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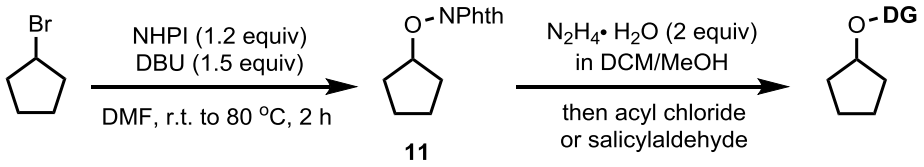
General Information

Solvents were obtained from Sigma-Aldrich, Alfa-Aesar and Acros and used directly without further purification. Analytical thin layer chromatography was performed on 0.25 mm silica gel 60-F254. Visualization was carried out with UV light (254 nm) and Vogel's permanganate. ^{1}H NMR spectra were recorded on Bruker AMX-400 (400 MHz) or Bruker DRX-600 (600 MHz) spectrometers. Data for ^{1}H NMR spectra are reported as follows: chemical shift, multiplicity (br = broad, s = singlet, bs = broad singlet, d = doublet, t = triplet, q = quartet, m = multiplet), coupling constants, and integration. Chemical shifts are reported in parts per million (ppm) referenced to the appropriate solvent signals, for example 7.26 ppm for chloroform-*d*. Coupling constants, *J*, are reported in Hertz (Hz). ^{13}C NMR spectra were recorded on a Bruker DRX-600 spectrometer (151 MHz). Chemical shifts are reported in parts per million (ppm) referenced to the appropriate solvent signals, for example 77.00 ppm for chloroform-*d*. High-resolution mass spectra (HRMS) were recorded on an Agilent Mass spectrometer using ESI-TOF (electrospray ionization-time of flight). Optical rotations were recorded on a Rudolph Research Analytical Autopol III Automatic Polarimeter.

Experimental Procedures

Preparation of DG2- to DG10-tethered cyclopentanol



Synthesis of intermediate 11:

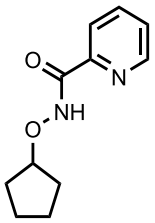
To a 50-mL round-bottom flask were added cyclopentyl bromide (3.0 g, 20 mmol) and *N*-hydroxy phthalimide (4.0 g, 24 mmol), the mixture was dissolved with DMF (20 mL). To the resulting solution was added 1,8-Diazabicyclo(5.4.0)undec-7-ene (DBU, 4.5 mL, 30 mmol) slowly, after which the resulting mixture was stirred at 80 °C for 2 hours. After cooling to room temperature, the reaction solution was poured into a HCl ice-water (10 mL conc. HCl in 200 g ice, pH ~1) while vigorously stirring, during which a pale yellow solid precipitated. The solid was collected by filtration and washed with sat. aq. $NaHCO_3$ and then with water, dried under air to give product **11** (4.1 g, yield: 87%).

General procedure for installation of DG2 and DG3:

To a 50-mL round-bottom flask were added **11** (231 mg, 1.0 mmol), CH_2Cl_2 (20 mL) and MeOH (2.0 mL); then, hydrazine monohydrate (0.1 mL, 2.0 mmol) was added. The resulting mixture was stirred at room temperature for 1 h, during which a significant amount of solid precipitated. Anhydrous sodium sulfate (~5 g) was then added, the mixture was filtered through a Büchner funnel, and the filtrate was used directly for the next step.

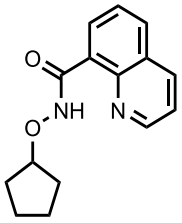
In another 25 mL-round-bottom flask was placed pyridine-2-carboxylic acid (250 mg, 2.0 mmol) or quinolinine-8-carboxylic acid (350 mg, 2.0 mmol), dissolved with CH_2Cl_2 (10 mL), then DMF (2 drops) was added. To this solution was added oxalyl chloride (0.35 mL, 4.0 mmol) dropwise. After addition, the mixture was stirred for 2 hours. The solvent was evaporated under reduced pressure and the residue was dissolved with CH_2Cl_2 (5 mL). This solution was added to the solution prepared in the

first step, followed by triethyl amine (1.4 mL). The resulting mixture was stirred at room temperature for 2 hours. The solution was washed with water and the organic phase was dried with anhydrous sodium sulfate. The product was purified by flash column chromatography.



N-(cyclopentyloxy)picolinamide (DG2-CP)

The product is obtained as a white solid, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.26 (s, 1H), 8.51 (s, 1H), 8.18 (d, *J* = 7.8 Hz, 1H), 7.86 (t, *J* = 8.4 Hz, 1H), 7.45 (d, *J* = 4.7 Hz, 1H), 4.67 (s, 1H), 1.96 (s, 2H), 1.89 – 1.68 (m, 4H), 1.59 (s, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 161.39, 148.83, 147.67, 136.98, 126.09, 121.91, 87.78, 30.77, 23.23; HRMS (ESI-TOF) m/z Calcd. for $C_{11}H_{15}N_2O_2^+$ $(M+H)^+$: 207.1128; found: 207.1131.

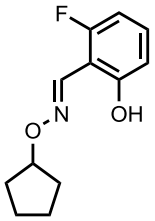


N-(cyclopentyloxy)quinoline-8-carboxamide (DG3-CP)

The product is obtained as a white solid, 54% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 9.00 – 8.88 (m, 1H), 8.88 – 8.78 (m, 1H), 8.36 – 8.21 (m, 1H), 8.05 – 7.90 (m, 1H), 7.75 – 7.60 (m, 1H), 7.51 (ddd, *J* = 16.3, 8.4, 4.0 Hz, 1H), 4.78 (ddt, *J* = 8.6, 5.7, 2.8 Hz, 1H), 2.19 – 1.99 (m, 2H), 1.98 – 1.73 (m, 4H), 1.62 (dtd, *J* = 17.1, 9.6, 8.8, 5.3 Hz, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 164.12, 149.44, 144.74, 137.88, 133.70, 131.99, 128.42, 126.59, 121.06, 87.49, 31.39, 23.84; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{17}N_2O_2^+$ $(M+H)^+$: 257.1285; found: 257.1289.

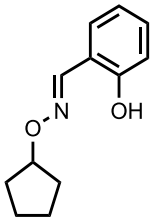
General procedure for installation of DG4–DG8 and DG10:

To a 50 mL-round-bottom flask were added **11** (346 mg, 1.5 mmol), CH_2Cl_2 (20 mL) and MeOH (2.0 mL); then hydrazine monohydrate (0.1 mL, 2.0 mmol) was added. The resulting mixture was stirred at room temperature for 1 h, during which a significant amount of solid precipitated. Anhydrous sodium sulfate (~5 g) was then added, and the resulting mixture was filtered. To the filtrate were added HOAc (0.15 mL) and salicylaldehyde (1.0 mmol), and the mixture was stirred at room temperature for 1 h. The volatiles were evaporated under reduced pressure and the residue was purified by flash column chromatography to give the desired product.



(*E*)-2-fluoro-6-hydroxybenzaldehyde O-cyclopentyl oxime (DG4-CP)

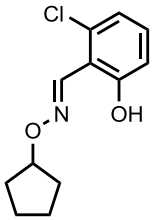
The product is obtained as a colorless oil, 88% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.35 (s, 1H), 8.45 (s, 1H), 7.27 – 7.18 (m, 1H), 6.82 – 6.75 (m, 1H), 6.61 (ddd, *J* = 10.2, 8.2, 1.0 Hz, 1H), 4.81 (dt, *J* = 5.7, 2.9 Hz, 1H), 1.89 (m, 4H), 1.83 – 1.73 (m, 2H), 1.64 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 161.94, 160.28, 158.66, 158.63, 144.77, 144.72, 131.42, 131.35, 112.41, 112.39, 106.14, 106.05, 105.80, 105.66, 86.38, 31.78, 23.70; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{15}FNO_2^+$ $(M+H)^+$: 224.1081; found: 224.1087.



(*E*)-2-hydroxybenzaldehyde O-cyclopentyl oxime (DG5-CP)

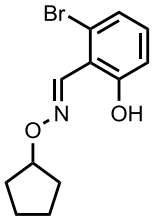
The product is obtained as a colorless oil, 91% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.11 (s, 1H), 8.16 (s, 1H), 7.29 (ddd, *J* = 8.5, 7.3, 1.7 Hz, 1H), 7.17 (dd, *J* = 7.7, 1.7 Hz, 1H), 7.02 (dd, *J* = 8.2, 1.0 Hz, 1H), 6.92 (td, *J* = 7.5, 1.1 Hz, 1H), 4.81 (tt, *J* = 5.8, 2.9 Hz, 1H), 1.90 (m, 4H), 1.83 – 1.72 (m, 2H), 1.64 (m, 2H); ^{13}C

NMR (151 MHz, Chloroform-*d*) δ 157.40, 151.05, 130.85, 130.48, 119.44, 116.64, 116.59, 86.05, 31.76, 23.71; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{16}NO_2^+$ $(M+H)^+$: 206.1176; found: 206.1181.



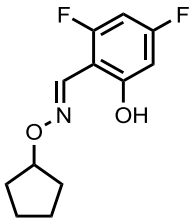
(*E*)-2-chloro-6-hydroxybenzaldehyde O-cyclopentyl oxime (DG6-CP)

The product is obtained as a colorless oil, 84% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.71 (s, 1H), 8.70 (s, 1H), 7.17 (t, *J* = 8.1 Hz, 1H), 6.98 – 6.85 (m, 2H), 4.82 (dt, *J* = 5.8, 2.9 Hz, 1H), 2.01 – 1.83 (m, 4H), 1.78 (d, *J* = 4.6 Hz, 2H), 1.73 – 1.58 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.54, 148.10, 133.66, 130.70, 120.14, 115.23, 113.97, 86.07, 31.39, 23.31; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{15}ClNO_2^+$ $(M+H)^+$: 240.0786; found: 240.0792.



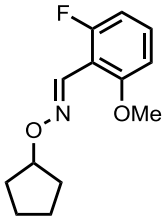
(*E*)-2-bromo-6-hydroxybenzaldehyde O-cyclopentyl oxime (DG7-CP)

The product is obtained as a colorless oil, 78% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.78 (s, 1H), 8.69 (s, 1H), 7.17 – 7.05 (m, 2H), 6.95 (dd, *J* = 7.9, 1.3 Hz, 1H), 4.82 (tt, *J* = 5.8, 2.9 Hz, 1H), 2.01 – 1.85 (m, 4H), 1.85 – 1.73 (m, 2H), 1.70 – 1.59 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.51, 150.64, 131.00, 123.73, 123.58, 115.97, 115.24, 86.11, 31.40, 23.33; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{15}BrNO_2^+$ $(M+H)^+$: 284.0281; found: 284.0283.



(*E*)-2,4-difluoro-6-hydroxybenzaldehyde O-cyclopentyl oxime (DG8-CP)

The product is obtained as a colorless oil, 86% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.66 (s, 1H), 8.36 (s, 1H), 6.56 – 6.48 (m, 1H), 6.44 – 6.36 (m, 1H), 4.79 (dt, *J* = 5.6, 2.6 Hz, 1H), 1.88 (m, 4H), 1.76 (td, *J* = 7.6, 7.1, 4.0 Hz, 2H), 1.69 – 1.59 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 164.44, 164.33, 162.78, 162.67, 161.83, 161.72, 160.16, 160.05, 159.46, 159.42, 159.36, 159.32, 143.72, 143.67, 102.48, 102.42, 102.39, 99.83, 99.81, 99.67, 99.64, 94.98, 94.81, 94.63, 86.02, 31.34, 23.26; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{14}F_2NO_2^+$ $(M+H)^+$: 242.0987; found: 242.0992.

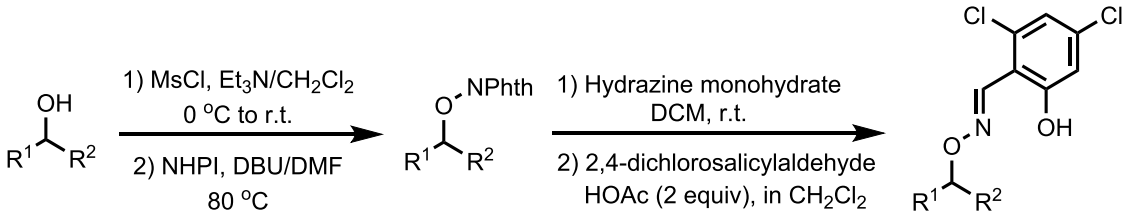


(*E*)-2-fluoro-6-methoxybenzaldehyde O-cyclopentyl oxime (DG10-CP)

The product is obtained as a colorless oil, 85% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 8.31 (s, 1H), 7.26 (td, *J* = 8.4, 6.3 Hz, 1H), 6.78 – 6.72 (m, 1H), 6.70 (d, *J* = 8.4 Hz, 1H), 4.86 (m, 1H), 3.87 (s, 3H), 1.95 – 1.83 (m, 4H), 1.80 – 1.71 (m, 2H), 1.66 – 1.56 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 161.42, 159.73, 158.50, 158.45, 141.03, 141.01, 130.05, 129.97, 109.49, 109.40, 108.29, 108.14, 106.05, 106.03, 84.91, 55.67, 31.64, 23.37; HRMS (ESI-TOF) m/z Calcd. for $C_{13}H_{17}FNO_2^+$ $(M+H)^+$: 238.1238; found: 238.1239.

Preparation of DG9-tethered alcohol substrates

General procedure A:

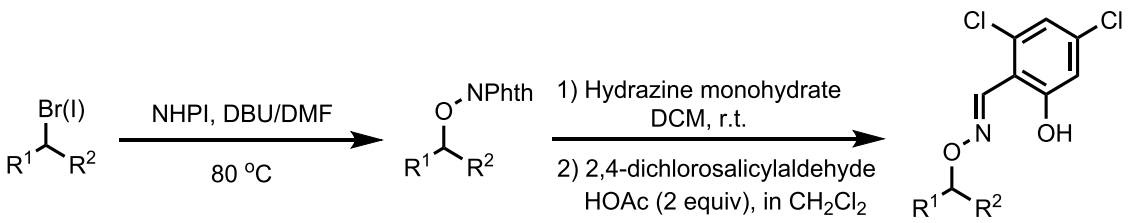


Alcohol (5.0 mmol) and Et_3N (10 mmol) were dissolved in anhydrous

dichloromethane (30 mL), and cooled with an ice-bath. To the pre-cooled solution was added MsCl (7.5 mmol) dropwise and the resulting mixture was stirred at room temperature for 1 h before poured into 1 M HCl solution (50 mL). The organic phase was collected, and the aqueous phase was extracted with CH_2Cl_2 (2×30 mL). The CH_2Cl_2 solution was dried with anhydrous sodium sulfate and concentrated under reduced pressure. The residue was dissolved in DMF (10 mL), then *N*-hydroxyphthalimide (5.0 mmol) and DBU (10 mmol) were added. The resulting dark brown solution was stirred at 80 °C for 4 h before being poured into aq. HCl (1 M, 80 mL). For solid products, the precipitate was collected and washed with sat. aq. $NaHCO_3$, dried under air. For the oil product the aqueous solution was extracted with 50 mL CH_2Cl_2 (×2). The combined CH_2Cl_2 solution was washed with brine and dried with anhydrous sodium sulfate. The solvent was evaporated under reduced pressure and the residue was used in the next step without further purification.

The crude intermediate was dissolved in CH_2Cl_2 (40 mL), then hydrazine monohydrate (10 mmol) and MeOH (5 mL) were added sequentially. The reaction was stirred at room temperature for 1 h. The white solid formed during the reaction was filtered, and to the filtrate were added AcOH (20 mmol) and 2,4-dichlorosalicylaldehyde (3.0 mmol). The resulting mixture was stirred at room temperature for 1 h, then washed with sat. aq. $NaHCO_3$ and extracted with 40 mL CH_2Cl_2, the organic phase was dried with anhydrous Na_2SO_4, evaporated and purified by flash column chromatography to give the desired product.

General procedure B:

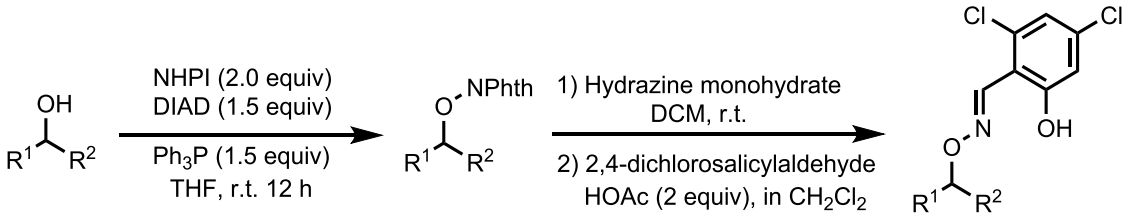


Alkyl bromide or alkyl iodide (7.0 mmol) was dissolved in DMF (10 mL), then *N*-hydroxyphthalimide (NHPI, 5.0 mmol) and 1,8-Diazabicyclo(5.4.0)undec-7-ene

(DBU, 10.0 mmol) were added. The resulting dark brown solution was stirred at 80 °C until the deep color disappeared (typically 1 h). The reaction mixture was cooled to room temperature and poured into aq. HCL (1 M, 80 mL). For solid products, the precipitate was collected and washed with sat. aq. $NaHCO_3$ and water, dried under air. For oil products, the aqueous solution was extracted with CH_2Cl_2 (50 mL × 2); organic layers were combined, washed with brine (× 3) and dried with anhydrous sodium sulfate. The solvent was evaporated under reduced pressure and the residue was used in the next step without further purification.

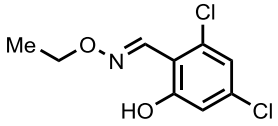
The resulting intermediate was dissolved in CH_2Cl_2 (40 mL), then hydrazine monohydrate (10 mmol) and MeOH (5 mL) were added sequentially. The reaction was stirred at room temperature for 1 h. The white solid formed during the reaction was filtered, and to the filtrate were added AcOH (20 mmol) and 2,4-dichlorosalicylaldehyde (3.0 mmol). The resulting mixture was stirred at room temperature for 1 h, then washed with sat. aq. NaHCO3 and extracted with 40 mL CH_2Cl_2. The organic phase was dried with anhydrous Na_2SO_4, concentrated under reduced pressure, and purified by flash column chromatography to give the desired product.

General procedure C:



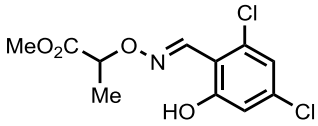
Alcohol (5.0 mmol), NHPI (10.0 mmol) and Ph_3P (7.5 mmol) were dissolved in anhydrous THF (30 mL), and cooled with an ice-bath. To the pre-cooled solution was added DIAD (7.5 mmol) dropwise and the resulting mixture was stirred at room temperature for 12 h. The solvent was evaporated, and the residue was purified by flash column chromatography.

The intermediate was dissolved in CH_2Cl_2 (40 mL), then hydrazine monohydrate (10 mmol) and MeOH (5 mL) were added sequentially. The reaction was stirred at room temperature for 1 h. The white solid formed during the reaction was filtered, and to the filtrate were added AcOH (20 mmol) and 2,4-dichlorosalicylaldehyde (3.0 mmol). The resulting mixture was stirred at room temperature for 1 h, then washed with sat. aq. NaHCO3 and extracted with CH_2Cl_2 (40 mL). The organic phase was dried with anhydrous Na_2SO_4, evaporated and purified by flash column chromatography to give the desired product.



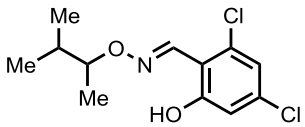
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-ethyl oxime (1a)

Following General procedure B, the product is obtained as a colorless oil, 78% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.75 (s, 1H), 8.64 (s, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.26 (q, *J* = 7.1 Hz, 2H), 1.35 (t, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.77, 147.59, 136.06, 134.20, 120.41, 115.70, 112.62, 70.42, 13.79; HRMS (ESI-TOF) m/z Calcd. for $C_9H_{10}Cl_2NO_2^+$ $(M+H)^+$: 234.0089; found: 234.0085.



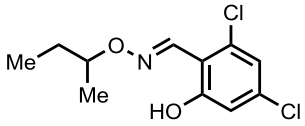
Methyl (*E*)-2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propanoate (1b)

Following General procedure A, the product is obtained as a colorless oil, 68% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.23 (s, 1H), 8.73 (s, 1H), 6.97 (d, *J* = 1.9 Hz, 1H), 6.90 (dd, *J* = 2.1, 0.6 Hz, 1H), 4.82 (q, *J* = 7.0 Hz, 1H), 3.79 (s, 3H), 1.57 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 171.40, 158.74, 149.17, 136.73, 134.67, 120.60, 115.81, 112.22, 77.91, 51.88, 16.27; HRMS (ESI-TOF) m/z Calcd. for $C_{11}H_{12}Cl_2NO_4^+$ $(M+H)^+$: 292.0143; found: 292.0145.



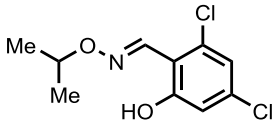
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(3-methylbutan-2-yl) oxime (1c)

Following General procedure A, the product is obtained as a colorless oil, 54% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.87 (s, 1H), 8.62 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.11 (m, 1H), 1.96 (pd, *J* = 6.8, 5.8 Hz, 1H), 1.26 (d, *J* = 6.5 Hz, 3H), 0.96 (dd, *J* = 19.4, 6.8 Hz, 6H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 147.44, 136.25, 134.48, 120.78, 116.07, 113.33, 85.61, 32.12, 18.47, 17.46, 15.78; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{16}Cl_2NO_2^+$ $(M+H)^+$: 276.0558; found: 276.0562.



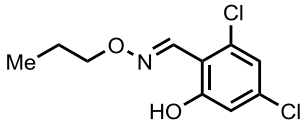
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(sec-butyl) oxime (1d)

Following General procedure B, the product is obtained as a colorless oil, 82% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.85 (s, 1H), 8.62 (s, 1H), 6.94 (d, *J* = 2.1 Hz, 1H), 6.90 (d, *J* = 2.0 Hz, 1H), 4.25 (h, *J* = 6.3 Hz, 1H), 1.79 – 1.70 (m, 1H), 1.65 – 1.57 (m, 1H), 1.31 (d, *J* = 6.3 Hz, 3H), 0.97 (t, *J* = 7.5 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 147.57, 136.27, 134.50, 120.76, 116.07, 113.29, 82.13, 28.19, 18.92, 9.57; HRMS (ESI-TOF) m/z Calcd. for $C_{11}H_{14}Cl_2NO_2^+$ $(M+H)^+$: 262.0396; found: 262.0391.



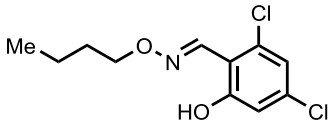
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-isopropyl oxime (1e)

Following General procedure B, the product is obtained as a colorless oil, 84% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.84 (s, 1H), 8.62 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.1, 0.6 Hz, 1H), 4.47 (hept, *J* = 6.3 Hz, 1H), 1.33 (d, *J* = 6.3 Hz, 6H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.22, 147.69, 136.35, 134.58, 120.81, 116.10, 113.27, 77.13, 21.31; HRMS (ESI-TOF) m/z Calcd. for $C_{10}H_{12}Cl_2NO_2^+$ $(M+H)^+$: 248.0245; found: 248.0246.



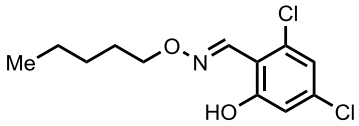
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-propyl oxime (1f)

Following General procedure B, the product is obtained as a colorless oil, 92% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.72 (s, 1H), 8.61 (s, 1H), 6.92 (d, *J* = 2.0 Hz, 1H), 6.88 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.15 (t, *J* = 6.7 Hz, 2H), 1.75 (h, *J* = 7.4 Hz, 2H), 1.00 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.16, 147.82, 136.39, 134.53, 120.74, 116.09, 113.01, 76.82, 22.07, 10.21; HRMS (ESI-TOF) m/z Calcd. for $C_{10}H_{12}Cl_2NO_2^+$ $(M+H)^+$: 248.0245; found: 248.0240.



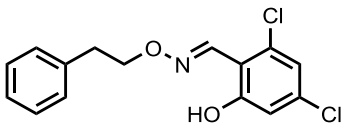
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-butyl oxime (1g)

Following General procedure B, the product is obtained as a colorless oil, 85% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.76 (s, 1H), 8.63 (s, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.20 (t, *J* = 6.7 Hz, 2H), 1.71 (ddt, *J* = 9.0, 7.8, 6.6 Hz, 2H), 1.48 – 1.41 (m, 2H), 0.97 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.22, 147.90, 136.47, 134.62, 120.85, 116.15, 113.10, 75.16, 30.81, 19.01, 13.81; HRMS (ESI-TOF) m/z Calcd. for $C_{11}H_{14}Cl_2NO_2^+$ $(M+H)^+$: 262.0402; found: 262.0401.



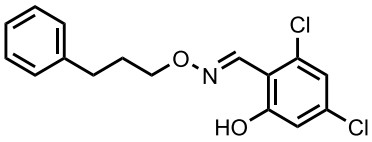
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-pentyl oxime (1h)

Following General procedure B, the product is obtained as a colorless oil, 75% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.75 (s, 1H), 8.62 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.19 (t, *J* = 6.7 Hz, 2H), 1.78 – 1.68 (m, 2H), 1.43 – 1.33 (m, 4H), 0.97 – 0.89 (m, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.20, 147.85, 136.44, 134.59, 120.81, 116.13, 113.08, 75.42, 28.45, 27.92, 22.42, 13.95; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{16}Cl_2NO_2^+$ $(M+H)^+$: 276.0558; found: 276.0553.



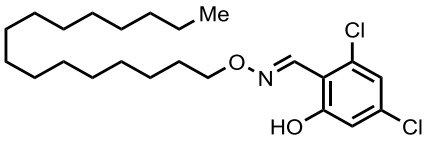
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-phenethyl oxime (1i)

Following General procedure A, the product is obtained as a colorless oil, 66% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.67 (s, 1H), 8.68 (s, 1H), 7.38 – 7.34 (m, 2H), 7.31 – 7.26 (m, 3H), 6.99 (d, *J* = 2.0 Hz, 1H), 6.95 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.46 (t, *J* = 7.0 Hz, 2H), 3.09 (t, *J* = 7.0 Hz, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.20, 148.40, 137.62, 136.64, 134.70, 128.87, 128.56, 126.58, 120.88, 116.17, 112.93, 75.71, 35.31; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}Cl_2NO_2^+$ $(M+H)^+$: 310.0402; found: 310.0401.



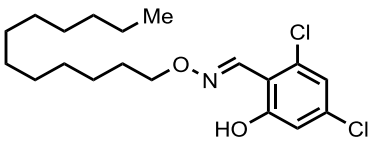
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(3-phenylpropyl) oxime (1j)

Following General procedure A, the product is obtained as a colorless oil, 74% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.69 (s, 1H), 8.65 (d, *J* = 0.6 Hz, 1H), 7.33 – 7.27 (m, 2H), 7.24 – 7.16 (m, 3H), 6.97 (d, *J* = 2.1 Hz, 1H), 6.92 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.21 (t, *J* = 6.5 Hz, 2H), 2.75 (dd, *J* = 8.4, 6.9 Hz, 2H), 2.11 – 2.03 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.22, 148.17, 141.17, 136.58, 134.68, 128.46, 128.43, 126.04, 120.89, 116.18, 113.03, 74.42, 31.93, 30.30; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{16}Cl_2NO_2^+$ $(M+H)^+$: 324.0558; found: 324.0555.



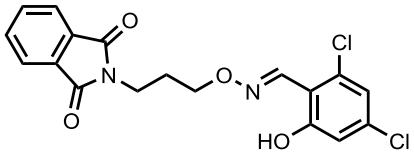
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-hexadecyl oxime (1k)

Following General procedure A, the product is obtained as a white solid, 72% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.76 (s, 1H), 8.63 (s, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (d, *J* = 2.0 Hz, 1H), 4.19 (t, *J* = 6.7 Hz, 2H), 1.72 (dt, *J* = 14.7, 6.8 Hz, 2H), 1.44 – 1.23 (m, 26H), 0.88 (t, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.22, 147.89, 136.46, 134.62, 120.84, 116.15, 113.10, 75.47, 31.92, 29.70, 29.69, 29.69, 29.67, 29.66, 29.64, 29.56, 29.51, 29.36, 29.35, 28.76, 25.77, 22.69, 14.12; HRMS (ESI-TOF) m/z Calcd. for $C_{23}H_{38}Cl_2NO_2^+$ $(M+H)^+$: 430.2280; found: 430.2274.



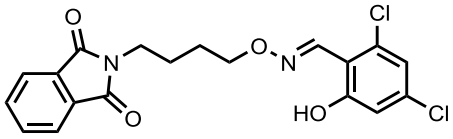
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-dodecyl oxime (1l)

Following General procedure A, the product is obtained as a white solid, 74% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.76 (s, 1H), 8.63 (s, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (d, *J* = 2.0 Hz, 1H), 4.19 (t, *J* = 6.7 Hz, 2H), 1.72 (dt, *J* = 14.8, 6.8 Hz, 2H), 1.42 – 1.23 (m, 18H), 0.88 (t, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.22, 147.89, 136.46, 134.61, 120.84, 116.15, 113.10, 75.47, 31.91, 29.64, 29.63, 29.56, 29.52, 29.35, 28.76, 25.77, 22.69, 14.11; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{30}Cl_2NO_2^+$ $(M+H)^+$: 374.1654; found: 374.1647.



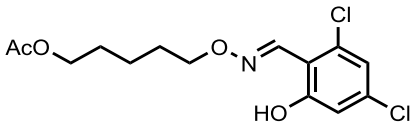
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(3-(1,3-dioxoisoindolin-2-yl)propyl) oxime (1m)

Following General procedure A from N-Boc protected 1, 3-amino alcohol, then remove the Boc in TFA/CH_2Cl_2 and re-protect the amine with phthalic anhydride. The product is obtained as a pale yellow solid, 42% yield. 1H NMR (600 MHz, Chloroform-*d*) δ 10.52 (s, 1H), 8.48 (d, *J* = 0.6 Hz, 1H), 7.84 (dd, *J* = 5.4, 3.1 Hz, 2H), 7.77 – 7.67 (m, 2H), 6.93 (d, *J* = 2.0 Hz, 1H), 6.89 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.28 (t, *J* = 6.1 Hz, 2H), 3.87 (t, *J* = 6.8 Hz, 2H), 2.14 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 168.29, 159.18, 148.50, 136.69, 134.71, 133.99, 132.05, 123.26, 120.86, 116.19, 112.82, 72.90, 35.18, 27.65; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{15}Cl_2N_2O_4^+$ $(M+H)^+$: 393.0409; found: 393.0406.



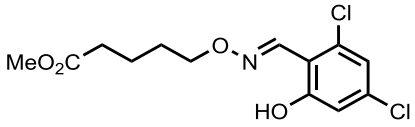
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(4-(1,3-dioxoisoindolin-2-yl)butyl) oxime (1n)

Following General procedure A from N-Boc protected 1, 4-amino alcohol, then remove the Boc in TFA/CH_2Cl_2 and re-protect the amine with phthalic anhydride. The product is obtained as a pale yellow solid, 48% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.61 (s, 1H), 8.60 (s, 1H), 7.83 (dd, *J* = 5.4, 3.0 Hz, 2H), 7.70 (dd, *J* = 5.4, 3.0 Hz, 2H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 – 6.86 (m, 1H), 4.23 (t, *J* = 6.2 Hz, 2H), 3.75 (t, *J* = 6.9 Hz, 2H), 1.85 – 1.76 (m, 4H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 168.40, 159.18, 148.26, 136.56, 134.69, 133.92, 132.03, 123.22, 120.85, 116.16, 112.95, 74.48, 37.52, 28.40, 26.04, 24.97; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{17}Cl_2N_2O_4^+$ $(M+H)^+$: 407.0565; found: 407.0558.



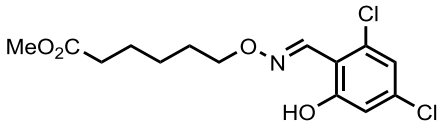
(*E*)-5-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)pentyl acetate (1o)

Following General procedure A, the product is obtained as a colorless oil, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.69 (s, 1H), 8.62 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.1, 0.6 Hz, 1H), 4.20 (t, *J* = 6.6 Hz, 2H), 4.08 (t, *J* = 6.6 Hz, 2H), 2.04 (s, 3H), 1.80 – 1.73 (m, 2H), 1.73 – 1.65 (m, 2H), 1.52 – 1.45 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 171.12, 159.18, 148.08, 136.55, 134.63, 120.85, 116.14, 112.98, 75.02, 64.21, 28.38, 28.33, 22.34, 20.95; HRMS (ESI-TOF) m/z Calcd. for $C_{14}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 334.0613; found: 334.0613.



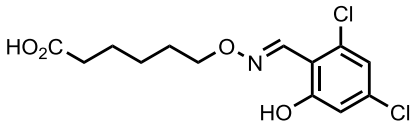
Methyl (*E*)-5-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)pentanoate (1p)

Following General procedure A, the product is obtained as a colorless oil, 72% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.66 (s, 1H), 8.63 (s, 1H), 6.96 (d, *J* = 2.1 Hz, 1H), 6.91 (dd, *J* = 2.1, 0.6 Hz, 1H), 4.26 – 4.16 (m, 2H), 3.68 (s, 3H), 2.44 – 2.33 (m, 2H), 1.84 – 1.69 (m, 4H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 173.68, 159.20, 148.21, 136.60, 134.68, 120.88, 116.17, 112.97, 74.74, 51.57, 33.59, 28.13, 21.32; HRMS (ESI-TOF) m/z Calcd. for $C_{13}H_{16}Cl_2NO_4^+$ $(M+H)^+$: 320.0456; found: 320.0460.



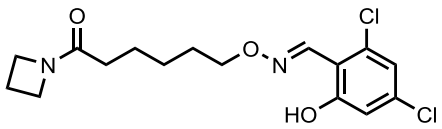
Methyl (*E*)-6-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)hexanoate (1q)

Following General procedure A, the product is obtained as a colorless oil, 70% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.67 (s, 1H), 8.60 (s, 1H), 6.92 (d, *J* = 2.0 Hz, 1H), 6.88 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.17 (t, *J* = 6.6 Hz, 2H), 3.65 (s, 3H), 2.32 (t, *J* = 7.5 Hz, 2H), 1.76 – 1.64 (m, 4H), 1.47 – 1.39 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 173.83, 159.14, 147.96, 136.45, 134.56, 120.76, 116.09, 112.94, 74.97, 51.44, 33.81, 28.37, 25.32, 24.57; HRMS (ESI-TOF) m/z Calcd. for $C_{14}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 334.0613; found: 334.0607.



(*E*)-6-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)hexanoic acid (1r)

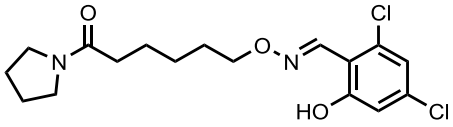
Following General procedure A, the product is obtained as a white solid, 61% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.69 (s, 1H), 8.63 (s, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.20 (t, *J* = 6.5 Hz, 2H), 2.39 (t, *J* = 7.4 Hz, 2H), 1.81 – 1.67 (m, 4H), 1.48 (tdd, *J* = 10.6, 8.4, 4.3 Hz, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 179.29, 159.20, 148.11, 136.56, 134.66, 120.87, 116.16, 113.01, 74.97, 33.77, 28.40, 25.30, 24.34; HRMS (ESI-TOF) m/z Calcd. for $C_{13}H_{16}Cl_2NO_4^+$ $(M+H)^+$: 320.0456; found: 320.0459.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(6-(azetidin-1-yl)-6-oxohexyl) oxime (1s)

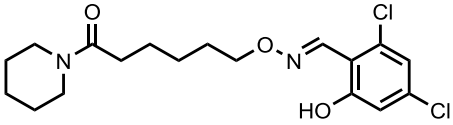
Following General procedure A, the product is obtained as a pale-yellow oil, 45% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.67 (s, 1H), 8.58 (s, 1H), 6.91 (d, *J* = 2.0 Hz, 1H), 6.89 – 6.84 (m, 1H), 4.16 (t, *J* = 6.6 Hz, 2H), 4.09 (t, *J* = 7.5 Hz, 2H), 3.98 (t, *J* = 7.6 Hz, 2H), 2.22 (m, 2H), 2.08 – 2.01 (m, 2H), 1.71 (dt, *J* = 14.7, 6.6 Hz, 2H), 1.66 – 1.62 (m, 2H), 1.45 – 1.37 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ

172.85, 159.08, 147.85, 136.37, 134.51, 120.72, 116.02, 112.93, 75.02, 50.01, 47.68, 30.80, 28.47, 25.52, 24.42, 14.92; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{21}Cl_2N_2O_3^+$ $(M+H)^+$: 359.0929; found: 359.0937.



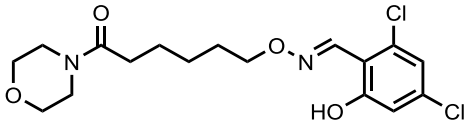
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(6-oxo-6-(pyrrolidin-1-yl)hexyl) oxime (1t)

Following General procedure A, the product is obtained as a pale-yellow oil, 48% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.69 (s, 1H), 8.59 (s, 1H), 6.92 (d, *J* = 2.0 Hz, 1H), 6.87 (d, *J* = 2.0 Hz, 1H), 4.17 (t, *J* = 6.6 Hz, 2H), 3.44 (t, *J* = 6.9 Hz, 2H), 3.38 (t, *J* = 6.8 Hz, 2H), 2.26 (t, *J* = 7.5 Hz, 2H), 1.92 (m, 2H), 1.82 (m, 2H), 1.71 (ddt, *J* = 30.3, 15.3, 7.1 Hz, 4H), 1.44 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 171.51, 159.10, 147.85, 136.38, 134.52, 120.73, 116.04, 112.96, 75.09, 46.59, 45.60, 34.44, 28.54, 26.00, 25.61, 24.49, 24.30; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{23}Cl_2N_2O_3^+$ $(M+H)^+$: 373.1080; found: 373.1084.



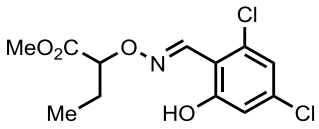
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(6-oxo-6-(piperidin-1-yl)hexyl) oxime (1u)

Following General procedure A, the product is obtained as a pale-yellow oil, 42% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.65 (s, 1H), 8.55 (s, 1H), 6.88 (d, *J* = 2.0 Hz, 1H), 6.83 (d, *J* = 2.0 Hz, 1H), 4.14 (t, *J* = 6.6 Hz, 2H), 3.49 (dd, *J* = 5.6, 2.3 Hz, 2H), 3.34 (d, *J* = 5.5 Hz, 2H), 2.29 (dd, *J* = 8.3, 7.1 Hz, 2H), 1.64 – 1.57 (m, 6H), 1.52 – 1.46 (m, 6H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 170.97, 158.96, 147.66, 136.21, 134.36, 120.54, 115.88, 112.80, 74.92, 72.82, 46.49, 42.48, 32.89, 28.74, 28.38, 26.33, 25.72, 25.46, 25.35, 25.10, 24.87, 24.31, 21.60; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{25}Cl_2N_2O_3^+$ $(M+H)^+$: 387.1237; found: 387.1240.



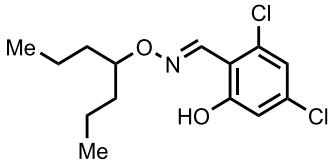
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(6-morpholino-6-oxohexyl) oxime (1v)

Following General procedure A, the product is obtained as a pale-yellow oil, 51% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.80 – 10.59 (m, 1H), 8.75 – 8.50 (m, 1H), 7.02 – 6.83 (m, 2H), 4.20 (dt, *J* = 16.1, 6.8 Hz, 2H), 3.65 (tt, *J* = 15.9, 7.9 Hz, 8H), 2.34 – 2.31 (m, 2H), 1.88 – 1.84 (m, 2H), 1.69 (dq, *J* = 16.1, 7.6 Hz, 4H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 171.35, 159.11, 147.92, 136.43, 134.54, 120.81, 116.07, 112.94, 75.03, 66.86, 41.83, 32.77, 28.56, 25.61, 24.77, 21.81; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{23}Cl_2N_2O_4^+$ $(M+H)^+$: 389.1029; found: 389.1035.



Methyl (*E*)-2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)butanoate (1w)

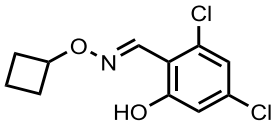
Following General procedure A, the product is obtained as a colorless oil, 68% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.23 (s, 1H), 8.74 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.88 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.66 (dd, *J* = 7.4, 5.4 Hz, 1H), 3.78 (s, 3H), 2.02 – 1.89 (m, 2H), 1.05 (t, *J* = 7.5 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 170.93, 158.73, 149.11, 136.66, 134.61, 120.56, 115.78, 112.23, 83.04, 51.72, 24.02, 9.05; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{14}Cl_2NO_4^+$ $(M+H)^+$: 306.0294; found: 306.0296.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-heptan-4-yl oxime (1x)

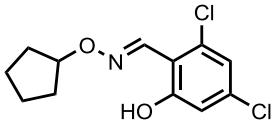
Following General procedure A, the product is obtained as a colorless oil, 65% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.88 (s, 1H), 8.62 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.19 (tt, *J* = 7.4, 5.1 Hz, 1H), 1.67 (dddd, *J* = 14.0, 10.1, 7.4, 5.3 Hz, 2H), 1.57 (dddd, *J* = 14.0, 9.9, 6.0, 5.1 Hz, 2H), 1.51 – 1.34 (m, 4H), 0.94 (t, *J* = 7.4 Hz, 6H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 147.33,

136.23, 134.46, 120.78, 116.06, 113.39, 84.64, 35.80, 18.58, 14.10; HRMS (ESI-TOF) m/z Calcd. for $C_{14}H_{20}Cl_2NO_2^+$ $(M+H)^+$: 304.0866; found: 304.0863.



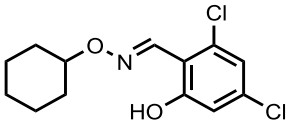
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-cyclobutyl oxime (1y)

Following General procedure B, the product is obtained as a colorless oil, 55% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.74 (s, 1H), 8.64 (s, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.85 – 4.69 (m, 1H), 2.39 – 2.30 (m, 2H), 2.22 – 2.11 (m, 2H), 1.89 – 1.79 (m, 1H), 1.71 – 1.60 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.24, 148.35, 136.54, 134.67, 120.82, 116.14, 113.09, 77.61, 29.38, 12.78; HRMS (ESI-TOF) m/z Calcd. for $C_{11}H_{12}Cl_2NO_2^+$ $(M+H)^+$: 260.0240; found: 260.0237.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-cyclopentyl oxime (1z)

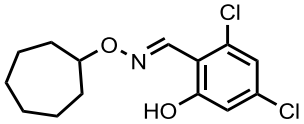
Following General procedure B, the product is obtained as a colorless oil, 85% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.87 (s, 1H), 8.59 (s, 1H), 6.94 (d, *J* = 2.1 Hz, 1H), 6.90 (dd, *J* = 2.1, 0.6 Hz, 1H), 4.79 (tt, *J* = 5.7, 3.1 Hz, 1H), 1.86 (tq, *J* = 12.0, 6.9, 6.3 Hz, 4H), 1.74 (qt, *J* = 8.7, 4.7 Hz, 2H), 1.67 – 1.58 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.24, 147.86, 136.33, 134.54, 120.77, 116.10, 113.25, 86.75, 31.82, 23.72; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{14}Cl_2NO_2^+$ $(M+H)^+$: 274.0396; found: 274.0398.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-cyclohexyl oxime (1aa)

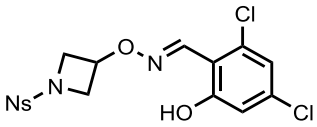
Following General procedure B, the product is obtained as a colorless oil, 74% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.87 (s, 1H), 8.63 (s, 1H), 6.94 (d, *J* = 2.0 Hz, 1H), 6.91 – 6.88 (m, 1H), 4.17 (ddd, *J* = 13.2, 9.3, 3.9 Hz, 1H), 2.07 – 1.95 (m, 2H), 1.79 (dq, *J* = 13.1, 4.2 Hz, 2H), 1.58 (dt, *J* = 12.5, 3.9 Hz, 1H), 1.55 – 1.45 (m, 2H),

1.36 (tdd, *J* = 13.6, 10.5, 3.3 Hz, 2H), 1.32 – 1.24 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 147.61, 136.25, 134.50, 120.74, 116.06, 113.28, 82.25, 31.30, 25.47, 23.61; HRMS (ESI-TOF) m/z Calcd. for $C_{13}H_{16}Cl_2NO_2^+$ $(M+H)^+$: 288.0553; found: 288.0557.



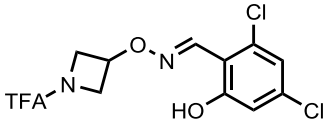
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-cycloheptyl oxime (1ab)

Following General procedure A, the product is obtained as a colorless oil, 54% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.86 (s, 1H), 8.59 (s, 1H), 6.92 (d, *J* = 2.1 Hz, 1H), 6.88 (d, *J* = 2.0 Hz, 1H), 4.35 (tt, *J* = 8.3, 4.6 Hz, 1H), 2.04 (dddd, *J* = 13.3, 7.6, 4.5, 2.8 Hz, 2H), 1.81 – 1.74 (m, 2H), 1.70 (ddq, *J* = 11.7, 7.0, 3.0 Hz, 2H), 1.58 (tq, *J* = 8.6, 5.6, 4.5 Hz, 4H), 1.46 (dtt, *J* = 12.3, 6.0, 3.8 Hz, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.16, 147.46, 136.19, 134.43, 120.68, 116.01, 113.26, 85.16, 33.07, 28.52, 22.76; HRMS (ESI-TOF) m/z Calcd. for $C_{14}H_{18}Cl_2NO_2^+$ $(M+H)^+$: 302.0709; found: 302.0711.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(1-((2-nitrophenyl)sulfonyl)azetidine -3-yl) oxime (1ad)

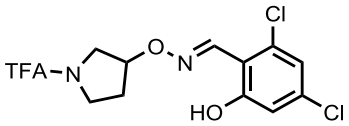
Following General procedure C, first with the Boc protection of azetidine, then changed the Boc to Ns, the product is obtained as pale yellow solid, 34% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.04 (s, 1H), 8.71 (s, 1H), 8.06 (dd, *J* = 6.9, 2.7 Hz, 1H), 7.77 – 7.70 (m, 3H), 7.00 – 6.94 (m, 1H), 6.89 (d, *J* = 2.0 Hz, 1H), 5.04 (tt, *J* = 6.5, 4.4 Hz, 1H), 4.41 (dd, *J* = 9.7, 6.6 Hz, 2H), 4.27 (dd, *J* = 9.7, 4.3 Hz, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.17, 150.90, 148.17, 137.60, 135.17, 133.88, 132.14, 132.11, 130.66, 124.46, 121.19, 116.36, 112.31, 70.26, 57.71; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{14}Cl_2N_3O_6S^+$ $(M+H)^+$: 445.9975; found: 445.9978.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde

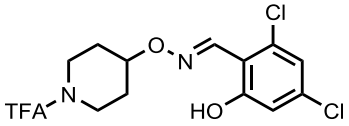
O-(1-(2,2,2-trifluoroacetyl)azetidin-3-yl) oxime (1ae)

Following General procedure C, first with the Boc protection of azetidine, then changed the Boc to TFA, the product is obtained as pale yellow solid, 42% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.00 (s, 1H), 8.78 (s, 1H), 7.05 – 6.98 (m, 1H), 6.97 – 6.89 (m, 1H), 5.17 (ddd, *J* = 10.5, 6.5, 3.9 Hz, 1H), 4.71 (dd, *J* = 10.1, 7.5 Hz, 1H), 4.48 (dd, *J* = 11.7, 5.6 Hz, 2H), 4.30 – 4.21 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.20, 156.46 (q, *J* = 37.5 Hz), 151.37, 137.91, 135.31, 121.36, 116.44, 115.92 (q, *J* = 288.4 Hz), 112.19, 71.76, 58.22 (q, *J* = 2.11 Hz), 55.29; HRMS (ESI-TOF) m/z Calcd. for $C_{12}H_{10}Cl_2F_3N_2O_3^+$ $(M+H)^+$: 357.0021; found: 357.0026.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(1-(2,2,2-trifluoroacetyl)pyrrolidin-3-yl) oxime (1af)

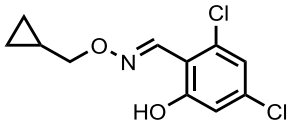
Following General procedure C, first with the Boc protection of pyrrolidine, then changed the Boc to TFA, the product is obtained as pale yellow solid, 48% yield. The NMR corresponding to the major rotamer. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.28 (s, 1H), 8.70 (d, *J* = 4.4 Hz, 1H), 7.01 (dt, *J* = 3.6, 1.6 Hz, 1H), 6.95 (d, *J* = 1.9 Hz, 1H), 5.11 – 4.96 (m, 1H), 4.09 – 3.67 (m, 4H), 2.50 – 2.35 (m, 1H), 2.31 – 2.13 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.16, 155.86 (q, *J* = 37.5 Hz), 150.14, 137.39, 135.06, 121.18, 116.31, 116.15 (q, *J* = 287.4 Hz), 112.50, 80.32, 52.30, 45.48, 28.53; HRMS (ESI-TOF) m/z Calcd. for $C_{13}H_{12}Cl_2F_3N_2O_3^+$ $(M+H)^+$: 371.0172; found: 371.0175.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(1-(2,2,2-trifluoroacetyl)piperidin-4-yl) oxime (1ag)

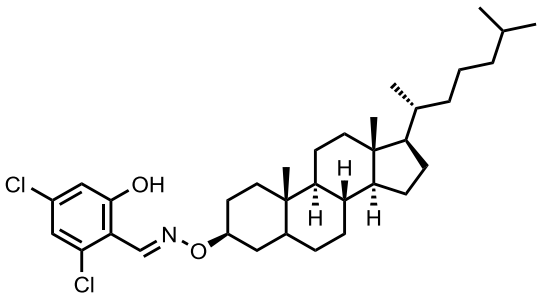
Following General procedure C, first with the Boc protection of pyrrolidine, then changed the Boc to TFA, the product is obtained as pale yellow solid, 44% yield. ^{1}H

NMR (600 MHz, Chloroform-*d*) δ 10.47 (s, 1H), 8.71 (s, 1H), 6.99 (d, *J* = 2.0 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.52 (tt, *J* = 6.7, 3.5 Hz, 1H), 3.86 – 3.53 (m, 4H), 2.11 – 2.00 (m, 2H), 2.00 – 1.86 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.18, 155.51 (q, *J* = 35.8 Hz), 149.20, 137.11, 134.90, 121.12, 116.48 (q, *J* = 288.4 Hz), 116.27, 112.76, 77.36, 42.21 (q, *J* = 3.8 Hz), 40.09, 30.53, 29.56; HRMS (ESI-TOF) m/z Calcd. for $C_{14}H_{14}Cl_2F_3N_2O_3^+$ $(M+H)^+$: 385.0328; found: 385.0332.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-cyclopropylmethyl oxime (1ah)

Following General procedure A, the product is obtained as a colorless oil, 58% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.76 (s, 1H), 8.66 (d, *J* = 0.6 Hz, 1H), 6.95 (d, *J* = 2.1 Hz, 1H), 6.90 (dd, *J* = 2.1, 0.6 Hz, 1H), 4.01 (d, *J* = 7.2 Hz, 2H), 1.26 – 1.14 (m, 1H), 0.70 – 0.59 (m, 2H), 0.39 – 0.29 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.22, 148.00, 136.47, 134.63, 120.81, 116.12, 113.08, 79.96, 9.95, 3.17; HRMS (ESI-TOF) m/z Calcd. for $C_{11}H_{12}Cl_2NO_2^+$ $(M+H)^+$: 260.0240; found: 260.0241.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-((3S,8R,9S,10S,13R,14S,17R)-10,13-dimethyl-17-((R)-6-methylheptan-2-yl)hexadecahydro-1H-cyclopenta[a]phenanthren-3-yl) oxime (4)

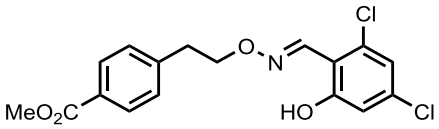
Following General procedure C, the product is obtained as a white solid, 48% yield. $[\alpha]^{20}_D$ = +24.7 (*c*=1, $CHCl_3$); ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.96 (s, 1H), 8.69 (s, 1H), 6.98 (t, *J* = 2.2 Hz, 1H), 6.93 (d, *J* = 2.0 Hz, 1H), 4.43 (q, *J* = 2.9 Hz, 1H), 2.04 – 1.93 (m, 2H), 1.83 (dtd, *J* = 13.3, 9.3, 5.6 Hz, 1H), 1.77 – 1.65 (m, 3H), 1.64 – 1.44 (m, 8H), 1.43 – 1.33 (m, 4H), 1.31 – 1.19 (m, 5H), 1.19 – 1.08 (m, 5H),

1.07 – 0.97 (m, 3H), 0.95 – 0.86 (m, 9H), 0.84 (s, 3H), 0.68 (s, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.80, 147.03, 135.78, 134.05, 120.33, 115.64, 112.94, 79.17, 56.07, 55.83, 53.70, 42.13, 39.56, 39.10, 39.06, 35.72, 35.36, 35.33, 35.02, 32.05, 31.95, 31.47, 28.03, 27.79, 27.55, 25.06, 23.72, 23.41, 22.37, 22.10, 20.34, 18.21, 11.62, 10.96; HRMS (ESI-TOF) m/z Calcd. for $C_{34}H_{52}Cl_2NO_2^+$ $(M+H)^+$: 576.3370; found: 576.3373.

C(sp^3)-H arylation of aliphatic alcohols

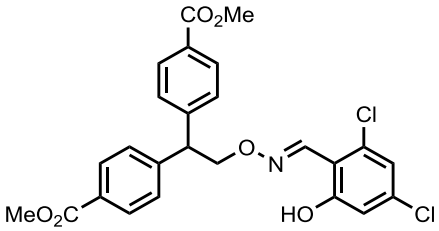
General procedure D:

To a 8-mL vial were added **DG9**-tethered alcohol (0.1 mmol), methyl 4-iodobenzoate (78 mg, 0.3 mmol), palladium acetate (2.3 mg, 0.01 mmol), 3-nitro-5-trifluoromethyl-2-pyridone (8.1 mg, 0.04 mmol), and silver trifluoroacetate (33 mg, 0.15 mmol). The mixture was dissolved with 1,1,1,3,3,3-hexafluoro-2-propanol (HFIP, 1.0 mL). The vial was sealed and stirred at 100 °C for 12 hours unless otherwise stated. The reaction was cooled to room temperature, diluted with 5 mL of EtOAc, and filtered through a pad of Celite. The filtrate was concentrated and purified by preparative thin-layer chromatography.



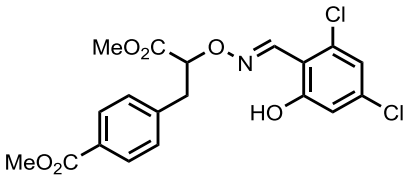
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)ethyl)benzoate (2a)

Following General procedure D, the product is obtained as a colorless oil, 30% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.55 (br s, 1H), 8.63 (s, 1H), 7.99 (d, *J* = 8.4 Hz, 2H), 7.31 (d, *J* = 8.4 Hz, 2H), 6.96 (d, *J* = 2.4 Hz, 1H), 6.91 (d, *J* = 2.4 Hz, 1H), 4.44 (t, *J* = 6.6 Hz, 2H), 3.91 (s, 3H), 3.10 (t, *J* = 6.6 Hz, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.9, 159.2, 148.7, 143.2, 136.8, 134.8, 129.9, 128.9, 128.6, 121.0, 116.2, 112.9, 75.1, 52.1, 35.3; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{16}Cl_2NO_4^+$ $(M+H)^+$: 368.0456; found: 368.0451.



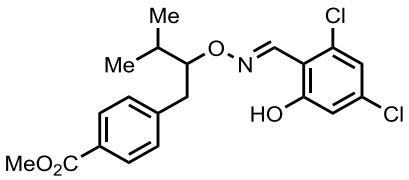
Dimethyl 4,4'-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy) ethane-1,1-diyl)(*E*)-dibenzoate (2a')

Following General procedure D, the product is obtained as a colorless oil, 45% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.44 (br s, 1H), 8.57 (s, 1H), 8.03 (d, *J* = 8.4 Hz, 4H), 7.35 (d, *J* = 8.4 Hz, 4H), 6.96 (d, *J* = 1.8 Hz, 1H), 6.92 (d, *J* = 1.8 Hz, 1H), 4.79 (d, *J* = 7.8 Hz, 2H), 4.60 (t, *J* = 7.8 Hz, 1H), 3.92 (s, 6H),; ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.7, 159.2, 149.2, 145.3, 137.0, 134.9, 130.1, 129.1, 128.3, 121.0, 116.2, 112.7, 77.0, 52.2, 50.1; HRMS (ESI-TOF) m/z Calcd. for $C_{25}H_{22}Cl_2NO_6^+$ $(M+H)^+$: 502.0819; found: 502.0822.



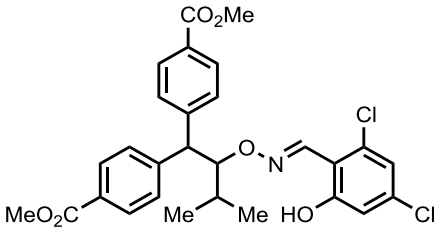
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-3-methoxy -3-oxopropyl)benzoate (2b)

Following General procedure D, the product is obtained as a colorless oil, 65% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.09 (s, 1H), 8.73 (d, *J* = 0.6 Hz, 1H), 8.06 – 7.99 (m, 2H), 7.39 – 7.33 (m, 2H), 6.99 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.98 (dd, *J* = 8.3, 5.0 Hz, 1H), 3.93 (s, 3H), 3.78 (s, 3H), 3.34 – 3.25 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 170.50, 166.80, 159.16, 150.10, 140.95, 137.39, 135.18, 129.89, 129.33, 129.11, 121.12, 116.28, 112.46, 82.56, 52.43, 52.10, 37.22; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{18}Cl_2NO_6^+$ $(M+H)^+$: 426.0511; found: 426.0513.



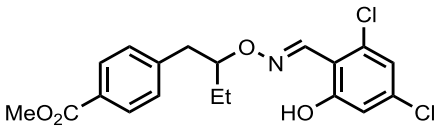
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-3-methylbutyl) benzoate (2c)

Following General procedure D, the product is obtained as a colorless oil, 52% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.53 (s, 1H), 8.60 (d, *J* = 0.6 Hz, 1H), 7.98 (d, *J* = 8.3 Hz, 2H), 7.32 (d, *J* = 8.3 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.89 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.26 (dt, *J* = 7.6, 5.3 Hz, 1H), 3.92 (s, 3H), 3.05 – 2.96 (m, 2H), 2.05 (pd, *J* = 6.9, 5.2 Hz, 1H), 1.06 (t, *J* = 7.1 Hz, 6H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.53, 158.66, 147.37, 143.52, 136.04, 134.11, 129.27, 128.86, 127.89, 120.40, 115.64, 112.61, 89.72, 51.56, 36.34, 30.55, 17.87, 17.42; HRMS (ESI-TOF) m/z Calcd. for $C_{20}H_{22}Cl_2NO_4^+$ $(M+H)^+$: 410.0926; found: 410.0922.



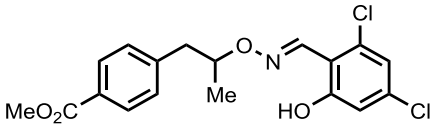
Dimethyl 4,4'-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-3-methylbutane-1,1-diyl)(*E*)-dibenzoate (2c')

Following General procedure D, the product is obtained as a pale-yellow oil, 20% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.19 (s, 1H), 8.39 (s, 1H), 7.95 (dd, *J* = 12.9, 8.4 Hz, 4H), 7.45 (d, *J* = 8.3 Hz, 2H), 7.36 (d, *J* = 8.3 Hz, 2H), 6.90 (d, *J* = 2.0 Hz, 1H), 6.83 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.82 (dd, *J* = 9.1, 4.3 Hz, 1H), 4.39 (d, *J* = 9.0 Hz, 1H), 3.88 (s, 3H), 3.86 (s, 3H), 1.87 (pd, *J* = 6.8, 4.2 Hz, 1H), 1.02 (d, *J* = 6.9 Hz, 3H), 0.98 (d, *J* = 6.8 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.73, 166.62, 158.96, 147.29, 146.16, 145.73, 136.54, 134.52, 130.18, 129.88, 128.92, 128.77, 128.34, 120.83, 116.07, 112.77, 91.70, 54.03, 52.11, 52.04, 30.44, 20.47, 16.31; HRMS (ESI-TOF) m/z Calcd. for $C_{28}H_{28}Cl_2NO_6^+$ $(M+H)^+$: 544.1294; found: 544.1293.



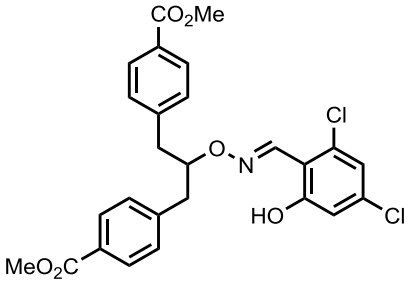
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)butyl)benzoate (2d)

Following General procedure D, the product is obtained as a pale-yellow oil, 68% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.62 (s, 1H), 8.62 (s, 1H), 7.97 (d, *J* = 8.3 Hz, 2H), 7.28 (d, *J* = 8.3 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.90 (d, *J* = 2.0 Hz, 1H), 4.41 – 4.32 (m, 1H), 3.90 (s, 3H), 3.06 (dd, *J* = 14.1, 7.0 Hz, 1H), 2.97 (dd, *J* = 14.1, 5.7 Hz, 1H), 1.74 – 1.66 (m, 2H), 1.00 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.97, 159.17, 148.20, 143.27, 136.60, 134.65, 129.73, 129.42, 128.45, 120.91, 116.13, 113.09, 52.03, 39.65, 26.11, 9.65; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{20}Cl_2NO_4^+$ $(M+H)^+$: 396.0764; found: 396.0763.



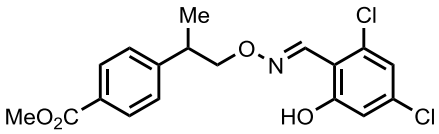
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propyl) benzoate (2e)

Following General procedure D, the product is obtained as a colorless oil, 63% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.64 (s, 1H), 8.62 (s, 1H), 7.98 (d, *J* = 8.3 Hz, 2H), 7.29 (d, *J* = 8.4 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.57 (h, *J* = 6.3 Hz, 1H), 3.90 (s, 3H), 3.10 (dd, *J* = 13.9, 6.6 Hz, 1H), 2.92 (dd, *J* = 13.9, 6.2 Hz, 1H), 1.32 (d, *J* = 6.3 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.94, 159.18, 148.30, 142.95, 136.63, 134.68, 129.73, 129.45, 128.53, 120.91, 116.14, 113.04, 81.05, 52.03, 41.75, 19.15; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 382.0607; found: 382.0609.



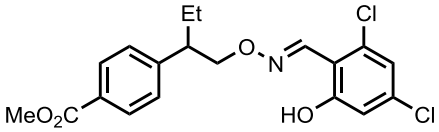
Dimethyl 4,4'-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propane-1,3-diyl)(*E*)-dibenzoate (2e')

Following General procedure D, the product is obtained as a colorless oil, 21% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.38 (s, 1H), 8.62 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 4H), 7.29 (t, *J* = 4.2 Hz, 4H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.73 (tt, *J* = 7.3, 5.4 Hz, 1H), 3.93 (s, 6H), 3.12 – 2.99 (m, 4H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.88, 159.13, 148.87, 142.62, 136.92, 134.79, 129.83, 129.42, 128.70, 121.01, 116.18, 112.81, 85.27, 52.07, 39.67; HRMS (ESI-TOF) m/z Calcd. for $C_{26}H_{24}Cl_2NO_6^+$ $(M+H)^+$: 516.0975; found: 516.0983.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propan-2-yl) benzoate (2f)

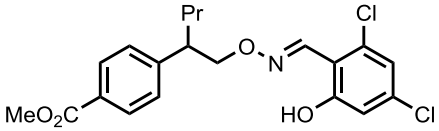
Following General procedure D, the product is obtained as a colorless oil, 85% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.54 (br s, 1H), 8.58 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.32 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 1.8 Hz, 1H), 6.89 (d, *J* = 1.8 Hz, 1H), 4.34-4.25 (m, 2H), 3.91 (s, 3H), 3.31-3.25 (m, 1H), 1.36 (d, *J* = 7.2 Hz, 3H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.9, 159.2, 148.5, 148.4, 136.8, 134.8, 129.9, 128.7, 127.4, 120.9, 116.2, 112.9, 79.9, 52.1, 39.4, 17.9; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 382.0607; found: 382.0609.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)butan-2-yl) benzoate (2g)

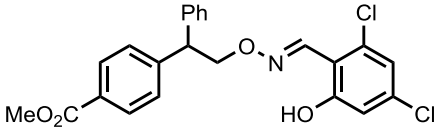
Following General procedure D, the product is obtained as a colorless oil, 82% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.54 (br s, 1H), 8.55 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 1.8 Hz, 1H), 6.89 (d, *J* = 1.8 Hz, 1H), 4.38-4.32 (m, 2H), 3.91 (s, 3H), 3.04-2.99 (m, 1H), 1.91-1.84 (m, 1H), 1.70-1.62 (m, 1H), 0.85 (t, *J* = 7.2 Hz, 3H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 167.0, 159.2, 148.4, 147.2, 136.7,

134.7, 129.9, 128.8, 128.0, 120.9, 116.2, 112.9, 78.9, 52.1, 47.1, 25.3, 11.8; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{20}Cl_2NO_4^+$ $(M+H)^+$: 396.0764; found: 396.0763.



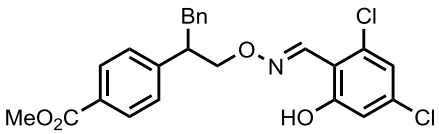
Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)pentan-2-yl) benzoate (2h)

Following General procedure D, the product is obtained as a colorless oil, 72% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.54 (br s, 1H), 8.55 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.29 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 1.8 Hz, 1H), 6.89 (d, *J* = 1.8 Hz, 1H), 4.36-4.31 (m, 2H), 3.90 (s, 3H), 3.13-3.10 (m, 1H), 1.78-1.75 (m, 1H), 1.67-1.60 (m, 1H), 1.25-1.21 (m, 2H), 0.88 (t, *J* = 7.2 Hz, 3H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 167.0, 159.2, 148.4, 147.5, 136.7, 134.7, 129.9, 128.7, 128.0, 120.9, 116.2, 112.9, 79.1, 52.1, 45.2, 34.4, 20.3, 14.0; HRMS (ESI-TOF) m/z Calcd. for $C_{20}H_{22}Cl_2NO_4^+$ $(M+H)^+$: 410.0926; found: 410.0927.



Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-1-phenylethyl) benzoate (2i)

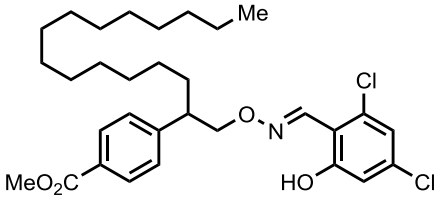
Following General procedure D, the product is obtained as a colorless oil, 61% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.50 (br s, 1H), 8.56 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.36 (d, *J* = 8.4 Hz, 2H), 7.34-7.33 (m, 2H), 7.28-7.24 (m, 3H), 6.94 (d, *J* = 1.8 Hz, 1H), 6.91 (d, *J* = 1.8 Hz, 1H), 4.79-4.74 (m, 2H), 4.53 (t, *J* = 7.2 Hz, 1H), 3.90 (s, 3H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.8, 159.2, 148.9, 146.3, 140.2, 136.9, 134.9, 130.0, 128.9, 128.4, 128.2, 127.2, 121.0, 116.2, 112.8, 77.4, 52.1, 50.1; HRMS (ESI-TOF) m/z Calcd. for $C_{23}H_{20}Cl_2NO_4^+$ $(M+H)^+$: 444.0764; found: 444.0761.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)

-3-phenylpropan-2-yl)benzoate (2j)

Following General procedure D, the product is obtained as a colorless oil, 54% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.48 (br s, 1H), 8.58 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 7.26-7.23 (m, 2H), 7.20-7.18 (m, 1H), 7.08-7.06 (m, 2H), 6.97 (d, *J* = 1.8 Hz, 1H), 6.92 (d, *J* = 1.8 Hz, 1H), 4.43 (d, *J* = 6.6 Hz, 2H), 3.93 (s, 3H), 3.47-3.43 (m, 1H), 3.17-3.13 (m, 1H), 3.01-2.98 (m, 1H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.9, 159.2, 148.6, 146.7, 138.7, 136.8, 134.8, 129.9, 129.0, 128.9, 128.4, 128.1, 126.4, 121.0, 116.2, 112.8, 77.8, 52.1, 47.1, 39.0; HRMS (ESI-TOF) m/z Calcd. for $C_{24}H_{22}Cl_2NO_4^+$ $(M+H)^+$: 458.0920; found: 458.0919.

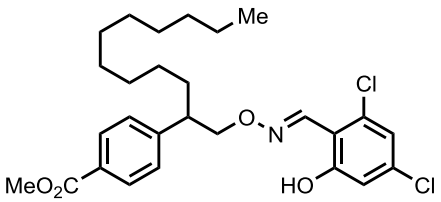


Methyl

(*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)hexadecan-2-yl)

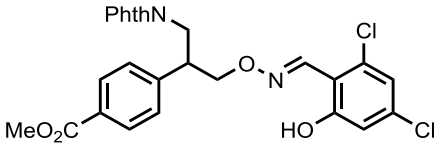
benzoate (2k)

Following General procedure D, the product is obtained as a colorless oil, 71% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.54 (br s, 1H), 8.55 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 1.8 Hz, 1H), 6.89 (d, *J* = 1.8 Hz, 1H), 4.36-4.32 (m, 2H), 3.90 (s, 3H), 3.12-3.07 (m, 1H), 1.82-1.77 (m, 1H), 1.67-1.60 (m, 1H), 1.30-1.16 (m, 24H), 0.88 (t, J = 7.2 Hz, 3H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.96, 159.20, 148.42, 147.53, 136.72, 134.73, 129.90, 128.72, 127.95, 120.92, 116.19, 112.86, 79.15, 52.04, 45.45, 32.27, 31.94, 29.70, 29.69, 29.67, 29.66, 29.62, 29.57, 29.55, 29.43, 29.38, 27.15, 22.71, 14.14; HRMS (ESI-TOF) m/z Calcd. for $C_{31}H_{44}Cl_2NO_4^+$ $(M+H)^+$: 564.2647; found: 564.2657.



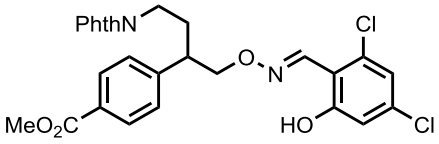
Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)dodecan-2-yl) benzoate (2l)

Following General procedure D, the product is obtained as a colorless oil, 76% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.54 (br s, 1H), 8.55 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 6.93 (d, *J* = 2.4 Hz, 1H), 6.89 (d, *J* = 2.4 Hz, 1H), 4.36-4.30 (m, 2H), 3.90 (s, 3H), 3.12-3.07 (m, 1H), 1.83-1.77 (m, 1H), 1.67-1.61 (m, 1H), 1.29-1.17 (m, 16H), 0.87 (t, J = 7.2 Hz, 3H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 166.95, 159.19, 148.42, 147.53, 136.72, 134.73, 129.90, 128.72, 127.95, 120.91, 116.19, 112.86, 79.15, 52.04, 45.45, 32.26, 31.90, 29.57, 29.56, 29.55, 29.42, 29.31, 27.14, 22.69, 14.12; HRMS (ESI-TOF) m/z Calcd. for $C_{27}H_{36}Cl_2NO_4^+$ $(M+H)^+$: 508.2021; found: 508.2023.



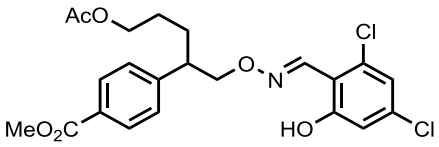
Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-3-(1,3-dioxoisoindolin-2-yl)propan-2-yl)benzoate (2m)

Following General procedure D, the product is obtained as a pale-yellow oil, 58% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.31 (br s, 1H), 8.40 (s, 1H), 7.99 (d, *J* = 8.4 Hz, 2H), 7.80-7.78 (m, 2H), 7.69-7.67 (m, 2H), 7.39 (d, *J* = 8.4 Hz, 2H), 6.92 (d, *J* = 2.4 Hz, 1H), 6.88 (d, *J* = 2.4 Hz, 1H), 4.50-4.45 (m, 2H), 4.13-4.03 (m, 2H), 3.89 (s, 3H), 3.84-3.80 (m, 1H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 168.1, 166.7, 159.2, 148.9, 143.4, 136.9, 134.8, 134.1, 131.7, 130.1, 129.6, 128.2, 123.4, 120.9, 116.3, 112.6, 77.0, 52.1, 43.5, 40.5; HRMS (ESI-TOF) m/z Calcd. for $C_{26}H_{21}Cl_2N_2O_6^+$ $(M+H)^+$: 527.0771; found: 527.0768.



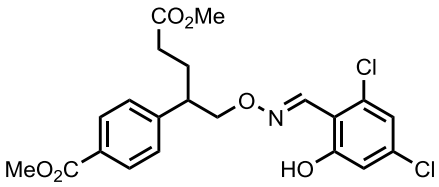
Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-4-(1,3-dioxoisoindolin-2-yl)butan-2-yl)benzoate (2n)

Following General procedure D, the product is obtained as a pale-yellow oil, 62% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.38 (s, 1H), 8.54 (s, 1H), 7.91 (d, *J* = 8.4 Hz, 2H), 7.72 (dd, *J* = 5.4, 3.0 Hz, 2H), 7.62 (dd, *J* = 5.4, 3.0 Hz, 2H), 7.32 (d, *J* = 8.4 Hz, 2H), 6.93 (d, *J* = 2.4 Hz, 1H), 6.85 (d, *J* = 2.4 Hz, 1H), 4.29 (d, *J* = 6.6 Hz, 2H), 3.87 (s, 3H), 3.67 (t, *J* = 6.6 Hz, 2H), 3.20-3.16 (m, 1H), 2.27-2.17 (m, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 168.2, 166.7, 159.1, 148.8, 145.6, 136.8, 134.8, 133.8, 131.8, 130.0, 128.9, 128.0, 123.1, 120.9, 116.2, 112.7, 78.6, 52.0, 43.4, 36.2, 30.2; HRMS (ESI-TOF) m/z Calcd. for $C_{27}H_{23}Cl_2N_2O_6^+$ $(M+H)^+$: 541.0933; found: 541.0938.



Methyl (*E*)-4-(5-acetoxy-1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy) pentan-2-yl)benzoate (2o)

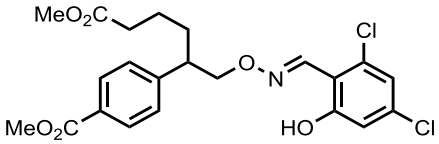
Following General procedure D, the product is obtained as a colorless oil, 69% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.48 (s, 1H), 8.56 (s, 1H), 8.01 (d, *J* = 8.4 Hz, 2H), 7.29 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 2.4 Hz, 1H), 6.89 (d, *J* = 2.4 Hz, 1H), 4.34 (d, *J* = 6.6 Hz, 2H), 4.02 (t, *J* = 6.6 Hz, 2H), 3.90 (s, 3H), 3.14-3.09 (m, 1H), 2.02 (s, 3H), 1.94-1.88 (m, 1H), 1.72-1.68 (m, 1H), 1.59-1.50 (m, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 171.1, 166.8, 159.2, 148.6, 146.6, 136.8, 134.8, 130.1, 129.0, 127.9, 121.0, 116.2, 112.8, 78.9, 64.0, 52.1, 45.1, 28.6, 26.3, 20.9; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{24}Cl_2NO_6^+$ $(M+H)^+$: 468.0981; found: 468.0984.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-5-methoxy-5-oxopentan-2-yl)benzoate (2p)

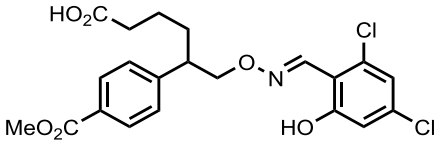
Following General procedure D, the product is obtained as a colorless oil, 70% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.45 (s, 1H), 8.56 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 6.93 (d, *J* = 2.4 Hz, 1H), 6.88 (d, *J* = 2.4 Hz, 1H), 4.34 (d, *J*

= 7.2 Hz, 2H), 3.90 (s, 3H), 3.61 (s, 3H), 3.19-3.12 (m, 1H), 2.25-2.18 (m, 3H), 2.01-1.92 (m, 1H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 173.3, 166.8, 159.2, 148.7, 145.9, 136.8, 134.8, 130.1, 129.2, 128.0, 121.0, 116.2, 112.8, 78.7, 52.1, 51.6, 44.7, 31.6, 27.3; HRMS (ESI-TOF) m/z Calcd. for $C_{21}H_{22}Cl_2NO_6^+$ $(M+H)^+$: 454.0824; found: 454.0823.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-6-methoxy-6-oxohexan-2-yl)benzoate (2q)

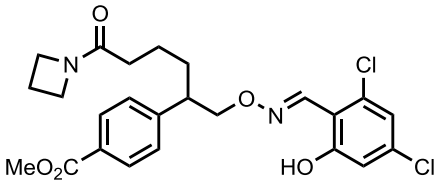
Following General procedure D, the product is obtained as a colorless oil, 73% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.47 (s, 1H), 8.54 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 6.93 (d, *J* = 2.4 Hz, 1H), 6.88 (d, *J* = 2.4 Hz, 1H), 4.32 (d, *J* = 7.2 Hz, 2H), 3.90 (s, 3H), 3.63 (s, 3H), 3.12-3.09 (m, 1H), 2.30-2.27 (m, 2H), 1.88-1.82 (m, 1H), 1.73-1.66 (m,1H), 1.59-1.48 (m, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 173.6, 166.9, 159.2, 148.6, 146.7, 136.8, 134.8, 130.0, 129.0, 127.9, 120.9, 116.2, 112.8, 78.9, 52.1, 51.5, 45.3, 33.8, 31.6, 22.6; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{24}Cl_2NO_6^+$ $(M+H)^+$: 468.0981; found: 468.0985.



(*E*)-6-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-5-(4-(methoxycarbonyl)phenyl)hexanoic acid (2r)

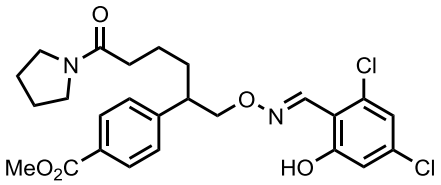
Following General procedure D, the product is obtained as a colorless oil, 71% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.48 (s, 1H), 8.56 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.29 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 2.4 Hz, 1H), 6.89 (d, *J* = 2.4 Hz, 1H), 4.33 (d, *J* = 7.2 Hz, 2H), 3.91 (s, 3H), 3.12-3.10 (m, 1H), 2.37-2.28 (m, 2H), 1.91-1.86 (m, 1H), 1.75-1.68 (m,1H), 1.60-1.49 (m, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 178.9, 166.9, 159.2, 148.6, 146.6, 136.8, 134.8, 130.1, 129.0, 127.9, 121.0, 116.2, 112.8, 78.9, 52.1,

45.3, 33.7, 31.5, 22.3; HRMS (ESI-TOF) m/z Calcd. for $C_{21}H_{21}Cl_2NO_6^+$ $(M+H)^+$: 454.0819; found: 454.0816.



Methyl (*E*)-4-(6-(azetidin-1-yl)-1-(((2,4-dichloro-6-hydroxybenzylidene) amino)oxy)-6-oxohexan-2-yl)benzoate (2s)

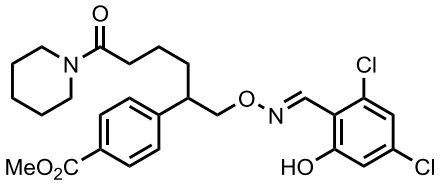
Following General procedure D, the product is obtained as a pale-yellow oil, 58% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.49 (br s, 1H), 8.55 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 2H), 7.29 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 2.4 Hz, 1H), 6.89 (d, *J* = 2.4 Hz, 1H), 4.35-4.30 (m, 2H), 4.01 (t, *J* = 7.8 Hz, 4H), 3.90 (s, 3H), 3.13-3.08 (m, 1H), 2.25-2.20 (m, 2H), 2.03 (td, *J* = 7.2, 2.0 Hz, 2H), 1.89-1.83 (m, 1H), 1.73-1.66 (m, 1H), 1.58-1.46 (m, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 172.1, 166.5, 158.7, 148.1, 146.4, 136.3, 134.3, 129.5, 128.4, 127.5, 120.5, 115.7, 112.4, 78.5, 51.6, 48.7 (broad), 44.9, 31.4, 30.3, 22.0, 14.6; HRMS (ESI-TOF) m/z Calcd. for $C_{24}H_{27}Cl_2N_2O_5^+$ $(M+H)^+$: 493.1292; found: 493.1295.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-6-oxo-6-(pyrrolidin-1-yl)hexan-2-yl)benzoate (2t)

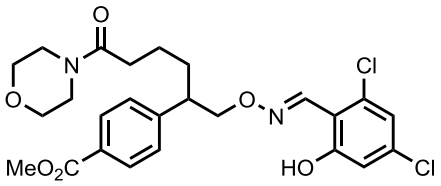
Following General procedure D, the product is obtained as a pale-yellow oil, 48% yield. ^{1}H NMR (600 MHz, $CDCl_3$) δ 10.50 (br s, 1H), 8.55 (s, 1H), 7.99 (d, *J* = 8.4 Hz, 2H), 7.30 (d, *J* = 8.4 Hz, 2H), 6.94 (d, *J* = 2.4 Hz, 1H), 6.89 (d, *J* = 2.4 Hz, 1H), 4.37-4.31 (m, 2H), 3.90 (s, 3H), 3.42-3.32 (br 4H), 3.14-3.11 (m, 1H), 2.26-2.20 (m, 2H), 1.92-1.83 (m, 5H), 1.76-1.70 (m, 1H), 1.65-1.51 (m, 2H); ^{13}C NMR (151 MHz, $CDCl_3$) δ 170.7, 166.5, 158.7, 148.1, 146.6, 136.3, 134.3, 129.5, 128.4, 127.5, 120.5, 115.7, 112.4, 78.6, 51.6, 46.1 (broad), 45.4 (broad), 45.0, 33.9, 31.4, 25.6 (broad),

23.9 (broad), 22.1; HRMS (ESI-TOF) m/z Calcd. for $C_{25}H_{29}Cl_2N_2O_5^+$ $(M+H)^+$: 507.1454; found: 507.1457.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-6-oxo-6-(piperidin-1-yl)hexan-2-yl)benzoate (2u)

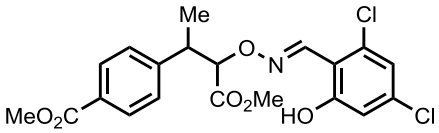
Following General procedure D, the product is obtained as a pale-yellow oil, 54% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.52 (s, 1H), 8.57 (s, 1H), 8.02 (d, *J* = 8.3 Hz, 2H), 7.32 (d, *J* = 8.3 Hz, 2H), 6.97 (d, *J* = 2.0 Hz, 1H), 6.92 (d, *J* = 2.0 Hz, 1H), 4.41 – 4.30 (m, 2H), 3.93 (s, 3H), 3.65 – 3.20 (m, 4H), 3.15 (dq, *J* = 11.9, 6.8 Hz, 1H), 2.41 – 2.25 (m, 2H), 1.95 – 1.89 (m, 1H), 1.77 – 1.71 (m, 1H), 1.65 – 1.47 (m, 8H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 170.72, 166.88, 159.16, 148.50, 146.96, 136.73, 134.73, 129.95, 128.84, 127.97, 120.91, 116.17, 112.81, 78.97, 52.04, 45.41, 32.98, 31.86, 25.94 (broad), 24.46, 22.98; HRMS (ESI-TOF) m/z Calcd. for $C_{26}H_{31}Cl_2N_2O_5^+$ $(M+H)^+$: 521.1610; found: 521.1613.



Methyl (*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-6-morpholino-6-oxohexan-2-yl)benzoate (2v)

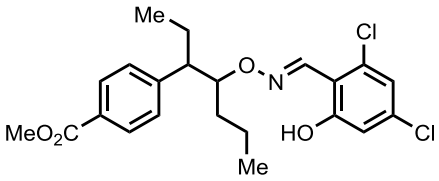
Following General procedure D, the product is obtained as a pale-yellow oil, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.49 (s, 1H), 8.55 (s, 1H), 8.00 (d, *J* = 8.3 Hz, 2H), 7.30 (d, *J* = 8.4 Hz, 2H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.89 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.38 – 4.29 (m, 2H), 3.90 (s, 3H), 3.61 (d, *J* = 14.9 Hz, 6H), 3.45 – 3.26 (m, 2H), 3.13 (dtd, *J* = 9.7, 6.9, 4.9 Hz, 1H), 2.32 – 2.22 (m, 2H), 1.89 (ddt, *J* = 13.4, 10.7, 5.4 Hz, 1H), 1.76 – 1.69 (m, 1H), 1.62 – 1.49 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 170.54, 166.40, 158.71, 148.11, 146.38, 136.35, 134.30, 129.54,

128.48, 127.52, 120.51, 115.74, 112.34, 78.49, 66.43, 66.09, 51.63, 45.42, 44.97, 41.42, 32.31, 31.36, 22.27; HRMS (ESI-TOF) m/z Calcd. for $C_{25}H_{29}Cl_2N_2O_6^+$ $(M+H)^+$: 523.1403; found: 523.1404.



Methyl (*E*)-4-(3-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-4-methoxy -4-oxobutan-2-yl)benzoate (2w)

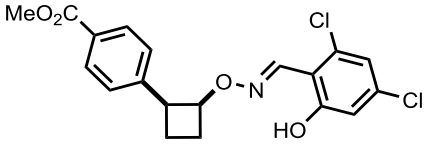
Following General procedure D, the product is obtained as a pale-yellow oil, 74% yield (dr = 4:1). ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.10 (s, 1H), 8.65 (s, 1H), 8.02 (d, *J* = 8.4 Hz, 2H), 7.38 (d, *J* = 8.2 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.90 (d, *J* = 1.6 Hz, 1H), 4.87 (d, *J* = 7.5 Hz, 1H), 3.92 (s, 3H), 3.76 (s, 2H), 3.64 (s, 1H), 3.48 (m, 1H), 1.43 (d, *J* = 7.2 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 170.43, 166.81, 159.12, 149.96, 146.34, 137.30, 135.11, 129.81, 129.08, 127.86, 121.06, 116.24, 112.40, 86.53, 52.23, 52.05, 41.39, 17.56; HRMS (ESI-TOF) m/z Calcd. for $C_{20}H_{20}Cl_2NO_6^+$ $(M+H)^+$: 440.0662; found: 440.0655.



Methyl (*E*)-4-(4-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)heptan-3-yl) benzoate (2x)

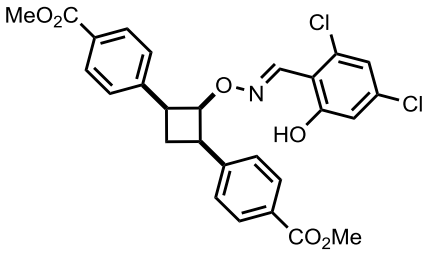
Following General procedure D, the product is obtained as a pale-yellow oil, 63% yield (dr = 5:1). ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.73 (s, 1H), 8.58 (s, 1H), 8.00 (d, *J* = 8.2 Hz, 2H), 7.33 (d, *J* = 8.3 Hz, 2H), 7.00 – 6.97 (m, 1H), 6.95 – 6.91 (m, 1H), 4.42 (dt, *J* = 9.2, 4.4 Hz, 1H), 3.92 (s, 3H), 2.88 (dt, *J* = 10.2, 4.9 Hz, 1H), 2.02 – 1.71 (m, 2H), 1.60 – 1.36 (m, 4H), 0.90 (t, *J* = 7.1 Hz, 3H), 0.82 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.02, 159.11, 147.49, 146.54, 136.44, 134.53, 129.50, 129.04, 128.48, 120.85, 116.07, 113.12, 87.85, 51.98, 51.59, 33.80,

24.49, 18.93, 13.95, 12.13; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{26}Cl_2NO_4^+$ $(M+H)^+$: 438.1239; found: 438.1241.



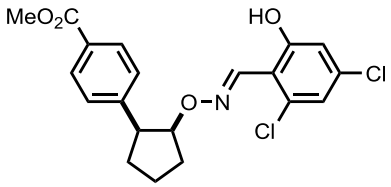
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cyclobutyl) benzoate (2y)

Following General procedure D, the product is obtained as a colorless oil, 18% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.39 (s, 1H), 8.32 (d, *J* = 0.5 Hz, 1H), 7.95 (d, *J* = 8.4 Hz, 2H), 7.36 (d, *J* = 8.1 Hz, 2H), 6.89 (d, *J* = 2.0 Hz, 1H), 6.84 (d, *J* = 2.0 Hz, 1H), 5.14 – 5.07 (m, 1H), 3.97 (q, *J* = 7.5 Hz, 1H), 3.88 (s, 3H), 2.57 – 2.42 (m, 2H), 2.37 – 2.26 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.01, 159.12, 149.09, 144.26, 136.70, 134.70, 129.39, 128.38, 128.30, 120.81, 116.10, 112.72, 80.58, 51.98, 45.56, 26.51, 21.63; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 394.0607; found: 394.0607.



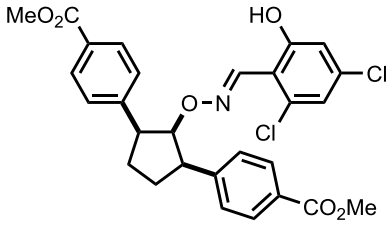
Dimethyl 4,4'-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cyclobutane-1,3-diyl)(*E*)-dibenzoate (2y')

Following General procedure D, the product is obtained as a pale-yellow solid, 58% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 9.79 (s, 1H), 8.08 (s, 1H), 7.96 (d, *J* = 8.3 Hz, 4H), 7.38 (d, *J* = 8.2 Hz, 4H), 6.80 (d, *J* = 2.0 Hz, 1H), 6.72 (d, *J* = 2.0 Hz, 1H), 5.39 (td, *J* = 5.6, 4.1 Hz, 1H), 3.99 (ddd, *J* = 11.0, 7.8, 5.9 Hz, 2H), 3.88 (s, 6H), 3.17 (q, *J* = 11.0 Hz, 1H), 2.75 (dtd, *J* = 11.6, 7.9, 3.9 Hz, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.87, 158.87, 149.26, 143.11, 136.64, 134.49, 129.45, 128.50, 128.29, 120.64, 115.98, 112.32, 86.25, 52.00, 41.75, 29.42; HRMS (ESI-TOF) m/z Calcd. for $C_{27}H_{24}Cl_2NO_6^+$ $(M+H)^+$: 528.0981; found: 528.0988.



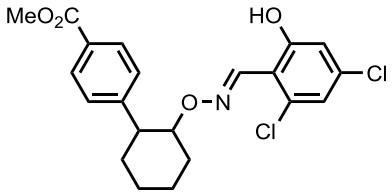
Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cyclopentyl) benzoate (2z)

Following General procedure D, the product is obtained as a colorless oil, 66% yield, dr > 20:1. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.39 (s, 1H), 8.35 (s, 1H), 7.94 (d, *J* = 8.4 Hz, 2H), 7.38 (d, *J* = 8.3 Hz, 2H), 6.89 (d, *J* = 2.0 Hz, 1H), 6.82 (d, *J* = 2.0 Hz, 1H), 4.90 (td, *J* = 5.0, 2.2 Hz, 1H), 3.88 (s, 3H), 3.25 (ddd, *J* = 12.1, 7.8, 4.9 Hz, 1H), 2.25 – 2.06 (m, 4H), 2.01 (ddt, *J* = 17.8, 11.8, 6.0 Hz, 1H), 1.79 (ddd, *J* = 13.9, 11.9, 6.5 Hz, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.01, 159.07, 148.05, 145.06, 136.40, 134.48, 129.34, 128.78, 128.29, 120.73, 116.03, 112.92, 88.14, 51.96, 50.35, 31.72, 29.01, 22.22; HRMS (ESI-TOF) m/z Calcd. for $C_{20}H_{20}Cl_2NO_4^+$ $(M+H)^+$: 408.0764; found: 408.0758.



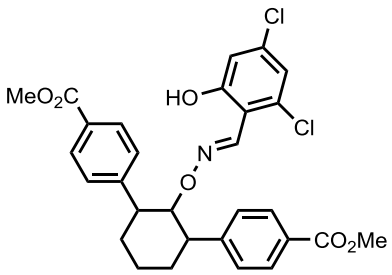
Dimethyl 4,4'-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cyclopentane -1,3-diyl)(*E*)-dibenzoate (2z')

Following General procedure D, the product is obtained as a pale-yellow oil, 16% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 9.52 (s, 1H), 8.13 (s, 1H), 7.95 (d, *J* = 8.3 Hz, 4H), 7.42 (d, *J* = 8.3 Hz, 4H), 6.83 (d, *J* = 2.0 Hz, 1H), 6.68 (d, *J* = 2.0 Hz, 1H), 4.99 (t, *J* = 4.0 Hz, 1H), 3.88 (s, 6H), 3.64 (dq, *J* = 6.9, 4.0 Hz, 2H), 2.55 – 2.44 (m, 2H), 2.39 (ddt, *J* = 13.8, 8.1, 4.3 Hz, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.87, 158.74, 147.53, 144.84, 136.32, 134.28, 129.44, 128.76, 128.49, 120.54, 115.86, 112.43, 91.29, 51.96, 50.57, 28.23; HRMS (ESI-TOF) m/z Calcd. for $C_{28}H_{26}Cl_2NO_6^+$ $(M+H)^+$: 542.1132; found: 542.1128.



Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cyclohexyl) benzoate (2aa)

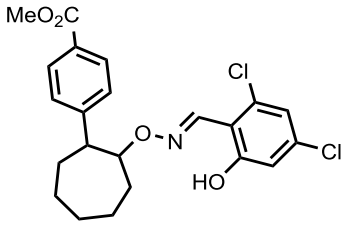
Following General procedure D, the product is obtained as a pale-yellow oil, 31% yield, dr = 1.5:1. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.43 (s, 1H), 8.56 (s, 1H), 7.96 (d, *J* = 8.4 Hz, 2H), 7.37 (d, *J* = 8.4 Hz, 2H), 6.91 (d, *J* = 2.0 Hz, 1H), 6.87 – 6.80 (m, 1H), 4.65 – 4.28 (m, 1H), 3.88 (s, 3H), 2.95 – 2.78 (m, 1H), 2.38 – 2.21 (m, 1H), 2.16 – 1.92 (m, 2H), 1.87 – 1.76 (m, 1H), 1.71 – 1.41 (m, 4H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.02, 166.95, 159.09, 159.05, 148.76, 148.73, 147.87, 147.77, 136.34, 134.49, 134.42, 129.79, 129.47, 128.28, 128.00, 127.57, 120.74, 120.72, 116.03, 115.99, 113.01, 112.99, 85.95, 82.86, 51.94, 49.35, 46.85, 34.08, 32.13, 30.43, 25.88, 25.83, 25.66, 24.68, 19.57; HRMS (ESI-TOF) m/z Calcd. for $C_{21}H_{22}Cl_2NO_4^+$ $(M+H)^+$: 422.0920; found: 422.0924.



Dimethyl 4,4'-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cyclohexane-1,3-diyl)(*E*)-dibenzoate (2aa')

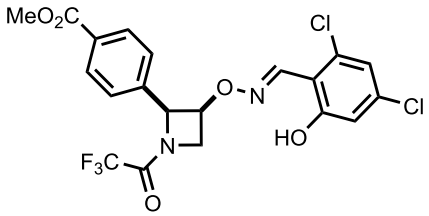
Following General procedure D, the product is obtained as a pale-yellow oil, 62% yield, dr = 2:1. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 8.99 (s, 1H), 8.34 (s, 1H), 7.94 (d, *J* = 8.4 Hz, 4H), 7.37 (d, *J* = 8.3 Hz, 4H), 6.83 (d, *J* = 2.0 Hz, 1H), 6.59 (d, *J* = 2.0 Hz, 1H), 4.69 (s, 1H), 3.88 (s, 6H), 3.12 (d, *J* = 12.8 Hz, 2H), 2.32 – 2.13 (m, 3H), 1.99 – 1.86 (m, 2H), 1.68 (dtd, *J* = 13.2, 9.5, 3.5 Hz, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.88, 158.70, 147.87, 146.75, 136.22, 134.20, 129.57, 128.50,

127.97, 120.43, 115.82, 112.34, 88.02, 51.93, 48.31, 25.70, 25.14; HRMS (ESI-TOF) m/z Calcd. for $C_{29}H_{28}Cl_2NO_6^+$ $(M+H)^+$: 556.1288; found: 556.1289.



Methyl (*E*)-4-(2-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)cycloheptyl) benzoate (2ab)

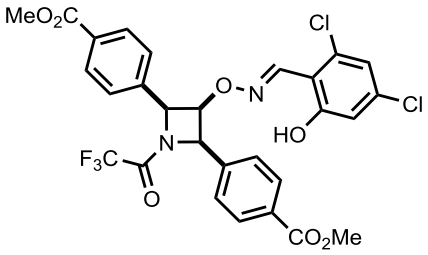
Following General procedure D, the product is obtained as a colorless oil, 76% yield, dr = 2:1. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.49 (s, 1H), 8.60 (s, 1H), 7.97 (d, *J* = 8.5 Hz, 2H), 7.37 (d, *J* = 8.2 Hz, 2H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.86 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.63 (dt, *J* = 5.9, 2.9 Hz, 1H), 3.90 (s, 3H), 3.08 (dt, *J* = 11.2, 2.8 Hz, 1H), 2.28 – 2.08 (m, 2H), 1.95 – 1.61 (m, 8H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.00, 159.11, 150.79, 147.83, 137.68, 134.47, 130.99, 129.54, 127.93, 120.75, 116.06, 113.02, 86.63, 49.47, 32.67, 29.19, 27.52, 27.35, 22.65; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{24}Cl_2NO_4^+$ $(M+H)^+$: 436.1077; found: 436.1076.



Methyl (*E*)-4-(3-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-1-(2,2,2-trifluoroacetyl)azetidin-2-yl)benzoate (2ae)

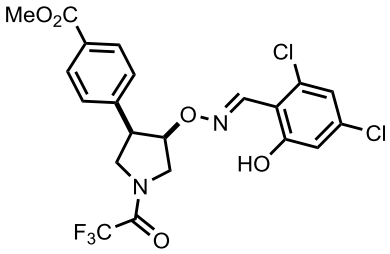
Following General procedure D, the product is obtained as a pale-yellow oil, 39% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 9.77 (s, 1H), 8.21 (s, 1H), 8.02 (d, *J* = 8.4 Hz, 2H), 7.38 (d, *J* = 8.1 Hz, 2H), 6.93 (t, *J* = 2.4 Hz, 1H), 6.88 (dd, *J* = 3.8, 2.0 Hz, 1H), 5.82 (d, *J* = 6.8 Hz, 1H), 5.40 (tt, *J* = 7.1, 3.9 Hz, 1H), 4.88 (dd, *J* = 11.0, 7.3 Hz, 1H), 4.59 (dd, *J* = 11.2, 4.2 Hz, 1H), 3.91 (s, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.98, 151.29, 137.86, 136.91, 135.14, 129.73, 127.38, 127.20,

121.20, 116.32, 73.91, 73.66, 69.45, 56.47, 53.96, 52.16; HRMS (ESI-TOF) m/z Calcd. for $C_{20}H_{16}Cl_2F_3N_2O_5^+$ $(M+H)^+$: 491.0388; found: 491.0388.



Dimethyl 4,4'-(3-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-1-(2,2,2-trifluoroacetyl)azetidine-2,4-diyl)(*E*)-dibenzoate (2ae')

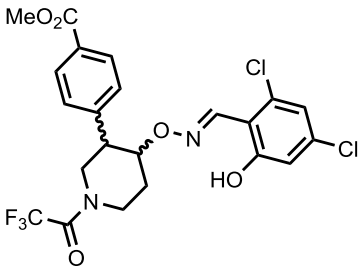
Following General procedure D, the product is obtained as a pale-yellow oil, 6% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 9.65 (s, 1H), 8.12 (d, *J* = 3.3 Hz, 4H), 7.85 (s, 1H), 7.50 (s, 4H), 6.87 (d, *J* = 2.0 Hz, 1H), 6.84 (dd, *J* = 2.0, 0.5 Hz, 1H), 6.09 (s, 2H), 5.61 (t, *J* = 7.2 Hz, 1H), 3.93 (s, 6H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.89, 151.45, 137.87, 135.09, 130.28, 126.98, 121.16, 116.27, 111.63, 76.60, 52.23; HRMS (ESI-TOF) m/z Calcd. for $C_{28}H_{22}Cl_2F_3N_2O_7^+$ $(M+H)^+$: 625.0756; found: 625.0766.



Methyl (*E*)-4-(4-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-1-(2,2,2-trifluoroacetyl)pyrrolidin-3-yl)benzoate (2af)

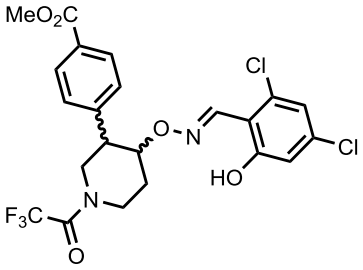
Following General procedure D, the product is obtained as a pale-yellow oil, 42% yield (rotamers). ^{1}H NMR (400 MHz, Chloroform-*d*) δ 9.90 (s, 1H), 8.54 (s, 1H), 8.06 (d, *J* = 8.3 Hz, 2H), 7.42 (d, *J* = 8.6 Hz, 2H), 6.97 (dd, *J* = 3.1, 2.0 Hz, 1H), 6.89 (ddd, *J* = 2.6, 2.0, 0.5 Hz, 1H), 5.14 (dt, *J* = 14.3, 3.9 Hz, 1H), 4.34 – 3.96 (m, 4H), 3.94 (s, 3H), 3.84 – 3.70 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.52, 159.08, 150.48, 150.31, 139.23, 138.90, 137.60, 137.51, 135.14, 135.01, 129.95, 128.48,

121.17, 116.31, 112.21, 84.32, 82.02, 53.09, 52.22, 49.38, 48.37, 45.80; HRMS (ESI-TOF) m/z Calcd. for $C_{21}H_{18}Cl_2F_3N_2O_5^+$ $(M+H)^+$: 505.0545; found: 505.0547.



Methyl (*E*)-4-(4-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-1-(2,2,2-trifluoroacetyl)piperidin-3-yl)benzoate (2ag)

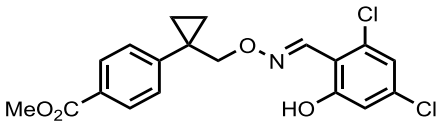
Following General procedure D, the product is obtained as a pale-yellow oil, 41% yield (major diastereomer). ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.05 (s, 1H), 8.66 (s, 1H), 8.04 (t, *J* = 8.0 Hz, 2H), 7.38 (d, *J* = 8.3 Hz, 2H), 6.98 (t, *J* = 2.0 Hz, 1H), 6.87 (t, *J* = 2.3 Hz, 1H), 4.78 (dd, *J* = 5.4, 2.6 Hz, 1H), 4.71 – 4.55 (m, 1H), 4.03 (m, 1H), 3.93 (s, 3H), 3.65 – 3.15 (m, 3H), 2.42 – 2.33 (m, 1H), 2.06 – 1.97 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.65, 159.06, 155.53, 149.35, 143.41, 143.10, 137.25, 134.83, 129.98, 129.87, 127.96, 121.10, 116.25, 112.41, 79.80, 52.13, 46.37, 45.18, 42.53, 40.48, 30.37, 29.29; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{20}Cl_2F_3N_2O_5^+$ $(M+H)^+$: 519.0696; found: 519.0698.



Methyl (*E*)-4-(4-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)-1-(2,2,2-trifluoroacetyl)piperidin-3-yl)benzoate (2ag')

Following General procedure D, the product is obtained as a pale-yellow oil, 20% yield (minor diastereomer, rotamers). ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.14 (d, *J* = 11.0 Hz, 1H), 8.49 (d, *J* = 13.8 Hz, 1H), 8.06 (t, *J* = 8.1 Hz, 2H), 7.37 (t, *J* = 8.2 Hz, 2H), 6.95 (dd, *J* = 3.7, 2.0 Hz, 1H), 6.89 (t, *J* = 2.0 Hz, 1H), 4.81 – 4.62 (m, 2H), 4.16 (m, 1H), 3.93 (s, 3H), 3.45 – 3.31 (m, 1H), 3.07 (dd, *J* = 24.7, 10.1 Hz, 2H), 2.50

– 2.42 (m, 1H), 1.90 – 1.80 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.59, 159.03, 155.53, 149.34, 143.01, 142.74, 137.11, 130.36, 130.22, 129.67, 127.75, 127.68, 121.08, 82.77, 52.15, 48.51, 47.41, 47.01, 42.13, 31.16, 30.51; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{20}Cl_2F_3N_2O_5^+$ $(M+H)^+$: 519.0696; found: 519.0699 .



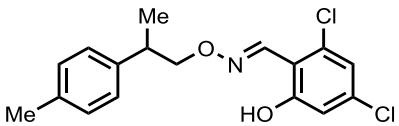
Methyl (*E*)-4-(1-((((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)methyl) cyclopropyl)benzoate (2ah)

Following General procedure D, the product is obtained as a colorless oil, 32% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.54 (s, 1H), 8.60 (s, 1H), 7.97 (d, *J* = 8.7 Hz, 2H), 7.39 (d, *J* = 8.7 Hz, 2H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.89 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.32 (s, 2H), 3.90 (s, 3H), 0.91 – 0.82 (m, 4H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.91, 159.21, 148.49, 147.79, 136.73, 134.76, 129.69, 128.38, 128.29, 120.93, 116.17, 112.89, 82.15, 52.04, 29.70, 24.96, 12.83; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 394.0607; found: 394.0602.

C(sp^3)-H arylation of DG9-tethered 1-propanol

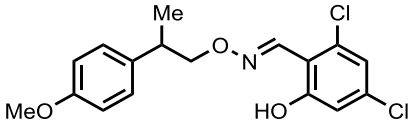
General procedure E:

To a 8-mL vial were added **DG9**-tethered 1-propanol (0.1 mmol), aryl iodide (0.3 mmol), palladium acetate (2.3 mg, 0.01 mmol), 3-nitro-5-trifluoromethyl-2-pyridone (8.1 mg, 0.04 mmol) and silver trifluoroacetate (33 mg, 0.15 mmol). the mixture was dissolved with 1,1,1,3,3,3-hexafluoro-2-propanol (HFIP, 1.0 mL). The vial was sealed and stirred at 100 °C for 12 hours unless otherwise stated. The reaction was cooled to room temperature and diluted with 5 mL of EtOAc and filtered through a pad of Celite. The filtrate was concentrated and purified by preparative thin-layer chromatography.



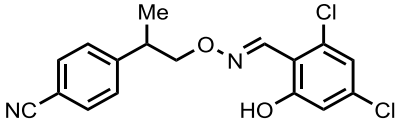
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(p-tolyl)propyl) oxime (3a)

Following General procedure E, the product is obtained as a colorless oil, 88% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.65 (s, 1H), 8.62 (s, 1H), 7.15 (s, 4H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (d, *J* = 2.0 Hz, 1H), 4.31 (dd, *J* = 10.5, 6.9 Hz, 1H), 4.22 (dd, *J* = 10.5, 7.5 Hz, 1H), 3.19 (m, 1H), 2.34 (s, 3H), 1.34 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.21, 148.23, 139.96, 136.57, 136.30, 134.67, 129.27, 127.15, 120.87, 116.15, 112.99, 80.61, 38.82, 21.02, 18.12; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{18}Cl_2NO_2^+$ $(M+H)^+$: 338.0709; found: 338.0714.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(4-methoxyphenyl)propyl) oxime (3b)

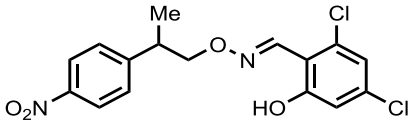
Following General procedure E, the product is obtained as a colorless oil, 66% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.64 (s, 1H), 8.61 (s, 1H), 7.17 (d, *J* = 8.5 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (d, *J* = 2.4 Hz, 1H), 6.88 (d, *J* = 8.7 Hz, 2H), 4.29 (dd, *J* = 10.5, 6.9 Hz, 1H), 4.20 (dd, *J* = 10.5, 7.5 Hz, 1H), 3.80 (s, 3H), 3.17 (m, 1H), 1.33 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.20, 158.36, 148.22, 136.58, 135.02, 134.67, 128.20, 120.87, 116.15, 113.98, 112.98, 80.70, 55.25, 38.40, 18.16; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{18}Cl_2NO_3^+$ $(M+H)^+$: 354.0658; found: 354.0659.



(*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propan-2-yl)benzonitrile (3c)

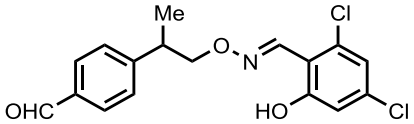
Following General procedure E, the product is obtained as a colorless oil, 68% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.43 (s, 1H), 8.58 (s, 1H), 7.63 (d, *J* = 8.4 Hz, 2H), 7.36 (d, *J* = 8.1 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.93 – 6.88 (m, 1H), 4.35 – 4.24 (m, 2H), 3.29 (m, 1H), 1.36 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.14, 148.70, 148.67, 136.92, 134.79, 132.43, 128.19, 121.01,

118.81, 116.22, 112.70, 110.71, 79.55, 39.51, 17.72; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{15}Cl_2N_2O_2^+$ $(M+H)^+$: 349.0505; found: 349.0513.



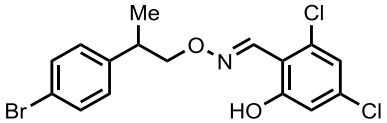
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(4-nitrophenyl)propyl) oxime (3d)

Following General procedure E, the product is obtained as a pale-yellow oil, 57% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.43 (s, 1H), 8.58 (s, 1H), 8.20 (d, *J* = 8.8 Hz, 2H), 7.42 (d, *J* = 8.6 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.93 – 6.88 (m, 1H), 4.38 – 4.27 (m, 2H), 3.35 (m, 1H), 1.39 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.15, 150.81, 148.78, 146.91, 136.97, 134.82, 128.24, 123.87, 121.04, 116.23, 112.69, 79.51, 39.36, 17.82; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}Cl_2N_2O_4^+$ $(M+H)^+$: 369.0403; found: 369.0402.



(*E*)-4-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propan-2-yl)benzaldehyde (3e)

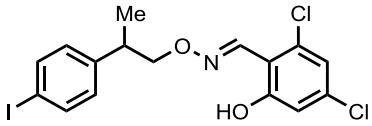
Following General procedure E, the product is obtained as a colorless oil, 84% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.49 (s, 1H), 9.99 (s, 1H), 8.58 (s, 1H), 7.85 (d, *J* = 8.2 Hz, 2H), 7.42 (d, *J* = 8.1 Hz, 2H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (d, *J* = 2.0 Hz, 1H), 4.40 – 4.26 (m, 2H), 3.32 (m, 1H), 1.38 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 191.81, 159.15, 150.31, 148.58, 136.82, 135.22, 134.75, 130.10, 128.04, 120.96, 116.19, 112.77, 79.76, 39.58, 17.83; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{16}Cl_2NO_3^+$ $(M+H)^+$: 352.0502; found: 352.0508.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(4-bromophenyl)propyl) oxime (3f)

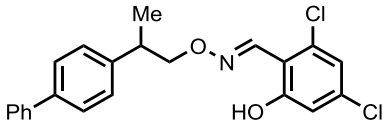
Following General procedure E, the product is obtained as a colorless oil, 80% yield.

^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.55 (s, 1H), 8.60 (s, 1H), 7.45 (d, *J* = 8.4 Hz, 2H), 7.13 (d, *J* = 8.3 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.32 – 4.18 (m, 2H), 3.19 (m, 1H), 1.33 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.18, 148.46, 142.03, 136.74, 134.73, 131.66, 129.05, 120.94, 120.51, 116.19, 112.86, 80.07, 38.79, 17.93; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}BrCl_2NO_2^+$ $(M+H)^+$: 401.9658; found: 401.9661.



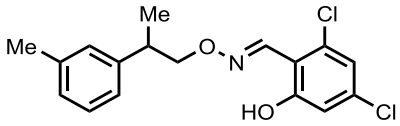
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(4-iodophenyl)propyl) oxime (3g)

Following General procedure E, the product is obtained as a colorless oil, 72% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.55 (s, 1H), 8.59 (s, 1H), 7.65 (d, *J* = 8.4 Hz, 2H), 7.00 (d, *J* = 8.1 Hz, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.33 – 4.18 (m, 2H), 3.17 (m, 1H), 1.32 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 148.48, 142.74, 137.64, 136.74, 134.74, 129.38, 120.94, 116.19, 112.86, 91.94, 80.04, 38.89, 17.89; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}ICl_2NO_2^+$ $(M+H)^+$: 449.9519; found: 449.9519.



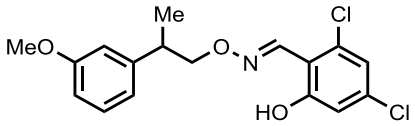
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-([1,1'-biphenyl]-4-yl)propyl) oxime (3h)

Following General procedure E, the product is obtained as a colorless oil, 78% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.65 (s, 1H), 8.66 (s, 1H), 7.60 (ddt, *J* = 10.4, 8.5, 1.7 Hz, 4H), 7.51 – 7.44 (m, 2H), 7.41 – 7.33 (m, 3H), 6.99 (d, *J* = 2.0 Hz, 1H), 6.96 – 6.92 (m, 1H), 4.42-4.30 (m, 2H), 3.30 (m, 1H), 1.43 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.21, 148.34, 142.07, 140.86, 139.74, 136.63, 134.70, 128.71, 127.72, 127.33, 127.15, 127.03, 120.89, 116.17, 112.95, 80.45, 38.97, 18.05; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{20}Cl_2NO_2^+$ $(M+H)^+$: 400.0866; found: 400.0862.



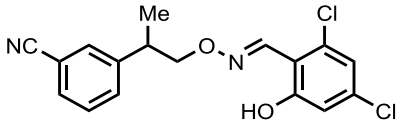
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(m-tolyl)propyl) oxime (3i)

Following General procedure E, the product is obtained as a colorless oil, 80% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.65 (s, 1H), 8.62 (s, 1H), 7.25 – 7.20 (m, 1H), 7.10 – 7.03 (m, 3H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.36 – 4.19 (m, 2H), 3.18 (m, 1H), 2.36 (s, 3H), 1.35 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.21, 148.26, 142.95, 138.17, 136.59, 134.68, 128.47, 128.07, 127.51, 124.29, 120.87, 116.16, 112.99, 80.56, 21.47, 18.12; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{18}Cl_2NO_2^+$ $(M+H)^+$: 338.0709; found: 338.0711.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(3-methoxyphenyl)propyl) oxime (3j)

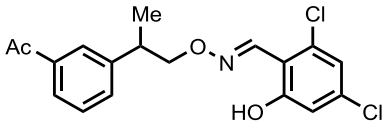
Following General procedure E, the product is obtained as a colorless oil, 78% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.65 (s, 1H), 8.64 (s, 1H), 7.29 (d, *J* = 7.7 Hz, 1H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.93 (d, *J* = 2.0 Hz, 1H), 6.87 (d, *J* = 7.6 Hz, 1H), 6.81 (dd, *J* = 9.2, 1.6 Hz, 2H), 4.35 (dd, *J* = 10.5, 6.9 Hz, 1H), 4.25 (dd, *J* = 10.5, 7.4 Hz, 1H), 3.84 (s, 3H), 3.22 (m, 1H), 1.37 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.75, 159.21, 148.30, 144.71, 136.61, 134.69, 129.56, 120.88, 119.65, 116.16, 113.43, 112.95, 111.69, 80.41, 55.17, 39.31, 18.06; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{18}Cl_2NO_3^+$ $(M+H)^+$: 354.0658; found: 354.0662.



(*E*)-3-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propan-2-yl)benzonitrile (3k)

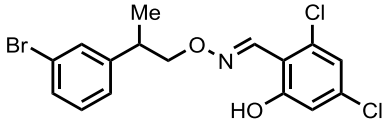
Following General procedure E, the product is obtained as a colorless oil, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.45 (s, 1H), 8.59 (s, 1H), 7.58 – 7.52 (m, 2H), 7.52 – 7.47 (m, 1H), 7.44 (t, *J* = 8.0 Hz, 1H), 6.96 (d, *J* = 2.1 Hz, 1H), 6.90 (dd, *J* =

2.1, 0.5 Hz, 1H), 4.34 – 4.23 (m, 2H), 3.26 (m, 1H), 1.37 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.16, 148.73, 144.59, 136.90, 134.81, 131.98, 131.01, 130.53, 129.38, 121.00, 118.83, 116.21, 112.72, 112.71, 79.65, 39.01, 29.69, 17.76; HRMS (ESI-TOF) m/z Calcd. for $C_{17}H_{15}Cl_2N_2O_2^+$ $(M+H)^+$: 349.0505; found: 349.0507.



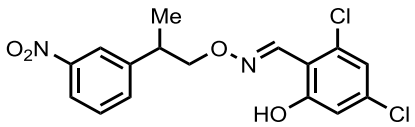
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(3-acetylphenyl)propyl) oxime (3l)

Following General procedure E, the product is obtained as a colorless oil, 81% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.55 (s, 1H), 8.61 (s, 1H), 7.91 – 7.83 (m, 2H), 7.50 – 7.44 (m, 2H), 6.97 (d, *J* = 2.0 Hz, 1H), 6.92 (d, *J* = 2.4 Hz, 1H), 4.40 – 4.27 (m, 2H), 3.32 (m, 1H), 2.63 (s, 3H), 1.41 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 198.09, 159.17, 148.48, 143.72, 136.73, 134.73, 132.19, 128.82, 127.03, 126.94, 120.92, 116.18, 112.83, 80.08, 39.25, 26.68, 17.99; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{18}Cl_2NO_3^+$ $(M+H)^+$: 366.0658; found: 366.0663.



