Advanced Synthesis & Catalysis

Supporting Information

Ruppert-Prakash Reagent ($TMSCF_3$)-Catalyzed Chemoselective Esterification of Weinreb Amides

Margherita Miele, Laura Castoldi, Egle Beccalli, and Vittorio Pace*

SUPPORTING INFORMATION

For

Ruppert-Prakash Reagent ($TMSCF_3$)-Catalyzed Chemoselective Esterification of Weinreb Amides

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Instrumentation and general analytical methods

Melting Points were determined on a Reichert-Kofler hot-stage microscope and are uncorrected. Mass spectra were obtained on a Shimadzu QP 1000 instrument (EI, 70 eV) and on a Bruker maXis 4G instrument (ESI-TOF, HRMS). ^{1}H, ^{13}C and ^{19}F NMR spectra were recorded at 297 K on a Bruker Avance III 400 spectrometer (400 MHz for ^{1}H, 100 MHz for ^{13}C, 40 MHz for ^{15}N, 376 MHz for ^{19}F) equipped with a directly detecting broadband observe (BBFO) probe, with a Bruker Avance III 500 spectrometer (500 MHz for ^{1}H, 125 MHz for ^{13}C) using a Prodigy cryoprobe, and with a Bruker DRX 200 spectrometer (200 MHz for ^{1}H, 50 MHz for ^{13}C) with a $^{1}H/^{13}C$ dual probe.

The centre of the solvent signal was used as an internal standard which was related to TMS with δ 7.26 ppm (^{1}H in $CDCl_3$), δ 7.16 ppm (^{1}H in C_6D_6), δ 77.00 ppm (^{13}C in $CDCl_3$) and δ 128.06 ppm (^{13}C in C_6D_6). Absolute referencing via *Ξ* ratio was usd for the ^{19}F NMR spectra. Spin-spin coupling constants (*J*) are given in Hz.

In nearly all cases, full and unambiguous assignment of all resonances was performed by combined application of standard NMR techniques, such as APT, HSQC, HMBC, HSQC-TOCSY, COSY and NOESY experiments.

All the reactions were carried out under inert atmosphere of argon. THF was distilled over Na/benzophenone. Chemicals were purchased from Sigma-Aldrich, Acros, Alfa Aesar, Fluorochem and TCI Europe. Starting Weinreb amides were prepared according to literature procedures we previously described.[1] Solutions were evaporated under reduced pressure with a rotary evaporator.

TLC was carried out on aluminium sheets precoated with silica gel 60F254 (Merchery-Nagel, Merk); the spots were visualised under UV light (λ = 254 nm).

General procedures for the Weinreb amides esterification

General Procedure 1

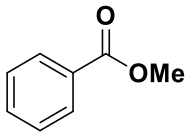
To a solution of Weinreb amide (1.0 equiv) in dry THF (3 mL) cooled at 0 °C, trimethyl(trifluoromethyl)silane was added (0.2 equiv) under Argon atmosphere. After 5 min, the solution of the competent alcoxide (1.4 equiv) was added dropwise during a period of 15 min and, the stirring was continued overnight at room temperature. Subsequently, the mixture was quenched with saturated (*aq.*) NH_4Cl (3 mL) and extracted with dichloromethane (3 mL). The organic layer was washed with saturated (*aq.*) NaCl (5 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure to give the crude compound purified as indicated below.

General Procedure 2

To a suspension of Na (1.8 equiv) in dry THF (2 mL), the alcohol (1.4 equiv) diluted with dry THF (concentration 0.6 M), was added dropwise during a period of 15 min at 0 °C. After 20 min, the solution of Weinreb amide (1.0 equiv), and trimethyl(trifluoromethyl)silane (0.2 equiv) in dry THF (1 mL) cooled at 0 °C were subsequently added under Argon atmosphere. The stirring was continued overnight at room temperature. The mixture was quenched with saturated (*aq.*) NH_4Cl (3 mL) and extracted with dichloromethane (3 mL). The organic layer was washed with saturated (*aq.*) NaCl (5 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure to give the crude compound purified as indicated below.

Characterization and spectral data of compounds

Methyl benzoate (2)[2]

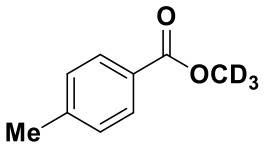


By following the **General procedure 1**, starting from *N*-methoxy-*N*-methylbenzamide (200 mg, 1.21 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.04 mL, 0.24 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (1.69 mL, 3.39 mmol, 1.4 equiv), **2** was obtained in 95% yield (156 mg) as white solid (mp 112°C, lit.[2] 112°C) without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.04 (d, *J* = 6.9 Hz, 2H, Ph H-2,6), 7.55 (t, *J* = 8.1 HZ, 1H, Ph H-4), 7.43 (m, 2H, Ph H-2,6), 3.92 (s, 3H, OCH_3).
^{13}C NMR (100 MHz, $CDCl_3$) δ: 167.2 (C=O), 133.0 (Ph C-4), 130.3 (Ph C-1), 129.7 (Ph C-2,6), 128.5 (Ph C-3,5), 52.2 (OCH_3).

HRMS (ESI), *m/z*: calcd. for $C_8H_9O_2^+$: 137.0603 $[M+H]^+$; found: 137.0599.

Methyl-d_3 4-methylbenzoate (3)[3]



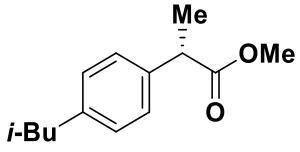
By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 2 equiv), Methanol-*d*4 (0.06 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **3** was obtained in 96% yield (224 mg) as colorless oil without any further purification step.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.93 (d, *J* = 8.2 Hz, 2H, Ph H-2,6), 7.23 (d, *J* = 8.2 Hz, 2H, Ph H-3,5), 2.40 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 167.2 (C=O), 143.5 (Ph C-4), 129.6 (Ph C-2,6), 129.0 (Ph C-3,5), 127.4 (Ph C-1), 51.2 (dt, *J* = 44.8 Hz, *J* = 22.4 Hz, CD_3), 21.6 (CH_3).

NCI(C_2H_4): *m/z* 91, 106, 121, 118.[4]

Methyl (*S*)-2-(4-isobutylphenyl)propanoate (4)[5,5b]



By following the **General procedure 1**, starting from (*S*)-2-(4-isobutylphenyl)-*N*-methoxy-*N*-methylpropanamide[1d] (200 mg, 0.80 mmol, 1.0 equiv, >99:1 *er*) in dry THF (3 mL),

trimethyl(trifluoromethyl)silane (0.02 mL, 0.16 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.25 mL, 1.12 mmol, 1.4 equiv), **4** was obtained in 92% yield (163 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.19 (m, 2H, Ph H-2,6), 7.09 (m, 2H, Ph H-3,5), 3.70 (q, *J* = 7.2 Hz, 1H, C<u>H</u>CH_3), 3.66 (s, 3H, OCH_3), 2.44 (d, *J* = 7.2 Hz, 2H, CH_2), 1.81 (s, *J* = 6.8 Hz, 1H, CH), 1.49 (d, *J* = 7.2 Hz, 3H, C<u>H</u>$_3$CH), 0.90 (d, *J* = 6.6 Hz, 6H, C<u>H</u>$_3$CHC<u>H</u>$_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 175.2 (C=O), 140.6 (Ph C-4), 137.7 (PH C-1), 129.3 (Ph C-3,5), 127.1 (PH C-2,6), 52.0 (OCH_3), 45.2 (CH_2), 30.2 (<u>C</u>HCH_3), 29.9 (CH_3<u>C</u>H CH_3), 22.4 (CH_3CH<u>C</u>H_3), 18.6 (CH<u>C</u>H_3).

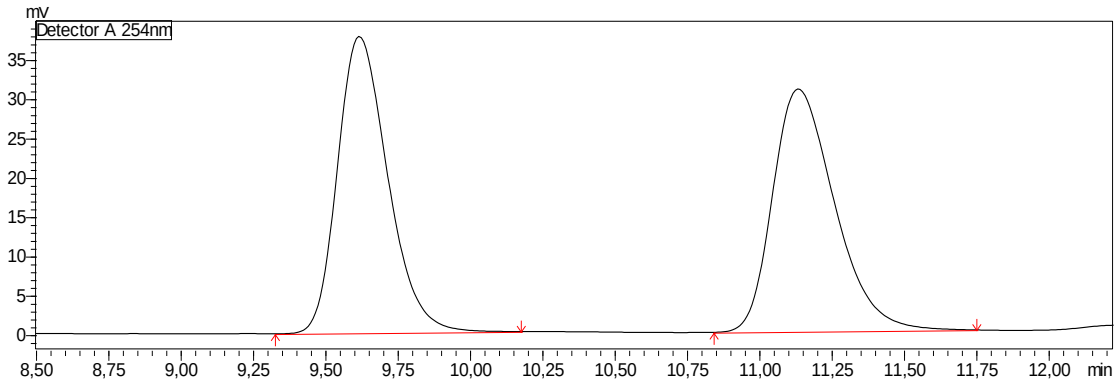
HRMS (ESI-TOF): Calcd. For $C_{14}H_{20}O_2Na^+$: 243.1356, Found: 243.1365.

HPLC analysis: Chiralpak IC Column, λ 254 nm, eluent: *n*-heptane / *i*-propanol 99:1 *v/v*, 23 °C, Flow: 1 mL/min.

[α]$^{25}_{D}$ = +61 (*c* 1, $CHCl_3$), lit.[6] +64.6 (*c* 1, $CHCl_3$).

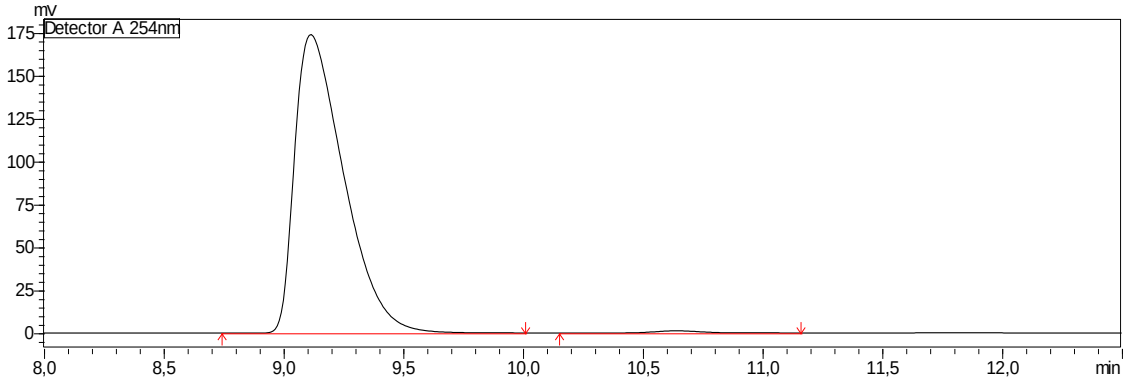
(*rac*)-**4** was analogously prepared from achiral Weinreb amide **4** (200 mg, 0.80 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.16 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.25 mL, 1.12 mmol, 1.4 equiv). It was obtained as colorless oil 88% yield (156 mg) after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).
Spectroscopic data match with those reported for the chiral compound shown above.

