

Supplementary Information

**Palladium catalyzed C-H bond acetoxylation: isoxazolinylyl as a directing group**

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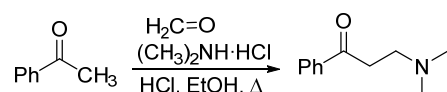
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## General information

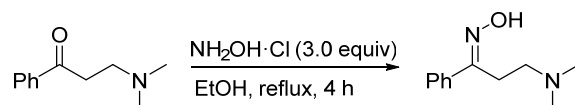
Commercial reagents and solvents were used as received. Thin-layer chromatography was performed on precoated silica gel (0.2–0.25 mm thick) plates with fluorescent indicator 254 nm. The plate was visualized with 254 nm UV lamp, PMA or KMnO<sub>4</sub> stain. Column chromatography was performed on 200–300 mesh silica gel.

<sup>1</sup>H NMR and <sup>13</sup>C NMR spectra were recorded on a Bruker Avance 400 spectrometer at 400 MHz and 100 MHz respectively. Chemical shifts of <sup>1</sup>H NMR and <sup>13</sup>C NMR were referred to TMS ( $\delta = 0$ ) and chloroform ( $\delta = 77.16$ ) respectively. The following abbreviations were used to denote the multiplicity of each peak: s (singlet), d (doublet), t (triplet), q (quartet), dd (doublet of doublets), m (multiplet). IR spectra were recorded on a Nicolet AVATAR 360 FT-IR spectrometer. The sample was prepared as a thin-film on a NaCl disc. MS spectra were obtained on a Waters Quattro Micro triple quadrupole mass spectrometer.

## General procedure I: preparations of 1a–1g

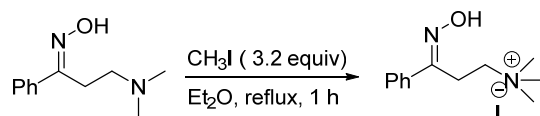


A 250 mL three-neck round-bottom flask were charged with acetophenone (29.3 mL, 250 mmol), paraformaldehyde (9.9 g, 326 mmol) and dimethylamine hydrochloride (26.5 g, 325 mmol). After the addition of 0.5 mL of concentrated hydrochloric acid in 40 mL ethanol, the mixture was refluxed for 4 h. The yellowish solution was diluted with cold acetone (200 mL) and chilled for several hours at 0 °C. The crystals were filtered, washed with acetone (2 × 20 mL), and dissolved in water (100 mL). The aqueous layer was treated with solid K<sub>2</sub>CO<sub>3</sub> until pH = 10, and then extracted with CH<sub>2</sub>Cl<sub>2</sub> (3 × 30 mL). The combined organic layers were dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated to give crude 3-dimethylamino-1-phenyl-1-propanone.

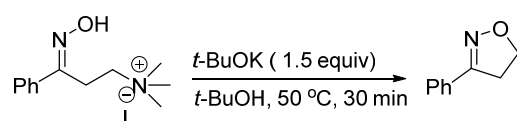


A 250 mL three-neck round-bottom flask were charged with crude 3-dimethylamino-1-phenyl-1-propanone (10.5 g, 59.0 mmol, 1.0 equiv),

hydroxylamine hydrochloride (12.4 g, 178 mmol, 3.0 equiv) and EtOH (100 mL). The solution was refluxed for 4 h, and then the solvent was evaporated. Aq. sodium hydroxide (2 N) was added until pH = 9. The precipitate of 3-dimethylamino-1-phenyl-1-propanone oxime was collected by filtration.



To a solution of crude 3-dimethylamino-1-phenyl-1-propanone oxime (2.98 g, 15.5 mmol, 1.0 equiv) in Et<sub>2</sub>O (10 mL) was added CH<sub>3</sub>I (3.10 mL, 49.6 mmol, 3.2 equiv). After the solution was refluxed for 1 h, the methiodide precipitated.



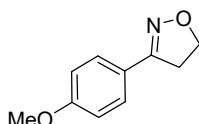
It (4.51 g, 13.5 mmol, 1.0 equiv) was suspended in *t*-butyl alcohol (15 mL) and potassium *t*-butoxide (2.27 g, 20.3 mmol, 1.5 equiv) was added. The solution was maintained at 50 °C for 30 min. Water (20 mL) and 2 N HCl were added until pH = 6. *t*-Butyl alcohol was removed under reduced pressure. The aqueous mixture was extracted with CH<sub>2</sub>Cl<sub>2</sub>. The extracts were dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated. Purification by column chromatography gave **1a**.

### 3-Phenyl-2-isoxazoline (**1a**)<sup>1</sup>



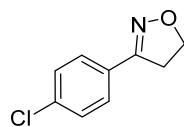
White solid (1.96 g, 99% yield), R<sub>f</sub> = 0.52 (5:1 hexanes/AcOEt); <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.71–7.68 (m, 2H), 7.42–7.40 (m, 3H), 4.49 (t, *J* = 10.1 Hz, 2H), 3.34 (t, *J* = 10.2 Hz, 2H).

### 3-(*p*-Methoxyphenyl)-2-isoxazoline (**1b**)<sup>2</sup>



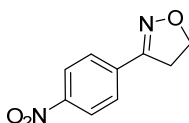
White solid (473 mg, 89% yield), R<sub>f</sub> = 0.28 (5:1 hexanes/AcOEt); <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.63 (d, *J* = 8.9 Hz, 2H), 6.92 (d, *J* = 8.9 Hz, 2H), 4.46 (t, *J* = 10.0 Hz, 2H), 3.84 (s, 3H), 3.31 (t, *J* = 10.0 Hz, 2H).

### 3-(*p*-Chlorophenyl)-2-isoxazoline (**1c**)<sup>2</sup>



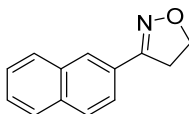
White solid (1.07 g, 96% yield),  $R_f = 0.34$  (5:1 hexanes/AcOEt);  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.64–7.61 (m, 2H), 7.40–7.37 (m, 2H), 4.51 (t,  $J = 10.1$  Hz, 2H), 3.32 (t,  $J = 10.2$  Hz, 2H).

### 3-(*p*-Nitrophenyl)-2-isoxazoline (**1d**)<sup>2</sup>



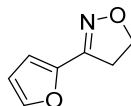
Yellow solid (168 mg, 26% yield),  $R_f = 0.22$  (5:1 hexanes/AcOEt);  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.30–8.26 (m, 2H), 7.88–7.84 (m, 2H), 4.60 (t,  $J = 10.3$  Hz, 2H), 3.38 (t,  $J = 10.3$  Hz, 2H).

### 3-(2-Naphthyl)-2-isoxazoline (**1e**)



Light yellow solid (442 mg, 68% yield), m.p. 84–85 °C,  $R_f = 0.44$  (3:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.99 (dd,  $J = 8.6, 1.6$  Hz, 1H), 7.92 (s, 1H), 7.87–7.84 (m, 3H), 7.55–7.50 (m, 2H), 4.54 (t,  $J = 10.1$  Hz, 2H), 3.46 (t,  $J = 10.0$  Hz, 2H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 157.0, 134.0, 133.0, 128.5, 128.4, 127.9, 127.1, 127.0, 126.7, 123.7, 69.4, 35.2; IR ( $\text{cm}^{-1}$ ): 3059, 2961, 2886, 1601, 1435, 1393, 1369, 1128, 928, 907, 866, 833, 820, 752, 476; MS (ESI): calculated for  $\text{C}_{13}\text{H}_{11}\text{NO}$   $[\text{M}+\text{H}]^+$  198.0919, found 198.0914.

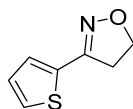
### 3-(2-Furyl)-2-isoxazoline (**1f**)



Light yellow oil (342 mg, 54% yield),  $R_f = 0.23$  (5:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.51 (dd,  $J = 1.8, 0.6$  Hz, 1H), 6.72 (d,  $J = 3.2$  Hz, 1H), 6.49 (dd,  $J = 3.4, 1.8$  Hz, 1H), 4.44 (t,  $J = 10.1$  Hz, 2H), 3.30 (t,  $J = 10.1$  Hz, 2H);  $^{13}\text{C NMR}$  (100

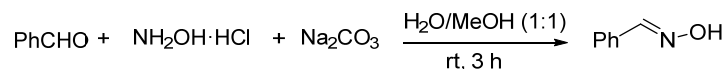
MHz, CDCl<sub>3</sub>)  $\delta$ : 149.1, 145.0, 144.4, 111.9, 111.8, 69.0, 35.3; IR (cm<sup>-1</sup>): 3144, 3123, 2963, 2889, 1485, 1437, 1404, 1329, 1261, 1227, 1161, 1009, 922, 874, 748, 594, 446; MS (ESI): calculated for C<sub>7</sub>H<sub>7</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 138.0555, found 138.0557.

### 3-(2-Thienyl)-2-isoxazoline (1g)

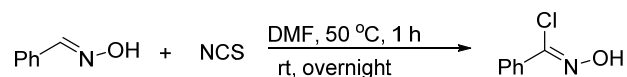


Light yellow solid (456 mg, 55% yield), m.p. 43–44 °C, R<sub>f</sub> = 0.31 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.38 (dd, *J* = 5.1, 1.0 Hz, 1H), 7.21 (dd, *J* = 3.6, 1.0 Hz, 1H), 7.06 (dd, *J* = 5.0, 3.6 Hz, 1H), 4.47 (t, *J* = 10.1 Hz, 2H), 3.34 (t, *J* = 10.1 Hz, 2H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 152.5, 131.7, 128.4, 128.0, 127.2, 69.2, 35.9; IR (cm<sup>-1</sup>): 3105, 2962, 2887, 1587, 1522, 1437, 1354, 1329, 1231, 1173, 1084, 1051, 1001, 961, 932, 880, 833, 710, 640, 581, 530; MS (ESI): calculated for C<sub>7</sub>H<sub>7</sub>NOS [M+H]<sup>+</sup> 154.0327, found 154.0324.

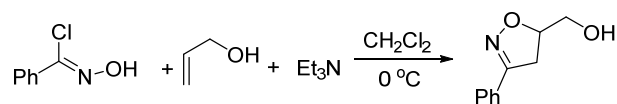
### General procedure II: preparations of 3a–3k, 5b–5g



To a suspension of benzaldehyde (3.0 mL, 30 mmol, 1.0 equiv) and hydroxylamine hydrochloride (2.29 g, 33 mmol, 1.1 equiv) in a 1:1 mixture of H<sub>2</sub>O/methanol (40 mL), an aqueous solution of Na<sub>2</sub>CO<sub>3</sub> (0.75 M, 20 mL, 0.5 equiv) was slowly added. The resulting mixture was stirred at rt for 3 h, and then methanol was evaporated. The aqueous phase was extracted with CH<sub>2</sub>Cl<sub>2</sub>. The combined organic layers were washed with brine, dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated to give crude benzaldoxime.

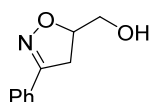


To a solution of crude benzaldoxime (1.21 g, 10 mmol, 1.0 equiv) in DMF (20 mL) at 50 °C was added dropwise a solution of *N*-chlorosuccinimide (1.34 g, 10 mmol, 1.0 equiv) in DMF (15 mL) over 30 min. The mixture was stirred at 50 °C for another 1 h, then it was allowed to stir at rt overnight. The reaction was quenched by pouring the mixture into ice-water. The mixture was extracted with CH<sub>2</sub>Cl<sub>2</sub>. The combined organic extracts were washed with ice-water and brine, dried over Na<sub>2</sub>SO<sub>4</sub>, and concentrated under reduced pressure to give crude  $\alpha$ -chlorobenzaldoxime.



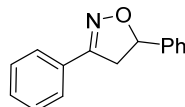
To a solution of crude  $\alpha$ -chlorobenzaldoxime (1.27 g, 8.2 mmol, 1.0 equiv) in  $\text{CH}_2\text{Cl}_2$  (30 mL) were added  $\text{Et}_3\text{N}$  (1.73 mL, 12.3 mmol, 1.5 equiv) and allyl alcohol (559  $\mu\text{L}$ , 8.2 mmol, 1.0 equiv). The mixture was stirred at 0 °C for 2 h before the solvent was evaporated. The crude product was purified by silica gel chromatography.

### (3-Phenyl-2-isoxazolin-5-yl)methanol<sup>3</sup>



White solid (756 mg, 52% yield),  $R_f = 0.45$  (1:2 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.67 (dd,  $J = 5.5, 2.1$  Hz, 2H), 7.42–7.40 (m, 3H), 4.91–4.85 (m, 1H), 3.91–3.86 (m, 1H), 3.72–3.66 (m, 1H), 3.40 (dd,  $J = 16.6, 10.8$  Hz, 1H), 3.28 (dd,  $J = 16.6, 7.8$  Hz, 1H), 1.93 (t,  $J = 6.6$  Hz, 1H).

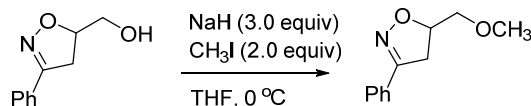
### 3,5-Diphenyl-2-isoxazoline (3a)<sup>4</sup>



**General procedure II** was applied using styrene instead of allyl alcohol.

Light yellow oil (520 mg, 69% yield),  $R_f = 0.38$  (20:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.71–7.68 (m, 2H), 7.44–7.30 (m, 8H), 5.74 (dd,  $J = 11.0, 8.2$  Hz, 1H), 3.78 (dd,  $J = 16.6, 11.0$  Hz, 1H), 3.35 (dd,  $J = 16.6, 8.2$  Hz, 1H).

### 5-Methoxymethyl-3-phenyl-2-isoxazoline (3b)<sup>5</sup>

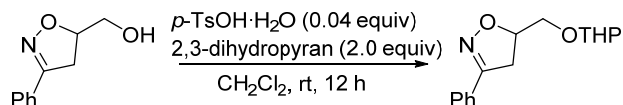


To a solution of (3-phenyl-2-isoxazolin-5-yl)methanol (213 mg, 1.2 mmol) in THF (10 mL) were added NaH (86 mg, 3.6 mmol) and  $\text{CH}_3\text{I}$  (150  $\mu\text{L}$ , 2.4 mmol). The mixture was stirred at 0 °C for 3 h before the solvent was evaporated. The crude product was purified by silica gel chromatography.

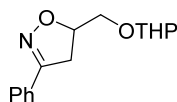
Light yellow oil (210 mg, 92% yield),  $R_f = 0.42$  (1:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.68–7.66 (m, 2H), 7.40–7.39 (m, 3H), 4.93–4.86 (m, 1H), 4.49 (qd,  $J = 10.4, 5.2$  Hz, 2H), 3.42 (s, 3H), 3.38 (dd,  $J = 16.6, 10.8$  Hz, 1H), 3.23 (dd,  $J =$

16.6, 7.6 Hz, 1H).

### 3-Phenyl-5-(2-tetrahydropyranyloxymethyl)-2-isoxazoline (3c)

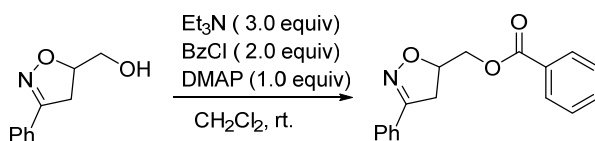


A solution of (3-phenyl-2-isoxazolin-5-yl)methanol (135 mg, 0.76 mmol), 3,4-dihydro-2*H*-pyran (139  $\mu$ L, 1.52 mmol) and *p*-TsOH·H<sub>2</sub>O (10 mg, 0.04 mmol) in CH<sub>2</sub>Cl<sub>2</sub> (10 mL) was stirred at rt for 12 h and then treated with sat. aq. NaHCO<sub>3</sub> (10 mL). The organic layer was separated, washed with brine (10 mL), dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated. Purification by column chromatography gave **3c**.

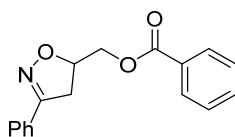


Light yellow oil (193 mg, 97% yield),  $R_f = 0.55$  (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.69–7.67 (m, 2H), 7.41–7.40 (m, 3H), 4.99–4.90 (m, 1H), 4.68–4.67 (m, 1H), 3.92–3.82 (m, 2H), 3.65–3.60 (m, 1H), 3.54–3.51 (m, 1H), 3.46–3.17 (m, 2H), 1.83–1.50 (m, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 156.5, 156.3, 130.1, 130.0, 129.73, 129.68, 128.7, 126.7, 99.4, 99.1, 68.6, 68.1, 62.5, 62.3, 37.5, 37.2, 30.5, 30.5, 25.42, 25.41, 19.5, 19.3; IR (cm<sup>-1</sup>): 2941, 2868, 1449, 1356, 1125, 1076, 1034, 968, 903, 870, 816, 760, 692, 546; MS (ESI): calculated for C<sub>15</sub>H<sub>19</sub>NO<sub>3</sub> [M+Na]<sup>+</sup> 284.1263, found 284.1255.

### (3-Phenyl-2-isoxazolin-5-yl)methyl benzoate (3d)

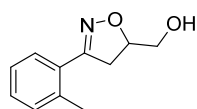


To a solution of (3-phenyl-2-isoxazolin-5-yl)methanol (370 mg, 2.1 mmol) in CH<sub>2</sub>Cl<sub>2</sub> (15 mL) were added Et<sub>3</sub>N (886  $\mu$ L, 6.3 mmol), DMAP (257 mg, 2.1 mmol) and PhCOCl (486  $\mu$ L, 4.2 mmol). The mixture was stirred at rt for 2 h before the solvent was evaporated. The crude product (**3d**) was purified by silica gel chromatography.



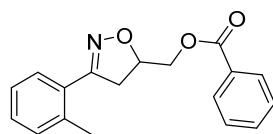
Light yellow oil (591 mg, 100% yield),  $R_f = 0.42$  (2:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.02–8.00 (m, 2H), 7.71–7.68 (m, 2H), 7.56–7.52 (m, 1H), 7.43–7.38 (m, 5H), 5.16–5.09 (m, 1H), 4.54–4.44 (m, 2H), 3.54 (dd,  $J = 16.9, 10.9$  Hz, 1H), 3.27 (dd,  $J = 16.9, 6.9$  Hz, 1H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.4, 156.4, 133.3, 130.3, 129.8, 129.6, 129.3, 128.8, 128.5, 126.8, 78.4, 65.6, 37.4; IR ( $\text{cm}^{-1}$ ): 3065, 2947, 2938, 1773, 1719, 1601, 1449, 1271, 1196, 1177, 1119, 1070, 1026, 912, 897, 760, 712, 692, 669, 548; MS (ESI): calculated for  $\text{C}_{17}\text{H}_{15}\text{NO}_3$   $[\text{M}+\text{H}]^+$  282.1130, found 282.1134.

**[3-(*o*-Tolyl)-2-isoxazolin-5-yl]methanol**



Light yellow solid (2.45 g, 56% yield),  $R_f = 0.32$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.35–7.21 (m, 4H), 4.84–4.77 (m, 1H), 3.85 (dd,  $J = 12.1, 3.2$  Hz, 1H), 3.68 (dd,  $J = 12.2, 4.7$  Hz, 1H), 3.42 (dd,  $J = 16.6, 10.7$  Hz, 1H), 3.31 (dd,  $J = 16.6, 7.7$  Hz, 1H), 2.54 (s, 3H), 2.12 (br s, 1H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 158.0, 137.8, 131.5, 129.4, 128.9, 128.5, 125.8, 80.3, 63.6, 39.1, 22.8; IR ( $\text{cm}^{-1}$ ): 3410, 3063, 3024, 2924, 2872, 1603, 1589, 1495, 1454, 1435, 1383, 1339, 1283, 1242, 1165, 1096, 1049, 893, 870, 820, 793, 760, 719, 658, 554; MS (ESI): calculated for  $\text{C}_{11}\text{H}_{13}\text{NO}_2$   $[\text{M}+\text{H}]^+$  192.1025, found 192.1026.

**[3-(*o*-Tolyl)-2-isoxazolin-5-yl]methyl benzoate (3e)**

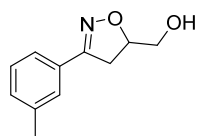


White solid (1.36 g, 92% yield), m.p. 71–72 °C,  $R_f = 0.33$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.03–8.01 (m, 2H), 7.58–7.54 (m, 1H), 7.43–7.22 (m, 6H), 5.10–5.03 (m, 1H), 4.54–4.44 (m, 2H), 3.59 (dd,  $J = 16.6, 10.8$  Hz, 1H), 3.31 (dd,  $J = 16.6, 6.8$  Hz, 1H), 2.57 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.4, 157.1, 138.1, 133.3, 131.7, 129.8, 129.6, 129.5, 128.9, 128.4, 128.3, 125.9, 77.3, 65.6, 39.9, 23.0; IR ( $\text{cm}^{-1}$ ): 3034, 2951, 2924, 1722, 1601, 1450, 1437, 1314, 1271, 1177, 1119, 1070, 1026, 910, 806, 787, 712, 694, 675; MS (ESI): calculated for  $\text{C}_{18}\text{H}_{17}\text{NO}_3$



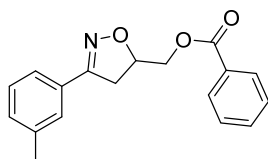
$[M+H]^+$  296.1287, found 296.1285.

**[3-(*m*-Tolyl)-2-isoxazolin-5-yl]methanol**



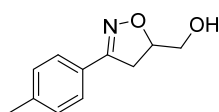
Light yellow oil (2.97 g, 68% yield),  $R_f = 0.35$  (2:1 hexanes/AcOEt).  $^1H$  NMR (400 MHz,  $CDCl_3$ )  $\delta$ : 7.51 (s, 1H), 7.44 (d,  $J = 7.6$  Hz, 1H), 7.31–7.21 (m, 2H), 4.89–4.83 (m, 1H), 3.89–3.85 (dd,  $J = 12.2, 2.8$  Hz, 1H), 3.70–3.66 (dd,  $J = 12.2, 4.7$  Hz, 1H), 3.38 (dd,  $J = 16.6, 10.8$  Hz, 1H), 3.26 (dd,  $J = 16.6, 7.8$  Hz, 1H), 2.38 (s, 3H), 1.93 (br s, 1H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ )  $\delta$ : 157.2, 138.3, 130.9, 129.2, 128.5, 127.2, 123.9, 81.3, 63.5, 36.4, 21.3; IR ( $cm^{-1}$ ): 3383, 3038, 2924, 2872, 1576, 1437, 1381, 1362, 1346, 1094, 1047, 955, 914, 878, 802, 787, 694, 446; MS (ESI): calculated for  $C_{11}H_{13}NO_2$   $[M+H]^+$  192.1025, found 192.1022.

**[3-(*m*-Tolyl)-2-isoxazolin-5-yl]methyl benzoate (3f)**



Light yellow solid (1.35 g, 91% yield), m.p. 85–86 °C,  $R_f = 0.31$  (5:1 hexanes/AcOEt).  $^1H$  NMR (400 MHz,  $CDCl_3$ )  $\delta$ : 8.01 (d,  $J = 7.4$  Hz, 2H), 7.57–7.53 (m, 2H), 7.47 (d,  $J = 7.6$  Hz, 1H), 7.40 (t,  $J = 7.8$  Hz, 2H), 7.30 (t,  $J = 7.6$  Hz, 1H), 7.23 (d,  $J = 7.6$  Hz, 1H), 5.14–5.07 (m, 1H), 4.53–4.44 (m, 2H), 3.52 (dd,  $J = 16.7, 10.8$  Hz, 1H), 3.26 (dd,  $J = 16.7, 6.9$  Hz, 1H), 2.38 (s, 3H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ )  $\delta$ : 166.4, 156.5, 138.6, 133.3, 131.1, 129.8, 129.6, 129.2, 128.7, 128.5, 127.4, 124.0, 78.3, 65.6, 37.5, 21.4; IR ( $cm^{-1}$ ): 3061, 3034, 2951, 2924, 2857, 1722, 1601, 1450, 1344, 1314, 1273, 1177, 1119, 1070, 1026, 910, 806, 787, 712, 694; MS (ESI): calculated for  $C_{18}H_{17}NO_3$   $[M+H]^+$  296.1287, found 296.1285.

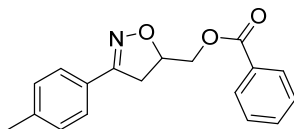
**[3-(*p*-Tolyl)-2-isoxazolin-5-yl]methanol**



Light yellow solid (3.38 g, 59% yield),  $R_f = 0.36$  (1:1 hexanes/AcOEt).  $^1H$  NMR (400

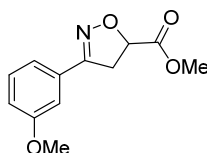
MHz, CDCl<sub>3</sub>)  $\delta$ : 7.55 (d,  $J$  = 7.9 Hz, 2H), 7.20 (d,  $J$  = 8.0 Hz, 2H), 4.88–4.82 (m, 1H), 3.86 (dd,  $J$  = 12.2, 2.6 Hz, 1H), 3.38 (dd,  $J$  = 12.2, 4.8 Hz, 1H), 3.37 (dd,  $J$  = 16.6, 10.7 Hz, 1H), 3.26 (dd,  $J$  = 16.6, 7.8 Hz, 1H), 2.38 (s, 3H), 1.93 (br s, 1H).

### [3-(*p*-Tolyl)-2-isoxazolin-5-yl]methyl benzoate (3g)



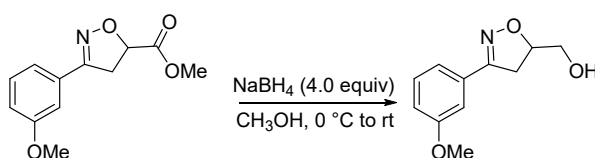
White solid (1.33 g, 90% yield), m.p. 124–125 °C,  $R_f$  = 0.28 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.01 (d,  $J$  = 8.1 Hz, 2H), 7.59–7.53 (m, 3H), 7.40 (t,  $J$  = 7.6 Hz, 2H), 7.21 (d,  $J$  = 7.9 Hz, 2H), 5.13–5.07 (m, 1H), 4.53–4.43 (m, 2H), 3.52 (dd,  $J$  = 16.6, 10.8 Hz, 1H), 3.25 (dd,  $J$  = 16.6, 6.8 Hz, 1H), 2.39 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 166.3, 156.3, 140.5, 133.2, 129.7, 129.6, 129.5, 128.4, 126.7, 126.4, 78.1, 65.6, 37.5, 21.4; IR (cm<sup>-1</sup>): 2955, 1719, 1450, 1273, 1177, 1119, 1070, 1026, 912, 897, 816, 712, 546; MS (ESI): calculated for C<sub>18</sub>H<sub>17</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 296.1287, found 296.1286.

### [3-(3-Methoxyphenyl)-2-isoxazolin-5-yl]carboxylic acid methyl ester



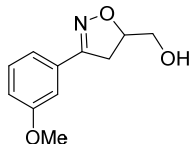
Colorless oil (619 mg, 43% yield),  $R_f$  = 0.30 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.31 (t,  $J$  = 8.0 Hz, 1H, ArH), 7.28–7.26 (m, 1H, ArH), 7.18–7.16 (m, 1H, ArH), 6.98–6.96 (m, 1H, ArH), 5.18 (dd,  $J$  = 10.3, 7.9 Hz, 1H, OCH), 3.82 (s, 3H, OCH<sub>3</sub>), 3.81 (s, 3H, OCH<sub>3</sub>), 3.64–3.61 (m, 2H, CHCH<sub>2</sub>); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 170.8, 159.8, 156.2, 129.9, 129.8, 119.7, 117.0, 111.6, 78.1, 55.5, 52.9, 39.1; IR (cm<sup>-1</sup>): 2955, 1744, 1608, 1575, 1433, 1360, 1292, 1219, 1030, 670, 557; MS (ESI): calculated for C<sub>12</sub>H<sub>13</sub>NO<sub>4</sub> [M+Na]<sup>+</sup> 258.0742, found 258.0735.

### [3-(3-Methoxyphenyl)-2-isoxazolin-5-yl]methanol



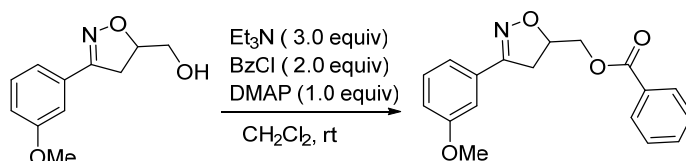
To a solution of the starting isoxazoline (2.09 g, 8.9 mmol) in CH<sub>3</sub>OH (50 mL) was

added NaBH<sub>4</sub> (1.35 g, 35.6 mmol) at 0 °C. The mixture was warmed to room temperature and stirred overnight. The solvent was removed under vacuum. The crude product was purified by silica gel chromatography.

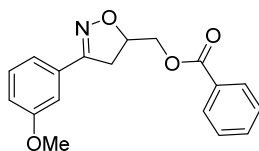


Colorless oil (1.47 g, 80% yield),  $R_f = 0.22$  (1:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.31 (t,  $J = 7.9$  Hz, 1H, ArH), 7.27–7.26 (m, 1H, ArH), 7.18 (d,  $J = 7.6$  Hz, 1H, ArH), 6.95–6.91 (m, 1H, ArH), 4.90–4.83 (m, 1H, CH), 3.87 (d,  $J = 12.2$  Hz, 1H, CH<sub>2</sub>OH), 3.83 (s, 3H, OCH<sub>3</sub>), 3.68 (d,  $J = 12.0$  Hz, 1H, CH<sub>2</sub>OH), 3.37 (dd,  $J = 16.6, 10.7$  Hz, 1H, CCH<sub>2</sub>), 3.26 (dd,  $J = 16.6, 7.8$  Hz, 1H, CCH<sub>2</sub>), 2.01 (s, 1H, OH); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 159.9, 157.2, 130.8, 129.9, 119.5, 116.7, 111.5, 81.4, 63.9, 55.5, 36.6; IR (cm<sup>-1</sup>): 3410, 2937, 1608, 1573, 1216, 1033, 690; MS (ESI): calculated for C<sub>11</sub>H<sub>13</sub>NO<sub>3</sub> [M+Na]<sup>+</sup> 230.0793, found 230.0786.

### [3-(3-Methoxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (**3h**)



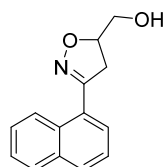
To a solution of the starting isoxazoline (450 mg, 2.6 mmol) in CH<sub>2</sub>Cl<sub>2</sub> (25 mL) were added Et<sub>3</sub>N (1.09 mL, 7.8 mmol), DMAP (316 mg, 2.6 mmol) and PhCOCl (0.6 mL, 5.2 mmol). The mixture was stirred at rt for 2 h before the solvent was evaporated. The crude product (**3h**) was purified by silica gel chromatography.



Light yellow oil (663 mg, 92% yield),  $R_f = 0.22$  (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.00 (m, 2H, ArH), 7.56–7.52 (m, 1H, ArH), 7.39 (t,  $J = 7.8$  Hz, 2H, ArH), 7.33–7.28 (m, 2H, ArH), 7.21–7.19 (m, 1H, ArH), 6.98–6.96 (m, 1H, ArH), 5.15–5.07 (m, 1H, CH), 4.51 (dd,  $J = 11.8, 4.3$  Hz, 1H, OCH<sub>2</sub>), 4.45 (dd,  $J = 11.8, 5.3$  Hz, 1H, OCH<sub>2</sub>), 3.82 (s, 3H, OCH<sub>3</sub>), 3.51 (dd,  $J = 16.7, 10.9$  Hz, 1H, N=CCH<sub>2</sub>), 3.25 (dd,  $J = 16.7, 6.9$  Hz, 1H, N=CCH<sub>2</sub>); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 166.4, 159.9,

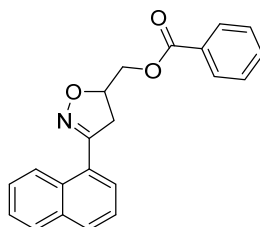
156.4, 133.4, 130.6, 129.91, 129.89, 129.7, 128.5, 119.5, 116.7, 111.5, 78.5, 65.6, 55.5, 37.5; IR (cm<sup>-1</sup>): 2942, 1722, 1602, 1573, 1453, 1273, 1217, 1178, 1120, 1027, 915, 712, 689; MS (ESI): calculated for C<sub>18</sub>H<sub>17</sub>NO<sub>4</sub> [M+Na]<sup>+</sup> 334.1055, found 334.1052.

**[3-(1-Naphthyl)-2-isoxazolin-5-yl]methanol**



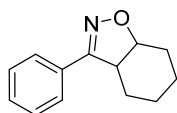
Light yellow oil (5.46 g, 96% yield), R<sub>f</sub> = 0.31 (1:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.94 (d, *J* = 8.6 Hz, 1H), 7.90 (t, *J* = 8.2 Hz, 2H), 7.63–7.46 (m, 4H), 4.93–4.87 (m, 1H), 3.97–3.92 (ddd, *J* = 9.0, 5.8, 3.2 Hz, 1H), 3.79–3.73 (ddd, *J* = 12.2, 7.6, 4.6 Hz, 1H), 3.59 (dd, *J* = 16.5, 10.6 Hz, 1H), 3.50 (dd, *J* = 16.5, 7.8 Hz, 1H), 1.98 (dd, *J* = 7.5, 5.9 Hz, 1H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 157.6, 133.8, 130.6, 130.5, 128.5, 127.7, 127.4, 126.8, 126.3, 126.2, 124.7, 80.2, 63.5, 39.3; IR (cm<sup>-1</sup>): 3406, 3050, 2927, 1595, 1510, 1320, 1049, 957, 894, 802, 775, 640; MS (ESI): calculated for C<sub>14</sub>H<sub>13</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 228.1025, found 228.1021.

**[3-(1-Naphthyl)-2-isoxazolin-5-yl]methyl benzoate (3i)**



Light yellow solid (1.62 g, 81% yield), m.p. 123–124 °C, R<sub>f</sub> = 0.32 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 9.01 (d, *J* = 8.2 Hz, 1H), 8.03–8.01 (m, 2H), 7.93–7.88 (m, 2H), 7.61–7.46 (m, 5H), 7.33 (t, *J* = 7.8 Hz, 2H), 5.18–5.12 (m, 1H), 4.61–4.51 (m, 2H), 3.78 (dd, *J* = 16.6, 10.9 Hz, 1H), 3.47 (dd, *J* = 16.6, 6.6 Hz, 1H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 166.4, 156.8, 134.0, 133.2, 131.0, 130.6, 129.8, 129.5, 128.6, 128.4, 127.8, 127.6, 127.1, 126.4, 126.2, 124.8, 77.2, 65.7, 40.2; IR (cm<sup>-1</sup>): 3061, 2950, 1720, 1601, 1510, 1451, 1316, 1273, 1177, 1119, 1071, 1026, 895, 801, 775, 711, 653, 550, 446; MS (ESI): calculated for C<sub>21</sub>H<sub>17</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 332.1287, found 332.1289.

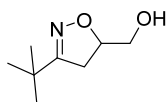
### 3-Phenyl-3a,4,5,6,7,7a-hexahydrobenzisoxazole (3j)



**General procedure II** was applied using cyclohexene instead of allyl alcohol.

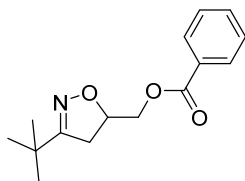
Yellow oil (100 mg, 10% yield),  $R_f = 0.34$  (10:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.72–7.71 (m, 2H), 7.41–7.39 (m, 3H), 4.52–4.48 (m, 1H), 3.30–3.23 (m, 1H), 2.28 (m, 1H), 1.98 (m, 1H), 1.78–1.57 (m, 4H), 1.26 (m, 2H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 163.7, 129.7, 129.2, 128.5, 126.6, 80.1, 44.1, 26.2, 24.8, 22.1, 20.0; IR ( $\text{cm}^{-1}$ ): 3061, 2936, 2860, 1726, 1589, 1555, 1497, 1445, 1375, 1350, 1310, 1257, 1188, 1155, 1076, 993, 939, 928, 891, 866, 810, 766, 692, 679, 642, 600, 500; MS (ESI): calculated for  $\text{C}_{13}\text{H}_{15}\text{NO}$   $[\text{M}+\text{H}]^+$  202.1232, found 202.1227.

### [3-(*t*-Butyl)-2-isoxazolin-5-yl]methanol



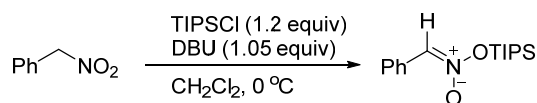
Yellow oil (841 mg, 47% yield),  $R_f = 0.34$  (1:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 4.67–4.61 (m, 1H), 3.75–3.70 (m, 1H), 3.57–3.51 (m, 1H), 2.99 (dd,  $J = 16.8, 10.5$  Hz, 1H), 2.86 (dd,  $J = 16.8, 7.3$  Hz, 1H), 2.19–2.11 (m, 1H), 1.19 (s, 9H).

### [3-(*t*-Butyl)-2-isoxazolin-5-yl]methyl benzoate (3k)<sup>6</sup>



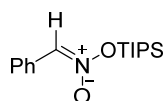
Colorless oil (589 mg, 100% yield),  $R_f = 0.38$  (5:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.05–8.03 (m, 2H), 7.56 (m, 1H), 7.46–7.42 (m, 2H), 4.94–4.88 (m, 1H), 4.42–4.34 (m, 2H), 3.14 (dd,  $J = 17.0, 10.8$  Hz, 1H), 2.87 (dd,  $J = 16.9, 6.5$  Hz, 1H), 1.20 (s, 9H).

### (*E*)-Triisopropylsilyl benzyldenitronate



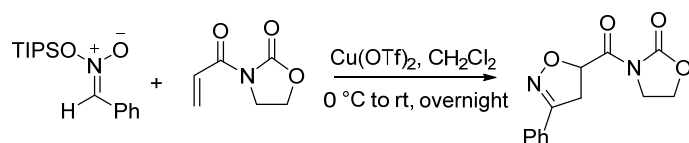
TIPS-Cl (1.27 mL, 6.0 mmol, 1.2 equiv) was added to a stirred solution of

phenylnitromethane (686 mg, 5.0 mmol, 1.0 equiv) in anhydrous dichloromethane at 0 °C under N<sub>2</sub>. The solution was stirred at 0 °C for 20 min, then 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU, 783 μL, 5.25 mmol, 1.05 equiv) was added dropwise via syringe at 0 °C. The mixture was stirred at 0 °C for another 20 min, then the solvent was removed under high vacuum and hexanes were added. When DBU·HCl precipitated, the hexanes solution of the silyl nitronate was collected via syringe. The silyl nitronate was immediately purified by column chromatography (20 mL silica gel) and used directly in the cycloaddition reaction as indicated below.

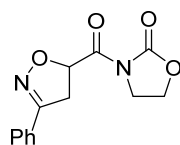


Yellow oil (1.39 g, 95% yield),  $R_f = 0.65$  (30:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.89–7.87 (m, 2H), 7.41–7.38 (m, 2H), 7.35–7.31 (m, 1H), 7.09 (s, 1H), 1.43–1.32 (m, 3H), 1.13 (d,  $J = 7.4$  Hz, 18H).

***N*-[(3-Phenyl-2-isoxazolin-5-yl)carbonyl]-2-oxazolidinone (5a)**



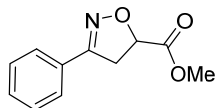
A dry 50 mL Schlenk tube were charged with *N*-acryloyl-2-oxazolidinone (282 mg, 2.0 mmol), Cu(OTf)<sub>2</sub> (144 mg, 0.4 mmol), triisopropylsilyl benzyldenitenitronate (880 mg, 3.0 mmol) and anhydrous CH<sub>2</sub>Cl<sub>2</sub> (15 mL). The mixture was stirred at 0 °C and then rt overnight. After evaporation of CH<sub>2</sub>Cl<sub>2</sub>, the crude product was purified by silica gel chromatography.



White solid (261 mg, 50% yield), m.p. 161–162 °C,  $R_f = 0.45$  (1:2 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.68 (dd,  $J = 7.2$ , 1.7 Hz, 2H), 7.45–7.38 (m, 3H), 6.13 (dd,  $J = 11.6$ , 6.2 Hz, 1H), 4.53 (t,  $J = 7.9$  Hz, 2H), 4.14–4.02 (m, 2H), 3.80 (dd,  $J = 17.1$ , 11.6 Hz, 1H), 3.60 (dd,  $J = 17.1$ , 6.1 Hz, 1H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.3, 156.1, 153.5, 130.6, 128.9, 128.7, 127.0, 77.9, 63.1, 42.6, 39.0; IR (cm<sup>-1</sup>):

1771, 1715, 1387, 1356, 1273, 1223, 1113, 1034, 880, 864, 766, 756, 694, 548; MS (ESI): calculated for C<sub>13</sub>H<sub>12</sub>N<sub>2</sub>O<sub>4</sub> [M+H]<sup>+</sup> 261.0875, found 261.0870.

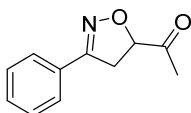
**(3-Phenyl-2-isoxazolin-5-yl)carboxylic acid methyl ester (5b)**<sup>7</sup>



**General procedure II** was applied using methyl acrylate instead of allyl alcohol.

Light yellow oil (853 mg, 83% yield), R<sub>f</sub> = 0.45 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.69–7.65 (m, 2H), 7.44–7.37 (m, 3H), 5.18 (dd, *J* = 10.6, 7.6 Hz, 1H), 3.80 (s, 3H), 3.64 (dd, *J* = 7.6, 2.0 Hz, 2H).

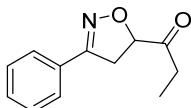
**Methyl 3-phenyl-2-isoxazolin-5-yl ketone (5c)**<sup>8</sup>



**General procedure II** was applied using methyl vinyl ketone instead of allyl alcohol.

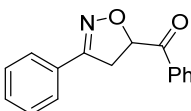
White solid (1.22 g, 65% yield), R<sub>f</sub> = 0.22 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.69–7.66 (m, 2H), 7.44–7.39 (m, 3H), 5.03 (dd, *J* = 11.8, 6.3 Hz, 1H), 3.64 (dd, *J* = 17.0, 6.2 Hz, 1H), 3.50 (dd, *J* = 17.0, 11.8 Hz, 1H), 2.36 (s, 3H).

**Ethyl 3-phenyl-2-isoxazolin-5-yl ketone (5d)**



Light yellow oil (521 mg, 51% yield), R<sub>f</sub> = 0.31 (10:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.69–7.65 (m, 2H), 7.45–7.38 (m, 3H), 5.05 (dd, *J* = 11.9, 6.3 Hz, 1H), 3.67–3.61 (dd, *J* = 17.0, 6.3 Hz, 1H), 3.53–3.46 (dd, *J* = 17.0, 11.9 Hz, 1H), 2.79–2.73 (m, 2H), 1.08 (t, *J* = 7.2 Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 210.0, 156.7, 130.5, 128.8, 128.7, 126.9, 84.1, 37.4, 32.2, 7.1; IR (cm<sup>-1</sup>): 3061, 2978, 2940, 1721, 1497, 1447, 1356, 1126, 1076, 920, 891, 864, 760, 692, 673, 544; MS (ESI): calculated for C<sub>12</sub>H<sub>13</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 204.1025, found 204.1025.

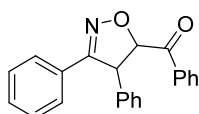
**Phenyl 3-phenyl-2-isoxazolin-5-yl ketone (5e)**



Light yellow solid (700 mg, 56% yield), m.p. 100–101 °C, R<sub>f</sub> = 0.38 (5:1

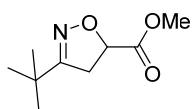
hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.13–8.11 (m, 2H), 7.73–7.71 (m, 2H), 7.65–7.61 (m, 1H), 7.54–7.50 (m, 2H), 7.44–7.39 (m, 3H), 5.88 (dd,  $J = 11.5, 7.1$  Hz, 1H), 4.09 (dd,  $J = 16.8, 7.1$  Hz, 1H), 3.54 (dd,  $J = 16.8, 11.6$  Hz, 1H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 193.8, 156.9, 134.6, 134.0, 130.5, 129.7, 128.9, 128.84, 128.81, 127.0, 81.5, 36.2; IR ( $\text{cm}^{-1}$ ): 3059, 2926, 1686, 1597, 1449, 1356, 1229, 912, 889, 762, 691, 544; MS (ESI): calculated for  $\text{C}_{16}\text{H}_{13}\text{NO}_2$   $[\text{M}+\text{H}]^+$  252.1025, found 252.1027.

### 3,4-Diphenyl-2-isoxazolin-5-yl phenyl ketone (5f)



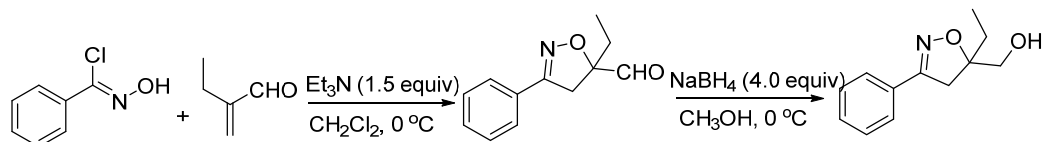
Light yellow oil (565 mg, 34% yield),  $R_f = 0.25$  (20:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.07–8.05 (m, 2H), 7.64–7.60 (m, 3H), 7.50 (t,  $J = 7.8$  Hz, 2H), 7.39–7.27 (m, 8H), 5.68 (d,  $J = 4.8$  Hz, 1H), 5.45 (d,  $J = 4.8$  Hz, 1H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 193.5, 158.6, 138.3, 134.2, 134.0, 130.2, 129.7, 129.5, 128.8, 128.7, 128.1, 127.9, 127.6, 90.1, 55.2; IR ( $\text{cm}^{-1}$ ): 3061, 3028, 1688, 1597, 1580, 1495, 1447, 1344, 1329, 1252, 1182, 1076, 949, 887, 754, 691, 557, 532; MS (ESI): calculated for  $\text{C}_{22}\text{H}_{17}\text{NO}_2$   $[\text{M}+\text{H}]^+$  328.1338, found 328.1333.

### (3-*t*-Butyl-2-isoxazolin-5-yl)carboxylic acid methyl ester (5g)<sup>9</sup>



Light yellow oil (2.43 g, 85% yield),  $R_f = 0.22$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 4.97 (dd,  $J = 10.2, 7.4$  Hz, 1H), 3.77 (s, 3H), 3.29–3.18 (m, 2H), 1.20 (s, 9H).

### General procedure III: preparations of 7a–7h

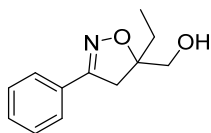


To a solution of  $\alpha$ -chlorobenzaldoxime (1.55 g, 10 mmol, 1.0 equiv) in  $\text{CH}_2\text{Cl}_2$  (30 mL) were added  $\text{Et}_3\text{N}$  (2.11 mL, 15 mmol, 1.5 equiv) and 2-ethylacrolein (1.0 mL, 10 mmol, 1.0 equiv). The mixture was stirred at 0 °C for 2 h before the solvent was



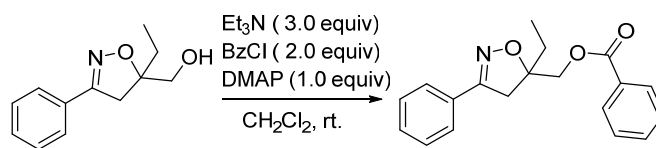
removed under high vacuum. To the crude product were added CH<sub>3</sub>OH (15 mL) and NaBH<sub>4</sub> (1.51 g, 40 mmol, 4.0 equiv). The mixture was stirred at 0 °C for 2 h. The solvent was evaporated and the crude product purified by silica gel chromatography.

**(5-Ethyl-3-phenyl-2-isoxazolin-5-yl)methanol**

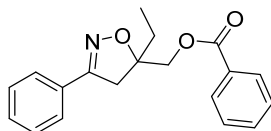


Colorless oil (1.93 g, 94% yield),  $R_f = 0.46$  (1:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.67–7.65 (m, 2H), 7.41–7.39 (m, 3H), 3.76 (d,  $J = 12.0$  Hz, 1H), 3.60 (d,  $J = 12.0$  Hz, 1H), 3.39 (d,  $J = 16.8$  Hz, 1H), 3.09 (d,  $J = 16.8$  Hz, 1H), 1.96 (br s, 1H), 1.81–1.68 (m, 2H), 0.98 (t,  $J = 7.4$  Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 156.8, 129.9, 129.7, 128.7, 126.6, 90.5, 66.1, 39.4, 28.3, 7.7; IR (cm<sup>-1</sup>): 3398, 2970, 2932, 1599, 1454, 1362, 1072, 922, 760, 694, 540; MS (ESI): calculated for C<sub>12</sub>H<sub>15</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 206.1181, found 206.1183.

**(5-Ethyl-3-phenyl-2-isoxazolin-5-yl)methyl benzoate (7a)**



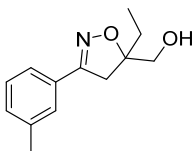
To a solution of (5-methyl-3-phenyl-2-isoxazolin-5-yl)methanol (308 mg, 1.5 mmol, 1.0 equiv) in CH<sub>2</sub>Cl<sub>2</sub> (10 mL) were added Et<sub>3</sub>N (633  $\mu$ L, 4.5 mmol, 3.0 equiv), DMAP (183 mg, 1.5 mmol, 1.0 equiv) and BzCl (347  $\mu$ L, 3.0 mmol, 2.0 equiv). The mixture was stirred at rt for 2 h before the solvent was evaporated. The crude product was purified by silica gel chromatography.



Colorless oil (452 mg, 97% yield),  $R_f = 0.37$  (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.98–7.96 (m, 2H), 7.69–7.67 (m, 2H), 7.55–7.51 (m, 1H), 7.43–7.35 (m, 5H), 4.44 (s, 2H), 3.34 (d,  $J = 16.9$  Hz, 1H), 3.23 (d,  $J = 16.8$  Hz, 1H), 1.96–1.90 (m, 2H), 1.07 (t,  $J = 7.4$  Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 166.3, 156.1, 133.2, 130.1, 129.7, 129.6, 128.7, 128.4, 126.6, 88.0, 67.6, 40.7, 28.7, 7.9; IR (cm<sup>-1</sup>): 3061,

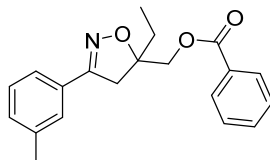
2970, 2939, 2881, 1718, 1600, 1450, 1360, 1315, 1273, 1178, 1072, 1026, 922, 760, 712, 692, 540; MS (ESI): calculated for C<sub>19</sub>H<sub>19</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 310.1443, found 310.1448.

**[5-Ethyl-3-(3-methylphenyl)-2-isoxazolin-5-yl]methanol**



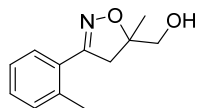
Light yellow oil (2.04 g, 100% yield), R<sub>f</sub> = 0.34 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.49 (s, 1H), 7.44 (d, *J* = 7.7 Hz, 1H), 7.30–7.26 (m, 1H), 7.21 (d, *J* = 7.6 Hz, 1H), 3.74 (dd, *J* = 12.0, 4.7 Hz, 1H), 3.59 (dd, *J* = 12.0, 8.9 Hz, 1H), 3.38 (d, *J* = 16.8 Hz, 1H), 3.07 (d, *J* = 16.8 Hz, 1H), 2.37 (s, 3H), 2.26–2.21 (m, 1H), 1.81–1.66 (m, 2H), 0.97 (t, *J* = 7.5 Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 157.0, 138.4, 130.8, 129.7, 128.6, 127.2, 123.8, 90.4, 66.2, 39.5, 28.4, 21.4, 7.7; IR (cm<sup>-1</sup>): 3414, 2969, 2924, 2881, 1610, 1597, 1575, 1462, 1437, 1363, 1067, 1005, 926, 823, 786, 694; MS (ESI): calculated for C<sub>13</sub>H<sub>17</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 220.1338, found 220.1333.

**[5-Ethyl-3-(3-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (7b)**



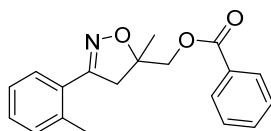
Light yellow oil (1.47 g, 95% yield), R<sub>f</sub> = 0.46 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.98 (dd, *J* = 8.2, 1.1 Hz, 2H), 7.55–7.51 (m, 2H), 7.46 (d, *J* = 7.6 Hz, 1H), 7.39–7.35 (m, 2H), 7.29 (t, *J* = 7.6 Hz, 1H), 7.22 (d, *J* = 7.6 Hz, 1H), 4.43 (q, *J* = 11.6 Hz, 2H), 3.33 (d, *J* = 16.9 Hz, 1H), 3.22 (d, *J* = 16.9 Hz, 1H), 2.37 (s, 3H), 1.97–1.87 (m, 2H), 1.06 (t, *J* = 7.5 Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 166.2, 156.1, 138.3, 133.1, 130.8, 129.6, 129.54, 129.49, 128.5, 128.3, 127.1, 123.7, 87.8, 67.6, 40.6, 28.6, 21.3, 7.8; IR (cm<sup>-1</sup>): 3062, 3034, 2970, 2941, 2926, 2882, 1723, 1602, 1575, 1492, 1462, 1451, 1381, 1363, 1348, 1315, 1272, 1177, 1116, 1071, 1027, 923, 823, 787, 712, 694, 674; MS (ESI): calculated for C<sub>20</sub>H<sub>21</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 324.1600, found 324.1592.

**[5-Methyl-3-(2-methylphenyl)-2-isoxazolin-5-yl]methanol**



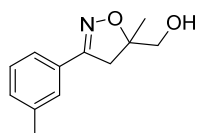
Light yellow oil (2.11 g, 85% yield),  $R_f = 0.16$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.34–7.21 (m, 4H), 3.73 (d,  $J = 11.6$  Hz, 1H), 3.60 (d,  $J = 8.5$  Hz, 1H), 3.54 (d,  $J = 16.4$  Hz, 1H), 3.05 (d,  $J = 16.6$  Hz, 1H), 2.55 (s, 3H), 2.14 (br s, 1H), 1.43 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 158.1, 137.8, 131.5, 129.3, 128.94, 128.86, 125.8, 86.3, 67.2, 44.7, 22.8, 22.6; IR ( $\text{cm}^{-1}$ ): 3422, 2970, 2927, 2871, 1603, 1588, 1495, 1457, 1435, 1383, 1345, 1291, 1191, 1047, 893, 845, 809, 787, 763, 719, 680, 648, 553, 460; MS (ESI): calculated for  $\text{C}_{12}\text{H}_{15}\text{NO}_2$   $[\text{M}+\text{H}]^+$  206.1181, found 206.1175.

**[5-Methyl-3-(2-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (7c)**



Light yellow solid (1.31 g, 85% yield), m.p. 87–88 °C,  $R_f = 0.43$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.00 (d,  $J = 7.8$  Hz, 2H), 7.55 (t,  $J = 7.3$  Hz, 1H), 7.40 (t,  $J = 7.5$  Hz, 2H), 7.33–7.22 (m, 4H), 4.43 (q,  $J = 11.5$  Hz, 2H), 3.48 (d,  $J = 16.7$  Hz, 1H), 3.23 (d,  $J = 16.6$  Hz, 1H), 2.56 (s, 3H), 1.62 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.3, 157.3, 138.0, 133.3, 131.7, 129.8, 129.7, 129.4, 128.8, 128.7, 128.5, 125.9, 84.0, 68.6, 45.8, 23.1, 23.0; IR ( $\text{cm}^{-1}$ ): 3063, 2976, 2932, 1716, 1602, 1585, 1493, 1451, 1376, 1344, 1277, 1177, 1116, 1071, 1027, 998, 907, 838, 789, 759, 711, 687, 671, 618, 554, 462; MS (ESI): calculated for  $\text{C}_{19}\text{H}_{19}\text{NO}_3$   $[\text{M}+\text{H}]^+$  310.1443, found 310.1438.

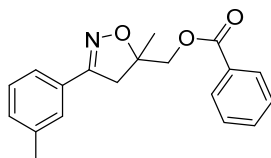
**[5-Methyl-3-(3-methylphenyl)-2-isoxazolin-5-yl]methanol**



Colorless oil (1.94 g, 100% yield),  $R_f = 0.34$  (2:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.48 (s, 1H), 7.43 (d,  $J = 7.6$  Hz, 1H), 7.30–7.20 (m, 2H), 3.73 (dd,  $J = 12.0, 3.5$  Hz, 1H), 3.58 (dd,  $J = 12.0, 3.5$  Hz, 1H), 3.48 (d,  $J = 16.6$  Hz, 1H), 3.00 (d,

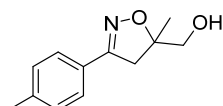
$J = 16.6$  Hz, 1H), 2.37 (s, 3H), 2.21 (br s, 1H), 1.42 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 157.2, 138.4, 130.9, 129.7, 128.6, 127.2, 123.8, 87.5, 67.3, 42.1, 22.7, 21.4; IR ( $\text{cm}^{-1}$ ): 3391, 2970, 2924, 2868, 1576, 1456, 1437, 1362, 1348, 1059, 926, 858, 787, 694; MS (ESI): calculated for  $\text{C}_{12}\text{H}_{15}\text{NO}_2$   $[\text{M}+\text{H}]^+$  206.1181, found 206.1175.

**[5-Methyl-3-(3-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (7d)**



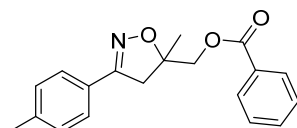
Light yellow oil (1.20 g, 100% yield),  $R_f = 0.36$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.99 (d,  $J = 7.8$  Hz, 2H), 7.56–7.50 (m, 2H), 7.45 (d,  $J = 7.6$  Hz, 1H), 7.39 (t,  $J = 7.4$  Hz, 2H), 7.29 (t,  $J = 7.5$  Hz, 1H), 7.22 (d,  $J = 7.5$  Hz, 1H), 4.42 (q,  $J = 11.5$  Hz, 2H), 3.43 (d,  $J = 16.7$  Hz, 1H), 3.17 (d,  $J = 16.7$  Hz, 1H), 2.38 (s, 3H), 1.61 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.3, 156.5, 138.5, 133.3, 131.0, 129.8, 129.62, 129.60, 128.7, 128.5, 127.2, 123.8, 85.1, 68.6, 43.3, 23.2, 21.4; IR ( $\text{cm}^{-1}$ ): 3061, 2974, 2930, 2872, 1722, 1601, 1574, 1491, 1450, 1377, 1314, 1277, 1177, 1113, 1070, 1026, 922, 789, 712, 694; MS (ESI): calculated for  $\text{C}_{19}\text{H}_{19}\text{NO}_3$   $[\text{M}+\text{H}]^+$  310.1443, found 310.1436.

**[5-Methyl-3-(4-methylphenyl)-2-isoxazolin-5-yl]methanol**



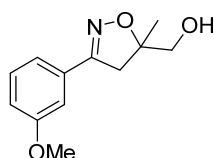
Light yellow oil (2.64 g, 100% yield),  $R_f = 0.16$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.53 (d,  $J = 7.9$  Hz, 2H), 7.19 (d,  $J = 7.8$  Hz, 2H), 3.72 (d,  $J = 11.8$  Hz, 1H), 3.58 (t,  $J = 8.5$  Hz, 1H), 3.47 (d,  $J = 16.6$  Hz, 1H), 3.00 (d,  $J = 16.6$  Hz, 1H), 2.37 (s, 3H), 2.15 (br s, 1H), 1.42 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 157.0, 140.2, 129.3, 126.9, 126.5, 87.3, 67.0, 42.0, 22.7, 21.4; IR ( $\text{cm}^{-1}$ ): 3422, 3406, 2970, 2924, 2868, 1516, 1358, 1057, 922, 908, 816, 783, 546, 534; MS (ESI): calculated for  $\text{C}_{12}\text{H}_{15}\text{NO}_2$   $[\text{M}+\text{H}]^+$  206.1181, found 206.1177.

**[5-Methyl-3-(4-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (7e)**



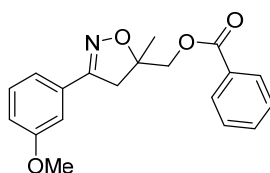
Light yellow solid (1.44 g, 93% yield), m.p. 89–90 °C,  $R_f = 0.36$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.99 (d,  $J = 7.8$  Hz, 2H), 7.57–7.52 (m, 3H), 7.38 (t,  $J = 7.4$  Hz, 2H), 7.20 (d,  $J = 7.7$  Hz, 2H), 4.41 (q,  $J = 11.5$  Hz, 2H), 3.42 (d,  $J = 16.7$  Hz, 1H), 3.16 (d,  $J = 16.7$  Hz, 1H), 2.38 (s, 3H), 1.60 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.4, 156.4, 140.5, 133.3, 129.9, 129.7, 129.6, 128.5, 127.0, 126.7, 85.1, 68.7, 43.5, 23.3, 21.6; IR ( $\text{cm}^{-1}$ ): 3062, 3034, 2976, 2926, 1733, 1602, 1517, 1451, 1376, 1358, 1315, 1287, 1177, 1111, 1071, 998, 912, 818, 786, 717, 539, 492; MS (ESI): calculated for  $\text{C}_{19}\text{H}_{19}\text{NO}_3$   $[\text{M}+\text{H}]^+$  310.1443, found 310.1437.

**[3-(3-Methoxyphenyl)-5-methyl-2-isoxazolin-5-yl]methanol**



Light yellow oil (2.03 g, 75% yield),  $R_f = 0.16$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.31–7.25 (m, 2H), 7.16 (d, 1H), 6.95 (dd,  $J = 8.2, 2.4$  Hz, 1H), 3.82 (s, 3H), 3.74 (dd,  $J = 12.0, 4.0$  Hz, 1H), 3.58 (dd,  $J = 11.9, 8.8$  Hz, 1H), 3.49 (d,  $J = 16.6$  Hz, 1H), 3.00 (d,  $J = 16.6$  Hz, 1H), 2.46 (m, 1H), 1.42 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 159.5, 156.9, 130.9, 129.6, 119.2, 116.2, 111.0, 87.6, 66.9, 55.2, 41.8, 22.6; IR ( $\text{cm}^{-1}$ ): 3417, 2971, 2933, 1605, 1572, 1466, 1457, 1432, 1349, 1291, 1219, 1180, 1054, 1034, 927, 861, 823, 786, 690; MS (ESI): calculated for  $\text{C}_{12}\text{H}_{15}\text{NO}_3$   $[\text{M}+\text{H}]^+$  222.1130, found 222.1127.

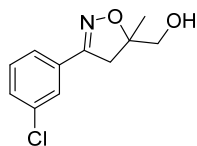
**[3-(3-Methoxyphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (7f)**



Yellow oil (1.13 g, 90% yield),  $R_f = 0.34$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.99 (d,  $J = 7.8$  Hz, 2H), 7.54 (t,  $J = 7.6$  Hz, 1H), 7.38 (t,  $J = 7.4$  Hz, 2H), 7.33–7.26 (m, 2H), 7.17 (d,  $J = 7.6$  Hz, 1H), 6.96 (d,  $J = 8.2$  Hz, 1H), 4.42 (q,  $J = 11.5$  Hz, 2H), 3.83 (s, 3H), 3.42 (d,  $J = 16.7$  Hz, 1H), 3.17 (d,  $J = 16.7$  Hz, 1H), 1.61 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.2, 159.7, 156.3, 133.2, 130.9, 129.72, 129.67, 129.5, 128.4, 119.2, 116.4, 111.1, 85.3, 68.5, 55.3, 43.2, 23.0; IR ( $\text{cm}^{-1}$ ): 3070,

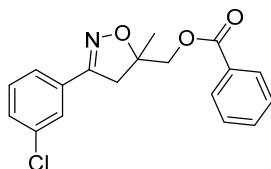
2975, 2939, 2837, 1723, 1602, 1572, 1491, 1451, 1432, 1365, 1350, 1315, 1279, 1226, 1178, 1114, 1071, 1028, 995, 923, 865, 790, 712, 689, 472; MS (ESI): calculated for  $C_{19}H_{19}NO_4$   $[M+H]^+$  326.1392, found 326.1388.

**[3-(3-Chlorophenyl)-5-methyl-2-isoxazolin-5-yl]methanol**



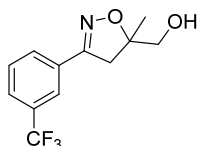
Light yellow oil (1.93 g, 91% yield),  $R_f = 0.21$  (3:1 hexanes/AcOEt).  $^1H$  NMR (400 MHz,  $CDCl_3$ )  $\delta$ : 7.64 (s, 1H), 7.53 (d,  $J = 7.4$  Hz, 1H), 7.38–7.31 (m, 2H), 3.75 (dd,  $J = 12.0, 4.1$  Hz, 1H), 3.58 (t,  $J = 9.6$  Hz, 1H), 3.47 (d,  $J = 16.6$  Hz, 1H), 2.98 (d,  $J = 16.6$  Hz, 1H), 2.08–2.05 (m, 1H), 1.44 (s, 3H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ )  $\delta$ : 155.8, 134.4, 131.4, 129.9, 129.8, 126.4, 124.6, 88.1, 66.9, 41.5, 22.6; IR ( $cm^{-1}$ ): 3414, 2973, 2931, 2871, 1596, 1560, 1431, 1361, 1346, 1105, 1056, 930, 786, 751, 685; MS (ESI): calculated for  $C_{11}H_{12}ClNO_2$   $[M+H]^+$  226.0635, found 226.0630.

**[3-(3-Chlorophenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (7g)**



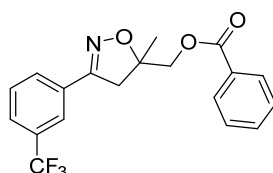
Light yellow oil (1.48 g, 90% yield),  $R_f = 0.27$  (5:1 hexanes/AcOEt).  $^1H$  NMR (400 MHz,  $CDCl_3$ )  $\delta$ : 7.98 (d,  $J = 7.8$  Hz, 2H), 7.65 (s, 1H), 7.54 (t,  $J = 7.4$  Hz, 2H), 7.41–7.31 (m, 4H), 4.42 (q,  $J = 11.6$  Hz, 2H), 3.40 (d,  $J = 16.7$  Hz, 1H), 3.15 (d,  $J = 17.0$  Hz, 1H), 1.62 (s, 3H);  $^{13}C$  NMR (100 MHz,  $CDCl_3$ )  $\delta$ : 166.0, 155.2, 134.6, 133.2, 131.4, 130.0, 129.9, 129.6, 129.4, 128.3, 126.4, 124.6, 85.6, 77.4, 68.4, 42.8, 22.9; IR ( $cm^{-1}$ ): 3071, 2979, 2926, 1723, 1598, 1496, 1451, 1438, 1404, 1380, 1356, 1314, 1278, 1248, 1175, 1114, 1095, 1071, 1027, 926, 822, 802, 713, 539, 503; MS (ESI): calculated for  $C_{18}H_{16}ClNO_3$   $[M+H]^+$  330.0897, found 330.0890.

**[5-Methyl-3-(3-trifluoromethylphenyl)-2-isoxazolin-5-yl]methanol**



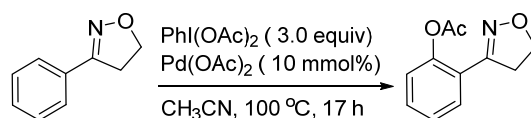
Light yellow oil (2.93 g, 100% yield),  $R_f = 0.21$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.88 (s, 1H), 7.86 (d,  $J = 8.0$  Hz, 1H), 7.66 (d,  $J = 7.8$  Hz, 1H), 7.53 (t,  $J = 7.8$  Hz, 1H), 3.78 (dd,  $J = 12.1, 4.6$  Hz, 1H), 3.59 (dd,  $J = 12.1, 9.2$  Hz, 1H), 3.53 (d,  $J = 16.6$  Hz, 1H), 3.04 (d,  $J = 16.6$  Hz, 1H), 2.06–2.03 (m, 1H), 1.45 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 156.0, 131.1 (q,  $J_{\text{C-F}} = 33$  Hz), 130.7, 129.7, 129.3, 126.4 (q,  $J_{\text{C-F}} = 3.0$  Hz), 123.8 (q,  $J_{\text{C-F}} = 273$  Hz,  $\text{CF}_3$ ), 123.3 (q,  $J_{\text{C-F}} = 4.0$  Hz), 88.4, 67.2, 41.6, 22.7; IR ( $\text{cm}^{-1}$ ): 3397, 2976, 2933, 2873, 1431, 1376, 1323, 1168, 1126, 1073, 1055, 934, 804, 780, 704; MS (ESI): calculated for  $\text{C}_{12}\text{H}_{12}\text{F}_3\text{NO}_2$   $[\text{M}+\text{H}]^+$  260.0898, found 260.0894.

**[5-Methyl-3-(3-trifluoromethylphenyl)-2-isoxazolin-5-yl]methyl benzoate (7h)**



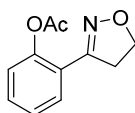
Light yellow oil (1.38 g, 76% yield),  $R_f = 0.43$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.98 (d,  $J = 7.9$  Hz, 2H), 7.87 (t,  $J = 7.8$  Hz, 2H), 7.66 (d,  $J = 7.8$  Hz, 1H), 7.53 (t,  $J = 7.5$  Hz, 2H), 7.38 (t,  $J = 7.5$  Hz, 2H), 4.43 (q,  $J = 11.6$  Hz, 2H), 3.45 (d,  $J = 16.7$  Hz, 1H), 3.20 (d,  $J = 16.7$  Hz, 1H), 1.63 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.2, 155.3, 133.4, 131.32 (q,  $J_{\text{C-F}} = 32$  Hz), 130.66, 129.75, 129.71, 129.52, 129.41, 128.51, 126.6 (q,  $J_{\text{C-F}} = 4.0$  Hz), 123.8 (q,  $J_{\text{C-F}} = 273$  Hz,  $\text{CF}_3$ ), 123.4 (q,  $J_{\text{C-F}} = 4.0$  Hz), 86.1, 68.6, 42.9, 23.1; IR ( $\text{cm}^{-1}$ ): 3072, 2979, 2939, 1724, 1602, 1452, 1376, 1323, 1316, 1277, 1169, 1126, 1072, 1027, 929, 804, 783, 712; MS (ESI): calculated for  $\text{C}_{19}\text{H}_{16}\text{F}_3\text{NO}_3$   $[\text{M}+\text{H}]^+$  364.1161, found 364.1156.

**General procedure IV: acetoxylation of 1, 3, 5, 7**



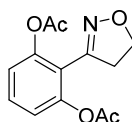
A dry 100 mL Schlenk tube was charged with the isoxazoline (1.0 equiv),  $\text{Pd}(\text{OAc})_2$  (10 mmol%),  $\text{PhI}(\text{OAc})_2$  (3.0 equiv) and  $\text{CH}_3\text{CN}$  (8 mL). The mixture was stirred at 100 °C for 17 h before the solvent was evaporated. The crude product was purified by silica gel chromatography.

### 3-(2-Acetoxyphenyl)-2-isoxazoline (2a)



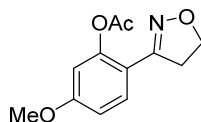
Light yellow solid (103 mg, 65% yield), m.p. 71–72 °C,  $R_f = 0.31$  (5:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.53 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.42 (td,  $J = 7.8, 1.6$  Hz, 1H), 7.29 (td,  $J = 7.6, 1.2$  Hz, 1H), 7.14 (dd,  $J = 8.1, 1.0$  Hz, 1H), 4.41 (t,  $J = 10.2$  Hz, 2H), 3.33 (t,  $J = 10.2$  Hz, 2H), 2.32 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.6, 154.1, 148.3, 130.7, 129.5, 126.2, 123.7, 122.7, 68.4, 36.6, 21.2; IR ( $\text{cm}^{-1}$ ): 2926, 1755, 1497, 1447, 1368, 1341, 1192, 1119, 1043, 1009, 912, 881, 820, 760, 669, 642, 592, 546; MS (ESI): calculated for  $\text{C}_{11}\text{H}_{11}\text{NO}_3$   $[\text{M}+\text{H}]^+$  206.0817, found 206.0812.

### 3-(2,6-Diacetoxyphenyl)-2-isoxazoline (2a')



Light yellow solid (49 mg, 24% yield), m.p. 119–120 °C,  $R_f = 0.14$  (5:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.43 (t,  $J = 8.2$  Hz, 1H), 7.08 (d,  $J = 8.2$  Hz, 2H), 4.41 (t,  $J = 10.1$  Hz, 2H), 3.22 (t,  $J = 10.1$  Hz, 2H), 2.28 (s, 6H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 168.8, 151.5, 149.5, 130.4, 120.6, 117.5, 69.1, 37.7, 21.0; IR ( $\text{cm}^{-1}$ ): 2889, 1771, 1611, 1595, 1458, 1435, 1369, 1327, 1248, 1188, 1032, 903, 878, 739, 667, 594, 523; MS (ESI): calculated for  $\text{C}_{13}\text{H}_{13}\text{NO}_5$   $[\text{M}+\text{H}]^+$  264.0872, found 264.0868.

### 3-(2-Acetoxy-4-methoxyphenyl)-2-isoxazoline (2b)

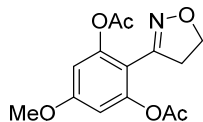


Light yellow solid (83 mg, 46% yield), m.p. 80–81 °C,  $R_f = 0.23$  (3:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.43 (d,  $J = 8.7$  Hz, 1H), 6.82 (dd,  $J = 8.7, 2.6$  Hz, 1H), 6.68 (d,  $J = 2.5$  Hz, 1H), 4.37 (t,  $J = 10.1$  Hz, 2H), 3.83 (s, 3H), 3.30 (t,  $J = 10.1$  Hz, 2H), 2.32 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.5, 161.3, 153.8, 149.6, 130.4, 115.2, 111.9, 109.5, 68.0, 55.5, 36.7, 21.2; IR ( $\text{cm}^{-1}$ ): 2963, 2938, 1763, 1616, 1558, 1508, 1466, 1425, 1368, 1348, 1302, 1246, 1207, 1161, 1132, 1121,



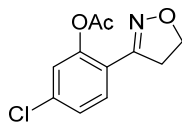
1042, 1015, 961, 934, 889, 814, 594; MS (ESI): calculated for C<sub>12</sub>H<sub>13</sub>NO<sub>4</sub> [M+H]<sup>+</sup> 236.0923, found 236.0917.

### 3-(2,6-Diacetoxy-4-methoxyphenyl)-2-isoxazoline (2b')



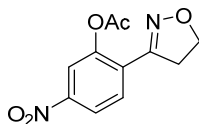
Light yellow oil (32 mg, 14% yield), R<sub>f</sub> = 0.19 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 6.62 (s, 2H), 4.36 (t, *J* = 10.0 Hz, 2H), 3.80 (s, 3H), 3.18 (t, *J* = 10.0 Hz, 2H), 2.27 (s, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 168.8, 161.1, 151.5, 150.3, 109.8, 107.0, 68.9, 55.9, 37.8, 21.1; IR (cm<sup>-1</sup>): 3094, 2941, 1771, 1624, 1497, 1464, 1433, 1369, 1337, 1188, 1146, 1042, 1015, 883, 598; MS (ESI): calculated for C<sub>14</sub>H<sub>15</sub>NO<sub>6</sub> [M+Na]<sup>+</sup> 316.0797, found 316.0792.

### 3-(2-Acetoxy-4-chlorophenyl)-2-isoxazoline (2c)



Light yellow solid (38 mg, 59% yield), m.p. 77–78 °C, R<sub>f</sub> = 0.25 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.46 (d, *J* = 8.4 Hz, 1H), 7.29–7.25 (m, 1H), 7.17 (d, *J* = 2.0 Hz, 1H), 4.42 (t, *J* = 10.2 Hz, 2H), 3.30 (t, *J* = 10.2 Hz, 2H), 2.32 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.2, 153.4, 148.9, 136.0, 130.2, 126.6, 124.4, 121.6, 68.7, 36.5, 21.2; IR (cm<sup>-1</sup>): 2960, 1774, 1751, 1602, 1490, 1435, 1367, 1340, 1222, 1199, 1087, 1010, 931, 883, 812, 487; MS (ESI): calculated for C<sub>11</sub>H<sub>10</sub>ClNO<sub>3</sub> [M+H]<sup>+</sup> 240.0427, found 240.0421.

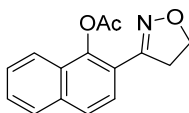
### 3-(2-Acetoxy-4-nitrophenyl)-2-isoxazoline (2d)



Light yellow solid (4 mg, 5% yield), m.p. 64–65 °C, R<sub>f</sub> = 0.23 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.15 (dd, *J* = 8.6, 2.2 Hz, 1H), 8.03 (d, *J* = 2.2 Hz, 1H), 7.73 (d, *J* = 8.6 Hz, 1H), 4.51 (t, *J* = 10.3 Hz, 2H), 3.37 (t, *J* = 10.3 Hz, 2H), 2.37 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 168.9, 152.9, 148.7, 129.9, 129.1, 128.8, 121.0, 119.6, 69.3, 36.1, 21.1; IR (cm<sup>-1</sup>): 2961, 2924, 1773, 1522, 1342, 1260, 1186, 1092,

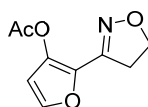
1013, 953, 934, 895, 847, 810, 745, 658, 602; MS (ESI): calculated for C<sub>11</sub>H<sub>10</sub>N<sub>2</sub>O<sub>5</sub> [M+H]<sup>+</sup> 251.0668, found 251.0669.

### 3-(1-Acetoxy-2-naphthyl)-2-isoxazoline (2e)



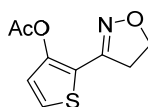
Light yellow solid (173 mg, 72% yield), m.p. 137–138 °C, R<sub>f</sub> = 0.25 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.94 (s, 1H), 7.86–7.79 (dd, *J* = 21.6, 8.0 Hz, 2H), 7.58 (s, 1H), 7.56–7.48 (m, 2H), 4.46 (t, *J* = 10.2 Hz, 2H), 3.47 (t, *J* = 10.2 Hz, 2H), 2.38 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 170.2, 154.3, 145.6, 133.7, 131.0, 130.2, 128.1, 127.7, 127.1, 126.4, 121.9, 121.0, 68.2, 36.5, 21.2; IR (cm<sup>-1</sup>): 2968, 2918, 1751, 1431, 1369, 1340, 1278, 1201, 1099, 1014, 929, 839, 750, 474; MS (ESI): calculated for C<sub>15</sub>H<sub>13</sub>NO<sub>3</sub> [M+Na]<sup>+</sup> 278.0793, found 278.0795.

### 3-(3-Acetoxy-2-furyl)-2-isoxazoline (2f)



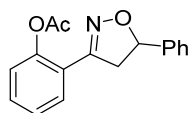
Yellow oil (22 mg, 13% yield), R<sub>f</sub> = 0.19 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.70 (d, *J* = 5.6 Hz, 1H), 6.31 (d, *J* = 5.6 Hz, 1H), 4.51–4.39 (m, 2H), 3.29 (m, 1H), 3.11 (m, 1H), 2.13 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 168.3, 167.9, 155.6, 151.3, 123.3, 101.6, 70.0, 34.1, 21.2; IR (cm<sup>-1</sup>): 3109, 2965, 2920, 2897, 1800, 1761, 1616, 1437, 1369, 1204, 1090, 1015, 910, 880, 824, 729, 702, 598, 567; MS (ESI): calculated for C<sub>9</sub>H<sub>9</sub>NO<sub>4</sub> [M+H]<sup>+</sup> 196.0610, found 196.0605.

### 3-(3-Acetoxy-2-thienyl)-2-isoxazoline (2g)



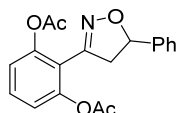
Purple solid (30 mg, 18% yield), m.p. 115–116 °C, R<sub>f</sub> = 0.25 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 6.95 (d, *J* = 4.1 Hz, 1H), 6.67 (d, *J* = 4.1 Hz, 1H), 4.45 (t, *J* = 10.0 Hz, 2H), 3.29 (t, *J* = 10.0 Hz, 2H), 2.32 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 167.0, 153.7, 152.7, 125.0, 124.4, 113.4, 69.3, 35.7, 20.7; IR (cm<sup>-1</sup>): 1757, 1541, 1474, 1425, 1373, 1198, 1182, 1051, 1011, 930, 910, 876, 841, 804, 770, 669, 573, 540; MS (ESI): calculated for C<sub>9</sub>H<sub>9</sub>NO<sub>3</sub>S [M+H]<sup>+</sup> 212.0381, found 212.0383.

### 3-(2-Acetoxyphenyl)-5-phenyl-2-isoxazoline (4a)



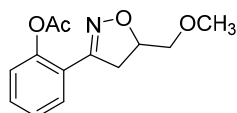
Light yellow oil (179 mg, 66% yield),  $R_f = 0.25$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.53 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.43 (td,  $J = 7.8, 1.6$  Hz, 1H), 7.38–7.27 (m, 6H), 7.15 (dd,  $J = 8.1, 1.1$  Hz, 1H), 5.67 (dd,  $J = 11.0, 8.4$  Hz, 1H), 3.77 (dd,  $J = 16.6, 11.0$  Hz, 1H), 3.35 (dd,  $J = 16.6, 8.4$  Hz, 1H), 2.31 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.6, 153.5, 148.4, 140.6, 130.8, 129.5, 128.7, 128.3, 126.2, 125.9, 123.8, 122.7, 81.9, 44.5, 21.2; IR ( $\text{cm}^{-1}$ ): 3065, 3032, 2932, 1771, 1759, 1589, 1495, 1449, 1368, 1341, 1194, 1011, 912, 820, 758, 700, 673, 646, 594, 494; MS (ESI): calculated for  $\text{C}_{17}\text{H}_{15}\text{NO}_3$   $[\text{M}+\text{H}]^+$  282.1130, found 282.1125.

### 3-(2,6-Diacetoxyphenyl)-5-phenyl-2-isoxazoline (4a')



Light yellow oil (92 mg, 28% yield),  $R_f = 0.16$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.45–7.30 (m, 6H), 7.07 (d,  $J = 8.2$  Hz, 2H), 5.72 (dd,  $J = 10.9, 6.8$  Hz, 1H), 3.65 (dd,  $J = 16.9, 10.9$  Hz, 1H), 3.25 (dd,  $J = 16.9, 6.8$  Hz, 1H), 2.12 (s, 6H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 168.9, 150.6, 149.6, 141.1, 130.6, 128.9, 128.3, 125.7, 120.6, 117.5, 82.0, 45.8, 20.9; IR ( $\text{cm}^{-1}$ ): 2932, 1771, 1601, 1458, 1369, 1329, 1186, 1034, 901, 883, 854, 760, 739, 700, 594, 557; MS (ESI): calculated for  $\text{C}_{19}\text{H}_{17}\text{NO}_5$   $[\text{M}+\text{H}]^+$  340.1185, found 340.1177.

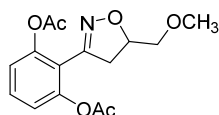
### 3-(2-Acetoxyphenyl)-5-methoxymethyl-2-isoxazoline (4b)



Light yellow oil (91 mg, 55% yield),  $R_f = 0.43$  (2:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.51 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.42 (td,  $J = 7.8, 1.6$  Hz, 1H), 7.28 (td,  $J = 7.6, 1.2$  Hz, 1H), 7.13 (dd,  $J = 8.0, 1.0$  Hz, 1H), 4.86–4.79 (m, 1H), 3.57 (dd,  $J = 10.3, 5.4$  Hz, 1H), 3.50 (dd,  $J = 10.3, 5.0$  Hz, 1H), 3.41 (s, 3H), 3.37 (dd,  $J = 17.0, 11.2$  Hz, 1H), 3.22 (dd,  $J = 16.6, 7.6$  Hz, 1H), 2.31 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.6, 153.7, 148.4, 130.7, 129.5, 126.2, 123.7, 122.8, 79.0, 73.3, 59.4,

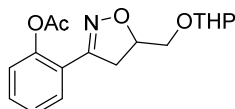
38.5, 21.2; IR (cm<sup>-1</sup>): 3069, 2984, 2932, 2887, 1759, 1607, 1591, 1497, 1449, 1368, 1344, 1194, 1121, 1042, 1011, 912, 816, 760, 673, 646, 592, 548, 490; MS (ESI): calculated for C<sub>13</sub>H<sub>15</sub>NO<sub>4</sub> [M+H]<sup>+</sup> 250.1079, found 250.1072.

### 3-(2,6-Diacetoxyphenyl)-5-methoxymethyl-2-isoxazoline (4b')



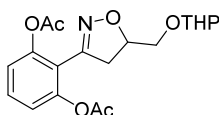
Light yellow oil (23 mg, 18% yield), R<sub>f</sub> = 0.31 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.33 (t, *J* = 8.2 Hz, 1H), 6.98 (d, *J* = 8.3 Hz, 2H), 4.78–4.71 (m, 1H), 3.47–3.39 (m, 2H), 3.33 (s, 3H), 3.17 (dd, *J* = 17.0, 10.8 Hz, 1H), 3.07 (dd, *J* = 17.0, 7.4 Hz, 1H), 2.19 (s, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 168.8, 150.9, 149.4, 130.4, 120.5, 117.5, 79.3, 73.1, 59.4, 39.2, 20.9; IR (cm<sup>-1</sup>): 2934, 2891, 2253, 1771, 1611, 1458, 1435, 1369, 1331, 1252, 1188, 1121, 1080, 1034, 905, 876, 816, 739, 669, 594, 523; MS (ESI): calculated for C<sub>15</sub>H<sub>17</sub>NO<sub>6</sub> [M+H]<sup>+</sup> 308.1134, found 308.1131.

### 3-(2-Acetoxyphenyl)-5-(2-tetrahydropyranoxymethyl)-2-isoxazoline (4c)



Light yellow oil (190 mg, 62% yield), R<sub>f</sub> = 0.35 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.52 (ddd, *J* = 7.7, 4.6, 1.6 Hz, 1H), 7.42 (td, *J* = 7.8, 1.6 Hz, 1H), 7.29 (td, *J* = 7.7, 1.2 Hz, 1H), 7.13 (dd, *J* = 8.1, 1.1 Hz, 1H), 4.91–4.82 (m, 1H), 4.67–4.64 (m, 1H), 3.89–3.79 (m, 2H), 3.63–3.58 (m, 1H), 3.54–3.49 (m, 1H), 3.34–3.16 (m, 2H), 2.31 (s, 3H), 1.82–1.48 (m, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.6, 153.8, 153.7, 148.4, 130.75, 130.73, 129.5, 126.2, 123.82, 123.80, 122.9, 122.8, 99.3, 99.0, 79.17, 79.15, 68.4, 67.9, 62.5, 62.2, 38.9, 38.5, 30.49, 30.44, 25.39, 25.36, 21.2, 19.4, 19.2; IR (cm<sup>-1</sup>): 2941, 2868, 1771, 1761, 1607, 1591, 1497, 1447, 1368, 1344, 1194, 1125, 1069, 1034, 908, 816, 760, 673, 646, 592, 548; MS (ESI): calculated for C<sub>17</sub>H<sub>21</sub>NO<sub>5</sub> [M+Na]<sup>+</sup> 342.1317, found 342.1318.

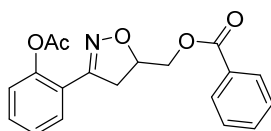
### 3-(2,6-Diacetoxyphenyl)-5-(2-tetrahydropyranoxymethyl)-2-isoxazoline (4c')



Light yellow oil (36 mg, 21% yield), R<sub>f</sub> = 0.22 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400

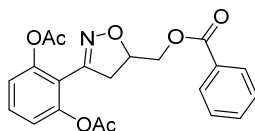
MHz, CDCl<sub>3</sub>)  $\delta$ : 7.42 (t,  $J$  = 8.2 Hz, 1H), 7.07 (d,  $J$  = 8.2 Hz, 2H), 4.91–4.85 (m, 1H), 4.69–4.66 (m, 1H), 3.90–3.76 (m, 2H), 3.62–3.58 (m, 1H), 3.55–3.49 (m, 1H), 3.33–3.07 (m, 2H), 2.29 (s, 6H), 1.84–1.50 (m, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 168.91, 168.88, 151.06, 150.96, 149.5, 130.4, 120.65, 120.63, 117.54, 117.47, 99.6, 99.0, 79.6, 68.1, 67.7, 62.7, 62.3, 39.8, 39.5, 30.6, 30.5, 25.41, 25.38, 21.1, 19.6, 19.3; IR (cm<sup>-1</sup>): 2943, 2870, 1771, 1611, 1591, 1458, 1441, 1369, 1333, 1188, 1134, 1069, 1034, 905, 870, 816, 735, 594, 523; MS (ESI): calculated for C<sub>19</sub>H<sub>23</sub>NO<sub>7</sub> [M+Na]<sup>+</sup> 400.1372, found 400.1366.

**[3-(2-Acetoxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (4d)**



Yellow oil (102 mg, 66% yield),  $R_f$  = 0.38 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.02 (d,  $J$  = 8.4 Hz, 2H), 7.51–7.52 (m, 2H), 7.46–7.39 (m, 3H), 7.29 (td,  $J$  = 7.6, 1.2 Hz, 1H), 7.16 (dd,  $J$  = 8.1, 1.0 Hz, 1H), 5.09–5.02 (m, 1H), 4.52–4.42 (m, 2H), 3.54 (dd,  $J$  = 16.7, 10.9 Hz, 1H), 3.28 (dd,  $J$  = 16.6, 7.1 Hz, 1H), 2.31 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.5, 166.2, 153.6, 148.4, 133.2, 130.9, 129.6, 129.5, 129.4, 128.4, 126.2, 123.8, 122.4, 77.6, 65.4, 38.6, 21.1; IR (cm<sup>-1</sup>): 2940, 1767, 1759, 1722, 1601, 1497, 1450, 1368, 1344, 1315, 1273, 1194, 1121, 1070, 1026, 912, 818, 760, 712, 675; MS (ESI): calculated for C<sub>19</sub>H<sub>17</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 340.1185, found 340.1184.

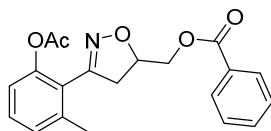
**[3-(2,6-Diacetoxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (4d')**



Yellow oil (67 mg, 22% yield),  $R_f$  = 0.21 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.05 (d,  $J$  = 7.3 Hz, 2H), 7.56 (t,  $J$  = 7.4 Hz, 1H), 7.45–7.39 (m, 3H), 7.07 (d,  $J$  = 8.2 Hz, 2H), 5.08–5.01 (m, 1H), 4.54–4.38 (m, 2H), 3.41 (dd,  $J$  = 17.0, 10.9 Hz, 1H), 3.17 (dd,  $J$  = 17.1, 7.1 Hz, 1H), 2.23 (s, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 168.8, 166.3, 151.0, 149.5, 133.4, 130.6, 129.8, 129.7, 129.5, 128.5, 120.6, 117.0,

78.0, 65.0, 39.6, 21.0; IR (cm<sup>-1</sup>): 2938, 1771, 1722, 1601, 1458, 1369, 1331, 1315, 1273, 1188, 1119, 1070, 1036, 907, 874, 714, 523; MS (ESI): calculated for C<sub>21</sub>H<sub>19</sub>NO<sub>7</sub> [M+H]<sup>+</sup> 398.1240, found 398.1233.

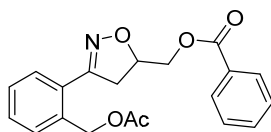
**[3-(2-Acetoxy-6-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (4e)**



*Note: A mixture (235 mg) of 4e and 4e'' was isolated in 72% yield. Pure 4e or 4e'' was isolated by eluting the mixture through a silica gel column using hexanes. 4e was eluted out first.*

R<sub>f</sub> = 0.33 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.07 (d, *J* = 7.2 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.44 (t, *J* = 7.8 Hz, 2H), 7.31 (t, *J* = 7.9 Hz, 1H), 7.12 (d, *J* = 7.6 Hz, 1H), 7.00 (d, *J* = 8.1 Hz, 1H), 5.13–5.06 (m, 1H), 4.52–4.44 (m, 2H), 3.38 (dd, *J* = 17.3, 10.8 Hz, 1H), 3.11 (dd, *J* = 17.3, 7.2 Hz, 1H), 2.34 (s, 3H), 2.23 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.2, 166.4, 153.8, 149.0, 138.9, 133.4, 130.1, 129.8, 129.6, 128.5, 128.1, 122.5, 120.3, 77.9, 65.0, 40.6, 21.0, 20.2; IR (cm<sup>-1</sup>): 3065, 2957, 2928, 2857, 2255, 1771, 1724, 1601, 1584, 1464, 1452, 1371, 1327, 1315, 1271, 1196, 1117, 1070, 1026, 957, 907, 870, 793, 762, 712, 687, 602; MS (ESI): calculated for C<sub>20</sub>H<sub>19</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 354.1341, found 354.1342.

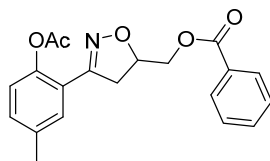
**[3-(2-Acetoxyethylphenyl)-2-isoxazolin-5-yl]methyl benzoate (4e'')**



R<sub>f</sub> = 0.33 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.03–8.01 (m, 2H), 7.57–7.51 (m, 2H), 7.45–7.36 (m, 5H), 5.44 (s, 2H), 5.12–5.05 (m, 1H), 4.54–4.45 (m, 2H), 3.59 (dd, *J* = 16.6, 10.8 Hz, 1H), 3.32 (dd, *J* = 16.7, 7.0 Hz, 1H), 2.13 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 170.5, 166.3, 156.2, 135.8, 133.3, 129.8, 129.7, 129.5, 129.0, 128.4, 128.3, 127.9, 127.3, 77.6, 65.4, 65.0, 39.4, 21.0; IR (cm<sup>-1</sup>): 3065, 2953, 1732, 1601, 1493, 1452, 1381, 1362, 1342, 1315, 1273, 1231, 1177, 1121, 1070, 1026, 910, 762, 712; MS (ESI): calculated for C<sub>20</sub>H<sub>19</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 354.1341, found

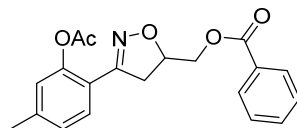
354.1342.

**[3-(2-Acetoxy-5-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (4f)**



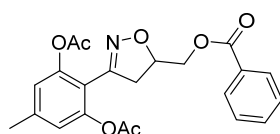
Light yellow solid (225 mg, 82% yield), m.p. 110–111 °C,  $R_f = 0.22$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.02 (d,  $J = 7.6$  Hz, 2H), 7.55 (t,  $J = 7.5$  Hz, 1H), 7.42 (t,  $J = 7.7$  Hz, 2H), 7.32 (s, 1H), 7.23 (d,  $J = 8.2$  Hz, 1H), 7.03 (d,  $J = 8.2$  Hz, 1H), 5.08–5.01 (m, 1H), 4.51–4.42 (m, 2H), 3.51 (dd,  $J = 16.7, 10.9$  Hz, 1H), 3.26 (dd,  $J = 16.7, 7.1$  Hz, 1H), 2.36 (s, 3H), 2.30 (s, 3H);  $^{13}\text{C}\{^1\text{H}\}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.9, 166.4, 153.9, 146.3, 136.1, 133.4, 131.7, 130.0, 129.9, 129.6, 128.5, 123.6, 122.1, 77.7, 65.5, 38.9, 21.3, 20.9; IR ( $\text{cm}^{-1}$ ): 1763, 1721, 1501, 1450, 1368, 1348, 1273, 1196, 1119, 1070, 1026, 907, 712; MS (ESI): calculated for  $\text{C}_{20}\text{H}_{19}\text{NO}_5$   $[\text{M}+\text{H}]^+$  354.1341, found 354.1337.

**[3-(2-Acetoxy-4-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (4g)**



White solid (147 mg, 54% yield), m.p. 132–133 °C,  $R_f = 0.20$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.02 (d,  $J = 8.0$  Hz, 2H), 7.55 (t,  $J = 7.4$  Hz, 1H), 7.43–7.39 (m, 3H), 7.09 (d,  $J = 8.0$  Hz, 1H), 6.97 (s, 1H), 5.06–4.99 (m, 1H), 4.51–4.41 (m, 2H), 3.51 (dd,  $J = 16.6, 10.9$  Hz, 1H), 3.25 (dd,  $J = 16.6, 7.1$  Hz, 1H), 2.39 (s, 3H), 2.31 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.7, 166.3, 153.6, 148.3, 141.8, 133.2, 129.8, 129.5, 129.3, 128.4, 127.1, 124.4, 119.6, 65.5, 38.8, 21.22, 21.21; IR ( $\text{cm}^{-1}$ ): 2938, 1773, 1719, 1364, 1273, 1204, 1121, 1070, 1024, 899, 818, 714; MS (ESI): calculated for  $\text{C}_{20}\text{H}_{19}\text{NO}_5$   $[\text{M}+\text{H}]^+$  354.1341, found 354.1340.

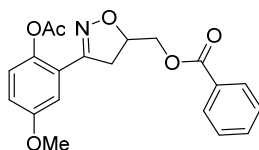
**[3-(2,6-Diacetoxy-4-methylphenyl)-2-isoxazolin-5-yl]methyl benzoate (4g')**



Yellow oil (52 mg, 15% yield),  $R_f = 0.28$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,

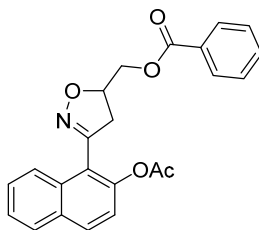
CDCl<sub>3</sub>)  $\delta$ : 8.06–8.04 (m, 2H), 7.57 (t,  $J = 7.4$  Hz, 1H), 7.43 (t,  $J = 7.8$  Hz, 2H), 6.89 (s, 2H), 5.06–4.99 (m, 1H), 4.44–4.42 (m, 2H), 3.39 (dd,  $J = 17.0, 10.9$  Hz, 1H), 3.15 (dd,  $J = 17.0, 7.1$  Hz, 1H), 2.37 (s, 3H), 2.22 (s, 6H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.0, 166.4, 151.0, 149.2, 141.8, 133.4, 129.9, 129.6, 128.5, 121.4, 114.0, 77.9, 65.0, 39.7, 21.4, 21.1; IR (cm<sup>-1</sup>): 3063, 2940, 2864, 1771, 1722, 1626, 1601, 1585, 1452, 1369, 1333, 1273, 1188, 1119, 1051, 1026, 893, 714, 525; MS (ESI): calculated for C<sub>22</sub>H<sub>21</sub>NO<sub>7</sub> [M+H]<sup>+</sup> 412.1396, found 412.1389.

**[3-(2-Acetoxy-5-methoxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (4h)**



Light yellow oil (185 mg, 53% yield),  $R_f = 0.33$  (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.02 (dd,  $J = 7.72, 0.6$  Hz, 2H, ArH), 7.55 (t,  $J = 5.8$  Hz, 1H, ArH), 7.41 (t,  $J = 7.8$  Hz, 2H, ArH), 7.07 (m, 2H, ArH), 6.95 (dd,  $J = 8.9, 3.0$  Hz, 1H, ArH), 5.08–5.01 (m, 1H, OCH), 4.46 (qd, 2H, OCH<sub>2</sub>), 3.80 (s, 3H, OCH<sub>3</sub>), 3.50 (dd,  $J = 16.7, 10.9$  Hz, 1H, N=CCH<sub>2</sub>), 3.24 (dd,  $J = 16.7, 7.1$  Hz, 1H, N=CCH<sub>2</sub>), 2.28 (s, 3H, COCH<sub>3</sub>); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 170.0, 166.4, 157.4, 153.8, 142.1, 133.4, 129.9, 129.6, 128.6, 124.7, 123.2, 116.2, 114.6, 78.0, 65.5, 55.8, 38.9, 21.2; IR (cm<sup>-1</sup>): 1764, 1722, 1503, 1369, 1272, 1194, 1180, 1119, 1027, 713; MS (ESI): calculated for C<sub>20</sub>H<sub>19</sub>NO<sub>6</sub> [M+Na]<sup>+</sup> 392.1110, found 392.1106.

**[3-(2-Acetoxy-1-naphthyl)-2-isoxazolin-5-yl]methyl benzoate (4i)**

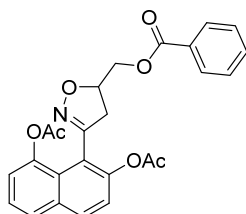


Light yellow oil (285 mg, 73% yield),  $R_f = 0.33$  (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.11–8.09 (m, 2H), 7.95–7.92 (dd,  $J = 8.2, 1.0$  Hz, 1H), 7.81–7.80 (m, 1H), 7.62–7.58 (m, 1H), 7.53 (t,  $J = 15.8$  Hz, 1H), 7.49–7.39 (m, 4H), 7.27–7.25 (dd,  $J = 7.5, 1.0$  Hz, 1H), 5.21–5.14 (m, 1H), 4.59–4.57 (m, 2H), 3.75 (dd,  $J = 17.2, 10.8$  Hz, 1H), 3.15 (dd,  $J = 17.2, 7.8$  Hz, 1H), 2.38 (s, 3H); <sup>13</sup>C NMR (100 MHz,



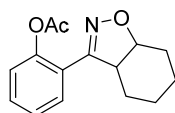
CDCl<sub>3</sub>)  $\delta$ : 169.1, 166.3, 159.6, 145.6, 135.3, 133.3, 130.2, 129.7, 129.5, 128.6, 128.4, 126.9, 126.0, 125.6, 124.4, 124.1, 121.0, 78.0, 65.5, 43.8, 20.8; IR (cm<sup>-1</sup>): 3061, 2945, 1769, 1723, 1601, 1450, 1368, 1315, 1273, 1198, 1119, 1070, 1026, 874, 762, 714; MS (ESI): calculated for C<sub>23</sub>H<sub>19</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 390.1341, found 390.1342.

**[3-(2,8-Diacetoxy-1-naphthyl)-2-isoxazolin-5-yl]methyl benzoate (4i')**



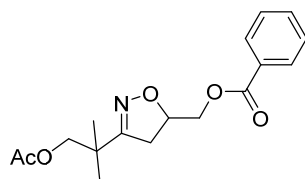
Light yellow oil (14 mg, 3% yield),  $R_f$  = 0.24 (2:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.11–8.09 (m, 2H), 7.97 (d,  $J$  = 8.9 Hz, 1H), 7.80 (d,  $J$  = 7.6 Hz, 1H), 7.59 (t,  $J$  = 7.4 Hz, 1H), 7.53 (t,  $J$  = 7.8 Hz, 1H), 7.47 (t,  $J$  = 7.8 Hz, 2H), 7.33 (d,  $J$  = 8.9 Hz, 1H), 7.28 (dd,  $J$  = 7.6, 0.8 Hz, 1H), 5.21–5.15 (m, 1H), 4.59–4.49 (m, 2H), 3.64–3.59 (m, 1H), 3.14–3.11 (m, 1H), 2.37 (s, 3H), 2.35 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.4, 169.2, 166.5, 148.0, 145.9, 133.6, 133.5, 130.0, 129.7, 129.0, 128.6, 127.0, 126.2, 125.3, 122.4, 122.1, 115.5, 65.5, 43.4, 29.8, 21.1, 21.0; IR (cm<sup>-1</sup>): 3063, 2959, 2918, 2851, 1773, 1719, 1369, 1271, 1188, 1117, 1015, 878, 764, 714; MS (ESI): calculated for C<sub>22</sub>H<sub>21</sub>NO<sub>7</sub> [M+H]<sup>+</sup> 448.1396, found 448.1392.

**3-(2-Acetoxyphenyl)-3a,4,5,6,7,7a-hexahydrobenzisoxazole (4j)**



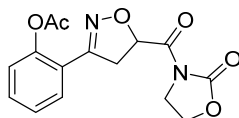
Yellow oil (49 mg, 38% yield),  $R_f$  = 0.16 (10:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.52 (dd,  $J$  = 7.8, 1.6 Hz, 1H), 7.41 (td,  $J$  = 7.6, 1.6 Hz, 1H), 7.29 (td,  $J$  = 7.6, 1.2 Hz, 1H), 7.14 (dd,  $J$  = 8.0, 1.2 Hz, 1H), 4.47–4.43 (m, 1H), 3.32–3.26 (m, 1H), 2.31 (s, 3H), 2.21–2.16 (m, 1H), 1.91–1.72 (m, 2H), 1.63–1.48 (m, 3H), 1.13–1.16 (m, 2H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.7, 161.3, 148.8, 130.6, 129.8, 126.2, 124.0, 122.6, 79.6, 45.8, 25.8, 25.1, 22.2, 21.3, 20.2; IR (cm<sup>-1</sup>): 3067, 2936, 2862, 1769, 1607, 1584, 1493, 1447, 1368, 1337, 1194, 1121, 1042, 1011, 912, 891, 822, 760, 677, 654, 590, 550; MS (ESI): calculated for C<sub>15</sub>H<sub>17</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 260.1287, found 260.1286.