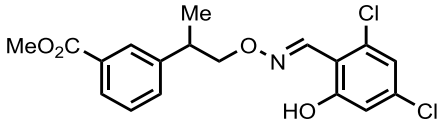
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(3-bromophenyl)propyl) oxime (3m)

Following General procedure E, the product is obtained as a colorless oil, 86% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.55 (s, 1H), 8.61 (s, 1H), 7.51 – 7.34 (m, 2H), 7.24 – 7.11 (m, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (d, *J* = 2.0 Hz, 1H), 4.31-4.22 (m, 2H), 3.19 (m, 1H), 1.34 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 148.53, 145.42, 136.74, 134.76, 130.42, 130.15, 129.88, 126.04, 122.68, 120.93, 116.19, 112.86, 80.02, 39.08, 17.93; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}BrCl_2NO_2^+$ $(M+H)^+$: 401.9658; found: 401.9661.



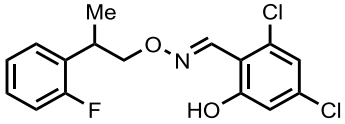
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(3-nitrophenyl)propyl) oxime (3n)

Following General procedure E, the product is obtained as a colorless oil, 88% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.46 (s, 1H), 8.61 (s, 1H), 8.20 – 8.09 (m, 2H), 7.61 (d, *J* = 7.7 Hz, 1H), 7.53 (t, *J* = 7.9 Hz, 1H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.92 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.41 – 4.28 (m, 2H), 3.38 (m, 1H), 1.43 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.15, 148.78, 148.49, 145.21, 136.91, 134.81, 133.76, 129.49, 122.25, 121.93, 121.00, 116.21, 112.70, 79.62, 39.11, 17.82; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}Cl_2N_2O_4^+$ $(M+H)^+$: 369.0403; found: 369.0405.



Methyl (*E*)-3-(1-(((2,4-dichloro-6-hydroxybenzylidene)amino)oxy)propan -2-yl)benzoate (3o)

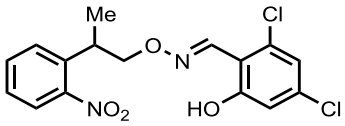
Following General procedure E, the product is obtained as a colorless oil, 78% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.57 (s, 1H), 8.62 (s, 1H), 8.00 – 7.89 (m, 2H), 7.50 – 7.38 (m, 2H), 6.97 (d, *J* = 2.0 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.38-4.28 (m, 2H), 3.94 (s, 3H), 3.31 (m, 1H), 1.40 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.03, 159.19, 148.47, 143.43, 136.70, 134.72, 132.06, 130.47, 128.64, 128.37, 128.04, 120.90, 116.18, 112.87, 80.10, 52.12, 39.15, 17.98; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{18}Cl_2NO_4^+$ $(M+H)^+$: 382.0607; found: 382.0608.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-fluorophenyl)propyl) oxime (3p)

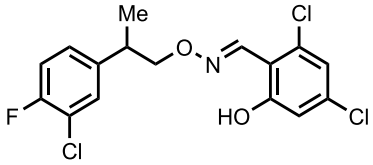
Following General procedure E, the product is obtained as a colorless oil, 72% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.61 (s, 1H), 8.63 (s, 1H), 7.14 (td, *J* = 7.5, 1.3 Hz, 1H), 7.07 (dd, *J* = 10.6, 8.1 Hz, 1H), 6.98 (d, *J* = 2.1 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.41 (dd, *J* = 10.6, 6.7 Hz, 1H), 4.29 (dd, *J* = 10.6, 7.2 Hz, 1H), 3.58 (m, 1H), 1.40 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 160.93 (d, *J* = 244.6 Hz), 159.22, 148.34, 136.62, 134.70, 129.66 (d, *J* = 15.1 Hz), 128.37 (d, *J* = 4.5

Hz), 128.19 (d, *J* = 7.6 Hz), 124.24 (d, *J* = 3.0 Hz), 120.86, 116.19, 115.57 (d, *J* = 22.7 Hz), 112.94, 79.19 (d, *J* = 1.5 Hz), 32.89 (d, *J* = 1.5 Hz), 16.81 (d, *J* = 0.8 Hz); HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}Cl_2FNO_2^+$ $(M+H)^+$: 342.0458; found: 342.0461.



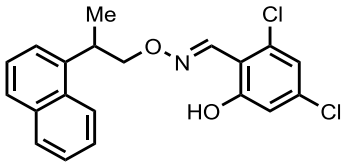
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-nitrophenyl)propyl) oxime (3q)

Following General procedure E, the product is obtained as a pale-yellow oil, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.41 (s, 1H), 8.58 (s, 1H), 7.77 (dd, *J* = 8.1, 1.3 Hz, 1H), 7.62 – 7.56 (m, 1H), 7.50 (dd, *J* = 7.9, 1.2 Hz, 1H), 7.42 – 7.34 (m, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.91 – 6.89 (m, 1H), 4.38 (dd, *J* = 10.7, 6.9 Hz, 1H), 4.28 (dd, *J* = 10.7, 6.7 Hz, 1H), 3.85 (h, *J* = 6.9 Hz, 1H), 1.41 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.21, 148.67, 137.02, 136.77, 134.79, 132.69, 128.24, 127.50, 124.31, 120.90, 116.24, 112.76, 79.44, 33.49, 17.53; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{15}Cl_2N_2O_4^+$ $(M+H)^+$: 369.0403; found: 369.0410.



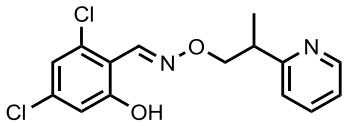
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(3-chloro-4-fluorophenyl)propyl) oxime (3r)

Following General procedure E, the product is obtained as a colorless oil, 86% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.51 (s, 1H), 8.60 (s, 1H), 7.28 (dd, *J* = 7.3, 1.5 Hz, 1H), 7.14 – 7.05 (m, 2H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.30 – 4.18 (m, 2H), 3.18 (m, 1H), 1.33 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.18, 157.76, 156.12, 148.60, 140.09 (d, *J* = 4.5 Hz), 136.82, 134.78, 129.35, 126.99 (d, *J* = 6.8 Hz), 120.97, 116.59 (d, *J* = 20.8 Hz), 116.21, 112.80, 79.97, 38.50, 18.00; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{14}Cl_3FNO_2^+$ $(M+H)^+$: 376.0069; found: 376.0073.



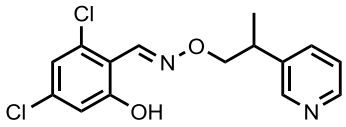
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(naphthalen-1-yl)propyl) oxime (3s)

Following General procedure E, the product is obtained as a colorless oil, 74% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.66 (s, 1H), 8.61 (s, 1H), 7.87 – 7.78 (m, 3H), 7.69 (s, 1H), 7.51 – 7.42 (m, 2H), 7.40 (dd, *J* = 8.4, 1.8 Hz, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.44 (dd, *J* = 10.6, 7.0 Hz, 1H), 4.33 (dd, *J* = 10.5, 7.3 Hz, 1H), 3.40 (m, 1H), 1.45 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.20, 148.37, 140.44, 136.62, 134.70, 133.54, 132.46, 128.24, 127.61, 126.07, 125.77, 125.70, 125.54, 120.89, 116.16, 112.94, 80.38, 39.36, 18.13; HRMS (ESI-TOF) m/z Calcd. for $C_{20}H_{18}Cl_2NO_2^+$ $(M+H)^+$: 374.0709; found: 374.0713.



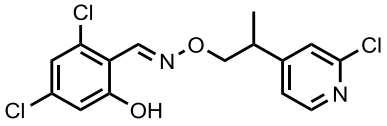
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(pyridin-2-yl)propyl) oxime (3t)

Following General procedure E, the product is obtained as a pale-yellow oil, 38% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.54 (s, 1H), 8.58 (d, *J* = 4.8 Hz, 1H), 8.56 (s, 1H), 7.62 (td, *J* = 7.7, 1.8 Hz, 1H), 7.18 (d, *J* = 7.8 Hz, 1H), 7.17 – 7.12 (m, 1H), 6.93 (d, *J* = 2.0 Hz, 1H), 6.89 (d, *J* = 2.0 Hz, 1H), 4.56 (dd, *J* = 10.6, 7.5 Hz, 1H), 4.37 (dd, *J* = 10.6, 6.5 Hz, 1H), 3.37 (m, 1H), 1.37 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 162.39, 159.18, 149.47, 148.20, 136.56, 136.50, 134.64, 122.49, 121.76, 120.82, 116.15, 112.93, 79.33, 41.32, 17.20; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{15}Cl_2N_2O_2^+$ $(M+H)^+$: 325.0505; found: 325.0511.



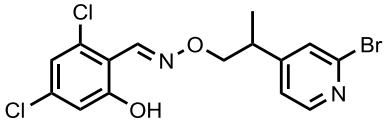
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(pyridin-3-yl)propyl) oxime (3u)

Following General procedure E, the product is obtained as a pale-yellow oil, 34% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.49 (s, 1H), 8.59 (s, 1H), 8.51 (d, *J* = 11.6 Hz, 2H), 7.57 (dddd, *J* = 7.9, 2.2, 1.6, 0.5 Hz, 1H), 7.30 – 7.26 (m, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.37 – 4.23 (m, 2H), 3.25 (m, 1H), 1.38 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.16, 149.33, 148.63, 148.24, 138.36, 136.82, 134.78, 134.56, 123.52, 120.97, 116.19, 112.78, 79.75, 36.94, 17.69; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{15}Cl_2N_2O_2^+$ $(M+H)^+$: 325.0505; found: 325.0507.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-chloropyridin-4-yl)propyl) oxime (3v)

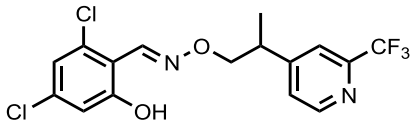
Following General procedure E, the product is obtained as a pale-yellow oil, 70% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.40 (s, 1H), 8.59 (s, 1H), 8.33 (s, 1H), 7.22 (s, 1H), 7.11 (dd, *J* = 5.1, 1.4 Hz, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (d, *J* = 2.0 Hz, 1H), 4.38 – 4.22 (m, 2H), 3.21 (m, 1H), 1.35 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.15, 155.53, 151.90, 149.80, 148.96, 137.01, 134.86, 123.23, 121.55, 121.04, 116.24, 112.63, 78.86, 38.66, 17.27; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}Cl_3N_2O_2^+$ $(M+H)^+$: 359.0115; found: 359.0113.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-bromopyridin-4-yl)propyl) oxime (3w)

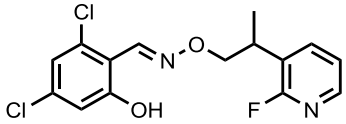
Following General procedure E, the product is obtained as a pale-yellow oil, 58% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.42 (s, 1H), 8.62 (s, 1H), 8.33 (d, *J* = 5.4 Hz, 1H), 7.40 (d, *J* = 1.5 Hz, 1H), 7.16 (dd, *J* = 5.1, 1.2 Hz, 1H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.4 Hz, 1H), 4.38 – 4.25 (m, 2H), 3.22 (dt, *J* = 13.9, 7.0 Hz, 1H), 1.37 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.15, 155.27, 150.22, 148.98, 142.64, 137.01, 134.87, 127.04, 121.94, 121.04, 116.24,

112.63, 78.84, 38.60, 17.27; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}BrCl_2N_2O_2^+$ $(M+H)^+$: 402.9610; found: 402.9610.



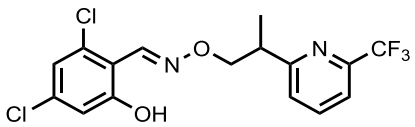
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-(trifluoromethyl)pyridin-4-yl) propyl) oxime (3x)

Following General procedure E, the product is obtained as a pale-yellow oil, 71% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.37 (s, 1H), 8.67 (d, *J* = 5.0 Hz, 1H), 8.59 (s, 1H), 7.57 (s, 1H), 7.38 (d, *J* = 5.0 Hz, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.33 (d, *J* = 6.9 Hz, 2H), 3.32 (m, 1H), 1.39 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.15, 154.22, 150.19, 149.06, 148.58 (q, *J* = 34.4 Hz), 137.08, 134.89, 125.42, 121.53 (q, *J* = 274.8 Hz), 121.07, 119.51 (q, *J* = 2.7 Hz), 116.25, 112.58, 78.81, 38.93, 17.26; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{14}Cl_2F_3N_2O_2^+$ $(M+H)^+$: 393.0379; found: 393.0387.



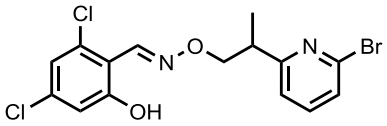
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-fluoropyridin-3-yl)propyl) oxime (3y)

Following General procedure E, the product is obtained as a pale-yellow oil, 56% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.48 (s, 1H), 8.60 (s, 1H), 8.17 – 8.06 (m, 1H), 7.77 – 7.64 (m, 1H), 7.25 – 7.13 (m, 1H), 6.97 (d, *J* = 2.0 Hz, 1H), 6.93 (d, *J* = 2.0 Hz, 1H), 4.37 (ddd, *J* = 47.9, 10.7, 6.8 Hz, 2H), 3.50 (m, 1H), 1.40 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 161.68 (d, *J* = 238.9 Hz), 159.19, 148.68, 145.72 (d, *J* = 1.5 Hz), 139.10, 136.84, 134.78, 124.74 (d, *J* = 29.1 Hz), 121.64, 120.95, 116.22, 112.75, 78.36, 33.14, 16.43; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}Cl_2FN_2O_2^+$ $(M+H)^+$: 343.0411; found: 343.0417.



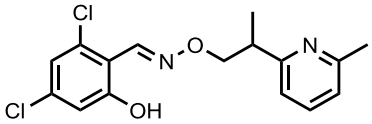
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-(trifluoromethyl)pyridin-2-yl) propyl) oxime (3z)

Following General procedure E, the product is obtained as a pale-yellow oil, 88% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.47 (s, 1H), 8.56 (d, *J* = 0.5 Hz, 1H), 7.79 (td, *J* = 7.8, 0.7 Hz, 1H), 7.54 (dd, *J* = 7.8, 0.9 Hz, 1H), 7.38 (d, *J* = 7.8 Hz, 1H), 6.94 (d, *J* = 2.0 Hz, 1H), 6.89 (dd, *J* = 2.1, 0.5 Hz, 1H), 4.56 (dd, *J* = 10.6, 7.6 Hz, 1H), 4.40 (dd, *J* = 10.6, 6.1 Hz, 1H), 3.51 – 3.40 (m, 1H), 1.40 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 163.36, 159.18, 148.40, 147.99 (q, *J* = 33.2 Hz), 137.64, 136.69, 134.69, 125.12, 121.50 (q, *J* = 274.8), 120.87, 118.36 (q, *J* = 3.0 Hz), 116.18, 112.82, 78.96, 41.22, 16.98; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{14}Cl_2F_3N_2O_2^+$ $(M+H)^+$: 393.0379; found: 393.0383.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-bromopyridin-2-yl)propyl) oxime (3aa)

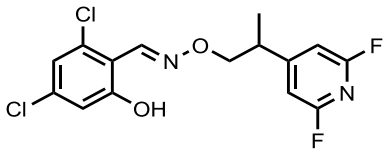
Following General procedure E, the product is obtained as a pale-yellow oil, 66% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.52 (s, 1H), 8.59 (s, 1H), 7.50 (d, *J* = 7.7 Hz, 1H), 7.36 (d, *J* = 7.8 Hz, 1H), 7.16 (d, *J* = 7.5 Hz, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.92 (d, *J* = 2.0 Hz, 1H), 4.55 (dd, *J* = 10.6, 7.5 Hz, 1H), 4.38 (dd, *J* = 10.6, 6.2 Hz, 1H), 3.41 – 3.31 (m, 1H), 1.38 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 164.06, 159.18, 148.38, 141.94, 138.72, 136.66, 134.67, 126.16, 121.18, 120.85, 116.18, 112.84, 78.90, 41.12, 17.03; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}BrCl_2N_2O_2^+$ $(M+H)^+$: 402.9610; found: 402.9611.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-methylpyridin-2-yl)propyl) oxime (3ab)

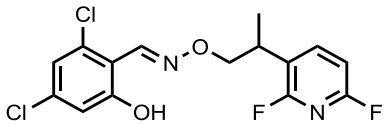
Following General procedure E, the product is obtained as a pale-yellow oil, 70% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.57 (s, 1H), 8.57 (s, 1H), 7.51 (t, *J* =

7.7 Hz, 1H), 6.99 (t, *J* = 8.0 Hz, 2H), 6.94 (d, *J* = 2.0 Hz, 1H), 6.89 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.55 (dd, *J* = 10.5, 7.2 Hz, 1H), 4.36 (dd, *J* = 10.5, 6.5 Hz, 1H), 3.34 (m, 1H), 2.54 (s, 3H), 1.36 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 161.70, 159.20, 158.08, 148.10, 136.70, 136.50, 134.62, 121.30, 120.80, 118.94, 116.15, 112.98, 79.49, 41.40, 24.49, 17.27; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{17}Cl_2N_2O_2^+$ $(M+H)^+$: 339.0662; found: 339.0665.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2,6-difluoropyridin-4-yl)propyl) oxime (3ac)

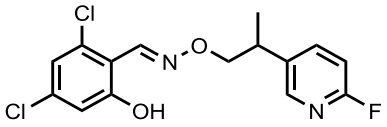
Following General procedure E, the product is obtained as a pale-yellow oil, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.35 (s, 1H), 8.60 (s, 1H), 6.97 (d, *J* = 2.0 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 6.72 (s, 2H), 4.31 (d, *J* = 6.8 Hz, 2H), 3.30 (h, *J* = 6.9 Hz, 1H), 1.37 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 162.93 (t, *J* = 7.5 Hz), 161.99 (dd, *J* = 246.6, 16.0 Hz), 159.15, 149.14, 137.13, 134.93, 121.10, 116.27, 112.57, 104.85 (dd, *J* = 30.1, 12.1 Hz), 78.62, 38.96 (t, *J* = 2.7 Hz), 17.26; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{13}Cl_2F_2N_2O_2^+$ $(M+H)^+$: 361.0317; found: 361.0319.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2,6-difluoropyridin-3-yl)propyl) oxime (3ad)

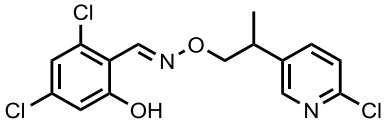
Following General procedure E, the product is obtained as a pale-yellow oil, 60% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.44 (s, 1H), 8.61 (s, 1H), 7.85 – 7.77 (m, 1H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.5 Hz, 1H), 6.84 (dd, *J* = 8.1, 2.9 Hz, 1H), 4.40 – 4.29 (m, 2H), 3.50 (m, 1H), 1.39 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 160.42 (dd, *J* = 154.8, 14.0 Hz), 159.17, 158.79 (dd, *J* = 155.4, 14.3 Hz), 148.81, 143.28 (dd, *J* = 7.6, 5.7 Hz), 136.94, 134.82, 121.18 (d, *J* = 6.0 Hz),

121.00, 116.24, 112.68, 106.22 (dd, *J* = 34.7, 6.0 Hz), 78.26, 32.44 (d, *J* = 3.0 Hz), 16.53; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{13}Cl_2F_2N_2O_2^+$ $(M+H)^+$: 361.0317; found: 361.0318.



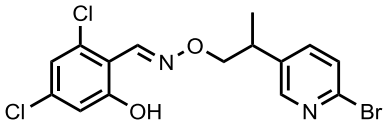
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-fluoropyridin-3-yl)propyl) oxime (3ae)

Following General procedure E, the product is obtained as a pale-yellow oil, 61% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.44 (s, 1H), 8.59 (s, 1H), 8.10 (d, *J* = 2.5 Hz, 1H), 7.68 (td, *J* = 8.1, 2.6 Hz, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.94 – 6.88 (m, 2H), 4.32 – 4.23 (m, 2H), 3.27 (m, 1H), 1.37 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 162.70 (d, *J* = 238.6 Hz), 159.15, 146.64 (d, *J* = 15.1 Hz), 139.71, 136.92, 136.01, 134.82, 121.02, 116.21, 112.70, 109.54, 109.30, 79.64, 36.14, 17.78; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}Cl_2FN_2O_2^+$ $(M+H)^+$: 343.0411; found: 343.0414.



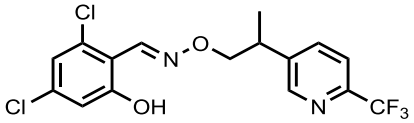
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-chloropyridin-3-yl)propyl) oxime (3af)

Following General procedure E, the product is obtained as a pale-yellow oil, 56% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.43 (s, 1H), 8.59 (s, 1H), 8.28 (d, *J* = 2.5 Hz, 1H), 7.55 (dd, *J* = 8.4, 2.7 Hz, 1H), 7.30 (d, *J* = 8.2 Hz, 1H), 6.96 (d, *J* = 2.0 Hz, 1H), 6.90 (d, *J* = 2.0 Hz, 1H), 4.32 – 4.22 (m, 2H), 3.25 (m, 1H), 1.36 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.14, 149.89, 149.07, 148.81, 137.45, 137.35, 136.94, 134.83, 124.19, 121.02, 116.21, 112.68, 79.42, 36.29, 17.61; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}Cl_3N_2O_2^+$ $(M+H)^+$: 359.0115; found: 359.0122.



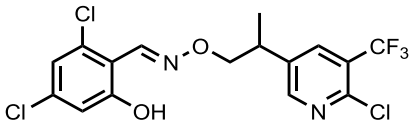
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-bromopyridin-3-yl)propyl) oxime (3ag)

Following General procedure E, the product is obtained as a pale-yellow oil, 57% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.45 (s, 1H), 8.61 (s, 1H), 8.36 – 8.25 (m, 1H), 7.54 – 7.42 (m, 2H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.4 Hz, 1H), 4.30 (qd, *J* = 10.6, 6.9 Hz, 2H), 3.25 (m, 1H), 1.39 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.14, 149.62, 148.83, 140.38, 137.79, 137.27, 136.95, 134.84, 127.99, 121.03, 116.21, 112.67, 79.34, 36.34, 17.55; HRMS (ESI-TOF) m/z Calcd. for $C_{15}H_{14}BrCl_2N_2O_2^+$ $(M+H)^+$: 402.9610; found: 402.9616.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-(trifluoromethyl)pyridin-3-yl) propyl) oxime (3ah)

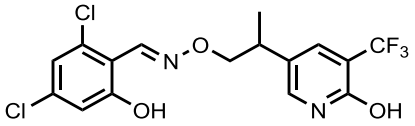
Following General procedure E, the product is obtained as a pale-yellow oil, 62% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.40 (s, 1H), 8.66 (s, 1H), 8.61 (s, 1H), 7.79 (d, *J* = 8.1 Hz, 1H), 7.69 (d, *J* = 8.1 Hz, 1H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.96 – 6.89 (m, 1H), 4.36 (qd, *J* = 10.6, 6.9 Hz, 2H), 3.38 (m, 1H), 1.44 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.14, 149.62, 148.95, 146.79 (q, *J* = 33.2 Hz), 141.87, 137.02, 135.86, 134.87, 121.56 (q, *J* = 274.8 Hz), 121.05, 120.38, 116.22, 112.61, 79.20, 36.90, 17.52; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{14}Cl_2F_3N_2O_2^+$ $(M+H)^+$: 393.0379; found: 393.0381.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-chloro-5-(trifluoromethyl) pyridine-3-yl)propyl) oxime (3ai)

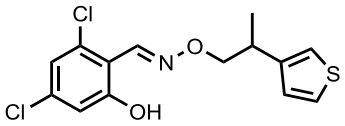
Following General procedure E, the product is obtained as a pale-yellow oil, 78% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.35 (s, 1H), 8.62 (s, 1H), 8.48 (d, *J* = 2.3 Hz, 1H), 7.91 (d, *J* = 2.4 Hz, 1H), 6.99 (d, *J* = 2.0 Hz, 1H), 6.93 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.41 – 4.27 (m, 2H), 3.36 (h, *J* = 7.2 Hz, 1H), 1.43 (d, *J* = 7.1 Hz, 3H); ^{13}C

NMR (151 MHz, Chloroform-*d*) δ 159.13, 151.63, 149.16, 147.27, 137.70, 137.13, 135.28 (q, *J* = 4.5 Hz), 134.92, 125.16 (q, *J* = 33.2 Hz), 122.14 (q, *J* = 273.3 Hz), 121.10, 116.24, 112.53, 78.92, 36.25, 17.40; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{13}Cl_3F_3N_2O_2^+$ $(M+H)^+$: 426.9989; found: 426.9996.



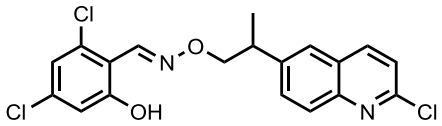
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(6-hydroxy-5-(trifluoromethyl) pyridin-3-yl)propyl) oxime (3aj)

Following General procedure E, the product is obtained as a pale-yellow oil, 56% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.40 (s, 1H), 8.64 (s, 1H), 7.93 (d, *J* = 53.5 Hz, 1H), 7.83 (d, *J* = 2.0 Hz, 1H), 7.57 (d, *J* = 2.2 Hz, 1H), 6.98 (d, *J* = 2.0 Hz, 1H), 6.95 – 6.89 (m, 1H), 4.29 – 4.18 (m, 2H), 3.10 (m, 1H), 1.34 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 160.44, 158.71, 148.62, 136.59, 134.48, 128.00, 127.89, 127.83, 127.63, 120.61, 120.25, 115.78, 112.17, 78.59, 35.05, 16.60; HRMS (ESI-TOF) m/z Calcd. for $C_{16}H_{14}Cl_2F_3N_2O_3^+$ $(M+H)^+$: 409.0328; found: 409.0331.



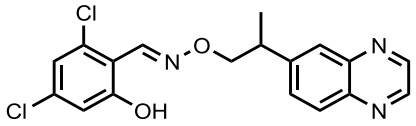
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(thiophen-3-yl)propyl) oxime (3ak)

Following General procedure E, the product is obtained as a pale-yellow oil, 64% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.60 (s, 1H), 8.64 (s, 1H), 7.30 (dd, *J* = 4.9, 2.9 Hz, 1H), 7.05 (ddd, *J* = 3.0, 1.4, 0.7 Hz, 1H), 7.03 (dd, *J* = 5.0, 1.4 Hz, 1H), 6.96 (d, *J* = 2.1 Hz, 1H), 6.91 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.33 (dd, *J* = 10.5, 6.5 Hz, 1H), 4.22 (dd, *J* = 10.5, 7.3 Hz, 1H), 3.34 (h, *J* = 6.9 Hz, 1H), 1.37 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.19, 148.29, 143.78, 136.65, 134.70, 126.83, 125.70, 120.91, 120.30, 116.18, 112.94, 80.21, 34.75, 17.95; HRMS (ESI-TOF) m/z Calcd. for $C_{14}H_{14}Cl_2NO_2S^+$ $(M+H)^+$: 330.0117; found: 330.0115.



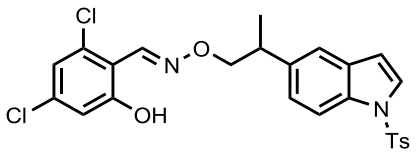
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(2-chloroquinolin-6-yl)propyl) oxime (3al)

Following General procedure E, the product is obtained as a pale-yellow oil, 33% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.56 (s, 1H), 8.59 (s, 1H), 8.12 (d, *J* = 8.7 Hz, 1H), 7.85 (d, *J* = 8.6 Hz, 1H), 7.67 – 7.59 (m, 2H), 7.08 (d, *J* = 8.8 Hz, 1H), 6.95 (d, *J* = 2.0 Hz, 1H), 6.90 (d, *J* = 2.4 Hz, 1H), 6.89 – 6.84 (m, 1H), 4.44 – 4.30 (m, 2H), 3.40 (m, 1H), 1.44 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.72, 157.54, 148.08, 143.70, 140.01, 139.93, 136.33, 134.29, 129.62, 127.31, 125.84, 125.07, 120.51, 115.73, 112.39, 111.44, 79.72, 38.68, 17.68; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{16}Cl_3N_2O_2^+$ $(M+H)^+$: 409.0272; found: 409.0278.



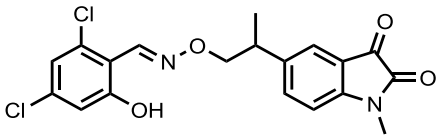
(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(quinoxalin-6-yl)propyl) oxime (3am)

Following General procedure E, the product is obtained as a pale-yellow oil, 35% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.50 (s, 1H), 8.86 – 8.77 (m, 2H), 8.58 (s, 1H), 8.09 (d, *J* = 8.6 Hz, 1H), 7.98 (d, *J* = 1.9 Hz, 1H), 7.70 (dd, *J* = 8.7, 2.0 Hz, 1H), 6.93 (d, *J* = 2.0 Hz, 1H), 6.88 (dd, *J* = 2.0, 0.6 Hz, 1H), 4.47 – 4.35 (m, 2H), 3.48 (m, 1H), 1.48 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 158.71, 148.18, 145.19, 144.64, 144.20, 142.65, 141.69, 136.33, 134.31, 129.79, 129.17, 126.77, 120.49, 115.73, 112.34, 79.43, 38.94, 17.52; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{16}Cl_2N_3O_2^+$ $(M+H)^+$: 376.0614; found: 376.0621.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(1-tosyl-1H-indol-5-yl)propyl) oxime (3an)

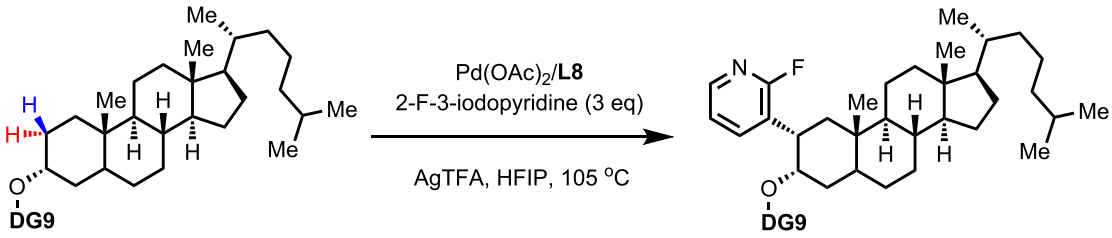
Following General procedure E, the product is obtained as a pale-yellow oil, 82% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.63 (s, 1H), 8.61 (s, 1H), 7.97 (d, *J* = 8.6 Hz, 1H), 7.80 (d, *J* = 8.4 Hz, 2H), 7.57 (d, *J* = 3.7 Hz, 1H), 7.42 (d, *J* = 1.6 Hz, 1H), 7.28 – 7.19 (m, 4H), 6.97 (d, *J* = 2.0 Hz, 1H), 6.90 (dd, *J* = 2.0, 0.5 Hz, 1H), 4.35 (dd, *J* = 10.5, 6.8 Hz, 1H), 4.26 (dd, *J* = 10.5, 7.4 Hz, 1H), 3.30 (m, 1H), 2.36 (s, 3H), 1.39 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 159.16, 148.30, 144.87, 138.10, 136.60, 135.37, 134.67, 133.72, 132.98, 130.99, 129.85, 126.82, 126.75, 126.57, 124.09, 120.86, 116.13, 115.31, 113.54, 112.91, 108.79, 107.95, 80.63, 39.08, 21.53, 18.39; HRMS (ESI-TOF) m/z Calcd. for $C_{25}H_{23}Cl_2N_2O_4S^+$ $(M+H)^+$: 517.0750; found: 517.0754.



(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-(2-(1-methyl-2,3-dioxoindolin-5-yl)propyl) oxime (3ao)

Following General procedure E, the product is obtained as a pale-yellow oil, 74% yield. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.45 (s, 1H), 8.58 (s, 1H), 7.52 (d, *J* = 1.9 Hz, 1H), 7.49 (dd, *J* = 8.1, 1.9 Hz, 1H), 6.95 (d, *J* = 2.1 Hz, 1H), 6.89 (dd, *J* = 2.0, 0.5 Hz, 1H), 6.85 (d, *J* = 8.0 Hz, 1H), 4.29 – 4.22 (m, 2H), 3.24 (m, 4H), 1.34 (d, *J* = 7.1 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 183.41, 159.14, 158.29, 150.24, 148.67, 139.17, 137.54, 136.88, 134.78, 123.90, 120.99, 117.70, 116.19, 112.73, 110.02, 79.83, 38.65, 26.25, 17.78; HRMS (ESI-TOF) m/z Calcd. for $C_{19}H_{17}Cl_2N_2O_4^+$ $(M+H)^+$: 407.0560; found: 407.0565.

C-H arylation/annulation of dihydrocholesterol

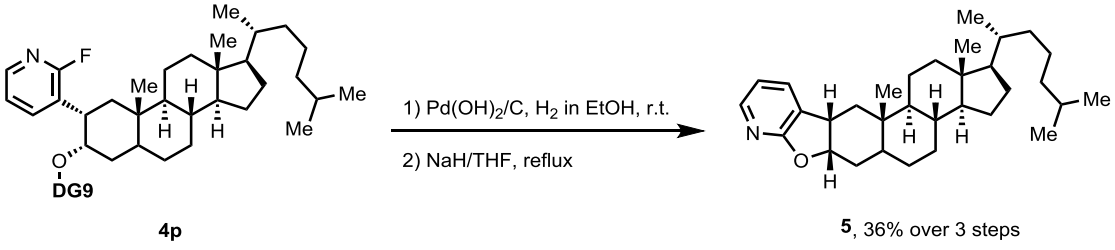


4 **4p**

(*E*)-2,4-dichloro-6-hydroxybenzaldehyde O-((2S,3S,8R,9S,10S,13R,14S,17R)-2-(2-fluoropyridin-3-yl)-10,13-dimethyl-17-((R)-6-methylheptan-2-yl)hexadecahydro-1H-cyclopenta[a]phenanthren-3-yl) oxime (4p)

To a 8-mL vial were added **DG9**-tethered dihydrocholesterol (**4**, 115 mg, 0.2 mmol), 2-fluoro-3-iodopyridine (134 mg, 0.6 mmol), palladium acetate (4.5 mg, 0.02 mmol), 3-nitro-5-trifluoromethyl-2-pyridone (16.2 mg, 0.08 mmol) and silver trifluoroacetate (110 mg, 0.5 mmol). The mixture was dissolved with 1,1,1,3,3,3-hexafluoro-2-propanol (HFIP, 2.0 mL). The vial was sealed and stirred at 105 ^{o}C for 12 hours. The reaction was cooled to room temperature and diluted with 5 mL of EtOAc, filtered through a pad of Celite, the filtrate was concentrated and purified by preparative thin-layer chromatography (hexanes : EtOAc = 4:1) to give **4p** as a white solid (68 mg, 51% yield).

$[\alpha]^{20}_{D}$ = +57.6 (*c*=0.25, $CHCl_3$); ^{1}H NMR (600 MHz, Chloroform-*d*) δ 10.36 (s, 1H), 8.53 (s, 1H), 8.07 (d, *J* = 4.6 Hz, 1H), 7.80 (t, *J* = 8.6 Hz, 1H), 7.14 (ddd, *J* = 7.5, 4.8, 1.4 Hz, 1H), 6.94 (d, *J* = 2.0 Hz, 1H), 6.87 (d, *J* = 2.0 Hz, 1H), 4.58 (d, *J* = 2.4 Hz, 1H), 3.40 (dt, *J* = 13.5, 3.2 Hz, 1H), 2.01 (dt, *J* = 12.6, 3.2 Hz, 1H), 1.91 – 1.67 (m, 6H), 1.61 – 1.49 (m, 4H), 1.44 – 1.24 (m, 8H), 1.22 – 1.05 (m, 7H), 1.01 (d, *J* = 10.1 Hz, 5H), 0.95 – 0.84 (m, 10H), 0.69 (s, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 161.31 (d, *J* = 237 Hz), 159.14, 147.74, 145.26 (d, *J* = 15 Hz), 140.15 (d, *J* = 6 Hz), 136.50, 134.40, 124.78 (d, *J* = 28.7 Hz), 121.29 (d, *J* = 4.5 Hz), 120.75, 116.17, 112.90, 81.34, 56.51, 56.31, 54.34, 42.61, 39.96, 39.50, 39.03, 37.44, 36.44, 36.16, 35.80, 35.38, 34.70, 33.09, 31.86, 28.23, 28.00, 27.94, 24.17, 23.86, 22.82, 22.55, 20.92, 18.67, 12.28, 12.11; HRMS (ESI-TOF) m/z Calcd. for $C_{39}H_{54}Cl_2FN_2O_2^+$ $(M+H)^+$: 671.3541; found: 671.3538.



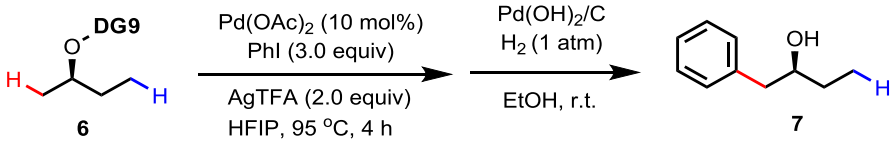
4p **5**, 36% over 3 steps

(1R,3aS,3bR,6aS,11bS,12aS,12bS,14aR)-12a,14a-dimethyl-1-((R)-6-methylheptan-2-yl)-2,3,3a,3b,4,5,5a,6,6a,11b,12,12a,12b,13,14,14a-hexadecahydro-1H-cyclopenta[7',8']phenanthro[3',2':4,5]furo[2,3-b]pyridine (5)

Product **4p** was dissolved with EtOH (1.0 mL) in an 8-mL vial. $Pd(OH)_2$ on activated carbon (20 wt. %, 20 mg) and HOAc (20 μL) were added sequentially. The vial was equipped with a H_2 balloon, evacuated and backfilled with H_2 (× 3), the resulting mixture was stirred at room temperature under H_2 atmosphere for 24 h. The reaction mixture was filtered, the filtrate was concentrated under reduced pressure, and the residue was dissolved with anhydrous THF (2.0 mL), then NaH (60 wt. % in mineral oil, 20 mg, 0.5 mmol) was added. The resulting mixture was stirred at 65 °C for 12 hours. The reaction solution was poured into 20 mL of water, extracted with EtOAc (10 mL × 3), the organic phase was combined and dried with anhydrous sodium sulfate. The solvent was evaporated, and the residue purified by preparative thin-layer chromatography (hexanes : EtOAc = 3:1) to give annulation product **5** (33 mg, white solid, 70% yield over 2 steps).

$[\alpha]^{20}_D$ = +16.2 (*c*=1, $CHCl_3$); ^{1}H NMR (600 MHz, Chloroform-*d*) δ 8.04 – 7.95 (m, 1H), 7.42 (dd, *J* = 7.1, 1.4 Hz, 1H), 6.78 (dd, *J* = 7.1, 5.3 Hz, 1H), 4.64 (t, *J* = 4.8 Hz, 1H), 3.14 (dt, *J* = 12.4, 6.4 Hz, 1H), 2.08 (dd, *J* = 15.7, 3.6 Hz, 1H), 2.00 – 1.84 (m, 2H), 1.83 – 1.75 (m, 1H), 1.73 – 1.63 (m, 2H), 1.57 – 1.40 (m, 4H), 1.36 – 1.16 (m, 8H), 1.15 – 0.93 (m, 8H), 0.89 – 0.80 (m, 13H), 0.64 (s, 5H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.24, 145.57, 132.36, 128.79, 116.71, 81.28, 56.38, 56.12, 53.49, 42.82, 42.39, 39.83, 39.49, 38.95, 37.03, 36.11, 35.76, 35.45, 34.66, 31.63, 30.47, 28.43, 28.17, 27.99, 24.17, 23.78, 22.80, 22.54, 20.75, 18.64, 12.02, 11.02; HRMS (ESI-TOF) m/z Calcd. for $C_{32}H_{50}NO^+$ $(M+H)^+$: 464.3887; found: 464.3888.

Synthesis of englitazone precursor via sequential β- and γ-C-H arylations



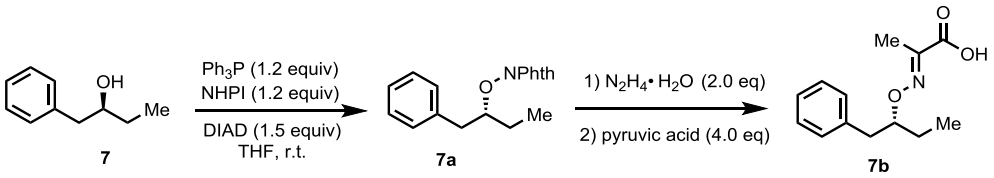
(*S*)-1-phenylbutan-2-ol (7)

To an 8-mL vial were added **6** (261 mg, 1.0 mmol), iodobenzene (600 mg, 3.0 mmol), palladium acetate (23 mg, 0.1 mmol) and silver trifluoroacetate (440 mg, 2.0 mmol). The mixture was dissolved with 1,1,1,3,3,3-hexafluoro-2-propanol (HFIP, 5.0 mL). The vial was sealed and stirred at 95 °C for 4 hours. The reaction was cooled to room temperature, diluted with 10 mL of EtOAc and filtered through a pad of Celite. The filtrate was concentrated, the residue was re-dissolved with 1 mL of EtOAc, then 10 mL of hexane was added. The solution was filtered again through a pad of Celite, the filtrate was concentrated under reduced pressure, and the resulting residue was used directly in the next step.

The crude arylation product was dissolved with EtOH (4 mL) in an 8-mL vial, following which $Pd(OH)_2$ on activated carbon (20 wt. %, 100 mg) and HOAc (100 μL) were added sequentially. The vial was equipped with a H_2 balloon, evacuated and backfilled with H_2 (× 3), and the resulting mixture was stirred at room temperature under H_2 atmosphere for 24 hours. The reaction mixture was filtered, the filtrate was concentrated under reduced pressure, and the residue was purified by flash column chromatography (hexanes : EtOAc = 5:1) to afford **7** (97 mg, 65% over 2 steps).

Colorless oil, 65% yield from **6**. $[\alpha]^{20}_D$ = +28.7 (c=1, $CHCl_3$); ^{1}H NMR (600 MHz, Chloroform-*d*) δ 7.41 – 7.32 (m, 2H), 7.31 – 7.23 (m, 3H), 3.78 (ddt, *J* = 8.3, 7.4, 4.6 Hz, 1H), 2.87 (dd, *J* = 13.6, 4.3 Hz, 1H), 2.68 (dd, *J* = 13.6, 8.4 Hz, 1H), 1.66 – 1.51 (m, 3H), 1.03 (t, *J* = 7.5 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 138.63, 129.38, 128.49, 126.37, 74.00, 43.55, 29.55, 10.02; HRMS (ESI-TOF) m/z Calcd. for $C_{10}H_{15}O^+$ $(M+H)^+$: 151.1117; found: 151.1114.

Directing group installation for γ-C-H arylation:



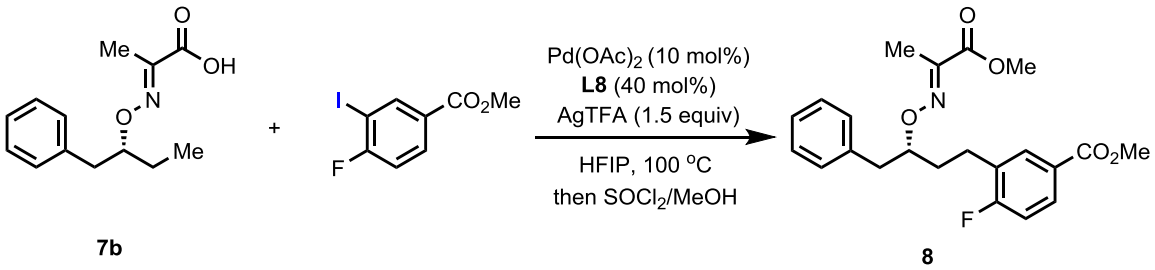
(*R*,*E*)-2-(((1-phenylbutan-2-yl)oxy)imino)propanoic acid (7b)

Alcohol **7** (75 mg, 0.5 mmol), NHPI (100 mg, 0.6 mmol) and Ph_3P (160 mg, 0.6 mmol) were dissolved in anhydrous THF (3.0 mL) and cooled with an ice-bath. To the pre-cooled solution was added DIAD (180 μL, 0.9 mmol) dropwise and the resulting mixture was stirred at room temperature for 12 h. The solvent was evaporated, and the residue was purified by flash column chromatography (hexanes : EtOAc = 4:1) to give **7a**: 140 mg, 95% yield.

Product **7a** was dissolved in CH_2Cl_2 (5 mL), then hydrazine monohydrate (1.0 mmol) and MeOH (1 mL) were added sequentially. The reaction mixture was stirred at room temperature for 2 h. The white solid formed during the reaction was removed by filtration. To the filtrate was added pyruvic acid (180 mg, 2.0 mmol), and the resulting mixture was stirred for 1 h at room temperature. The solution was extracted with aq. NaOH (4.0 M, 10 mL) and the aqueous phase was washed with CH_2Cl_2 (5 mL, × 2). The aqueous phase was then acidified to pH ~ 2.0 by addition of conc. HCl, then extracted with CH_2Cl_2. The organic phase was dried with anhydrous sodium sulfate and concentrated to give the product **7b** (106 mg, 95% yield).

Colorless oil, 90% yield from 7. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 7.34 – 7.29 (m, 2H), 7.27 – 7.23 (m, 1H), 7.22 – 7.16 (m, 2H), 4.46 (tt, *J* = 7.0, 5.6 Hz, 1H), 3.04 – 2.92 (m, 2H), 2.06 (s, 3H), 1.78 – 1.67 (m, 2H), 1.00 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 163.24, 147.53, 137.77, 129.35, 128.34, 126.45, 88.00, 39.98, 26.18, 10.13, 9.62; HRMS (ESI-TOF) m/z Calcd. for $C_{13}H_{18}O_3^+$ $(M+H)^+$: 236.1281; found: 236.1276.

γ-C-H arylation of substrate 7b:



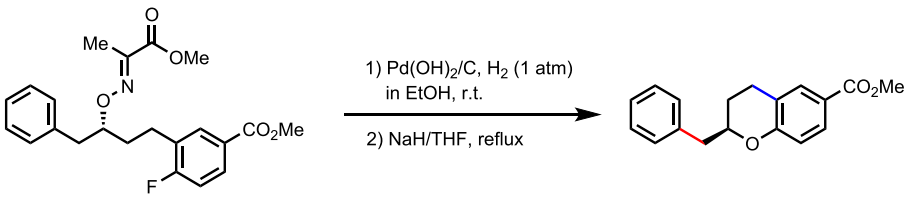
7b **8**

Methyl (*R*,*E*)-4-fluoro-3-(3-(((1-methoxy-1-oxopropan-2-ylidene)amino)oxy)-4-phenylbutyl)benzoate (8)

To a 8-mL vial were added **7b** (94 mg, 0.4 mmol), methyl 4-fluoro-3-iodobenzoate (168 mg, 0.6 mmol), palladium acetate (9.2 mg, 0.04 mmol), 3-nitro-5-trifluoro-2-pyridone (32 mg, 0.16 mmol) and silver trifluoroacetate (132 mg, 0.6 mmol), and the mixture was dissolved with 1,1,1,3,3,3-hexafluoro-2-propanol (HFIP, 2.0 mL). The vial was sealed and stirred at 100 °C for 4 hours. The reaction was cooled to room temperature, diluted with EtOAc (5 mL), and filtered through a pad of Celite. The filtrate was concentrated, the residue was re-dissolved with methanol (3 mL), then $SOCl_2$ (0.3 mL) was added dropwise. After stirring for 30 min at room temperature, the solution was concentrated under reduced pressure and the residue was purified by preparative thin-layer chromatography to give the arylation product **8** (78 mg, 49% yield).

Colorless oil, 49% yield from **7b**. ^{1}H NMR (600 MHz, Chloroform-*d*) δ 7.91 – 7.86 (m, 2H), 7.30 – 7.27 (m, 2H), 7.25 – 7.22 (m, 1H), 7.22 – 7.18 (m, 2H), 7.07 – 7.03 (m, 1H), 4.65 – 4.61 (m, 1H), 3.91 (d, *J* = 2.2 Hz, 3H), 3.88 (s, 3H), 3.10 (dd, *J* = 14.0, 6.1 Hz, 1H), 2.97 (dd, *J* = 14.0, 6.4 Hz, 1H), 2.84 (ddd, *J* = 15.1, 9.5, 6.1 Hz, 1H), 2.80 – 2.71 (m, 1H), 2.06 (s, 3H), 2.01 – 1.94 (m, 2H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 166.25, 164.40, 148.79, 137.47, 132.50, 132.45, 129.66, 129.60, 129.53, 128.88, 128.73, 128.51, 128.27, 126.33, 115.45, 115.29, 84.74, 52.63, 52.11, 40.11, 32.95, 24.85, 11.60; HRMS (ESI-TOF) m/z Calcd. for $C_{22}H_{25}FNO_5^+$ $(M+H)^+$: 402.1711; found: 402.1713.

Synthesis of englitazone precursor 9:



8 **9**

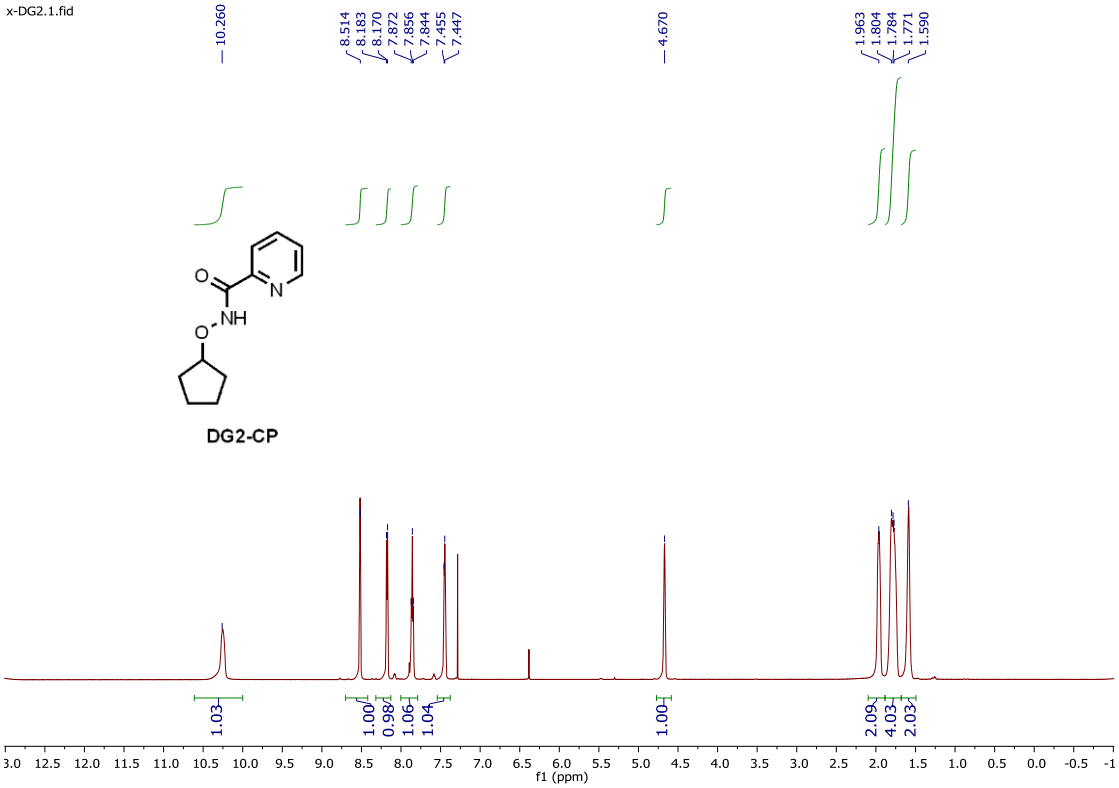
Methyl (*R*)-2-benzylchromane-6-carboxylate (9)

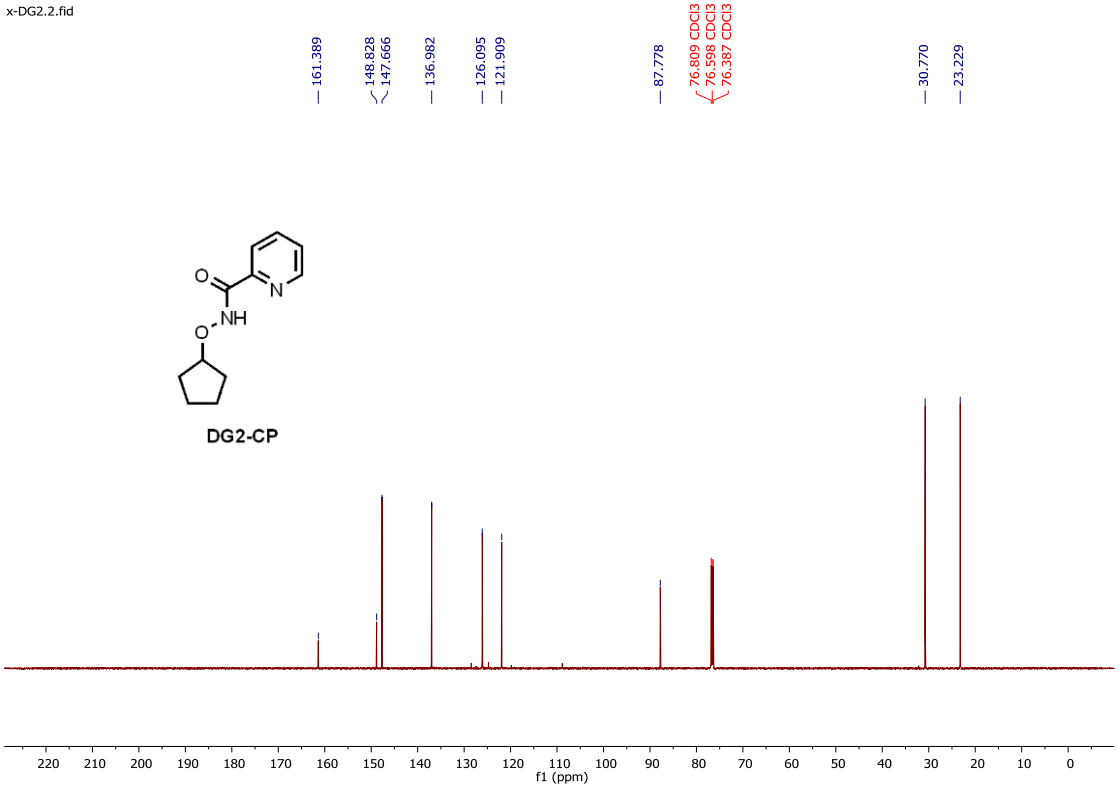
Arylation product **8** (40 mg, 0.1 mmol) was dissolved with EtOH (1.0 mL) in an 8-mL vial, and $Pd(OH)_2$ on activated carbon (20 wt. %, 20 mg) and HOAc (20 μL) were

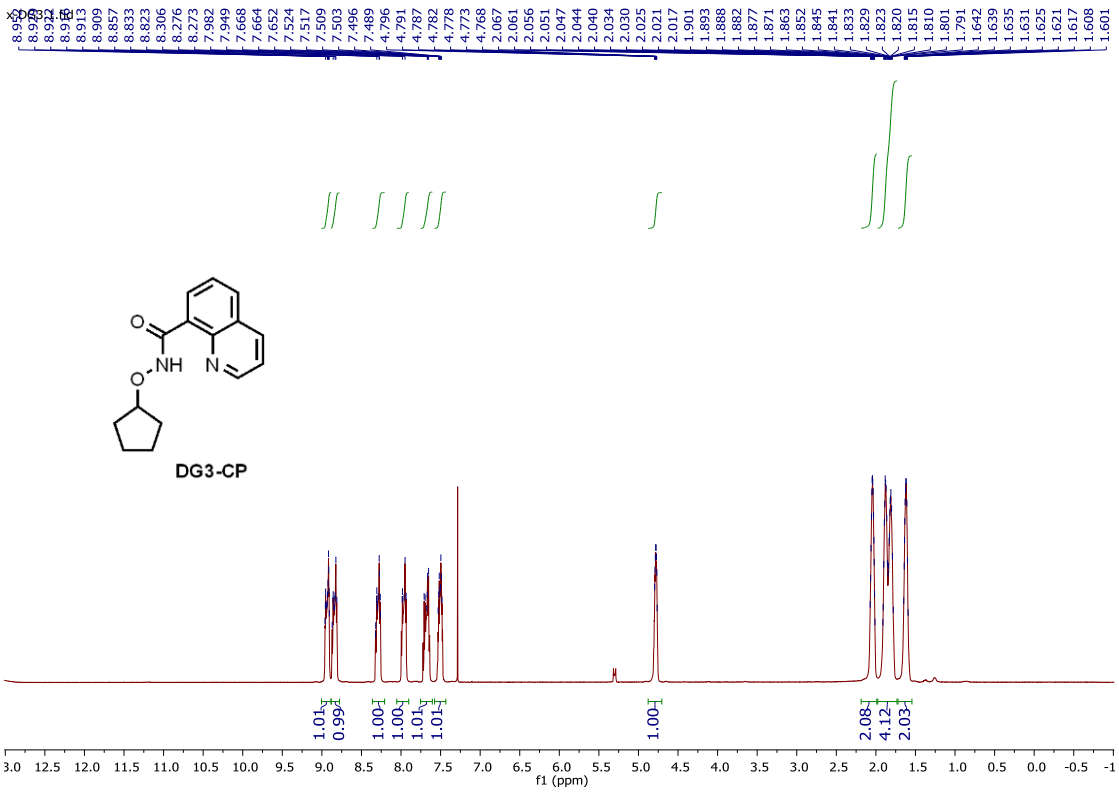
added sequentially. The vial was equipped with a H_2 balloon, evacuated and backfilled with H_2 (× 3), and the resulting mixture was stirred at room temperature under H_2 atmosphere for 24 h. The reaction mixture was filtered, the filtrate was concentrated under reduced pressure, and the residue was re-dissolved with anhydrous THF (2.0 mL). Next, NaH (60 wt. % in mineral oil, 20 mg, 0.5 mmol) was added, and the resulting mixture was stirred at 65 ^oC for 8 h. The reaction solution was poured into water (20 mL) and extracted with EtOAc (10 mL × 3). The organic phase was dried with anhydrous sodium sulfate, concentrated, and the residue was purified by preparative thin-layer chromatography (hexanes : EtOAc = 4:1) to give cyclization product **9** (22 mg, 81% yield over 2 steps).

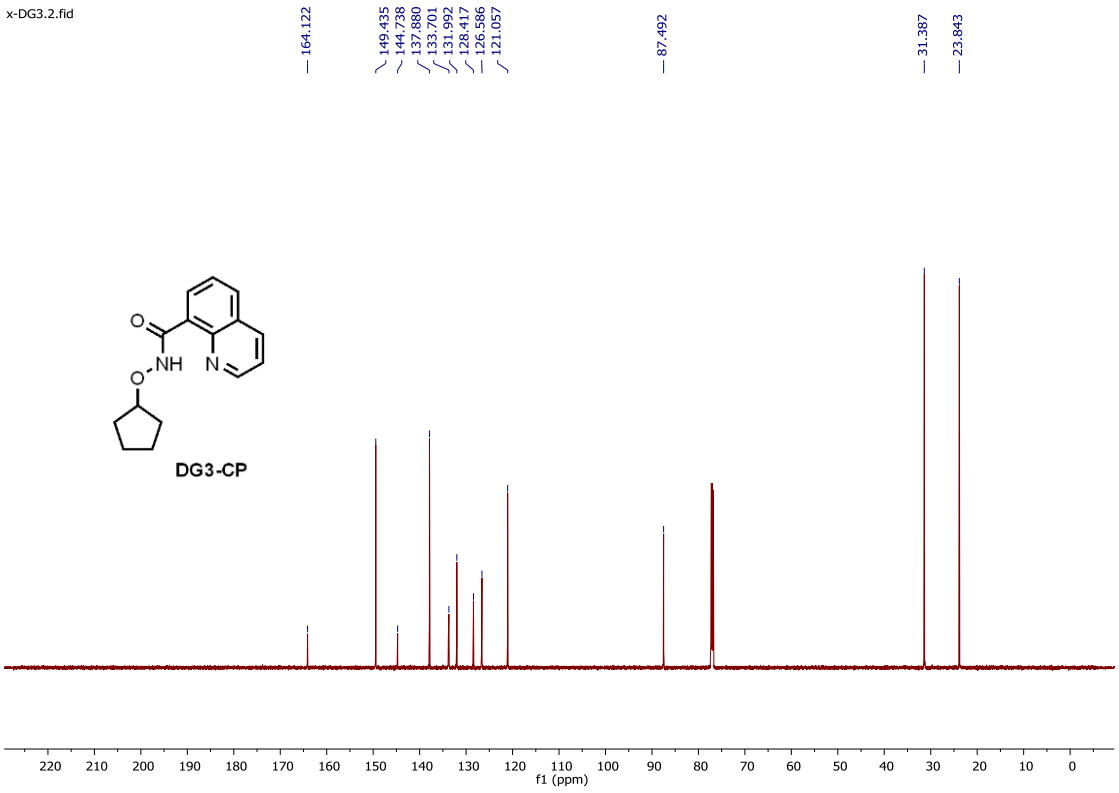
Colorless oil, 81% yield from **8**. $[\alpha]^{20}_D$ = -94 (*c*=1, $CHCl_3$); ^{1}H NMR (600 MHz, Chloroform-*d*) δ 7.77 (d, *J* = 9.5 Hz, 2H), 7.37 – 7.30 (m, 2H), 7.27 (d, *J* = 7.4 Hz, 2H), 7.26 – 7.22 (m, 1H), 6.84 – 6.79 (m, 1H), 4.30 – 4.25 (m, 1H), 3.86 (s, 3H), 3.14 (dd, *J* = 13.7, 6.3 Hz, 1H), 2.90 (dd, *J* = 13.7, 6.8 Hz, 1H), 2.80 (dd, *J* = 10.1, 5.8 Hz, 2H), 2.05 – 1.99 (m, 1H), 1.72 (m, 1H); ^{13}C NMR (151 MHz, Chloroform-*d*) δ 167.07, 158.93, 137.42, 131.59, 129.54, 129.10, 128.42, 126.56, 121.85, 121.70, 116.74, 77.26, 51.79, 41.67, 26.23, 24.44; HRMS (ESI-TOF) m/z Calcd. for $C_{18}H_{19}O_3^+$ $(M+H)^+$: 283.1329; found: 283.1331.

^{1}H and ^{13}C NMR Spectra

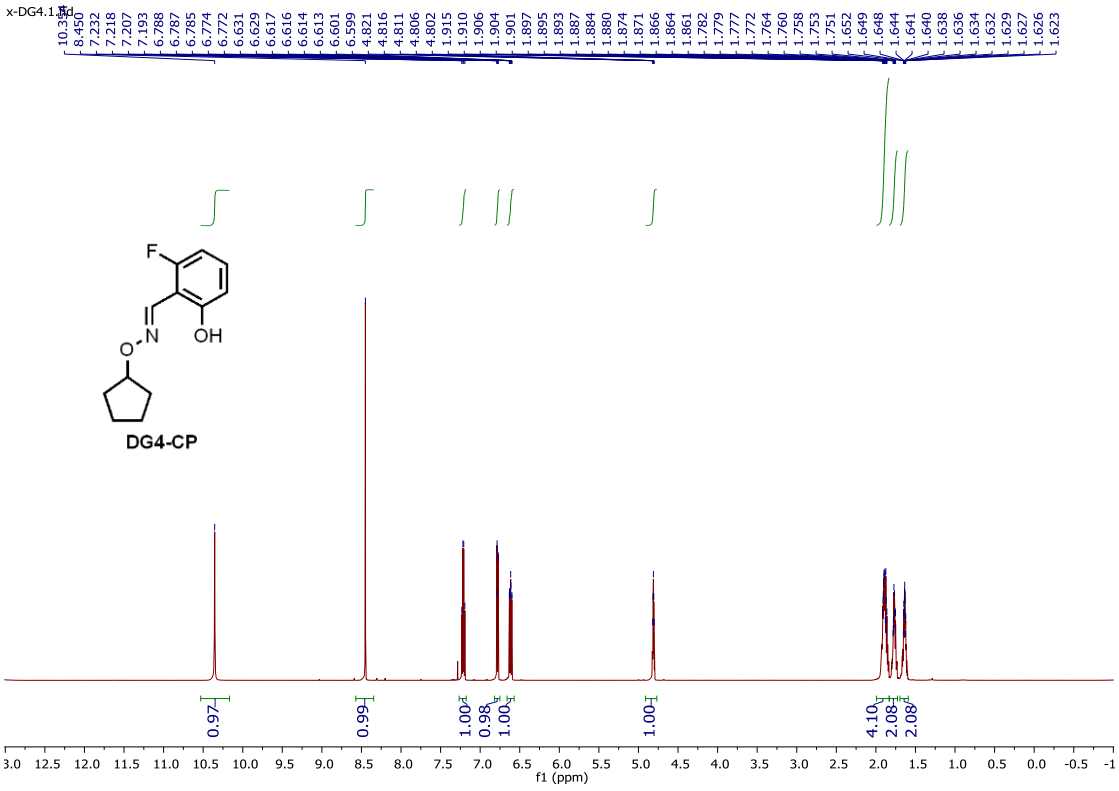




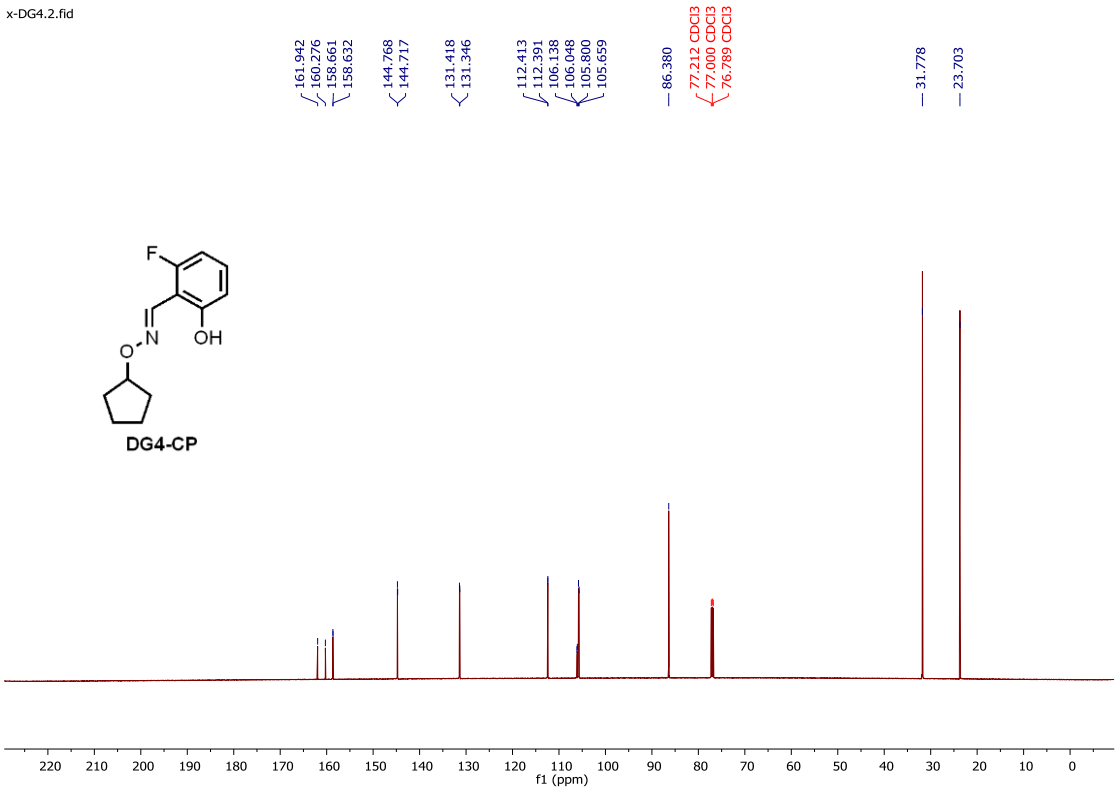

x-DG3.1.fid
DG3-CP
f1 (ppm)

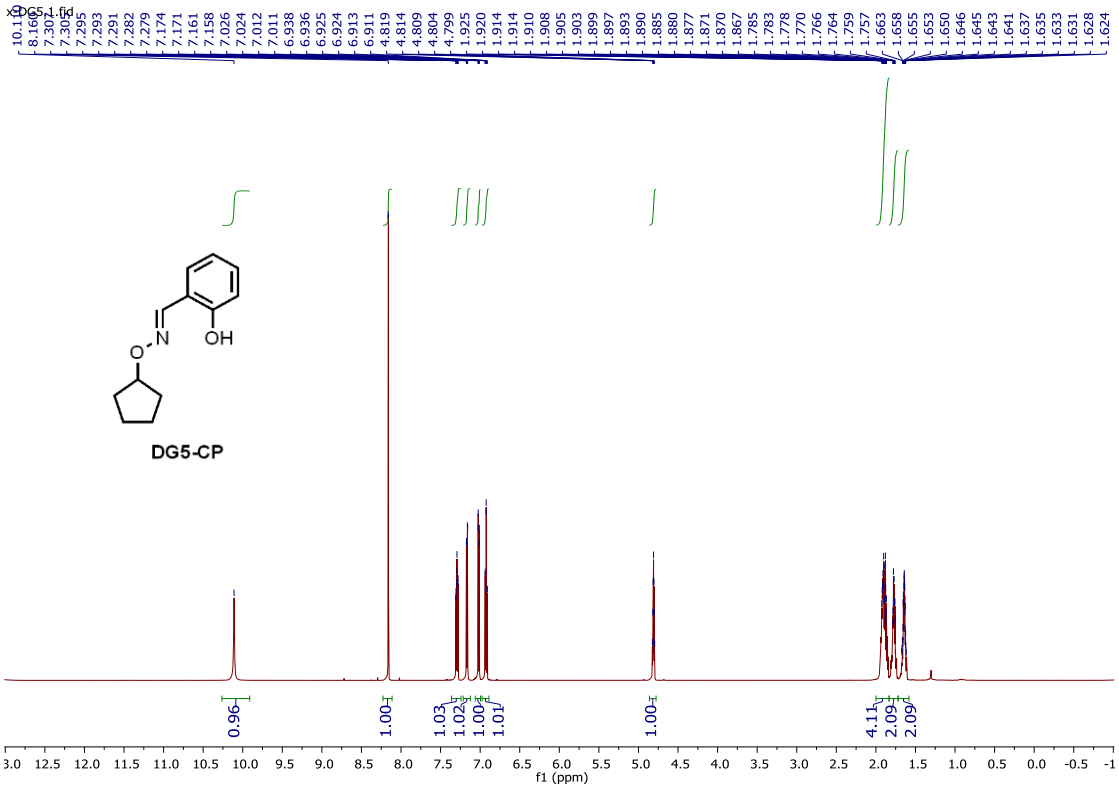

x-DG3.2.fid
DG3-CP
f1 (ppm)

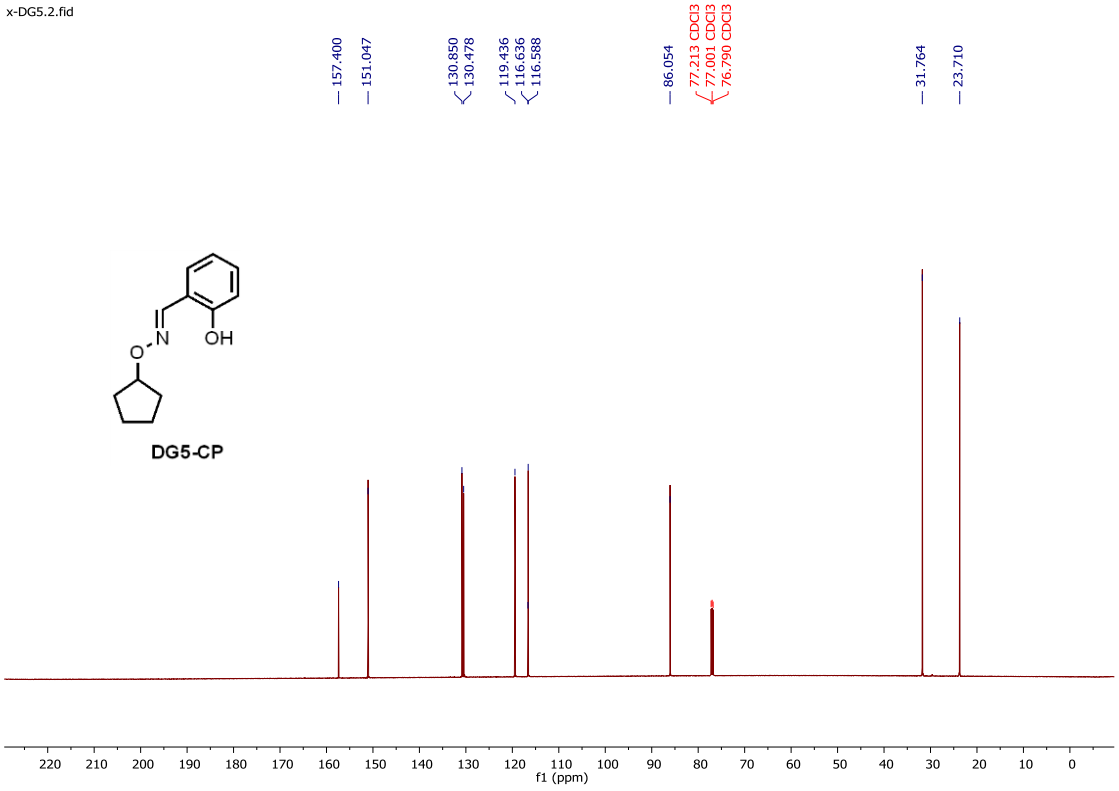
x-DG4.1.fid



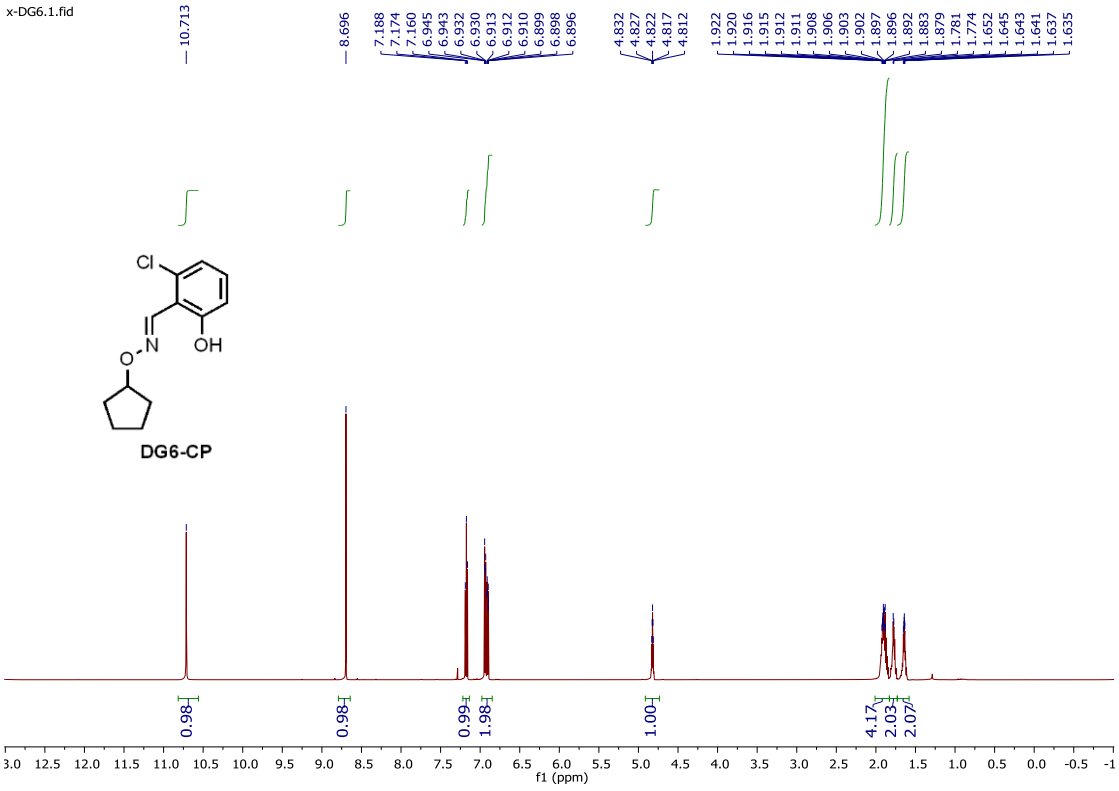
x-DG4.2.fid



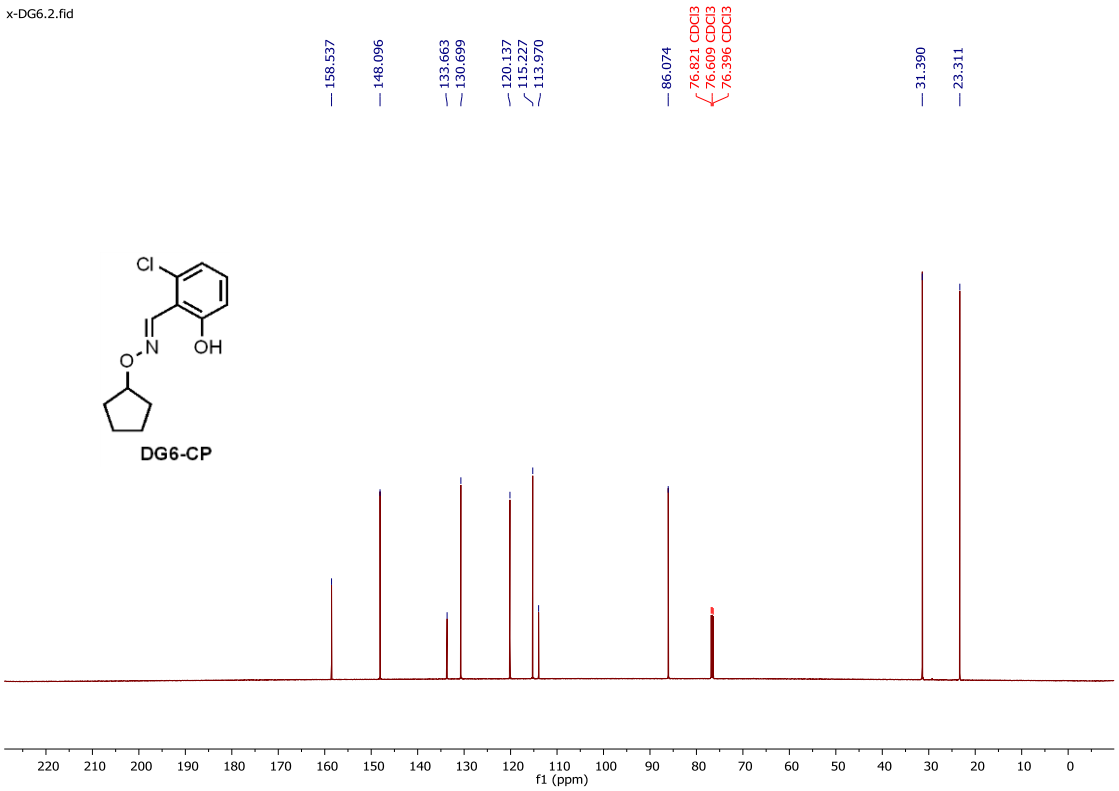

x-DG5.1.fid
DG5-CP
f1 (ppm)

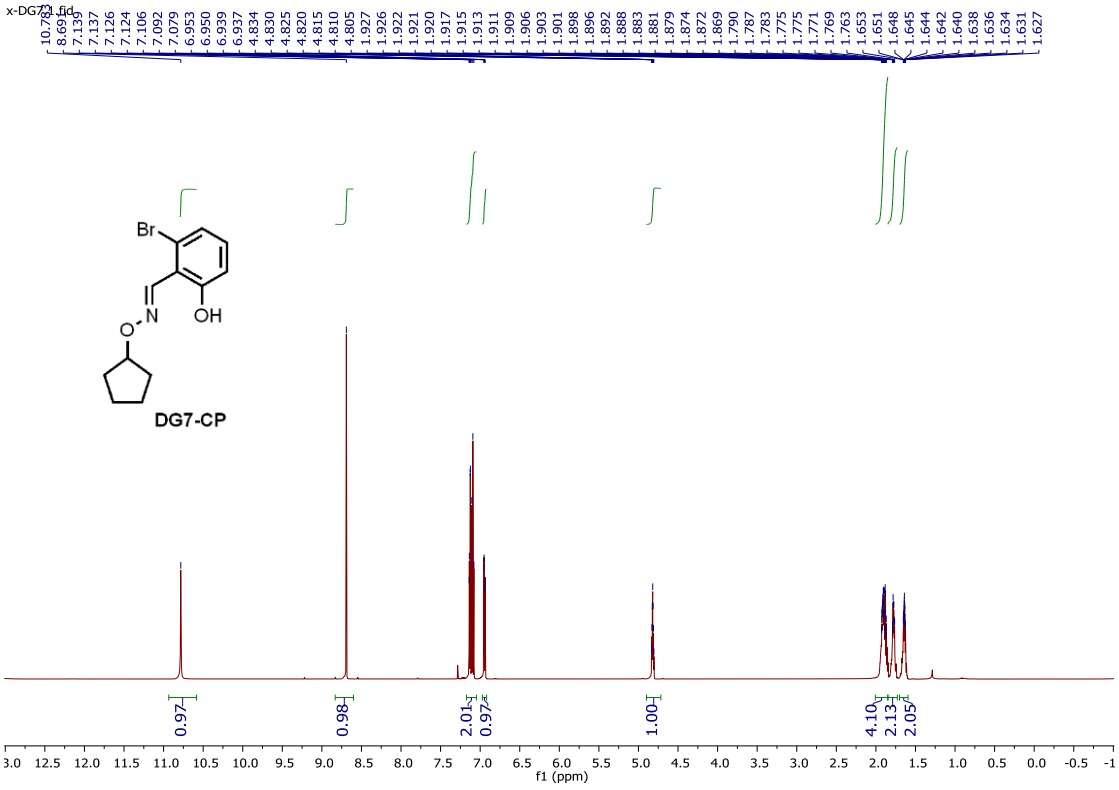

x-DG5.2.fid
DG5-CP
f1 (ppm)

x-DG6.1.fid



x-DG6.2.fid




x-DG7.1.fid
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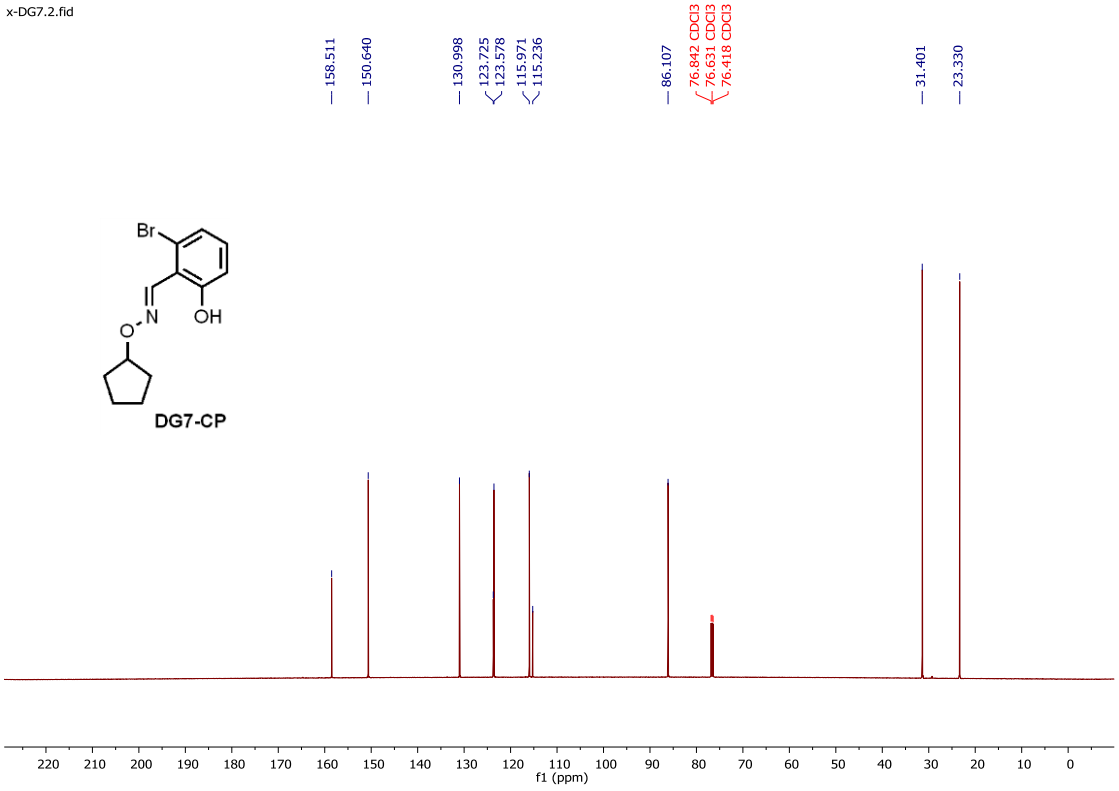
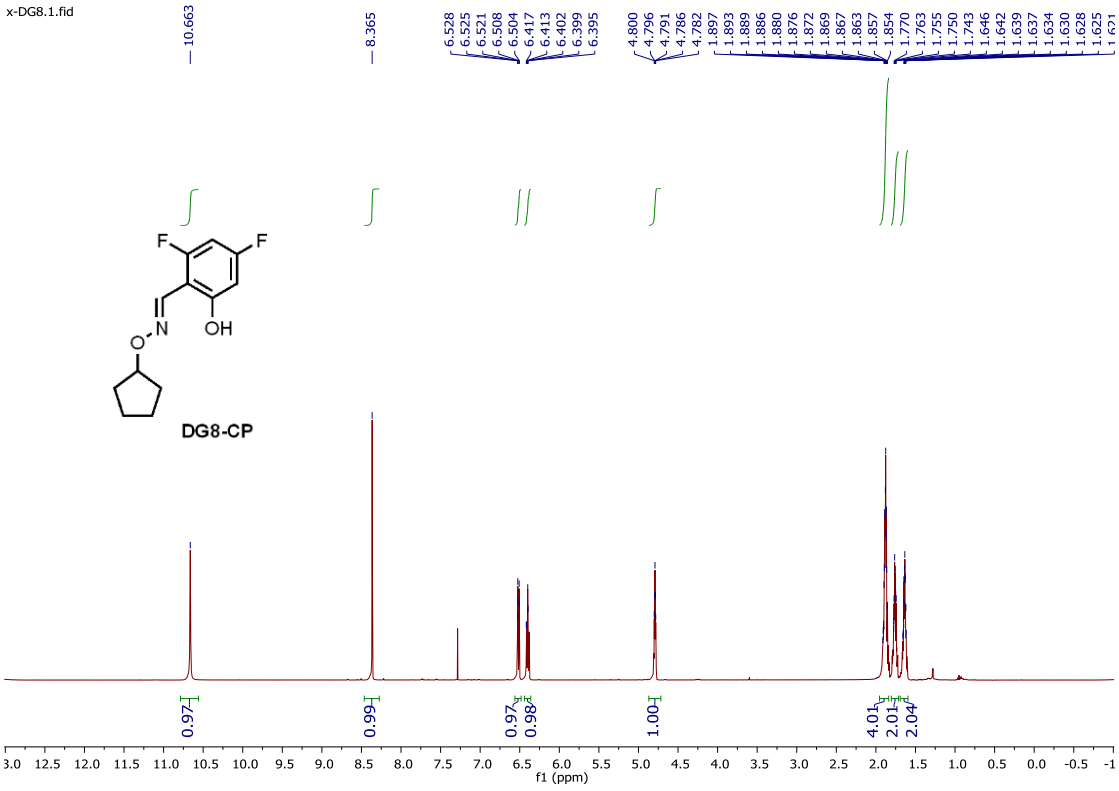
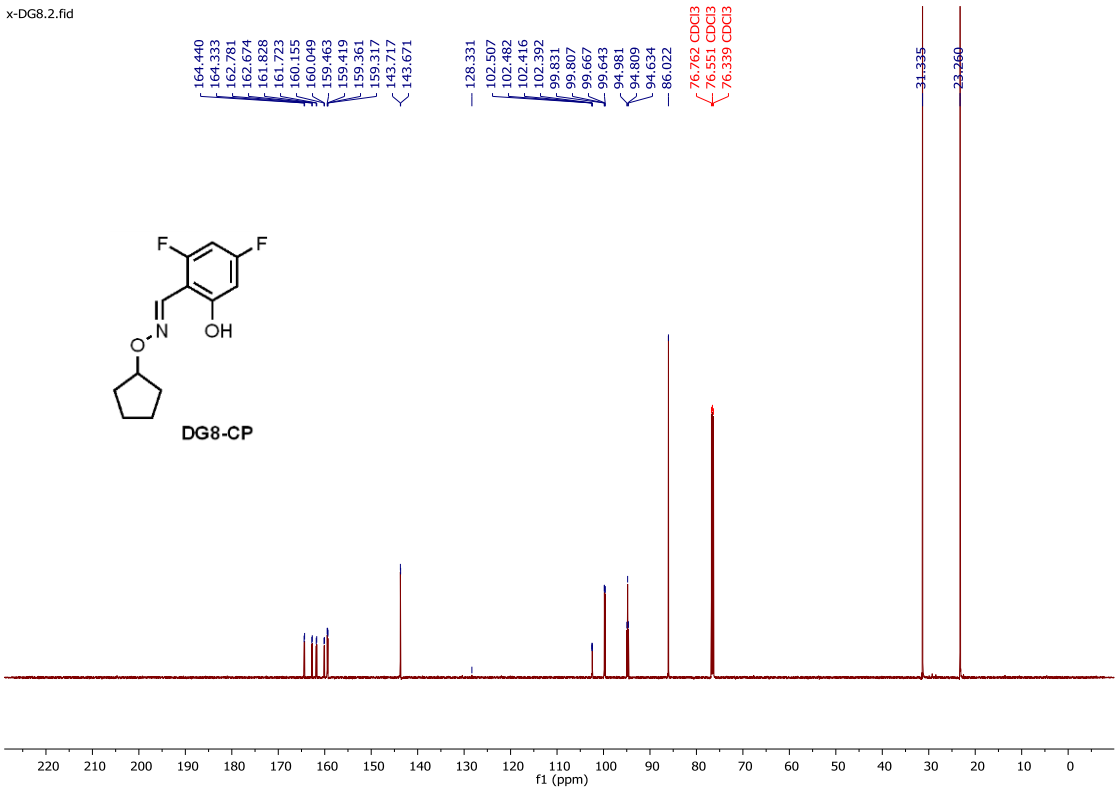
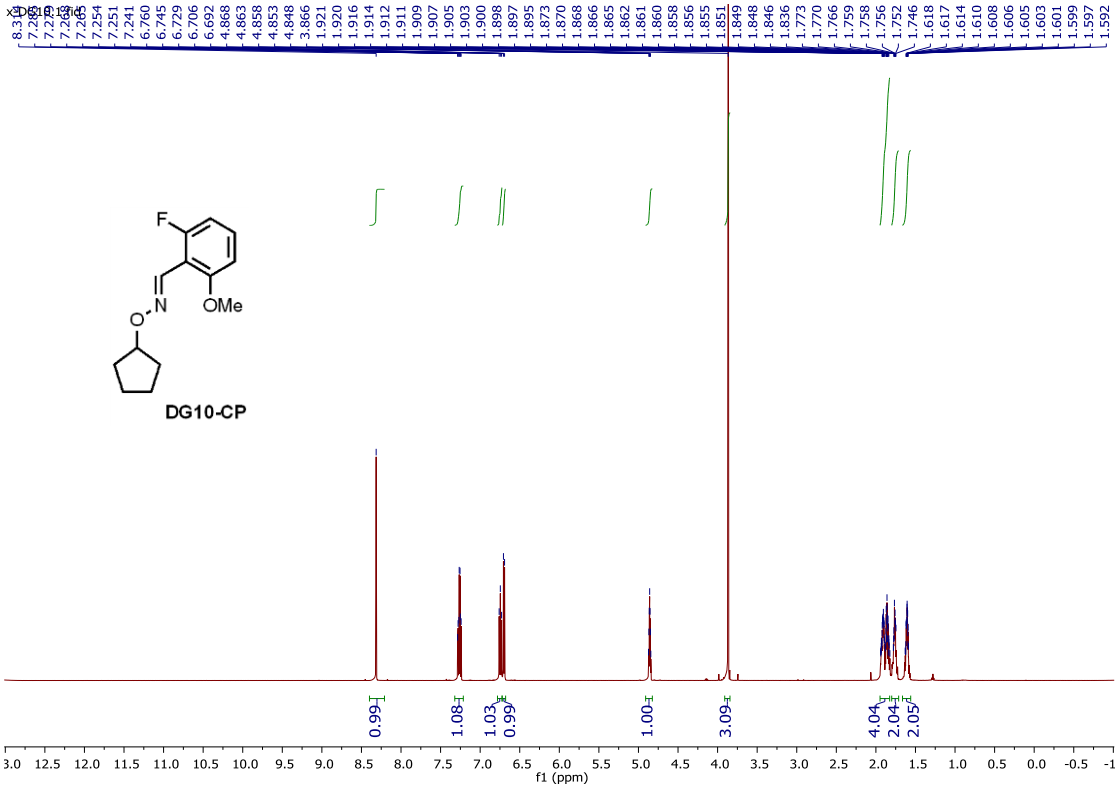
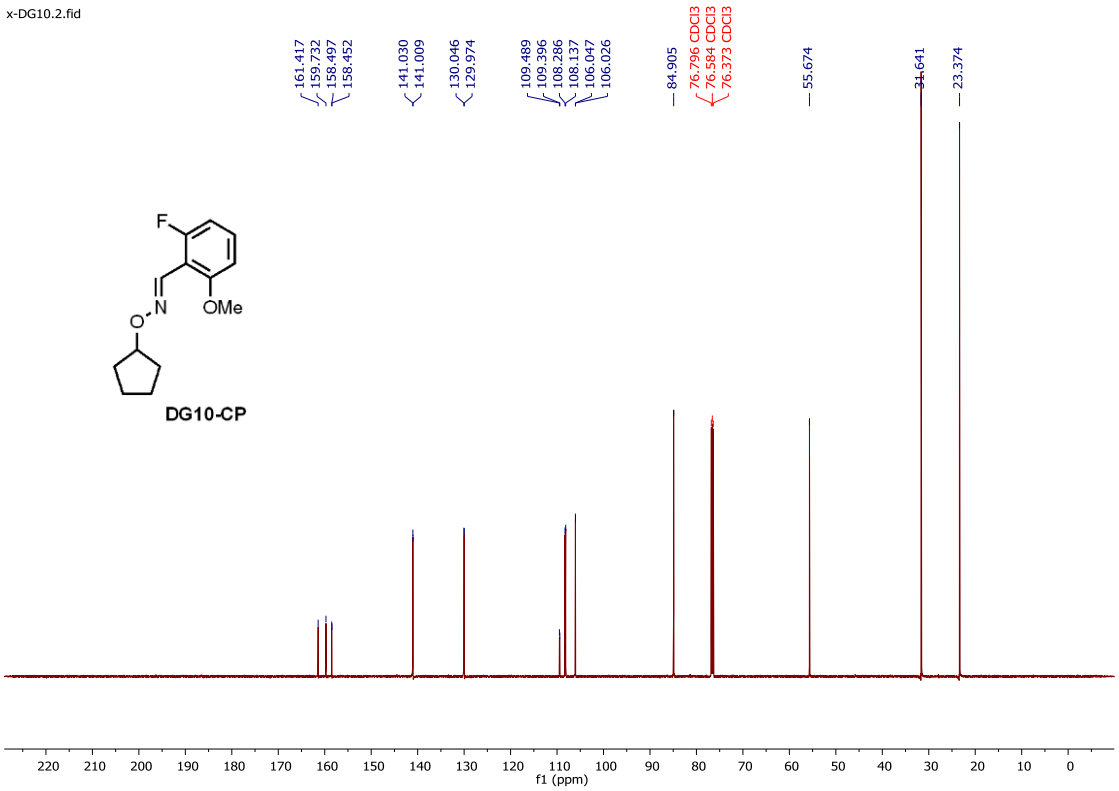
8.693
7.139
7.137
7.126
7.124
7.106
7.092
7.079
6.953
6.950
6.939
6.937
4.834
4.830
4.825
4.820
4.815
4.810
4.805
1.927
1.926
1.922
1.921
1.920
1.917
1.915
1.913
1.911
1.909
1.906
1.903
1.901
1.898
1.896
1.892
1.888
1.883
1.881
1.879
1.874
1.872
1.869
1.790
1.787
1.783
1.775
1.775
1.771
1.769
1.763
1.653
1.651
1.648
1.645
1.644
1.642
1.640
1.638
1.636
1.634
1.631
1.627
Br
N
OH
O
DG7-CP
0.97
0.98
2.01
0.97
1.00
4.10
2.13
2.05
f1 (ppm)


x-DG7.2.fid
158.511
150.640
130.998
123.725
123.578
115.971
115.236
86.107
76.842 CDCl3
76.631 CDCl3
76.418 CDCl3
31.401
23.330
Br
N
OH
O
DG7-CP
f1 (ppm)


x-DG8.1.fid
10.663
8.365
6.528
6.525
6.521
6.508
6.504
6.417
6.413
6.402
6.399
6.395
4.800
4.796
4.791
4.786
4.782
1.897
1.893
1.889
1.886
1.880
1.876
1.872
1.869
1.867
1.863
1.857
1.854
1.770
1.763
1.755
1.750
1.743
1.646
1.642
1.639
1.637
1.634
1.630
1.628
1.625
F
F
N
OH
O
DG8-CP
0.97
0.99
0.97
0.98
1.00
4.01
2.01
2.04
f1 (ppm)


x-DG8.2.fid
164.440
164.333
162.781
162.674
161.828
161.723
160.155
160.049
159.463
159.419
159.361
159.317
143.717
143.671
128.331
102.507
102.482
102.416
102.392
99.831
99.807
99.667
99.643
94.981
94.809
94.634
86.022
76.762 CDCl3
76.551 CDCl3
76.339 CDCl3
31.335
23.260
F
F
N
OH
O
DG8-CP
f1 (ppm)


x-DG10.1.fid
F
N
O
OMe
DG10-CP
0.99
1.08
1.03
0.99
1.00
3.09
4.04
2.04
2.05
f1 (ppm)


x-DG10.2.fid
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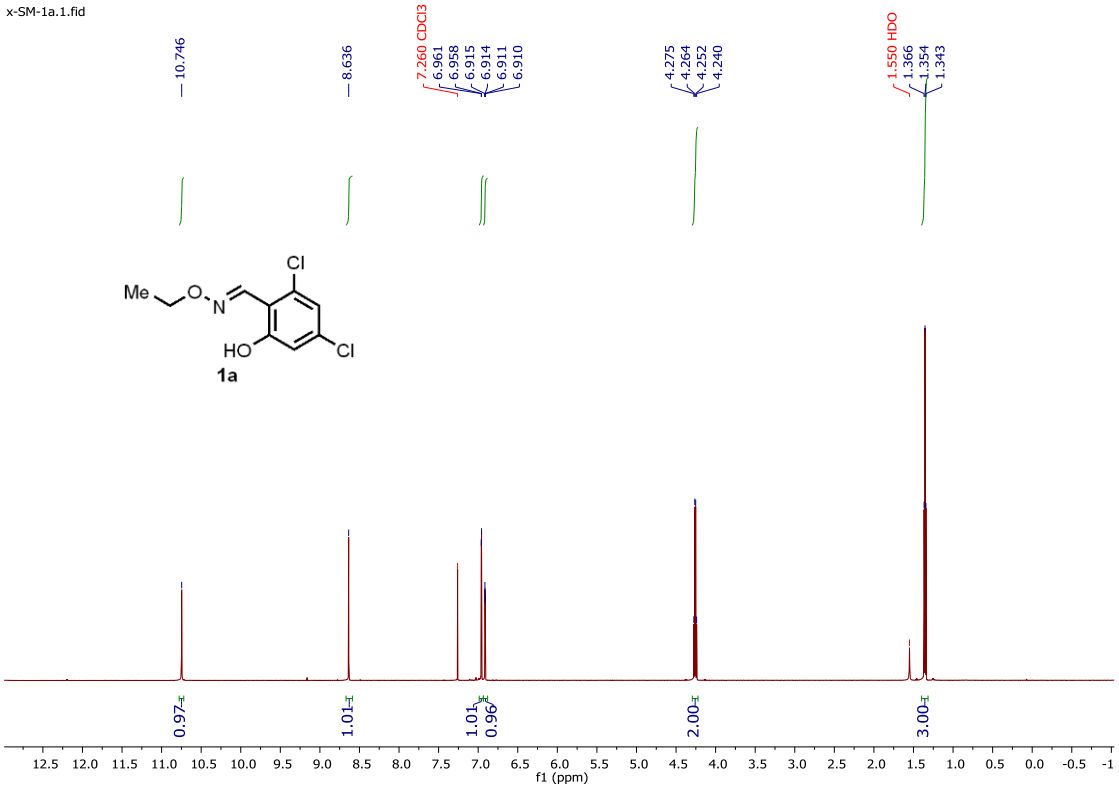
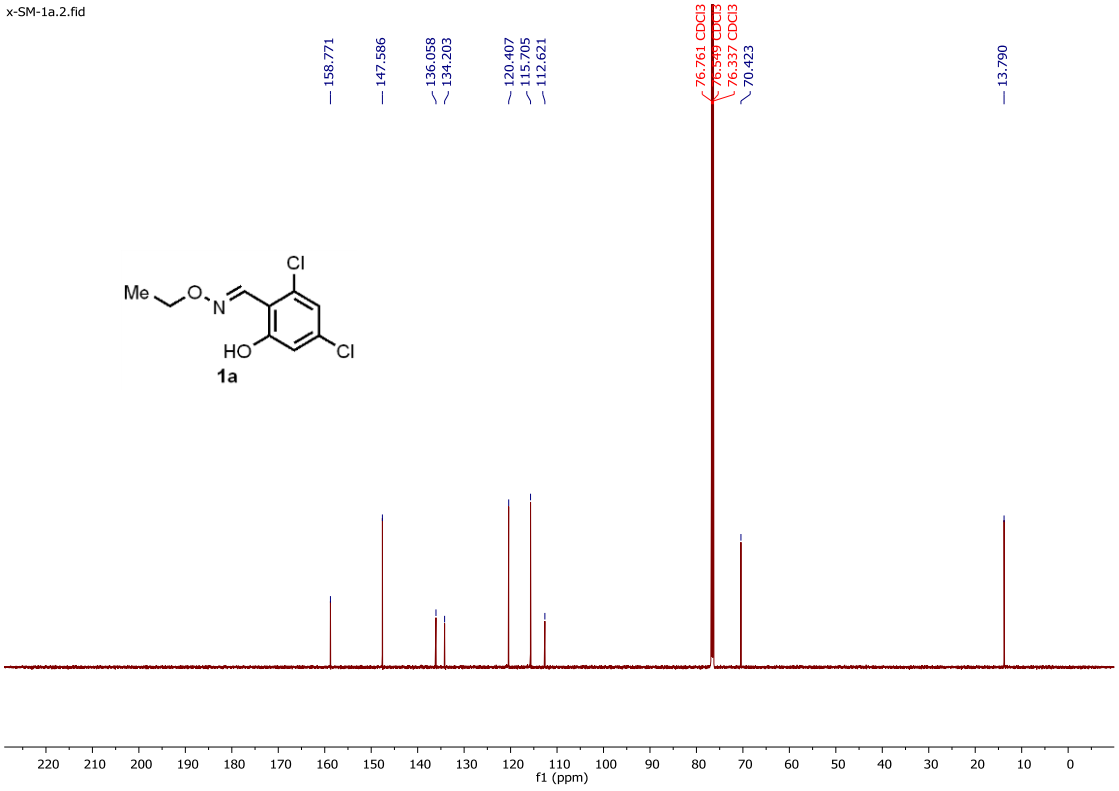
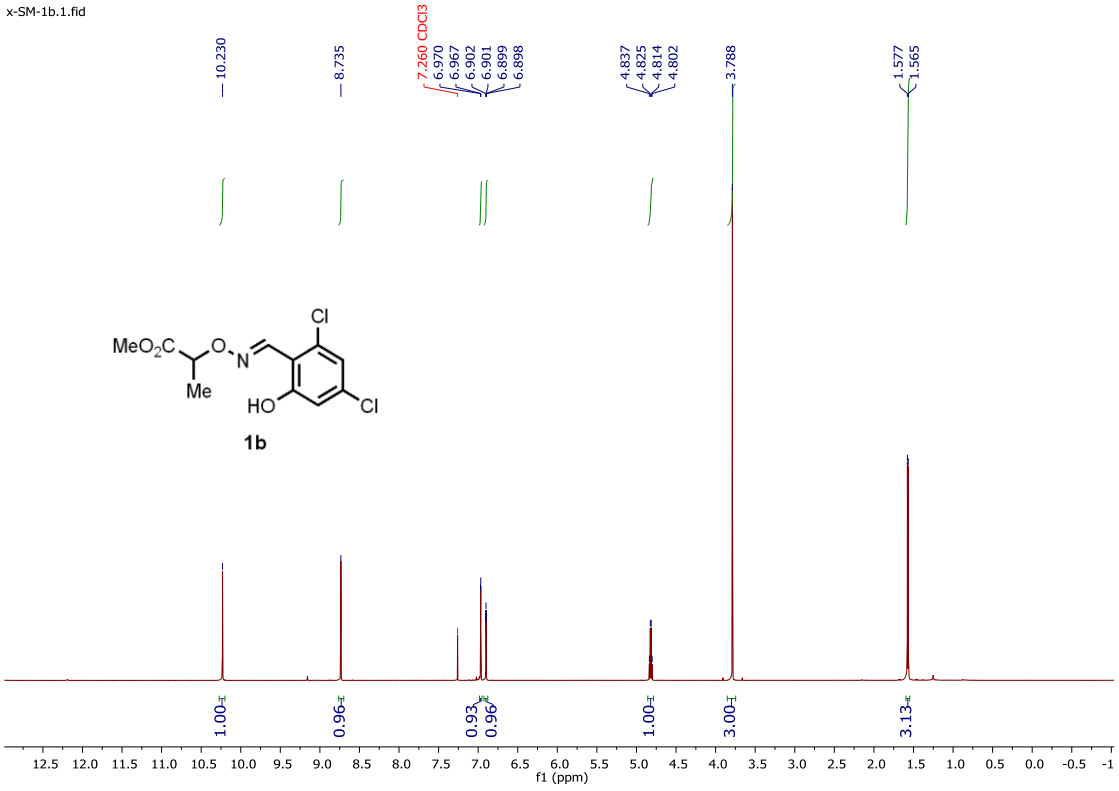
159.732
158.497
158.452
141.030
141.009
130.046
129.974
109.489
109.396
108.286
108.137
106.047
106.026
84.905
76.796 CDCl3
76.584 CDCl3
76.373 CDCl3
55.674
31.641
23.374
F
N
O
OMe
DG10-CP
f1 (ppm)

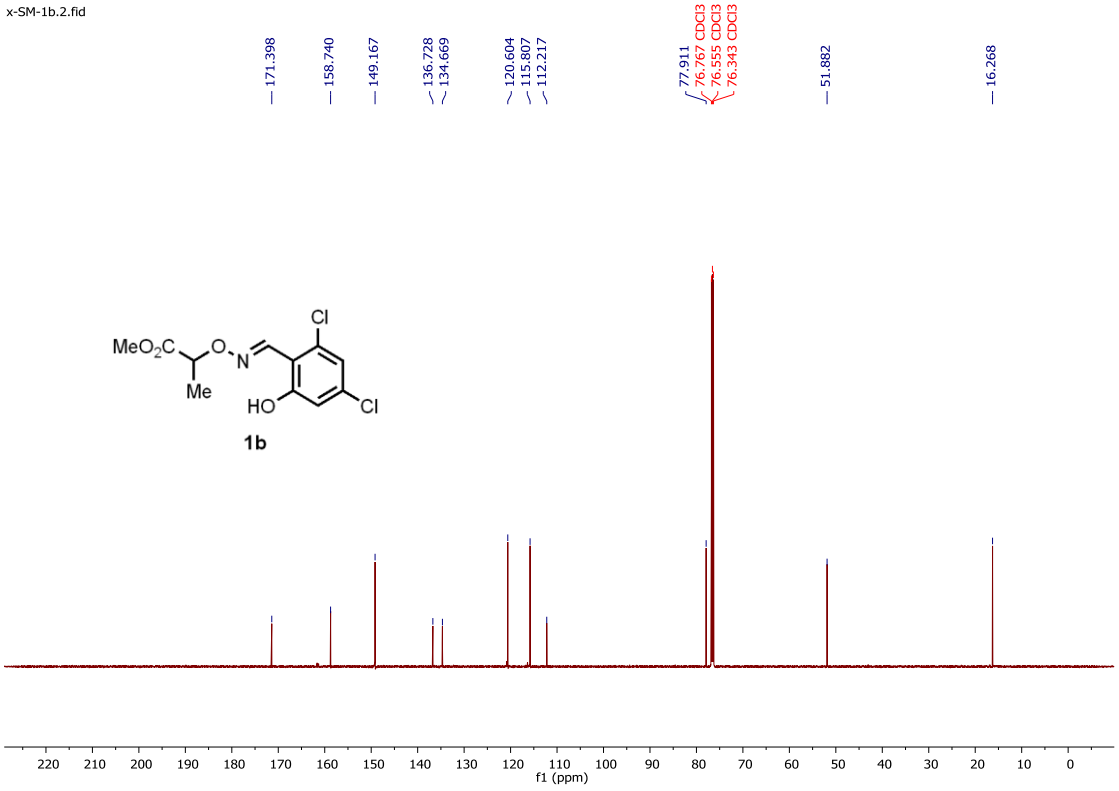

x-SM-1a.1.fid
10.746
8.636
7.260 CDCl3
6.961
6.958
6.915
6.914
6.911
6.910
4.275
4.264
4.252
4.240
1.550 HDO
1.366
1.354
1.343
Me
O
N
Cl
HO
Cl
1a
0.97
1.01
1.01
0.96
2.00
3.00
f1 (ppm)


x-SM-1a.2.fid
158.771
147.586
136.058
134.203
120.407
115.705
112.621
76.761 CDCl3
76.549 CDCl3
76.337 CDCl3
70.423
13.790
Me
O
N
Cl
HO
Cl
1a
f1 (ppm)

