Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

Highly, regioselective electrophile induced cyclizations of 2-(prop-1-ynyl)benzamides

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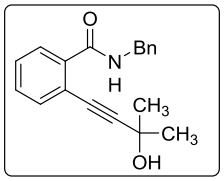
N-Benzyl-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide (10a)



To a solution of N-benzyl-2-iodobenzamide[1] (1 gm, 2.96 mmol) and 2-methylbut-3-yn-2-ol (298 mg, 3.55 mmol) in dry THF (20 mL) and DIPA (10 mL) were added [$(Ph_3P)_2PdCl_2$] (20 mg, 0.029 mmol) and CuI (28 mg, 0.28 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. The reaction mixture was diluted with saturated aq. NH_4Cl (10 mL) and ethyl acetate (20 mL). Aqueous layer was extracted with ethyl acetate (2 x 50 mL). The combined organic layers were washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (4:1, hexane: EtOAc) gave the coupled product **10a** (750 mg, 2.55 mmol, 86 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.08 (1 H, dd, *J* = 1.9 & 6.9 Hz), 7.70 (1 H, br, s), 7.28-7.46 (8 H, m), 4.67 (2 H, d, *J* = 5.5 Hz), 1.39 (6 H, s) ppm.

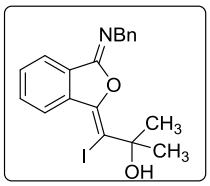
^{13}C NMR (100 MHz, $CDCl_3$):δ = 166.3, 138.2, 135.1, 133.6, 130.6, 130.0, 128.91, 128.88, 128.3, 127.8, 119.3, 100.7, 80.5, 65.3, 44.3 and 30.9 ppm.

IR (neat): 3394, 3057, 2987, 1649, 1531, 1437, 1267, 1163, 903, 735 and 555 cm^{-1}.

HR ESI-MS: $[C_{19}H_{20}NO_2]^+ = [M+H]^+$ requires 294.1494; found 294.1505.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-ol (11a)



To a solution of coupled product **10a** (30 mg, 0.102 mmol) in dry DCM (3 mL), was added NIS (28 mg, 0.122 mmol) and the reaction mixture was stirred at room temperature for 15 min. The reaction mixture was diluted with water (10 mL) and DCM (20 mL) aqueous layer was extracted with DCM (2 x 20 mL). The combined organic layers were washed with hypo solution (10 mL) and brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **11a** (41 mg, 0.097 mmol, 95 %) as a brown viscous oil.

^{1}H NMR (400 MHz, $CDCl_3$):δ = 8.82 (1 H, d, *J* = 8.0 Hz), 7.94 (1 H, d, *J* = 7.6 Hz), 7.60 (1 H, td, *J* = 1.1 & 8.2 Hz), 7.52 (1 H, t, *J* = 7.6 Hz), 7.40 (2 H, d, *J* = 7.2 Hz), 7.33 (2 H, t, *J* = 7.3 Hz), 7.22-7.26 (1 H, m), 4.81 (2 H, s), 3.19 (1 H, br, s), 1.68 (6 H, s) ppm.

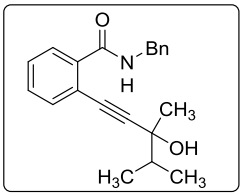
^{13}C NMR (100 MHz, $CDCl_3$):δ = 153.6, 145.9, 139.6, 136.7, 131.5, 131.0, 130.4, 128.6, 127.6, 127.0, 125.4, 123.5, 93.0, 74.6, 52.0 and 29.8 ppm.

IR (neat): 3309, 3059, 2976, 2928, 2856, 1777, 1684, 1645, 1456, 1361, 1262, 1108, 1007, 740, 700, 544 and 411 cm^{-1}.

HR ESI-MS: $[C_{19}H_{19}INO_2]^+ = [M+H]^+$ requires 420.0461; found 420.0465.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-Benzyl-2-(3-hydroxy-3,4-dimethylpent-1-yn-1-yl)benzamide (10b)



To a solution of N-benzyl-2-iodobenzamide (200 mg, 0.593 mmol) and 3,4-dimethylpent-1-yn-3-ol(80 mg, 0.711 mmol) in dry THF (10 mL) and DIPA (1 mL) were added $[(Ph_3P)_2PdCl_2]$ (4 mg, 0.00593 mmol) and CuI (17 mg, 0.0.88 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (4:1, hexane: EtOAc) gave the coupled product **10b** (150 mg, 0.467 mmol, 79 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$):δ = 8.06 (1 H, dd, *J* = 2.2 & 5.9 Hz), 7.74 (1 H, br), 7.29-7.45 (8 H, m), 4.66 (2 H, d, *J* = 5.6 Hz), 1.91 (1 H, br, s), 1.71-1.76 (1 H, m), 1.31 (3 H, s), 0.98 (3 H, d, *J* = 6.8 Hz), 0.95 (3 H, d, *J* = 6.8 Hz) ppm.

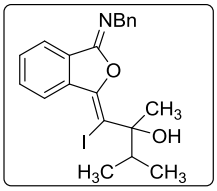
^{13}C NMR (100 MHz, $CDCl_3$):δ = 166.3, 139.8, 138.1, 135.1, 133.6, 130.5, 129.9, 128.76, 128.71, 128.1, 127.6, 119.4, 82.2, 71.8, 44.1, 38.8, 26.5, 17.7 and 17.6 ppm.

IR (neat): 3408, 3055, 2976, 1657, 1524, 1441, 1271, 1155, 1088, 1034, 908, 731, 473 and 430 cm^{-1}.

HR ESI-MS: $[C_{21}H_{23}NaNO_2]^+ = [M+Na]^+$ requires 344.1626; found 344.1645.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-1-iodo-2,3-dimethylbutan-2-ol (11b)



To a solution of coupled product **10b** (30 mg, 0.09 mmol) in dry DCM (3 mL), was added NIS (25 mg, 0.112 mmol) and the reaction mixture was stirred at room temperature for 15 min.purification by flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **11b** (29 mg, 0.064 mmol, 72 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$):δ = 8.82 (1 H, d, *J* = 8.0 Hz), 7.87 (1 H, d, *J* = 7.5 Hz), 7.54 (1 H, t, *J* = 7.5 Hz), 7.45 (1 H, t, *J* = 7.4 Hz), 7.32 (2 H, d, *J* = 7.4 Hz), 7.26 (2 H, t, *J* = 7.3 Hz), 7.17 (1 H, t, *J* = 6.1 Hz), 4.72 (2 H, s), 2.76 (1 H, br, s), 2.41-2.48 (1 H, m), 1.57 (3 H, s), 0.92 (3 H, d, *J* = 6.7 Hz), 0.88 (3 H, d, *J* = 6.8 Hz) ppm.

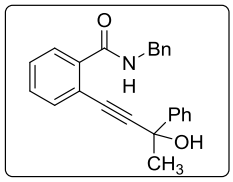
^{13}C NMR (100 MHz, $CDCl_3$):δ = 153.8, 145.6, 139.7, 136.8, 131.5, 131.4, 130.4, 128.6, 127.6, 127.0, 125.7, 123.5, 95.1, 78.7, 52.1, 36.4, 25.4, 17.9 and 17.4 ppm.

IR (neat): 3055, 2984, 2929, 1786, 1705, 1650, 1423, 1266, 1099, 1027, 896, 744, 708 and 436 cm^{-1}.

HR ESI-MS: $[C_{21}H_{23}INO_2]^+ = [M+H]^+$ requires 448.0774; found 448.0803.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-Benzyl-2-(3-hydroxy-3-phenylbut-1-yn-1-yl)benzamide (10c)



To a solution of N-benzyl-2-iodobenzamide (200 mg, 0.593 mmol) and 2-phenylbut-3-yn-2-ol (104 mg, 0.711 mmol) in dry THF (10 mL) and DIPA (1 mL) were added $[(Ph_3P)_2PdCl_2]$ (4 mg, 0.00593 mmol) and CuI (17 mg, 0.0.88 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (4:1, hexane: EtOAc) gave the coupled product **10c** (142 mg, 0.423 mmol, 71 %) as a yellow oil.

^{1}HNMR (400 MHz, $CDCl_3$):δ = 7.95-7.98 (1 H, m), 7.65 (1 H, br), 7.57 (2 H, dd, *J* = 1.5 & 8.3 Hz), 7.44-7.47 (1 H, m), 7.28-7.37 (5 H, m), 7.19 (5 H, s), 4.47 (2 H, t, *J* = 6.2 Hz), 1.68 (3 H, s) ppm.

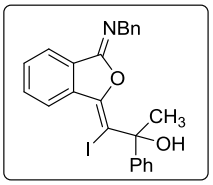
^{13}C NMR (100 MHz, $CDCl_3$):δ = 166.3, 145.0, 138.1, 135.4, 133.6, 130.6, 130.0, 129.0, 128.7, 128.4, 128.0, 127.9, 127.5, 124.9, 119.1, 99.4, 82.8, 70.1, 44.1 and 32.8 ppm.

IR (neat): 3400, 3059, 2985, 2926, 2846, 1651, 1529, 1437, 1267, 895, 733 and 447 cm^{-1}.

HR ESI-MS: $[C_{24}H_{21}NaNO_2]^+ = [M+Na]^+$ requires 378.1470; found 378.1477.

TLC: R_f = 0.4 (4:1; hexane:EtOAc)

1-((1E,3Z)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-phenylpropan-2-ol (11c)



To a solution of coupled product **10c** (30 mg, 0.084 mmol) in dry DCM (3 mL), was added NIS (23 mg, 0.101 mmol) and the reaction mixture was stirred at room temperature for 15 min.purification by flash column chromatography (9:1, hexane: EtOAc) gave the iodocyclicimidate **11c** (36 mg, 0.076 mmol, 92%) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$):δ = 8.85 (1 H, d, *J* = 8.1 Hz), 7.86 (1 H, d, *J* = 7.5 Hz), 7.60 (1 H, td, *J* = 1.0 & 8.2 Hz), 7.50-7.53 (3 H, m), 7.30 (4 H, t, *J* = 7.6 Hz), 7.19-7.24 (4 H, m), 4.38 (2 H, q, *J* = 9.3 Hz), 3.43 (1 H, s), 1.96 (3 H, s) ppm.

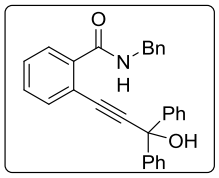
^{13}C NMR (100 MHz, $CDCl_3$):δ = 153.3, 147.6, 147.1, 139.4, 136.4, 131.5, 131.1, 130.6, 128.5, 128.3, 127.6, 127.3, 126.9, 125.4, 125.1, 123.5, 90.3, 77.5, 51.9 and 32.6 ppm.

IR (neat):3055, 2986, 2932, 2858, 1785, 1702, 1647, 1608, 1445, 1423, 1265, 1007, 896, 742, 709 and 451 cm^{-1}.

HR ESI-MS: $[C_{24}H_{21}INO_2]^+ = [M+H]^+$ requires 482.0617; found 482.0628.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-Benzyl-2-(3-hydroxy-3,3-diphenylprop-1-yn-1-yl)benzamide (10d)



To a solution of N-benzyl-2-iodobenzamide (200 mg, 0.593 mmol) and 1,1-diphenylprop-2-yn-1-ol(148 mg, 0.711 mmol) in dry THF (10 mL) and DIPA (1 mL) were added [$(Ph_3P)_2PdCl_2$] (4 mg, 0.00593 mmol) and CuI (17 mg, 0.0.88 mmol) The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (4:1, hexane: EtOAc) gave the coupled product **10d** (152 mg, 0.364 mmol, 61 %) as a yellow oil

^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.98-8.00 (1 H, m), 7.50-7.55 (6 H, m), 7.38-7.41(2 H, m), 7.25-7.33 (6 H, m), 7.13-7.18 (5 H, m), 4.38 (2 H, d, *J* = 5.8 Hz), 3.05 (1 H, br, s) ppm.

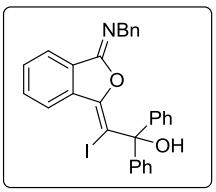
^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.3, 144.6, 139.8, 138.0, 1355, 131.1, 130.5, 129.9, 129.0, 128.7, 128.5, 128.3, 128.17, 128.10, 127.87, 127.84, 127.3, 126.0, 119.0, 98.6, 84.9, 74.6 and 43.8 ppm.

IR (neat): 3371, 3300, 3053, 2926, 1639, 1533, 1456, 1282, 1016, 731 and 434 cm^{-1}.

HR ESI-MS: $[C_{29}H_{23}NO_2]^+ = [M+H]^+$ requires 440.1626; found 440.1606.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

2-((1E,3Z)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-2-iodo-1,1-diphenylethan-1-ol (11d)



To a solution of coupled product **10d** (30 mg, 0.07 mmol) in dry DCM (3 mL), was added NIS (19 mg, 0.086 mmol) and the reaction mixture was stirred at room temperature for 15 min.purification by flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **11d** (37 mg, 0.068 mmol, 98 %) as a brown solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.89 (1 H, d, *J* = 8.1 Hz), 7.85 (1 H, d, *J* = 7.6 Hz), 7.60 (1 H, td, *J* = 1.1 & 8.3 Hz), 7.52 (1 H, td, *J* = 0.8 & 7.6 Hz), 7.43-7.46 (4 H, m), 7.20-7.34 (9 H, m), 7.11 (2 H, d, *J* = 6.9 Hz), 3.99 (2 H, s), 3.81 (1 H, br, s) ppm.

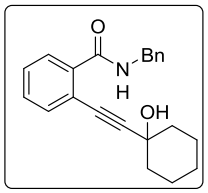
^{13}C NMR (100 MHz, $CDCl_3$): δ = 152.8, 147.5, 145.4, 139.5, 136.4, 131.5, 131.3, 130.8, 128.4, 128.2, 128.19, 128.15, 127.9, 127.88, 127.84, 127.81, 127.7, 126.8, 125.6, 123.5, 90.9, 83.0 and 51.4 ppm. **IR** (neat): 3438, 3055, 2984, 2926, 2855, 1706, 1652, 1609, 1449, 1266, 1023, 898, 740, 461 and 405 cm^{-1}.

HR ESI-MS: $[C_{29}H_{23}INO_2]^+ = [M+H]^+$ requires 544.0774; found 544.0775.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

M.P: 118-120 °C

N-Benzyl-2-((1-hydroxycyclohexyl)ethynyl)benzamide (10e)



To a solution of N-benzyl-2-iodobenzamide (300 mg, 0.89 mmol) and 1-ethynylcyclohexan-1-ol(132 mg, 1.068 mmol) in dry THF (10 mL) and DIPA (2 mL) were added $[(Ph_3P)_2PdCl_2]$ (6 mg, 0.0089 mmol) and CuI (25 mg, 0.133 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (4:1, hexane: EtOAc) gave the coupled product **10e** (250 mg, 0.75 mmol, 84 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.01-8.03 (1 H, m), 7.82 (1 H, br), 7.43-7.45 (1 H, m), 7.26-7.38 (7 H, m), 4.63 (2 H, d, *J* = 5.6 Hz), 2.60 (1 H, br, s), 1.73-1.75 (2 H, m), 1.62-1.65 (2 H, m), 1.44-1.54 (6 H, m) ppm.

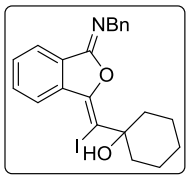
^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.3, 138.2, 135.1, 133.7, 130.5, 130.0, 128.8, 128.7, 128.2, 127.7, 119.5, 100.1, 82.3, 68.7, 44.2, 39.4, 25.0 and 23.1ppm.

IR (neat): 3388, 3055, 2935, 1649, 1531, 1441, 1271, 1153, 1068, 966, 901, 739 and 540 cm^{-1}.

HR ESI-MS: $[C_{22}H_{24}NO_2]^+ = [M+H]^+$ requires 334.1807; found 344.1808.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-(((1E,3E)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)iodomethyl)cyclohexan-1-ol (11e)



To a solution of coupled product **10e** (30 mg, 0.09 mmol) in dry DCM (3 mL), was added NIS (24 mg, 0.108 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **11e** (35 mg, 0.076 mmol, 85 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.85 (1 H, d, *J* = 8.1 Hz), 7.94 (1 H, d, *J* = 7.5 Hz), 7.60 (1 H, td, *J* = 1.2 & 7.4 Hz), 7.52 (1 H, td, *J* = 0.8 & 7.5 Hz), 7.40 (2 H, d, *J* = 7.2 Hz), 7.34 (2 H, t, *J* =

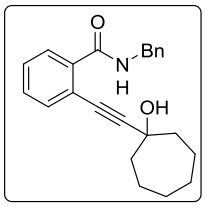
7.3 Hz), 7.23-7.26 (1 H, m), 4.82 (2 H, s), 2.89 (1 H, br, s), 2.12-2.19 (2 H, m), 1.58-1.81 (8 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.6, 145.9, 139.6, 136.8, 131.4, 130.9, 130.3, 128.5, 127.5, 126.9, 125.5, 123.4, 94.9, 75.3, 52.0, 36.7, 25.4 and 22.5 ppm.

IR (neat): 3415, 3059, 2976, 2875, 1780, 1691, 1433, 1265, 1149, 997, 895, 73 and 436 cm^{-1}.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-Benzyl-2-((1-hydroxycycloheptyl)ethynyl)benzamide (10f)



To a solution of N-benzyl-2-iodobenzamide (150 mg, 0.445 mmol) and 1-ethynylcycloheptan-1-ol (74 mg, 0.534 mmol) in dry THF (8 mL) and DIPA (1 mL) were added [$(Ph_3P)_2PdCl_2$] (3 mg, 0.004 mmol) and CuI (13 mg, 0.066 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h.purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **10f** (80 mg, 0.23 mmol, 52 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.06-8.08 (1 H, m), 7.81 (1 H, br), 7.44-7.46 (1 H, m), 7.33-7.42 (6 H, m), 7.29 (1 H, dt, *J* = 1.4 & 6.2 Hz), 4.66 (2 H, d, *J* = 4.5 Hz), 2.02 (1 H, br, s), 1.84-1.91 (3 H, m), 1.72-1.77 (2 H, m), 1.44-1.68 (7 H, m) ppm.

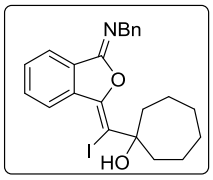
^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.2, 138.3, 135.0, 133.7, 130.6, 130.2, 128.9, 128.8, 128.3, 127.8, 119.4, 101.1, 81.7, 71.9, 44.3, 42.7, 28.0 and 22.1 ppm.

IR (neat): 3391, 3055, 2985, 2931, 2857, 1654, 1595, 1530, 1453, 1424, 1266, 1155, 1027, 897, 743, 707, 529 and 464 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

M.P: 80-82 °C

1-(((1E,3E)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)iodomethyl)cycloheptan-1-ol (11f)



To a solution of coupled product **10f** (30 mg, 0.086 mmol) in dry DCM (3 mL), was added NIS (23 mg, 0.103 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **11f** (28 mg, 0.059 mmol, 68 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$):δ = 8.86 (1 H, d, *J* = 8.1 Hz), 7.94 (1 H, d, *J* = 7.6 Hz), 7.60 (1 H, td, *J* = 1.2 & 7.4 Hz), 7.52 (1 H, td, *J* = 0.8 & 7.6 Hz), 7.40 (2 H, d, *J* = 7.5 Hz), 7.34 (2 H, t, *J* =

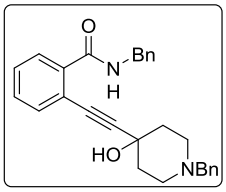
7.3 Hz), 7.25 (1 H, t, *J* = 6.5 Hz), 4.84 (2 H, s), 2.83 (1 H, br, s), 2.36-2.43 (2 H, m), 1.87-1.92 (2 H, m), 1.54-1.80 (8 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$):δ = 153.7, 145.5, 139.7, 137.0, 131.4, 131.1, 130.3, 128.6, 127.6, 127.0, 125.6, 123.5, 97.1, 78.6, 52.1, 40.4, 28.3 and 22.7 ppm.

IR (neat): 3443, 3055, 2927, 2857, 1781, 1700, 1645, 1458, 1265, 1110, 1032, 997, 897, 739 and 442 cm^{-1}.

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

N-Benzyl-2-((1-benzyl-4-hydroxypiperidin-4-yl)ethynyl)benzamide (10g)



To a solution of N-benzyl-2-iodobenzamide (300 mg, 0.89 mmol) and 1-benzyl-4-ethynylpiperidin-4-ol[2] (229 mg, 1.06 mmol) in dry THF (10 mL) and DIPA (2 mL) were added [$(Ph_3P)_2PdCl_2$] (6 mg, 0.0089 mmol) and CuI (25 mg, 0.133 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (7:3, hexane: EtOAc) gave the coupled product **10g** (210 mg, 0.495 mmol, 56 %) as a yellow oil

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.01 (1 H, d, *J* = 6.5 Hz), 7.60 (1 H, br, s), 7.36-7.43 (5 H, m), 7.23-7.34 (8 H, m), 4.65 (2 H, d, *J* = 5.5 Hz), 3.51 (2 H, s), 2.58-2.63 (2 H, m), 2.34-2.42 (4 H, m), 1.92-1.96 (2 H, m) ppm.

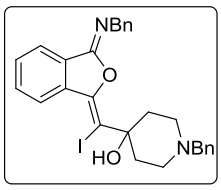
^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.4, 138.3, 138.2, 135.4, 133.8, 130.6, 129.9, 129.27, 129.25, 129.0, 128.9, 128.3, 127.8, 127.2, 119.3, 101.2, 82.7, 70.7, 62.7, 49.9, 44.3 and 38.9 ppm.

IR (neat): 3473, 2978, 1734, 1450, 1383, 1248, 1053, 920, 733, 629 and 446 cm^{-1}.

HR ESI-MS: $[C_{28}H_{29}N_2O_2]^+ = [M+H]^+$ requires 425.2229; found 425.2234.

TLC: R_f = 0.4 (7:3; hexane:EtOAc)

1-Benzyl-4-(((1E,3E)-3-(benzylimino)isobenzofuran-1(3H)-ylidene)iodomethyl)piperidin-4-ol (11g)



To a solution of coupled product **10g** (30 mg, 0.07 mmol) in dry DCM (3 mL), was added NIS (19 mg, 0.084 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (8:2, hexane: EtOAc) gave the iodo cyclic imidate **11g** (31 mg, 0.056 mmol, 80 %) as a yellow oil.

^{1}H NMR (500 MHz, $CDCl_3$): δ = 8.84 (1 H, d, *J* = 6.4 Hz), 7.94 (1 H, d, *J* = 6.0 Hz), 7.60 (1 H, td, *J* = 0.9 & 6.6 Hz), 7.53 (1 H, td, *J* = 0.6 & 6.1 Hz), 7.42 (2 H, d, *J* = 5.8 Hz), 7.24-7.36 (8 H, m), 4.84 (2 H, s), 3.58 (2 H, s), 2.73-2.79 (2 H, m), 2.45-2.48 (4 H, m), 1.80 (2 H, *J* = 8.5 Hz) ppm.

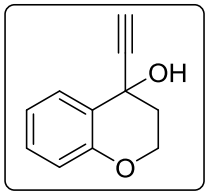
^{13}C NMR (125 MHz, $CDCl_3$): δ = 153.4, 146.8, 139.7, 136.7, 131.5, 131.0, 130.6, 129.3, 128.7, 128.5, 128.4, 127.7, 127.2, 127.0, 125.6, 123.5, 90.1, 73.7, 63.0, 52.2, 49.8 and 37.2 ppm.

IR (neat): 3439, 3055, 2984, 2927, 2855, 1699, 1643, 1455, 1424, 1266, 1025, 896, 740, 538 and 451 cm^{-1}.

HR ESI-MS: $[C_{28}H_{28}IN_2O_2]^+ = [M+H]^+$ requires 551.1196; found 551.1224.

TLC: R_f = 0.4 (4:1; hexane:EtOAc)

4-Ethynylchroman-4-ol (S0)



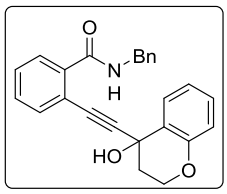
To an ice cold solution of chroman-4-one (300 mg, 2.02 mmol) in dry THF (10 mL) and ethynyl magnesium bromide (0.5 M in THF 4.04 mmol) under nitrogen. The reaction was stirred at same temperature for 2 h.The reaction mixture was diluted with saturated aq. NH_4Cl (10 mL) and ethyl acetate (20 mL). Aqueous layer was extracted with ethyl acetate (2 x 50 mL). The combined organic layers were washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (8:2, hexane: EtOAc) gave the alcohol **S0** (280 mg, 1.64 mmol, 86%) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.64 (1 H, dd, *J* = 1.3 & 7.8 Hz), 7.20 (1 H, 1.5 & 8.3 Hz), 6.93 (1 H, t, *J* = 7.7 Hz), 6.80 (1 H, d, *J* = 8.2 Hz), 4.27-4.30 (2 H, m), 2.76 (1 H, t, *J* = 7.4 Hz), 2.61 (1 H, s), 2.24-2.36 (2 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.5, 130.3, 128.2, 124.6, 120.9, 117.3, 86.4, 73.1, 63.6, 62.3 and 37.1 ppm.

TLC: R_f = 0.5 (4:1; hexane:EtOAc).

N-Benzyl-2-((4-hydroxychroman-4-yl)ethynyl)benzamide (10h)



To a solution of N-benzyl-2-iodobenzamide (200 mg, 0.593 mmol) and 4-ethynylchroman-4-ol **S0** (124 mg, 0.71 mmol) in dry THF (10 mL) and DIPA (2 mL) were added $[(Ph_3P)_2PdCl_2]$ (4 mg, 0.005 mmol) and CuI (17 mg, 0.088 mmol) under nitrogen. The reaction was stirred at room temperature

for 14 h. purificationby flash column chromatography (4:1, hexane: EtOAc) gave the coupled product **10h** (145 mg, 0.378 mmol, 64 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.99-8.02 (1 H, m), 7.55 (1 H, dd, *J* = 1.6 & 7.8 Hz), 7.46-7.48 (2 H, m), 7.38-7.42 (2 H, m), 7.19-7.28 (6 H, m), 6.87-6.91 (1 H, m), 6.83 (1 H, d, *J* = 8.2 Hz), 4.57-4.63 (1 H, m), 4.44-4.49 (1 H, m), 4.21-4.30 (2 H, m), 2.94 (1 H, m), 2.14 (2 H, t, *J* = 3.5 Hz) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.5, 153.5, 138.0, 135.6, 133.6, 130.5, 130.2, 129.7, 129.0, 128.7, 128.3, 128.0, 127.5, 124.7, 120.8, 119.1, 117.3, 98.4, 82.8, 64.0, 62.3, 44.1 and 36.8 ppm.

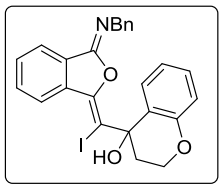
IR (neat): 3059, 2980, 2943, 2858, 1643, 1506, 1439, 1267, 1043, 883, 739 and 430 cm^{-1}.

HR ESI-MS: $[C_{25}H_{21}NaNO_3]^+ = [M+Na]^+$ requires 406.1419; found 406.1434.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

M.P: 135-137 °C

4-(((1E,3E)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)iodomethyl)chroman-4-ol (11h)



To a solution of coupled product **10h** (30 mg, 0.078 mmol) in dry DCM (3 mL), was added NIS (21 mg, 0.093 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **11h** (35 mg, 0.068 mmol, 88 %) as a brown solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.85 (1 H, d, *J* = 8.1 Hz), 7.83 (1 H, d, *J* = 7.6 Hz), 7.60 (1 H, td, *J* = 1.0 & 8.2 Hz), 7.49 (1 H, t, *J* = 7.6 Hz), 7.20-7.30 (6 H, m), 7.09 (1 H, td, *J* = 1.6 & 7.4 Hz), 6.87 (1 H, dd, *J* = 0.9 & 8.2 Hz), 6.81 (1 H, td, *J* = 1.0 & 7.6 Hz), 4.33 (2 H, dd, *J* = 2.4 & 7.6 Hz), 4.23 (1 H, d, *J* = 15.8 Hz), 4.02 (1 H, d, *J* = 15.8 Hz), 2.60-2.67 (1 H, m), 2.03-2.07 (1 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 154.0, 153.0, 145.9, 139.8, 136.3, 136.0, 131.3, 130.4, 129.3, 128.2, 127.6, 127.4, 127.1, 126.5, 125.1, 123.4, 121.2, 117.2, 91.2, 70.6, 63.2, 51.2 and 34.5 ppm.

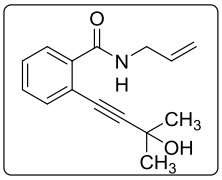
IR (neat): 3367, 3059, 2983, 1784, 1699, 1603, 1437, 1265, 1001, 897,731 and 455 cm^{-1}.

HR ESI-MS: $[C_{25}H_{21}INO_3]^+ = [M+H]^+$ requires 510.0566; found 510.0594.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

M.P: 125-127 °C

N-Allyl-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide (14a)



To a solution of N-allyl-2-iodobenzamide[1] (500 mg, 1.74 mmol) and 2-methylbut-3-yn-2-ol (176 mg, 2.09 mmol) in dry THF (20 mL) and DIPA (4 mL) were added [$(Ph_3P)_2PdCl_2$] (12 mg, 0.017 mmol) and CuI (50 mg, 0.26 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14a** (380 mg, 1.56 mmol, 90 %) as a white semi solid.

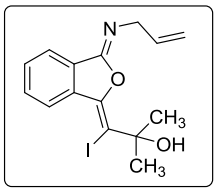
^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.97 (1 H, dd, *J* = 3.6 & 6.6 Hz), 7.49 (1 H, br), 7.43 (1 H, dd, *J* = 3.0 & 5.6 Hz), 7.36 (2 H, dd, *J* = 3.8 & 5.5 Hz), 5.89-5.98 (1 H, m), 5.27 (1 H, dd, *J* = 1.3 & 17.1 Hz), 5.16 (1 H, dd, *J* = 1.1 & 10.2 Hz), 4.07-4.10 (2 H, m), 1.60 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.4, 135.4, 134.1, 133.5, 130.5, 129.8, 128.8, 119.3, 116.9, 100.7, 80.4, 65.4, 42.6 and 31.2 ppm.

IR (neat): 3410, 3061, 2985, 1720, 1651, 1535, 1433, 1267, 1169, 906, 755 and 465 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-(Allylimino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-ol (15a)



To a solution of coupled product**14a** (30 mg, 0.123 mmol) in dry DCM (3 mL), was added NIS (33 mg, 0.148 mmol) and the reaction mixture was stirred at room temperature for 15 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **15a** (37 mg, 0.1 mmol, 82 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.73 (1 H, d, *J* = 8.0 Hz), 7.84 (1 H, d, *J* = 7.5 Hz), 7.50 (1 H, t, *J* = 7.4 Hz), 7.45 (1 H, t, *J* = 7.4 Hz), 5.93-6.02 (1 H, m), 5.22 (1 H, dd, *J* = 1.5 & 17.1 Hz), 5.09 (1 H, dd, *J* = 1.3 & 10.2 Hz), 4.17 (2 H, d, *J* = 5.4 Hz), 3.25 (1 H, br, s), 1.63 (6 H, s) ppm.

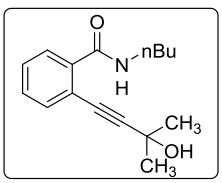
^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.7, 145.9, 136.6, 135.4, 131.5, 130.9, 130.4, 125.4, 123.4, 115.8, 92.7, 74.6, 50.8 and 29.9 ppm.

IR (neat): 3402, 3055, 2985, 2930, 1782, 1684, 1648, 1422, 1266, 1105, 1009, 896, 743, 463 and 417 cm^{-1}**.**

HR ESI-MS: $[C_{15}H_{17}INO_2]^+ = [M+H]^+$ requires 370.0304; found 370.0339.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-Butyl-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide (14b)



To a solution of N-butyl-2-iodobenzamide[1] (250 mg, 0.825 mmol) and 2-methylbut-3-yn-2-ol **xx** (83 mg, 0.99 mmol) in dry THF (10 mL) and DIPA

(2 mL) were added [$(Ph_3P)_2PdCl_2$] (6 mg, 0.0082 mmol) and CuI (24 mg, 0.123 mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14b** (148 mg, 0.57 mmol, 69 %) as a yellow oil.

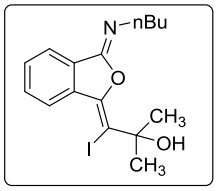
^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.92-7.94 (1 H, m), 7.40-7.42 (1 H, m), 7.33-7.35 (3 H, m), 3.61 (1 H, br, s), 3.43 (2 H, q, *J* = 7.0 Hz), 1.62 (6 H, s), 1.54-1.60 (2 H, m), 1.37 (2 H, q, *J* = 7.5 Hz), 0.91 (3 H, t, *J* = 6.8 Hz) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.6, 135.8, 133.5, 130.3, 129.6, 128.7, 119.3, 100.5, 80.4, 65.4, 40.0, 31.6, 31.3, 20.3 and 13.8 ppm.

IR (neat): 3406, 3059, 2974, 2877, 1651, 1537, 1437, 1267, 1165, 903, 733 and 536 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-(Butylimino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-ol (15b)



To a solution of coupled product **14b** (30 mg, 0.115 mmol) in dry DCM (3 mL), was added NIS (31 mg, 0.138 mmol) and the reaction mixture was stirred at room temperature for 15 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **15b** (36 mg, 0.093 mmol, 81 %) as a brown viscous oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.81 (1 H, d, *J* = 8.0 Hz), 7.89 (1 H, d, *J* = 7.6 Hz), 7.58 (1 H, t, *J* = 8.0 Hz), 7.51 (1 H, t, *J* = 7.5 Hz), 3.59 (2 H, t, *J* = 7.1 Hz), 3.41 (1 H, br, s), 1.72 (6 H, s), 1.65-1.69 (2 H, m), 1.43 (2 H, q, *J* = 7.6 Hz), 0.95 (3 H, t, *J* = 7.3 Hz) ppm.

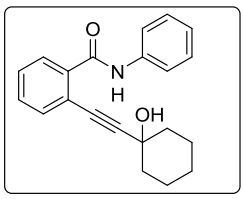
^{13}C NMR (100 MHz, $CDCl_3$): δ = 152.8, 145.9, 136.5, 131.2, 131.1, 130.3, 125.4, 123.3, 92.0, 74.6, 48.2, 32.9, 29.9, 20.8 and 14.0 ppm.

IR (neat): 3059, 2974, 1782, 1687, 1437, 1265, 1011, 901, 731, 534 and 451 cm^{-1}.

HR ESI-MS: $[C_{16}H_{21}INO_2]^+ = [M+H]^+$ requires 386.0617; found 386.0616.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

2-((1-Hydroxycyclohexyl)ethynyl)-N-phenylbenzamide (14c)



To a solution of 2-iodo-N-phenylbenzamide[3] (500 mg, 1.55 mmol) and 1-ethynylcyclohexan-1-ol (230 mg, 2.09 mmol) in dry THF (10 mL) and DIPA (3 mL) were added [$(Ph_3P)_2PdCl_2$] (11 mg, 0.015 mmol) and CuI (44 mg, 0.23 mmol) under nitrogen. The reaction was stirred at room

temperature for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14c** (380 mg, 1.19 mmol, 77 %) as a yellow oil

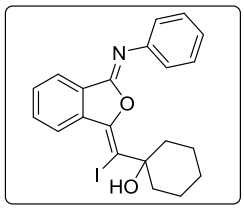
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.95 (1 H, br, s), 8.03 (1 H, dd, *J* = 4.0 & 8.9 Hz), 7.72 (2 H, d, *J* = 7.8 Hz), 7.52 (1 H, dd, *J* = 2.0 & 4.8 Hz), 7.42 (2 H, t, *J* = 6.6 Hz), 7.34 (2 H, t, *J* = 7.8 Hz), 7.12 (1 H, t, *J* = 7.4 Hz), 2.43 (1 H, br, s), 1.94-1.98 (2 H, m), 1.60-1.71 (5 H, m), 1.46-1.57 (3 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 164.7, 138.0, 136.1, 133.8, 130.8, 130.1, 129.17, 129.10, 124.6, 120.2, 119.3, 100.4, 82.3, 69.3, 39.9, 25.1 and 23.3 ppm.

IR (neat): 3364, 3058, 2939, 2861, 1736, 1666, 1600, 1532, 1443, 1367, 1320, 1236, 1133, 1023, 961, 903, 742 and 414 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc)

1-(Iodo((1E,3Z)-3-(phenylimino)isobenzofuran-1(3H)-ylidene)methyl)cyclohexan-1-ol (15c)



To a solution of coupled product **14c** (30 mg, 0.094 mmol) in dry DCM (3 mL), was added NIS (25 mg, 0.112 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **15c** (37 mg, 0.083 mmol, 87 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.87 (1 H, d, *J* = 8.0 Hz), 8.01 (1 H, dt, *J* = 0.9 & 7.5 Hz), 7.65 (1 H, td, *J* = 1.2 & 7.4 Hz), 7.58 (1 H, td, *J* = 1.0 & 7.6 Hz), 7.35-7.39 (2 H, m), 7.20 (2 H, dd, *J* = 0.4 & 8.5 Hz), 7.13-7.18 (1 H, m), 2.70 (1 H, br, s), 1.96-2.04 (2 H, m), 1.68-1.73 (2 H, m), 1.50-1.60 (6 H, m) ppm.

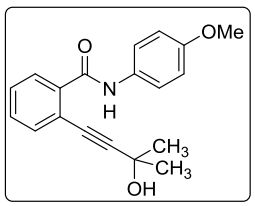
^{13}C NMR (100 MHz, $CDCl_3$): δ = 152.3, 146.2, 146.0, 136.9, 132.0, 130.9, 130.5, 129.0, 125.5, 124.8, 123.9, 122.6, 96.1, 75.3, 36.8, 24.9 and 22.3 ppm.

IR (neat): 3372, 3056, 2980, 2936, 2860, 1731, 1694, 1600, 1479, 1369, 1266, 1142, 1088, 1018, 892 and 742 cm^{-1}.

HR ESI-MS: $[C_{21}H_{20}NaINO_2]^+ = [M+Na]^+$ requires 468.0437; found 468.0435.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

2-(3-Hydroxy-3-methylbut-1-yn-1-yl)-N-(4-methoxyphenyl)benzamide (14d)



To a solution of 2-iodo-N-(4-methoxyphenyl)benzamide[3] (350 mg, 1.02 mmol) and 2-methylbut-3-yn-2-ol (103 mg, 1.22 mmol) in dry THF (10 mL) and Et_3N (2 mL) were added $[(Ph_3P)_2PdCl_2]$ (7 mg, 0.01 mmol) and

CuI (29 mg, 0.153 mmol) under nitrogen. The reaction was stirred at 60 °C for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14d** (260 mg, 0.84 mmol, 82 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.95 (1 H, br), 8.00-8.02 (1 H, m), 7.61 (2 H, d, *J* = 8.9 Hz), 7.38-7.45 (3 H, m), 6.84 (2 H, d, *J* = 9.0 Hz), 3.77 (3 H, s), 1.57 (6 H, s) ppm.

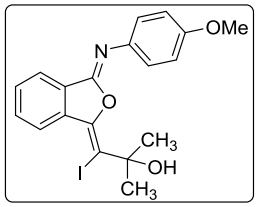
^{13}C NMR (100 MHz, $CDCl_3$): δ = 164.4, 156.6, 135.9, 133.6, 131.0, 130.7, 130.0, 129.0, 122.0, 119.2, 114.2, 101.3, 80.2, 65.5, 55.5 and 31.4 ppm.

IR (neat): 3414, 3056, 2986, 2934, 2848, 1659, 1515, 1420, 1265, 1172, 1122, 1037, 829, 740 and 527 cm^{-1}.

HR ESI-MS: $[C_{19}H_{19}NaNO_3]^+ = [M+Na]^+$ requires 332.1263; found 332.1253.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-Iodo-1-((1E,3Z)-3-((4-methoxyphenyl)imino)isobenzofuran-1(3H)-ylidene)-2-methylpropan-2-ol (15d)



To a solution of coupled product**14d** (30 mg, 0.097 mmol) in dry DCM (3 mL), was added NIS (26 mg, 0.116 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate**15d** (37 mg, 0.085 mmol, 88 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.84 (1 H, d, *J* = 8.0 Hz), 8.01 (1 H, d, *J* = 7.5 Hz), 7.64 (1H, td, *J* = 1.2 & 7.6 Hz), 7.58 (1 H, td, *J* = 0.8 & 7.5 Hz), 7.25 (2 H, d, *J* = 6.5 Hz), 6.92 (2 H, d, *J* = 6.8 Hz), 3.82 (3 H, s), 3.27 (1 H, br, s), 1.61 (6 H, s) ppm.

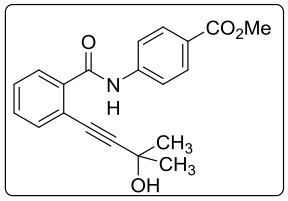
^{13}C NMR (100 MHz, $CDCl_3$): δ = 157.0, 151.1, 146.2, 138.6, 136.3, 131.8, 131.4, 130.5, 125.4, 124.4, 123.8, 114.3, 92.6, 74.9, 55.5 and 30.4 ppm.

IR (neat): 3443, 3055, 2985, 2929, 2844, 1692, 1628, 1506, 1463, 1424, 1265, 1169, 1107, 1027, 895, 840, 738 and 433 cm^{-1}.

HR ESI-MS:$[C_{19}H_{19}INO_3]^+ = [M+H]^+$ requires 436.0410; found 436.0442.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

Methyl 4-(2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamido)benzoate (14e)



To a solution of methyl 4-(2-iodobenzamido)benzoate[3] (300 mg, 0.789 mmol) and 2-methylbut-3-yn-2-ol (80 mg, 0.947 mmol) in dry THF (10 mL) and Et_3N (2 mL) were added $[(Ph_3P)_2PdCl_2]$ (5.5 mg, 0.007 mmol)

and CuI (22 mg, 0.118 mmol) under nitrogen. The reaction was stirred at 60 °C for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14e** (245 mg, 0.727 mmol, 92 %) as a yellow oil.

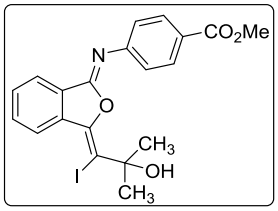
^{1}H NMR (400 MHz, $CDCl_3$): δ = 9.23 (1 H, br, s), 8.06 (1 H, dd, *J* = 3.7 & 6.6 Hz), 8.00 (2 H, d, *J* = 8.6 Hz), 7.82 (2 H, d, *J* = 8.7 Hz), 7.50 (1 H, dd, *J* = 3.2 & 5.5 Hz), 7.44 (2 H, dd, *J* = 3.8 & 5.2 Hz), 3.89 (3 H, s), 1.60 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 166.7, 164.7, 142.1, 135.3, 133.8, 131.2, 130.9, 130.3, 129.2, 125.8, 119.3, 119.2, 101.8, 80.1, 65.8, 52.1 and 31.4 ppm.

IR (neat): 3369, 2962, 1653, 1601, 1417, 1277, 1101, 748, 640, 573 and 430 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

Methyl4-(((1Z,3E)-3-(2-hydroxy-1-iodo-2-methylpropylidene)isobenzofuran-1(3H)-ylidene)amino)benzoate (15e)



To a solution of coupled product **14e** (30 mg, 0.089 mmol) in dry DCM (3 mL), was added NIS (24 mg, 0.106 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **15e** (39 mg, 0.084 mmol, 95 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$):δ = 8.86 (1 H, d, *J* = 8.0 Hz), 8.06 (2 H, d, *J* = 8.3 Hz), 8.02 (1 H, d, *J* = 7.6 Hz), 7.69 (1 H, t, *J* = 7.7 Hz), 7.62 (1 H, t, *J* = 7.5 Hz), 7.21 (2 H, d, *J* = 8.3 Hz), 3.92 (3 H, s), 2.97 (1 H, br, s), 1.52 (6 H, s) ppm.

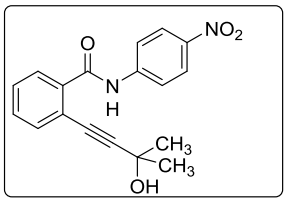
^{13}C NMR (100 MHz, $CDCl_3$):δ = 166.9, 152.8, 150.8, 145.7, 136.8, 132.5, 130.79, 130.73, 130.5, 126.2, 125.5, 124.1, 122.3, 95.0, 74.7, 52.1 and 30.1 ppm.

IR (neat): 3055, 2986, 2925, 1713, 1600, 1423, 1266, 1109, 1015, 896 and 736cm^{-1}.

HR ESI-MS: $[C_{20}H_{19}INO_4]^+ = [M+H]^+$ requires 464.0359; found 464.0342.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

2-(3-Hydroxy-3-methylbut-1-yn-1-yl)-N-(4-nitrophenyl)benzamide (14f)



To a solution of 2-iodo-N-(4-nitrophenyl)benzamide[3] (300 mg, 0.817 mmol) and 2-methylbut-3-yn-2-ol **xx** (82 mg, 0.980 mmol) in dry THF (10 mL) and Et_3N (2 mL) were added $[(Ph_3P)_2PdCl_2]$ (6 mg, 0.008 mmol) and CuI (23 mg, 0.122 mmol) under nitrogen. The reaction was

stirred at 60 °C for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14f** (230 mg, 0.709 mmol, 87 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 9.61 (1 H, br), 8.15 (2 H, d, *J* = 9.0 Hz), 8.08 (1 H, t, *J* = 5.2 Hz), 7.96 (2 H, d, *J* = 9.0 Hz), 7.45-7.47 (3 H, m), 2.82 (1 H, br), 1.64 (6 H, s) ppm.

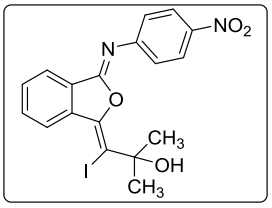
^{13}C NMR (100 MHz, $CDCl_3$): δ = 164.6, 143.77, 143.73, 134.3, 133.9, 131.7, 130.6, 129.4, 125.1, 119.7, 119.1, 102.3, 80.1, 65.9 and 31.5 ppm.

IR (neat): 3408, 3061, 2985, 1672, 1612, 1527, 1429, 1325, 1263, 1167, 1134, 897, 748 and 546 cm^{-1}.

HR ESI-MS: $[C_{18}H_{16}NaN_2O_4]^+ = [M+Na]^+$ requires 347.1008; found 347.1034.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-Iodo-2-methyl-1-((1E,3Z)-3-((4-nitrophenyl)imino)isobenzofuran-1(3H)-ylidene)propan-2-ol (15f)



To a solution of coupled product **14f** (30 mg, 0.09 mmol) in dry DCM (3 mL), was added NIS (25 mg, 0.11 mmol) and the reaction mixture was stirred at room temperature for 30 min. purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **15f** (37 mg, 0.082 mmol, 92 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.81 (1 H, d, *J* = 8.0 Hz), 8.19 (2 H, d, *J* = 8.8 Hz), 7.95 (1 H, d, *J* = 7.4 Hz), 7.66 (1 H, t, *J* = 7.6 Hz), 7.59 (1 H, t, *J* = 7.3 Hz), 7.19 (2 H, d, *J* = 8.3 Hz), 2.73 (1 H, br, s), 1.45 (6 H, s) ppm.

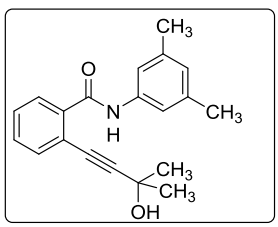
^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.5, 152.8, 145.5, 144.4, 136.9, 132.9, 130.8, 130.2, 125.7, 124.9, 124.3, 123.0, 96.5, 74.6 and 30.0 ppm.

IR (neat): 3055, 2984, 2926, 2854, 1698, 1589, 1515, 1454, 1428, 1341, 1266, 1108, 1024, 891, 854, 742, 463 and 430 cm^{-1}.

HR ESI-MS: $[C_{18}H_{16}IN_2O_4]^+ = [M+H]^+$ requires 451.0155; found 451.0166.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-(3,5-Dimethylphenyl)-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide (14g)



To a solution of N-(3,5-dimethylphenyl)-2-iodobenzamide[4] (500 mg, 1.42 mmol) and 2-methylbut-3-yn-2-ol (143 mg, 1.02 mmol) in dry THF (10 mL) and Et_3N (3 mL) were added $[(Ph_3P)_2PdCl_2]$ (10 mg, 0.0142 mmol) and CuI (40 mg, 0.213 mmol) under nitrogen. The reaction was

stirred at 60 °C for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14g** (360 mg, 1.17 mmol, 82 %) as a yellow oil

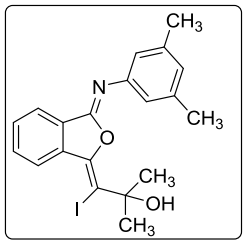
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.88 (1 H, br, s), 8.00 (1 H, dd, *J* = 2.2 & 6.7 Hz), 7.36-7.45 (3 H, m), 7.35 (2 H, s), 6.74 (1 H, s), 3.00 (1 H, br, s), 2.28 (6 H, s), 1.58 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 164.5, 138.7, 137.7, 136.0, 133.6, 130.7, 129.9, 128.9, 126.4, 119.2, 117.9, 101.3, 80.1, 65.5, 31.3 and 21.4 ppm.

IR (neat): 3377, 3051, 2978, 2933, 2862, 1659, 1549, 1454, 1273, 1161, 957, 897, 737 and 436 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-((3,5-Dimethylphenyl)imino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-ol (15g)



To a solution of coupled product **14g** (30 mg, 0.097 mmol) in dry DCM (3 mL), was added NIS (26 mg, 0.117 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **15g** (36 mg, 0.083 mmol, 86 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.75 (1 H, d, *J* = 8.0 Hz), 7.95 (1H, d, *J* = 7.3 Hz), 7.57 (1 H, dd, *J* = 1.2 & 7.4 Hz), 7.50 (1 H, dd, *J* = 0.9 & 7.5 Hz), 6.79 (2 H, s), 6.72 (1 H, s), 3.14 (1 H, br), 2.24 (6 H, s), 1.51 (6 H, s) ppm.

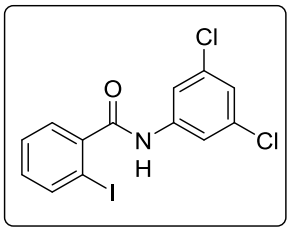
^{13}C NMR (100 MHz, $CDCl_3$): δ = 151.7, 146.2, 145.6, 138.5, 136.5, 131.9, 131.2, 130.5, 126.6, 125.4, 123.9, 120.6, 92.8, 74.8, 30.3 and 21.4 ppm.

IR (neat):3392, 3052, 2981, 2926, 2862, 1691, 1598, 1466, 1365, 1264, 1193, 1160, 1106, 1030, 935, 895, 849, 734 and 413 cm^{-1}.

HR ESI-MS: $[C_{20}H_{21}INO_2]^+ = [M+H]^+$ requires 434.0617; found 434.0586.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

N-(3,5-Dichlorophenyl)-2-iodobenzamide (S1)



To an ice cold solution of 2-iodo benzoic acid (300 mg, 1.209 mmol) in dry DCM (10 mL) and 3,5dichloro aniline (215 mg, 1.33 mmol) were added DCC (298 mg, 1.45 mmol) and DMAP (29 mg, 0.24 mmol) under nitrogen. The reaction was stirred at room temperature for 12 h.The reaction mixture was diluted water and DCM (10 mL). Aqueous

layer was extracted DCM (2 x 10 mL). The combined organic layers were washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (9:1, hexane: EtOAc) gave the acyl protected product **S1** (250 mg, 0.64 mmol, 53 %) as a white solid.

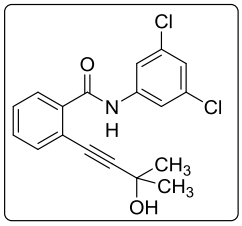
^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.89 (1 H, d, *J* = 7.9 Hz), 7.66 (1 H, br, s), 7.58 (2 H, s), 7.47 (1 H, d, *J* = 6.4 Hz), 7.42 (1 H, t, *J* = 7.4 Hz), 7.13-7.17 (2 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 167.4, 141.3, 140.2, 139.3, 135.5, 132.0, 128.7, 128.5, 125.0, 118.4 and 92.3 ppm.

IR (neat): 3271, 3109, 2868, 1645, 1585, 1531, 1425, 1275, 1014, 945, 851 and 646 cm^{-1}.

TLC: R_f = 0.5 (9:1; hexane:EtOAc).

N-(3,5-Dichlorophenyl)-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide (14h)



To a solution of N-(3,5-dichlorophenyl)-2-iodobenzamide **S1** (300 mg, 0.769 mmol) and 2-methylbut-3-yn-2-ol (78 mg, 0.92 mmol) in dry THF (10 mL) and Et_3N (2 mL) were added [$(Ph_3P)_2PdCl_2$] (6 mg, 0.007 mmol) and CuI (28 mg, 0.28 mmol) under nitrogen. The reaction was stirred at 60 °C for 14 h. purificationby flash column chromatography (8:2, hexane: EtOAc) gave the coupled product **14h** (215 mg, 0.619 mmol, 80 %) as a yellow oil.

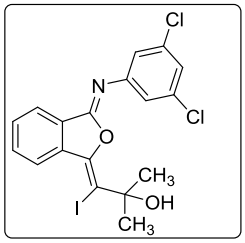
^{1}H NMR (400 MHz, $CDCl_3$): δ = 9.22 (1 H, br, s), 8.08 (1 H, dd, *J* = 4.2 & 7.0 Hz), 7.77 (2 H, s), 7.46-7.53 (3 H, m), 7.10 (1 H, t, *J* = 1.6 Hz), 2.29 (1 H, br, s), 1.65 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 164.4, 139.7, 135.3, 133.8, 131.4, 130.5, 129.3, 124.5, 121.6, 119.0, 118.5, 102.1, 80.2, 65.9 and 31.5 ppm.

IR (neat): 3406, 3086, 2968, 2924, 2870, 1660, 1583, 1425, 1257, 1128, 928, 839, 741, 617, 544 and 480 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-((3,5-Dichlorophenyl)imino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-ol (15h)



To a solution of coupled product **14h** (30 mg, 0.086 mmol) in dry DCM (3 mL), was added NIS (23 mg, 0.103 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane:EtOAc) gave the iodo cyclic imidate **15h** (30 mg, 0.063 mmol, 74 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.86 (1 H, d, *J* = 7.6 Hz), 7.98 (1 H, d, *J* = 7.2 Hz), 7.69 (1 H, t, *J* = 7.4 Hz), 7.61 (1 H, t, *J* = 6.8 Hz), 7.14 (3 H, s), 2.80 (1 H, br, s), 1.60 (6 H, s) ppm.

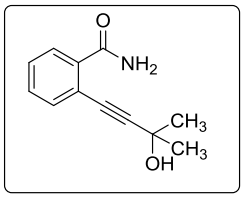
^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.6, 148.1, 145.5, 136.8, 135.0, 132.6, 130.7, 130.6, 125.6, 124.7, 124.2, 121.7, 96.6, 74.5 and 29.9 ppm.

IR (neat): 3059, 2985, 1693, 1579, 1435, 1265, 1109, 1020, 910, 735, 546 and 428 cm^{-1}.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

M.P: 95-97 °C

2-(3-Hydroxy-3-methylbut-1-yn-1-yl)benzamide (14i)



To a solution of 2-iodo benzamide[4] (200 mg, 0.809mmol) and 2-methylbut-3-yn-2-ol (77 mg, 0.92mmol) in dry THF (10 mL) and DIPA (1 mL) were added [$(Ph_3P)_2PdCl_2$] (6 mg, 0.0089 mmol) and CuI (23 mg, 0.121 mmol) under nitrogen. The reaction was stirred at 60 °C for 14 h. purificationby flash column chromatography (6:4, hexane: EtOAc) gave the coupled product **14i** (130 mg, 0.64mmol, 79 %) as a yellow oil.

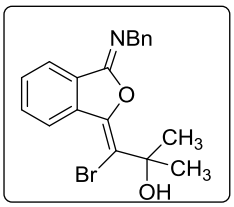
^{1}H NMR (400 MHz, $CDCl_3$):δ = 7.99 (1 H, s), 7.45 (1 H, s), 7.39 (2 H, t, *J* = 5.2 Hz), 6.37 (1 H, s), 3.50 (1 H, s), 1.62 (6 H, s) ppm.

^{13}C NMR (125 MHz, $CDCl_3$):δ = 169.2, 134.8, 133.3, 130.8, 129.6, 128.5, 120.0, 100.7, 80.2, 65.2 and 31.0 ppm.

IR (neat):3454, 2980, 2931, 1642, 1597, 1450, 1385, 1261, 1165, 964, 910, 760, 715, 622, 576, 504 and 467 cm^{-1}.

TLC: R_f = 0.3 (3:2; hexane:EtOAc).

1-((1E,3E)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-1-bromo-2-methylpropan-2-ol (13a)



To a solution of coupled product **10a** (30 mg, 0.102 mmol) in dry DCM (3 mL), was added NBS (22 mg, 0.122 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the bromocyclicimidate **13a** (30 mg, 0.08 mmol, 79 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.50 (1 H, dd, *J* = 0.6 & 7.9 Hz), 7.94 (1 H, dd, *J* = 0.8 & 7.6 Hz), 7.59 (1 H, td, *J* = 1.1 & 8.5 Hz), 7.52 (1 H, td, *J* = 1.0 & 7.6 Hz), 7.40 (2 H, d, *J* = 7.6 Hz),

7.34 (2 H, t, *J* = 7.3 Hz), 7.25 (1 H, t, *J* = 7.1 Hz), 4.80 (2 H, s), 3.26 (1 H, br, s), 1.66 (6 H, s)ppm.

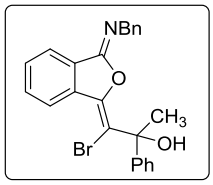
^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.9, 144.6, 139.6, 136.3, 132.0, 130.5, 130.3, 128.6, 127.6, 127.0, 125.4, 123.5, 114.8, 74.7, 52.0 and 29.6 ppm.

IR (neat): 3443, 3055, 2986, 2912, 1785, 1685, 1647, 1423, 1266, 1018, 896, 743, 706, 481 and 430 cm^{-1}.

HR ESI-MS: $[C_{19}H_{19}BrNO_2]^+ = [M+H]^+$ requires 372.0599; found 372.0619.

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

1-((1E,3E)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-1-bromo-2-phenylpropan-2-ol (13b)



To a solution of coupled product **10b** (30 mg, 0.084 mmol) in dry DCM (3 mL), was added NBS (18 mg, 0.10 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the bromo cyclic imidate **13b** (35 mg, 0.08 mmol, 97 %) as a yellow oil.

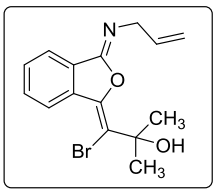
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.51 (1 H, d, *J* = 8.0 Hz), 7.88 (1 H, d, *J* = 7.6 Hz), 7.58 (1 H, t, *J* = 7.8 Hz), 7.49-7.53 (3 H, m), 7.22-7.33 (8 H, m), 4.46 (2 H, d, *J* = 3.0 Hz), 3.55 (1 H, br, s), 1.93 (3 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.5, 147.4, 145.9, 139.4, 136.0, 131.9, 130.7, 130.5, 128.6, 128.4, 127.6, 127.3, 126.9, 125.3, 124.8, 123.5, 113.4, 78.1, 51.9 and 31.5 ppm.

IR (neat): 3055, 2986, 2932, 2858, 1785, 1702, 1647, 1608, 1423, 1265, 1007, 896, 742, 451 and 415 cm^{-1}.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

1-((1E,3Z)-3-(Allylimino)isobenzofuran-1(3H)-ylidene)-1-bromo-2-methylpropan-2-ol (13c)



To a solution of coupled product **14a** (30 mg, 0.123mmol) in dry DCM (3 mL), was added NBS (26 mg, 0.147mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the bromocyclicimidate **13c** (25 mg, 0.077 mmol, 63 %) as a yellow oil.

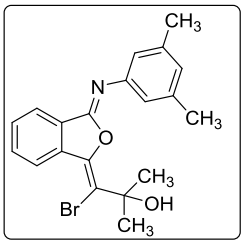
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.50 (1 H, d, *J* = 8.0 Hz), 7.91 (1 H, d, *J* = 7.6 Hz), 7.60 (1 H, td, *J* = 1.1 & 7.6 Hz), 7.53 (1 H, td, *J* = 7.5 Hz), 6.01-6.11 (1 H, m), 5.28 (1 H, dd, *J* = 1.7 & 17.1 Hz), 5.17 (1 H, dd, *J* = 1.6 & 10.2 Hz), 4.24 (2 H, dt, *J* = 1.6 & 5.5 Hz), 1.68 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 154.0, 144.6, 136.2, 135.4, 132.0, 130.3, 125.4, 125.3, 123.5, 115.8, 114.7, 74.8, 50.9 and 29.6 ppm.

IR (neat): 3444, 3055, 2986, 2928, 1786, 1701, 1653, 1423, 1266, 1102, 1017, 896, 740 and 466 cm^{-1}

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

1-Bromo-1-((1E,3Z)-3-((3,5-dimethylphenyl)imino)isobenzofuran-1(3H)-ylidene)-2-methylpropan-2-ol (13d)



To a solution of coupled product **14g** (30 mg, 0.097mmol) in dry DCM (5 mL), was added NBS (21 mg, 0.116mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the bromo cyclic imidate **13d** (35 mg, 0.09 mmol, 93 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.43 (1 H, d, *J* = 7.9 Hz), 7.95 (1 H, d, *J* = 7.3 Hz), 7.56 (1 H, dd, *J* = 1.2 & 7.5 Hz), 7.50 (1 H, dd, *J* = 1.0 & 7.5 Hz), 6.80 (2 H, s), 6.72 (1 H, s), 3.19 (1 H, br), 2.24 (6 H, s), 1.50 (6 H, s) ppm.

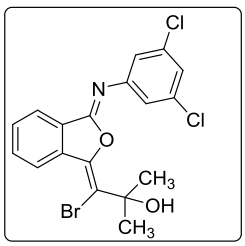
^{13}C NMR (100 MHz, $CDCl_3$): δ = 151.9, 145.4, 144.6, 138.4, 136.0, 132.3, 130.6, 130.3, 126.6, 125.2, 123.8, 120.6, 115.1, 74.7, 29.7 and 21.3 ppm.

IR (neat): 3380, 3054, 2984, 2926, 1694, 1596, 1459, 1423, 1376, 1265, 1198, 1151, 1099, 1017, 896, 740 and 452 cm^{-1}

HR ESI-MS: $[C_{20}H_{21}BrNO_2]^+ = [M+H]^+$ requires 386.0756; found 386.0757

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

1-Bromo-1-((1E,3Z)-3-((3,5-dichlorophenyl)imino)isobenzofuran-1(3H)-ylidene)-2-methylpropan-2-ol (13e)



To a solution of coupled product **14h** (30 mg, 0.086mmol) in dry DCM (3 mL), was added NBS (18 mg, 0.103mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane:EtOAc) gave the bromo cyclic imidate **13e** (25 mg, 0.058 mmol, 68 %) as a yellow oil.

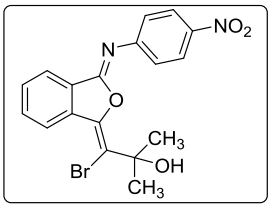
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.47 (1 H, d, *J* = 7.9 Hz), 7.92 (1 H, d, *J* = 7.5 Hz), 7.61 (1 H, t, *J* = 7.3 Hz), 7.53 (1 H, t, *J* = 7.0 Hz), 7.07 (3 H, s), 2.78 (1 H, br), 1.52 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.5, 147.9, 144.3, 140.2, 136.4, 135.1, 133.1, 130.6, 125.5, 124.8, 124.1, 121.8, 117.6, 74.6 and 29.8 ppm.

IR (neat): 3061, 2978, 2941, 2852, 1695, 1579, 1435, 1265, 1028, 733 and 428 cm^{-1}

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

1-Bromo-2-methyl-1-((1E,3Z)-3-((4-nitrophenyl)imino)isobenzofuran-1(3H)-ylidene)propan-2-ol (13f)



To a solution of coupled product **14f** (30 mg, 0.09mmol) in dry DCM (3 mL), was added NBS (19 mg, 0.108mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane:EtOAc) gave the bromo cyclic imidate **13f** (36 mg, 0.089 mmol, 98 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.47 (1 H, d, *J* = 8.0 Hz), 8.16 (2 H, d, *J* = 9.0 Hz), 7.95 (1 H, d, *J* = 7.5 Hz), 7.63 (1 H, t, *J* = 7.3 Hz), 7.55 (1 H, t, *J* = 7.4 Hz), 7.20 (2 H, d, *J* = 8.8 Hz), 2.85 (1 H, br, s), 1.45 (6 H, s) ppm.

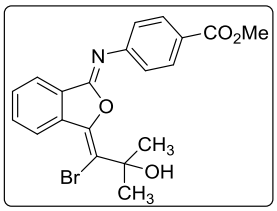
^{13}C NMR (100 MHz, $CDCl_3$): δ = 153.9, 152.5, 144.5, 144.2, 136.5, 133.3, 130.7, 129.7, 125.5, 124.9, 124.3, 123.1, 117.7, 74.8 and 29.8 ppm.

IR (neat): 3421, 3228, 3082, 2929, 2008, 1819, 1666, 1589, 1506, 1335, 1105, 1034, 852, 754 and 619 cm^{-1}

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

M.P: 142-144 °C

Methyl4-(((1Z,3E)-3-(1-bromo-2-hydroxy-2-methylpropylidene)isobenzofuran-1(3H)-ylidene)amino)benzoate (13g)



To a solution of coupled product **14e** (30 mg, 0.089mmol) in dry DCM (3 mL), was added NBS (19 mg, 0.106mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane:EtOAc) gave the bromo cyclic imidate **13g** (35 mg, 0.084mmol, 94 %) as a yellow oil.

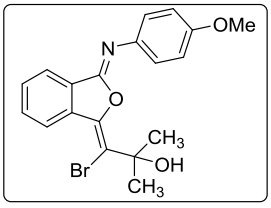
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.55 (1 H, d, *J* = 7.7 Hz), 8.06 (3 H, t, *J* = 8.2 Hz), 7.69 (1 H, t, *J* = 7.4 Hz), 7.62 (1 H, t, *J* = 7.3 Hz), 7.22 (2 H, d, *J* = 7.9 Hz), 3.92 (3 H, s), 2.97 (1 H, br, s), 1.53 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ =166.9, 153.1, 150.5, 144.4, 136.4, 132.9, 130.8, 130.5, 130.1, 126.3, 125.4, 124.1, 122.4, 116.7, 74.8, 52.1 and 29.8 ppm.

IR (neat): 3055, 2985, 2954, 2930, 1786, 1711, 1599, 1436, 1267, 1171, 1110, 1025, 896, 743, 518 and 464 cm^{-1}

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

1-Bromo-1-((1E,3Z)-3-((4-methoxyphenyl)imino)isobenzofuran-1(3H)-ylidene)-2-methylpropan-2-ol (13h)



To a solution of coupled product **14d** (30 mg, 0.097mmol) in dry DCM (3 mL), was added NBS (21 mg, 0.116mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane:EtOAc) gave the bromo cyclic imidate **13h** (34 mg, 0.087 mmol, 90 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.44 (1 H, d, *J* = 7.8 Hz), 7.93 (1 H, dd, *J* = 1.0 & 7.1 Hz), 7.54 (1 H, td, *J* = 1.3 & 7.4 Hz), 7.49 (1 H, td, *J* = 1.4 & 7.5 Hz), 7.18 (2 H, d, *J* = 9.0 Hz), 6.83 (2 H, d, *J* = 9.0 Hz), 3.74 (3 H, s), 3.24 (1 H, br, s), 1.52 (6 H, s) ppm.

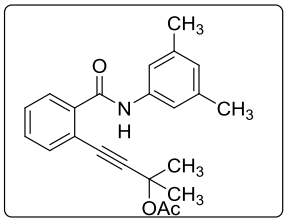
^{13}C NMR (100 MHz, $CDCl_3$): δ = 157.1, 151.3, 144.8, 138.5, 135.9, 132.2, 130.9, 130.4, 125.3, 124.5, 123.8, 115.0, 114.3, 75.0, 55.5 and 29.9 ppm.

