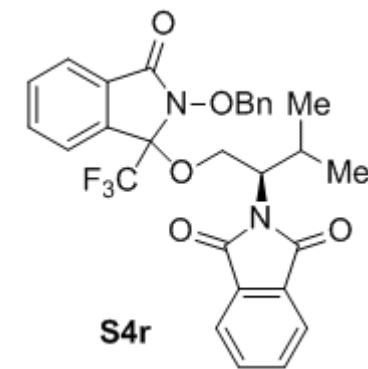


DFILE ozawa04-060_13c.jdf
COMNT valinol, Bn
DATIM 2014-03-17 13:26:26
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 160
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.42 Hz
RGAIN 60

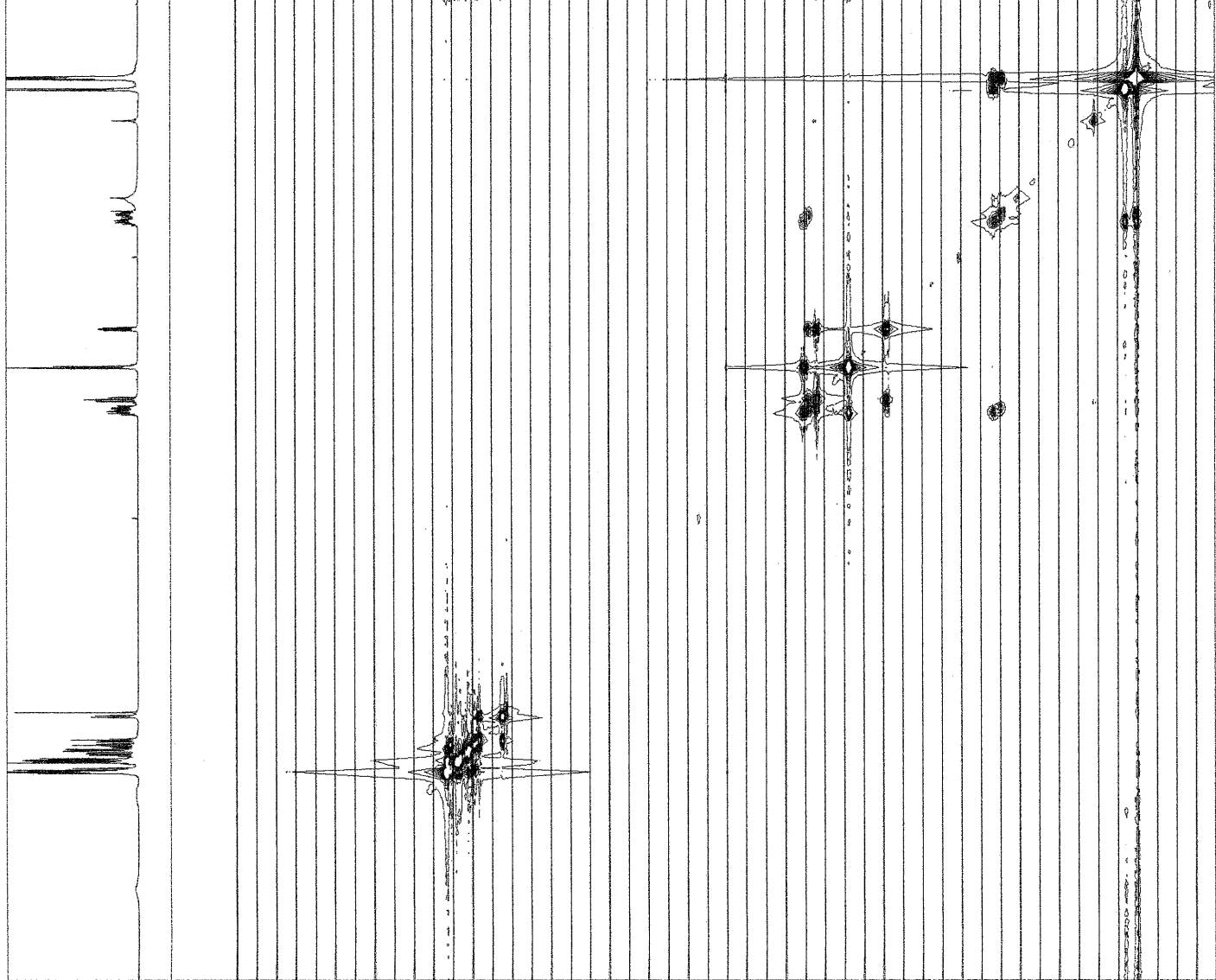
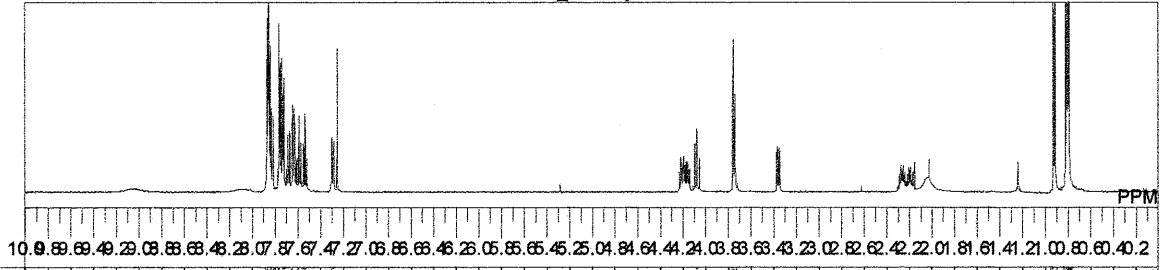




DFILE ozawa04-060_19F.als
 COMPT D-valinol-N-phth
 DATIM 02-12-2013 21:18:26
 CQNUM 19F
 EXMOD proton.jpg
 OBFRQ 368.64 MHz
 OBSST 7.53 KHz
 OSFIN 2.85 Hz
 POINT 13107
 FREQU 149253.73 Hz
 SCANS 4
 ACQTM 0.0878 sec
 PD 5.0000 sec
 PW1 3.50 usec
 IRNUC 19F
 CTXMP 21.4 c
 SLVMT CDCL3
 EXREF -164.90 ppm
 SF 0.12 Hz
 RGAIN 50

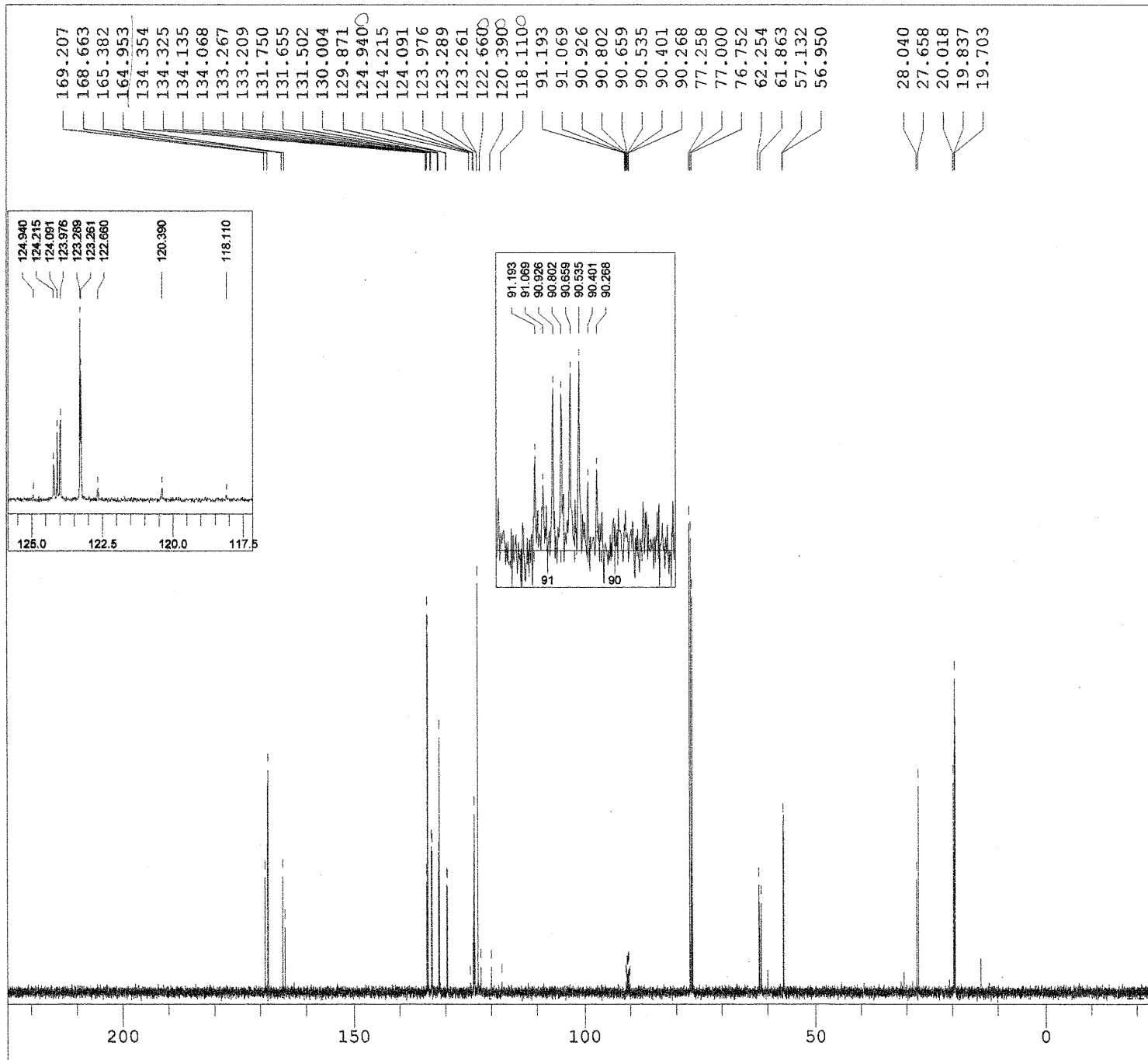


\\172.20.1.201\users\delta\Documents\JEOL\data\ozawa04-064_COSY.jdf

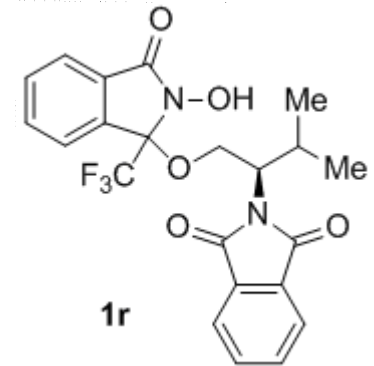


DFILE ozawa04-064_COSY.jdf
COMNT valinol, OH
DATIM 18-08-2014 19:34:41
EXMOD cosy.jxp
OBNUC 1H
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 1280
FREQU 6253.13 Hz
CLPNT 256
TODAT 256
CLFRQ 5002.00 Hz
SCANS 2
ACQTM 0.2047 sec
PD 1.5000 sec
PW1 11.10 usec
PW2 0.00 usec
PW3 0.00 usec
PI1 0.0000 msec
PI2 0.0000 msec
PI3 0.0000 msec
IRNUC 1H
CTEMP 25.9 c
SLVNT CDCL3
EXREF 7.26 ppm
CLEXR 7.26
RGAIN 48

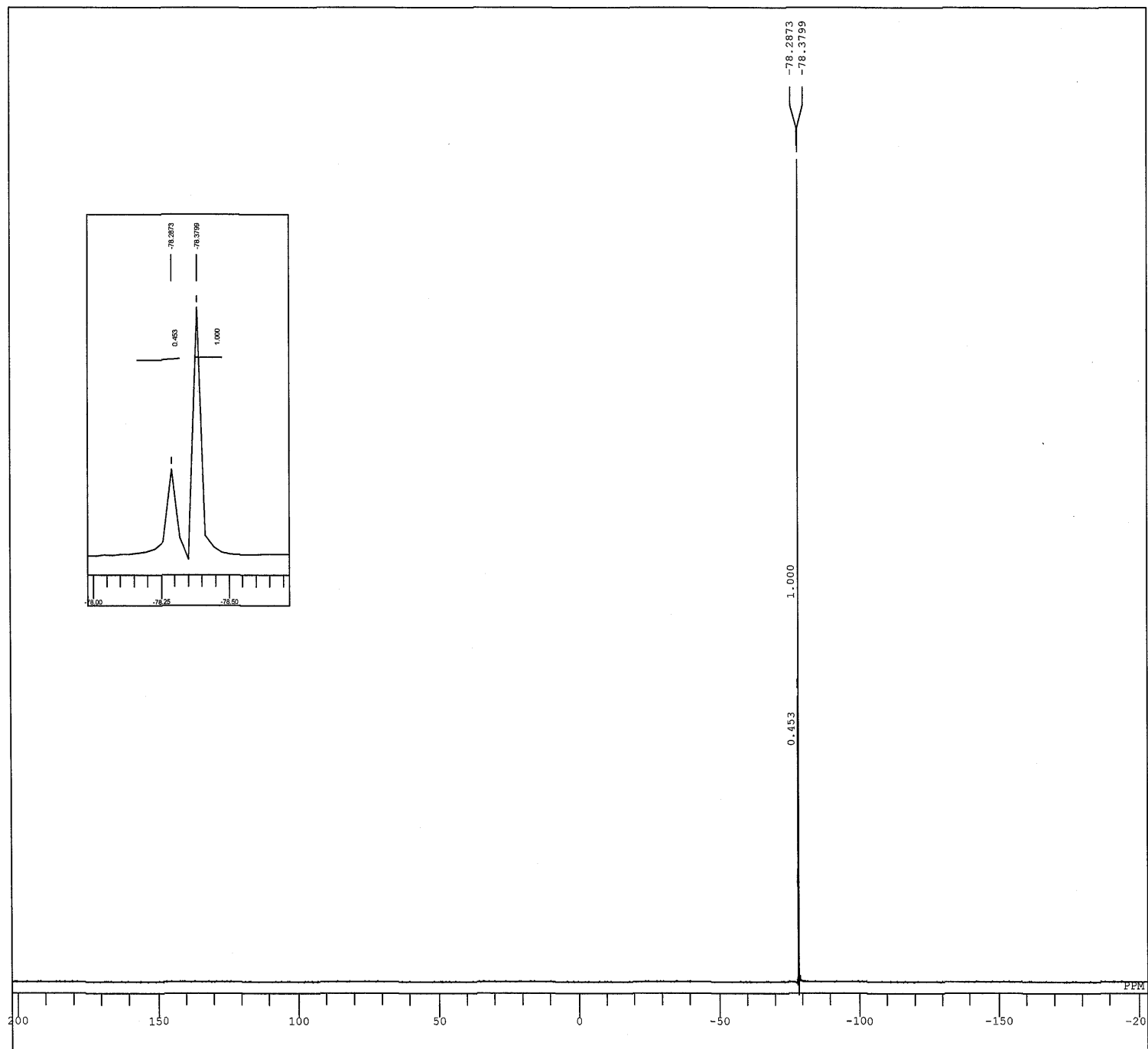
valinol, OH



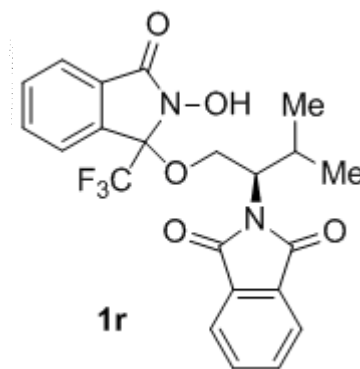
DFILE ozawa04-064_13C.jdf
COMNT valinol, OH
DATIM 2014-03-17 13:12:34
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 124
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.42 Hz
RGAIN 60



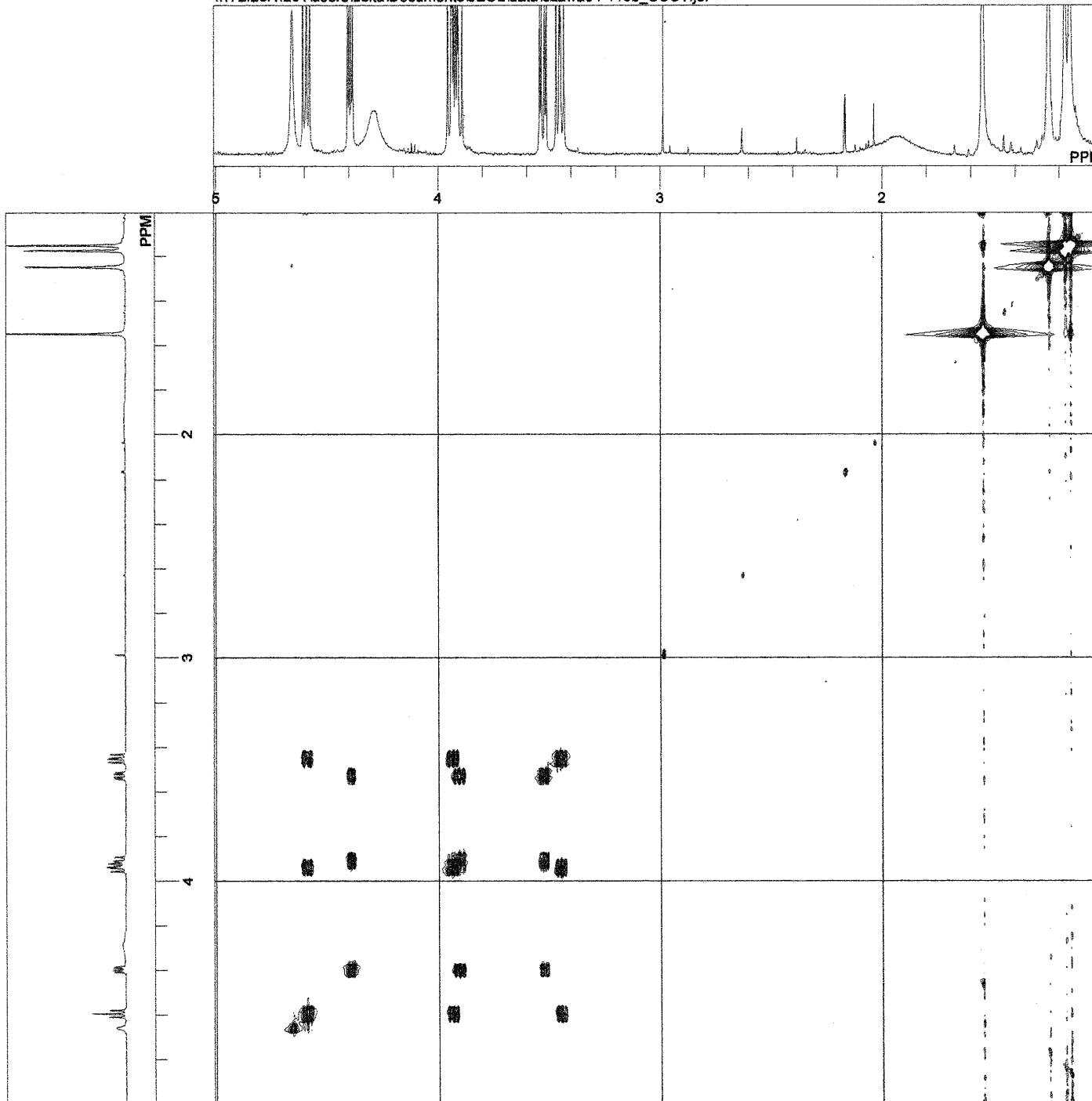
valinol, OH



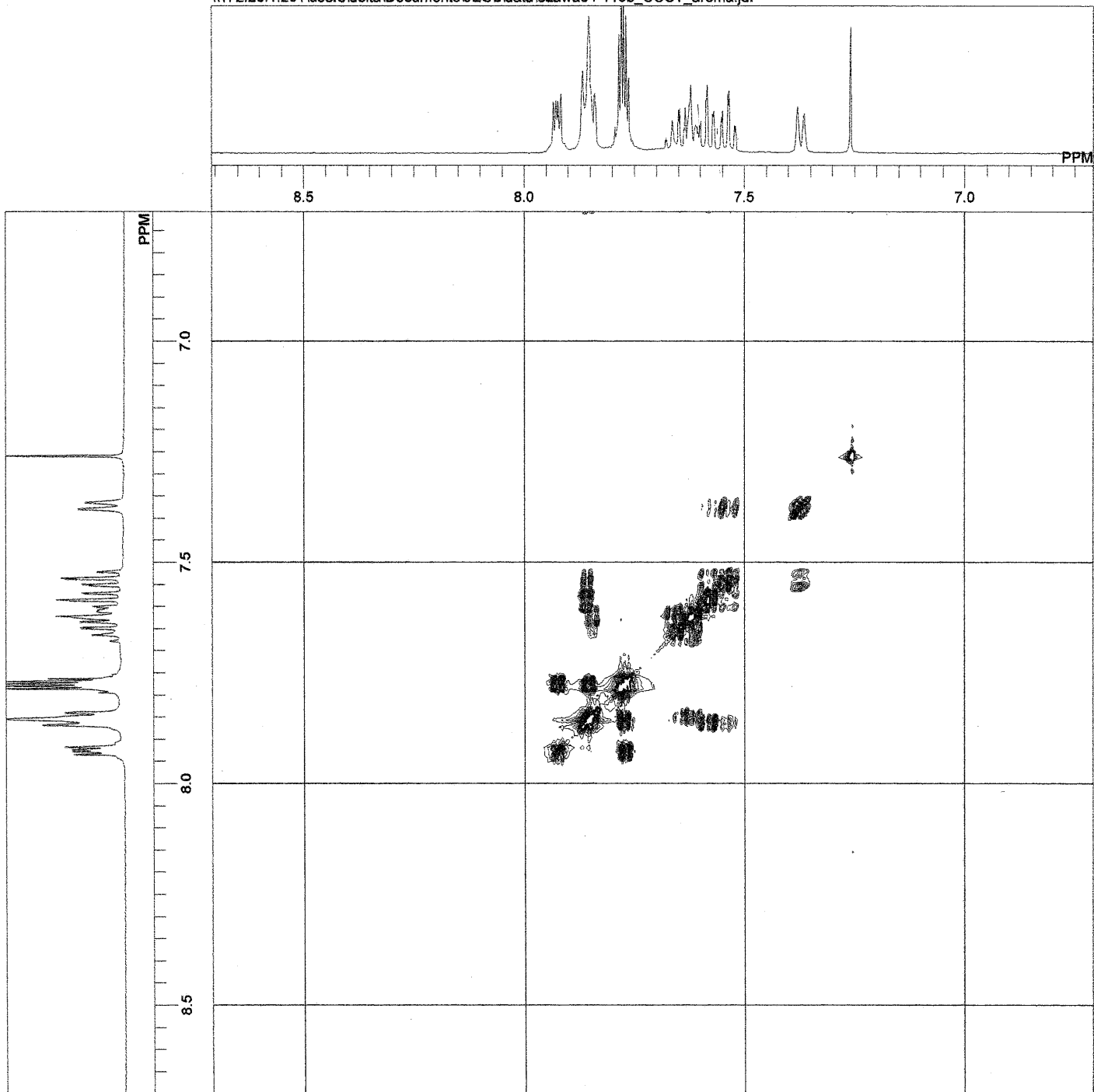
DFILE ozawa04-064_19F.jdf
COMNT valinol, OH
DATIM 11-02-2014 19:56:06
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 1.00 Hz
RGAIN 46



DFILE ozawa04-116b_COSY.jdf
 COMNT valinol, [O]
 DATIM 08-02-2014 21:15:04
 EXMOD cosy.jxp
 OBNUC 1H
 OBFRQ 500.16 MHz
 OBSET 1.41 KHz
 OBFIN 5.69 Hz
 POINT 1280
 FREQU 2501.00 Hz
 CLPNT 256
 TODAT 256
 CLFRQ 2000.80 Hz
 SCANS 1
 ACQTM 0.5118 sec
 PD 2.5000 sec
 PW1 11.10 usec
 PW2 0.00 usec
 PW3 0.00 usec
 PI1 0.0000 msec
 PI2 0.0000 msec
 PI3 0.0000 msec
 IRNUC 1H
 CTEMP 21.8 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 CLEXR 7.26
 RGAIN 50

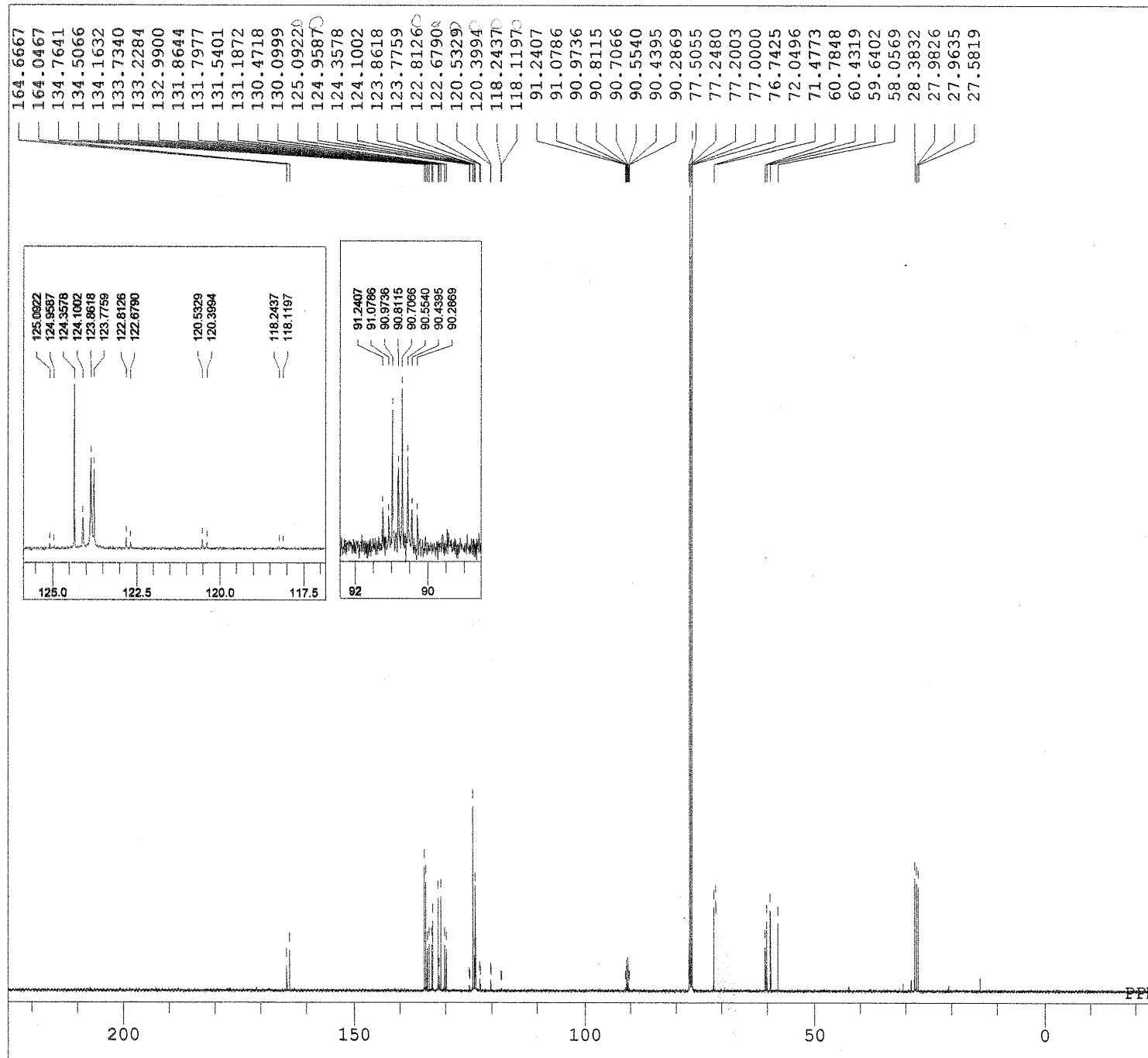


\\172.20.1.201\users\delta\Documents\JEOL\data\ozawa04-116b_COSY_aroma.jdf

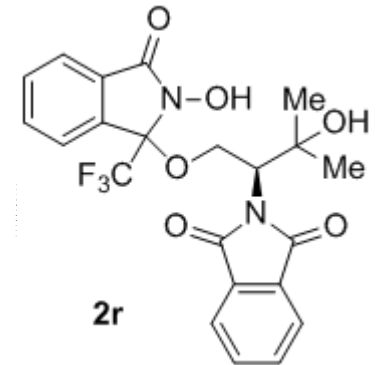


DFILE ozawa04-116b_COSY_aroma.jdf
COMNT valinol, [O]
DATIM 11-02-2014 21:00:49
EXMOD cosy.jpg
OBNUC 1H
OBFRQ 500.16 MHz
OBSET 3.76 KHz
OBFIN 6.44 Hz
POINT 1280
FREQU 1250.50 Hz
CLPNT 256
TODAT 256
CLFRQ 1000.34 Hz
SCANS 1
ACQTM 1.0236 sec
PD 2.5000 sec
PW1 11.10 usec
PW2 0.00 usec
PW3 0.00 usec
PI1 0.0000 msec
PI2 0.0000 msec
PI3 0.0000 msec
IRNUC 1H
CTEMP 21.3 c
SLVNT CDCL3
EXREF 7.26 ppm
CLEXR 7.26
RGAIN 54

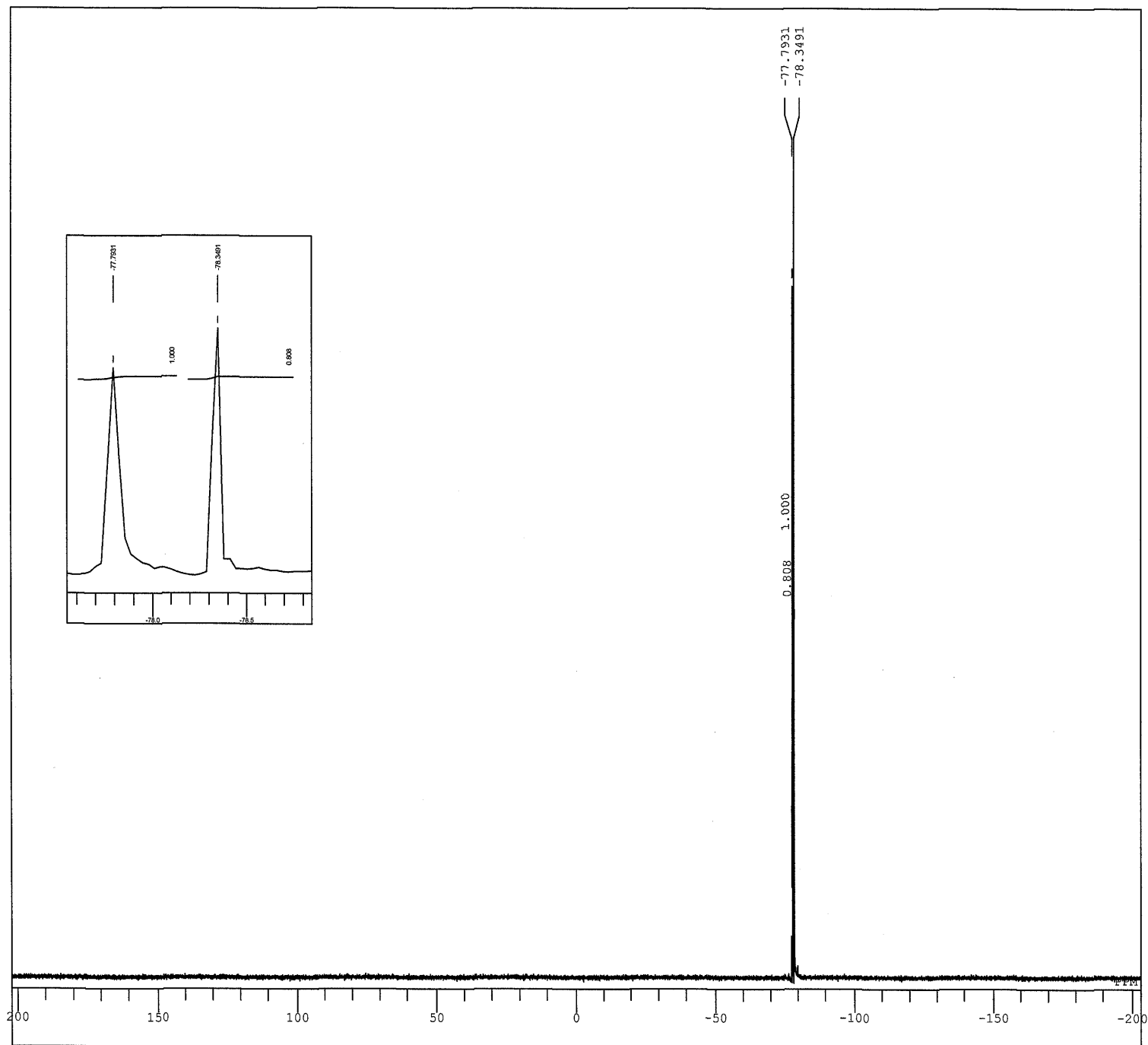
valinol, [O]



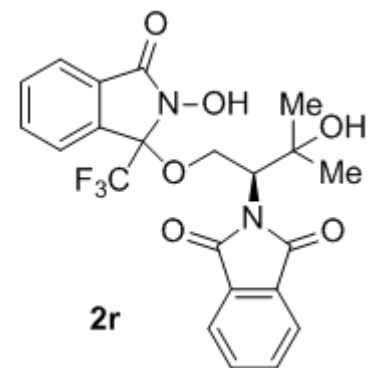
DFILE ozawa04-116b_13C.jdf
COMNT valinol, [O]
DATIM 2014-03-22 22:54:06
OBNUC 13C
EXMOD carbon.jxp
OBFRO 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 12788
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



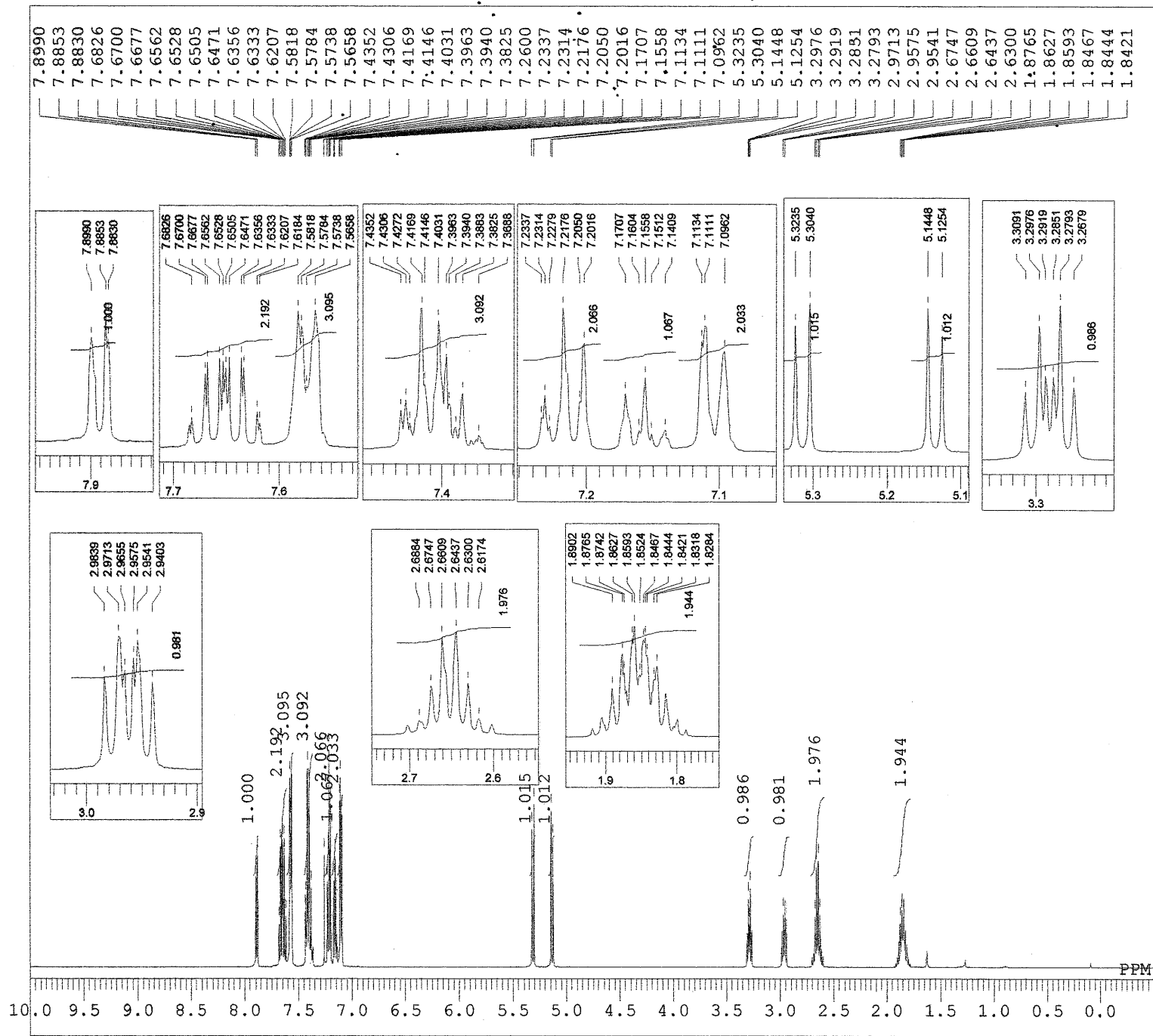
valinol, [0]



DFILE ozawa04-116b_19F.jdf
COMNT valinol, [0]
DATIM 11-02-2014 19:59:11
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 1.00 Hz
RGAIN 48



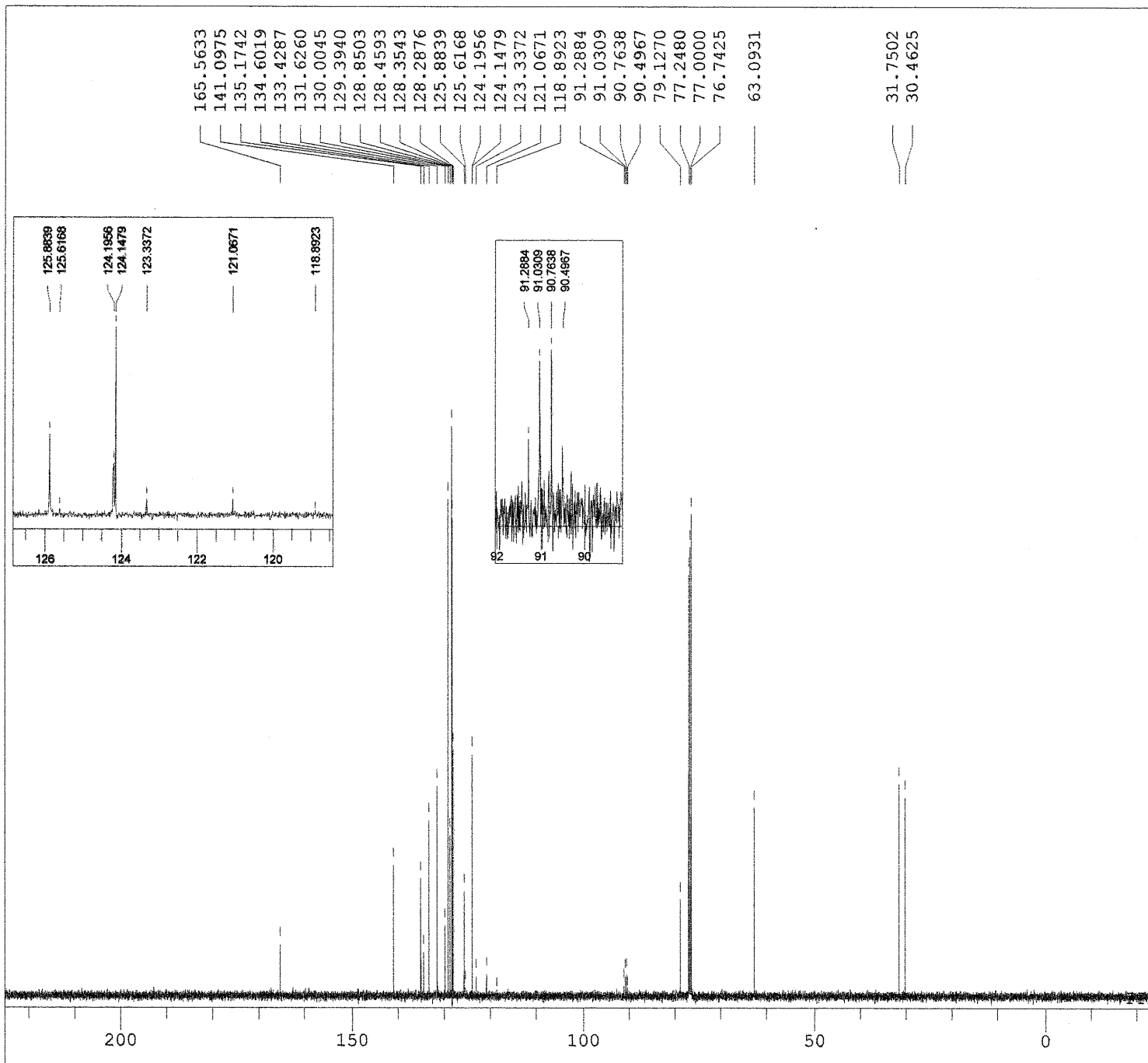
PhPROH, Bn



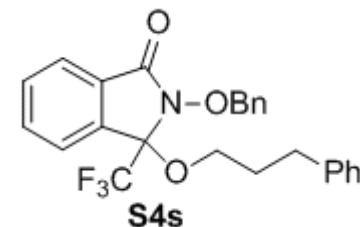
DFILE ozawa04-115_1H.jdf
 COMNT PhPROH, Bn
 DATIM 2014-01-31 20:48:11
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 34

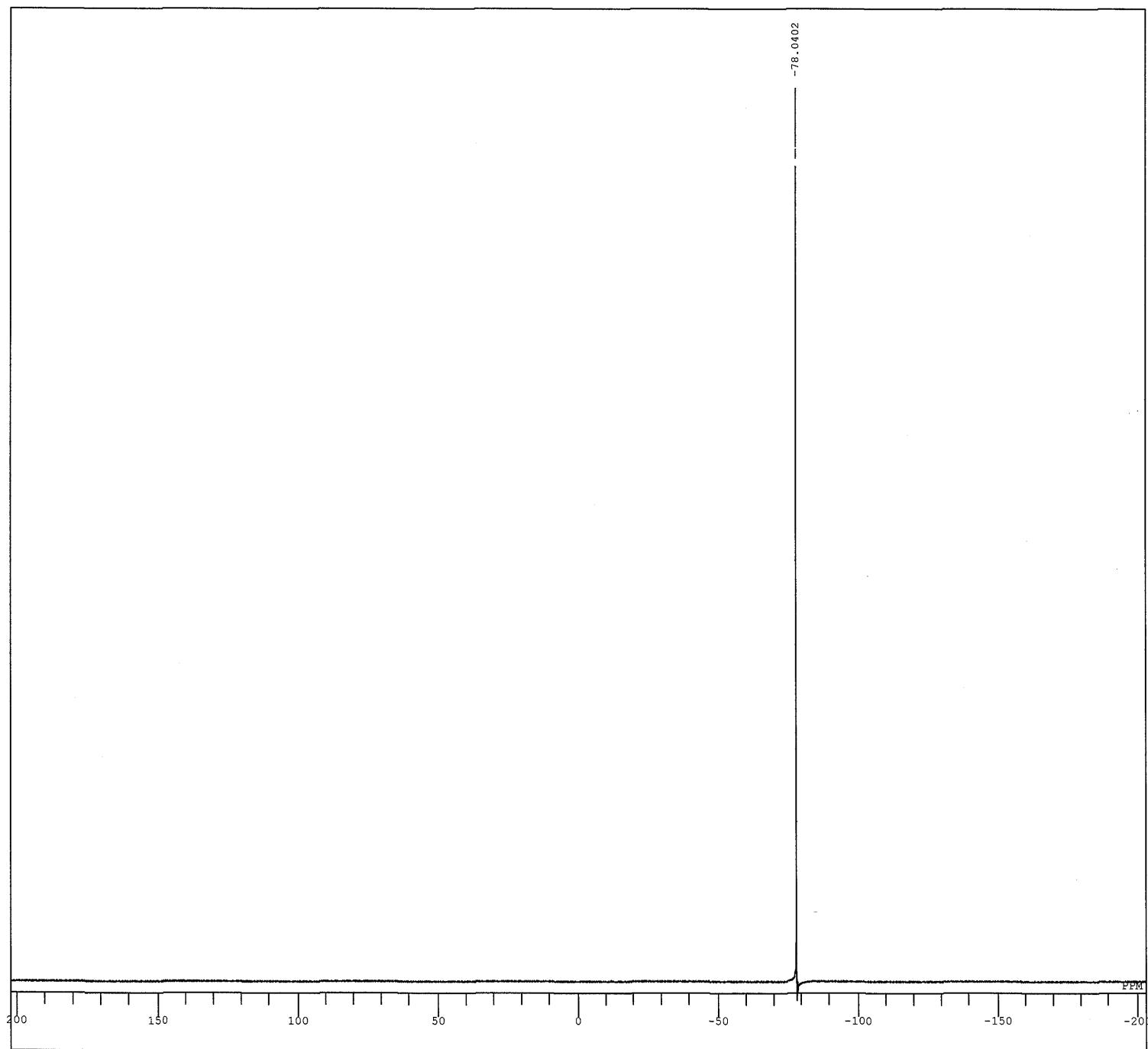


PhPROH, Bn

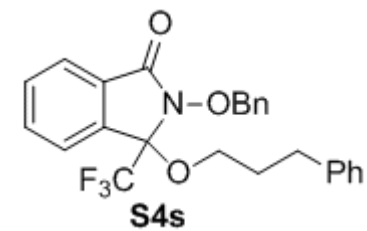


DFILE ozawa04-115_13C.jdf
COMNT PhPROH, Bn
DATIM 2014-01-31 20:49:14
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 308
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.8 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

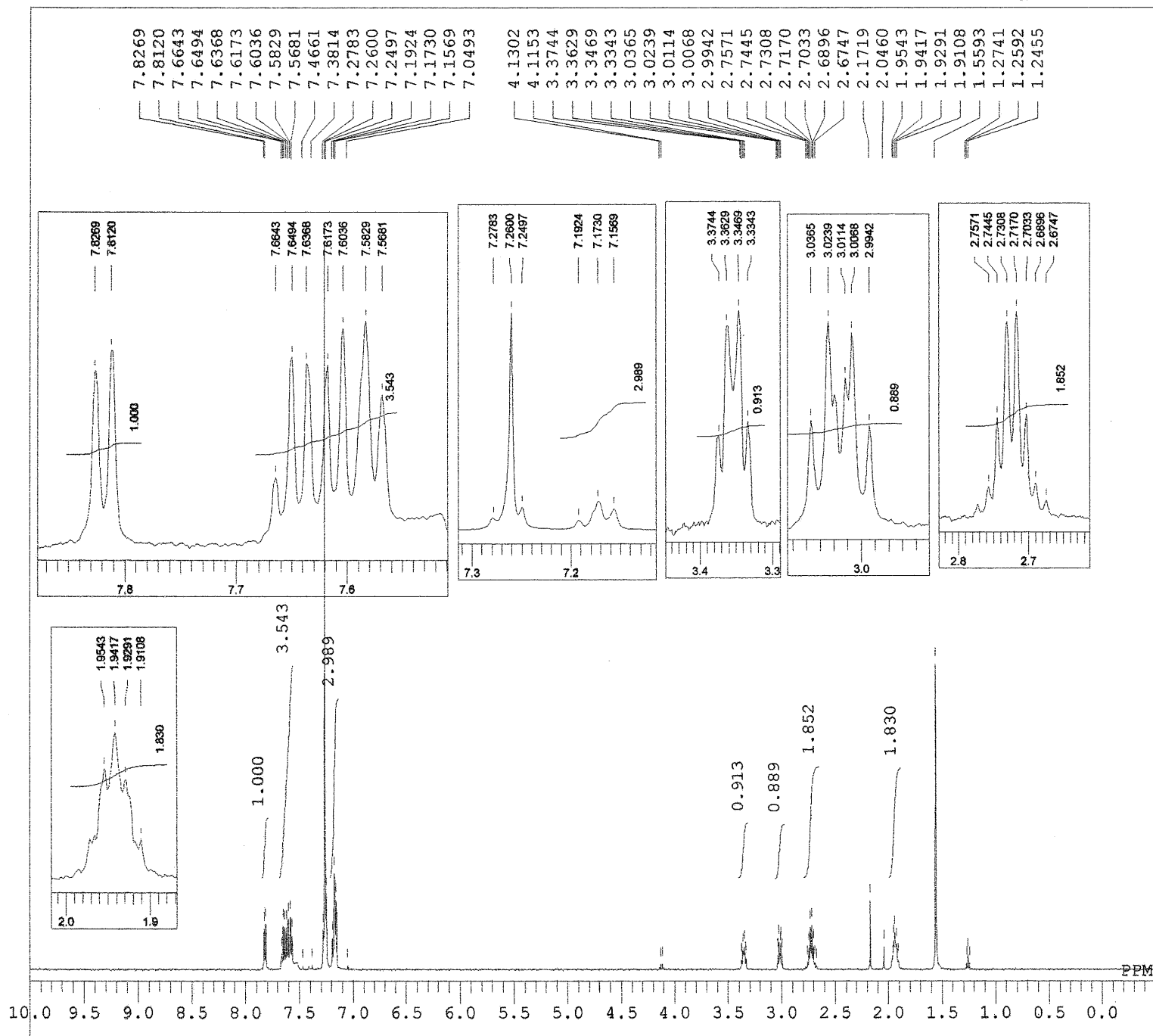




DFILE ozawa04-115_19F.jdf
COMNT PhPrOH, Bn
DATIM 31-01-2014 20:43:35
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQIM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 21.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48

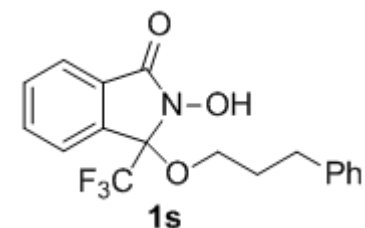


column, 3-Ph-1-propanol

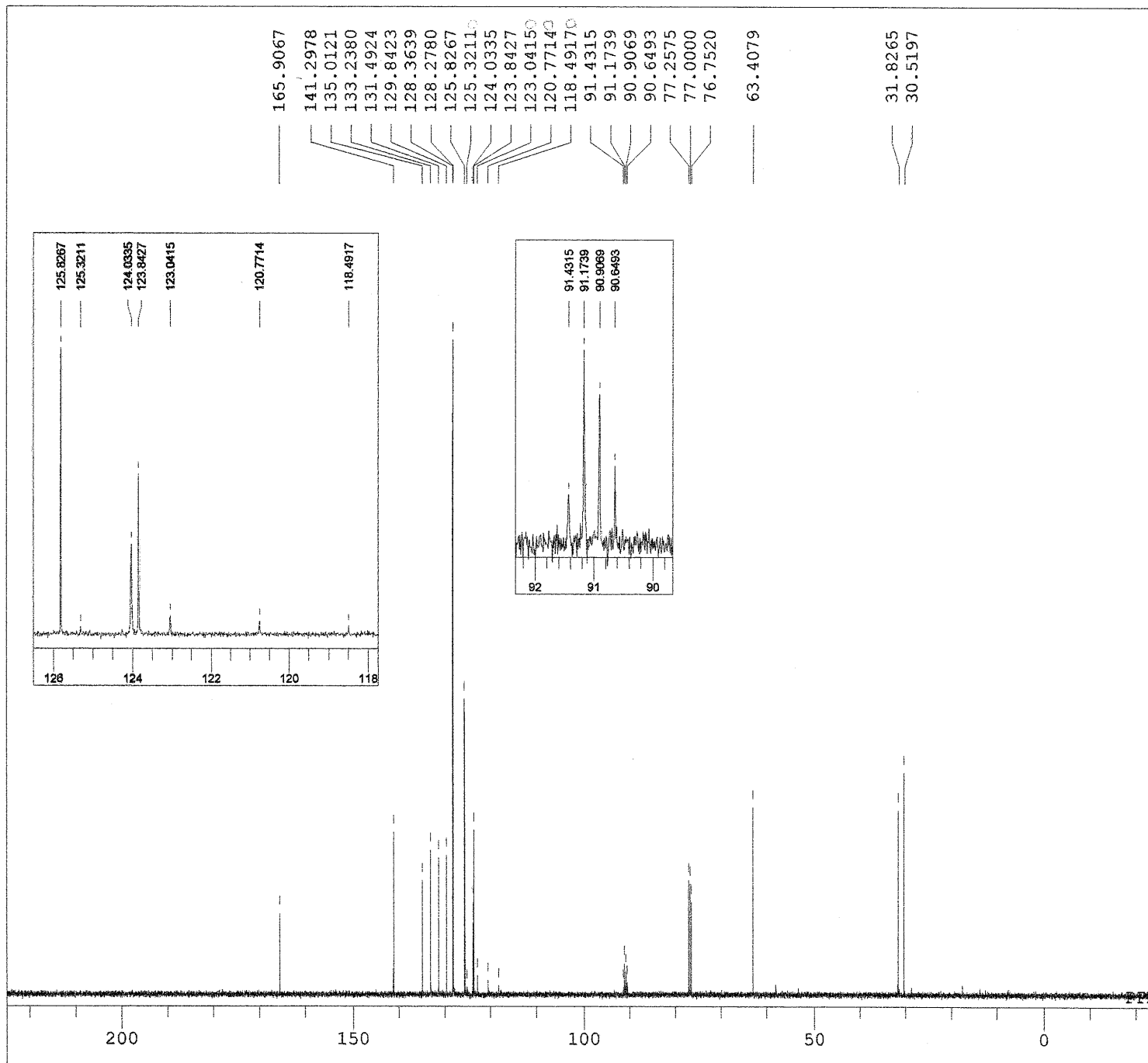


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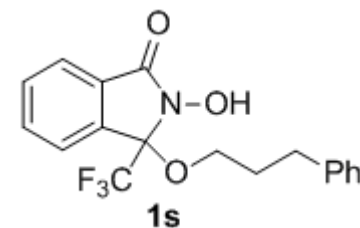
DFILE ozawa03-198_1.jdf
COMNT column, 3-Ph-1-propanol
DATIM 2013-10-10 20:11:21
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.5 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 1.00 Hz
RGAIN 40
    