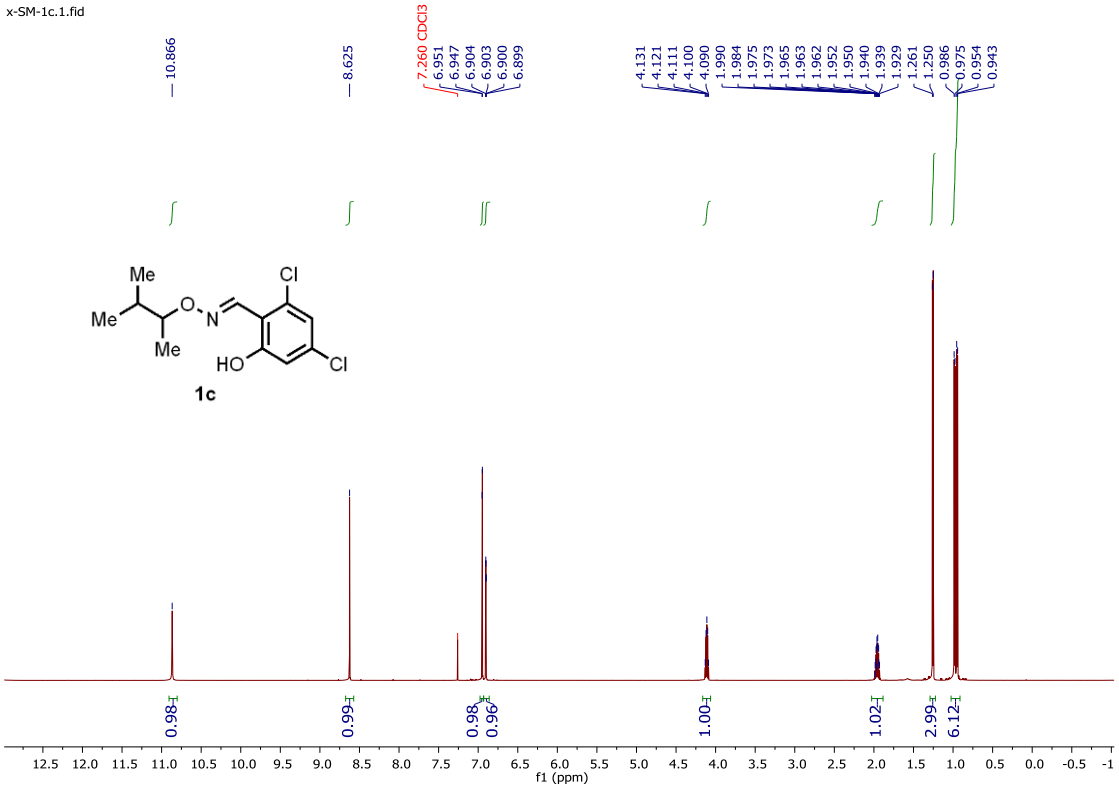
x-SM-1b.1.fid



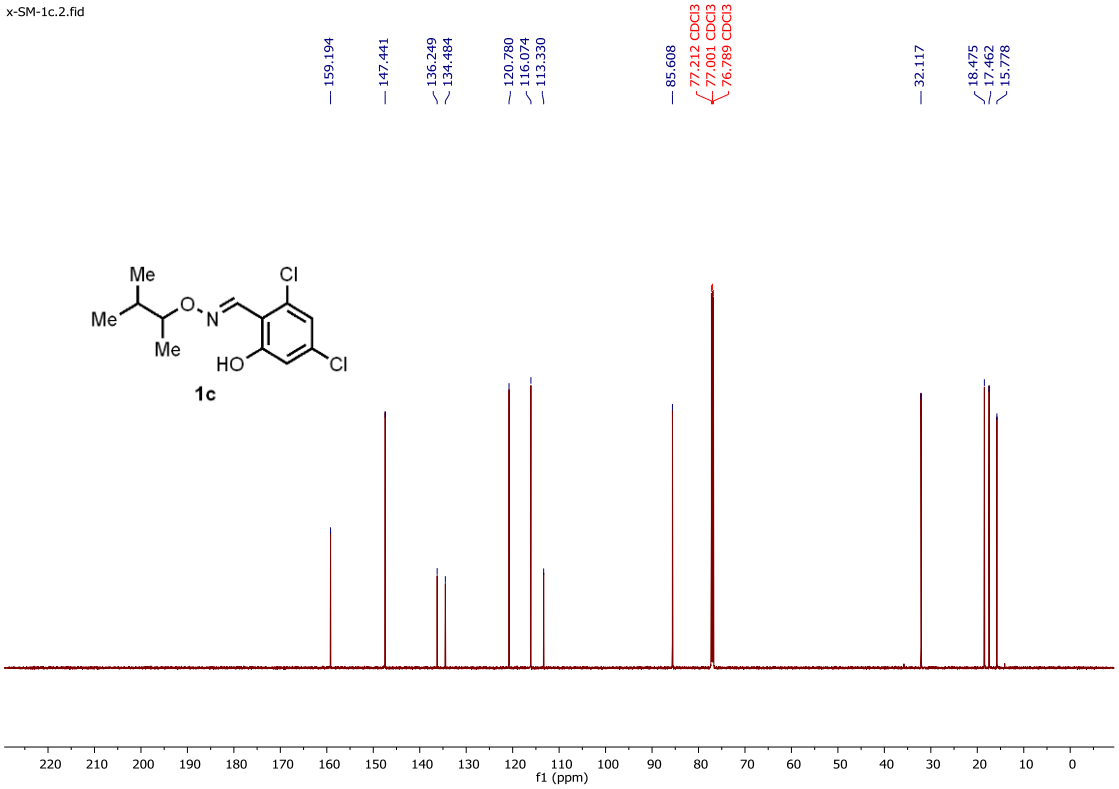
x-SM-1b.2.fid



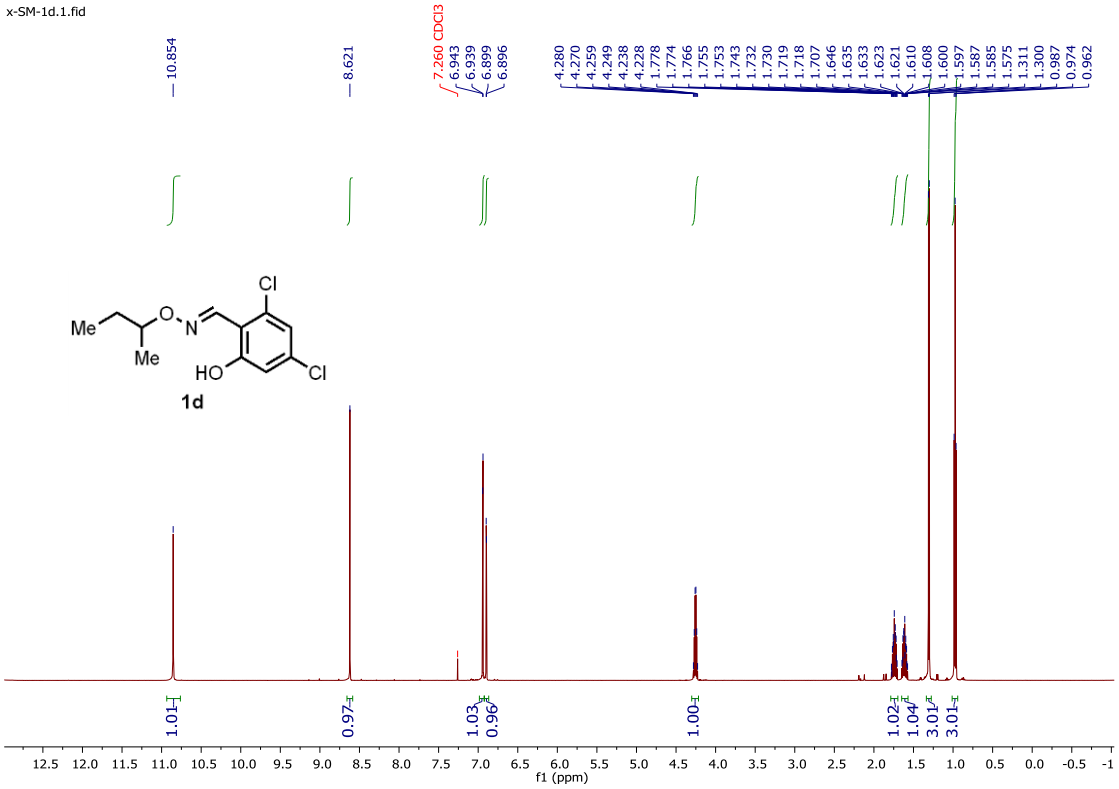
x-SM-1c.1.fid



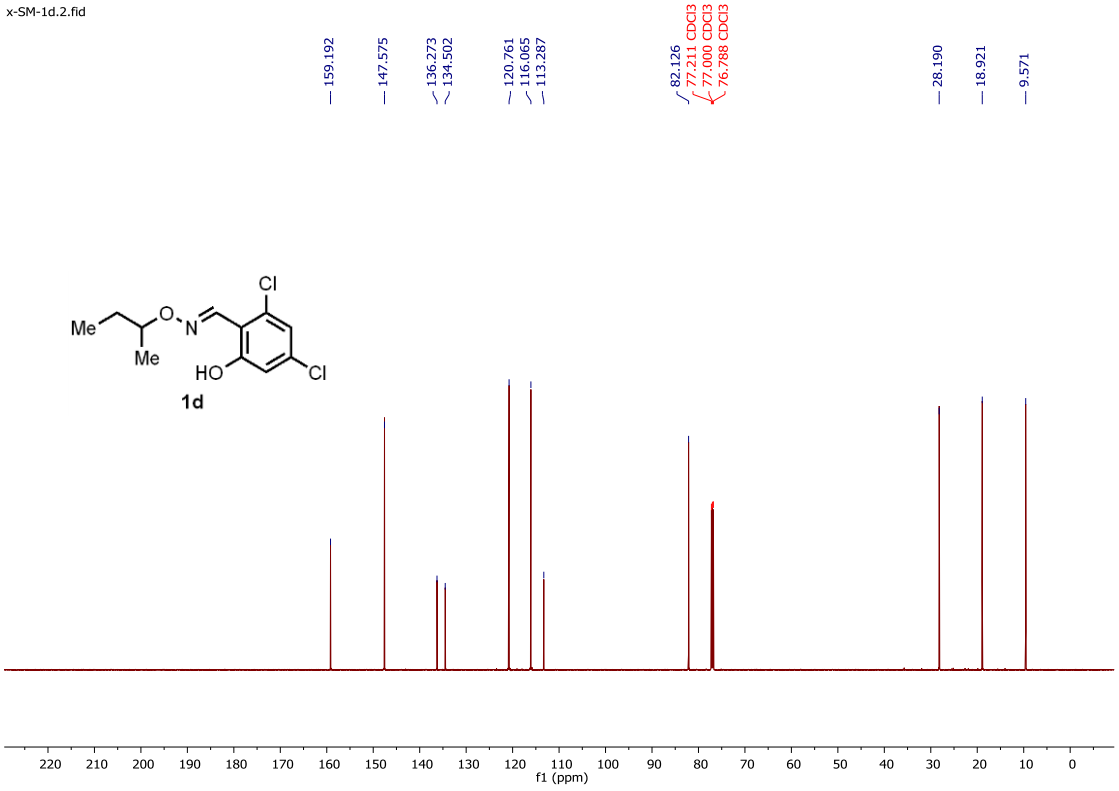
x-SM-1c.2.fid

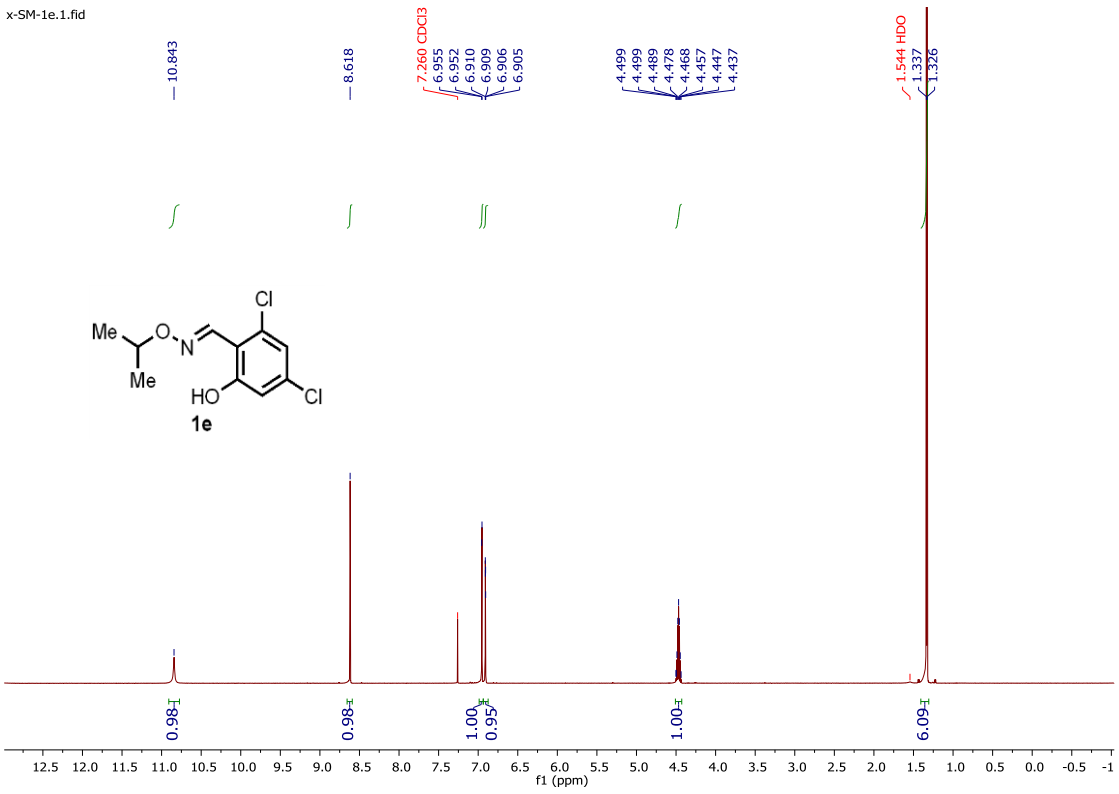


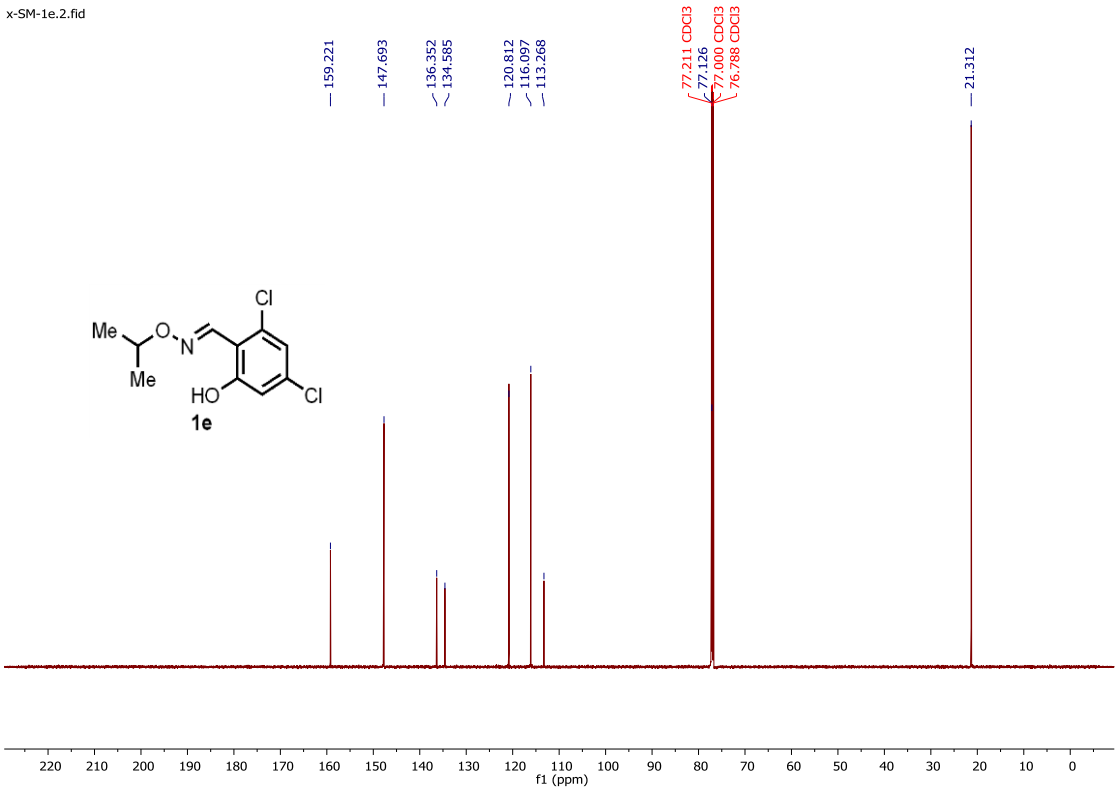
x-SM-1d.1.fid



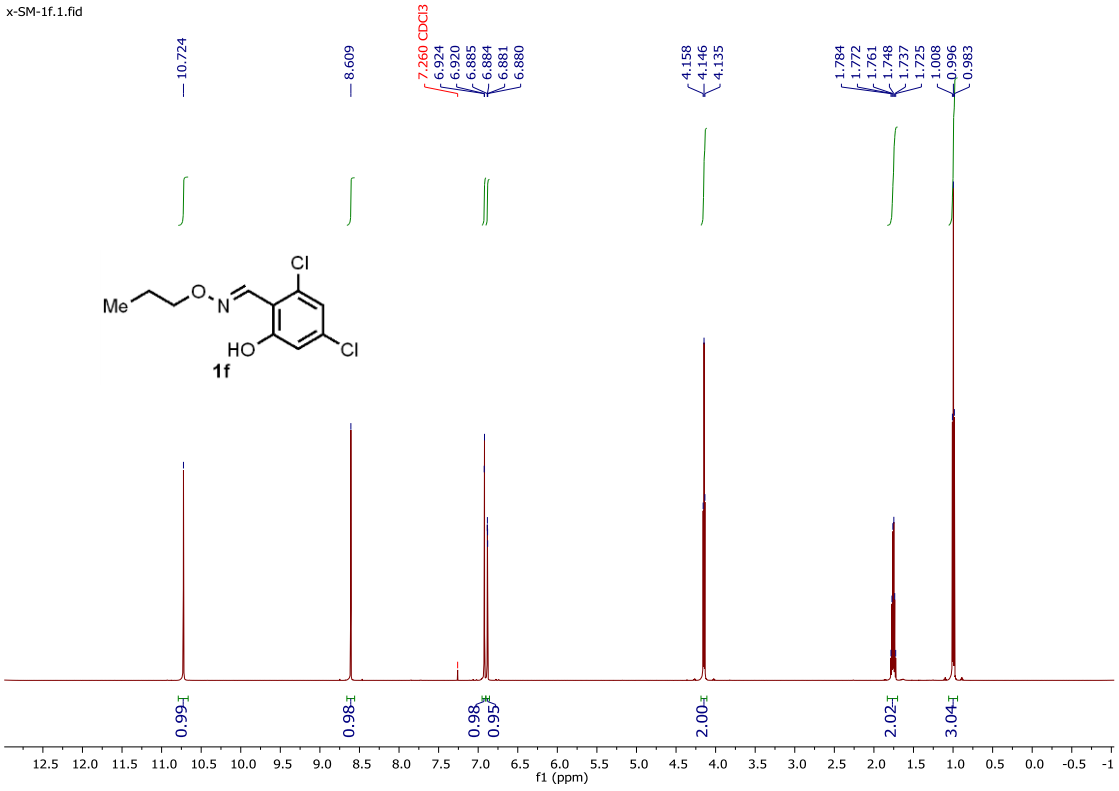
x-SM-1d.2.fid



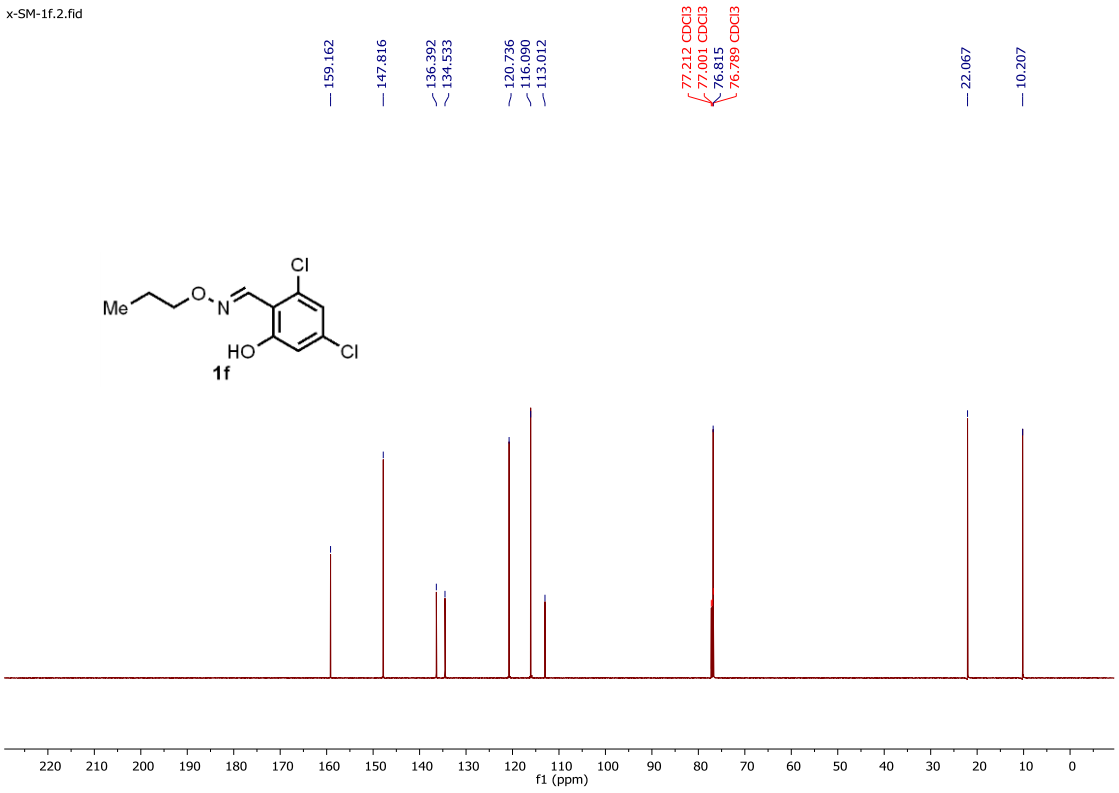

x-SM-1e.1.fid
10.843
8.618
7.260 CDCl3
6.955
6.952
6.910
6.909
6.906
6.905
4.499
4.499
4.489
4.478
4.468
4.457
4.447
4.437
1.544 HDO
1.337
1.326
Me
O
N
Me
Cl
HO
Cl
1e
0.98
0.98
1.00
0.95
1.00
6.09
f1 (ppm)


x-SM-1e.2.fid
159.221
147.693
136.352
134.585
120.812
116.097
113.268
77.211 CDCl3
77.126
77.000 CDCl3
76.788 CDCl3
21.312
Me
O
N
Me
Cl
HO
Cl
1e
f1 (ppm)

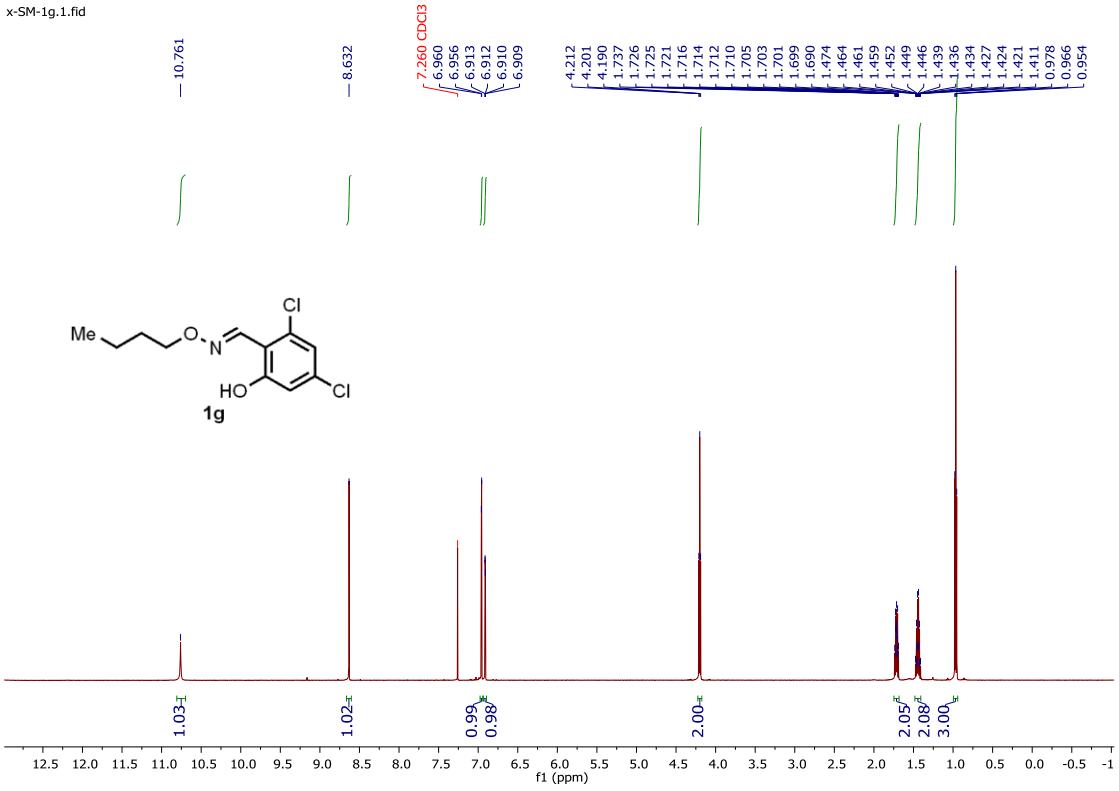
x-SM-1f.1.fid



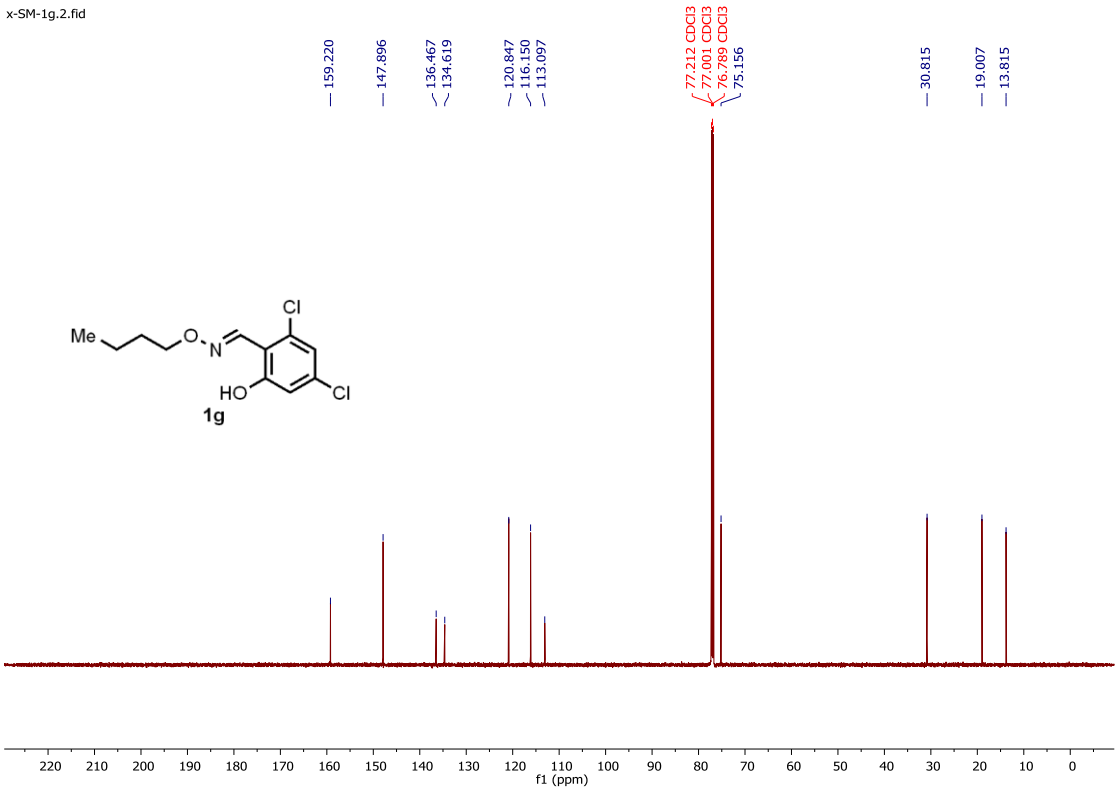
x-SM-1f.2.fid



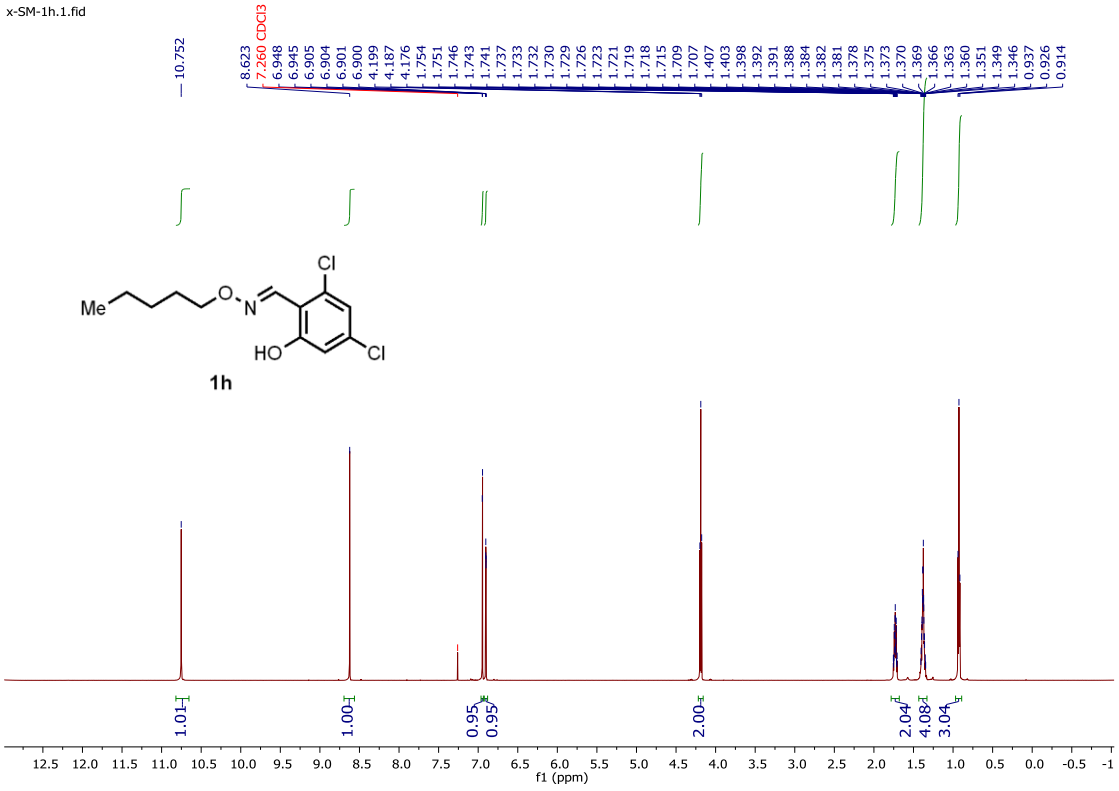
x-SM-1g.1.fid



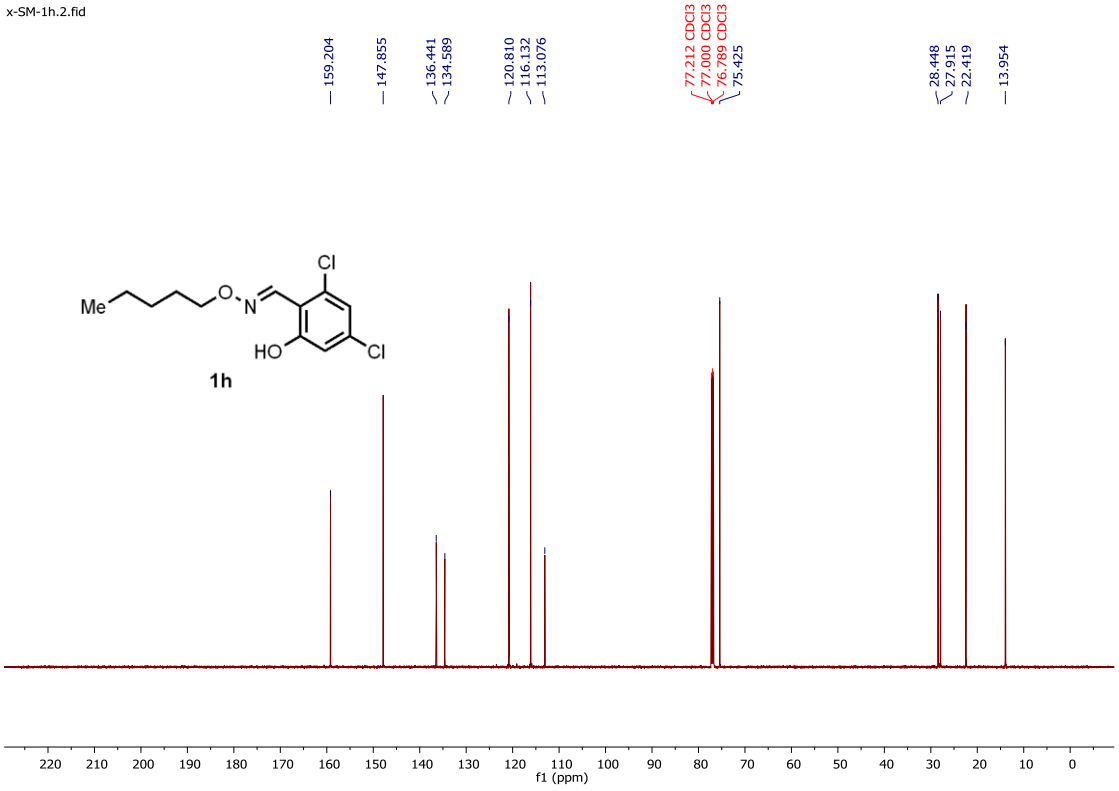
x-SM-1g.2.fid



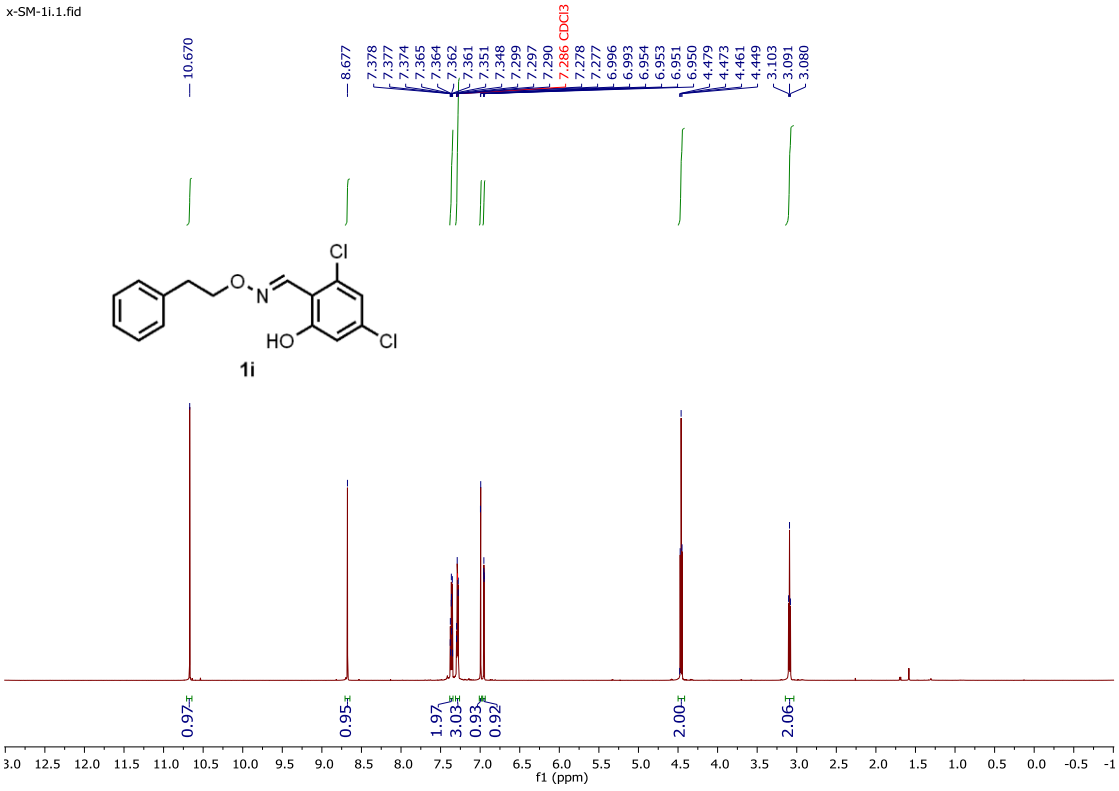
x-SM-1h.1.fid



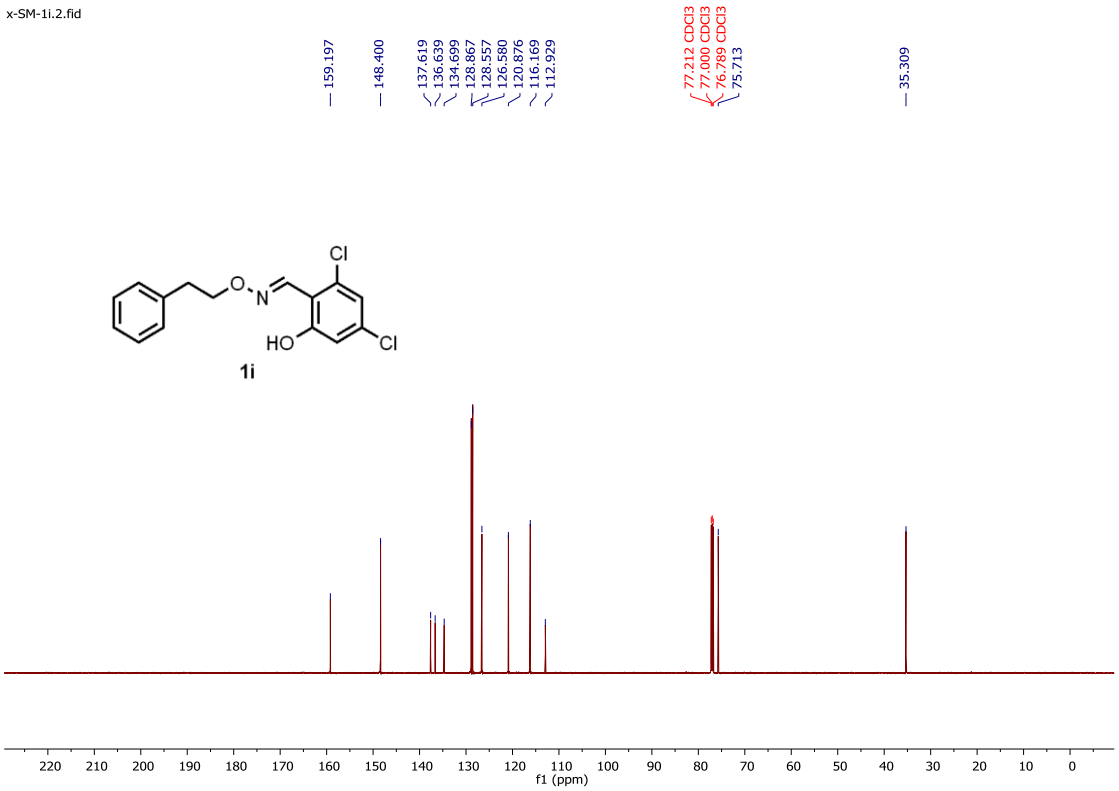
x-SM-1h.2.fid

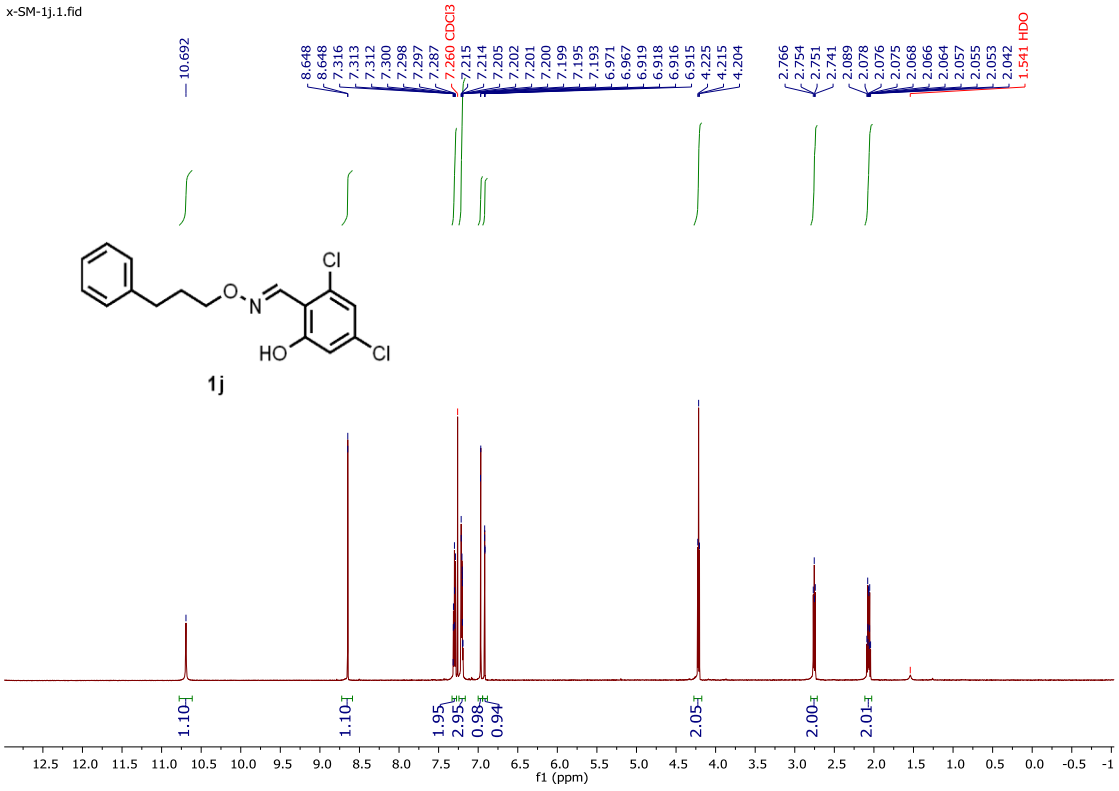


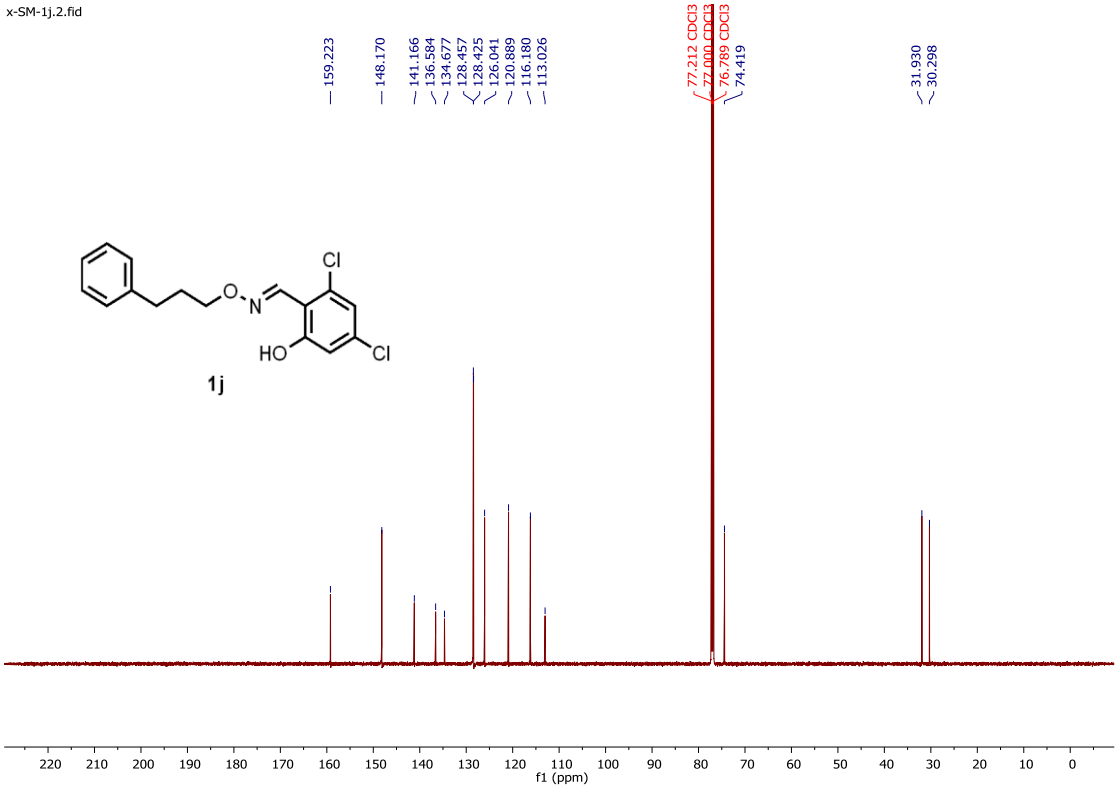
x-SM-1i.1.fid

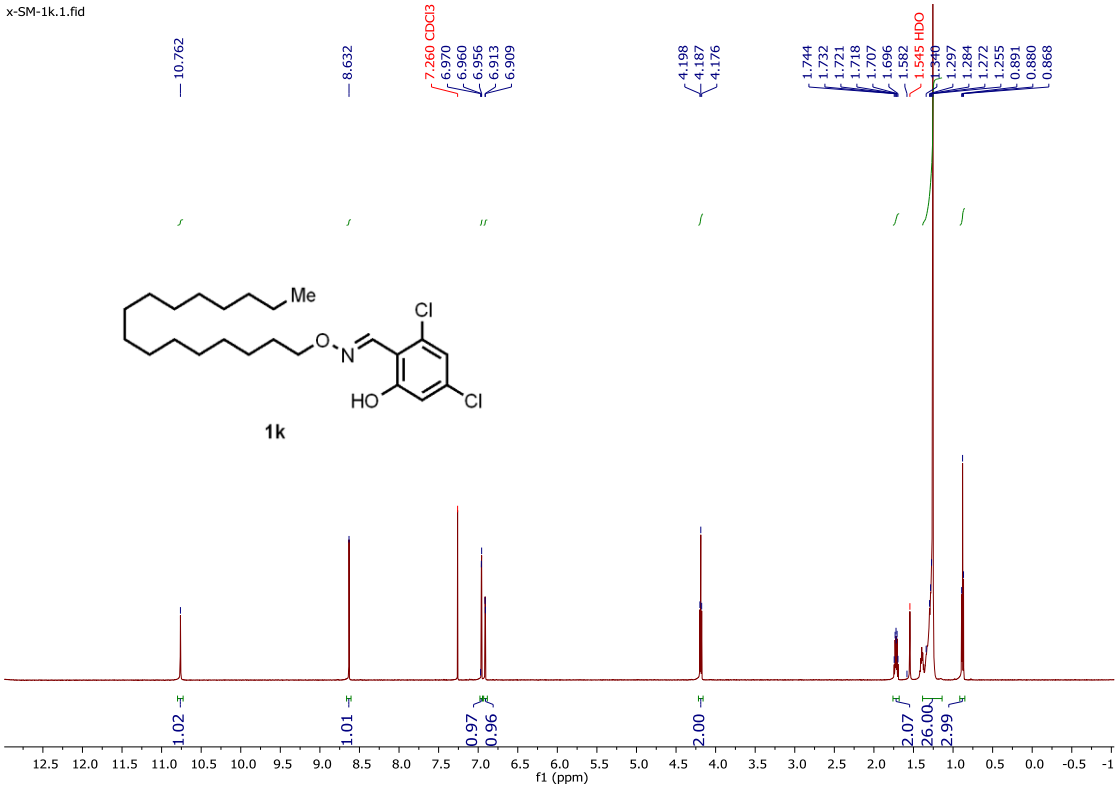


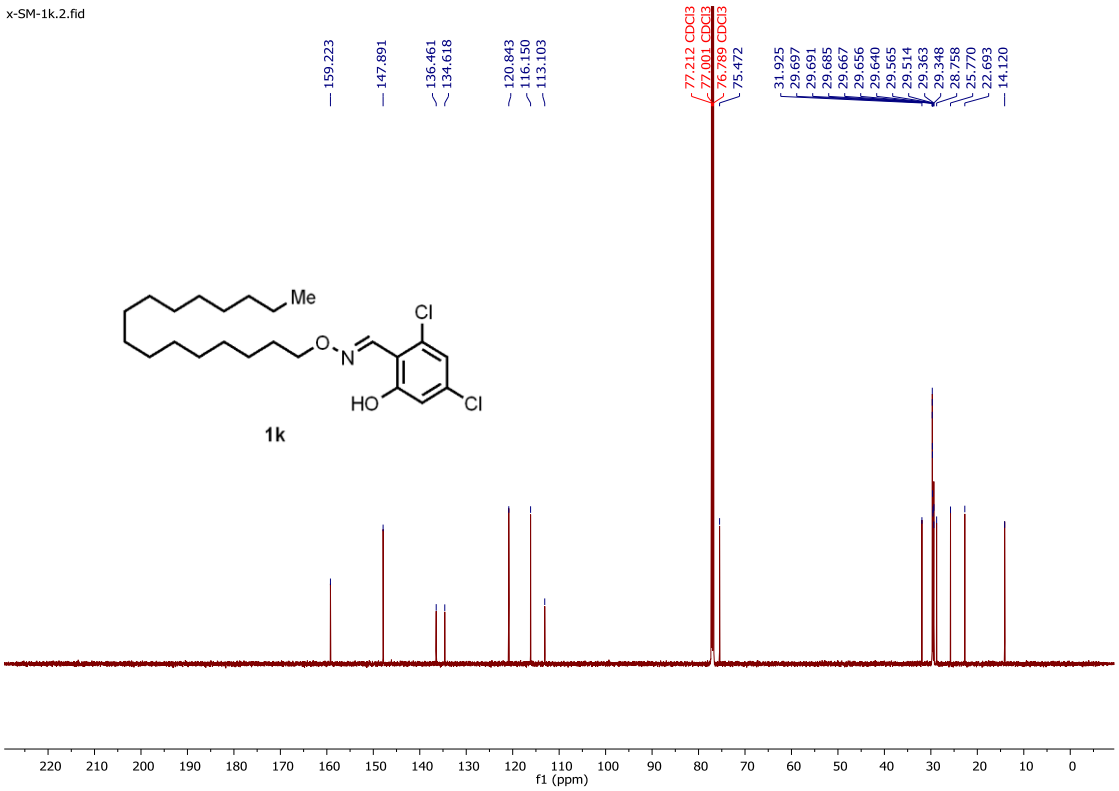
x-SM-1i.2.fid

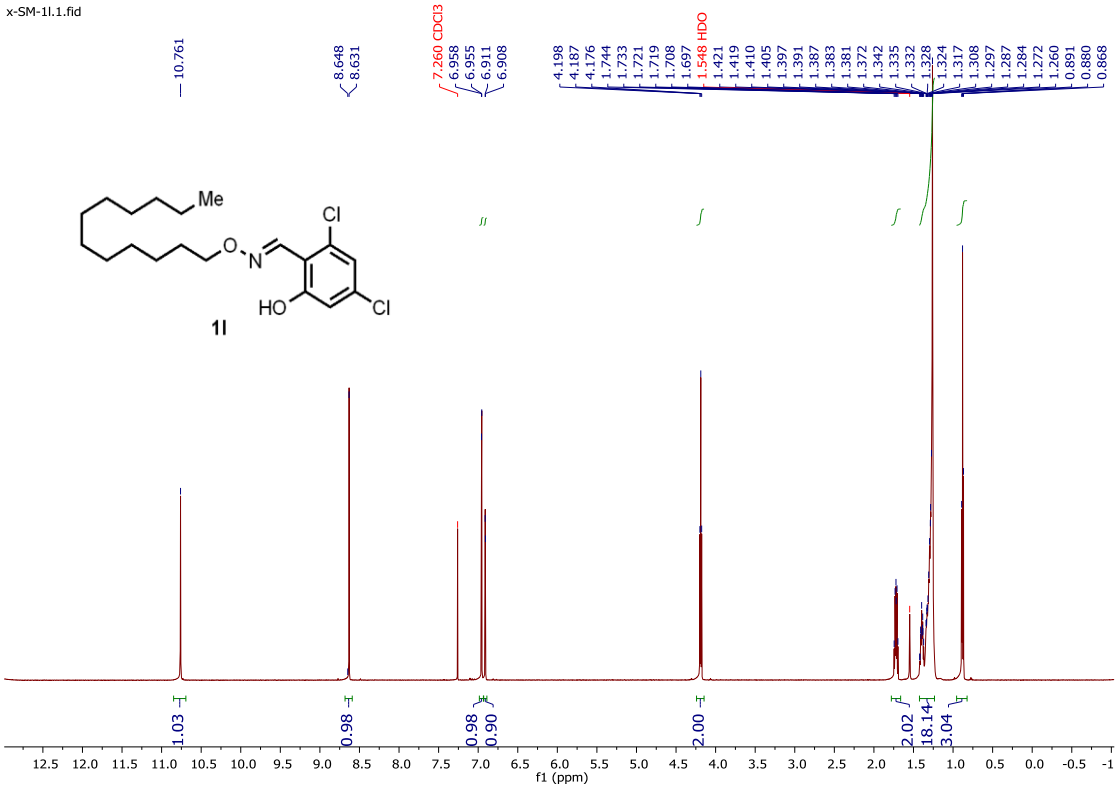



x-SM-1j.1.fid
10.692
8.648
8.648
7.316
7.313
7.312
7.300
7.298
7.297
7.287
7.260 CDCl3
7.215
7.214
7.205
7.202
7.201
7.200
7.199
7.195
7.193
6.971
6.967
6.919
6.918
6.916
6.915
4.225
4.215
4.204
2.766
2.754
2.751
2.741
2.089
2.078
2.076
2.075
2.068
2.066
2.064
2.057
2.055
2.053
2.042
1.541 HDO
Cl
O
N
HO
Cl
1j
1.10
1.10
1.95
2.95
0.98
0.94
2.05
2.00
2.01
f1 (ppm)


x-SM-1j.2.fid
159.223
148.170
141.166
136.584
134.677
128.457
128.425
126.041
120.889
116.180
113.026
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
74.419
31.930
30.298
Cl
O
N
HO
Cl
1j
f1 (ppm)


x-SM-1k.1.fid
10.762
8.632
7.260 CDCl3
6.970
6.960
6.956
6.913
6.909
4.198
4.187
4.176
1.744
1.732
1.721
1.718
1.707
1.696
1.582
1.545 HDO
1.340
1.297
1.284
1.272
1.255
0.891
0.880
0.868
Me
O
N
Cl
HO
Cl
1k
1.02
1.01
0.97
0.96
2.00
2.07
26.00
2.99
f1 (ppm)


x-SM-1k.2.fid
159.223
147.891
136.461
134.618
120.843
116.150
113.103
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
75.472
31.925
29.697
29.691
29.685
29.667
29.656
29.640
29.565
29.514
29.363
29.348
28.758
25.770
22.693
14.120
Me
O
N
Cl
HO
Cl
1k
f1 (ppm)


x-SM-1l.1.fid
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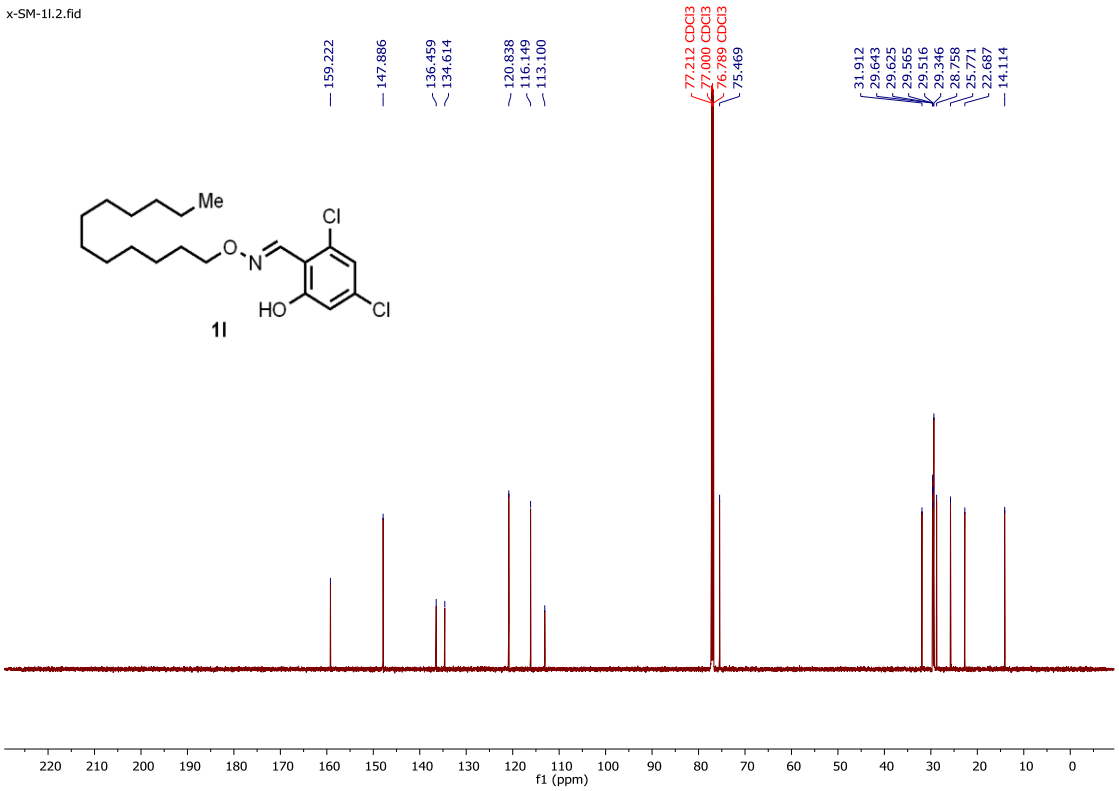
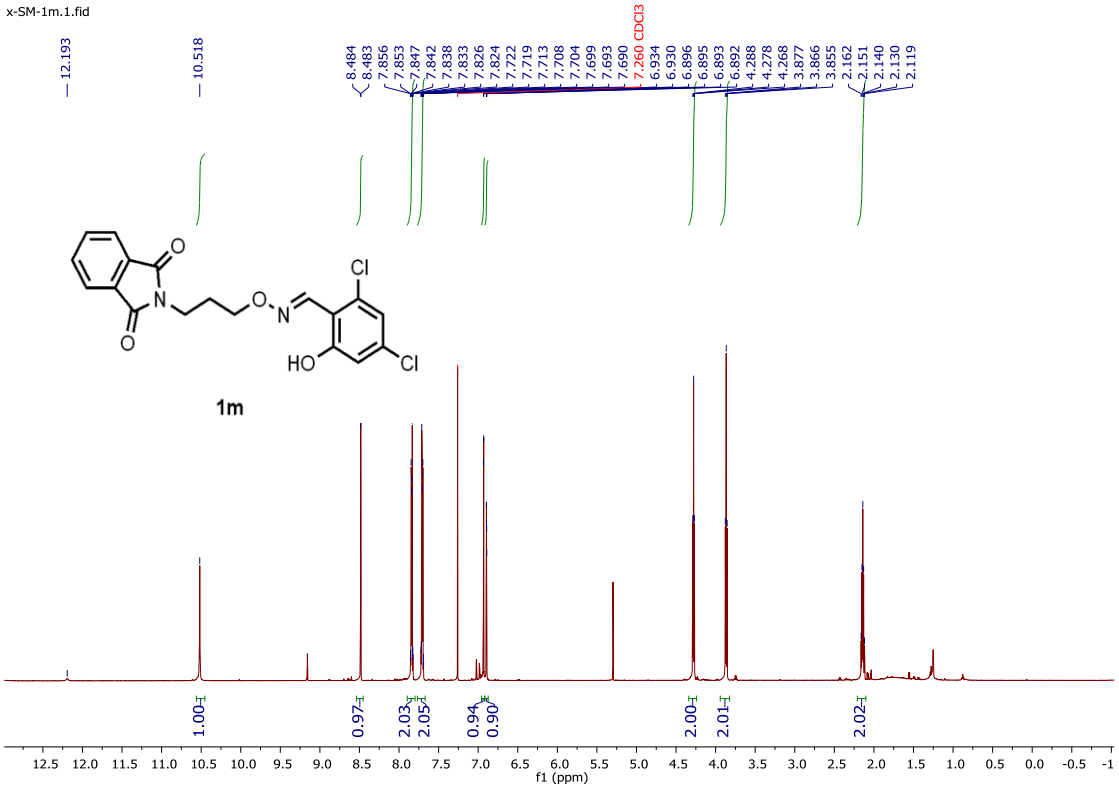
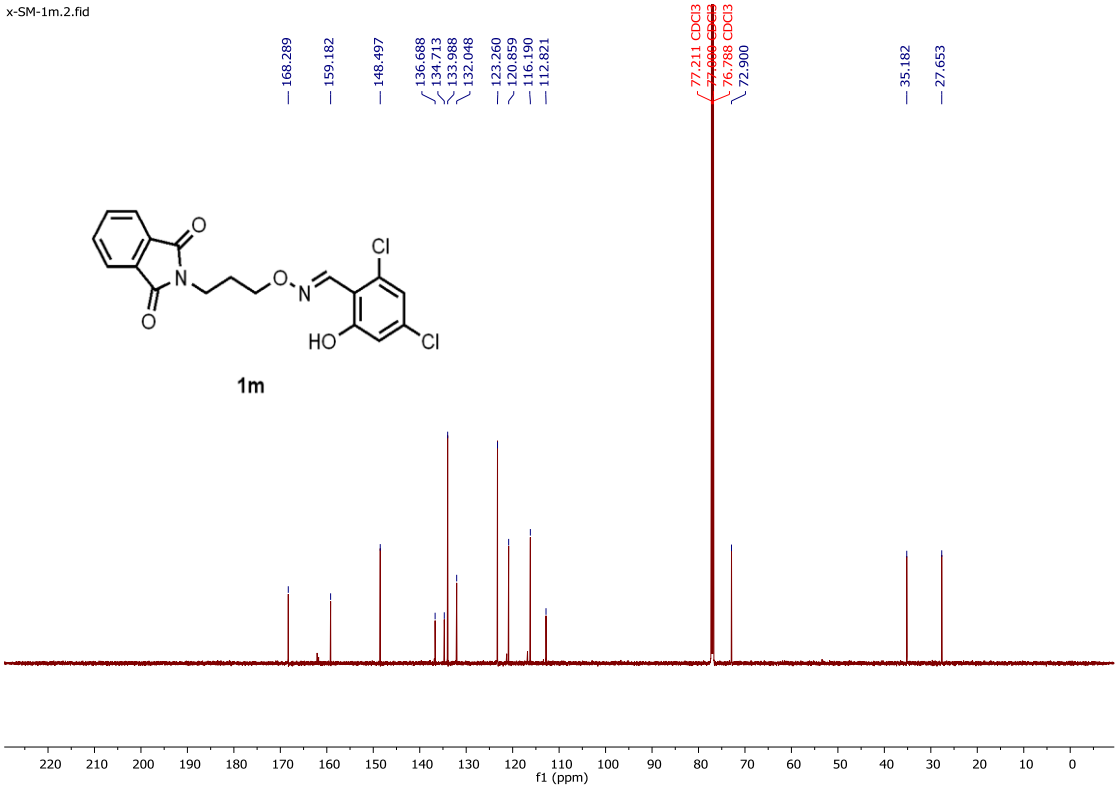
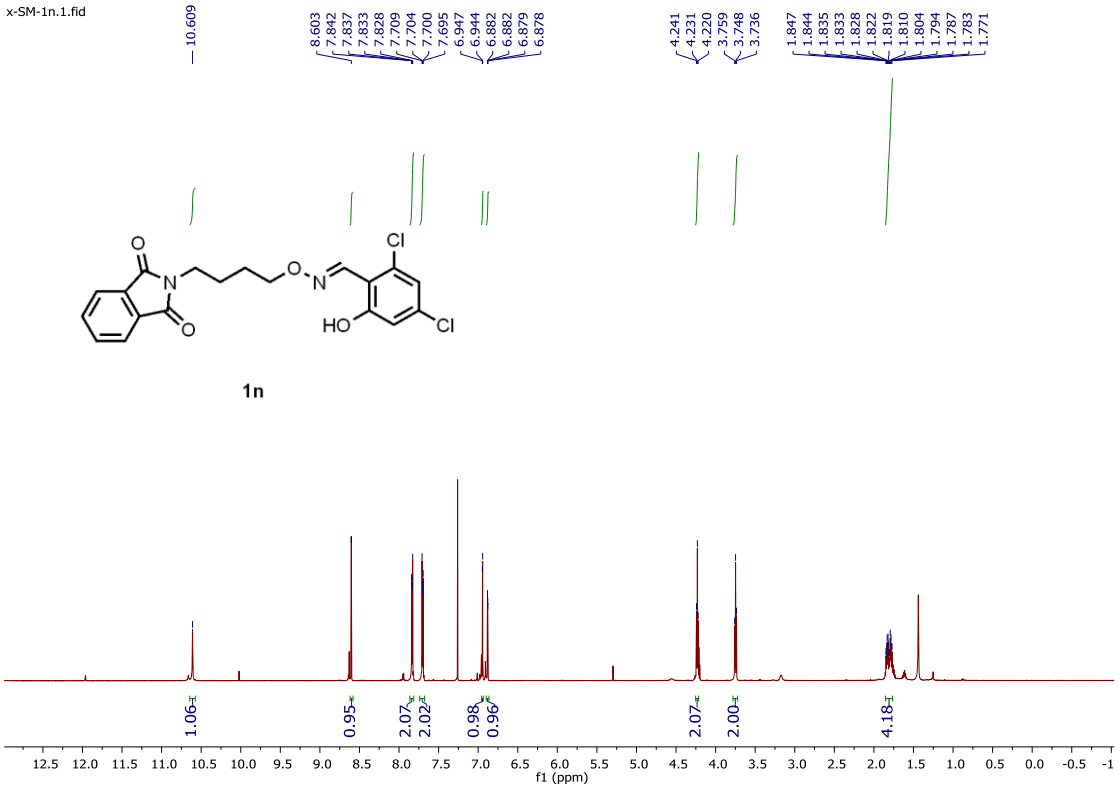
8.648
8.631
7.260 CDCl3
6.958
6.955
6.911
6.908
4.198
4.187
4.176
1.744
1.733
1.721
1.719
1.708
1.697
1.548 HDO
1.421
1.419
1.410
1.405
1.397
1.391
1.387
1.383
1.381
1.372
1.342
1.335
1.332
1.328
1.324
1.317
1.308
1.297
1.287
1.284
1.272
1.260
0.891
0.880
0.868
Me
O
N
Cl
HO
Cl
1l
1.03
0.98
0.98
0.90
2.00
2.02
18.14
3.04
f1 (ppm)


x-SM-1l.2.fid
159.222
147.886
136.459
134.614
120.838
116.149
113.100
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
75.469
31.912
29.643
29.625
29.565
29.516
29.346
28.758
25.771
22.687
14.114
Me
O
N
Cl
HO
Cl
1l
f1 (ppm)


x-SM-1m.1.fid
12.193
10.518
8.484
8.483
7.856
7.853
7.847
7.842
7.838
7.833
7.826
7.824
7.722
7.719
7.713
7.708
7.704
7.699
7.693
7.690
7.260 CDCl3
6.934
6.930
6.896
6.895
6.893
6.892
4.288
4.278
4.268
3.877
3.866
3.855
2.162
2.151
2.140
2.130
2.119
1m
1.00
0.97
2.03
2.05
0.94
0.90
2.00
2.01
2.02
f1 (ppm)

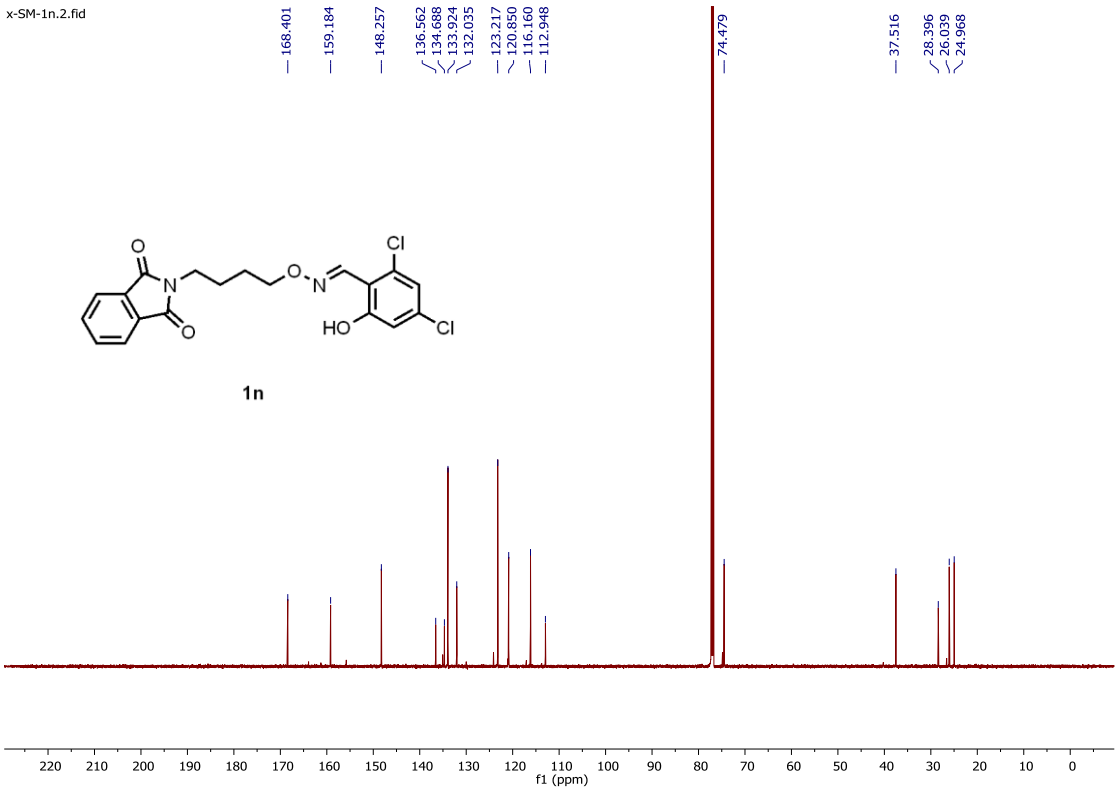

x-SM-1m.2.fid
168.289
159.182
148.497
136.688
134.713
133.988
132.048
123.260
120.859
116.190
112.821
77.211 CDCl3
76.788 CDCl3
72.900
35.182
27.653
1m
f1 (ppm)

x-SM-1n.1.fid



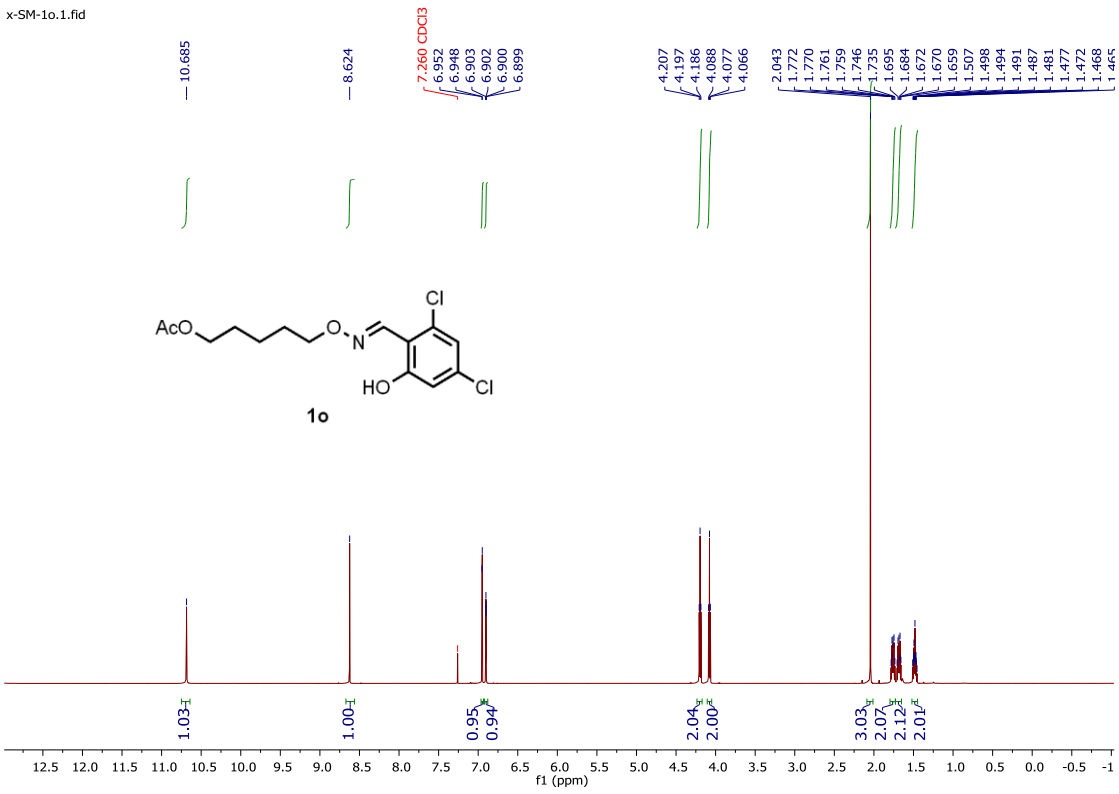
1n

x-SM-1n.2.fid

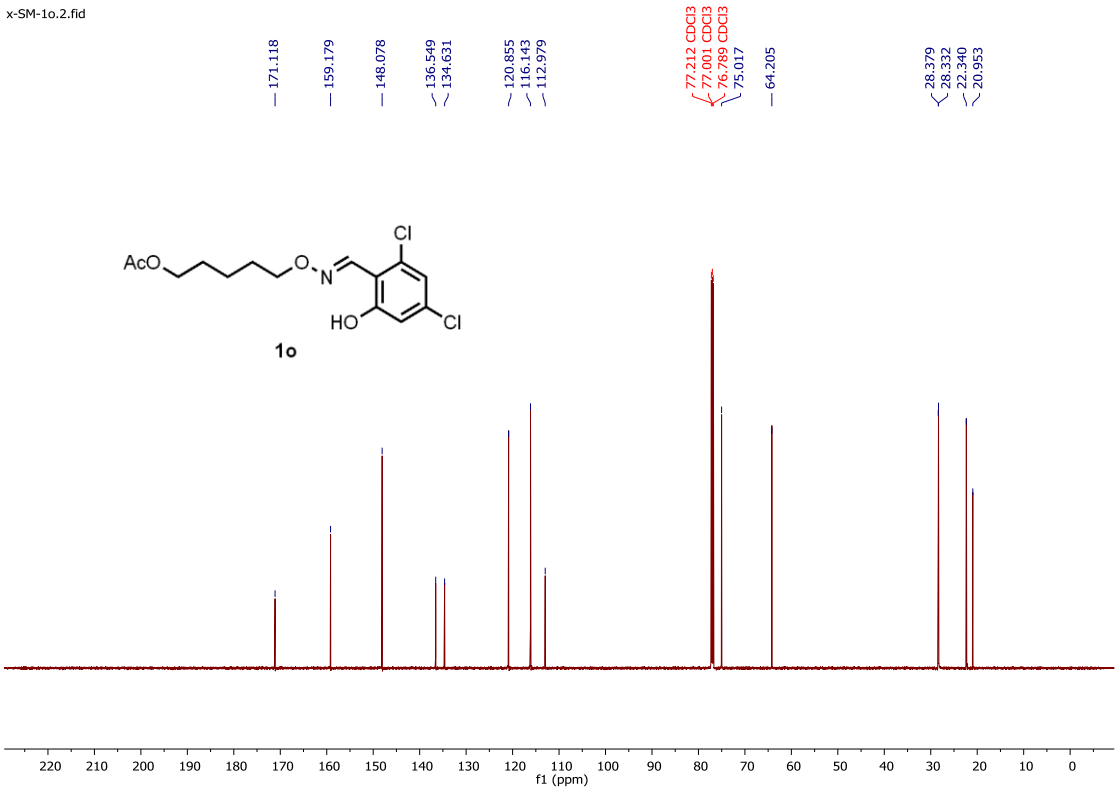


1n

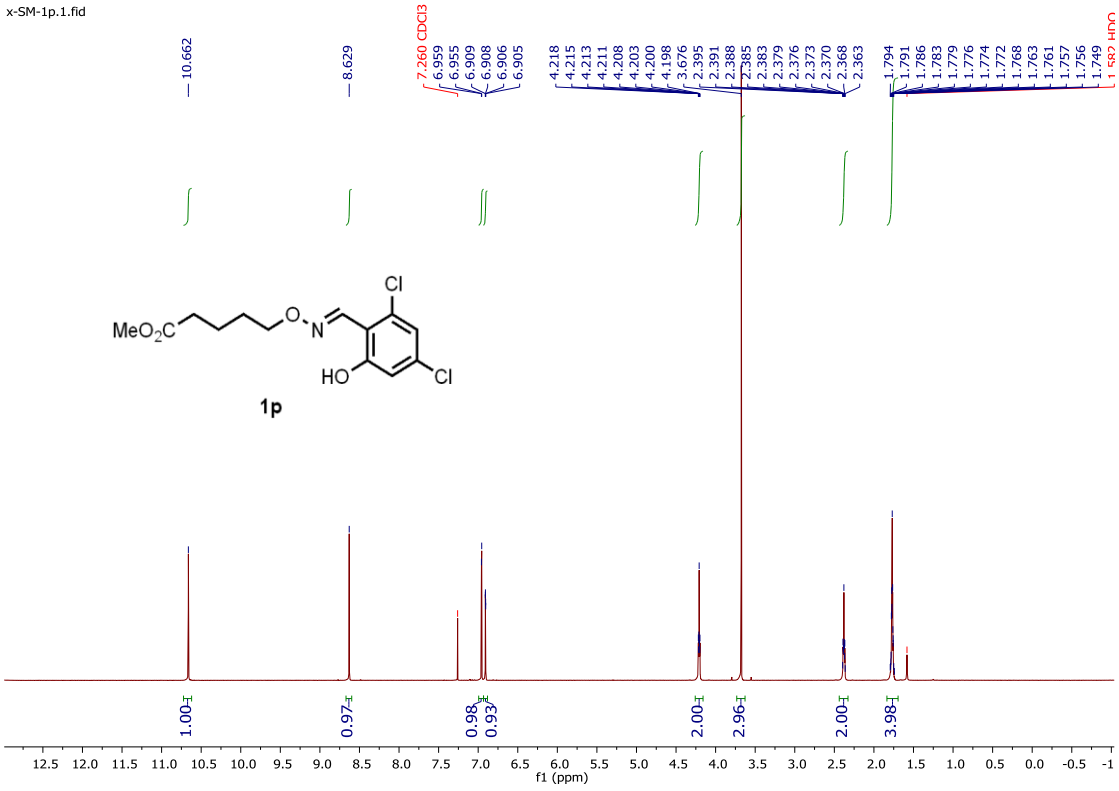
x-SM-1o.1.fid



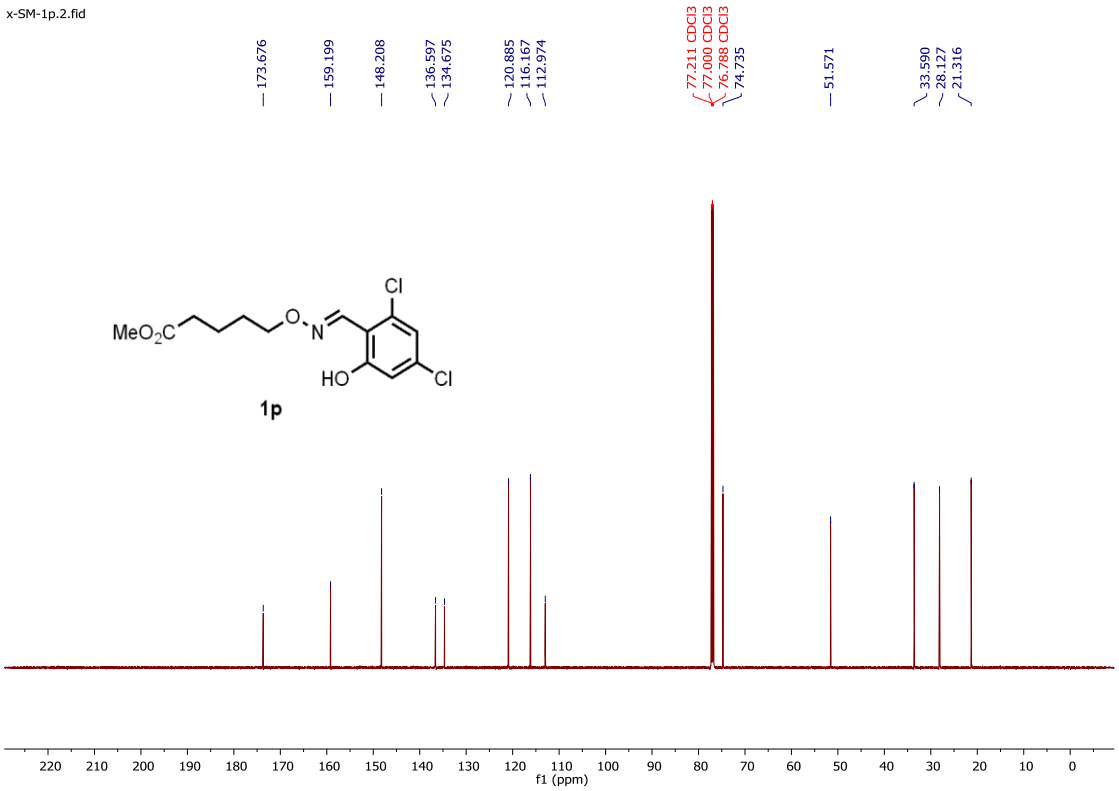
x-SM-1o.2.fid



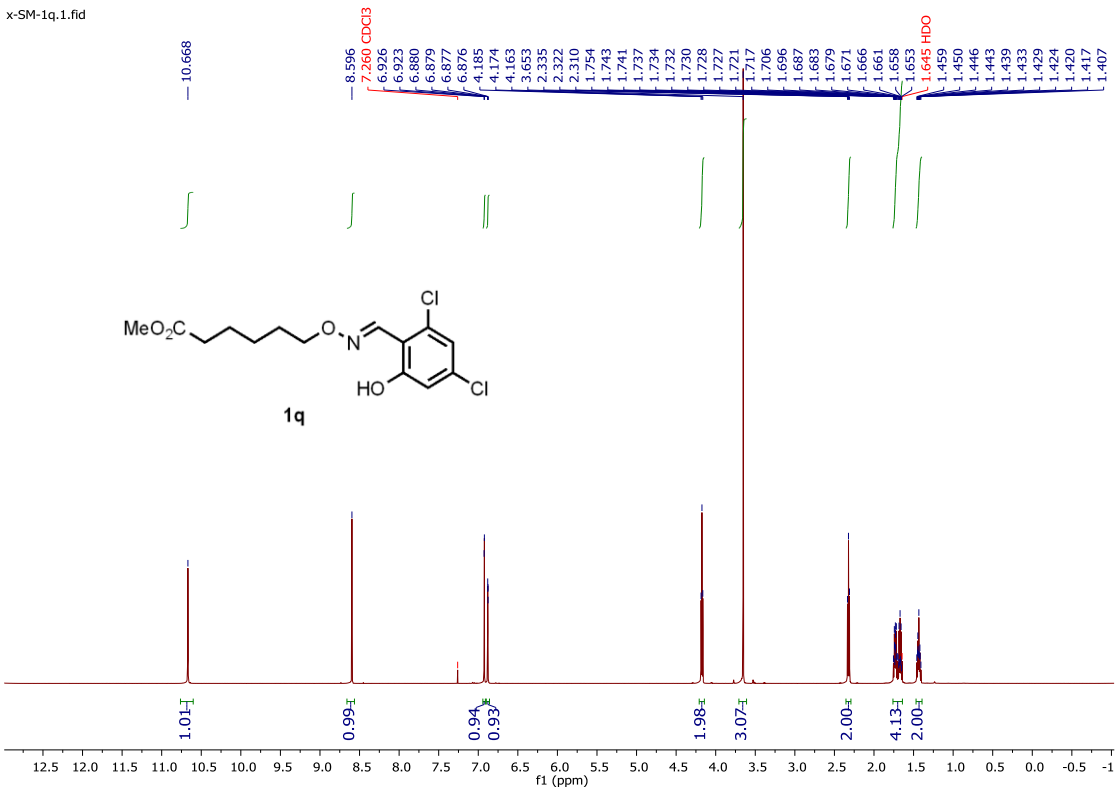
x-SM-1p.1.fid



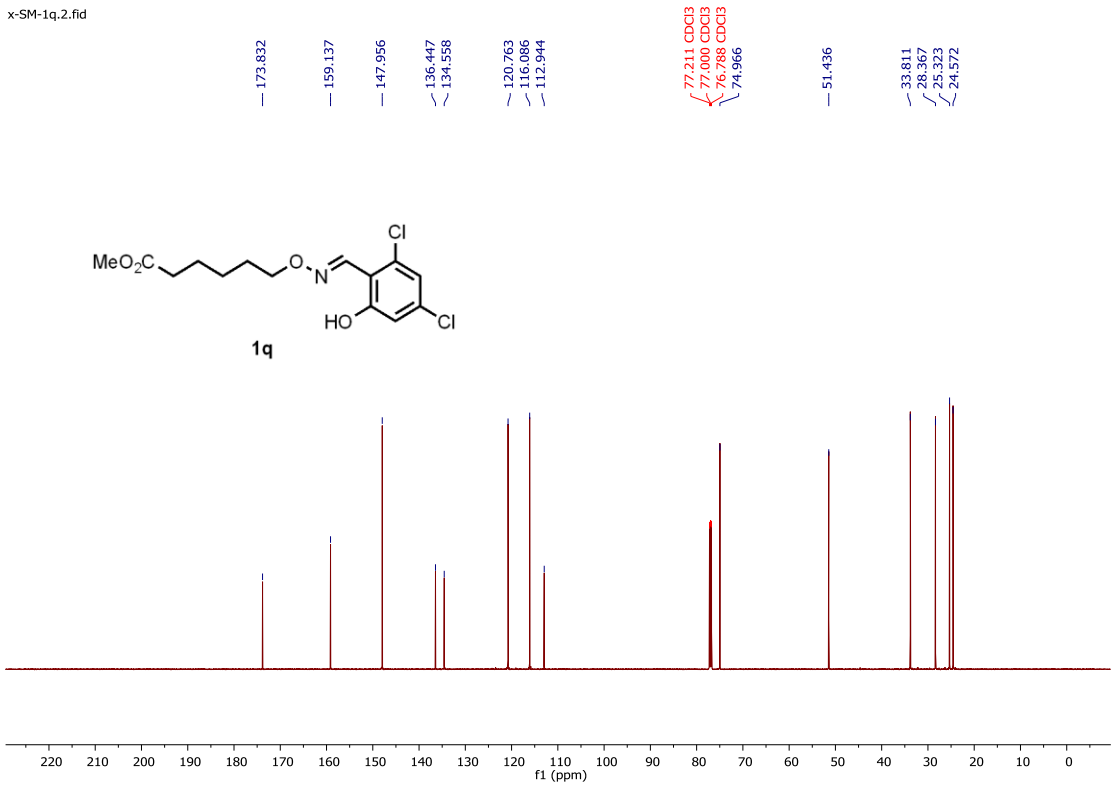
x-SM-1p.2.fid

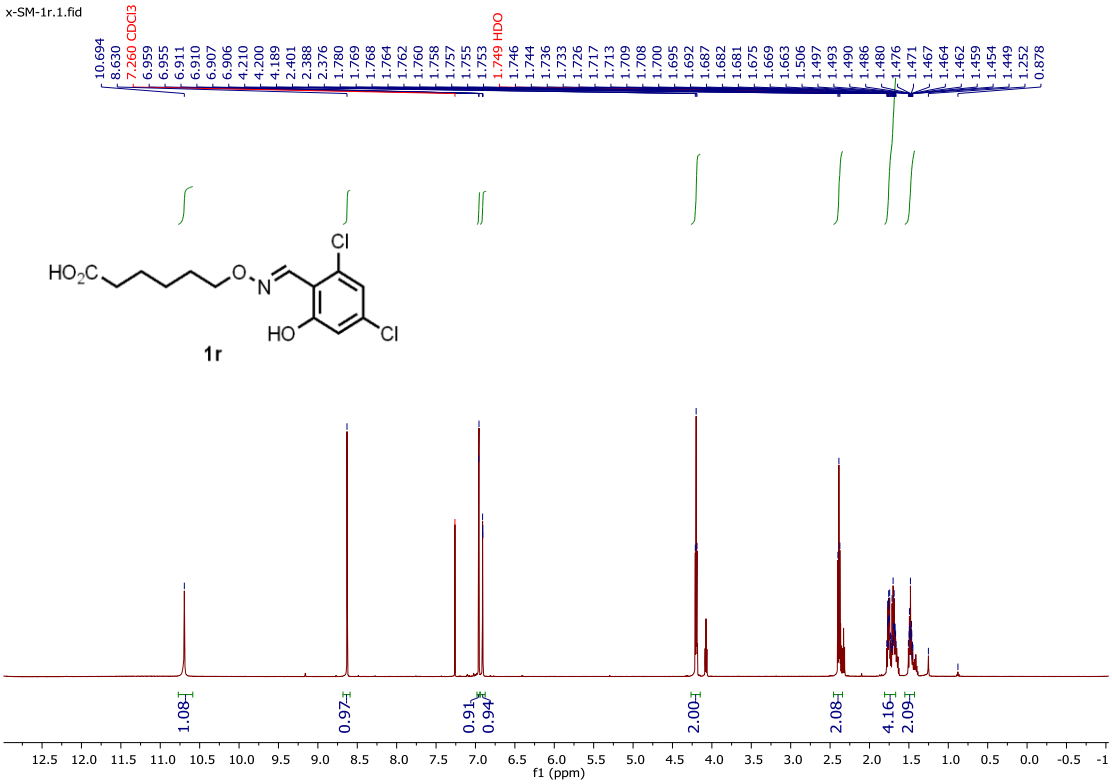


x-SM-1q.1.fid



x-SM-1q.2.fid




x-SM-1r.1.fid
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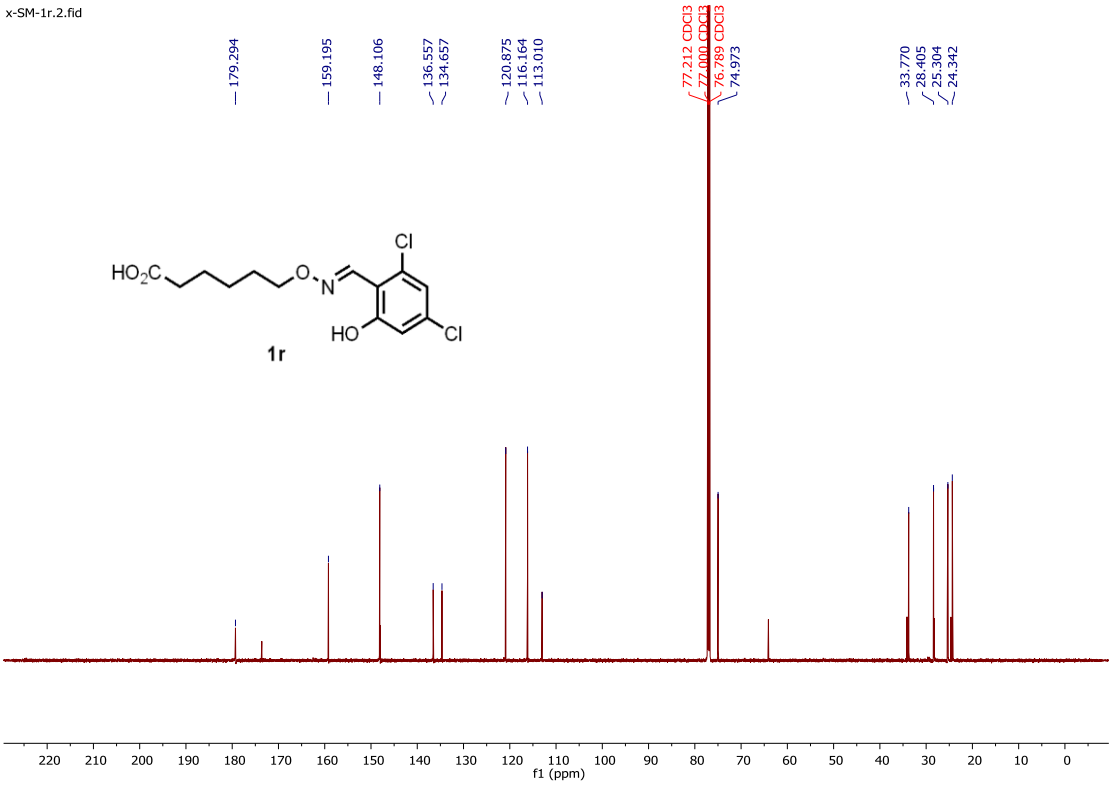
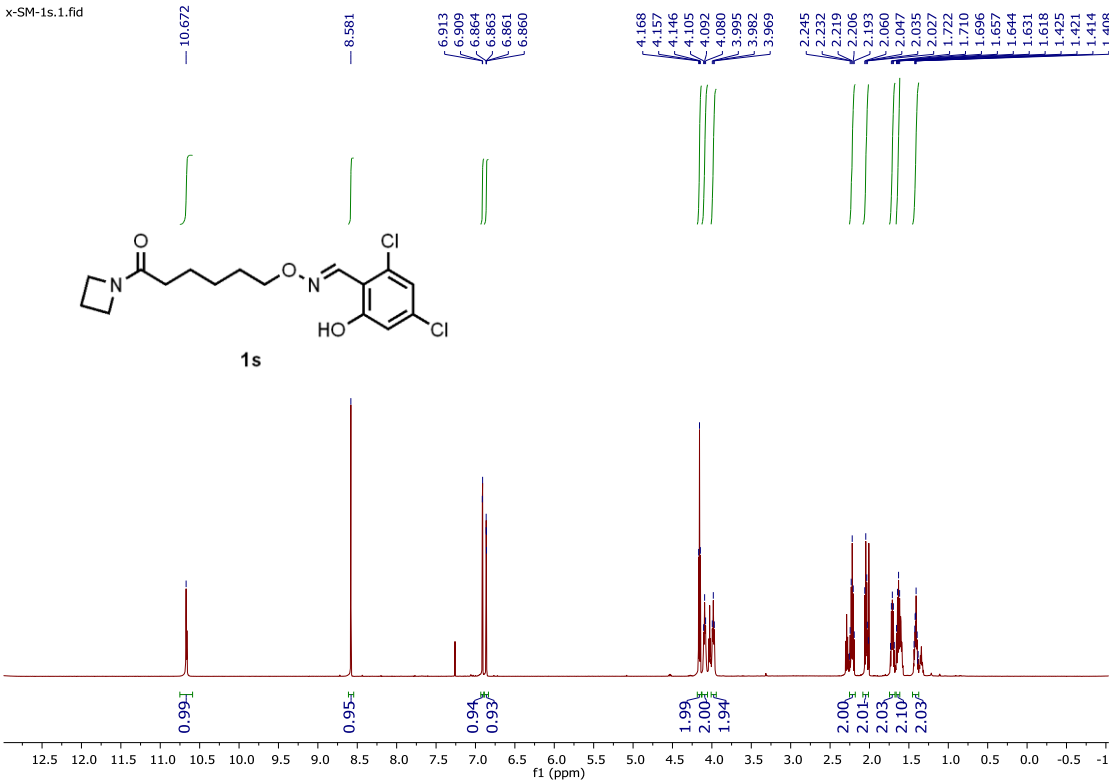
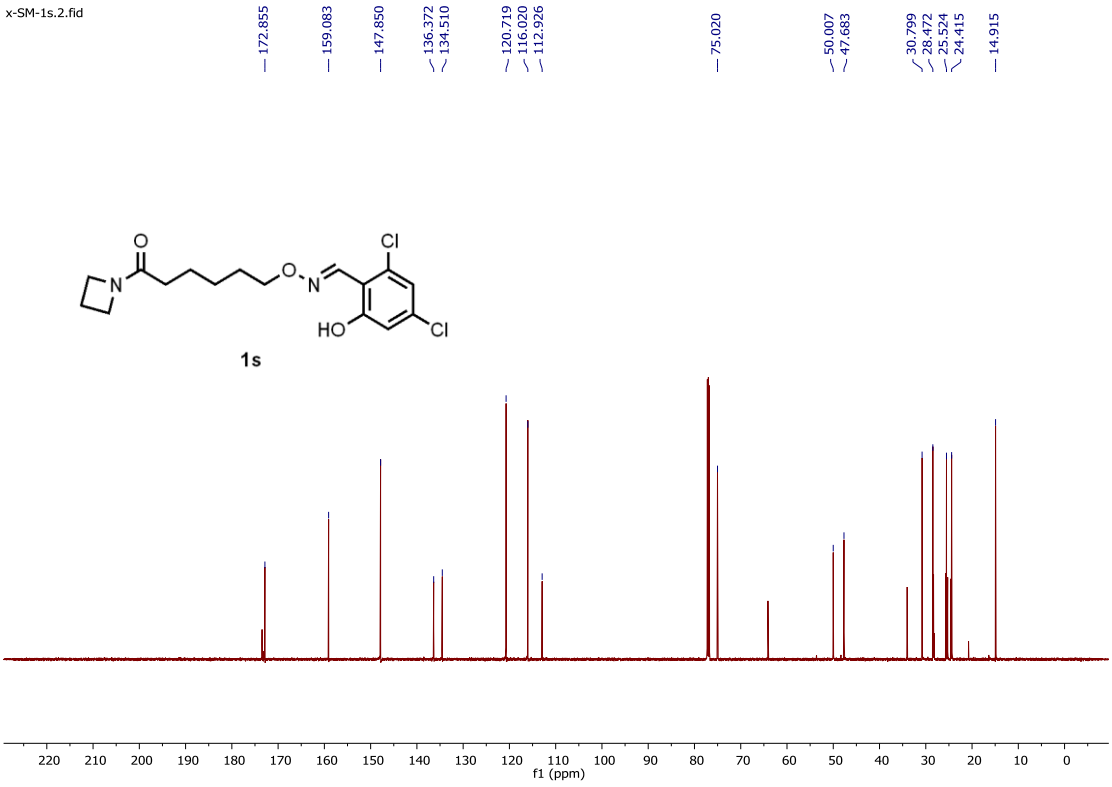
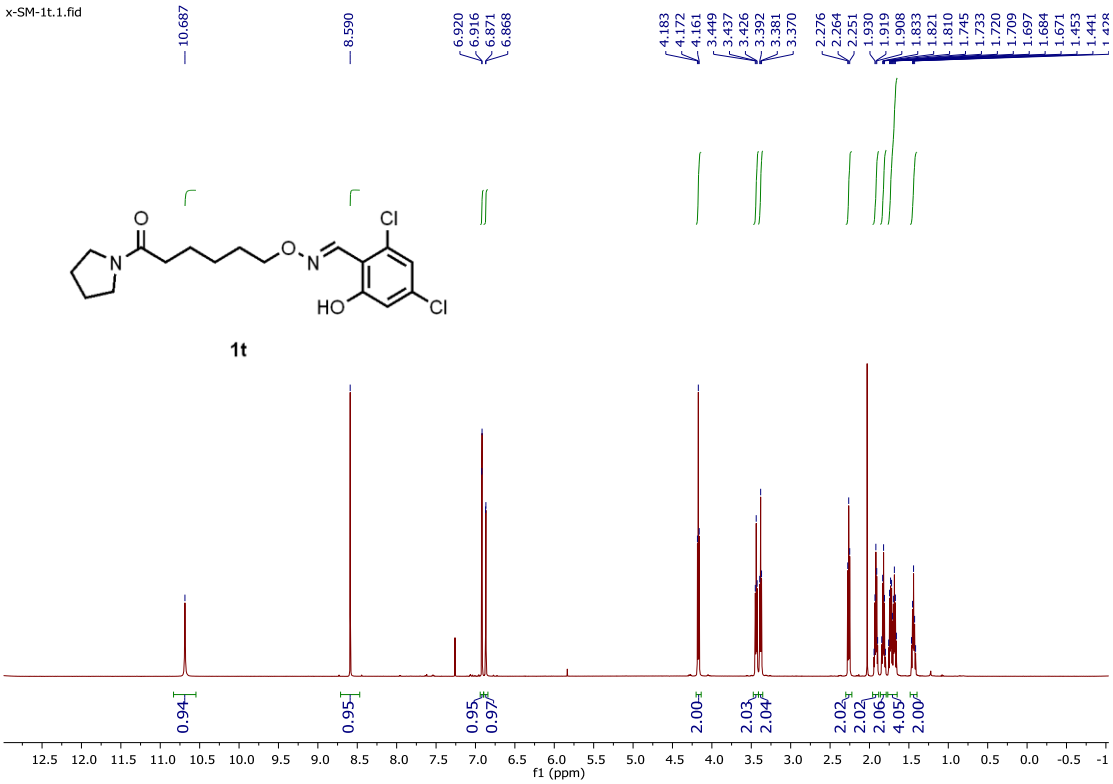
8.630
7.260 CDCl3
6.959
6.955
6.911
6.910
6.907
6.906
4.210
4.200
4.189
2.401
2.388
2.376
1.780
1.769
1.768
1.764
1.762
1.760
1.758
1.757
1.755
1.753
1.749 HDO
1.746
1.744
1.736
1.733
1.726
1.717
1.713
1.709
1.708
1.700
1.695
1.692
1.687
1.682
1.681
1.675
1.669
1.663
1.506
1.497
1.493
1.490
1.486
1.480
1.476
1.471
1.467
1.464
1.462
1.459
1.454
1.449
1.252
0.878
HO2C
O
N
Cl
HO
Cl
1r
1.08
0.97
0.91
0.94
2.00
2.08
4.16
2.09
f1 (ppm)


x-SM-1r.2.fid
179.294
159.195
148.106
136.557
134.657
120.875
116.164
113.010
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
74.973
33.770
28.405
25.304
24.342
HO2C
O
N
Cl
HO
Cl
1r
f1 (ppm)


x-SM-1s.1.fid
10.672
8.581
6.913
6.909
6.864
6.863
6.861
6.860
4.168
4.157
4.146
4.105
4.092
4.080
3.995
3.982
3.969
2.245
2.232
2.219
2.206
2.193
2.060
2.047
2.035
2.027
1.722
1.710
1.696
1.657
1.644
1.631
1.618
1.425
1.421
1.414
O
N
O
N
Cl
HO
Cl
1s
0.99
0.95
0.94
0.93
1.99
2.00
1.94
2.00
2.01
2.03
2.10
2.03
12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1
f1 (ppm)

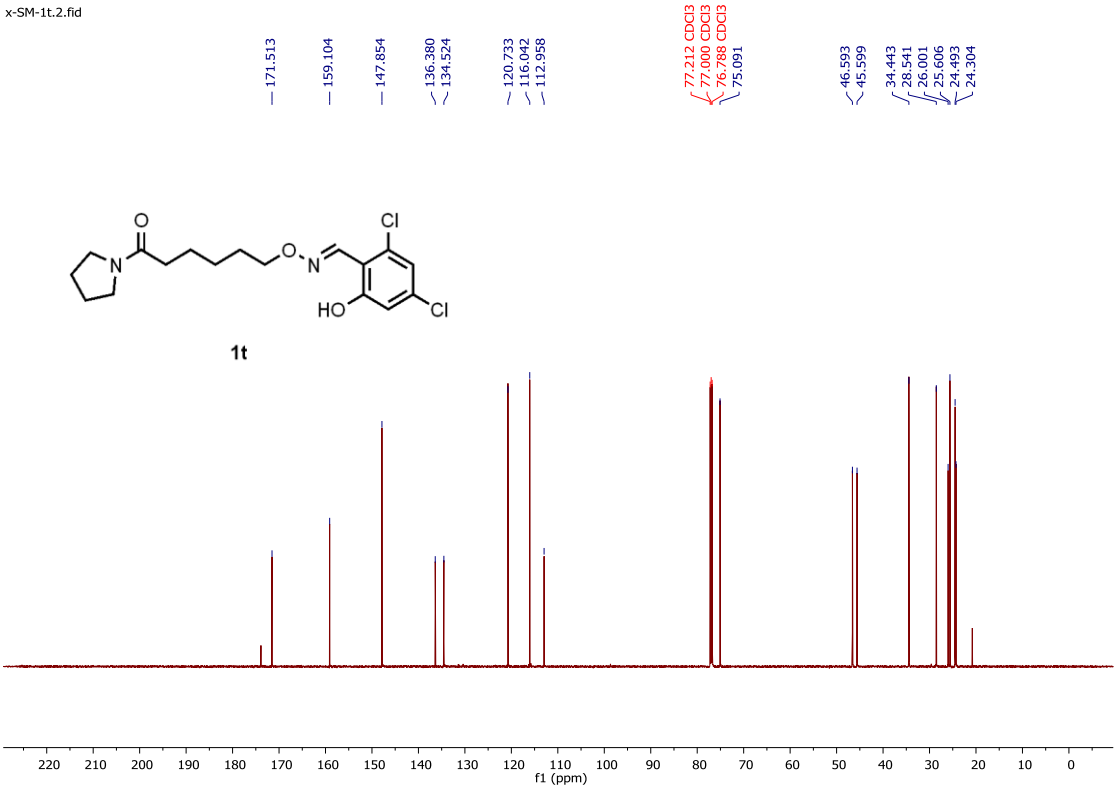

x-SM-1s.2.fid
172.855
159.083
147.850
136.372
134.510
120.719
116.020
112.926
75.020
50.007
47.683
30.799
28.472
25.524
24.415
14.915
O
N
O
N
Cl
HO
Cl
1s
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

x-SM-1t.1.fid



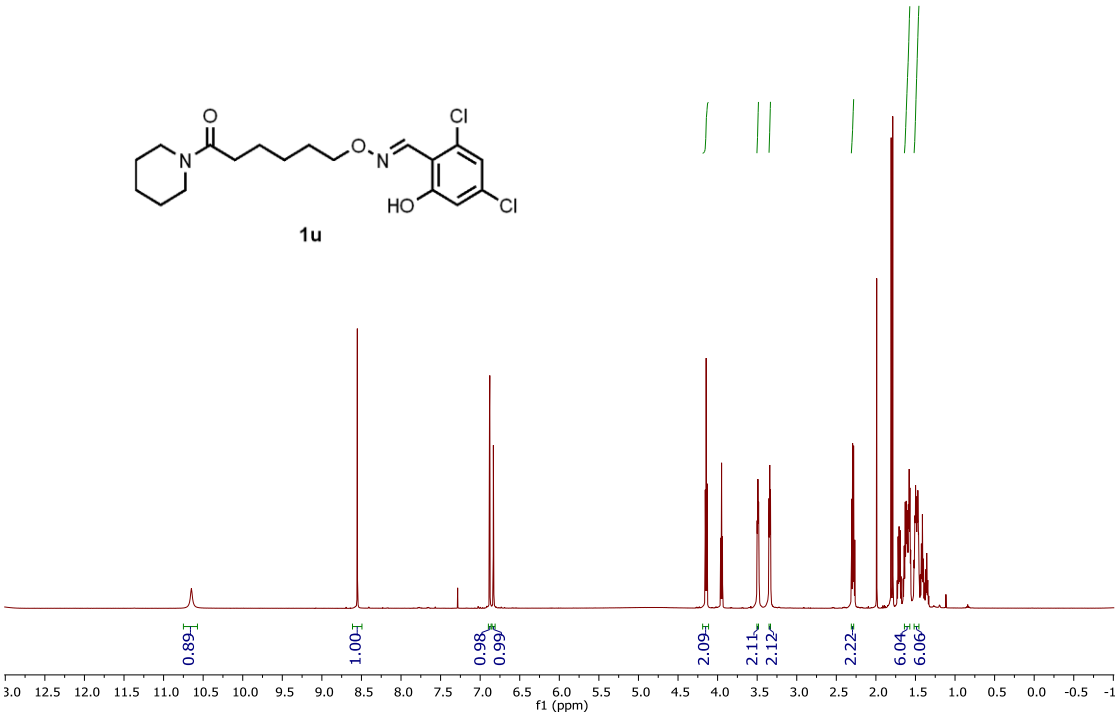
1t

x-SM-1t.2.fid



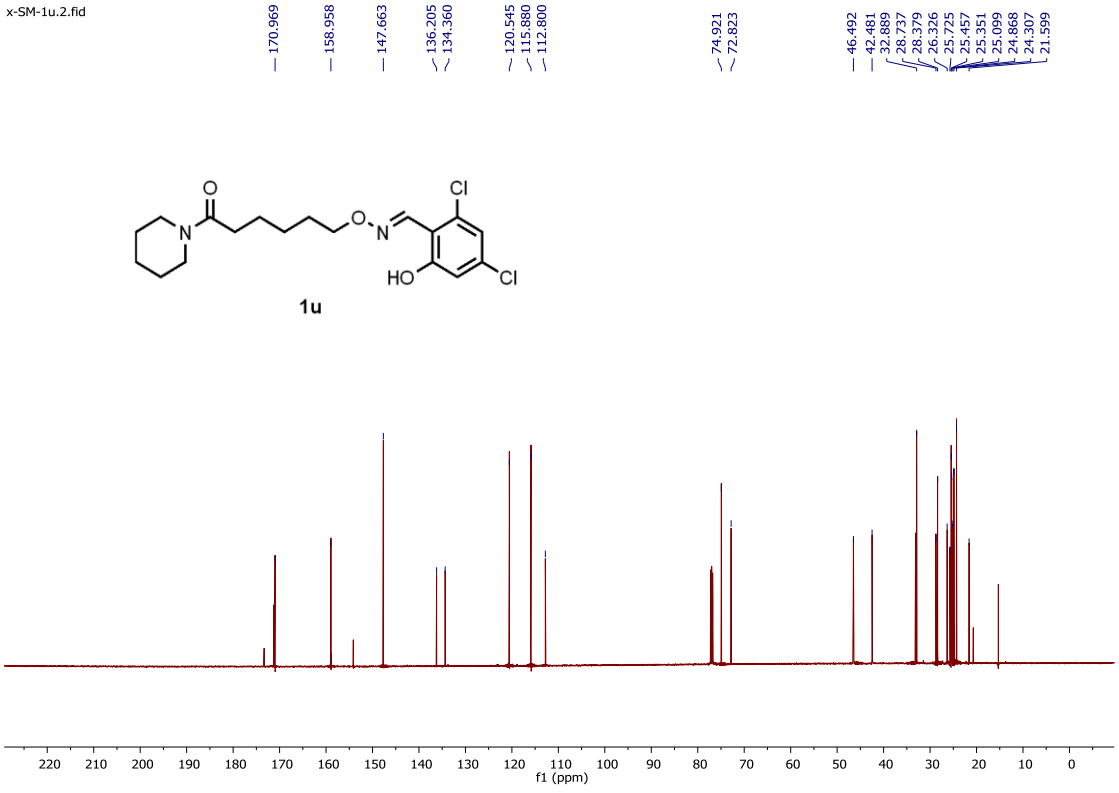
1t

x-SM-1u.1.fid



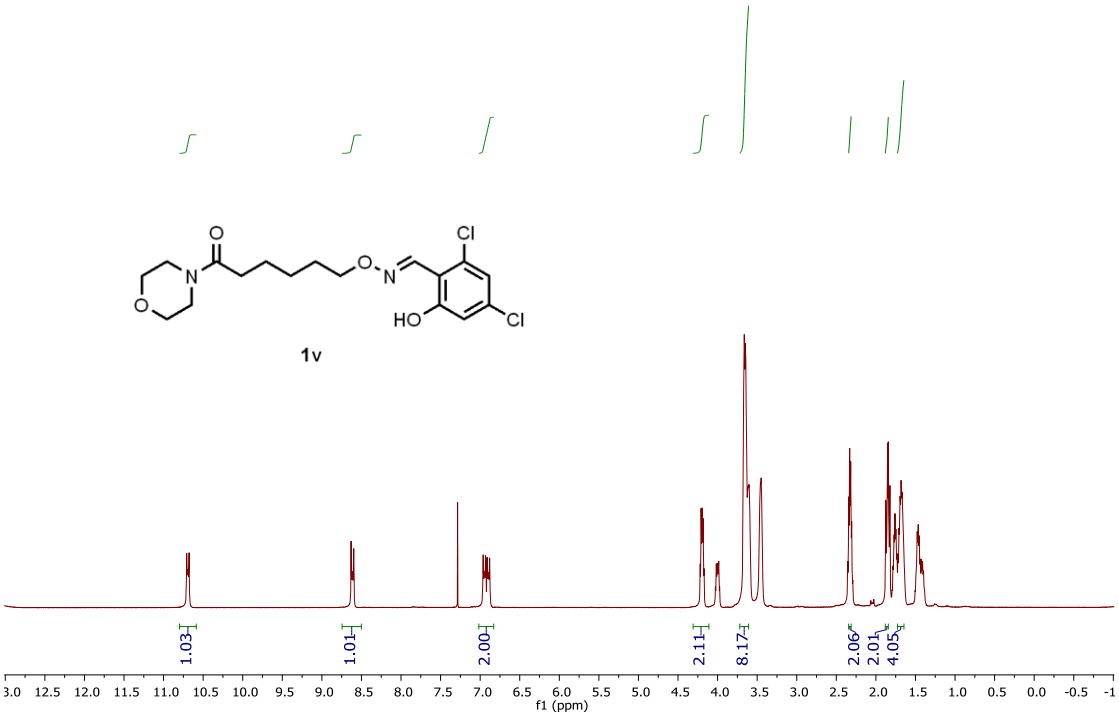
1u

x-SM-1u.2.fid



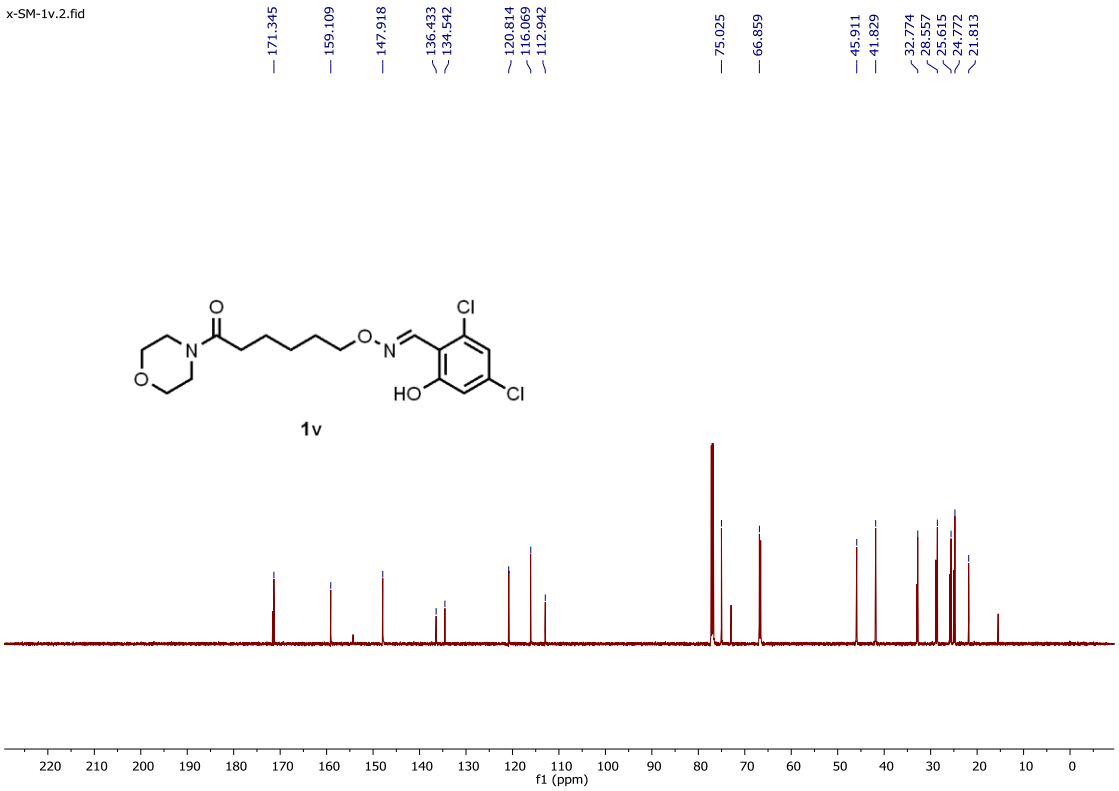
1u

x-SM-1v.1.fid



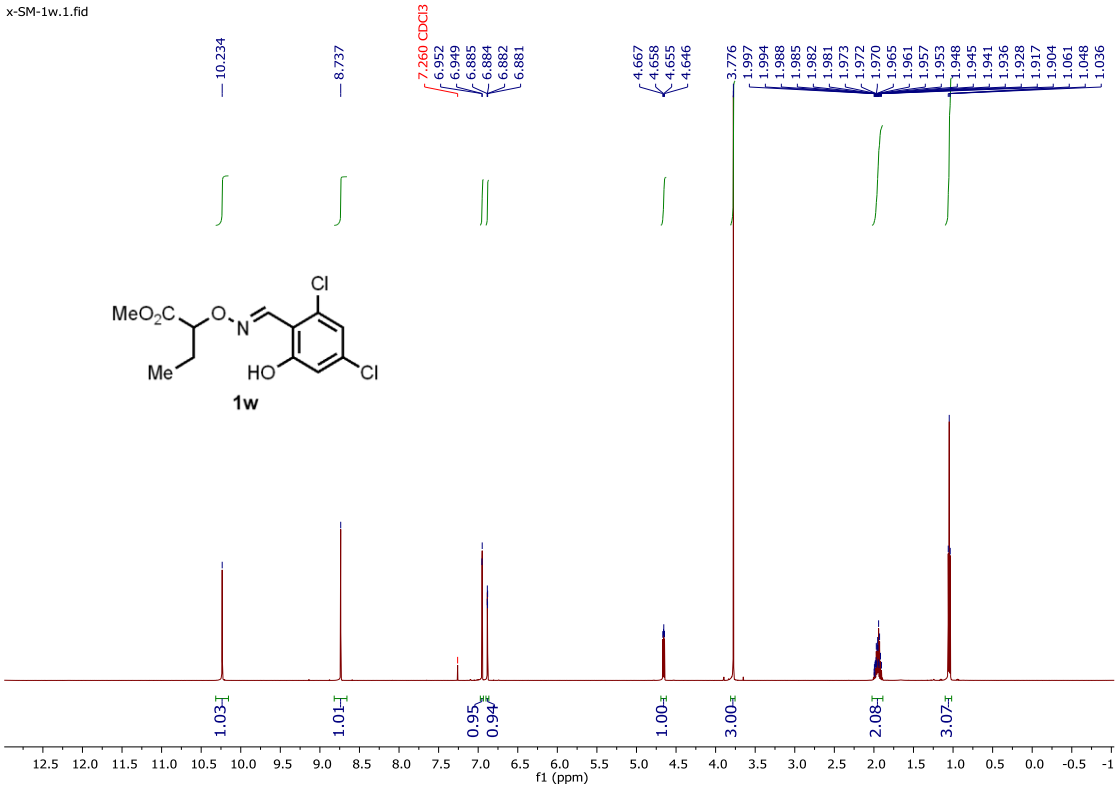
1v

x-SM-1v.2.fid



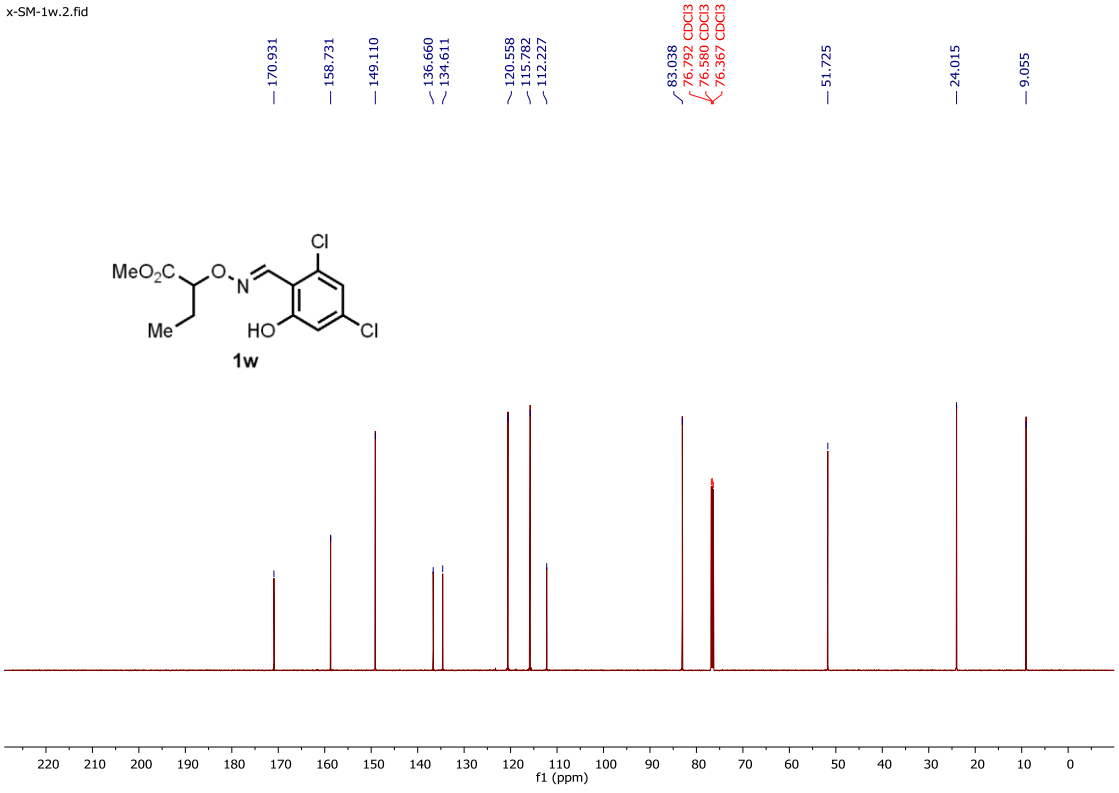
1v

x-SM-1w.1.fid

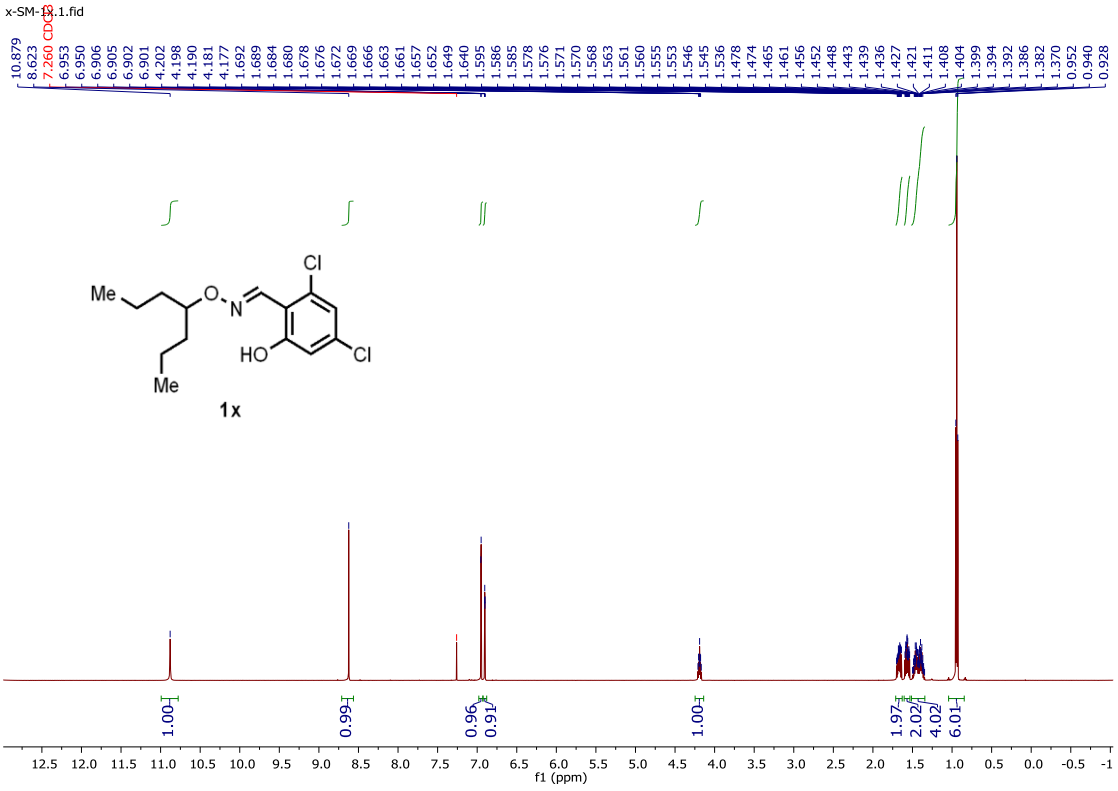


1w

x-SM-1w.2.fid



1w


x-SM-1x.1.fid
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8.623
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6.950
6.906
6.905
6.902
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4.202
4.198
4.190
4.181
4.177
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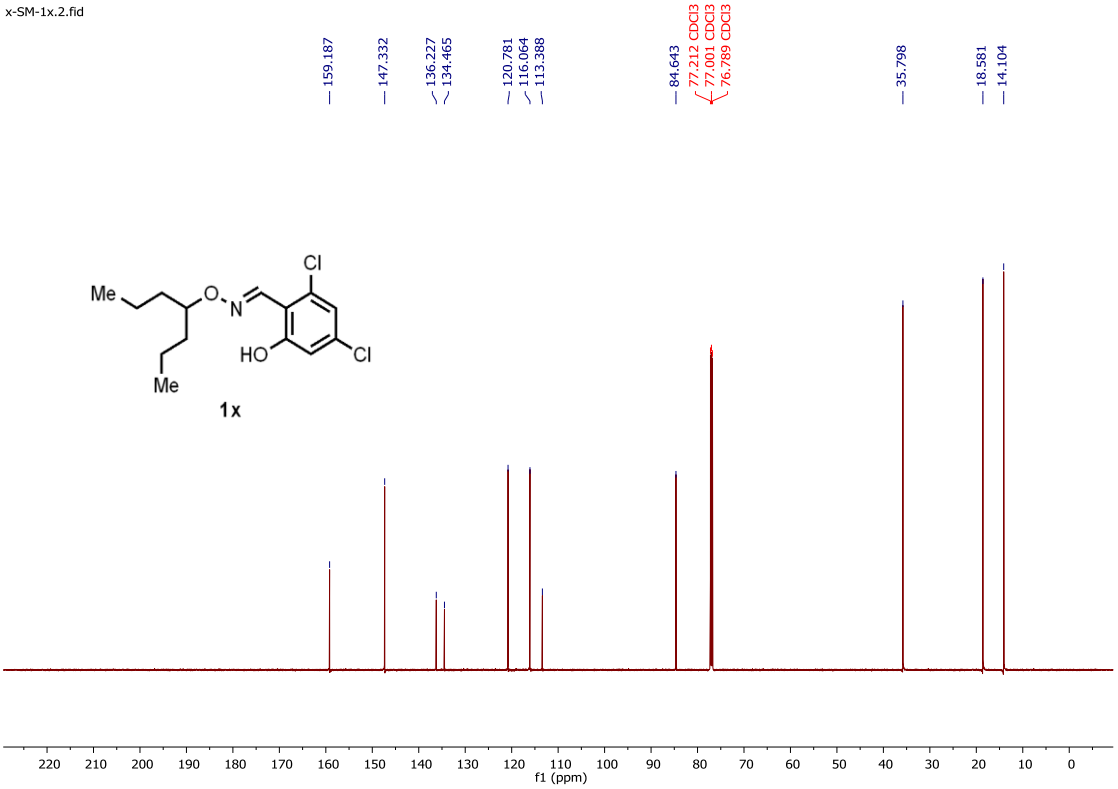
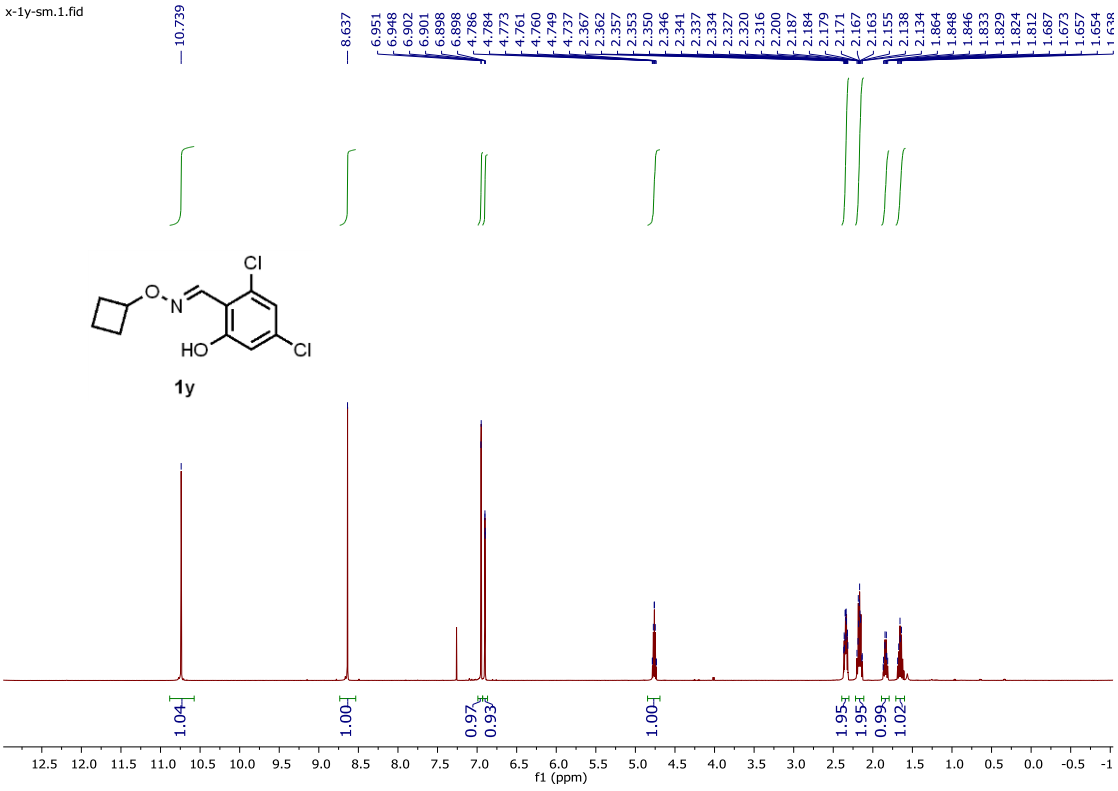
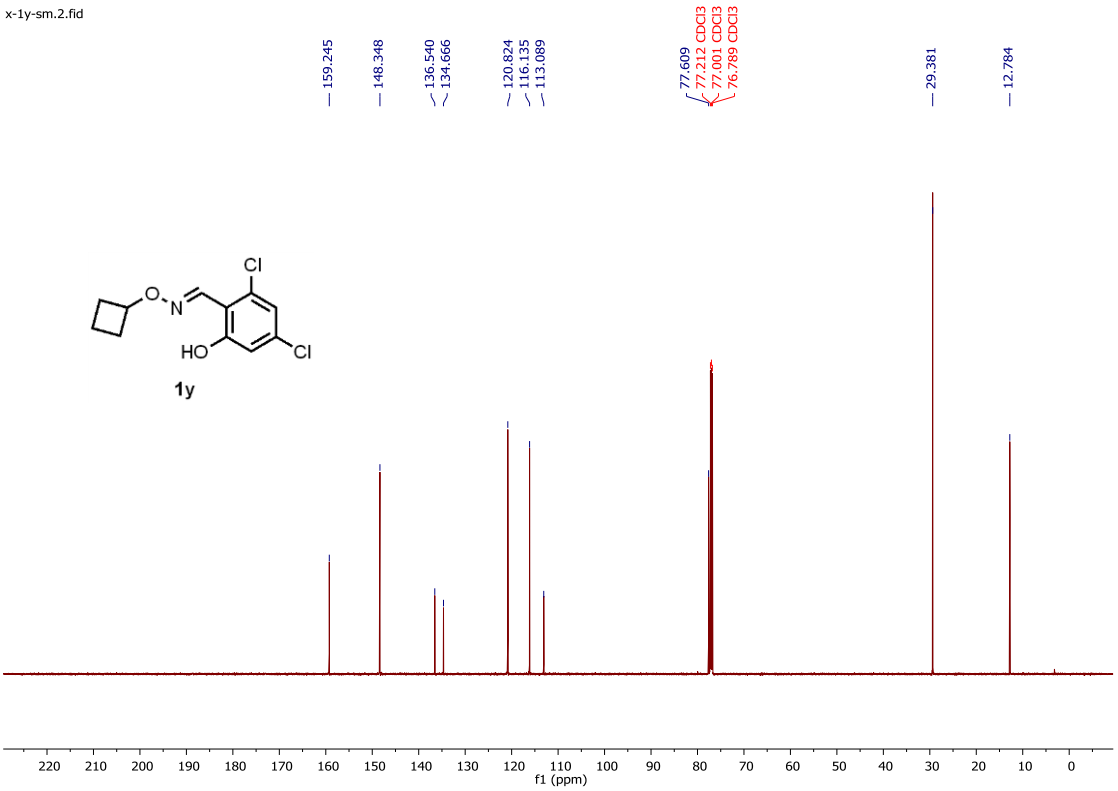
1.553
1.546
1.545
1.536
1.478
1.474
1.465
1.461
1.456
1.452
1.448
1.443
1.439
1.436
1.427
1.421
1.411
1.408
1.404
1.399
1.394
1.392
1.386
1.382
1.370
0.952
0.940
0.928
Me
O
N
Cl
HO
Cl
Me
1x
1.00
0.99
0.96
0.91
1.00
1.97
2.02
4.02
6.01
f1 (ppm)


x-SM-1x.2.fid
159.187
147.332
136.227
134.465
120.781
116.064
113.388
84.643
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
35.798
18.581
14.104
Me
O
N
Cl
HO
Cl
Me
1x
f1 (ppm)