IR (neat): 3423, 3056, 2985, 2926, 2842, 1695, 1619, 1503, 1430, 1265, 1162, 1026, 896 and 547 cm^{-1}

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

M.P: 78-80 °C

4-(2-((3,5-Dimethylphenyl)carbamoyl)phenyl)-2-methylbut-3-yn-2-yl acetate (16a)



To an ice cold solution of N-(3,5-dimethylphenyl)-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide **14g** (100 mg, 0.325 mmol) in dry DCM (5 mL) and Et_3N (1 mL) were added Ac_2O (50 mg, 0.488 mmol) and DMAP (8 mg, 0.065mmol) under nitrogen. The reaction was stirred at same temperature for 2h.The reaction mixture was diluted water and DCM (10 mL). Aqueous layer was extracted DCM (2 x 10 mL). The combined organic layers were

washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (9:1, hexane: EtOAc) gave the acyl protected product **16a** (110 mg, 0.315 mmol, 97 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.79 (1 H, br, s), 8.03 (1 H, dd, *J* = 2.2 & 7.6 Hz), 7.52-7.54 (1 H, m), 7.42-7.45 (2 H, m), 7.36 (2 H, s), 6.79 (1 H, s), 2.32 (6 H, s), 1.93 (3 H, s), 1.70 (6 H, s) ppm.

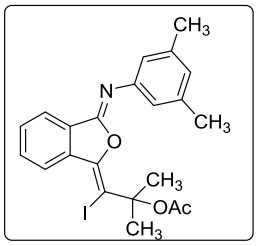
^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.6, 164.7, 138.6, 137.8, 136.5, 133.8, 130.7, 130.3, 129.2, 126.4, 118.9, 118.8, 97.2, 82.4, 72.0, 28.9, 21.8 and 21.5 ppm.

IR (neat): 3055, 2988, 2925, 1739, 1669, 1598, 1553, 1424, 1266, 1191, 1133, 1017, 896, 843 and 737 cm^{-1}

TLC: R_f = 0.5 (9:1; hexane:EtOAc)

M.P: 102-104 °C

1-((1E,3Z)-3-((3,5-Dimethylphenyl)imino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-yl acetate (17a)



To a solution of coupled product **16a** (30 mg, 0.085mmol) in dry DCM (3 mL), was added NIS (23 mg, 0.102mmol) and the reaction mixture was stirred at room temperature for 1 h.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **17a** (35 mg, 0.08mmol, 94 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.86 (1 H, d, *J* = 8.0 Hz), 7.99 (1 H, d, *J* = 7.3 Hz), 7.61 (1 H, td, *J* = 1.2 & 7.4 Hz), 7.56 (1 H, td, *J* = 0.9 & 7.5 Hz), 7.04 (2 H, s), 6.80 (1 H, s), 2.32 (6 H, s), 1.89 (3 H, s), 1.77 (6 H, s) ppm.

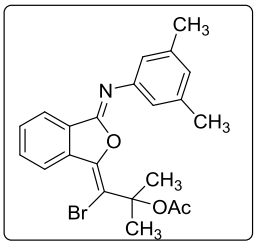
^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.7, 152.0, 146.4, 145.4, 138.1, 136.6, 132.0, 131.6, 130.5, 126.6, 125.7, 123.8, 121.8, 87.3, 82.3, 28.6, 21.6 and 21.4 ppm.

IR (neat): 3050, 2983, 2925, 2858, 1739, 1690, 1598, 1467, 1435, 1368, 1258, 1183, 1136, 1015, 941, 849, 741, 704, 671 and 422 cm^{-1}

HR ESI-MS: $[C_{22}H_{23}INO_3]^+ = [M+H]^+$ requires 476.0717; found 476.0719

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

1-Bromo-1-((1E,3Z)-3-((3,5-dimethylphenyl)imino)isobenzofuran-1(3H)-ylidene)-2-methylpropan-2-yl acetate (17a')



To a solution of coupled product **16a** (30 mg, 0.085mmol) in dry DCM (3 mL), was added NBS (18 mg, 0.102mmol) and the reaction mixture was stirred at room temperature for 1.5 h.purificationby flash column chromatography (9:1, hexane:EtOAc) gave the bromo cyclic imidate **17a'** (29 mg, 0.07 mmol, 82 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.46 (1 H, d, *J* = 7.8 Hz), 7.91 (1 H, td, *J* = 1.0 & 6.8 Hz), 7.45-7.56 (2 H, m), 6.98 (2 H, s), 6.72 (1 H, s), 2.24 (6 H, s), 1.79 (3 H, s), 1.68 (6 H, s) ppm.

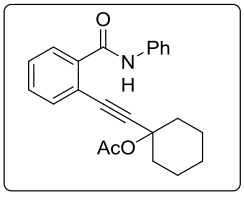
^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.7, 152.3, 145.2, 138.1, 136.1, 132.1, 130.3, 126.7, 125.5, 124.2, 123.7, 122.0, 121.9, 111.1, 81.4, 27.9, 21.4 and 21.3 ppm.

IR (neat): 3054, 2986, 2927, 2858, 1737, 1692, 1627, 1596, 1465, 1423, 1369, 1265, 1140, 1038, 1017, 896, 708 and 421 cm^{-1}

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

M.P: 63-65 °C

1-((2-(Phenylcarbamoyl)phenyl)ethynyl)cyclohexyl acetate (16b)



To an ice cold solution of 2-((1-hydroxycyclohexyl)ethynyl)-N-phenylbenzamide **14c** (100 mg, 0.313mmol) in dry DCM (5 mL) and Et_3N (1 mL) were added Ac_2O (51 mg, 0.47mmol) and DMAP (8 mg, 0.06mmol) under nitrogen. The reaction was stirred at same temperature for 2h.The reaction mixture was diluted water and DCM (10 mL). Aqueous layer was extracted DCM (2 x 10 mL). The combined organic layers were washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (9:1, hexane: EtOAc) gave the acyl protected product **16b** (102 mg, 0.282 mmol, 90 %) as a yellow oil.

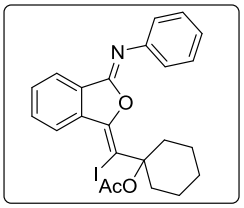
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.94 (1 H, br, s), 8.01 (1 H, d, *J* = 7.1 Hz), 7.71 (2 H, d, *J* = 7.8 Hz), 7.52-7.54 (1 H, m), 7.43 (2 H, t, *J* = 3.7 Hz), 7.35 (2 H, t, *J* = 7.5 Hz), 7.13 (1 H, t, *J* = 7.4 Hz), 2.12-2.15 (2 H, m), 1.92 (3 H, s), 1.79-182 (2 H, m), 1.55-1.56 (4 H, m), 1.44-1.47 (1 H, m), 1.25-1.28 (1 H, m) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.5, 165.0, 137.9, 136.6, 133.6, 130.6, 130.2, 129.1, 128.8, 124.6, 121.3, 119.1, 96.1, 84.4, 75.6, 36.9, 25.0, 22.6 and 21.8 ppm.

IR (neat): 3377, 3142, 3057, 2940, 2861, 1737, 1667, 1599, 1444, 1369, 1321, 1267, 1235, 1137, 1021, 960, 911, 741 and 699 cm^{-1}

TLC: R_f = 0.5 (9:1; hexane:EtOAc)

1-(Iodo((1E,3Z)-3-(phenylimino)isobenzofuran-1(3H)-ylidene)methyl)cyclohexylacetate (18a)



To a solution of coupled product **16b** (30 mg, 0.083mmol) in dry DCM (3 mL), was added NIS (22 mg, 0.099mmol) and the reaction mixture was stirred at room temperature for 1 h.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **18a** (38 mg, 0.073 mmol, 89 %) as a yellow semi solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.89 (1 H, d, *J* = 8.1 Hz), 8.00 (1 H, d, *J* = 7.7 Hz), 7.62 (1 H, t, *J* = 7.4 Hz), 7.56 (1 H, t, *J* = 6.0 Hz), 7.41 (2 H, d, *J* = 6.6 Hz), 7.35 (2 H, t, *J* = 7.6 Hz), 7.15 (1 H, td, *J* = 1.0 & 7.4 Hz), 2.50-2.53 (2 H, m), 1.85 (3 H, s), 1.76-1.82 (3 H, m), 1.50-1.64 (5 H, m) ppm.

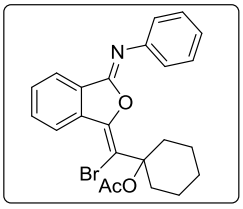
^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.5, 152.5, 146.4, 145.8, 136.8, 131.8, 131.7, 130.5, 128.6, 125.8, 124.9, 124.0, 123.8, 88.7, 83.2, 36.1, 25.0, 22.5 and 21.2 ppm.

IR (neat): 3055, 2984, 2938, 2860, 1733, 1693, 1593, 1488, 1451, 1423, 1368, 1266, 1234, 1141, 1093, 1017, 966, 894, 740, 707, 521, 447 and 412 cm^{-1}

HR ESI-MS: $[C_{23}H_{23}INO_3]^+ = [M+H]^+$ requires 488.0717; found 488.0707

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

1-(Bromo((1E,3Z)-3-(phenylimino)isobenzofuran-1(3H)-ylidene)methyl)cyclohexyl acetate (18a')



To a solution of coupled product **16b** (30 mg, 0.083mmol) in dry DCM (3 mL), was added NBS (18 mg, 0.099mmol) and the reaction mixture was stirred at room temperature for 1.5 h.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the bromo cyclic imidate **18a'** (36 mg, 0.082 mmol, 98 %) as a yellow solid.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.86 (1 H, d, *J* = 7.8 Hz), 8.01 (1 H, dd, *J* = 1.0 & 7.0 Hz), 7.61 (1 H, td, *J* = 1.3 & 7.4 Hz), 7.56 (1 H, td, *J* = 1.1 & 7.5 Hz), 7.33-7.42 (4 H, m), 7.15 (1 H, tt, *J* = 1.3 & 2.8 Hz), 2.51-2.53 (2 H, m), 1.86 (3 H, s), 1.76-1.84 (2 H, m), 1.52-1.69 (6 H, m) ppm.

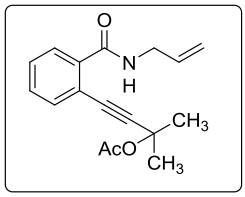
^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.5, 152.9, 145.7, 145.1, 136.4, 132.2, 131.3, 130.3, 128.6, 125.7, 124.9, 124.1, 123.7, 112.1, 82.8, 34.9, 25.1, 22.1 and 21.1 ppm.

IR (neat): 3055, 2985, 2938, 2860, 1734, 1695, 1623, 1592, 1487, 1449, 1424, 1369, 1266, 1236, 895 and 746 cm^{-1}

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

M.P: 96-98 °C

4-(2-(Allylcarbamoyl)phenyl)-2-methylbut-3-yn-2-yl acetate (16c)



To an ice cold solution of N-allyl-2-(3-hydroxy-3-methylbut-1-yn-1-yl)benzamide **14a** (100 mg, 0.411 mmol) in dry DCM (5 mL) and Et_3N (1 mL) were added Ac_2O (67 mg, 0.617mmol) and DMAP (10 mg, 0.08 mmol) under nitrogen. The reaction was stirred at same temperature for 1.5h.The reaction mixture was diluted water and DCM (10 mL). Aqueous layer was extracted DCM (2 x 10 mL). The combined organic layers were washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purificationof the crudemixture by column chromatography (9:1, hexane: EtOAc) gave the acyl protected product **16c** (105 mg, 0.368 mmol, 90 %) as a yellow oil.

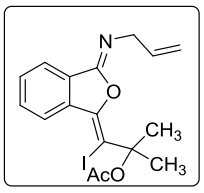
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.15 (1 H, d, *J* = 7.3 Hz), 8.03 (1 H, br, s), 7.47 (1 H, t, *J* = 7.1 Hz), 7.41 (2 H, t, *J* = 8.4 Hz), 5.94-6.04 (1 H, m), 5.27 (1 H, d, *J* = 17.1 Hz), 5.13 (1 H, d, *J* = 10.2 Hz), 4.17 (2 H, t, *J* = 5.8 Hz), 2.05 (3 H, s), 1.73 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 170.0, 165.7, 135.4, 134.7, 133.9, 130.7, 130.4, 129.2, 118.7, 115.7, 96.3, 82.8, 71.9, 42.6, 28.8 and 22.0 ppm.

IR (neat): 3394, 3056, 2989, 2935, 1736, 1653, 1594, 1525, 1475, 1425, 1369, 1266, 1191, 1133, 1017, 969, 928, 738, 557 and 454 cm^{-1}

TLC: R_f = 0.5 (9:1; hexane:EtOAc)

1-((1E,3Z)-3-(Allylimino)isobenzofuran-1(3H)-ylidene)-1-bromo-2-methylpropan-2-ylacetate (19a)



To a solution of coupled product **16c** (30 mg, 0.105mmol) in dry DCM (3 mL), was added N1S (28 mg, 0.126mmol) and the reaction mixture was stirred at room temperature for 1.5 h.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **19a** (25 mg, 0.058 mmol, 55 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.84 (1 H, d, *J* = 8.0 Hz), 7.89 (1 H, d, *J* = 7.6 Hz), 7.58 (1 H, td, *J* = 1.2 & 7.4 Hz), 7.51 (1 H, td, *J* = 1.0 & 7.5 Hz), 6.03-6.10 (1 H, m), 5.28 (1 H, dq, *J* = 1.7

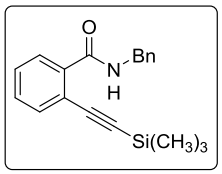
& 17.1 Hz), 5.14 (1 H, dq, *J* = 1.6 & 10.2 Hz), 4.24 (2 H, dt, *J* = 1.6 & 5.6 Hz), 2.08 (3 H, s), 1.87 (6 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 169.7, 154.2, 146.3, 136.9, 135.7, 131.5, 131.3, 130.5, 125.8, 123.3, 115.7, 86.8, 82.5, 50.9, 28.4 and 22.1ppm.

IR (neat): 2925, 2858, 1780, 1736, 1654, 1459, 1412, 1365, 1254, 1146, 1109, 1012, 932, 838, 762 and 696 cm^{-1}

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

N-Benzyl-2-((trimethylsilyl)ethynyl)benzamide (20a)



To a solution of N-benzyl-2-iodobenzamide (200 mg, 0.593mmol) and trimethylsilylacetylene (70 mg, 0.712 mmol) in dry THF (10 mL) and Et_3N (1 mL) were added [$(Ph_3P)_2PdCl_2$] (4 mg, 0.0059 mmol) and CuI (17 mg, 0.088mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (9:1, hexane: EtOAc) gave the coupled product **20a** (120 mg, 0.390 mmol, 59 %) as a brown oil

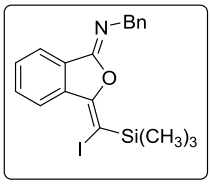
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.06-8.08 (2 H, m), 8.04 (1 H, br, s), 7.14-7.35 (7 H, m), 4.58 (2 H, d, *J* = 5.6 Hz), -0.0002 (9 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 165.5, 138.1, 135.0, 134.1, 130.6, 130.5, 129.2, 128.8, 127.9, 127.6, 119.4, 103.7, 102.2, 44.2 and -0.3685 ppm.

IR (neat): 3390, 3055, 2985, 1655, 1595, 1534, 1423, 1266, 1146, 1089, 1037, 895, 864, 849, 740, 707, 536 and 469 cm^{-1}

TLC: R_f = 0.5 (9:1; hexane:EtOAc)

(1Z,3E)-N-Benzyl-3-(iodo(trimethylsilyl)methylene)isobenzofuran-1(3H)-imine (21a)



To a solution of coupled product **20a** (30 mg, 0.097mmol) in dry DCM (3 mL), was added NIS (26 mg, 0.117mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **21a** (25 mg, 0.057 mmol, 60 %) as a brown oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.94 (1 H, d, *J* = 7.9 Hz), 7.92 (1 H, d, *J* = 7.4 Hz), 7.60 (1 H, t, *J* = 7.4 Hz), 7.53 (1 H, t, *J* = 7.4 Hz), 7.41 (2 H, d, *J* = 7.2 Hz), 7.34 (2 H, t, *J* = 7.3 Hz), 7.24 (1 H, t, *J* = 7.2 Hz), 4.81 (2 H, s), 0.3952 (9 H, s)ppm.

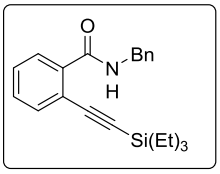
^{13}C NMR (100 MHz, $CDCl_3$): δ = 155.3, 154.4, 140.0, 136.8, 132.5, 131.4, 130.8, 128.5, 127.8, 126.9, 125.9, 123.4, 79.1, 52.1 and 0.6676 ppm.

IR (neat): 3054, 2982, 2903, 1702, 1589, 1456, 1423, 1350, 1264, 1178, 1104, 1026, 851, 742, 483 and 438 cm^{-1}

HR ESI-MS: $[C_{19}H_{21}INOSi]^+ = [M+H]^+$ requires 434.0442; found 434.0442

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

N-Benzyl-2-((triethylsilyl)ethynyl)benzamide (20b)



To a solution of N-benzyl-2-iodobenzamide (200 mg, 0.593mmol) and triethylsilylacetylene (100 mg, 0.712 mmol) in dry THF (10 mL) and Et_3N (1 mL) were added $[(Ph_3P)_2PdCl_2]$ (4 mg, 0.0059 mmol) and CuI (17 mg, 0.088mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. purificationby flash column chromatography (9:1, hexane: EtOAc) gave the coupled product **20b** (130 mg, 0.372 mmol, 63 %) as a brown oil

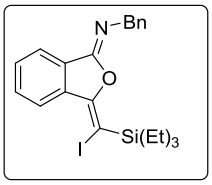
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.16 (1 H, br, s), 8.11 (1 H, dd, *J* = 1.3 & 7.8 Hz), 7.46 (1 H, d, *J* = 6.8 Hz), 7.16-7.37 (7 H, m), 4.60 (2 H, d, *J* = 5.6 Hz), 0.87 (9 H, t, *J* = 7.9 Hz), 0.46 (6 H, q, *J* = 7.9 Hz) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 165.8, 138.2, 134.8, 134.4, 130.6, 130.5, 129.1, 128.7, 127.8, 127.4, 119.6, 104.9, 100.0, 44.1, 7.53 and 4.14 ppm.

IR (neat): 3385, 3055, 2957, 2916, 2877, 1655, 1593, 1533, 1457, 1420, 1266, 1146, 1093, 1013, 974, 901, 846, 738, 706 and 507 cm^{-1}

TLC: R_f = 0.5 (9:1; hexane:EtOAc)

(1Z,3E)-N-Benzyl-3-(iodo(triethylsilyl)methylene)isobenzofuran-1(3H)-imine (21b)



To a solution of coupled product **20b** (30 mg, 0.085mmol) in dry DCM (3 mL), was added NIS (23 mg, 0.103mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the iodo cyclic imidate **21b** (30 mg, 0.063 mmol, 75 %) as a brown oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 9.00 (1 H, d, *J* = 7.9 Hz), 7.92 (1 H, d, *J* = 7.6 Hz), 7.58-7.62 (1 H, m), 7.53 (1 H, t, *J* = 7.4 Hz), 7.41 (2 H, d, *J* = 7.5 Hz), 7.34 (2 H, t, *J* = 7.3 Hz), 7.22-7.26 (1 H, m), 4.81 (2 H, s), 1.01 (9 H, t, *J* = 6.8 Hz), 0.93 (6 H, t, *J* = 7.3 Hz) ppm.

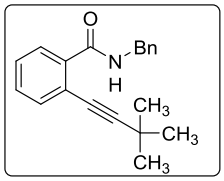
^{13}C NMR (100 MHz, $CDCl_3$): δ = 155.8, 154.5, 140.0, 136.8, 132.5, 131.3, 130.7, 128.5, 127.8, 126.8, 126.1, 123.4, 79.9, 52.0, 7.66 and 4.97 ppm.

IR (neat):2953, 2930, 2875, 1781, 1703, 1654, 1586, 1415, 1355, 1264, 1102, 1024, 1001, 821, 730, 696, 669, 504 and 435 cm^{-1}

HR ESI-MS: $[C_{26}H_{27}INOSi]^+ = [M+H]^+$ requires 476.0907; found 476.0898

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

N-Benzyl-2-(3,3-dimethylbut-1-yn-1-yl)benzamide (20c)



To a solution of N-benzyl-2-iodobenzamide (200 gm, 0.59mmol) and 3,3-dimethylbut-1-yne (67 mg, 0.71mmol) in dry THF (8 mL) and DIPA (2 mL) were added $[(Ph_3P)_2PdCl_2]$ (4.0 mg, 0.0059 mmol) and CuI (17 mg, 0.088mmol) under nitrogen. The reaction was stirred at room temperature for 14 h. The reaction mixture was diluted with saturated aq. NH_4Cl (10 mL) and ethyl acetate (20 mL). Aqueous layer was extracted with ethyl acetate (2 x 50 mL). The combined organic layers were washed with brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purification of the crude mixture by column chromatography (8:2, hexane: EtOAc) gave the coupled product **20c** (120 mg, 0.412 mmol, 70 %) as a yellow oil.

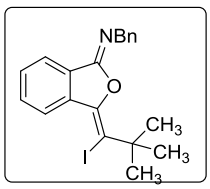
^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.14-8.18 (2 H, m), 7.25-7.44 (8 H, m), 4.69 (2 H, s), 1.13 (9 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$):δ = 166.0, 138.3, 134.3, 133.9, 130.6, 130.5, 128.8, 128.3, 128.2, 127.6, 120.3, 105.7, 78.3, 44.2, 30.5 and 28.3 ppm.

IR (neat):3385, 3058, 2972, 2873, 1656, 1599, 1533, 1464, 1362, 1271, 1201, 1155, 743, 603, 548, 502 and 484 cm^{-1}.

TLC: R_f = 0.4 (4:1; hexane:EtOAc).

(1E,3E)-N-Benzyl-3-(1-iodo-2,2-dimethylpropylidene)isobenzofuran-1(3H)-imine (21c)



To a solution of coupled product **20c** (30 mg, 0.103mmol) in dry DCM (3 mL), was added NIS (28 mg, 0.123mmol) and the reaction mixture was stirred at room temperature for 30 min. The reaction mixture was diluted with water (10 mL) and DCM (20 mL) aqueous layer was extracted with DCM (2 x 20 mL). The combined organic layers were washed with hypo solution (10 mL) and brine (10 mL), and dried over Na_2SO_4. Evaporation of the solvent and purification of the crude mixture by column

chromatography (9:1, hexane: EtOAc) gave the five membered iodo cyclic imidate **21c** (28 mg, 0.067 mmol, 65%) as a yellow oil.

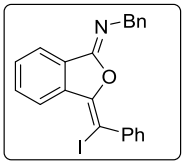
^{1}H NMR (400 MHz, $CDCl_3$):δ =8.91 (1 H, d, *J* = 8.0 Hz), 7.92 (1 H, d, *J* = 7.4 Hz), 7.56 (1 H, t, *J* = 7.3 Hz), 7.48 (1 H, t, *J* = 7.4 Hz), 7.42 (2 H, d, *J* = 7.2 Hz), 7.33 (2 H, t, *J* = 7.2 Hz), 7.24 (1 H, t, *J* = 6.0 Hz), 4.83 (2 H, s), 1.49 (9 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$):δ = 154.3, 146.3, 140.0, 137.5, 131.3, 131.0, 129.8, 128.4, 127.7, 126.7, 125.8, 123.2, 95.7, 52.1, 40.1 and 32.1ppm.

IR (neat):3404, 3056, 2972, 1775, 1696, 1604, 1464, 1358, 1265, 1109, 1031, 922, 901, 742, 629 and 447cm^{-1}.

TLC: R_f = 0.6 (4:1; hexane:EtOAc).

(1Z,3E)-N-Benzyl-3-(iodo(phenyl)methylene)isobenzofuran-1(3H)-imine (24a)



To a solution of coupled product[5] **22** (30 mg, 0.096mmol) in dry DCM (3 mL), was added NIS (26 mg, 0.115mmol) and the reaction mixture was stirred at room temperature for 15 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the five membered iodo cyclic imidate **24a** (35 mg, 0.08 mmol, 83 %) as a yellow oil. and six membered iodo cyclic imidate **24b** (5 mg , 0.011mmol, 13%) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.0 (1 H, dt, *J* = 0.8 & 8.0 Hz), 7.93 (1 H, d, *J* = 7.6 Hz), 7.63 (1 H, td, *J* = 1.2 & 7.4 Hz), 7.51-7.59 (3 H, m), 7.38 (2 H, t, *J* = 7.3 Hz), 7.20-7.31(6 H, m), 4.60 (2 H, s) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 154.5, 147.3, 140.7, 139.9, 136.0, 131.8, 131.5, 130.2, 130.1, 128.47, 128.44, 128.18, 128.11, 126.8, 125.0, 123.5, 73.7 and 51.9 ppm.

IR (neat): 3059, 2989, 1772, 1691, 1435, 1267, 1009, 903 and 731 cm^{-1}

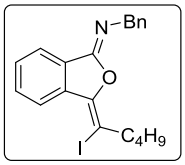
TLC: R_f = 0.5 (9:1; hexane:EtOAc)

(Z)-N-Benzyl-4-iodo-3-phenyl-1H-isochromen-1-imine (24b)

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.32 (1 H, td, *J* = 1.0 & 8.0 Hz), 7.71 (1 H, dd, *J* = 0.7 & 7.9 Hz), 7.60-7.63 (3 H, m), 7.45-7.48 (3 H, m), 7.41-7.43 (3 H, m), 7.32 (2 H, t, *J* = 7.2 Hz), 7.27 (1 H t, *J* = 4.3 Hz), 4.69 (2 H, s) ppm.

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

(1Z,3E)-N-Benzyl-3-(1-iodopentylidene)isobenzofuran-1(3H)-imine (25a)



To a solution of coupled product[6] **23** (30 mg, 0.103mmol) in dry DCM (3 mL), was added NIS (28 mg, 0.123 mmol) and the reaction mixture was stirred at room temperature for 30 min.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the five membered iodo cyclic imidate product **25a** (22 mg, 0.059mmol, 59 %) as a yellow oil. and six membered iodo cyclic imidate **25b**(4 mg, 0.007 mmol, 7%) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.65 (1 H, d, *J* = 7.8 Hz), 7.90 (1 H, d, *J* = 7.4 Hz), 7.57 (1 H, t, *J* = 7.3 Hz), 7.49 (1 H, t, *J* = 7.4 Hz), 7.43 (2 H, d, *J* = 7.0 Hz), 7.33 (2 H, t, *J* = 7.1 Hz), 7.24 (1 H, t, *J* = 1.5 Hz), 4.80 (2 H, s), 2.96 (2 H, t, *J* = 7.1 Hz), 1.61 (2 H, t, *J* = 7.1 Hz), 1.39 (2 H, q, *J* = 7.4 Hz), 0.96 (3 H, t, *J* = 7.2 Hz) ppm.

^{13}C NMR (100 MHz, $CDCl_3$): δ = 154.5, 147.1, 140.2, 135.9, 131.9, 131.3, 129.9, 128.5, 128.0, 126.8, 124.1, 123.3, 81.4, 51.8, 39.2, 31.2, 21.6 and 14.0 ppm.

IR (neat): 3057, 2976, 1655, 129, 1714, 901 and 731 cm^{-1}

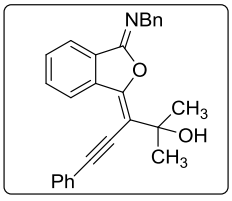
TLC: R_f = 0.5 (9:1; hexane:EtOAc)

(**E)-N-Benzyl-3-butyl-4-iodo-1H-isochromen-1-imine (25b)**

^{1}H NMR (400 MHz, $CDCl_3$): δ = 8.22 (1 H, t, *J* = 7.4 Hz), 7.22-7.29 (1 H, m), 7.51-7.54 (2 H, m), 7.44 (1 H, d, *J* = 7.2 Hz), 7.31-7.35 (3 H, m), 7.23 (1 H, t, *J* = 7.3 Hz), 4.69 (2 H, s), 2.81-2.95 (2 H, m), 1.64-1.75 (2 H, m), 1.41-1.46 (2 H, m), 0.94-0.98 (3 H, m)ppm.

TLC: R_f = 0.6 (9:1; hexane:EtOAc)

3-((1Z,3E)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-2-methyl-5-phenylpent-4-yn-2-ol (27)



To a solution of 1-((1E,3Z)-3-(Benzylimino)isobenzofuran-1(3H)-ylidene)-1-iodo-2-methylpropan-2-ol **11a** (150 mg, 0.357 mmol) and phenyl acetylene(44 mg, 0.429mmol) in Et_3N (5 ml) were added $[(Ph_3P)_2PdCl_2]$ (2.4 mg, 0.0035 mmol) and CuI (10 mg, 0.05mmol) under nitrogen. The reaction was stirred at 60 °C for 14 h. purificationby flash column chromatography (9:1, hexane: EtOAc) gave the coupled product **27** (100 mg, 0.254 mmol, 71 %) as a yellow oil.

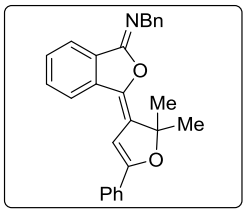
^{1}H NMR (500 MHz, $CDCl_3$): δ = 8.45 (1 H, d, *J* = 7.9 Hz), 7.94 (1 H, d, *J* = 7.7 Hz), 7.59 (1 H, t, *J* = 7.3 Hz), 7.53-7.55 (2 H, m), 7.50 (1 H, t, *J* = 7.5 Hz), 7.33-7.43 (7 H, m), 7.25 (1 H, t, *J* = 7.4 Hz), 4.87 (2 H, s), 3.24 (1 H, br, s), 1.68 (6 H, s) ppm.

^{13}C NMR (125 MHz, $CDCl_3$): δ = 153.9, 151.5, 139.6, 136.3, 132.2, 131.4, 130.2, 129.7, 128.8, 128.75, 128.70, 127.7, 127.0, 123.8, 123.3, 123.2, 109.1, 99.6, 85.8, 72.8, 52.2 and 29.6 ppm.

IR (neat): 3055, 2986, 2931, 1784, 1732, 1704, 1655, 1611, 1423, 1266, 1078, 896, 741, 707, 606 and 527 cm^{-1}

TLC: R_f = 0.6 (4:1; hexane:EtOAc)

(1E,3Z)-N-Benzyl-3-(2,2-dimethyl-5-phenylfuran-3(2H)-ylidene)isobenzofuran-1(3H)-imine (26)



To a solution of coupled product **27** (30 mg, 0.076mmol) in dry DCM (3 mL), was added AgOTf (5 mg, 0.019mmol) and the reaction mixture was stirred at room temperature for 14 h.purificationby flash column chromatography (9:1, hexane: EtOAc) gave the cyclised product **26** (25 mg, 0.063 mmol, 82 %) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$): δ = 7.86 (1 H, d, *J* = 7.7 Hz), 7.65 (2 H, dd, *J* = 1.8 & 8.2 Hz), 7.59 (1 H, d, *J* = 7.9 Hz), 7.48 (1 H, td, *J* = 1.0 & 8.1 Hz), 7.42 (1 H, d, *J* = 7.5 Hz), 7.35 (2 H, t, *J* = 7.0 Hz), 7.24-7.33 (4 H, m), 7.17 (1 H, t, *J* = 6.4 Hz), 7.04-7.10 (1 H, m), 6.33 (1 H, s), 4.77 (2 H, s), 1.70 (6 H, s) ppm.

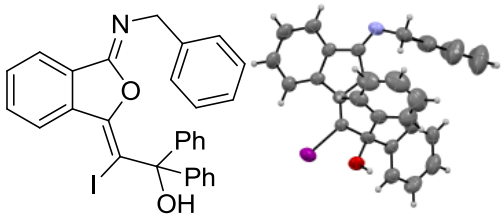
^{13}C NMR (100 MHz, $CDCl_3$): δ = 162.1, 156.7, 140.5, 136.8, 136.3, 131.8, 130.5, 129.6, 128.6, 128.5, 128.2, 127.9, 127.6, 126.8, 125.8, 123.7, 120.7, 95.4, 90.3, 51.8 and 25.7 ppm.

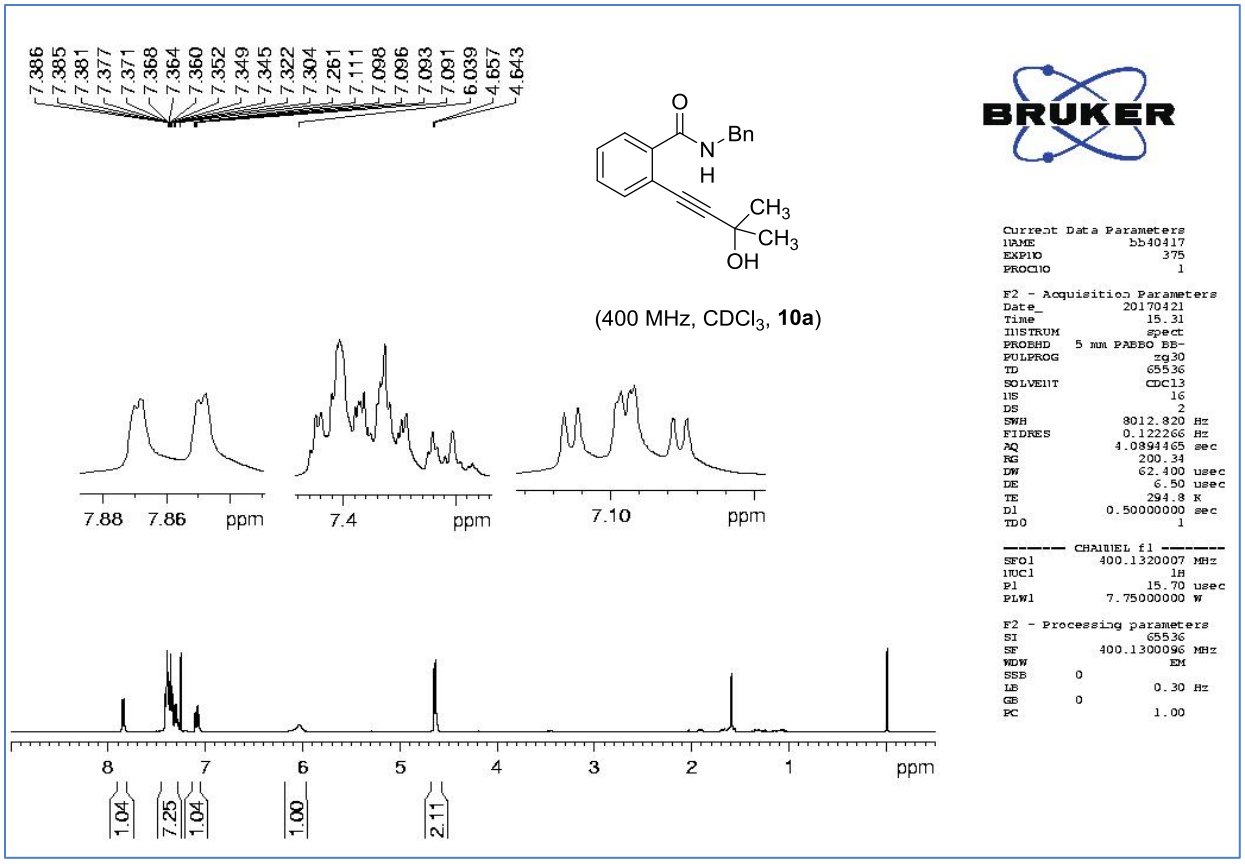
IR (neat): 3433, 3055, 2986, 2929, 1778, 1701, 1654, 1450, 1423, 1266, 1020, 896, 737, 707 and 444 cm^{-1}

TLC: R_f = 0.5 (4:1; hexane:EtOAc)

References

1) F. Chahdoura, S. M.Ladeirab and M. Gomez., *Org. Chem. Front*., **2015**, *2*, 312–318.
2) I. Sánchez, M. D.Pujol., *Synthesis*, **2006**, *11*, 1823-1828.
3) K. Dev, R. Maurya., *RSC Advances*, **2015**, *5*, 13102-13106.
4) R. G. Chary , G. Dhananjaya , K. V. Prasad , S. Vaishaly, Y. S. S. Ganesh , B.Dulla, K. S. Kumar, and M. Pal, *Chem.Commun.*, **2014**, *50*, 6797-6800.
5) S. Mehta, T. Yao, R. C. Larock., *J. Org. Chem.***2012**, *77*, 10938−10944
6) R. Mancuso, I.Ziccarelli, D.Armentano, N. Marino, S. V. Giofrè, and B. Gabriele., *J. Org. Chem.*, **2014**, *79*, 3506–3518.

Crystallographic Data and Structure Refinements Summary for Compound 11d	
Molecular Structure (ORTEP Diagram)	
CCDC number	CCDC 1589065
Formula (M+ CH2Cl2)	C30 H24Cl2I NO2
Formula weight	628.30
Colour	colourless
Crystal morphology	orthogonal
Temperature/K	296(2)
Radiation	Mo k/a
Wavelength/Å	0.71073
Crystal system	tetragonal
Space group	141/a
a (Å)	18.2568(5)
b (Å)	18.2568(5)
c (Å)	33.7580(19)
α (°)	90
β (°)	90
γ (°)	90
Volume(Å3)	11252.0(9)
Z	16
Density (g/cm^3)	1.484
μ (1/mm)	1.355
F (000)	5024
θ (min, max)	1.268 to 24.648
No. of unique reflns	4740
No. of parameters	302
R_obs, wR2_obs	R1 = 0.0472, wR2 = 0.1185
Δρmin, Δρmax (eÅ-3)	0.787 and -0.722
GooF	1.125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7.385
7.381
7.377
7.371
7.368
7.364
7.360
7.352
7.349
7.345
7.322
7.304
7.261
7.111
7.098
7.096
7.093
7.091
6.039
4.657
4.643
O
N
Bn
H
CH3
CH3
OH
(400 MHz, CDCl3, 10a)
7.88
7.86
ppm
7.4
ppm
7.10
ppm
8
7
6
5
4
3
2
1
ppm
1.04
7.25
1.04
1.00
2.11
BRUKER
Current Data Parameters
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EXPNO 375
PROCNO 1
F2 - Acquisition Parameters
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Time 15.31
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TD 65536
SOLVENT CDCl3
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SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 294.8 K
D1 0.50000000 sec
TD0 1
CHANNEL f1
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NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
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SF 400.1300096 MHz
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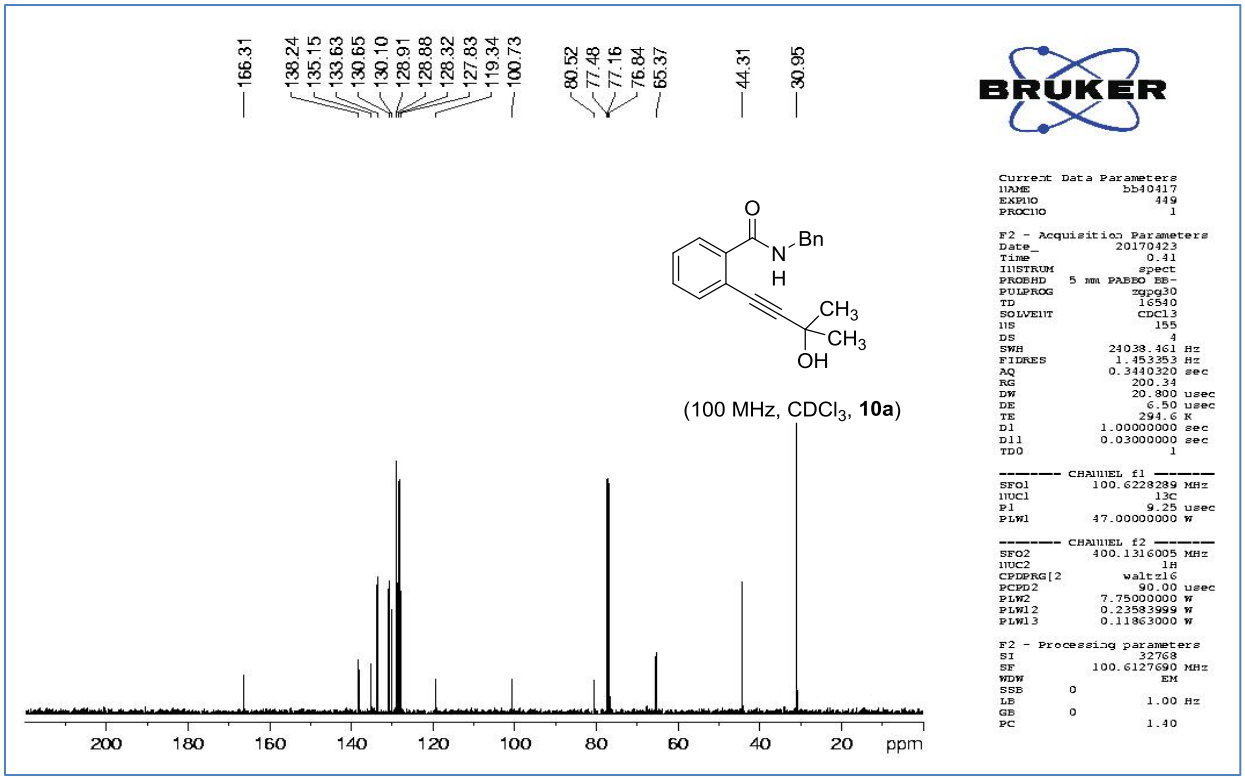
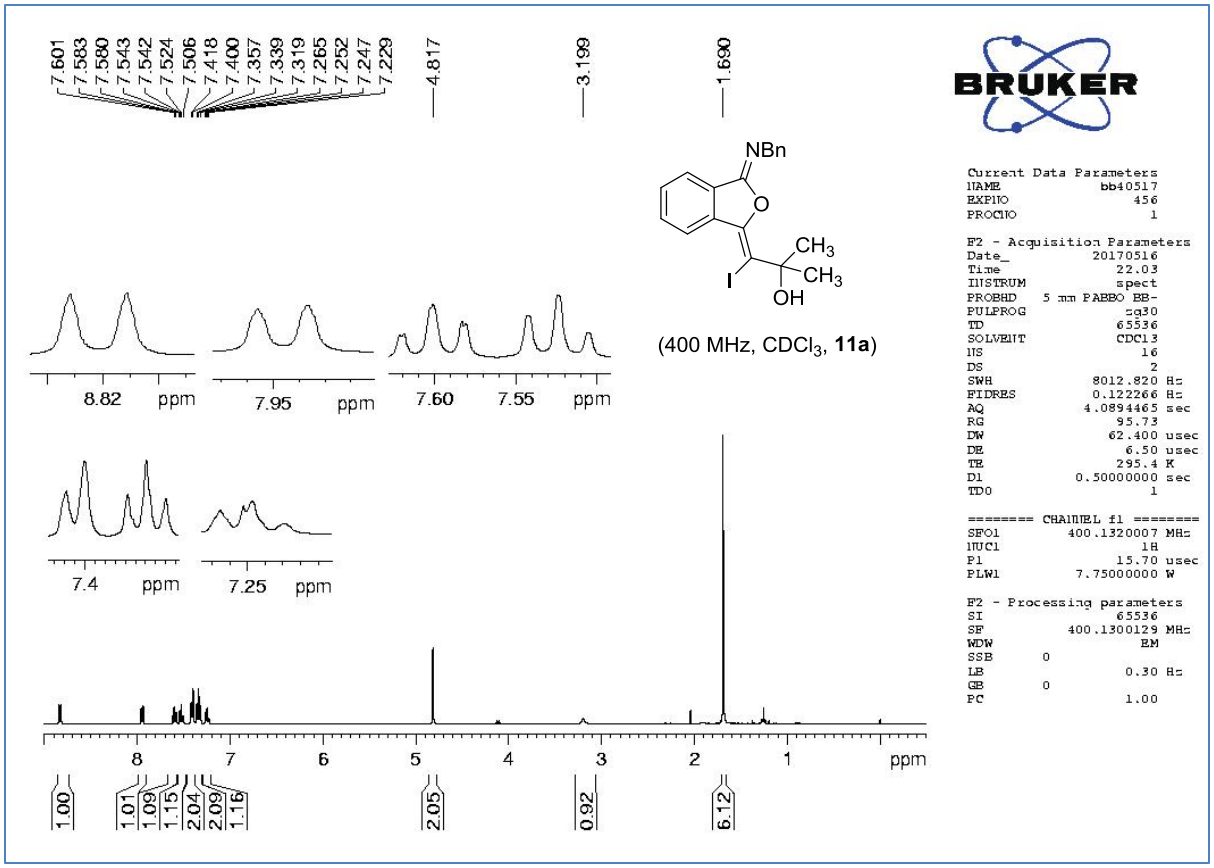
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


166.31
138.24
135.15
133.63
130.65
130.10
128.91
128.88
128.32
127.83
119.34
100.73
80.52
77.48
77.16
76.84
65.37
44.31
30.95
O
N
Bn
H
CH3
CH3
OH
(100 MHz, CDCl3, 10a)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40417
EXPNO 449
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170423
Time 0.41
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 155
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.6 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
CHANNEL f1
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
CHANNEL f2
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



(400 MHz, $CDCl_3$, **11a**)

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EXPNO                     456
PROCNO                      1

F2 - Acquisition Parameters
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Time                    22.03
INSTRUM                 spect
PROBHD     5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 8012.820 Hz
FIDRES              0.122266 Hz
AQ                  4.0894465 sec
RG                      95.73
DW                     62.400 usec
DE                      6.50 usec
TE                     295.4 K
D1                  0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1           400.1320007 MHz
NUC1                       1H
P1                      15.70 usec
PLW1            7.75000000 W

F2 - Processing parameters
SI                     65536
SF             400.1300129 MHz
WDW                       EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.00
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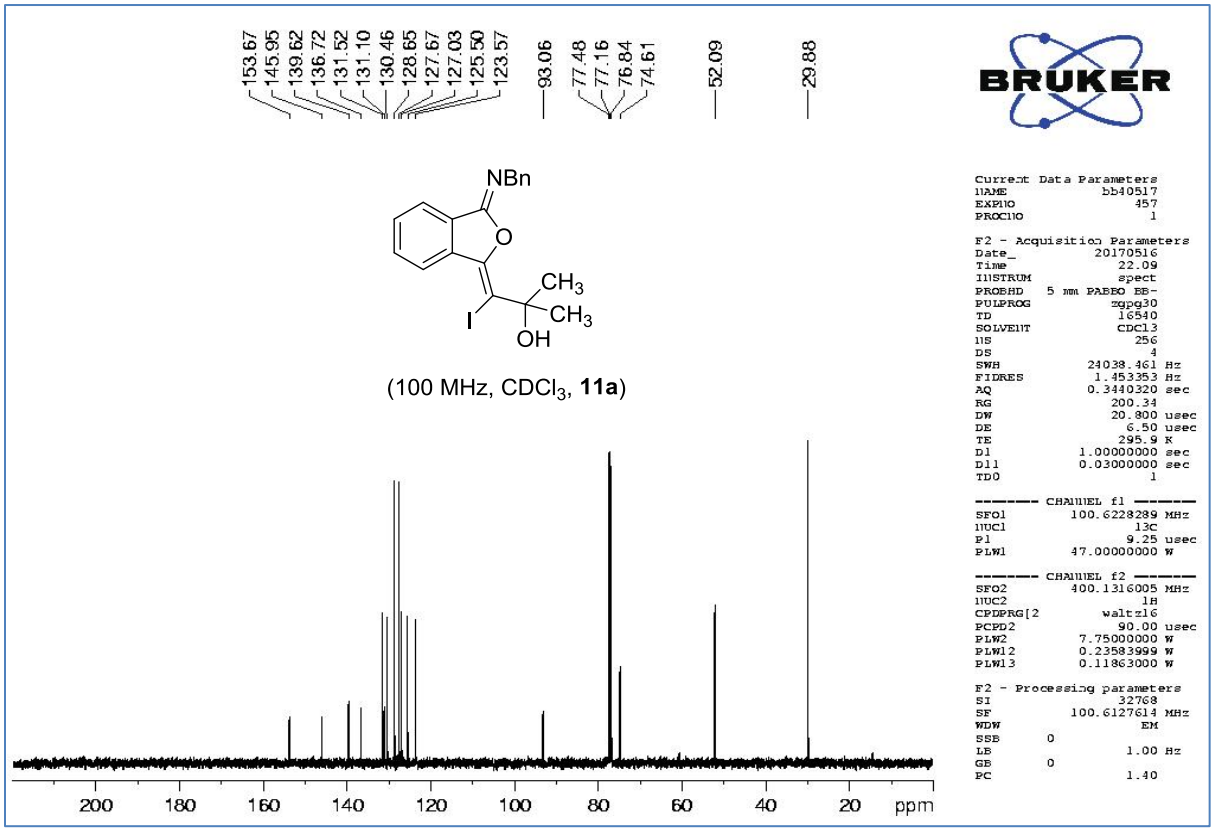

(100 MHz, $CDCl_3$, **11a**)

```
Current Data Parameters
NAME                  bb40517
EXPNO                     457
PROCNO                      1

F2 - Acquisition Parameters
Date_                20170516
Time                    22.09
INSTRUM                 spect
PROBHD     5 mm PABBO BB-
PULPROG                 zgpg30
TD                     16540
SOLVENT                CDCl3
NS                       256
DS                         4
SWH                24038.461 Hz
FIDRES              1.453353 Hz
AQ                  0.3440320 sec
RG                      200.34
DW                     20.800 usec
DE                      6.50 usec
TE                     295.9 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                         1

-------- CHANNEL f1 -------
SFO1           100.6228289 MHz
NUC1                       13C
P1                      9.25 usec
PLW1           47.00000000 W

-------- CHANNEL f2 -------
SFO2           400.1316005 MHz
NUC2                       1H
CPDPRG[2              waltz16
PCPD2                  90.00 usec
PLW2            7.75000000 W
PLW12           0.23583999 W
PLW13           0.11863000 W

F2 - Processing parameters
SI                     32768
SF             100.6127614 MHz
WDW                       EM
SSB          0
LB                      1.00 Hz
GB           0
PC                      1.40
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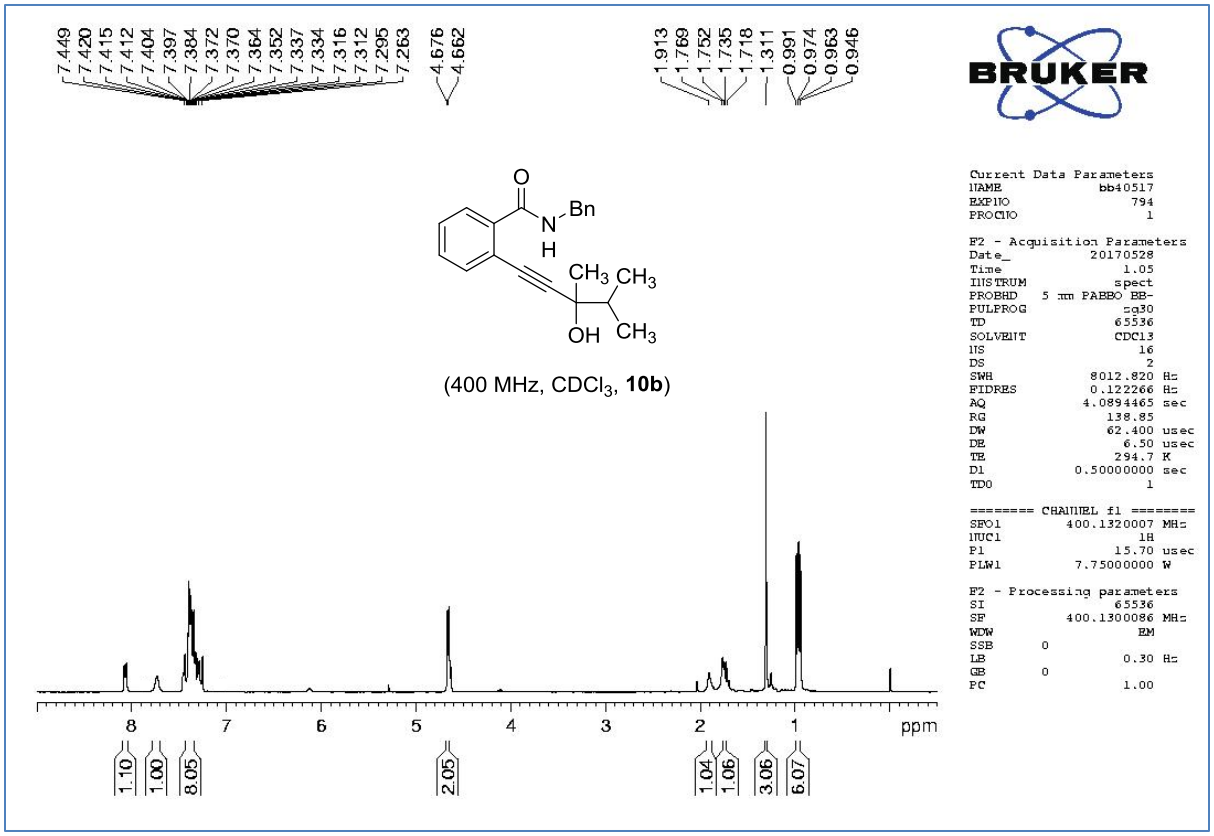
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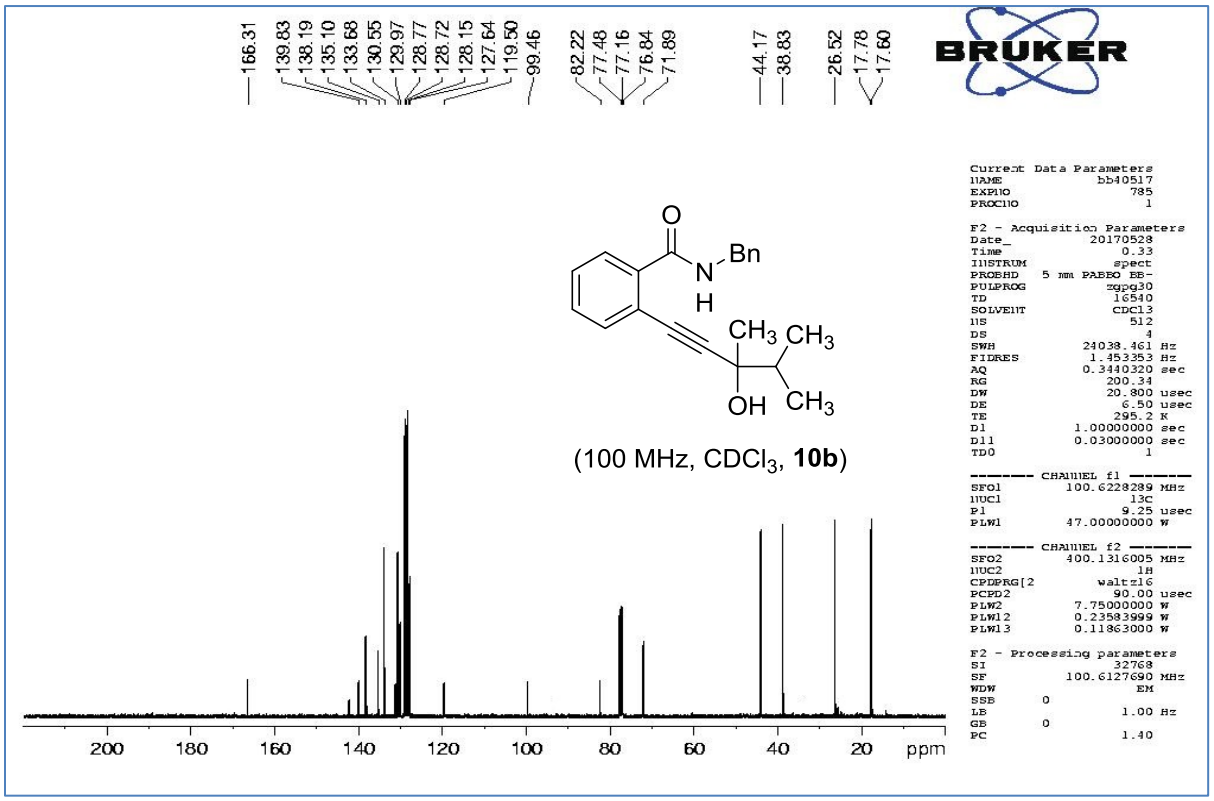
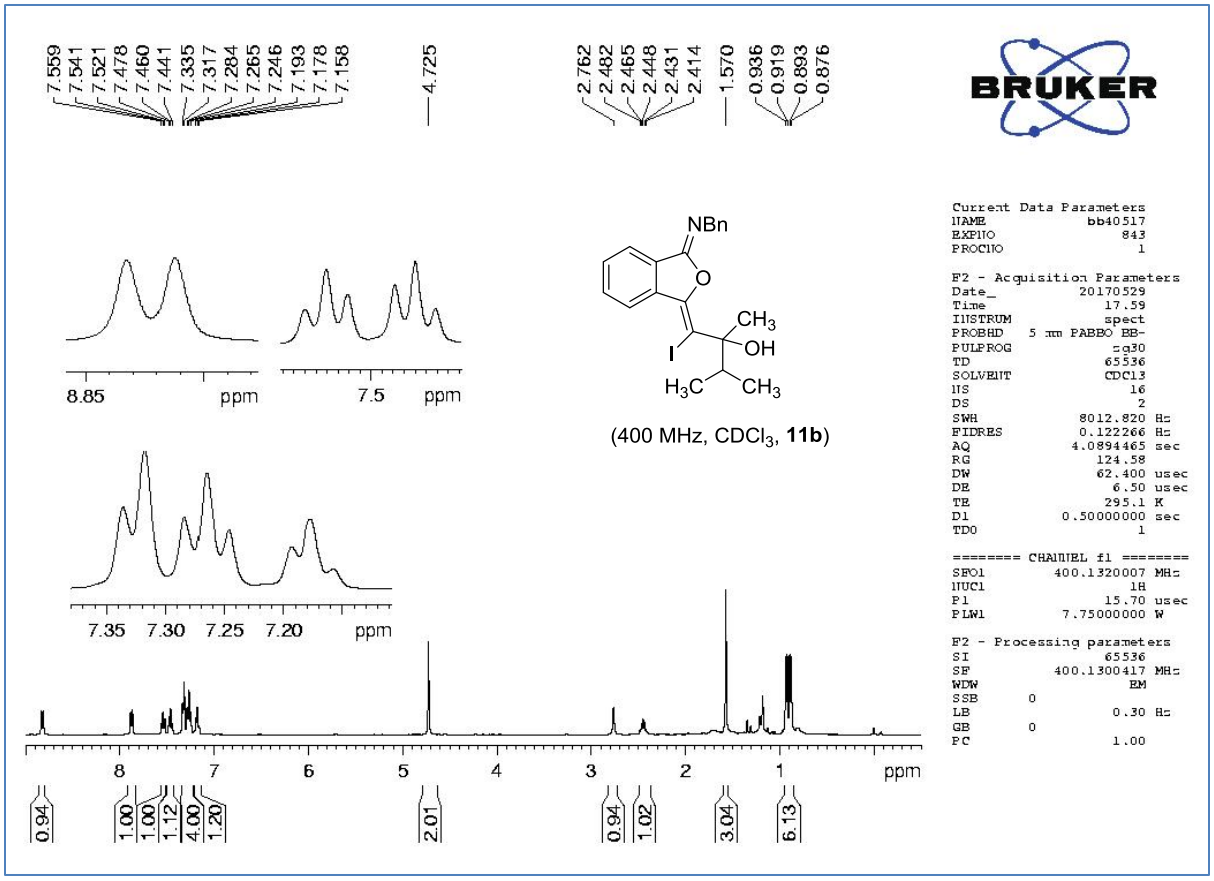
7.415
7.412
7.404
7.397
7.384
7.372
7.370
7.364
7.352
7.337
7.334
7.316
7.312
7.295
7.263
4.676
4.662
1.913
1.769
1.752
1.735
1.718
1.311
0.991
0.974
0.963
0.946
BRUKER
O
N
Bn
H
CH3 CH3
OH CH3
(400 MHz, CDCl3, 10b)
Current Data Parameters
NAME bb40517
EXPNO 794
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170528
Time 1.05
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 138.85
DW 62.400 usec
DE 6.50 usec
TE 294.7 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300086 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
8 7 6 5 4 3 2 1 ppm
1.10 1.00 8.05 2.05 1.04 1.06 3.06 6.07


166.31
139.83
138.19
135.10
133.68
130.55
129.97
128.77
128.72
128.15
127.64
119.50
99.46
82.22
77.48
77.16
76.84
71.89
44.17
38.83
26.52
17.78
17.60
BRUKER
O
N
Bn
H
CH3 CH3
OH CH3
(100 MHz, CDCl3, 10b)
Current Data Parameters
NAME bb40517
EXPNO 785
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170528
Time 0.33
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 512
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.2 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200 180 160 140 120 100 80 60 40 20 ppm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7.541
7.521
7.478
7.460
7.441
7.335
7.317
7.284
7.265
7.246
7.193
7.178
7.158
4.725
2.762
2.482
2.465
2.448
2.431
2.414
1.570
0.936
0.919
0.893
0.876
BRUKER
NBn
O
CH3
OH
I
H3C
CH3
8.85 ppm
7.5 ppm
7.35 7.30 7.25 7.20 ppm
(400 MHz, CDCl3, 11b)
8 7 6 5 4 3 2 1 ppm
0.94
1.00
1.00
1.12
4.00
1.20
2.01
0.94
1.02
3.04
6.13
Current Data Parameters
NAME bb40517
EXPNO 843
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170529
Time 17.59
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 124.58
DW 62.400 usec
DE 6.50 usec
TE 295.1 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
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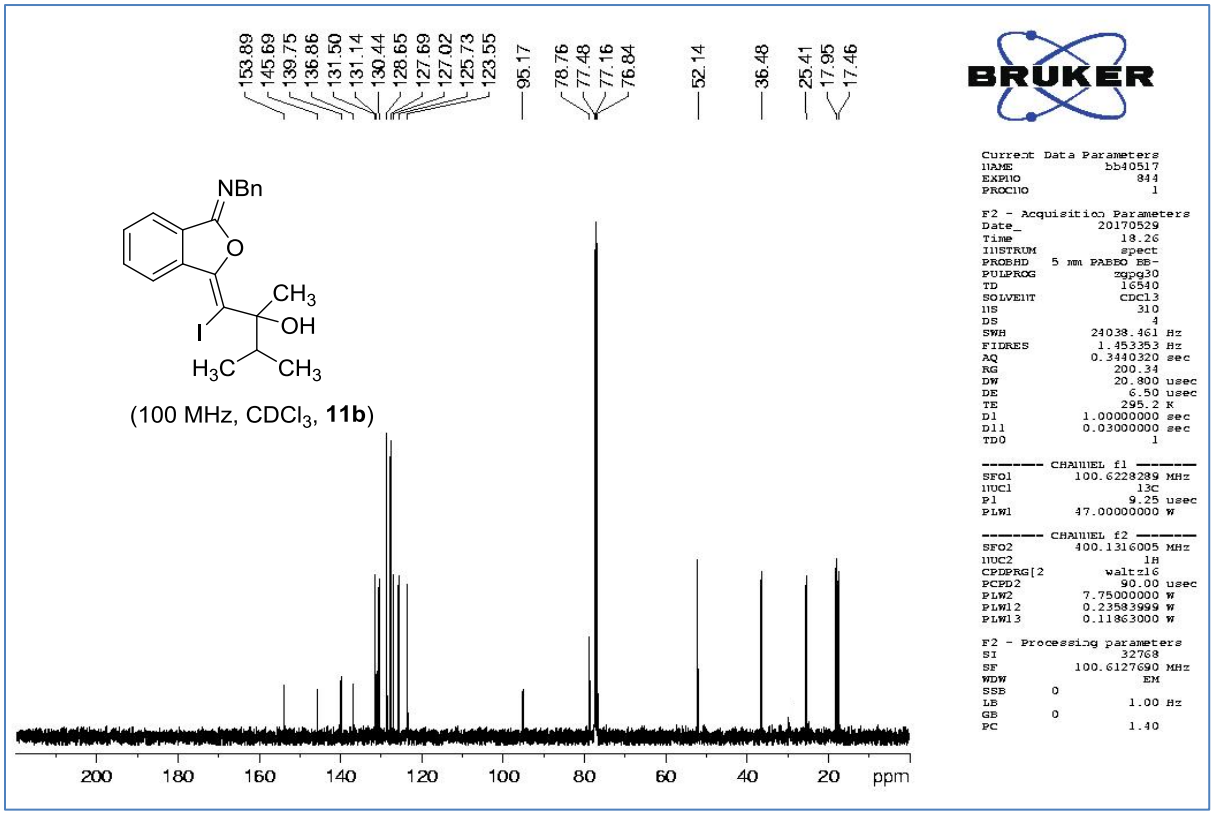
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00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145.69
139.75
136.86
131.50
131.14
130.44
128.65
127.69
127.02
125.73
123.55
95.17
78.76
77.48
77.16
76.84
52.14
36.48
25.41
17.95
17.46
BRUKER
NBn
O
CH3
OH
I
H3C
CH3
(100 MHz, CDCl3, 11b)
200 180 160 140 120 100 80 60 40 20 ppm
Current Data Parameters
NAME bb40517
EXPNO 844
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170529
Time 18.26
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 310
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.2 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
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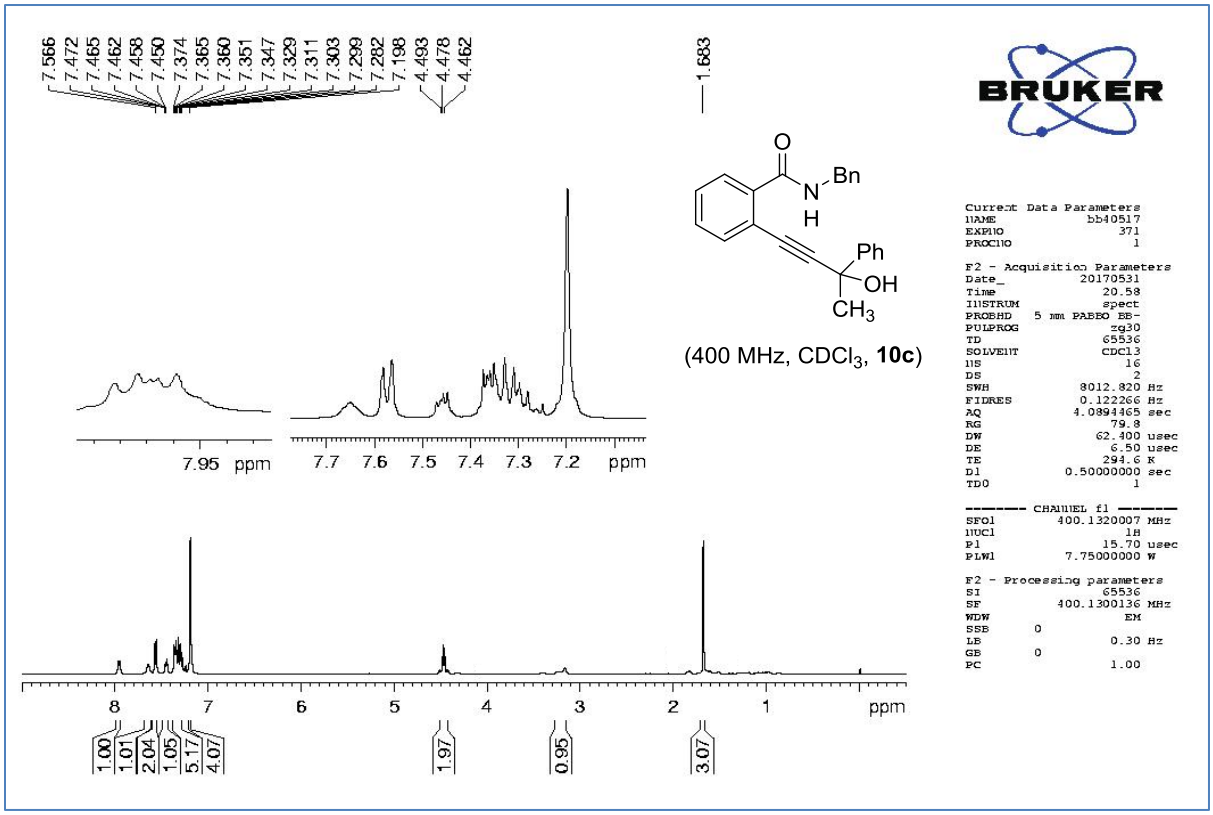
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40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7.360
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7.347
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7.299
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4.493
4.478
4.462
1.683
O
N
H
Bn
Ph
OH
CH3
(400 MHz, CDCl3, 10c)
Current Data Parameters
NAME bb40517
EXPNO 371
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170531
Time 20.58
INSTRUM spect
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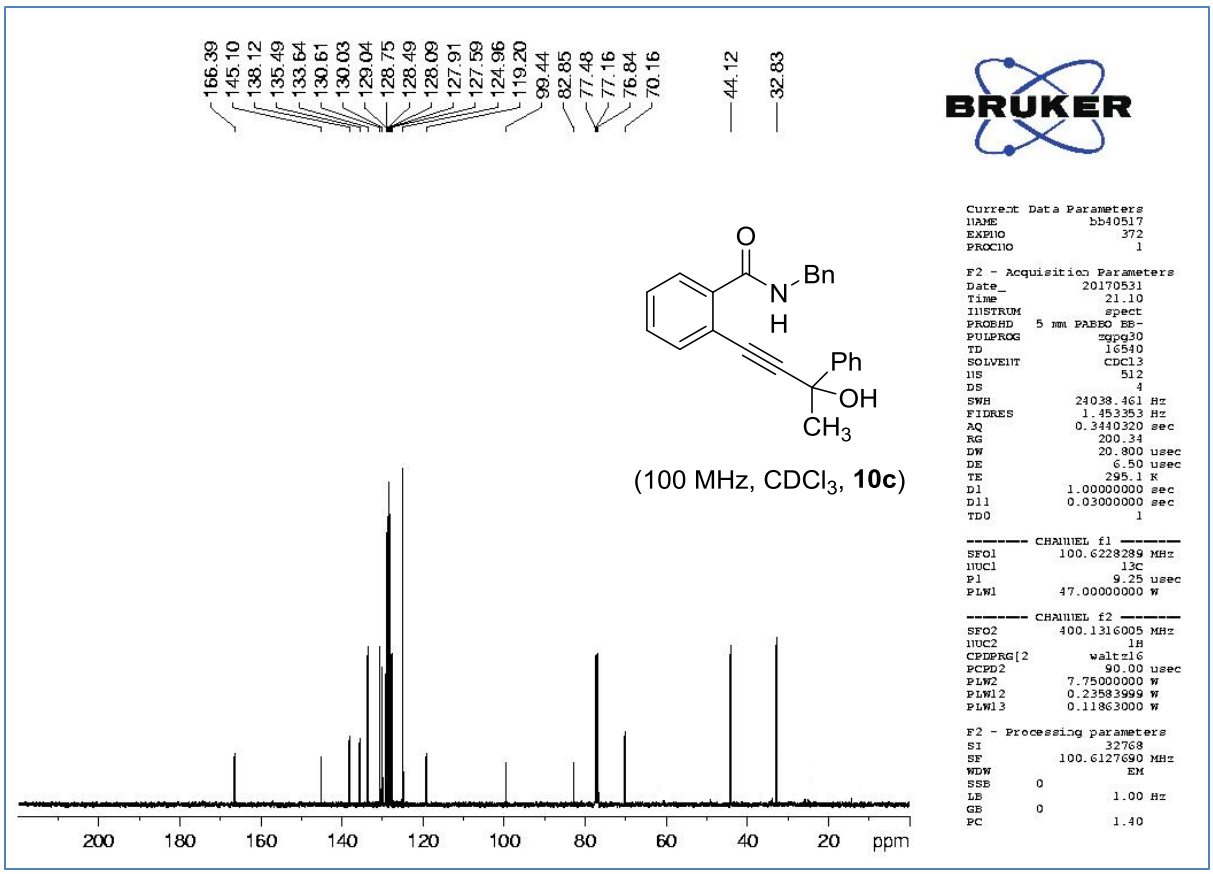
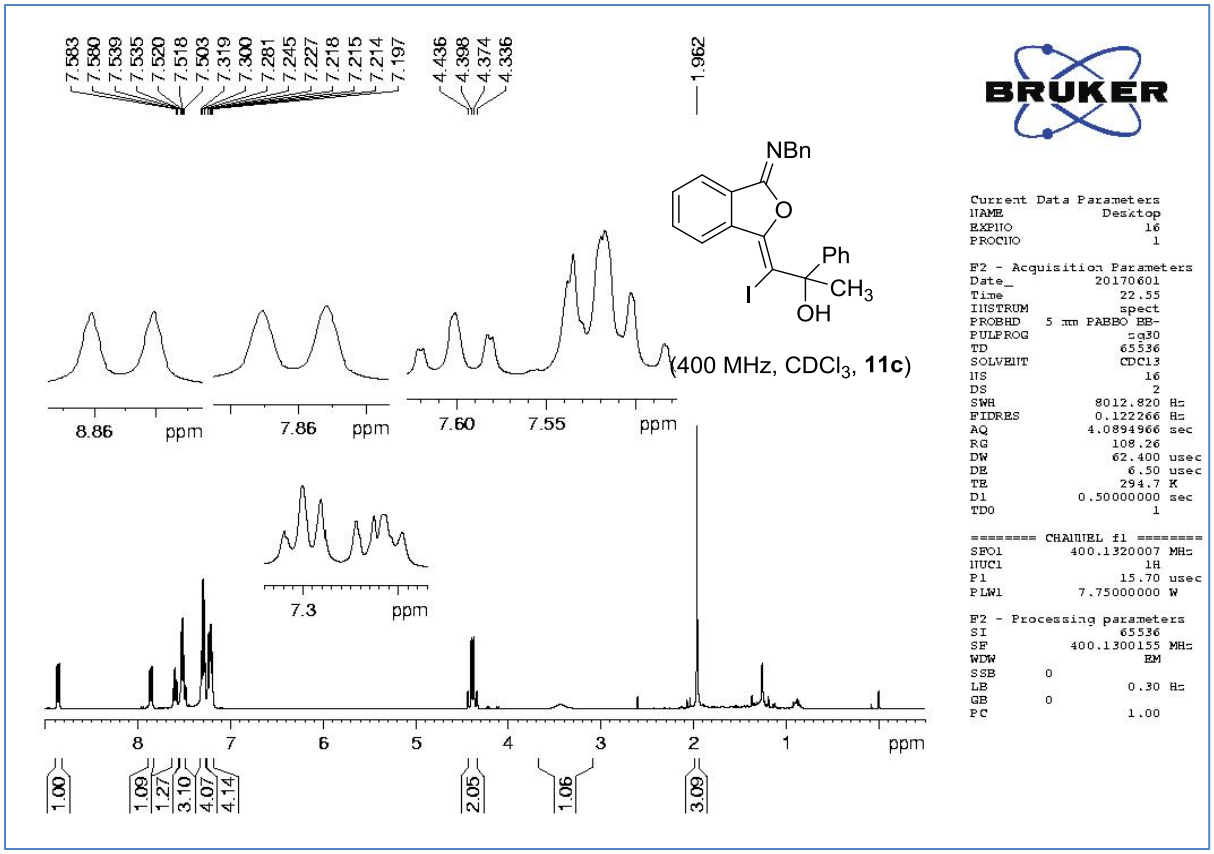
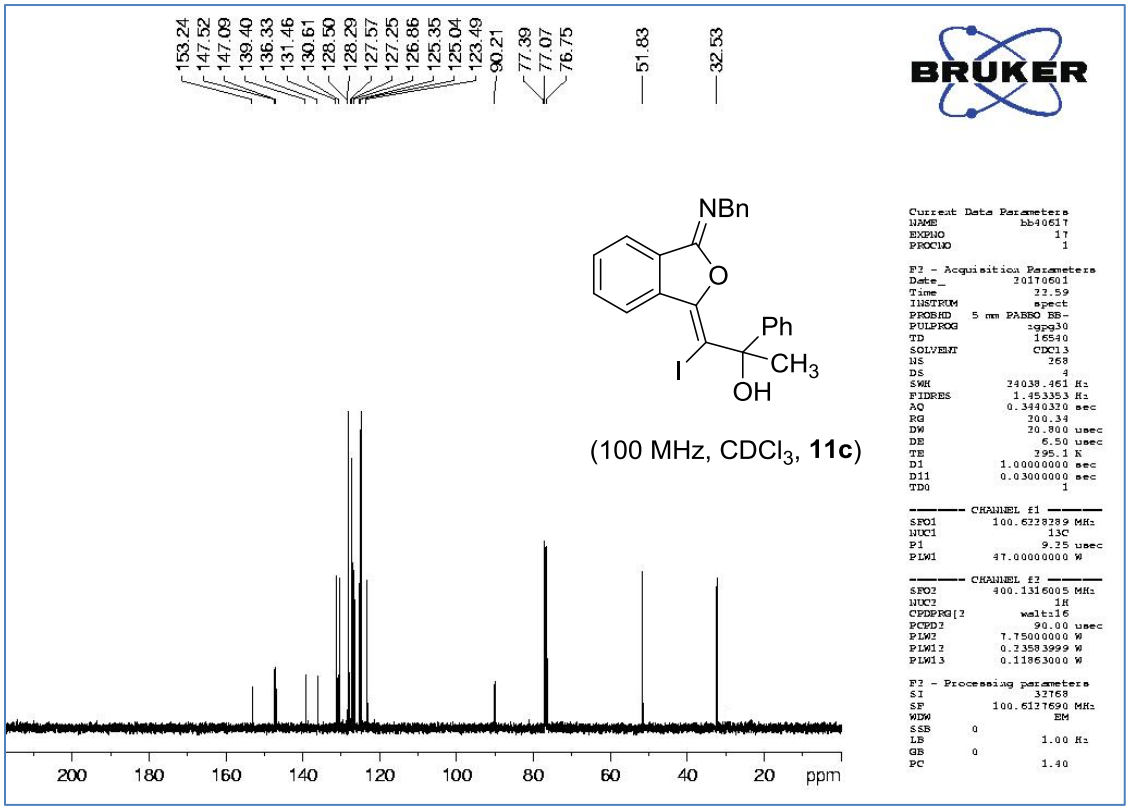
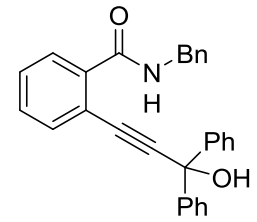
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 79.8
DW 62.400 usec
DE 6.50 usec
TE 294.6 K
D1 0.50000000 sec
TD0 1
CHANNEL f1
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300136 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.95 ppm
7.7 7.6 7.5 7.4 7.3 7.2 ppm
8 7 6 5 4 3 2 1 ppm
1.00
1.01
2.04
1.05
5.17
4.07
1.97
0.95
3.07

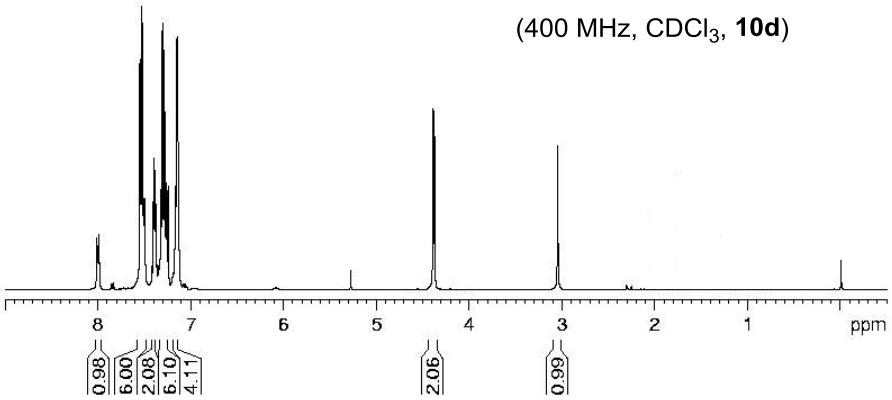

166.39
145.10
138.12
135.49
133.64
130.61
130.03
129.04
128.75
128.49
128.09
127.91
127.59
124.96
119.20
99.44
82.85
77.48
77.16
76.84
70.16
44.12
32.83
O
N
H
Bn
Ph
OH
CH3
(100 MHz, CDCl3, 10c)
Current Data Parameters
NAME bb40517
EXPNO 372
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170531
Time 21.10
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 512
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
CHANNEL f1
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
CHANNEL f2
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200 180 160 140 120 100 80 60 40 20 ppm


7.583
7.580
7.539
7.535
7.520
7.518
7.503
7.319
7.300
7.281
7.245
7.227
7.218
7.215
7.214
7.197
4.436
4.398
4.374
4.336
1.962
NBn
O
Ph
CH3
I
OH
(400 MHz, CDCl3, 11c)
8.86 ppm
7.86 ppm
7.60
7.55 ppm
7.3 ppm
8 7 6 5 4 3 2 1 ppm
1.00
1.09
1.27
3.10
4.07
4.14
2.05
1.06
3.09
BRUKER
Current Data Parameters
NAME Desktop
EXPNO 16
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170601
Time 22.55
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 108.26
DW 62.400 usec
DE 6.50 usec
TE 294.7 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300155 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


153.24
147.52
147.09
139.40
136.33
131.46
130.61
128.50
128.29
127.57
127.25
126.86
125.35
125.04
123.49
90.21
77.39
77.07
76.75
51.83
32.53
NBn
O
Ph
CH3
I
OH
(100 MHz, CDCl3, 11c)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40617
EXPNO 17
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170601
Time 22.59
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 268
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



(400 MHz, $CDCl_3$, **10d**)

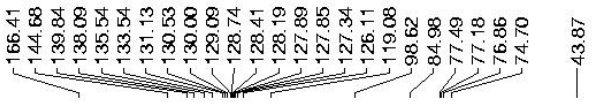


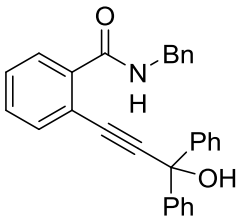

