

Supporting Information

**Gold-catalyzed synthesis of nitrogen-containing heterocycles from
 ϵ -N-protected propargylic esters**

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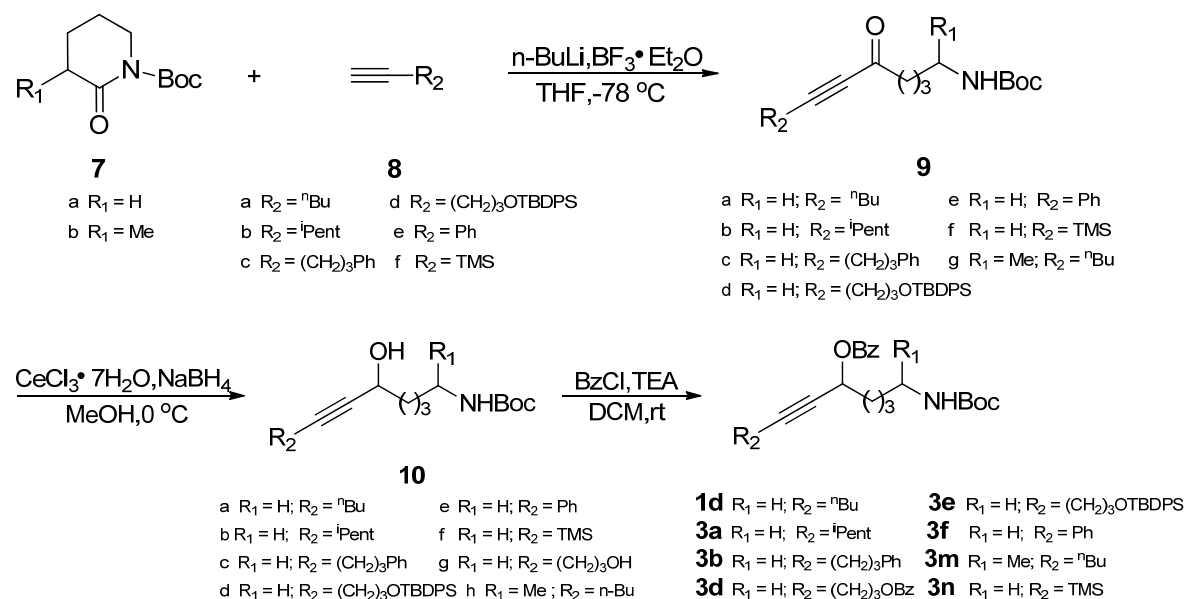
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General Information

Ethyl acetate (AR grade) and Petroleum ether (60-90 °C, AR grade) were purified by distillation. Anhydrous tetrahydrofuran and diethyl ether were freshly distilled from sodium/benzophenone. Anhydrous acetonitrile was obtained by drying over anhydrous K_2CO_3 for 24h, then over 3Å molecular sieves for 24h, followed by distillation. Other commercially available reagents were used without further purification. $AuCl_3$ was purchased from Across Organics and $AgOTf$ was purchased from Alfa Aesar. All manipulations of catalytic reactions were carried out under argon atmosphere. Reactions were monitored by thin layer chromatography (TLC). Flash column chromatography was performed over silica gel (300-400 mesh). 1H NMR and ^{13}C NMR spectra were recorded on Bruker DMX-400 spectrometers using residue solvent peaks as an internal standard. Chemical shifts (δ) are quoted in parts per million (ppm) and coupling constants (J) are measured in hertz (Hz). The following abbreviations are used to describe multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, quin = quintuplet, br. = broad, m = multiplet.

General procedure A: Preparation of propargylic esters 1d, 3a, 3b,

3d-f, 3m



Compounds **7a** and **7b** were prepared according to the known procedure.^{1, 2, 3}

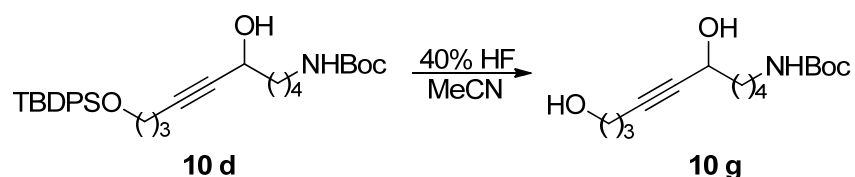
Synthesis of alkyne 9:

The compounds were prepared by using a modified procedure from F. G. West and co-workers.⁴ To a solution of alkyne **8** (36.52 mmol) in dry THF (300.0 ml) at -78 °C, n-BuLi (14.0 ml, 2.84 M, 39.76 mmol) was slowly added, maintaining in argon atmosphere. The reaction mixture was stirred for 45 min, then BF₃·Et₂O (4.0 ml, 30.41 mmol) was added dropwise. Stirring was continued for 15 min, and then lactone **7** (30.41 mmol) was added in one portion via syringe. After stirring for 20 min, the reaction was gradually warmed to room temperature and a solution of saturated NH₄Cl – NH₃ (aq) (2:1, 50 ml in total) was added to quench the reaction. The aqueous layer was extracted with Et₂O (2×50 ml). The combined organic layers were washed with brine, dried with MgSO₄, filtered and evaporated to afford the crude product as reddish-brown oil. The crude material was purified by flash chromatography on silica gel (PE/EtOAc 1:10) to provide alkyne **9**.

Synthesis of alkyne **10**:

To a solution of alkyne **9** (30.43 mmol) in MeOH (250 mL) was added CeCl₃·7H₂O (30.43 mmol) at 0 °C. The resulting mixture was stirred for 10 min before NaBH₄ (60.86 mmol) was added in portions. The resulting mixture was stirred for 20 min before MeOH was removed, then quenched with sat. aq. NaHCO₃ solution (200 mL) and stirred for 15 min. The aqueous layer was extracted with EtOAc (3 × 100 mL) and the combined organic layers were washed with brine, dried (Na₂SO₄), and concentrated *in vacuo*. Flash chromatography purification (silica gel, PE:EtOAc 1:4) afforded alkyne **10** as colorless oil.

Synthesis of propargylic alkyne **10g**:



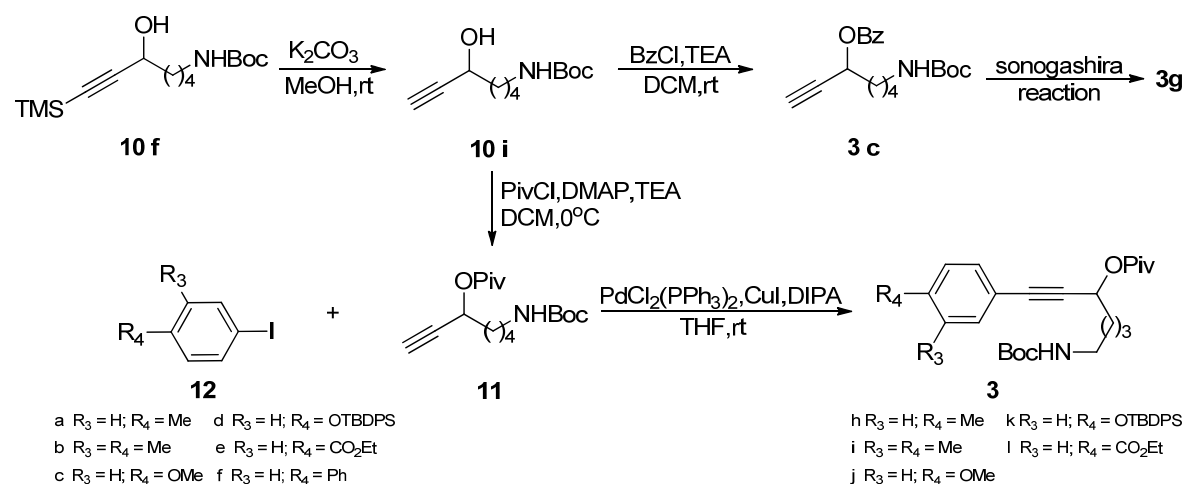
40% HF solution (1.3 mL, 29.4 mmol) was added to a solution of **10d** (1.5398 g, 2.94 mmol) in MeCN (26 mL) at 0 °C. The reaction mixture was stirred at room temperature for 24 h and poured into saturated aqueous NaHCO₃. The aqueous layer was extracted with EtOAc. The combined organic layer was washed with brine, dried

over Na₂SO₄ and concentrated in vacuo. Purification of the residue by SiO₂ column chromatography (EtOAc) gave **10g** (384.8 mg, 46%, not optimized) as colorless oil.

Synthesis of propargylic esters:

A solution of alkynol **10** (2.08 mmol) in CH₂Cl₂ (20.0 mL) was treated with Et₃N (8.32 mmol) and BzCl (8.32 mmol) at 0 °C, and stirred for 1 h. The mixture was diluted with 100 ml CH₂Cl₂ and washed with 10% NH₃ (aq.), brine, dried (Na₂SO₄), and chromatographed on silica gel eluting with EtOAc/PE (1:10 to 1:5) to give propargylic esters **1d**, **3a**, **3b**, **3d-f**, **3m-n**.

General procedure B: Preparation of propargylic esters **3c**, **3g-l**



Synthesis of alkynol **10i**:

A solution of **10f** (6.7301 g, 22.47 mmol) and K₂CO₃ (9.8243 g, 67.45 mmol) in 200 mL of MeOH was stirred at room temperature for 30 min. After the solvent was removed, the residue was dissolved in 150 mL of sat. aqueous NH₄Cl solution and then extracted with Et₂O (3×100 ml), washed with brine and dried over MgSO₄. Concentration of the solution gave **10i** as colorless oil.

3c was obtained by following a standard procedure of benzoylation. The residue was purified through a silica gel column eluting with EtOAc/PE = 1:10, gave colorless oil 4.2401 g, Yield for two steps: 56.9%.

Synthesis of propargylic pivaloate **11**:

Alkynol **10i** (956.3 mg, 4.2 mmol) was dissolved in dry CH₂Cl₂ (45 mL). Then TEA (6.2 mL, 42.0 mmol) and DMAP (167.5 mg, 1.28 mmol) were added, followed by the addition of pivaloyl chloride (1.1 mL, 8.4 mmol) at 0°C. The mixture was stirred for 1

h at room temperature, then treated with MeOH (5.0 mL), and stirred for 1 h. The aqueous phase was extracted with Et₂O (2 × 50 mL). The combined Et₂O layers were washed with saturated NaHCO₃ solution (25 mL), saturated NaCl solution, dried with anhydrous Na₂SO₄, filtered, and concentrated in vacuo. The residue was chromatographed (EtOAc/PE = 1:10) to provide pure propargylic acetate **11** (1.08 g, 83%) as colorless oil.

Synthesis of propargylic esters **3g-l**:

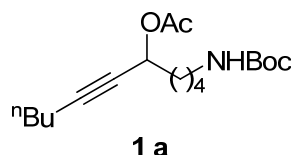
Aryl iodide **12** (1.0 mmol), propargylic ester **11** (1.0 mmol), PdCl₂(PPh₃)₂ (0.05 mmol), and CuI (0.10 mmol) were dissolved in dry THF (10 mL), and then DIPA or TEA (2.0 mmol) was added. The mixture was stirred at room temperature for 1h and the solvent was removed, then 50ml of Et₂O was added. The suspension was filtered through celite. The combined filtrate was concentrated under reduced pressure to give brown oil. The residue was purified through a silica gel column eluting with EtOAc/PE (1:10 to 1:5) to give propargylic esters **3h-l**.

3g was obtained by following a similar procedure as above via **3c**.

General procedure C: Au-catalyzed propargylic ester cyclization

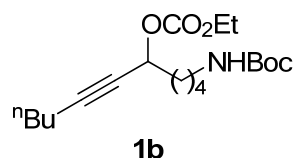
A mixture of AuCl₃ (5mol%, 3.0 mg) and AgOTf (15 mol%, 7.8 mg) in anhydrous MeCN (1.0 ml) was stirred under argon atmosphere at room temperature for 5 minutes. Then the substituted propargylic ester in anhydrous MeCN (1.0ml) was added. After the reaction completed (TLC control), TEA (0.1 ml) was added and the solvent was evaporated under reduced pressure. The crude mixture was purified by flash chromatography (silica gel).

Spectroscopic and Analytical Data

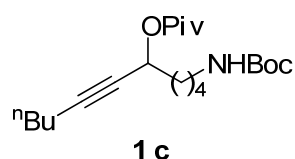


Compound **1a** was prepared according to the general procedure A: R_f = 0.31 (PE/EtOAc, 5/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ 5.34 - 5.30 (tt, J = 6.8 Hz, 2.0 Hz, 1H), 4.53 (*br.s*, 1H), 3.11 - 3.10 (t, J = 6.4 Hz, 2H), 2.20 - 2.16 (td, J =

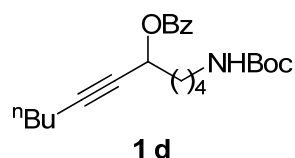
6.8 Hz, 2.0 Hz, 2H), 2.04 (s, 3H), 1.74 - 1.68 (m, 2H), 1.48 - 1.32 (m, 8H), 1.42(s, 9H), 0.90 - 0.86 (t, $J = 7.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 170.0, 156.0, 86.4, 79.1, 77.5, 64.4, 40.4, 34.8, 30.6, 29.7, 28.5, 22.3, 21.9, 21.1, 18.4, 13.6; IR (neat, cm^{-1}): 3379, 2961, 2933, 2868, 2242, 1740, 1711, 1516, 1456, 1369.



Compound **1b** was prepared according to the general procedure A: $R_f = 0.31$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 5.22 - 5.18 (tt, $J = 6.4$ Hz, 2.0 Hz, 1H), 4.52 (*br.s*, 1H), 4.23 - 4.17 (q, $J = 7.2$ Hz, 2H), 3.13 - 3.11 (m, 2H), 2.22 - 2.18 (td, $J = 7.2$ Hz, 2.0 Hz, 2H), 1.81 - 1.75 (m, 2H), 1.43 (s, 9H), 1.51 - 1.37 (m, 8H), 1.33 - 1.29 (t, $J = 6.8$ Hz, 3H), 0.91 - 0.88 (t, $J = 3.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 156.0, 154.5, 87.3, 79.1, 76.9, 68.3, 64.1, 40.4, 34.8, 30.5, 29.6, 28.5, 22.3, 21.9, 18.4, 14.3, 13.6; IR (neat, cm^{-1}): 3392, 2934, 2868, 2241, 1749, 1714, 1515, 1459, 1393, 1370.

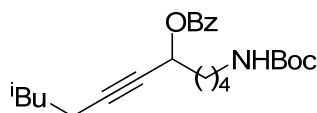


Compound **1c** was prepared according to the general procedure A: $R_f = 0.38$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 5.33 - 5.29 (tt, $J = 6.4$ Hz, 1.6 Hz, 1H), 4.52 (*br.s*, 1H), 3.13 - 3.09 (q, $J = 6.0$ Hz, 2H), 2.20 - 2.16 (td, $J = 6.8$ Hz, 2.0 Hz, 2H), 1.76 - 1.70 (m, 2H), 1.54 - 1.33 (m, 8H), 1.43 (s, 9H), 1.20 (s, 9H), 0.91 - 0.87 (t, $J = 7.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 177.5, 156.0, 85.9, 79.0, 77.7, 64.0, 40.4, 38.7, 34.7, 30.6, 29.6, 28.5, 27.1, 22.3, 21.9, 18.4, 13.6; IR (neat, cm^{-1}): 3392, 2962, 2934, 2869, 2243, 1723, 1516, 1480, 1393, 1367.



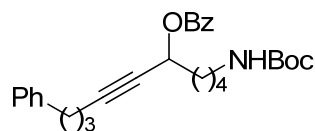
Compound **1d** was prepared according to the general procedure A: $R_f = 0.33$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.07 - 8.04 (dd, $J = 7.2$ Hz, 1.6 Hz, 2H), 7.58 - 7.54 (t, $J = 7.6$ Hz, 1H), 7.46 - 7.42 (t, $J = 7.6$ Hz, 2H), 5.62 -

5.59 (tt, $J = 6.4$ Hz, 2.0 Hz, 1H), 4.53 (*br.s*, 1H), 3.15 - 3.13 (m, 2H), 2.23 - 2.19 (td, $J = 7.2$ Hz, 2.0 Hz, 2H), 1.91 - 1.85 (m, 2H), 1.55 - 1.34 (m, 8H), 1.43 (s, 9H), 0.91 - 0.88 (t, $J = 3.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 165.7, 156.0, 133.1, 130.3, 129.8, 128.4, 86.7, 79.2, 77.5, 65.0, 40.5, 35.0, 30.7, 29.8, 28.5, 22.5, 22.0, 18.5, 13.7; IR (neat, cm^{-1}): 3389, 2933, 2867, 2242, 1719, 1514, 1454, 1365.



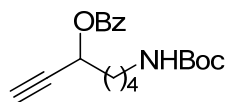
3 a

Compound **3a** was prepared according to the general procedure A: $R_f = 0.63$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.05 - 8.03 (m, 2H), 7.56 - 7.53 (m, 1H), 7.44 - 7.41 (m, 2H), 5.60 - 5.57 (t, $J = 6.4$ Hz, 1H), 4.57 (*br.s*, 1H), 3.13 - 3.12 (m, 2H), 2.22 - 2.18 (td, $J = 7.6$ Hz, 1.6 Hz, 2H), 1.89 - 1.84 (m, 2H), 1.67 - 1.59 (m, 1H), 1.54 - 1.52 (m, 4H), 1.42 (s, 9H), 1.40 - 1.36 (q, $J = 7.2$ Hz, 2H), 0.87 - 0.86 (d, $J = 6.8$ Hz, 6H); ^{13}C NMR (100MHz, CDCl_3): δ 165.5, 155.9, 132.9, 130.0, 129.6, 128.3, 86.5, 78.8, 77.3, 64.8, 40.3, 37.3, 34.8, 29.6, 28.3, 27.2, 22.3, 22.1, 16.7; IR (neat, cm^{-1}): 3390, 3066, 2956, 2868, 2241, 1720, 1602, 1517, 1454, 1390, 1366.



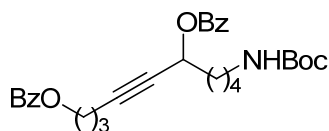
3 b

Compound **3b** was prepared according to the general procedure A: $R_f = 0.49$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.08 - 8.06 (d, $J = 7.6$ Hz, 2H), 7.58 - 7.54 (t, $J = 7.2$ Hz, 1H), 7.46 - 7.42 (m, 2H), 7.28 - 7.24 (m, 2H), 7.18 - 7.15 (m, 3H), 5.64 - 5.60 (*br.t*, $J = 6.4$ Hz, 1H), 4.57 (*br.s*, 1H), 3.15 - 3.13 (m, 2H), 2.24 - 2.20 (td, $J = 7.2$ Hz, 1.6 Hz, 2H), 2.71 - 2.68 (t, $J = 7.2$ Hz, 2H), 1.92 - 1.89 (m, 2H), 1.86 - 1.80 (m, 2H), 1.57 - 1.54 (m, 4H), 1.43 (s, 9H). ^{13}C NMR (100MHz, CDCl_3): δ 165.7, 156.0, 141.5, 133.1, 130.2, 129.8, 128.6, 128.4(2C), 125.9, 86.1, 79.1, 78.2, 64.9, 40.5, 34.9, 34.8, 30.1, 29.7, 28.5, 22.5, 18.2; IR (neat, cm^{-1}): 3393, 3063, 3008, 2936, 2864, 2240, 1718, 1602, 1512, 1453, 1392, 1366.



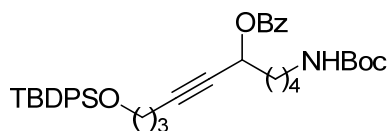
3c

Compound **3c** was prepared according to the general procedure B: $R_f = 0.47$ (PE/EtOAc, 5/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ 8.05 - 8.03 (m, 2H), 7.58 - 7.54 (m, 1H), 7.45 - 7.41 (t, $J = 8.0$ Hz, 2H), 5.61 - 5.57 (td, $J = 6.4$ Hz, 2.0 Hz, 1H), 4.57 (*br.s*, 1H), 3.13 (*br.s*, 2H), 2.49 - 2.48 (d, $J = 2.0$ Hz, 1H), 1.96 - 1.90 (m, 2H), 1.57 - 1.54 (quin, $J = 3.6$ Hz, 4H), 1.42 (s, 9H); ¹³C NMR (100MHz, CDCl₃): δ 165.6, 156.1, 133.3, 129.9, 129.8, 128.5, 81.1, 79.2, 74.0, 64.2, 40.4, 34.4, 29.7, 28.5, 22.3; IR (neat, cm⁻¹): 3388, 3301, 3066, 2935, 2867, 2121, 1723, 1601, 1515, 1453, 1392, 1365.



3d

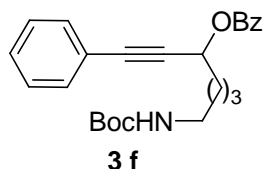
Compound **3d** was prepared according to the general procedure A: $R_f = 0.38$ (PE/EtOAc, 5/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ 8.03 - 7.98 (m, 4H), 7.53 - 7.48 (m, 2H), 7.41 - 7.37 (m, 4H), 5.58 - 5.55 (*br.t*, $J = 6.4$ Hz, 1H), 4.80 (*br.s*, 1H), 4.39 - 4.36 (t, $J = 6.2$ Hz, 2H), 3.11 - 3.10 (m, 2H), 2.40 - 2.36 (td, $J = 7.2$ Hz, 1.6 Hz, 2H), 1.98 - 1.91 (quin, $J = 6.8$ Hz, 2H), 1.86 - 1.84 (m, 2H), 1.51 (*br.s*, 4H), 1.38(s, 9H); ¹³C NMR (100MHz, CDCl₃): δ 166.1, 165.2, 155.8, 132.8, 132.7, 129.9, 129.8, 129.4, 129.3, 128.1(2C), 84.6, 78.4, 78.2, 64.5, 63.2, 40.1, 34.5, 29.4, 28.1, 27.4, 22.1, 15.4; IR (neat, cm⁻¹): 3395, 3066, 3012, 2936, 2866, 2244, 1717, 1602, 1512, 1452, 1366.



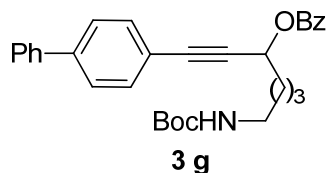
3e

Compound **3e** was prepared according to the general procedure A: $R_f = 0.54$ (PE/EtOAc, 5/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ 8.07 - 8.06 (d, $J = 7.6$ Hz, 2H), 7.68 - 7.66 (m, 4H), 7.58 - 7.55 (t, $J = 7.2$ Hz, 1H), 7.46 - 7.36 (m, 8H), 5.63 - 5.60 (*br.t*, $J = 6.4$ Hz, 1H), 4.56 (*br.s*, 1H), 3.75 - 3.72 (t, $J = 6.0$ Hz, 2H), 3.13 - 3.12 (m, 2H), 2.41 - 2.38 (m, 2H), 1.89 - 1.76 (m, 4H), 1.57 - 1.47 (m, 4H), 1.44 (s,

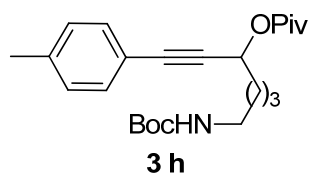
9H), 1.05 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): 165.7, 156.0, 135.6, 133.9, 133.1, 130.2, 129.8, 129.7, 128.4, 127.7, 86.1, 79.1, 77.7, 64.9, 62.5, 40.5, 35.0, 31.5, 29.7, 28.5, 26.9, 22.5, 19.3, 15.4; IR (neat, cm^{-1}): 3391, 3069, 2933, 2860, 2244, 1719, 1594, 1510, 1428, 1390, 1315.



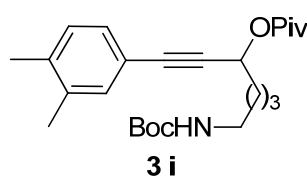
Compound **3f** was prepared according to the general procedure A: $R_f = 0.29$ (PE/EtOAc, 5/1) white solid. ^1H NMR (400MHz, CDCl_3): δ 8.10 - 8.08 (m, 2H), 7.60 - 7.56 (t, $J = 7.6$ Hz, 1H), 7.48 - 7.43 (m, 4H), 7.32 - 7.29 (m, 3H), 5.87 - 5.84 (t, $J = 6.4$ Hz, 1H), 4.55 (*br.s*, 1H), 3.17 - 3.16 (m, 2H), 2.05 - 2.00 (m, 2H), 1.62 - 1.61 (m, 4H), 1.43 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 165.7, 156.1, 133.3, 132.0, 130.1, 129.9, 128.7, 128.5, 128.4, 122.4, 86.5, 85.7, 79.2, 65.0, 40.5, 34.8, 29.8, 28.5, 22.6; IR (neat, cm^{-1}): 3142, 3060, 3003, 2975, 2937, 2864, 2230, 1722, 1695, 1600, 1516, 1491, 1367.



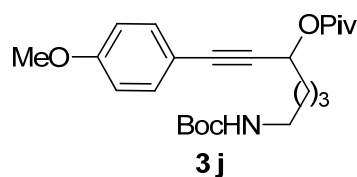
Compound **3g** was prepared according to the general procedure B: $R_f = 0.57$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.13 - 8.11 (d, $J = 7.6$ Hz, 2H), 7.59 - 7.54 (m, 7H), 7.48 - 7.42 (m, 4H), 7.37 - 7.33 (m, 1H), 5.92 - 5.89 (t, $J = 6.4$ Hz, 1H), 4.60 (*br.s*, 1H), 3.19 - 3.18 (m, 2H), 2.08 - 2.03 (m, 2H), 1.66 - 1.63 (m, 4H), 1.45 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 165.6, 156.1, 141.4, 140.2, 133.2, 132.4, 130.0, 129.9, 128.9, 128.5, 127.8, 127.0, 126.9, 121.2, 87.2, 85.6, , 79.0, 65.0, 40.4, 34.8, 29.8, 28.5, 22.5; IR (neat, cm^{-1}): 3390, 3061, 2975, 2934, 2866, 2229, 1720, 1601, 1513, 1452, 1366.



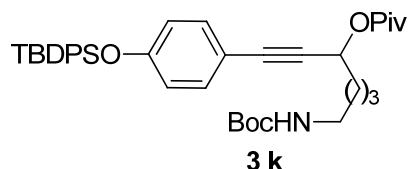
Compound **3h** was prepared according to the general procedure B: $R_f = 0.50$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.32 - 7.30 (d, $J = 8.0$ Hz, 2H), 7.11 - 7.09 (d, $J = 8.0$ Hz, 2H), 5.58 - 5.55 (t, $J = 6.4$ Hz, 1H), 4.54 (*br.s*, 1H), 3.14 - 3.13 (*br.d*, $J = 6.0$ Hz, 2H), 2.34 (s, 3H), 1.88 - 1.83 (q, $J = 14.0$ Hz, 6.8 Hz, 2H), 1.54 - 1.51 (m, 4H), 1.43 (s, 9H), 1.22 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 177.6, 156.1, 138.8, 131.9, 129.1, 119.5, 86.0, 85.3, 79.3, 64.2, 40.5, 38.9, 34.7, 29.7, 28.6, 27.2, 22.5, 21.6; IR (neat, cm^{-1}): 3393, 2975, 2869, 2229, 1727, 1511, 1457, 1393, 1366.



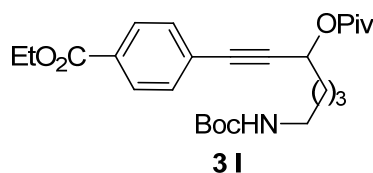
Compound **3i** was prepared according to the general procedure B: $R_f = 0.59$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.21 (*br.s*, 1H), 7.17 - 7.15 (d, $J = 8.0$ Hz, 1H), 7.06 - 7.04 (d, $J = 7.6$ Hz, 1H), 5.58 - 5.55 (t, $J = 6.4$ Hz, 1H), 4.54 (*br.s*, 1H), 3.14 - 3.13 (m, 2H), 2.24 - 2.22 (d, $J = 9.6$ Hz, 6H), 1.88 - 1.83 (m, 2H), 1.54 (*br.s*, 4H), 1.43 (s, 9H), 1.22 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 177.6, 156.1, 137.6, 136.7, 133.0, 129.6, 129.4, 119.7, 85.7, 85.5, 79.2, 64.2, 40.5, 38.9, 34.7, 29.7, 28.5, 27.2, 22.5, 19.9, 19.6; IR (neat, cm^{-1}): 3392, 2974, 2869, 2230, 1721, 1506, 1480, 1455, 1393, 1366.



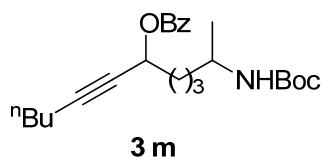
Compound **3j** was prepared according to the general procedure B: $R_f = 0.52$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.37 - 7.34 (m, 2H), 6.83 - 6.80 (m, 2H), 5.76 - 5.54 (t, $J = 6.4$ Hz, 1H), 4.54 (*br.s*, 1H), 3.80 (s, 3H), 3.14 - 3.13 (m, 2H), 1.88 - 1.82 (m, 2H), 1.54 - 1.52 (m, 4H), 1.43 (s, 9H), 1.22 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 177.6, 159.9, 156.1, 133.5, 114.6, 114.0, 85.3, 85.1, 79.2, 64.3, 55.4, 40.5, 38.9, 34.7, 29.7, 28.5, 27.2, 22.5; IR (neat, cm^{-1}): 3395, 2974, 2869, 2228, 1721, 1606, 1510, 1459, 1394, 1366.



Compound **3k** was prepared according to the general procedure B: $R_f = 0.55$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.70 - 7.68 (m, 4H), 7.45 - 7.41 (m, 2H), 7.38 - 7.35 (m, 4H), 7.18 - 7.15 (d, $J = 8.4$ Hz, 2H), 6.69 - 6.67 (d, $J = 8.4$ Hz, 2H), 5.54 - 5.51 (t, $J = 6.4$ Hz, 1H), 4.51 (*br.s*, 1H), 3.13 - 3.11 (m, 2H), 1.84 - 1.79 (m, 2H), 1.52 - 1.50 (m, 4H), 1.42 (s, 9H), 1.20 (s, 9H), 1.09 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 177.4, 156.0, 135.4, 133.2, 132.4, 130.1, 127.9, 119.8, 114.9, 85.3, 85.1, 79.0, 64.1, 40.4, 38.8, 34.6, 29.6, 28.4, 27.1, 26.5, 22.3, 19.4; IR (neat, cm^{-1}): 3395, 3071, 3048, 2934, 2862, 2229, 1725, 1602, 1507, 1429, 1393, 1365.

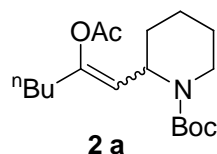


Compound **3l** was prepared according to the general procedure B: $R_f = 0.47$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.95 - 7.93 (d, $J = 8.4$ Hz, 2H), 7.45 - 7.43 (d, $J = 8.4$ Hz, 2H), 5.56 - 5.53 (t, $J = 6.6$ Hz, 1H), 4.62 (*br.s*, 1H), 4.37 - 4.31 (q, $J = 7.2$ Hz, 2H), 3.13 - 3.10 (t, $J = 6.2$ Hz, 2H), 1.88 - 1.83 (m, 2H), 1.52 - 1.51 (m, 4H), 1.40 (s, 9H), 1.38 - 1.34 (t, $J = 7.2$ Hz, 3H), 1.20 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ 177.3, 165.9, 156.0, 131.7, 130.1, 129.3, 126.9, 89.5, 84.3, 78.9, 63.8, 61.1, 40.3, 38.8, 34.3, 29.6, 28.4, 27.0, 22.3, 14.3; IR (neat, cm^{-1}): 3398, 2976, 2931, 2871, 2251, 1721, 1606, 1512, 1457, 1397, 1367.

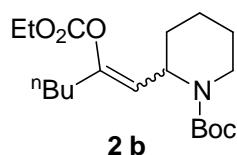


Compound **3m** was prepared according to the general procedure A: $R_f = 0.59$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.07 - 8.04 (m, 2H), 7.58 - 7.54 (m, 1H), 7.45 - 7.42 (m, 2H), 5.62 - 5.58 (m, 1H), 4.33 (*br.s*, 1H), 3.65

(*br.s*, 1H), 2.23 - 2.19 (td, $J = 7.2$ Hz, 2.0 Hz, 2H), 1.93 - 1.82 (m, 2H), 1.57 - 1.36 (m, 8H), 1.42 (s, 9H), 1.13 - 1.10 (dd, $J = 6.6$ Hz, 2.8 Hz, 3H), 0.91 - 0.88 (t, $J = 7.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 165.7, 155.5, 133.1, 130.2, 129.8, 128.4, 86.6, 79.0, 77.5, 65.0, 46.4, 36.9, 35.1, 30.6, 28.5, 22.0, 21.8, 21.3, 18.5, 13.6; IR (neat, cm^{-1}): 3382, 3066, 2934, 2868, 2241, 1720, 1602, 1515, 1454, 1366.

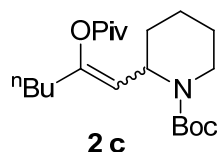


Compound **2a** was prepared in 84.3% yield according to the general procedure C: $R_f = 0.51$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 5.46 - 5.44 (d, $J = 9.2$ Hz, 0.5H), 5.30 - 5.28 (d, $J = 8.4$ Hz, 0.5H), 5.94 (*br.s*, 1H), 3.94 - 3.90 (m, 1H), 2.83 - 2.80 (m, 1H), 2.40 - 2.27 (m, 1 H), 2.21 - 2.19 (m, 1H), 2.17 (s, 1.5H), 2.14 (s, 1.5H), 1.61 - 1.55 (m, 4H), 1.43 (s, 4.5H), 1.44 (s, 4.5H), 1.43 - 1.28 (m, 6H), 0.90 - 0.87 (m, 3H); ^{13}C NMR (100MHz, CDCl_3): δ major: 169.4, 154.7, 151.4, 115.4, 79.3, 47.7, 39.9, 33.2, 29.4, 28.7, 28.5, 25.6, 22.5, 21.0, 19.5, 13.9; minor : 169.0, 154.9, 149.7, 113.7, 79.5, 47.0, 39.8, 30.7, 30.0, 29.1, 28.6, 25.6, 22.1, 21.2, 19.8, 14.0; IR (neat, cm^{-1}): 2933, 2865, 1757, 1693, 1454, 1413, 1367; HRMS (ES^+) Calculated for $[\text{C}_{18}\text{H}_{31}\text{NNaO}_4]^+$: 348.2151; Found: 348.2147.

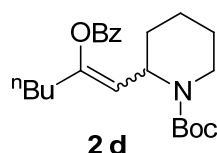


Compound **2b** was prepared in 71.7% yield according to the general procedure C: $R_f = 0.54$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ major: 5.59 - 5.56 (d, $J = 9.2$ Hz, 0.75H), minor: 5.28 - 5.26 (d, $J = 8.4$ Hz, 0.25H), 5.00 - 5.49 (m, 1H), 4.22 - 4.17 (q, $J = 7.2$ Hz, 2H), 3.93 - 3.90 (m, 1H), 2.83 - 2.76 (m, 1H), major: 2.44 - 2.30 (m, 1.5H), minor: 2.25 - 2.21 (m, 0.5H), 1.59 - 1.42 (m, 4H), 1.43 (s, 9H), 1.43 - 1.32 (m, 6H), 1.33 - 1.29 (t, $J = 7.2$ Hz, 3H), 0.89 - 0.85 (t, $J = 7.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ major: 154.6, 153.5, 151.6, 115.2, 79.5, 64.3, 47.6, 39.7, 32.8, 30.6, 28.9, 28.5, 28.4, 25.5, 22.4, 19.5, 14.2; minor: 154.9, 152.8, 149.3, 114.0, 79.4, 64.3, 47.0, 39.7, 32.8, 30.0, 29.1, 28.7, 28.5, 25.5, 22.1, 19.8, 14.3; IR (neat,

cm⁻¹): 2934, 2866, 1757, 1693, 1452, 1413, 1368; HRMS (ES⁺) Calculated for [C₁₉H₃₃NNaO₅]⁺: 378.2256; Found: 378.2253.

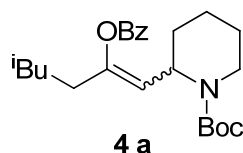


Compound **2c** was prepared in 83.1% yield according to the general procedure C: R_f = 0.56 (PE/EtOAc, 5/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ major: 5.41 - 5.39 (d, *J* = 8.8 Hz, 0.75H), minor: 5.27 - 5.24 (d, *J* = 8.4 Hz, 0.25H), 4.98 - 4.91 (*br.s*, 1H), 3.98 - 3.91 (m, 1H), 2.86 - 2.79 (m, 1H), major : 2.36 - 2.30 (m, 1.5H), minor: 2.21 - 2.17 (m, 0.5H), 1.61 - 1.55 (m, 4H), major : 1.44 (s, 5H), minor: 1.42 (s, 4H), 1.41 - 1.27 (m, 6H), major : 1.24 (s, 5H), minor: 1.26 (s, 4H), major : 0.90 - 0.88 (t, *J* = 3.6 Hz, 1.5H), minor: 0.88 - 0.86 (t, *J* = 3.6 Hz, 1.5H); ¹³C NMR (100MHz, CDCl₃): δ major: 177.0, 154.6, 151.5, 114.9, 79.5, 47.7, 39.8, 39.0, 32.8, 30.8, 29.0, 28.6, 27.3, 25.6, 22.5, 19.5, 14.1; minor: 176.3, 155.1, 149.3, 114.0, 79.4, 47.6, 39.9, 39.2, 32.8, 30.3, 29.2, 28.5, 27.2, 25.5, 22.1, 20.0, 13.9; IR (neat, cm⁻¹): 2934, 2868, 1745, 1694, 1475, 1413, 1367; HRMS (ES⁺) Calculated for [C₂₁H₃₇NNaO₄]⁺: 390.2620; Found: 390.2617.

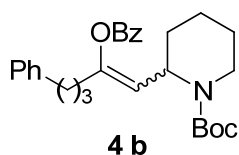


Compound **2d** was prepared in 91.8% yield according to the general procedure C: R_f = 0.51 (PE/EtOAc, 5/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ 8.10 - 8.06 (t, *J* = 8.0 Hz, 2H), 7.60 - 7.56 (t, *J* = 7.6 Hz, 1H), 7.48 - 7.44 (t, *J* = 7.6 Hz, 2H), major: 5.63 - 5.60 (d, *J* = 9.2 Hz, 0.6H), minor: 5.41 - 5.39 (d, *J* = 8.0 Hz, 0.4H), 5.07 - 5.00 (m, 1H), 3.99 - 3.95 (m, 1H), 2.90 - 2.83 (m, 1H), major: 2.54 - 2.41(m, 1.25H), minor: 2.34 - 2.32 (m, 0.75H), 1.65 - 1.58 (m, 4H), major: 1.48 (s, 5H), minor: 1.34 (s, 4H), 1.48 - 1.34(m, 6H), 0.92 - 0.86 (q, *J* = 7.2 Hz, 3H); ¹³C NMR (100MHz, CDCl₃): δ major: 165.2, 154.7, 151.6, 133.4, 130.0, 128.6, 115.6, 79.6, 47.6, 39.8, 33.2, 30.3, 29.5, 28.6, 28.4, 25.6, 22.6, 19.6, 14.1; minor: 164.5, 155.0, 149.7, 133.4, 130.2,

128.6, 114.5, 79.3, 47.8, 39.8, 33.2, 30.8, 29.1, 28.9, 28.6, 25.6, 22.2, 19.9, 14.0; IR (neat, cm^{-1}): 2933, 2864, 1733, 1691, 1602, 1451, 1412, 1367; HRMS (ES^+) Calculated for $[\text{C}_{23}\text{H}_{33}\text{NNaO}_4]^+$: 410.2307; Found: 410.2298.

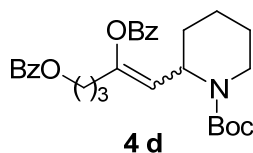


Compound **4a** was prepared in 83.2% yield according to the general procedure C: R_f = 0.77 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.10 - 8.06 (m, 2H), 7.60 - 7.56 (m, 1H), 7.47 - 7.43 (m, 2H), major: 5.60 - 5.58 (d, J = 8.8 Hz, 0.6H), minor: 5.41 - 5.39 (d, J = 8.0 Hz, 0.4H), 5.06 - 5.00 (m, 1H), 3.98 - 3.95 (m, 1H), 2.890 - 2.83 (m, 1H), major: 2.53 - 2.42(m, 1.2H), minor: 2.35 - 2.32 (m, 0.8H), 1.65 - 1.54 (m, 6H), major: 1.48 (s, 5H), minor: 1.33 (s, 4H), 1.40 - 1.34(m, 3H), 0.89 - 0.86 (m, 6H); ^{13}C NMR (100MHz, CDCl_3): δ major: 165.1, 154.7, 151.8, 133.3, 130.1, 130.0, 128.6, 115.5, 79.3, 47.5, 39.9, 36.0, 31.5, 30.3, 28.6, 28.0, 27.8, 22.6, 19.6; minor: 164.4, 154.9, 150.0, 133.4, 130.2, 129.8, 128.6, 114.2, 79.6, 47.8, 39.9, 35.8, 31.5, 30.9, 28.4, 27.6, 25.6, 22.5, 19.9; IR (neat, cm^{-1}): 3065, 2932, 2865, 1734, 1692, 1602, 1415, 1412, 1367; HRMS (ES^+) Calculated for $[\text{C}_{24}\text{H}_{35}\text{KNO}_4]^+$: 440.2203; Found: 440.2206.

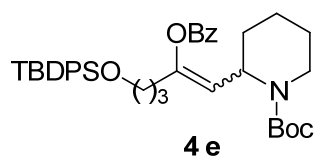


Compound **4b** was prepared in 85.3 % yield according to the general procedure C: R_f = 0.62 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.09 - 8.06 (m, 2H), 7.60 - 7.56 (m, 1H), 7.48 - 7.44 (m, 2H), 7.29 - 7.22 (m, 2H), 7.19 - 7.13 (m, 3H), major: 5.68 - 5.66 (d, J = 9.2 Hz, 0.6H) ,minor: 5.43 - 5.41 (d, J = 8.0 Hz, 0.4H), 5.06 (br.s, 1H), 4.00 - 3.96 (m, 1H), 2.91 - 2.83 (m, 1H), 2.68 - 2.64 (m, 2H), major: 2.60 - 2.57(m, 1.2H), minor: 2.41 - 2.37 (m, 0.8H), 1.85 - 1.82 (m, 3H), 1.66 - 1.35 (m, 5H), major: 1.49 (s, 5H), minor:1.35 (s, 4H); ^{13}C NMR (100MHz, CDCl_3): δ major: 165.1, 154.6, 151.0, 141.8, 133.3, 130.1, 129.9, 128.5, 128.4(2C), 128.5, 116.1, 79.5, 47.6, 39.8, 35.6, 33.0, 30.2, 28.6, 28.4, 25.5, 19.5; minor: 164.3, 154.8, 149.1, 142.1,

133.4, 129.9, 129.7, 128.5(2C), 128.3, 125.9, 114.9, 79.3, 47.4, 39.8, 35.1, 30.7, 30.2, 28.7, 28.3, 25.5, 19.8; IR (neat, cm^{-1}): 3063, 2034, 2935, 2860, 1732, 1689, 1602, 1451, 1412, 1366; HRMS (ES^+) Calculated for $[\text{C}_{28}\text{H}_{35}\text{KNO}_4]^+$: 488.2203; Found: 488.2222.