Racemate



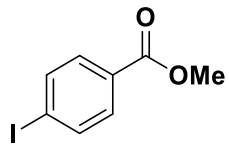
Peaks	*Retention time (min)*	*Area*	*Area%*
1	9,649	454624	49,782
2	11,152	458607	50,218
Total		913231	100,000

Enantioenriched



Peaks	*Retention time (min)*	*Area*	*Area%*
1	9,226	2479623	99,241
2	10,676	18967	0,759
Total		2498590	100,000

Methyl 4-iodobenzoate (5)[7]



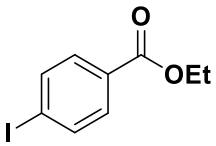
By following the **General procedure 1**, starting from 4-iodo-*N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 0.69 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.14 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (1.9 mL, 0.96 mmol, 1.4 equiv), **5** was obtained in 90% yield (162 mg) as colorless oil without any further purification step.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.80 (m, 2H, Ph H-3,5), 7.74 (m, 2H, Ph H-2,6), 3.91 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.6 (C=O), 137.7 (Ph C-3,5), 131.0 (Ph C-2,6), 129.6 (Ph C-1), 100.7 (Ph C-4), 52.3 (OCH_3).

HRMS (ESI), *m/z*: calcd. for $C_8H_8IO_2^+$: 262.9490 $[M+H]^+$; found: 262.9488.

Ethyl 4-iodobenzoate (6)[8]



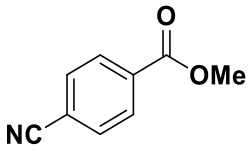
By following the **General procedure 1**, starting from 4-iodo-*N*-methoxy-*N*-methylbenzamide (200 mg, 0.69 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.14 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (3.21 mL, 0.96 mmol, 1.4 equiv), **6** was obtained in 93% yield (176 mg) as yellow oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.79 (m, 2H, Ph H-3,5), 7.74 (m, 2H, Ph H-2,6), 4.36 (2H, $OC\underline{H}_2CH_3$), 1.39 (3H, $OCH_2C\underline{H}_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.1 (C=O), 137.6 (Ph C-3,5), 131.0 (Ph C-2,6), 129.9 (Ph C-1), 100.6 (Ph C-4), 61.2 ($O\underline{C}H_2CH_3$), 14.3 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_9H_{10}IO_2^+$: 276.9647 $[M+H]^+$; found: 276.9654.

Methyl 4-cyanobenzoate (7)[9]



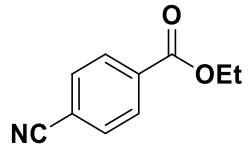
By following the **General procedure 1**, starting from 4-cyano-*N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.05 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.94 mL, 1.47 mmol, 1.4 equiv), **7** was obtained in 87 % yield (147 mg) as yellow solid (mp 66 °C, lit.[10] 65-67 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.13 (m, 2H, Ph H-2,6), 7.73 (m, 2H, Ph H-3,5), 3.95 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 165.4 (C=O), 133.8 (Ph C-1), 132.17 (Ph C-3,5), 130.0 (Ph C-2,6), 117.9 (CN), 116.3 (Ph C-4), 52.7 (OCH_3).

HRMS (ESI), *m/z*: calcd. for $C_9H_8NO_2^+$: 162.0548 $[M+H]^+$; found: 162.0547.

Ethyl 4-cyanobenzoate (8)[11]



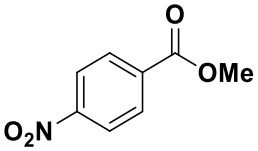
By following the **General procedure 1**, starting from 4-cyano-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.05 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (4.91 mL, 1.47 mmol, 1.4 equiv), **8** was obtained in 85% yield (157 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.14 (m, 2H, Ph H-2,6), 7.74 (m, 2H, Ph H-3,5), 4.41 (q, *J* = 7.2 Hz, 2H, OCH_2CH_3), 1.41 (t, *J* = 7.2 Hz, 3H, OCH_2CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 165.1 (C=O), 134.3 (Ph C-1), 132.2 (Ph C-3,5), 130.1 (Ph C-2,6), 118.0 (CN), 116.2 (Ph C-4), 61.8 (OCH_2CH_3), 14.2 (OCH_2CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{10}H_{10}NO_2^+$: 176.0712 $[M+H]^+$; found: 176.072.

Methyl 4-nitrobenzoate (9)[12]



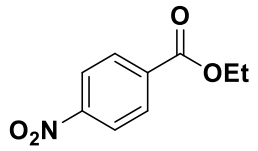
By following the **General procedure 1**, starting from 4-nitro-*N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 0.95 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.19 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.66 mL, 1.33 mmol, 1.4 equiv), **9** was obtained in 83% yield (143 mg) as yellow solid (mp 94 °C, lit.[13] 94-96 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.29 (m, 2H, Ph H-3,5), 8.21 (m, 2H, Ph H-2,6), 3.98 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 165.2 (C=O), 150.5 (Ph C-4), 135.5 (Ph C-1), 130.7 (Ph C-2,6), 123.5 (Ph C-3,5), 52.8 (OCH_3).

HRMS (ESI), *m/z*: calcd. for $C_8H_8NO_4^+$: 182.0457 $[M+H]^+$; found: 182.0458.

Ethyl 4-nitrobenzoate (10)[14]



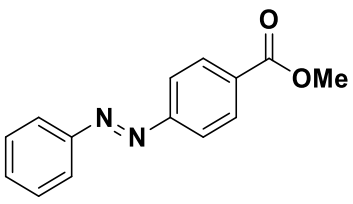
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-nitrobenzamide (200 mg, 0.95 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.19 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (4.44 mL, 1.33 mmol, 1.4 equiv), **10** was obtained in 85% yield (158 mg) as yellow solid (mp 56-58 °C, lit. [15] 56-58 °C) after column chromatography on silica gel. (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.29 (m, 2H, Ph H-3,5), 8.22 (m, 2H, Ph H-2,6), 4.44 (q, *J* = 7.2 Hz, 2H, $OC\underline{H}_2CH_3$), 1.43 (t, *J* = 7.2 Hz, 3H, $OCH_2C\underline{H}_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 164.7 (C=O), 150.5 (Ph C-4), 135.8 (Ph C-1), 130.7 (Ph C-2,6), 123.5 (Ph C-3,5), 62.0 ($O\underline{C}H_2CH_3$), 14.2 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_9H_{10}NO_4^+$: 196.0609 $[M+H]^+$; found: 196.0611.

Methyl 4-(phenyldiazenyl) benzoate (11)[16]



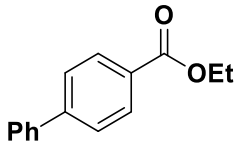
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-(phenyldiazenyl)benzamide (200 mg, 0.74 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.15 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.08 mL, 1.04 mmol, 1.4 equiv), **11** was obtained in 91% yield (162 mg) as red solid (mp 122 °C, lit.[17] 121-124 °C) after chromatographic purification step on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.19 (m, 2H, Ph H-2,6), 7.95 (m, 4H, Ph H-3,5, Ph H-2',6'), 7.53 (Ph H-3',5'), 7.51 (Ph H-4'), 3.96 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.5 (C=O), 155.1 (Ph C-4), 152.5 (PH C-1'), 131.7 (Ph C-1), 131.7 (PH C-4'), 130.6 (Ph C-2,6), 129.2 (Ph C-3',5'), 123.1 (PH C-2',6'), 122.6 (Ph C-3,5), 52.3 (OCH_3).

HRMS (ESI), *m/z*: calcd. for $C_{14}H_{12}N_2O_2^+$: 263.0790 $[M+Na]^+$; found: 263.0791.

Ethyl [1,1'-biphenyl]-4-carboxylate (12)[18]



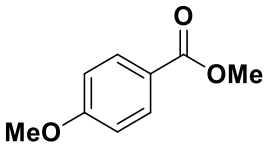
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-[1,1'-biphenyl]-4-carboxamide (200 mg, 0.83 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.17 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (3.87 mL, 1.16 mmol, 1.4 equiv), **12** was obtained in 97% yield (182 mg) as colorless solid (mp 49 °C, lit. [19] 49-50 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.12 (m, 2H, Ph H-2,6), 7.66 (m, 2H, Ph H-3,5), 7.63 (m, 2H, Ph1 H-2,6), 7.47 (m, 2H, Ph1 H-3,5), 7.40 (m, 1H, Ph1 H-4), 4.41 (q, *J* = 7.2 Hz, 2H, $OC\underline{H}_2CH_3$), 1.42 (t, *J* = 7.2 Hz, 3H, $OCH_2C\underline{H}_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.5 (C=O), 145.5 (Ph C-4), 140.0 (Ph1 C-1), 130.0 (Ph C-2,6), 129.2 (Ph C-1), 128.9 (Ph1 C-3,5), 128.1 (Ph1 C-4), 127.3 (Ph1 C-2,6), 127.0 (Ph C-3,5), 61.0 ($O\underline{C}H_2CH_3$), 14.4 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_{15}H_{15}O_2^+$: 227.1067 $[M+H]^+$; found: 227.1057.

Methyl 4-methoxybenzoate (13)[20]



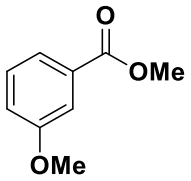
By following the **General procedure 1**, starting from 4-methoxy-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.02 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.8 mL, 1.43 mmol, 1.4 equiv), **13** was obtained in 94% yield (160 mg) as colorless solid (mp 48-50°C, lit.[21] 48-50 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.0 (d, *J* = 8.9 Hz, 2H, Ph H-2,6), 6.9 (d, *J* = 8.9 Hz, 2H, Ph H-3,5), 3.88 (s, 3H, $COOCH_3$), 3.86 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.9 (C=O), 160.3 (Ph C-4), 131.3 (Ph C-2,6), 122.6 (Ph C-1), 113.6 (Ph C-3,5), 55.4 (OCH_3), 51.8 ($COO\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_9H_{11}O_3^+$: 167.0708 $[M+H]^+$; found: 167.0706.

Methyl 3-methoxybenzoate (14)[22]



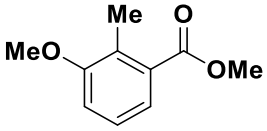
By following the **General procedure 1**, starting from 3-methoxy-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.02 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.8 mL, 1.43 mmol, 1.4 equiv), **14** was obtained in 90% yield (153 mg) as colorless solid (mp 110°C, lit.[23] 110-111°C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.64 (dd, *J* = 7.6 Hz, *J* = 1.0 Hz, 1H, Ph H-6), 7.56 (s, 1H, Ph H-2), 7.34 (t, *J* = 7.9 Hz, 1H, Ph H-5), 7.09 (m, 1H, Ph H-4), 4.38 (q, *J* = 7.4 Hz, 2H, $OC\underline{H}_2CH_3$), 3.85 (s, 3H, OCH_3), 1.39 (t, *J* = 7.4 Hz, 3H, $OCH_2C\underline{H}_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.5 (C=O), 159.5 (Ph C-3), 131.8 (Ph C-1), 129.3 (Ph C-5), 121.9 (Ph C-6), 119.3 (Ph C-4), 61.0 ($O\underline{C}H_2CH_3$), 55.4 (OCH_3), 14.3 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_9H_{11}O_3^+$: 167.0708 $[M+H]^+$; found: 167.0706.