### [3-(2-Acetoxy-1,1-dimethylethyl)-2-isoxazolin-5-yl]methyl benzoate (4k)



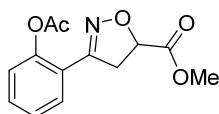
Light yellow oil (76 mg, 51% yield),  $R_f = 0.16$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.04 (d,  $J = 7.3$  Hz, 2H), 7.57 (t,  $J = 7.4$  Hz, 1H), 7.44 (t,  $J = 7.8$  Hz, 2H), 4.97–4.90 (m, 1H), 4.41–4.33 (m, 2H), 4.05 (s, 2H), 3.14 (dd,  $J = 16.9, 10.8$  Hz, 1H), 2.87 (dd,  $J = 17.0, 6.7$  Hz, 1H), 2.04 (s, 3H), 1.236 (s, 3H), 1.229 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 170.7, 166.2, 162.3, 133.2, 129.7, 129.6, 128.4, 77.5, 70.2, 65.2, 37.0, 36.8, 23.2, 23.1, 20.7; IR ( $\text{cm}^{-1}$ ): 3064, 2973, 1740, 1724, 1602, 1475, 1452, 1377, 1316, 1273, 1249, 1178, 1120, 1072, 1043, 884, 714; MS (ESI): calculated for  $\text{C}_{17}\text{H}_{21}\text{NO}_5$   $[\text{M}+\text{H}]^+$  320.1498, found 320.1503.

### *N*-{[3-(2-Acetoxyphenyl)-2-isoxazolin-5-yl]carbonyl}-2-oxazolidinone (6a)



Light yellow solid (35 mg, 30% yield), m.p. 147–148 °C,  $R_f = 0.45$  (1:2 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.56 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.44 (td,  $J = 7.7, 1.6$  Hz, 1H), 7.29 (td,  $J = 7.7, 1.2$  Hz, 1H), 7.15 (dd,  $J = 8.1, 1.0$  Hz, 1H), 6.06 (dd,  $J = 11.6, 6.2$  Hz, 1H), 4.51 (t,  $J = 8.3$  Hz, 2H), 4.10–4.06 (m, 2H), 3.78 (dd,  $J = 17.0, 11.6$  Hz, 1H), 3.62 (dd,  $J = 17.0, 6.2$  Hz, 1H), 2.34 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.7, 169.0, 153.5, 153.4, 148.7, 131.3, 129.7, 126.4, 124.0, 122.1, 77.4, 63.1, 42.7, 40.3, 21.4; IR ( $\text{cm}^{-1}$ ): 2924, 1773, 1709, 1393, 1368, 1342, 1279, 1221, 1194, 1119, 1040, 914, 760; MS (ESI): calculated for  $\text{C}_{15}\text{H}_{14}\text{N}_2\text{O}_6$   $[\text{M}+\text{H}]^+$  319.0930, found 319.0924.

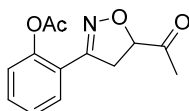
### [3-(2-Acetoxyphenyl)-2-isoxazolin-5-yl]carboxylic acid methyl ester (6b)



Light yellow solid (82 mg, 58% yield), m.p. 105–106 °C,  $R_f = 0.31$  (2:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.53 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.45

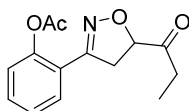
(td,  $J = 7.6, 1.6$  Hz, 1H), 7.29 (td,  $J = 7.6, 1.6$  Hz, 1H), 7.15 (dd,  $J = 8.0, 1.1$  Hz, 1H), 5.12 (dd,  $J = 11.5, 6.9$  Hz, 1H), 3.81 (s, 3H), 3.65 (dd,  $J = 16.8, 6.9$  Hz, 2H), 2.32 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 170.2, 169.3, 153.3, 148.3, 131.0, 129.4, 126.1, 123.6, 121.6, 76.6, 52.6, 39.9, 21.0; IR ( $\text{cm}^{-1}$ ): 2955, 1757, 1605, 1497, 1449, 1437, 1368, 1342, 1277, 1217, 1192, 1121, 1013, 912, 822, 760, 673, 646, 594, 548, 494; MS (ESI): calculated for  $\text{C}_{13}\text{H}_{13}\text{NO}_5$   $[\text{M}+\text{H}]^+$  264.0872, found 264.0869.

### 3-(2-Acetoxyphenyl)-2-isoxazolin-5-yl methyl ketone (6c)



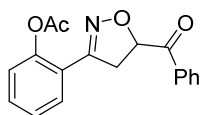
Colorless oil (86 mg, 56% yield),  $R_f = 0.25$  (3:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.53 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.45 (td,  $J = 7.7, 1.6$  Hz, 1H), 7.29 (td,  $J = 7.6, 1.2$  Hz, 1H), 7.14 (dd,  $J = 8.1, 1.1$  Hz, 1H), 4.95 (dd,  $J = 11.9, 6.3$  Hz, 1H), 3.67–3.61 (dd,  $J = 17.0, 6.3$  Hz, 1H), 3.51–3.43 (dd,  $J = 17.0, 11.9$  Hz, 1H), 2.34 (s, 3H), 2.33 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 207.1, 169.4, 154.1, 148.4, 131.2, 129.6, 126.3, 123.8, 121.9, 83.6, 38.5, 26.3, 21.1; IR ( $\text{cm}^{-1}$ ): 2960, 2926, 1757, 1722, 1606, 1593, 1497, 1449, 1368, 1281, 1190, 1121, 1045, 1011, 911, 889, 759, 675, 648, 596, 548; MS (ESI): calculated for  $\text{C}_{13}\text{H}_{13}\text{NO}_4$   $[\text{M}+\text{H}]^+$  248.0923, found 248.0920.

### 3-(2-Acetoxyphenyl)-2-isoxazolin-5-yl ethyl ketone (6d)



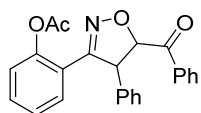
Light yellow oil (36 mg, 43% yield),  $R_f = 0.19$  (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 7.54 (dd,  $J = 7.8, 1.6$  Hz, 1H), 7.45 (td,  $J = 7.8, 1.6$  Hz, 1H), 7.30 (td,  $J = 7.7, 1.2$  Hz, 1H), 7.15 (dd,  $J = 8.1, 1.1$  Hz, 1H), 4.99 (dd,  $J = 11.9, 6.3$  Hz, 1H), 3.69–3.63 (dd,  $J = 17.0, 6.4$  Hz, 1H), 3.51–3.44 (dd,  $J = 17.0, 11.9$  Hz, 1H), 2.78–2.70 (m, 2H), 2.33 (s, 3H), 1.08 (t,  $J = 7.2$  Hz, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 209.9, 169.5, 154.2, 148.5, 131.3, 129.7, 126.4, 123.9, 122.0, 83.5, 38.8, 32.2, 21.2, 7.1; IR ( $\text{cm}^{-1}$ ): 2978, 2937, 1768, 1759, 1718, 1604, 1593, 1496, 1448, 1367, 1342, 1192, 1120, 1010, 912, 891, 860, 819, 758, 673, 594, 547; MS (ESI): calculated for  $\text{C}_{14}\text{H}_{15}\text{NO}_4$   $[\text{M}+\text{H}]^+$  262.1079, found 262.1083.

### 3-(2-Acetoxyphenyl)-2-isoxazolin-5-yl phenyl ketone (6e)



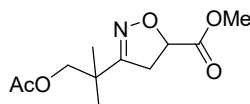
Light yellow oil (53 mg, 31% yield),  $R_f = 0.22$  (5:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.10 (dd,  $J = 8.6, 1.4$  Hz, 2H), 7.64–7.59 (m, 2H), 7.54–7.50 (m, 2H), 7.45 (td,  $J = 7.8, 1.5$  Hz, 1H), 7.31 (td,  $J = 7.6, 1.2$  Hz, 1H), 7.15 (dd,  $J = 8.1, 1.1$  Hz, 1H), 5.82 (dd,  $J = 11.6, 7.3$  Hz, 1H), 4.16–4.10 (dd,  $J = 16.8, 7.3$  Hz, 1H), 3.54–3.47 (dd,  $J = 16.8, 11.6$  Hz, 1H), 2.33 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 193.4, 169.6, 154.2, 148.5, 134.5, 133.9, 131.1, 129.8, 129.6, 128.7, 126.3, 123.9, 122.1, 80.6, 37.4, 21.2; IR ( $\text{cm}^{-1}$ ): 3065, 2959, 2926, 2853, 1771, 1724, 1694, 1603, 1450, 1420, 1369, 1319, 1287, 1229, 1194, 1072, 1024, 912, 758, 712, 690; MS (ESI): calculated for  $\text{C}_{18}\text{H}_{15}\text{NO}_4$   $[\text{M}+\text{H}]^+$  310.1079, found 310.1071.

### 3-(2-Acetoxyphenyl)-4-phenyl-2-isoxazolin-5-yl phenyl ketone (6f)



Light yellow oil (17 mg, 21% yield),  $R_f = 0.16$  (10:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.06 (d,  $J = 7.6$  Hz, 2H), 7.62 (t,  $J = 7.2$  Hz, 1H), 7.50 (m, 2H), 7.39–7.28 (m, 7H), 7.14–7.08 (m, 2H), 5.64 (d,  $J = 5.1$  Hz, 1H), 5.54 (d,  $J = 5.1$  Hz, 1H), 2.38 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 193.2, 169.6, 156.3, 149.0, 138.0, 134.4, 134.1, 131.0, 130.5, 129.7, 129.5, 128.8, 128.1, 128.0, 126.1, 123.8, 121.5, 89.2, 56.1, 21.3; MS (ESI): calculated for  $\text{C}_{24}\text{H}_{19}\text{NO}_4$   $[\text{M}+\text{H}]^+$  386.1392, found 386.1384.

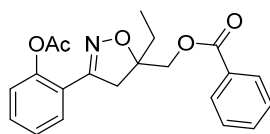
### [3-(2-Acetoxy-1,1-dimethylethyl)-2-isoxazolin-5-yl]carboxylic acid methyl ester (6g)



Light yellow oil (30 mg, 35% yield),  $R_f = 0.21$  (3:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 5.00 (dd,  $J = 10.5, 7.2$  Hz, 1H), 4.04 (q,  $J = 11.1$  Hz, 2H), 3.79 (s, 3H), 3.31–3.20 (m, 2H), 2.06 (s, 3H), 1.25 (s, 3H), 1.24 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 170.79, 170.76, 162.3, 70.1, 52.7, 38.6, 36.9, 30.9, 23.2, 23.1, 20.8; IR ( $\text{cm}^{-1}$ ): 2973, 2958, 1741, 1475, 1438, 1377, 1286, 1221, 1042, 876, 833, 647, 607;

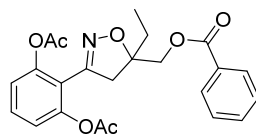
MS (ESI): calculated for C<sub>11</sub>H<sub>17</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 244.1185, found 244.1185.

**[3-(2-Acetoxyphenyl)-5-ethyl-2-isoxazolin-5-yl]methyl benzoate (8a)**



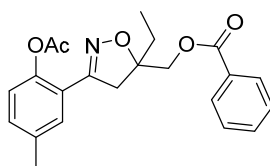
Light yellow oil (210 mg, 72% yield), R<sub>f</sub> = 0.34 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.99 (dd, *J* = 8.0, 0.9 Hz, 2H), 7.56–7.38 (m, 5H), 7.29 (dd, *J* = 7.6, 1.2 Hz, 1H), 7.15 (dd, *J* = 8.1, 1.1 Hz, 1H), 4.42 (s, 2H), 3.35 (d, *J* = 16.8 Hz, 1H), 3.22 (d, *J* = 16.8 Hz, 1H), 2.30 (s, 3H), 1.95–1.85 (m, 2H), 1.05 (t, *J* = 7.4 Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.5, 166.2, 153.4, 148.3, 133.2, 130.7, 129.63, 129.60, 129.44, 129.36, 128.41, 128.38, 126.1, 123.8, 122.8, 87.1, 67.5, 42.0, 28.6, 21.1, 7.7; IR (cm<sup>-1</sup>): 3430, 3064, 2970, 2940, 2883, 1770, 1723, 1602, 1492, 1451, 1369, 1315, 1273, 1193, 1114, 1071, 913, 820, 759, 713; MS (ESI): calculated for C<sub>21</sub>H<sub>21</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 368.1498, found 368.1495.

**[3-(2,6-Diacetoxyphenyl)-5-ethyl-2-isoxazolin-5-yl]methyl benzoate (8a')**



Light yellow oil (39 mg, 12% yield), R<sub>f</sub> = 0.24 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.04 (d, *J* = 7.3 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.45–7.40 (m, 3H), 7.07 (d, *J* = 8.2 Hz, 2H), 4.41 (s, 2H), 3.27 (d, *J* = 17.3 Hz, 1H), 3.10 (d, *J* = 17.3 Hz, 1H), 2.20 (s, 6H), 1.94–1.83 (m, 2H), 1.05 (t, *J* = 7.4 Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 168.9, 166.4, 150.6, 149.6, 133.5, 130.5, 129.9, 129.7, 128.6, 120.7, 117.5, 87.7, 67.1, 43.0, 29.8, 28.6, 21.0, 7.8; IR (cm<sup>-1</sup>): 2972, 2920, 2849, 2255, 1773, 1722, 1601, 1458, 1369, 1337, 1273, 1188, 1115, 1072, 1036, 1024, 912, 733, 714; MS (ESI): calculated for C<sub>23</sub>H<sub>23</sub>NO<sub>7</sub> [M+H]<sup>+</sup> 426.1553, found 426.1548.

**[3-(2-Acetoxy-5-methylphenyl)-5-ethyl-2-isoxazolin-5-yl]methyl benzoate (8b)**

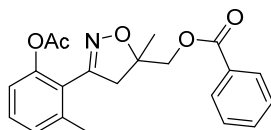


Light yellow oil (249 mg, 75% yield), R<sub>f</sub> = 0.33 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400

MHz, CDCl<sub>3</sub>)  $\delta$ : 7.99 (d,  $J$  = 7.7 Hz, 2H), 7.54 (t,  $J$  = 7.4 Hz, 1H), 7.40 (t,  $J$  = 7.6 Hz, 2H), 7.30 (s, 1H), 7.21 (d,  $J$  = 8.2 Hz, 1H), 7.02 (d,  $J$  = 8.2 Hz, 1H), 4.42 (s, 2H), 3.34 (d,  $J$  = 16.8 Hz, 1H), 3.21 (d,  $J$  = 16.8 Hz, 1H), 2.35 (s, 3H), 2.28 (s, 3H), 1.93–1.86 (m, 2H), 1.05 (t,  $J$  = 7.4 Hz, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.9, 166.4, 153.6, 146.2, 136.0, 133.3, 131.4, 130.0, 129.8, 129.6, 128.5, 123.6, 122.5, 87.2, 67.6, 42.2, 28.8, 21.3, 20.9, 7.9; IR (cm<sup>-1</sup>): 3063, 2971, 2942, 2929, 2883, 1765, 1723, 1602, 1502, 1451, 1368, 1315, 1274, 1197, 1116, 1071, 1027, 929, 911, 713, 640; MS (ESI): calculated for C<sub>22</sub>H<sub>23</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 382.1654, found 382.1648.

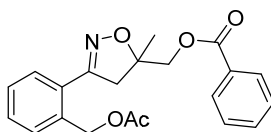
**[3-(2-Acetoxy-6-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8c)**

*Note: A mixture (212 mg) of 8c and 8c'' was isolated in 58% yield. 8c and 8c'' were not separable on silica gel. A mixture was used for NMR and MS analyses. Preparation of pure 8c was reported in the section of "Preparation of 8c".*



R<sub>f</sub> = 0.35 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.07 (d,  $J$  = 7.8 Hz, 2H), 7.57 (t,  $J$  = 7.3 Hz, 1H), 7.43 (t,  $J$  = 7.7 Hz, 2H), 7.30 (t,  $J$  = 7.8 Hz, 1H), 7.12 (d,  $J$  = 7.6 Hz, 1H), 6.99 (d,  $J$  = 8.1 Hz, 1H), 4.44 (s, 2H), 3.30 (d,  $J$  = 17.4 Hz, 1H), 3.00 (d,  $J$  = 17.4 Hz, 1H), 2.34 (s, 3H), 2.22 (s, 3H), 1.60 (s, 3H).

**[3-(2-Acetoxyethylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8c'')**



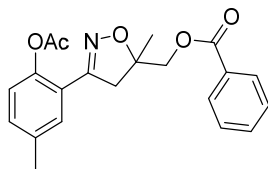
R<sub>f</sub> = 0.35 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.00 (d,  $J$  = 7.9 Hz, 2H), 7.55 (m, 2H), 7.42 (m, 5H), 5.43 (q,  $J$  = 14.3 Hz, 2H), 4.45 (m, 2H), 3.50 (d,  $J$  = 16.6 Hz, 1H), 3.23 (d,  $J$  = 16.6 Hz, 1H), 2.12 (s, 3H), 1.62 (s, 3H).

**8c and 8c''**

<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 170.2, 168.8, 165.91, 165.87, 156.1, 153.5, 148.8, 138.5, 135.4, 133.1, 133.0, 129.7, 129.5, 129.4, 128.7, 128.3, 128.2, 128.0, 127.7, 127.6, 127.5, 122.7, 120.0, 84.5, 84.2, 77.4, 68.2, 67.4, 64.8, 46.0, 44.9, 23.0, 22.7,

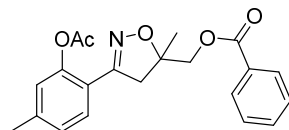
20.7, 20.6, 19.8; MS (ESI): calculated for C<sub>21</sub>H<sub>21</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 368.1498, found 368.1493.

**[3-(2-Acetoxy-5-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8d)**



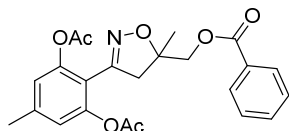
Light yellow oil (227 mg, 69% yield), R<sub>f</sub> = 0.22 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.00 (d, *J* = 7.8 Hz, 2H), 7.55 (t, *J* = 7.4 Hz, 1H), 7.41 (t, *J* = 7.6 Hz, 2H), 7.29 (s, 1H), 7.21 (d, *J* = 8.2 Hz, 1H), 7.02 (d, *J* = 8.2 Hz, 1H), 4.40 (q, *J* = 11.6 Hz, 2H), 3.43 (d, *J* = 16.7 Hz, 1H), 3.16 (d, *J* = 16.7 Hz, 1H), 2.35 (s, 3H), 2.28 (s, 3H), 1.58 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.9, 166.3, 153.9, 146.2, 136.0, 133.3, 131.5, 130.0, 129.8, 129.6, 128.5, 123.6, 122.4, 84.5, 68.8, 44.8, 23.1, 21.3, 20.9; IR (cm<sup>-1</sup>): 2977, 2934, 1765, 1723, 1602, 1502, 1452, 1369, 1351, 1278, 1197, 1114, 1071, 1027, 928, 908, 713; MS (ESI): calculated for C<sub>21</sub>H<sub>21</sub>NO<sub>5</sub> [M+H]<sup>+</sup> 368.1498, found 368.1495.

**[3-(2-Acetoxy-4-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8e)**



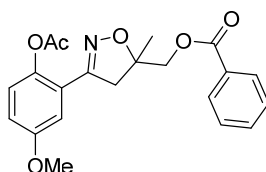
Light yellow oil (188 mg, 58% yield), R<sub>f</sub> = 0.23 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.01–7.99 (m, 2H), 7.57–7.53 (m, 1H), 7.41 (t, *J* = 7.9 Hz, 2H), 7.36 (d, *J* = 8.0 Hz, 1H), 7.09 (dd, *J* = 8.0, 0.8 Hz, 1H), 6.96 (d, *J* = 0.6 Hz, 1H), 4.39 (q, *J* = 11.6 Hz, 2H), 3.42 (d, *J* = 16.6 Hz, 1H), 3.15 (d, *J* = 16.6 Hz, 1H), 2.38 (s, 3H), 2.29 (s, 3H), 1.58 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 169.8, 166.3, 153.7, 148.3, 141.7, 133.3, 129.8, 129.6, 129.3, 128.5, 127.1, 124.5, 120.0, 84.2, 68.6, 44.7, 23.1, 21.31, 21.29; IR (cm<sup>-1</sup>): 2977, 2936, 1770, 1723, 1620, 1602, 1511, 1452, 1369, 1350, 1316, 1278, 1204, 1115, 1072, 1027, 953, 903, 820, 714; MS (ESI): calculated for C<sub>21</sub>H<sub>21</sub>NO<sub>5</sub> [M+Na]<sup>+</sup> 390.1317, found 390.1311.

**[3-(2,6-Diacetoxy-4-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8e')**



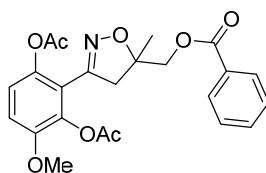
Yellow oil (150 mg, 40% yield),  $R_f = 0.25$  (3:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.06–8.04 (m, 2H), 7.59–7.55 (m, 1H), 7.44 (t,  $J = 7.8$  Hz, 2H), 6.88 (s, 2H), 4.39 (q,  $J = 11.6$  Hz, 2H), 3.35 (d,  $J = 17.0$  Hz, 1H), 3.00 (d,  $J = 17.0$  Hz, 1H), 2.37 (s, 3H), 2.19 (s, 6H), 1.54 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 168.9, 166.2, 150.8, 149.1, 141.5, 133.4, 129.8, 129.6, 128.5, 121.3, 114.4, 84.7, 67.8, 45.4, 23.0, 21.3, 20.9; IR ( $\text{cm}^{-1}$ ): 2976, 2934, 1773, 1722, 1628, 1450, 1369, 1277, 1188, 1113, 1026, 893, 714; MS (ESI): calculated for  $\text{C}_{23}\text{H}_{23}\text{NO}_7$   $[\text{M}+\text{H}]^+$  426.1553, found 426.1546.

**[3-(2-Acetoxy-5-methoxyphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8f)**



Light yellow oil (225 mg, 66% yield),  $R_f = 0.28$  (3:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.00 (dd,  $J = 7.9, 0.8$  Hz, 2H), 7.57–7.53 (m, 1H), 7.43–7.39 (m, 2H), 7.06–7.02 (m, 2H), 6.94 (dd,  $J = 8.8, 3.0$  Hz, 1H), 4.40 (q,  $J = 11.6$  Hz, 2H), 3.80 (s, 3H), 3.41 (d,  $J = 16.7$  Hz, 1H), 3.14 (d,  $J = 16.7$  Hz, 1H), 2.27 (s, 3H), 1.58 (s, 3H);  $^{13}\text{C NMR}$  (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 170.0, 166.2, 157.2, 153.7, 141.8, 133.3, 129.8, 129.5, 128.5, 124.6, 123.4, 115.9, 114.4, 84.7, 68.5, 55.7, 44.5, 23.0, 21.2; IR ( $\text{cm}^{-1}$ ): 3071, 2974, 2939, 1764, 1723, 1602, 1569, 1504, 1452, 1370, 1277, 1194, 1114, 1039, 933, 713; MS (ESI): calculated for  $\text{C}_{21}\text{H}_{21}\text{NO}_6$   $[\text{M}+\text{H}]^+$  384.1447, found 384.1443.

**[3-(2,6-Diacetoxy-3-methoxyphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8f')**

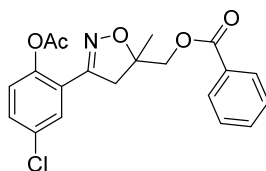


Light yellow oil (63 mg, 14% yield),  $R_f = 0.34$  (2:1 hexanes/AcOEt).  $^1\text{H NMR}$  (400



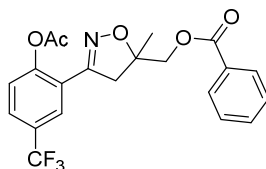
MHz, CDCl<sub>3</sub>)  $\delta$ : 8.05–8.03 (m, 2H), 7.56 (t,  $J = 7.4$  Hz, 1H), 7.43 (t,  $J = 7.8$  Hz, 2H), 7.00 (q,  $J = 9.0$  Hz, 2H), 4.39 (m, 2H), 3.82 (s, 3H), 3.33 (d,  $J = 17.1$  Hz, 1H), 2.99 (d,  $J = 17.1$  Hz, 1H), 2.195 (s, 3H), 2.191 (s, 3H), 1.54 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.5, 168.2, 166.3, 150.7, 149.6, 141.9, 138.7, 133.4, 129.9, 129.6, 128.6, 120.6, 118.7, 113.2, 85.0, 67.8, 56.5, 45.5, 23.1, 20.9, 20.5; IR (cm<sup>-1</sup>): 2974, 2940, 2845, 1771, 1722, 1601, 1584, 1483, 1452, 1439, 1369, 1337, 1275, 1192, 1117, 1072, 1028, 914, 818, 789, 714, 503; MS (ESI): calculated for C<sub>23</sub>H<sub>23</sub>NO<sub>8</sub> [M+H]<sup>+</sup> 442.1502, found 442.1495.

**[3-(2-Acetoxy-5-chlorophenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8g)**



Light yellow oil (51 mg, 24% yield),  $R_f = 0.21$  (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.00 (d,  $J = 4.5$  Hz, 2H), 7.56 (t,  $J = 7.5$  Hz, 1H), 7.47–7.37 (m, 4H), 7.09 (d,  $J = 8.6$  Hz, 1H), 4.40 (q,  $J = 11.6$  Hz, 2H), 3.42 (d,  $J = 16.7$  Hz, 1H), 3.15 (d,  $J = 16.7$  Hz, 1H), 2.30 (s, 3H), 1.59 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 169.5, 166.3, 152.9, 146.9, 133.5, 131.8, 130.7, 129.9, 129.5, 129.3, 128.6, 125.3, 124.5, 85.1, 68.5, 44.4, 23.1, 21.3; IR (cm<sup>-1</sup>): 3072, 2977, 2935, 1770, 1723, 1602, 1492, 1452, 1371, 1345, 1316, 1277, 1191, 1114, 1072, 1027, 930, 906, 753, 713; MS (ESI): calculated for C<sub>20</sub>H<sub>18</sub>ClNO<sub>5</sub> [M+H]<sup>+</sup> 388.0952, found 388.0946.

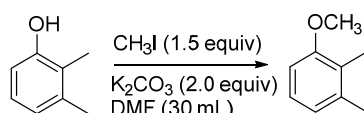
**[3-(2-Acetoxy-5-trifluoromethylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8h)**



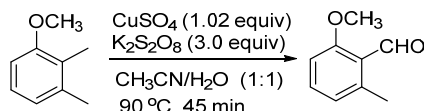
Light yellow oil (19 mg, 25% yield),  $R_f = 0.21$  (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.99 (dd,  $J = 8.5, 1.3$  Hz, 2H), 7.75 (d,  $J = 1.6$  Hz, 1H), 7.67 (dd,  $J = 8.4, 1.8$  Hz, 1H), 7.57–7.53 (m, 1H), 7.40 (t,  $J = 7.9$  Hz, 2H), 7.28 (d,  $J = 8.4$  Hz, 1H), 4.42 (q,  $J = 11.6$  Hz, 2H), 3.46 (d,  $J = 16.7$  Hz, 1H), 3.20 (d,  $J = 16.7$  Hz, 1H), 2.31 (s,

3H), 1.60 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.1, 166.3, 152.9, 150.9, 133.5, 129.8, 129.5, 129.0, 128.6, 127.71 (q,  $J_{\text{C-F}} = 4.0$  Hz), 126.65 (q,  $J_{\text{C-F}} = 4.0$  Hz), 124.8, 124.0, 123.5 (q,  $J_{\text{C-F}} = 273$  Hz,  $\text{CF}_3$ ), 85.4, 68.5, 44.4, 23.1, 21.2; IR ( $\text{cm}^{-1}$ ): 3073, 2978, 2937, 1771, 1724, 1601, 1452, 1371, 1360, 1317, 1275, 1192, 1128, 1072, 1049, 1028, 932, 907, 802, 714; MS (ESI): calculated for  $\text{C}_{21}\text{H}_{18}\text{F}_3\text{NO}_5$   $[\text{M}+\text{Na}]^+$  444.1035, found 444.1031.

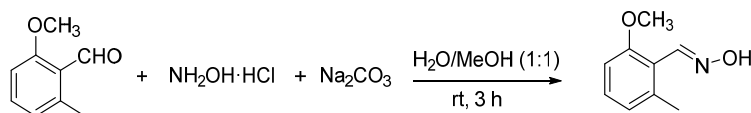
### Preparation of **8c**<sup>10, 11</sup>



A 250 mL round bottom flask were charged with 2,3-dimethylphenol (12.23 g, 100 mmol),  $\text{CH}_3\text{I}$  (9.38 mL, 150 mmol),  $\text{K}_2\text{CO}_3$  (27.63 g, 200 mmol) and DMF (30 mL). The flask was closed tightly, and vigorously stirred at 55 °C for 24 h. Then, the mixture was poured into water (200 mL) and extracted with  $\text{CH}_2\text{Cl}_2$  ( $3 \times 50$  mL). The combined organic phases were washed with water (200 mL), brine (200 mL), dried over  $\text{Na}_2\text{SO}_4$ , filtered, and evaporated under reduced pressure. The residue was purified by silica gel chromatography to give 2,3-dimethyl anisole as a colorless liquid. Yield: 5.73 g, 84%.  $R_f = 0.60$  (10:1 hexanes/AcOEt).

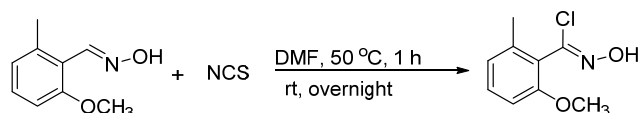


A 100 mL round bottom flask were charged with 2,3-dimethyl anisole (1.36 g, 10 mmol),  $\text{CuSO}_4$  (1.63 g, 10.2 mmol),  $\text{K}_2\text{S}_2\text{O}_8$  (8.11 g, 30 mmol) and a mixture of  $\text{CH}_3\text{CN}/\text{H}_2\text{O}$  (1:1, 30 mL). The suspension was vigorously stirred at 90 °C for 45 min before it was allowed to cool to rt. The non-dissolved copper salt was removed by filtration.  $\text{CH}_2\text{Cl}_2$  was added and the phases were separated. The aqueous phase was extracted with  $\text{CH}_2\text{Cl}_2$  ( $3 \times 20$  mL). The combined organic layers were dried over  $\text{Na}_2\text{SO}_4$ , filtered, and evaporated under reduced pressure. The crude product was purified by chromatography. Yield: 957 mg, 65%.  $R_f = 0.50$  (5:1 hexanes/AcOEt).



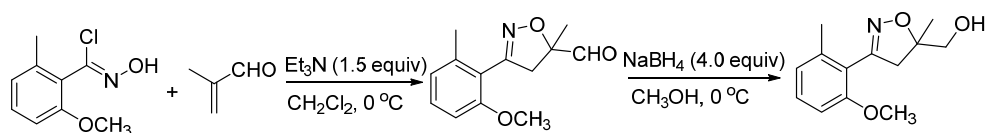
To a suspension of 2-methoxy-6-methylbenzaldehyde (947 mg, 6.3 mmol, 1.0 equiv)

and hydroxylamine hydrochloride (487 mg, 7 mmol, 1.1 equiv) in a 1:1 mixture of H<sub>2</sub>O/methanol (20 mL), an aqueous solution of Na<sub>2</sub>CO<sub>3</sub> (0.75 M, 10 mL, 0.5 equiv) was slowly added. The resulting mixture was stirred at rt for 3 h, and then methanol was evaporated. The aqueous phase was extracted with CH<sub>2</sub>Cl<sub>2</sub>. The combined organic layers were washed with brine, dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated to give the crude benzaldoxime.

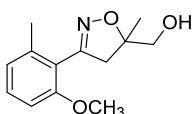


To a solution of the crude benzaldoxime (925 mg, 5.6 mmol, 1.0 equiv) in DMF (20 mL) at 50 °C was added dropwise a solution of *N*-chlorosuccinimide (747 mg, 5.6 mmol, 1.0 equiv) in DMF (15 mL) over 30 min. The mixture was stirred at 50 °C for another 1 h. Then it was allowed to stir at rt overnight. The reaction was quenched by pouring the mixture into ice-water. The mixture was extracted with CH<sub>2</sub>Cl<sub>2</sub>. The combined organic extracts were washed with ice-water and brine, dried over Na<sub>2</sub>SO<sub>4</sub>, and concentrated under reduced pressure to give the crude  $\alpha$ -chlorobenzaldoxime.

### [3-(2-Methoxy-6-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methanol



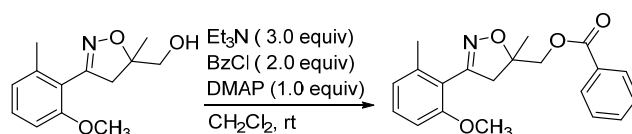
To a solution of the  $\alpha$ -chlorobenzaldoxime (981 mg, 4.9 mmol, 1.0 equiv) in CH<sub>2</sub>Cl<sub>2</sub> (20 mL) were added Et<sub>3</sub>N (1.03 mL, 7.4 mmol, 1.5 equiv) and 2-methylacrolein (0.5 mL, 4.9 mmol, 1.0 equiv). The mixture was stirred at 0 °C for 2 h before the solvent was removed under high vacuum. The crude product in CH<sub>3</sub>OH (10 mL) was cooled to 0 °C before NaBH<sub>4</sub> (741 mg, 19.6 mmol, 4.0 equiv) was added. The mixture was stirred at 0 °C for 2 h. The solvent was evaporated and the crude product purified by silica gel chromatography.



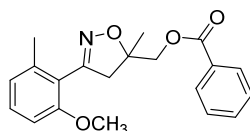
Yellow oil (901 mg, 83% yield), *R*<sub>f</sub> = 0.41 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 7.22 (t, *J* = 8.0 Hz, 1H), 6.83 (d, *J* = 7.6 Hz, 1H), 6.73 (d, *J* = 8.3 Hz, 1H),

3.78 (s, 3H), 3.69 (dd,  $J = 11.9, 4.3$  Hz, 1H), 3.60 (dd,  $J = 11.8, 7.6$  Hz, 1H), 3.31 (d,  $J = 17.0$  Hz, 1H), 2.92 (d,  $J = 17.0$  Hz, 1H), 2.48–2.43 (m, 1H), 2.31 (s, 3H), 1.44 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 158.0, 156.5, 138.6, 130.0, 122.7, 118.9, 108.2, 86.6, 67.1, 55.7, 45.5, 22.5, 19.9; IR ( $\text{cm}^{-1}$ ): 3379, 2932, 2839, 1585, 1472, 1437, 1333, 1265, 1188, 1082, 1003, 910, 887, 777; MS (ESI): calculated for  $\text{C}_{13}\text{H}_{17}\text{NO}_3$   $[\text{M}+\text{H}]^+$  236.1287, found 236.1280.

### [3-(2-Methoxy-6-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate

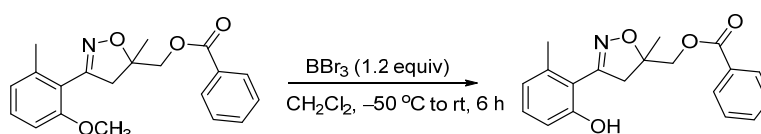


To a solution of the starting isoxazoline (828 mg, 3.7 mmol) in  $\text{CH}_2\text{Cl}_2$  (15 mL) were added  $\text{Et}_3\text{N}$  (1.56 mL, 11.1 mmol), DMAP (452 mg, 3.7 mmol) and  $\text{PhCOCl}$  (856  $\mu\text{L}$ , 7.4 mmol). The mixture was stirred at rt for 2 h before the solvent was evaporated. The crude product was purified by silica gel chromatography.



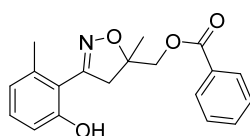
Yellow oil (995 mg, 83% yield),  $R_f = 0.38$  (5:1 hexanes/ $\text{AcOEt}$ ).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.09 (dd,  $J = 8.3, 1.3$  Hz, 2H), 7.59–7.55 (m, 1H), 7.43 (t,  $J = 7.9$  Hz, 2H), 7.23 (t,  $J = 8.0$  Hz, 1H), 6.85 (d,  $J = 7.6$  Hz, 1H), 6.72 (d,  $J = 8.3$  Hz, 1H), 4.46 (s, 2H), 3.70 (s, 3H), 3.40 (d,  $J = 17.1$  Hz, 1H), 3.04 (d,  $J = 17.1$  Hz, 1H), 2.35 (s, 3H), 1.61 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.4, 158.1, 155.5, 138.7, 133.2, 130.0, 129.8, 128.4, 122.8, 118.7, 108.1, 84.4, 68.0, 55.5, 46.5, 23.2, 20.1; IR ( $\text{cm}^{-1}$ ): 3376, 2976, 2938, 2878, 1722, 1585, 1466, 1447, 1377, 1279, 1177, 1115, 1070, 1026, 955, 804, 781, 762, 712; MS (ESI): calculated for  $\text{C}_{20}\text{H}_{21}\text{NO}_4$   $[\text{M}+\text{H}]^+$  340.1549, found 340.1545.

### [3-(2-Hydroxy-6-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate



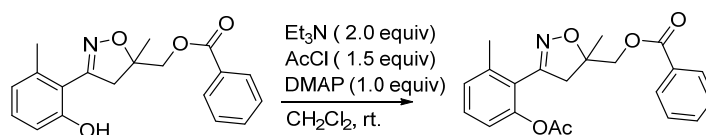
A dry Schlenk tube were charged with the starting isoxazoline (961 mg, 2.96 mmol,

1.0 equiv) and CH<sub>2</sub>Cl<sub>2</sub> (15 mL). The mixture was cooled to –50 °C before BBr<sub>3</sub> (474 μL, 3.55 mmol, 1.2 equiv) was added. The mixture was allowed to warm to rt over 6 h. H<sub>2</sub>O was added and the phases separated. The aqueous layer was extracted with CH<sub>2</sub>Cl<sub>2</sub> (3 × 20 mL). The combined organic layers were dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated. The crude product was purified by silica gel chromatography.

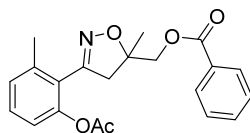


Yellow oil (700 mg, 76% yield), *R*<sub>f</sub> = 0.30 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 7.97 (dd, *J* = 8.4, 1.4 Hz, 2H), 7.56–7.52 (m, 1H), 7.39 (t, *J* = 7.9 Hz, 2H), 7.16 (t, *J* = 7.9 Hz, 1H), 6.90 (d, *J* = 8.2 Hz, 1H), 6.71 (d, *J* = 7.4 Hz, 1H), 4.42 (q, *J* = 11.7 Hz, 2H), 3.62 (d, *J* = 16.8 Hz, 1H), 3.38 (d, *J* = 16.8 Hz, 1H), 2.43 (s, 3H), 1.62 (s, 3H); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 166.2, 158.4, 157.8, 137.5, 133.4, 131.0, 129.7, 129.4, 128.5, 123.0, 115.3, 114.2, 84.5, 68.5, 46.9, 22.9, 22.7; IR (cm<sup>-1</sup>): 2972, 2938, 2837, 1722, 1584, 1470, 1452, 1375, 1335, 1279, 1263, 1177, 1113, 1072, 910, 891, 802, 777, 712; MS (ESI): calculated for C<sub>19</sub>H<sub>19</sub>NO<sub>4</sub> [M+H]<sup>+</sup> 326.1392, found 326.1388.

### [3-(2-Acetoxy-6-methylphenyl)-5-methyl-2-isoxazolin-5-yl]methyl benzoate (8c)



To a solution of the starting isoxazoline (368 mg, 1.2 mmol) in CH<sub>2</sub>Cl<sub>2</sub> (15 mL) were added Et<sub>3</sub>N (338 μL, 2.4 mmol), DMAP (147 mg, 1.2 mmol) and AcCl (126 μL, 1.8 mmol). The mixture was stirred at rt for 2 h before the solvent was evaporated. The crude product was purified by silica gel chromatography.

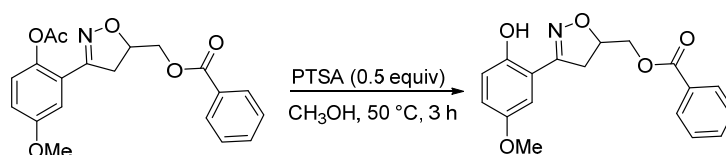


Light yellow oil (436 mg, 100% yield), *R*<sub>f</sub> = 0.35 (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 8.06 (d, *J* = 7.8 Hz, 2H), 7.57 (t, *J* = 7.3 Hz, 1H), 7.43 (t, *J* = 7.7 Hz, 2H), 7.29 (t, *J* = 7.8 Hz, 1H), 7.10 (d, *J* = 7.6 Hz, 1H), 6.98 (d, *J* = 8.1 Hz, 1H), 4.44

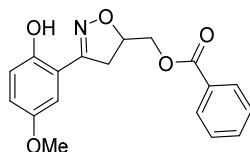
(s, 2H), 3.30 (d,  $J = 17.4$  Hz, 1H), 2.99 (d,  $J = 17.4$  Hz, 1H), 2.33 (s, 3H), 2.21 (s, 3H), 1.59 (s, 3H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 169.1, 166.2, 153.6, 149.0, 138.8, 133.4, 130.0, 129.7, 129.6, 128.5, 128.0, 122.8, 120.2, 84.7, 67.7, 46.3, 23.3, 20.9, 20.1; IR ( $\text{cm}^{-1}$ ): 3065, 3028, 2976, 2934, 2880, 1767, 1721, 1601, 1462, 1450, 1371, 1335, 1315, 1277, 1196, 1113, 1070, 1026, 957, 903, 868, 802, 760, 712, 602; MS (ESI): calculated for  $\text{C}_{21}\text{H}_{21}\text{NO}_5$   $[\text{M}+\text{H}]^+$  368.1498, found 368.1493.

## Preparations of **9**, **10**, **11**

### [3-(2-Hydroxy-5-methoxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (**9**)

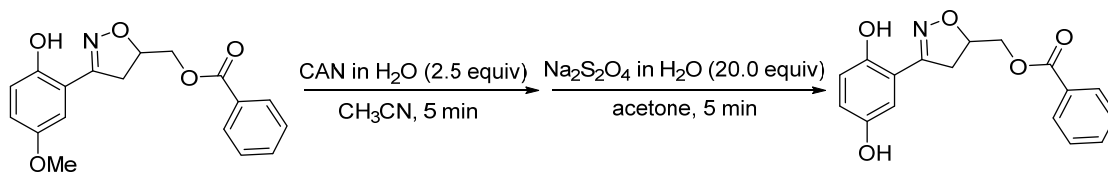


PTSA (165 mg, 0.96 mmol) was added to a solution of **4h** (709 mg, 1.92 mmol) in  $\text{CH}_3\text{OH}$ , then the mixture was stirred at  $50\text{ }^\circ\text{C}$  for 3 h before the solvent was evaporated. The crude product (**9**) was purified by silica gel chromatography.



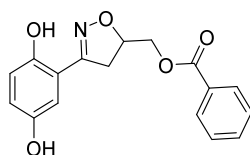
Light yellow oil (519 mg, 83% yield),  $R_f = 0.36$  (3:1 hexanes/ $\text{AcOEt}$ ).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 9.32 (s, 1H, OH), 7.99 (m, 2H, ArH), 7.57–7.53 (m, 1H, ArH), 7.40 (t,  $J = 8.0$  Hz, 2H, ArH), 6.99 (d,  $J = 9.0$  Hz, 1H, ArH), 6.93 (dd,  $J = 9.0, 2.9$  Hz, 1H, ArH), 6.7 (d,  $J = 2.9$  Hz, 1H, ArH), 5.13–5.06 (m, 1H, OCH), 4.54 (dd,  $J = 12.0, 4.0$  Hz, 1H,  $\text{OCH}_2$ ), 4.47 (dd,  $J = 12.0, 5.3$  Hz, 1H,  $\text{OCH}_2$ ), 3.77 (s, 3H,  $\text{OCH}_3$ ), 3.60 (dd,  $J = 16.6, 10.8$  Hz, 1H,  $\text{N}=\text{CCH}_2$ ), 3.34 (dd,  $J = 16.7, 7.0$  Hz, 1H,  $\text{N}=\text{CCH}_2$ );  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.4, 158.2, 152.7, 151.7, 133.5, 129.8, 129.5, 128.6, 118.0, 117.8, 113.8, 113.3, 77.5, 65.3, 56.1, 37.7; IR ( $\text{cm}^{-1}$ ): 3244, 2942, 1722, 1497, 1399, 1271, 1120, 942, 712; MS (ESI): calculated for  $\text{C}_{18}\text{H}_{17}\text{NO}_5$   $[\text{M}+\text{Na}]^+$  350.1004, found 350.1000.

### [3-(2,5-Dihydroxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (**10**)



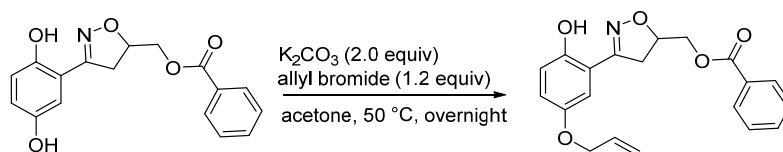
A solution of CAN (2.18 g, 3.98 mmol) in H<sub>2</sub>O (10 mL) was added to a solution of **9** (0.52 g, 1.59 mmol) in CH<sub>3</sub>CN (15 mL) at room temperature. After 5 min, the aq. mixture was extracted with CH<sub>2</sub>Cl<sub>2</sub> (3 × 30 mL). The combined organic layers were dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated to give the crude benzoquinone product.

To a solution of the crude benzoquinone in acetone (15 mL) was added a solution of Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub> (5.5 g, 31.8 mmol, 20.0 equiv) in H<sub>2</sub>O (5 mL) at 0 °C. After 5 min, the reaction mixture was diluted with brine (15 mL) and extracted with AcOEt (3 × 15 mL). The combined organic phases were dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated. The crude product was purified by silica gel chromatography.



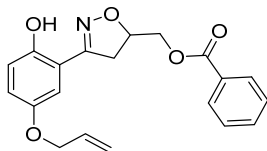
White solid (389 mg, 78% yield), *R*<sub>f</sub> = 0.13 (3:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>) δ: 9.33 (s, 1H, OH), 7.99–7.97 (m, 2H, ArH), 7.57–7.54 (m, 1H, ArH), 7.40 (t, *J* = 7.7 Hz, 2H, ArH), 6.93 (d, *J* = 8.8 Hz, 1H, ArH), 6.84 (dd, *J* = 8.8, 2.9 Hz, 1H, ArH), 6.68 (d, *J* = 2.9 Hz, 1H, ArH), 5.12–5.05 (m, 1H, OCH), 4.77 (s, 1H, OH), 4.53 (dd, *J* = 12.0, 4.0 Hz, 1H, OCH<sub>2</sub>), 4.46 (dd, *J* = 12.0, 5.4 Hz, 1H, OCH<sub>2</sub>), 3.55 (dd, *J* = 16.7, 10.9 Hz, 1H, N=CCH<sub>2</sub>), 3.29 (dd, *J* = 16.7, 6.9 Hz, 1H, N=CCH<sub>2</sub>); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>) δ: 166.4, 158.0, 151.6, 148.3, 133.5, 129.8, 129.4, 128.6, 119.5, 117.9, 114.3, 113.8, 77.5, 65.2, 37.561; IR (cm<sup>-1</sup>): 1721, 1495, 1273, 1122, 784, 712; MS (ESI): calculated for C<sub>17</sub>H<sub>15</sub>NO<sub>5</sub> [M+Na]<sup>+</sup> 336.0848, found 336.0844.

### [3-(5-Allyloxy-2-hydroxyphenyl)-2-isoxazolin-5-yl]methyl benzoate



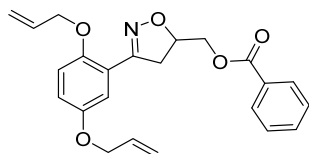
To a solution of **10** (335 mg, 1.07 mmol) in acetone (20 mL) were added K<sub>2</sub>CO<sub>3</sub> (296

mg, 2.14 mmol) and allyl bromide (107  $\mu$ L, 1.28 mmol). The mixture was stirred at 50  $^{\circ}$ C overnight. Then the solids were filtered off, the filtrate was concentrated under reduced pressure. The crude product was purified by silica gel chromatography.



White solid (220 mg, 58% yield),  $R_f$  = 0.21 (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 9.33 (s, 1H, OH), 7.98 (d,  $J$  = 7.2 Hz, 2H, ArH), 7.54 (t,  $J$  = 7.4 Hz, 1H, ArH), 7.40 (t,  $J$  = 7.8 Hz, 2H, ArH), 6.95 (m, 2H, ArH), 6.74 (d,  $J$  = 2.6 Hz, 1H, ArH), 6.07–5.98 (m, 1H,  $\text{CH}=\text{CH}_2$ ), 5.39 (dd,  $J$  = 17.2, 1.5 Hz, 1H,  $\text{CH}=\text{CH}_2$ ), 5.28 (dd,  $J$  = 10.4, 1.2 Hz, 1H,  $\text{CH}=\text{CH}_2$ ), 5.12–5.05 (m, 1H, OCH), 4.55–4.44 (m, 4H,  $\text{OCH}_2$ ), 3.58 (dd,  $J$  = 16.7, 10.8 Hz, 1H,  $\text{N}=\text{CCH}_2$ ), 3.32 (dd,  $J$  = 16.7, 7.0 Hz, 1H,  $\text{N}=\text{CCH}_2$ );  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.3, 158.2, 151.8, 151.6, 133.44, 133.36, 129.8, 129.4, 128.6, 118.8, 117.9, 117.7, 114.5, 113.7, 69.9, 65.2, 37.6; IR ( $\text{cm}^{-1}$ ): 3224, 2922, 1722, 1496, 1402, 1270, 1201, 1119, 713; MS (ESI): calculated for  $\text{C}_{20}\text{H}_{19}\text{NO}_5$   $[\text{M}+\text{Na}]^+$  376.1161, found 376.1158.

### **[3-(2,5-Diallyloxyphenyl)-2-isoxazolin-5-yl]methyl benzoate**

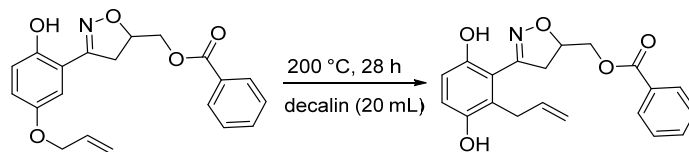


Light yellow oil (95 mg, 22% yield),  $R_f$  = 0.30 (5:1 hexanes/AcOEt).  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$ : 8.03 (d,  $J$  = 8.0 Hz, 2H, ArH), 7.55 (t,  $J$  = 7.4 Hz, 1H, ArH), 7.40 (t,  $J$  = 7.7 Hz, 2H, ArH), 7.35 (d,  $J$  = 3.1 Hz, 1H, ArH), 6.94 (dd,  $J$  = 9.0, 3.1 Hz, 1H, ArH), 6.85 (d,  $J$  = 9.0 Hz, 1H, ArH), 6.08–5.94 (m, 2H,  $\text{CH}=\text{CH}_2$ ), 5.42–5.32 (m, 2H,  $\text{CH}=\text{CH}_2$ ), 5.28–5.23 (m, 2H,  $\text{CH}=\text{CH}_2$ ), 5.10–5.03 (m, 1H, OCH), 4.50–4.40 (m, 6H,  $\text{OCH}_2$ ), 3.65 (dd,  $J$  = 17.6, 10.8 Hz, 1H,  $\text{N}=\text{CCH}_2$ ), 3.41 (dd,  $J$  = 17.6, 6.7 Hz, 1H,  $\text{N}=\text{CCH}_2$ );  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$ : 166.4, 155.9, 152.7, 151.1, 133.3, 133.2, 133.0, 129.8, 129.7, 128.4, 119.3, 118.6, 118.2, 117.7, 114.5, 114.4, 78.5, 70.2, 69.4, 65.8, 39.9; IR ( $\text{cm}^{-1}$ ): 3081, 2925, 2867, 1722, 1494, 1429, 1273, 1202, 1118, 1024, 998, 926, 804, 713; MS (ESI): calculated for  $\text{C}_{23}\text{H}_{23}\text{NO}_5$   $[\text{M}+\text{Na}]^+$  416.1474, found

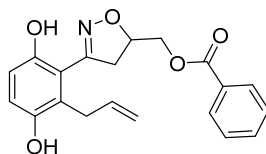


416.1467.

**[3-(2-Allyl-3,6-dihydroxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (11)**



A mixture of [3-(5-allyloxy-2-hydroxyphenyl)-2-isoxazolin-5-yl]methyl benzoate (92 mg, 0.26 mmol) and decalin (20 mL) was stirred at 200 °C under N<sub>2</sub> for 28 h. The crude product (**11**) was purified by silica gel chromatography.

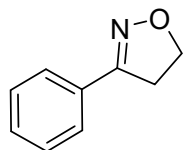


Colorless oil (92 mg, 100% yield),  $R_f = 0.21$  (5:1 hexanes/AcOEt). <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)  $\delta$ : 8.44 (s, 1H, OH), 7.99 (m, 2H, ArH), 7.57–7.53 (m, 1H, ArH), 7.40 (t,  $J = 7.9$  Hz, 2H, ArH), 6.81 (d,  $J = 8.8$  Hz, 1H, ArH), 6.78 (d,  $J = 8.8$  Hz, 1H, ArH), 6.02–5.92 (m, 1H, CH=CH<sub>2</sub>), 5.17 (s, 1H, OH), 5.09–5.02 (m, 2H, OCH, CH=CH<sub>2</sub>), 4.90 (dd,  $J = 17.3, 1.6$  Hz, 1H, CH=CH<sub>2</sub>), 4.51–4.42 (m, 2H, OCH<sub>2</sub>), 3.57 (dd,  $J = 17.0, 11.8$  Hz, 1H, N=CCH<sub>2</sub>), 3.46–3.44 (m, 2H, CH<sub>2</sub>=CHCH<sub>2</sub>), 3.33 (dd,  $J = 17.0, 6.7$  Hz, 1H, N=CCH<sub>2</sub>); <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)  $\delta$ : 166.6, 157.3, 150.5, 147.7, 135.9, 133.5, 129.9, 129.4, 128.6, 124.5, 119.2, 116.5, 115.9, 115.6, 78.0, 65.4, 40.6, 31.7; IR (cm<sup>-1</sup>): 3419, 2925, 1720, 1699, 1489, 1273, 1122, 911, 811, 734.9, 713; MS (ESI): calculated for C<sub>20</sub>H<sub>20</sub>NO<sub>5</sub> [M+Na]<sup>+</sup> 376.1161, found 376.1158.

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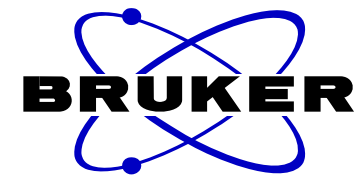


**1a**

7.7057  
7.6996  
7.6940  
7.6906  
7.6815  
7.4189  
7.4117  
7.4074  
7.4026  
7.2600

4.5176  
4.4923  
4.4671

3.3695  
3.3441  
3.3189

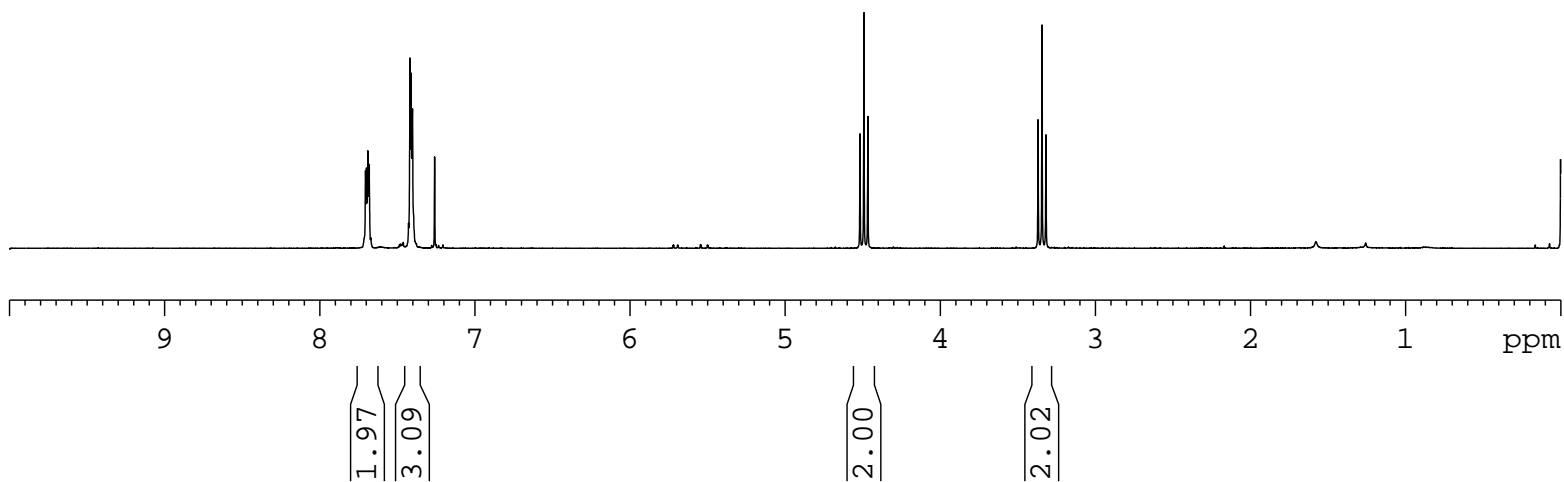


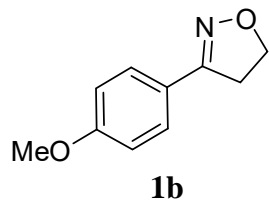
```

NAME          CWG150507-1
EXPNO         1
PROCNO        1
Date_         20150507
Time          18.12
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            298.2 K
D1            1.0000000 sec
TD0           1
  
```

```

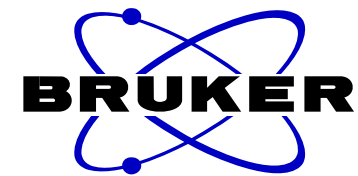
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700034 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```





7.6419  
7.6196  
7.2600  
6.9357  
6.9134

4.4819  
4.4568  
4.4317  
3.8430  
3.3390  
3.3139  
3.2889

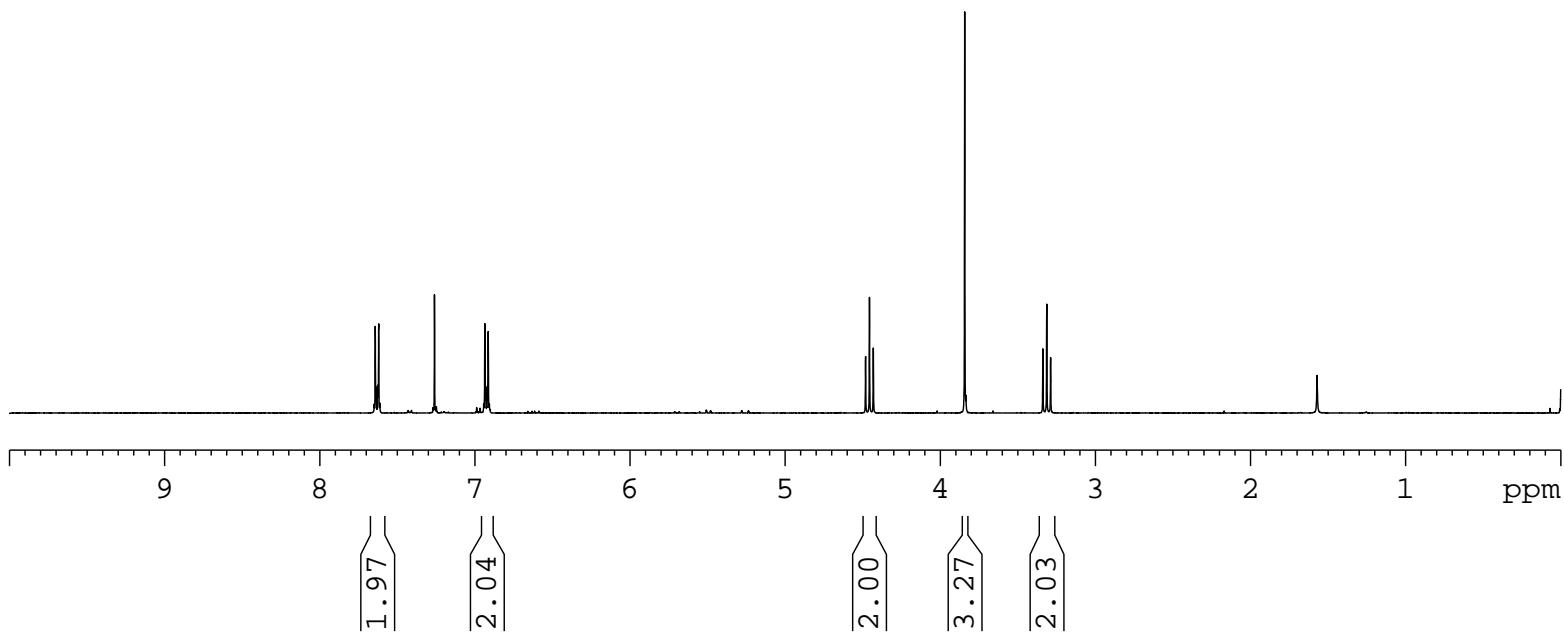


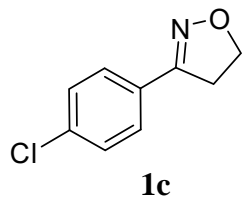
```

NAME          CWG150616-1
EXPNO         1
PROCNO        1
Date_         20150617
Time          10.41
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.7 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

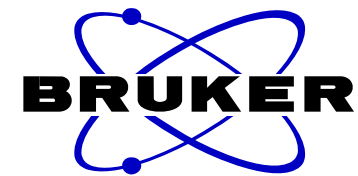




7.6323  
7.6107  
7.3923  
7.3707  
7.2599

4.5282  
4.5029  
4.4775

3.3397  
3.3143  
3.2890

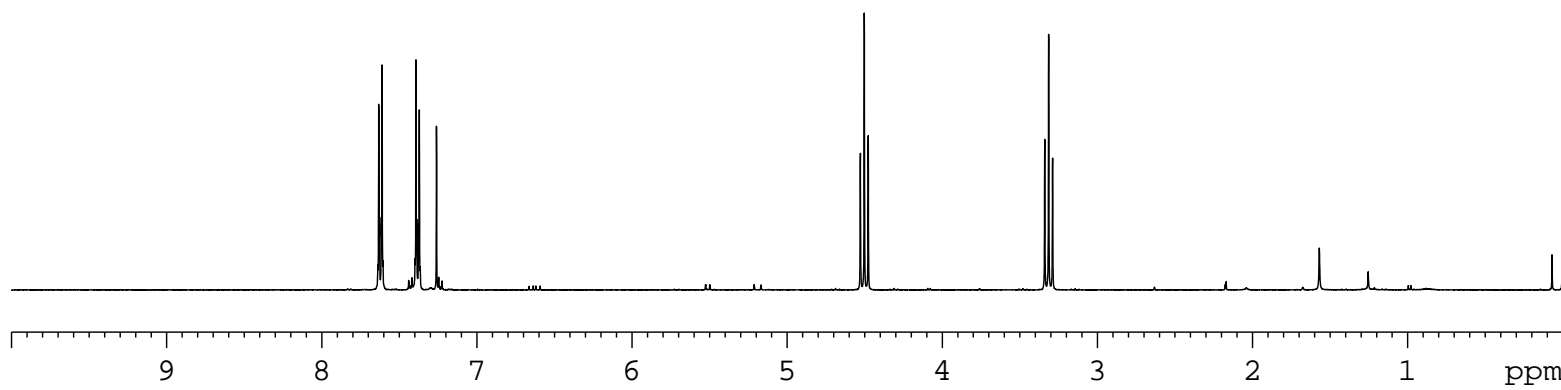


```

NAME CWG150613-1
EXPNO 1
PROCNO 1
Date_ 20150613
Time_ 19.45
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 296.7 K
D1 1.0000000 sec
TD0 1
  
```

```

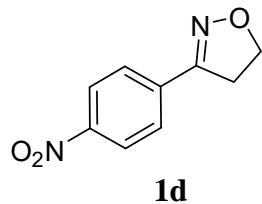
===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700033 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
  
```



1.97  
1.95

2.00

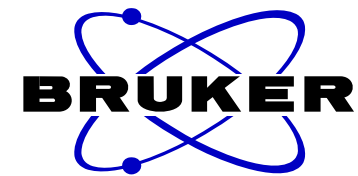
2.02



8.2866  
8.2642  
7.8677  
7.8453

4.6182  
4.5925  
4.5668

3.4047  
3.3789  
3.3533

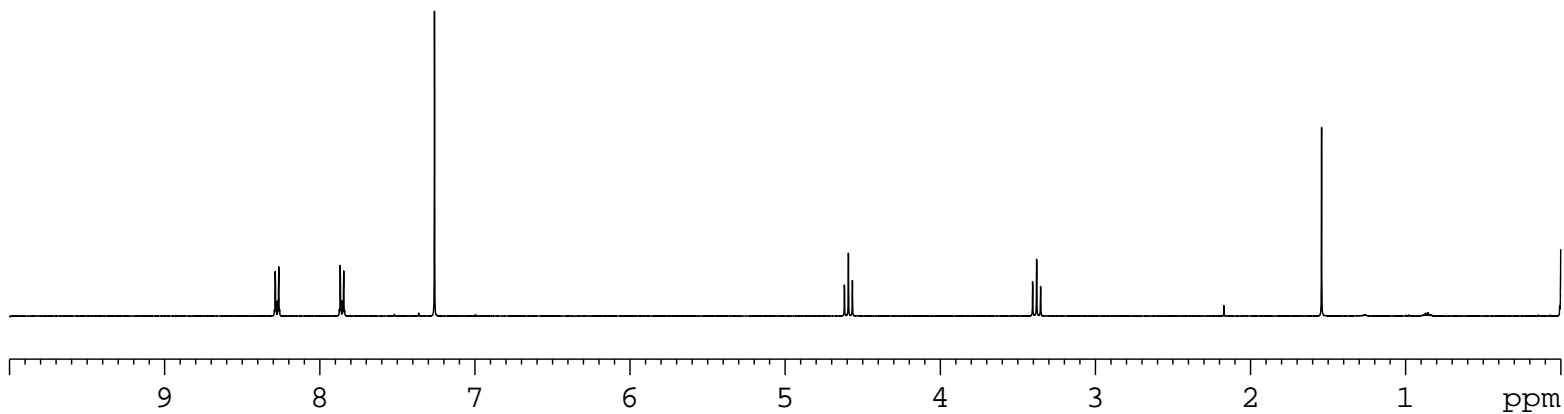


```

NAME      CWG150630-2-pure
EXPNO     1
PROCNO    1
Date_     20150701
Time      21.55
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   CDC13
NS         16
DS         2
SWH       8223.685 Hz
FIDRES    0.125483 Hz
AQ         3.9846387 sec
RG         203
DW         60.800 usec
DE         6.50 usec
TE         296.4 K
D1         1.00000000 sec
TD0        1
  
```

```

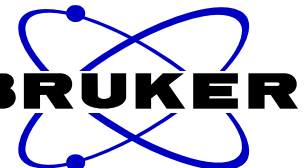
===== CHANNEL f1 =====
NUC1      1H
P1         13.80 usec
PL1        -1.00 dB
PL1W      13.18669796 W
SFO1      400.1724712 MHz
SI         32768
SF         400.1700033 MHz
WDW        EM
SSB         0
LB         0.30 Hz
GB         0
PC         1.00
  
```



1.90  
1.94

2.00

2.02



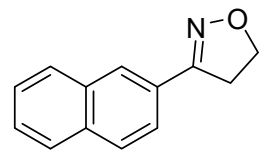
NAME CWG150610-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150610  
Time 18.40  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 181  
DW 60.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

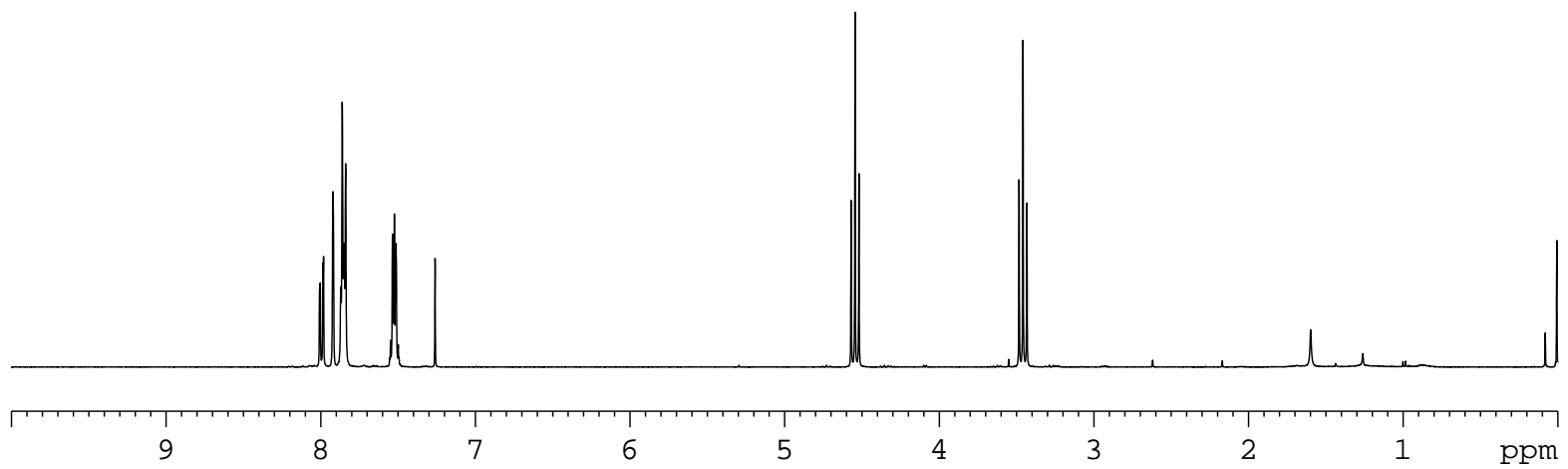
8.0074  
8.0035  
7.9858  
7.9818  
7.9212  
7.8702  
7.8605  
7.8496  
7.8391  
7.5481  
7.5360  
7.5333  
7.5235  
7.5146  
7.5124  
7.4985  
7.2601

4.5701  
4.5448  
4.5195

3.4839  
3.4588  
3.4335



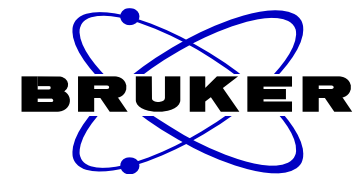
1e



1.00  
1.02  
3.09  
2.05

2.05

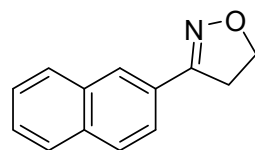
2.07



NAME CWG150610-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150916  
Time 13.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 97  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228242 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



1e

156.99

134.04

133.03

128.54

128.41

127.87

127.12

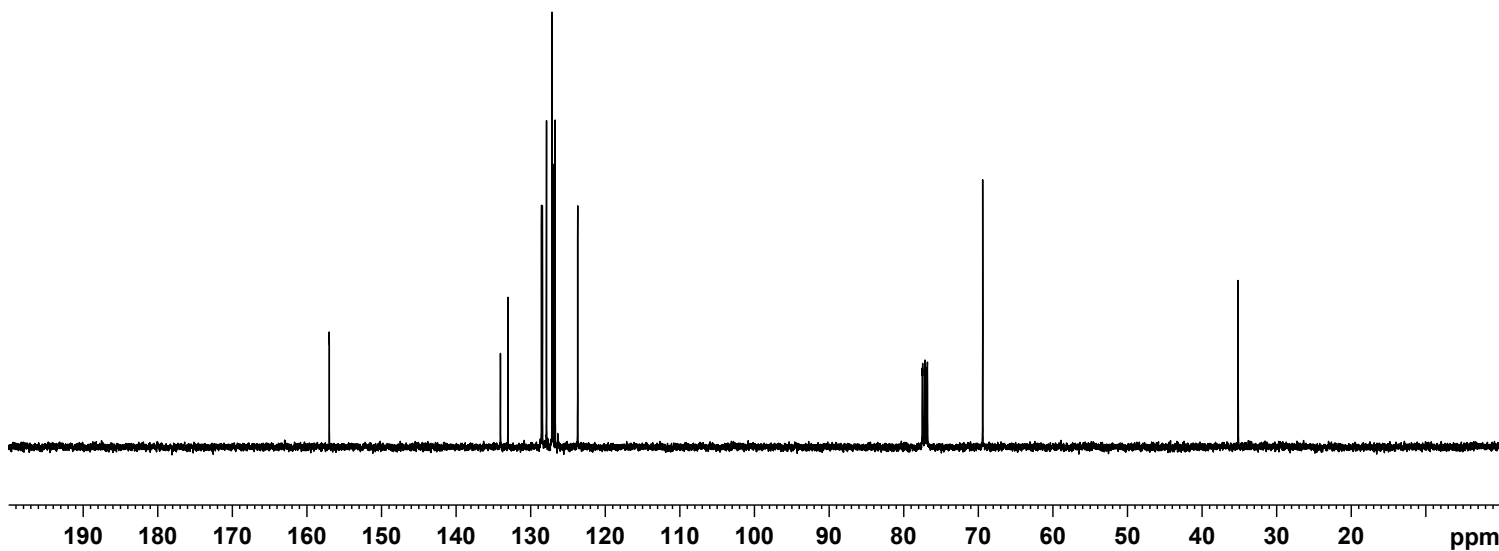
126.97

126.70

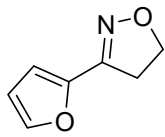
123.69

69.39

35.17





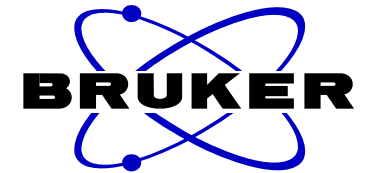
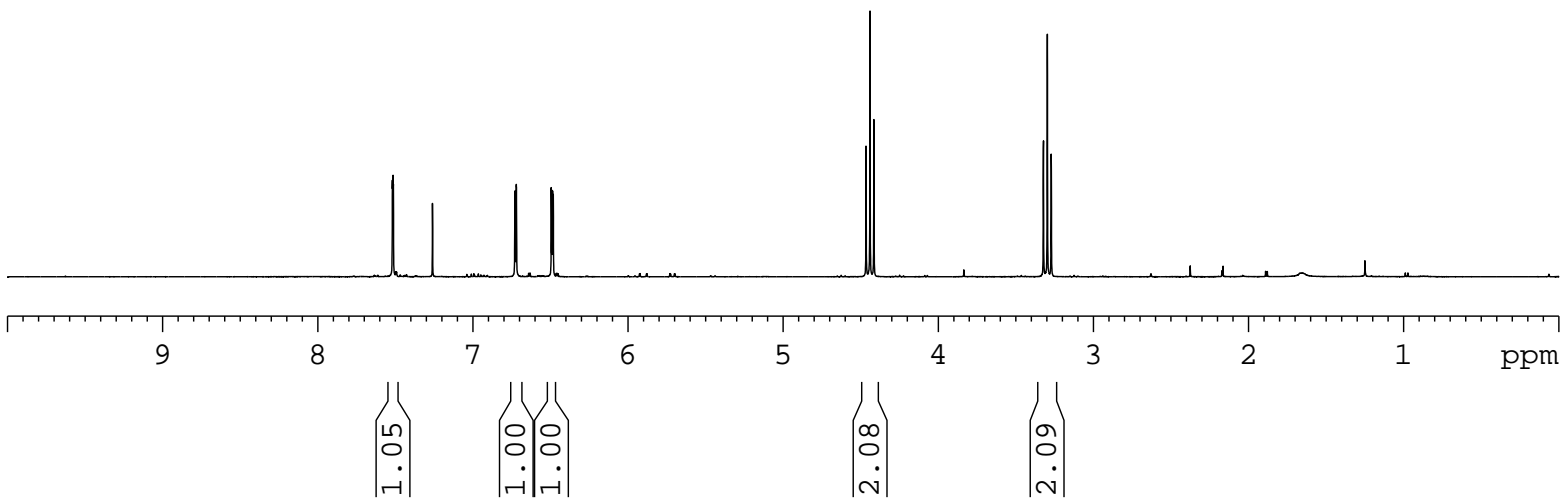


**1f**

7.5183  
7.5168  
7.5139  
7.5124  
7.2600  
6.7286  
6.7278  
6.7199  
6.4942  
6.4897  
6.4856  
6.4811

4.4658  
4.4405  
4.4153

3.3223  
3.2971  
3.2719

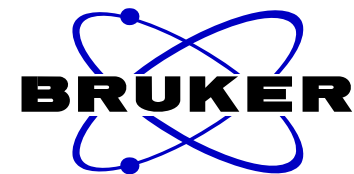


```

NAME          CWG150626-2
EXPNO         1
PROCNO        1
Date_         20150629
Time          9.44
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.3 K
D1            1.00000000 sec
TD0           1
  
```

```

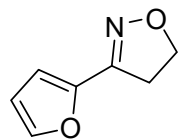
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



NAME CWG150601-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150916  
Time 13.39  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 95  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228179 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



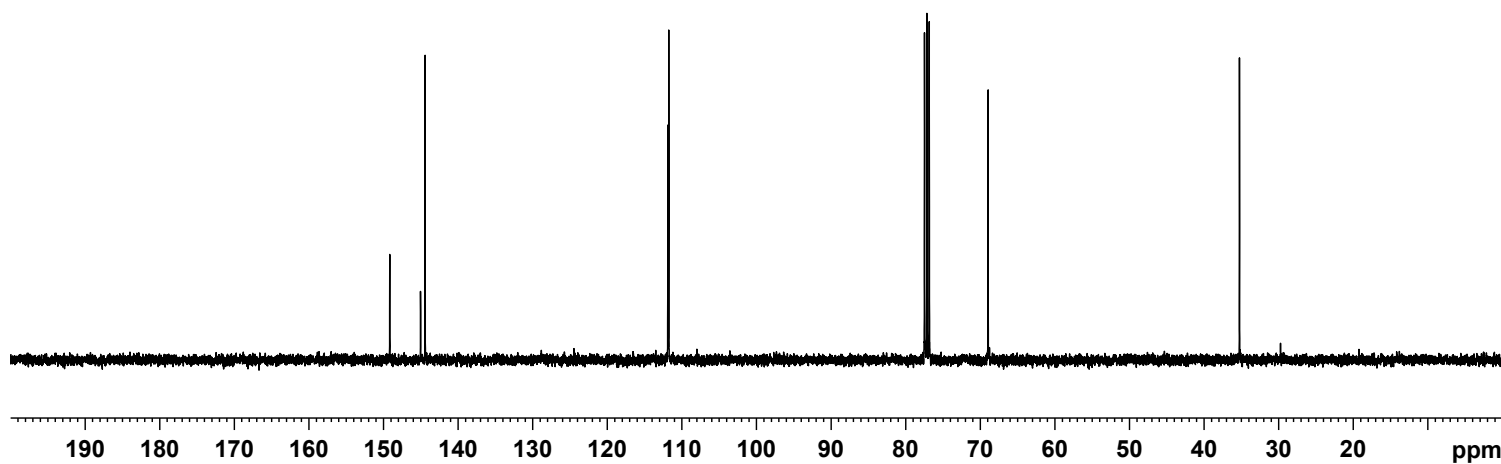
1f

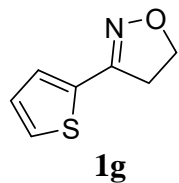
149.15  
145.01  
144.40

111.88  
111.77

68.95

35.25

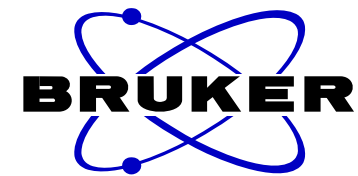




7.3920  
7.3894  
7.3792  
7.3767  
7.2599  
7.2180  
7.2154  
7.2089  
7.2063  
7.0688  
7.0597  
7.0562  
7.0470

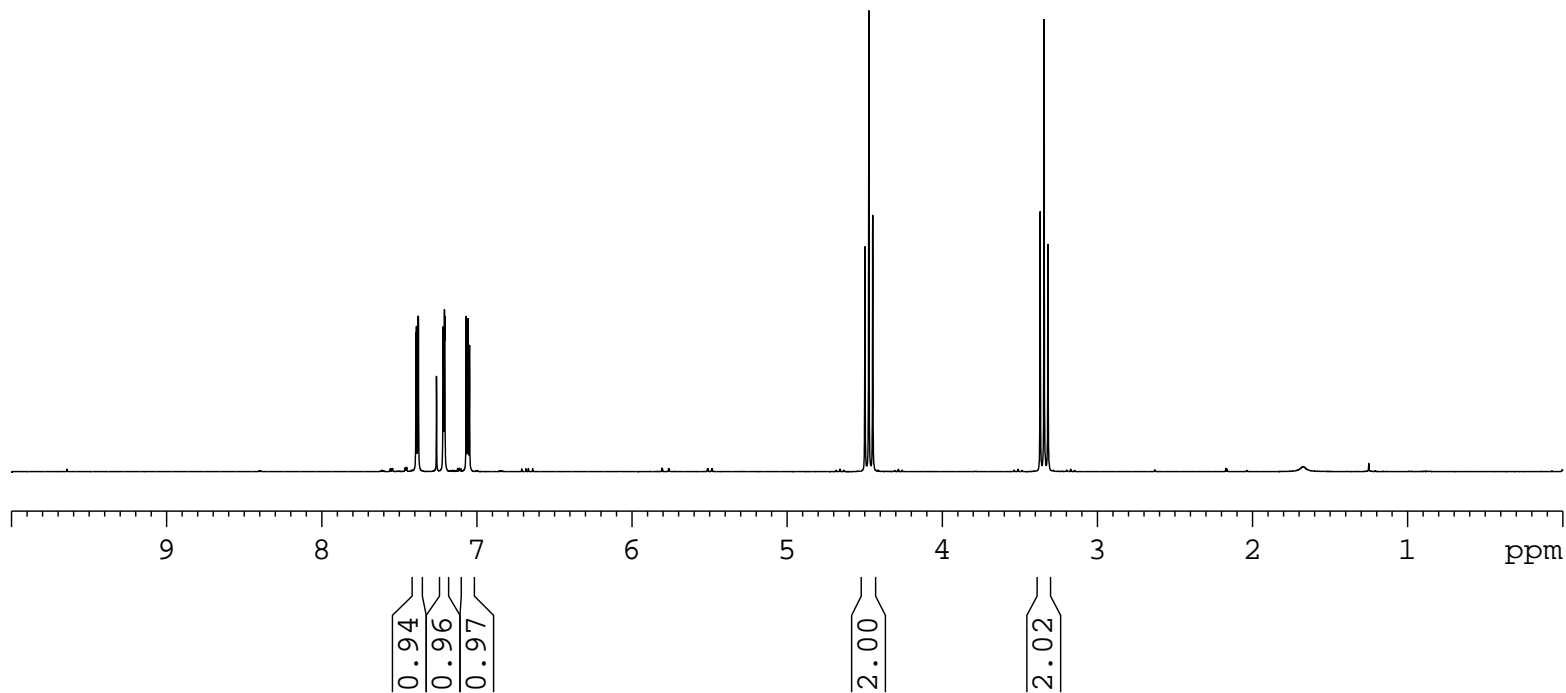
4.4989  
4.4737  
4.4486

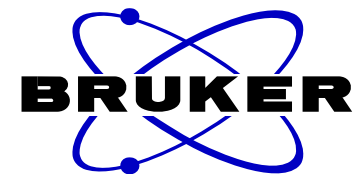
3.3691  
3.3439  
3.3188



NAME CWG150629-2  
EXPNO 1  
PROCNO 1  
Date\_ 20150630  
Time 8.18  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 296.2 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

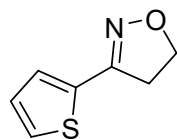




NAME CWG150629-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150916  
Time 13.31  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 73  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228437 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



1g

152.49

131.72

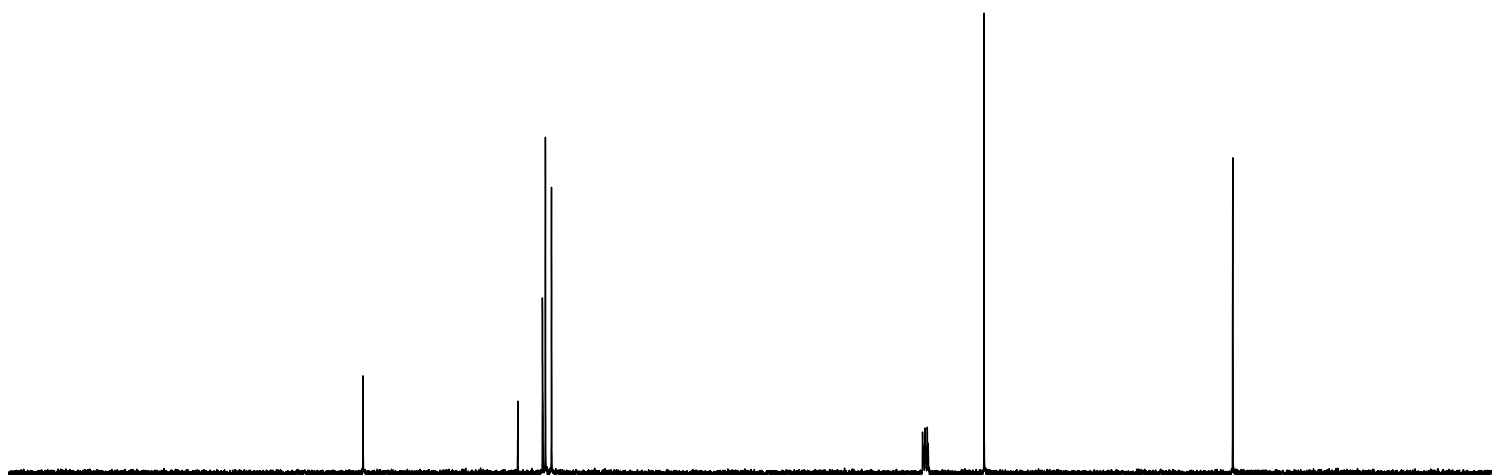
128.43

128.02

127.22

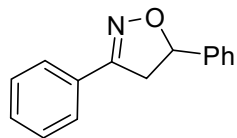
69.22

35.88

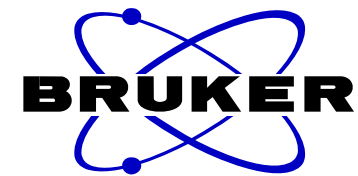
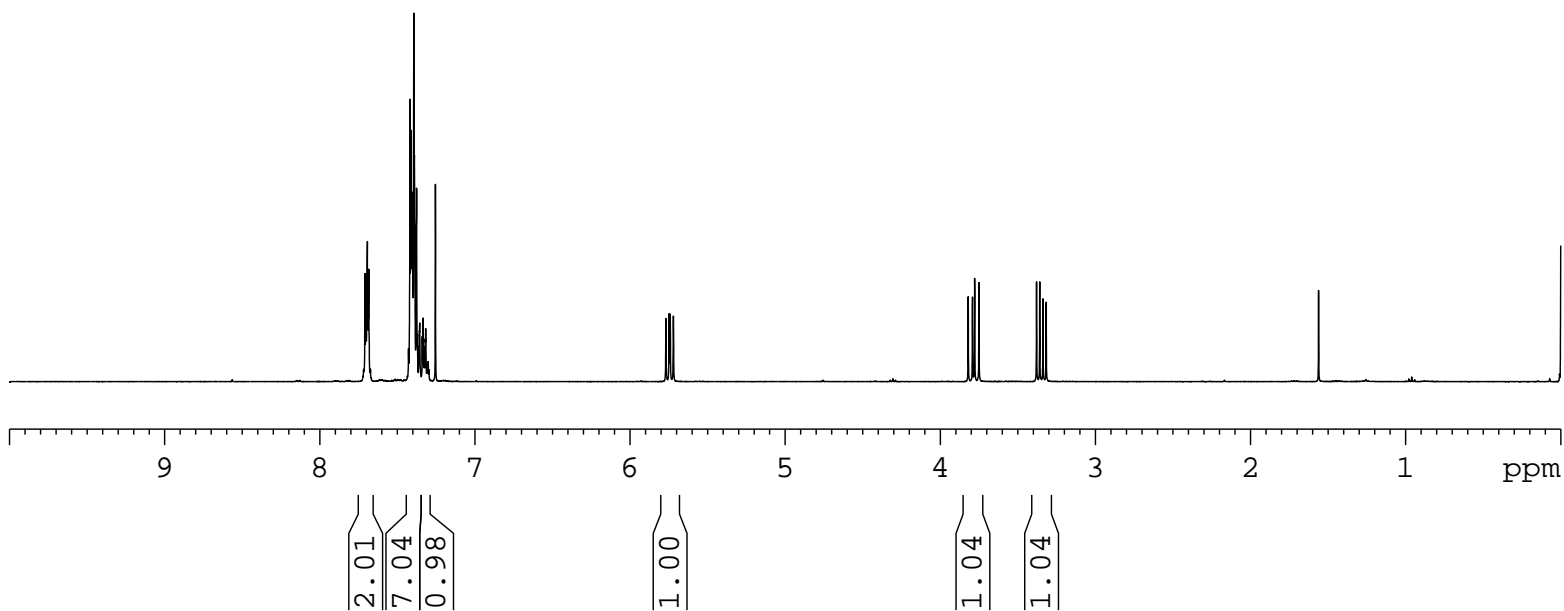


190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm

7.4358  
7.4283  
7.4188  
7.4118  
7.4073  
7.4021  
7.3941  
7.3902  
7.3761  
7.3709  
7.3614  
7.3579  
7.3563  
7.3495  
7.3394  
7.3341  
7.3261  
7.3202  
7.3176  
7.3096  
7.3067  
7.3021  
7.2965  
7.2547  
5.7685  
5.7479  
5.7410  
5.7204  
3.8198  
3.7923  
3.7783  
3.7508  
3.3793  
3.3587  
3.3377  
3.3171



**3a**

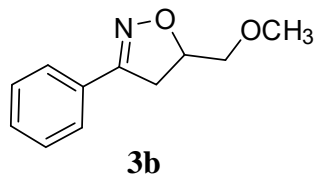


```

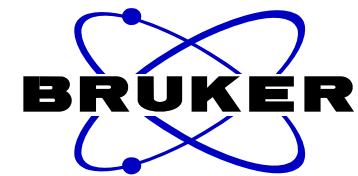
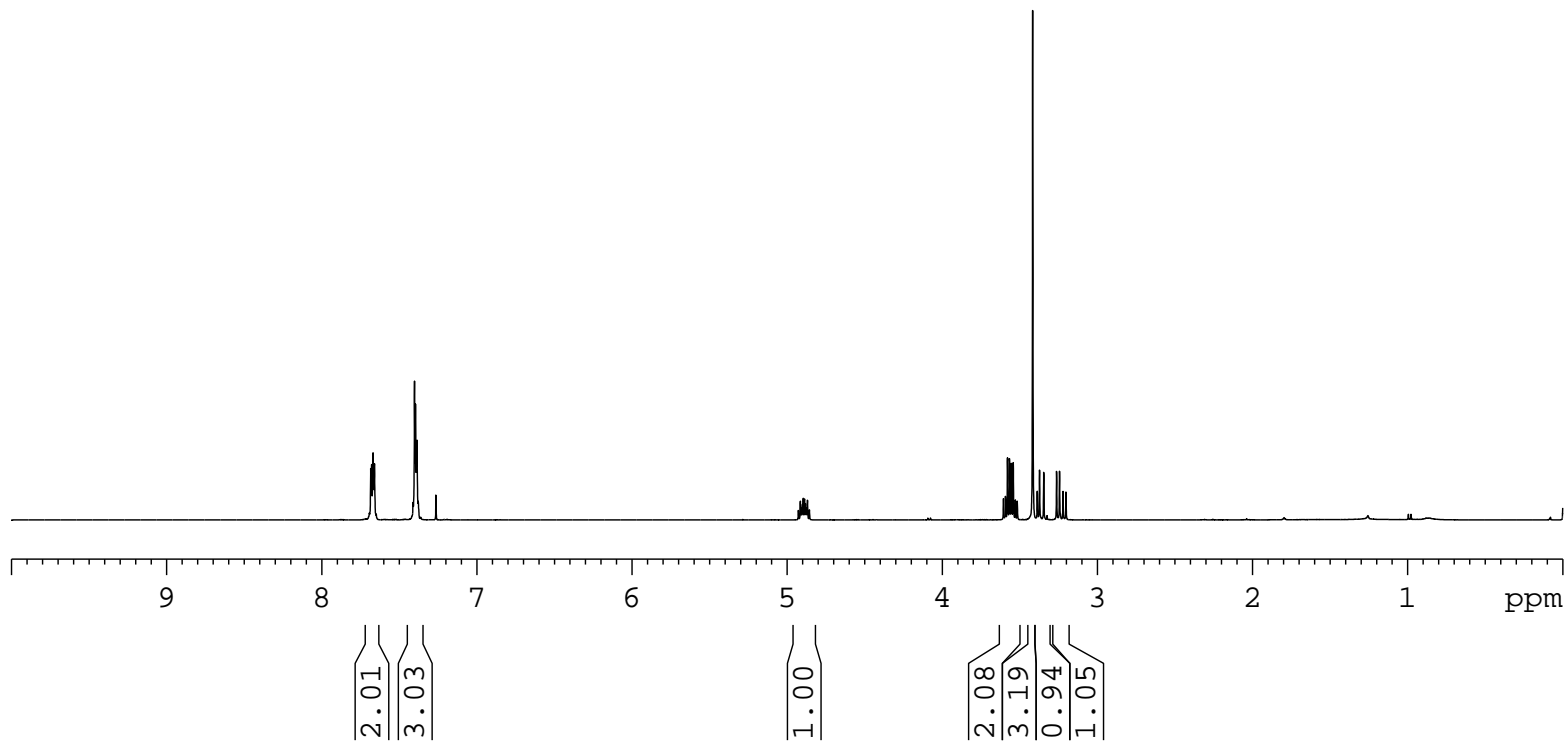
NAME          CWG150418-1
EXPNO         1
PROCNO        1
Date_         20150418
Time          21.06
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.3 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700059 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



7.6843  
7.6784  
7.6692  
7.6660  
7.6600  
7.4019  
7.3953  
7.3900  
7.3852  
7.2639  
4.9279  
4.9153  
4.9089  
4.9013  
4.8964  
4.8884  
4.8831  
4.8758  
4.8694  
4.8568  
3.6057  
3.5926  
3.5797  
3.5668  
3.5548  
3.5425  
3.5288  
3.5166  
3.4176  
3.3876  
3.3730  
3.3461  
3.3246  
3.2632  
3.2441  
3.2216  
3.2026



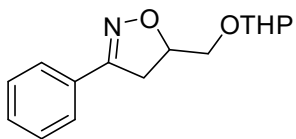
```

NAME          CWG150413-1
EXPNO         1
PROCNO        1
Date_         20150413
Time          17.44
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            80.6
DW            60.800 usec
DE            6.50 usec
TE            294.4 K
D1            1.00000000 sec
TD0           1

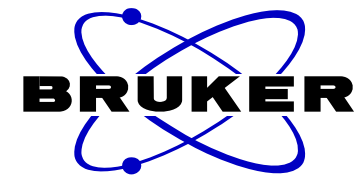
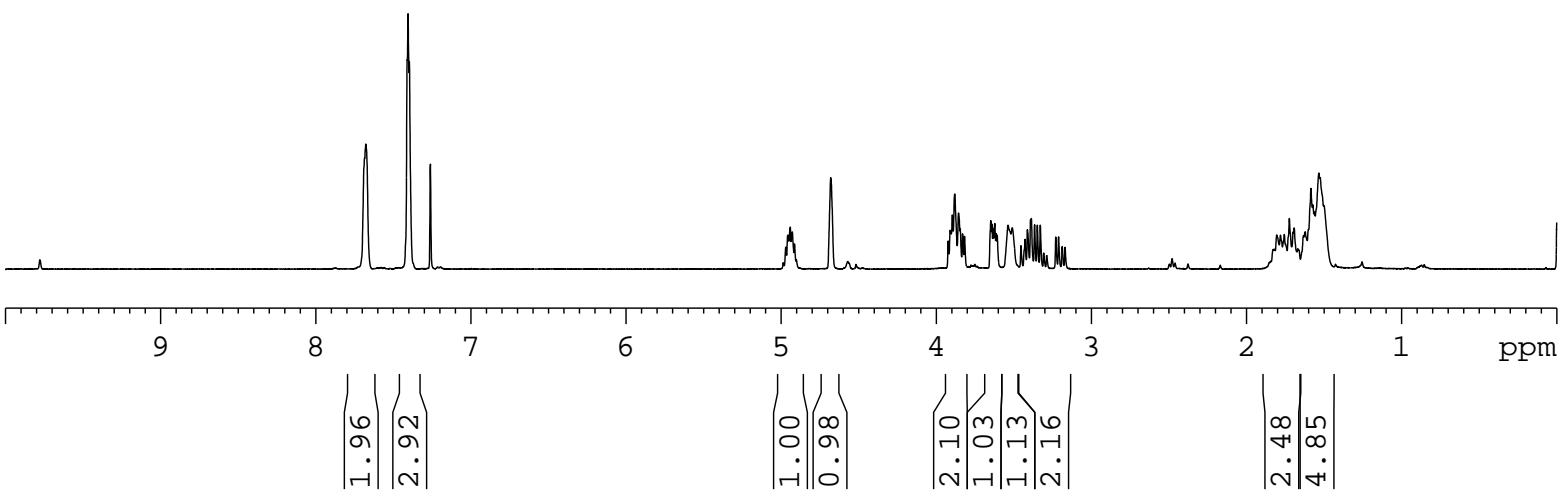
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700024 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00

```

7.6772  
7.4105  
7.4050  
7.3964  
7.2610  
4.9573  
4.9408  
4.9282  
4.6800  
3.9112  
3.8970  
3.8815  
3.8571  
3.8462  
3.8308  
3.8182  
3.6492  
3.6422  
3.6340  
3.6233  
3.6145  
3.6077  
3.5381  
3.5108  
3.4129  
3.3927  
3.3874  
3.3667  
3.3490  
3.3298  
3.2119  
1.8057  
1.7813  
1.7567  
1.7243  
1.6998  
1.6928  
1.6334  
1.6221  
1.5849  
1.5722  
1.5620  
1.5336  
1.5252  
1.5018