```
Current Data Parameters
NAME                  bb40517
EXPNO                     833
PROCNO                      1

F2 - Acquisition Parameters
Date_              20170529
Time                  13.40
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    153.13
DW                   62.400 usec
DE                    6.50 usec
TE                   295.0 K
D1                0.50000000 sec
TD0                         1

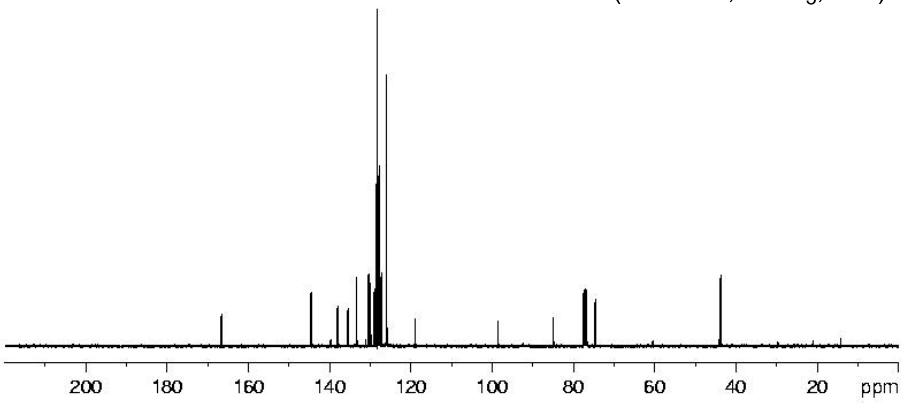
======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                     1H
P1                    15.70 usec
PLW1             7.75000000 W

F2 - Processing parameters
SI                   65536
SF              400.1300129 MHz
WDW                     EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.00
```





(100 MHz, $CDCl_3$, **10d**)



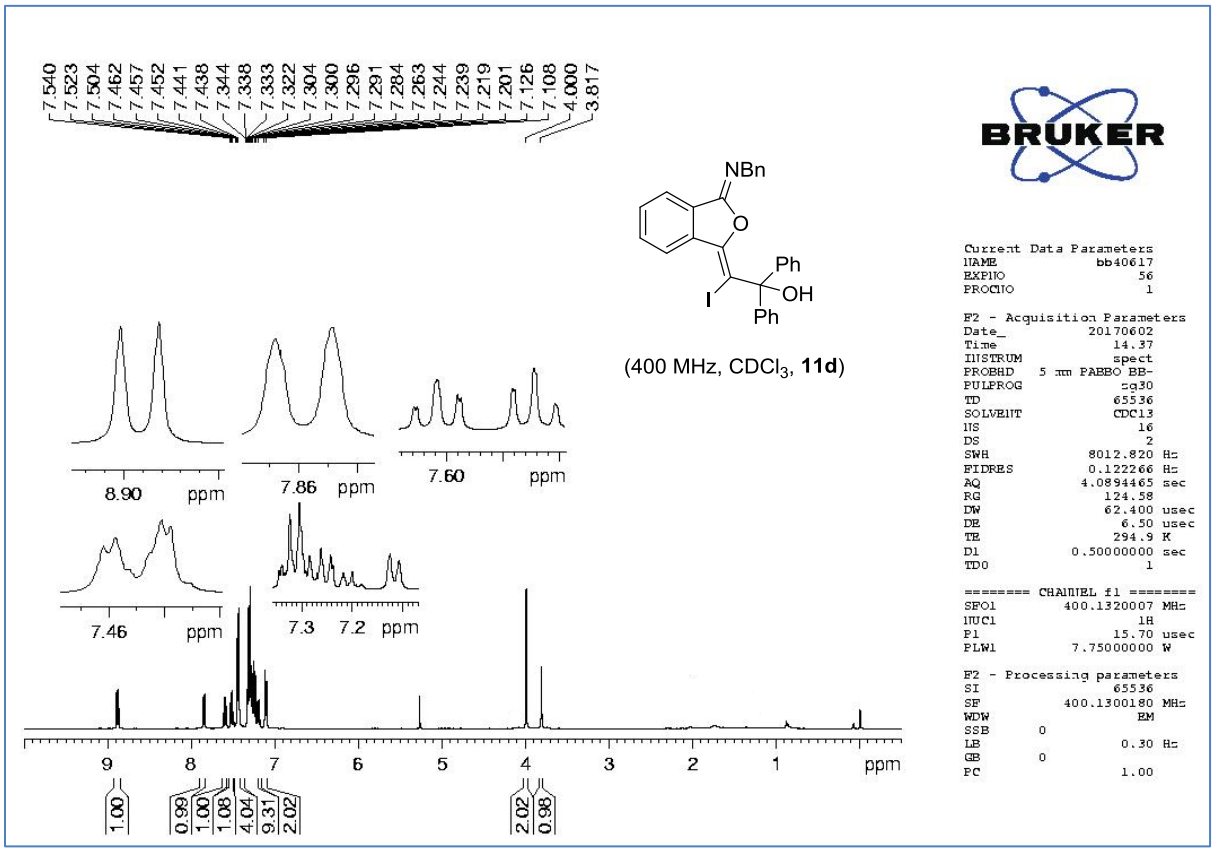

```
Current Data Parameters
NAME                  bb40517
EXPNO                     832
PROCNO                      1

F2 - Acquisition Parameters
Date_              20170529
Time                  13.28
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   16540
SOLVENT              CDCl3
NS                      319
DS                       4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                   20.800 usec
DE                    6.50 usec
TE                   295.4 K
D1                1.00000000 sec
D11               0.03000000 sec
TD0                         1

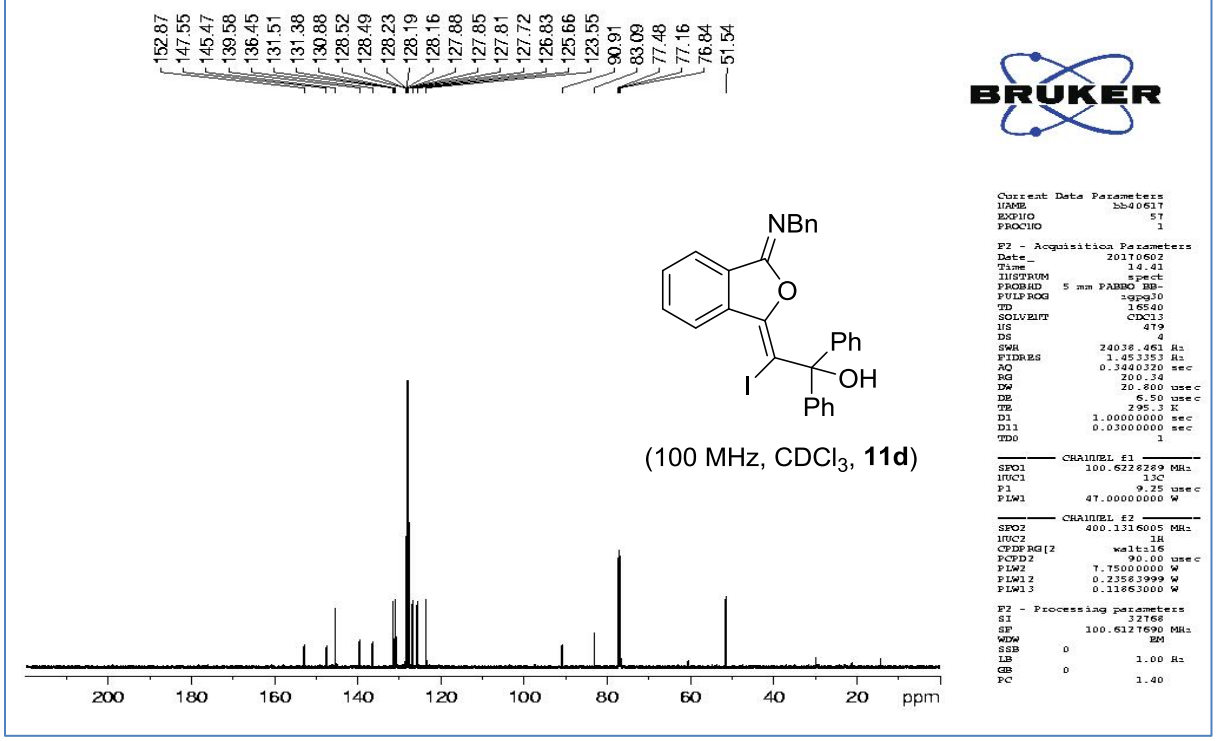
======== CHANNEL f1 ========
SFO1            100.6228289 MHz
NUC1                     13C
P1                    9.25 usec
PLW1             47.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                     1H
CPDPRG[2              waltz16
PCPD2                 90.00 usec
PLW2             7.75000000 W
PLW12            0.23583999 W
PLW13            0.11863000 W

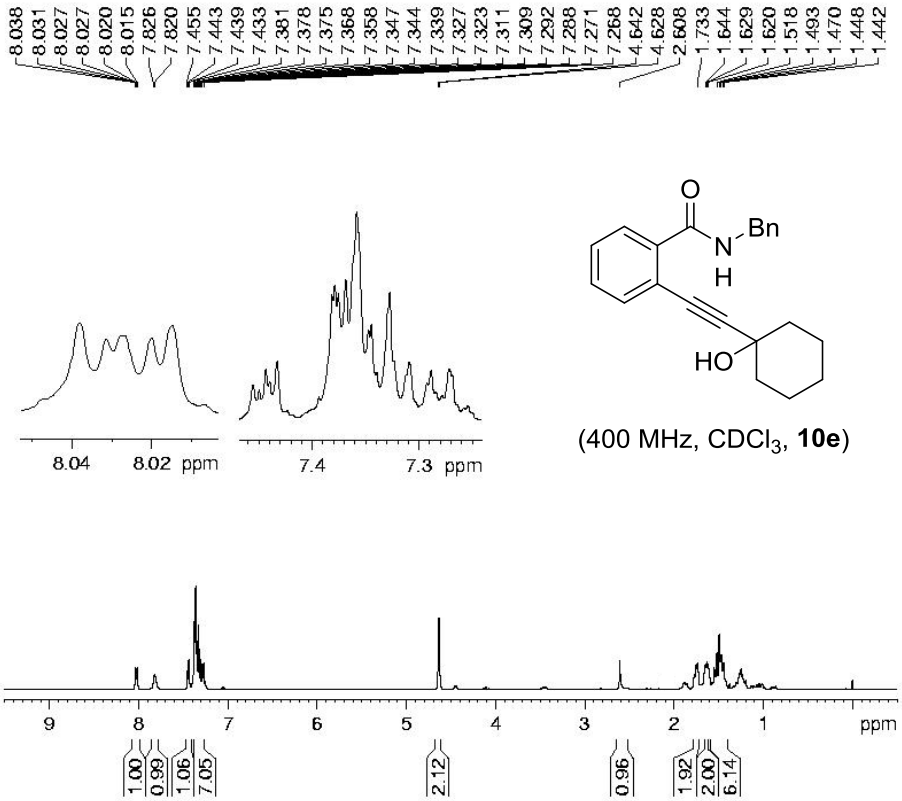
F2 - Processing parameters
SI                   32768
SF              100.6127690 MHz
WDW                     EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```

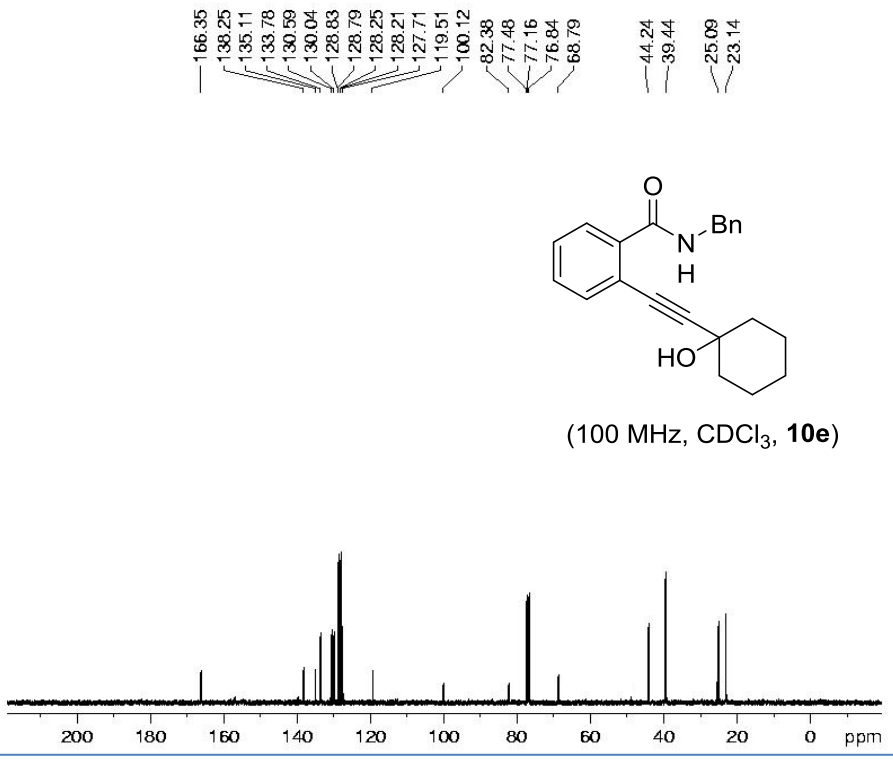


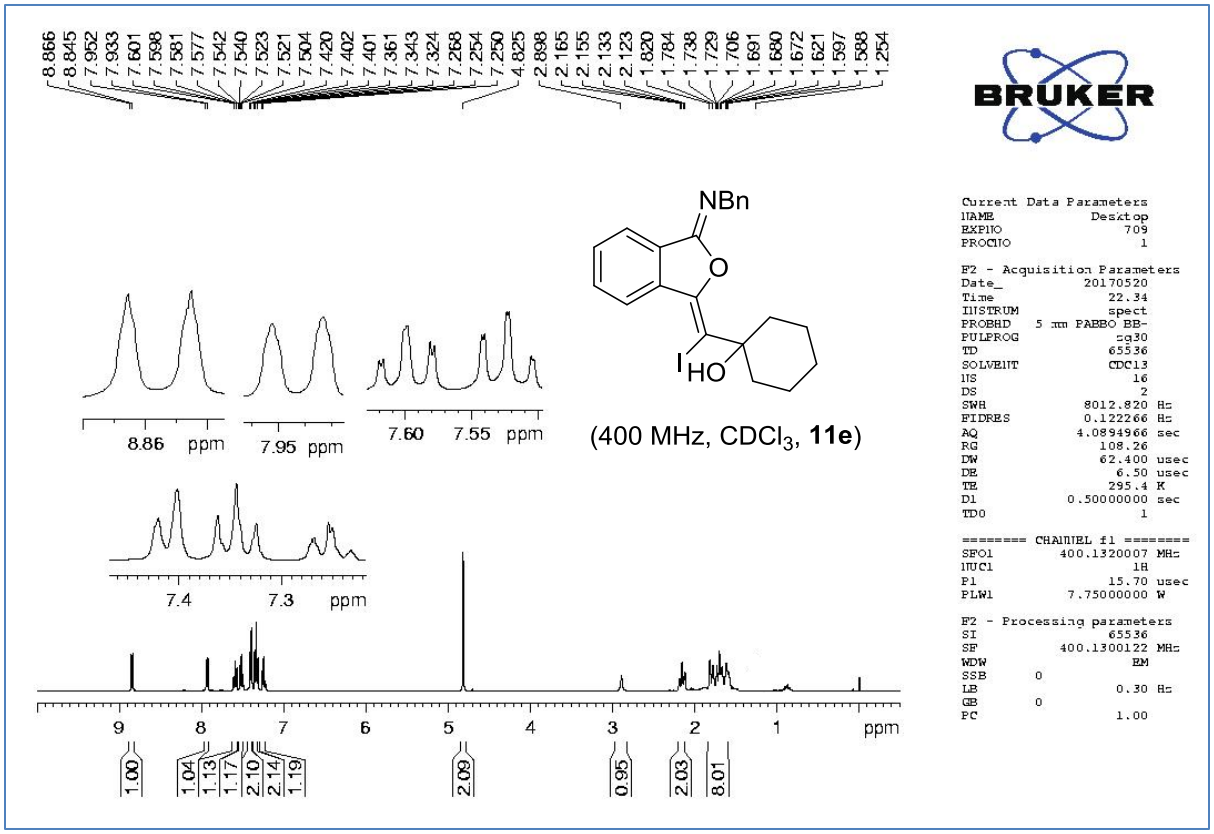
(400 MHz, $CDCl_3$, **11d**)



(100 MHz, $CDCl_3$, **11d**)


8.038
8.031
8.027
8.027
8.020
8.015
7.826
7.820
7.455
7.443
7.439
7.433
7.381
7.378
7.375
7.368
7.358
7.347
7.344
7.339
7.327
7.323
7.311
7.309
7.292
7.288
7.271
7.268
4.642
4.628
2.608
1.733
1.644
1.629
1.620
1.518
1.493
1.470
1.448
1.442
BRUKER
O
N
Bn
H
HO
(400 MHz, CDCl3, 10e)
8.04
8.02 ppm
7.4
7.3 ppm
9
8
7
6
5
4
3
2
1
ppm
1.00
0.99
1.06
7.05
2.12
0.96
1.92
2.00
6.14
Current Data Parameters
NAME Desktop
EXPNO 688
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170520
Time 14.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 67.99
DW 62.400 usec
DE 6.50 usec
TE 295.7 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300065 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


166.35
138.25
135.11
133.78
130.59
130.04
128.83
128.79
128.25
128.21
127.71
119.51
100.12
82.38
77.48
77.16
76.84
68.79
44.24
39.44
25.09
23.14
BRUKER
O
N
Bn
H
HO
(100 MHz, CDCl3, 10e)
200
180
160
140
120
100
80
60
40
20
0
ppm
Current Data Parameters
NAME bb40517
EXPNO 689
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170520
Time 14.05
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 174
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 296.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



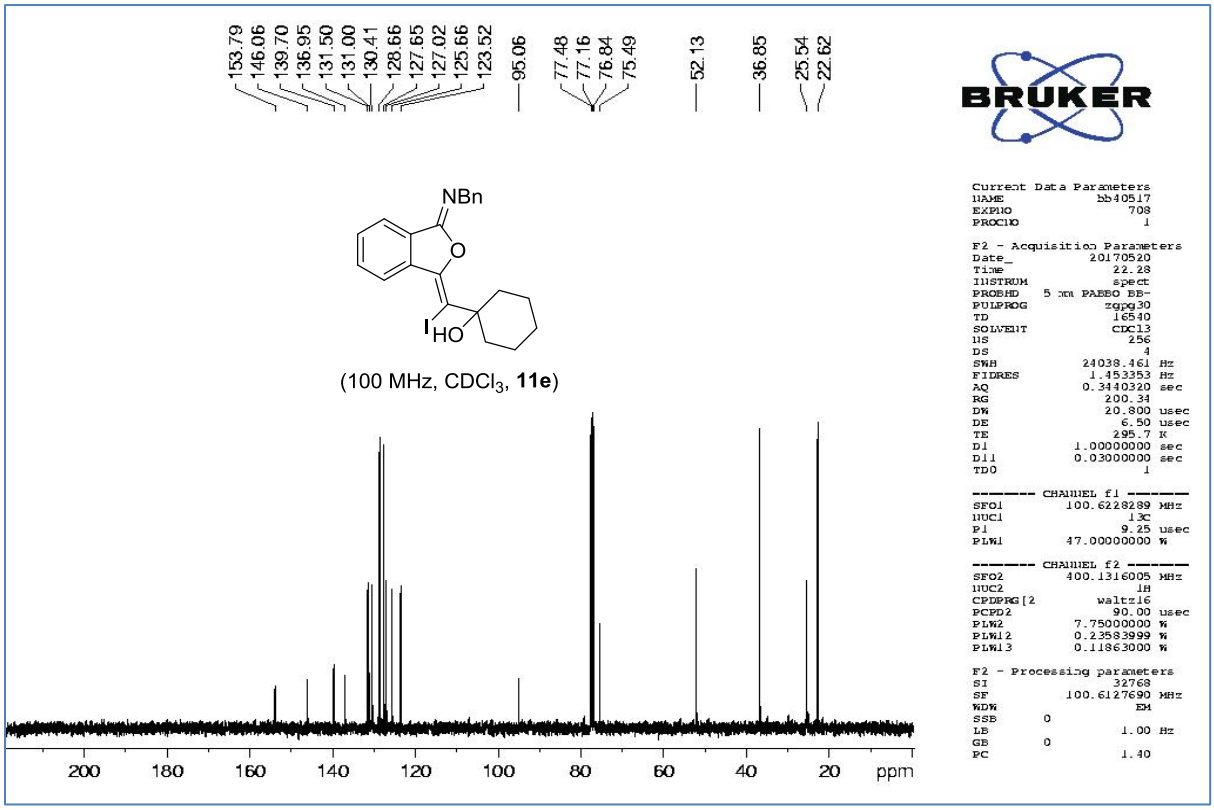
(400 MHz, $CDCl_3$, **11e**)

```
Current Data Parameters
NAME                 Desktop
EXPNO                    709
PROCNO                     1

F2 - Acquisition Parameters
Date_               20170520
Time                   22.34
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                     65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 8012.820 Hz
FIDRES              0.122266 Hz
AQ                  4.0894966 sec
RG                     108.26
DW                    62.400 usec
DE                     6.50 usec
TE                     295.4 K
D1                  0.50000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                    1H
P1                    15.70 usec
PLW1             7.75000000 W

F2 - Processing parameters
SI                     65536
SF              400.1300122 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```



(100 MHz, $CDCl_3$, **11e**)

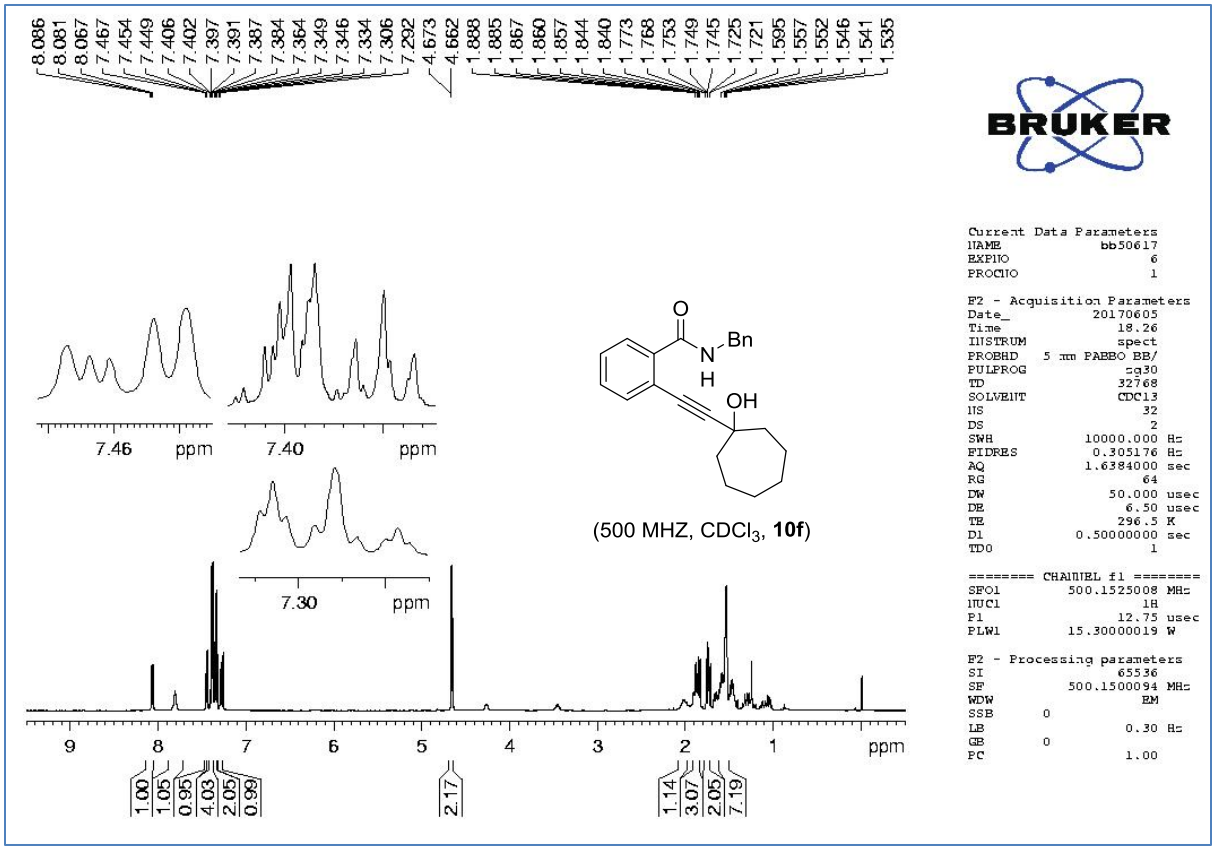
```
Current Data Parameters
NAME                 bb40517
EXPNO                    708
PROCNO                     1

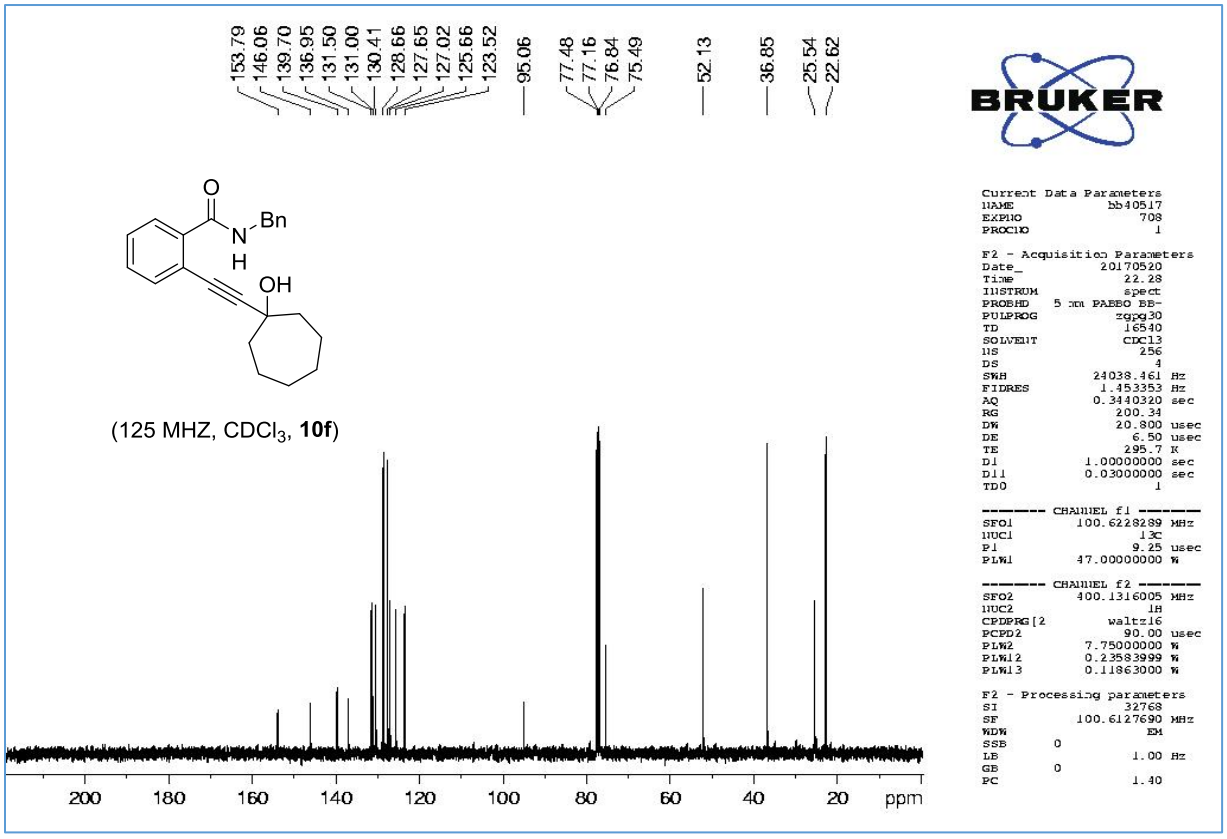
F2 - Acquisition Parameters
Date_               20170520
Time                   22.28
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                     16540
SOLVENT                CDCl3
NS                       256
DS                         4
SWH                24038.461 Hz
FIDRES              1.453353 Hz
AQ                  0.3440320 sec
RG                     200.34
DW                    20.800 usec
DE                     6.50 usec
TE                     295.7 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                        1

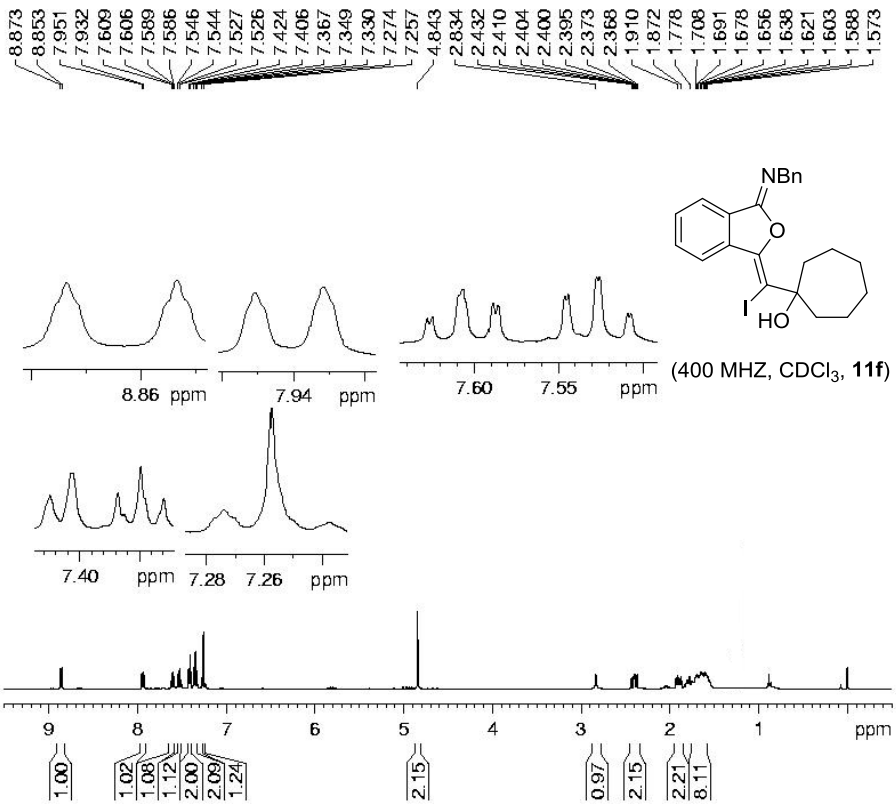
-------- CHANNEL f1 --------
SFO1            100.6228289 MHz
NUC1                    13C
P1                     9.25 usec
PLW1            47.00000000 W

-------- CHANNEL f2 --------
SFO2            400.1316005 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                 90.00 usec
PLW2             7.75000000 W
PLW12            0.23583999 W
PLW13            0.11863000 W

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


8.086
8.081
8.067
7.467
7.454
7.449
7.406
7.402
7.397
7.391
7.387
7.384
7.364
7.349
7.346
7.334
7.306
7.292
4.673
4.662
1.888
1.885
1.867
1.860
1.857
1.844
1.840
1.773
1.768
1.753
1.749
1.745
1.725
1.721
1.595
1.557
1.552
1.546
1.541
1.535
7.46 ppm
7.40 ppm
7.30 ppm
O
N
Bn
H
OH
(500 MHZ, CDCl3, 10f)
9 8 7 6 5 4 3 2 1 ppm
1.00 1.05 0.95 4.03 2.05 0.99 2.17 1.14 3.07 2.05 7.19
BRUKER
Current Data Parameters
NAME bb50617
EXPNO 6
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170605
Time 18.26
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 32
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 1.6384000 sec
RG 64
DW 50.000 usec
DE 6.50 usec
TE 296.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 500.1525008 MHz
NUC1 1H
P1 12.75 usec
PLW1 15.30000019 W
F2 - Processing parameters
SI 65536
SF 500.1500094 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


153.79
146.06
139.70
136.95
131.50
131.00
130.41
128.66
127.65
127.02
125.66
123.52
95.06
77.48
77.16
76.84
75.49
52.13
36.85
25.54
22.62
O
N
Bn
H
OH
(125 MHZ, CDCl3, 10f)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40517
EXPNO 708
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170520
Time 22.28
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



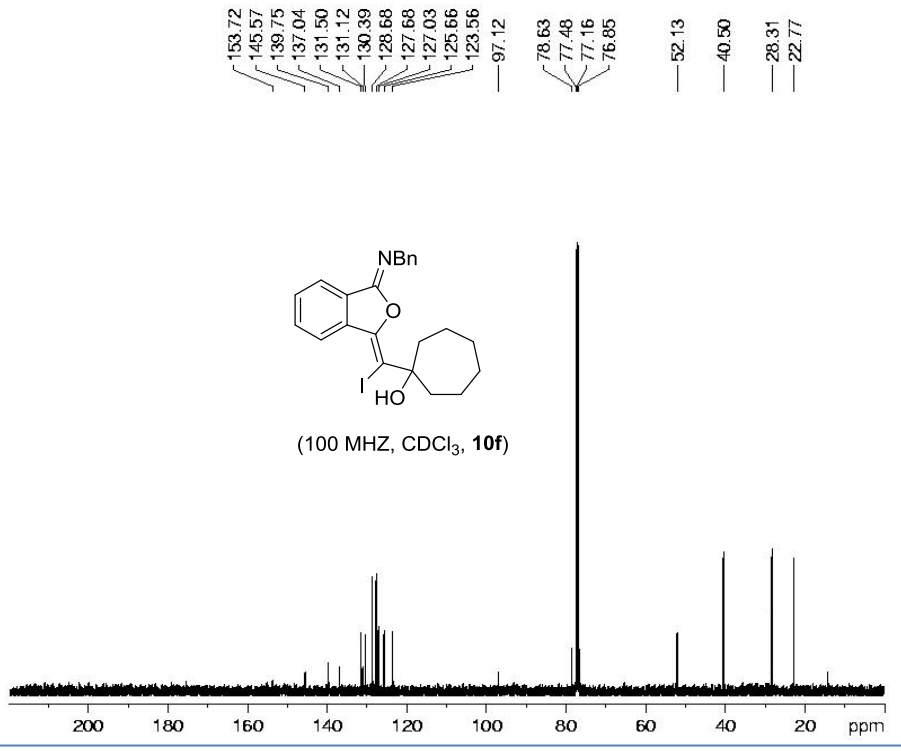
(400 MHZ, $CDCl_3$, **11f**)

```
Current Data Parameters
NAME                  bb40617
EXPNO                     120
PROCNO                      1

F2 - Acquisition Parameters
Date_               20170607
Time                   12.37
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    169.77
DW                  62.400 usec
DE                   6.50 usec
TE                   299.3 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1          400.1320007 MHz
NUC1                     1H
P1                   15.70 usec
PLW1           7.75000000 W

F2 - Processing parameters
SI                    65536
SF            400.1300107 MHz
WDW                      EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.00
```



(100 MHZ, $CDCl_3$, **10f**)

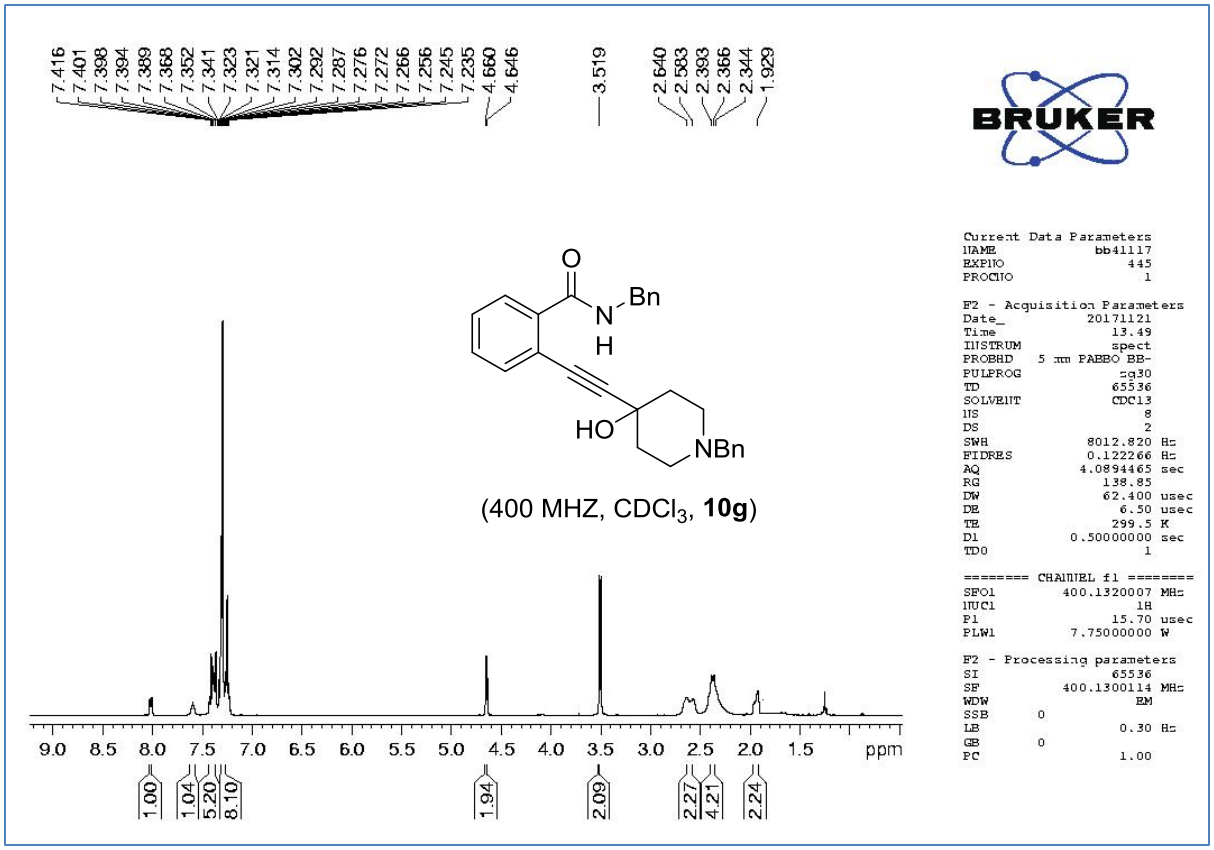
```
Current Data Parameters
NAME                  bb40617
EXPNO                      47
PROCNO                      1

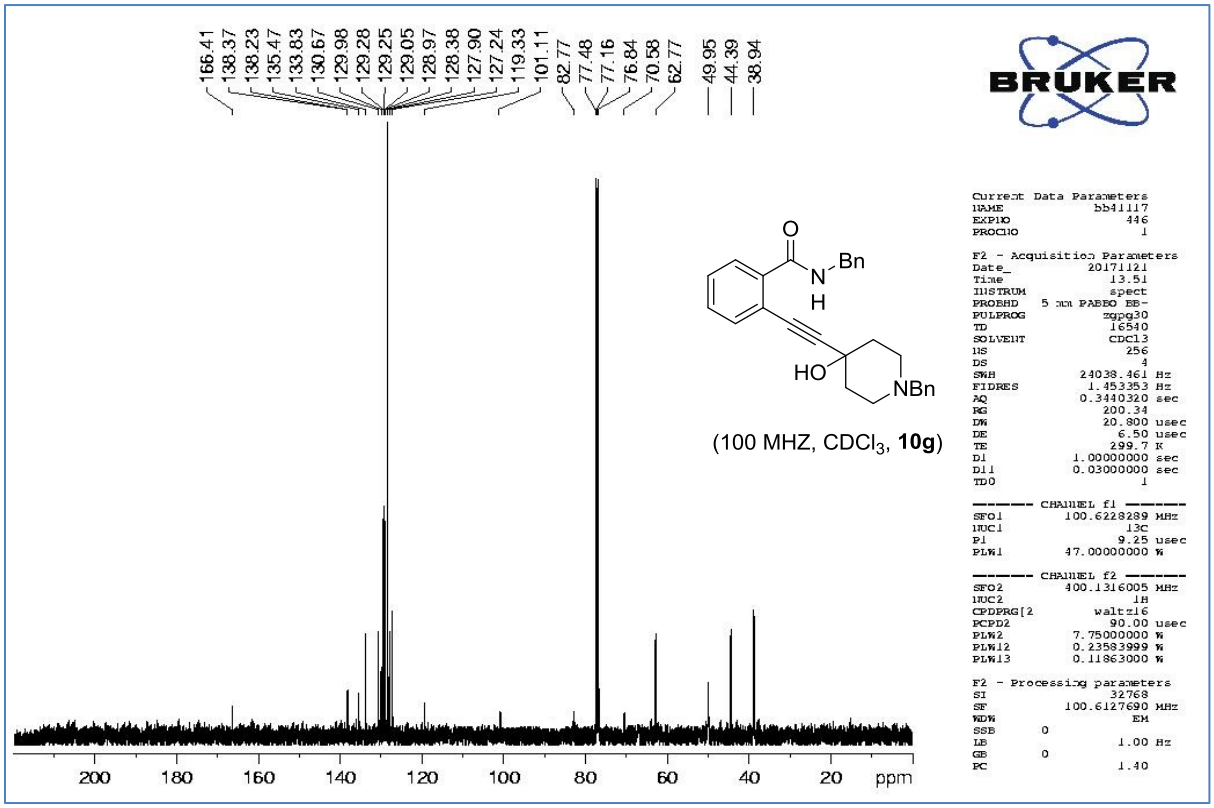
F2 - Acquisition Parameters
Date_               20170607
Time                   22.40
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG              zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      467
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                  20.800 usec
DE                   6.50 usec
TE                   300.3 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                         1

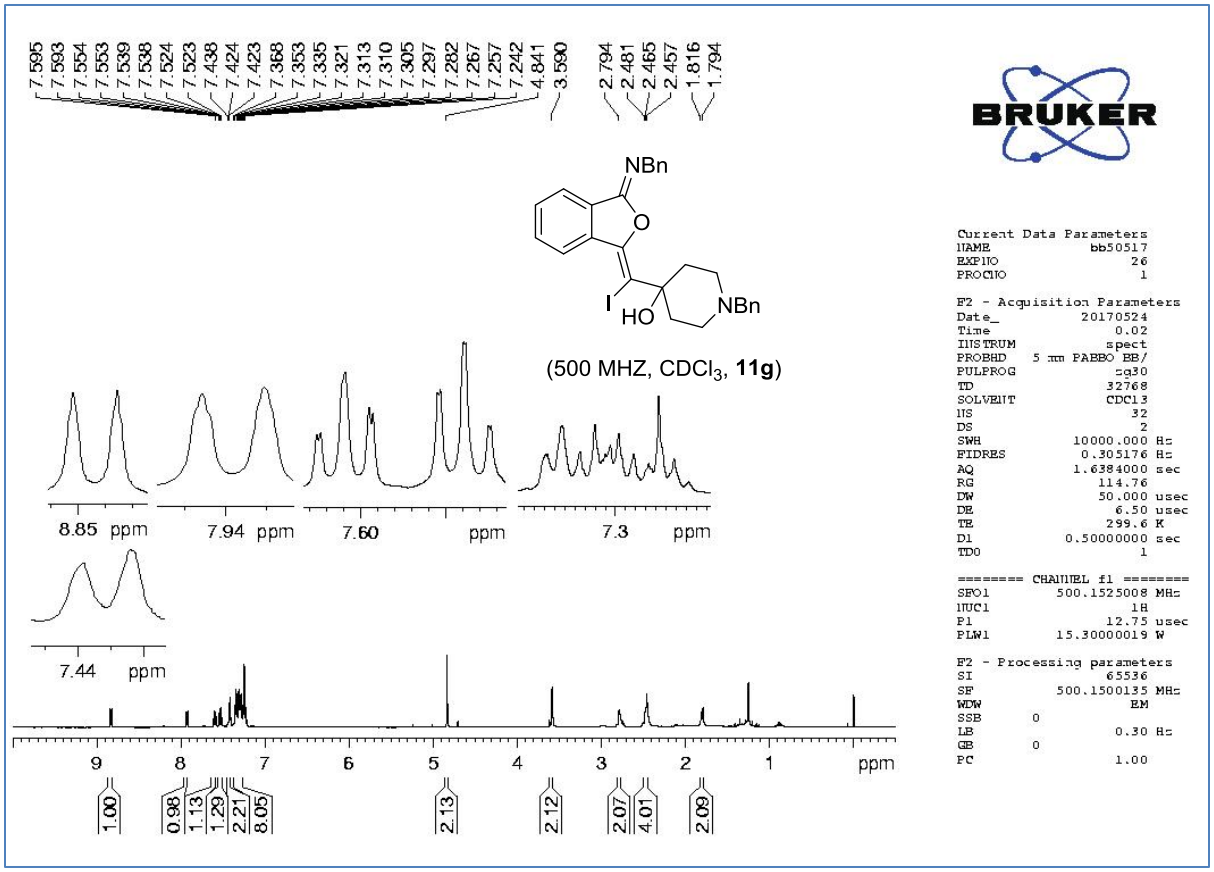
======== CHANNEL f1 ========
SFO1          100.6228289 MHz
NUC1                     13C
P1                    9.25 usec
PLW1          47.00000000 W

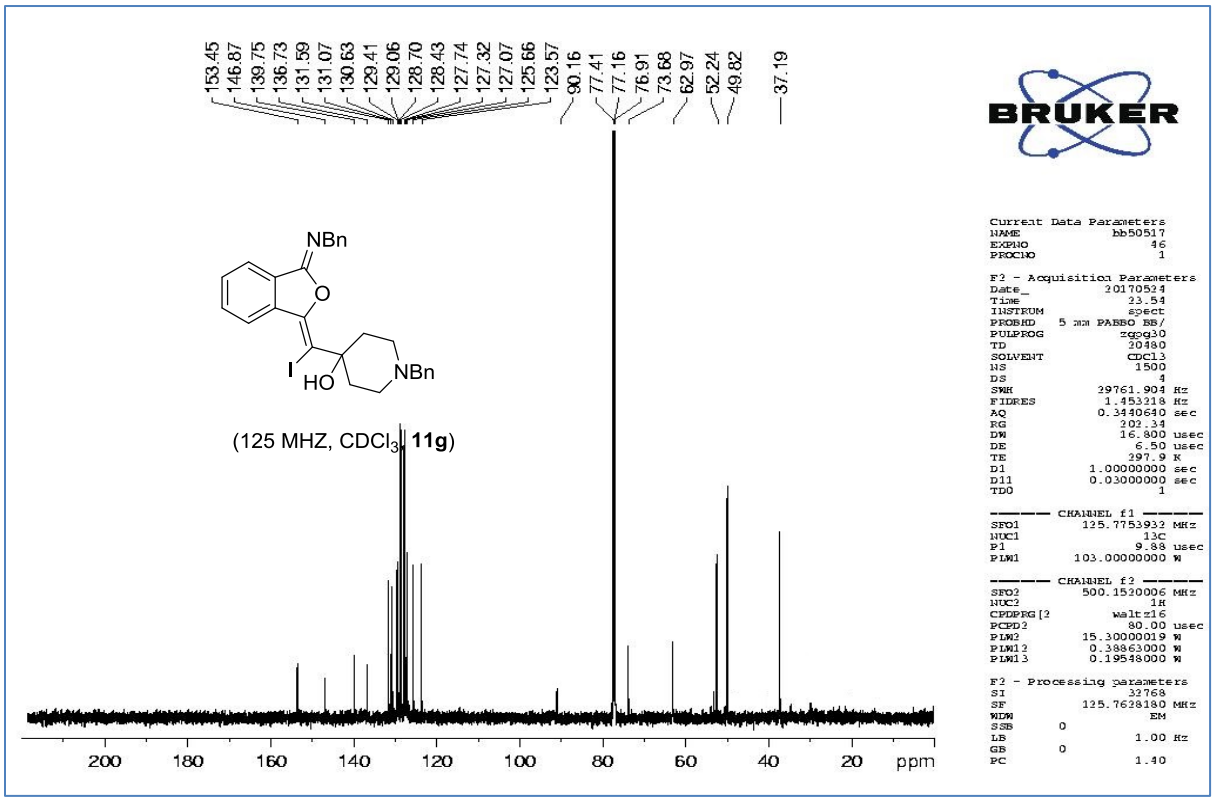
======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                     1H
CPDPRG[2           waltz16
PCPD2                90.00 usec
PLW2           7.75000000 W
PLW12          0.23583999 W
PLW13          0.11863000 W

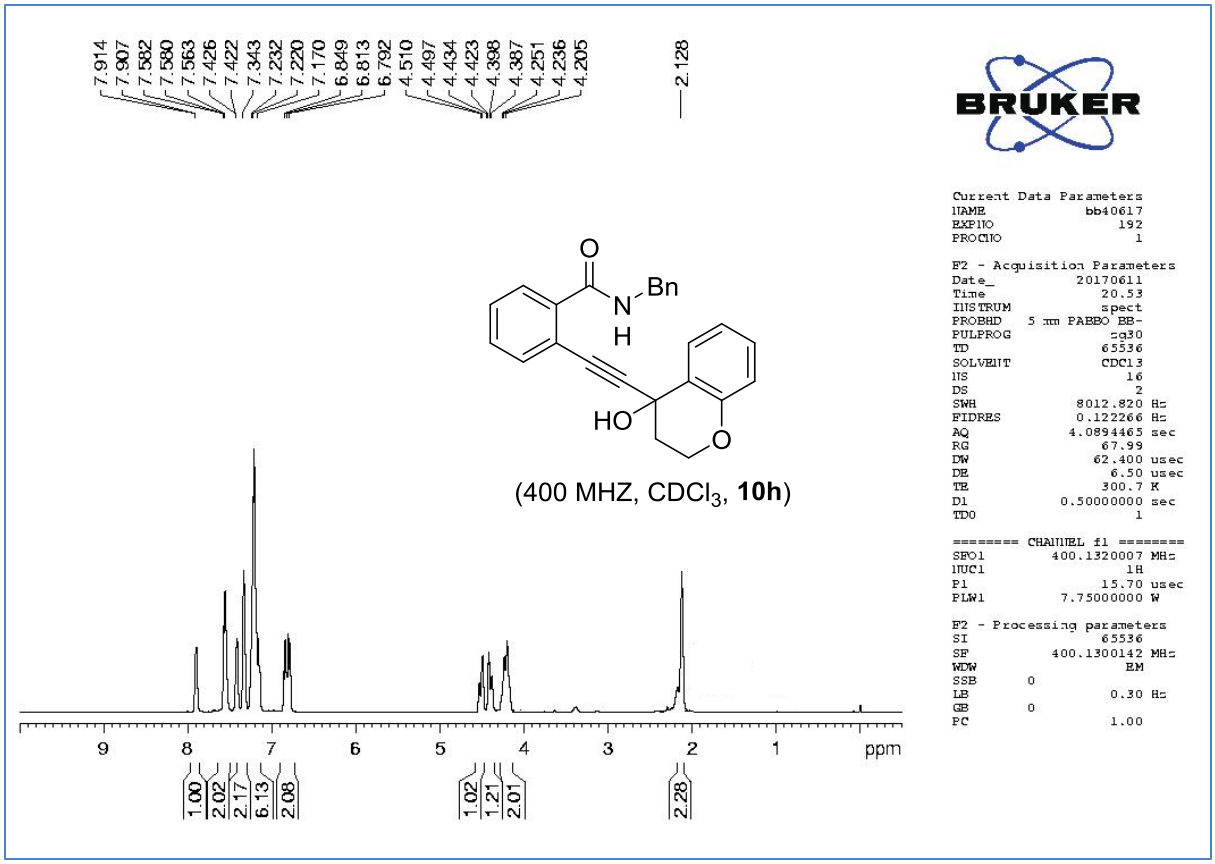
F2 - Processing parameters
SI                    32768
SF            100.6127690 MHz
WDW                      EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```

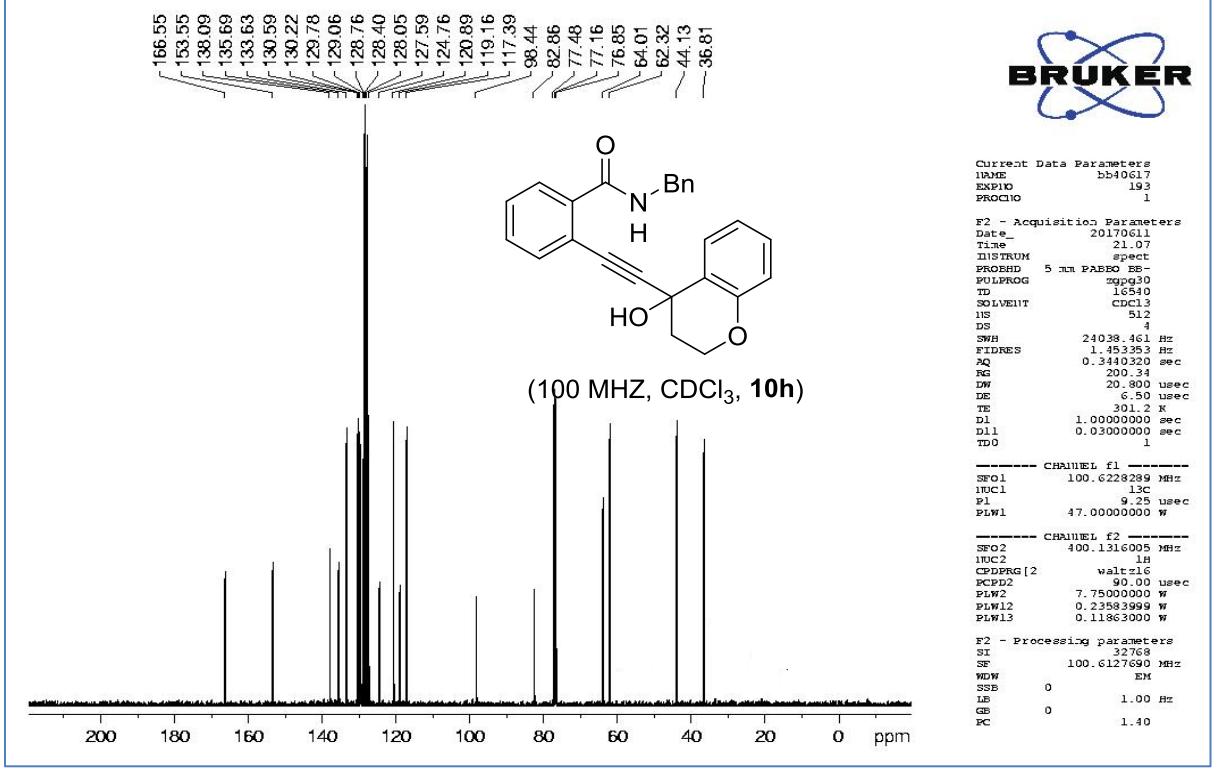

7.416
7.401
7.398
7.394
7.389
7.368
7.352
7.341
7.323
7.321
7.314
7.302
7.292
7.287
7.276
7.272
7.266
7.256
7.245
7.235
4.660
4.646
3.519
2.640
2.583
2.393
2.366
2.344
1.929
BRUKER
O
N
Bn
H
HO
NBn
(400 MHZ, CDCl3, 10g)
Current Data Parameters
NAME bb41117
EXPNO 445
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171121
Time 13.49
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 138.85
DW 62.400 usec
DE 6.50 usec
TE 299.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300114 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 ppm
1.00
1.04
5.20
8.10
1.94
2.09
2.27
4.21
2.24

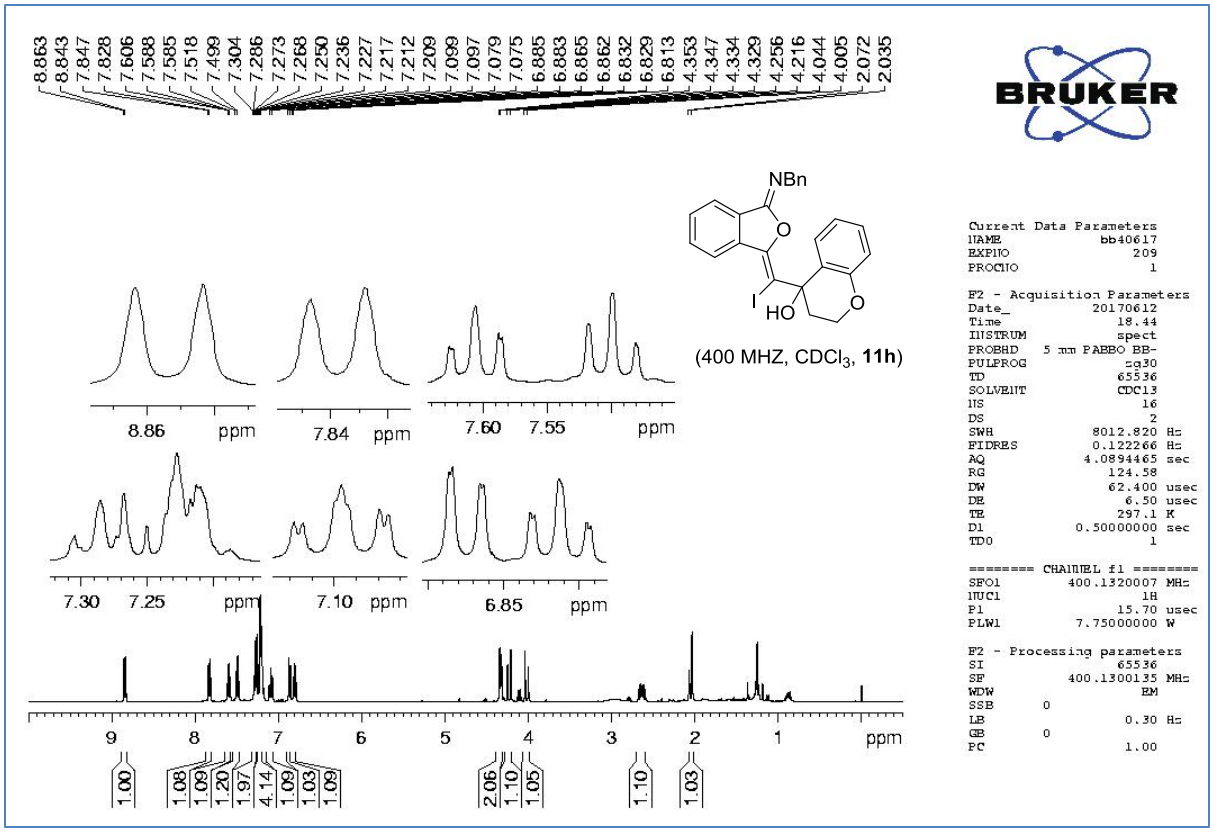

166.41
138.37
138.23
135.47
133.83
130.67
129.98
129.28
129.25
129.05
128.97
128.38
127.90
127.24
119.33
101.11
82.77
77.48
77.16
76.84
70.58
62.77
49.95
44.39
38.94
BRUKER
O
N
Bn
H
HO
NBn
(100 MHZ, CDCl3, 10g)
Current Data Parameters
NAME bb41117
EXPNO 446
PROCNO 1
F2 - Acquisition Parameters
Date_ 20171121
Time 13.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 299.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------ CHANNEL f1 ------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------ CHANNEL f2 ------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200 180 160 140 120 100 80 60 40 20 ppm

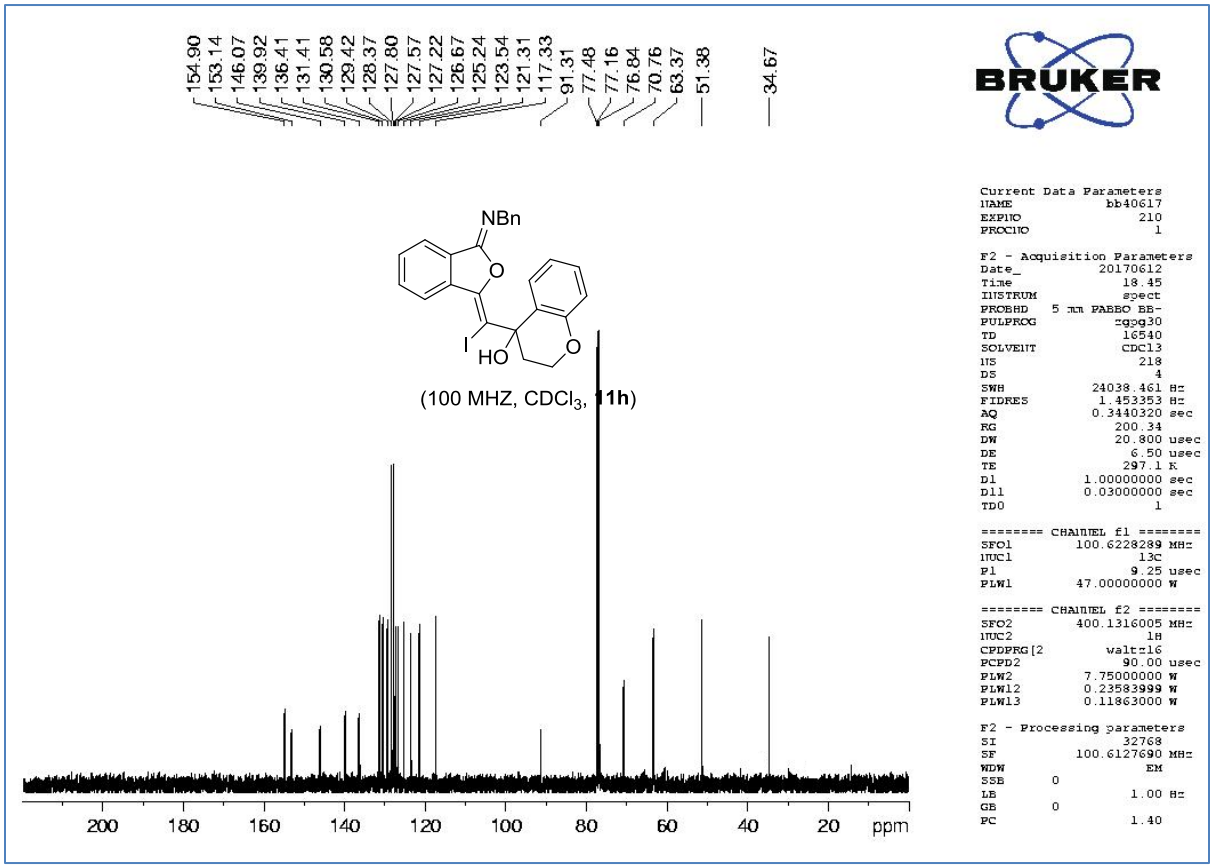

7.595 7.593 7.554 7.553 7.539 7.538 7.524 7.523 7.438 7.424 7.423 7.368 7.353 7.335 7.321 7.313 7.310 7.305 7.297 7.282 7.267 7.257 7.242 4.841 3.590 2.794 2.481 2.465 2.457 1.816 1.794
NBn
O
I
HO
NBn
(500 MHZ, CDCl3, 11g)
8.85 ppm
7.94 ppm
7.60 ppm
7.3 ppm
7.44 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00 0.98 1.13 1.29 2.21 8.05 2.13 2.12 2.07 4.01 2.09
BRUKER
Current Data Parameters
NAME bb50517
EXPNO 26
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170524
Time 0.02
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 32
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 1.6384000 sec
RG 114.76
DW 50.000 usec
DE 6.50 usec
TE 299.6 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 500.1525008 MHz
NUC1 1H
P1 12.75 usec
PLW1 15.30000019 W
F2 - Processing parameters
SI 65536
SF 500.1500135 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

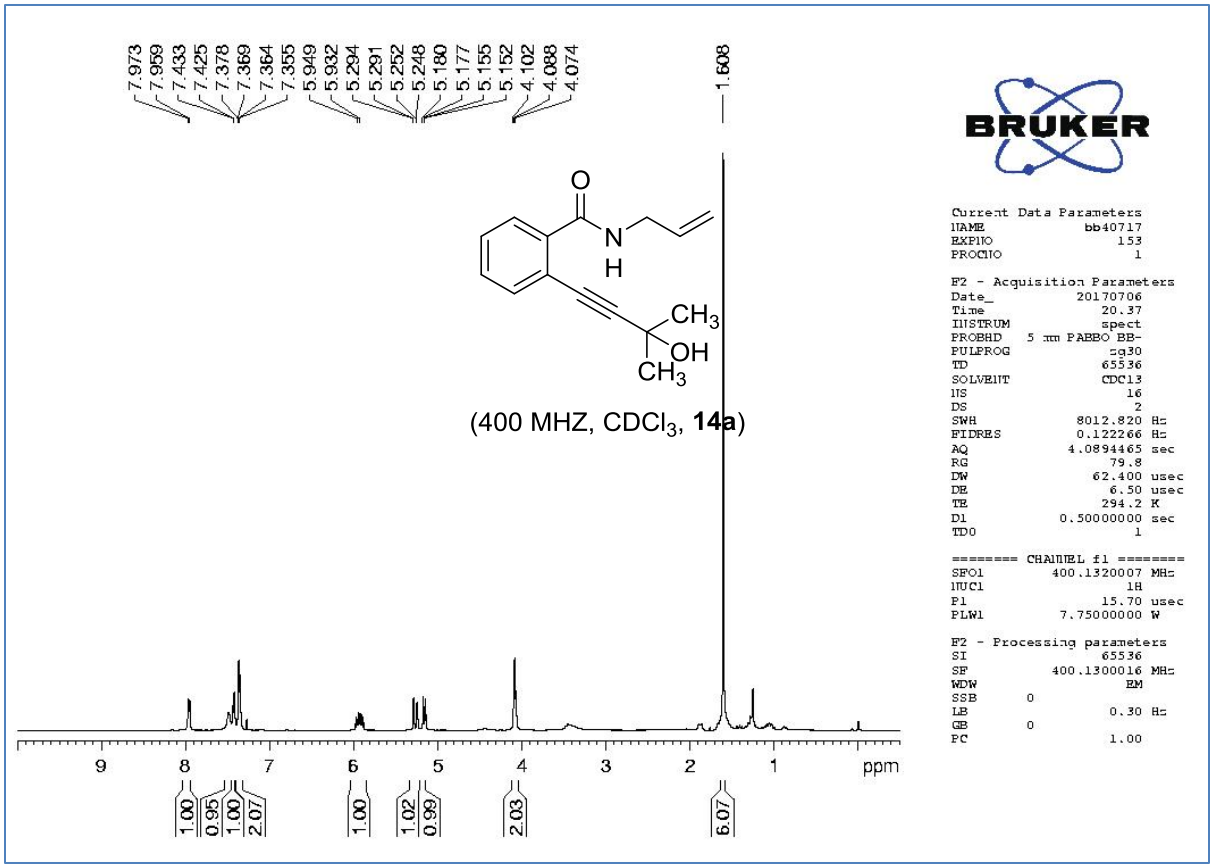

153.45 146.87 139.75 136.73 131.59 131.07 130.63 129.41 129.06 128.70 128.43 127.74 127.32 127.07 125.66 123.57 90.16 77.41 77.16 76.91 73.68 62.97 52.24 49.82 37.19
NBn
O
I
HO
NBn
(125 MHZ, CDCl3, 11g)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb50517
EXPNO 46
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170524
Time 23.54
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 20480
SOLVENT CDCl3
NS 1500
DS 4
SWH 29761.904 Hz
FIDRES 1.453218 Hz
AQ 0.3440640 sec
RG 202.34
DW 16.800 usec
DE 6.50 usec
TE 297.9 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------ CHANNEL f1 ------
SFO1 125.7753932 MHz
NUC1 13C
P1 9.88 usec
PLW1 103.00000000 W
------ CHANNEL f2 ------
SFO2 500.1520006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 80.00 usec
PLW2 15.30000019 W
PLW12 0.38863000 W
PLW13 0.19548000 W
F2 - Processing parameters
SI 32768
SF 125.7628180 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


7.914
7.907
7.582
7.580
7.563
7.426
7.422
7.343
7.232
7.220
7.170
6.849
6.813
6.792
4.510
4.497
4.434
4.423
4.398
4.387
4.251
4.236
4.205
2.128
O
N
Bn
H
HO
O
(400 MHZ, CDCl3, 10h)
9
8
7
6
5
4
3
2
1
ppm
1.00
2.02
2.17
6.13
2.08
1.02
1.21
2.01
2.28
BRUKER
Current Data Parameters
NAME bb40617
EXPNO 192
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170611
Time 20.53
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 67.99
DW 62.400 usec
DE 6.50 usec
TE 300.7 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300142 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


166.55
153.55
138.09
135.69
133.63
130.59
130.22
129.78
129.06
128.76
128.40
128.05
127.59
124.76
120.89
119.16
117.39
98.44
82.86
77.48
77.16
76.85
64.01
62.32
44.13
36.81
O
N
Bn
H
HO
O
(100 MHZ, CDCl3, 10h)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40617
EXPNO 193
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170611
Time 21.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 512
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 301.2 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.863 8.843 7.847 7.828 7.606 7.588 7.585 7.518 7.499 7.304 7.286 7.273 7.268 7.250 7.236 7.227 7.217 7.212 7.209 7.099 7.097 7.079 7.075 6.885 6.883 6.865 6.862 6.832 6.829 6.813 4.353 4.347 4.334 4.329 4.256 4.216 4.044 4.005 2.072 2.035
NBn
O
I
HO
O
(400 MHZ, CDCl3, 11h)
8.86 ppm
7.84 ppm
7.60 7.55 ppm
7.30 7.25 ppm
7.10 ppm
6.85 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00 1.08 1.09 1.20 1.97 4.14 1.09 1.03 1.09 2.06 1.10 1.05 1.10 1.03
BRUKER
Current Data Parameters
NAME bb40617
EXPNO 209
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170612
Time 18.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 124.58
DW 62.400 usec
DE 6.50 usec
TE 297.1 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300135 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


154.90 153.14 146.07 139.92 136.41 131.41 130.58 129.42 128.37 127.80 127.57 127.22 126.67 125.24 123.54 121.31 117.33 91.31 77.48 77.16 76.84 70.76 63.37 51.38 34.67
NBn
O
I
HO
O
(100 MHZ, CDCl3, 11h)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40617
EXPNO 210
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170612
Time 18.45
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 218
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 297.1 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



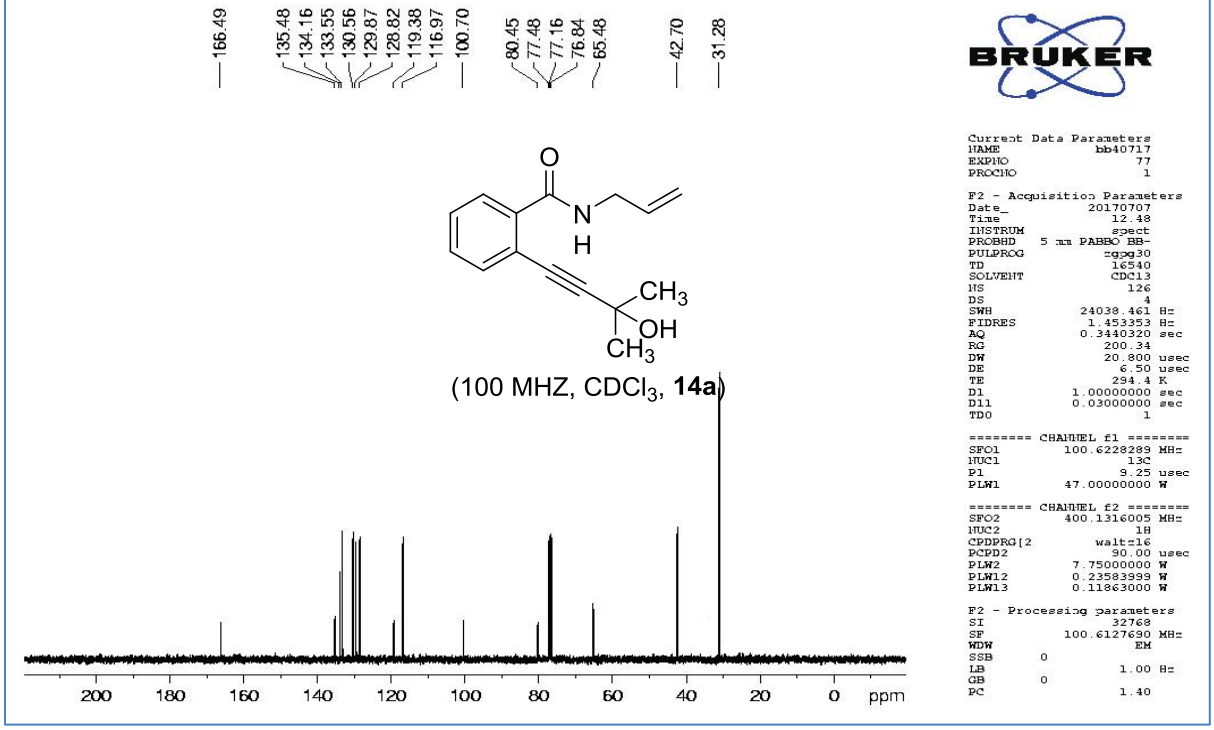
(400 MHZ, $CDCl_3$, **14a**)