```

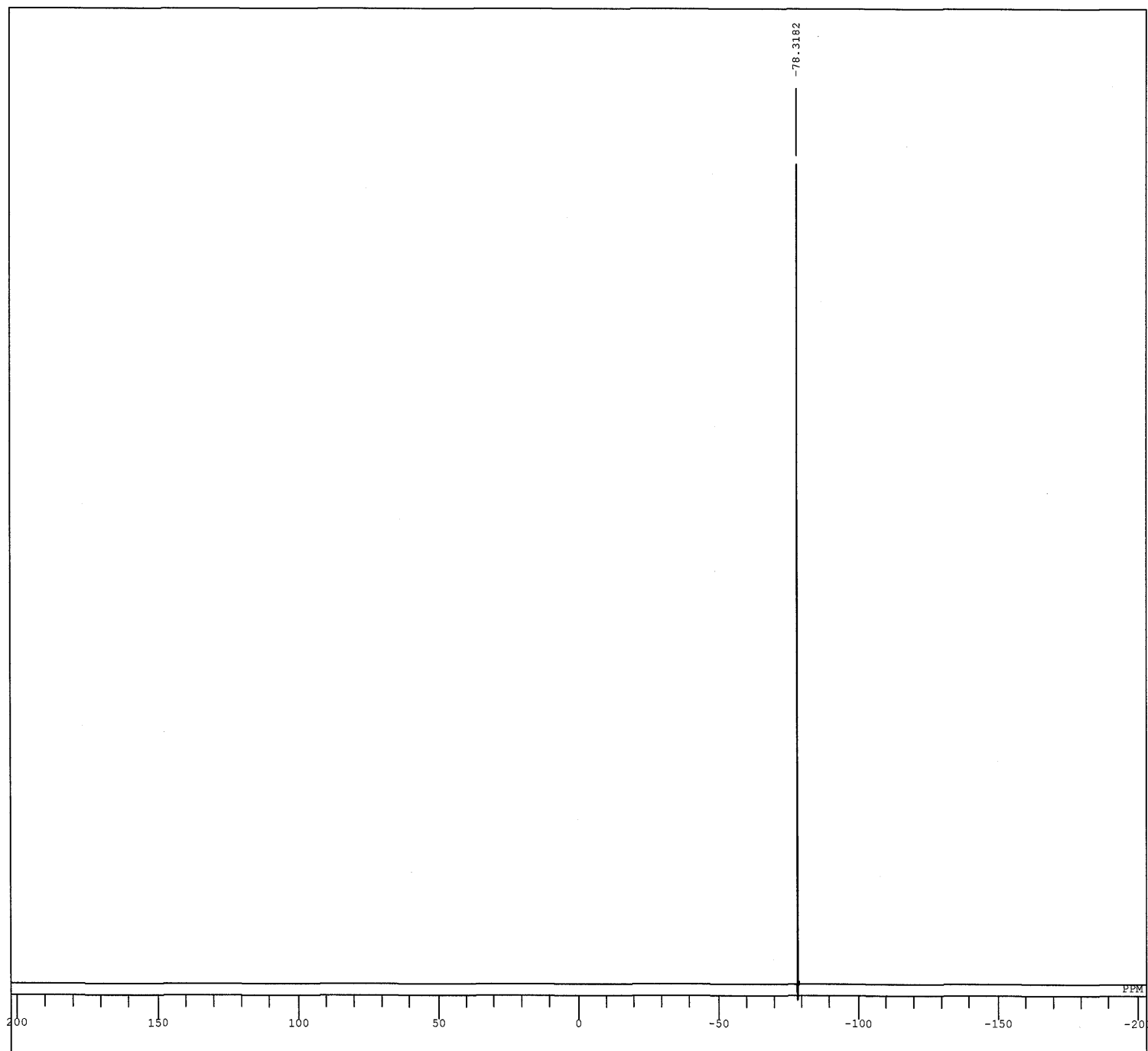


PhPrOH, OH

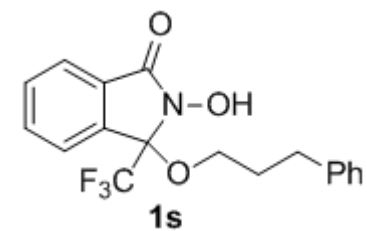


DFILE ozawa03-198_13C.jdf
COMNT PhPrOH, OH
DATIM 2014-01-29 12:20:25
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 60
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 21.9 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

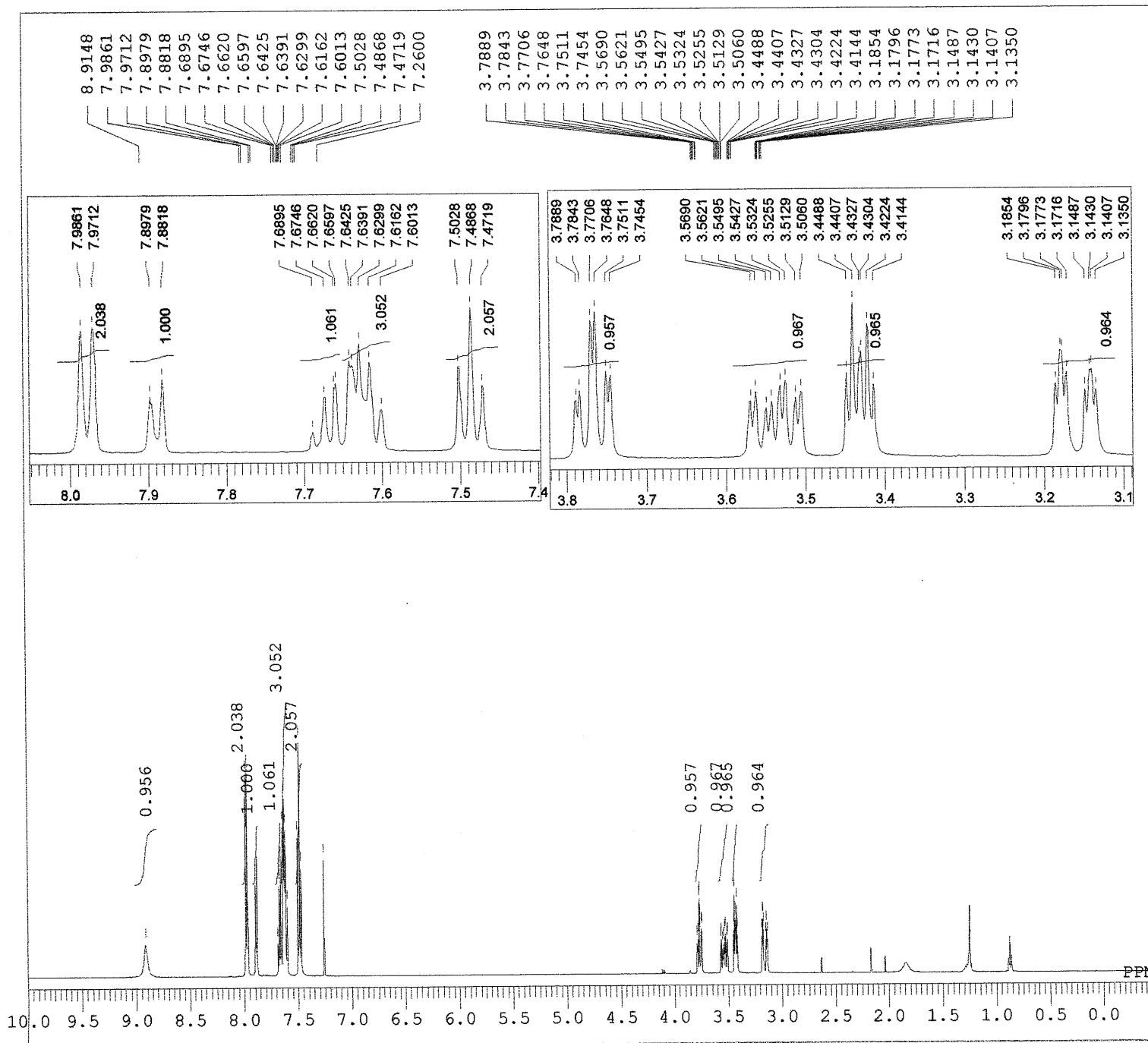




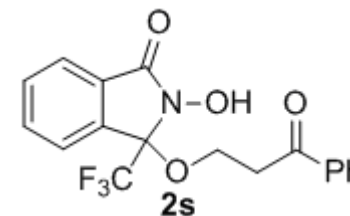
DFILE ozawa03-198_19F.jdf
COMNT PhPrOH, OH
DATIM 29-01-2014 12:48:08
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 20.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 42

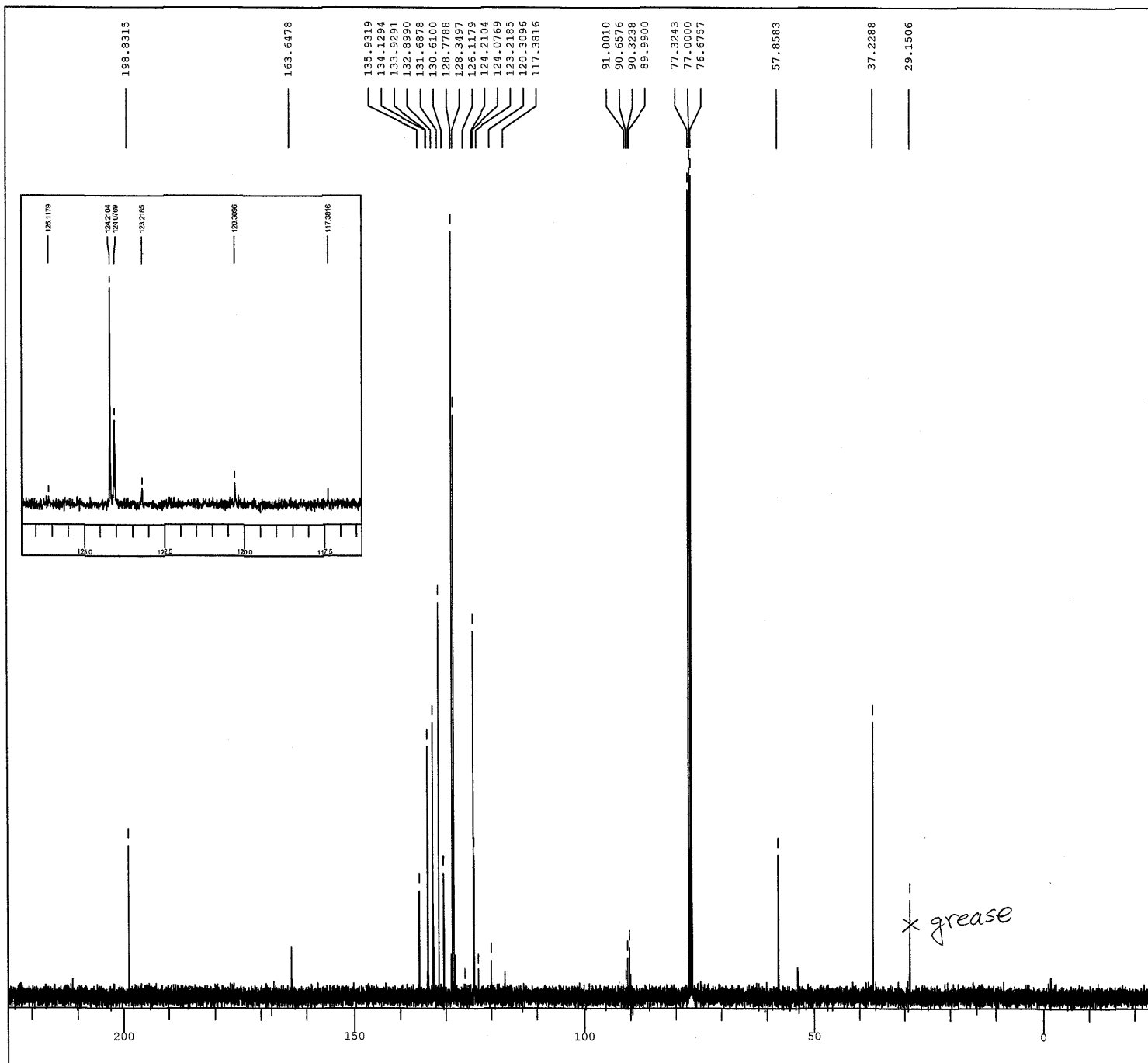


PhPrOH, [O]

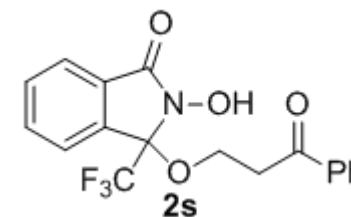


DFILE ozawa04-117_1h.als
COMNT PhPrOH, [O]
DATIM 2014-02-03 22:08:42
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.51 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 21.3 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.20 Hz
RGAIN 36

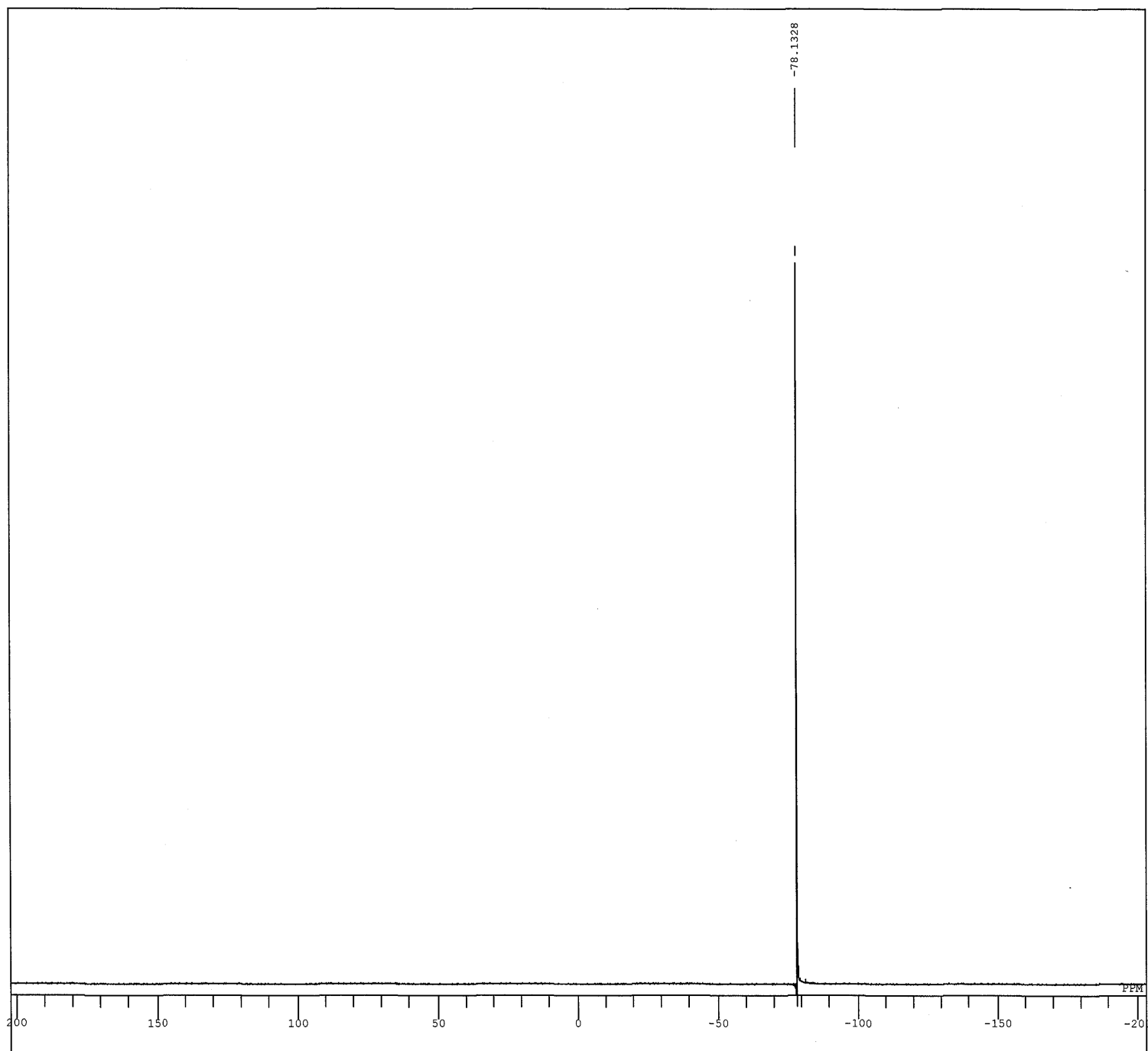




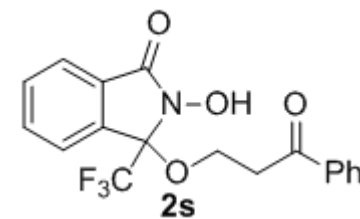
DFILE ozawa04-117.13C.jdf
 COMNT PhPrOH, [0]
 DATIM 02-02-2014 20:47:05
 OBNUC 13C
 EKMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 308
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 21.2 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

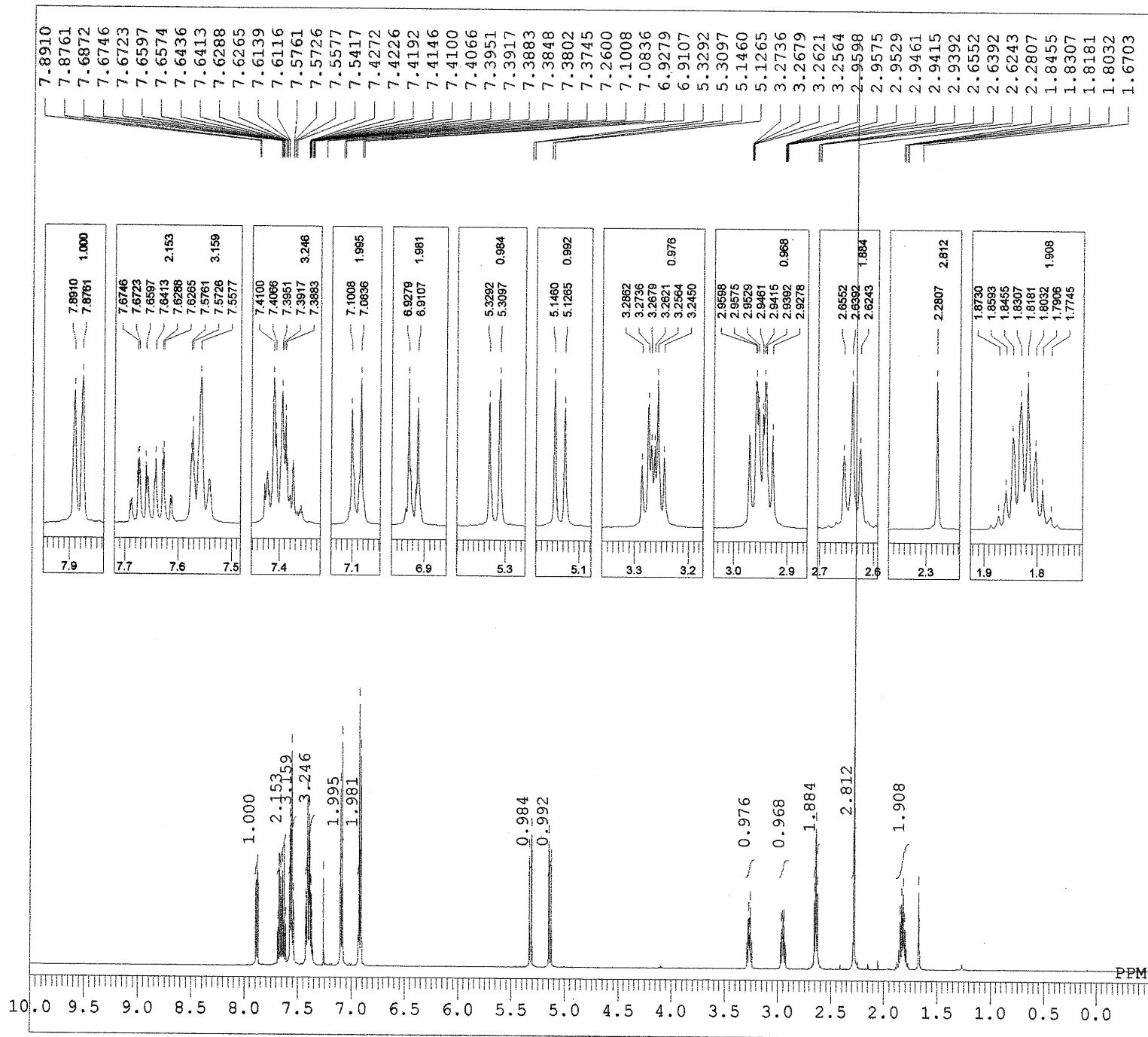


PhPr-01
PTLC, BuOH, [0]



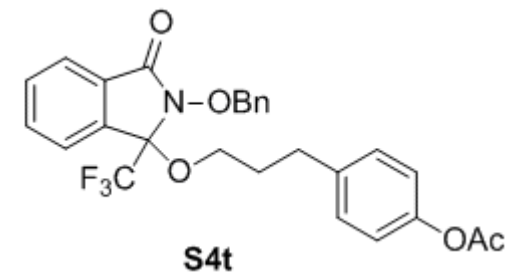
DFILE ozawa04-109_2_19F.jdf
COMNT PTLC, BuOH, [0]
DATIM 24-01-2014-21:00:10
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



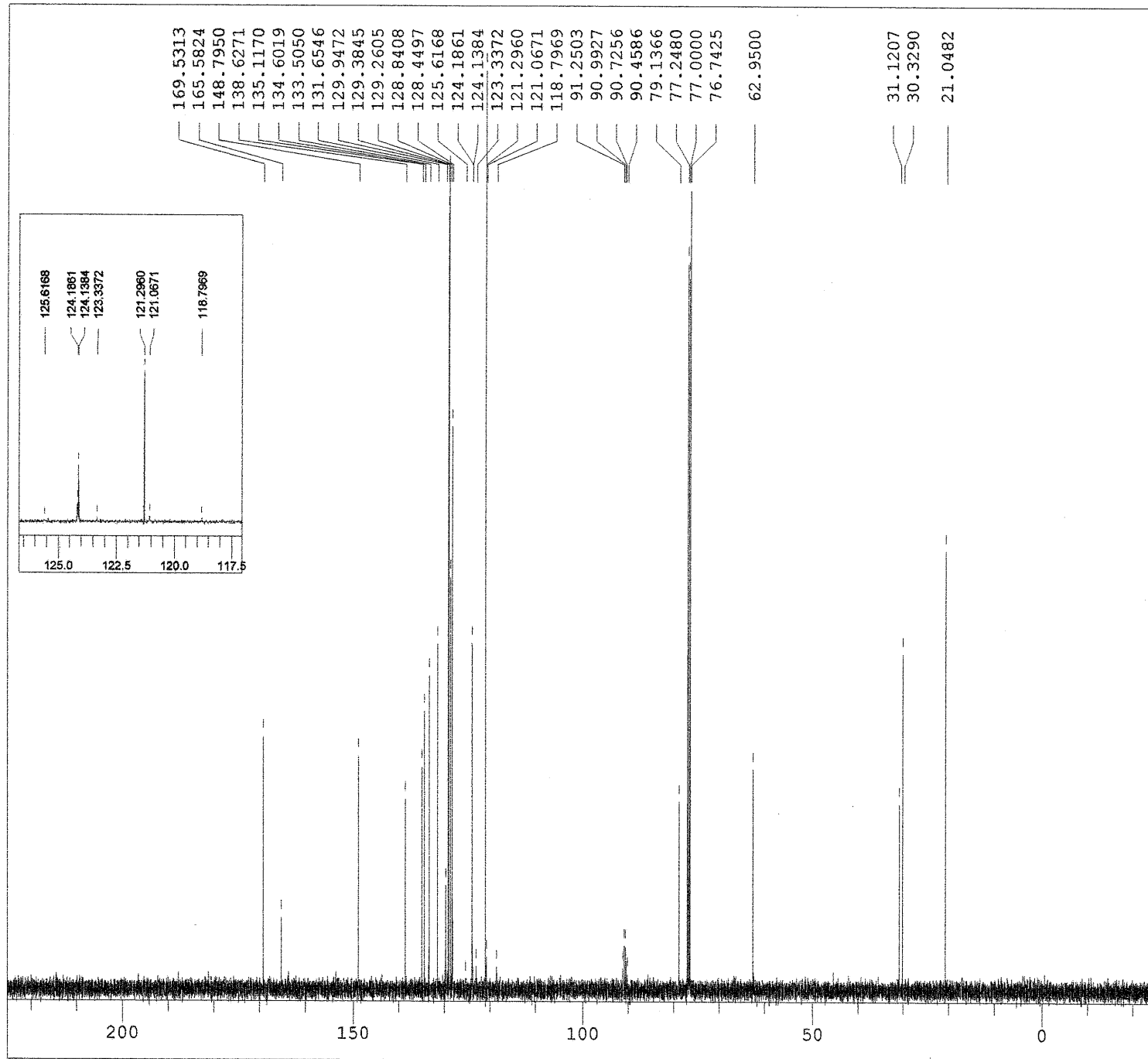


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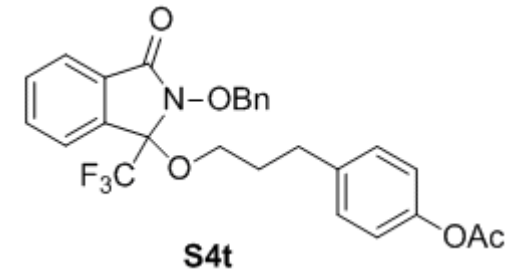
DFILE  ozawa05-048_1H.jdf
COMNT  PhOAc, Bn
DATIM  2014-08-15 13:12:30
OBNUC  1H
EXMOD  proton.jxp
OBFRQ   500.16 MHz
OBSET   2.41 KHz
OBFIN   6.01 Hz
POINT   16384
FREQU   9384.38 Hz
SCANS   4
ACQTM   1.7459 sec
PD      5.0000 sec
PW1     5.55 usec
IRNUC   1H
CTEMP   26.0 c
SLVNT   CDCL3
EXREF   7.26 ppm
BF      0.12 Hz
RGAIN   32
  
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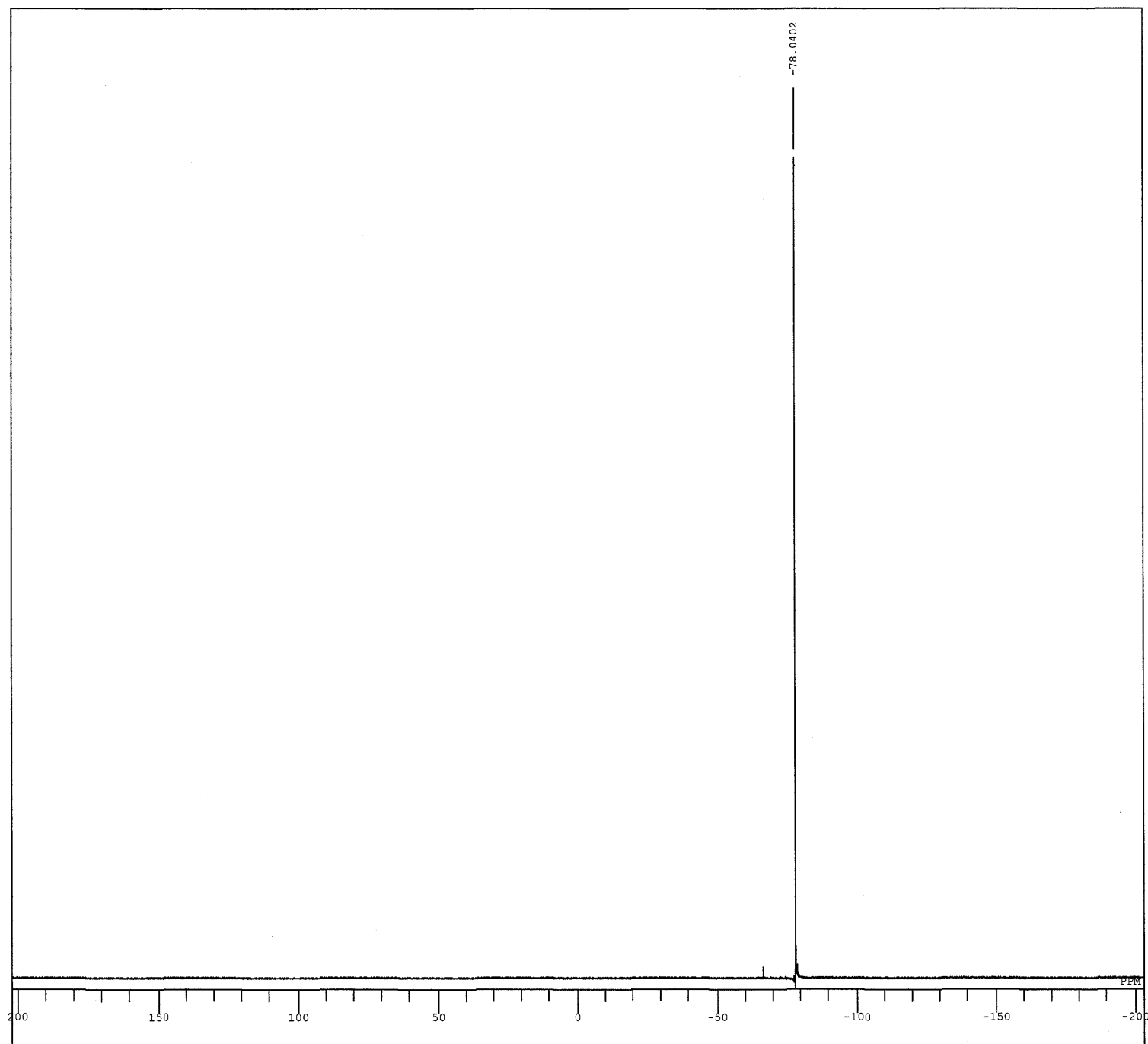


PhOAc, Bn

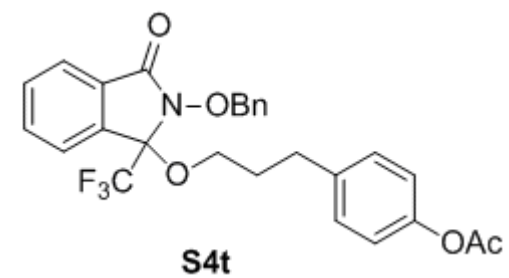


DFILE ozawa05-048_13C.jdf
COMNT PhOAc, Bn
DATIM 2014-08-15 13:13:33
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 180
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

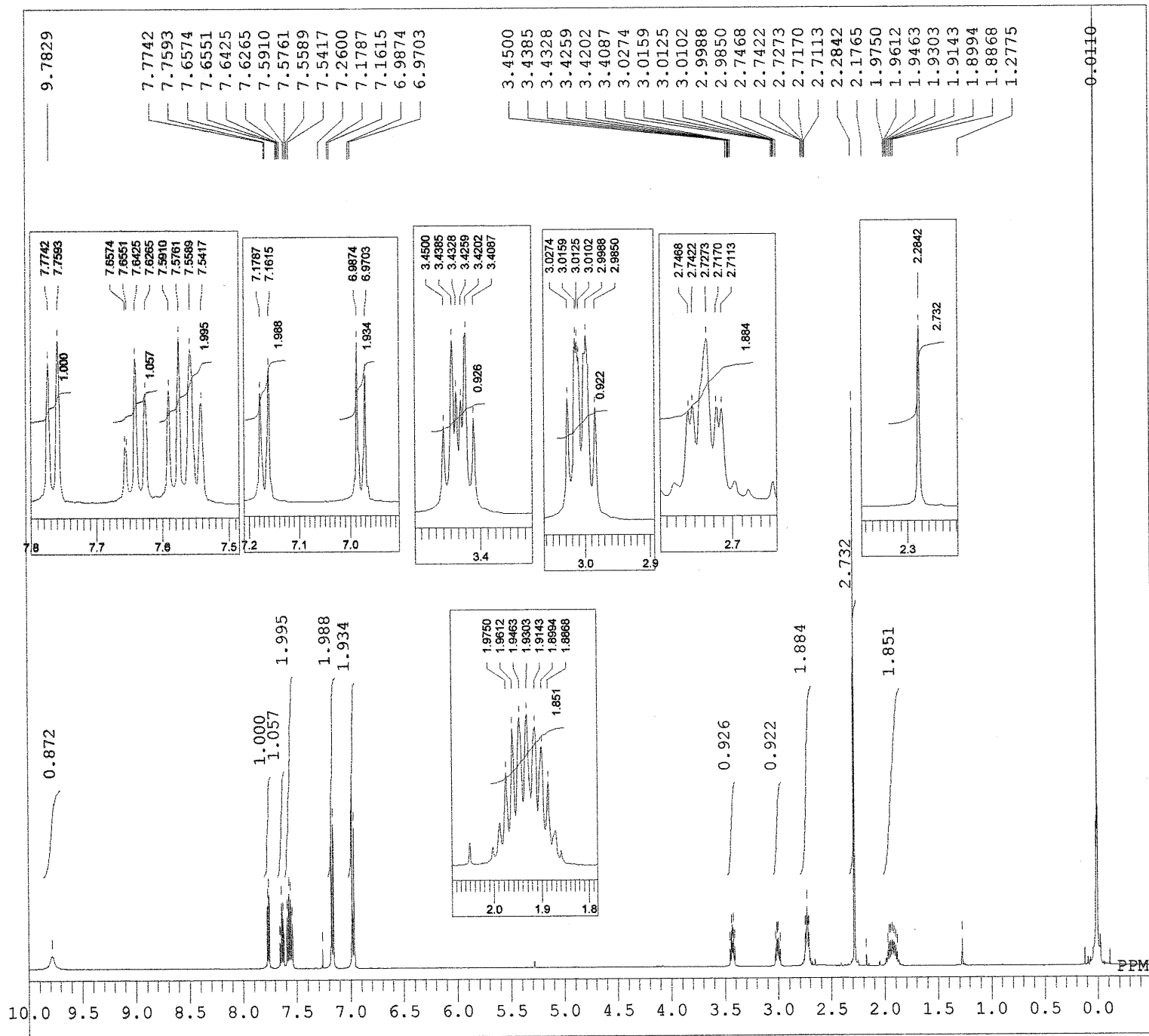




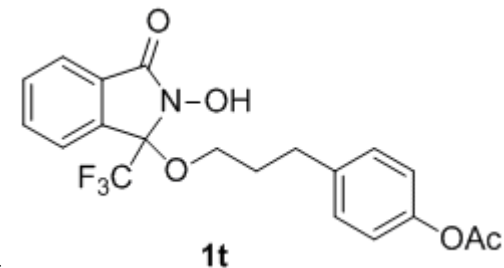
DFILE ozawa05-048_19F.jdf
COMNT PhOAc, Bn
DATIM 15-08-2014 13:57:18
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 24.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



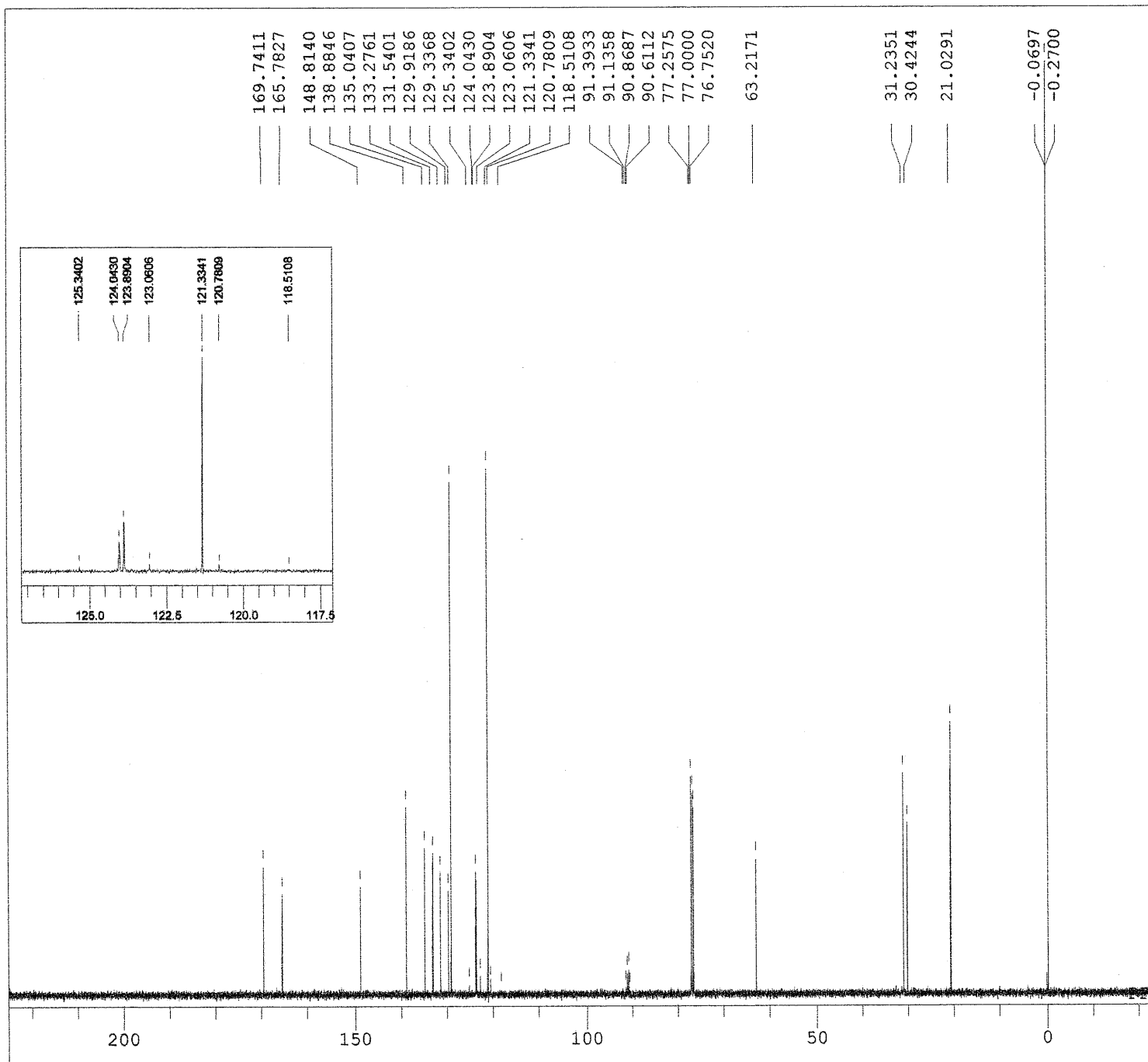
PhOAc



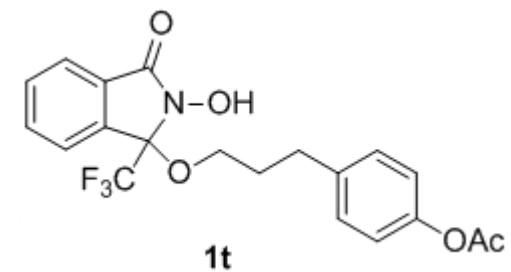
DFILE ozawa05-054_1h.jdf
COMNT PhOAc
DATIM 2014-06-14 13:17:60
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.4 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 26

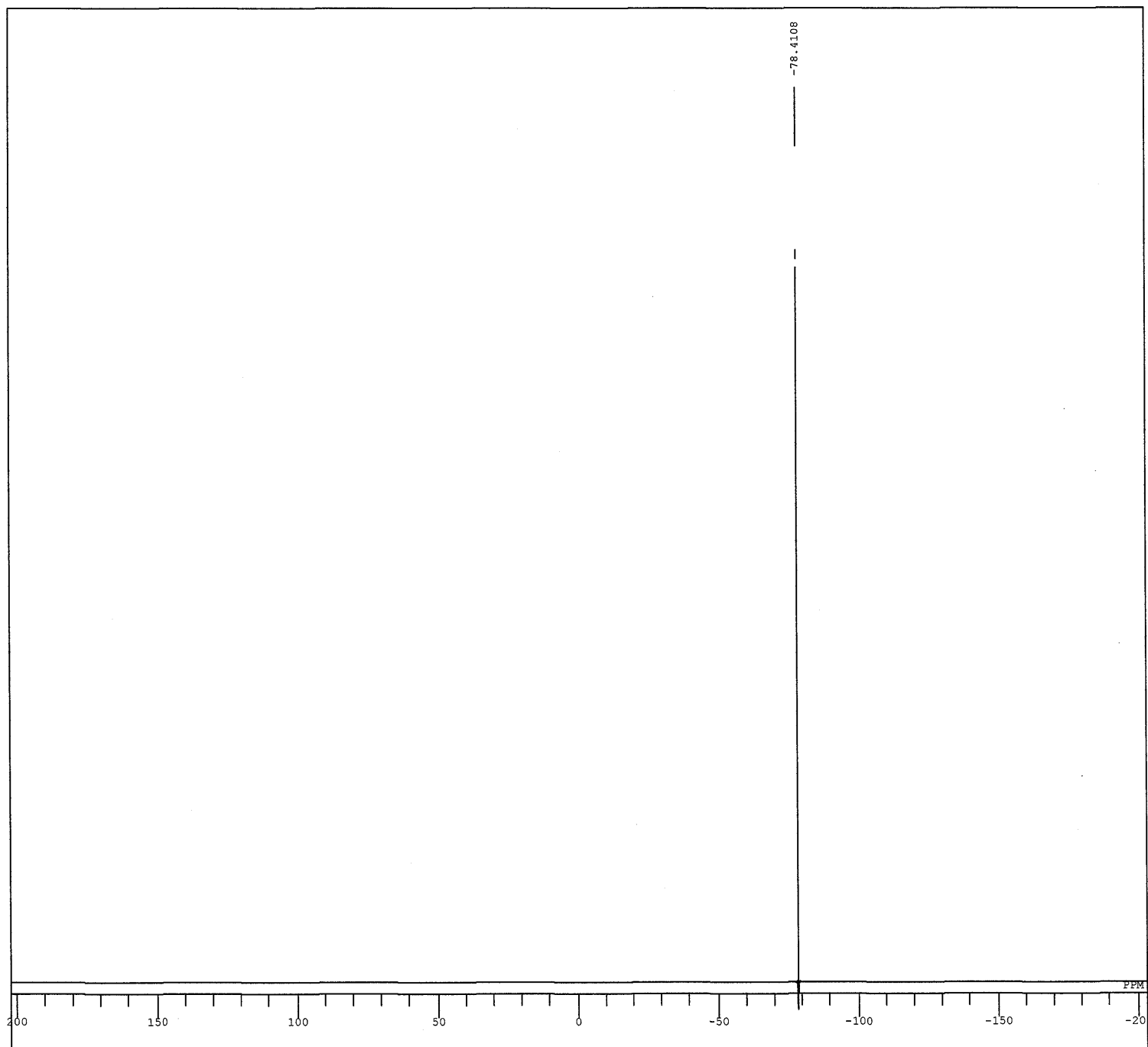


PhOAc

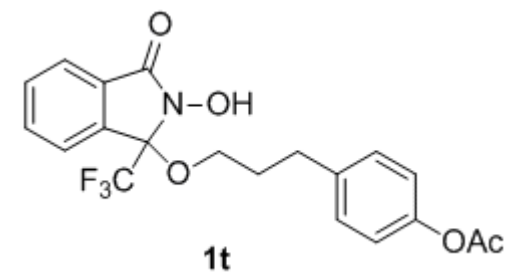


DFILE ozawa05-054_13C.jdf
COMNT PhOAc
DATIM 2014-06-14 13:19:03
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 108
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.0 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

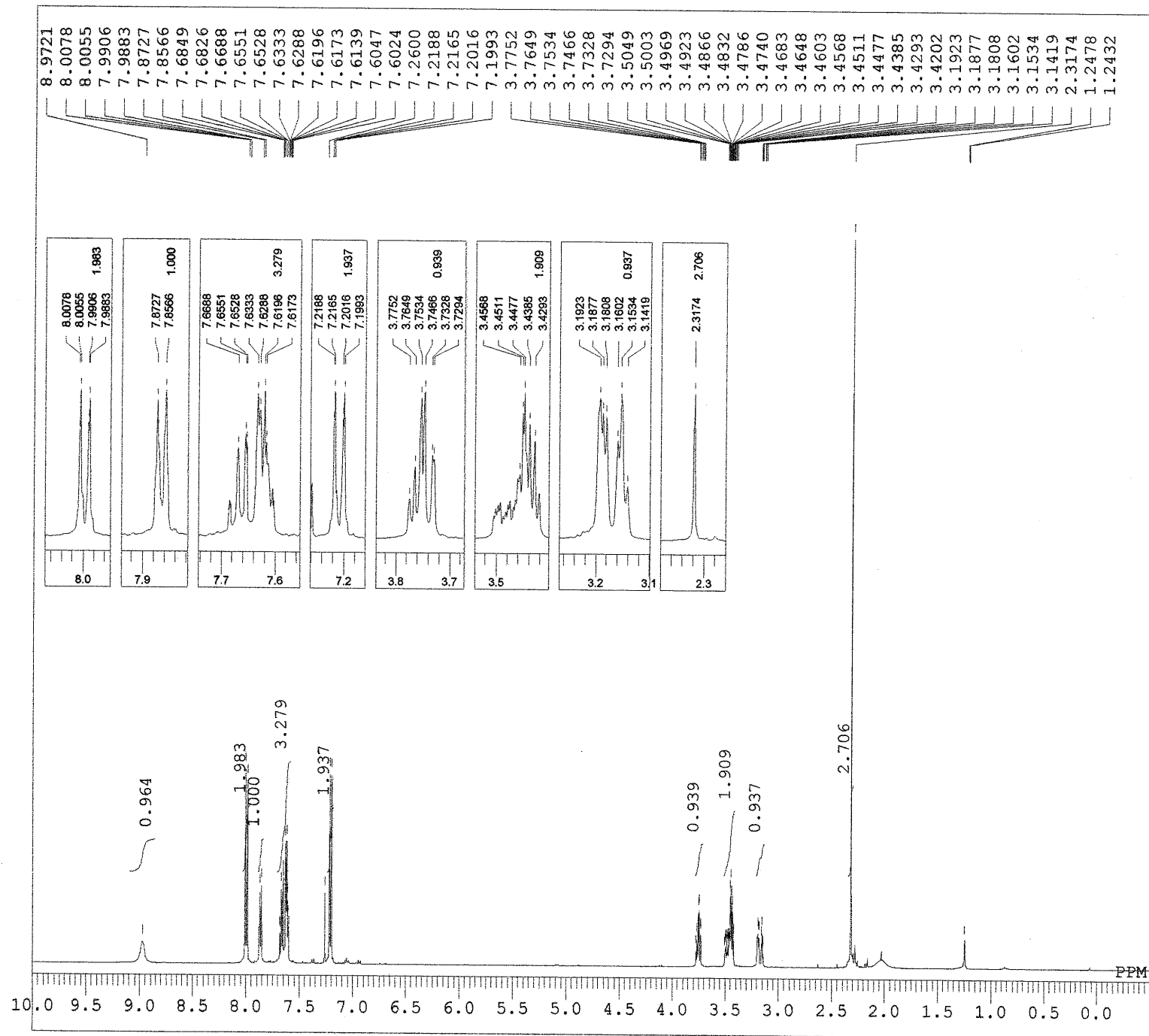




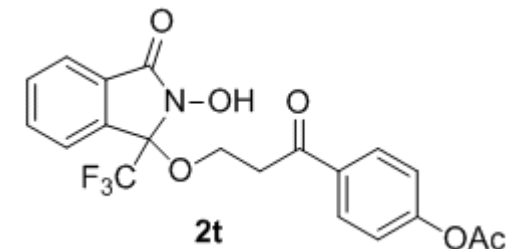
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DFILE ozawa05-054_19F.jdf
COMNT Ph-OAc
DATIM 14-06-2014 14:44:50
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 23.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50
```

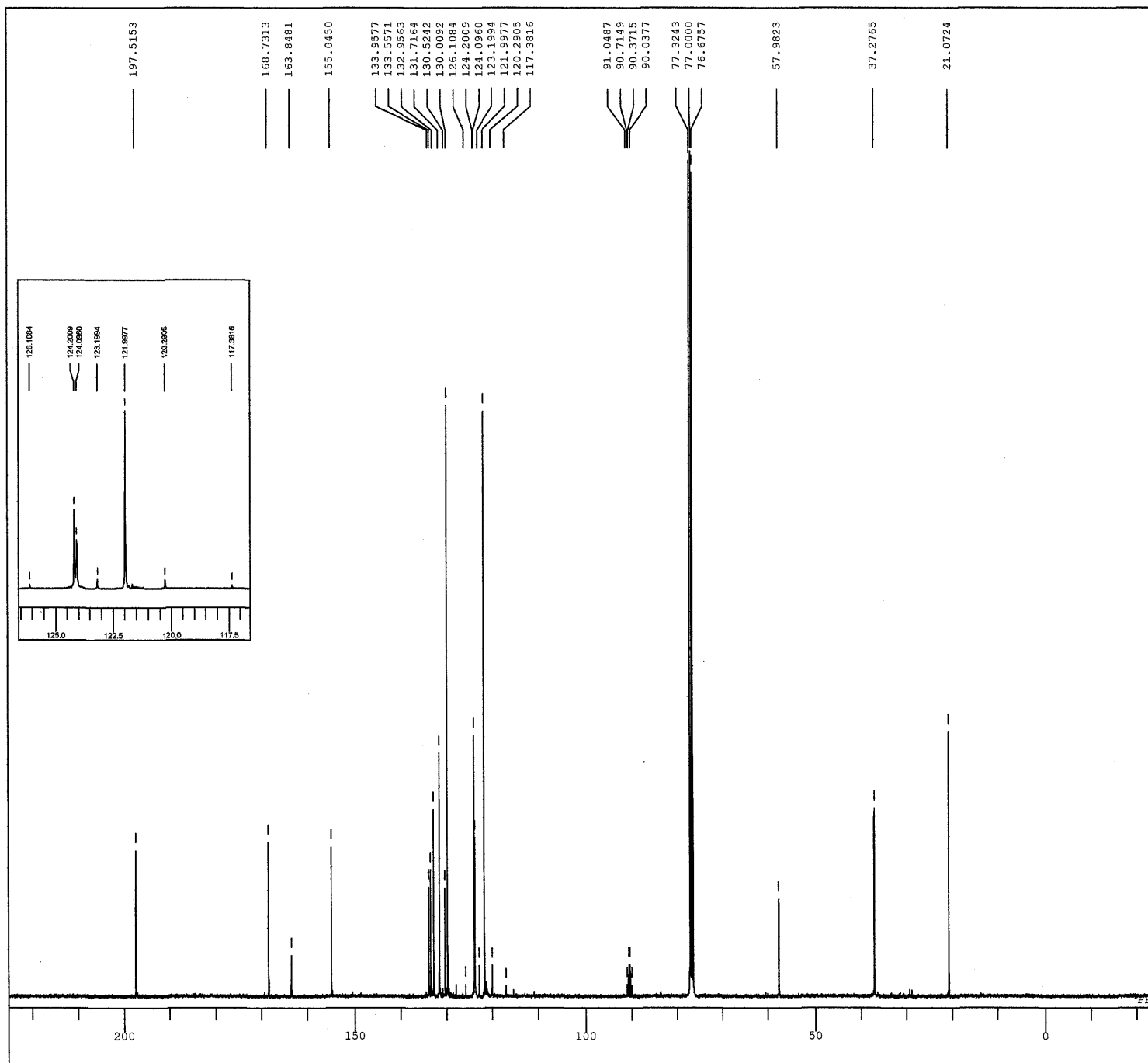


PhOAc, [0]

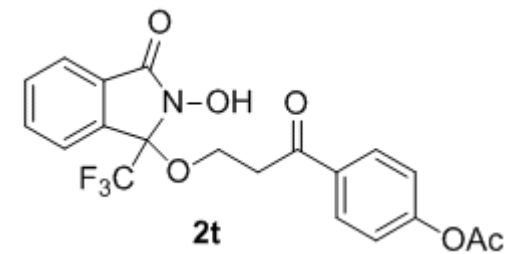


DFILE ozawa05-095_1_1H.jdf
COMNT PhOAc, [0]
DATIM 2014-08-16 12:54:38
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.9 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 34

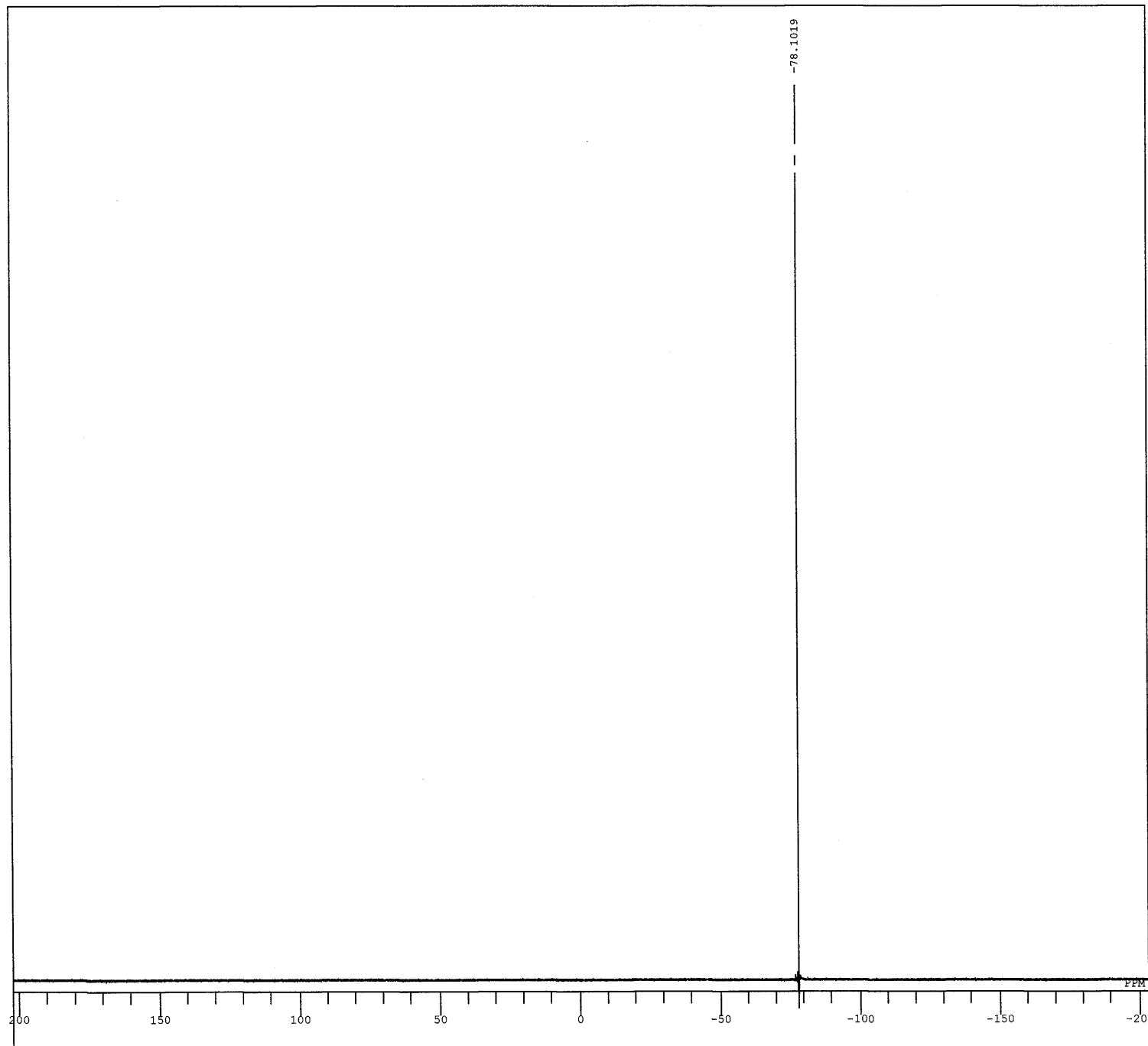




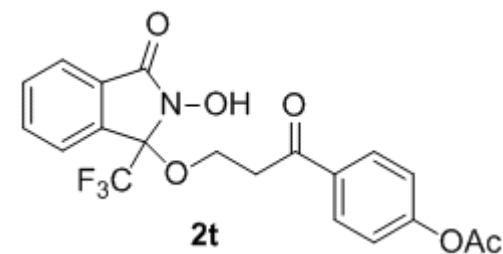
DFILE ozawa05-095_1_13C.jdf
 COMNT PhOAc, [0]
 DATIM 15-08-2014 22:46:13
 OBNUC 13C
 EMMOD carbon.jxp
 OBFRO 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 10000
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 24.4 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 1.20 Hz
 RGAIN 60

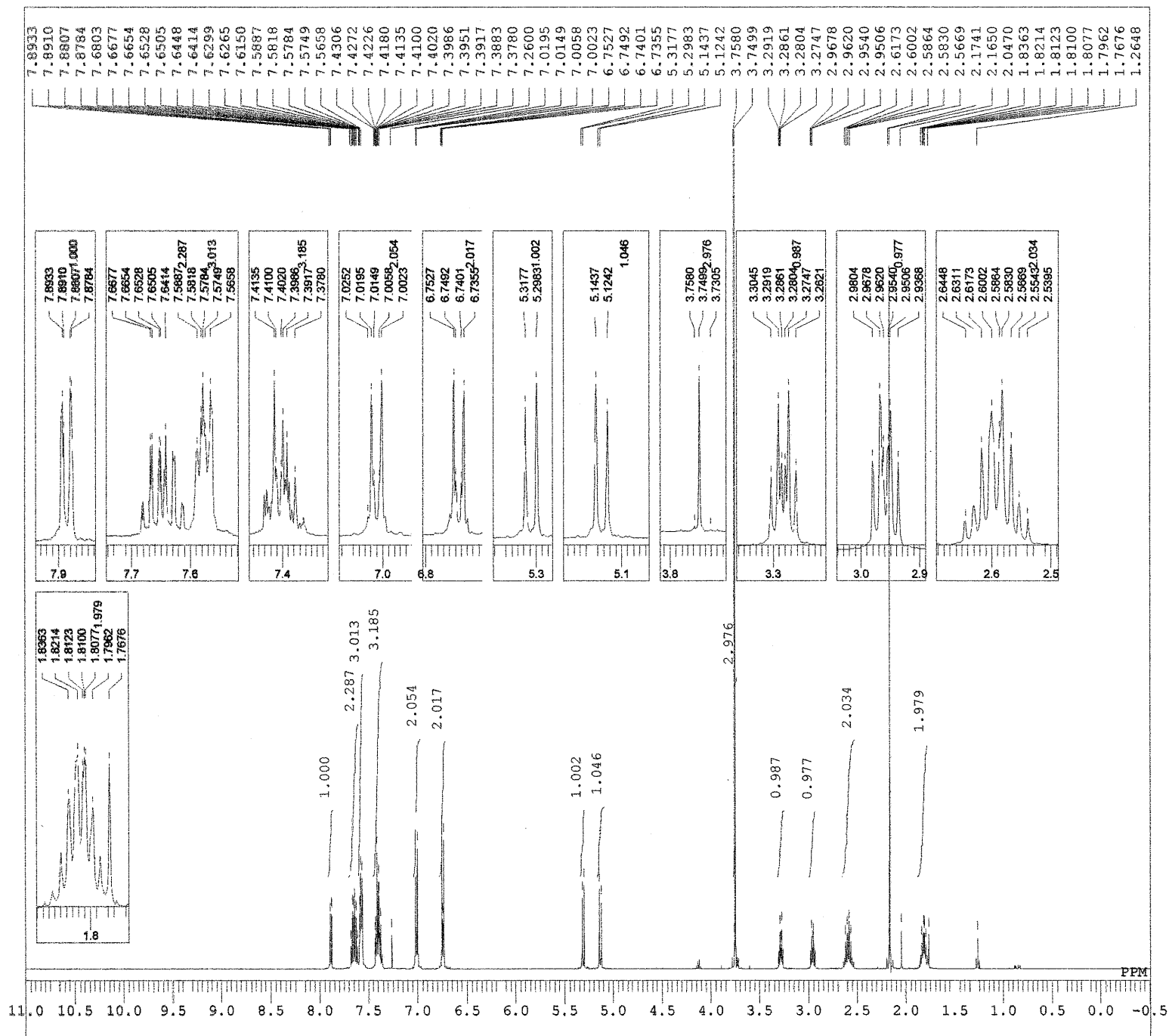


PhOAc, [0]

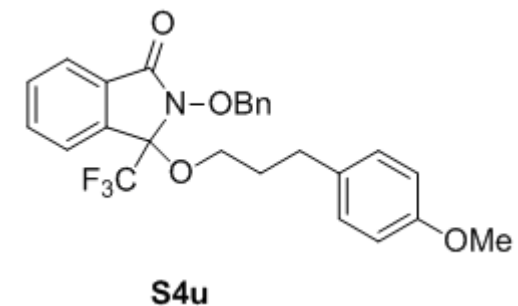


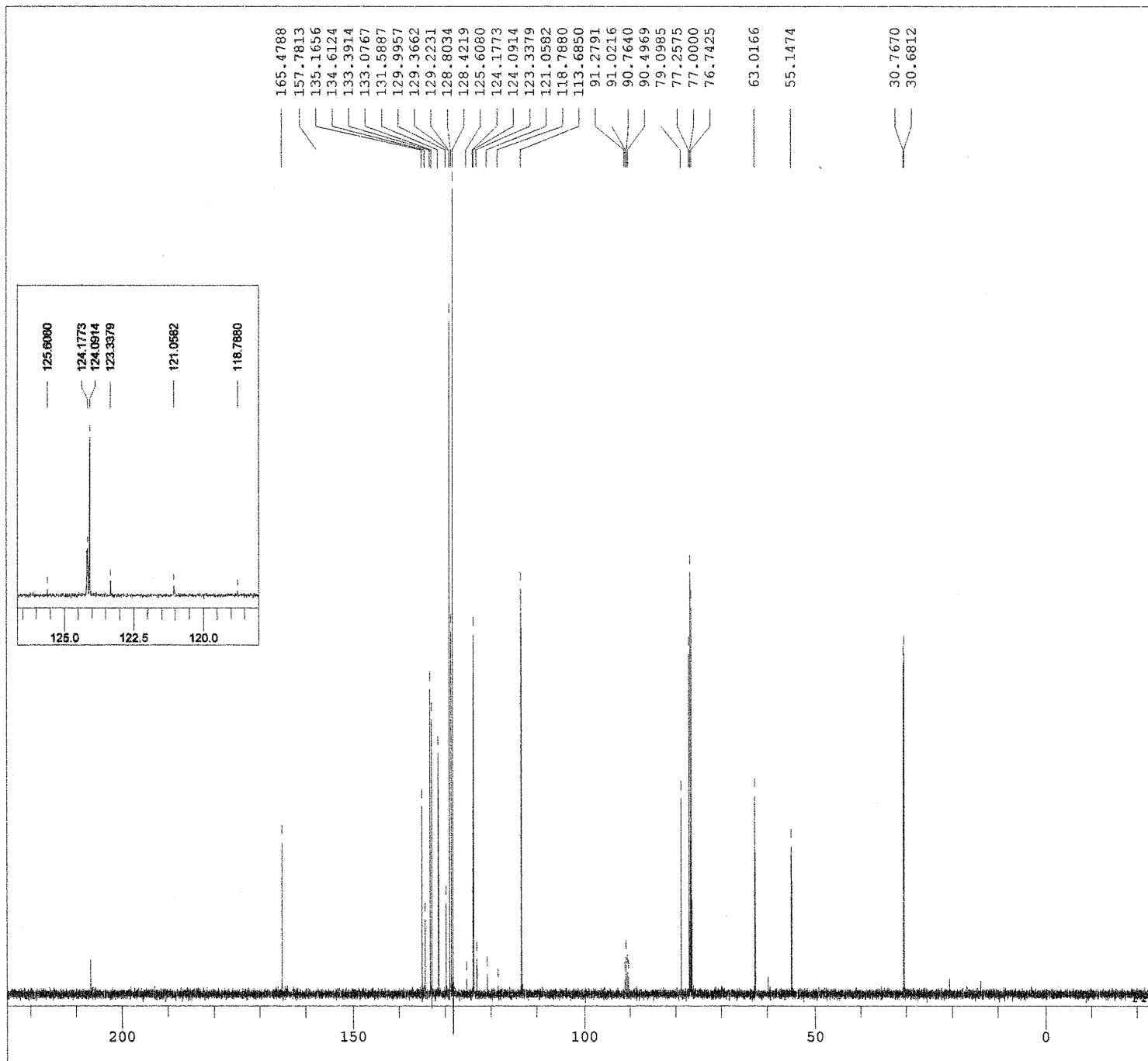
DFILE ozawa05-095_1_19F.jdf
COMMT PhOAc, [0]
DATIM 07-07-2014 18:30:14
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.3 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



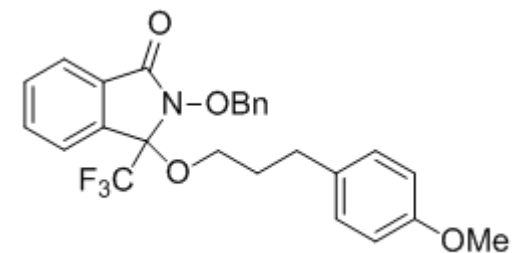


DFILE ozawa07-048_1H.als
 COMNT 4-Me-Ph, Bn
 DATIM 2015-03-19 08:31:00
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 25.7 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26

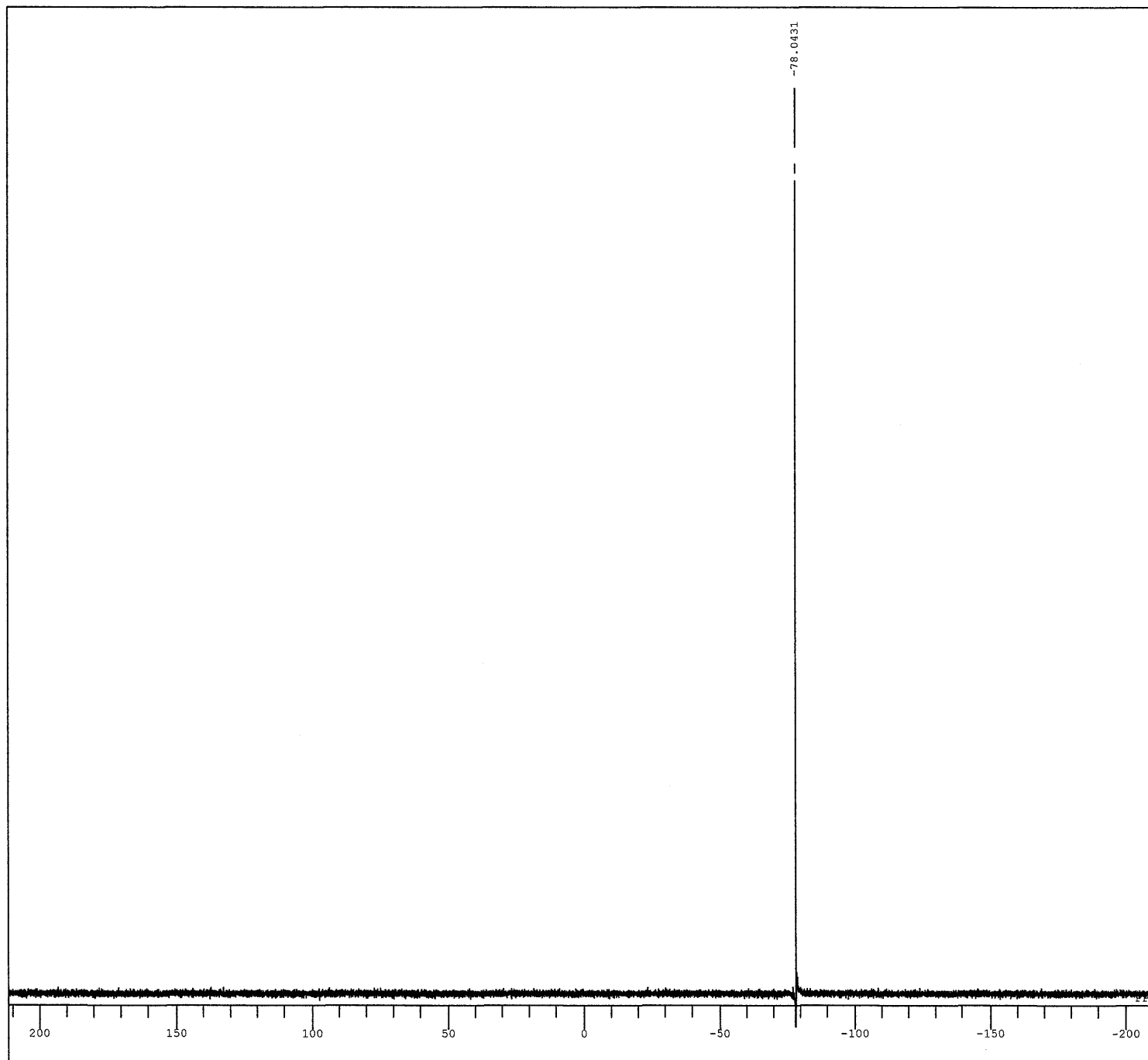




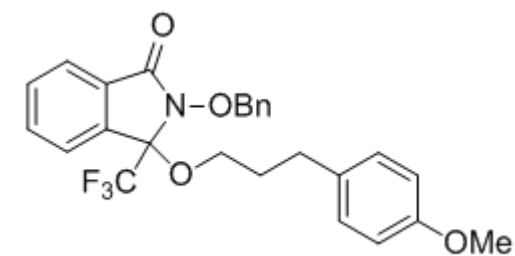
DFILE ozawa07-048_13C.als
 COMNT 4-OMe-Ph, Bn
 DATIM 2015-03-19 08:32:02
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 26214
 FREQU 31446.54 Hz
 SCANS 244
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 26.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



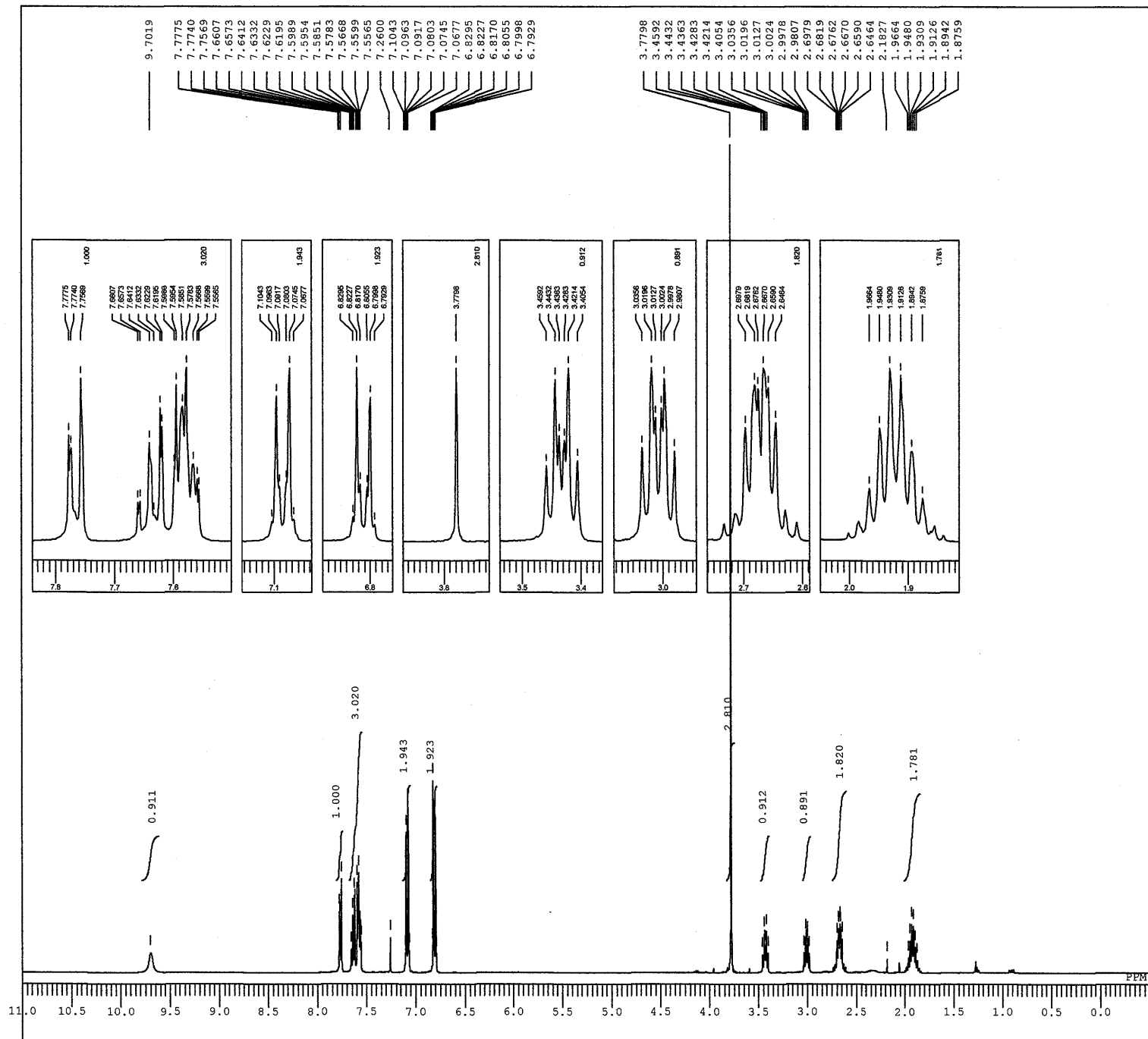
S4u



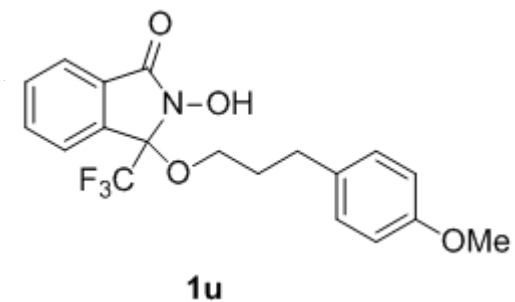
DFILE ozawa07-048_19F.jdf
COMNT 4-Me-Ph, Bn
DATIM 21-03-2015 12:13:59
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

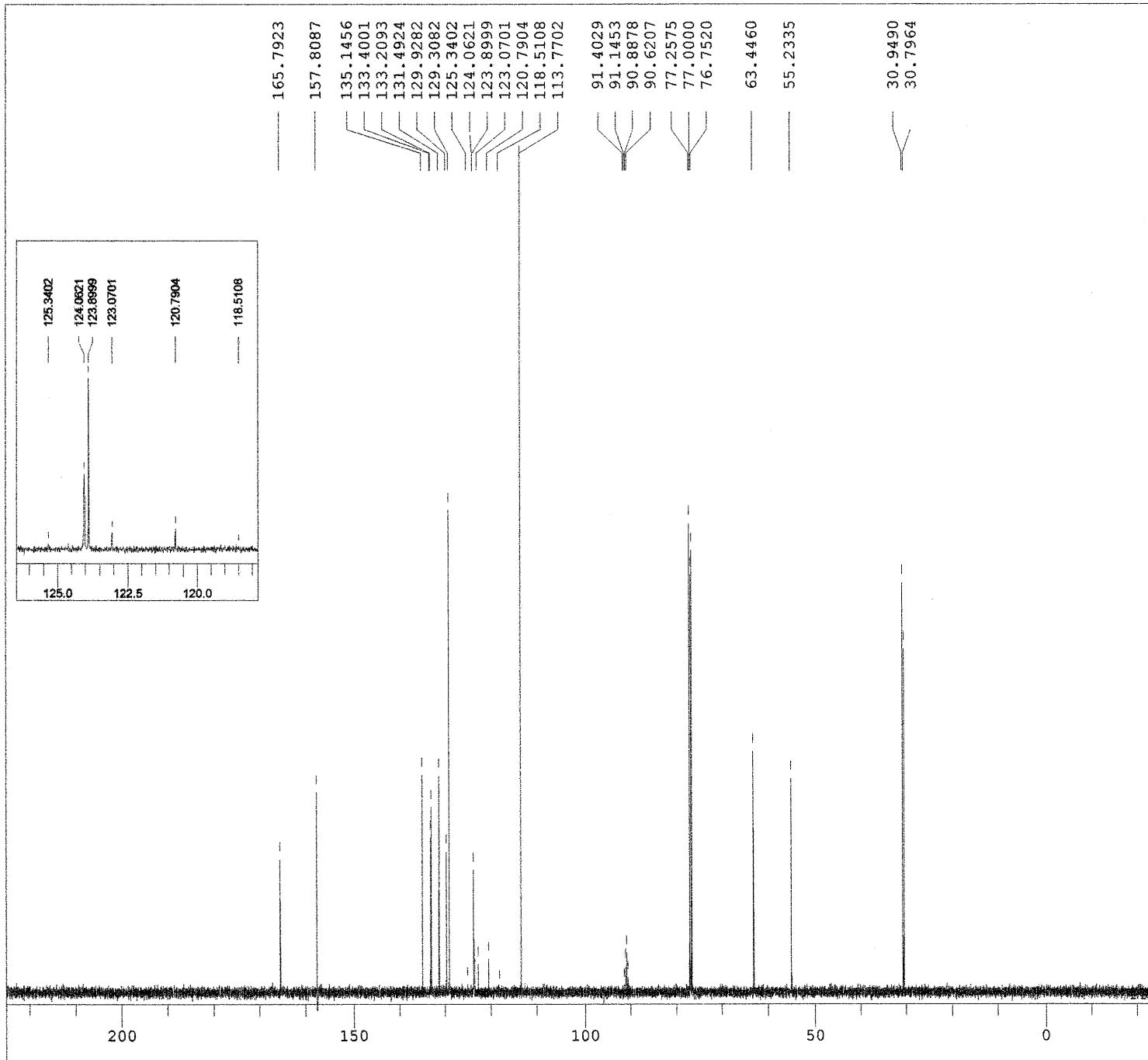


S4u

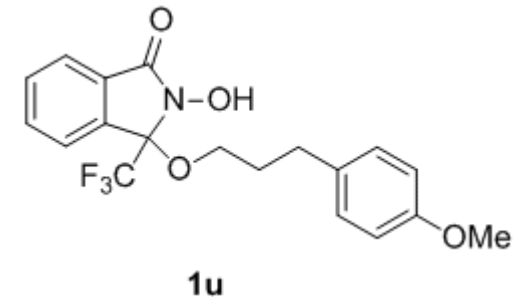


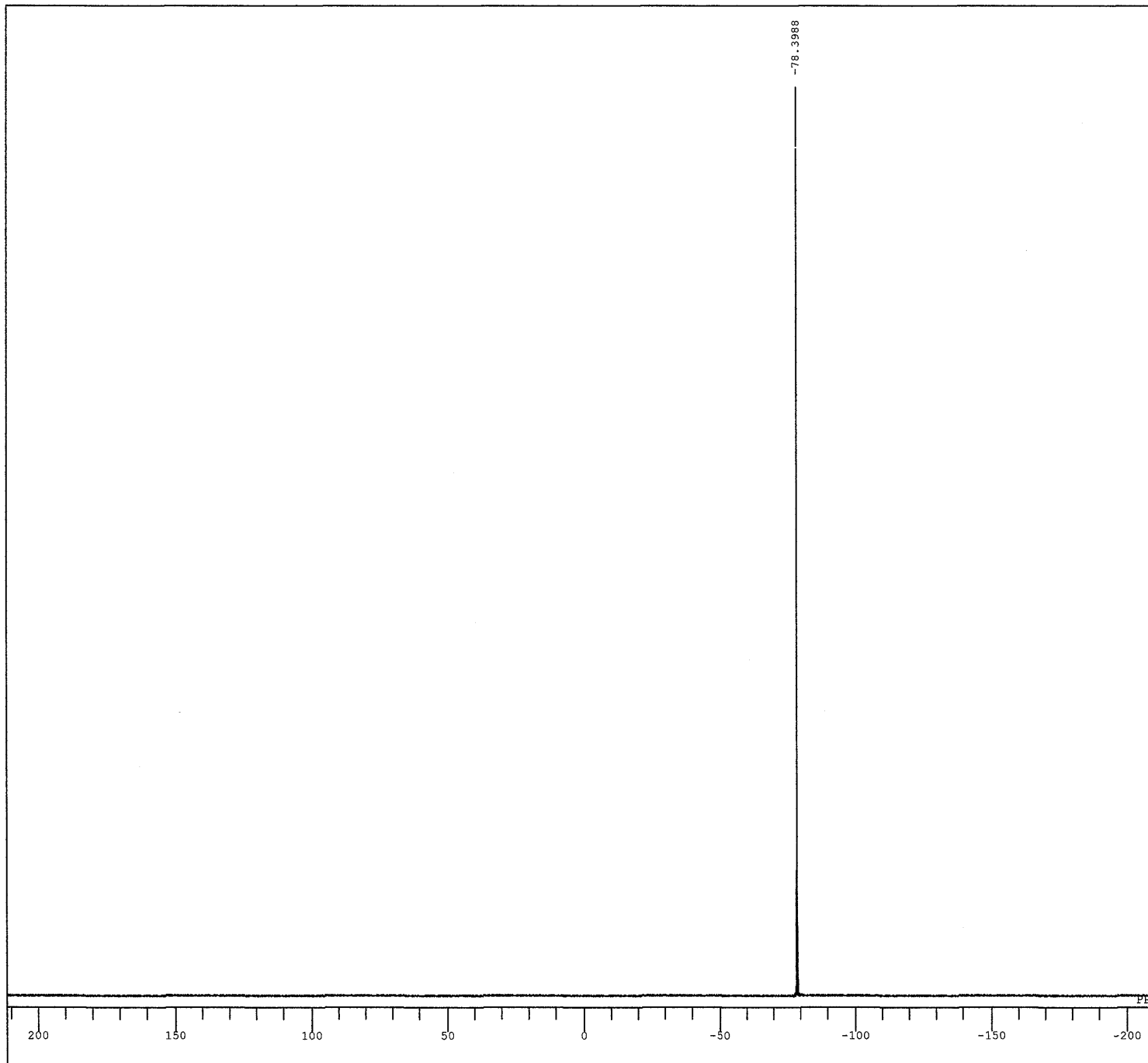
DFILE ozawa07-049 1H.jdf
 COMNT 4-OMe-Ph, OH
 DATIM 20-03-2015 17:32:44
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSETE 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 4.99 usec
 IRNUC 1H
 CTEMP 25.4 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30



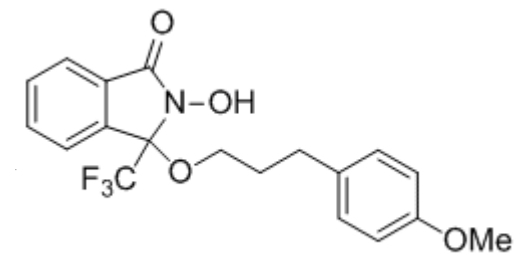


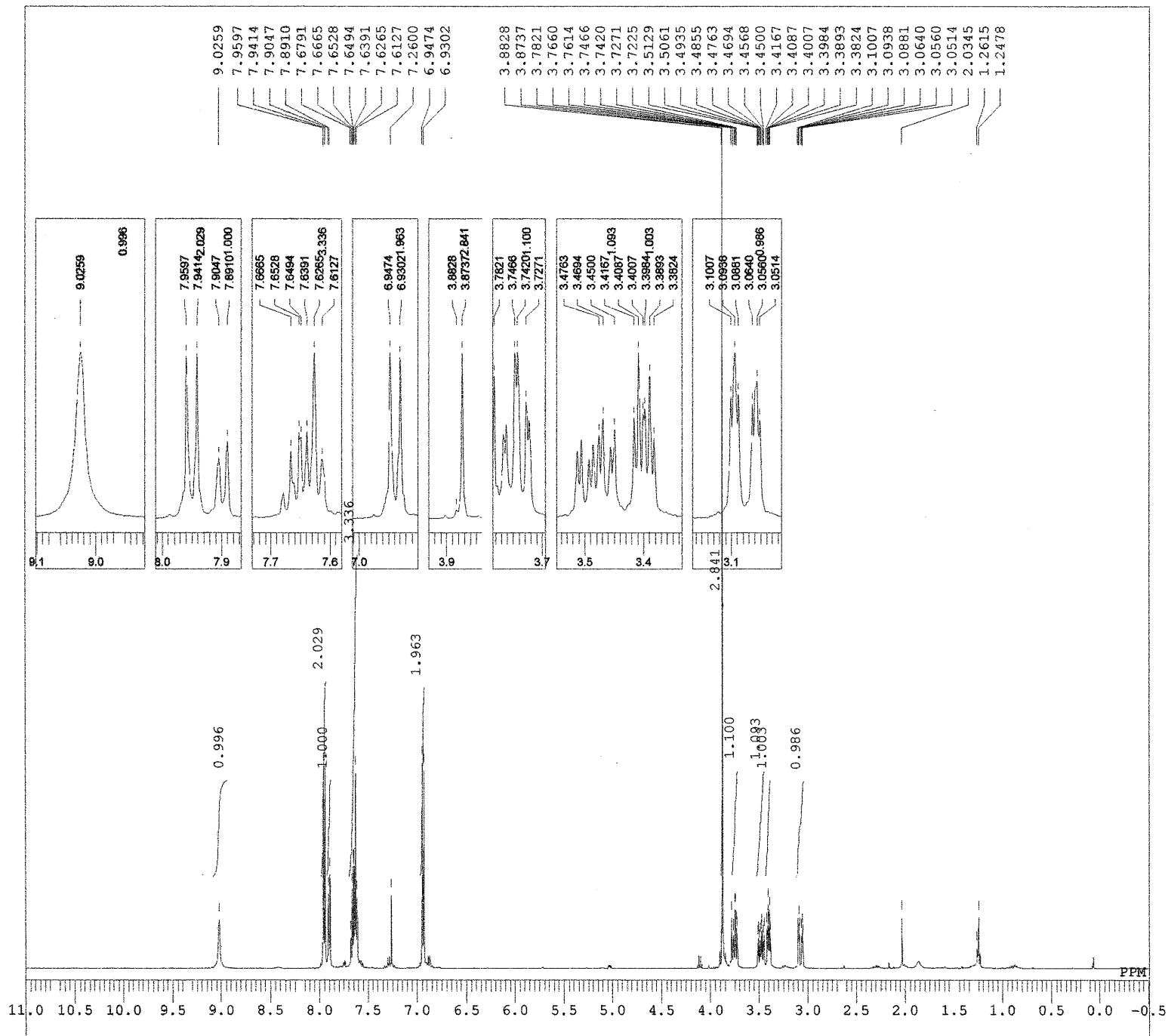
DFILE ozawa07-049_C13.jdf
 COMNT 4-OMe-Ph, OH
 DATIM 2015-03-20 17:28:55
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 256
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 26.7 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



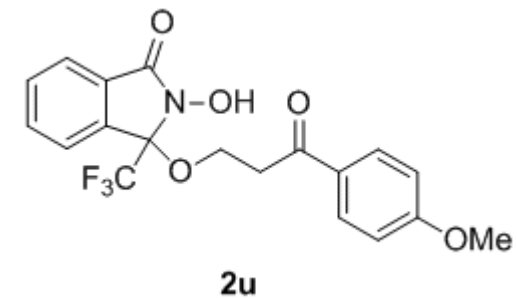


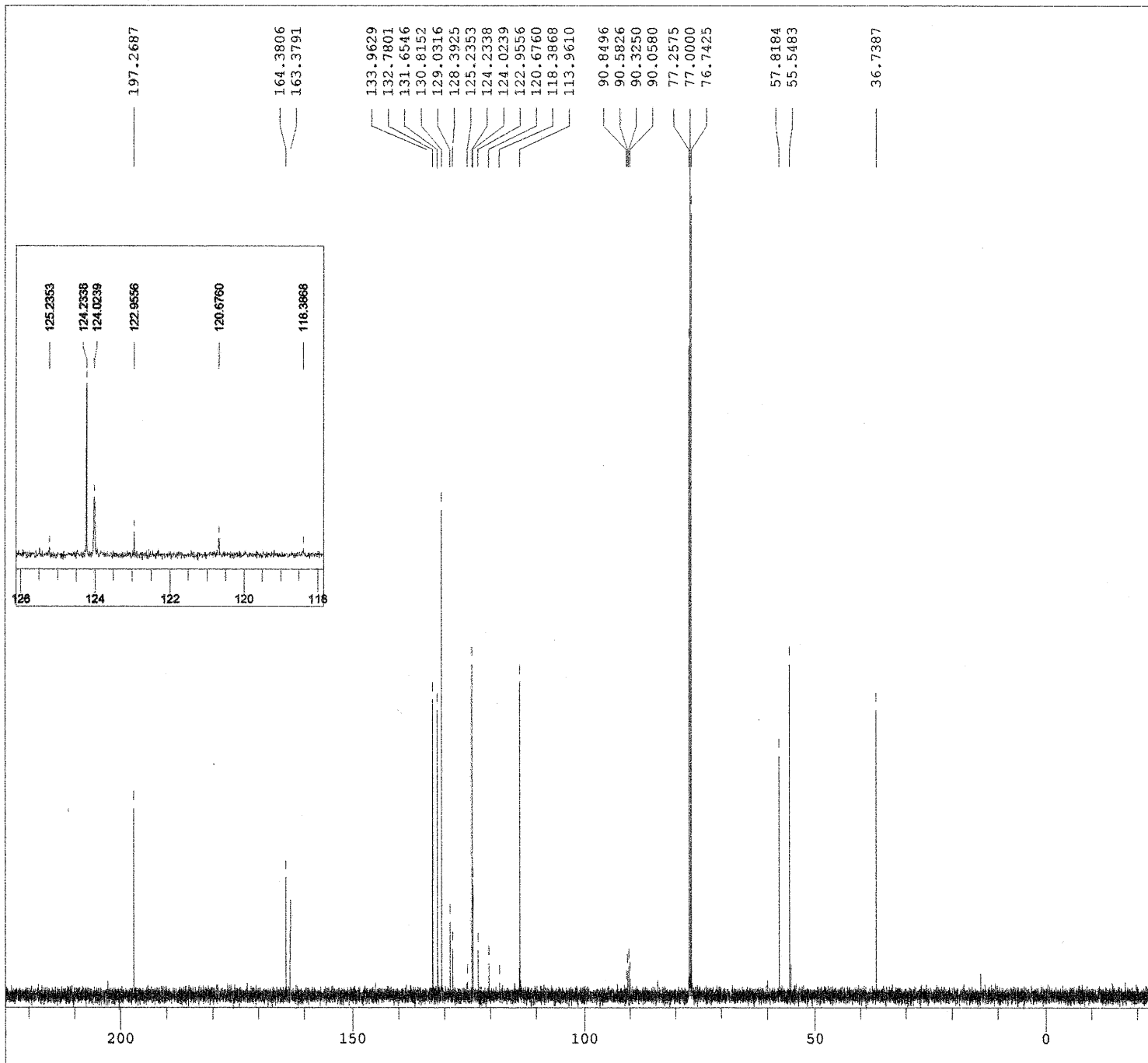
DFILE ozawa07-049_19F.jdf
COMNT 4-OMe-Ph, OH
DATIM 20-03-2015 17:30:46
19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 25.4 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

**1u**

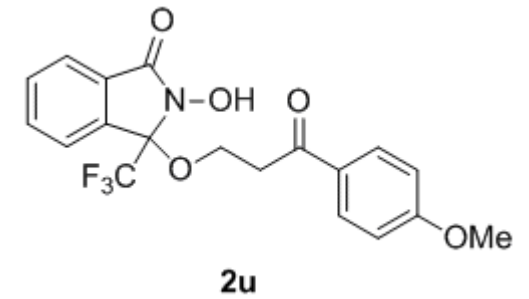


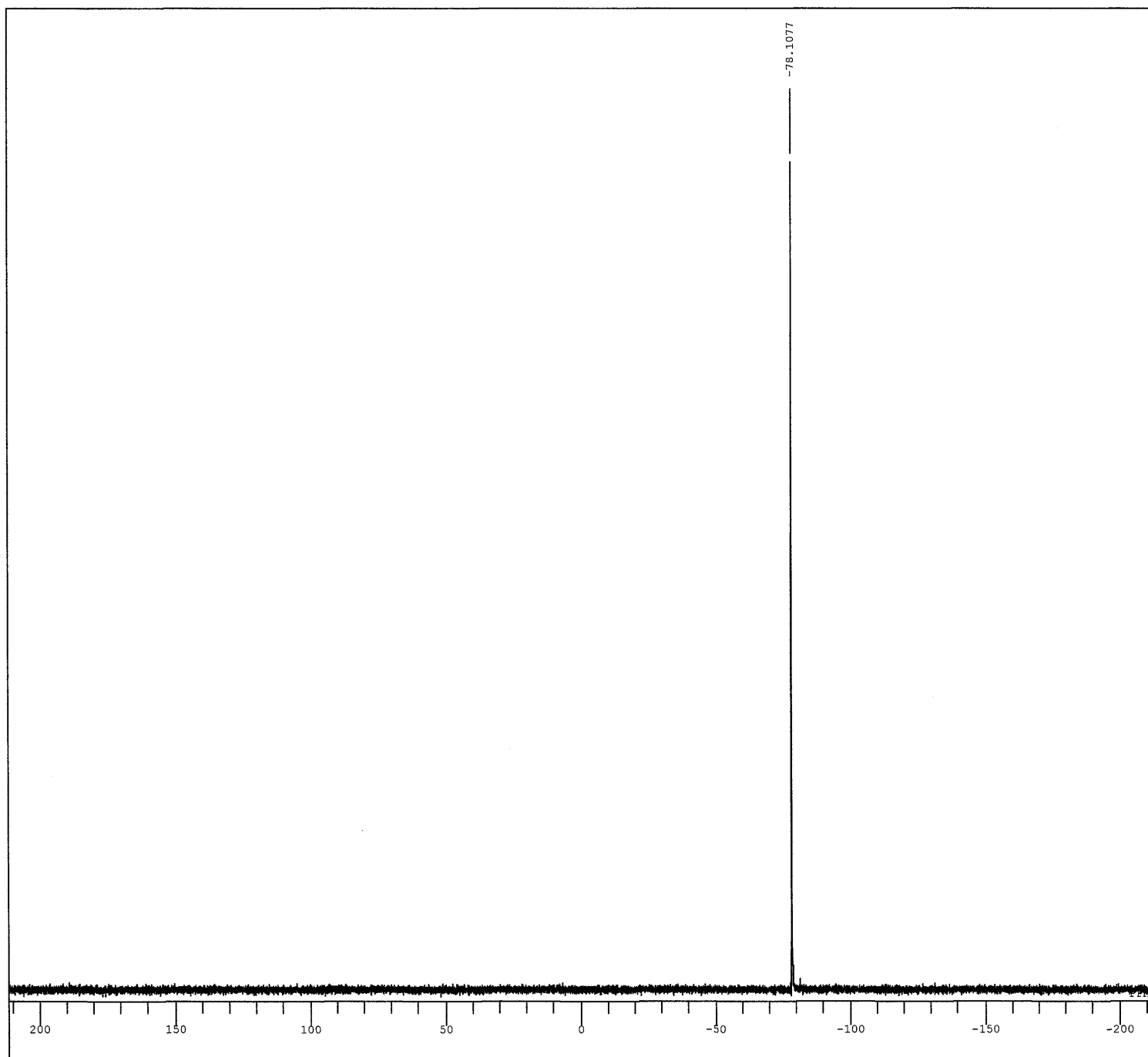
DFILE ozawa07-053 1H-1-1.jdf
 COMNT 4-OMe-Ph, [O]
 DATIM 2015-03-23 16:44:10
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 26.2 c
 SLVNT CDCl3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30



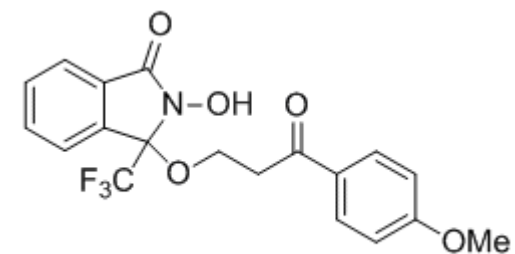


DFILE ozawa07-053_13C.jdf
 COMNT 4-OMe-Ph, [O]
 DATIM 2015-03-23 16:45:12
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 500
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 26.8 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

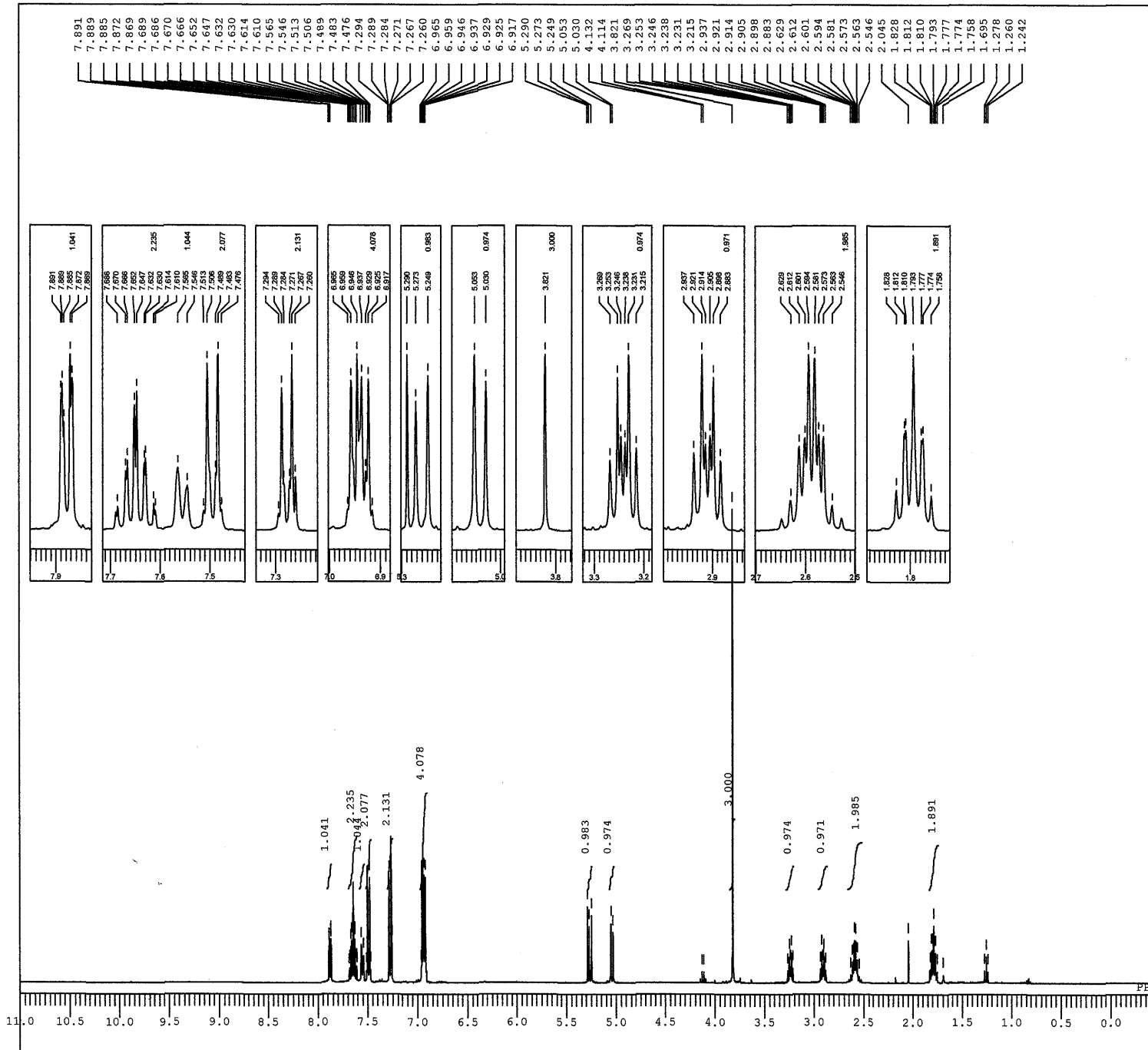




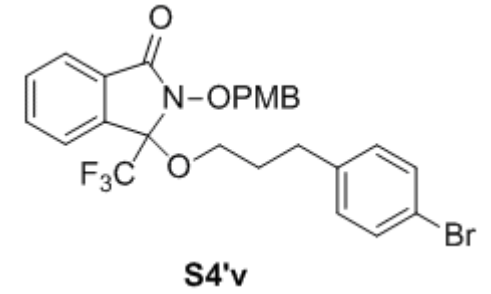
DFILE ozawa07-050_19F.jdf
COMNT 4-OMe-Ph, [O]
DATIM 20-03-2015 17:27:38
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.4 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