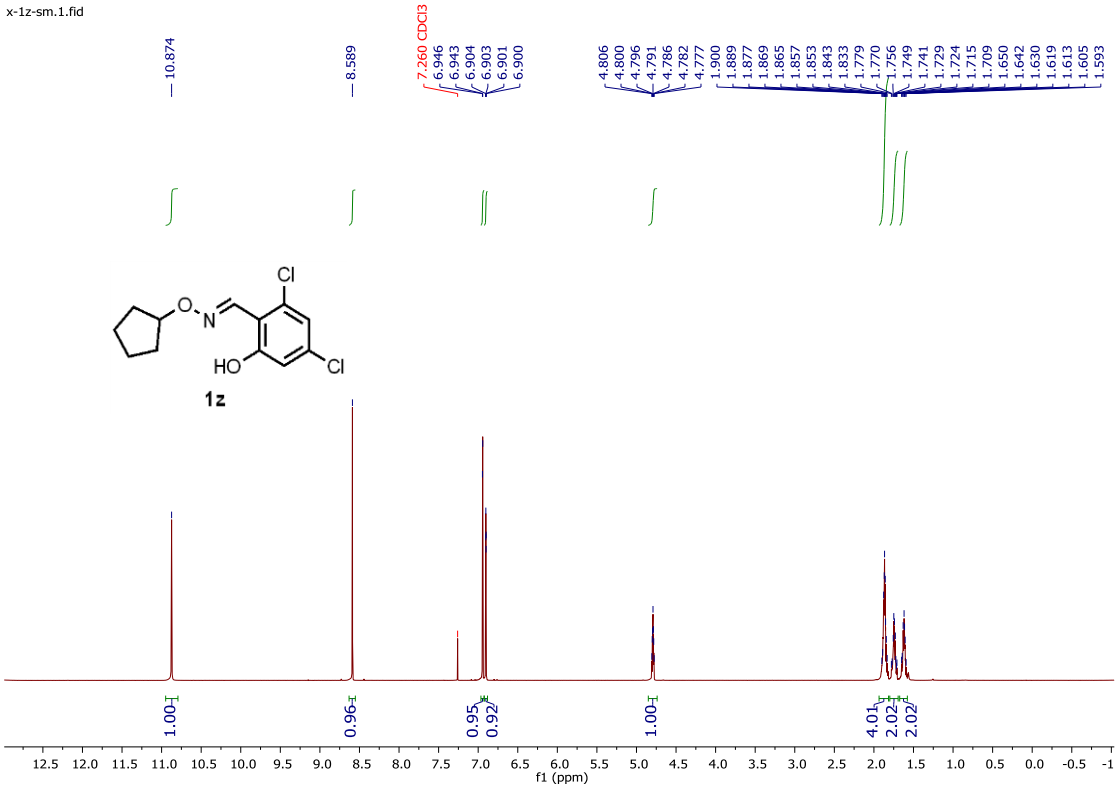
x-1y-sm.1.fid



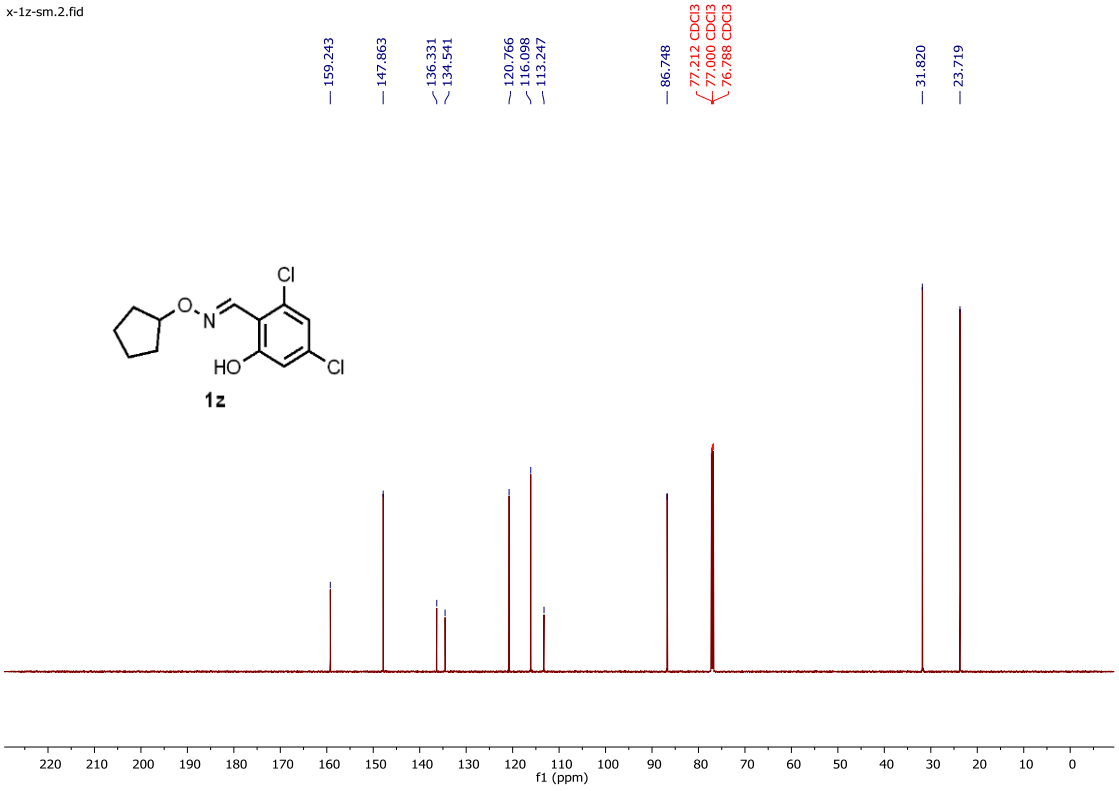
x-1y-sm.2.fid



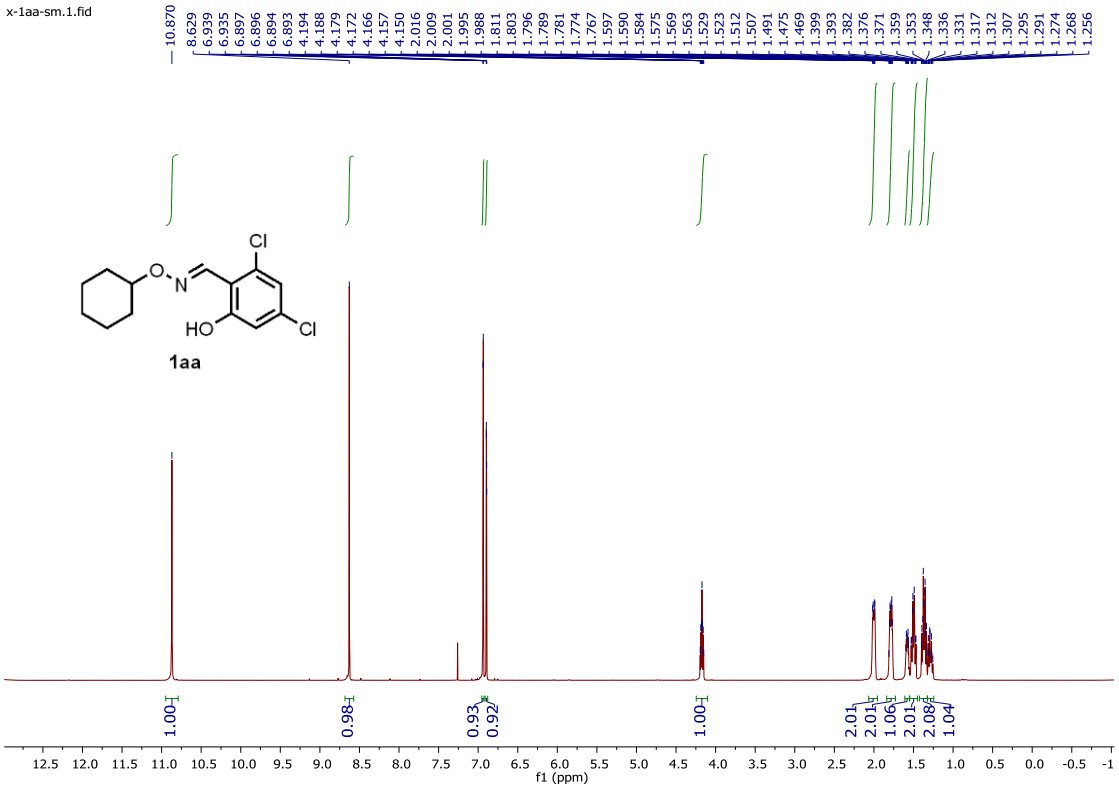
x-1z-sm.1.fid



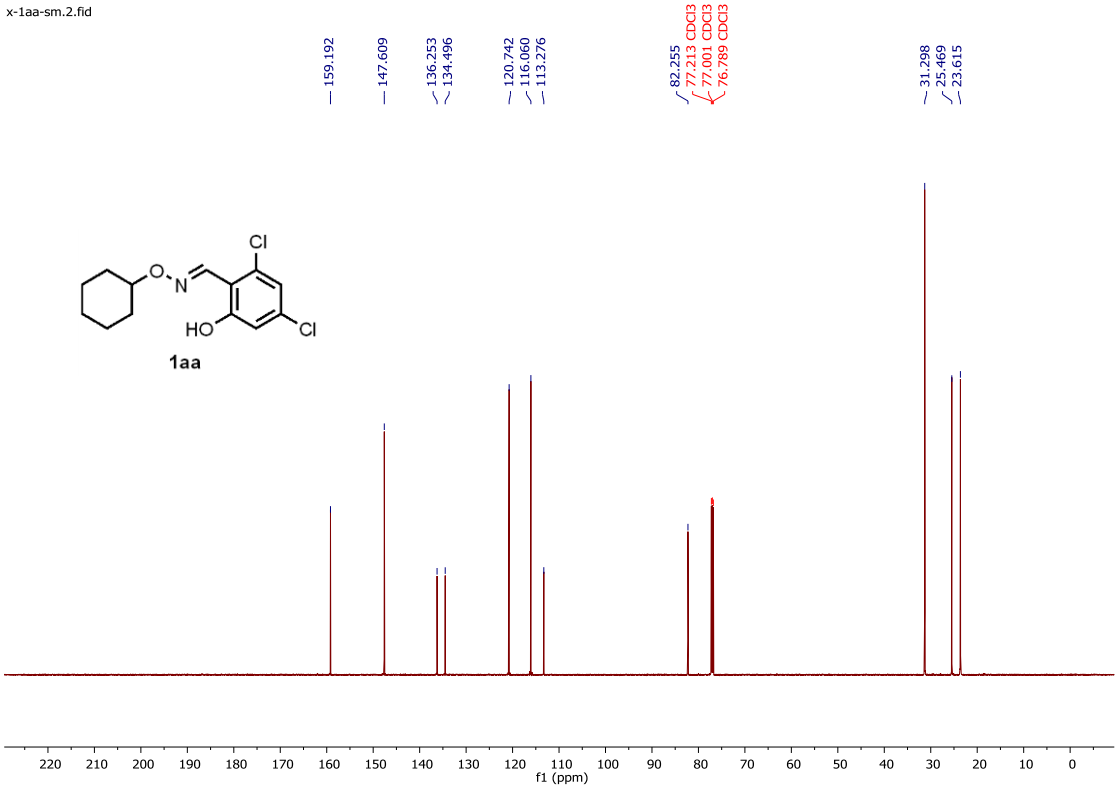
x-1z-sm.2.fid



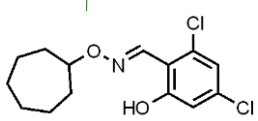
x-1aa-sm.1.fid



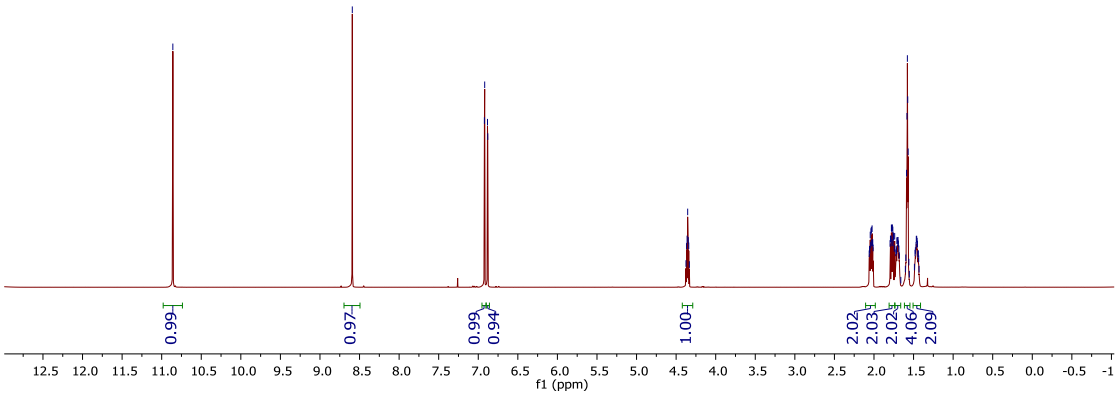
x-1aa-sm.2.fid



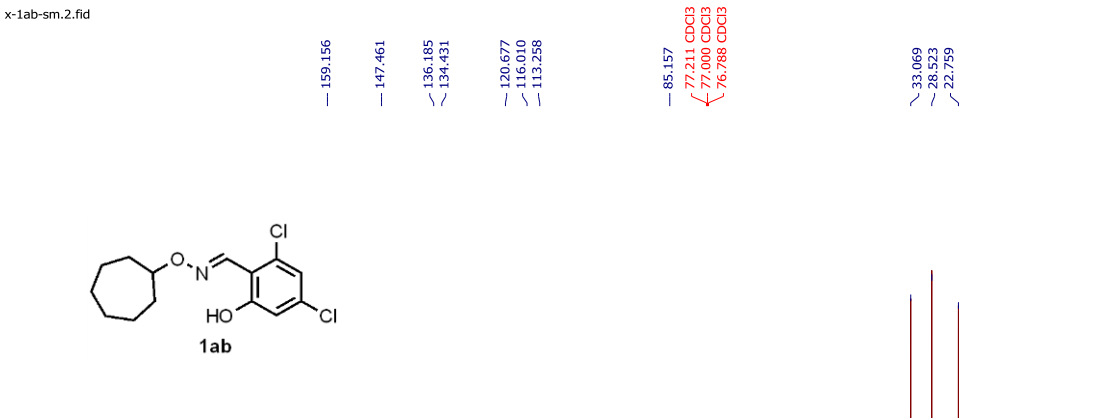
x-1ab-sm.1.fid



1ab

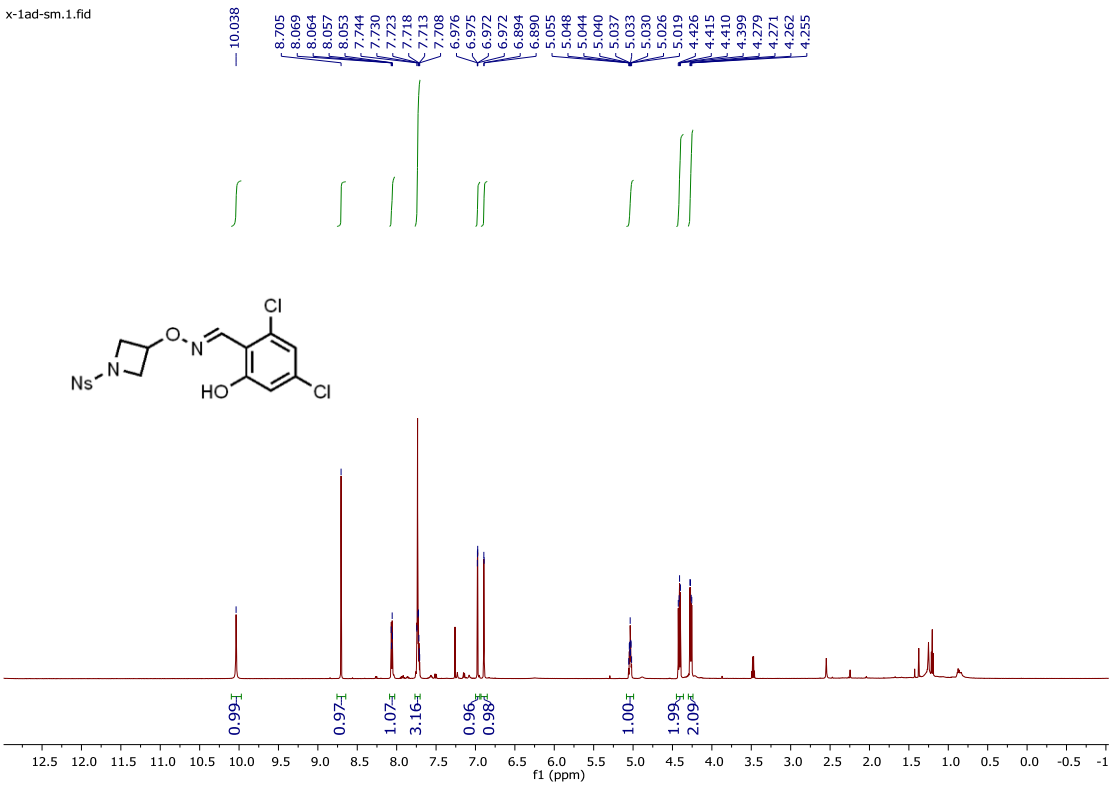


x-1ab-sm.2.fid

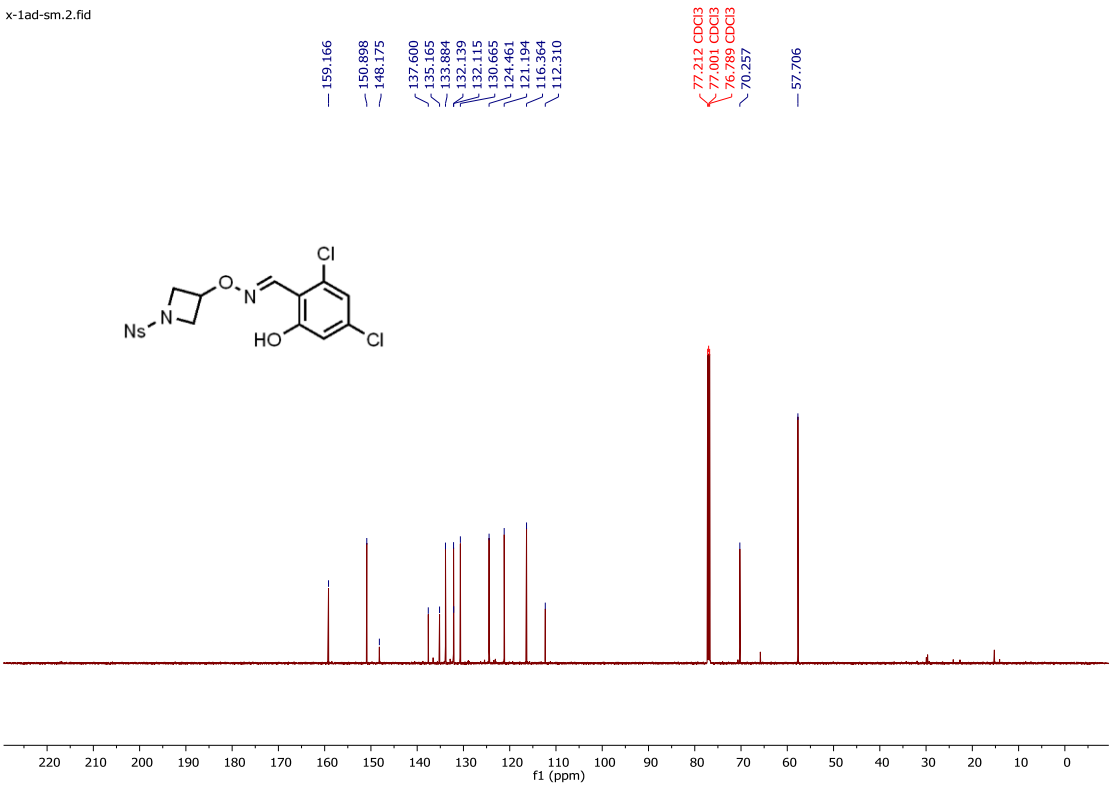


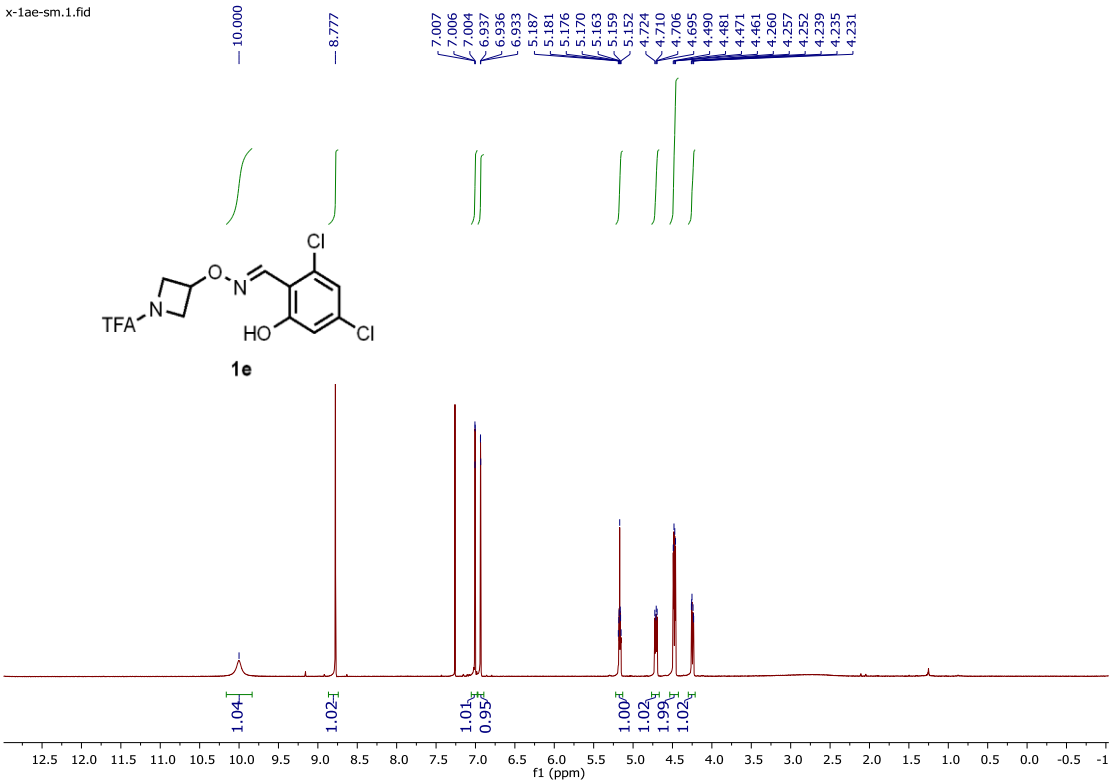
1ab

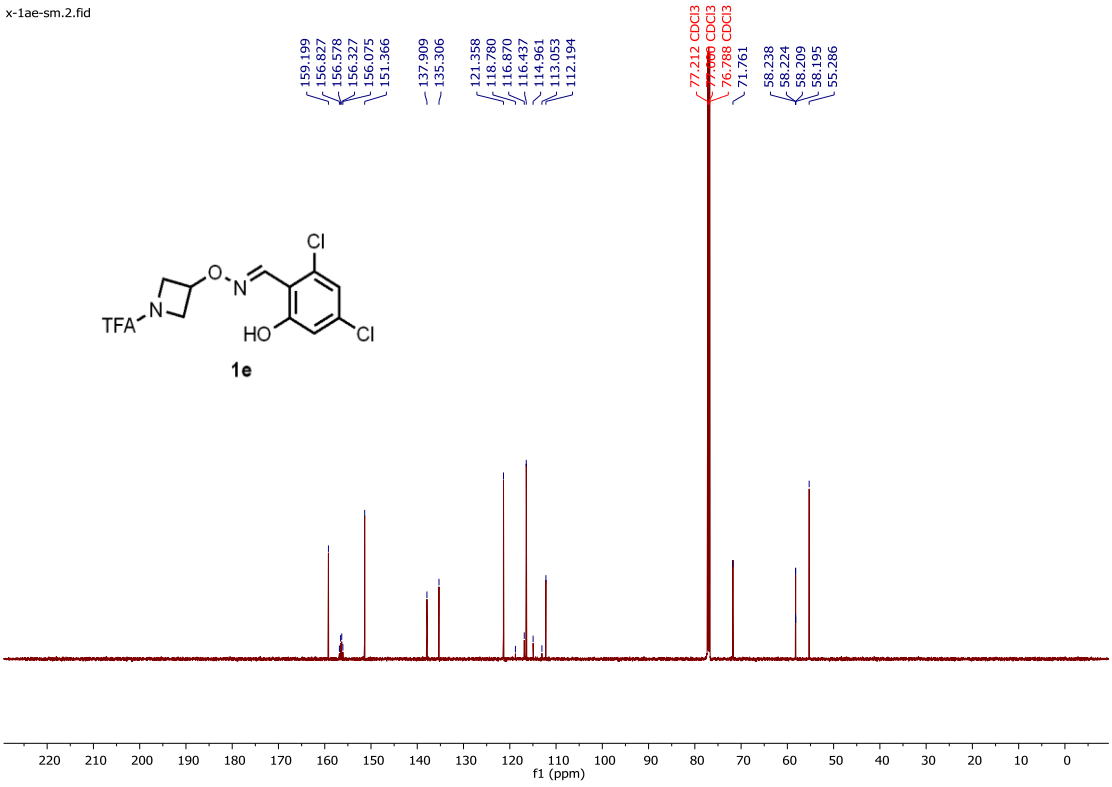
x-1ad-sm.1.fid



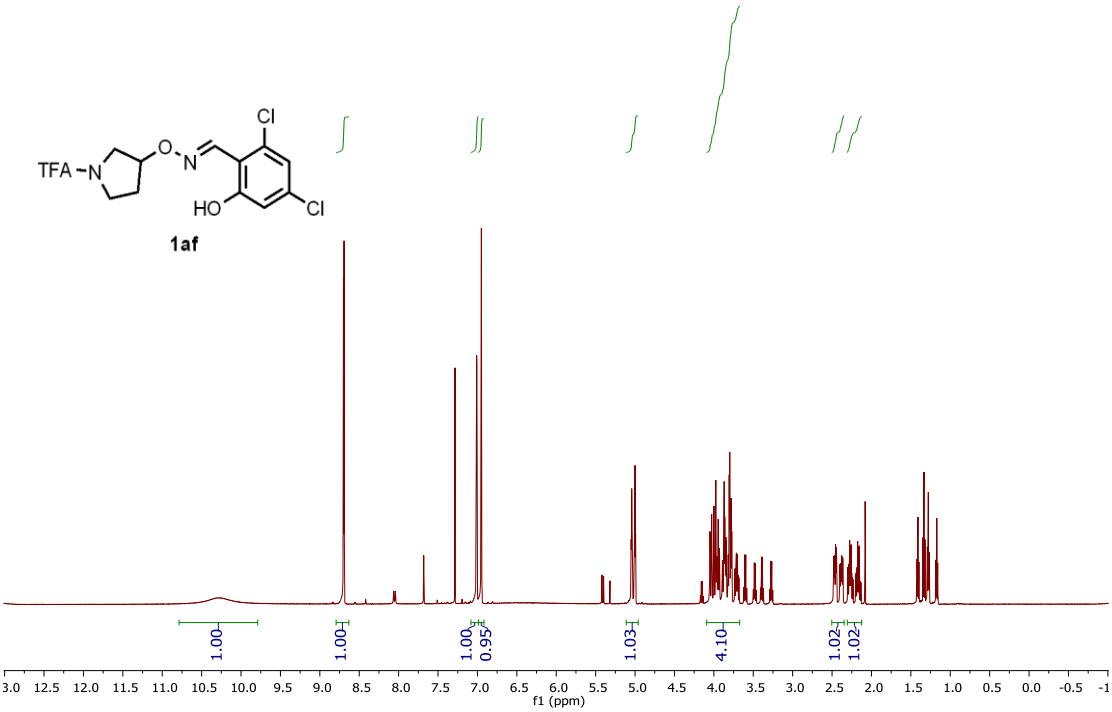
x-1ad-sm.2.fid



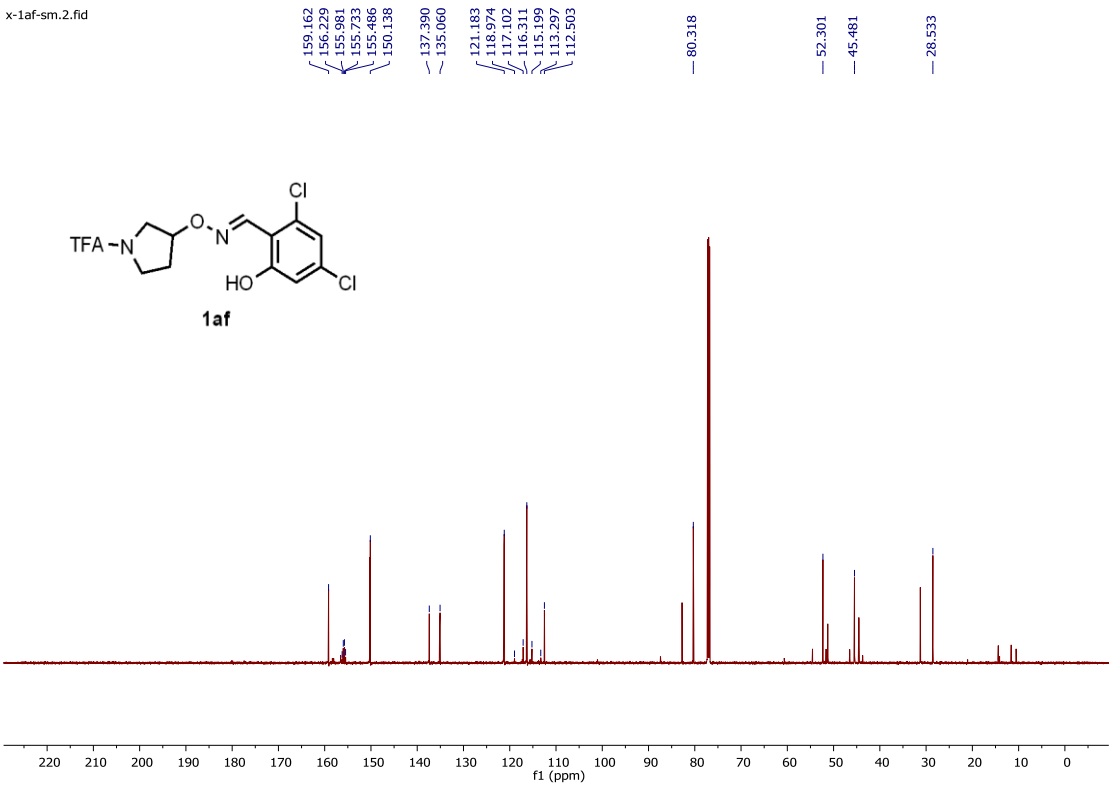

x-1ae-sm.1.fid
10.000
8.777
7.007
7.006
7.004
6.937
6.936
6.933
5.187
5.181
5.176
5.170
5.163
5.159
5.152
4.724
4.710
4.706
4.695
4.490
4.481
4.471
4.461
4.260
4.257
4.252
4.239
4.235
4.231
Cl
O
N
TFA
N
HO
Cl
1e
1.04
1.02
1.01
0.95
1.00
1.02
1.99
1.02
12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1
f1 (ppm)

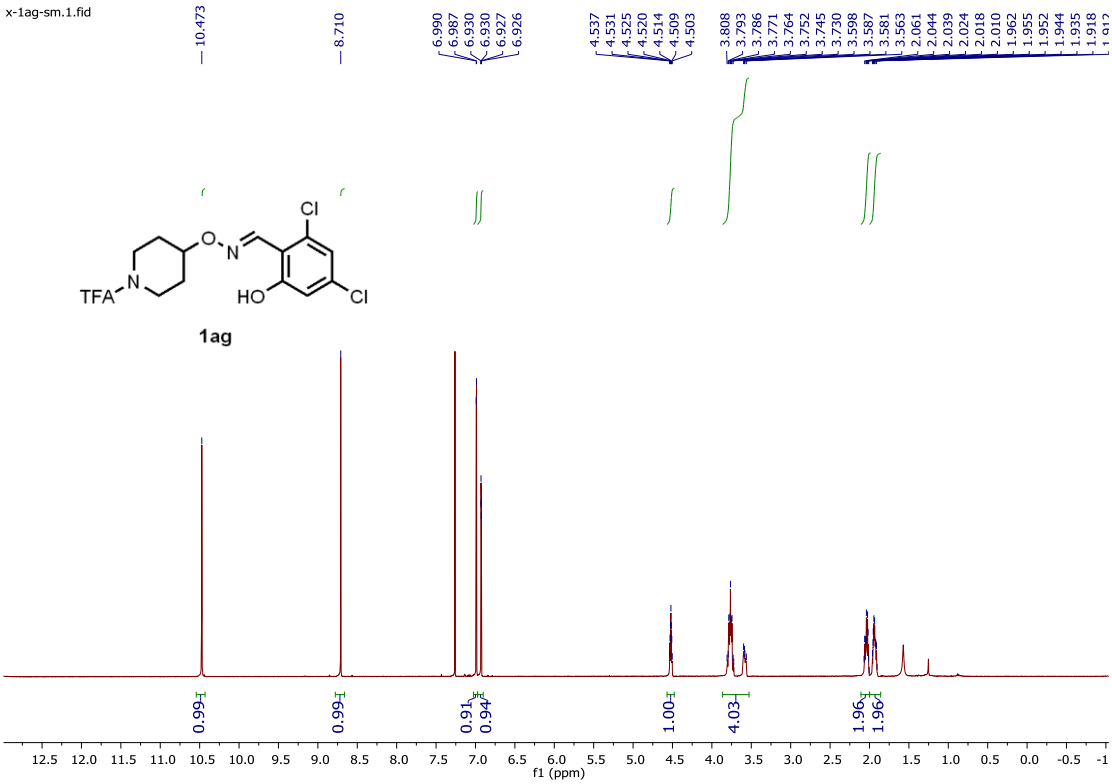

x-1ae-sm.2.fid
159.199
156.827
156.578
156.327
156.075
151.366
137.909
135.306
121.358
118.780
116.870
116.437
114.961
113.053
112.194
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
71.761
58.238
58.224
58.209
58.195
55.286
Cl
O
N
TFA
N
HO
Cl
1e
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

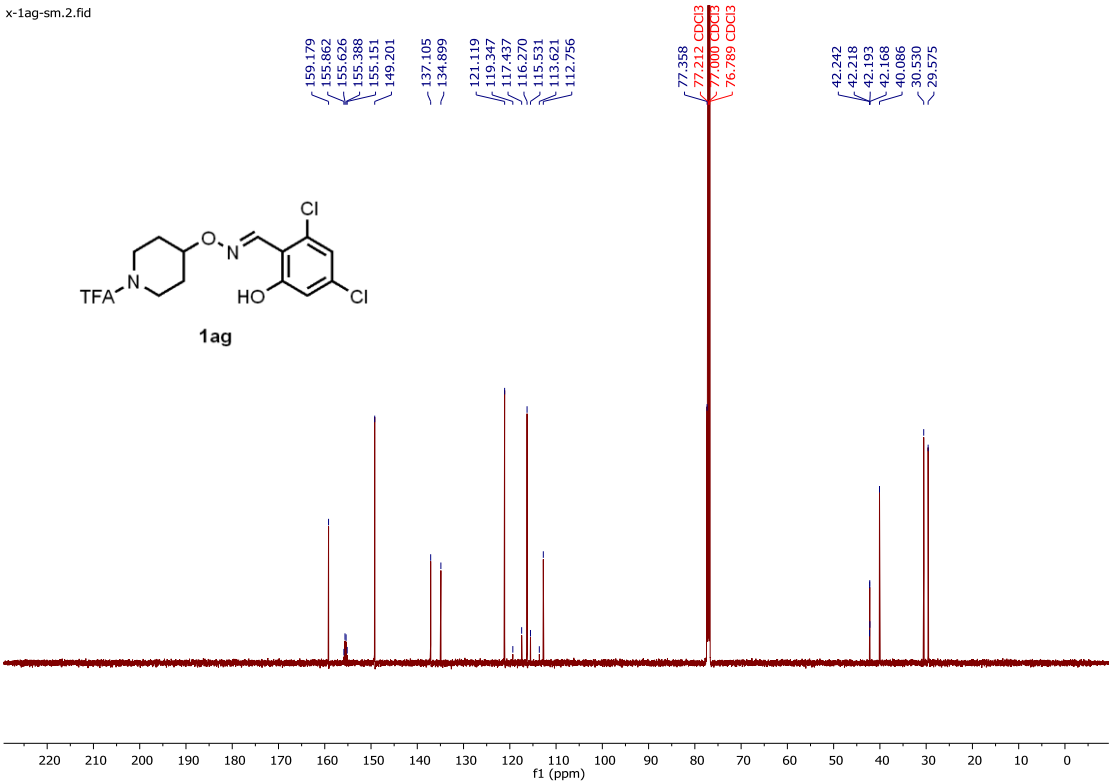
x-1af-sm.1.fid

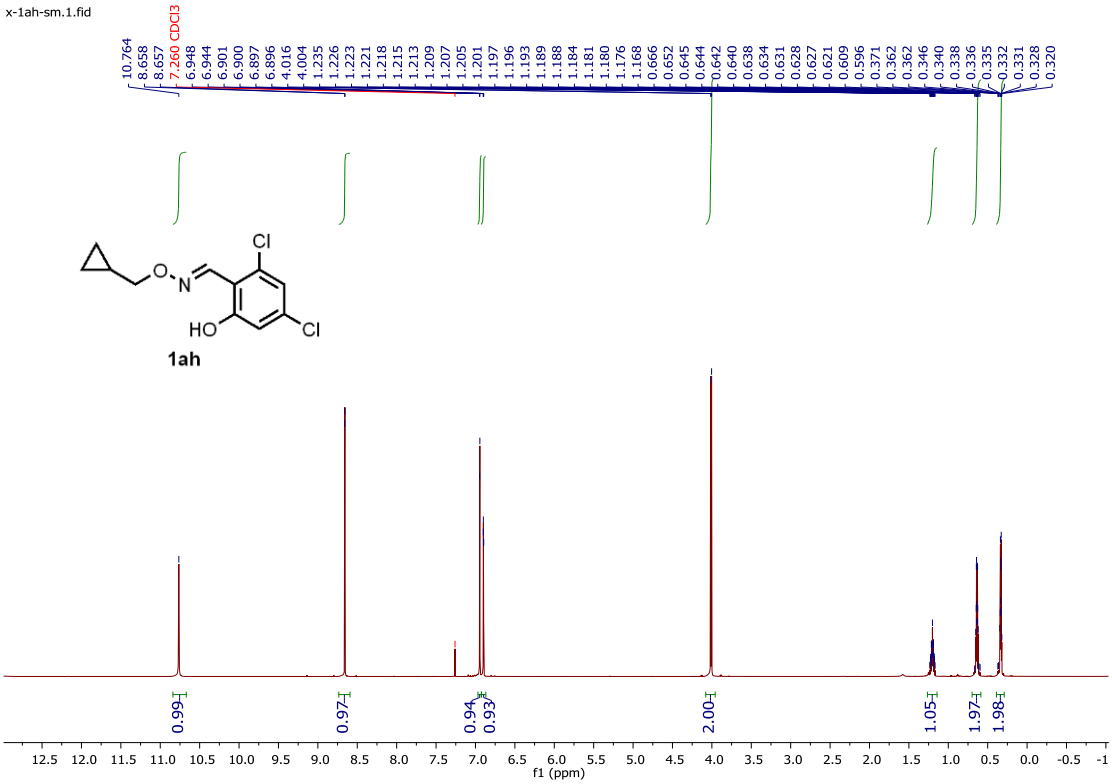


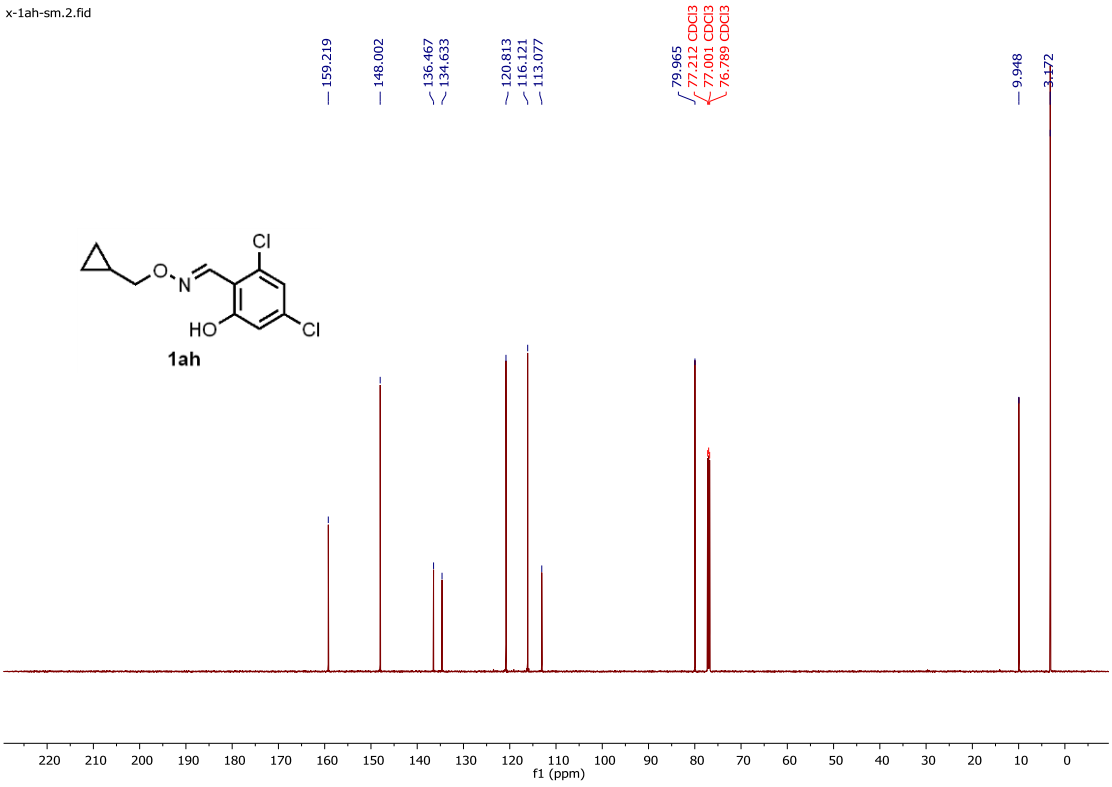
x-1af-sm.2.fid



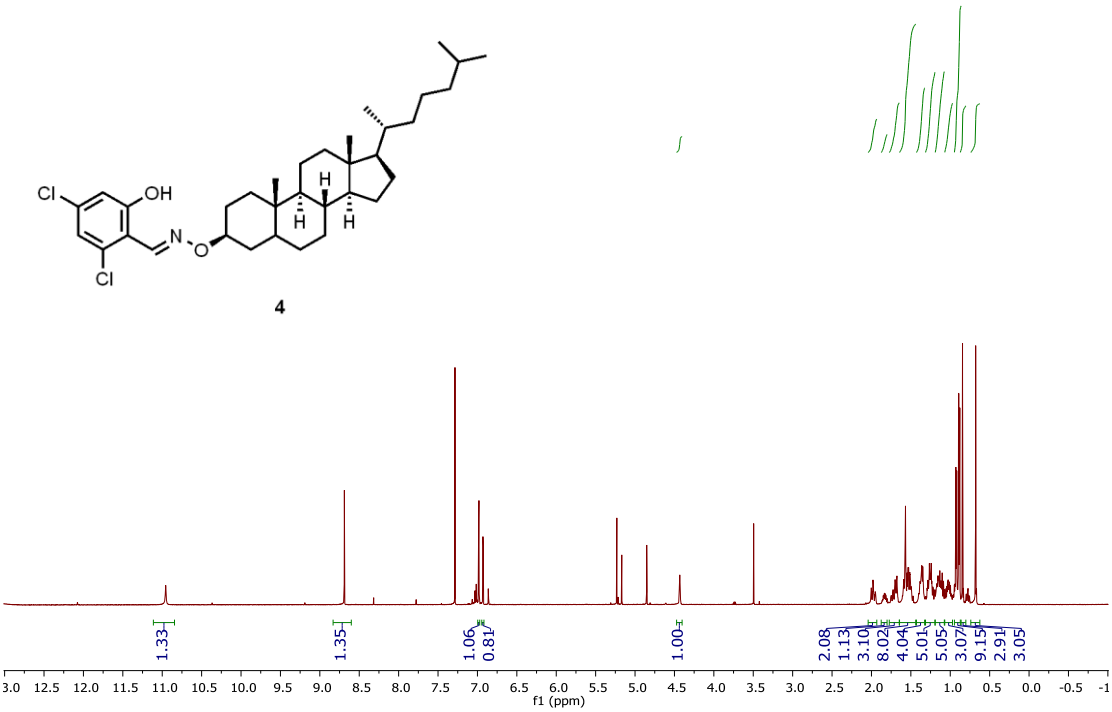

x-1ag-sm.1.fid
10.473
8.710
6.990
6.987
6.930
6.930
6.927
6.926
4.537
4.531
4.525
4.520
4.514
4.509
4.503
3.808
3.793
3.786
3.771
3.764
3.752
3.745
3.730
3.598
3.587
3.581
3.563
2.061
2.044
2.039
2.024
2.018
2.010
1.962
1.955
1.952
1.944
1.935
1.918
Cl
O
N
TFA
N
HO
Cl
1ag
0.99
0.99
0.91
0.94
1.00
4.03
1.96
1.96
f1 (ppm)


x-1ag-sm.2.fid
159.179
155.862
155.626
155.388
155.151
149.201
137.105
134.899
121.119
119.347
117.437
116.270
115.531
113.621
112.756
77.358
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
42.242
42.218
42.193
42.168
40.086
30.530
29.575
Cl
O
N
TFA
N
HO
Cl
1ag
f1 (ppm)

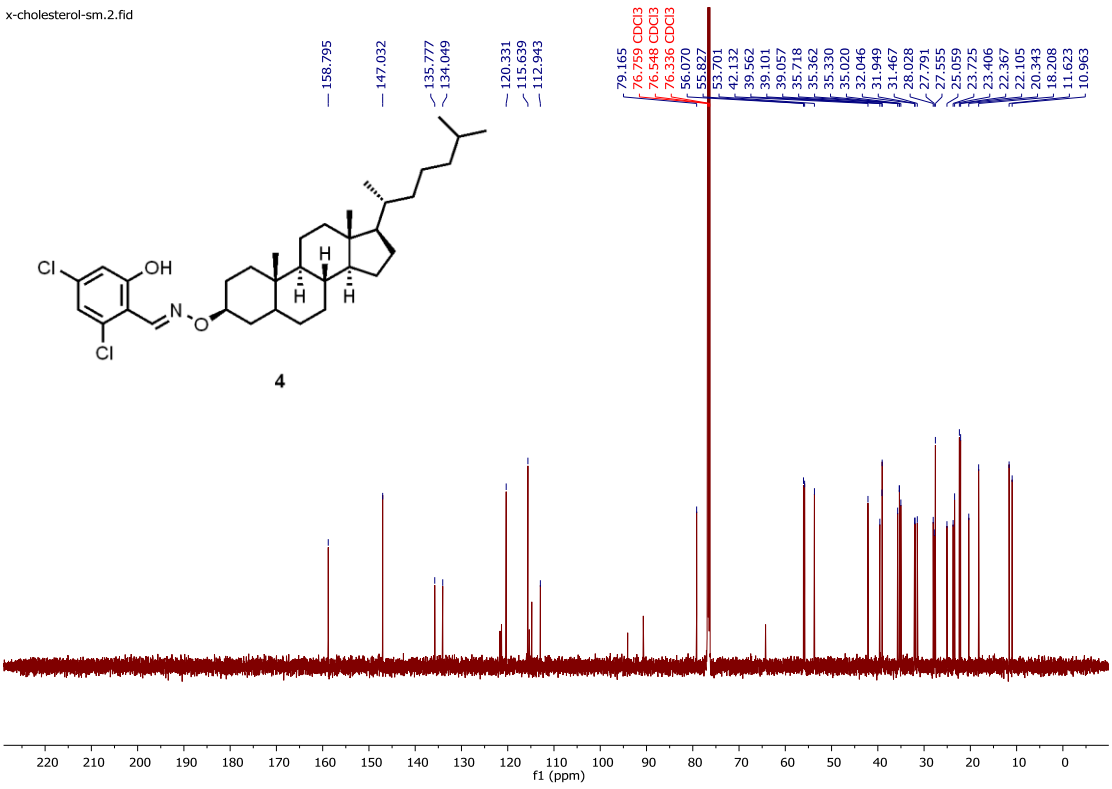

x-1ah-sm.1.fid
10.764
8.658
8.657
7.260 CDCl3
6.948
6.944
6.901
6.900
6.897
6.896
4.016
4.004
1.235
1.226
1.223
1.221
1.218
1.215
1.213
1.209
1.207
1.205
1.201
1.197
1.196
1.193
1.189
1.188
1.184
1.181
1.180
1.176
1.168
0.666
0.652
0.645
0.644
0.642
0.640
0.638
0.634
0.631
0.628
0.627
0.621
0.609
0.596
0.371
0.362
0.362
0.346
0.340
0.338
0.336
0.335
0.332
0.331
0.328
0.320
Cl
O
N
HO
Cl
1ah
0.99
0.97
0.94
0.93
2.00
1.05
1.97
1.98
12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1
f1 (ppm)

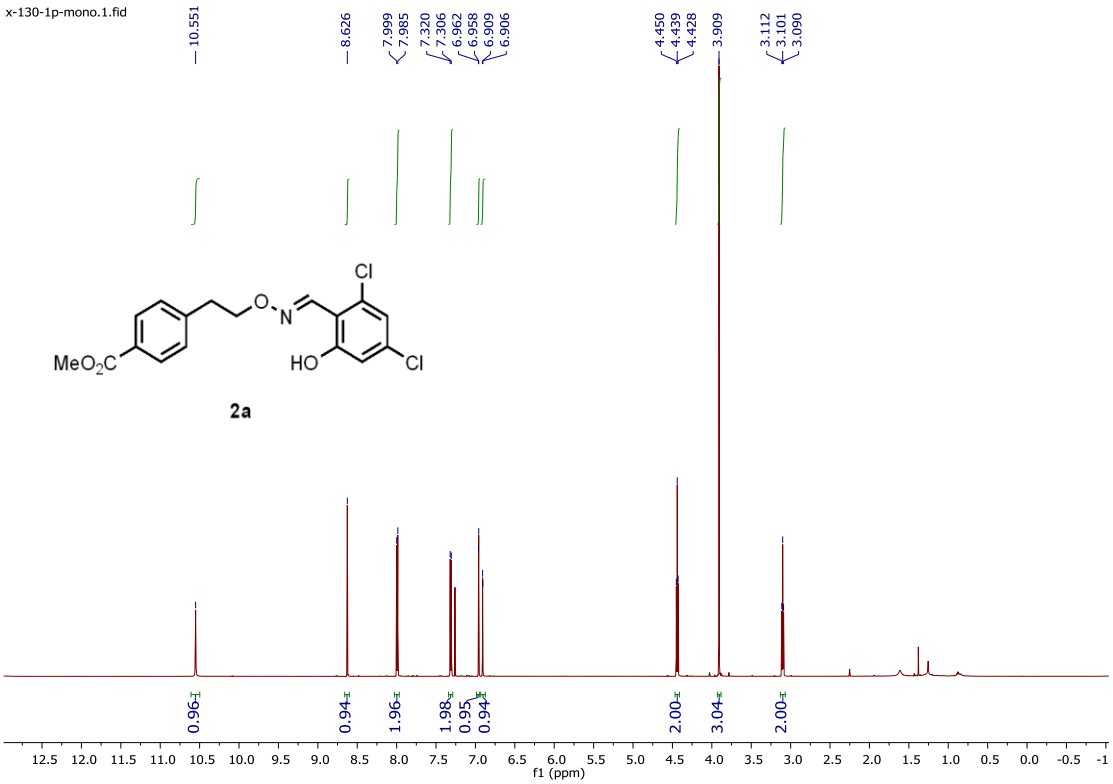

x-1ah-sm.2.fid
159.219
148.002
136.467
134.633
120.813
116.121
113.077
79.965
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
9.948
3.172
Cl
O
N
HO
Cl
1ah
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

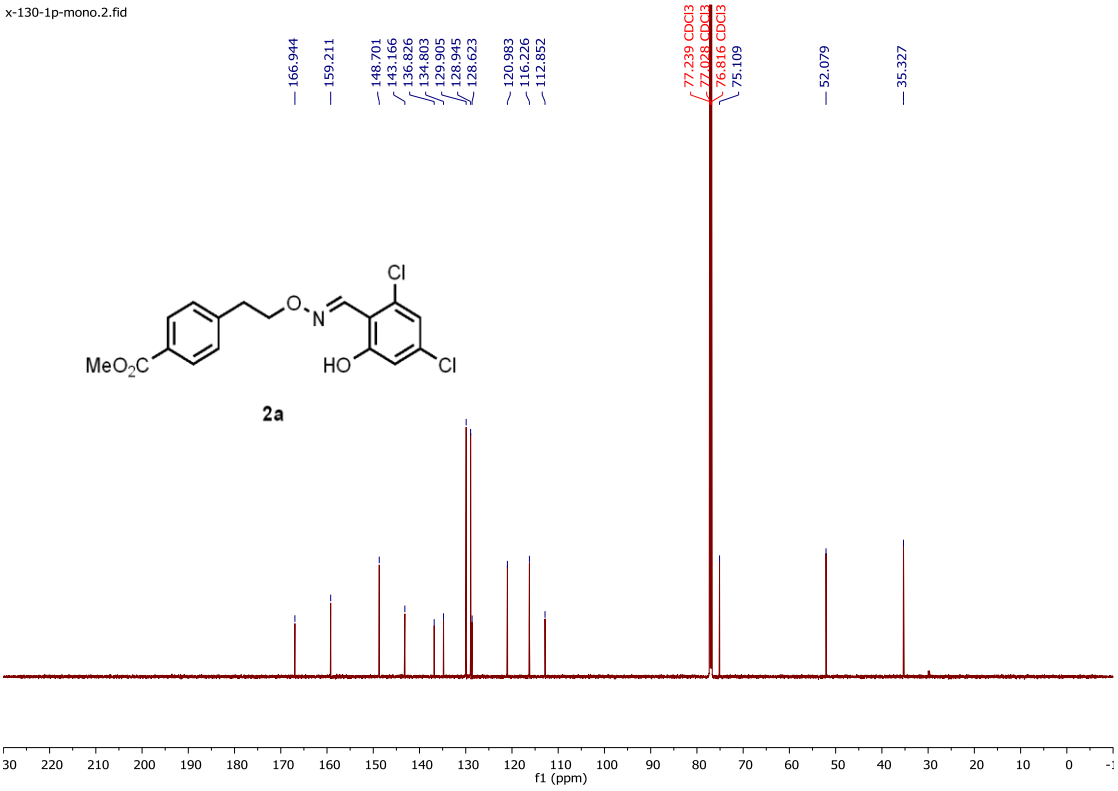
x-cholesterol-sm.1.fid

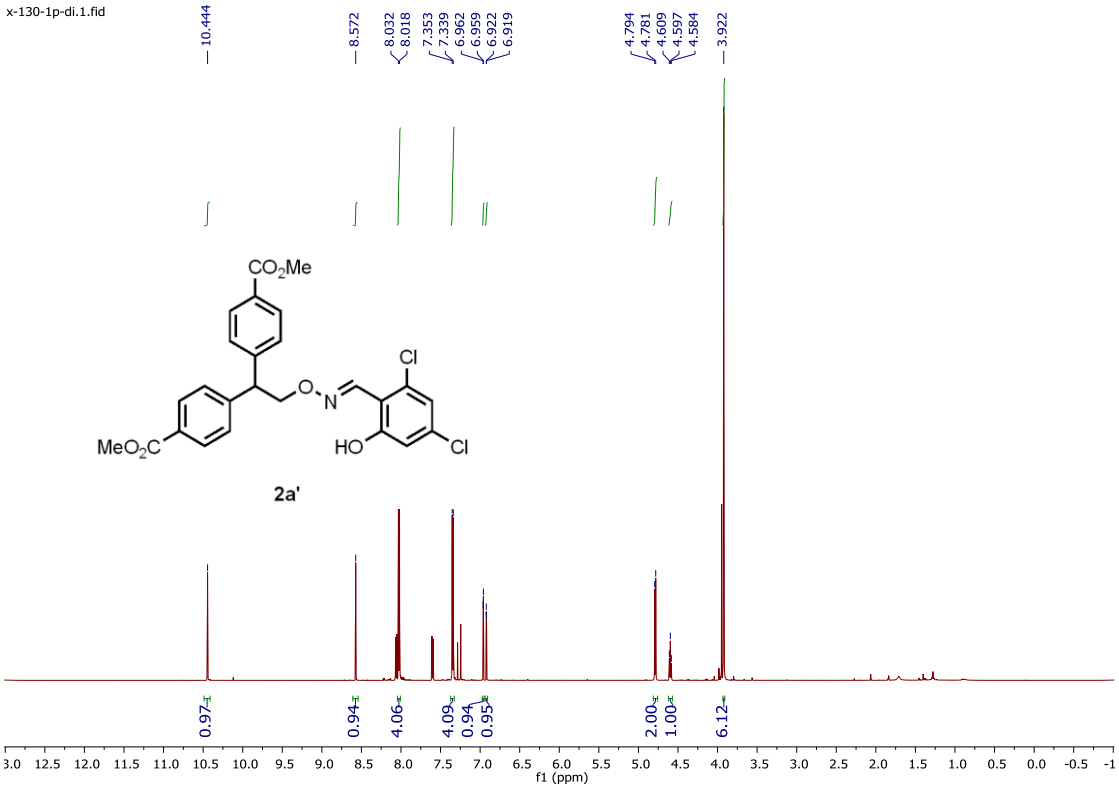


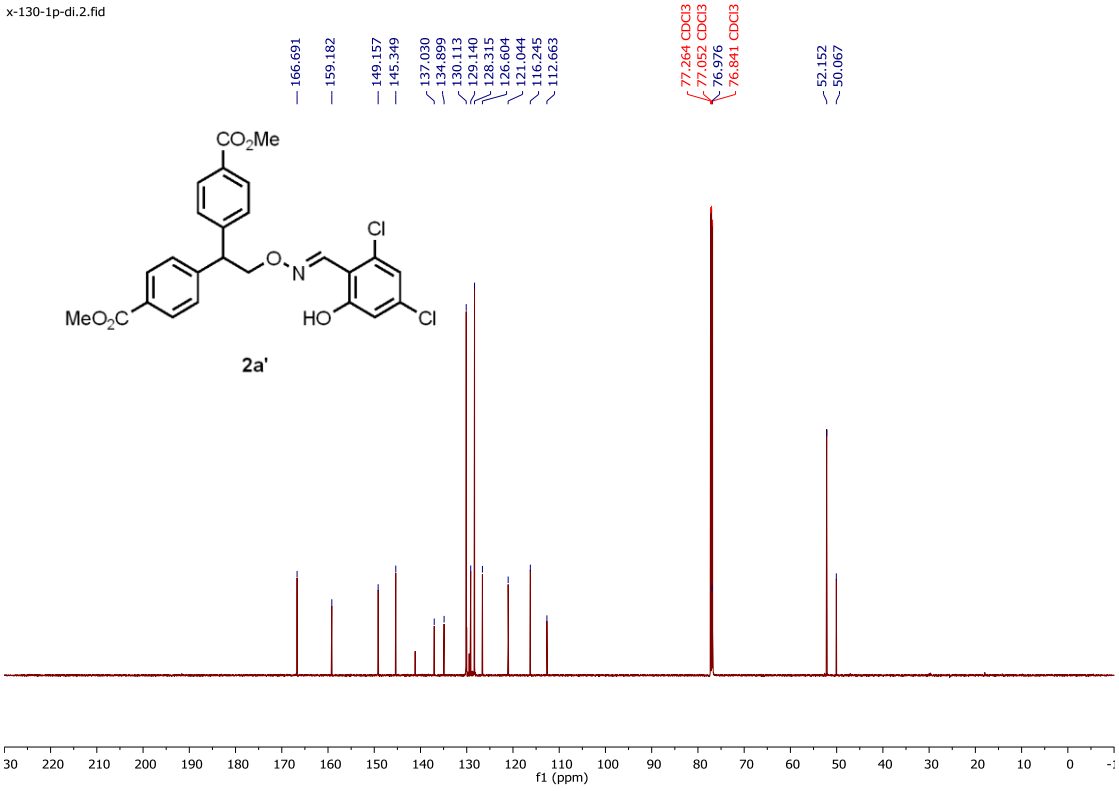
x-cholesterol-sm.2.fid



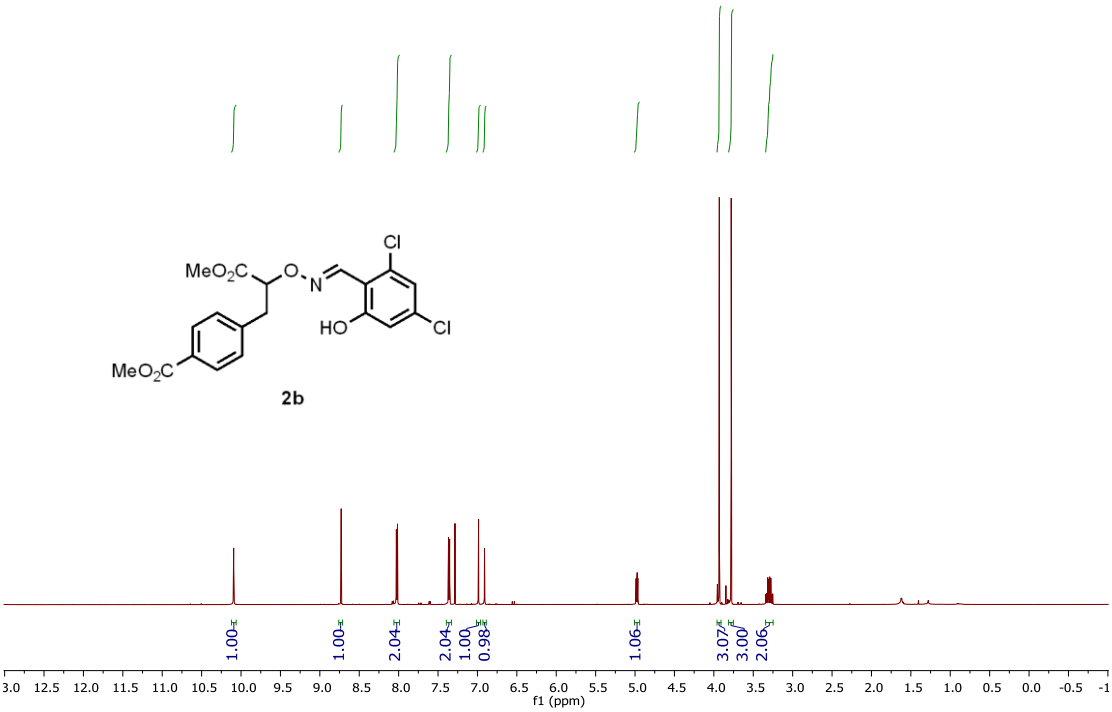

x-130-1p-mono.1.fid
10.551
8.626
7.999
7.985
7.320
7.306
6.962
6.958
6.909
6.906
4.450
4.439
4.428
3.909
3.112
3.101
3.090
Cl
O
N
MeO2C
HO
Cl
2a
0.96
0.94
1.96
1.98
0.95
0.94
2.00
3.04
2.00
f1 (ppm)


x-130-1p-mono.2.fid
166.944
159.211
148.701
143.166
136.826
134.803
129.905
128.945
128.623
120.983
116.226
112.852
77.239 CDCl3
77.028 CDCl3
76.816 CDCl3
75.109
52.079
35.327
Cl
O
N
MeO2C
HO
Cl
2a
f1 (ppm)

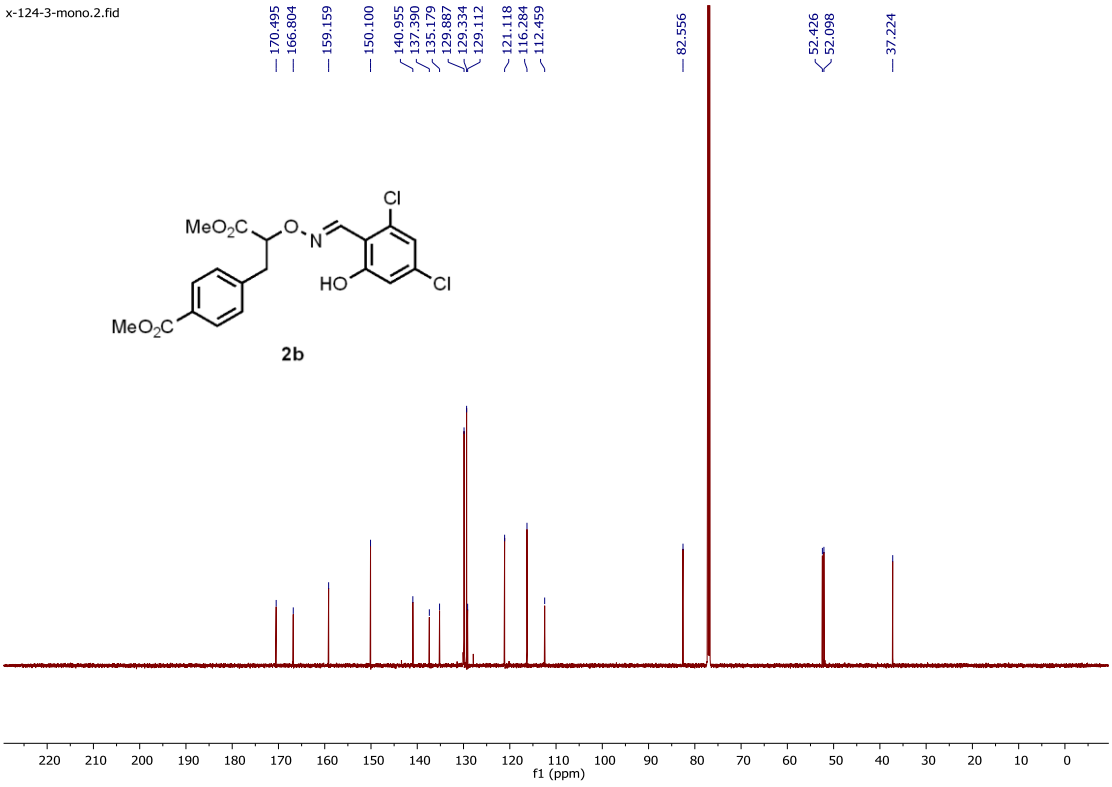

x-130-1p-di.1.fid
10.444
8.572
8.032
8.018
7.353
7.339
6.962
6.959
6.922
6.919
4.794
4.781
4.609
4.597
4.584
3.922
CO2Me
MeO2C
O
N
Cl
HO
Cl
2a'
0.97
0.94
4.06
4.09
0.94
0.95
2.00
1.00
6.12
f1 (ppm)


x-130-1p-di.2.fid
166.691
159.182
149.157
145.349
137.030
134.899
130.113
129.140
128.315
126.604
121.044
116.245
112.663
77.264 CDCl3
77.052 CDCl3
76.976
76.841 CDCl3
52.152
50.067
CO2Me
MeO2C
O
N
Cl
HO
Cl
2a'
f1 (ppm)

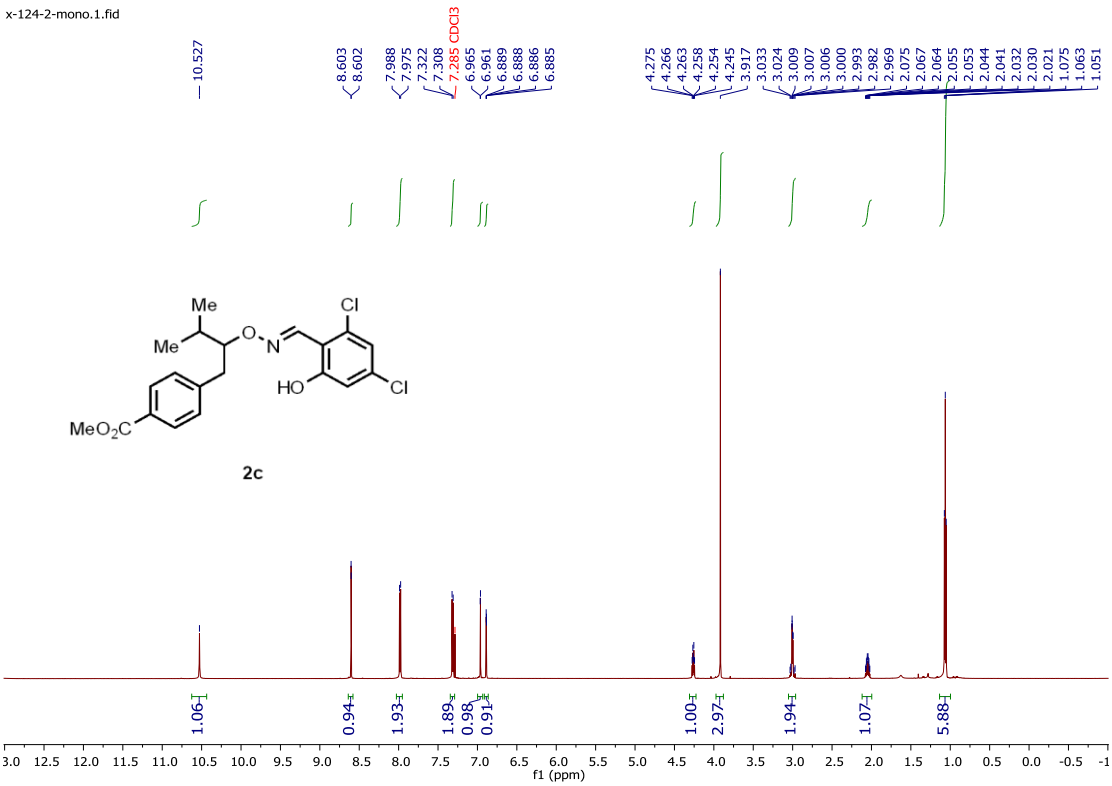
x-124-3-mono.1.fid



x-124-3-mono.2.fid

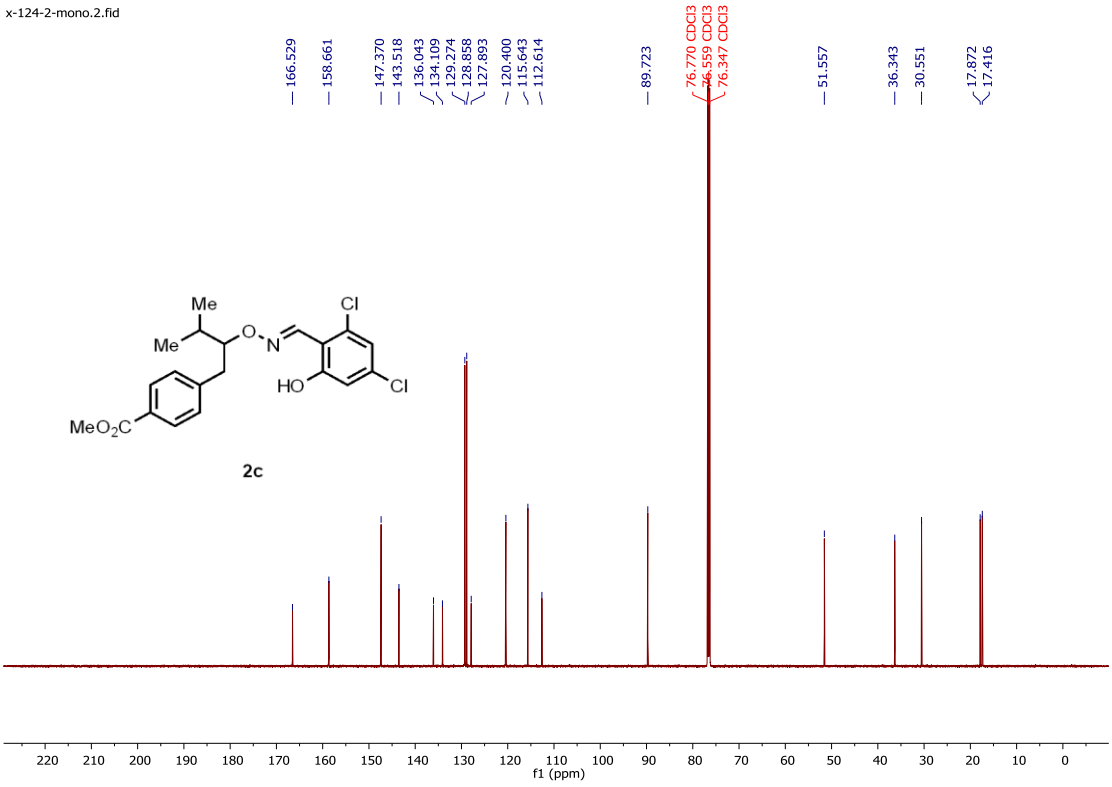


x-124-2-mono.1.fid

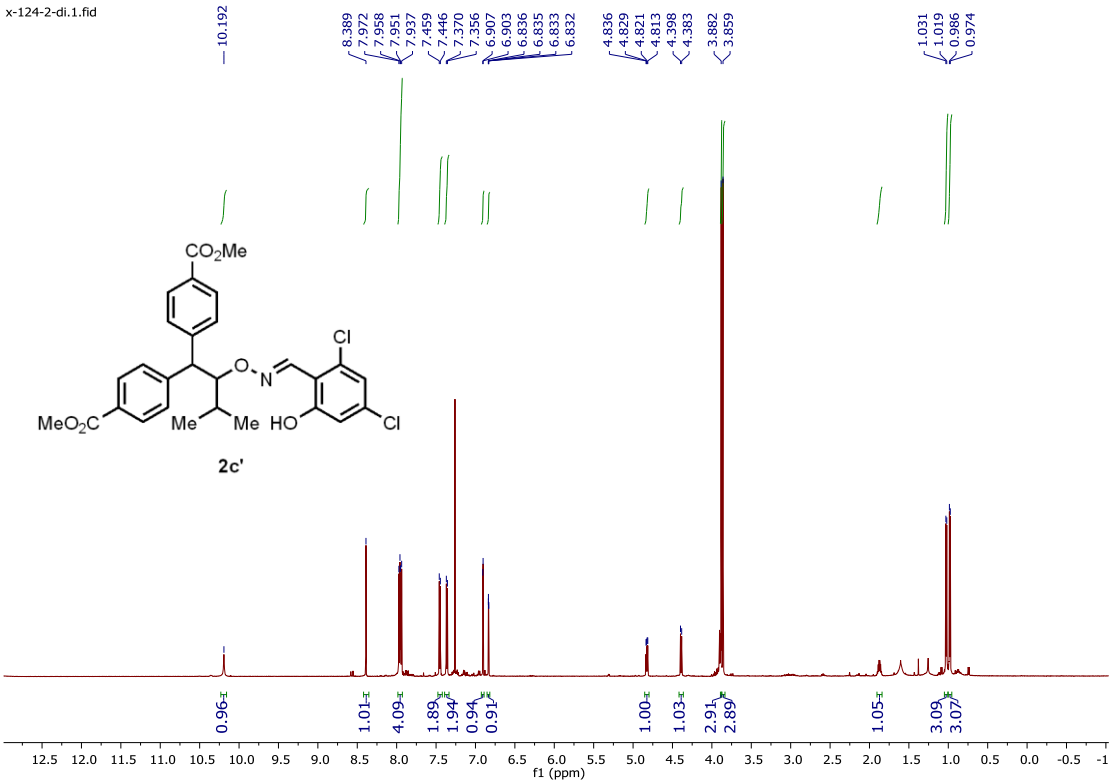


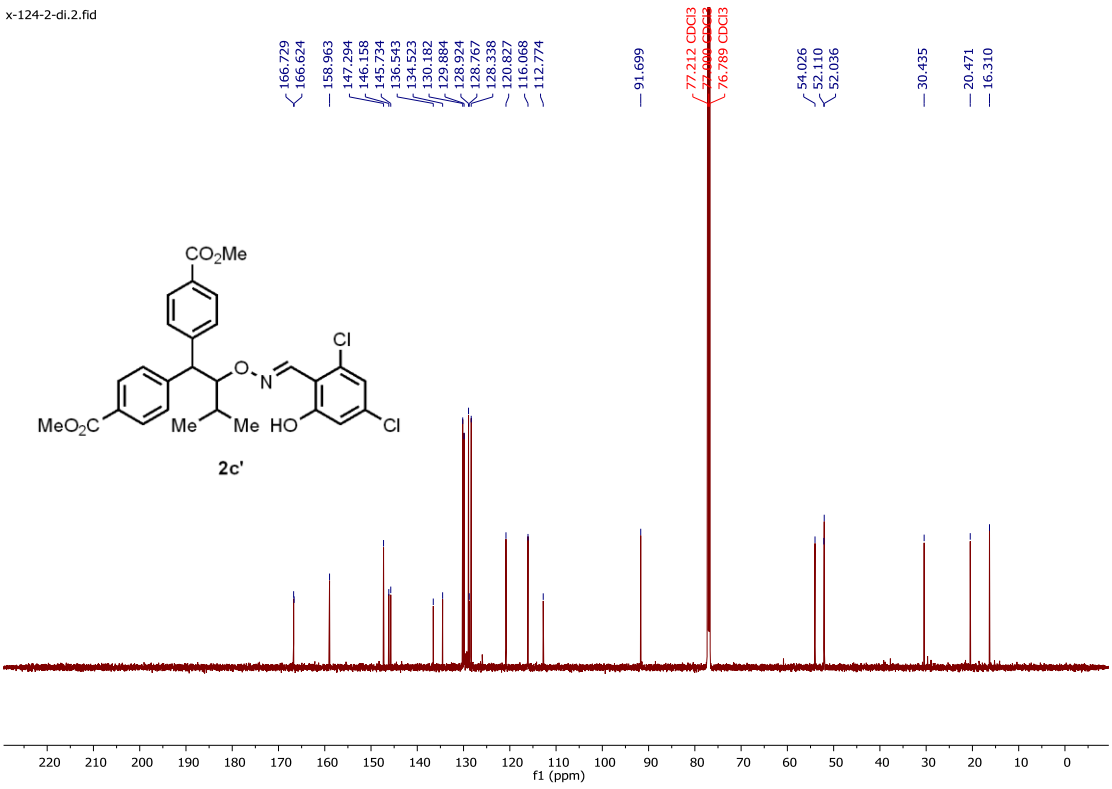
2c

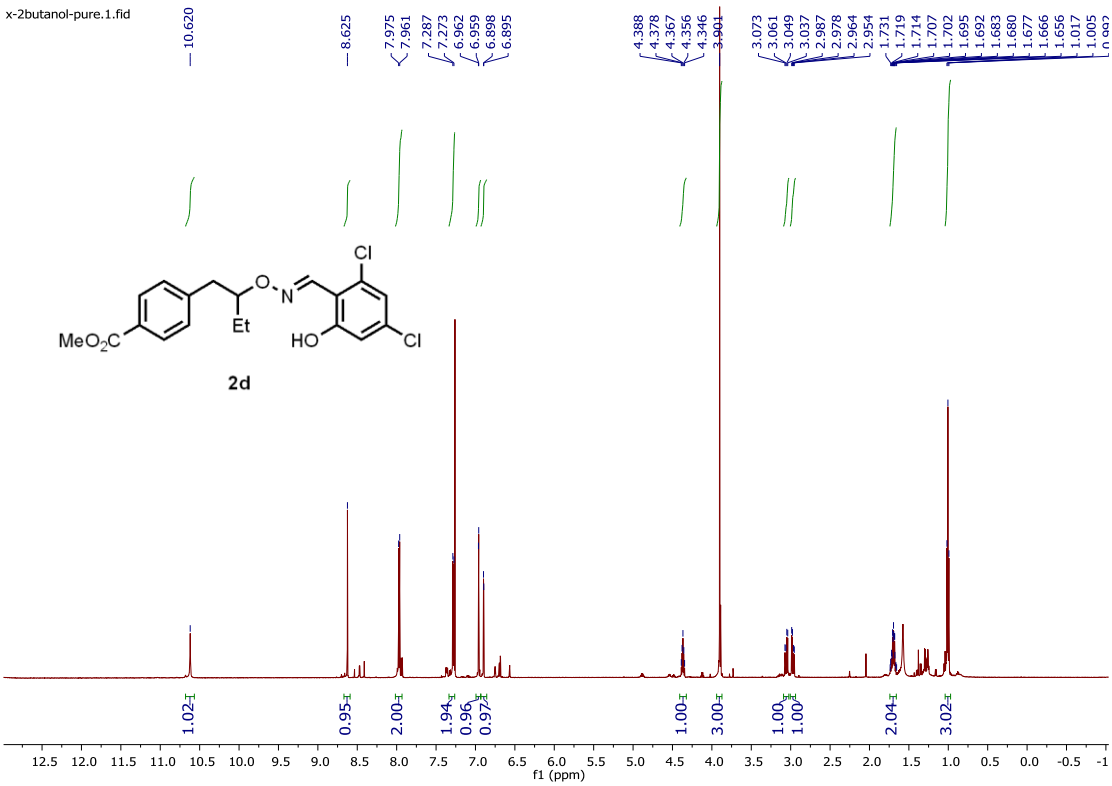
x-124-2-mono.2.fid

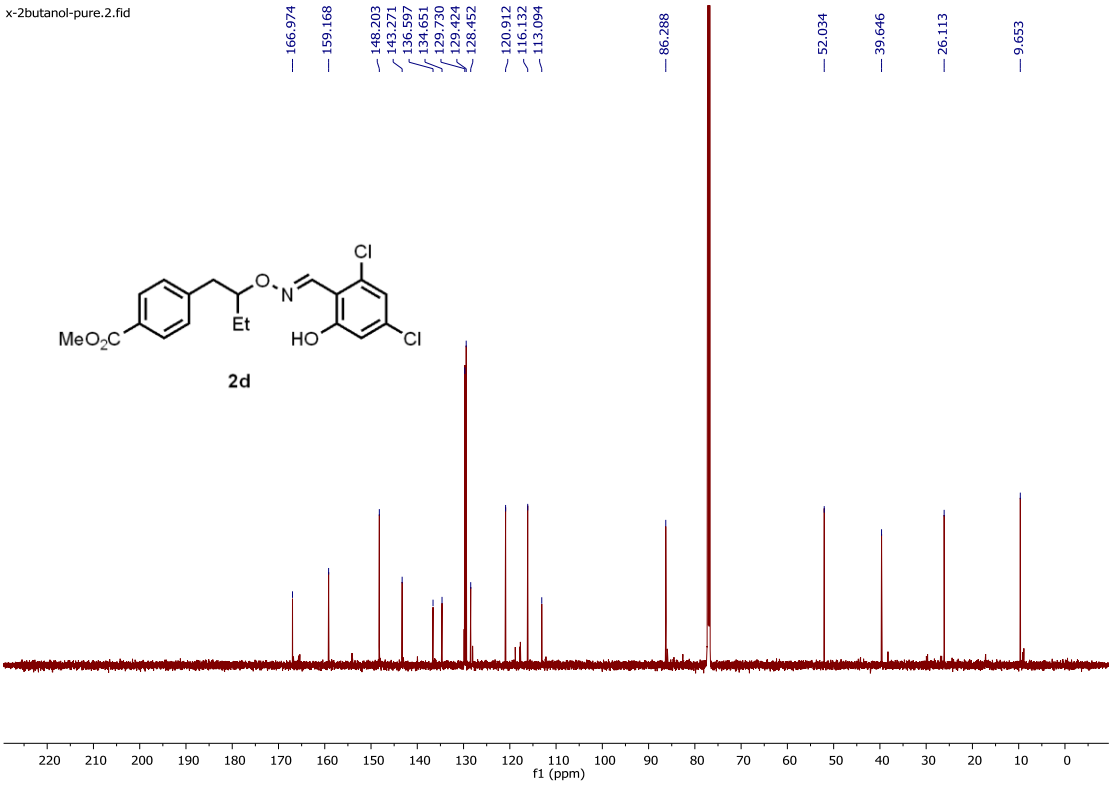


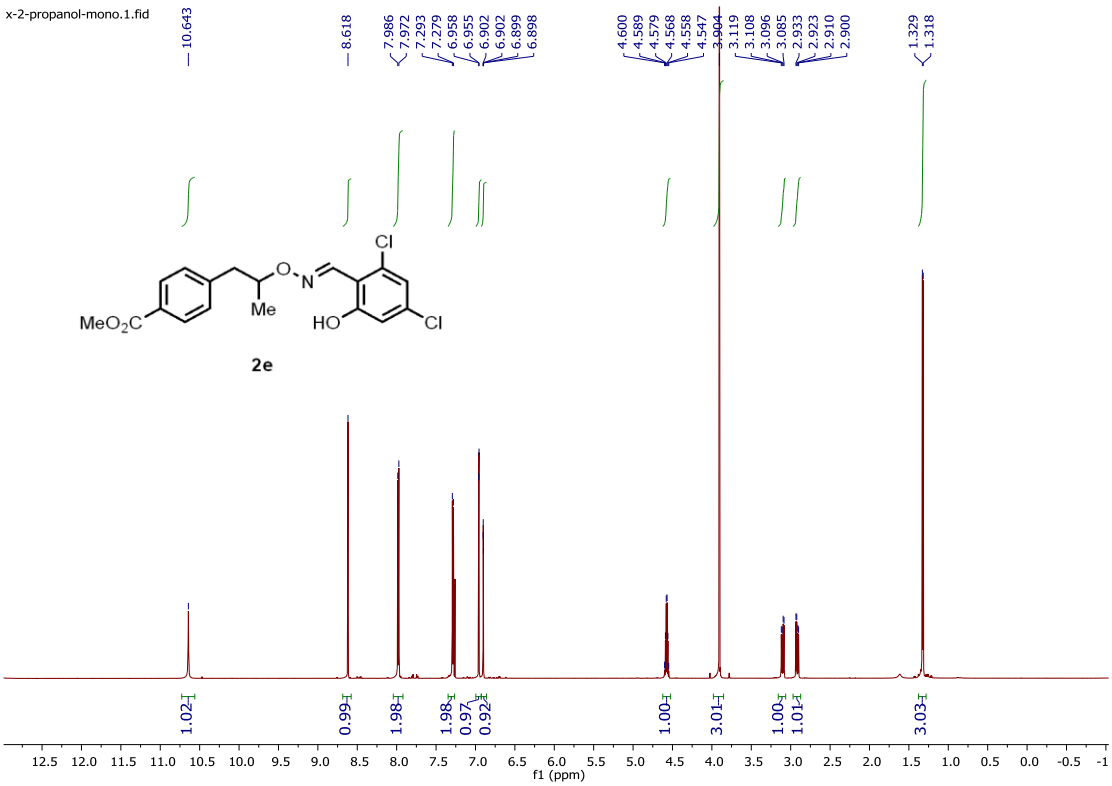
2c

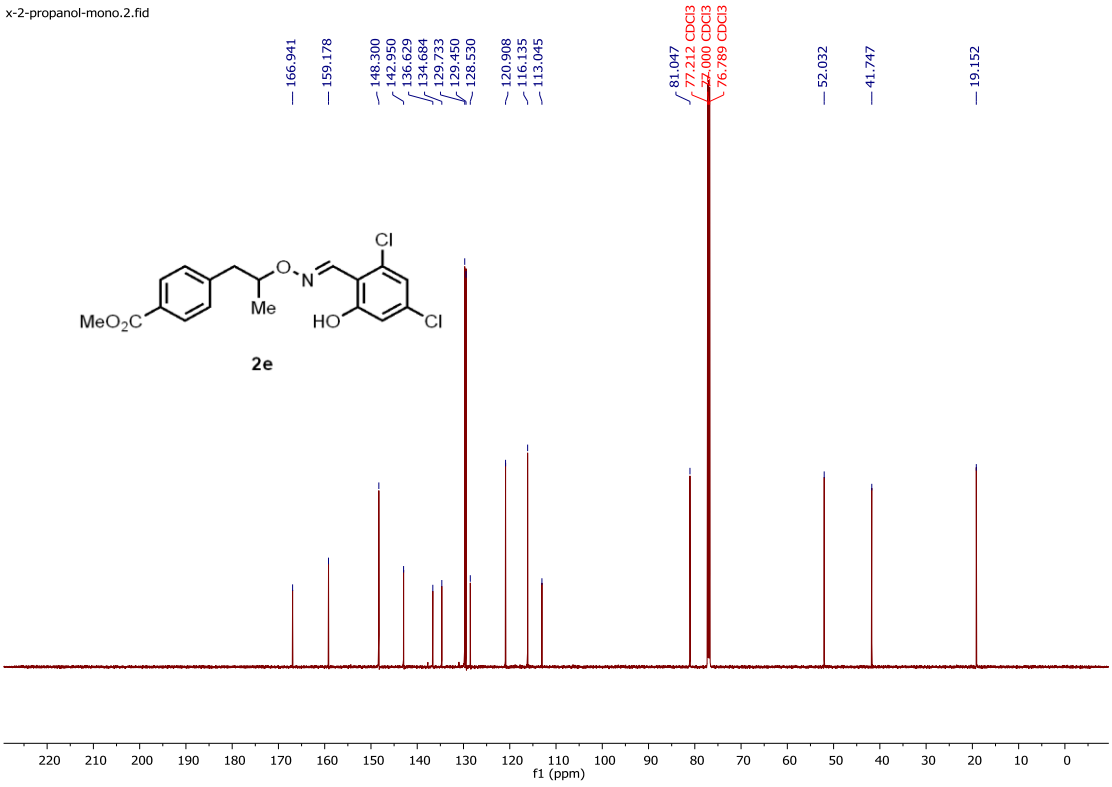

x-124-2-di.1.fid
10.192
8.389
7.972
7.958
7.951
7.937
7.459
7.446
7.370
7.356
6.907
6.903
6.836
6.835
6.833
6.832
4.836
4.829
4.821
4.813
4.398
4.383
3.882
3.859
1.031
1.019
0.986
0.974
CO2Me
MeO2C
Me
Me
HO
Cl
Cl
O
N
2c'
0.96
1.01
4.09
1.89
1.94
0.94
0.91
1.00
1.03
2.91
2.89
1.05
3.09
3.07
f1 (ppm)

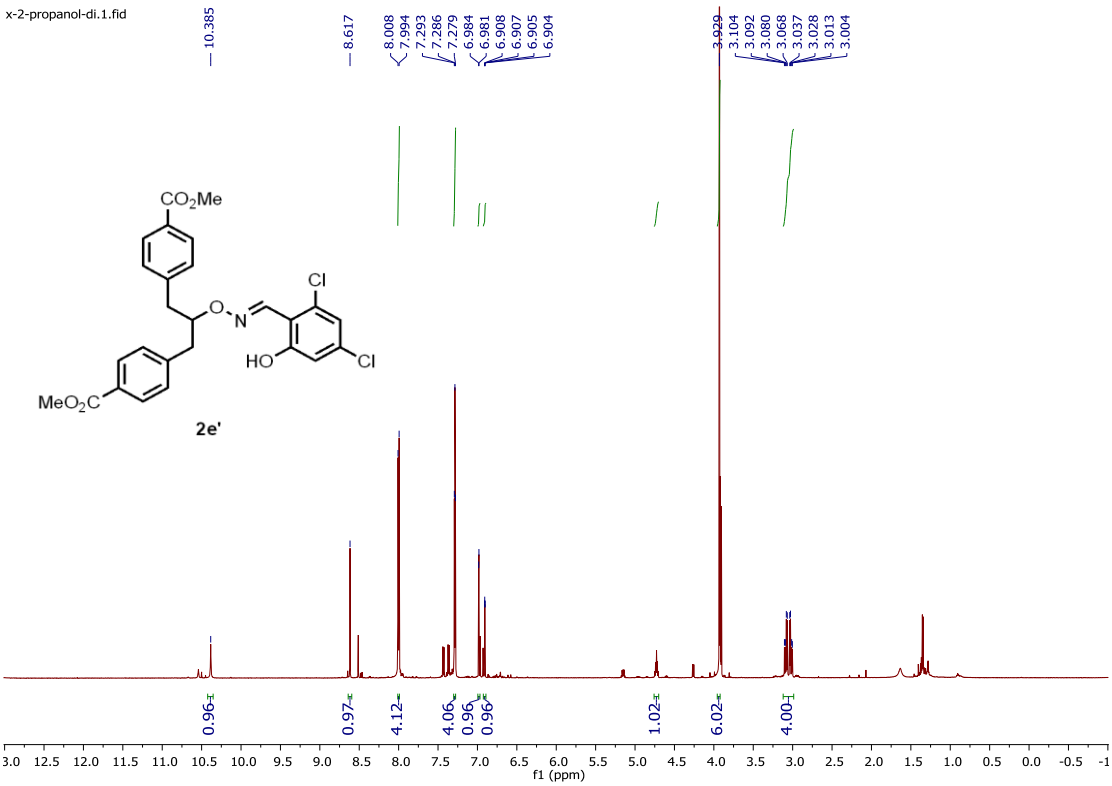

x-124-2-di.2.fid
166.729
166.624
158.963
147.294
146.158
145.734
136.543
134.523
130.182
129.884
128.924
128.767
128.338
120.827
116.068
112.774
91.699
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
54.026
52.110
52.036
30.435
20.471
16.310
CO2Me
MeO2C
Me
Me
HO
Cl
Cl
O
N
2c'
f1 (ppm)

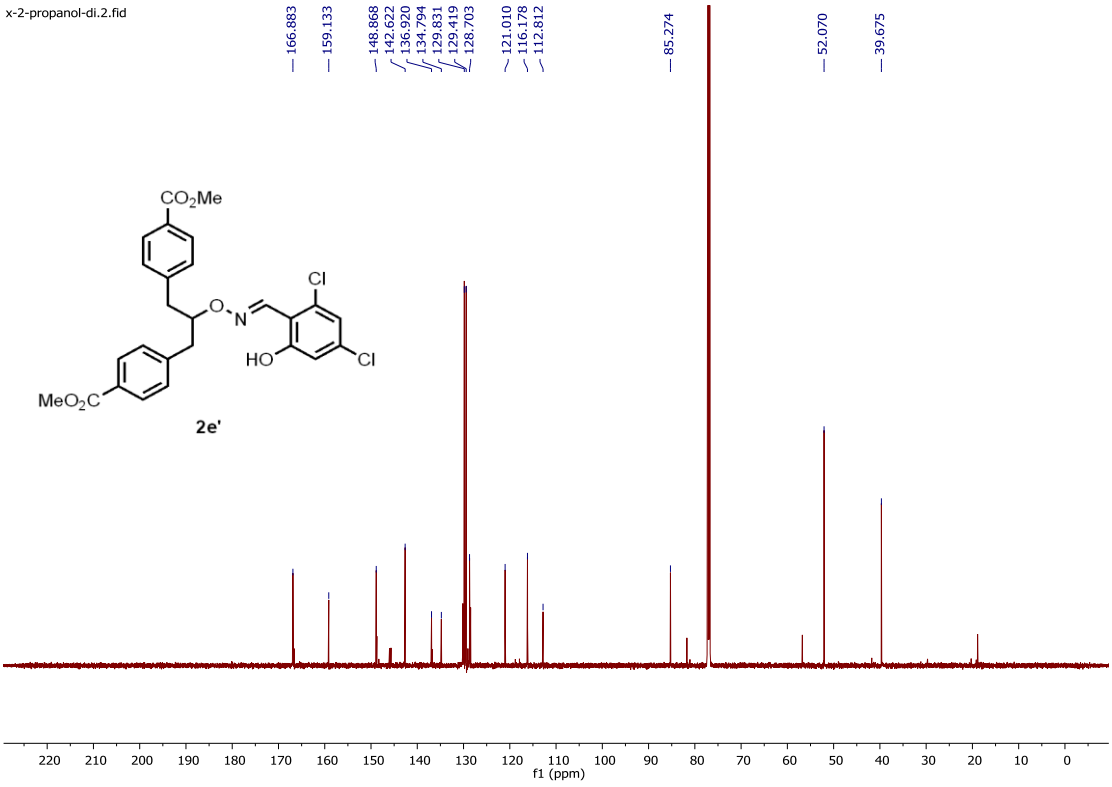

x-2butanol-pure.1.fid
10.620
8.625
7.975
7.961
7.287
7.273
6.962
6.959
6.898
6.895
4.388
4.378
4.367
4.356
4.346
3.901
3.073
3.061
3.049
3.037
2.987
2.978
2.964
2.954
1.731
1.719
1.714
1.707
1.702
1.695
1.692
1.683
1.680
1.677
1.666
1.656
1.017
1.005
Cl
O
N
Et
MeO2C
HO
Cl
2d
1.02
0.95
2.00
1.94
0.96
0.97
1.00
3.00
1.00
1.00
2.04
3.02
f1 (ppm)


x-2butanol-pure.2.fid
166.974
159.168
148.203
143.271
136.597
134.651
129.730
129.424
128.452
120.912
116.132
113.094
86.288
52.034
39.646
26.113
9.653
Cl
O
N
Et
MeO2C
HO
Cl
2d
f1 (ppm)

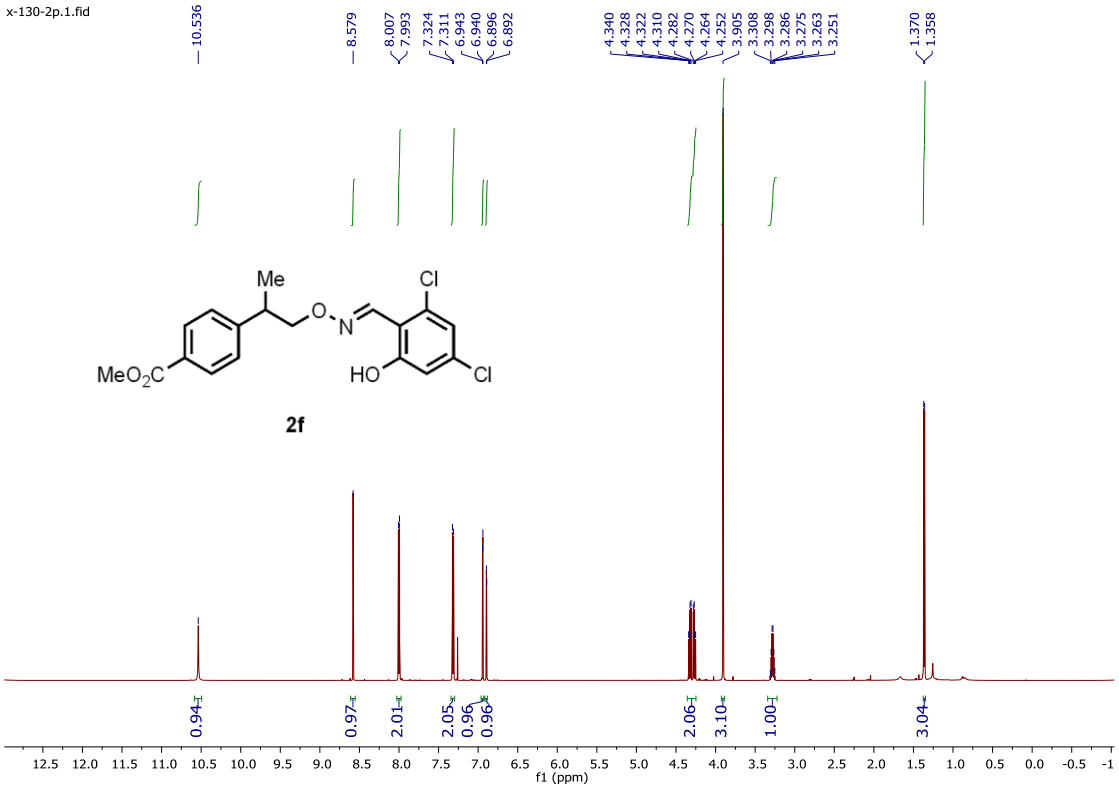

x-2-propanol-mono.1.fid
10.643
8.618
7.986
7.972
7.293
7.279
6.958
6.955
6.902
6.902
6.899
6.898
4.600
4.589
4.579
4.568
4.558
4.547
3.904
3.119
3.108
3.096
3.085
2.933
2.923
2.910
2.900
1.329
1.318
Cl
O
N
Me
MeO2C
HO
Cl
2e
1.02
0.99
1.98
1.98
0.97
0.92
1.00
3.01
1.00
1.01
3.03
f1 (ppm)


x-2-propanol-mono.2.fid
166.941
159.178
148.300
142.950
136.629
134.684
129.733
129.450
128.530
120.908
116.135
113.045
81.047
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
52.032
41.747
19.152
Cl
O
N
Me
MeO2C
HO
Cl
2e
f1 (ppm)


x-2-propanol-di.1.fid
10.385
8.617
8.008
7.994
7.293
7.286
7.279
6.984
6.981
6.908
6.907
6.905
6.904
3.929
3.104
3.092
3.080
3.068
3.037
3.028
3.013
3.004
CO2Me
Cl
O
N
HO
Cl
MeO2C
2e'
0.96
0.97
4.12
4.06
0.96
0.96
1.02
6.02
4.00
f1 (ppm)