```
Current Data Parameters
NAME                  bb40717
EXPNO                     153
PROCNO                      1

F2 - Acquisition Parameters
Date_                20170706
Time                    20.37
INSTRUM                 spect
PROBHD    5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894465 sec
RG                        79.8
DW                      62.400 usec
DE                        6.50 usec
TE                       294.2 K
D1                   0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1               400.1320007 MHz
NUC1                        1H
P1                       15.70 usec
PLW1                7.75000000 W

F2 - Processing parameters
SI                         65536
SF                 400.1300016 MHz
WDW                           EM
SSB                0
LB                        0.30 Hz
GB                 0
PC                        1.00
```



(100 MHZ, $CDCl_3$, **14a**)

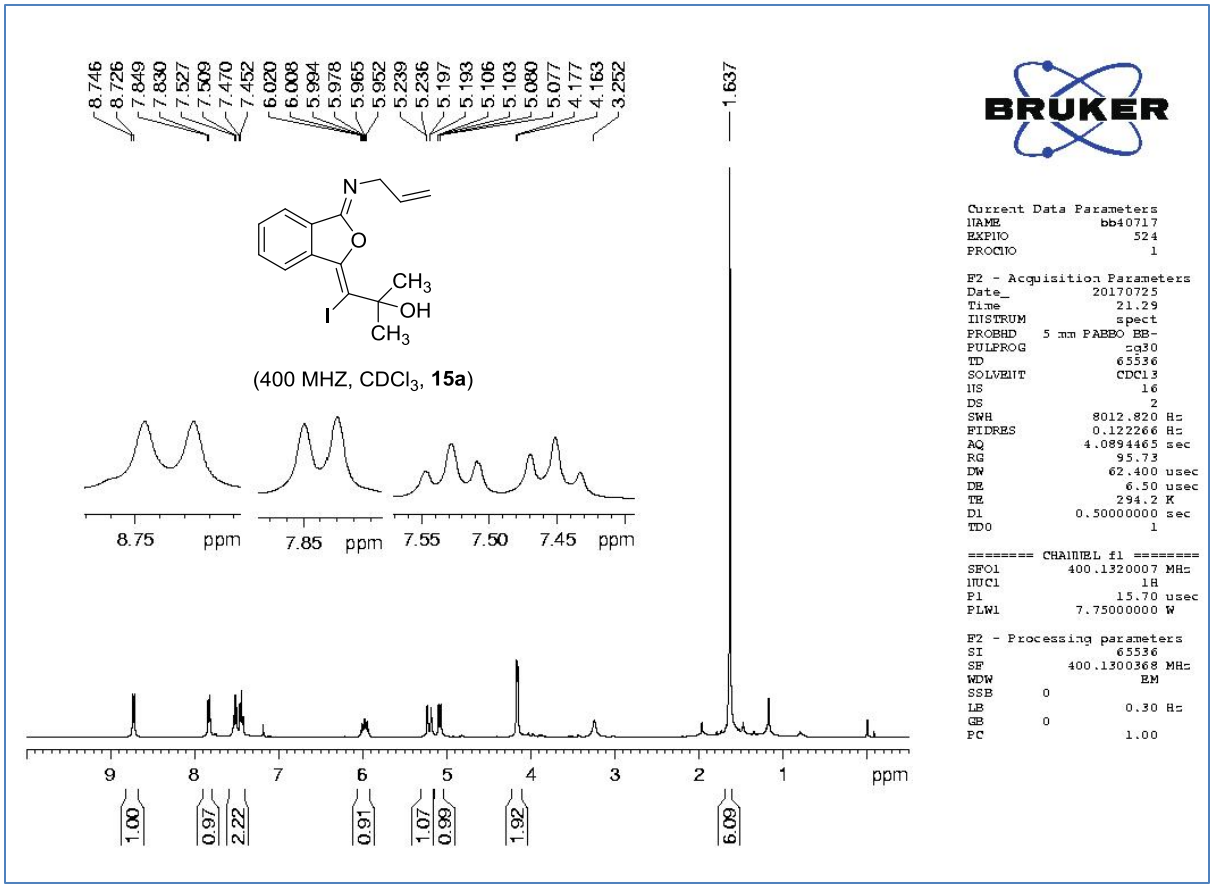
```
Current Data Parameters
NAME                  bb40717
EXPNO                      77
PROCNO                      1

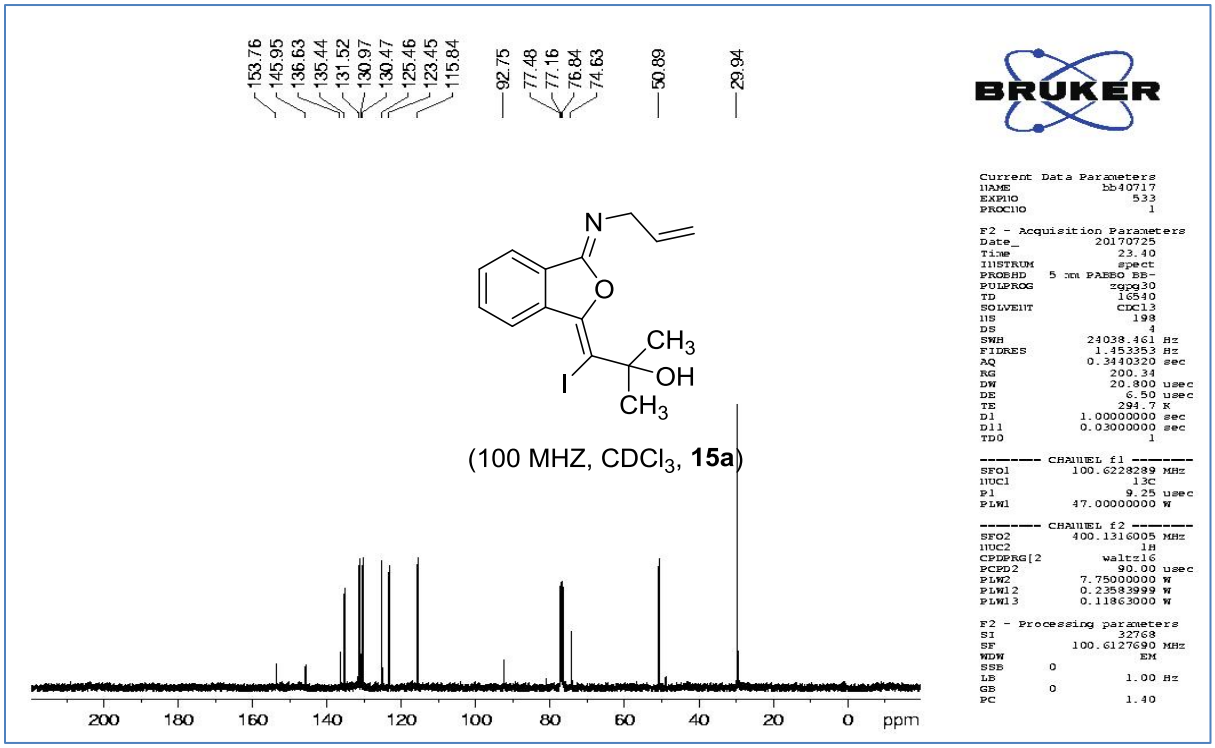
F2 - Acquisition Parameters
Date_                20170707
Time                    12.48
INSTRUM                 spect
PROBHD    5 mm PABBO BB-
PULPROG              zgpg30
TD                     16540
SOLVENT                CDCl3
NS                       126
DS                         4
SWH                24038.461 Hz
FIDRES              1.453353 Hz
AQ                  0.3440320 sec
RG                     200.34
DW                     20.800 usec
DE                        6.50 usec
TE                       294.4 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                         1

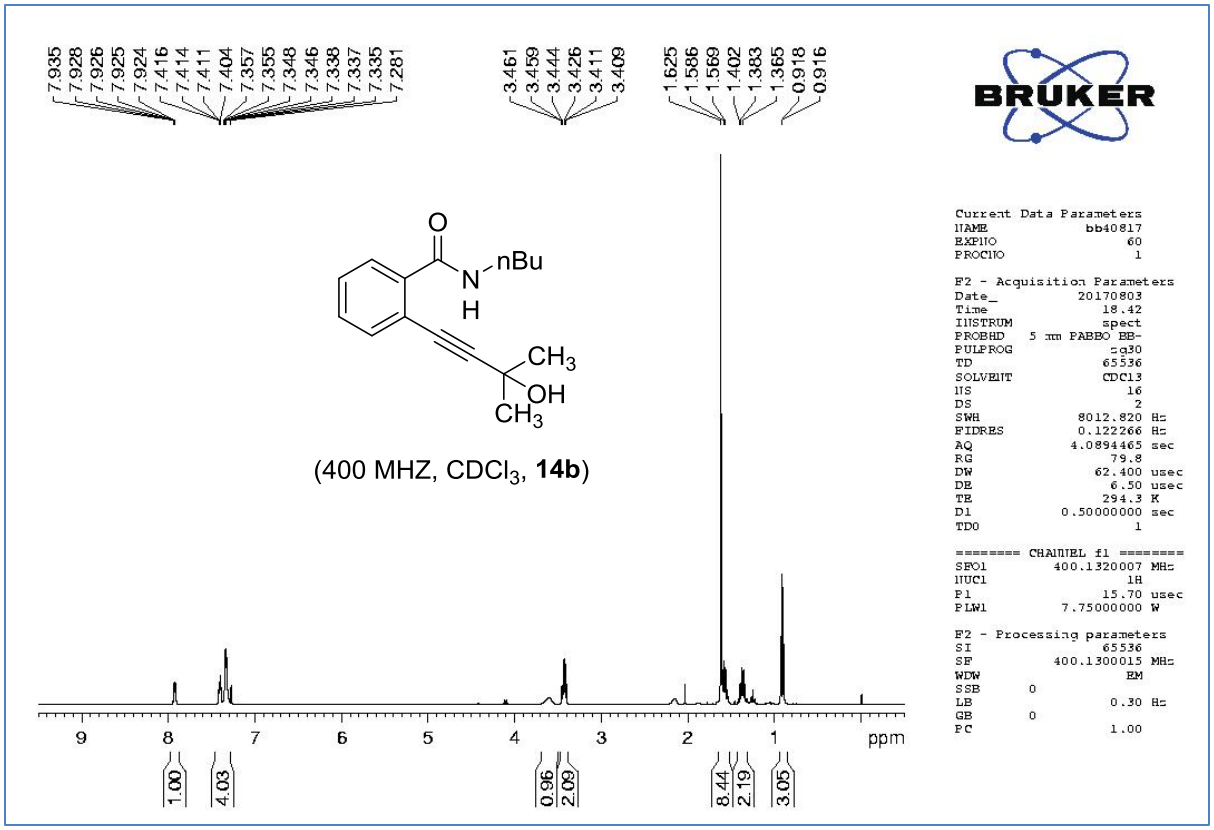
======== CHANNEL f1 ========
SFO1               100.6228289 MHz
NUC1                        13C
P1                        9.25 usec
PLW1                47.00000000 W

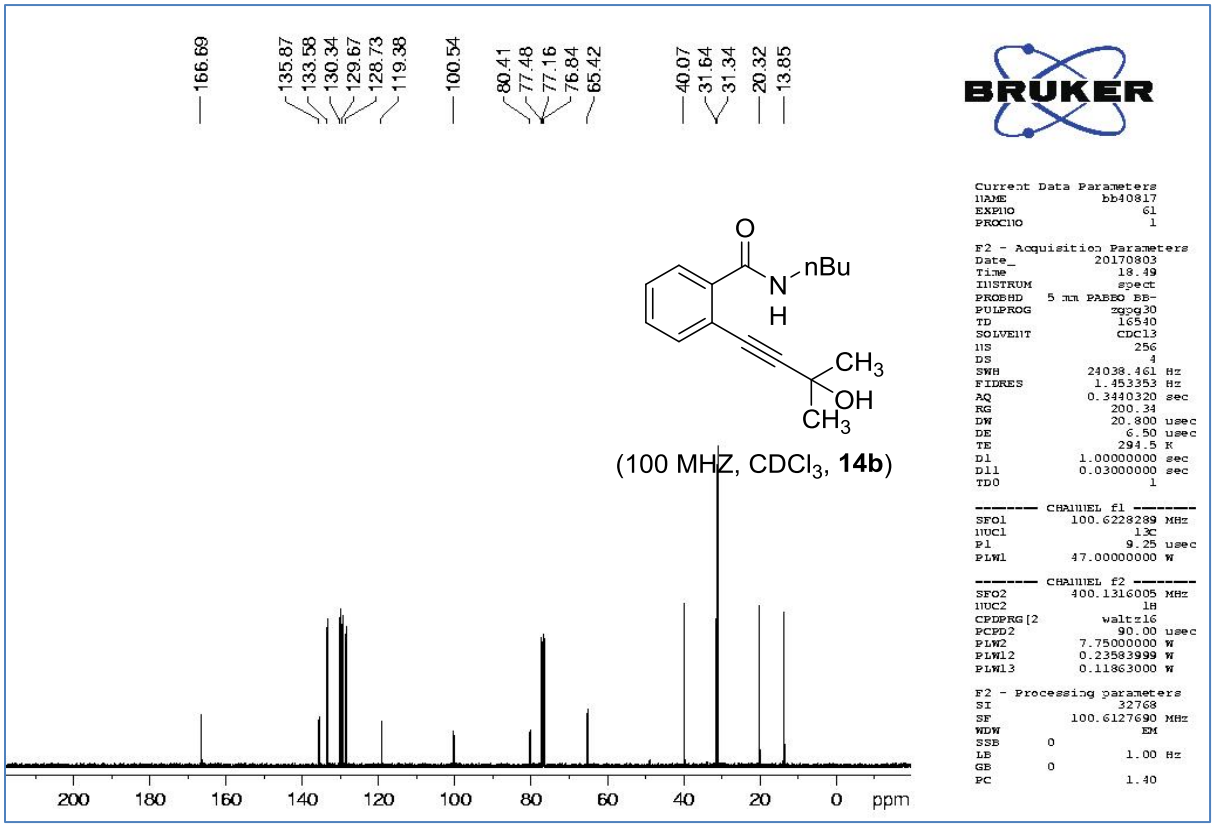
======== CHANNEL f2 ========
SFO2               400.1316005 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                    90.00 usec
PLW2                7.75000000 W
PLW12               0.23583999 W
PLW13               0.11863000 W

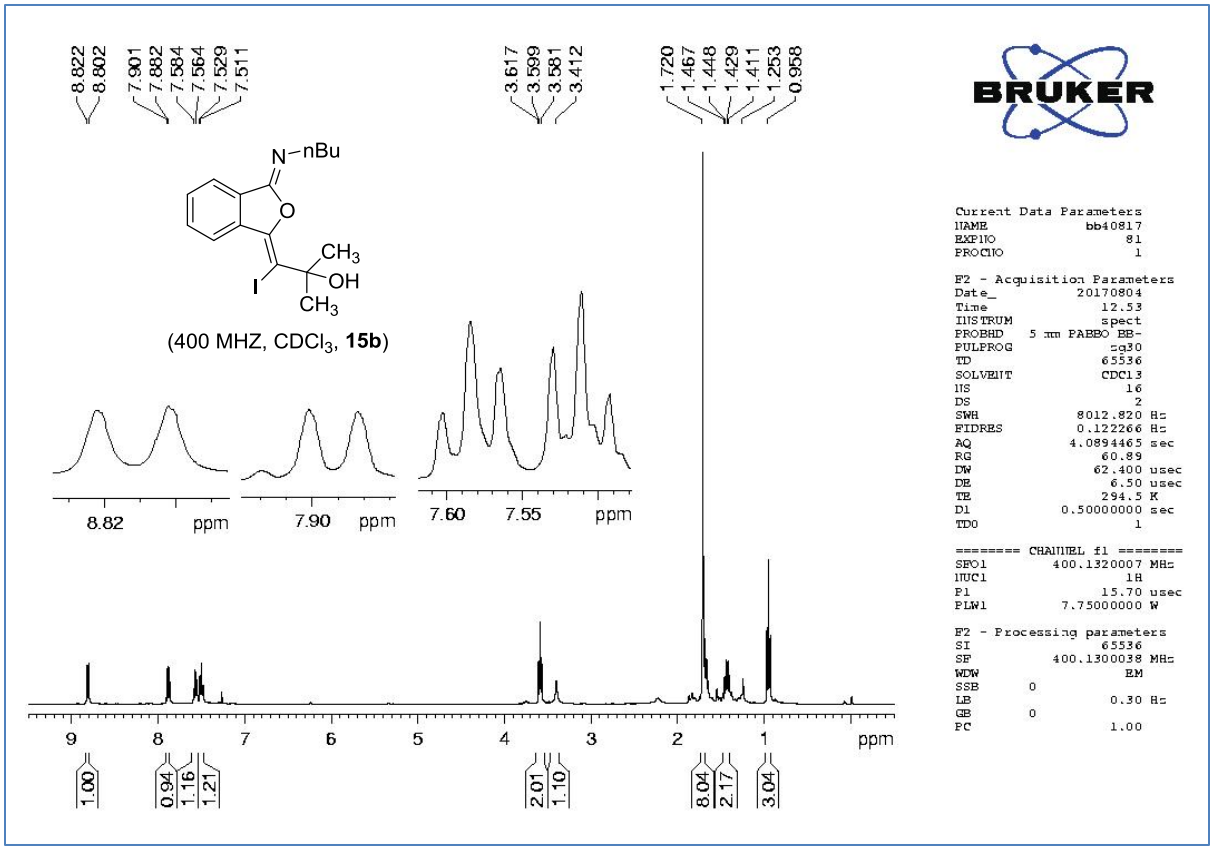
F2 - Processing parameters
SI                         32768
SF                 100.6127690 MHz
WDW                           EM
SSB                0
LB                        1.00 Hz
GB                 0
PC                        1.40
```

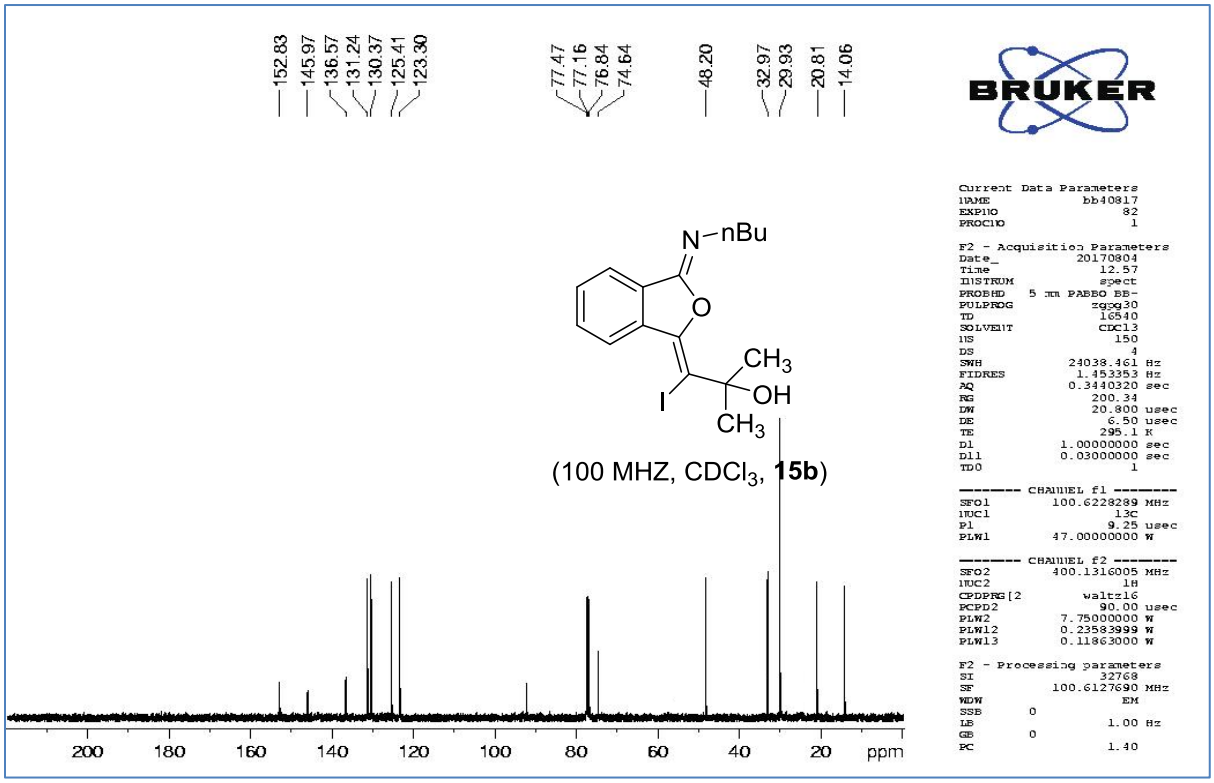

8.746
8.726
7.849
7.830
7.527
7.509
7.470
7.452
6.020
6.008
5.994
5.978
5.965
5.952
5.239
5.236
5.197
5.193
5.106
5.103
5.080
5.077
4.177
4.163
3.252
1.637
N
O
CH3
OH
I
CH3
(400 MHZ, CDCl3, 15a)
8.75 ppm
7.85 ppm
7.55
7.50
7.45 ppm
9
8
7
6
5
4
3
2
1
ppm
1.00
0.97
2.22
0.91
1.07
0.99
1.92
6.09
BRUKER
Current Data Parameters
NAME bb40717
EXPNO 524
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170725
Time 21.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 95.73
DW 62.400 usec
DE 6.50 usec
TE 294.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300368 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

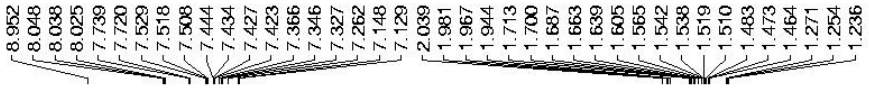

153.76
145.95
136.63
135.44
131.52
130.97
130.47
125.46
123.45
115.84
92.75
77.48
77.16
76.84
74.63
50.89
29.94
N
O
CH3
OH
I
CH3
(100 MHZ, CDCl3, 15a)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40717
EXPNO 533
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170725
Time 23.40
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 198
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

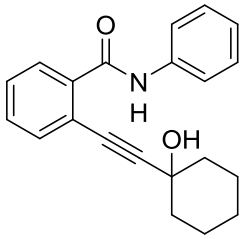

7.935
7.928
7.926
7.925
7.924
7.416
7.414
7.411
7.404
7.357
7.355
7.348
7.346
7.338
7.337
7.335
7.281
3.461
3.459
3.444
3.426
3.411
3.409
1.625
1.586
1.569
1.402
1.383
1.365
0.918
0.916
O
N
H
nBu
CH3
OH
CH3
(400 MHZ, CDCl3, 14b)
9
8
7
6
5
4
3
2
1
ppm
1.00
4.03
0.96
2.09
8.44
2.19
3.05
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 60
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170803
Time 18.42
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 79.8
DW 62.400 usec
DE 6.50 usec
TE 294.3 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300015 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


166.69
135.87
133.58
130.34
129.67
128.73
119.38
100.54
80.41
77.48
77.16
76.84
65.42
40.07
31.64
31.34
20.32
13.85
O
N
H
nBu
CH3
OH
CH3
(100 MHZ, CDCl3, 14b)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 61
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170803
Time 18.49
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.5 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

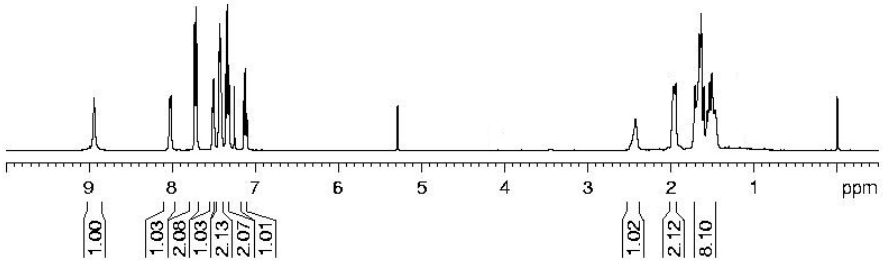

8.822
8.802
7.901
7.882
7.584
7.564
7.529
7.511
3.617
3.599
3.581
3.412
1.720
1.467
1.448
1.429
1.411
1.253
0.958
N–nBu
O
CH3
I
OH
CH3
(400 MHZ, CDCl3, 15b)
8.82 ppm
7.90 ppm
7.60 7.55 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00
0.94
1.16
1.21
2.01
1.10
8.04
2.17
3.04
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 81
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170804
Time 12.53
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 60.89
DW 62.400 usec
DE 6.50 usec
TE 294.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300038 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


152.83
145.97
136.57
131.24
130.37
125.41
123.30
77.47
77.16
76.84
74.64
48.20
32.97
29.93
20.81
14.06
N–nBu
O
CH3
I
OH
CH3
(100 MHZ, CDCl3, 15b)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 82
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170804
Time 12.57
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 150
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40





(400 MHZ, $CDCl_3$, **14c**)

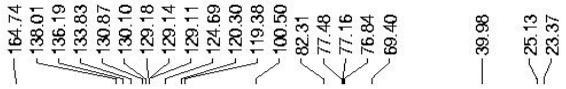


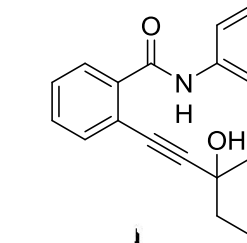

```
Current Data Parameters
NAME                  bb40717
EXPNO                     382
PROCNO                      1

F2 - Acquisition Parameters
Date_               20170722
Time                   16.52
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    138.85
DW                    62.400 usec
DE                     6.50 usec
TE                    294.4 K
D1                 0.50000000 sec
TD0                         1

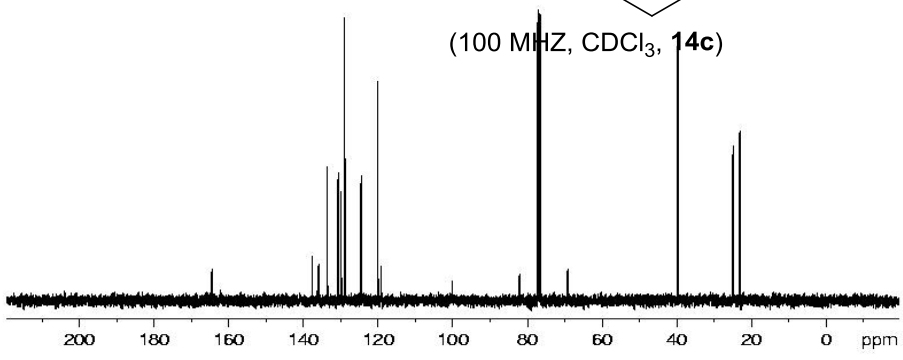
======== CHANNEL f1 ========
SFO1          400.1320007 MHz
NUC1                     1H
P1                    15.70 usec
PLW1           7.75000000 W

F2 - Processing parameters
SI                    65536
SF          400.1300087 MHz
WDW                     EM
SSB                  0
LB                    0.30 Hz
GB                   0
PC                    1.00
```





(100 MHZ, $CDCl_3$, **14c**)



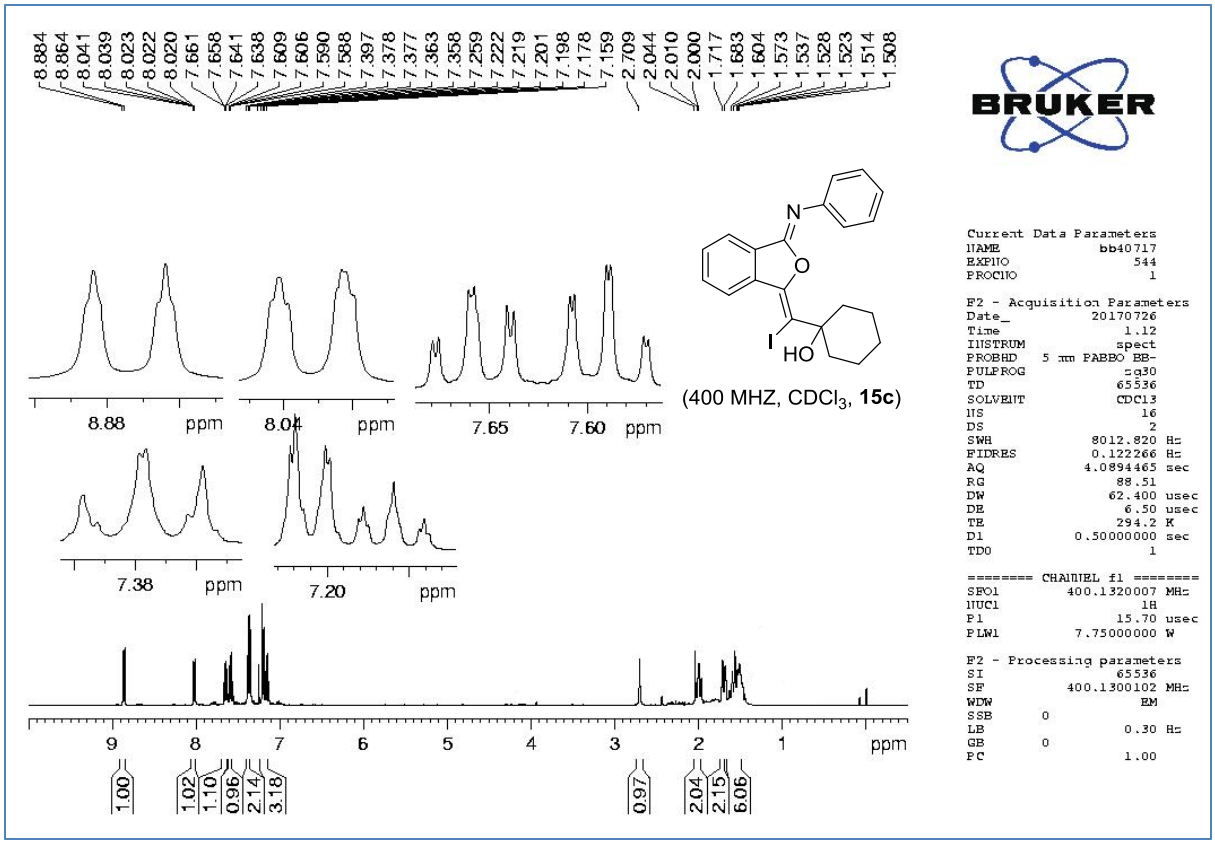

```
Current Data Parameters
NAME                  bb40717
EXPNO                     383
PROCNO                      1

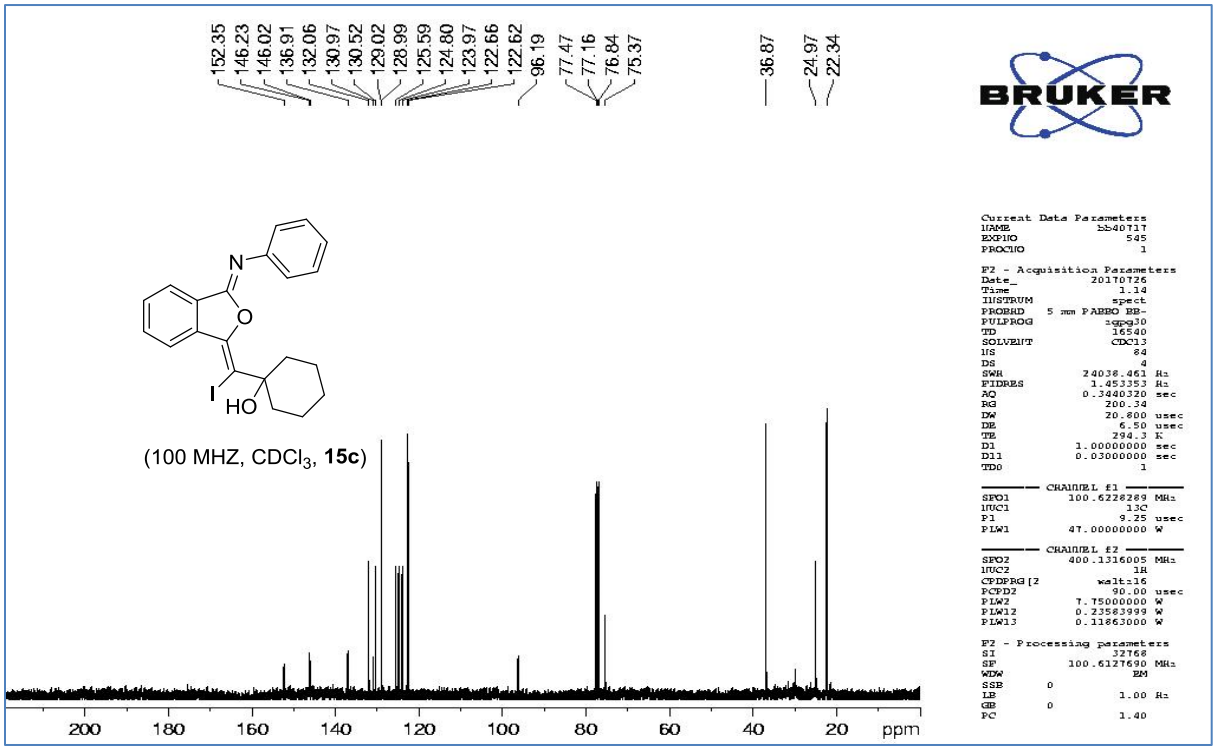
F2 - Acquisition Parameters
Date_               20170722
Time                   16.56
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      250
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    294.7 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                         1

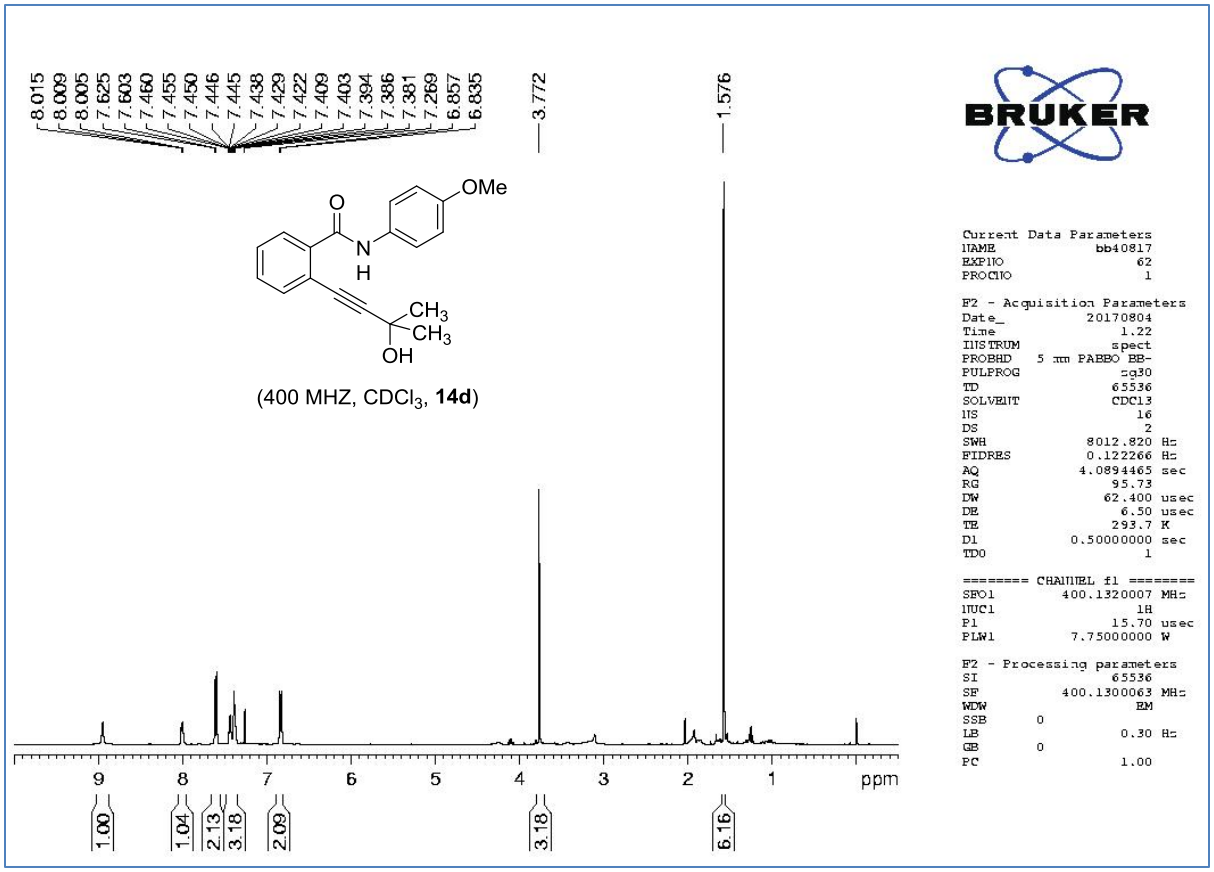
======== CHANNEL f1 ========
SFO1          100.6228289 MHz
NUC1                    13C
P1                    9.25 usec
PLW1          47.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                     1H
CPDPRG[2            waltz16
PCPD2                 90.00 usec
PLW2           7.75000000 W
PLW12          0.23583999 W
PLW13          0.11863000 W

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


8.884 8.864 8.041 8.039 8.023 8.022 8.020 7.661 7.658 7.641 7.638 7.609 7.606 7.590 7.588 7.397 7.378 7.377 7.363 7.358 7.259 7.222 7.219 7.201 7.198 7.178 7.159 2.709 2.044 2.010 2.000 1.717 1.683 1.604 1.573 1.537 1.528 1.523 1.514 1.508
8.88 ppm
8.04 ppm
7.65 7.60 ppm
7.38 ppm
7.20 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00 1.02 1.10 0.96 2.14 3.18 0.97 2.04 2.15 6.06
N O I HO
(400 MHZ, CDCl3, 15c)
Current Data Parameters
NAME bb40717
EXPNO 544
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170726
Time 1.12
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 88.51
DW 62.400 usec
DE 6.50 usec
TE 294.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300102 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


152.35 146.23 146.02 136.91 132.06 130.97 130.52 129.02 128.99 125.59 124.80 123.97 122.66 122.62 96.19 77.47 77.16 76.84 75.37 36.87 24.97 22.34
200 180 160 140 120 100 80 60 40 20 ppm
N O I HO
(100 MHZ, CDCl3, 15c)
Current Data Parameters
NAME bb40717
EXPNO 545
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170726
Time 1.14
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 84
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3400320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.3 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



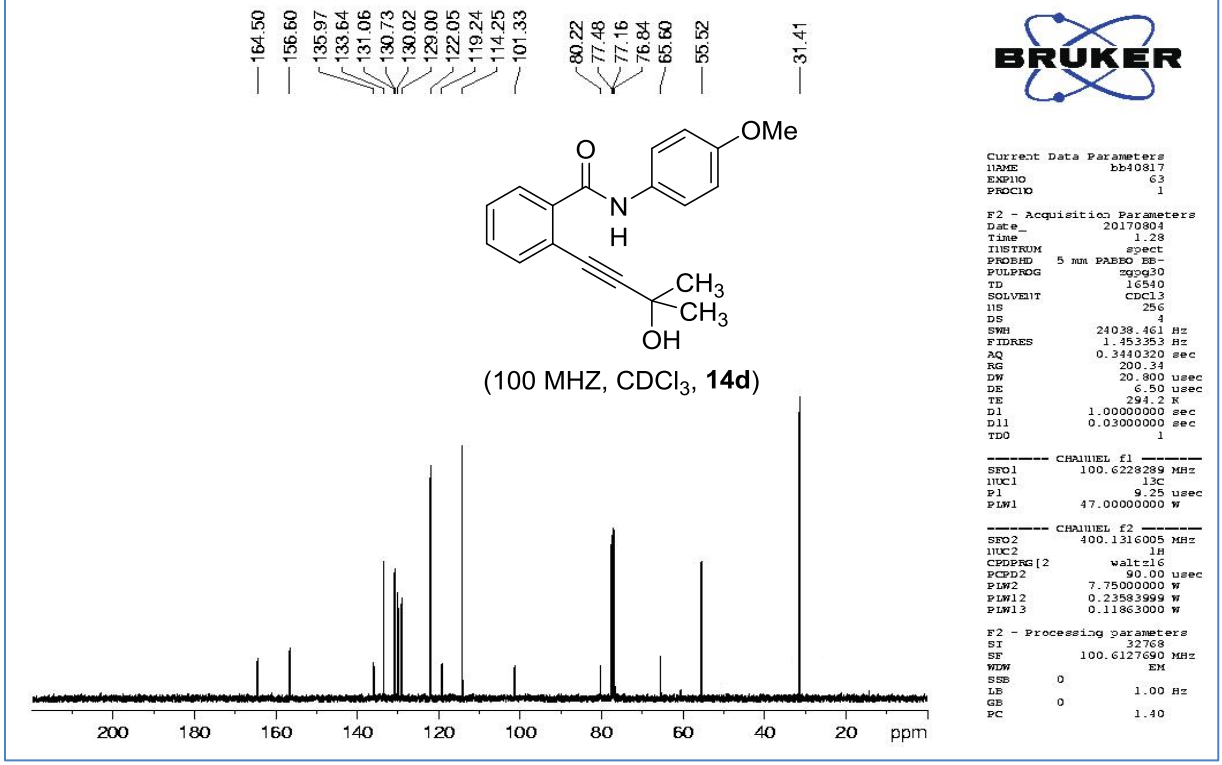
(400 MHZ, $CDCl_3$, **14d**)

```
Current Data Parameters
NAME                 bb40817
EXPNO                     62
PROCNO                     1

F2 - Acquisition Parameters
Date_               20170804
Time                    1.22
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                     95.73
DW                    62.400 usec
DE                     6.50 usec
TE                    293.7 K
D1                 0.50000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1          400.1320007 MHz
NUC1                    1H
P1                    15.70 usec
PLW1           7.75000000 W

F2 - Processing parameters
SI                    65536
SF            400.1300063 MHz
WDW                     EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```



(100 MHZ, $CDCl_3$, **14d**)

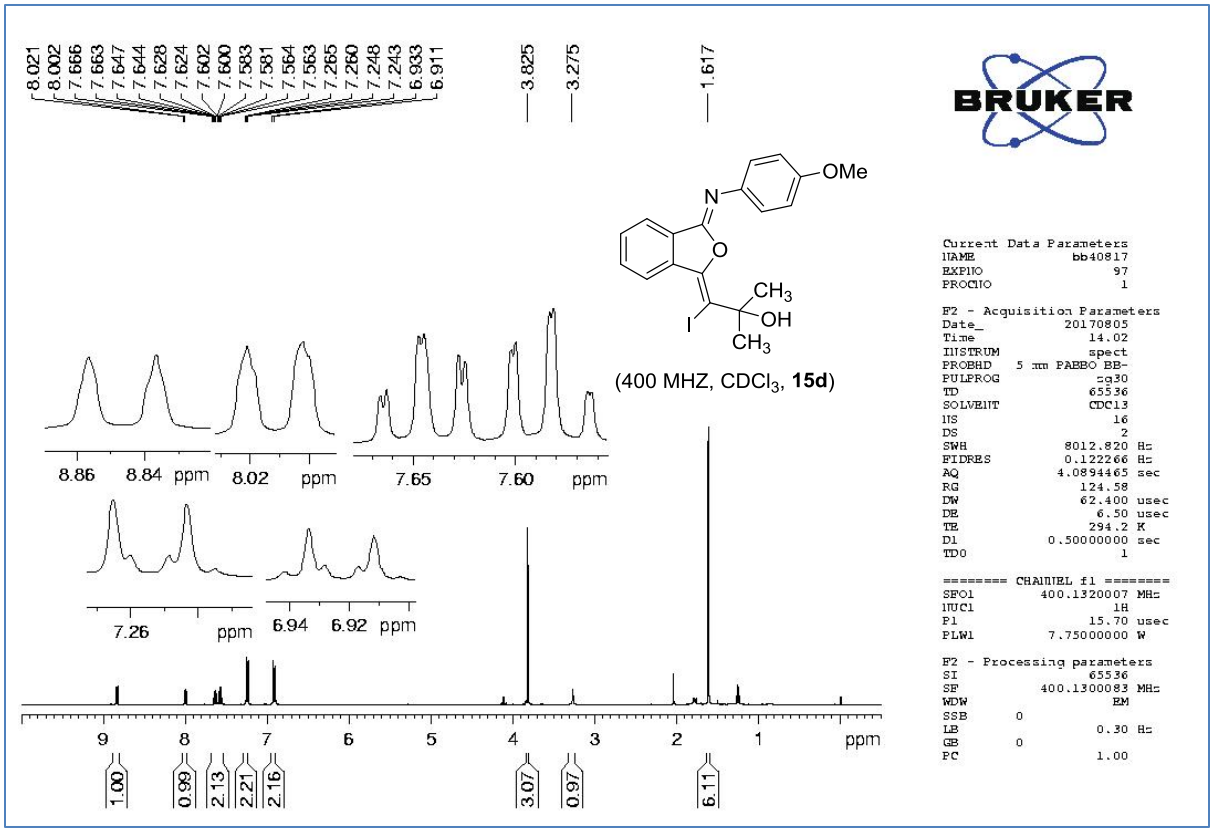
```
Current Data Parameters
NAME                 bb40817
EXPNO                     63
PROCNO                     1

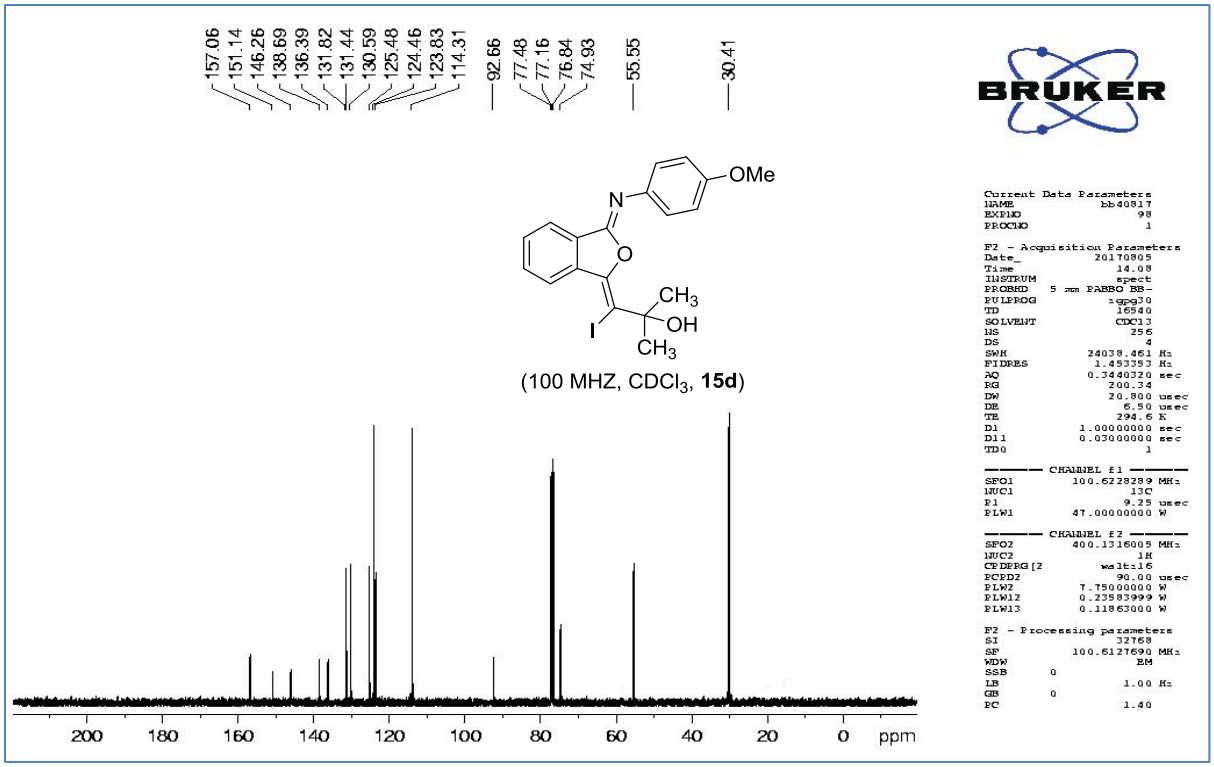
F2 - Acquisition Parameters
Date_               20170804
Time                    1.28
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                     200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    294.2 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                        1

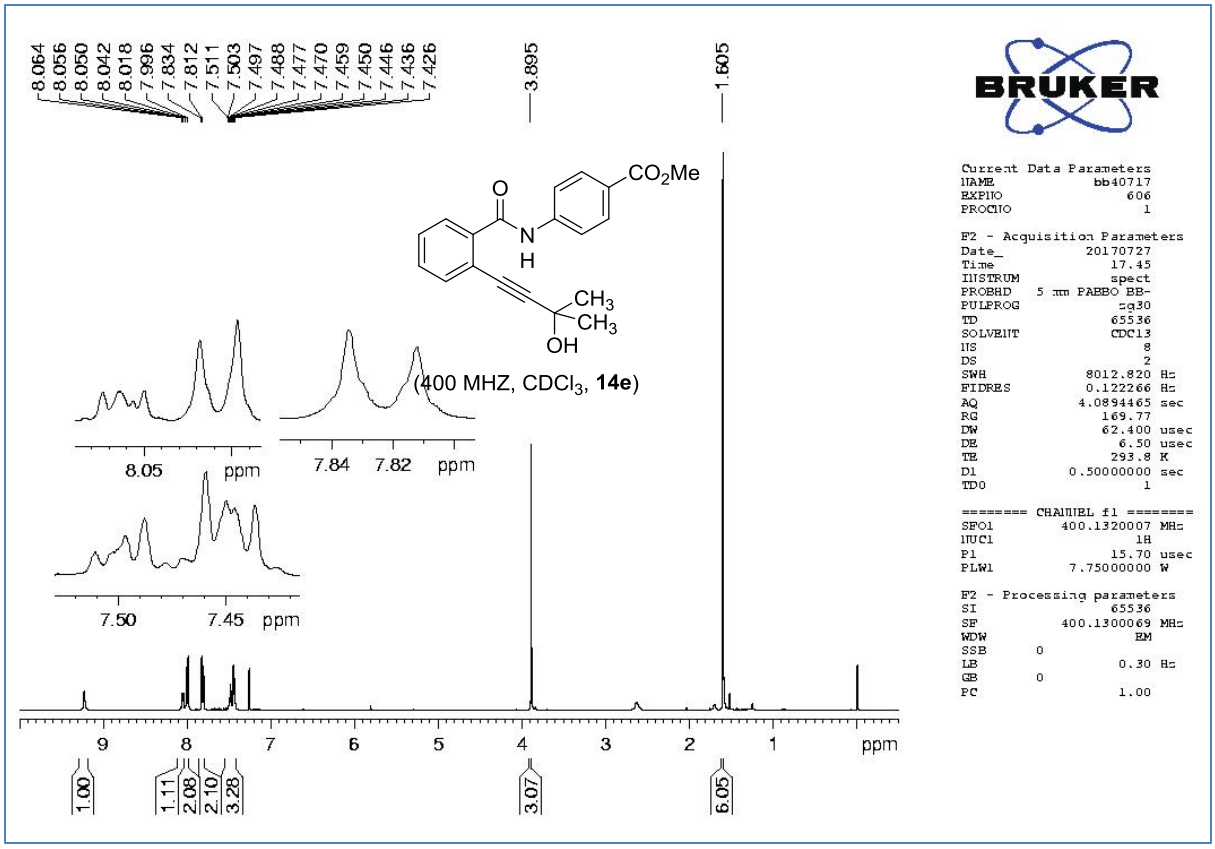
======== CHANNEL f1 ========
SFO1          100.6228289 MHz
NUC1                    13C
P1                     9.25 usec
PLW1          47.00000000 W

======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                    1H
CPDPRG[2           waltz16
PCPD2                 90.00 usec
PLW2           7.75000000 W
PLW12          0.23583999 W
PLW13          0.11863000 W