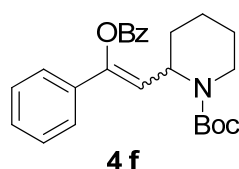


Compound **4d** was prepared in 55.4% yield according to the general procedure C: R_f = 0.59 and 0.50 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.10 - 8.00 (m, 4H), 7.60 - 7.50 (m, 2H), 7.47 - 7.37 (m, 4H), major: 5.72 - 5.69 (d, J = 9.6 Hz, 0.7H), minor: 5.49 - 5.47 (d, J = 8.0 Hz, 0.3H), 5.10 - 5.06 (m, 1H), 4.39 - 4.32 (m, 2H), 3.98 - 3.95 (*br.d*, J = 13.6 Hz, 1H), 2.89 - 2.83 (t, J = 13.2 Hz, 1H), 2.80 - 2.52 (m, 2H), 2.02 - 1.96 (m, 2H), 1.73 - 1.60 (m, 6H), 1.47 (s, 5H), 1.33 (s, 4H); ^{13}C NMR (100MHz, CDCl_3): δ major: 166.6, 165.1, 154.7, 150.2, 133.5, 132.9, 130.2, 129.8, 129.6, 128.6, 128.4, 116.6, 79.7, 64.3, 47.6, 39.9, 30.6, 30.2, 28.6, 26.4, 26.1, 25.5, 19.5; minor: 166.6, 164.3, 154.8, 148.5, 133.5, 133.0, 130.3, 130.0, 129.5, 128.6, 128.4, 115.6, 79.4, 64.0, 47.6, 39.9, 30.6, 30.2, 28.4, 26.4, 26.1, 25.5, 19.9; IR (neat, cm^{-1}): 3427, 3065, 2933, 2857, 1726, 1689, 1602, 1450, 1412, 1367; HRMS (ES^+) Calculated for $[\text{C}_{29}\text{H}_{36}\text{NO}_6]^+$: 494.2543; Found: 494.2541.

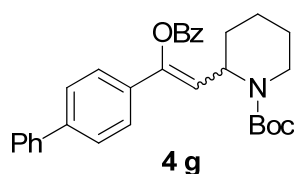


Compound **4e** was prepared in 77.3% yield according to the general procedure C: R_f = 0.66 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.10 - 8.05 (m, 2H), 7.66 - 7.58 (m, 5H), 7.48 - 7.46 (t, J = 7.6 Hz, 2H), 7.41 - 7.31 (m, 6H), major: 5.65 - 5.63 (d, J = 9.2 Hz, 0.6H), minor: 5.44 - 5.42 (d, J = 8.0 Hz, 0.4H), 5.99-5.96 (m, 1H), 5.04 (*br.s*, 1H), 3.73 - 3.68 (m, 2H), 2.88 - 2.85 (t, J = 12.0 Hz, 1H), major: 2.50 - 2.47(m, 1.4H), minor: 2.72 - 2.60 (m, 0.6H), 1.78 - 1.70 (m, 3H), 1.65 - 1.57 (m, 5H), major: 1.47 (s, 5H), minor: 1.34 (s, 4H), major: 1.04 (s, 5H), minor: 1.02 (s, 4H); ^{13}C NMR (100MHz, CDCl_3): δ major: 165.1, 154.8, 149.3, 135.6, 134.0, 133.3, 130.0,

129.6, 128.6, 127.7, 115.9, 79.6, 63.4, 47.9, 39.8, 30.9, 30.2, 30.1, 28.6, 26.9, 26.2, 25.5, 19.6, 19.3; minor: 164.4, 154.8, 150.9, 135.6, 134.0, 133.4, 130.2, 129.7, 128.5, 127.7, 114.9, 79.3, 63.0, 47.5, 39.9, 30.9, 30.2, 29.9, 28.4, 27.0, 26.2, 25.6, 20.0, 19.3; IR (neat, cm^{-1}): 3068, 2935, 2859, 1732, 1688, 1601, 1451, 1419, 1366; HRMS (ES^+) Calculated for $[\text{C}_{38}\text{H}_{49}\text{NaNO}_5\text{Si}]^+$: 650.3278; Found: 650.3229.

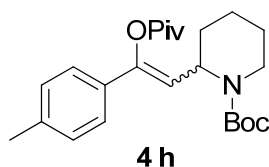


Compound **4f** was prepared in 49.9% yield according to the general procedure C: $R_f = 0.47$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.22 - 8.20 (d, $J = 7.6$ Hz, 1H), 8.12 - 8.10 (d, $J = 7.6$ Hz, 1H), 7.65 - 7.57 (m, 1H), 7.52 - 7.45 (m, 4H), 7.38 - 7.29 (m, 3H), 6.16 - 6.14 (d, $J = 8.0$ Hz, 0.5H), 6.01 - 5.98 (d, $J = 10.0$ Hz, 0.5H), 5.22 - 5.15 (m, 1 H), 4.07 - 3.99 (m, 1H), 2.98 - 2.90 (m, 1H), 1.82 - 1.78 (m, 2H), 1.69 - 1.67 (m, 3H), 1.51 - 1.36 (m, 1H), 1.35 (s, 4.5H), 1.24 (s, 4.5H); ^{13}C NMR (100MHz, CDCl_3): δ major: 165.2, 154.9, 147.6, 134.3, 133.5, 130.1, 129.3, 128.7, 128.6, 128.2, 124.9, 115.9, 79.5, 48.4, 39.4, 31.0, 28.4, 25.5, 19.7; minor: 164.4, 154.9, 147.1, 134.9, 133.7, 130.4, 128.9, 129.3, 128.7, 128.5, 124.9, 117.1, 79.5, 48.2, 40.1, 30.2, 28.2, 25.6, 20.1; IR (neat, cm^{-1}): 3061, 2974, 2933, 2857, 1737, 1689 1601, 1450, 1412, 1367; HRMS (ES^+) Calculated for $[\text{C}_{25}\text{H}_{29}\text{NNaO}_4]^+$: 430.1994; Found: 430.1991.

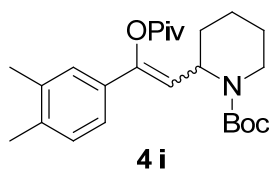


Compound **4g** was prepared in 53% yield according to the general procedure C: $R_f = 0.69$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.26 - 8.24 (d, $J = 8.0$ Hz, 1H), 8.17 - 8.15 (d, $J = 8.0$ Hz, 1H), 7.68 - 7.42 (m, 11H), 7.37 - 7.33 (m, 1H), 6.23 - 6.21 (dd, $J = 8.0$ Hz, 1.6 Hz, 0.5H), 6.06 - 6.03 (dd, $J = 10.0$ Hz, 1.6 Hz, 0.5H), 5.25 (br.s, 1 H), 4.10 - 4.026 (m, 1H), 3.05 - 2.93 (m, 1H), 1.87 - 1.70 (m, 5H), 1.50 - 1.46 (m, 1H), major: 1.38 (s, 5H), minor: 1.26 (s, 4H); ^{13}C NMR (100MHz, CDCl_3):

δ major: 165.4, 154.9, 147.4, 141.5, 140.6, 133.8, 133.6, 130.4, 129.4, 128.9, 128.7, 127.6, 127.4, 127.1, 125.3, 116.1, 79.6, 48.4, 40.2, 31.0, 28.5, 25.6, 20.0; minor: 164.5, 154.9, 146.9, 141.8, 140.7, 133.9, 133.3, 130.2, 129.8, 128.7, 128.6, 127.6, 127.3, 127.2, 125.3, 117.3, 79.6, 48.3, 39.4, 30.3, 28.3, 25.5, 19.8; IR (neat, cm^{-1}): 3059, 3032, 2934, 2859, 1736, 1689, 1601, 1484, 1450, 1411, 1367; HRMS (ES^+) Calculated for $[\text{C}_{31}\text{H}_{33}\text{NNaO}_4]^+$: 506.2307; Found: 506.2306.

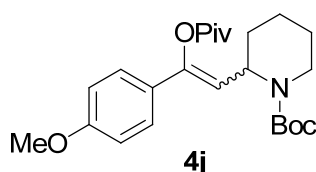


Compound **4h** was prepared in 64.2% yield according to the general procedure C: R_f = 0.67 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.27 - 7.25 (m, 2H), 7.16 - 7.12 (m, 2H), minor: 5.93 - 5.91 (d, J = 8.4 Hz, 0.34H), major: 5.75 - 5.73 (d, J = 10.0 Hz, 0.66H), 5.08 - 5.05 (*br.d*, J = 10.0 Hz, 1H), 4.05 - 3.95 (m, 1H), 2.97 - 2.86 (m, 1H), 2.33 (s, 3H), 1.73 - 1.36 (m, 6H), minor: 1.44 (s, 3H), major: 1.22 (s, 6H), minor: 1.36 (s, 3H), major: 1.24 (s, 6H); ^{13}C NMR (100MHz, CDCl_3): δ major: 177.0, 154.9, 147.8, 138.6, 131.6, 129.0, 127.9, 114.8, 79.4, 48.3, 39.4, 38.8, 31.0, 28.2, 27.1, 25.5, 21.4, 19.7; minor: 176.1, 155.2, 146.9, 138.4, 132.6, 129.3, 124.7, 115.8, 79.6, 48.2, 40.0, 39.2, 30.2, 28.6, 27.3, 25.5, 21.3, 20.1; IR (neat, cm^{-1}): 2975, 2935, 2862, 1745, 1686, 1512, 1477, 1412, 1366; HRMS (ES^+) Calculated for $[\text{C}_{24}\text{H}_{35}\text{NNaO}_4]^+$: 424.2464; Found: 424.2458.

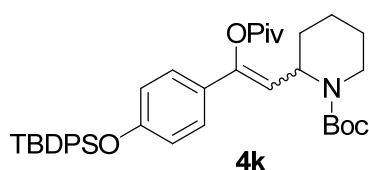


Compound **4i** was prepared in 75.3% yield according to the general procedure C: R_f = 0.73 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.16 - 7.08 (m, 3H), minor: 5.92 - 5.90 (d, J = 8.4 Hz, 0.34H), major: 5.73 - 5.71 (d, J = 10.0 Hz, 0.66H), 5.08 - 5.06 (m, 1 H), 4.05 - 3.95 (m, 1H), 2.98 - 2.87 (m, 1H), 2.24 - 2.23 (d, J = 3.6 Hz, 6H), 1.74 - 1.65 (m, 6H), minor: 1.44 (s, 4H), major: 1.21 (s, 5H), minor: 1.36 (s, 3H), major: 1.25 (s, 6H); ^{13}C NMR (100MHz, CDCl_3): δ major: 177.1, 154.9, 148.0,

137.3, 136.4, 132.0, 129.6, 129.2, 125.6, 115.7, 79.4, 48.4, 39.3, 38.9, 31.0, 28.6, 27.3, 27.2, 20.0(2C), 19.7; minor: 176.1, 155.2, 147.0, 137.2, 136.8, 133.1, 129.9, 126.1, 122.2, 114.7, 79.6, 48.4, 40.1, 39.4, 30.3, 29.8, 28.2, 25.6, 20.2, 19.9, 19.7; IR (neat, cm^{-1}): 3046, 2974, 2935, 2866, 1749, 1691, 1476, 1453, 1412, 1367; HRMS (ES^+) Calculated for $[\text{C}_{25}\text{H}_{37}\text{NNaO}_4]^+$: 438.2620; Found: 438.2616.

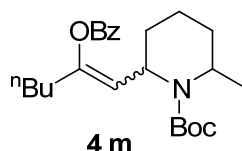


Compound **4j** was prepared in 61.3% yield according to the general procedure C: R_f = 0.66 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.32 - 7.29 (d, J = 8.8 Hz, 2H), 6.88 - 6.84 (m, 2H), major: 5.87 - 5.85 (d, J = 8.0 Hz, 0.6H) , minor: 5.71 - 5.69 (d, J = 10.0 Hz, 0.4H), 5.06 - 5.04 (m, 1 H), 4.05 - 3.94 (m, 1H), 3.79 (s, 3H), 2.97 - 2.86 (m, 1H), 1.72 - 1.60 (m, 6H), minor: 1.44 (s, 4H), major: 1.35 (s, 5H), 1.24 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ major: 176.1, 159.9, 155.1, 146.6, 128.0, 126.2, 114.0, 113.9, 74.9, 55.4, 48.4, 40.0, 39.2, 30.2, 28.6, 27.3, 25.5, 20.1; minor: 177.0, 159.8, 154.8, 147.5, 129.4, 127.0, 115.5, 113.8, 79.6, 55.3, 48.2, 39.4, 38.8, 31.0, 28.3, 27.1, 25.5, 19.7; IR (neat, cm^{-1}): 3041, 2934, 2864, 2250, 1748, 1691, 1609, 1576, 1512, 1461, 1413, 1367; HRMS (ES^+) Calculated for $[\text{C}_{24}\text{H}_{35}\text{KNO}_5]^+(\text{NH}_4^+)$: 659.3880; Found: 659.3881.

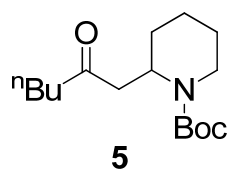


Compound **4k** was prepared in 65.1% yield according to the general procedure C: R_f = 0.69 (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 7.73 - 7.71 (d, J = 6.8 Hz, 4H), 7.46 - 7.36 (m, 6H), 7.15 - 7.13 (d, J = 7.6 Hz, 2H), 6.76 - 6.72 (m, 2H), 5.86 - 5.984 (d, J = 8.4 Hz, 0.5H), 5.67 - 5.65 (d, J = 10.0 Hz, 0.5H) , 5.02 - 4.99 (m, 1H), 4.04 - 3.95 (m, 1H), 2.95 - 2.85 (m, 1H), 1.71 - 1.46 (m, 6H), 1.45 (s, 4.5H), 1.34 (s, 4.5H), 1.23 (s, 9H), 1.11 (s, 9H); ^{13}C NMR (100MHz, CDCl_3): δ major: 176.1, 156.0, 146.5, 135.6, 132.8, 130.1, 128.1, 127.9, 125.9, 119.7, 113.8, 79.3, 48.5,

40.0, 39.2, 30.2, 28.6, 27.3, 26.6, 25.5, 20.1, 19.5; minor: 177.0, 155.0, 147.3, 135.6, 132.7, 130.1, 129.2, 127.9, 127.3, 119.5, 115.5, 79.6, 48.2, 39.3, 38.8, 31.0, 28.3, 27.1, 26.6, 25.4, 19.8, 19.5; IR (neat, cm^{-1}): 3050, 2935, 2860, 1748, 1691, 1606, 1508, 1475, 1411, 1367; HRMS (ES^+) Calculated for $[\text{C}_{39}\text{H}_{55}\text{N}_2\text{O}_5\text{Si}]^+(\text{NH}_4^+)$: 456.2152; Found: 456.2158.

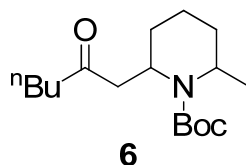


Compound **4m** was prepared in 90.9% yield according to the general procedure C: $R_f = 0.71$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 8.11 - 8.06 (m, 2H), 7.59 - 7.56 (m, 1H), 7.48 - 7.44 (m, 2H), 5.58 - 5.56 (d, $J = 10.0$ Hz, 0.3H), 5.43 - 5.41 (d, $J = 8.8$ Hz, 0.3H), 5.38 - 5.36 (d, $J = 8.8$ Hz, 0.2 H), 5.24 - 5.22 (d, $J = 8.0$ Hz, 0.2H), 5.00 - 4.91 (m, 0.5H), 4.65 - 4.57 (m, 0.5H), 4.37 - 4.28 (m, 0.5H), 4.05 - 3.98 (m, 0.5H), 2.61 - 2.41 (m, 1.2H), 2.34 - 2.30 (m, 0.8H), 1.96 - 1.16 (m, 19H), 1.17 - 1.16 (m, 3H), 0.91 - 0.86 (m, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 165.2, 165.1, 164.6, 164.5, 155.5, 155.4, 155.2, 155.1, 150.7, 149.9, 148.5, 148.4, 133.3, 133.2, 130.2 (2C), 130.1 (2C), 130.0 (2C), 129.9, 129.8, 128.6, 128.5, 120.2, 119.6, 119.3, 118.9, 79.5 (2C), 79.2 (2C), 48.9, 48.2, 47.9, 47.6, 47.0, 46.9, 46.1, 45.9, 31.0, 30.2, 30.0, 29.3, 29.2 (2C), 29.1, 28.8 (2C), 28.6 (3C), 28.5, 28.1, 27.8, 27.3, 22.6 (2C), 22.2, 22.1, 20.9, 20.6, 20.5 (2C), 15.7, 15.2, 14.9, 14.6, 14.1, 14.0, 13.9 (2C); IR (neat, cm^{-1}): 3065, 2935, 2869, 1733, 1689, 1602, 1455, 1367; HRMS (ES^+) Calculated for $[\text{C}_{24}\text{H}_{35}\text{KNO}_4]^+$: 440.2203; Found: 440.2268.



Compound **5** was prepared in 83.7% yield. $R_f = 0.49$ (PE/EtOAc, 5/1) colorless oil. ^1H NMR (400MHz, CDCl_3): δ 4.69 - 4.68 (m, 1H), 3.97 - 3.94 (m, 1H), 2.79 - 2.73 (m, 1H), 2.63 - 2.59 (m, 2H), 2.47 - 2.41 (m, 2H), 1.62 - 1.24 (m, 10H), 1.43 (s, 9H), 0.90 - 0.87 (t, $J = 7.2$ Hz, 3H); ^{13}C NMR (100MHz, CDCl_3): δ 209.4, 154.8, 79.6, 47.4, 43.3, 42.7, 39.5, 28.5, 28.4, 25.9, 25.4, 22.4, 19.0, 13.9; IR (neat, cm^{-1}): 2934,

2866, 1690, 1452, 1411, 1368; HRMS (ES⁺) Calculated for [C₁₆H₂₉NNaO₃]⁺: 306.2045; Found: 306.2051.

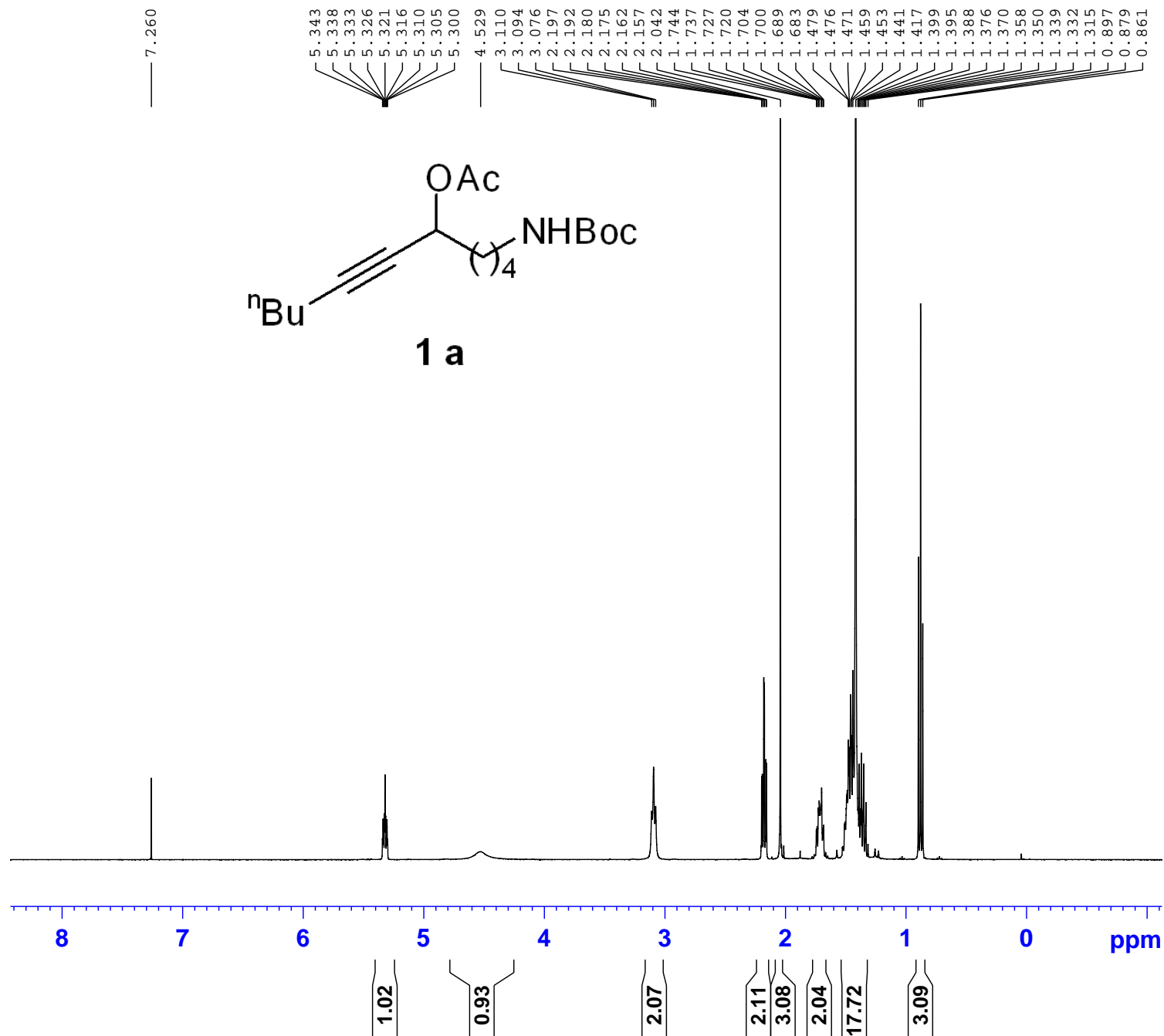


Compound **6** was prepared in 82.6% yield. R_f = 0.43 (PE/EtOAc, 10/1) colorless oil. ¹H NMR (400MHz, CDCl₃): δ 4.56 - 4.53 (m, 0.5H), 4.28 - 4.24 (m, 0.5H), 4.24 - 4.19 (m, 0.5H), 4.05 - 3.97 (m, 0.5H), 2.85 - 2.49 (m, 2H), 2.45 - 2.39 (m, 2H), 1.83 - 1.77 (m, 2H), 1.61 - 1.49 (m, 6H), 1.44 - 1.43 (d, J = 1.6 Hz, 9H), 1.32 - 1.26 (m, 2H), 1.22 - 1.20 (d, J = 6.8 Hz, 1.5H), 1.14 - 1.12 (d, J = 6.8 Hz, 1.5H), 0.91 - 0.86 (td, J = 7.2 Hz, 2.0 Hz, 3H); ¹³C NMR (100MHz, CDCl₃): δ major: 209.5, 155.0, 79.4, 47.6, 47.5, 46.2, 42.7, 29.9, 28.5, 27.9, 25.9, 22.3, 20.1, 14.1, 13.8; minor: 209.3, 154.9, 79.2, 47.6, 47.4, 45.6, 42.6, 28.5, 27.9, 25.0, 25.8, 22.3, 20.3, 14.1, 13.7; IR (neat, cm⁻¹): 2936, 2872, 1688, 1460, 1391, 1369; HRMS (ES⁺) Calculated for [C₁₇H₃₁NNaO₃]⁺: 320.2202; Found: 320.2209.

Reference:

- [1] J.-J. Zhang and Y.-Q. Li, *Chinese Journal of Pharmaceuticals*, 2004, **35**, 395.
- [2] G. A. Lawrance, M. Maeder, M. J. Robertson and Sutrisno, *Transition Metal Chemistry*, 2004, **29**, 505.
- [3] T. J. Harrison and G. R. Dake, *J. Org. Chem.*, 2005, **70**, 10872.
- [4] T. N. Grant, C. L. Benson and F. G. West, *Org. Lett.*, 2008, **10**, 3985.

Copies of ¹H NMR and ¹³CNMR of Compounds

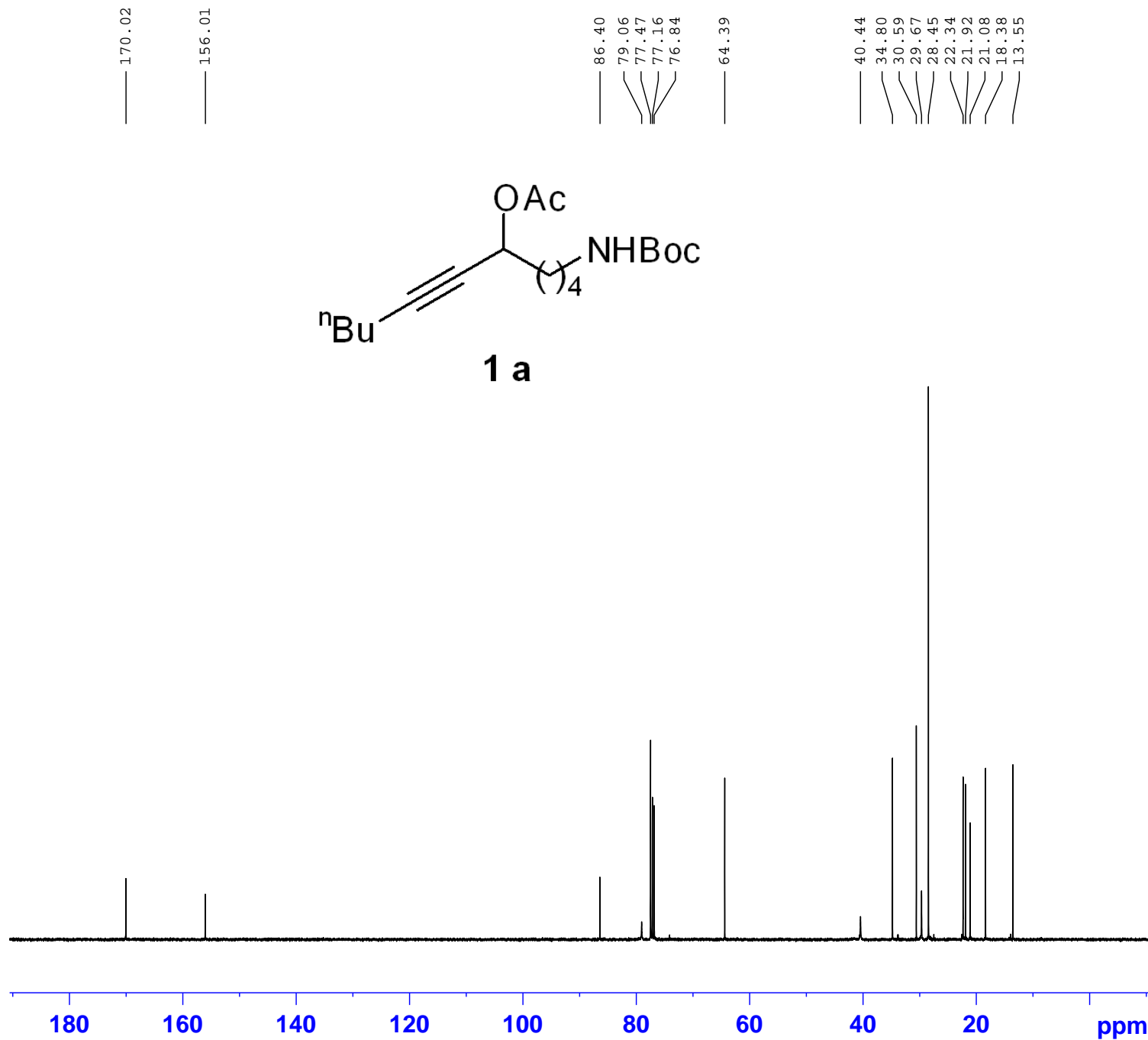
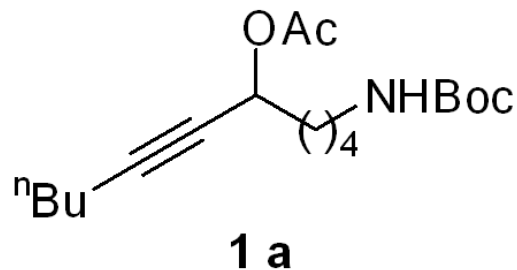


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 D1 1.00000000 sec
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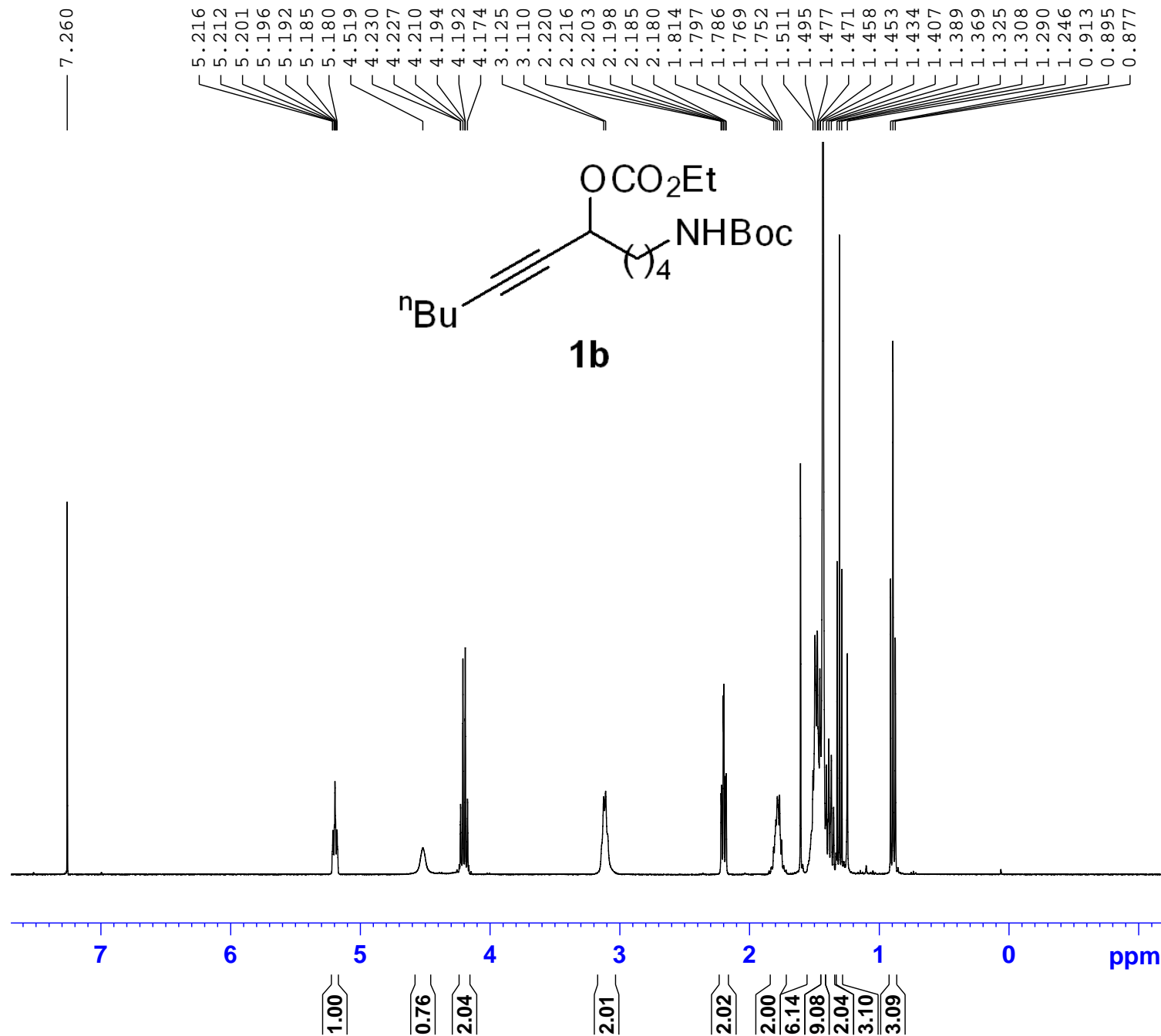
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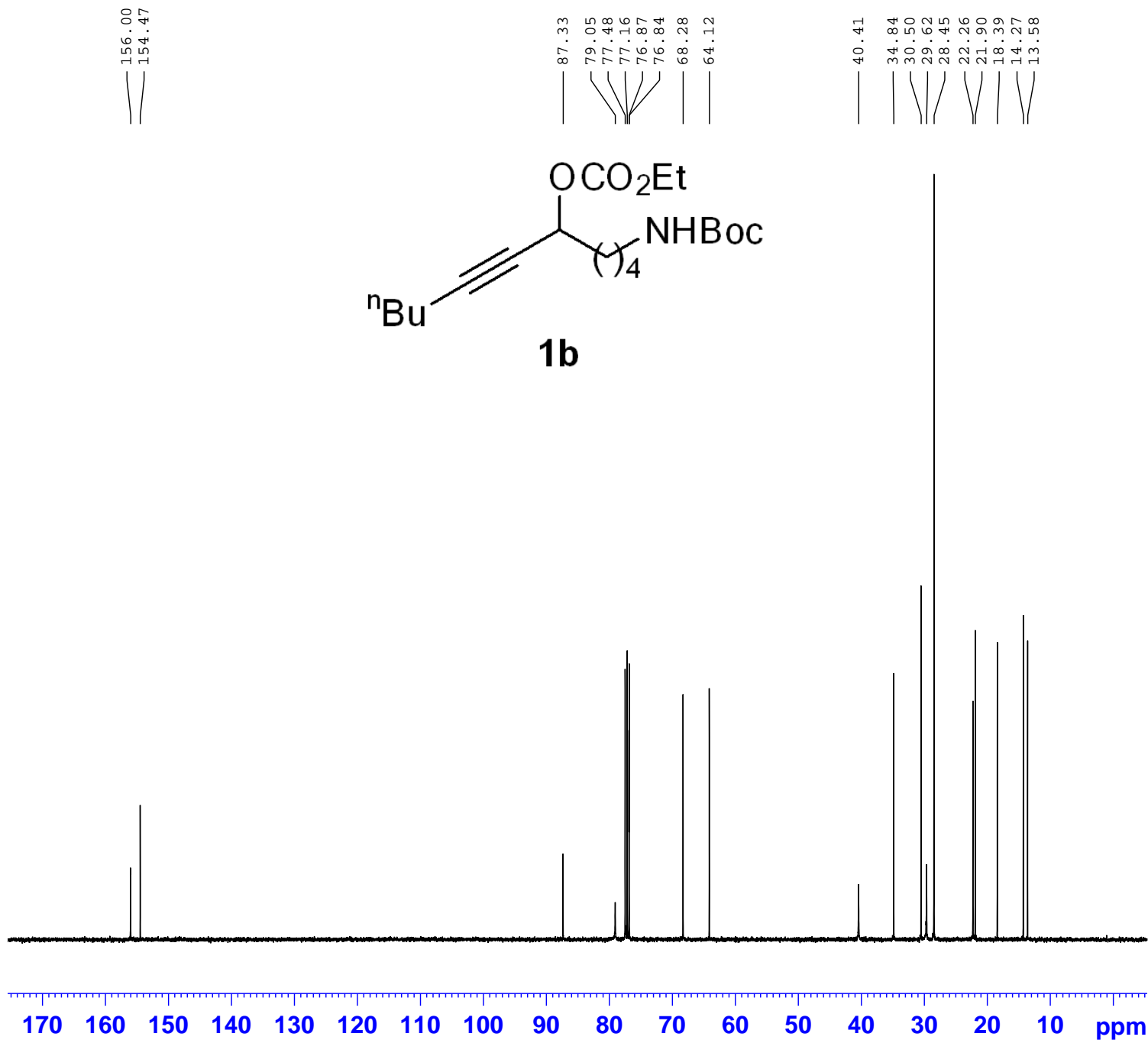
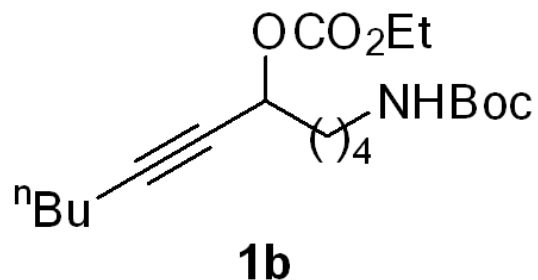


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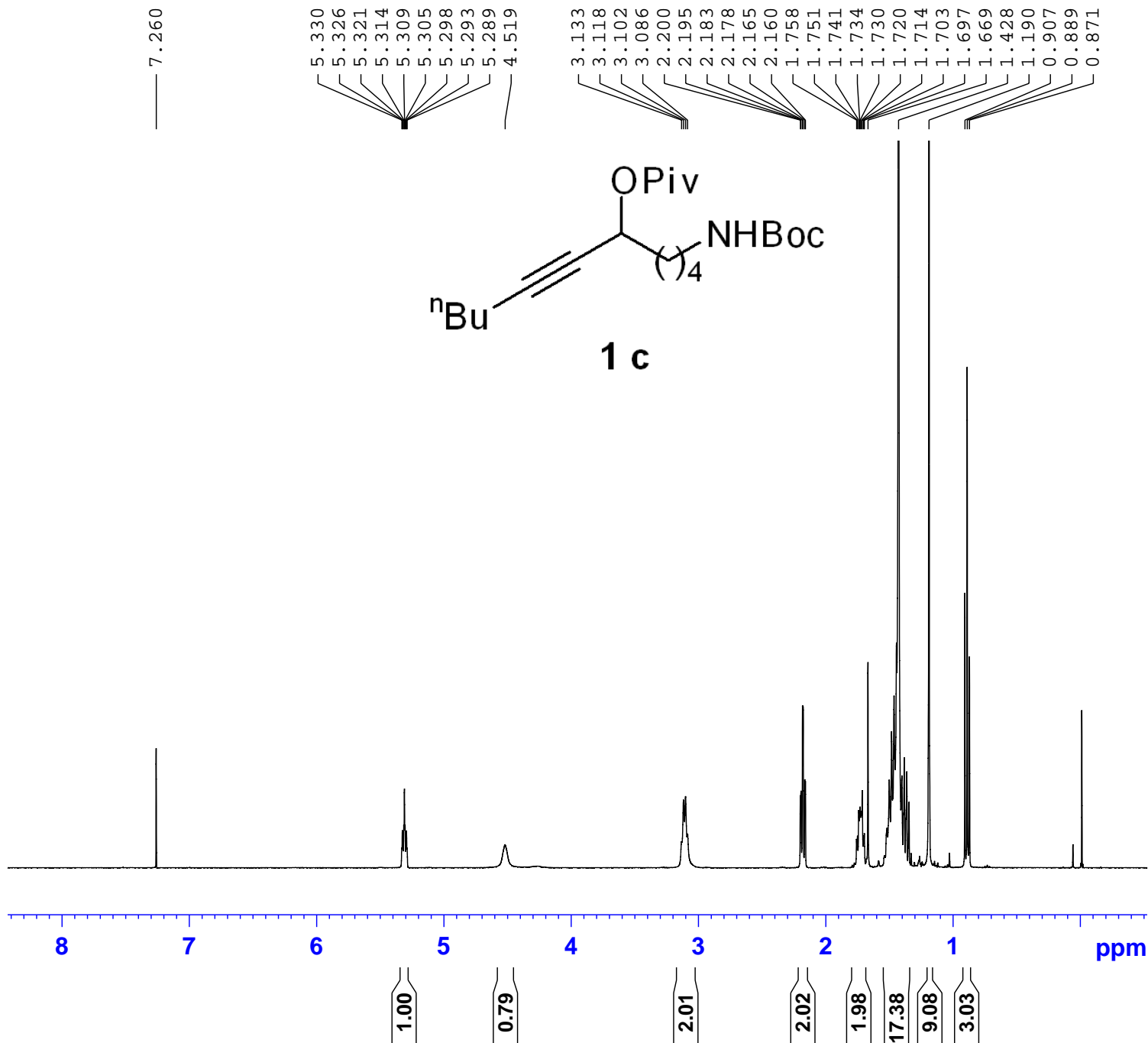
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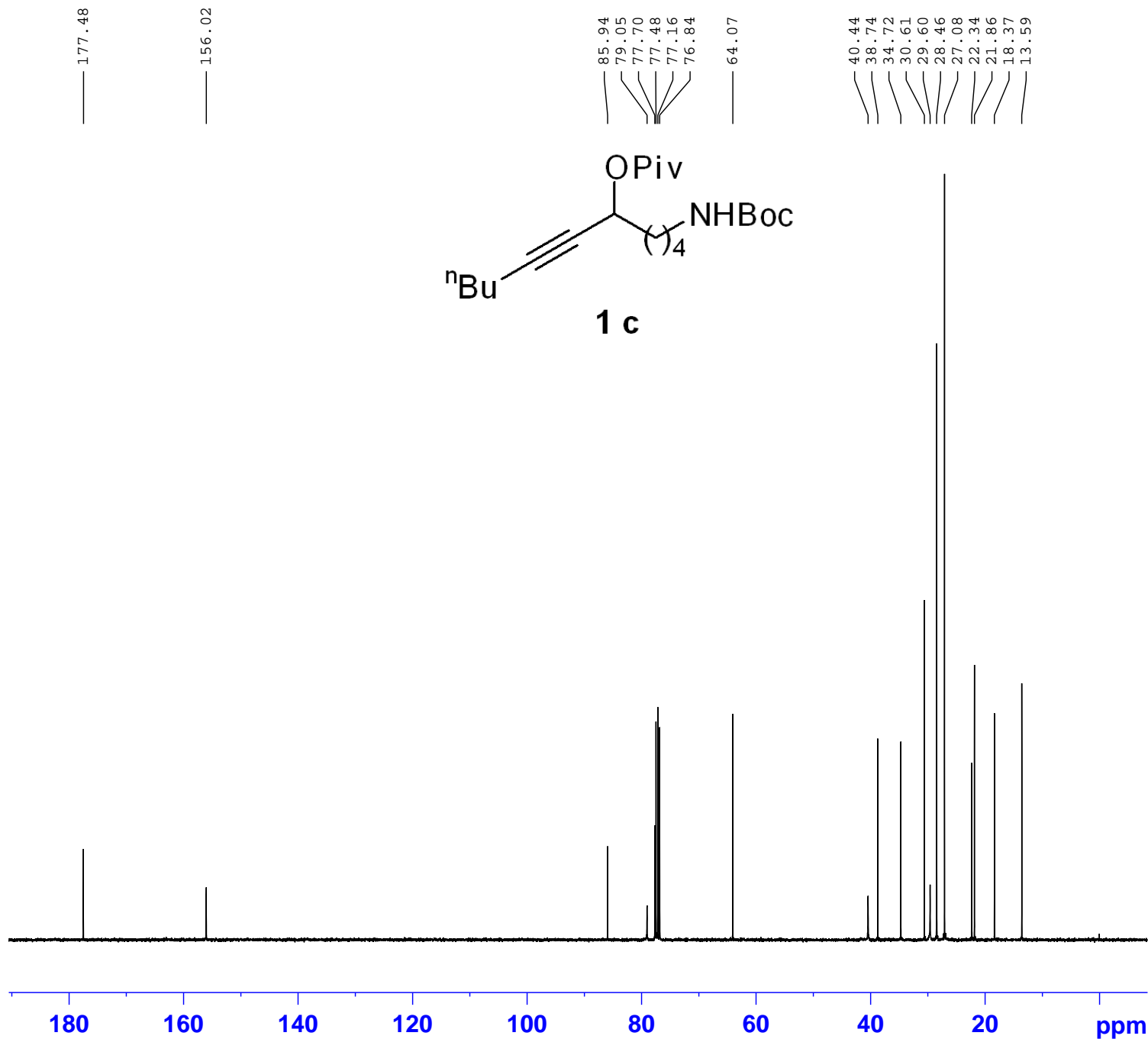