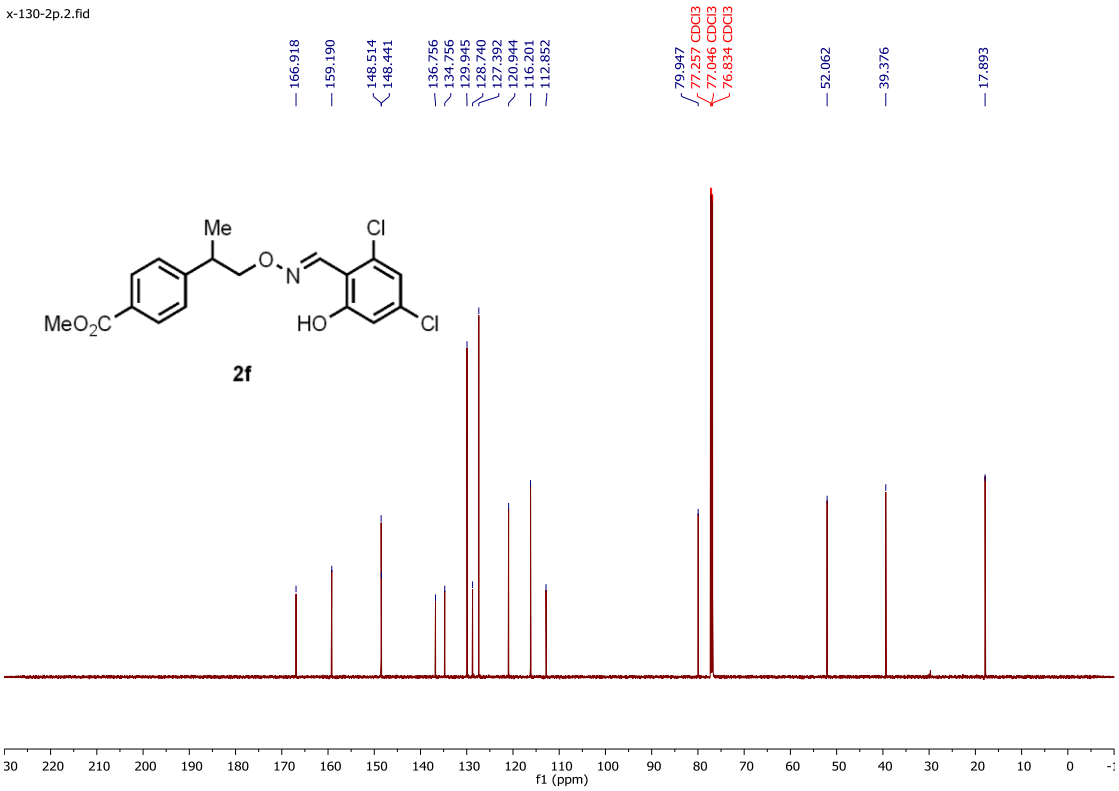

x-2-propanol-di.2.fid
166.883
159.133
148.868
142.622
136.920
134.794
129.831
129.419
128.703
121.010
116.178
112.812
85.274
52.070
39.675
CO2Me
Cl
O
N
HO
Cl
MeO2C
2e'
f1 (ppm)

x-130-2p.1.fid

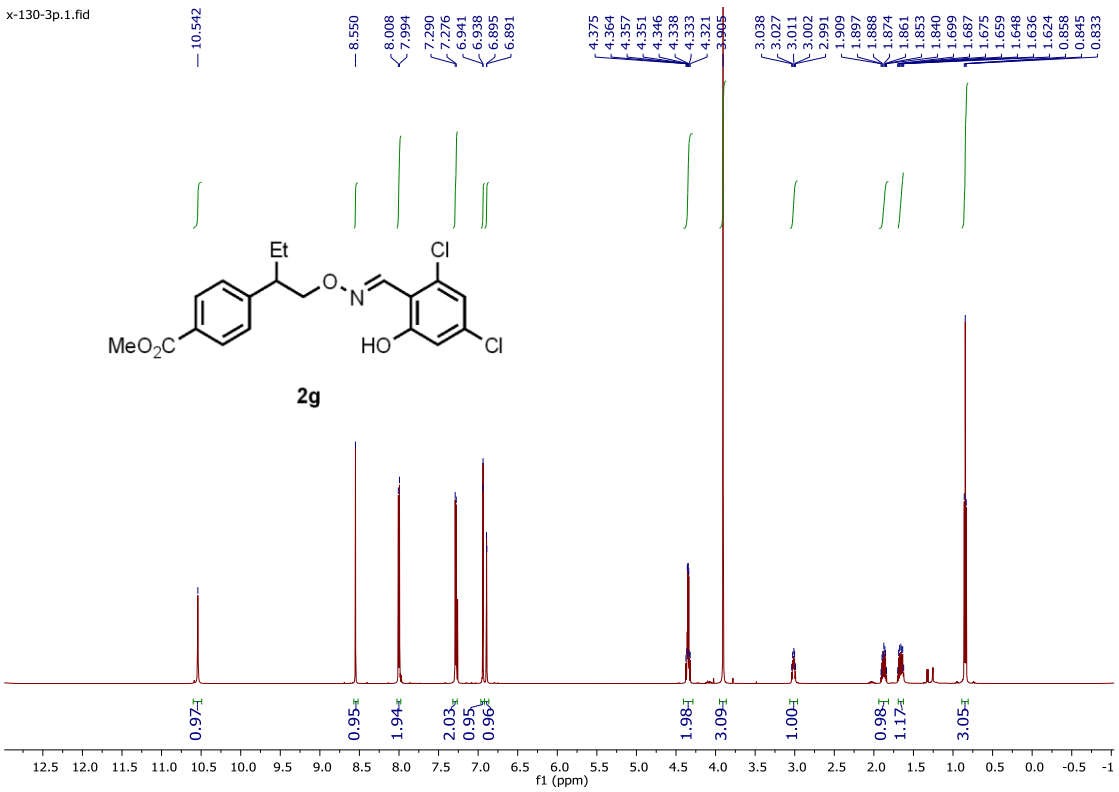


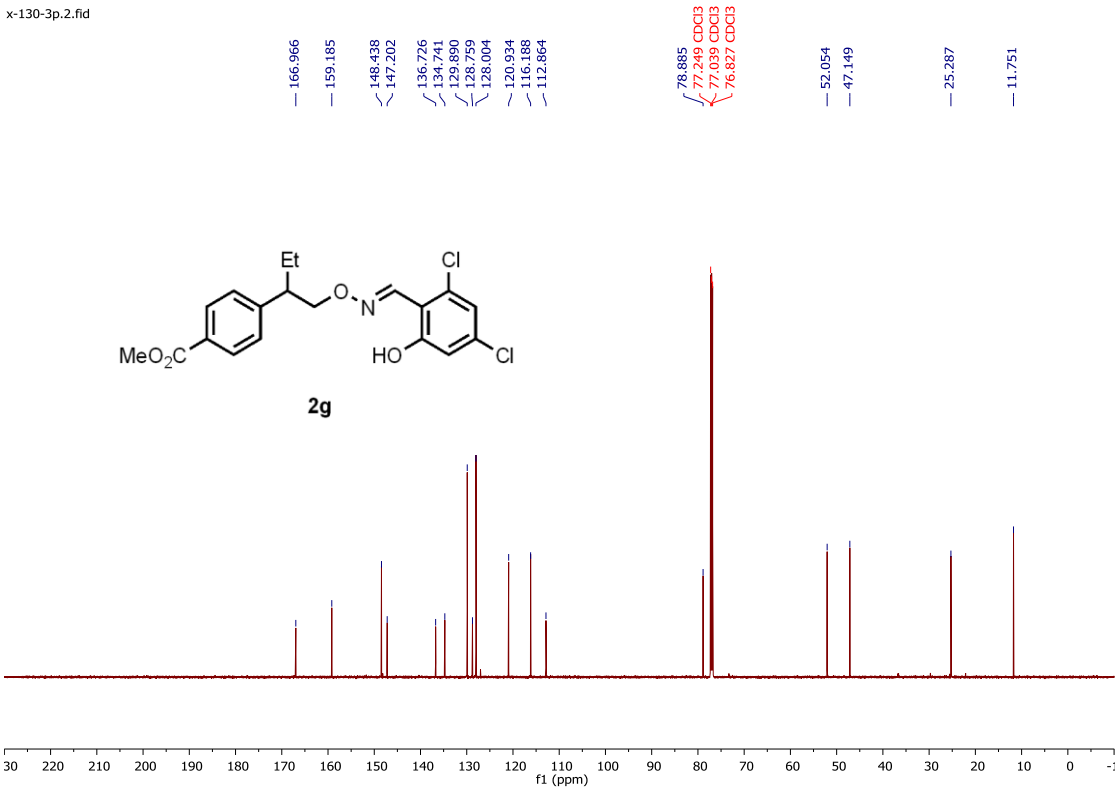
2f

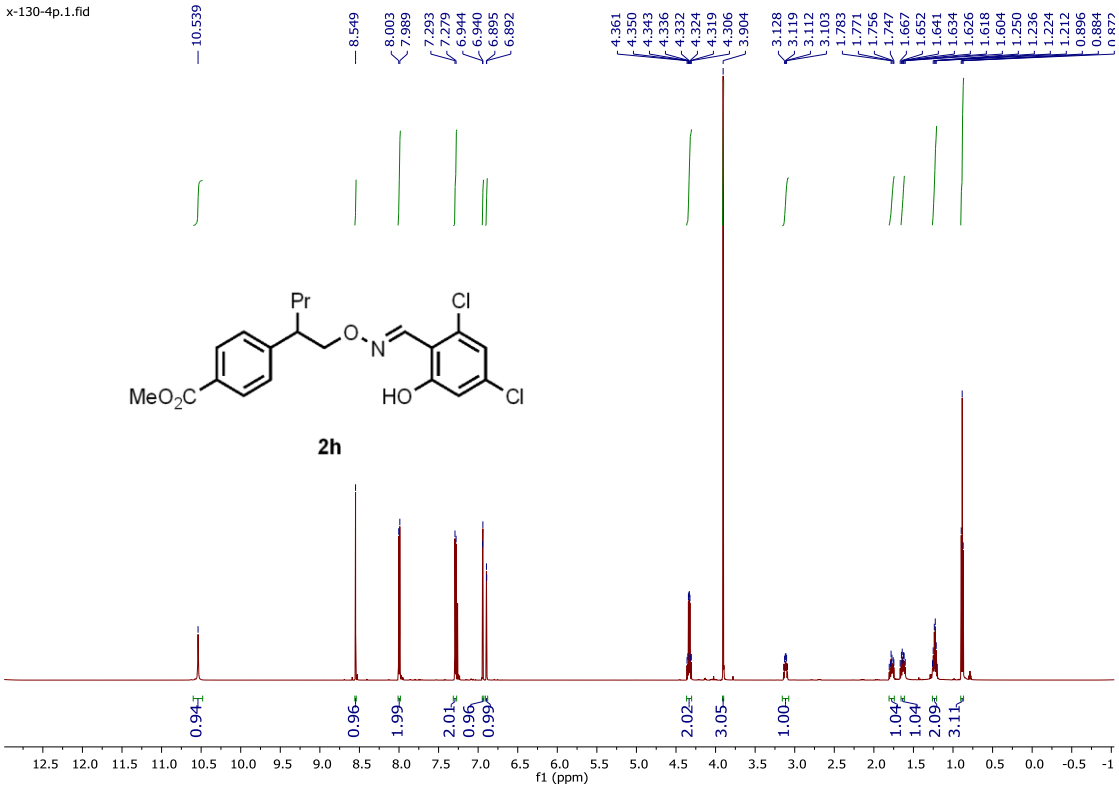
x-130-2p.2.fid

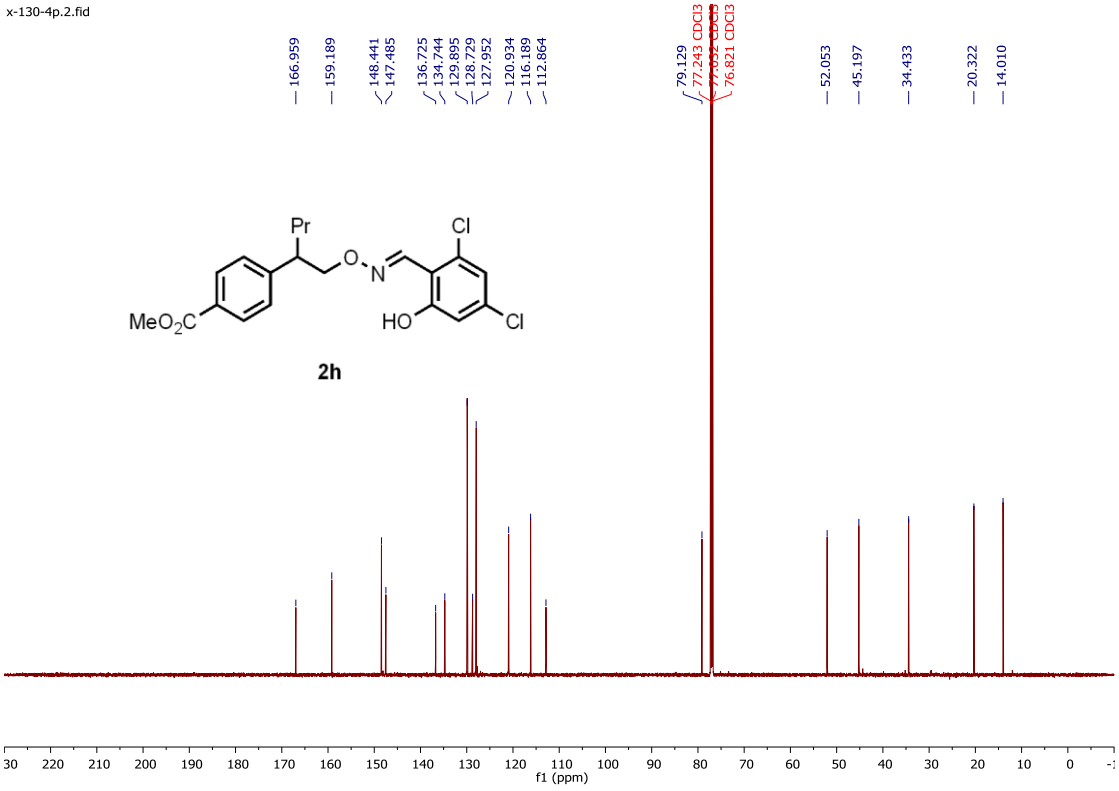


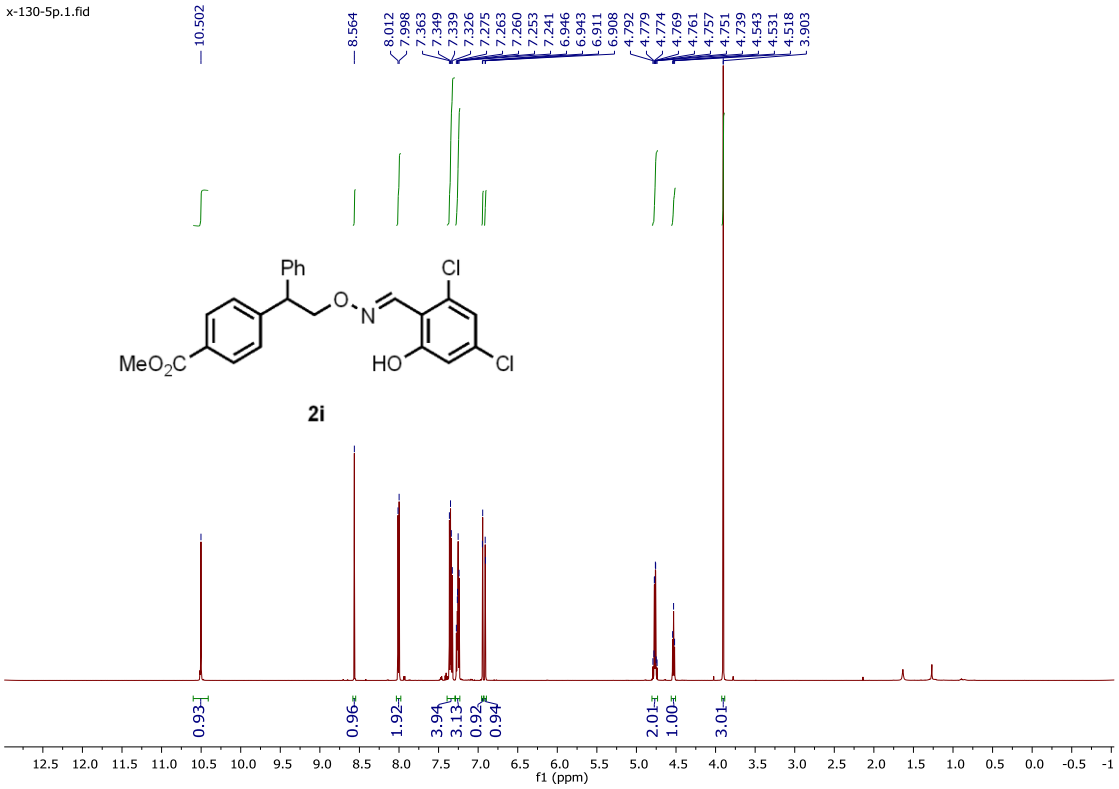
2f


x-130-3p.1.fid
10.542
8.550
8.008
7.994
7.290
7.276
6.941
6.938
6.895
6.891
4.375
4.364
4.357
4.351
4.346
4.338
4.333
4.321
3.905
3.038
3.027
3.011
3.002
2.991
1.909
1.897
1.888
1.874
1.861
1.853
1.840
1.699
1.687
1.675
1.659
1.648
1.636
1.624
1.858
0.845
0.833
Et
Cl
O
N
MeO2C
HO
Cl
2g
0.97
0.95
1.94
2.03
0.95
0.96
1.98
3.09
1.00
0.98
1.17
3.05
f1 (ppm)


x-130-3p.2.fid
166.966
159.185
148.438
147.202
136.726
134.741
129.890
128.759
128.004
120.934
116.188
112.864
78.885
77.249 CDCl3
77.039 CDCl3
76.827 CDCl3
52.054
47.149
25.287
11.751
Et
Cl
O
N
MeO2C
HO
Cl
2g
f1 (ppm)


x-130-4p.1.fid
10.539
8.549
8.003
7.989
7.293
7.279
6.944
6.940
6.895
6.892
4.361
4.350
4.343
4.336
4.332
4.324
4.319
4.306
3.904
3.128
3.119
3.112
3.103
1.783
1.771
1.756
1.747
1.667
1.652
1.641
1.634
1.626
1.618
1.604
1.250
1.236
1.224
1.212
0.896
0.884
0.877
Pr
Cl
O
N
MeO2C
HO
Cl
2h
0.94
0.96
1.99
2.01
0.96
0.99
2.02
3.05
1.00
1.04
1.04
2.09
3.11
f1 (ppm)


x-130-4p.2.fid
166.959
159.189
148.441
147.485
136.725
134.744
129.895
128.729
127.952
120.934
116.189
112.864
79.129
77.243 CDCl3
77.031 CDCl3
76.821 CDCl3
52.053
45.197
34.433
20.322
14.010
Pr
Cl
O
N
MeO2C
HO
Cl
2h
f1 (ppm)


x-130-5p.1.fid
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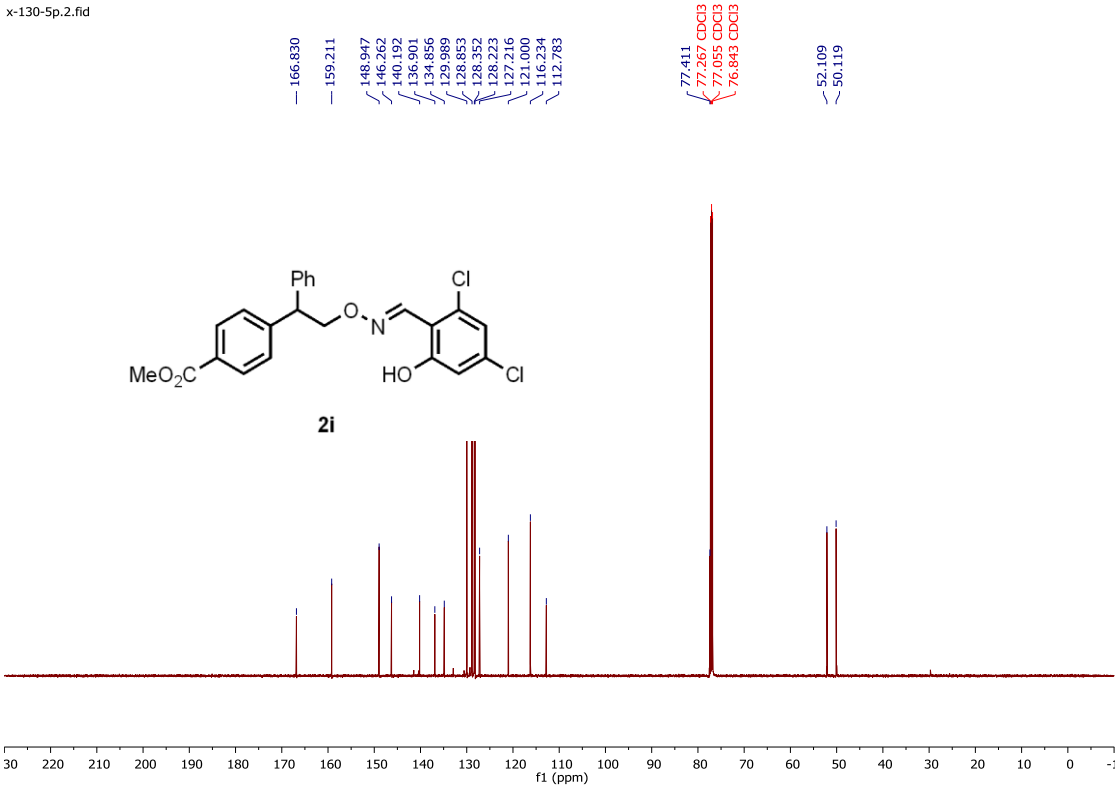
8.564
8.012
7.998
7.363
7.349
7.339
7.326
7.275
7.263
7.260
7.253
7.241
6.946
6.943
6.911
6.908
4.792
4.779
4.774
4.769
4.761
4.757
4.751
4.739
4.543
4.531
4.518
3.903
Ph
Cl
O
N
MeO2C
HO
Cl
2i
0.93
0.96
1.92
3.94
3.13
0.92
0.94
2.01
1.00
3.01
f1 (ppm)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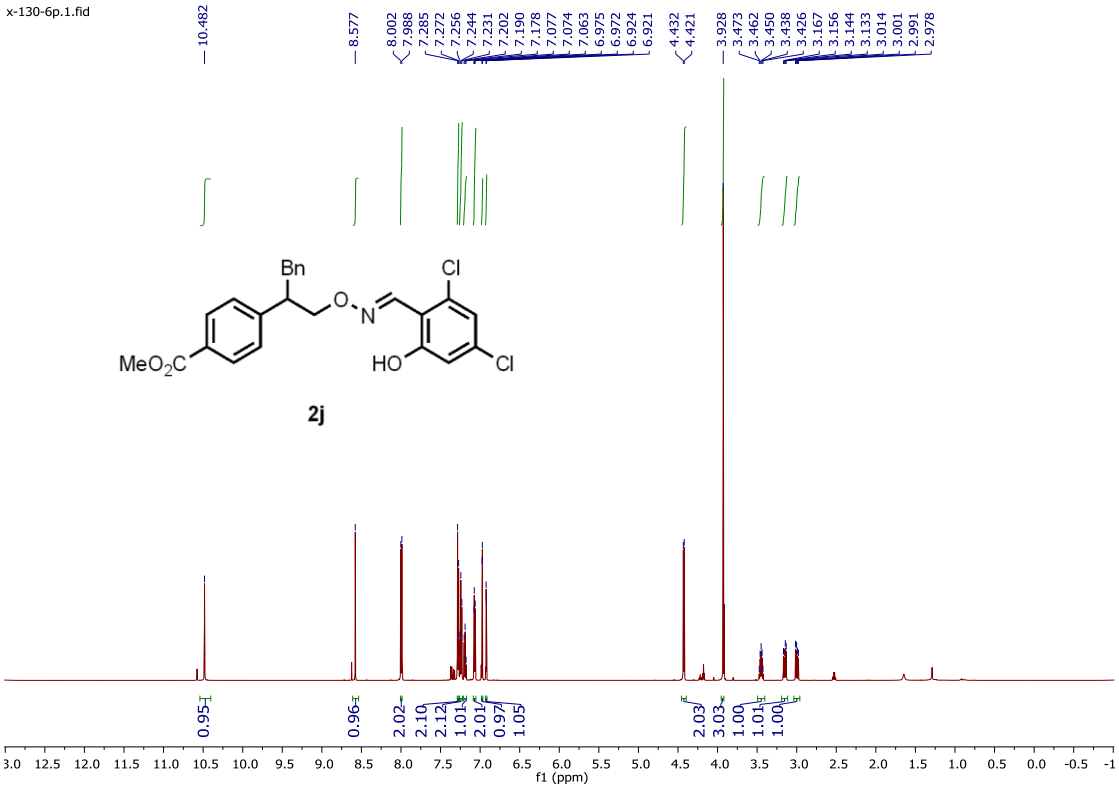
166.830
159.211
148.947
146.262
140.192
136.901
134.856
129.989
128.853
128.352
128.223
127.216
121.000
116.234
112.783
77.411
77.267 CDCl3
77.055 CDCl3
76.843 CDCl3
52.109
50.119
Ph
Cl
O
N
MeO2C
HO
Cl
2i
f1 (ppm)


x-130-6p.1.fid
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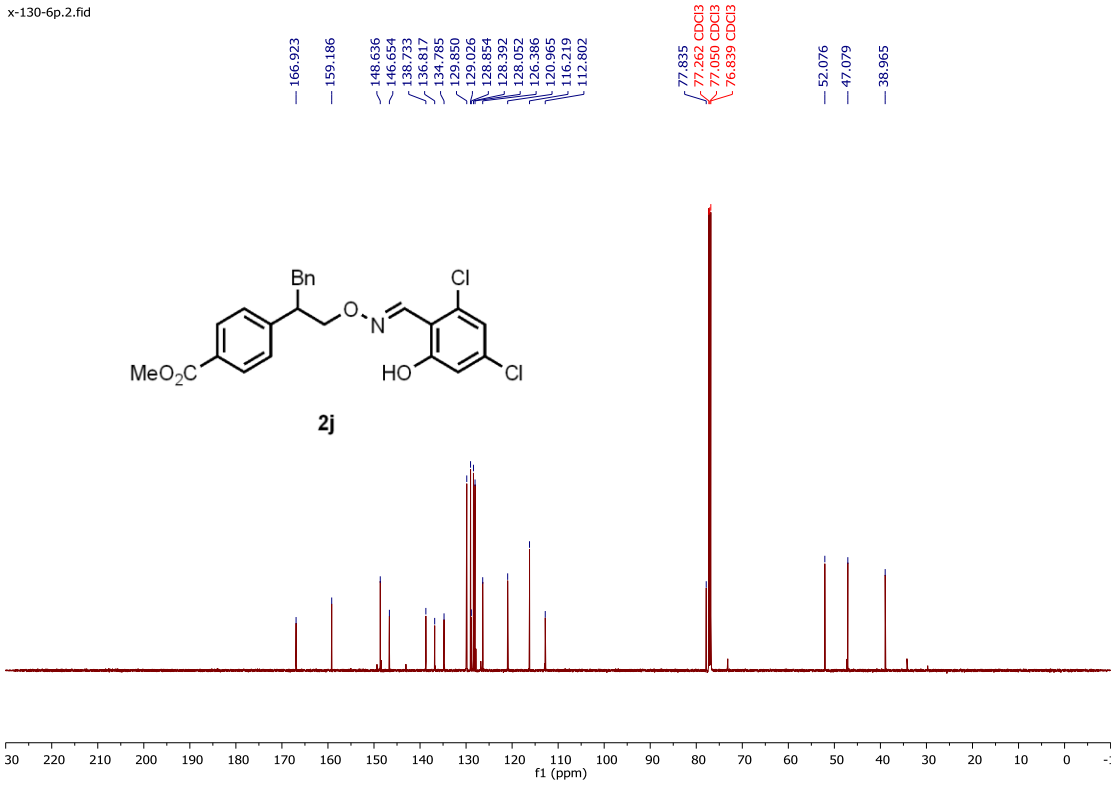
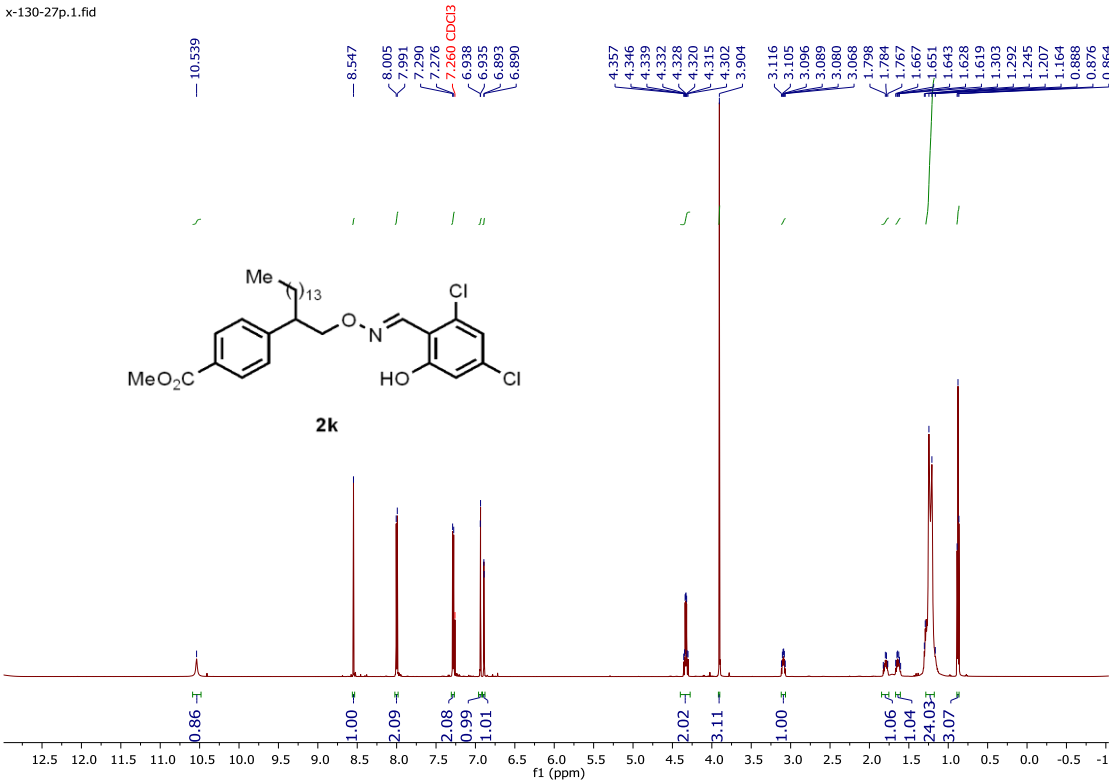
8.577
8.002
7.988
7.285
7.272
7.256
7.244
7.231
7.202
7.190
7.178
7.077
7.074
7.063
6.975
6.972
6.924
6.921
4.432
4.421
3.928
3.473
3.462
3.450
3.438
3.426
3.167
3.156
3.144
3.133
3.014
3.001
2.991
2.978
Bn
Cl
O
N
MeO2C
HO
Cl
2j
0.95
0.96
2.02
2.10
2.12
1.01
2.01
0.97
1.05
2.03
3.03
1.00
1.01
1.00
f1 (ppm)


x-130-6p.2.fid
166.923
159.186
148.636
146.654
138.733
136.817
134.785
129.850
129.026
128.854
128.392
128.052
126.386
120.965
116.219
112.802
77.835
77.262 CDCl3
77.050 CDCl3
76.839 CDCl3
52.076
47.079
38.965
Bn
Cl
O
N
MeO2C
HO
Cl
2j
f1 (ppm)


x-130-27p.1.fid
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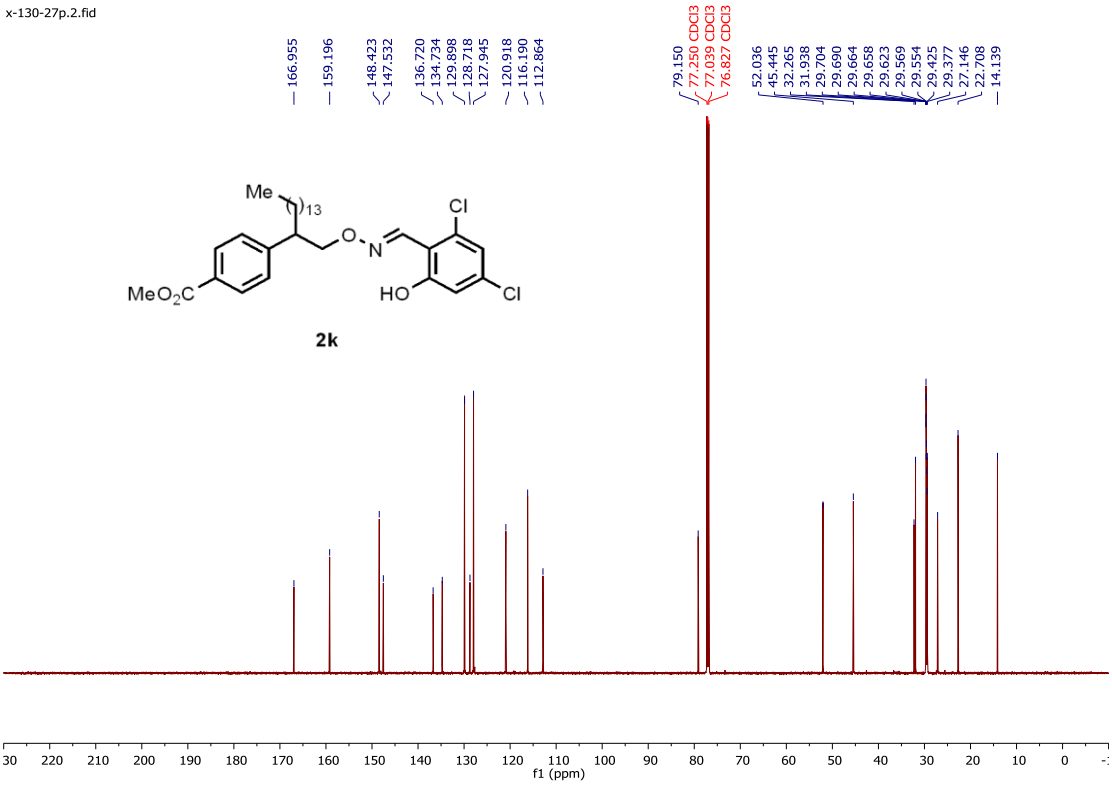
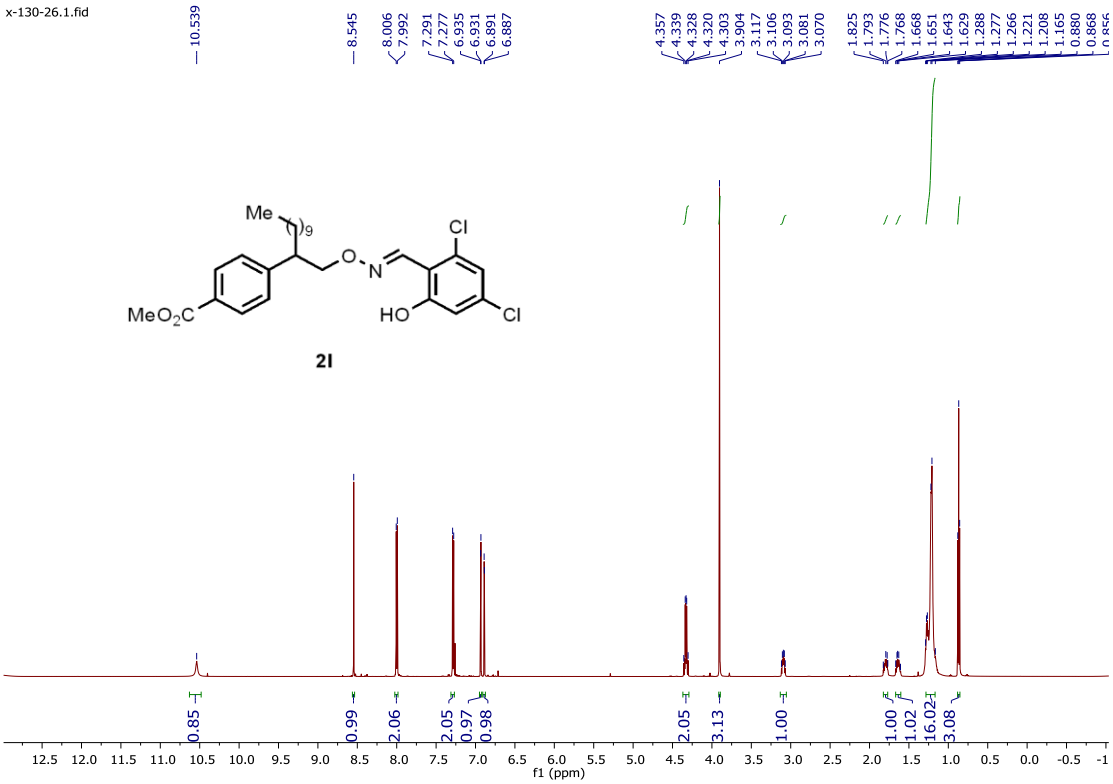
8.547
8.005
7.991
7.290
7.276
7.260 CDCl3
6.938
6.935
6.893
6.890
4.357
4.346
4.339
4.332
4.328
4.320
4.315
4.302
3.904
3.116
3.105
3.096
3.089
3.080
3.068
1.798
1.784
1.767
1.667
1.651
1.643
1.628
1.619
1.303
1.292
1.245
1.207
1.164
0.888
0.876
Me
13
O
N
Cl
MeO2C
HO
Cl
2k
0.86
1.00
2.09
2.08
0.99
1.01
2.02
3.11
1.00
1.06
1.04
24.03
3.07
f1 (ppm)

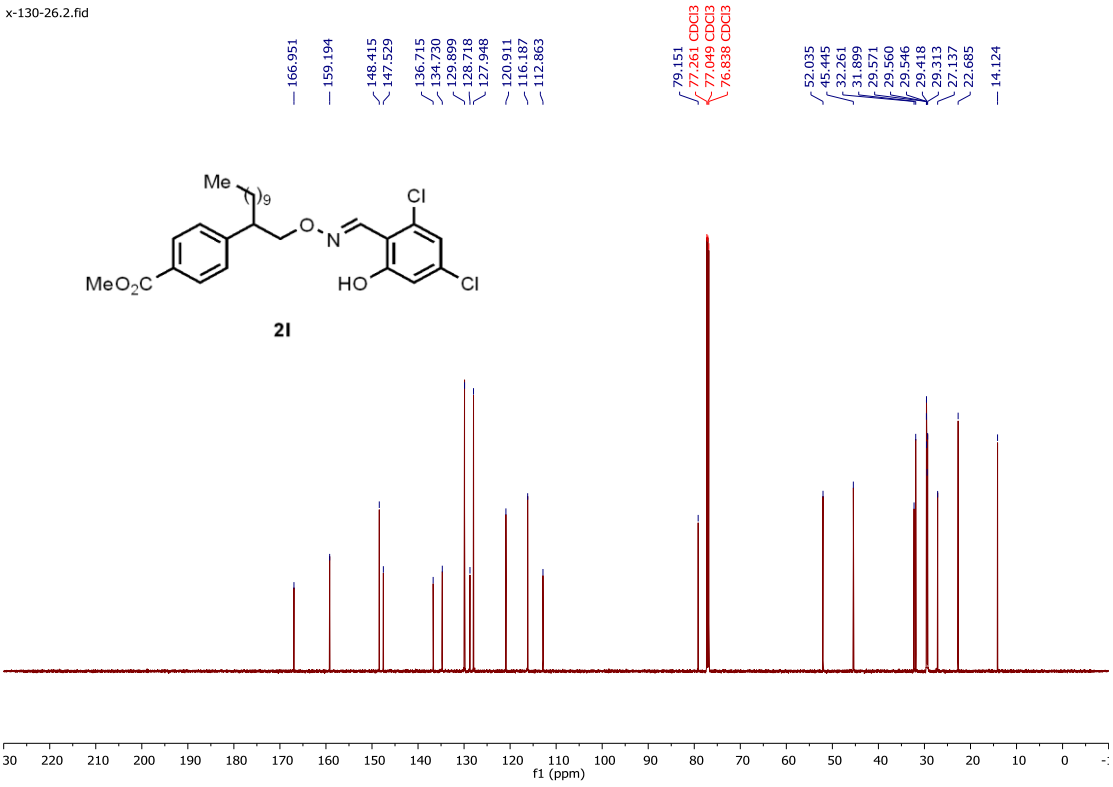

x-130-27p.2.fid
166.955
159.196
148.423
147.532
136.720
134.734
129.898
128.718
127.945
120.918
116.190
112.864
79.150
77.250 CDCl3
77.039 CDCl3
76.827 CDCl3
52.036
45.445
32.265
31.938
29.704
29.690
29.664
29.658
29.623
29.569
29.554
29.425
29.377
27.146
22.708
14.139
Me
13
O
N
Cl
MeO2C
HO
Cl
2k
f1 (ppm)

x-130-26.1.fid

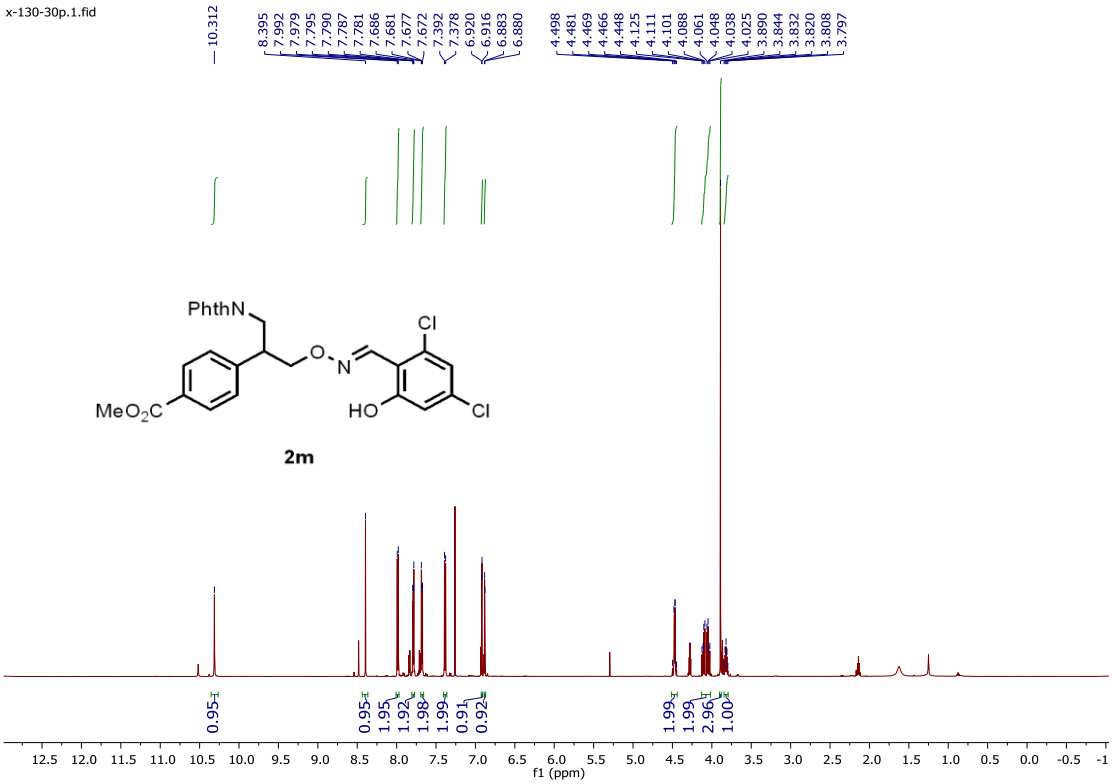


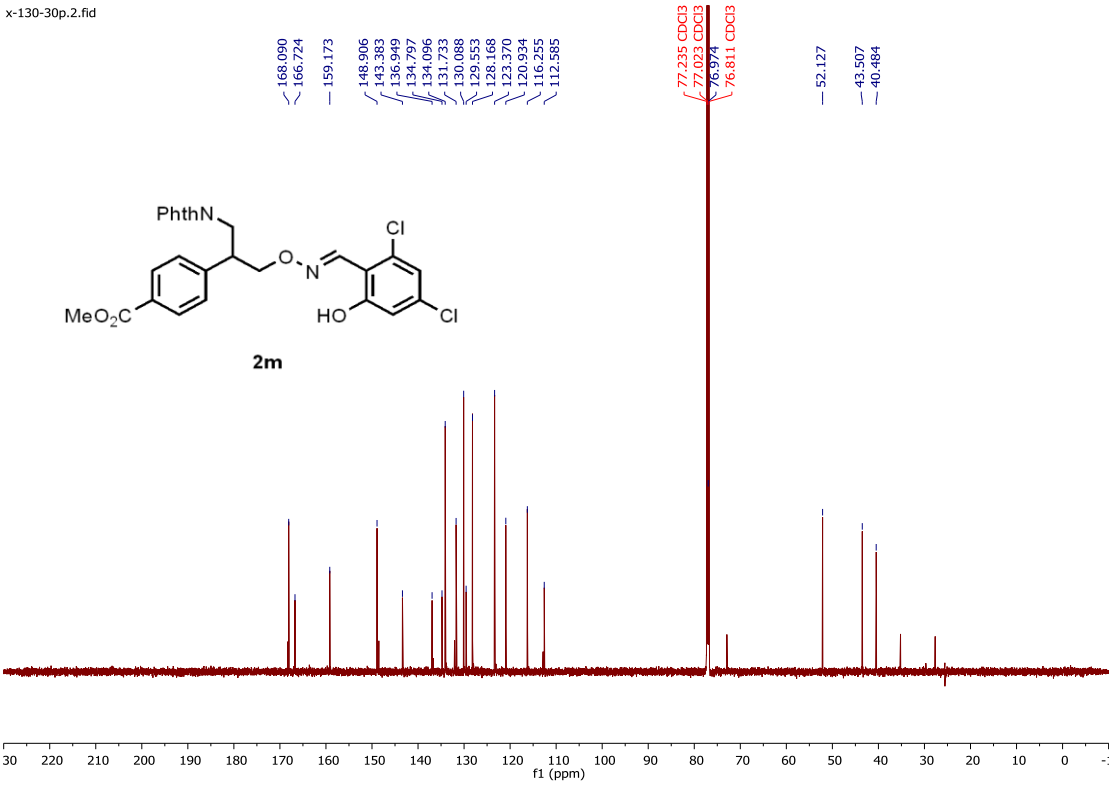
2l

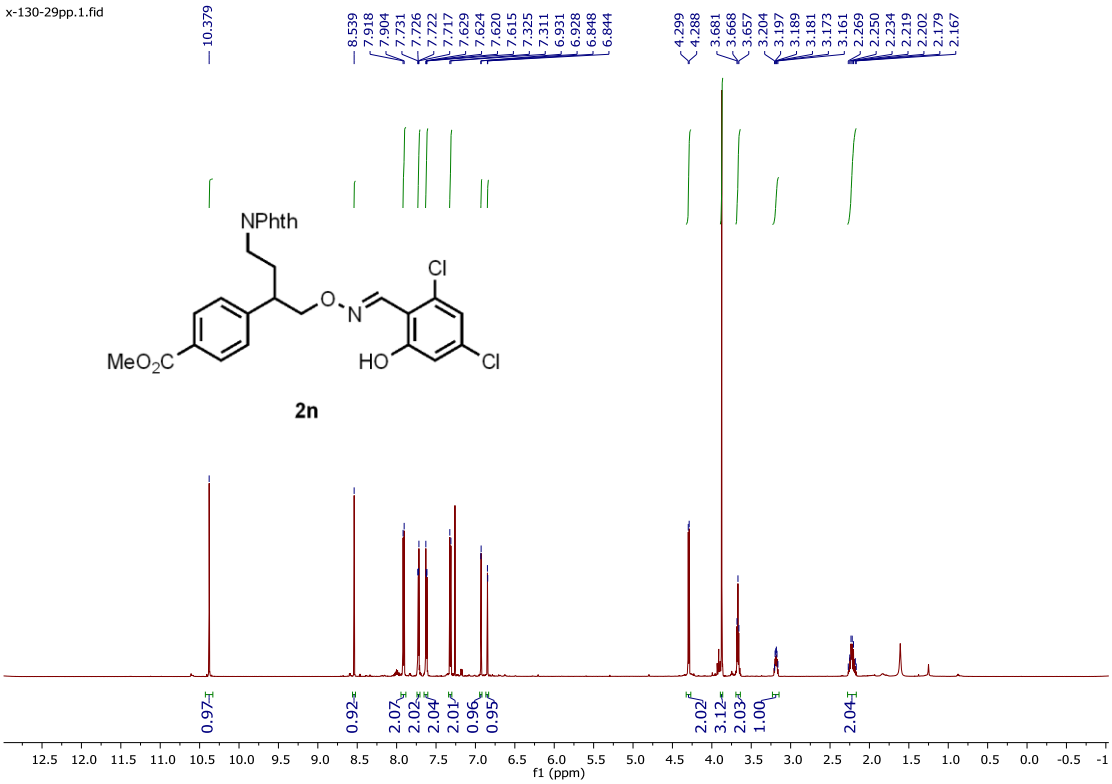
x-130-26.2.fid

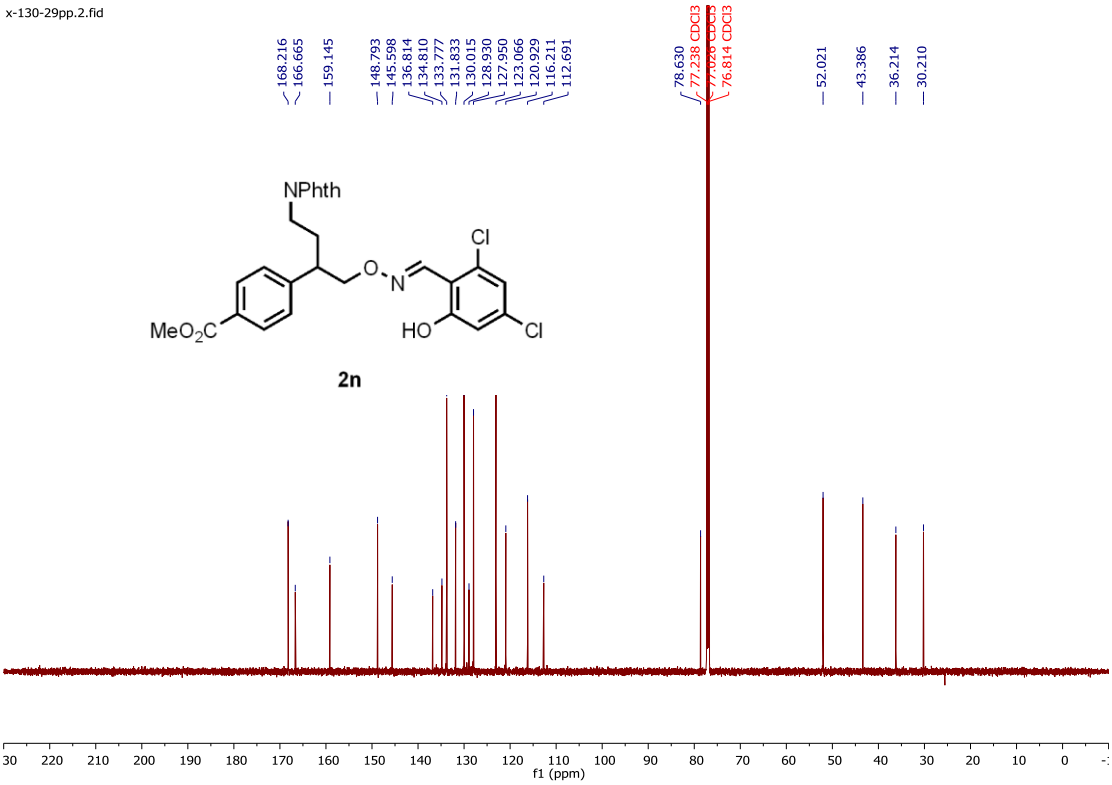


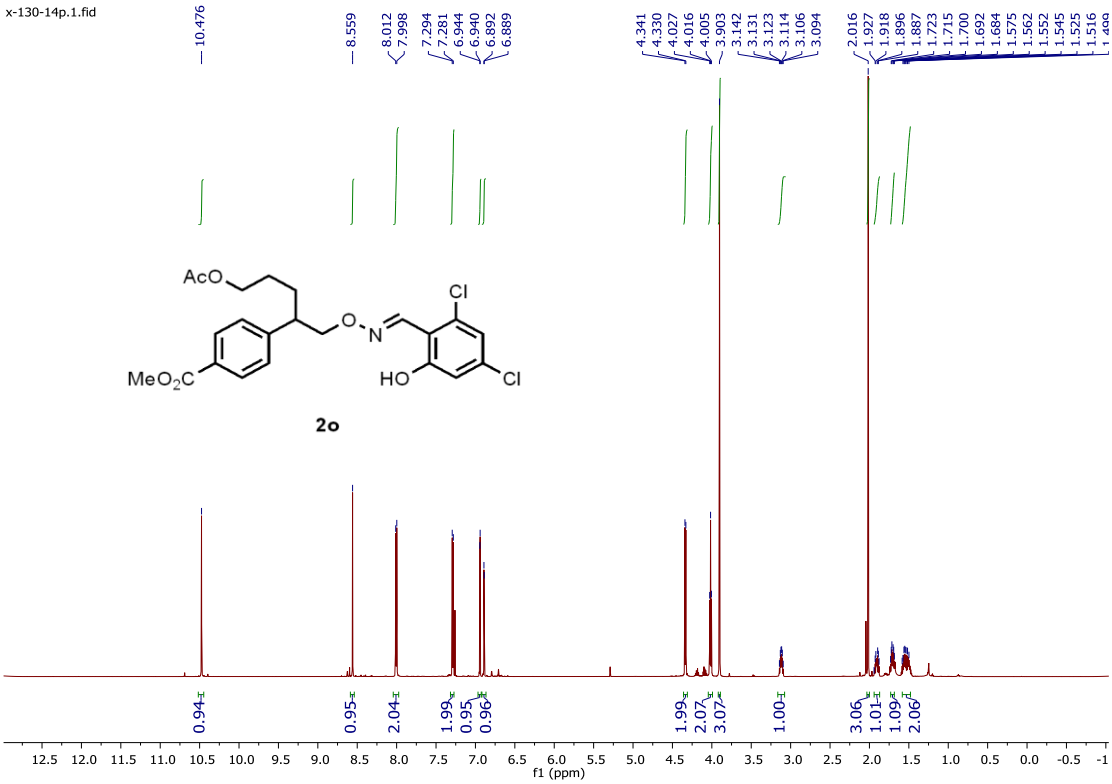
2l

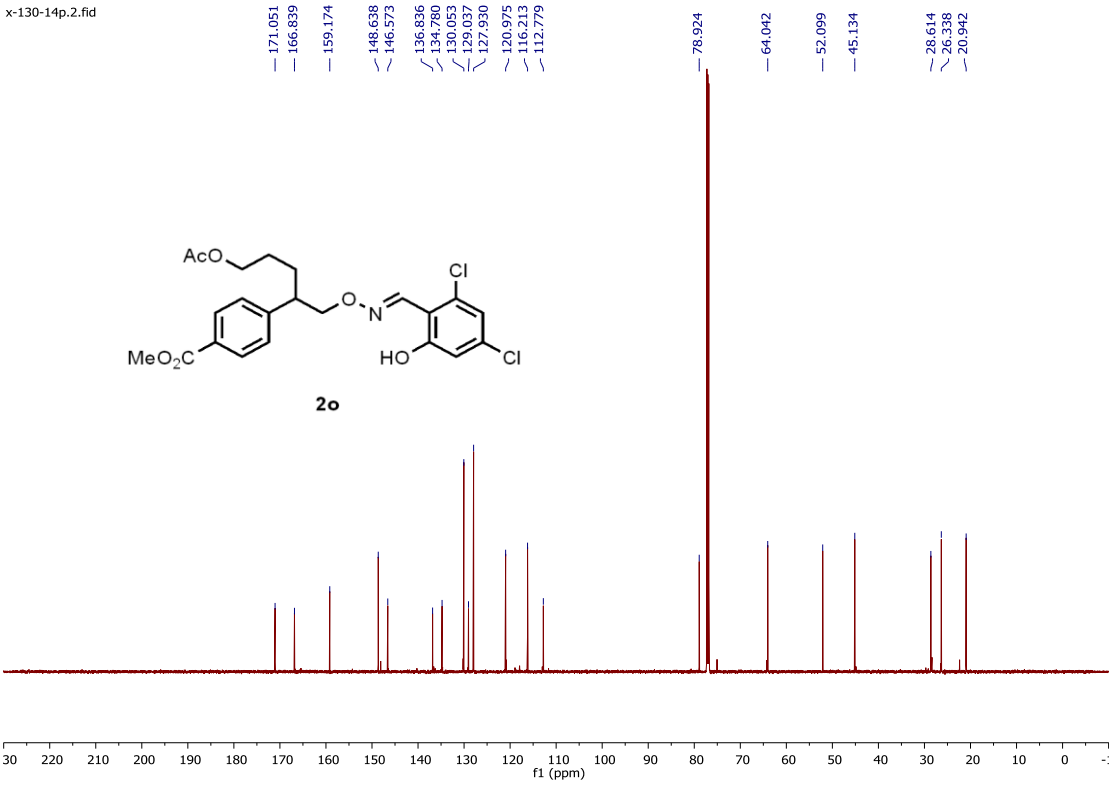

x-130-30p.1.fid
10.312
8.395
7.992
7.979
7.795
7.790
7.787
7.781
7.686
7.681
7.677
7.672
7.392
7.378
6.920
6.916
6.883
6.880
4.498
4.481
4.469
4.466
4.448
4.125
4.111
4.101
4.088
4.061
4.048
4.038
4.025
3.890
3.844
3.832
3.820
3.808
3.797
PhthN
Cl
O
N
MeO2C
HO
Cl
2m
0.95
0.95
1.95
1.92
1.98
1.99
0.91
0.92
1.99
1.99
2.96
1.00
f1 (ppm)

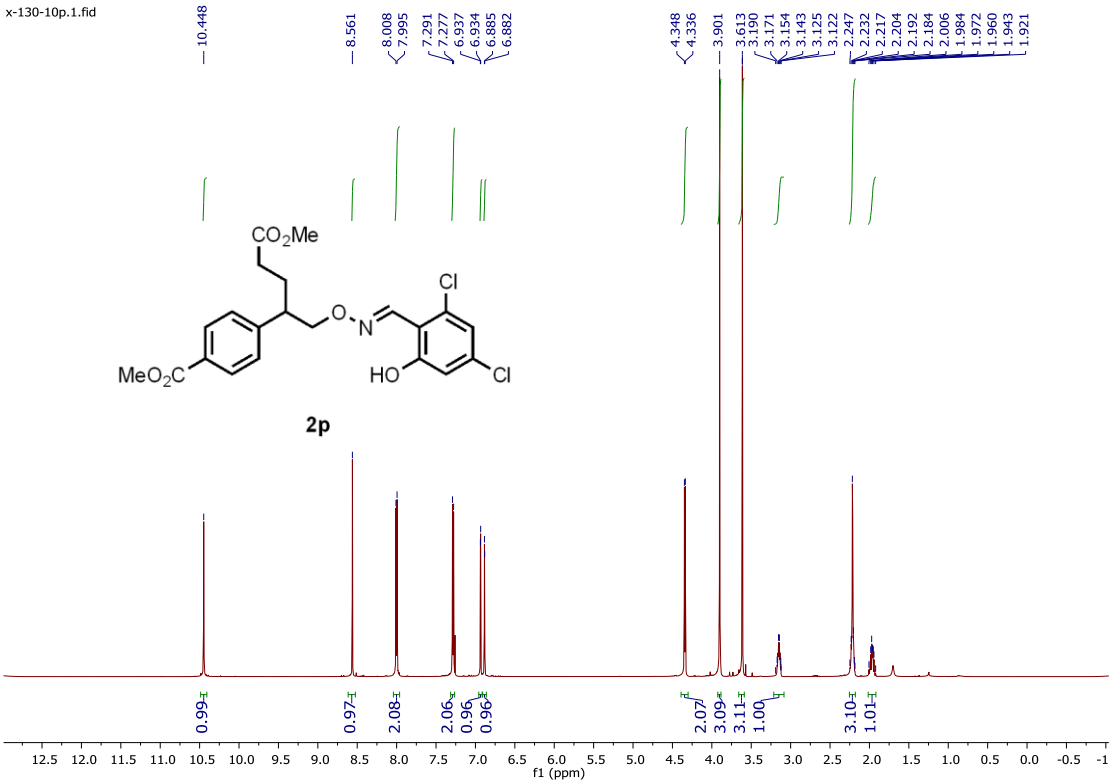

x-130-30p.2.fid
168.090
166.724
159.173
148.906
143.383
136.949
134.797
134.096
131.733
130.088
129.553
128.168
123.370
120.934
116.255
112.585
77.235 CDCl3
77.023 CDCl3
76.974
76.811 CDCl3
52.127
43.507
40.484
PhthN
Cl
O
N
MeO2C
HO
Cl
2m
f1 (ppm)


x-130-29pp.1.fid
NPhth
Cl
O
N
MeO2C
HO
Cl
2n
f1 (ppm)


x-130-29pp.2.fid
NPhth
Cl
O
N
MeO2C
HO
Cl
2n
f1 (ppm)


x-130-14p.1.fid
AcO
MeO2C
O
N
Cl
HO
Cl
2o
f1 (ppm)


x-130-14p.2.fid
AcO
MeO2C
O
N
Cl
HO
Cl
2o
f1 (ppm)


x-130-10p.1.fid
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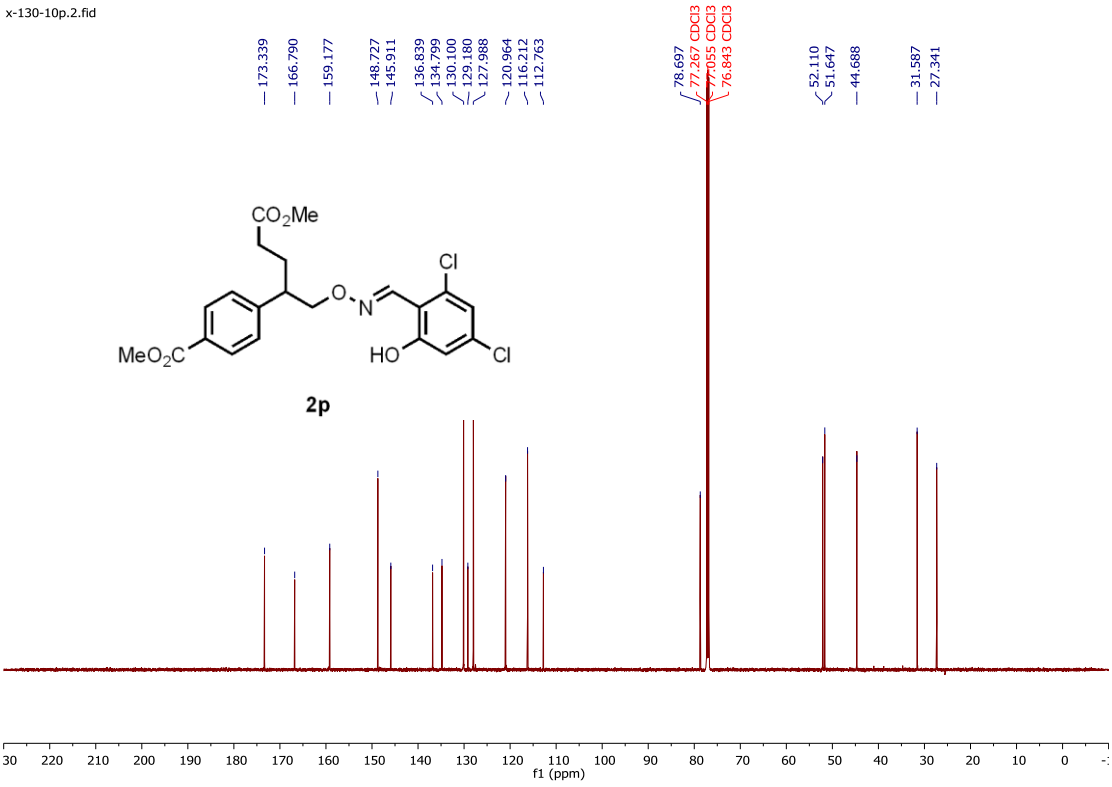
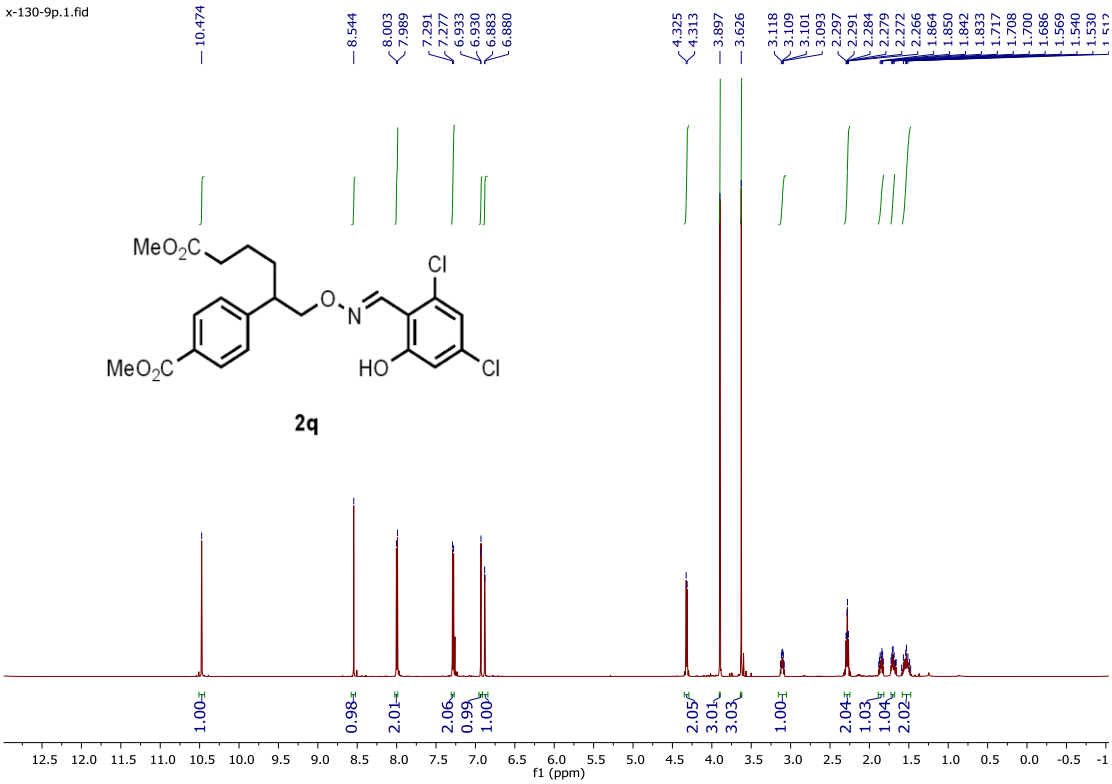
8.561
8.008
7.995
7.291
7.277
6.937
6.934
6.885
6.882
4.348
4.336
3.901
3.613
3.190
3.171
3.154
3.143
3.125
3.122
2.247
2.232
2.217
2.204
2.192
2.184
2.006
1.984
1.972
1.960
1.943
1.921
CO2Me
MeO2C
O
N
Cl
HO
Cl
2p
0.99
0.97
2.08
2.06
0.96
0.96
2.07
3.09
3.11
1.00
3.10
1.01
f1 (ppm)

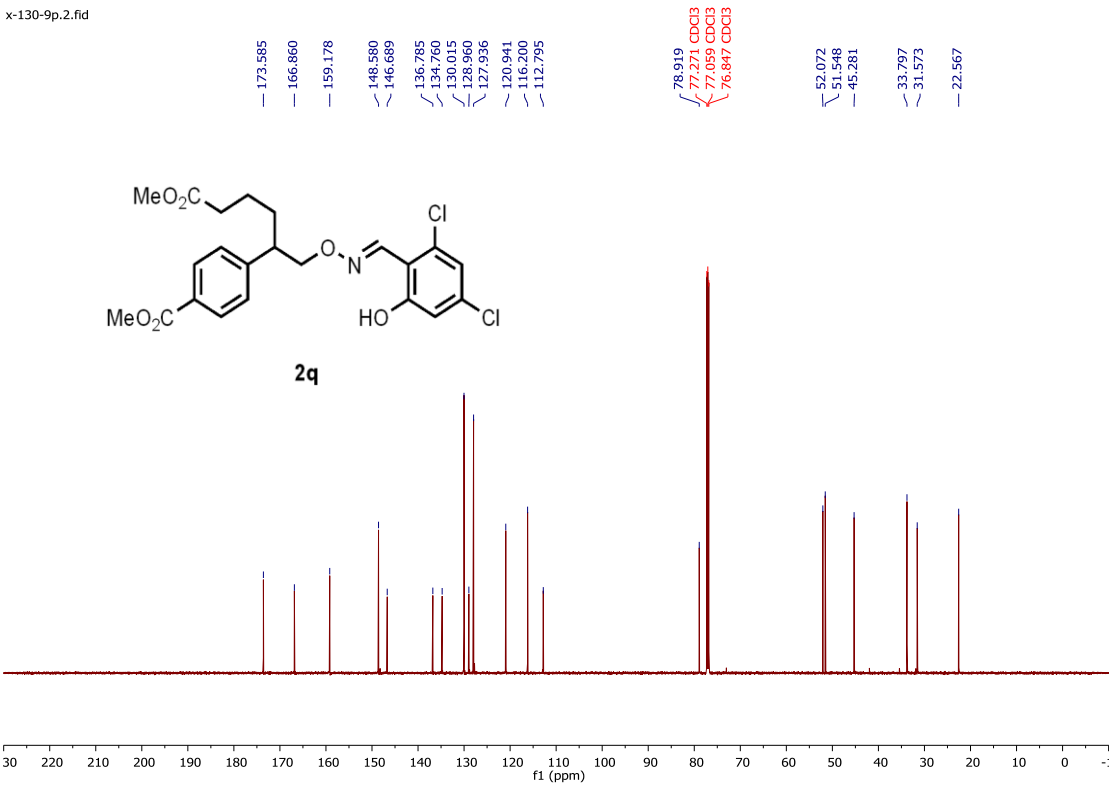

x-130-10p.2.fid
173.339
166.790
159.177
148.727
145.911
136.839
134.799
130.100
129.180
127.988
120.964
116.212
112.763
78.697
77.267 CDCl3
77.055 CDCl3
76.843 CDCl3
52.110
51.647
44.688
31.587
27.341
CO2Me
MeO2C
O
N
Cl
HO
Cl
2p
f1 (ppm)

x-130-9p.1.fid

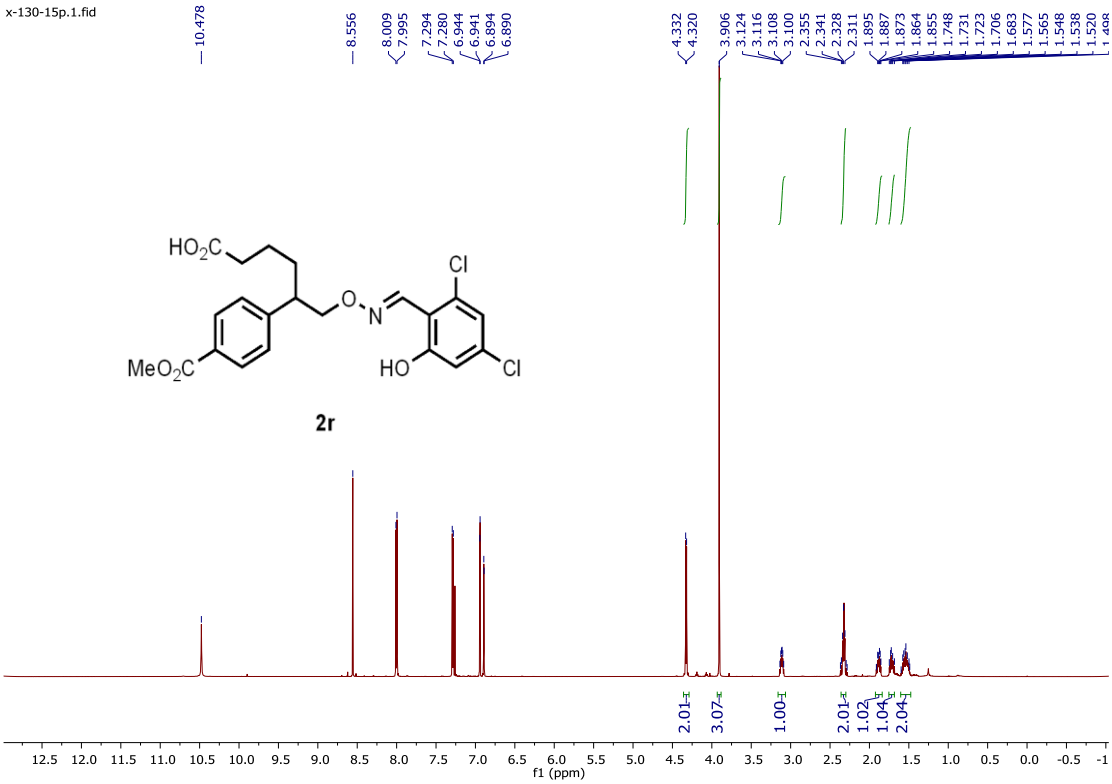


2q

x-130-9p.2.fid



2q


x-130-15p.1.fid
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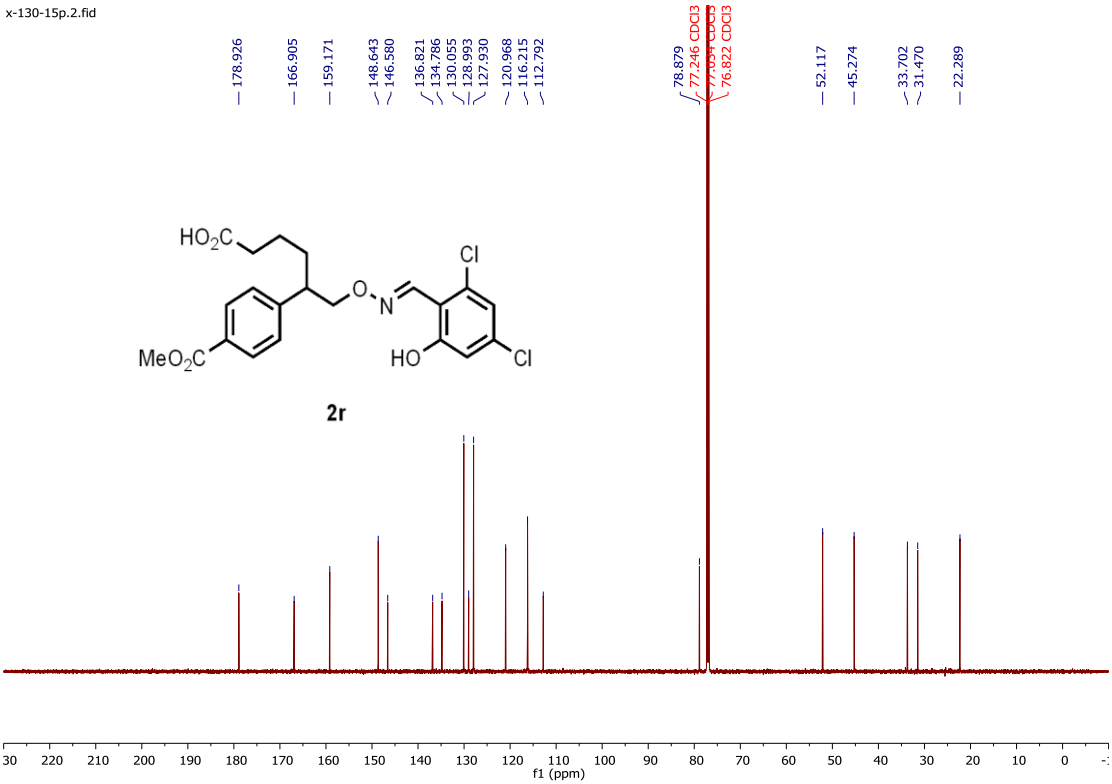
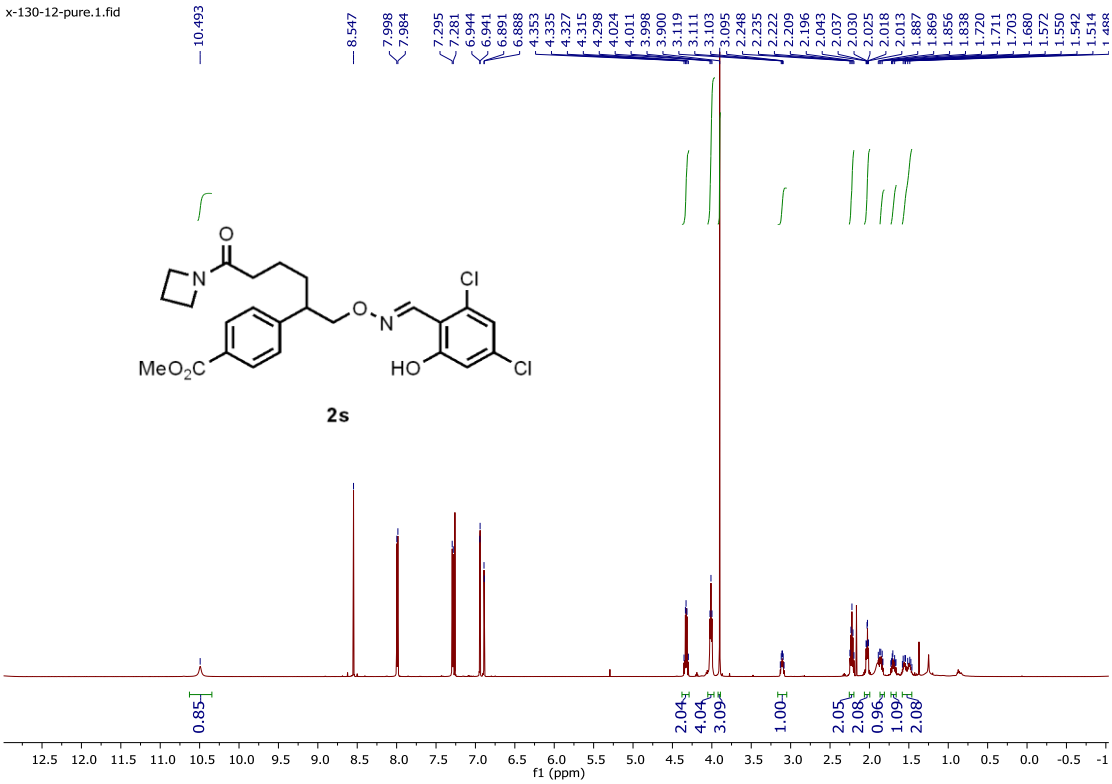
8.556
8.009
7.995
7.294
7.280
6.944
6.941
6.894
6.890
4.332
4.320
3.906
3.124
3.116
3.108
3.100
2.355
2.341
2.328
2.311
1.895
1.887
1.873
1.864
1.855
1.748
1.731
1.723
1.706
1.683
1.577
1.565
1.548
1.538
1.520
HO2C
MeO2C
O
N
Cl
HO
Cl
2r
2.01
3.07
1.00
2.01
1.02
1.04
2.04
f1 (ppm)


x-130-15p.2.fid
178.926
166.905
159.171
148.643
146.580
136.821
134.786
130.055
128.993
127.930
120.968
116.215
112.792
78.879
77.246 CDCl3
77.034 CDCl3
76.822 CDCl3
52.117
45.274
33.702
31.470
22.289
HO2C
MeO2C
O
N
Cl
HO
Cl
2r
f1 (ppm)


x-130-12-pure.1.fid
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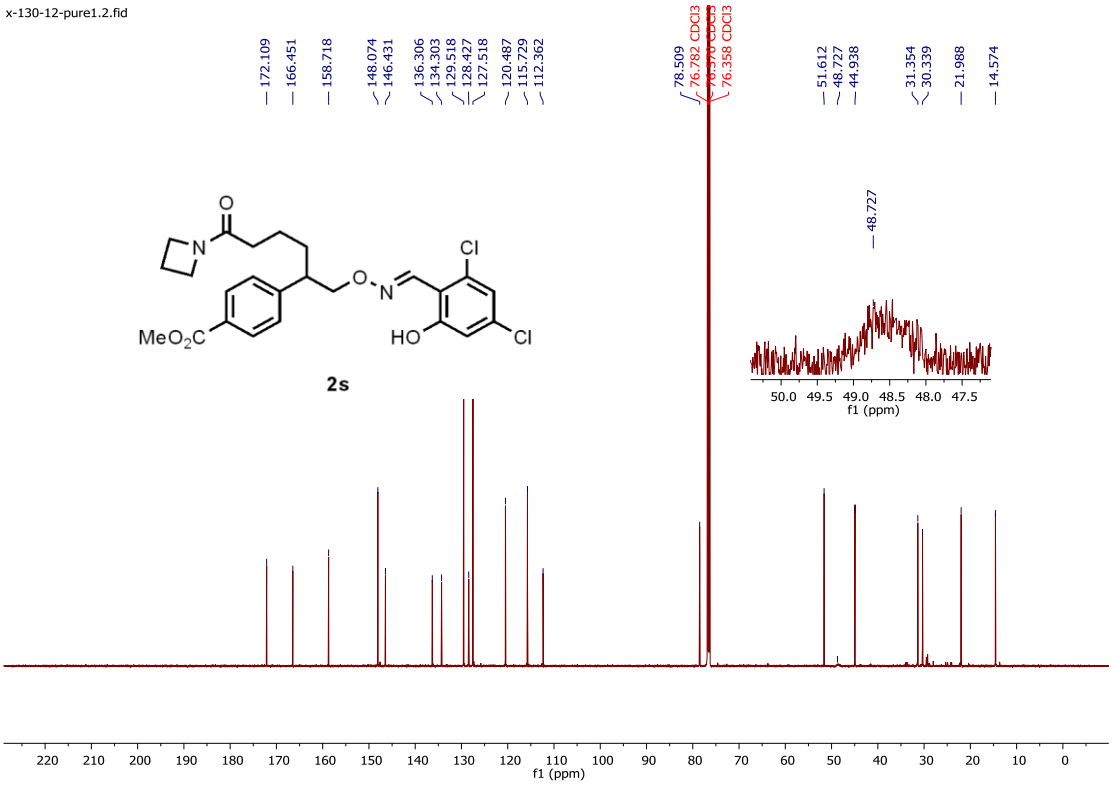
8.547
7.998
7.984
7.295
7.281
6.944
6.941
6.891
6.888
4.353
4.335
4.327
4.315
4.298
4.024
4.011
3.998
3.900
3.119
3.111
3.103
3.095
2.248
2.235
2.222
2.209
2.196
2.043
2.037
2.030
2.025
2.018
2.013
1.887
1.869
1.856
1.838
1.720
1.711
1.703
1.680
1.572
1.550
1.542
1.514
O
N
O
N
Cl
Cl
HO
MeO2C
2s
0.85
2.04
4.04
3.09
1.00
2.05
2.08
0.96
1.09
2.08
f1 (ppm)


x-130-12-pure1.2.fid
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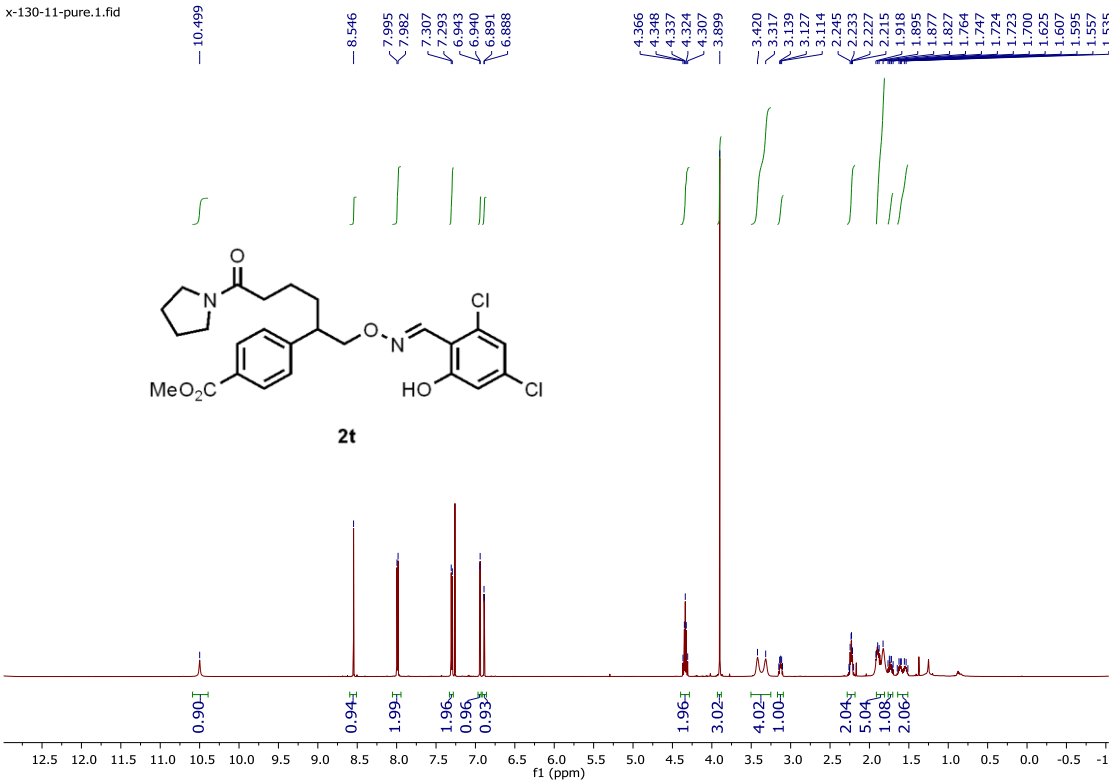
166.451
158.718
148.074
146.431
136.306
134.303
129.518
128.427
127.518
120.487
115.729
112.362
78.509
76.782 CDCl3
76.570 CDCl3
76.358 CDCl3
51.612
48.727
44.938
31.354
30.339
21.988
14.574
48.727
O
N
O
N
Cl
Cl
HO
MeO2C
2s
f1 (ppm)


x-130-11-pure.1.fid
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8.546
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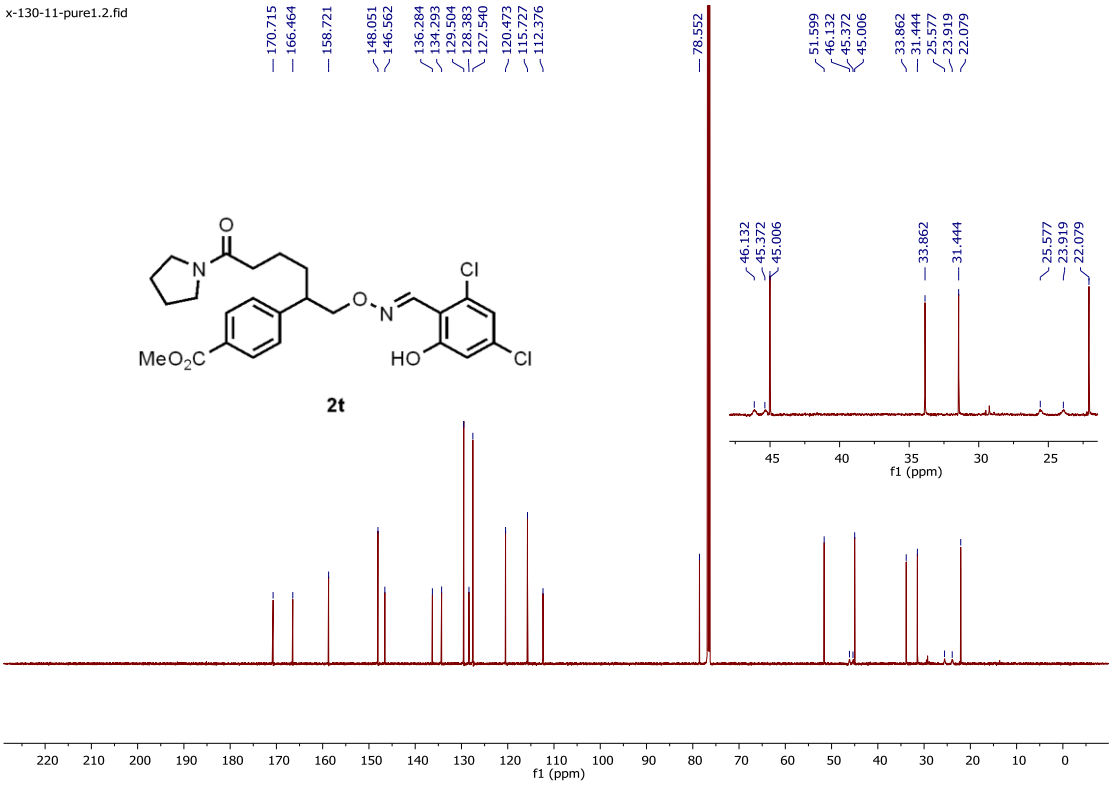
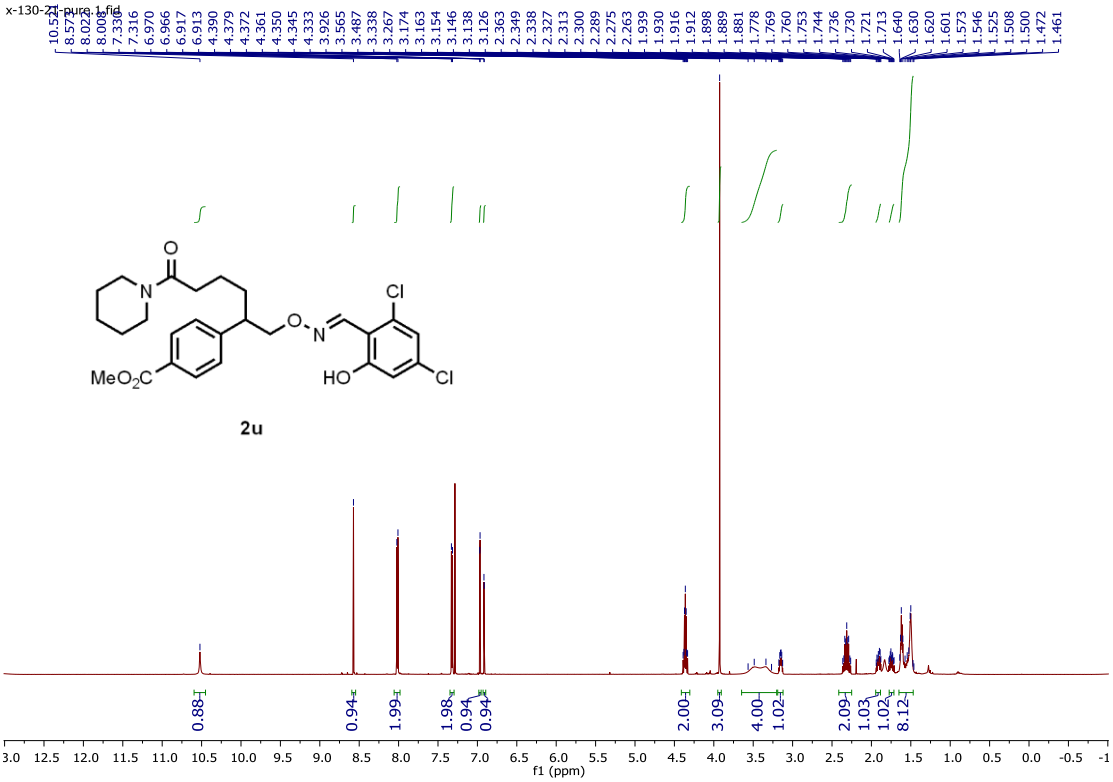
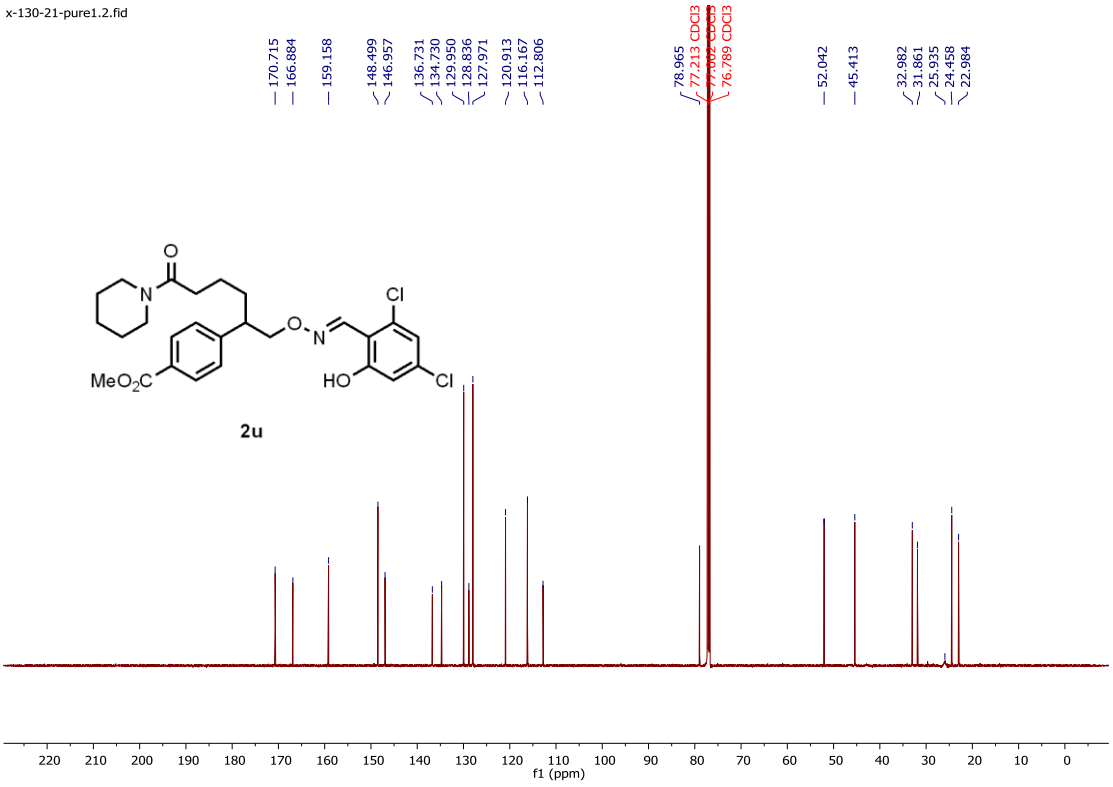
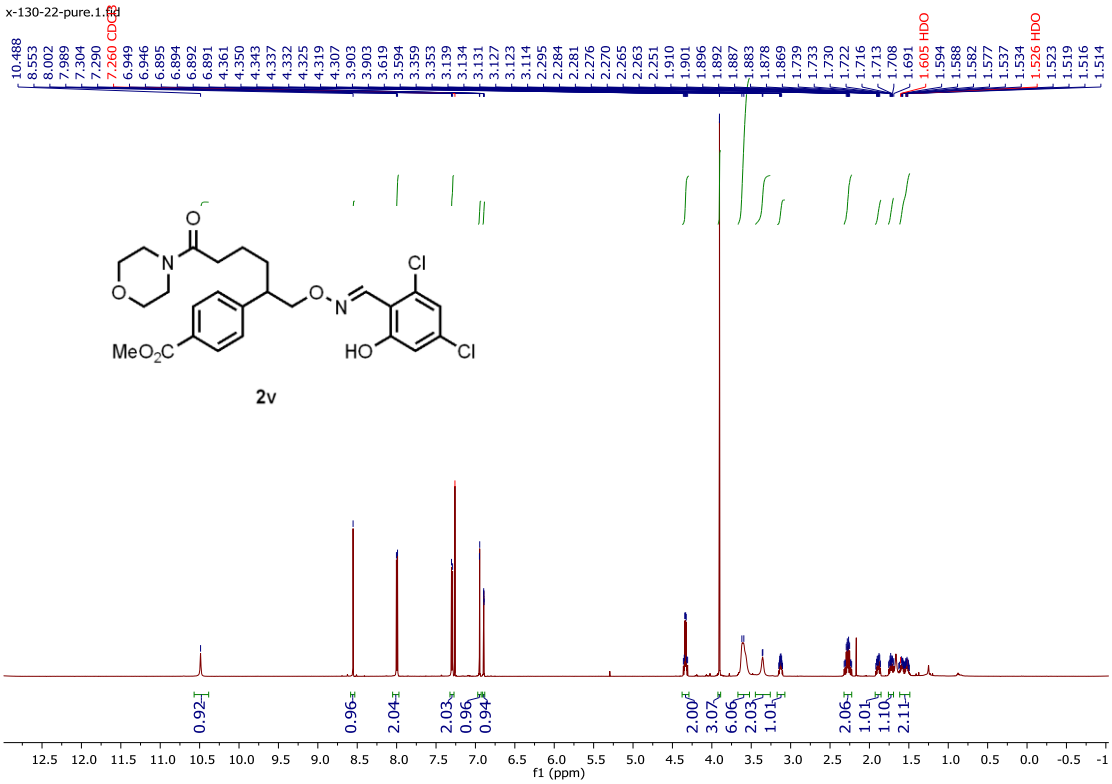
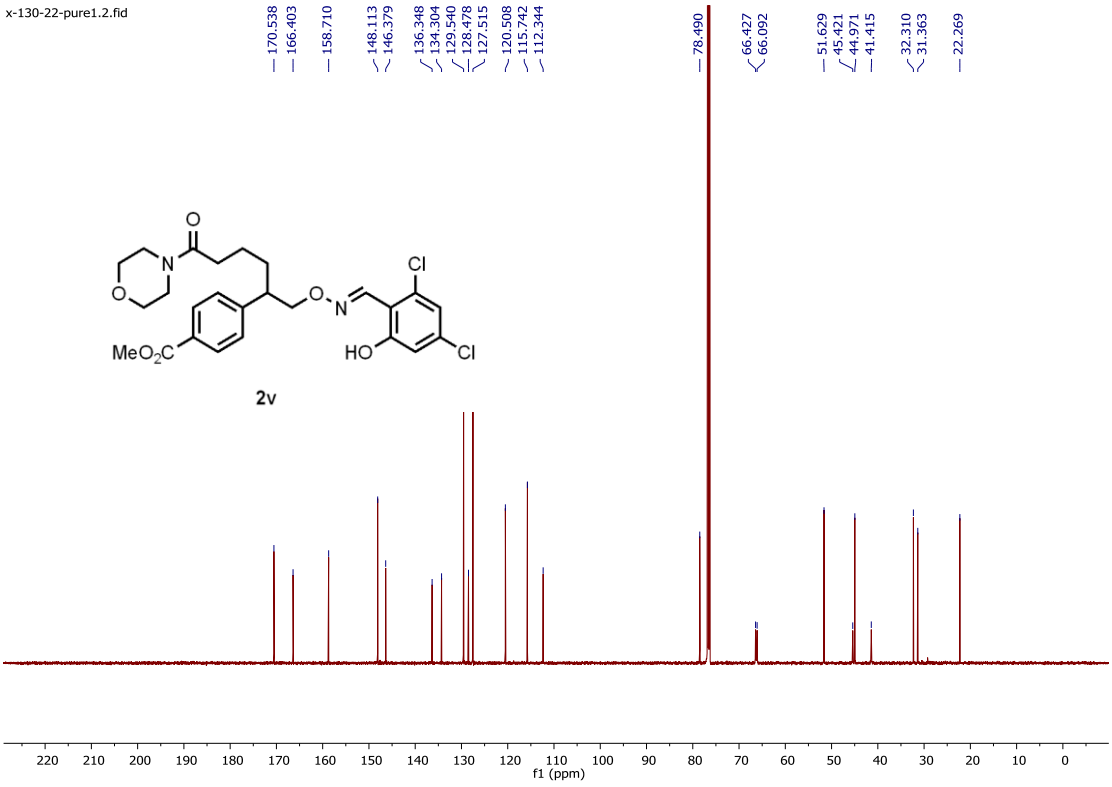
7.307
7.293
6.943
6.940
6.891
6.888
4.366
4.348
4.337
4.324
4.307
3.899
3.420
3.317
3.139
3.127
3.114
2.245
2.233
2.227
2.215
1.918
1.895
1.877
1.827
1.764
1.747
1.724
1.723
1.700
1.625
1.607
1.595
1.557
O
N
O
N
Cl
MeO2C
HO
Cl
2t
0.90
0.94
1.99
1.96
0.96
0.93
1.96
3.02
4.02
1.00
2.04
5.04
1.08
2.06
f1 (ppm)

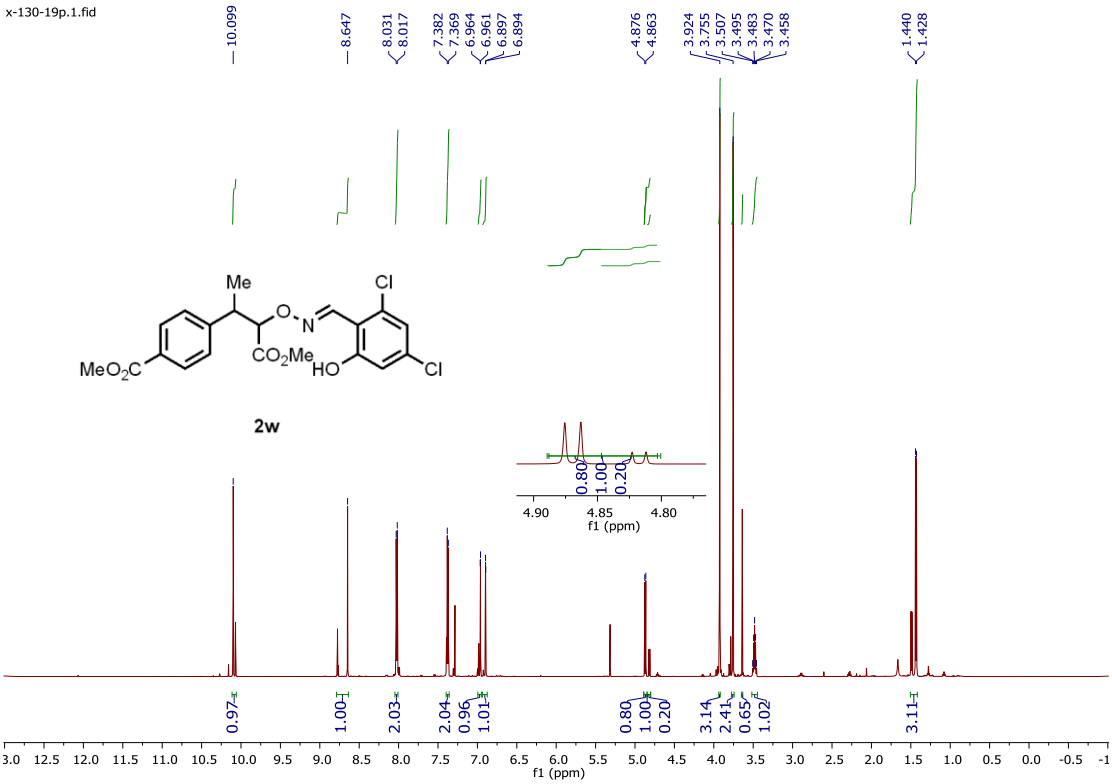

x-130-11-pure1.2.fid
170.715
166.464
158.721
148.051
146.562
136.284
134.293
129.504
128.383
127.540
120.473
115.727
112.376
78.552
51.599
46.132
45.372
45.006
33.862
31.444
25.577
23.919
22.079
O
N
O
N
Cl
MeO2C
HO
Cl
2t
f1 (ppm)
f1 (ppm)

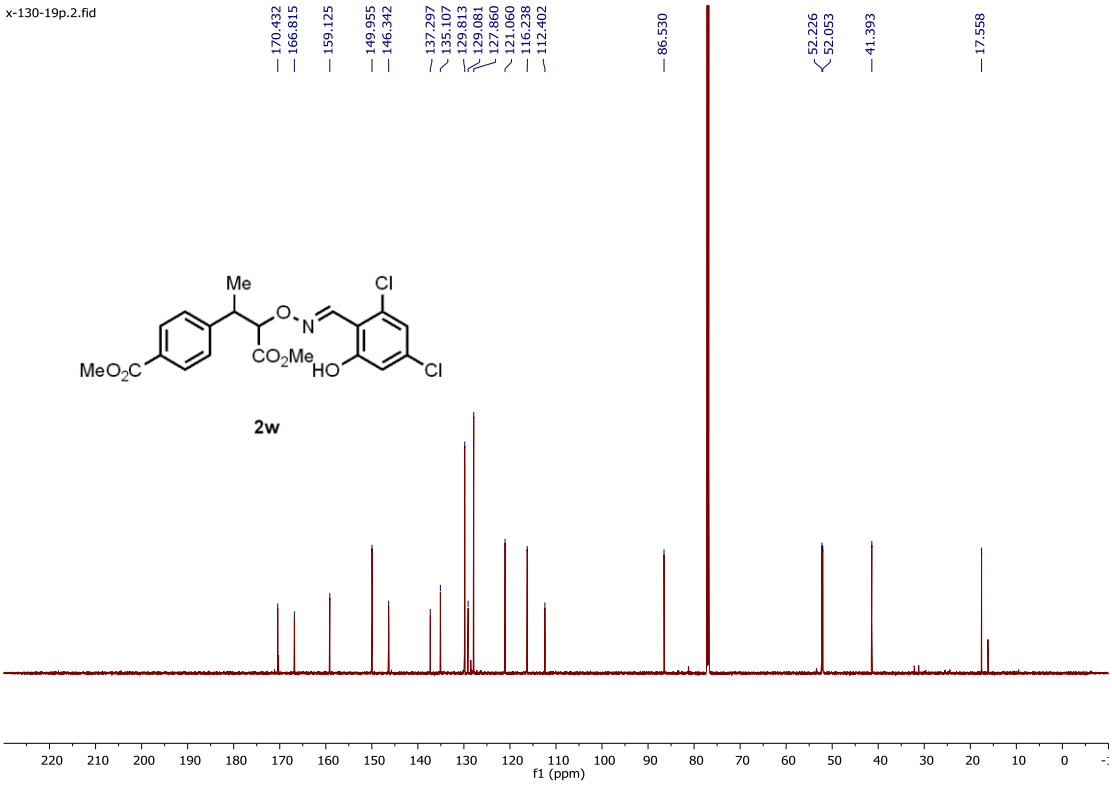

x-130-21-pure.1.fid
2u
f1 (ppm)

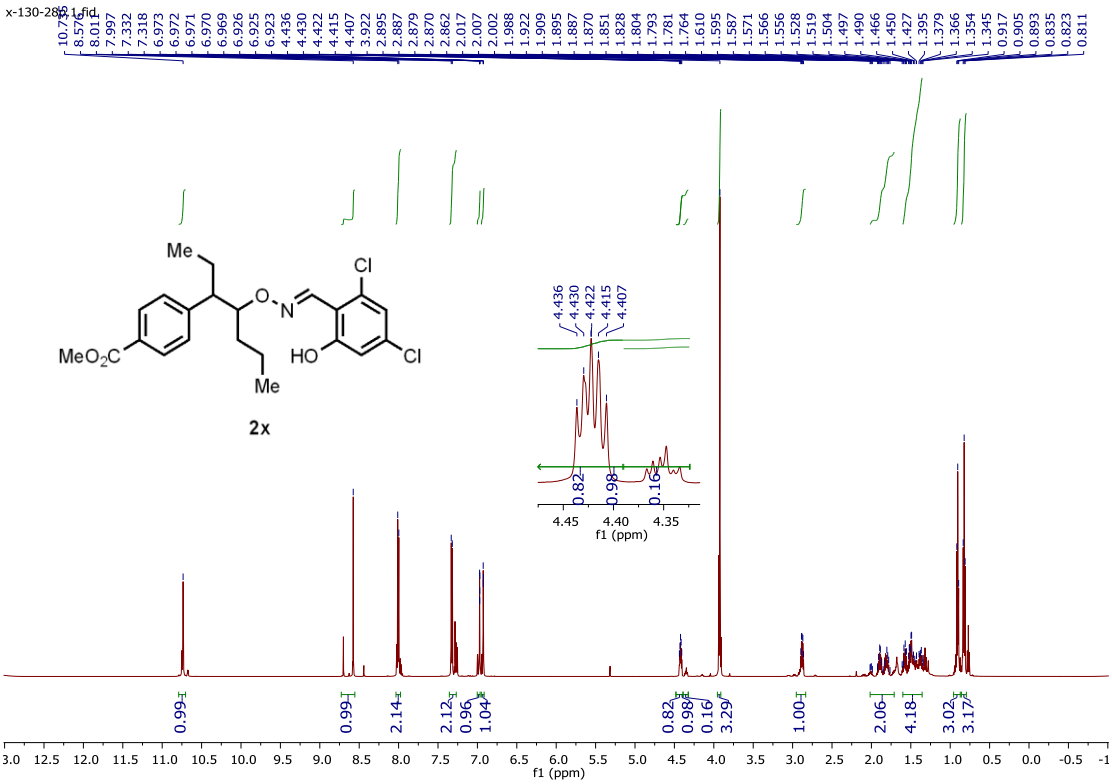

x-130-21-pure1.2.fid
2u
f1 (ppm)

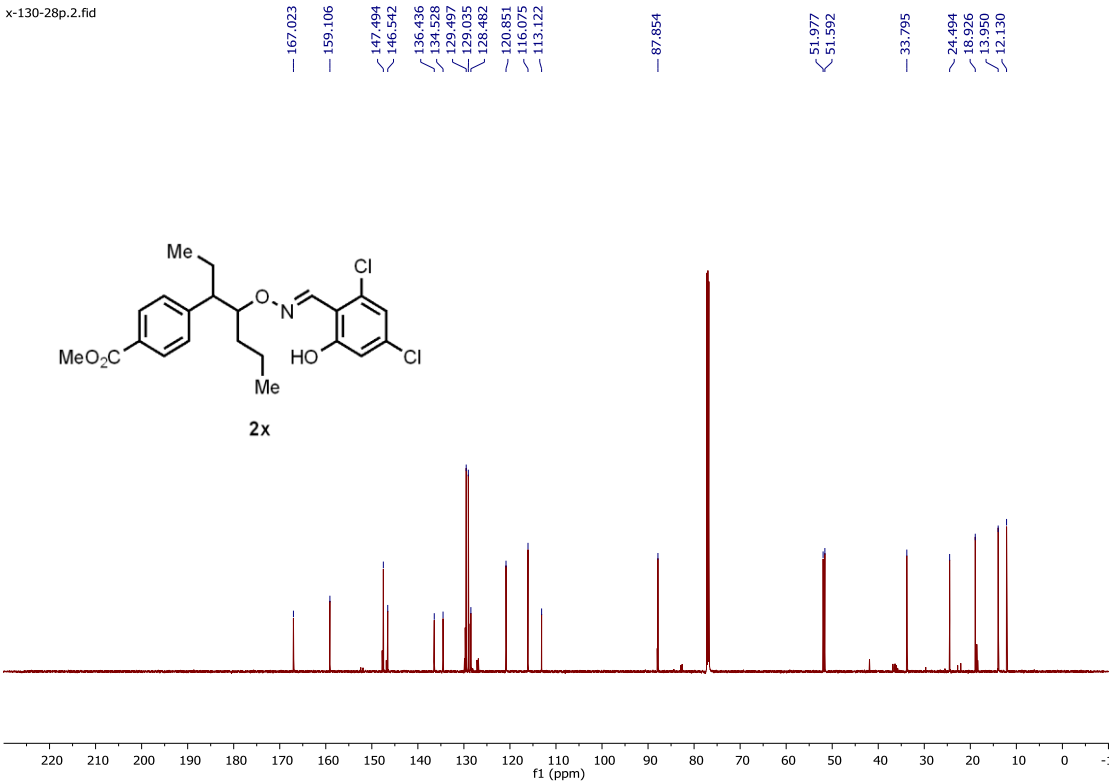

x-130-22-pure.1.fid
10.488
8.553
8.002
7.989
7.304
7.290
7.260 CDCl3
6.949
6.946
6.895
6.894
6.892
6.891
4.361
4.350
4.343
4.337
4.332
4.325
4.319
4.307
3.903
3.903
3.619
3.594
3.359
3.353
3.139
3.134
3.131
3.127
3.123
3.114
2.295
2.284
2.281
2.276
2.270
2.265
2.263
2.251
1.910
1.901
1.896
1.892
1.887
1.883
1.878
1.869
1.739
1.733
1.730
1.722
1.716
1.713
1.708
1.691
1.605 HDO
1.594
1.588
1.582
1.577
1.537
1.534
1.526 HDO
1.523
1.519
1.516
1.514
MeO2C
HO
Cl
Cl
2v
0.92
0.96
2.04
2.03
0.96
0.94
2.00
3.07
6.06
2.03
1.01
2.06
1.01
1.10
2.11
f1 (ppm)

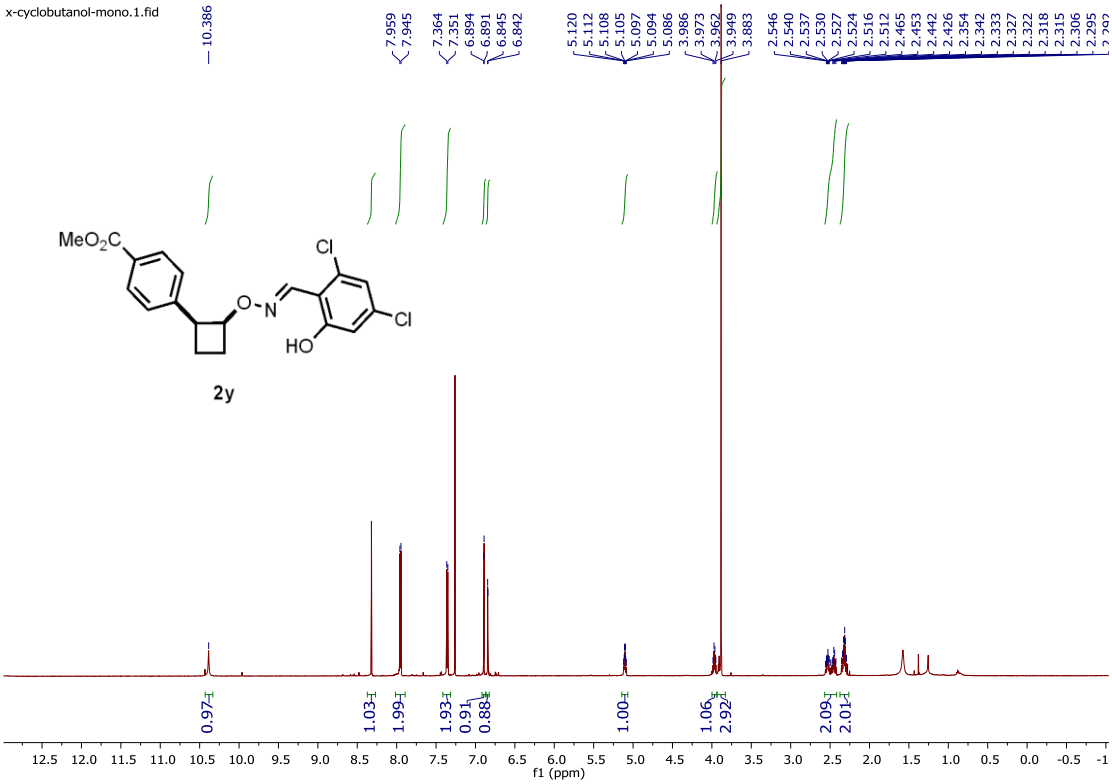

x-130-22-pure1.2.fid
170.538
166.403
158.710
148.113
146.379
136.348
134.304
129.540
128.478
127.515
120.508
115.742
112.344
78.490
66.427
66.092
51.629
45.421
44.971
41.415
32.310
31.363
22.269
MeO2C
HO
Cl
Cl
2v
f1 (ppm)

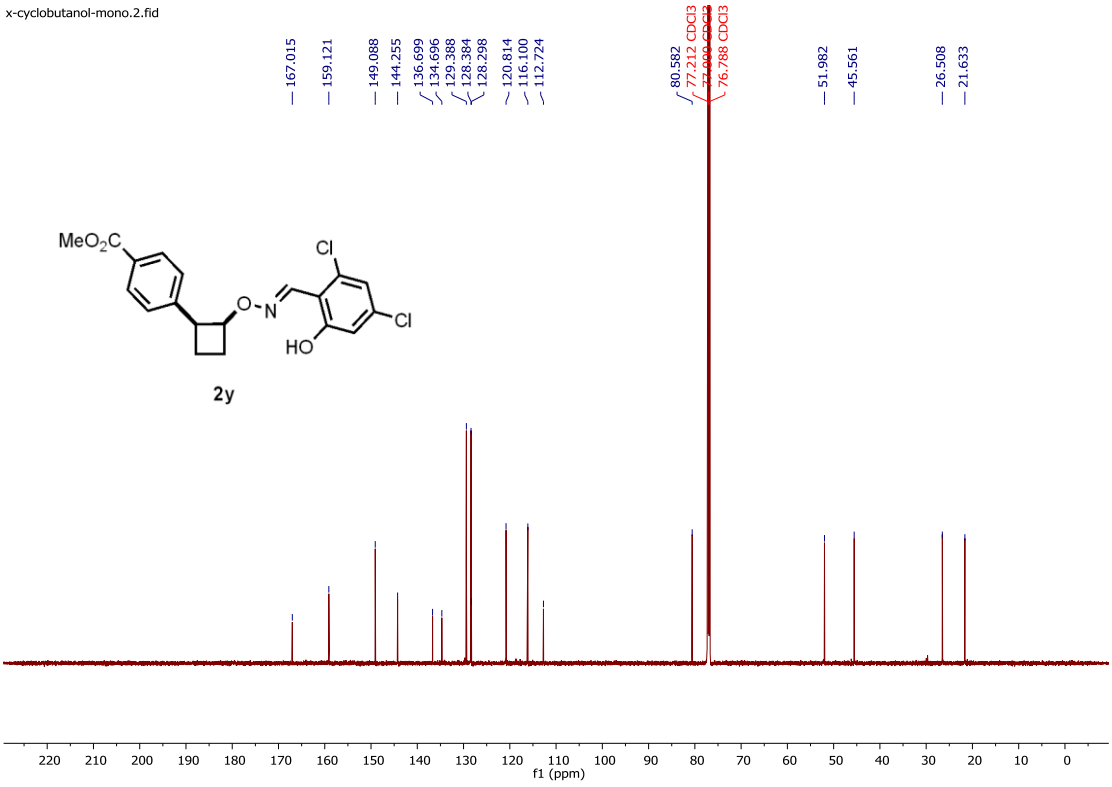

x-130-19p.1.fid
10.099
8.647
8.031
8.017
7.382
7.369
6.964
6.961
6.897
6.894
4.876
4.863
3.924
3.755
3.507
3.495
3.483
3.470
3.458
1.440
1.428
Me
Cl
O
N
CO2Me
HO
MeO2C
Cl
2w
0.80
1.00
0.20
4.90
4.85
4.80
f1 (ppm)
0.97
1.00
2.03
2.04
0.96
1.01
0.80
1.00
0.20
3.14
2.41
0.65
1.02
3.11
f1 (ppm)

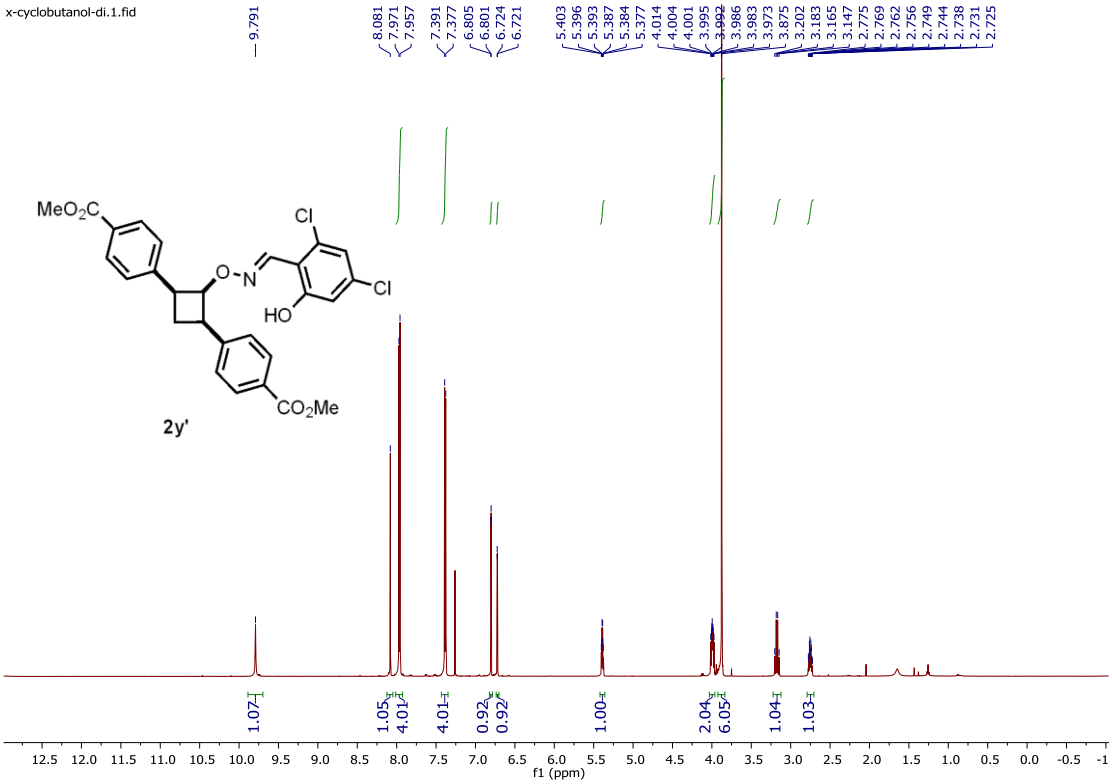

x-130-19p.2.fid
170.432
166.815
159.125
149.955
146.342
137.297
135.107
129.813
129.081
127.860
121.060
116.238
112.402
86.530
52.226
52.053
41.393
17.558
Me
Cl
O
N
CO2Me
HO
MeO2C
Cl
2w
f1 (ppm)

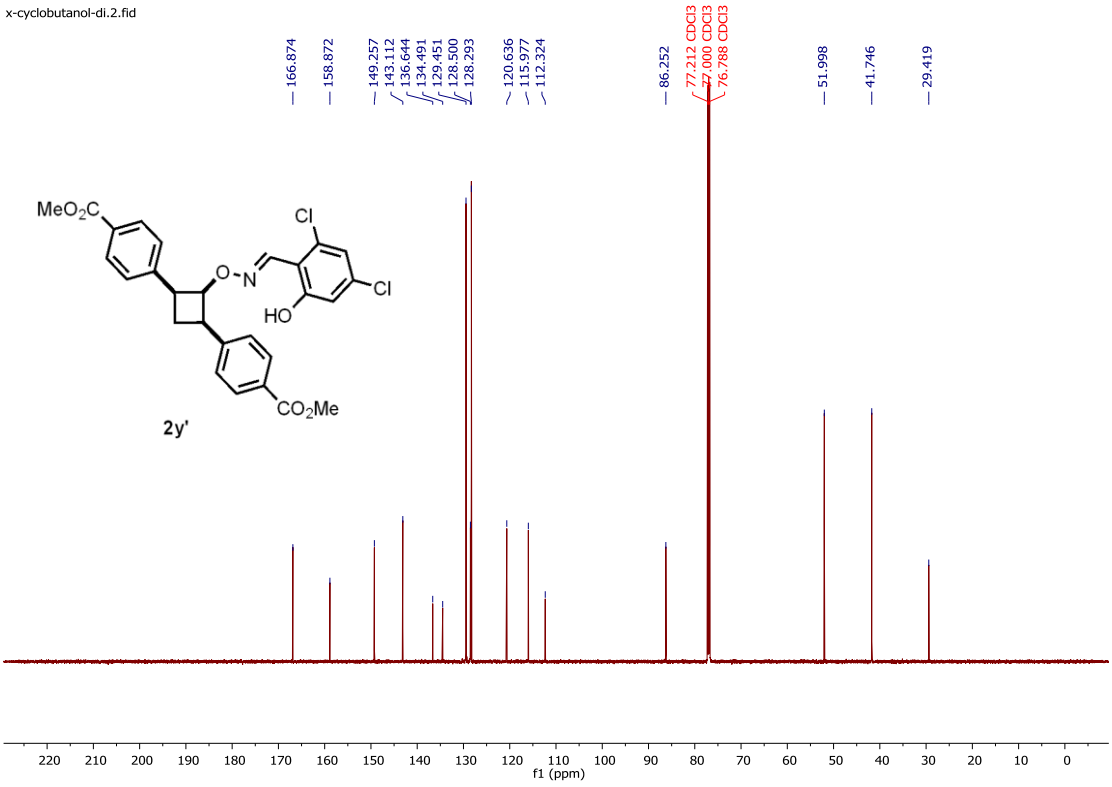

x-130-28p1.fid
Me
Cl
O
N
MeO2C
HO
Cl
Me
2x
4.436
4.430
4.422
4.415
4.407
0.82
0.98
0.16
4.45
4.40
4.35
f1 (ppm)
0.99
0.99
2.14
2.12
0.96
1.04
0.82
0.98
0.16
3.29
1.00
2.06
4.18
3.02
3.17
f1 (ppm)