3c

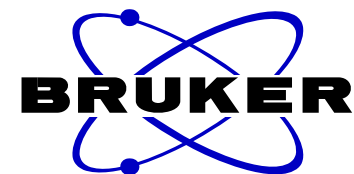


```

NAME          CWG150323-1-1
EXPNO         1
PROCNO        1
Date_         20151013
Time          10.33
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            297.8 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700030 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



NAME CWG150323-1-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151013  
Time 11.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 206  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228194 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

156.46  
156.34

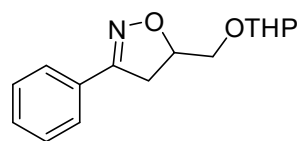
130.06  
130.04  
129.73  
129.68  
128.72  
126.74

99.39  
99.09

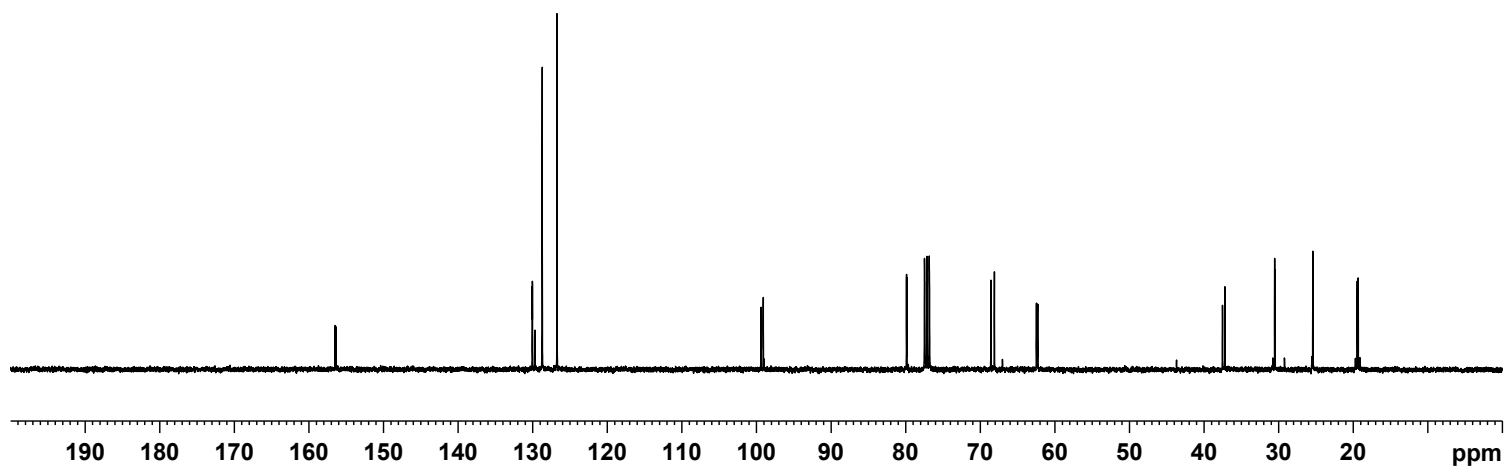
79.89  
79.83

68.58  
68.11  
62.47  
62.29

37.53  
37.21  
30.54  
30.50  
25.43  
25.41  
19.47  
19.34

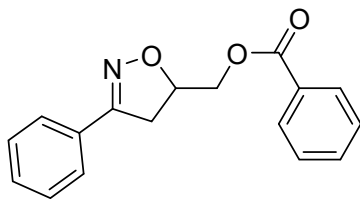


3c

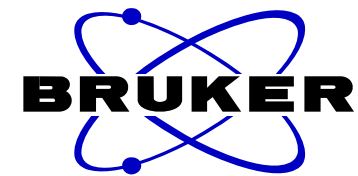




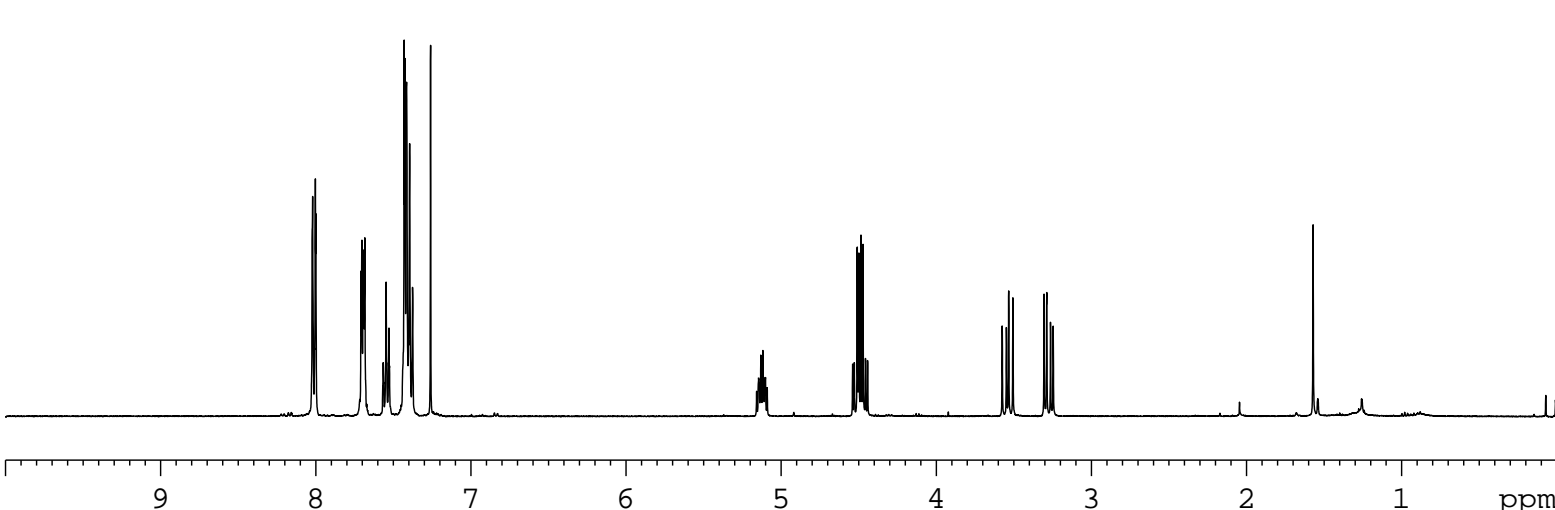
8.0203  
8.0070  
8.0025  
7.9991  
7.7079  
7.7026  
7.6943  
7.6919  
7.6835  
7.5647  
7.5617  
7.5461  
7.5306  
7.5275  
7.5245  
7.4297  
7.4245  
7.4146  
7.4020  
7.3945  
7.3756  
7.2598  
5.1454  
5.1310  
5.1178  
5.1073  
5.1033  
5.1012  
4.5394  
4.5287  
4.5098  
4.4992  
4.4857  
4.4724  
4.4562  
4.4429  
3.5750  
3.5478  
3.5333  
3.5061  
3.3051  
3.2879  
3.2634  
3.2462  
1.5707



3d

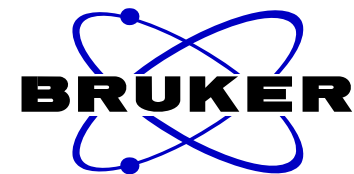


NAME CWG150325  
EXPNO 1  
PROCNO 1  
Date\_ 20150325  
Time\_ 21.54  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 295.8 K  
D1 1.00000000 sec  
TD0 1



==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700039 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

1.96  
2.02  
1.07  
5.07  
1.00  
2.04  
1.02  
1.01



NAME CWG150409-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150916  
Time 13.21  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 130  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228206 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.37

156.37

133.29

130.33

129.80

129.62

129.29

128.84

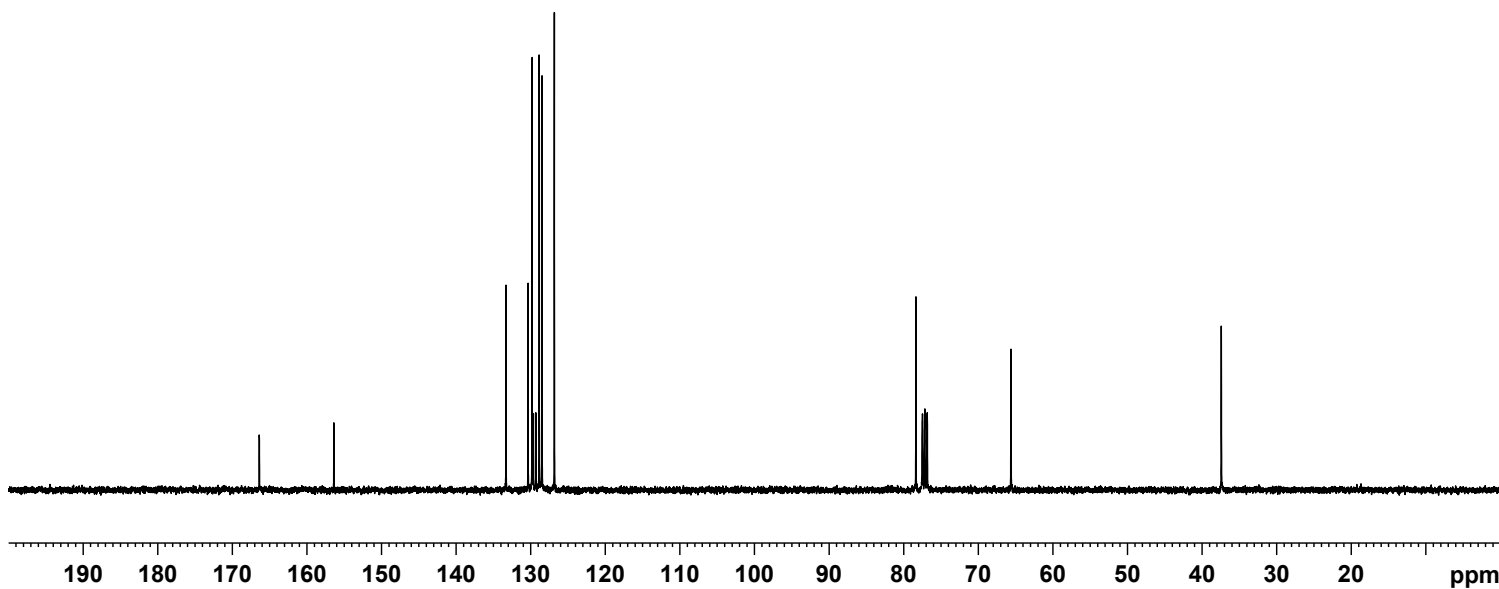
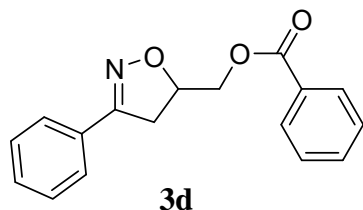
128.47

126.81

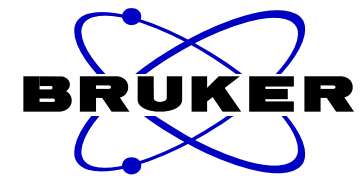
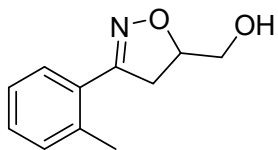
78.37

65.62

37.42

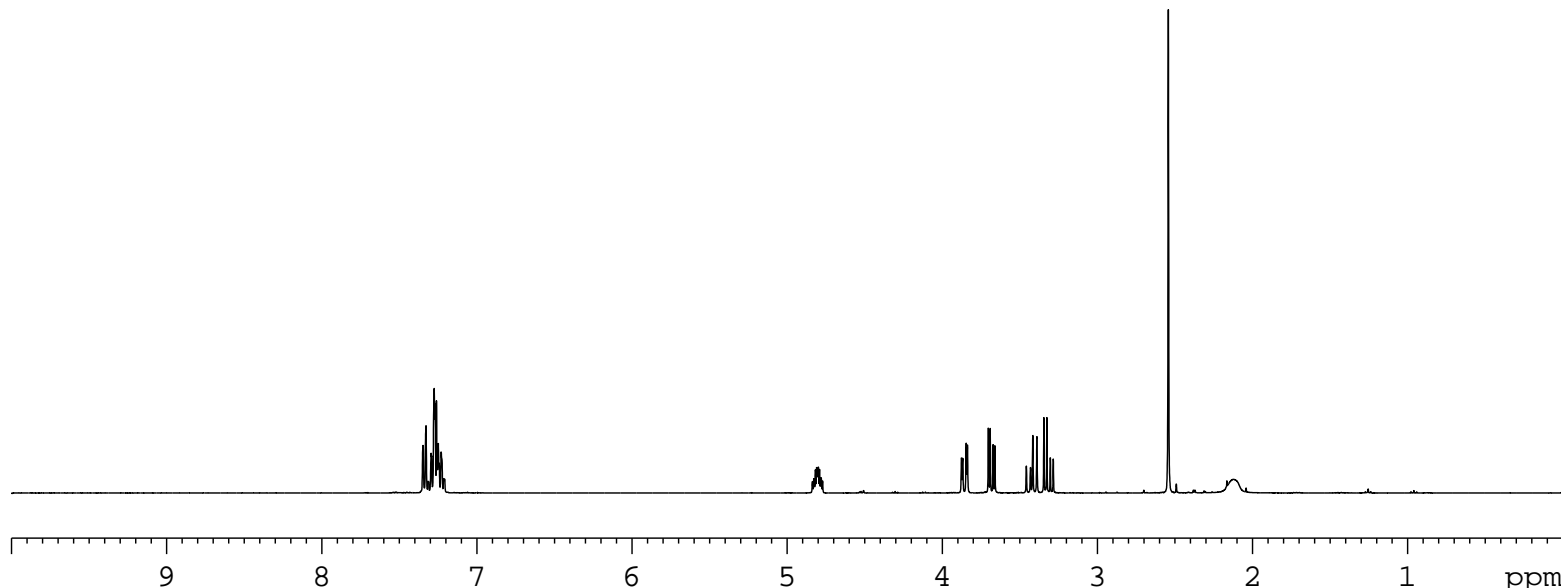


7.3277  
7.3140  
7.3108  
7.2948  
7.2920  
7.2781  
7.2747  
7.2693  
7.2601  
7.2551  
7.2483  
7.2428  
7.2297  
7.2127  
7.2075  
4.8375  
4.8288  
4.8262  
4.8181  
4.8104  
4.8064  
4.7990  
4.7915  
4.7832  
4.7808  
4.7718  
3.8763  
3.8683  
3.8460  
3.8379  
3.7032  
3.6914  
3.6728  
3.6610  
3.4581  
3.4314  
3.4165  
3.3900  
3.3452  
3.3260  
3.3037  
3.2845  
2.5429  
2.1227

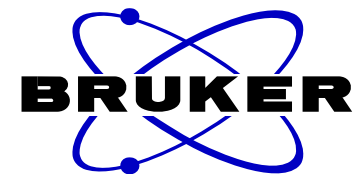


NAME CWG150920-1-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150922  
Time\_ 21.16  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 12  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



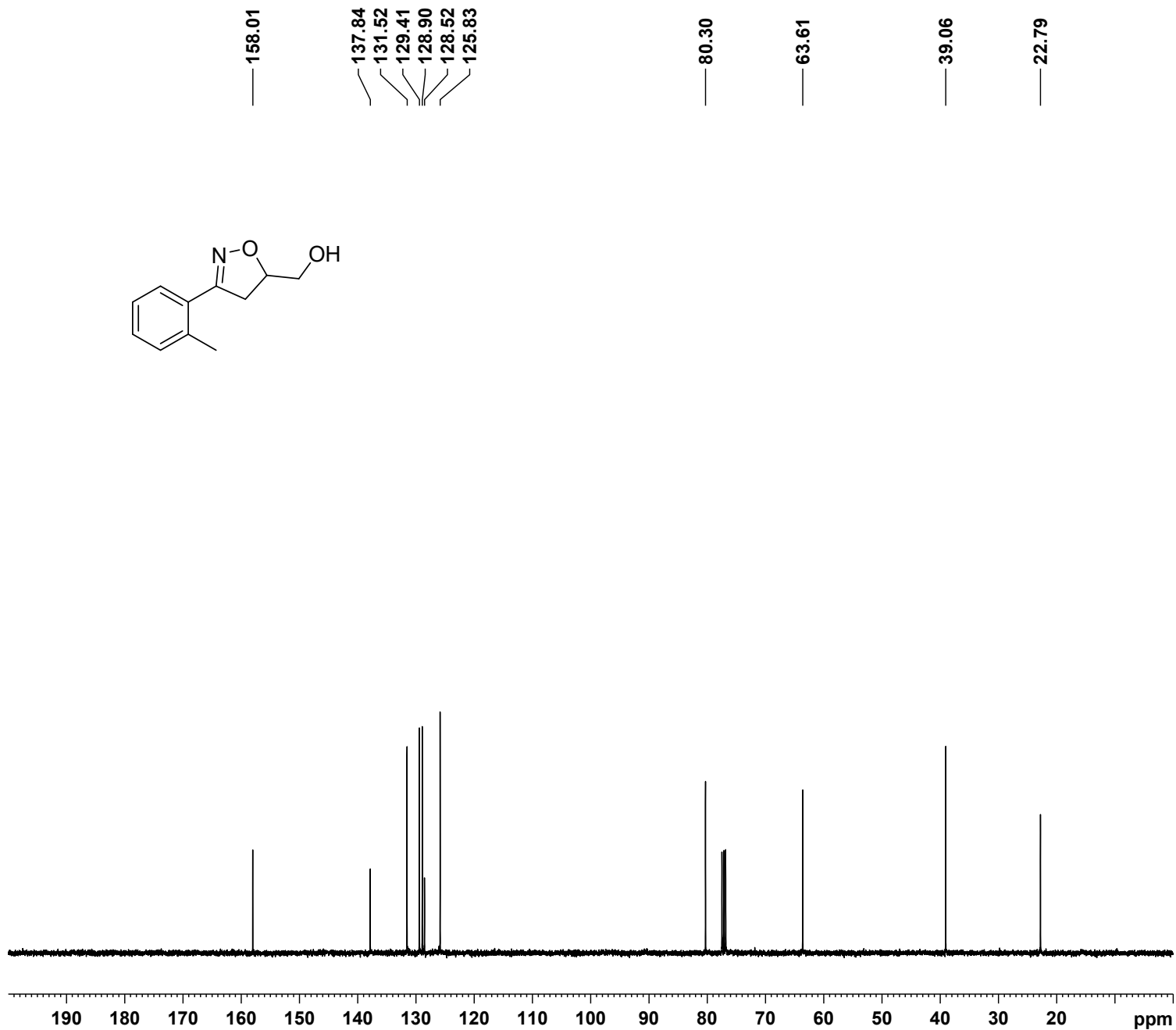
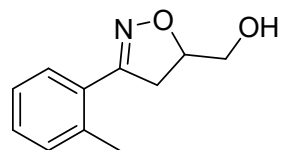
1.00  
3.31  
1.00  
1.03  
1.04  
1.04  
1.04  
3.03  
1.19



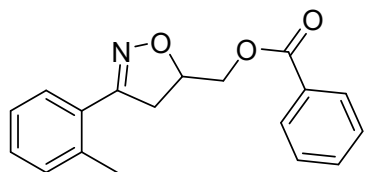
NAME CWG150920-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150928  
Time 18.22  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 64  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.9 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

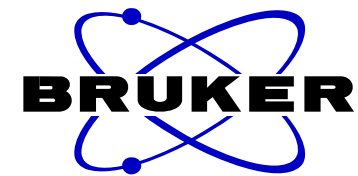
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228259 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



8.0345  
8.0167  
8.0134  
7.5725  
7.5540  
7.5382  
7.5354  
7.4258  
7.4062  
7.3870  
7.3572  
7.3385  
7.3113  
7.3080  
7.2956  
7.2920  
7.2780  
7.2600  
7.2515  
7.2391  
7.2331  
5.0899  
5.0877  
5.0738  
5.0604  
5.0498  
5.0463  
5.0441  
4.5438  
4.5331  
4.5143  
4.5036  
4.4865  
4.4730  
4.4570  
4.4435  
3.6303  
3.6032  
3.5887  
3.5616  
3.3438  
3.3268  
3.3022  
3.2852  
2.5701

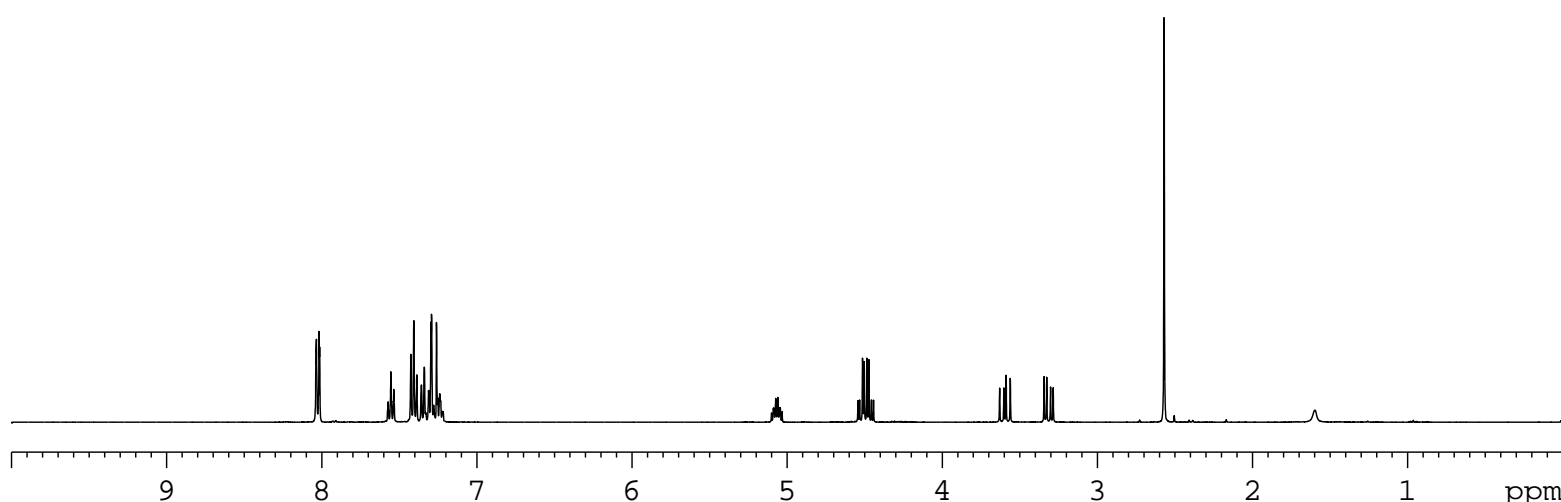


**3e**

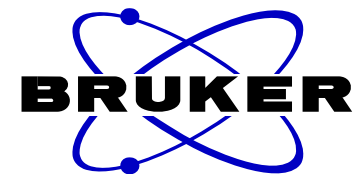


NAME CWG150922-2  
EXPNO 1  
PROCNO 1  
Date\_ 20150922  
Time\_ 20.55  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



1.96  
1.03  
2.05  
3.06  
0.80  
1.00  
2.07  
1.02  
1.01  
3.00

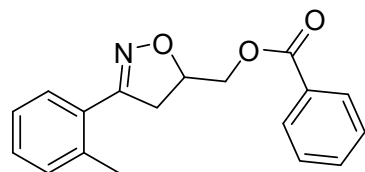


NAME CWG150922-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151008  
Time 16.55  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 71  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

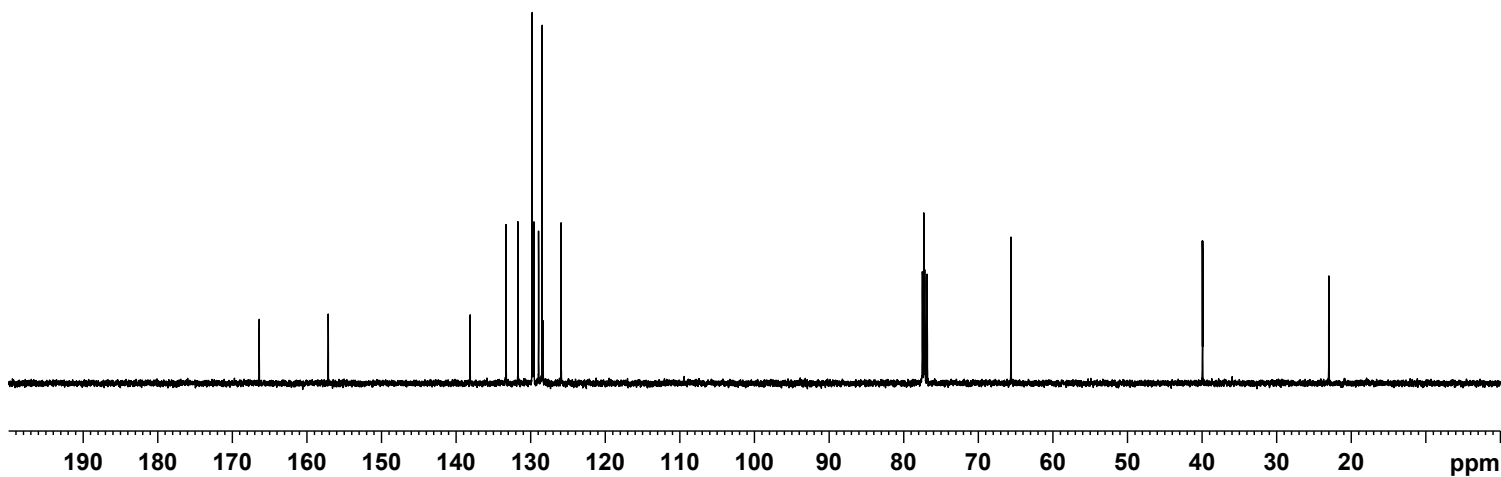
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

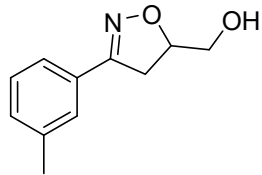
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228225 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.38  
157.12  
138.10  
133.29  
131.69  
129.78  
129.64  
129.56  
128.92  
128.45  
128.32  
125.91  
77.28  
65.60  
39.93  
23.01

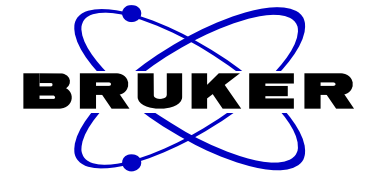


3e



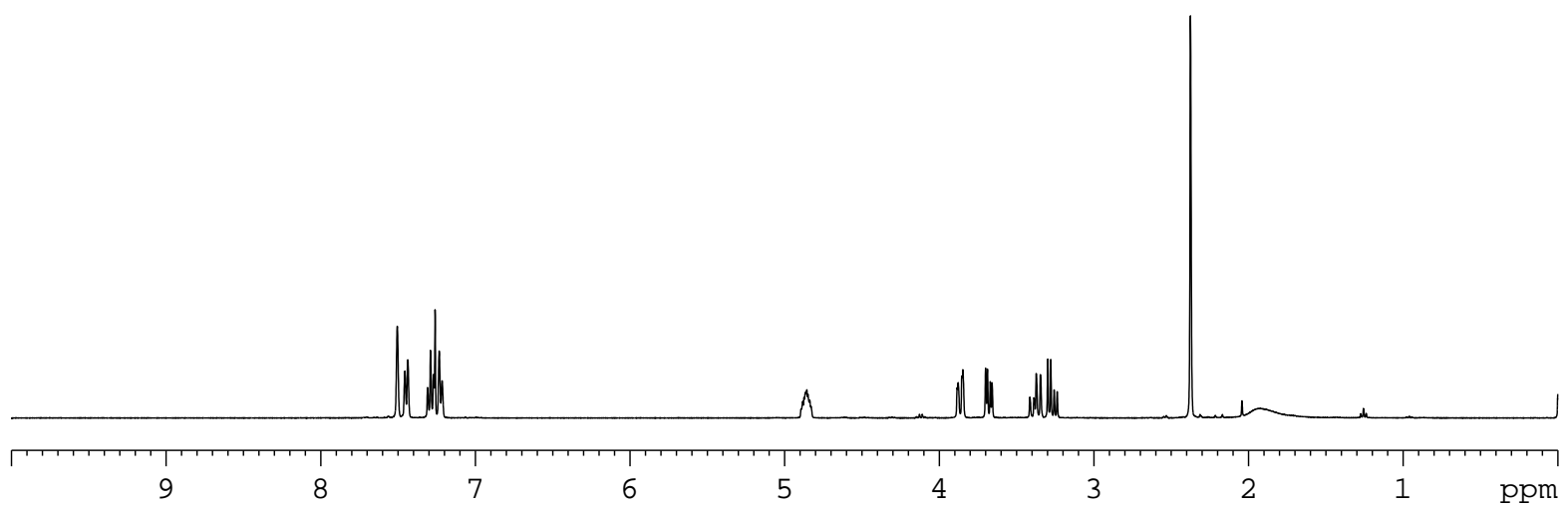


7.5050  
7.4558  
7.4368  
7.3091  
7.2901  
7.2710  
7.2601  
7.2336  
7.2148  
4.8936  
4.8828  
4.8747  
4.8634  
4.8559  
4.8486  
4.8368  
4.8289  
3.8851  
3.8782  
3.8545  
3.8478  
3.7010  
3.6892  
3.6705  
3.6587  
3.4149  
3.3880  
3.3734  
3.3465  
3.2989  
3.2795  
3.2574  
3.2380  
2.3758  
1.9343

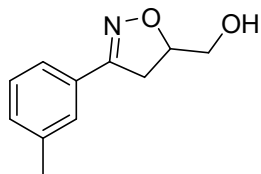


NAME CWG150920-3-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150924  
Time 16.59  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 161  
DW 60.800 usec  
DE 6.50 usec  
TE 297.8 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



1.00  
0.99  
1.01  
1.00  
1.00  
1.06  
1.03  
1.04  
1.04  
3.08  
1.49



— 157.15

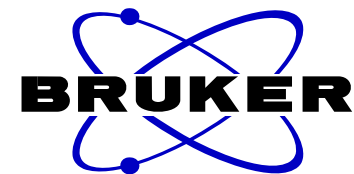
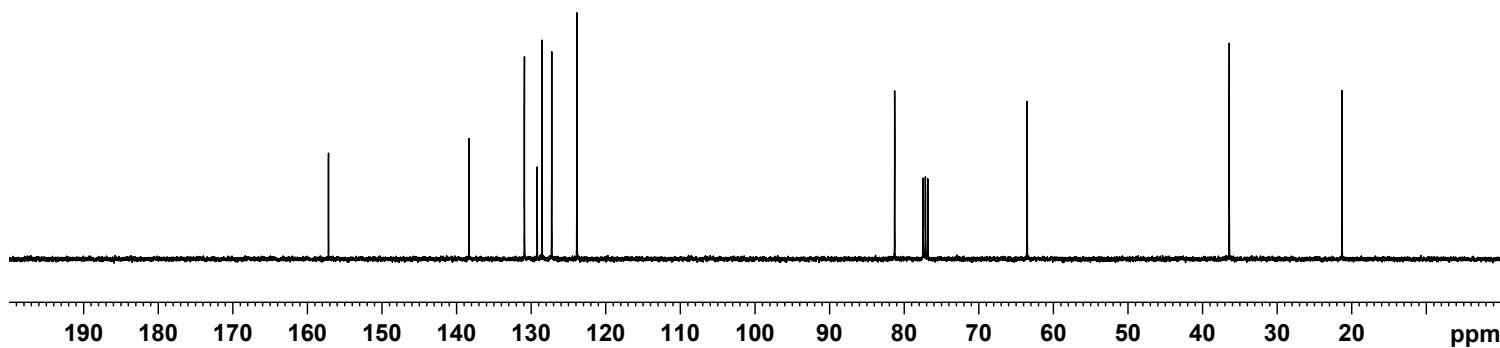
138.34  
130.91  
129.19  
128.55  
127.25  
123.88

— 81.28

— 63.51

— 36.42

— 21.29



```

NAME CWG150920-3-1-C13
EXPNO 1
PROCNO 1
Date_ 20150928
Time 18.29
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 61
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 296.7 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

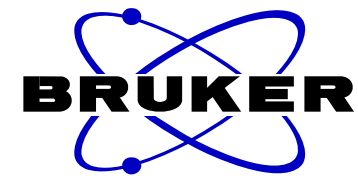
```

```

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228297 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

```

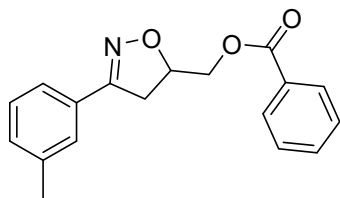




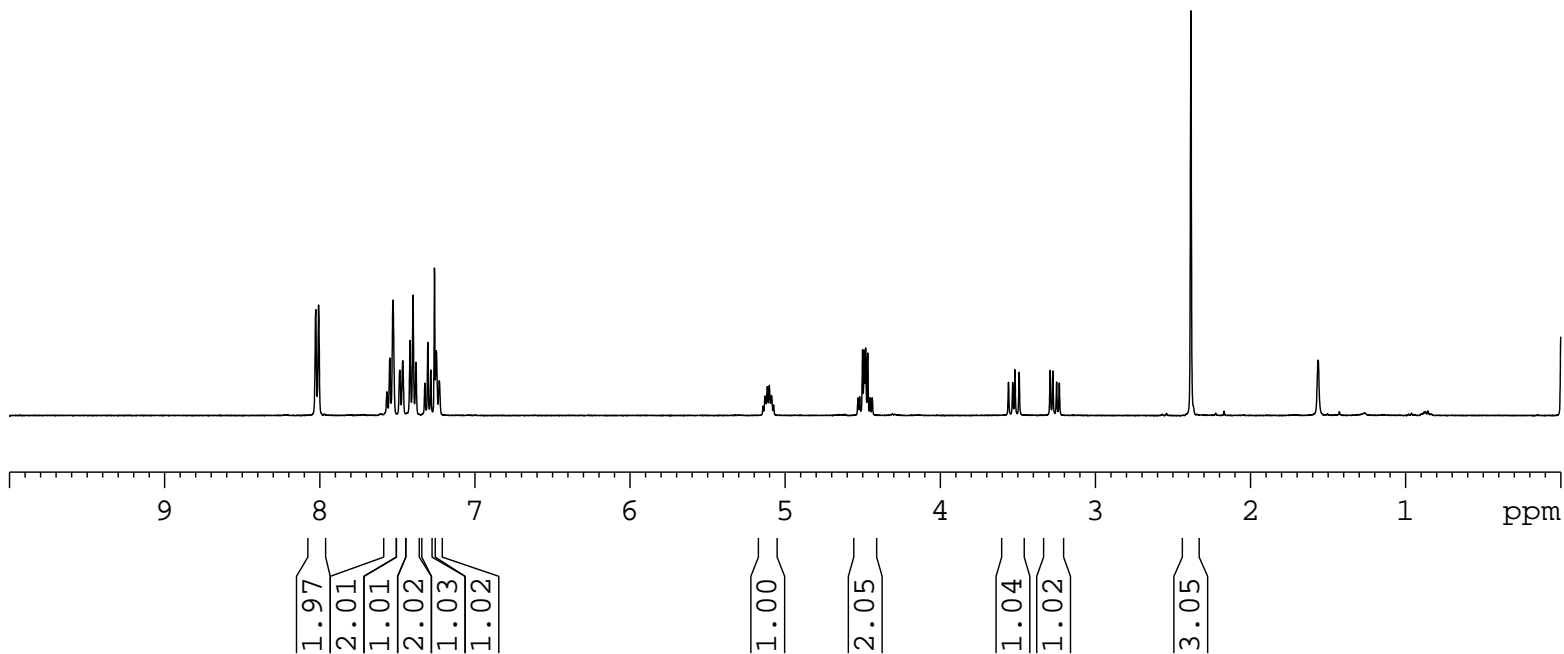
NAME CWG150924  
EXPNO 1  
PROCNO 1  
Date\_ 20150924  
Time 17.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.8 K  
D1 1.00000000 sec  
TD0 1

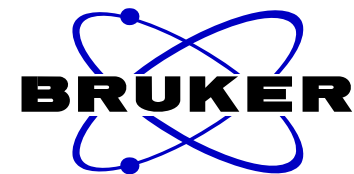
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

8.0259  
8.0073  
7.5670  
7.5483  
7.5271  
7.4840  
7.4649  
7.4178  
7.3984  
7.3793  
7.3221  
7.3031  
7.2841  
7.2601  
7.2481  
7.2291  
5.1431  
5.1301  
5.1156  
5.1025  
5.0879  
5.0749  
4.5309  
4.5200  
4.5013  
4.4904  
4.4813  
4.4680  
4.4518  
4.4385  
3.5605  
3.5334  
3.5188  
3.4917  
3.2919  
3.2746  
3.2502  
3.2329  
2.3846



3f





NAME CWG150924-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150928  
Time 18.37  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 84  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.7 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228203 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

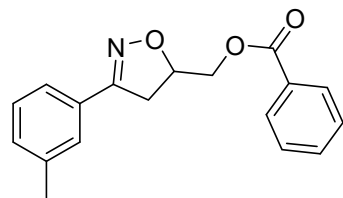
166.39  
156.47  
138.55  
133.29  
131.14  
129.82  
129.63  
129.17  
128.72  
128.46  
127.39  
124.00

78.27

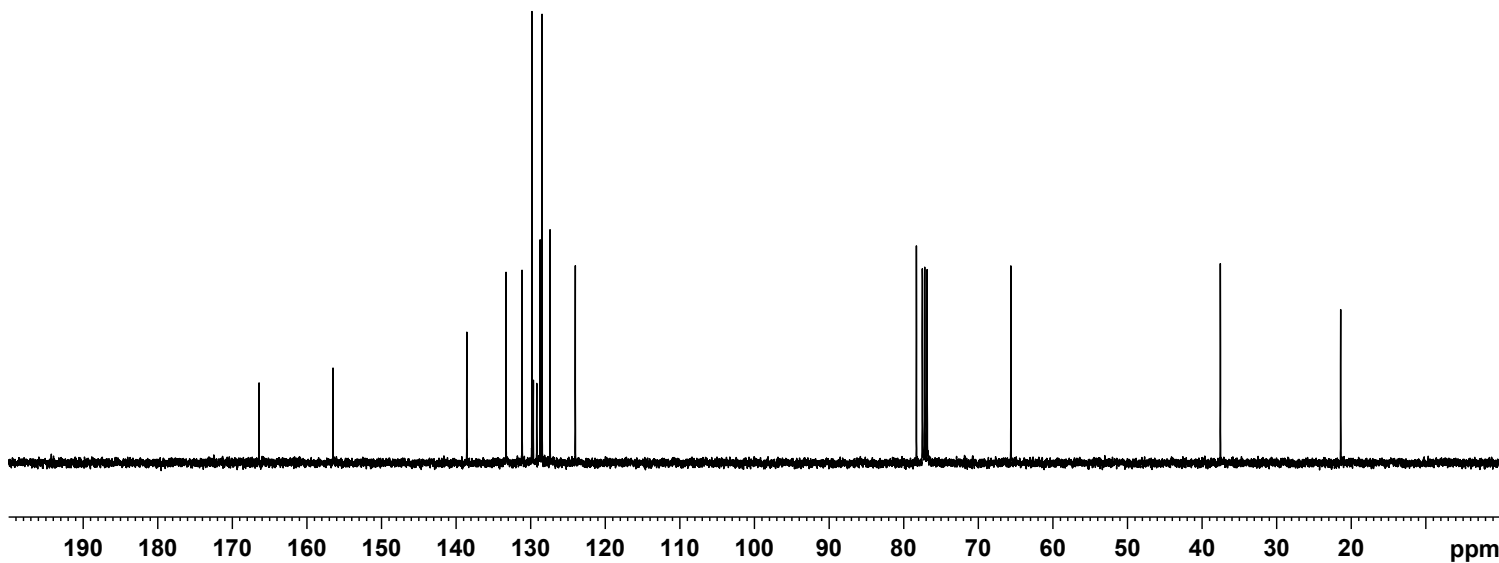
65.61

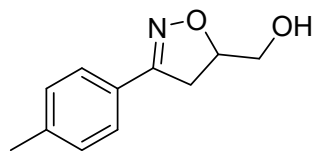
37.53

21.41

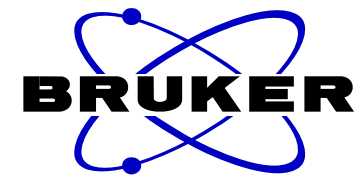


3f





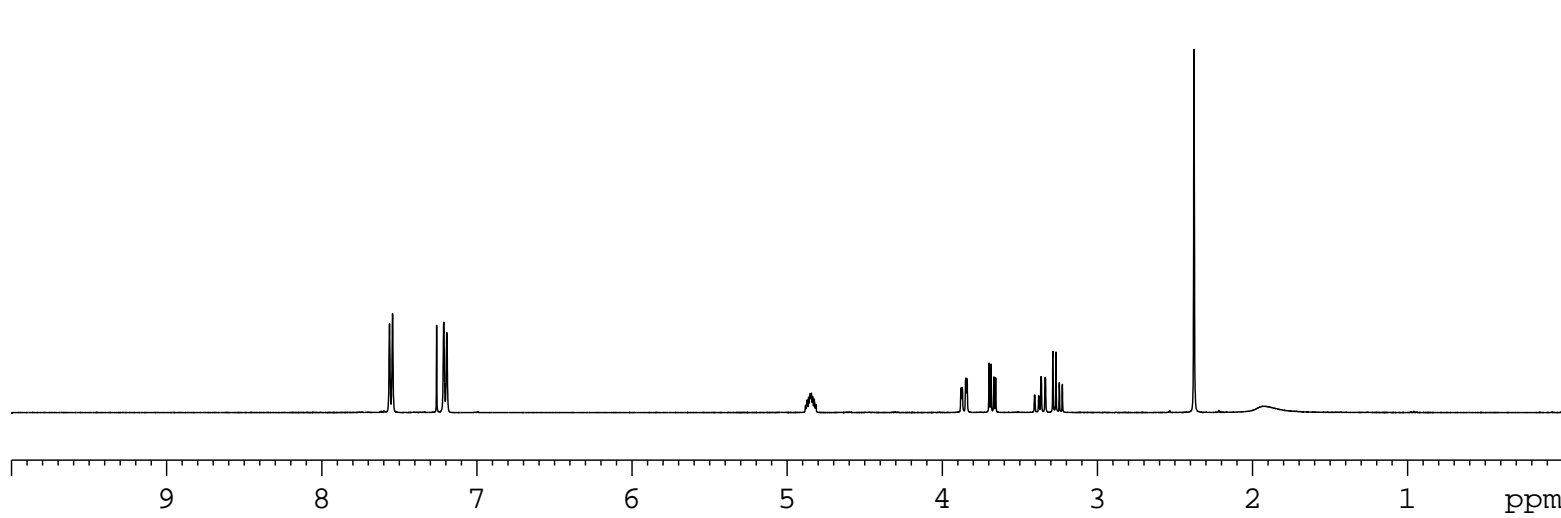
7.5639  
7.5441  
7.2599  
7.2141  
7.1942  
4.8806  
4.8713  
4.8610  
4.8525  
4.8484  
4.8440  
4.8358  
4.8252  
4.8162  
3.8784  
3.8718  
3.8478  
3.8415  
3.6982  
3.6863  
3.6677  
3.6558  
3.4050  
3.3782  
3.3634  
3.3621  
3.3367  
3.2867  
3.2673  
3.2453  
3.2258  
2.3769  
1.9251



```

NAME CWG150920-5
EXPNO 1
PROCNO 1
Date_ 20150922
Time 21.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 13
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 298.2 K
D1 1.0000000 sec
TD0 1

```



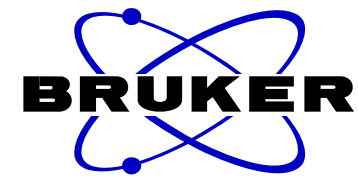
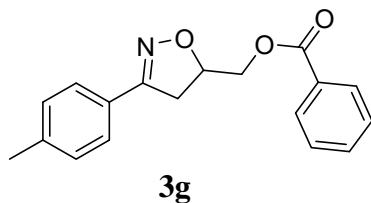
```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700034 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```

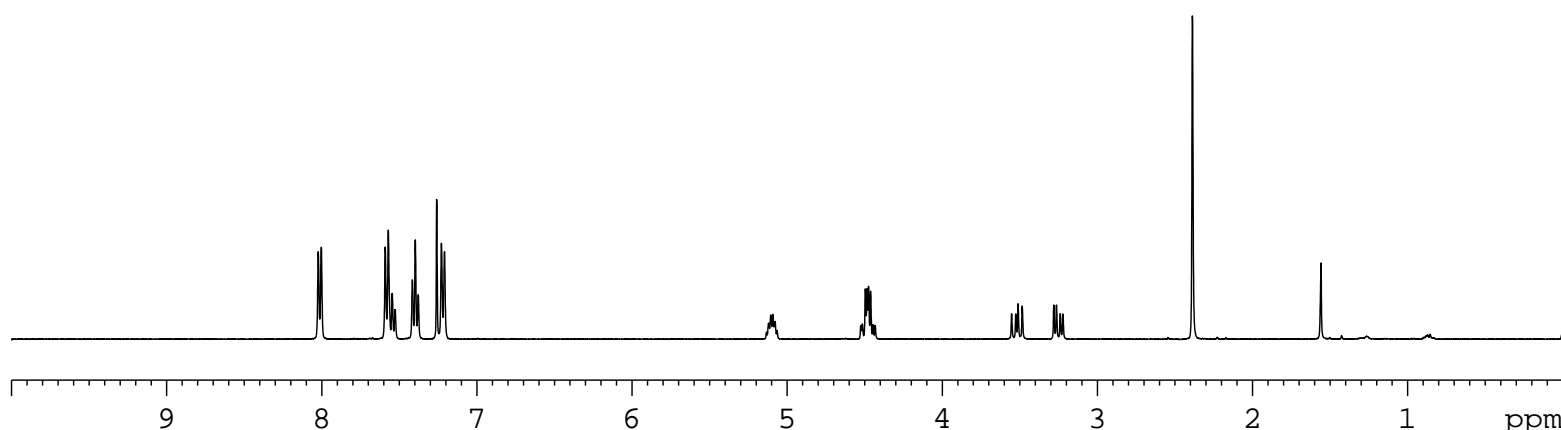
2.03  
2.02  
1.00  
1.05  
1.03  
2.07  
3.11  
1.44

8.0234  
 8.0031  
 7.5914  
 7.5714  
 7.5465  
 7.5285  
 7.4166  
 7.3976  
 7.3784  
 7.2600  
 7.2290  
 7.2092  
 5.1335  
 5.1186  
 5.1051  
 5.0927  
 5.0777  
 5.0656  
 4.5252  
 4.5152  
 4.4960  
 4.4854  
 4.4757  
 4.4624  
 4.4462  
 4.4330  
 3.5531  
 3.5260  
 3.5115  
 3.4845  
 3.2810  
 3.2639  
 3.2394  
 3.2223  
 2.3873

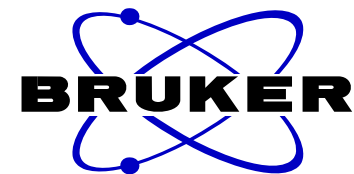


NAME CWG150922-5-1  
 EXPNO 1  
 PROCNO 1  
 Date\_ 20150928  
 Time 17.33  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 15  
 DS 2  
 SWH 8223.685 Hz  
 FIDRES 0.125483 Hz  
 AQ 3.9846387 sec  
 RG 203  
 DW 60.800 usec  
 DE 6.50 usec  
 TE 296.2 K  
 D1 1.00000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 13.80 usec  
 PL1 -1.00 dB  
 PL1W 13.18669796 W  
 SFO1 400.1724712 MHz  
 SI 32768  
 SF 400.1700036 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



1.96  
 3.00  
 2.01  
 2.03  
 1.00  
 2.06  
 1.04  
 1.01  
 3.04

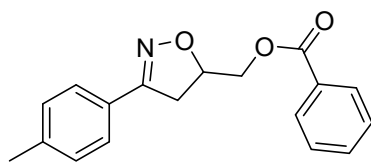


NAME CWG150922-5-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150928  
Time 20.07  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 69  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

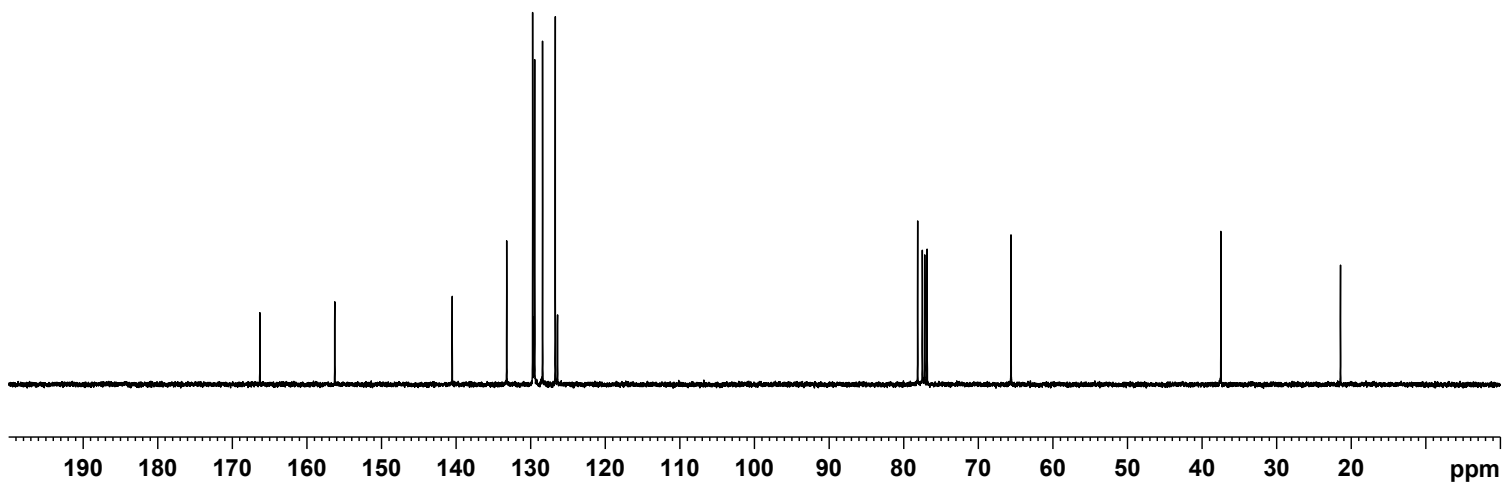
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

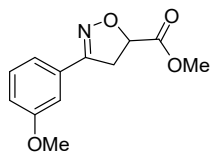
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228278 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.30  
156.25  
140.50  
133.20  
129.73  
129.57  
129.46  
128.39  
126.69  
126.39  
78.11  
65.59  
37.48  
21.45



3g

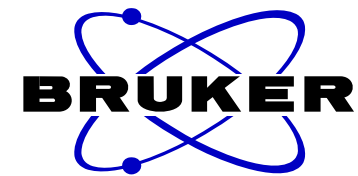




7.3075  
7.2874  
7.2763  
7.2724  
7.2668  
7.2601  
7.1857  
7.1834  
7.1644

5.2007  
5.1810  
5.1748  
5.1552

3.8222  
3.8080  
3.6408  
3.6391  
3.6215  
3.6127

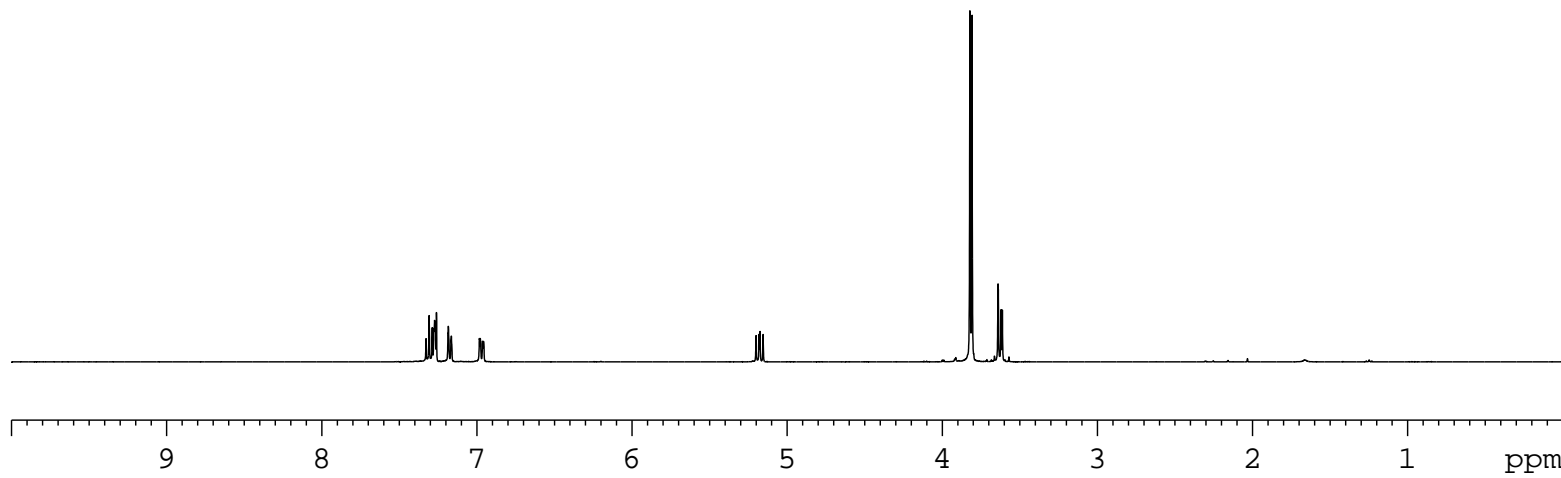


```

NAME      CWG160429-1-PURE
EXPNO     1
PROCNO    1
Date_     20160430
Time      8.08
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         16
DS         2
SWH        8223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         128
DW         60.800 usec
DE         6.50 usec
TE         298.4 K
D1         1.0000000 sec
TD0        1
  
```

```

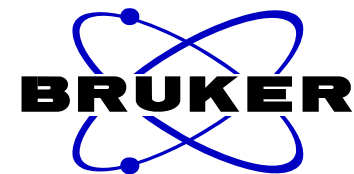
===== CHANNEL f1 =====
NUC1      1H
P1         13.80 usec
PL1        -1.00 dB
PL1W      13.18669796 W
SFO1      400.1724712 MHz
SI         32768
SF         400.1700033 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```



1.12  
0.98  
1.03  
1.05

1.00

6.31  
2.01

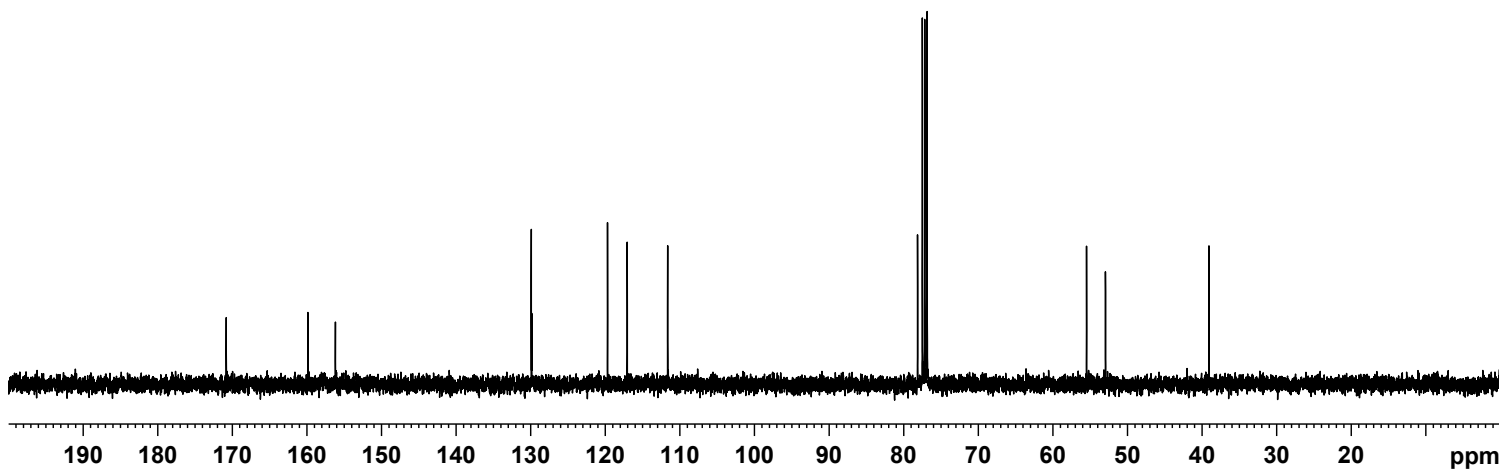
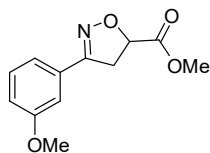


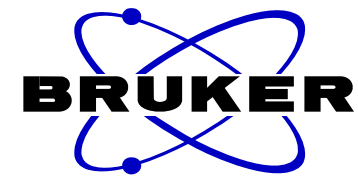
NAME CWG160429-1-PURE-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160430  
Time 8.13  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 27  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.8 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TD0 1

=====  
CHANNEL f1  
=====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

=====  
CHANNEL f2  
=====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228147 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

170.80  
159.85  
156.17  
129.90  
129.85  
119.69  
117.04  
111.63  
78.12  
55.49  
52.95  
39.09





```

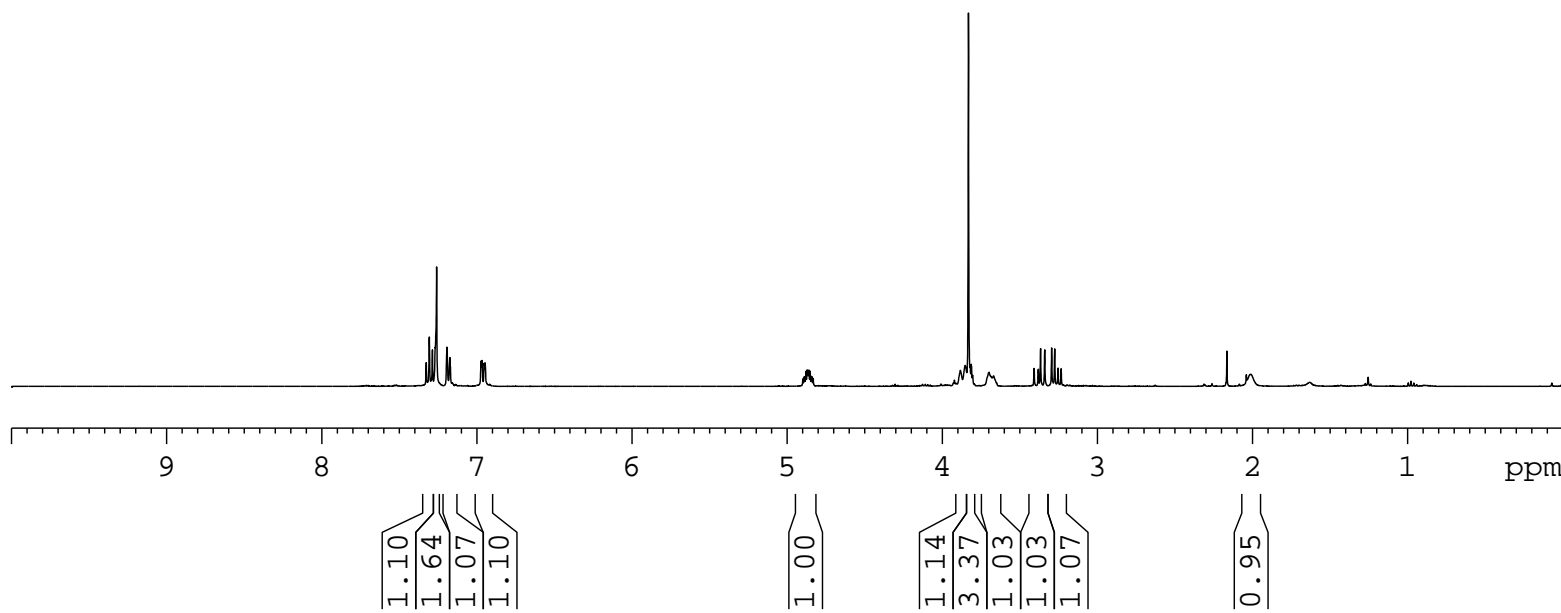
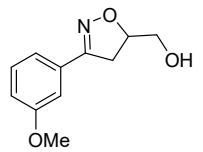
NAME          CWG160430
EXPNO         1
PROCNO        1
Date_         20160501
Time          13.44
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            301.3 K
D1            1.00000000 sec
TD0           1
  
```

```

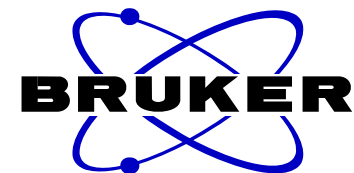
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700031 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

```

7.3270
7.3072
7.2873
7.2693
7.2600
7.1934
7.1744
6.9744
6.9726
6.9681
6.9538
6.9520
6.9474
4.8986
4.8902
4.8869
4.8788
4.8711
4.8672
4.8633
4.8597
4.8521
4.8438
4.8405
4.8323
3.8832
3.8526
3.8312
3.6996
3.6697
3.4080
3.3812
3.3665
3.3397
3.2949
3.2753
3.2534
3.2337
2.0129
  
```



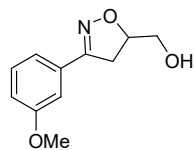




NAME CWG160430-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160501  
Time 13.49  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 211  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 301.8 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228106 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



159.89  
157.20

130.75  
129.87

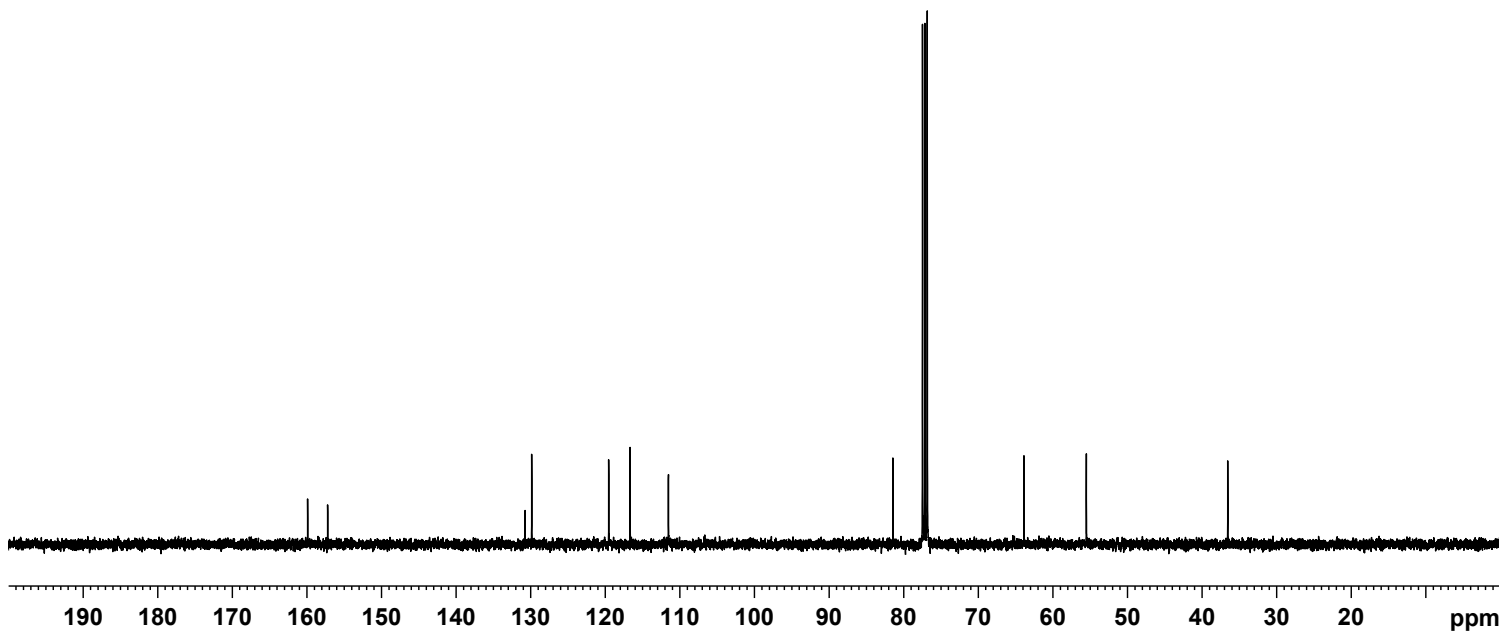
119.55  
116.67  
111.54

81.44

63.87

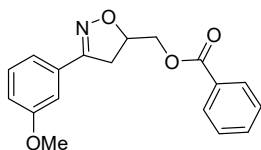
55.51

36.56

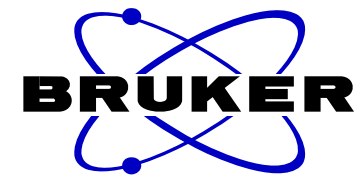


80

8.0184  
8.0159  
7.9981  
7.9948  
7.5576  
7.5390  
7.5235  
7.5204  
7.4091  
7.3895  
7.3703  
7.3334  
7.3137  
7.2937  
7.2904  
7.2842  
7.2599  
7.2074  
7.1906  
7.1881  
6.9836  
6.9818  
6.9773  
6.9630  
6.9612  
6.9566  
5.1139  
5.1009  
4.5285  
4.5178  
4.4989  
4.4883  
4.4746  
4.4613  
4.4451  
4.4318  
3.8274  
3.5475  
3.5203  
3.5058  
3.4786  
3.2816  
3.2643  
3.2398  
3.2225

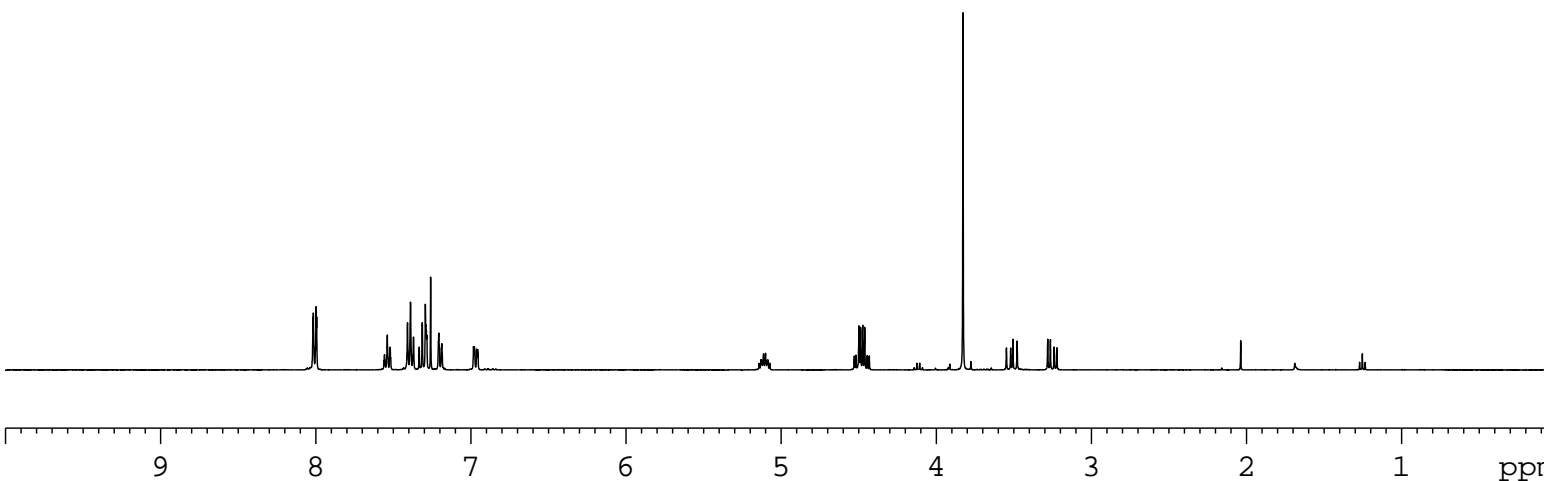


**3h**

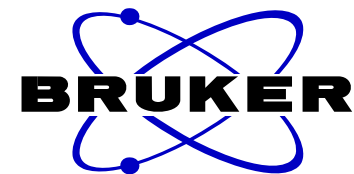


NAME CWG1600430-1-pure  
EXPNO 1  
PROCNO 1  
Date\_ 20160502  
Time 10.51  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 144  
DW 60.800 usec  
DE 6.50 usec  
TE 299.3 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



1.96  
1.01  
2.04  
1.95  
1.05  
0.98  
1.00  
2.04  
2.91  
1.00  
0.99

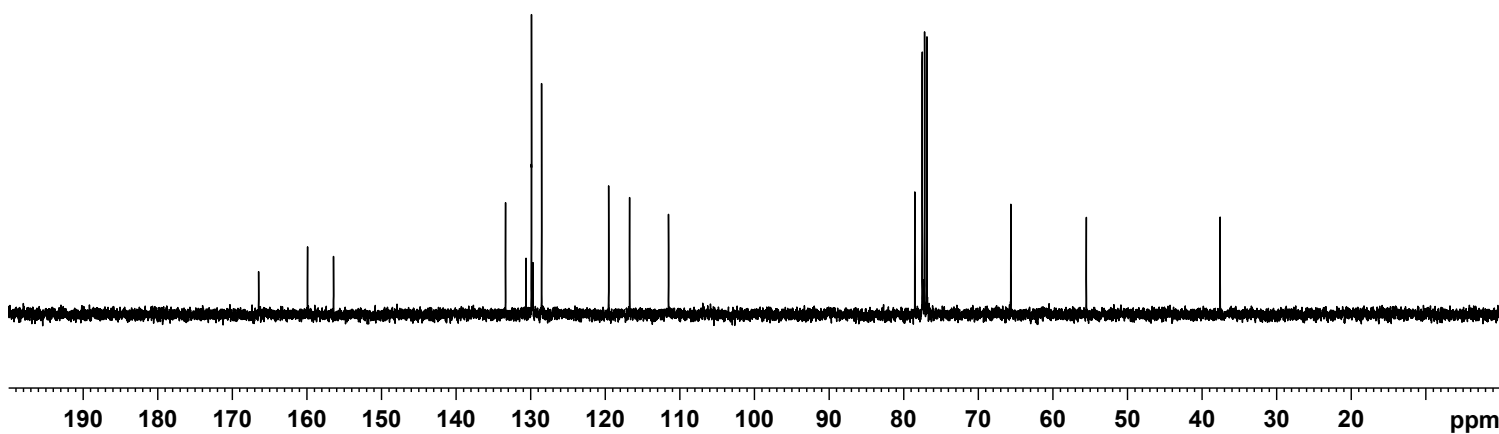
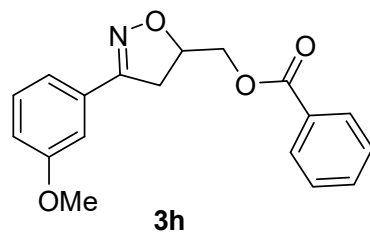


NAME CWG16000430-1-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160502  
Time 10.55  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 34  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 299.5 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

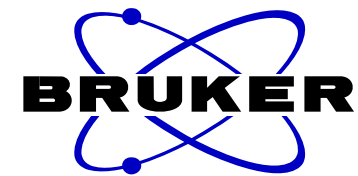
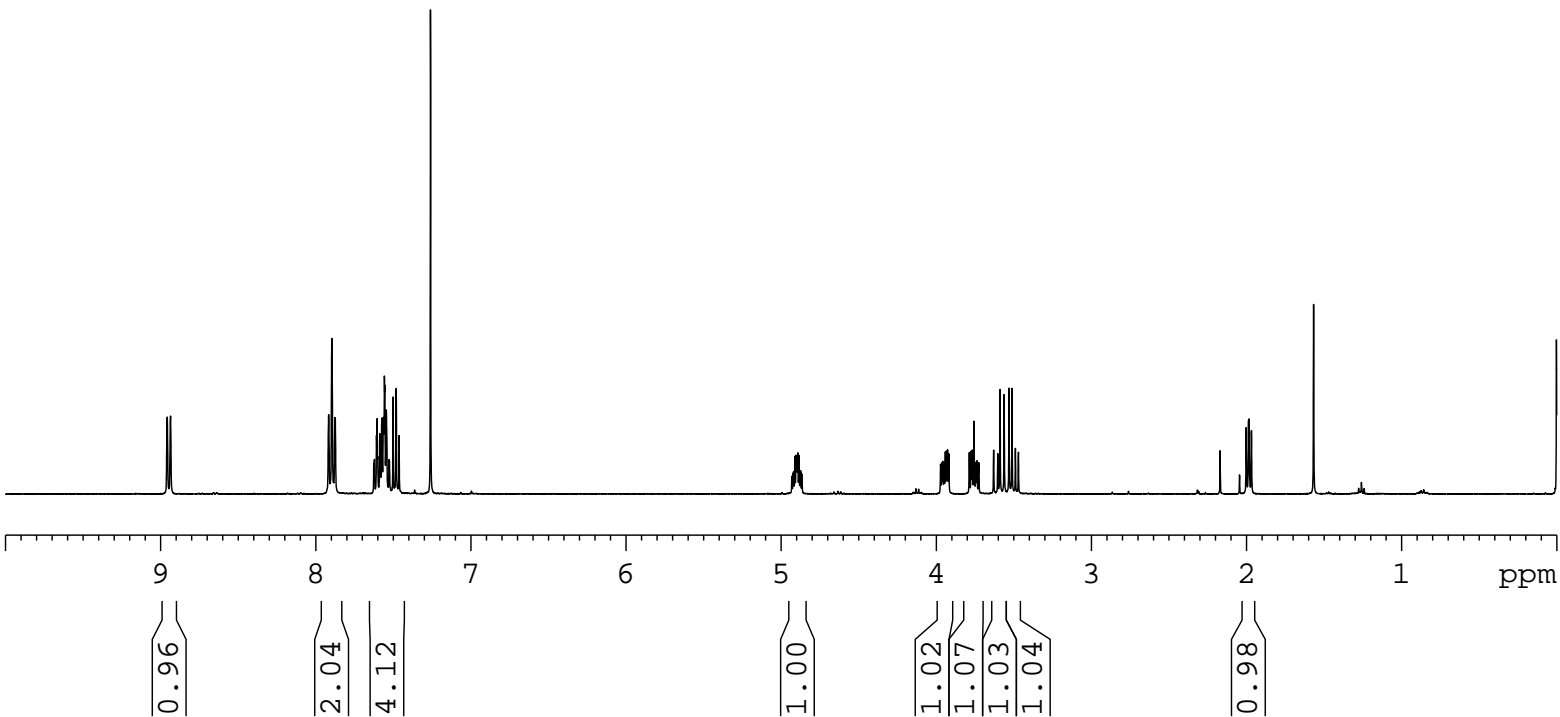
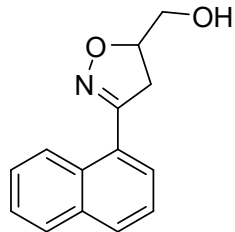
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228121 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.45  
159.90  
156.41  
133.37  
130.62  
129.91  
129.89  
129.69  
128.54  
119.55  
116.74  
111.52  
78.51  
65.64  
55.51  
37.57



8.9574  
8.9359  
7.9166  
7.8962  
7.8766  
7.6082  
7.6046  
7.6006  
7.5871  
7.5833  
7.5752  
7.5724  
7.5647  
7.5616  
7.5571  
7.5544  
7.5446  
7.5010  
7.4811  
7.4626  
7.2599  
4.9121  
4.9045  
4.8931  
4.8856  
3.9420  
3.9341  
3.9274  
3.9195  
3.7873  
3.7757  
3.7683  
3.7567  
3.6305  
3.6039  
3.5892  
3.5627  
3.5314  
3.5120  
3.4901  
3.4707  
2.0019  
1.9871  
1.9831  
1.9683

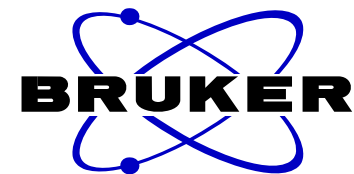


```

NAME          CWG150914-1
EXPNO         1
PROCNO        1
Date_         20150915
Time          11.20
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            298.5 K
D1            1.00000000 sec
TD0           1
  
```

```

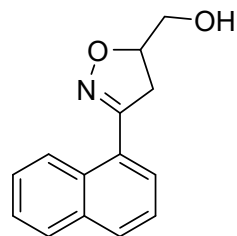
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



NAME CWG150914-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150915  
Time 12.30  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 39  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228392 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



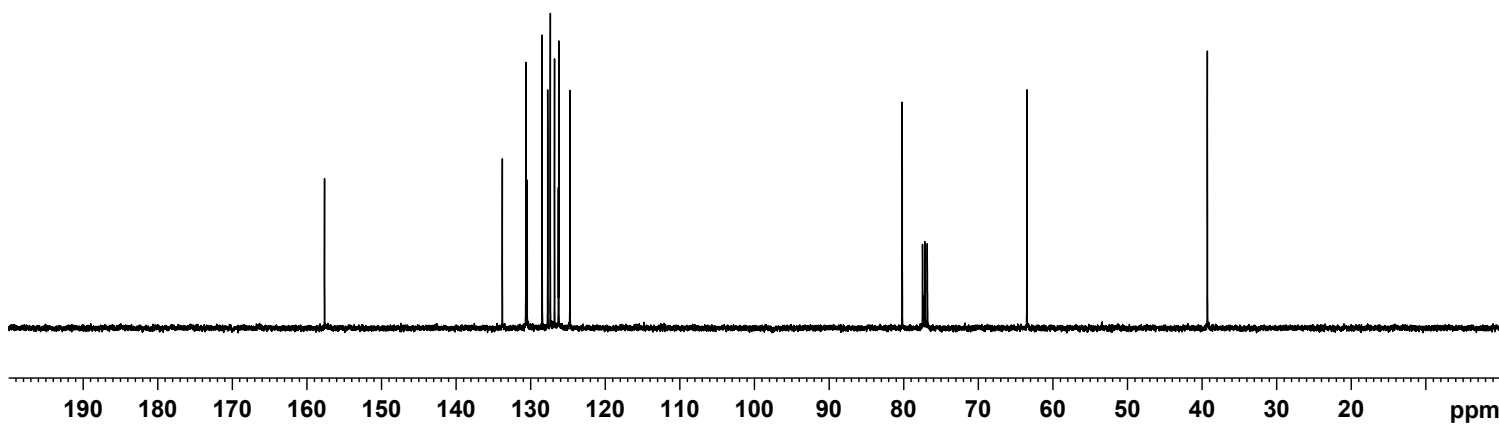
157.62

133.80  
130.65  
130.47  
128.46  
127.72  
127.37  
126.81  
126.30  
126.23  
124.74

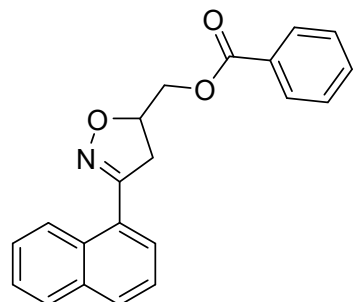
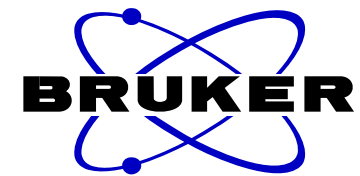
80.20

63.48

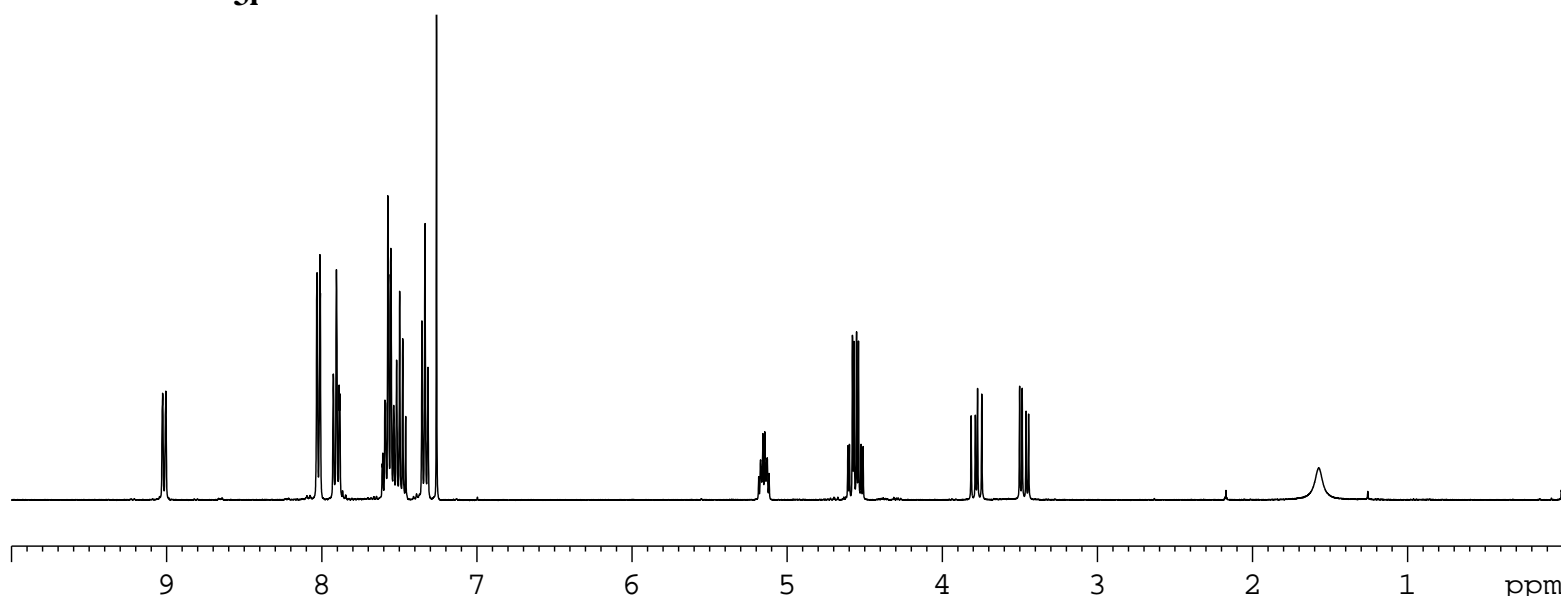
39.29



9.0252  
 9.0048  
 8.0300  
 8.0121  
 8.0089  
 7.9250  
 7.9050  
 7.8875  
 7.8831  
 7.6101  
 7.6063  
 7.5930  
 7.5893  
 7.5736  
 7.5691  
 7.5539  
 7.5358  
 7.5170  
 7.4975  
 7.4776  
 7.4587  
 7.3538  
 7.3342  
 7.3149  
 7.2600  
 5.1718  
 5.1564  
 5.1444  
 5.1289  
 4.6090  
 4.5987  
 4.5793  
 4.5691  
 4.5531  
 4.5405  
 4.5235  
 4.5108  
 3.8141  
 3.7869  
 3.7727  
 3.7455  
 3.5016  
 3.4850  
 3.4602  
 3.4436



3i

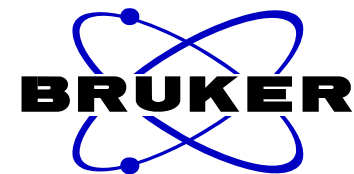


0.97  
 1.95  
 2.04  
 5.14  
 2.01  
 1.00  
 2.05  
 1.02  
 1.04

```

NAME          CWG150915-1
EXPNO         1
PROCNO        1
Date_         20150915
Time          19.17
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.9 K
D1            1.00000000 sec
TD0           1

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



NAME CWG150915-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150915  
Time 19.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 71  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

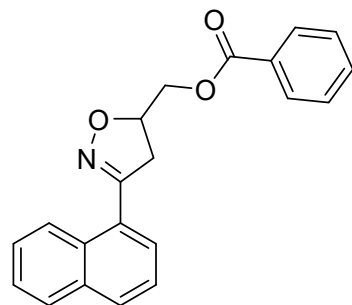
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.40  
156.83  
134.01  
133.24  
131.01  
130.57  
129.77  
129.54  
128.61  
128.40  
127.83  
127.62  
127.06  
126.45  
126.20  
124.80

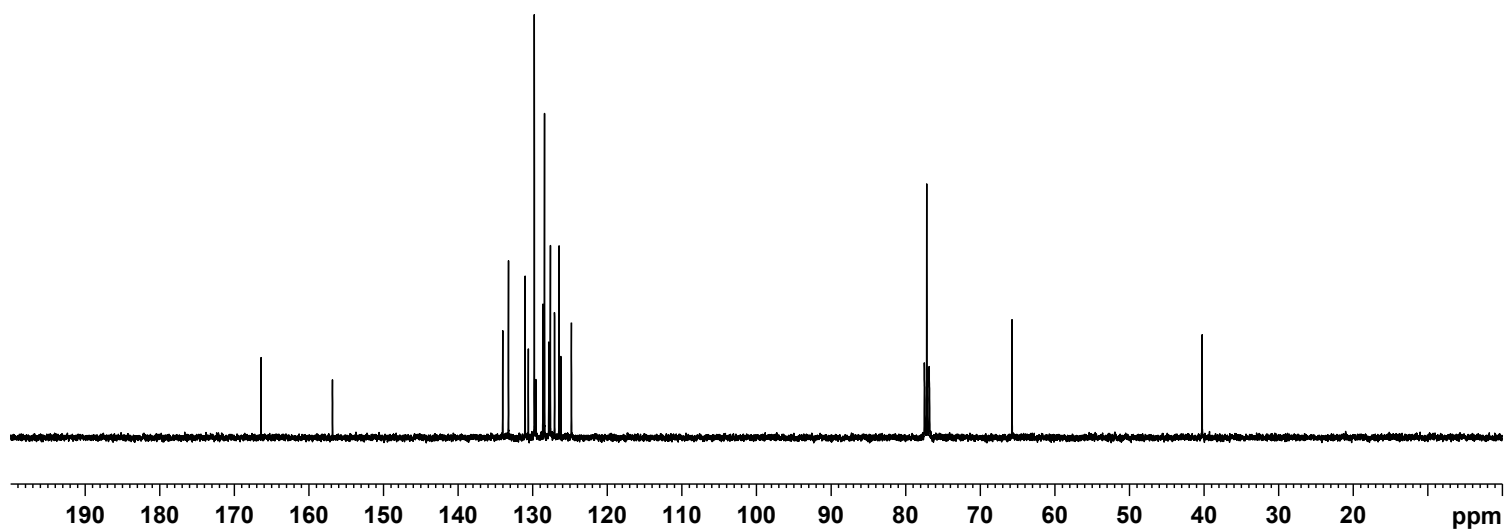
77.17

65.74

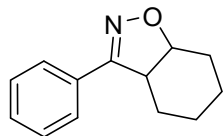
40.25



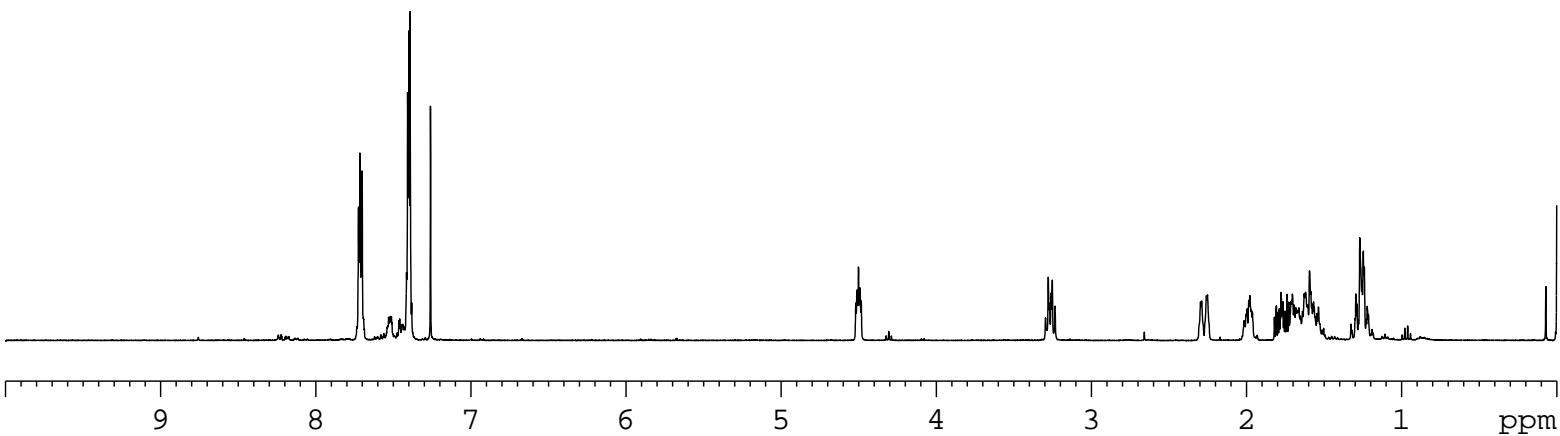
3i



7.7244  
7.7215  
7.7188  
7.7152  
7.7121  
7.7061  
7.7001  
7.4146  
7.4075  
7.4023  
7.3978  
7.3909  
7.2600  
4.5189  
4.5102  
4.5016  
4.4934  
4.4843  
3.2781  
3.2700  
3.2602  
3.2523  
2.2967  
2.2894  
2.2589  
2.2517  
1.9854  
1.9788  
1.7771  
1.7657  
1.7391  
1.7279  
1.7125  
1.7041  
1.6285  
1.6198  
1.5942  
1.5856  
1.5679  
1.2953  
1.2885  
1.2699  
1.2555  
1.2471  
1.2409



3j

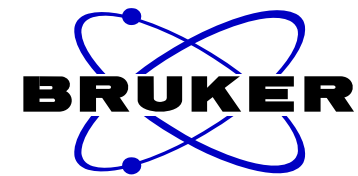


2.03  
3.05

1.00

1.01

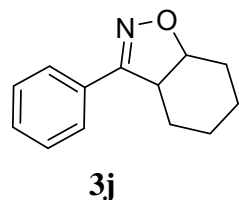
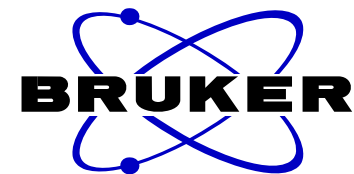
1.03  
1.01  
2.35  
2.35  
2.34



NAME CWG150425-4  
EXPNO 1  
PROCNO 1  
Date\_ 20150427  
Time 13.45  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 181  
DW 60.800 usec  
DE 6.50 usec  
TE 296.7 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00





163.69

129.67  
129.19  
128.54  
126.65

80.14

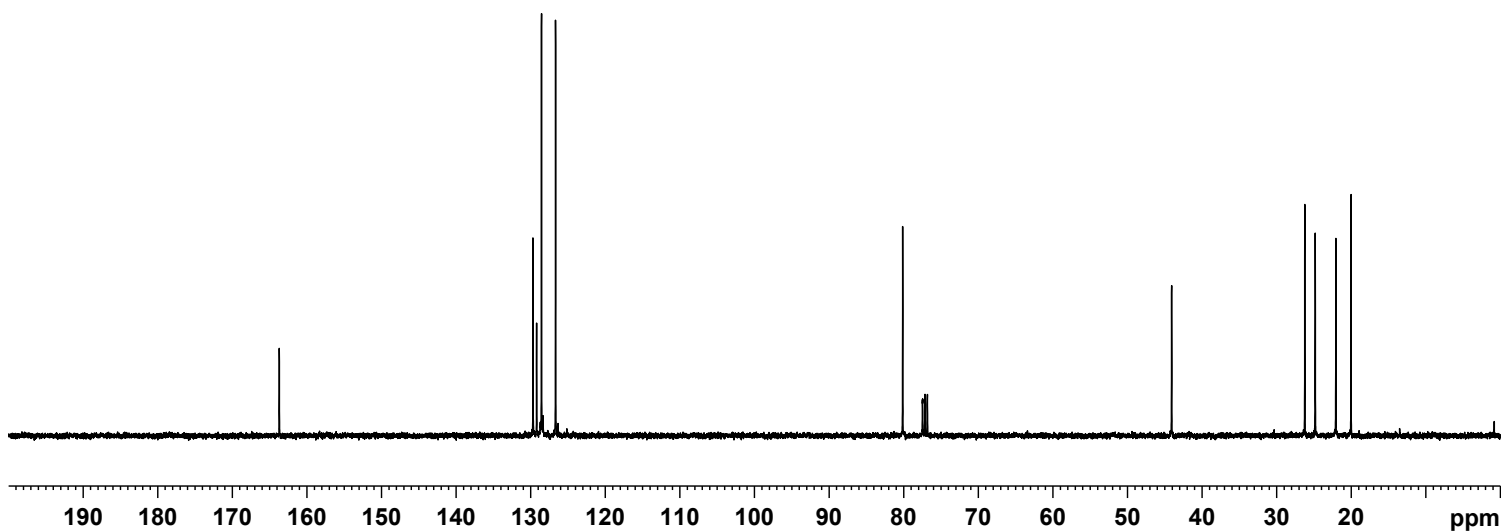
44.09

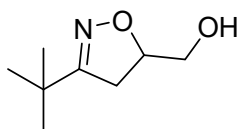
26.23  
24.83  
22.07  
20.03

NAME CWG150420-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160223  
Time 14.59  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 19  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.7 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

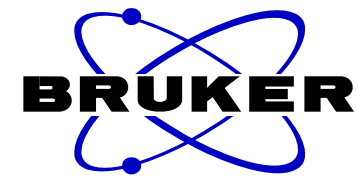
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228485 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



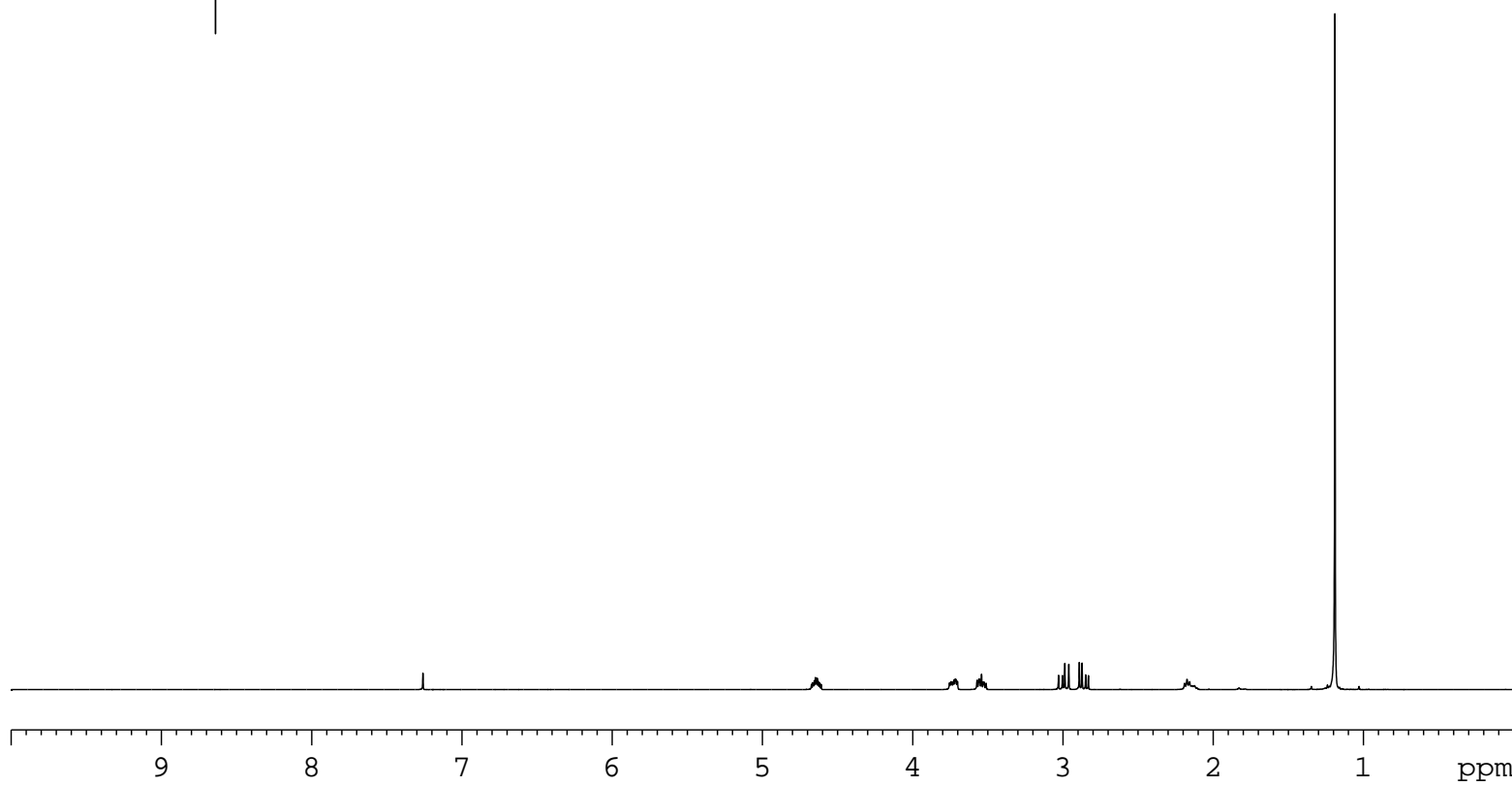


7.2600  
4.6736  
4.6652  
4.6618  
4.6551  
4.6472  
4.6436  
4.6387  
4.6353  
4.6287  
4.6207  
4.6174  
4.6089  
3.7548  
3.7464  
3.7403  
3.7319  
3.7247  
3.7163  
3.7102  
3.7020  
3.5719  
3.5599  
3.5537  
3.5417  
3.5298  
3.5235  
3.5115  
3.0291  
3.0028  
2.9871  
2.9608  
2.8907  
2.8725  
2.8488  
2.8306  
2.1904



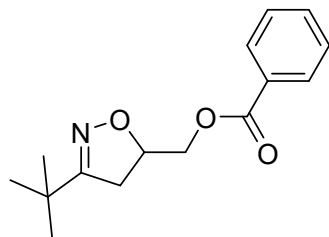
NAME CWG150813-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150814  
Time 10.54  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 90.5  
DW 60.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

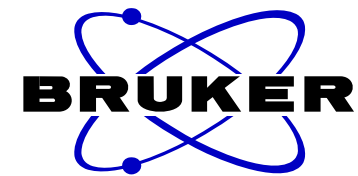
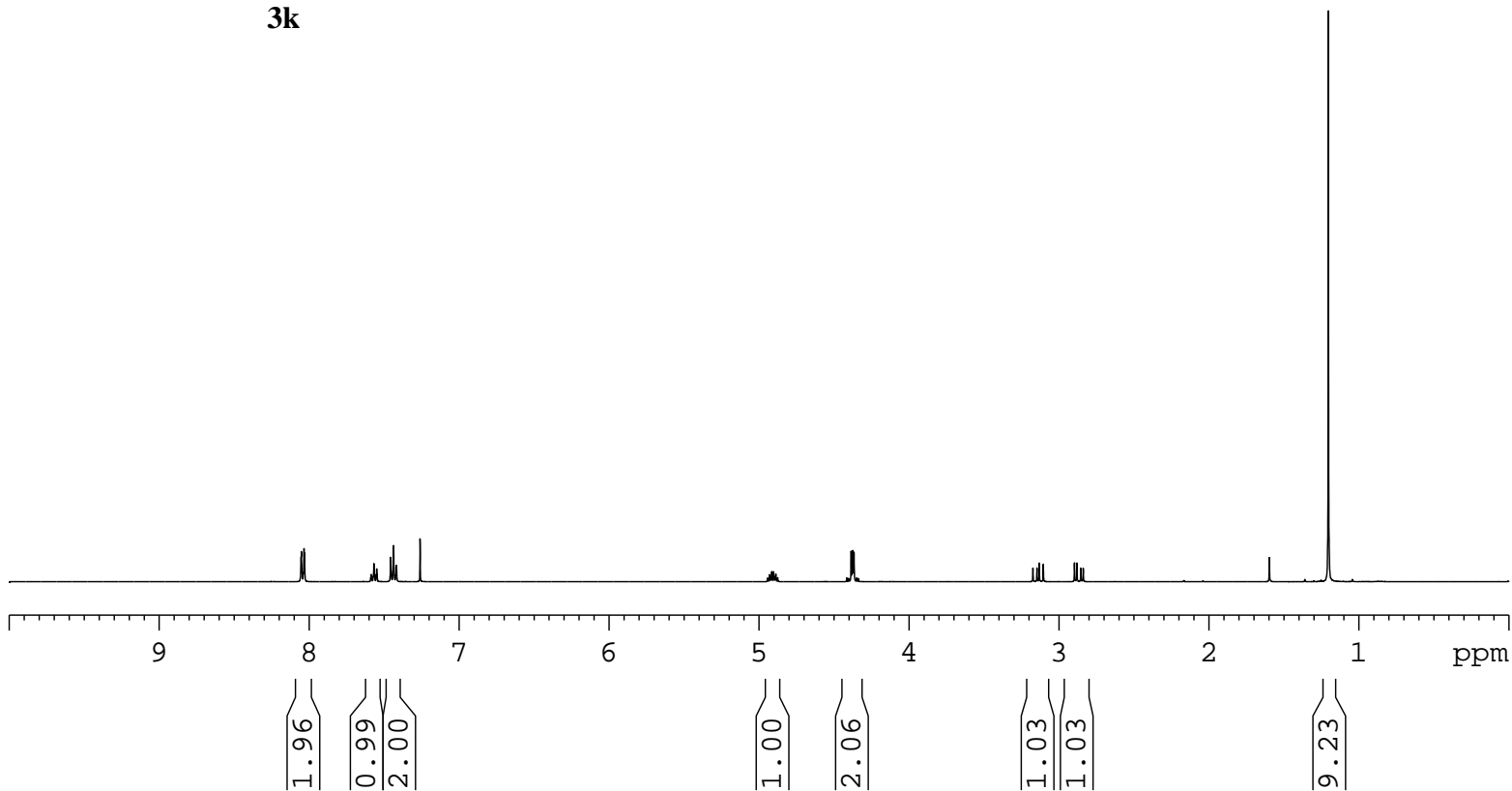


1.00  
1.05  
1.04  
1.05  
1.03  
1.02  
9.15

8.0538  
8.0514  
8.0337  
8.0302  
7.5677  
7.5491  
7.4562  
7.4528  
7.4365  
7.4177  
7.2598  
4.9433  
4.9312  
4.9272  
4.9155  
4.9038  
4.8921  
4.8882  
4.8760  
4.4154  
4.4028  
4.3863  
4.3785  
4.3736  
4.3669  
4.3493  
4.3376  
3.1740  
3.1471  
3.1317  
3.1048  
2.8969  
2.8807  
2.8546  
2.8384  
— 1.2039