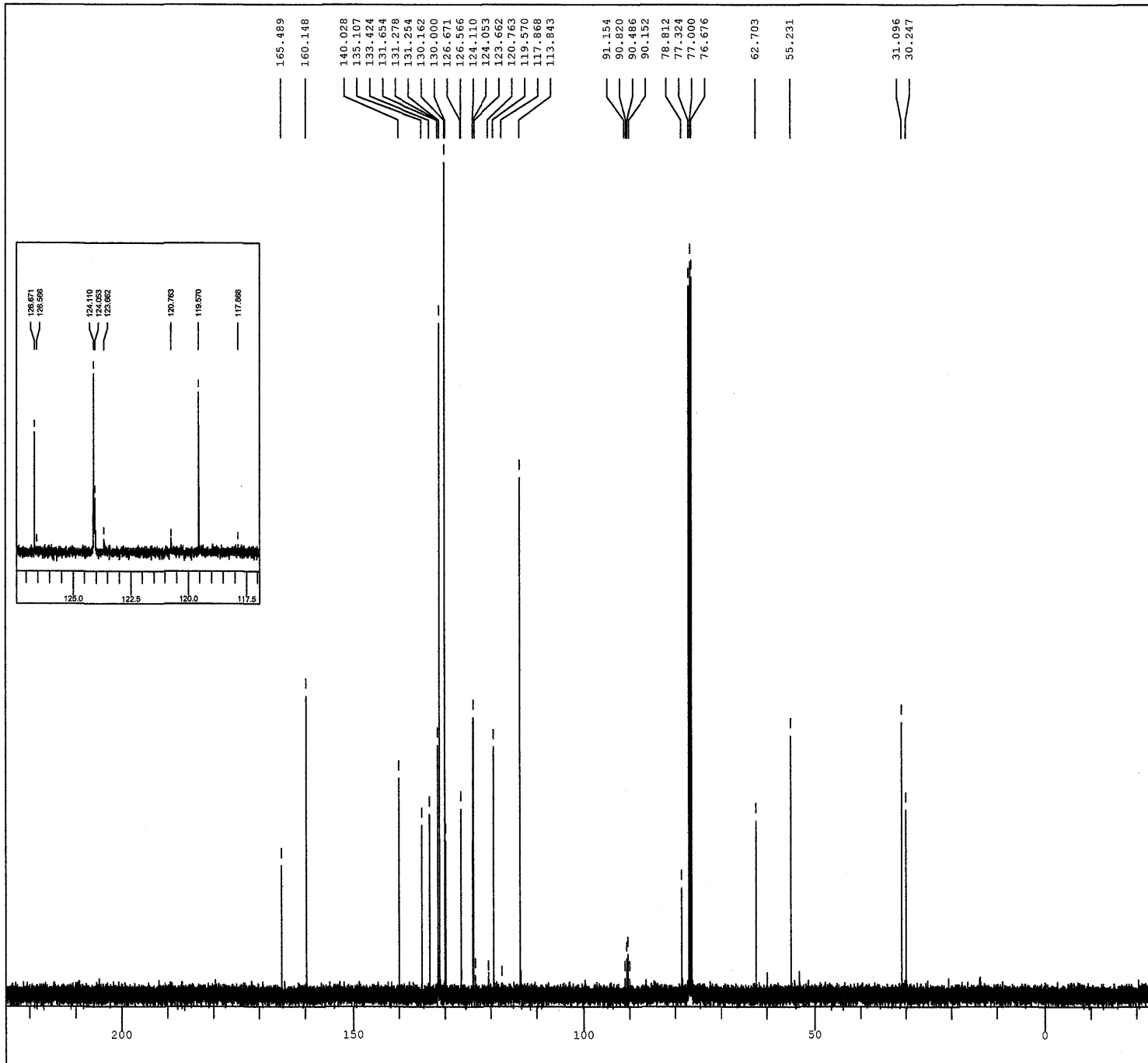


2u

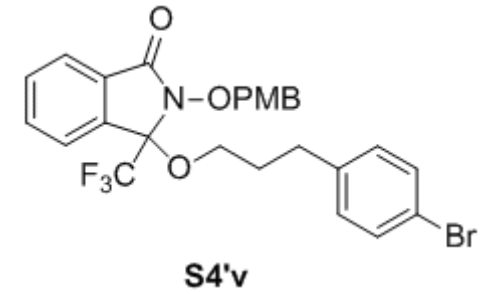


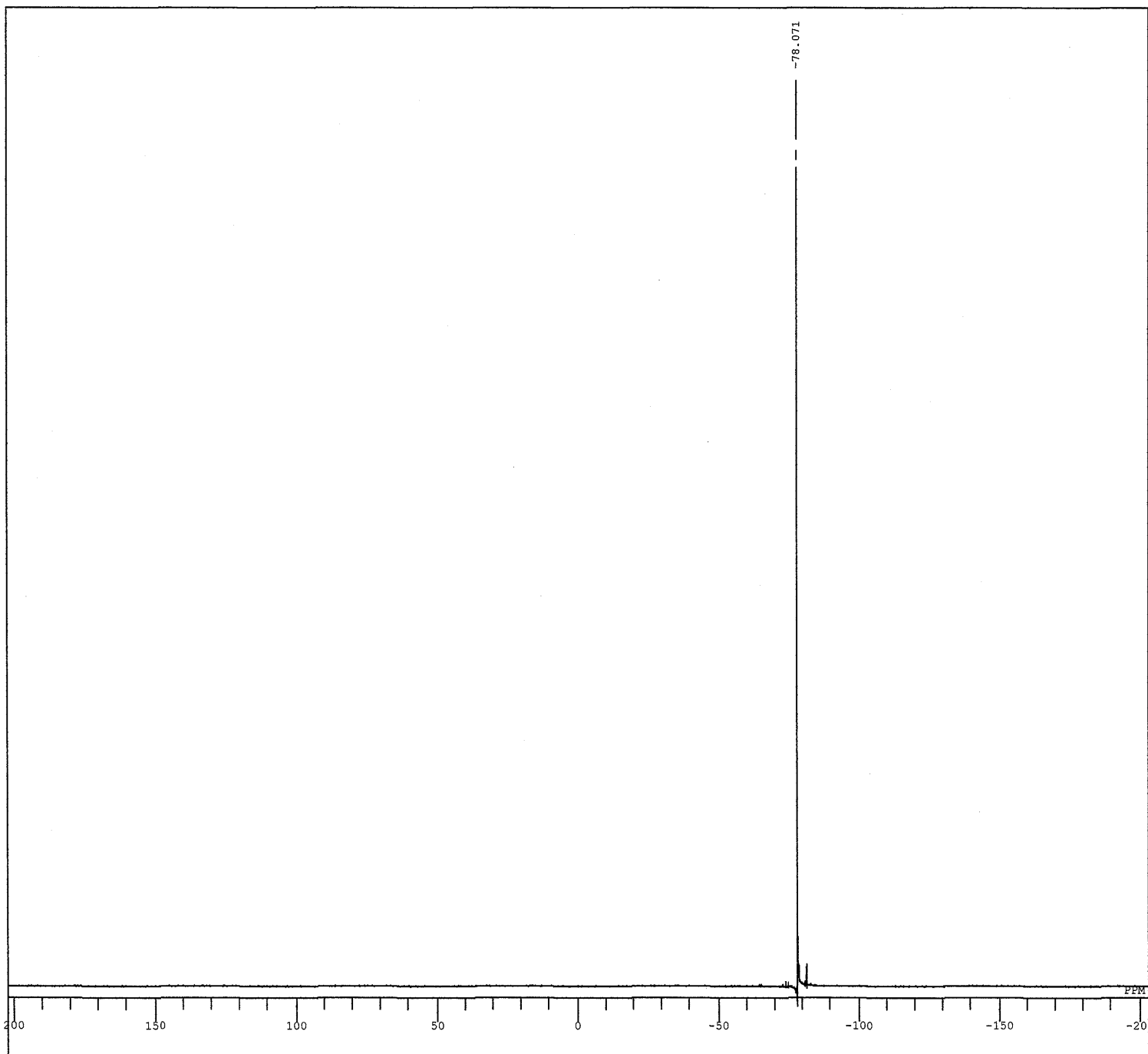
DFILE ozawa06-116 1H.jdf
 COMNT 4-BrPh-PrOH, PMB
 DATIM 24-12-2014 13:35:46
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7349.62 Hz
 SCANS 8
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.07 usec
 IRNUC 1H
 CTEMP 22.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30



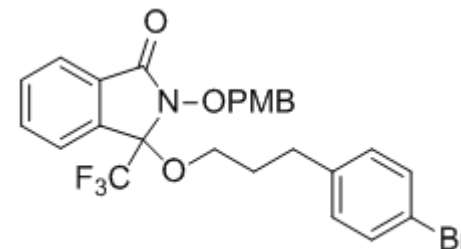


DFILE ozawa06-116 13C.jdf
 COMNT 4-BrPh-PrOH, PMB
 DATIM 24-12-2014 13:37:22
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQU 30788.18 Hz
 SCANS 340
 ACQTM 2.1286 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

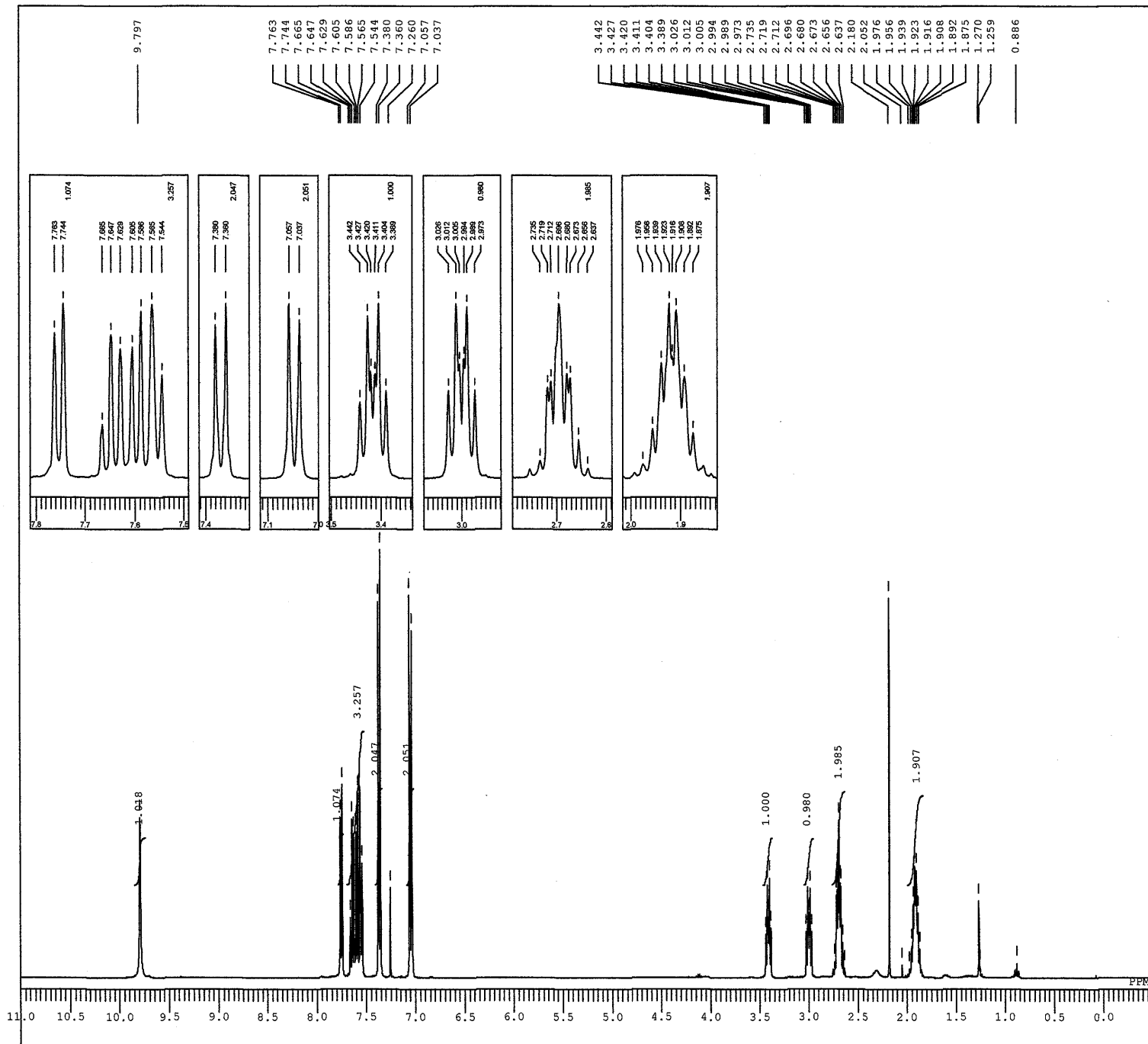




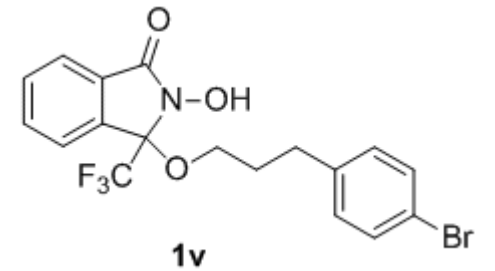
DFILE ozawa06-116_19F.jdf
COMNT 4-BrPh-PrOH, PMB
DATIM 24-12-2014 13:33:22
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 22.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48

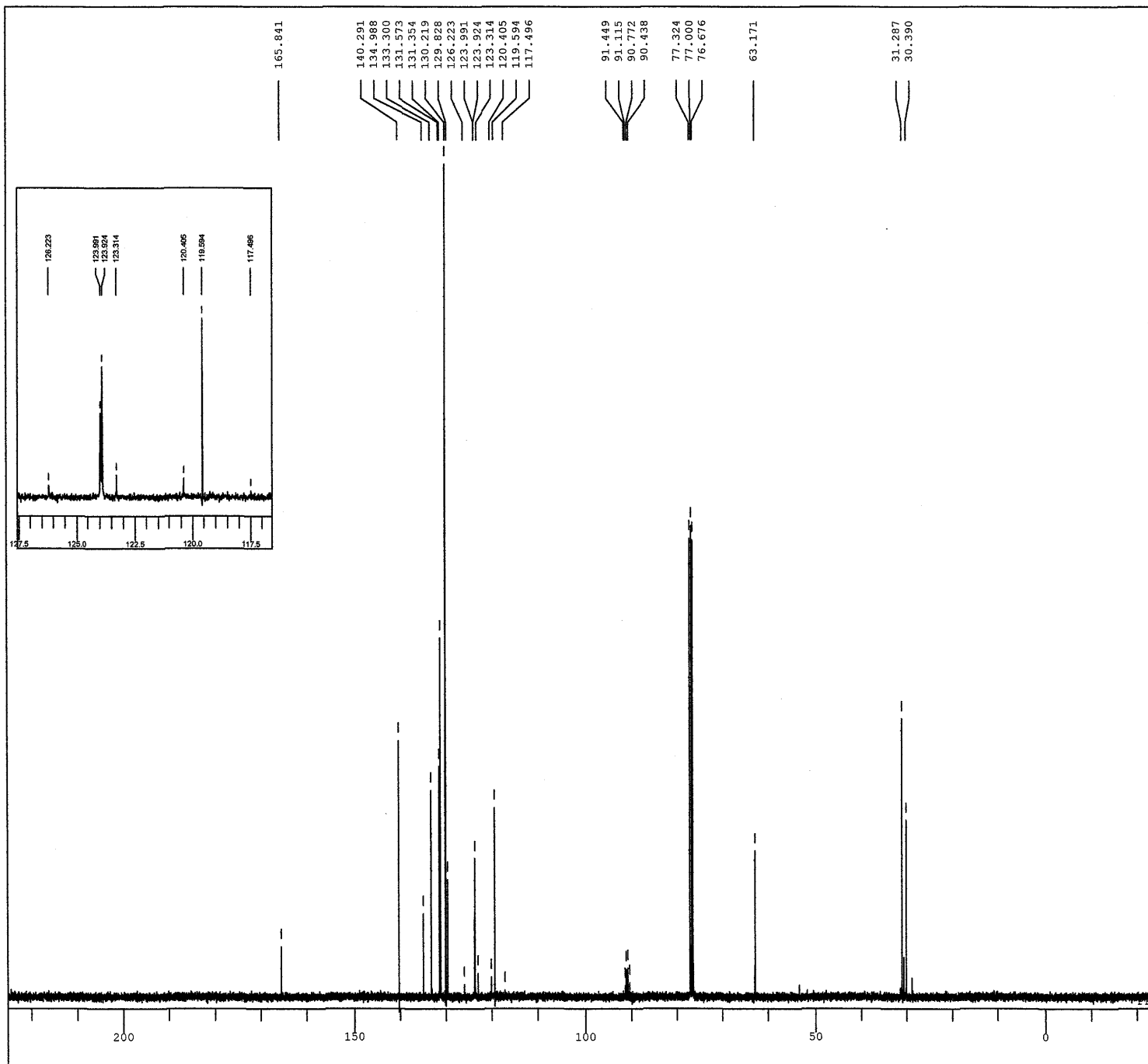


S4'v

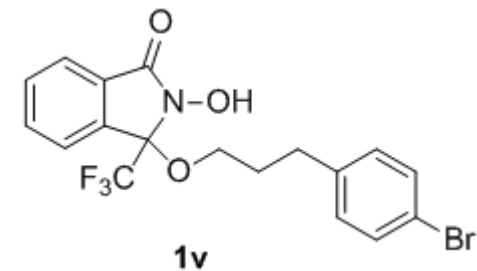


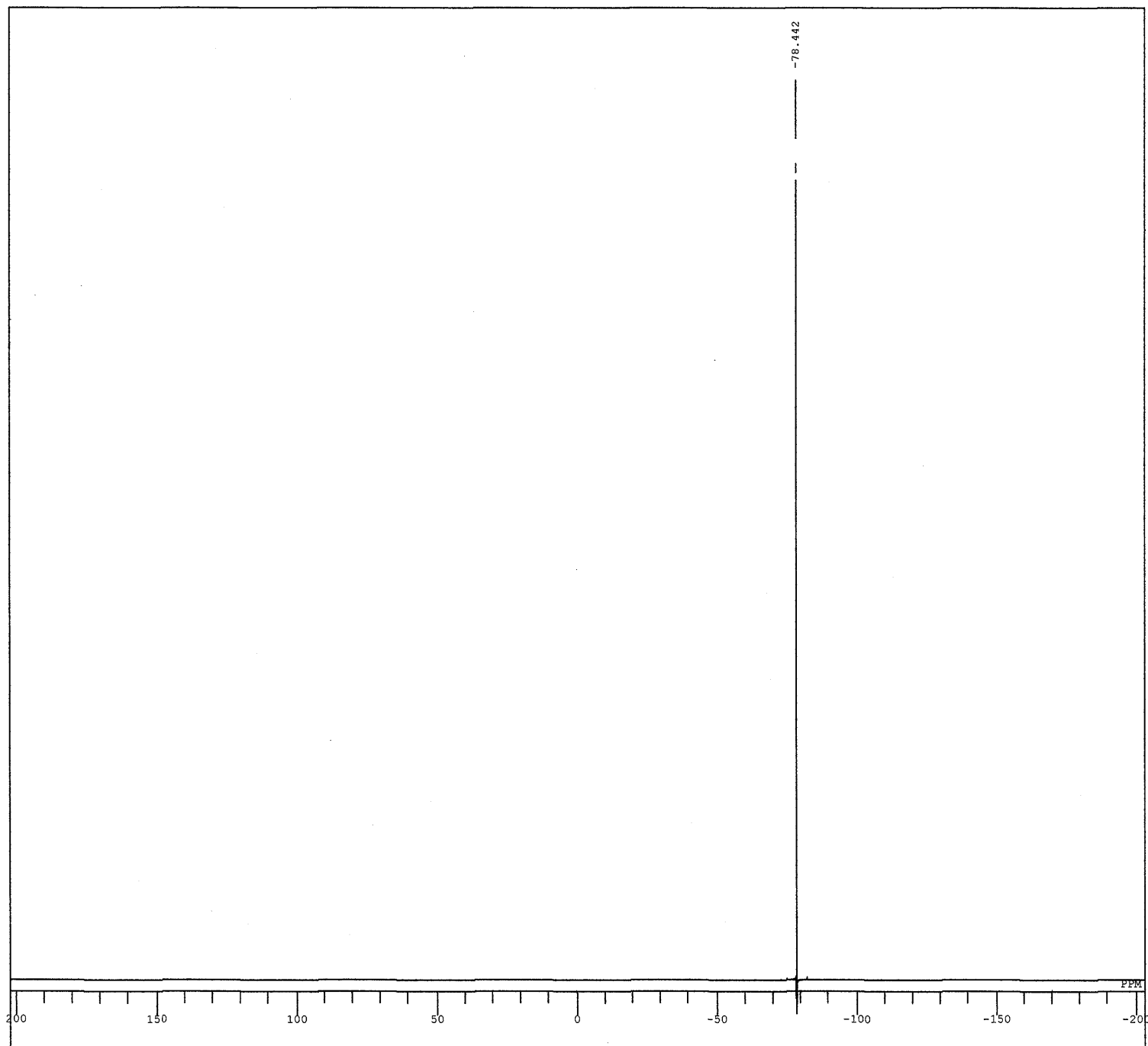
DFILE ozawa06-117 1H.jdf
 COMNT 4-Br-Ph, OH
 DATIM 30-12-2014 10:15:11
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSFT 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 8
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.07 usec
 IRNUC 1H
 CTEMP 21.5 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 32



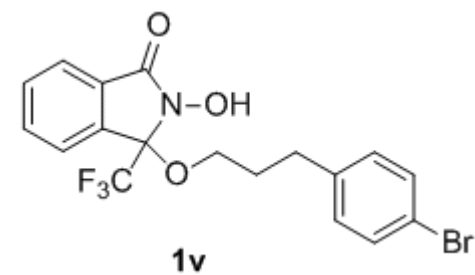


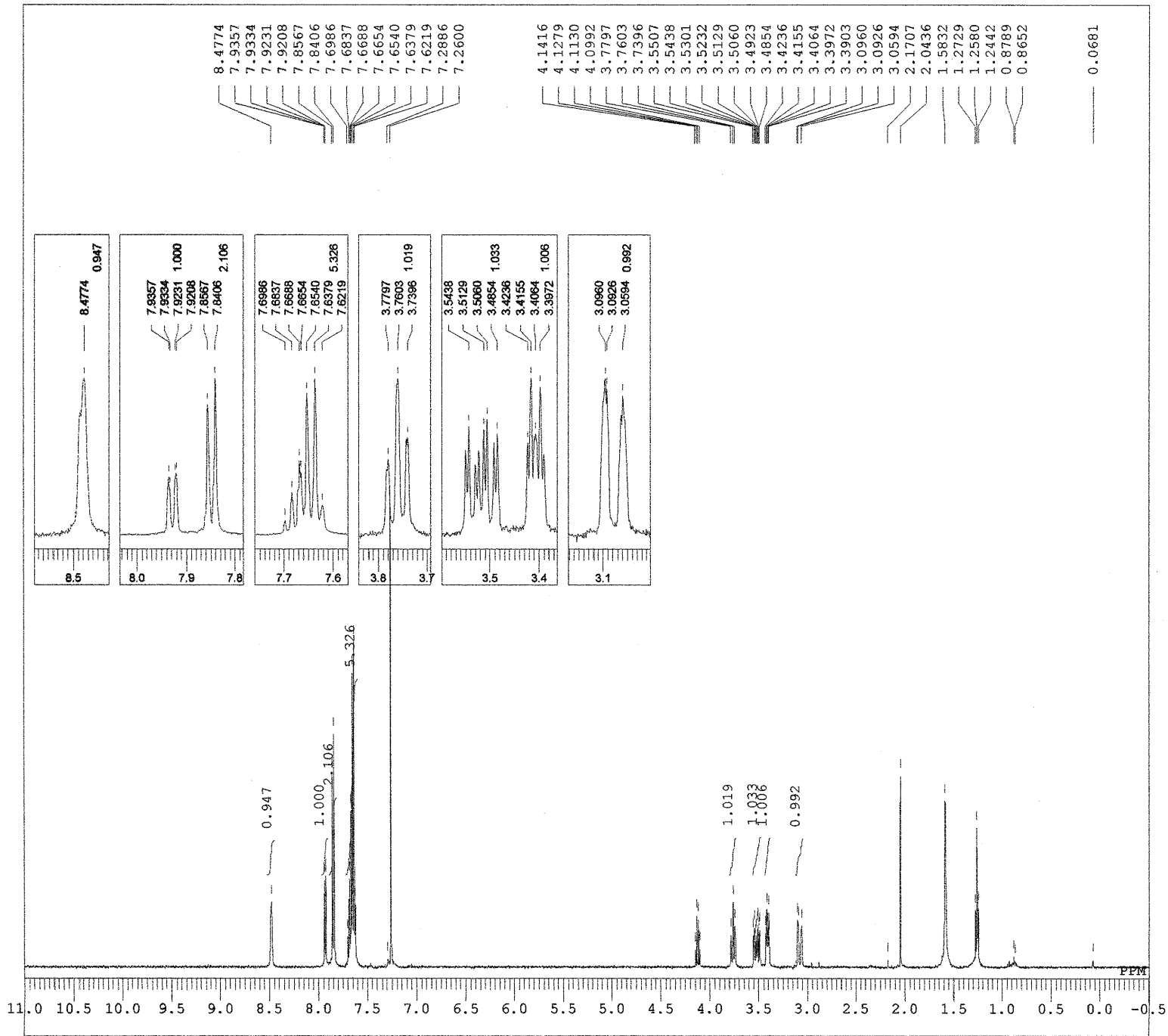
DFILE ozawa06-117_13C.jdf
 COMNT 4-Br-Ph, OH
 DATIM 30-12-2014 10:18:35
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 98.52 MHz
 OBSFT 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 460
 ACQTM 1.0643 sec
 PD 3.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60





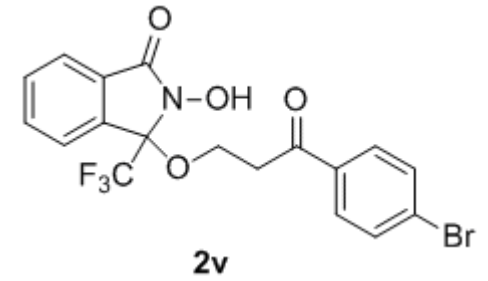
DFILE ozawa06-117 19F.jdf
COMNT 4-Br-Ph, OH
DATIM 30-12-2014 10:12:31
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBFSE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



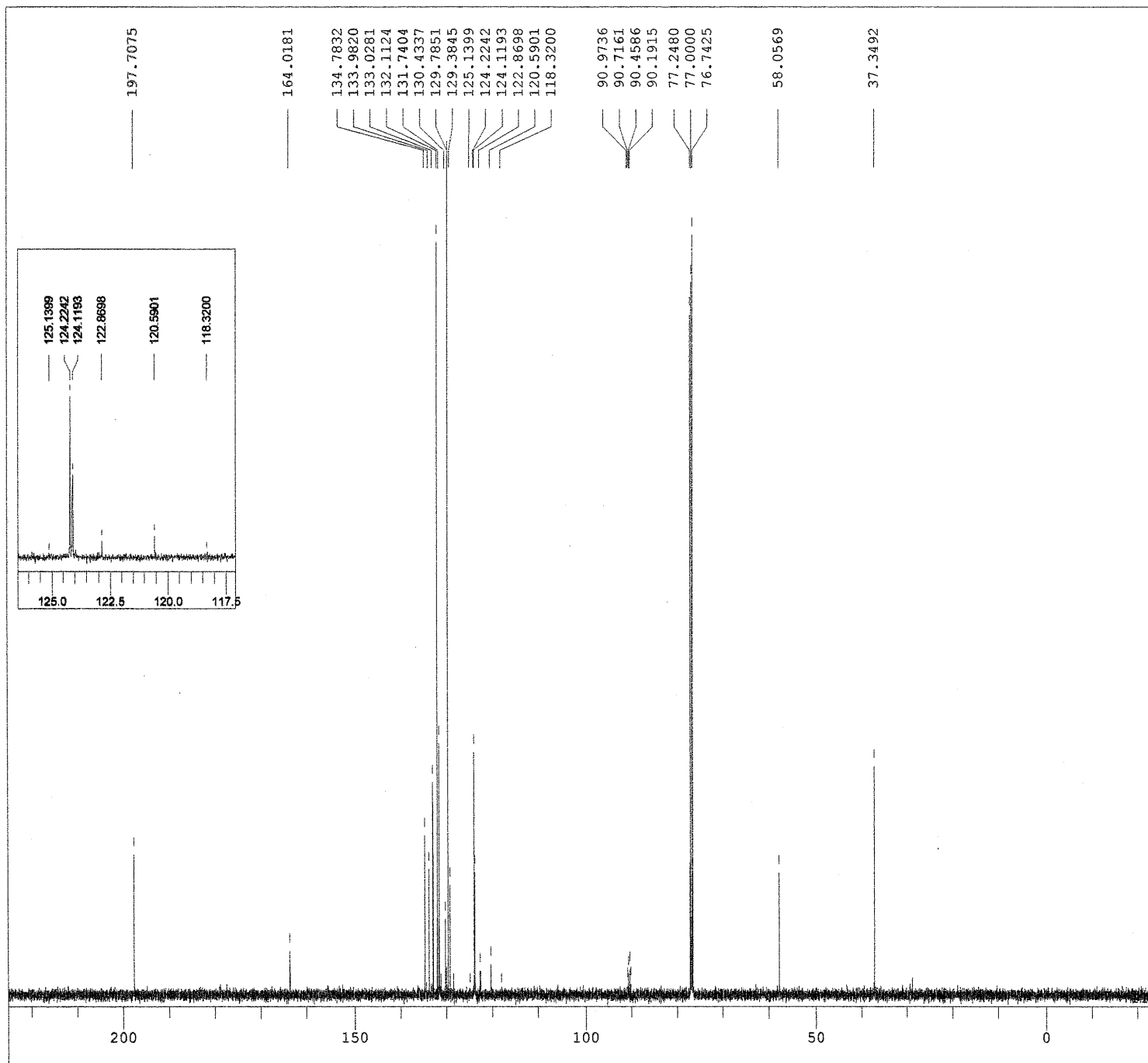


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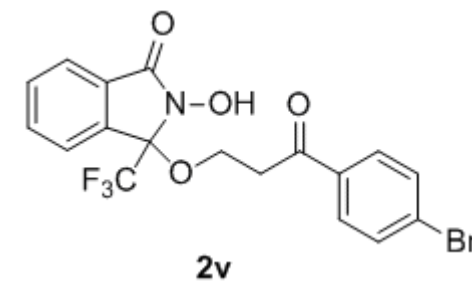
DFILE ozawa06-118_take2.als
COMNT PTLC 4-Br-Ph, [O]
DATIM 2014-12-27 08:23:00
OBNUC 1H
EXMOD proton.jxp
OBFREQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.51 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 24.0 c
SLVNT CDCl3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 30
    
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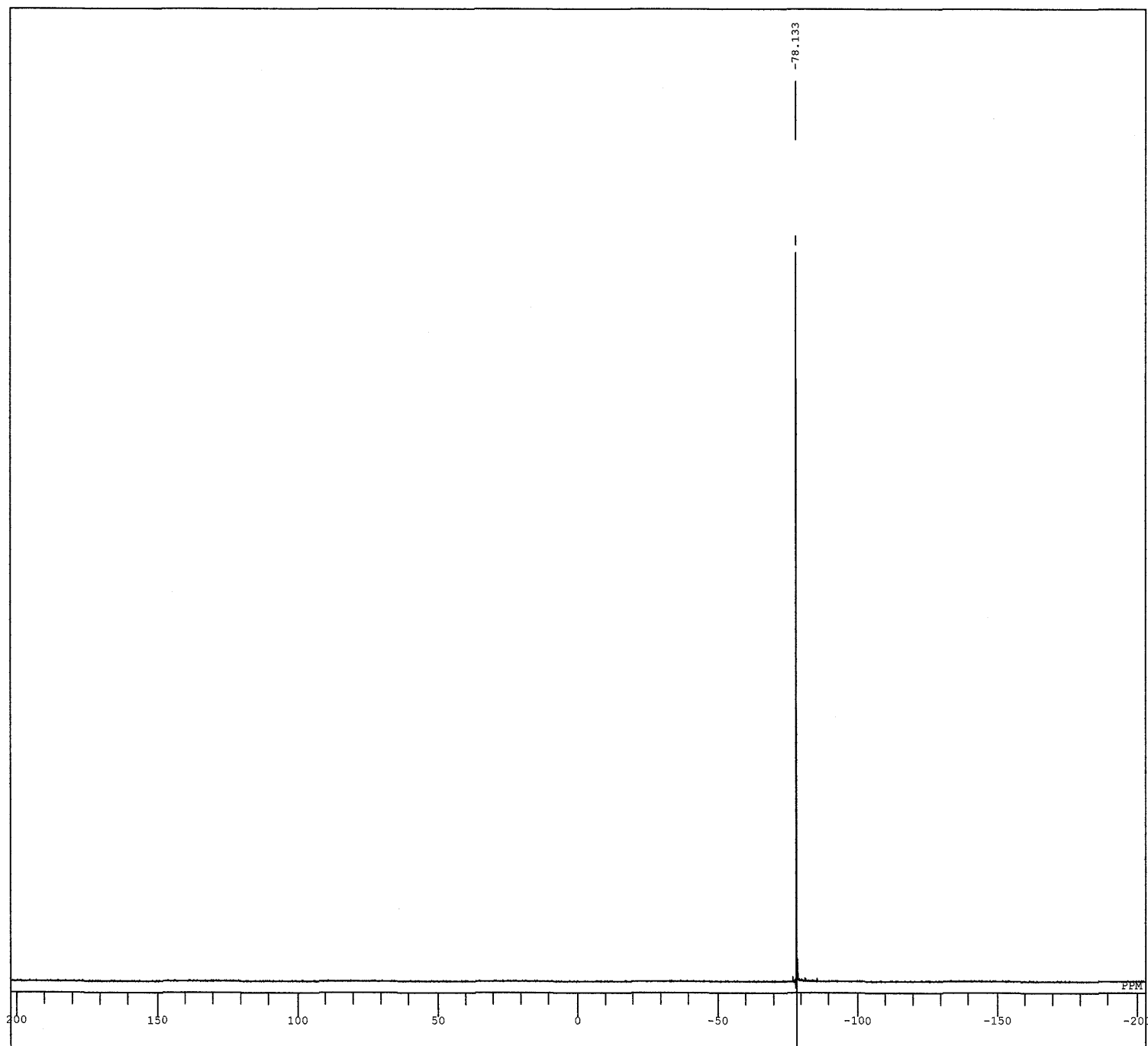


4-Br-Ph, [O]

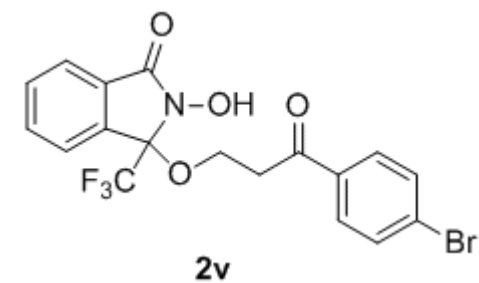


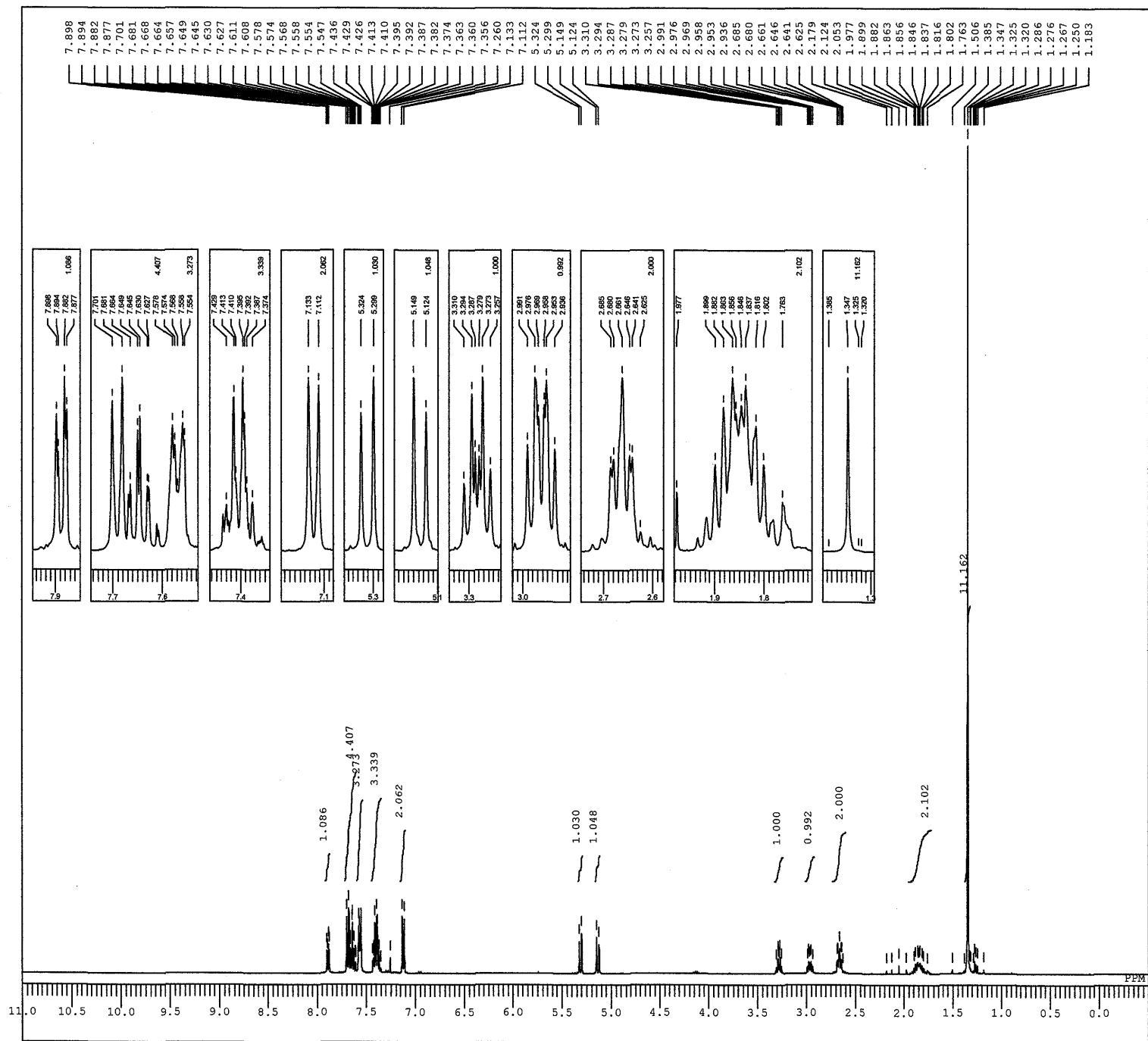
DFILE ozawa06-118_13C.jdf
COMNT 4-Br-Ph, [O]
DATIM 2015-01-05 10:29:28
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 640
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 24.2 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



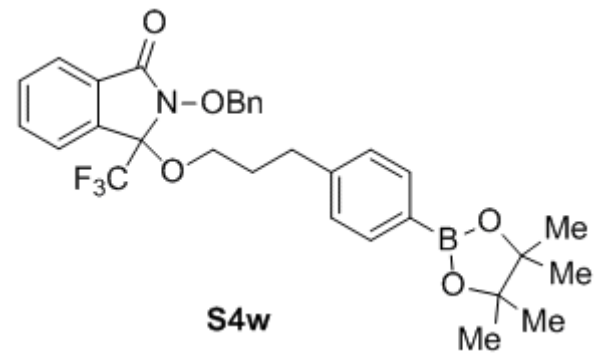


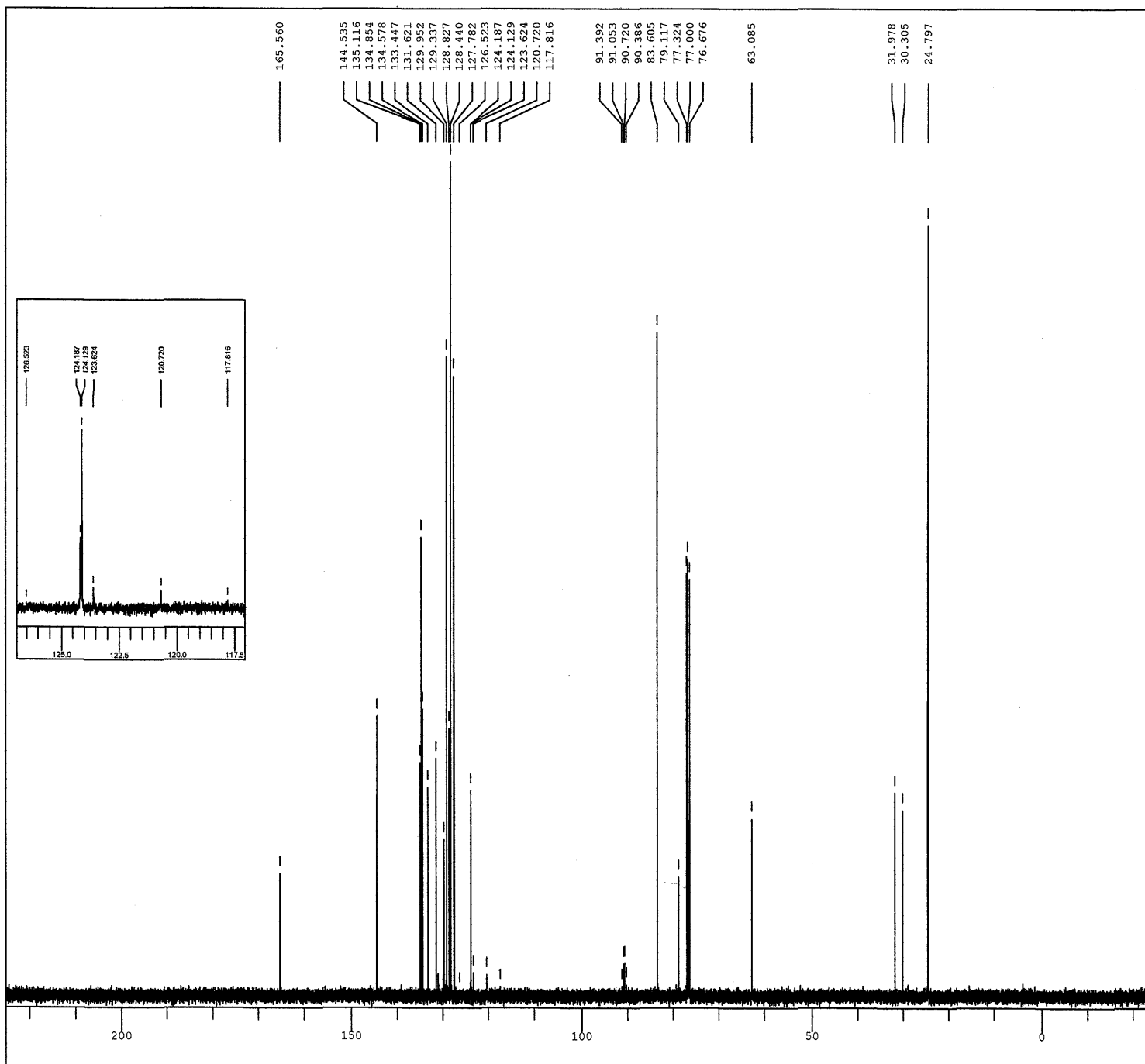
DFILE ozawa06-118_19F.jdf
COMNT 4-Br-Ph, [O]
DATIM 05-01-2015 12:24:41
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



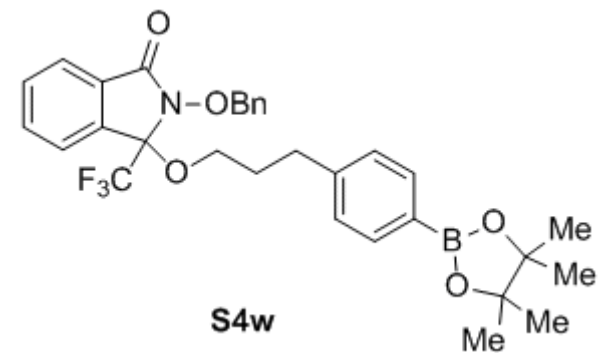


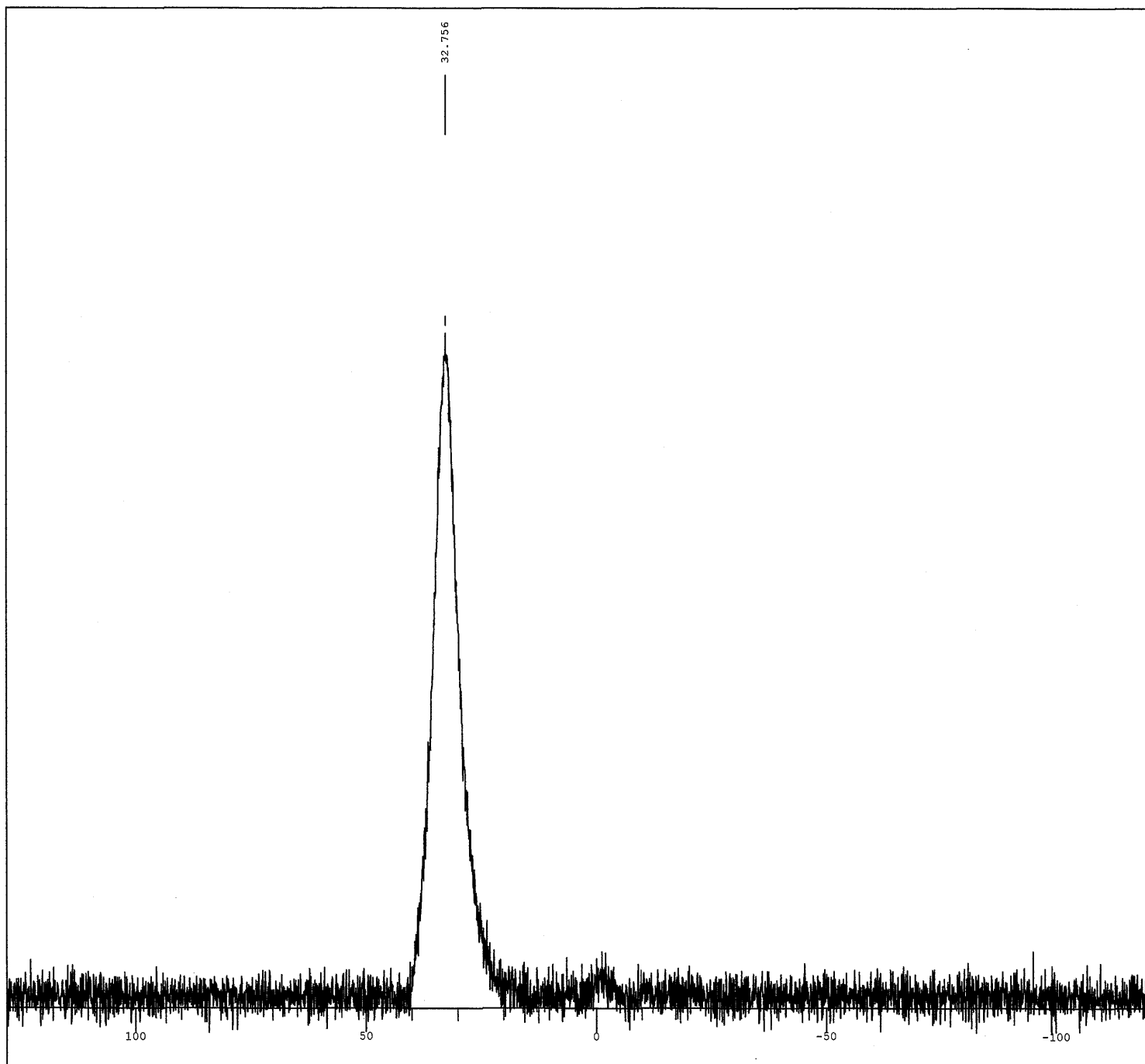
DFILE ozawa06-113 1H.jdf
 COMNT Ph-Bpin, Bn
 DATIM 25-12-2014 11:29:15
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSFT 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 8
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.07 usec
 IRNUC 1H
 CTEMP 22.0 c
 SLVMT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



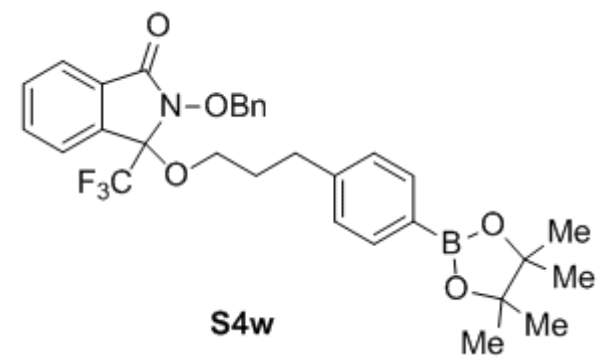


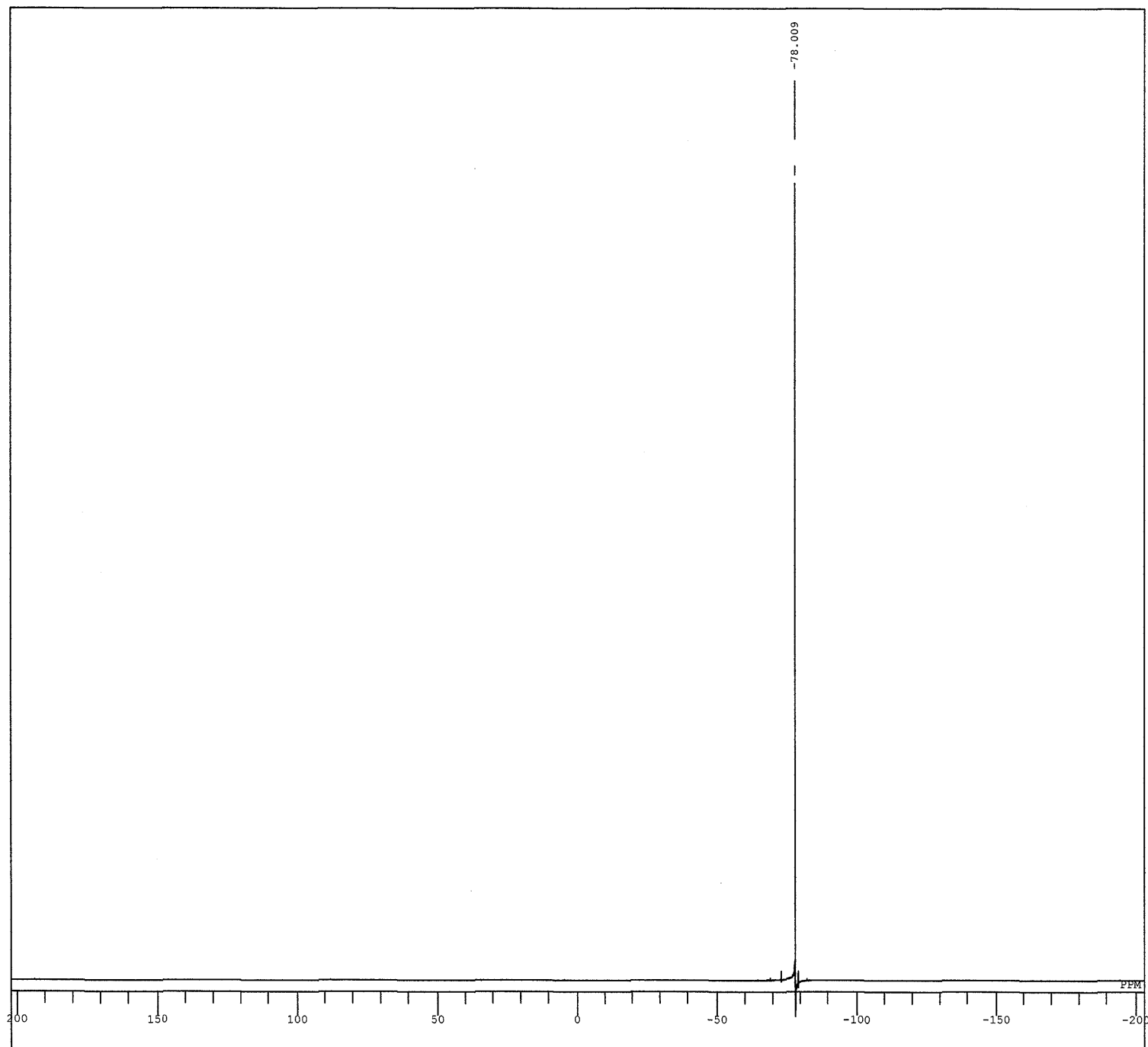
DFILE ozawa06-113 13C.jdf
 COMNT 4-Bpin-Ph, Bn
 DATIM 25-12-2014 11:32:48
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 65535
 FREQU 30788.18 Hz
 SCANS 180
 ACQTM 2.1286 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



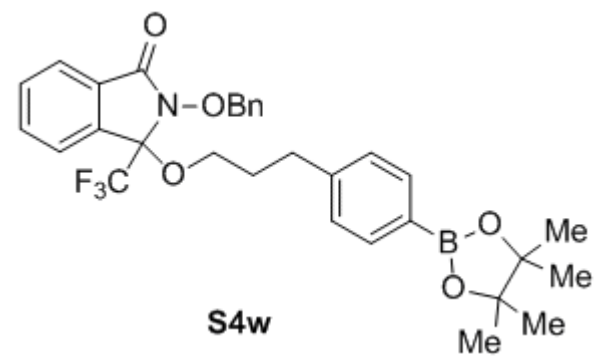


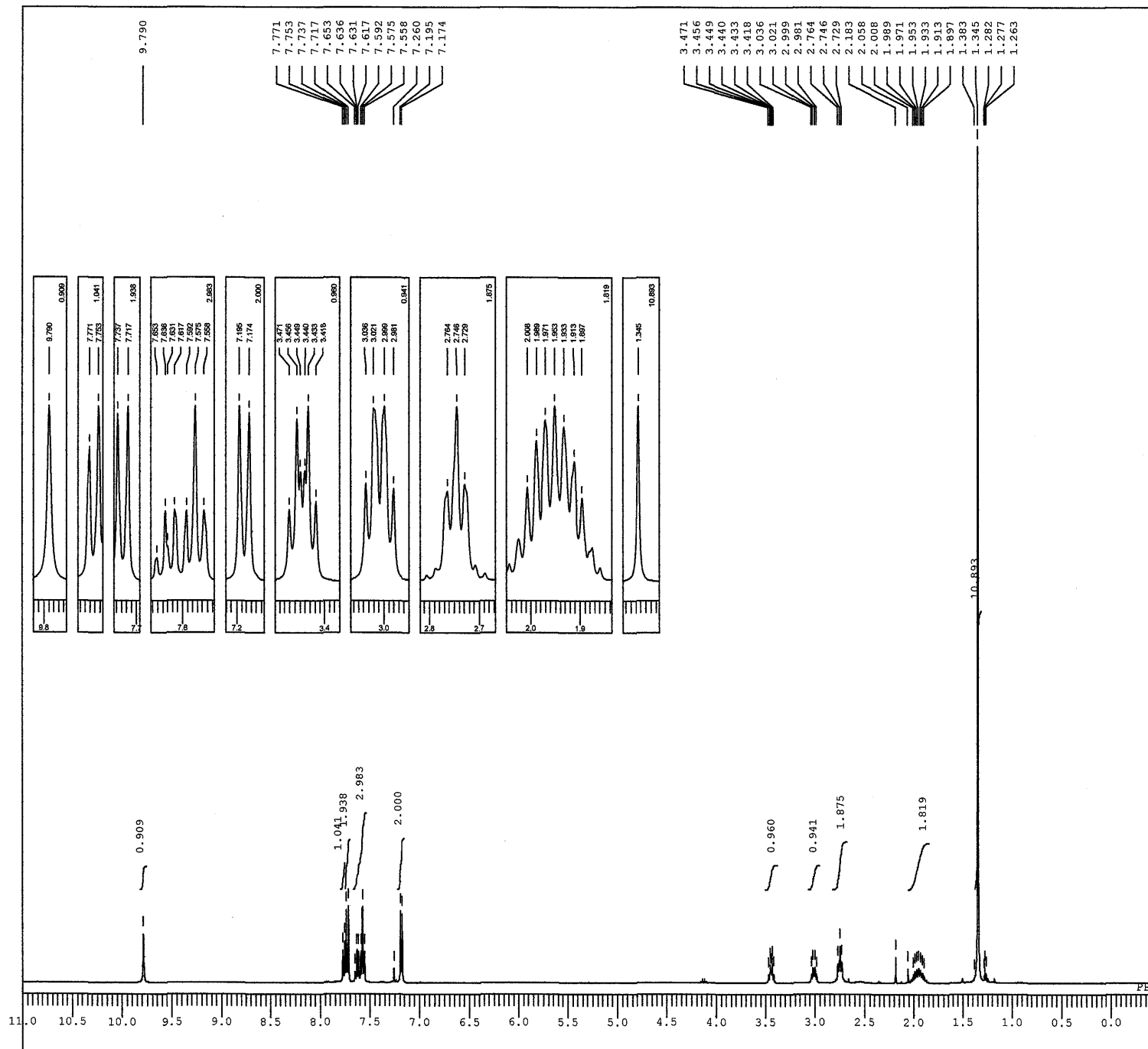
DFILE ozawa06-113 11B.jdf
COMNT 4-Bpin-Ph, Bn
DATIM 25-12-2014 11:24:53
OBNUC 11B
EXMOD carbon.jxp
OBFREQ 125.70 MHz
OBSET 0.81 KHz
OBFIN 3.25 Hz
POINT 4095
FREQU 39308.18 Hz
SCANS 200
ACQTM 0.1042 sec
PD 80.0000 sec
PW1 3.98 usec
IRNUC 1H
CTEMP 22.2 c
SLVNT CDCL3
EXREF 31.00 ppm
BF 0.12 Hz
RGAIN 44



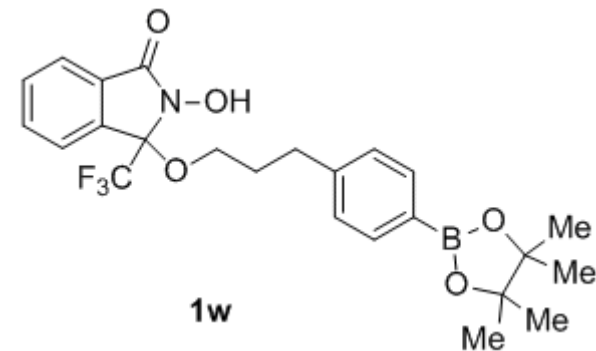


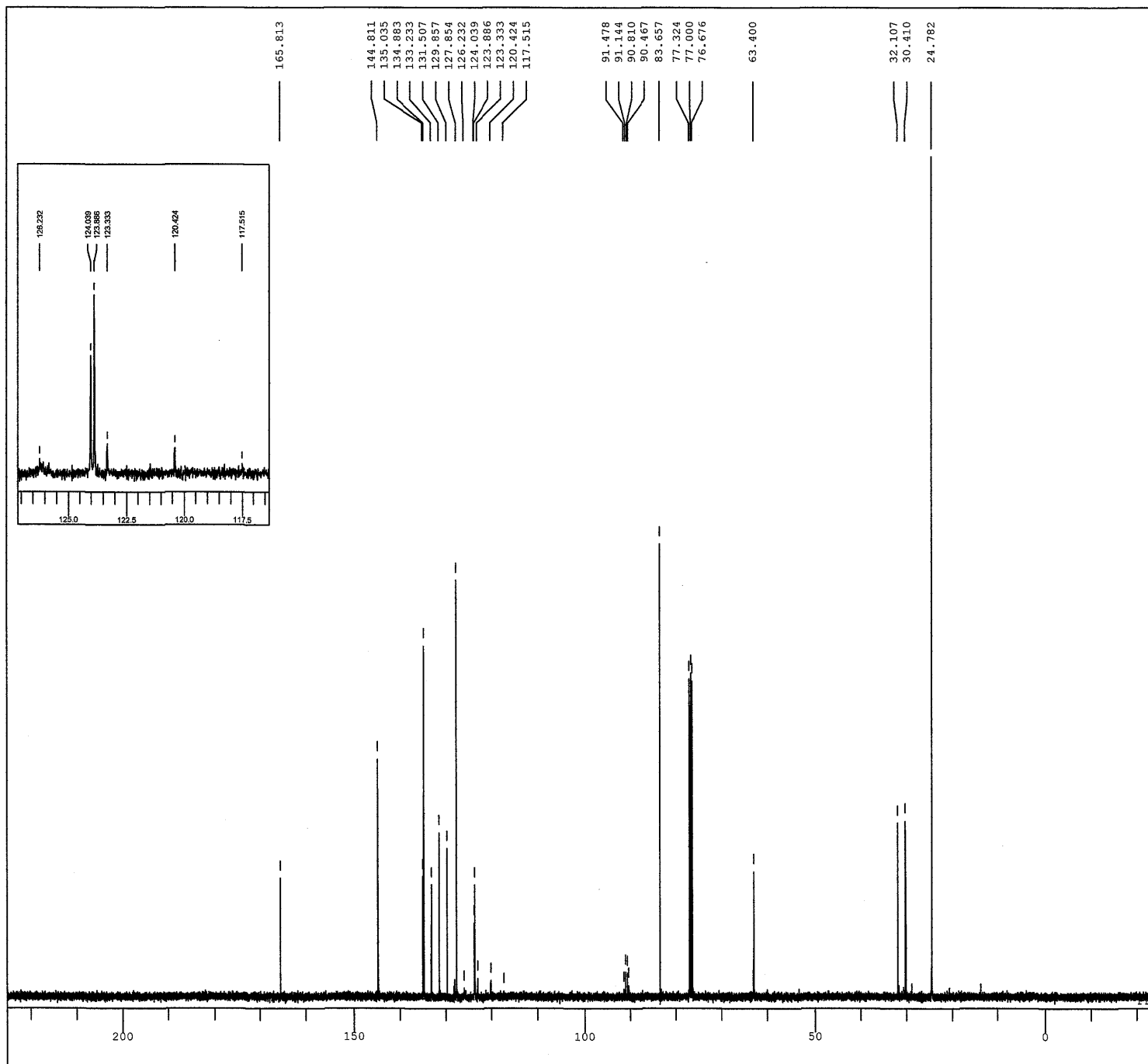
DFILE ozawa06-113_19F.jdf
COMNT Ph-Bpin, Bn
DATIM 25-12-2014 11:26:56
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREOU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 22.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



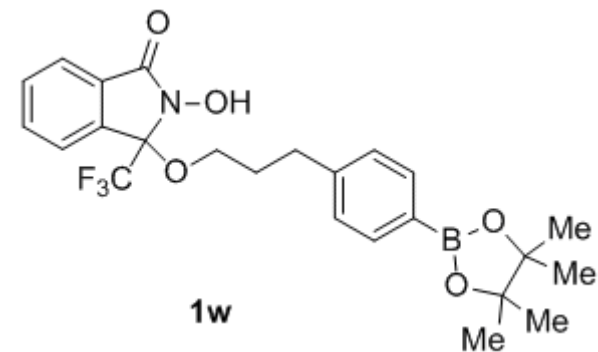


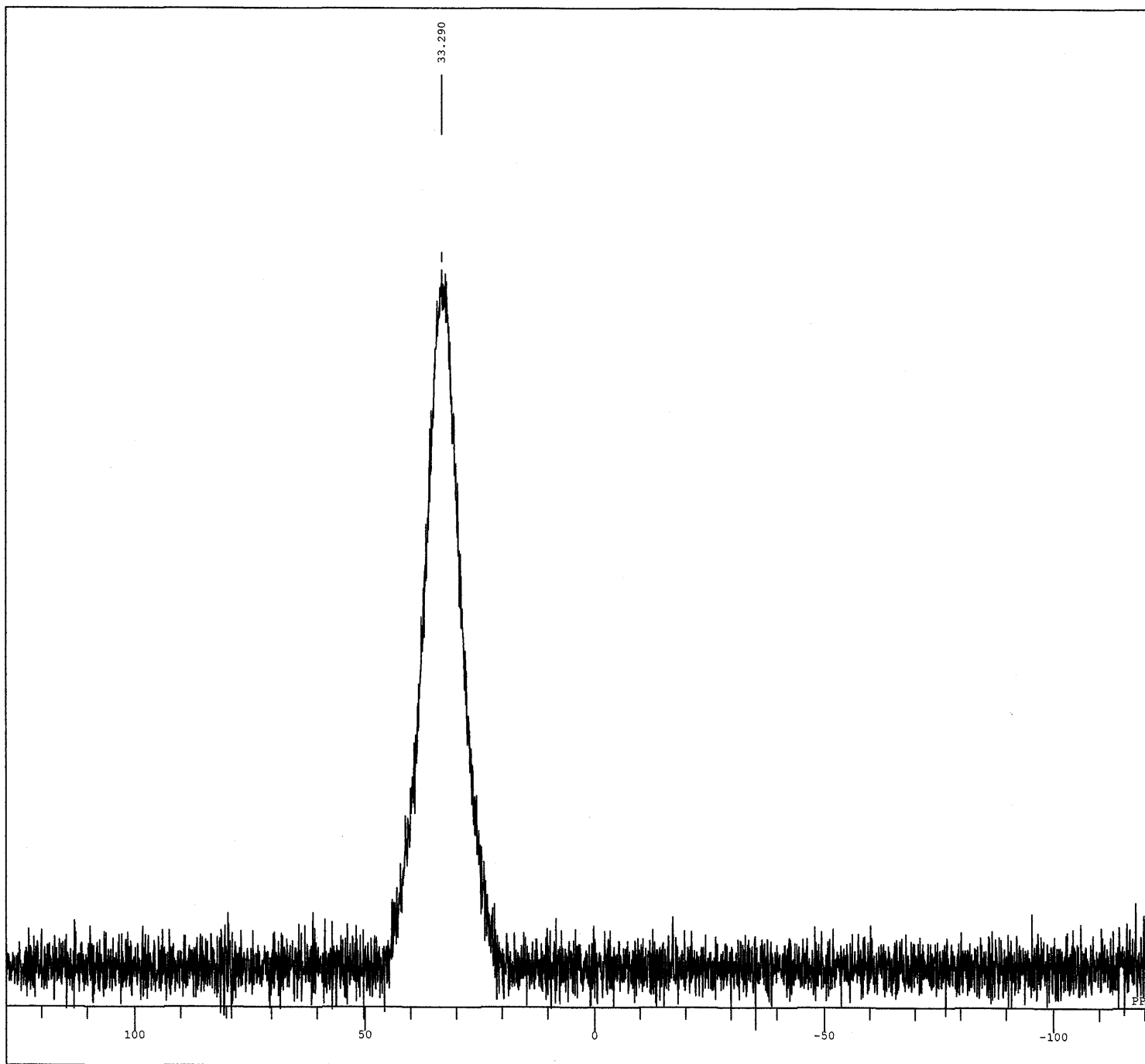
DFILE ozawa06-120 1H.jdf
 COMNT 4-Bpin-Ph, OH
 DATIM 27-12-2014 11:38:22
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 8
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.07 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



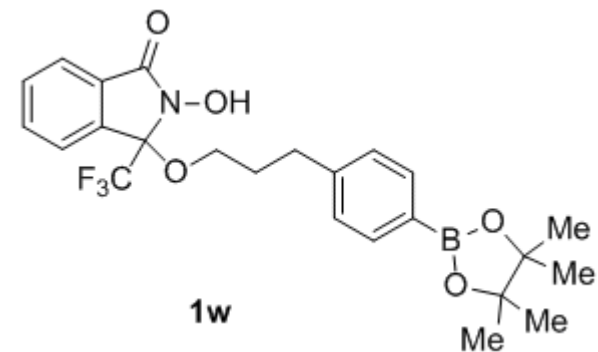


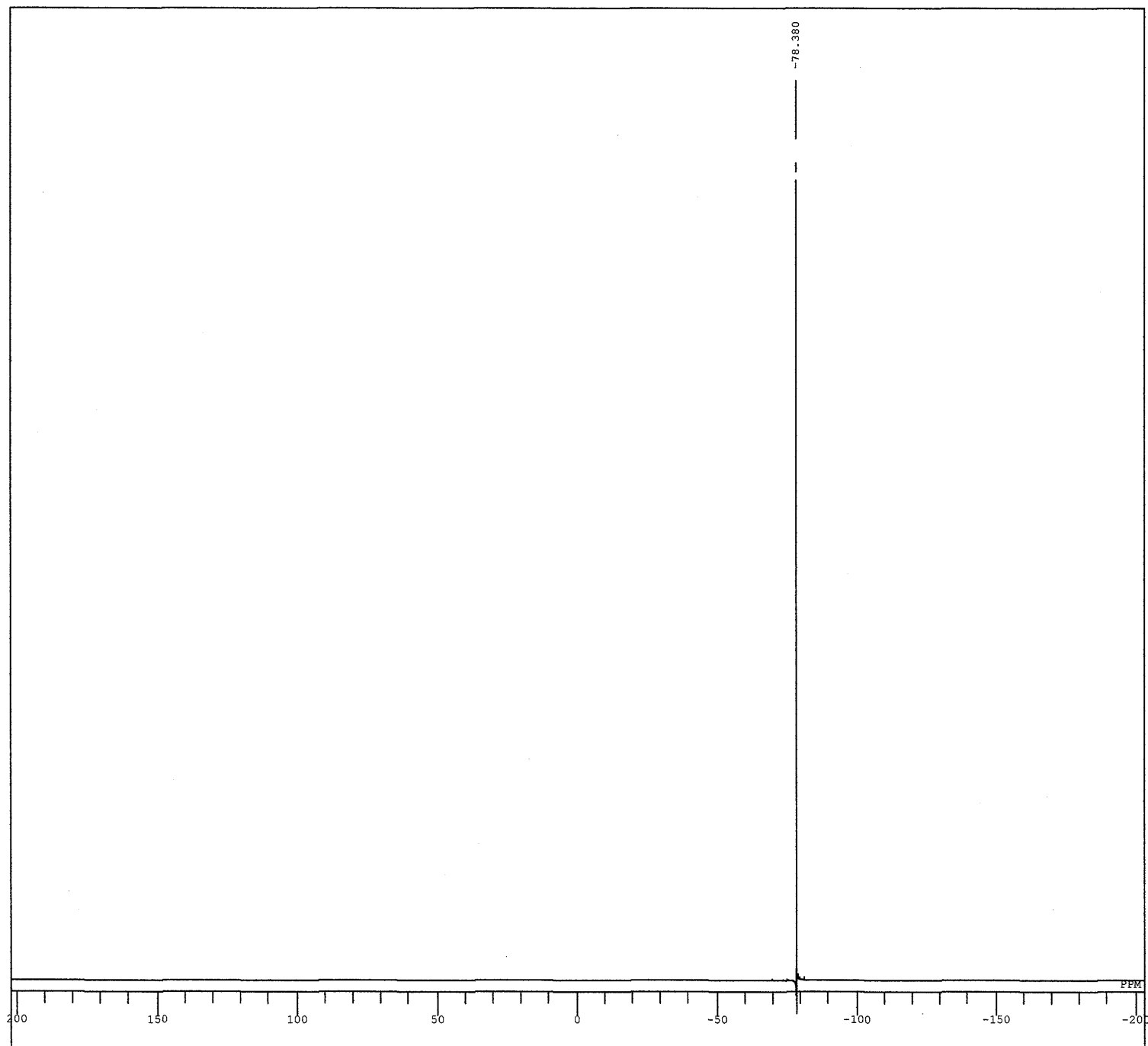
DFILE ozawa06-120_13C.jdf
 COMNT 4-Bpin-Ph, OH
 DATIM 27-12-2014 11:40:58
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 320
 ACQTM 1.0643 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 22.1 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



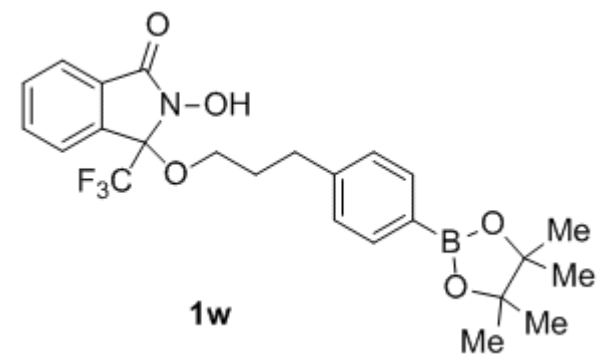


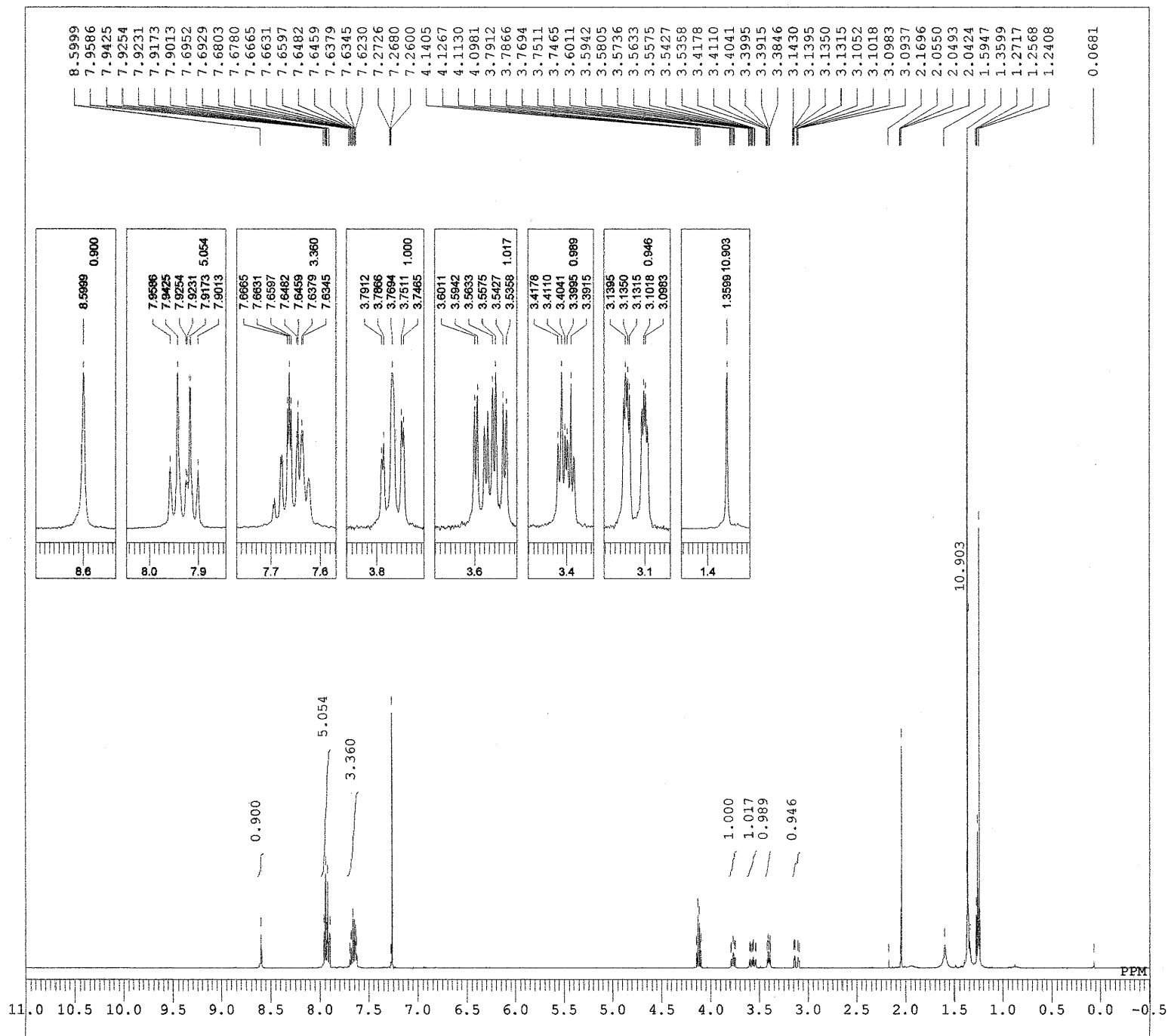
DFILE ozawa06-120_11B.jdf
COMNT 4-Bpin-Ph, OH
DATIM 27-12-2014 11:34:01
OBNUC 11B
EXMOD carbon.jxp
OBFRO 125.70 MHz
OBFSE 0.81 KHz
OBFIN 3.25 Hz
POINT 4095
FREQU 39308.18 Hz
SCANS 200
ACQTM 0.1042 sec
PD 80.0000 sec
PW1 3.98 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 31.00 ppm
BF 0.12 Hz
RGAIN 56