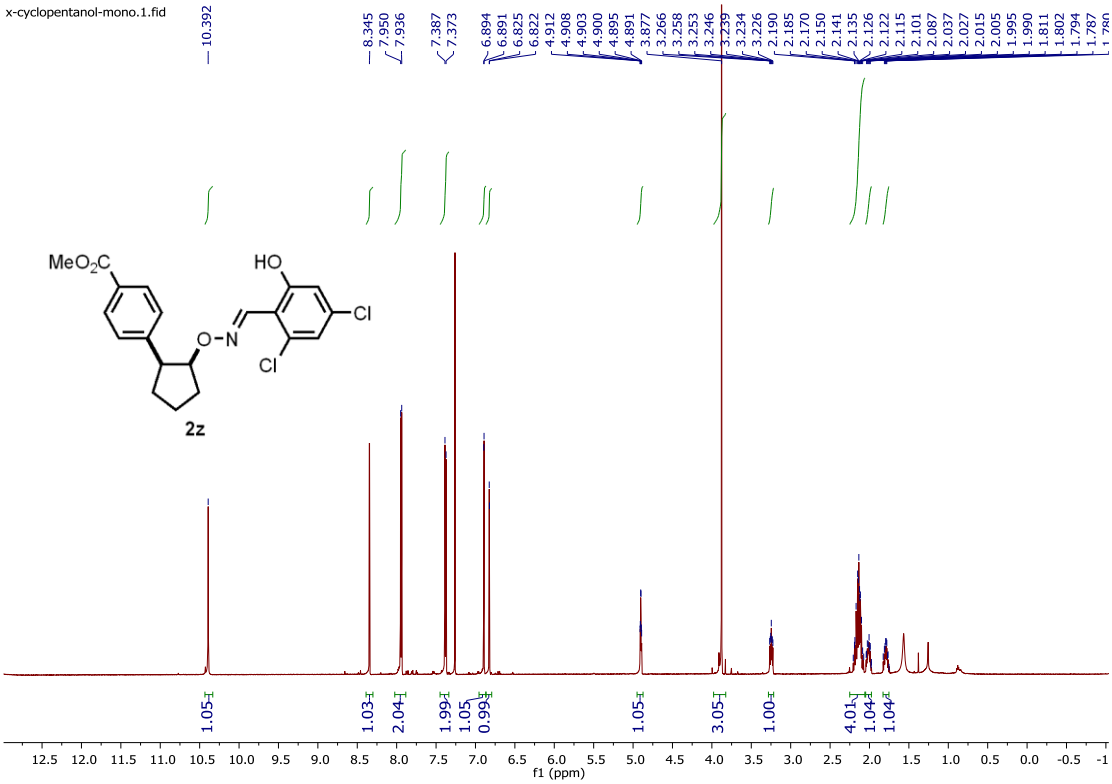

x-130-28p.2.fid
167.023
159.106
147.494
146.542
136.436
134.528
129.497
129.035
128.482
120.851
116.075
113.122
87.854
51.977
51.592
33.795
24.494
18.926
13.950
12.130
Me
Cl
O
N
MeO2C
HO
Cl
Me
2x
f1 (ppm)

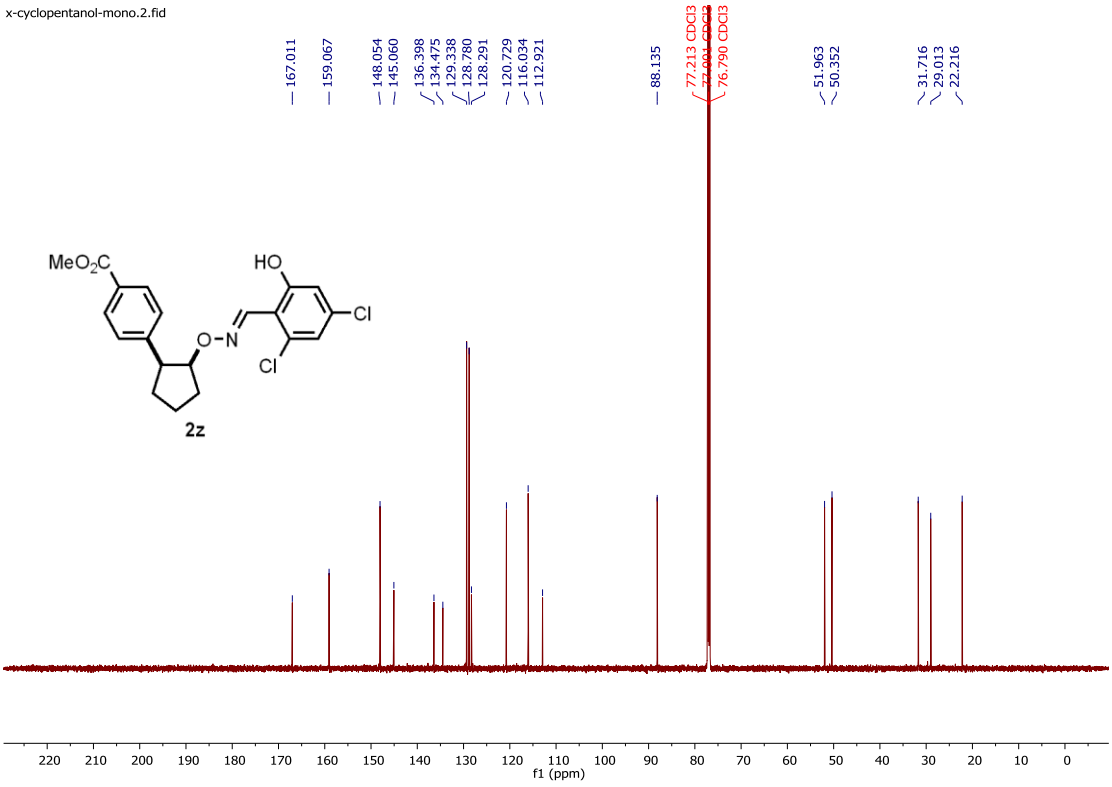

x-cyclobutanol-mono.1.fid
10.386
7.959
7.945
7.364
7.351
6.894
6.891
6.845
6.842
5.120
5.112
5.108
5.105
5.097
5.094
5.086
3.986
3.973
3.962
3.949
3.883
2.546
2.540
2.537
2.530
2.527
2.524
2.516
2.512
2.465
2.453
2.442
2.426
2.354
2.342
2.333
2.327
2.322
2.318
2.315
2.306
2.295
MeO2C
Cl
O
N
Cl
HO
2y
0.97
1.03
1.99
1.93
0.91
0.88
1.00
1.06
2.92
2.09
2.01
f1 (ppm)

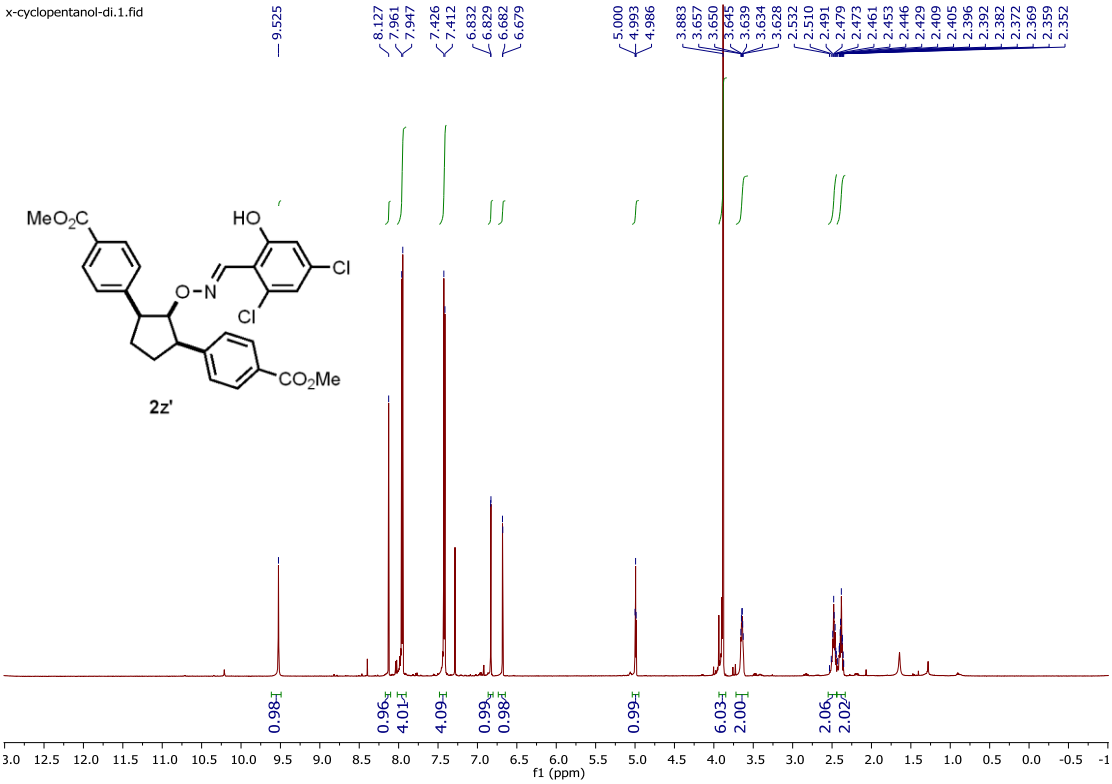

x-cyclobutanol-mono.2.fid
167.015
159.121
149.088
144.255
136.699
134.696
129.388
128.384
128.298
120.814
116.100
112.724
80.582
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
51.982
45.561
26.508
21.633
MeO2C
Cl
O
N
Cl
HO
2y
f1 (ppm)

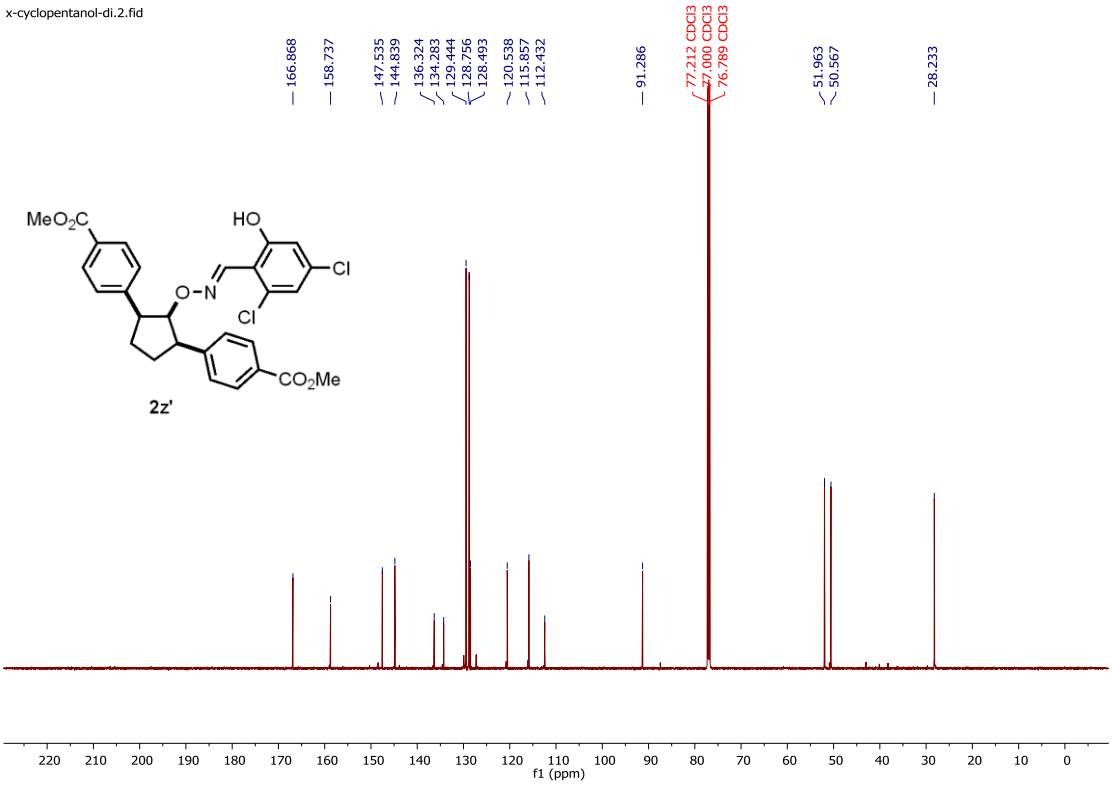

x-cyclobutanol-di.1.fid
9.791
8.081
7.971
7.957
7.391
7.377
6.805
6.801
6.724
6.721
5.403
5.396
5.393
5.387
5.384
5.377
4.014
4.004
4.001
3.995
3.992
3.986
3.983
3.973
3.875
3.202
3.183
3.165
3.147
2.775
2.769
2.762
2.756
2.749
2.744
2.738
2.731
2.725
MeO2C
Cl
O
N
Cl
HO
CO2Me
2y'
1.07
1.05
4.01
4.01
0.92
0.92
1.00
2.04
6.05
1.04
1.03
f1 (ppm)

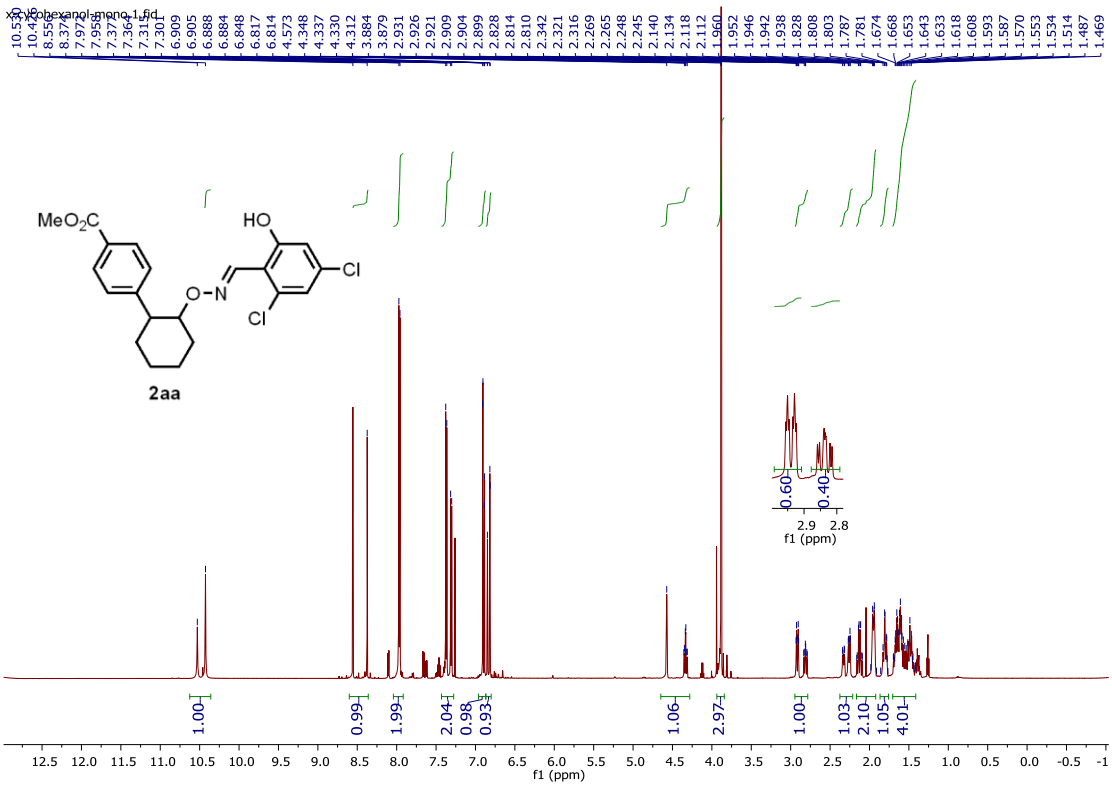

x-cyclobutanol-di.2.fid
166.874
158.872
149.257
143.112
136.644
134.491
129.451
128.500
128.293
120.636
115.977
112.324
86.252
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
51.998
41.746
29.419
MeO2C
Cl
O
N
Cl
HO
CO2Me
2y'
f1 (ppm)

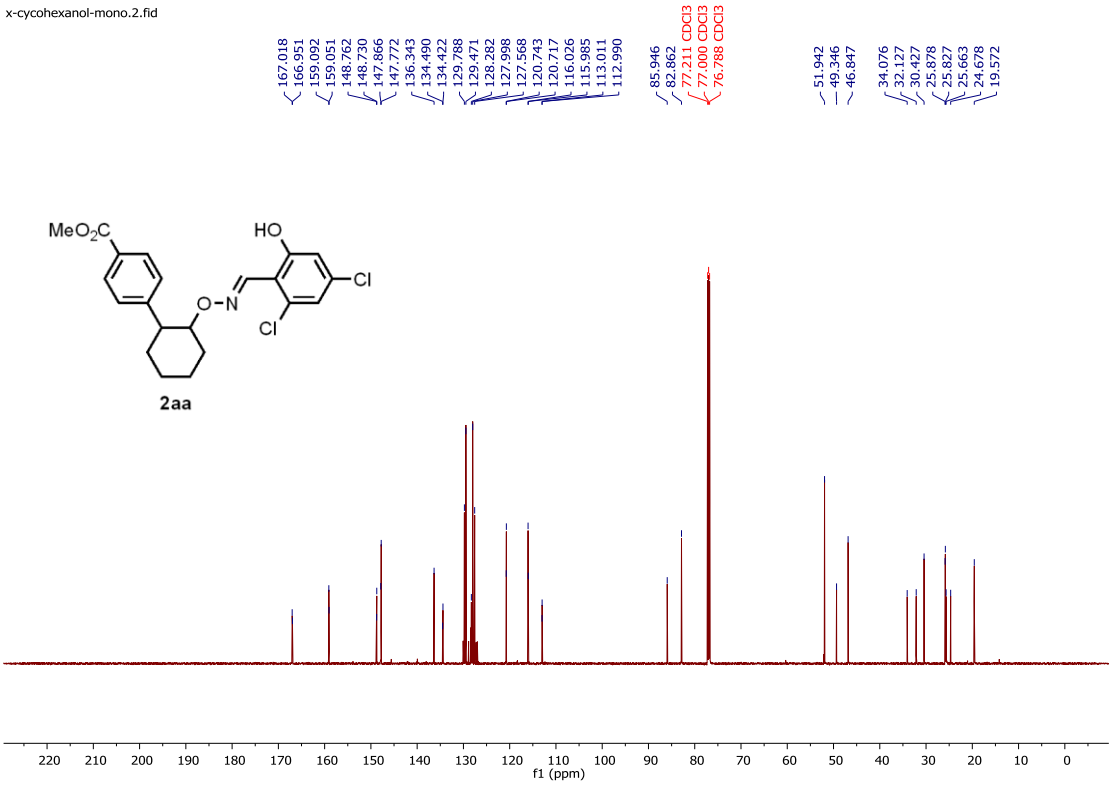

x-cyclopentanol-mono.1.fid
MeO2C
HO
Cl
O-N
Cl
2z
f1 (ppm)

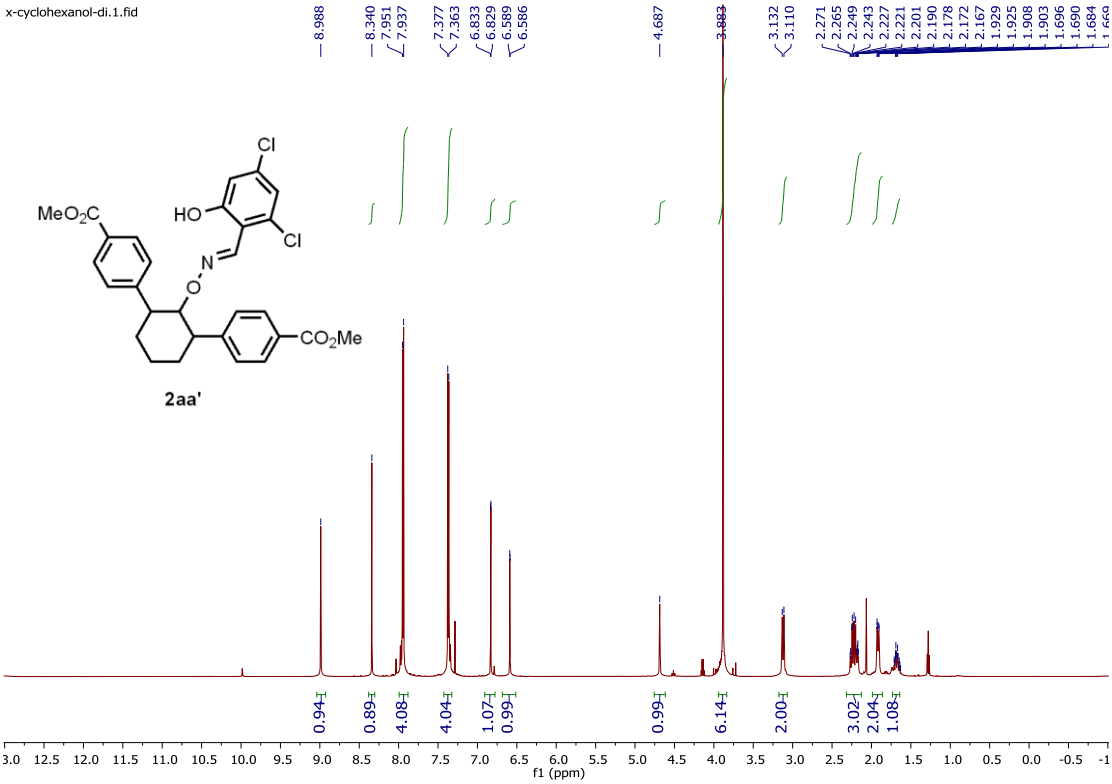

x-cyclopentanol-mono.2.fid
MeO2C
HO
Cl
O-N
Cl
2z
77.213 CDCl3
77.001 CDCl3
76.790 CDCl3
f1 (ppm)

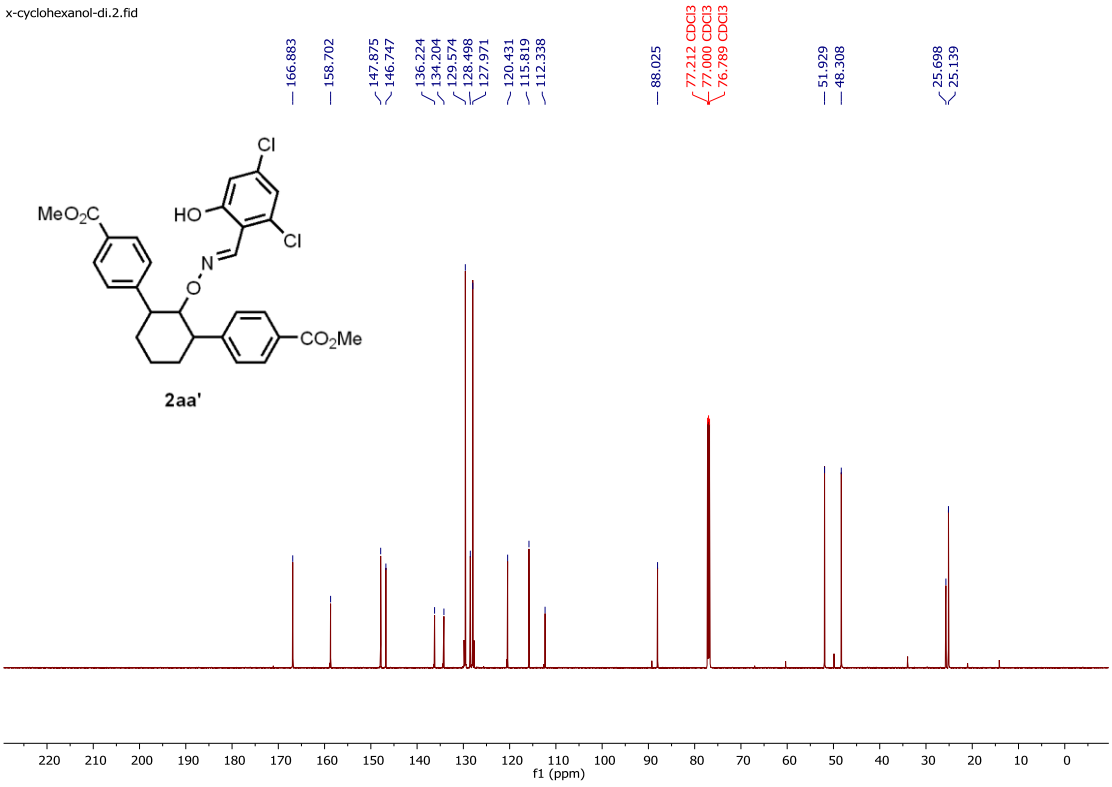

x-cyclopentanol-di.1.fid
9.525
8.127
7.961
7.947
7.426
7.412
6.832
6.829
6.682
6.679
5.000
4.993
4.986
3.883
3.657
3.650
3.645
3.639
3.634
3.628
2.532
2.510
2.491
2.479
2.473
2.461
2.453
2.446
2.429
2.409
2.405
2.396
2.392
2.382
2.372
2.369
2.359
2.352
MeO2C
HO
Cl
O-N
Cl
CO2Me
2z'
0.98
0.96
4.01
4.09
0.99
0.98
0.99
6.03
2.00
2.06
2.02
f1 (ppm)

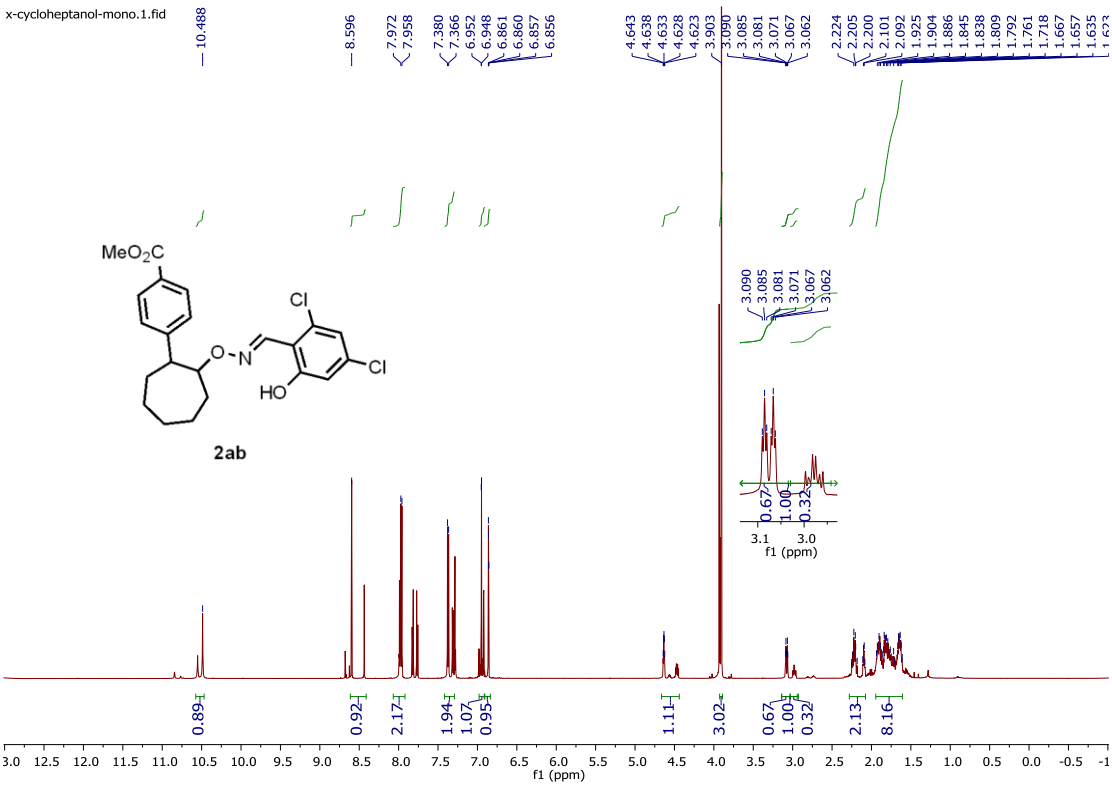

x-cyclopentanol-di.2.fid
166.868
158.737
147.535
144.839
136.324
134.283
129.444
128.756
128.493
120.538
115.857
112.432
91.286
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
51.963
50.567
28.233
MeO2C
HO
Cl
O-N
Cl
CO2Me
2z'
f1 (ppm)

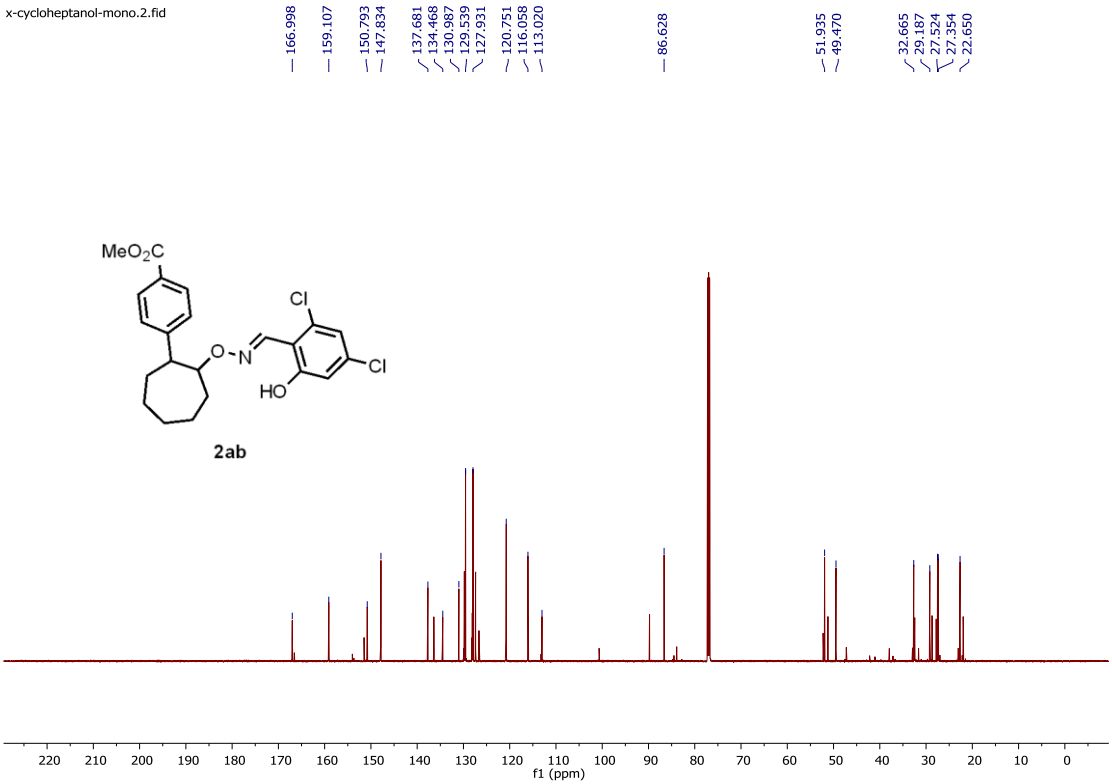

x-cyclohexanol-mono.1.fid
MeO2C
HO
Cl
O-N
Cl
2aa
1.00
0.99
1.99
2.04
0.98
0.93
1.06
2.97
1.00
1.03
2.10
1.05
4.01
f1 (ppm)

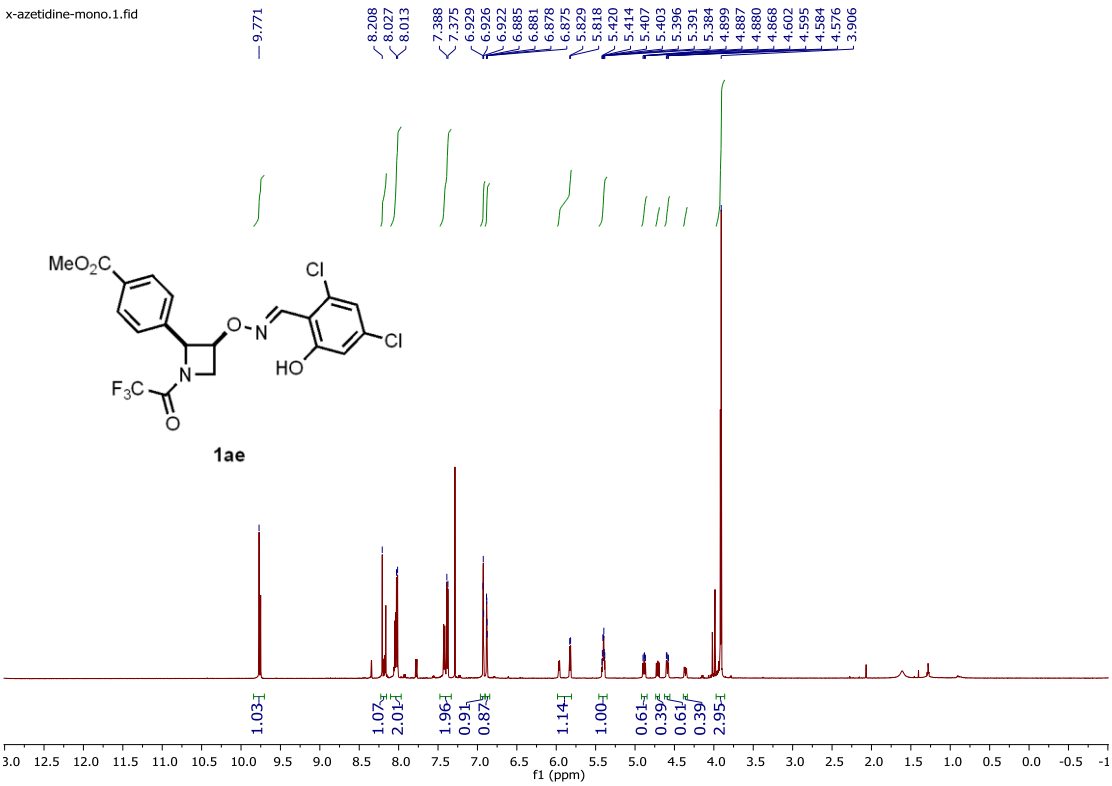

x-cycohexanol-mono.2.fid
MeO2C
HO
Cl
O-N
Cl
2aa
f1 (ppm)

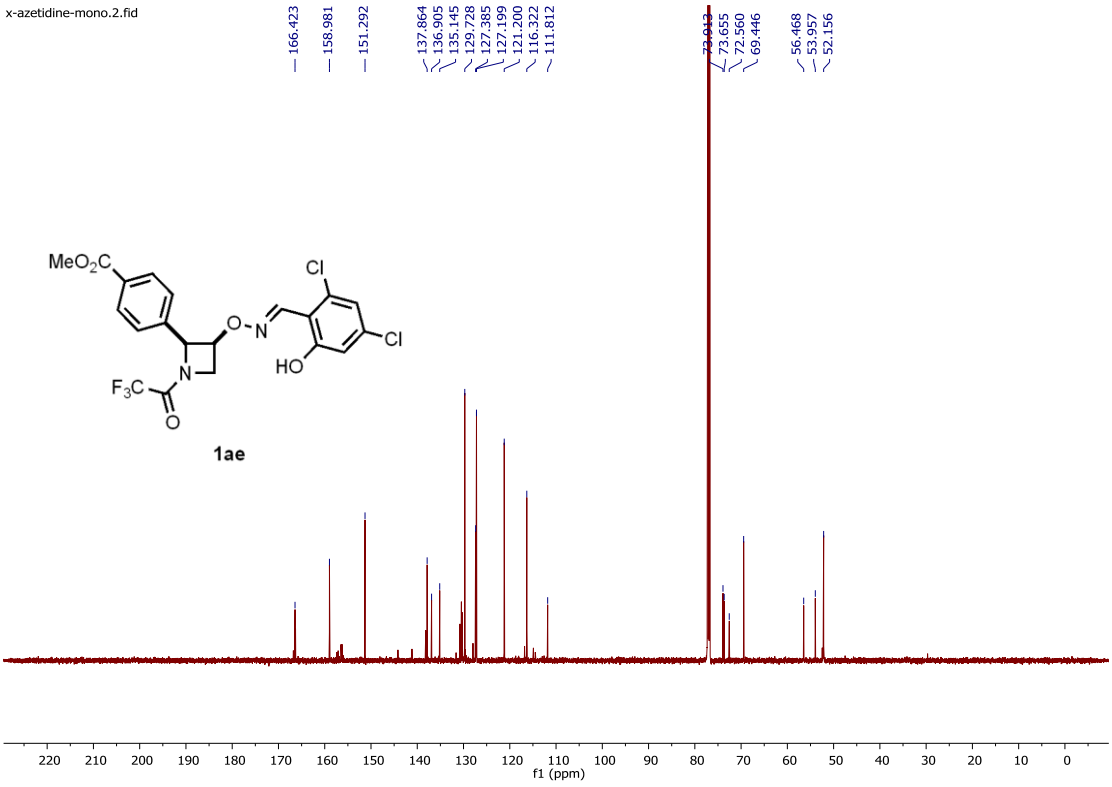

x-cyclohexanol-di.1.fid
8.988
8.340
7.951
7.937
7.377
7.363
6.833
6.829
6.589
6.586
4.687
3.883
3.132
3.110
2.271
2.265
2.249
2.243
2.227
2.221
2.201
2.190
2.178
2.172
2.167
1.929
1.925
1.908
1.903
1.696
1.690
1.684
0.94
0.89
4.08
4.04
1.07
0.99
0.99
6.14
2.00
3.02
2.04
1.08
f1 (ppm)
MeO2C
HO
Cl
Cl
N
O
CO2Me
2aa'

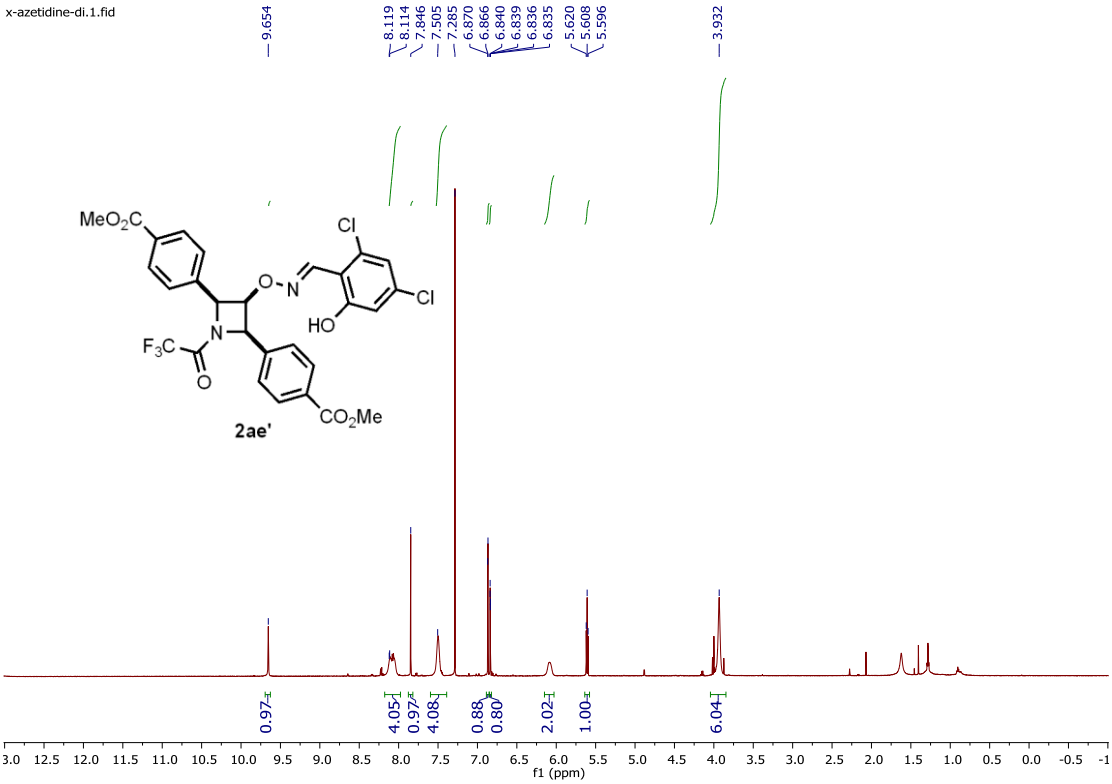

x-cyclohexanol-di.2.fid
166.883
158.702
147.875
146.747
136.224
134.204
129.574
128.498
127.971
120.431
115.819
112.338
88.025
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
51.929
48.308
25.698
25.139
f1 (ppm)
MeO2C
HO
Cl
Cl
N
O
CO2Me
2aa'

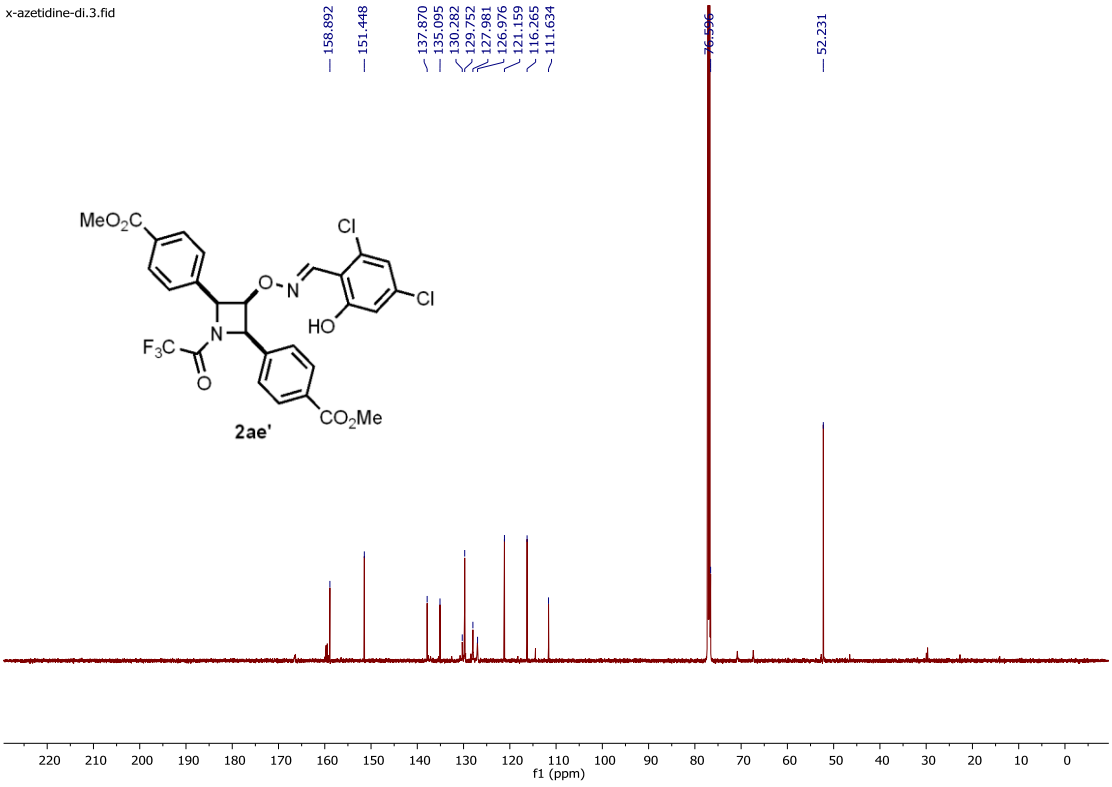

x-cycloheptanol-mono.1.fid
MeO2C
Cl
O
N
Cl
HO
2ab
f1 (ppm)

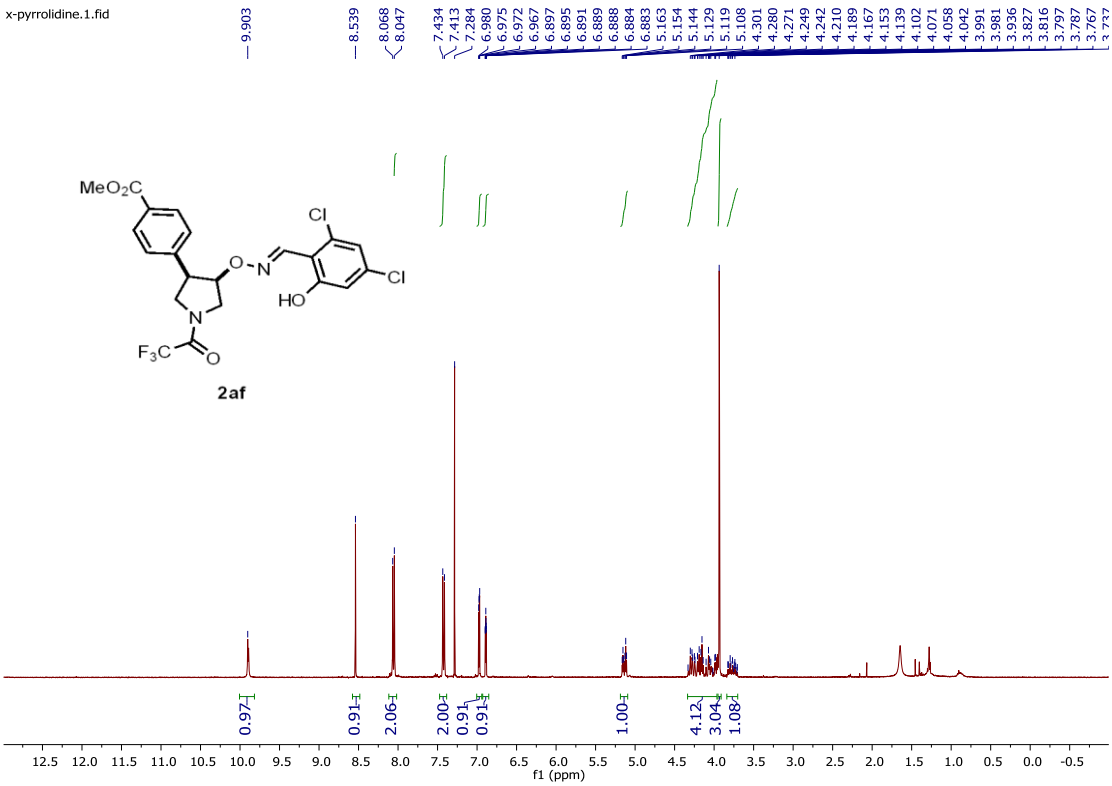

x-cycloheptanol-mono.2.fid
MeO2C
Cl
O
N
Cl
HO
2ab
f1 (ppm)

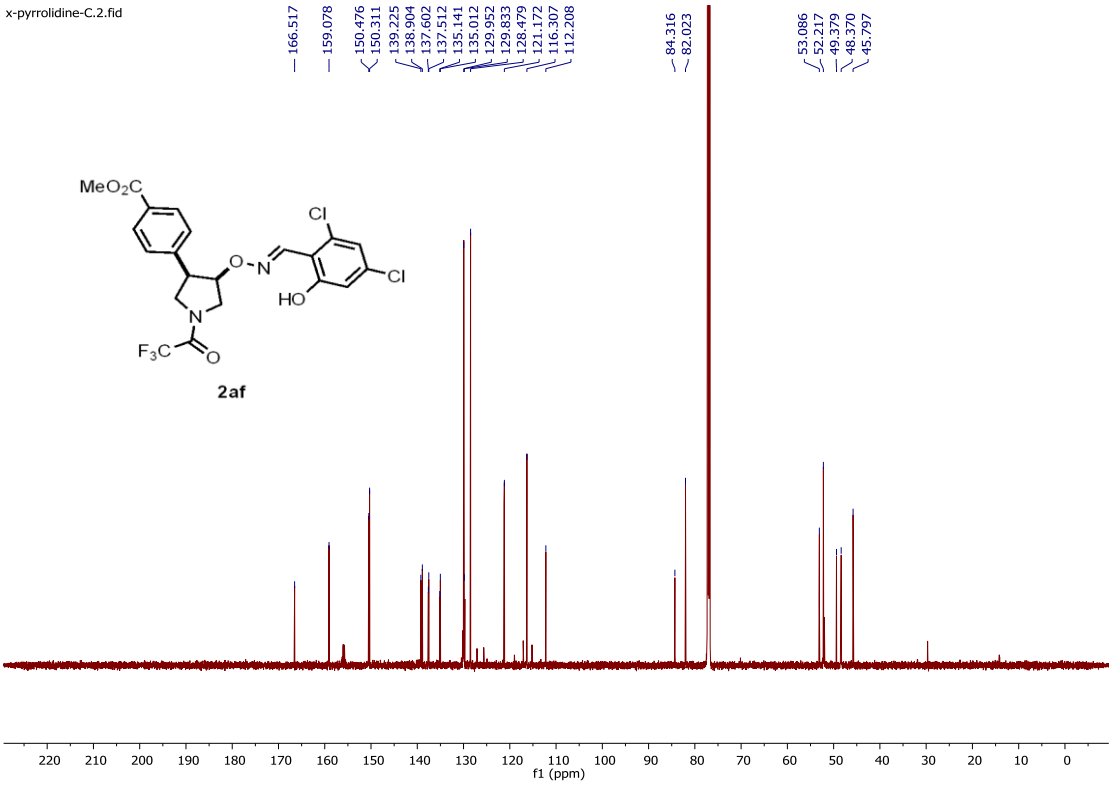

x-azetidine-mono.1.fid
9.771
8.208
8.027
8.013
7.388
7.375
6.929
6.926
6.922
6.885
6.881
6.878
6.875
5.829
5.818
5.420
5.414
5.407
5.403
5.396
5.391
5.384
4.899
4.887
4.880
4.868
4.602
4.595
4.584
4.576
3.906
MeO2C
Cl
O
N
Cl
HO
F3C
N
O
1ae
1.03
1.07
2.01
1.96
0.91
0.87
1.14
1.00
0.61
0.39
0.61
0.39
2.95
f1 (ppm)

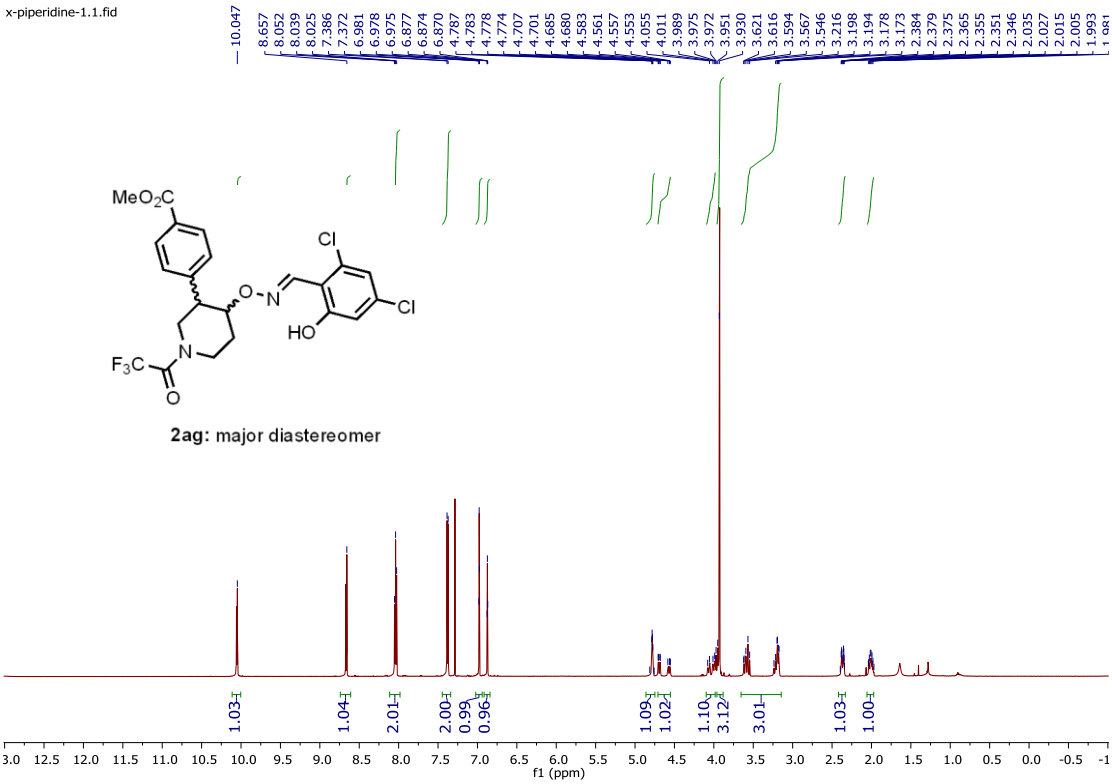

x-azetidine-mono.2.fid
166.423
158.981
151.292
137.864
136.905
135.145
129.728
127.385
127.199
121.200
116.322
111.812
73.943
73.655
72.560
69.446
56.468
53.957
52.156
MeO2C
Cl
O
N
Cl
HO
F3C
N
O
1ae
f1 (ppm)

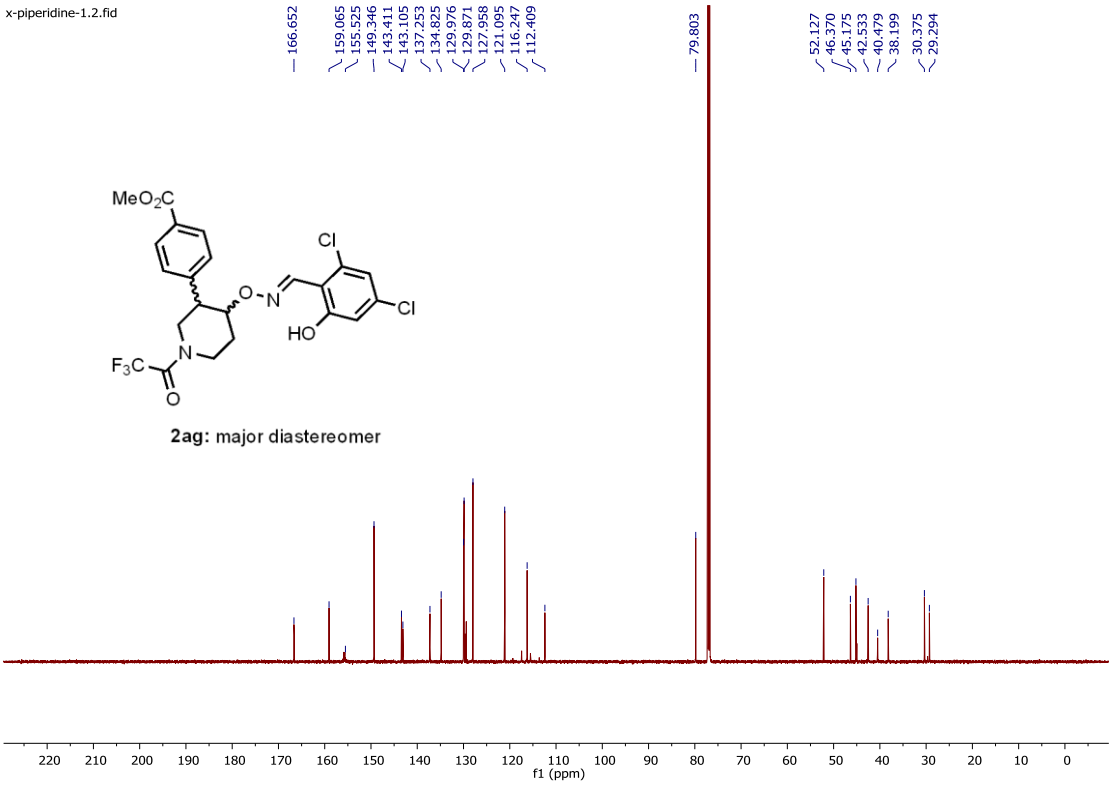

x-azetidine-di.1.fid
9.654
8.119
8.114
7.846
7.505
7.285
6.870
6.866
6.840
6.839
6.836
6.835
5.620
5.608
5.596
3.932
MeO2C
Cl
Cl
HO
F3C
O
N
O
N
CO2Me
2ae'
0.97
4.05
0.97
4.08
0.88
0.80
2.02
1.00
6.04
f1 (ppm)

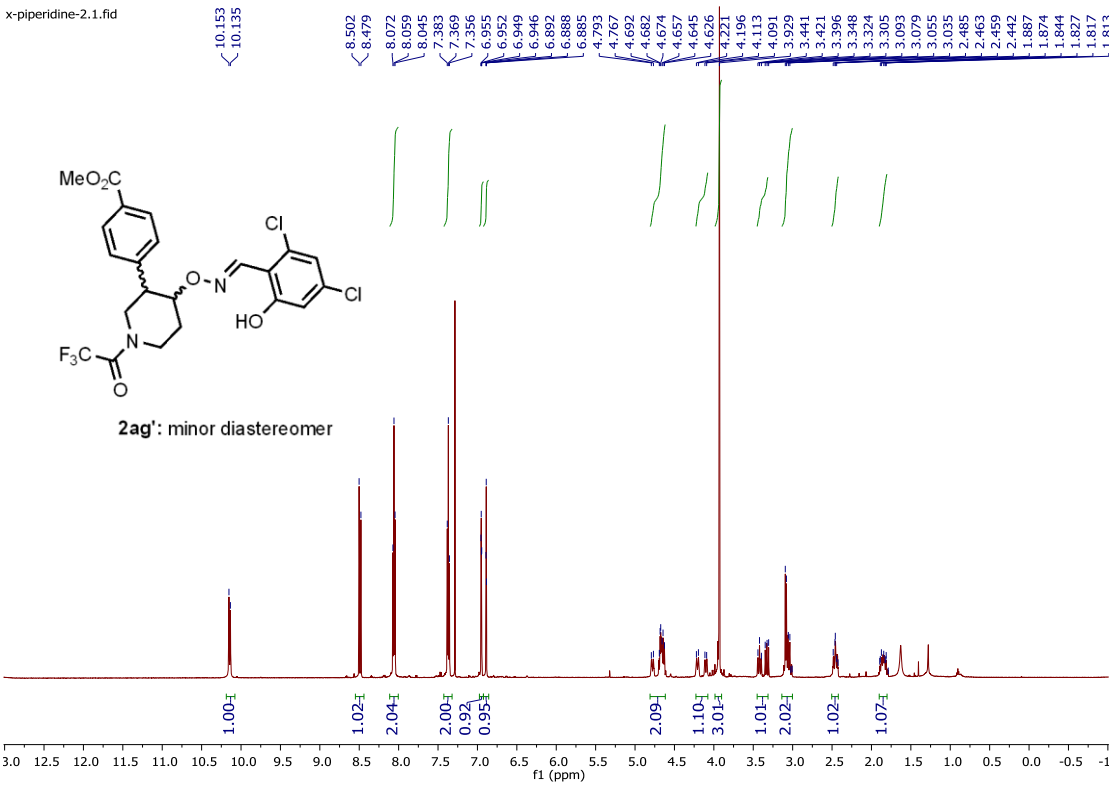

x-azetidine-di.3.fid
158.892
151.448
137.870
135.095
130.282
129.752
127.981
126.976
121.159
116.265
111.634
76.696
52.231
MeO2C
Cl
Cl
HO
F3C
O
N
O
N
CO2Me
2ae'
f1 (ppm)

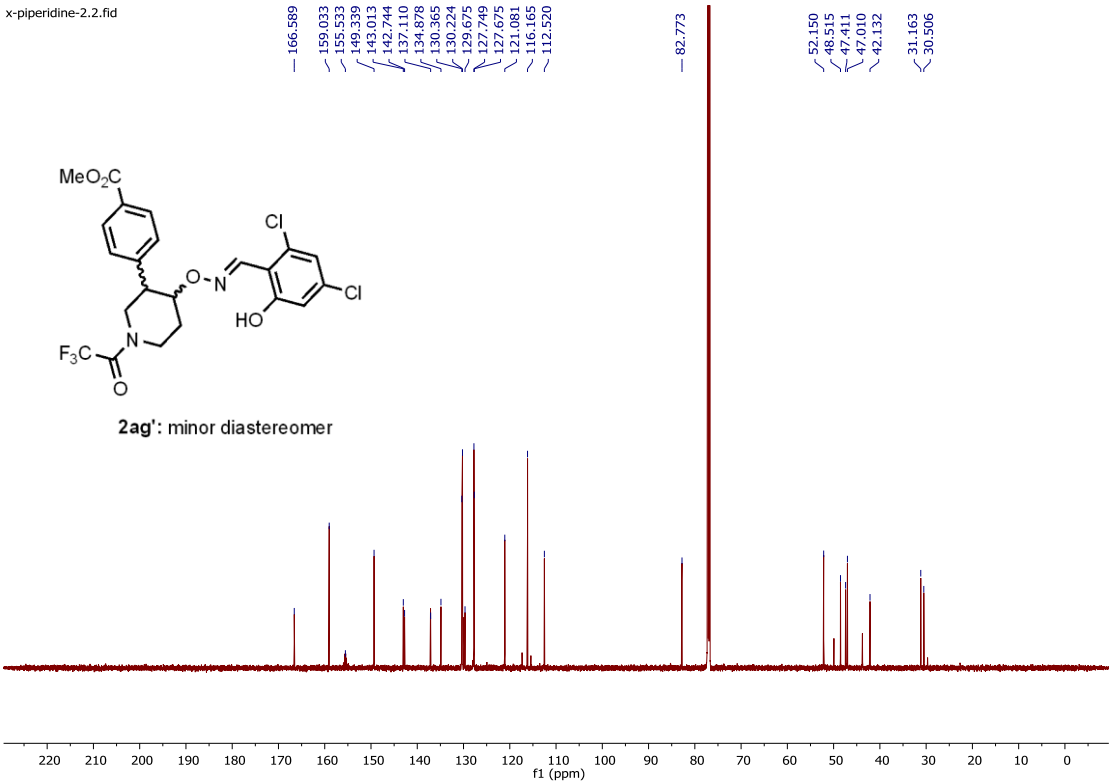

x-pyrrolidine.1.fid
9.903
8.539
8.068
8.047
7.434
7.413
7.284
6.980
6.975
6.972
6.967
6.897
6.895
6.891
6.889
6.888
6.884
6.883
5.163
5.154
5.144
5.129
5.119
5.108
4.301
4.280
4.271
4.249
4.242
4.210
4.189
4.167
4.153
4.139
4.102
4.071
4.058
4.042
3.991
3.981
3.936
3.827
3.816
3.797
3.787
3.767
MeO2C
Cl
O
N
Cl
HO
N
F3C
O
2af
0.97
0.91
2.06
2.00
0.91
0.91
1.00
4.12
3.04
1.08
12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)

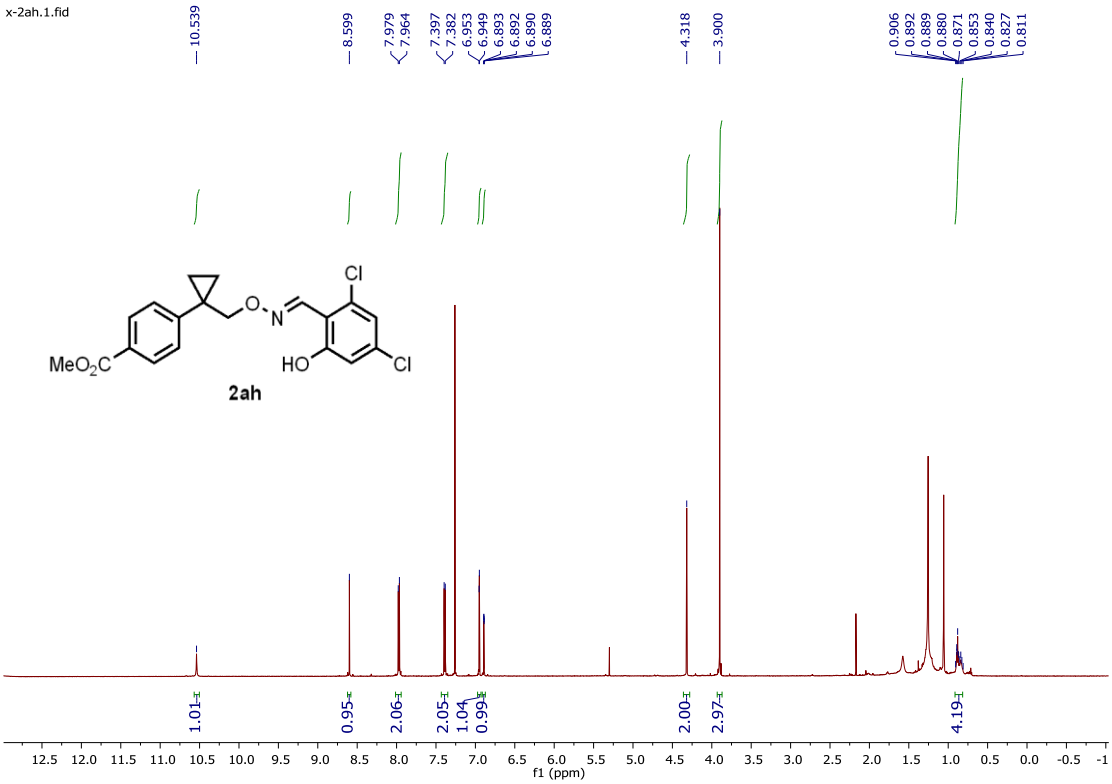

x-pyrrolidine-C.2.fid
166.517
159.078
150.476
150.311
139.225
138.904
137.602
137.512
135.141
135.012
129.952
129.833
128.479
121.172
116.307
112.208
84.316
82.023
53.086
52.217
49.379
48.370
45.797
MeO2C
Cl
O
N
Cl
HO
N
F3C
O
2af
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

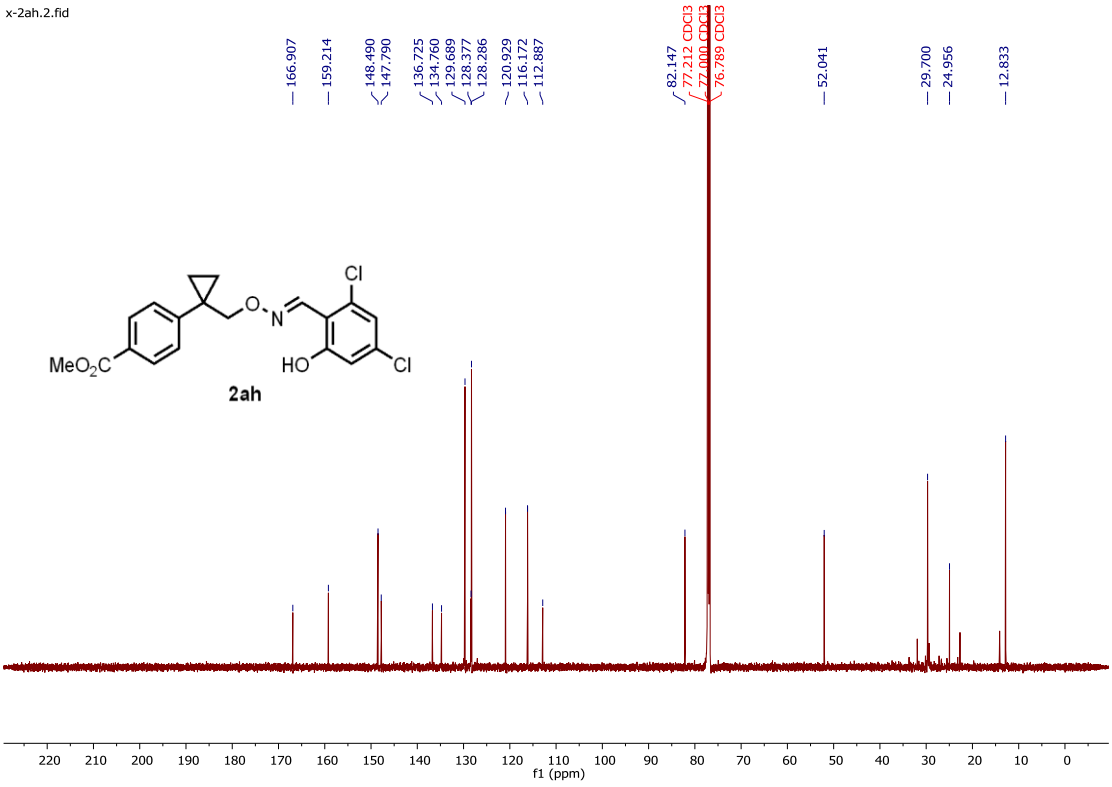

x-piperidine-1.1.fid
MeO2C
Cl
O
N
Cl
HO
F3C
N
O
2ag: major diastereomer
f1 (ppm)


x-piperidine-1.2.fid
MeO2C
Cl
O
N
Cl
HO
F3C
N
O
2ag: major diastereomer
f1 (ppm)

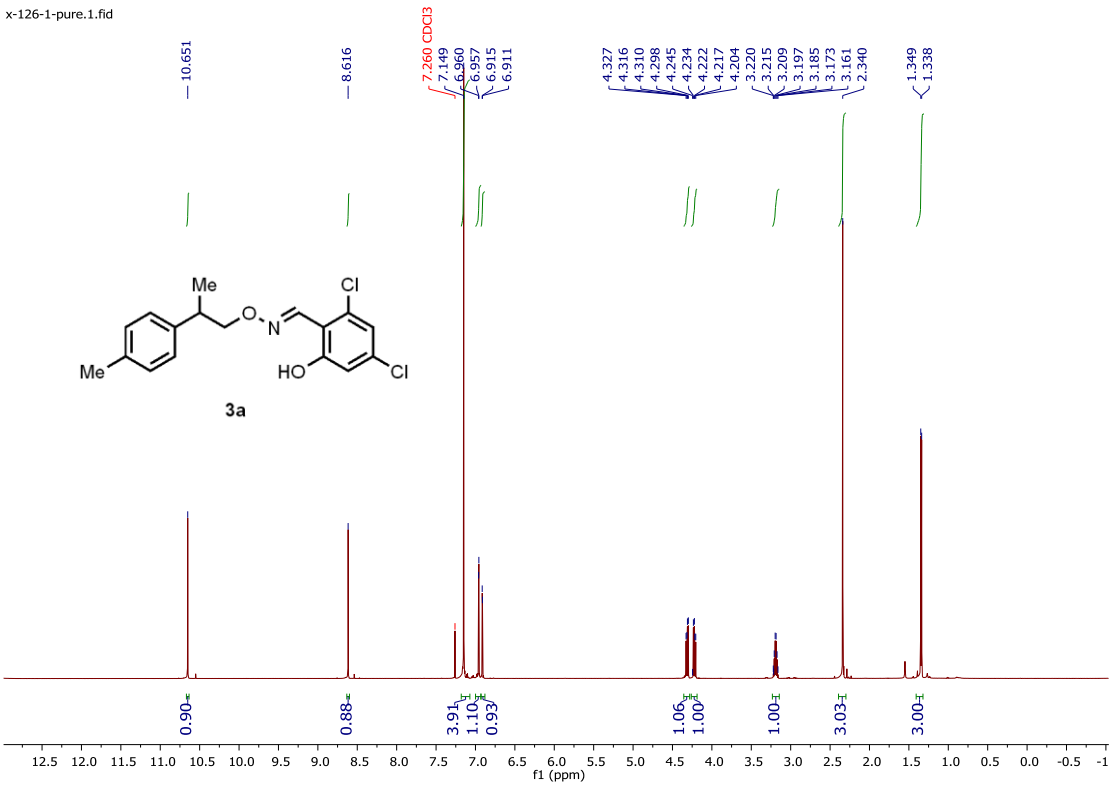

x-piperidine-2.1.fid
10.153
10.135
8.502
8.479
8.072
8.059
8.045
7.383
7.369
7.356
6.955
6.952
6.949
6.946
6.892
6.888
6.885
4.793
4.767
4.692
4.682
4.674
4.657
4.645
4.626
4.221
4.196
4.113
4.091
3.929
3.441
3.421
3.396
3.348
3.324
3.305
3.093
3.079
3.055
3.035
2.485
2.463
2.459
2.442
1.887
1.874
1.844
1.827
1.817
MeO2C
Cl
O
N
Cl
HO
F3C
N
O
2ag': minor diastereomer
1.00
1.02
2.04
2.00
0.92
0.95
2.09
1.10
3.01
1.01
2.02
1.02
1.07
f1 (ppm)


x-piperidine-2.2.fid
166.589
159.033
155.533
149.339
143.013
142.744
137.110
134.878
130.365
130.224
129.675
127.749
127.675
121.081
116.165
112.520
82.773
52.150
48.515
47.411
47.010
42.132
31.163
30.506
MeO2C
Cl
O
N
Cl
HO
F3C
N
O
2ag': minor diastereomer
f1 (ppm)


x-2ah.1.fid
10.539
8.599
7.979
7.964
7.397
7.382
6.953
6.949
6.893
6.892
6.890
6.889
4.318
3.900
0.906
0.892
0.889
0.880
0.871
0.853
0.840
0.827
0.811
Cl
O
N
MeO2C
HO
Cl
2ah
1.01
0.95
2.06
2.05
1.04
0.99
2.00
2.97
4.19
f1 (ppm)

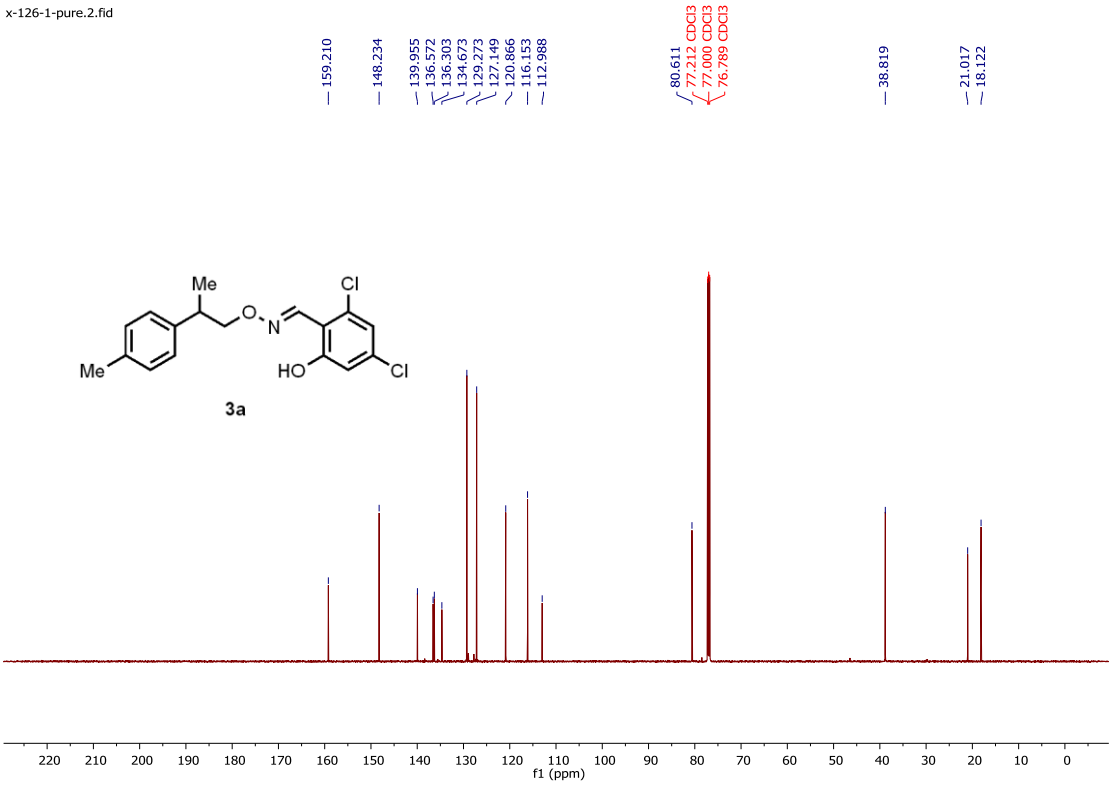

x-2ah.2.fid
166.907
159.214
148.490
147.790
136.725
134.760
129.689
128.377
128.286
120.929
116.172
112.887
82.147
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
52.041
29.700
24.956
12.833
Cl
O
N
MeO2C
HO
Cl
2ah
f1 (ppm)

x-126-1-pure.1.fid

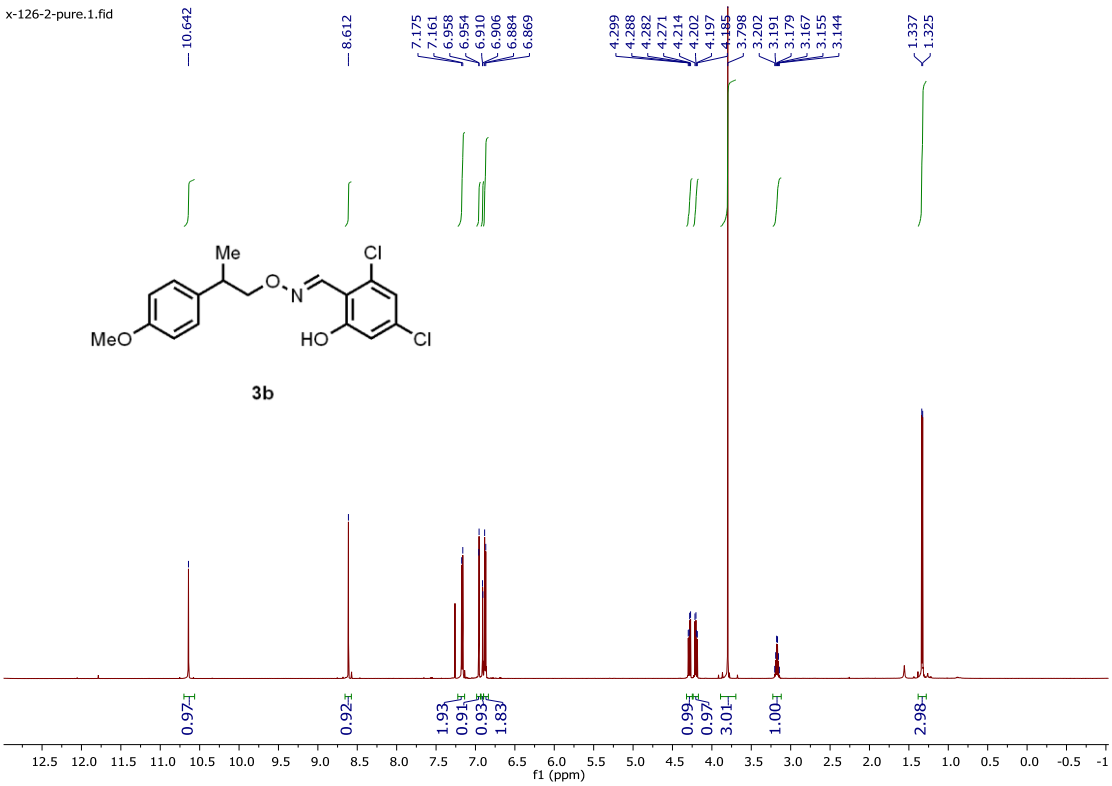


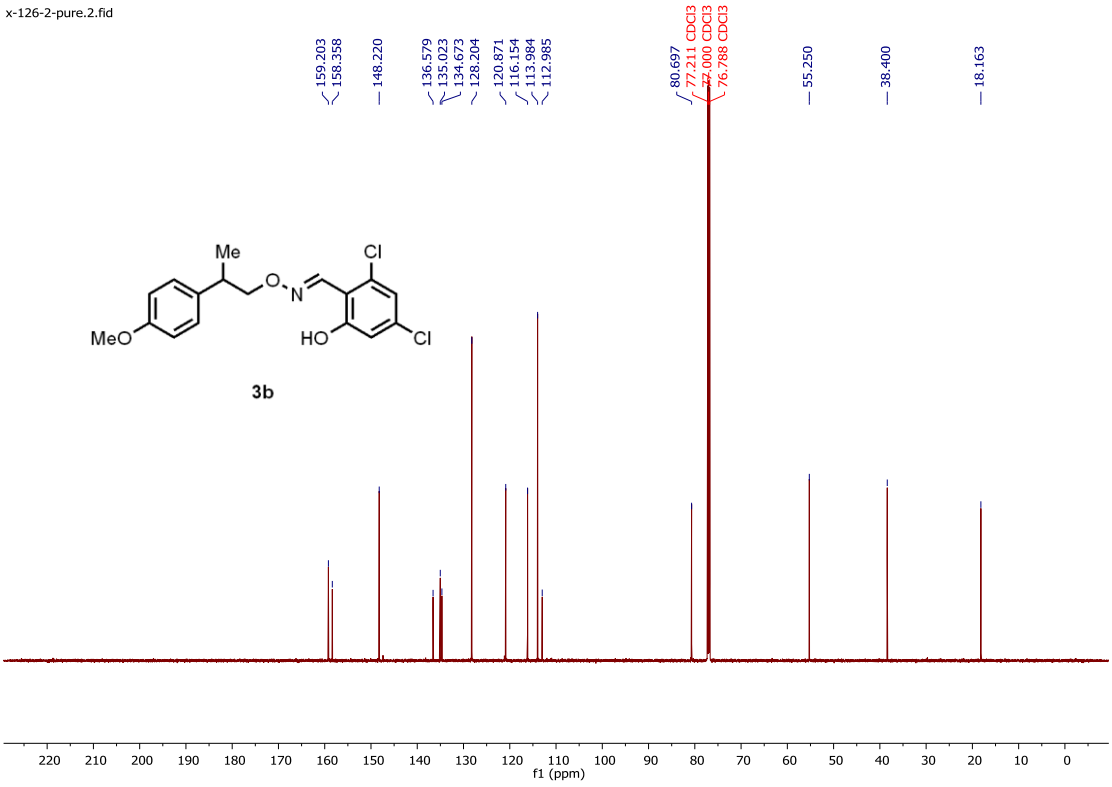
3a

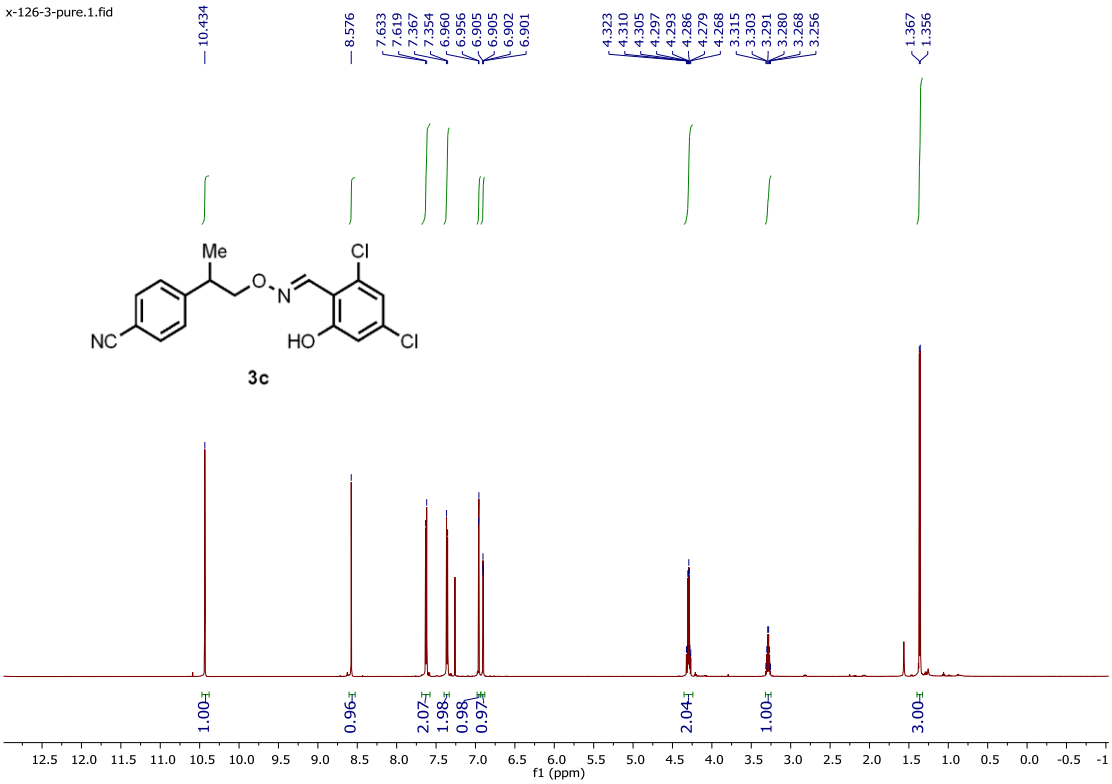
x-126-1-pure.2.fid

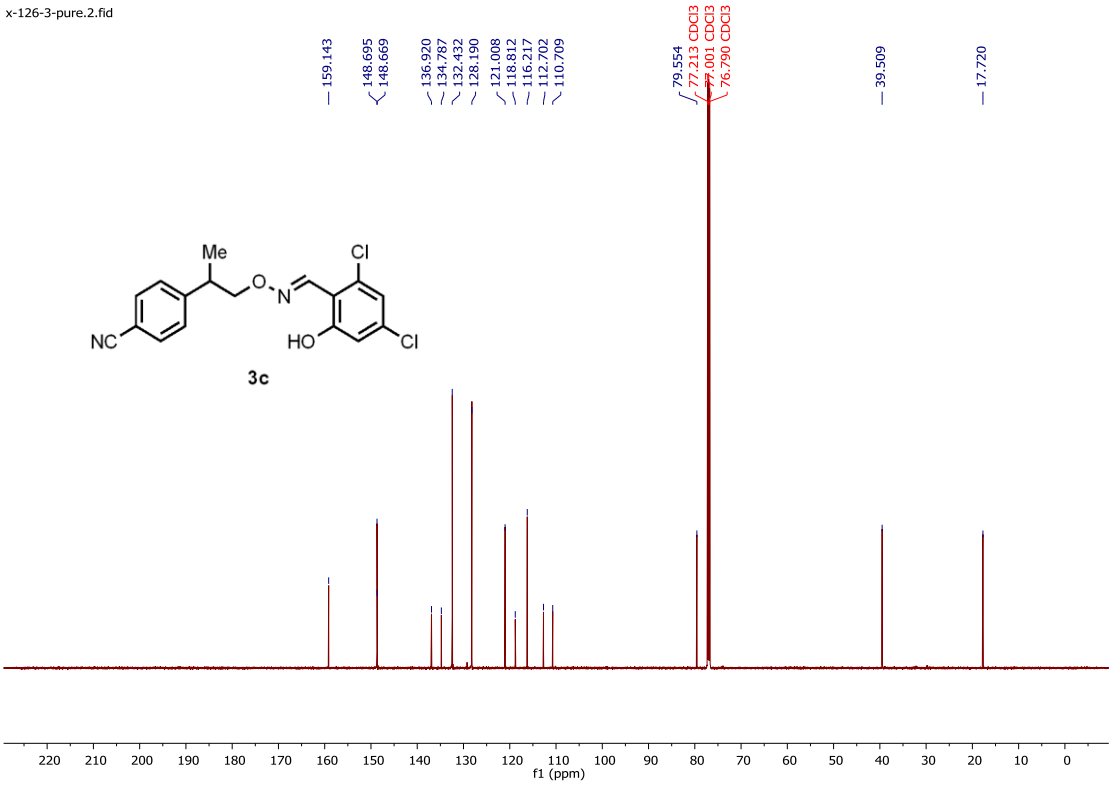


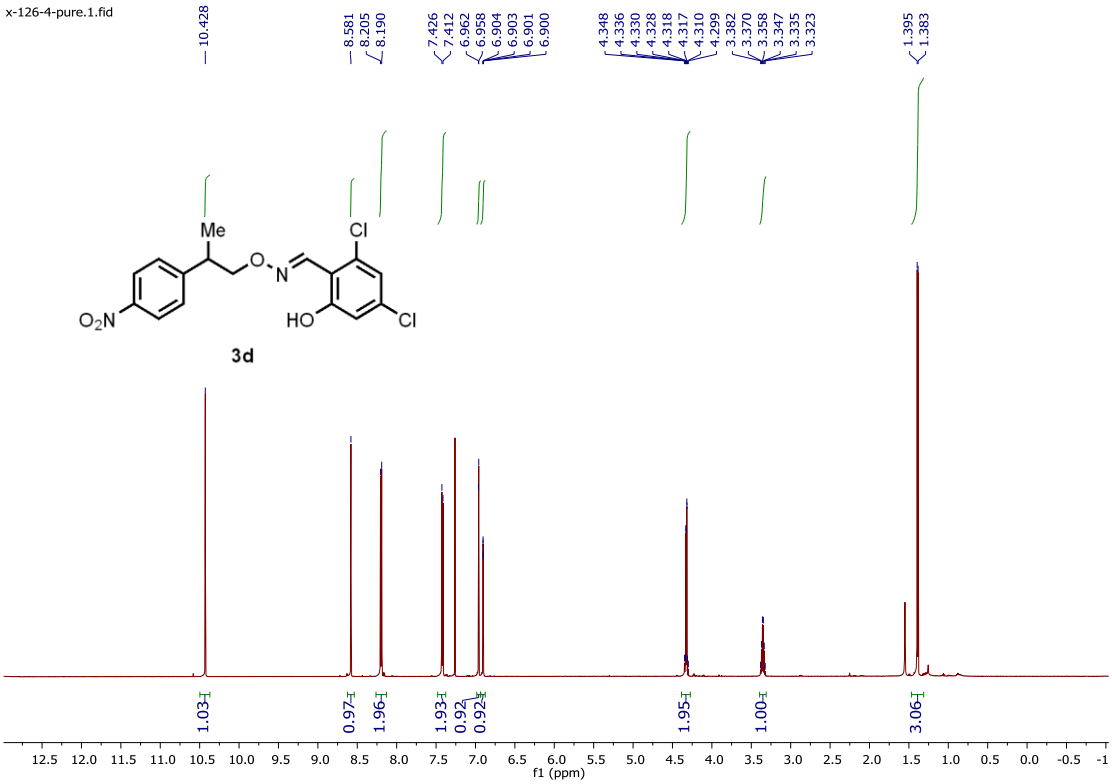
3a

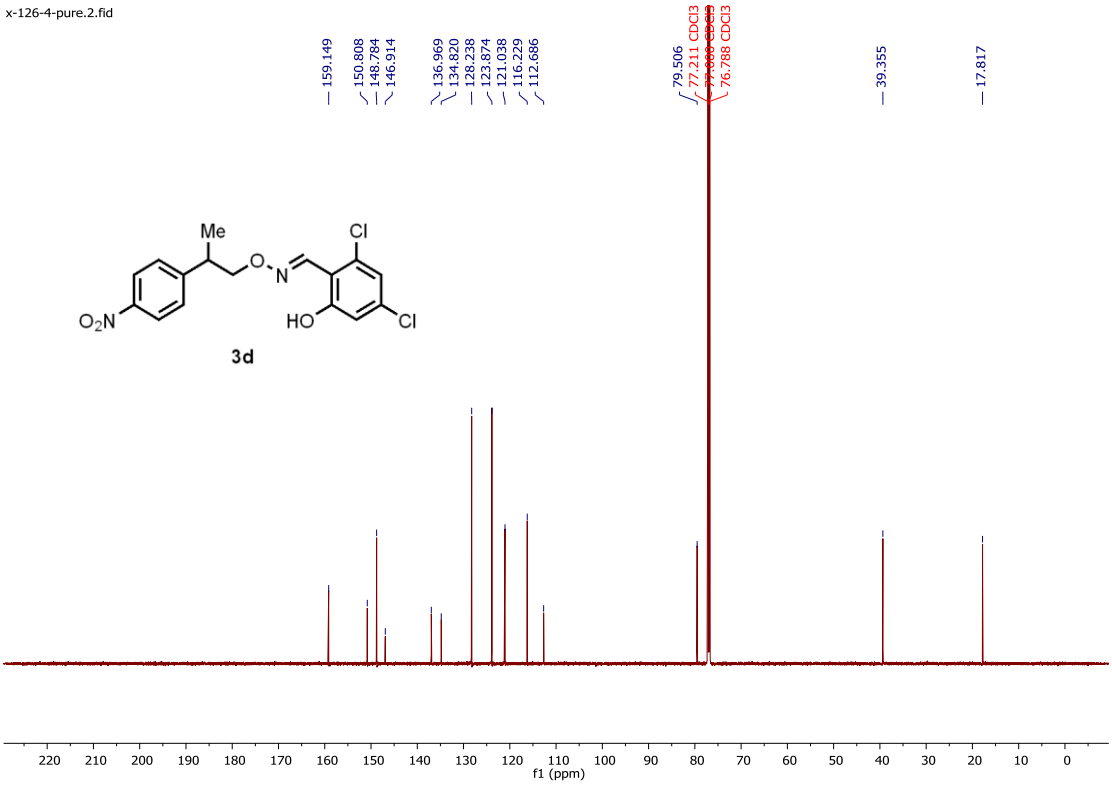

x-126-2-pure.1.fid
10.642
8.612
7.175
7.161
6.958
6.954
6.910
6.906
6.884
6.869
4.299
4.288
4.282
4.271
4.214
4.202
4.197
4.185
3.798
3.202
3.191
3.179
3.167
3.155
3.144
1.337
1.325
Me
Cl
O
N
MeO
HO
Cl
3b
0.97
0.92
1.93
0.91
0.93
1.83
0.99
0.97
3.01
1.00
2.98
f1 (ppm)


x-126-2-pure.2.fid
159.203
158.358
148.220
136.579
135.023
134.673
128.204
120.871
116.154
113.984
112.985
80.697
77.211 CDCl3
77.000 CDCl3
76.788 CDCl3
55.250
38.400
18.163
Me
Cl
O
N
MeO
HO
Cl
3b
f1 (ppm)

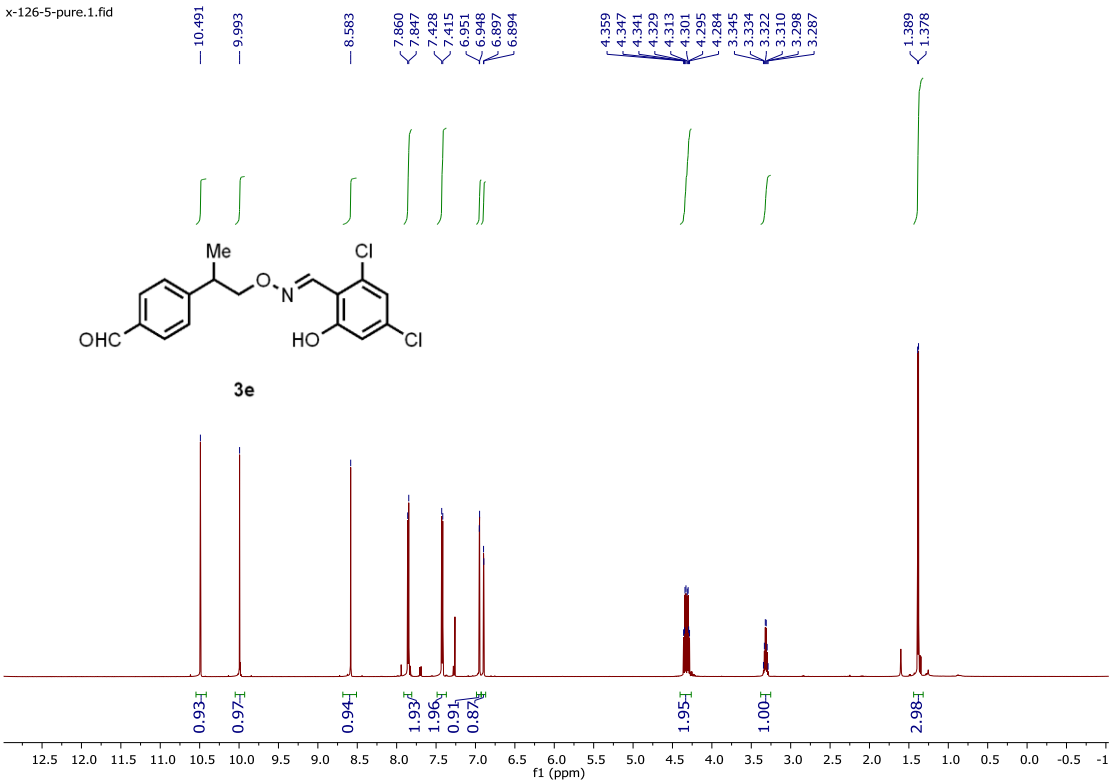

x-126-3-pure.1.fid
10.434
8.576
7.633
7.619
7.367
7.354
6.960
6.956
6.905
6.902
6.901
4.323
4.310
4.305
4.297
4.293
4.286
4.279
4.268
3.315
3.303
3.291
3.280
3.268
3.256
1.367
1.356
Me
Cl
O
N
NC
HO
Cl
3c
1.00
0.96
2.07
1.98
0.98
0.97
2.04
1.00
3.00
f1 (ppm)


x-126-3-pure.2.fid
159.143
148.695
148.669
136.920
134.787
132.432
128.190
121.008
118.812
116.217
112.702
110.709
79.554
77.213 CDCl3
77.001 CDCl3
76.790 CDCl3
39.509
17.720
Me
Cl
O
N
NC
HO
Cl
3c
f1 (ppm)


x-126-4-pure.1.fid
10.428
8.581
8.205
8.190
7.426
7.412
6.962
6.958
6.904
6.903
6.901
6.900
4.348
4.336
4.330
4.328
4.318
4.317
4.310
4.299
3.382
3.370
3.358
3.347
3.335
3.323
1.395
1.383
Me
Cl
O
N
O2N
HO
Cl
3d
1.03
0.97
1.96
1.93
0.92
0.92
1.95
1.00
3.06
f1 (ppm)

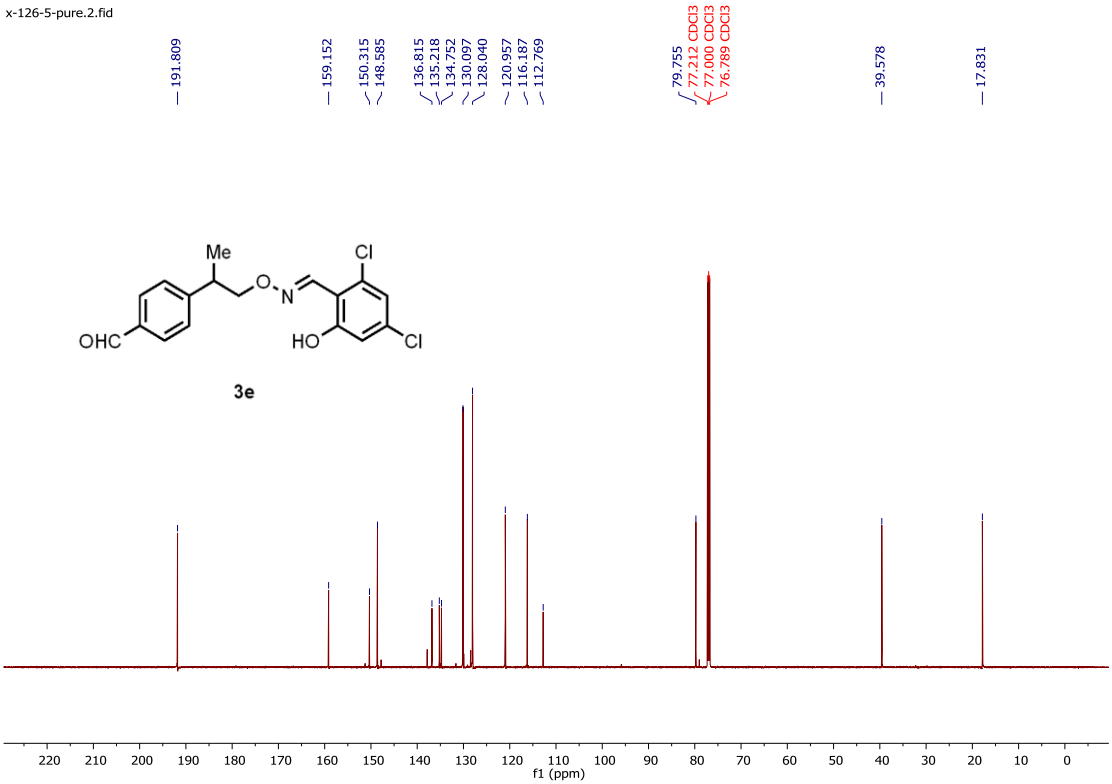

x-126-4-pure.2.fid
159.149
150.808
148.784
146.914
136.969
134.820
128.238
123.874
121.038
116.229
112.686
79.506
77.211 CDCl3
76.788 CDCl3
39.355
17.817
Me
Cl
O
N
O2N
HO
Cl
3d
f1 (ppm)

x-126-5-pure.1.fid

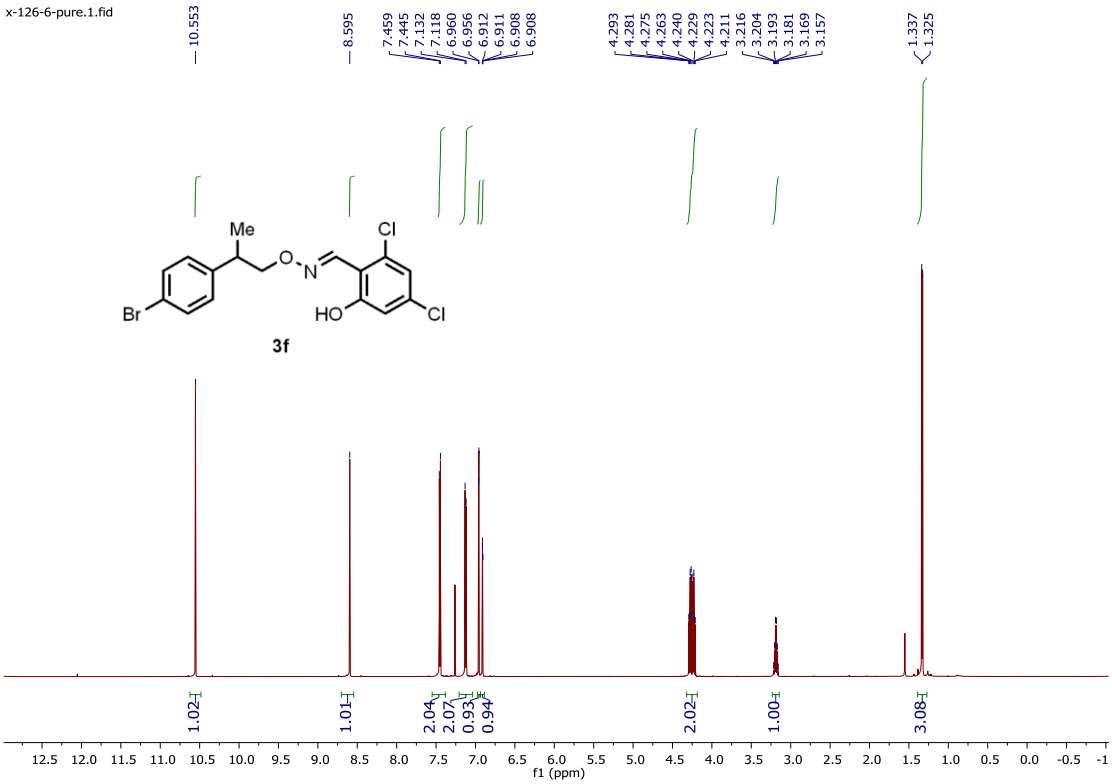


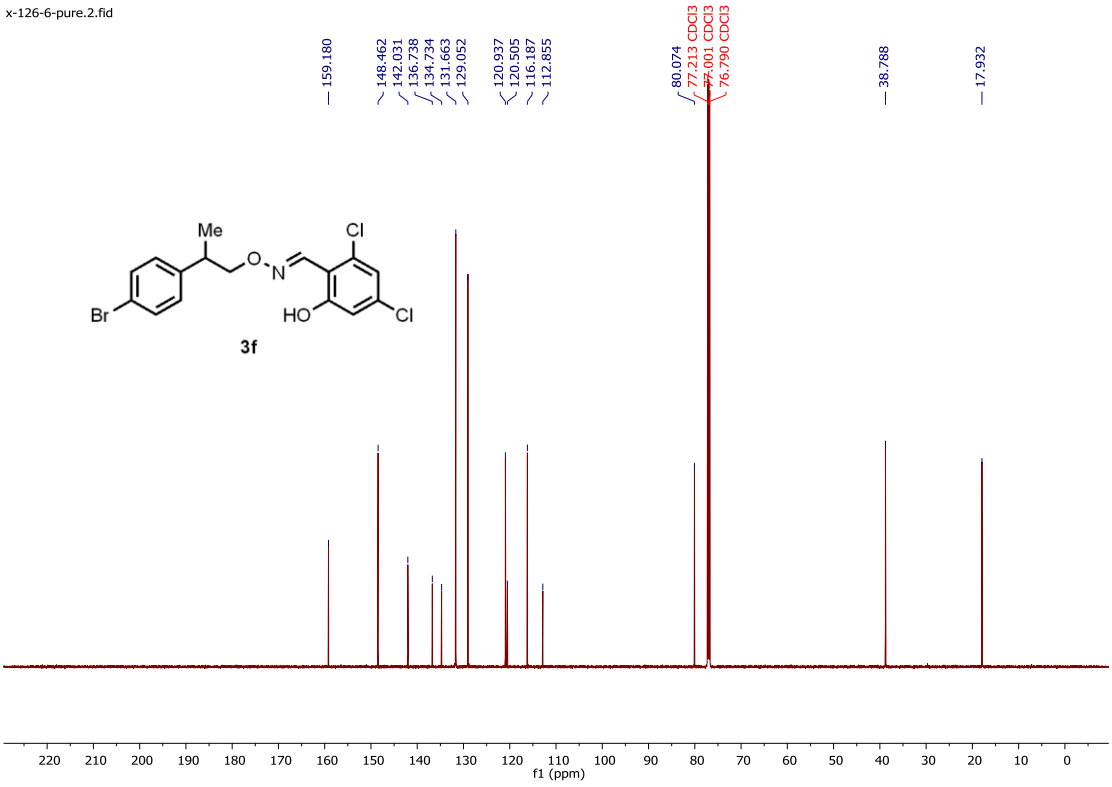
3e

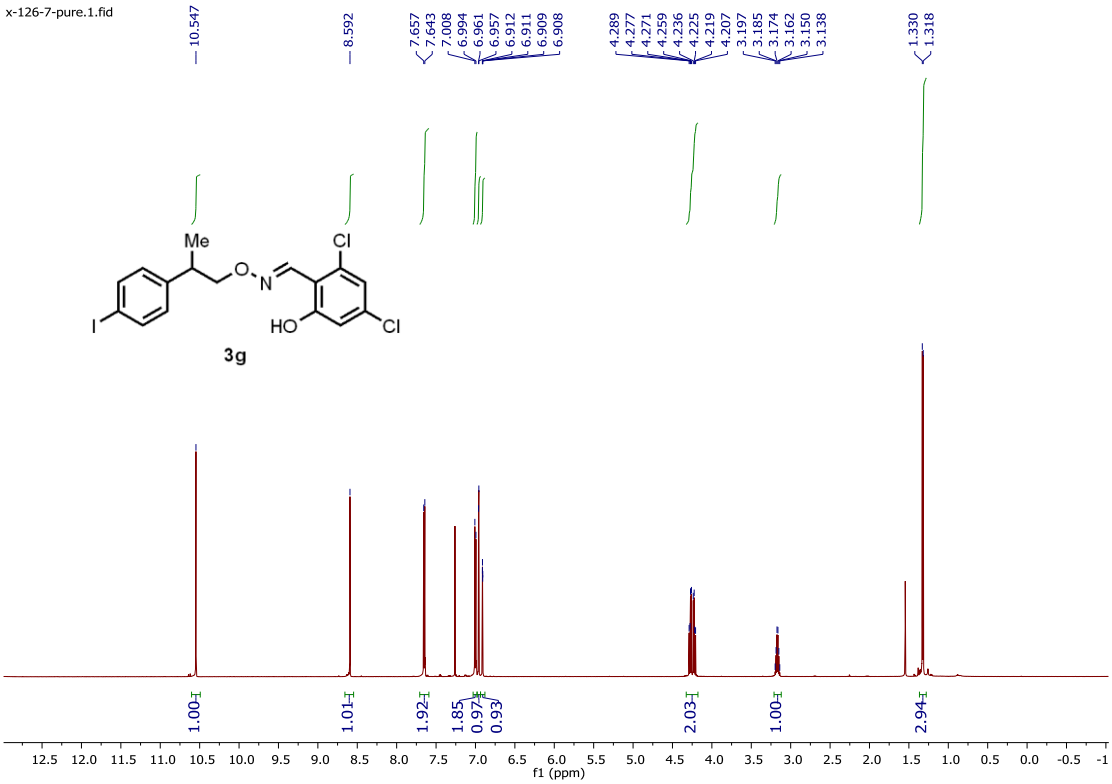
x-126-5-pure.2.fid

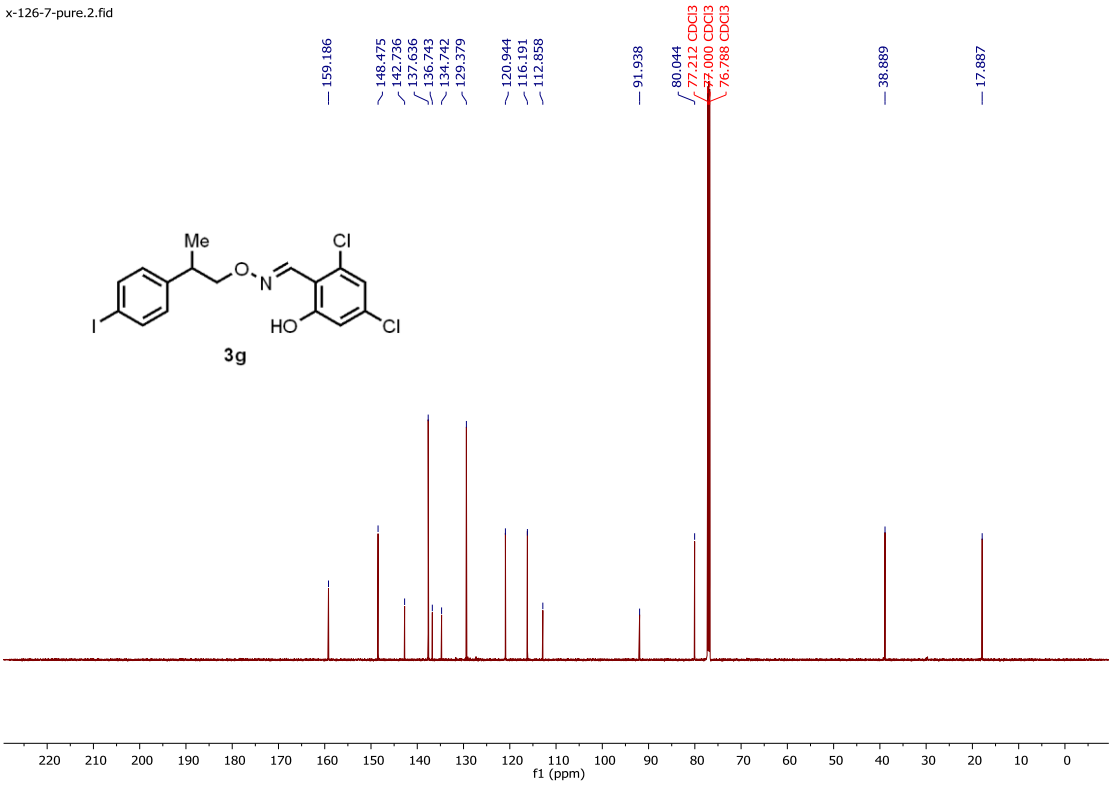


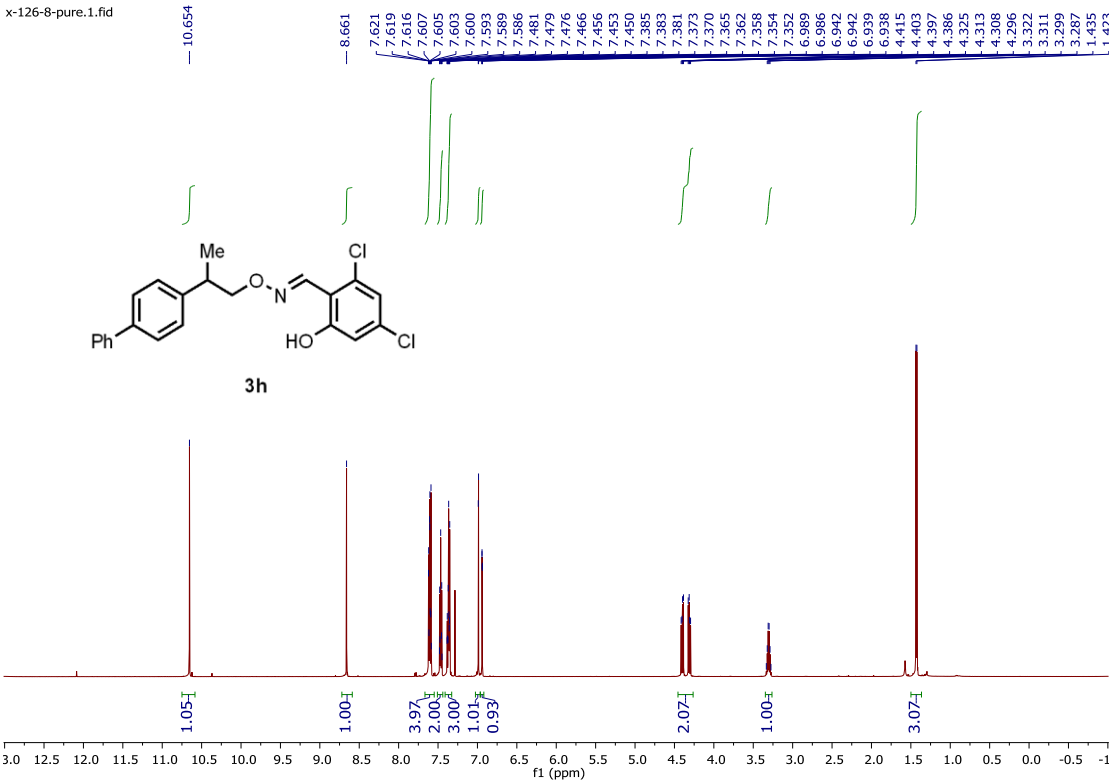
3e

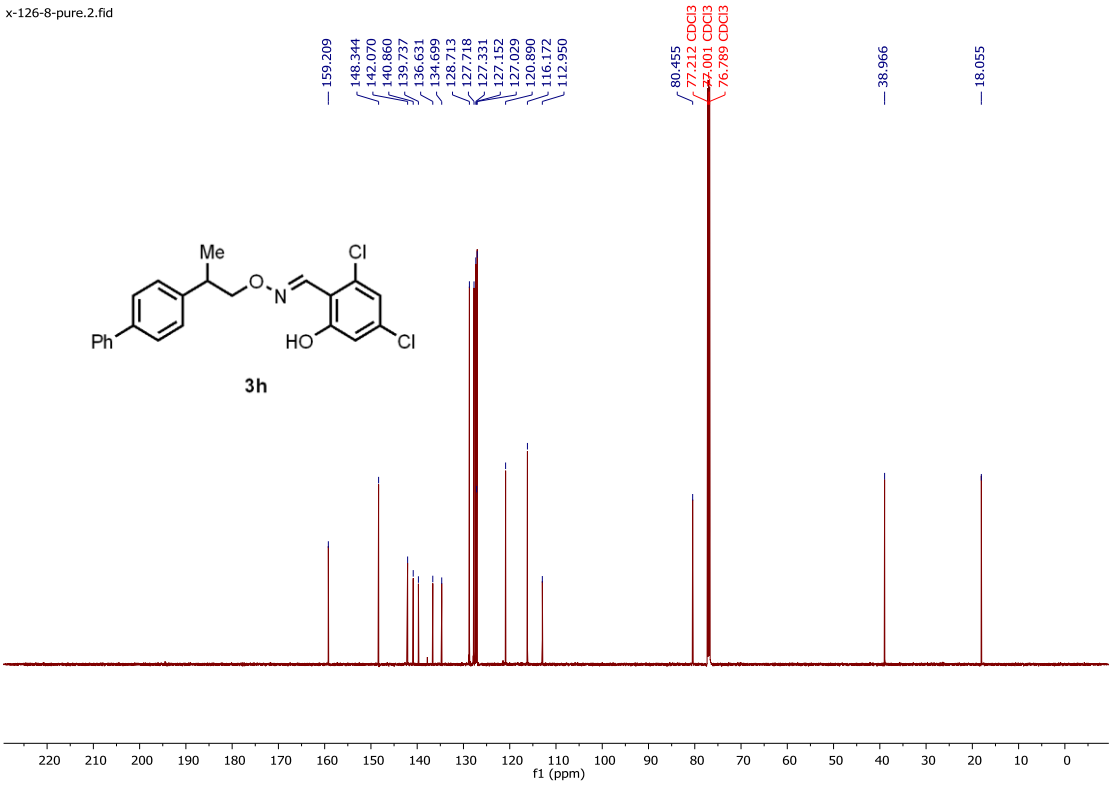

x-126-6-pure.1.fid
10.553
8.595
7.459
7.445
7.132
7.118
6.960
6.956
6.912
6.911
6.908
6.908
4.293
4.281
4.275
4.263
4.240
4.229
4.223
4.211
3.216
3.204
3.193
3.181
3.169
3.157
1.337
1.325
Me
O
N
Cl
Br
HO
Cl
3f
1.02
1.01
2.04
2.07
0.93
0.94
2.02
1.00
3.08
f1 (ppm)

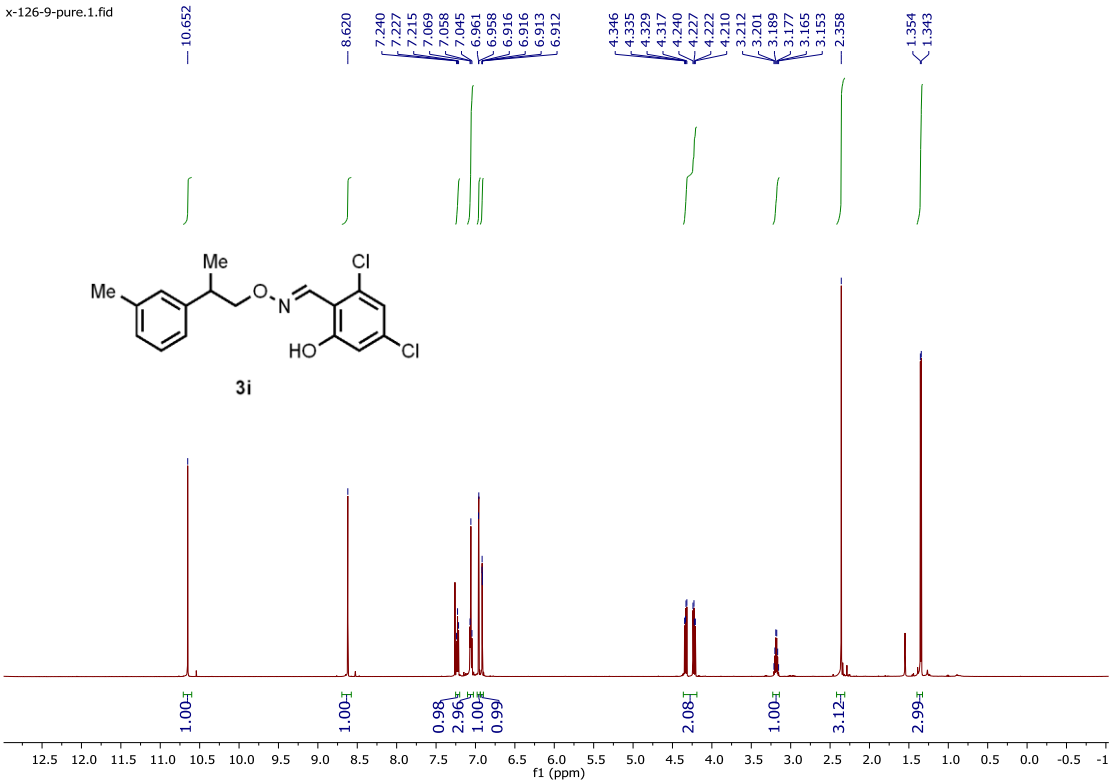

x-126-6-pure.2.fid
159.180
148.462
142.031
136.738
134.734
131.663
129.052
120.937
120.505
116.187
112.855
80.074
77.213 CDCl3
77.001 CDCl3
76.790 CDCl3
38.788
17.932
Me
O
N
Cl
Br
HO
Cl
3f
f1 (ppm)