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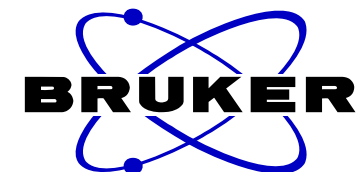
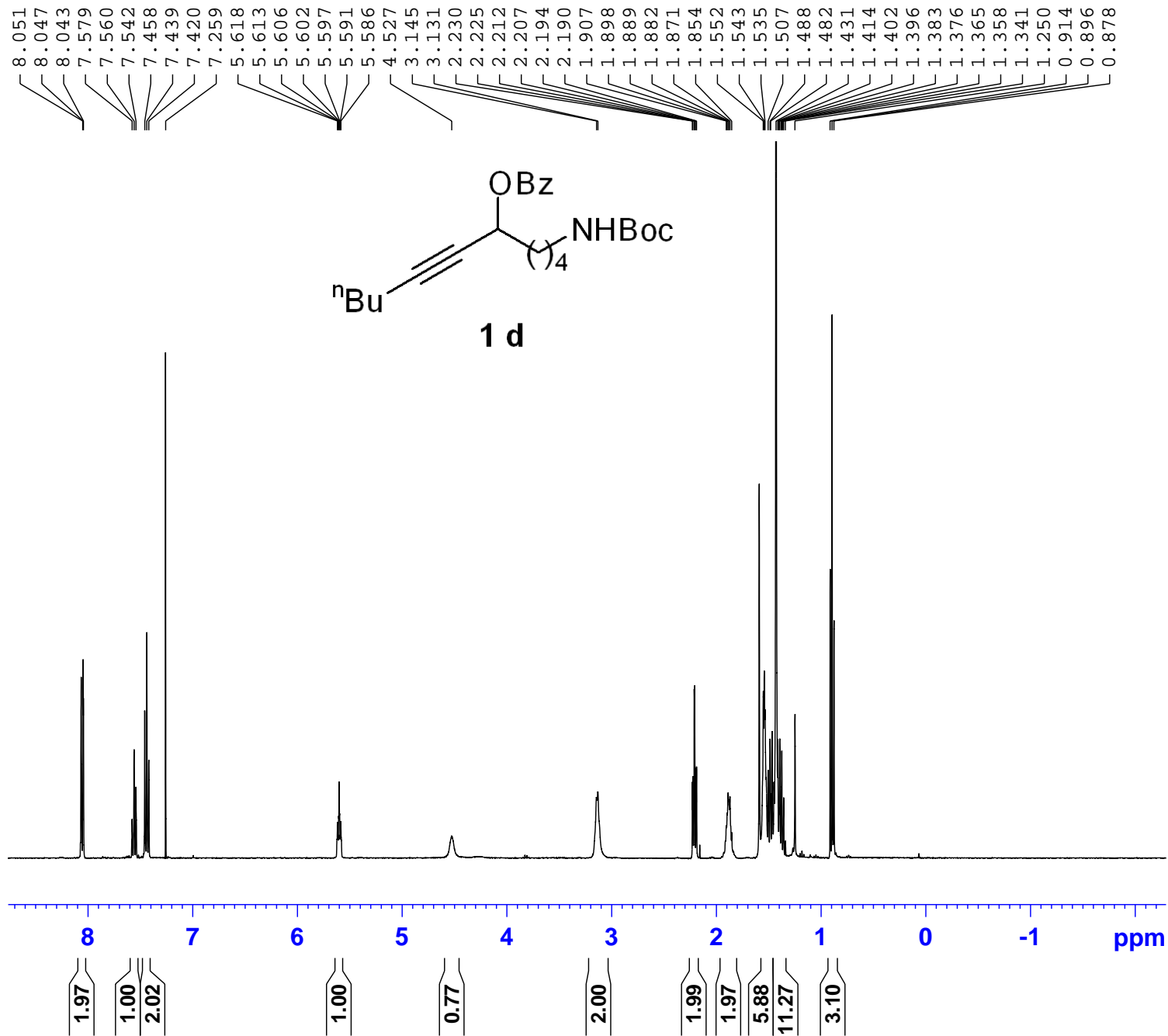
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SOLVENT CDC13
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DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 296.9 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

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NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127596 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

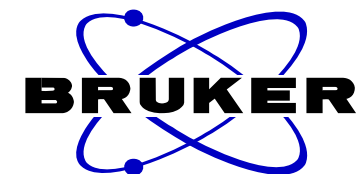
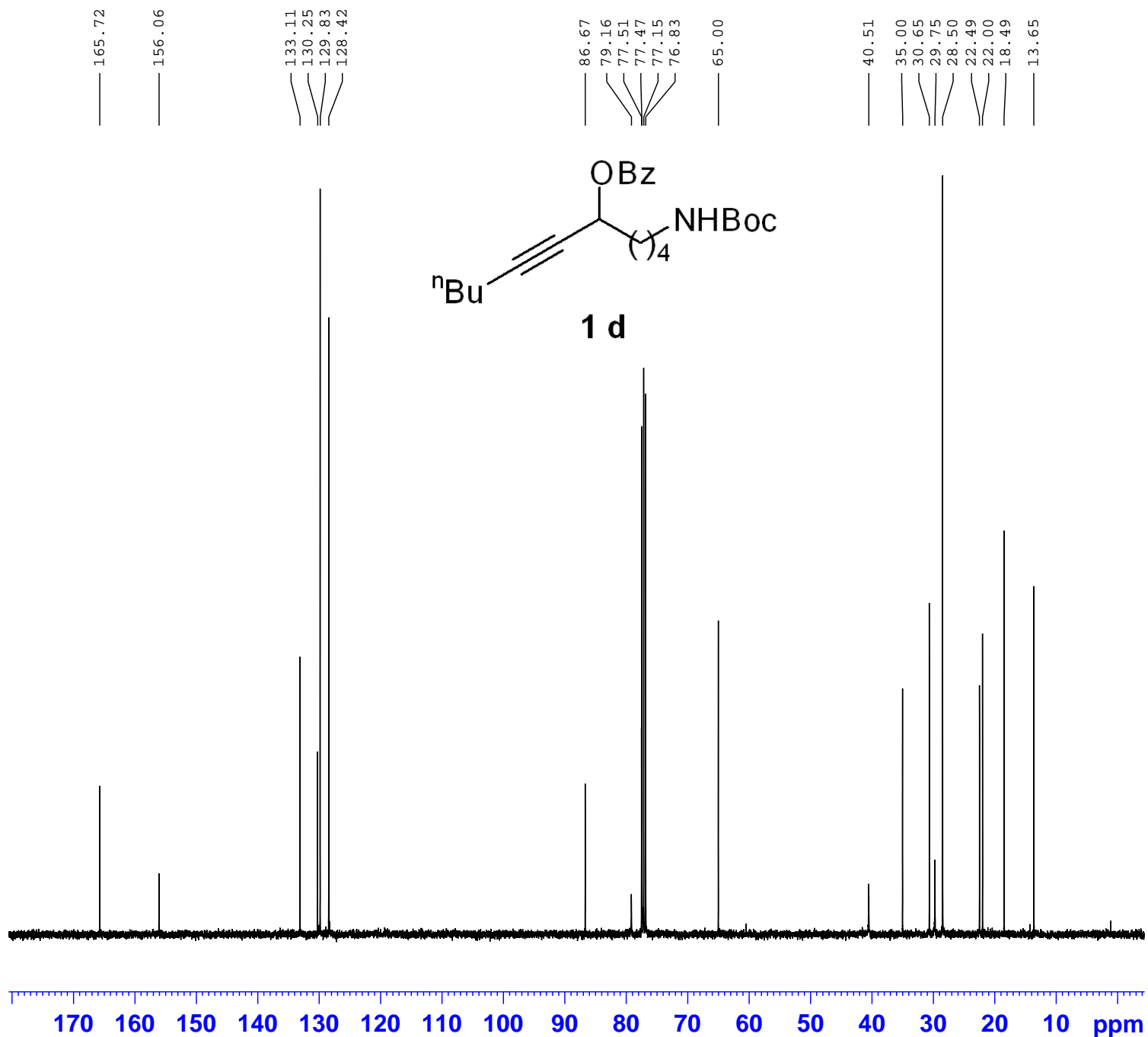


Current Data Parameters
 NAME Jun22-2009 HJF 3-119
 EXPNO 6
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090623
 Time 1.41
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 322
 DW 60.800 usec
 DE 6.50 usec
 TE 296.1 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300098 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



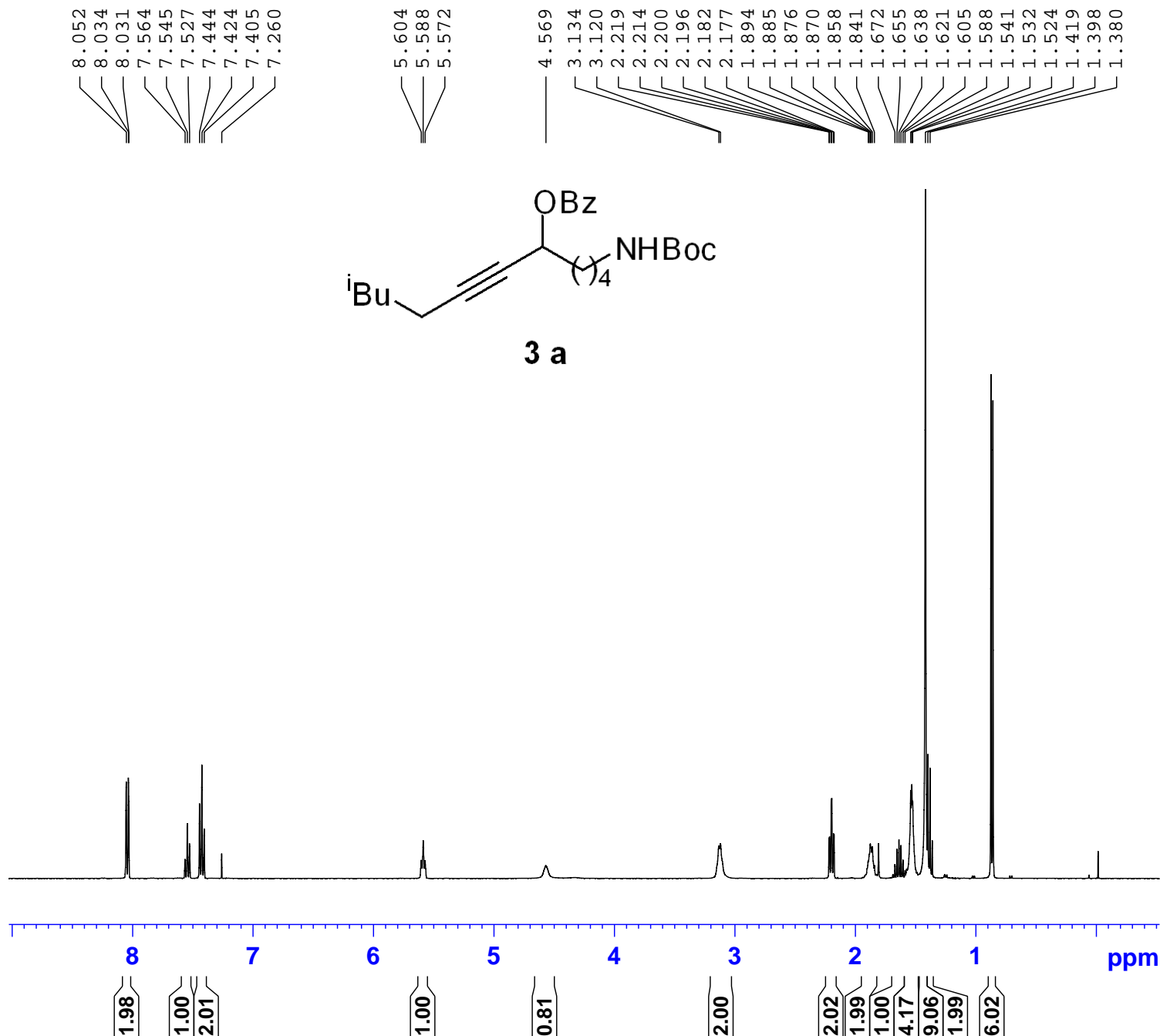
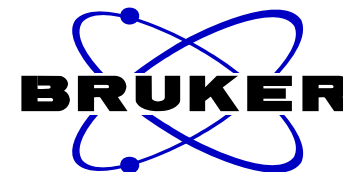
Current Data Parameters
 NAME 2009-09-30 HJF 3-119
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090624
 Time 21.47
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 297.3 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127592 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

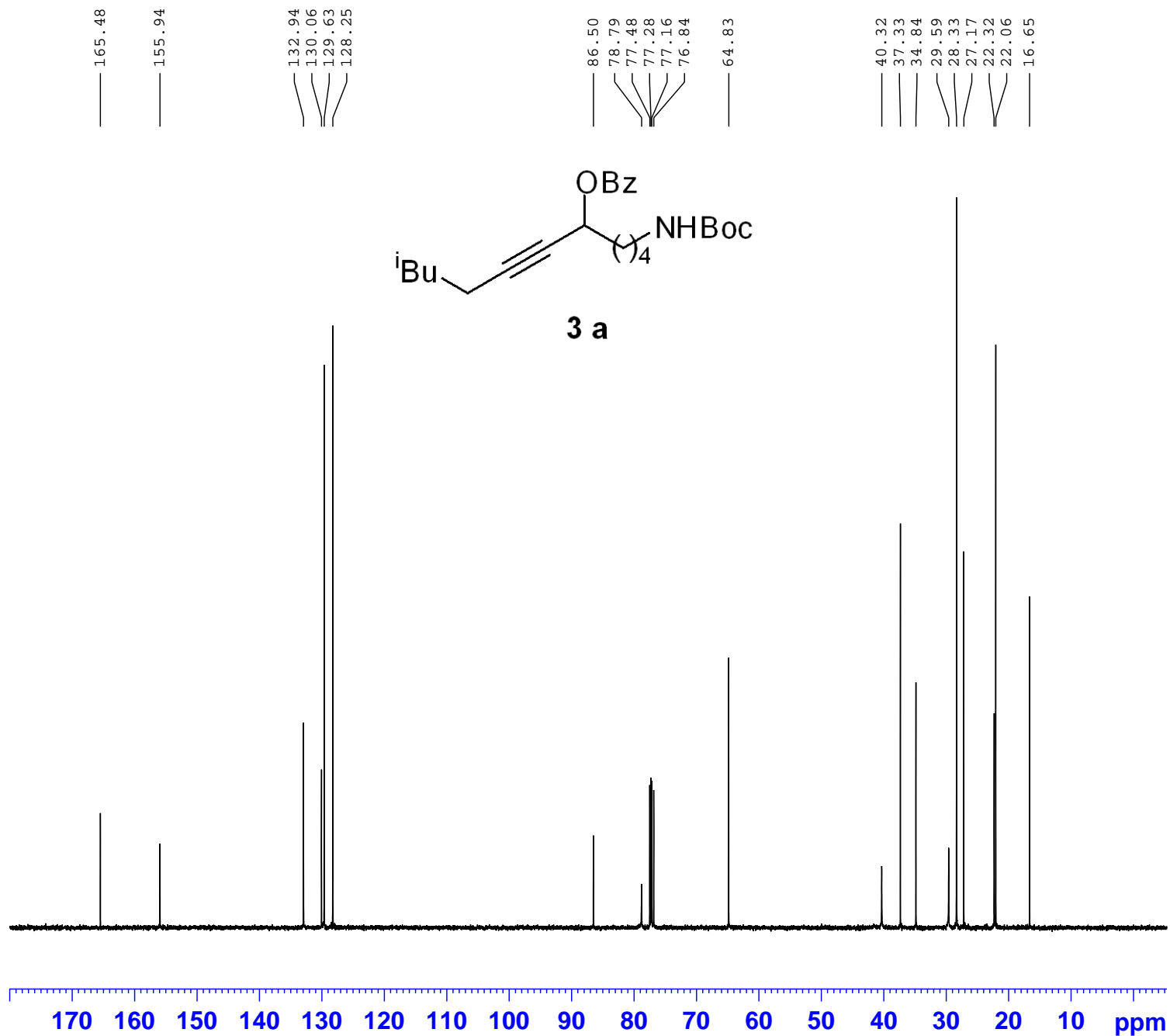
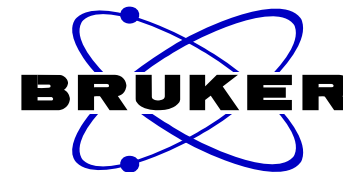


Current Data Parameters
 NAME Nov03-2009
 EXPNO 5
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091104
 Time 1.32
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 64
 DW 60.800 usec
 DE 6.50 usec
 TE 296.1 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300095 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



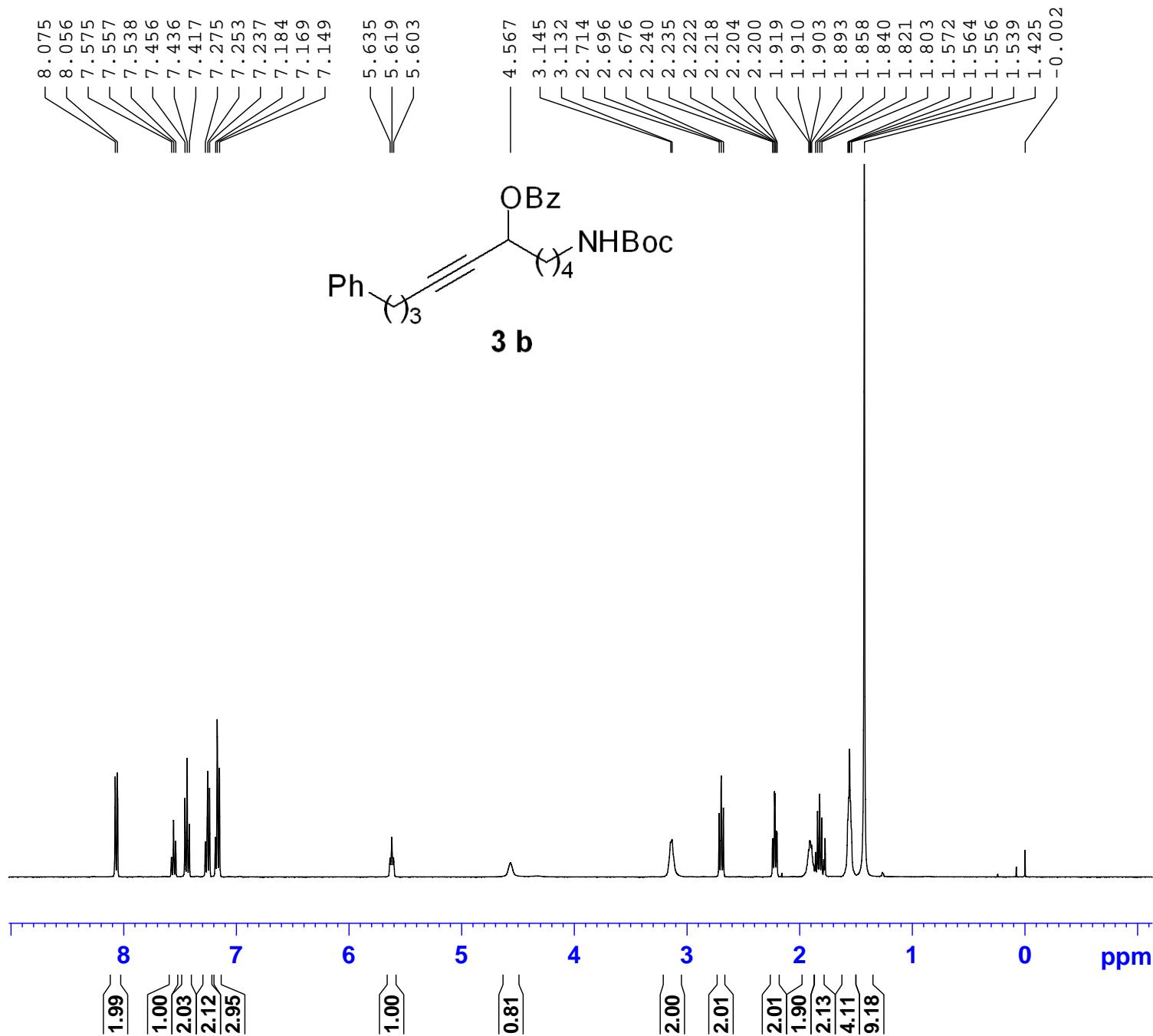
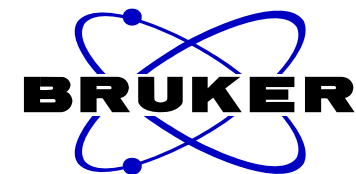
Current Data Parameters
 NAME Nov06-2009 HJF 4-45
 EXPNO 8
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091106
 Time 23.00
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 128
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.1 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127724 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

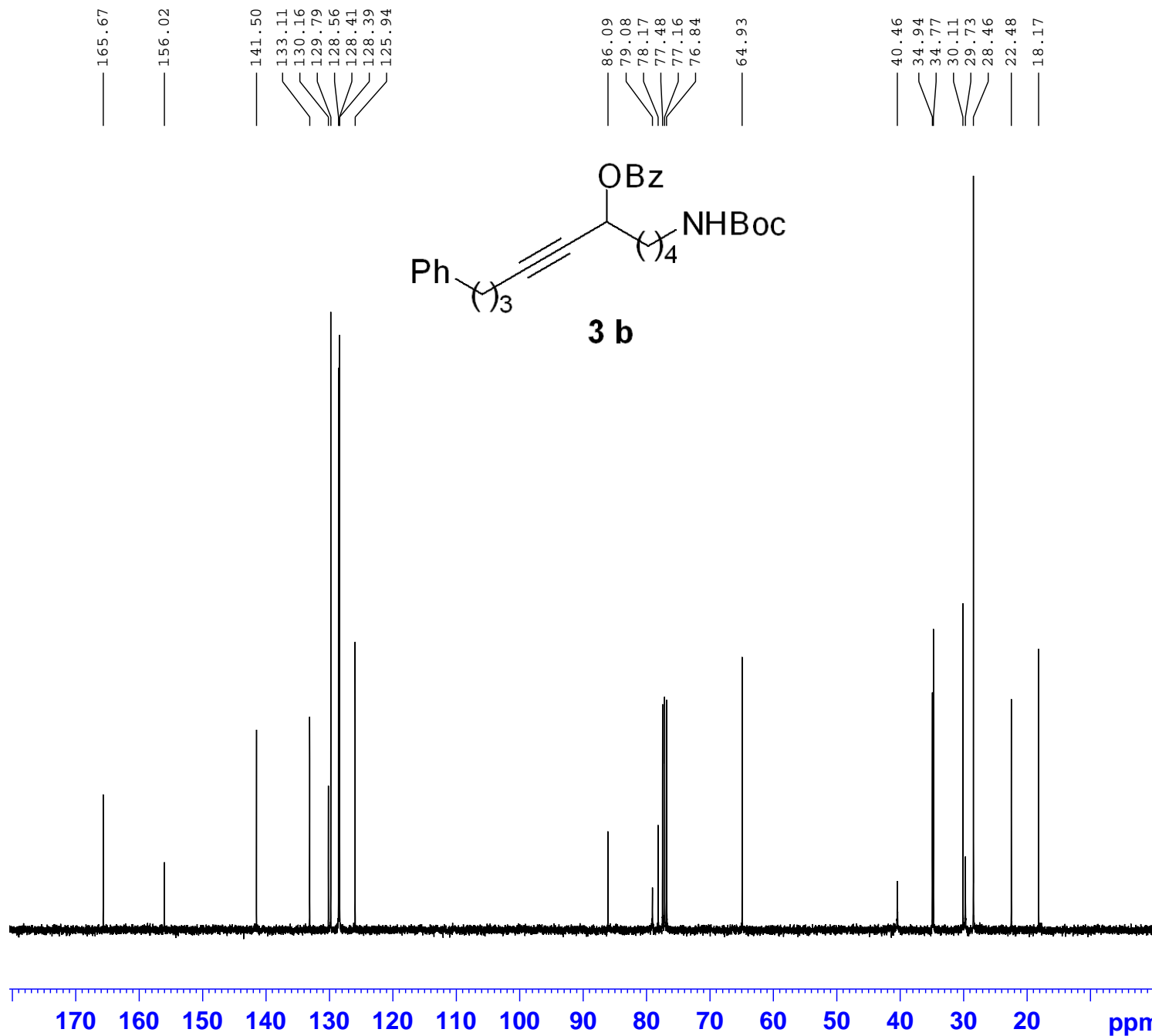


Current Data Parameters
 NAME Nov03-2009
 EXPNO 3
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091104
 Time 1.22
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 64
 DW 60.800 usec
 DE 6.50 usec
 TE 296.3 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300125 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



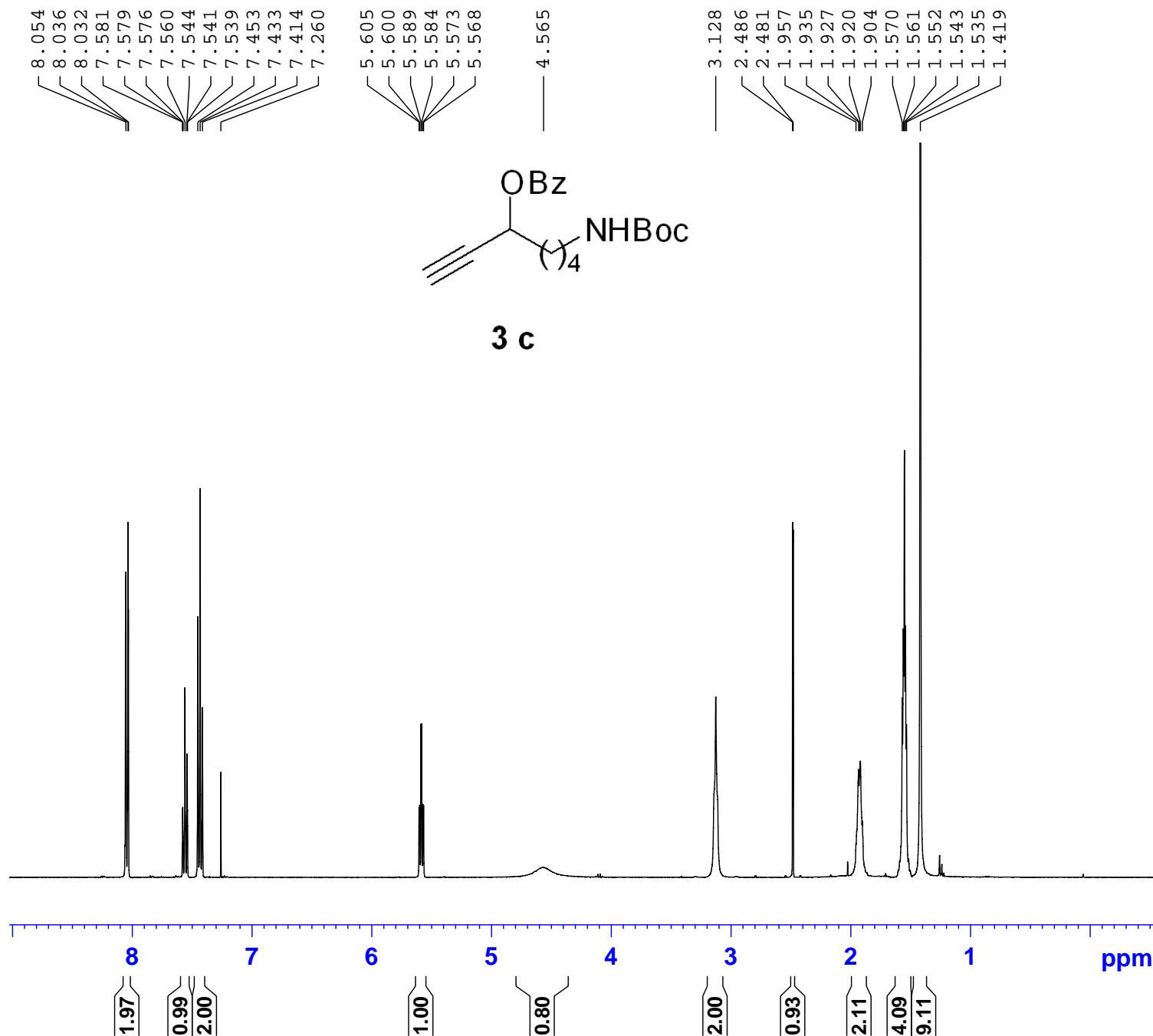
Current Data Parameters
 NAME Nov06-2009 HJF 4-37
 EXPNO 7
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091106
 Time 22.48
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 128
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.1 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127663 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

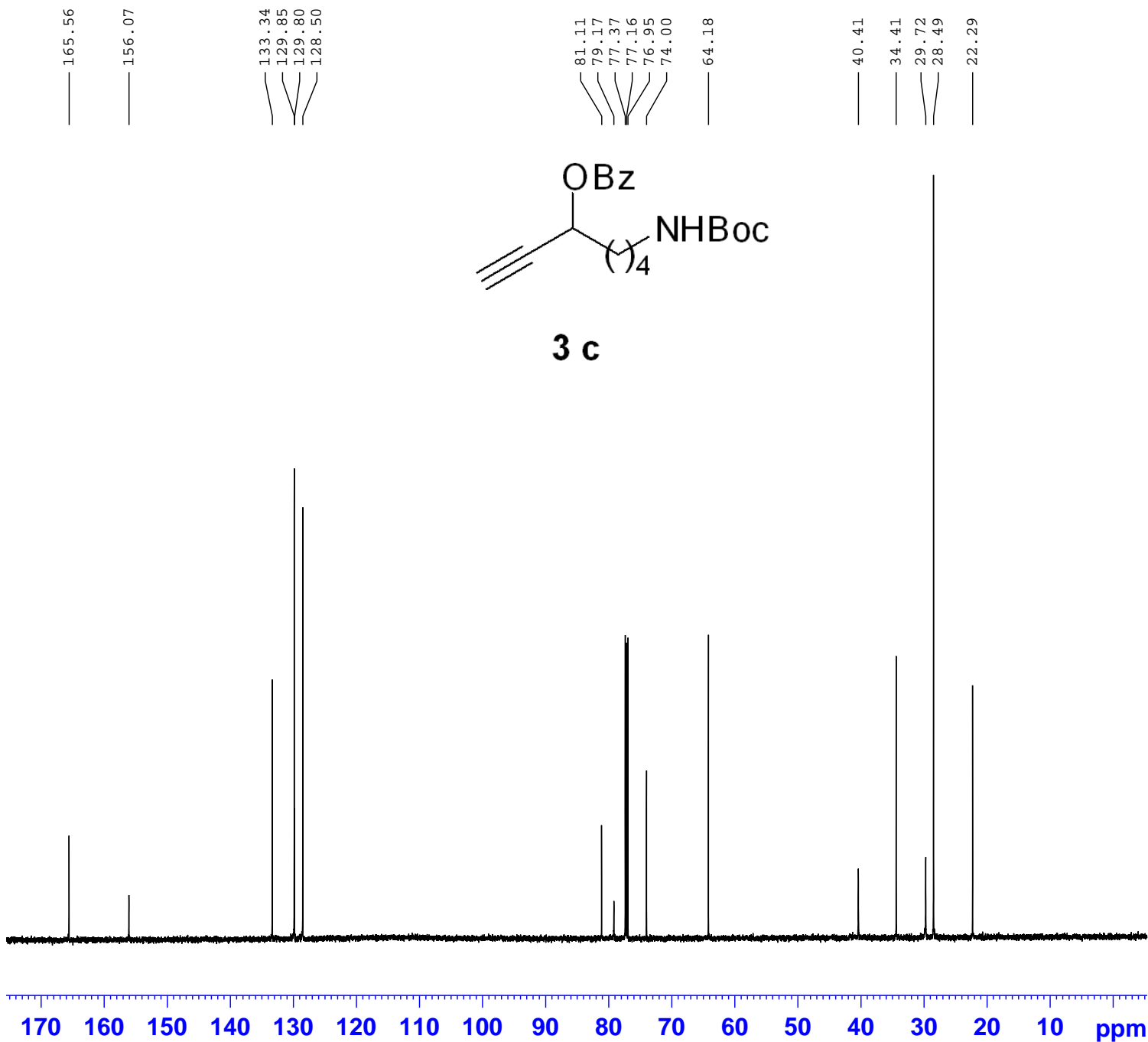
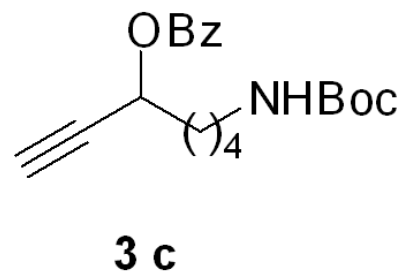


Current Data Parameters
 NAME Jul15-2009-test HJF 3-135
 EXPNO 5
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090716
 Time 1.59
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 71.8
 DW 60.800 usec
 DE 6.50 usec
 TE 295.7 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300094 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



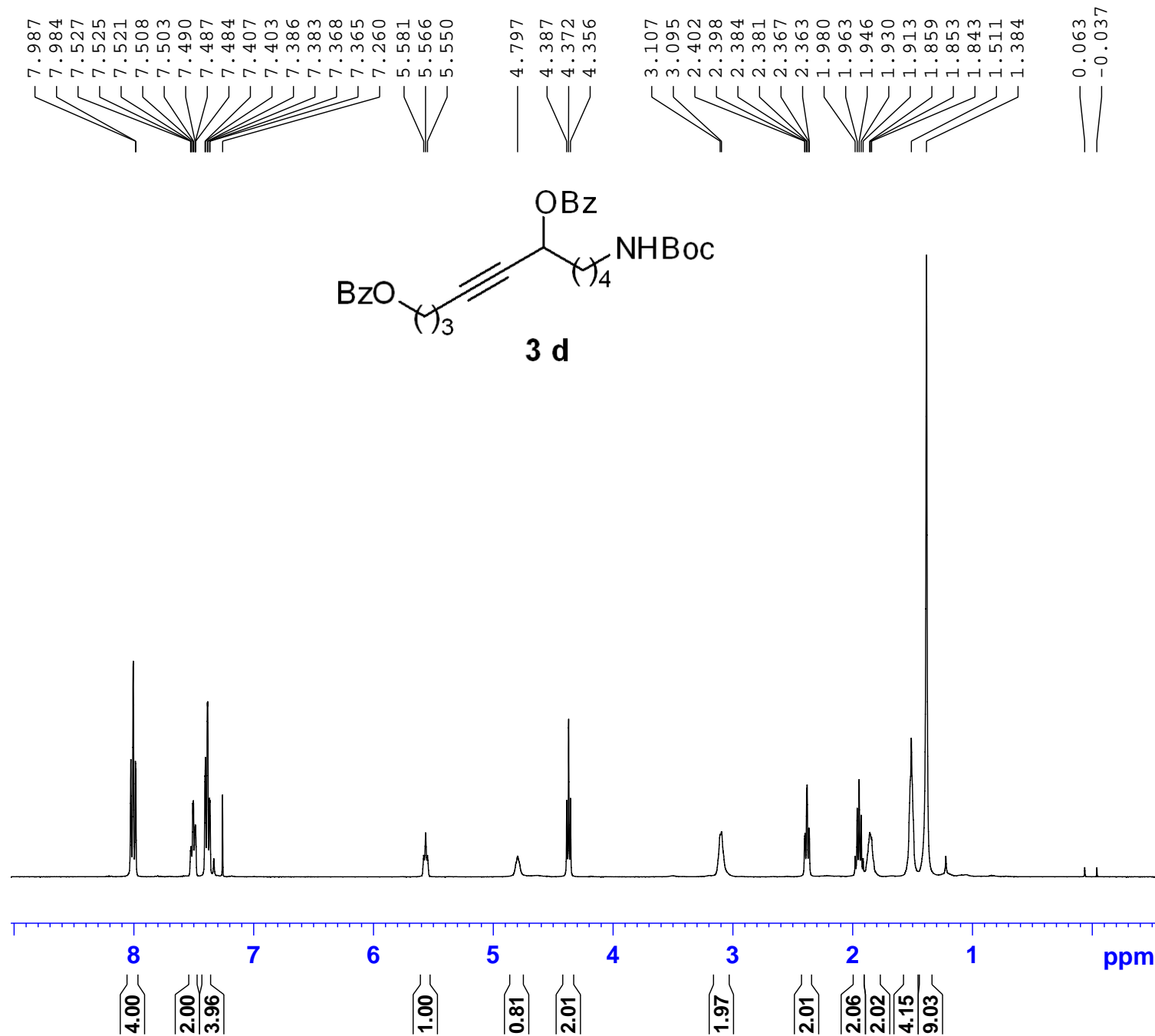
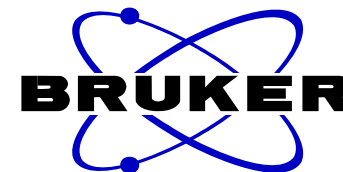
Current Data Parameters
 NAME 2009-09-30 HJF 3-135
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090722
 Time 21.49
 INSTRUM spect
 PROBHD 5 mm PATXI 1H/
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 345
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.9088159 sec
 RG 90.5
 DW 13.867 usec
 DE 6.50 usec
 TE 296.4 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 11.50 usec
 PL1 -3.00 dB
 SFO1 150.9178988 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL12 19.50 dB
 PL13 19.50 dB
 PL2 -1.00 dB
 SFO2 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9027954 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

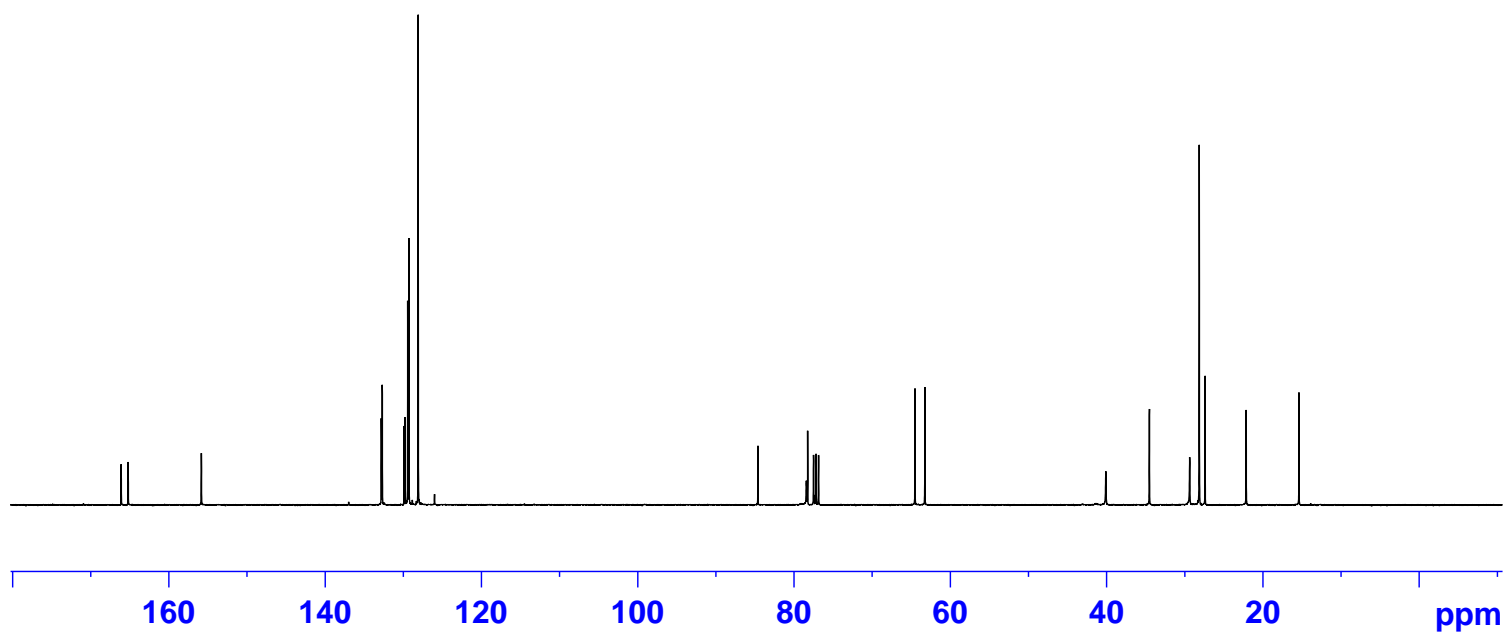
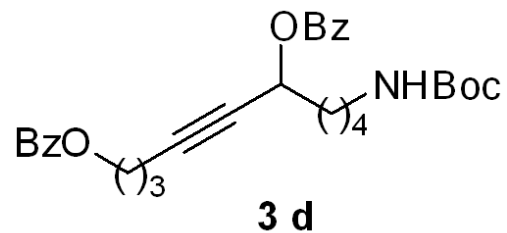
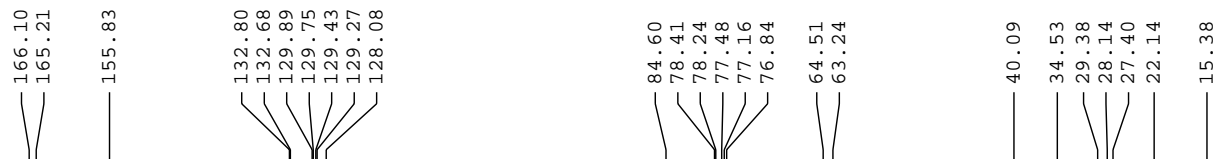


Current Data Parameters
 NAME Oct29-2009 HX 1-140
 EXPNO 7
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091030
 Time 2.32
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 28.5
 DW 60.800 usec
 DE 6.50 usec
 TE 295.9 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300090 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