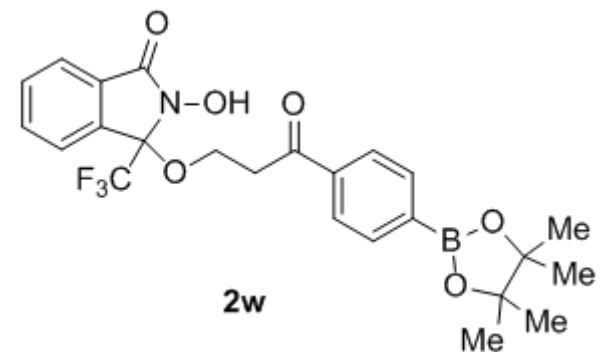


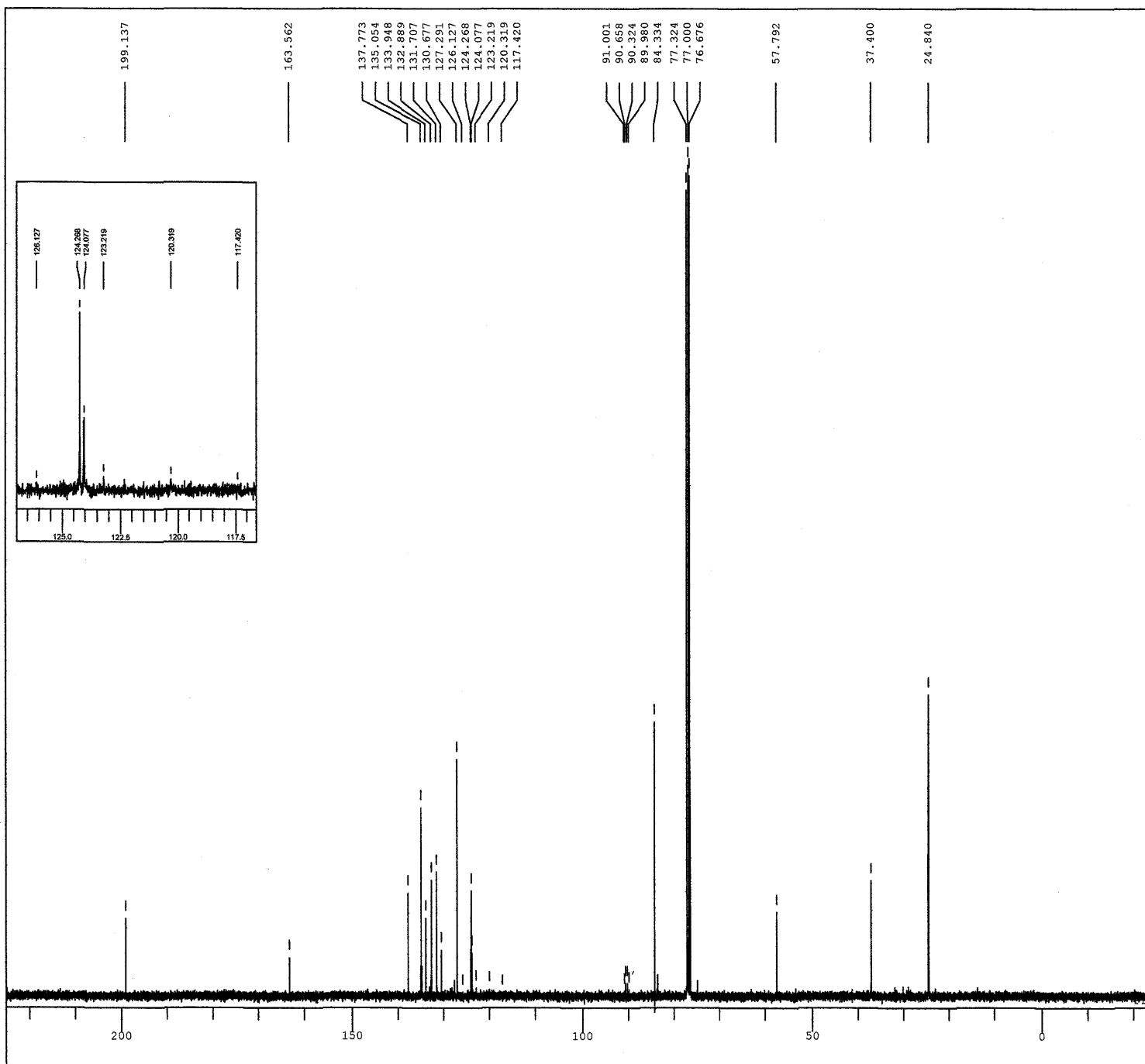
DFILE ozawa06-120 19F.jdf
COMNT 4-Bpin-Ph, OH
DATIM 27-12-2014 11:36:05
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBFSE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.8 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



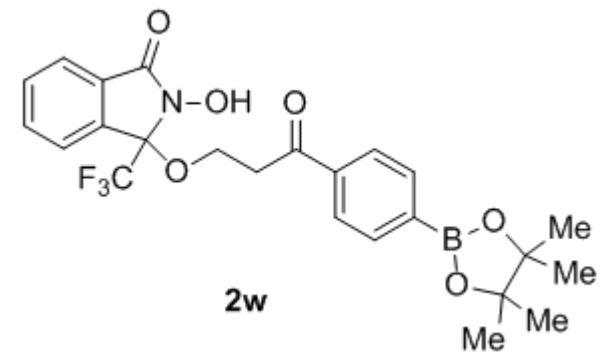


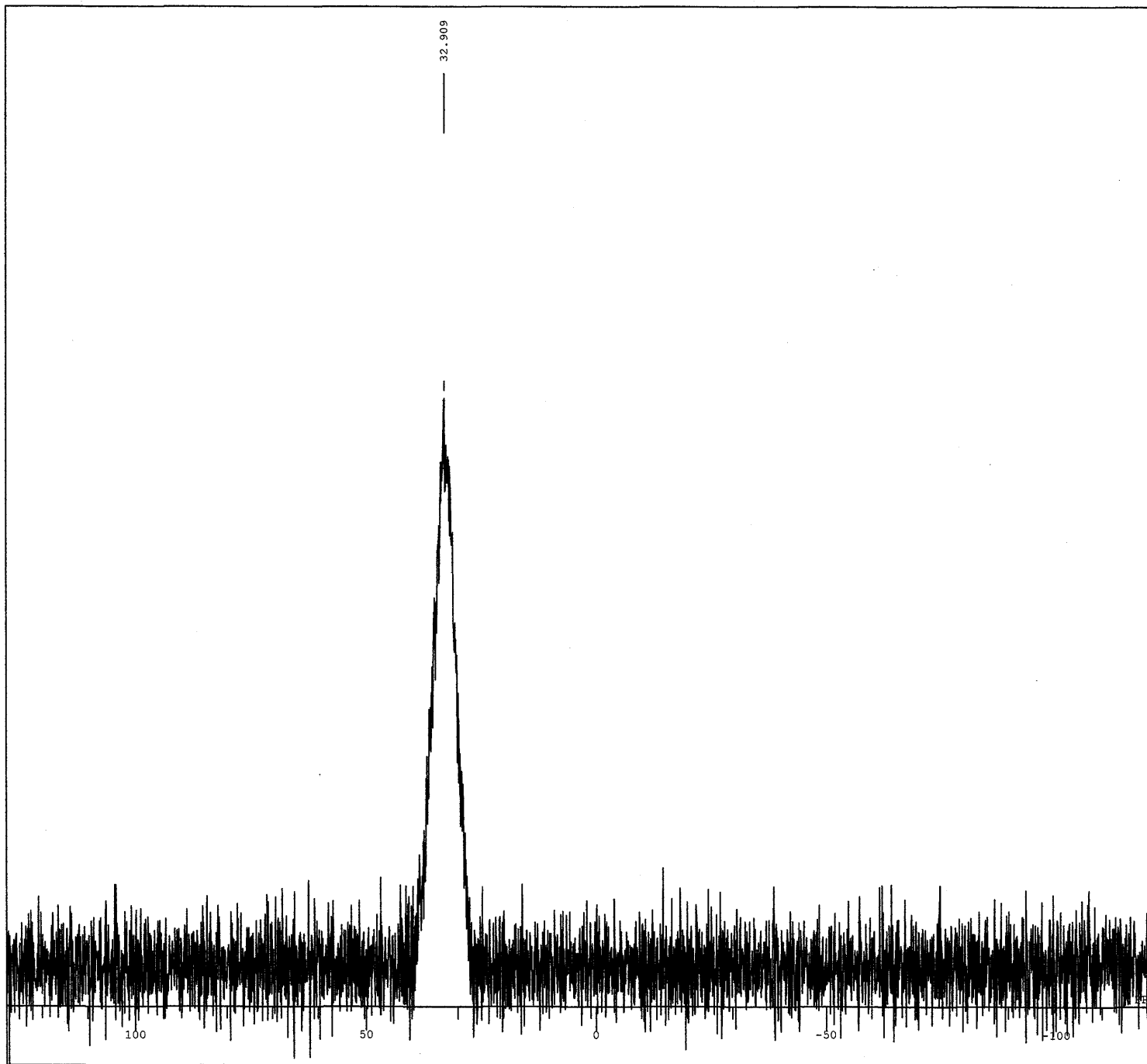
DFILE ozawa06-121.als
 COMNT PTLC, 4-Bpin-Ph
 DATIM 2014-12-27 15:25:04
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 8
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 24.6 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 32



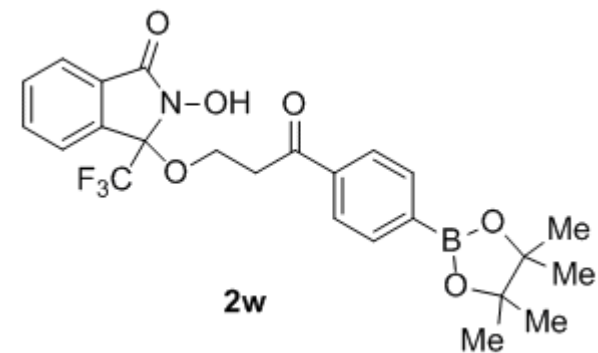


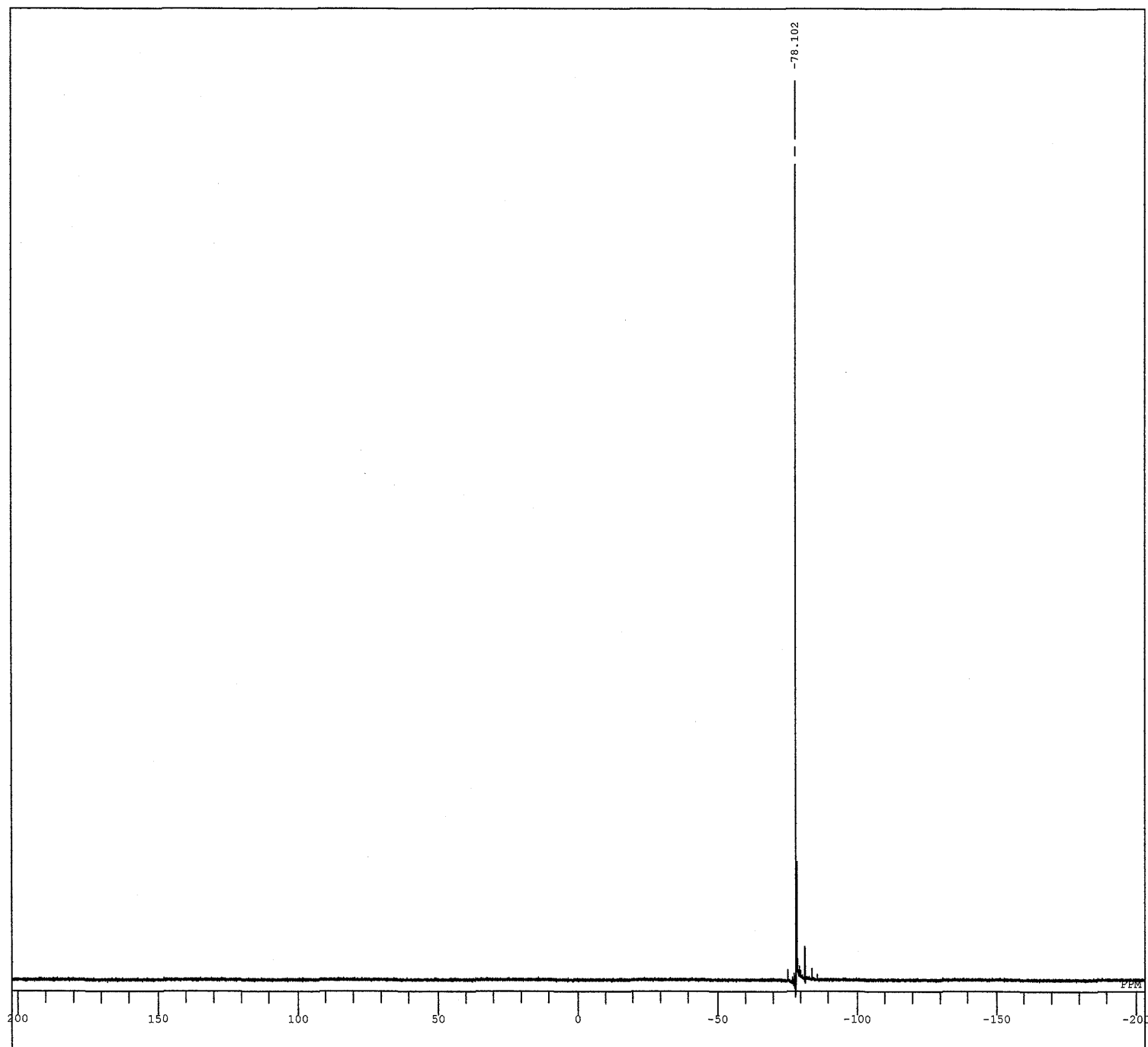
DFILE ozawa06-121_13C.jdf
 COMNT 4-Bpin-Ph, [0]
 DATIM 06-01-2015 07:38:31
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 2000
 ACQTM 1.0643 sec
 PD 2.0000 sec
 PW1 3.07 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.10 Hz
 RGAIN 60



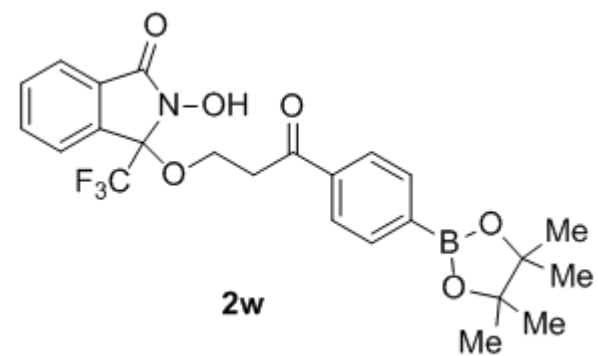


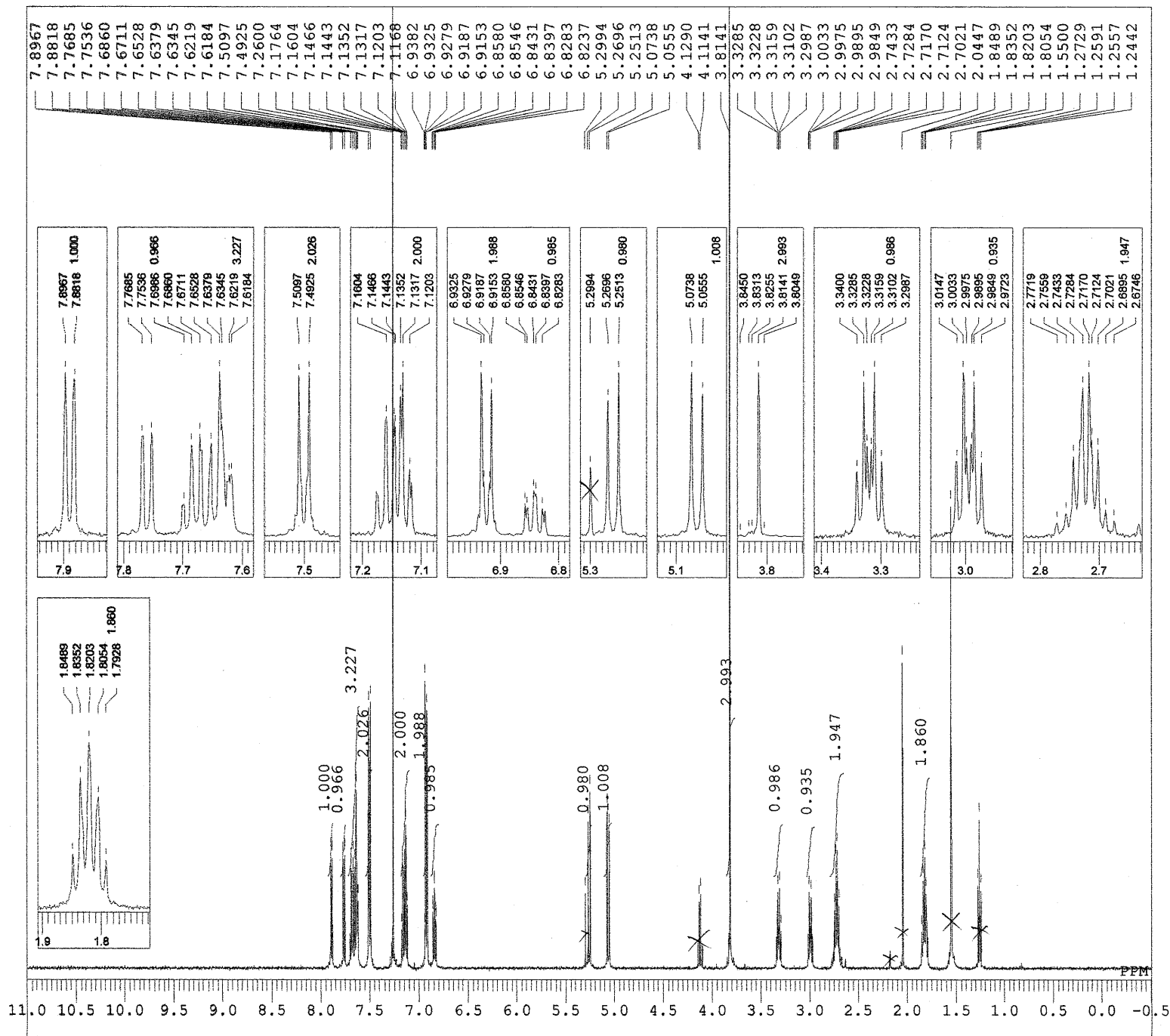
DFILE ozawa06-121 11B.jdf
COMNT 4-Bpin-Ph, [0]
DATIM 05-01-2015 12:30:28
OBNUC 11B
EXMOD carbon.jxp
OBFRO 125.70 MHz
OBSEF 0.81 KHz
OBFIN 3.25 Hz
POINT 4095
FREQU 39308.18 Hz
SCANS 500
ACQTM 0.1042 sec
PD 80.0000 sec
PW1 3.98 usec
IRNUC 1H
CTEMP 21.7 c
SLVNT CDCL3
EXREF 31.00 ppm
BF 0.12 Hz
RGAIN 60



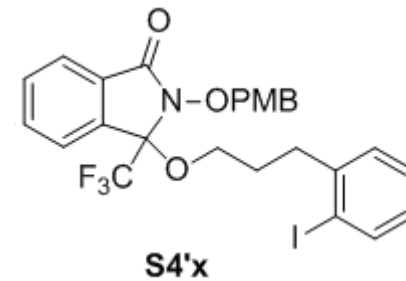


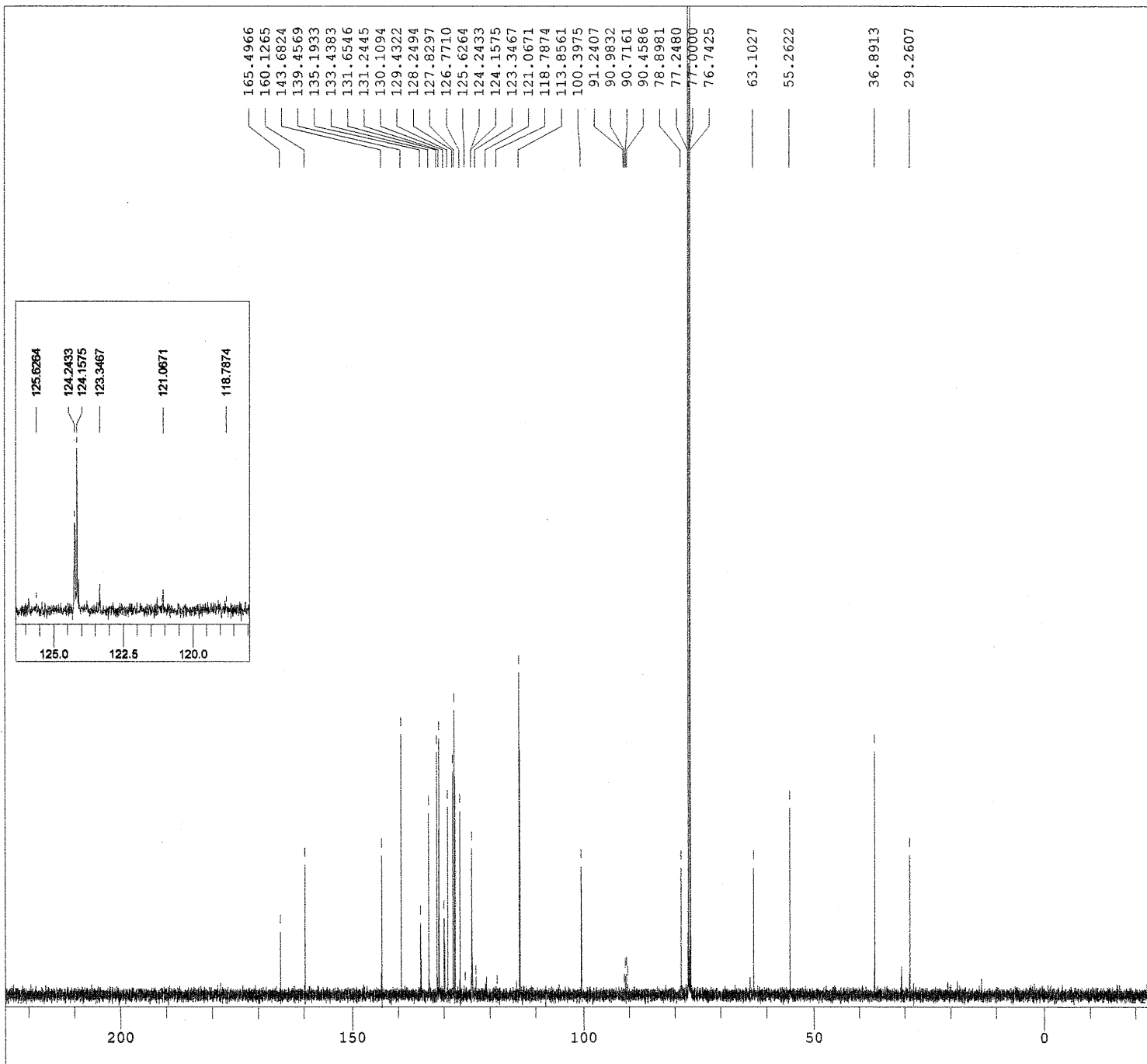
DFILE ozawa06-121_19F.jdf
COMNT 4-Bpin-Ph, [0]
DATIM 05-01-2015 12:27:22
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 21.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



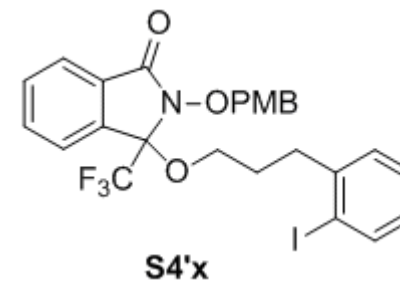


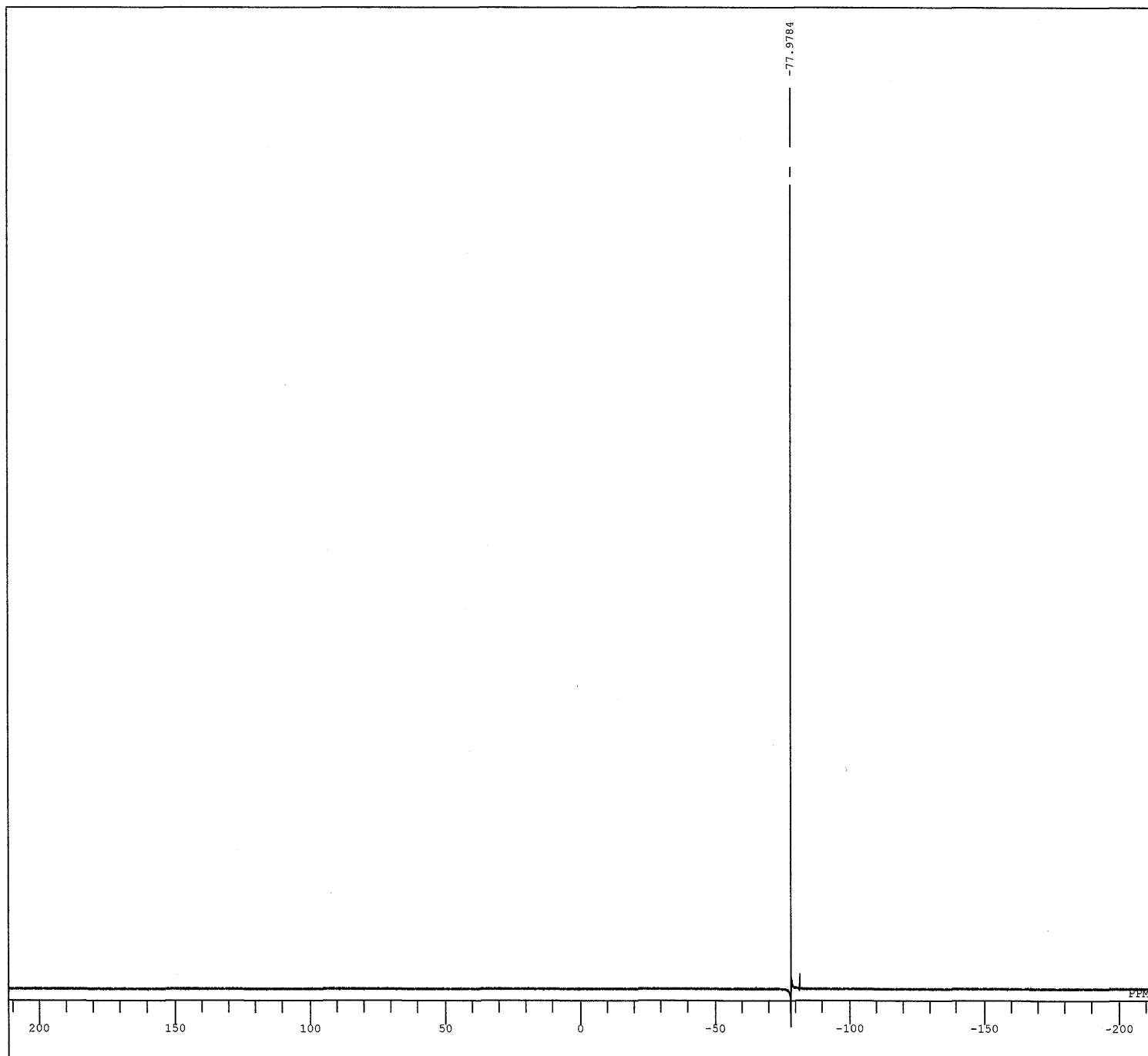
DFILE ozawa06-144.als
 COMNT 2-I-Ph
 DATIM 2015-01-22 12:59:51
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 23.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 42



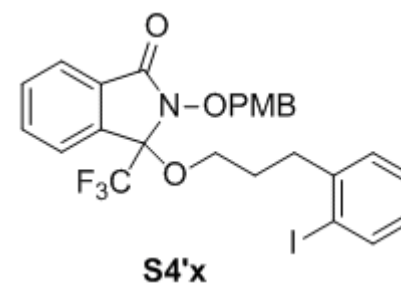


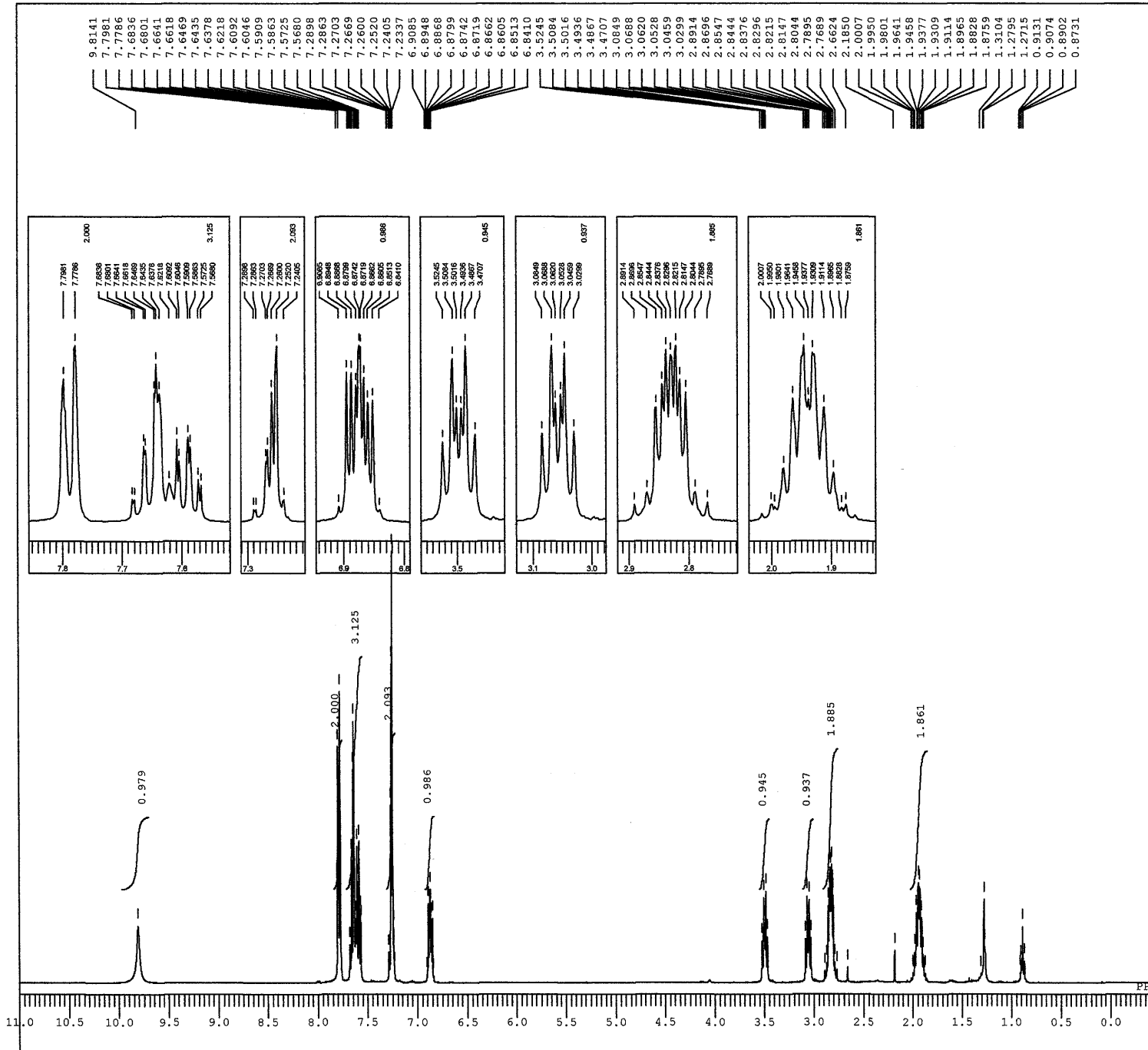
DFILE ozawa06-144 13C.jdf
 COMNT PTLC, 2-I-Ph, PMB
 DATIM 2015-01-26 13:52:31
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 1000
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 23.6 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60





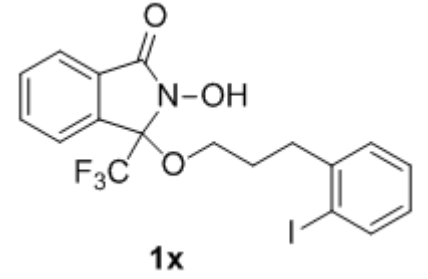
DFILE ozawa06-144 19F.jdf
COMNT 2-I-Ph, PMB
DATIM 21-03-2015 12:18:53
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

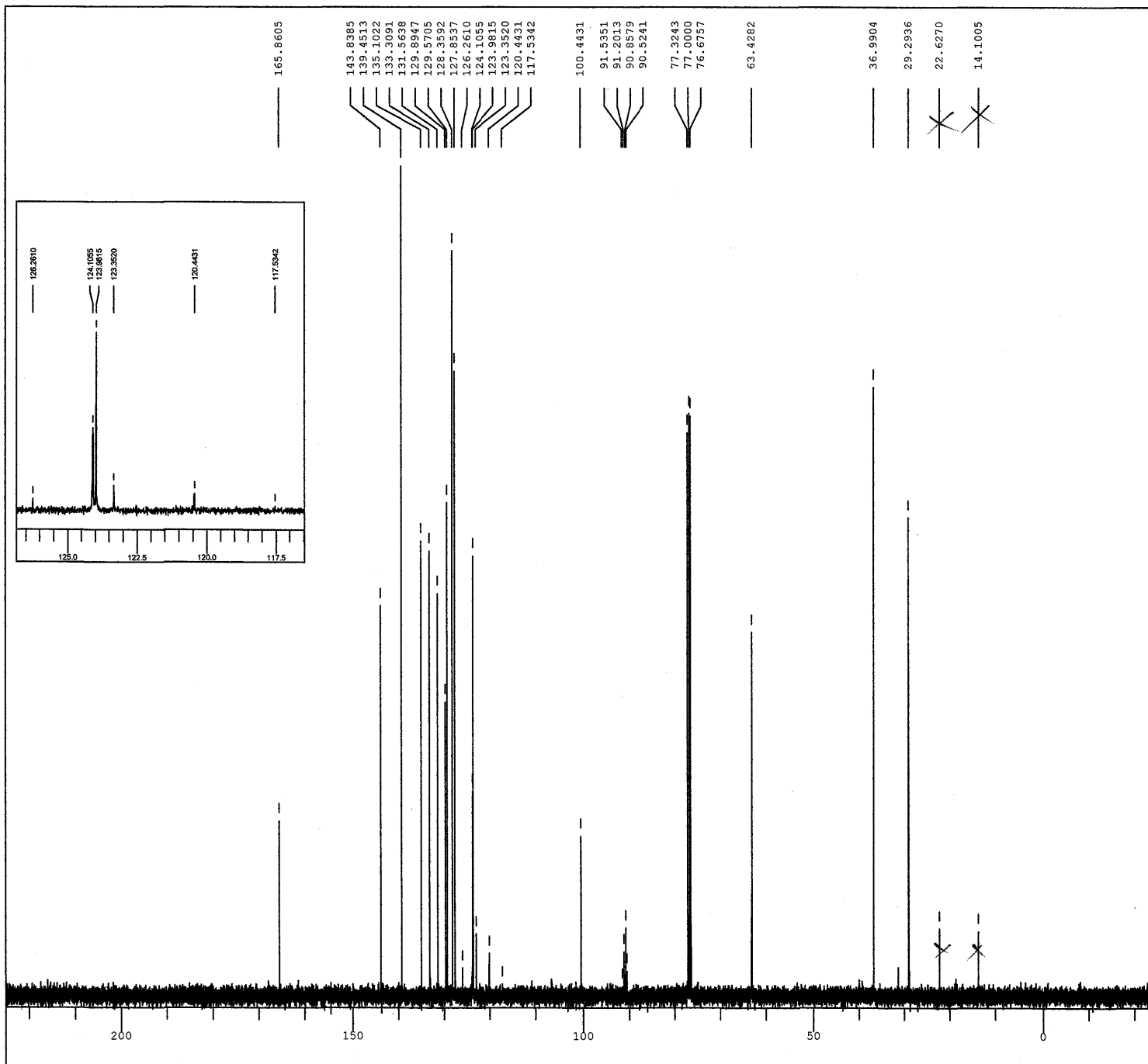




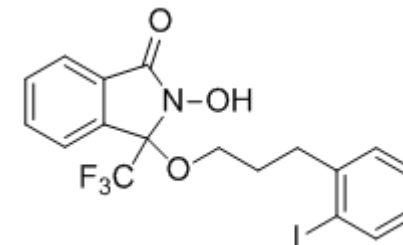
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DFILE ozawa06-157_1h.jdf
COMNT 2-I-Ph, OH
DATIM 14-03-2015 08:29:06
OBNUC 1H
EXMOD proton.jxp
OBFRQ 391.78 MHz
OBSET 8.51 KHz
OBFIN 3.34 Hz
POINT 16384
FREQU 7348.62 Hz
SCANS 4
ACQTM 2.2295 sec
PD 5.0000 sec
PW1 4.99 usec
IRNUC 1H
CTEMP 24.4 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 30
    
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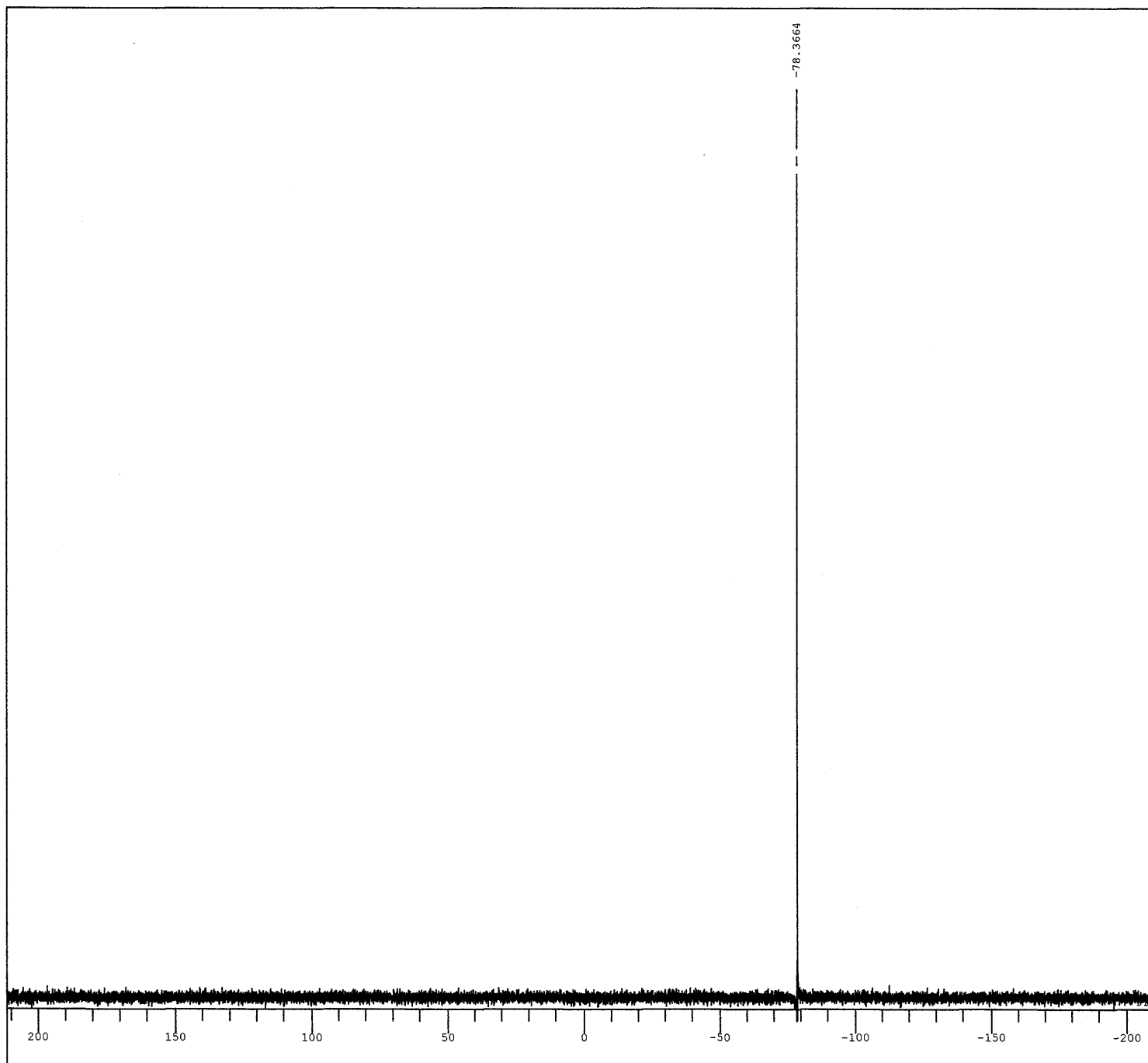




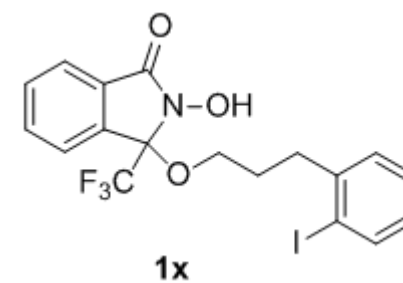
DFILE ozawa06-157_13C.jdf
 COMNT 2-I-Ph, OH
 DATIM 14-03-2015 08:31:37
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 348
 ACQTM 1.0643 sec
 PD 2.0000 sec
 PW1 3.16 usec
 IRNUC 1H
 CTEMP 24.6 c
 SLVNT CDCL3
 EKREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

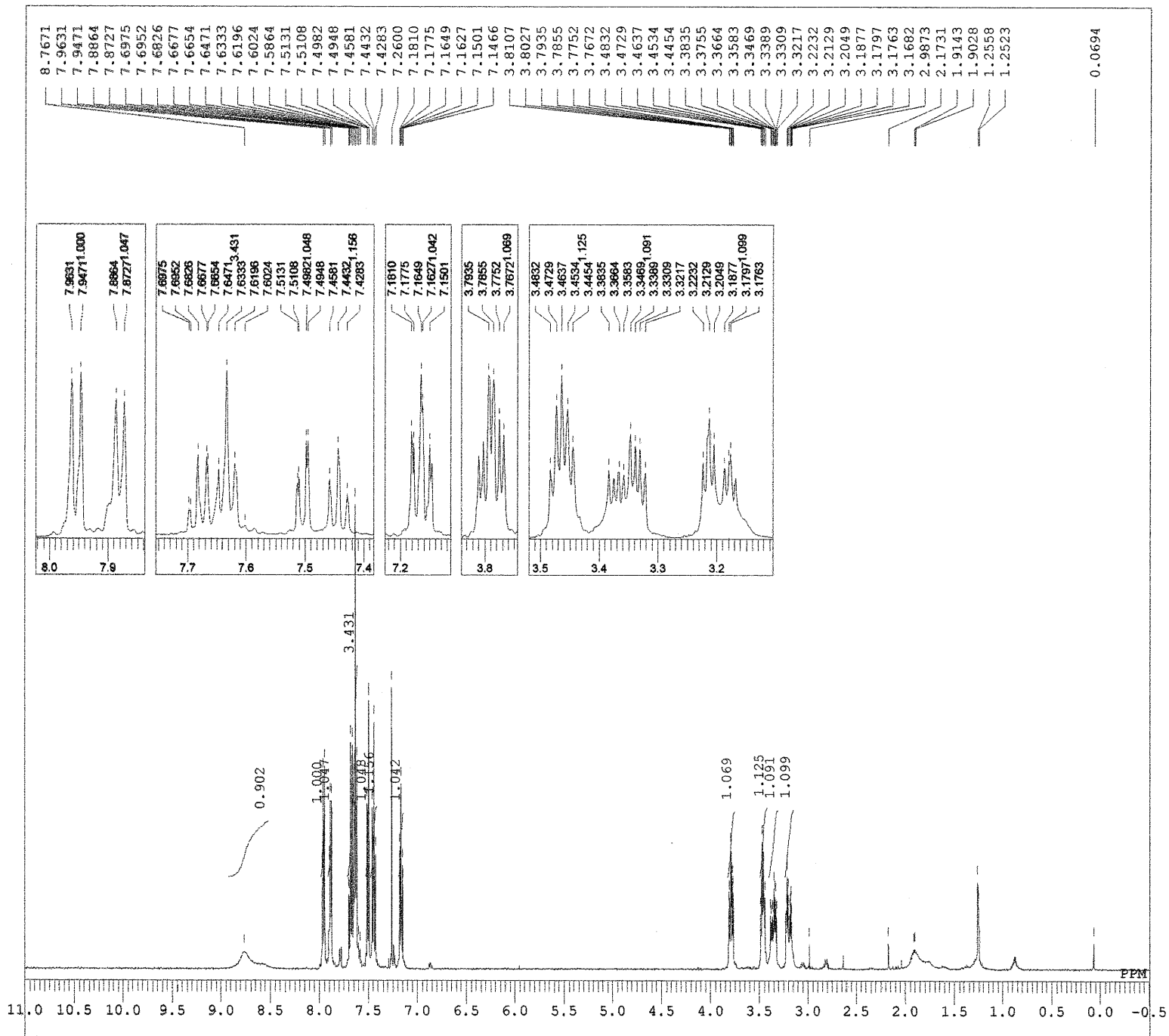


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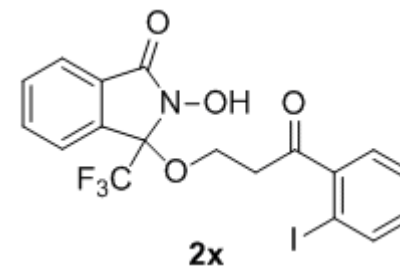


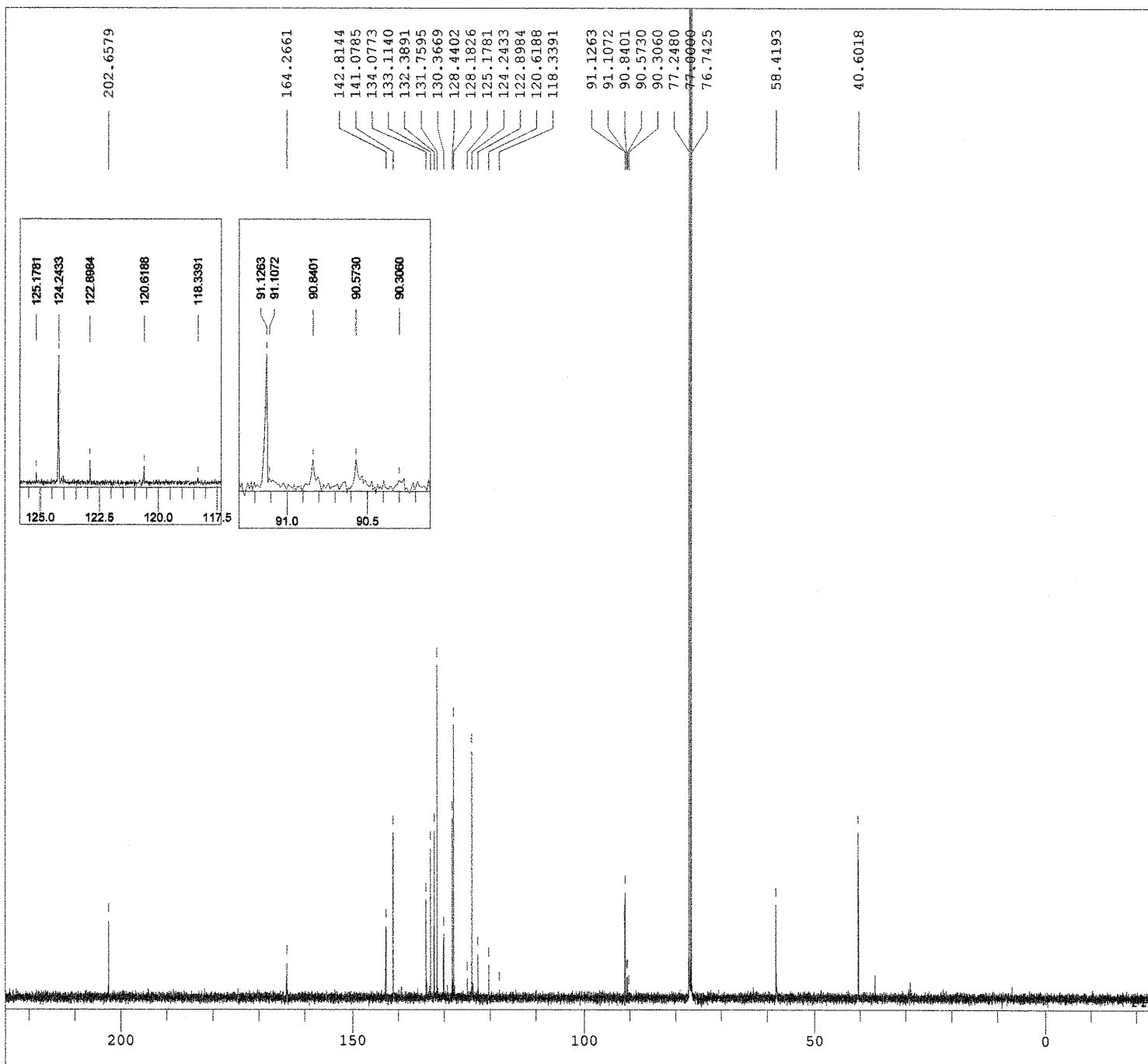
DFILE ozawa06-157_19F.jdf
COMNT 2-I-Ph, OH
DATIM 21-03-2015 11:38:46
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50





DFILE ozawa06-161_1h.jdf
 COMNT 2-I-Ph, [O]
 DATIM 2015-03-14 07:18:52
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSSET 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 24.8 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 30

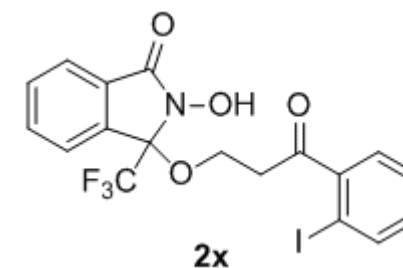


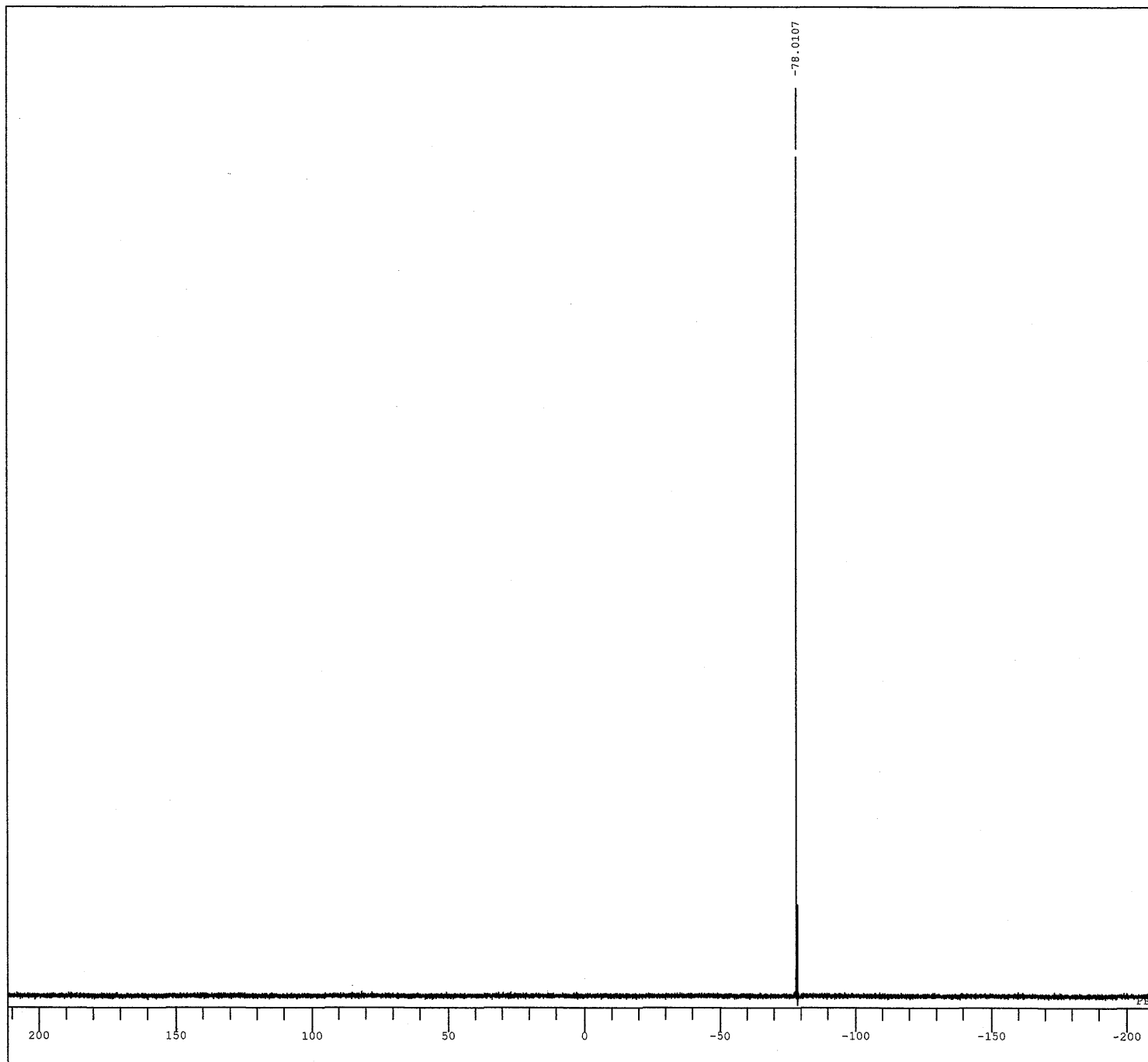


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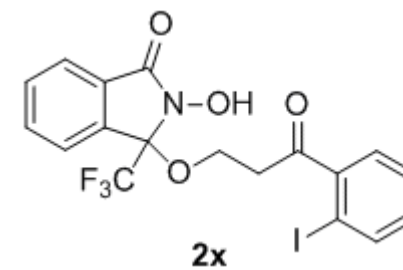
DFILE ozawa06-161_13C.jdf
COMMT 2-I-Ph, [O]
DATIM 2015-03-14 07:19:55
OBNUC 13C
EXMOD carbon.jxp
OBFREQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 2472
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 25.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

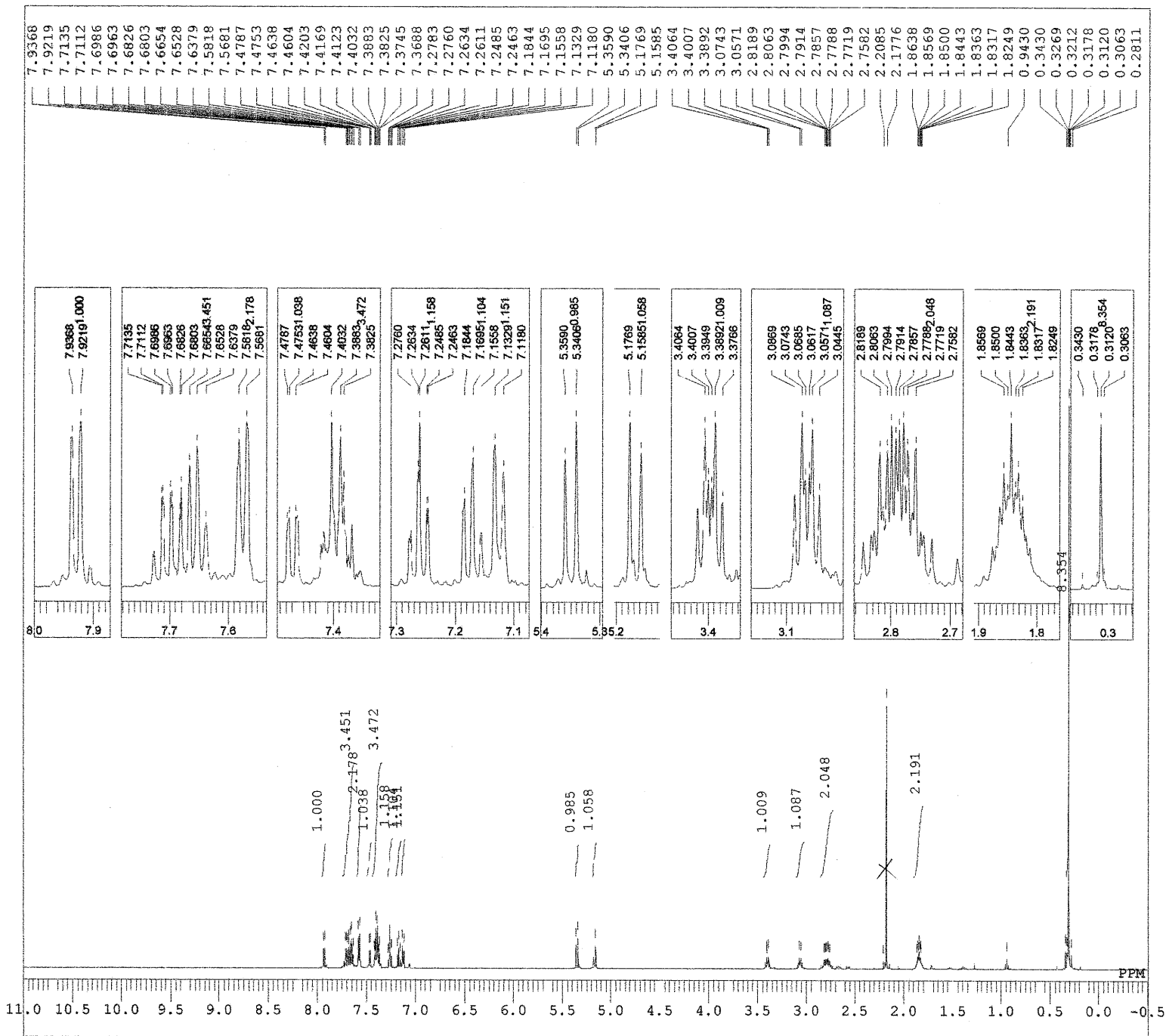
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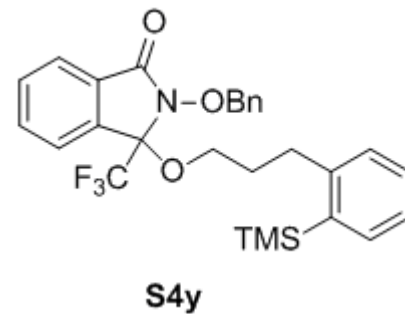


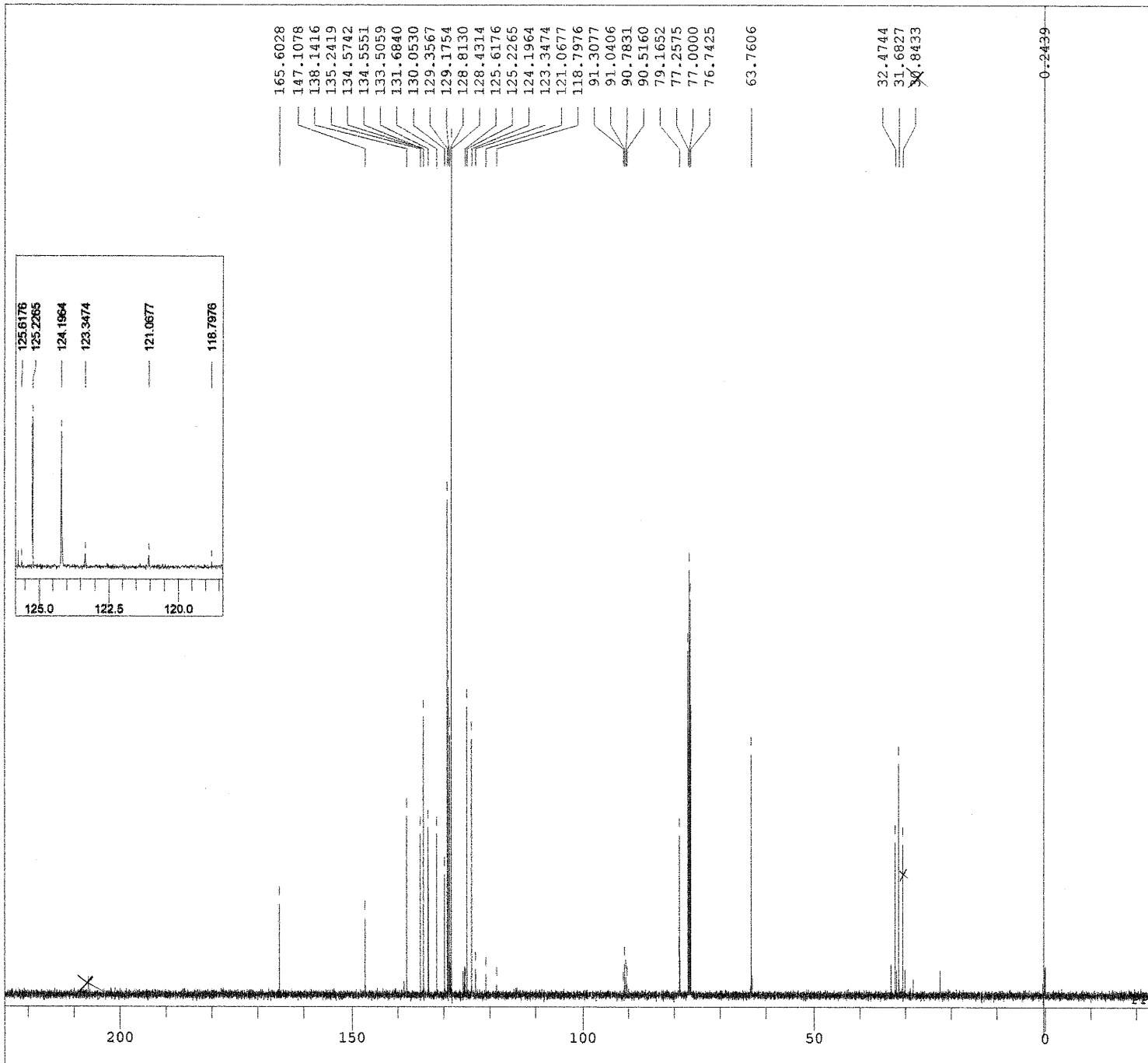
DFILE ozawa06-161_1_19F.jdf
COMNT 2-I-Ph, [0]
DATIM 21-03-2015 11:36:27
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



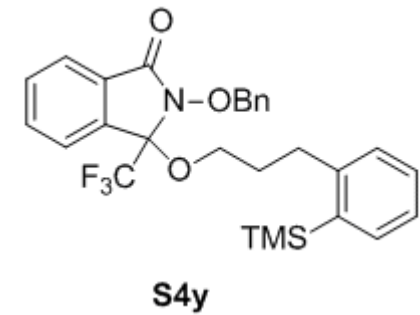


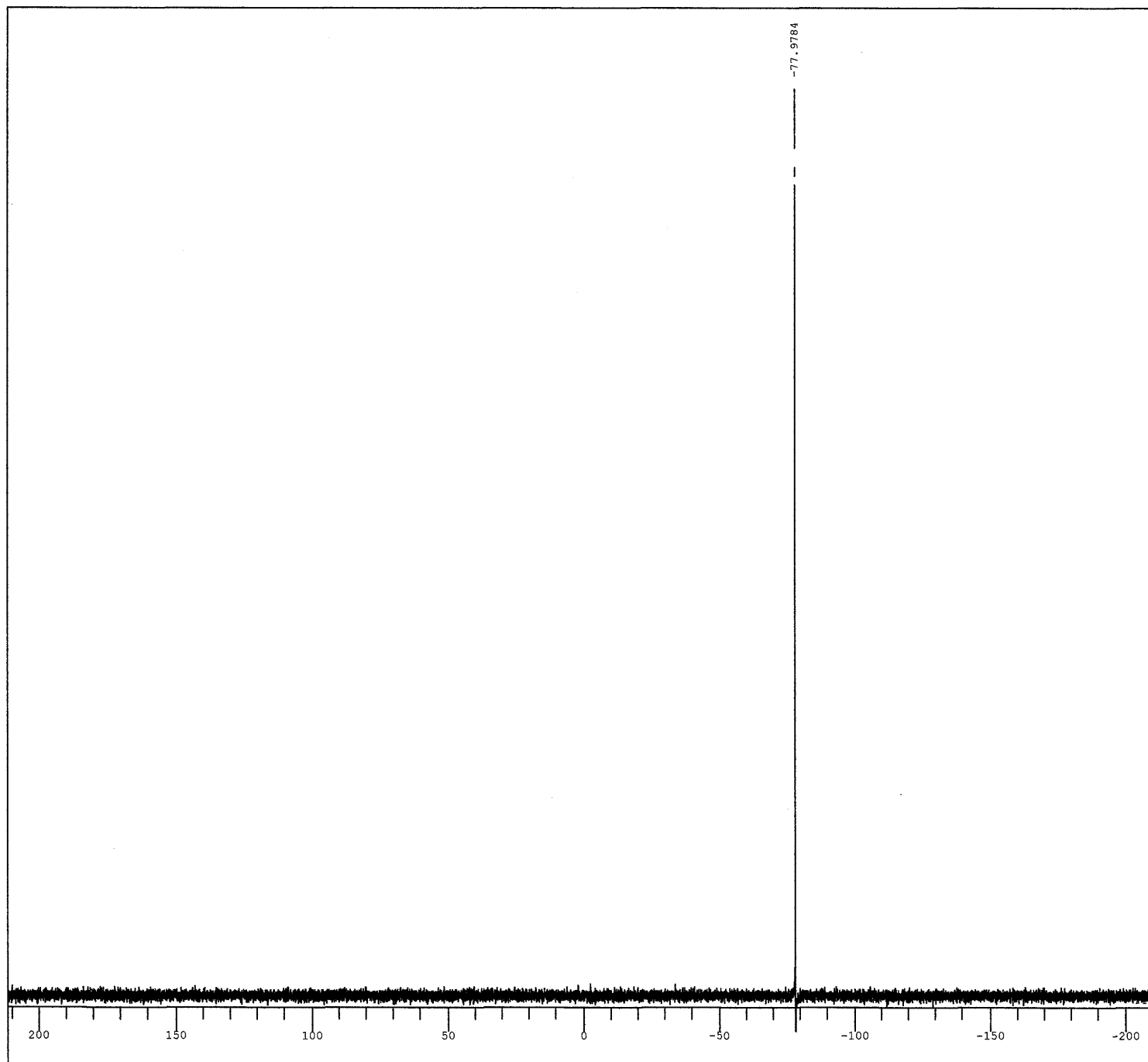
DFILE ozawa07-034_1h.als
 COMTM 2-TMS-Ph, Bn
 DATIM 2015-03-09 10:43:25
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PWL 5.55 usec
 IRNUC 1H
 CTEMP 24.6 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



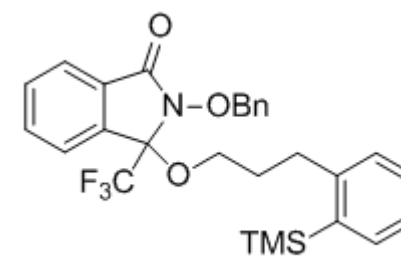


DFILE ozawa07-034_13C.als
 COMNT 2-TMS-Ph, Bn
 DATIM 2015-03-09 10:44:27
 OBNUC 13C
 EXMOD carbon.jsp
 OBFRQ 125.77 MHz
 OBSSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 26214
 FREQU 31446.54 Hz
 SCANS 368
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 25.0 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

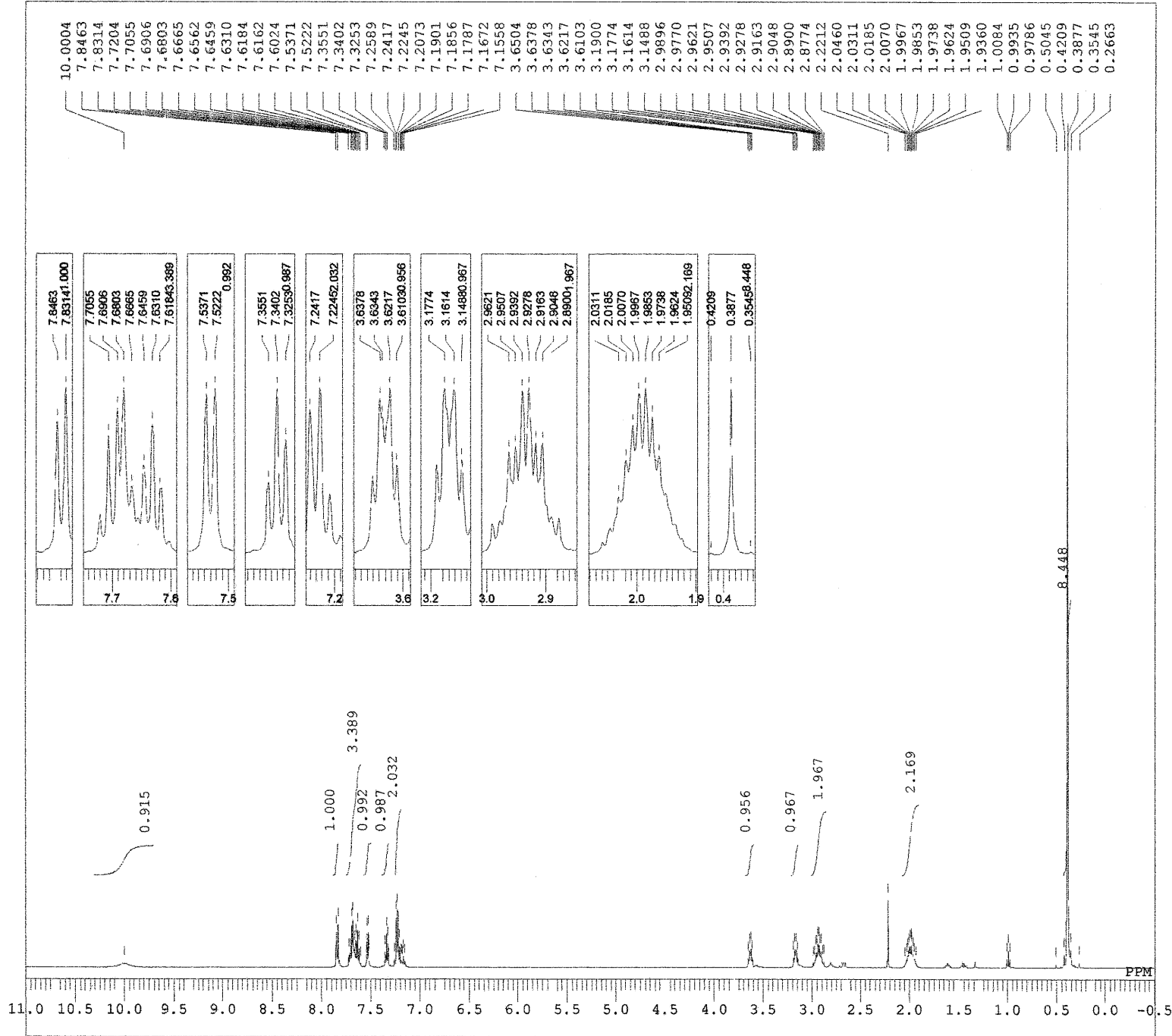




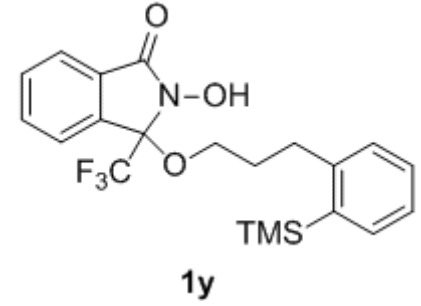
DFILE ozawa07-034_19F.jdf
COMNT 2-TMS-Ph, Bn
DATIM 21-03-2015 12:09:18
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

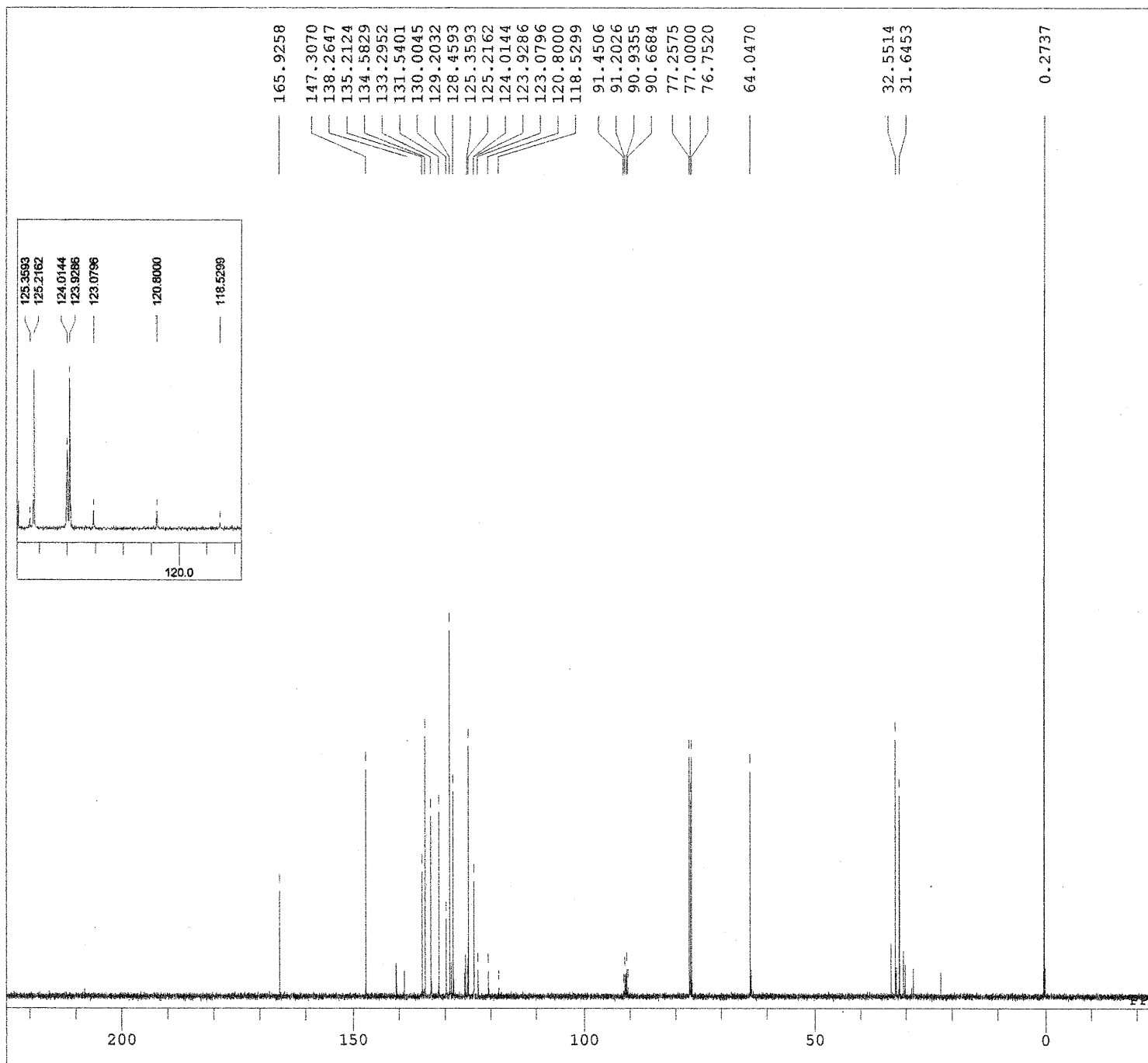


S4y

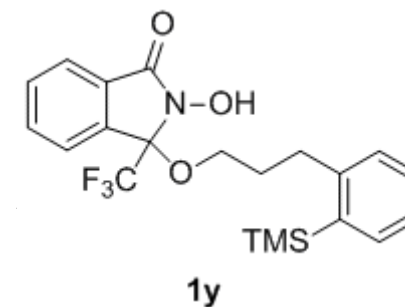


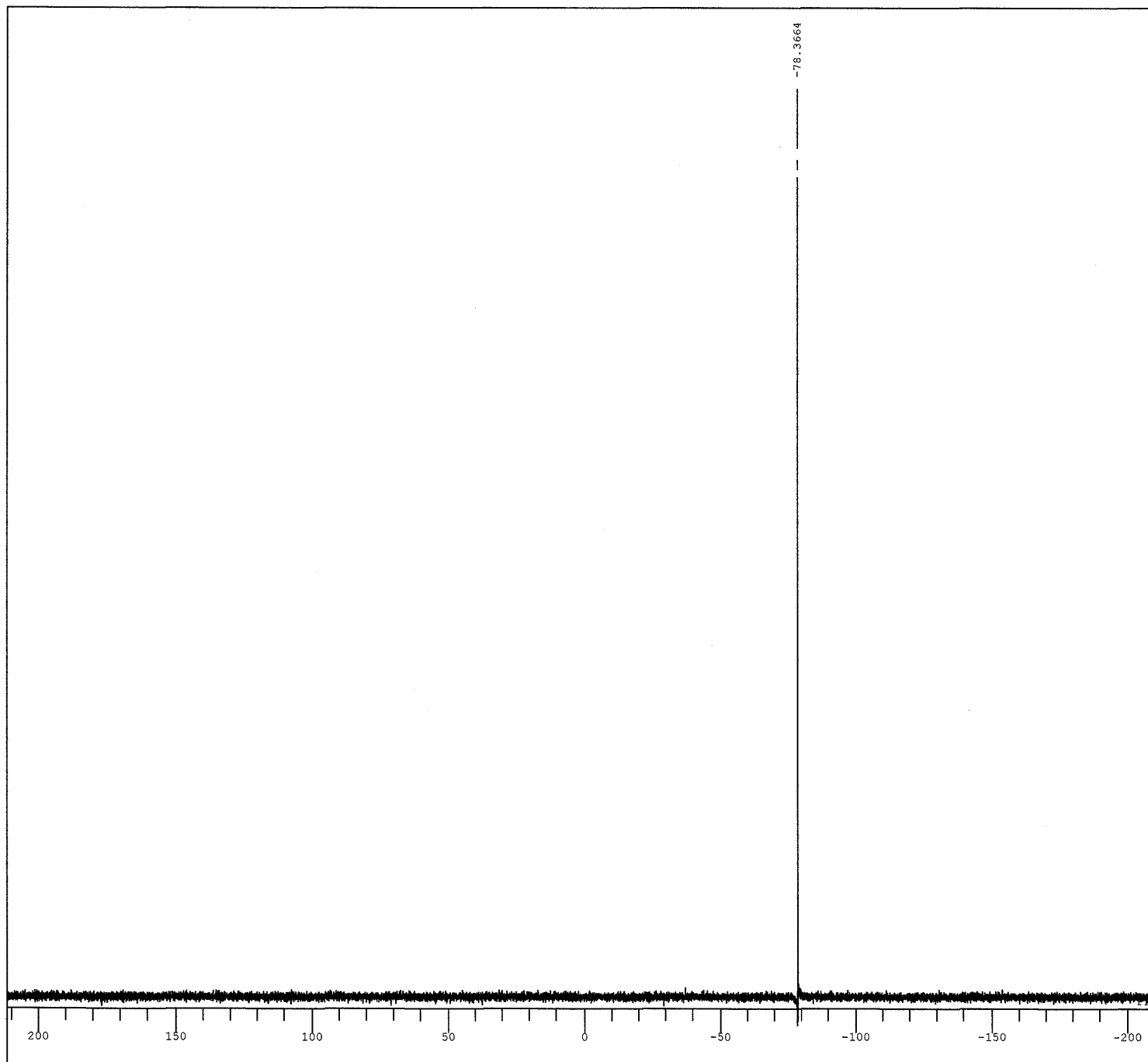
DFILE ozawa07-035_1h.jdf
 COMNT 2-TMS-Ph, OH
 DATIM 2015-03-24 08:49:33
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 500.16 MHz
 OBSSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 27.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.20 Hz
 RGAIN 20