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


8.021
8.002
7.666
7.663
7.647
7.644
7.628
7.624
7.602
7.600
7.583
7.581
7.564
7.563
7.265
7.260
7.248
7.243
6.933
6.911
3.825
3.275
1.617
OMe
N
O
CH3
OH
I
CH3
(400 MHZ, CDCl3, 15d)
8.86
8.84 ppm
8.02 ppm
7.65
7.60 ppm
7.26 ppm
6.94
6.92 ppm
9
8
7
6
5
4
3
2
1
ppm
1.00
0.99
2.13
2.21
2.16
3.07
0.97
6.11
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 97
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170805
Time 14.02
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 124.58
DW 62.400 usec
DE 6.50 usec
TE 294.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300083 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


157.06
151.14
146.26
138.69
136.39
131.82
131.44
130.59
125.48
124.46
123.83
114.31
92.66
77.48
77.16
76.84
74.93
55.55
30.41
OMe
N
O
CH3
OH
I
CH3
(100 MHZ, CDCl3, 15d)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 98
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170805
Time 14.08
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.6 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
CHANNEL f1
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
CHANNEL f2
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

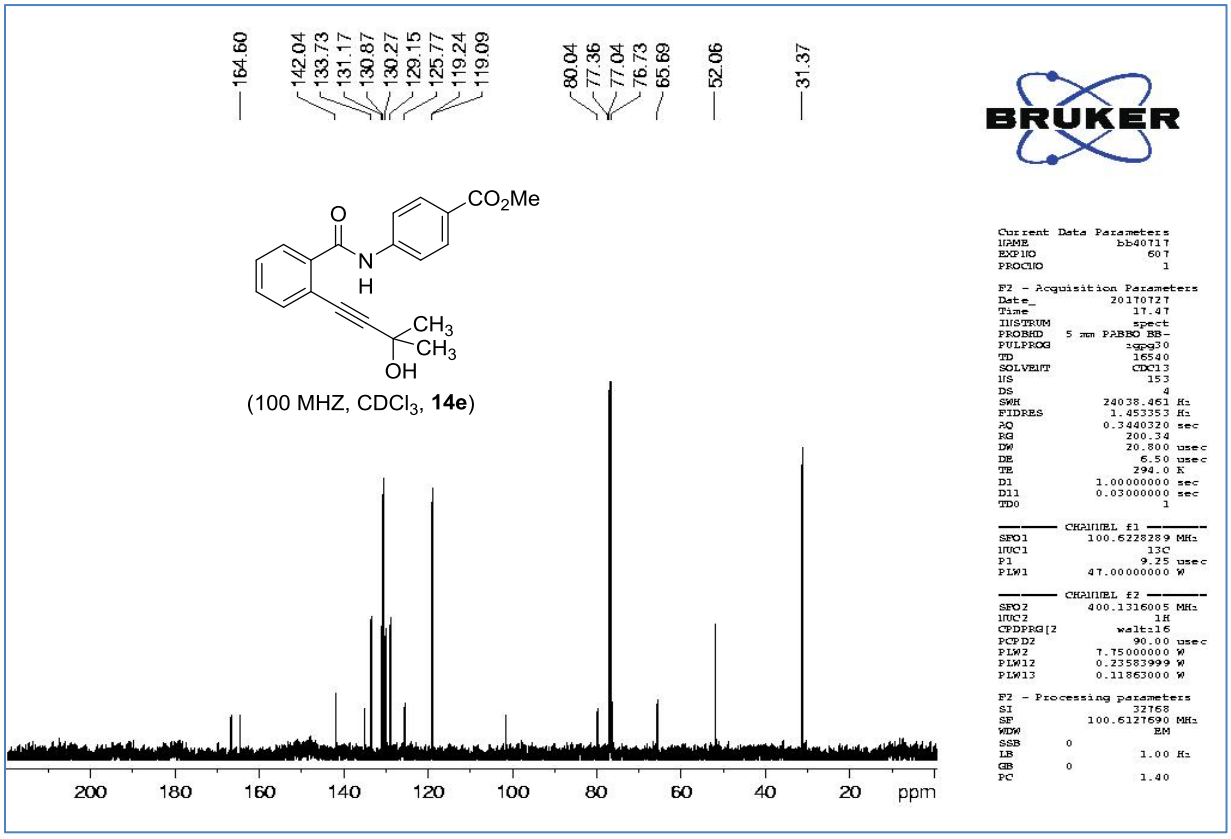



```
Current Data Parameters
NAME                  bb40717
EXPNO                     606
PROCNO                      1

F2 - Acquisition Parameters
Date_               20170727
Time                   17.45
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        8
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    169.77
DW                    62.400 usec
DE                     6.50 usec
TE                    293.8 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                     1H
P1                    15.70 usec
PLW1            7.75000000 W

F2 - Processing parameters
SI                    65536
SF              400.1300069 MHz
WDW                      EM
SSB         0
LB                     0.30 Hz
GB          0
PC                     1.00
```



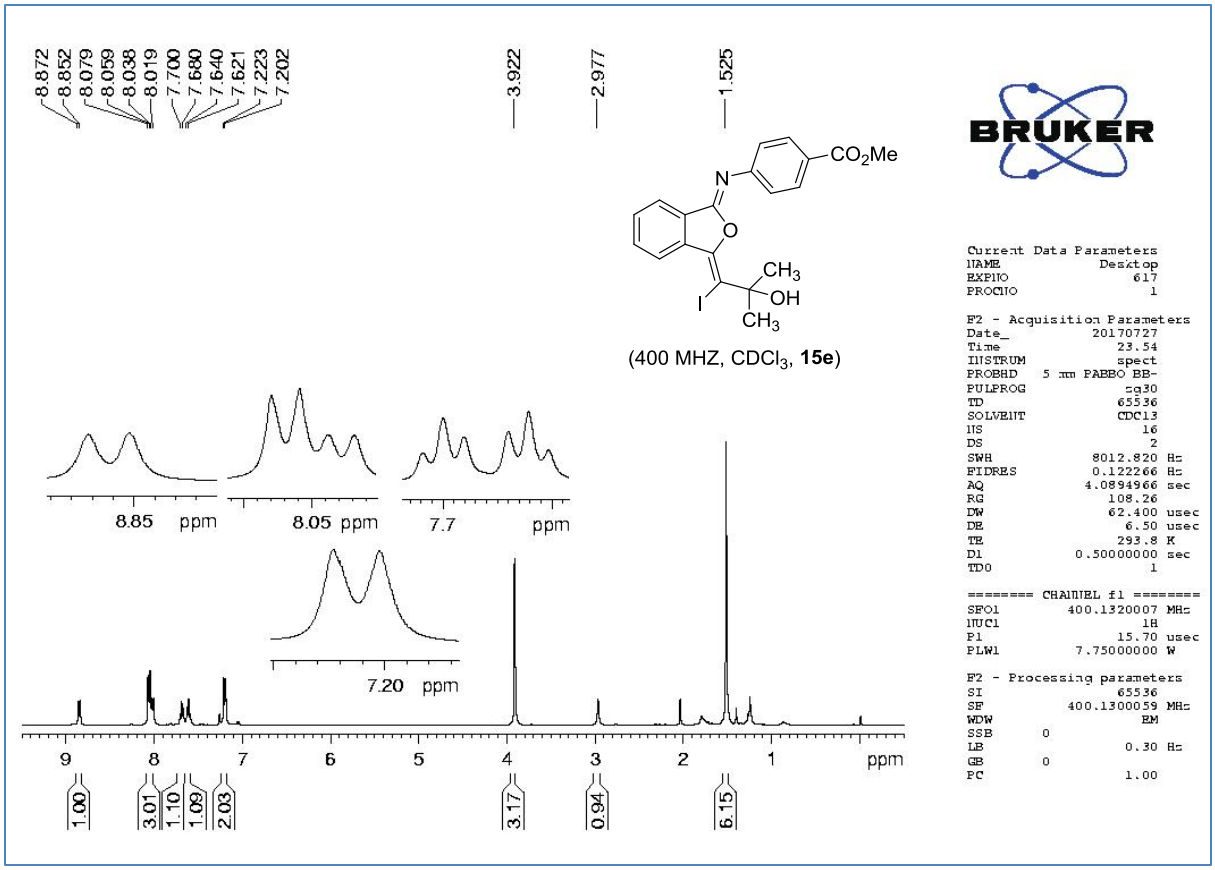

```
Current Data Parameters
NAME                  bb40717
EXPNO                     607
PROCNO                      1

F2 - Acquisition Parameters
Date_               20170727
Time                   17.47
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      153
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    294.0 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            100.6228289 MHz
NUC1                     13C
P1                     9.25 usec
PLW1           47.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                     1H
CPDPRG[2              waltz16
PCPD2                 90.00 usec
PLW2            7.75000000 W
PLW12           0.23583999 W
PLW13           0.11863000 W

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



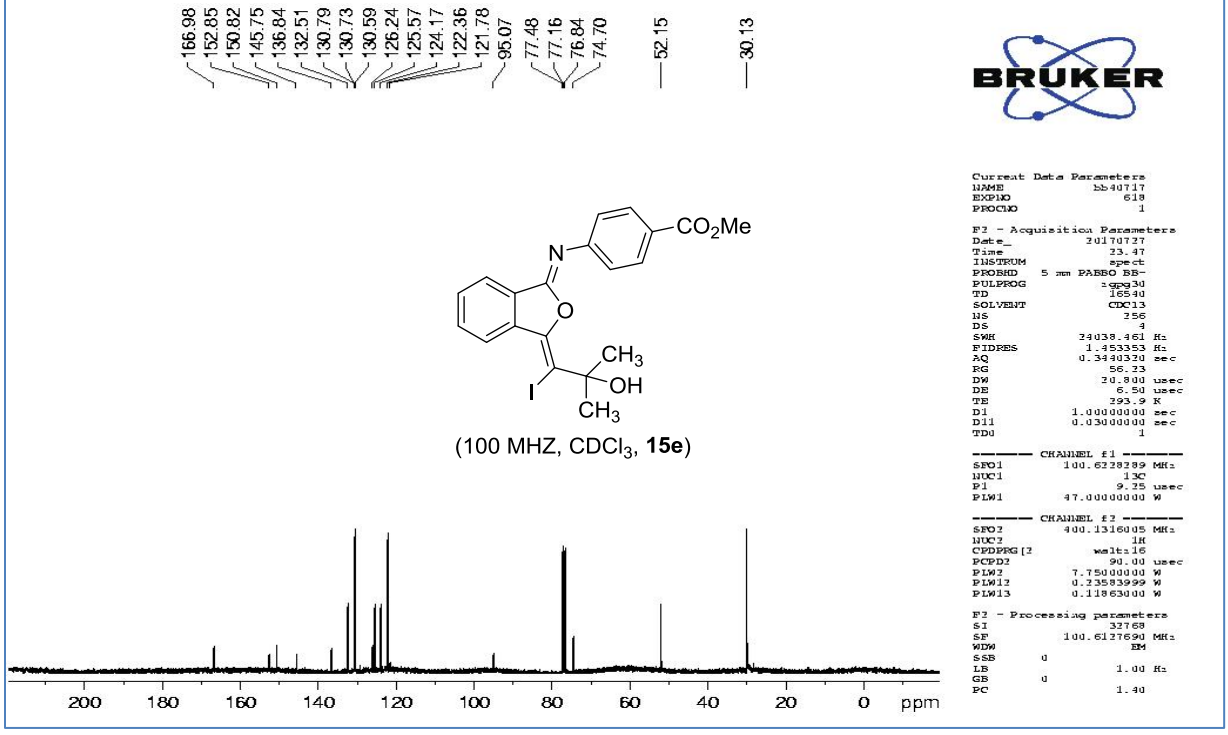
(400 MHZ, $CDCl_3$, **15e**)

```
Current Data Parameters
NAME                  Desktop
EXPNO                     617
PROCNO                      1

F2 - Acquisition Parameters
Date_                20170727
Time                    23.54
INSTRUM                 spect
PROBHD     5 mm PABBO BB-
PULPROG                 zg30
TD                     65536
SOLVENT                CDCl3
NS                         16
DS                          2
SWH                  8012.820 Hz
FIDRES               0.122266 Hz
AQ                   4.0894966 sec
RG                      108.26
DW                      62.400 usec
DE                       6.50 usec
TE                      293.8 K
D1                   0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                     1H
P1                      15.70 usec
PLW1             7.75000000 W

F2 - Processing parameters
SI                     65536
SF              400.1300059 MHz
WDW                       EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.00
```



(100 MHZ, $CDCl_3$, **15e**)

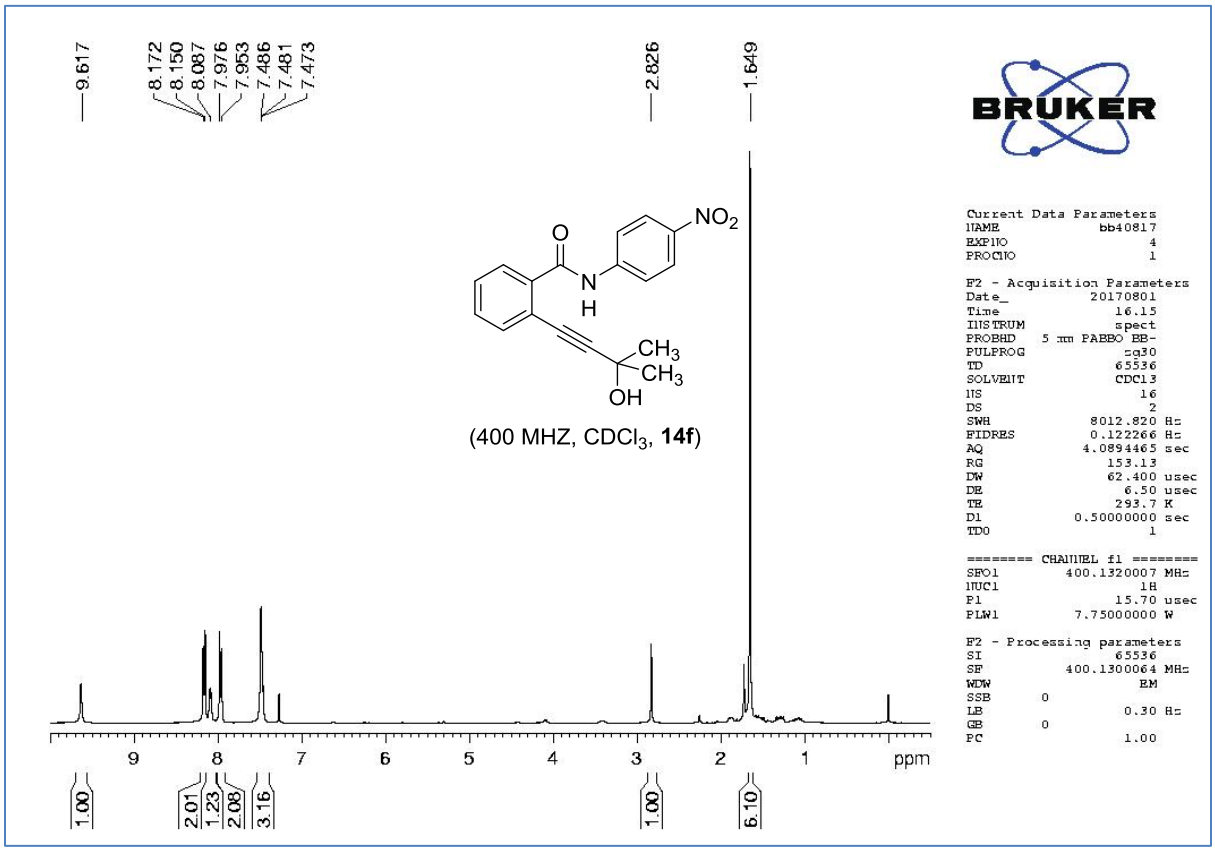
```
Current Data Parameters
NAME                  bb40717
EXPNO                     618
PROCNO                      1

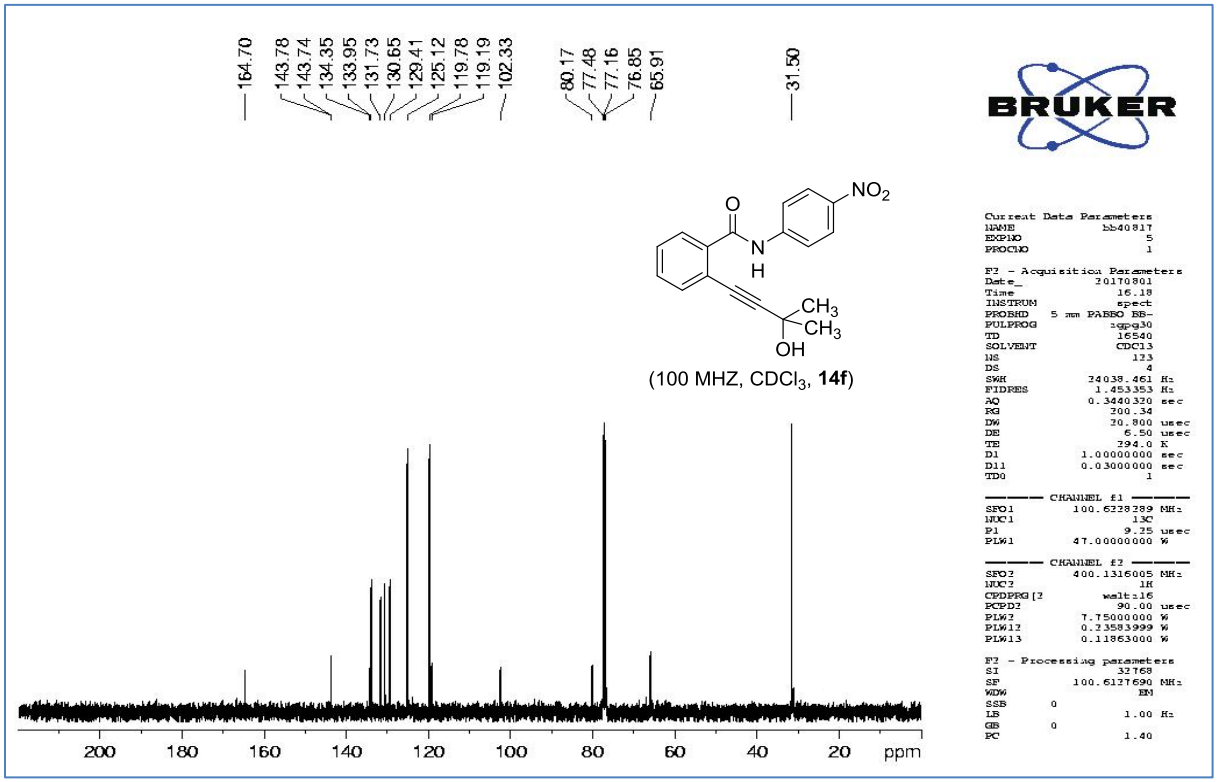
F2 - Acquisition Parameters
Date_                20170727
Time                    23.47
INSTRUM                 spect
PROBHD     5 mm PABBO BB-
PULPROG              zgpg30
TD                     16384
SOLVENT                CDCl3
NS                       256
DS                         4
SWH                 24038.461 Hz
FIDRES               1.453353 Hz
AQ                   0.3440320 sec
RG                      56.73
DW                      20.800 usec
DE                       6.50 usec
TE                      293.9 K
D1                   1.00000000 sec
D11                  0.03000000 sec
TD0                         1

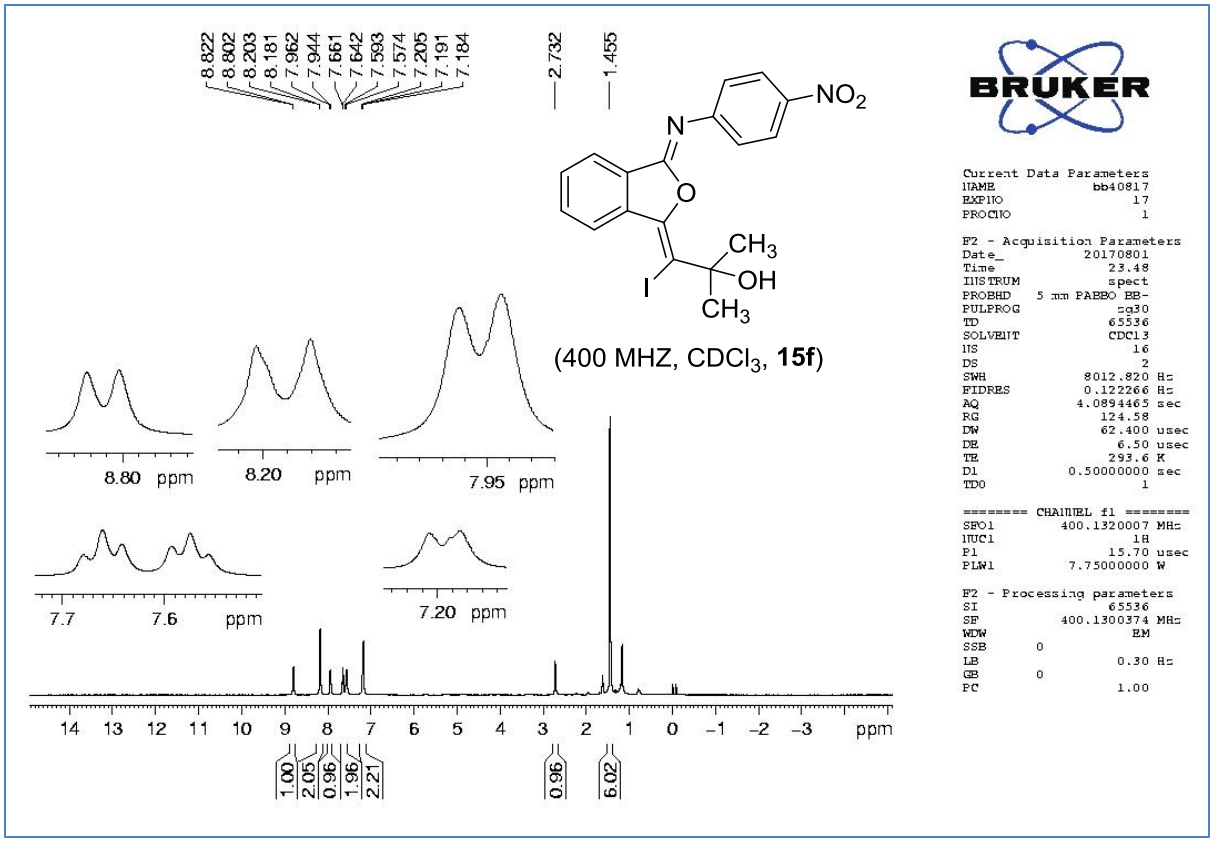
======== CHANNEL f1 ========
SFO1            100.6228289 MHz
NUC1                     13C
P1                       9.25 usec
PLW1            47.00000000 W

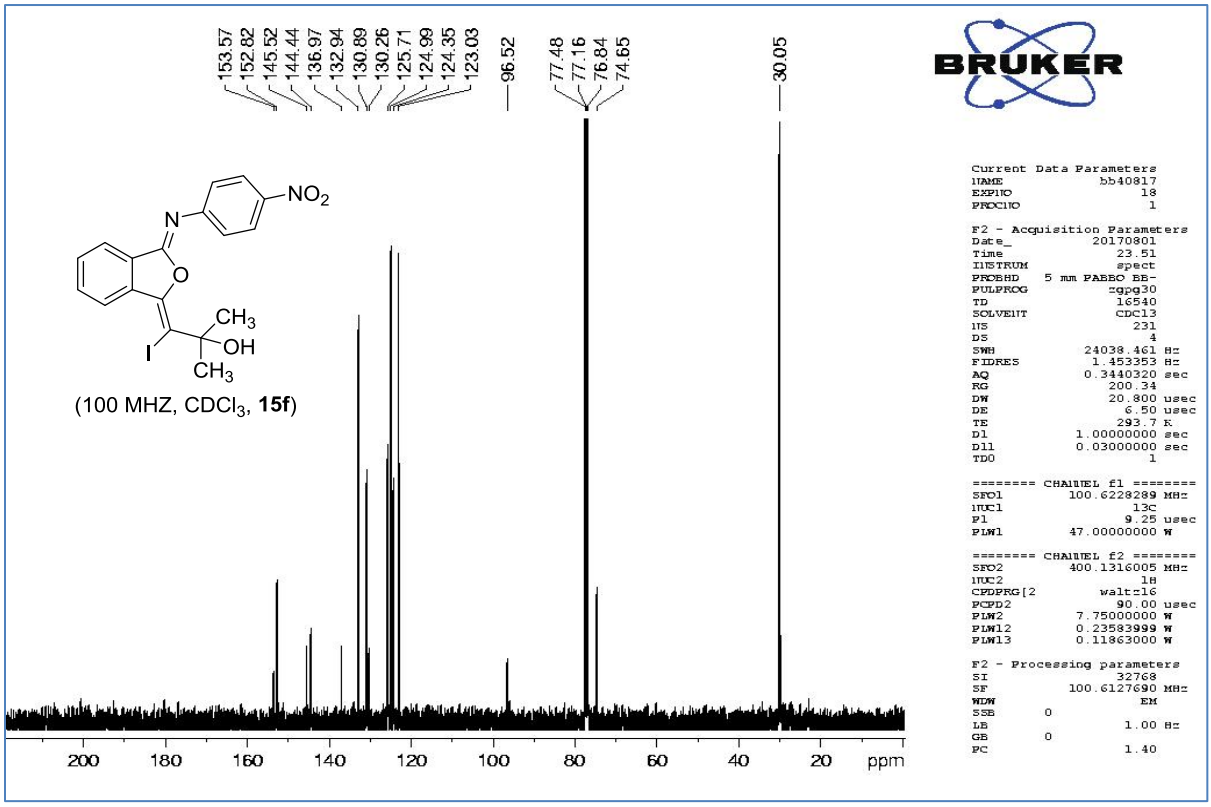
======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                     1H
CPDPRG[2              waltz16
PCPD2                   90.00 usec
PLW2             7.75000000 W
PLW12            0.23583999 W
PLW13            0.11863000 W

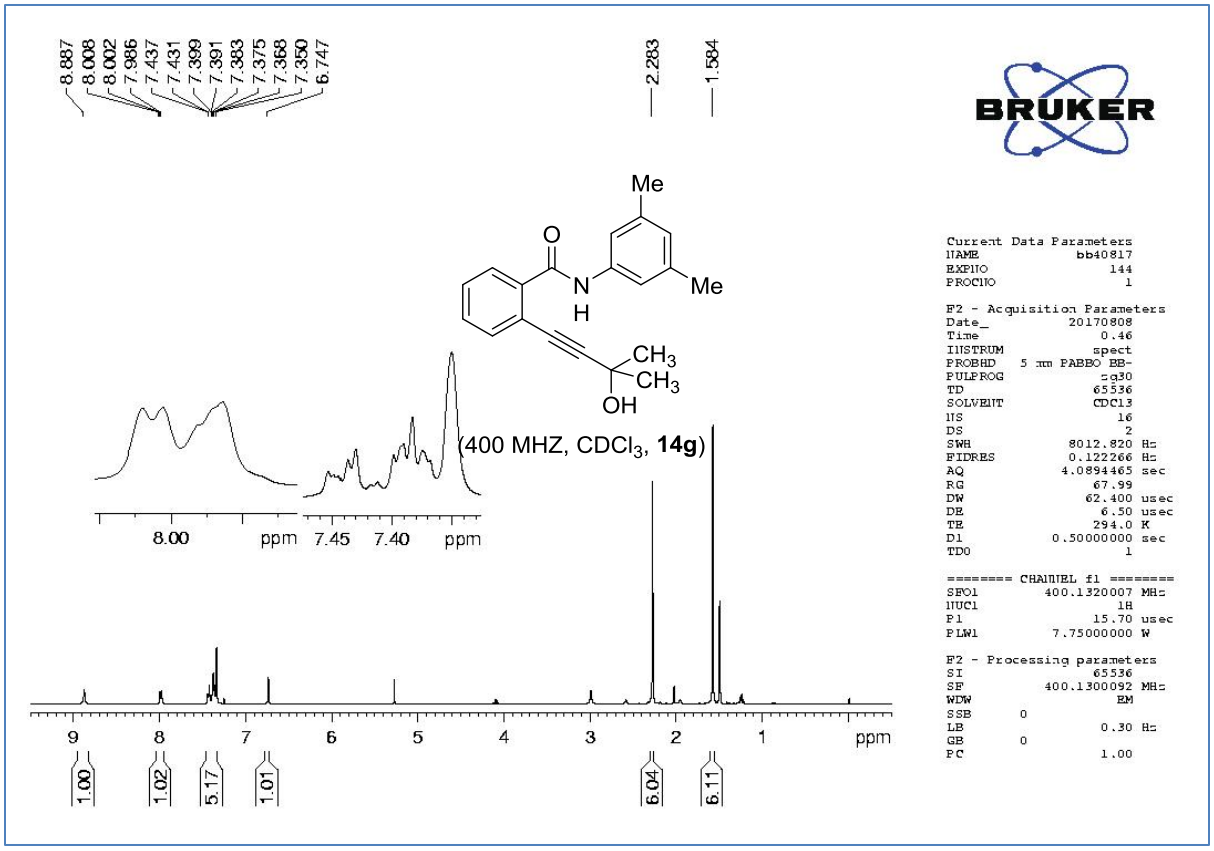
F2 - Processing parameters
SI                     32768
SF              100.6127690 MHz
WDW                       EM
SSB          0
LB                       1.00 Hz
GB           0
PC                       1.40
```

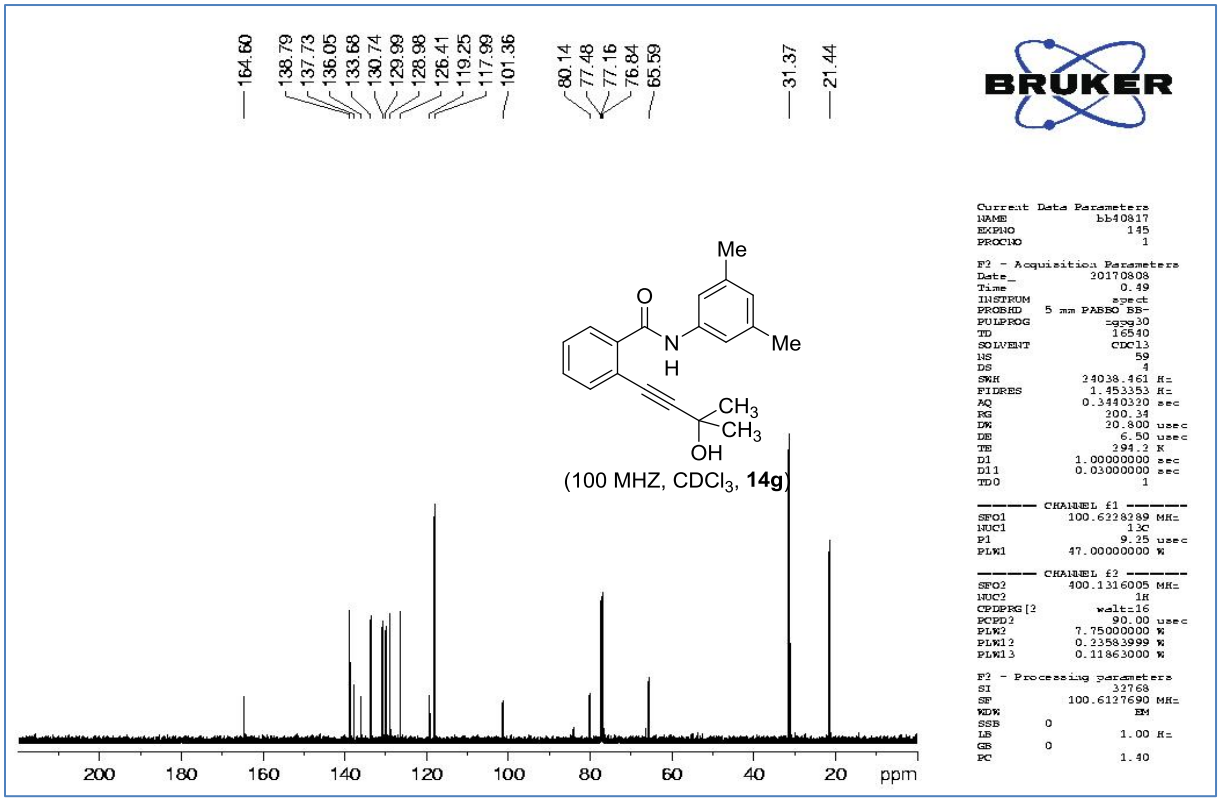

9.617
8.172
8.150
8.087
7.976
7.953
7.486
7.481
7.473
2.826
1.649
NO2
O
N
H
CH3
CH3
OH
(400 MHZ, CDCl3, 14f)
9
8
7
6
5
4
3
2
1
ppm
1.00
2.01
1.23
2.08
3.16
1.00
6.10
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 4
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170801
Time 16.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 153.13
DW 62.400 usec
DE 6.50 usec
TE 293.7 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300064 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

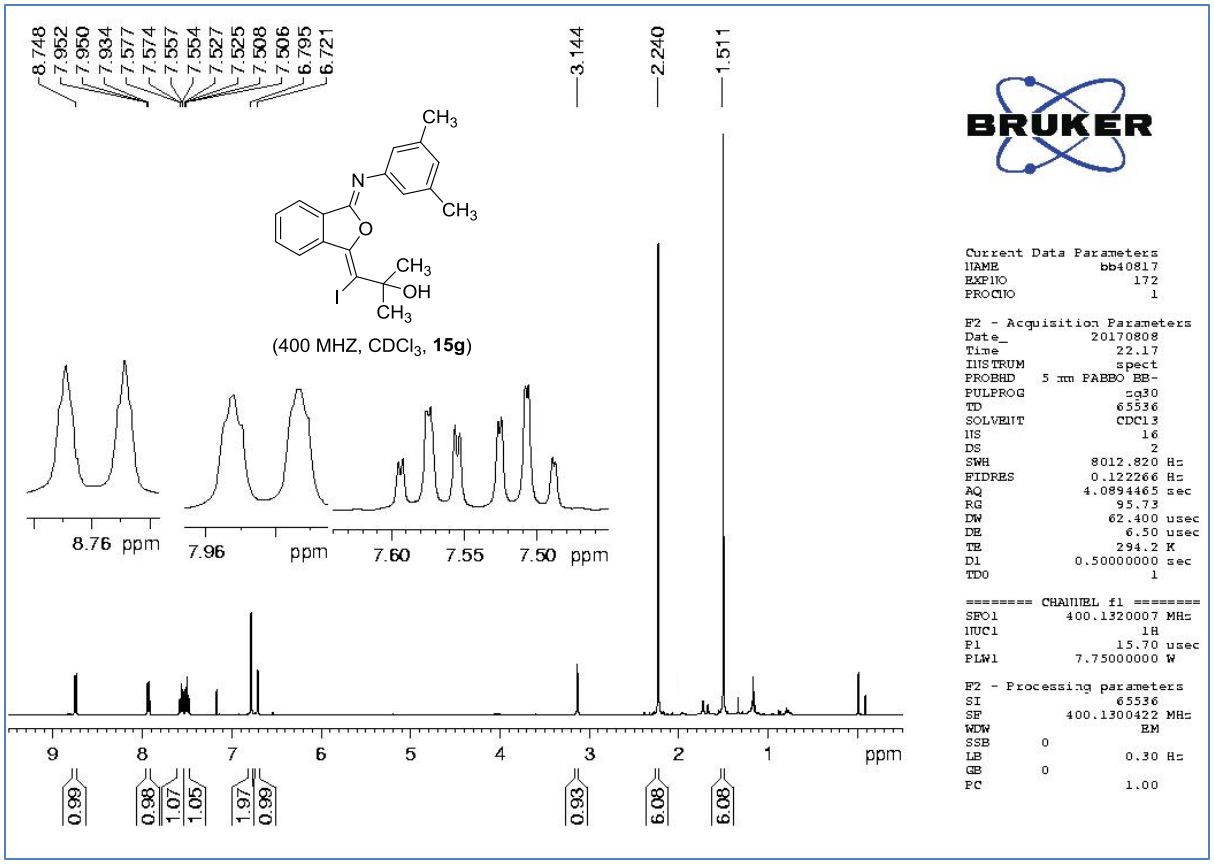

164.70
143.78
143.74
134.35
133.95
131.73
130.65
129.41
125.12
119.78
119.19
102.33
80.17
77.48
77.16
76.85
65.91
31.50
NO2
O
N
H
CH3
CH3
OH
(100 MHZ, CDCl3, 14f)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170801
Time 16.18
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65540
SOLVENT CDCl3
NS 173
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6238289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

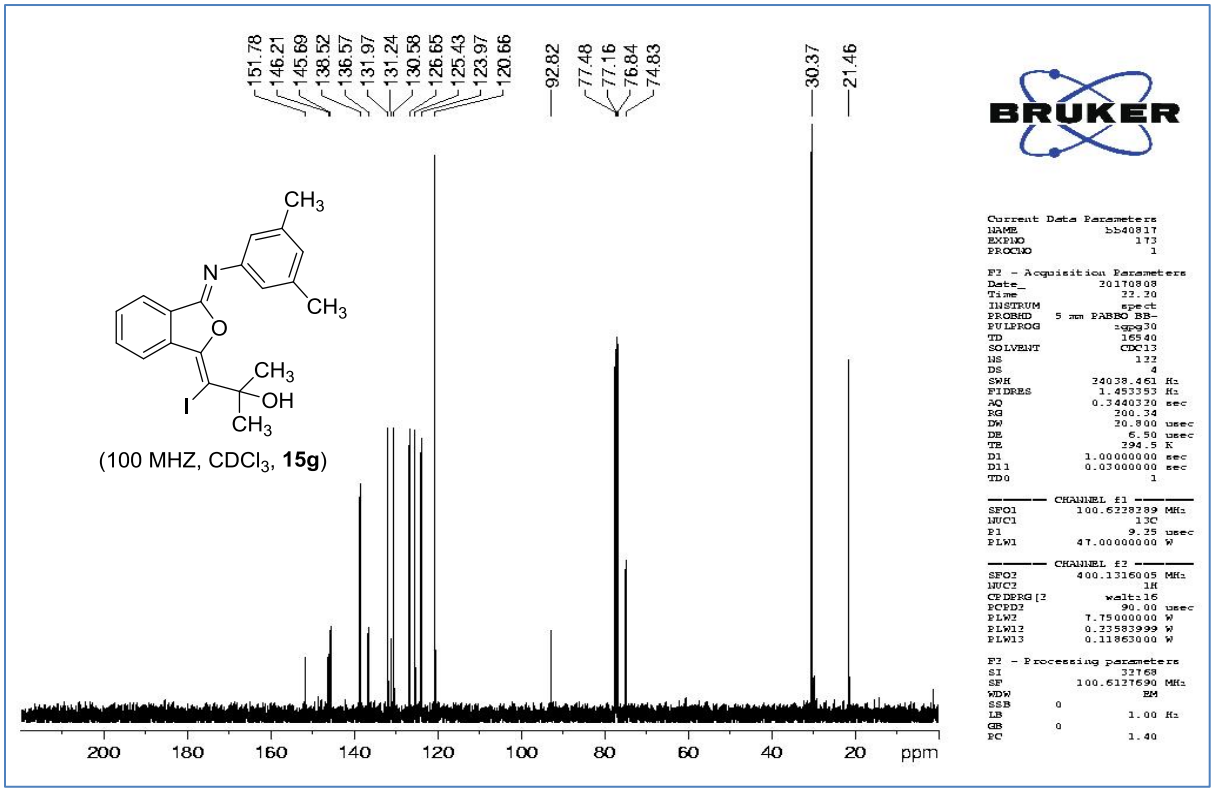

8.822
8.802
8.203
8.181
7.962
7.944
7.661
7.642
7.593
7.574
7.205
7.191
7.184
2.732
1.455
NO2
N
O
CH3
OH
I
CH3
(400 MHZ, CDCl3, 15f)
8.80 ppm
8.20 ppm
7.95 ppm
7.7
7.6
ppm
7.20 ppm
14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 −1 −2 −3 ppm
1.00
2.05
0.96
1.96
2.21
0.96
6.02
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 17
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170801
Time 23.48
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 124.58
DW 62.400 usec
DE 6.50 usec
TE 293.6 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300374 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

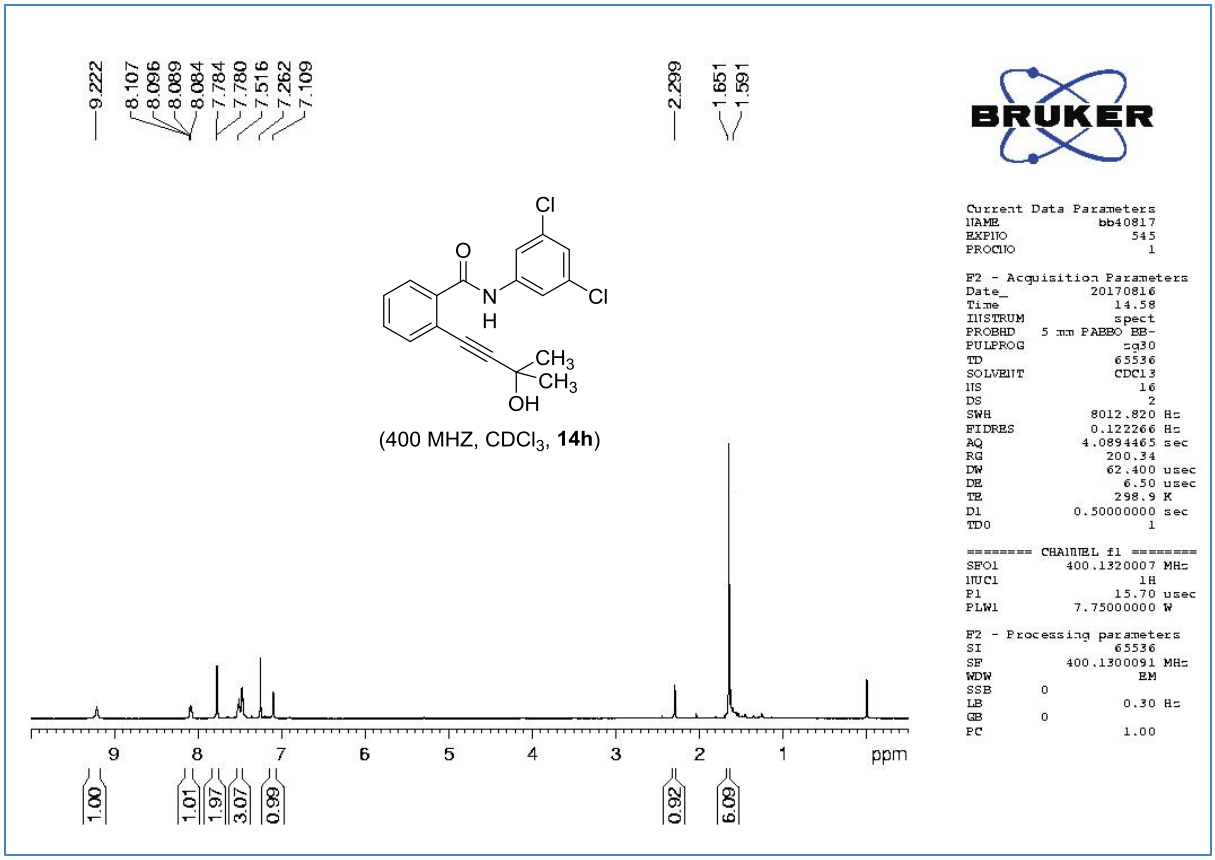

153.57
152.82
145.52
144.44
136.97
132.94
130.89
130.26
125.71
124.99
124.35
123.03
96.52
77.48
77.16
76.84
74.65
30.05
NO2
N
O
CH3
OH
I
CH3
(100 MHZ, CDCl3, 15f)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 18
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170801
Time 23.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 231
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 293.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

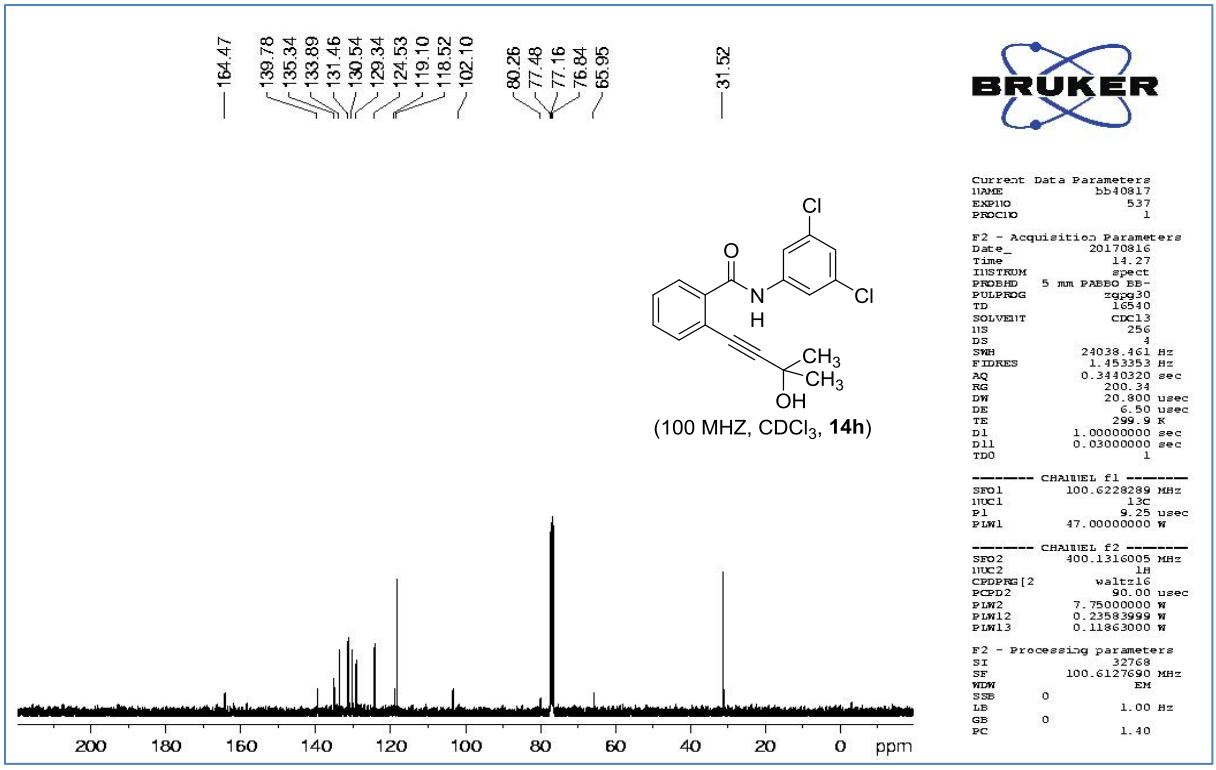

8.887
8.008
8.002
7.986
7.437
7.431
7.399
7.391
7.383
7.375
7.368
7.350
6.747
2.283
1.584
Me
O
N
H
Me
CH3
CH3
OH
(400 MHZ, CDCl3, 14g)
8.00
ppm
7.45
7.40
ppm
9
8
7
6
5
4
3
2
1
ppm
1.00
1.02
5.17
1.01
6.04
6.11
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 144
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170808
Time 0.46
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 67.99
DW 62.400 usec
DE 6.50 usec
TE 294.0 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300092 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

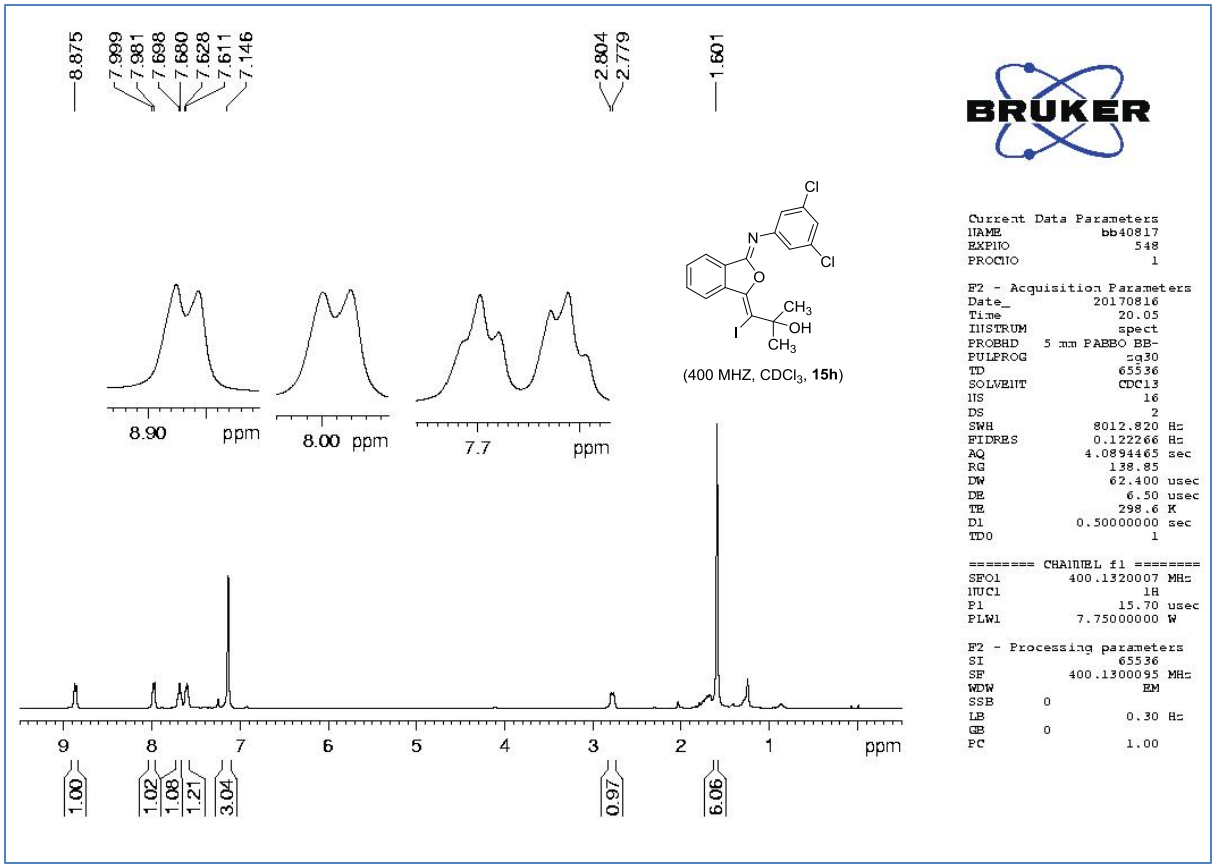

164.60
138.79
137.73
136.05
133.68
130.74
129.99
128.98
126.41
119.25
117.99
101.36
80.14
77.48
77.16
76.84
65.59
31.37
21.44
Me
O
N
H
Me
CH3
CH3
OH
(100 MHZ, CDCl3, 14g)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 145
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170808
Time 0.49
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 59
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 203.34
DW 20.800 usec
DE 6.50 usec
TE 294.2 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------ CHANNEL f1 ------
SFO1 100.6228389 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------ CHANNEL f2 ------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

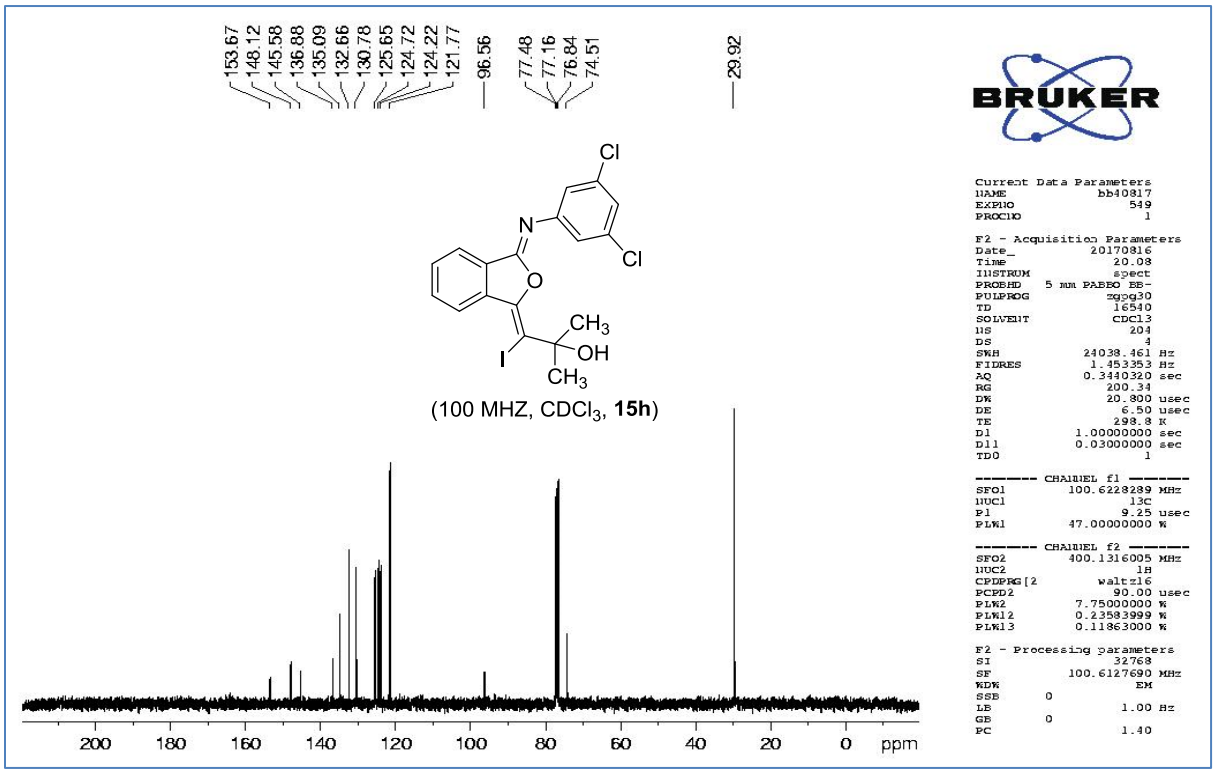

8.748
7.952
7.950
7.934
7.577
7.574
7.557
7.554
7.527
7.525
7.508
7.506
6.795
6.721
3.144
2.240
1.511
(400 MHZ, CDCl3, 15g)
8.76 ppm
7.96
7.60
7.55
7.50 ppm
9
8
7
6
5
4
3
2
1
ppm
0.99
0.98
1.07
1.05
1.97
0.99
0.93
6.08
6.08
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 172
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170808
Time 22.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 95.73
DW 62.400 usec
DE 6.50 usec
TE 294.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300422 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

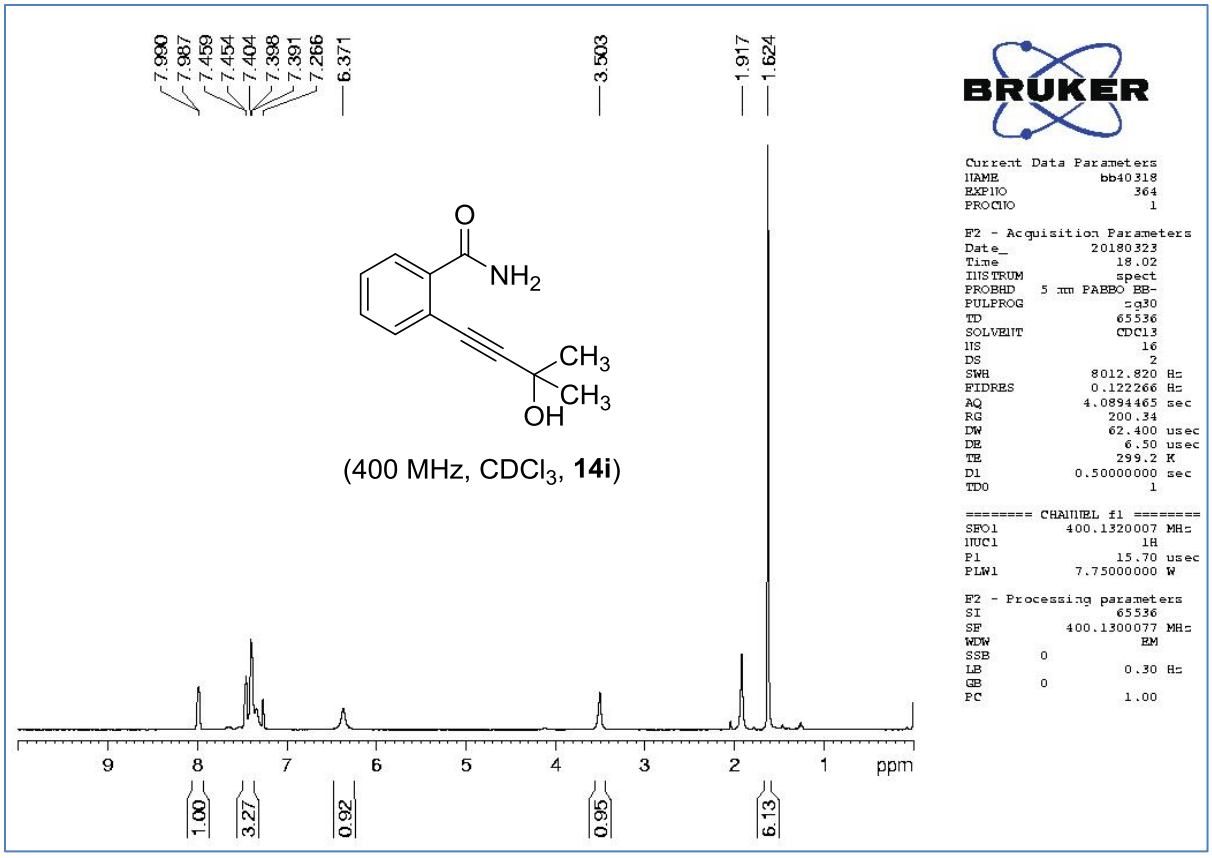

151.78
146.21
145.69
138.52
136.57
131.97
131.24
130.58
126.65
125.43
123.97
120.66
92.82
77.48
77.16
76.84
74.83
30.37
21.46
(100 MHZ, CDCl3, 15g)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 173
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170808
Time 22.20
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 122
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.5 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6238389 MHz
NUC1 13C
P1 9.35 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


9.222
8.107
8.096
8.089
8.084
7.784
7.780
7.516
7.262
7.109
2.299
1.651
1.591
Cl
O
N
H
Cl
CH3
CH3
OH
(400 MHZ, CDCl3, 14h)
9
8
7
6
5
4
3
2
1
ppm
1.00
1.01
1.97
3.07
0.99
0.92
6.09
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 545
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 14.58
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 298.9 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300091 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


164.47
139.78
135.34
133.89
131.46
130.54
129.34
124.53
119.10
118.52
102.10
80.26
77.48
77.16
76.84
65.95
31.52
Cl
O
N
H
Cl
CH3
CH3
OH
(100 MHZ, CDCl3, 14h)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 537
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 14.27
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 299.9 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.875
7.999
7.981
7.698
7.680
7.628
7.611
7.146
2.804
2.779
1.601
8.90 ppm
8.00 ppm
7.7 ppm
(400 MHZ, CDCl3, 15h)
9 8 7 6 5 4 3 2 1 ppm
1.00
1.02
1.08
1.21
3.04
0.97
6.06
Current Data Parameters
NAME bb40817
EXPNO 548
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 20.05
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 138.85
DW 62.400 usec
DE 6.50 usec
TE 298.6 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


153.67
148.12
145.58
136.88
135.09
132.66
130.78
125.65
124.72
124.22
121.77
96.56
77.48
77.16
76.84
74.51
29.92
(100 MHZ, CDCl3, 15h)
200 180 160 140 120 100 80 60 40 20 0 ppm
Current Data Parameters
NAME bb40817
EXPNO 549
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 20.08
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 204
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.8 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



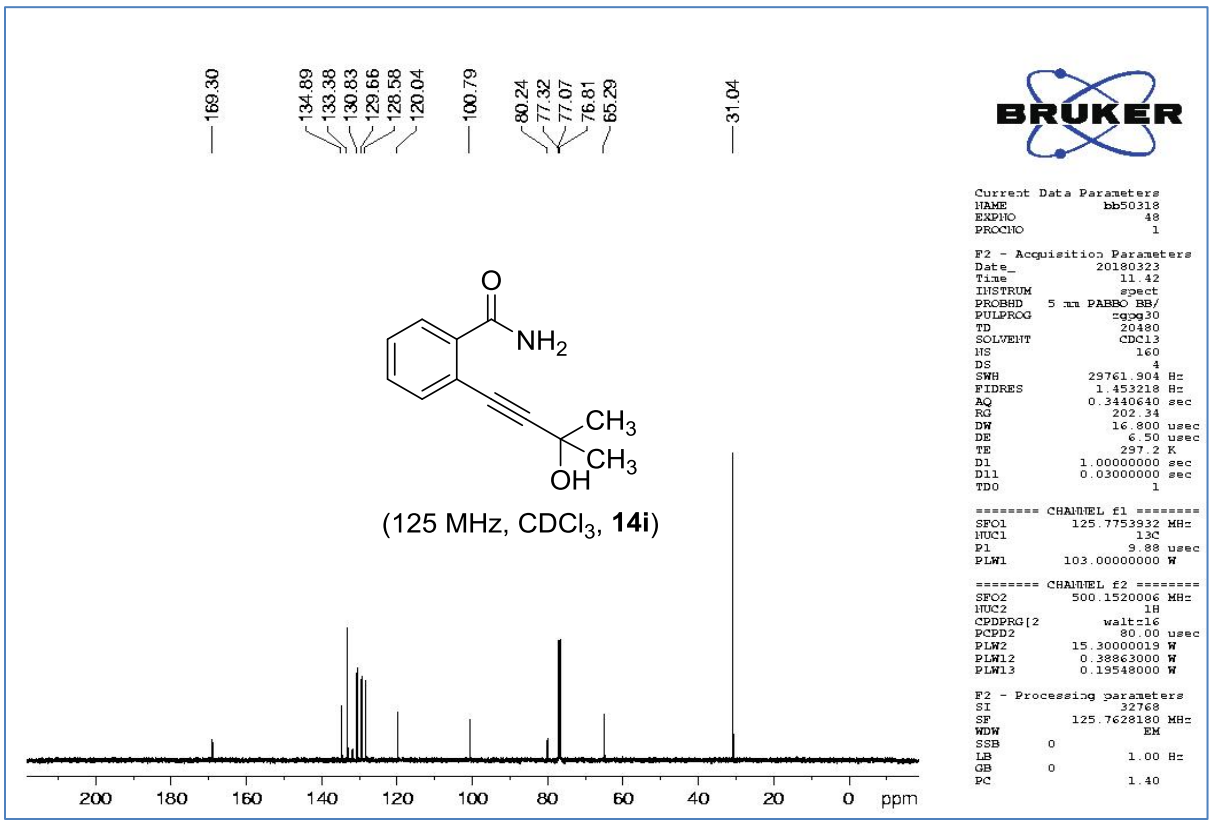
(400 MHz, $CDCl_3$, **14i**)

```
Current Data Parameters
NAME                  bb40318
EXPNO                     364
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180323
Time                  18.02
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                      16
DS                       2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    200.34
DW                  62.400 usec
DE                   6.50 usec
TE                  299.2 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                     1H
P1                    15.70 usec
PLW1            7.75000000 W

F2 - Processing parameters
SI                   65536
SF              400.1300077 MHz
WDW                     EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.00
```



(125 MHz, $CDCl_3$, **14i**)

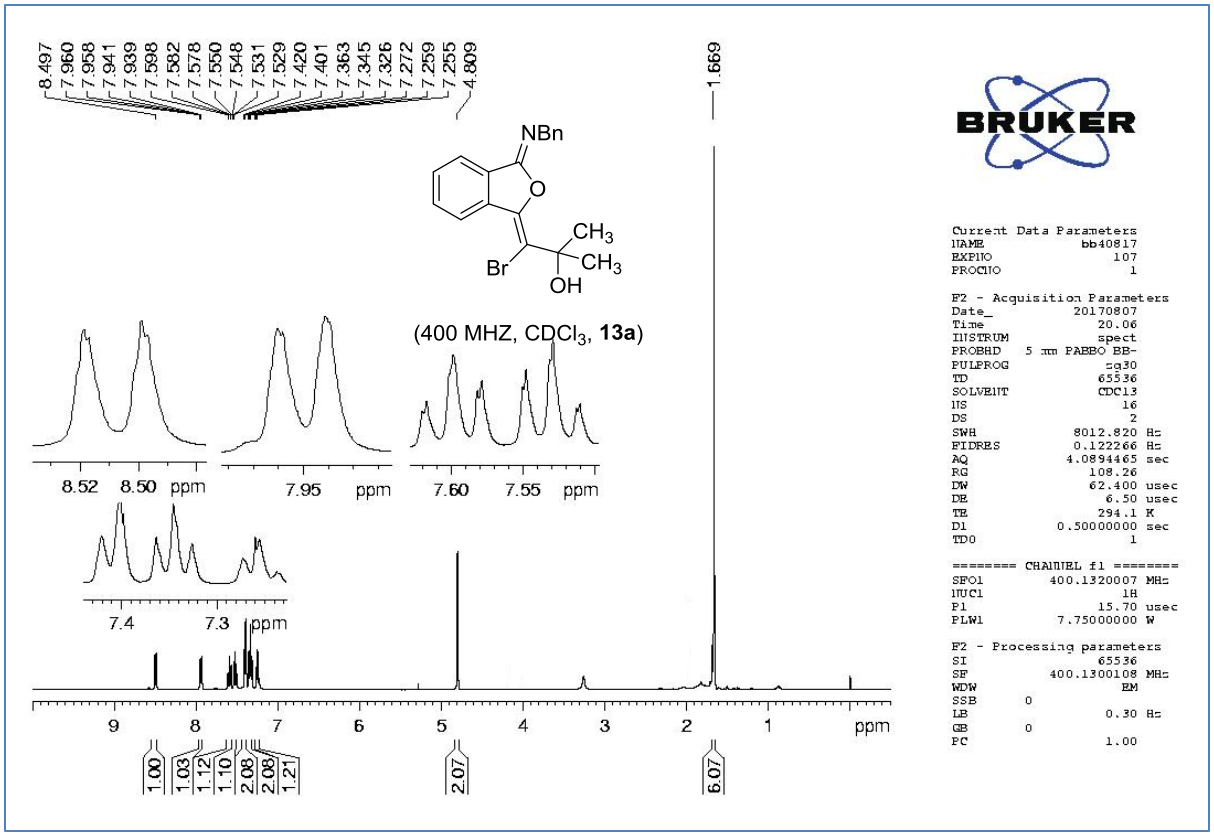
```
Current Data Parameters
NAME                  bb50318
EXPNO                      48
PROCNO                      1

F2 - Acquisition Parameters
Date_              20180323
Time                  11.42
INSTRUM               spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                   20480
SOLVENT              CDCl3
NS                     160
DS                       4
SWH               29761.904 Hz
FIDRES             1.453218 Hz
AQ                 0.3440640 sec
RG                    202.34
DW                  16.800 usec
DE                   6.50 usec
TE                  297.2 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            125.7753932 MHz
NUC1                     13C
P1                    9.88 usec
PLW1           103.00000000 W

======== CHANNEL f2 ========
SFO2            500.1520006 MHz
NUC2                     1H
CPDPRG[2              waltz16
PCPD2                 80.00 usec
PLW2           15.30000019 W
PLW12           0.38863000 W
PLW13           0.19548000 W

F2 - Processing parameters
SI                   32768
SF              125.7628180 MHz
WDW                     EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```