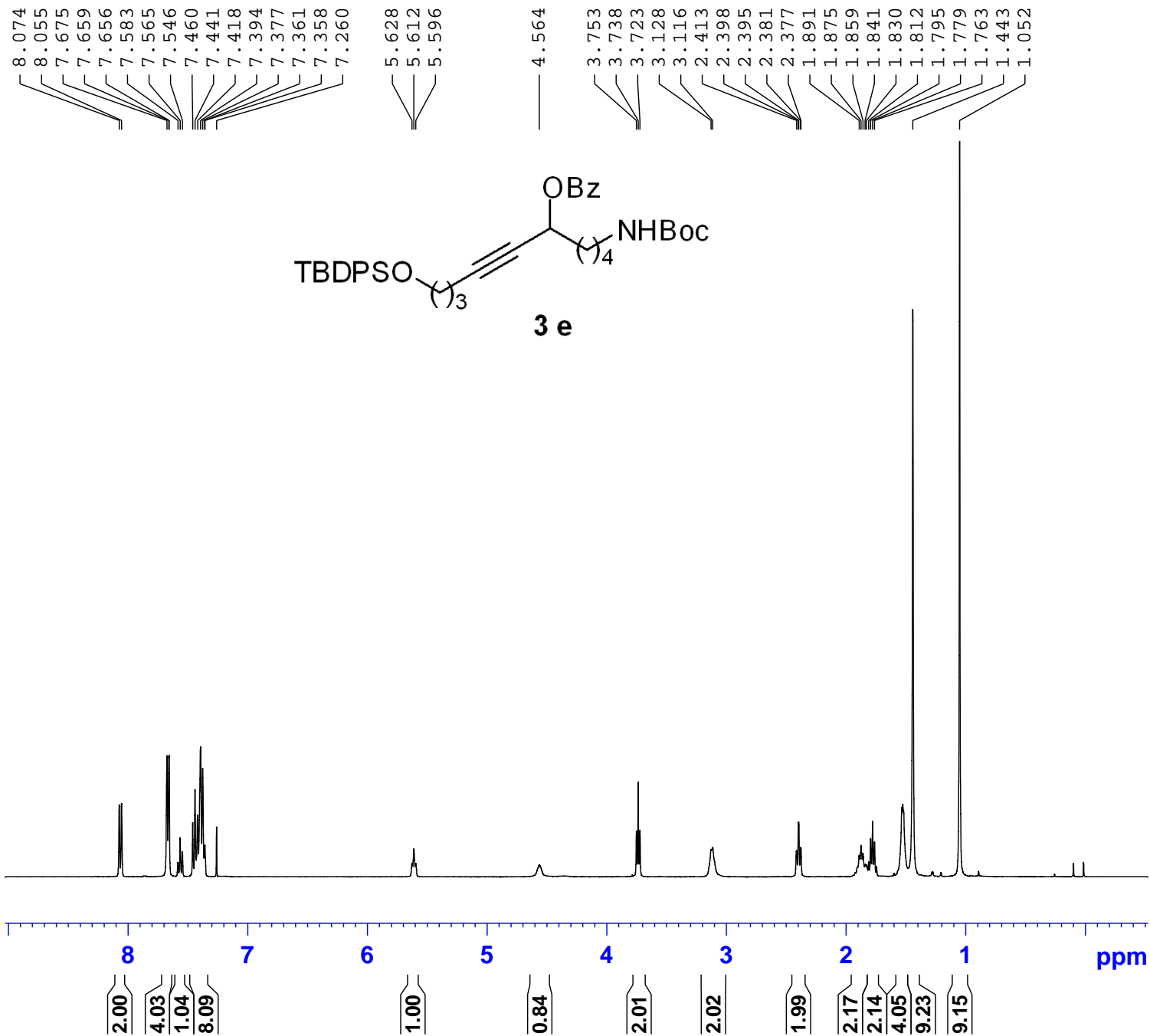
Current Data Parameters
 NAME 2009-11-24 HX-1-140
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091124
 Time 20.56
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 298.3 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127899 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

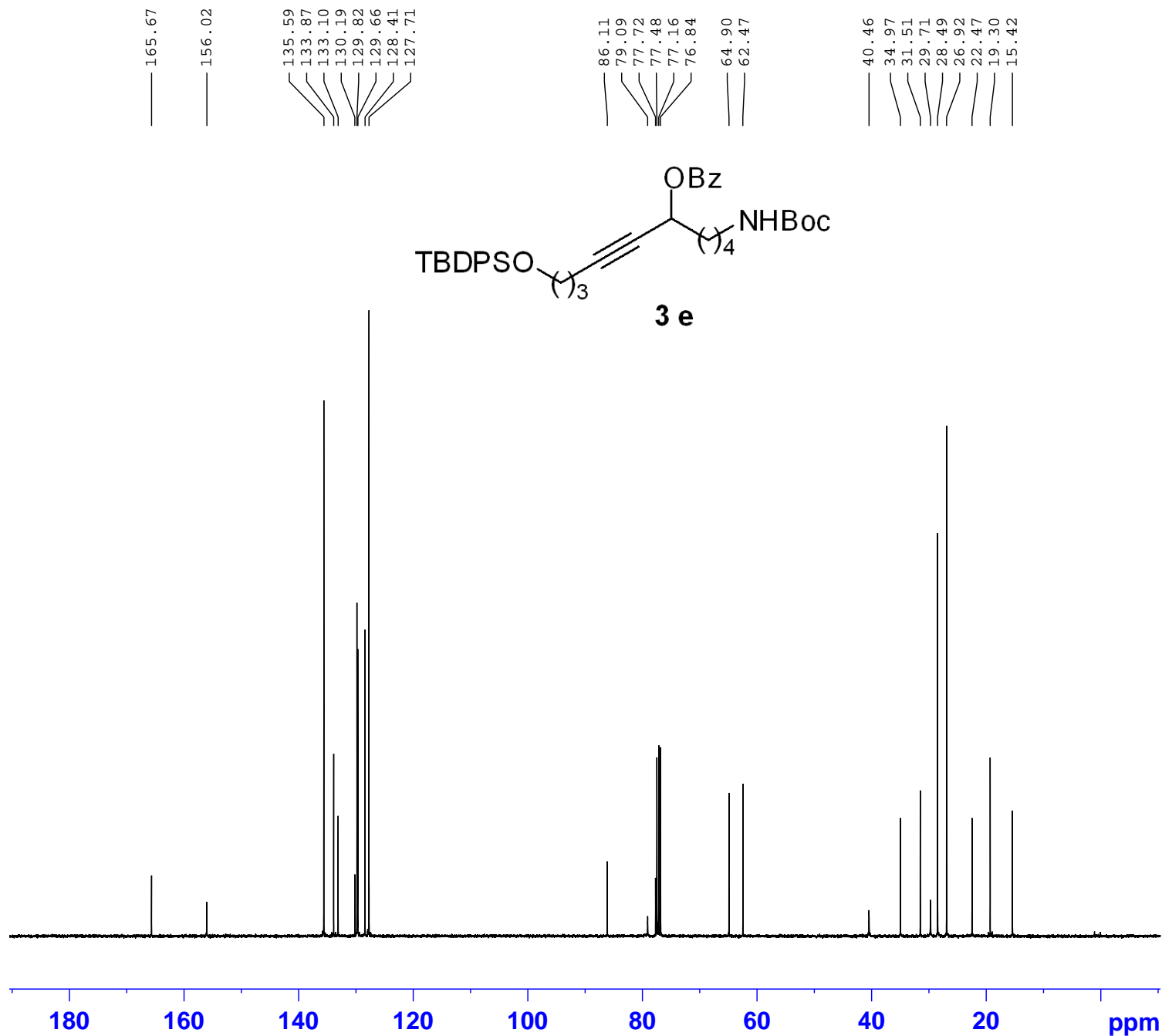


Current Data Parameters
 NAME Oct29-2009 HX 1-138
 EXPNO 6
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091030
 Time 2.27
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 45.2
 DW 60.800 usec
 DE 6.50 usec
 TE 296.0 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300091 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



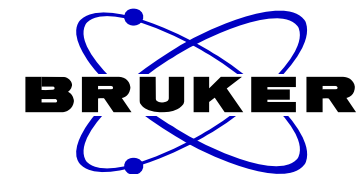
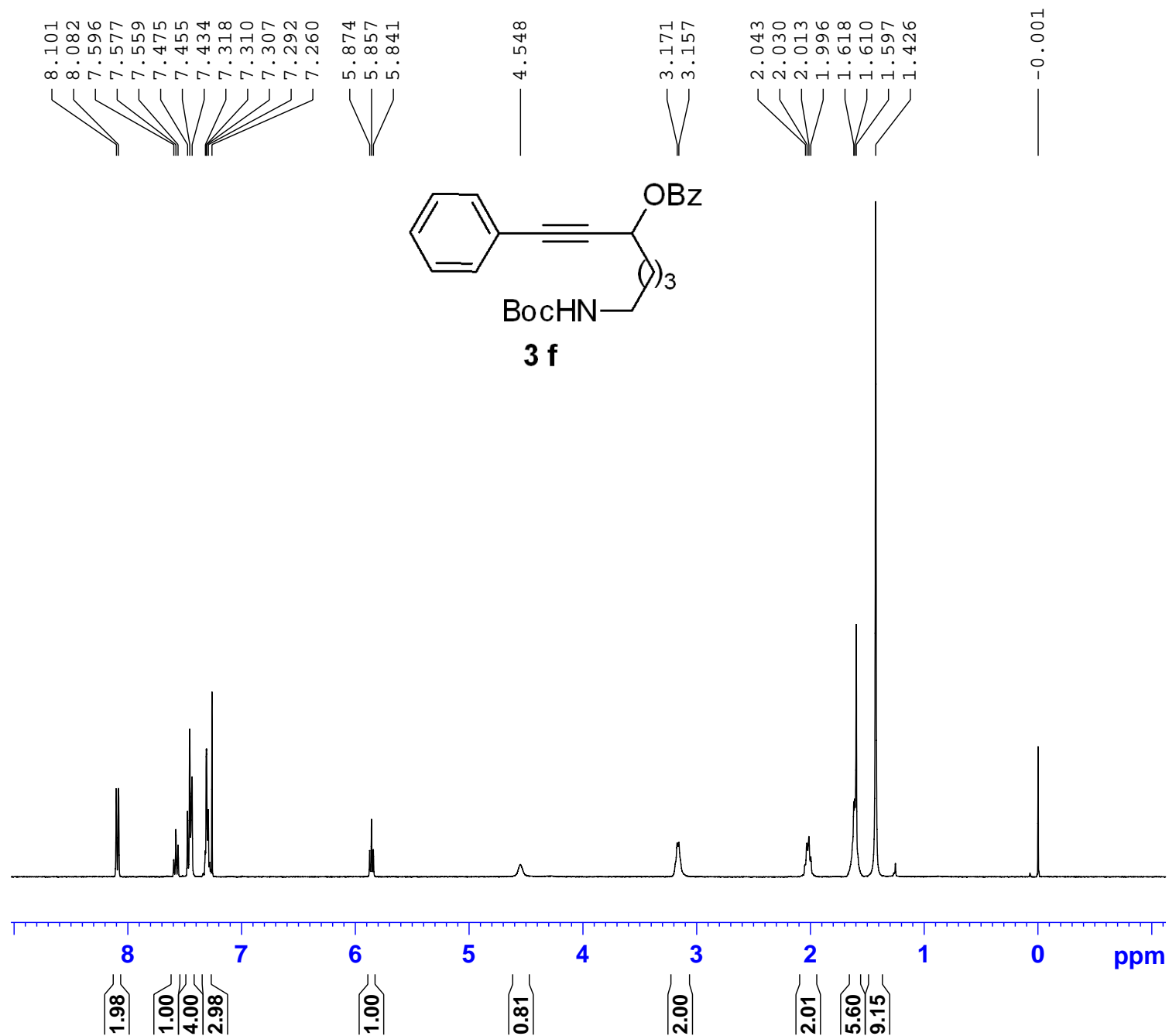
Current Data Parameters
NAME 2009-11-24 HX-1-138
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20091124
Time 18.49
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 297.7 K
D1 2.0000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127648 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40



Current Data Parameters

NAME Nov09-2009 HX 1-45
 EXPNO 5
 PROCNO 1

F2 - Acquisition Parameters

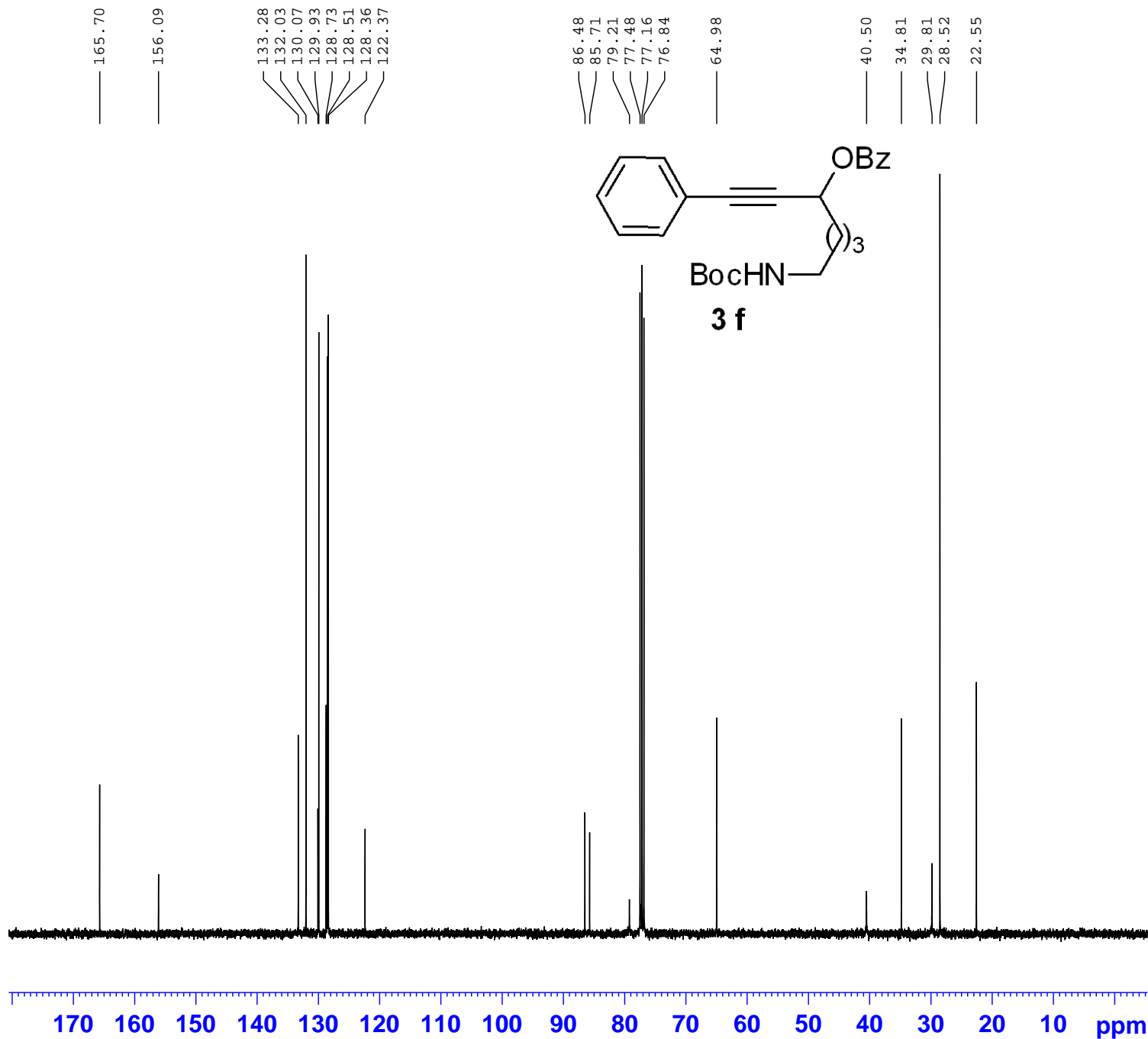
Date_ 20091110
 Time 1.31
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 322
 DW 60.800 usec
 DE 6.50 usec
 TE 296.3 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====

NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters

SI 32768
 SF 400.1300096 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



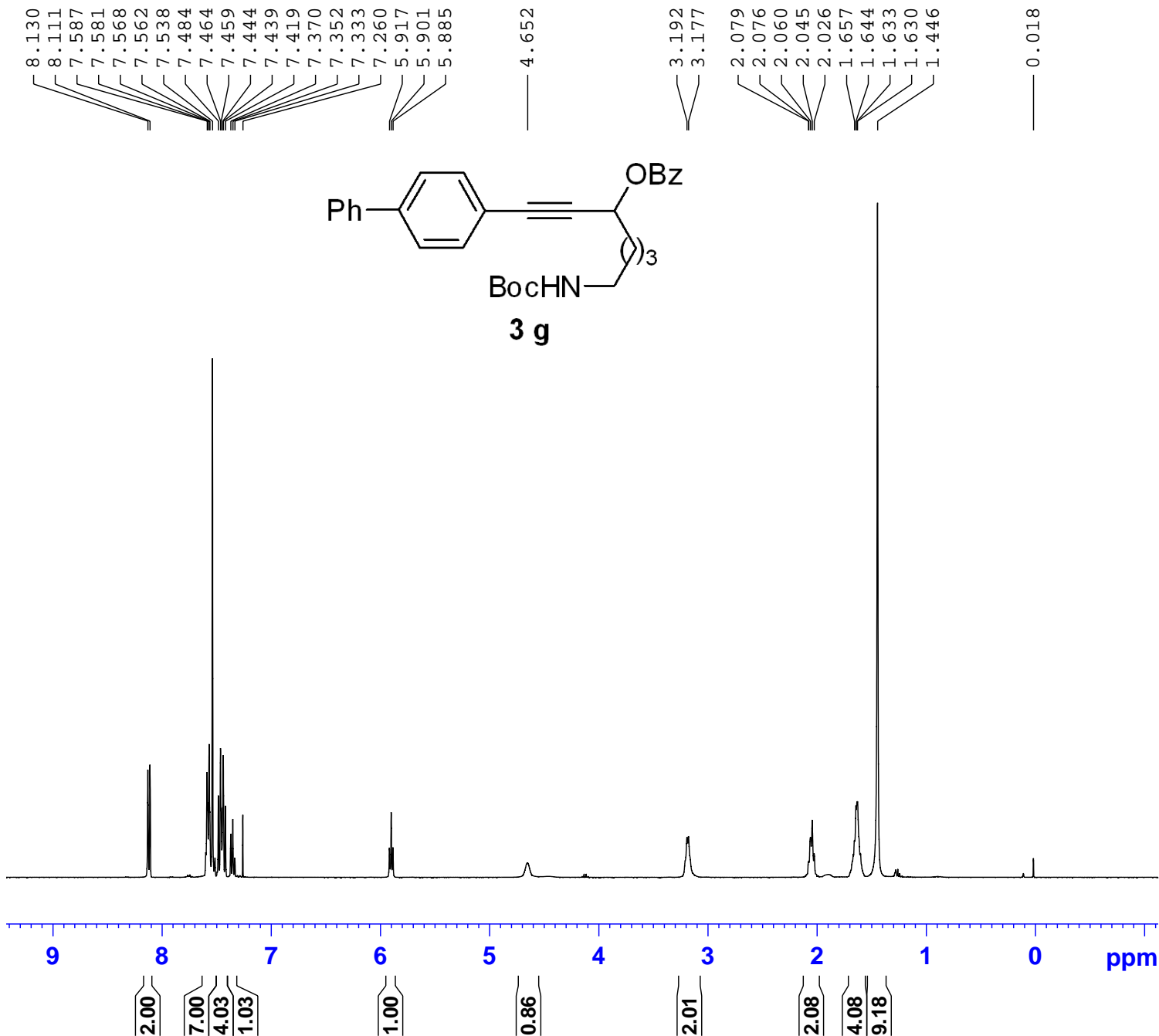
Current Data Parameters
 NAME 2009-09-30 HX 1-45
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090710
 Time 0.57
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 297.2 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127583 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

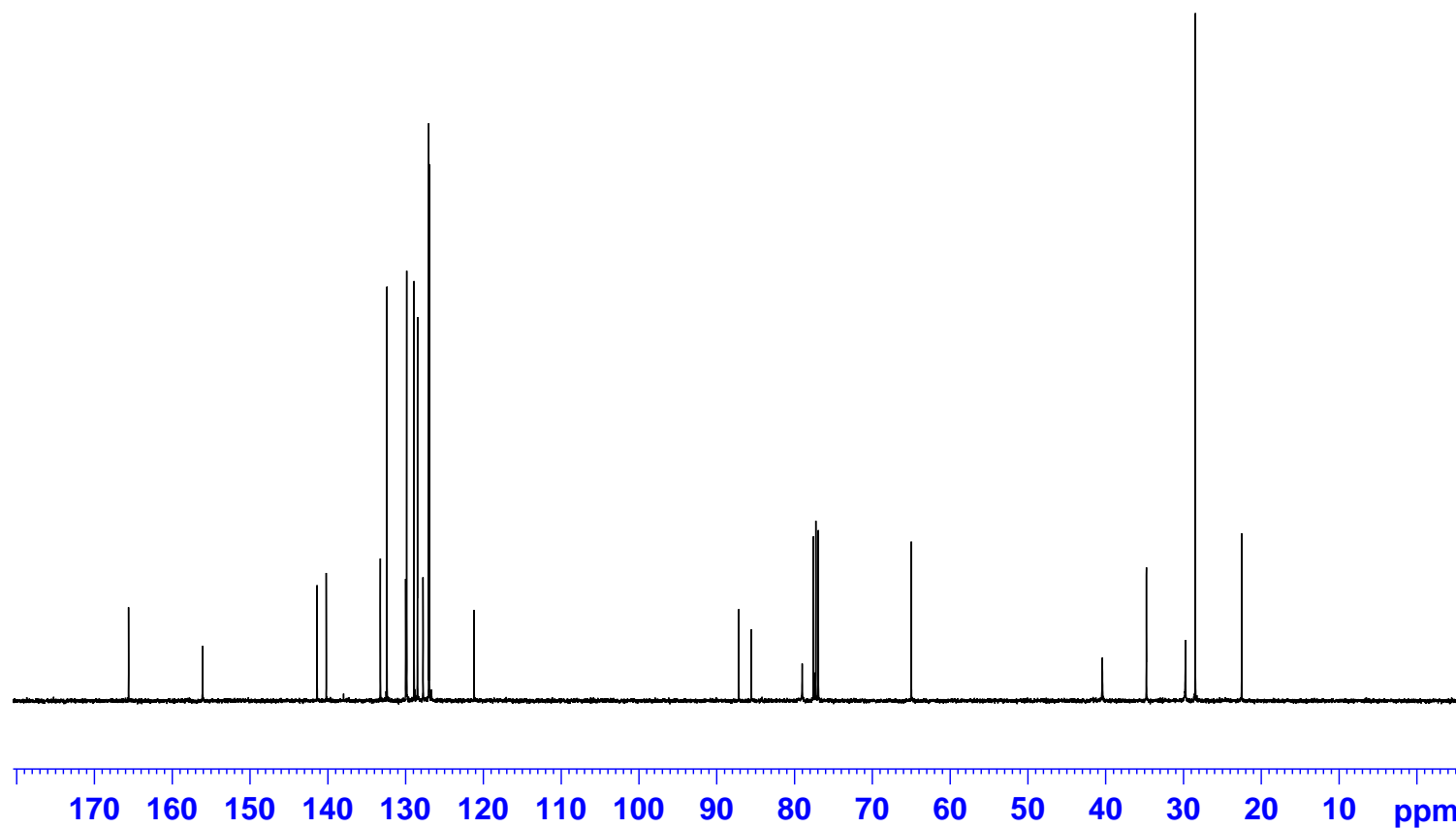
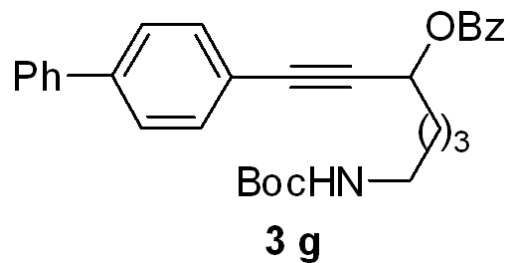
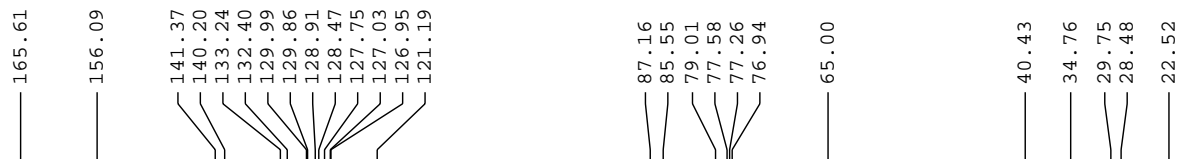


Current Data Parameters
 NAME Nov03-2009
 EXPNO 6
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091104
 Time 1.36
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 50.8
 DW 60.800 usec
 DE 6.50 usec
 TE 296.2 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300091 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



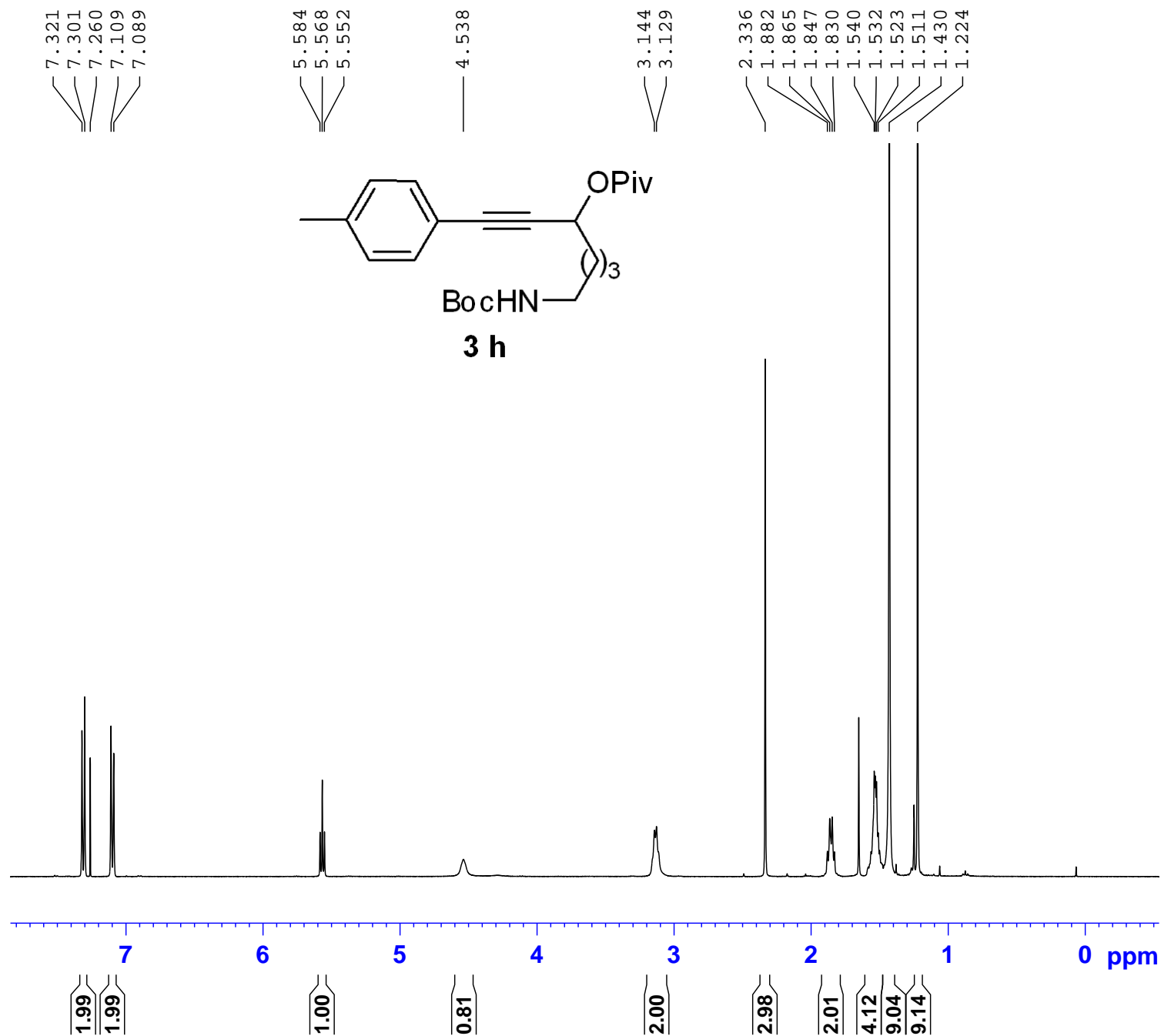
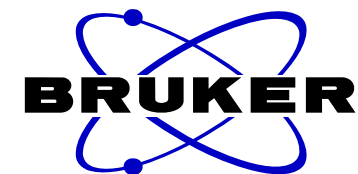
Current Data Parameters
 NAME Nov09-2009 HJF 4-46
 EXPNO 13
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091110
 Time 2.32
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 128
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.2 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127688 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

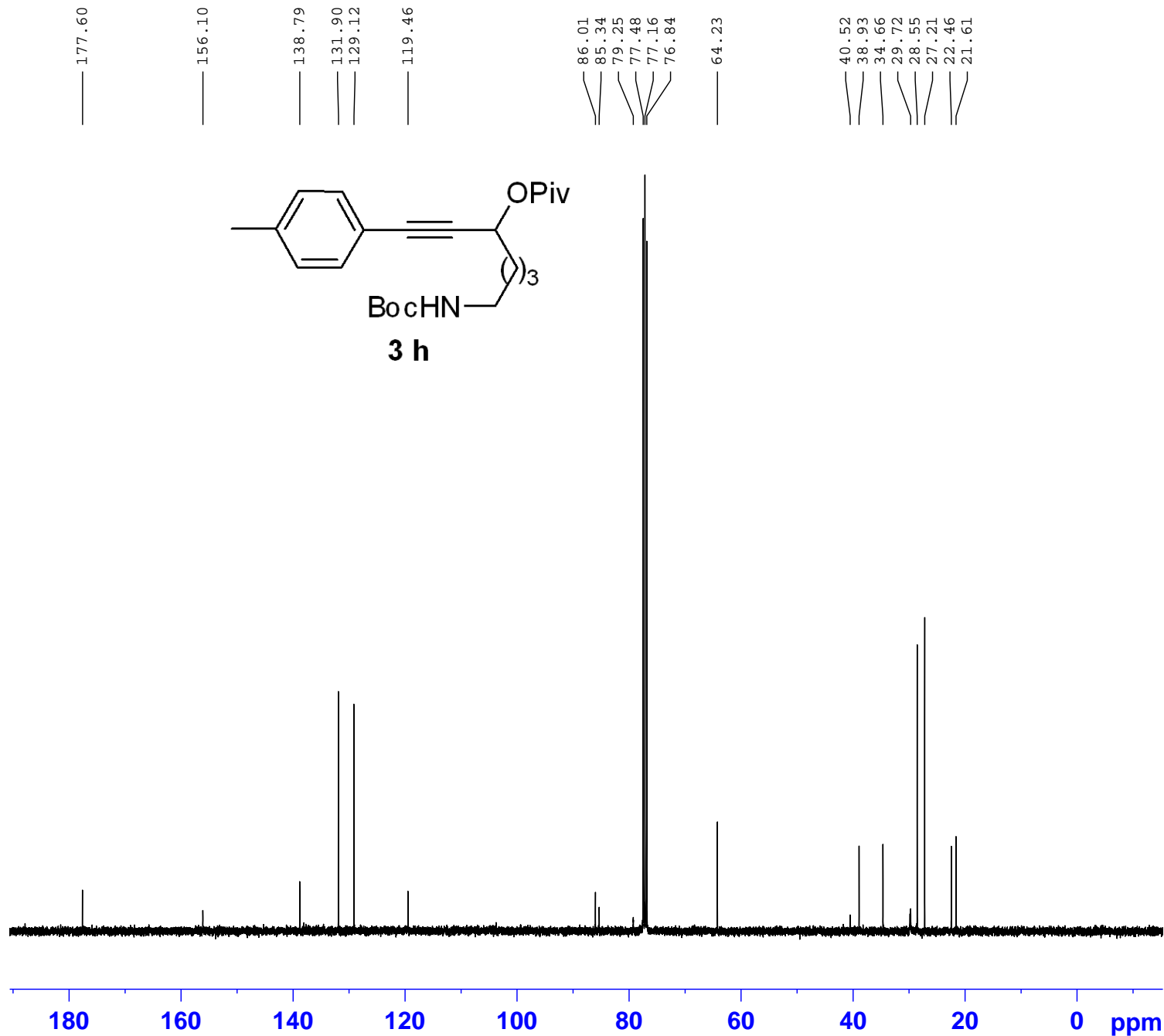


Current Data Parameters
 NAME Jul03-2009 HJF 3-131
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090704
 Time 1.04
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 114
 DW 60.800 usec
 DE 6.50 usec
 TE 295.9 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300093 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



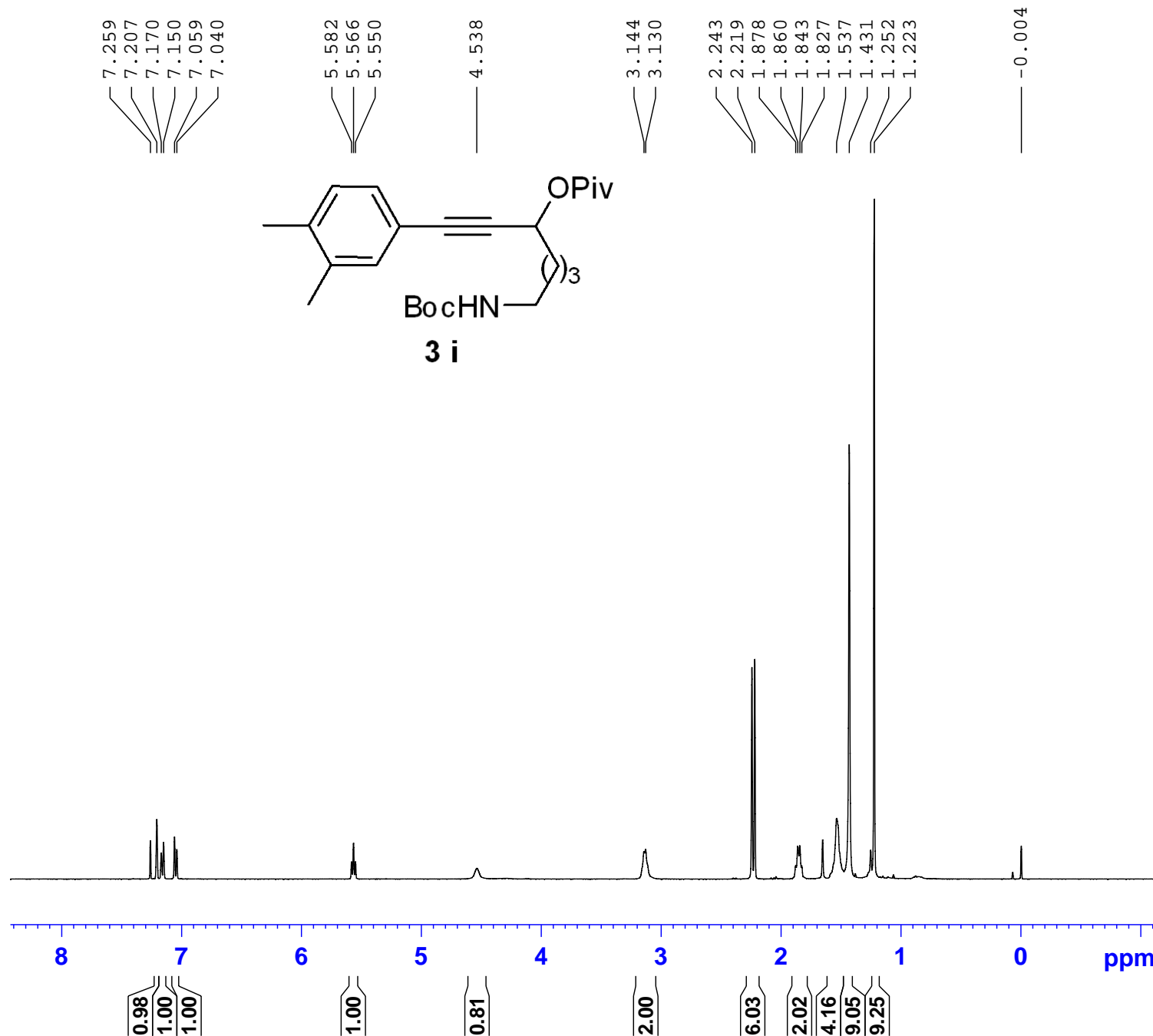
Current Data Parameters
 NAME 2009-07-09 HJF 3-131
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090709
 Time 23.08
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 297.1 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127553 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

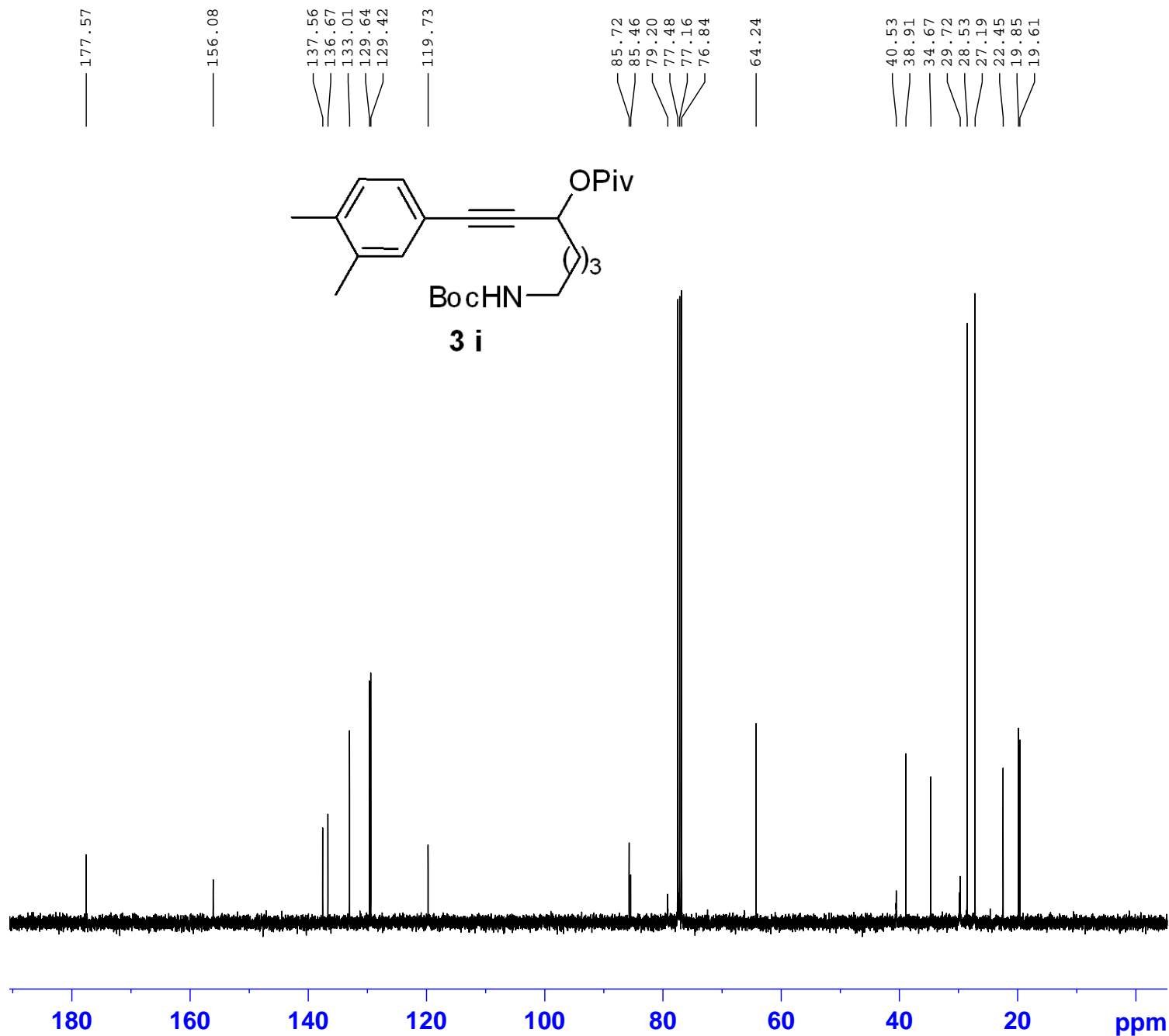


Current Data Parameters
 NAME Nov26-2009 HJF 4-4
 EXPNO 14
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091127
 Time 2.16
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 114
 DW 60.800 usec
 DE 6.50 usec
 TE 295.9 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300094 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



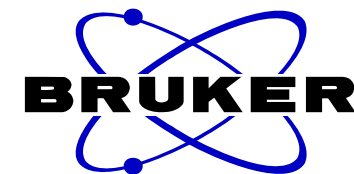
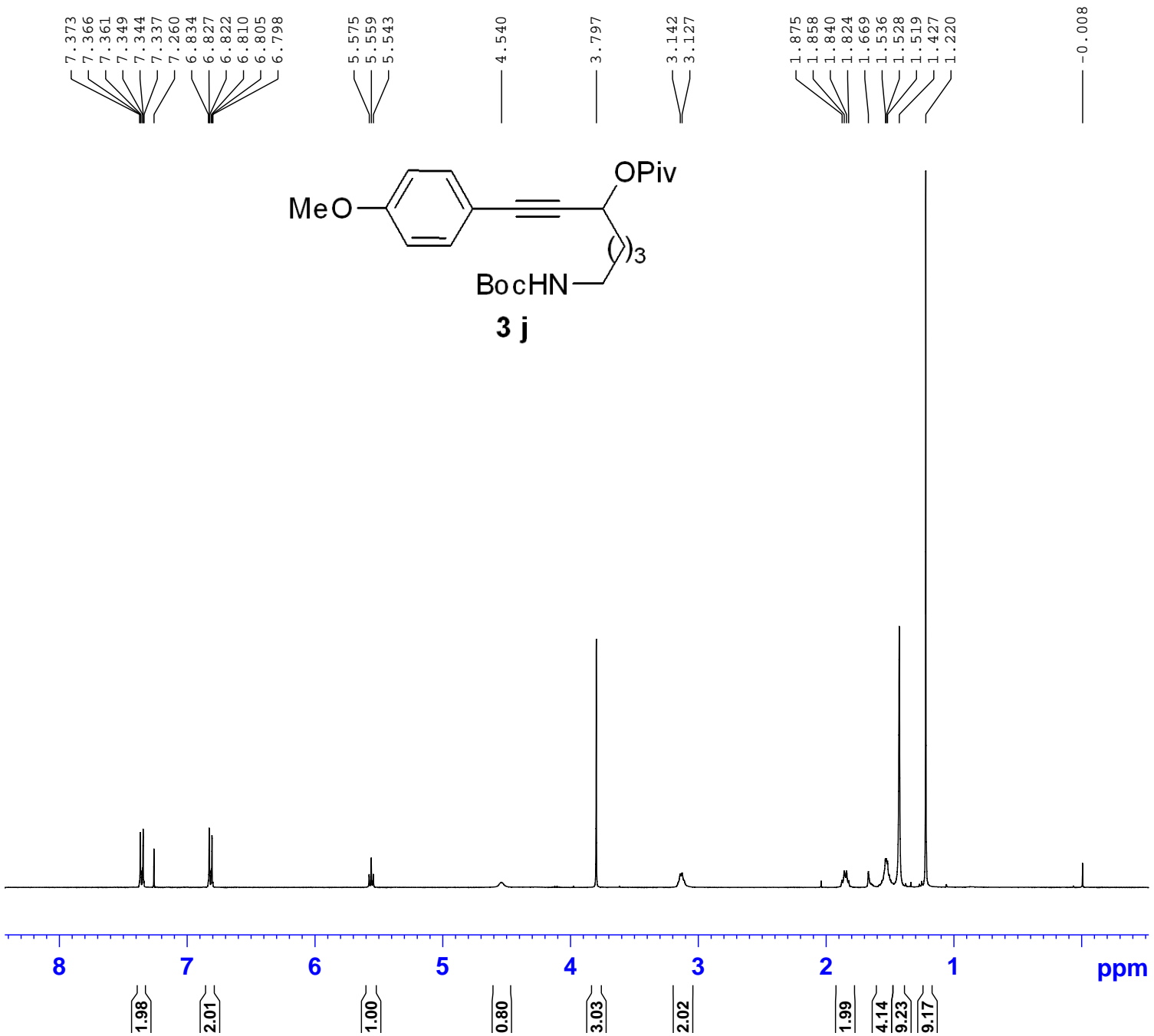
Current Data Parameters
 NAME Dec01-2009 HJF 4-4
 EXPNO 9
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091202
 Time 1.56
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 128
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.0 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127573 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