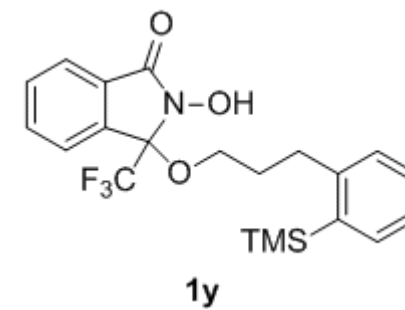


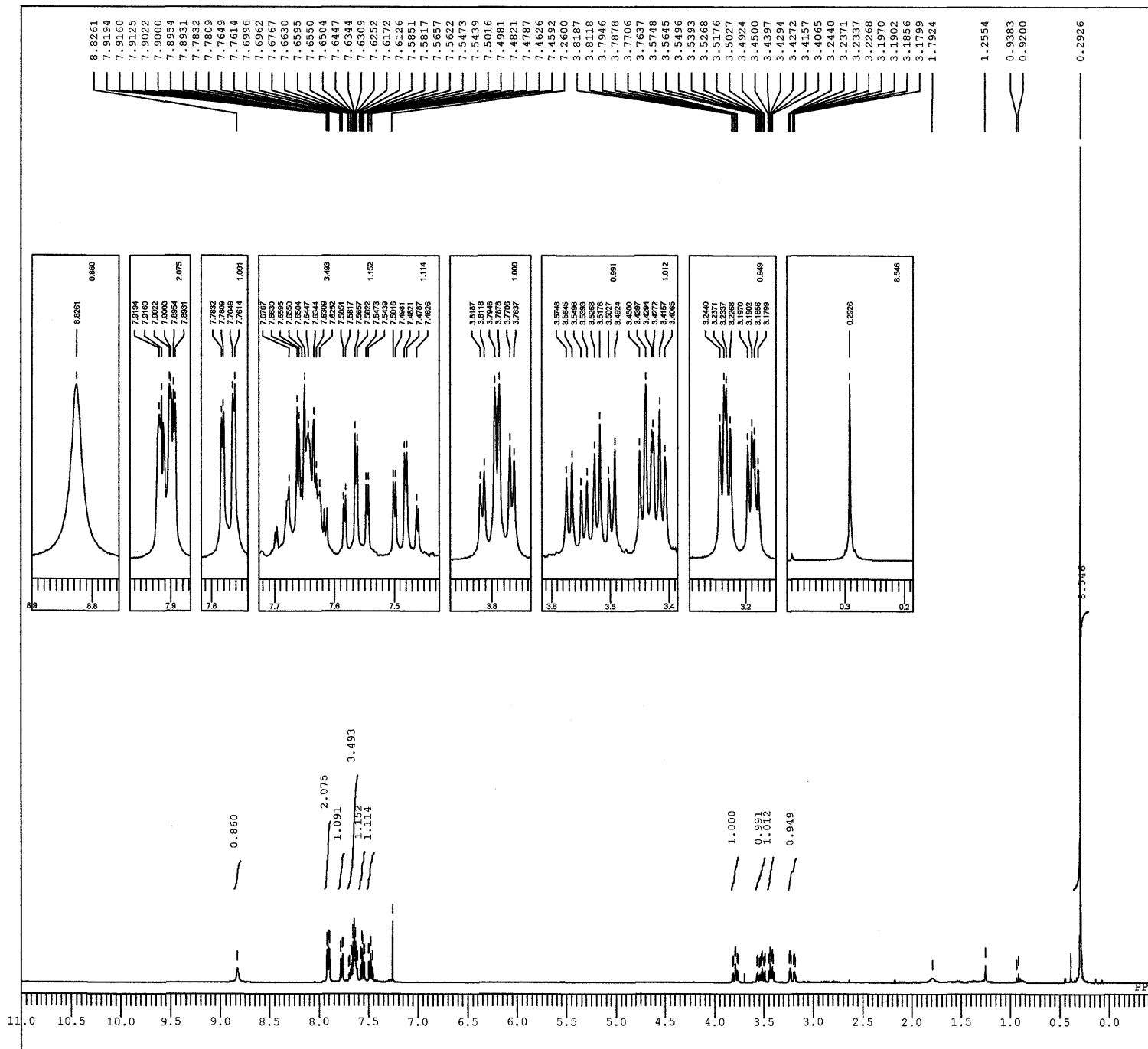
DFILE ozawa07-035_13C.jdf
 COMNT 2-TMS-Ph, OH
 DATIM 2015-03-24 08:50:36
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32767
 FREQU 39308.18 Hz
 SCANS 240
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 27.2 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.20 Hz
 RGAIN 60



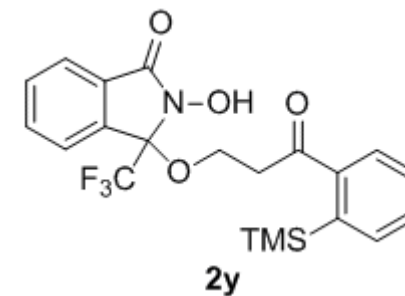


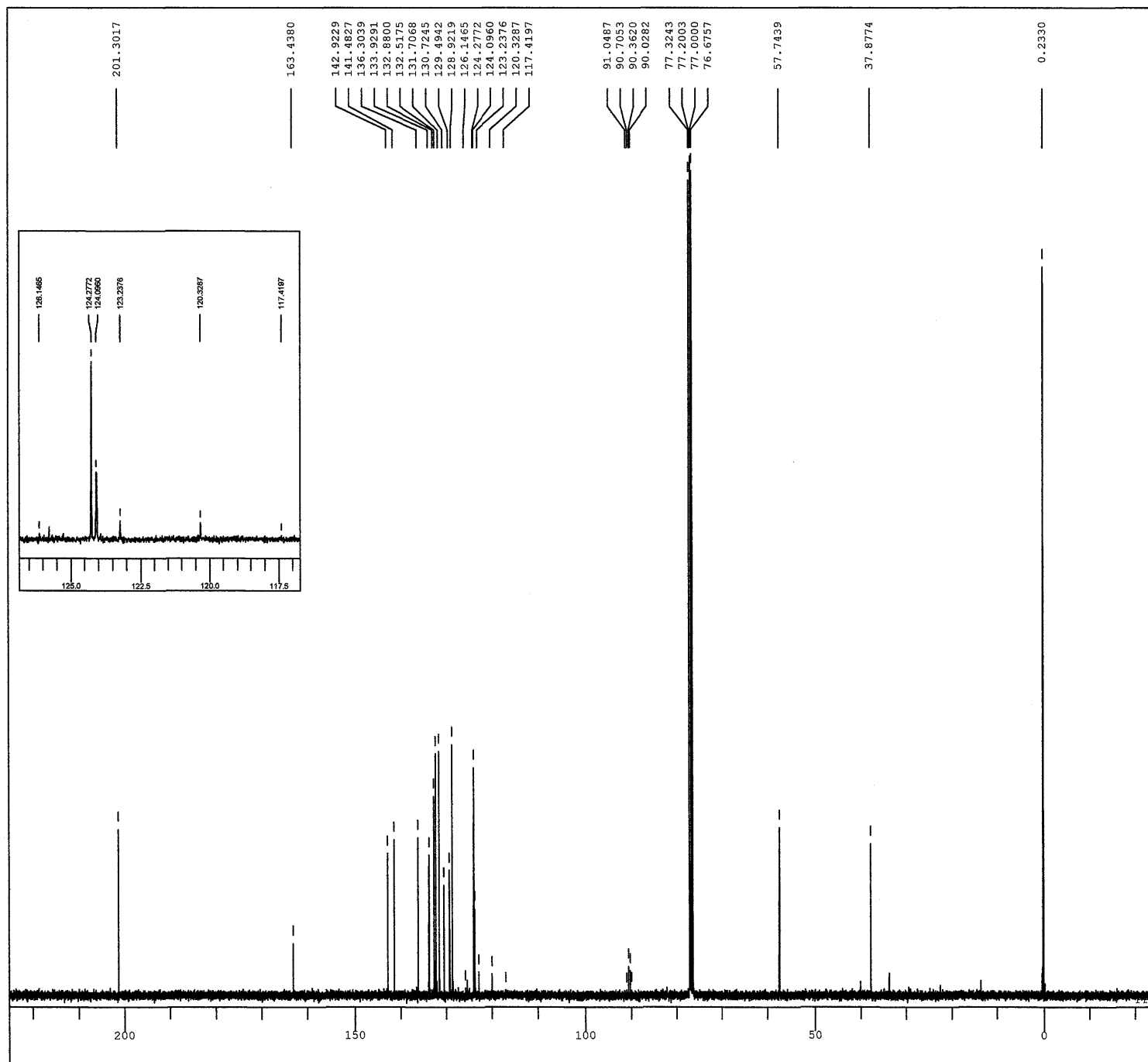
DFILE ozawa07-035 19F.jdf
COMNT 2-TMS-Ph, OH
DATIM 21-03-2015 11:43:48
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



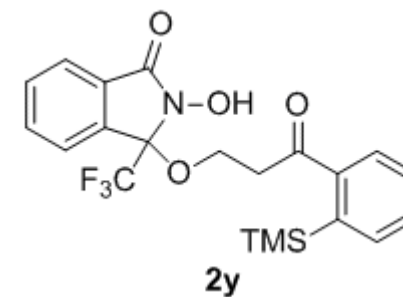


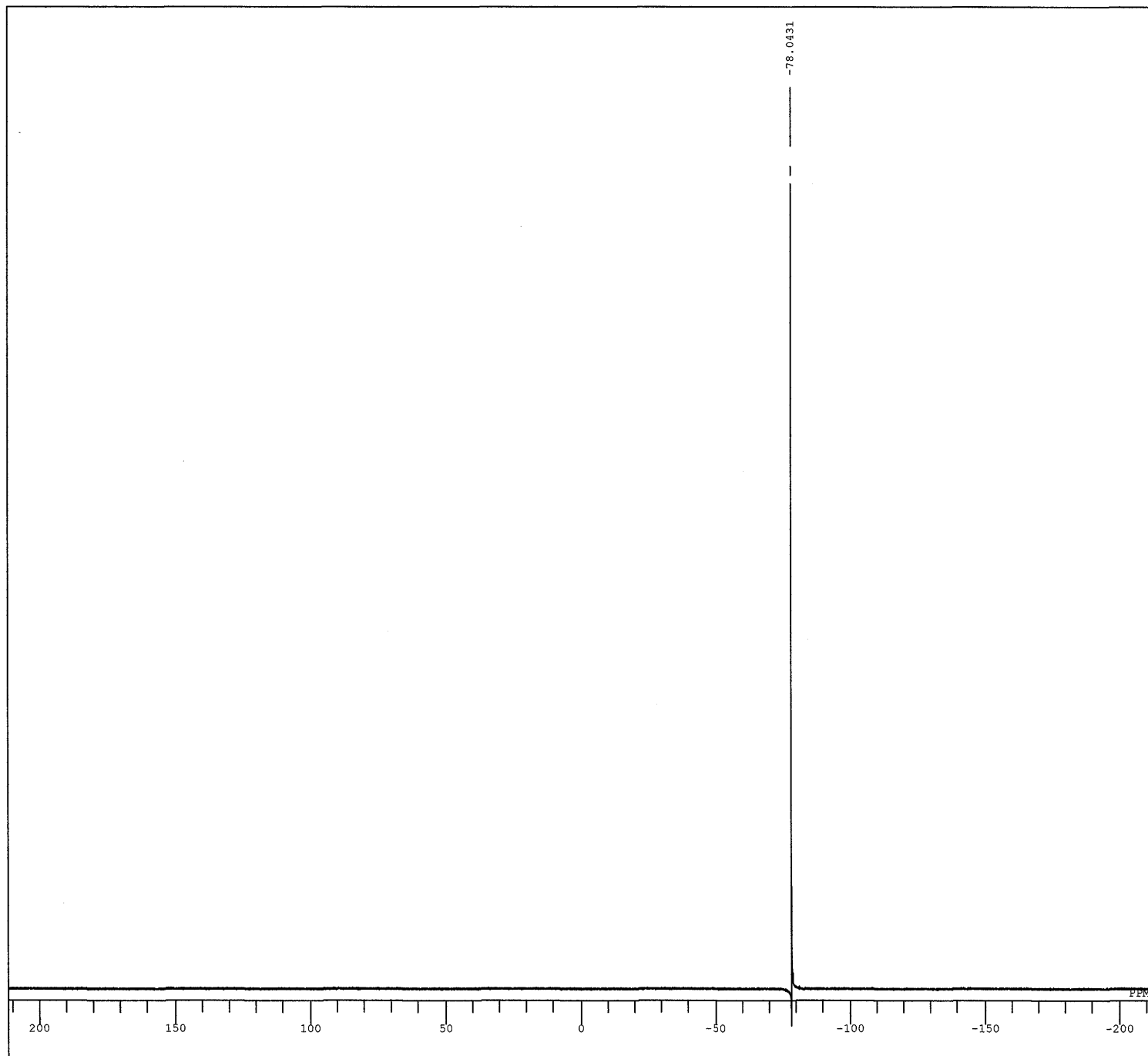
DFILE ozawa07-038 1H.jdf
 COMNT 2-TMS-Ph, [O]
 DATIM 21-03-2015 08:26:35
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSFET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 4.99 usec
 IRNUC 1H
 CTEMP 25.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 38



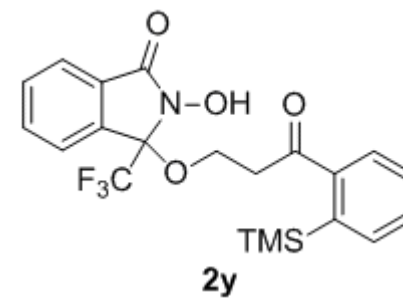


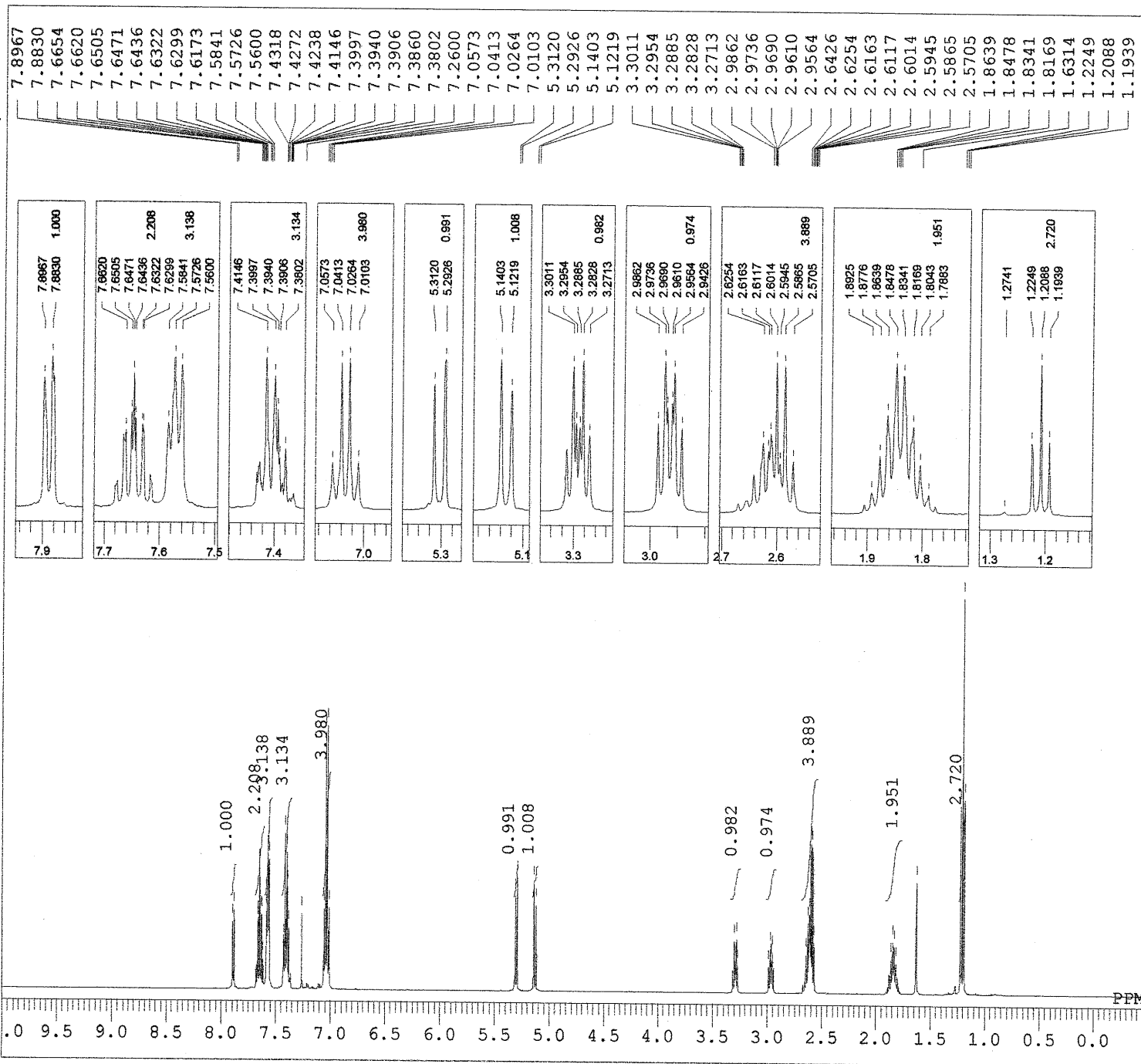
DFILE ozawa07-038_13c.jdf
 COMNT 2-TMS-Ph, [O]
 DATIM 21-03-2015 08:31:52
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 30788.18 Hz
 SCANS 2360
 ACQTM 1.0643 sec
 PD 2.0000 sec
 PW1 3.16 usec
 IRNUC 1H
 CTEMP 25.2 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60





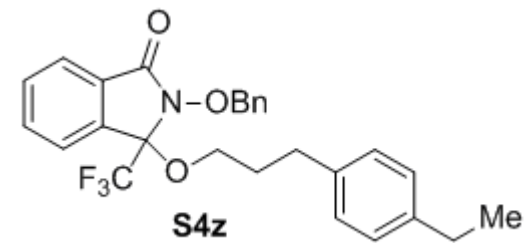
DFILE ozawa07-038_19F.jdf
COMNT 2-TMS-Ph, [O]
DATIM 21-03-2015 08:24:23
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

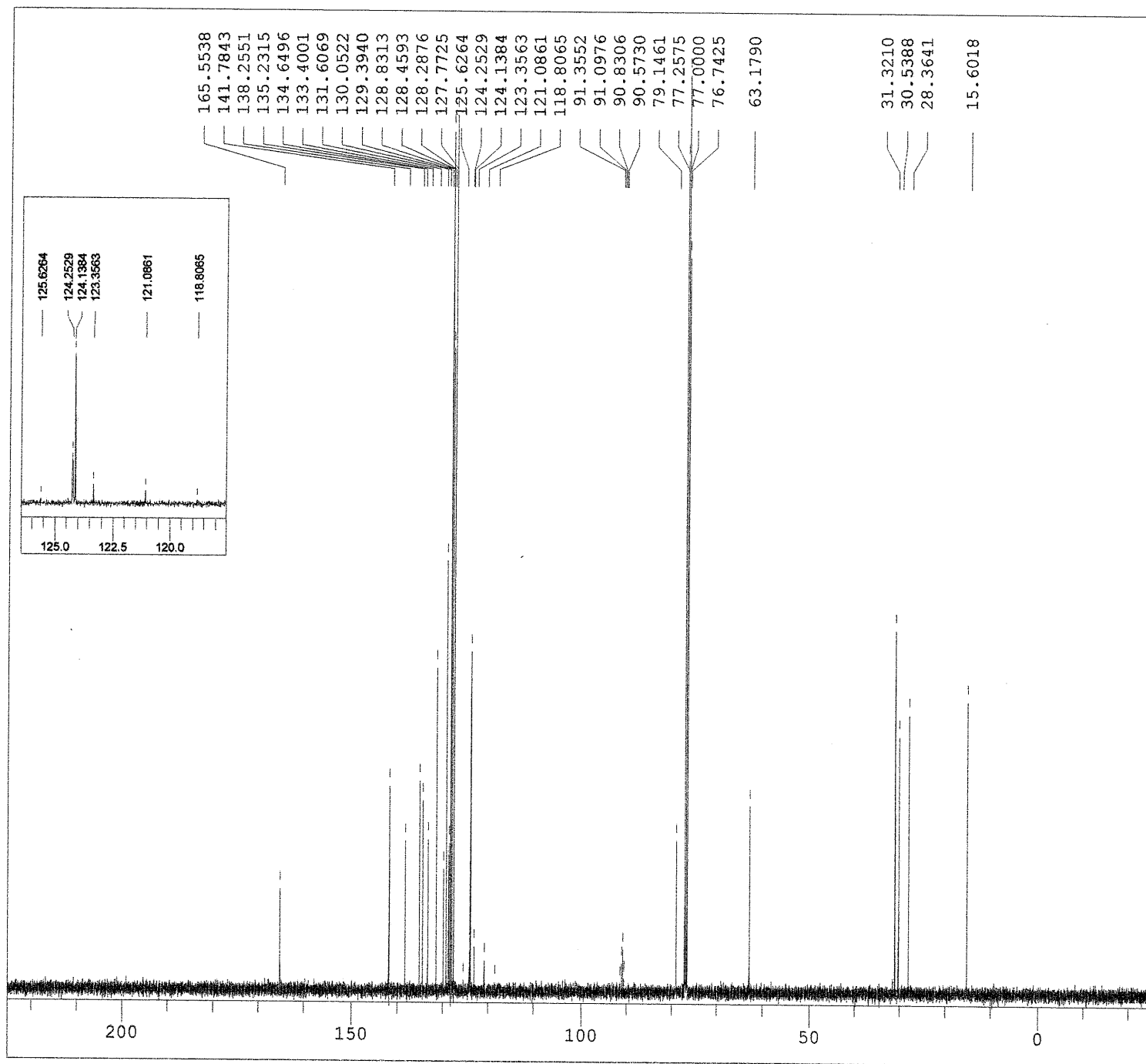




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DFILE  ozawa05-050_1H.jdf
COMNT  PhEt, Bn
DATIM  2014-08-15 12:19:02
OBNUC  1H
EXMOD  proton.jxp
OBFRQ   500.16 MHz
OBSET   2.41 KHz
OBFIN   6.01 Hz
POINT   16384
FREQU   9384.38 Hz
SCANS   4
ACQTM   1.7459 sec
PD       5.0000 sec
PW1     5.55 usec
IRNUC   1H
CTEMP   25.7 c
SLVNT   CDCL3
EXREF   7.26 ppm
BF       0.12 Hz
RGAIN   34
    
```

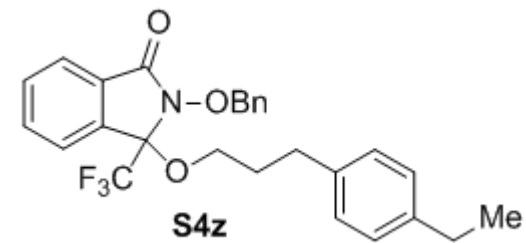


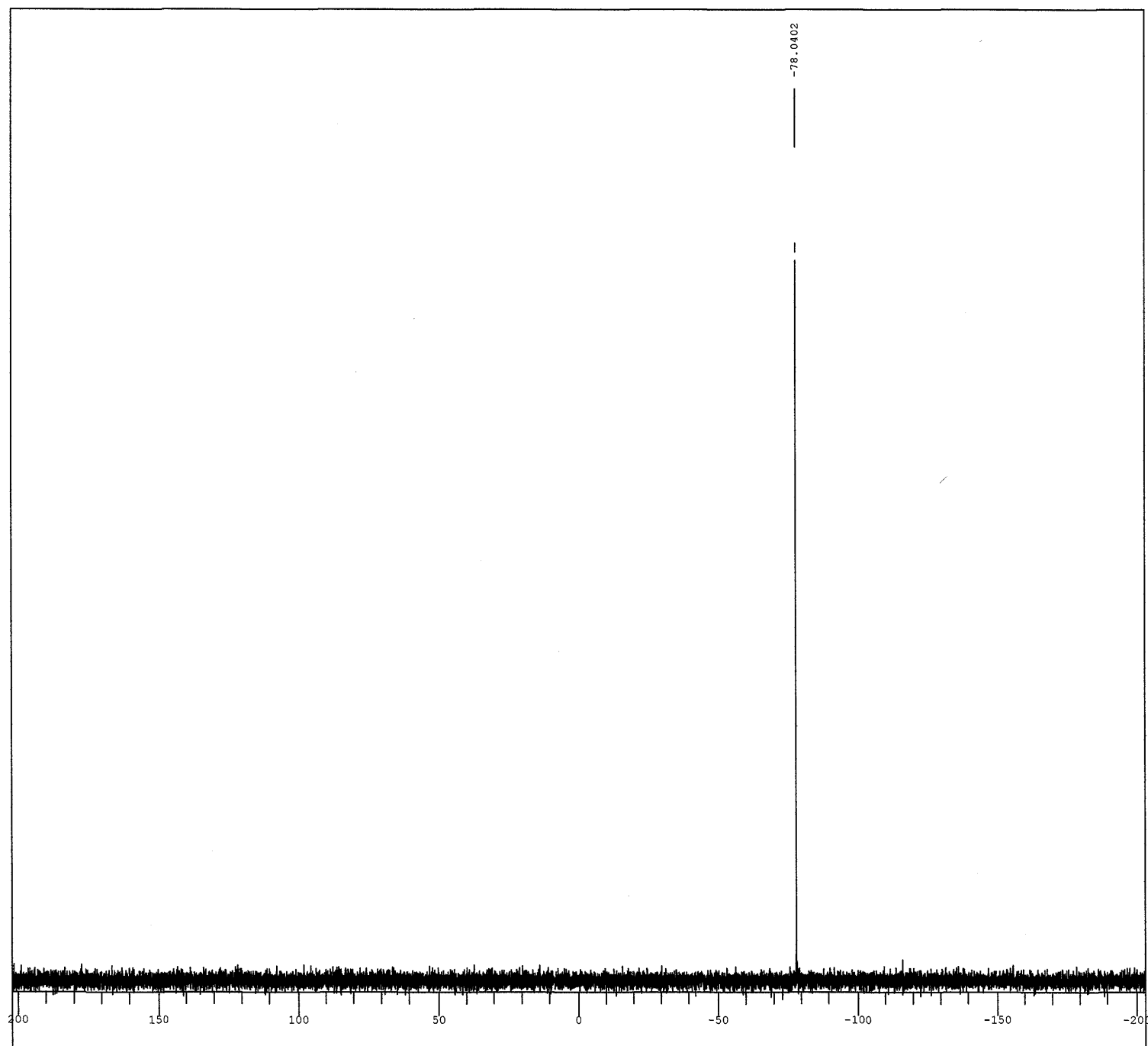


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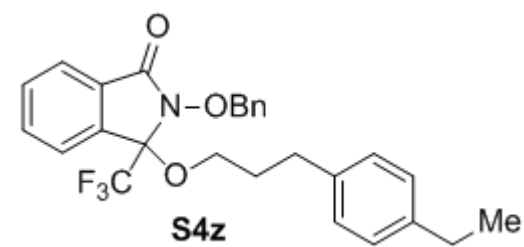
DFILE ozawa05-050_13C_copy2-1-1.jdf
COMNT PhEt, Bn
DATIM 2014-08-15 12:20:06
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQ 39308.18 Hz
SCANS 444
ACQTM 0.0000 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.2 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

```

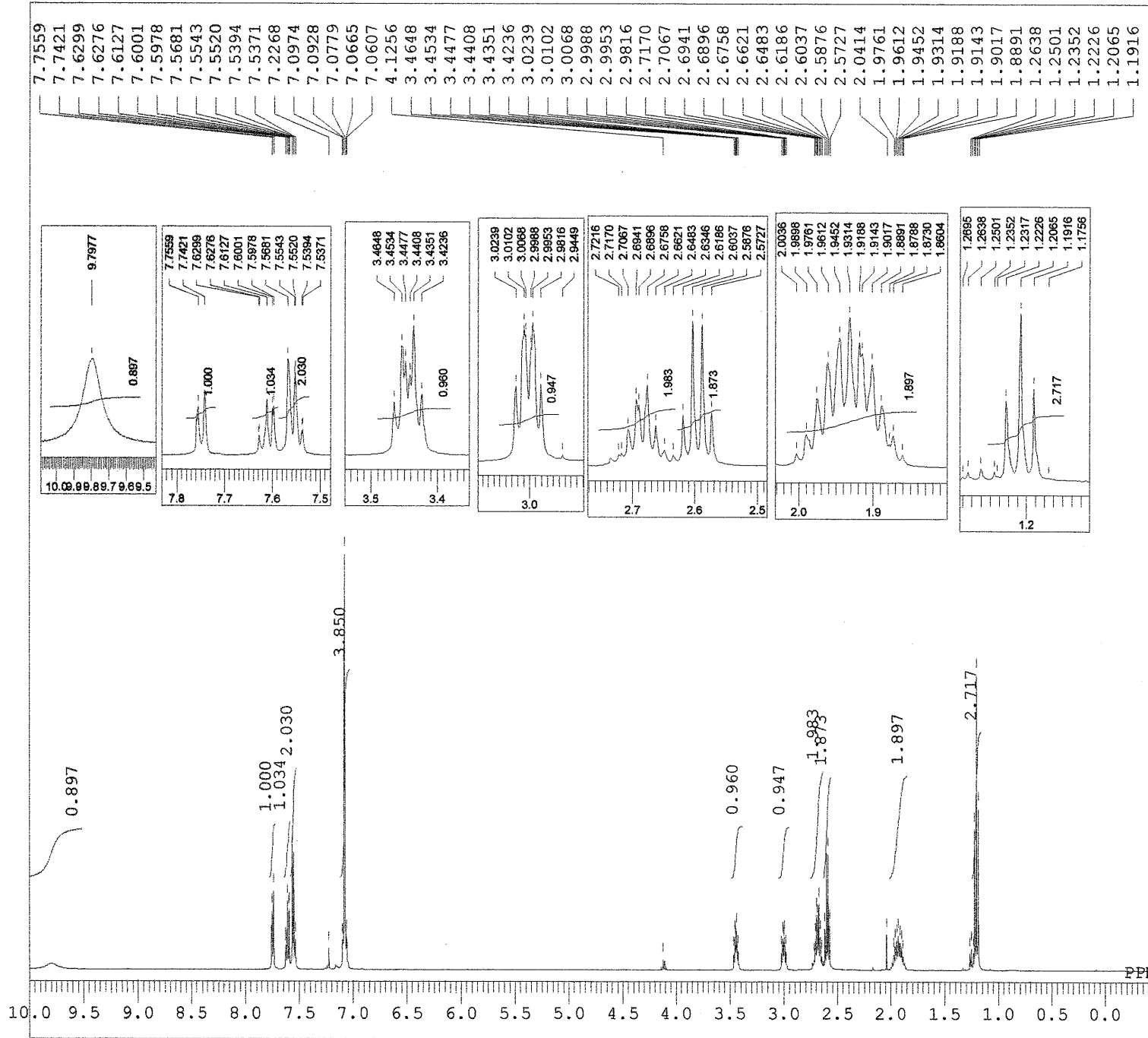




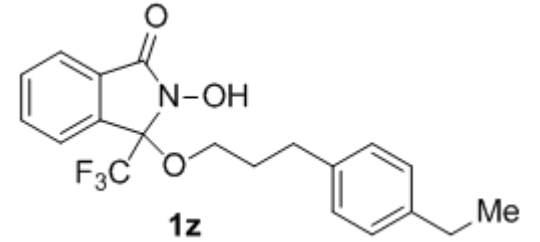
DFILE ozawa05-050_19F.jdf
COMNT Ph-Et
DATIM 14-06-2014 14:47:32
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 23.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 56



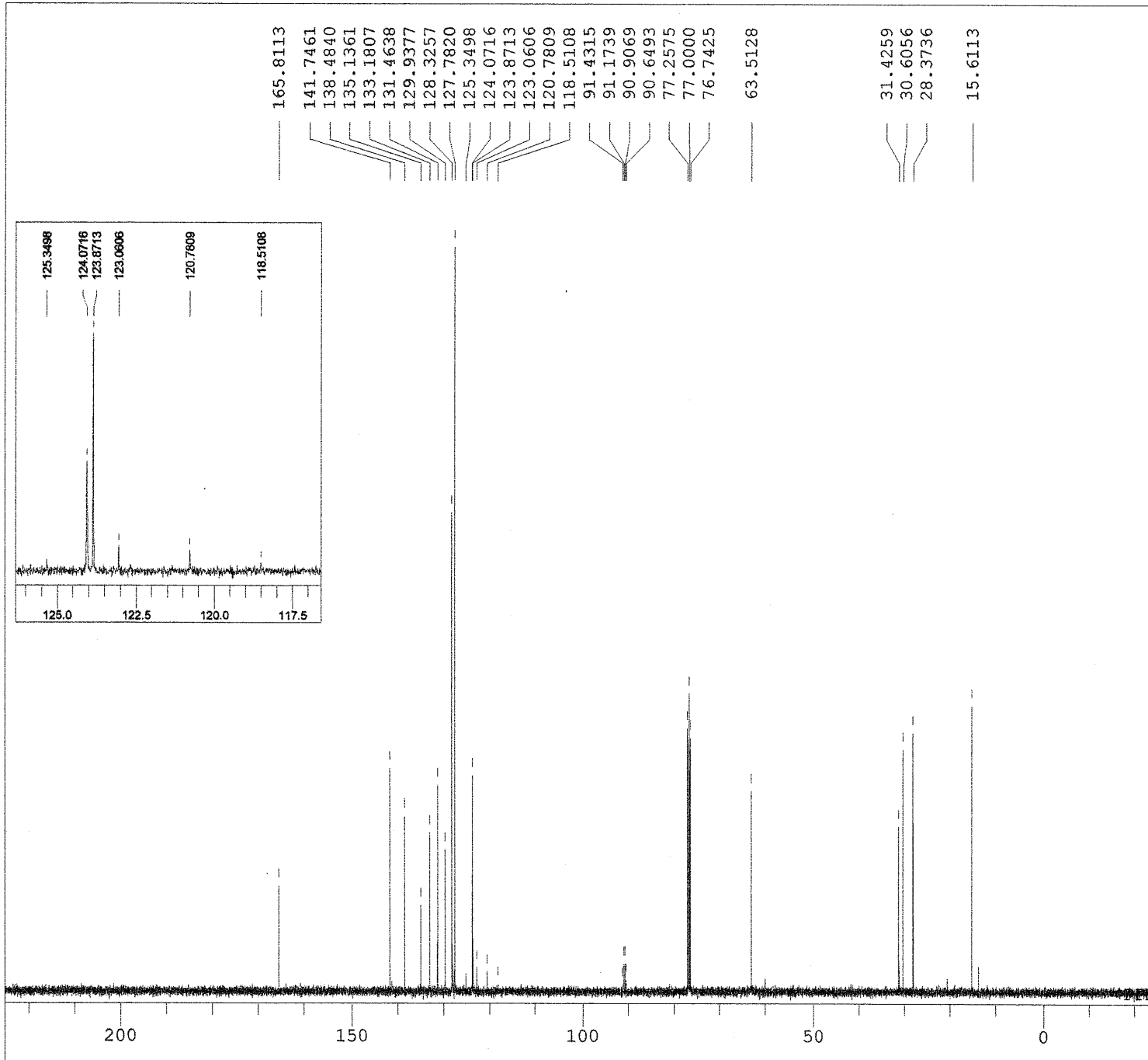
Ph-Et



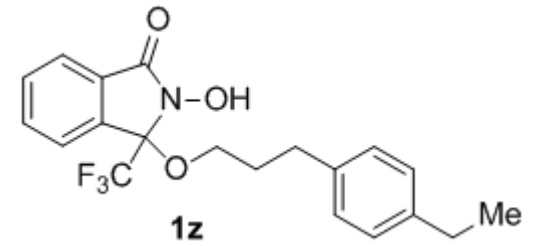
DFILE ozawa05-055_1H.jdf
COMNT Ph-Et
DATIM 2014-06-16 19:48:40
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.7 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 28



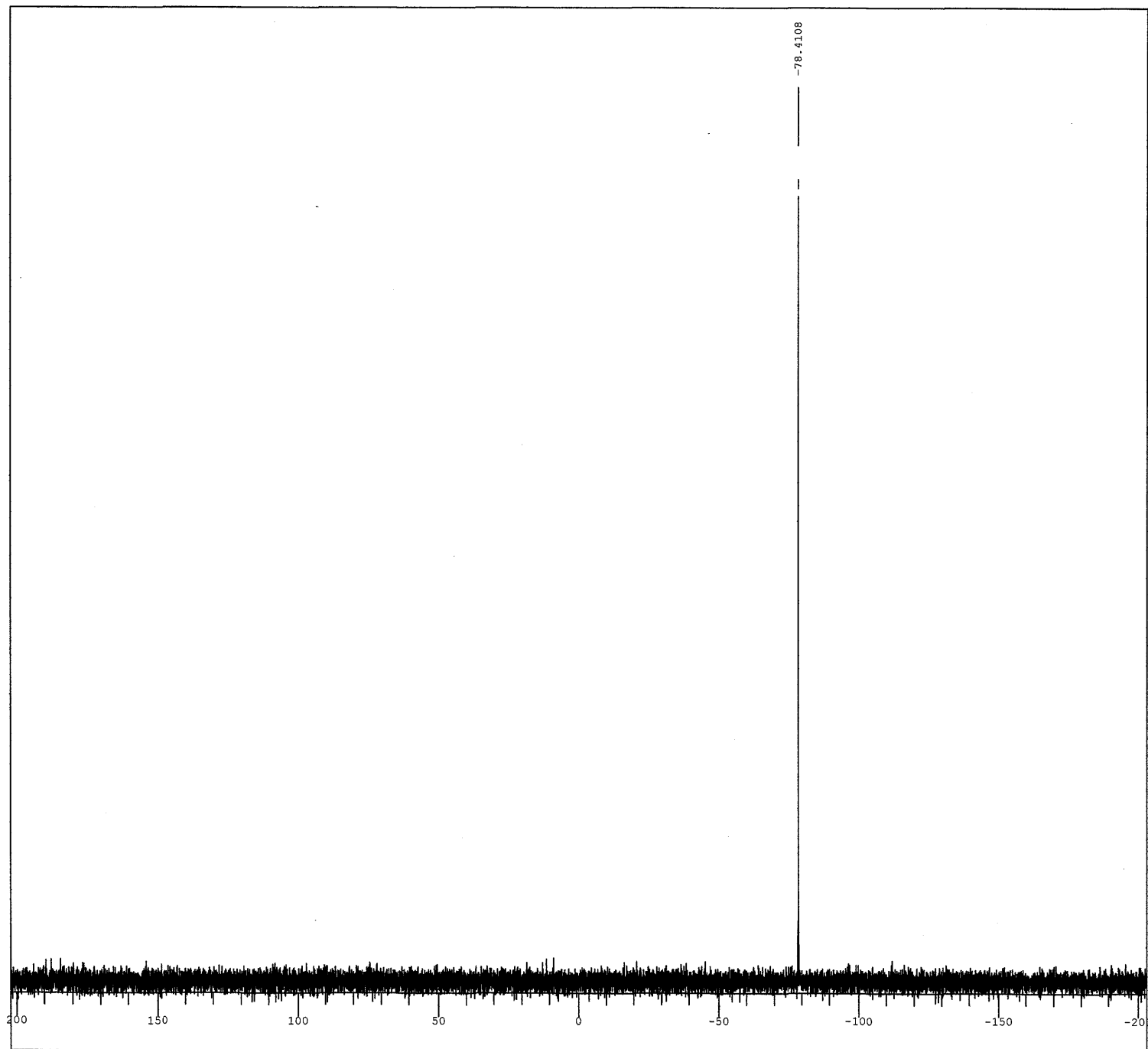
Ph-Et



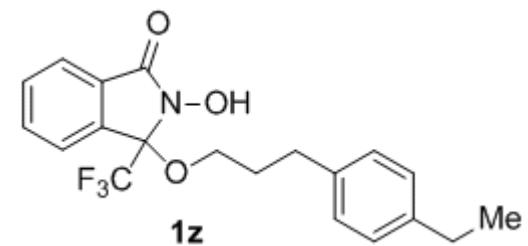
DFILE ozawa05-055_13C.jdf
COMNT Ph-Et
DATIM 2014-06-16 19:49:44
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 108
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.0 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



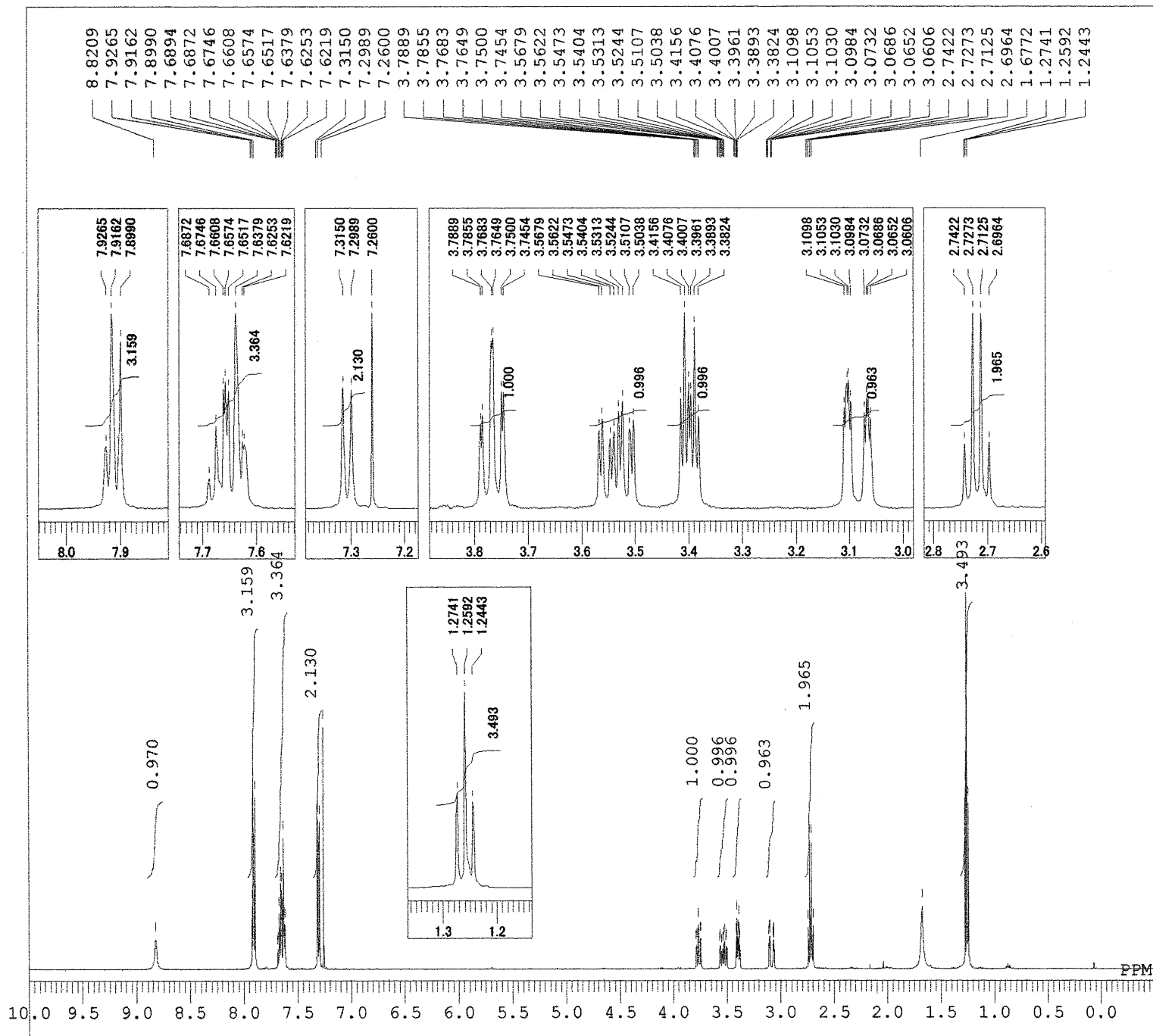
PhEt, OH



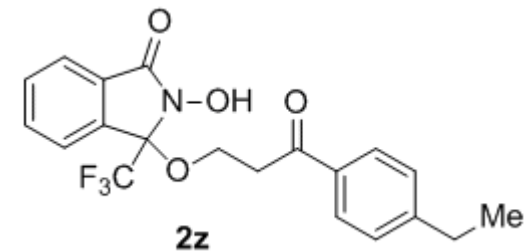
DFILE ozawa05-055_19F.jdf
COMNT PhEt, OH
DATIM 15-08-2014 20:04:41
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 24.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



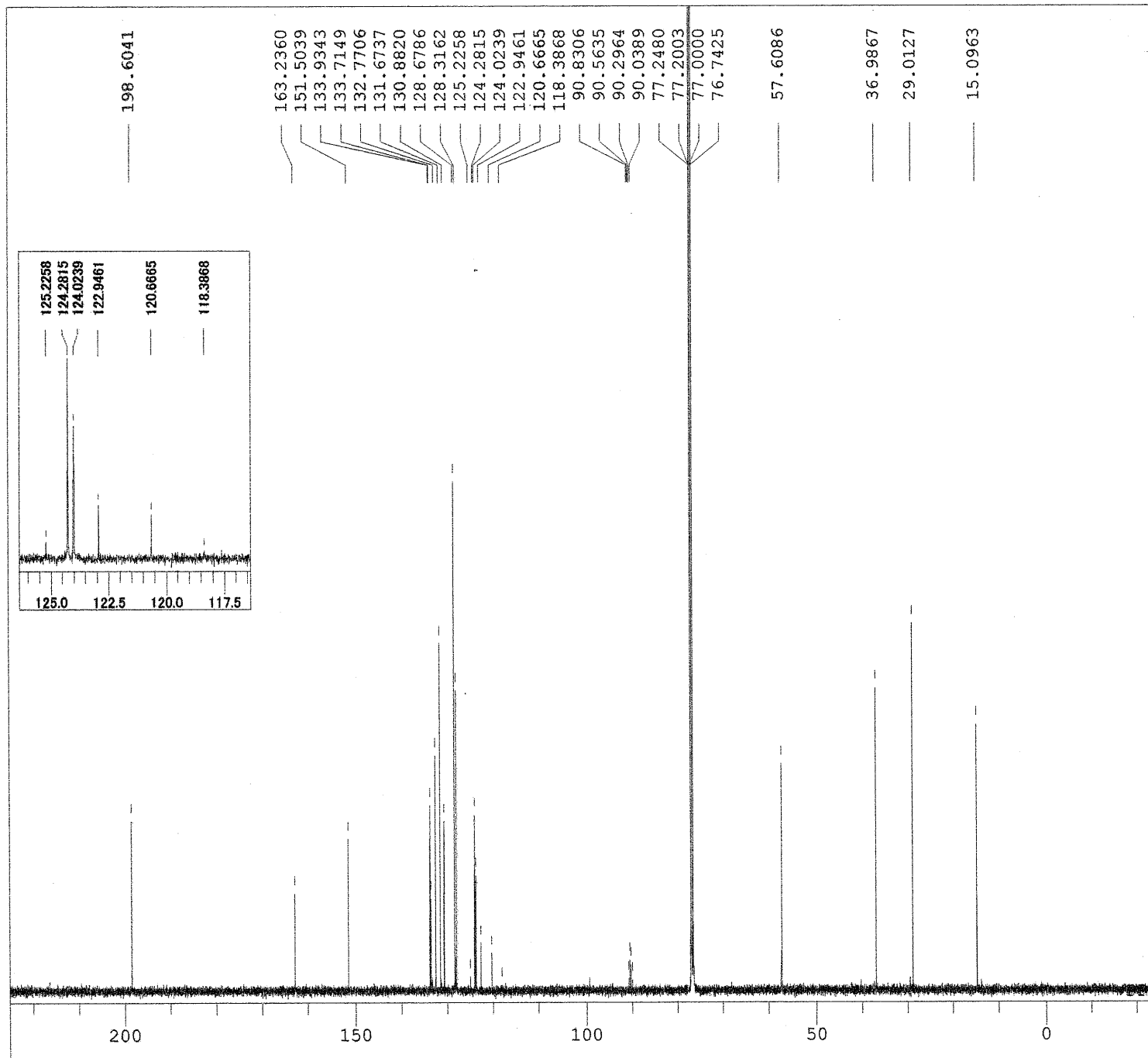
PhEt, [O]



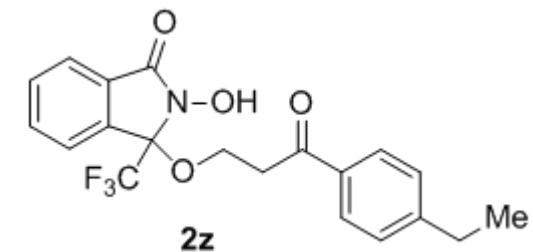
DFILE ozawa05-097_1H.jdf
COMNT PhEt, [O]
DATIM 2014-07-09 22:52:48
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.8 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 38

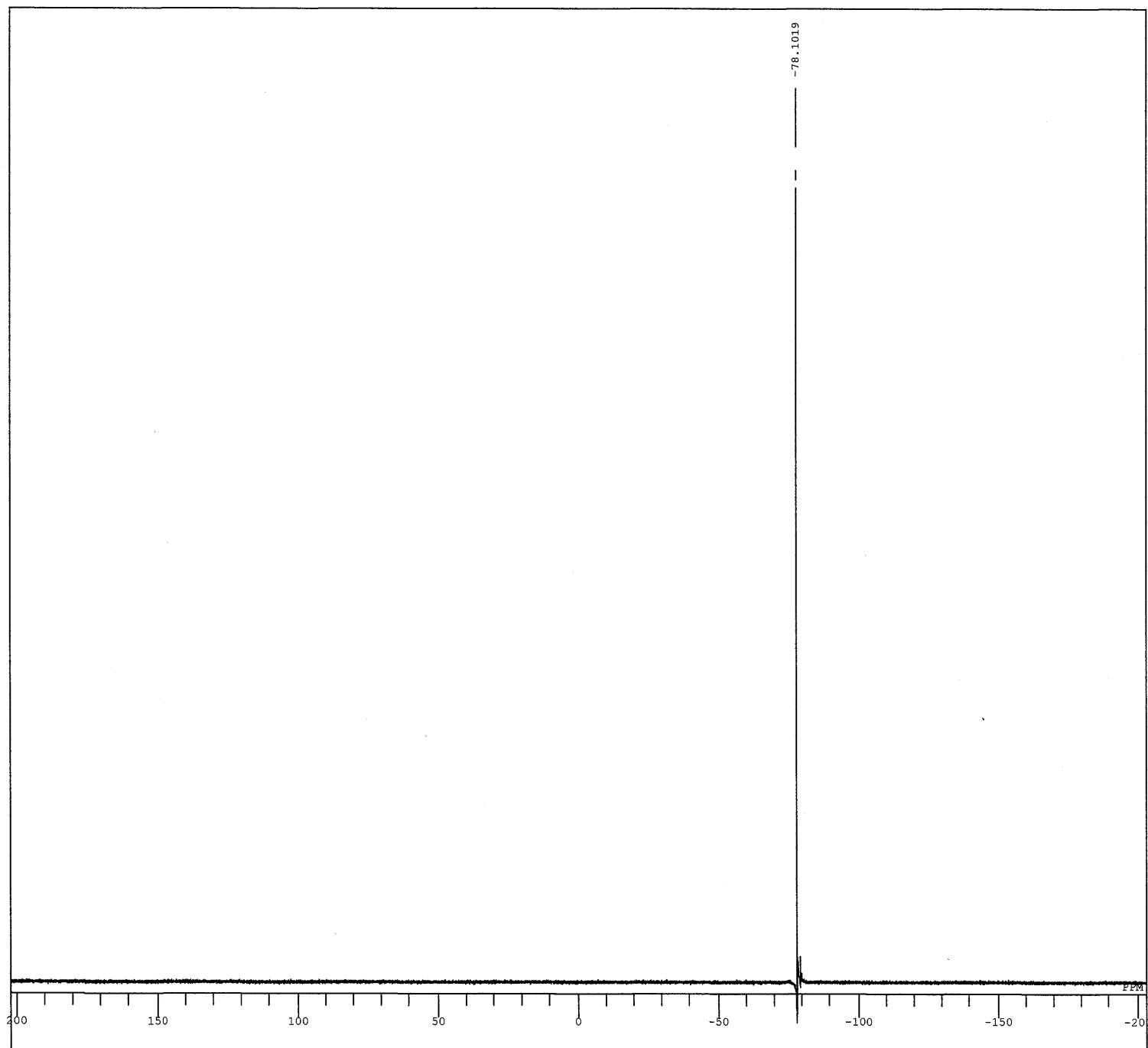


PhEt, [0]

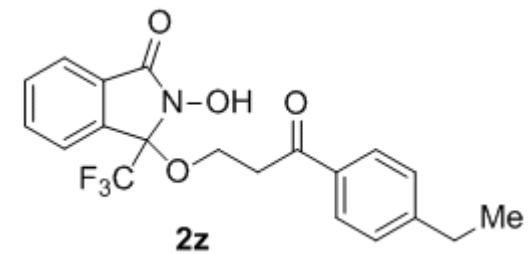


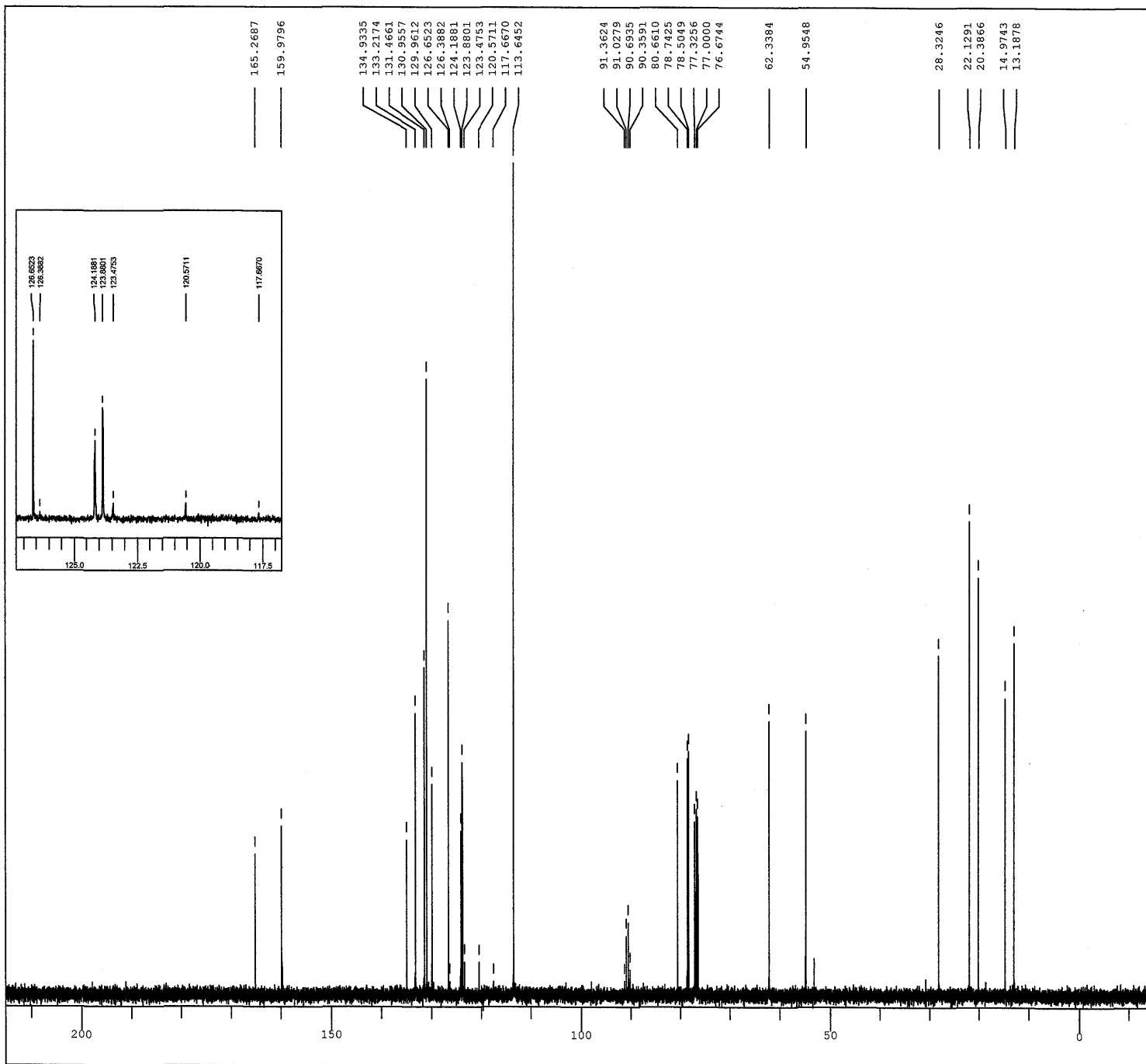
DFILE ozawa05-097_13C.jdf
COMNT PhEt, [0]
DATIM 2014-07-09 22:53:52
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 9400
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.0 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



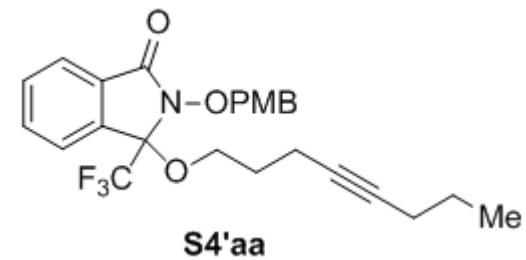


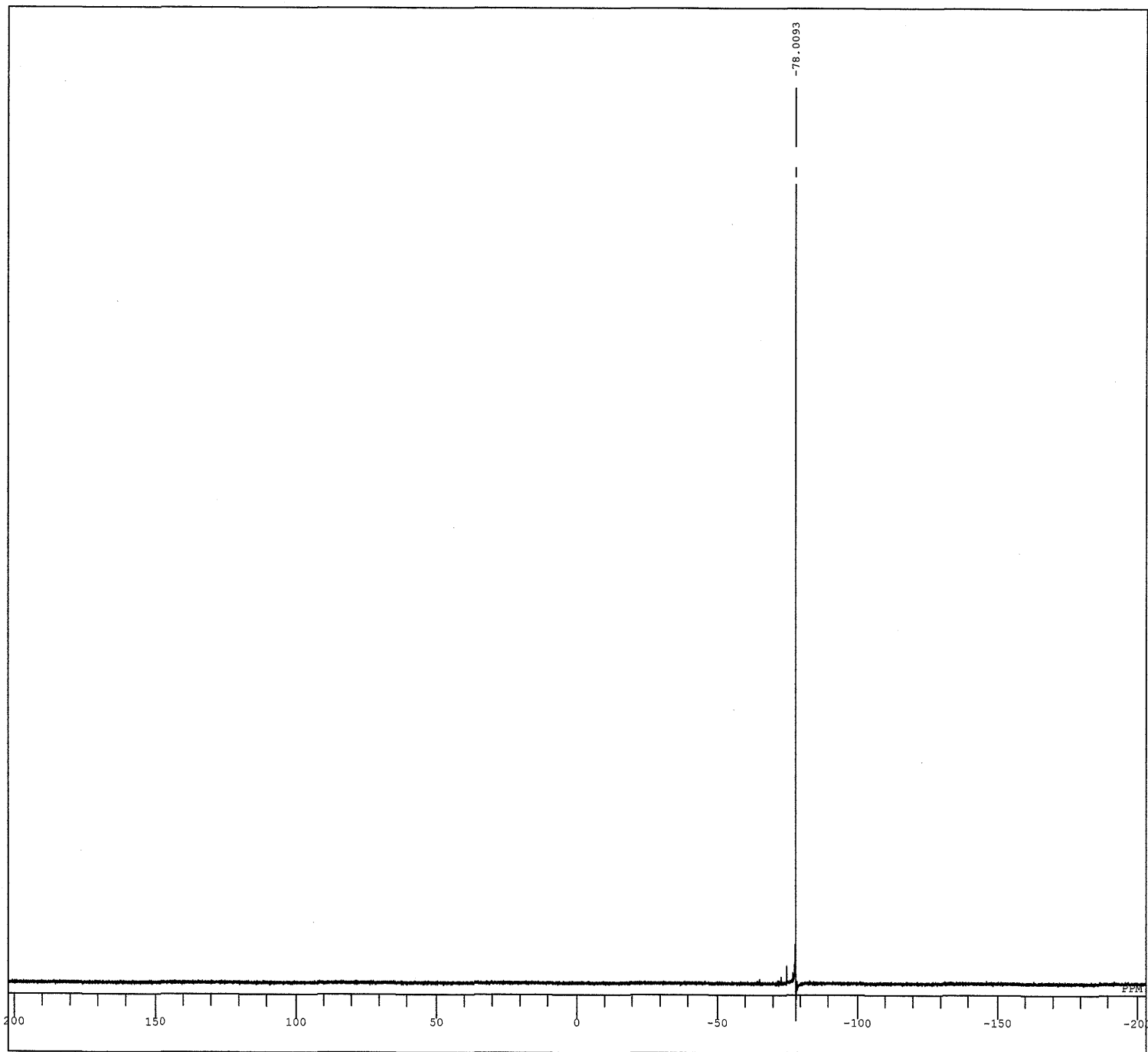
DFILE ozawa05-097_19F.jdf
COMNT PhEt, [0]
DATIM 10-07-2014 14:38:13
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 23.7 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 40



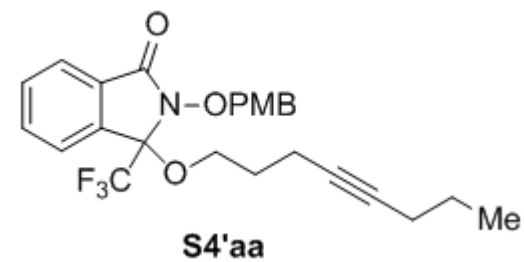


DFILE ozawa05-127_1_13c.jdf
 COMNT nPr-yne, PMB
 DATIM 11-08-2014 19:30:52
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRO 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 28409.09 Hz
 SCANS 72
 ACQTM 0.0000 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 24.3 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

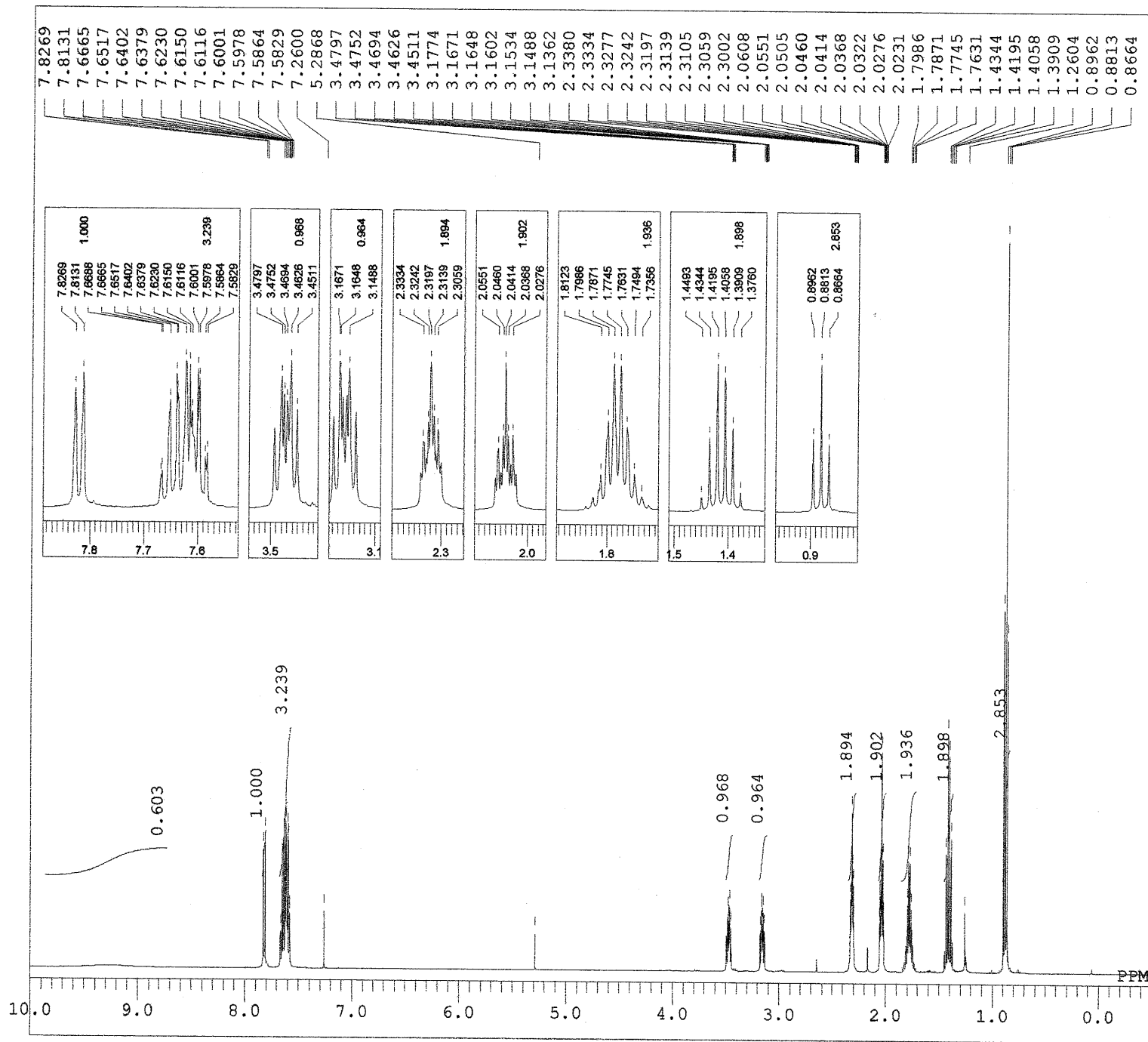




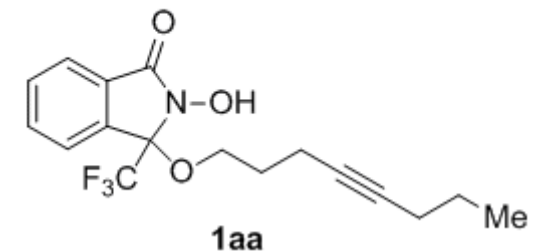
DFILE ozawa05-127_1_19F.jdf
COMNT nPr-yne, PMB
DATIM 11-08-2014 20:18:02
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 24.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



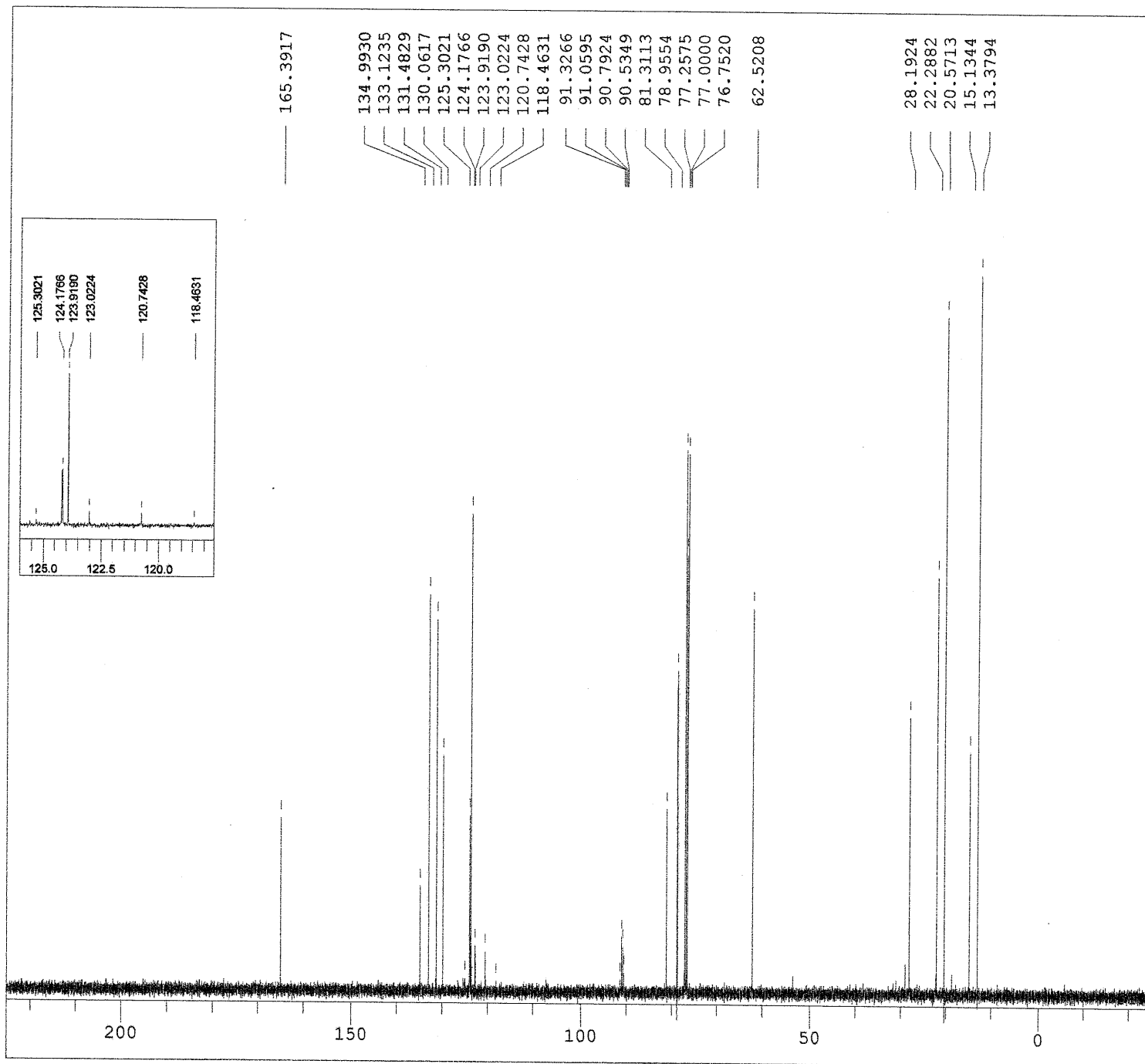
nPr-yne, OH



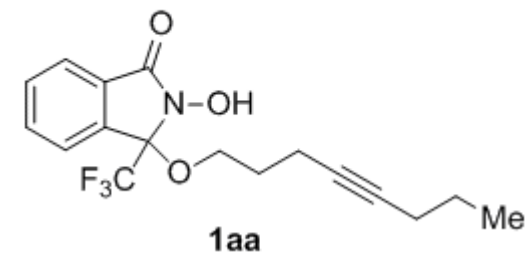
DFILE ozawa05-129_1_1H.jdf
COMNT nPr-yne, OH
DATIM 2014-08-15 18:45:04
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 26.3 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 30



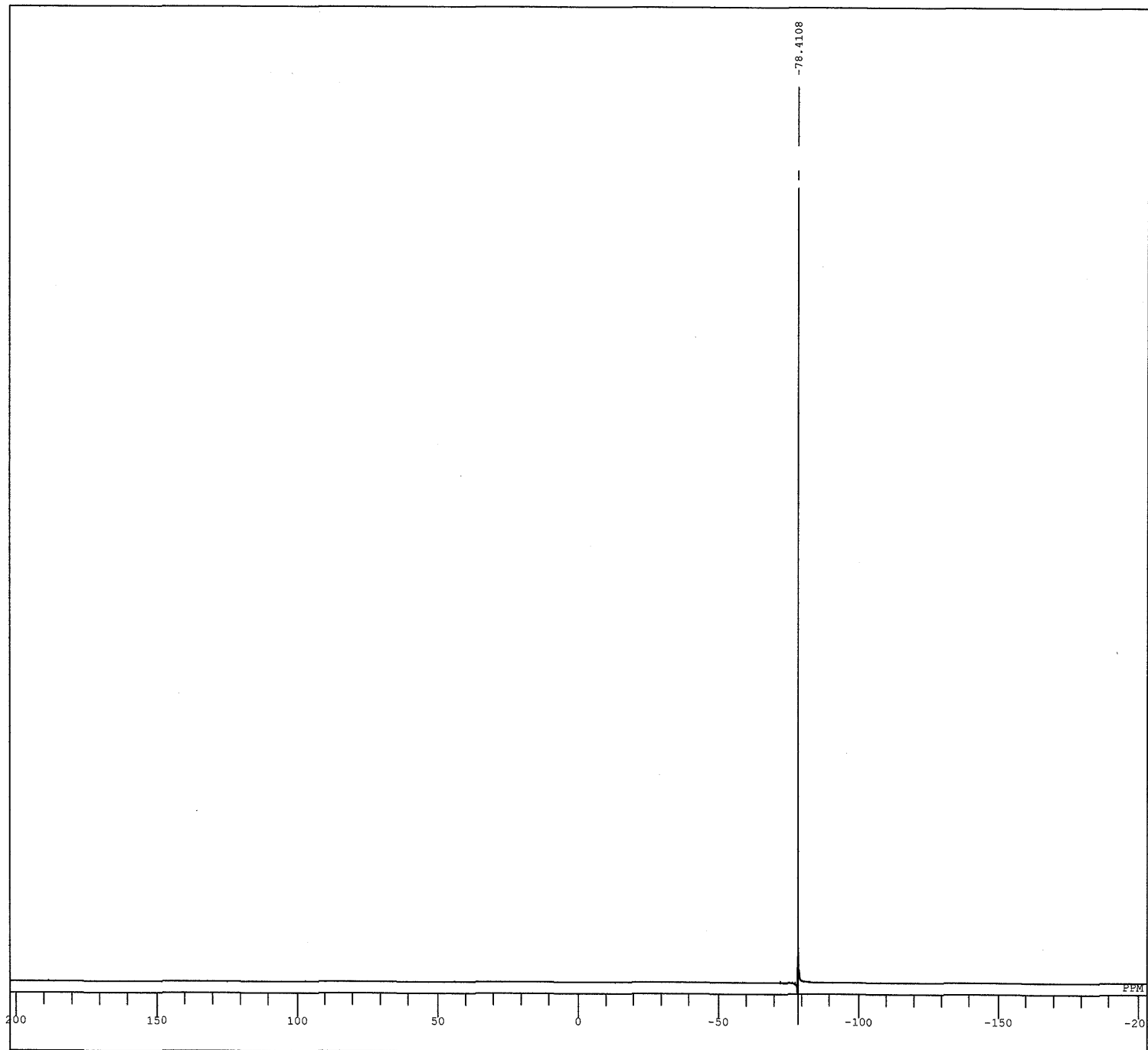
nPr-yne, OH



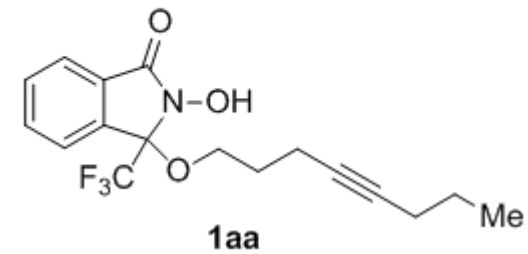
DFILE ozawa05-129_1_13C.jdf
COMNT nPr-yne, OH
DATIM 2014-08-15 18:46:07
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 200
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.6 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