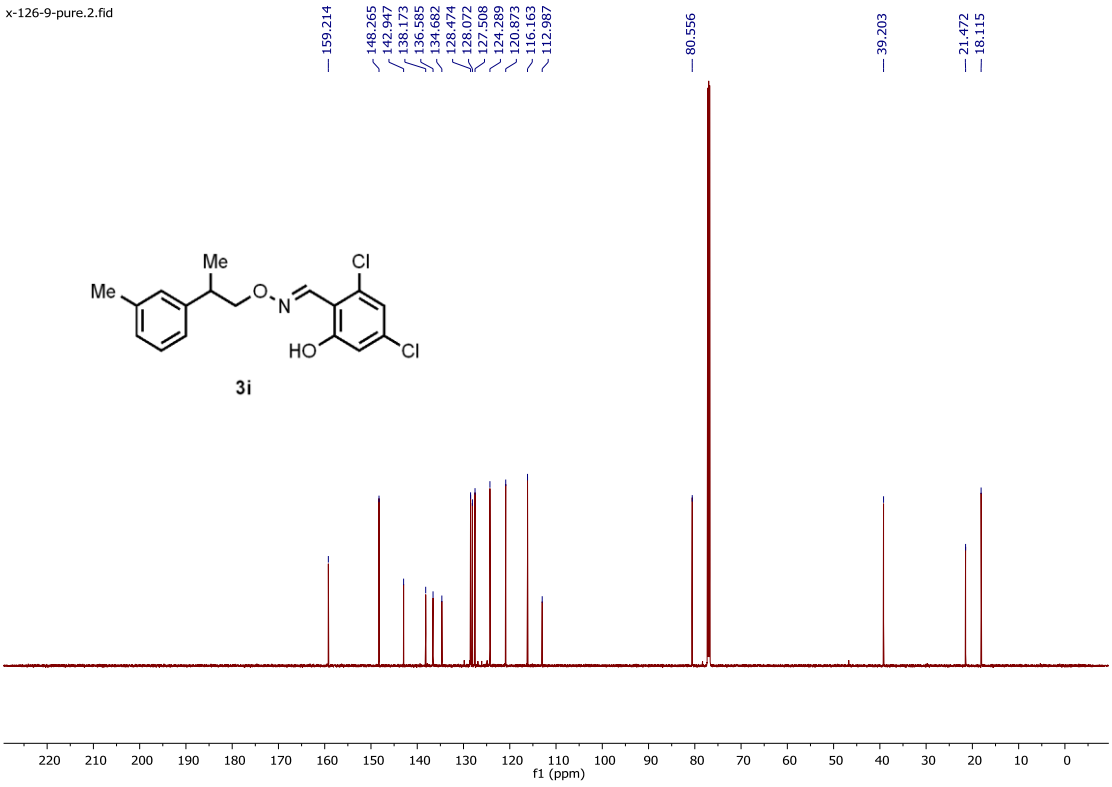

x-126-7-pure.1.fid
10.547
8.592
7.657
7.643
7.008
6.994
6.961
6.957
6.912
6.911
6.909
6.908
4.289
4.277
4.271
4.259
4.236
4.225
4.219
4.207
3.197
3.185
3.174
3.162
3.150
3.138
1.330
1.318
Me
O
N
Cl
HO
Cl
I
3g
1.00
1.01
1.92
1.85
0.97
0.93
2.03
1.00
2.94
f1 (ppm)

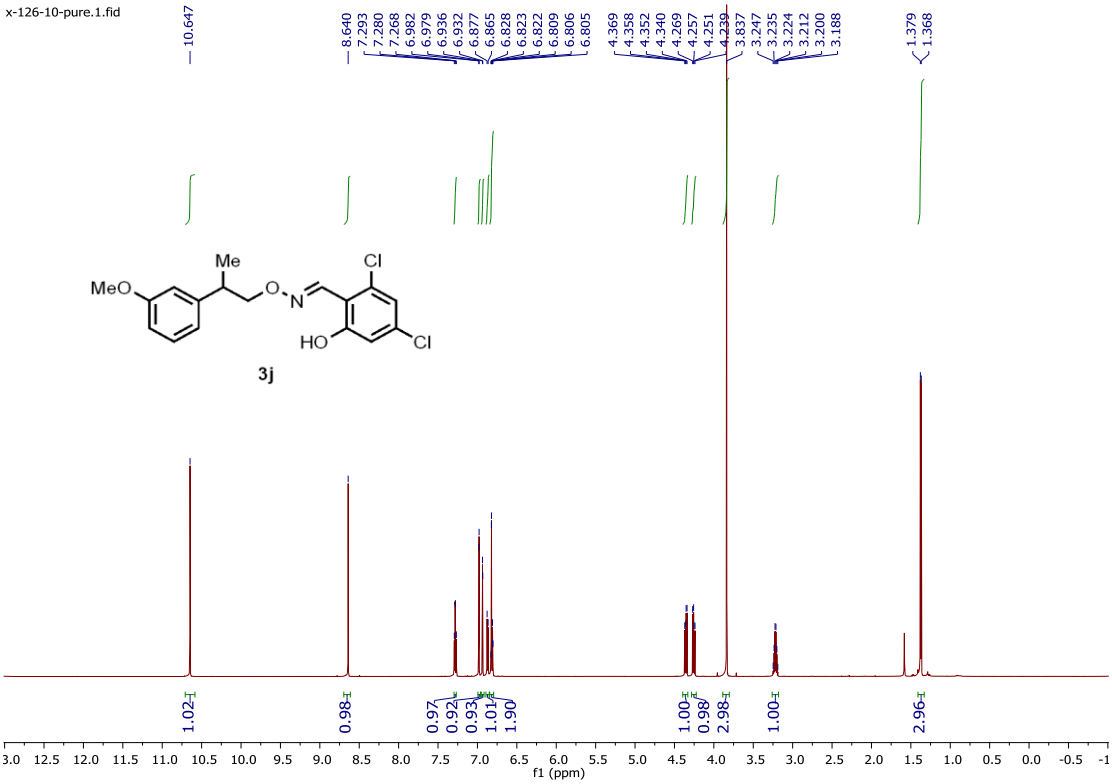

x-126-7-pure.2.fid
159.186
148.475
142.736
137.636
136.743
134.742
129.379
120.944
116.191
112.858
91.938
80.044
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
38.889
17.887
Me
O
N
Cl
HO
Cl
I
3g
f1 (ppm)

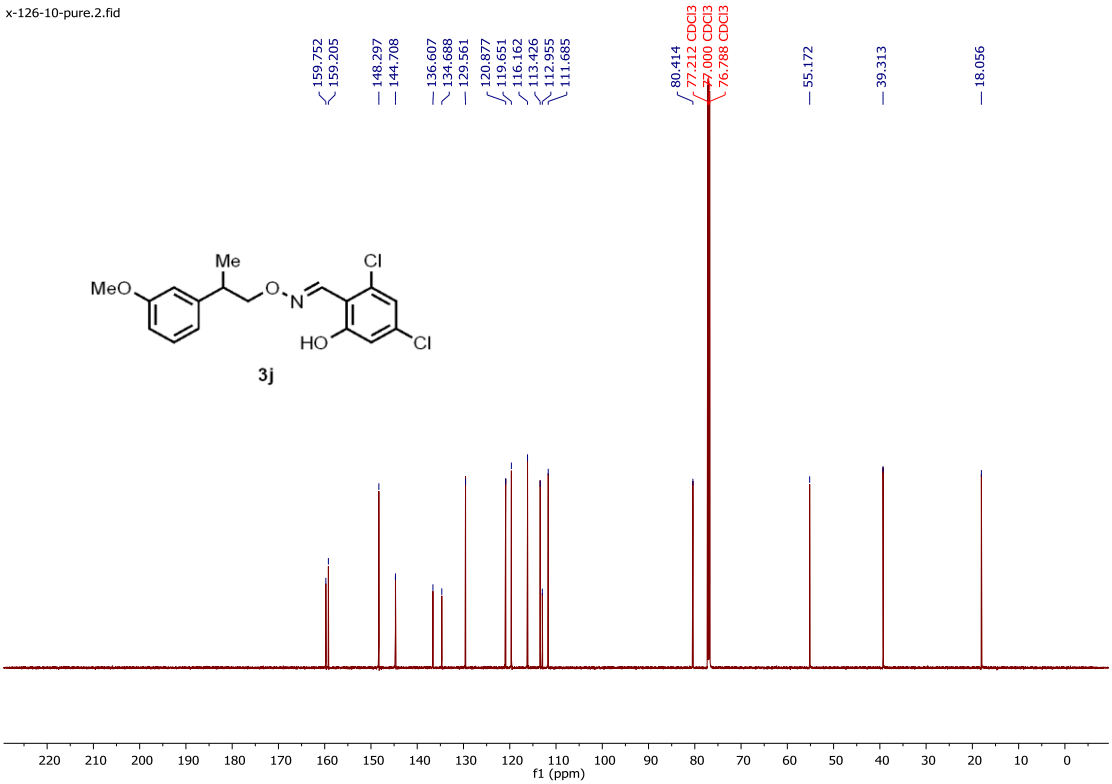

x-126-8-pure.1.fid
10.654
8.661
7.621
7.619
7.616
7.607
7.605
7.603
7.600
7.593
7.589
7.586
7.481
7.479
7.476
7.466
7.456
7.453
7.450
7.385
7.383
7.381
7.373
7.370
7.365
7.362
7.358
7.354
7.352
6.989
6.986
6.942
6.942
6.939
6.938
4.415
4.403
4.397
4.386
4.325
4.313
4.308
4.296
3.322
3.311
3.299
3.287
1.435
Me
O
N
Cl
Ph
HO
Cl
3h
1.05
1.00
3.97
2.00
3.00
1.01
0.93
2.07
1.00
3.07
f1 (ppm)

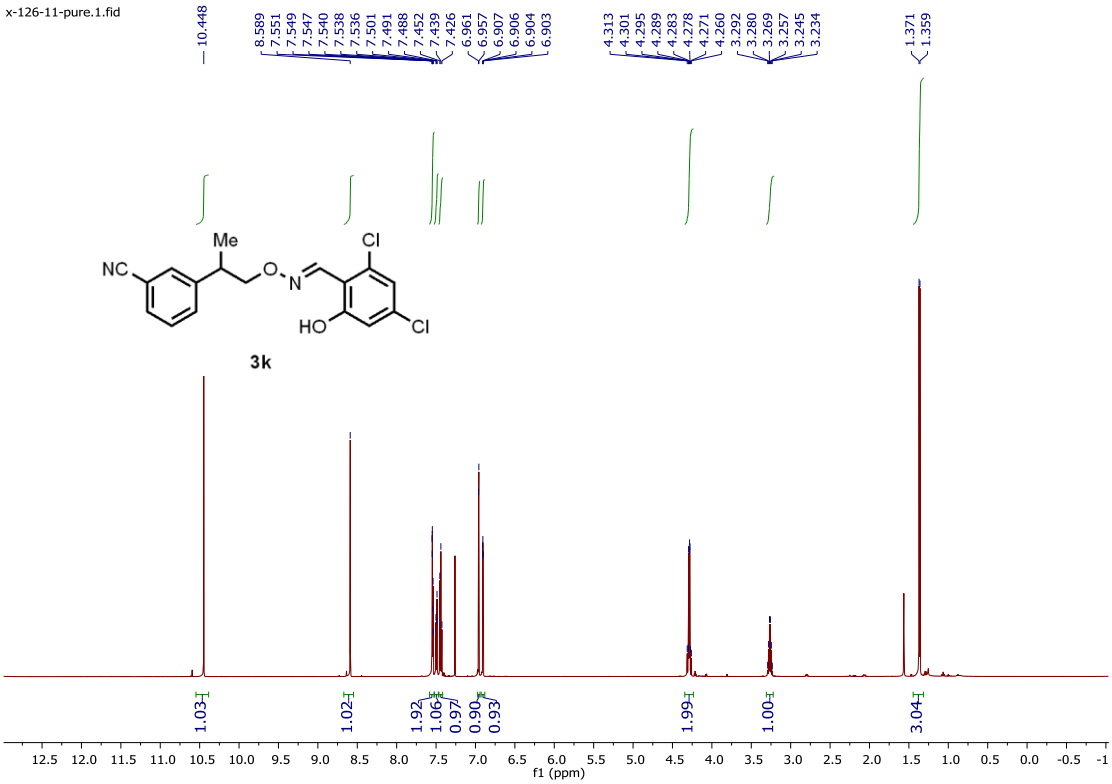

x-126-8-pure.2.fid
159.209
148.344
142.070
140.860
139.737
136.631
134.699
128.713
127.718
127.331
127.152
127.029
120.890
116.172
112.950
80.455
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
38.966
18.055
Me
O
N
Cl
Ph
HO
Cl
3h
f1 (ppm)

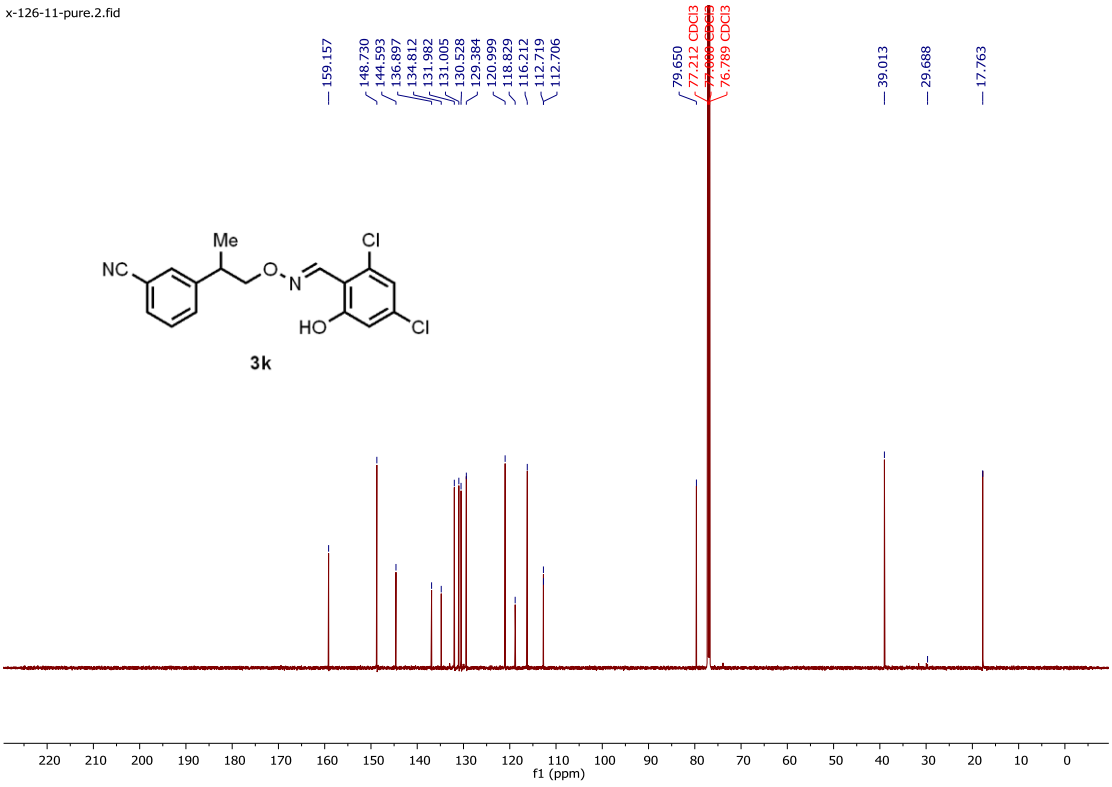

x-126-9-pure.1.fid
10.652
8.620
7.240
7.227
7.215
7.069
7.058
7.045
6.961
6.958
6.916
6.913
6.912
4.346
4.335
4.329
4.317
4.240
4.227
4.222
4.210
3.212
3.201
3.189
3.177
3.165
3.153
2.358
1.354
1.343
Me
Cl
Me
O
N
HO
Cl
3i
1.00
1.00
0.98
2.96
1.00
0.99
2.08
1.00
3.12
2.99
f1 (ppm)

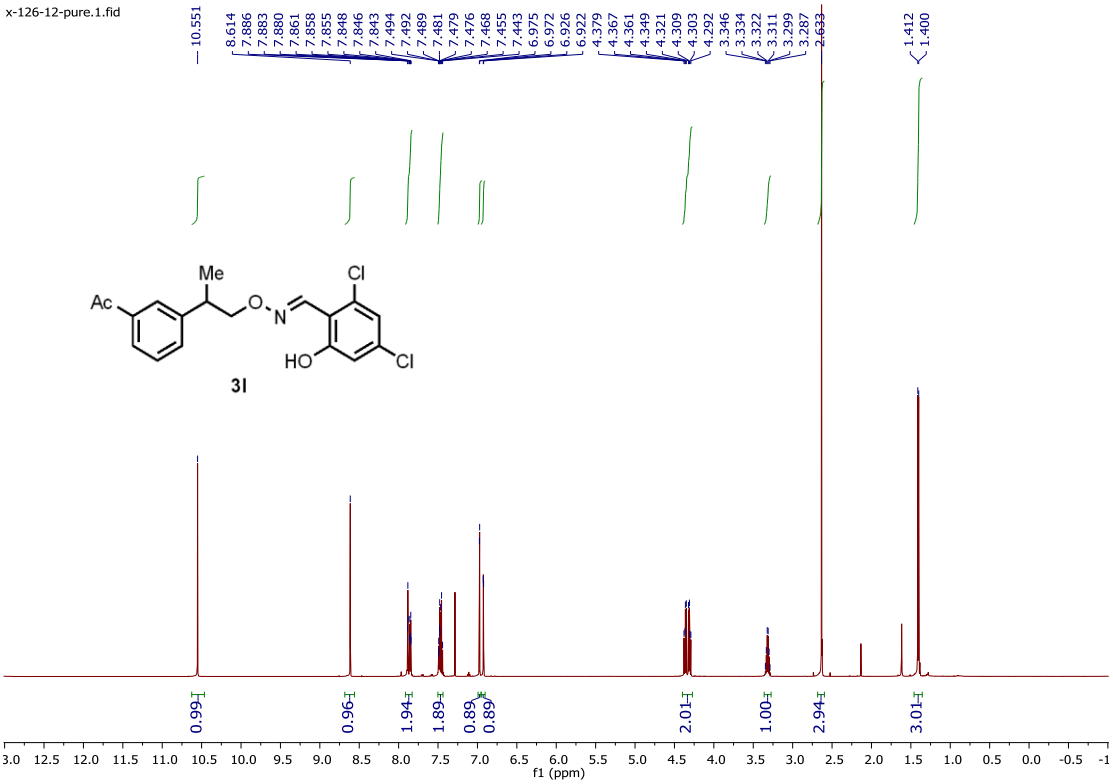

x-126-9-pure.2.fid
159.214
148.265
142.947
138.173
136.585
134.682
128.474
128.072
127.508
124.289
120.873
116.163
112.987
80.556
39.203
21.472
18.115
Me
Cl
Me
O
N
HO
Cl
3i
f1 (ppm)

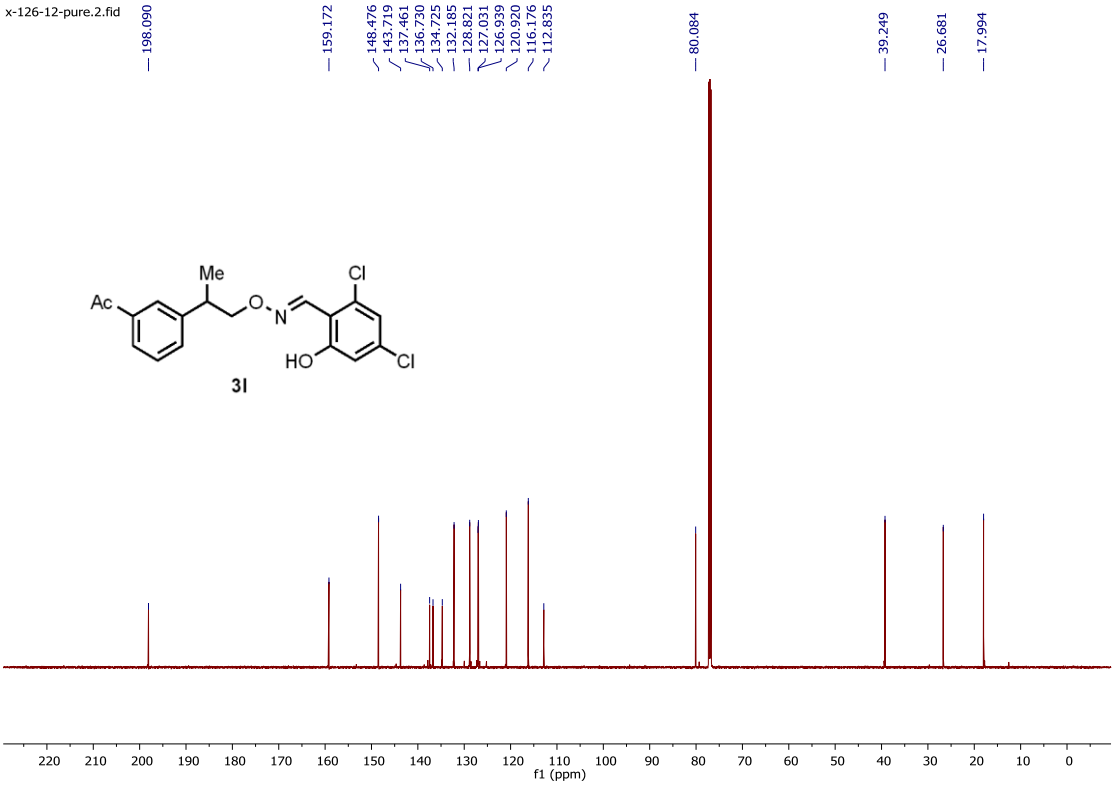

x-126-10-pure.1.fid
10.647
8.640
7.293
7.280
7.268
6.982
6.979
6.936
6.932
6.877
6.865
6.828
6.823
6.822
6.809
6.806
6.805
4.369
4.358
4.352
4.340
4.269
4.257
4.251
4.239
3.837
3.247
3.235
3.224
3.212
3.200
3.188
1.379
1.368
Me
MeO
O
N
Cl
HO
Cl
3j
1.02
0.98
0.97
0.92
0.93
1.01
1.90
1.00
0.98
2.98
1.00
2.96
f1 (ppm)


x-126-10-pure.2.fid
159.752
159.205
148.297
144.708
136.607
134.688
129.561
120.877
119.651
116.162
113.426
112.955
111.685
80.414
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
55.172
39.313
18.056
Me
MeO
O
N
Cl
HO
Cl
3j
f1 (ppm)

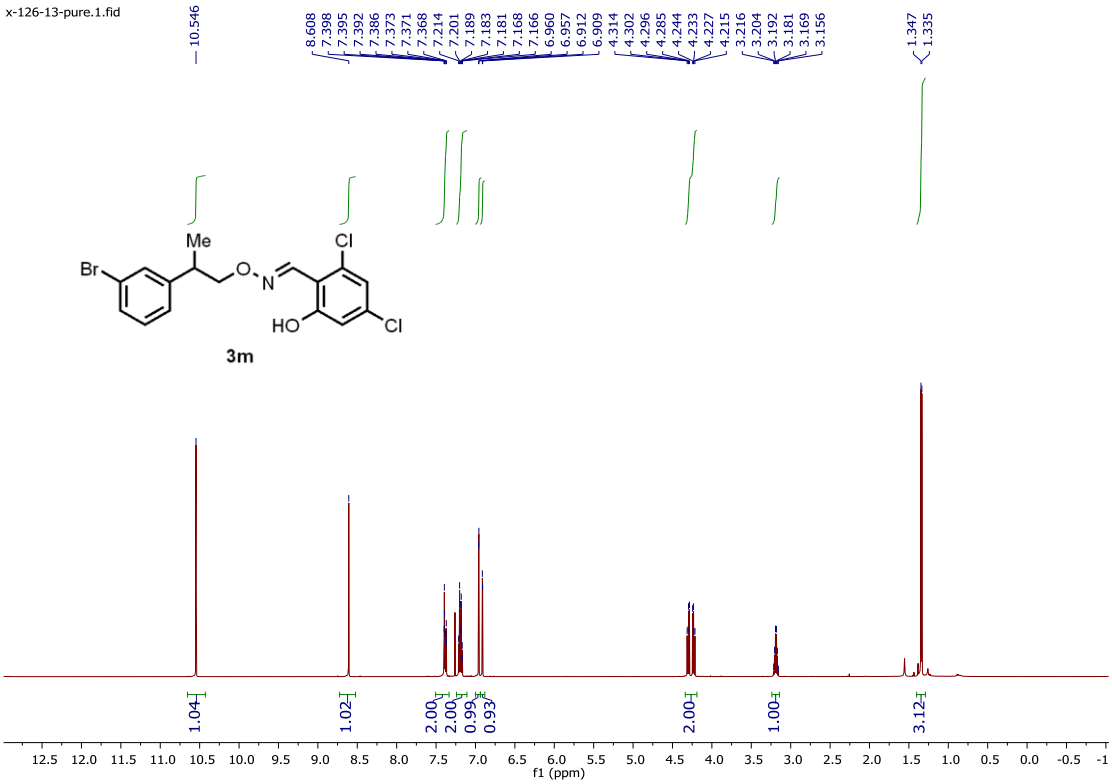

x-126-11-pure.1.fid
10.448
8.589
7.551
7.549
7.547
7.540
7.538
7.536
7.501
7.491
7.488
7.452
7.439
7.426
6.961
6.957
6.907
6.906
6.904
6.903
4.313
4.301
4.295
4.289
4.283
4.278
4.271
4.260
3.292
3.280
3.269
3.257
3.245
3.234
1.371
1.359
Me
NC
O
N
Cl
HO
Cl
3k
1.03
1.02
1.92
1.06
0.97
0.90
0.93
1.99
1.00
3.04
f1 (ppm)


x-126-11-pure.2.fid
159.157
148.730
144.593
136.897
134.812
131.982
131.005
130.528
129.384
120.999
118.829
116.212
112.719
112.706
79.650
77.212 CDCl3
76.789 CDCl3
39.013
29.688
17.763
Me
NC
O
N
Cl
HO
Cl
3k
f1 (ppm)

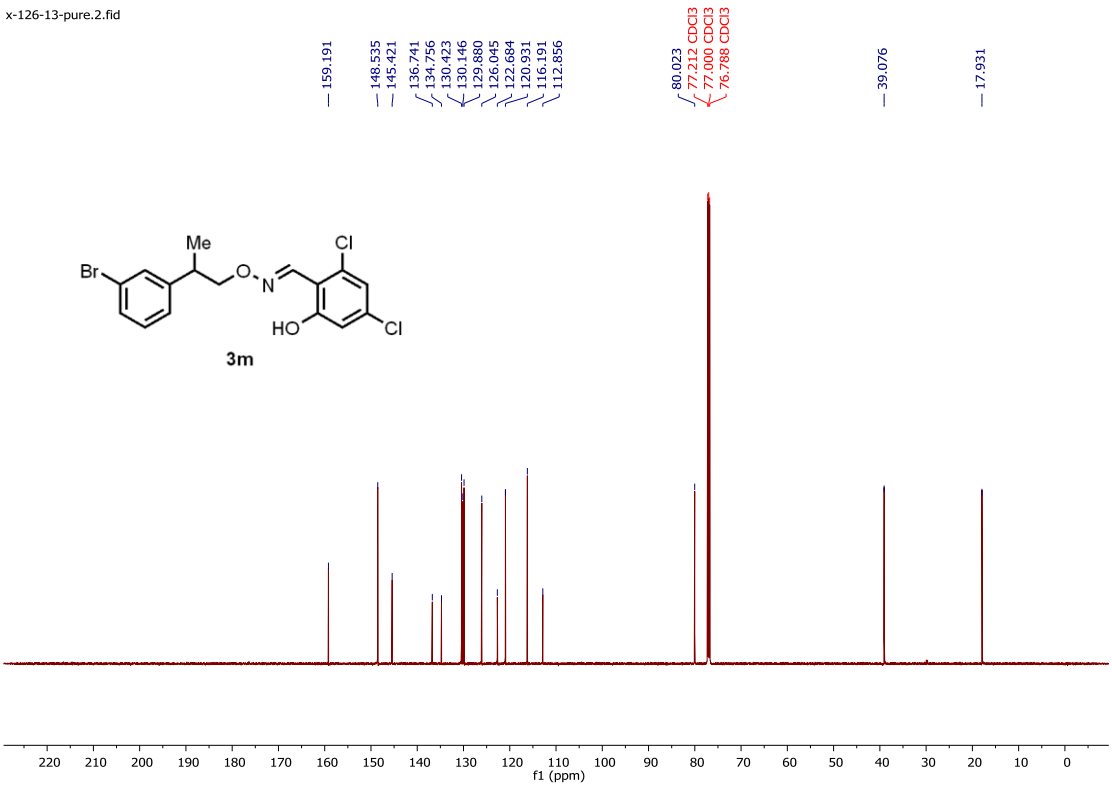

x-126-12-pure.1.fid
10.551
8.614
7.886
7.883
7.880
7.861
7.858
7.855
7.848
7.846
7.843
7.494
7.492
7.489
7.481
7.479
7.476
7.468
7.455
7.443
6.975
6.972
6.926
6.922
4.379
4.367
4.361
4.349
4.321
4.309
4.303
4.292
3.346
3.334
3.322
3.311
3.299
3.287
2.633
1.412
1.400
Me
Ac
O
N
Cl
HO
Cl
3l
0.99
0.96
1.94
1.89
0.89
0.89
2.01
1.00
2.94
3.01
f1 (ppm)

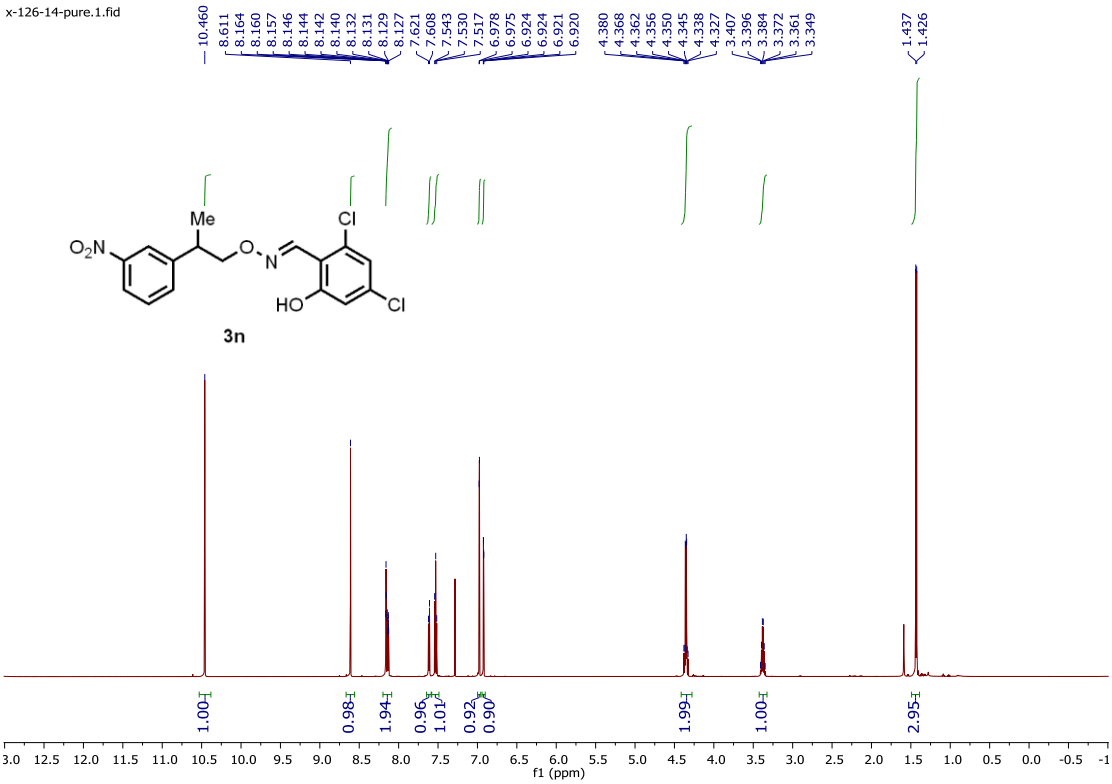

x-126-12-pure.2.fid
198.090
159.172
148.476
143.719
137.461
136.730
134.725
132.185
128.821
127.031
126.939
120.920
116.176
112.835
80.084
39.249
26.681
17.994
Me
Ac
O
N
Cl
HO
Cl
3l
f1 (ppm)

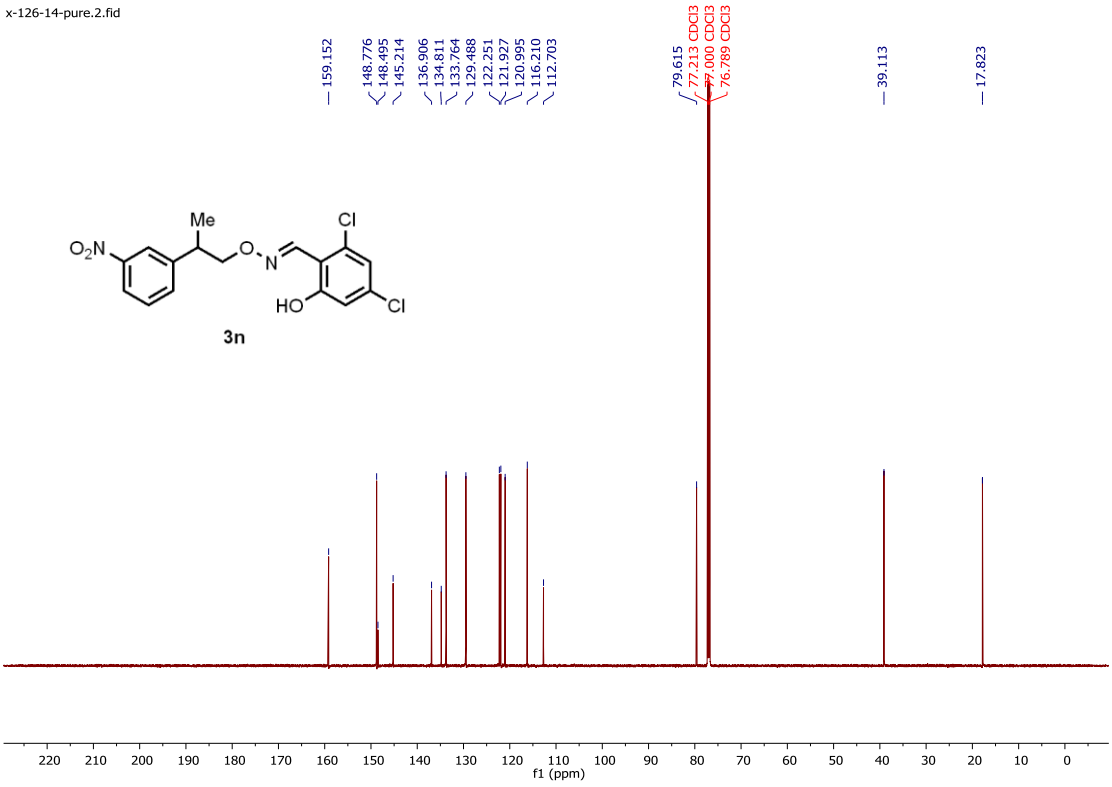
x-126-13-pure.1.fid

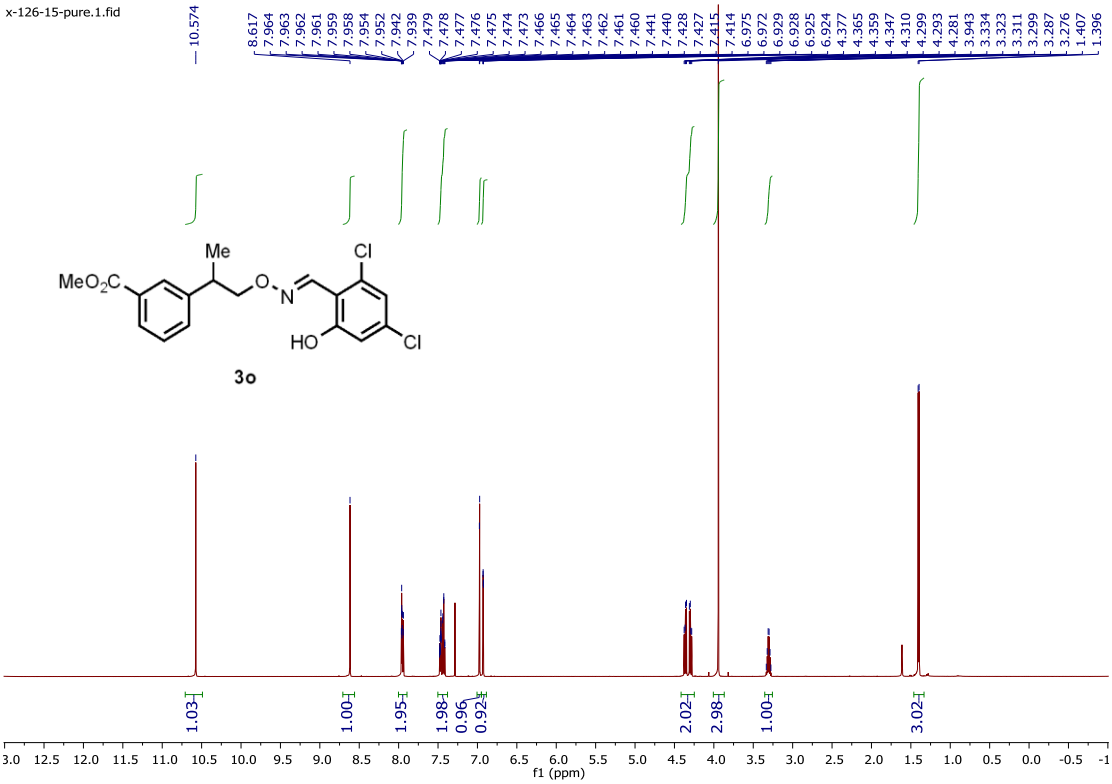


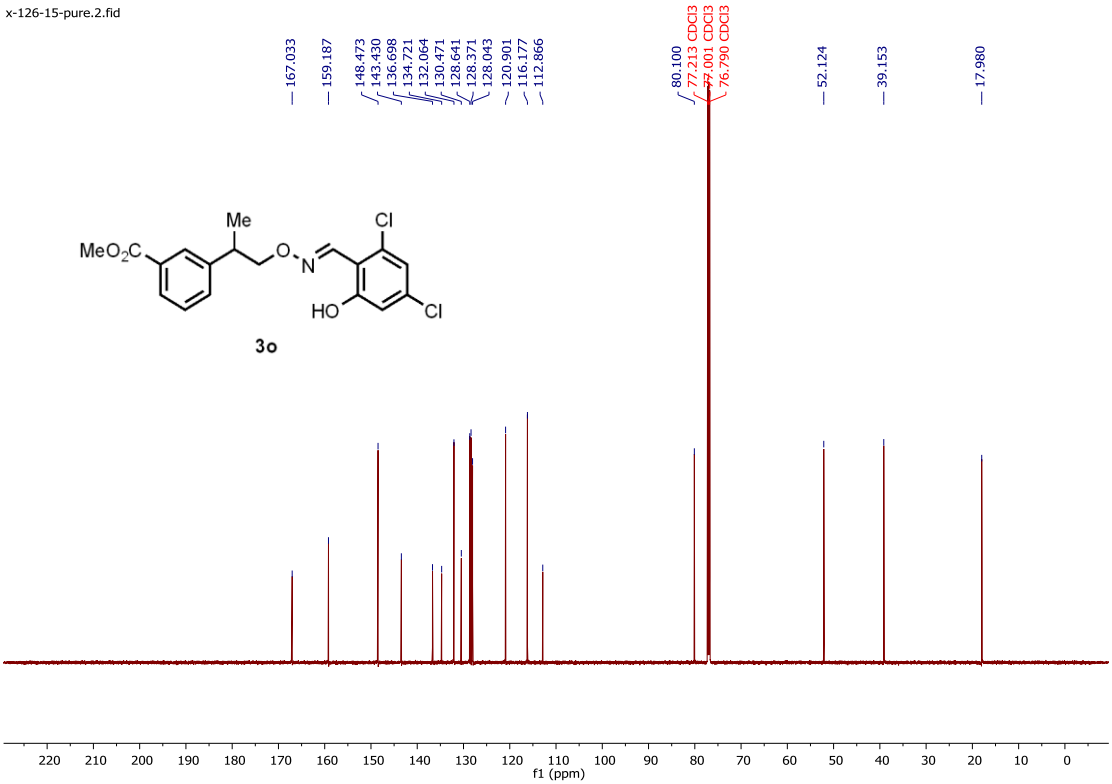
x-126-13-pure.2.fid

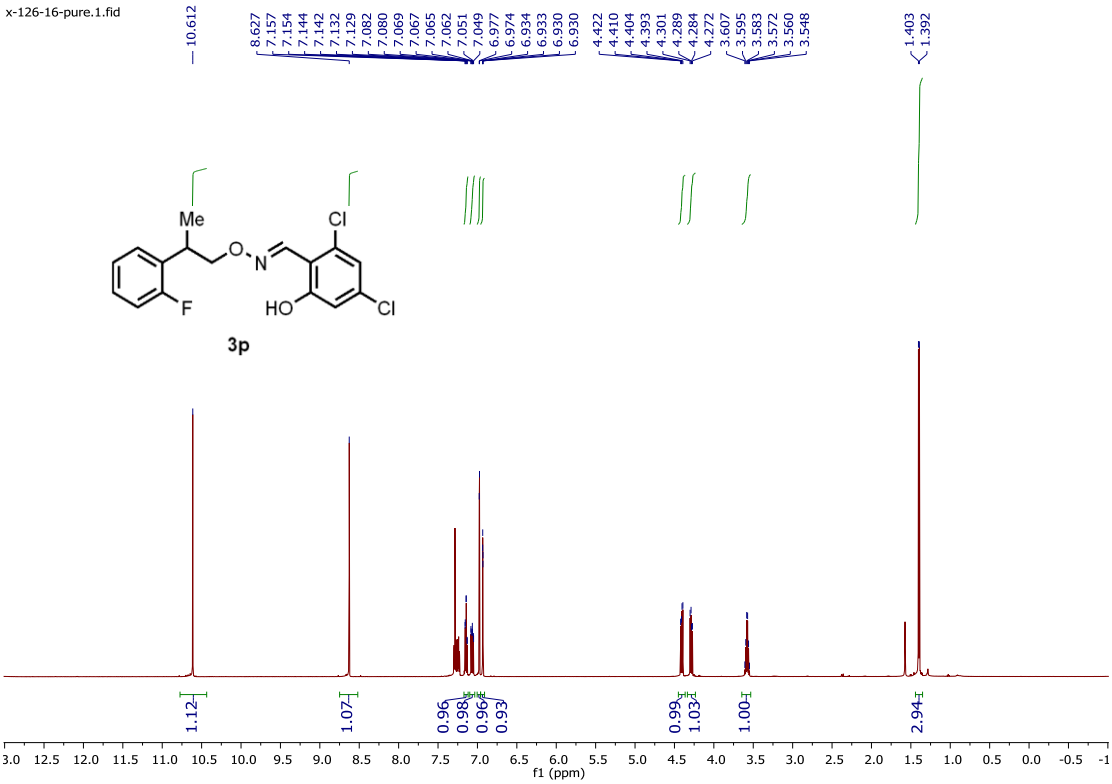


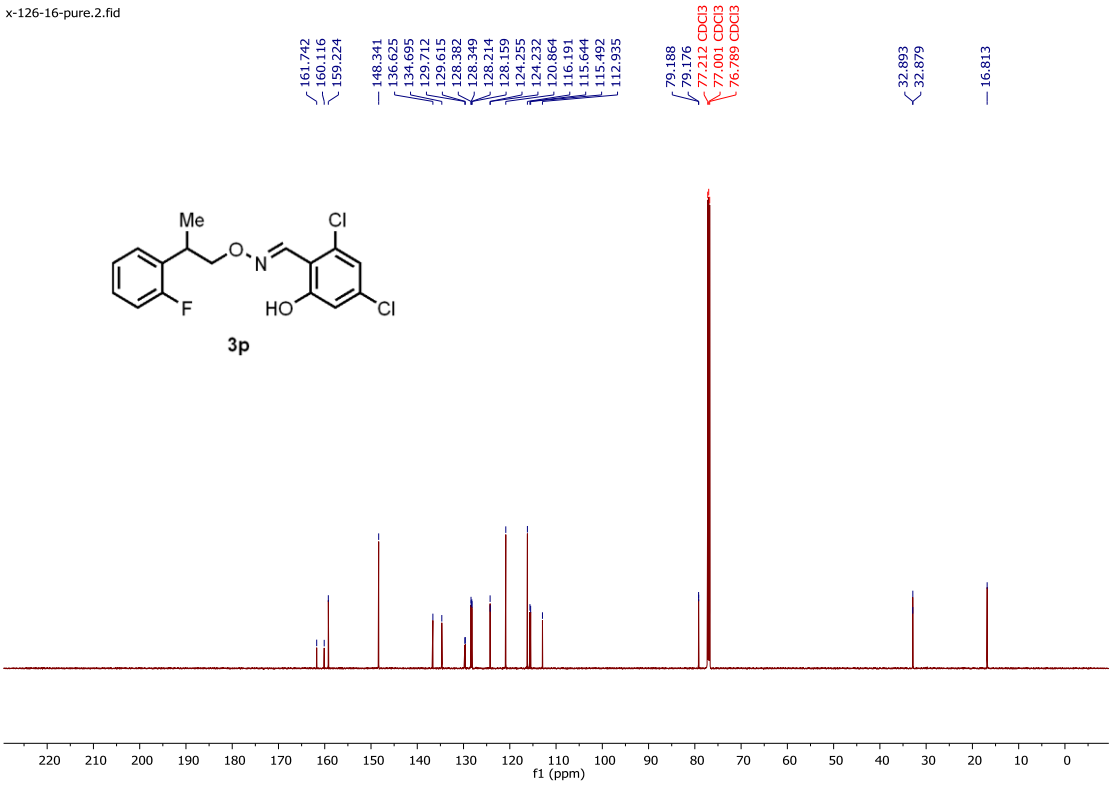

x-126-14-pure.1.fid
10.460
8.611
8.164
8.160
8.157
8.146
8.144
8.142
8.140
8.132
8.131
8.129
8.127
7.621
7.608
7.543
7.530
7.517
6.978
6.975
6.924
6.924
6.921
6.920
4.380
4.368
4.362
4.356
4.350
4.345
4.338
4.327
3.407
3.396
3.384
3.372
3.361
3.349
1.437
1.426
Me
Cl
O2N
O
N
HO
Cl
3n
1.00
0.98
1.94
0.96
1.01
0.92
0.90
1.99
1.00
2.95
f1 (ppm)


x-126-14-pure.2.fid
159.152
148.776
148.495
145.214
136.906
134.811
133.764
129.488
122.251
121.927
120.995
116.210
112.703
79.615
77.213 CDCl3
77.000 CDCl3
76.789 CDCl3
39.113
17.823
Me
Cl
O2N
O
N
HO
Cl
3n
f1 (ppm)

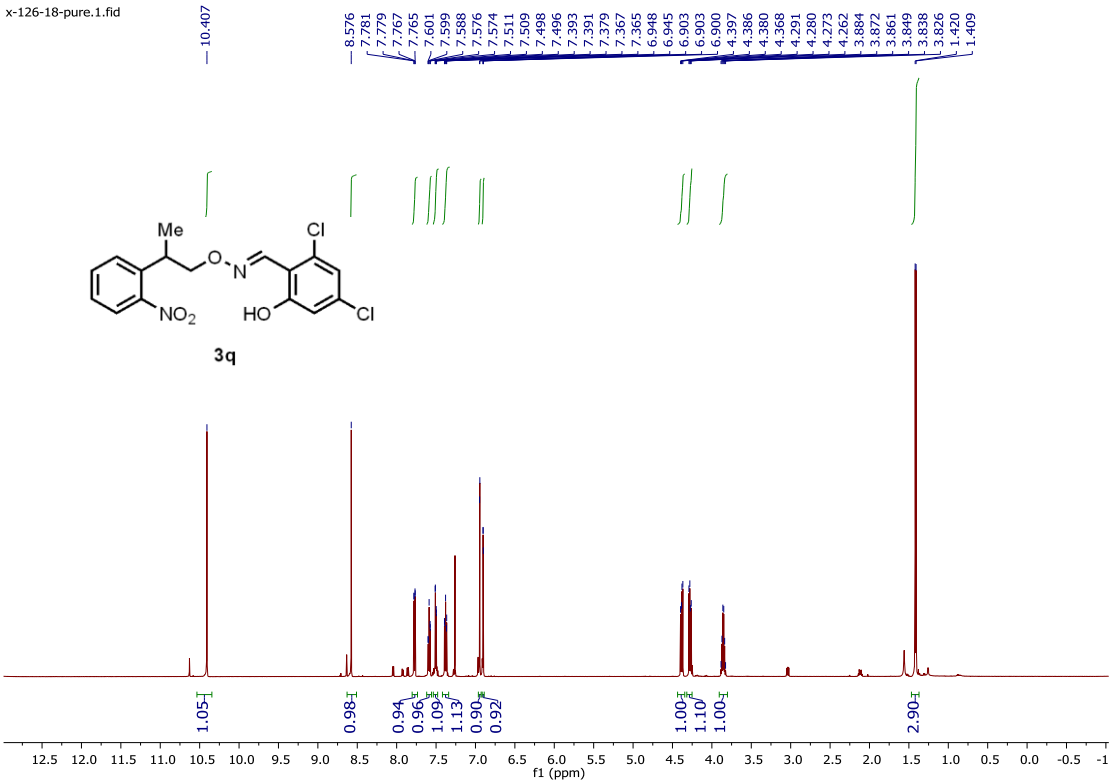

x-126-15-pure.1.fid
10.574
8.617
7.964
7.963
7.962
7.961
7.959
7.958
7.954
7.952
7.942
7.939
7.479
7.478
7.477
7.476
7.475
7.474
7.473
7.466
7.465
7.464
7.463
7.462
7.461
7.460
7.441
7.440
7.428
7.427
7.415
7.414
6.975
6.972
6.929
6.928
6.925
6.924
4.377
4.365
4.359
4.347
4.310
4.299
4.293
4.281
3.943
3.334
3.323
3.311
3.299
3.287
3.276
1.407
1.396
Me
MeO2C
O
N
Cl
HO
Cl
3o
1.03
1.00
1.95
1.98
0.96
0.92
2.02
2.98
1.00
3.02
f1 (ppm)


x-126-15-pure.2.fid
167.033
159.187
148.473
143.430
136.698
134.721
132.064
130.471
128.641
128.371
128.043
120.901
116.177
112.866
80.100
77.213 CDCl3
77.001 CDCl3
76.790 CDCl3
52.124
39.153
17.980
Me
MeO2C
O
N
Cl
HO
Cl
3o
f1 (ppm)

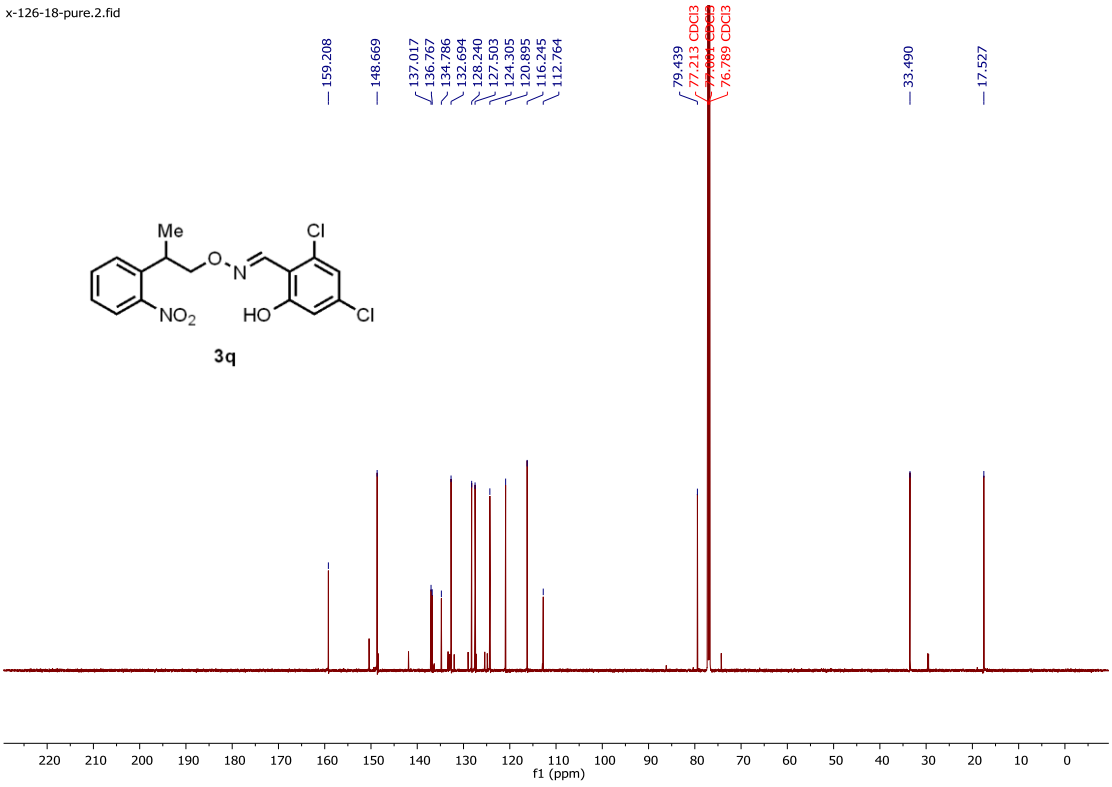

x-126-16-pure.1.fid
10.612
8.627
7.157
7.154
7.144
7.142
7.132
7.129
7.082
7.080
7.069
7.067
7.065
7.062
7.051
7.049
6.977
6.974
6.934
6.933
6.930
6.930
4.422
4.410
4.404
4.393
4.301
4.289
4.284
4.272
3.607
3.595
3.583
3.572
3.560
3.548
1.403
1.392
Me
O
N
Cl
F
HO
Cl
3p
1.12
1.07
0.96
0.98
0.96
0.93
0.99
1.03
1.00
2.94
f1 (ppm)


x-126-16-pure.2.fid
161.742
160.116
159.224
148.341
136.625
134.695
129.712
129.615
128.382
128.349
128.214
128.159
124.255
124.232
120.864
116.191
115.644
115.492
112.935
79.188
79.176
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
32.893
32.879
16.813
Me
O
N
Cl
F
HO
Cl
3p
f1 (ppm)

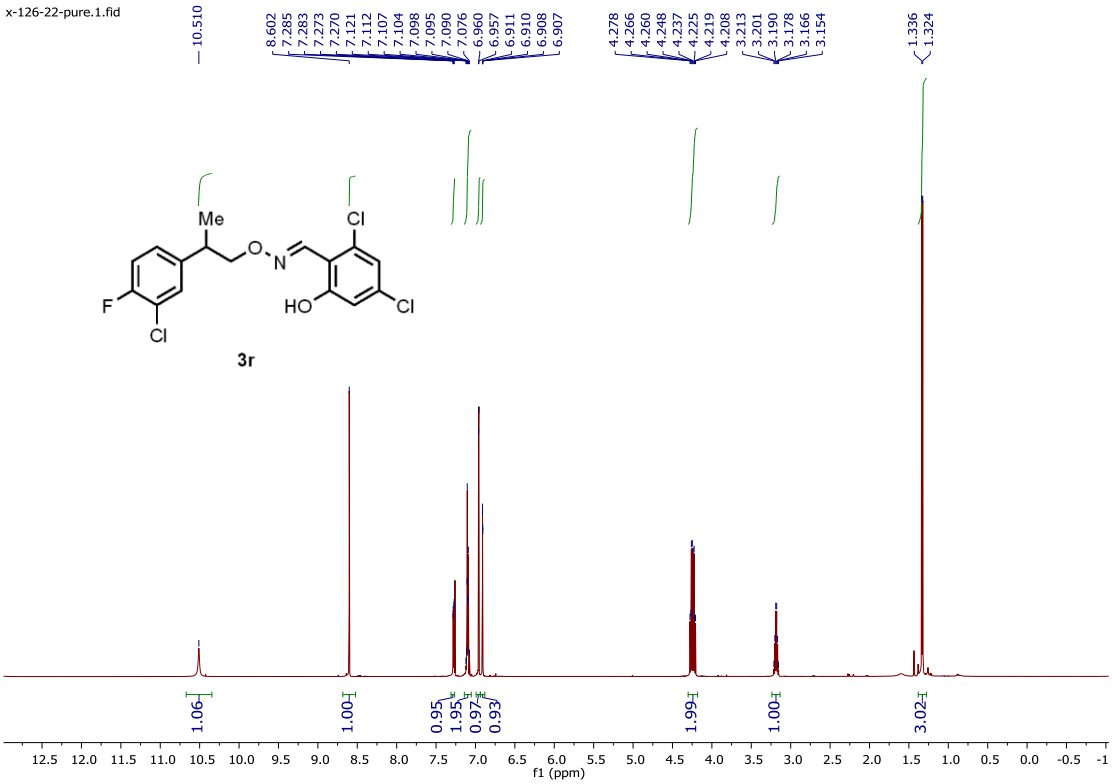
x-126-18-pure.1.fid



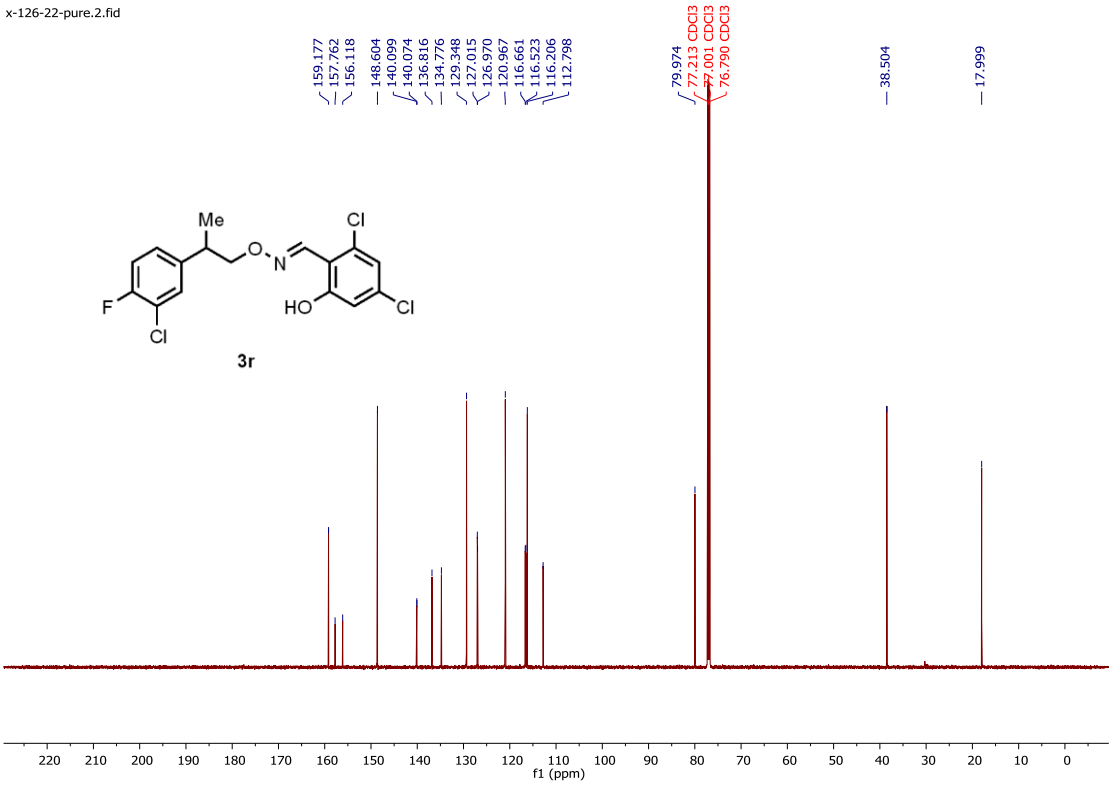
x-126-18-pure.2.fid

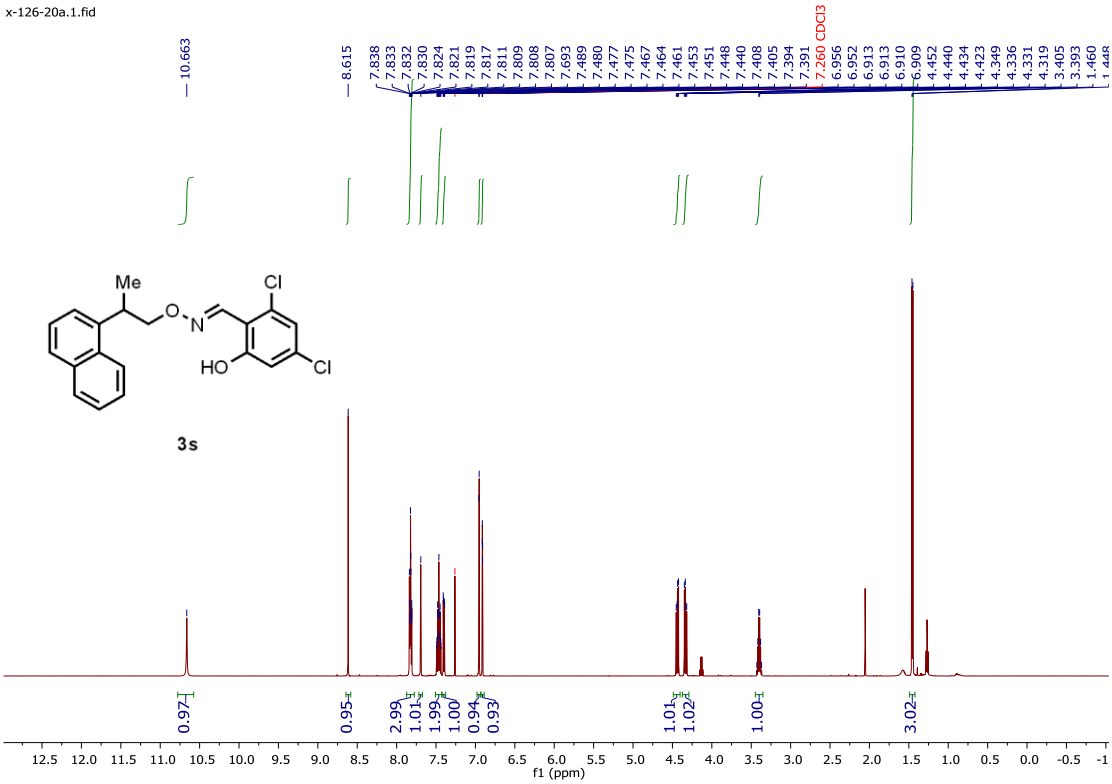


x-126-22-pure.1.fid



x-126-22-pure.2.fid




x-126-20a.1.fid
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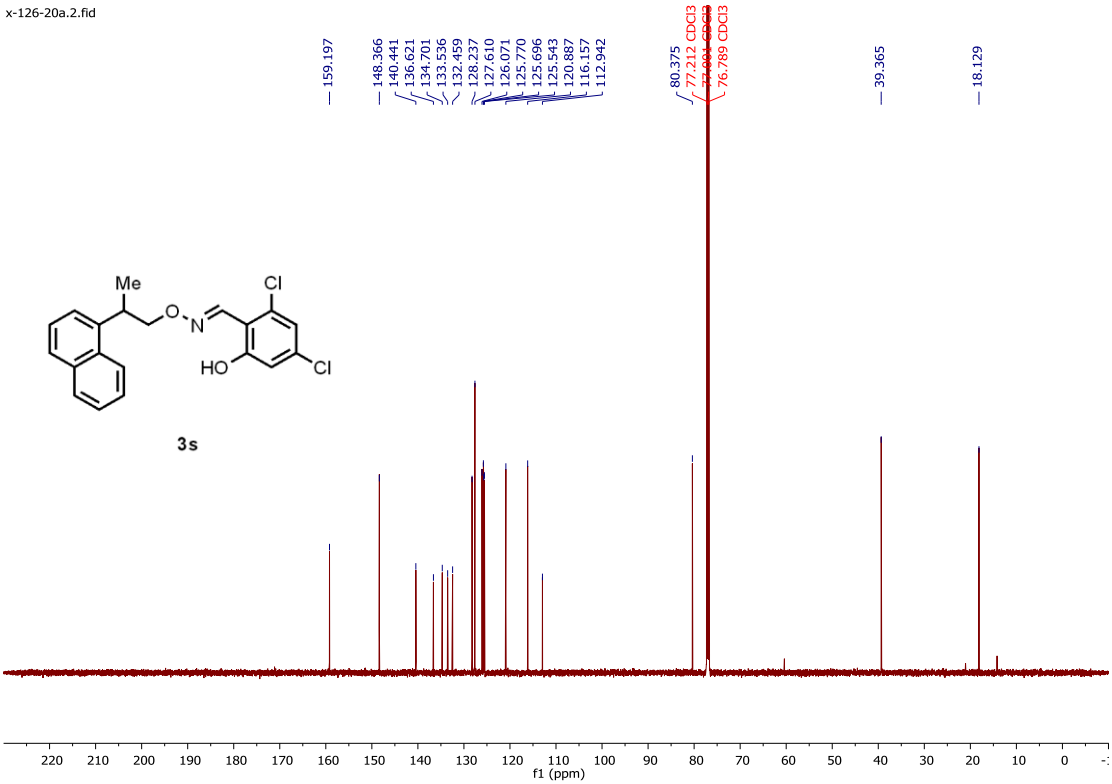
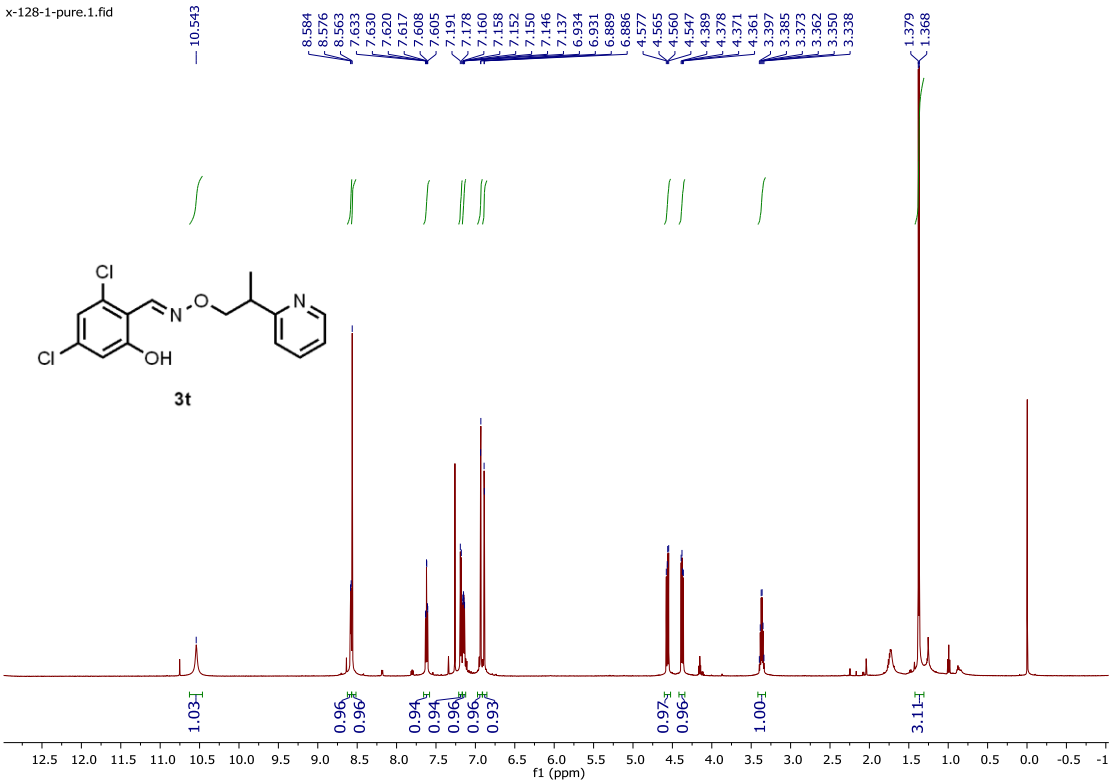
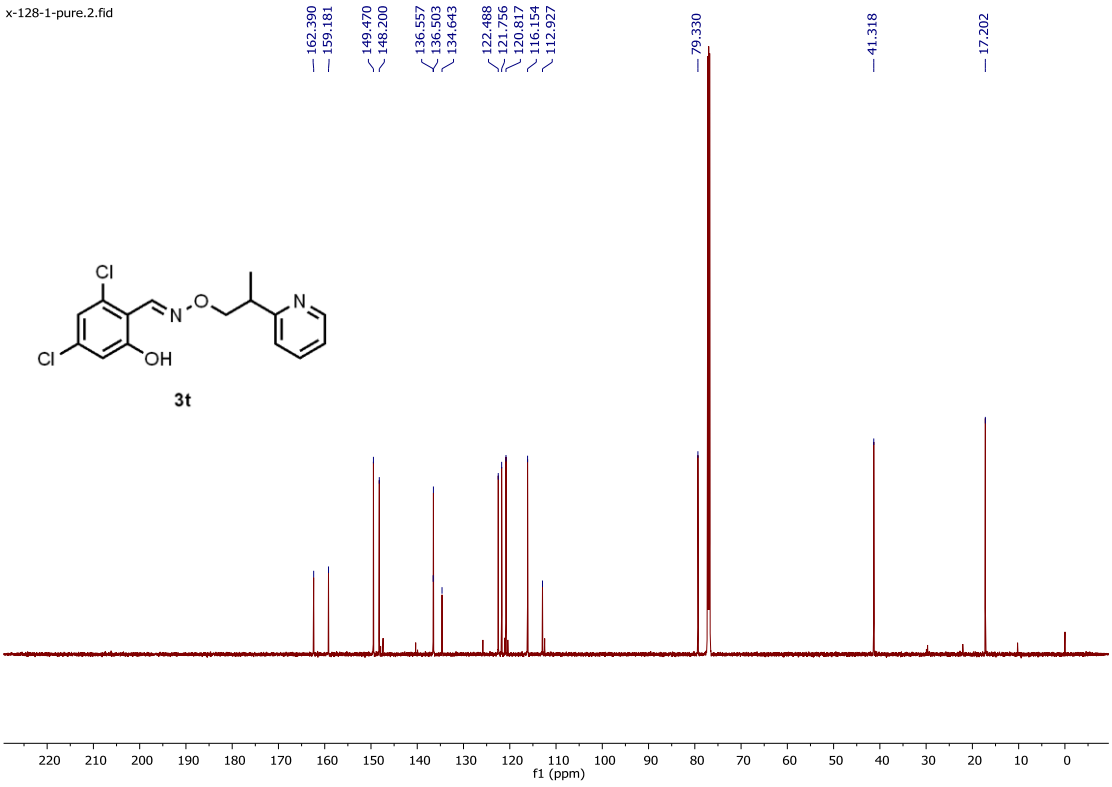
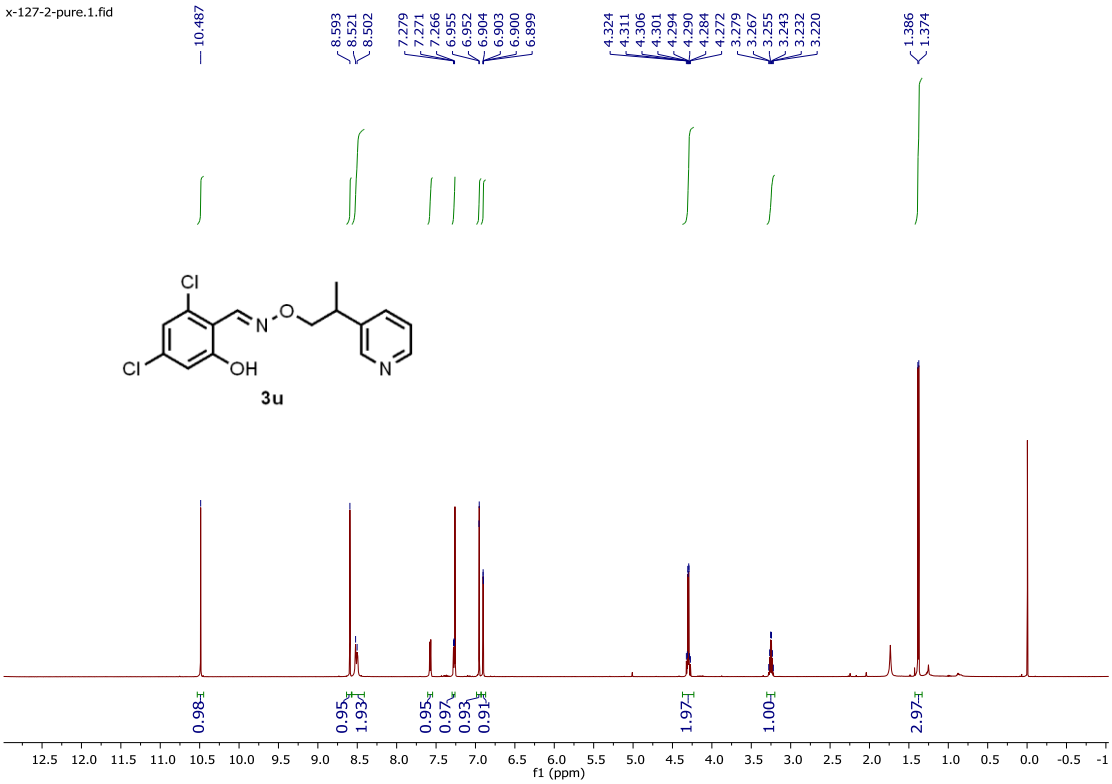
8.615
7.838
7.833
7.832
7.830
7.824
7.821
7.819
7.817
7.811
7.809
7.808
7.807
7.693
7.489
7.480
7.477
7.475
7.467
7.464
7.461
7.453
7.451
7.448
7.440
7.408
7.405
7.394
7.391
7.260 CDCl3
6.956
6.952
6.913
6.913
6.910
6.909
4.452
4.440
4.434
4.423
4.349
4.336
4.331
4.319
3.405
3.393
1.460
Me
O
N
Cl
HO
Cl
3s
0.97
0.95
2.99
1.01
1.99
1.00
0.94
0.93
1.01
1.02
1.00
3.02
f1 (ppm)


x-126-20a.2.fid
159.197
148.366
140.441
136.621
134.701
133.536
132.459
128.237
127.610
126.071
125.770
125.696
125.543
120.887
116.157
112.942
80.375
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
39.365
18.129
Me
O
N
Cl
HO
Cl
3s
f1 (ppm)


x-128-1-pure.1.fid
10.543
8.584
8.576
8.563
7.633
7.630
7.620
7.617
7.608
7.605
7.191
7.178
7.160
7.158
7.152
7.150
7.146
7.137
6.934
6.931
6.889
6.886
4.577
4.565
4.560
4.547
4.389
4.378
4.371
4.361
3.397
3.385
3.373
3.362
3.350
3.338
1.379
1.368
Cl
N
O
Cl
OH
3t
1.03
0.96
0.96
0.94
0.94
0.96
0.96
0.93
0.97
0.96
1.00
3.11
f1 (ppm)


x-128-1-pure.2.fid
162.390
159.181
149.470
148.200
136.557
136.503
134.643
122.488
121.756
120.817
116.154
112.927
79.330
41.318
17.202
Cl
N
O
Cl
OH
3t
f1 (ppm)


x-127-2-pure.1.fid
10.487
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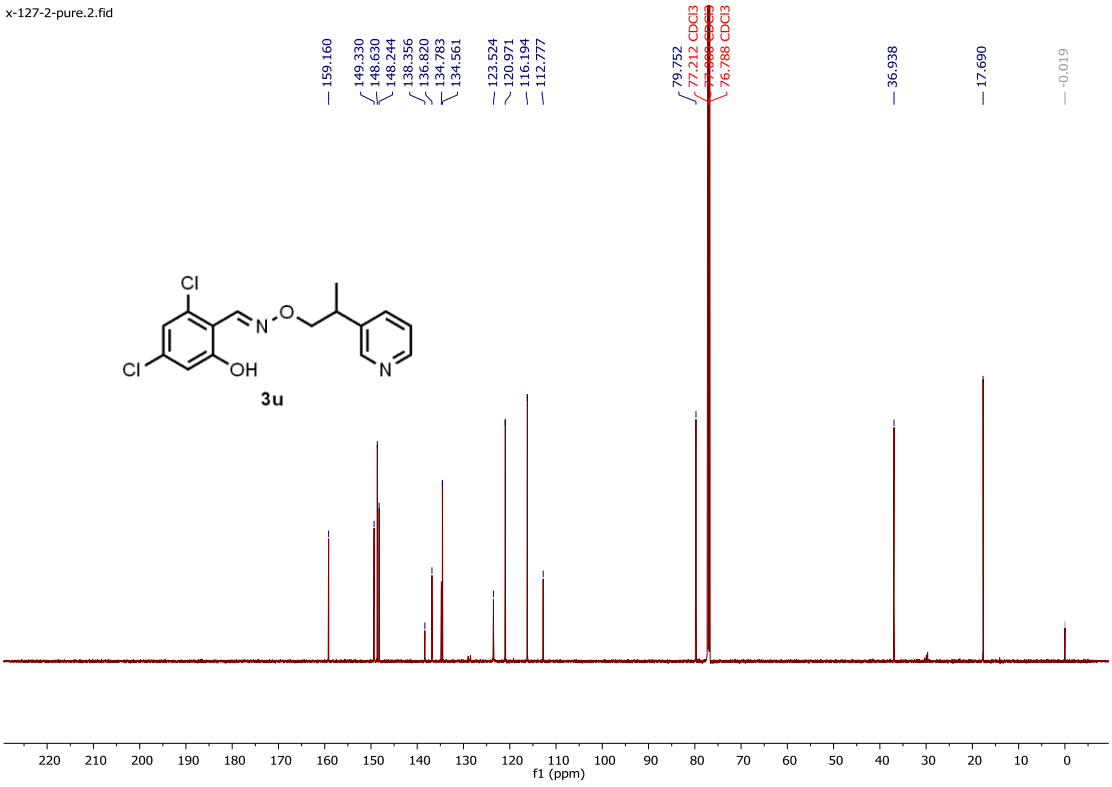
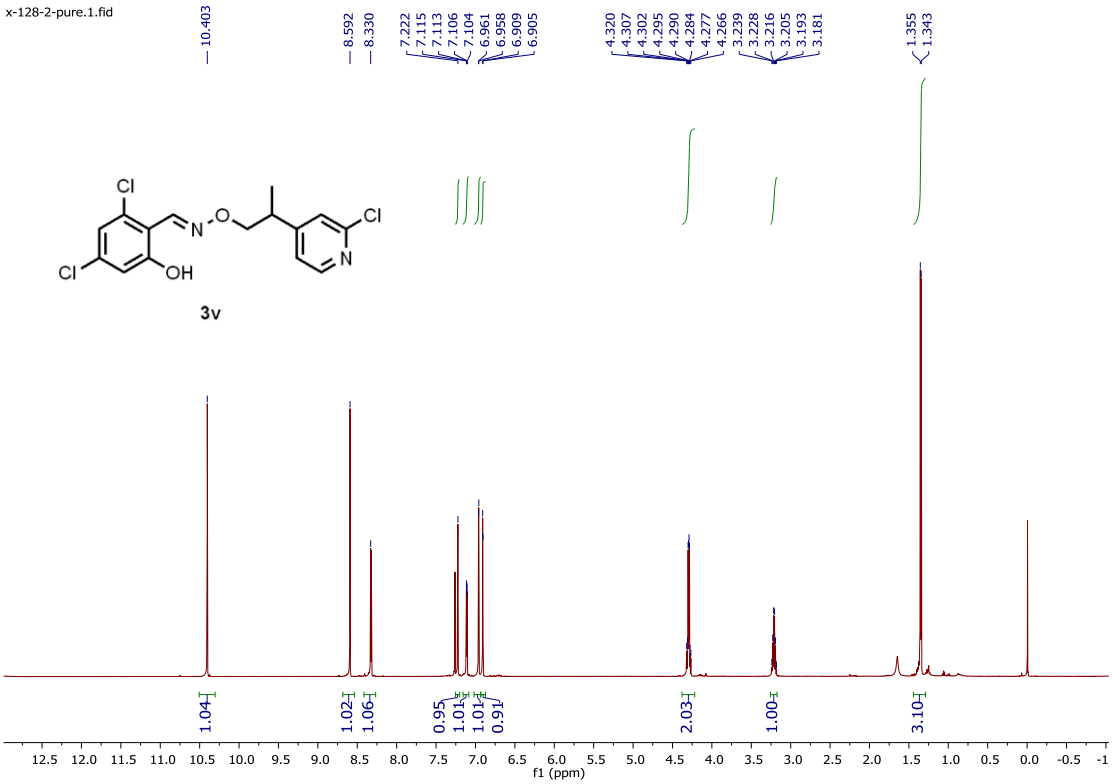
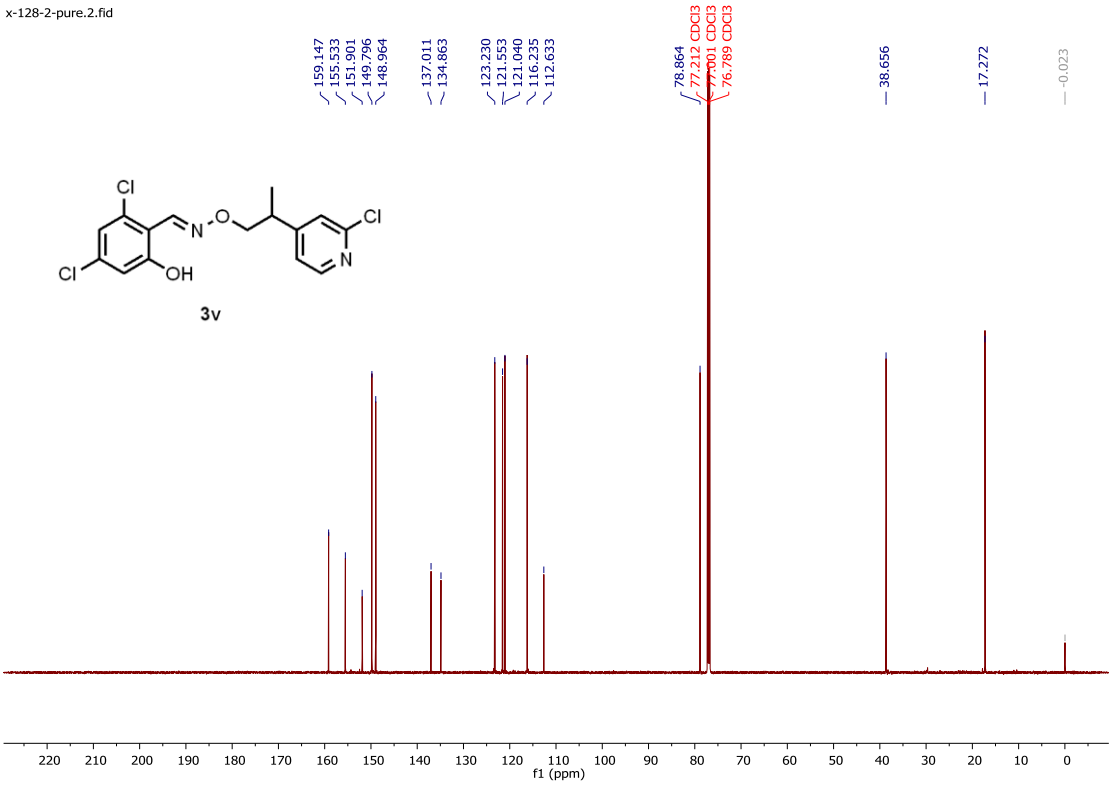
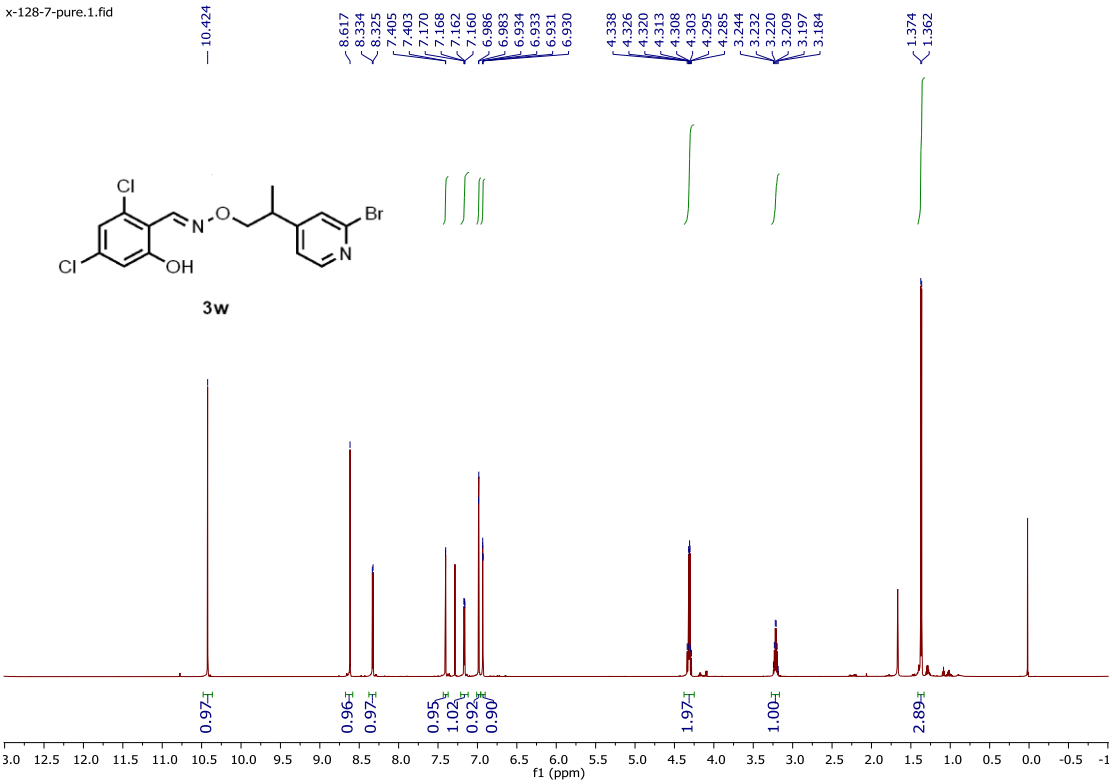
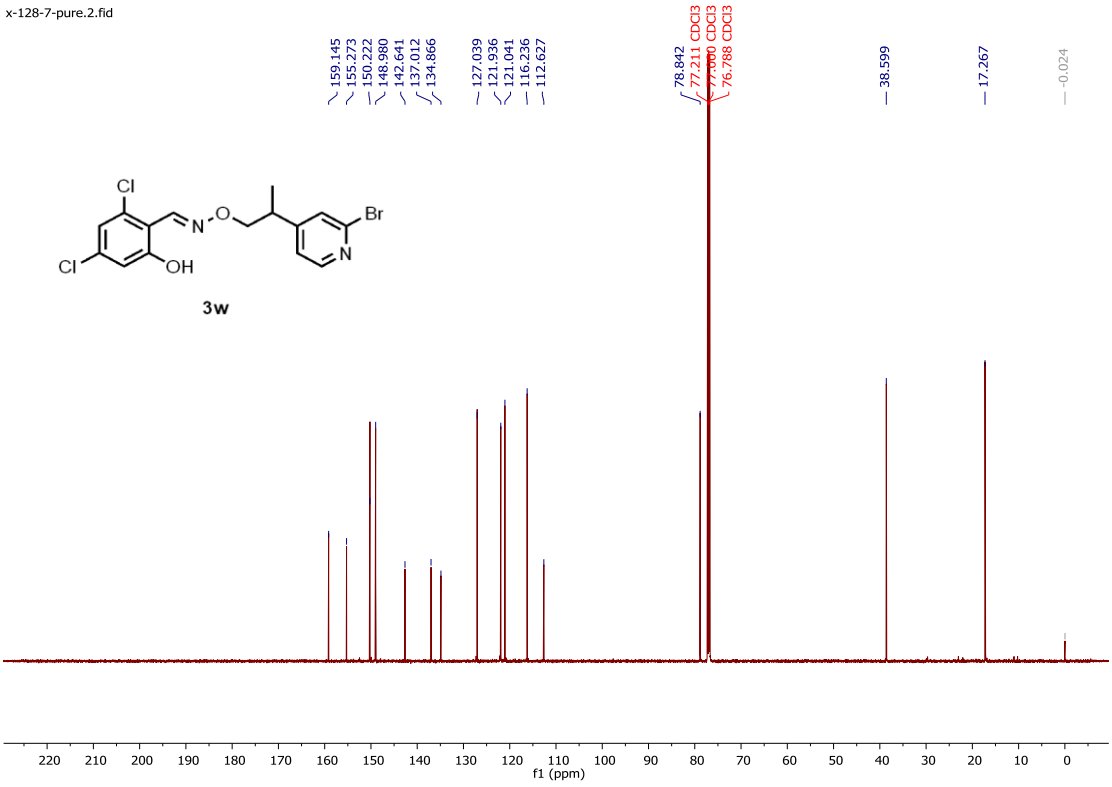
8.521
8.502
7.279
7.271
7.266
6.955
6.952
6.904
6.903
6.900
6.899
4.324
4.311
4.306
4.301
4.294
4.290
4.284
4.272
3.279
3.267
3.255
3.243
3.232
3.220
1.386
1.374
Cl
N
O
Cl
OH
N
3u
0.98
0.95
1.93
0.95
0.97
0.93
0.91
1.97
1.00
2.97
f1 (ppm)


x-127-2-pure.2.fid
159.160
149.330
148.630
148.244
138.356
136.820
134.783
134.561
123.524
120.971
116.194
112.777
79.752
77.212 CDCl3
76.788 CDCl3
36.938
17.690
-0.019
Cl
N
O
Cl
OH
N
3u
f1 (ppm)

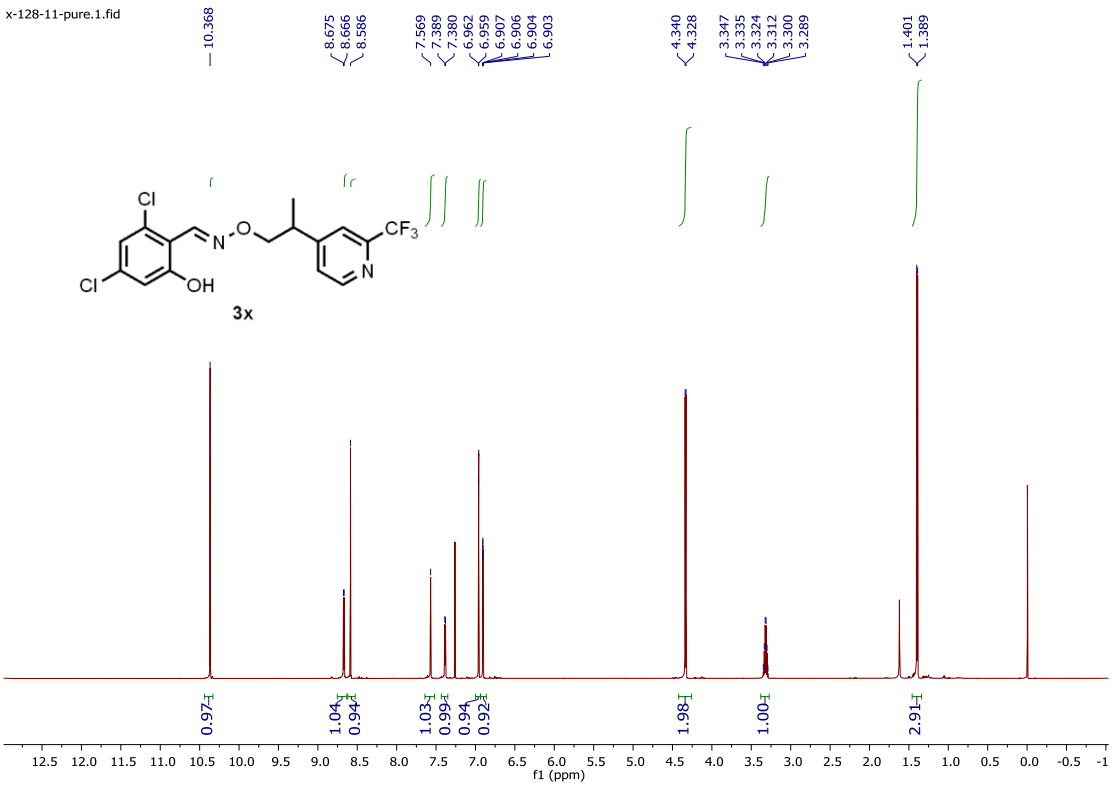

x-128-2-pure.1.fid
10.403
8.592
8.330
7.222
7.115
7.113
7.106
7.104
6.961
6.958
6.909
6.905
4.320
4.307
4.302
4.295
4.290
4.284
4.277
4.266
3.239
3.228
3.216
3.205
3.193
3.181
1.355
1.343
Cl
Cl
N
O
OH
Cl
N
3v
1.04
1.02
1.06
0.95
1.01
1.01
0.91
2.03
1.00
3.10
f1 (ppm)


x-128-2-pure.2.fid
159.147
155.533
151.901
149.796
148.964
137.011
134.863
123.230
121.553
121.040
116.235
112.633
78.864
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
38.656
17.272
-0.023
Cl
Cl
N
O
OH
Cl
N
3v
f1 (ppm)

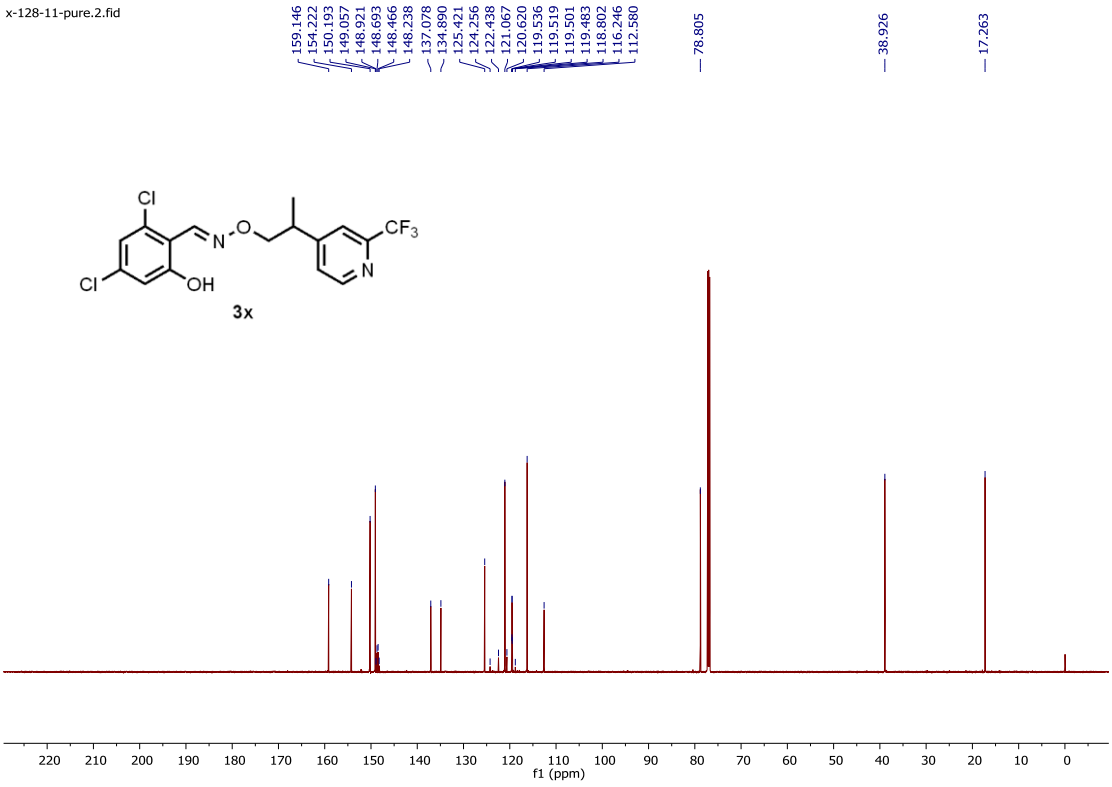

x-128-7-pure.1.fid
10.424
8.617
8.334
8.325
7.405
7.403
7.170
7.168
7.162
7.160
6.986
6.983
6.934
6.933
6.931
6.930
4.338
4.326
4.320
4.313
4.308
4.303
4.295
4.285
3.244
3.232
3.220
3.209
3.197
3.184
1.374
1.362
Cl
Cl
OH
N
O
Br
N
3w
0.97
0.96
0.97
0.95
1.02
0.92
0.90
1.97
1.00
2.89
f1 (ppm)

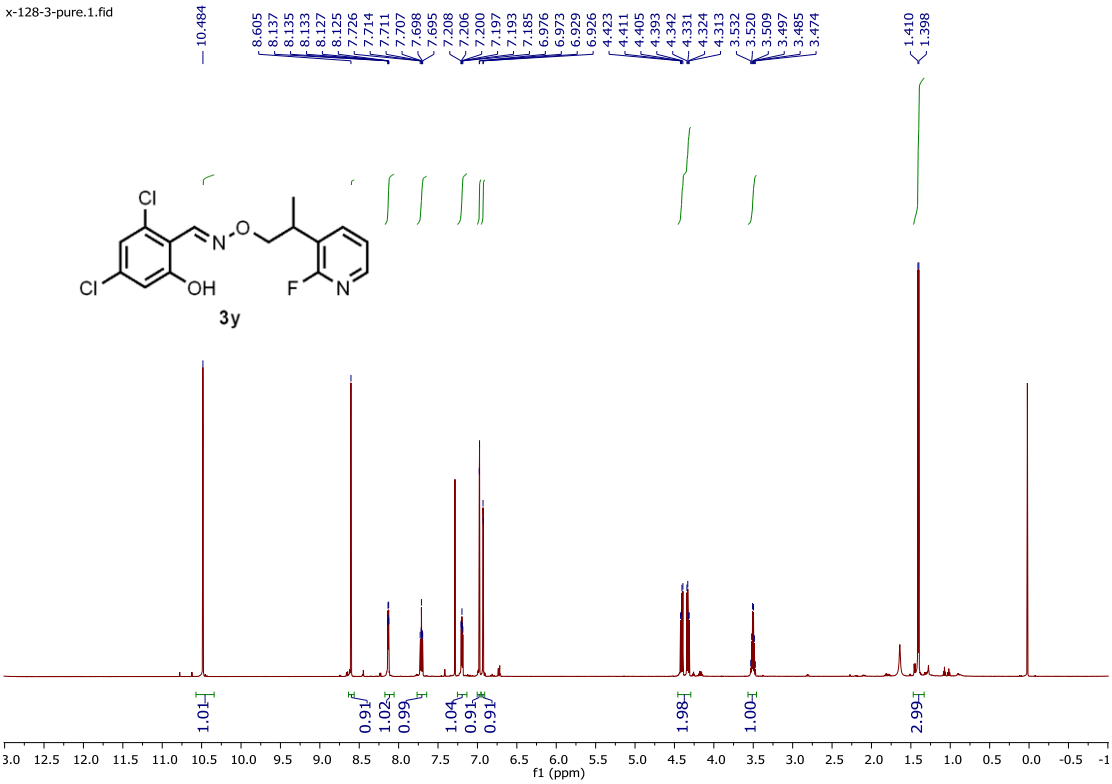

x-128-7-pure.2.fid
159.145
155.273
150.222
148.980
142.641
137.012
134.866
127.039
121.936
121.041
116.236
112.627
78.842
77.211 CDCl3
77.000 CDCl3
76.788 CDCl3
38.599
17.267
-0.024
Cl
Cl
OH
N
O
Br
N
3w
f1 (ppm)

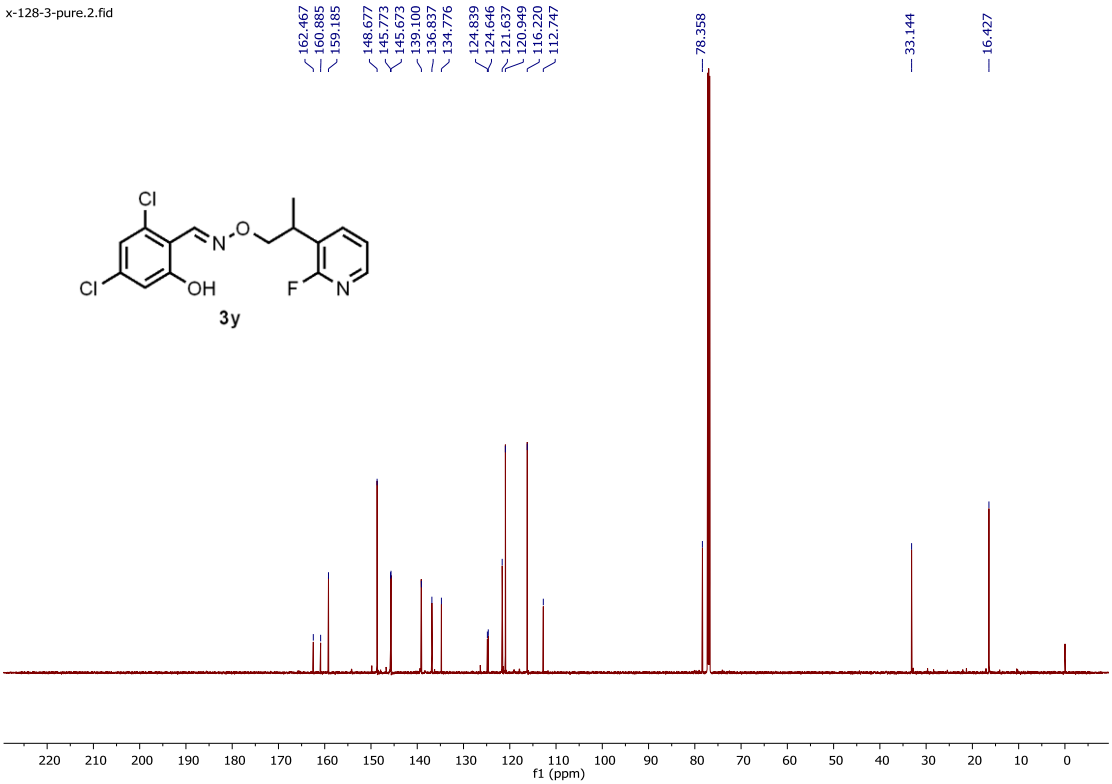
x-128-11-pure.1.fid



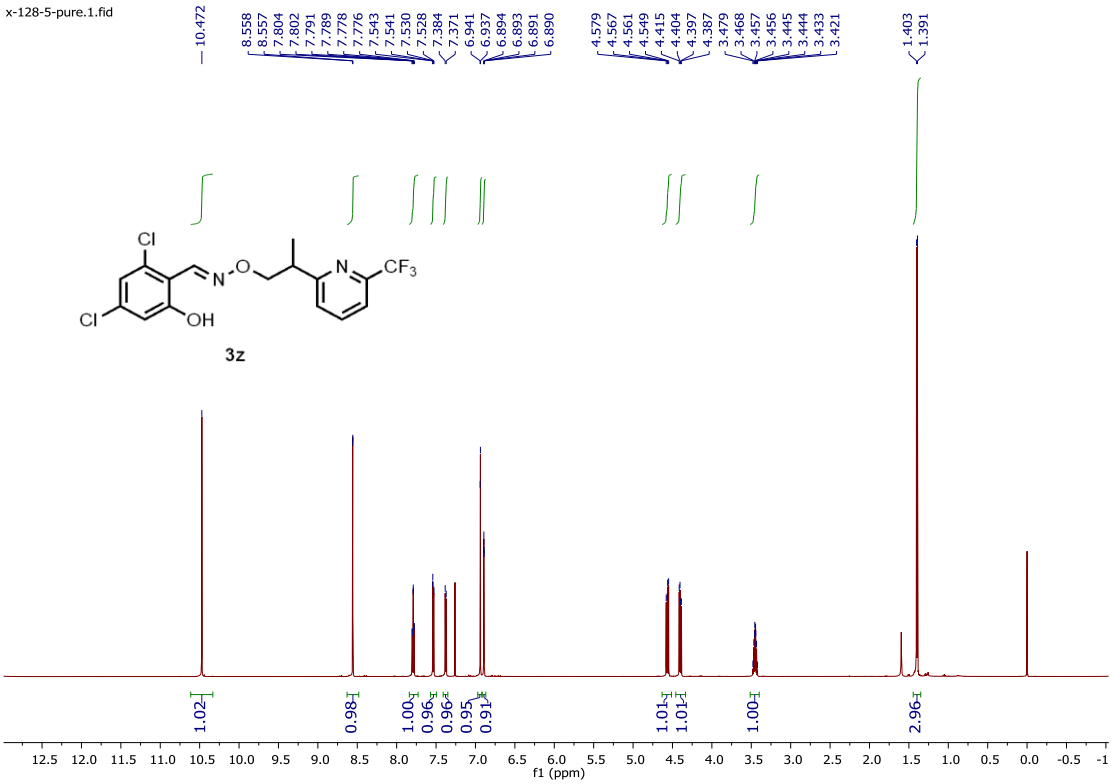
x-128-11-pure.2.fid



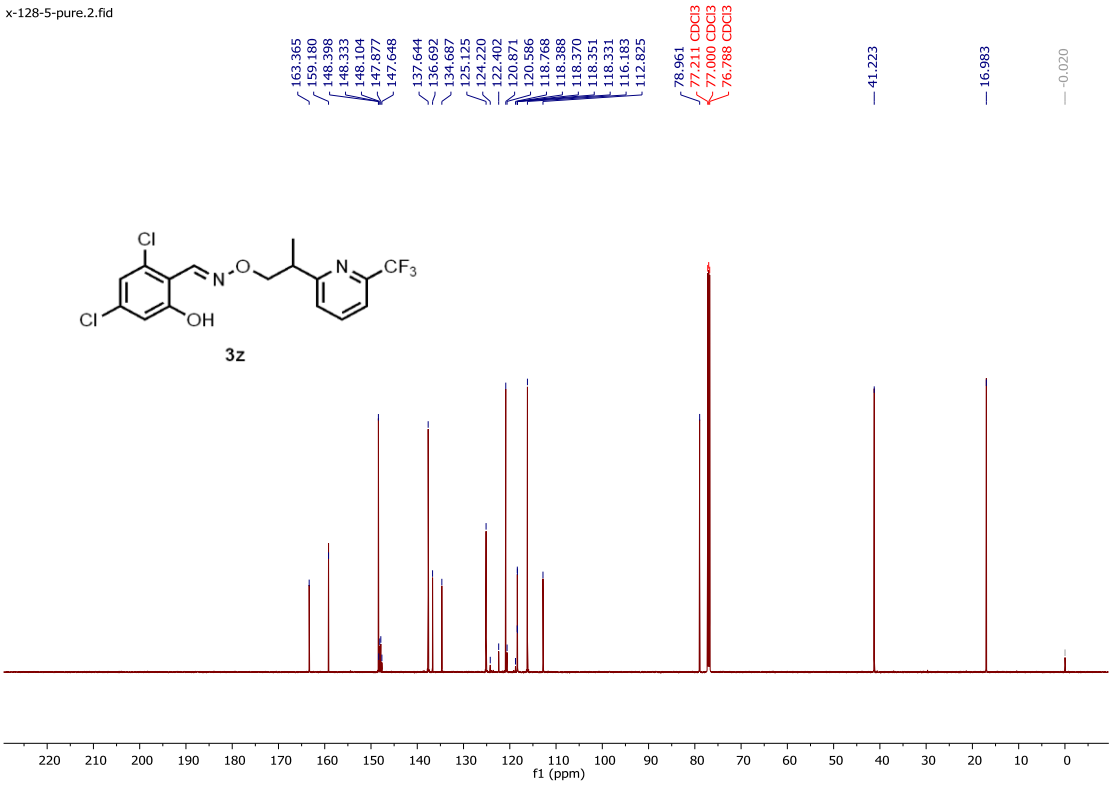

x-128-3-pure.1.fid
10.484
8.605
8.137
8.135
8.133
8.127
8.125
7.726
7.714
7.711
7.707
7.698
7.695
7.208
7.206
7.200
7.197
7.193
7.185
6.976
6.973
6.929
6.926
4.423
4.411
4.405
4.393
4.342
4.331
4.324
4.313
3.532
3.520
3.509
3.497
3.485
3.474
1.410
1.398
Cl
N
O
Cl
OH
F
N
3y
1.01
0.91
1.02
0.99
1.04
0.91
0.91
1.98
1.00
2.99
f1 (ppm)

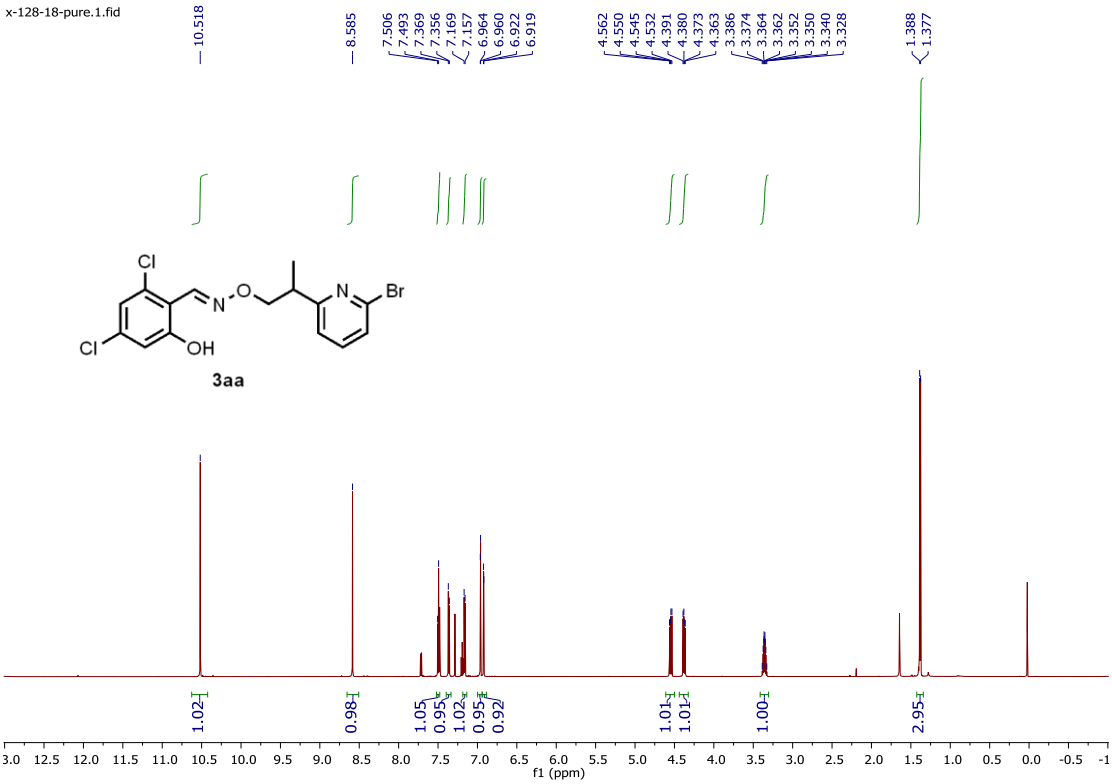

x-128-3-pure.2.fid
162.467
160.885
159.185
148.677
145.773
145.673
139.100
136.837
134.776
124.839
124.646
121.637
120.949
116.220
112.747
78.358
33.144
16.427
Cl
N
O
Cl
OH
F
N
3y
f1 (ppm)