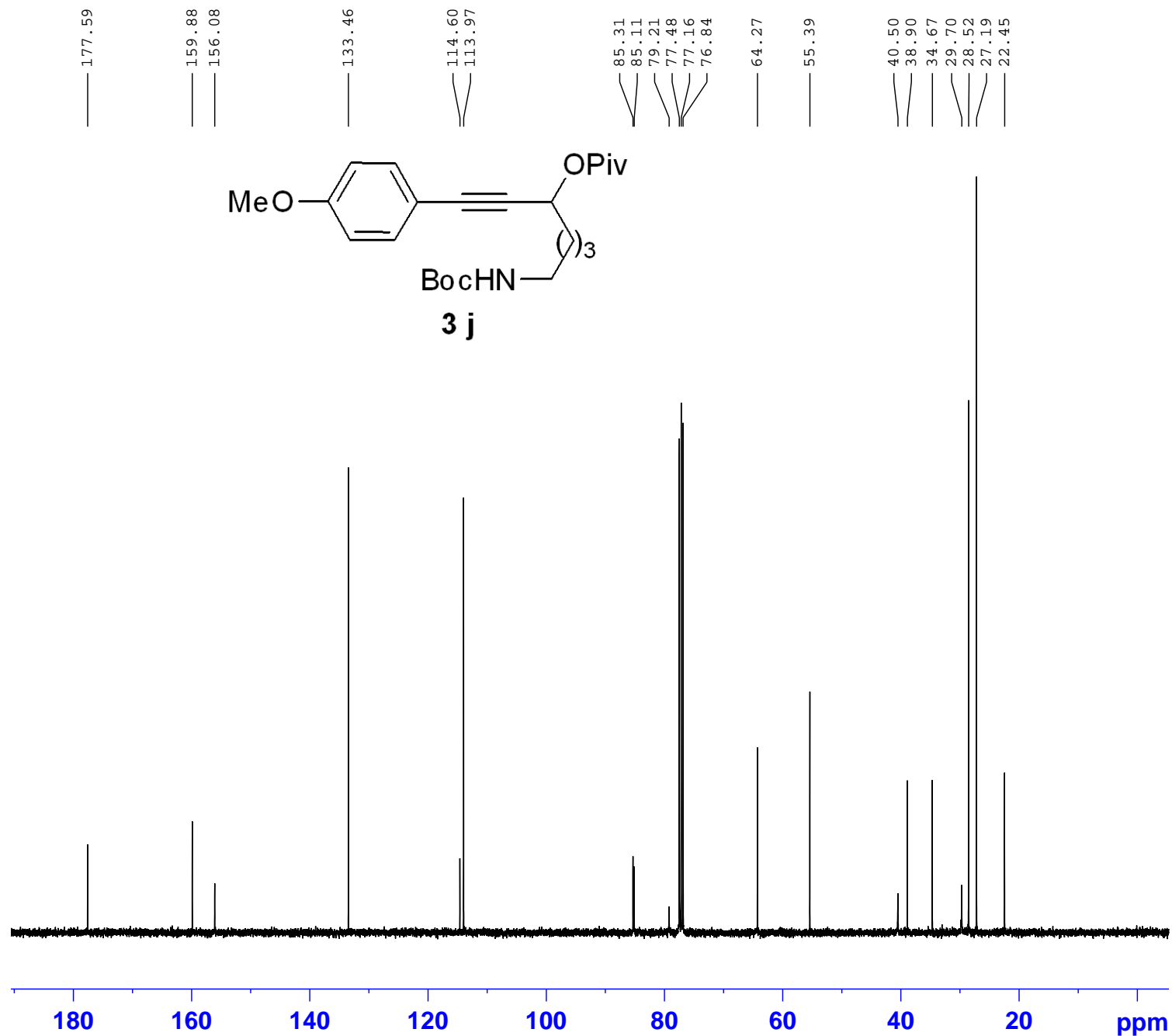


Current Data Parameters
 NAME Jul29-2009 HJF 3-162
 EXPNO 13
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090730
 Time 3.07
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 128
 DW 60.800 usec
 DE 6.50 usec
 TE 295.4 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300096 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



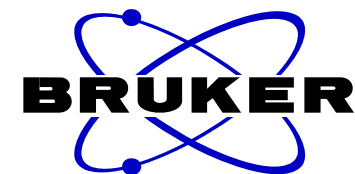
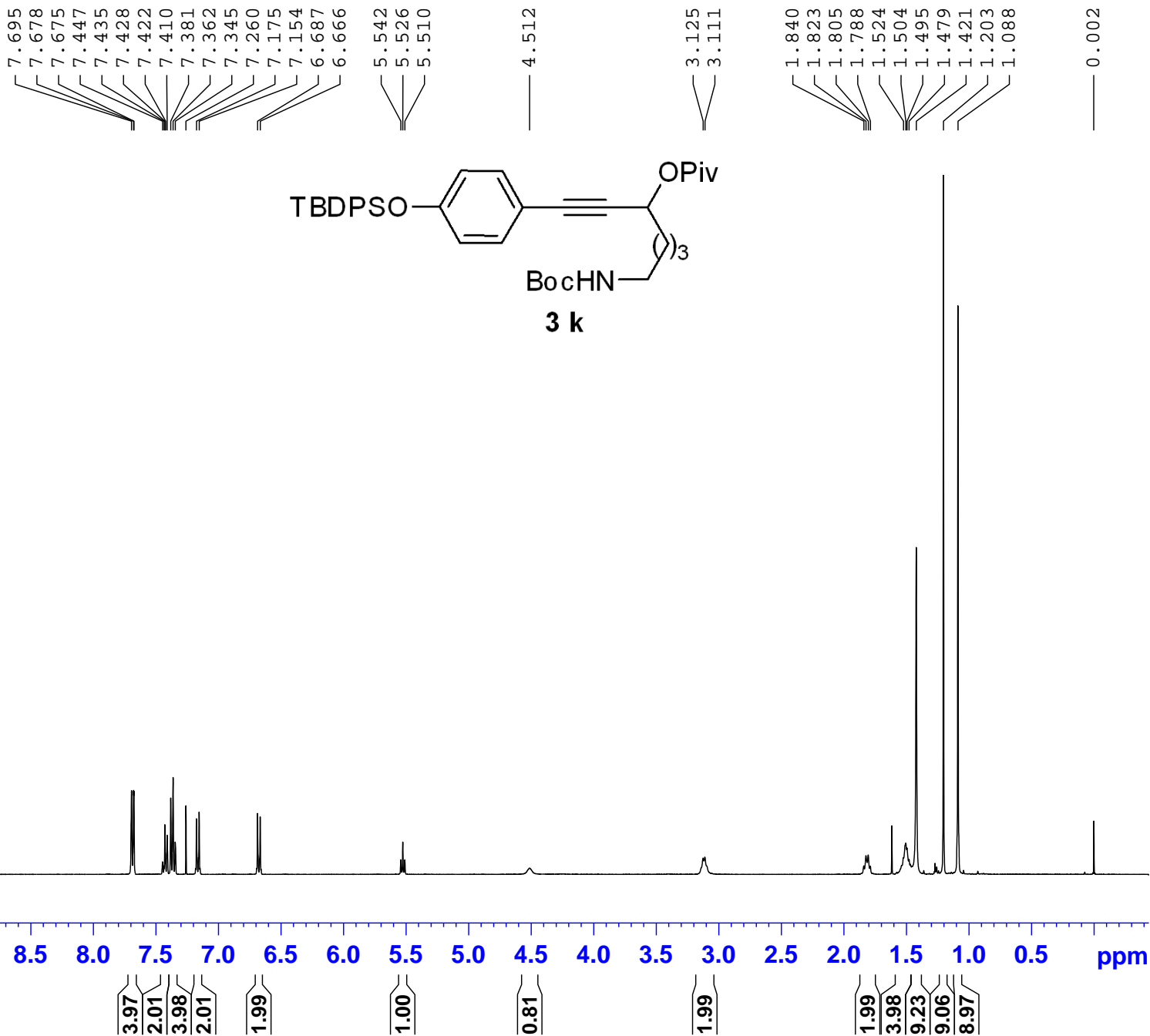
Current Data Parameters
 NAME 2009-08-07 HJF3-162
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090807
 Time 17.00
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 296.6 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127576 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

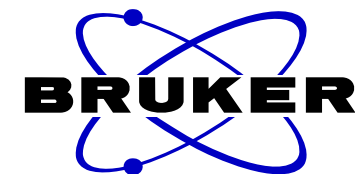


Current Data Parameters
 NAME Dec15-2009 HJF 4-58
 EXPNO 21
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091216
 Time 2.28
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 128
 DW 60.800 usec
 DE 6.50 usec
 TE 296.4 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300096 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



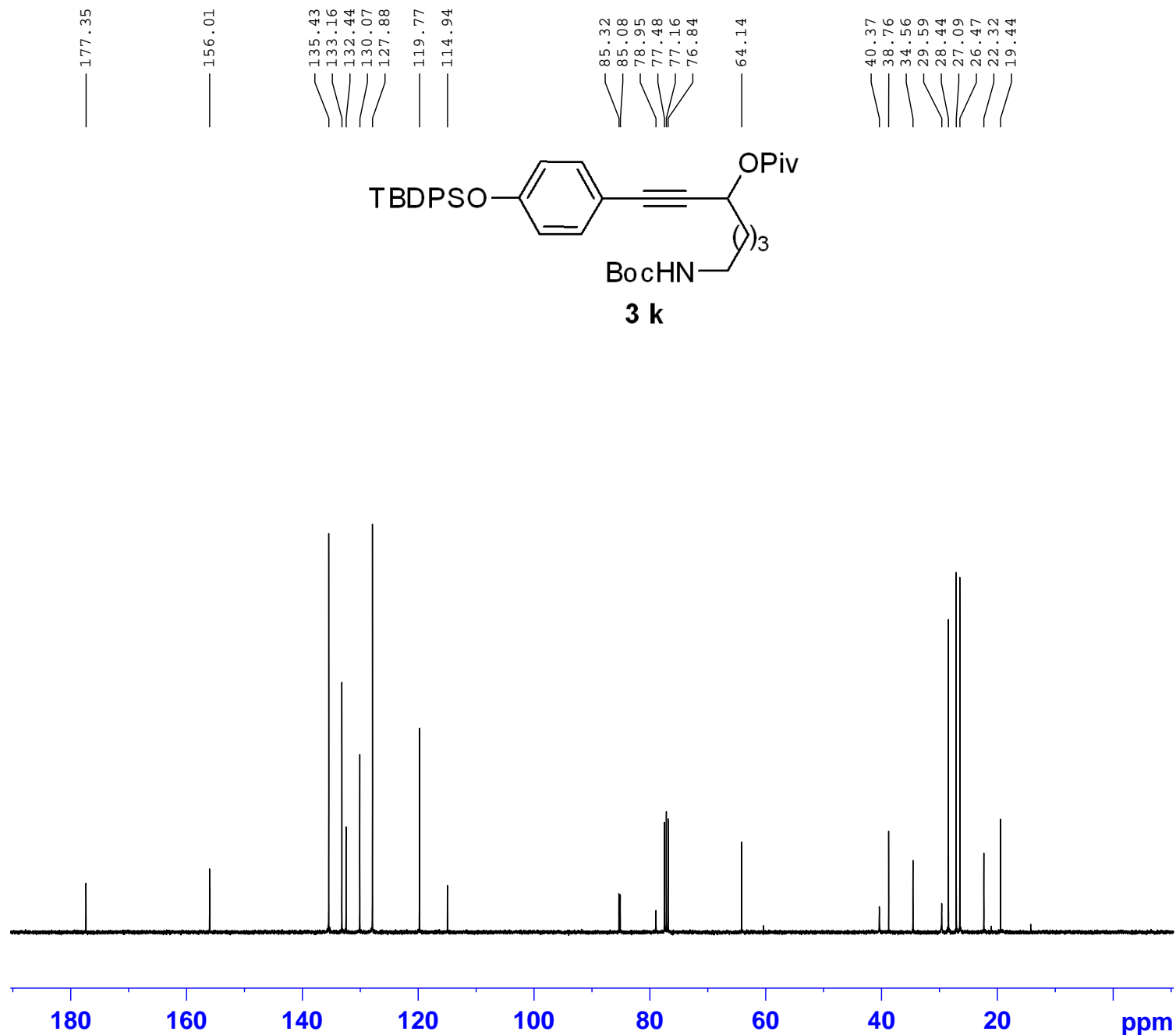
Current Data Parameters
 NAME Dec25-2009
 EXPNO 9
 PROCNO 1

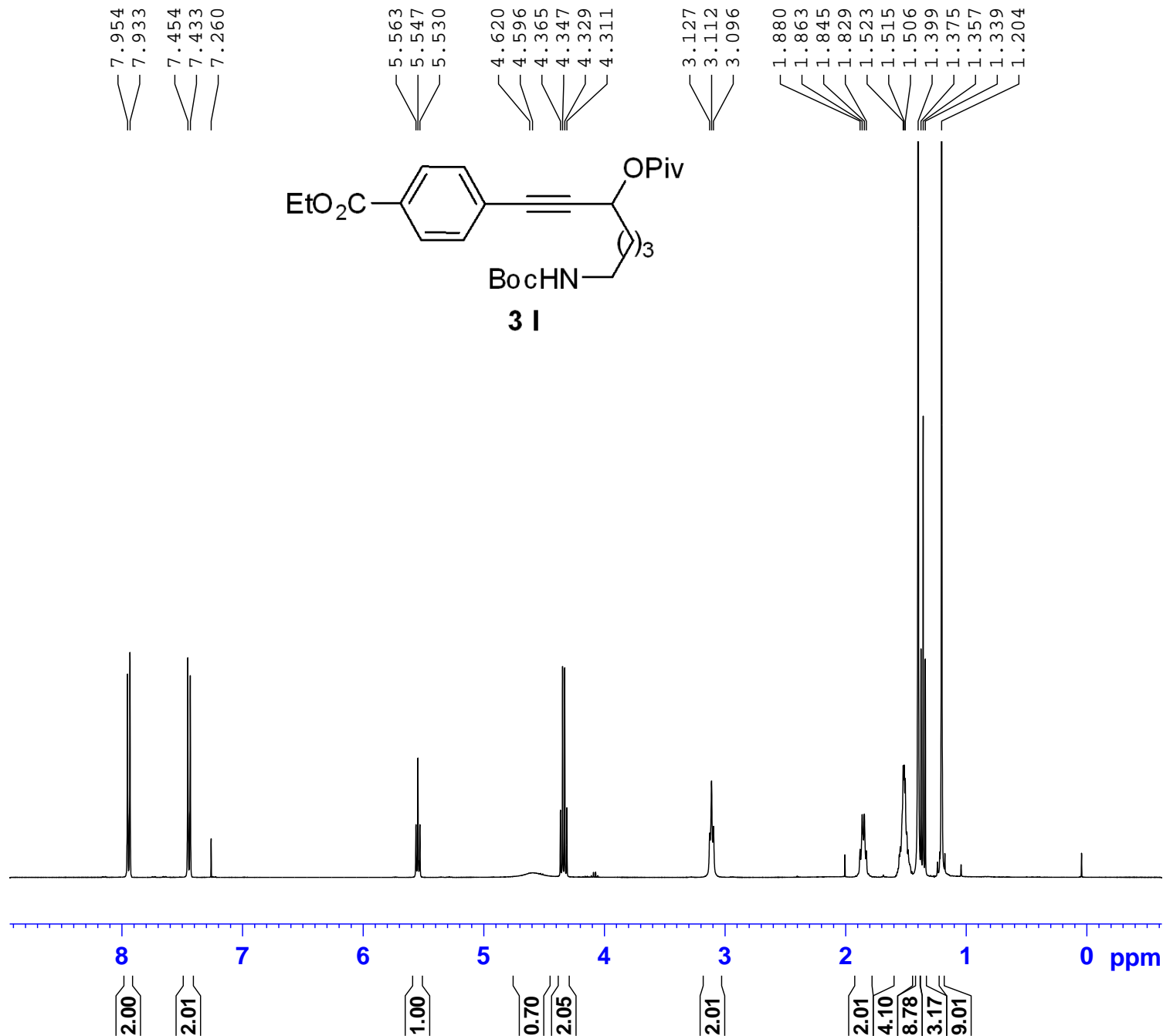
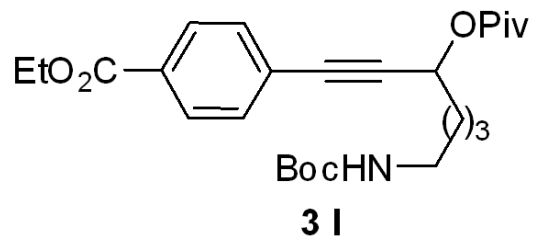
F2 - Acquisition Parameters
 Date_ 20091225
 Time 20.03
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 128
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 300.0 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127690 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



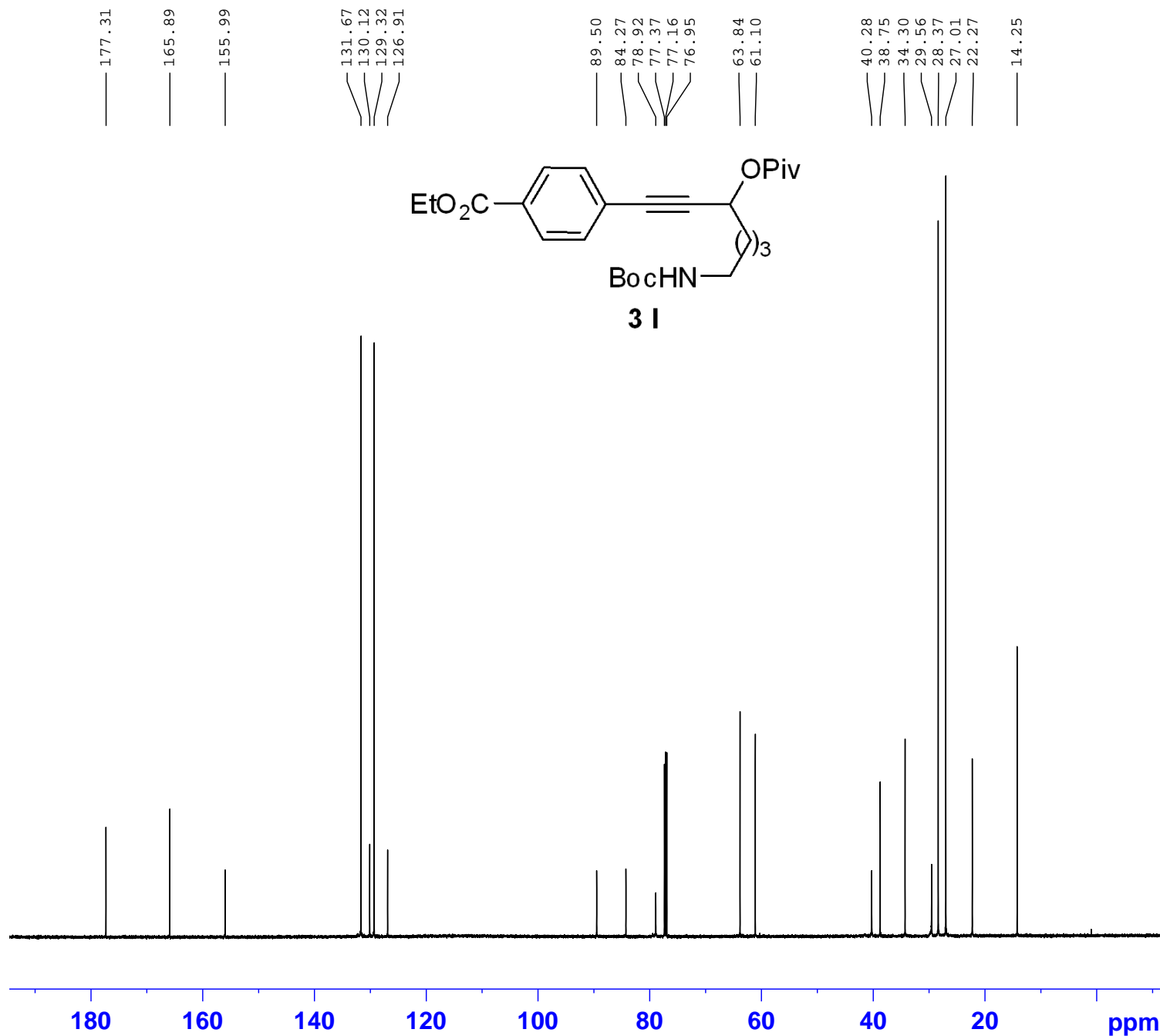


Current Data Parameters
 NAME Jul15-2009 HJF 3-140
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090716
 Time 2.09
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 50.8
 DW 60.800 usec
 DE 6.50 usec
 TE 295.8 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300091 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



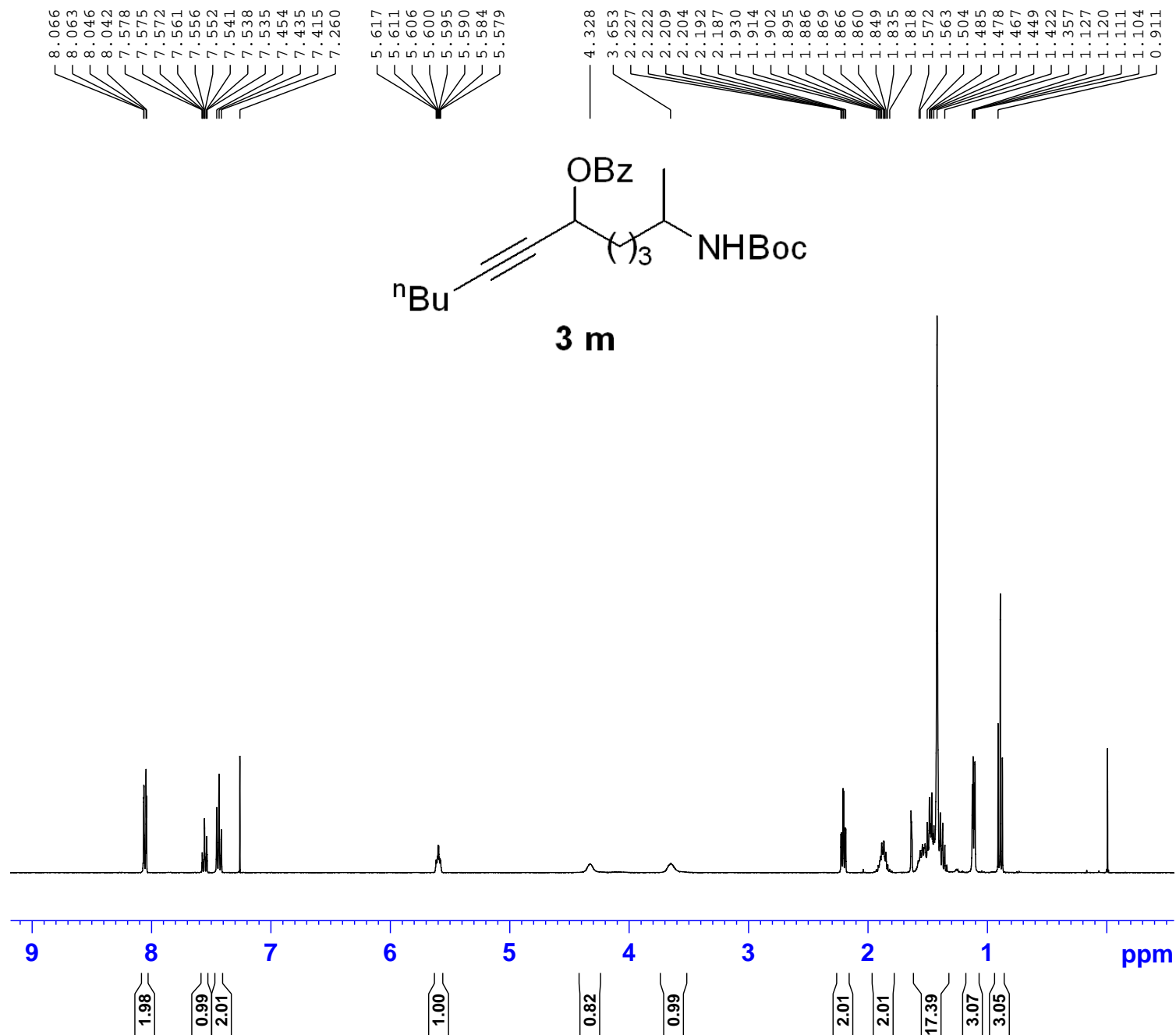
Current Data Parameters
 NAME 2009-07-22 H₂F 3-140
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090722
 Time 21.28
 INSTRUM spect
 PROBHD 5 mm PATXI 1H/
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl₃
 NS 512
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.9088159 sec
 RG 90.5
 DW 13.867 usec
 DE 6.50 usec
 TE 296.4 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 11.50 usec
 PL1 -3.00 dB
 SFO1 150.9178988 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL12 19.50 dB
 PL13 19.50 dB
 PL2 -1.00 dB
 SFO2 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028050 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

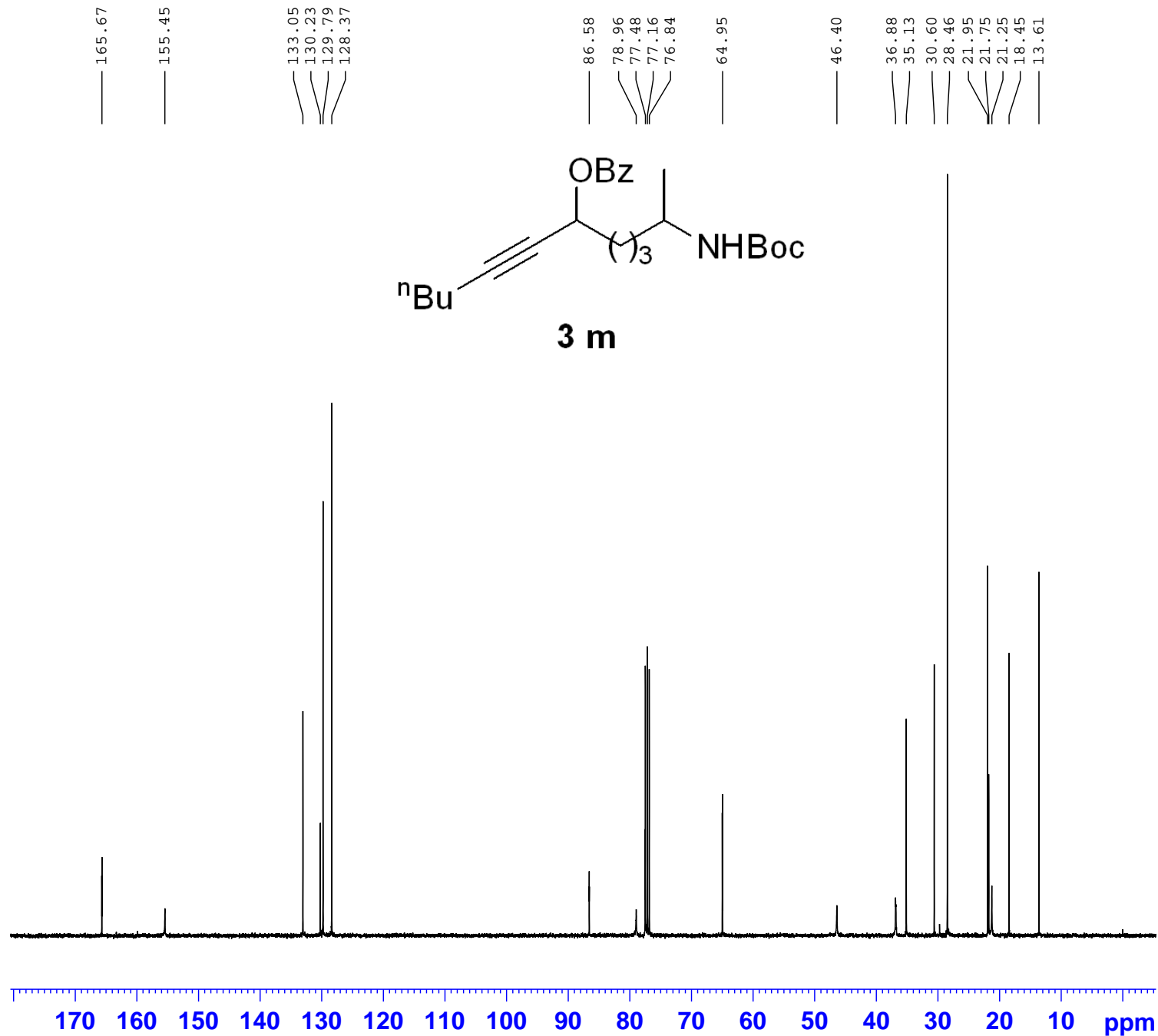


Current Data Parameters
 NAME Nov11-2009 HX 1-127
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091112
 Time 2.49
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 144
 DW 60.800 usec
 DE 6.50 usec
 TE 295.9 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.130095 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



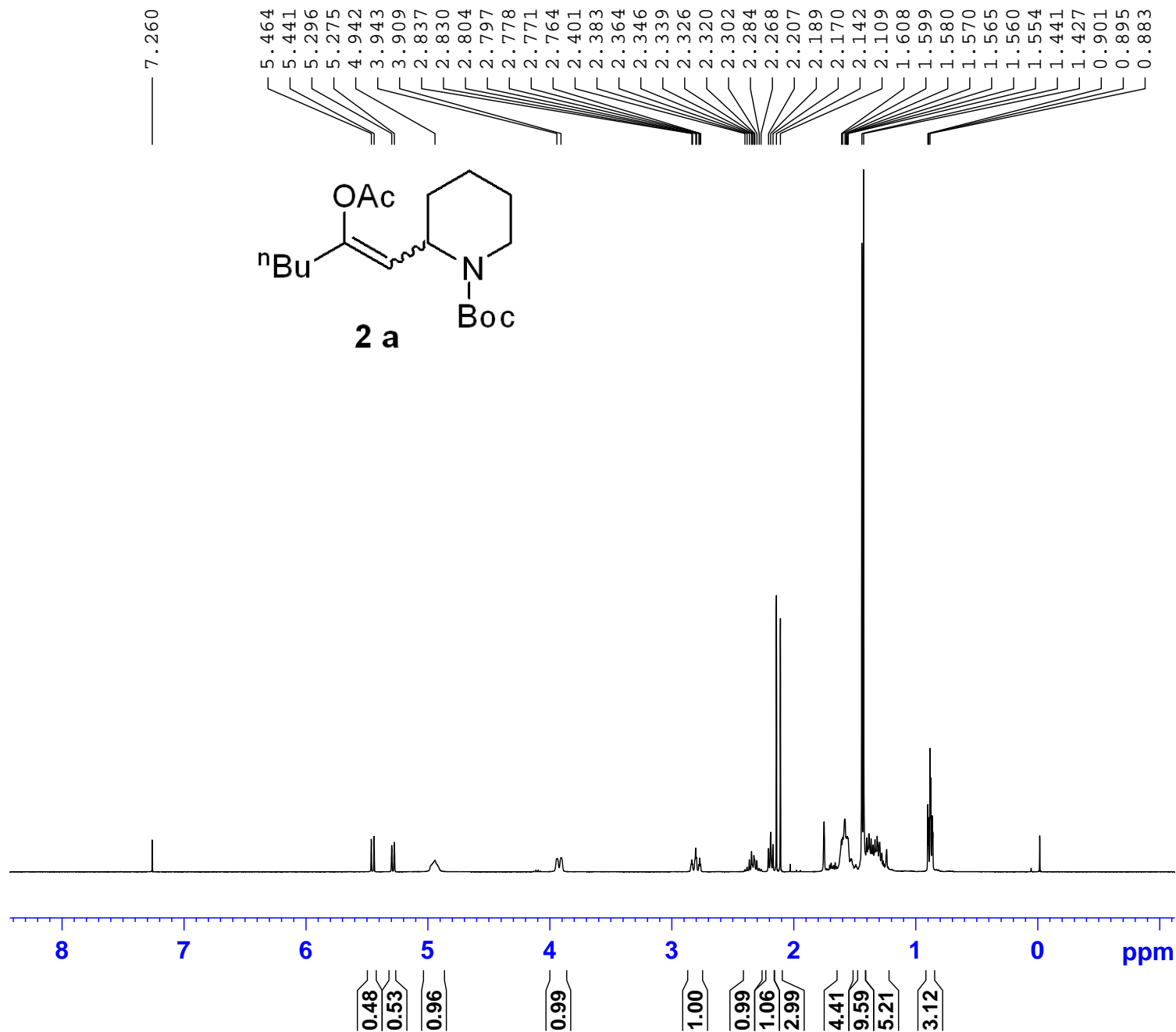
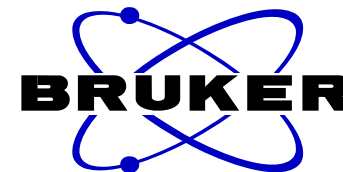
Current Data Parameters
 NAME 2009-09-30 HX-1-127
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090930
 Time 22.13
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 298.0 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127620 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

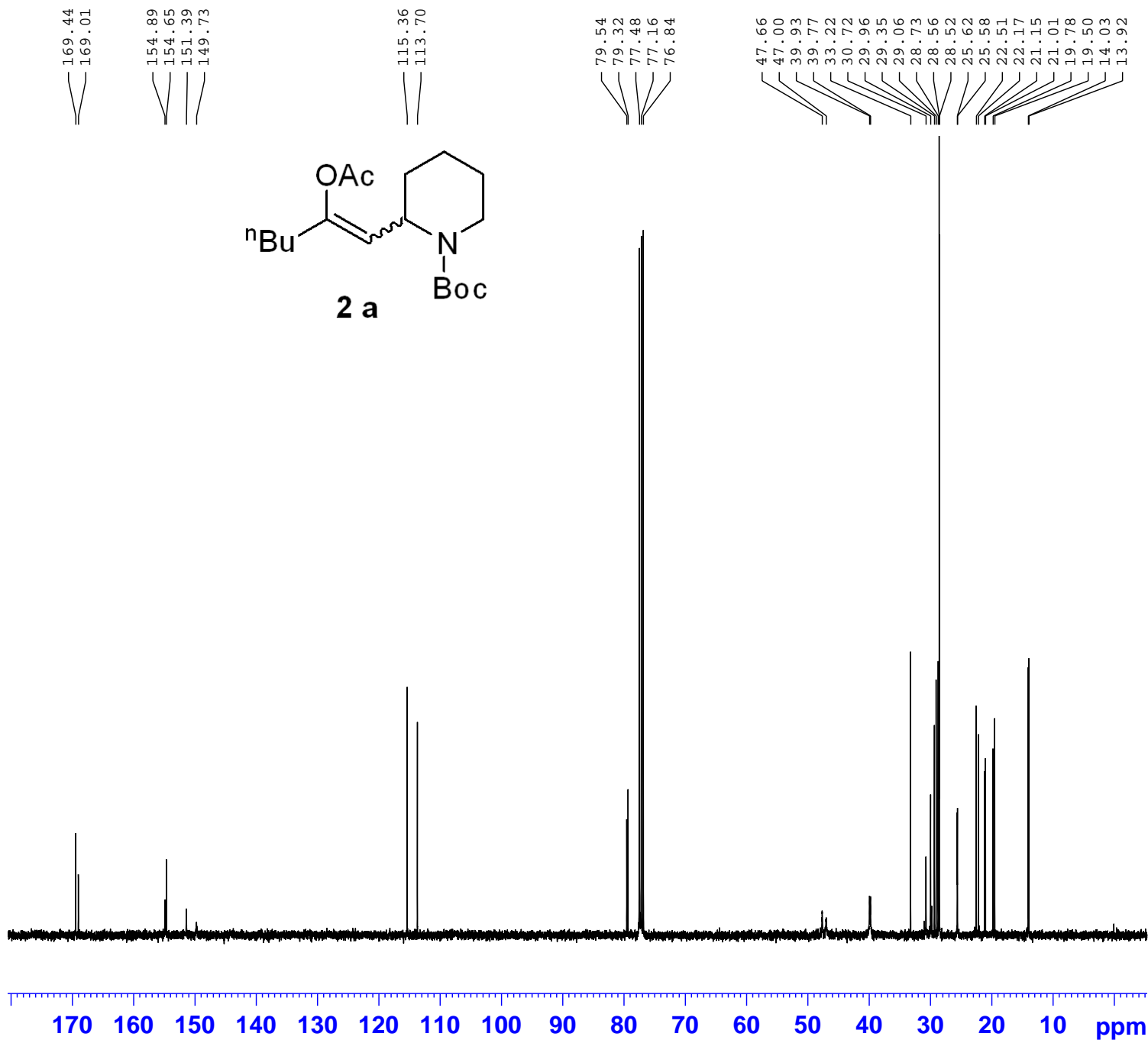
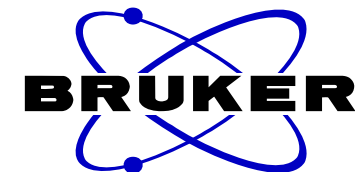


Current Data Parameters
 NAME Aug19-2009 HJF 3-17701
 EXPNO 12
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090820
 Time 2.24
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 90.5
 DW 60.800 usec
 DE 6.50 usec
 TE 295.3 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300096 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



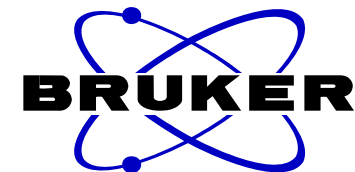
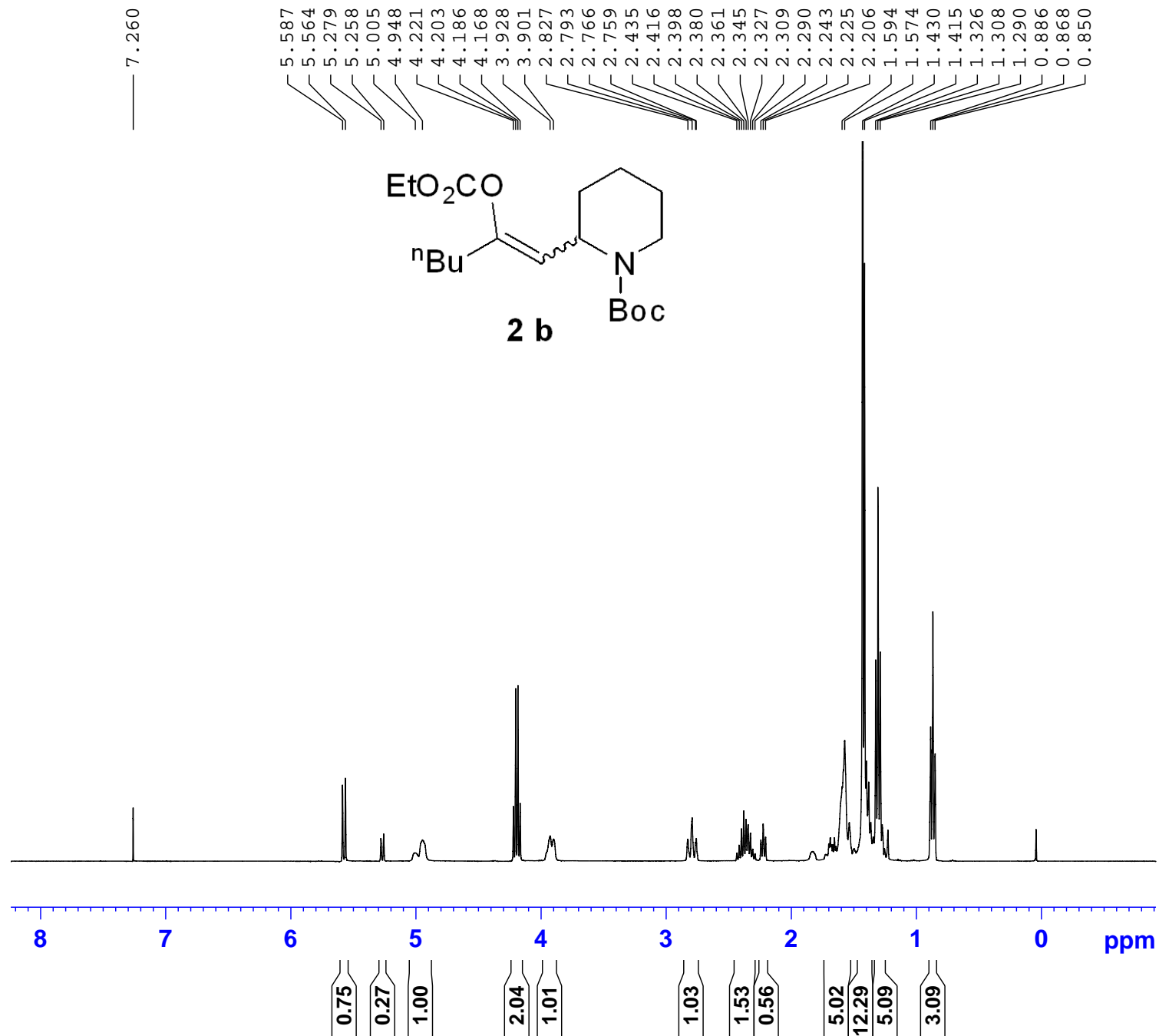
Current Data Parameters
 NAME 2009-08-25 HJF 3-17701
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090825
 Time 18.53
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 297.1 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127574 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