Methyl 4-methoxybenzoate (15)[24]



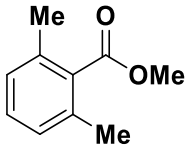
By following the **General procedure 1**, starting from *N*,3-dimethoxy-*N*,2-dimethylbenzamide (200 mg, 0.96 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.19 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.6 mL, 1.34 mmol, 1.4 equiv), **15** was obtained in 86% yield (148 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.18 (t, *J*= 7.9 Hz, 1H, Ph H-3), 6.85 (d, *J*= 8.2 Hz, 2H, Ph H-2,4), 3.88 (s, 3H, $COOCH_3$), 3.40-3.36 (bs, 3H, OCH_3), 2.17 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 157.5 (C=O), 136.7 (Ph C-5), 126.3 (Ph C-1), 123.5 (Ph C-3), 124.8 (Ph C-6), 118.1 (Ph C-2), 110.6 (Ph C-4), 61.1 (OCH_3), 55.5 ($COO\underline{C}H_3$), 12.7 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{10}H_{13}O_3^+$: 181.0865 $[M+H]^+$; found: 181.0867.

Methyl 2,6-dimethylbenzoate (16)[25]



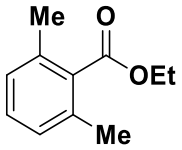
By following the **General procedure 1**, starting from *N*-methoxy-*N*,2,6-trimethylbenzamide (200 mg, 1.03 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.90 mL, 1.45 mmol, 1.4 equiv), **16** was obtained in 83% yield (142 mg) as colorless oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.19 (t, *J* = 7.6 Hz, 1H, Ph H-4), 7.03 (d, *J* = 7.6 Hz, 2H, Ph H-3,5), 3.91 (s, 3H, OCH_3), 2.31 (6H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.5 (C=O), 134.9 (Ph C-2,6), 133.8 (PH C-1), 129.3 (PH C-4), 127.5 (Ph C-3,5), 51.9 (OCH_3), 19.7 (2C, CH_3).

HRMS (ESI-TOF), *m/z*: calcd. for $C_{10}H_{13}O_2^+$: 165.0916 $[M+H]^+$; found: 165.0912.

Ethyl 2,6-dimethylbenzoate 17)[26]



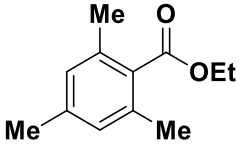
By following the **General procedure 1**, starting from *N*-methoxy-*N*,2,6-trimethylbenzamide (200 mg, 1.03 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (4.83 mL, 1.45 mmol, 1.4 equiv), **17** was obtained in 81% yield (149 mg) as colorless oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.18 (t, *J* = 7.7 Hz, 1H, Ph H-4), 7.03 (d, *J* = 7.7 Hz, 2H, Ph H-3,5), 4.40 (q, *J* = 7.2 Hz, 2H, $OC\underline{H}_2CH_3$), 2.32 (s, 6H, CH_3), 1.39 (t, *J* = 7.2 Hz, 3H, $OCH_2C\underline{H}_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.0 (C=O), 134.8 (Ph C-2,6), 134.1 (Ph C-1), 129.2 (Ph C-4), 127.5 (Ph C-3,5), 60.9 ($O\underline{C}H_2CH_3$), 19.6 (2C, CH_3), 14.3 ($OCH_2\underline{C}H_3$).

HRMS (ESI-TOF), *m/z*: calcd. for $C_{11}H_{15}O_2^+$: 179.1072 $[M+H]^+$; found: 179.1073.

Ethyl 2,4,6-trimethylbenzoate (18)[27]



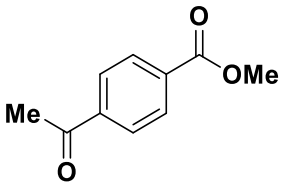
By following the **General procedure 1**, starting from *N*-methoxy-*N*,2,4,6-tetramethylbenzamide (200 mg, 0.97 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.19 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (4.50 mL, 1.35 mmol, 1.4 equiv), **18** was obtained in 87% yield (161 mg) as colorless oil without further purification.

^{1}H NMR (600 MHz, $CDCl_3$) δ: 6.85 (s, 2H, Ph H-3,5), 4.38 (q, *J* = 7.1 Hz, 2H, OCH_2), 2.29 (s, 3H, CH_3),2.28 (s, 3H, CH_3), 1.38 (t, *J* = 7.1 Hz, 3H, OCH_2CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.1 (C=O), 139.2 (Ph C-4), 135.0 (Ph C-2,6), 131.1 (Ph C-1), 128.4 (Ph C-3,5), 60.8 (OCH_2), 21.1 (CH_3), 19.7 (CH_3), 14.3 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_{12}H_{17}O_2^+$: 193.1229 $[M+H]^+$; found: 193.1230.

Methyl 4-acetylbenzoate (19)[9]



By following the **General procedure 1**, starting from 4-acetyl-*N*-methoxy-*N*-methylbenzamide (200 mg, 0.97 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.19 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.70 mL, 1.35 mmol, 1.4 equiv), **19** was obtained in 91% yield (156 mg) as white solid (mp 96-97 °C, lit.[28] 96-97 °C) without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.13 (m, 2H, Ph H-2,6), 8.01 (m, 2H, Ph H-3,5), 3.95 (s, 3H, OCH_3), 2.65 (3H, CH_3).

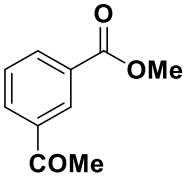
^{13}C NMR (100 MHz, $CDCl_3$) δ: 197.6 (CH_3C=O), 166.2 (C=O), 140.2 (Ph C-4), 133.9 (PH C-1), 129.8 (Ph C-2,6), 128.2 (PH C-3,5), 52.5 (OCH_3), 26.9 (CH_3).

HRMS (ESI-TOF) m/z: calcd for $C_{10}H_{10}NaO_3^+$: 201.0522 $(M + Na)^+$, found: 201.0519.

Scale up of the reaction using 20 mmol of starting material

By following the **General procedure 1**, starting from 4-acetyl-*N*-methoxy-*N*-methylbenzamide (4.145 g, 20 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.6 mL, 4 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (56 mL, 28 mmol, 1.4 equiv), **19** was obtained in 93% yield (3.314 g) as white solid without further purification.
Spectroscopic and spectrometric data match with those ones reported for the running reaction at 0.97 mmol scale.

Methyl 3-acetylbenzoate (20)[9]



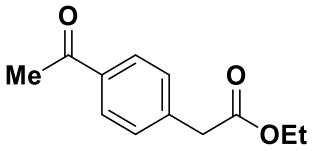
By following the **General procedure 1**, starting from 3-acetyl-*N*-methoxy-*N*-methylbenzamide (200 mg, 0.97 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.19 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.70 mL, 1.35 mmol, 1.4 equiv), **20** was obtained in 85% yield (146 mg) as white solid (mp 43°C, lit.[29] 42-43.7 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.59 (m, 1H, Ph H-2), 8.23 (m, 1H, Ph H-4), 8.16 (m, 1H, Ph H-6), 7.56 (t, *J* = 7.8 Hz, 1H, Ph H-5), 3.95 (s, 3H, OCH_3), 2.65 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 197.2 (C=O), 166.3 (CO_2), 137.3 (Ph C-3), 133.9 (Ph C-6), 132.3 (Ph C-4), 130.7 (Ph C-1), 129.5 (Ph C-2), 128.8 (Ph C-5), 52.4 (OCH_3), 26.7 (CH_3).

HRMS (ESI-TOF) m/z: calcd for $C_{10}H_{10}NaO_3^+$: 201.0522 $(M + Na)^+$, found: 201.0523.

Ethyl 2-(4-acetylphenyl) acetate (21)[30]



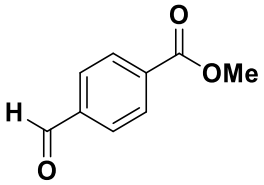
By following the **General procedure 1**, starting from 2-(4-acetylphenyl)-N-methoxy-N-methylacetamide (200 mg, 0.90 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.18 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (4.2 mL, 1.27 mmol, 1.4 equiv), **21** was obtained in 81% yield (151 mg) as white solid (mp 50°C, lit.[31] 49-50 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.92 (m, 2H, Ph H-3,5), 7.38 (m, 2H, Ph H-2,6), 4.16 (q, *J* = 7.2 Hz, 2H, OCH_2CH_3), 3.67 (m, 2H, CH_2), 2.59 (s, 3H, $C{=}OCH_3$), 1.25 (t, *J* = 7.2 Hz, 3H, OCH_2CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 197.7 ($C{=}OCH_3$), 170.8 (C=O), 139.5 (Ph C-4), 136.0 (Ph C-1), 129.5 (Ph C-2,6), 128.6 (Ph C-3,5), 61.1 ($O\underline{C}H_2CH_3$), 53.6 (CH_3), 41.3 (CH_2), 26.6 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_{12}H_{15}O_3^+$: 207.1021 $[M+H]^+$; found: 207.1023.

Methyl 4-formylbenzoate (22)[32]



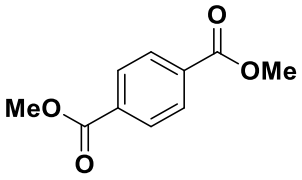
By following the **General procedure 1**, starting from 4-formyl-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.04 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.90 mL, 1.45 mmol, 1.4 equiv), **22** was obtained in 93% yield (158 mg) as white solid (m.p. 180 °C, lit.[33] 180 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 7:3 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 10.1 (COH), 8.20 (m, 2H, Ph H-2,6), 7.96 (m, 2H, Ph H-3,5), 3.96 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 191.7 (COH), 166.1 (C=O), 139.1 (Ph C-4), 135.1 (PH C-1), 130.2 (Ph C-2,6), 129.5 (PH C-3,5), 52.6 (OCH_3).

HRMS (ESI) : m/z calcd. for $C_9H_9O_3$ $[M+H]^+$ 166.0552; found: 166.0555.

Methyl 4-methoxybenzoate(23)[34]



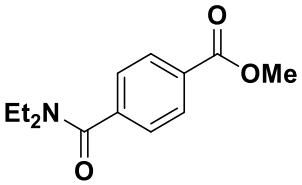
By following the **General procedure 1**, starting from methyl 4-(methoxy(methyl)carbamoyl) benzoate (200 mg, 0.90 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.18 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.5 mL, 1.25 mmol, 1.4 equiv), **23** was obtained in 87% yield (151 mg) as white solid (mp 142°C, lit.[34] 141-143 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (400 MHz, $CDCl_3$) δ: 8.0 (s, 4H, Ph H-2,3,5,6), 3.95 (s, 6H, $COOCH_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.3 (C=O), 133.9 (Ph C-1, 4), 129.5 (Ph C-2,3,5,6), 52.4 ($COOCH_3$).