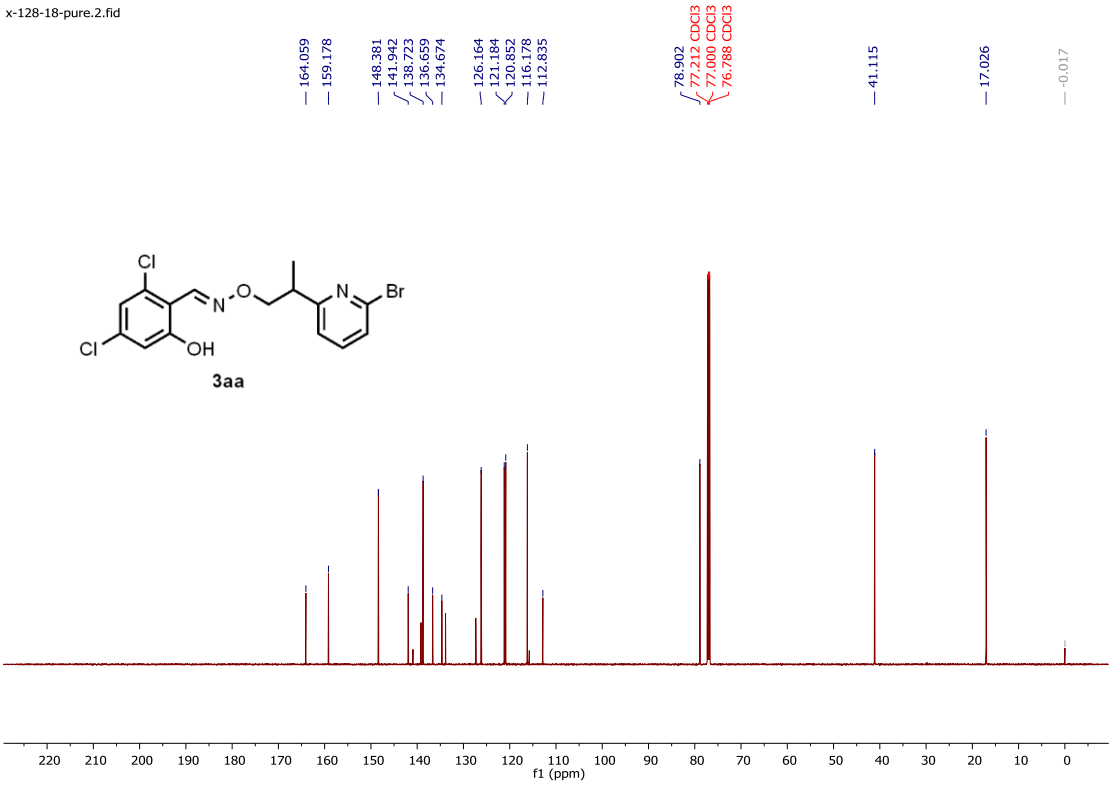
x-128-5-pure.1.fid

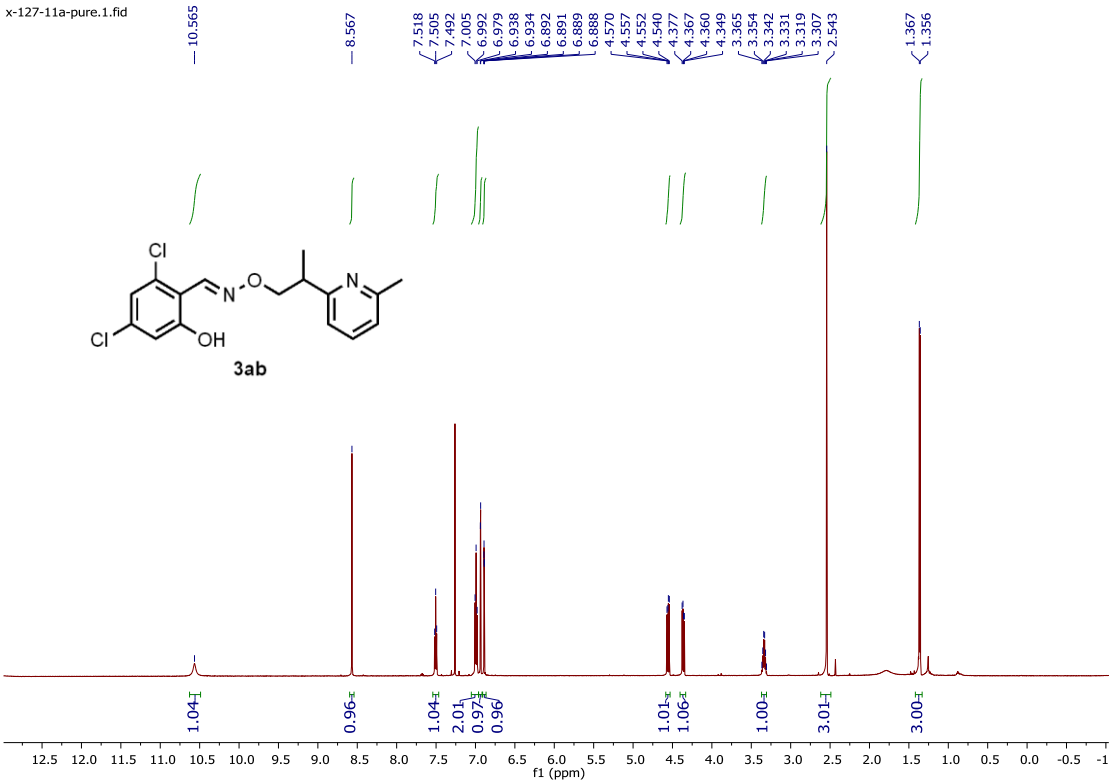


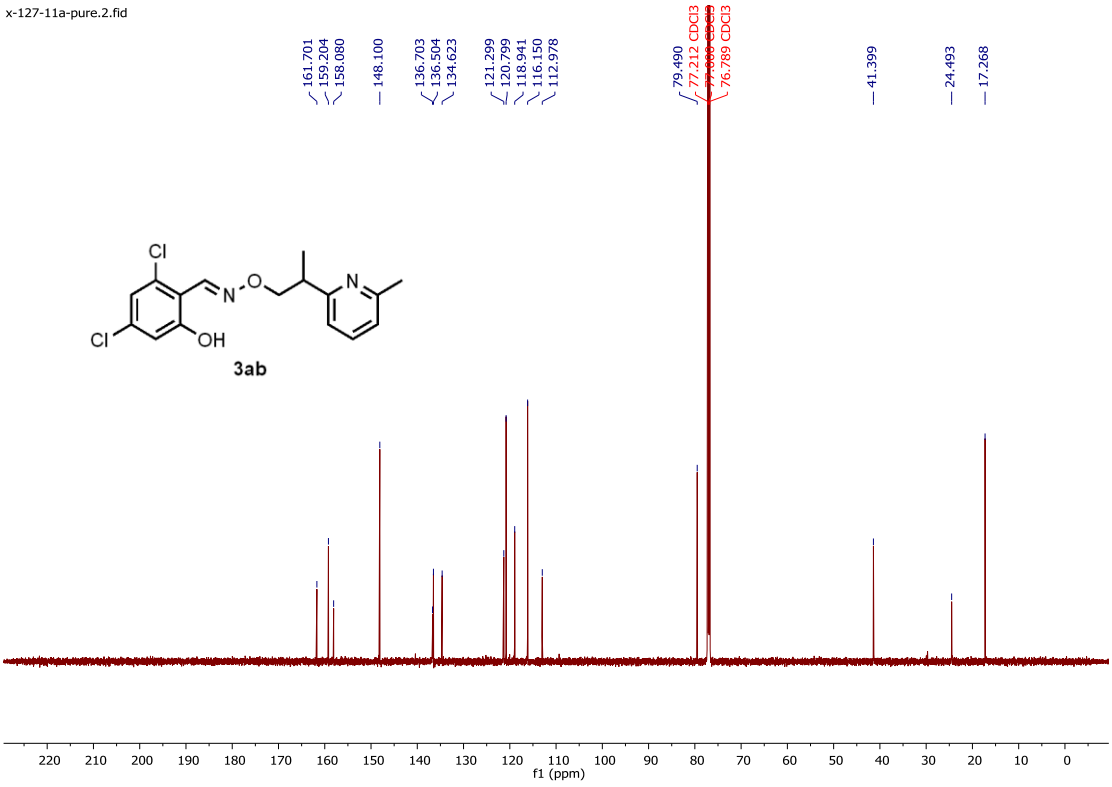
x-128-5-pure.2.fid

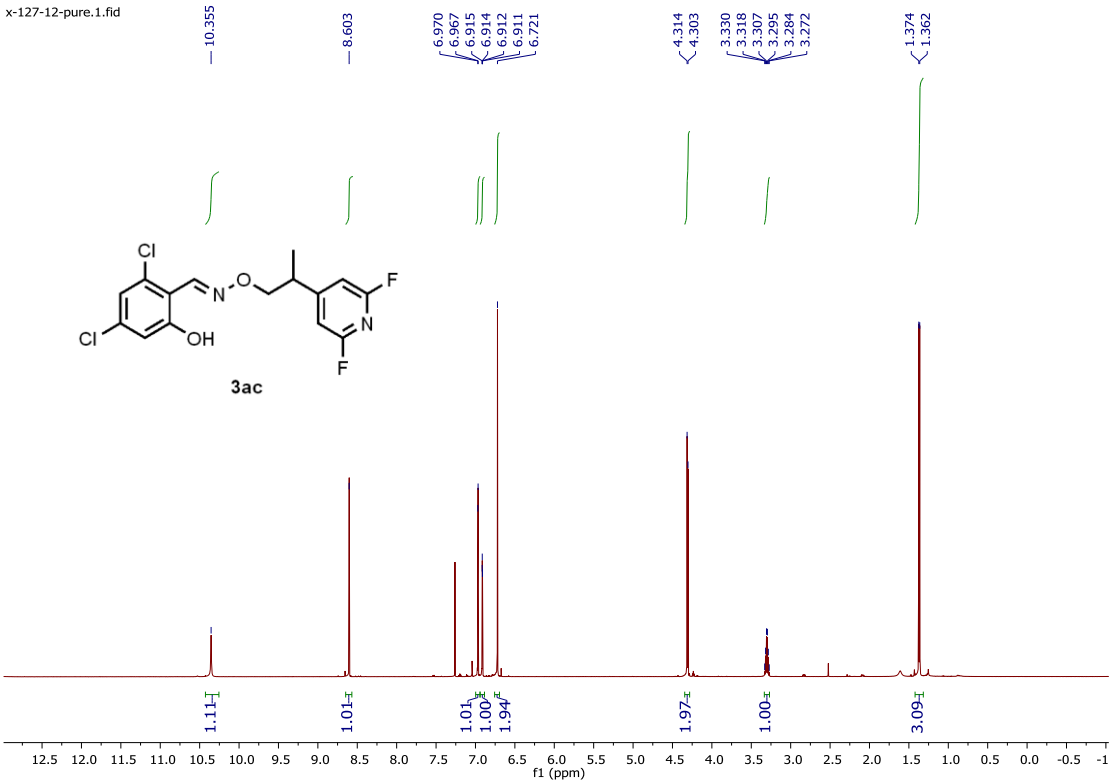


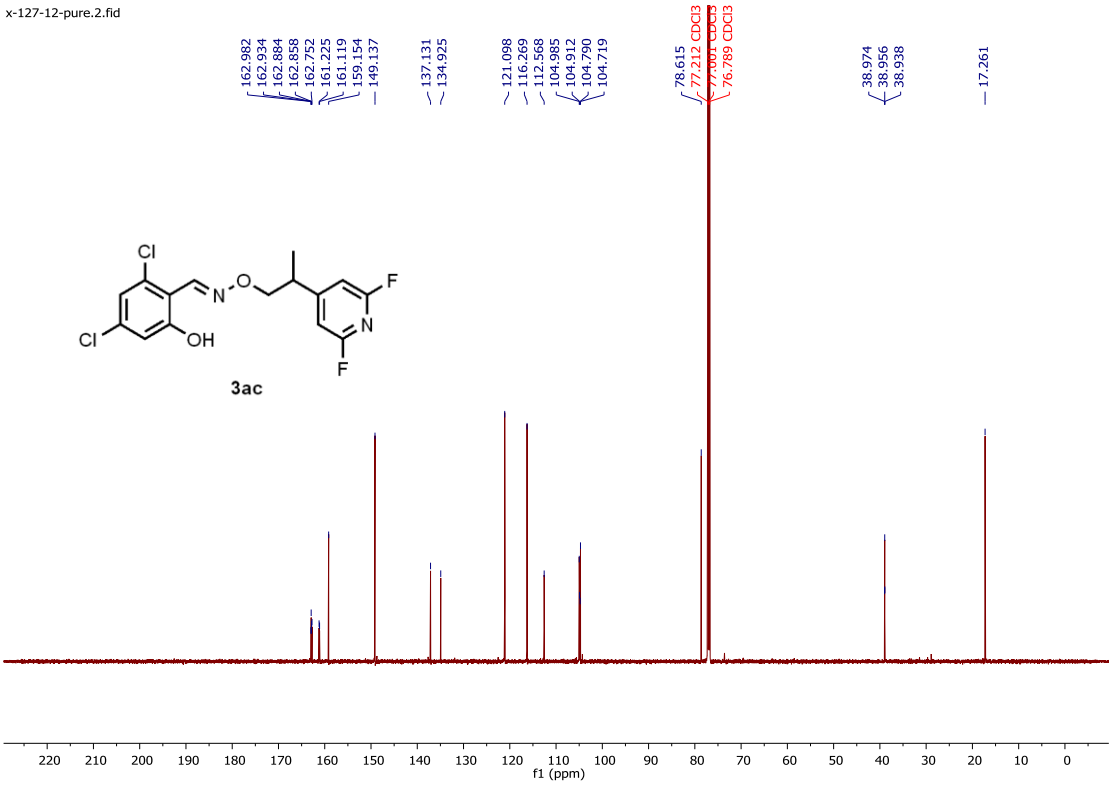

x-128-18-pure.1.fid
10.518
8.585
7.506
7.493
7.369
7.356
7.169
7.157
6.964
6.960
6.922
6.919
4.562
4.550
4.545
4.532
4.391
4.380
4.373
4.363
3.386
3.374
3.364
3.362
3.352
3.350
3.340
3.328
1.388
1.377
Cl
N
O
Br
Cl
OH
3aa
1.02
0.98
1.05
0.95
1.02
0.95
0.92
1.01
1.01
1.00
2.95
f1 (ppm)

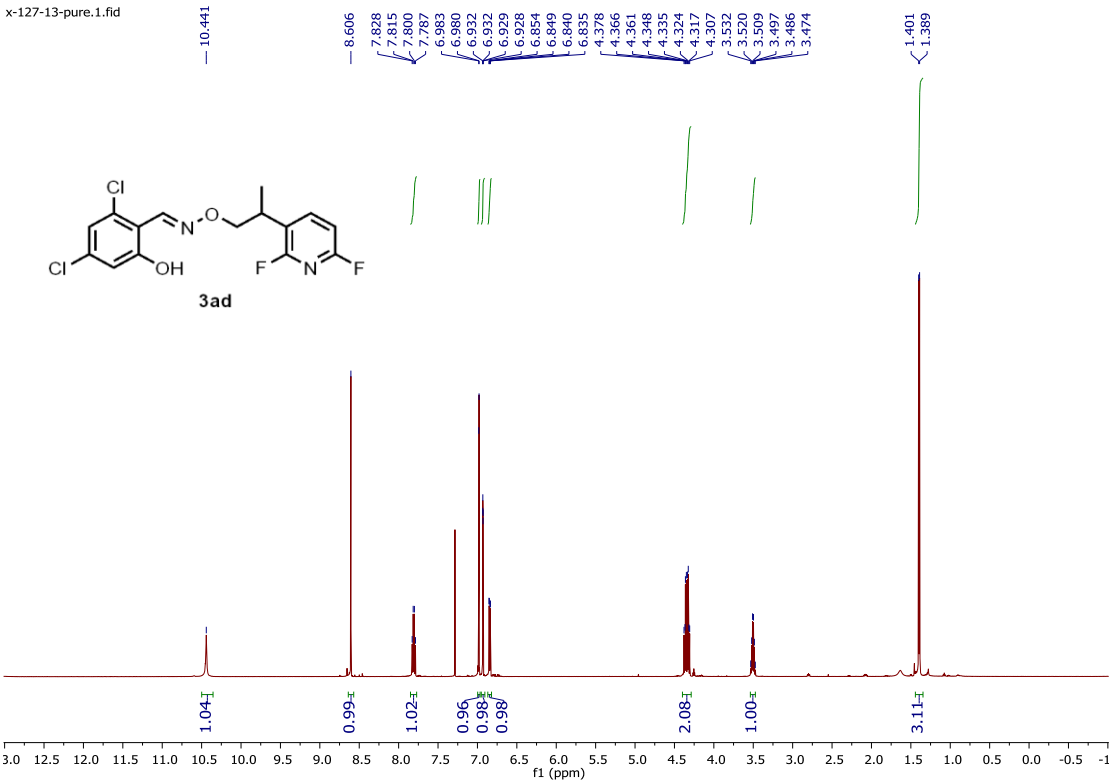

x-128-18-pure.2.fid
164.059
159.178
148.381
141.942
138.723
136.659
134.674
126.164
121.184
120.852
116.178
112.835
78.902
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
41.115
17.026
-0.017
Cl
N
O
Br
Cl
OH
3aa
f1 (ppm)

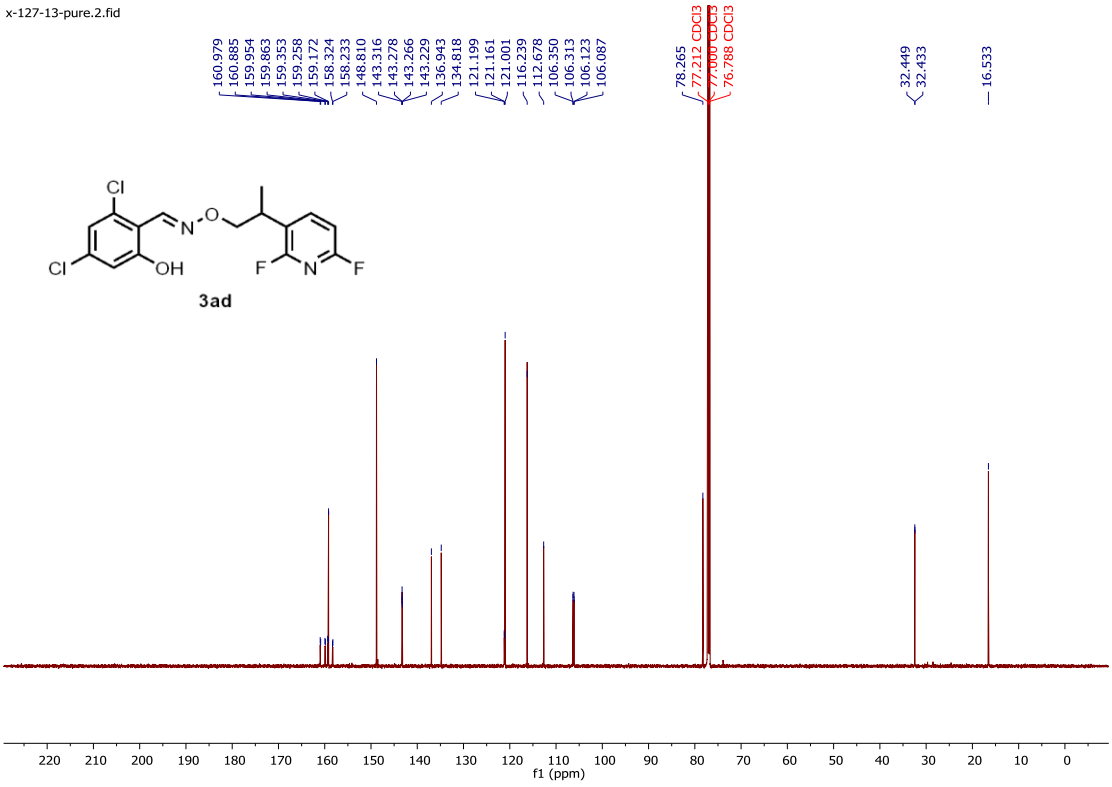

x-127-11a-pure.1.fid
10.565
8.567
7.518
7.505
7.492
7.005
6.992
6.979
6.938
6.934
6.892
6.891
6.889
6.888
4.570
4.557
4.552
4.540
4.377
4.367
4.360
4.349
3.365
3.354
3.342
3.331
3.319
3.307
2.543
1.367
1.356
Cl
Cl
OH
N
O
N
3ab
1.04
0.96
1.04
2.01
0.97
0.96
1.01
1.06
1.00
3.01
3.00
f1 (ppm)

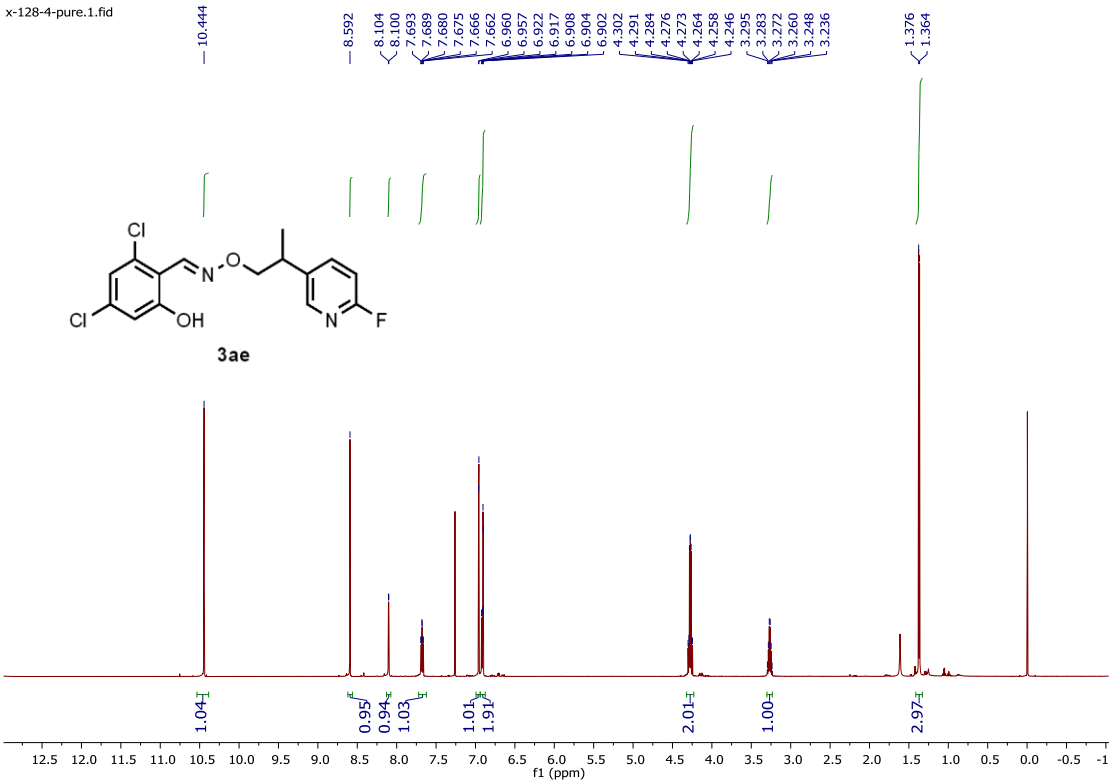

x-127-11a-pure.2.fid
161.701
159.204
158.080
148.100
136.703
136.504
134.623
121.299
120.799
118.941
116.150
112.978
79.490
77.212 CDCl3
76.789 CDCl3
41.399
24.493
17.268
Cl
Cl
OH
N
O
N
3ab
f1 (ppm)

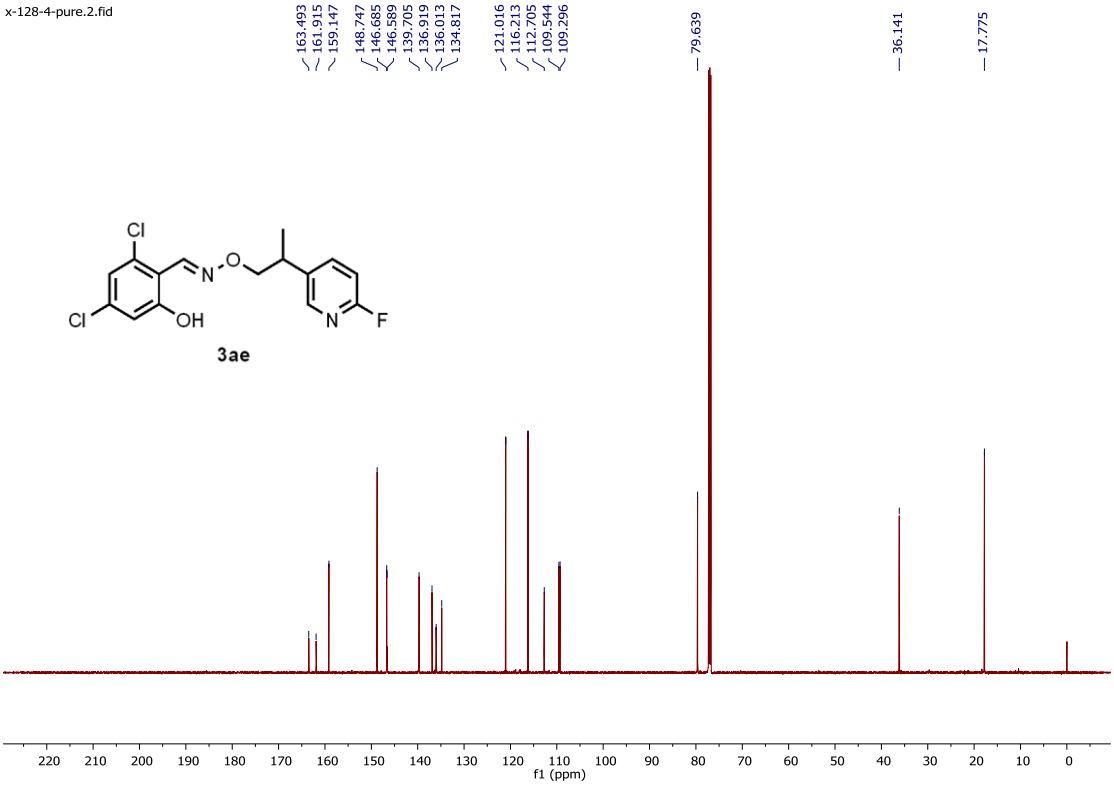

x-127-12-pure.1.fid
10.355
8.603
6.970
6.967
6.915
6.914
6.912
6.911
6.721
4.314
4.303
3.330
3.318
3.307
3.295
3.284
3.272
1.374
1.362
Cl
Cl
OH
N
O
F
N
F
3ac
1.11
1.01
1.01
1.00
1.94
1.97
1.00
3.09
f1 (ppm)

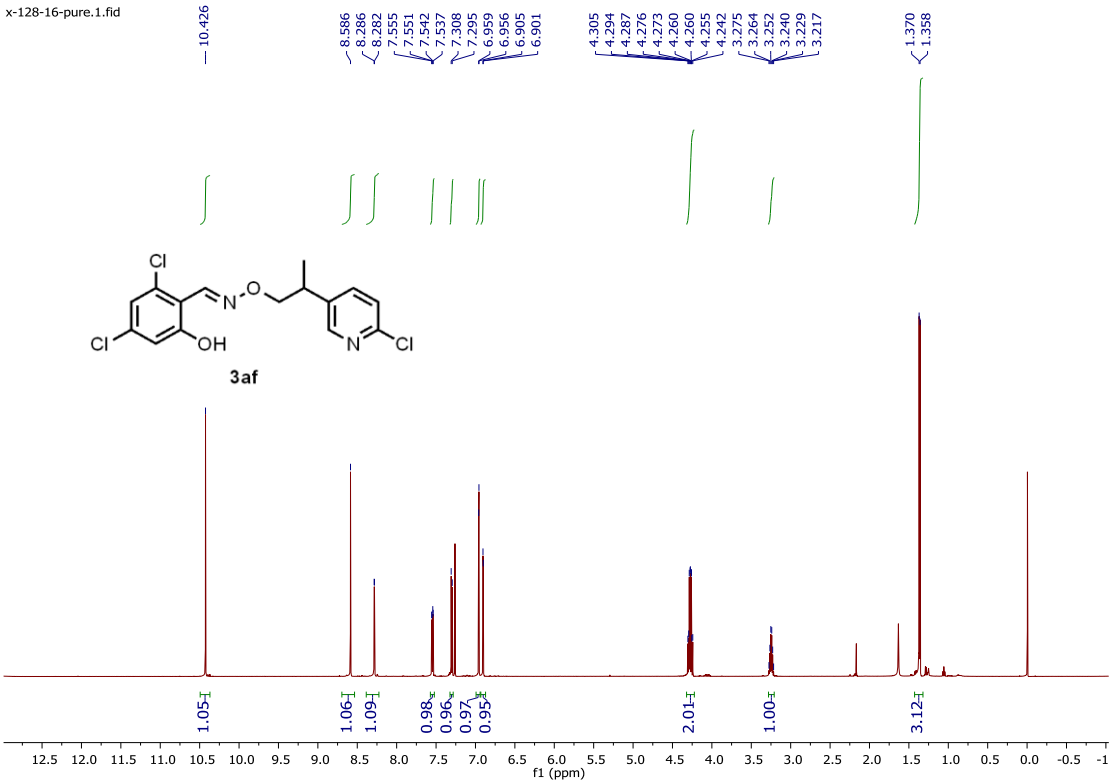

x-127-12-pure.2.fid
162.982
162.934
162.884
162.858
162.752
161.225
161.119
159.154
149.137
137.131
134.925
121.098
116.269
112.568
104.985
104.912
104.790
104.719
78.615
77.212 CDCl3
76.789 CDCl3
38.974
38.956
38.938
17.261
Cl
Cl
OH
N
O
F
N
F
3ac
f1 (ppm)

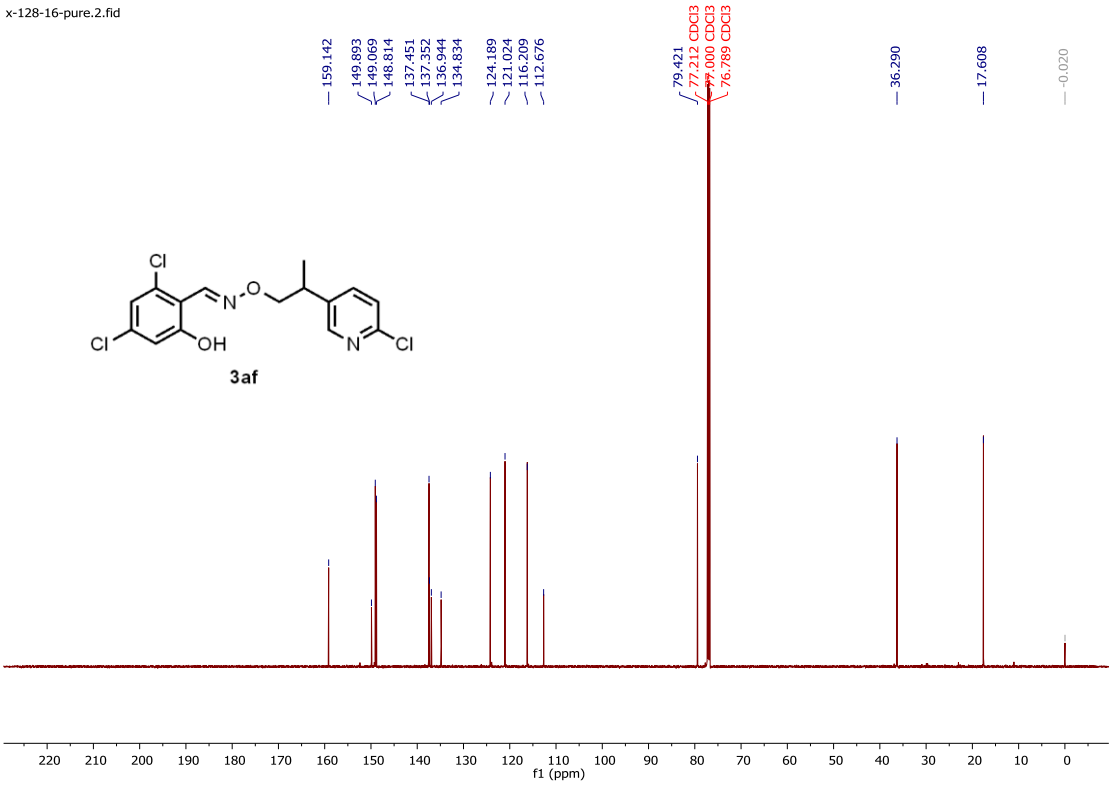

x-127-13-pure.1.fid
10.441
8.606
7.828
7.815
7.800
7.787
6.983
6.980
6.932
6.932
6.929
6.928
6.854
6.849
6.840
6.835
4.378
4.366
4.361
4.348
4.335
4.324
4.317
4.307
3.532
3.520
3.509
3.497
3.486
3.474
1.401
1.389
Cl
Cl
OH
N
O
F
N
F
3ad
1.04
0.99
1.02
0.96
0.98
0.98
2.08
1.00
3.11
f1 (ppm)

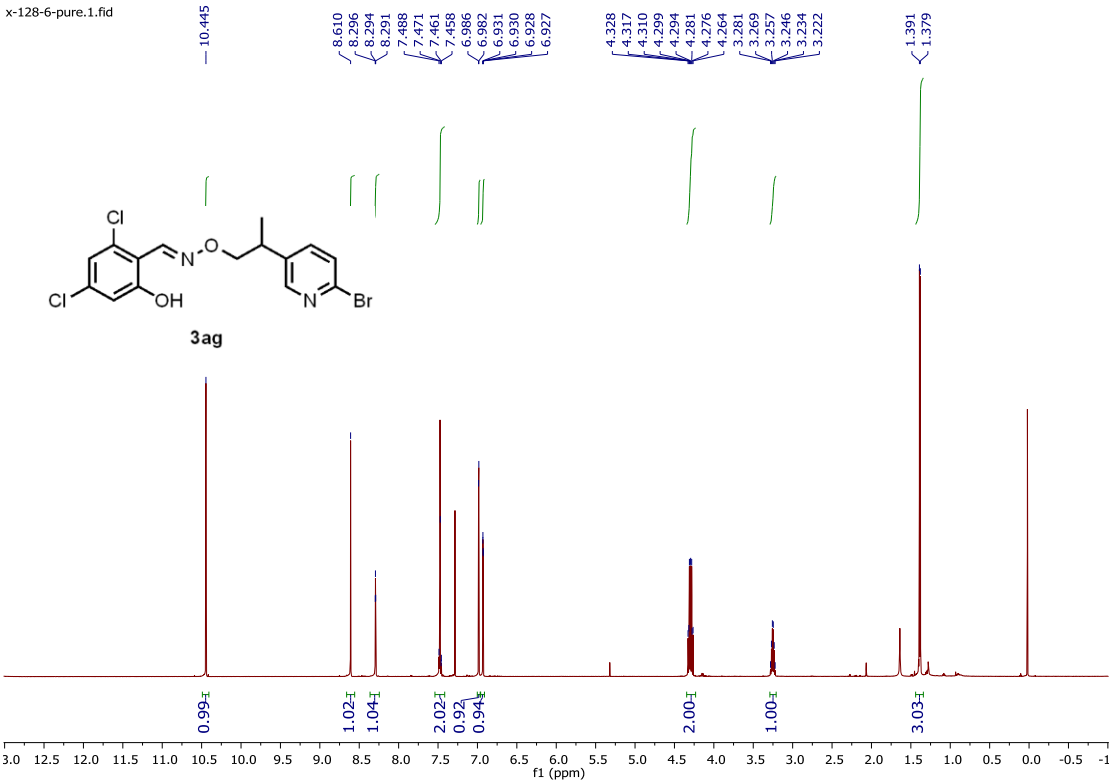

x-127-13-pure.2.fid
160.979
160.885
159.954
159.863
159.353
159.258
159.172
158.324
158.233
148.810
143.316
143.278
143.266
143.229
136.943
134.818
121.199
121.161
121.001
116.239
112.678
106.350
106.313
106.123
106.087
78.265
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
32.449
32.433
16.533
Cl
Cl
OH
N
O
F
N
F
3ad
f1 (ppm)

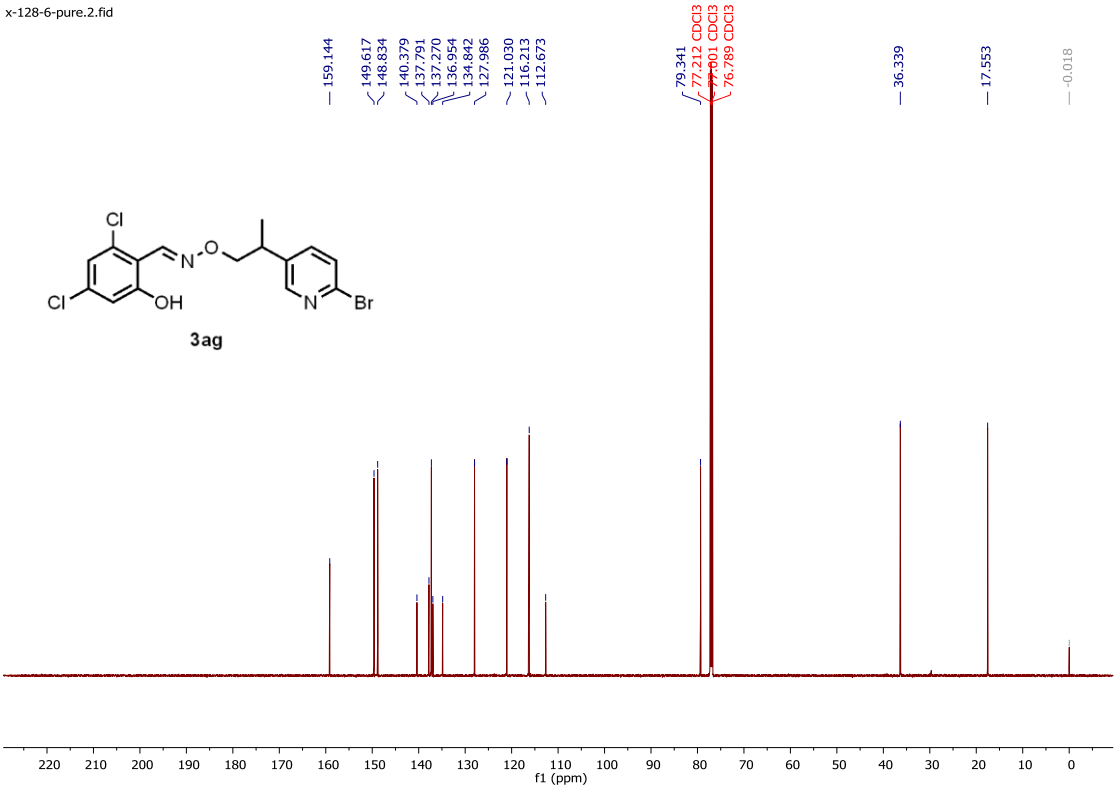

x-128-4-pure.1.fid
10.444
8.592
8.104
8.100
7.693
7.689
7.680
7.675
7.666
7.662
6.960
6.957
6.922
6.917
6.908
6.904
6.902
4.302
4.291
4.284
4.276
4.273
4.264
4.258
4.246
3.295
3.283
3.272
3.260
3.248
3.236
1.376
1.364
Cl
Cl
OH
N
O
N
F
3ae
1.04
0.95
0.94
1.03
1.01
1.91
2.01
1.00
2.97
f1 (ppm)

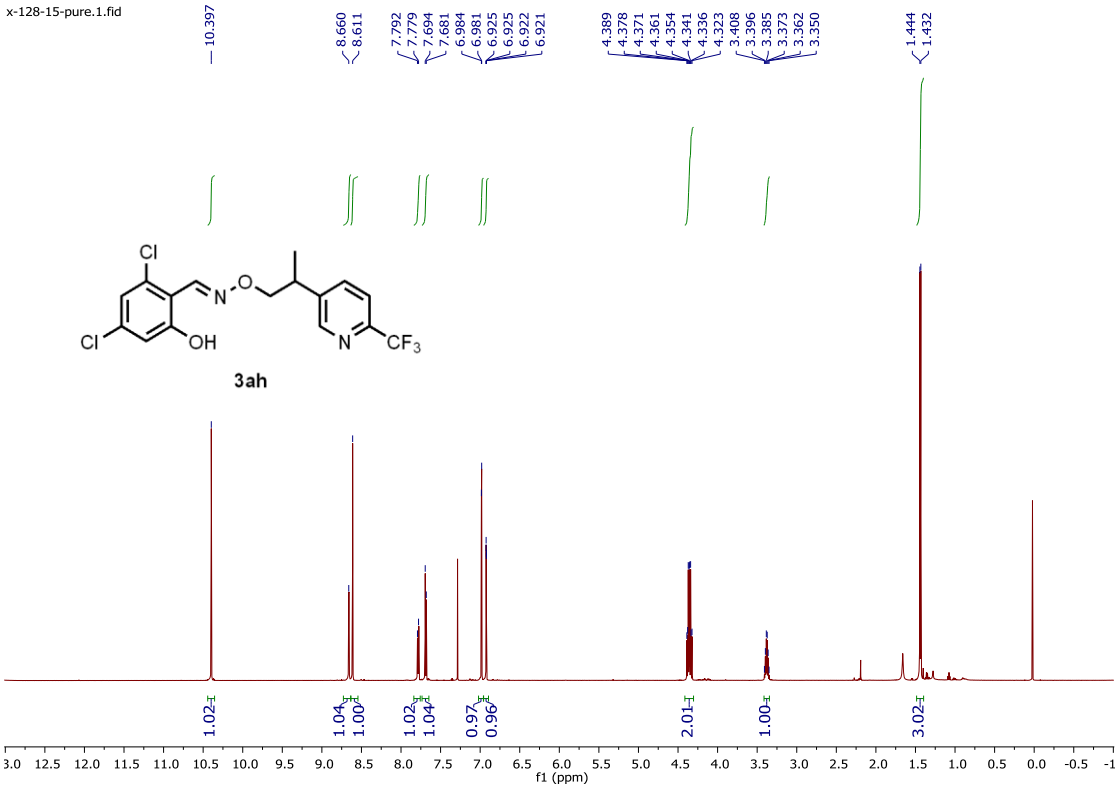

x-128-4-pure.2.fid
163.493
161.915
159.147
148.747
146.685
146.589
139.705
136.919
136.013
134.817
121.016
116.213
112.705
109.544
109.296
79.639
36.141
17.775
Cl
Cl
OH
N
O
N
F
3ae
f1 (ppm)

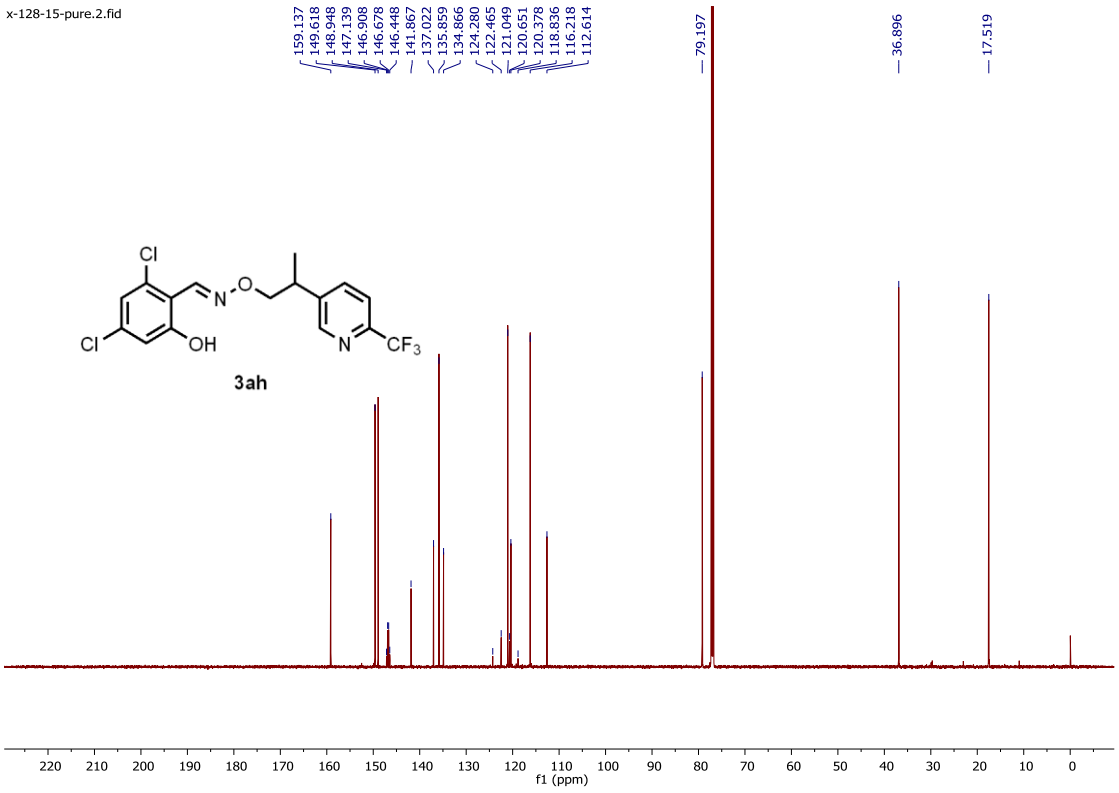

x-128-16-pure.1.fid
10.426
8.586
8.286
8.282
7.555
7.551
7.542
7.537
7.308
7.295
6.959
6.956
6.905
6.901
4.305
4.294
4.287
4.276
4.273
4.260
4.260
4.255
4.242
3.275
3.264
3.252
3.240
3.229
3.217
1.370
1.358
Cl
N
O
Cl
OH
N
Cl
3af
1.05
1.06
1.09
0.98
0.96
0.97
0.95
2.01
1.00
3.12
f1 (ppm)


x-128-16-pure.2.fid
159.142
149.893
149.069
148.814
137.451
137.352
136.944
134.834
124.189
121.024
116.209
112.676
79.421
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
36.290
17.608
-0.020
Cl
N
O
Cl
OH
N
Cl
3af
f1 (ppm)

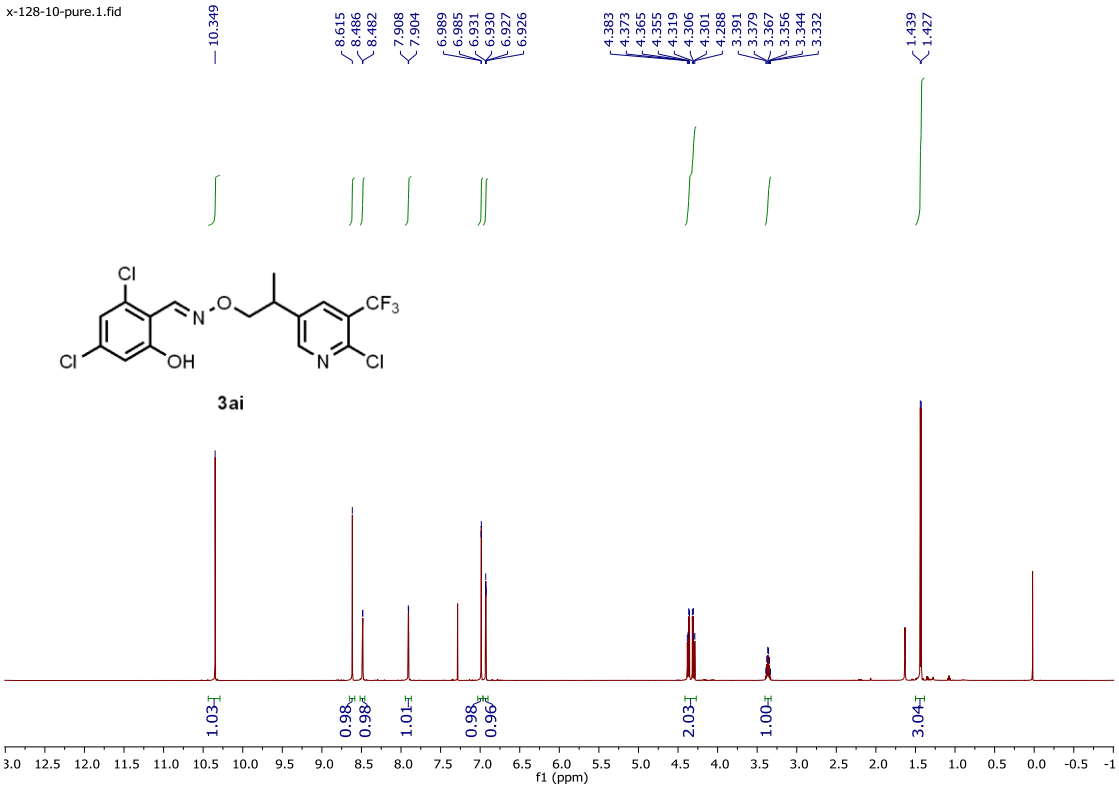

x-128-6-pure.1.fid
10.445
8.610
8.296
8.294
8.291
7.488
7.471
7.461
7.458
6.986
6.982
6.931
6.930
6.928
6.927
4.328
4.317
4.310
4.299
4.294
4.281
4.276
4.264
3.281
3.269
3.257
3.246
3.234
3.222
1.391
1.379
Cl
Cl
OH
N
O
N
Br
3ag
0.99
1.02
1.04
2.02
0.92
0.94
2.00
1.00
3.03
f1 (ppm)


x-128-6-pure.2.fid
159.144
149.617
148.834
140.379
137.791
137.270
136.954
134.842
127.986
121.030
116.213
112.673
79.341
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
36.339
17.553
-0.018
Cl
Cl
OH
N
O
N
Br
3ag
f1 (ppm)


x-128-15-pure.1.fid
10.397
8.660
8.611
7.792
7.779
7.694
7.681
6.984
6.981
6.925
6.922
6.921
4.389
4.378
4.371
4.361
4.354
4.341
4.336
4.323
3.408
3.396
3.385
3.373
3.362
3.350
1.444
1.432
Cl
Cl
OH
N
O
N
CF3
3ah
1.02
1.04
1.00
1.02
1.04
0.97
0.96
2.01
1.00
3.02
f1 (ppm)

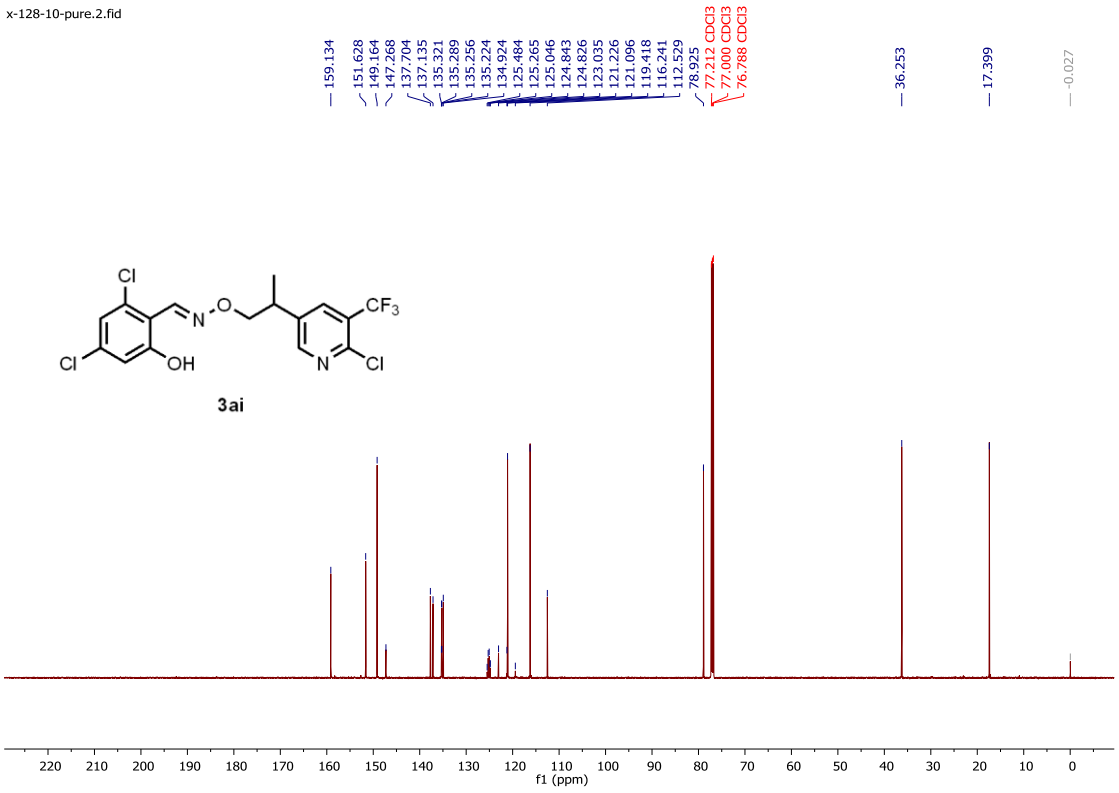

x-128-15-pure.2.fid
159.137
149.618
148.948
147.139
146.908
146.678
146.448
141.867
137.022
135.859
134.866
124.280
122.465
121.049
120.651
120.378
118.836
116.218
112.614
79.197
36.896
17.519
Cl
Cl
OH
N
O
N
CF3
3ah
f1 (ppm)

x-128-10-pure.1.fid



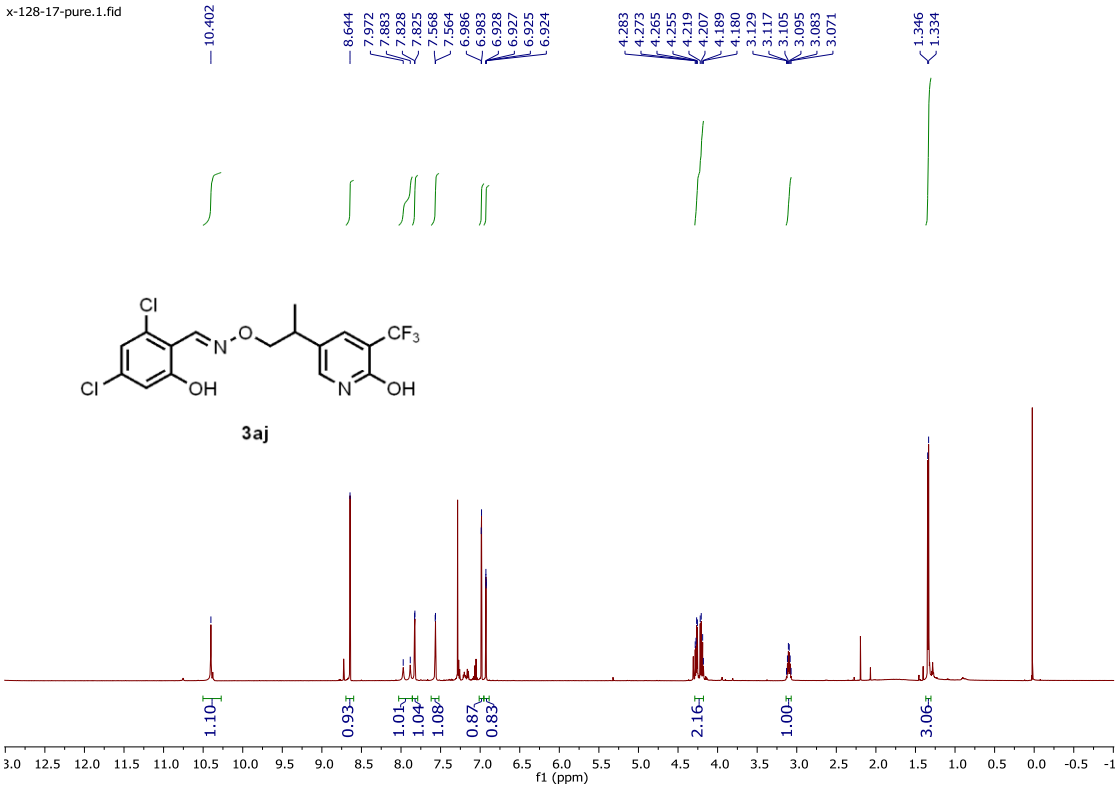
3ai

x-128-10-pure.2.fid



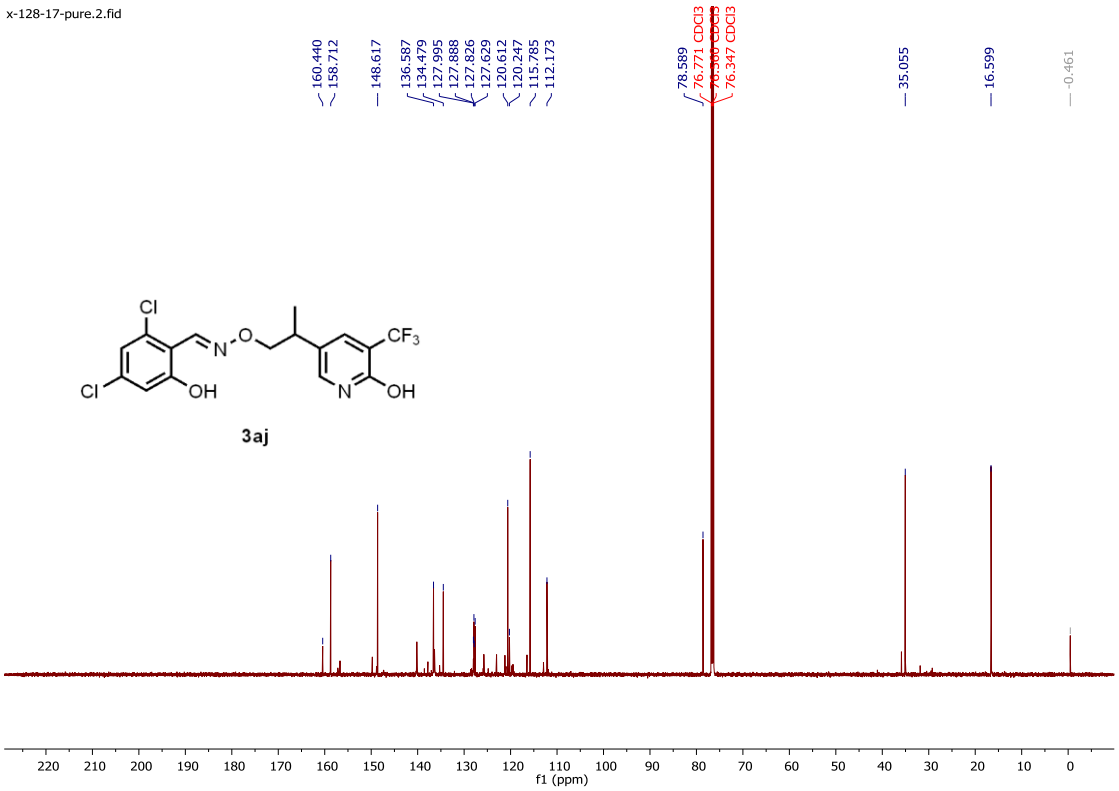
3ai

x-128-17-pure.1.fid

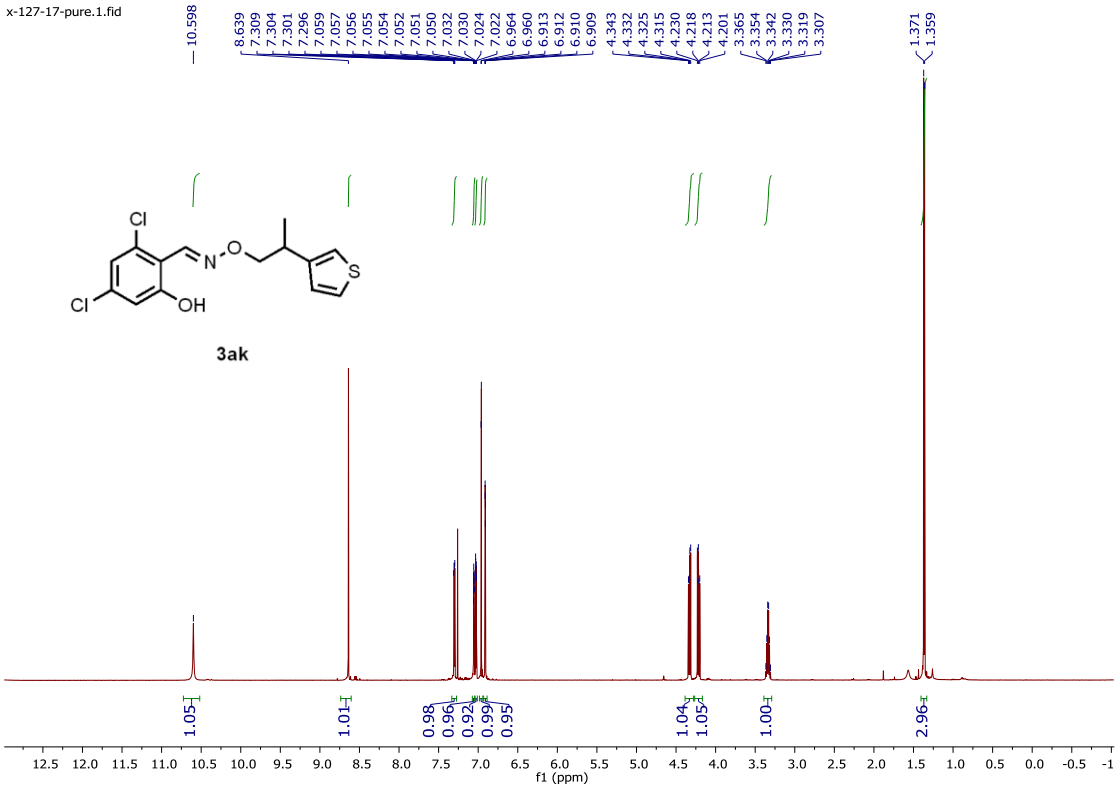


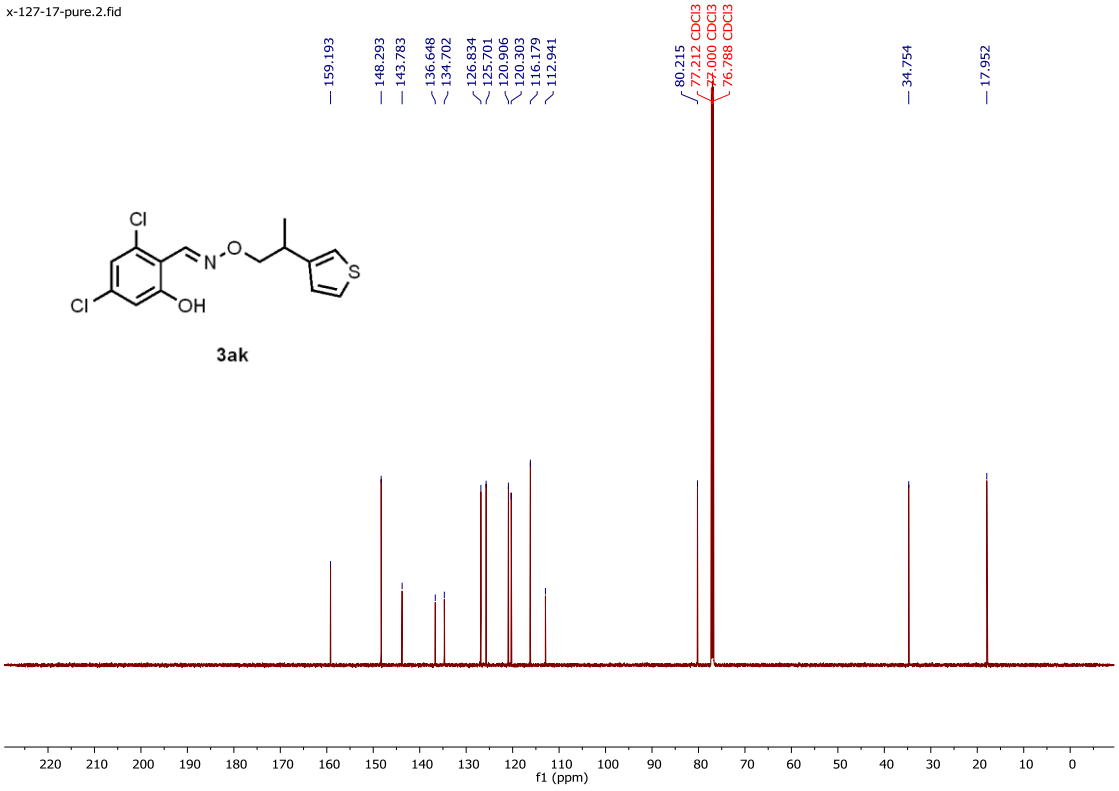
3aj

x-128-17-pure.2.fid

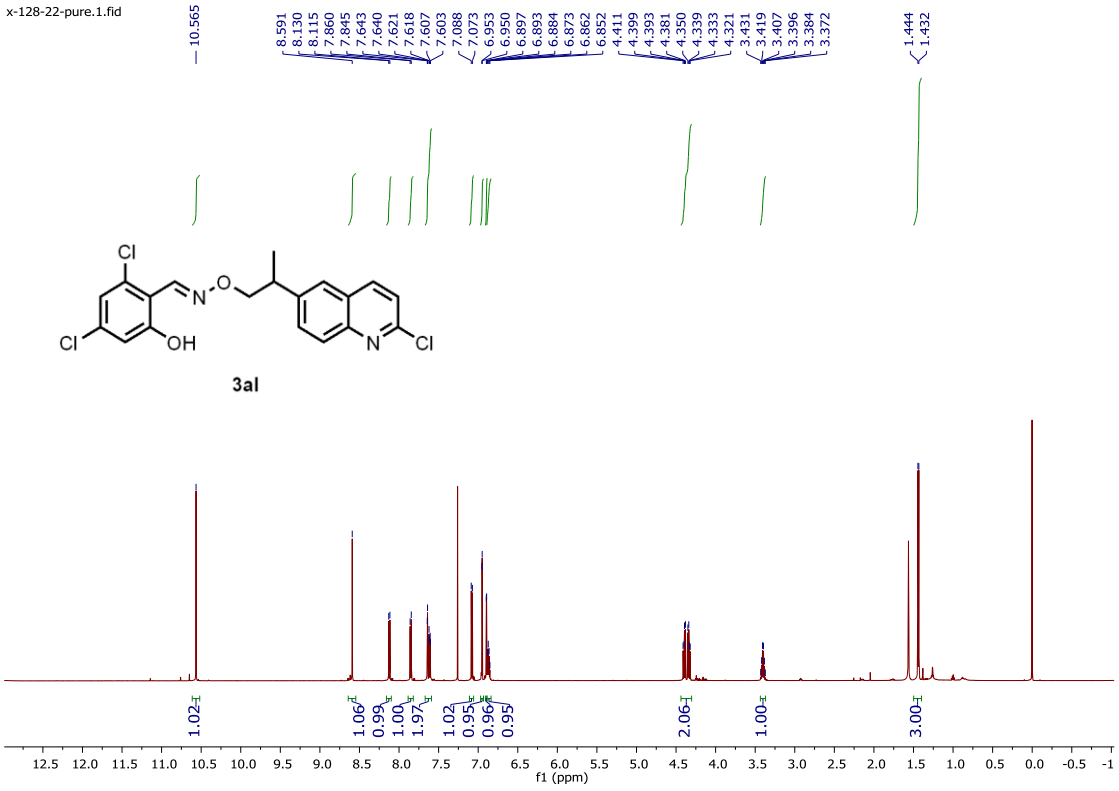


3aj


x-127-17-pure.1.fid
10.598
8.639
7.309
7.304
7.301
7.296
7.059
7.057
7.056
7.055
7.054
7.052
7.051
7.050
7.032
7.030
7.024
7.022
6.964
6.960
6.913
6.912
6.910
6.909
4.343
4.332
4.325
4.315
4.230
4.218
4.213
4.201
3.365
3.354
3.342
3.330
3.319
3.307
1.371
1.359
Cl
N
O
S
Cl
OH
3ak
1.05
1.01
0.98
0.96
0.92
0.99
0.95
1.04
1.05
1.00
2.96
f1 (ppm)

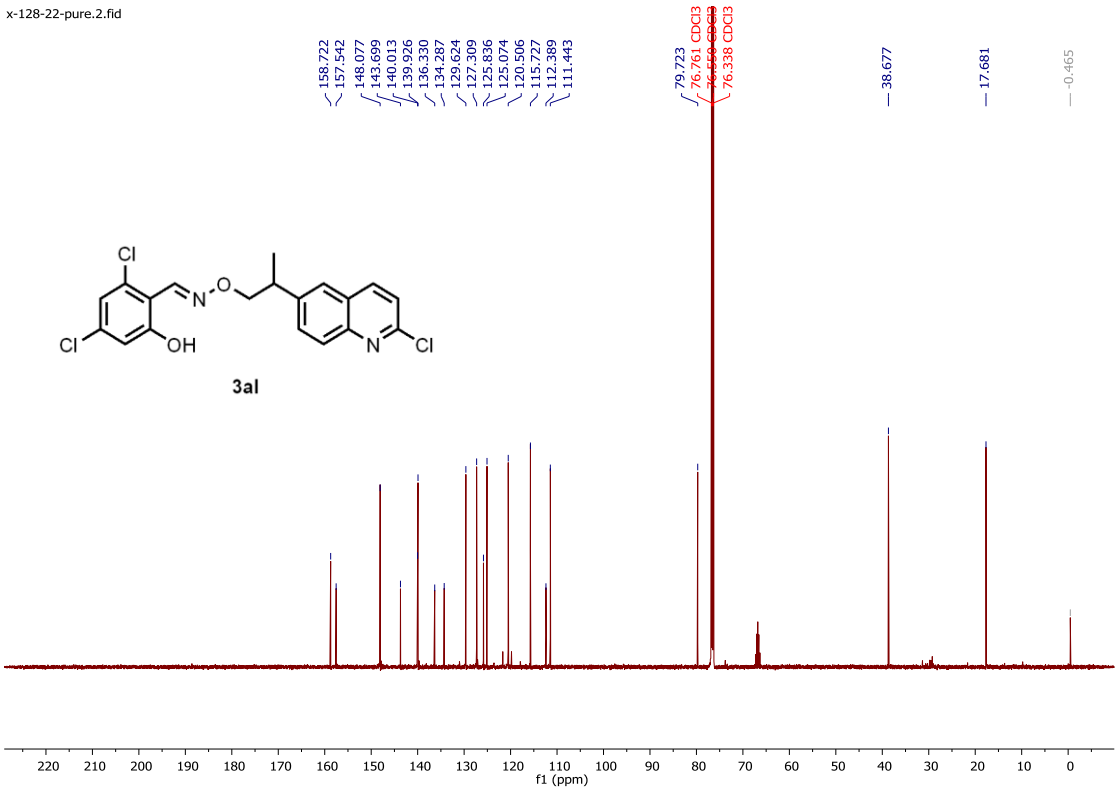

x-127-17-pure.2.fid
159.193
148.293
143.783
136.648
134.702
126.834
125.701
120.906
120.303
116.179
112.941
80.215
77.212 CDCl3
77.000 CDCl3
76.788 CDCl3
34.754
17.952
Cl
N
O
S
Cl
OH
3ak
f1 (ppm)

x-128-22-pure.1.fid



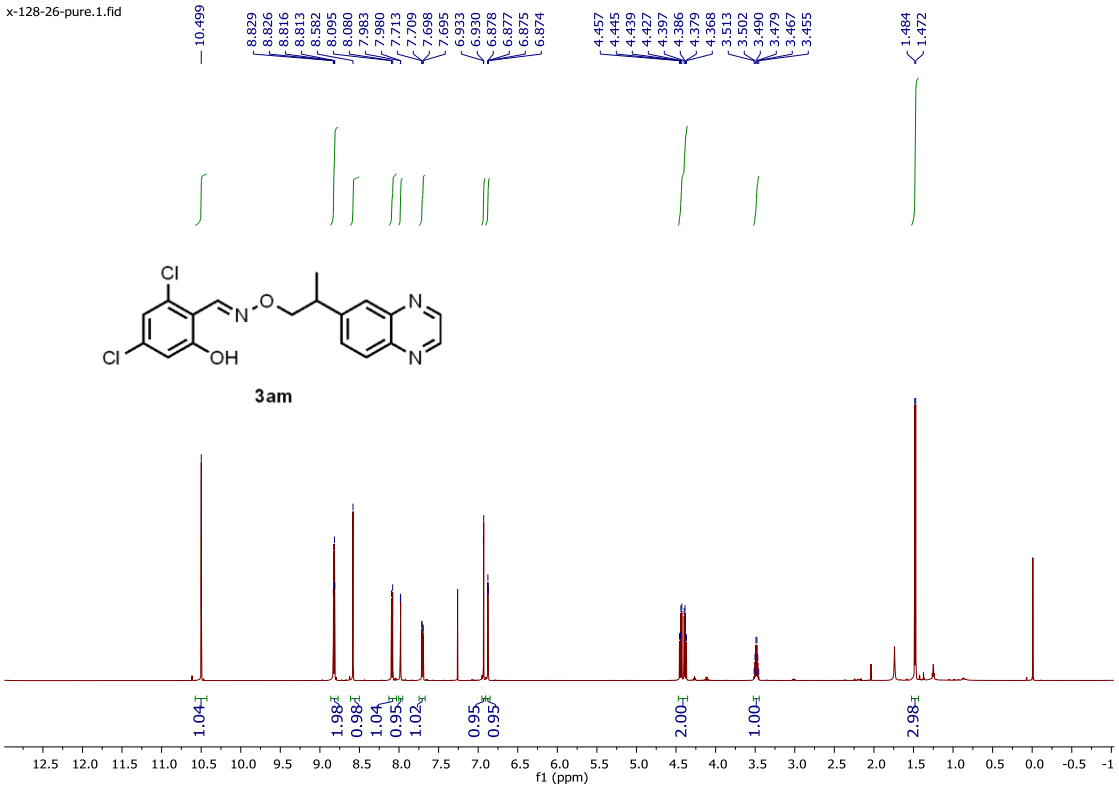
3al

x-128-22-pure.2.fid

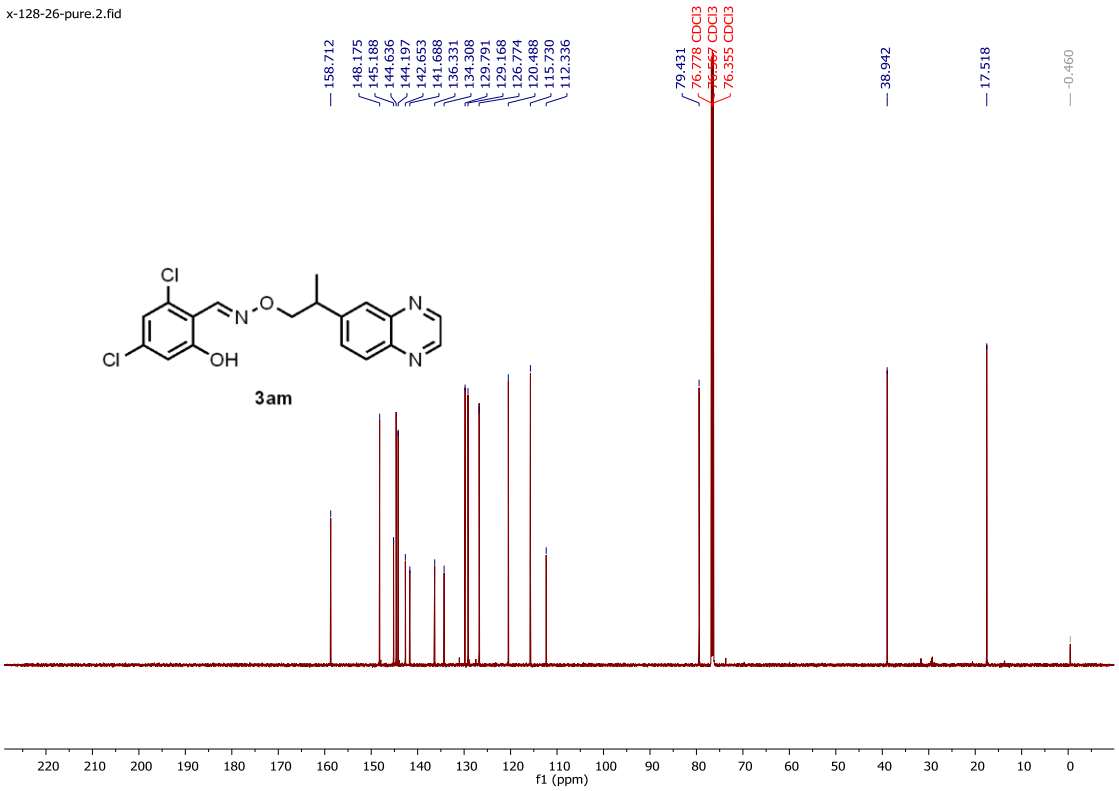


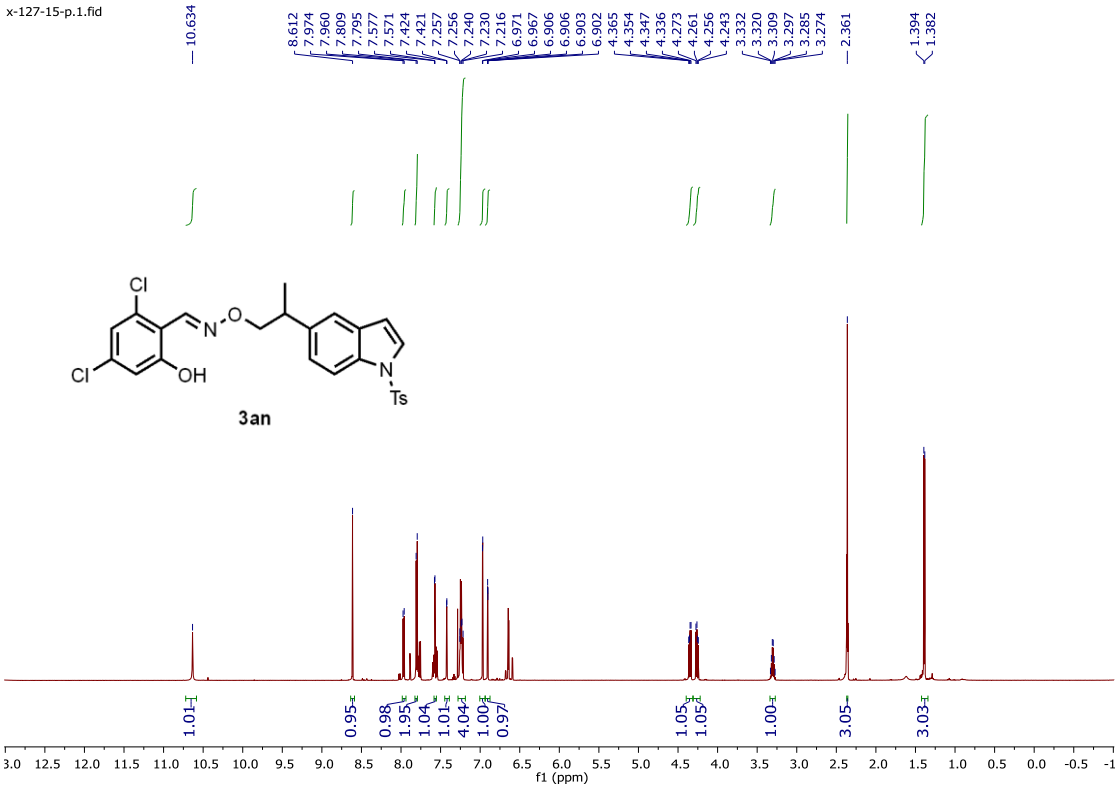
3al

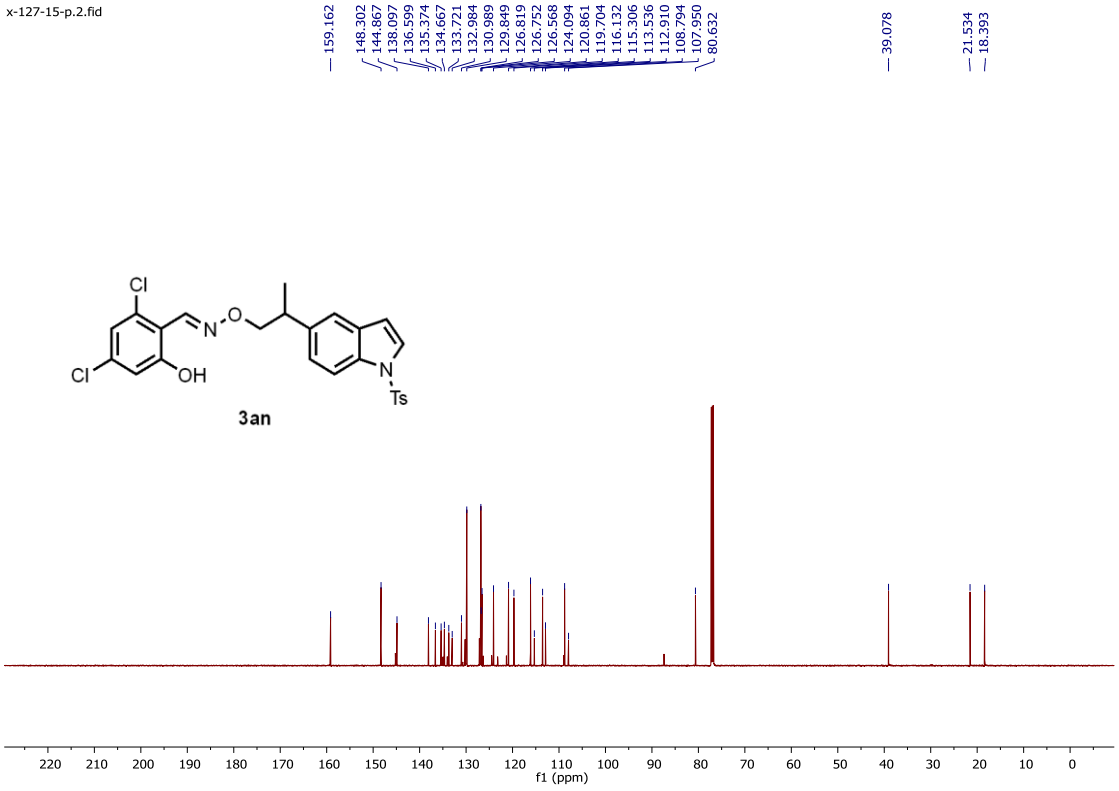
x-128-26-pure.1.fid

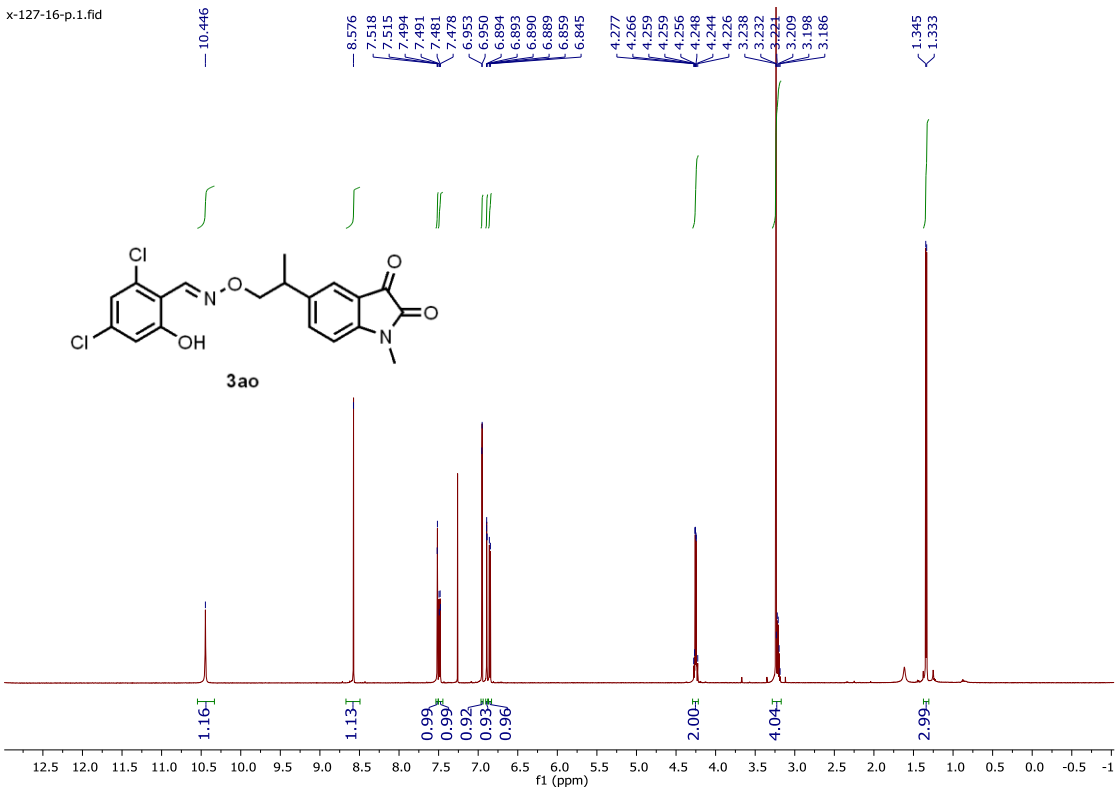


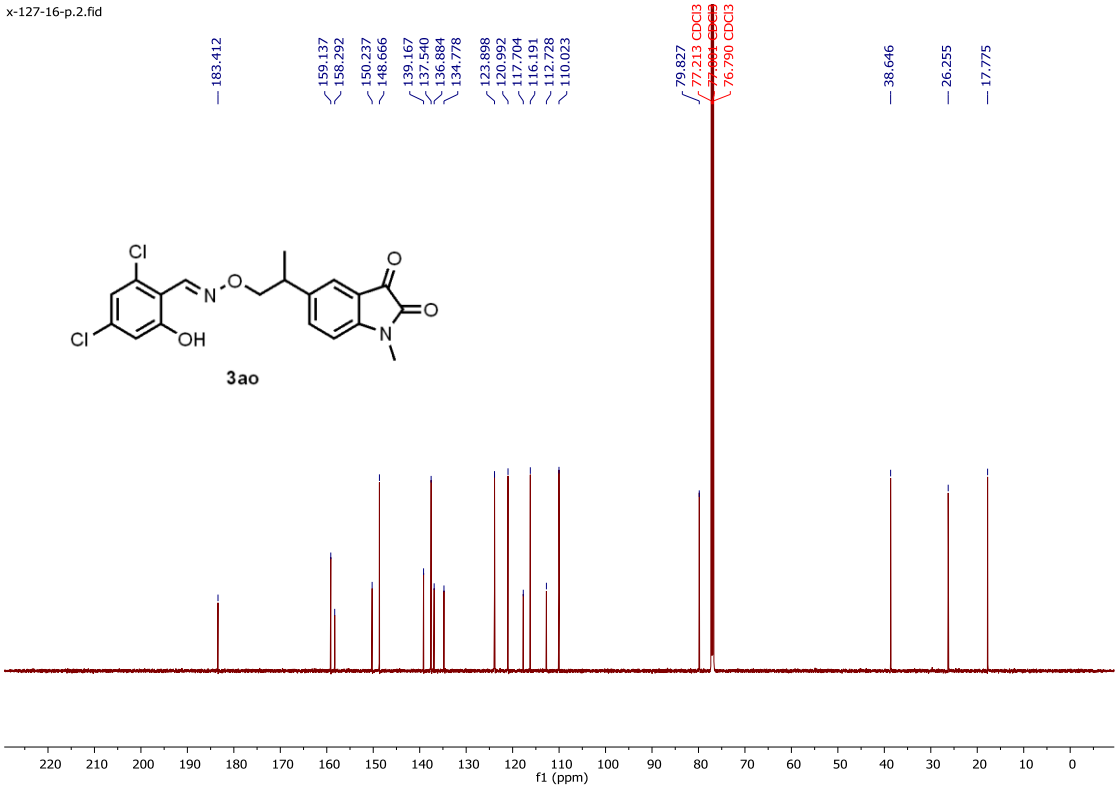
x-128-26-pure.2.fid

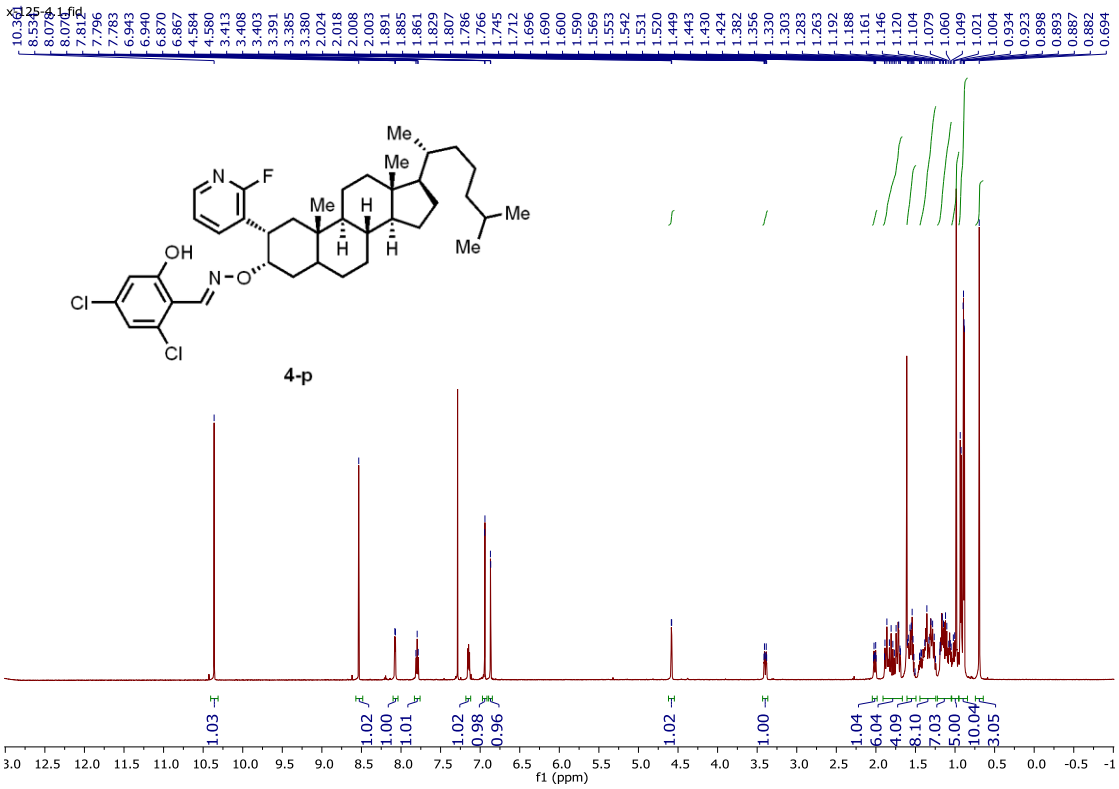


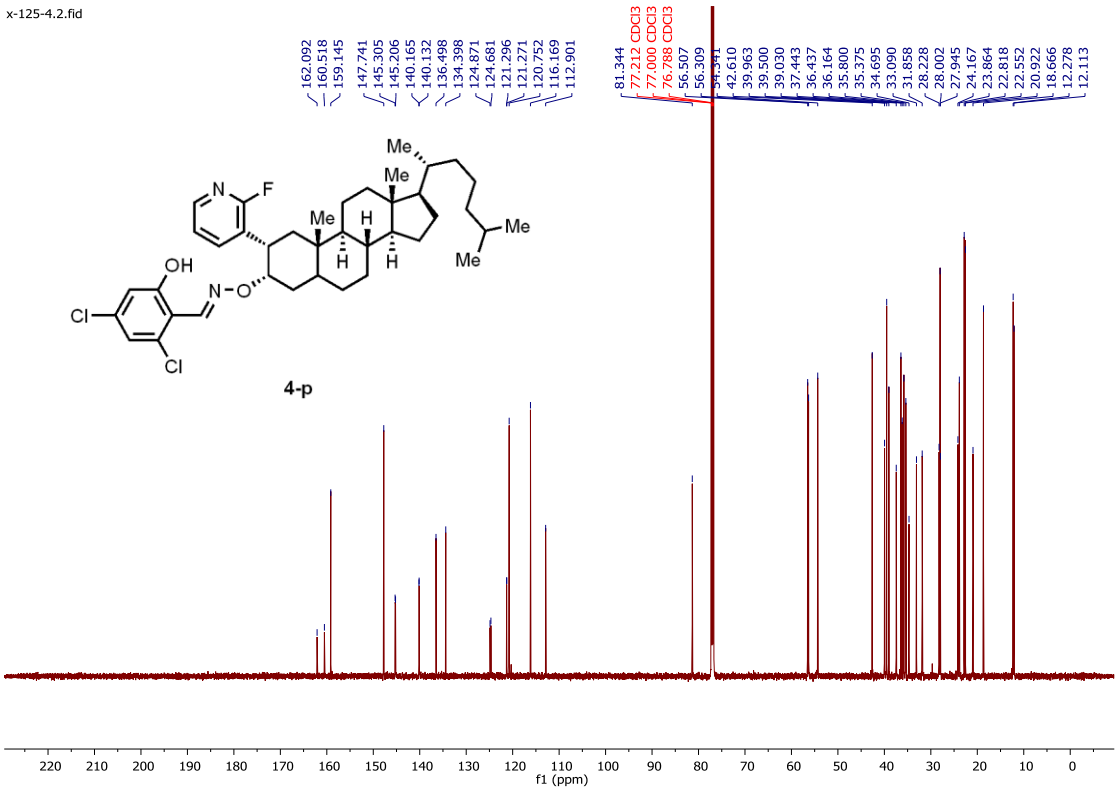

x-127-15-p.1.fid
10.634
8.612
7.974
7.960
7.809
7.795
7.577
7.571
7.424
7.421
7.257
7.256
7.240
7.230
7.216
6.971
6.967
6.906
6.906
6.903
6.902
4.365
4.354
4.347
4.336
4.273
4.261
4.256
4.243
3.332
3.320
3.309
3.297
3.285
3.274
2.361
1.394
1.382
Cl
Cl
OH
N
O
N
Ts
3an
1.01
0.95
0.98
1.95
1.04
1.01
4.04
1.00
0.97
1.05
1.05
1.00
3.05
3.03
f1 (ppm)

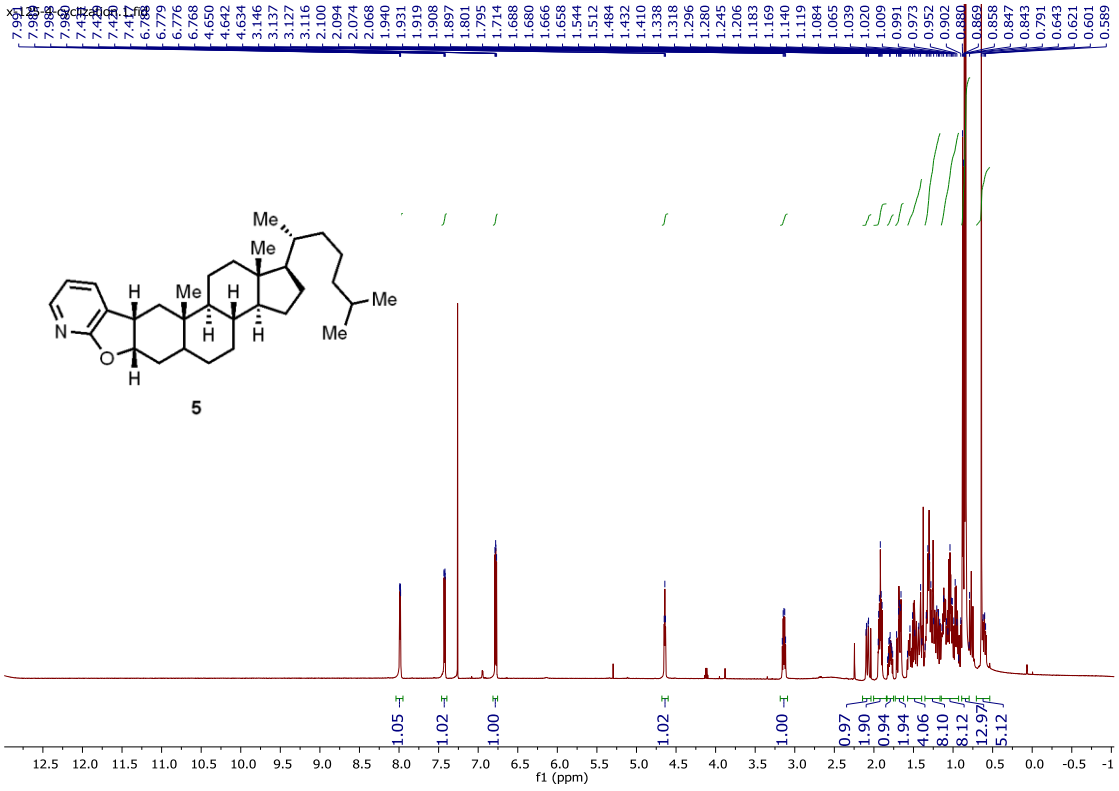

x-127-15-p.2.fid
159.162
148.302
144.867
138.097
136.599
135.374
134.667
133.721
132.984
130.989
129.849
126.819
126.752
126.568
124.094
120.861
119.704
116.132
115.306
113.536
112.910
108.794
107.950
80.632
39.078
21.534
18.393
Cl
Cl
OH
N
O
N
Ts
3an
f1 (ppm)


x-127-16-p.1.fid
10.446
8.576
7.518
7.515
7.494
7.491
7.481
7.478
6.953
6.950
6.894
6.893
6.890
6.889
6.859
6.845
4.277
4.266
4.259
4.259
4.256
4.248
4.244
4.226
3.238
3.232
3.221
3.209
3.198
3.186
1.345
1.333
Cl
Cl
OH
N
O
O
O
N
3ao
1.16
1.13
0.99
0.99
0.92
0.93
0.96
2.00
4.04
2.99
f1 (ppm)

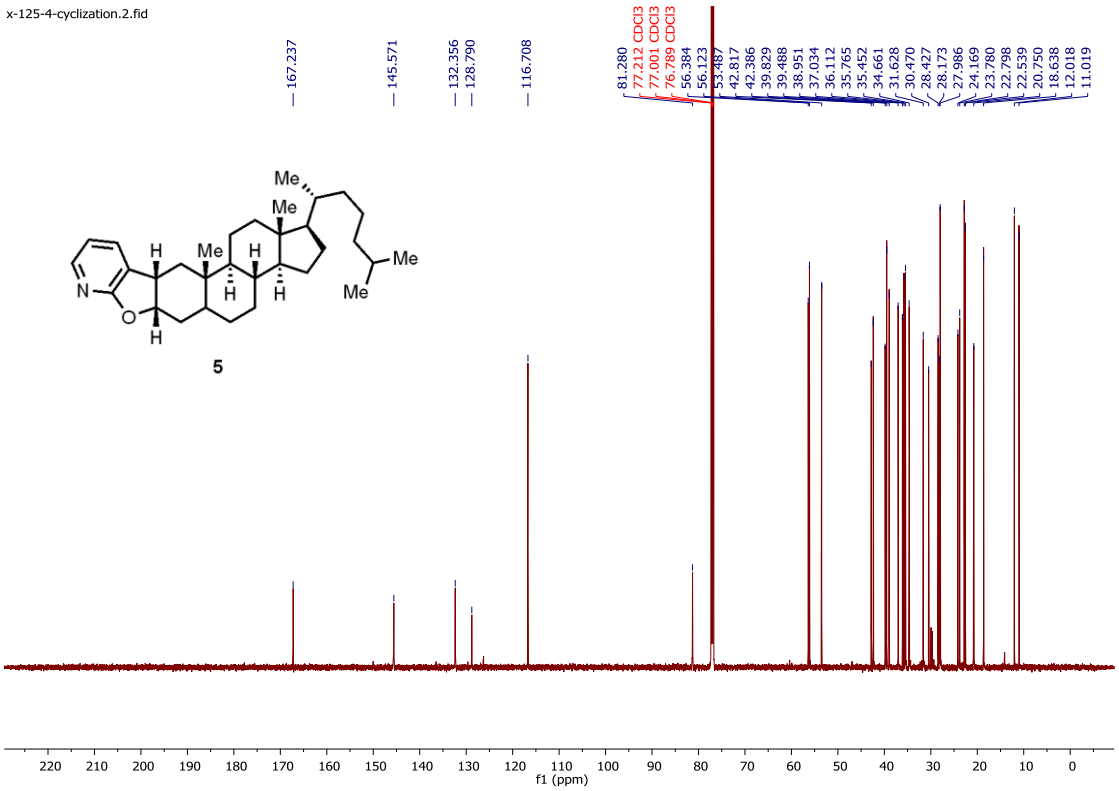

x-127-16-p.2.fid
183.412
159.137
158.292
150.237
148.666
139.167
137.540
136.884
134.778
123.898
120.992
117.704
116.191
112.728
110.023
79.827
77.213 CDCl3
76.790 CDCl3
38.646
26.255
17.775
Cl
Cl
OH
N
O
O
O
N
3ao
f1 (ppm)


x-125-4.1.fid
4-p
f1 (ppm)

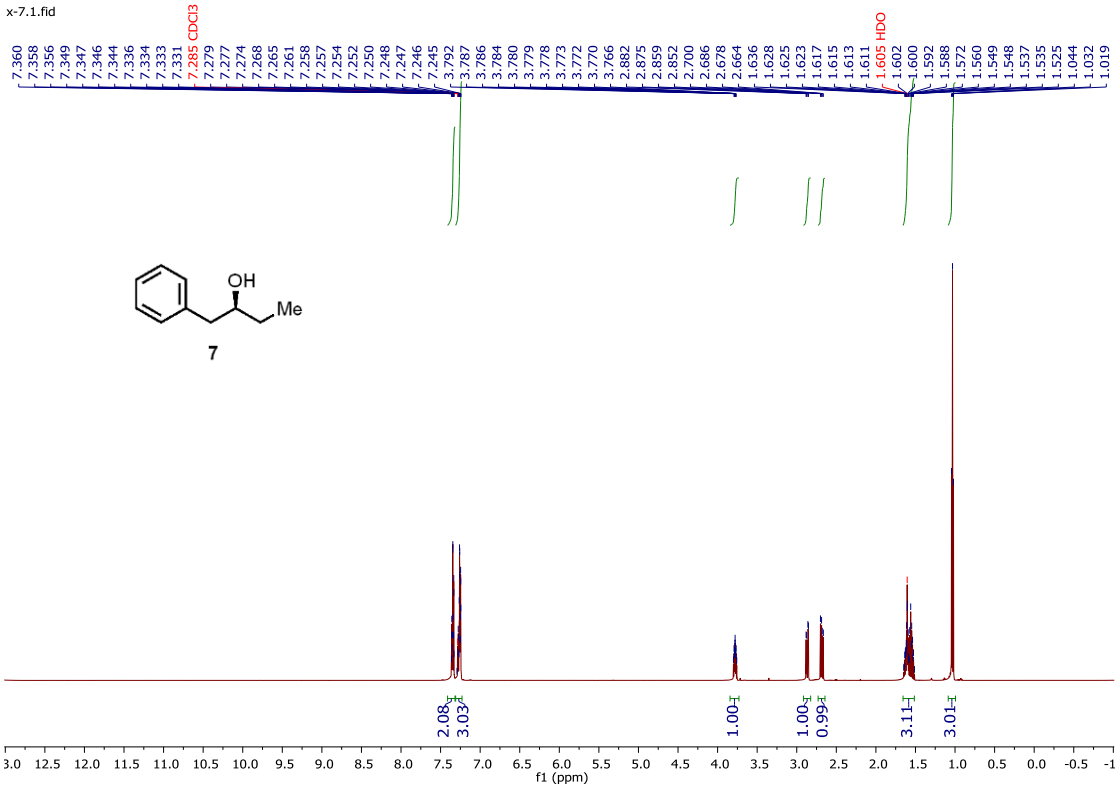

x-125-4.2.fid
4-p
f1 (ppm)

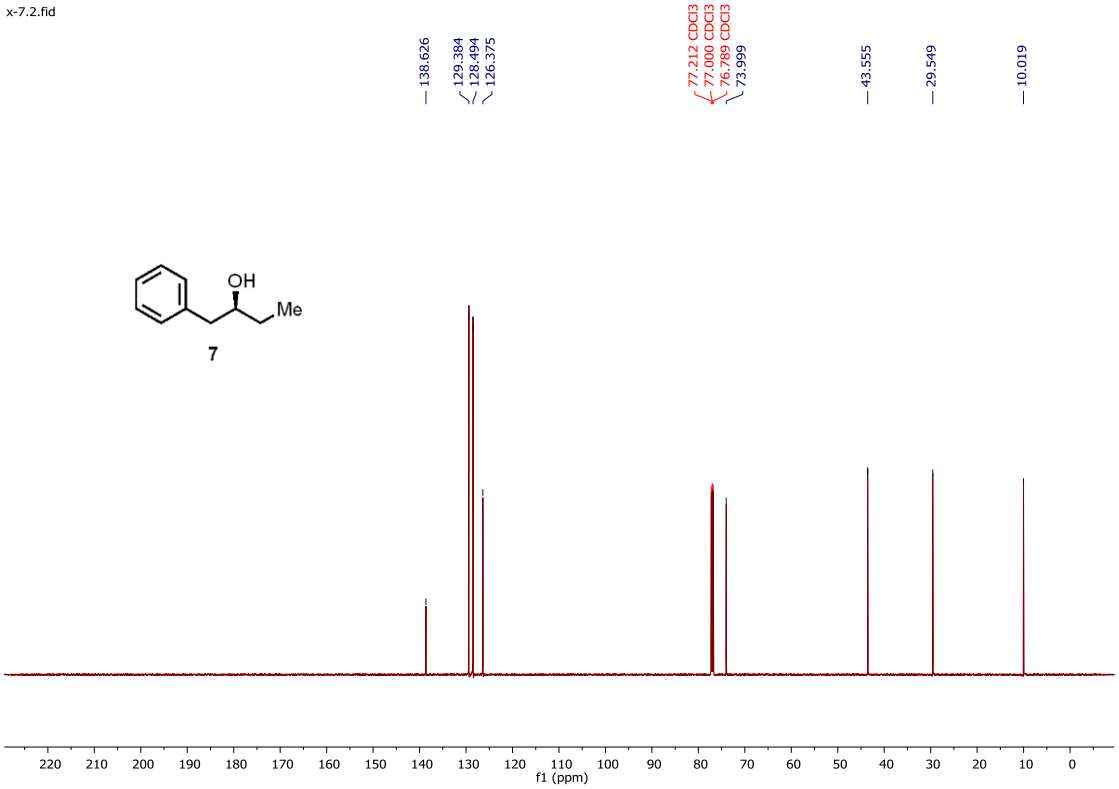

1.05
1.02
1.00
1.02
1.00
0.97
1.90
0.94
1.94
4.06
8.10
8.12
12.97
5.12
f1 (ppm)

5

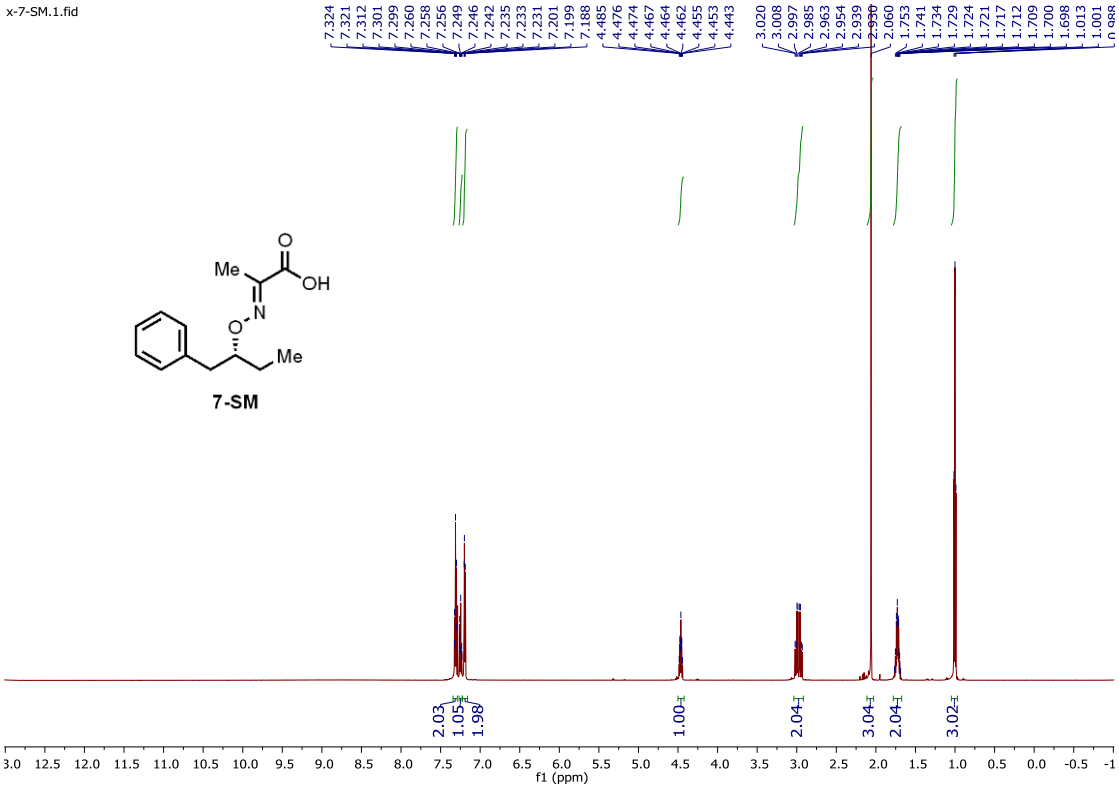

x-125-4-cyclization.2.fid
167.237
145.571
132.356
128.790
116.708
81.280
77.212 CDCl3
77.001 CDCl3
76.789 CDCl3
56.384
56.123
53.487
42.817
42.386
39.829
39.488
38.951
37.034
36.112
35.765
35.452
34.661
31.628
30.470
28.427
28.173
27.986
24.169
23.780
22.798
22.539
20.750
18.638
12.018
11.019
f1 (ppm)

5

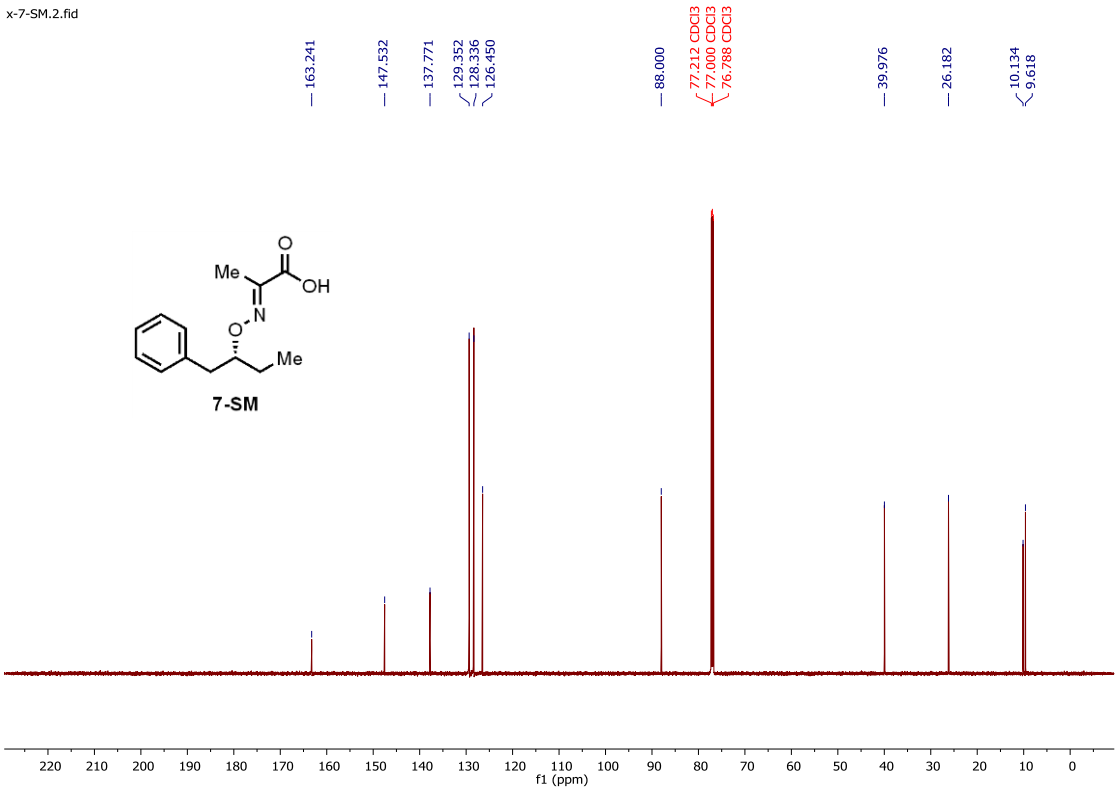

x-7.1.fid
7.285 CDCl3
1.605 HDO
OH
Me
7
2.08
3.03
1.00
1.00
0.99
3.11
3.01
f1 (ppm)


x-7.2.fid
138.626
129.384
128.494
126.375
77.212 CDCl3
77.000 CDCl3
76.789 CDCl3
73.999
43.555
29.549
10.019
OH
Me
7
f1 (ppm)

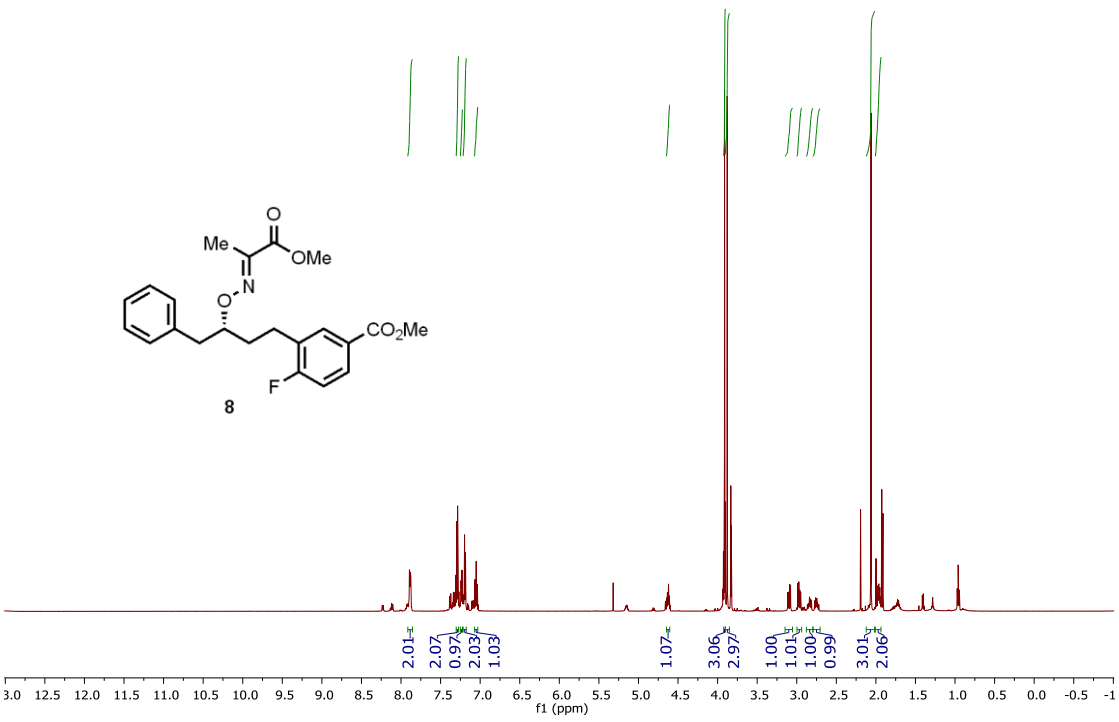
x-7-SM.1.fid



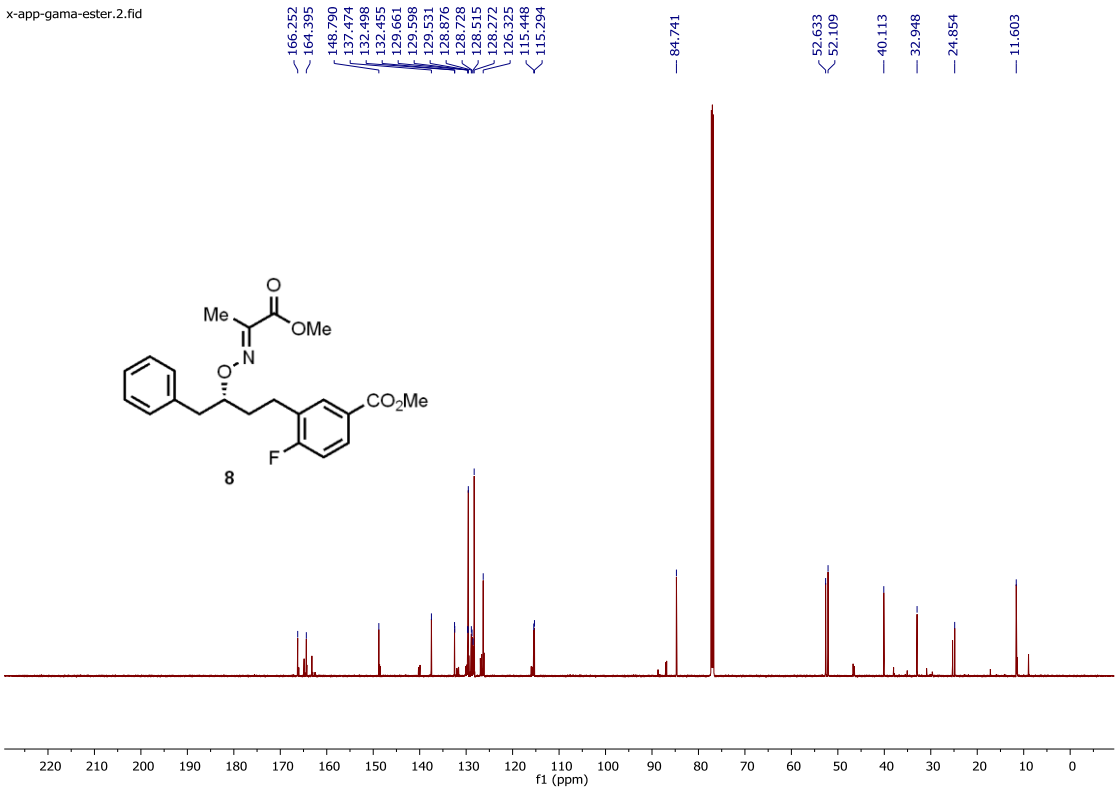
x-7-SM.2.fid

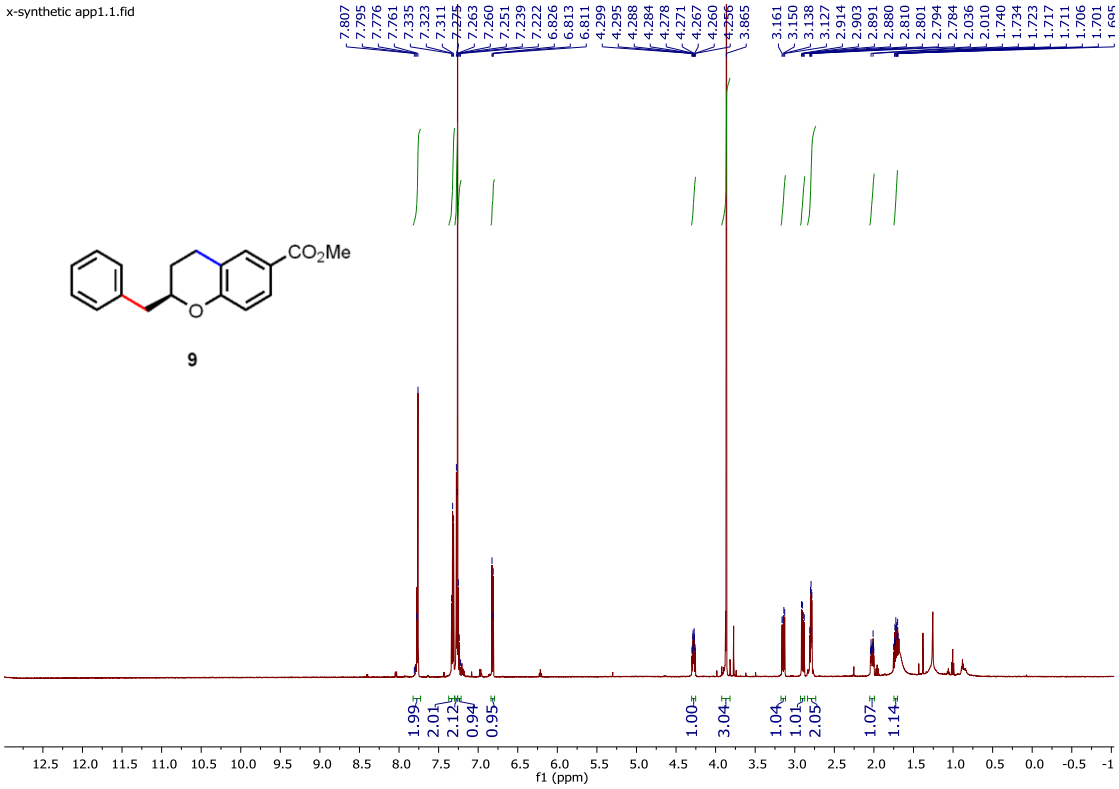


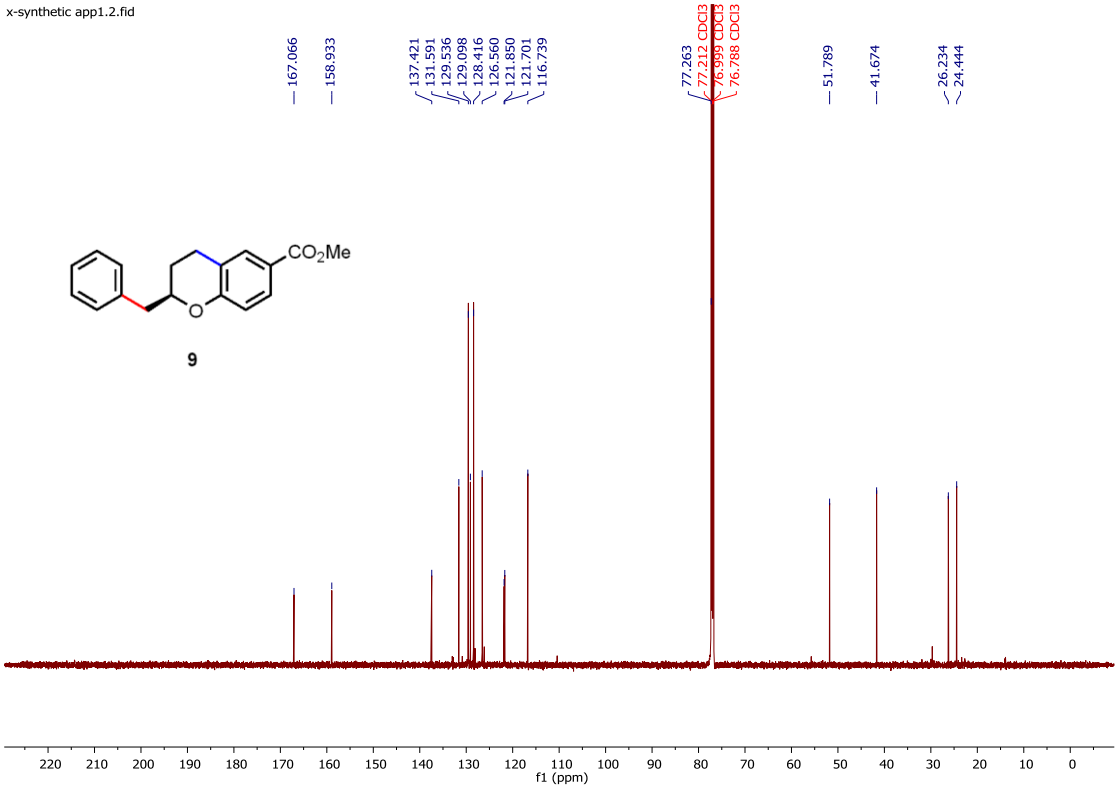
x-app-gama-ester.1.fid



x-app-gama-ester.2.fid




x-synthetic app1.1.fid
7.807
7.795
7.776
7.761
7.335
7.323
7.311
7.275
7.263
7.260
7.251
7.239
7.222
6.826
6.813
6.811
4.299
4.295
4.288
4.284
4.278
4.271
4.267
4.260
4.256
3.865
3.161
3.150
3.138
3.127
2.914
2.903
2.891
2.880
2.810
2.801
2.794
2.784
2.036
2.010
1.740
1.734
1.723
1.717
1.711
1.706
1.701
CO2Me
9
1.99
2.01
2.12
0.94
0.95
1.00
3.04
1.04
1.01
2.05
1.07
1.14
f1 (ppm)


x-synthetic app1.2.fid
167.066
158.933
137.421
131.591
129.536
129.098
128.416
126.560
121.850
121.701
116.739
77.263
77.212 CDCl3
76.999 CDCl3
76.788 CDCl3
51.789
41.674
26.234
24.444
CO2Me
9
f1 (ppm)