3k

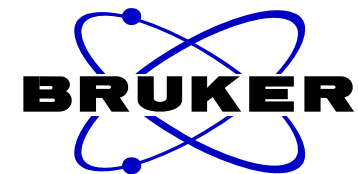


```

NAME CWG150814
EXPNO 1
PROCNO 1
Date_ 20150814
Time 15.59
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 298.3 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700033 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

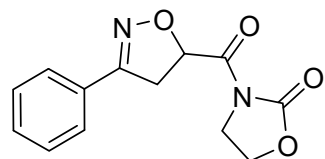
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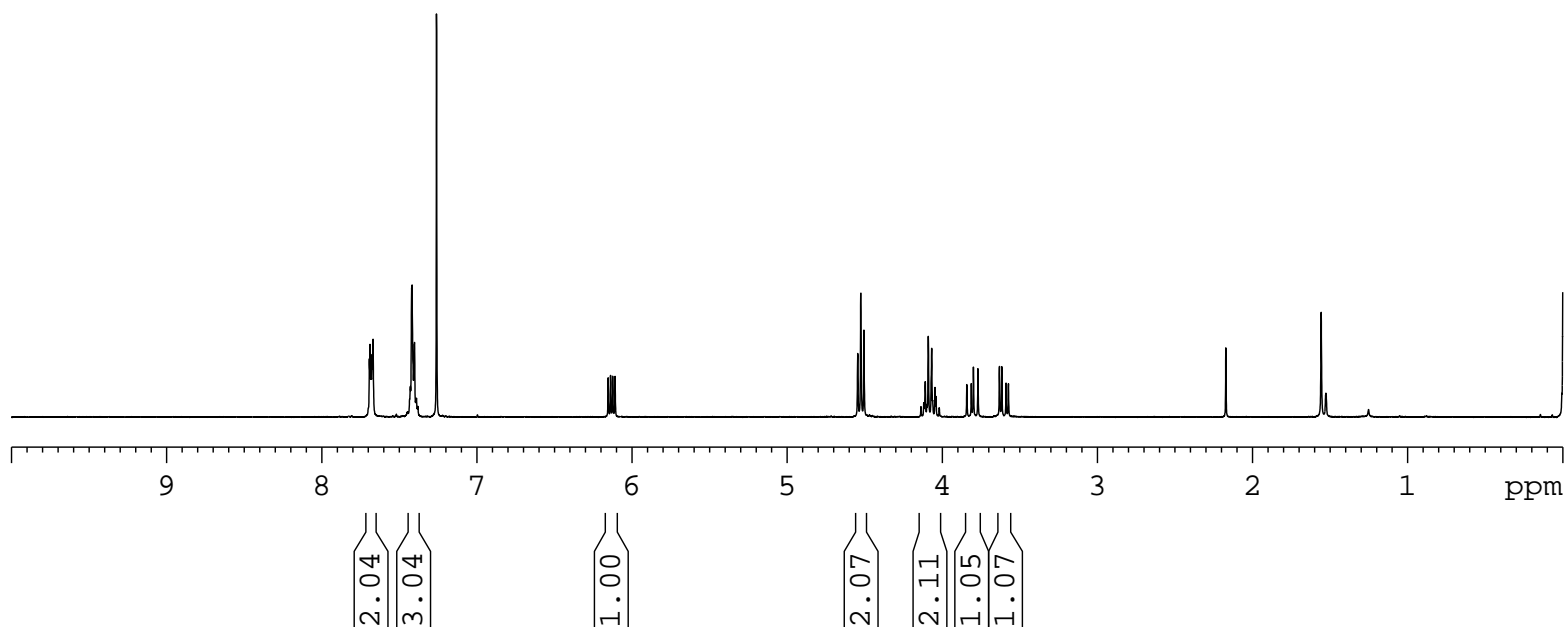
NAME CWG150311-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150312  
Time 11.59  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 294.5 K  
D1 1.00000000 sec  
TD0 1

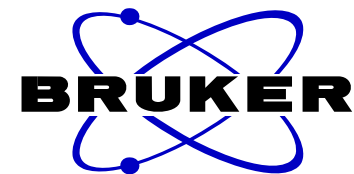
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700039 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

7.6929  
7.6887  
7.6750  
7.6691  
7.4501  
7.4459  
7.4286  
7.4204  
7.4176  
7.4021  
7.3937  
7.3893  
7.3800  
7.2601  
6.1533  
6.1379  
6.1242  
6.1089  
4.5453  
4.5256  
4.5051  
4.1375  
4.1193  
4.1099  
4.0992  
4.0902  
4.0684  
4.0624  
4.0472  
4.0408  
4.0196  
3.8420  
3.8129  
3.7993  
3.7702  
3.6318  
3.6165  
3.5891  
3.5738



5a





NAME CWG150311-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150313  
Time 19.05  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 460  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.7 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.15

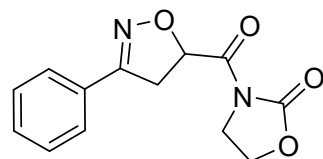
155.93  
153.37

130.47  
128.76  
128.57  
126.92

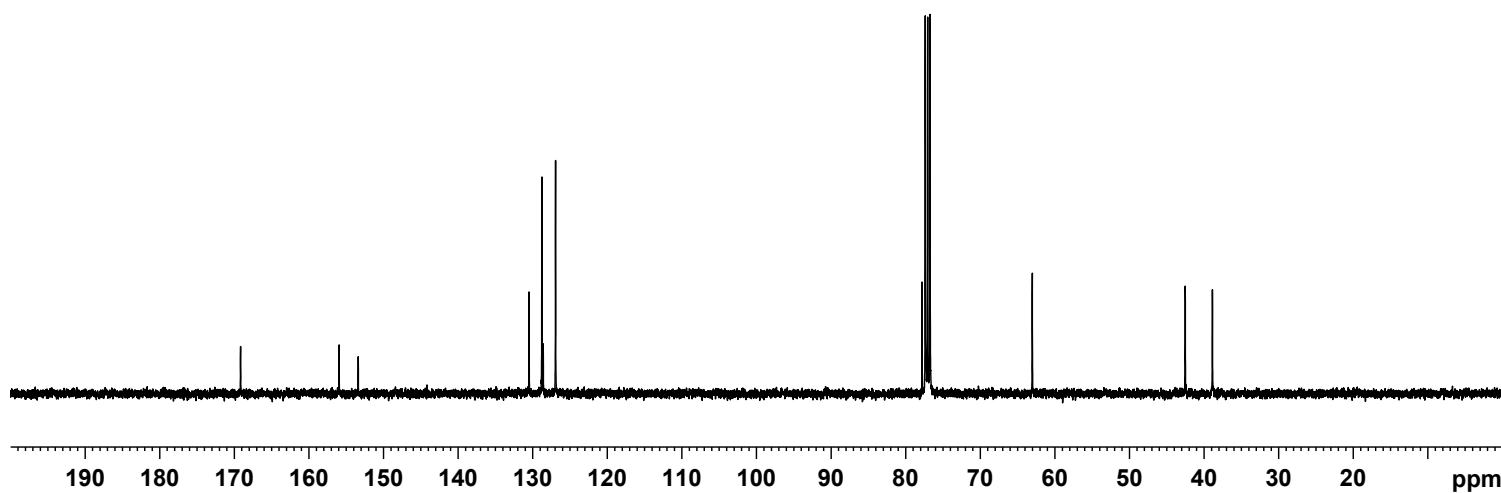
77.79  
77.36  
77.04  
76.72

63.01

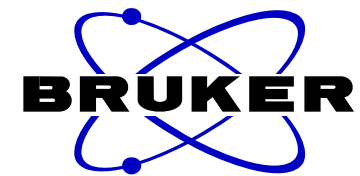
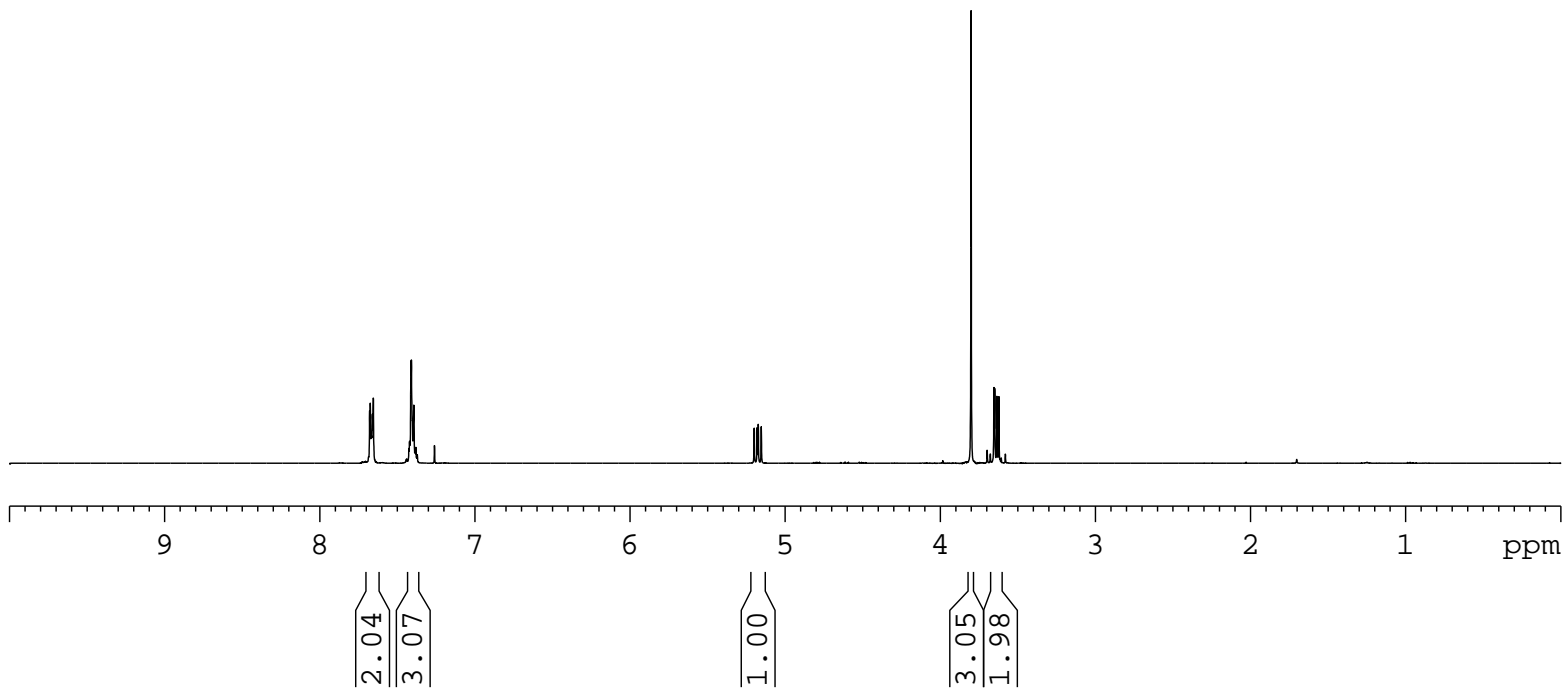
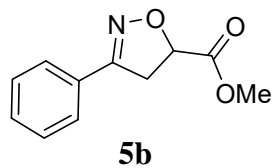
42.51  
38.87



5a

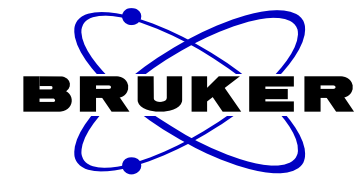


7.6783  
7.6740  
7.6694  
7.6673  
7.6647  
7.6602  
7.6543  
7.6451  
7.4416  
7.4374  
7.4251  
7.4208  
7.4188  
7.4114  
7.4087  
7.4032  
7.3930  
7.3843  
7.3800  
7.3749  
7.3707  
7.2601  
5.1998  
5.1808  
5.1733  
5.1542  
3.8017  
3.6543  
3.6493  
3.6353  
3.6227



NAME CWG150421-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150422  
Time\_ 12.01  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 114  
DW 60.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 1.0000000 sec  
TD0 1

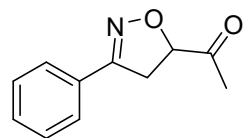
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700038 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



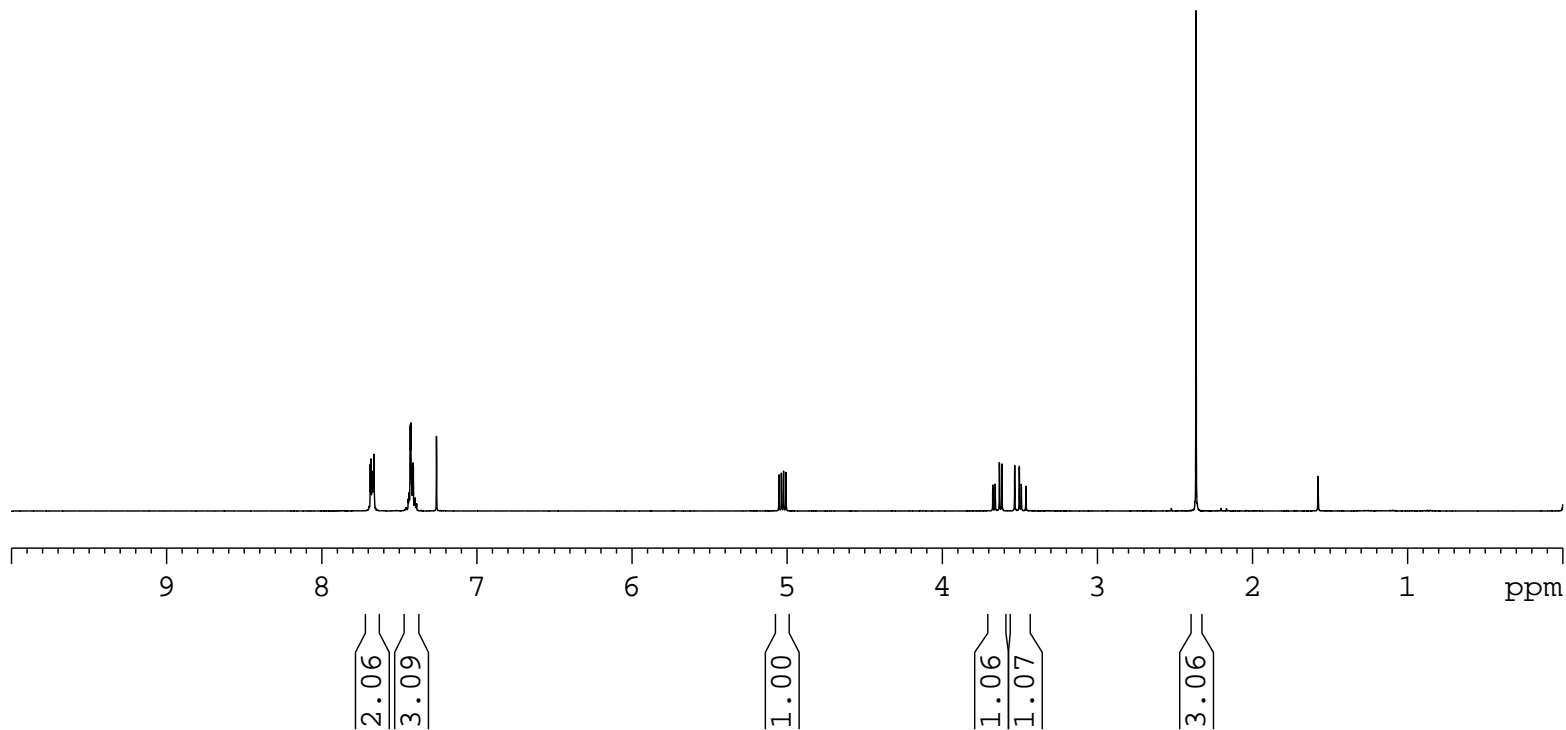
NAME CWG150707-1-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150707  
Time 17.31  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 1.00000000 sec  
TD0 1

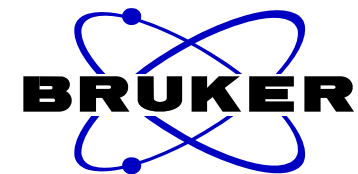
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

7.6871  
7.6827  
7.6780  
7.6758  
7.6738  
7.6691  
7.6629  
7.4423  
7.4374  
7.4289  
7.4257  
7.4195  
7.4147  
7.4104  
7.4018  
7.3976  
7.3880  
7.2600  
5.0531  
5.0374  
5.0235  
5.0079  
3.6743  
3.6587  
3.6318  
3.6162  
3.5332  
3.5036  
3.4907  
3.4610  
— 2.3644

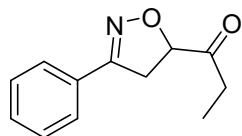


5c





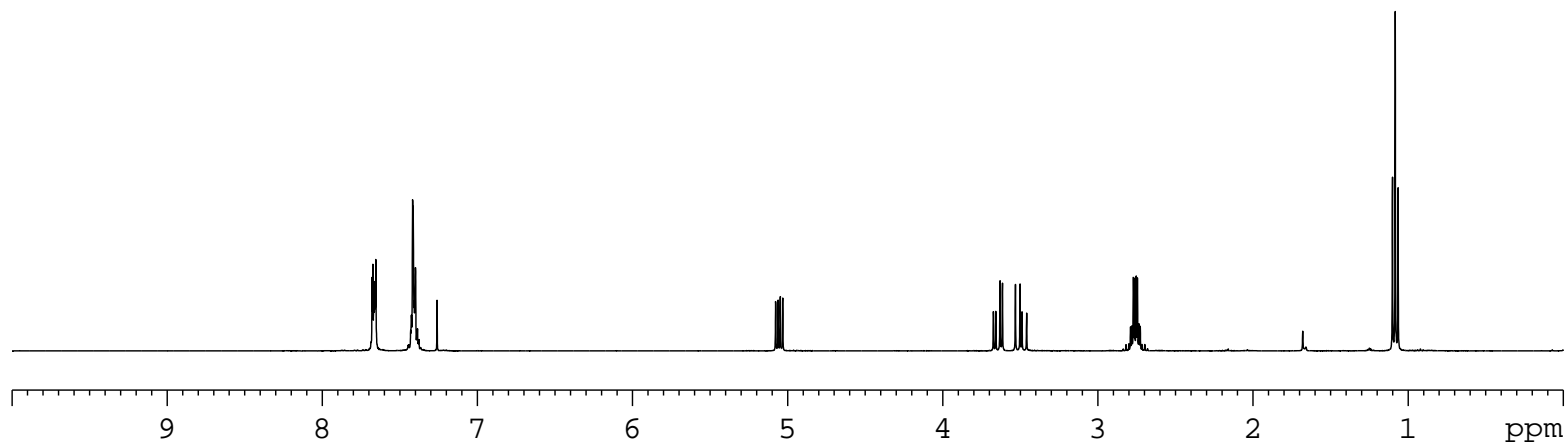
7.6860  
7.6786  
7.6742  
7.6689  
7.6665  
7.6609  
7.6545  
7.4461  
7.4419  
7.4301  
7.4251  
7.4175  
7.4138  
7.4073  
7.3989  
7.3903  
7.3862  
7.3806  
7.3766  
7.2600  
5.0770  
5.0612  
5.0473  
5.0315  
3.6730  
3.6573  
3.6305  
3.6147  
3.5310  
3.5013  
3.4885  
3.4587  
2.7890  
2.7805  
2.7708  
2.7624  
2.7526  
2.7444  
2.7345  
2.7264  
1.1005  
1.0824  
1.0643



5d

NAME CWG150709-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150710  
Time\_ 10.15  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 90.5  
DW 60.800 usec  
DE 6.50 usec  
TE 296.7 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



2.06  
3.15

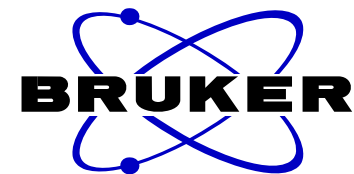
1.00

1.05  
1.07

2.06

3.16

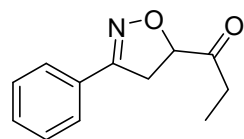




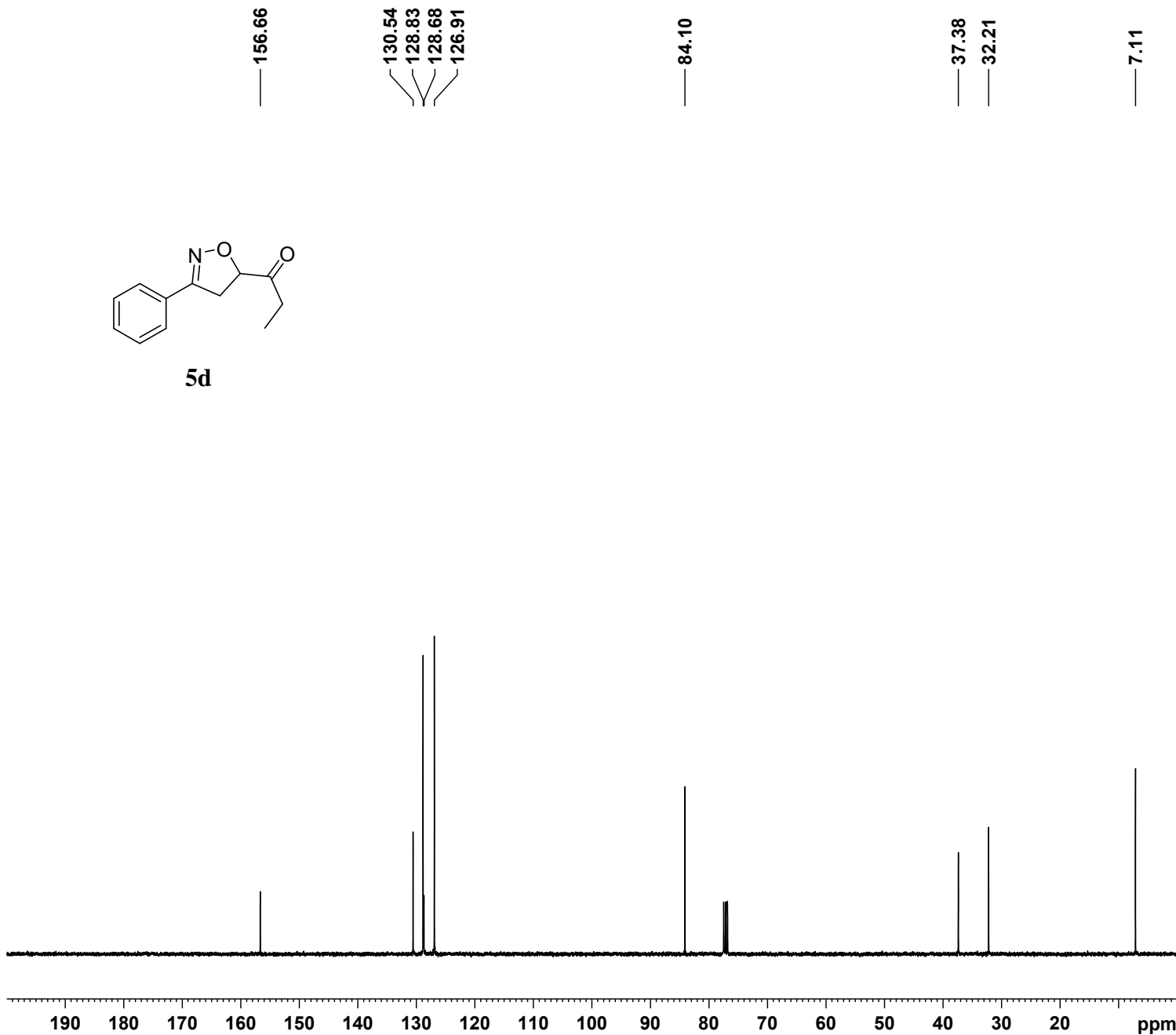
NAME CWG150709-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150928  
Time 17.49  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 101  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.6 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

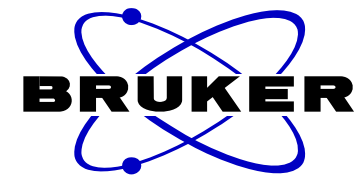
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228229 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

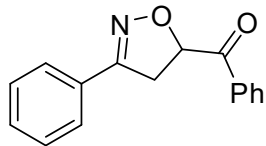


5d





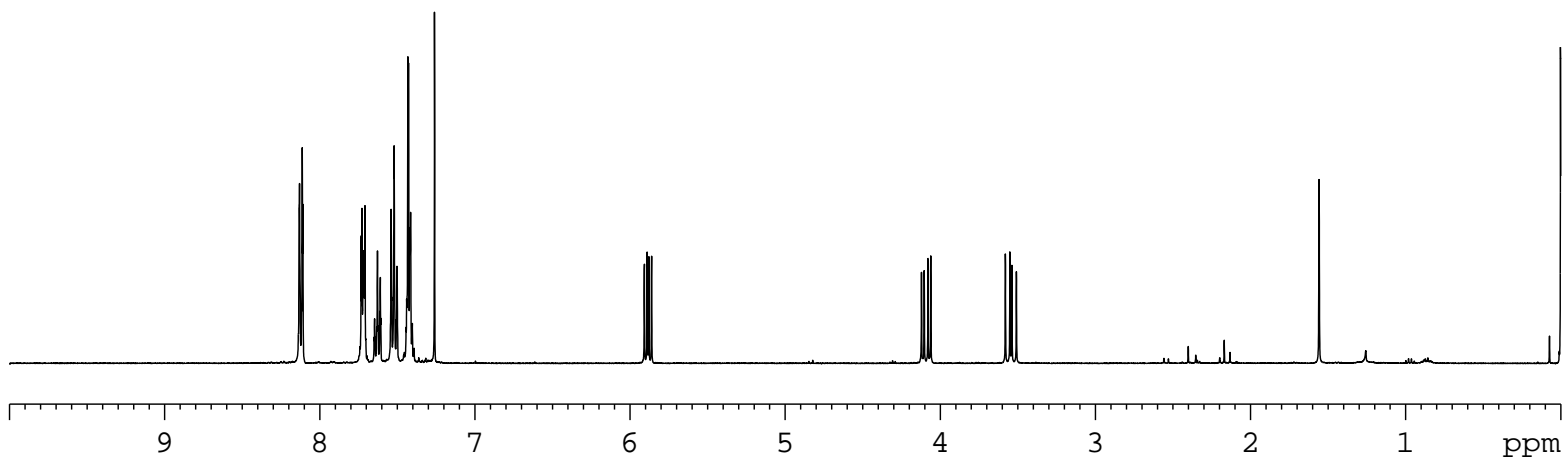
7.7277  
7.7197  
7.7178  
7.7157  
7.7082  
7.6463  
7.6326  
7.6278  
7.6232  
7.6124  
7.6093  
7.6062  
7.5397  
7.5361  
7.5200  
7.5015  
7.4321  
7.4275  
7.4193  
7.4141  
7.2599  
5.9081  
5.8903  
5.8793  
5.8615  
4.1214  
4.1036  
4.0794  
4.0616  
3.5804  
3.5515  
3.5383  
3.5095



5e

NAME CWG150713-1-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150714  
Time 12.13  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 298.7 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

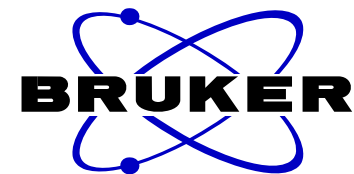


2.00  
2.04  
1.06  
2.16  
3.03

1.00

1.02

1.04



NAME CWG150709-4-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150916  
Time 13.09  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 127  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228190 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

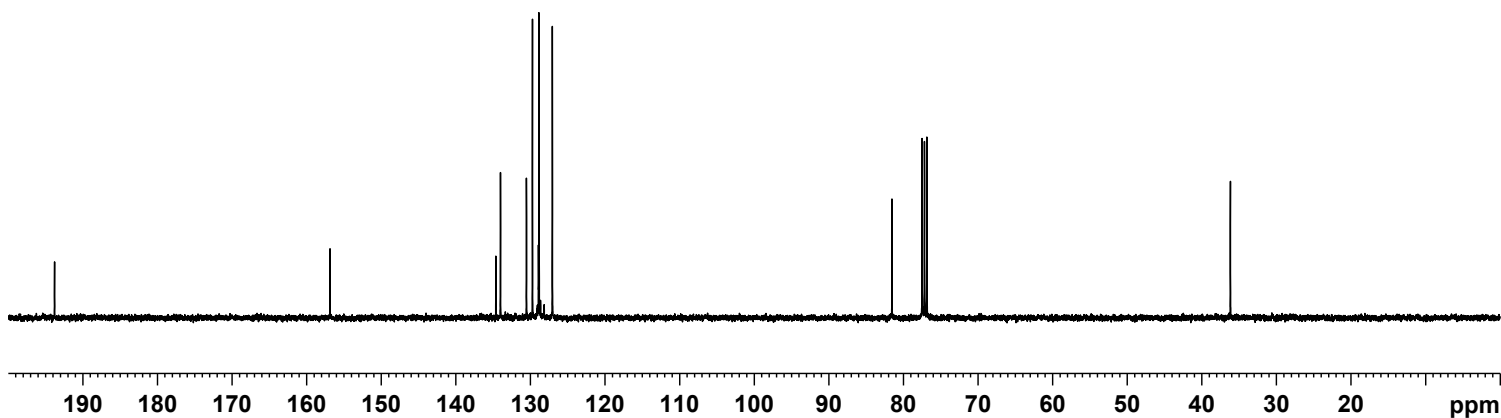
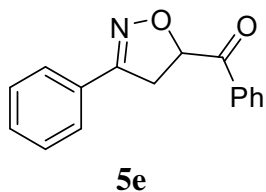
193.78

156.85

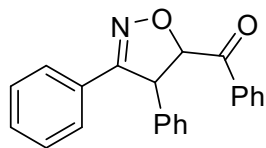
134.62  
134.00  
130.52  
129.71  
128.91  
128.84  
128.81  
127.04

81.51

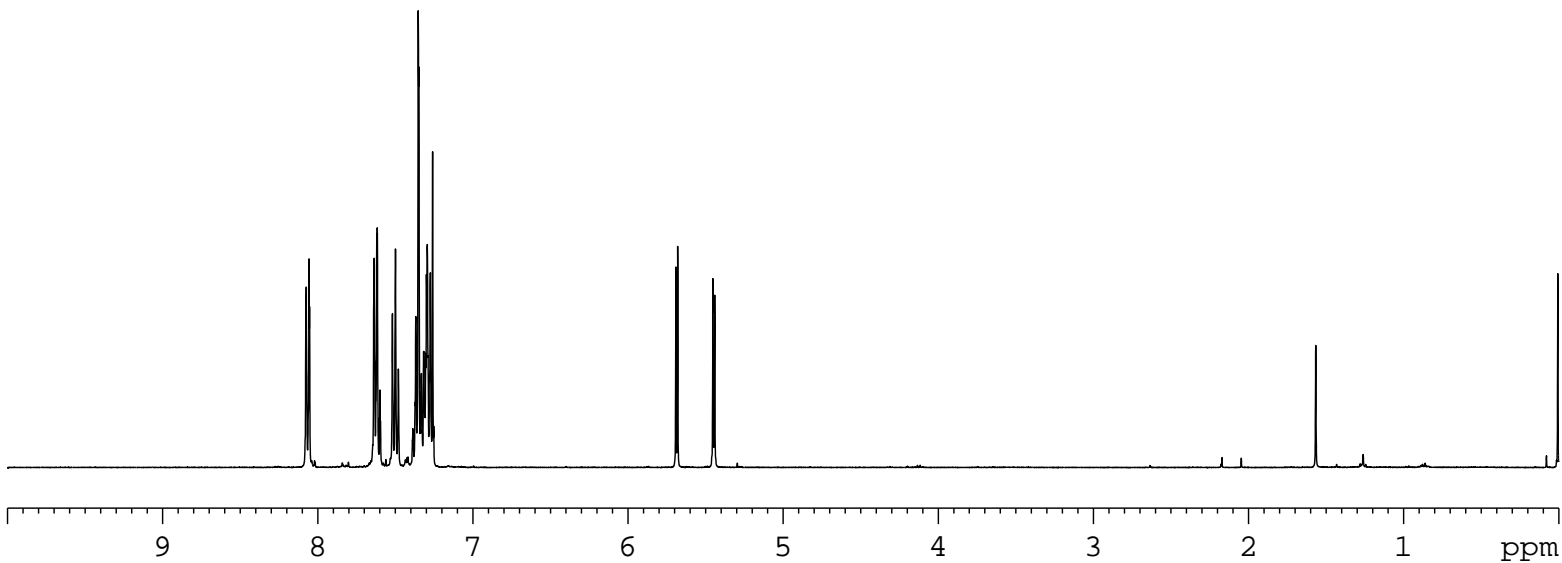
36.17



7.6166  
7.5990  
7.5191  
7.4995  
7.4806  
7.3874  
7.3731  
7.3688  
7.3670  
7.3528  
7.3483  
7.3360  
7.3323  
7.3270  
7.3178  
7.3163  
7.3100  
7.3043  
7.2998  
7.2942  
7.2894  
7.2810  
7.2747  
7.2601  
7.2528  
5.6919  
5.6799  
5.4532  
5.4412

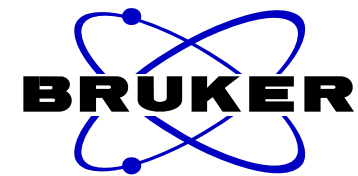


5f



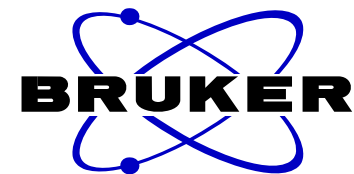
2.03  
3.12  
2.15  
7.87

1.00  
1.01



NAME CWG150709-2-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150709  
Time 17.36  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 298.6 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



NAME CWG150709-2--C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150916  
Time 12.52  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 91  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228229 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

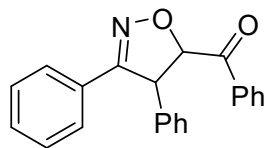
193.47

158.57

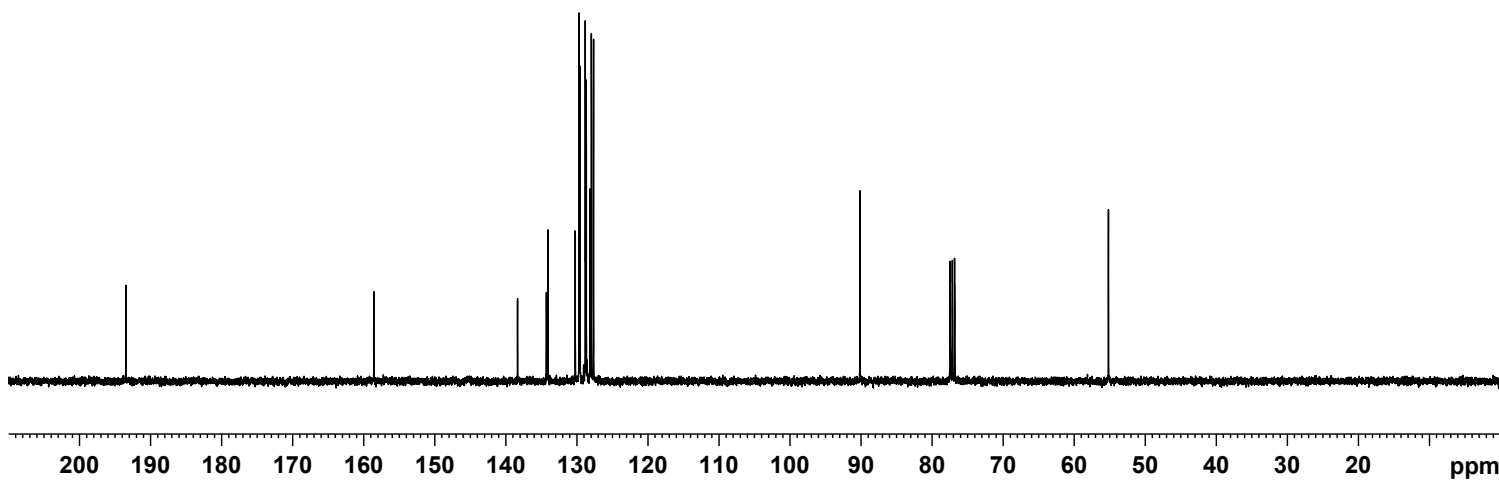
138.33  
134.28  
134.05  
130.21  
129.69  
129.55  
128.80  
128.66  
128.14  
127.94  
127.64

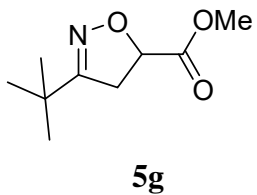
90.13

55.18



5f



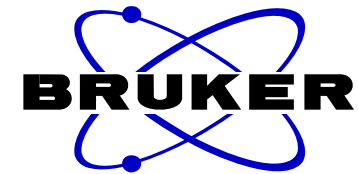


— 7.2602

4.9908  
4.9722  
4.9652  
4.9466

3.7706  
3.2910  
3.2723  
3.2484  
3.2444  
3.2299  
3.2187  
3.2018  
3.1761

— 1.1993

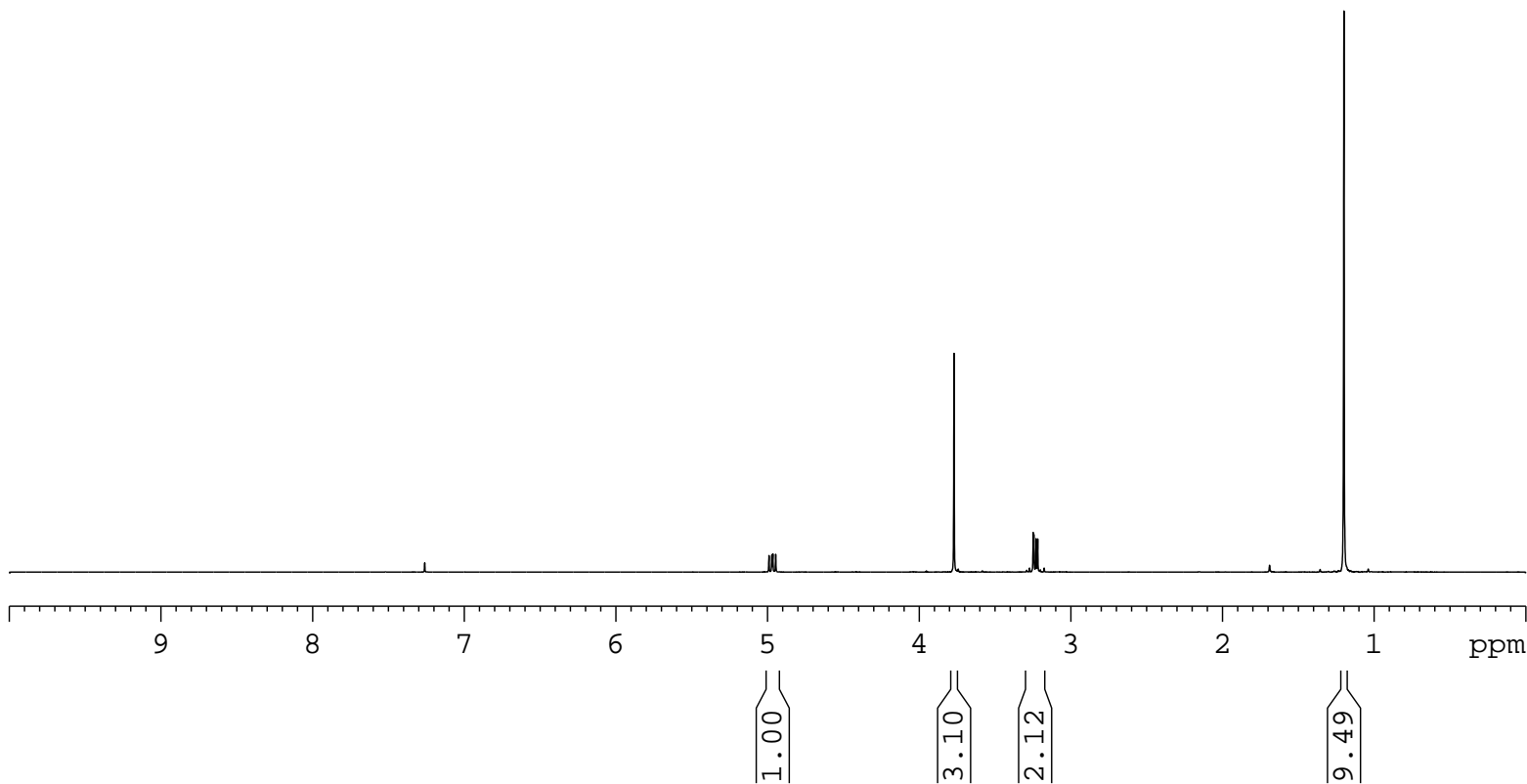


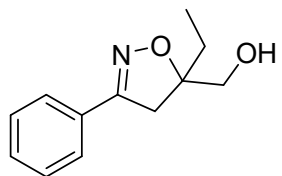
```

NAME          CWG150819-1
EXPNO         1
PROCNO        1
Date_         20150820
Time          11.07
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            80.6
DW            60.800 usec
DE            6.50 usec
TE            296.5 K
D1            1.00000000 sec
TD0           1
  
```

```

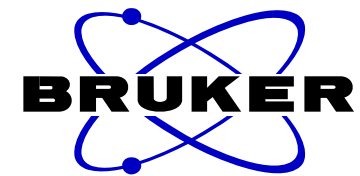
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700030 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```





7.6746  
7.6684  
7.6630  
7.6595  
7.6533  
7.6504  
7.4094  
7.4024  
7.3984  
7.3931  
7.2618

3.7745  
3.7445  
3.6178  
3.5878  
3.4111  
3.3692  
3.1115  
3.0696  
1.9607  
1.8078  
1.7908  
1.7897  
1.7722  
1.7529  
1.7515  
1.7326  
1.7145  
1.6970  
1.6786  
0.9991

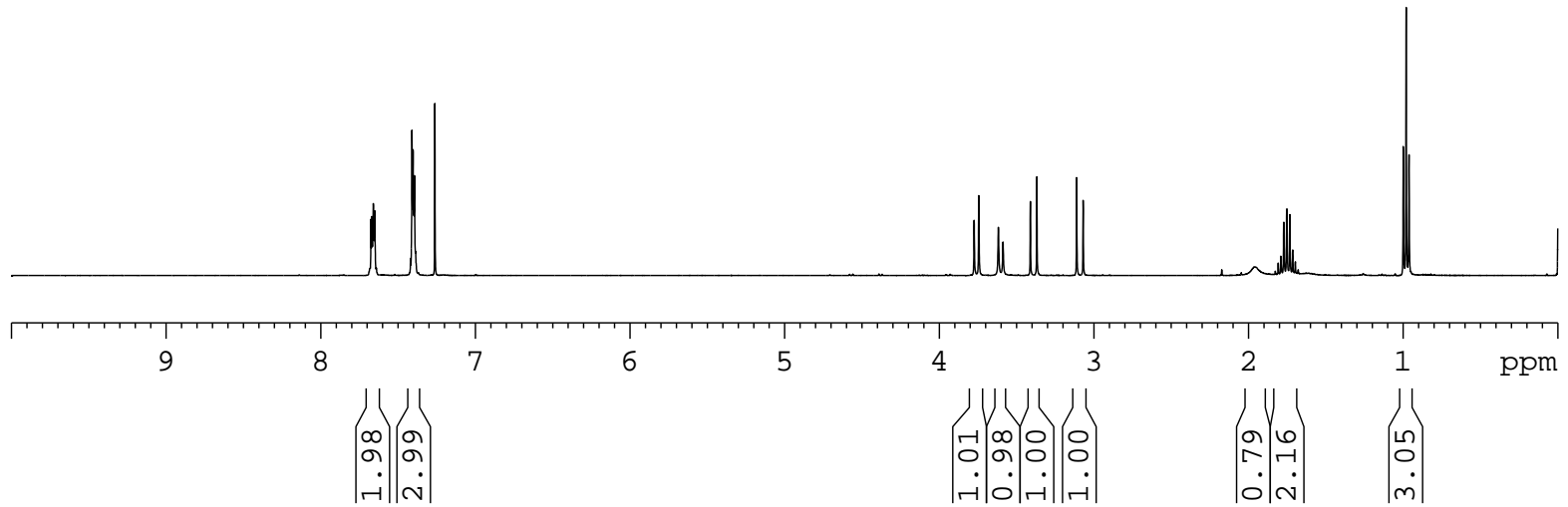


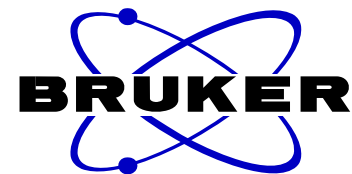
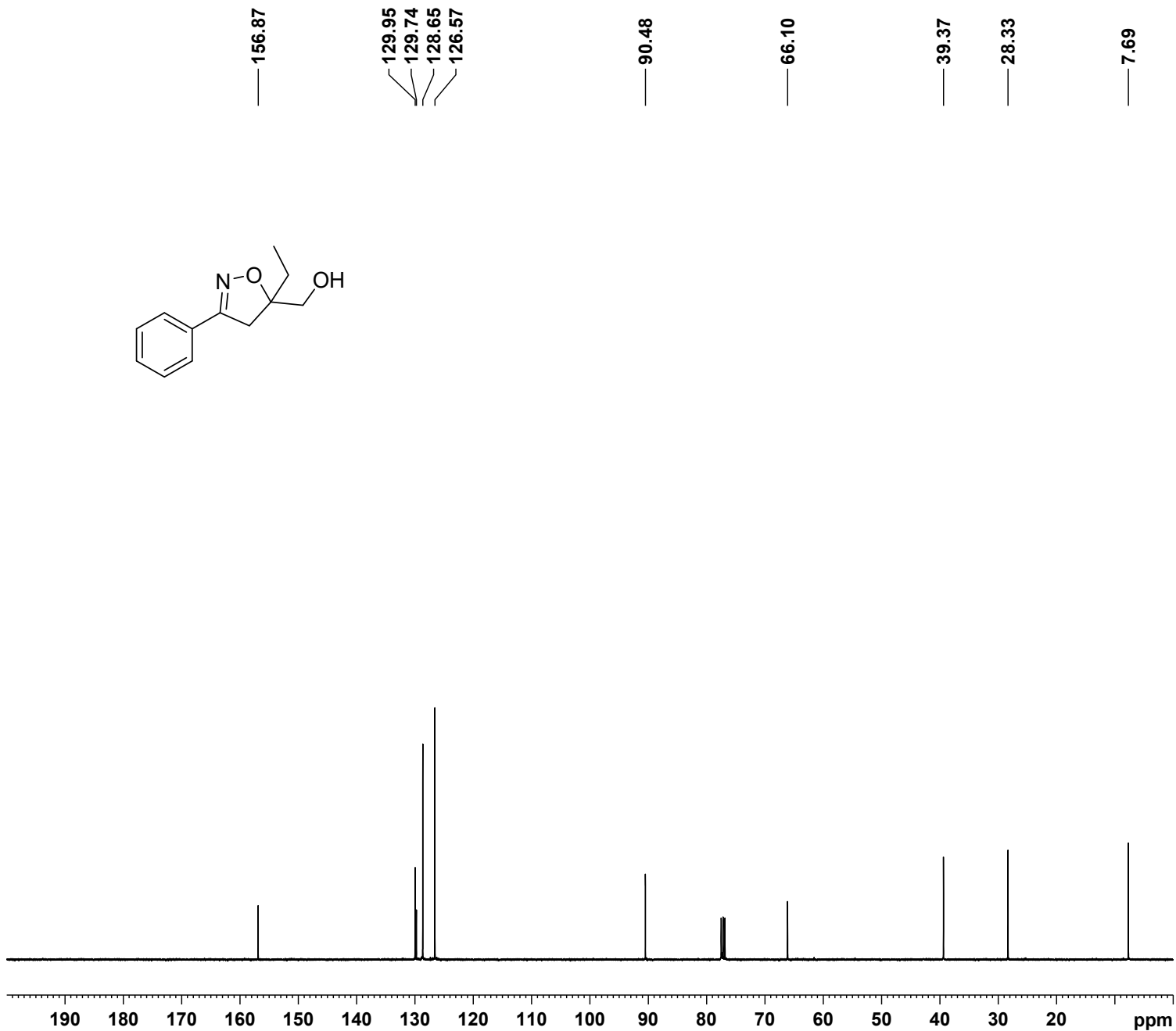
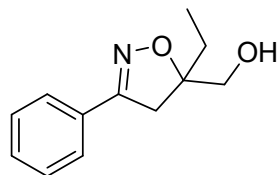
```

NAME          XYH150307-1
EXPNO         1
PROCNO        1
Date_         20150307
Time          10.07
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            294.1 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700032 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```





```

NAME      XYH150307-1-C13
EXPNO     1
PROCNO    1
Date_     20150307
Time      10.28
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         65536
SOLVENT   CDC13
NS         85
DS         4
SWH        24038.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         203
DW         20.800 usec
DE         6.50 usec
TE         295.2 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1
  
```

```

===== CHANNEL f1 =====
NUC1      13C
P1        8.50 usec
PL1       -2.00 dB
PL1W      57.32743073 W
SFO1      100.6328888 MHz
  
```

```

===== CHANNEL f2 =====
CPDPRG2   waltz16
NUC2      1H
PCPD2     80.00 usec
PL2       -1.00 dB
PL12      14.26 dB
PL13      14.46 dB
PL2W      13.18669796 W
PL12W     0.39276794 W
PL13W     0.37509048 W
SFO2      400.1716007 MHz
SI         32768
SF         100.6228270 MHz
WDW        EM
SSB         0
LB         1.00 Hz
GB          0
PC         1.40
  
```

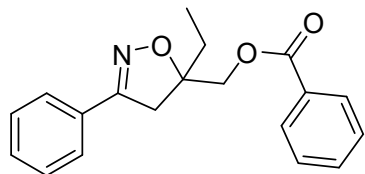


7.9866  
7.9688  
7.9654  
7.6923  
7.6863  
7.6803  
7.6772  
7.6681  
7.5486  
7.5457  
7.5300  
7.5143  
7.5114  
7.5087  
7.4263  
7.4170  
7.4102  
7.4006  
7.3920  
7.3720  
7.3529  
7.2604

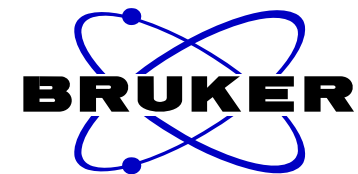
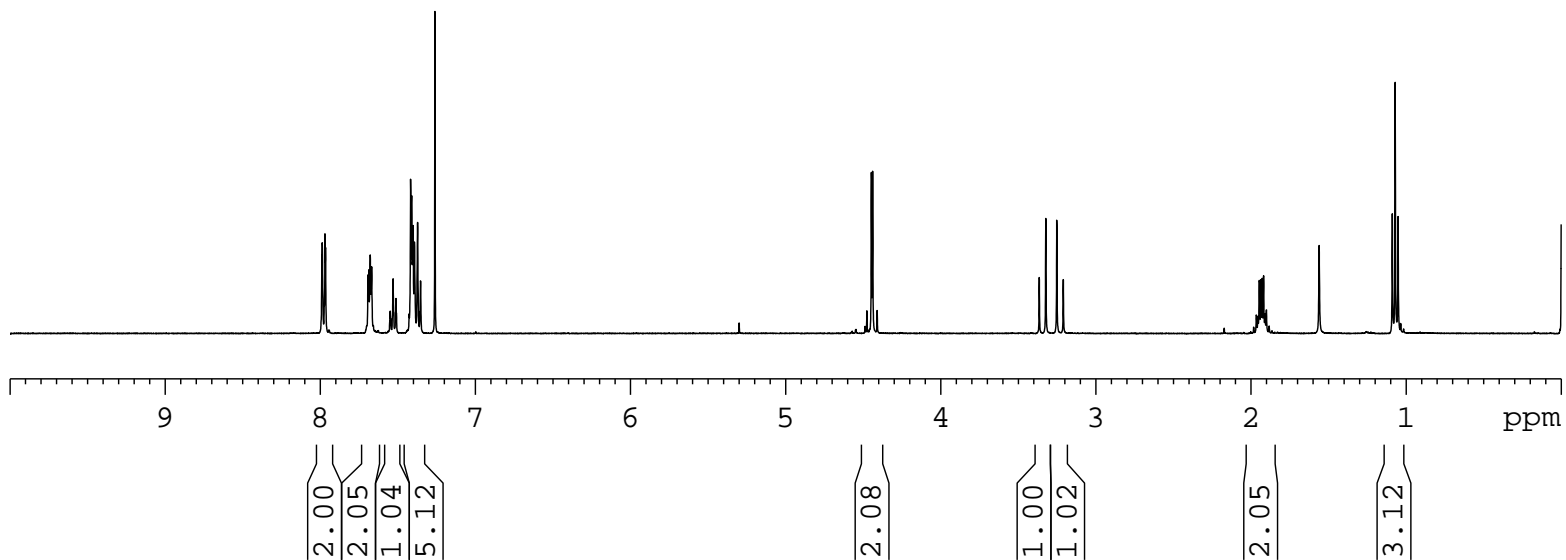
4.4764  
4.4473  
4.4389  
4.4099

3.3649  
3.3227  
3.2520  
3.2099

1.9651  
1.9553  
1.9466  
1.9369  
1.9277  
1.9184  
1.9090  
1.9003  
1.5603  
1.0887  
1.0701  
1.0514



7a

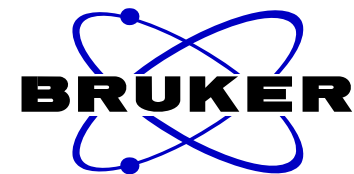


```

NAME          XYH150307-2
EXPNO         1
PROCNO        1
Date_         20150308
Time          7.53
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            295.2 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700037 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

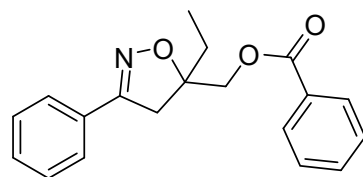


NAME XYH150307-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150308  
Time 8.30  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 257  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

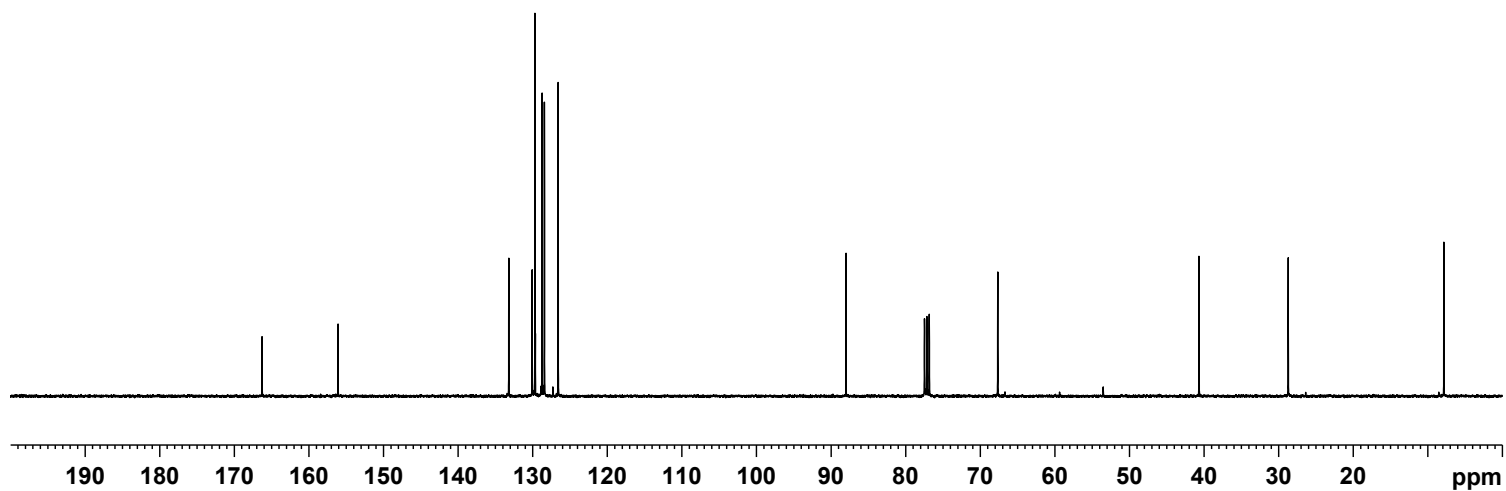
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

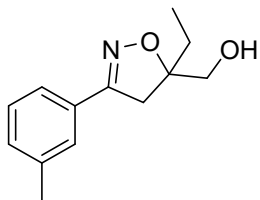
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.26  
156.08  
133.19  
130.06  
129.69  
129.62  
128.73  
128.41  
126.57  
87.98  
67.64  
40.66  
28.72  
7.86



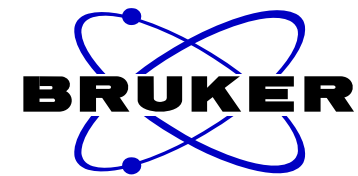
7a





7.4904  
7.4459  
7.4266  
7.2952  
7.2762  
7.2617  
7.2572  
7.2154  
7.1964

3.7633  
3.7516  
3.7334  
3.7217  
3.6184  
3.5962  
3.5885  
3.5663  
3.3995  
3.3576  
3.0892  
3.0473  
2.3662  
2.2589  
2.2469  
2.2371  
2.2250  
2.2065  
1.8100  
1.7911  
1.7740  
1.7555  
1.7360  
1.7165  
1.6985  
1.6808

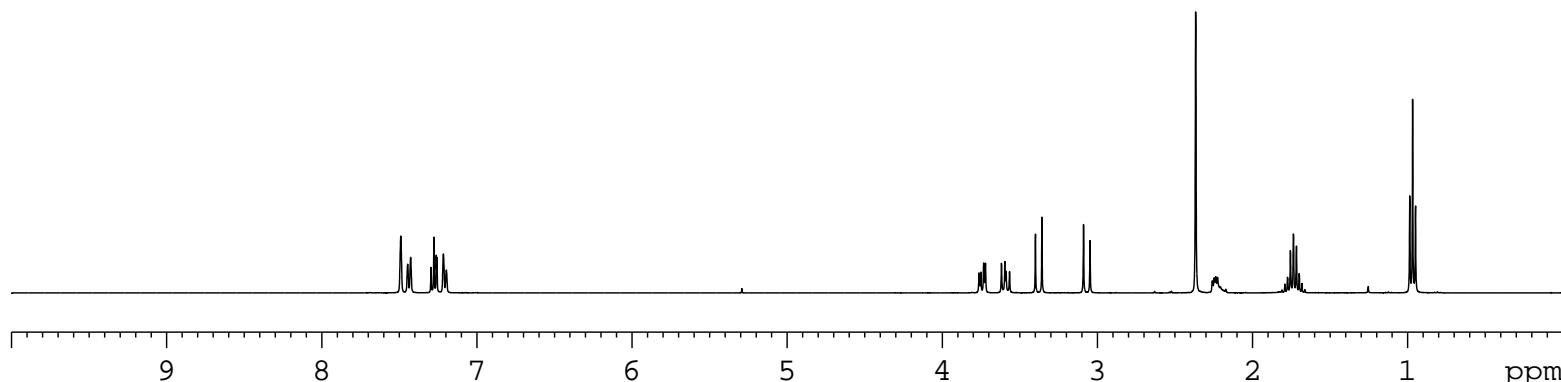


```

NAME          CWG151023-1
EXPNO         1
PROCNO        1
Date_         20151204
Time          15.00
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            80.6
DW            60.800 usec
DE            6.50 usec
TE            294.0 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700025 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

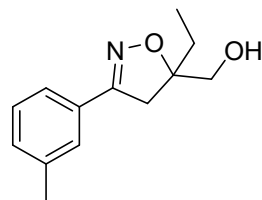
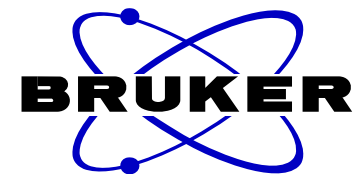


0.97  
0.99  
1.16  
0.97

1.01  
1.01  
1.00  
1.00

2.97  
1.04  
2.05

3.00



157.03

138.37

130.80

129.67

128.58

127.18

123.79

90.37

66.25

39.50

28.37

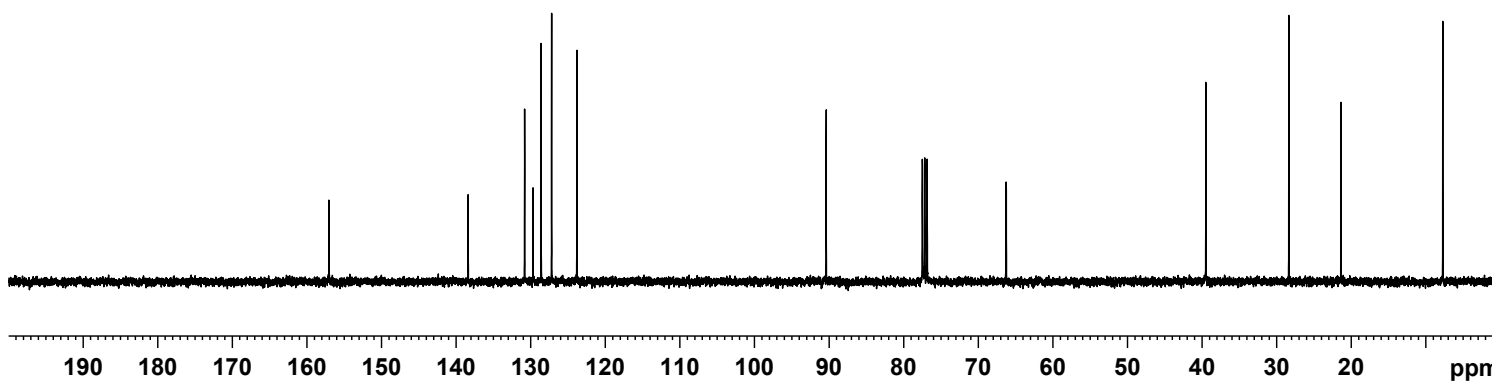
21.38

7.73

NAME CWG151023-1C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151204  
Time 15.05  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 44  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 294.0 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

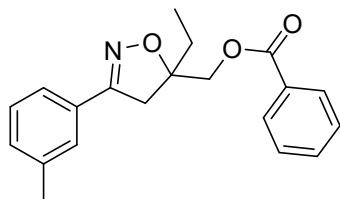
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228227 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

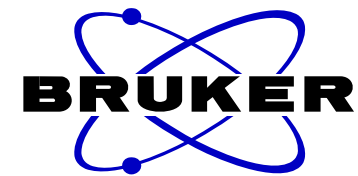
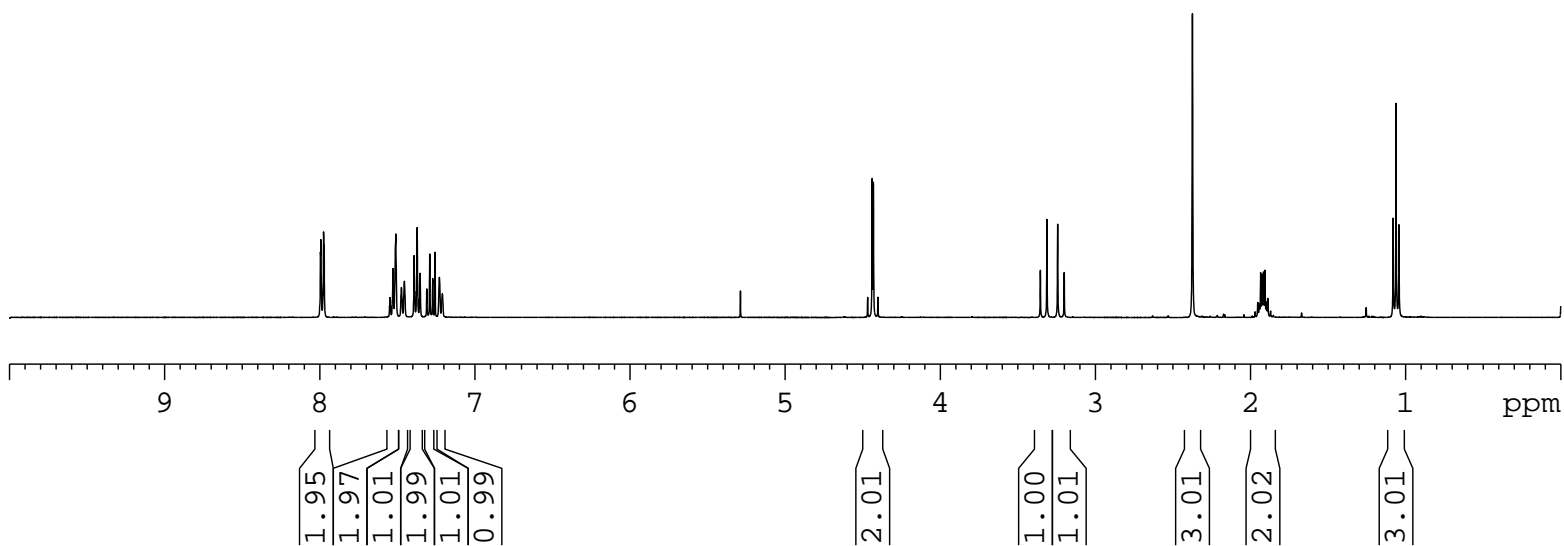


7.9951  
7.9924  
7.9747  
7.9712  
7.5507  
7.5476  
7.5445  
7.5290  
7.5106  
7.4740  
7.4549  
7.3925  
7.3886  
7.3726  
7.3577  
7.3536  
7.3105  
7.2915  
7.2724  
7.2568  
7.2292  
7.2103

4.4685  
4.4395  
4.4312  
4.4021  
3.3548  
3.3126  
3.2434  
3.2012  
2.3744  
1.9703  
1.9533  
1.9435  
1.9347  
1.9249  
1.9158  
1.9065  
1.8971  
1.8884  
1.8708  
1.0804  
1.0617  
1.0430



7b

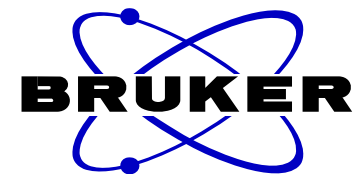


```

NAME          CWG151024-2-1
EXPNO         1
PROCNO        1
Date_         20151203
Time          16.58
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            90.5
DW            60.800 usec
DE            6.50 usec
TE            292.4 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700046 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

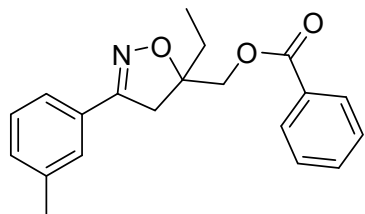


NAME CWG151024-2-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151203  
Time 17.03  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 32  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 292.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

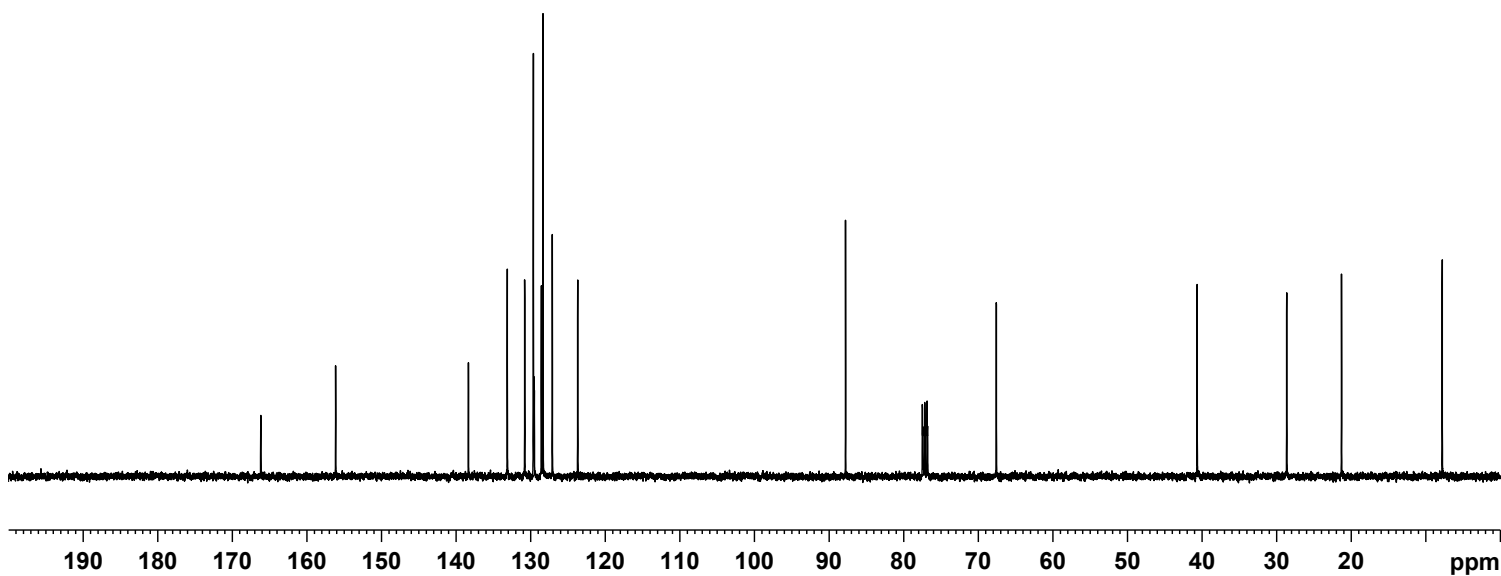
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

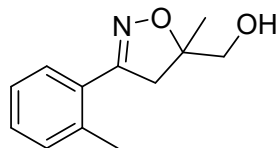
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228357 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.16  
156.14  
138.33  
133.12  
130.79  
129.62  
129.54  
129.49  
128.55  
128.33  
127.08  
123.68  
87.77  
67.56  
40.64  
28.64  
21.28  
7.78



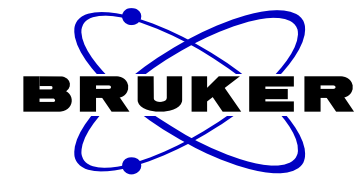
7b





7.3358  
7.3170  
7.2893  
7.2699  
7.2467  
7.2264  
7.2087

3.7486  
3.7196  
3.6112  
3.5899  
3.5632  
3.5223  
3.0731  
3.0316  
2.5470  
— 2.1355  
— 1.4336

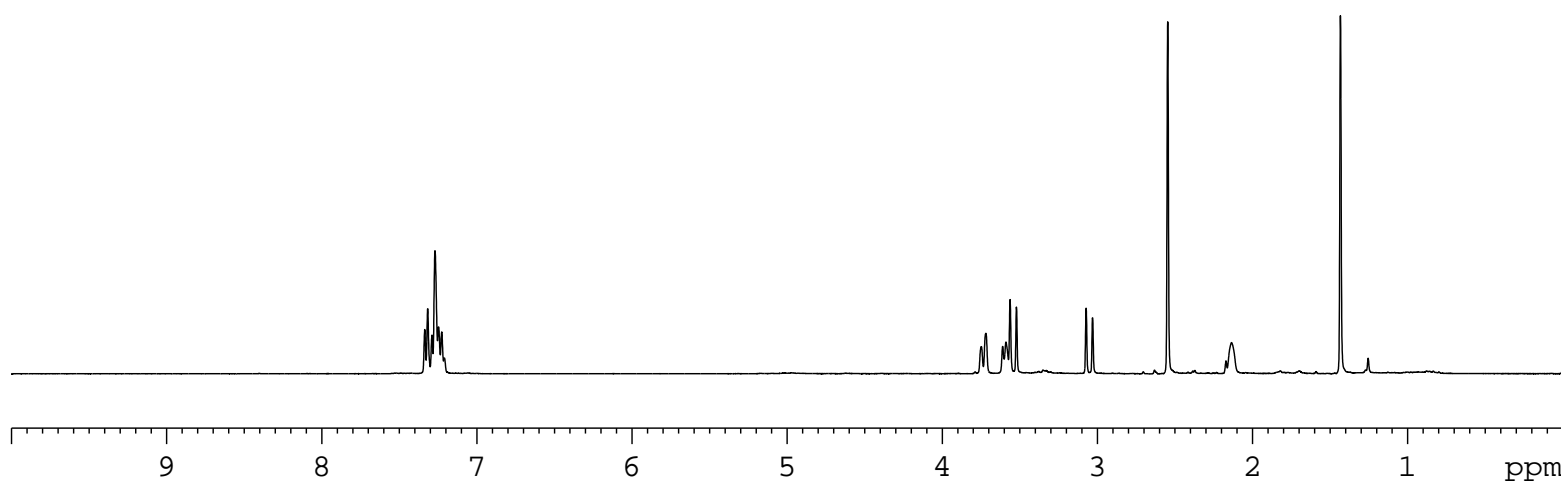


```

NAME          CWG151028
EXPNO         1
PROCNO        1
Date_         20151029
Time          16.28
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            12
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            90.5
DW            60.800 usec
DE            6.50 usec
TE            295.2 K
D1            1.0000000 sec
TD0           1
  
```

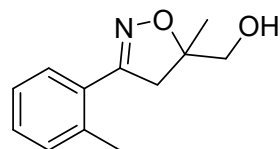
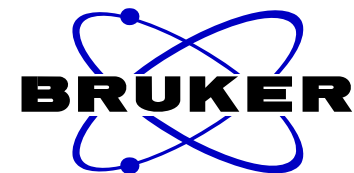
```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700027 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



1.03  
1.94  
1.13

1.00  
2.03  
1.00  
2.92  
0.96  
2.97



158.14

137.78

131.52

129.30

128.94

128.86

125.82

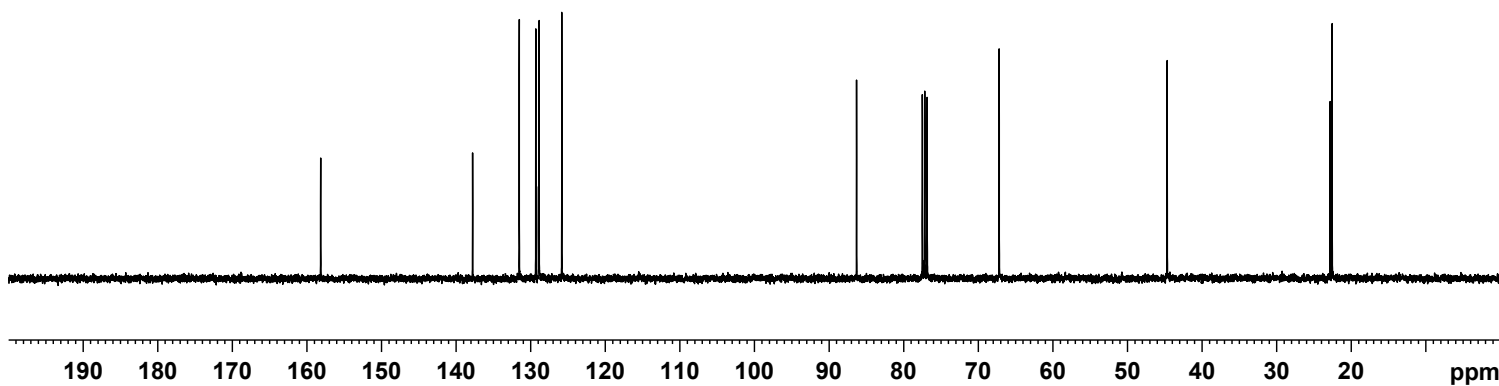
86.30

67.18

44.68

22.83

22.57

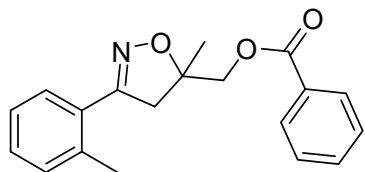


NAME CWG151028-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151031  
Time 17.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 57  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228242 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

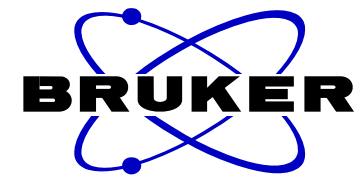




7c

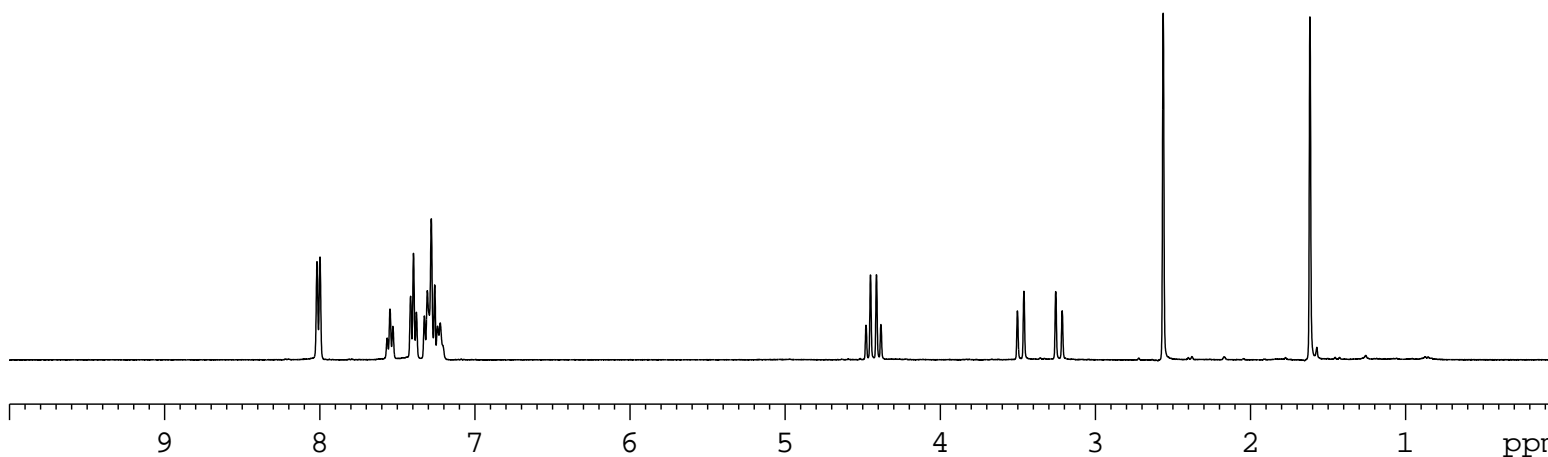
8.0174  
7.9978  
7.5660  
7.5477  
7.5293  
7.4151  
7.3963  
7.3776  
7.3261  
7.3070  
7.2814  
7.2597  
7.2411  
7.2238

4.4789  
4.4501  
4.4117  
4.3828  
3.5028  
3.4611  
3.2559  
3.2143  
2.5629  
1.6168



NAME CWG151029-3  
EXPNO 1  
PROCNO 1  
Date\_ 20151029  
Time\_ 16.33  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 13  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 295.1 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700036 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



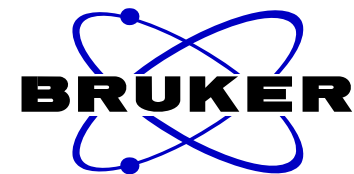
2.00  
1.08  
2.05  
1.34  
3.18

2.08

1.08  
1.09

3.00

3.03

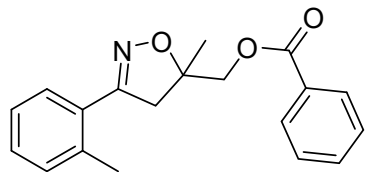


NAME CWG151029-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151031  
Time 17.11  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 70  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

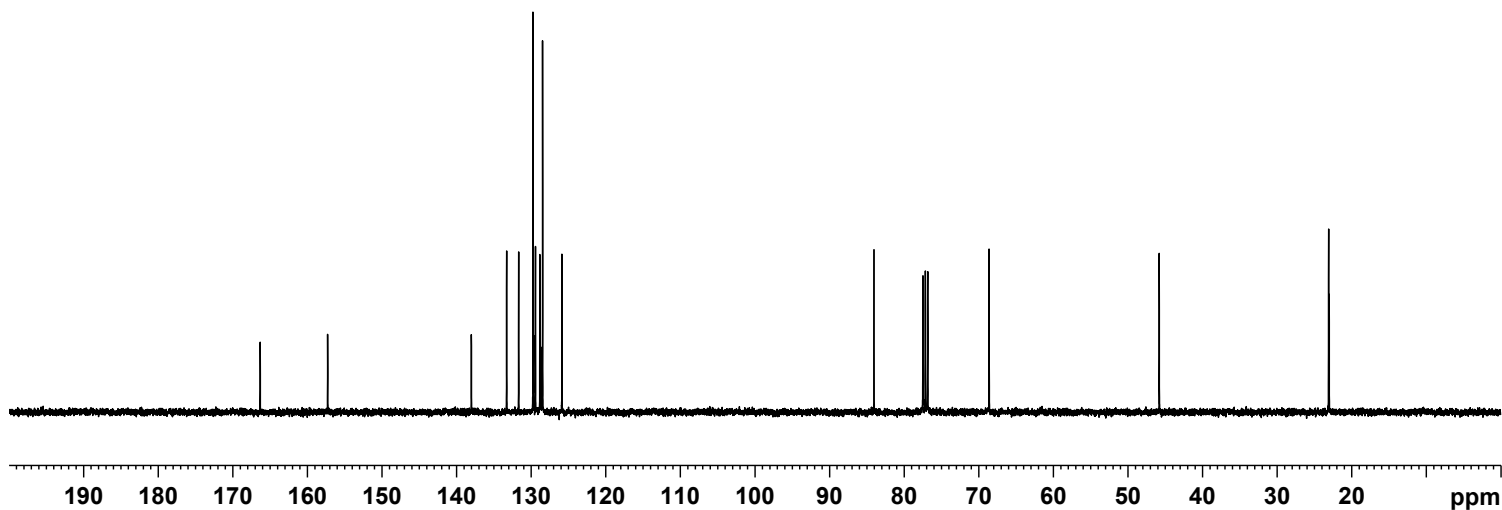
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

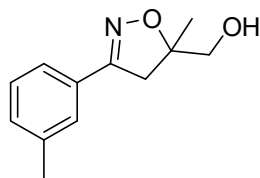
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228216 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.30  
157.27  
138.00  
133.29  
131.68  
129.76  
129.68  
129.43  
128.84  
128.72  
128.47  
125.88  
84.04  
68.61  
45.80  
23.10  
23.02



7c

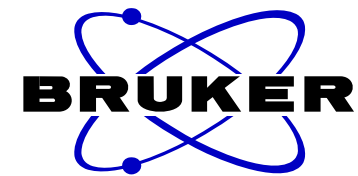




7.4835  
7.4357  
7.4166  
7.2954  
7.2765  
7.2594  
7.2166  
7.1979

3.7465  
3.7377  
3.7166  
3.7079  
3.6003  
3.5784  
3.5490  
3.5009  
3.4594  
3.0243  
2.9828  
2.3661  
2.2050

— 1.4243

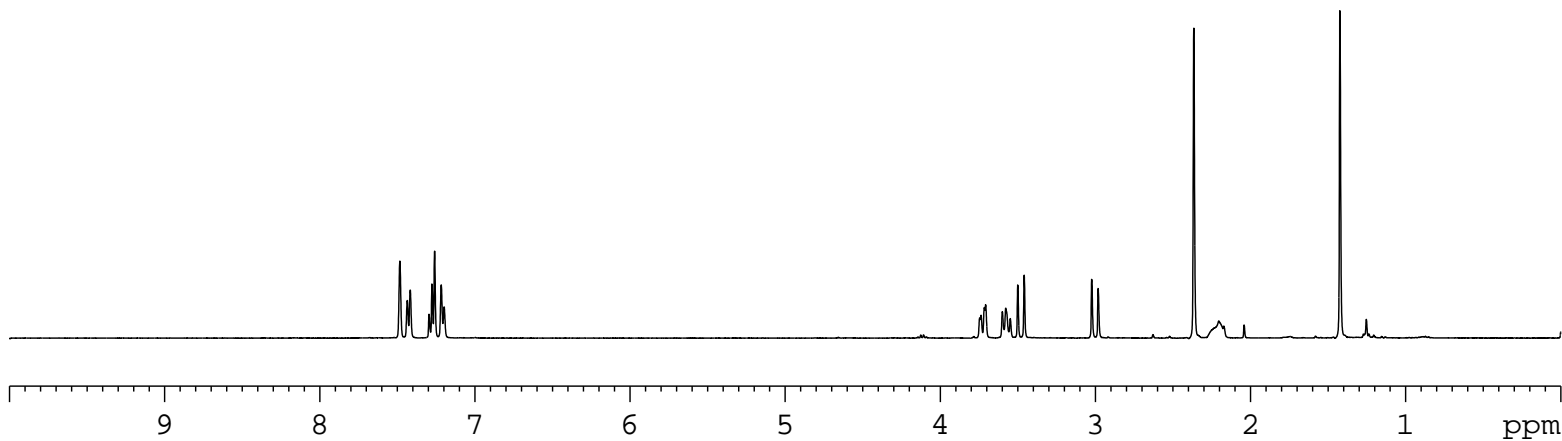


```

NAME          CWG151024-1
EXPNO         1
PROCNO        1
Date_         20151024
Time          17.23
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            80.6
DW            60.800 usec
DE            6.50 usec
TE            296.5 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700032 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

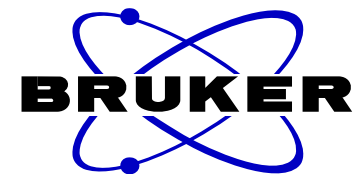


0.96  
0.98  
0.71  
1.00

1.00  
1.00  
1.01  
1.00

2.97  
1.08

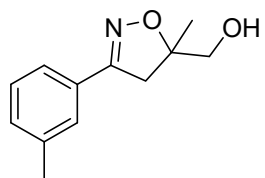
3.00



NAME CWG151024-1-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151128  
Time 17.18  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 73  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 291.9 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228208 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



157.24

138.42

130.89

129.69

128.63

127.21

123.83

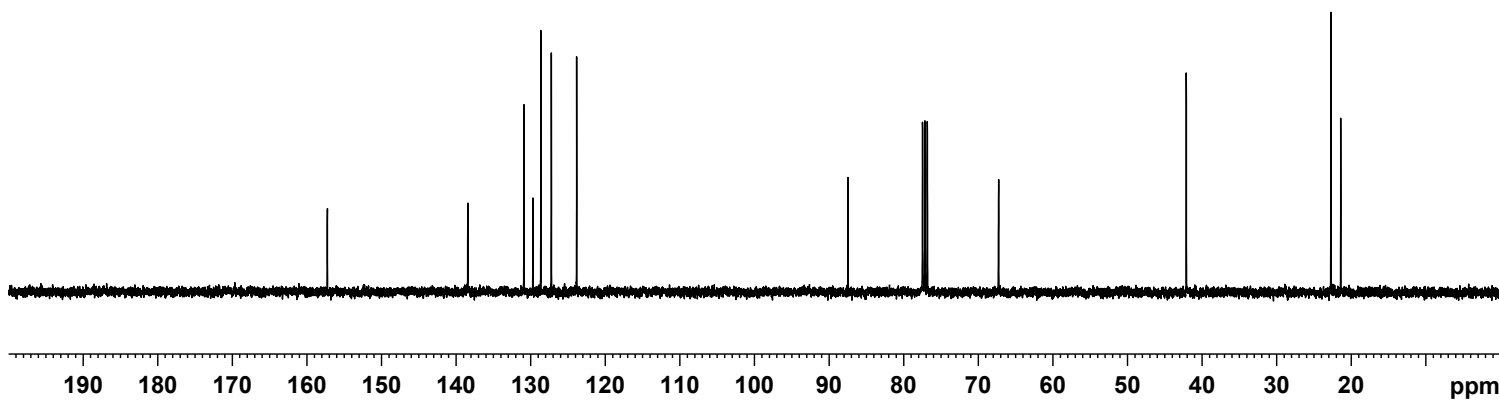
87.46

67.27

42.11

22.74

21.42



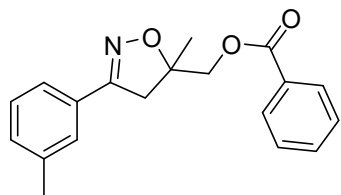
8.0065  
7.9871  
7.5584  
7.5399  
7.5211  
7.5047  
7.4631  
7.4441  
7.4037  
7.3851  
7.3663  
7.3123  
7.2935  
7.2743  
7.2607  
7.2345  
7.2158

4.4630  
4.4342  
4.4041  
4.3753

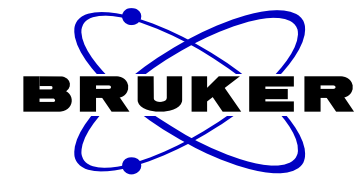
3.4477  
3.4060  
3.1936  
3.1518

2.3771

1.6084



7d

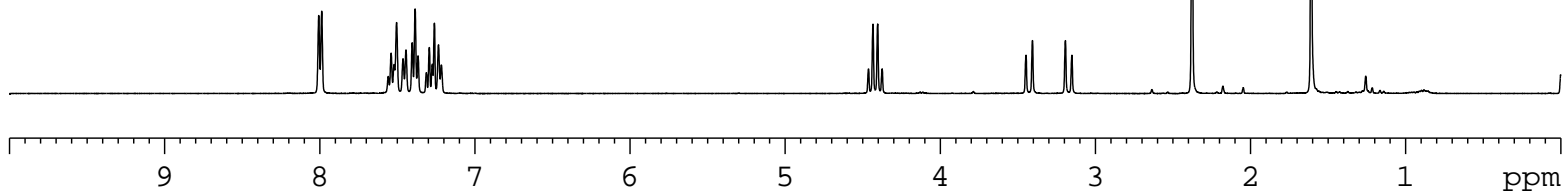


```

NAME          CWG151026-3
EXPNO         1
PROCNO        1
Date_         20151026
Time          11.09
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            293.1 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1           1H
P1             13.80 usec
PL1            -1.00 dB
PL1W           13.18669796 W
SFO1           400.1724712 MHz
SI             32768
SF             400.1700030 MHz
WDW            EM
SSB            0
LB             0.30 Hz
GB             0
PC             1.00
  
```



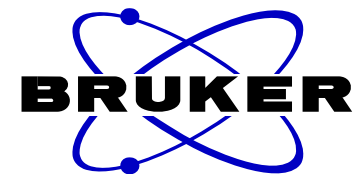
1.96  
1.98  
1.03  
1.97  
0.98  
1.01

2.00

1.00  
1.00

2.97

3.26

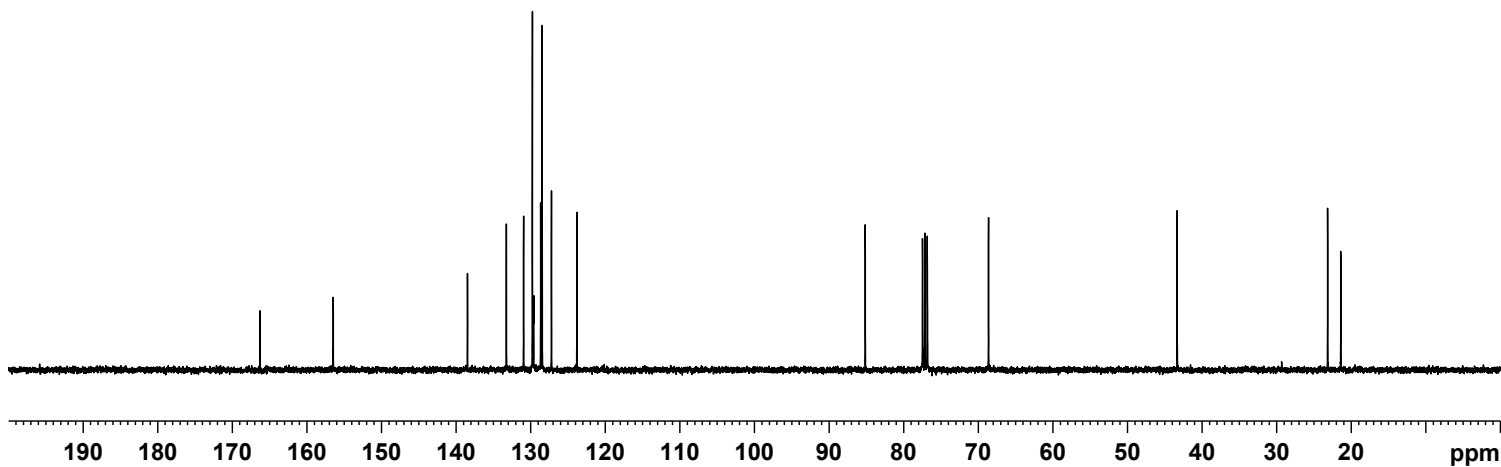
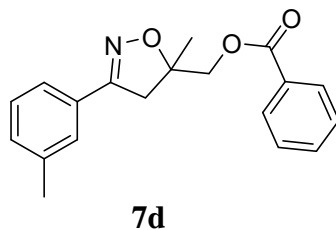


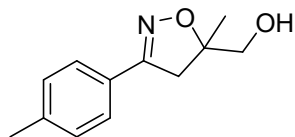
NAME CWG151026-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151026  
Time 11.30  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 114  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 293.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228224 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

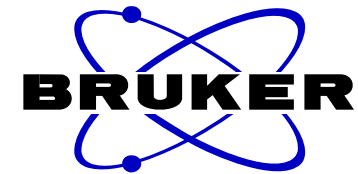
166.28  
156.47  
138.48  
133.26  
130.96  
129.77  
129.62  
129.60  
128.67  
128.46  
127.22  
123.81  
85.15  
68.62  
43.34  
23.16  
21.41





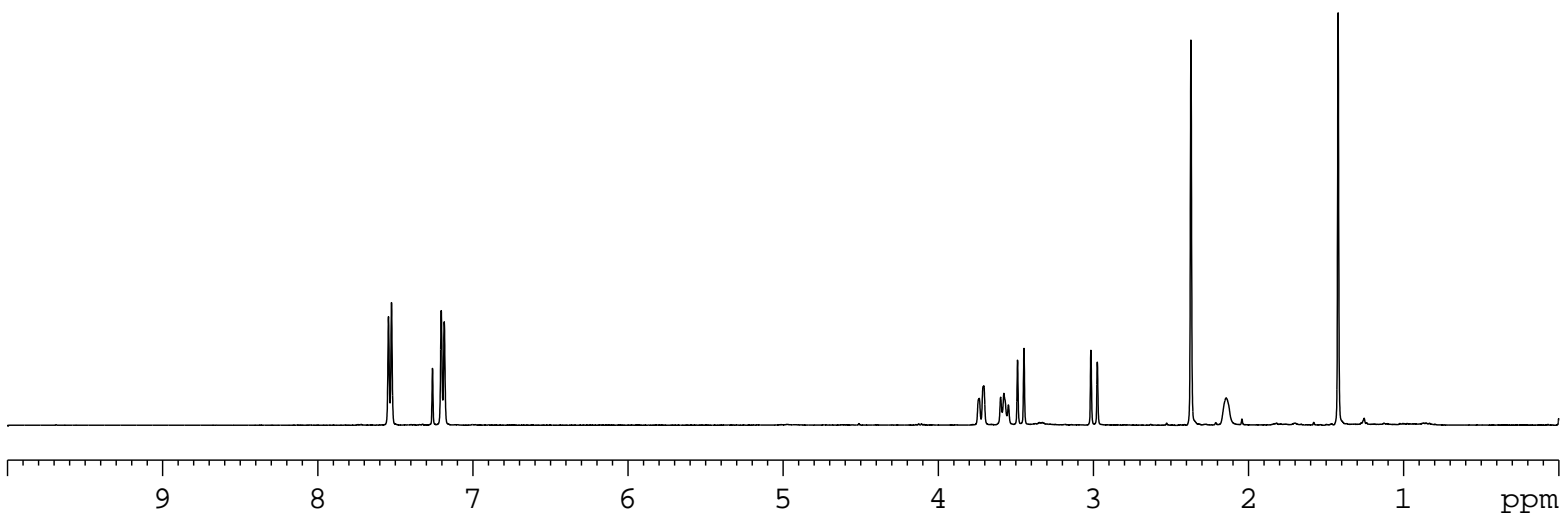
7.5439  
7.5242  
7.2601  
7.2036  
7.1840

3.7362  
3.7067  
3.5983  
3.5771  
3.5480  
3.4893  
3.4478  
3.0163  
2.9749  
2.3714  
2.1453  
1.4226



NAME CWG151029-2  
EXPNO 1  
PROCNO 1  
Date\_ 20151030  
Time 17.22  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 12  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 161  
DW 60.800 usec  
DE 6.50 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

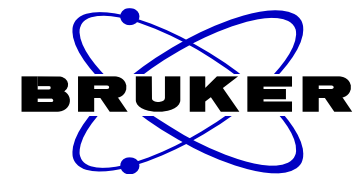


1.95  
1.97

1.02  
1.03  
1.04  
1.01

3.00  
0.99

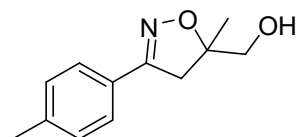
3.01



NAME CWG151029-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151229  
Time 10.53  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 17  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 288.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228295 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



156.98

140.15

129.33

126.88

126.50

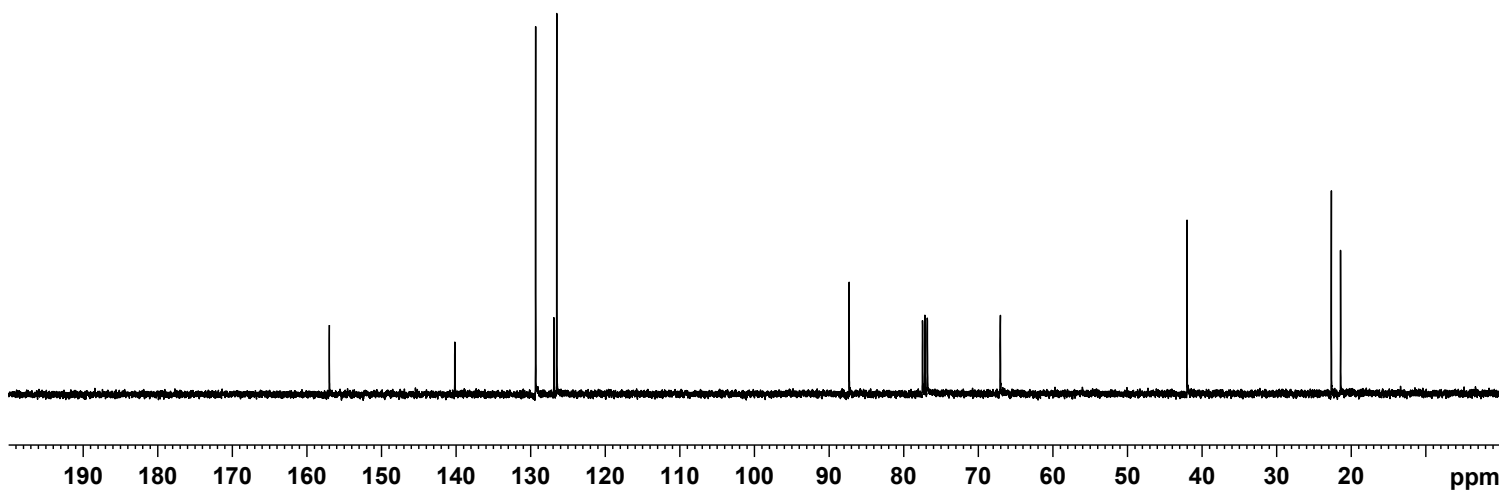
87.31

67.04

42.01

22.67

21.44





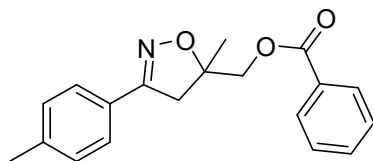
8.0019  
7.9825  
7.5674  
7.5491  
7.5192  
7.4018  
7.3834  
7.3649  
7.2597  
7.2187  
7.1995

4.4559  
4.4271  
4.3970  
4.3682

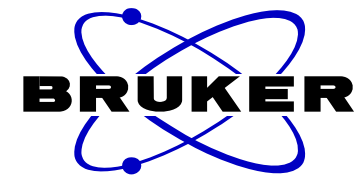
3.4361  
3.3944  
3.1826  
3.1409

2.3807

1.6042



7e

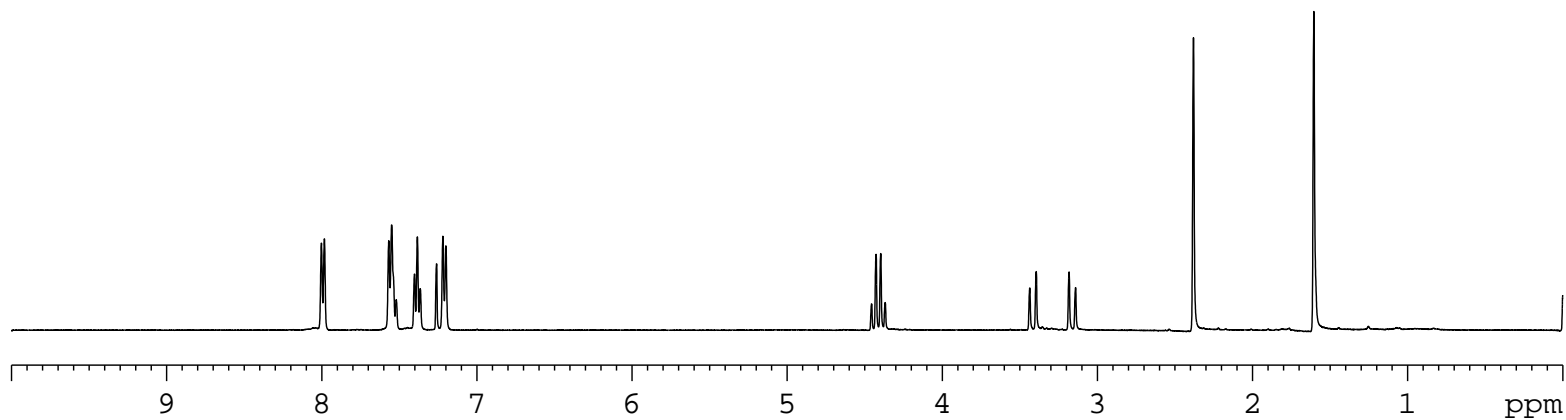


```

NAME          CWG151106-1
EXPNO         1
PROCNO        1
Date_         20151106
Time          17.43
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            10
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            291.5 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1           1H
P1             13.80 usec
PL1            -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700030 MHz
WDW            EM
SSB            0
LB             0.30 Hz
GB            0
PC            1.00
  
```



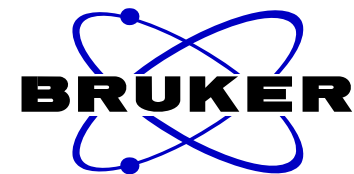
1.84  
2.92  
1.95  
1.90

1.93

0.99  
0.99

2.88

3.48



NAME CWG151106-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151106  
Time 18.07  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 1024  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 291.8 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228128 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

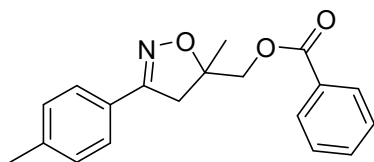
166.41  
156.37  
140.48  
133.33  
129.86  
129.72  
129.56  
128.54  
126.96  
126.66

85.11

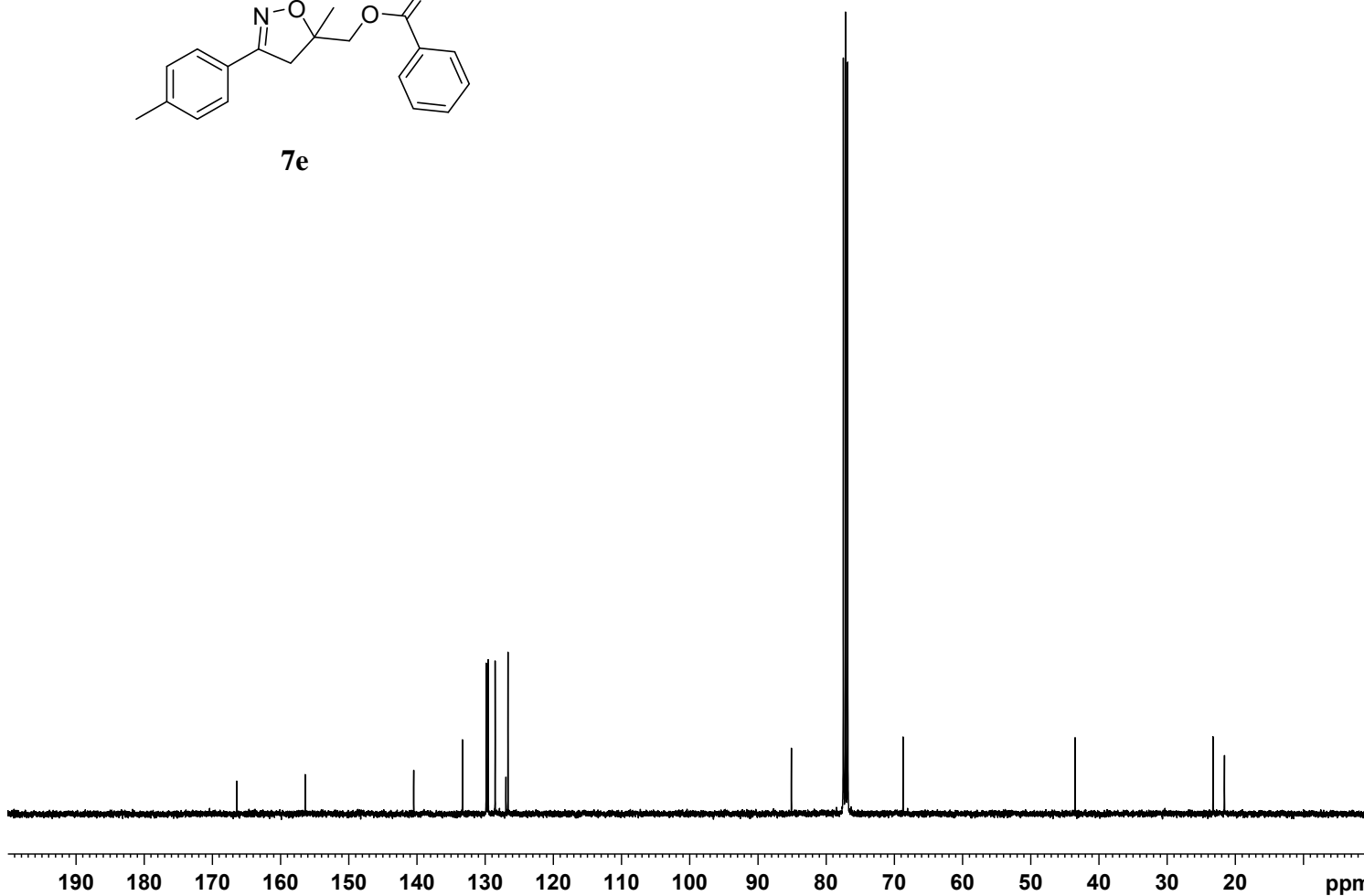
68.72

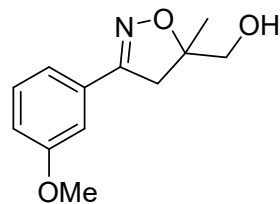
43.49

23.27  
21.59



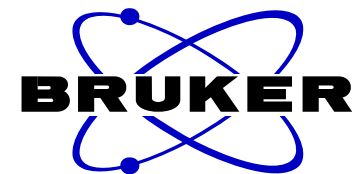
7e





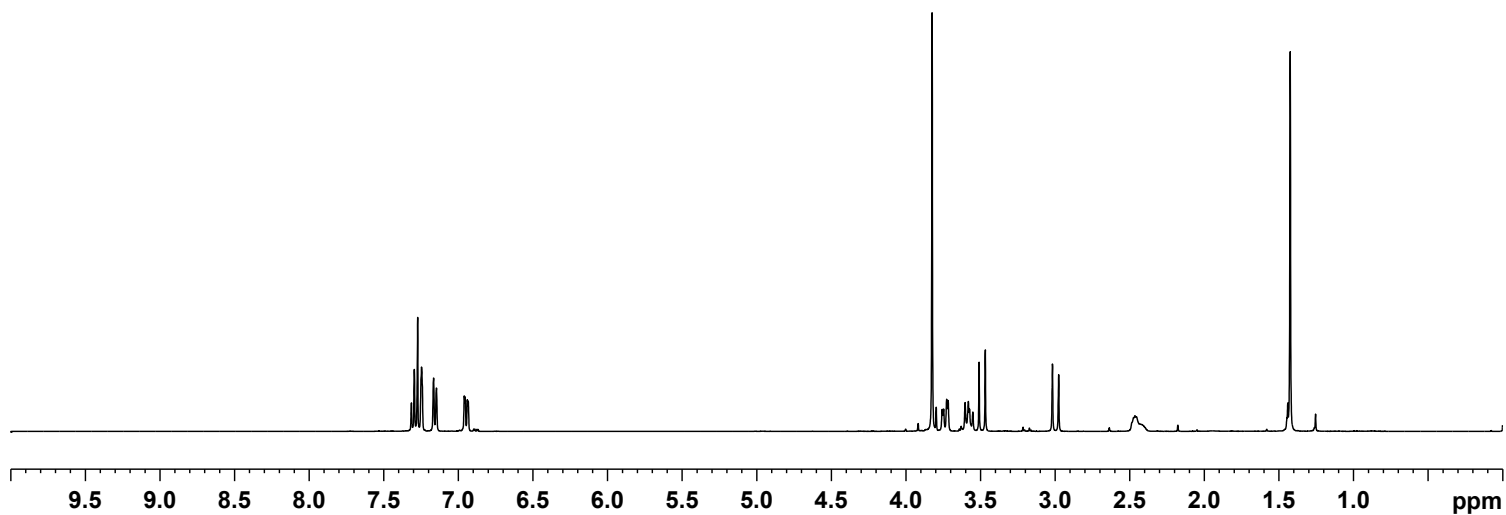
7.31  
7.29  
7.27  
7.25  
7.17  
7.15  
6.96  
6.95  
6.94  
6.93

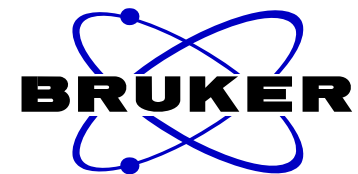
3.82  
3.80  
3.76  
3.75  
3.73  
3.72  
3.60  
3.58  
3.57  
3.55  
3.51  
3.47  
3.02  
2.98  
2.47  
2.46  
2.45  
1.42



NAME CWG151109-2-2  
EXPNO 1  
PROCNO 1  
Date\_ 20151229  
Time 10.47  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDC13  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 71.8  
DW 60.800 usec  
DE 6.50 usec  
TE 288.0 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1699985 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



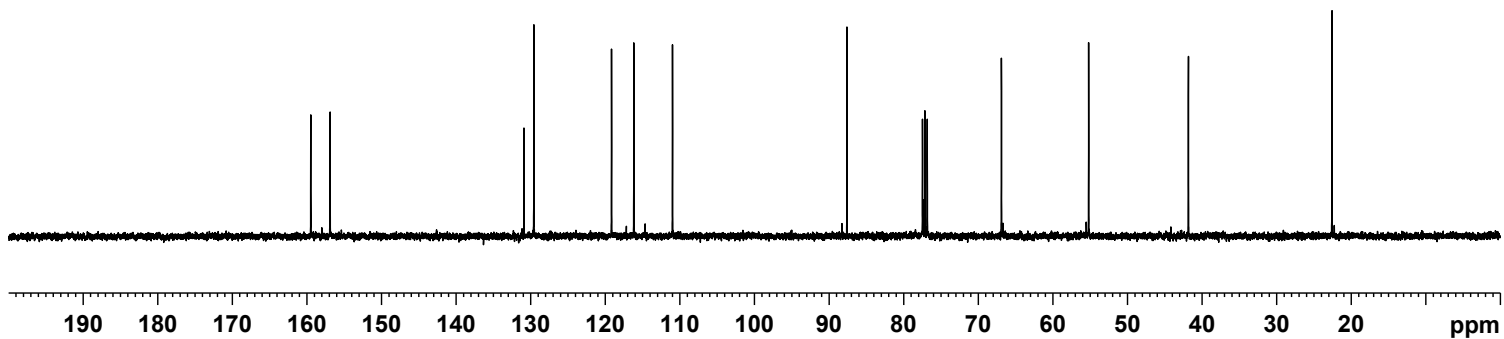
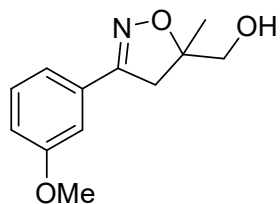


NAME CWG151109-2-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151229  
Time 11.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 14  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 288.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228355 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

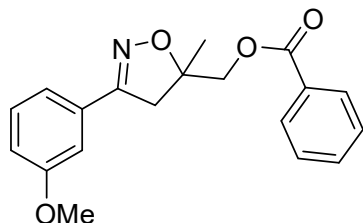
159.47  
156.87  
130.90  
129.58  
119.17  
116.18  
110.99  
87.61  
66.89  
55.21  
41.83  
22.58



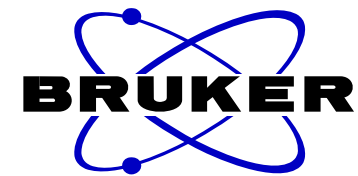
8.0010  
7.9816  
7.5579  
7.5390  
7.5209  
7.4029  
7.3843  
7.3660  
7.3306  
7.3110  
7.2791  
7.2614  
7.1844  
7.1655  
6.9739  
6.9534