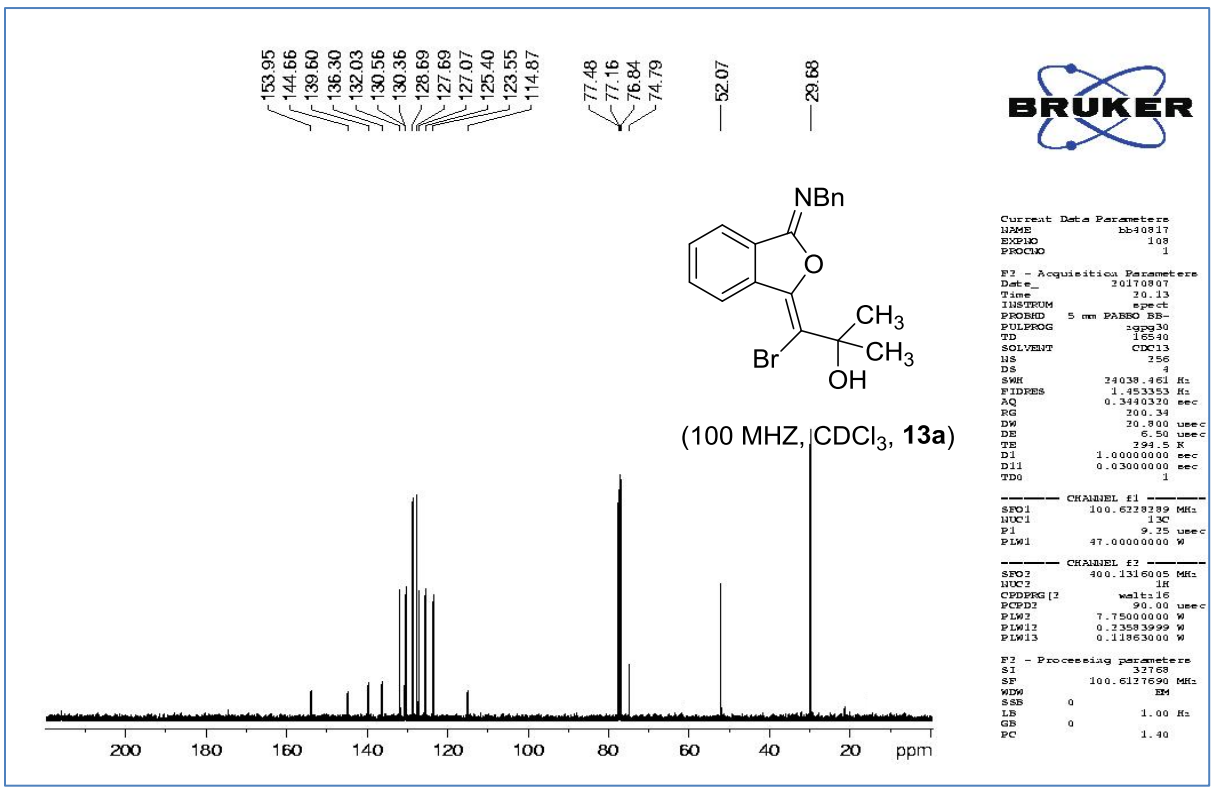
BRUKER

```
Current Data Parameters
NAME                  bb40817
EXPNO                     107
PROCNO                      1

F2 - Acquisition Parameters
Date_              20170807
Time                   20.06
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    108.26
DW                    62.400 usec
DE                     6.50 usec
TE                    294.1 K
D1                 0.50000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           400.1320007 MHz
NUC1                     1H
P1                    15.70 usec
PLW1            7.75000000 W

F2 - Processing parameters
SI                    65536
SF             400.1300108 MHz
WDW                      EM
SSB       0
LB                     0.30 Hz
GB        0
PC                     1.00
```



BRUKER

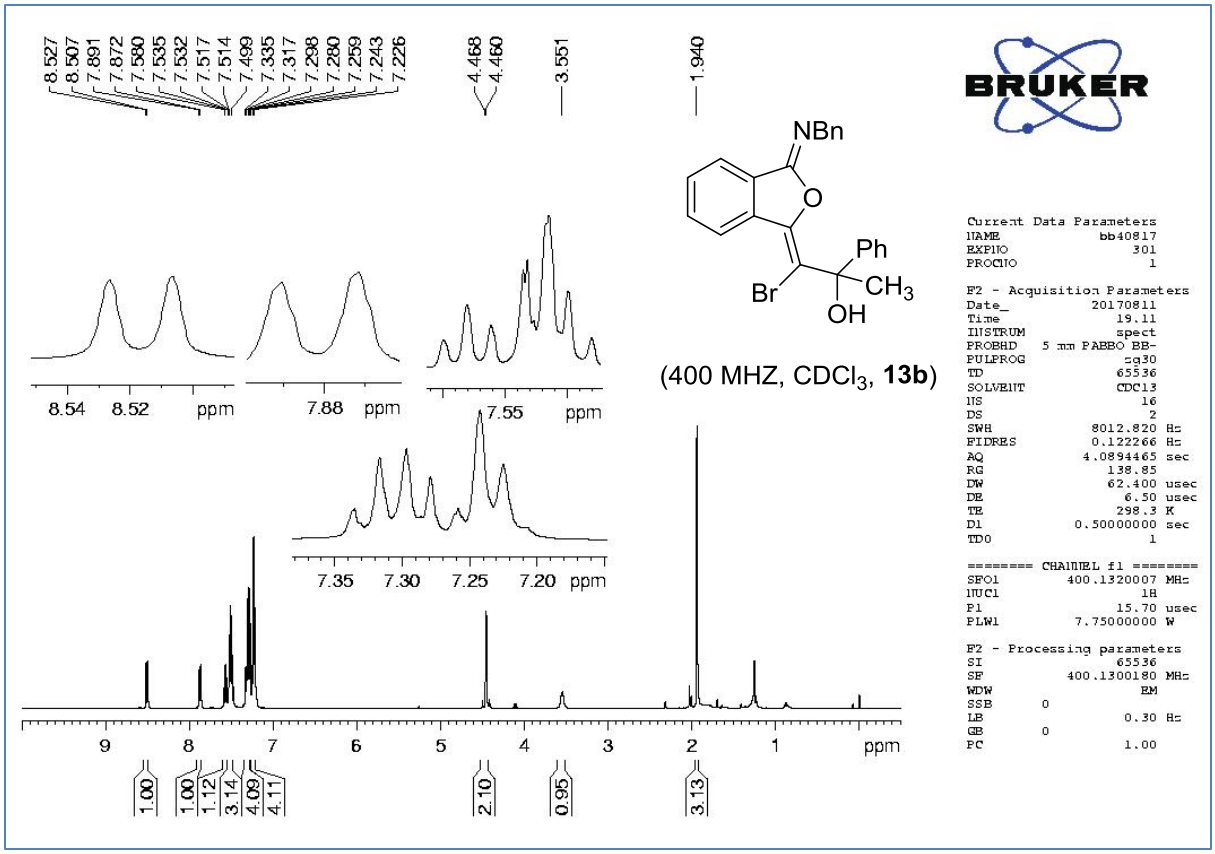
```
Current Data Parameters
NAME                  bb40817
EXPNO                     108
PROCNO                      1

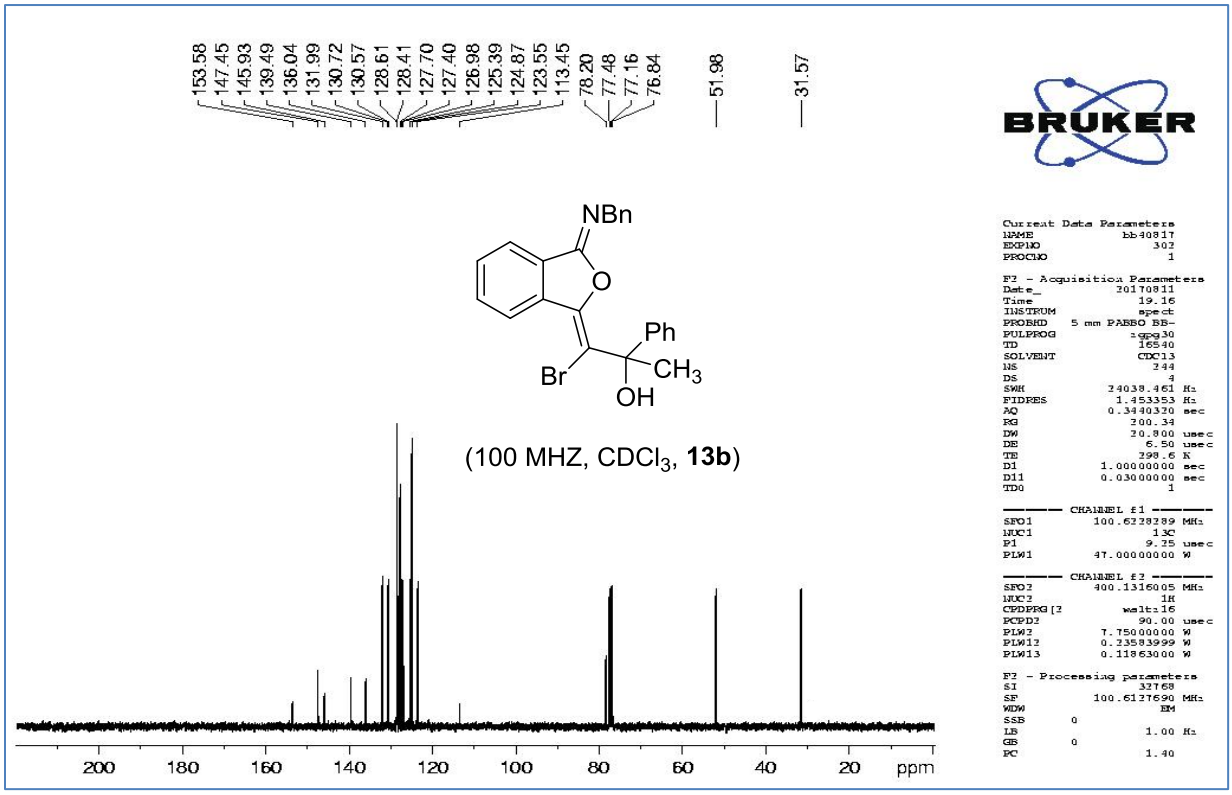
F2 - Acquisition Parameters
Date_              20170807
Time                   20.13
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    294.5 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                       1

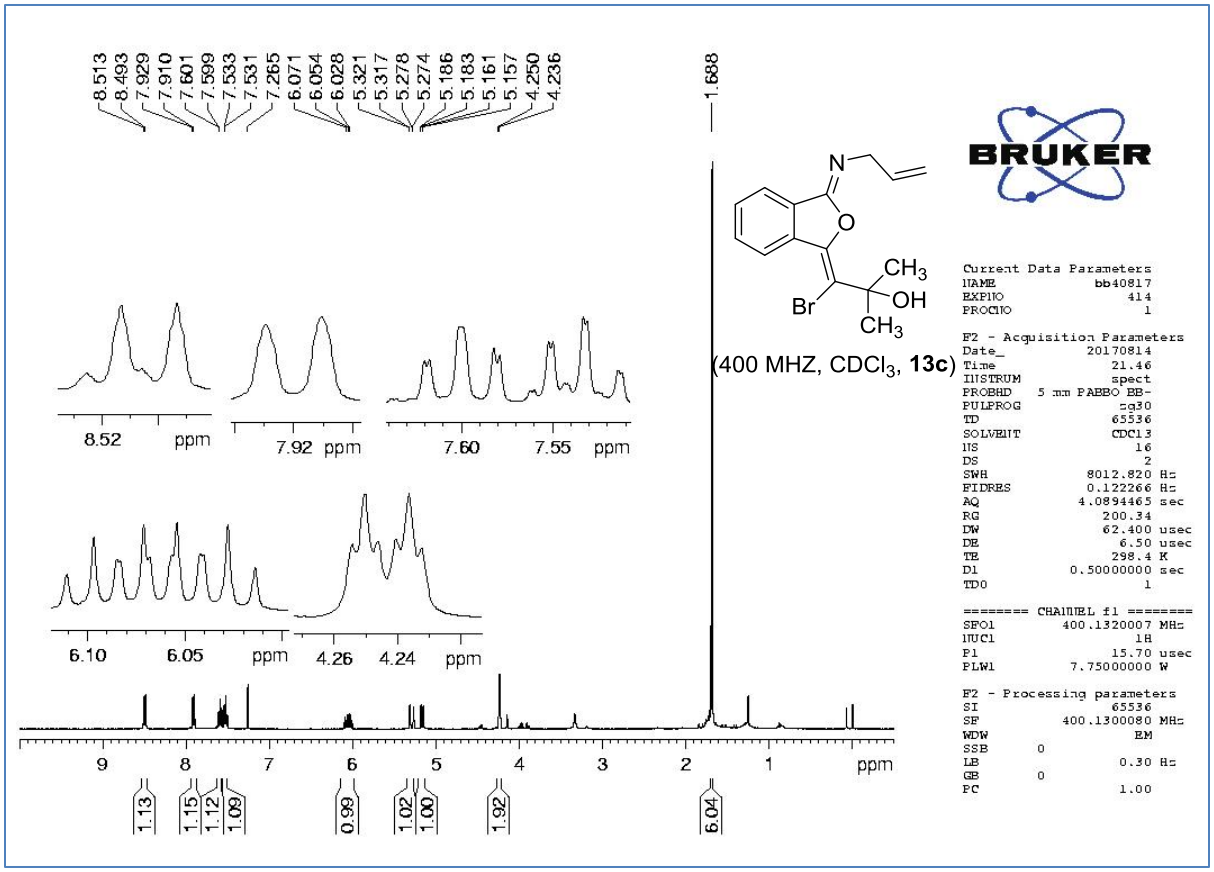
======== CHANNEL f1 ========
SFO1           100.6228289 MHz
NUC1                     13C
P1                     9.25 usec
PLW1            47.00000000 W

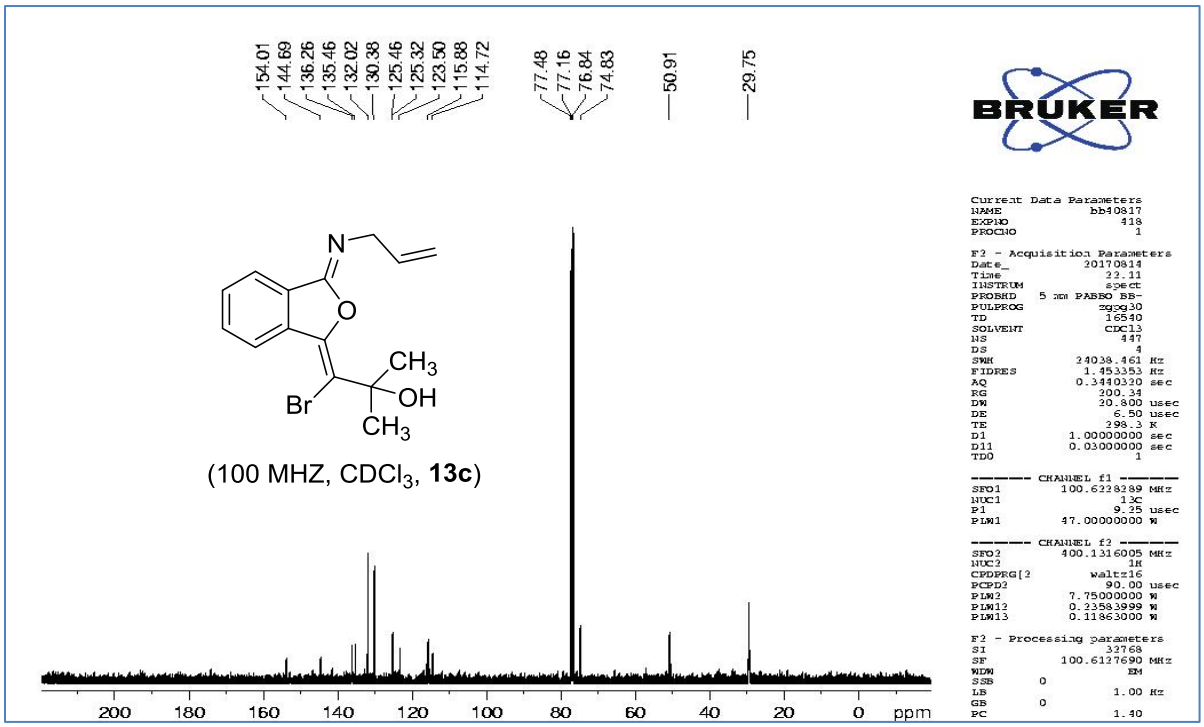
======== CHANNEL f2 ========
SFO2           400.1316005 MHz
NUC2                     1H
CPDPRG[2            waltz16
PCPD2                 90.00 usec
PLW2            7.75000000 W
PLW12           0.23583999 W
PLW13           0.11863000 W

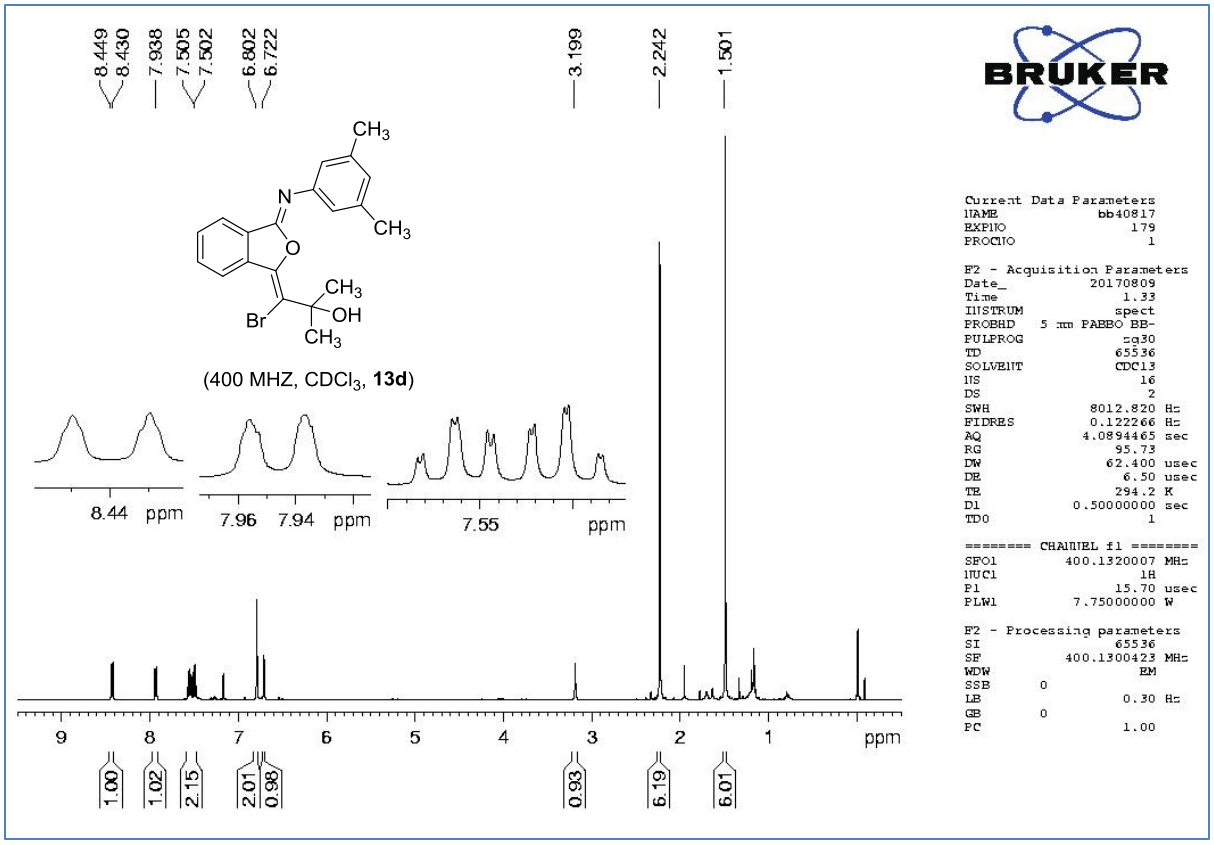
F2 - Processing parameters
SI                    32768
SF             100.6127690 MHz
WDW                      EM
SSB       0
LB                     1.00 Hz
GB        0
PC                     1.40
```

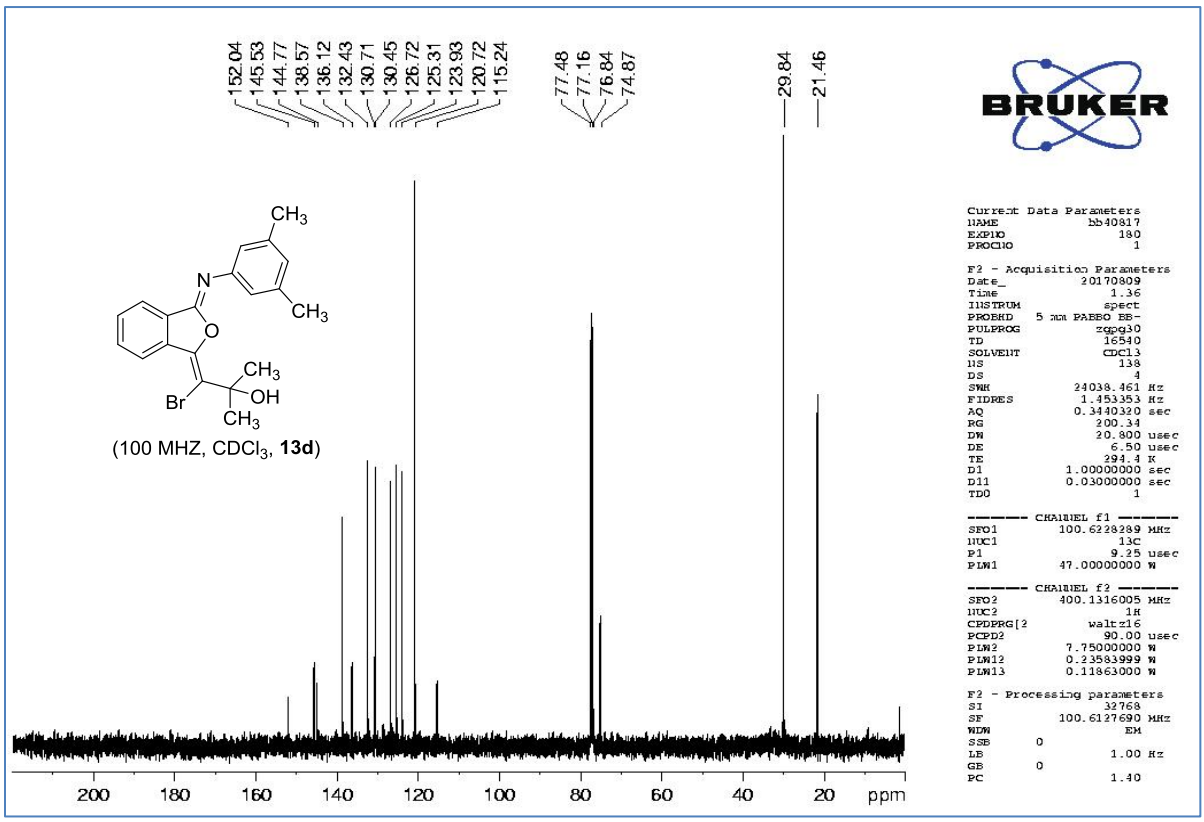

8.527
8.507
7.891
7.872
7.580
7.535
7.532
7.517
7.514
7.499
7.335
7.317
7.298
7.280
7.259
7.243
7.226
4.468
4.460
3.551
1.940
NBn
O
Ph
CH3
Br
OH
(400 MHZ, CDCl3, 13b)
8.54
8.52
ppm
7.88
ppm
7.55
ppm
7.35
7.30
7.25
7.20
ppm
9
8
7
6
5
4
3
2
1
ppm
1.00
1.00
1.12
3.14
4.09
4.11
2.10
0.95
3.13
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 301
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170811
Time 19.11
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 138.85
DW 62.400 usec
DE 6.50 usec
TE 298.3 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300180 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

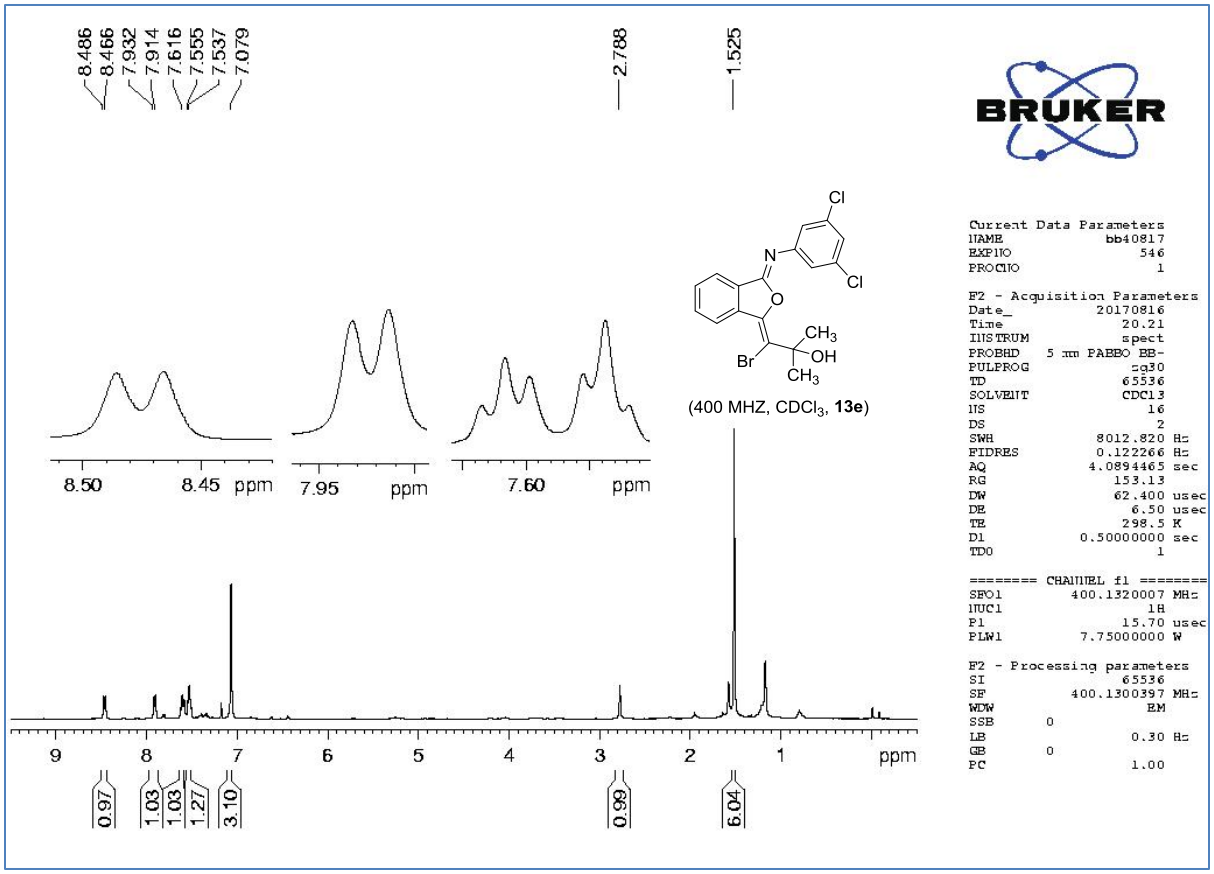

153.58
147.45
145.93
139.49
136.04
131.99
130.72
130.57
128.61
128.41
127.70
127.40
126.98
125.39
124.87
123.55
113.45
78.20
77.48
77.16
76.84
51.98
31.57
NBn
O
Ph
CH3
Br
OH
(100 MHZ, CDCl3, 13b)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 302
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170811
Time 19.16
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 244
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.6 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

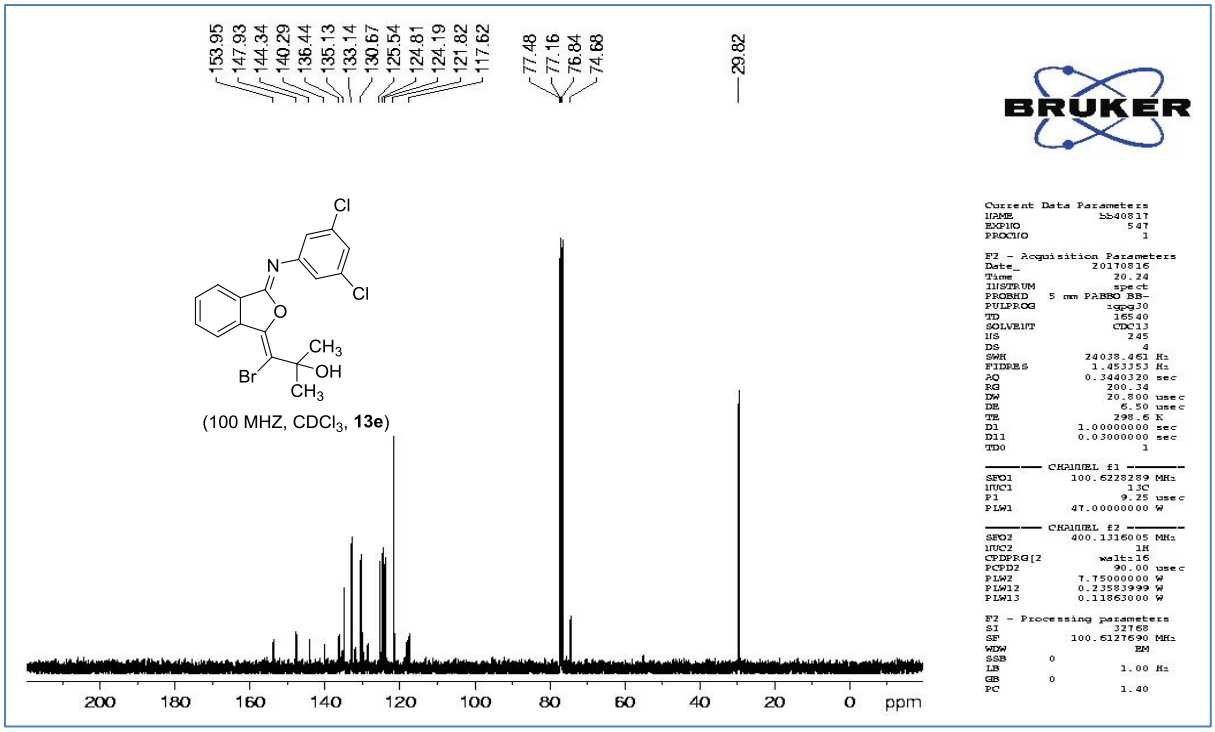

8.513
8.493
7.929
7.910
7.601
7.599
7.533
7.531
7.265
6.071
6.054
6.028
5.321
5.317
5.278
5.274
5.186
5.183
5.161
5.157
4.250
4.236
1.688
8.52 ppm
7.92 ppm
7.60
7.55 ppm
6.10
6.05 ppm
4.26
4.24 ppm
9 8 7 6 5 4 3 2 1 ppm
1.13
1.15
1.12
1.09
0.99
1.02
1.00
1.92
6.04
N
O
CH3
Br
OH
CH3
(400 MHZ, CDCl3, 13c)
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 414
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170814
Time 21.46
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 298.4 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300080 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

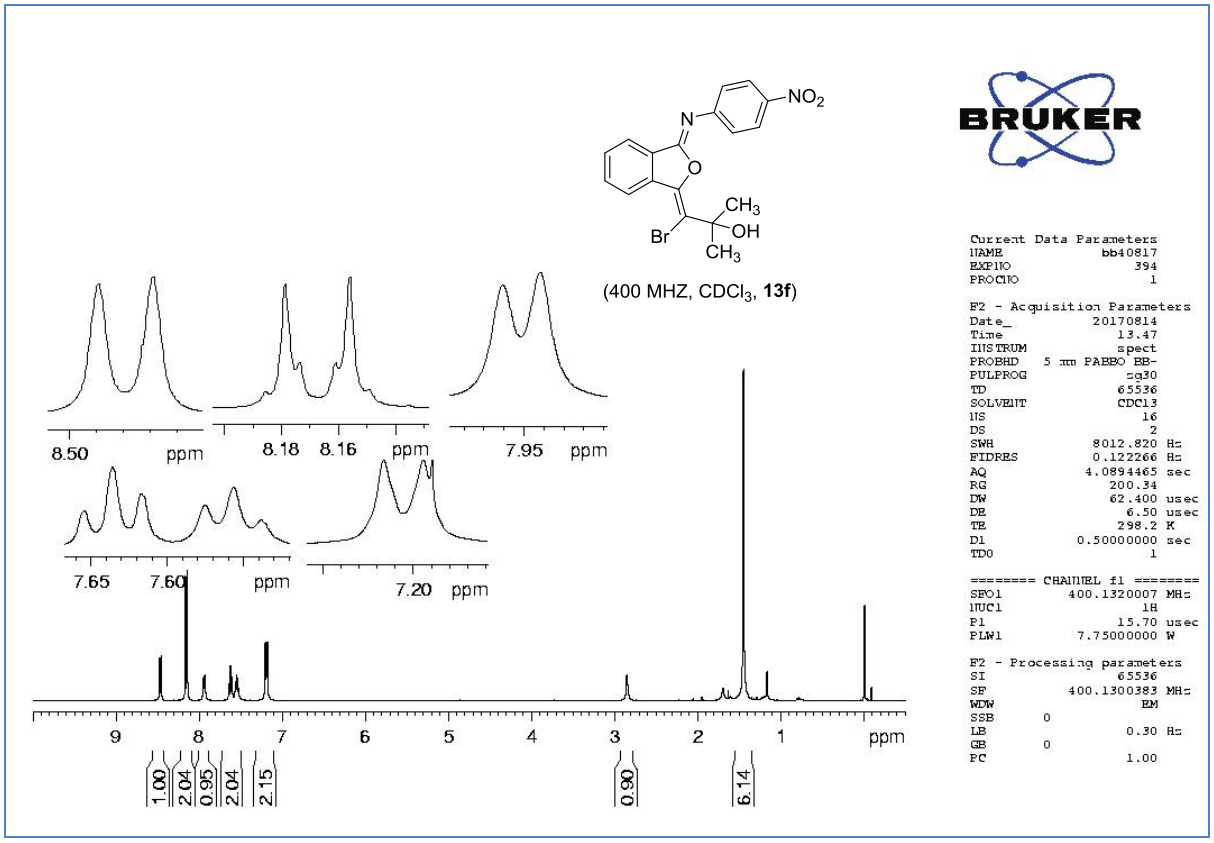

154.01
144.69
136.26
135.46
132.02
130.38
125.46
125.32
123.50
115.88
114.72
77.48
77.16
76.84
74.83
50.91
29.75
N
O
CH3
Br
OH
CH3
(100 MHZ, CDCl3, 13c)
200 180 160 140 120 100 80 60 40 20 0 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 418
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170814
Time 22.11
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 447
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.3 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

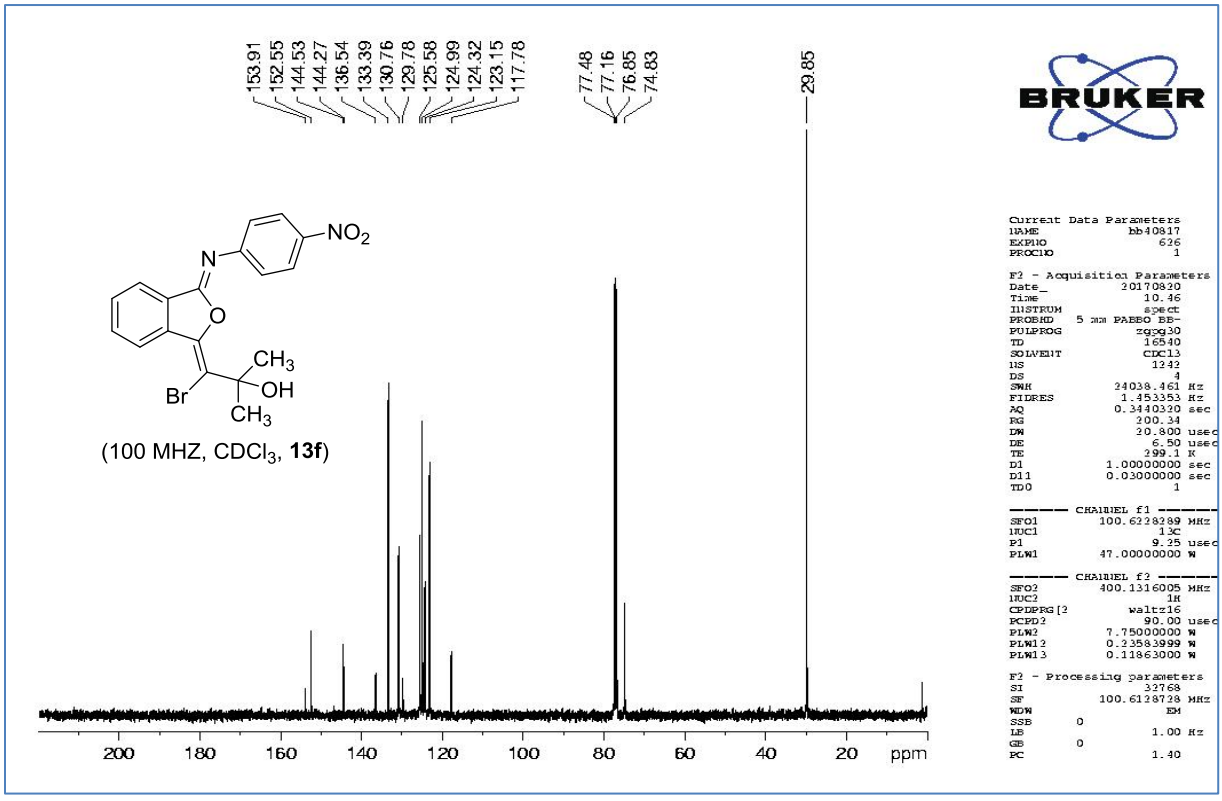

8.449
8.430
7.938
7.505
7.502
6.802
6.722
3.199
2.242
1.501
(400 MHZ, CDCl3, 13d)
8.44 ppm
7.96 7.94 ppm
7.55 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00
1.02
2.15
2.01
0.98
0.93
6.19
6.01
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 179
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 1.33
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 95.73
DW 62.400 usec
DE 6.50 usec
TE 294.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300423 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

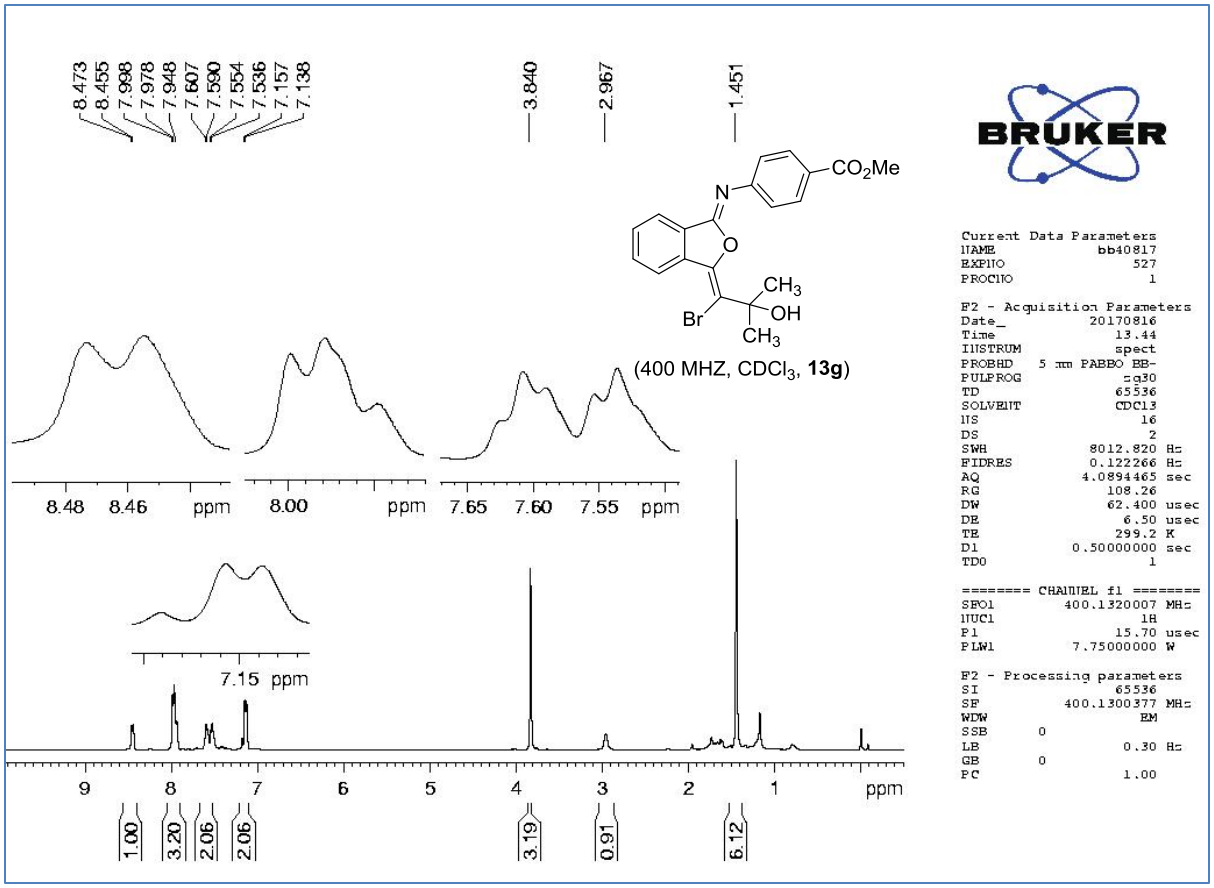

152.04
145.53
144.77
138.57
136.12
132.43
130.71
130.45
126.72
125.31
123.93
120.72
115.24
77.48
77.16
76.84
74.87
29.84
21.46
(100 MHZ, CDCl3, 13d)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 180
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 1.36
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 138
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.4 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

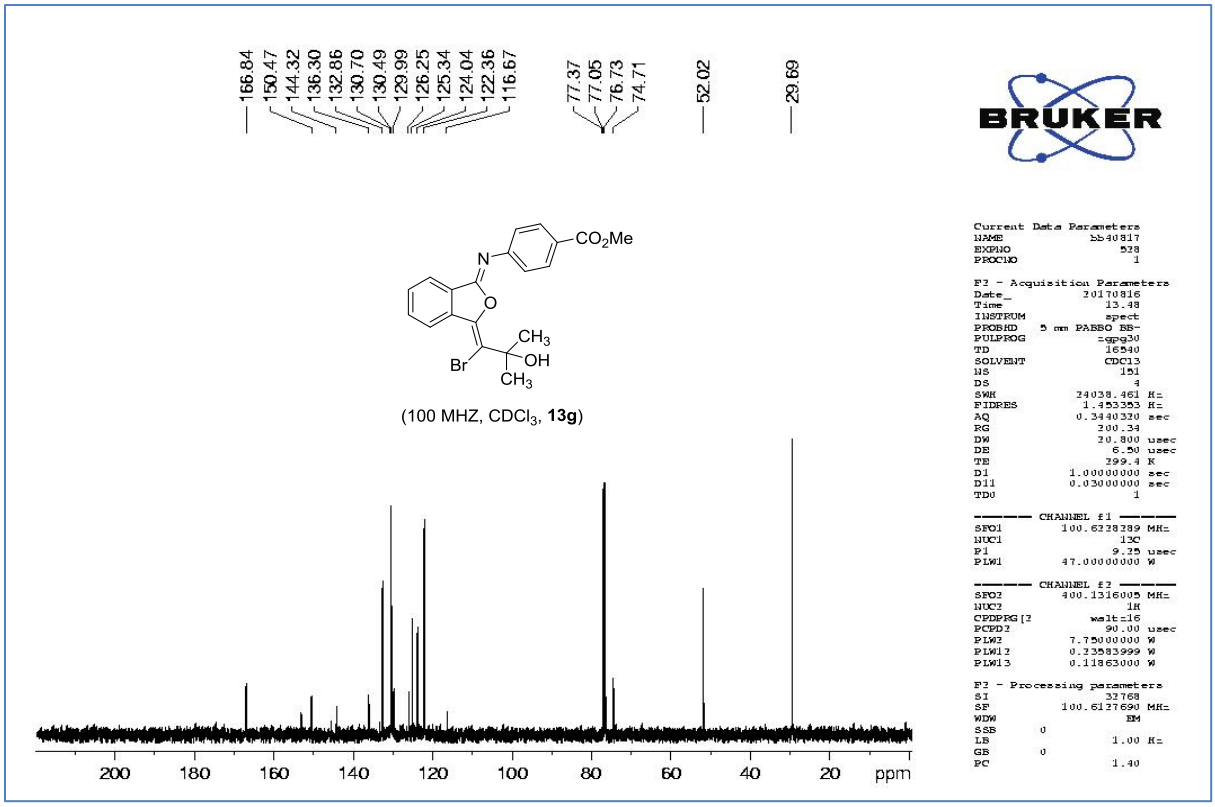

8.486
8.466
7.932
7.914
7.616
7.555
7.537
7.079
2.788
1.525
(400 MHZ, CDCl3, 13e)
8.50
8.45 ppm
7.95
ppm
7.60
ppm
9
8
7
6
5
4
3
2
1
ppm
0.97
1.03
1.03
1.27
3.10
0.99
6.04
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 546
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 20.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 153.13
DW 62.400 usec
DE 6.50 usec
TE 298.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300397 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

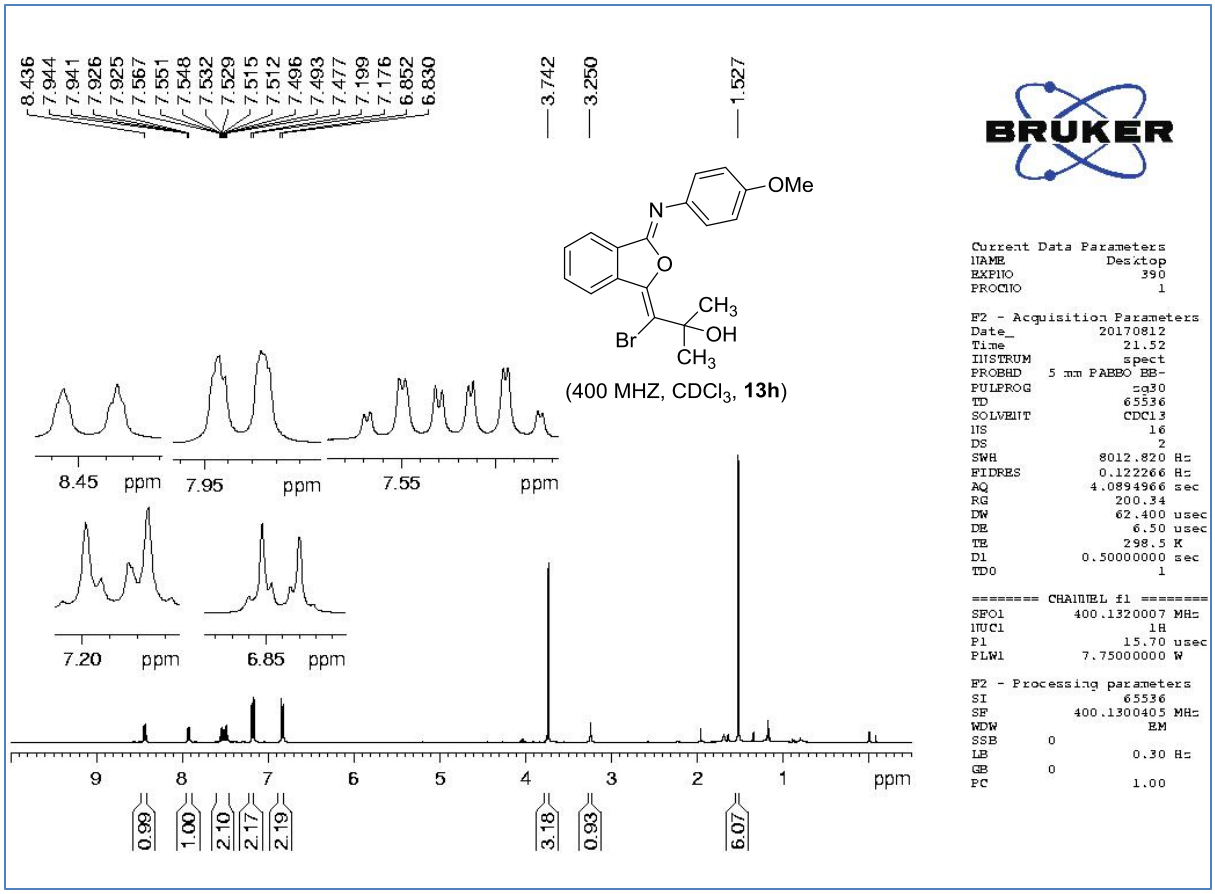

153.95
147.93
144.34
140.29
136.44
135.13
133.14
130.67
125.54
124.81
124.19
121.82
117.62
77.48
77.16
76.84
74.68
29.82
(100 MHZ, CDCl3, 13e)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 547
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 20.24
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 245
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.24
DW 20.800 usec
DE 6.50 usec
TE 298.6 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


NO2
N
O
CH3
Br
OH
CH3
(400 MHZ, CDCl3, 13f)
8.50 ppm
8.18 8.16 ppm
7.95 ppm
7.65 7.60 ppm
7.20 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00 2.04 0.95 2.04 2.15 0.90 6.14
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 394
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170814
Time 13.47
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 298.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300383 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


153.91 152.55 144.53 144.27 136.54 133.39 130.76 129.78 125.58 124.99 124.32 123.15 117.78
77.48 77.16 76.85 74.83
29.85
NO2
N
O
CH3
Br
OH
CH3
(100 MHZ, CDCl3, 13f)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 626
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170820
Time 10.46
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 1242
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 299.1 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------- CHANNEL f1 -------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.35 usec
PLW1 47.00000000 W
------- CHANNEL f2 -------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6128728 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.473
8.455
7.998
7.978
7.948
7.607
7.590
7.554
7.536
7.157
7.138
3.840
2.967
1.451
CO2Me
N
O
CH3
Br
OH
CH3
(400 MHZ, CDCl3, 13g)
8.48 8.46 ppm
8.00 ppm
7.65 7.60 7.55 ppm
7.15 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00
3.20
2.06
2.06
3.19
0.91
6.12
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 527
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 13.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 108.26
DW 62.400 usec
DE 6.50 usec
TE 299.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300377 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


166.84
150.47
144.32
136.30
132.86
130.70
130.49
129.99
126.25
125.34
124.04
122.36
116.67
77.37
77.05
76.73
74.71
52.02
29.69
CO2Me
N
O
CH3
Br
OH
CH3
(100 MHZ, CDCl3, 13g)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 528
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170816
Time 13.48
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 151
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 299.4 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------- CHANNEL f1 -------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------- CHANNEL f2 -------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

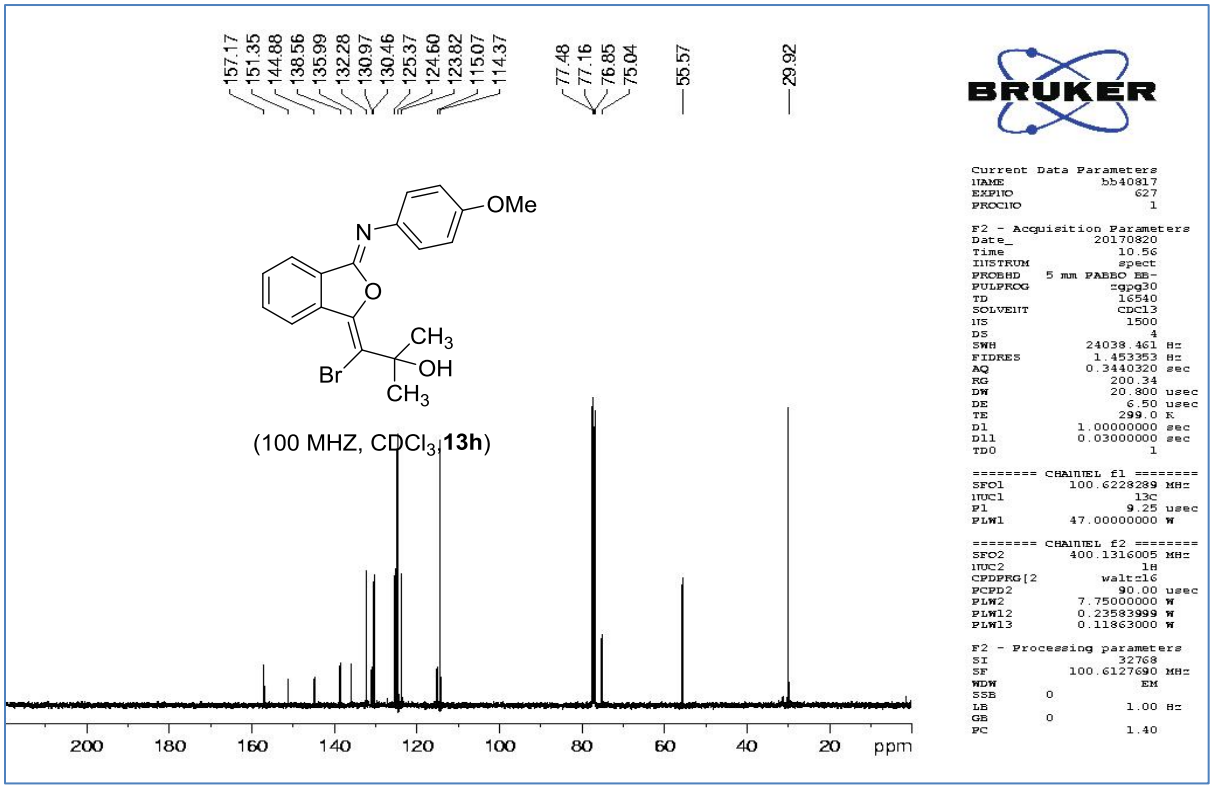



```
Current Data Parameters
NAME                  Desktop
EXPNO                     390
PROCNO                      1

F2 - Acquisition Parameters
Date_               20170812
Time                   21.52
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894966 sec
RG                    200.34
DW                    62.400 usec
DE                     6.50 usec
TE                    298.5 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1          400.1320007 MHz
NUC1                      1H
P1                     15.70 usec
PLW1           7.75000000 W

F2 - Processing parameters
SI                    65536
SF            400.1300405 MHz
WDW                      EM
SSB       0
LB                     0.30 Hz
GB        0
PC                     1.00
```



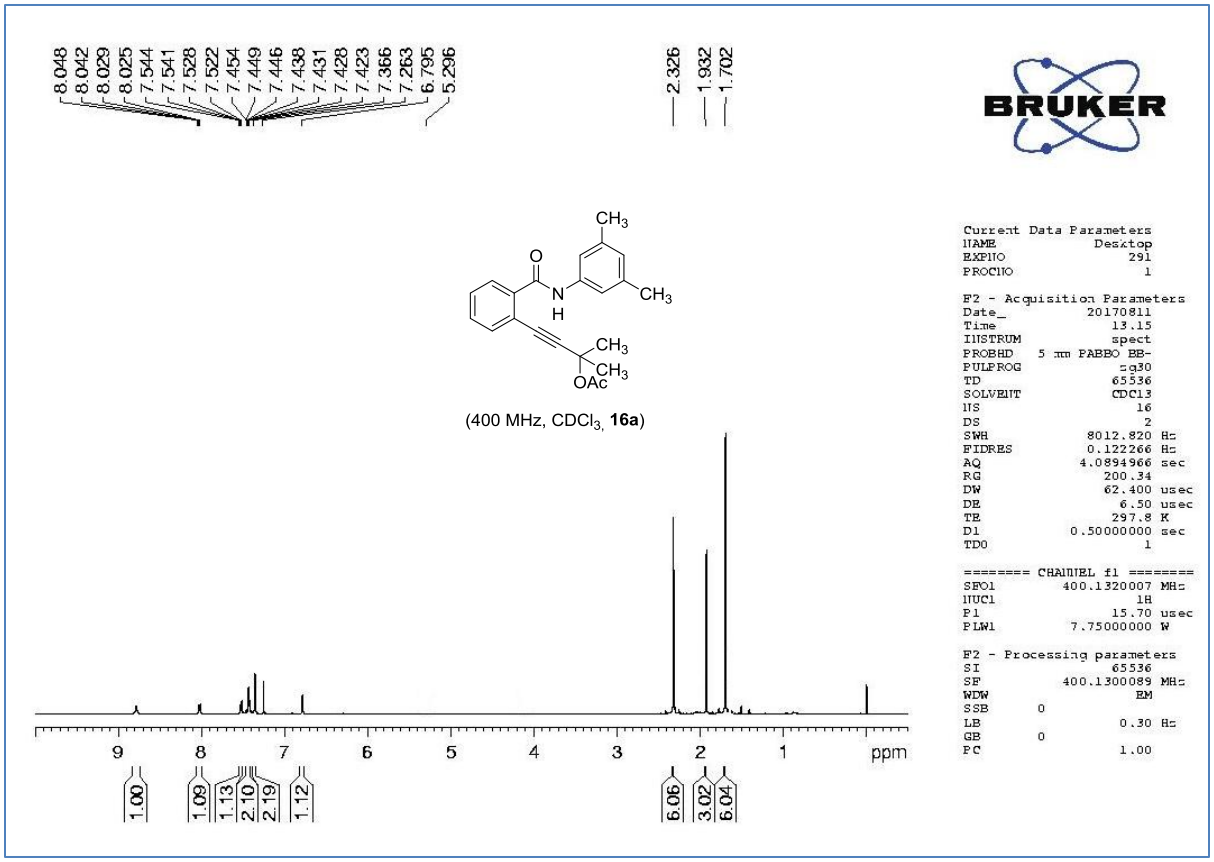

```
Current Data Parameters
NAME                  bb40817
EXPNO                     627
PROCNO                      1

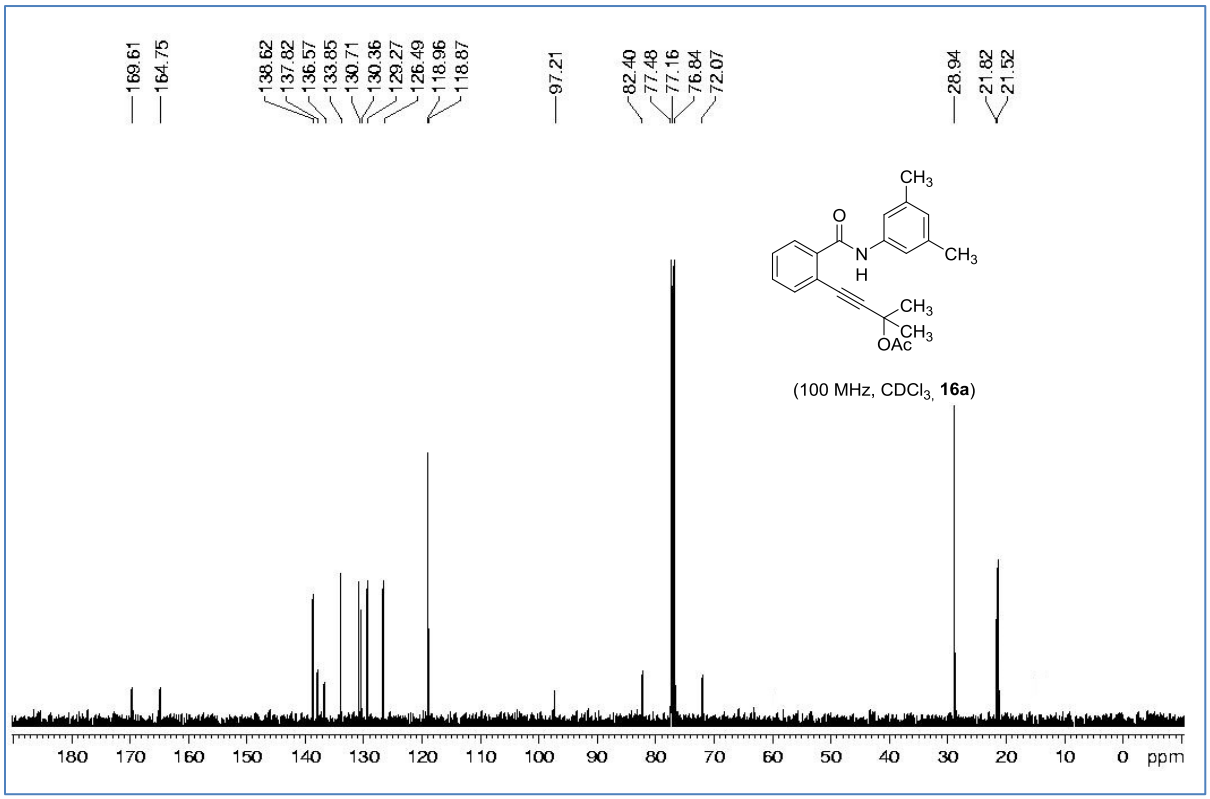
F2 - Acquisition Parameters
Date_               20170820
Time                   10.56
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                     1500
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                    20.800 usec
DE                     6.50 usec
TE                    299.0 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                         1

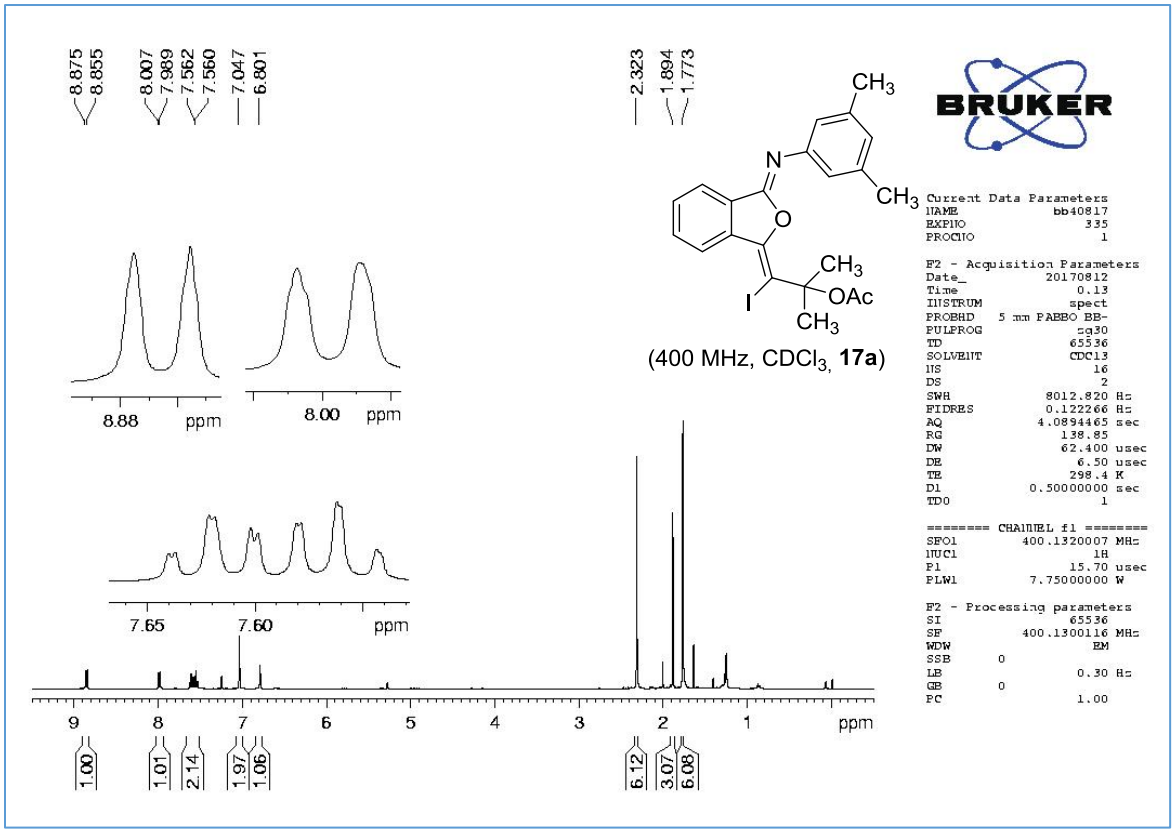
======== CHANNEL f1 ========
SFO1          100.6228289 MHz
NUC1                      13C
P1                     9.25 usec
PLW1          47.00000000 W

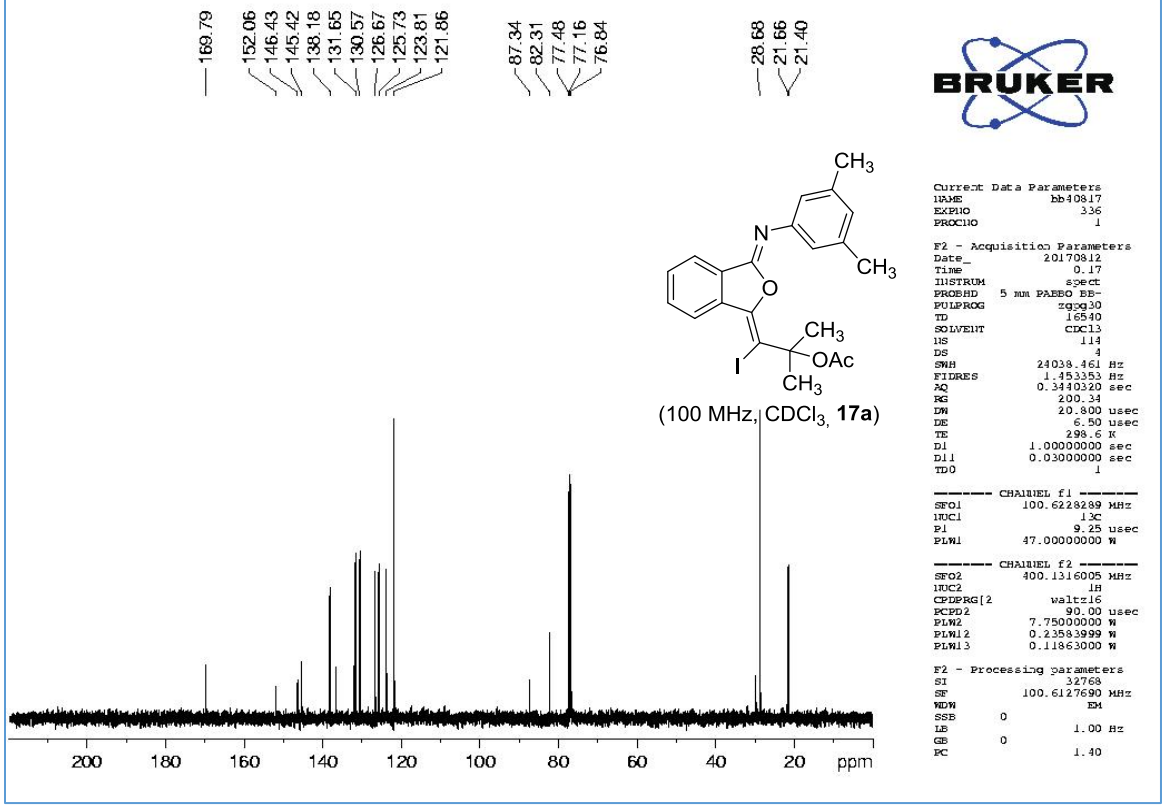
======== CHANNEL f2 ========
SFO2          400.1316005 MHz
NUC2                      1H
CPDPRG[2             waltz16
PCPD2                 90.00 usec
PLW2           7.75000000 W
PLW12          0.23583999 W
PLW13          0.11863000 W

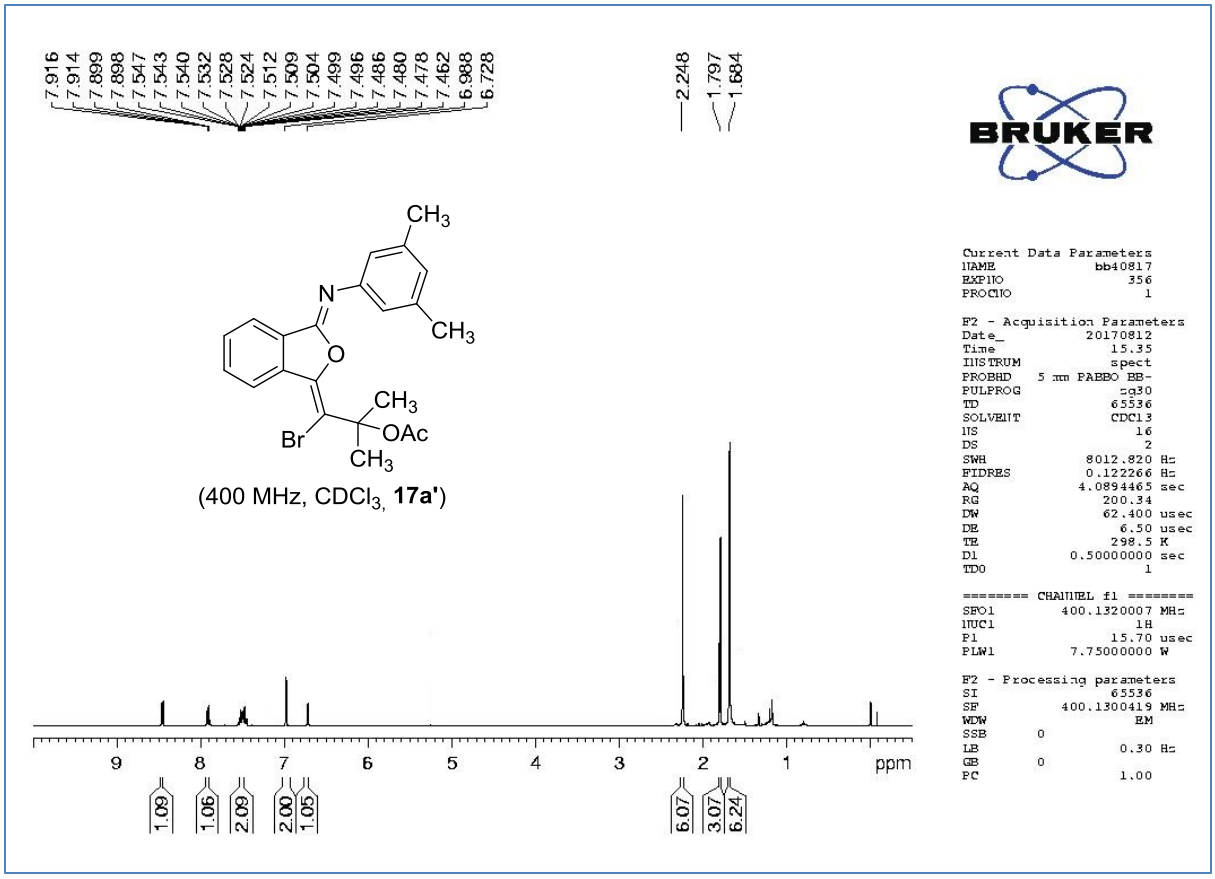
F2 - Processing parameters
SI                    32768
SF            100.6127690 MHz
WDW                      EM
SSB       0
LB                     1.00 Hz
GB        0
PC                     1.40
```