HRMS (ESI), *m/z*: calcd. for $C_{10}H_{10}NaO_4^+$: 217.0471 $[M+Na]^+$; found: 217.0475.

Methyl 4-(diethylcarbamoyl)benzoate (24)[35]



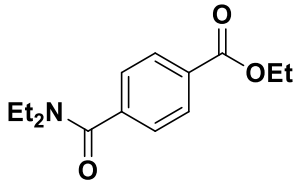
By following the **General procedure 1**, starting from 4-(diethylcarbamoyl)-*N*-methoxy-*N*-methylbenzamide (200 mg, 0.76 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.15 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.12 mL, 1.06 mmol, 1.4 equiv), **24** was obtained in 94% yield (167 mg) as yellow oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.05 (m, 2H, Ph H-2,6), 7.42 (m, 2H, Ph H-3,5), 3.91 (s, 3H, OCH_3), 3.54 (m, 1H, NCH_2), 3.19 (m, 1H, NCH_2), 1.24 (m, 3H, CH_3), 1.08 (m, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.2 (CON), 166.4 (C=O), 141.5 (Ph C-4), 130.6 (Ph C-1), 129.7 (Ph C-2,6), 126.2 (Ph C-3,5), 52.2 (OCH_3), 43.2 (NCH_2), 39.2 (NCH_2), 14.1 (CH_3), 12.8 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{13}H_{17}NNaO_3^+$: 258.1101 $[M+Na]^+$; found: 258.1101.

Ethyl 4-(diethylcarbamoyl) benzoate (25)[36]



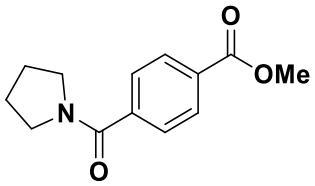
By following the **General procedure 1**, starting from 4-(diethylcarbamoyl)-*N*-methoxy-*N*-methylbenzamide (200 mg, 0.76 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.15 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (3.5 mL, 1.06 mmol, 1.4 equiv), **25** was obtained in 89% yield (168 mg) as yellow oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.07 (m, 2H, Ph H-2,6), 7.43 (m, 2H, Ph H-3,5), 4.39 (q, *J* = 7.2 Hz, 2H, $OC\underline{H}_2CH_3$), 3.55 (m, 2H, NCH_2), 3.20 (m, 2H, NCH_2), 1.40 (t, *J* = 7.2 Hz, 3H, $OCH_2C\underline{H}_3$), 1.25 (m, 3H, $NCH_2C\underline{H}_3$), 1.09 (m, 3H, $NCH_2C\underline{H}_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.3 (C=ON), 166.0 (C=O), 141.4 (Ph C-4), 131.0 (Ph C-1), 129.7 (Ph C-2,6), 126.2 (Ph C-3,5), 61.2 ($O\underline{C}H_2CH_3$), 43.2 (NCH_2), 39.3 (NCH_2), 14.3 ($OCH_2\underline{C}H_3$), 14.2 ($NCH_2\underline{C}H_3$), 12.9 ($NCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_{14}H_{19}NNaO_3^+$: 272.1263 $[M+Na]^+$; found: 272.1264.

Methyl 4-(pyrrolidine-1-carbonyl) benzoate (26)[37]



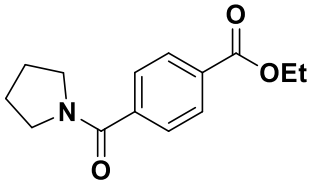
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-(pyrrolidine-1-carbonyl)benzamide (200 mg, 0.76 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.15 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (2.14 mL, 1.07 mmol, 1.4 equiv), **26** was obtained in 92% yield (164 mg) as white solid (mp 103–104 °C, lit.[37] 103-104 °C) without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.06 (m, 2H, Ph H-2,6), 7.56 (m, 2H, Ph H-3,5), 3.92 (s, 3H, OCH_3), 3.65 (m, 2H, Pyr H-5), 3.37 (m, 2H, Pyr H-2), 1.97 (m, 2H, Pyr H-4), 1.89 (m, 2H, Pyr H-3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 168.7 (CON), 166.4 (C=O), 141.4 (Ph C-4), 131.1 (Ph C-1), 129.6 (Ph C-2,6), 127.0 (Ph C-3,5), 52.3 (OCH_3), 49.4 (Pyr C-2), 46.2 (Pyr C-5), 26.3 (Pyr C-3), 24.4 (Pyr C-4).

HRMS (ESI), *m/z*: calcd. for $C_{13}H_{16}NO_3^+$: 234.1119 $[M+H]^+$; found: 234.1124.

Ethyl 4-(pyrrolidine-1-carbonyl) benzoate (27)[38]



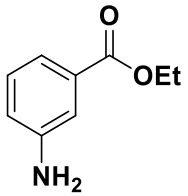
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-(pyrrolidine-1-carbonyl) benzamide (200 mg, 0.76 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.15 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (3.56 mL, 1.07 mmol, 1.4 equiv), **27** was obtained in 86% yield (162 mg) as colorless oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.07 (m, 2H, Ph H-2,6), 7.57 (m, 2H, Ph H-3,5), 4.39 (q, *J* = 7.2 Hz, 2H, $OC\underline{H}_2CH_3$), 3.65 (t, *J* = 6.8 Hz, 2H, Pyr H-5), 3.38 (t, *J* = 6.8 Hz, 2H, Pyr H-2), 2.0 (m, 2H, Pyr H-4), 1.9 (m, 2H, Pyr H-3), 1.40 (t, *J* = 7.2 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 168.8 (C=ON), 166.0 (C=O), 141.2 (Ph C-4), 131.5 (Ph C-1), 129.6 (Ph C-2,6), 127.0 (Ph C-3,5), 61.2 ($O\underline{C}H_2CH_3$), 49.5 (Pyr C-2), 46.2 (Pyr C-5), 26.4 (Pyr C-3), 24.4 (Pyr C-4), 14.3 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_{14}H_{18}NO_3^+$: 248.1279 $[M+H]^+$; found: 248.1281.

Ethyl 3-aminobenzoate (28) [39]



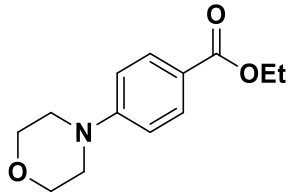
By following the **General procedure 1**, starting from 3-amino-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.11 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (5.18 mL, 1.55 mmol, 1.4 equiv), **28** was obtained in 82% yield (150 mg) as colorless oil column chromatography on silica gel (*n*-hexane/ethyl acetate 1:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.44 (m, 1H, Ph H-6), 7.37 (m, 1H, Ph H-2), 7.21 (m, 1H, Ph H-5), 6.87 (m, 1H, Ph H-4), 4.35 (q, *J* = 7.2 Hz, 2H, OCH_2CH_3), 3.53 (bs, 2H, NH_2), 1.38 (t, *J* = 7.2 Hz, 3H, OCH_2CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.8 (C=O), 146.1 (Ph C-3), 131.4 (Ph C-1), 129.2 (Ph C-5), 119.9 (Ph C-6), 119.4 (Ph C-4), 115.9 (Ph C-2), 60.9 ($O\underline{C}H_2CH_3$), 14.3 ($OCH_2\underline{C}H_3$).

HRMS (ESI), *m/z*: calcd. for $C_9H_{12}NO_2^+$: 166.0868 $[M+H]^+$; found: 166.0880.

Ethyl 4-morpholinobenzoate (29)[40]



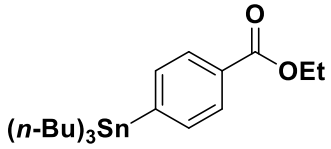
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-morpholinobenzamide (200 mg, 0.80 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.16 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (3.73 mL, 1.12 mmol, 1.4 equiv), **29** was obtained in 96% yield (180 mg) as yellow solid (mp 85 °C, lit.[40] 85 °C) without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.94 (d, *J* = 9.0 Hz, 2H, Ph H-2,6), 6.86 (d, *J* = 9.0 Hz, 2H, Ph H-3,5), 4.33 (q, *J* = 7.1 Hz, 2H, OCH_2), 3.86 (m, 4H, Morph H-2,6), 3.28 (m, 4H, Morph H-3,5), 1.37 (t, *J* = 7.1 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.6 (C=O), 154.1 (Ph C-4), 131.1 Ph C-2,6), 120.7 (Ph C-1), 113.5 (Ph C-3,5), 66.6 (Morph C-2,6), 60.4 (OCH_2), 47.7 (Morph C-3,5), 14.4 (CH_3).

HRMS (ESI-TOF): m/z: calcd. for $C_{13}H_{18}NO_3^+$: 236.1281 $[M+H]^+$; Found: 236.1279.

ethyl 4-(tributylstannyl) benzoate (30)[41]



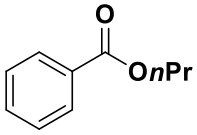
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-(tributylstannyl)benzamide (200 mg, 0.44 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.01 mL, 0.09 mmol, 0.2 equiv), EtONa 0.3 M solution in EtOH (2.06 mL, 0.62 mmol, 1.4 equiv), **30** was obtained in 93% yield (180 mg) as yellow oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.96 (d, *J* = 8.1 Hz, 2H, Ph H-2,6), 7.55 (d, *J* = 8.1 Hz, 2H, Ph H-3,5), 4.37 (q, *J* = 7.1 Hz, 2H, OCH_2CH_3), 1.52 (m, 6H, *n*-Bu), 1.39 (t, *J* = 7.1 Hz, 3H, OCH_2CH_3), 1.32 (m, 6H, *n*-Bu), 1.08 (m, 6H, $(CH_2)_3Sn$), 0.88 (t, *J* = 7.3 Hz, 9H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 167.1 (C=O), 149.4 (Ph C-4), 136.4 (Ph C-3,5), 129.9 (Ph C-1), 128.3 (Ph C-2,6), 60.8 ($O\underline{C}H_2CH_3$), 29.0 (*n*-Bu), 27.3 (*n*-Bu), 14.3 ($OCH_2\underline{C}H_3$), 13.6 (CH_3), 9.6 ($(CH_2)_3Sn$).

HRMS (ESI), *m/z*: calcd. for $C_{21}H_{37}O_2Sn^+$: 441.1806 $[M+H]^+$; found: 441.1810.

Propyl benzoate (31)[42]



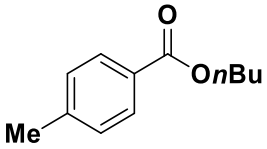
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methylbenzamide (200 mg, 1.21 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.04 mL, 0.24 mmol, 0.2 equiv), *n*-PrONa (0.16 mL, 1.69 mmol, 1.4 equiv), **31** was obtained in 85% yield (169 mg) as yellow oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.05 (m, 2H, Ph H-2,6), 7.55 (m, 1H, Ph H-4), 7.44 (m, 2H, Ph H-3,5), 4.29 (t, *J* = 6.6 Hz, 2H, OCH_2), 1.80 (m, 2H, CH_2), 1.03 (t, *J* = 7.3 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.7 (C=O), 132.8 (Ph C-4), 130.5 (Ph H-1), 129.5 (Ph C-2,6), 128.3 (Ph C-3,5), 66.5 (OCH_2), 22.1 (CH_2), 10.5 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{10}H_{13}O_2^+$: 165.0910 $[M+H]^+$; found: 165.0904.