4.4666  
4.4378  
4.4030  
4.3741  
3.8316  
3.4457  
3.4039  
3.1896  
3.1479

1.6120



7f

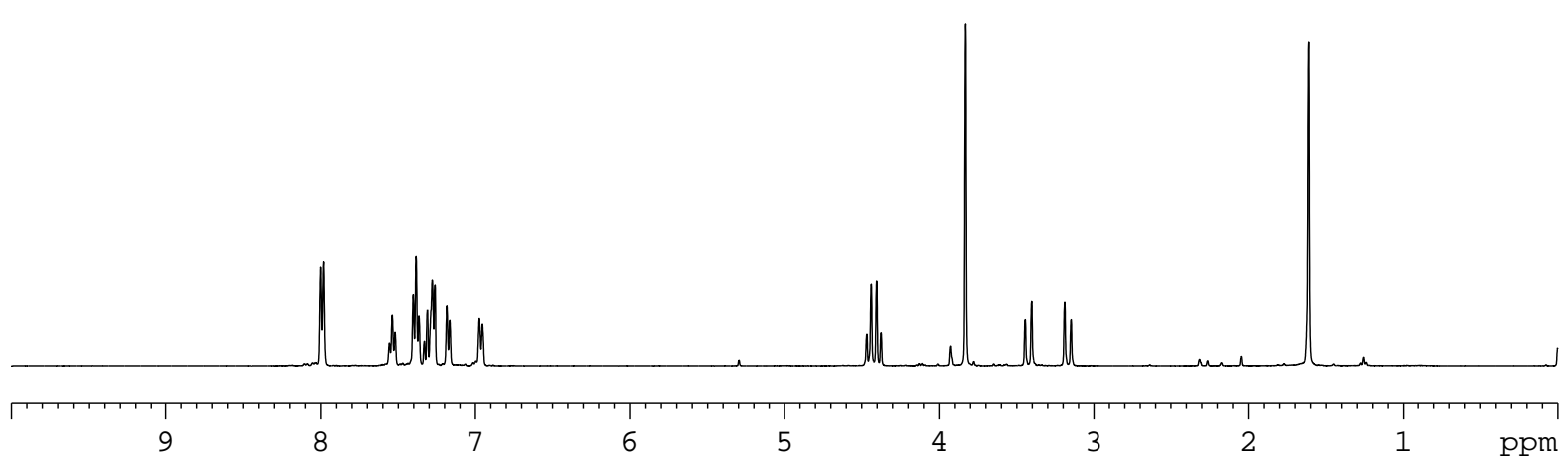


```

NAME          CWG151110-1-2
EXPNO         1
PROCNO        1
Date_         20151116
Time          11.09
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            292.3 K
D1            1.0000000 sec
TD0           1
  
```

```

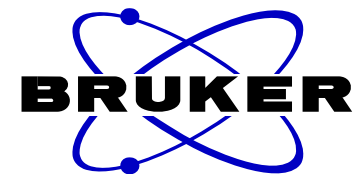
===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700024 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



1.92  
1.06  
2.11  
2.49  
0.97  
0.97

2.06  
2.84  
1.02  
1.00

3.16

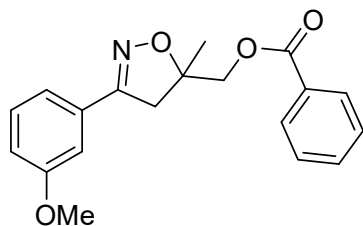


NAME CWG151110-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151128  
Time 17.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 62  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 292.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

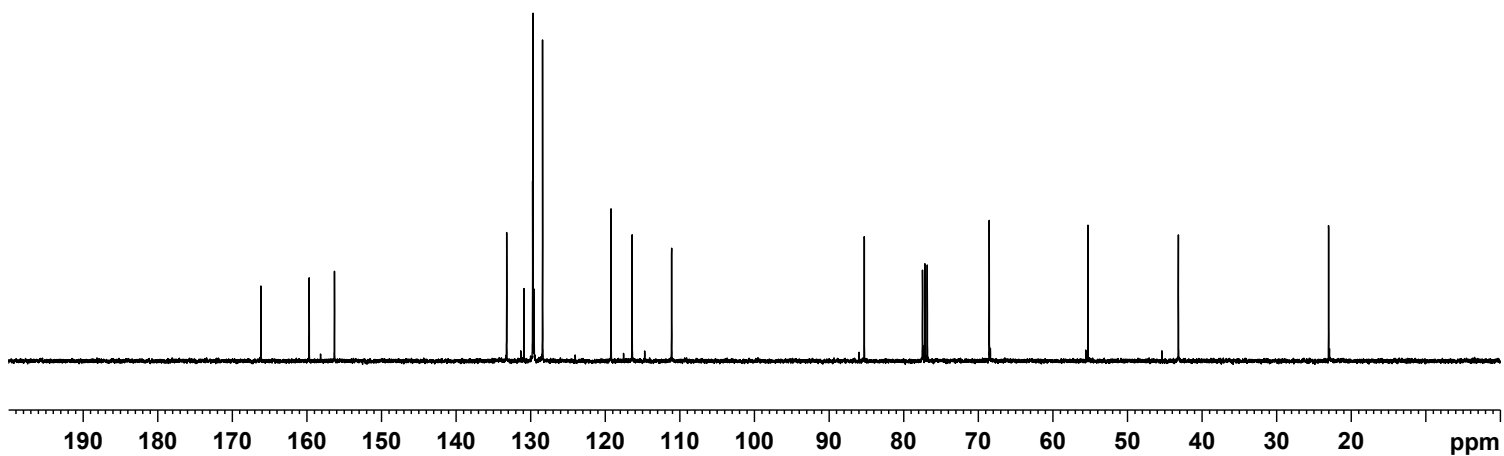
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

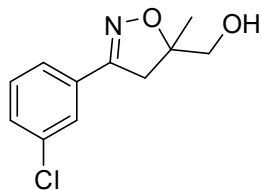
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228303 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.15  
159.67  
156.29  
133.20  
130.89  
129.72  
129.67  
129.52  
128.39  
119.21  
116.39  
111.11  
85.28  
68.54  
55.30  
43.18  
23.04



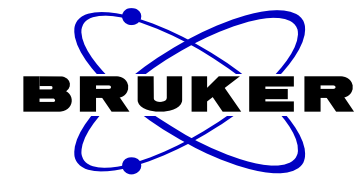
7f





7.6338  
7.5417  
7.5231  
7.3809  
7.3631  
7.3460  
7.3268  
7.3076  
7.2646

3.7708  
3.7605  
3.7407  
3.7304  
3.6037  
3.5798  
3.5512  
3.4933  
3.4517  
3.0096  
2.9680  
2.0842  
2.0725  
2.0616  
2.0463  
1.4365

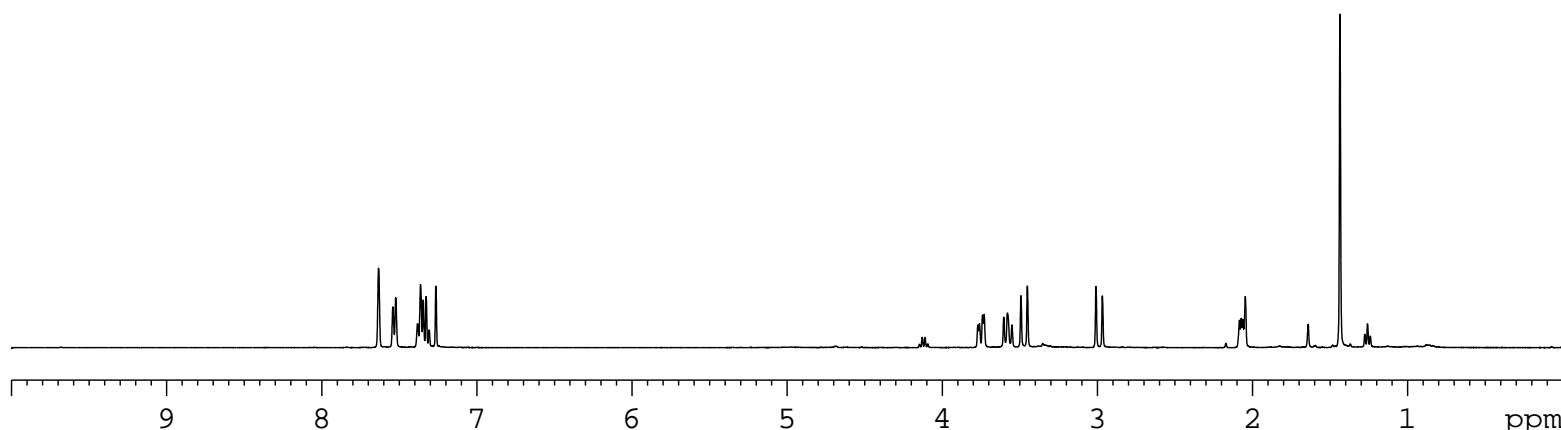


```

NAME          CWG151103-1
EXPNO         1
PROCNO        1
Date_         20151104
Time          17.54
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.4 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700017 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

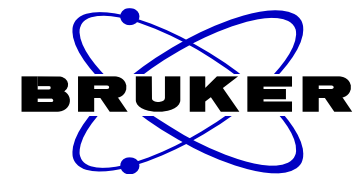


0.94  
0.99  
2.01

1.00  
1.03  
1.05  
1.00

1.28

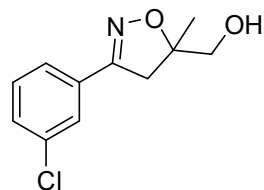
2.98



NAME CWG151103-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151128  
Time 17.13  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 20  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 292.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228347 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



155.82

134.45

131.43

129.86

129.76

126.40

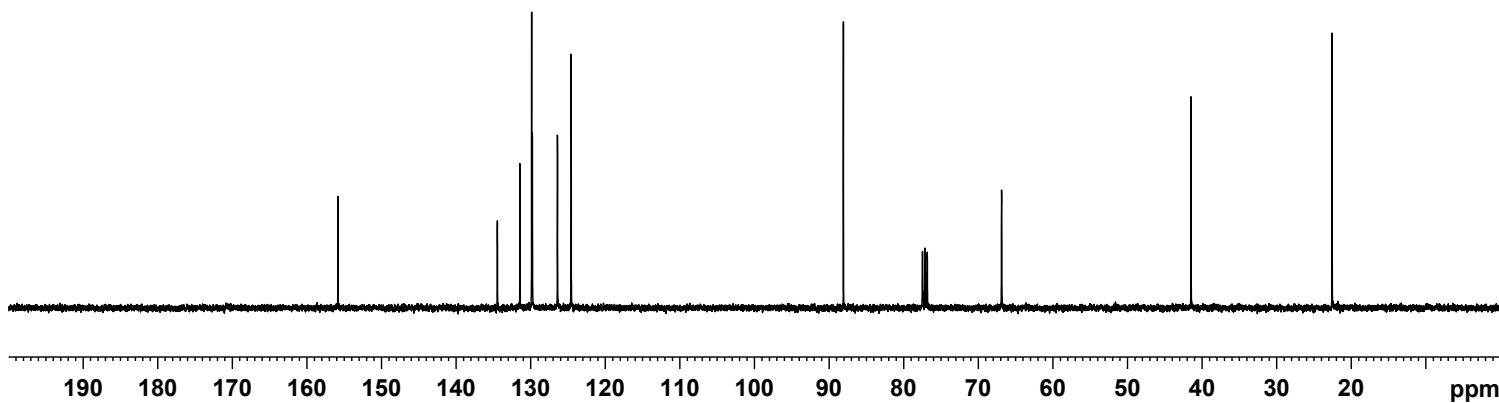
124.55

88.08

66.88

41.49

22.57

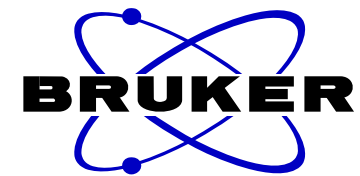
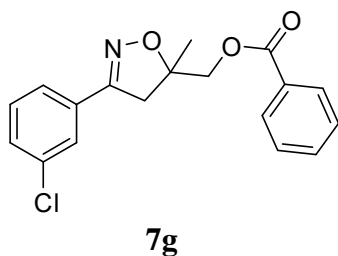




7.9906  
7.9711  
7.6467  
7.5609  
7.5425  
7.5243  
7.4066  
7.3882  
7.3696  
7.3532  
7.3341  
7.3147  
7.2610

4.4663  
4.4373  
4.4062  
4.3772  
3.4249  
3.3832  
3.1705  
3.1287

1.6159

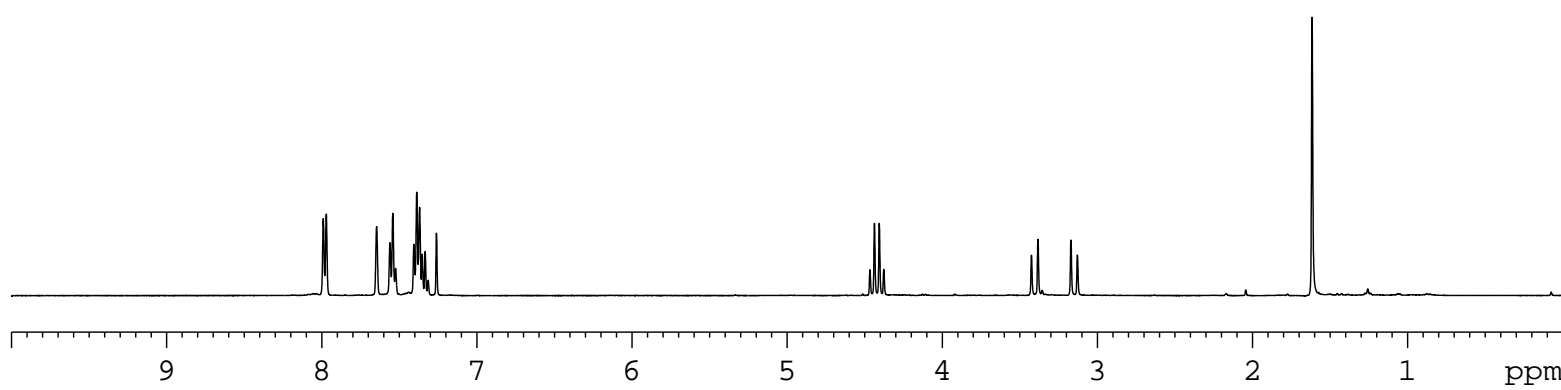


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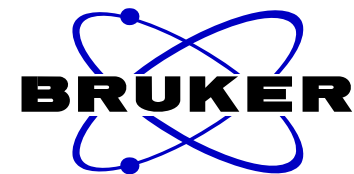
NAME          CWG151104-1
EXPNO         1
PROCNO        1
Date_         20151104
Time          17.59
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.2 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700029 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



1.86  
0.96  
1.96  
3.86  
1.96  
1.00  
1.01  
3.04

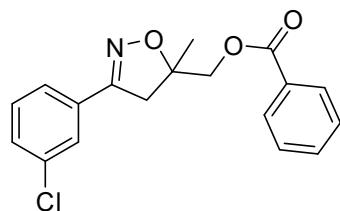


NAME CWG151104-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151128  
Time 17.08  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 31  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 292.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

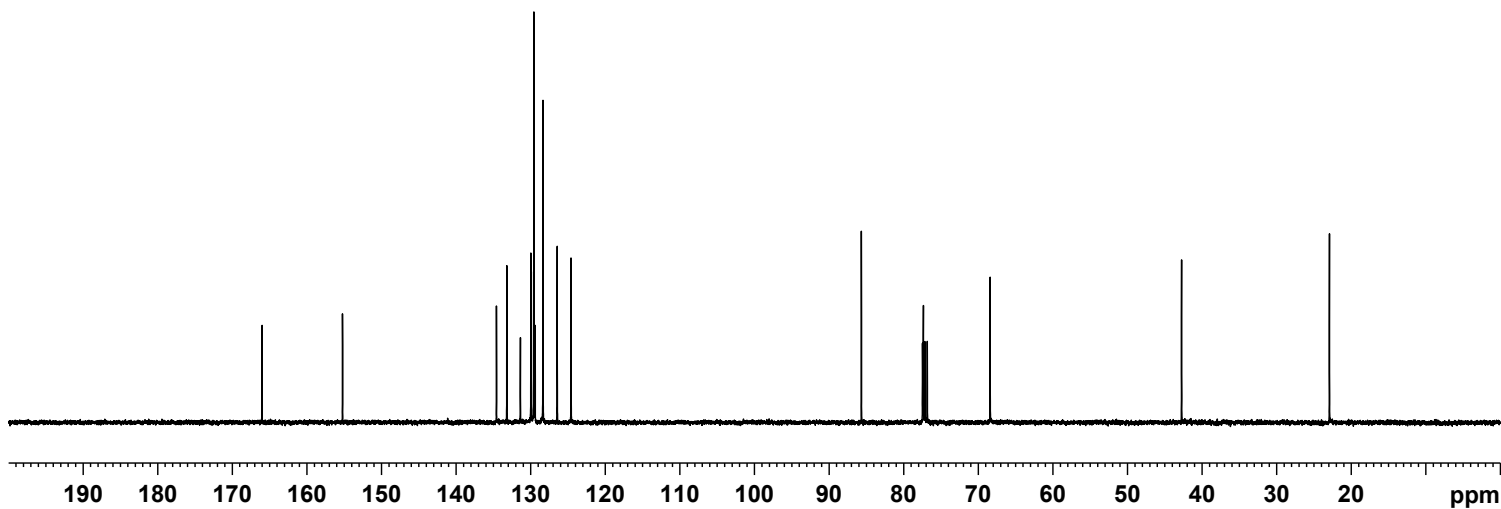
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

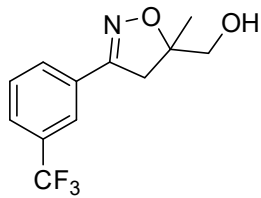
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228368 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

165.99  
155.21  
134.57  
133.19  
131.37  
129.96  
129.90  
129.56  
129.38  
128.34  
126.43  
124.57  
85.65  
77.36  
68.42  
42.75  
22.93



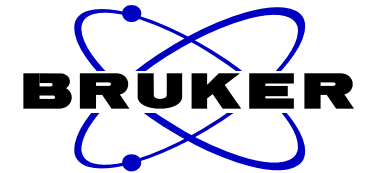
7g





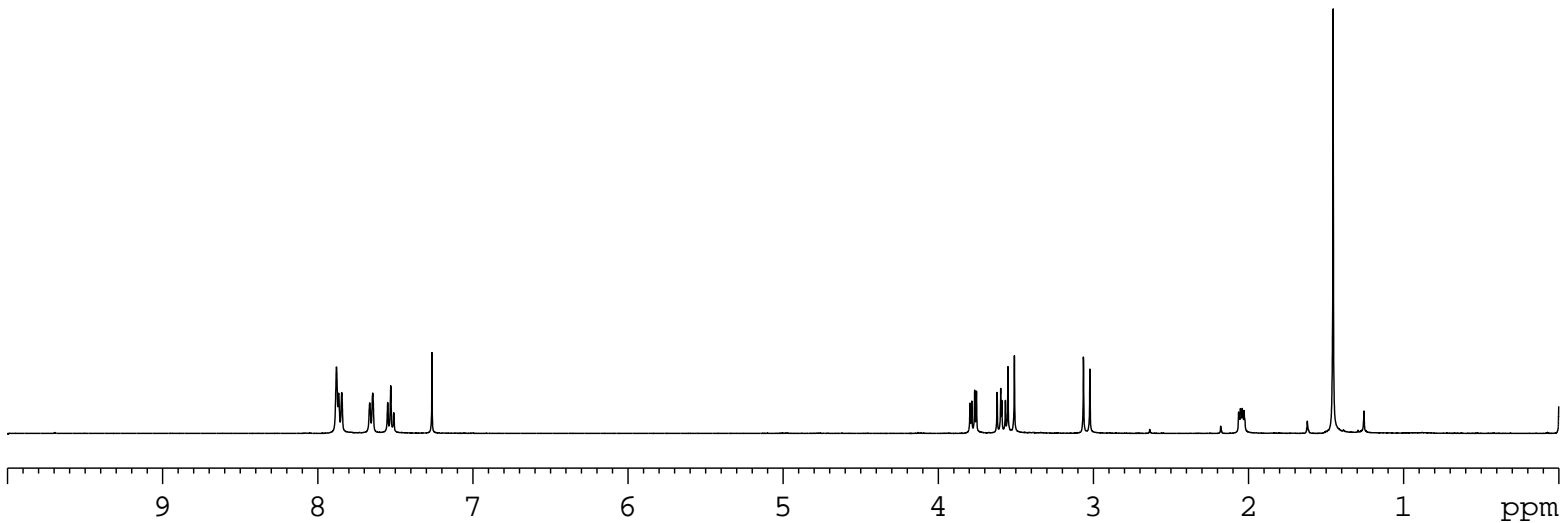
7.8800  
7.8658  
7.8457  
7.6653  
7.6459  
7.5494  
7.5300  
7.5105

3.7957  
3.7841  
3.7654  
3.7539  
3.6205  
3.5974  
3.5903  
3.5672  
3.5508  
3.5093  
3.0640  
3.0224  
2.0636  
2.0582  
2.0521  
2.0469  
2.0408  
2.0291  
1.4545



NAME CWG151030-3-1  
EXPNO 1  
PROCNO 1  
Date\_ 20151210  
Time 17.56  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 294.4 K  
D1 1.00000000 sec  
TD0 1

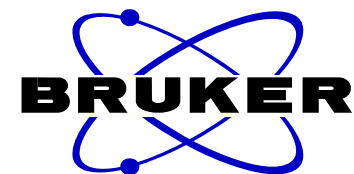
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700016 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



0.96  
0.98  
1.00  
1.03

1.00  
1.01  
1.04  
1.01

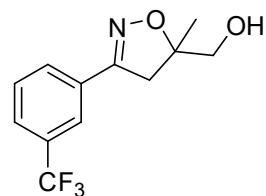
0.98  
3.03



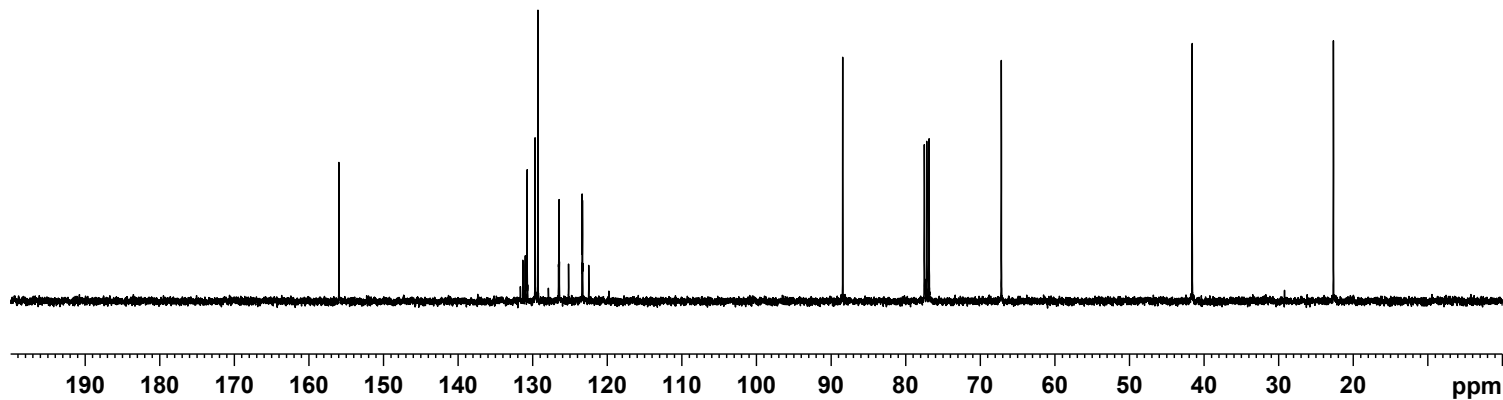
NAME CWG151030-3-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151210  
Time 18.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 41  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 294.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228191 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



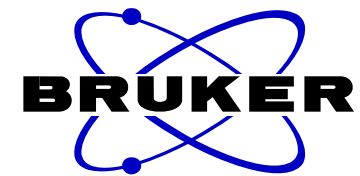
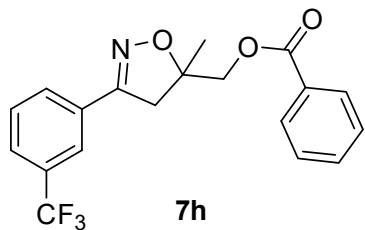
155.96  
131.31  
130.98  
130.72  
129.66  
129.28  
126.48  
126.45  
125.18  
123.39  
123.35  
123.31  
122.47  
88.43  
67.18  
41.59  
22.66



7.9862  
7.9665  
7.8936  
7.8742  
7.8545  
7.6696  
7.6502  
7.5531  
7.5343  
7.5157  
7.3949  
7.3762  
7.3572  
7.2601

4.4814  
4.4523  
4.4226  
4.3936  
  
3.4725  
3.4307  
3.2233  
3.1815

1.6326

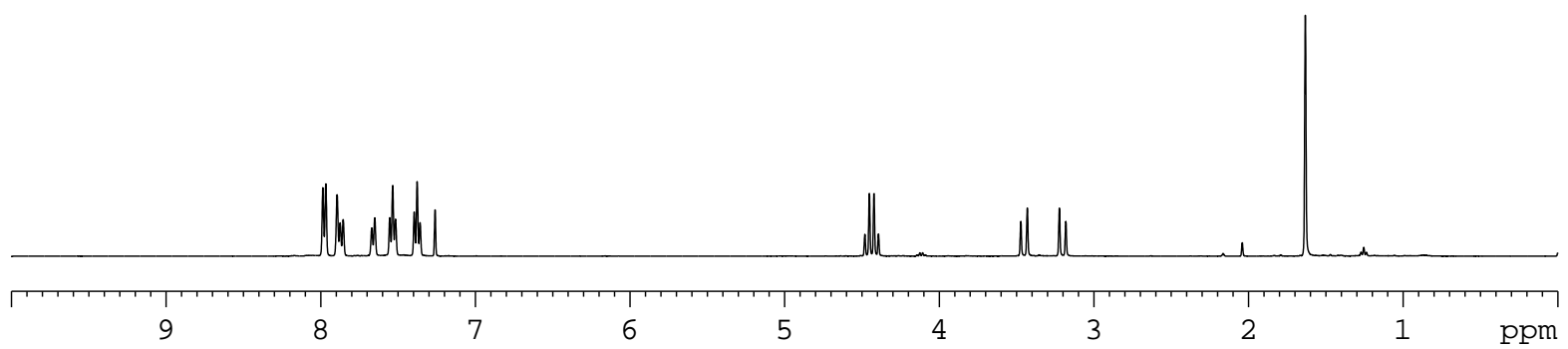


```

NAME          CWG151030-4
EXPNO         1
PROCNO        1
Date_         20151031
Time          17.00
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            11
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            80.6
DW            60.800 usec
DE            6.50 usec
TE            294.9 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700031 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

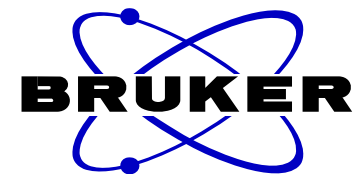


1.95  
1.98  
1.04  
2.05  
2.00

2.00

1.02  
1.01

3.05

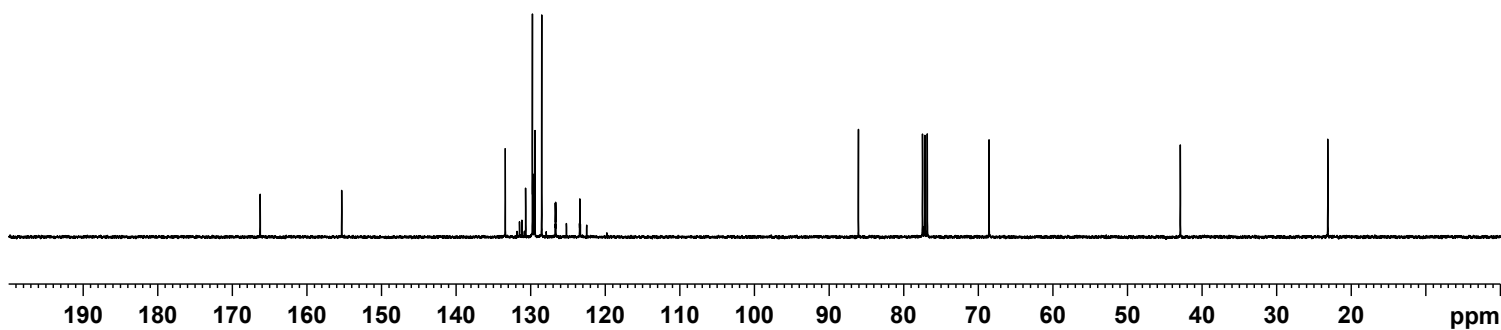
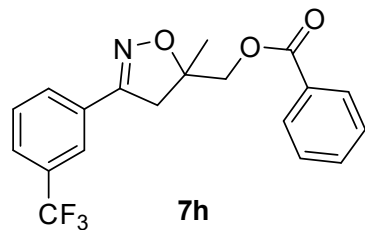


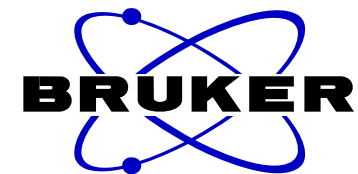
NAME CWG151030-4-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151128  
Time 17.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 200  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 292.0 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228185 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.24  
155.32  
133.39  
131.80  
131.16  
130.83  
130.66  
129.75  
129.71  
129.52  
129.41  
128.51  
126.71  
126.67  
126.64  
126.60  
125.19  
123.44  
123.40  
123.36  
123.32  
122.48  
86.07  
  
68.56  
  
42.91  
  
23.15





NAME CWG150507-2-S  
EXPNO 1  
PROCNO 1  
Date\_ 20150508  
Time\_ 20.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 144  
DW 60.800 usec  
DE 6.50 usec  
TE 299.4 K  
D1 1.0000000 sec  
TD0 1

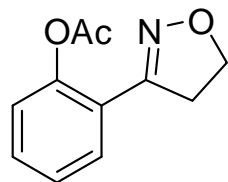
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

7.5474  
7.5435  
7.5280  
7.5240  
7.4454  
7.4413  
7.4259  
7.4224  
7.4066  
7.4025  
7.3122  
7.3092  
7.2931  
7.2903  
7.2742  
7.2713  
7.2600  
7.1512  
7.1486  
7.1310  
7.1284

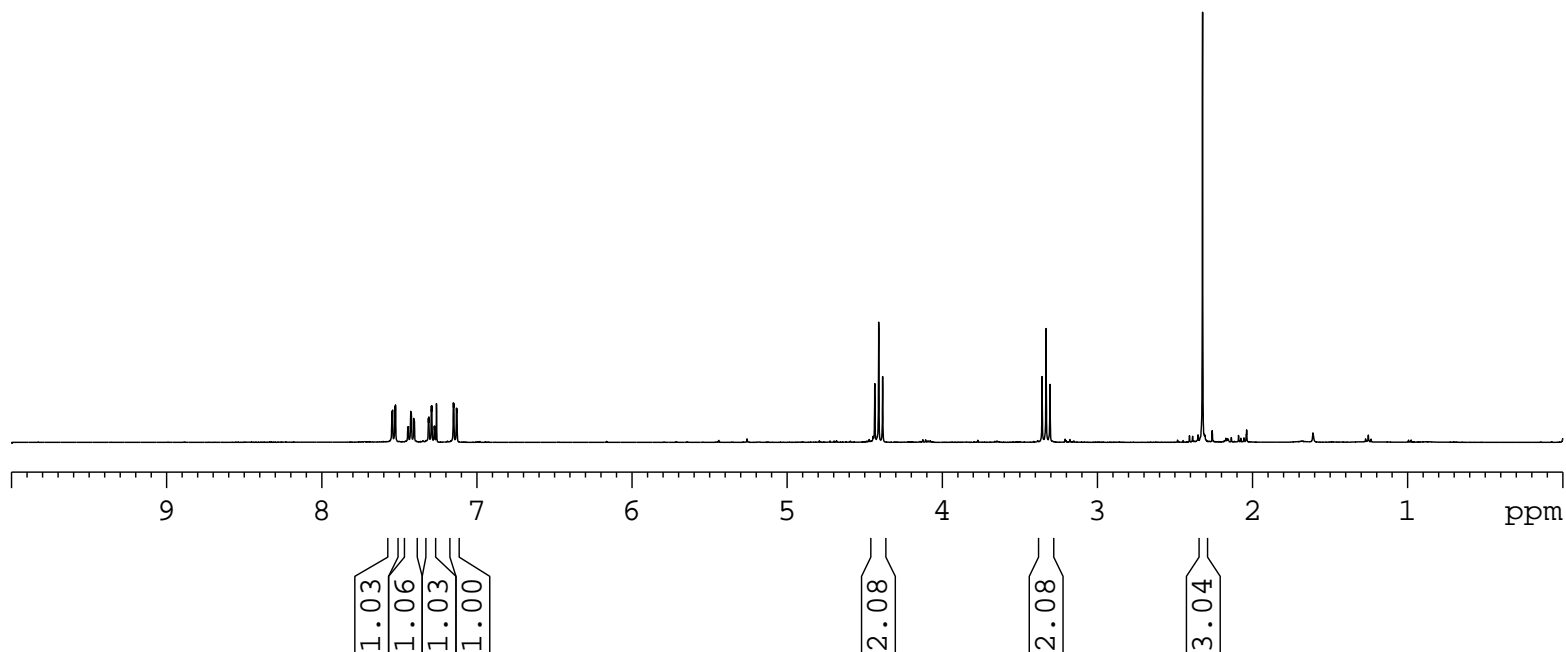
4.4355  
4.4101  
4.3847

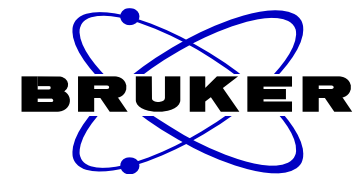
3.3566  
3.3312  
3.3058

2.3225



2a





NAME CWG150507-2-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150509  
Time 17.14  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 78  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228284 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.63

154.14

148.36

130.72

129.53

126.22

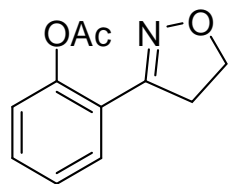
123.77

122.73

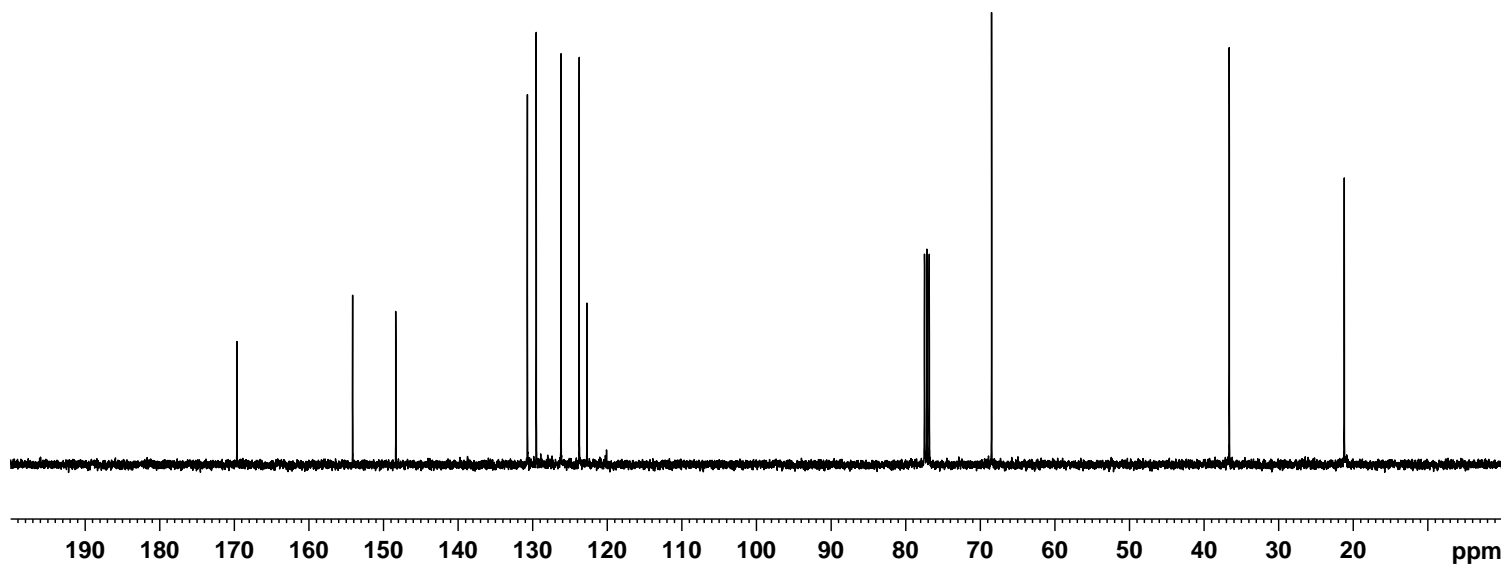
68.48

36.62

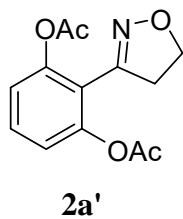
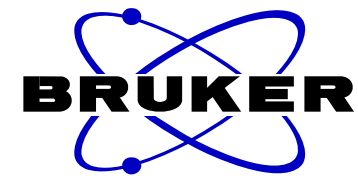
21.21



2a







7.4487  
7.4281  
7.4074  
7.2602  
7.0902  
7.0696

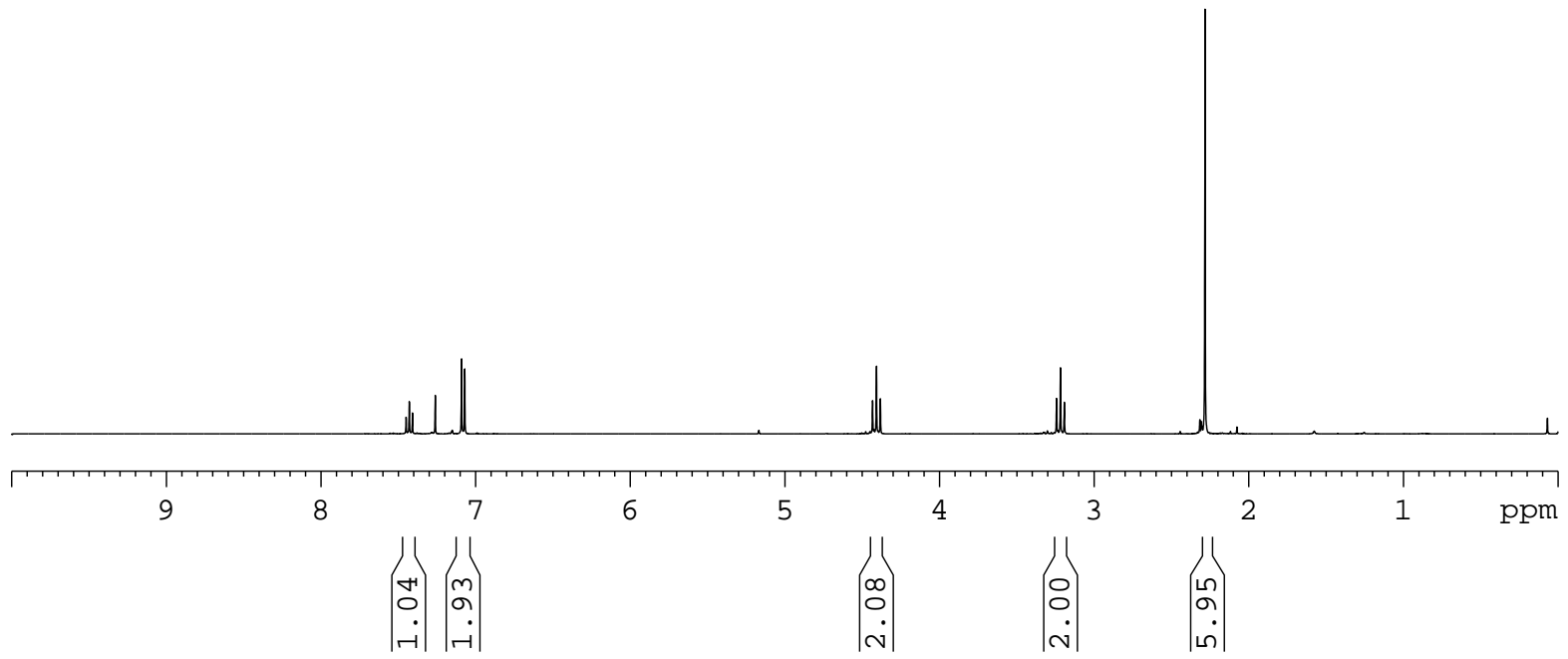
4.4328  
4.4075  
4.3823

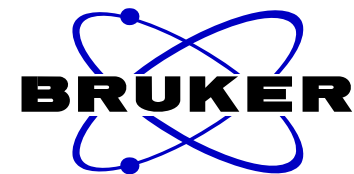
3.2430  
3.2178  
3.1926

— 2.2826

```
NAME CWG150507-2-x-pure
EXPNO 1
PROCNO 1
Date_ 20160215
Time 16.49
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 297.7 K
D1 1.0000000 sec
TD0 1
```

```
===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700030 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
```

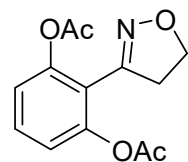




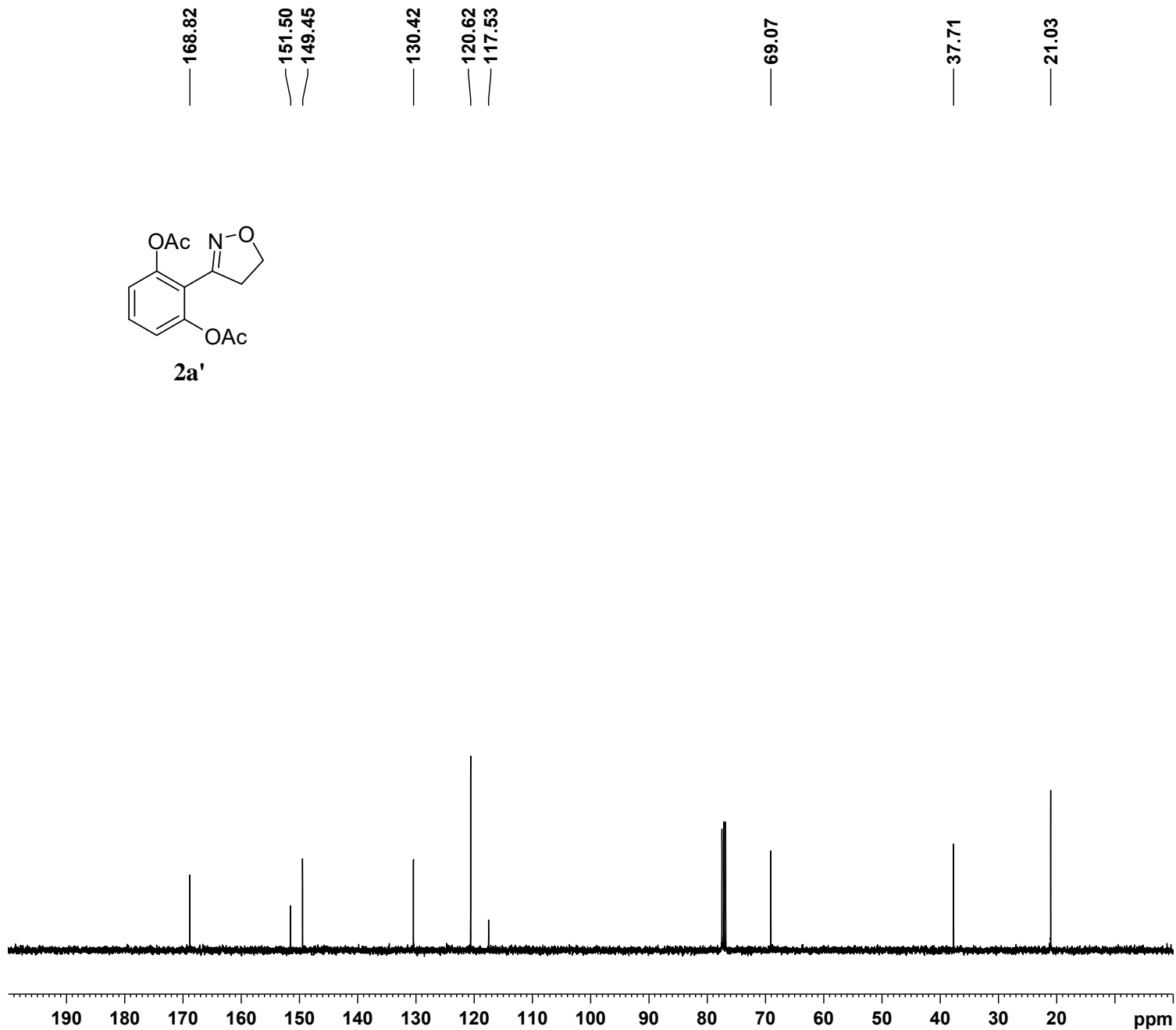
NAME CWG150507-2-x-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160215  
Time 17.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 33  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.5 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

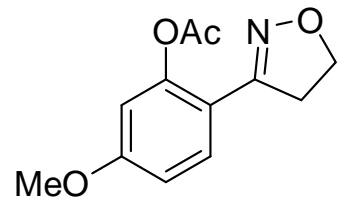
=====  
CHANNEL f1  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

=====  
CHANNEL f2  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228208 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



2a'

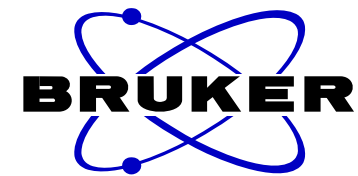




2b

7.4465  
7.4247  
7.2600  
6.8404  
6.8340  
6.8186  
6.8122  
6.6843  
6.6780

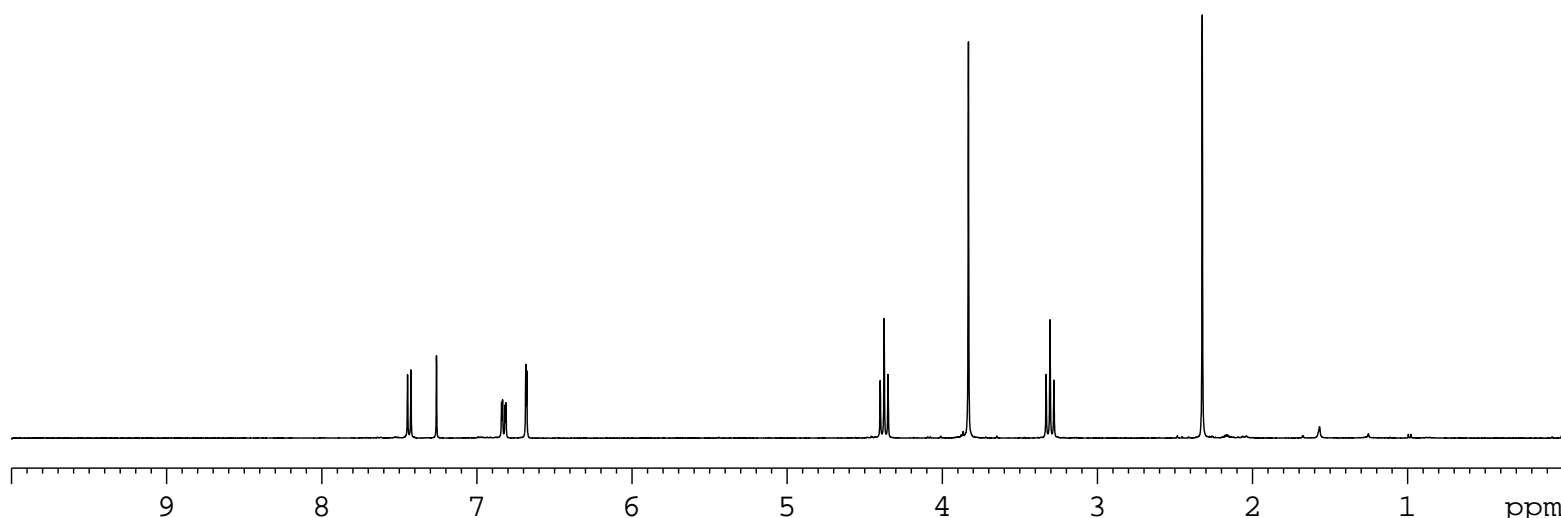
4.4003  
4.3751  
4.3499  
3.8318  
3.3308  
3.3056  
3.2805  
2.3241



```

NAME CWG150617-DAN
EXPNO 1
PROCNO 1
Date_ 20150618
Time 11.24
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 297.5 K
D1 1.00000000 sec
TD0 1

```

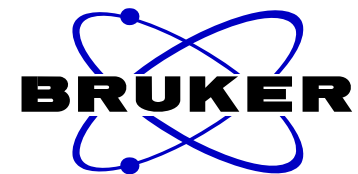


1.04  
1.04  
1.00  
2.10  
3.19  
2.12  
3.17

```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700033 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```



NAME CWG150617-dan-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150618  
Time 12.21  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 600  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.54  
161.36  
153.81  
149.60

130.43

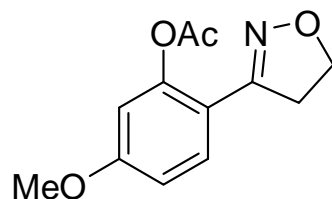
115.25  
111.95  
109.55

77.48  
77.16  
76.84  
68.08

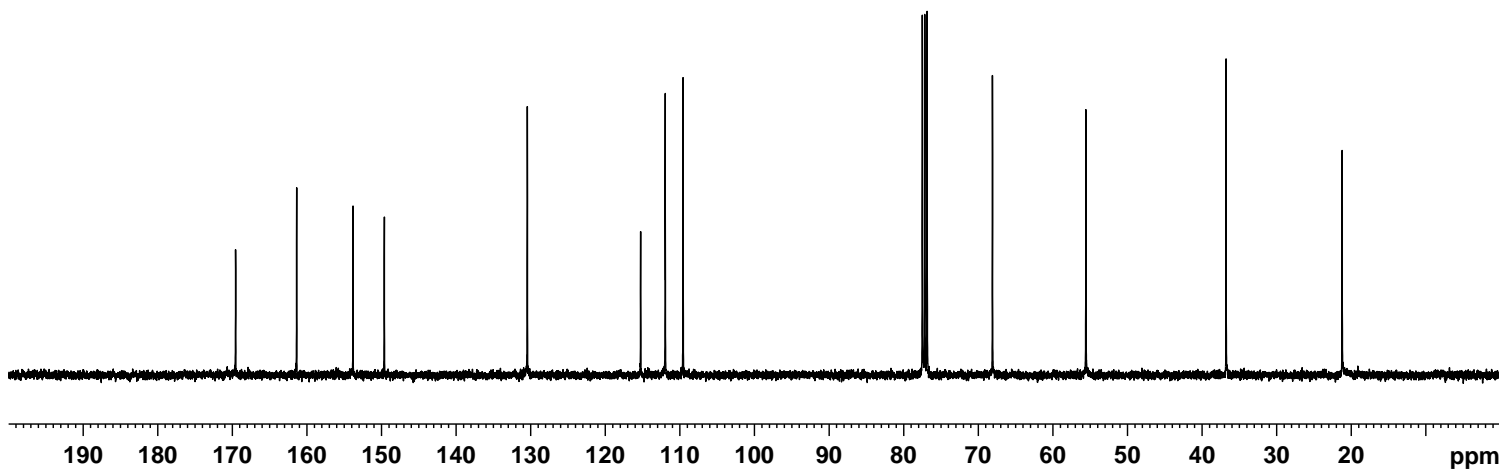
55.56

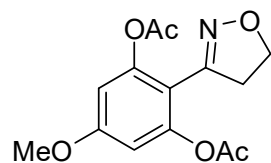
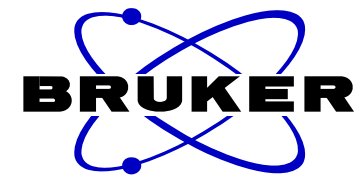
36.76

21.23



2b





2b'

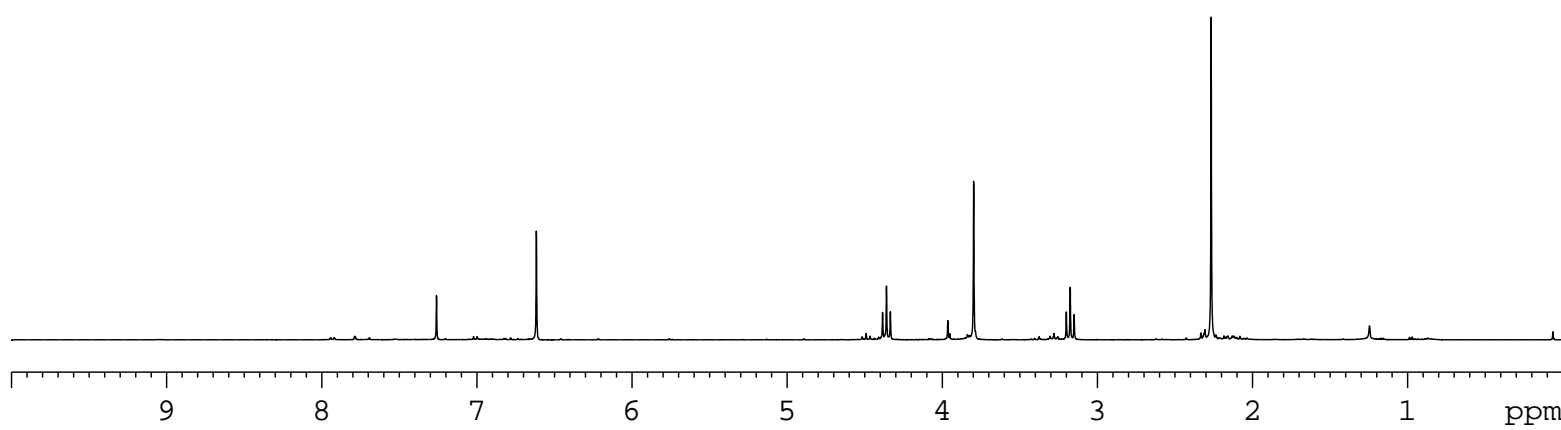
— 6.6160

4.3851  
4.3600  
4.3349  
— 3.7979  
3.2006  
3.1755  
3.1503

— 2.2668

NAME CWG150625-4-X-PURE  
EXPNO 1  
PROCNO 1  
Date\_ 20160218  
Time 18.22  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 101  
DW 60.800 usec  
DE 6.50 usec  
TE 296.2 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700035 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



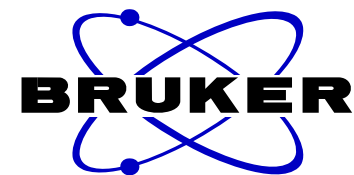
1.89

2.07

3.15

2.00

5.99



NAME CWG150625-4-X-PURE-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160218  
Time\_ 18.43  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 435  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.4 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

=====  
CHANNEL f1  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

=====  
CHANNEL f2  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228151 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

168.82  
161.06  
151.47  
150.28

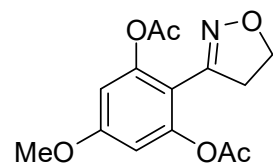
109.84  
107.04

68.91

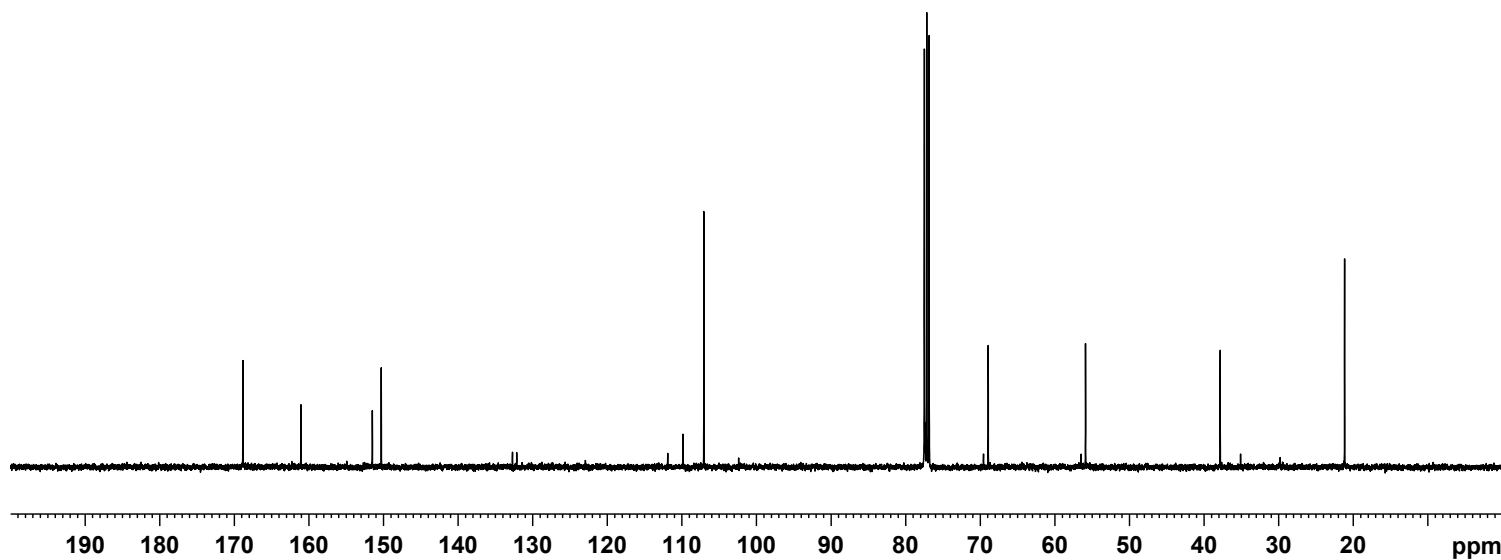
55.87

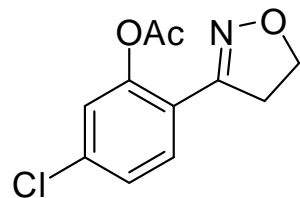
37.82

21.15



2b'





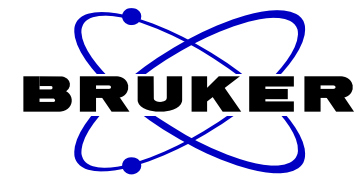
2c

7.4735  
7.4524  
7.2916  
7.2865  
7.2705  
7.2653  
7.2599  
7.1779  
7.1728

4.4469  
4.4215  
4.3960

3.3341  
3.3086  
3.2832

2.3212



```

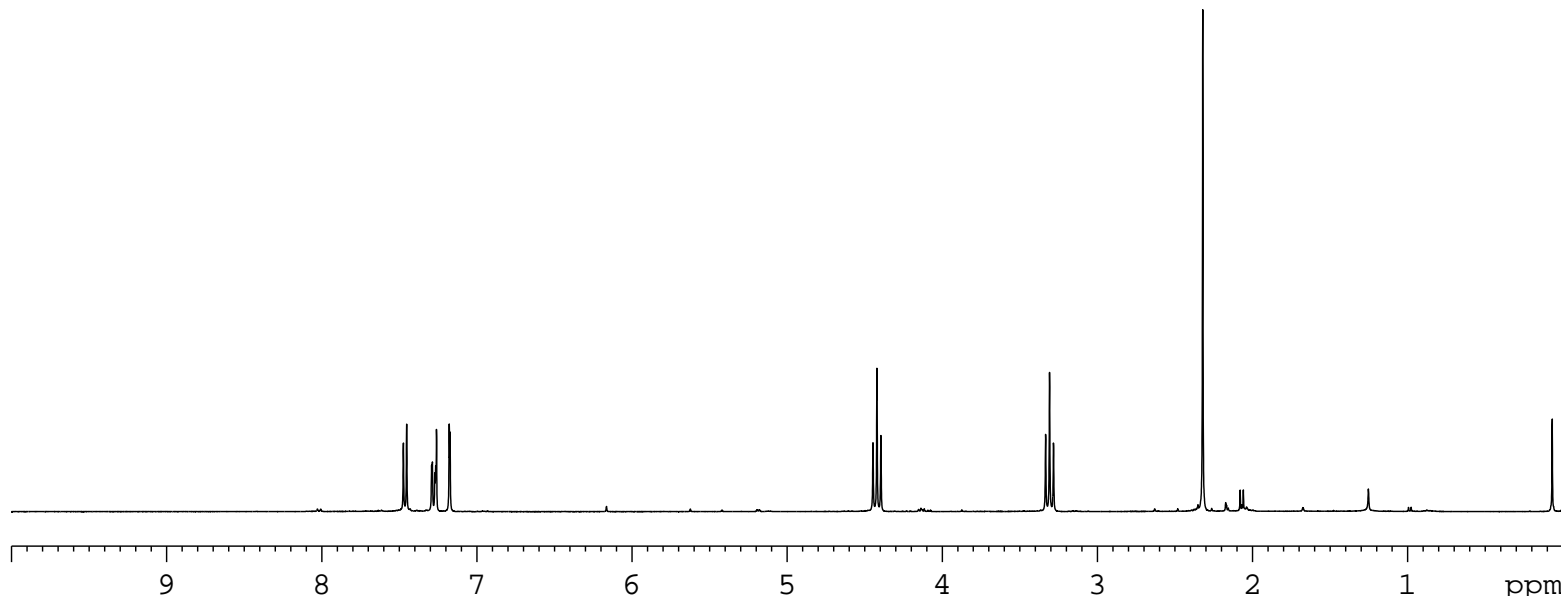
NAME CWG150613-2
EXPNO 1
PROCNO 1
Date_ 20150614
Time 18.35
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 297.4 K
D1 1.00000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SF01 400.1724712 MHz
SI 32768
SF 400.1700033 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```

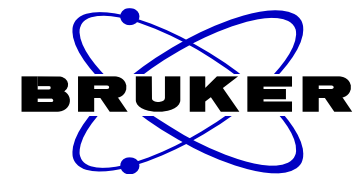


1.06  
1.01  
0.92

2.00

2.01

3.04

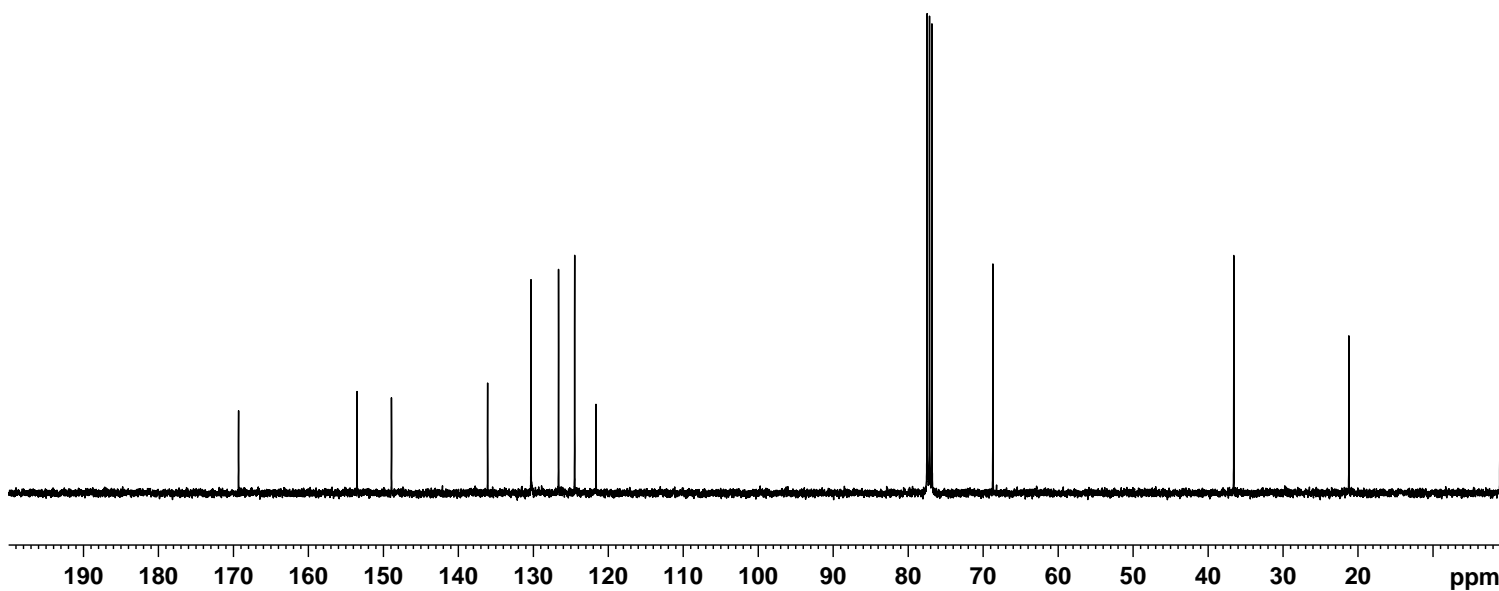
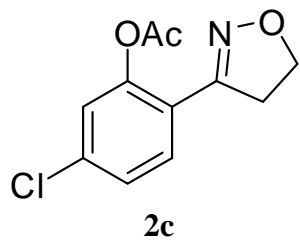


NAME CWG150613-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150614  
Time 19.40  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 350  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.7 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228169 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.30  
153.49  
148.91  
136.08  
130.29  
126.62  
124.47  
121.63  
68.71  
36.57  
21.22



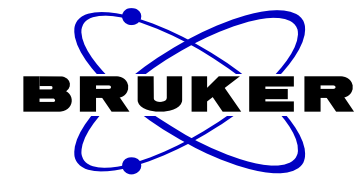
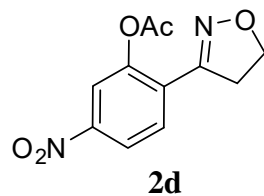


8.1704  
8.1648  
8.1488  
8.1432  
8.0376  
8.0321  
7.7409  
7.7193  
7.2601

4.5338  
4.5080  
4.4823

3.3993  
3.3736  
3.3478

2.3673

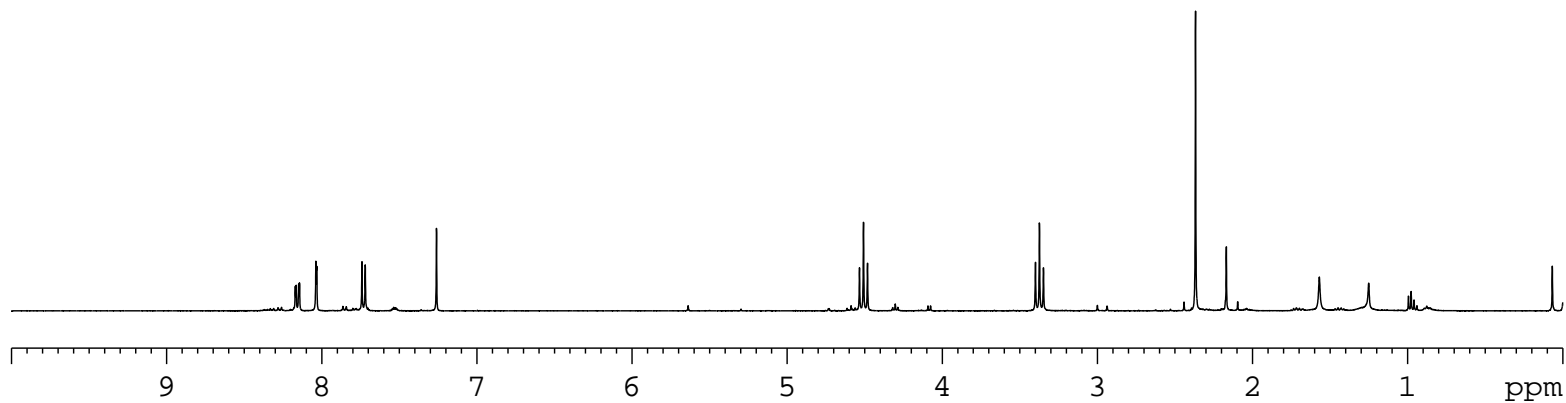


```

NAME      CWG150702-2-2
EXPNO     1
PROCNO    1
Date_     20150703
Time      20.04
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD        65536
SOLVENT   CDCl3
NS        16
DS        2
SWH       8223.685 Hz
FIDRES    0.125483 Hz
AQ        3.9846387 sec
RG        203
DW        60.800 usec
DE        6.50 usec
TE        296.8 K
D1        1.00000000 sec
TD0       1
  
```

```

===== CHANNEL f1 =====
NUC1      1H
P1        13.80 usec
PL1       -1.00 dB
PL1W      13.18669796 W
SFO1      400.1724712 MHz
SI        32768
SF        400.1700032 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

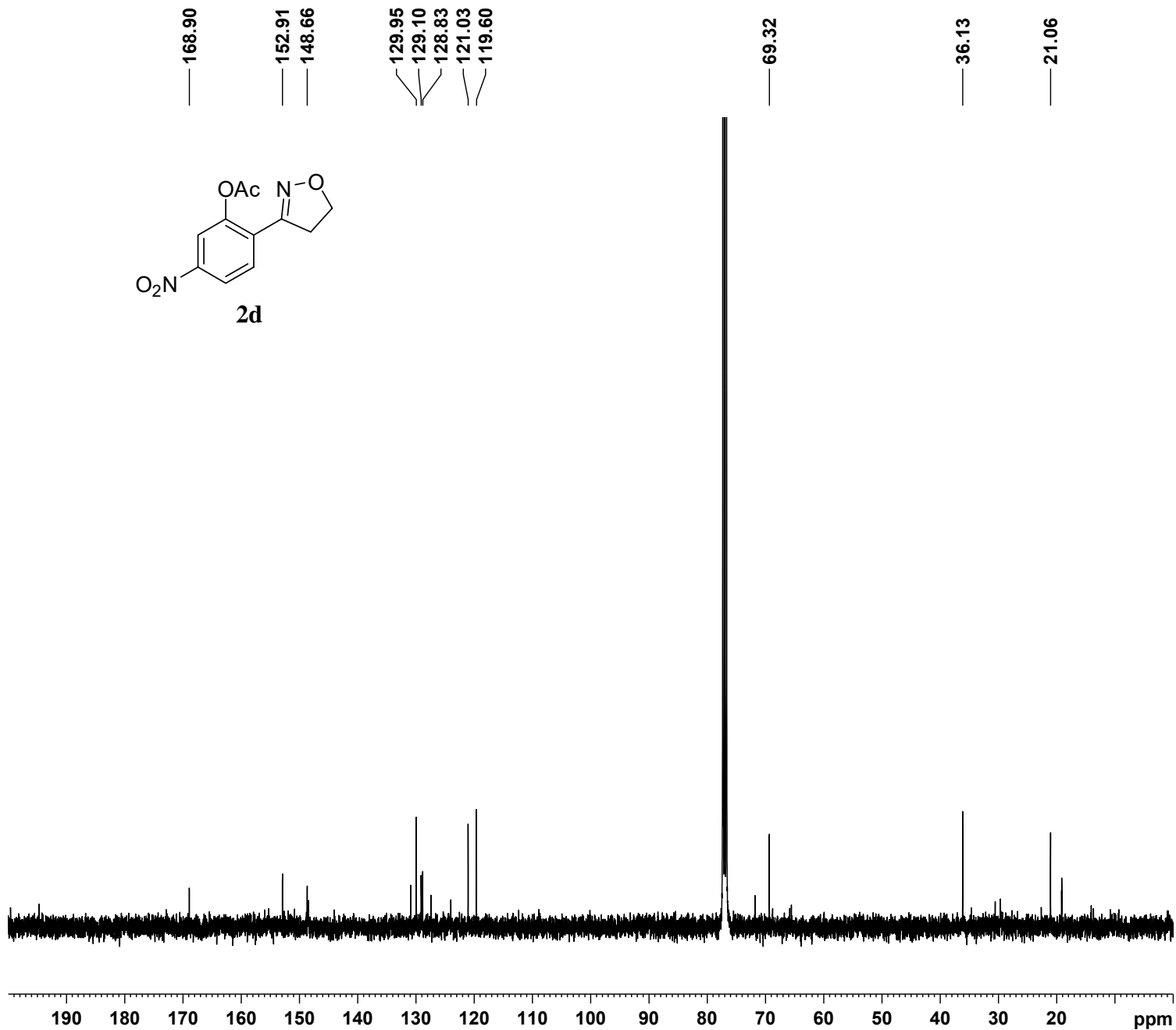
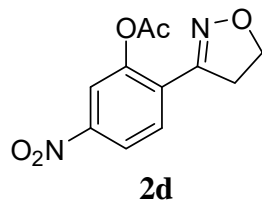
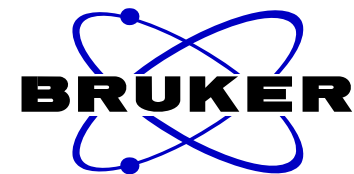


1.00  
0.92  
1.14

2.00

2.15

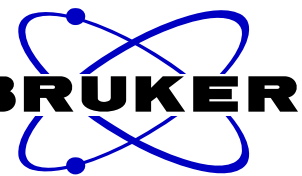
3.04



```
NAME CWG150702-2-C13
EXPNO 1
PROCNO 1
Date_ 20151007
Time 11.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2389
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 297.3 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1
```

```
===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz
```

```
===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228270 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
```

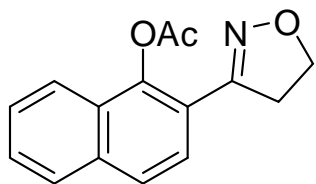


NAME CWG150610-2-S  
EXPNO 1  
PROCNO 1  
Date\_ 20150611  
Time 15.28  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 1.00000000 sec  
TD0 1

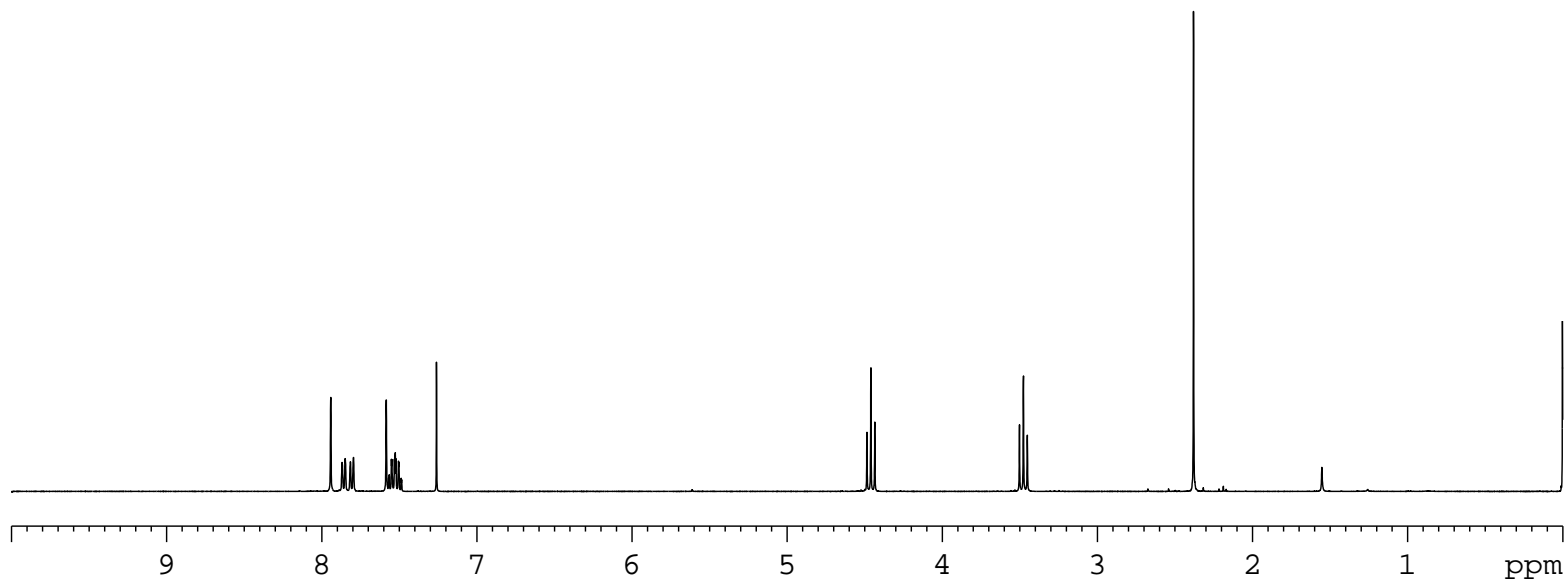
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

7.9418  
7.8689  
7.8490  
7.8150  
7.7951  
7.5839  
7.5682  
7.5648  
7.5509  
7.5477  
7.5315  
7.5258  
7.5212  
7.5050  
7.5020  
7.4879  
7.4846  
7.2601

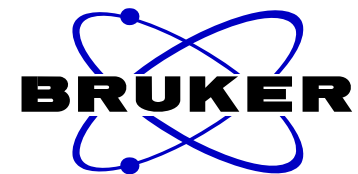
4.4862  
4.4607  
4.4354  
3.5026  
3.4772  
3.4518  
2.3806



2e



1.05  
2.13  
1.00  
2.12  
2.11  
2.12  
3.11

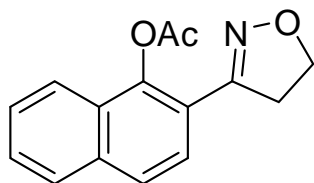


NAME CWG150610-2-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150611  
Time 17.19  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 111  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.8 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

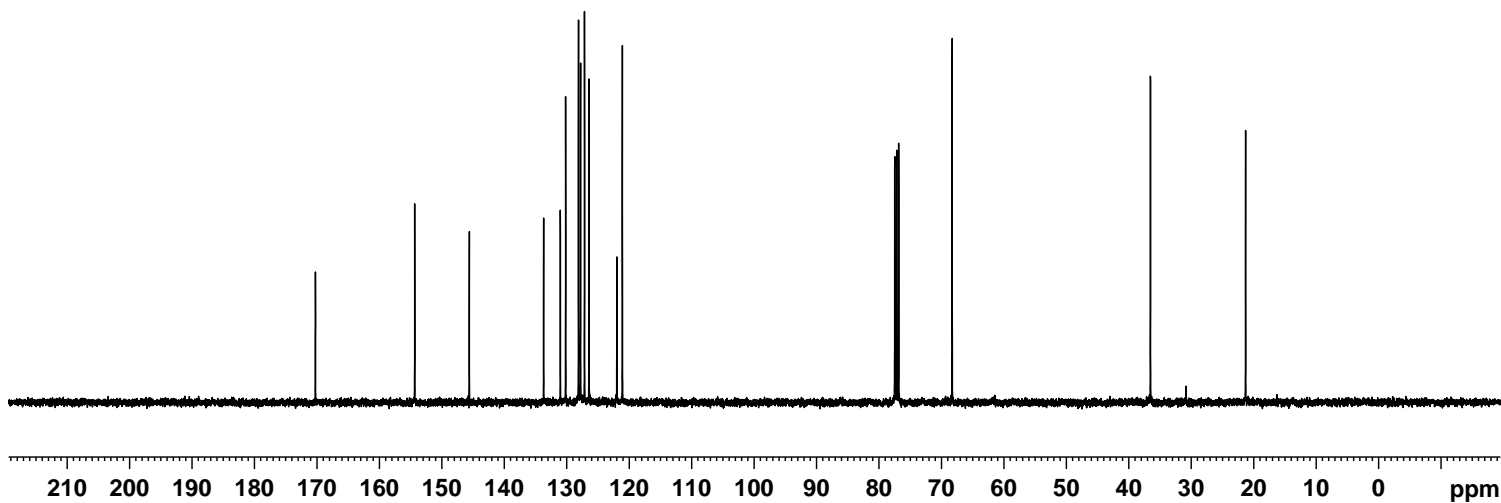
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

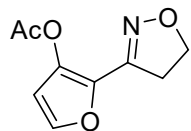
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228330 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

170.24  
154.35  
145.60  
133.70  
131.02  
130.18  
128.12  
127.79  
127.15  
126.43  
121.98  
121.09  
68.28  
36.53  
21.29



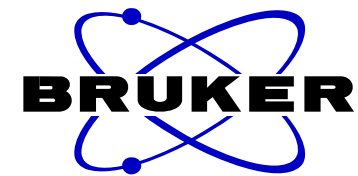
2e





2f

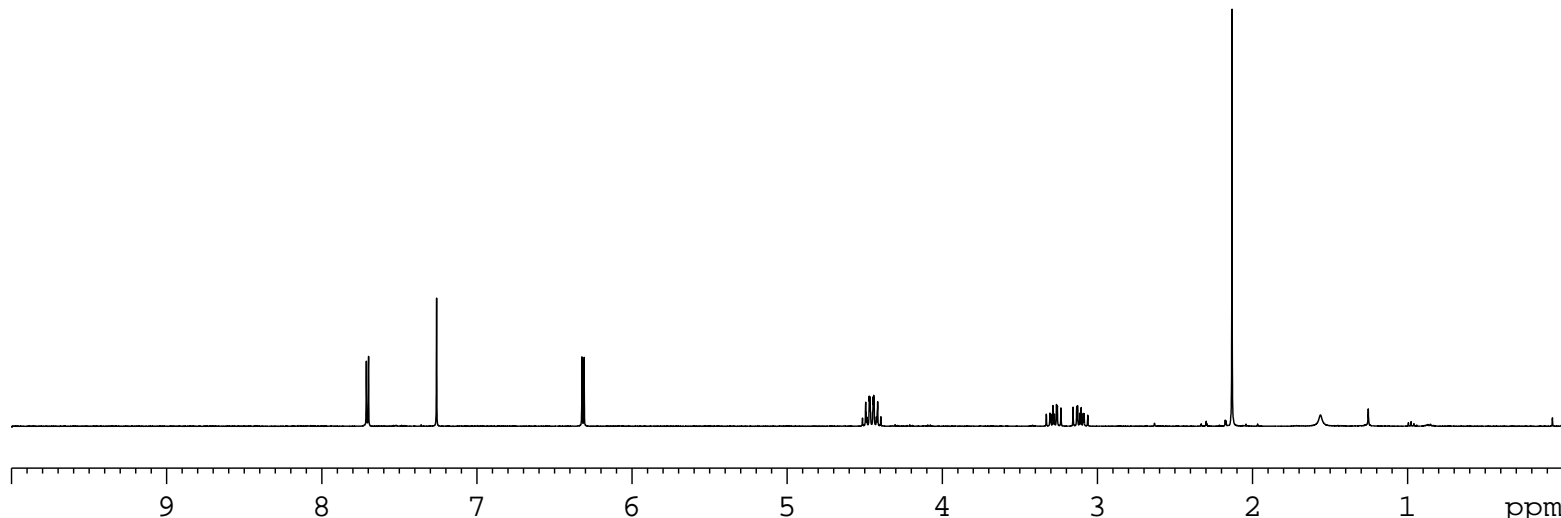
7.7128  
7.6988  
7.2601  
6.3228  
6.3089  
4.5142  
4.4939  
4.4915  
4.4854  
4.4706  
4.4683  
4.4652  
4.4451  
4.4418  
4.4395  
4.4249  
4.4164  
4.3961  
3.3291  
3.3061  
3.3001  
3.2867  
3.2772  
3.2636  
3.2578  
3.2347  
3.1565  
3.1332  
3.1276  
3.1141  
3.1044  
3.0909  
3.0852  
3.0620  
2.1320



```

NAME CWG150705-1
EXPNO 1
PROCNO 1
Date_ 20150706
Time 13.12
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 297.0 K
D1 1.00000000 sec
TD0 1

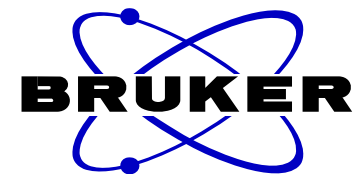
```



```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700032 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```



NAME CWG150705-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150706  
Time 17.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1643  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228128 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

168.35  
167.91

155.69  
151.38

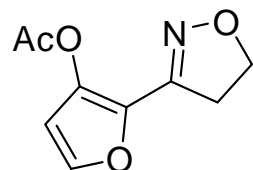
123.38

101.66

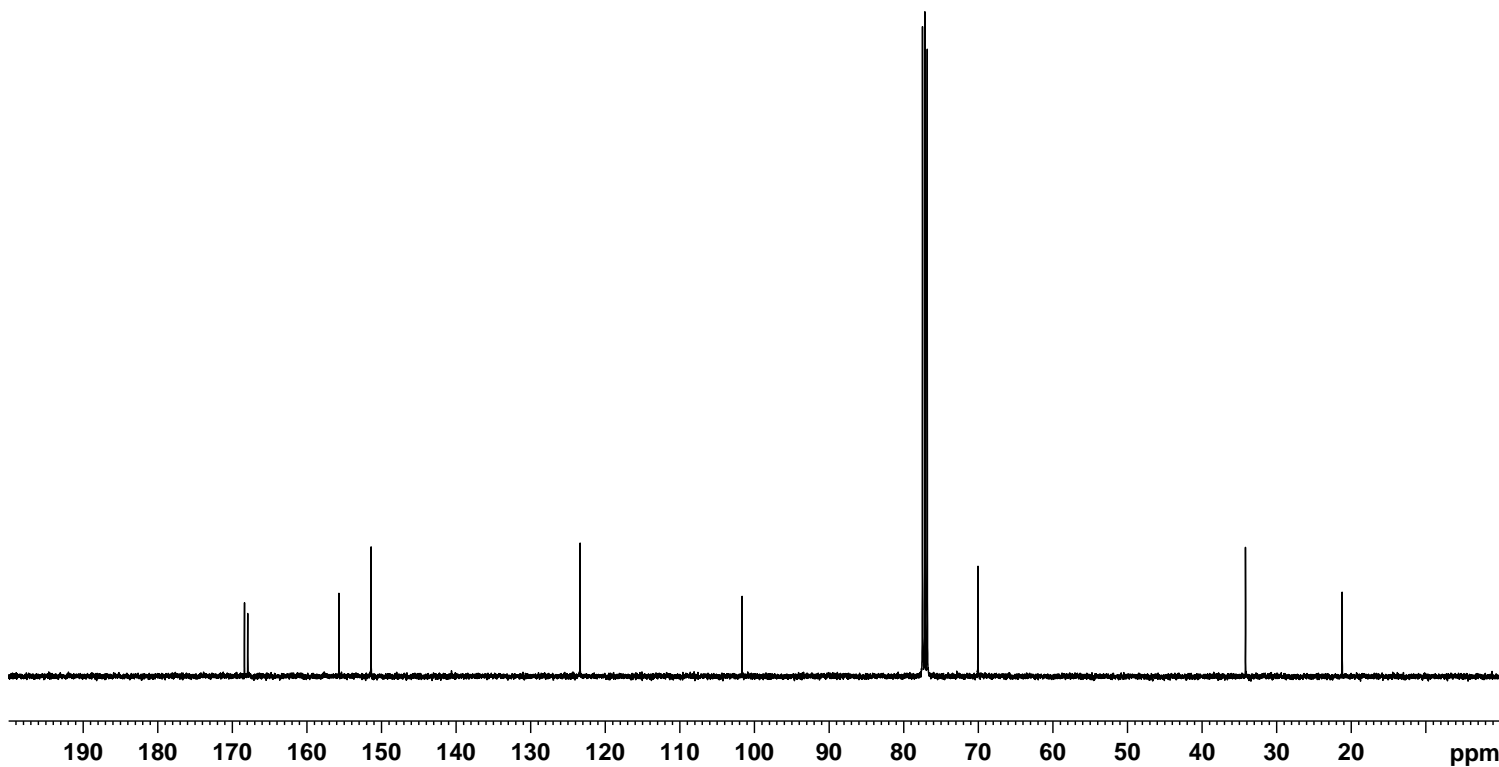
70.05

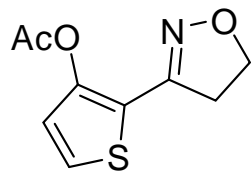
34.18

21.22



2f





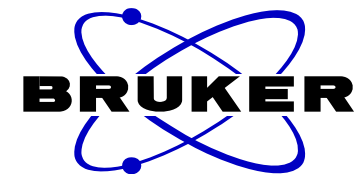
2g

7.2599  
6.9523  
6.9421  
6.6703  
6.6600

4.4814  
4.4563  
4.4313

3.3232  
3.2981  
3.2731

2.3213

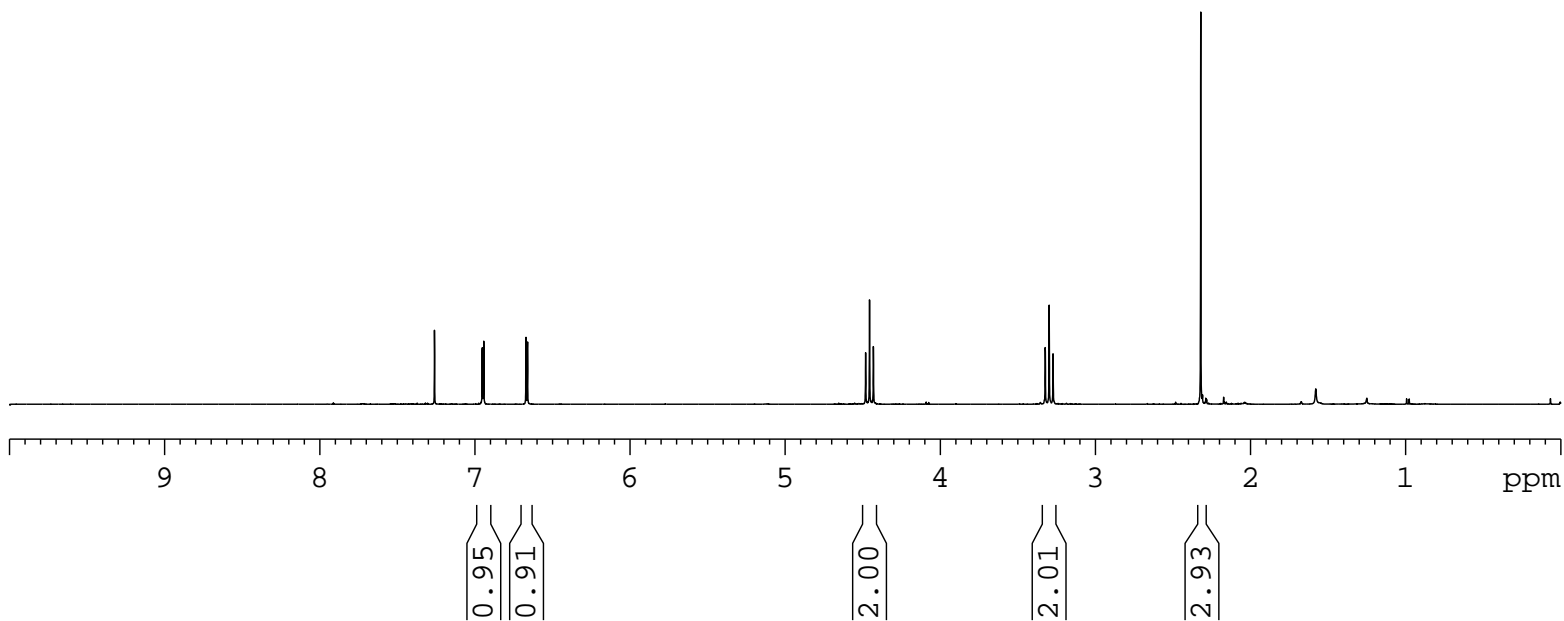


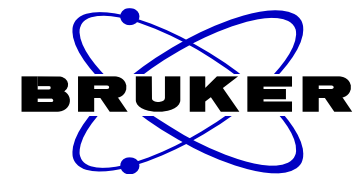
```

NAME          CWG150629-3-z
EXPNO         1
PROCNO        1
Date_         20140301
Time          19.49
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            296.5 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



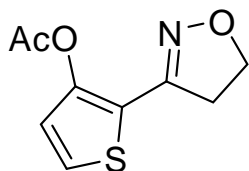


NAME CWG150629-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150708  
Time 14.37  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1453  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 299.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

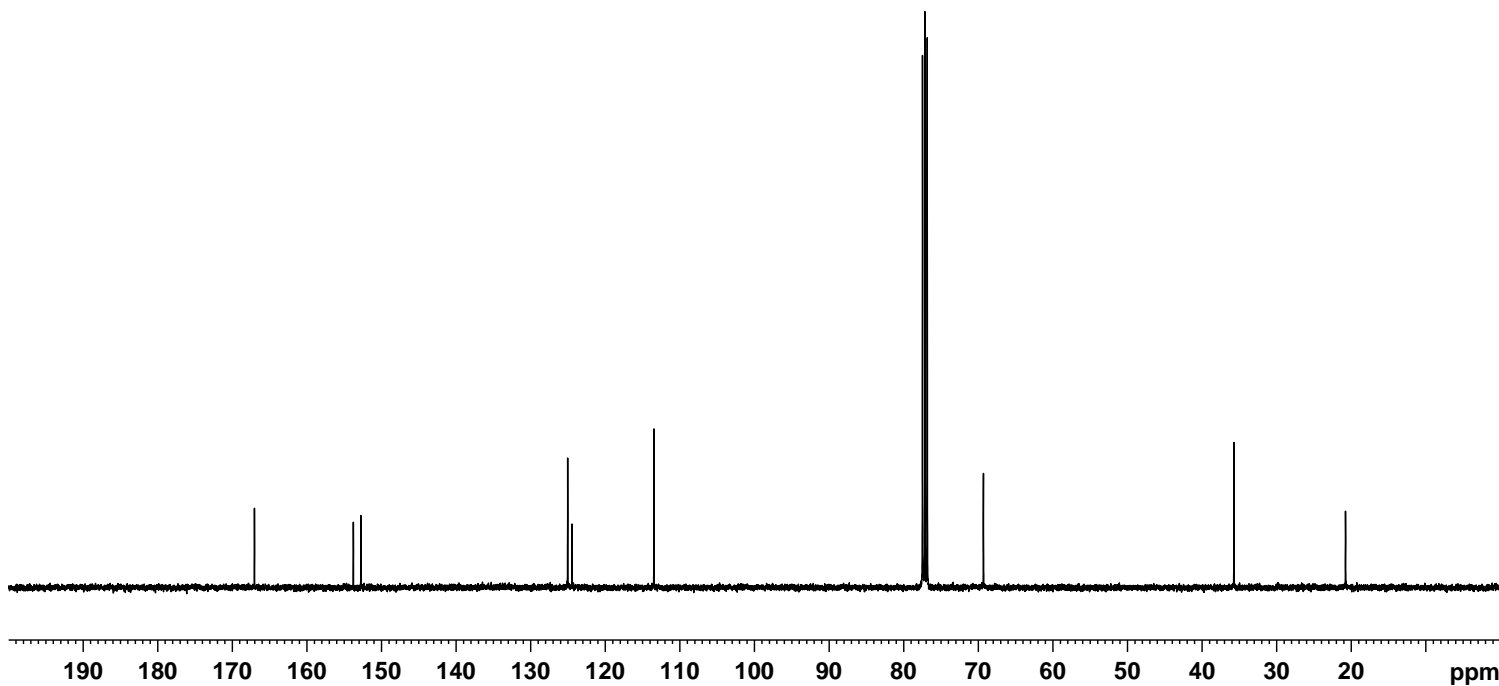
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228150 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

167.02  
153.75  
152.75  
125.04  
124.46  
113.49  
69.31  
35.73  
20.77

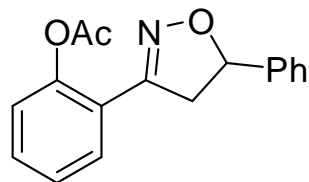


2g

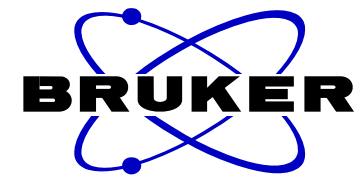
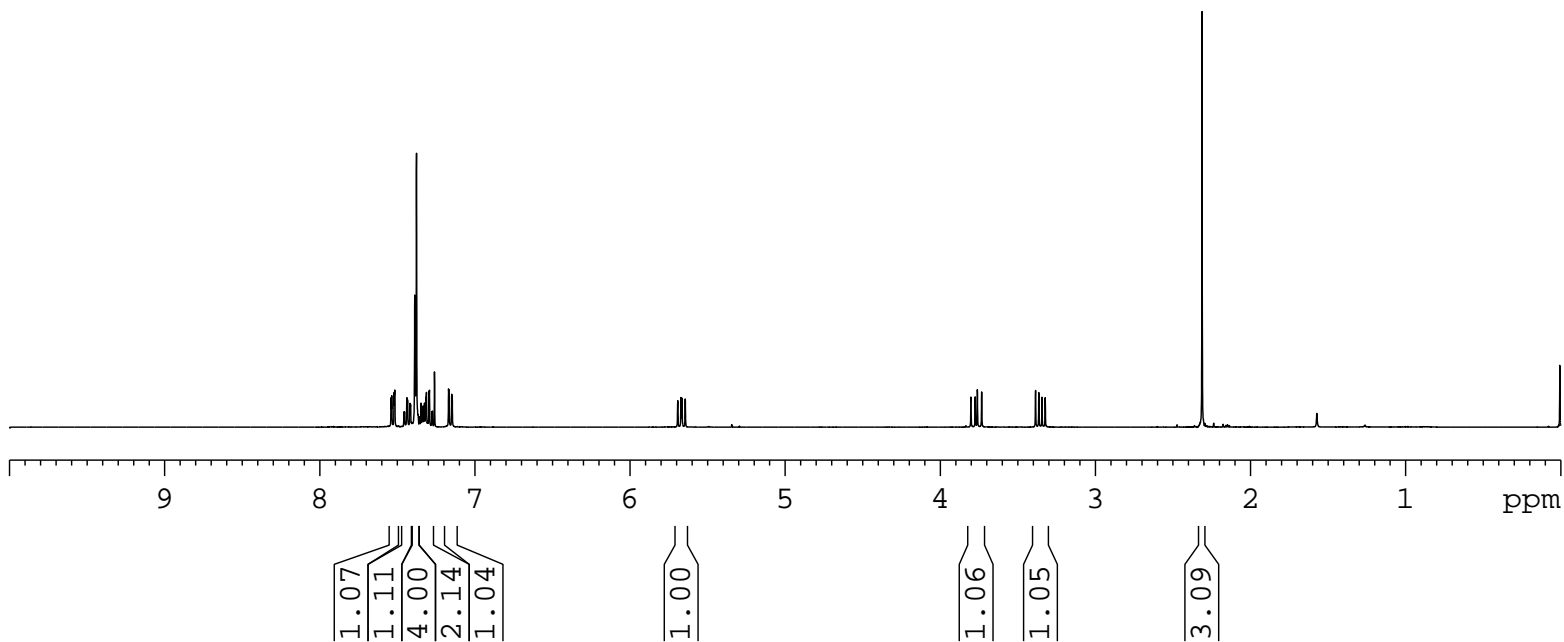




7.4531  
7.4377  
7.4341  
7.4183  
7.4142  
7.3871  
7.3761  
7.3660  
7.3564  
7.3463  
7.3370  
7.3347  
7.3246  
7.3146  
7.3120  
7.2956  
7.2927  
7.2767  
7.2737  
7.2600  
7.1691  
7.1664  
7.1489  
7.1462  
5.6930  
5.6719  
5.6655  
5.6445  
3.8025  
3.7750  
3.7610  
3.7335  
3.3861  
3.3650  
3.3446  
3.3235  
2.3127



4a

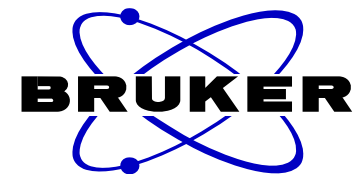


```

NAME          CWG150420-S(1)
EXPNO         1
PROCNO        1
Date_         20150606
Time          14.01
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            297.8 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

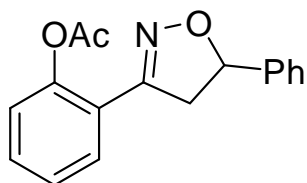


NAME CWG150420-S(1)C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150606  
Time 14.24  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 52  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

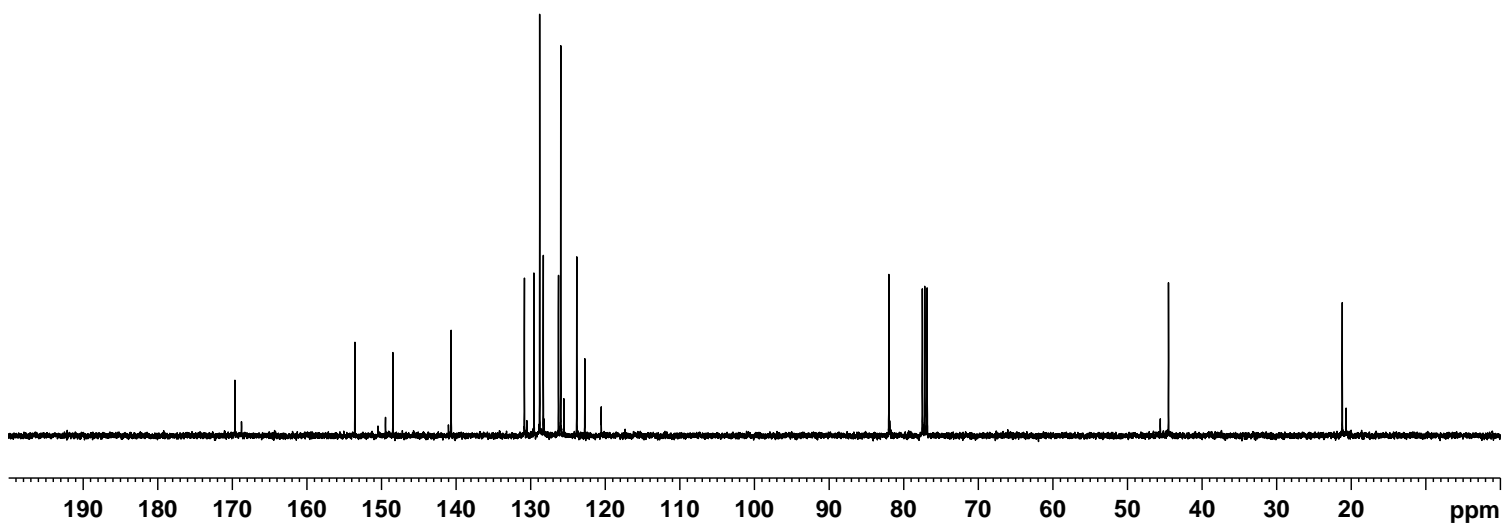
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228308 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

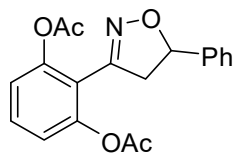
169.63  
153.56  
148.47  
140.64  
130.83  
129.54  
128.78  
128.30  
126.26  
125.96  
123.81  
122.74  
81.97  
44.51  
21.21



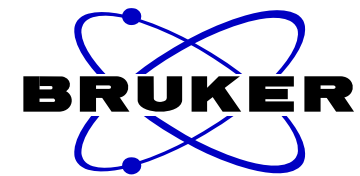
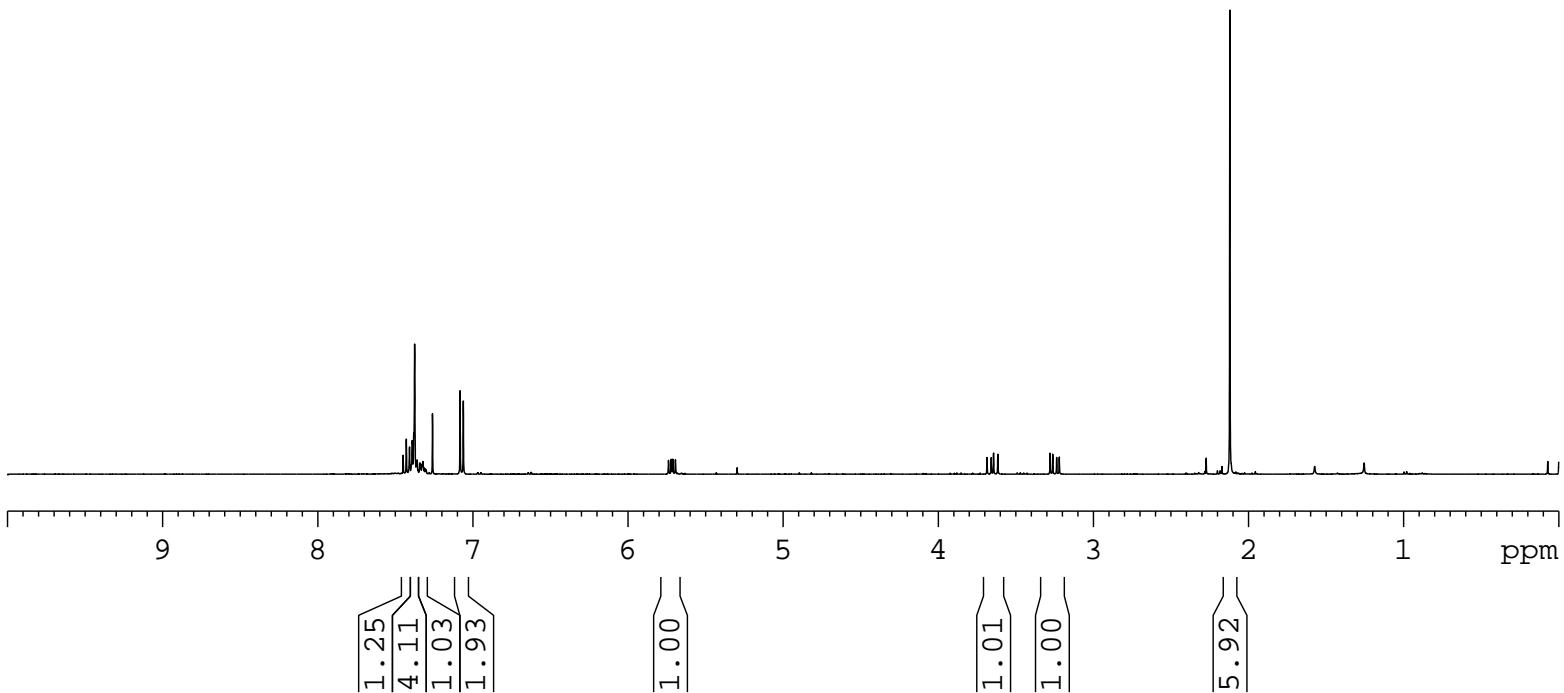
4a



7.4494  
7.4288  
7.4082  
7.3962  
7.3911  
7.3895  
7.3808  
7.3751  
7.3635  
7.3593  
7.3529  
7.3428  
7.3377  
7.3355  
7.3283  
7.3214  
7.3125  
7.3061  
7.3008  
7.2600  
7.0820  
7.0614  
5.7384  
5.7213  
5.7110  
5.6939  
3.6861  
3.6587  
3.6438  
3.6164  
3.2794  
3.2623  
3.2371  
3.2200  
— 2.1208



4a'

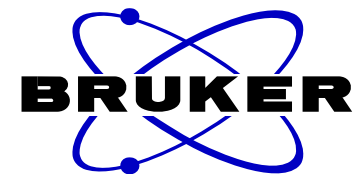