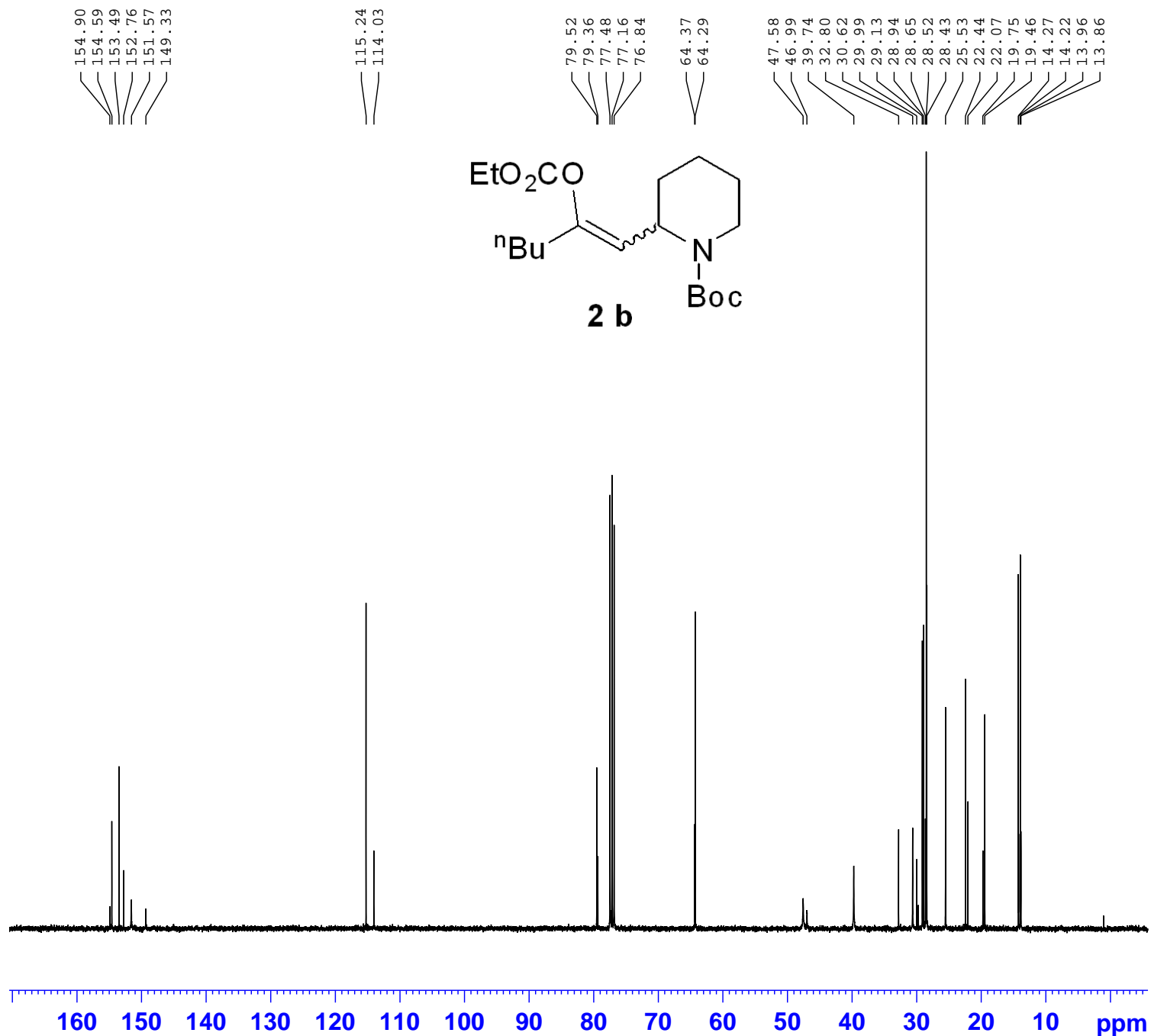


Current Data Parameters
NAME Jul03-2009 HJF 3-12804
EXPNO 5
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090704
Time 1.26
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 50.8
DW 60.800 usec
DE 6.50 usec
TE 296.0 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -2.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300092 MHz
WDW GM
SSB 0
LB -0.20 Hz
GB 0.1
PC 1.00



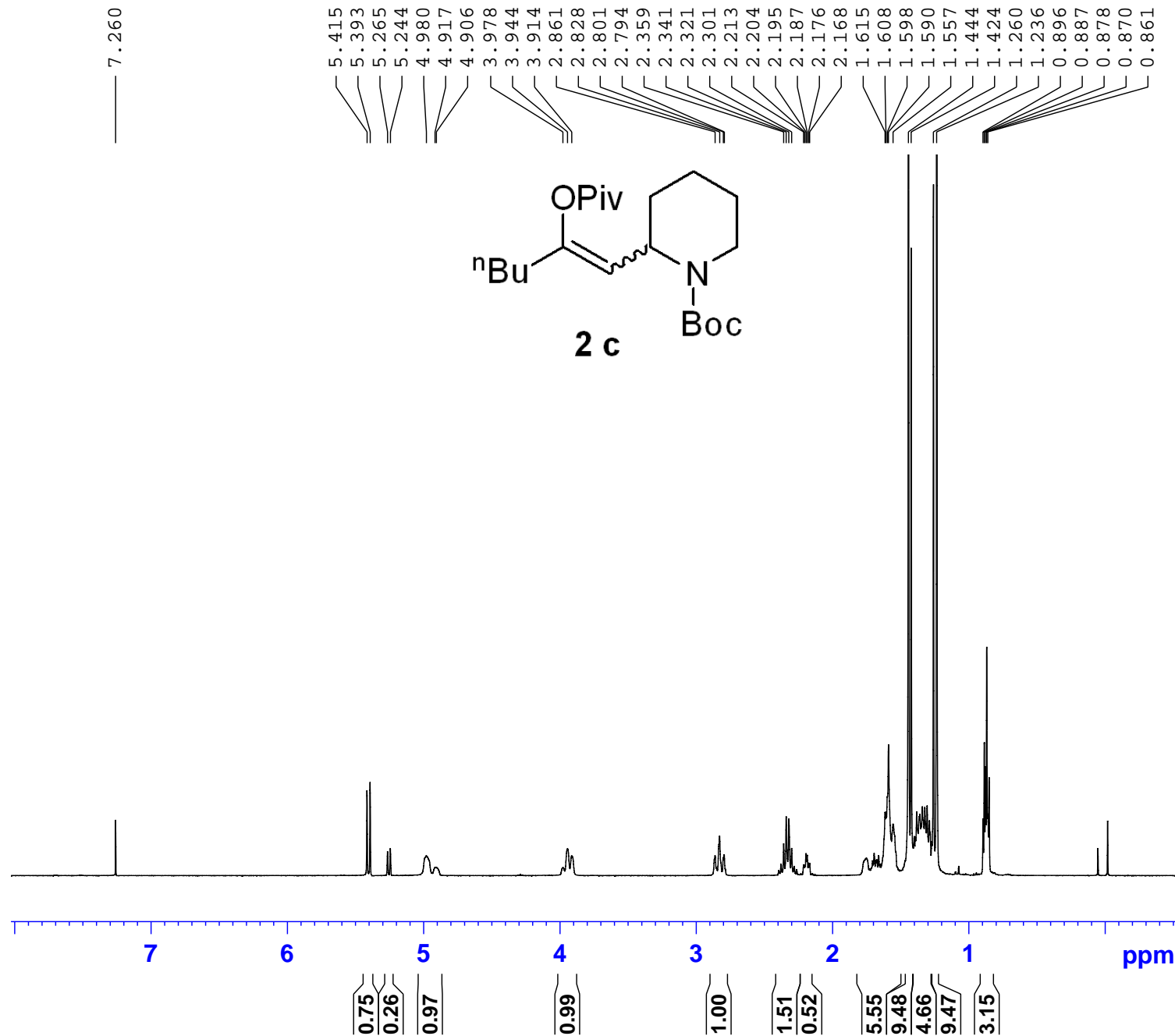
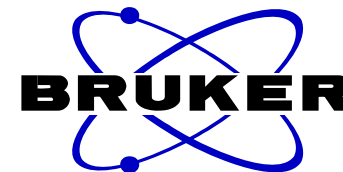
Current Data Parameters
NAME 2009-07-09 HJF 3-12804
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090709
Time 23.43
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 296.9 K
D1 2.0000000 sec
d11 0.0300000 sec
DELTA 1.89999998 sec
TD0 1

=====
CHANNEL f1
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

=====
CHANNEL f2
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127590 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

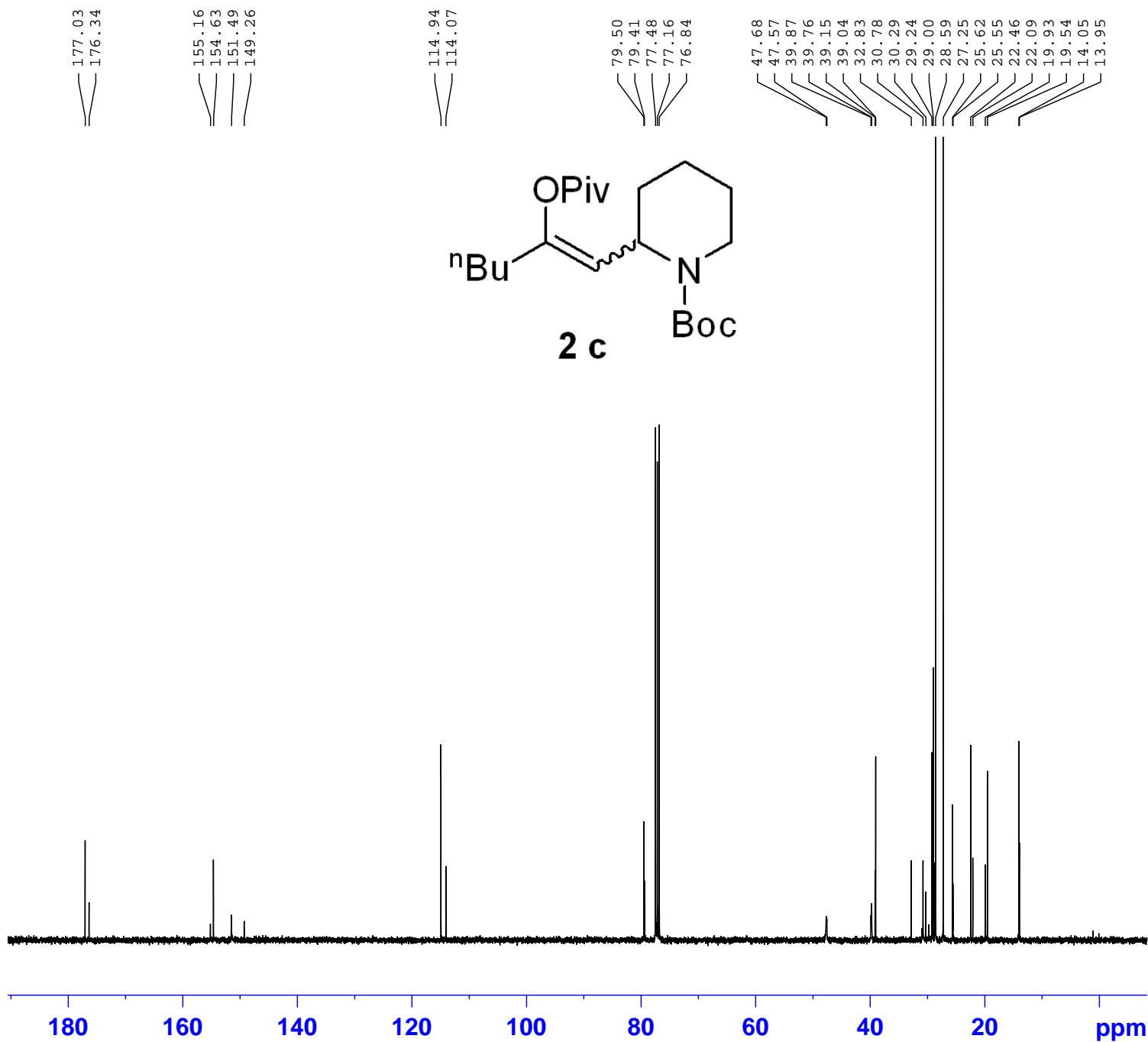
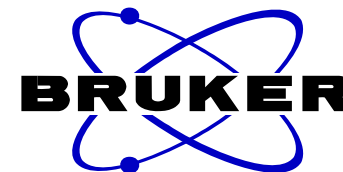


Current Data Parameters
 NAME Aug19-2009 HJF 3-17703
 EXPNO 13
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090820
 Time 2.29
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 71.8
 DW 60.800 usec
 DE 6.50 usec
 TE 295.4 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.130096 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



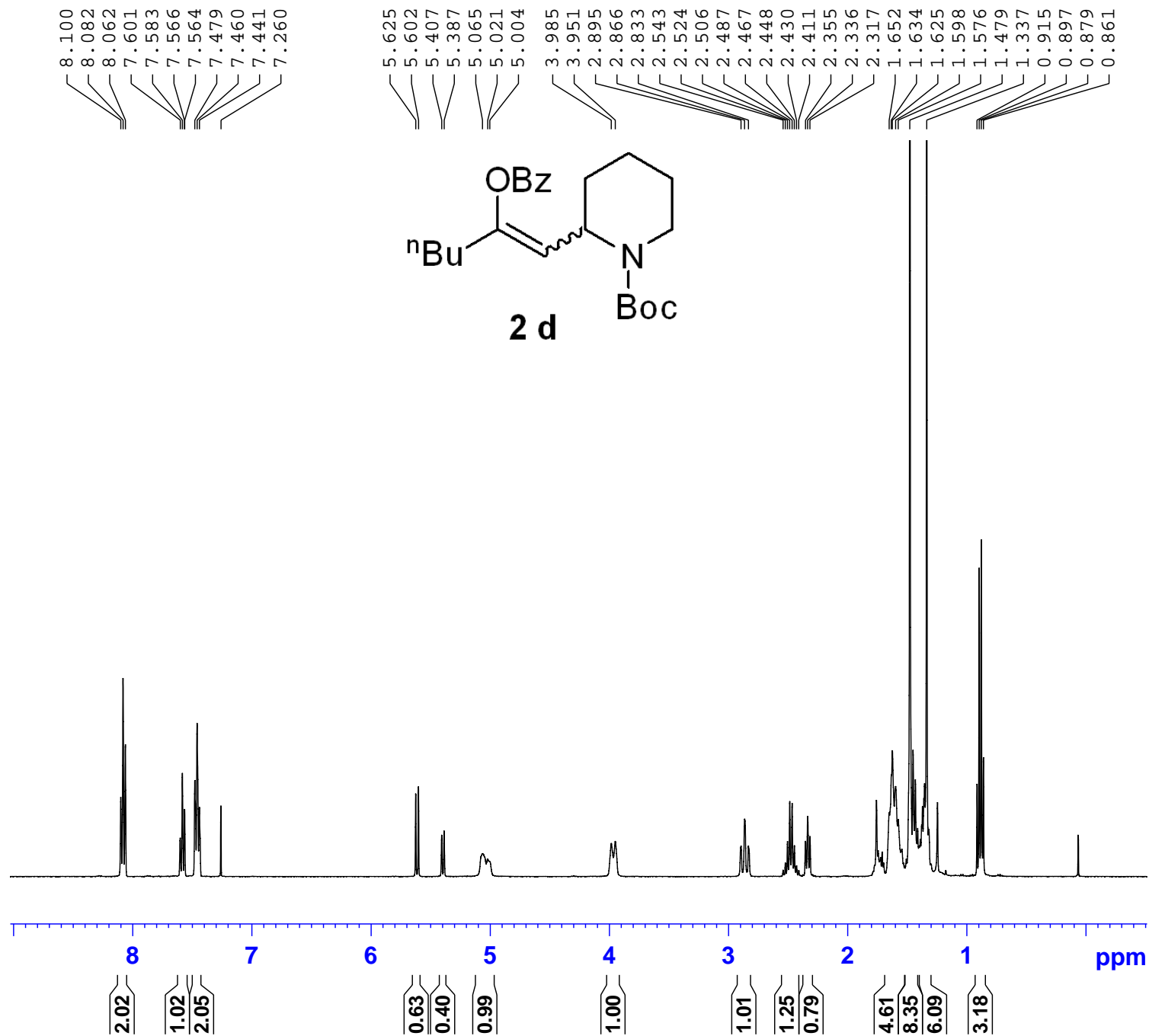
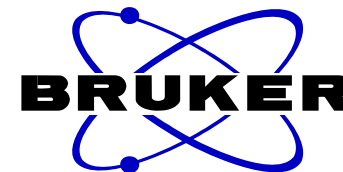
Current Data Parameters
NAME 2009-08-25 HJF 3-17703
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090825
Time 20.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 297.3 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

=====
CHANNEL f1
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

=====
CHANNEL f2
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127566 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

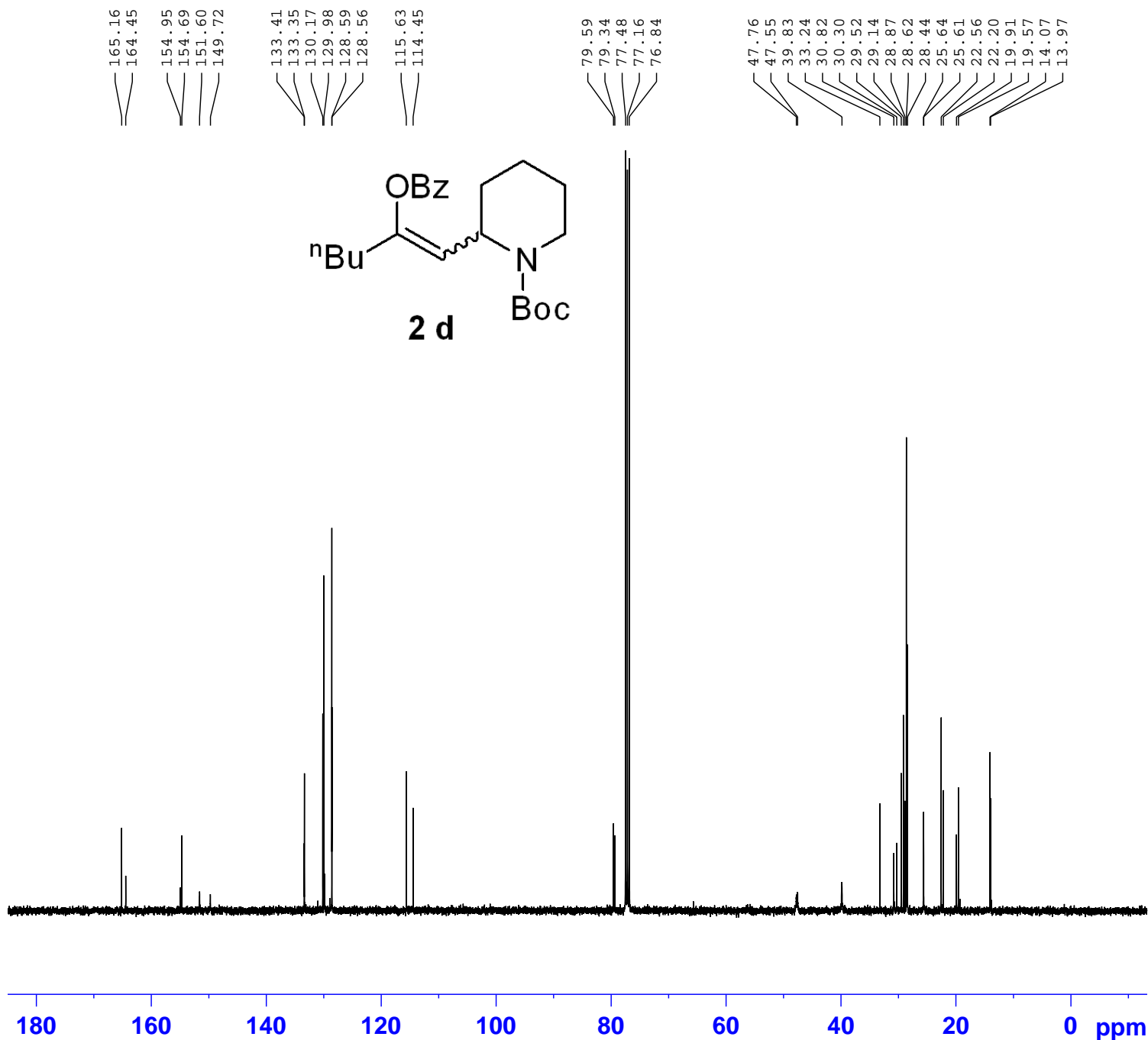
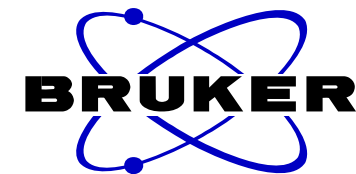


Current Data Parameters
 NAME Jun30-2009 HJF 3-12803
 EXPNO 10
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090701
 Time 1.53
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 71.8
 DW 60.800 usec
 DE 6.50 usec
 TE 295.9 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.130093 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



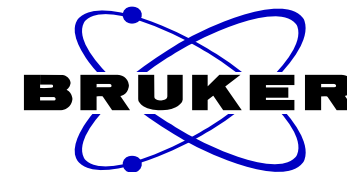
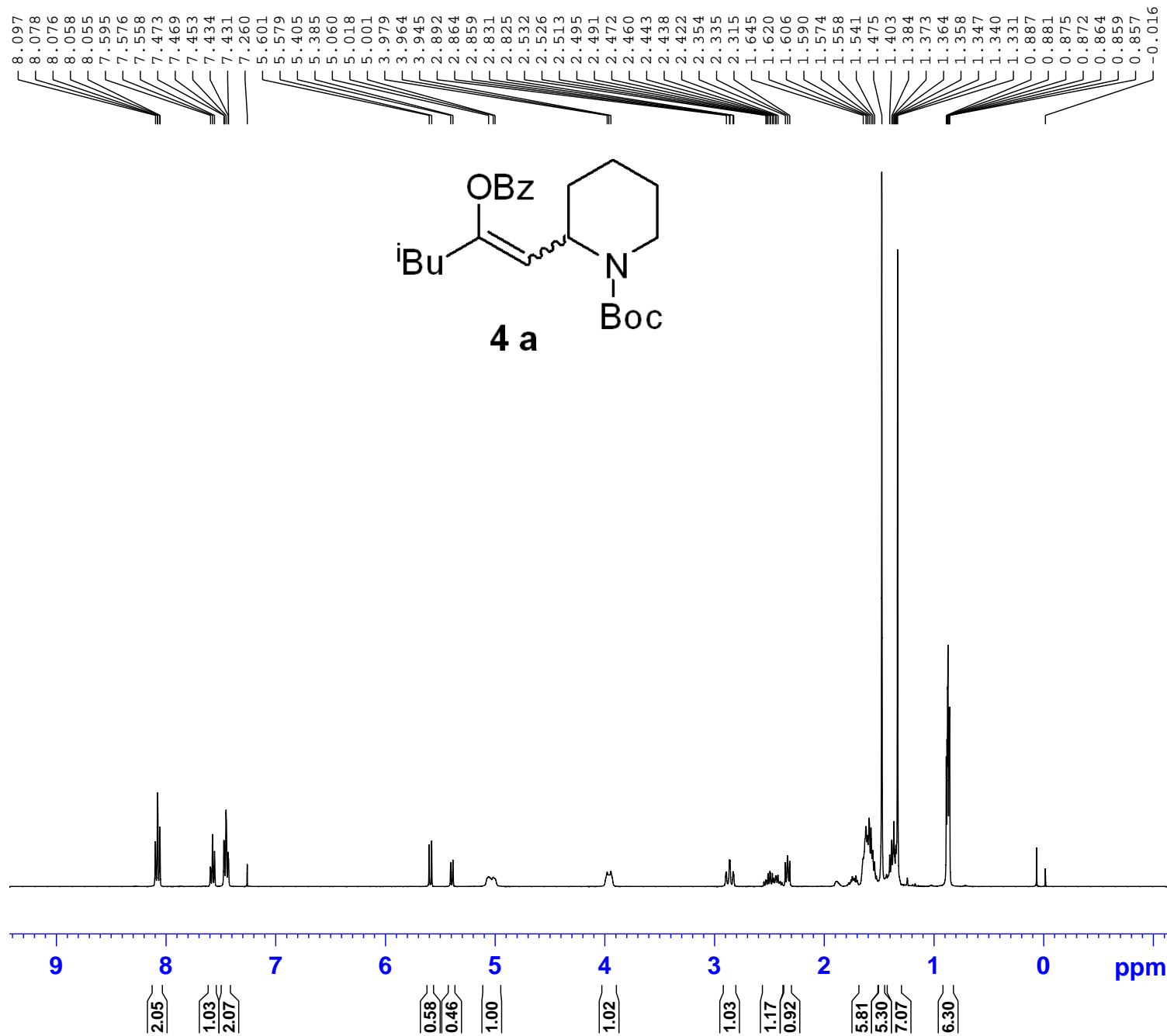
Current Data Parameters
 NAME Jul13-2009 HJF3-12803
 EXPNO 7
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090714
 Time 4.14
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.2 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127570 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

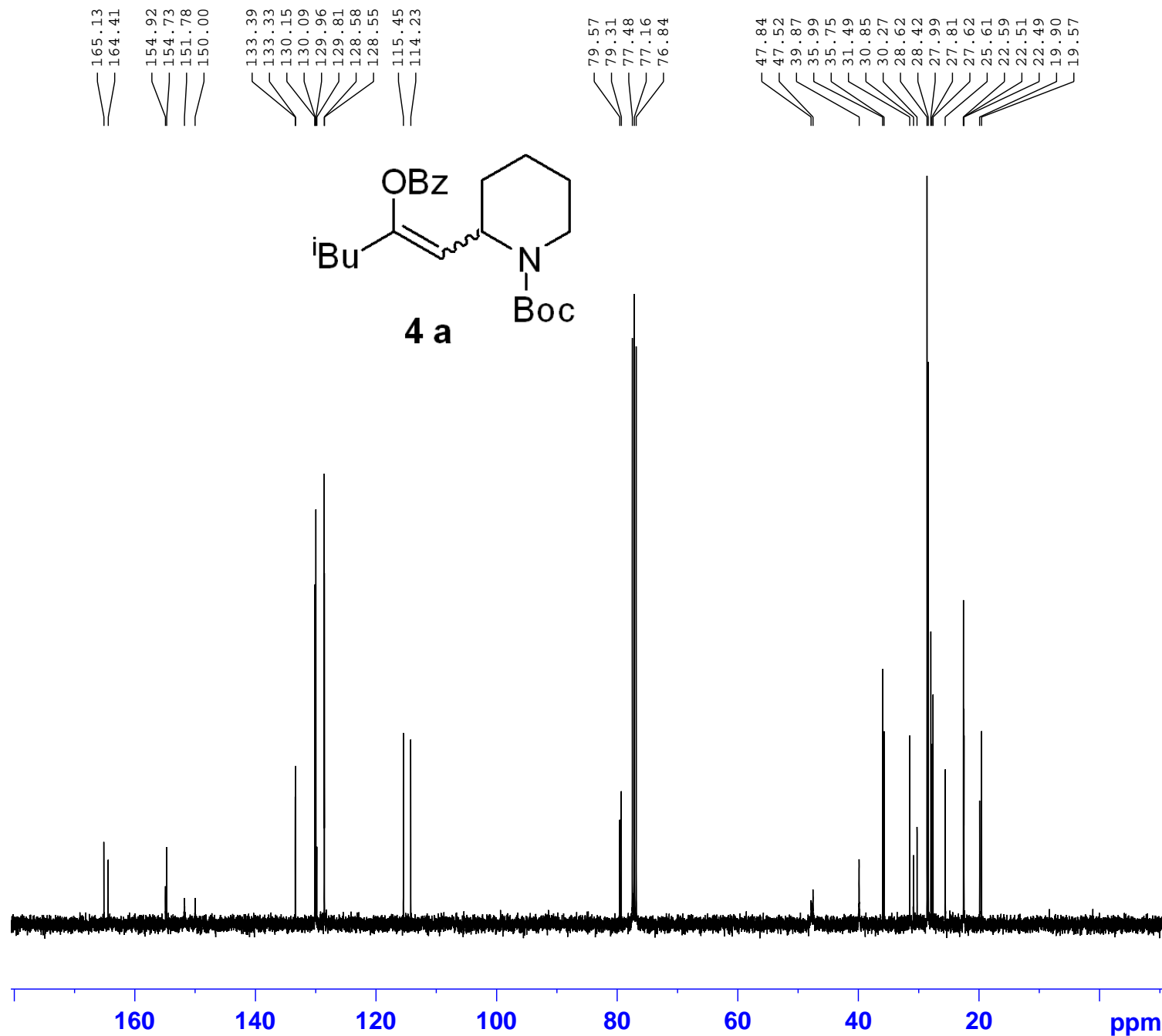


Current Data Parameters
 NAME Nov11-2009 HJF 4-5002
 EXPNO 12
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091112
 Time 2.59
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 50.8
 DW 60.800 usec
 DE 6.50 usec
 TE 295.9 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300094 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



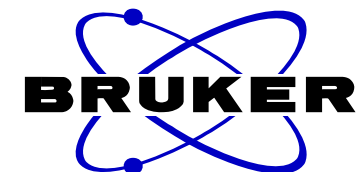
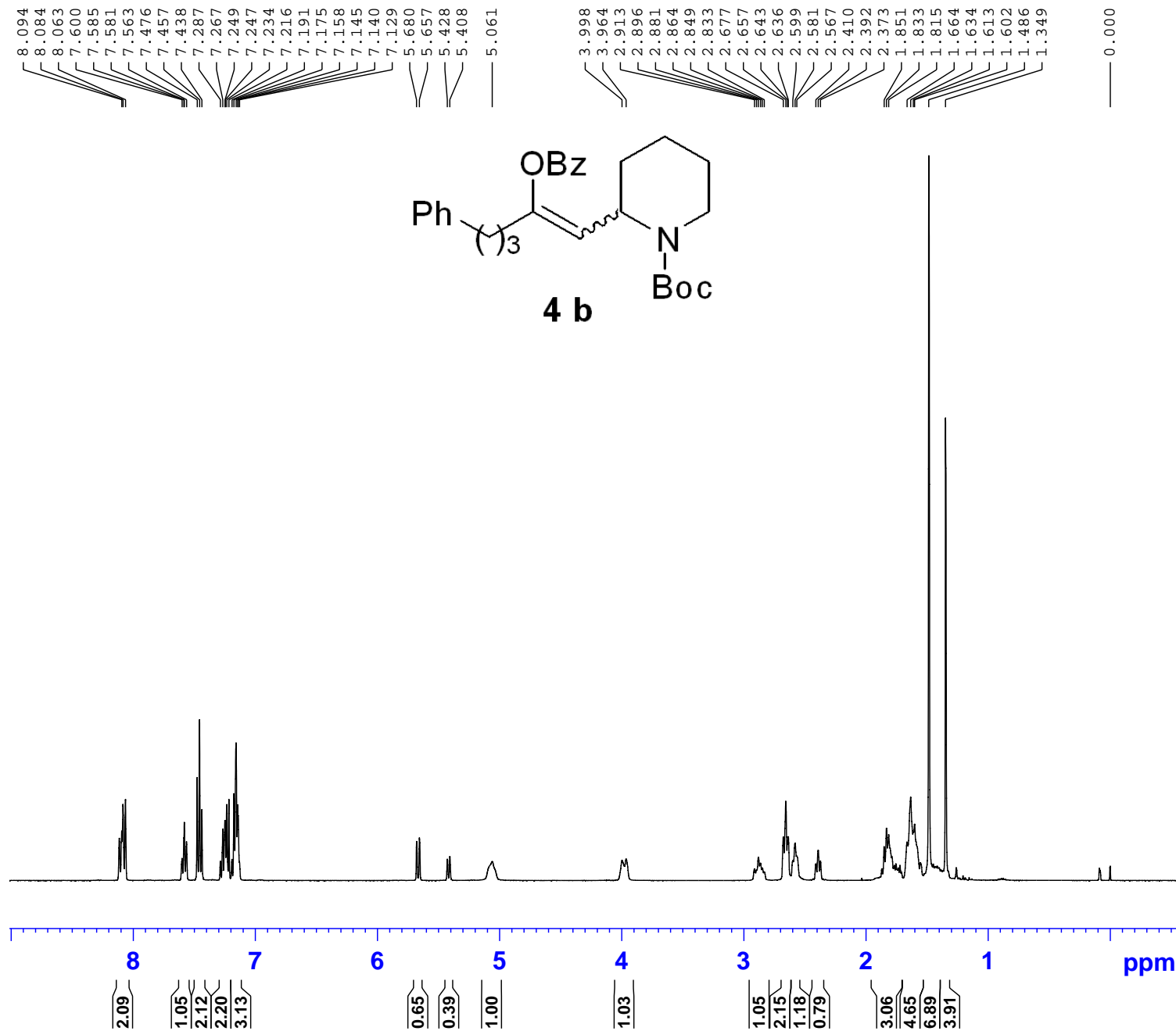
Current Data Parameters
 NAME Nov17-2009 HJF 4-5002
 EXPNO 14
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091118
 Time 3.17
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 128
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.3 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127583 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

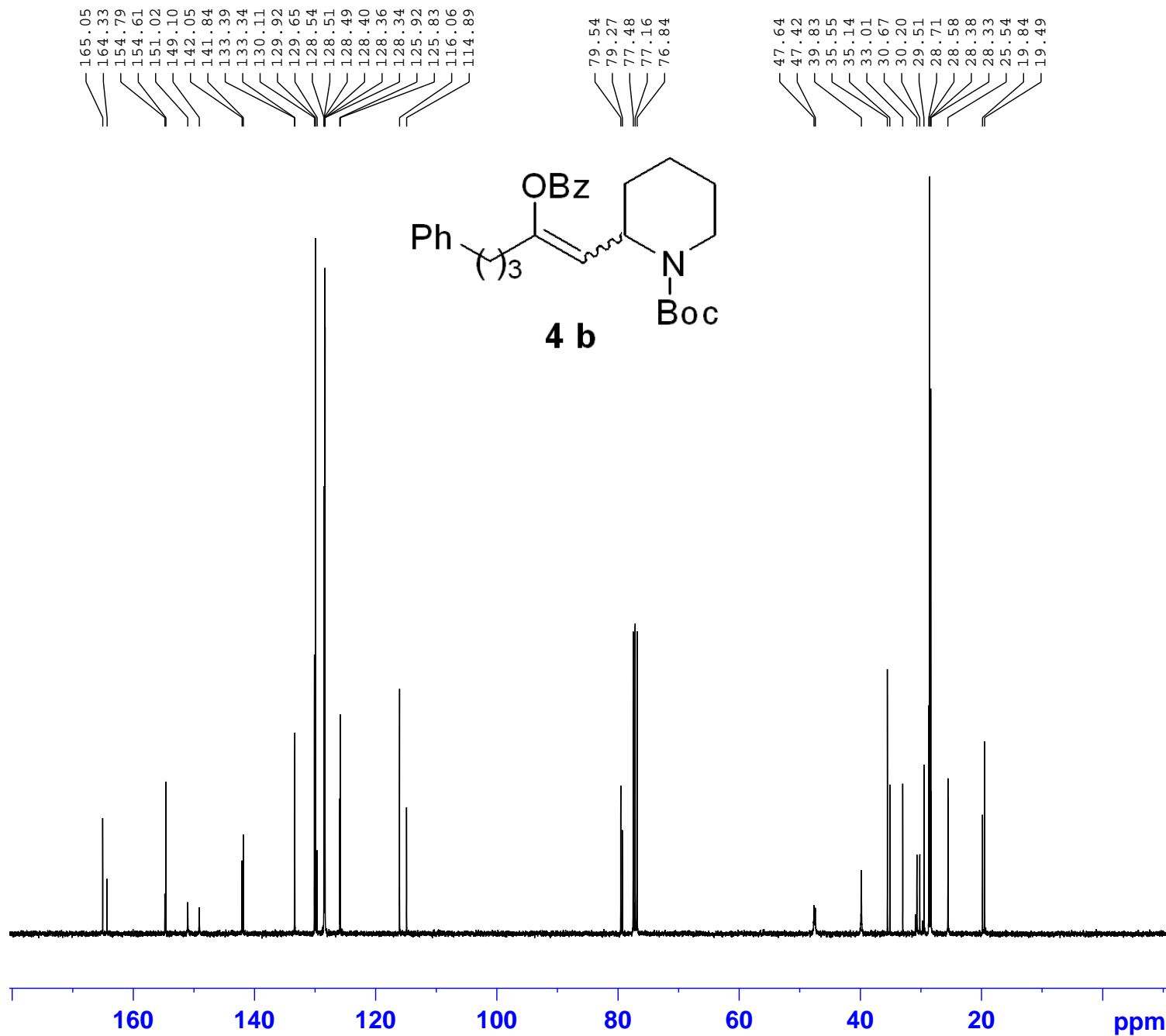


Current Data Parameters
 NAME Nov11-2009 HJF 4-5001
 EXPNO 11
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091112
 Time 2.54
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 45.2
 DW 60.800 usec
 DE 6.50 usec
 TE 296.0 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300151 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



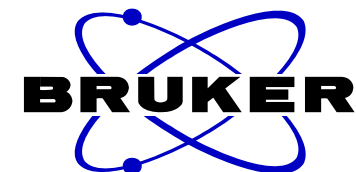
Current Data Parameters
 NAME 2009-11-20 HJF-4-5001
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091121
 Time 5.08
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 296.8 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127681 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

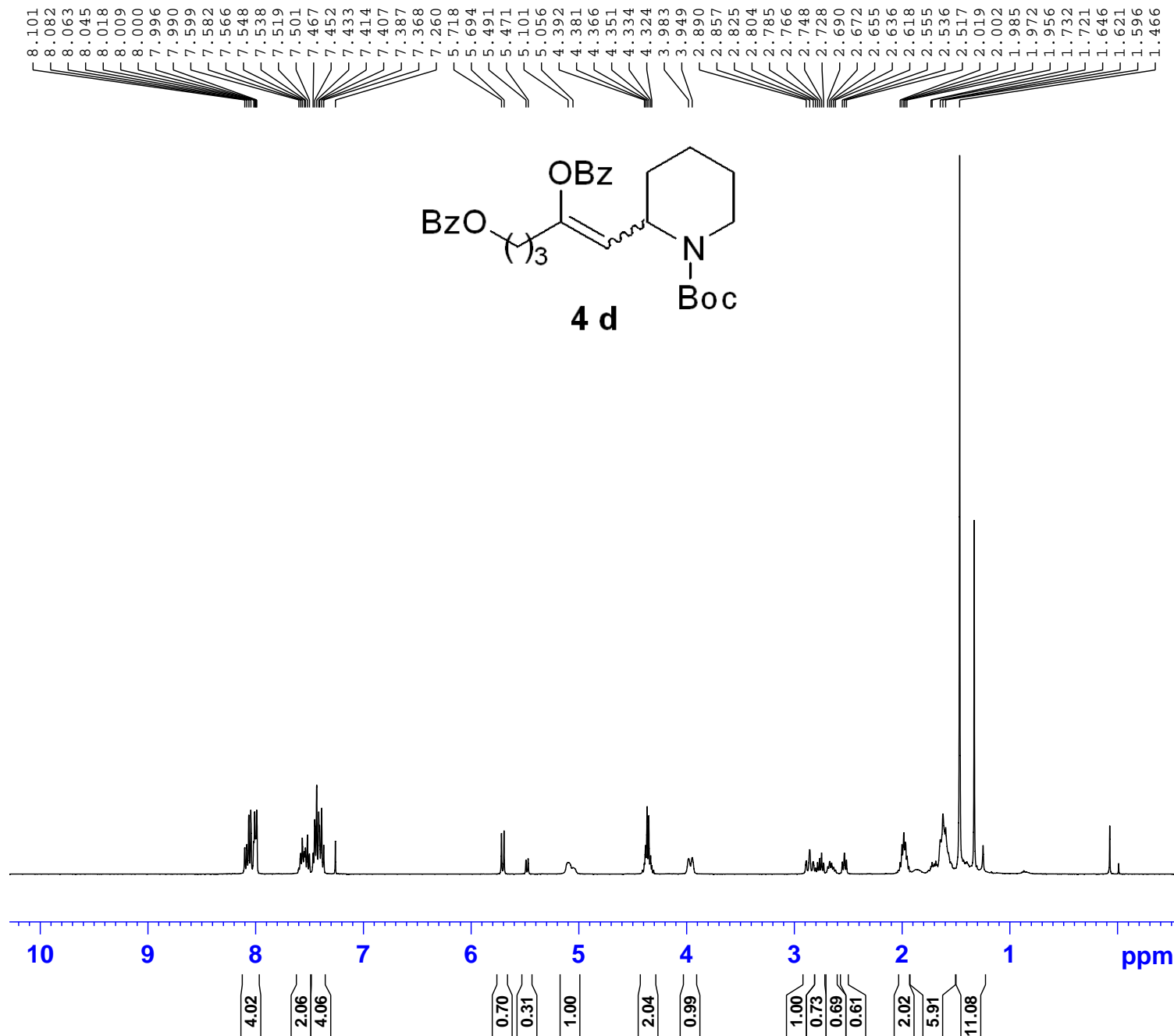


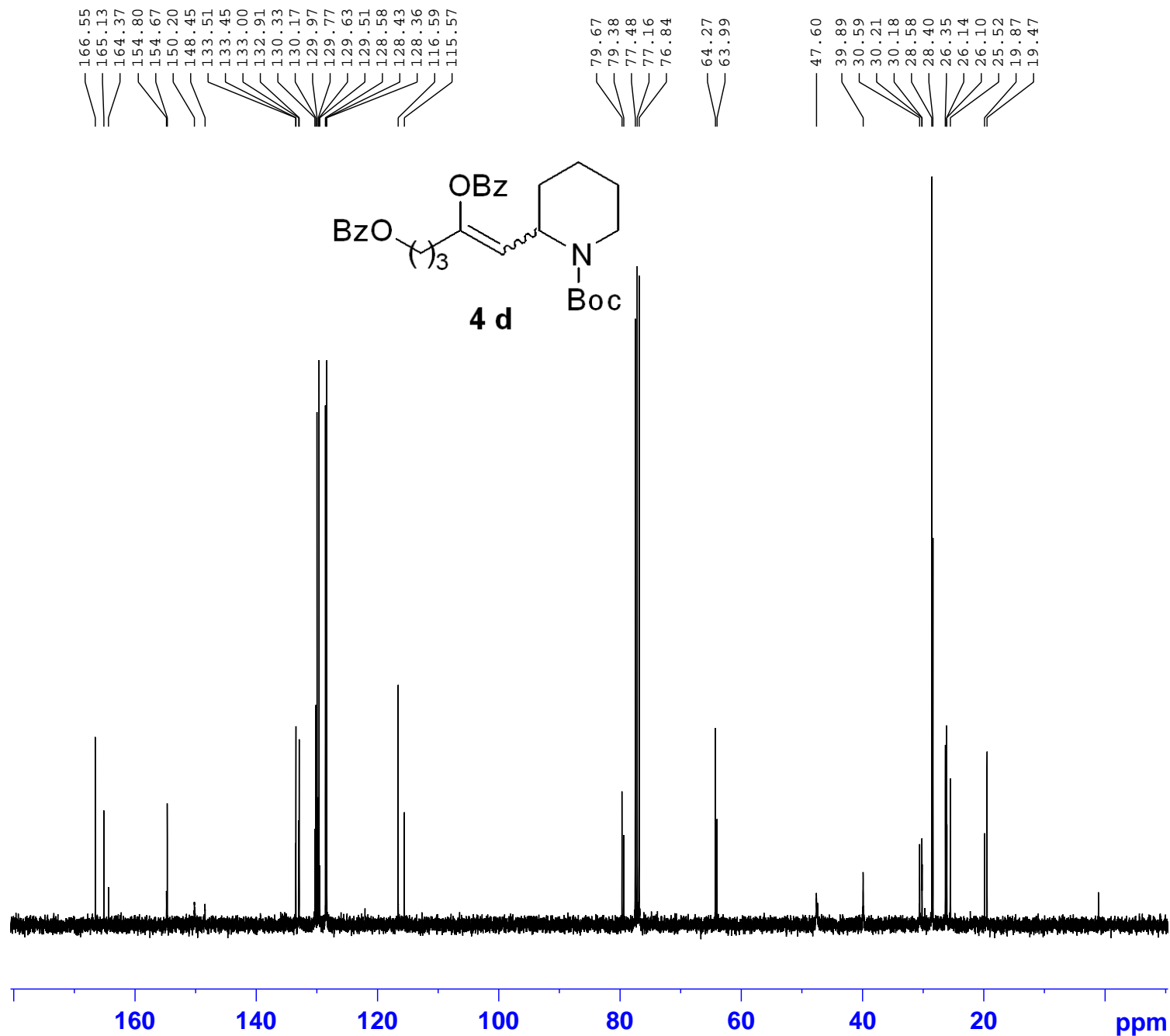
Current Data Parameters
 NAME Nov09-2009 HJF 4-3804
 EXPNO 6
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091110
 Time 1.36
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 64
 DW 60.800 usec
 DE 6.50 usec
 TE 296.4 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300092 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00