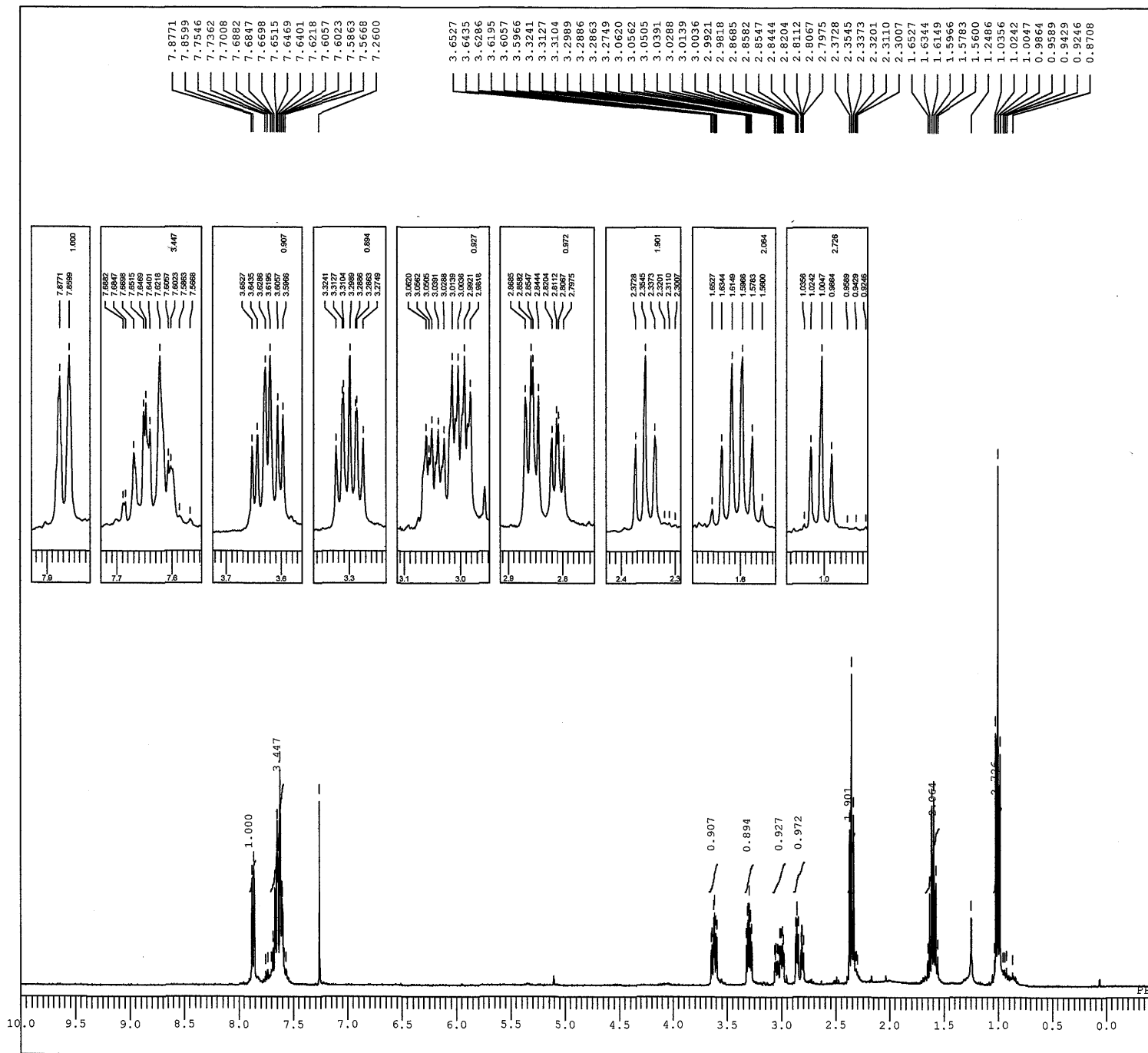


nPr-yne, OH

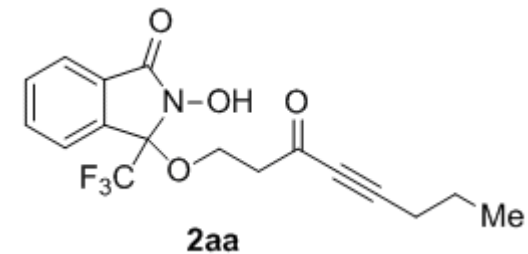


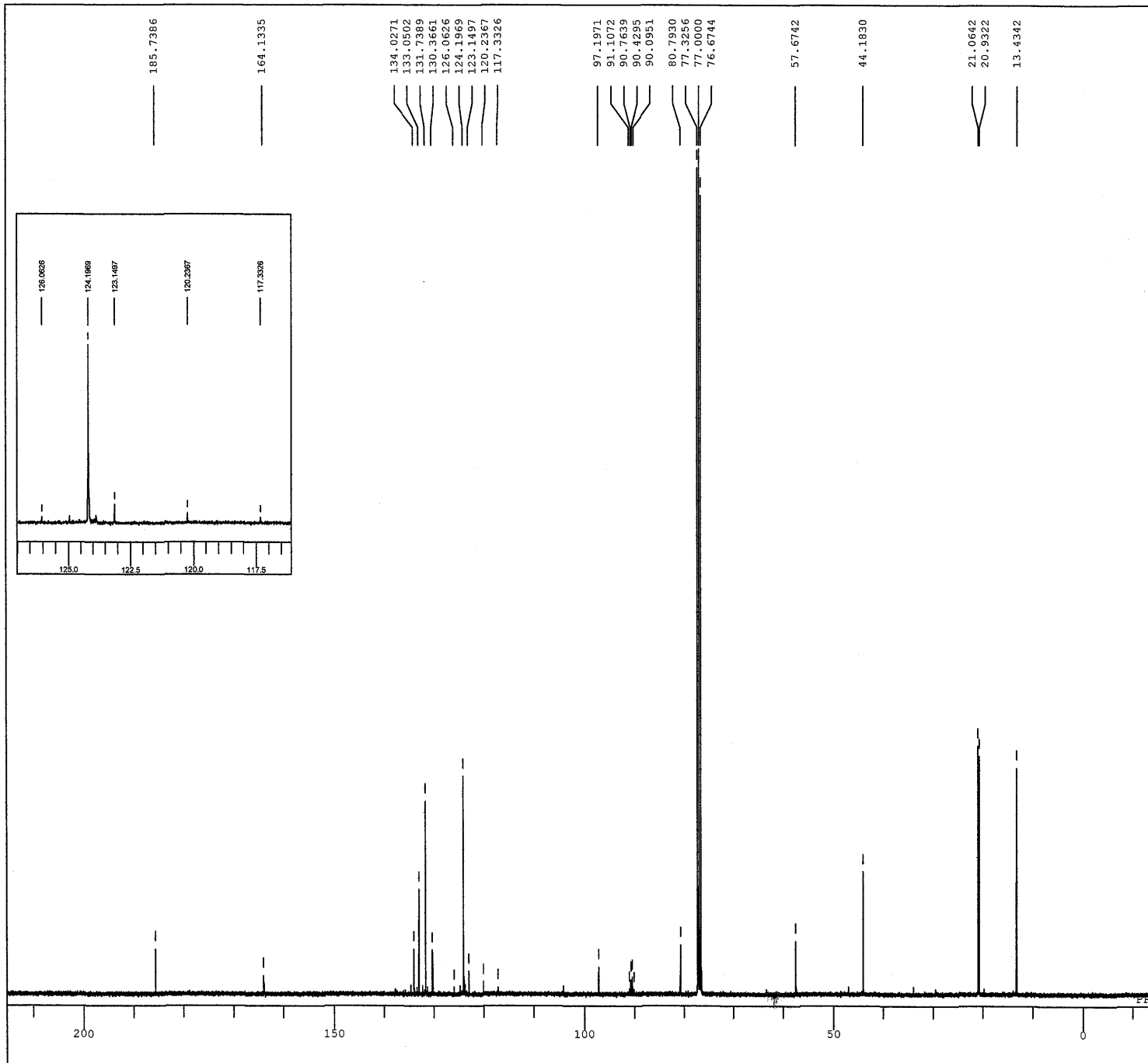
DFILE ozawa05-129_1_19F.jdf
COMNT nPr-yne, OH
DATIM 15-08-2014 19:57:17
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



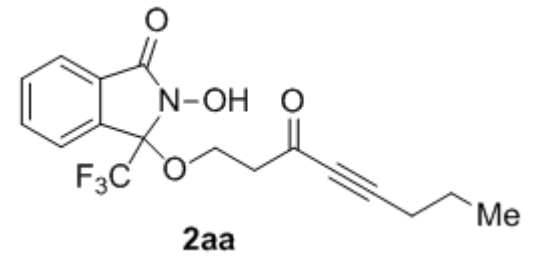


DFILE ozawa05-134_3_1H.jdf
 COMNT nPr-yne, [0]
 DATIM 14-08-2014 23:08:23
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSETE 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 5.25 usec
 IRNUC 1H
 CTEMP 24.1 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 38

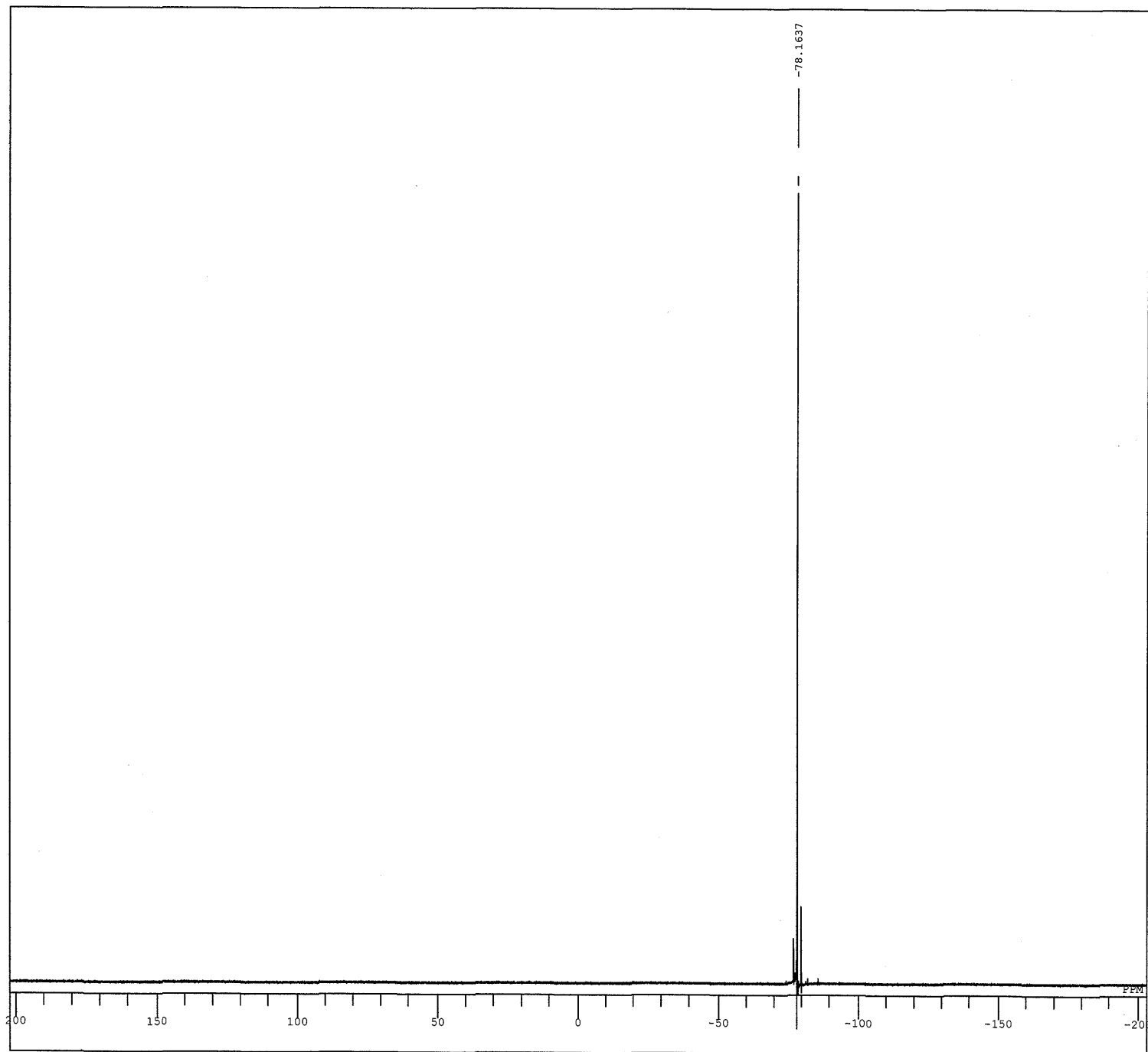




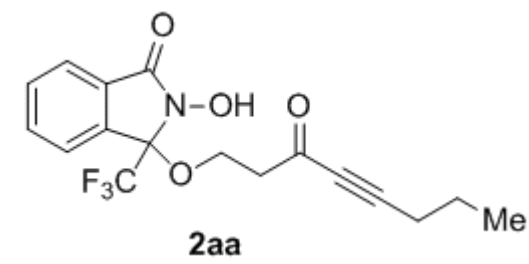
DFILE ozawa05-134_3_13c.jdf
 COMNT nPr-yne, [0]
 DATIM 14-08-2014 23:09:30
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSETE 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 28409.09 Hz
 SCANS 9000
 ACQTM 1.1534 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 23.9 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60



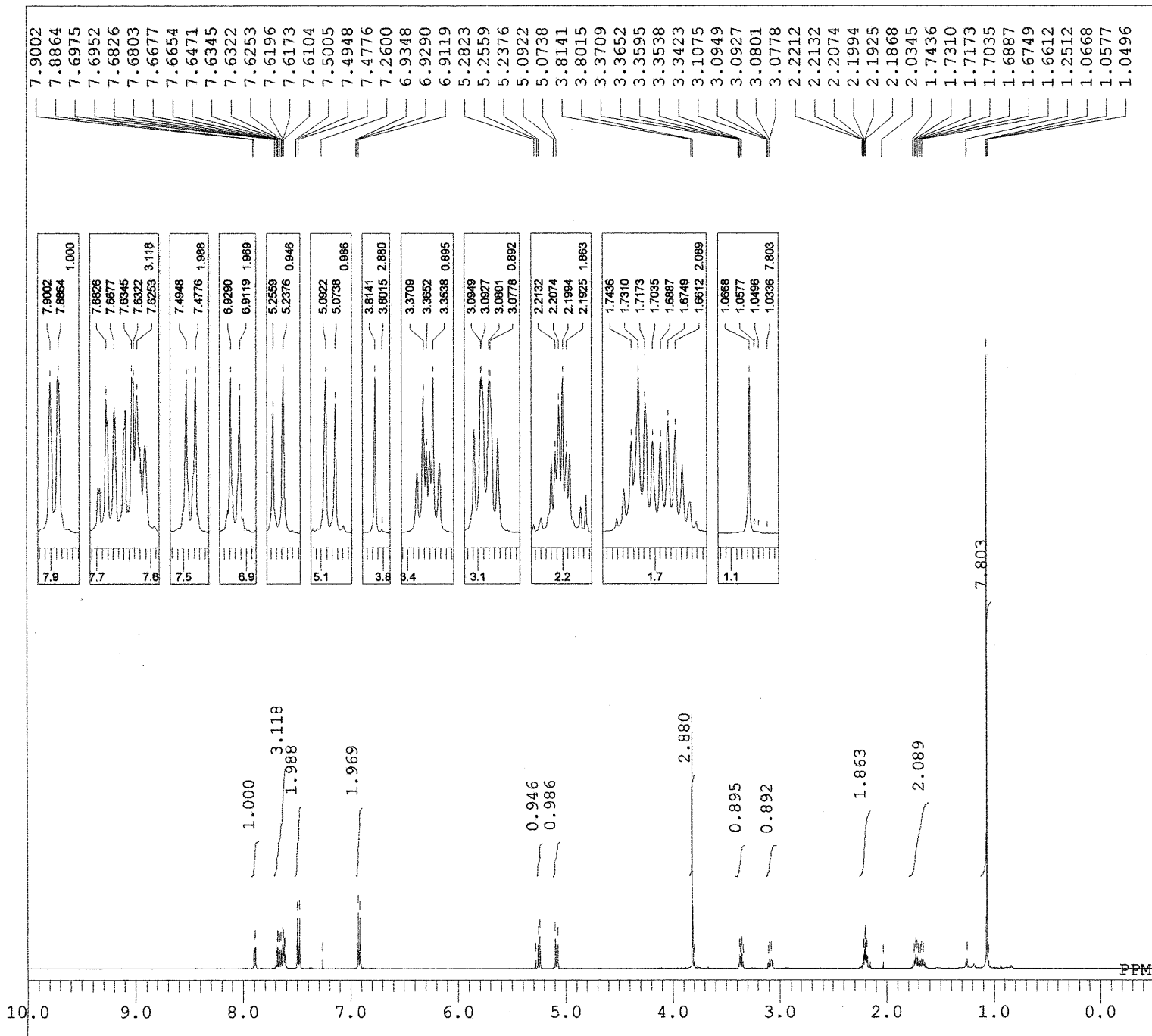
nPr-yne, [0]



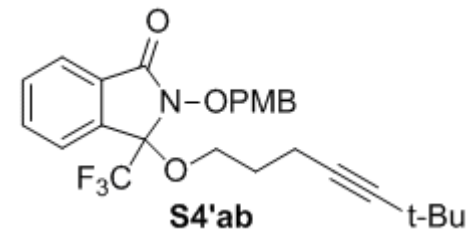
DFILE ozawa05-134_3_19F.jdf
COMNT nPr-yne, [0]
DATIM 15-08-2014 13:52:07
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 24.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



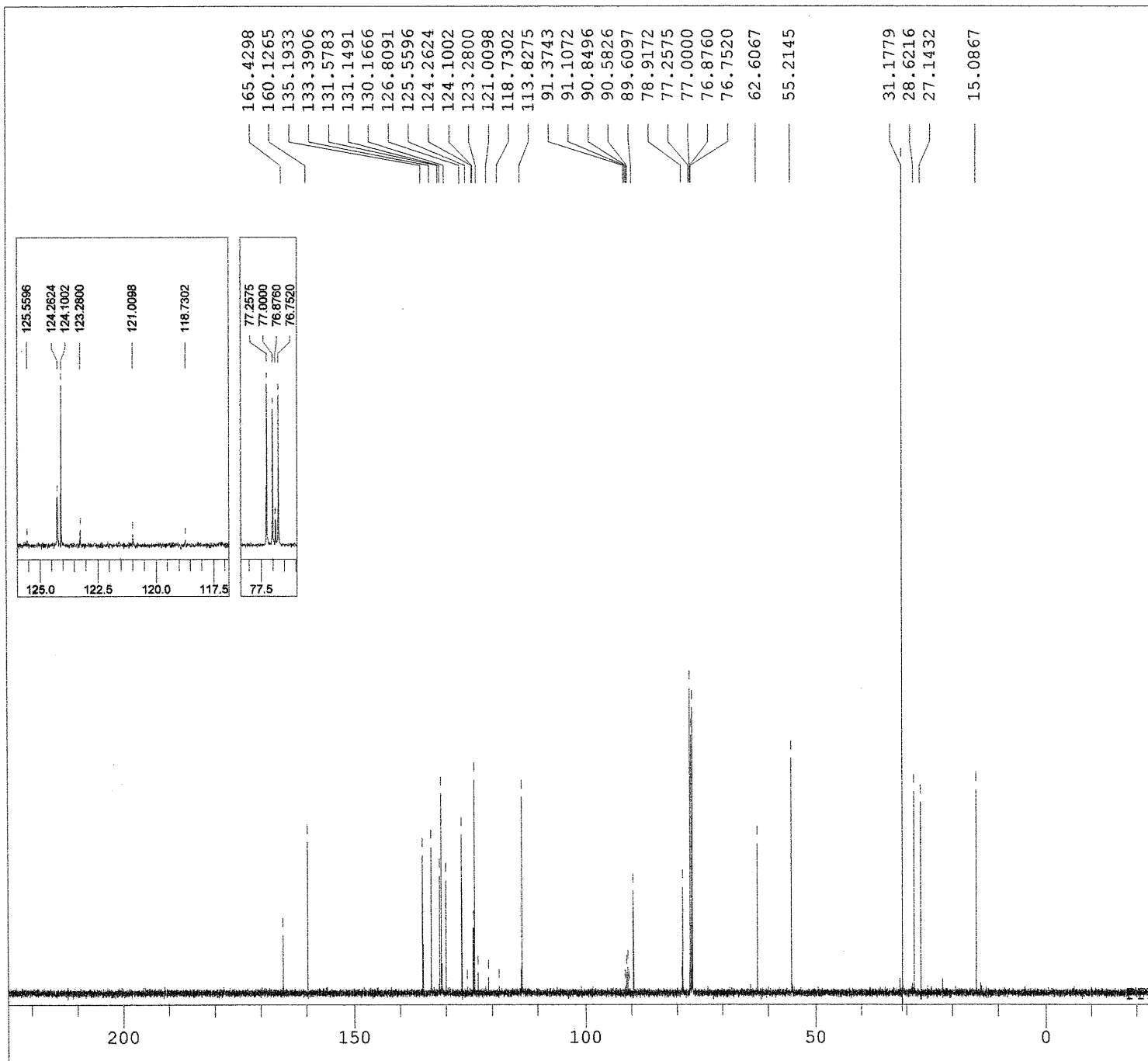
tBu-yne, PMB



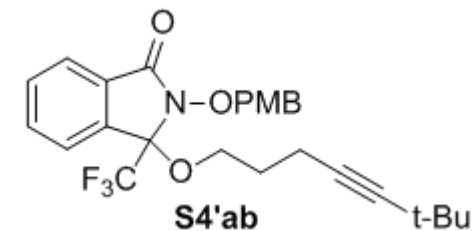
DFILE ozawa05-125_2_1H.jdf
COMNT tBu-yne, PMB
DATIM 2014-08-07 15:21:25
OBNUC 1H
EXMOC proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 26.6 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 28



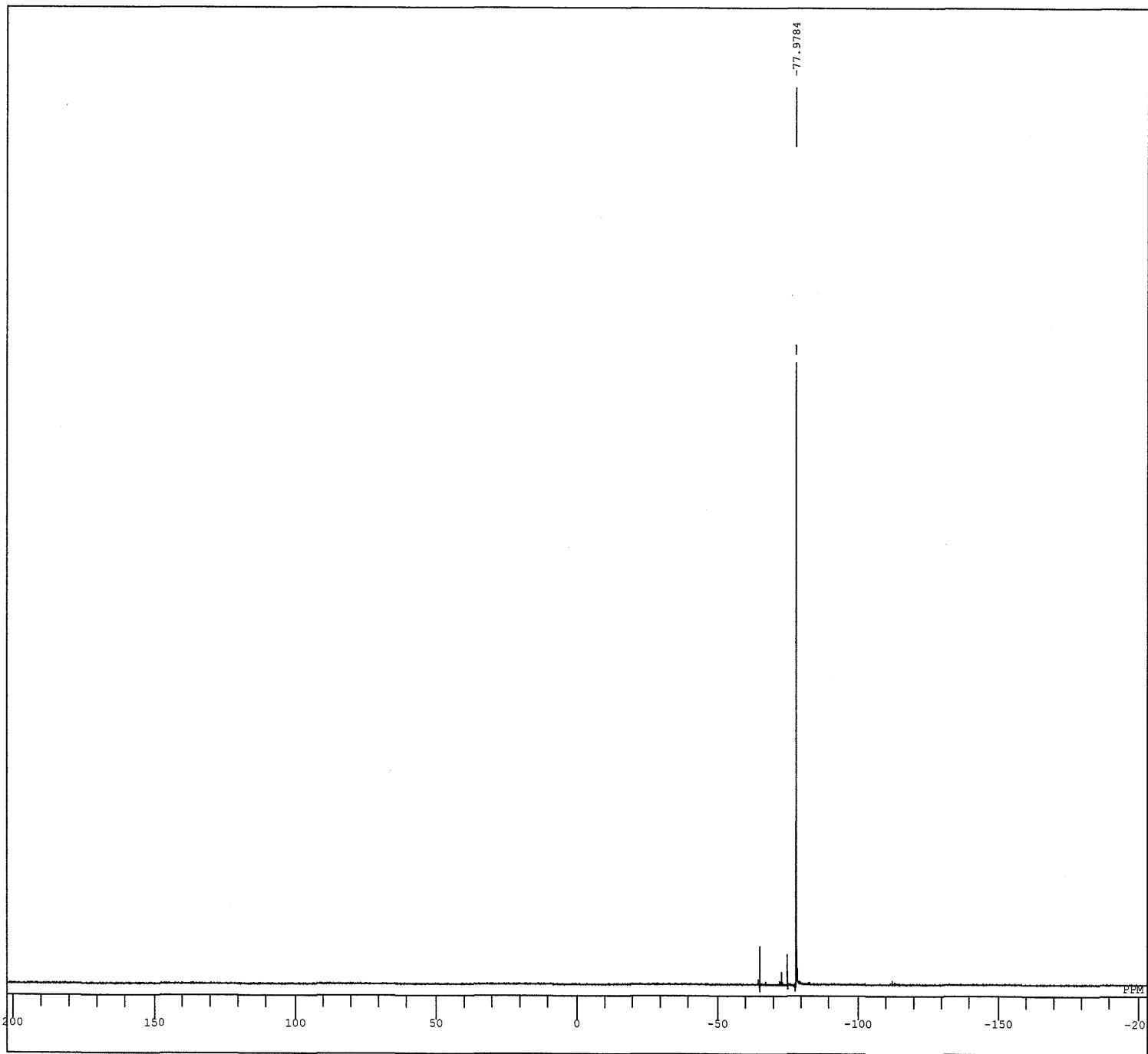
tBu-yne, PMB



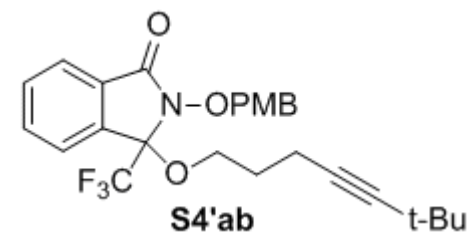
DFILE ozawa05-125_2_13C.jdf
COMNT tBu-yne, PMB
DATIM 2014-08-07 15:22:39
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 200
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 27.2 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



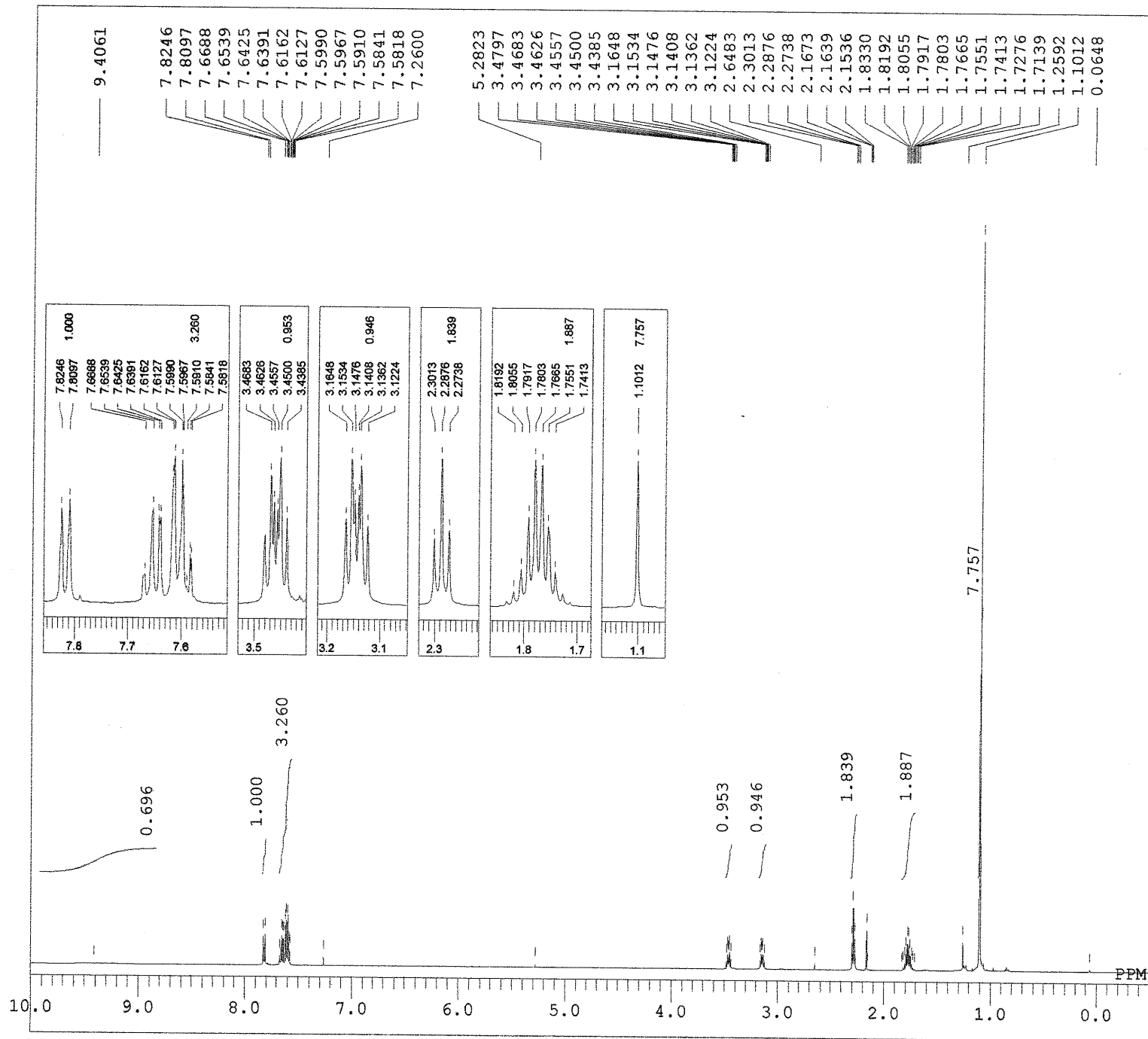
tBu-yne, PMB



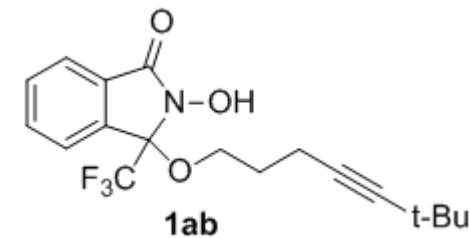
DFILE ozawa05-125_2_19F.jdf
COMNT tBu-yne, PMB
DATIM 07-08-2014 16:15:31
OBNUC 19F
EXMOD proton.jxp
OBFQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.9 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



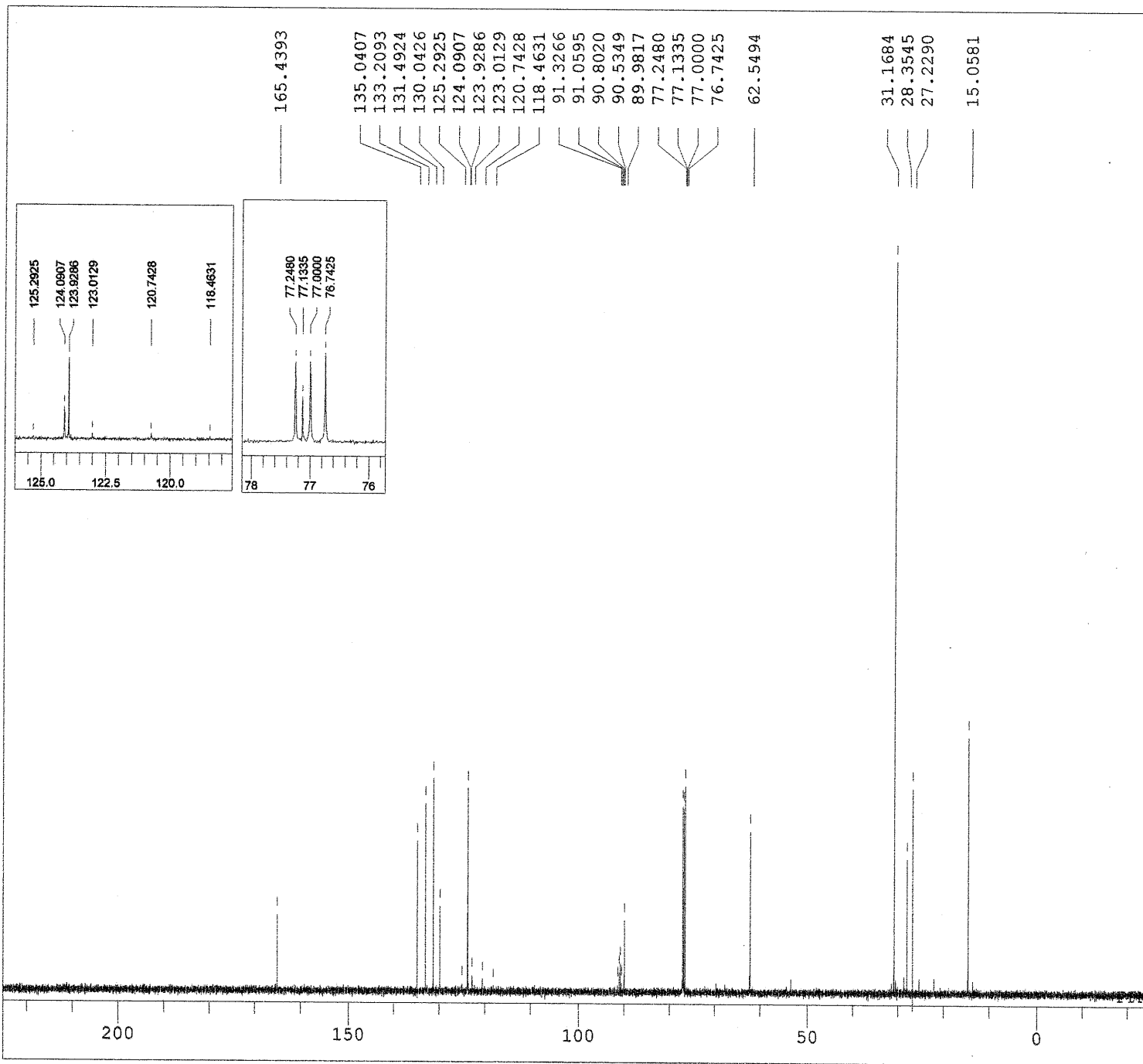
tBu-yne, OH



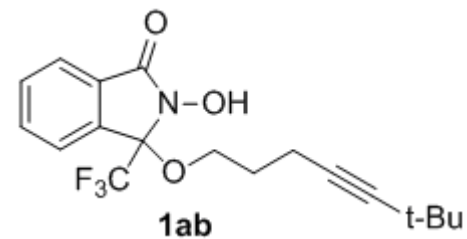
DFILE ozawa05-128_1_1H.jdf
COMNT tBu-yne, OH
DATIM 2014-08-15 18:35:12
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 26.1 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 26



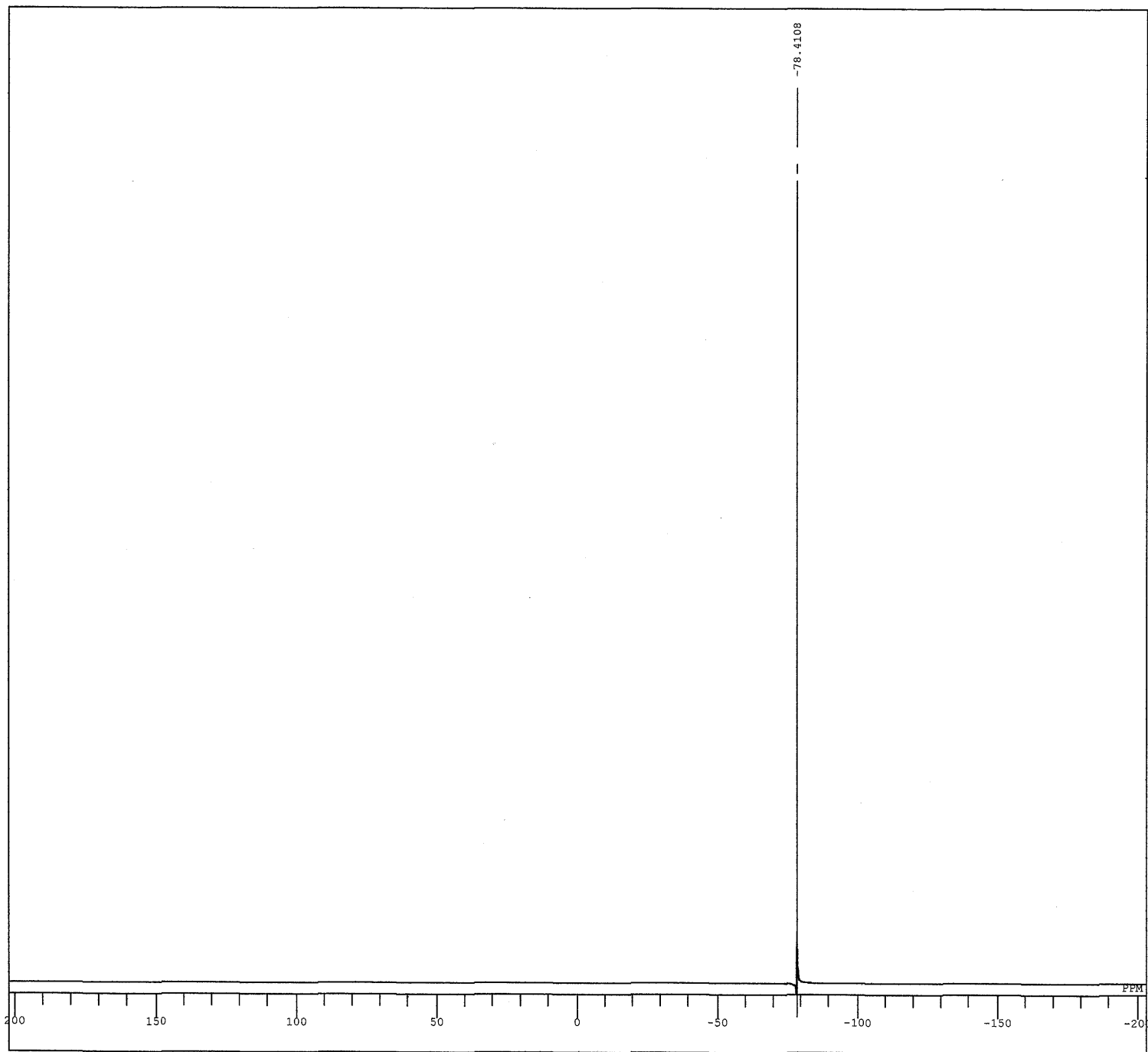
tBu-yne, OH



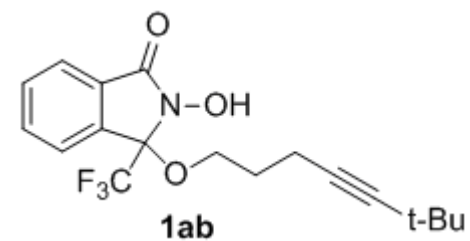
DFILE ozawa05-128_1_13C.jdf
COMNT tBu-yne, OH
DATIM 2014-08-15 18:36:15
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 81
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



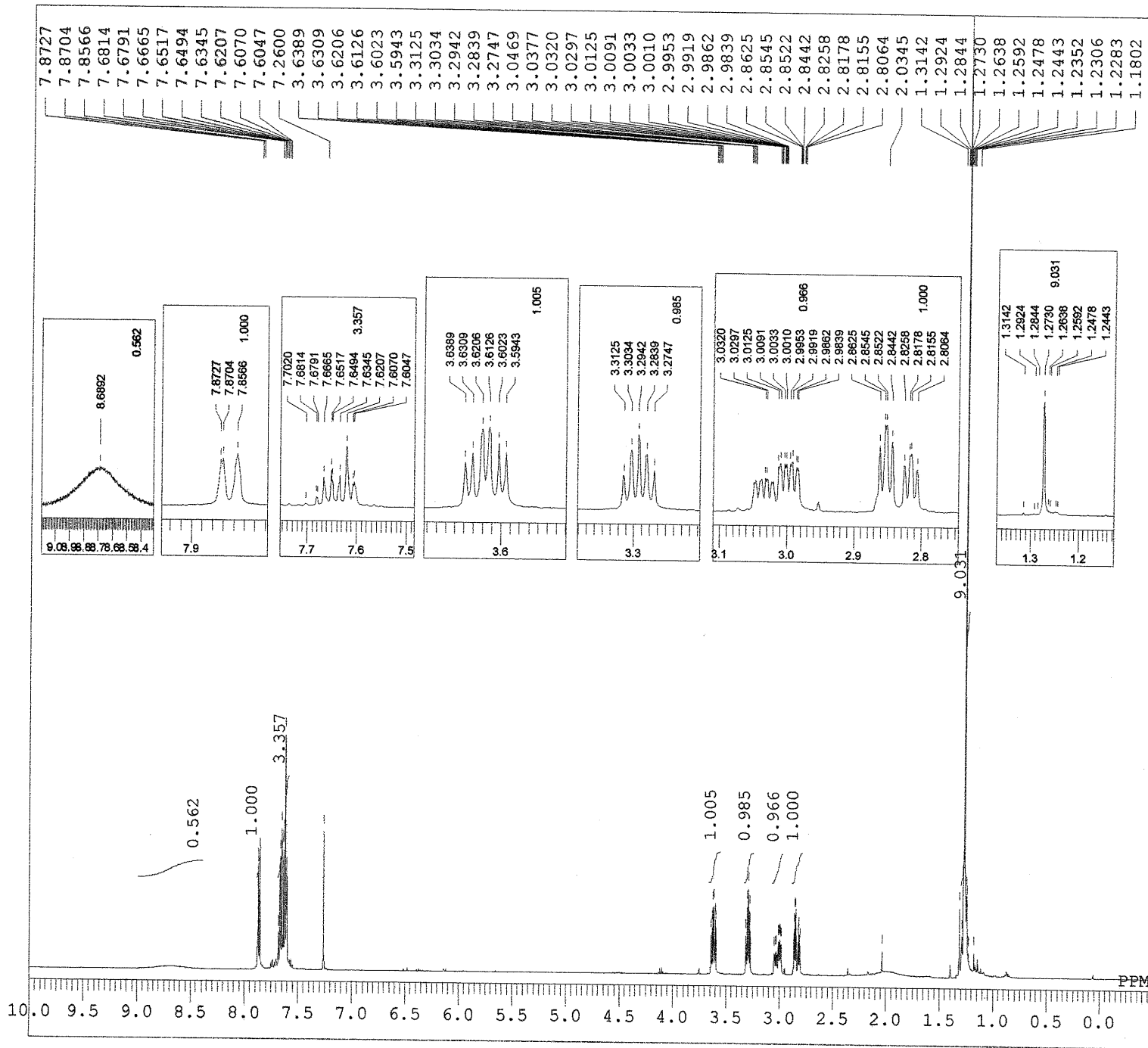
tBu-yne, OH



DFILE ozawa05-128_2_19F.jdf
COMNT tBu-yne, OH
DATIM 15-08-2014 19:53:50
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSFT 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 24.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44

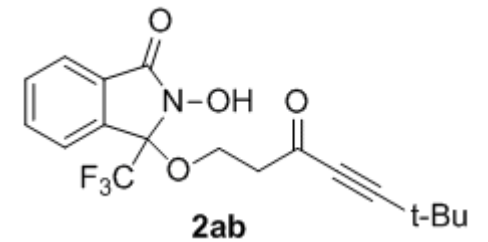


tBu-yne, [0]

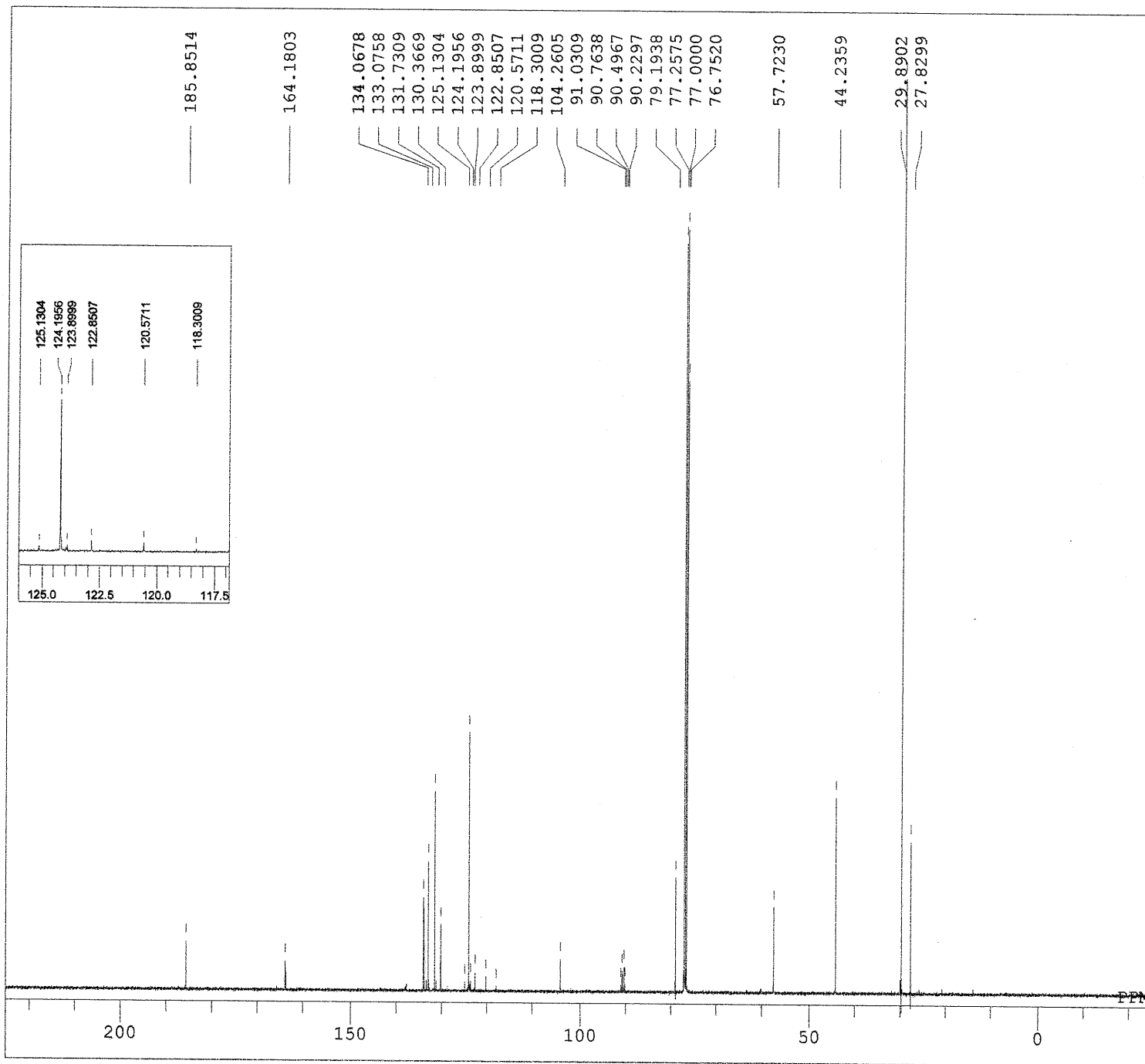


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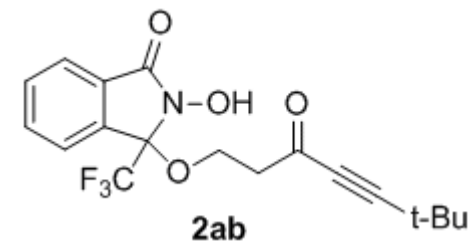
DFILE  ozawa05-134_2_1H.jdf
COMNT  tBu-yne, [0]
DATIM  2014-08-14 22:48:47
OBNUC  1H
EXMOD  proton.jxp
OBFRQ  500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  16384
FREQU  9384.38 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
PW1     5.55 usec
IRNUC  1H
CTEMP  25.7 c
SLVNT  CDCL3
EXREF  7.26 ppm
BF     0.12 Hz
RGAIN  36
    
```



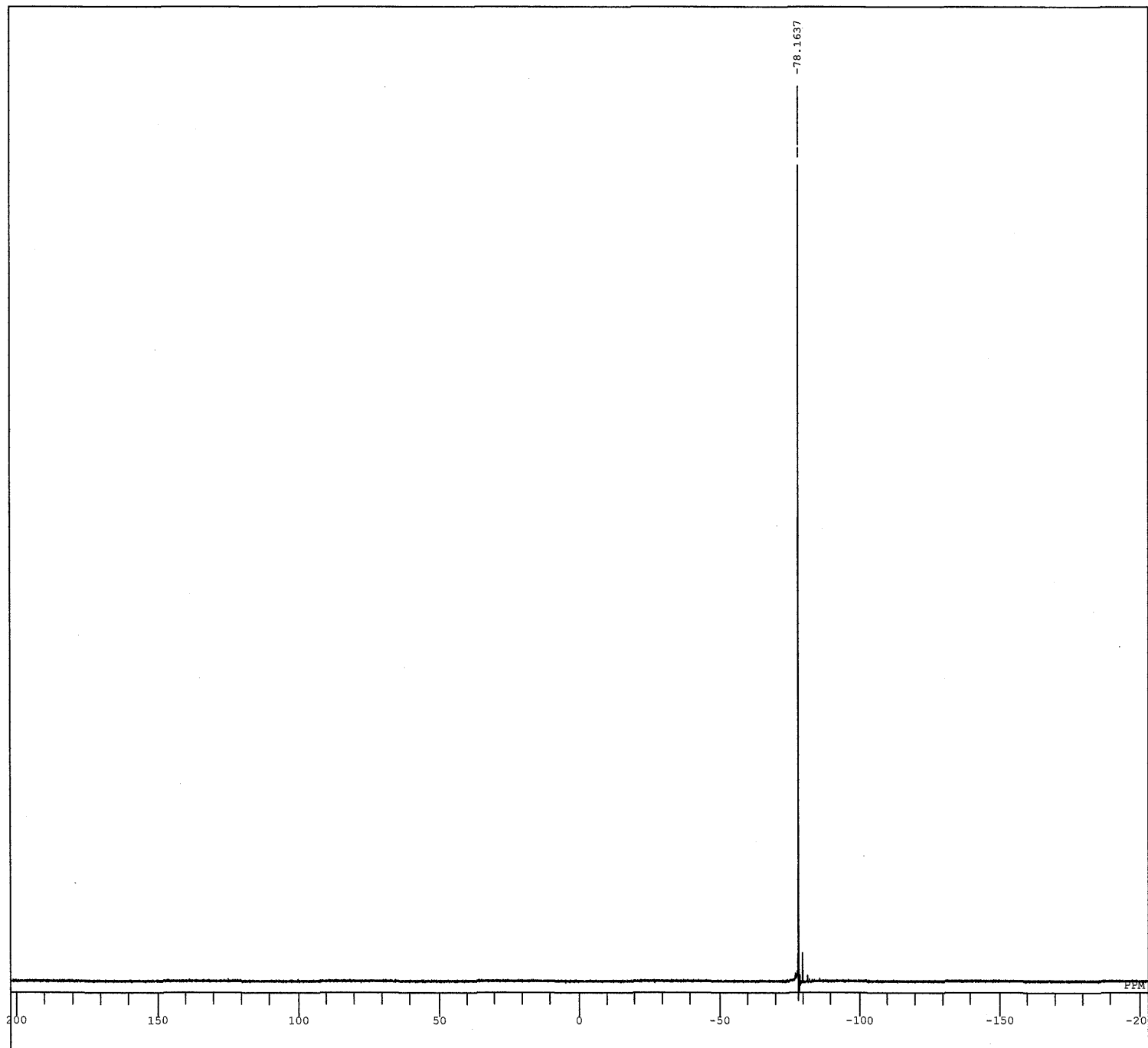
tBu-yne, [0]



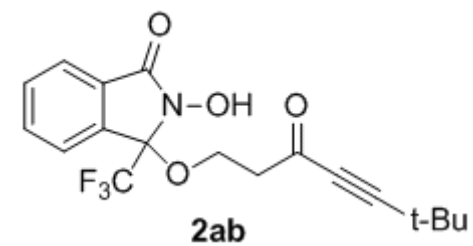
DFILE ozawa05-134_2_13C.jdf
COMNT tBu-yne, [0]
DATIM 2014-08-14 22:49:50
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 9400
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.0 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

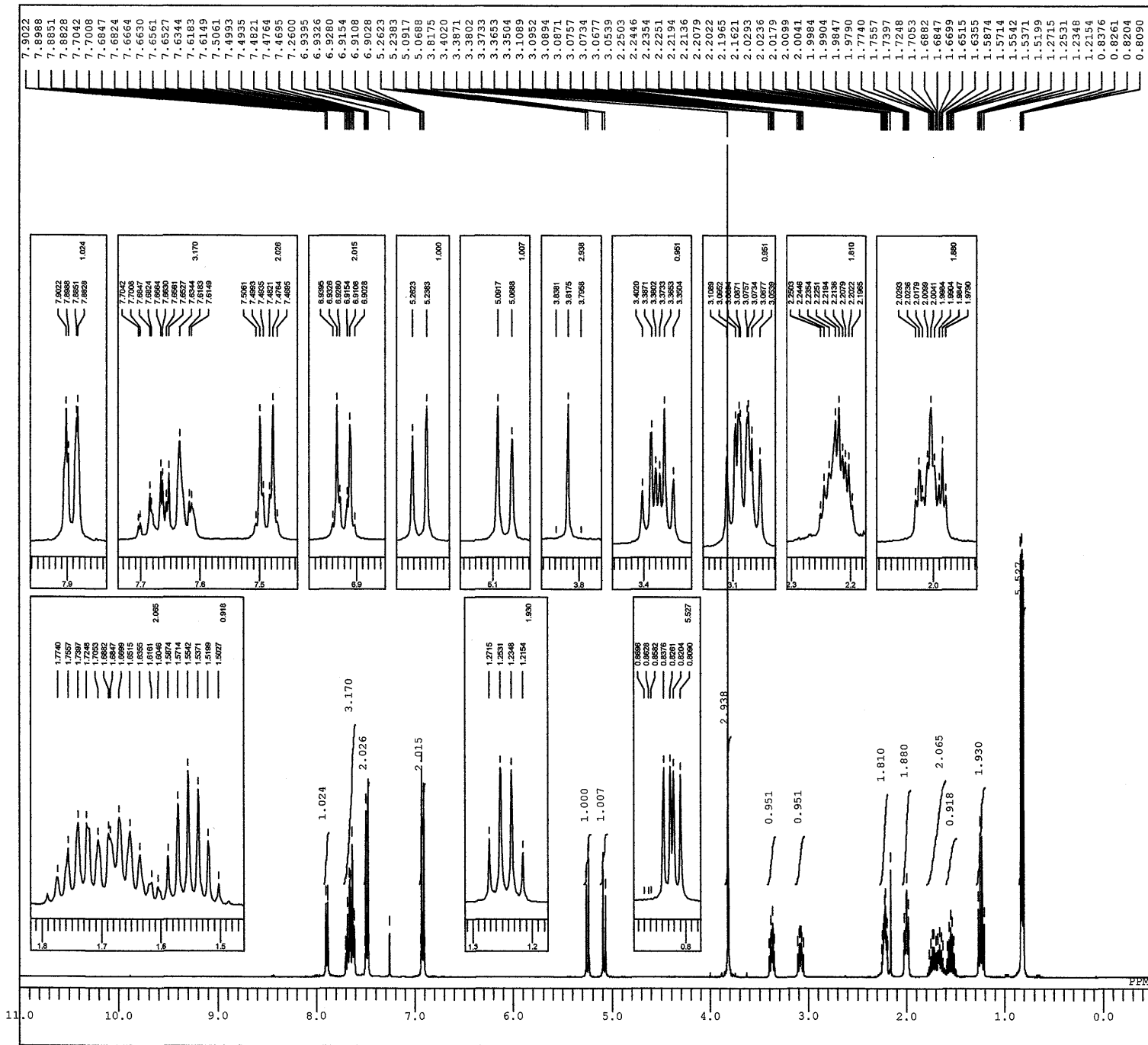


tBu-yne, [0]

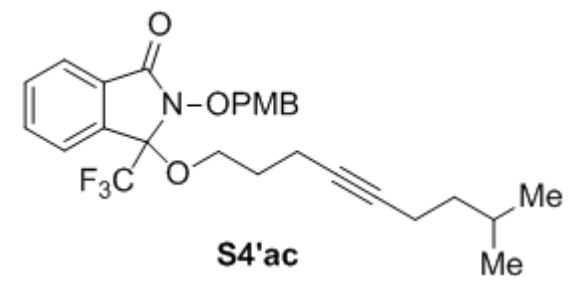


DFILE ozawa05-134_2_19F.jdf
COMNT tBu-yne, [0]
DATIM 15-08-2014 13:49:26
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWI 3.90 usec
IRNUC 19F
CTEMP 24.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48

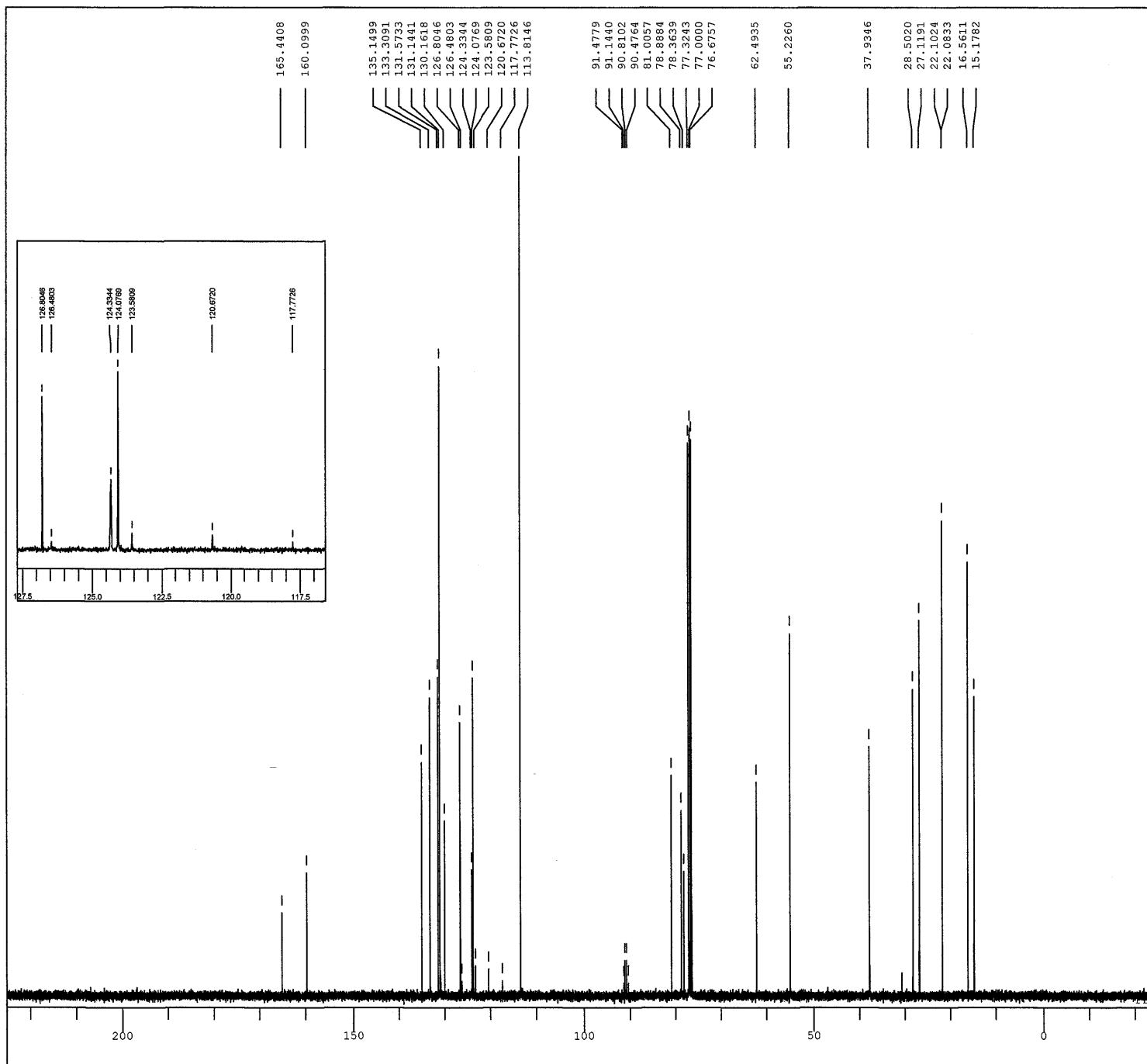




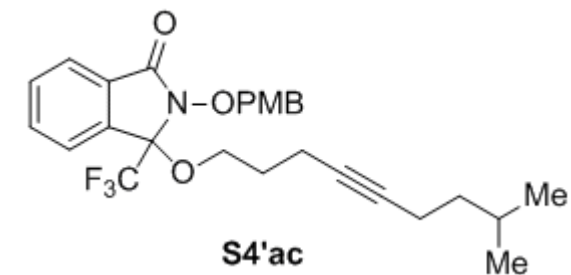
DFILE ozawa07-028 1H.jdf
 COMNT yne-tert, PMB
 DATIM 05-03-2015 13:49:18
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSEF 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 FW1 4.99 usec
 IRNUC 1H
 CTEMP 23.7 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 28



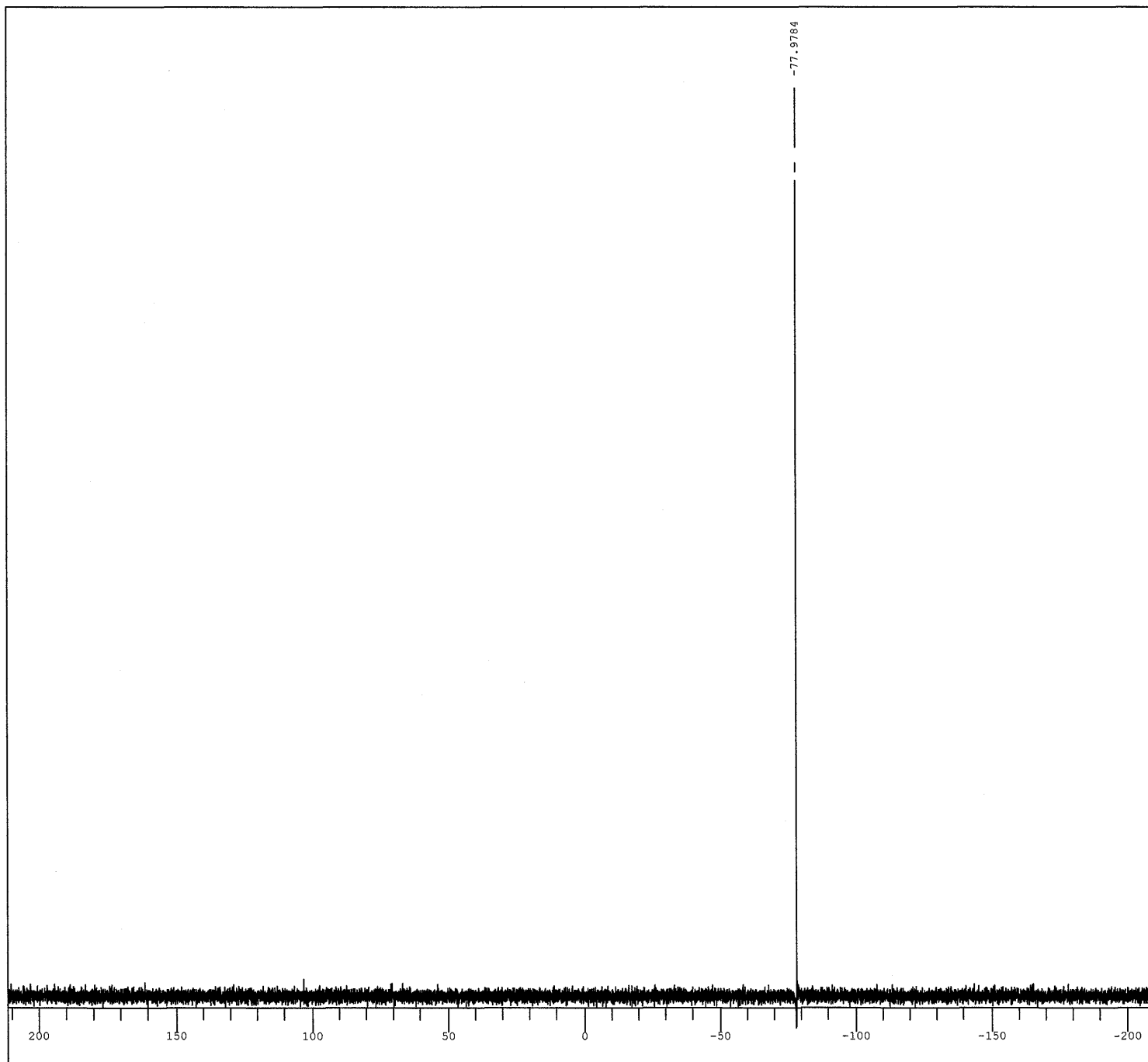
yne-tert, PMB



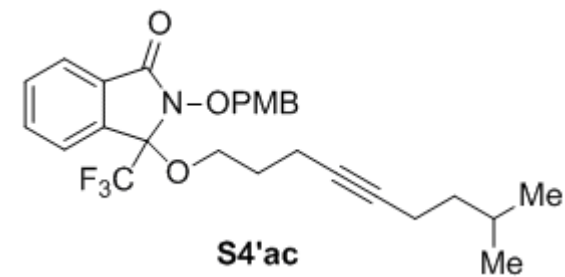
DFILE ozawa07-028 13C.jdf
COMNT yne-tert, PMB
DATIM 05-03-2015 13:50:22
OBNUC 13C
EXMOD carbon.jxp
OBFRO 98.52 MHz
OBSFE 4.64 KHz
OBFIN 8.74 Hz
POINT 32767
FREQU 30788.18 Hz
SCANS 904
ACQTM 1.0643 sec
FD 2.0000 sec
PW1 3.16 usec
IRNUC 1H
CTEMP 23.8 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



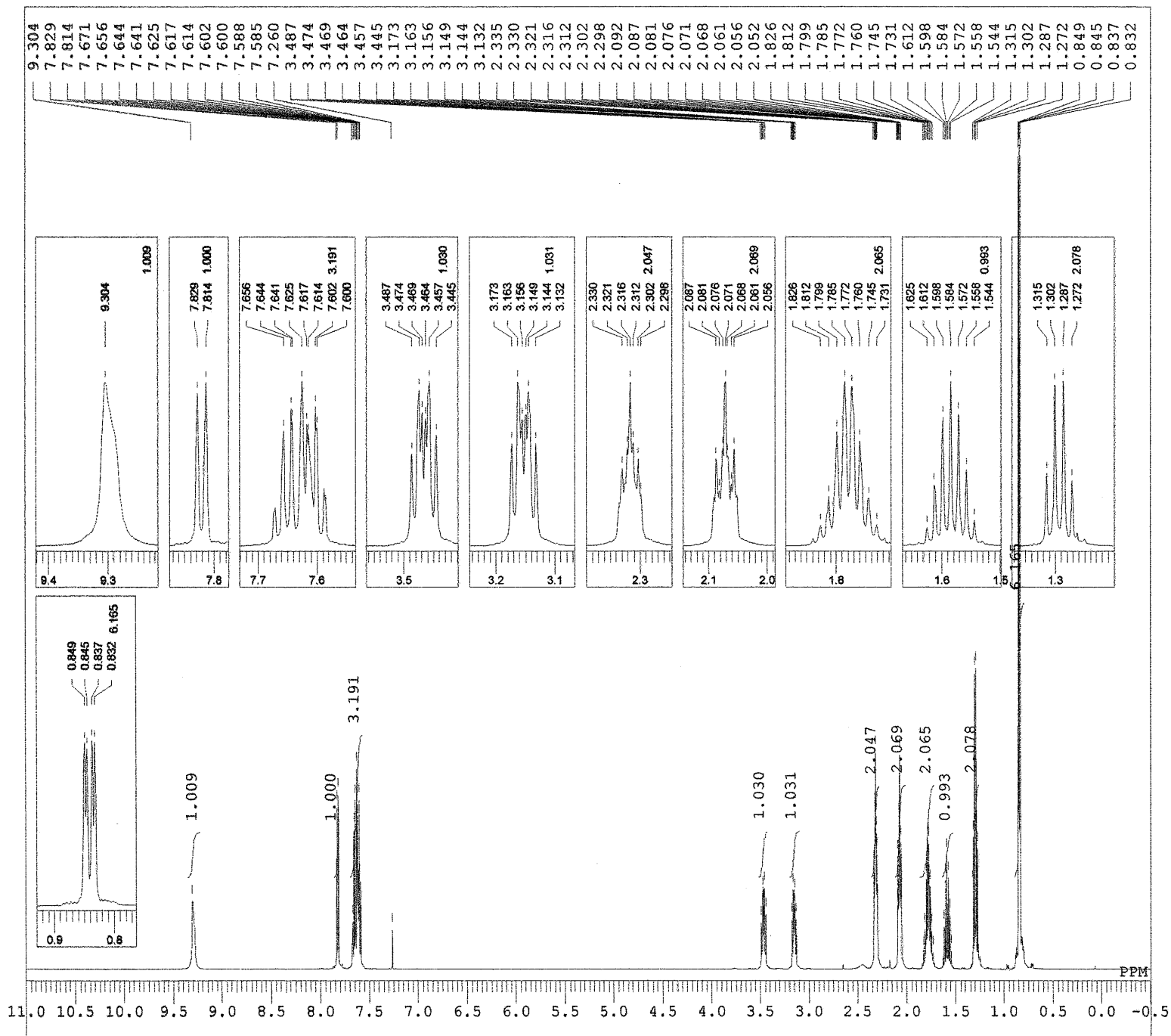
yne-tert, PMB



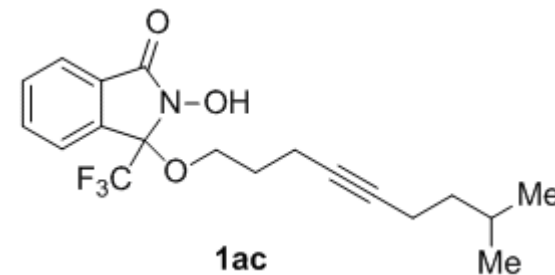
DFILE ozawa07-028 19F.jdf
COMNT yne-tert, PMB
DATIM 21-03-2015 12:16:18
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.0 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



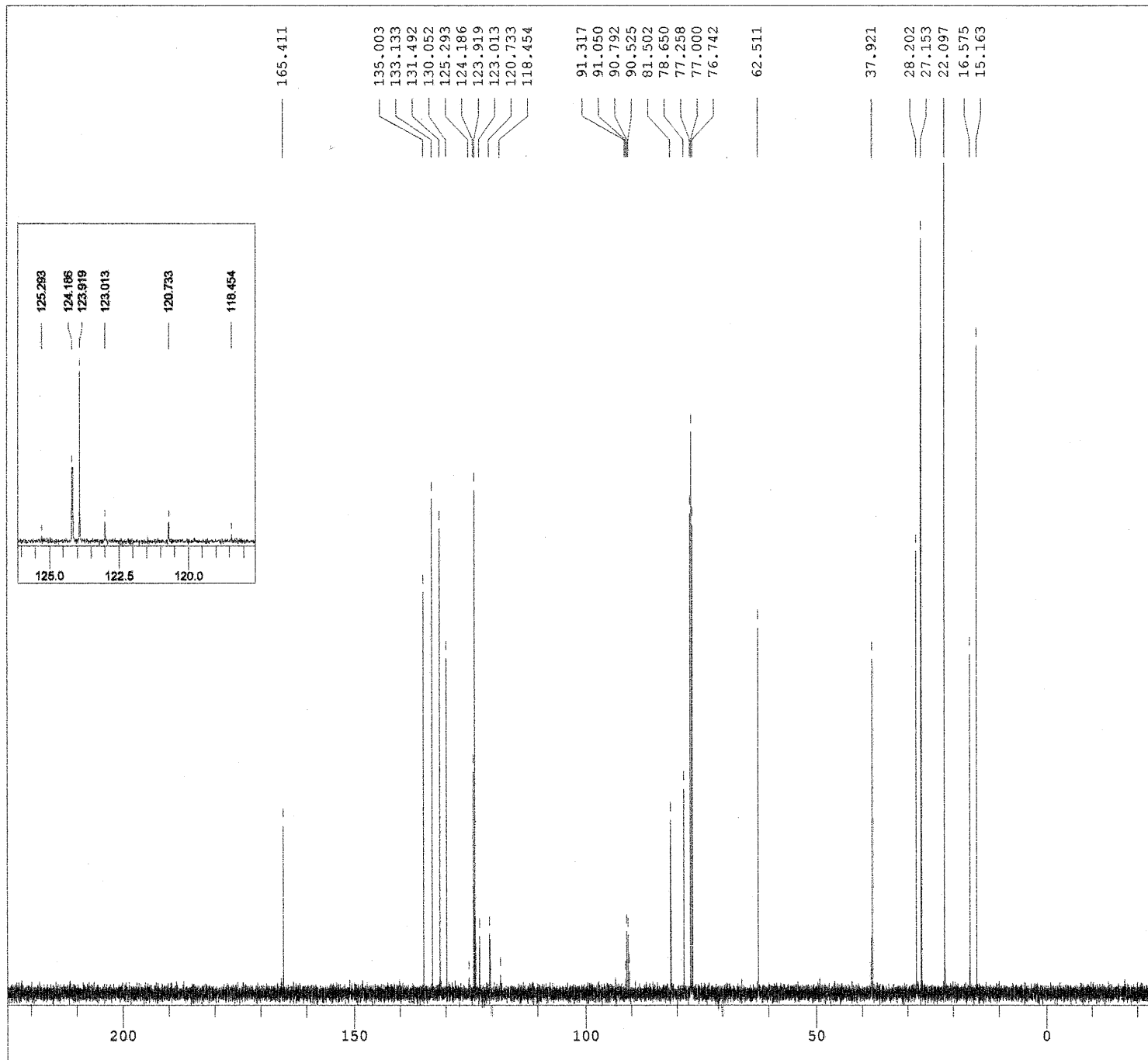
yne-tert, OH



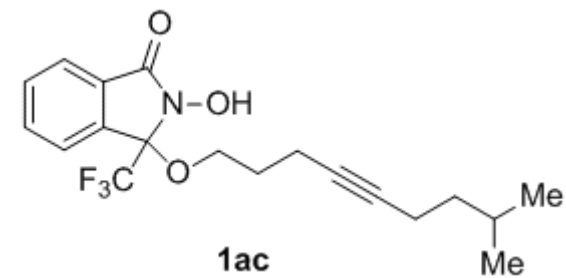
DFILE ozawa07-025_1H.jdf
COMNT yne-tert, OH
DATIM 2015-03-07 12:46:00
OBNUC 1H
EXMOD proton.jxp
OBFREQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 8
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.2 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 26



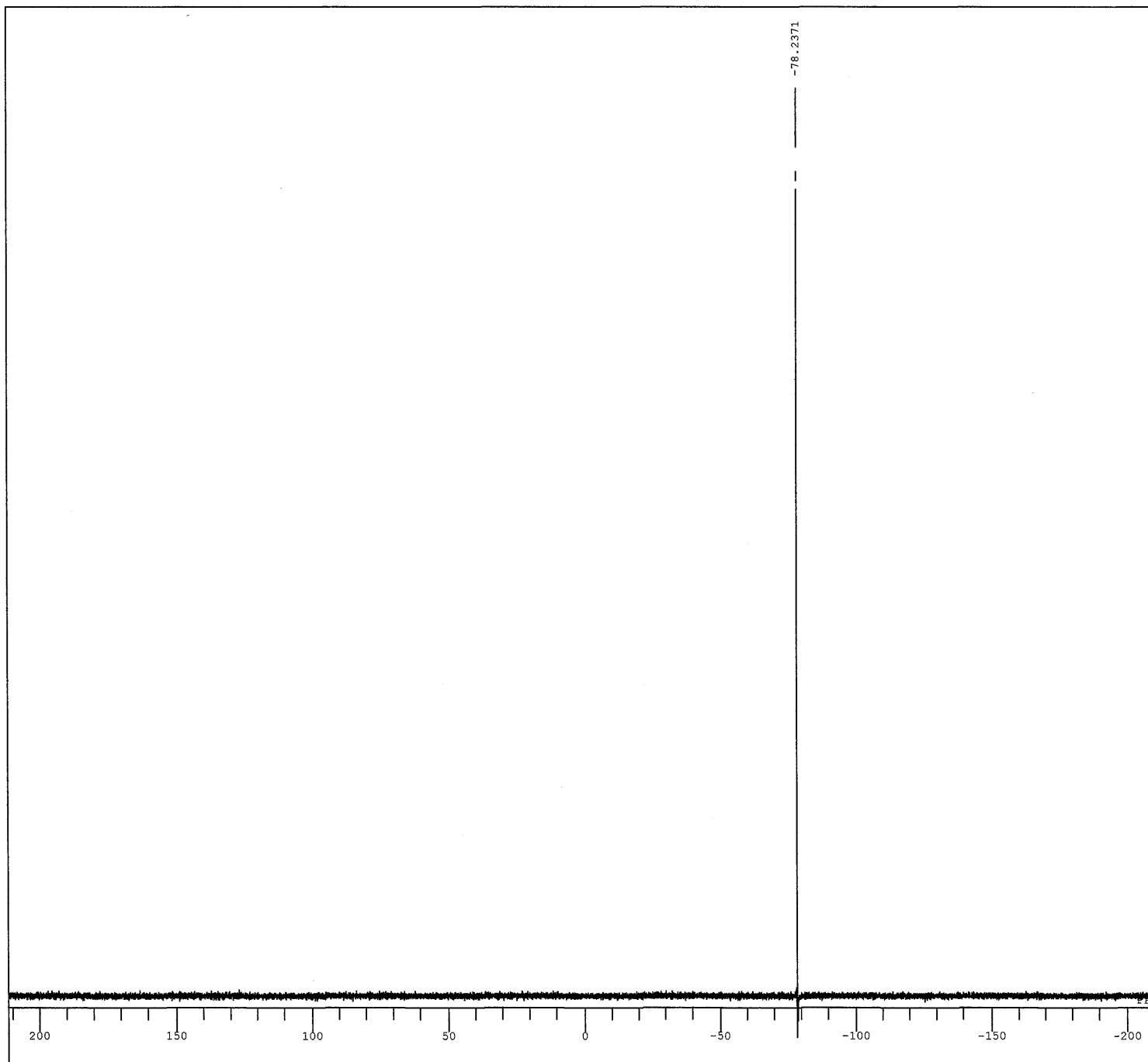
yne-tert, OH



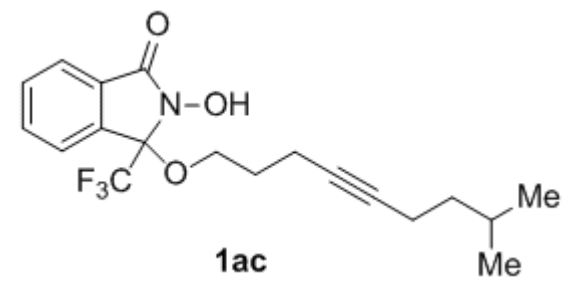
DFILE ozawa07-025_13C.jdf
COMNT yne-tert, OH
DATIM 2015-03-07 12:47:30
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 180
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 25.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

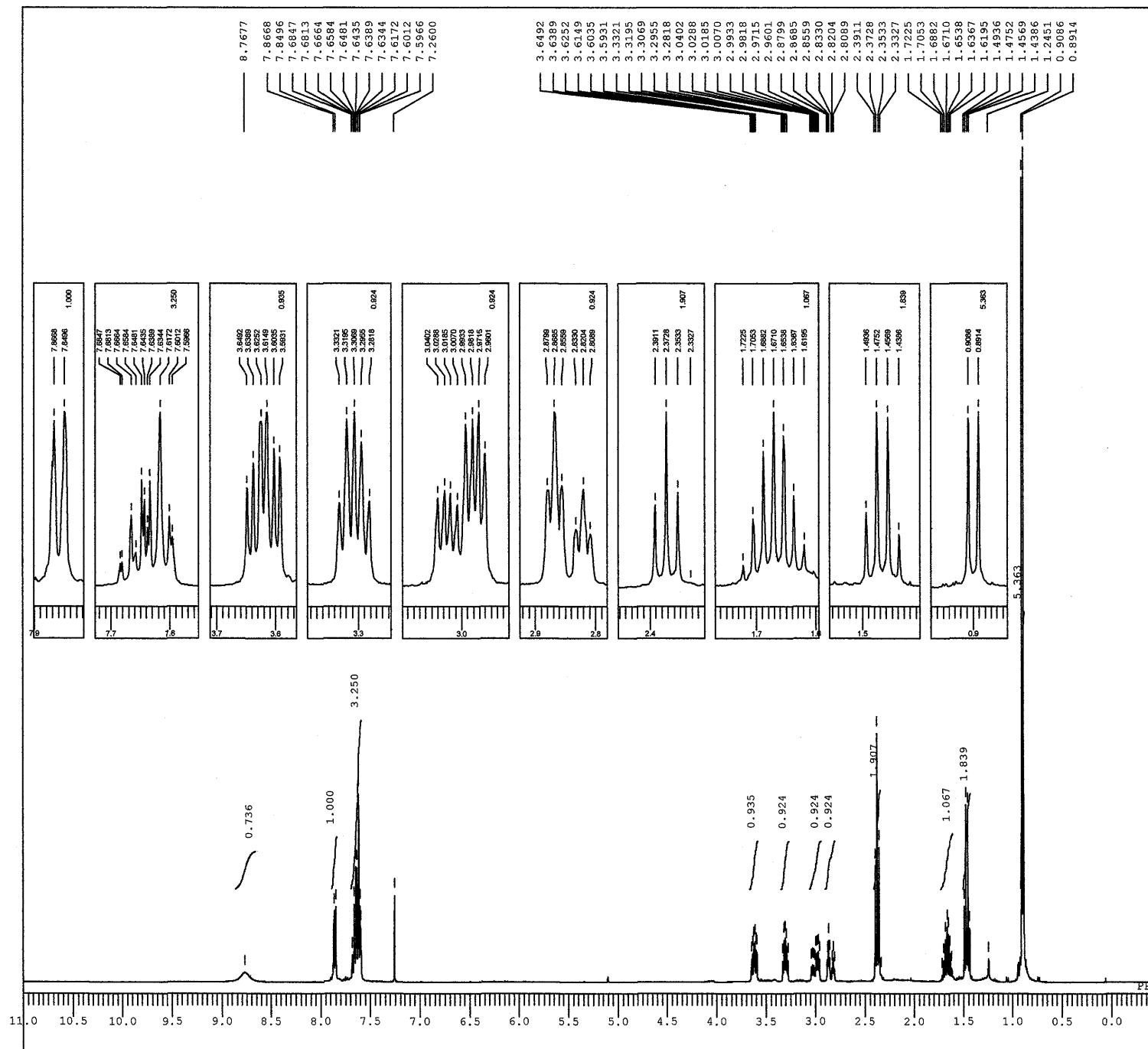


yne-tert, OH

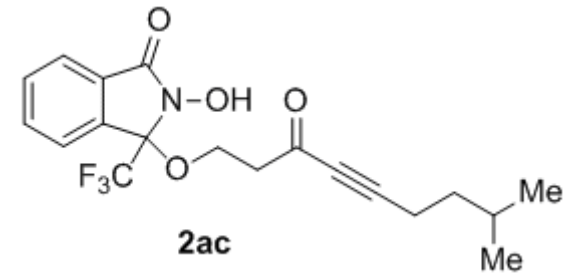


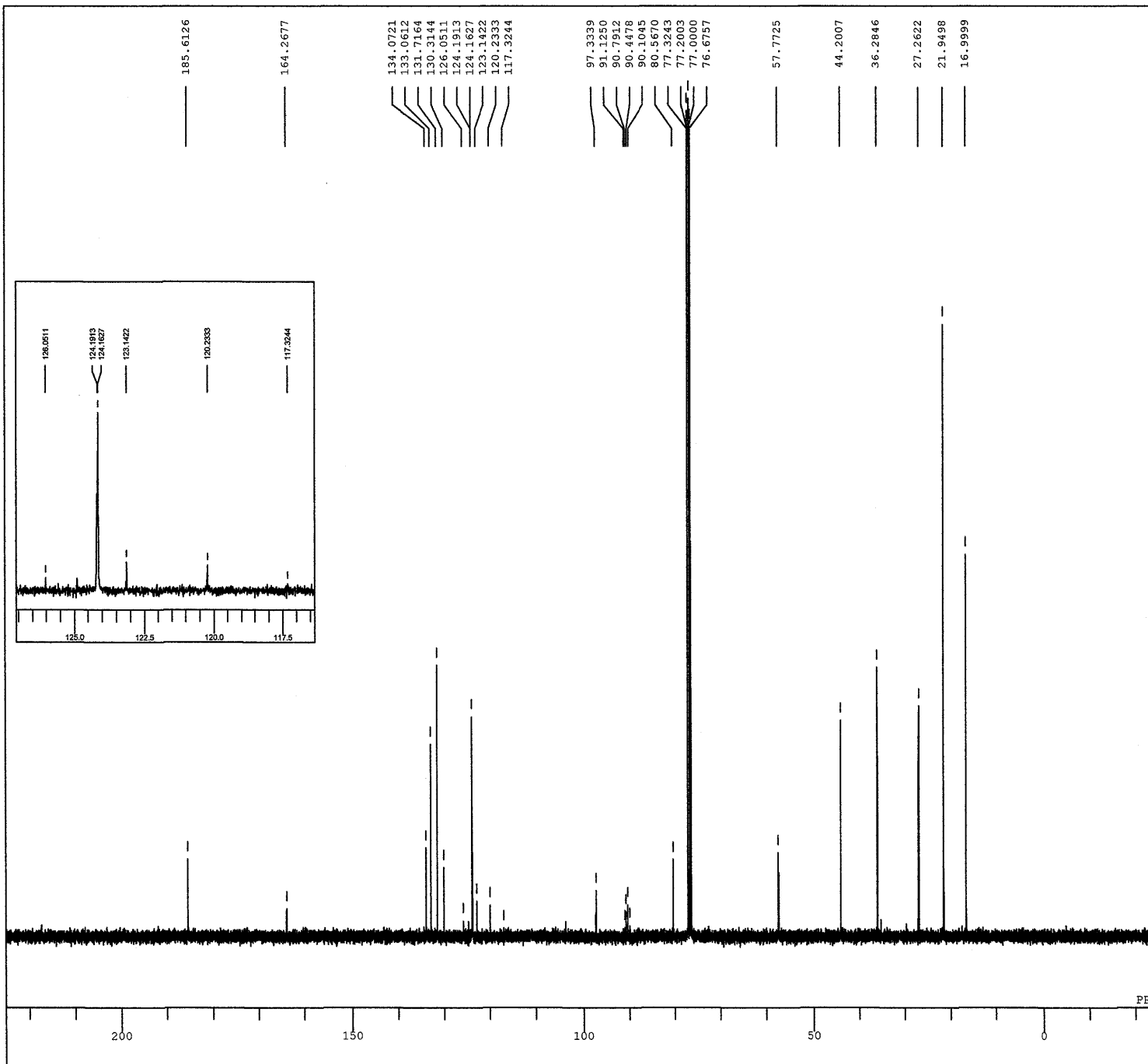
DFILE ozawa07-025 19F.jdf
COMNT yne-tert, OH
DATIM 21-03-2015 11:41:16
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSETE 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.1 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50





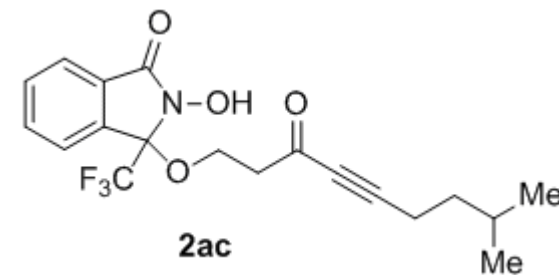
DFILE ozawa07-004 1H.jdf
 COMNT yne-tert, [0]
 DATIM 21-03-2015 07:31:59
 OBNUC 1H
 EXMOD proton.jxp
 OBFREQ 391.78 MHz
 OBSSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 4.99 usec
 IRNUC 1H
 CTEMP 25.0 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 32



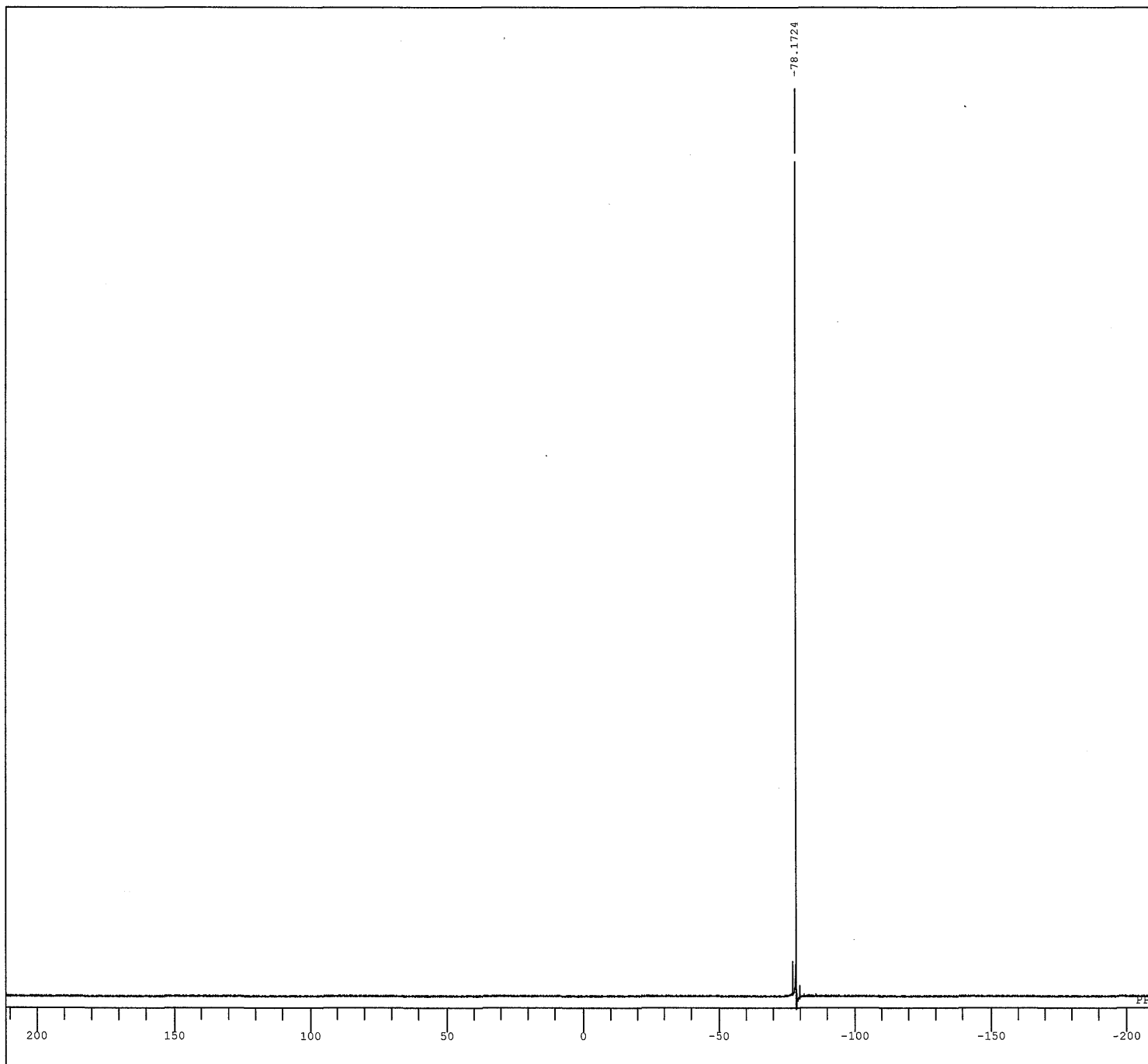


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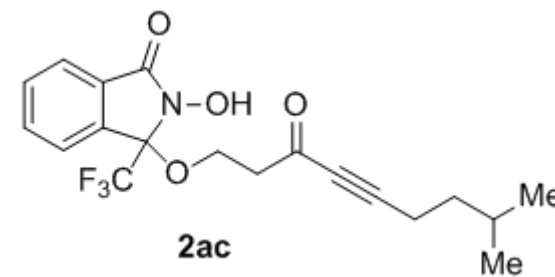
DFILE ozawa07-004_13c.jdf
COMNT yne-tert, [0]
DATIM 21-03-2015 07:33:01
OBNUC 13C
EXMOD carbon.jxp
OBFREQ 98.52 MHz
OBSSET 4.64 KHz
OBSFIN 8.74 Hz
POINT 32767
FREQU 30788.18 Hz
SCANS 916
ACQTM 1.0643 sec
PD 2.0000 sec
PW1 3.16 usec
IRNUC 1H
CTEMP 25.3 c
SLVNT CDCL3
EKREF 77.00 ppm
BF 0.12 Hz
RGAIN 60
    
```