```

NAME          CWG150420-X-1
EXPNO         1
PROCNO        1
Date_         20160223
Time_         9.49
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            294.5 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

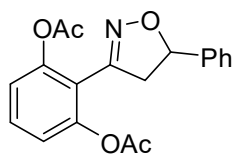


NAME CWG150420-x-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160223  
Time 15.10  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 508  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

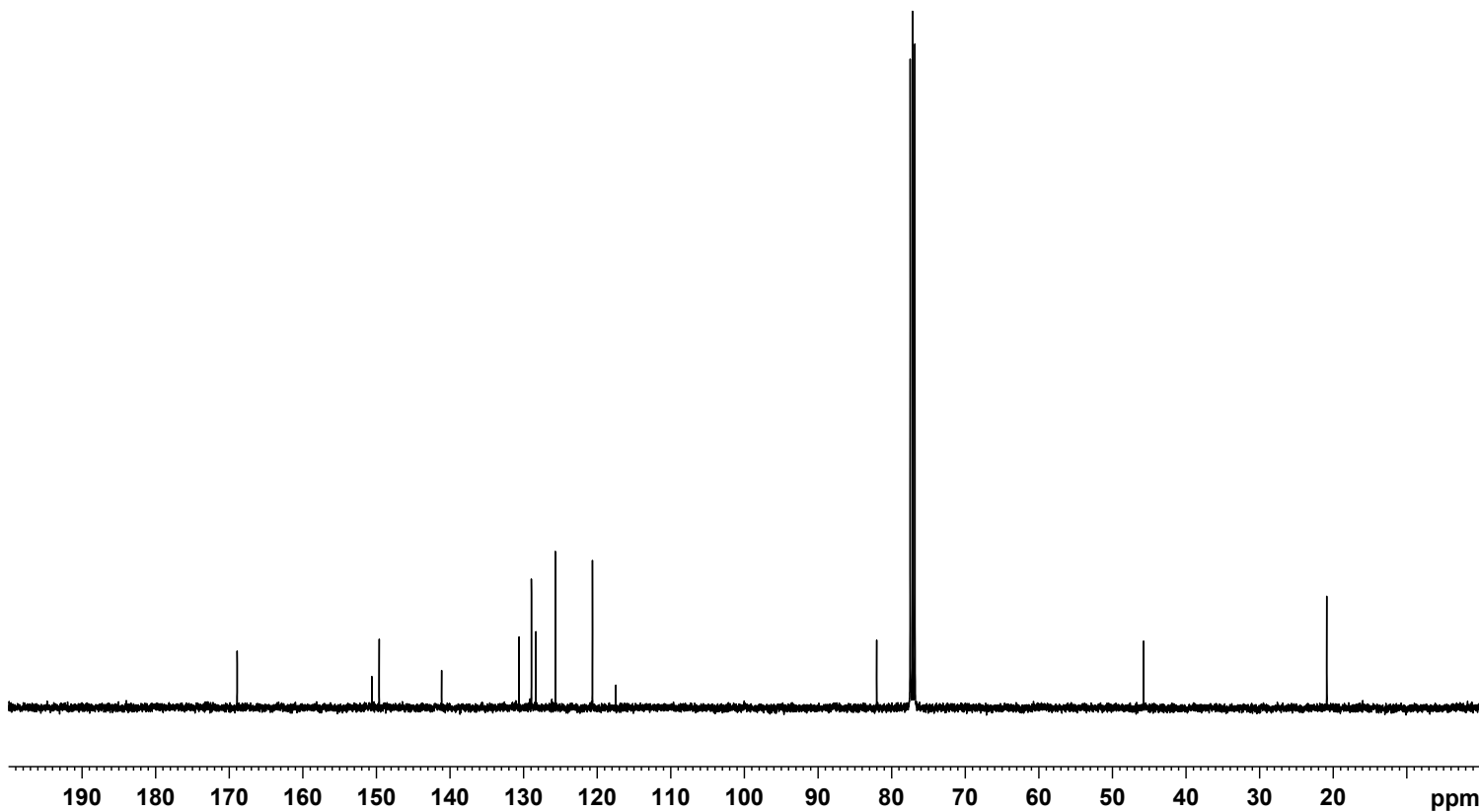
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228114 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

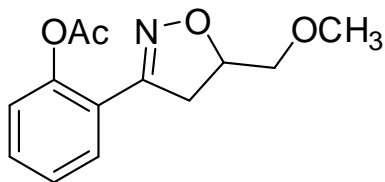
168.90  
150.60  
149.62  
141.14  
130.62  
128.94  
128.33  
125.69  
120.65  
117.47  
82.03  
45.77  
20.88



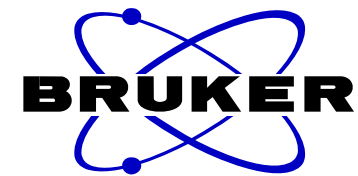
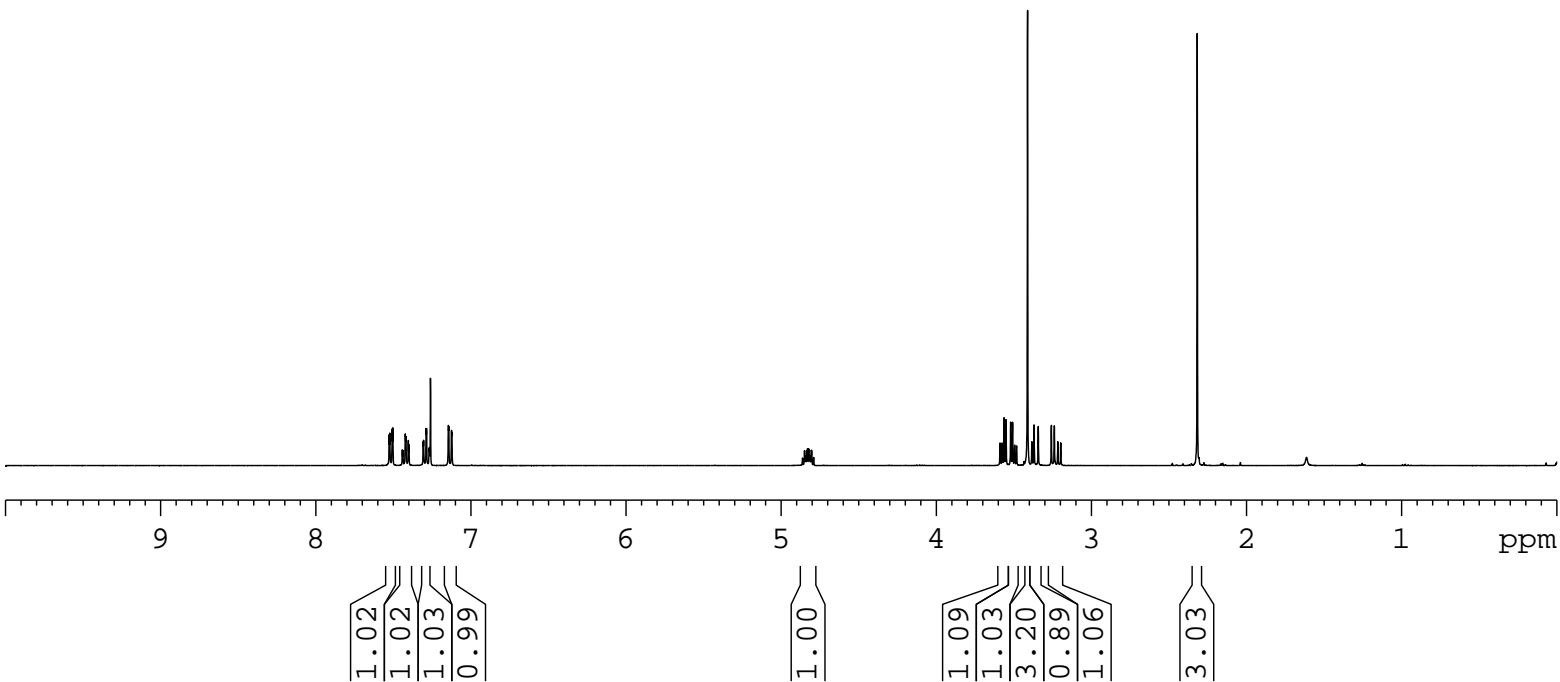
4a'



7.5264  
7.5224  
7.5070  
7.5030  
7.4417  
7.4376  
7.4223  
7.4186  
7.4030  
7.3989  
7.3073  
7.3043  
7.2882  
7.2853  
7.2692  
7.2662  
7.2600  
7.1448  
7.1422  
7.1247  
7.1221  
4.8497  
4.8362  
4.8307  
4.8228  
4.8172  
4.8098  
4.8037  
3.5894  
3.5760  
3.5636  
3.5502  
3.5207  
3.5082  
3.4949  
3.4824  
3.4120  
3.3841  
3.3696  
3.3427  
3.2583  
3.2392  
3.2169  
3.1978  
2.3176

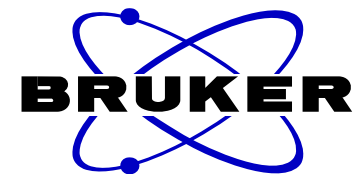


4b



NAME CWG150413-3  
EXPNO 1  
PROCNO 1  
Date\_ 20150207  
Time 11.22  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 161  
DW 60.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 1.00000000 sec  
TD0 1

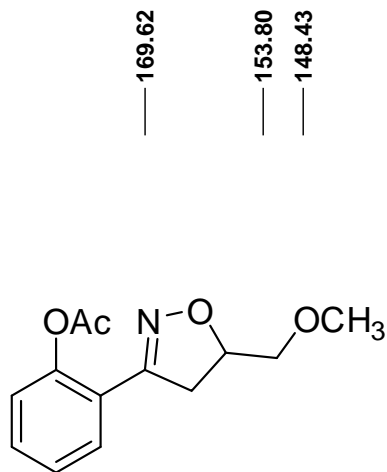
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700030 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



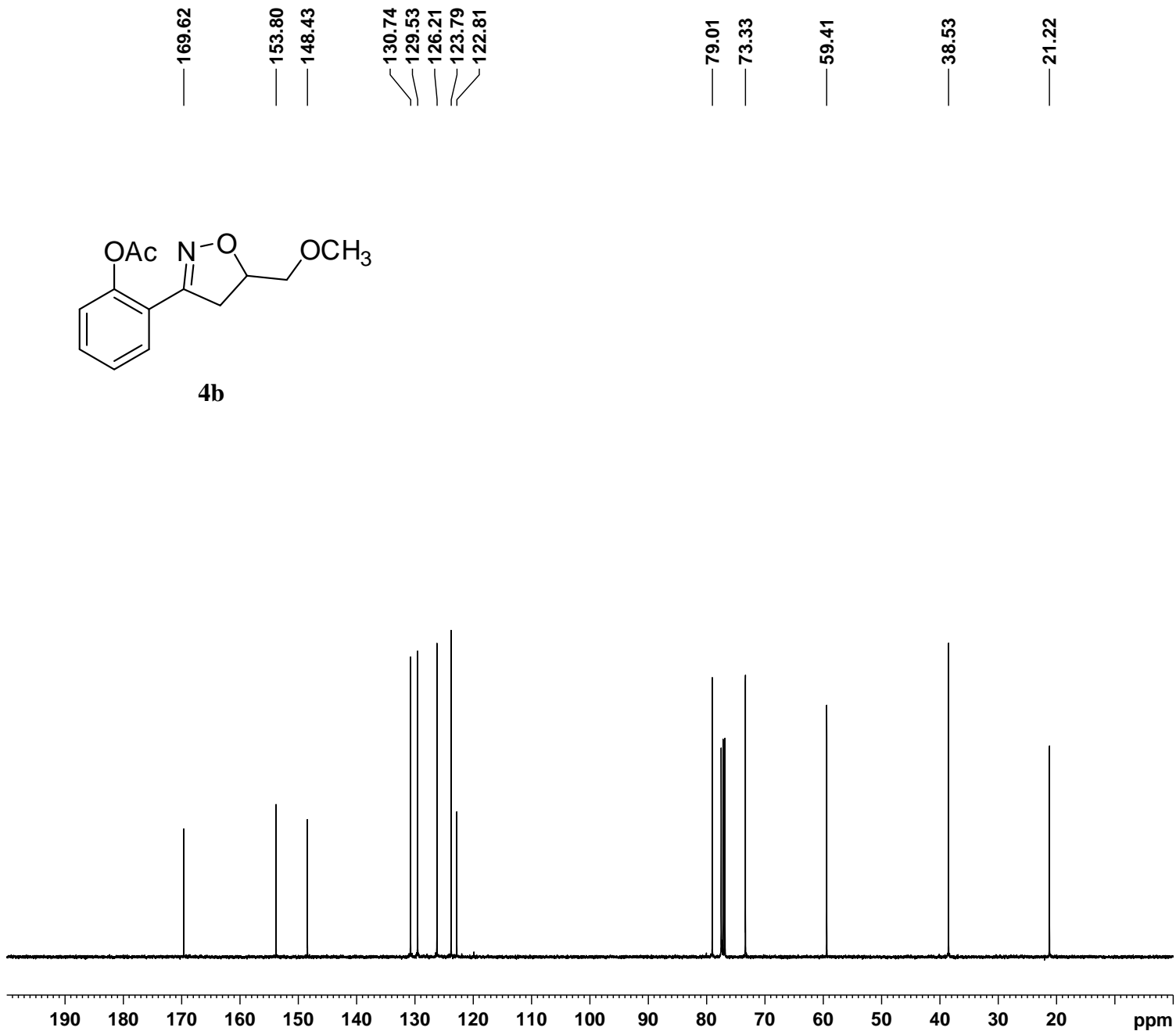
NAME CWG150413-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150207  
Time 14.02  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 500  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 299.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

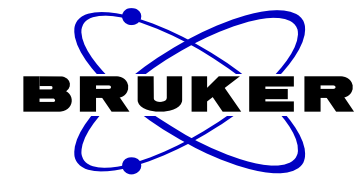
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228249 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



4b





```

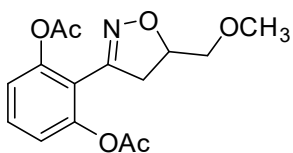
NAME CWG150522-1-x-PURE
EXPNO 1
PROCNO 1
Date_ 20160225
Time 16.52
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 14
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 45.2
DW 60.800 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
TD0 1

```

```

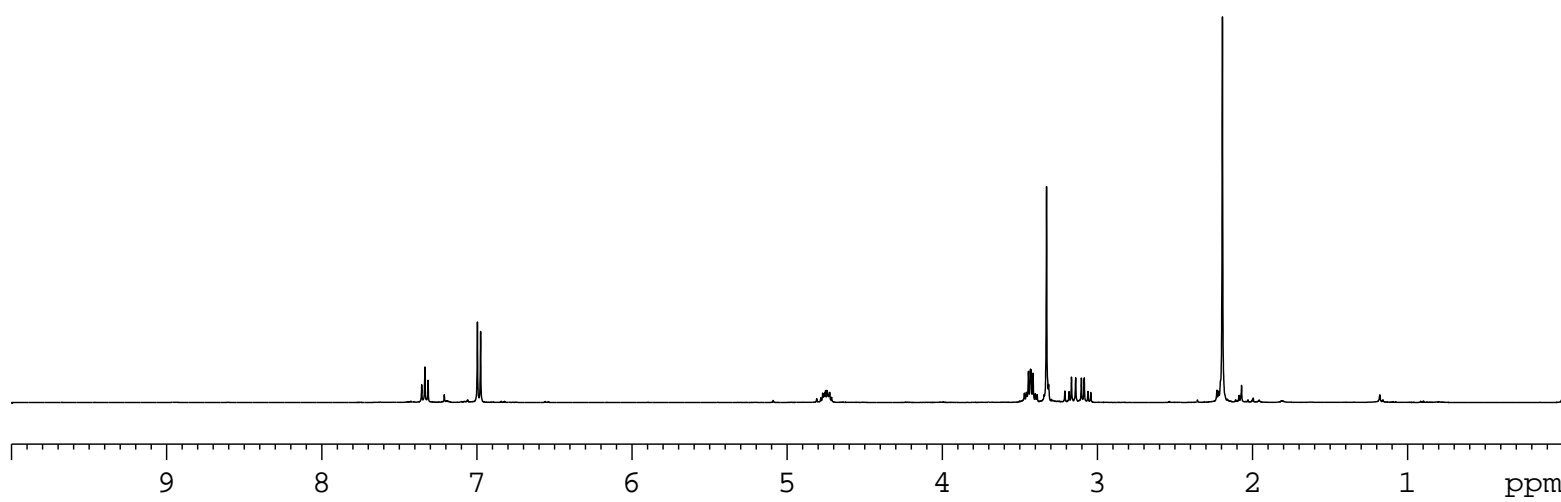
===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700230 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```

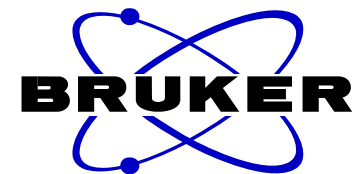


4b'

7.3553  
7.3349  
7.3142  
6.9963  
6.9756  
4.7832  
4.7710  
4.7646  
4.7560  
4.7528  
4.7440  
4.7402  
4.7319  
4.7259  
4.7136  
3.4707  
3.4580  
3.4446  
3.4317  
3.4266  
3.4148  
3.4002  
3.3885  
3.3277  
3.2095  
3.1826  
3.1671  
3.1403  
3.1032  
3.0848  
3.0608  
3.0423  
2.1937



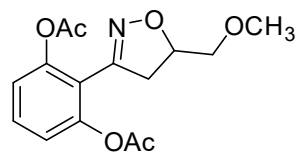
1.01  
1.82  
1.06  
2.19  
3.13  
1.06  
1.00  
6.02



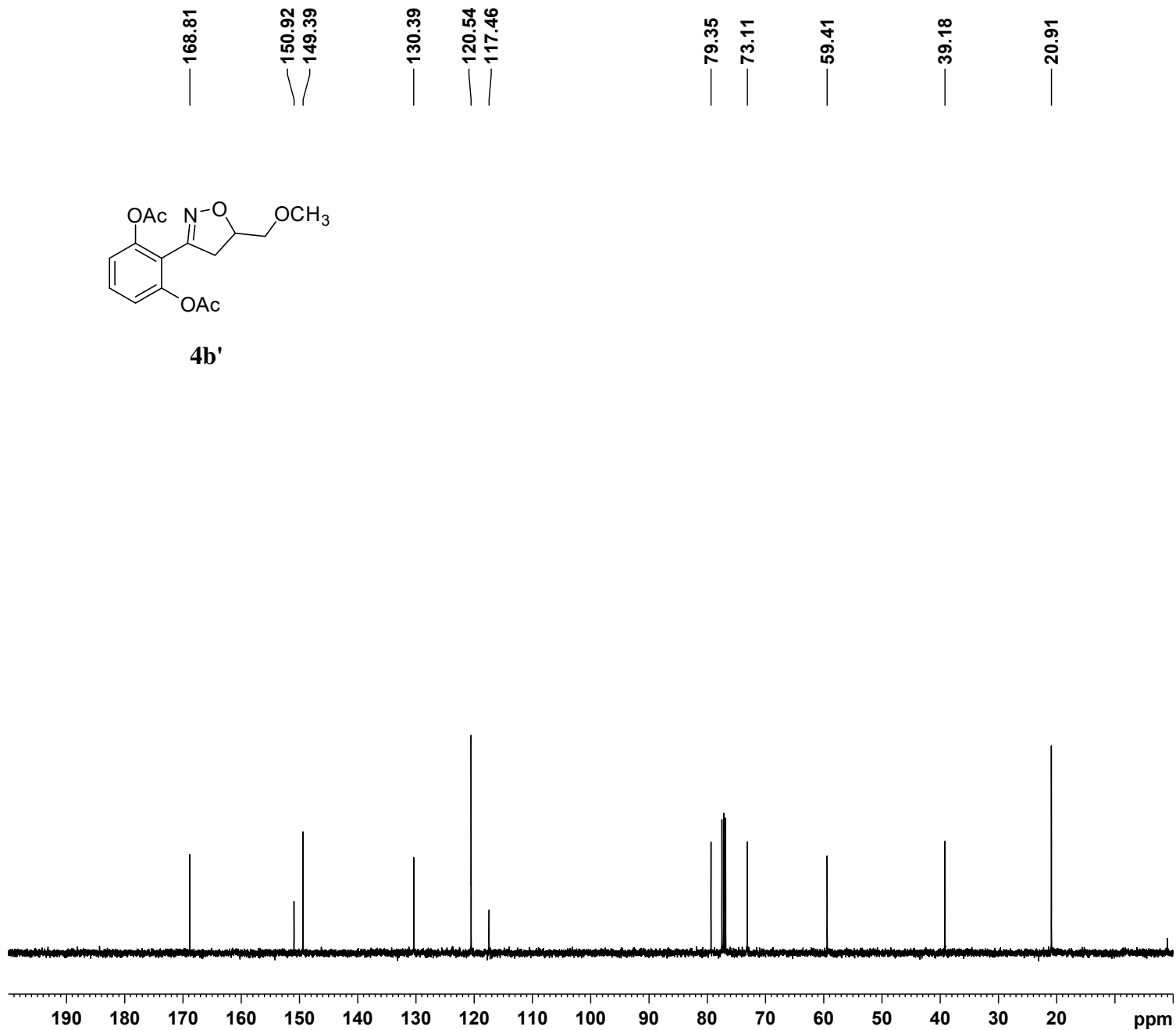
NAME CWG150522-1-x-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160225  
Time 16.57  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 18  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 294.3 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228275 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

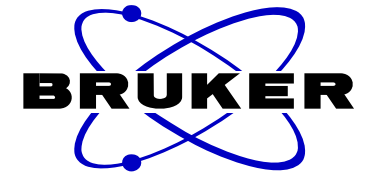
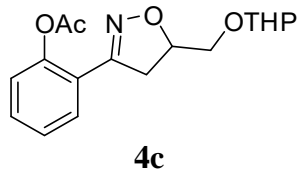


4b'



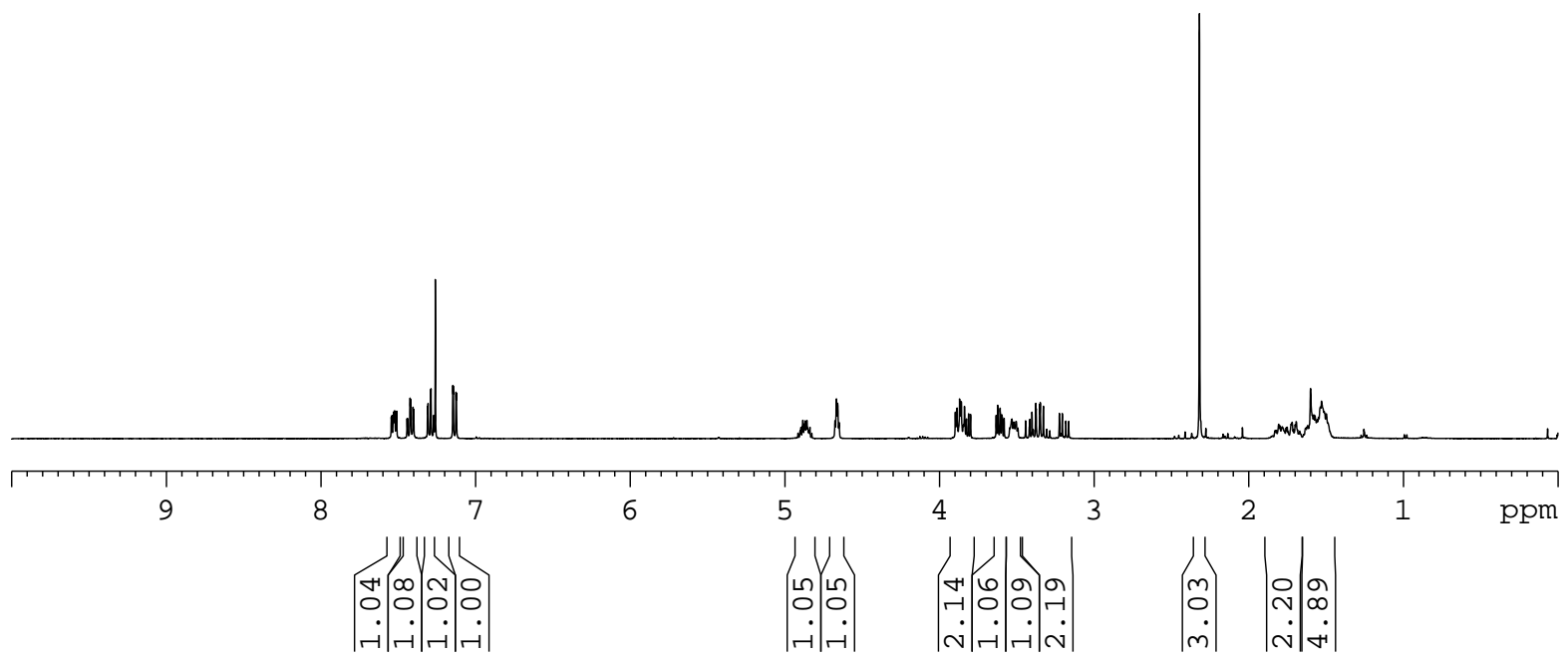


7.5292  
7.5254  
7.5213  
7.5139  
7.5099  
7.4233  
7.4195  
7.4039  
7.3999  
7.3100  
7.3070  
7.2908  
7.2879  
7.2600  
7.1466  
7.1439  
7.1264  
7.1238  
4.6671  
4.6590  
3.8977  
3.8864  
3.8700  
3.8587  
3.8385  
3.8118  
3.7994  
3.6235  
3.6083  
3.5972  
3.4017  
3.3781  
3.3750  
3.3520  
3.3483  
3.3285  
3.2249  
3.2062  
2.3188  
1.6002  
1.5365  
1.5295  
1.5119  
1.5081  
1.4985



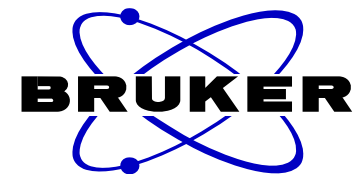
```

NAME          CWG150406-1(1)
EXPNO         1
PROCNO        1
Date_         20150617
Time          19.44
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            297.4 K
D1            1.00000000 sec
TD0           1
  
```



```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



```

NAME CWG150406-1(1)C13
EXPNO 1
PROCNO 1
Date_ 20150617
Time 20.37
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 570
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 298.4 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

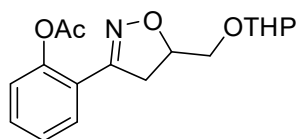
```

```

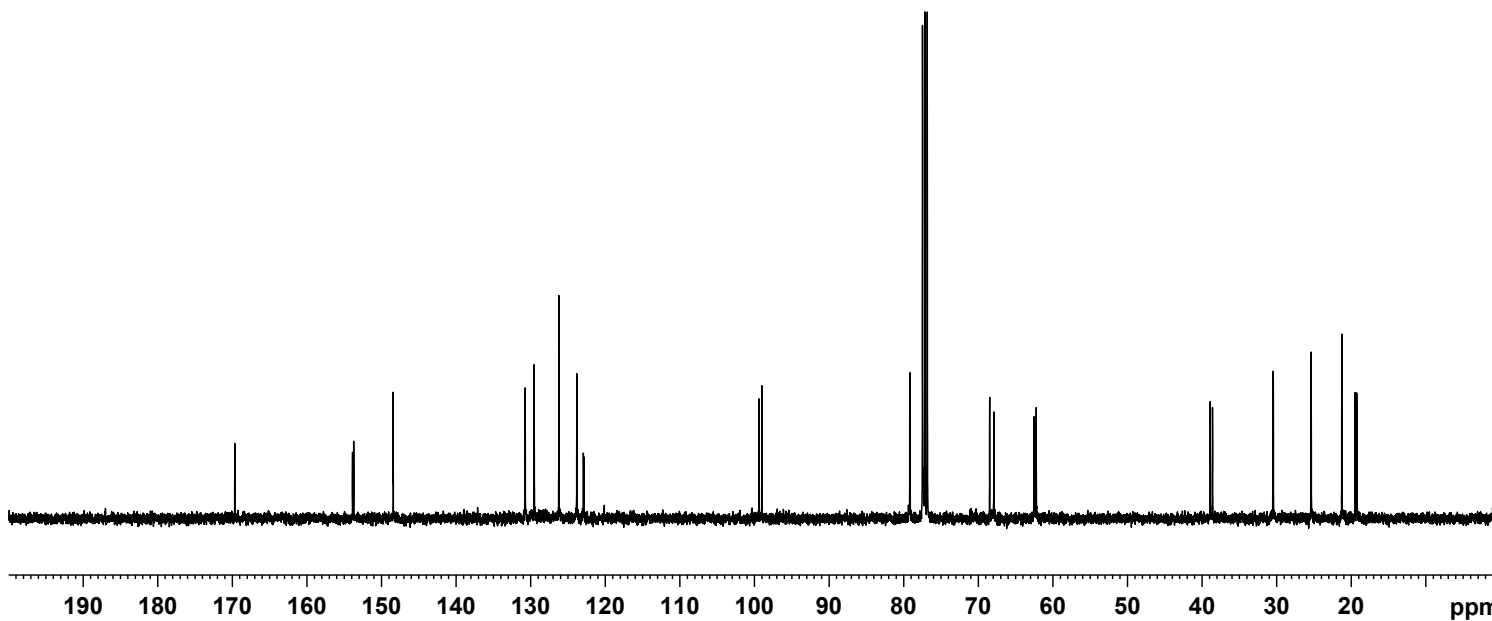
===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228216 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

```

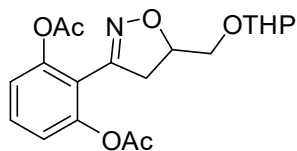
169.65  
 153.87 153.70 148.44  
 130.76 130.73 129.53 126.23 123.83 123.81 122.94 122.87  
 99.39 99.02  
 79.18 79.15  
 68.48 67.91 62.51 62.23  
 38.91 38.60 30.49 30.45 25.39 25.37 21.26 19.48 19.26



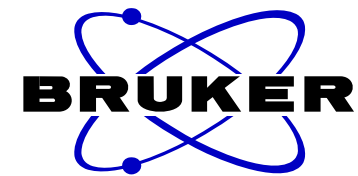
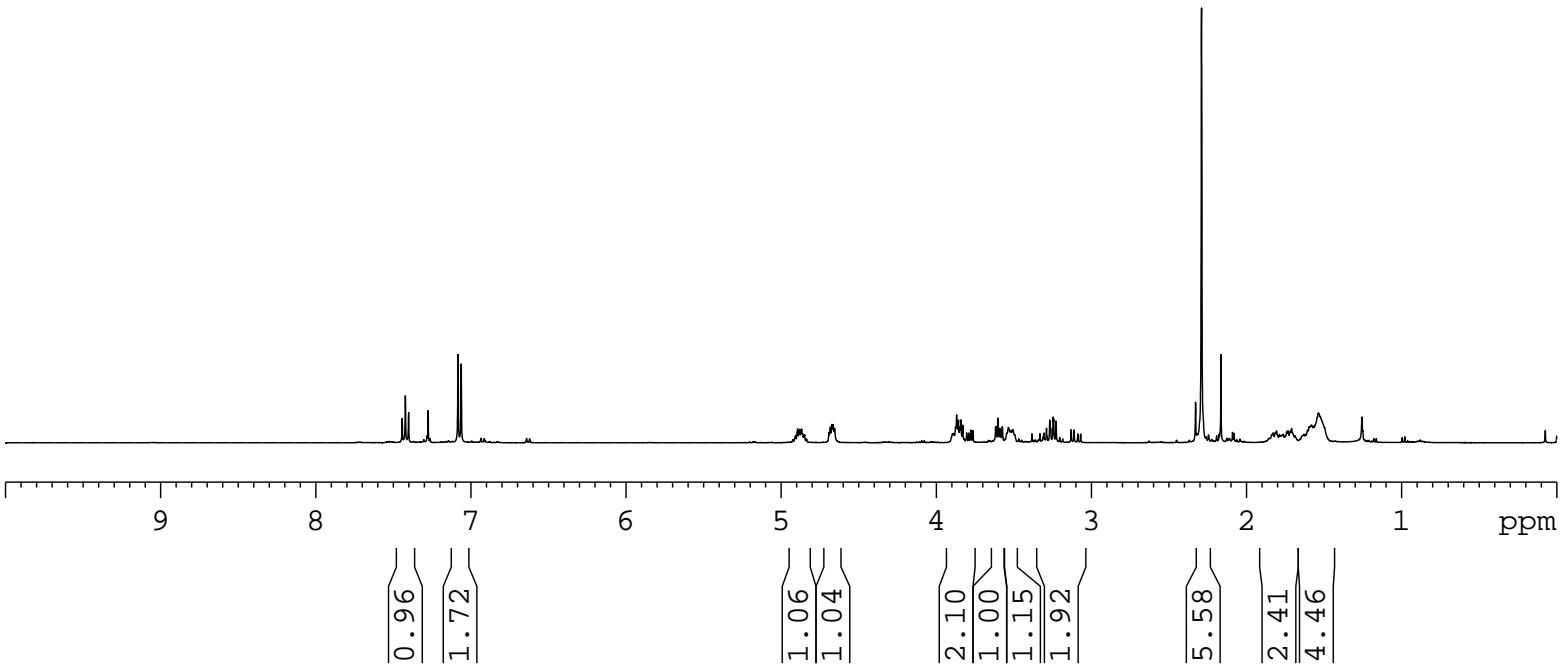
4c



7.4423  
7.4218  
7.4011  
7.2759  
7.0835  
7.0629  
4.8939  
4.8804  
4.8679  
4.6835  
4.6738  
4.6663  
4.6622  
4.6552  
3.8755  
3.8689  
3.8571  
3.8479  
3.8413  
3.8293  
3.6178  
3.6134  
3.6018  
3.5911  
3.5856  
3.5751  
3.5352  
3.5079  
3.2895  
3.2686  
3.2629  
3.2467  
3.2432  
3.2274  
3.1300  
3.1116  
2.2905  
1.7095  
1.5963  
1.5811  
1.5699  
1.5602  
1.5372  
1.5259  
1.4966



4c'



```

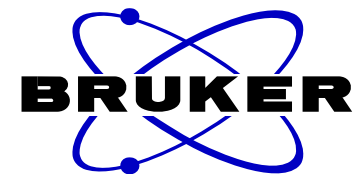
NAME CWG150406-1-x-PURE
EXPNO 1
PROCNO 1
Date_ 20160225
Time_ 17.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 71.8
DW 60.800 usec
DE 6.50 usec
TE 294.1 K
D1 1.00000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1699968 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```



NAME CWG150406-1-x-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160225  
Time 17.06  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 61  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 294.4 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228187 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

168.91  
168.88

151.06  
150.96  
149.48

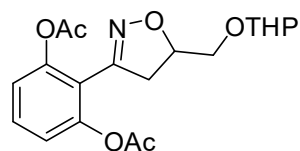
130.43  
120.65  
120.63  
117.54  
117.47

99.61  
99.04

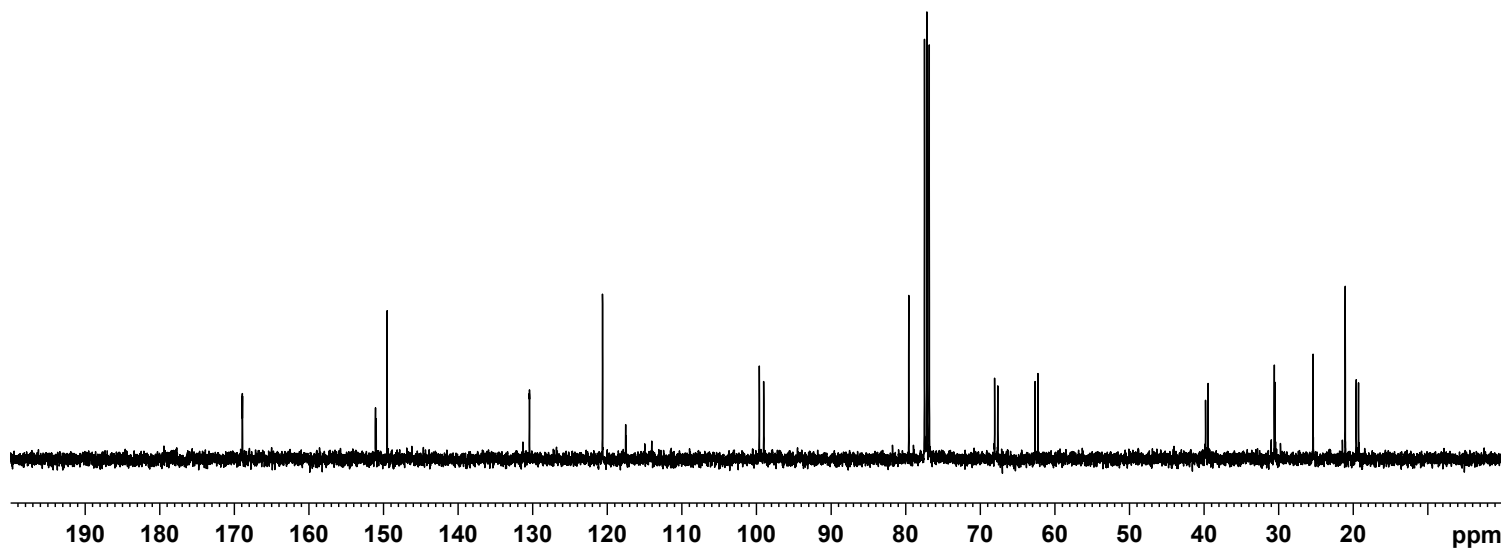
79.59

68.08  
67.66  
62.66  
62.26

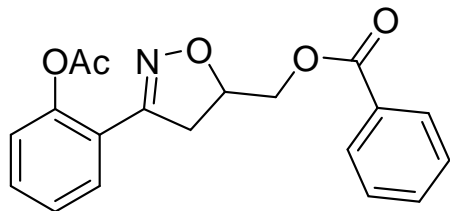
39.80  
39.45  
30.58  
30.49  
25.41  
25.38  
21.08  
19.60  
19.30



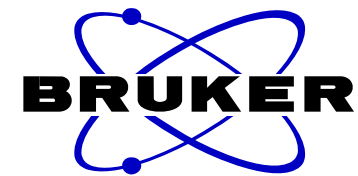
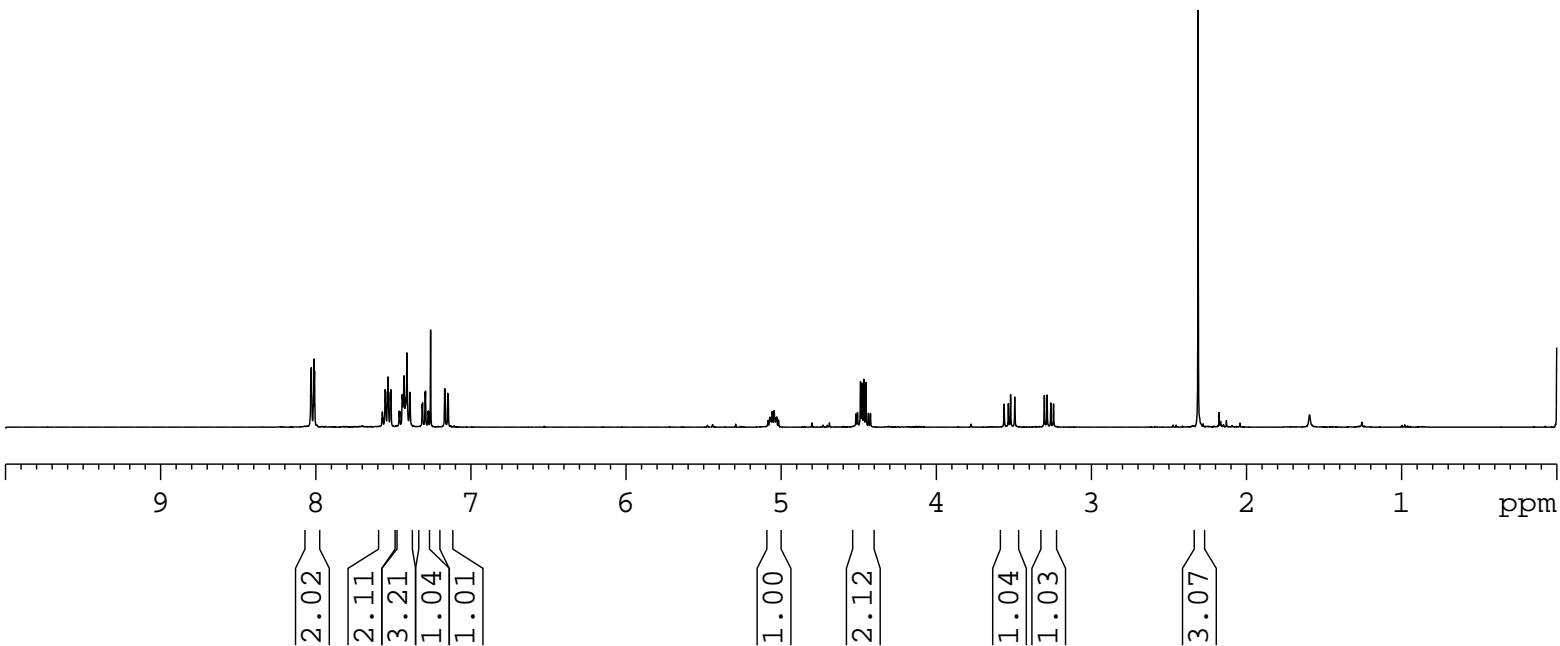
4c'



8.0296  
8.0119  
8.0085  
7.5710  
7.5525  
7.5387  
7.5346  
7.5197  
7.5158  
7.4626  
7.4587  
7.4431  
7.4396  
7.4321  
7.4238  
7.4196  
7.4124  
7.3975  
7.3934  
7.3148  
7.3119  
7.2956  
7.2929  
7.2767  
7.2738  
7.2602  
7.1695  
7.1670  
7.1493  
7.1468  
5.0578  
5.0449  
4.4886  
4.4781  
4.4671  
4.4539  
3.5626  
3.5353  
3.5209  
3.4936  
3.3033  
3.2856  
3.2617  
3.2439  
2.3122

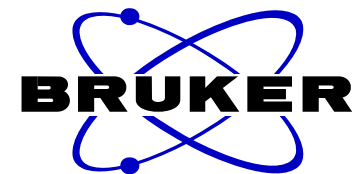


4d



NAME CWG150409-(1)  
EXPNO 1  
PROCNO 1  
Date\_ 20150521  
Time\_ 19.46  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 161  
DW 60.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700031 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



```

NAME CWG150409-(1)-C13
EXPNO 1
PROCNO 1
Date_ 20150522
Time 14.38
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 80
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 298.7 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

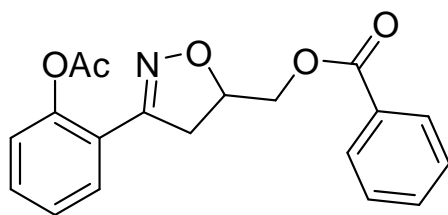
```

```

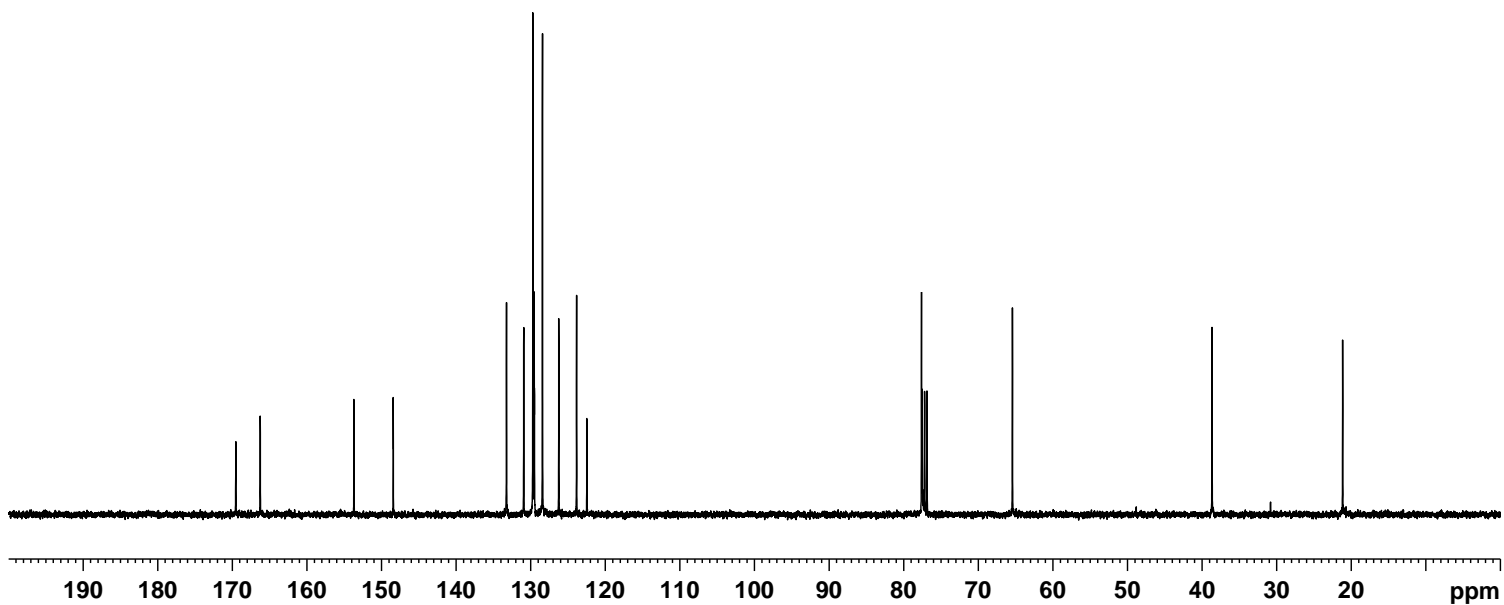
===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228302 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

```

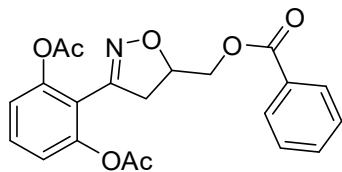
169.51  
166.24  
153.68  
148.41  
133.23  
130.92  
129.70  
129.51  
129.48  
128.40  
126.22  
123.83  
122.46  
77.62  
65.42  
38.66  
21.16



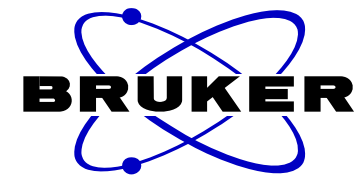
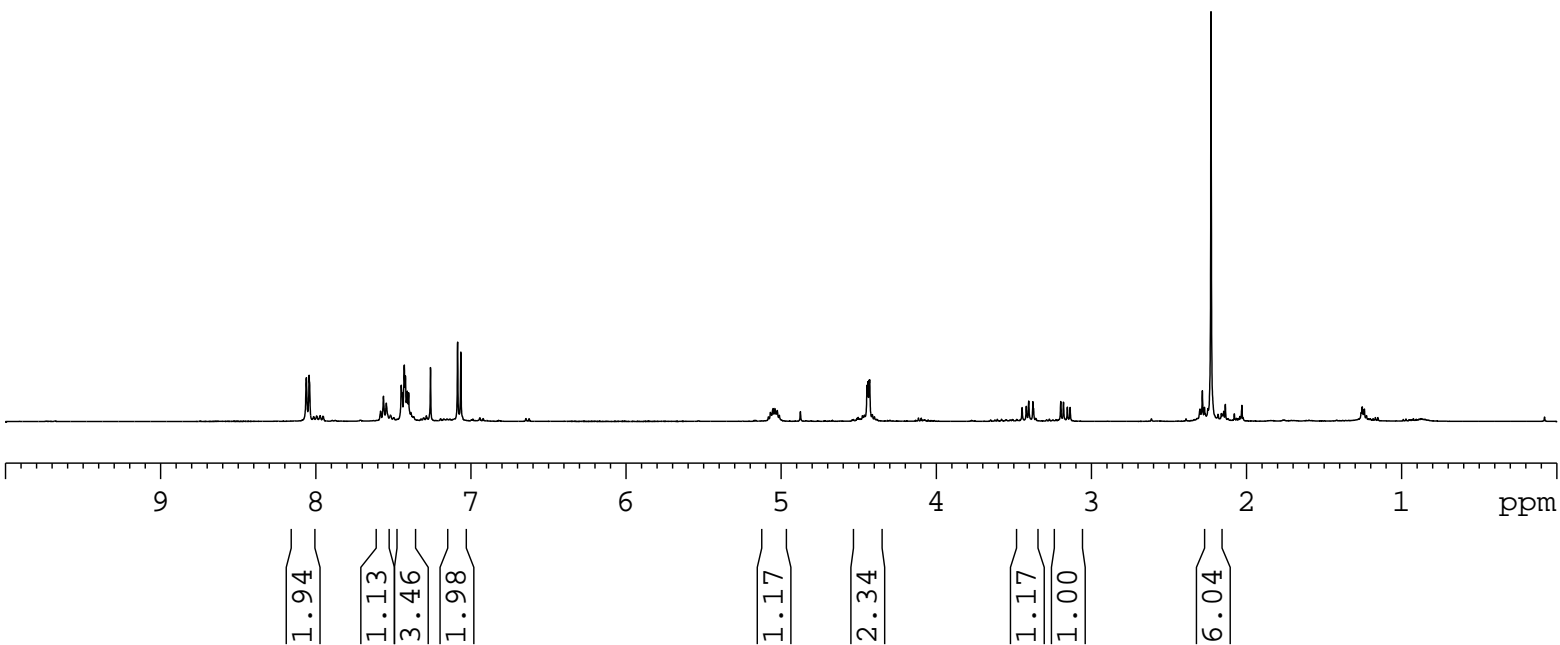
4d



8.0605  
8.0423  
7.5821  
7.5635  
7.5449  
7.4485  
7.4425  
7.4290  
7.4216  
7.4100  
7.4009  
7.3860  
7.2601  
7.0855  
7.0649  
5.0822  
5.0695  
5.0647  
5.0525  
5.0421  
5.0296  
5.0250  
5.0121  
4.5120  
4.5034  
4.4892  
4.4761  
4.4635  
4.4470  
4.4412  
4.4334  
4.4296  
4.4120  
4.3990  
4.3844  
3.4468  
3.4196  
3.4042  
3.3770  
3.3731  
3.1977  
3.1799  
3.1550  
3.1373  
2.2287



4d'

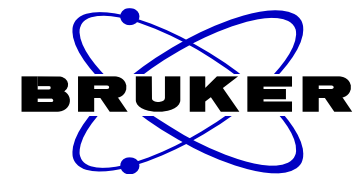


```

NAME          CWG151016-1-x-PURE
EXPNO         1
PROCNO        1
Date_         20160226
Time          16.23
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            14
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            57
DW            60.800 usec
DE            6.50 usec
TE            294.7 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700029 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



NAME CWG151016-1-x-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160226  
Time 16.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 23  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 294.8 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228224 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

168.84  
166.35

150.97  
149.46

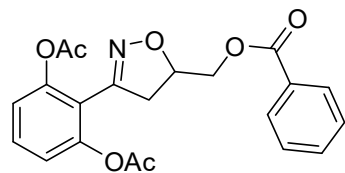
133.41  
130.63  
129.82  
129.71  
129.53  
128.52  
120.65  
117.02

78.05

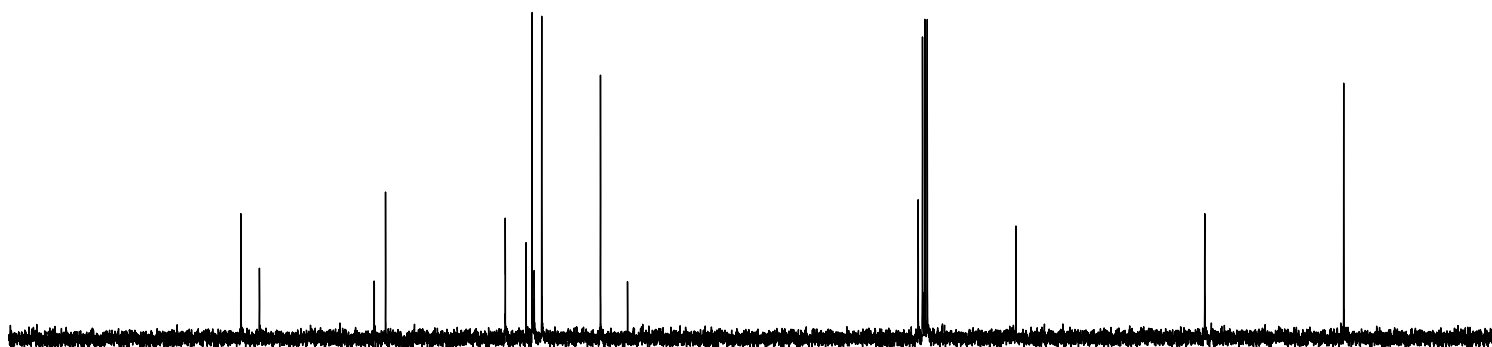
64.95

39.64

21.01



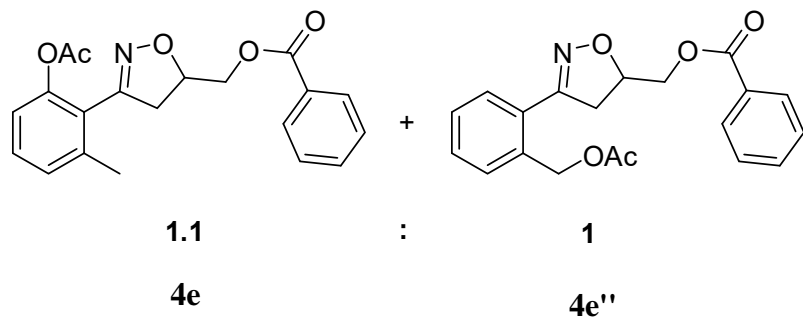
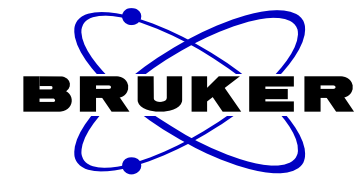
4d'



190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm



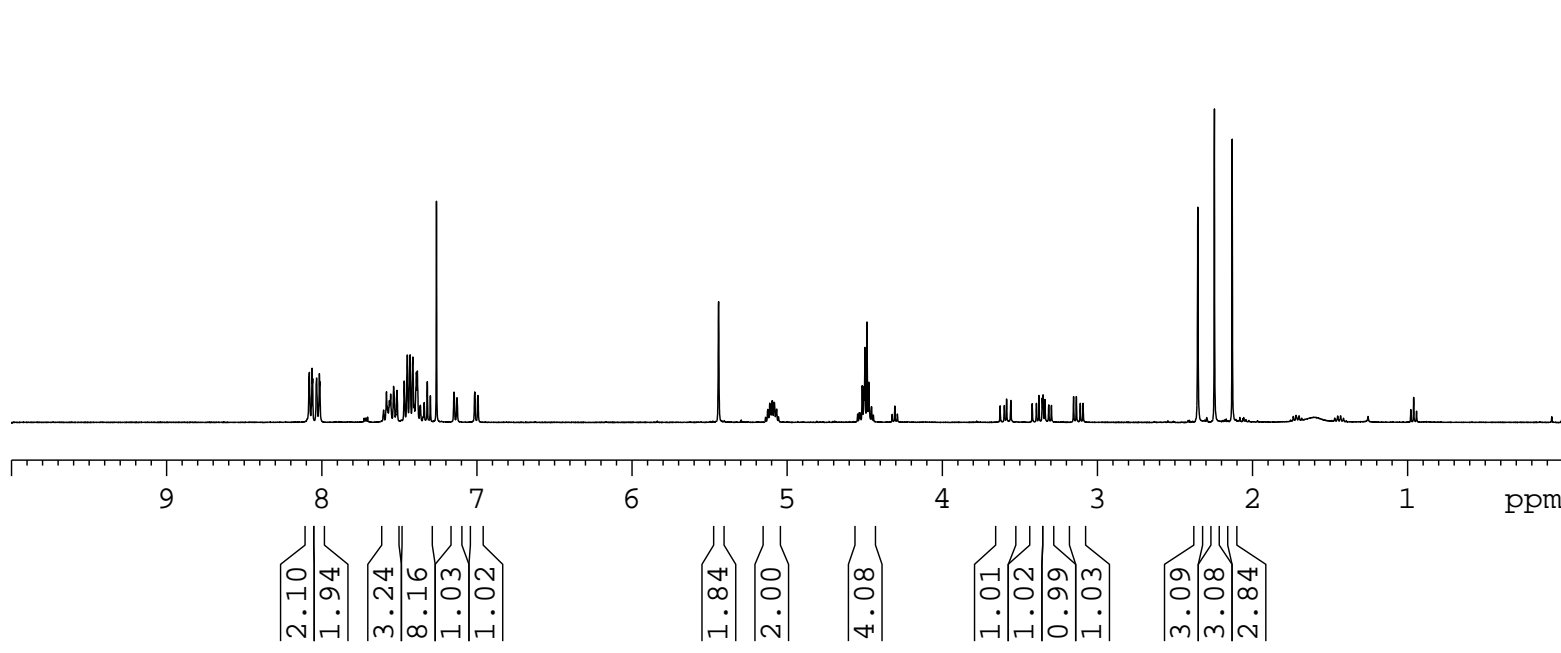
8.0798  
8.0620  
8.0586  
8.0327  
8.0148  
8.0115  
7.5824  
7.5637  
7.5555  
7.5366  
7.5150  
7.4679  
7.4481  
7.4302  
7.4121  
7.3895  
7.3836  
7.3391  
7.3193  
7.2995  
7.2602  
7.1468  
7.1277  
7.0135  
6.9933  
5.4425  
5.0977  
5.0950  
5.0827  
4.5162  
4.5055  
4.4991  
4.4854  
4.4738  
3.5855  
3.5585  
3.3769  
3.3556  
3.3502  
3.3382  
3.1538  
3.1357  
2.3528  
2.2459  
2.1310



```

NAME CWG150922-3-s-1
EXPNO 1
PROCNO 1
Date_ 20150923
Time 19.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 297.5 K
D1 1.00000000 sec
TD0 1

```



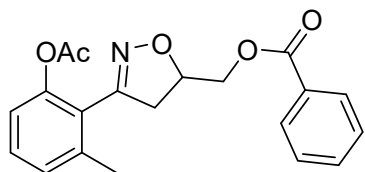
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===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700033 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

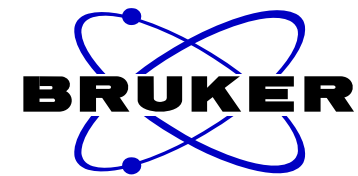
```



8.0751  
8.0570  
7.5891  
7.5706  
7.5521  
7.4566  
7.4371  
7.4181  
7.3266  
7.3068  
7.2870  
7.2600  
7.1338  
7.1147  
7.0069  
6.9866  
5.1314  
5.1178  
5.1042  
5.1013  
5.0905  
5.0872  
5.0740  
5.0601  
4.5181  
4.5037  
4.4888  
4.4756  
4.4651  
4.4479  
4.4357  
3.4148  
3.3879  
3.3715  
3.3446  
3.1453  
3.1273  
3.1020  
3.0839  
2.3416  
2.2335

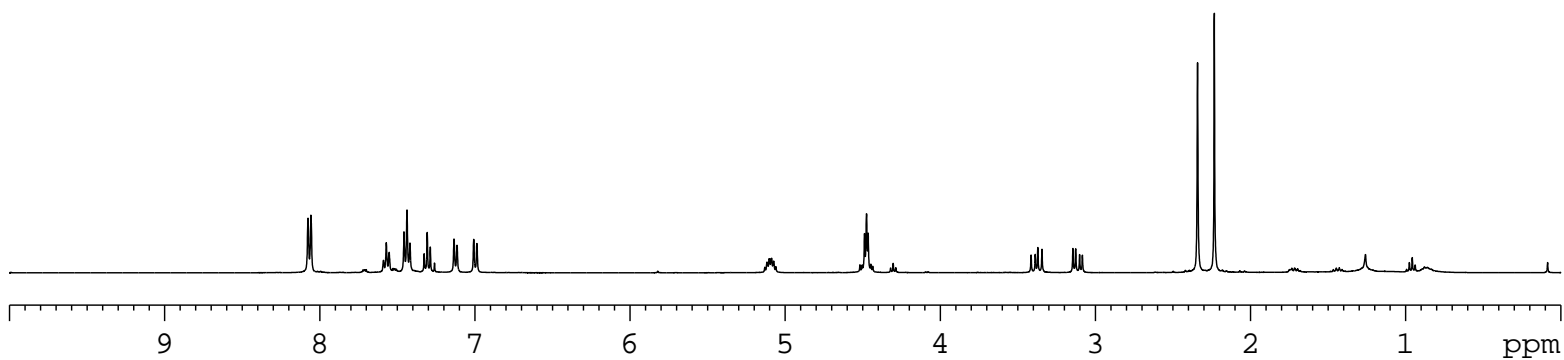


4e

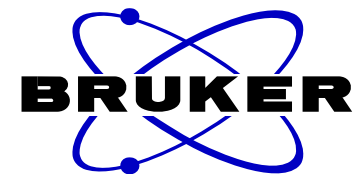


NAME CWG150922-3-2  
EXPNO 1  
PROCNO 1  
Date\_ 20160321  
Time\_ 17.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 13  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 57  
DW 60.800 usec  
DE 6.50 usec  
TE 295.7 K  
D1 1.00000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700031 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



1.97  
1.07  
2.04  
1.02  
1.02  
0.96  
1.00  
2.00  
1.01  
1.00  
2.99  
2.98



NAME CWG150922-3-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160321  
Time 17.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 23  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.9 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228223 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

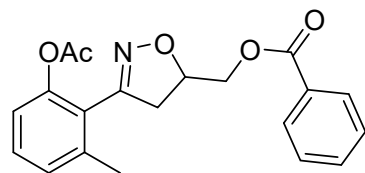
169.18  
166.38  
153.81  
149.02  
138.86  
133.40  
130.13  
129.82  
129.58  
128.51  
128.12  
122.50  
120.25

77.95

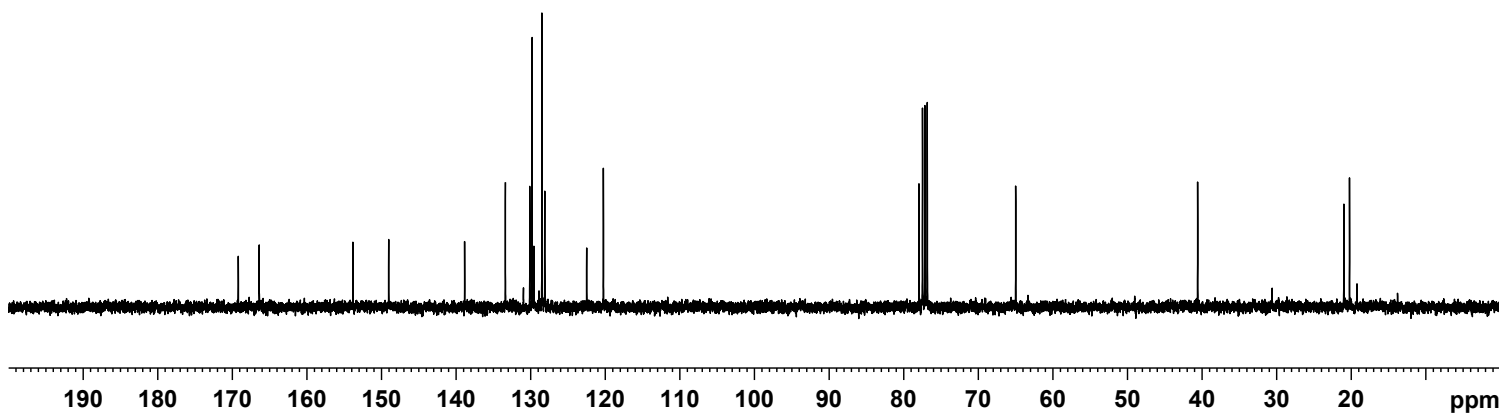
64.98

40.59

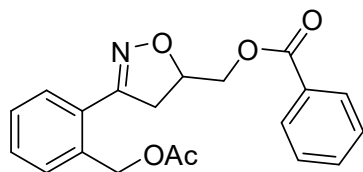
20.99  
20.23



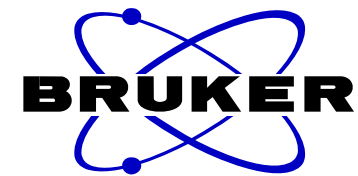
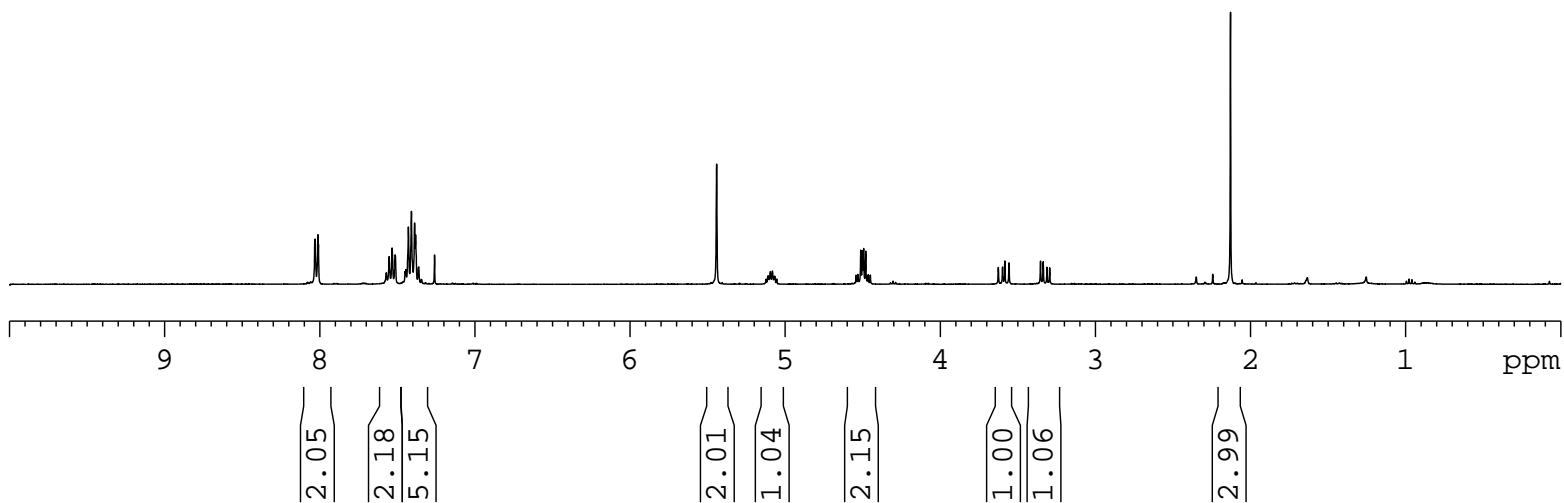
4e



8.0117  
8.0084  
7.5708  
7.5523  
7.5334  
7.5134  
7.4496  
7.4446  
7.4284  
7.4088  
7.3884  
7.3819  
7.3620  
7.3451  
7.2598  
5.4413  
5.1225  
5.1091  
5.1053  
5.0949  
5.0814  
5.0708  
5.0671  
5.0537  
4.5426  
4.5319  
4.5130  
4.5022  
4.4944  
4.4808  
4.4649  
4.4512  
3.6260  
3.5989  
3.5843  
3.5573  
3.3541  
3.3366  
3.3124  
3.2949  
2.1293



4e''

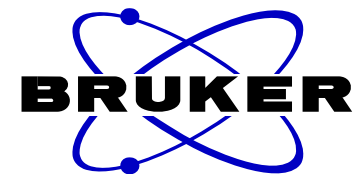


```

NAME          CWG150922-3-3
EXPNO         1
PROCNO        1
Date_         20160321
Time          17.09
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            295.8 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700032 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



NAME CWG150922-3-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160322  
Time 9.02  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 23  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228272 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

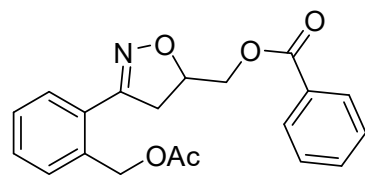
170.53  
166.29  
156.21  
135.78  
133.27  
129.80  
129.71  
129.51  
128.96  
128.44  
128.33  
127.88  
127.29

77.62

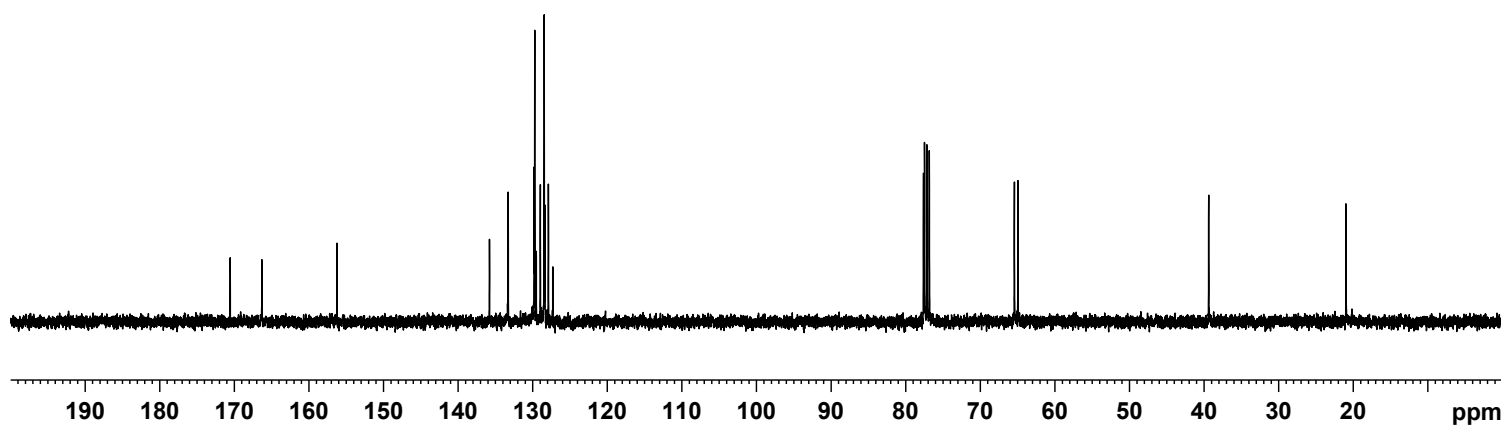
65.43  
64.96

39.38

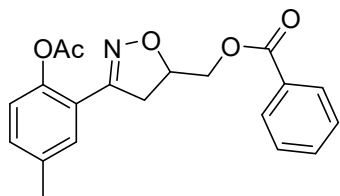
20.99



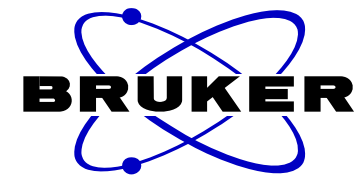
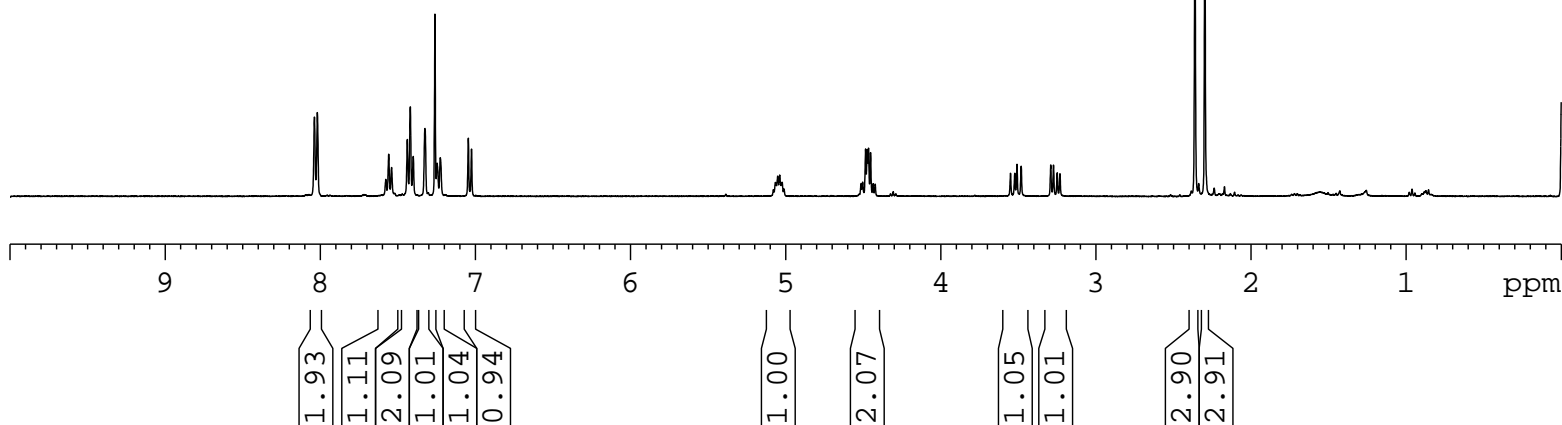
4e''



8.0371  
8.0182  
7.5770  
7.5582  
7.5398  
7.4382  
7.4190  
7.3999  
7.3248  
7.2600  
7.2463  
7.2258  
7.0448  
7.0243  
5.0791  
5.0662  
5.0513  
5.0387  
5.0232  
5.0106  
4.5143  
4.5037  
4.4848  
4.4741  
4.4658  
4.4526  
4.4361  
4.4230  
3.5504  
3.5231  
3.5087  
3.4815  
3.2910  
3.2732  
3.2493  
3.2316  
2.3613  
2.2972

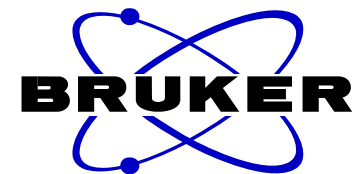


4f



NAME CWG150924-1-S  
EXPNO 1  
PROCNO 1  
Date\_ 20150925  
Time 14.02  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.5 K  
D1 1.00000000 sec  
TD0 1

===== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



NAME CWG150924-1-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150928  
Time 18.45  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 126  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.8 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228169 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

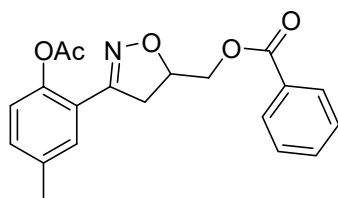
169.89  
166.44  
153.86  
146.34  
136.08  
133.36  
131.70  
130.04  
129.88  
129.60  
128.52  
123.64  
122.08

77.71

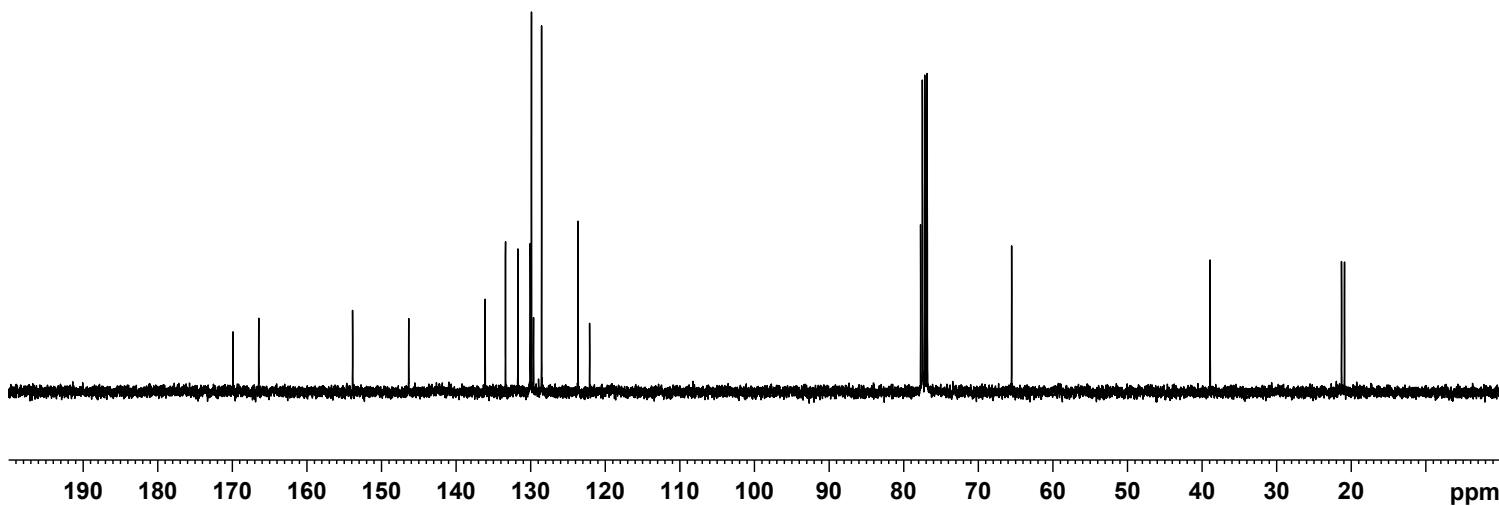
65.51

38.92

21.30  
20.90

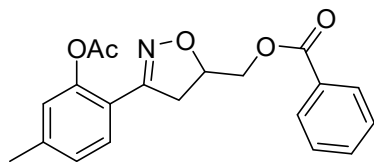


4f

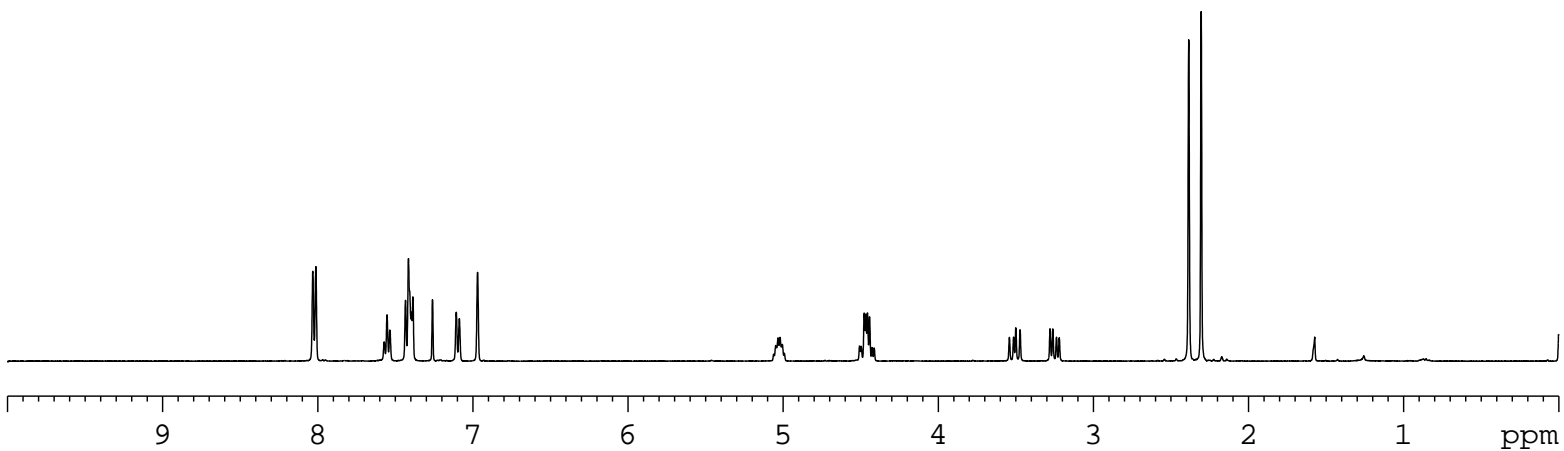




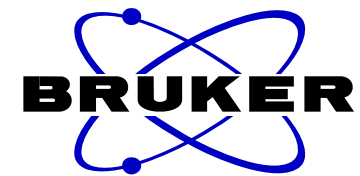
8.0317  
8.0118  
7.5715  
7.5530  
7.5351  
7.4340  
7.4152  
7.4079  
7.3963  
7.3865  
7.2602  
7.1068  
7.0869  
6.9695  
5.0612  
5.0474  
5.0330  
5.0207  
5.0061  
4.9933  
4.5075  
4.4973  
4.4778  
4.4677  
4.4569  
4.4435  
4.4272  
4.4140  
3.5419  
3.5146  
3.5005  
3.4732  
3.2798  
3.2621  
3.2382  
3.2205  
2.3857  
2.3056



4g

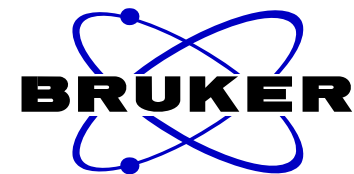


1.95  
1.05  
3.01  
1.01  
0.98  
1.00  
2.06  
1.03  
1.01  
3.05  
3.01



NAME CWG150922-6-1  
EXPNO 1  
PROCNO 1  
Date\_ 20151015  
Time 15.08  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.7 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



NAME CWG150922-6-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151015  
Time 17.46  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 84  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.6 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

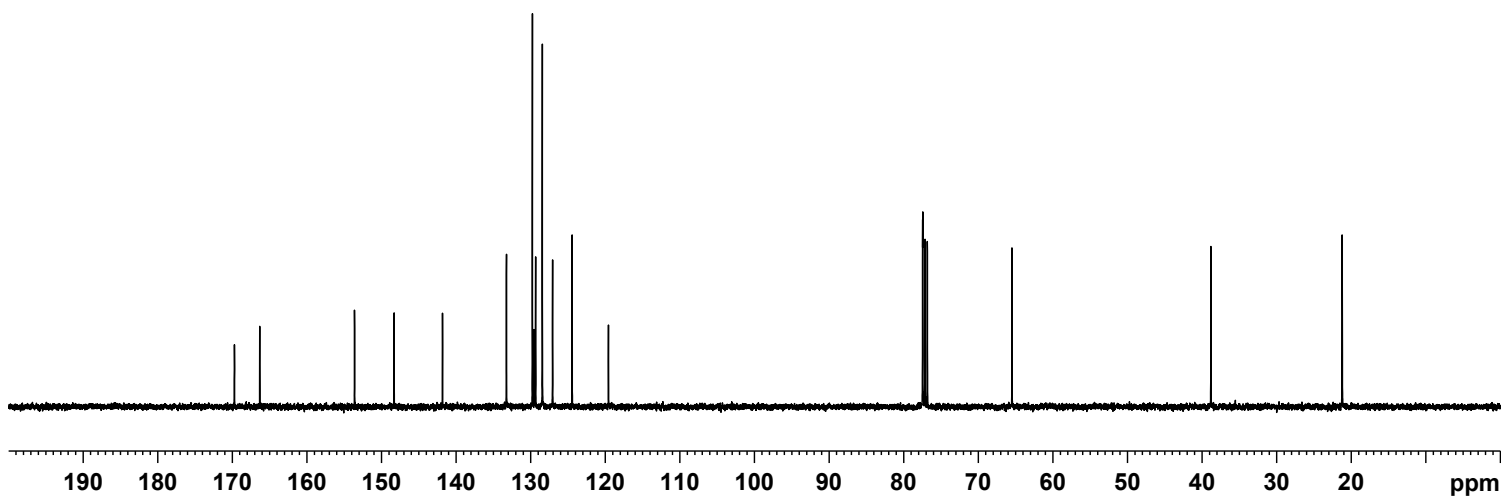
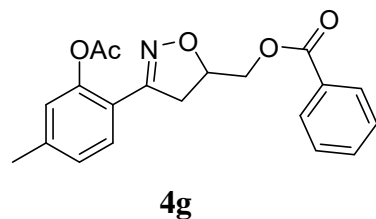
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

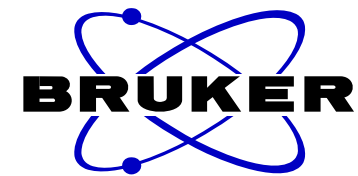
169.70  
166.31  
153.60  
148.30  
141.81  
133.24  
129.76  
129.53  
129.33  
128.42  
127.05  
124.43  
119.56

65.47

38.81

21.22  
21.21





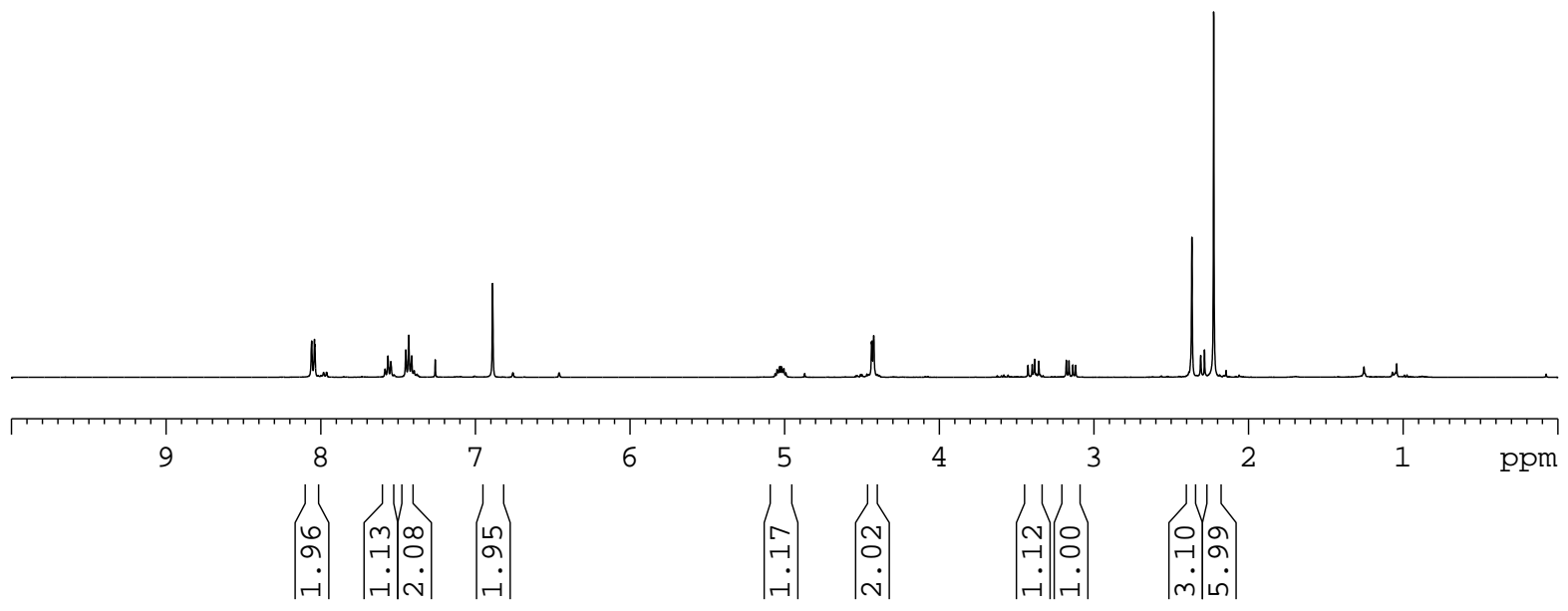
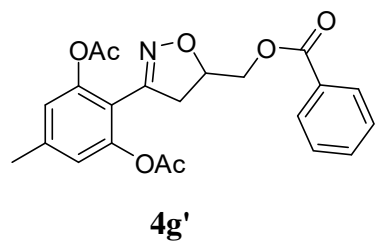
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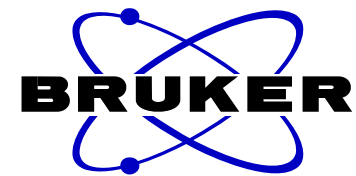
NAME CWG150922-6-x-pure
EXPNO 1
PROCNO 1
Date_ 20160224
Time 15.28
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 294.9 K
D1 1.0000000 sec
TD0 1
  
```

```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700032 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
  
```

8.0588  
8.0408  
8.0377  
7.5844  
7.5658  
7.5471  
7.4508  
7.4312  
7.4123  
7.3959  
6.8888  
5.0618  
5.0491  
5.0445  
5.0321  
5.0219  
5.0092  
5.0048  
4.9919  
4.4381  
4.4348  
4.4241  
3.4262  
3.3990  
3.3837  
3.3566  
3.1786  
3.1609  
3.1361  
3.1184  
2.3663  
2.2253





NAME CWG150922-6-X-PURE-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160224  
Time 15.33  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 73  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.0 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228187 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

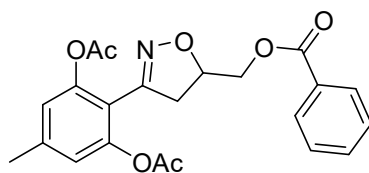
168.99  
166.40  
150.98  
149.20  
141.78  
133.41  
129.86  
129.58  
128.54  
121.42  
114.03

77.93

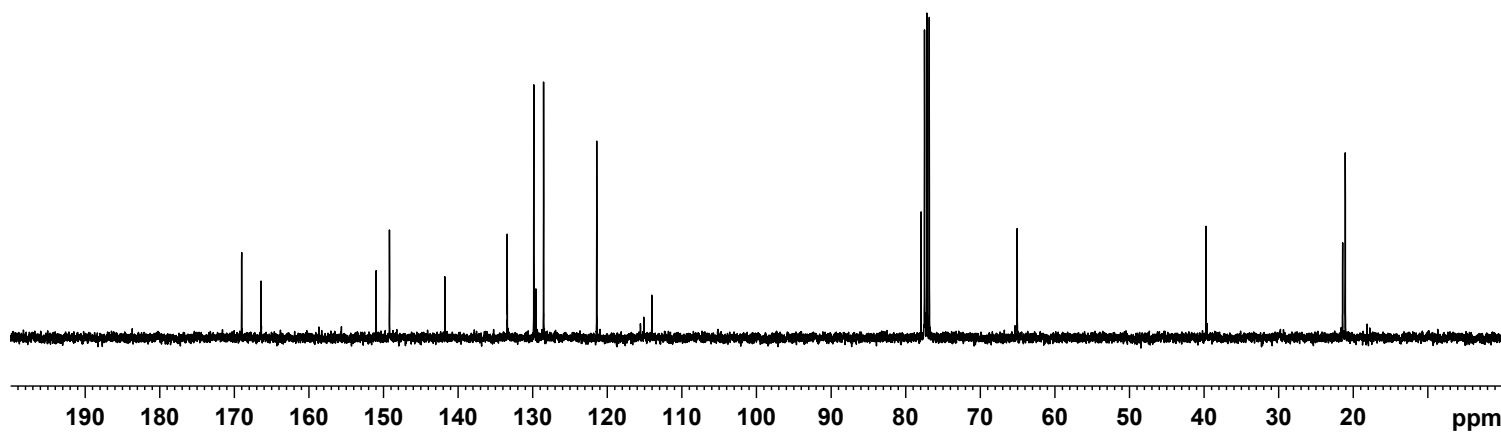
65.05

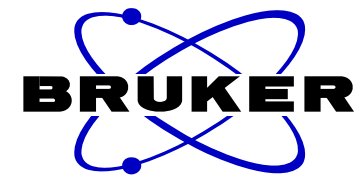
39.74

21.42  
21.07



4g'

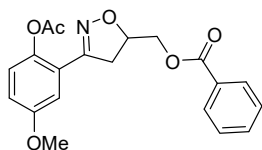




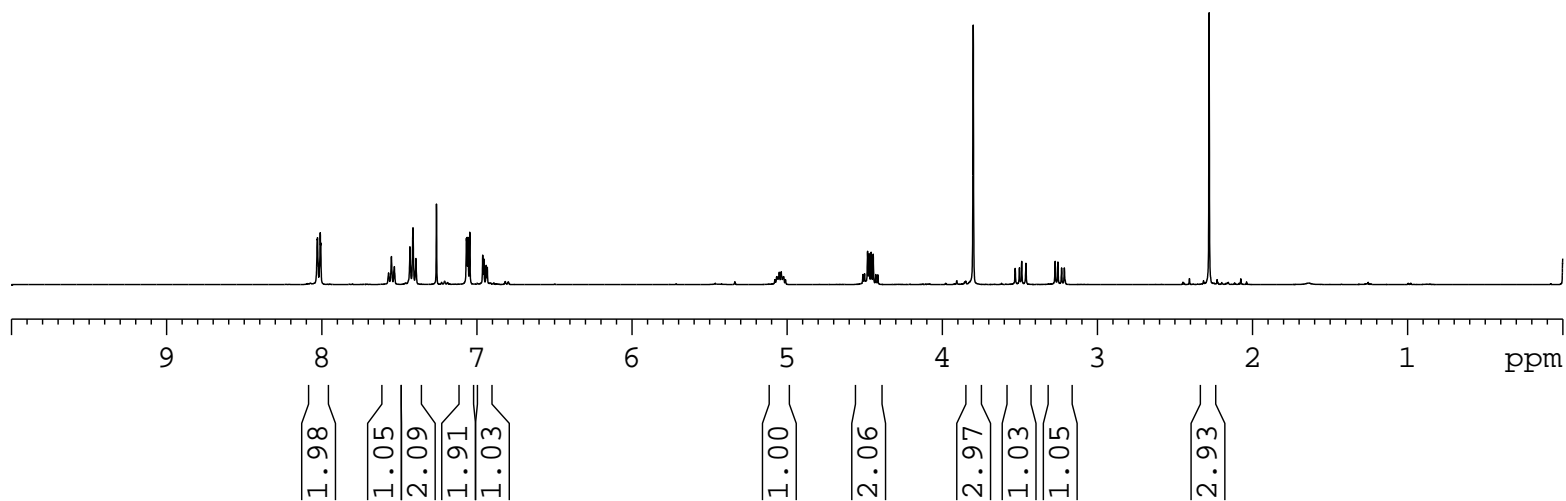
NAME CWG160430-2-2  
EXPNO 1  
PROCNO 1  
Date\_ 20160501  
Time\_ 14.10  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 128  
DW 60.800 usec  
DE 6.50 usec  
TE 301.3 K  
D1 1.00000000 sec  
TD0 1

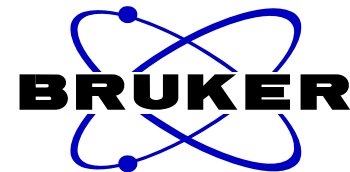
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700031 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

8.0063  
7.5690  
7.5505  
7.5318  
7.4311  
7.4115  
7.3925  
7.2601  
7.0670  
7.0643  
7.0566  
7.0454  
6.9620  
6.9546  
6.9398  
6.9324  
5.0793  
5.0665  
5.0618  
5.0514  
5.0387  
5.0284  
5.0235  
5.0108  
4.5116  
4.5012  
4.4818  
4.4715  
4.4586  
4.4454  
4.4290  
4.4158  
3.8005  
3.5300  
3.5027  
3.4883  
3.4610  
3.2726  
3.2548  
3.2308  
3.2130  
2.2797



4h





```

NAME CWG160430-2-C13
EXPNO 1
PROCNO 1
Date_ 20160501
Time 14.14
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 100
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 301.7 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

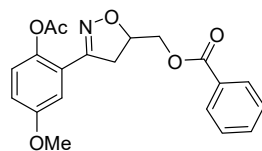
```

```

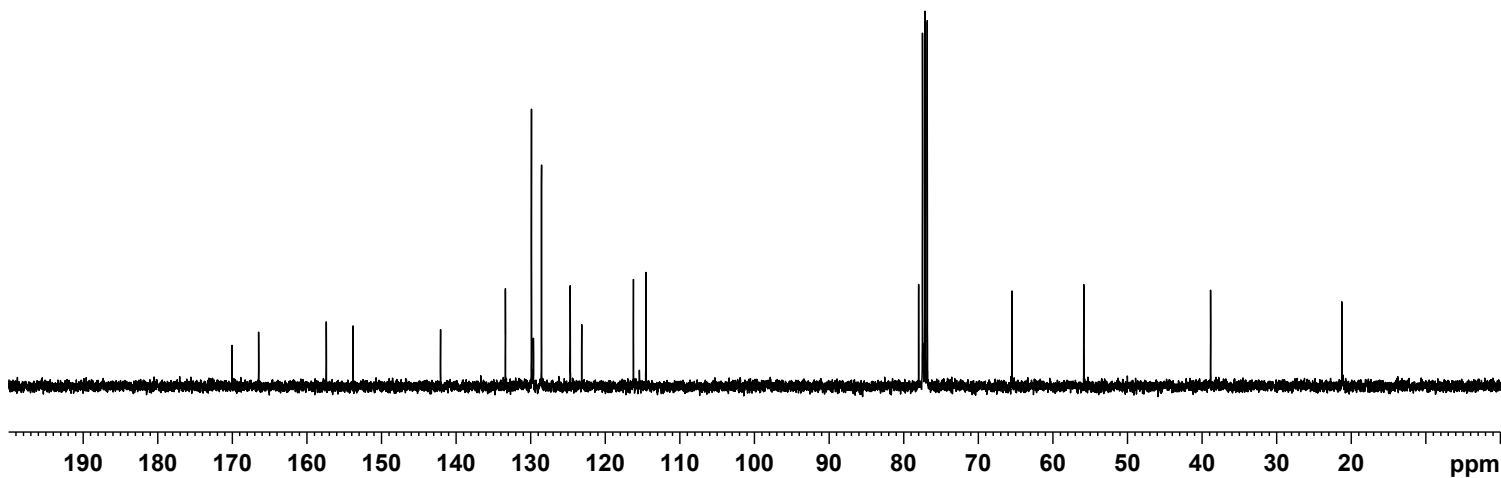
===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228136 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

```

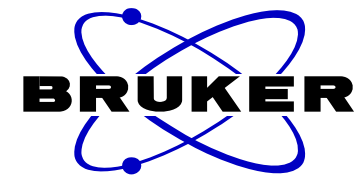
170.03  
 166.45  
 157.37  
 153.79  
 142.09  
 133.39  
 129.90  
 129.63  
 128.55  
 124.70  
 123.16  
 116.23  
 114.56  
 78.00  
 65.48  
 55.85  
 38.86  
 21.25



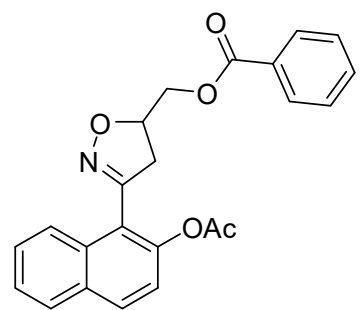
**4h**



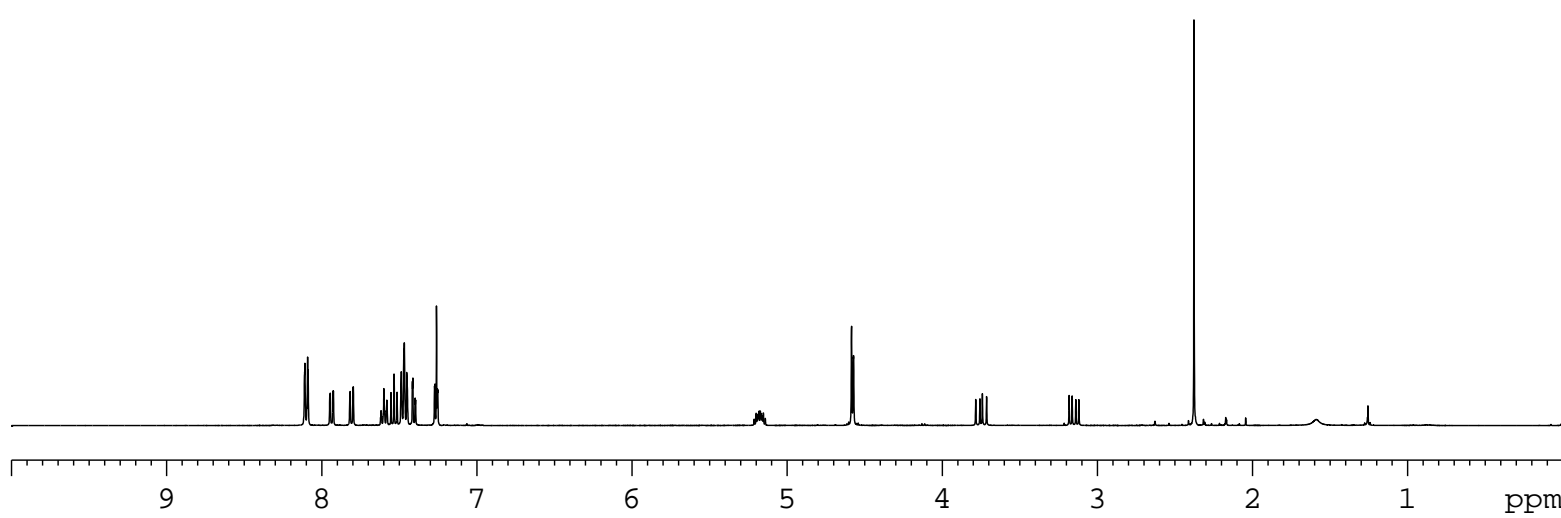
7.8170  
7.7979  
7.7964  
7.6206  
7.6176  
7.6145  
7.5990  
7.5836  
7.5805  
7.5775  
7.5533  
7.5338  
7.5139  
7.4869  
7.4675  
7.4518  
7.4484  
7.4155  
7.4124  
7.3979  
7.3948  
7.2728  
7.2704  
7.2541  
7.2515  
5.2003  
5.1935  
5.1867  
5.1807  
5.1731  
5.1678  
5.1610  
5.1536  
4.5854  
4.5737  
4.5721  
3.7847  
3.7576  
3.7416  
3.7146  
3.1825  
3.1629  
3.1394  
3.1197  
2.3775



NAME CWG150915-2-S  
EXPNO 1  
PROCNO 1  
Date\_ 20150917  
Time\_ 8.46  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 299.4 K  
D1 1.00000000 sec  
TD0 1

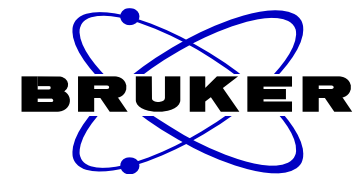


4i



1.95  
1.00  
0.99  
1.00  
1.03  
3.92  
1.63  
1.00  
1.97  
1.04  
1.03  
2.98

===== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



NAME CWG150915-2-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150917  
Time 17.33  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 101  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.6 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228396 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

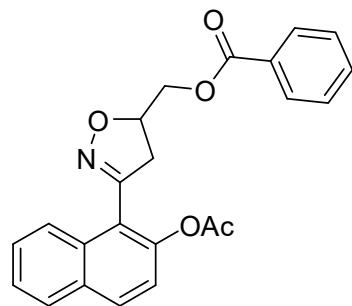
169.06  
166.25  
159.64  
145.59  
135.34  
133.28  
130.20  
129.67  
129.53  
128.59  
128.39  
126.86  
126.02  
125.57  
124.38  
124.06  
121.00

78.04

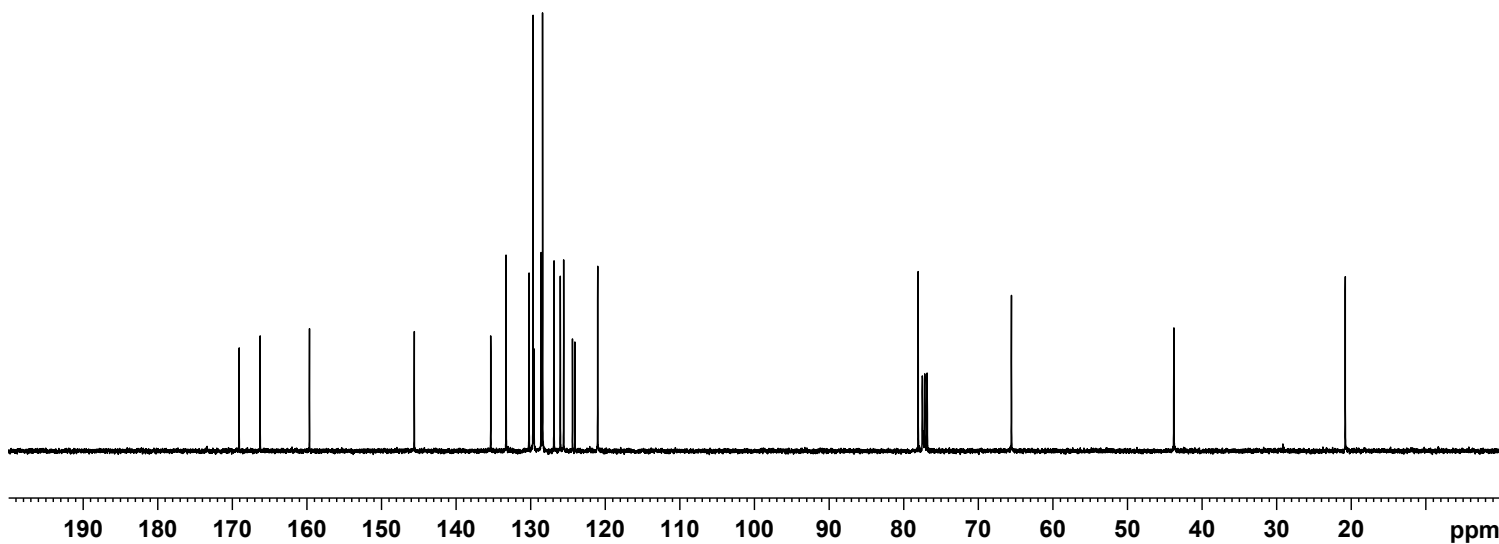
65.54

43.79

20.81

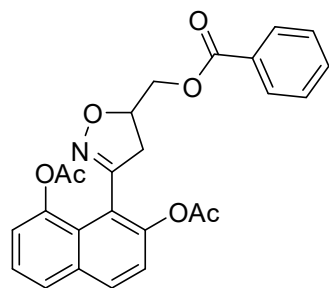


4i

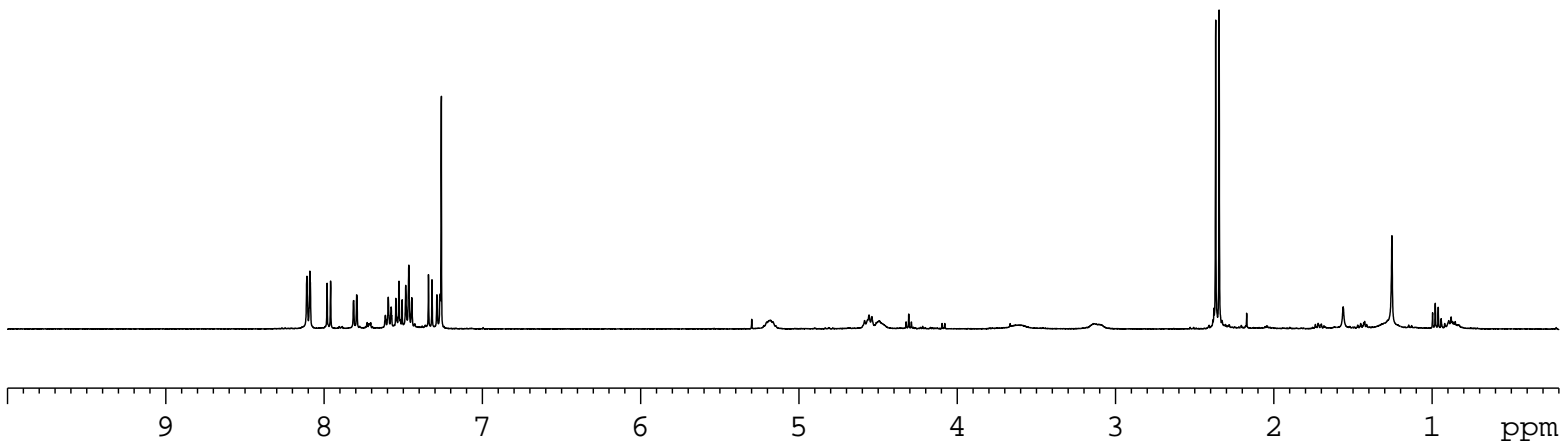




7.9816  
7.9593  
7.8135  
7.7944  
7.6133  
7.5948  
7.5762  
7.5471  
7.5276  
7.5076  
7.4847  
7.4651  
7.4462  
7.3407  
7.3184  
7.2878  
7.2858  
7.2689  
7.2665  
7.2599  
5.2214  
5.2031  
5.1842  
5.1772  
5.1646  
5.1458  
4.5856  
4.5575  
4.5397  
4.5119  
4.4913  
3.6446  
3.6111  
3.5942  
3.1388  
3.1071  
2.3675  
2.3453



4i'



2.07  
1.02  
1.06  
1.14  
1.42  
2.17  
2.06

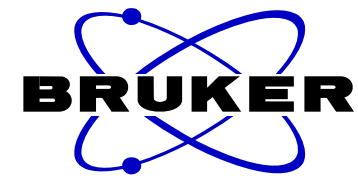
1.00

1.92

1.01

0.95

5.88

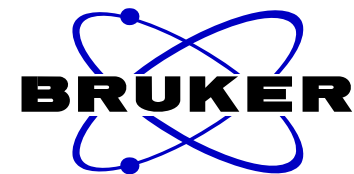