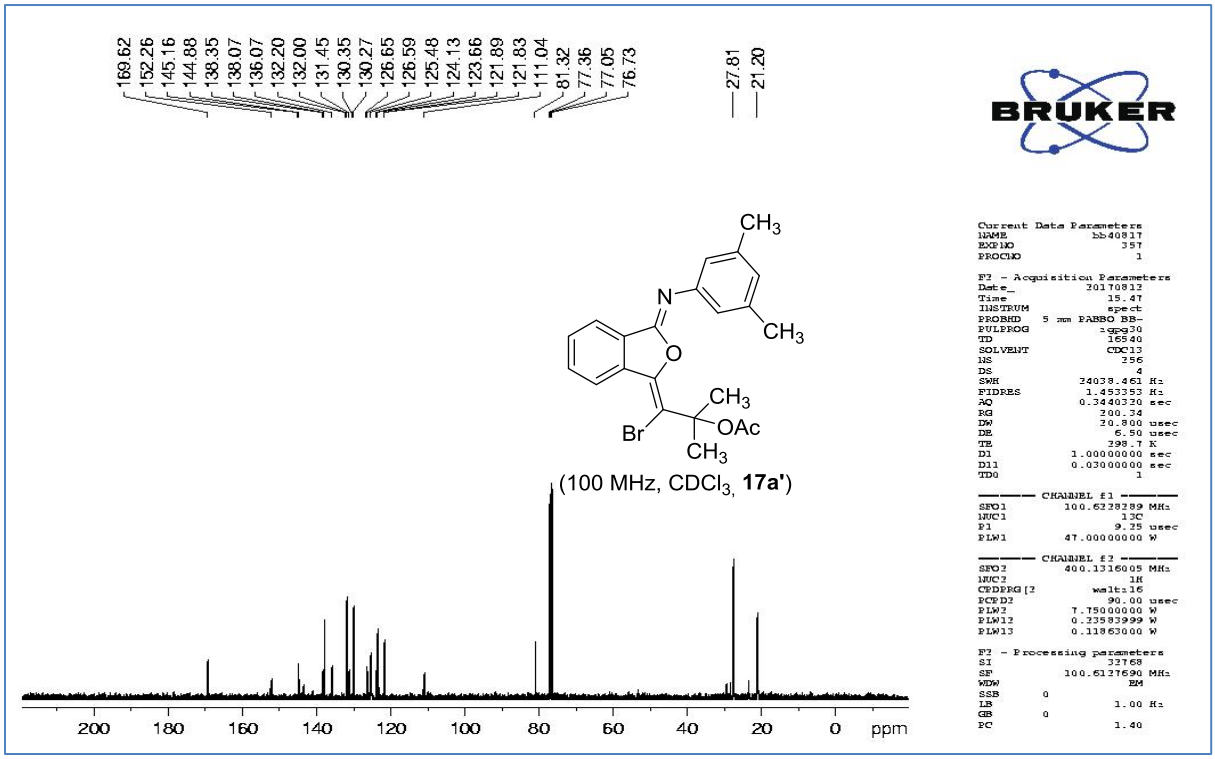

8.048
8.042
8.029
8.025
7.544
7.541
7.528
7.522
7.454
7.449
7.446
7.438
7.431
7.428
7.423
7.366
7.263
6.795
5.296
2.326
1.932
1.702
BRUKER
CH3
O
N
H
CH3
CH3
CH3
OAc
(400 MHz, CDCl3, 16a)
Current Data Parameters
NAME Desktop
EXPNO 291
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170811
Time_ 13.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 297.8 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300089 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
1.00
1.09
1.13
2.10
2.19
1.12
6.06
3.02
6.04

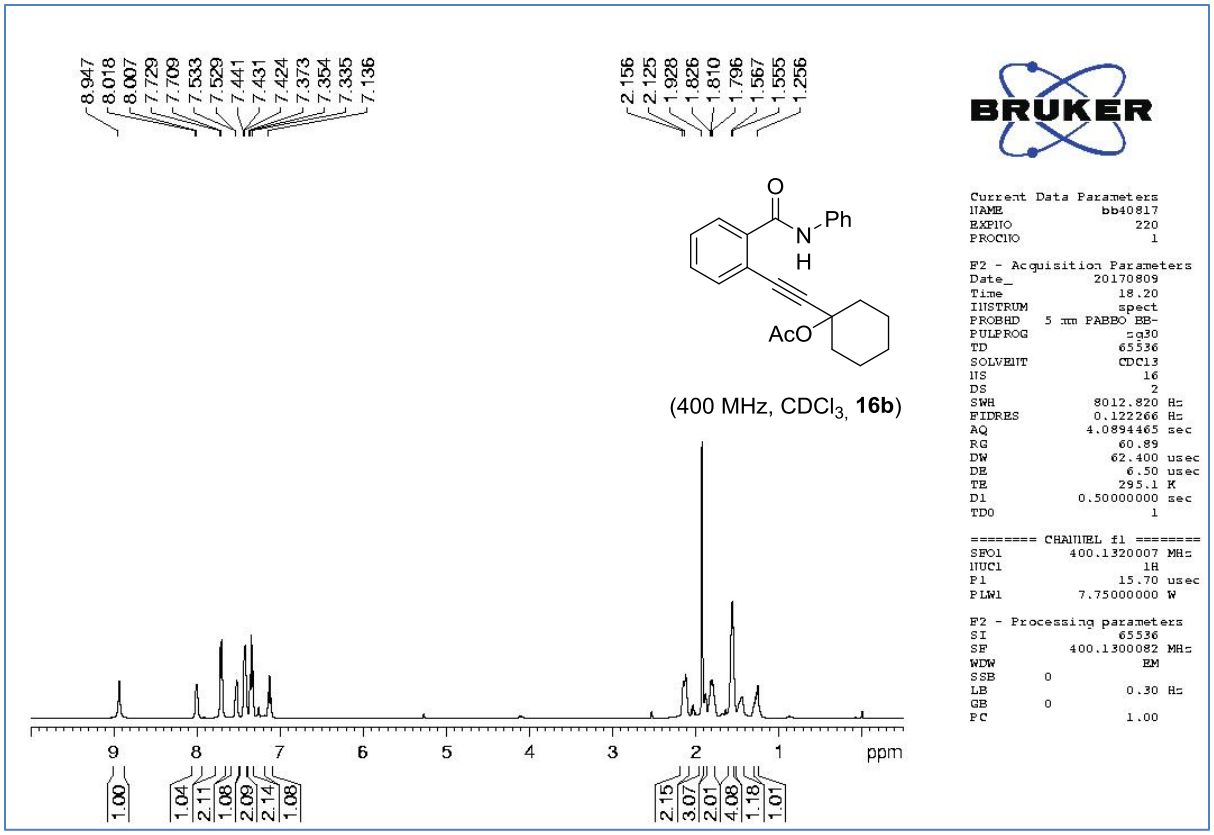

169.61
164.75
138.62
137.82
136.57
133.85
130.71
130.36
129.27
126.49
118.96
118.87
97.21
82.40
77.48
77.16
76.84
72.07
28.94
21.82
21.52
CH3
O
N
H
CH3
CH3
CH3
OAc
(100 MHz, CDCl3, 16a)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
ppm

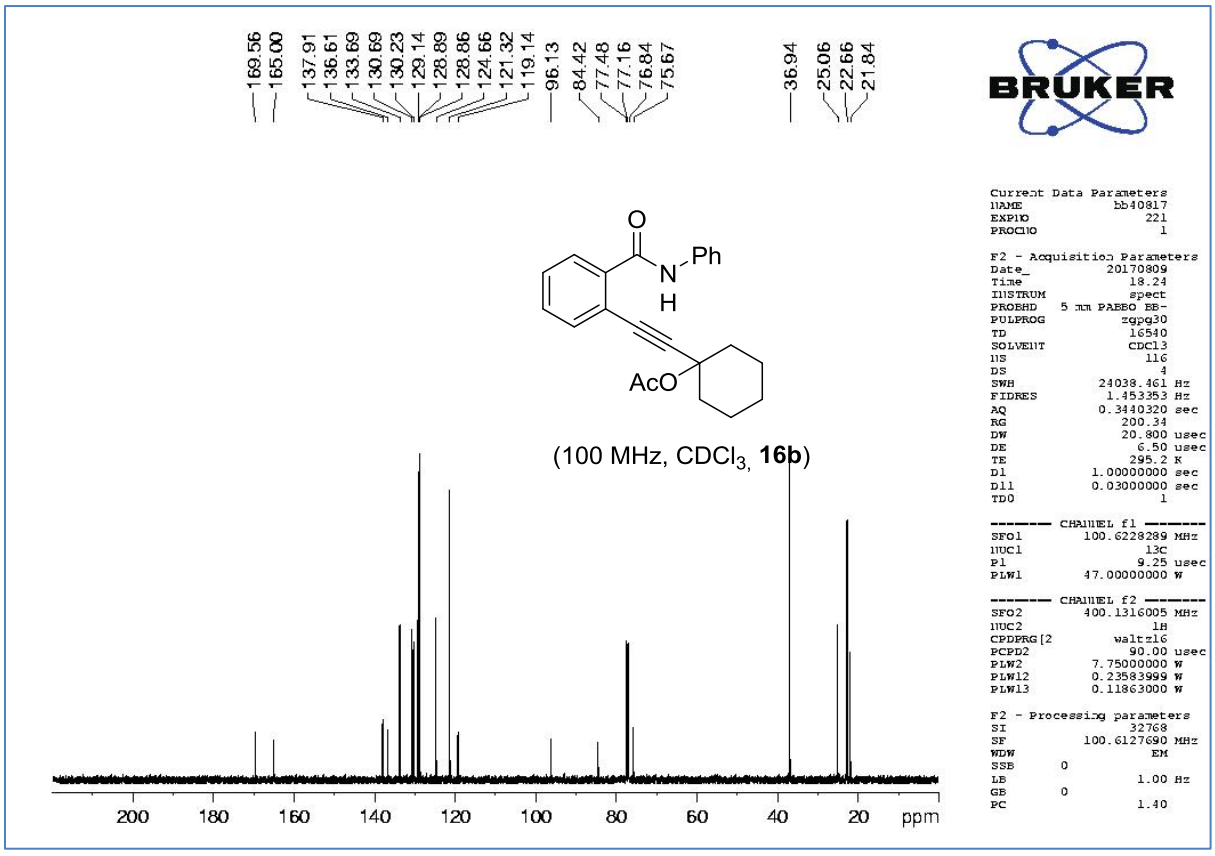

8.875
8.855
8.007
7.989
7.562
7.560
7.047
6.801
2.323
1.894
1.773
(400 MHz, CDCl3, 17a)
8.88 ppm
8.00 ppm
7.65
7.60
ppm
1.00
1.01
2.14
1.97
1.06
6.12
3.07
6.08
Current Data Parameters
NAME bb40817
EXPNO 335
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170812
Time 0.13
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 138.85
DW 62.400 usec
DE 6.50 usec
TE 298.4 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300116 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

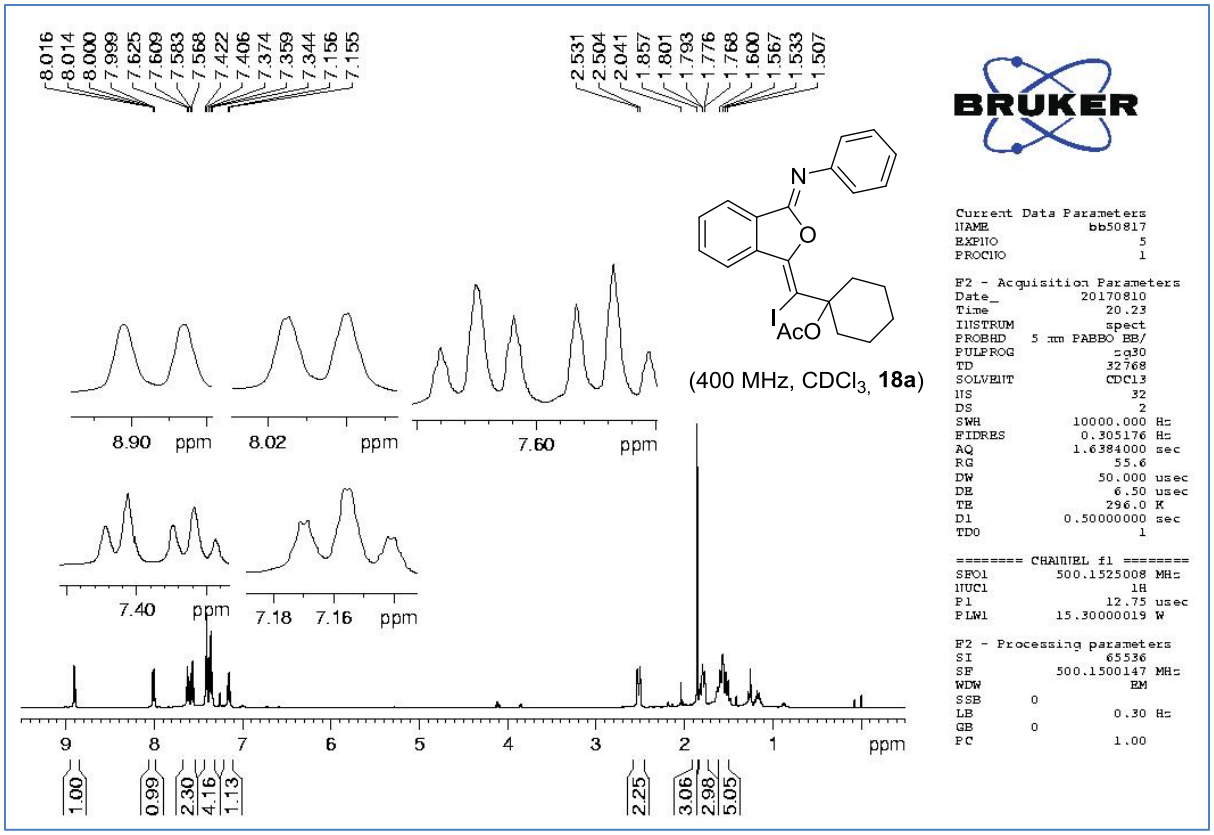

169.79
152.06
146.43
145.42
138.18
131.65
130.57
126.67
125.73
123.81
121.86
87.34
82.31
77.48
77.16
76.84
28.68
21.66
21.40
(100 MHz, CDCl3, 17a)
200
180
160
140
120
100
80
60
40
20
ppm
Current Data Parameters
NAME bb40817
EXPNO 336
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170812
Time 0.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 114
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.6 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

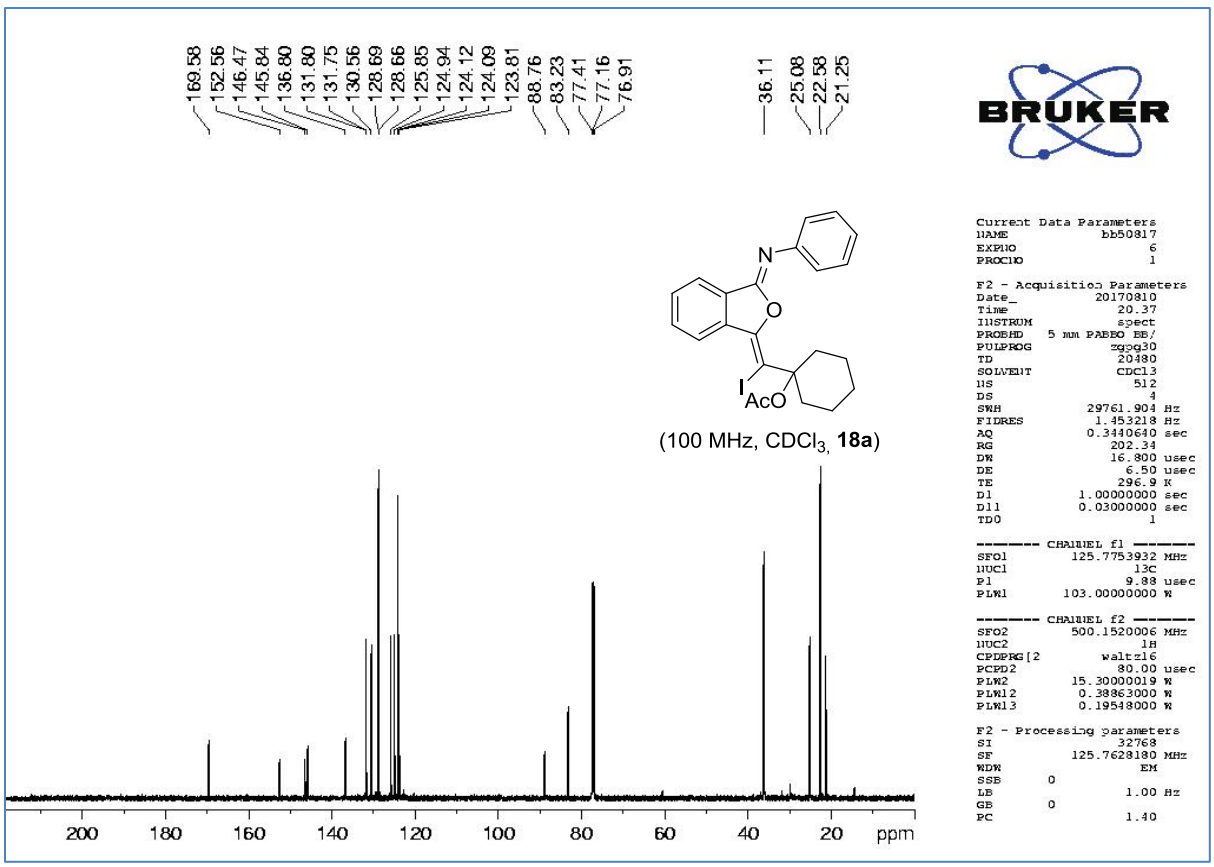

7.916
7.914
7.899
7.898
7.547
7.543
7.540
7.532
7.528
7.524
7.512
7.509
7.504
7.499
7.496
7.486
7.480
7.478
7.462
6.988
6.728
2.248
1.797
1.684
BRUKER
CH3
N
CH3
O
CH3
Br
OAc
CH3
(400 MHz, CDCl3, 17a')
Current Data Parameters
NAME bb40817
EXPNO 356
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170812
Time 15.35
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 298.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300419 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
1.09
1.06
2.09
2.00
1.05
6.07
3.07
6.24

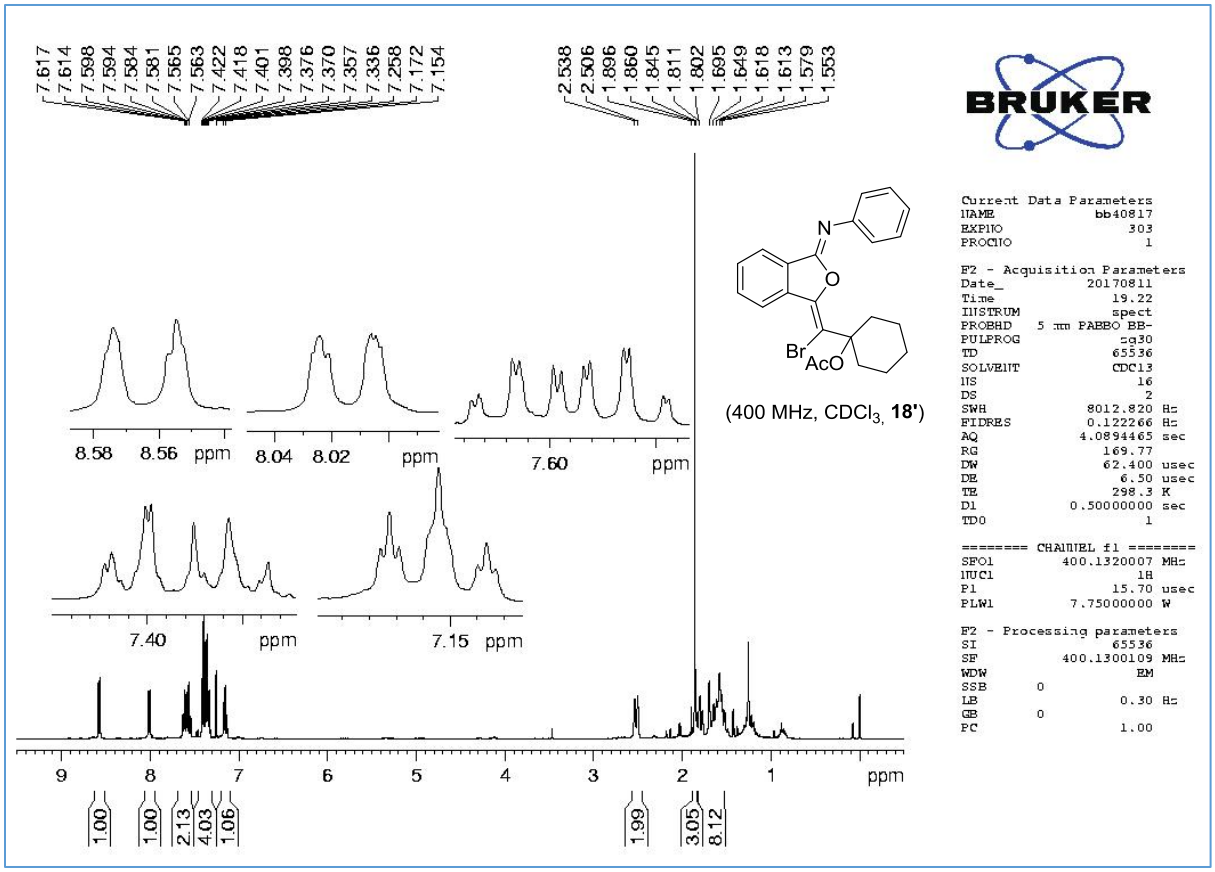

169.62
152.26
145.16
144.88
138.35
138.07
136.07
132.20
132.00
131.45
130.35
130.27
126.65
126.59
125.48
124.13
123.66
121.89
121.83
111.04
81.32
77.36
77.05
76.73
27.81
21.20
BRUKER
CH3
N
CH3
O
CH3
Br
OAc
CH3
(100 MHz, CDCl3, 17a')
Current Data Parameters
NAME bb40817
EXPNO 357
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170812
Time 15.47
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 356
DS 4
SWH 34038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------ CHANNEL f1 ------
SFO1 100.6238389 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------ CHANNEL f2 ------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200
180
160
140
120
100
80
60
40
20
0
ppm

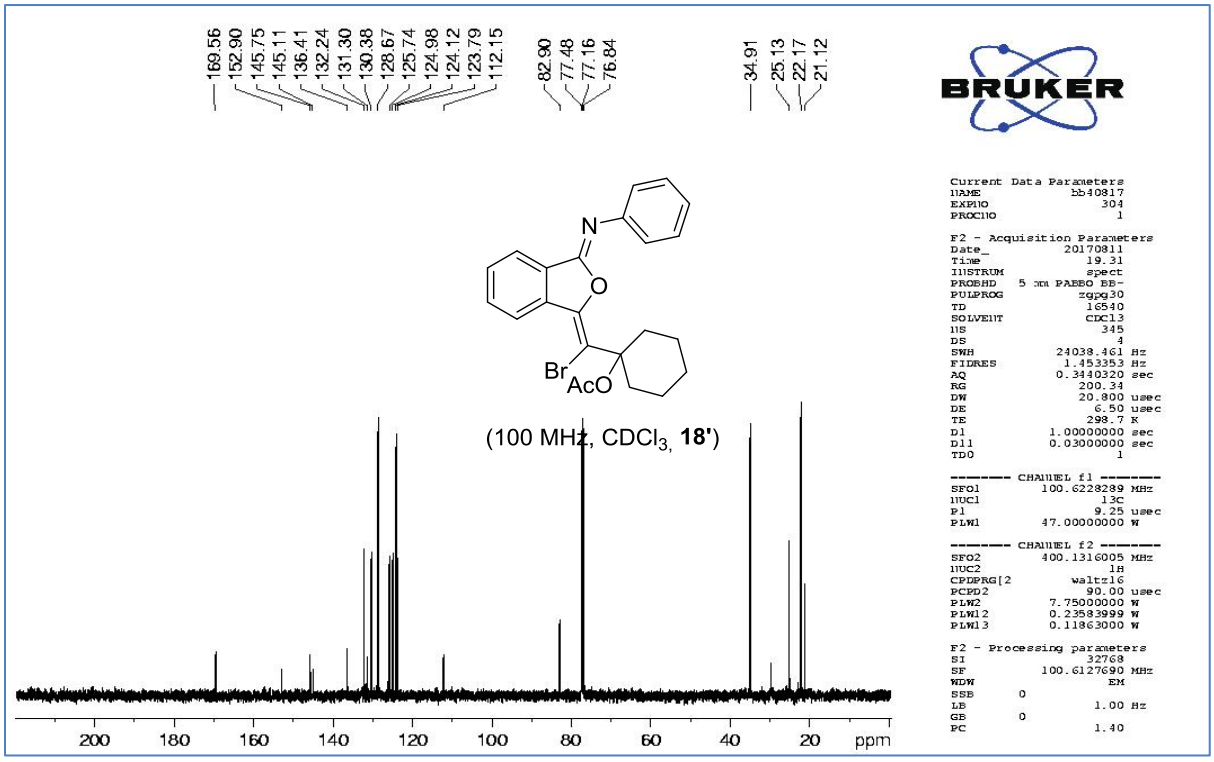

8.947
8.018
8.007
7.729
7.709
7.533
7.529
7.441
7.431
7.424
7.373
7.354
7.335
7.136
2.156
2.125
1.928
1.826
1.810
1.796
1.567
1.555
1.256
O
N
Ph
H
AcO
(400 MHz, CDCl3, 16b)
9
8
7
6
5
4
3
2
1
ppm
1.00
1.04
2.11
1.08
2.09
2.14
1.08
2.15
3.07
2.01
4.08
1.18
1.01
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 220
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 18.20
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 60.89
DW 62.400 usec
DE 6.50 usec
TE 295.1 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300082 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

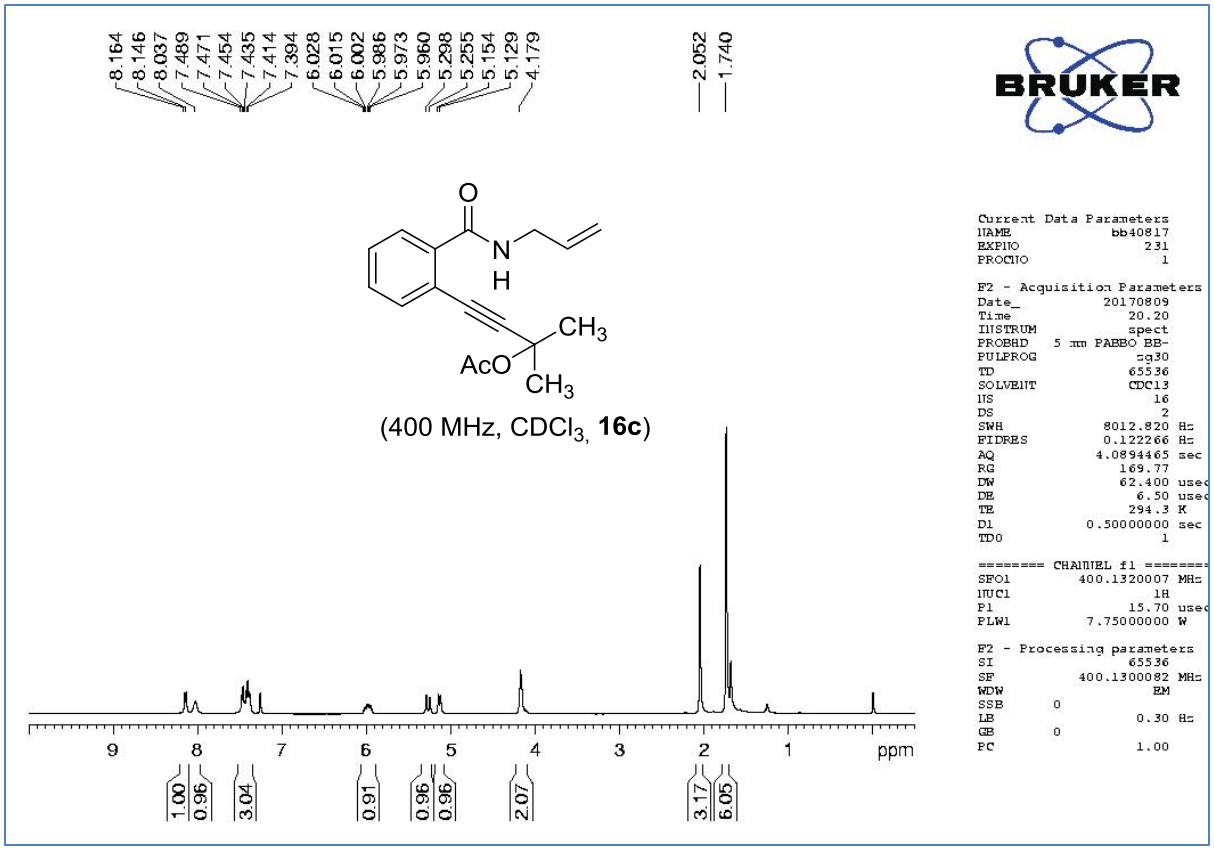

169.56
165.00
137.91
136.61
133.69
130.69
130.23
129.14
128.89
128.86
124.66
121.32
119.14
96.13
84.42
77.48
77.16
76.84
75.67
36.94
25.06
22.66
21.84
O
N
Ph
H
AcO
(100 MHz, CDCl3, 16b)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 221
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 18.24
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 116
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.2 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

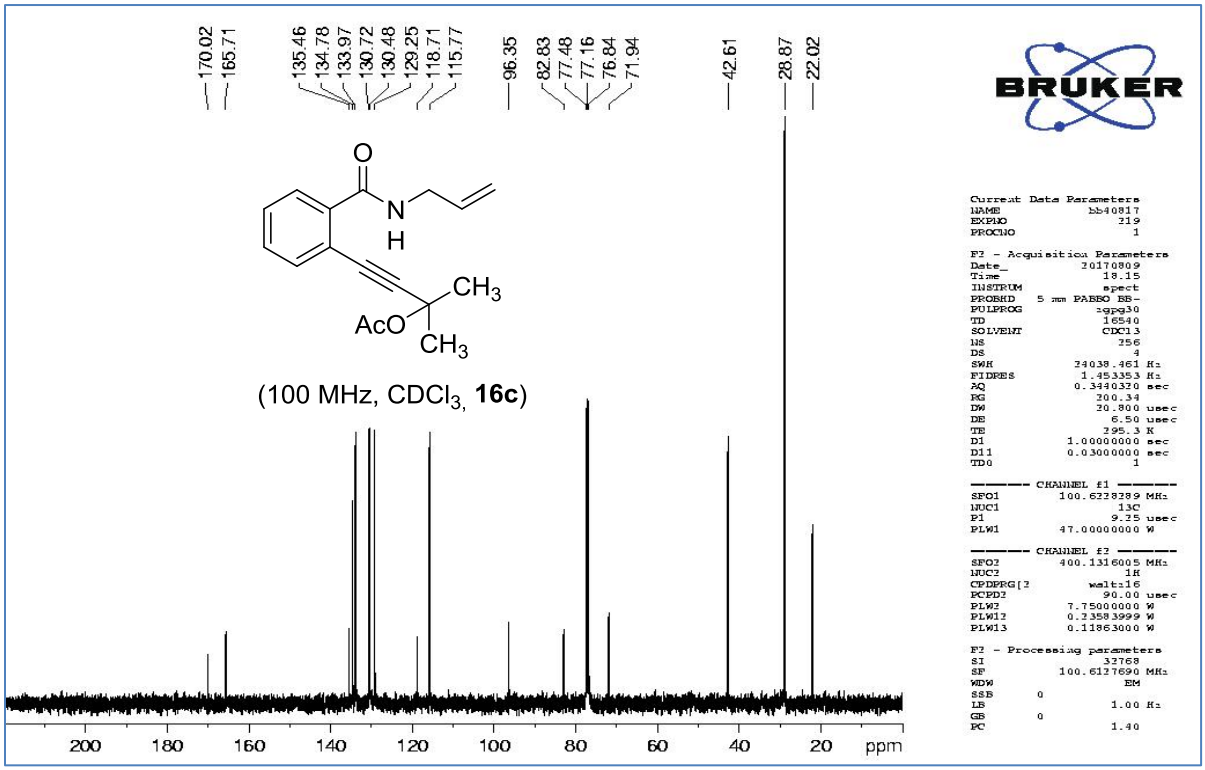

8.016
8.014
8.000
7.999
7.625
7.609
7.583
7.568
7.422
7.406
7.374
7.359
7.344
7.156
7.155
2.531
2.504
2.041
1.857
1.801
1.793
1.776
1.768
1.600
1.567
1.533
1.507
N
O
I
AcO
(400 MHz, CDCl3, 18a)
8.90 ppm
8.02 ppm
7.60 ppm
7.40 ppm
7.18 7.16 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00
0.99
2.30
4.16
1.13
2.25
3.06
2.98
5.05
BRUKER
Current Data Parameters
NAME bb50817
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170810
Time 20.23
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 32
DS 2
SWH 10000.000 Hz
FIDRES 0.305176 Hz
AQ 1.6384000 sec
RG 55.6
DW 50.000 usec
DE 6.50 usec
TE 296.0 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 500.1525008 MHz
NUC1 1H
P1 12.75 usec
PLW1 15.30000019 W
F2 - Processing parameters
SI 65536
SF 500.1500147 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

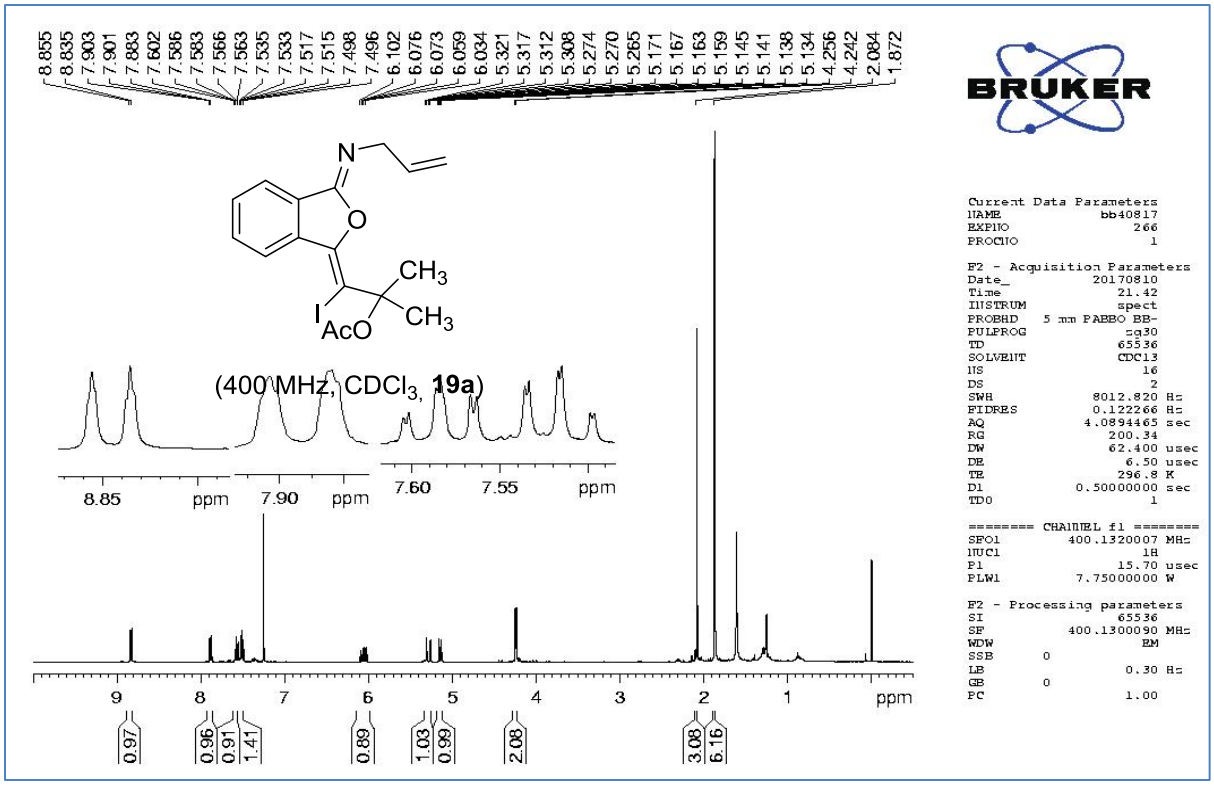

169.58
152.56
146.47
145.84
136.80
131.80
131.75
130.56
128.69
128.66
125.85
124.94
124.12
124.09
123.81
88.76
83.23
77.41
77.16
76.91
36.11
25.08
22.58
21.25
N
O
I
AcO
(100 MHz, CDCl3, 18a)
200 180 160 140 120 100 80 60 40 20 ppm
BRUKER
Current Data Parameters
NAME bb50817
EXPNO 6
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170810
Time 20.37
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 20480
SOLVENT CDCl3
NS 512
DS 4
SWH 29761.904 Hz
FIDRES 1.453218 Hz
AQ 0.3440640 sec
RG 202.34
DW 16.800 usec
DE 6.50 usec
TE 296.9 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 125.7753932 MHz
NUC1 13C
P1 9.88 usec
PLW1 103.00000000 W
======== CHANNEL f2 ========
SFO2 500.1520006 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 80.00 usec
PLW2 15.30000019 W
PLW12 0.38863000 W
PLW13 0.19548000 W
F2 - Processing parameters
SI 32768
SF 125.7628180 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

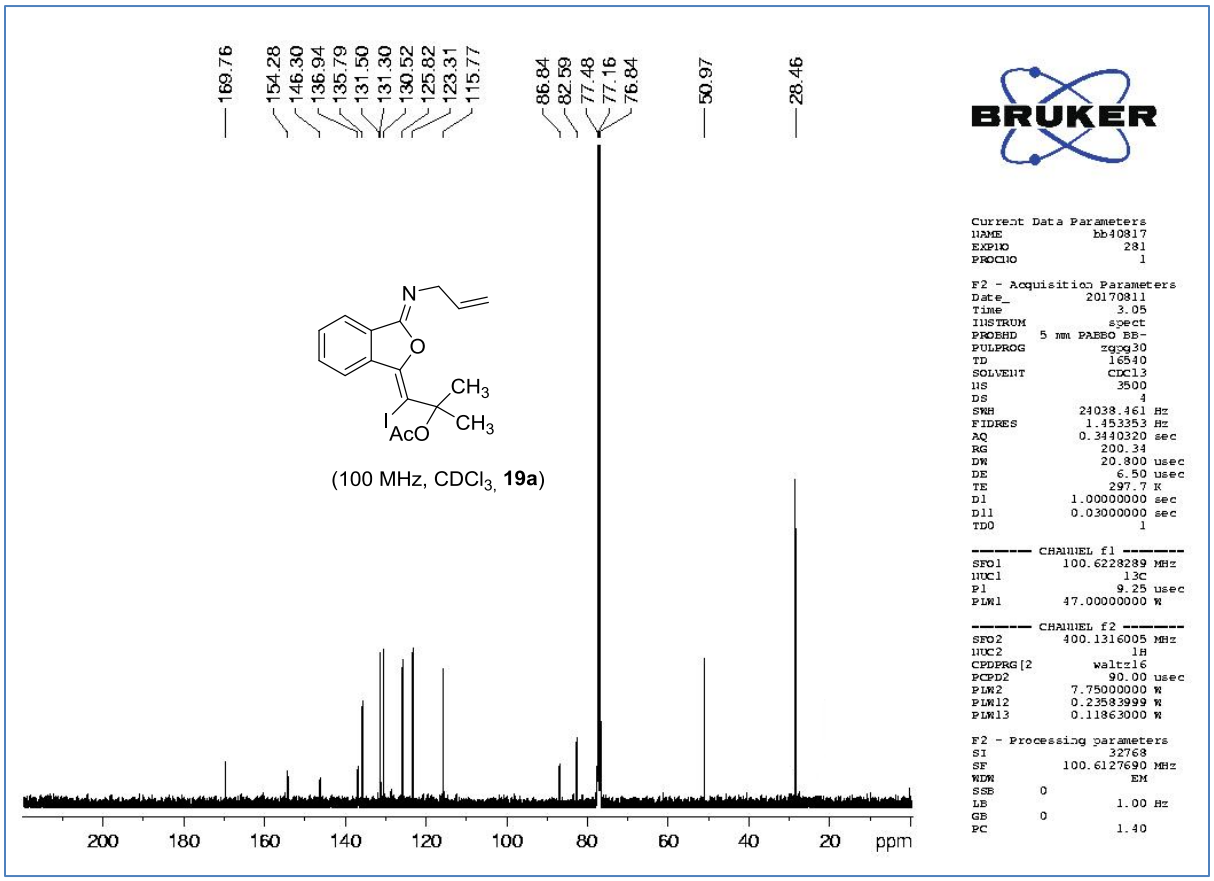

7.617
7.614
7.598
7.594
7.584
7.581
7.565
7.563
7.422
7.418
7.401
7.398
7.376
7.370
7.357
7.336
7.258
7.172
7.154
2.538
2.506
1.896
1.860
1.845
1.811
1.802
1.695
1.649
1.618
1.613
1.579
1.553
8.58
8.56
ppm
8.04
8.02
ppm
7.60
ppm
7.40
ppm
7.15
ppm
9
8
7
6
5
4
3
2
1
ppm
1.00
1.00
2.13
4.03
1.06
1.99
3.05
8.12
N
O
Br
AcO
(400 MHz, CDCl3, 18')
Current Data Parameters
NAME bb40817
EXPNO 303
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170811
Time 19.22
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 169.77
DW 62.400 usec
DE 6.50 usec
TE 298.3 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300109 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

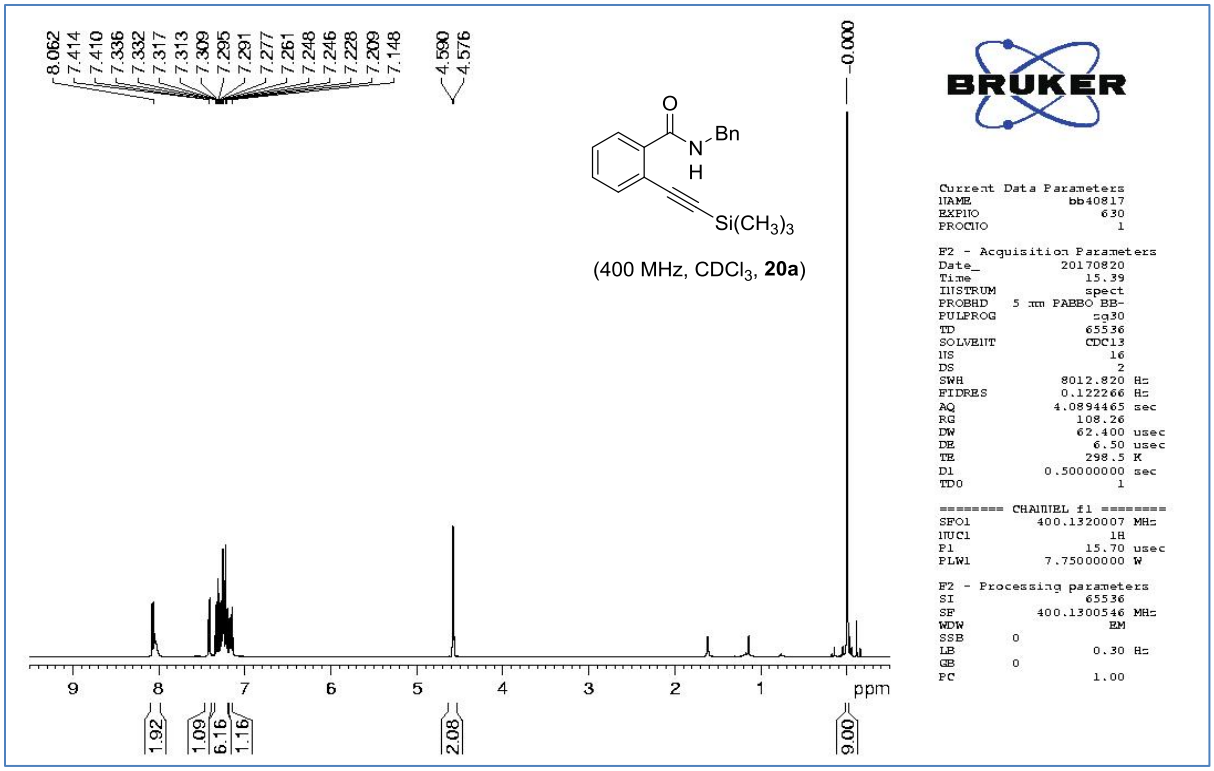

169.56
152.90
145.75
145.11
136.41
132.24
131.30
130.38
128.67
125.74
124.98
124.12
123.79
112.15
82.90
77.48
77.16
76.84
34.91
25.13
22.17
21.12
N
O
Br
AcO
(100 MHz, CDCl3, 18')
200
180
160
140
120
100
80
60
40
20
ppm
Current Data Parameters
NAME bb40817
EXPNO 304
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170811
Time 19.31
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 345
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

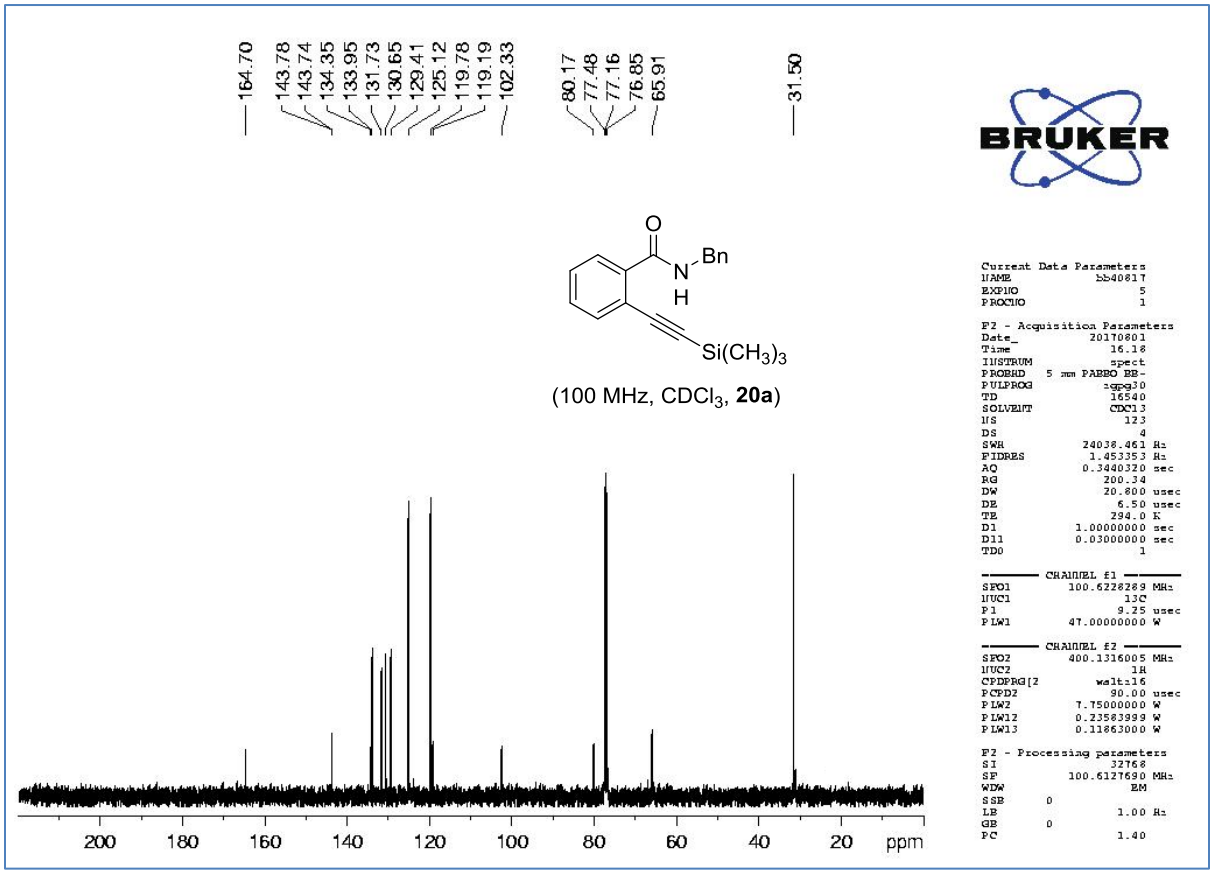

8.164
8.146
8.037
7.489
7.471
7.454
7.435
7.414
7.394
6.028
6.015
6.002
5.986
5.973
5.960
5.298
5.255
5.154
5.129
4.179
2.052
1.740
BRUKER
O
N
H
CH3
AcO
CH3
(400 MHz, CDCl3, 16c)
Current Data Parameters
NAME bb40817
EXPNO 231
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 20.20
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 169.77
DW 62.400 usec
DE 6.50 usec
TE 294.3 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300082 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
1.00
0.96
3.04
0.91
0.96
0.96
2.07
3.17
6.05

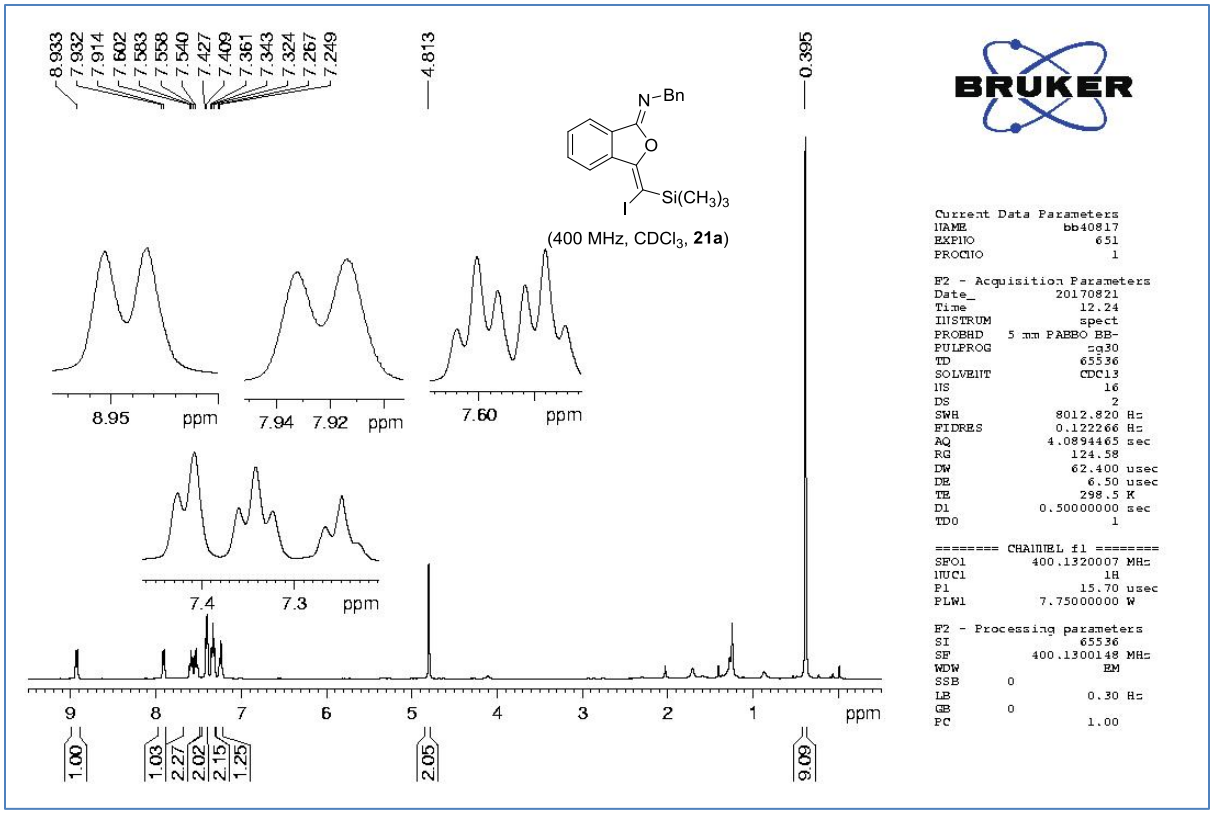

170.02
165.71
135.46
134.78
133.97
130.72
130.48
129.25
118.71
115.77
96.35
82.83
77.48
77.16
76.84
71.94
42.61
28.87
22.02
BRUKER
O
N
H
CH3
AcO
CH3
(100 MHz, CDCl3, 16c)
Current Data Parameters
NAME bb40817
EXPNO 219
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 18.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.3 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200
180
160
140
120
100
80
60
40
20
ppm

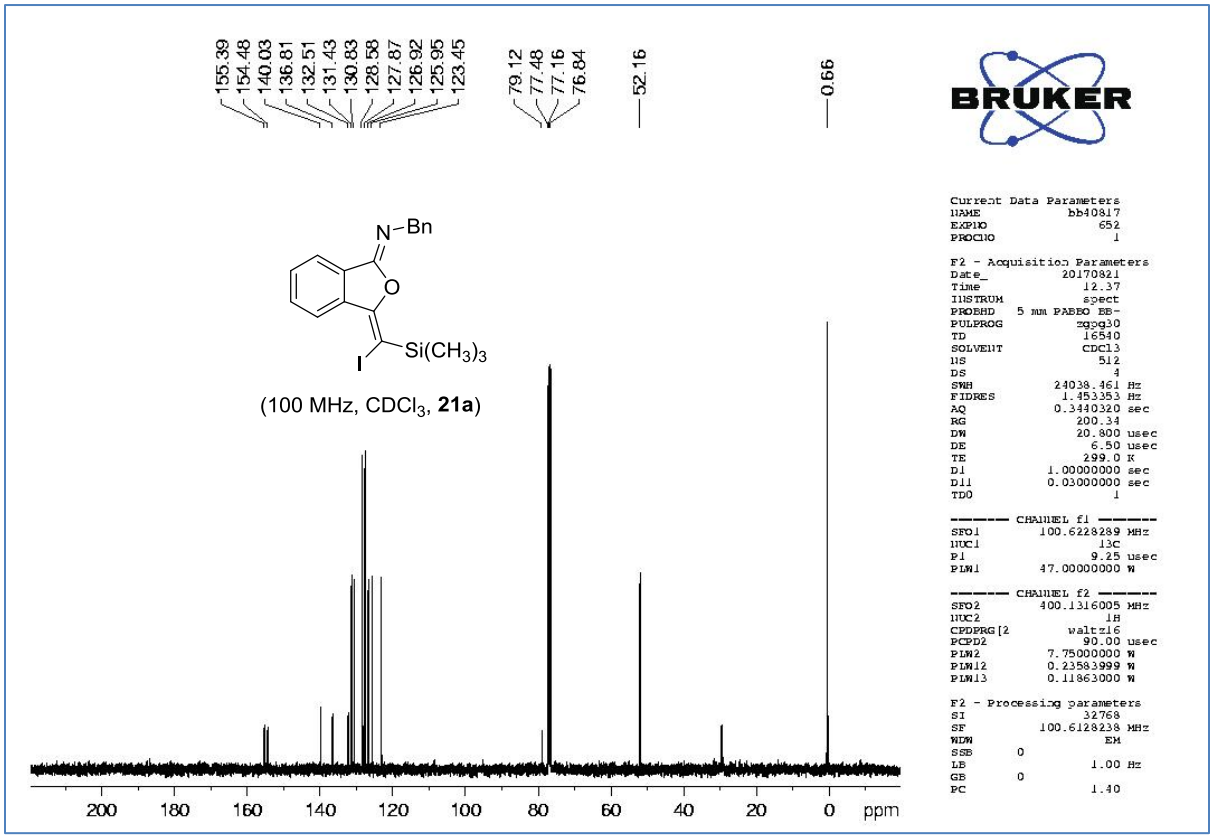

8.855
8.835
7.903
7.901
7.883
7.602
7.586
7.583
7.566
7.563
7.535
7.533
7.517
7.515
7.498
7.496
6.102
6.076
6.073
6.059
6.034
5.321
5.317
5.312
5.308
5.274
5.270
5.265
5.171
5.167
5.163
5.159
5.145
5.141
5.138
5.134
4.256
4.242
2.084
1.872
N
O
CH3
I
AcO
CH3
(400 MHz, CDCl3, 19a)
8.85
ppm
7.90
ppm
7.60
7.55
ppm
9
8
7
6
5
4
3
2
1
ppm
0.97
0.96
0.91
1.41
0.89
1.03
0.99
2.08
3.08
6.16
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 266
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170810
Time 21.42
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 296.8 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300090 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

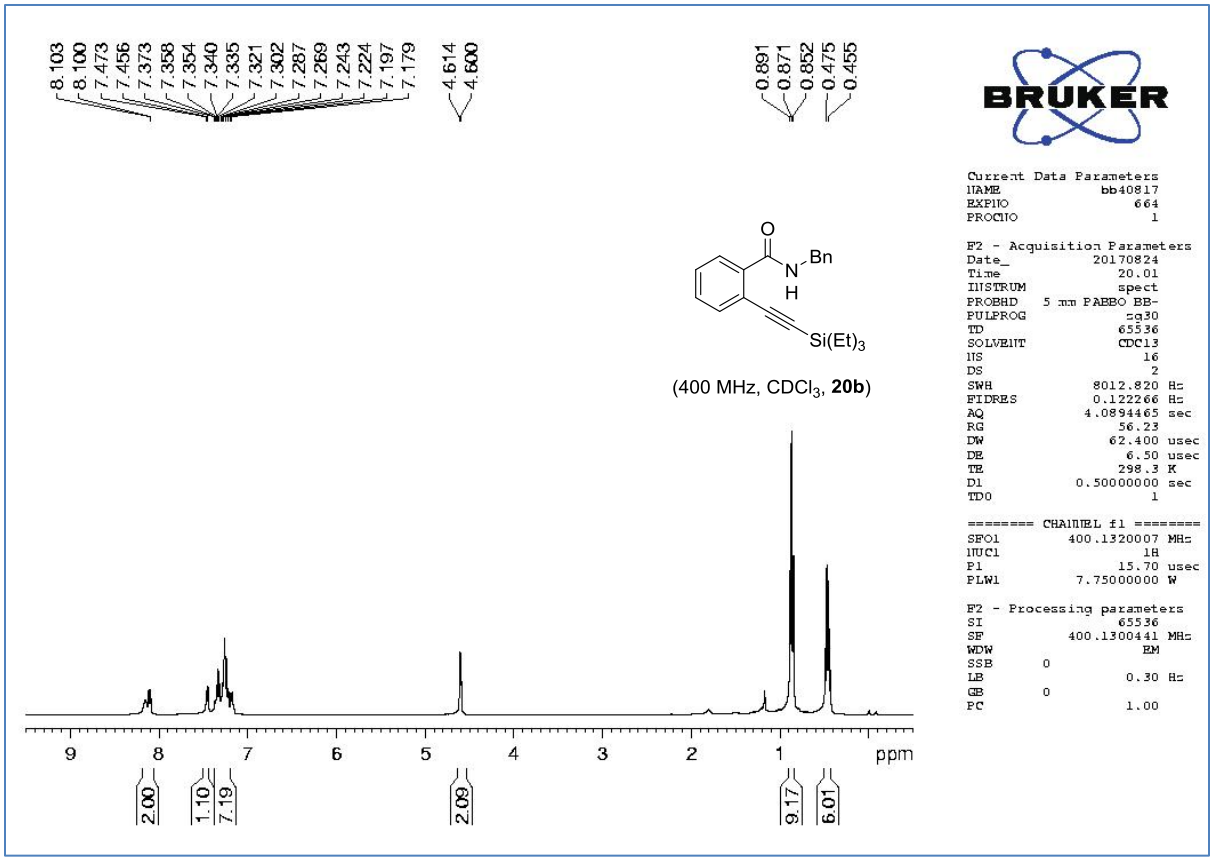

169.76
154.28
146.30
136.94
135.79
131.50
131.30
130.52
125.82
123.31
115.77
86.84
82.59
77.48
77.16
76.84
50.97
28.46
N
O
CH3
I
AcO
CH3
(100 MHz, CDCl3, 19a)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 281
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170811
Time 3.05
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 3500
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 297.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------- CHANNEL f1 -------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------- CHANNEL f2 -------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

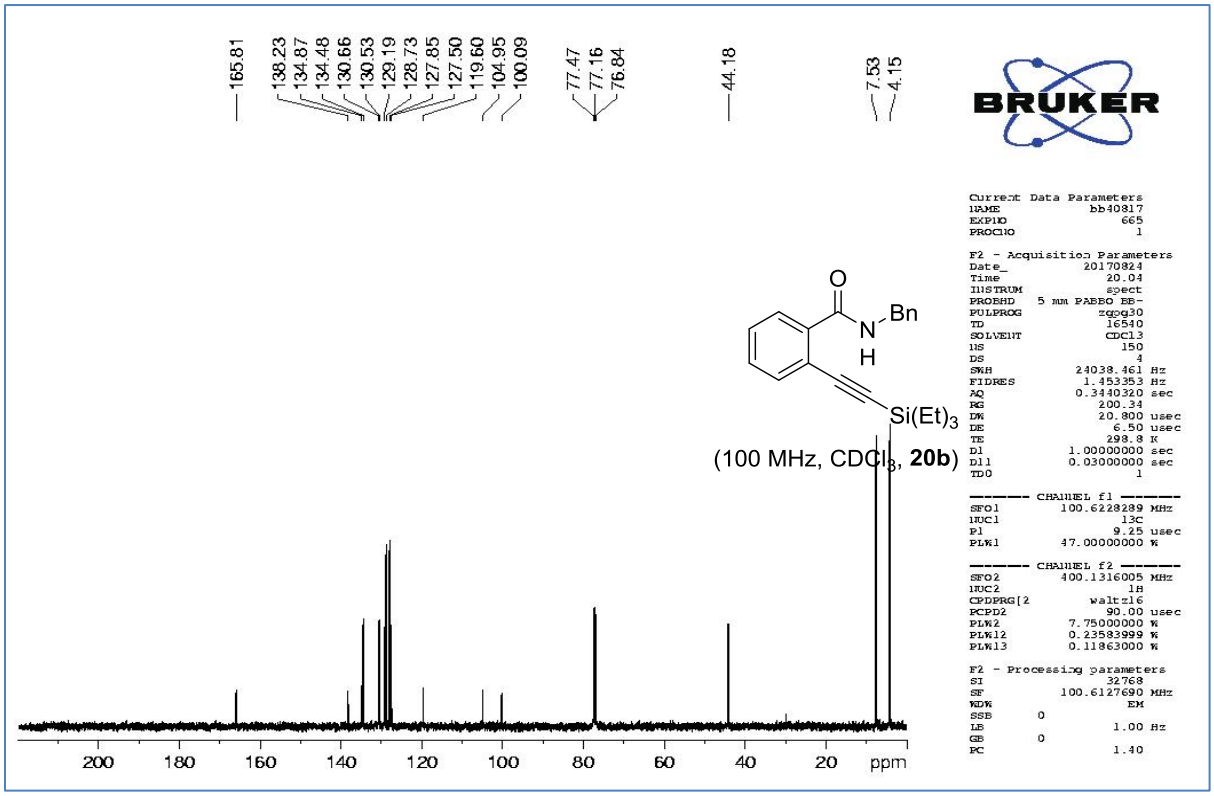

8.062
7.414
7.410
7.336
7.332
7.317
7.313
7.309
7.295
7.291
7.277
7.261
7.248
7.246
7.228
7.209
7.148
4.590
4.576
0.000
O
N
Bn
H
Si(CH3)3
(400 MHz, CDCl3, 20a)
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 630
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170820
Time 15.39
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 108.26
DW 62.400 usec
DE 6.50 usec
TE 298.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300546 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
1.92
1.09
6.16
1.16
2.08
9.00

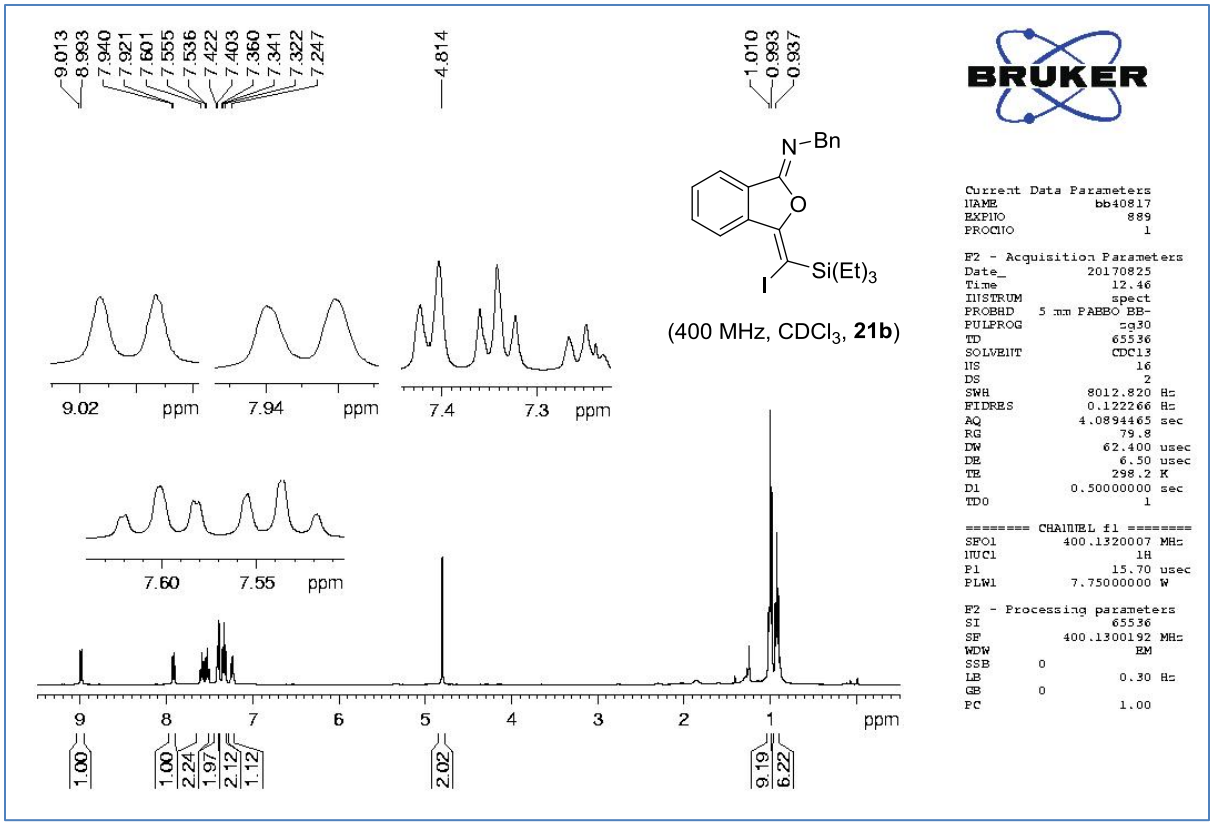

164.70
143.78
143.74
134.35
133.95
131.73
130.65
129.41
125.12
119.78
119.19
102.33
80.17
77.48
77.16
76.85
65.91
31.50
O
N
Bn
H
Si(CH3)3
(100 MHz, CDCl3, 20a)
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170801
Time 16.18
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 123
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200
180
160
140
120
100
80
60
40
20
ppm