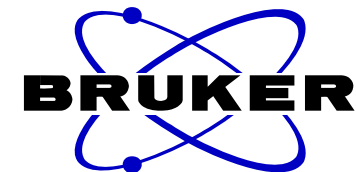
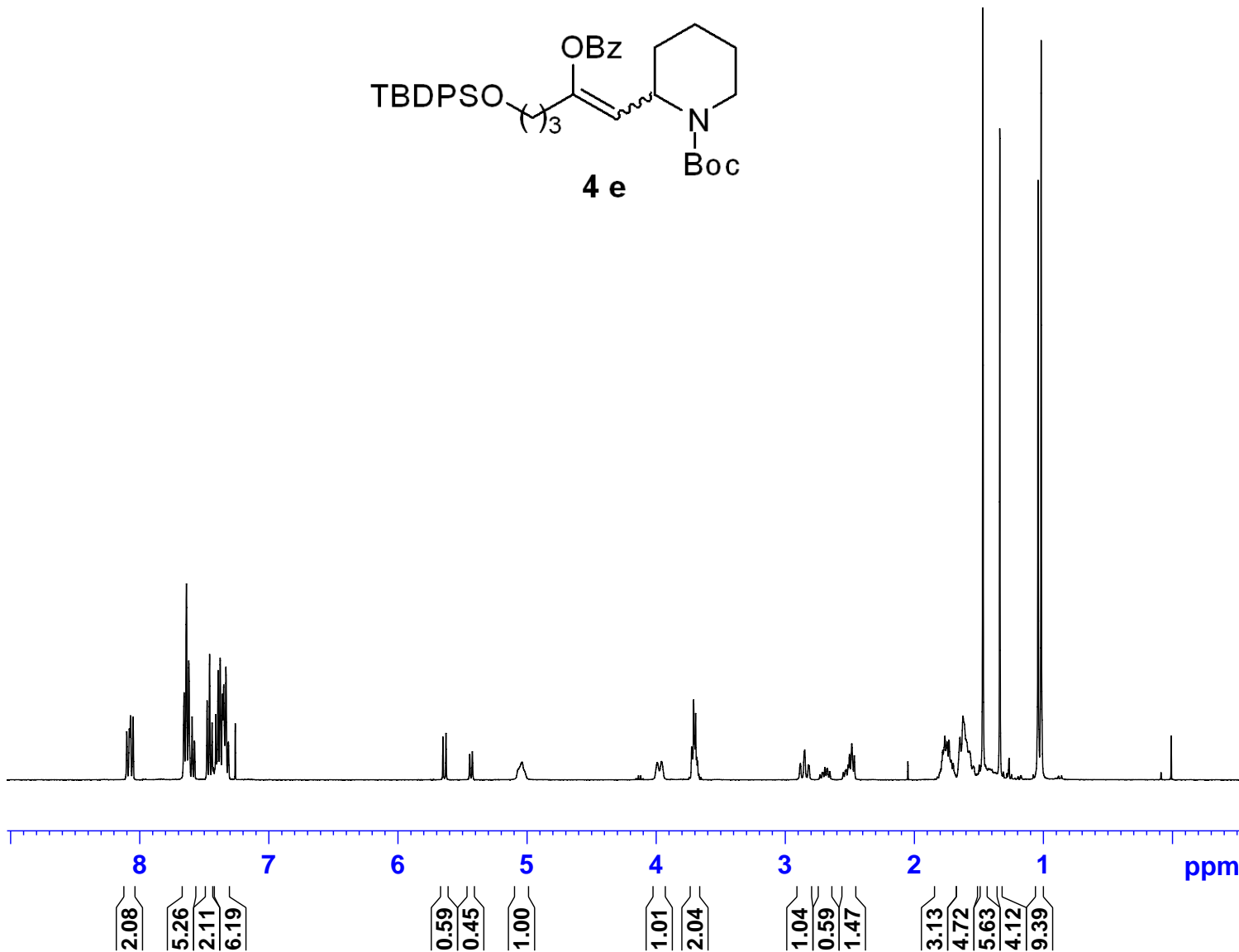
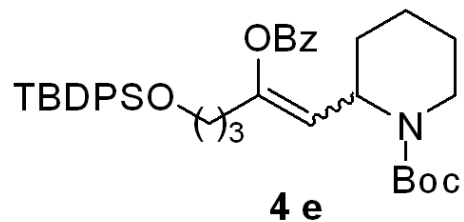
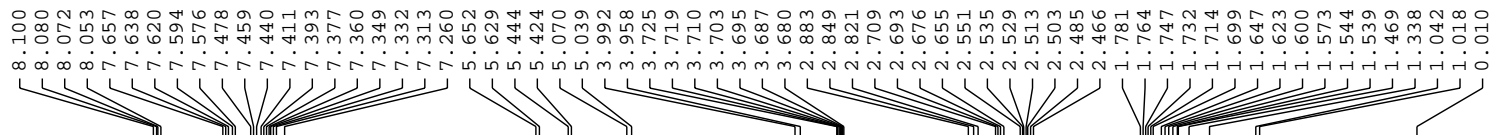
Current Data Parameters
NAME Nov17-2009 HJF 4-3804
EXPNO 15
PROCNO 1

F2 - Acquisition Parameters
Date_ 20091118
Time 3.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 128
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 2050
DW 20.800 usec
DE 6.50 usec
TE 297.6 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127612 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

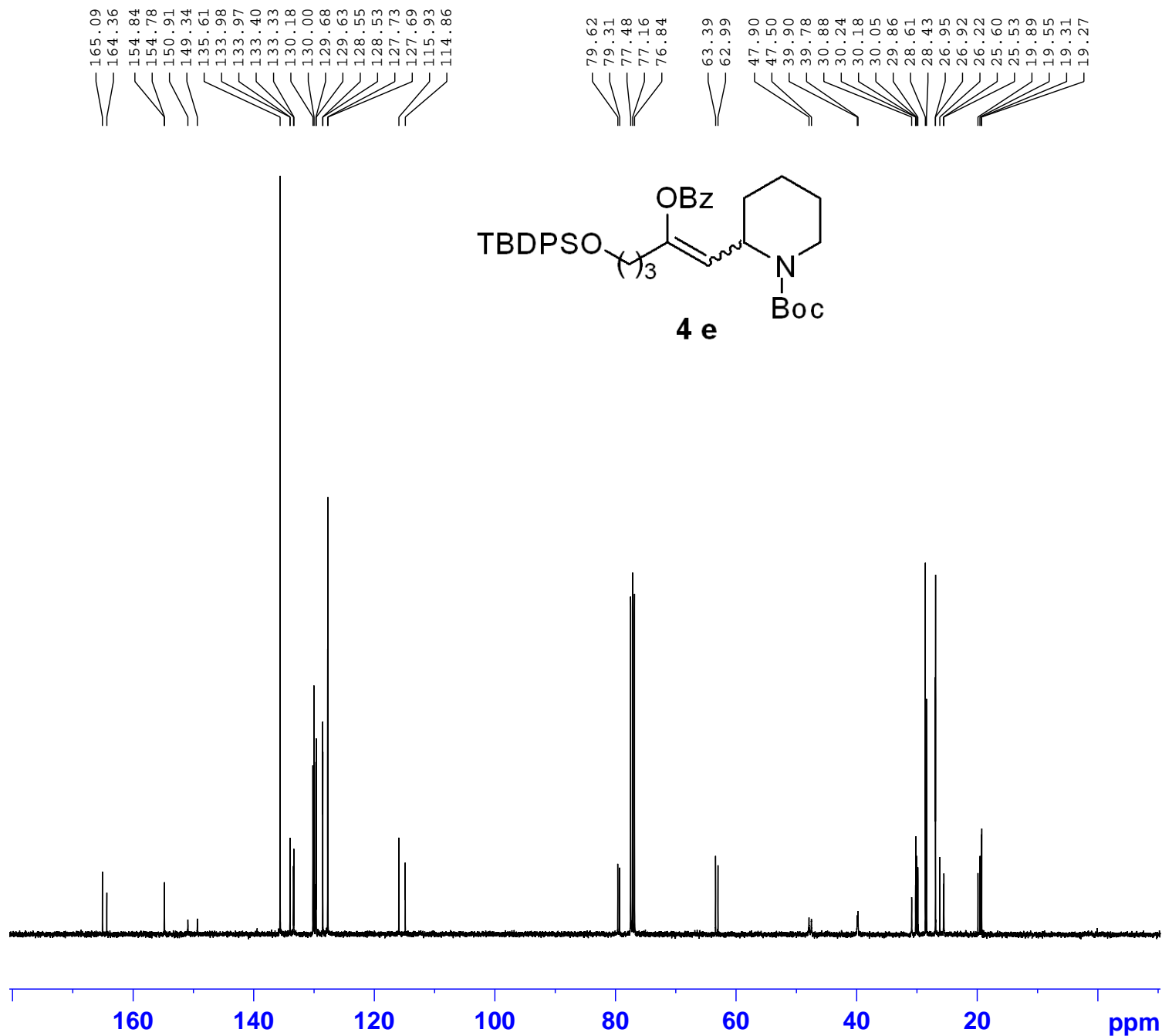


Current Data Parameters
NAME Oct23-2009 HJF 4-3803
EXPNO 4
PROCNO 1

F2 - Acquisition Parameters
Date_ 20091024
Time 3.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 71.8
DW 60.800 usec
DE 6.50 usec
TE 296.1 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -2.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300094 MHz
WDW GM
SSB 0
LB -0.20 Hz
GB 0.1
PC 1.00



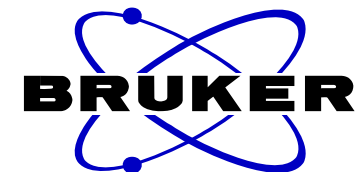
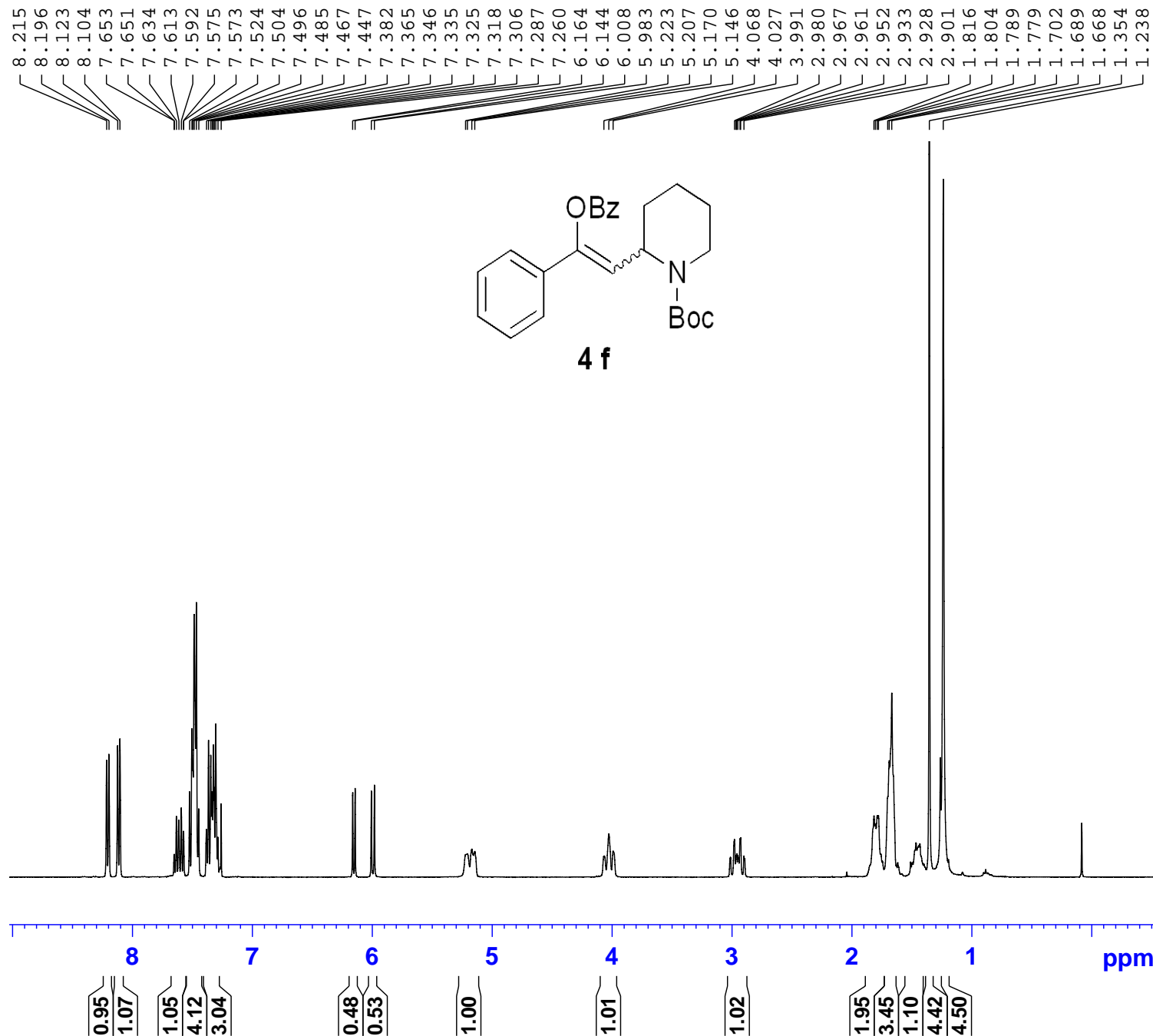
Current Data Parameters
 NAME 2009-11-11 HJF4-3803
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091111
 Time 21.50
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 297.4 K
 D1 2.0000000 sec
 d11 0.0300000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127613 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40



Current Data Parameters

NAME Jun30-2009 HJF 3-12805
EXPNO 8
PROCNO 1

F2 - Acquisition Parameters

Date_ 20090701
Time 1.59
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 71.8
DW 60.800 usec
DE 6.50 usec
TE 295.8 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====

NUC1 1H
P1 12.00 usec
PL1 -2.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters

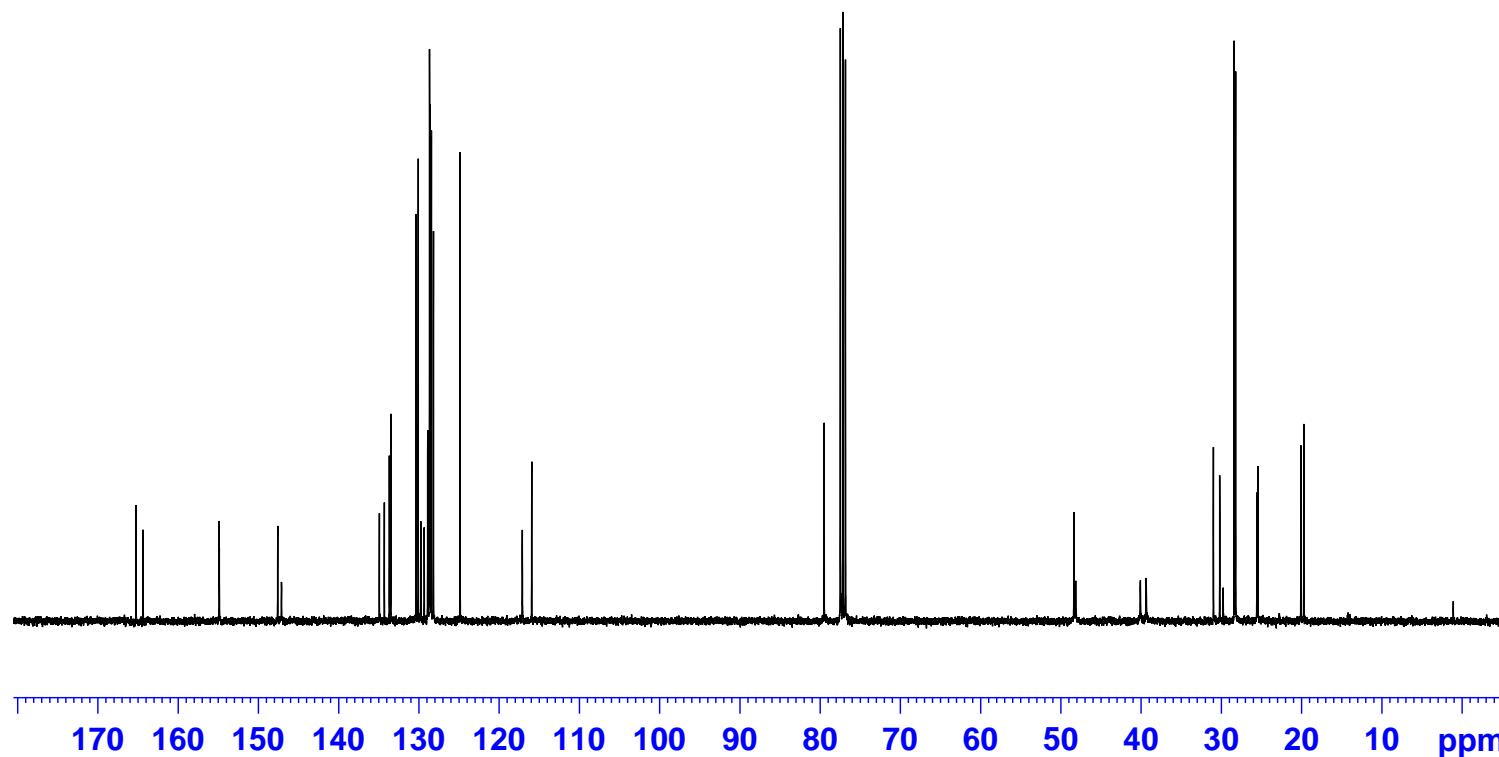
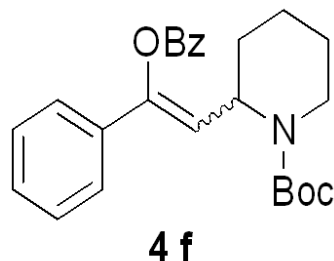
SI 32768
SF 400.130093 MHz
WDW GM
SSB 0
LB -0.20 Hz
GB 0.1
PC 1.00



165.24
164.37
154.89
147.59
147.12
134.93
134.30
133.68
133.51
130.35
130.08
129.33
128.91
128.68
128.66
128.59
128.45
128.19
124.87
117.11
115.94

79.53
79.49
77.48
77.16
76.84

48.37
48.15
40.09
39.37
30.98
30.20
28.40
28.22
25.57
25.45
20.09
19.73



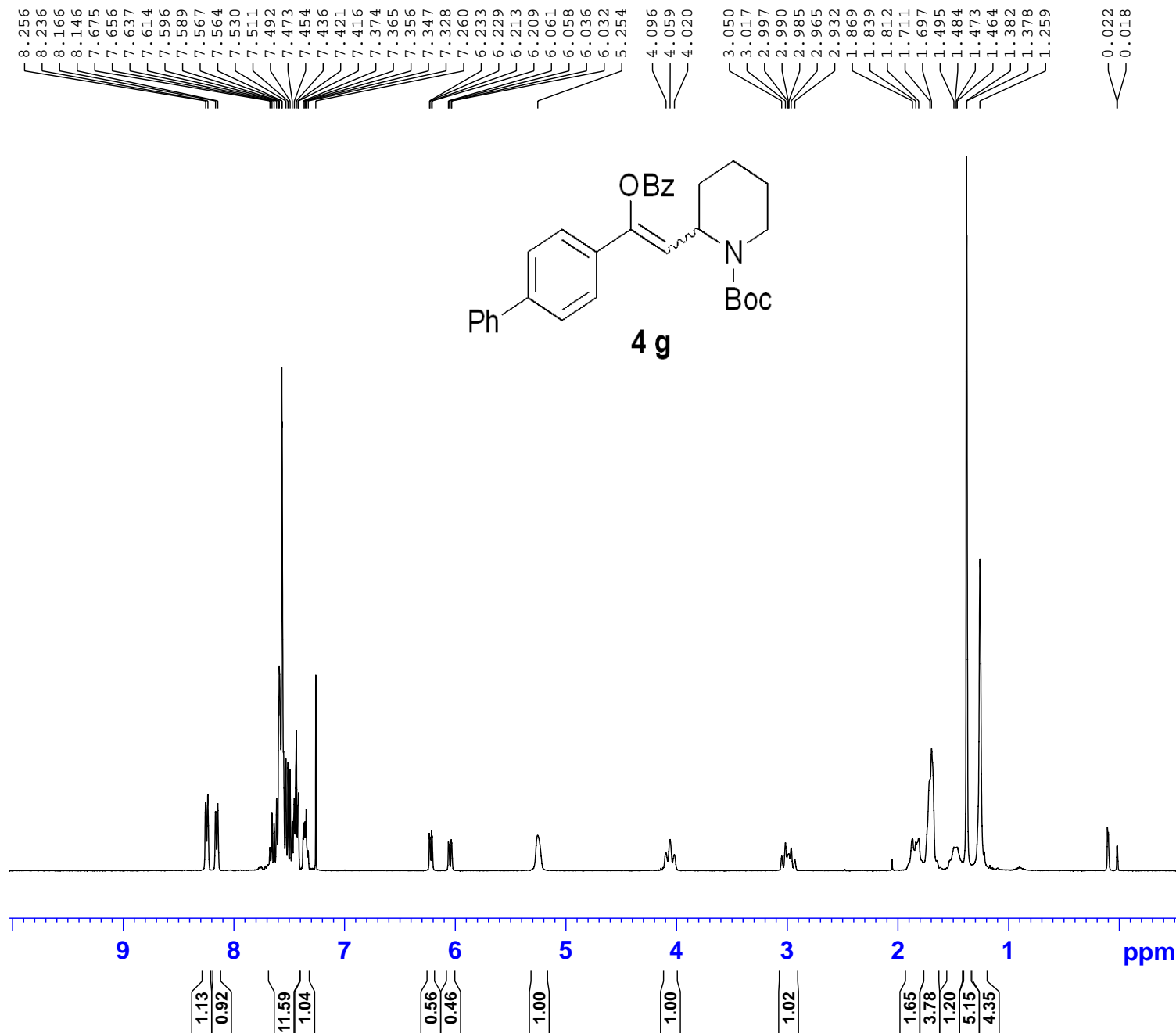
Current Data Parameters
 NAME 2009-07-06 HJF 3-12805
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090707
 Time 0.47
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.3 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127627 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

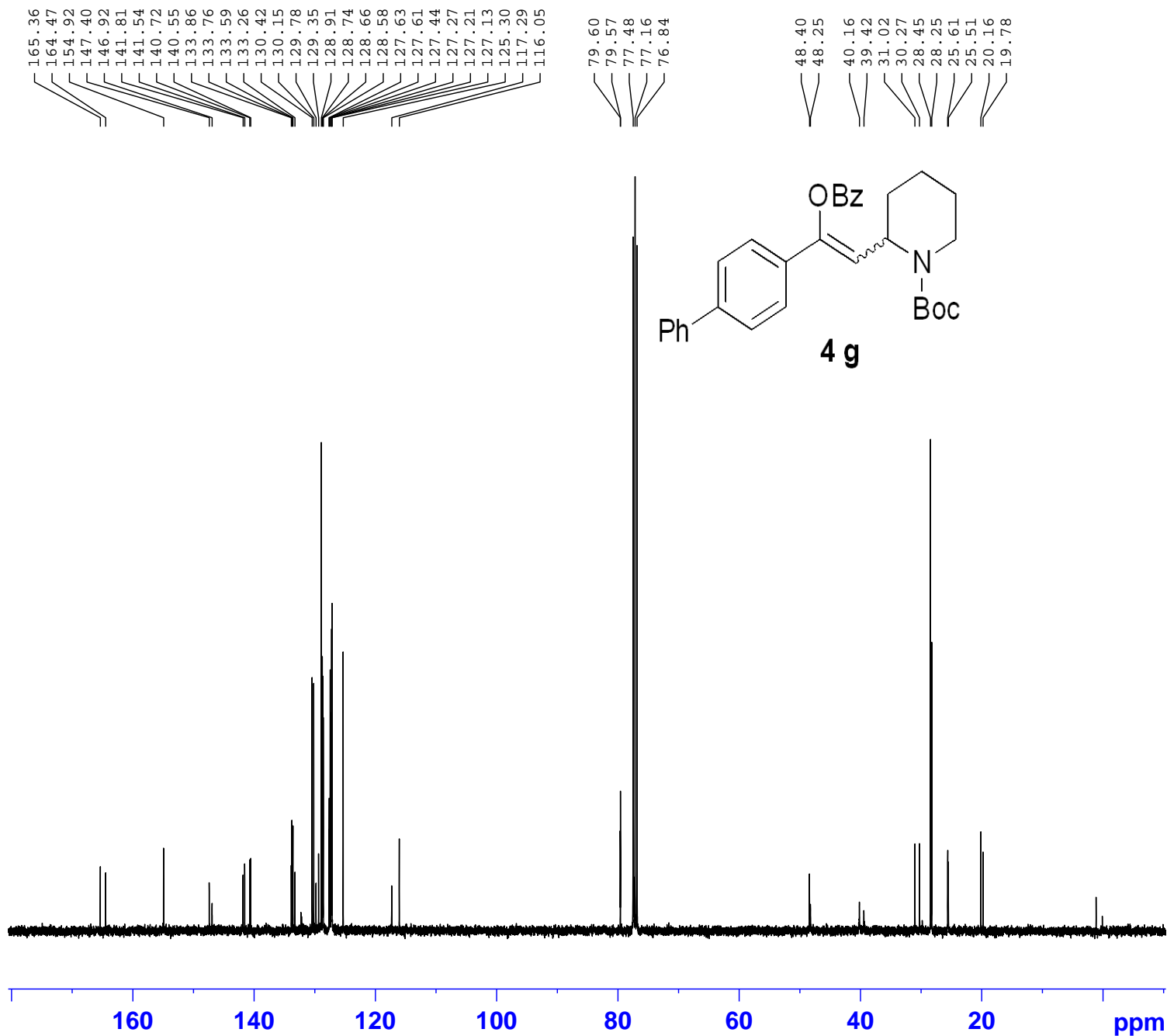


Current Data Parameters
 NAME Nov17-2009 HJF 4-5004
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091118
 Time 2.08
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 71.8
 DW 60.800 usec
 DE 6.50 usec
 TE 296.1 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.130093 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



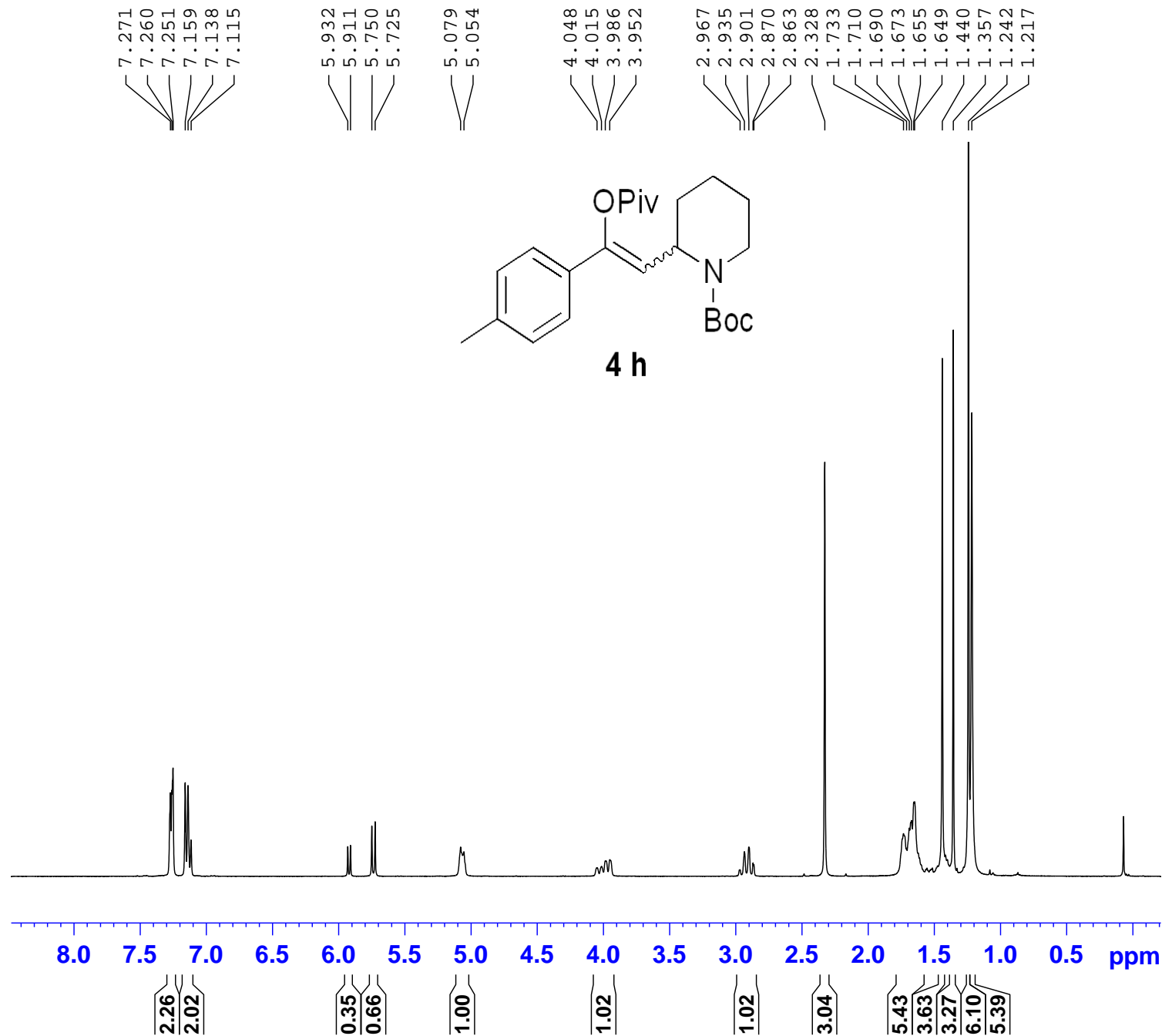
Current Data Parameters
 NAME 2009-11-30 HJF-4-5004
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091130
 Time 19.13
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 512
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 181
 DW 20.800 usec
 DE 6.50 usec
 TE 297.6 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127597 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

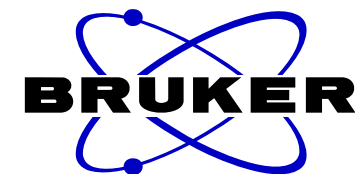
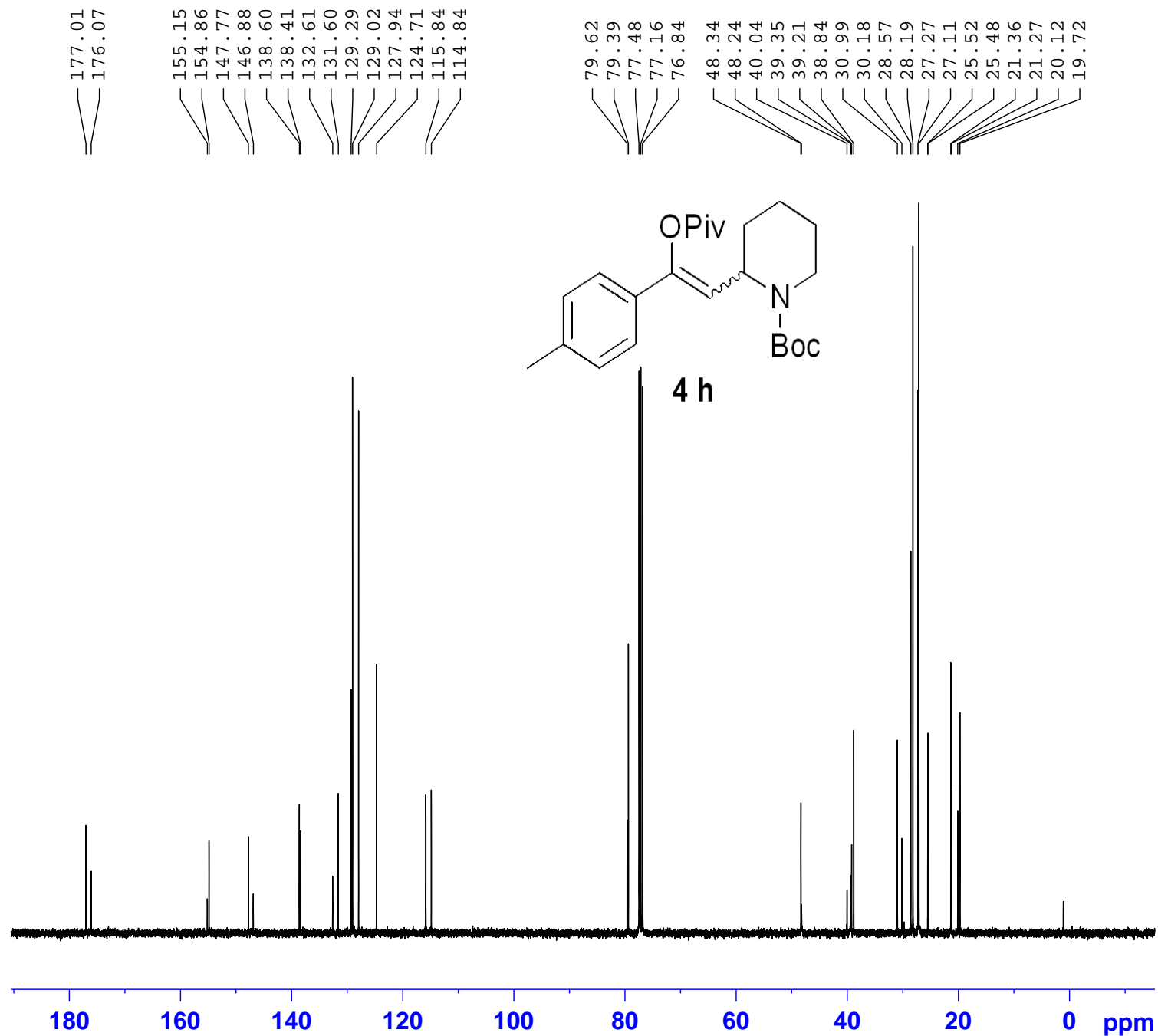


Current Data Parameters
NAME Jul23-2009 HJF 3-14405
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090724
Time 1.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 295.6 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -2.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300089 MHz
WDW GM
SSB 0
LB -0.20 Hz
GB 0.1
PC 1.00



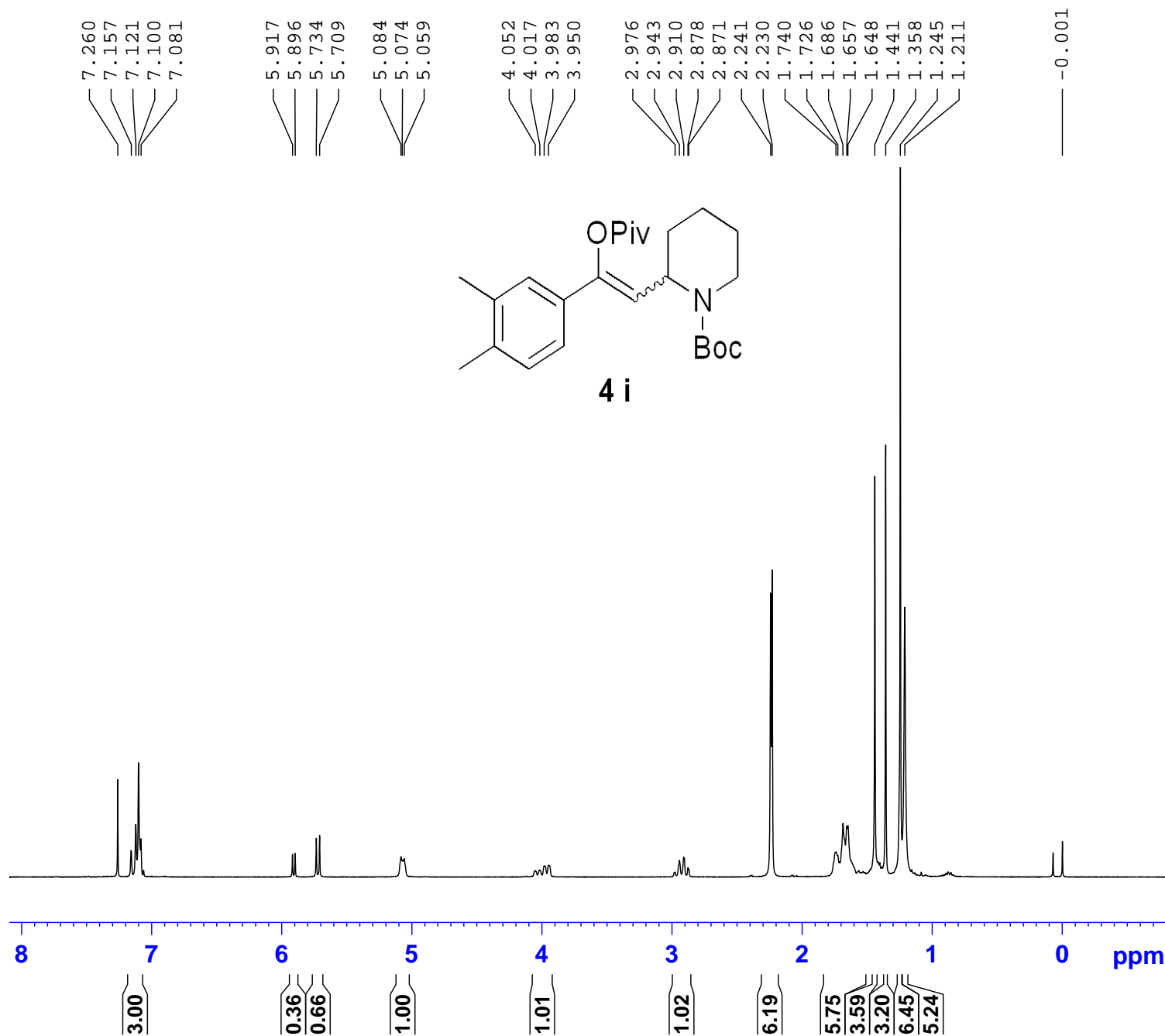
Current Data Parameters
NAME 2009-07-27 HJF 3-14405
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090727
Time 17.19
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 90.5
DW 20.800 usec
DE 6.50 usec
TE 297.1 K
D1 2.0000000 sec
d11 0.0300000 sec
DELTA 1.89999998 sec
TD0 1

=====
CHANNEL f1
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

=====
CHANNEL f2
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127605 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

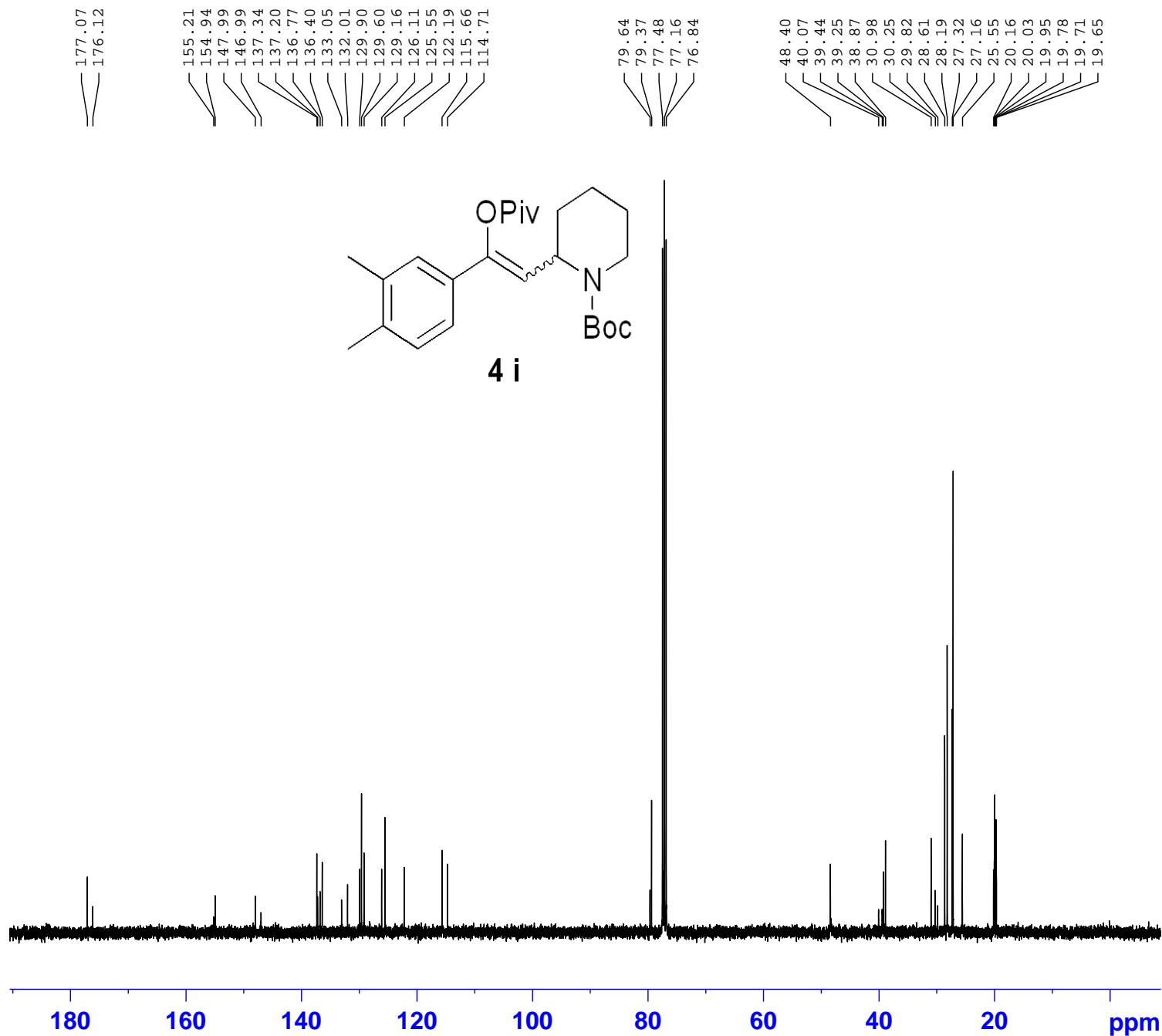


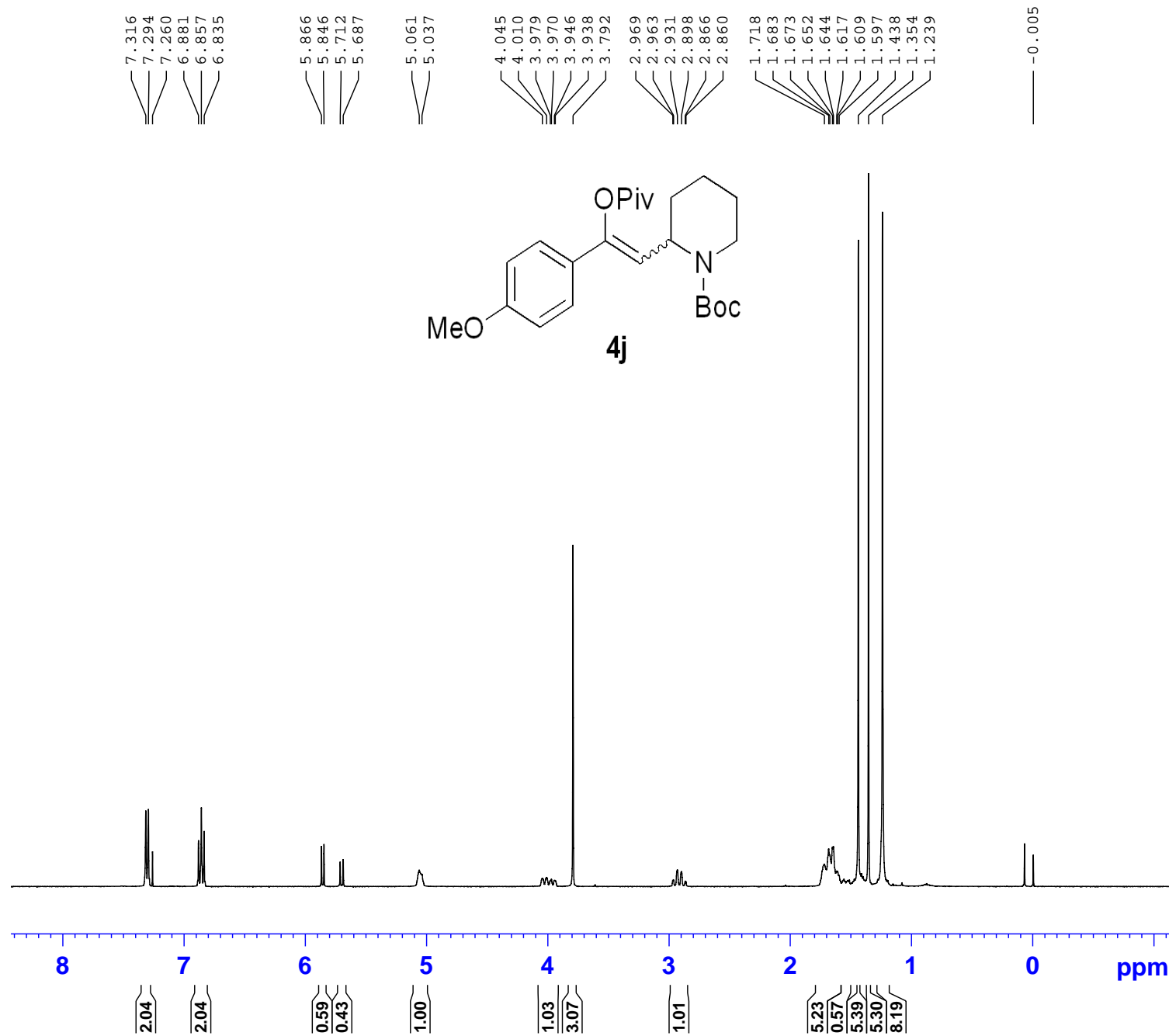
Current Data Parameters
 NAME Dec08-2009 HJF 4-5301
 EXPNO 8
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091209
 Time 1.56
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 90.5
 DW 60.800 usec
 DE 6.50 usec
 TE 296.1 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.130094 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00