```

NAME          CWG150915-2-z-PURE
EXPNO         1
PROCNO        1
Date_         20160226
Time          16.17
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            181
DW            60.800 usec
DE            6.50 usec
TE            294.8 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI           32768
SF           400.1700034 MHz
WDW          EM
SSB          0
LB           0.30 Hz
GB           0
PC           1.00
  
```



NAME CWG150915-2-z-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160229  
Time 17.07  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 3000  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 294.2 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228118 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.37  
169.15  
166.48

147.99  
145.88  
133.61  
133.54  
129.96  
129.66  
128.98  
128.62  
127.02  
126.16  
125.34  
122.40  
122.06  
115.50

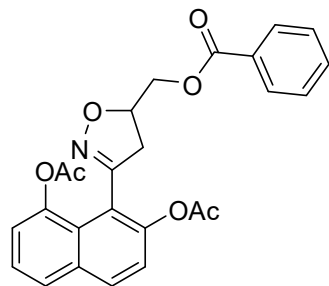
65.49

43.43

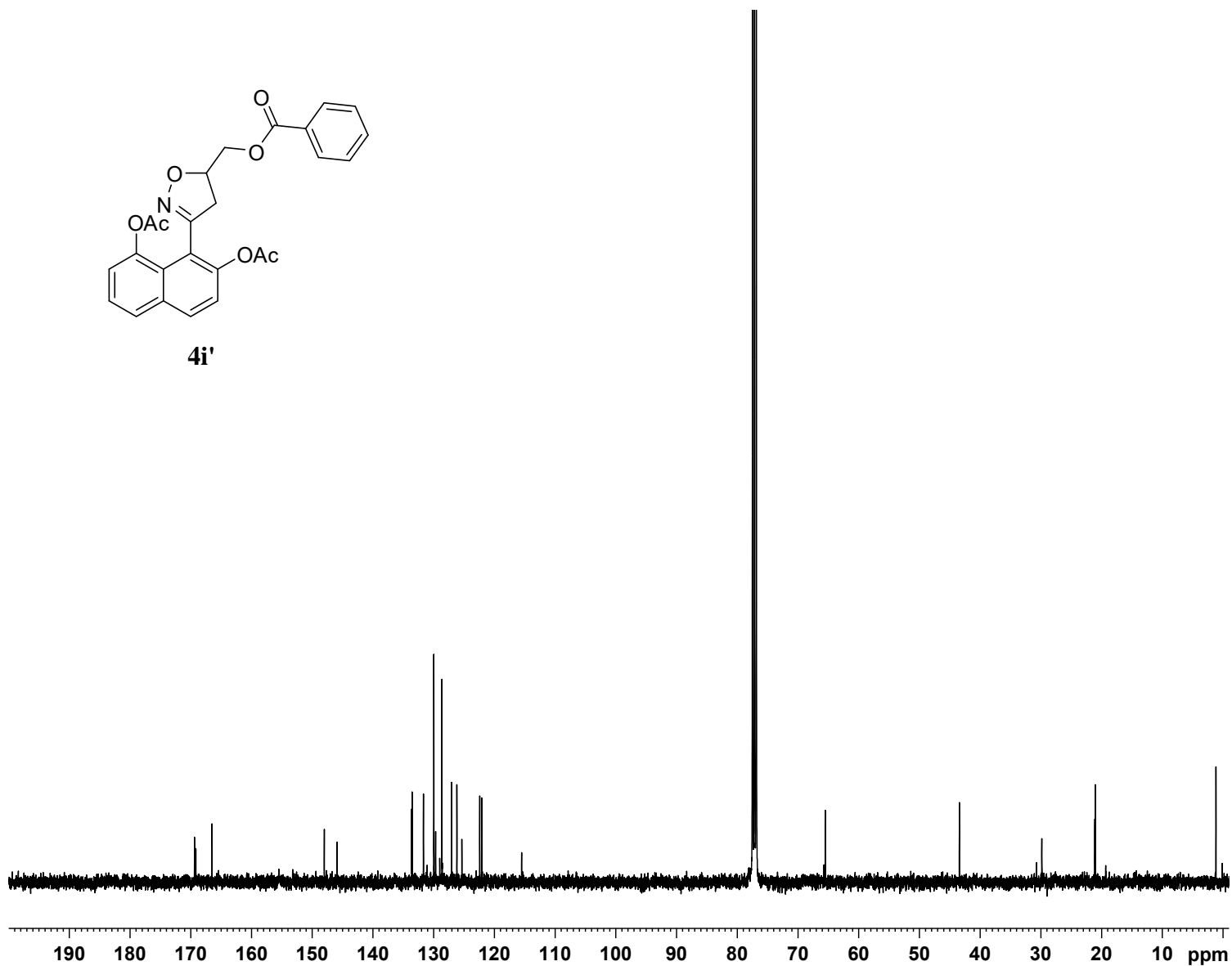
29.84

21.12  
21.04

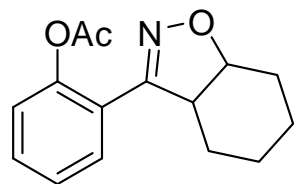
1.17



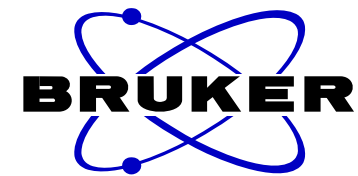
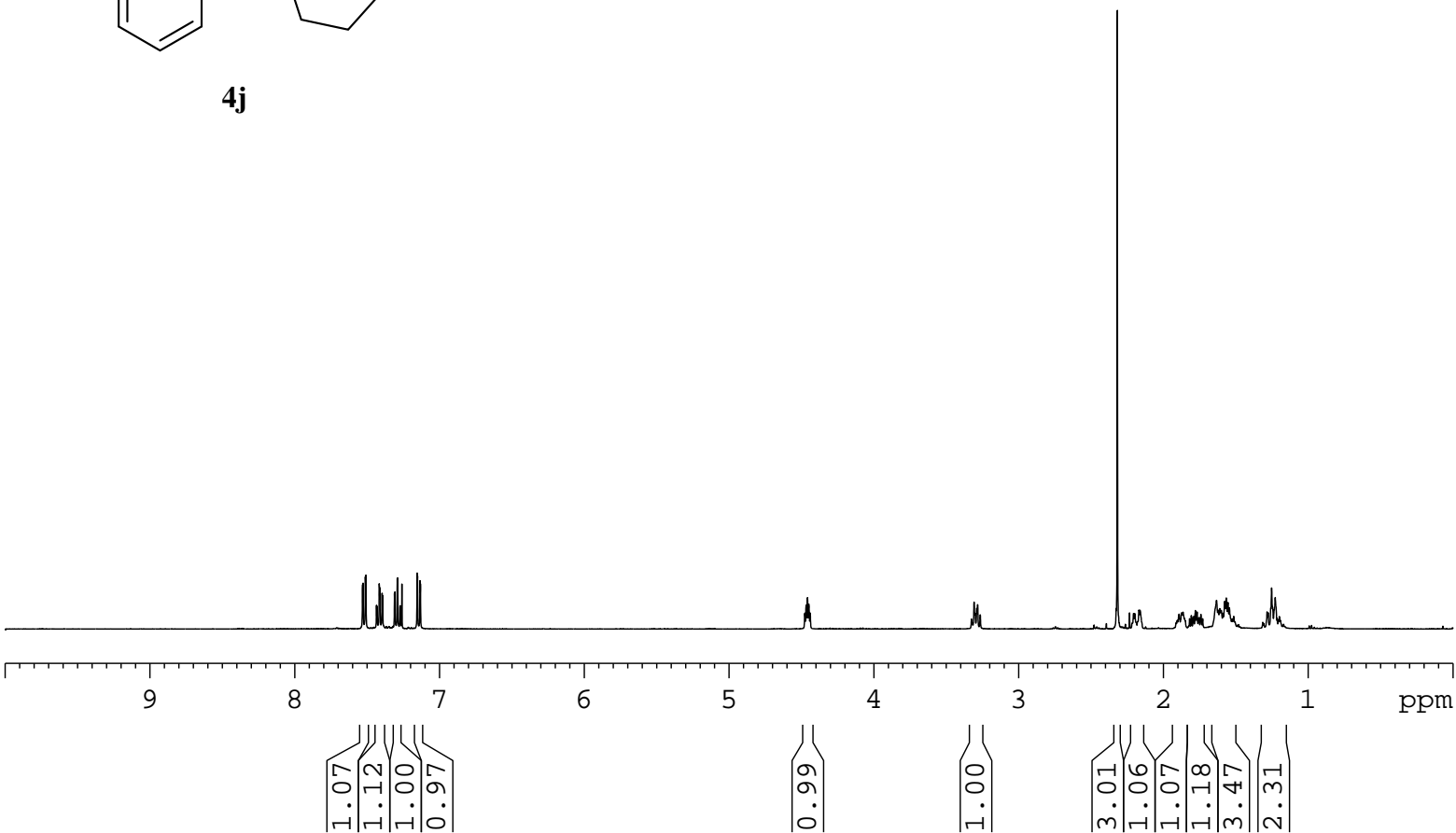
4i'



7.5319  
7.5279  
7.5125  
7.5085  
7.4354  
7.4314  
7.4164  
7.4123  
7.3968  
7.3926  
7.3111  
7.3080  
7.2921  
7.2890  
7.2731  
7.2700  
7.2601  
7.1549  
7.1520  
7.1348  
7.1319  
4.4677  
4.4582  
4.4494  
3.3077  
3.2895  
3.2832  
2.3180  
2.1691  
2.1614  
1.7790  
1.6331  
1.6213  
1.6101  
1.6000  
1.5761  
1.5660  
1.5539  
1.5437  
1.2840  
1.2584  
1.2524  
1.2461  
1.2345  
1.2275



4j

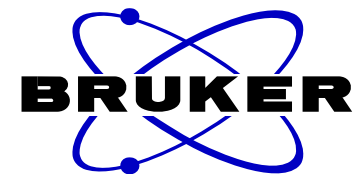


```

NAME CWG150603-2-DAN
EXPNO 1
PROCNO 1
Date_ 20150604
Time 17.38
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 297.6 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700031 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```



NAME CWG150603-2-dan1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150604  
Time 18.38  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 251  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.8 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228191 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

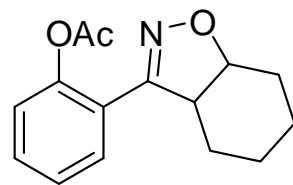
169.72  
161.32  
148.90

130.69  
129.89  
126.28  
124.03  
122.63

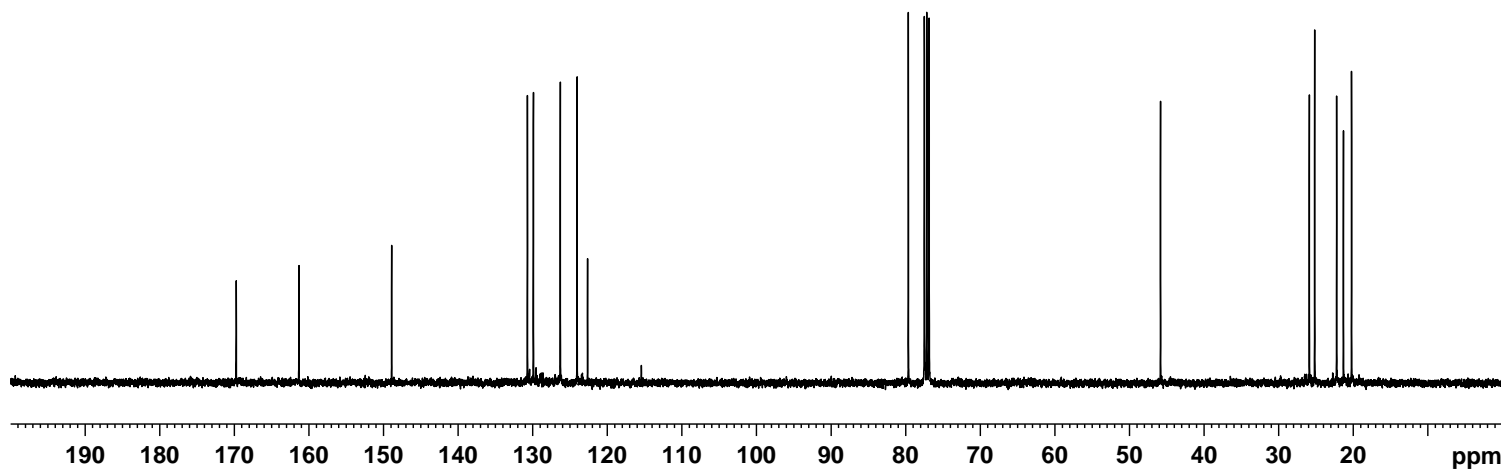
79.62

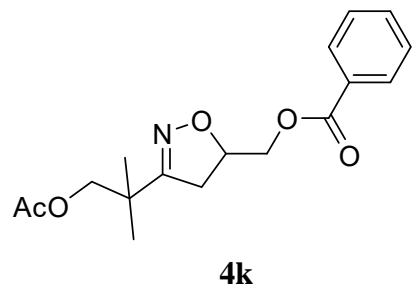
45.84

25.89  
25.18  
22.23  
21.32  
20.23



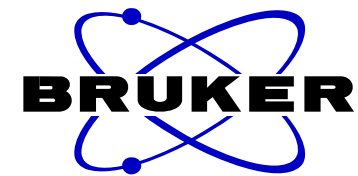
4j





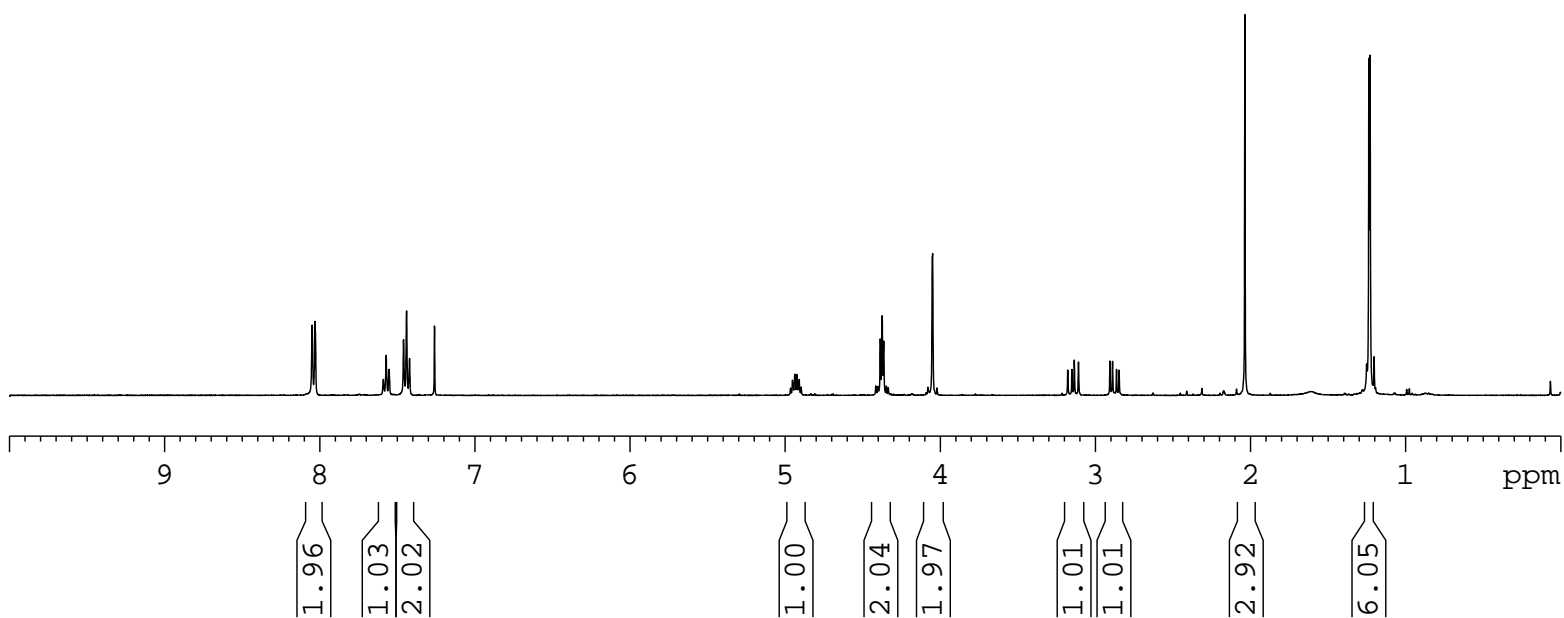
8.0488  
8.0305  
7.5900  
7.5715  
7.5529  
7.4597  
7.4402  
7.4211

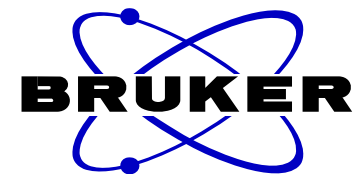
4.9657  
4.9531  
4.9374  
4.9253  
4.9100  
4.8972  
4.4163  
4.4030  
4.3870  
4.3749  
4.3649  
4.3474  
4.3356  
4.0496  
3.1782  
3.1513  
3.1360  
3.1091  
2.9061  
2.8894  
2.8637  
2.8471  
2.0364  
1.2364  
1.2290



NAME CWG150814-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150815  
Time 11.21  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.5 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

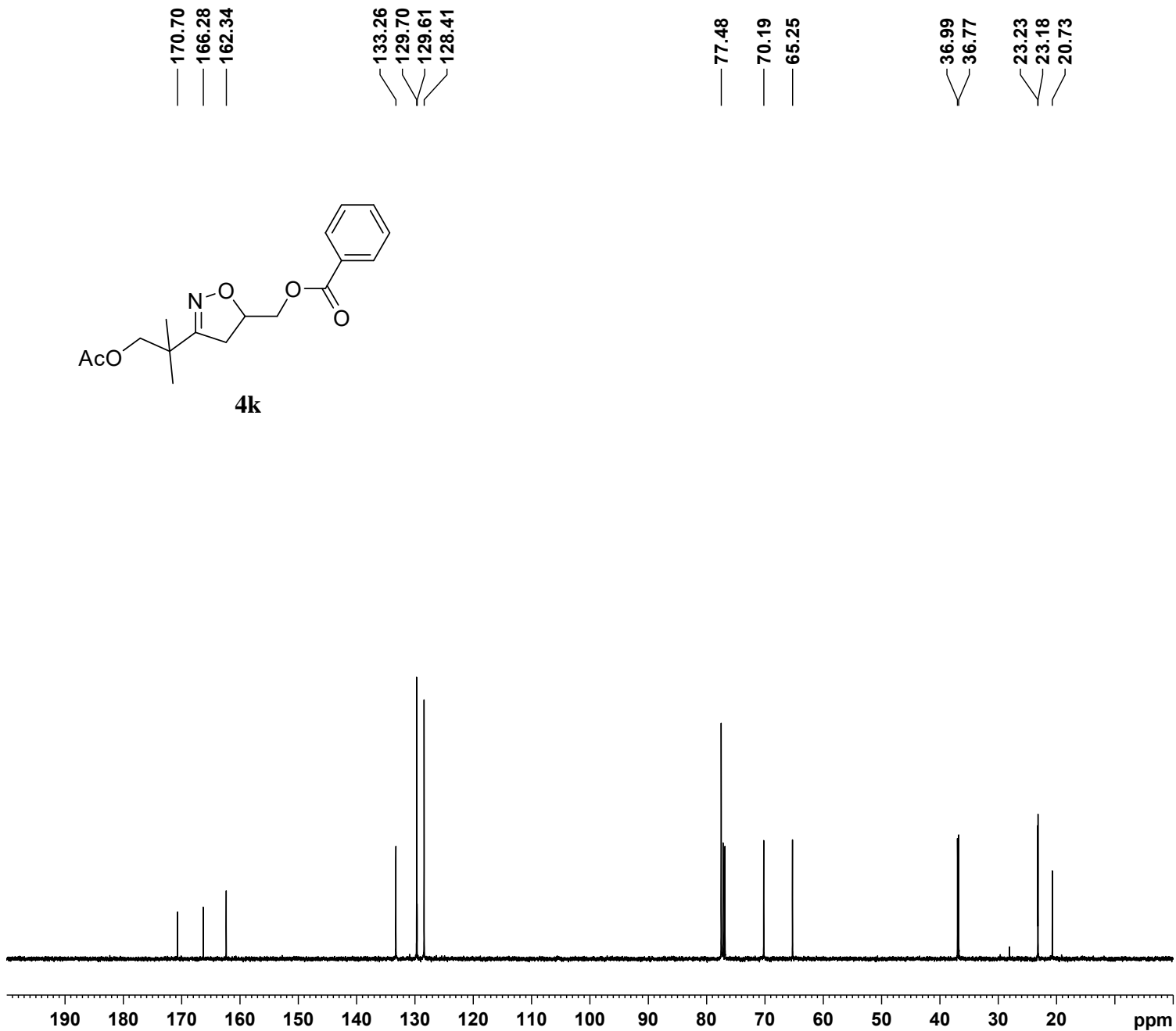
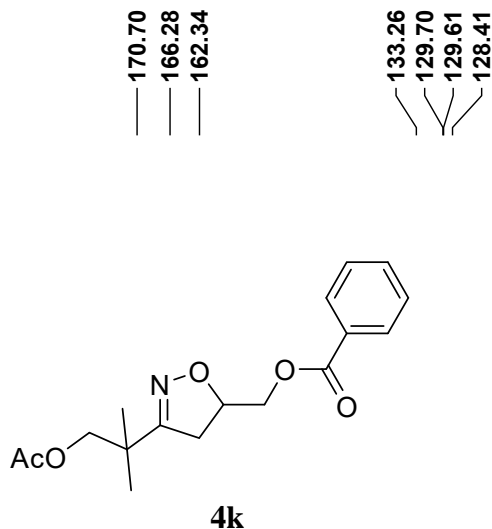




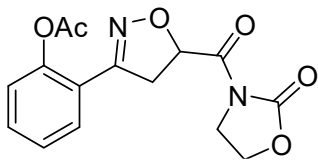
NAME CWG150814-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150815  
Time 15.34  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 83  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.6 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

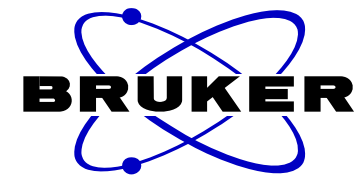
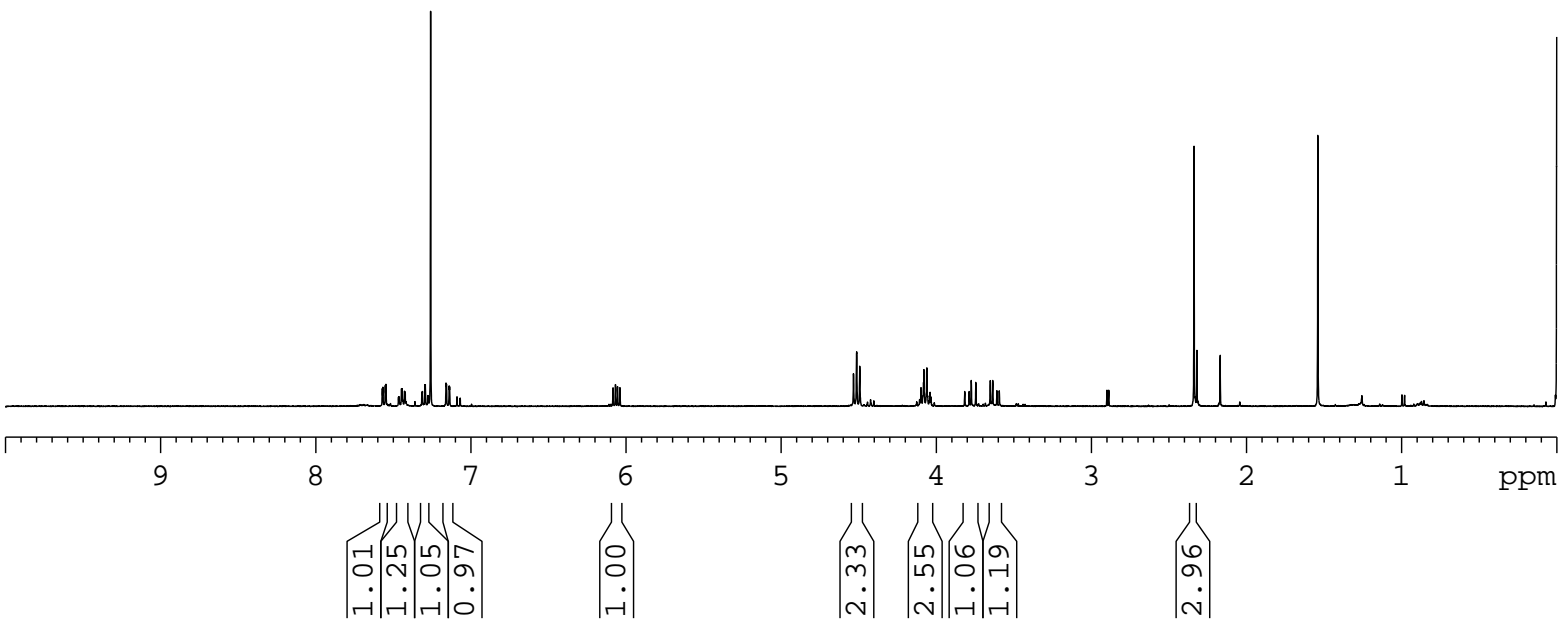
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228249 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



7.5714  
7.5675  
7.5519  
7.5480  
7.4669  
7.4629  
7.4477  
7.4439  
7.4280  
7.4240  
7.3161  
7.3131  
7.2969  
7.2941  
7.2779  
7.2749  
7.2600  
7.1604  
7.1578  
7.1402  
7.1375  
6.0839  
6.0683  
6.0549  
6.0394  
4.5336  
4.5129  
4.4934  
4.1074  
4.0983  
4.0796  
4.0609  
4.0557  
4.0451  
4.0402  
4.0338  
3.8166  
3.7877  
3.7740  
3.7451  
3.6516  
3.6360  
3.6090  
3.5934  
2.3383

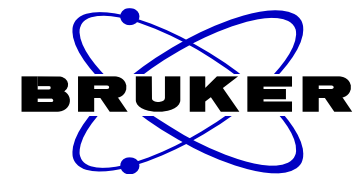


6a



NAME CWG150708-2-1  
EXPNO 1  
PROCNO 1  
Date\_ 20150713  
Time 20.49  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



NAME CWG150708-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160216  
Time 16.19  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1284  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228107 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.73  
168.97

153.50  
153.44  
148.69

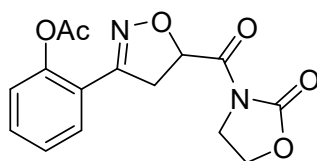
131.34  
129.75  
126.40  
124.00  
122.11

77.37

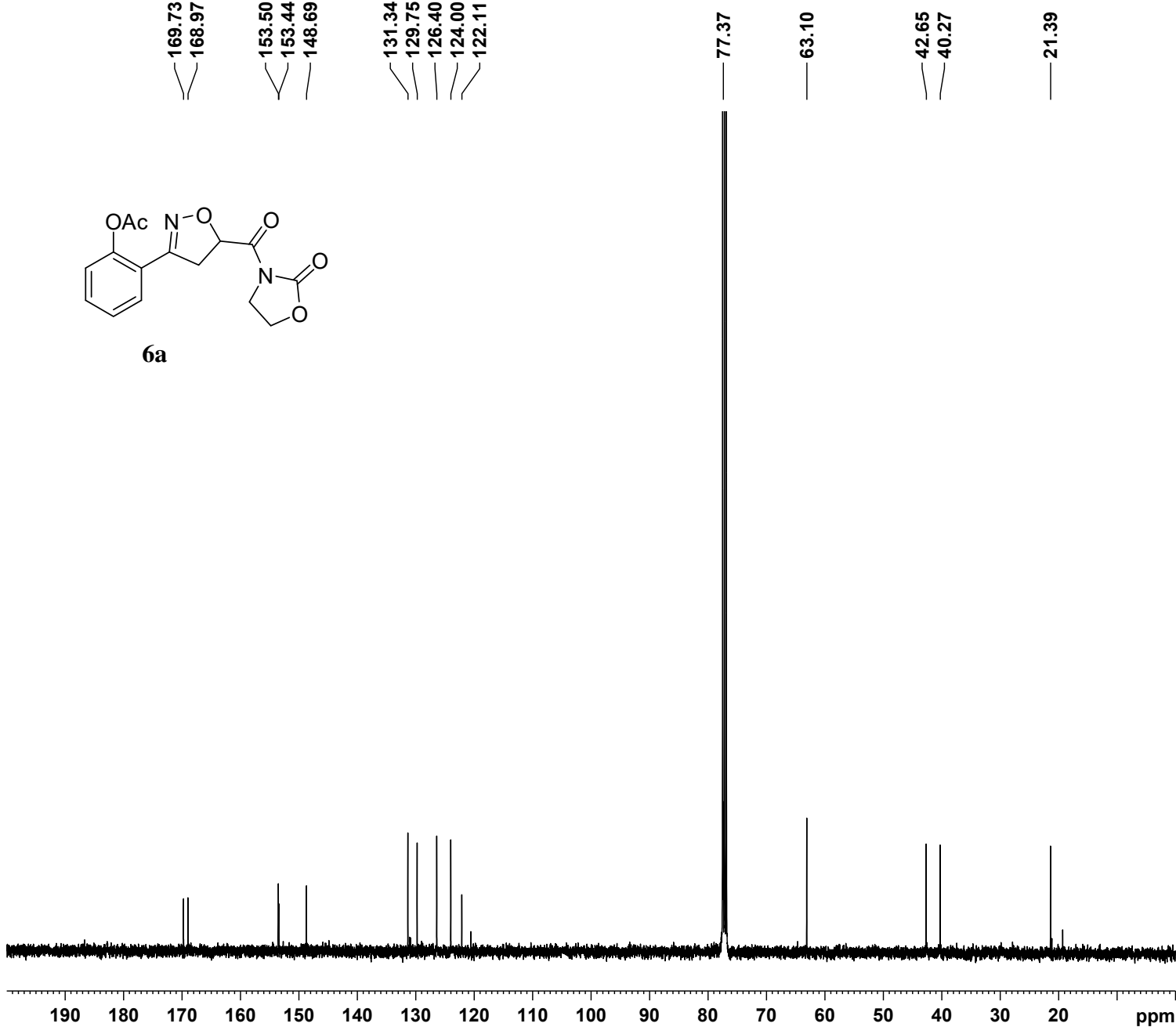
63.10

42.65  
40.27

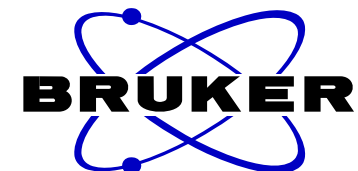
21.39



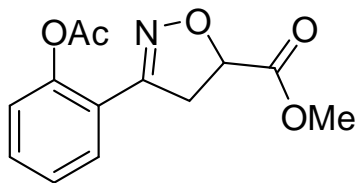
6a



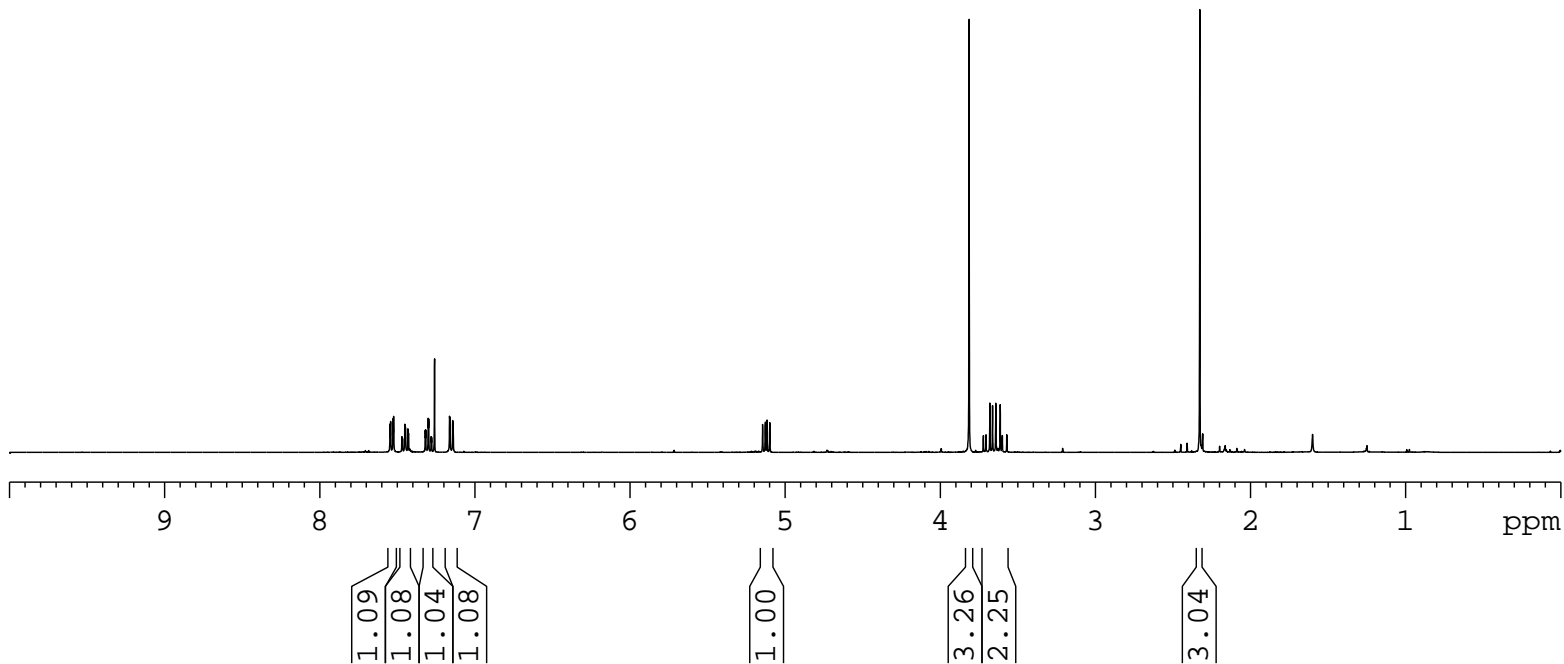




7.5468  
7.5429  
7.5274  
7.5234  
7.4704  
7.4662  
7.4513  
7.4473  
7.4315  
7.4274  
7.3195  
7.3164  
7.3004  
7.2974  
7.2814  
7.2784  
7.2598  
7.1630  
7.1602  
7.1428  
7.1399  
5.1452  
5.1280  
5.1165  
5.0993  
3.8142  
3.7224  
3.7052  
3.6803  
3.6631  
3.6421  
3.6134  
3.6000  
3.5712  
2.3271

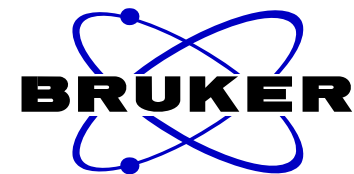


6b



NAME CWG150410(1)  
EXPNO 1  
PROCNO 1  
Date\_ 20150609  
Time 21.20  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 181  
DW 60.800 usec  
DE 6.50 usec  
TE 297.3 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



NAME CWG150410-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150614  
Time 19.29  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 117  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228270 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

170.45  
169.51

153.49  
148.50

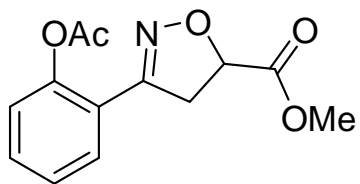
131.23  
129.64  
126.27  
123.85  
121.82

76.83

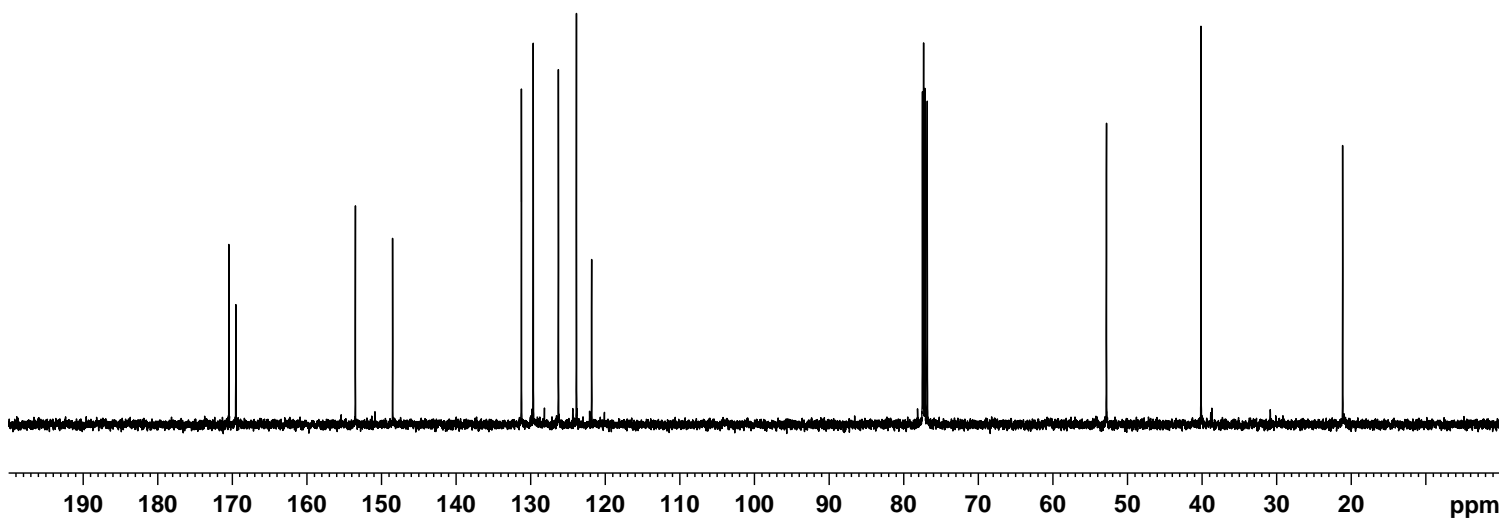
52.80

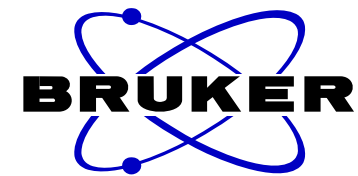
40.12

21.16



6b

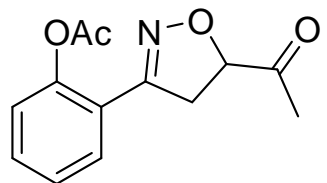




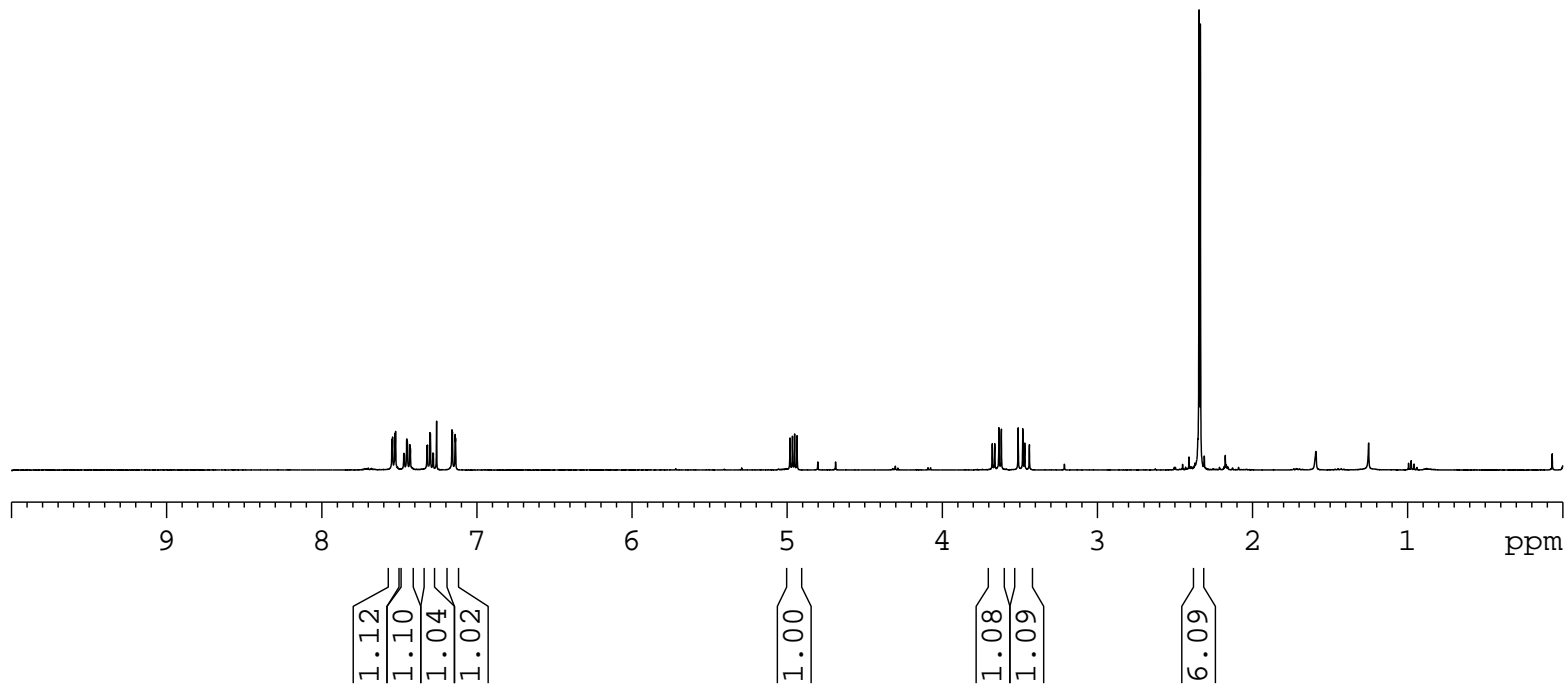
NAME CWG150707-3-pure  
EXPNO 1  
PROCNO 1  
Date\_ 20150708  
Time 21.23  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 144  
DW 60.800 usec  
DE 6.50 usec  
TE 297.9 K  
D1 1.0000000 sec  
TD0 1

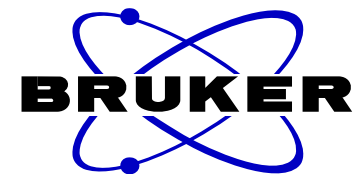
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700032 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

7.5479  
7.5439  
7.5284  
7.5245  
7.4718  
7.4678  
7.4525  
7.4488  
7.4329  
7.4289  
7.3220  
7.3191  
7.3029  
7.3000  
7.2839  
7.2810  
7.2601  
7.1607  
7.1581  
7.1406  
7.1379  
4.9817  
4.9659  
4.9519  
4.9362  
3.6774  
3.6617  
3.6349  
3.6192  
3.5107  
3.4810  
3.4681  
3.4384  
2.3447  
2.3358



6c



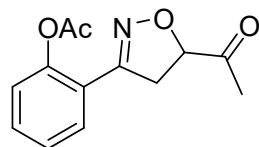


NAME CWG150707-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150708  
Time 22.06  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 69  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

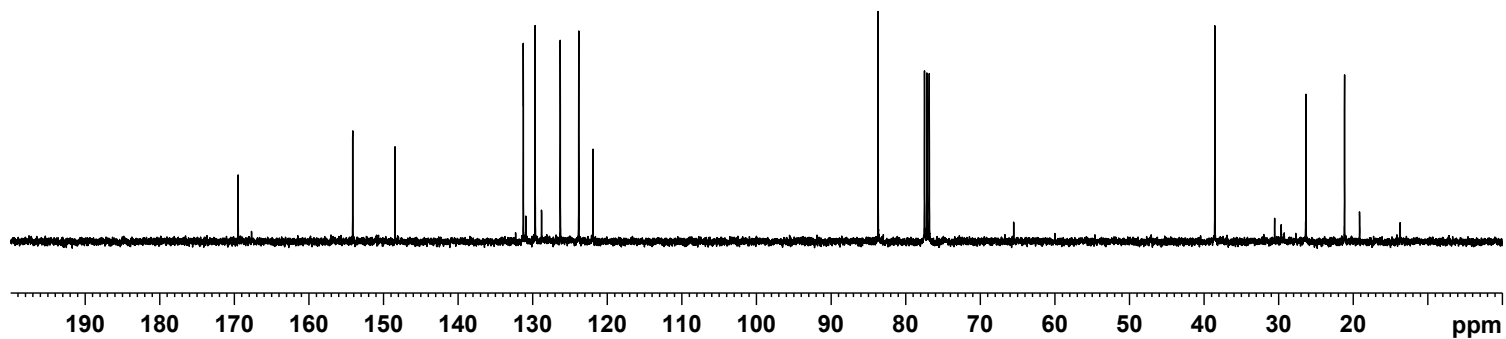
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228260 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

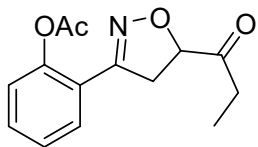
169.47  
154.11 148.46  
131.26  
129.67  
126.31  
123.83  
121.93  
83.69  
38.55  
26.34  
21.17



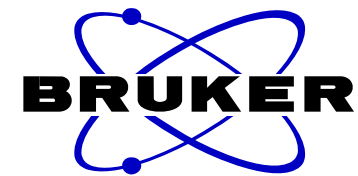
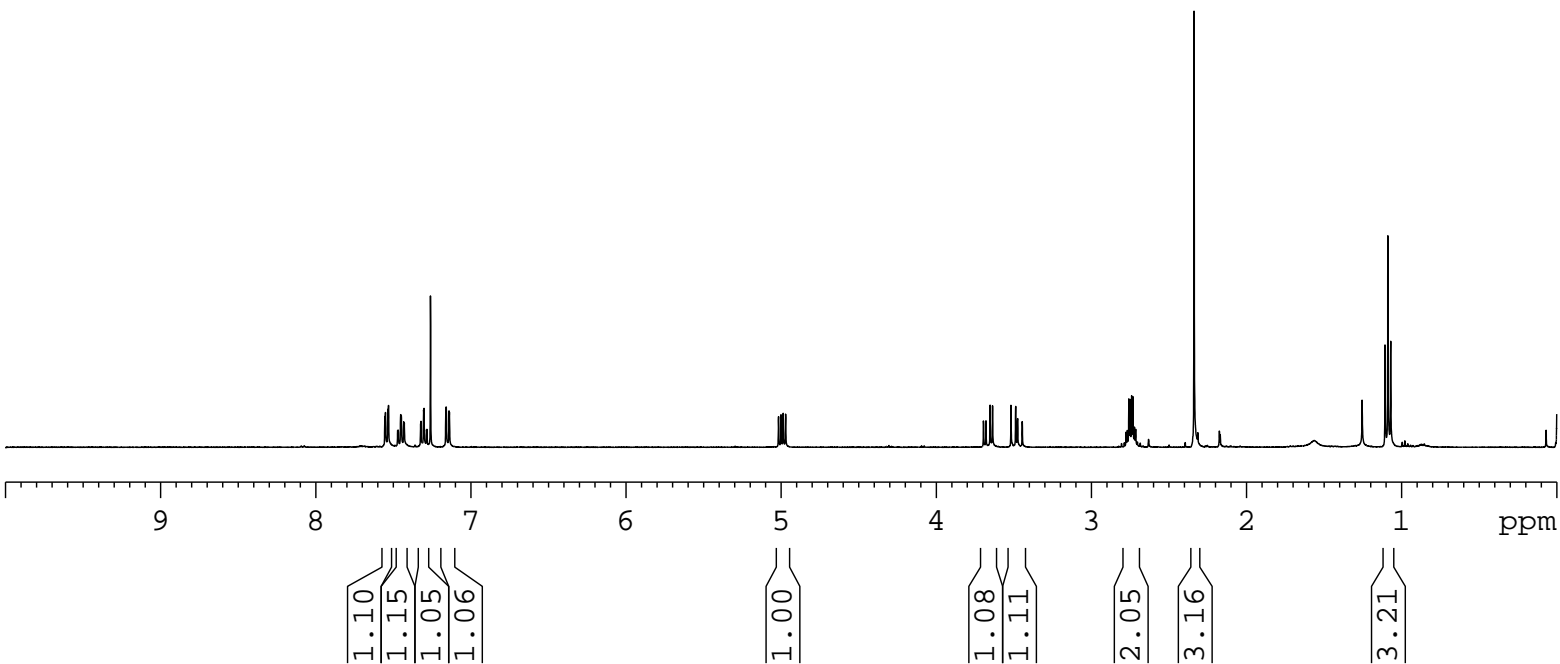
6c



7.5542  
7.5502  
7.5347  
7.5308  
7.4717  
7.4677  
7.4523  
7.4485  
7.4329  
7.4288  
7.3236  
7.3207  
7.3044  
7.3017  
7.2855  
7.2826  
7.2600  
7.1609  
7.1582  
7.1407  
7.1380  
5.0172  
5.0014  
4.9874  
4.9715  
3.6959  
3.6800  
3.6534  
3.6375  
3.5184  
3.4885  
3.4759  
3.4460  
2.7769  
2.7685  
2.7587  
2.7505  
2.7406  
2.7325  
2.7225  
2.7145  
2.3383  
1.1067  
1.0887  
1.0706



6d

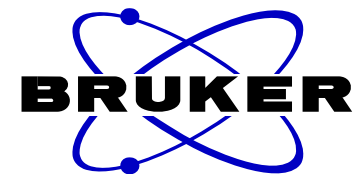


```

NAME          CWG150710-3
EXPNO         1
PROCNO        1
Date_         20150711
Time          17.18
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            298.1 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

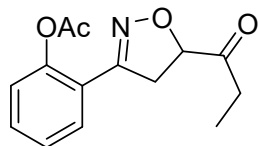


NAME CWG150710-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150711  
Time 17.39  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 567  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

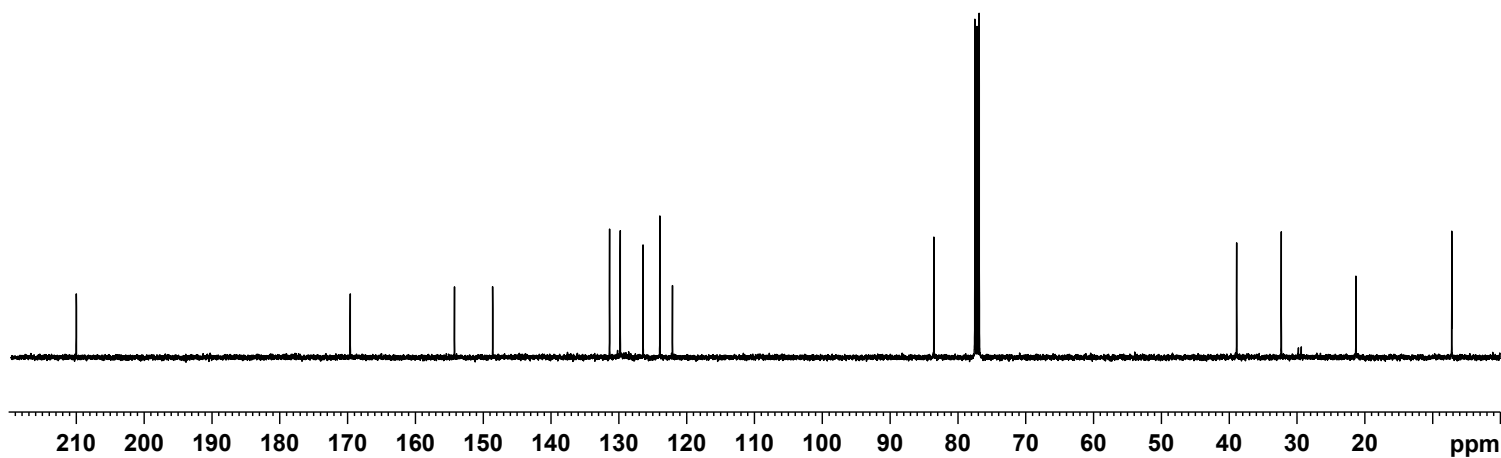
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228161 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

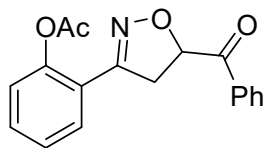
209.97  
169.59  
154.22  
148.59  
131.35  
129.78  
126.41  
123.94  
122.07  
83.53  
38.88  
32.30  
21.29  
7.16



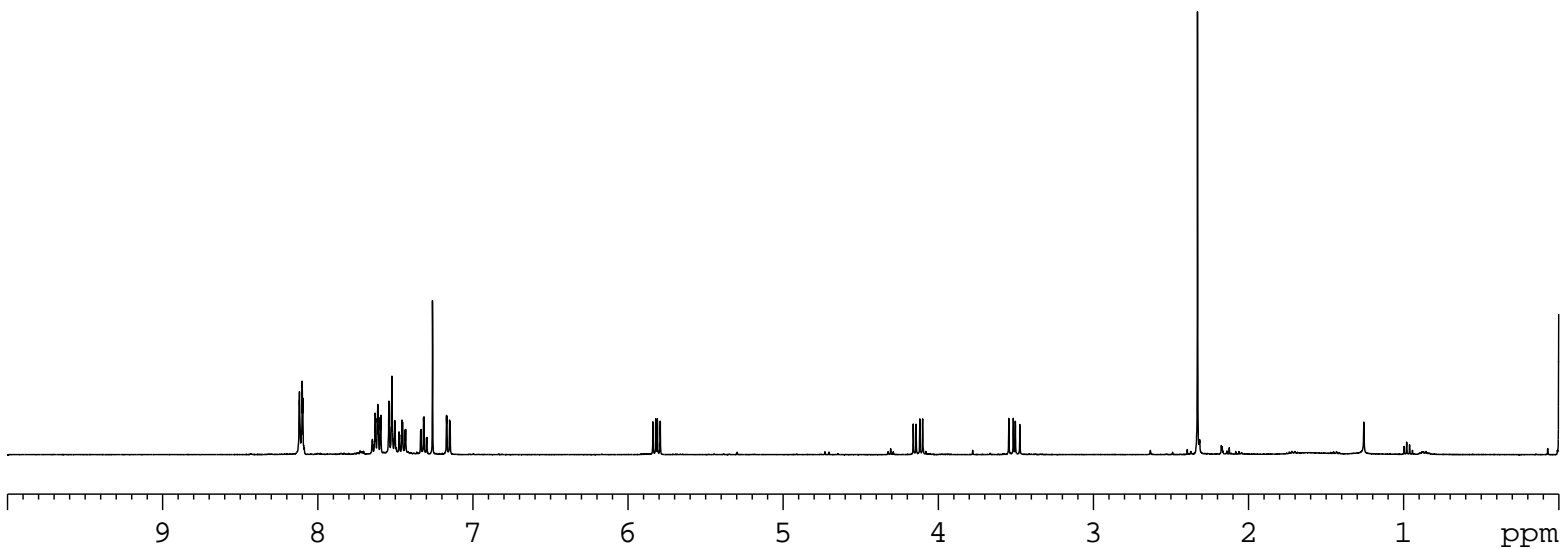
6d



7.6121  
7.5971  
7.5931  
7.5410  
7.5374  
7.5215  
7.5069  
7.5029  
7.4758  
7.4720  
7.4564  
7.4530  
7.4371  
7.4331  
7.3367  
7.3338  
7.3176  
7.3147  
7.2987  
7.2957  
7.1698  
7.1671  
7.1496  
7.1469  
5.8400  
5.8218  
5.8111  
5.7928  
4.1615  
4.1432  
4.1194  
4.1011  
3.5453  
3.5164  
3.5033  
3.4743  
2.3289



6e



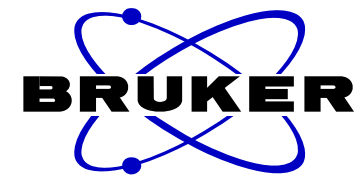
2.22  
2.18  
2.36  
1.35  
1.06  
1.01

1.00

1.06

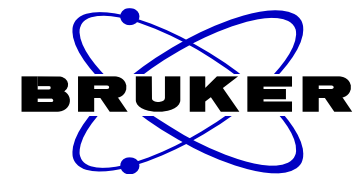
1.06

3.12



NAME CWG150713-1-2  
EXPNO 1  
PROCNO 1  
Date\_ 20150714  
Time 12.21  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 298.8 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700033 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

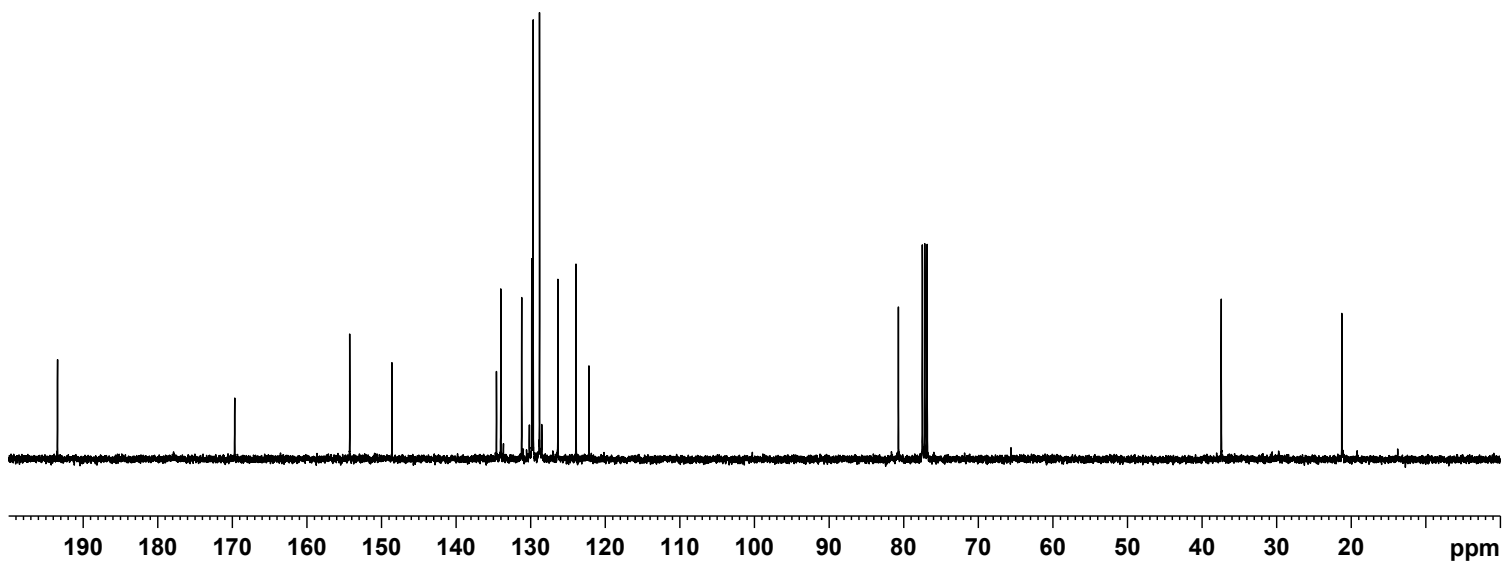
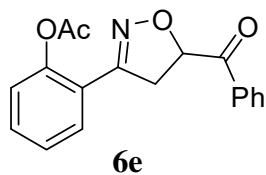


NAME CWG150713-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150715  
Time 18.42  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 103  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.9 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

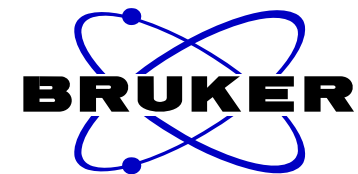
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228228 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

193.42  
169.66  
154.25  
148.59  
134.57  
133.99  
131.19  
129.85  
129.65  
128.80  
126.34  
123.90  
122.18  
80.69  
37.43  
21.26





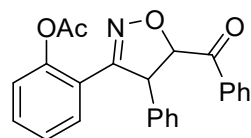


NAME CWG151008-2-1  
EXPNO 1  
PROCNO 1  
Date\_ 20151013  
Time 10.28  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 297.7 K  
D1 1.0000000 sec  
TD0 1

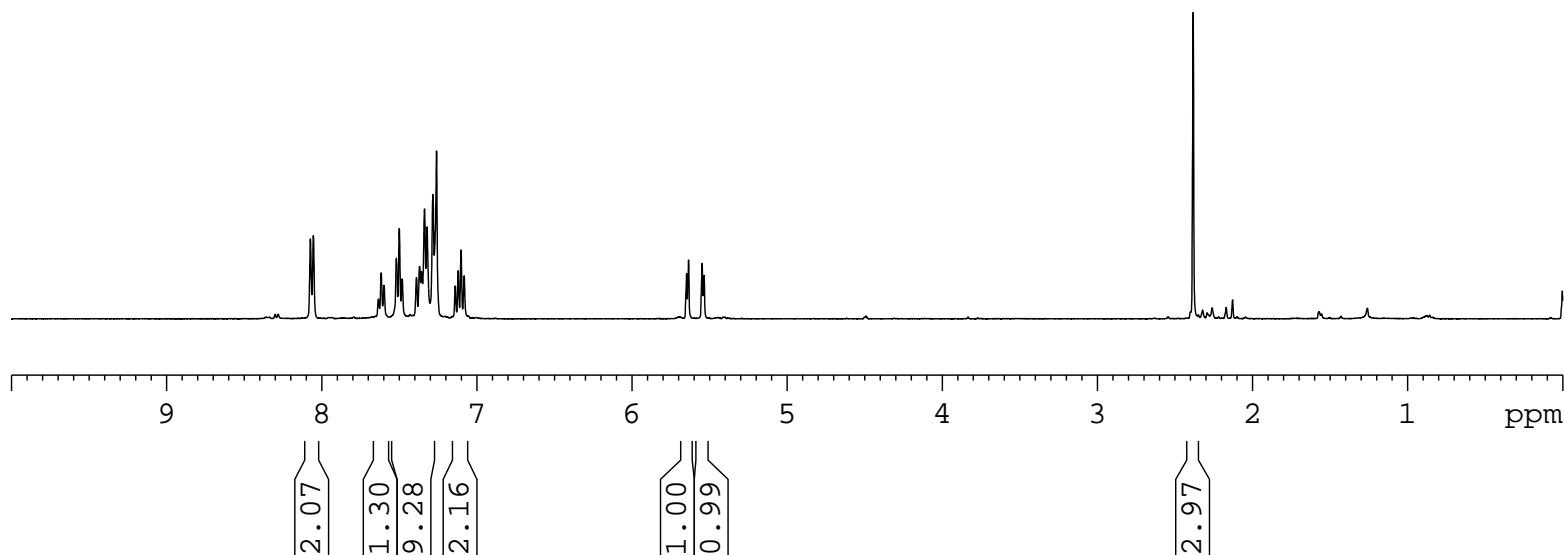
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700035 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

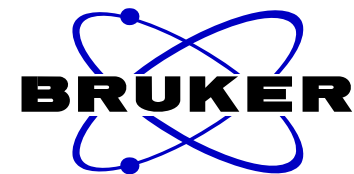
8.0730  
8.0539  
7.6346  
7.6167  
7.5987  
7.5188  
7.4999  
7.4811  
7.3889  
7.3688  
7.3568  
7.3373  
7.3212  
7.2831  
7.2598  
7.1391  
7.1199  
7.1015  
7.0816  
5.6487  
5.6359  
5.5485  
5.5358

— 2.3826



6f





NAME CWG151008-2-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151013  
Time 10.50  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 128  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

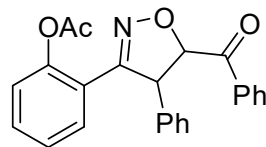
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228202 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

193.17  
169.58  
156.31  
148.99  
137.97  
134.38  
134.07  
130.97  
130.48  
129.71  
129.50  
128.83  
128.14  
127.97  
126.10  
123.82  
121.53

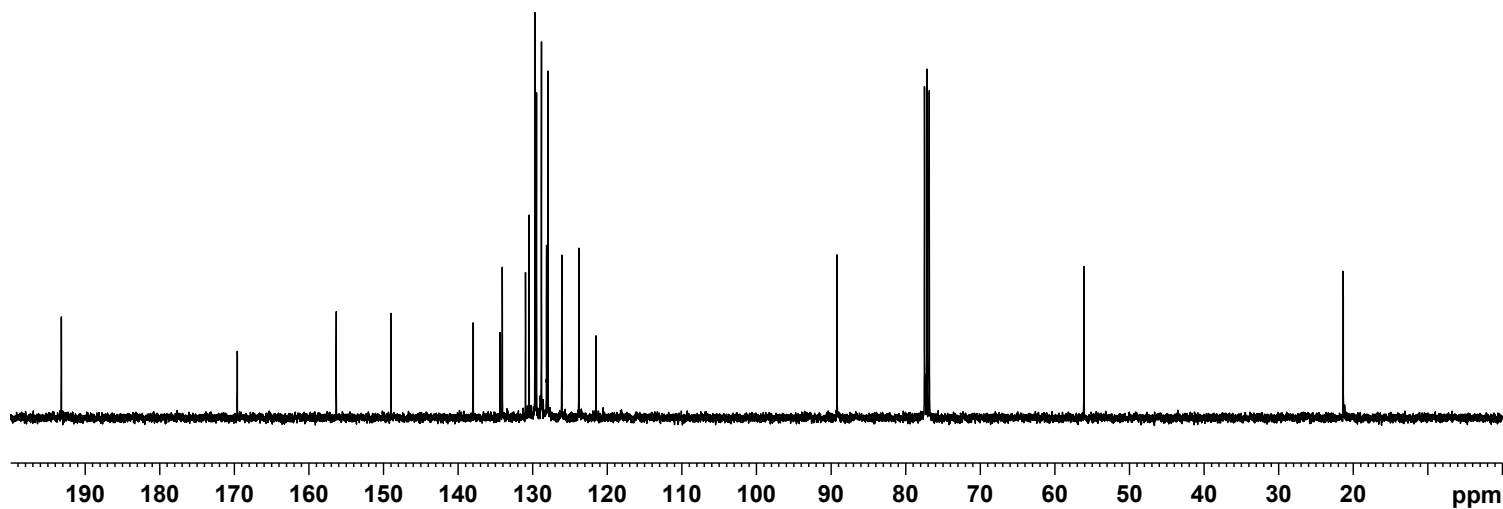
89.21

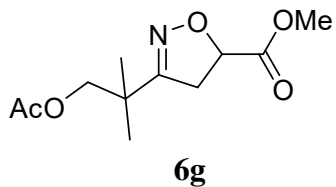
56.11

21.34



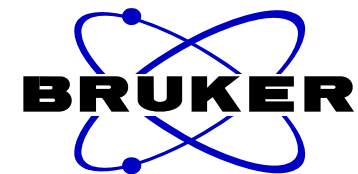
6f





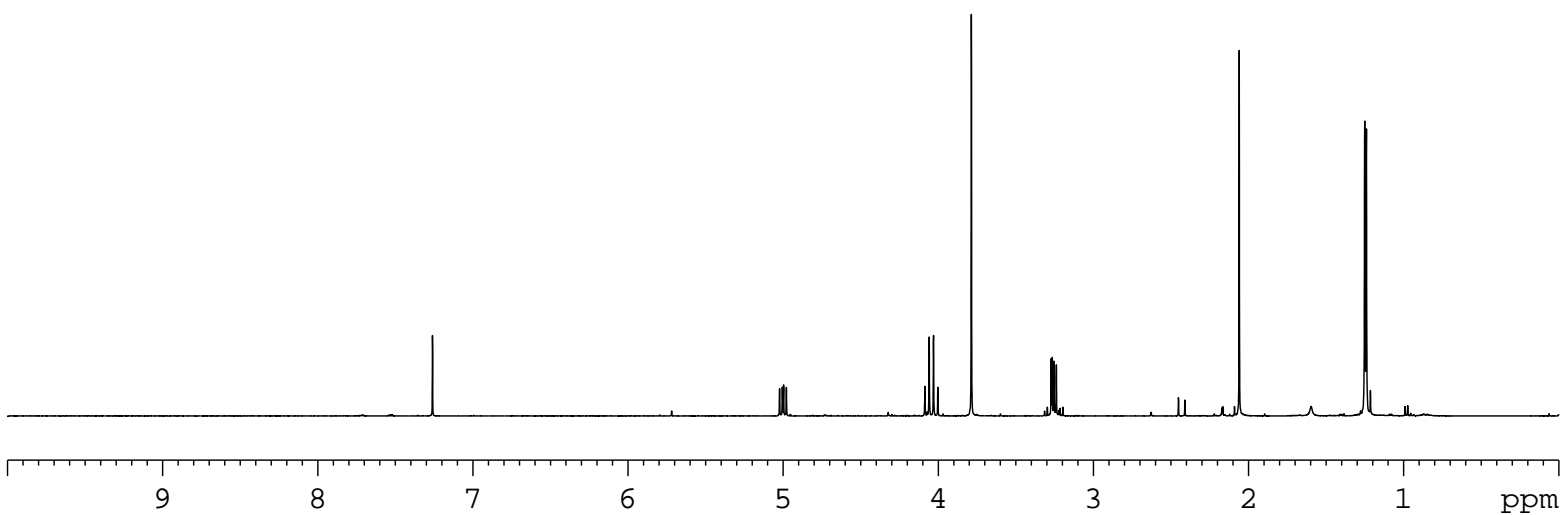
— 7.2599

5.0234  
 5.0055  
 4.9972  
 4.9793  
 4.0865  
 4.0588  
 4.0309  
 4.0032  
 3.7868  
 3.3147  
 3.2969  
 3.2723  
 3.2652  
 3.2545  
 3.2390  
 3.2228  
 3.2148  
 3.1966  
 2.0599  
 1.2514  
 1.2400

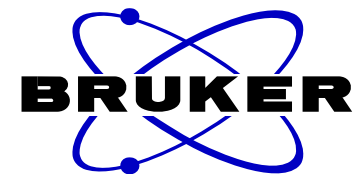


NAME CWG150820-s  
 EXPNO 1  
 PROCNO 1  
 Date\_ 20150821  
 Time\_ 11.22  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8223.685 Hz  
 FIDRES 0.125483 Hz  
 AQ 3.9846387 sec  
 RG 203  
 DW 60.800 usec  
 DE 6.50 usec  
 TE 296.7 K  
 D1 1.00000000 sec  
 TD0 1

==== CHANNEL f1 =====  
 NUC1 1H  
 P1 13.80 usec  
 PL1 -1.00 dB  
 PL1W 13.18669796 W  
 SFO1 400.1724712 MHz  
 SI 32768  
 SF 400.1700033 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



1.00  
 2.13  
 3.14  
 2.21  
 3.10  
 3.36  
 3.07



NAME CWG150820-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20150914  
Time 18.18  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 222  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.5 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

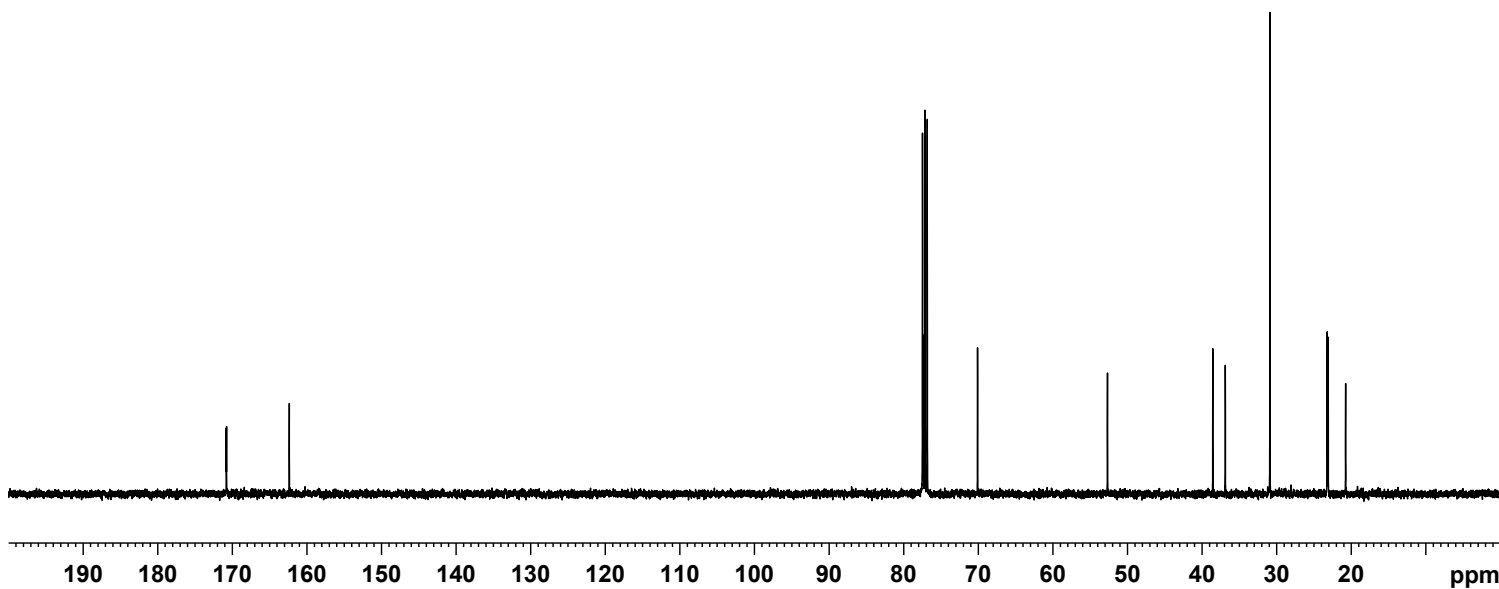
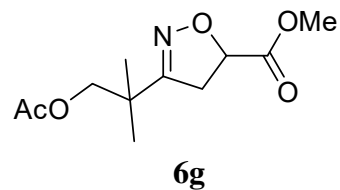
==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228187 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

170.79  
170.76  
162.34

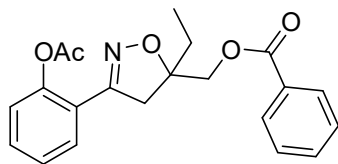
70.10

52.68

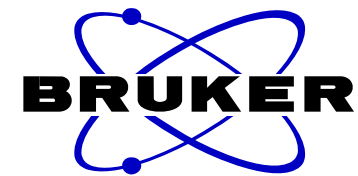
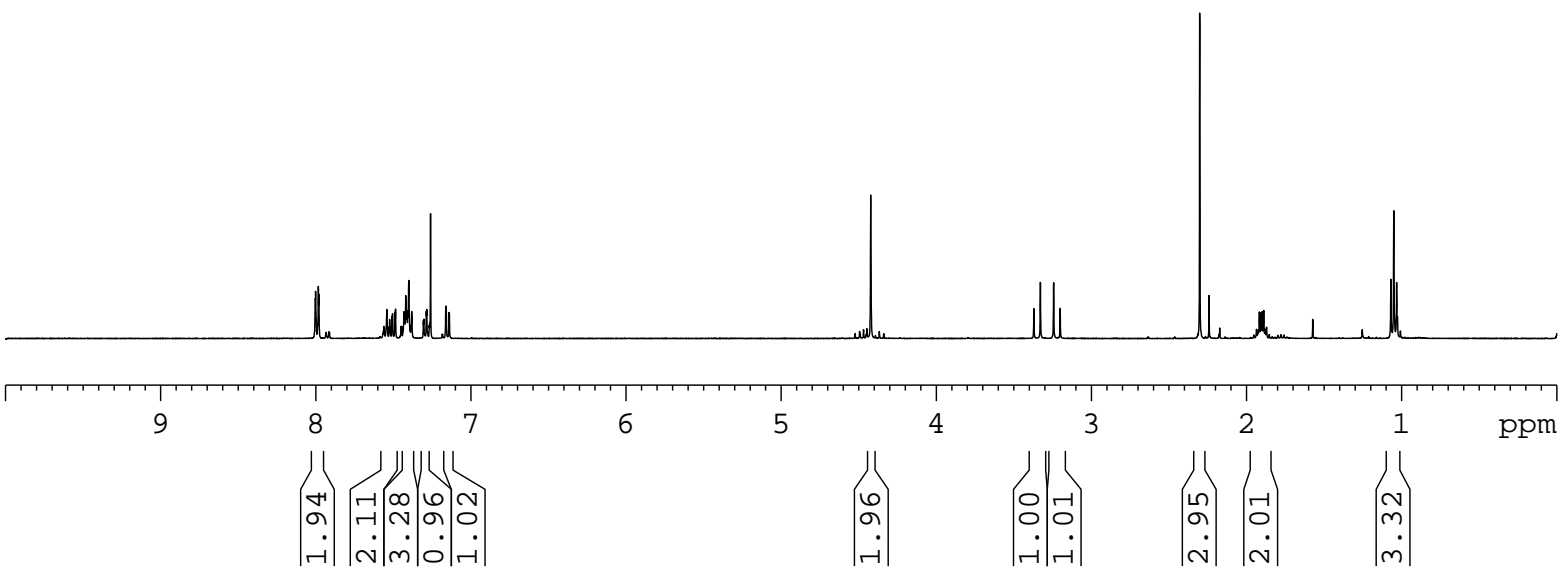
38.56  
36.88  
30.91  
23.22  
23.09  
20.76



8.0032  
8.0009  
7.9831  
7.9797  
7.5419  
7.5234  
7.5089  
7.5049  
7.4895  
7.4855  
7.4500  
7.4459  
7.4306  
7.4266  
7.4197  
7.4157  
7.4113  
7.4069  
7.4000  
7.3855  
7.3812  
7.3060  
7.3031  
7.2870  
7.2841  
7.2680  
7.2648  
7.2599  
7.1615  
7.1588  
7.1413  
7.1386  
4.4224  
3.3710  
3.3289  
3.2435  
3.2014  
2.3018  
1.9170  
1.9072  
1.8982  
1.8888  
1.0692  
1.0506  
1.0319



8a

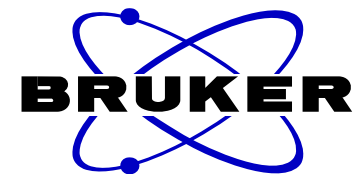


```

NAME          CWG151019-1-1
EXPNO         1
PROCNO        1
Date_         20151126
Time          14.38
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            203
DW            60.800 usec
DE            6.50 usec
TE            291.1 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700034 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

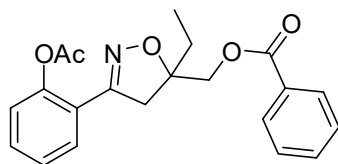


NAME CWG151019-1-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151126  
Time 16.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 18  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 293.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

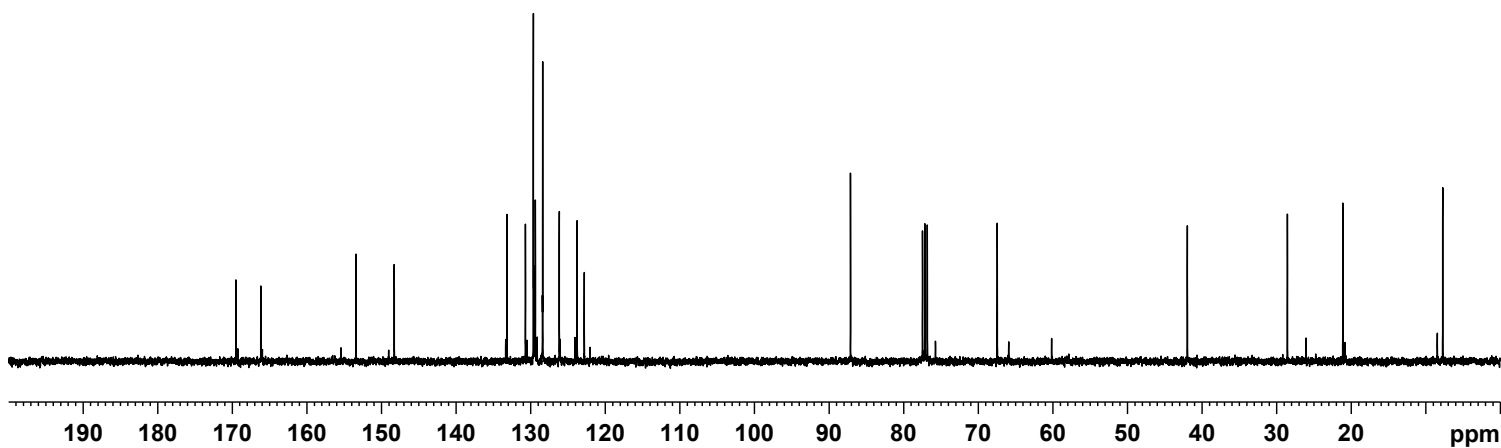
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228360 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.50  
166.16  
153.41  
148.28  
133.17  
130.69  
129.63  
129.60  
129.44  
129.36  
128.41  
128.38  
126.15  
123.76  
122.80  
87.13  
67.47  
41.97  
28.56  
21.13  
7.74



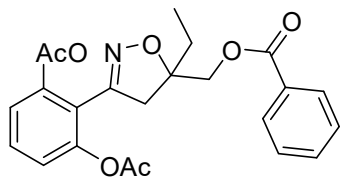
8a



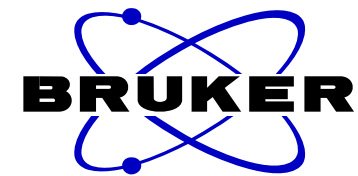
8.0500  
8.0318  
7.5891  
7.5706  
7.5520  
7.4534  
7.4430  
7.4340  
7.4224  
7.4150  
7.4019  
7.2600  
7.0850  
7.0644

4.4110

3.2895  
3.2463  
3.1259  
3.0826  
2.1992  
1.9376  
1.9199  
1.9021  
1.8873  
1.8836  
1.8693  
1.8515  
1.8337  
1.0730  
1.0544  
1.0358



8a'



```

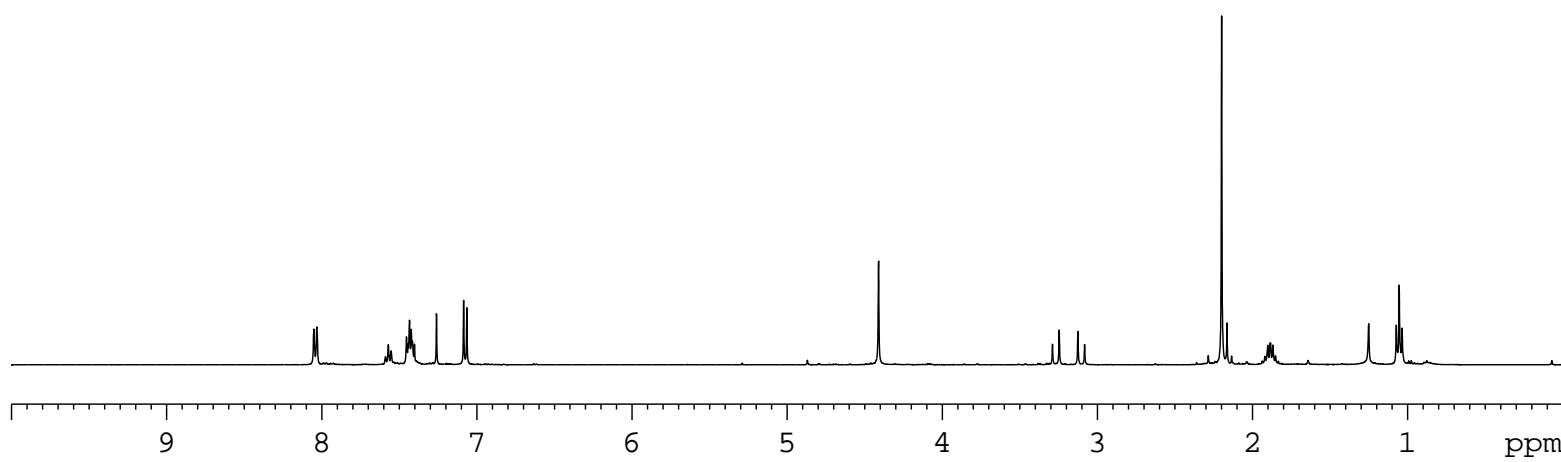
NAME CWG151019-1-x-pure
EXPNO 1
PROCNO 1
Date_ 20160224
Time 11.00
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 293.2 K
D1 1.00000000 sec
TD0 1

```

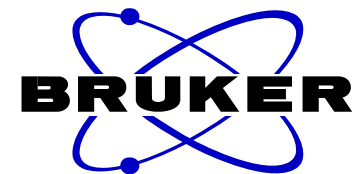
```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700033 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```



1.93  
1.13  
3.32  
1.99  
2.12  
1.03  
1.00  
5.95  
2.20  
3.33



```

NAME CWG151019-1-X-PURE-C13
EXPNO 1
PROCNO 1
Date_ 20160224
Time 11.11
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 311
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 293.9 K
D1 2.0000000 sec
D11 0.03000000 sec
TDO 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228150 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

```

168.92  
166.42

150.58  
149.56

133.47  
130.53  
129.88  
129.66  
128.62  
120.68  
117.47

87.72

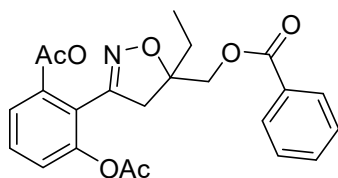
67.14

42.98

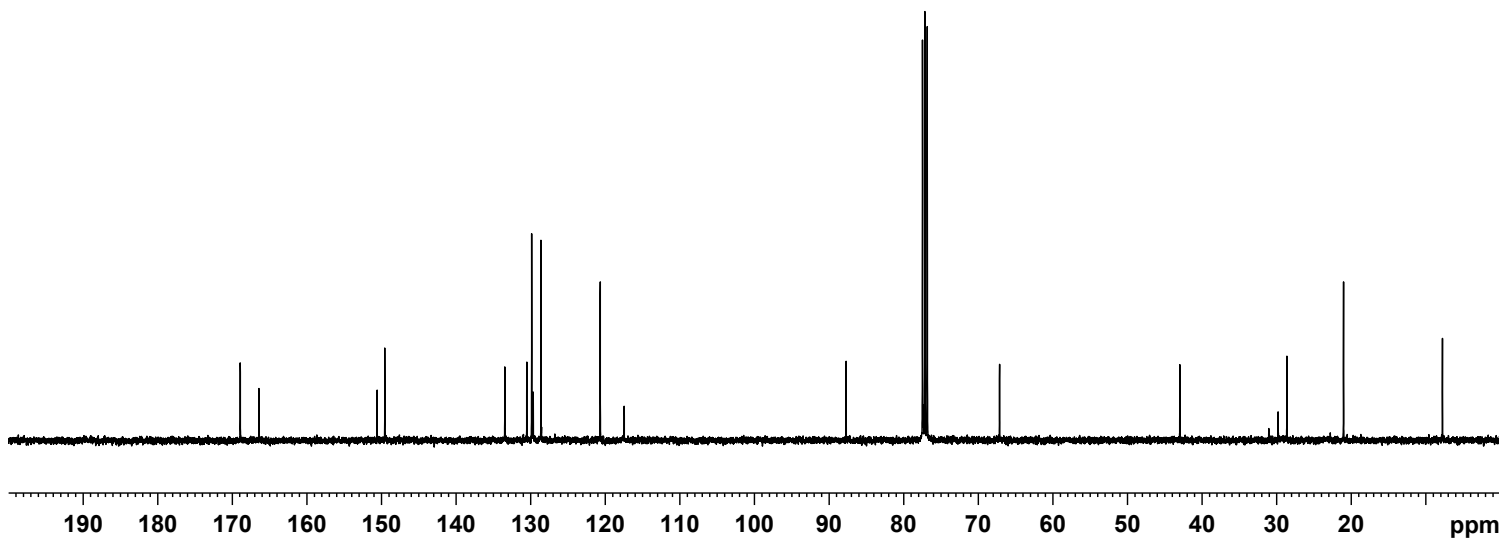
29.81  
28.63

21.03

7.77

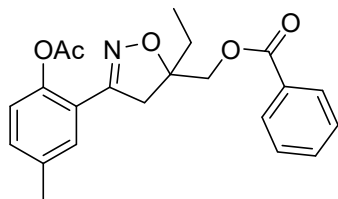


8a'





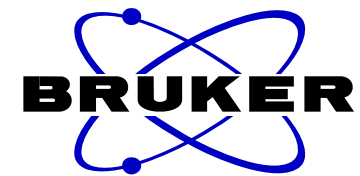
8.0092  
7.9899  
7.5595  
7.5411  
7.5227  
7.4215  
7.4026  
7.3837  
7.2952  
7.2597  
7.2231  
7.2027  
7.0331  
7.0127



8b

4.4188

3.3565  
3.3144  
3.2310  
3.1889  
2.3472  
2.2792  
1.9257  
1.9079  
1.8980  
1.8900  
1.8802  
1.8624  
1.0661  
1.0476  
1.0290

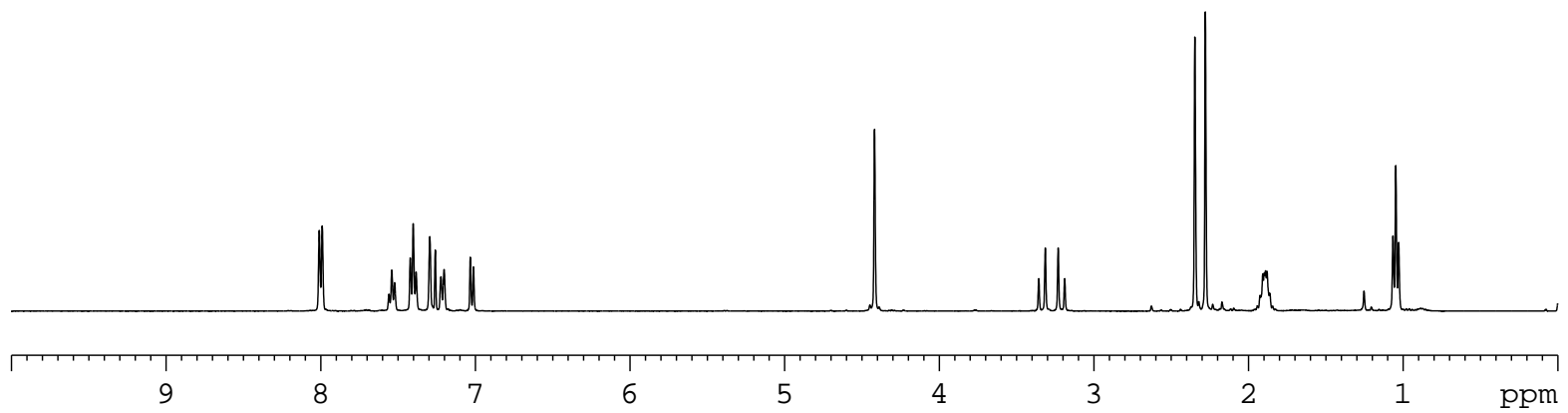


```

NAME          CWG151026-4-S
EXPNO         1
PROCNO        1
Date_         20151028
Time          16.07
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            71.8
DW            60.800 usec
DE            6.50 usec
TE            295.7 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



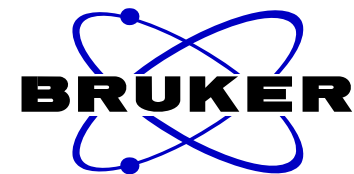
1.95  
1.03  
2.03  
1.02  
1.00  
0.94

2.00

1.00  
1.00

2.95  
2.88  
2.02

3.07



NAME CWG151026-4-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151028  
Time 16.54  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 102  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228211 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.86  
166.36  
153.62  
146.23  
135.97  
133.29  
131.44  
129.92  
129.81  
129.62  
128.50  
123.56  
122.47

87.23

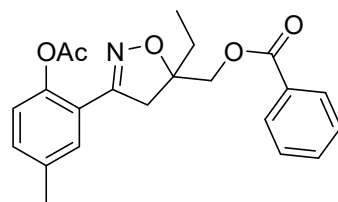
67.60

42.22

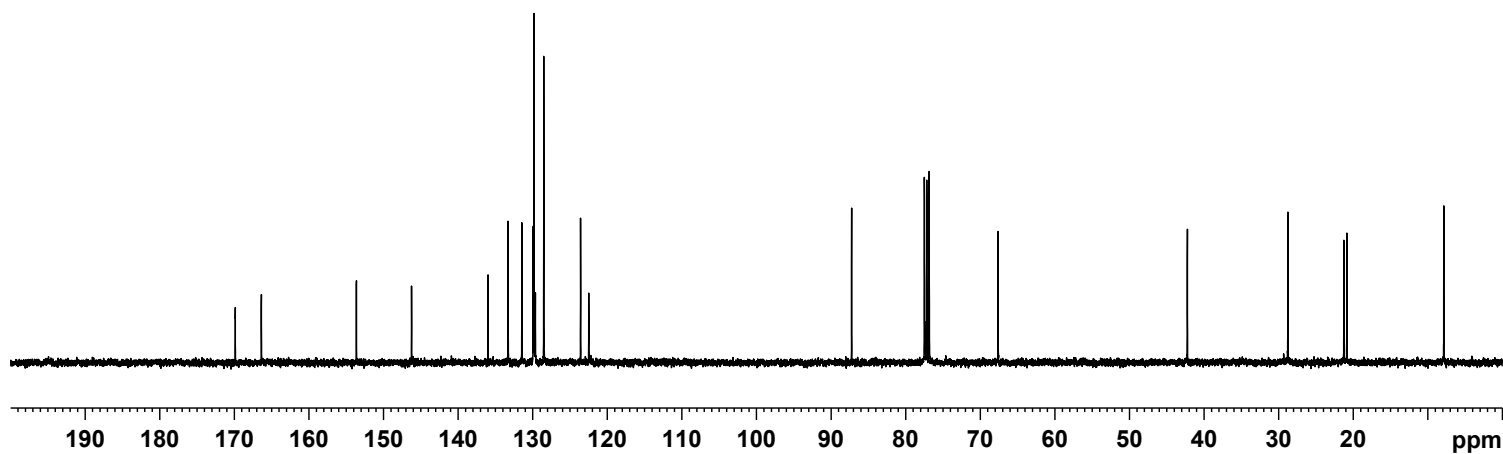
28.76

21.26  
20.87

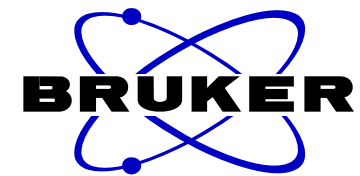
7.86



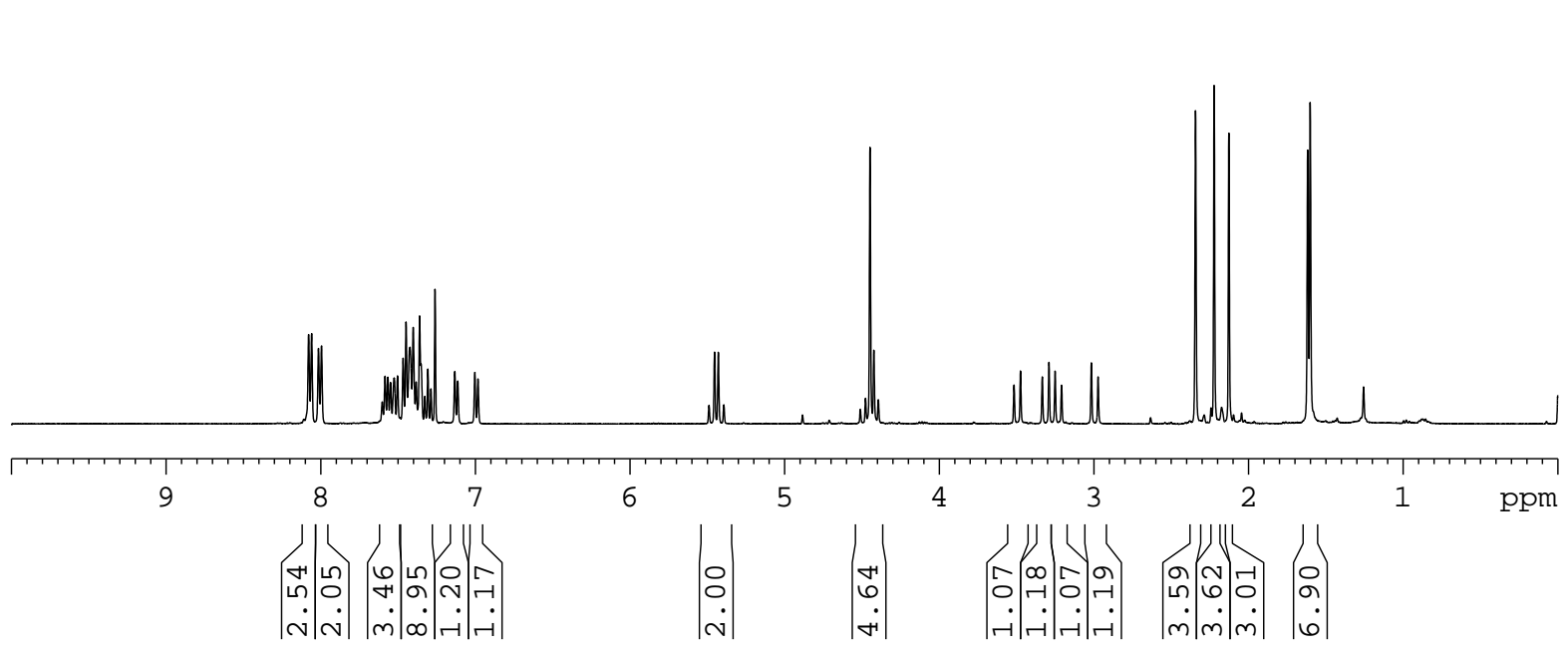
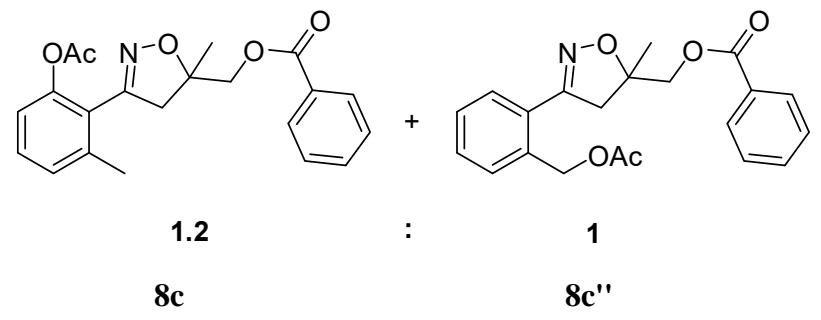
8b



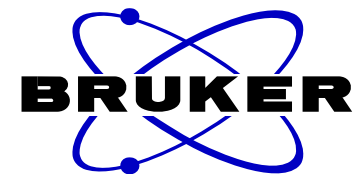
8.0779  
8.0582  
8.0141  
7.9944  
7.6019  
7.5836  
7.5658  
7.5482  
7.5251  
7.5041  
7.4678  
7.4488  
7.4232  
7.4026  
7.3834  
7.3610  
7.3515  
7.3276  
7.3077  
7.2879  
7.2614  
7.1336  
7.1145  
7.0039  
6.9836  
5.4537  
5.4291  
5.3935  
4.4773  
4.4482  
4.4234  
4.3945  
3.5166  
3.4750  
3.3340  
3.2906  
3.2510  
3.2094  
3.0165  
2.9732  
2.3427  
2.2226  
2.1274  
1.6175  
1.6012



NAME CWG151029-4-S  
EXPNO 1  
PROCNO 1  
Date\_ 20151030  
Time 17.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 161  
DW 60.800 usec  
DE 6.50 usec  
TE 300.0 K  
D1 1.00000000 sec  
TD0 1