Butyl 4-methylbenzoate (32)[43]



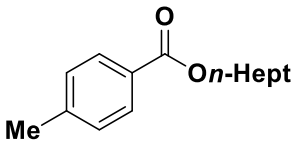
By following the **General procedure 1**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), *n*-BuONa 0.5 M solution in *n*-BuOH (3.12 mL, 1.56 mmol, 1.4 equiv), **32** was obtained in 94% yield (202 mg) as colorless oil without further purification.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.93 (m, 2H, Ph H-2,6), 7.23 (m, 2H, Ph H-3,5), 4.31 (t, *J* = 6.7 Hz, 2H, OCH_2), 2.41 (s, 3H, Ph CH_3), 1.75 (m, 2H, CH_2), 1.48 (m, 2H, CH_2), 0.98 (t, *J* = 7.4 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.7 (C=O), 143.4 (Ph C-4), 129.5 (Ph C-2,6), 129.0 (Ph C-3,5), 127.7 (Ph C-1), 64.6 (OCH_2), 30.8 ($OCH_2\underline{C}H_2$), 21.6 (Ph 4-CH_3), 19.3 (CH_2), 13.8 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{12}H_{17}O_2^+$: 193.1223 $[M+H]^+$; found: 193.1218.

Heptyl 4-methylbenzoate (33)[44]



By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), *n*-HeptOH (0.22 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **33** was

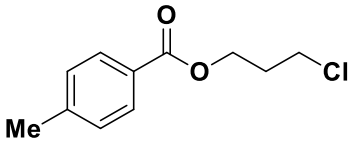
obtained in 78% yield (104 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.93 (m, 2H, Ph H-2,6), 7.23 (m, 2H, Ph H-3,5), 4.30 (t, *J* = 6.6 Hz, 2H, OCH_2), 2.41 (s, 3H, Ph CH_3), 1.76 (m, 2H, CH_2), 1.43 (m, 2H, CH_2), 1.36 (m, 2H, CH_2), 1.31 (m, 2H, CH_2), 1.30 (m, 2H, CH_2), 0.89 (t, *J* = 6.8 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.7 (C=O), 143.4 (Ph C-4), 129.5 (Ph C-2,6), 129.0 (Ph C-3,5), 127.7 (Ph C-1), 65.0 (OCH_2), 31.7 (CH_2), 29.0 (CH_2), 28.7 (CH_2), 26.0 (CH_2), 23.0 (CH_2), 21.6 (Ph CH_3), 14.0 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{15}H_{22}O_2Na^+$: 257.1459 $[M+Na]^+$; found: 257.1450.

3-chloropropyl 4-methylbenzoate (34)[45]



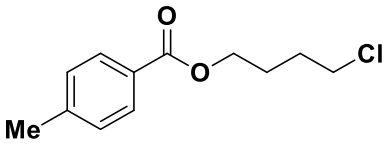
By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 3-chloropropan-1-ol (0.13 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **34** was obtained in 74% yield (176 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 85:15 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.92 (m, 2H, Ph H-2,6), 7.24 (m, 2H, Ph H-3,5), 4.46 (t, *J* = 6.1 Hz, 2H, OCH_2), 2.41 (s, 3H, Ph CH_3), 3.70 (t, *J* = 6.5 Hz, 2H, CH_2Cl), 2.23 (m, 2H, CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.5 (C=O), 143.8 (Ph C-4), 129.6 (Ph C-2,6), 129.1 (Ph C-3,5), 127.3 (Ph C-1), 61.5 (OCH_2), 41.3 (CH_2Cl), 31.8 (CH_2), 21.6 (Ph 4-CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{14}ClO_2^+$: 213.0672 $[M+H]^+$; found: 213.0677.

4-chlorobutyl 4-methylbenzoate (35)[46]



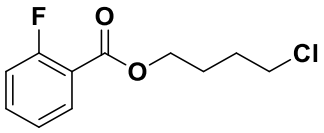
By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 4-chlorobutan-1-ol (0.16 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **35** was obtained in 76% yield (192 mg) as colorless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.92 (m, 2H, Ph H-2,6), 7.24 (m, 2H, Ph H-3,5), 4.34 (m, 2H, OCH_2), 3.62 (m, 2H, CH_2Cl), 2.41 (s, 3H, Ph CH_3), 1.94 (m, 4H, CH_2CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.6 (C=O), 143.6 (Ph C-4), 129.5 (Ph C-2,6), 129.1 (Ph C-3,5), 127.5 (Ph C-1), 63.9 (OCH_2), 44.5 (CH_2Cl), 29.3 (CH_2), 26.2 (CH_2), 21.7 (Ph CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{12}H_{16}ClO_2^+$: 227.0827 $[M+H]^+$; found: 227.0832.

4-chlorobutyl 2-fluorobenzoate (36)



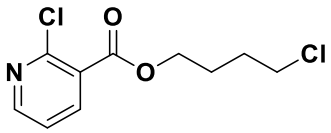
By following the **General procedure 2**, starting from 2-fluoro-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.09 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 4-chlorobutan-1-ol (0.15 mL, 1.53 mmol, 1.4 equiv), sodium (45 mg, 1.97 mmol, 1.8 equiv), **36** was obtained in 82% yield (207 mg) as colorless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.93 (m, 1H, Ph H-6), 7.52 (m, 1H, Ph H-4), 7.21 (m, 1H, Ph H-5), 7.14 (m, 1H, Ph H-3), 4.38 (m, 2H, OCH_2), 3.62 (m, 2H, CH_2Cl), 1.96 (m, 2H, CH_2), 1.95 (m, 2H, CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 164.5 (d, $^{3}J_{C,F}$ = 4.0 Hz, C=O), 161.9 (d, $^{1}J_{C,F}$ = 258.4 Hz, Ph C-2), 134.5 (d, $^{3}J_{C,F}$ = 9.1 Hz, Ph C-4), 132.1 (Ph C-6), 124.0 (d, $^{4}J_{C,F}$ = 4.0 Hz, Ph C-5), 118.7 (d, $^{2}J_{C,F}$ = 10.2 Hz, Ph C-1), 117.0 (d, $^{2}J_{C,F}$ = 22.0 Hz, Ph C-3), 64.4 (OCH_2), 44.5 (CH_2Cl), 29.2 (CH_2), 26.0 (CH_2).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{12}ClFNaO_2^+$: 253.0395 $[M+H]^+$; found: 253.0400.

4-chlorobutyl 2-chloronicotinate (37) [47]



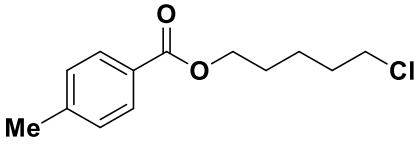
By following the **General procedure 2**, starting from 2-chloro-*N*-methoxy-*N*-methylnicotinamide (200 mg, 1.00 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.20 mmol, 0.2 equiv), 4-chlorobutan-1-ol (0.14 mL, 1.40 mmol, 1.4 equiv), sodium (41 mg, 1.79 mmol, 1.8 equiv), **37** was obtained in 75% yield (185 mg) as colorless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.53 (dd, *J* = 1.8 Hz, *J* = 4.6 Hz, 1H, Pyr H-6), 8.16 (dd, *J* = 1.9 Hz, *J* = 7.6 Hz, 1H, Pyr H-4), 7.34 (dd, *J* = 4.6 Hz, *J* = 7.6 Hz, 1H, Pyr H-5), 4.41 (m, 2H, OCH_2), 3.61 (m, 2H, CH_2Cl), 1.96 (m, 4H, CH_2 CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 164.6 (C=O), 151.9 (Pyr C-6), 150.0 (Pyr C-2), 140.3 (Pyr C-4), 127.0 (Pyr C-3), 122.1 (Pyr C-5), 65.3 (OCH_2), 44.4 (CH_2Cl), 29.1 (CH_2), 25.9 (CH_2).

HRMS (ESI), *m/z*: calcd. for $C_{10}H_{12}Cl_2NO_2^+$: 248.0234 $[M+H]^+$; found: 248.0239.

5-chloropentyl 4-methylbenzoate (38)[48]



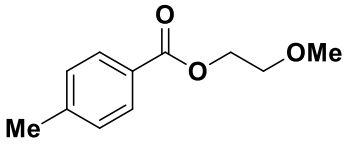
By following the **General procedure 1**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 5-chloropentan-1-ol (0.18 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **38** was obtained in 82% yield (220 mg) as yellow oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.93 (m, 2H, Ph H-2,6), 7.24 (m, 2H, Ph H-3,5), 4.31 (t, *J* = 6.5 Hz, 2H, OCH_2), 3.56 (t, *J* = 6.6 Hz, 2H, CH_2Cl), 2.41 (s, 3H, CH_3), 1.85 (m, 2H, CH_2), 1.80 (m, 2H, CH_2), 1.61 (m, 2H, CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.7 (C=O), 143.5 (Ph C-4), 129.5 (Ph C-2,6), 129.0 (Ph C-3,5), 127.6 (Ph C-1), 64.4 (OCH_2), 44.8 (CH_2Cl), 32.1 (CH_2), 28.0 (CH_2), 23.4 (CH_2), 21.6 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{13}H_{18}ClO_2^+$: 241.0987 $[M+H]^+$; found: 241.0990.

2-methoxyethyl 4-methylbenzoate (39)[49]



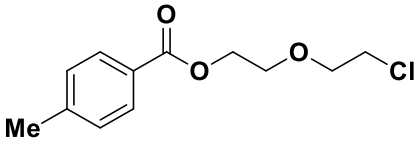
By following the **General procedure 1**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 2-methoxyethan-1-ol (0.12 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **39** was obtained in 90% yield (195 mg) as colourless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 7:3 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.95 (m, 2H, Ph H-2,6), 7.23 (m, 2H, Ph H-3,5), 4.46 (t, *J* = 4.8 Hz, 2H, OCH_2), 3.72 (t, *J* = 4.8 Hz, 2H, CH_2OMe), 3.43 (s, 3H, OCH_3), 2.40 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.7 (C=O), 143.6 (Ph C-4), 129.7 (Ph C-2,6), 129.0 (Ph C-3,5), 127.3 (Ph C-1), 70.6 ($\underline{C}H_2OCH_3$), 63.9 (OCH_2), 59.0 (OCH_3), 21.6 (Ph 4-CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{15}O_3^+$: 195.1010 $[M+H]^+$; found: 191.1016.