7.316
7.294
7.260
6.881
6.857
6.835

5.866
5.846
5.712
5.687

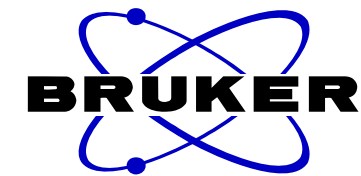
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5.037

4.045
4.010
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3.970
3.946
3.938
3.792

2.969
2.963
2.931
2.898
2.866
2.860

1.718
1.683
1.673
1.652
1.644
1.617
1.609
1.597
1.438
1.354
1.239

— -0.005

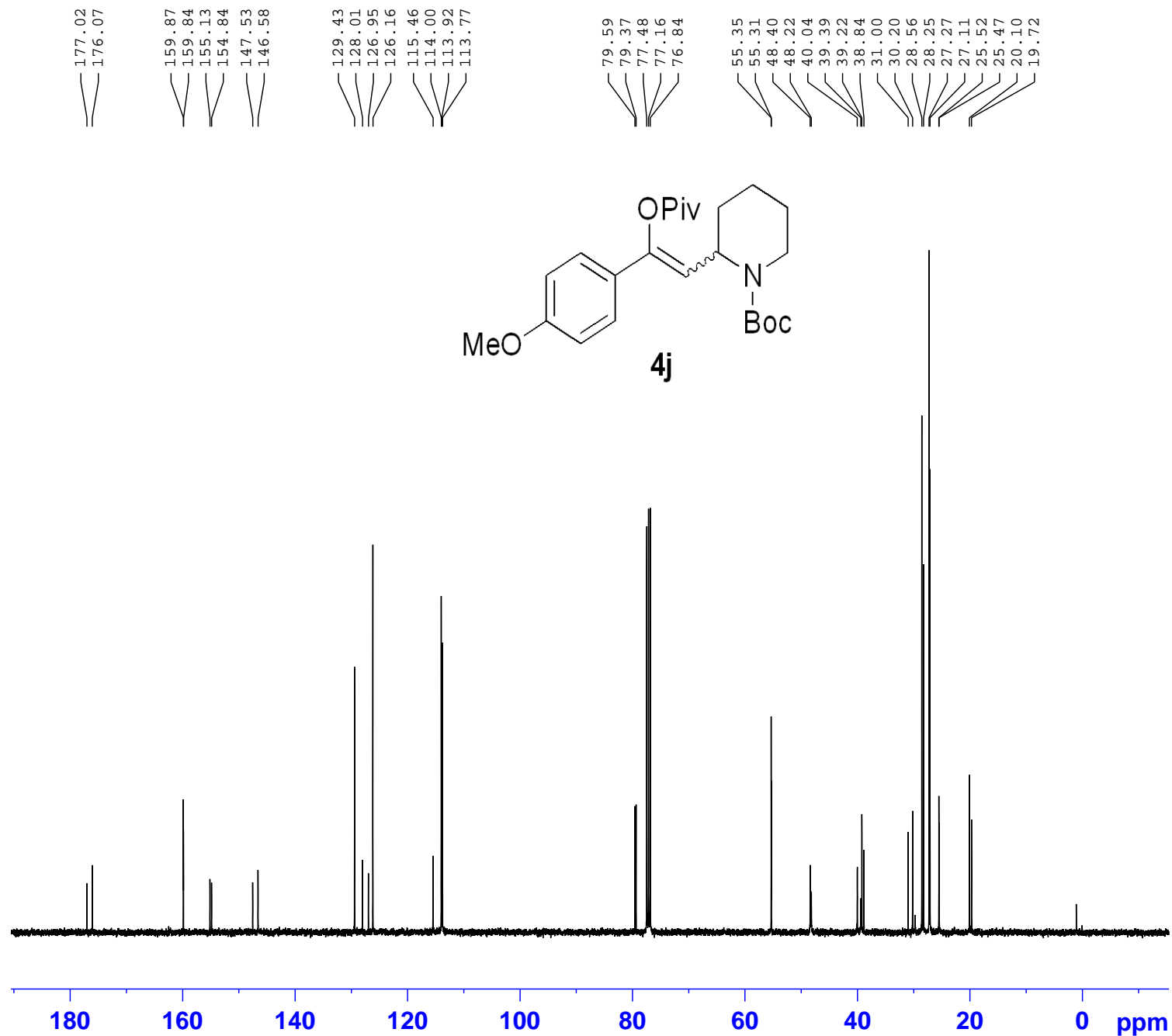


Current Data Parameters
 NAME Oct29-2009 HJF 4-3802
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091030
 Time 2.18
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 90.5
 DW 60.800 usec
 DE 6.50 usec
 TE 296.0 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300093 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



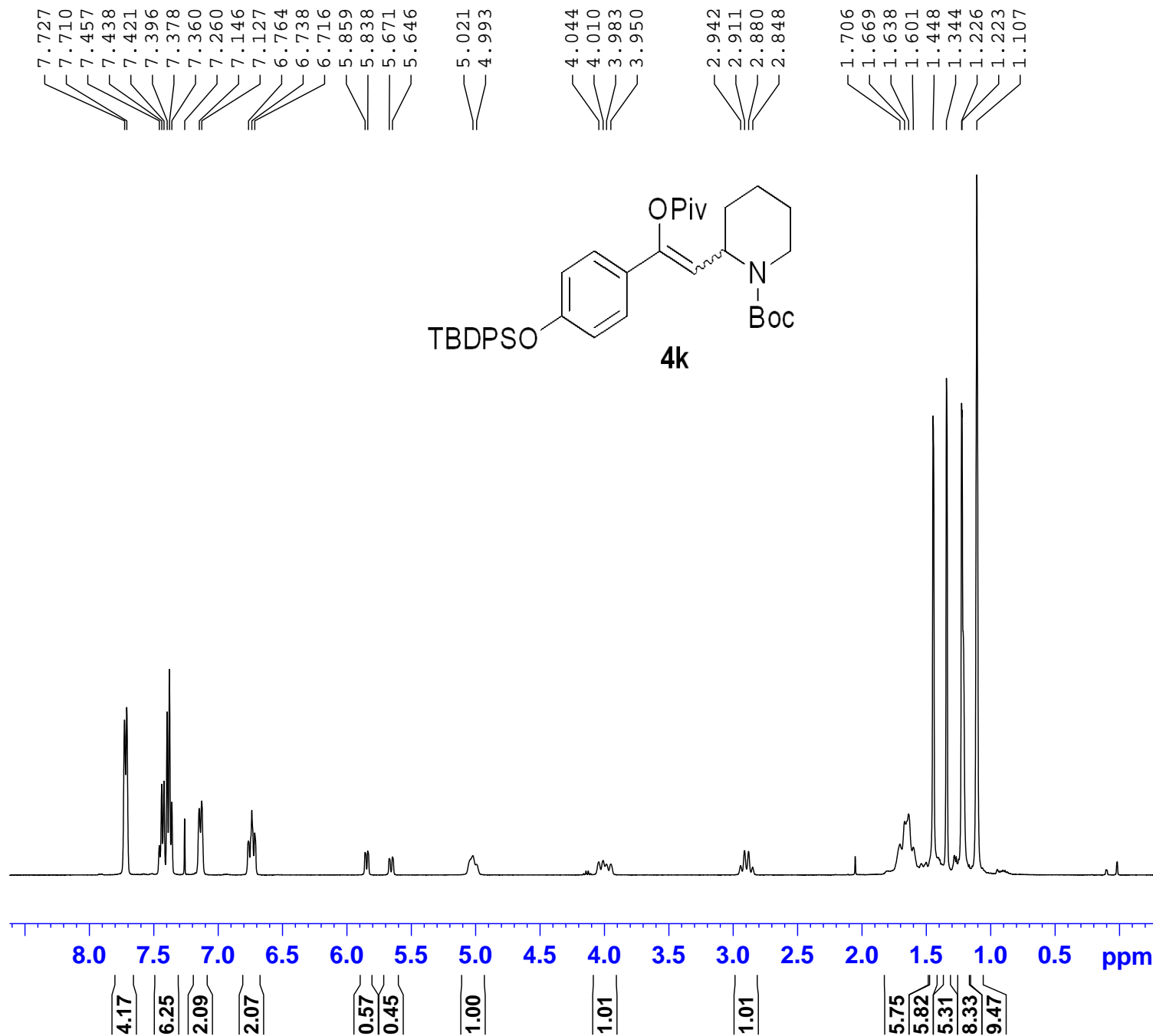
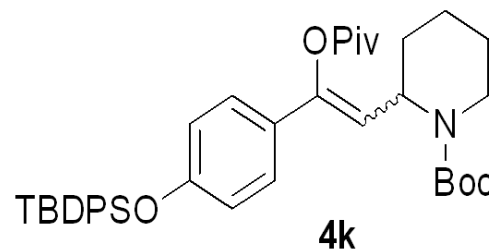
Current Data Parameters
NAME 2009-11-24 HJF-4-3802
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20091124
Time 19.30
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 298.4 K
D1 2.0000000 sec
d11 0.0300000 sec
DELTA 1.89999998 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127610 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

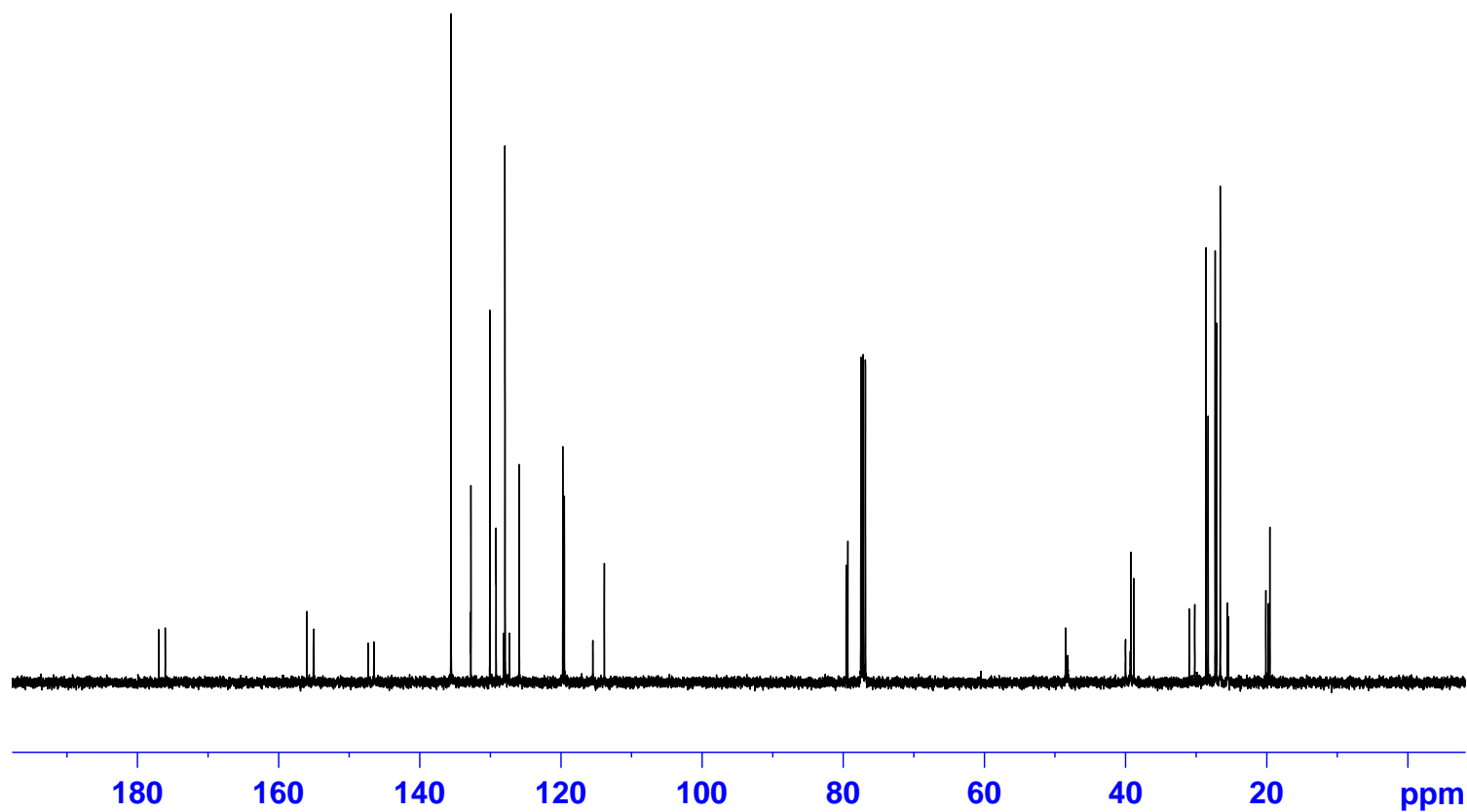
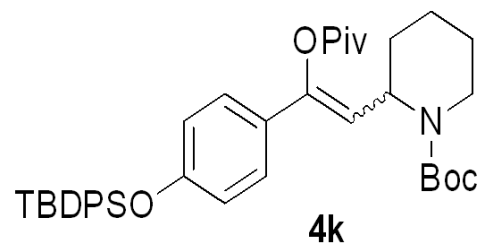
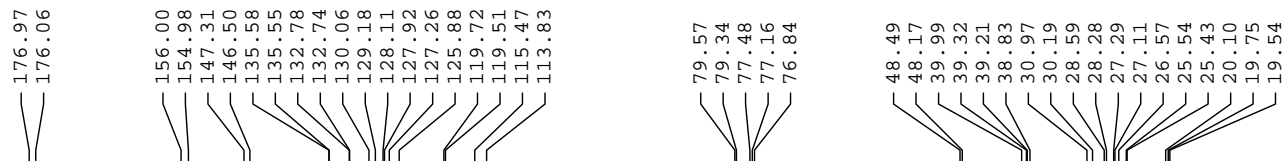


Current Data Parameters
 NAME Dec21-2009 HJF 4-5902
 EXPNO 9
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091222
 Time 2.09
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 45.2
 DW 60.800 usec
 DE 6.50 usec
 TE 295.7 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300093 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



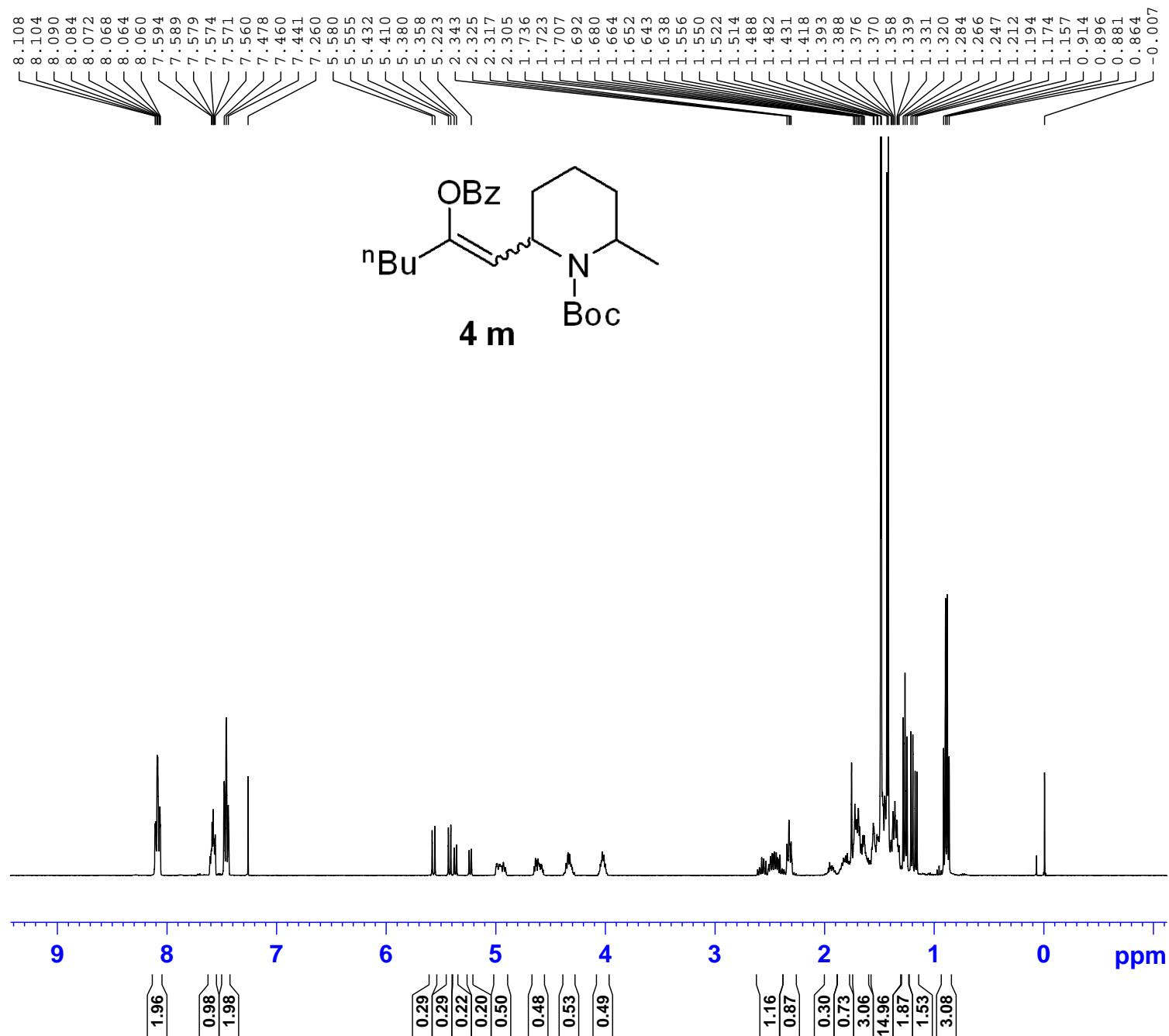
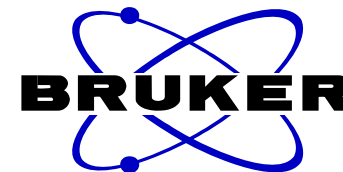
Current Data Parameters
NAME Dec21-2009 HJF 4-5902
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20091222
Time 2.26
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 256
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 1820
DW 20.800 usec
DE 6.50 usec
TE 297.1 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127615 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40

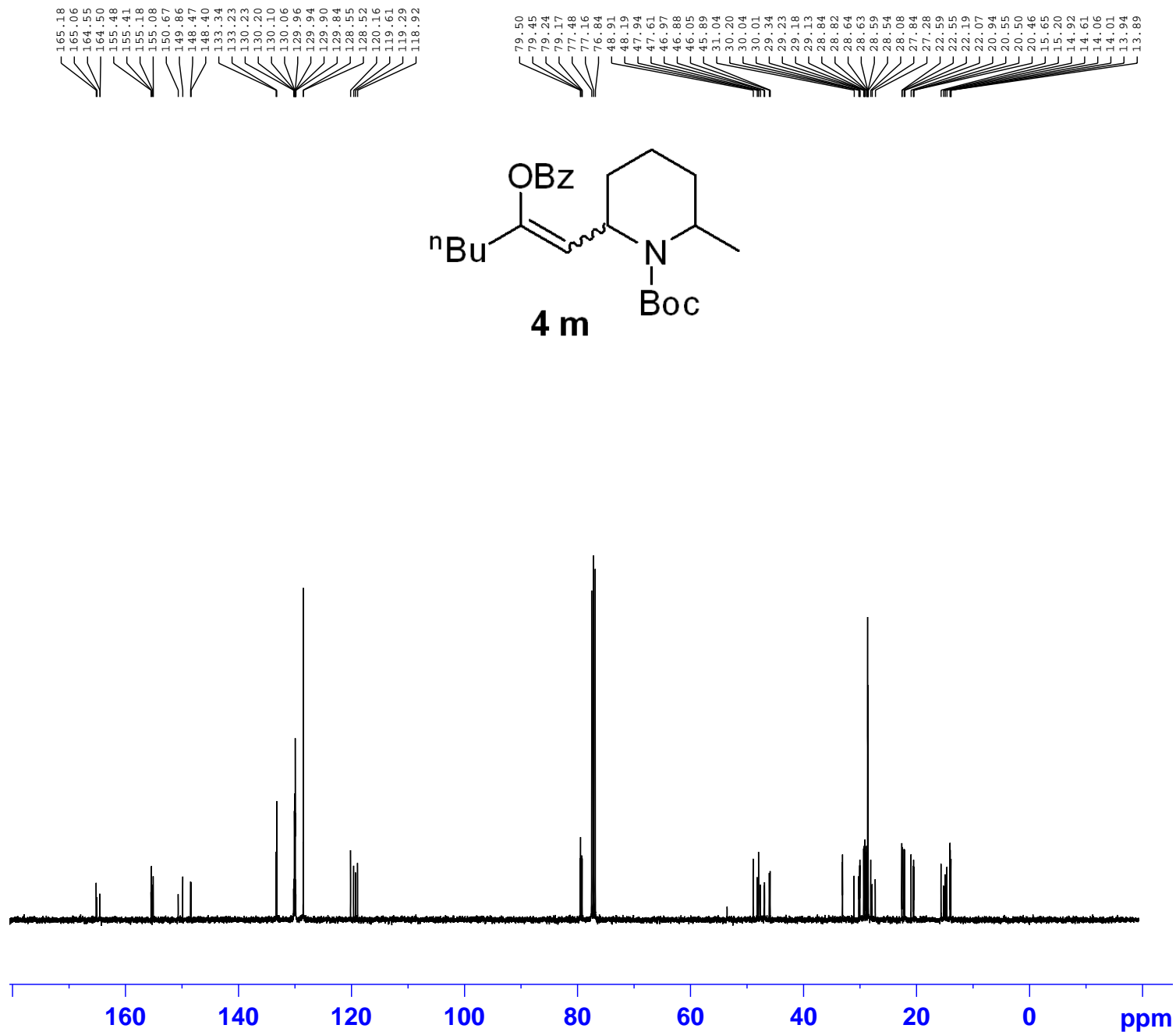


Current Data Parameters
 NAME Sep14-2009 HJF 4-704
 EXPNO 11
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090915
 Time 2.11
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 90.5
 DW 60.800 usec
 DE 6.50 usec
 TE 295.7 K
 D1 1.00000000 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.130094 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.1
 PC 1.00



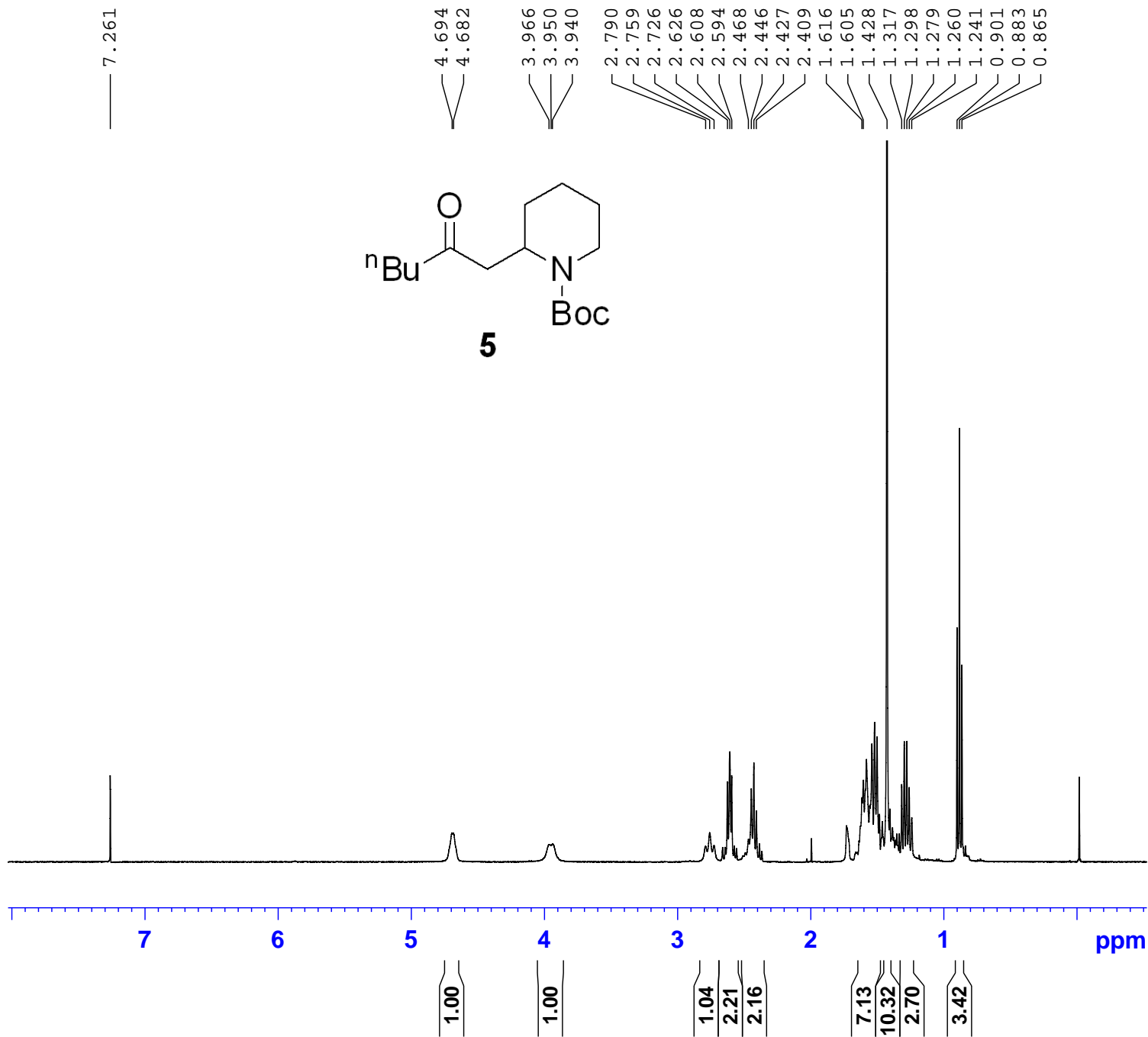
Current Data Parameters
 NAME Nov25-2009 HJF 4-704
 EXPNO 8
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20091125
 Time 20.41
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 256
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 297.8 K
 D1 2.00000000 sec
 d11 0.03000000 sec
 DELTA 1.89999998 sec
 TD0 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 15.50 usec
 PL1 -1.00 dB
 SFO1 100.6228298 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 60.00 usec
 PL12 11.35 dB
 PL13 13.05 dB
 PL2 -2.00 dB
 SFO2 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127598 MHz
 WDW EM
 SSB 0
 LB 0.60 Hz
 GB 0
 PC 1.40

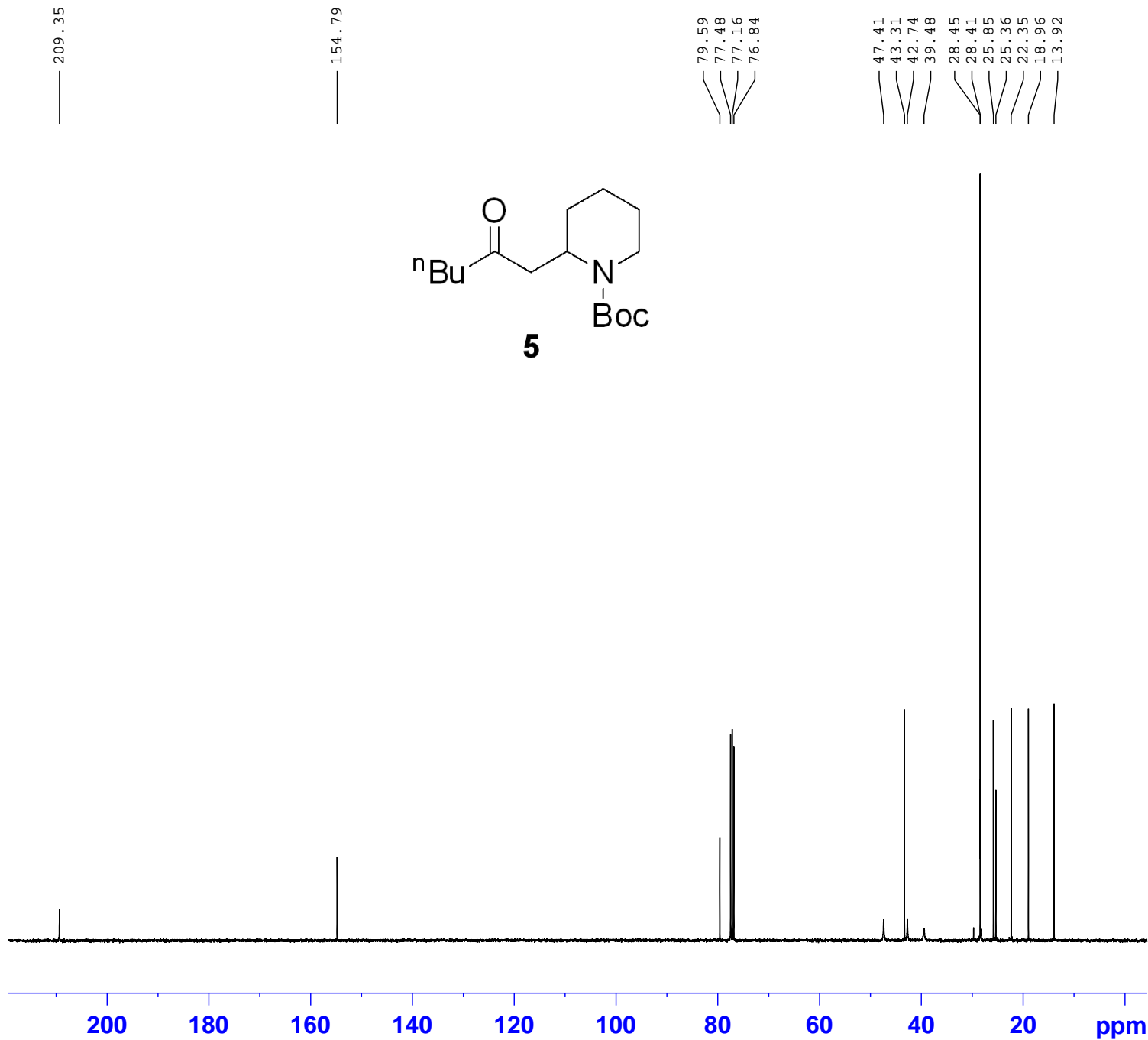
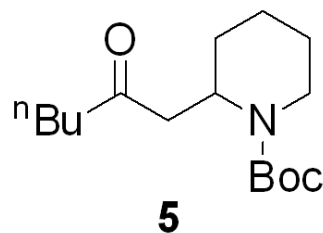


Current Data Parameters
 NAME Sep21-2009 3-179
 EXPNO 3
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20090922
 Time 1.28
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDC13
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 101
 DW 60.800 usec
 DE 6.50 usec
 TE 296.6 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -2.00 dB
 SFO1 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300096 MHz
 WDW GM
 SSB 0
 LB -0.20 Hz
 GB 0.8
 PC 1.00



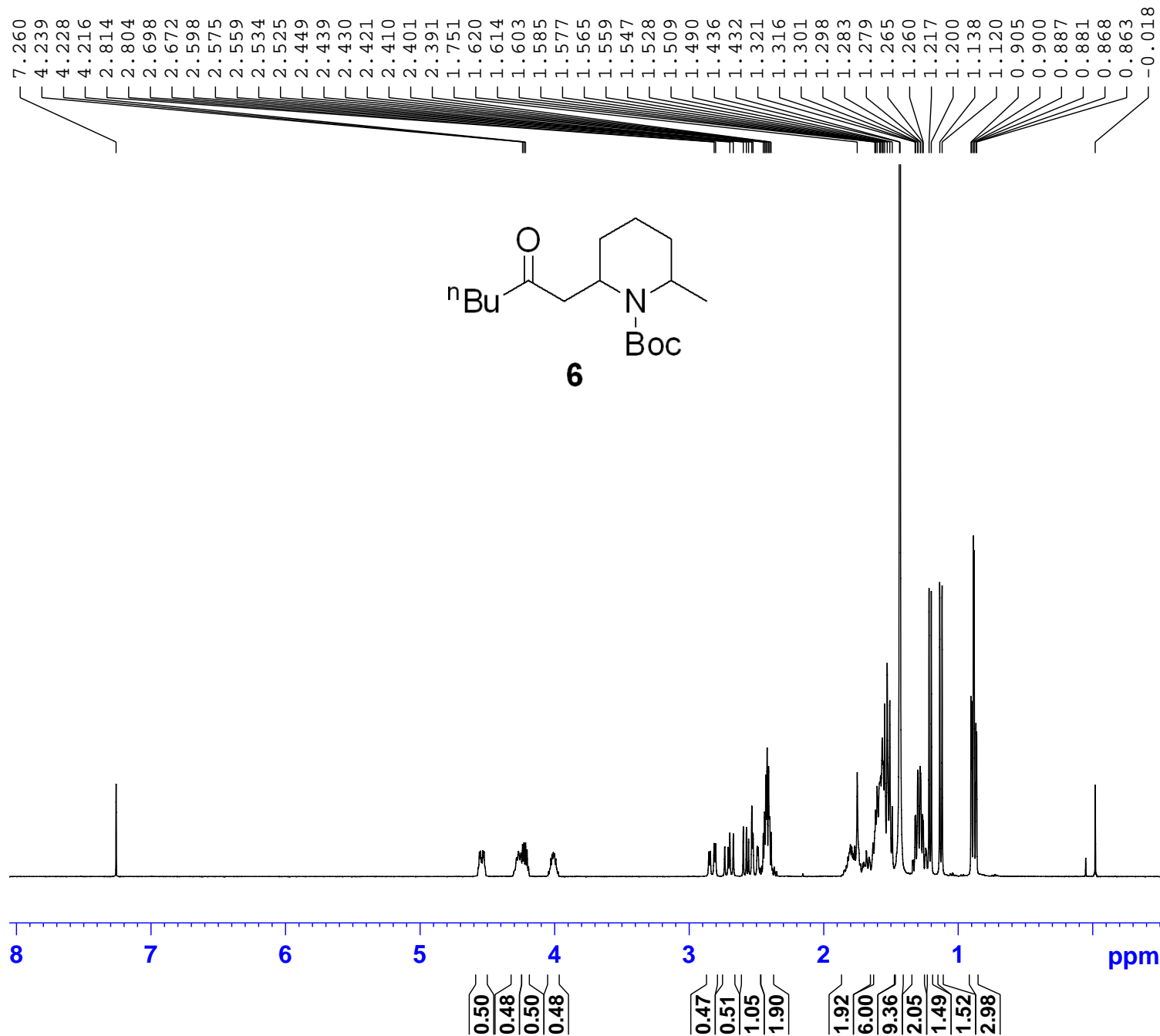
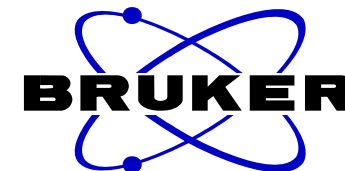
Current Data Parameters
NAME 2009-09-30 HJF-3-179
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090930
Time 19.06
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 297.9 K
D1 2.0000000 sec
d11 0.0300000 sec
DELTA 1.89999998 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127597 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.40



Current Data Parameters
NAME Sep23-2009 HJF 4-20
EXPNO 4
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090924
Time 1.38
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 296.2 K
D1 1.00000000 sec
TD0 1

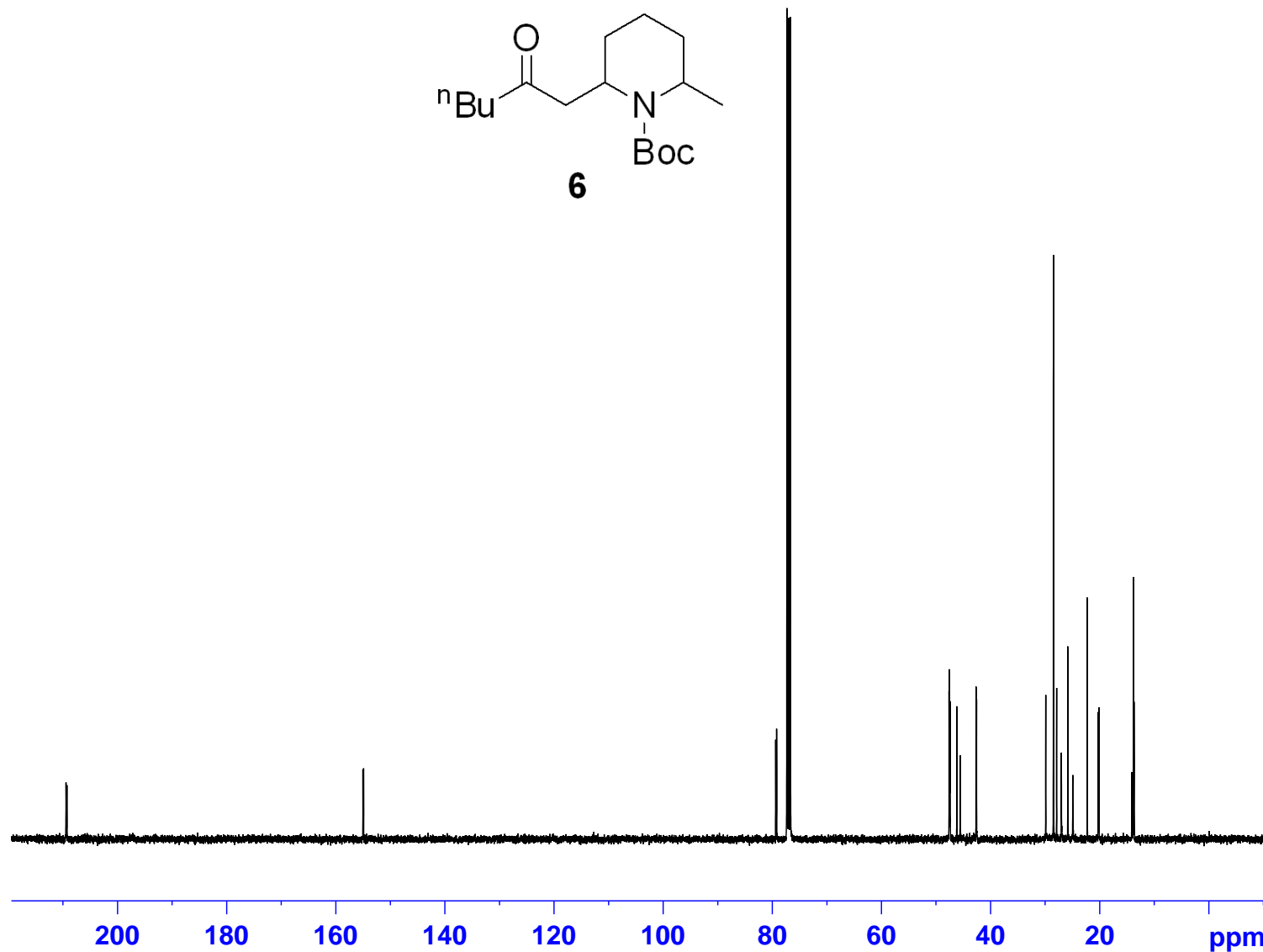
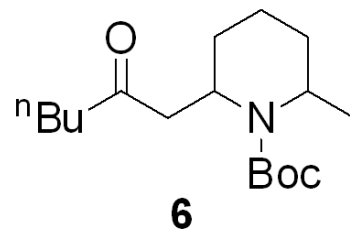
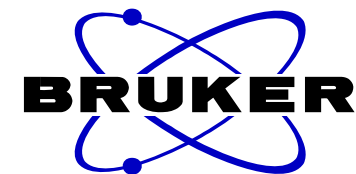
==== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -2.00 dB
SFO1 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.130095 MHz
WDW GM
SSB 0
LB -0.20 Hz
GB 0.1
PC 1.00

209.45
209.28

155.04
154.92

79.39
79.22
77.34
77.02
76.70
47.62
47.58
47.49
47.44
46.20
45.57
42.67
42.58
29.90
28.50
28.46
27.91
27.04
25.87
25.83
24.95
22.29
20.28
20.13
14.11
13.81
13.71



Current Data Parameters
NAME 2009-10-13 HJF-4-20
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20091014
Time 0.28
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 0
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 181
DW 20.800 usec
DE 6.50 usec
TE 299.6 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

==== CHANNEL f1 =====
NUC1 13C
P1 15.50 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 60.00 usec
PL12 11.35 dB
PL13 13.05 dB
PL2 -2.00 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40