==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700028 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



```

NAME CWG151029-4-S-C13
EXPNO 1
PROCNO 1
Date_ 20160217
Time 10.58
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 55
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 296.1 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228482 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

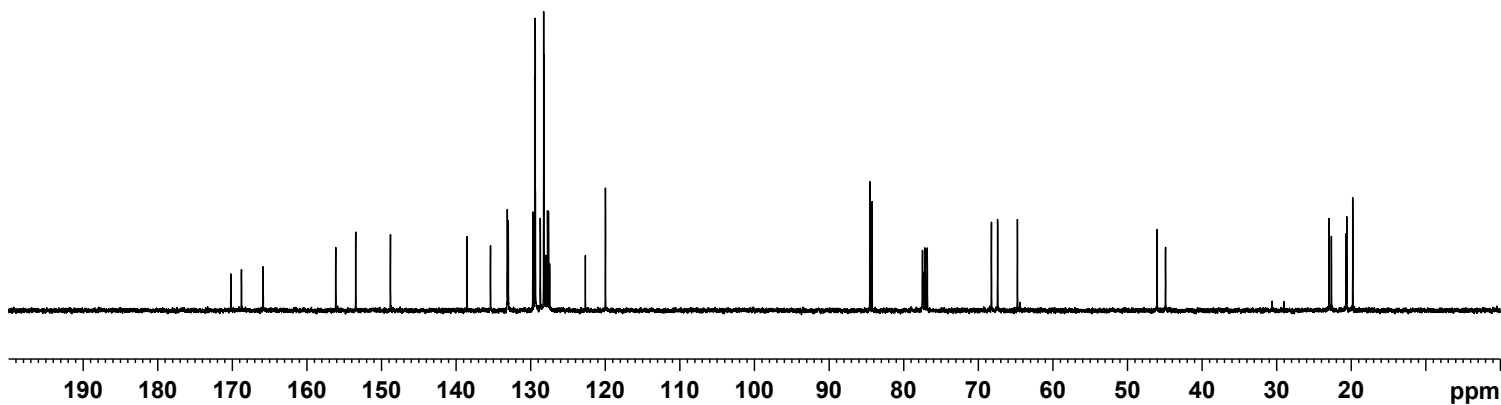
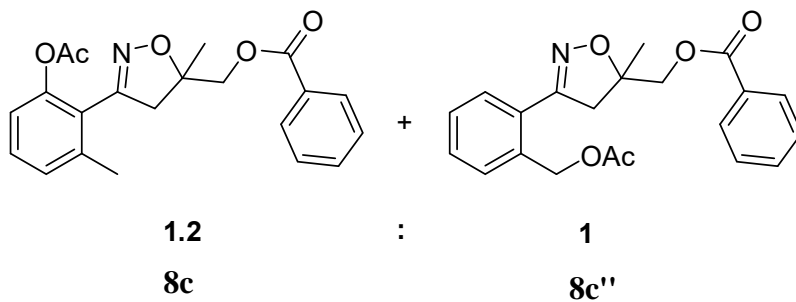
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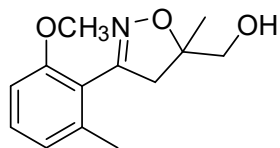
170.20  
168.77  
165.91  
165.87  
156.14  
153.46  
148.80  
138.53  
135.39  
133.13  
133.01  
129.72  
129.46  
129.39  
128.71  
128.26  
128.23  
127.98  
127.75  
127.62  
127.46  
122.68  
119.98

84.55  
84.24  
77.36  
68.24  
67.41  
64.75

46.03  
44.90

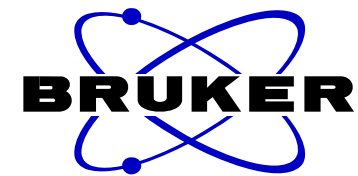
22.99  
22.67  
20.71  
20.61  
19.80





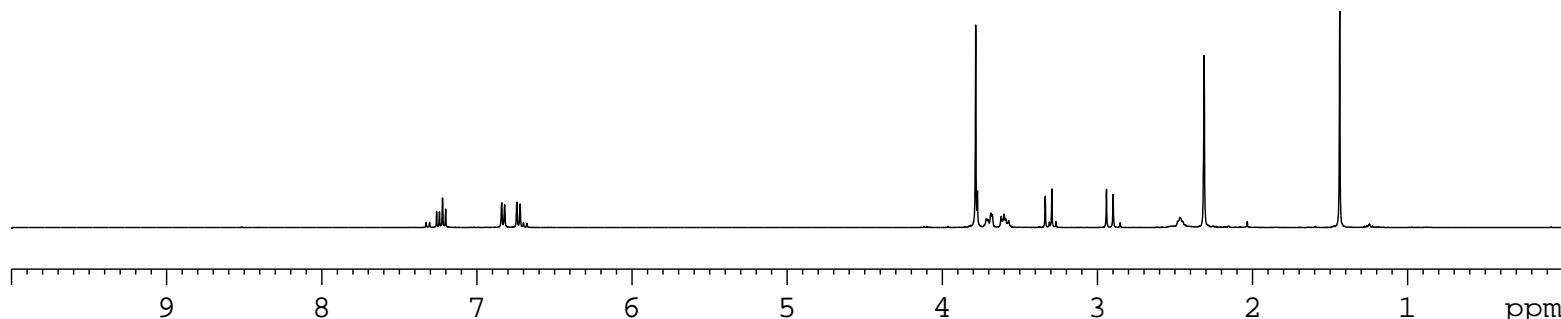
7.2601  
7.2417  
7.2218  
7.2018  
6.8406  
6.8215  
6.7429  
6.7222

3.7846  
3.7173  
3.7065  
3.6875  
3.6774  
3.6204  
3.6014  
3.5910  
3.5717  
3.3362  
3.2936  
2.9414  
2.8988  
2.4807  
2.4682  
2.4502  
2.3117  
1.4379



NAME CWG160305-1  
EXPNO 1  
PROCNO 1  
Date\_ 20160307  
Time\_ 8.15  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 57  
DW 60.800 usec  
DE 6.50 usec  
TE 295.3 K  
D1 1.00000000 sec  
TD0 1

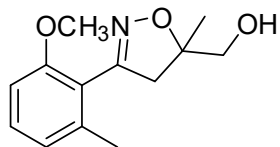
==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700031 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



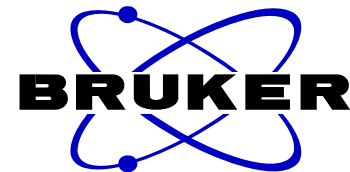
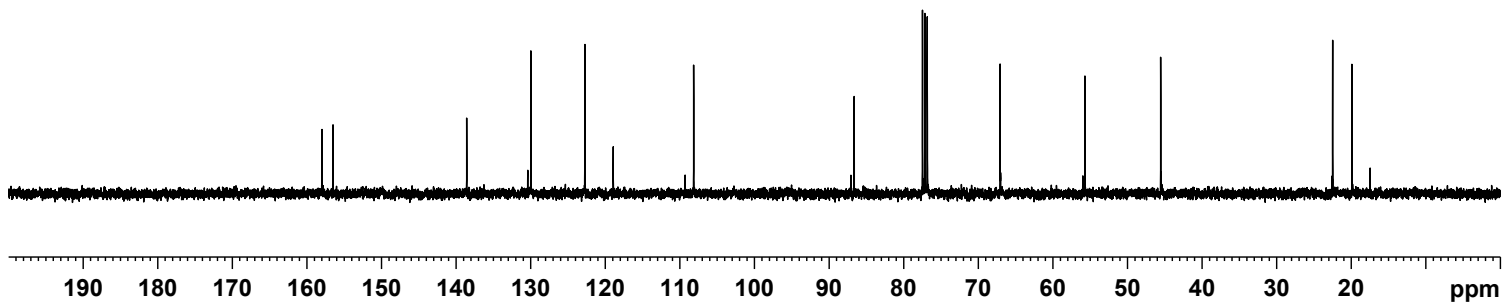
0.92  
0.96  
0.95

3.29  
1.15  
1.12  
1.00  
1.02  
0.90  
3.25

3.25



157.98  
156.50  
138.58  
129.97  
122.74  
118.94  
108.15  
86.64  
67.07  
55.71  
45.55  
22.49  
19.91

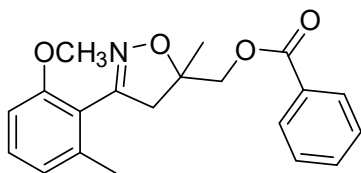


NAME CWG160305-1-C13  
 EXPNO 1  
 PROCNO 1  
 Date\_ 20160307  
 Time 8.19  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDC13  
 NS 18  
 DS 4  
 SWH 24038.461 Hz  
 FIDRES 0.366798 Hz  
 AQ 1.3631988 sec  
 RG 203  
 DW 20.800 usec  
 DE 6.50 usec  
 TE 295.6 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

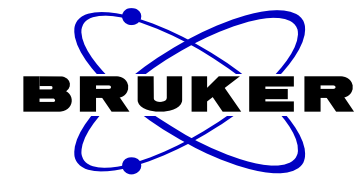
==== CHANNEL f1 =====  
 NUC1 13C  
 P1 8.50 usec  
 PL1 -2.00 dB  
 PL1W 57.32743073 W  
 SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
 CPDPRG2 waltz16  
 NUC2 1H  
 PCPD2 80.00 usec  
 PL2 -1.00 dB  
 PL12 14.26 dB  
 PL13 14.46 dB  
 PL2W 13.18669796 W  
 PL12W 0.39276794 W  
 PL13W 0.37509048 W  
 SFO2 400.1716007 MHz  
 SI 32768  
 SF 100.6228224 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

8.1064  
8.1032  
8.0856  
8.0822  
7.5858  
7.5715  
7.5672  
7.5519  
7.5487  
7.5456  
7.4536  
7.4339  
7.4193  
7.4151  
7.2601  
7.2507  
7.2307  
7.2108  
6.8567  
6.8376  
6.7354  
6.7147

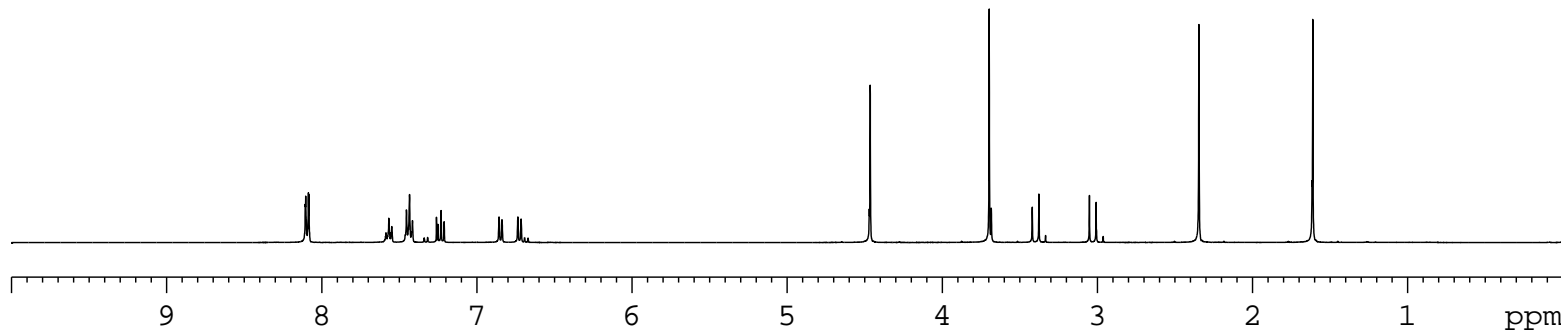


— 4.4646  
3.6979  
3.4199  
3.3772  
3.0516  
3.0088  
— 2.3457  
— 1.6116

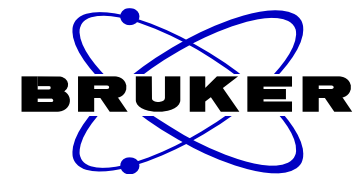


NAME CWG160307-1  
EXPNO 1  
PROCNO 1  
Date\_ 20160307  
Time\_ 14.21  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 13  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 57  
DW 60.800 usec  
DE 6.50 usec  
TE 297.2 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700030 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



2.03  
1.05  
2.07  
0.88  
0.92  
0.90  
2.10  
3.14  
1.00  
1.00  
3.19  
3.21

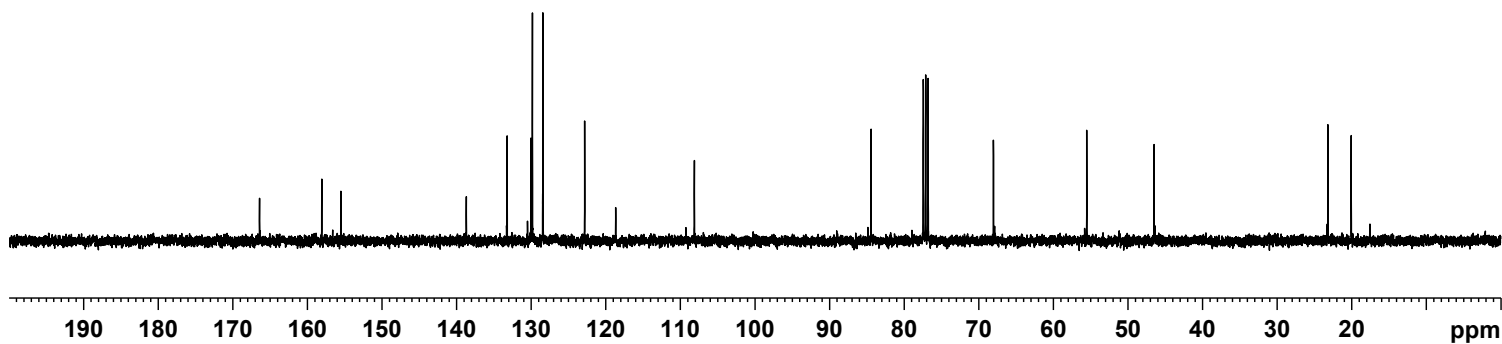
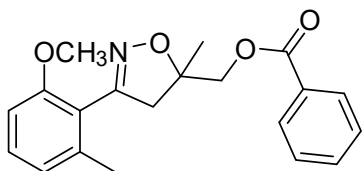


NAME CWG160307-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160307  
Time 14.26  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 32  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

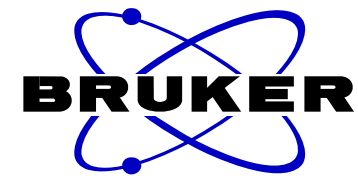
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228224 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.39  
158.08  
155.51  
138.70  
133.22  
130.04  
129.84  
128.43  
122.83  
118.67  
108.12  
84.44  
68.03  
55.52  
46.49  
23.20  
20.07







```

NAME      CWG160307-3-pure
EXPNO     1
PROCNO    1
Date_     20160308
Time      17.03
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD        65536
SOLVENT   CDCl3
NS         16
DS         2
SWH       8223.685 Hz
FIDRES    0.125483 Hz
AQ         3.9846387 sec
RG         128
DW         60.800 usec
DE         6.50 usec
TE         293.5 K
D1         1.00000000 sec
TD0        1
  
```

```

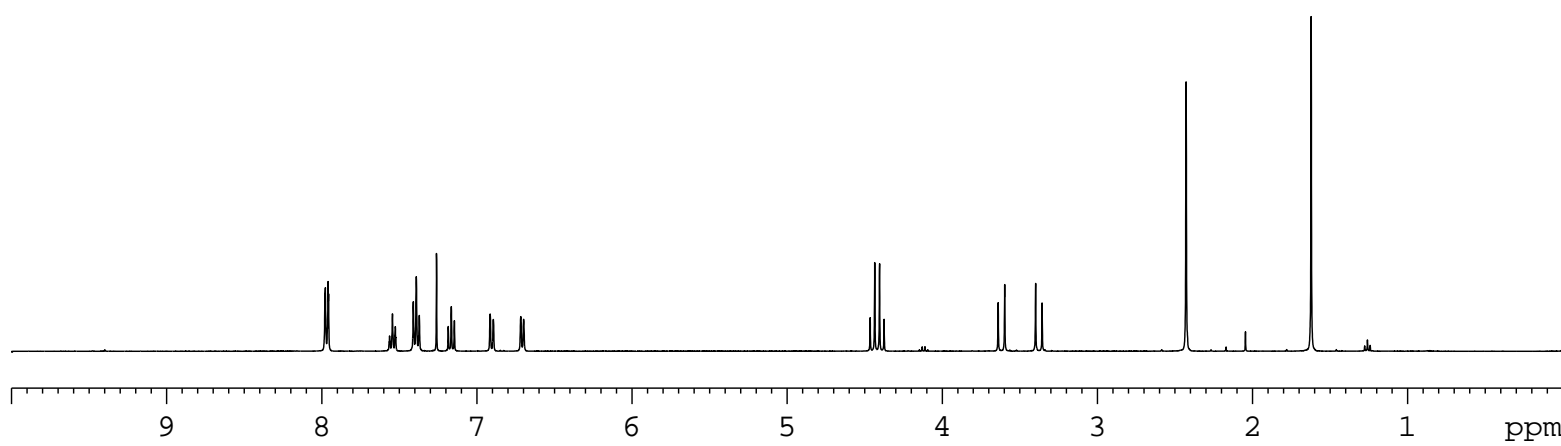
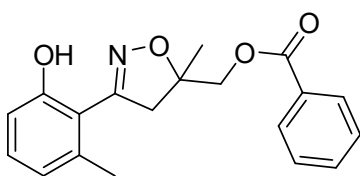
===== CHANNEL f1 =====
NUC1      1H
P1        13.80 usec
PL1       -1.00 dB
PL1W      13.18669796 W
SFO1      400.1724712 MHz
SI         32768
SF         400.1700033 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00
  
```

7.9769  
7.9592  
7.9558  
7.5653  
7.5626  
7.5596  
7.5440  
7.5283  
7.5254  
7.5225  
7.4097  
7.3900  
7.3709  
7.2599  
7.1842  
7.1645  
7.1449  
6.9141  
6.8937  
6.7168  
6.6982

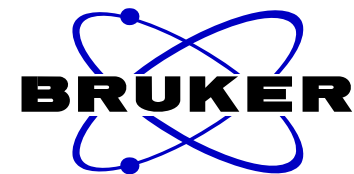
4.4650  
4.4357  
4.4048  
4.3754  
3.6400  
3.5978  
3.3986  
3.3565

— 2.4284

— 1.6219



1.96  
1.01  
2.00  
0.99  
1.00  
0.99  
2.02  
1.00  
1.00  
3.01  
3.07

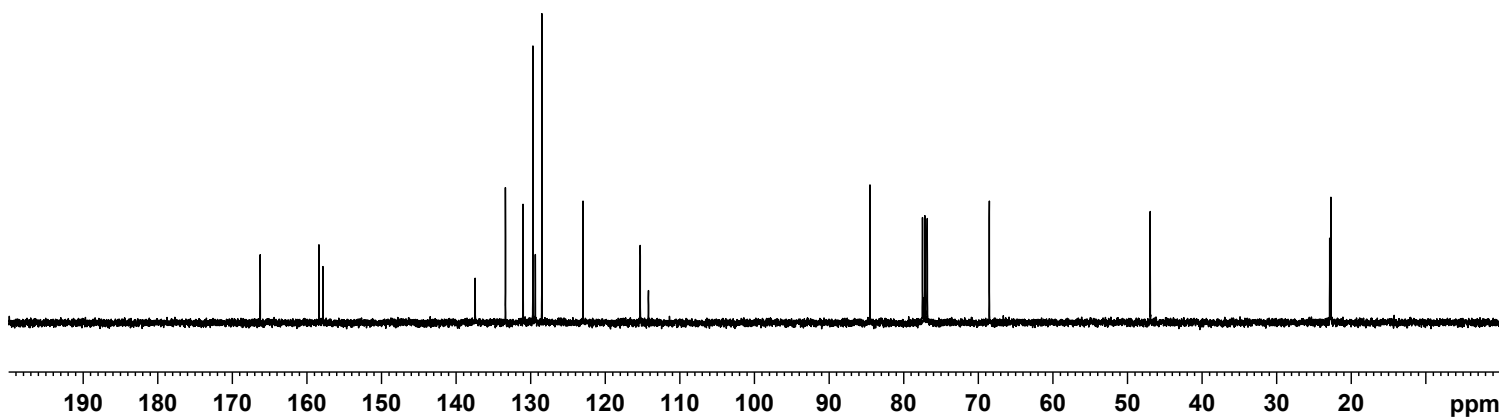
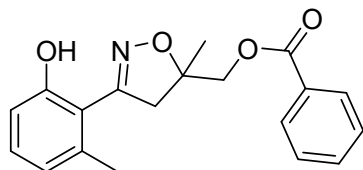


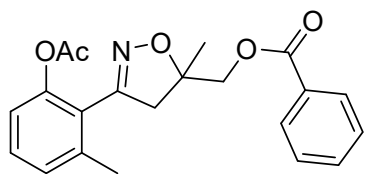
NAME CWG160307-3-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160309  
Time 8.22  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 21  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 293.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228245 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

166.24  
158.36  
157.82  
137.45  
133.38  
131.02  
129.71  
129.38  
128.51  
122.99  
115.32  
114.22  
84.51  
68.52  
46.95  
22.89  
22.72





8c

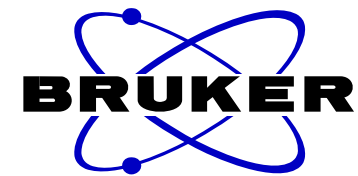
8.0733  
8.0539  
7.5668  
7.5481  
7.4529  
7.4337  
7.4144  
7.3082  
7.2886  
7.2685  
7.2620  
7.1158  
7.0968  
6.9967  
6.9764

4.4717  
4.4422  
4.4105

3.3275  
3.2841  
3.0093  
2.9659

2.3306  
2.2056

1.5889

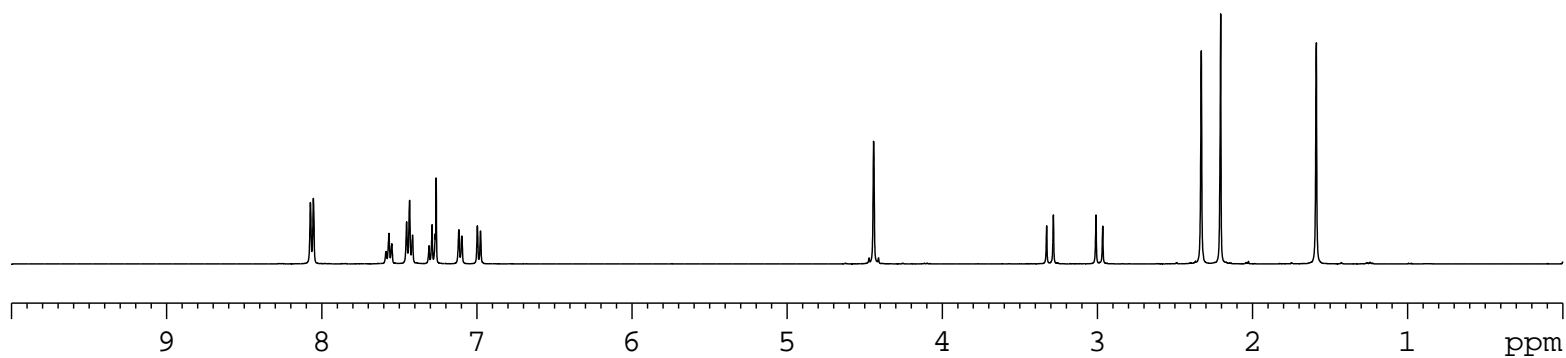


```

NAME          CWG160309-1
EXPNO         1
PROCNO        1
Date_         20160309
Time          14.36
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            40.3
DW            60.800 usec
DE            6.50 usec
TE            294.9 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700020 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



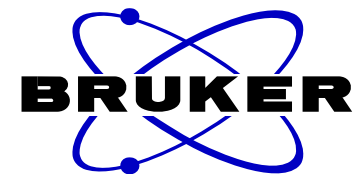
1.97  
1.00  
1.99  
1.06  
0.99  
0.98

2.01

1.00  
1.00

3.04  
3.01

3.02



NAME CWG160309-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160309  
Time 14.39  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 23  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228286 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.08  
166.21

153.63  
148.98

138.78  
133.35

129.97  
129.72

129.57  
128.47

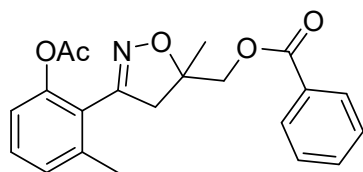
128.00  
122.83  
120.16

84.74

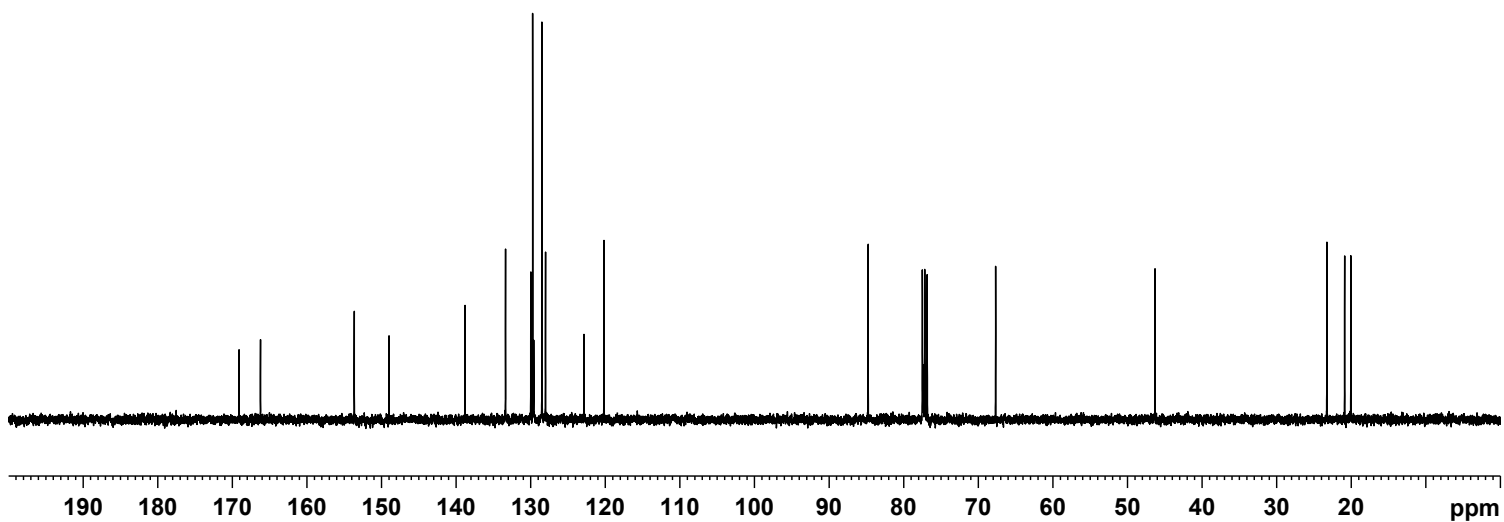
67.68

46.32

23.27  
20.89  
20.06

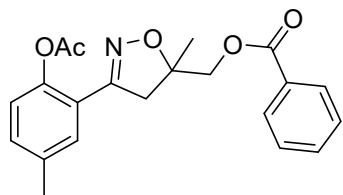


8c

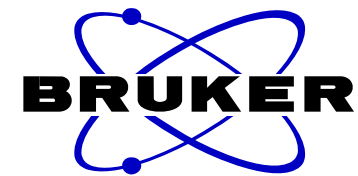


8.0186  
7.9991  
7.5660  
7.5475  
7.5291  
7.4272  
7.4081  
7.3892  
7.2880  
7.2606  
7.2267  
7.2063  
7.0338  
7.0134

4.4383  
4.4092  
4.3905  
4.3615  
3.4468  
3.4051  
3.1802  
3.1385  
2.3466  
2.2832  
1.5784



8d

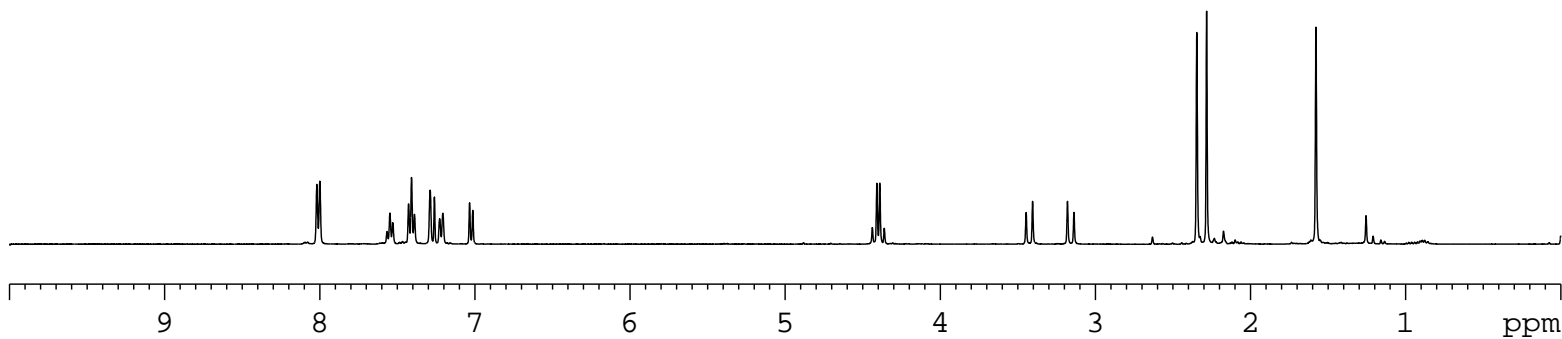


```

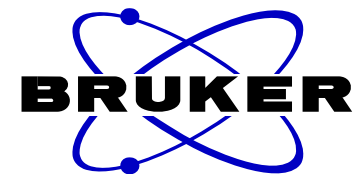
NAME          CWG151026-5-S
EXPNO         1
PROCNO        1
Date_         20151028
Time_         16.15
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            181
DW            60.800 usec
DE            6.50 usec
TE            295.6 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI           32768
SF           400.1700030 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



1.97  
1.06  
2.04  
1.00  
1.03  
0.95  
2.03  
1.00  
1.00  
2.97  
2.94  
3.04



NAME CWG151026-5-S-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151028  
Time 17.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 106  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 295.8 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228183 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

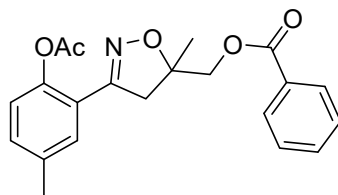
169.92  
166.35  
153.86  
146.25  
136.01  
133.34  
131.52  
129.96  
129.85  
129.61  
128.53  
123.60  
122.45

84.53

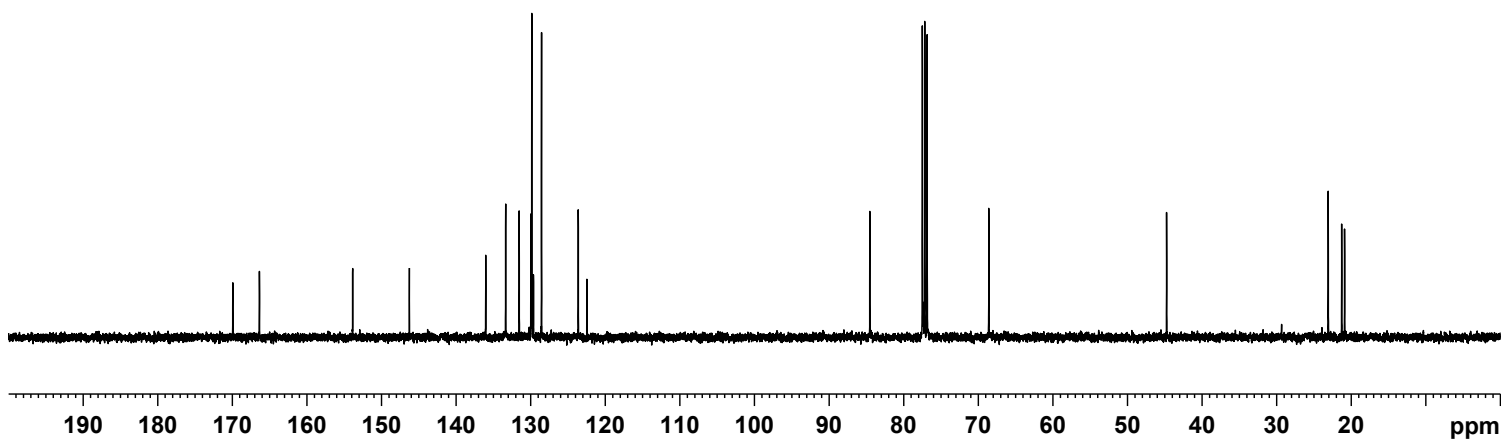
68.57

44.76

23.09  
21.29  
20.89



8d



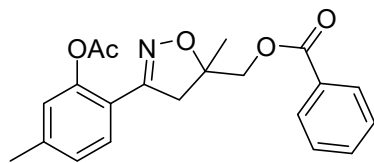
8.0132  
7.9955  
7.9920  
7.5657  
7.5630  
7.5471  
7.5314  
7.5285  
7.4274  
7.4077  
7.3889  
7.3676  
7.3477  
7.0967  
7.0948  
7.0767  
7.0749  
6.9631  
6.9616

4.4312  
4.4022  
4.3828  
4.3539

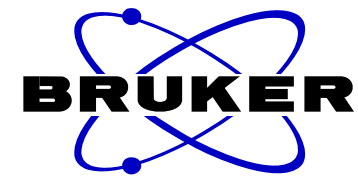
3.4382  
3.3966  
3.1735  
3.1320

2.3805  
2.2971

1.5775

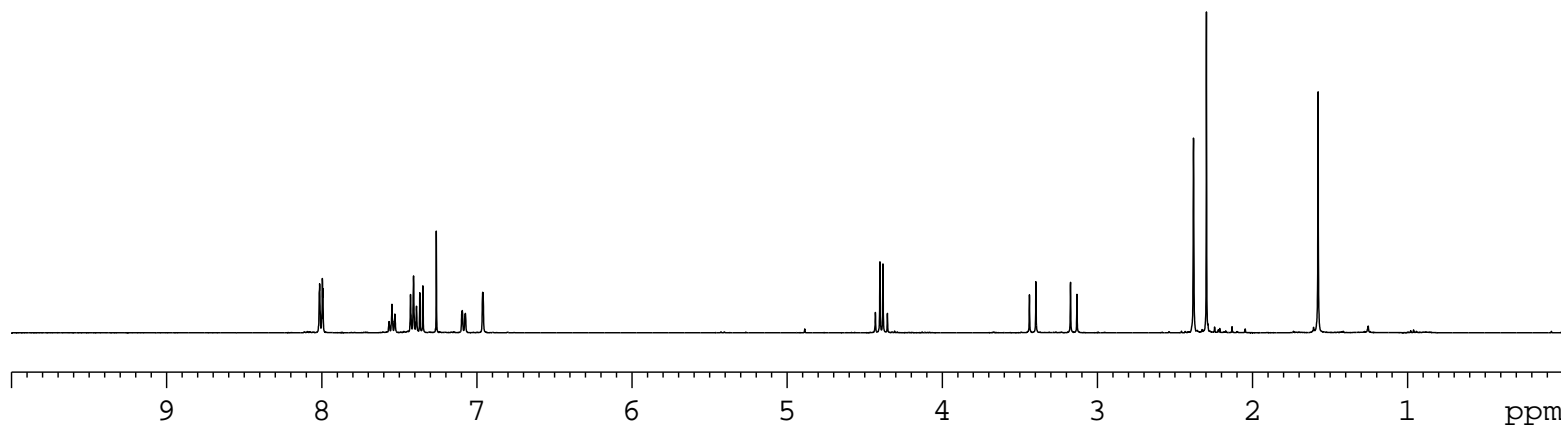


8e



NAME CWG151106-4-1  
EXPNO 1  
PROCNO 1  
Date\_ 20151203  
Time 11.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 161  
DW 60.800 usec  
DE 6.50 usec  
TE 292.5 K  
D1 1.0000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700026 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



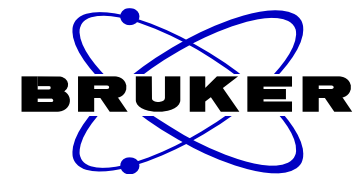
1.93  
1.06  
2.00  
0.97  
0.99  
0.97

2.11

1.01  
1.00

2.93  
2.94

2.99



NAME CWG151106-4-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151203  
Time 11.34  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 51  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 293.1 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228216 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

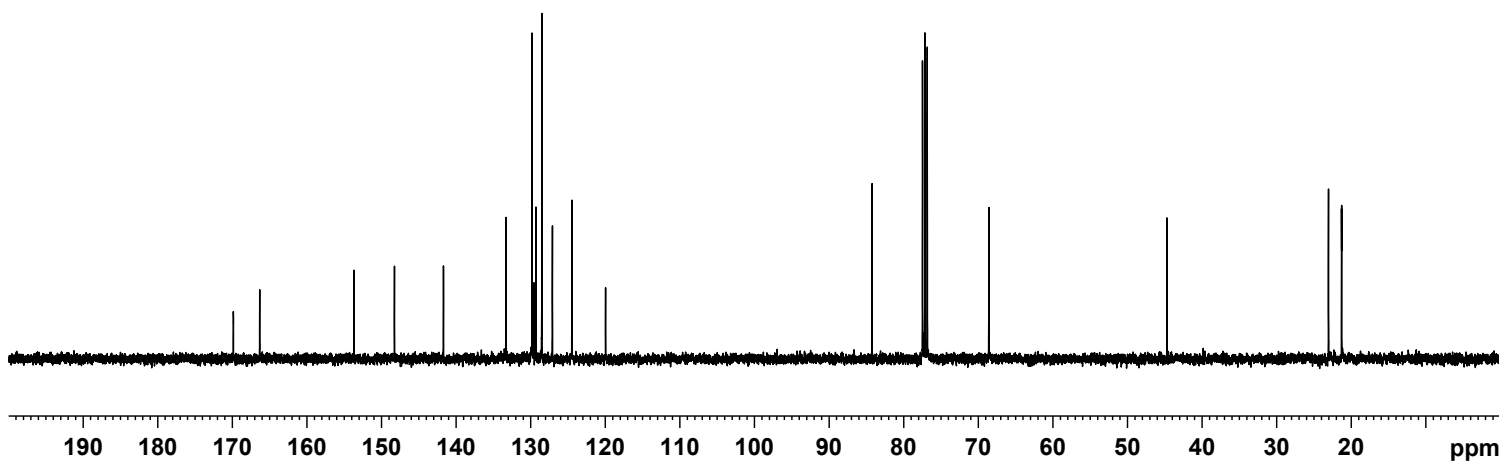
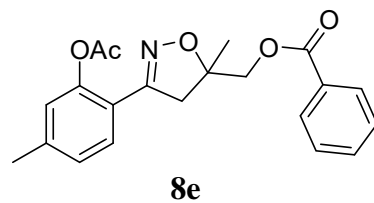
169.84  
166.31  
153.66  
148.27  
141.70  
133.30  
129.80  
129.57  
129.29  
128.51  
127.09  
124.48  
119.97

84.25

68.59

44.72

23.06  
21.31  
21.29





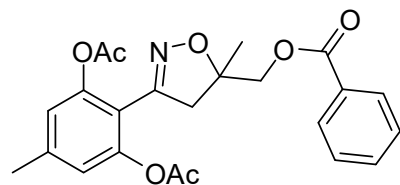
8.0574  
8.0396  
8.0362  
7.5906  
7.5878  
7.5721  
7.5563  
7.5534  
7.4567  
7.4371  
7.4181  
7.2599  
6.8823

4.4297  
4.4007  
4.3937  
4.3647

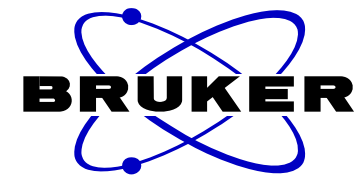
3.3689  
3.3263  
3.0172  
2.9747

2.3693  
2.1940

1.5410

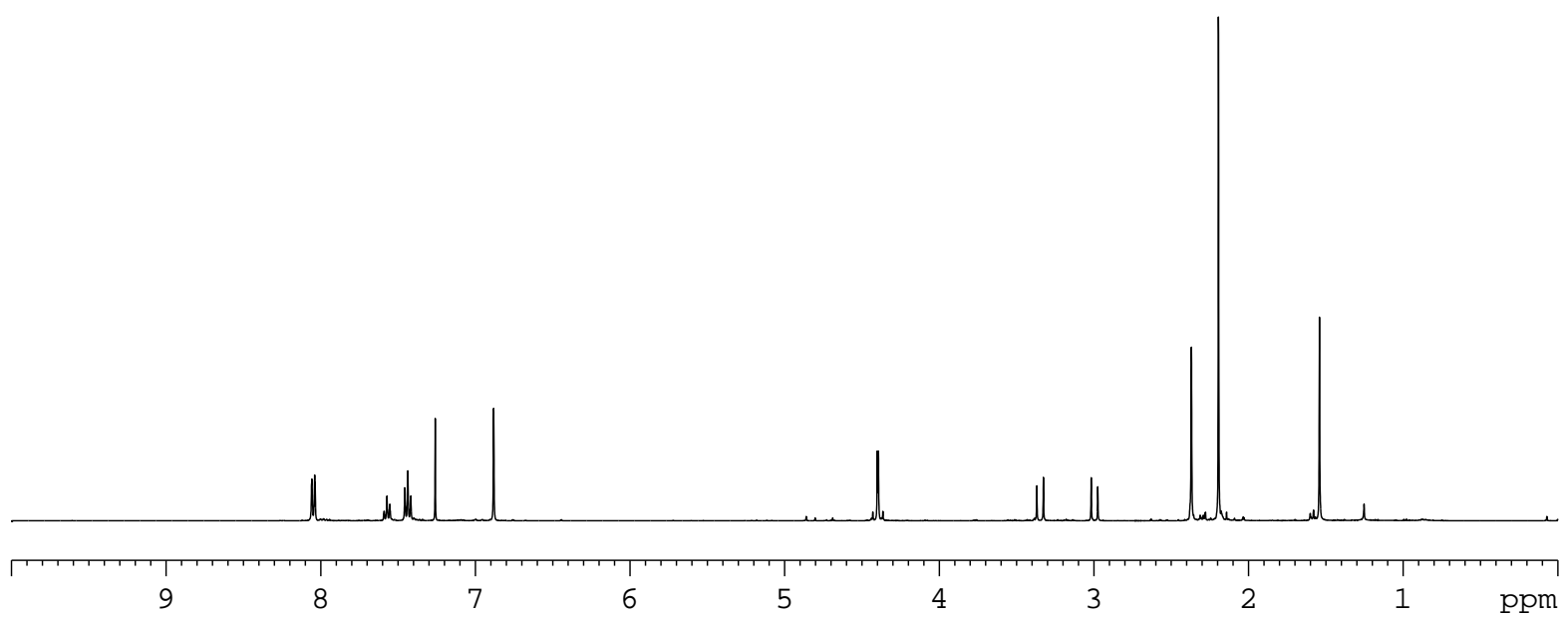


8e'

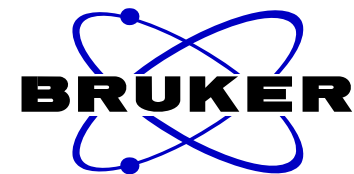


NAME CWG151106-4-X-PURE  
EXPNO 1  
PROCNO 1  
Date\_ 20160217  
Time 10.45  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 128  
DW 60.800 usec  
DE 6.50 usec  
TE 295.5 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700034 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



2.00  
1.08  
2.15  
1.97  
2.15  
1.04  
1.00  
3.26  
6.19  
3.08



NAME CWG1511106-4-X-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160217  
Time 11.08  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 32  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 296.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228260 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

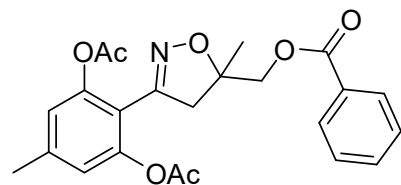
168.91  
166.21  
150.79  
149.13  
141.53  
133.35  
129.75  
129.56  
128.51  
121.26  
114.38

84.74

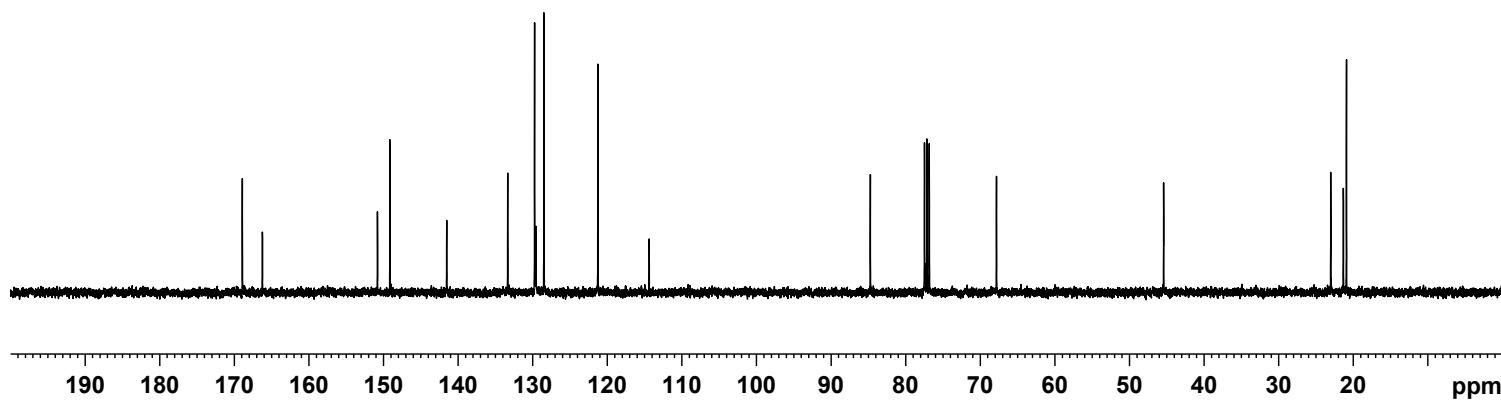
67.83

45.42

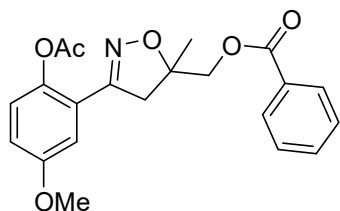
23.02  
21.32  
20.91



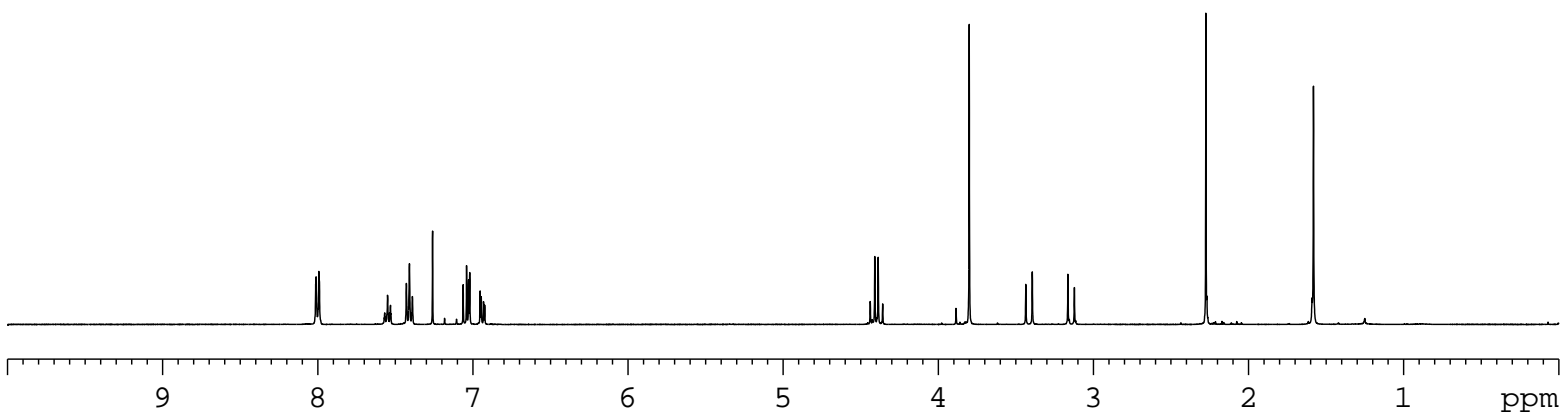
8e'



8.0126  
8.0106  
7.9929  
7.9895  
7.5684  
7.5653  
7.5498  
7.5343  
7.5312  
7.5282  
7.4284  
7.4087  
7.3936  
7.3897  
7.2598  
7.0625  
7.0403  
7.0276  
7.0202  
6.9531  
6.9456  
6.9310  
6.9235  
4.4386  
4.4095  
4.3956  
4.3877  
4.3586  
3.8007  
3.4358  
3.3940  
3.1644  
3.1226



8f



1.97  
1.04  
2.05  
1.86  
0.96

2.03

2.89

1.02

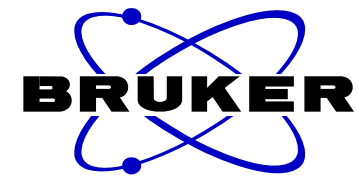
1.00

3.02

3.13

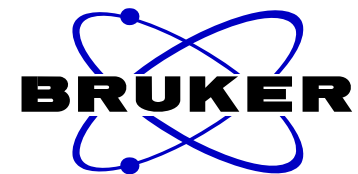
— 2.2748

— 1.5811



NAME CWG151117-1-1  
EXPNO 1  
PROCNO 1  
Date\_ 20151126  
Time 14.33  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 8223.685 Hz  
FIDRES 0.125483 Hz  
AQ 3.9846387 sec  
RG 203  
DW 60.800 usec  
DE 6.50 usec  
TE 291.1 K  
D1 1.00000000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 1H  
P1 13.80 usec  
PL1 -1.00 dB  
PL1W 13.18669796 W  
SFO1 400.1724712 MHz  
SI 32768  
SF 400.1700034 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

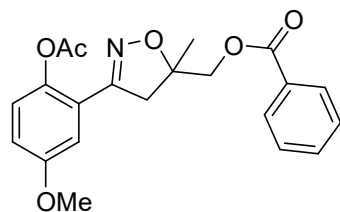


NAME CWG151117-1-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151126  
Time 15.54  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 39  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 293.3 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

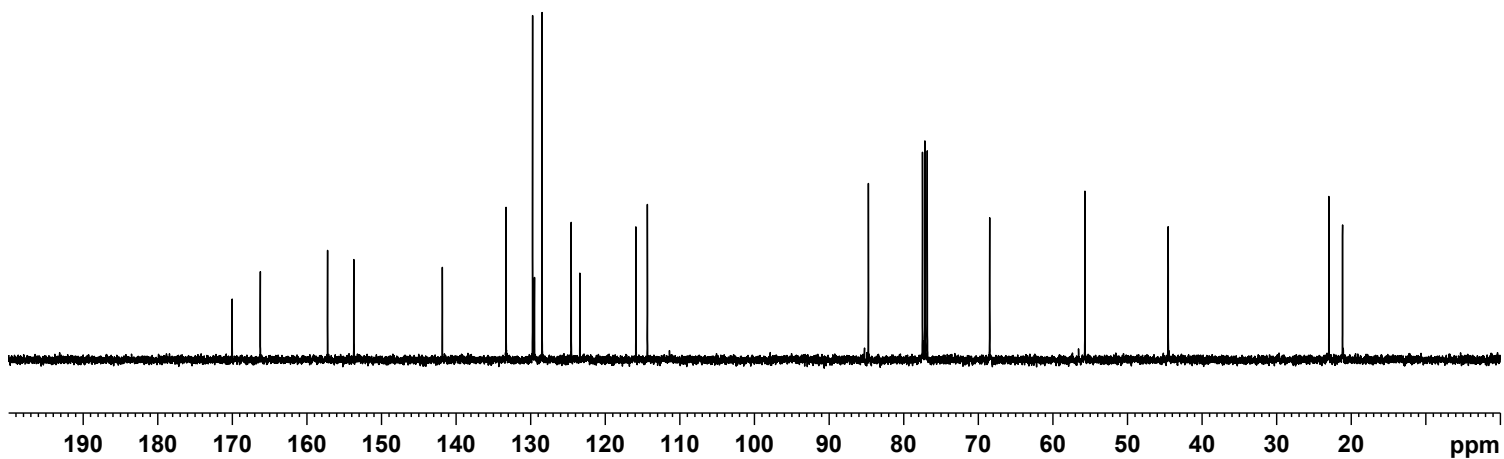
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228253 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

170.00  
166.23  
157.21  
153.70  
141.85  
133.30  
129.75  
129.50  
128.48  
124.57  
123.41  
115.90  
114.36  
84.73  
68.48  
55.71  
44.54  
23.00  
21.17

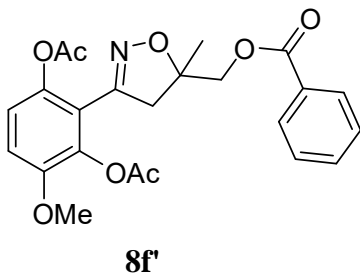
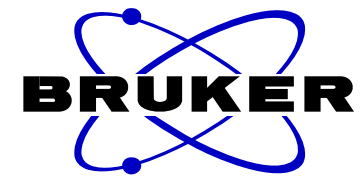


8f



8.0530  
8.0351  
8.0321  
7.5831  
7.5647  
7.5460  
7.4530  
7.4336  
7.4147  
7.2599  
7.0297  
7.0073  
6.9998  
6.9772

3.3594  
3.3167  
3.0102  
2.9675  
2.1951  
2.1906  
1.5369



```

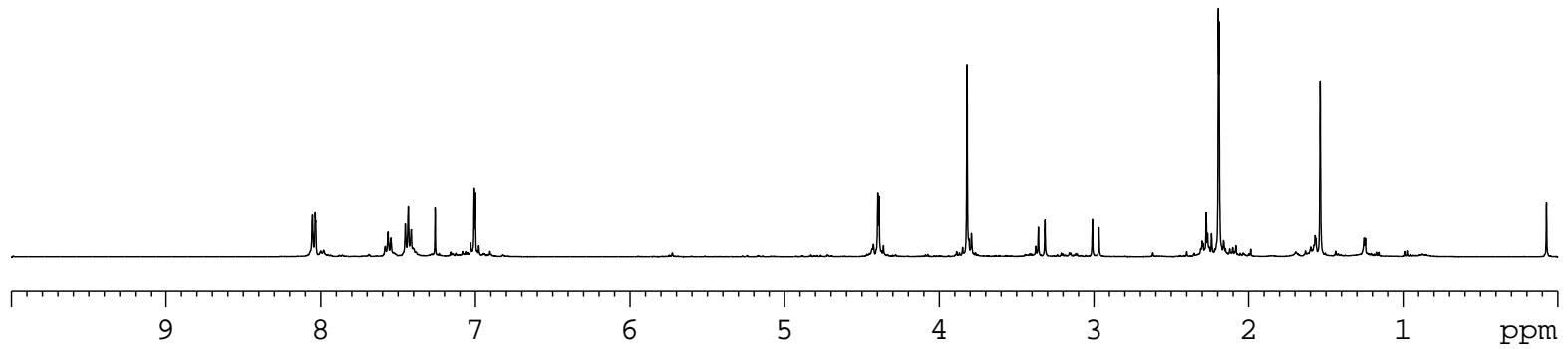
NAME CWG151110-2-x-pure
EXPNO 1
PROCNO 1
Date_ 20160215
Time 16.55
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 80.6
DW 60.800 usec
DE 6.50 usec
TE 297.4 K
D1 1.0000000 sec
TD0 1

```

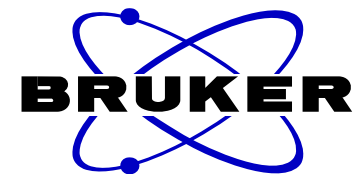
```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700031 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

```



2.10  
1.30  
2.42  
2.17  
2.03  
3.15  
1.07  
1.00  
5.97  
2.94



```

NAME CWG151110-2-x-pure-C13
EXPNO 1
PROCNO 1
Date_ 20160215
Time 17.06
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 224
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 297.3 K
D1 2.0000000 sec
D11 0.0300000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

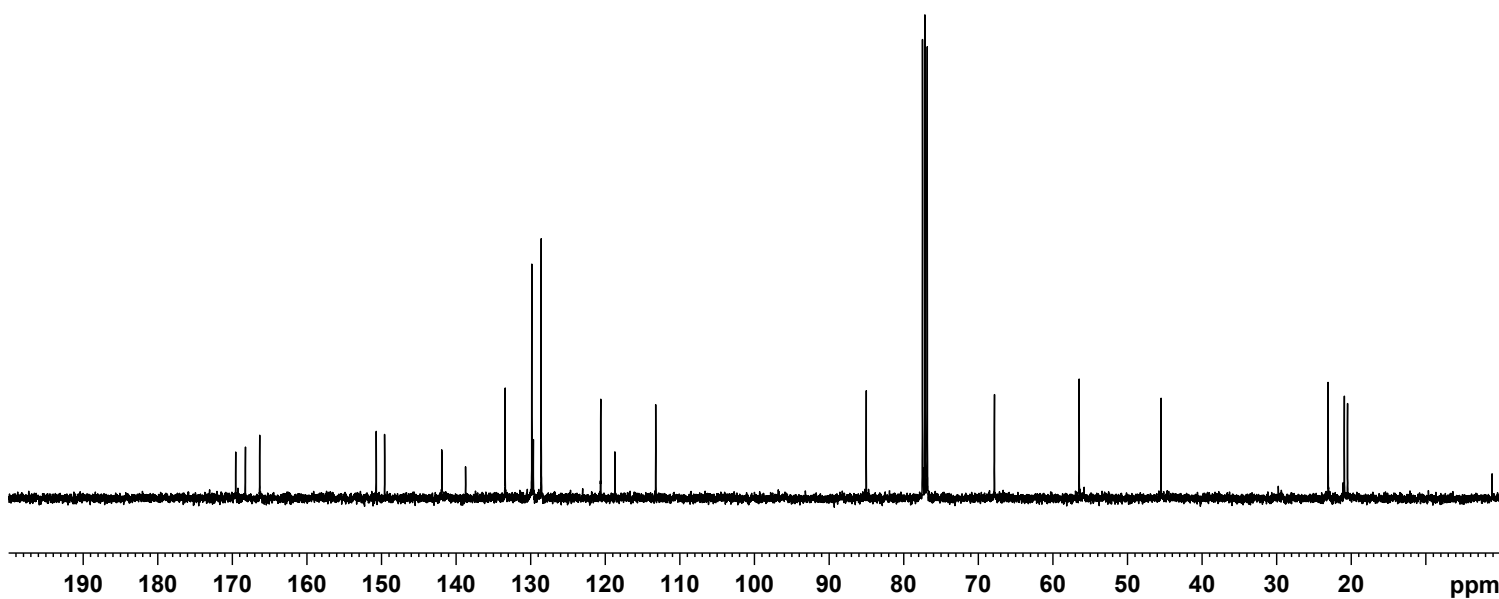
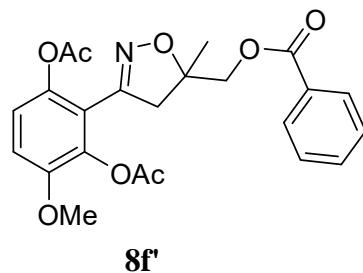
```

```

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228165 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

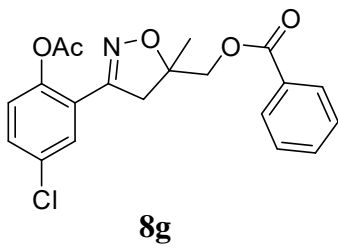
```

169.53  
 168.23  
 166.32  
 150.70  
 149.58  
 141.92  
 138.73  
 133.42  
 129.86  
 129.64  
 128.60  
 120.61  
 118.71  
 113.25  
 85.01  
 67.84  
 56.47  
 45.49  
 23.11  
 20.92  
 20.50



8.0081  
7.9898  
7.5801  
7.5614  
7.5430  
7.4701  
7.4640  
7.4396  
7.4201  
7.4004  
7.3972  
7.3906  
7.3751  
7.3690  
7.2644  
7.1066  
7.0850

4.4421  
4.4130  
4.3946  
4.3655  
3.4368  
3.3951  
3.1735  
3.1318  
2.2966  
1.5924

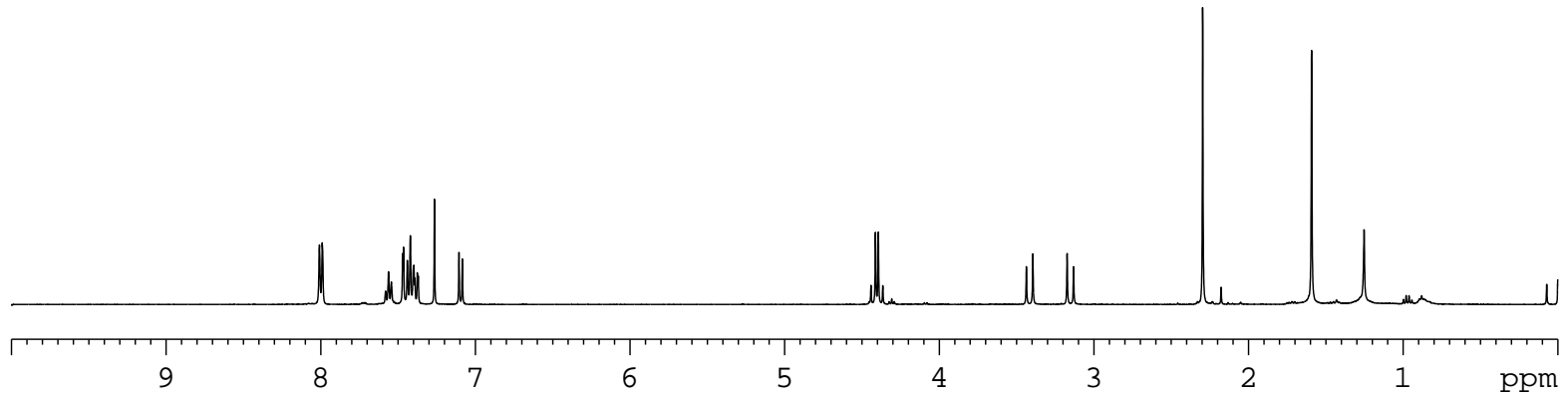


```

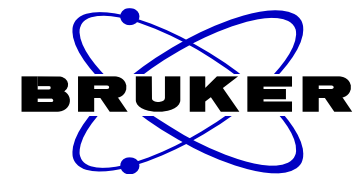
NAME          CWG151106-3-2
EXPNO         1
PROCNO        1
Date_         20151228
Time         16.06
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            181
DW            60.800 usec
DE            6.50 usec
TE            289.0 K
D1            1.0000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700016 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



1.99  
1.12  
3.99  
0.99  
2.01  
1.00  
1.02  
3.02  
3.38

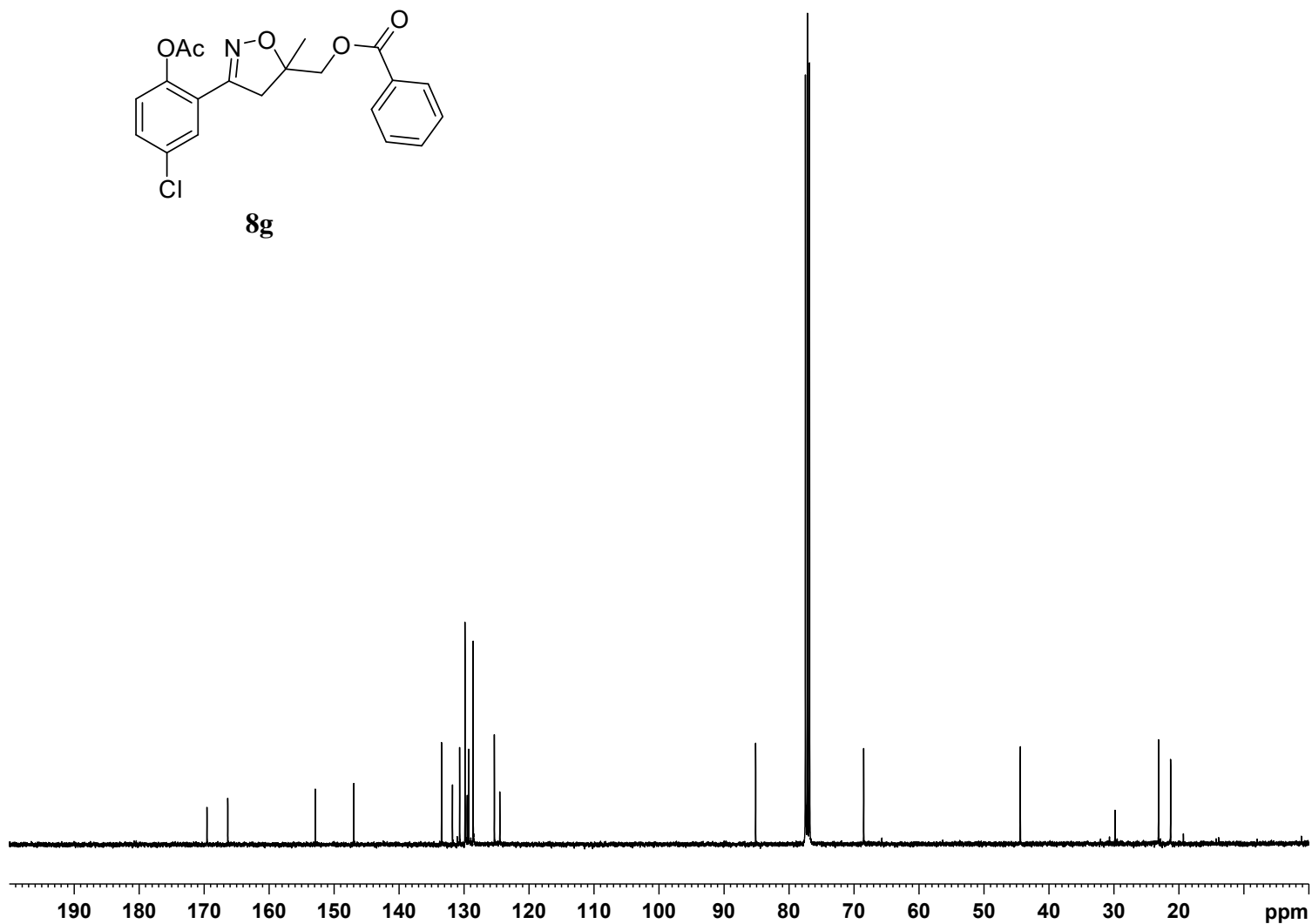
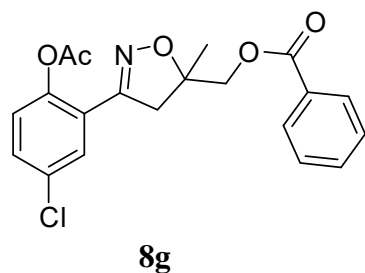


NAME CWG151106-3-2-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20151228  
Time 17.31  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 2000  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 289.2 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

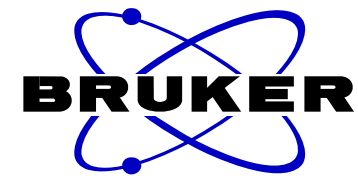
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228143 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

169.54  
166.34  
152.87  
146.95  
133.47  
131.79  
130.69  
129.87  
129.51  
129.29  
128.61  
125.34  
124.51  
85.13  
68.51  
44.40  
29.83  
23.14  
21.28







```

NAME      CWG160216-4-pure
EXPNO     1
PROCNO    1
Date_     20160219
Time      15.24
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD        65536
SOLVENT   CDCl3
NS         16
DS         2
SWH       8223.685 Hz
FIDRES    0.125483 Hz
AQ         3.9846387 sec
RG         80.6
DW         60.800 usec
DE         6.50 usec
TE         297.3 K
D1         1.00000000 sec
TD0        1
  
```

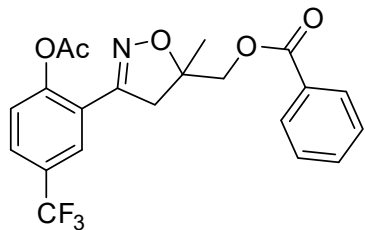
```

===== CHANNEL f1 =====
NUC1      1H
P1        13.80 usec
PL1       -1.00 dB
PL1W      13.18669796 W
SF01      400.1724712 MHz
SI        32768
SF        400.1700030 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00
  
```

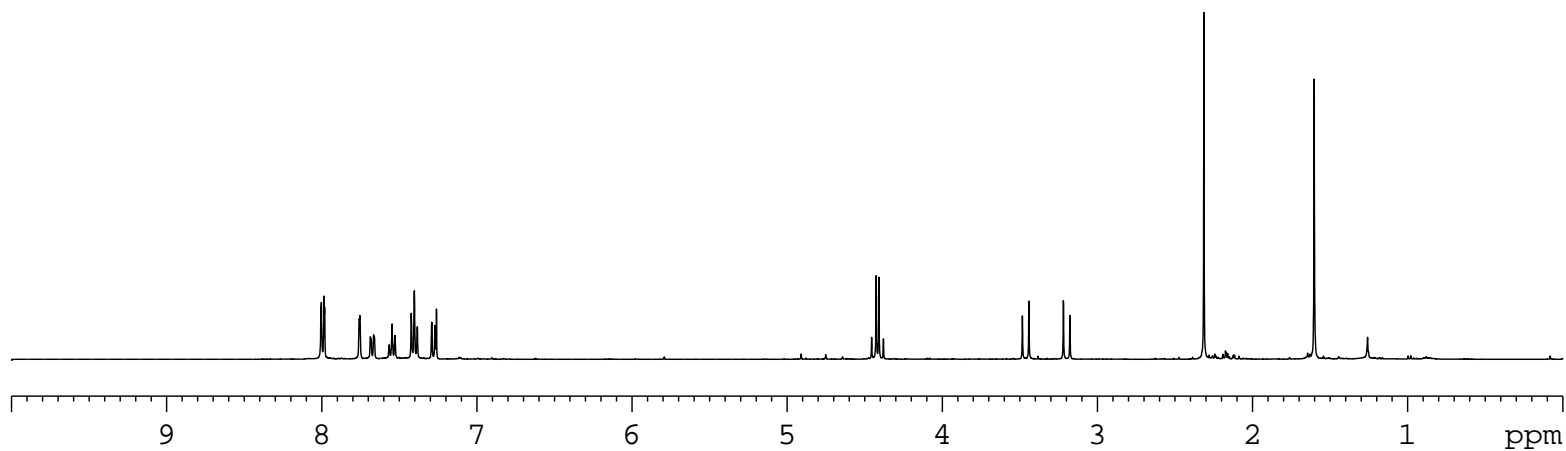
8.0025  
7.9846  
7.9813  
7.7578  
7.7537  
7.6862  
7.6817  
7.6651  
7.6606  
7.5650  
7.5624  
7.5465  
7.5307  
7.5279  
7.4225  
7.4028  
7.3838  
7.2906  
7.2695  
7.2601

4.4556  
4.4265  
4.4090  
4.3799  
3.4835  
3.4418  
3.2192  
3.1774

2.3136  
1.6025



8h



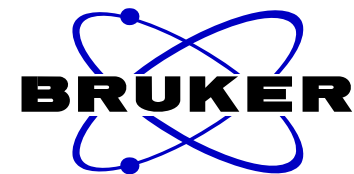
1.99  
1.04  
1.06  
1.23  
2.08  
0.97

2.01

1.00  
1.00

3.02

2.95



NAME CWG160216-4-pure-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160219  
Time 15.29  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 242  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.7 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TD0 1

==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228142 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

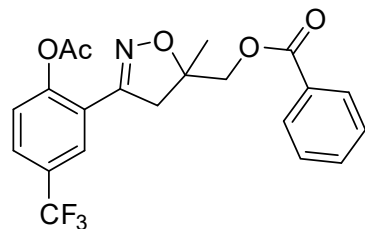
169.10  
166.31  
152.85  
150.93  
133.45  
129.83  
129.54  
128.97  
128.59  
127.73  
127.69  
126.67  
126.63  
124.75  
123.95  
122.19

85.38

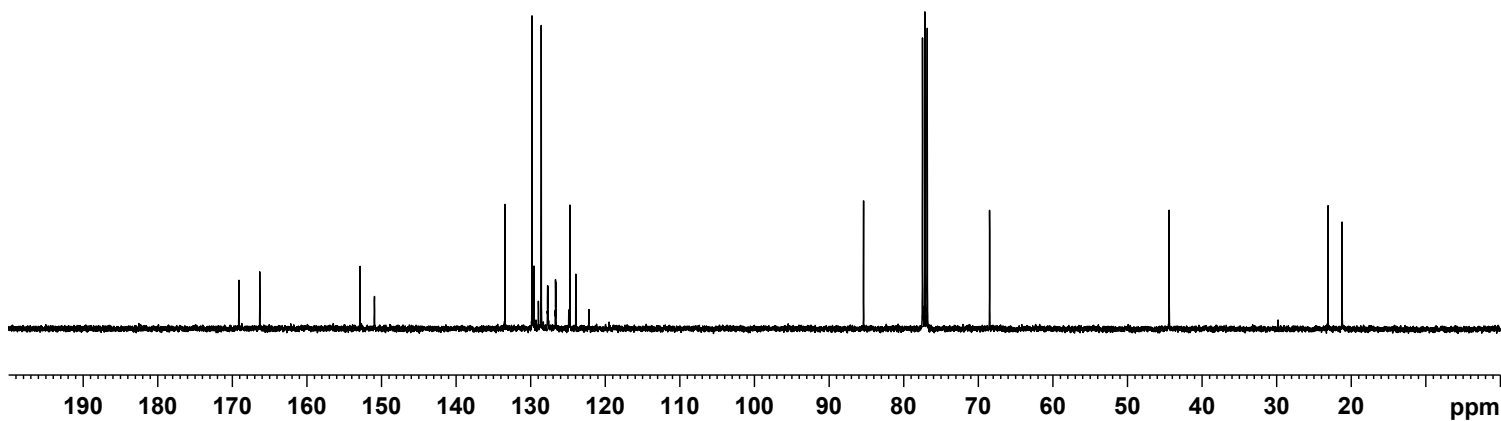
68.48

44.41

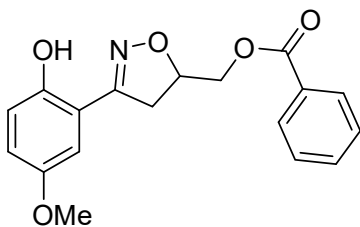
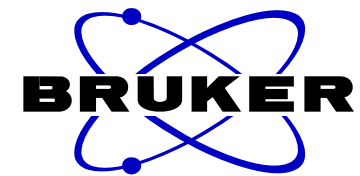
23.11  
21.23



8h



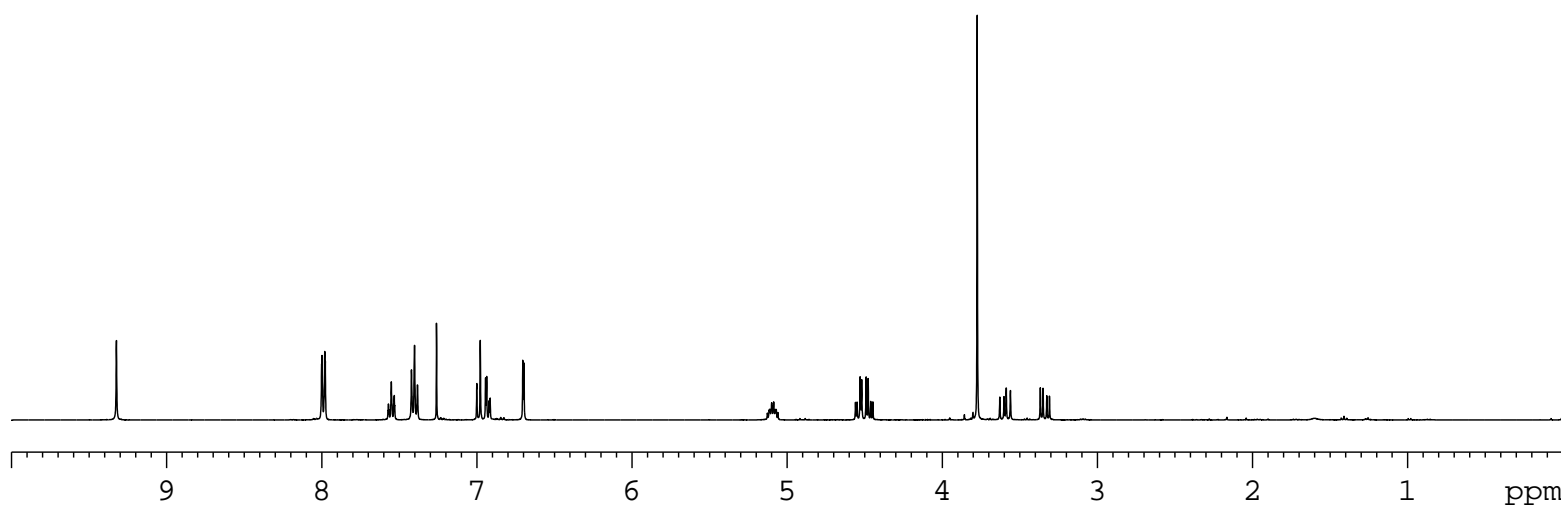
9.3236  
7.9999  
7.9982  
7.9804  
7.9770  
7.5698  
7.5668  
7.5511  
7.5355  
7.5326  
7.5297  
7.4214  
7.4017  
7.3827  
7.2600  
7.0001  
6.9777  
6.9438  
6.9365  
6.9213  
6.9141  
6.7035  
6.6963  
5.1145  
5.1003  
5.0973  
5.0872  
5.0771  
5.0731  
5.0702  
4.5597  
4.5496  
4.5298  
4.5197  
4.4913  
4.4780  
3.7749  
3.6294  
3.6024  
3.5878  
3.5608  
3.3682  
3.3507  
3.3265  
3.3090



9

```

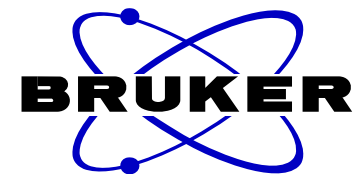
NAME          CWG160501-1
EXPNO         1
PROCNO        1
Date_         20160502
Time_         10.35
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            298.9 K
D1            1.0000000 sec
TD0           1
  
```



```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700033 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```

0.90  
1.90  
0.98  
1.97  
0.97  
0.99  
0.95  
1.01  
2.00  
2.95  
1.04  
1.00

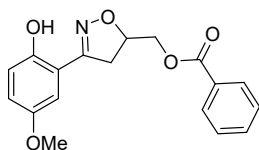


NAME CWG1600501-1-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160502  
Time 10.41  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 179  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 299.8 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

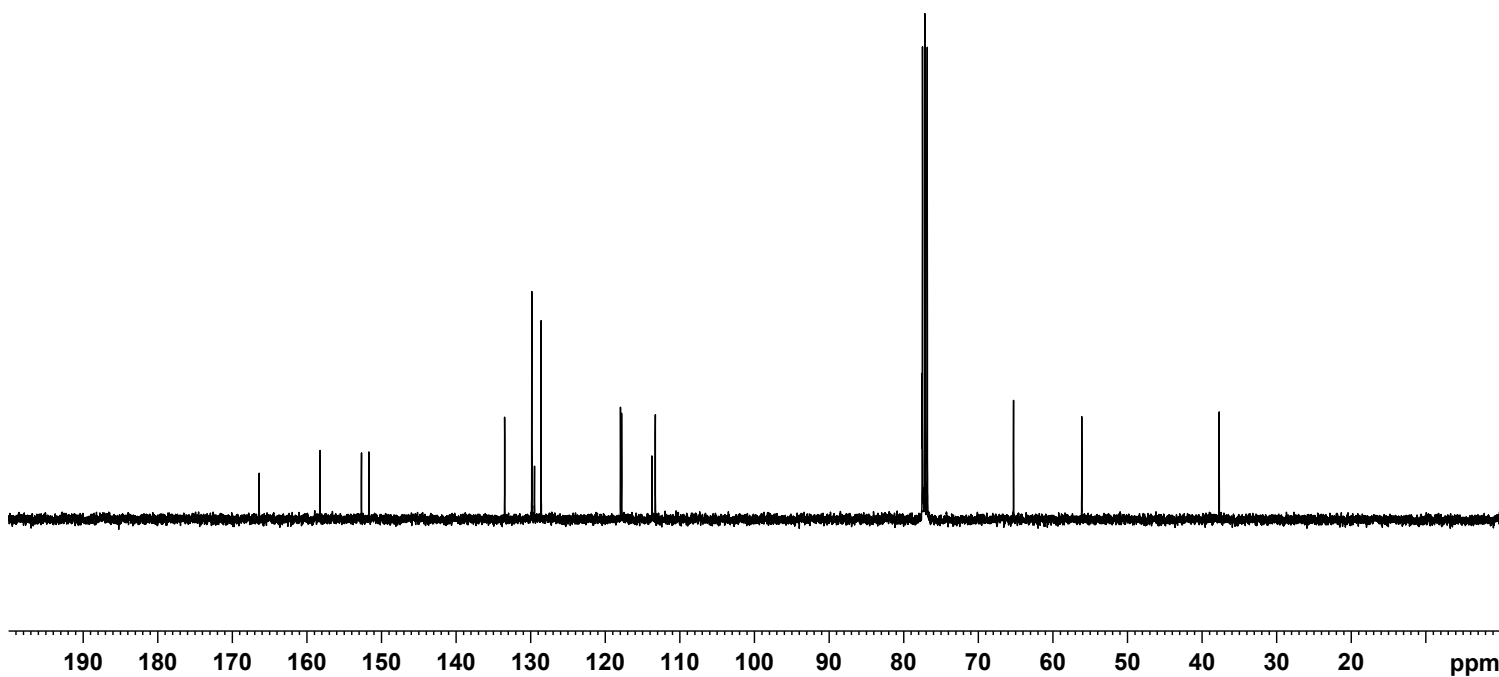
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228121 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

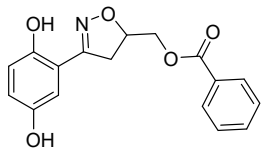
166.38  
158.22  
152.67  
151.67  
133.49  
129.86  
129.50  
128.61  
117.96  
117.82  
113.75  
113.30  
77.53  
65.27  
56.13  
37.70



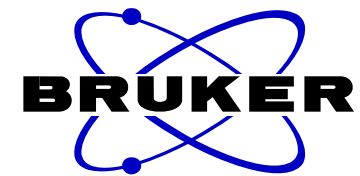
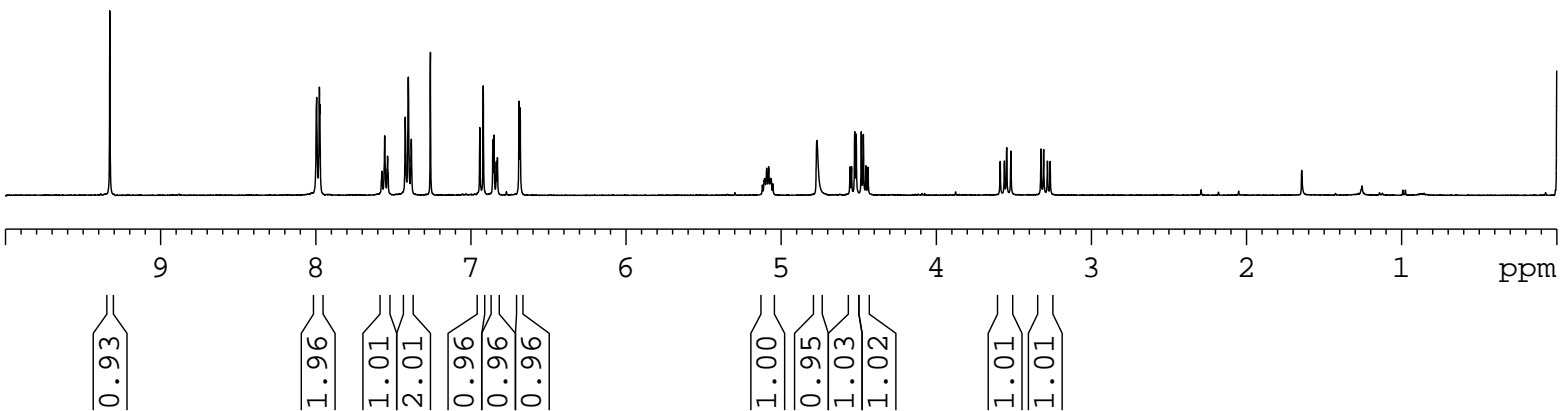
9



9.3262  
7.9927  
7.9749  
7.9717  
7.5725  
7.5539  
7.5381  
7.5353  
7.4212  
7.4016  
7.3824  
6.9418  
6.9198  
6.8575  
6.8503  
6.8355  
6.8282  
6.6887  
6.6815  
5.1093  
5.1064  
5.1026  
5.0926  
5.0793  
5.0693  
5.0654  
5.0625  
5.0522  
4.7685  
4.5550  
4.5450  
4.5250  
4.5151  
4.4822  
4.4688  
4.4522  
4.4389  
3.5867  
3.5595  
3.5449  
3.5179  
3.3239  
3.3066  
3.2821  
3.2649



10



```

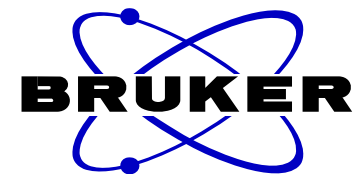
NAME CWG160511-2-pure
EXPNO 1
PROCNO 1
Date_ 20160513
Time 20.32
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 203
DW 60.800 usec
DE 6.50 usec
TE 296.9 K
D1 1.00000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 1H
P1 13.80 usec
PL1 -1.00 dB
PL1W 13.18669796 W
SFO1 400.1724712 MHz
SI 32768
SF 400.1700031 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

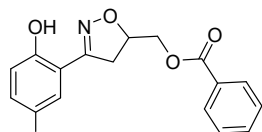
```



NAME CWG160511-2-pure-C13-1  
EXPNO 1  
PROCNO 1  
Date\_ 20160513  
Time\_ 21.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 356  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.1 K  
D1 2.0000000 sec  
D11 0.03000000 sec  
TD0 1

=====  
CHANNEL f1  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

=====  
CHANNEL f2  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228172 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40



10

166.45

158.01

151.55

148.31

133.51

129.82

129.37

128.58

119.52

117.86

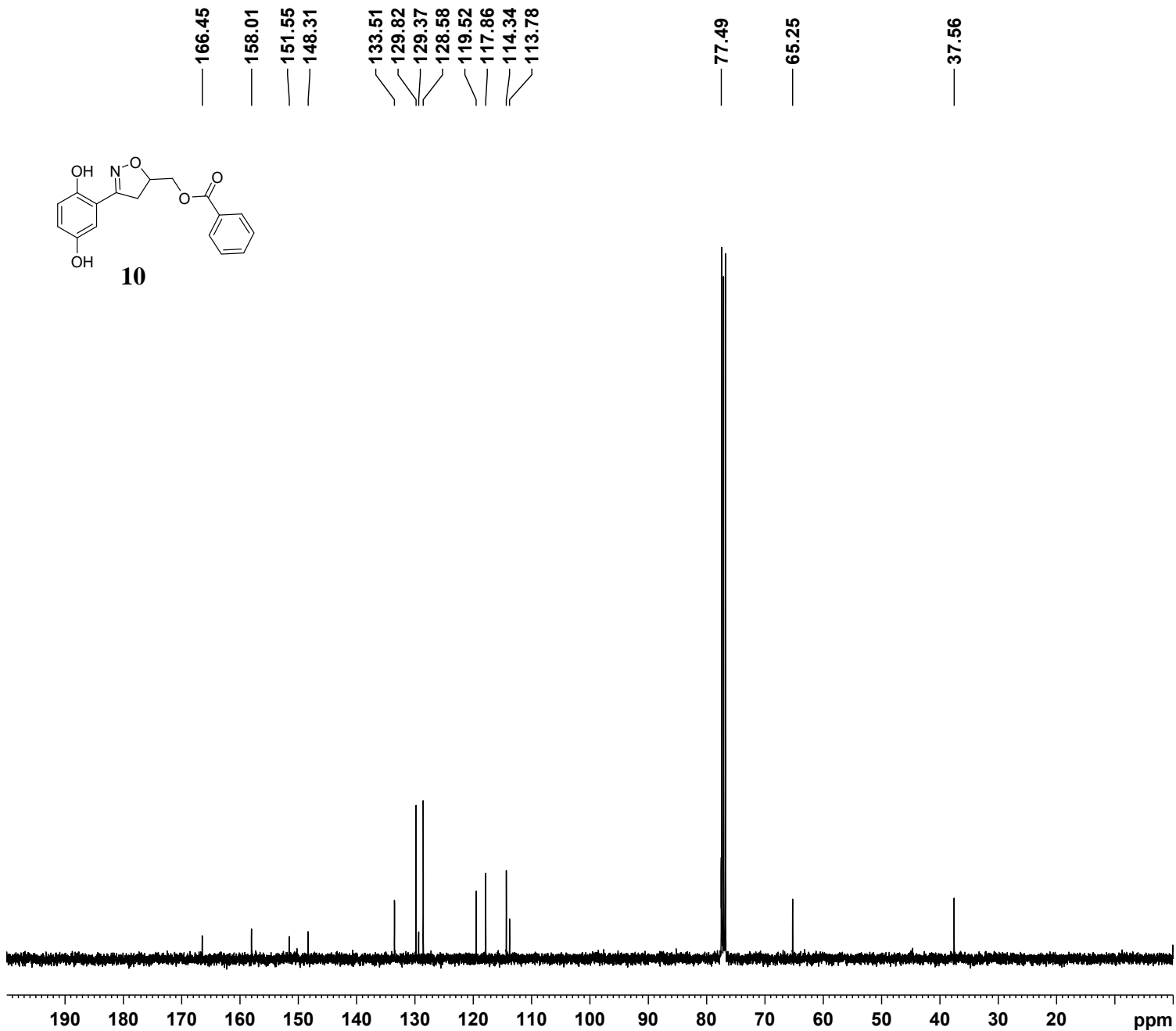
114.34

113.78

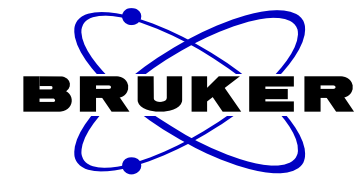
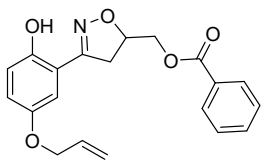
77.49

65.25

37.56



9.3337  
7.9924  
7.9744  
7.9713  
7.5455  
7.5268  
7.4150  
7.3955  
7.3763  
7.2604  
6.9842  
6.9619  
6.9487  
6.9420  
6.7388  
6.7322  
6.0347  
6.0181  
5.9918  
5.4140  
5.4103  
5.3709  
5.3672  
5.2909  
5.2878  
5.2648  
5.2615  
5.0910  
5.0778  
4.5205  
4.5104  
4.4879  
4.4835  
4.4783  
4.4747  
4.4710  
4.4520  
3.6082  
3.5811  
3.5665  
3.5395  
3.3499  
3.3325  
3.3082  
3.2908

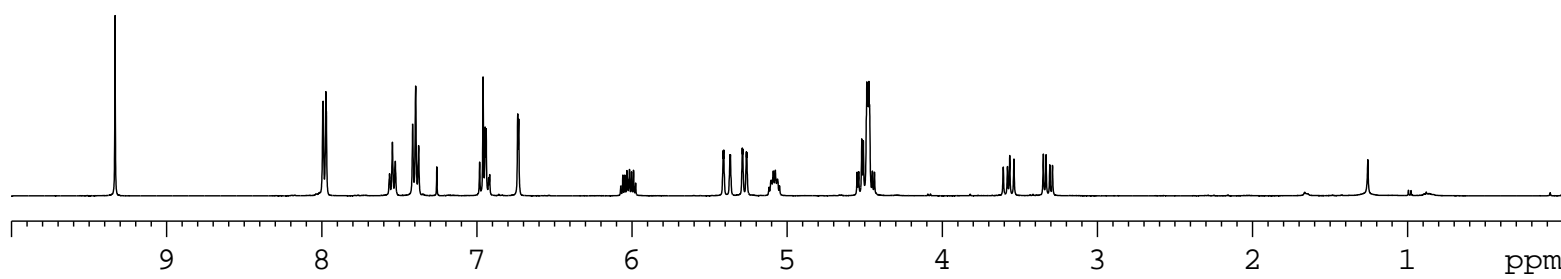


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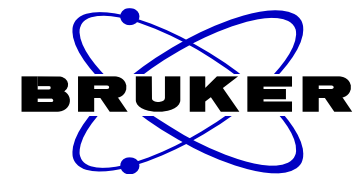
NAME          CWG160512-1-x
EXPNO         1
PROCNO        1
Date_         20160513
Time          10.57
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            90.5
DW            60.800 usec
DE            6.50 usec
TE            297.7 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W         13.18669796 W
SFO1         400.1724712 MHz
SI            32768
SF           400.1700036 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



0.93  
1.93  
0.99  
1.95  
1.93  
0.96  
0.96  
0.99  
0.98  
1.00  
4.03  
0.97  
0.98



```

NAME CWG160512-1-x-C13
EXPNO 1
PROCNO 1
Date_ 20160513
Time 11.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 100
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 297.8 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

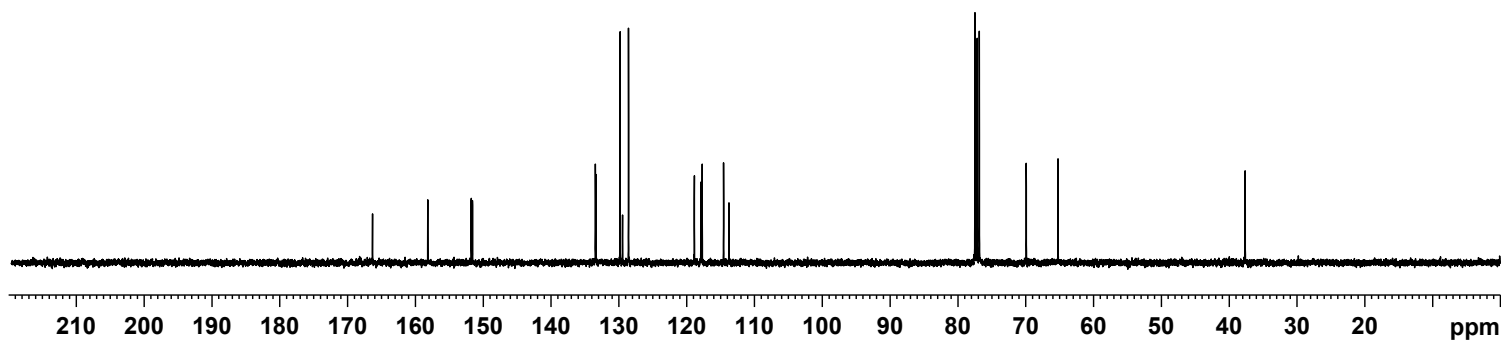
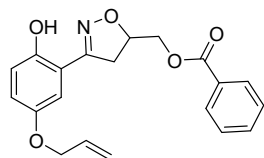
```

```

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228172 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

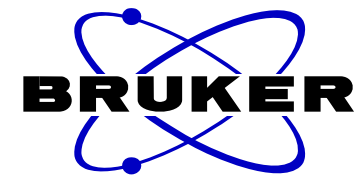
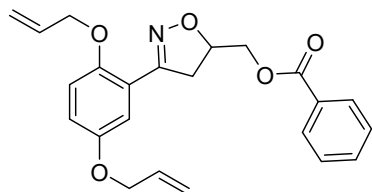
```

166.31  
 158.17  
 151.75  
 151.56  
 133.44  
 133.36  
 129.80  
 129.44  
 128.56  
 118.85  
 117.88  
 117.69  
 114.54  
 113.74  
 77.47  
 77.15  
 76.83  
 69.91  
 65.23  
 37.62





8.0437  
8.0427  
8.0243  
7.5458  
7.5271  
7.4210  
7.4017  
7.3824  
7.3561  
7.3484  
7.2602  
6.9611  
6.9534  
6.9385  
6.9308  
6.8657  
6.8431  
6.0226  
6.0094  
5.9962  
5.4219  
5.4183  
5.3786  
5.3747  
5.3708  
5.3673  
5.3274  
5.3240  
5.2854  
5.2825  
5.2565  
5.2305  
5.2279  
4.5033  
4.4900  
4.4774  
4.4674  
4.4463  
4.4326  
3.6398  
3.6128  
3.4404  
3.4237  
3.3965  
3.3798

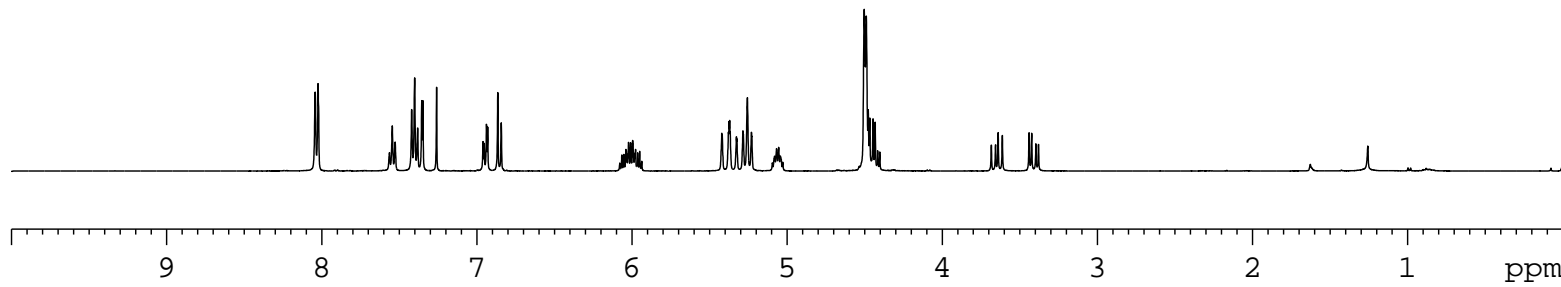


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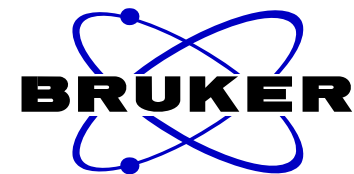
NAME          CWG160512-1-s
EXPNO         1
PROCNO        1
Date_         20160513
Time_         11.12
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            144
DW            60.800 usec
DE            6.50 usec
TE            297.9 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700031 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



1.89  
0.93  
1.97  
0.99  
0.97  
0.97  
1.92  
1.96  
2.00  
1.00  
6.04  
0.98  
0.99

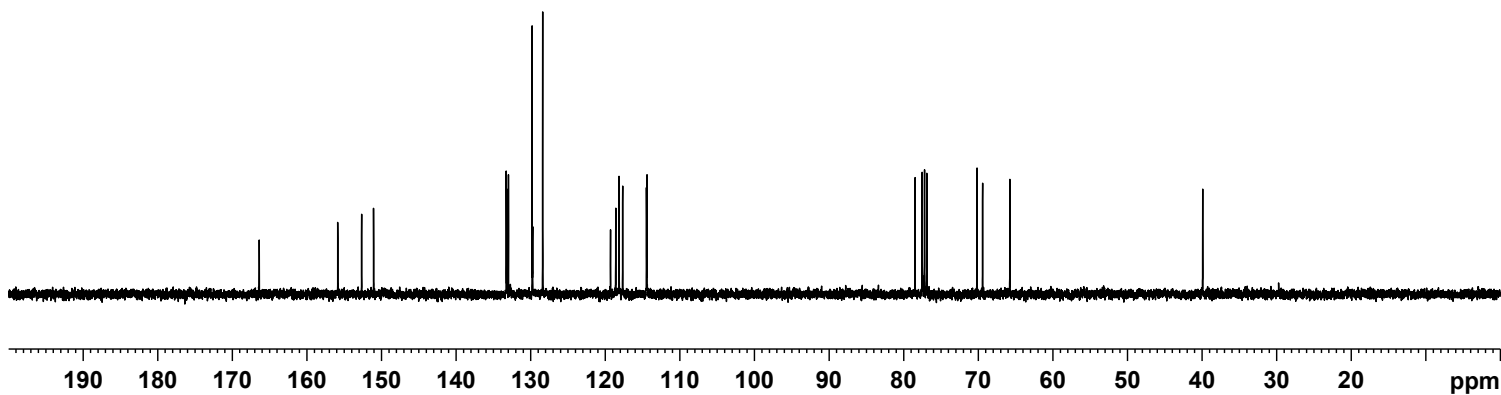
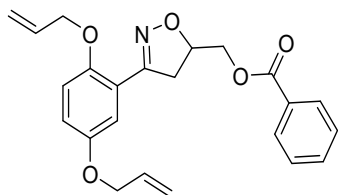


NAME FLFCWG-C13  
EXPNO 1  
PROCNO 1  
Date\_ 20160517  
Time 21.04  
INSTRUM spect  
PROBHD 5 mm PABBO BB-  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 12  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631988 sec  
RG 203  
DW 20.800 usec  
DE 6.50 usec  
TE 297.4 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1

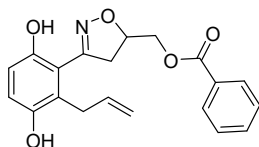
==== CHANNEL f1 =====  
NUC1 13C  
P1 8.50 usec  
PL1 -2.00 dB  
PL1W 57.32743073 W  
SFO1 100.6328888 MHz

==== CHANNEL f2 =====  
CPDPRG2 waltz16  
NUC2 1H  
PCPD2 80.00 usec  
PL2 -1.00 dB  
PL12 14.26 dB  
PL13 14.46 dB  
PL2W 13.18669796 W  
PL12W 0.39276794 W  
PL13W 0.37509048 W  
SFO2 400.1716007 MHz  
SI 32768  
SF 100.6228224 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

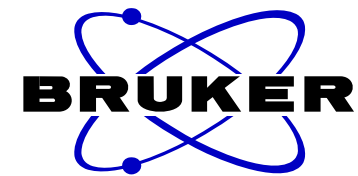
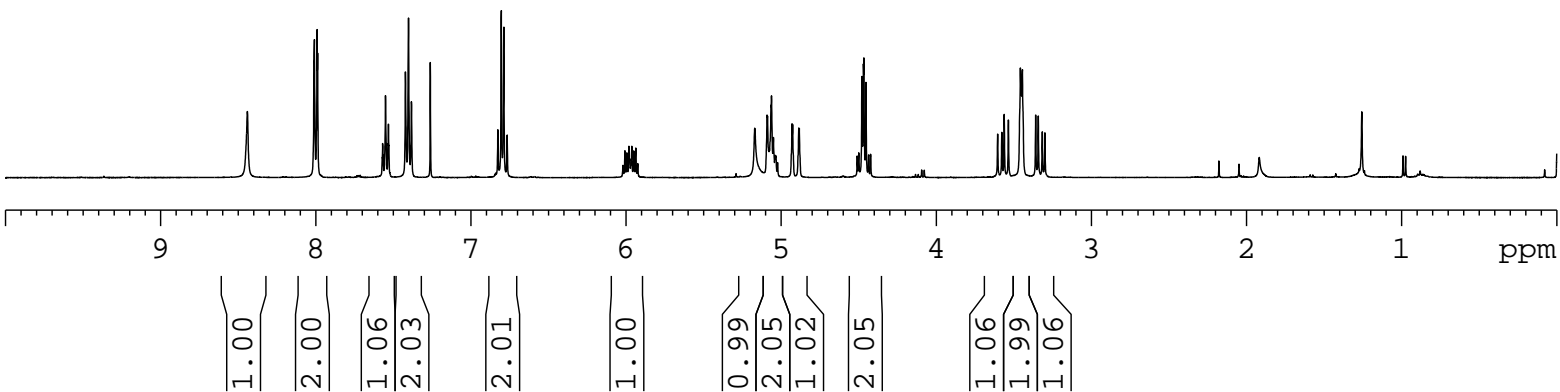
166.37  
155.87  
152.67  
151.06  
133.28  
133.20  
132.98  
129.81  
129.73  
128.40  
119.30  
118.60  
118.16  
117.68  
114.48  
114.41  
78.46  
70.17  
69.42  
65.76  
39.91



8.4406  
8.0089  
7.9911  
7.9878  
7.5685  
7.5499  
7.5343  
7.5313  
7.5286  
7.4215  
7.4018  
7.3828  
7.2612  
6.8255  
6.8036  
6.7874  
6.7655  
5.9807  
5.9633  
5.9376  
5.1705  
5.0911  
5.0882  
5.0658  
5.0626  
5.0501  
4.9303  
4.9264  
4.8871  
4.8832  
4.4798  
4.4698  
4.4668  
4.4535  
3.6047  
3.5778  
3.5621  
3.5353  
3.4579  
3.4523  
3.4452  
3.3594  
3.3426  
3.3168  
3.3000



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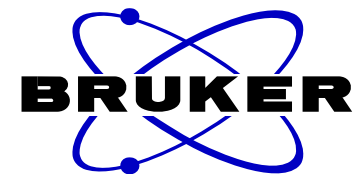


```

NAME          CWG160514-1-X
EXPNO         1
PROCNO        1
Date_         20160514
Time          13.14
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            16
DS            2
SWH           8223.685 Hz
FIDRES        0.125483 Hz
AQ            3.9846387 sec
RG            114
DW            60.800 usec
DE            6.50 usec
TE            297.0 K
D1            1.00000000 sec
TD0           1
  
```

```

===== CHANNEL f1 =====
NUC1          1H
P1            13.80 usec
PL1           -1.00 dB
PL1W          13.18669796 W
SFO1          400.1724712 MHz
SI            32768
SF            400.1700030 MHz
WDW           EM
SSB           0
LB            0.30 Hz
GB            0
PC            1.00
  
```



```

NAME CWG160514-1-X-C13
EXPNO 1
PROCNO 1
Date_ 20160514
Time 13.20
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDC13
NS 184
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 203
DW 20.800 usec
DE 6.50 usec
TE 297.3 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

```

```

===== CHANNEL f1 =====
NUC1 13C
P1 8.50 usec
PL1 -2.00 dB
PL1W 57.32743073 W
SFO1 100.6328888 MHz

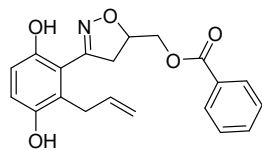
```

```

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.26 dB
PL13 14.46 dB
PL2W 13.18669796 W
PL12W 0.39276794 W
PL13W 0.37509048 W
SFO2 400.1716007 MHz
SI 32768
SF 100.6228151 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

```

166.65  
 157.28  
 150.46  
 147.72  
 135.92  
 133.52  
 129.88  
 129.44  
 128.57  
 124.54  
 119.23  
 116.50  
 115.89  
 115.64  
 78.00  
 65.37  
 40.64  
 31.70



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