2-(2-chloroethoxy)ethyl 4-methylbenzoate (40)



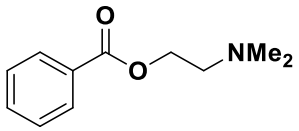
By following the **General procedure 1**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 2-(2-chloroethoxy) ethan-1-ol (0.19 mL, 1.57 mmol, 1.4 equiv), sodium (46 mg, 2.02 mmol, 1.8 equiv), **40** was obtained in 74% yield (200 mg) as colourless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 7:3 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.95 (m, 2H, Ph H-2,6), 7.24 (m, 2H, Ph H-3,5), 4.47 (t, *J* = 4.7 Hz, 2H, OCH_2), 3.86 (t, *J* = 4.7 Hz, 2H, CH_2O), 3.80 (t, *J* = 5.5 Hz, 2H, OCH_2), 3.64 (t, *J* = 5.5 Hz, 2H, CH_2Cl), 2.41 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.6 (C=O), 143.7 (Ph C-4), 129.7 (Ph C-2,6), 129.1 (Ph C-3,5), 127.3 (Ph C-1), 71.3 (CH_2O), 69.3 (OCH_2), 63.8 (OCH_2), 42.7 (CH_2Cl), 21.7 (CH_3).

HRMS (ESI), *m/z*: calcd. For $C_{12}H_{16}ClO_3^+$: 243.0778 $[M+H]^+$; found: 243.0782.

2-(dimethylamino)ethyl benzoate (41)[50]



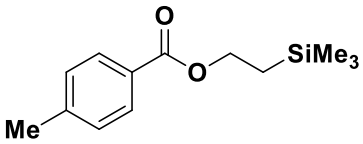
By following the **General procedure 2**, starting from *N*-methoxy-*N*-methylbenzamide (200 mg, 1.21 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.04 mL, 0.24 mmol, 0.2 equiv), 2-(Dimethylamino)-ethanol (0.17 mL, 1.70 mmol, 1.4 equiv), sodium (50 mg, 2.18 mmol, 1.8 equiv), **compound 41** was obtained in 85% yield (199 mg) as colourless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 5:5 as eluent).

^{1}H NMR (400 MHz, $CDCl_3$) δ: 8.05 (d, *J* = 7.7 Hz, 2H, Ph H-2,6), 7.55 (t, *J* = 7.4 Hz, 1H, Ph H-4), 7.43(t, *J* = 7.6 Hz, 2H, Ph H-3,5), 4.43 (t, *J* = 5.9 Hz, 2H, OCH_2), 2.72 (t, *J* = 5.9 Hz, 2H, CH_2), 2.34 (s, 6H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.7 (C=O), 133.1 (Ph C-4), 130.4 (Ph C-1), 129.8 (Ph C-2,6), 128.5 (Ph C-3,5), 63.2 (CH_2O), 58.0 (CH_2), 46.0 ($N(CH_3)_2$).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{15}NNaO_2^+$: 216.1001 $[M+Na]^+$; found: 216.1003.

2-(trimethylsilyl) ethyl 4-methylbenzoate (42)[51]



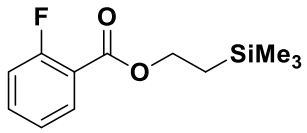
By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 2-(trimethylsilyl) ethan-1-ol (0.22 mL, 1.57 mmol, 1.4 equiv), sodium (46 mg, 2.02 mmol, 1.8 equiv), **42** was obtained in 76% yield (201 mg) as colourless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 95:5 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.93 (m, 2H, Ph H-2,6), 7.23 (m, 2H, Ph H-3,5), 4.40 (m, 2H, OCH_2), 2.40 (m, 3H, CH_3), 1.13 (m, 2H, OCH_2), 0.08 (s, 9H, $Si(CH_3)_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.9 (C=O), 143.3 (Ph C-4), 129.5 (Ph C-2,6), 129.0 (Ph C-3,5), 127.9 (Ph C-1), 63.0 (CH_2O), 21.6 (OCH_3), 17.4 (CH_2), -1.5 ($Si(CH_3)_3$).

HRMS (ESI), *m/z*: calcd. for $C_{13}H_{20}NaO_2Si^+$: 259.1118 $[M+Na]^+$; found: 259.1123.

2-(trimethylsilyl)ethyl 2-fluorobenzoate (43)



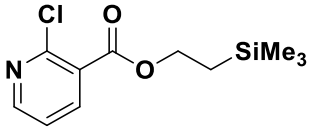
By following the **General procedure 2**, starting from 2-fluoro-*N*-methoxy-*N*-methylbenzamide (200 mg, 1.09 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), 2-(trimethylsilyl) ethan-1-ol (0.22 mL, 1.53 mmol, 1.4 equiv), sodium (45 mg, 1.97 mmol, 1.8 equiv), **43** was obtained in 82% yield (215 mg) as colourless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 95:5 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.92 (m, 2H, Ph H-6), 7.50 (m, 1H, Ph H-4), 7.19 (m, 1H, Ph H-5), 7.13 (m, 1H, Ph H-3), 4.43 (m, 2H, OCH_2), 1.14 (m, 2H, CH_2), 0.08 (s, 9H, $Si(CH_3)_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 164.6 (d, $^3J_{C,F}$ = 3,7 Hz, C=O), 161.9 (d, $^1J_{C,F}$ = 257.7 Hz, Ph C-2), 134.2 (d, $^3J_{C,F}$ = 9.1 Hz, Ph C-4), 132.0 (Ph C-6), 123.9 (d, $^4J_{C,F}$ = 3.5 Hz, Ph C-5), 119.2 (d, $^2J_{C,F}$ = 9.9 Hz, Ph C-1), 116.9 (d, $^2J_{C,F}$ = 22.7 Hz, Ph C-3), 63.6 (OCH_2), 17.4 (CH_2), -1.5 ($Si(CH_3)_3$).

HRMS (ESI), *m/z*: calcd. For $C_{12}H_{17}FNaO_2Si^+$: 263.0867 $[M+Na]^+$; found: 263.0874.

2-(trimethylsilyl) ethyl 2-chloronicotinate (44)



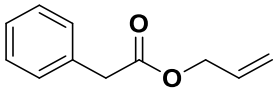
By following the **General procedure 2**, starting from 2-chloro-*N*-methoxy-*N*-methylnicotinamide (200 mg, 1.00 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.20 mmol, 0.2 equiv), 2-(trimethylsilyl) ethan-1-ol (0.20 mL, 1.40 mmol, 1.4 equiv), sodium (41 mg, 1.79 mmol, 1.8 equiv), **44** was obtained in 75% yield (193 mg) as colorless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 95:5 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.51 (dd, *J* = 1.8 Hz, *J* = 4.7 Hz, 1H, Pyr H-6), 8.14 (dd, *J* = 1.9 Hz, *J* = 7.7 Hz, 1H, Pyr H-4), 7.33 (dd, *J* = 4.7 Hz, *J* = 7.7 Hz, 1H, Pyr H-5), 4.45 (m, 2H, OCH_2), 1.15 (m, 2H, CH_2), 0.08 (s, 9H, $Si(CH_3)_3$).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 164.7 (C=O), 151.6 (Pyr C-6), 149.9 (Pyr C-2), 140.1 (Pyr C-4), 127.4 (Pyr C-3), 122.1 (Pyr C-5), 64.6 (OCH_2), 17.4 (CH_2), -1.5 ($Si(CH_3)_3$).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{17}ClNO_2Si^+$: 258.0707 $[M+H]^+$; found: 258.0712.

Allyl 2-phenylacetate (45)[52]



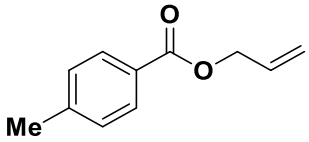
By following the **General procedure 2**, starting from N-methoxy-N-methyl-2-phenylacetamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), prop-2-en-1-ol (0.13 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **45** was obtained in 83% yield (163 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.32 (m, 2H, Ph H-3,5), 7.30 (m, 2H, Ph H-2,6), 7.27 (m, 1H, Ph H-4), 5.90 (m, 1H, C<u>H</u>=CH_2), 5.27 (m, 1H, CH=C<u>H</u>$_2$), 5.22 (m, 1H, CH=C<u>H</u>$_2$), 4.60 (m, 2H, OCH_2), 3.66 (m, 2H, CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 171.2 (C=O), 133.9 (Ph C-1), 132.0 (<u>C</u>H=CH_2), 129.3 (Ph C-2,6), 128.6 (Ph C-3,5), 127.1 (Ph C-4), 118.2 (CH=CH_2), 65.5 (OCH_2), 41.3 (CH_2).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{13}O_2^+$: 177.0907 $[M+H]^+$; found: 177.0910.

Allyl 4-methylbenzoate (46)[53]



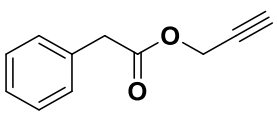
By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.04 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), prop-2-en-1-ol (0.13 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **46** was obtained in 85% yield (167 mg) as colorless oil without any further purification step.

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.96 (m, 2H, Ph H-2,6), 7.24 (m, 2H, Ph H-3,5), 6.04 (m, 1H, C<u>H</u>=CH_2), 5.41 (m, 1H, CH=C<u>H</u>$_2$), 5.28 (m, 1H, CH=C<u>H</u>$_2$), 4.81 (m, 2H, OCH_2), 2.41 (m, 2H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.3 (C=O), 143.6 (Ph C-4), 132.4 (<u>C</u>H=CH_2), 129.6 (Ph C-2,6), 129.1 (Ph C-3,5), 127.4 (Ph C-1), 118.0 (CH=<u>C</u>H_2), 65.3 (OCH_2), 21.6 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{13}O_2^+$: 177.0908 $[M+H]^+$; found: 177.0910.

Prop-2-yn-1-yl 2-phenylacetate (47)[54]



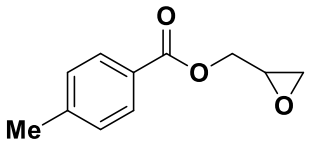
By following the **General procedure 2**, starting from *N*-methoxy-*N*-methyl-2-phenylacetamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), prop-2-yn-1-ol (0.09 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **47** was obtained in 85% yield (165 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.35-7.28 (m, 5H, Ph H-2,3,4,5,6), 4.70 (d, *J* = 2.6 Hz, 2H, CH_2O), 3.68 (s, 2H, CH_2), 2.47 (t, *J* = 2.4 Hz, 1H, CCH).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.9 (C=O), 133.5 (Ph C-1), 129.4 (Ph C-2,6), 128.8 (Ph C-3,5), 127.4 (Ph C-4), 77.7 (CCH), 75.2 (CH), 52.5 (OCH_2), 41.1 (CH_2).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{11}O_2^+$: 175.0754 $[M+H]^+$; found: 175.0749.