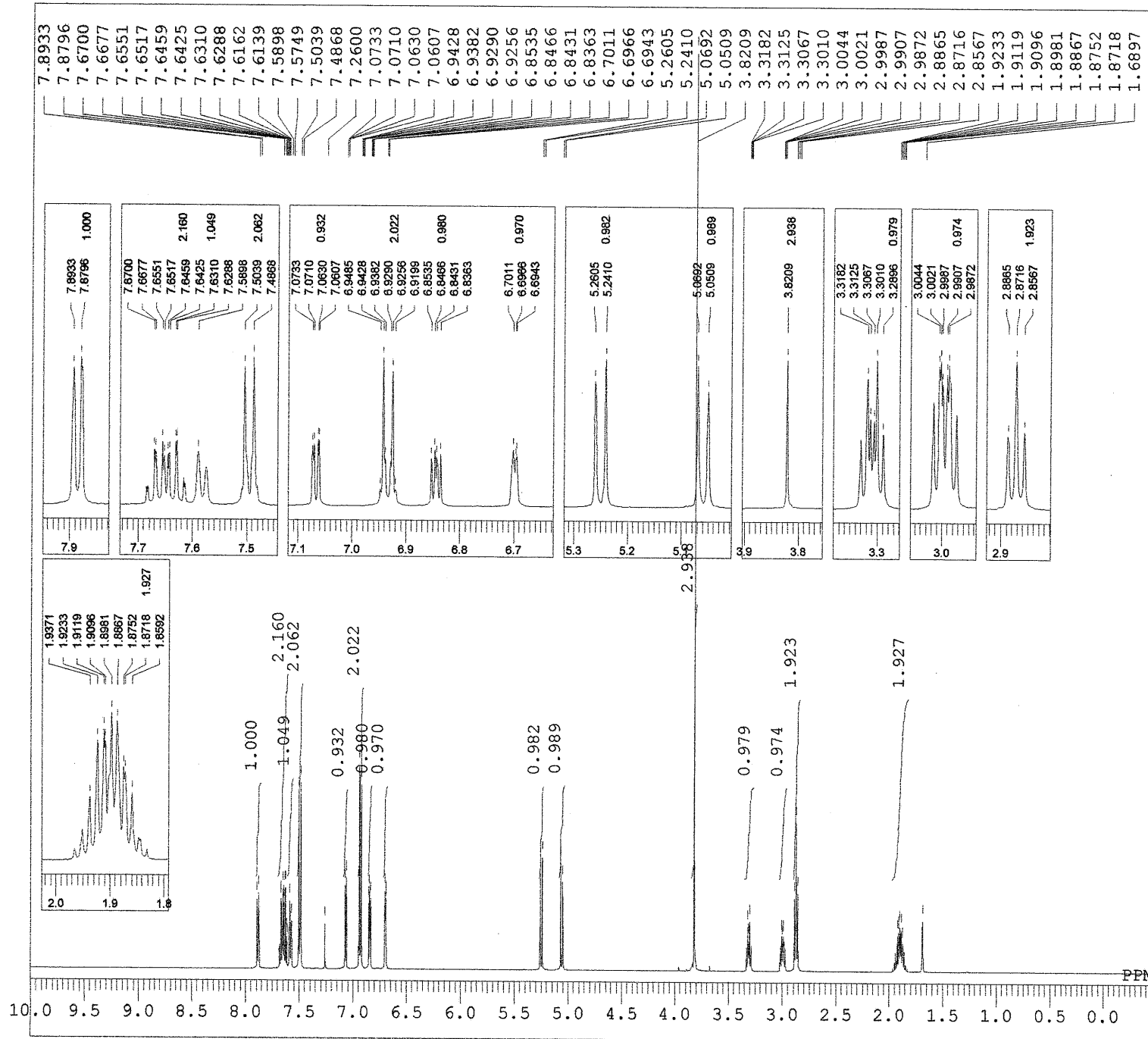
yne-tert, [0]



DFILE ozawa07-004_19F.jdf
COMNT yne-tert, [0]
DATIM 21-03-2015 08:21:33
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 195312.50 Hz
SCANS 4
ACQTM 0.0839 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 25.2 c
SIVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

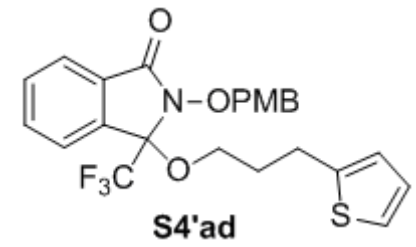


thiophene, PMB

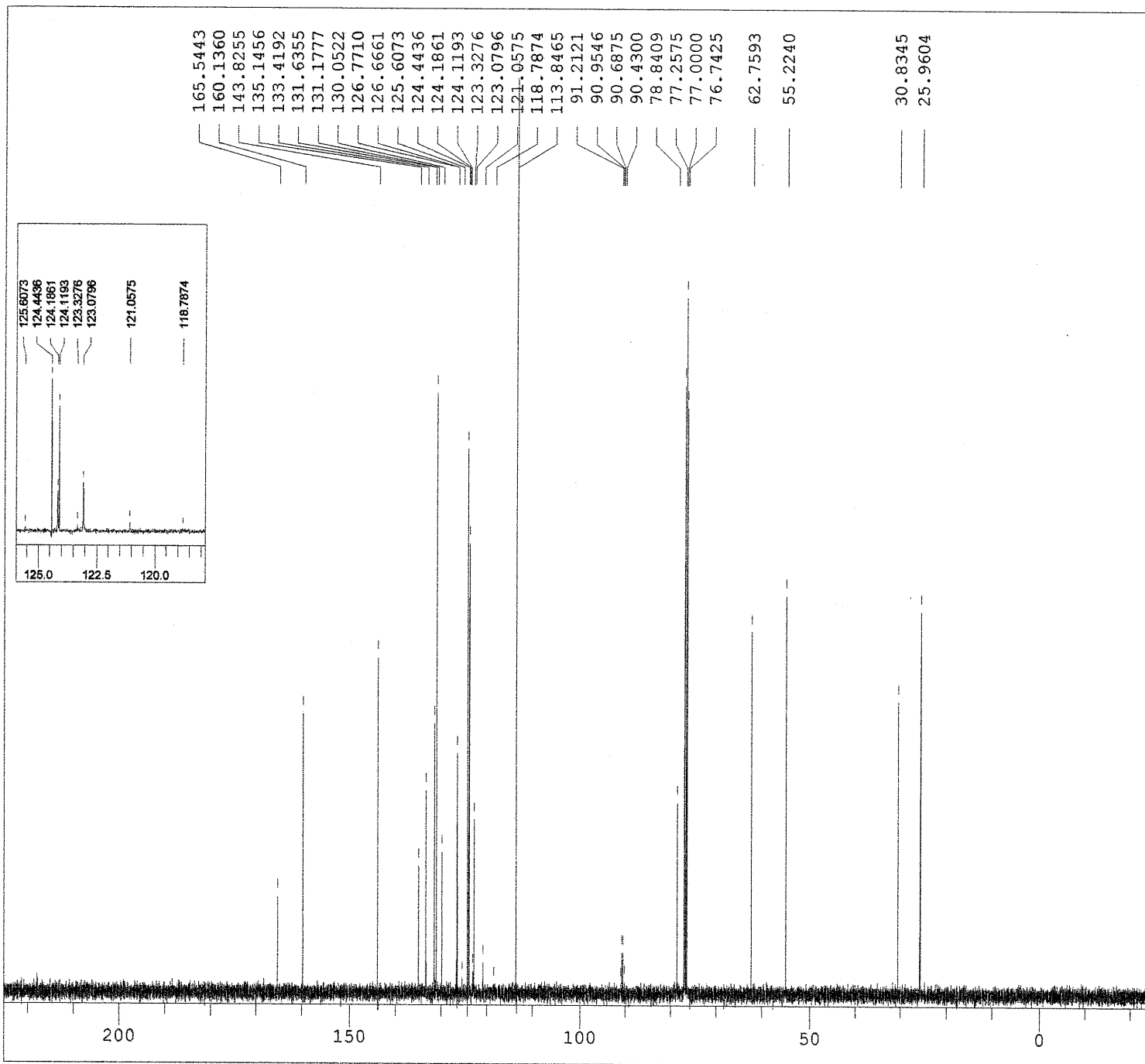


```

DFILE  ozawa05-046_1H.als
COMNT  thiophene, PMB
DATIM  2014-08-15 12:56:25
OBNUC  1H
EXMOD  proton.jxp
OBFRQ  500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  13107
FREQU  7507.51 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
PW1     5.55 usec
IRNUC  1H
CTEMP  26.2 c
SLVNT  CDCL3
EXREF  7.26 ppm
BF      0.12 Hz
RGAIN  30
    
```



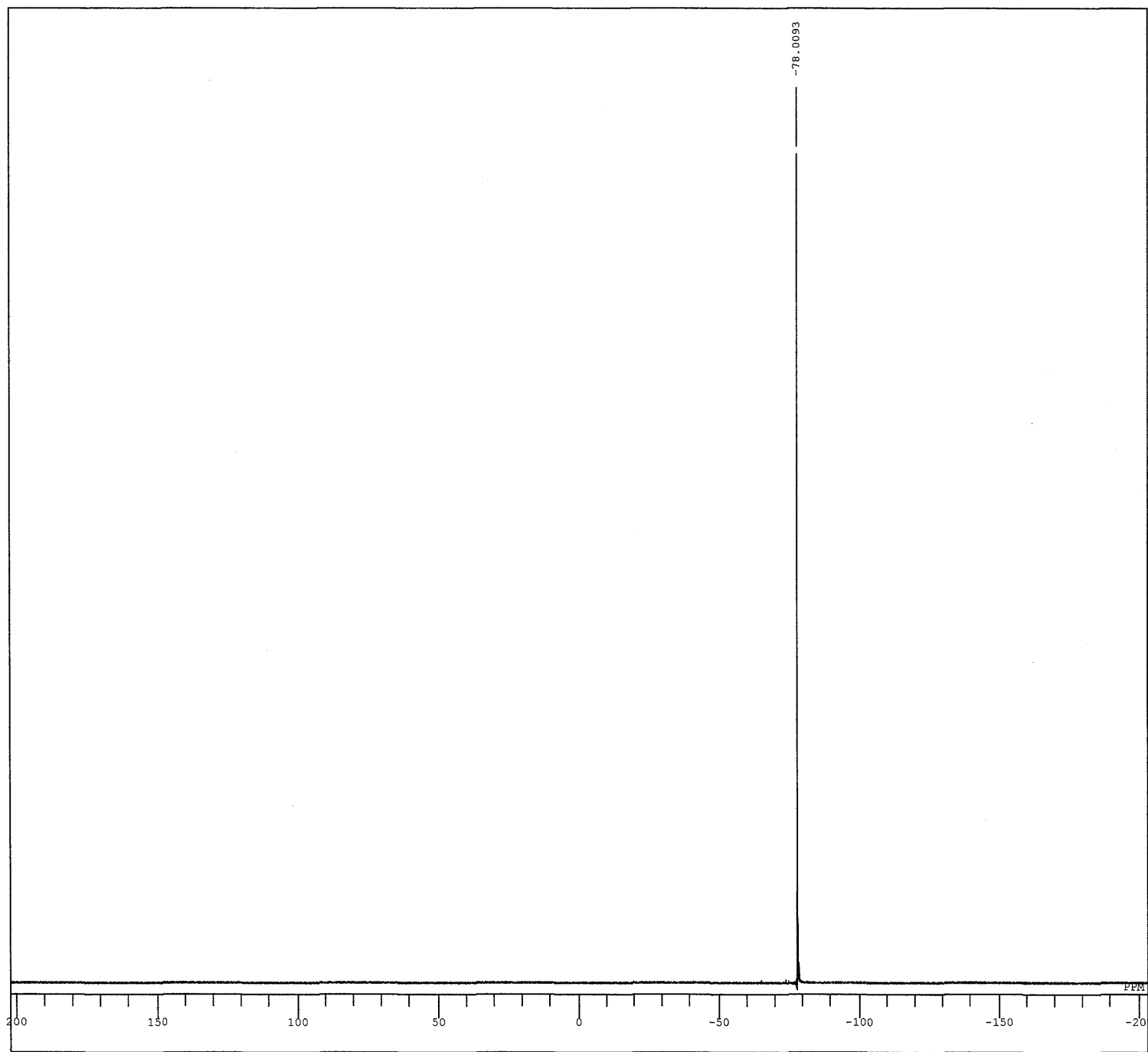
thiophene, PMB



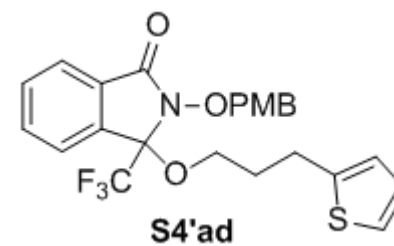
DFILE ozawa05-046_13C.jdf
COMNT thiophene, PMB
DATIM 2014-08-15 12:57:28
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 180
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.4 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



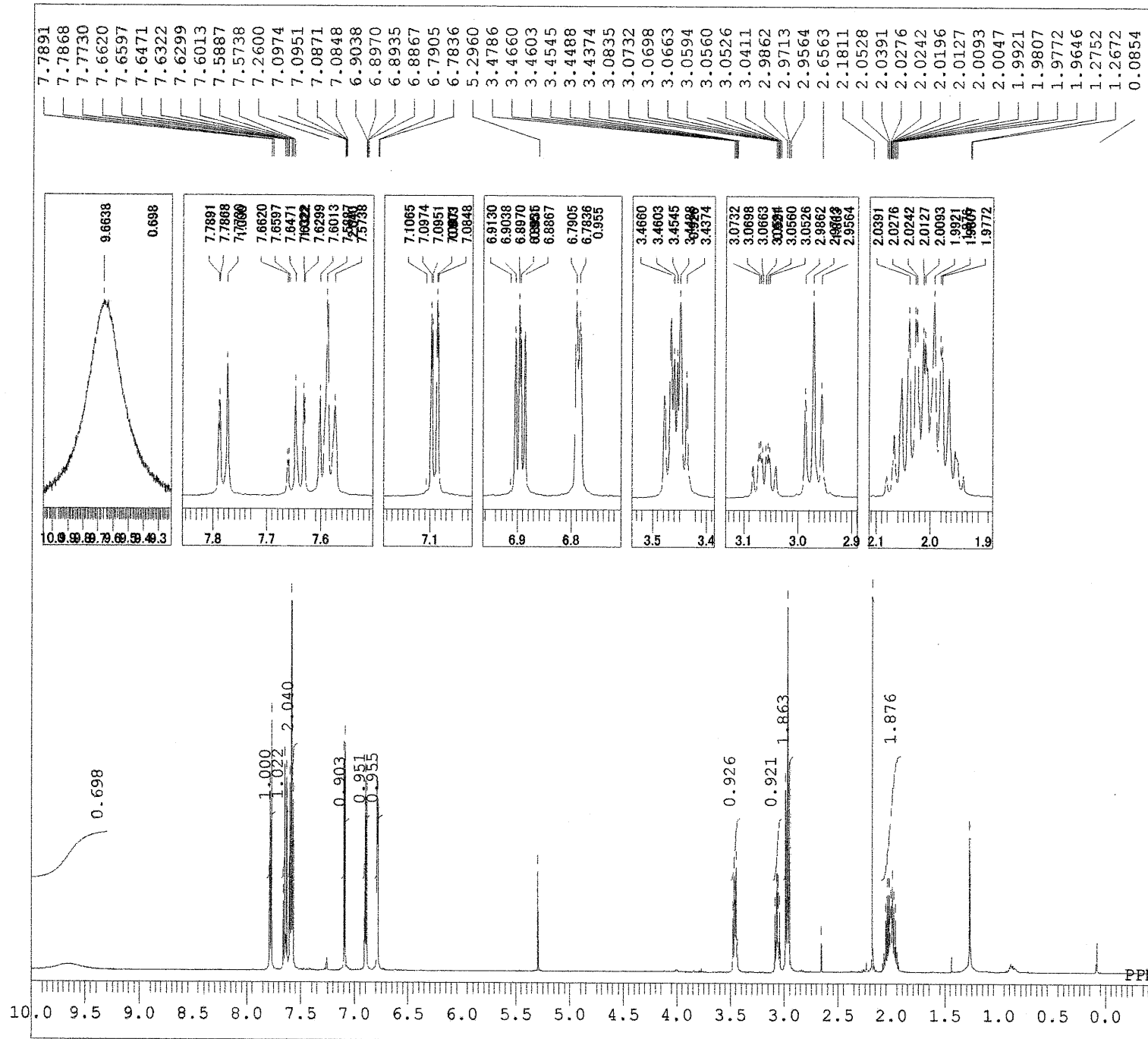
thiophene, PMB



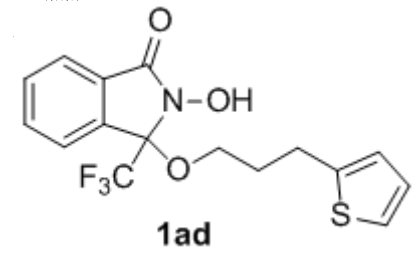
DFILE ozawa05-046_19F.jdf
COMNT thiophene, PMB
DATIM 15-08-2014 13:54:52
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
ED 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 24.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



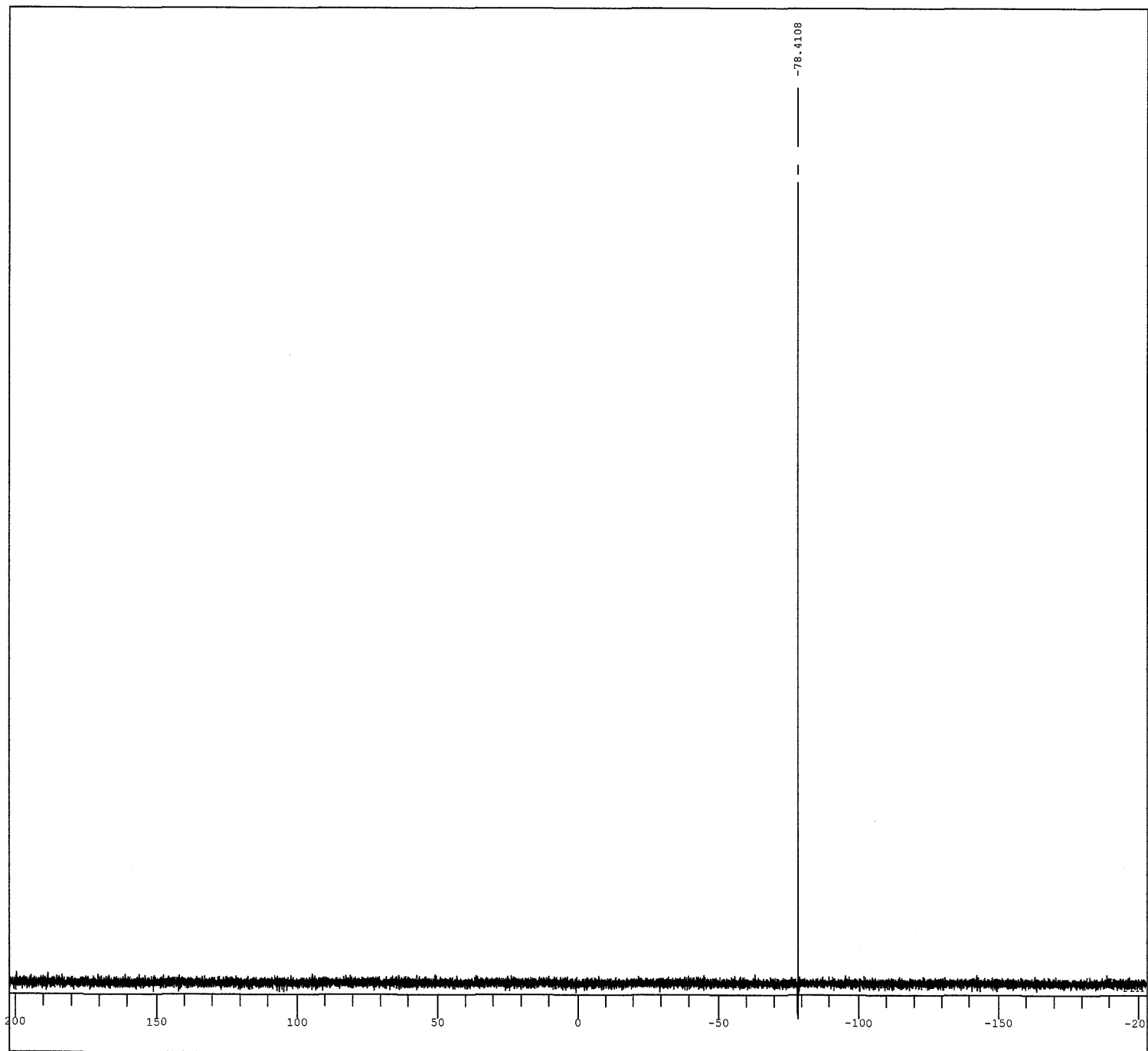
thiophene, OH



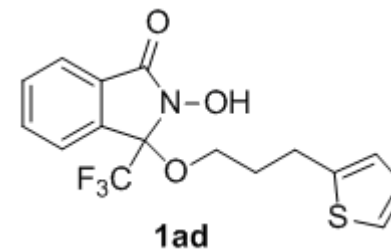
DFILE ozawa05-076_1H.jdf
COMNT thiophene, OH
DATIM 2014-07-03 17:14:10
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.8 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 34



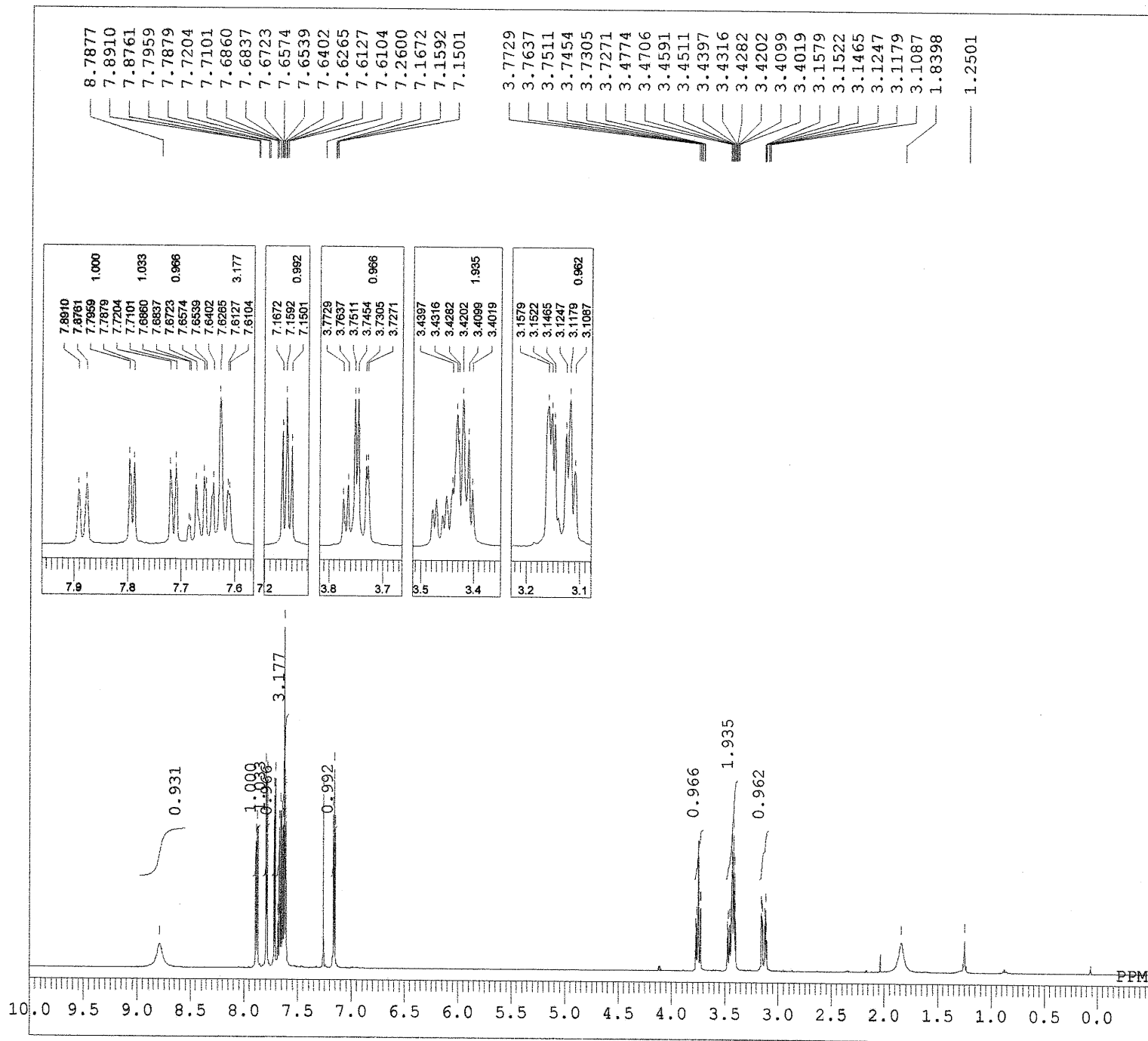
thiophene, OH



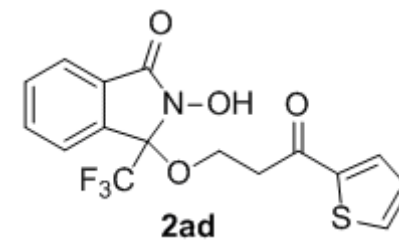
DFILE ozawa05-076 19F.jdf
COMNT thiophene, OH
DATIM 15-08-2014 20:00:49
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSFT 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 24.5 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 48



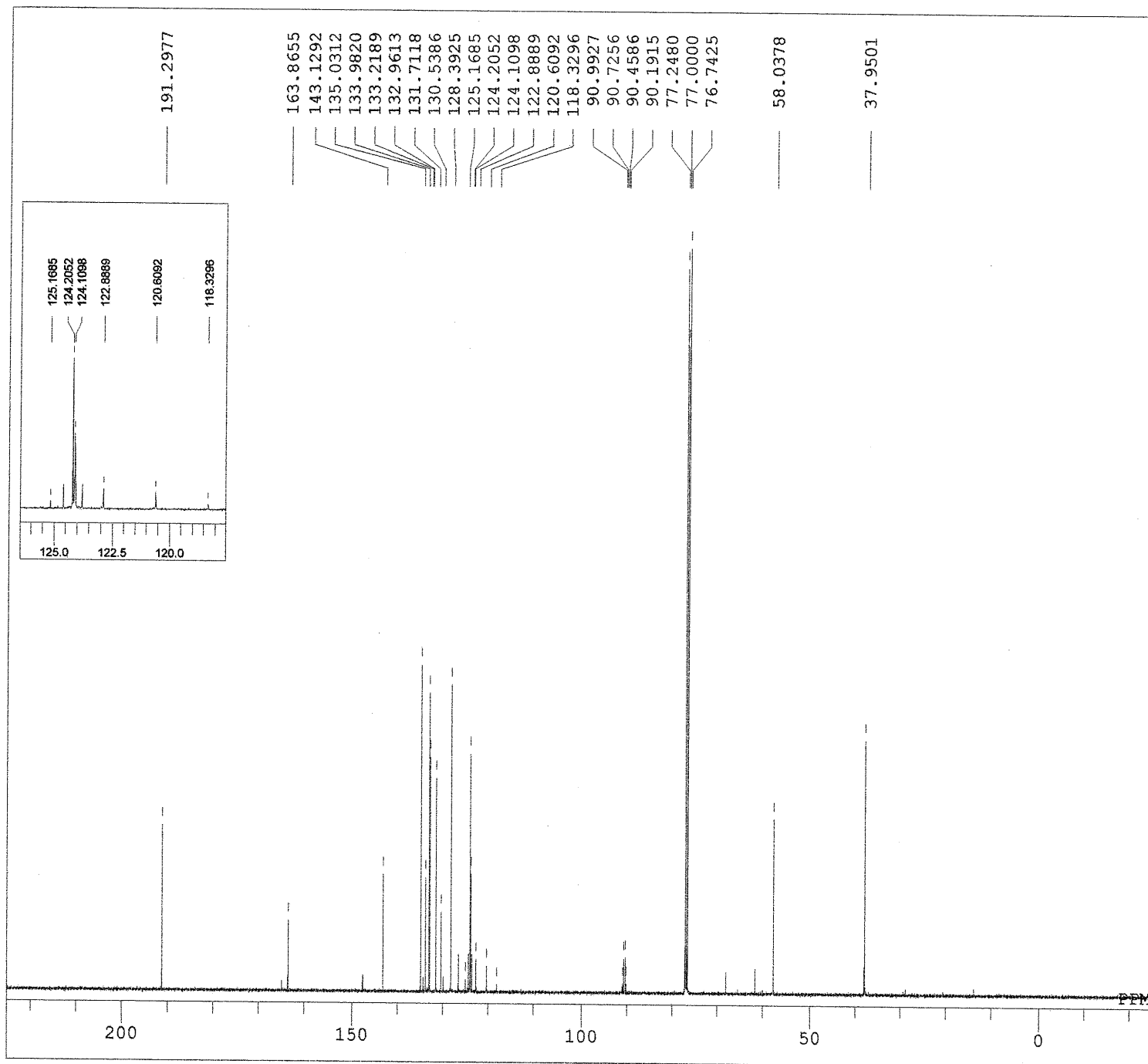
thiophene, [0]



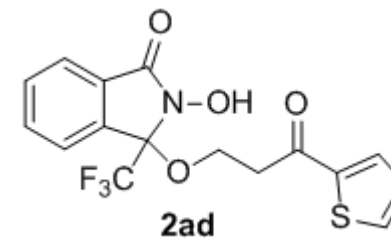
DFILE ozawa05-095_2_1H.jdf
COMNT thiophene, [0]
DATIM 2014-08-16 15:25:08
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 8
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 26.2 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 38



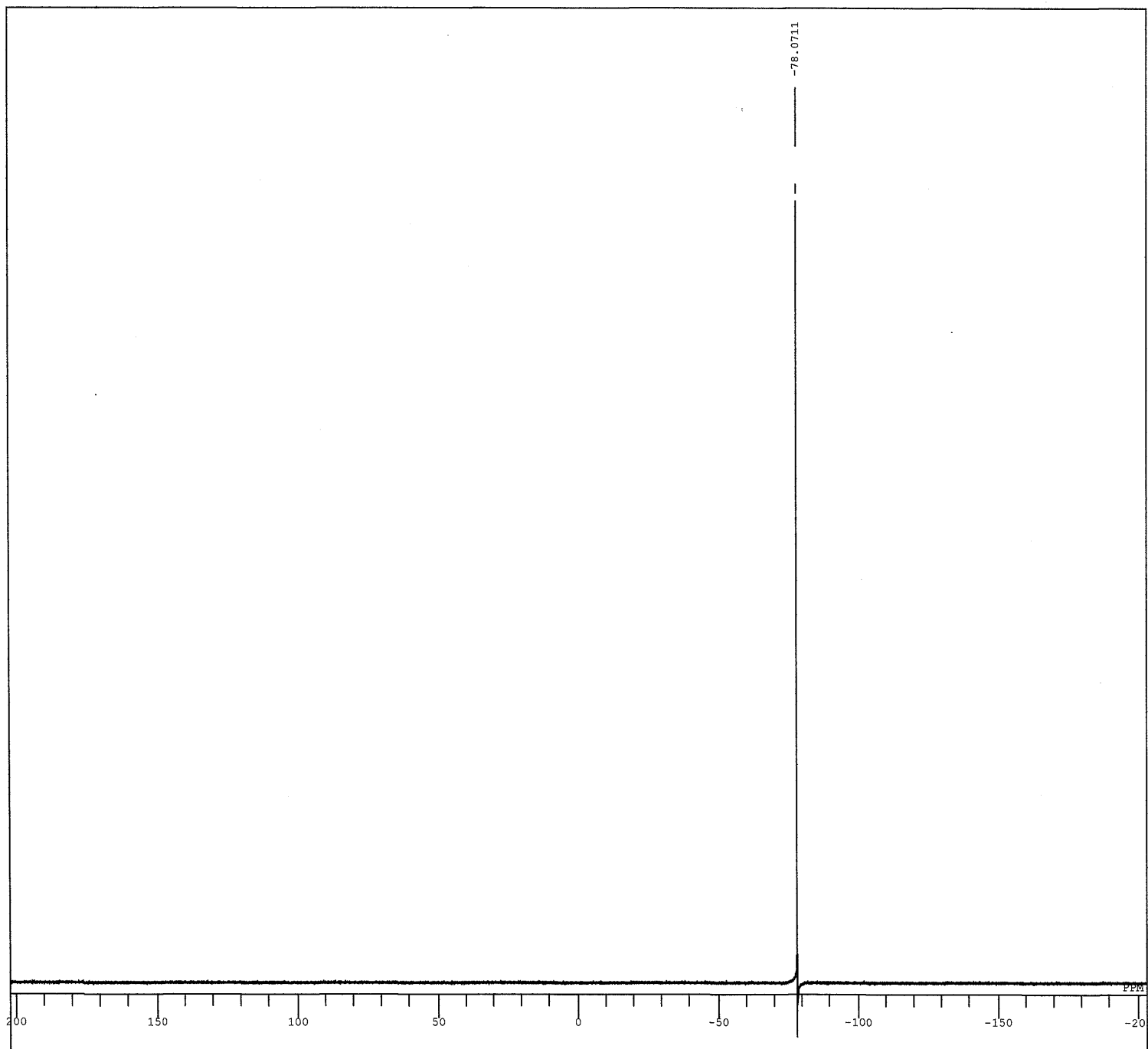
thiophene, [O]



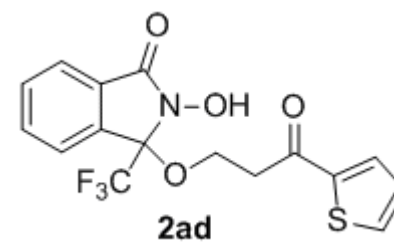
DFILE ozawa05-095_2_13C.jdf
COMNT thiophene, [O]
DATIM 2014-08-15 22:28:45
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 10000
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.6 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

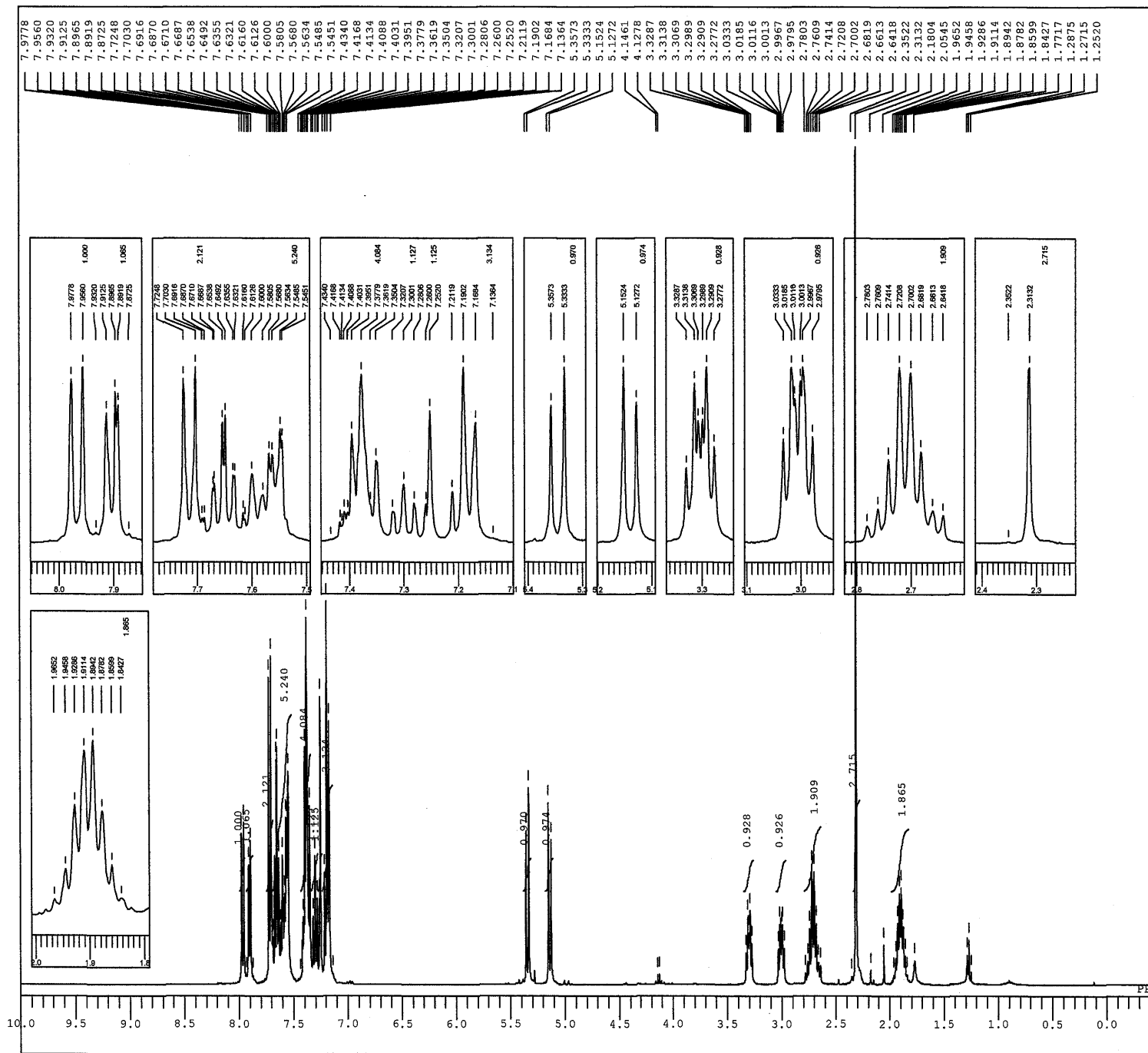


thiophene, [O]

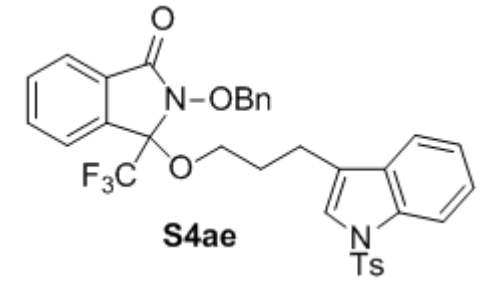


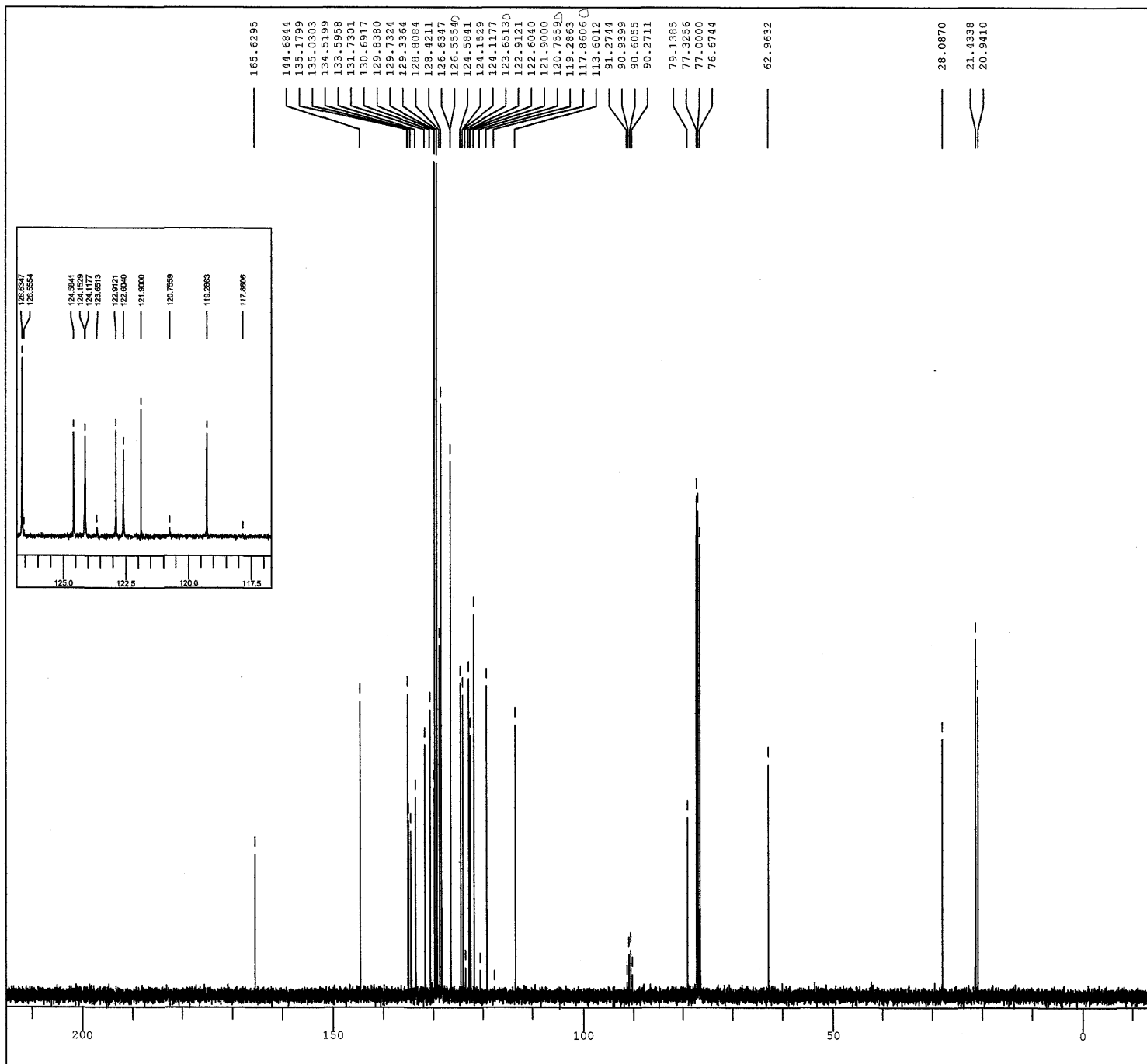
DFILE ozawa05-095 2 19F.jdf
COMNT thiophene, [O]
DATIM 07-07-2014 18:32:55
OBNUC 19F
EXMOD proton.jxp
OBFREQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.3 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50



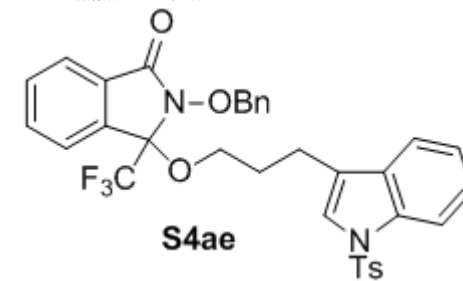


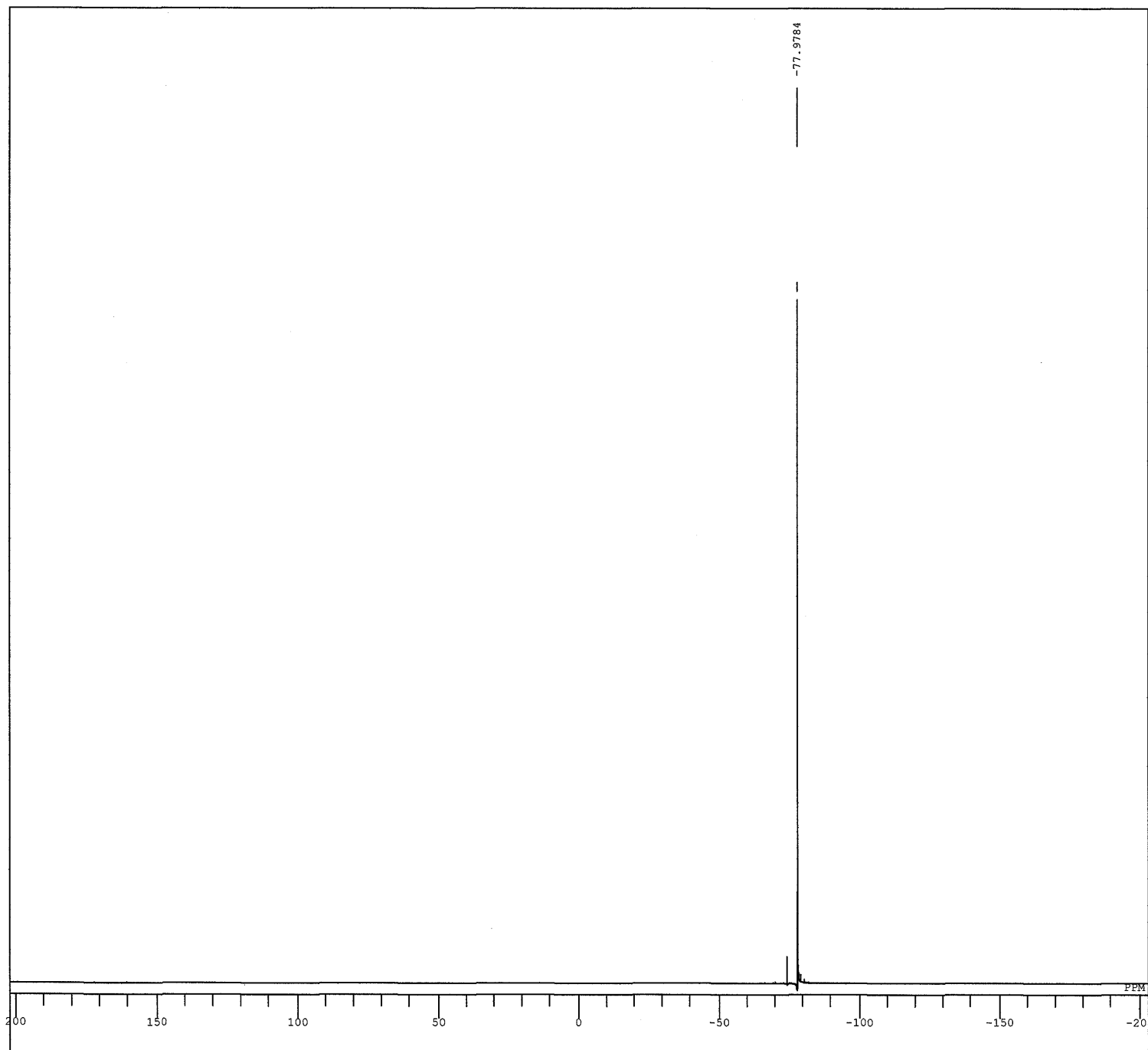
DFILE ozawa05-122 1H.jdf
 COMNT Ts-indol, Bn
 DATIM 04-08-2014 16:43:13
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 391.78 MHz
 OBSEF 8.51 KHz
 OBFIN 3.34 Hz
 POINT 16384
 FREQU 7348.62 Hz
 SCANS 4
 ACQTM 2.2295 sec
 PD 5.0000 sec
 FW1 5.25 usec
 IRNUC 1H
 CTEMP 24.2 c
 SILVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 26



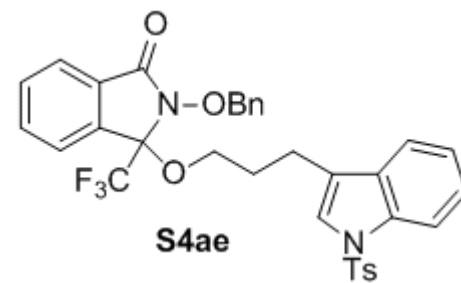


DFILE ozawa05-122_13C.jdf
 COMNT Ts-indol, Bn
 DATIM 04-08-2014 16:44:20
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 98.52 MHz
 OBSET 4.64 KHz
 OBFIN 8.74 Hz
 POINT 32767
 FREQU 28409.09 Hz
 SCANS 200
 ACQTM 1.1534 sec
 PD 3.0000 sec
 PW1 3.00 usec
 IRNUC 1H
 CTEMP 24.5 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

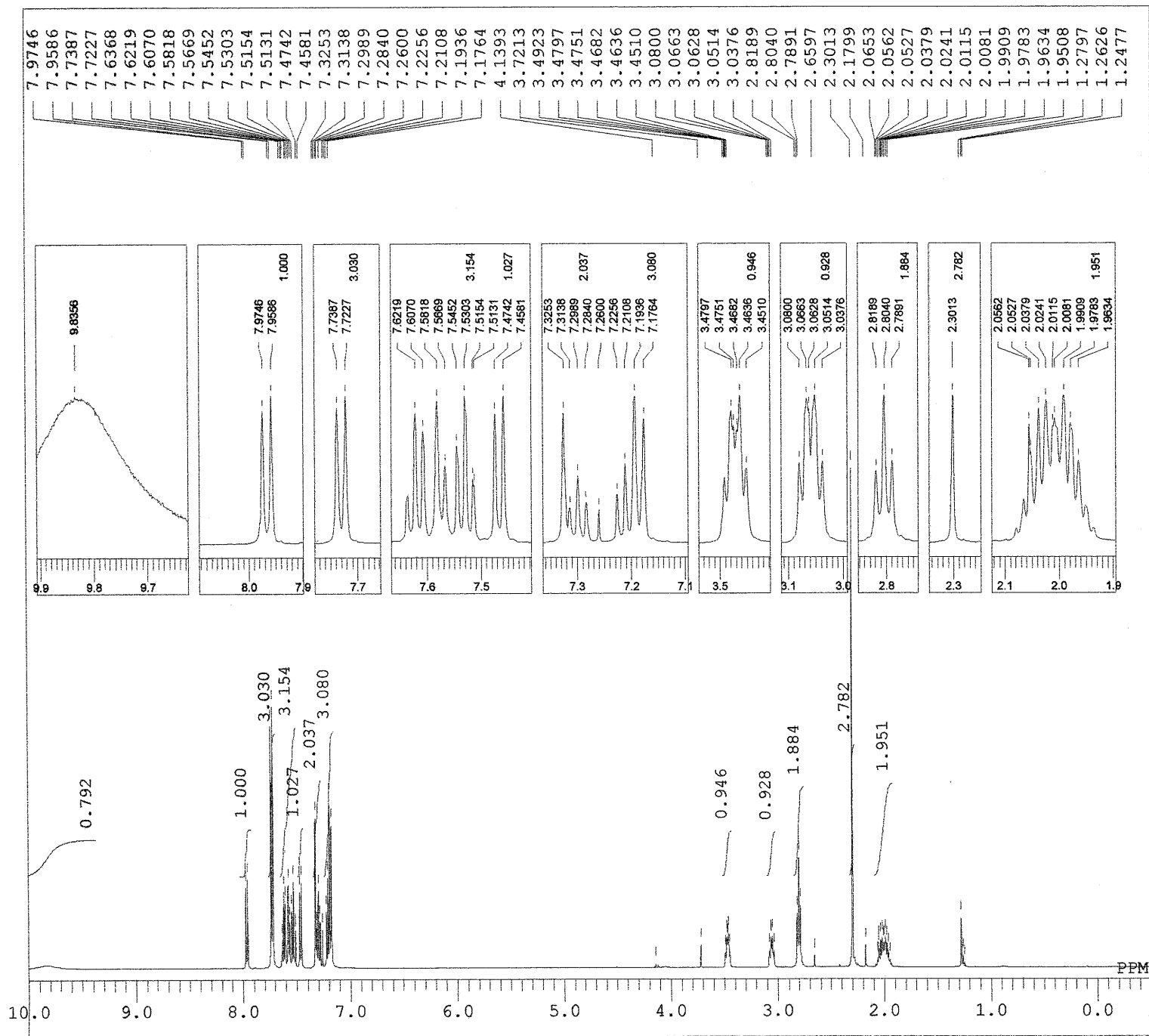




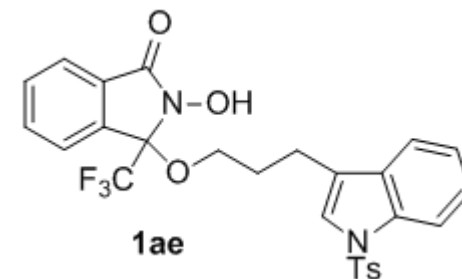
DFILE ozawa05-122_19F.jdf
COMNT Ts-indol, Bn
DATIM 04-08-2014 16:40:51
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQIM 0.0878 sec
PD 5.0000 sec
FW1 3.90 usec
IRNUC 19F
CTEMP 24.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 44



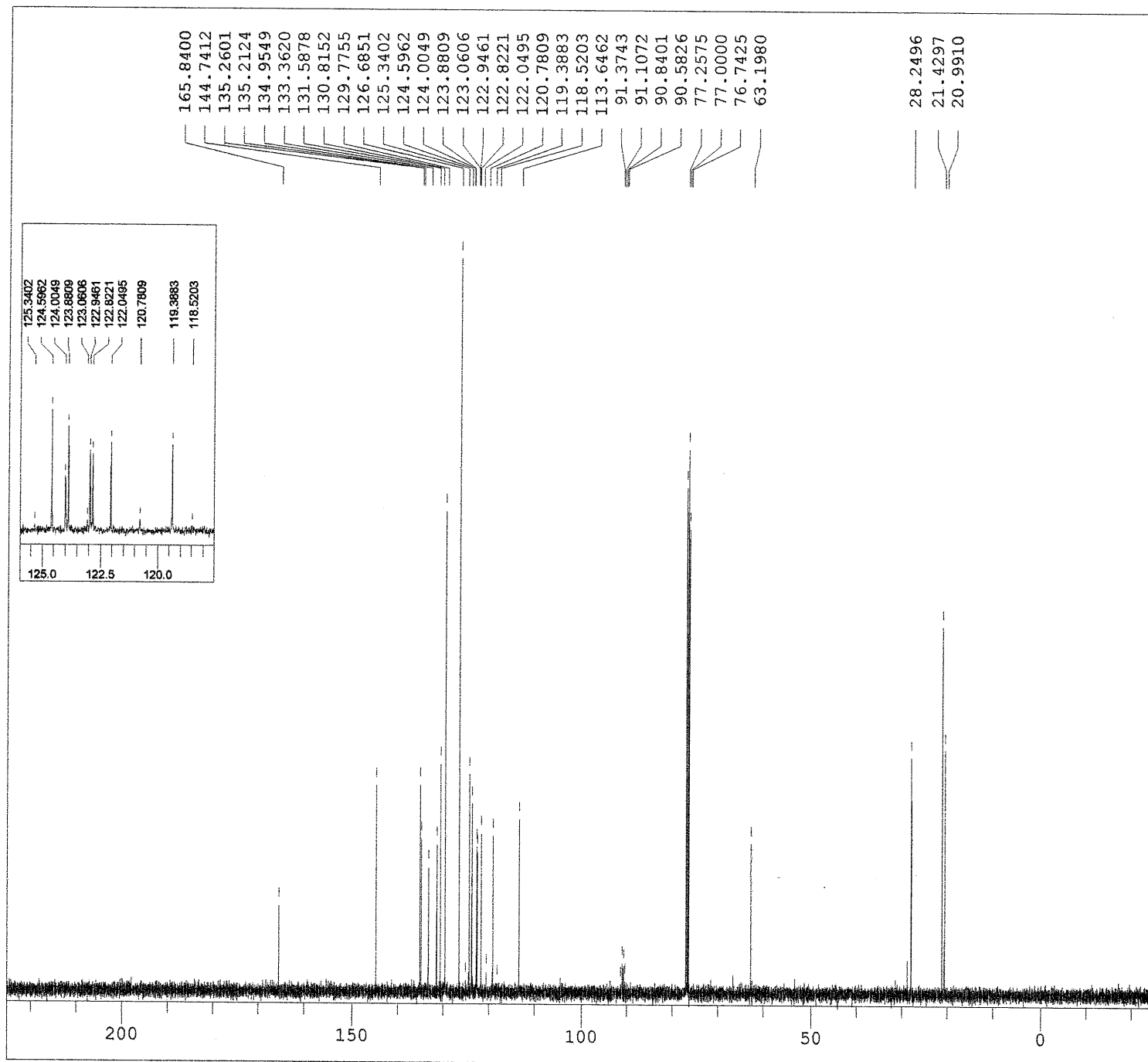
Ts-indole, OH



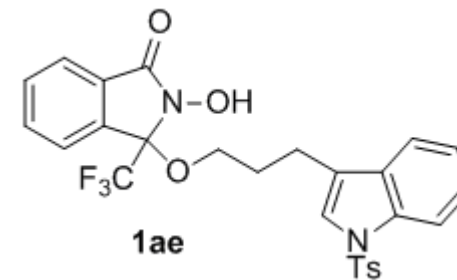
DFILE ozawa05-123_1H.als
COMNT Ts-indole, OH
DATIM 2014-08-15 18:19:53
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.51 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.9 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 30



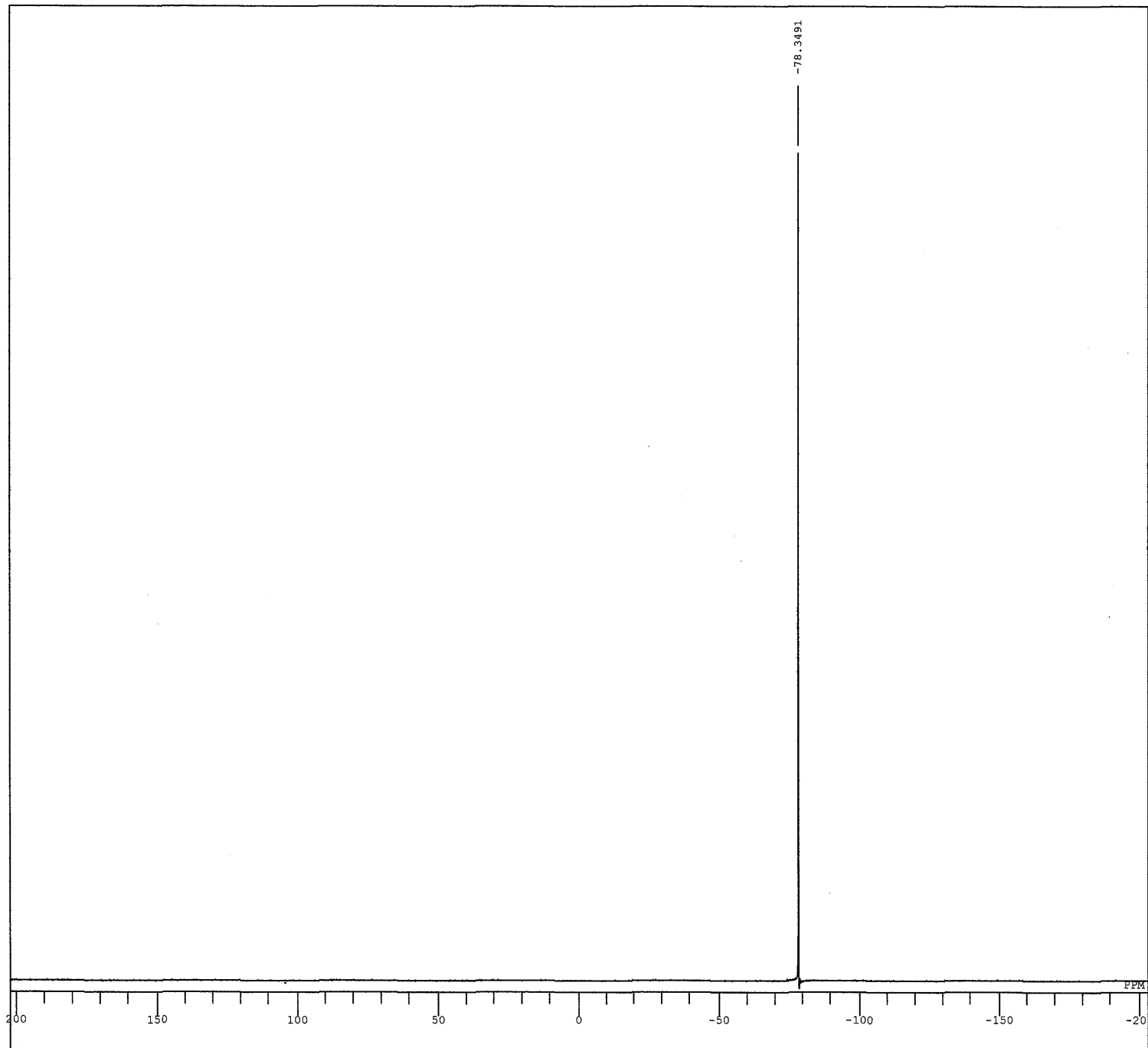
Ts-indole, OH



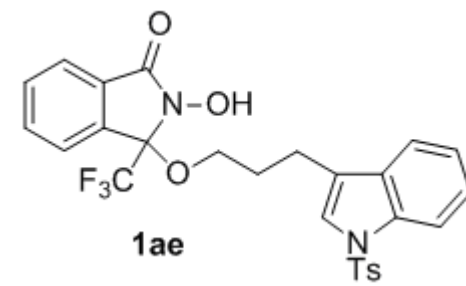
DFILE ozawa05-123_13C.jdf
COMNT Ts-indole, OH
DATIM 2014-08-15 18:20:56
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 160
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.5 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60