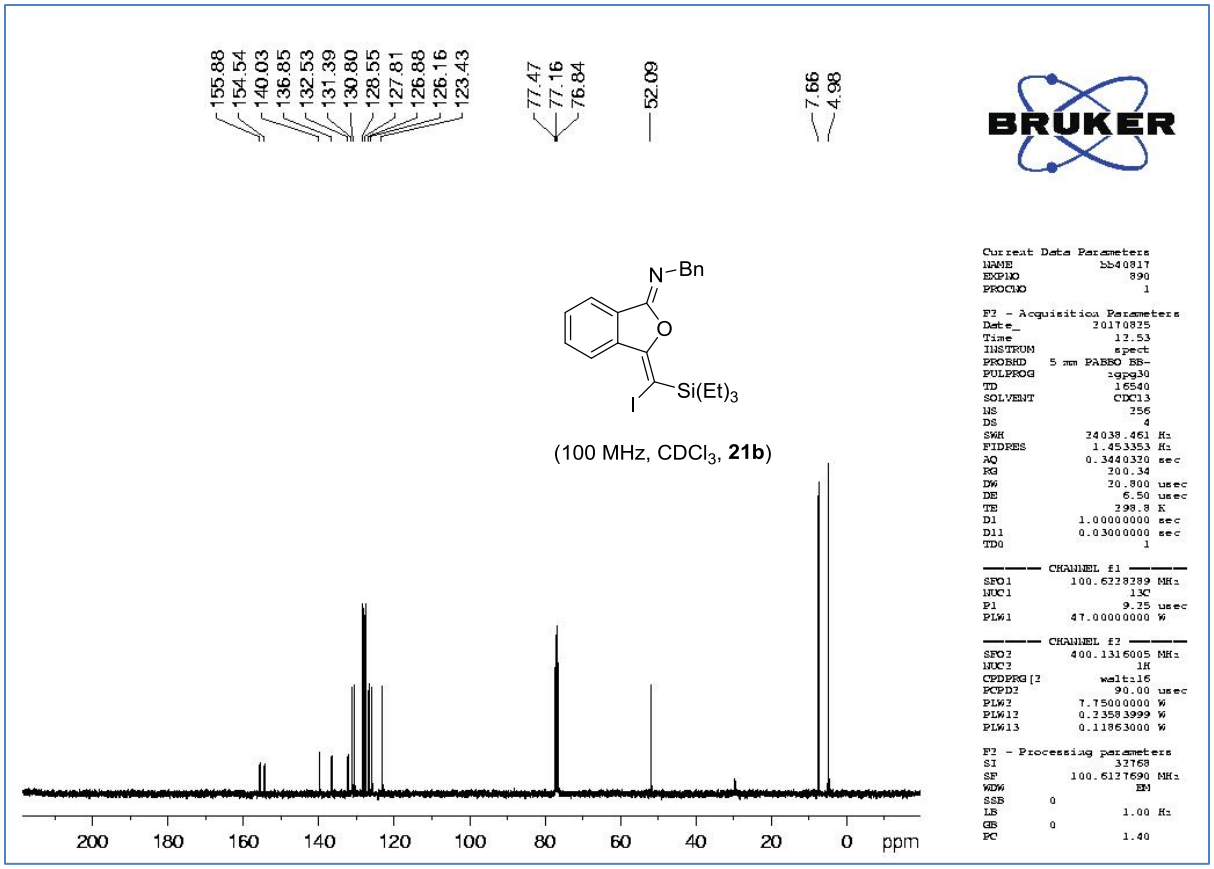

8.933
7.932
7.914
7.602
7.583
7.558
7.540
7.427
7.409
7.361
7.343
7.324
7.267
7.249
4.813
0.395
N–Bn
O
I
Si(CH3)3
(400 MHz, CDCl3, 21a)
8.95 ppm
7.94 7.92 ppm
7.60 ppm
7.4 7.3 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00
1.03
2.27
2.02
2.15
1.25
2.05
9.09
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 651
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170821
Time 12.24
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 124.58
DW 62.400 usec
DE 6.50 usec
TE 298.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300148 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

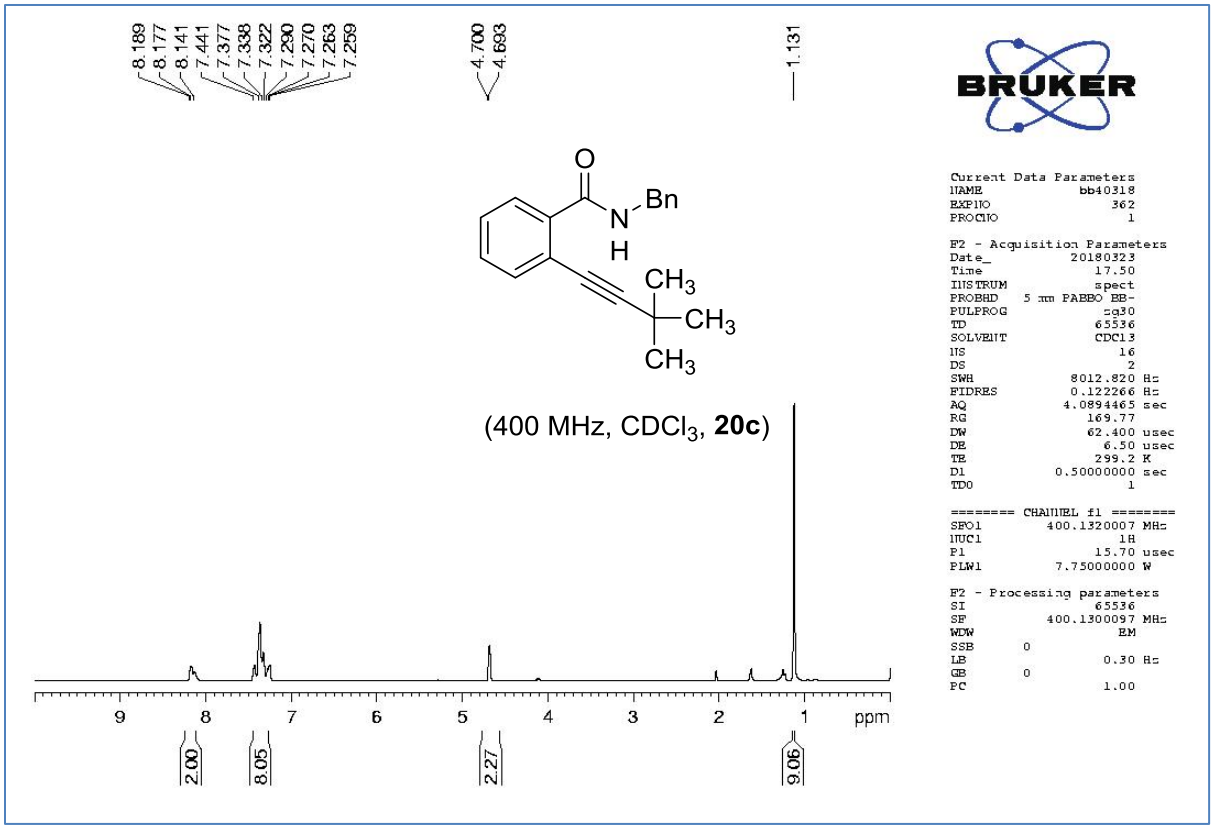

155.39
154.48
140.03
136.81
132.51
131.43
130.83
128.58
127.87
126.92
125.95
123.45
79.12
77.48
77.16
76.84
52.16
0.66
N–Bn
O
I
Si(CH3)3
(100 MHz, CDCl3, 21a)
200 180 160 140 120 100 80 60 40 20 0 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 652
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170821
Time 12.37
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 512
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 299.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------- CHANNEL f1 -------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------- CHANNEL f2 -------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6128238 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

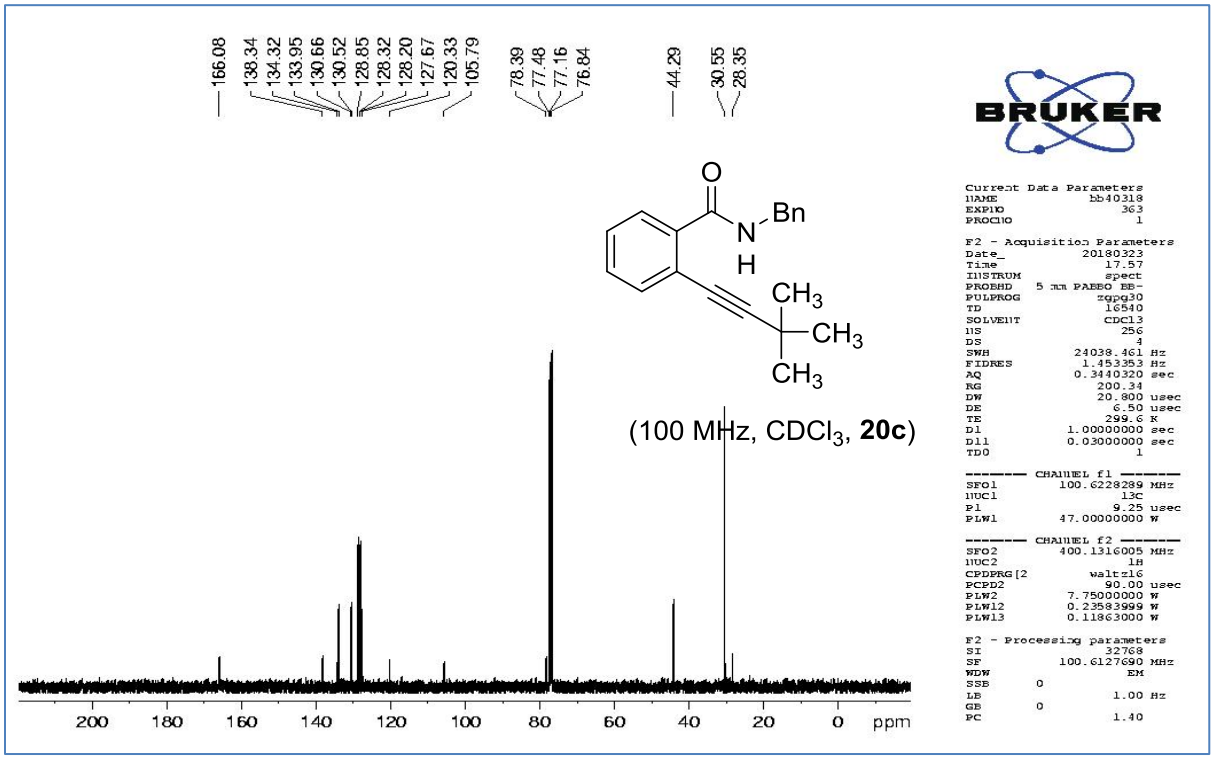

8.103
8.100
7.473
7.456
7.373
7.358
7.354
7.340
7.335
7.321
7.302
7.287
7.269
7.243
7.224
7.197
7.179
4.614
4.600
0.891
0.871
0.852
0.475
0.455
BRUKER
O
N
Bn
H
Si(Et)3
(400 MHz, CDCl3, 20b)
Current Data Parameters
NAME bb40817
EXPNO 664
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170824
Time 20.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 56.23
DW 62.400 usec
DE 6.50 usec
TE 298.3 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300441 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
2.00
1.10
7.19
2.09
9.17
6.01

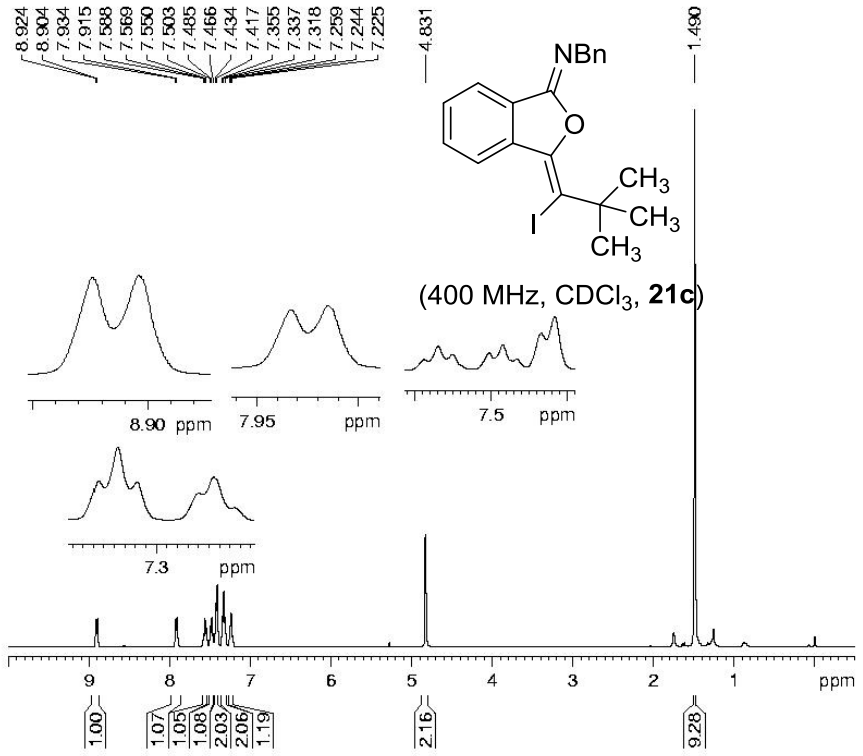

165.81
138.23
134.87
134.48
130.66
130.53
129.19
128.73
127.85
127.50
119.60
104.95
100.09
77.47
77.16
76.84
44.18
7.53
4.15
BRUKER
O
N
Bn
H
Si(Et)3
(100 MHz, CDCl3, 20b)
Current Data Parameters
NAME bb40817
EXPNO 665
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170824
Time 20.04
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 150
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 298.8 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------- CHANNEL f1 -------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 %
------- CHANNEL f2 -------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 %
PLW12 0.23583999 %
PLW13 0.11863000 %
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200
180
160
140
120
100
80
60
40
20
ppm


9.013
8.993
7.940
7.921
7.601
7.555
7.536
7.422
7.403
7.360
7.341
7.322
7.247
4.814
1.010
0.993
0.937
N–Bn
O
Si(Et)3
I
(400 MHz, CDCl3, 21b)
9.02 ppm
7.94 ppm
7.4
7.3 ppm
7.60
7.55 ppm
9 8 7 6 5 4 3 2 1 ppm
1.00 1.00 2.24 1.97 2.12 1.12 2.02 9.19 6.22
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 889
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170825
Time 12.46
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 79.8
DW 62.400 usec
DE 6.50 usec
TE 298.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300192 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


155.88
154.54
140.03
136.85
132.53
131.39
130.80
128.55
127.81
126.88
126.16
123.43
77.47
77.16
76.84
52.09
7.66
4.98
N–Bn
O
Si(Et)3
I
(100 MHz, CDCl3, 21b)
200 180 160 140 120 100 80 60 40 20 0 ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 890
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170825
Time 12.53
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 300.34
DW 20.800 usec
DE 6.50 usec
TE 298.8 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
CHANNEL f1
SFO1 100.6238389 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
CHANNEL f2
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


8.189
8.177
8.141
7.441
7.377
7.338
7.322
7.290
7.270
7.263
7.259
4.700
4.693
1.131
O
N
H
Bn
CH3
CH3
CH3
(400 MHz, CDCl3, 20c)
9
8
7
6
5
4
3
2
1
ppm
2.00
8.05
2.27
9.06
BRUKER
Current Data Parameters
NAME bb40318
EXPNO 362
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180323
Time 17.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 169.77
DW 62.400 usec
DE 6.50 usec
TE 299.2 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300097 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


166.08
138.34
134.32
133.95
130.66
130.52
128.85
128.32
128.20
127.67
120.33
105.79
78.39
77.48
77.16
76.84
44.29
30.55
28.35
O
N
H
Bn
CH3
CH3
CH3
(100 MHz, CDCl3, 20c)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40318
EXPNO 363
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180323
Time 17.57
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 299.6 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

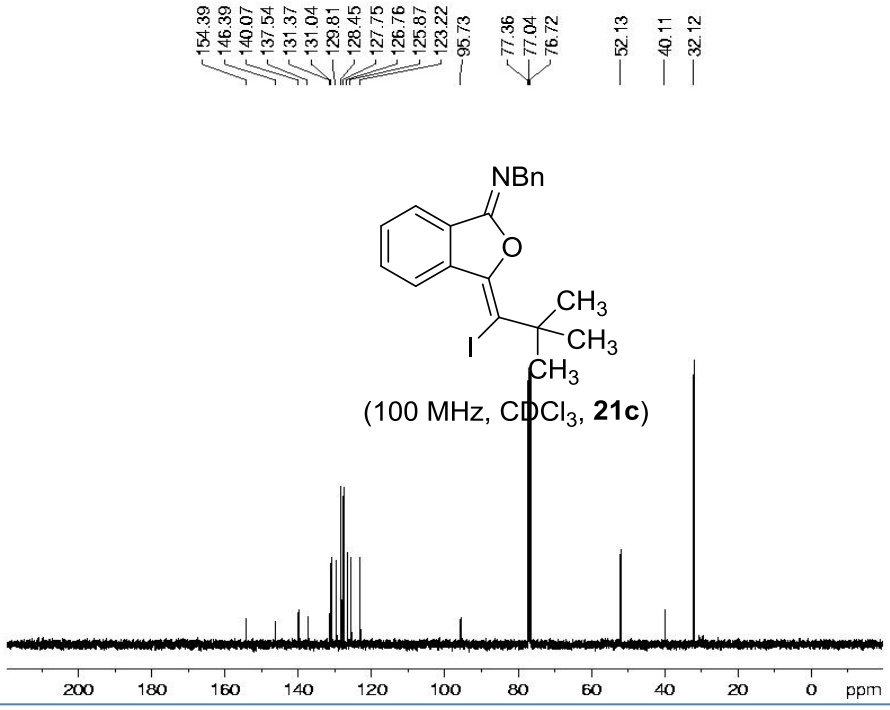



```
Current Data Parameters
NAME                  bb40318
EXPNO                     368
PROCNO                      1

F2 - Acquisition Parameters
Date_               20180323
Time                   19.23
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                        7
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    124.58
DW                   62.400 usec
DE                    6.50 usec
TE                   299.2 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                      1H
P1                    15.70 usec
PLW1             7.75000000 W

F2 - Processing parameters
SI                    65536
SF              400.1300151 MHz
WDW                      EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.00
```



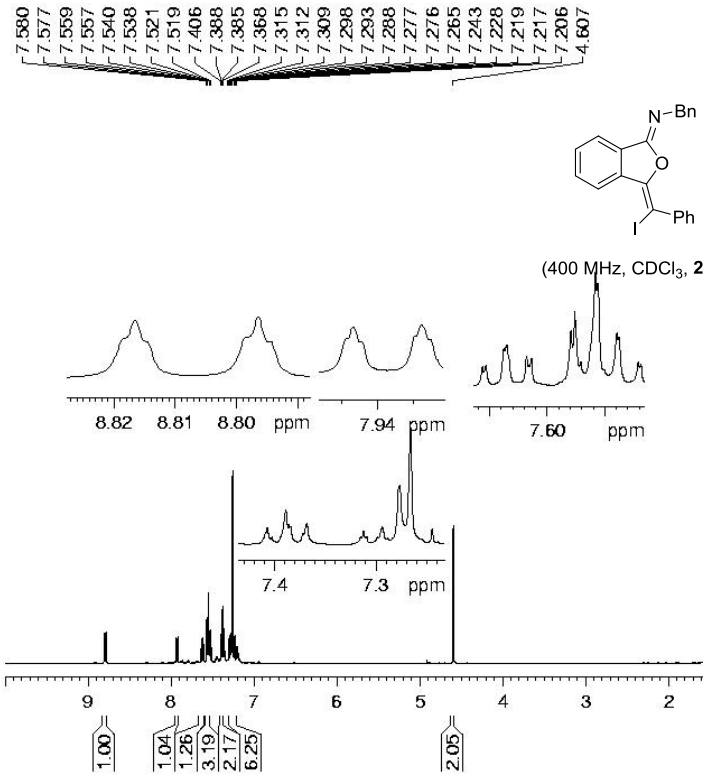

```
Current Data Parameters
NAME                  bb40318
EXPNO                     369
PROCNO                      1

F2 - Acquisition Parameters
Date_               20180323
Time                   19.25
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT               CDCl3
NS                      213
DS                        4
SWH               24038.461 Hz
FIDRES             1.453353 Hz
AQ                 0.3440320 sec
RG                    200.34
DW                   20.800 usec
DE                    6.50 usec
TE                   299.3 K
D1                 1.00000000 sec
D11                0.03000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1            100.6228289 MHz
NUC1                      13C
P1                    9.25 usec
PLW1            47.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                      1H
CPDPRG[2              waltz16
PCPD2                 90.00 usec
PLW2             7.75000000 W
PLW12            0.23583999 W
PLW13            0.11863000 W

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



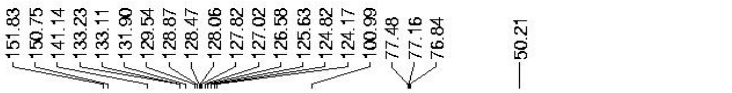
(400 MHz, $CDCl_3$, **24a**)

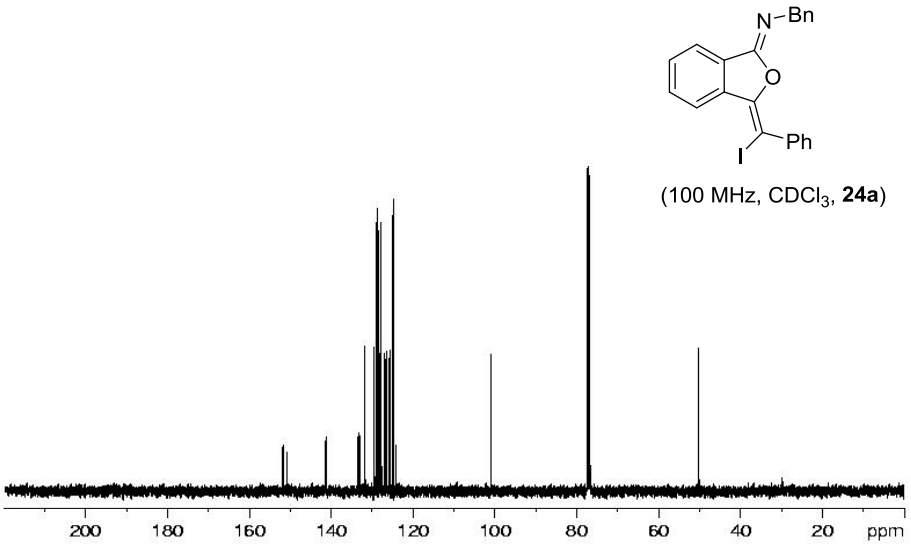
```
Current Data Parameters
NAME                 Desktop
EXPNO                    717
PROCNO                     1

F2 - Acquisition Parameters
Date_               20170521
Time                   13.16
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT                CDCl3
NS                        16
DS                         2
SWH                 8012.820 Hz
FIDRES              0.122266 Hz
AQ                  4.0894966 sec
RG                     124.58
DW                     62.400 usec
DE                      6.50 usec
TE                     295.5 K
D1                  0.50000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            400.1320007 MHz
NUC1                    1H
P1                     15.70 usec
PLW1            7.75000000 W

F2 - Processing parameters
SI                    65536
SF              400.1300164 MHz
WDW                      EM
SSB          0
LB                      0.30 Hz
GB           0
PC                      1.00
```





(100 MHz, $CDCl_3$, **24a**)

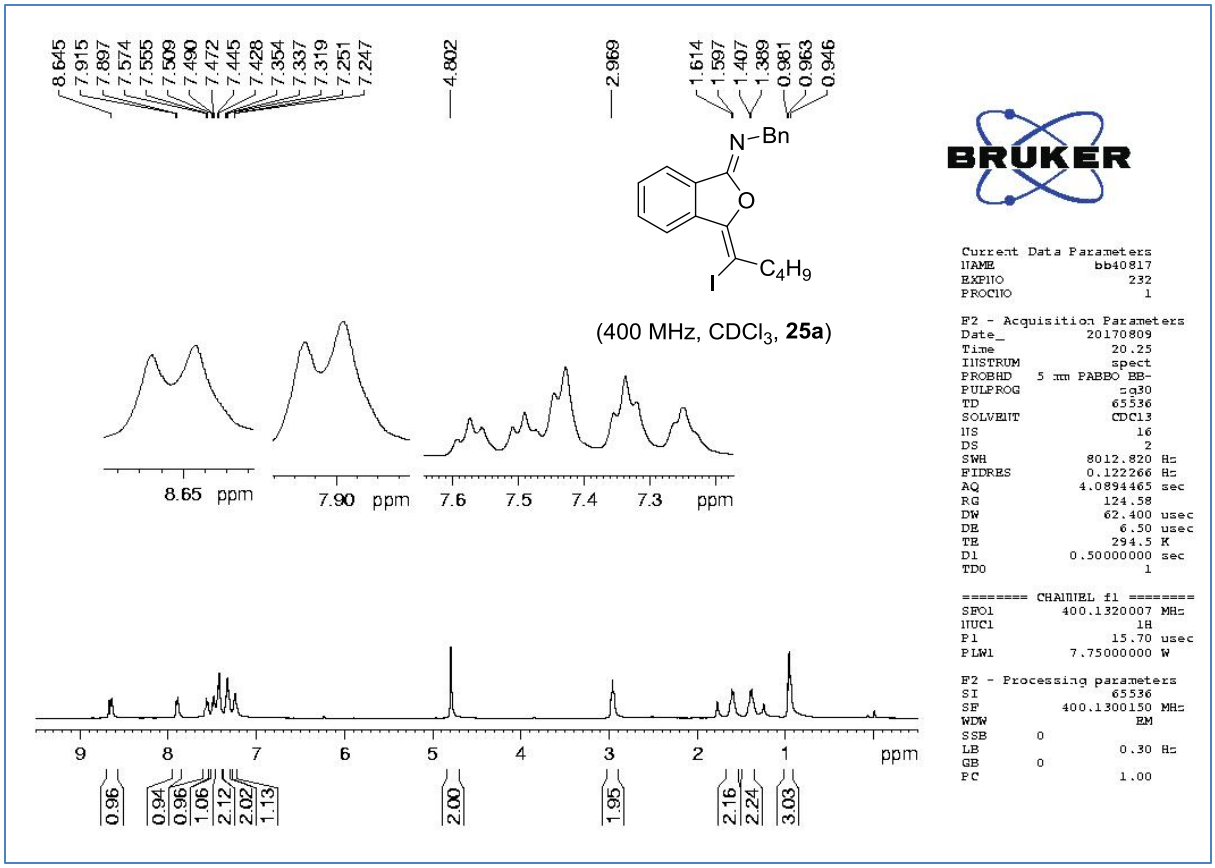
```
Current Data Parameters
NAME                 bb40617
EXPNO                    378
PROCNO                     1

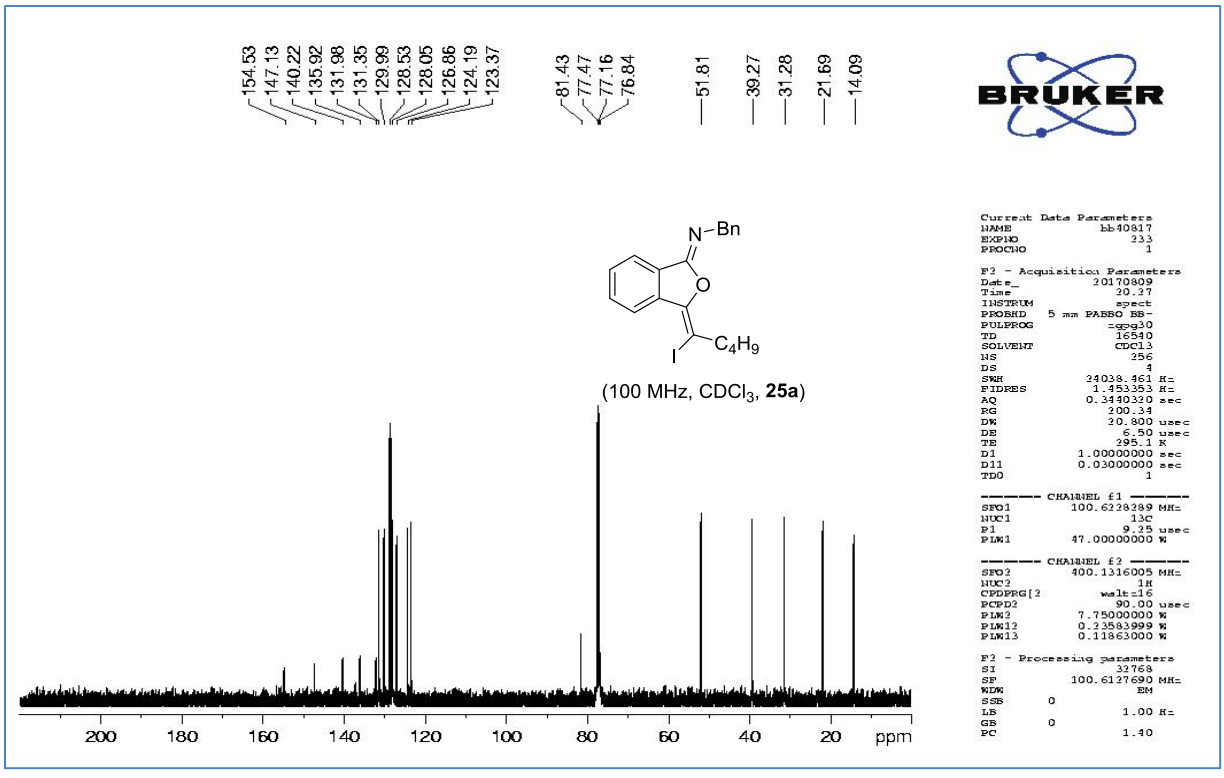
F2 - Acquisition Parameters
Date_               20170616
Time                   15.26
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    16540
SOLVENT                CDCl3
NS                       292
DS                         4
SWH                24038.461 Hz
FIDRES              1.453353 Hz
AQ                  0.3440320 sec
RG                     200.34
DW                     20.800 usec
DE                      6.50 usec
TE                     295.0 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                        1

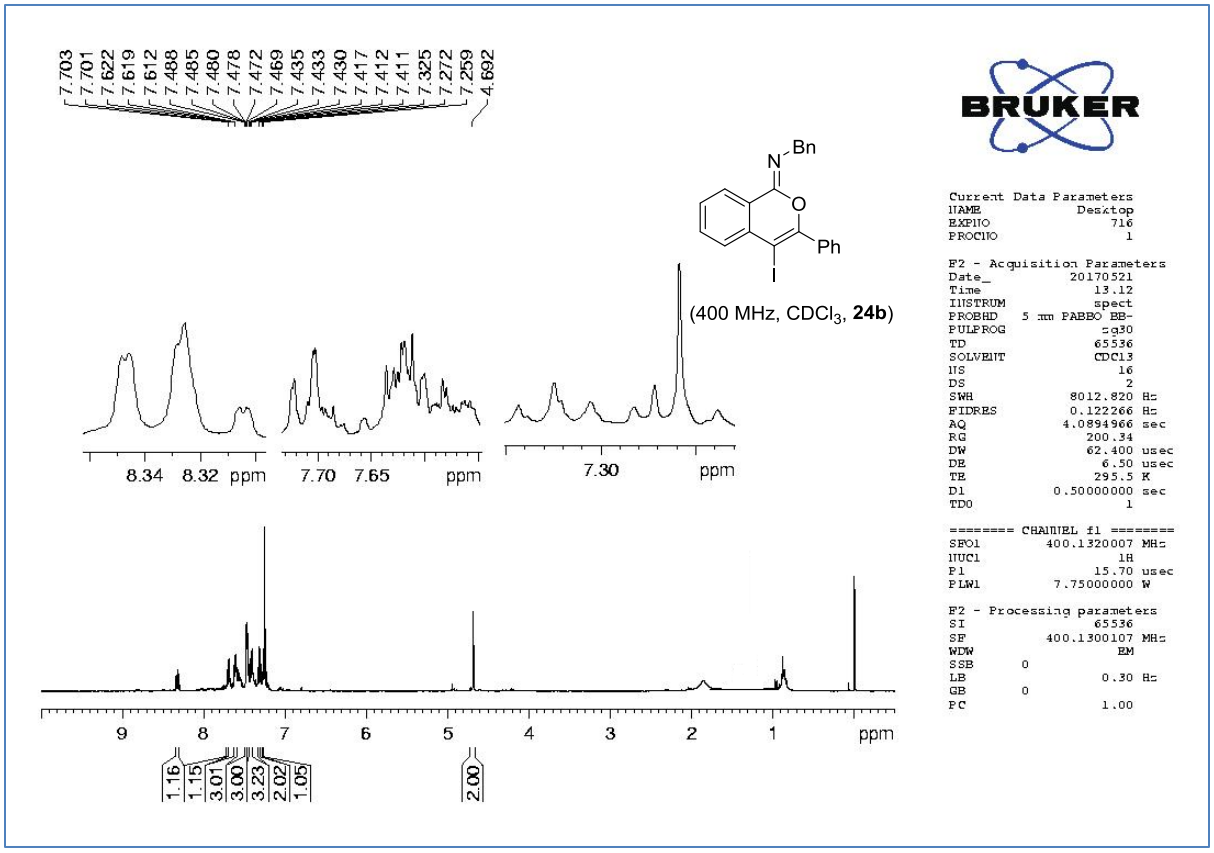
======== CHANNEL f1 ========
SFO1            100.6228389 MHz
NUC1                    13C
P1                      9.25 usec
PLW1           47.00000000 W

======== CHANNEL f2 ========
SFO2            400.1316005 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                  90.00 usec
PLW2            7.75000000 W
PLW12           0.23583999 W
PLW13           0.11863000 W

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


8.645
7.915
7.897
7.574
7.555
7.509
7.490
7.472
7.445
7.428
7.354
7.337
7.319
7.251
7.247
4.802
2.969
1.614
1.597
1.407
1.389
0.981
0.963
0.946
N–Bn
O
I
C4H9
(400 MHz, CDCl3, 25a)
8.65 ppm
7.90 ppm
7.6
7.5
7.4
7.3
ppm
9
8
7
6
5
4
3
2
1
ppm
0.96
0.94
0.96
1.06
2.12
2.02
1.13
2.00
1.95
2.16
2.24
3.03
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 232
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 20.25
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 124.58
DW 62.400 usec
DE 6.50 usec
TE 294.5 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300150 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


154.53
147.13
140.22
135.92
131.98
131.35
129.99
128.53
128.05
126.86
124.19
123.37
81.43
77.47
77.16
76.84
51.81
39.27
31.28
21.69
14.09
N–Bn
O
I
C4H9
(100 MHz, CDCl3, 25a)
200
180
160
140
120
100
80
60
40
20
ppm
BRUKER
Current Data Parameters
NAME bb40817
EXPNO 233
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170809
Time 20.27
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 295.1 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
======== CHANNEL f2 ========
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



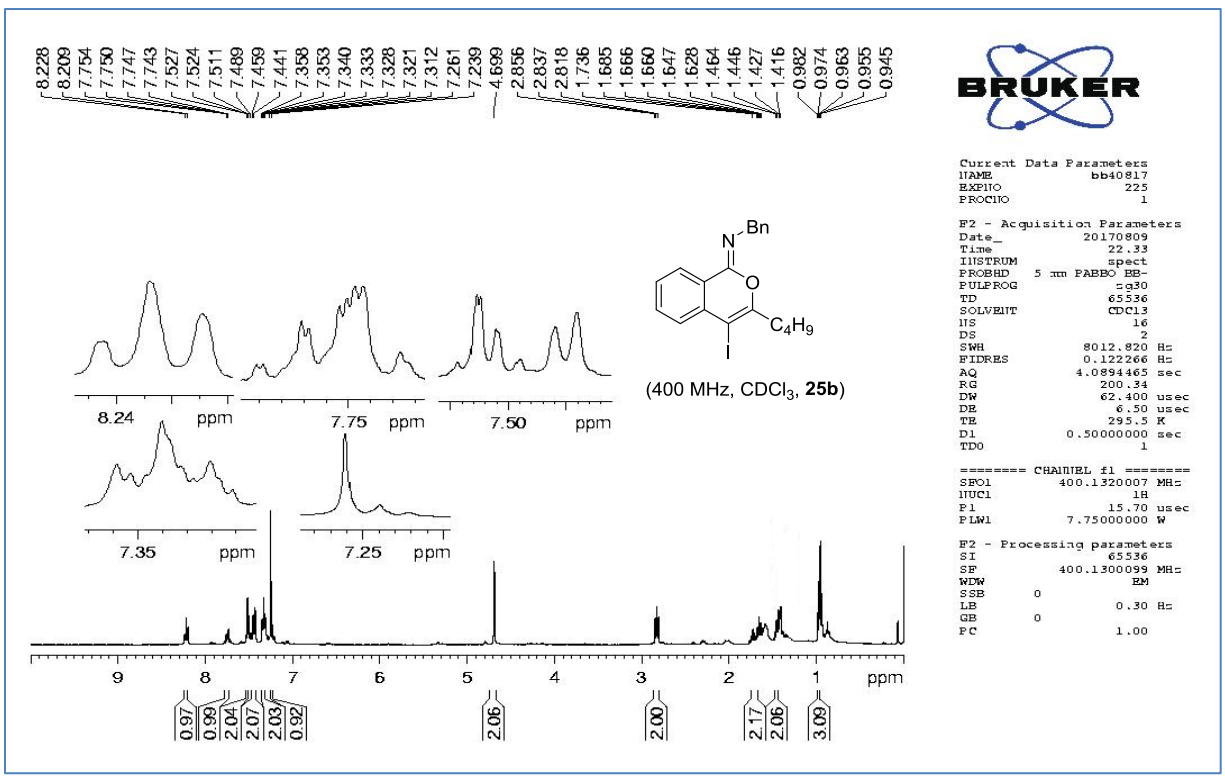
BRUKER

```
Current Data Parameters
NAME                  Desktop
EXPNO                     716
PROCNO                      1

F2 - Acquisition Parameters
Date_              20170521
Time                  13.12
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894966 sec
RG                    200.34
DW                    62.400 usec
DE                     6.50 usec
TE                    295.5 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1             400.1320007 MHz
NUC1                      1H
P1                    15.70 usec
PLW1              7.75000000 W

F2 - Processing parameters
SI                    65536
SF               400.1300107 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                    1.00
```



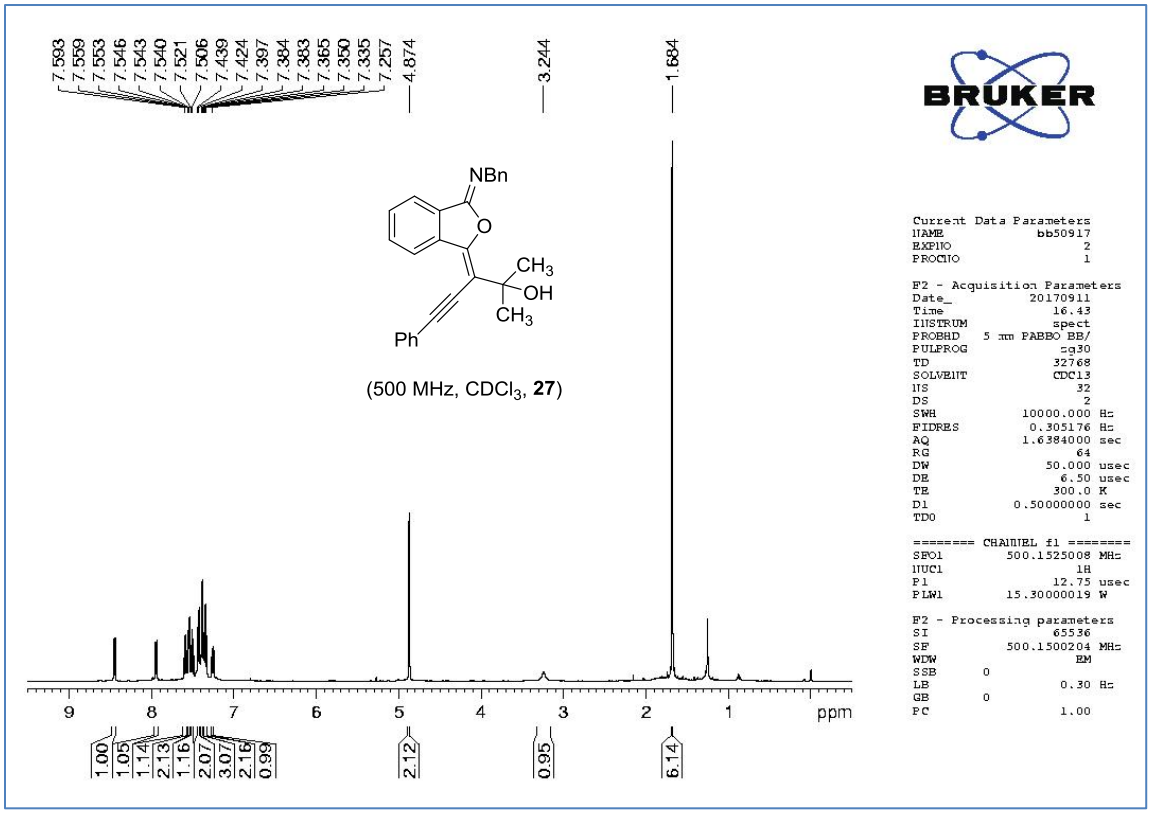
BRUKER

```
Current Data Parameters
NAME                  bb40817
EXPNO                     225
PROCNO                      1

F2 - Acquisition Parameters
Date_              20170809
Time                  22.33
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT               CDCl3
NS                       16
DS                        2
SWH                8012.820 Hz
FIDRES             0.122266 Hz
AQ                 4.0894465 sec
RG                    200.34
DW                    62.400 usec
DE                     6.50 usec
TE                    295.5 K
D1                 0.50000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1             400.1320007 MHz
NUC1                      1H
P1                    15.70 usec
PLW1              7.75000000 W

F2 - Processing parameters
SI                    65536
SF               400.1300099 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                    1.00
```



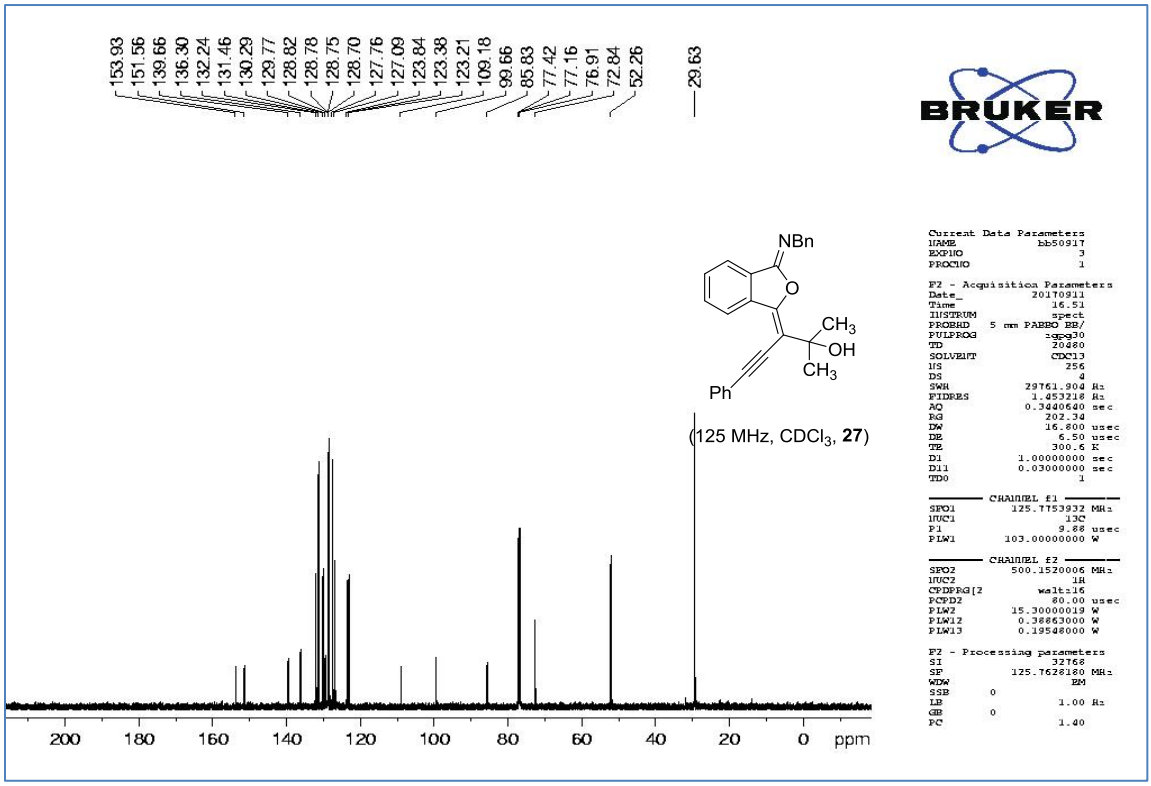
(500 MHz, $CDCl_3$, **27**)

```
Current Data Parameters
NAME                 bb50917
EXPNO                      2
PROCNO                     1

F2 - Acquisition Parameters
Date_               20170911
Time                   16.43
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       32
DS                        2
SWH               10000.000 Hz
FIDRES                0.305176 Hz
AQ                    1.6384000 sec
RG                       64
DW                    50.000 usec
DE                     6.50 usec
TE                     300.0 K
D1                0.50000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            500.1525008 MHz
NUC1                      1H
P1                     12.75 usec
PLW1           15.30000019 W

F2 - Processing parameters
SI                        65536
SF              500.1500204 MHz
WDW                        EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```



(125 MHz, $CDCl_3$, **27**)

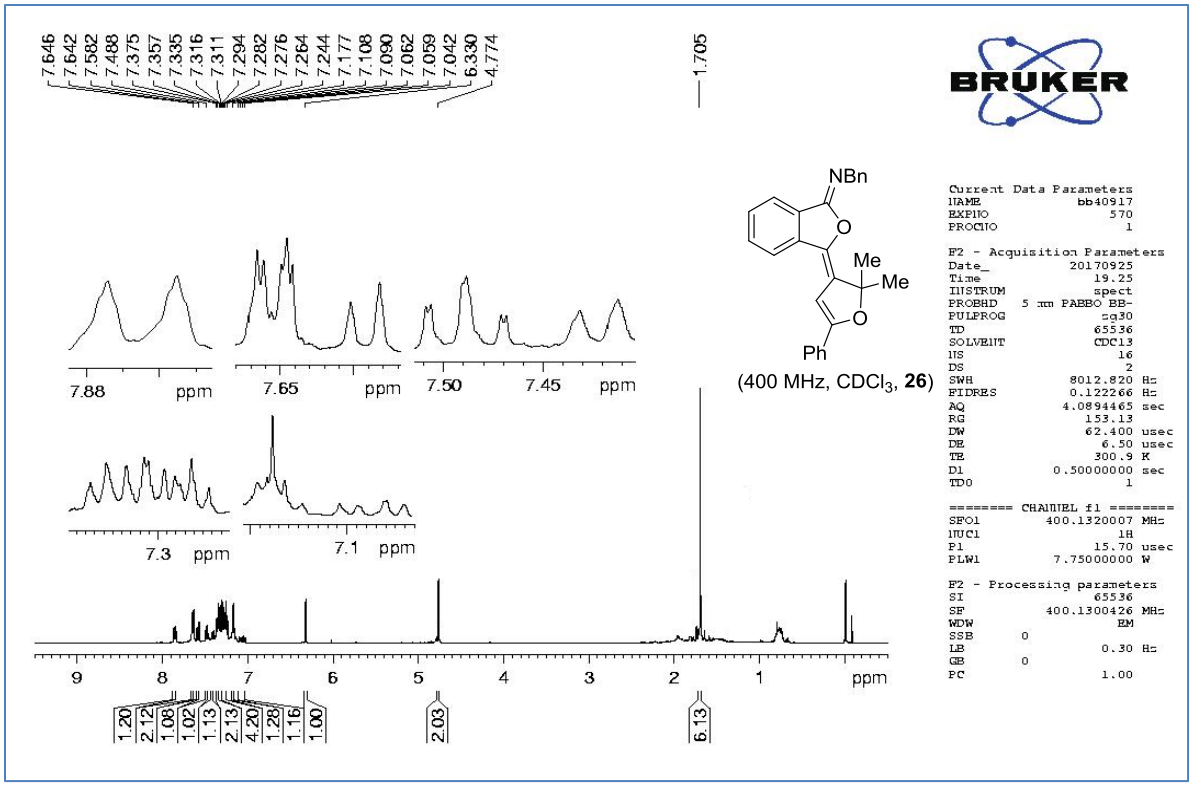
```
Current Data Parameters
NAME                 bb50917
EXPNO                      3
PROCNO                     1

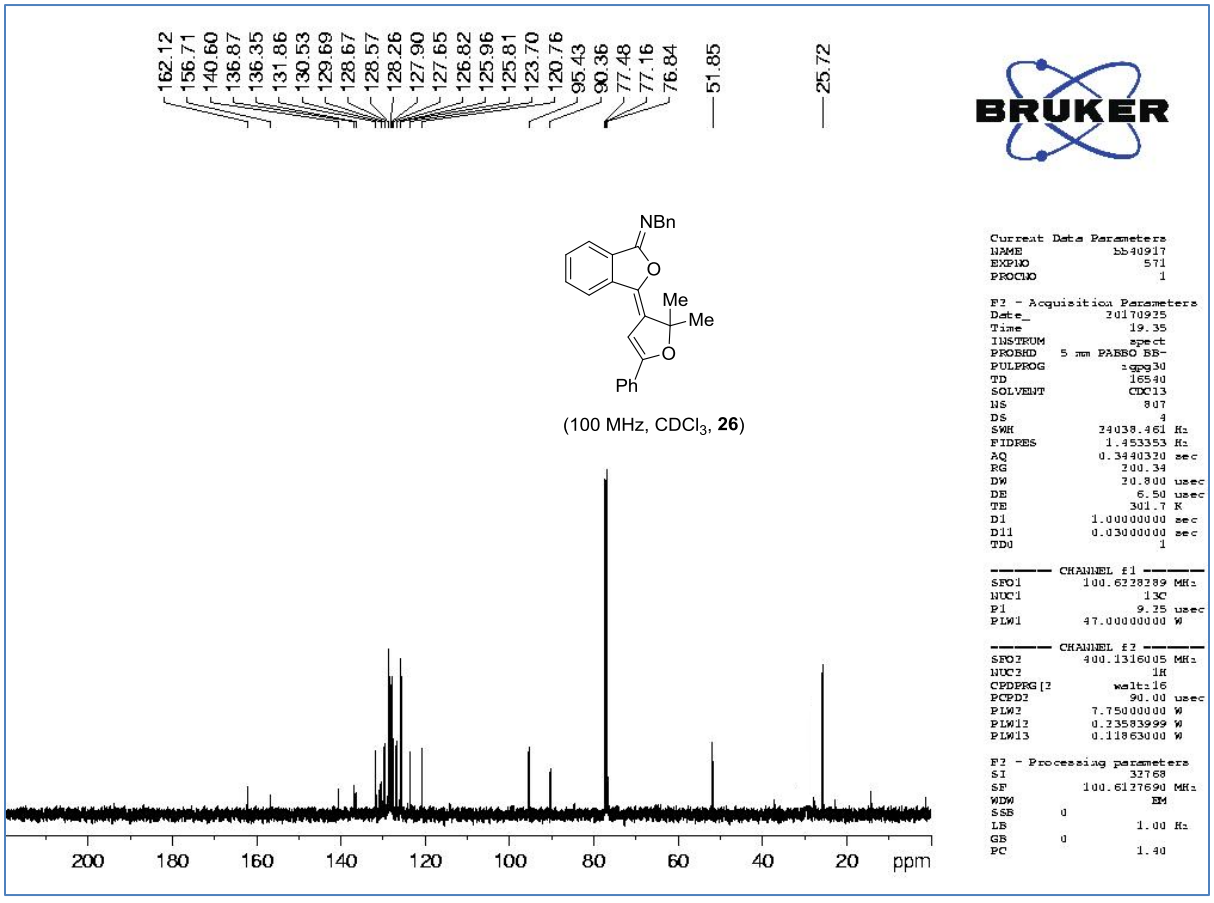
F2 - Acquisition Parameters
Date_               20170911
Time                   16.51
INSTRUM                spect
PROBHD    5 mm PABBO BB/
PULPROG             zgpg30
TD                    20480
SOLVENT               CDCl3
NS                      256
DS                        4
SWH               29761.904 Hz
FIDRES                1.452718 Hz
AQ                    0.3440640 sec
RG                     202.34
DW                    16.800 usec
DE                     6.50 usec
TE                     300.6 K
D1                1.00000000 sec
D11               0.03000000 sec
TD0                        1

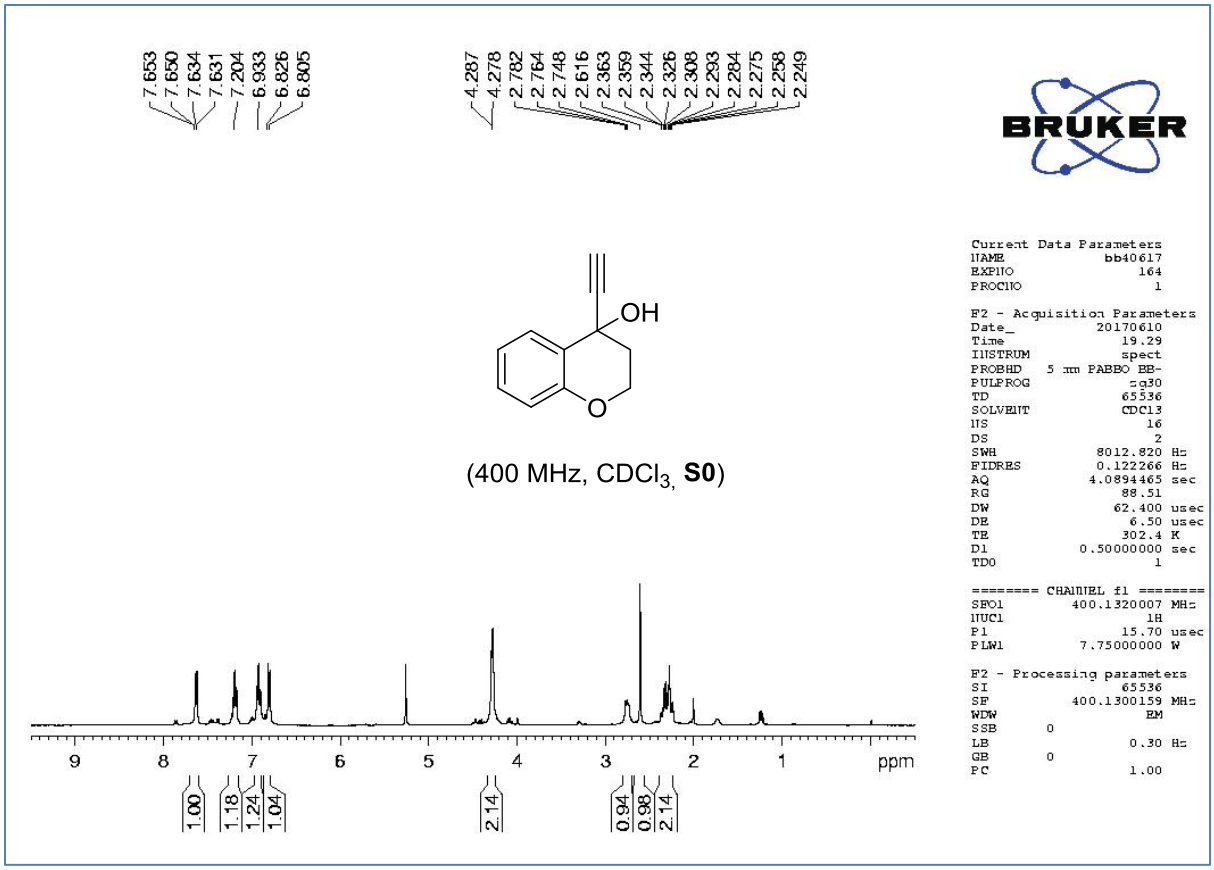
======== CHANNEL f1 ========
SFO1            125.7753932 MHz
NUC1                      13C
P1                      9.88 usec
PLW1          103.00000000 W

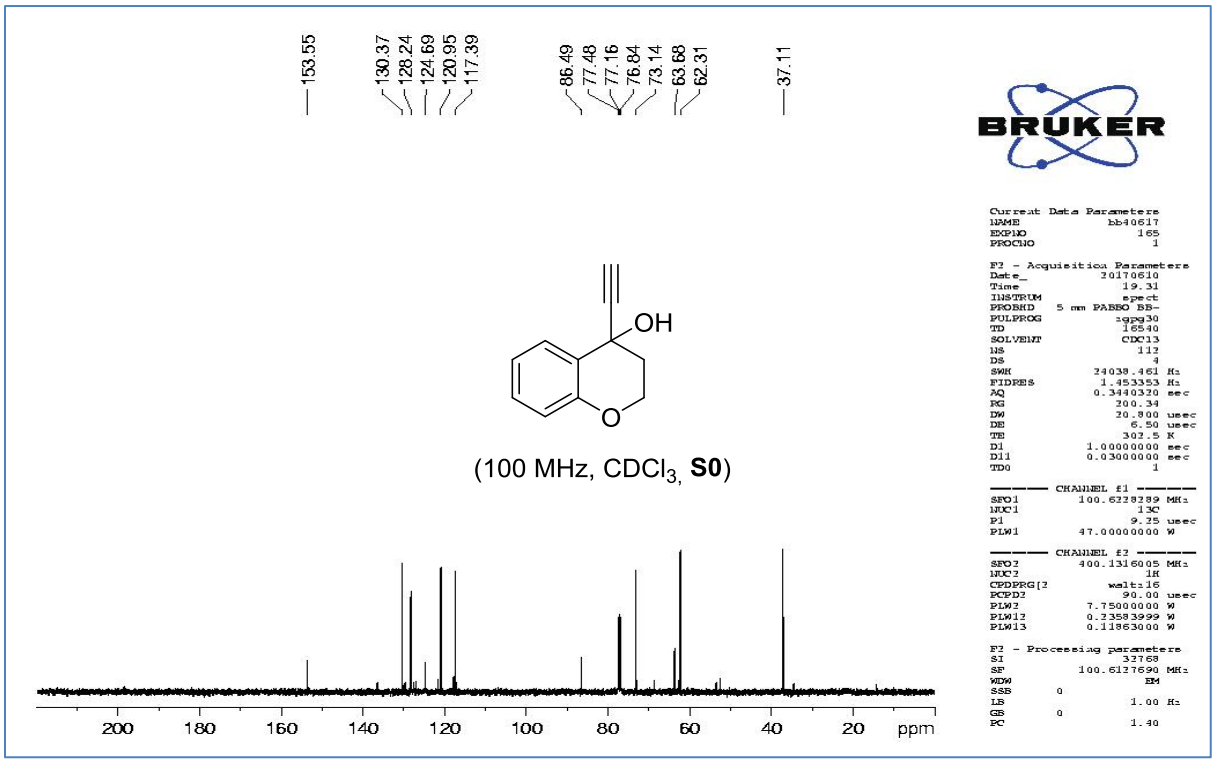
======== CHANNEL f2 ========
SFO2            500.1520006 MHz
NUC2                      1H
CPDPRG[2             waltz16
PCPD2                  80.00 usec
PLW2          15.30000019 W
PLW12          0.38863000 W
PLW13          0.19548000 W

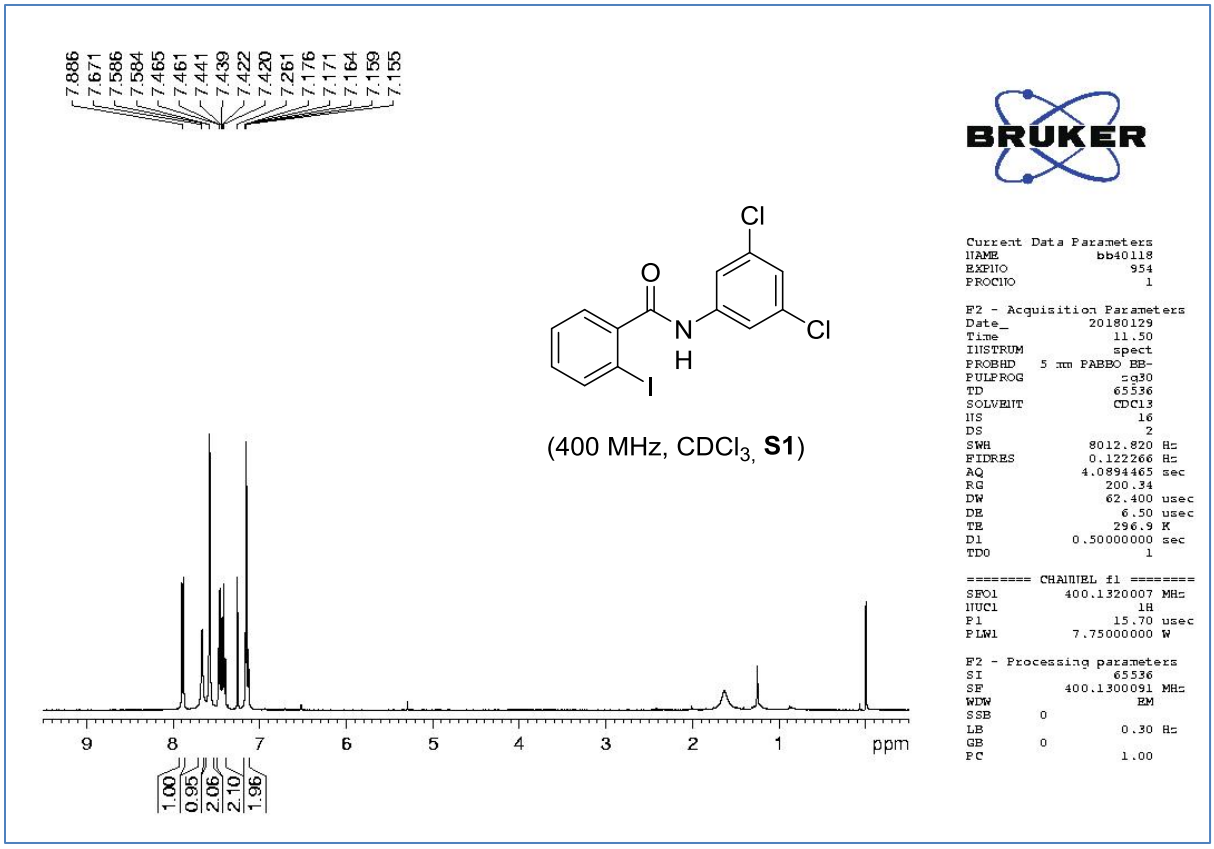
F2 - Processing parameters
SI                        32768
SF              125.7628180 MHz
WDW                        EM
SSB          0
LB                     1.00 Hz
GB           0
PC                     1.40
```

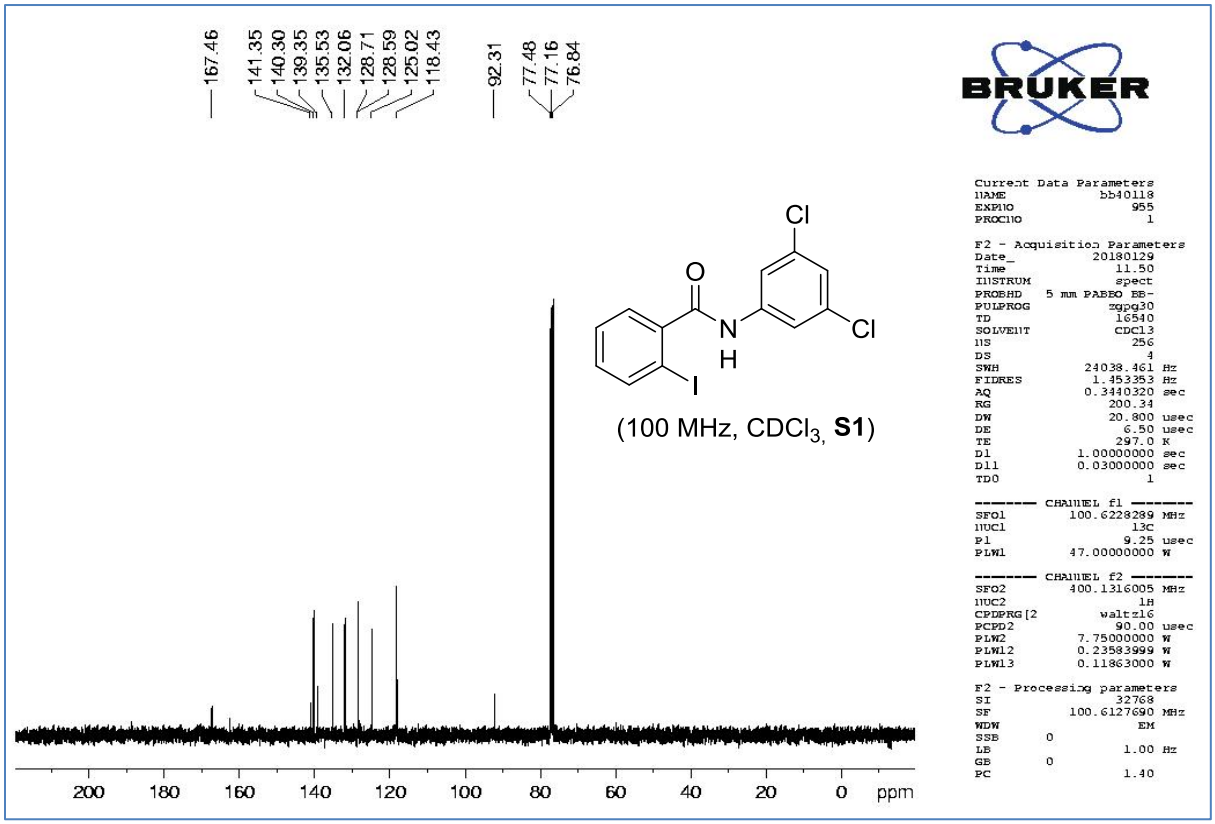

7.646
7.642
7.582
7.488
7.375
7.357
7.335
7.316
7.311
7.294
7.282
7.276
7.264
7.244
7.177
7.108
7.090
7.062
7.059
7.042
6.330
4.774
1.705
BRUKER
NBn
O
Me
Me
O
Ph
(400 MHz, CDCl3, 26)
Current Data Parameters
NAME bb40917
EXPNO 570
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170925
Time 19.25
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 153.13
DW 62.400 usec
DE 6.50 usec
TE 300.9 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300426 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
7.88 ppm
7.65 ppm
7.50
7.45 ppm
7.3 ppm
7.1 ppm
9 8 7 6 5 4 3 2 1 ppm
1.20
2.12
1.08
1.02
1.13
2.13
4.20
1.28
1.16
1.00
2.03
6.13


162.12
156.71
140.60
136.87
136.35
131.86
130.53
129.69
128.67
128.57
128.26
127.90
127.65
126.82
125.96
125.81
123.70
120.76
95.43
90.36
77.48
77.16
76.84
51.85
25.72
BRUKER
NBn
O
Me
Me
O
Ph
(100 MHz, CDCl3, 26)
Current Data Parameters
NAME bb40917
EXPNO 571
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170925
Time 19.35
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65540
SOLVENT CDCl3
NS 807
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 301.7 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------ CHANNEL f1 ------
SFO1 100.6238289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------ CHANNEL f2 ------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200 180 160 140 120 100 80 60 40 20 ppm


7.653
7.650
7.634
7.631
7.204
6.933
6.826
6.805
4.287
4.278
2.782
2.764
2.748
2.616
2.363
2.359
2.344
2.326
2.308
2.293
2.284
2.275
2.258
2.249
OH
O
(400 MHz, CDCl3, S0)
9
8
7
6
5
4
3
2
1
ppm
1.00
1.18
1.24
1.04
2.14
0.94
0.98
2.14
Current Data Parameters
NAME bb40617
EXPNO 164
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170610
Time 19.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 88.51
DW 62.400 usec
DE 6.50 usec
TE 302.4 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300159 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


153.55
130.37
128.24
124.69
120.95
117.39
86.49
77.48
77.16
76.84
73.14
63.68
62.31
37.11
OH
O
(100 MHz, CDCl3, S0)
200
180
160
140
120
100
80
60
40
20
ppm
Current Data Parameters
NAME bb40617
EXPNO 165
PROCNO 1
F2 - Acquisition Parameters
Date_ 20170610
Time 19.31
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65540
SOLVENT CDCl3
NS 112
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 302.5 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
------ CHANNEL f1 ------
SFO1 100.6238289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
------ CHANNEL f2 ------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


7.886
7.671
7.586
7.584
7.465
7.461
7.441
7.439
7.422
7.420
7.261
7.176
7.171
7.164
7.159
7.155
Cl
O
N
H
Cl
I
(400 MHz, CDCl3, S1)
9
8
7
6
5
4
3
2
1
ppm
1.00
0.95
2.06
2.10
1.96
BRUKER
Current Data Parameters
NAME bb40118
EXPNO 954
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180129
Time 11.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 200.34
DW 62.400 usec
DE 6.50 usec
TE 296.9 K
D1 0.50000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1320007 MHz
NUC1 1H
P1 15.70 usec
PLW1 7.75000000 W
F2 - Processing parameters
SI 65536
SF 400.1300091 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00


167.46
141.35
140.30
139.35
135.53
132.06
128.71
128.59
125.02
118.43
92.31
77.48
77.16
76.84
Cl
O
N
H
Cl
I
(100 MHz, CDCl3, S1)
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME bb40118
EXPNO 955
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180129
Time 11.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 16540
SOLVENT CDCl3
NS 256
DS 4
SWH 24038.461 Hz
FIDRES 1.453353 Hz
AQ 0.3440320 sec
RG 200.34
DW 20.800 usec
DE 6.50 usec
TE 297.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
-------- CHANNEL f1 --------
SFO1 100.6228289 MHz
NUC1 13C
P1 9.25 usec
PLW1 47.00000000 W
-------- CHANNEL f2 --------
SFO2 400.1316005 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 7.75000000 W
PLW12 0.23583999 W
PLW13 0.11863000 W
F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40