Oxiran-2-ylmethyl 4-methylbenzoate (48)[55]



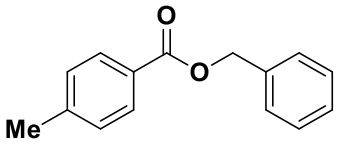
By following the **General procedure 2**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), Glycidol (0.10 mL, 1.56 mmol, 1.4 equiv), sodium (46 mg, 2.01 mmol, 1.8 equiv), **48** was obtained in 91% yield (195 mg) as colourless oil chromatographic purification on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.96 (m, 2H, Ph H-2,6), 7.25 (m, 2H, Ph H-3,5), 4.64 (dd, *J* = 3.1 Hz, *J* = 12.3 Hz, 1H, OCH_2), 4.16 (dd, *J* = 6.2 Hz, *J* = 12.3 Hz, 1H, OCH_2), 3.34 (m, 1H, CH), 2.90 (t, *J* = 4.6 Hz, 1H, OCH_2), 2.73 (dd, *J* = 2.6 Hz, *J* = 4.8 Hz, 1H, OCH_2), 2.41 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.3 (C=O), 144.0 (Ph C-4), 129.8 (Ph C-2,6), 129.1 (Ph C-3,5), 126.9 (Ph C-1), 65.2 (OCH_2), 49.5 (CH), 44.7 (OCH_2), 21.7 (CH_3).

HRMS (ESI), *m/z*: calcd. For $C_{11}H_{13}O_3^+$: 193.0854 $[M+H]^+$; found: 193.0859.

Benzyl 4-methylbenzoate (49)[56]



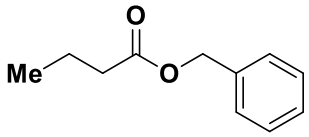
By following the **General procedure 1**, starting from *N*-methoxy-*N*,4-dimethylbenzamide (200 mg, 1.12 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.22 mmol, 0.2 equiv), sodium benzyloxide 1.0 M solution in benzyl alcohol (1.56 mL, 1.56 mmol, 1.4 equiv), **49** was obtained in 94% yield (237 mg) as colourless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 7:3 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.00 (m, 2H, Ph H-2,6), 7.47 (m, 2H, Ph1 H-2,6), 7.41 (m, 2H, Ph1 H-3,5), 7.36 (m, 1H, Ph1 H-4), 7.26 (m, 2H, Ph H-3,6), 5.38 (m, 2H, OCH_2), 2.43 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 166.5 (C=O), 143.7 (Ph C-4), 136.1 (Ph1 C-1), 129.7 (Ph C-2,6), 129.0 (Ph C-3,5), 128.5 (Ph1 C-3,5),128.1 (Ph1 C-4), 128.1 (Ph1 C-2,6), 127.3 (Ph C-1), 66.5 (OCH_2), 21.6 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{15}H_{14}NaO_2^+$: 249.0877 $[M+H]^+$; found: 249.0882.

Benzyl butyrate (50)[57]



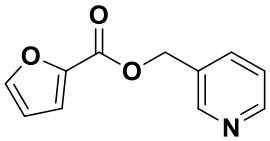
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methylbutyramide (200 mg, 1.53 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.05 mL, 0.31 mmol, 0.2 equiv), sodium benzyloxide 1.0 M solution in benzyl alcohol (2.14 mL, 2.14 mmol, 1.4 equiv), **50** was obtained in 75% yield (204 mg) as colourless oil after column chromatography on silica gel (*n*-hexane/diethyl ether 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.36 (m, 4H, Ph H-2,3,5,6), 7.32 (m, 1H, Ph H-4), 5.12 (s, 2H, OCH_2), 2.34 (t, *J* = 7.4 Hz, 2H, CH_2), 1.68 (sext, *J* = 7.5 Hz, 2H, CH_2), 0.95 (t, *J* = 7.4 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 173.5 (C=O), 136.1 (Ph C-1), 128.5 (Ph C-3,5), 128.1 (Ph C-2,4,6), 66.0 (OCH_2), 36.2 (CH_2), 18.4 (CH_2), 13.7 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{15}O_2^+$: 179.1067 $[M+H]^+$; found: 179.1068.

Pyridin-3-ylmethyl furan-2-carboxylate (51)



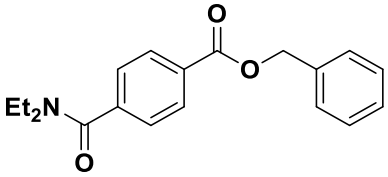
By following the **General procedure 2**, starting from *N*-methoxy-*N*-methylfuran-2-carboxamide (200 mg, 1.29 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.04 mL, 0.26 mmol, 0.2 equiv), pyridin-3-ylmethanol (0.18 mL, 1.81 mmol, 1.4 equiv), sodium (53 mg, 2.32 mmol, 1.4 equiv), **51** was obtained in 73% yield (191 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.71 (m, 1H, Pyr H-2), 8.60 (m, 1H, Pyr H-6), 7.81 (m, 1H, Pyr H-4), 7.59 (m, 1H, Fur H-5), 7.35 (m, 1H, Pyr H-5), 7.22 (m, 1H, Fur H-3), 6.52 (m, 1H, Fur H-4), 5.36 (s, 2H, OCH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 158.2 (C=O), 149.3 (Pyr C-2,6), 146.7 (Fur C-5), 144.1 (Fur C-2), 136.6 (Pyr C-4), 131.5 (Pyr C-3), 123.7 (Pyr C-5), 118.6 (Fur C-3), 112.0 (Fur C-4), 63.8 (OCH_2).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{10}NO_3^+$: 204.0658 $[M+H]^+$; found: 204.0655.

Benzyl 4-(diethylcarbamoyl)benzoate (52)



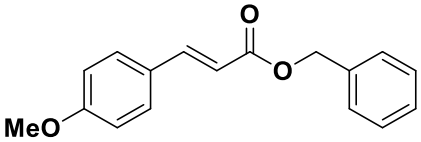
By following the **General procedure 1**, starting from N^1,N^1-diethyl-N^4-methoxy-N^4-methylterephthalamide (200 mg, 0.76 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.15 mmol, 0.2 equiv), sodium benzyloxide 1.0 M solution in benzyl alcohol (1.06 mL, 1.06 mmol, 1.4 equiv), **52** was obtained in 76% yield (179 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 6:4 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.11 (m, 2H, Ph H-2,6), 7.45 (m, 2H, Ph1 H-2,6), 7.43 (m, 2H, Ph C-3,5), 7.40 (m, 2H, Ph1 H-3,5), 7.36 (m, Ph1 H-4), 5.37 (s, 2H, OCH_2), 3.55 (m, 2H, NCH_2), 3.20 (m, 2H, NCH_2), 1.25 (m, 3H, CH_3), 1.09 (m, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.2 (NC=O), 165.8 (C=O), 141.7 (Ph1 C-4), 135.8 (Ph1 C-1), 130.6 (Ph C-1), 129.9 (Ph C-2,6), 128.6 (Ph1 C-3,5), 128.3 (Ph1 C-4), 128.2 (Ph1 C-2,6), 126.3 (Ph C-3,5), 66.9 (OCH_2), 43.2 (NCH_2), 39.2 (NCH_2), 14.2 (CH_3), 12.9 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{19}H_{22}NO_3^+$: 312.1588 $[M+H]^+$; found: 312.1593.

(E)-benzyl 3-(4-methoxyphenyl)acrylate (53)[58]



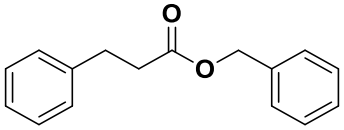
By following the **General procedure 1**, starting from (*E*)-*N*-methoxy-3-(4-methoxyphenyl)-*N*-methylacrylamide (200 mg, 0.90 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.18 mmol, 0.2 equiv), sodium benzyloxide 1.0 M solution in benzyl alcohol (1.27 mL, 1.27 mmol, 1.4 equiv), **53** was obtained in 85% yield (206 mg) as white solid (mp 53-54°C, lit.[59] 53-54 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 7:3 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.90 (m, 2H, Ph H-3,5), 7.69 (d, *J* = 16.0 Hz, 1H, CH=CH), 7.47 (m, 2H, Ph C-2,6), 7.41 (m, 2H, Ph1 H-2,6), 7.38 (m, 2H, Ph1 H-3,5), 7.34 (m, Ph1 H-4), 6.36 (d, *J* = 8.8 Hz, 1H, CH=CH), 5.24 (s, 2H, CH_2), 3.84 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 167.1 (CH=CH), 161.4 (Ph C-4), 144.8 (CH=CH), 136.2 (Ph1 C-1), 129.8 (2C, Ph C-2,6), 128.6 (Ph1 C-3,5), 128.3 (Ph1 C-2,6), 128.2 (Ph1 C-4), 127.1 (Ph C-1), 115.3 (CH=CH), 114.3 (Ph C-3,5), 66.2 (OCH_2), 55.4 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{17}H_{17}O_3^+$: 269.1163 $[M+H]^+$; found: 269.1168.

(*E*)-benzyl 3-(4-methoxyphenyl)acrylate (54)[60]



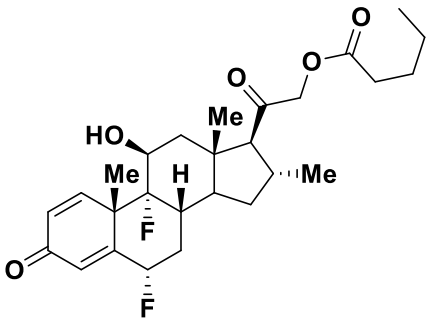
By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-3-phenylpropanamide (200 mg, 1.04 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.03 mL, 0.21 mmol, 0.2 equiv), sodium benzyloxide 1.0 M solution in benzyl alcohol (1.45 mL, 1.45 mmol, 1.4 equiv), **54** was obtained in 90% yield (224 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 7:3 as eluent).

^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.36-7.18 (m, 10H, Ph1, Ph2), 5.11 (s, 2H, CH_2O), 2.98 (m, 2H, CH_2), 2.69 (m, 2H, CH_2).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 172.7 (C=O), 140.4 (Ph1 C-1), 135.9 (Ph2 C-1), 128.5 (Ph1 C-3,5), 128.5 (Ph2 C-3,5), 128.3 (Ph1 C-2,6), 128.2 (Ph1 C-2,6), 126.3 (Ph1,2 C-4), 66.3 (OCH_2), 35.9 (CH_2) 31.0 (CH_2).

HRMS (ESI), *m/z*: calcd. for $C_{16}H_{16}O_3Na^+$: 263.1043 $[M+H]^+$; found: 263.1043.

Difluocortolone valerate (55)



By following the **General procedure 1**, starting from *N*-methoxy-*N*-methylpentanamide (200 mg, 1.38 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.04 mL, 0.28 mmol, 0.2 equiv), difluorocortolone (761 mg, 1.9 mmol, 1.4 equiv), sodium (57 mg, 2.48 mmol, 1.8 equiv), **55** was obtained in 87% yield (573 mg) as colourless oil after column chromatography on silica gel (*n*-hexane/methanol 98:2 as eluent).

^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.12 (dd, *J* = 10.1Hz, *J* = 1.1 Hz, 1H, C<u>H</u>=CH), 6.42 (s, 1H, =CH), 6.37 (dd, *J* = 10.1 Hz, *J* = 1.1 Hz, 1H, CH=CH), 5.44, 5.31, 4,76, 4.37, 4.33, 2.76, 2.46-1.62 (m, 12H), 1.52 (s, 3H, CH_3), 1.43-1.29 (m, 3H, CH_3), 0.99 (m, 6H, CH_3), 0.93 (t, *J* = 7.4 Hz, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 203.2 (C=O), 185.7 (C=O), 173.5 (C=O), 161.3, 150.6, 130.4, 121.4, 100.0, 98.2, 87.6, 85.7, 71.9, 71.6, 69.6, 68.2, 48.3, 48.3, 48.1, 48.0, 45.3, 44.0, 33.9-13.8.