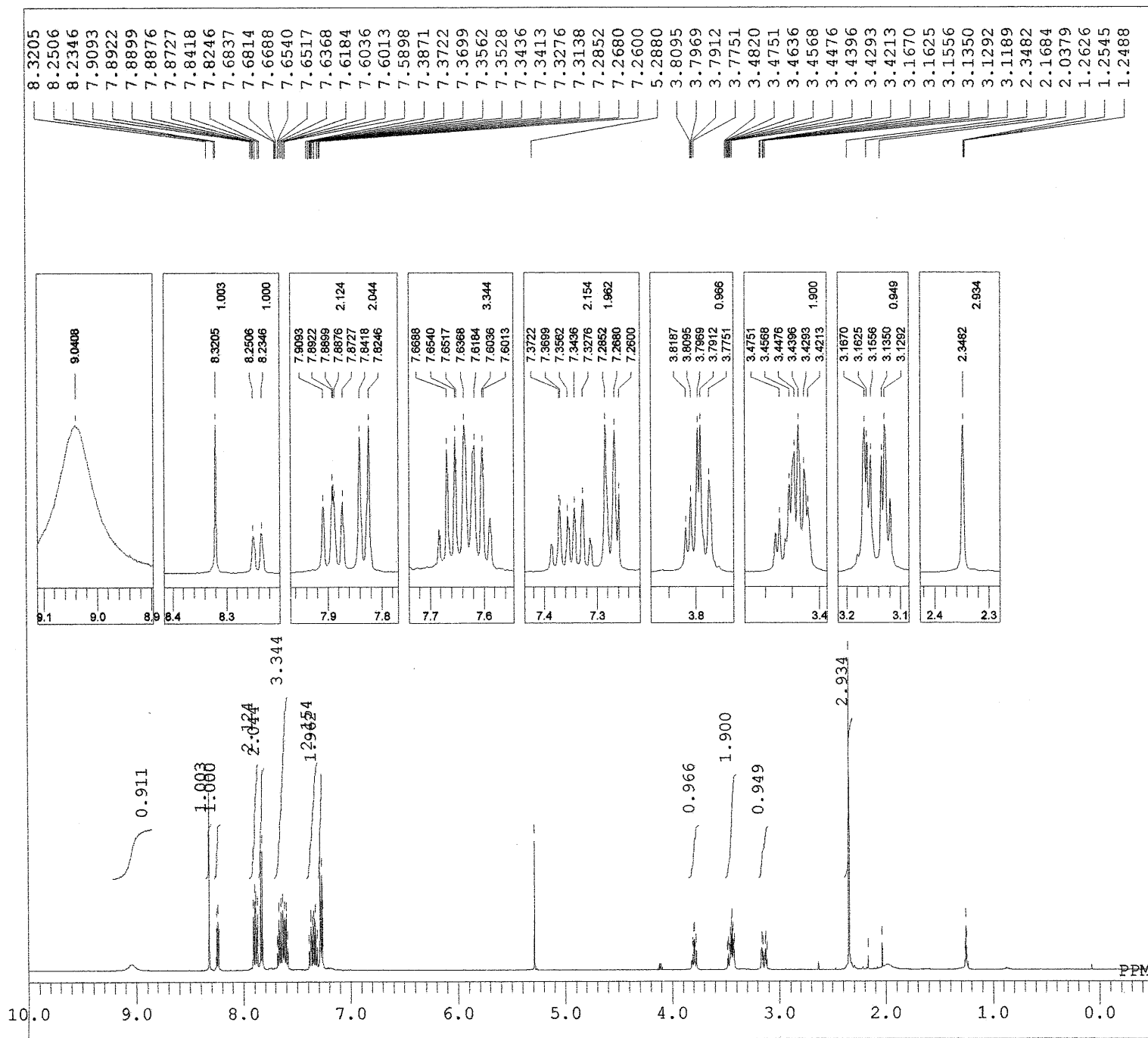
Ts-indole, OH



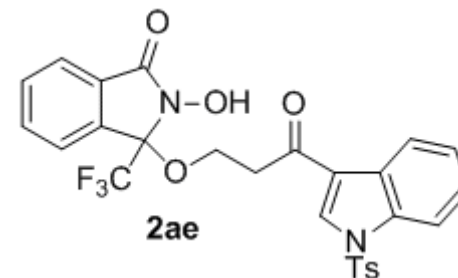
DFILE ozawa05-123_19F.jdf
COMNT Ts-indole, OH
DATIM 15-08-2014 19:48:48
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSEF 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PW1 3.90 usec
IRNUC 19F
CTEMP 24.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



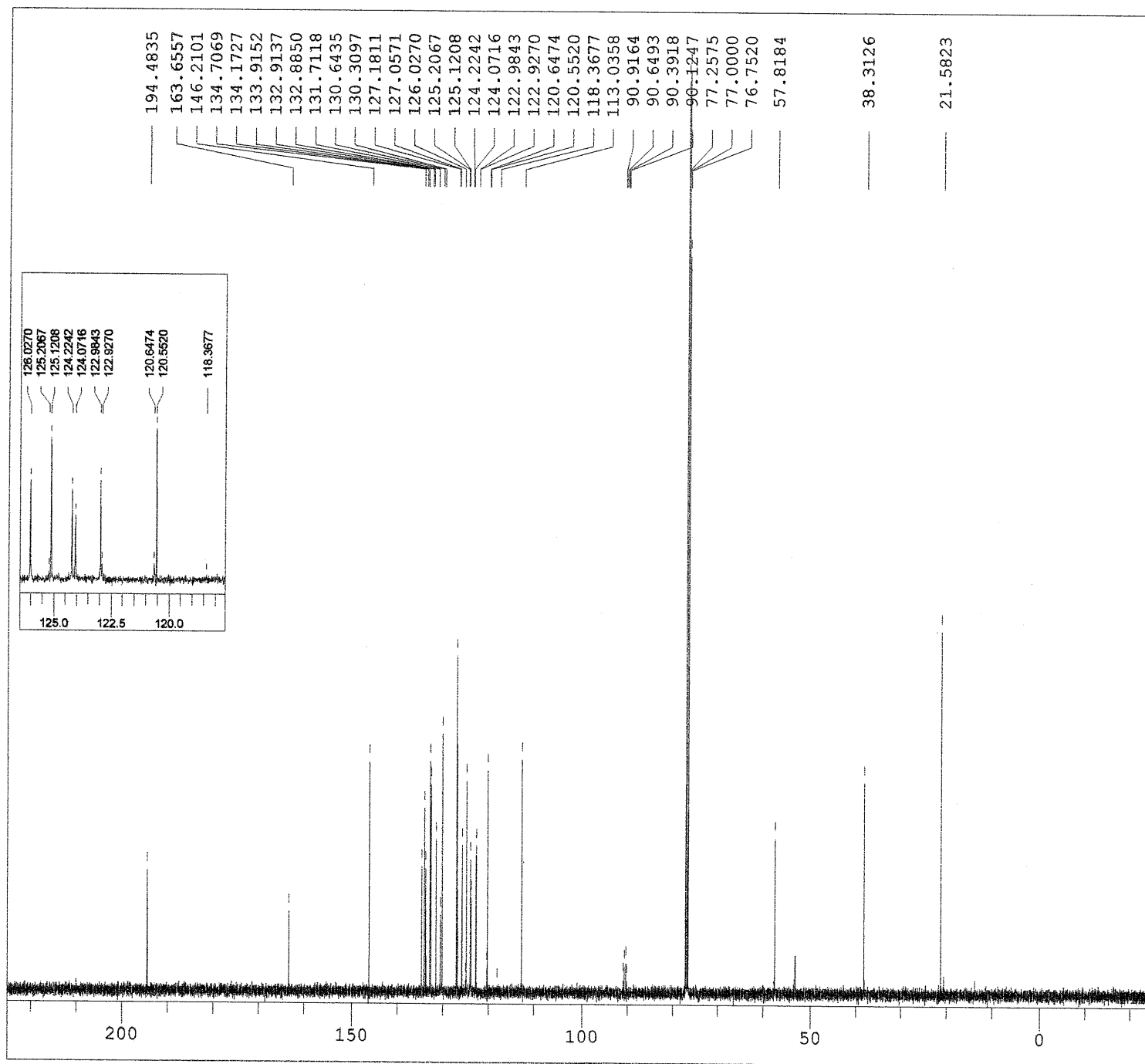
Ts-indole, [0]



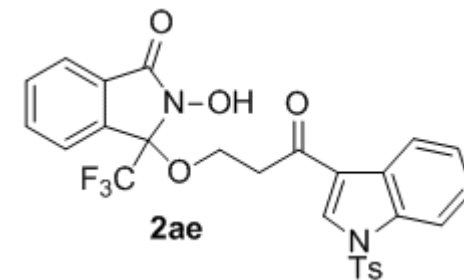
DFILE ozawa05-132_1H.als
COMNT Ts-indole, [0]
DATIM 2014-08-14 17:05:43
OBNUC 1H
EXMOD proton.jxp
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.51 Hz
SCANS 4
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 5.55 usec
IRNUC 1H
CTEMP 25.5 c
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 34

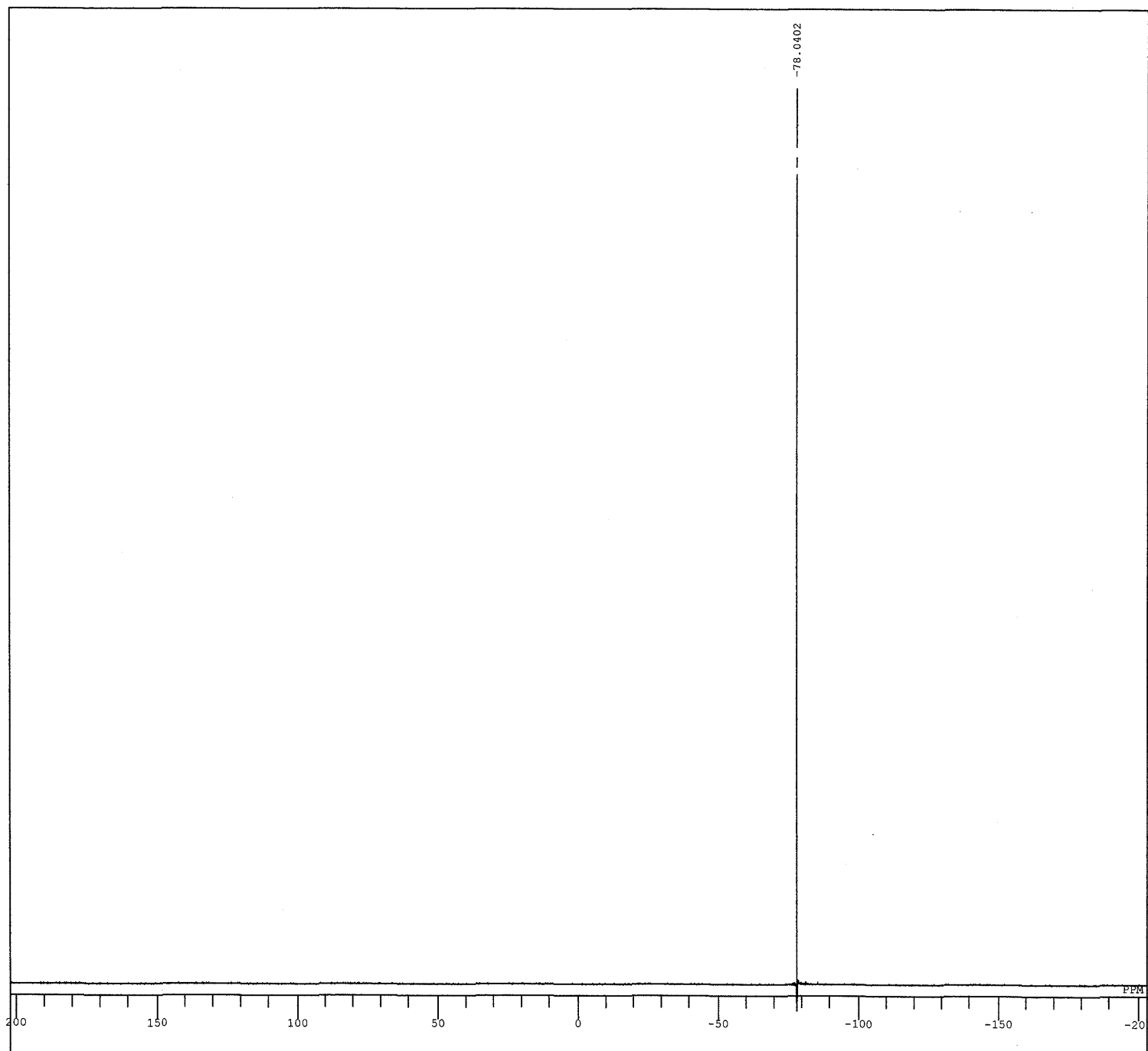


Ts-indole, [0]

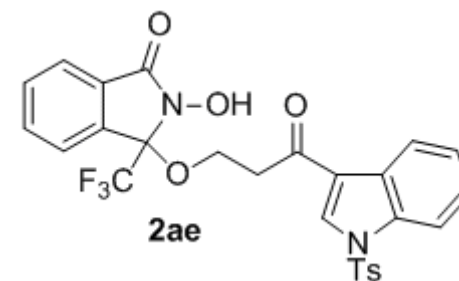


DFILE ozawa05-132_13C.jdf
COMNT Ts-indole, [0]
DATIM 2014-08-14 17:06:47
OBNUC 13C
EXMOD carbon.jxp
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 600
ACQTM 0.8336 sec
PD 3.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 26.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

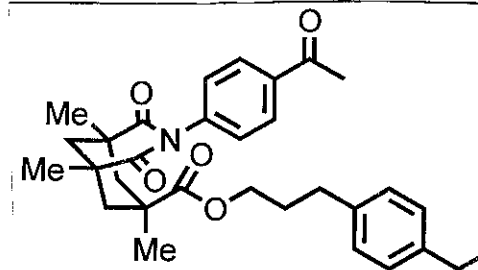




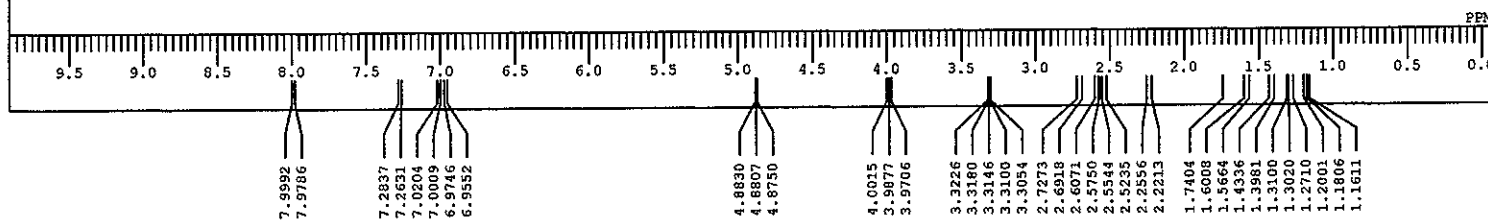
DFILE ozawa05-132_19F.jdf
COMNT Ts-indole
DATIM 14-08-2014 19:23:06
OBNUC 19F
EXMOD proton.jxp
OBFRO 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 16384
FREQU 186567.17 Hz
SCANS 4
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 24.2 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 46



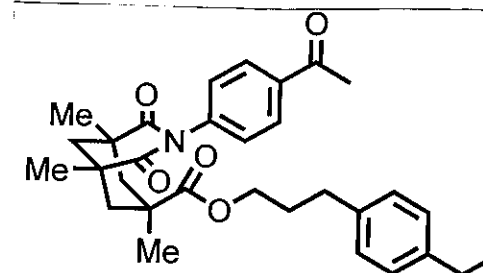
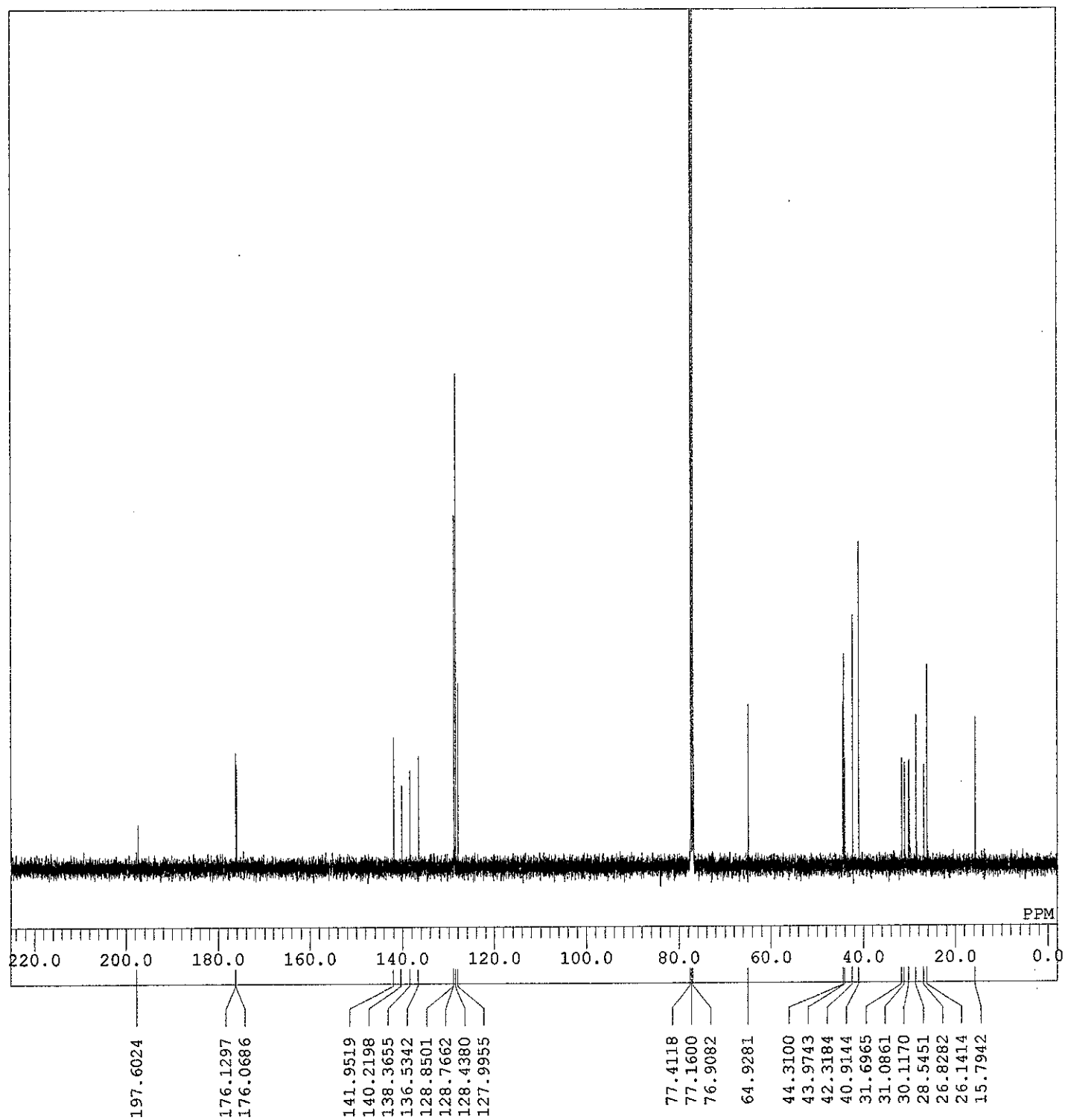
DFILE S7 HMR-1-1.als
 COMNT
 DATIM 30-05-2015 11:28:31
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 391.78 MHz
 OBSET 8.51 KHz
 OBFIN 3.34 Hz
 POINT 13107
 FREQU 5878.90 Hz
 SCANS 8
 ACQTM 2.2295 sec
 PD 5.0000 sec
 PW1 4.99 usec
 IRNUC 1H
 CTEMP 21.6 c
 SLVNT CD3OD
 EXREF 3.31 ppm
 BF 0.12 Hz
 RGAIN 44



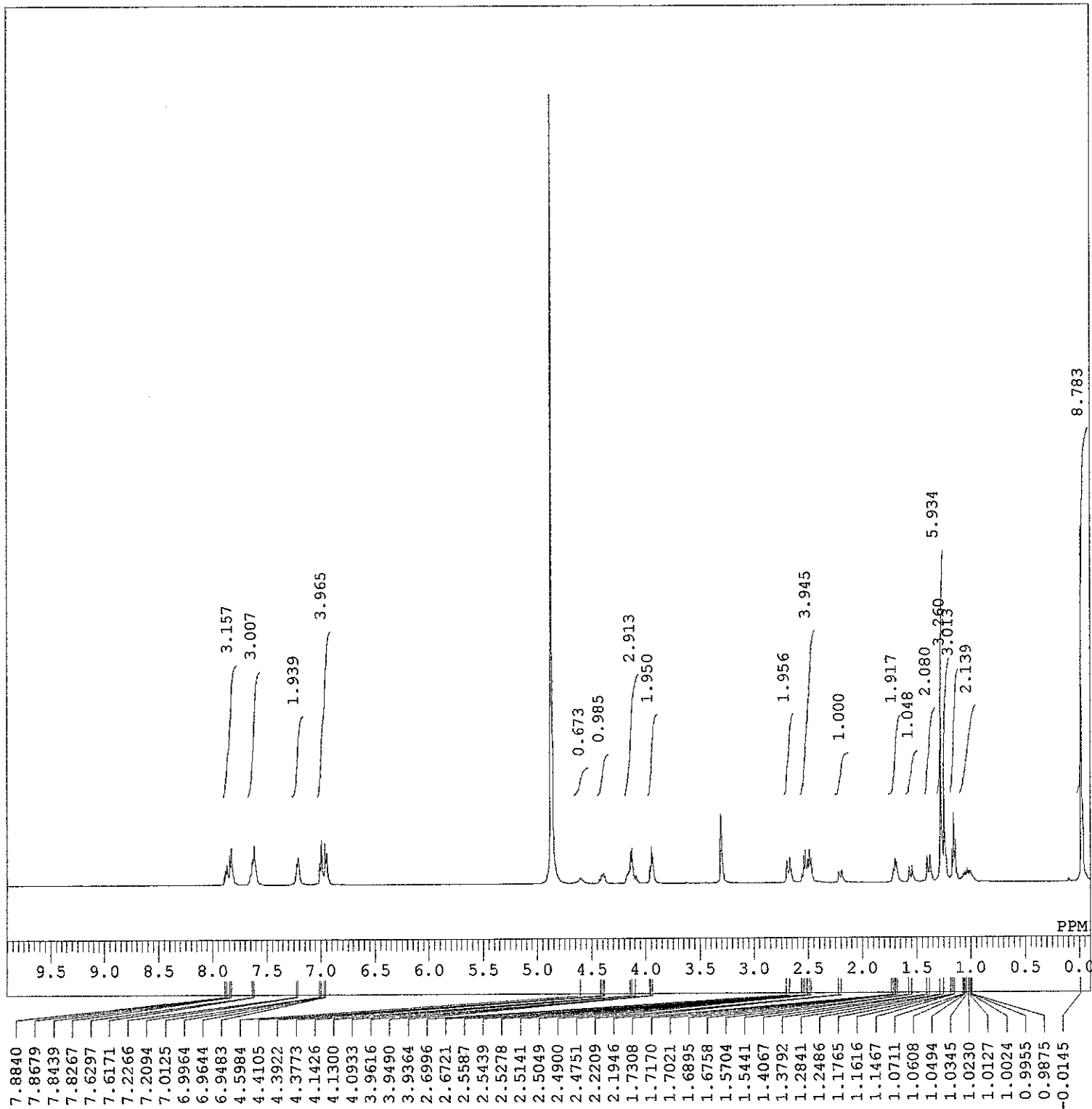
S7



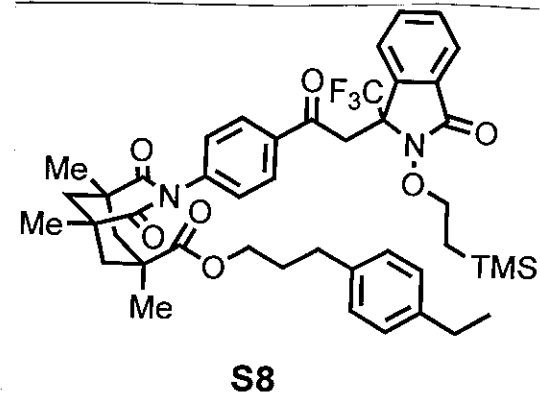
DFILE S7 CNMR.als
 COMNT
 DATIM 2015-05-06 14:46:47
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 31446.54 Hz
 SCANS 3017
 ACQTM 0.0000 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CDCL3
 EXREF 77.16 ppm
 BF 0.12 Hz
 RGAIN 72



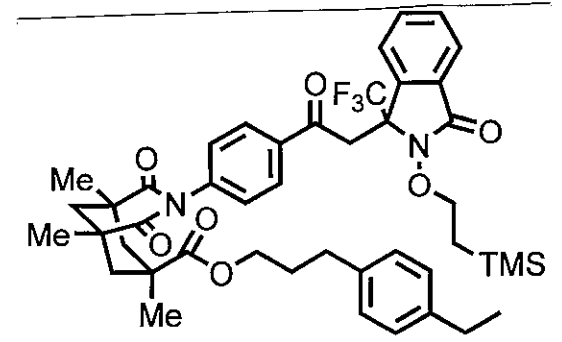
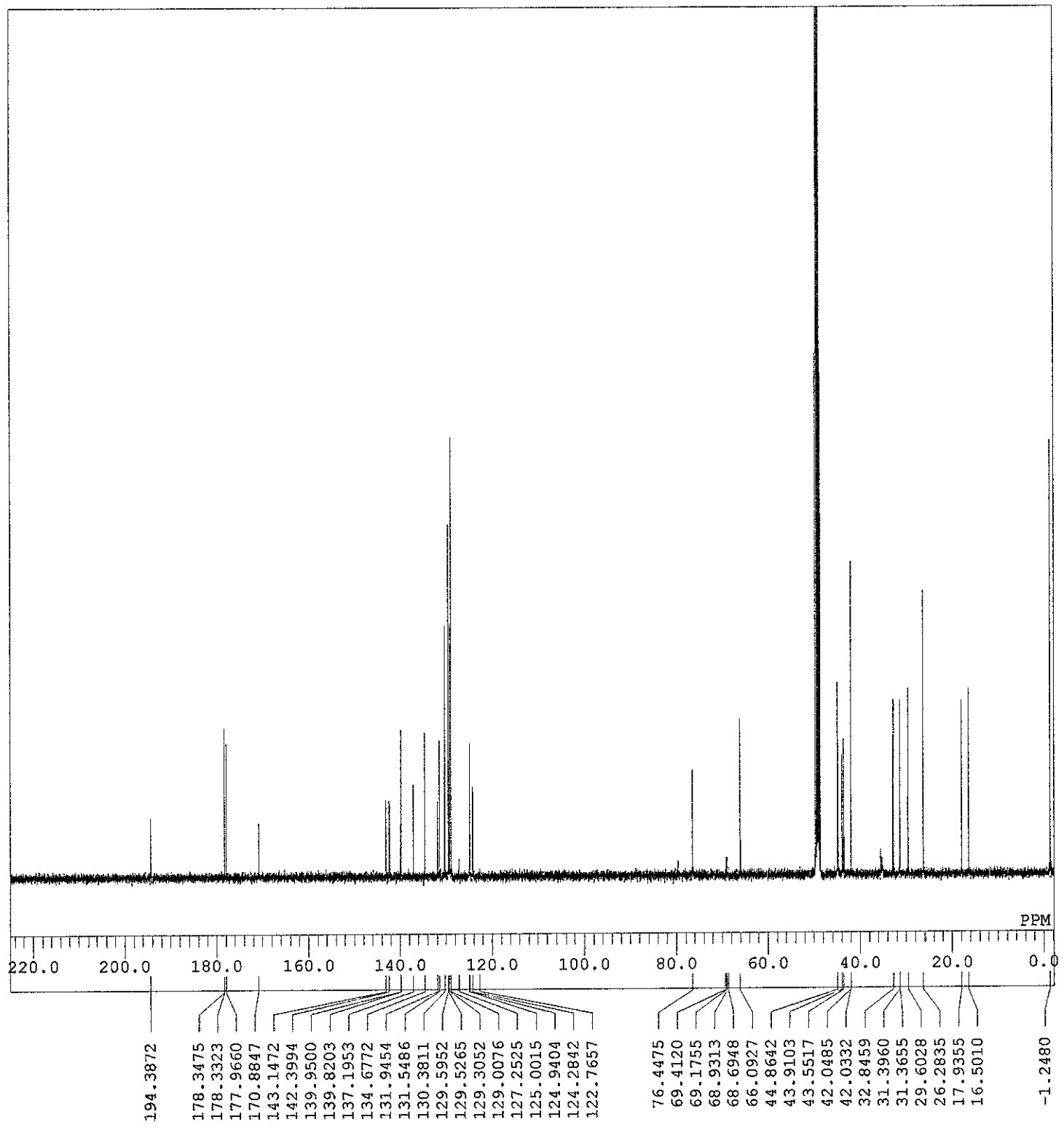
S7



DFILE S8 HNMR.als
 COMNT
 DATIM 2015-05-06 18:35:39
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 19
 ACQTM 0.0000 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.4 c
 SLVNT CD3OD
 EXREF 3.31 ppm
 BF 0.12 Hz
 RGAIN 30

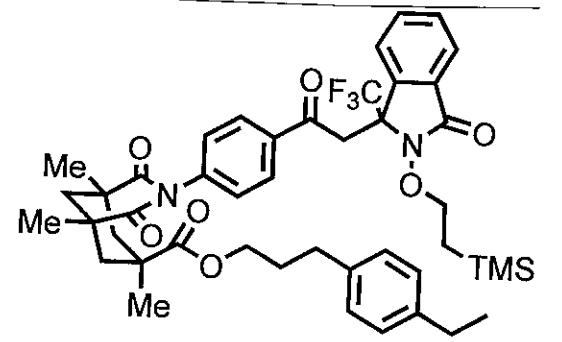


DFILE S8 CNMR.als
 COMNT
 DATIM 2015-05-06 18:43:52
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 31446.54 Hz
 SCANS 16000
 ACQTM 1.0420 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.9 c
 SLVNT CD3OD
 EXREF 49.00 ppm
 BF 0.12 Hz
 RGAIN 74

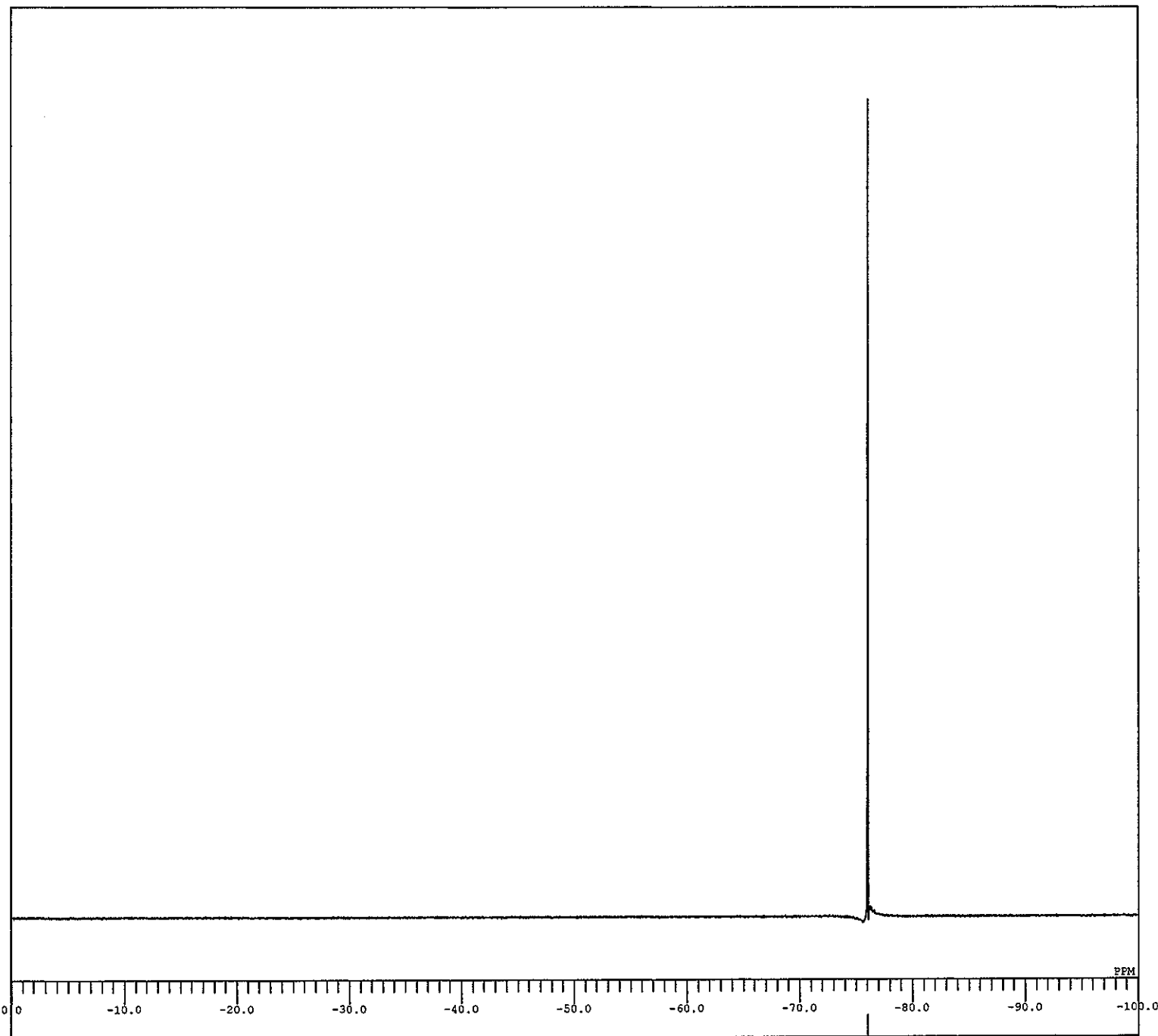


S8

DFILE S8 FMR-1-1.als
 COMNT
 DATIM 30-05-2015 11:11:30
 OBNUC 19F
 EXMOD proton.jxp
 OBFRQ 368.64 MHz
 OBSET 7.63 KHz
 OBFIN 2.85 Hz
 POINT 13107
 FREQU 149253.73 Hz
 SCANS 8
 ACQTM 0.0878 sec
 PD 5.0000 sec
 PW1 3.90 usec
 IRNUC 19F
 CTEMP 21.7 c
 SLVNT CDCL3
 EXREF -164.90 ppm
 BF 0.12 Hz
 RGAIN 50

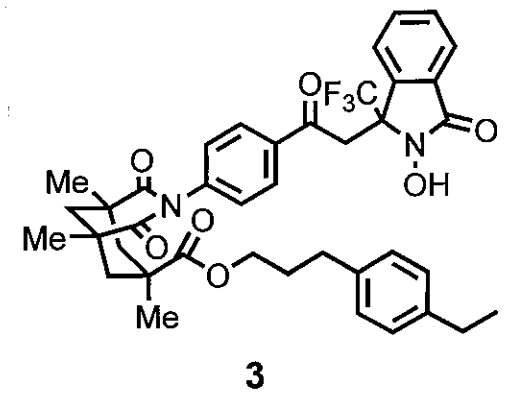
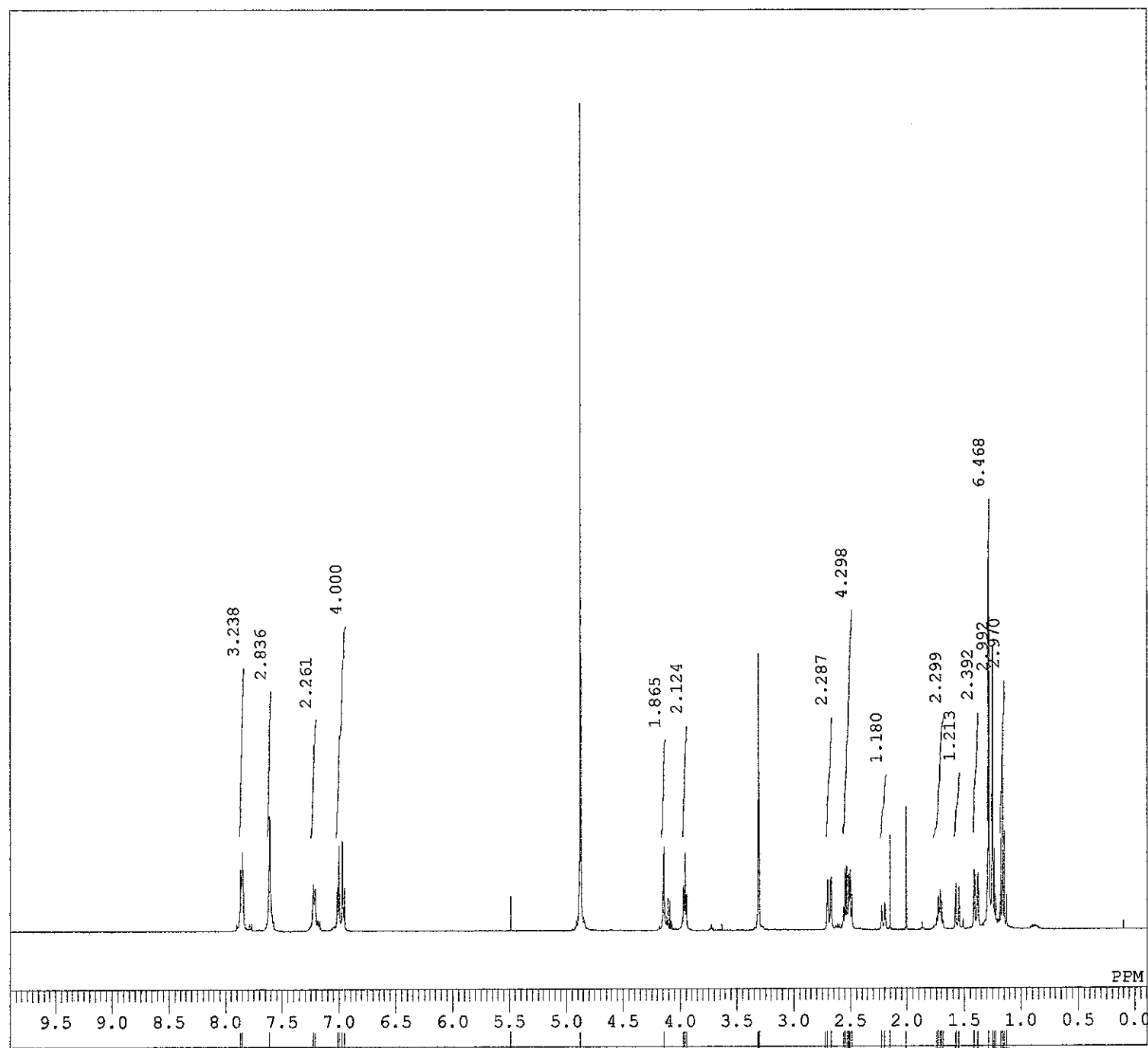


S8

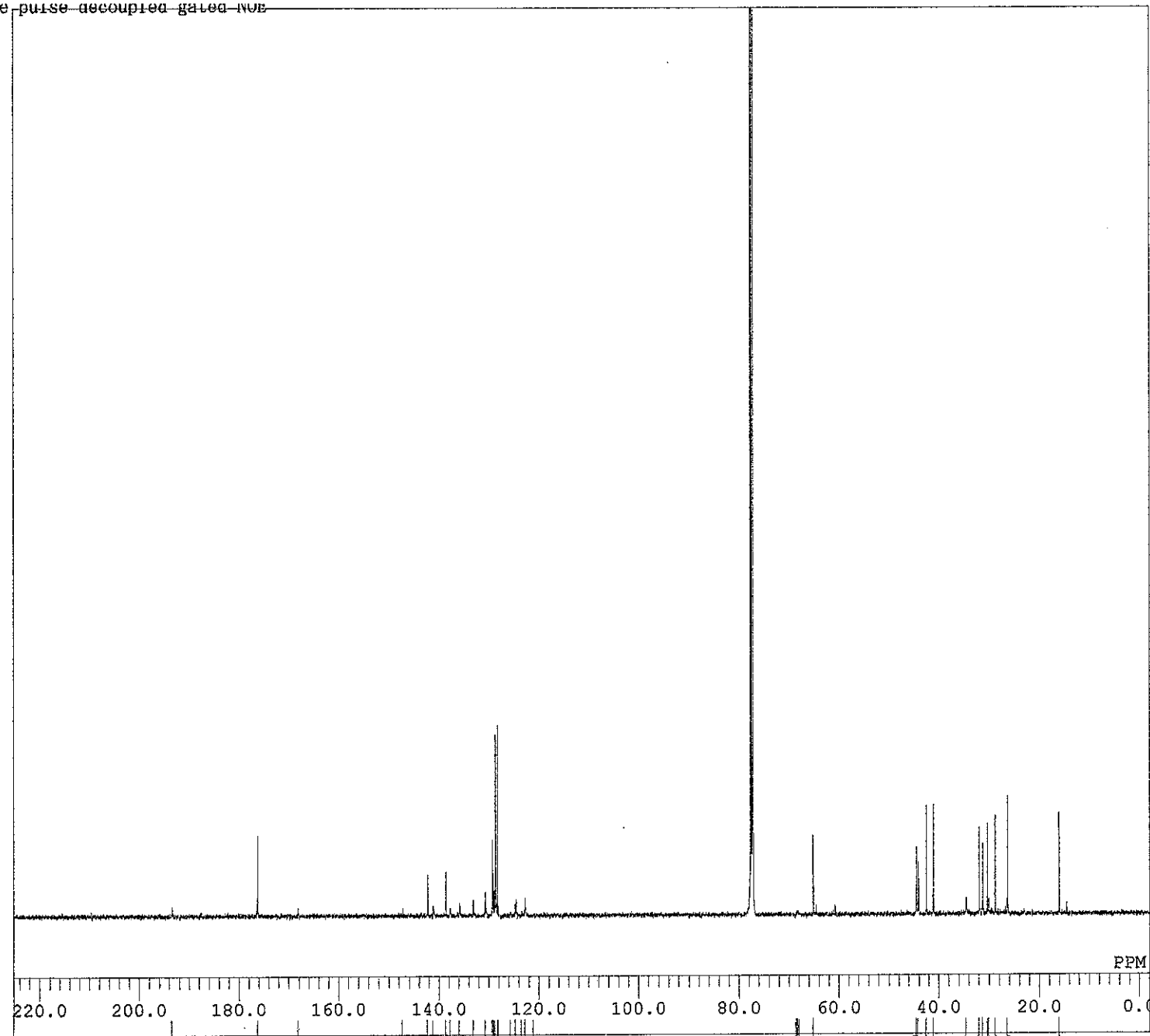


-76.0618

DFILE 3 HNMR.als
 COMNT
 DATIM 2015-05-28 14:11:51
 OBNUC 1H
 EXMOD proton.jxp
 OBFRO 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 CD3OD
 EXREF 3.31 ppm
 BF 0.12 Hz
 RGAIN 30

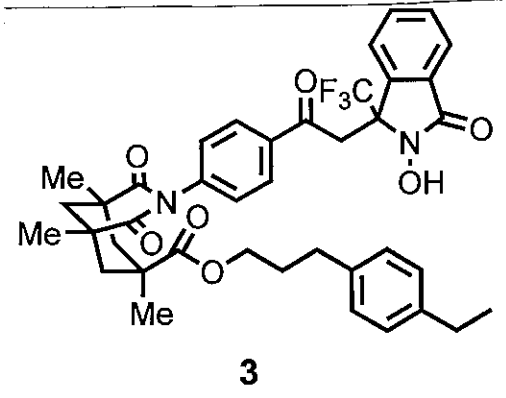


7.8702
 7.8530
 7.6125
 7.2277
 7.2117
 7.0159
 6.9999
 6.9724
 6.9563
 5.4893
 4.8766
 4.1414
 3.9696
 3.9570
 3.9444
 3.3157
 3.3123
 3.3100
 3.3066
 3.3031
 2.7225
 2.7008
 2.6733
 2.5633
 2.5473
 2.5324
 2.5187
 2.5118
 2.5038
 2.4889
 2.2255
 2.1992
 2.1533
 2.0113
 1.7422
 1.7296
 1.7147
 1.7010
 1.6872
 1.5762
 1.5498
 1.4112
 1.3838
 1.2876
 1.2841
 1.2521
 1.2383
 1.2234
 1.1799
 1.1639
 1.1490
 1.1284

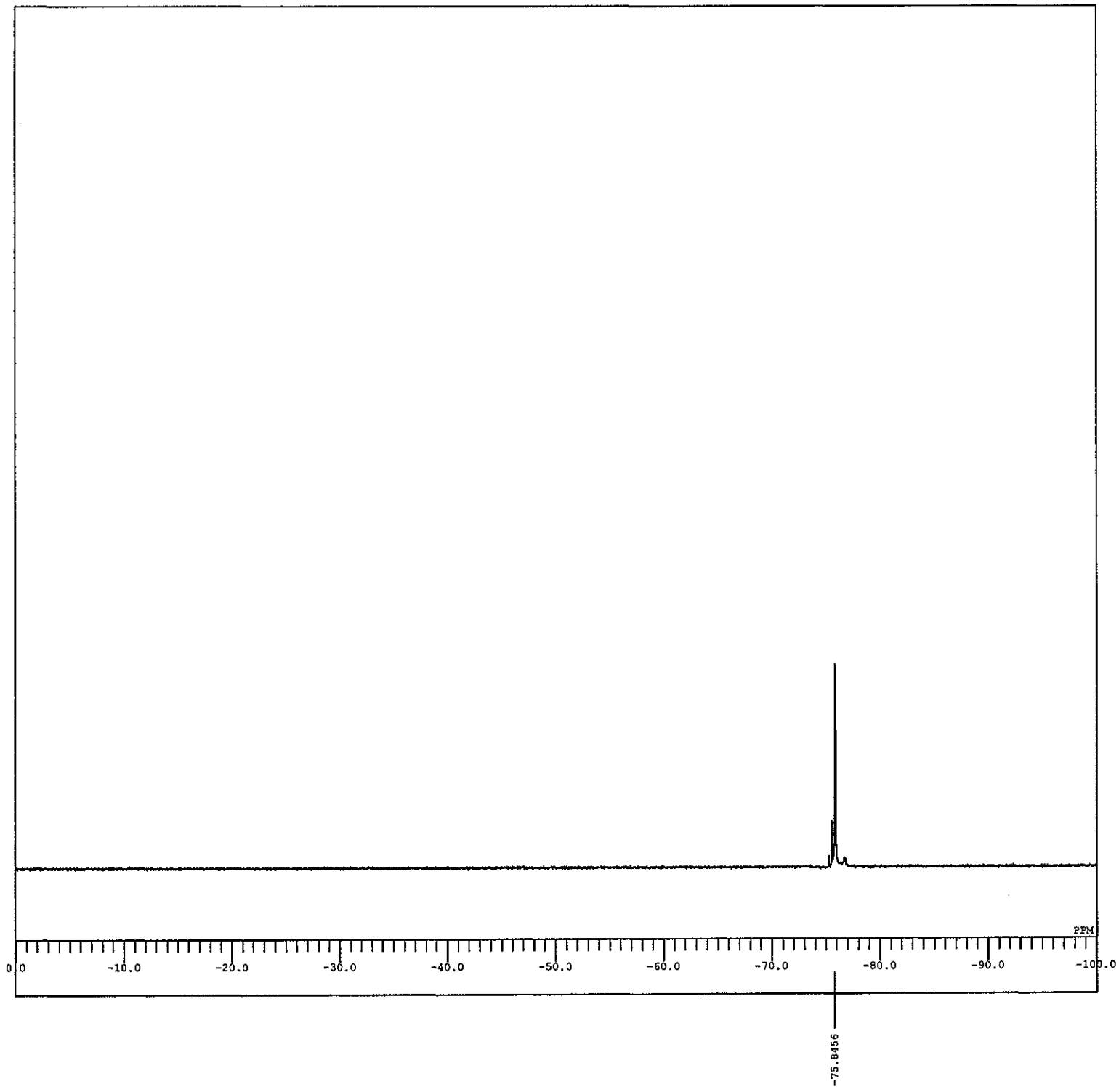
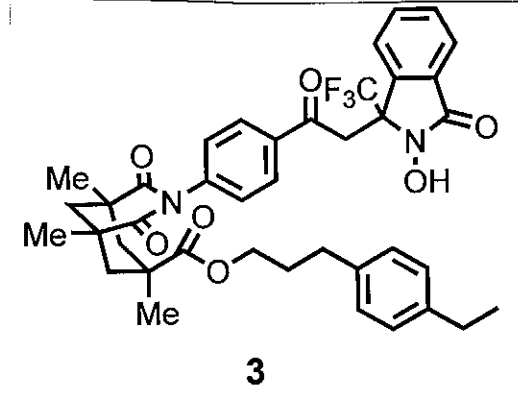


- 193.3863
- 176.3029
- 176.2743
- 168.1380
- 147.2487
- 142.2124
- 141.1250
- 138.5878
- 137.7293
- 135.8407
- 133.0936
- 130.6899
- 129.2591
- 129.0684
- 128.9253
- 128.6487
- 128.2195
- 127.9810
- 125.6727
- 124.6235
- 123.3739
- 122.7158
- 121.0751
- 68.5468
- 68.3465
- 68.1271
- 67.8981
- 65.0938
- 44.5575
- 44.4717
- 44.1378
- 42.5163
- 41.1523
- 34.5421
- 31.9572
- 31.2418
- 30.3356
- 30.0876
- 28.7427
- 26.2818
- 16.0184

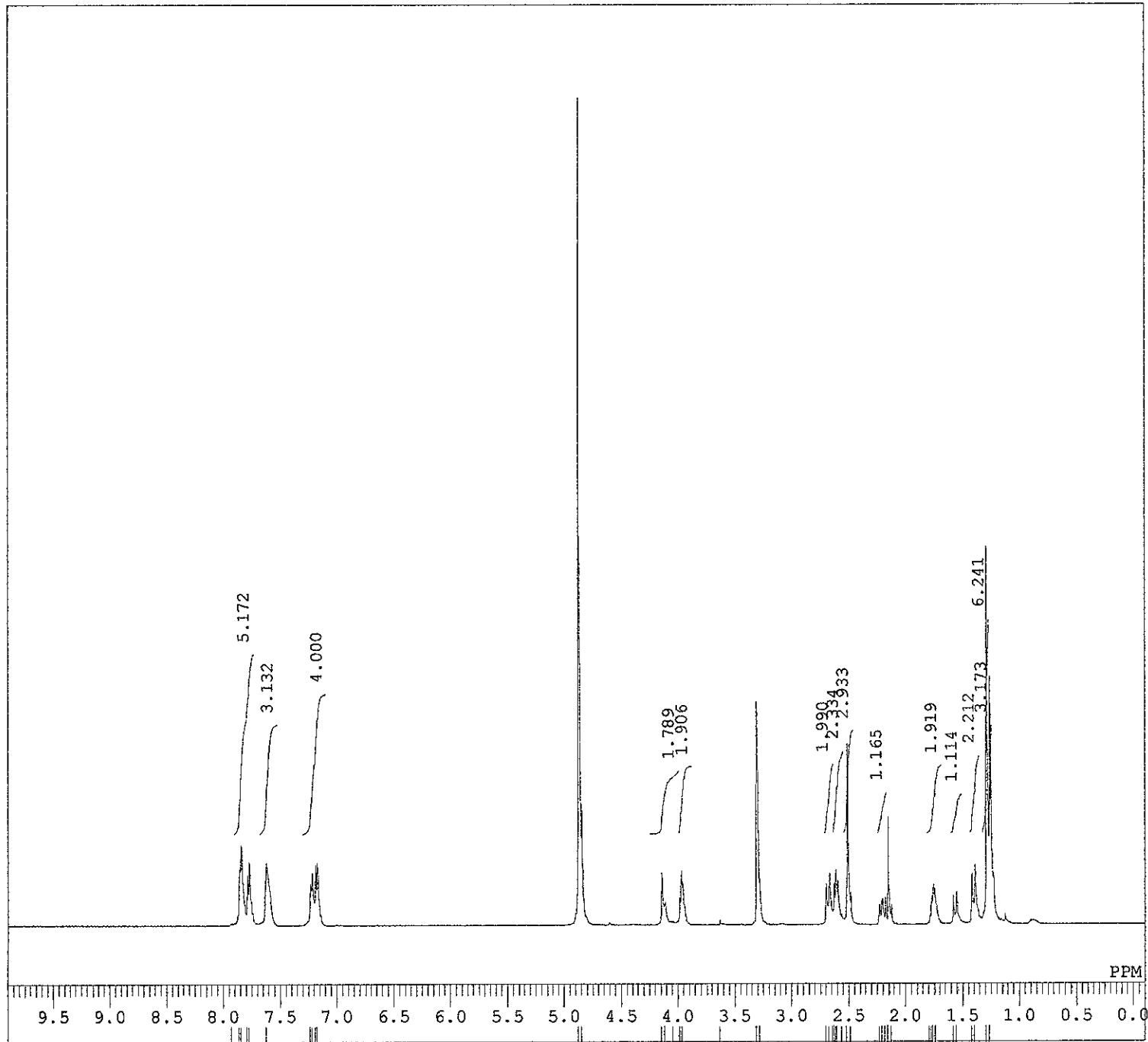
DFILE 3 CNMR.als
 COMNT single pulse decoupled gated 1
 DATIM 2015-05-29 23:00:44
 OBNUC 13C
 EXMOD carbon.jxp
 OBFREQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 26214
 FREQU 31446.54 Hz
 SCANS 13769
 ACQTM 0.0000 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.3 c
 SLVNT CDCL3
 EXREF 77.16 ppm
 BF 1.20 Hz
 RGAIN 50



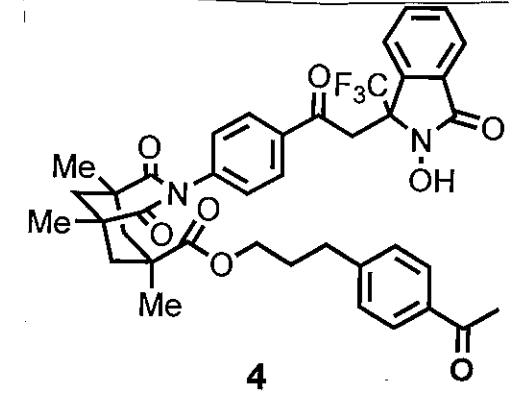
DFILE 3 FNMR-1-1.als
COMNT
DATIM 30-05-2015 11:15:10
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 13107
FREQU 149253.73 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 21.7 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

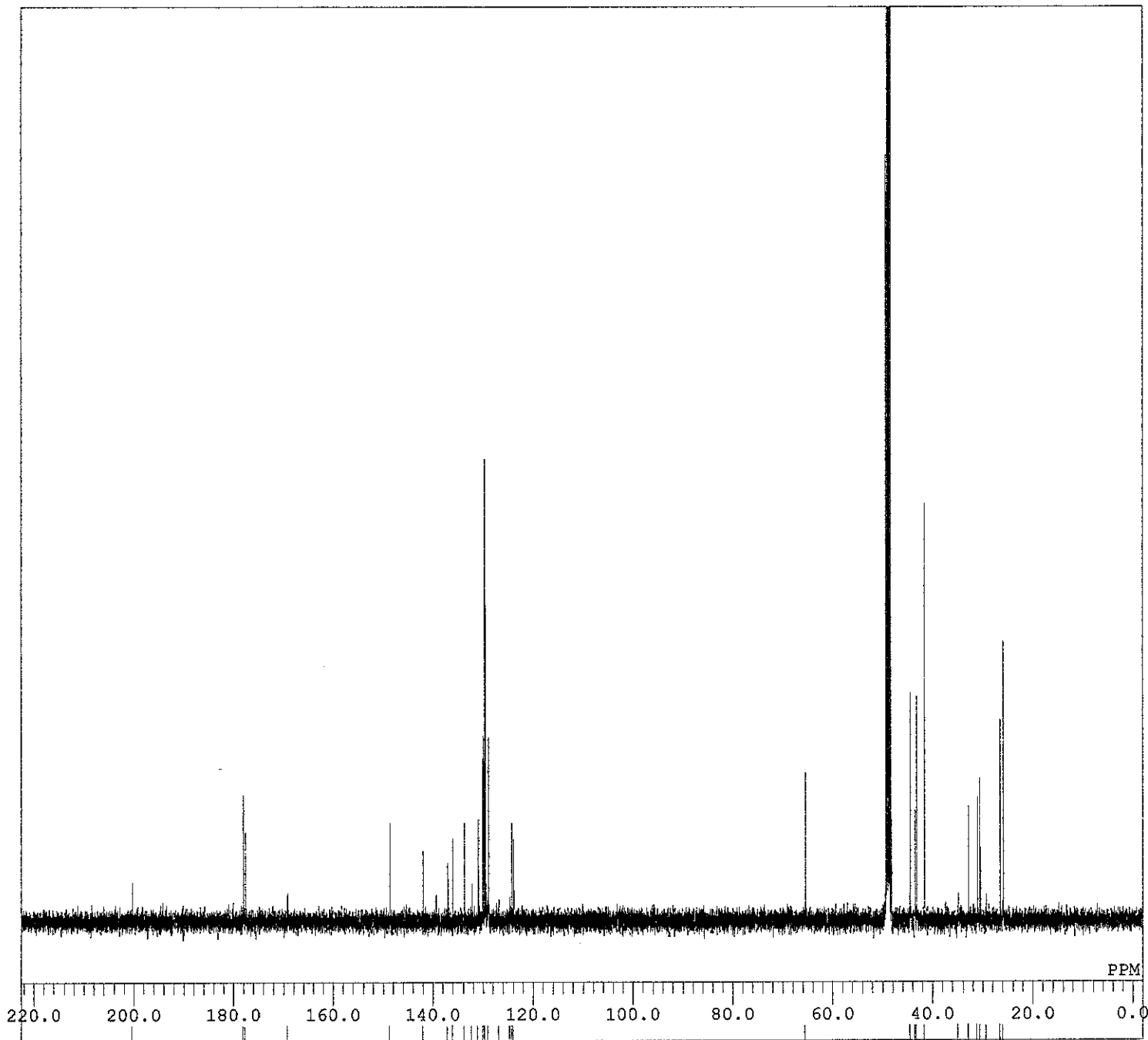


DFILE 4 HNMR.als
 COMNT
 DATIM 2015-05-27 22:54:43
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 13107
 FREQU 7507.51 Hz
 SCANS 8
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.1 c
 SLVNT CD3OD
 EXREF 3.31 ppm
 BF 0.12 Hz
 RGAIN 30



7.9229
 7.8565
 7.8427
 7.7878
 7.7717
 7.6206
 7.2346
 7.2186
 7.1888
 7.1728
 4.8766
 4.8457
 4.1426
 4.1128
 4.0429
 3.9834
 3.9719
 3.9593
 3.6329
 3.3100
 3.3066
 3.2825
 3.2791
 2.6973
 2.6687
 2.6389
 2.6275
 2.6126
 2.5977
 2.5610
 2.5118
 2.4809
 2.2312
 2.2049
 2.1785
 2.1545
 2.1236
 1.7857
 1.7720
 1.7582
 1.7445
 1.7308
 1.5819
 1.5555
 1.4193
 1.3906
 1.2899
 1.2589





200.2780

178.0194

177.6378

169.1754

148.6947

142.0026

137.0579

136.0430

133.7157

132.2125

130.9992

130.0453

129.6943

129.5036

128.9542

126.7947

124.5818

124.2918

123.8874

65.5509

44.5208

43.5364

43.2388

41.7051

34.9062

32.8077

31.0374

30.5948

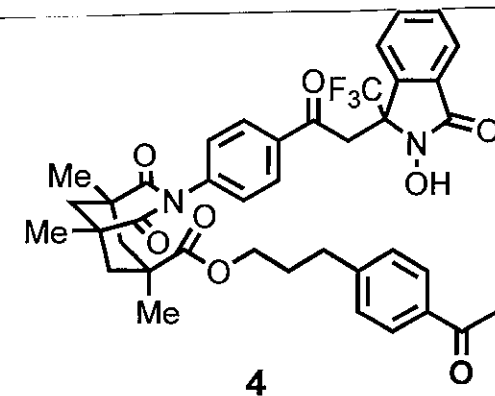
30.5033

29.3434

26.5353

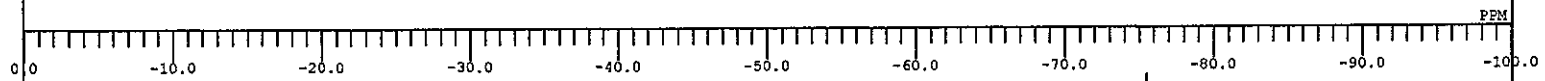
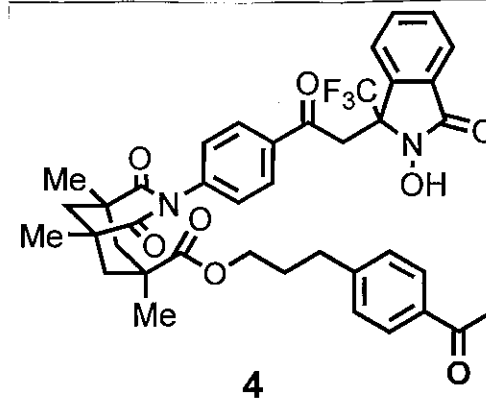
25.9325

DFILE 4CNMR.als
 COMNT
 DATIM 2015-05-27 22:57:05
 OBNUC 13C
 EXMOD carbon.jxp
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 31446.54 Hz
 SCANS 12272
 ACQTM 1.0420 sec
 PD 2.0000 sec
 PW1 3.40 usec
 IRNUC 1H
 CTEMP 21.6 c
 SLVNT CD3OD
 EXREF 49.00 ppm
 BF 0.12 Hz
 RGAIN 74



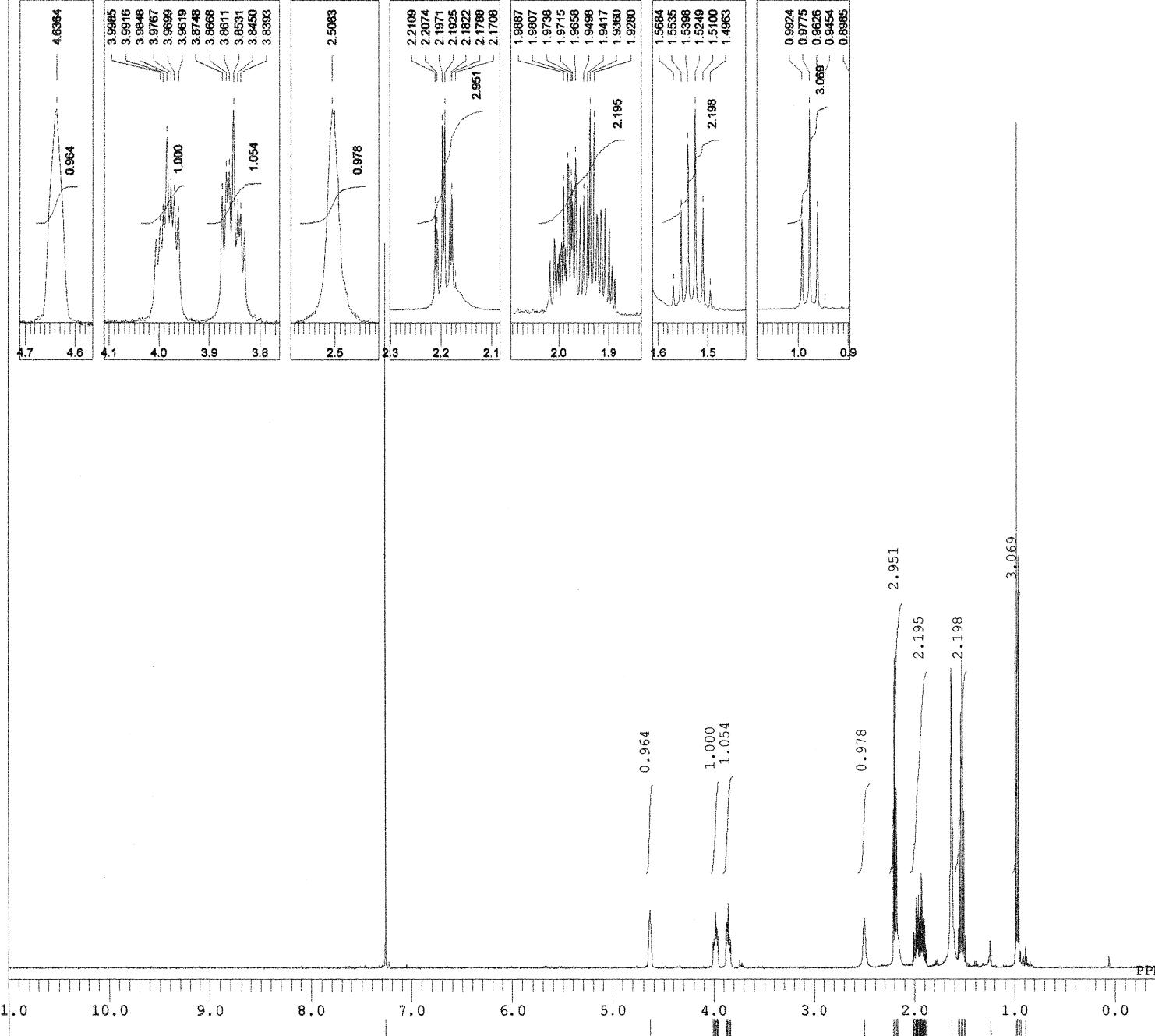
4

DFILE 4 FNMR-1-1.als
CCMNT
DATIM 31-05-2015 11:23:39
OBNUC 19F
EXMOD proton.jxp
OBFRQ 368.64 MHz
OBSET 7.63 KHz
OBFIN 2.85 Hz
POINT 13107
FREQU 149253.73 Hz
SCANS 8
ACQTM 0.0878 sec
PD 5.0000 sec
PWL 3.90 usec
IRNUC 19F
CTEMP 21.6 c
SLVNT CDCL3
EXREF -164.90 ppm
BF 0.12 Hz
RGAIN 50

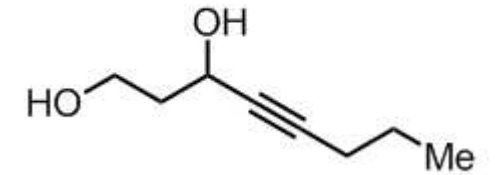


-75.5367

PTLC, 3-octyne



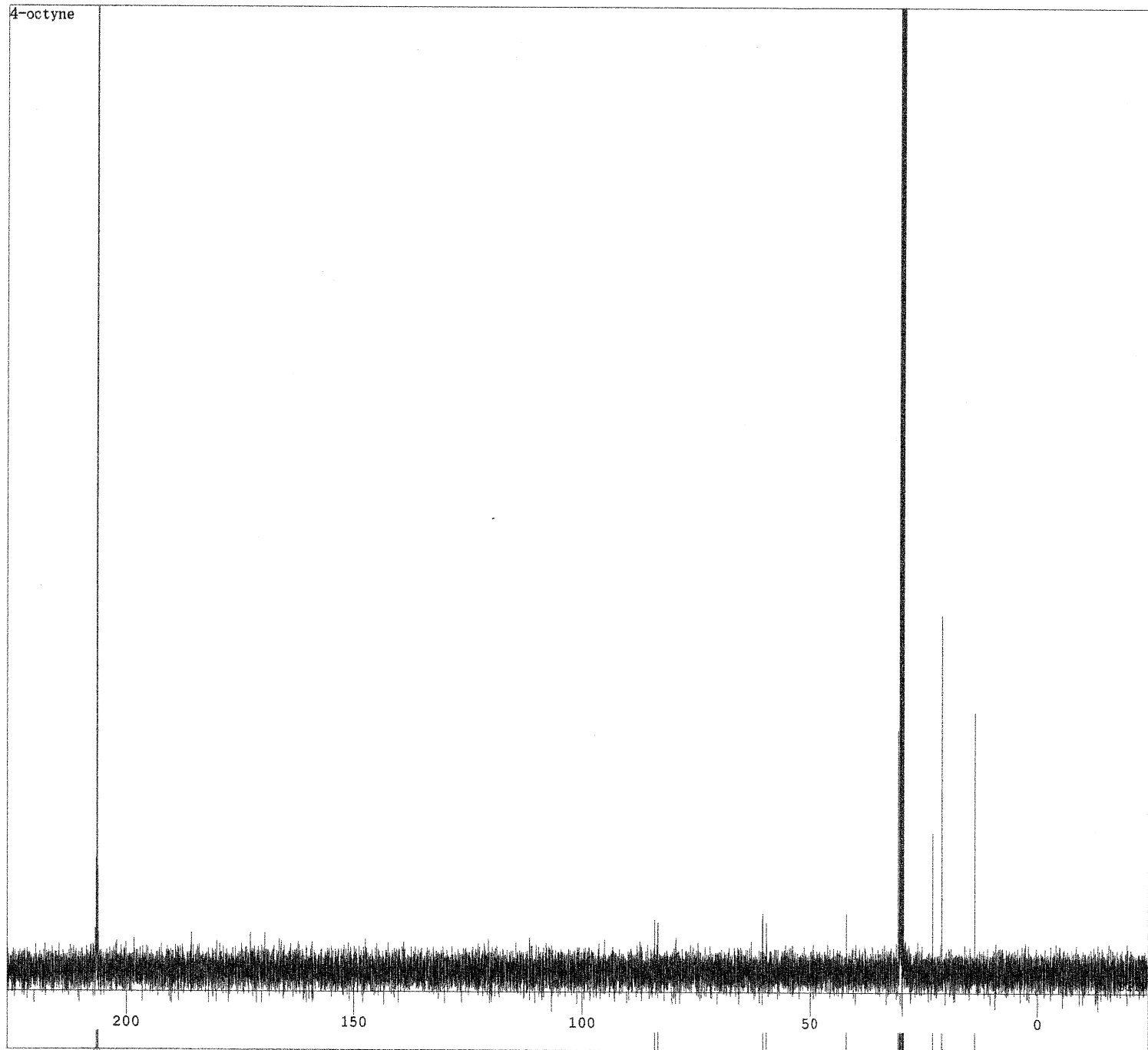
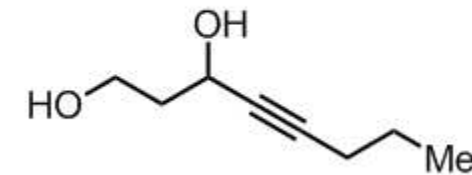
DFILE ozawa08-103.jdf
 COMNT PTLC, 3-octyne
 DATIM 2015-09-02 12:52:20
 OBNUC 1H
 EXMOD proton.jxp
 OBFRQ 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 4
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PW1 5.55 usec
 IRNUC 1H
 CTEMP 21.2 c
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.10 Hz
 RGAIN 34



7.2600
 4.6364
 4.0065
 3.9985
 3.9916
 3.9848
 3.9767
 3.9699
 3.9619
 3.8748
 3.8668
 3.8611
 3.8531
 3.8450
 3.8393
 3.8313
 2.5063
 2.2109
 2.2074
 2.1971
 2.1925
 2.1822
 2.1788
 2.0173
 2.0093
 2.0024
 2.0001
 1.9944
 1.9887
 1.9853
 1.9807
 1.9738
 1.9715
 1.9658
 1.9566
 1.9498
 1.9417
 1.9360
 1.9280
 1.9234
 1.9154
 1.9074
 1.8994
 1.8936
 1.8856
 1.6303
 1.5684
 1.5535
 1.5398
 1.5249
 1.5100
 1.4963
 1.2489
 0.9924
 0.9775
 0.9626
 0.9454
 0.8985

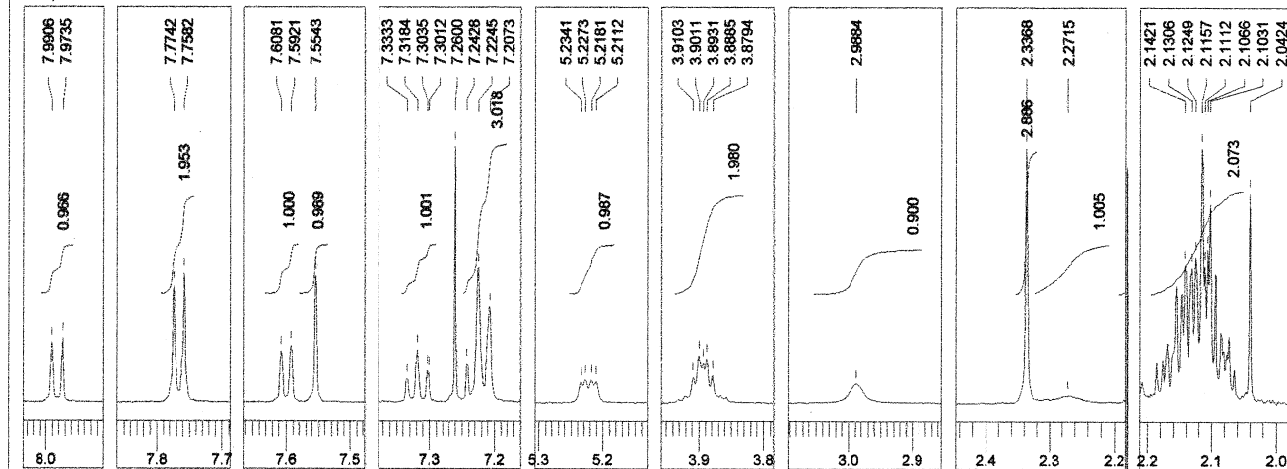
4-octyne

DFILE ozawa08-103_13C_acetone.jdf
COMNT 4-octyne
DATIM 2015-09-16 17:55:18
OBNUC 13C
EXMOD carbon.jpg
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 600
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.40 usec
IRNUC 1H
CTEMP 22.1 c
SLVNT ACETN
EXREF 29.84 ppm
BF 0.12 Hz
RGAIN 60



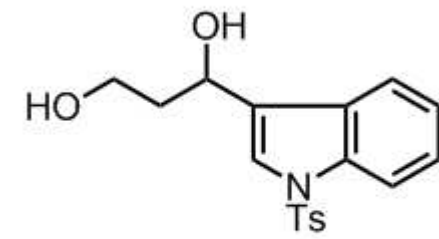
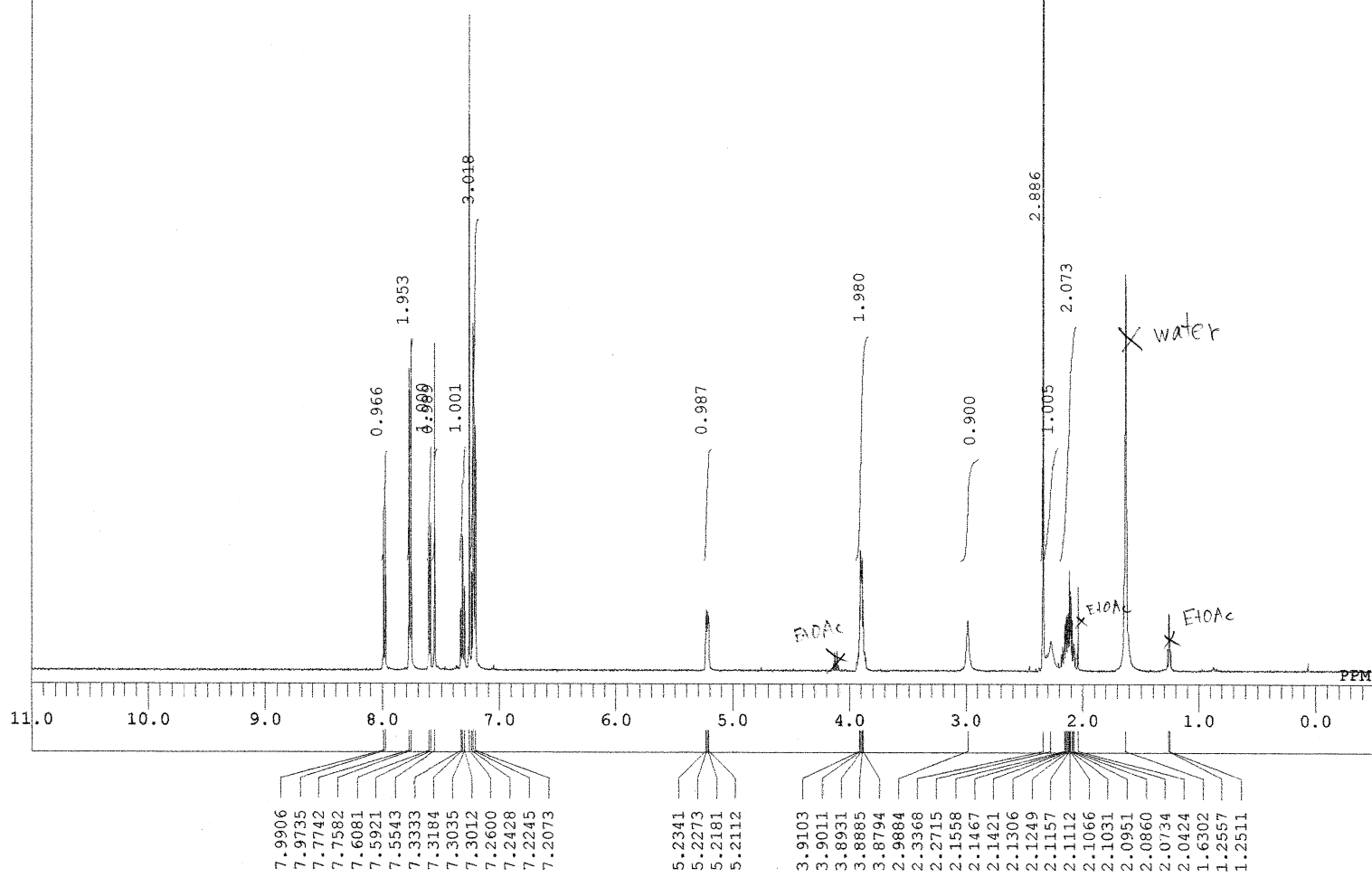
- 206.3659
- 206.2133
- 206.0512
- 84.1799
- 83.3024
- 60.3150
- 59.4851
- 41.9823
- 30.5935
- 30.3074
- 30.1452
- 29.9926
- 29.8400
- 29.6874
- 29.5348
- 29.3822
- 22.9152
- 21.0075
- 13.6248

PTLC, Ts-indole



```

DFILE  ozawa08-102.als
COMNT  PTLC, Ts-indole
DATIM  2015-09-02 12:57:14
OBNUC  1H
EXMOD  proton.jxp
OBFRQ  500.16 MHz
OBSET  2.41 KHz
OBFIN  6.01 Hz
POINT  13107
FREQU  7507.51 Hz
SCANS  4
ACQTM  1.7459 sec
PD      5.0000 sec
PW1     5.55 usec
IRNUC  1H
CTEMP  21.2 c
SLVNT  CDCL3
EXREF  7.26 ppm
BF      0.10 Hz
RGAIN  34
    
```



X water
X EtOAc
X EtOAc

PTLC, Ts-indole

DFILE ozawa08-102_13C.jdf
COMNT PTLC, Ts-indole
DATIM 2015-09-17 06:41:60
OBNUC 13C
EXMOD carbon.jpg
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32767
FREQU 39308.18 Hz
SCANS 2440
ACQTM 0.8336 sec
PD 2.0000 sec
PWL 3.40 usec
IRNUC 1H
CTEMP 21.8 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