Mechanistic investigations (Scheme 4 of the manuscript)

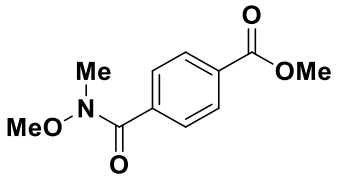
a) Esterification of modified Weinreb amide (N-ethoxy-N-methyl) **56**

By following the **General procedure 1**, starting from *N*-ethoxy-*N*-methylbenzamide (217 mg, 1.21 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.04 mL, 0.24 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (1.69 mL, 3.39 mmol, 1.4 equiv), **2** was obtained in 72% yield (119 mg) as white solid (mp 112°C, lit.[2] 112°C) after chromatographic purification on silica gel (*n*-hexane/ethyl acetate 9:1 as eluent).

Spectral data for compound **2** match those ones above reported.

b) Activation of $TMSCF_3$ towards Weinreb amides with different Lewis bases

Methyl 4-(methoxy(methyl)carbamoyl)benzoate (58)[61]



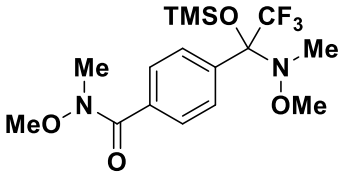
By following the **General procedure 1**, starting from N^1 ,N^4-dimethoxy-N^1,N^4-dimethylterephthalamide[62] (200 mg, 0.79 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.16 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (1.51 mL, 0.75 mmol, 0.95 equiv), **58** was obtained in 86% yield (152 mg) as white solid (mp 90 °C, lit.[63] 90-91 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.07 (d, *J* = 8.0 Hz, 2H, Ph H-2,6), 7.7 (d, *J* = 8.0 Hz, 2H, Ph H-3,5), 3.94 (s, 3H, $COOCH_3$), 3.53 (s, 3H, OCH_3), 3.37 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 169.2 (C=O), 166.6 ($C=OOCH_3$), 138.5 (Ph C-4), 132.0 (Ph C-1), 129.4 (Ph C-2,6), 128.2 (Ph C-3,5), 61.4 (OCH_3), 52.5 ($COOCH_3$), 33.6 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_{11}H_{13}NO_4Na^+$: 246.0743 $[M+Na]^+$; found: 246.0742.

***N*-methoxy-*N*-methyl-4-(3,6,6-trimethyl-4-(trifluoromethyl)-2,5-dioxa-3-aza-6-silaheptan-4-yl) benzamide (59)**



Starting from N^1,N^4-dimethoxy-N^1,N^4-dimethylterephthalamide[62] (200 mg, 0.79 mmol, 1.0 equiv) in dry toluene (3 mL), trimethyl(trifluoromethyl)silane (0.12 mL, 0.83 mmol, 1.05 equiv) and caesium fluoride (12 mg, 0.08 mmol, 0.1 equiv) were added at 0 °C. The reaction was stirring to reach room temperature for 24 h.[64] Subsequently, the mixture was quenched with saturated (*aq.*) NH_4Cl (3 mL) and extracted with dichloromethane (3 mL). The organic layer was washed with saturated (*aq.*) NaCl (5 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure. **59** was

obtained in 77% yield (241 mg) as yellow oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.65 (m, 4H, Ph H-2,3,5,6), 3.58 (s, 3H, $NOCH_3$), 3.53 (s, 3H, $CNOCH_3$), 3.36 (s, 3H, NCH_3), 2.29 (s, 3H, $CNCH_3$), 0.28 (s, 6H, TMS).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 169.7 (C=O), 140.1 (Ph C-4), 134.8 (Ph C-1), 127.9 (Ph C-2,6), 127.5 (Ph C-3,5), 123.5 (q, *J* = 288.7 Hz, CF_3), 93.2 (q, *J* = 28.9 Hz, CCF_3), 61.2 ($CNOCH_3$), 59.6 (OCH_3), 36.7 (CH_3), 2.09 (TMS).

^{19}F NMR (376 MHz, $CDCl_3$) δ: -73.20 (CF_3).

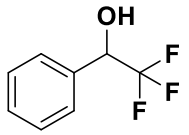
The instability of compound **59** *– mainly due to the presence of the hemiaminal moiety – did not allow to record satisfactory MS analyses*.[1b]

d) Activation of $TMSCF_3$ towards and aldehyde and a Weinreb amide

Use of NaOtBu (as activating reagent)

Benzaldehyde **61** (106 mg, 0.10 mL, 1.00 mmol, 1.00 equiv) was dissolved in dry THF (2 mL) followed by trimethyl(trifluoromethyl)silane (0.12 mL, 0.83 mmol, 1.05 equiv). At rt, was then commenced the dropwise addition of a 2 M THF solution of NaO*t*Bu (1.10 mmol, 1.10 equiv, 0.55 mL) and the resulting mixture was stirred overnight at rt. Subsequently, it was quenched with saturated (*aq.*) NH_4Cl (3 mL) and extracted with dichloromethane (3 mL). The organic layer was washed with saturated (*aq.*) NaCl (5 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure. Trifluoromethyl alcohol **62** was obtained in 91% yield (160 mg) as colorless oil after column chromatography on silica gel (*n*-hexane/ethyl acetate 7:3 as eluent).

2,2,2-trifluoro-1-phenylethan-1-ol (62)[65]



^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.48 (m, 2H, Ph H-2,6), 7.42 (m, 3H, Ph H-3,4,5), 5.01 (q, *J* = 6.8 Hz, 1H, $CHCF_3$), 2.86 (bs, 1H, OH).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 134.2 (Ph C-1), 129.7 (Ph C-4), 128.8 (Ph C-3,5), 127.6 (Ph C-2,6), 124.4 (q, *J*= 282.0 Hz, CF_3), 73.0 (q, *J*= 32.0 Hz, COH).

^{19}F NMR (376 MHz, $CDCl_3$) δ: -78.3 (d, *J*= 6.8 Hz, CF_3).

HRMS (ESI), *m/z*: calcd. for $C_8H_7F_3O^+$: 177.0449 $[M+H]^+$; found: 177.0452.

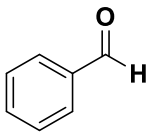
Use of NaOMe (as hypothetical activating agent)

Benzaldehyde **61** (106 mg, 0.10 mL, 1.00 mmol, 1.00 equiv) was dissolved in dry THF (2 mL) followed by trimethyl(trifluoromethyl)silane (0.12 mL, 0.83 mmol, 1.05 equiv). At rt, was then commenced the dropwise addition of a 0.5 M methanol solution of NaOMe (1.10 mmol, 1.10 equiv, 2.20 mL) and the

resulting mixture was stirred overnight at rt. Subsequently, it was quenched with saturated (*aq.*) NH_4Cl (3 mL) and extracted with dichloromethane (3 mL). The organic layer was washed with saturated (*aq.*) NaCl (5 mL), dried over anhydrous Na_2SO_4, filtered and concentrated under reduced pressure.

As judged by the ^{1}H-NMR analysis of the crude, no reaction was observed. Benzaldehyde **61** was recovered in 93% yield (98 mg).

Benzaldehyde 61 *(recovered)*



^{1}H NMR (400 MHz, $CDCl_3$) δ: 10.02 (s, 1H, COH), 7.88 (d, *J*= 8.4 Hz, 2H, Ph H-2,6), 7.63 (t, *J*= 7.4 Hz, 1H, Ph H-4), 7.53 (t, *J*= 7.4 Hz, 2H, Ph H-3,5).

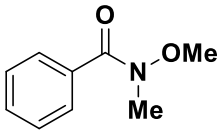
^{13}C NMR (100 MHz, $CDCl_3$) δ: 192.5 (C=O), 136.6 (Ph C-1), 134.6 (Ph C-4), 129.9 (Ph C-3,5), 129.1 (Ph C-2,6).

HRMS (ESI), *m/z*: calcd. for $C_7H_5O_1^+$: 105.0340 $[M+]^+$; found:105.0345.

Attempted reaction between Weinreb amide **1a** *and TMSCF$_3$ activated with NaOtBu*

N-methoxy-*N*-methylbenzamide **1a** (200 mg, 1.21 mmol, 1.0 equiv) was dissolved in dry THF (3 mL) and trimethyl(trifluoromethyl)silane (181 mg, 1.88 mL, 1.27 mmol, 1.05 equiv) was added. Then, a 2 M THF solution of NaO*t*Bu (0.67 mL, 1.33 mmol, 1.1 equiv) was added dropwise and the mixture was stirred at rt overnight. After quenching with saturated (*aq.*) NH_4Cl (3 mL), extracting with dichloromethane (3 mL), washing the organic layer with saturated (*aq.*) NaCl (5 mL), drying over anhydrous Na_2SO_4, the solution was filtered and concentrated under reduced pressure. Upon removal of the solvent, the ^{1}H-NMR of the crude revealed the lack of reactivity, being Weinreb amide **1a** (almost) fully recovered (188 mg, 94%). To fully ascertain this aspect, after passing on a pug of Celite a solution of **1a** in dichloromethane, NMR spectra were recorded, thus confirming no modification on Weinreb amide **1a**.

***N*-methoxy-*N*-methylbenzamide 1a** (recovered)

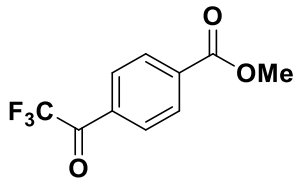


^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.67 (d, 2H, *J*= 6.8 Hz, Ph H-2,6), 7.41 (m, 3H, Ph H-3,4,5), 3.55 (s, 3H, OCH_3), 3.36 (s, 3H, CH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.0 (C=O), 134.2 (Ph C-1), 130.6 (Ph C-4), 128.2 (Ph C-3,5), 128.0 (Ph C-2,6), 61.0 (OCH_3), 33.8 (CH_3).

HRMS (ESI), *m/z*: calcd. for $C_9H_{11}NO_2Na^+$: 188.0682 $[M+Na]^+$; found: 188.0678.

Methyl 4-(2,2,2-trifluoroacetyl)benzoate (60)[66]



By following the **General procedure 1**, starting from *N*-methoxy-*N*-methyl-4-(3,6,6-trimethyl-4-(trifluoromethyl)-2,5-dioxa-3-aza-6-silaheptan-4-yl) benzamide **59** (200 mg, 0.51 mmol, 1.0 equiv) in dry THF (3 mL), trimethyl(trifluoromethyl)silane (0.02 mL, 0.10 mmol, 0.2 equiv), MeONa 0.5 M solution in MeOH (1.12 mL, 0.56 mmol, 1.1 equiv), **60** was obtained in 83% yield (98 mg) as white solid (mp 37-39 °C, lit.[67] 37-38 °C) after column chromatography on silica gel (*n*-hexane/ethyl acetate 8:2 as eluent).

^{1}H NMR (400 MHz, $CDCl_3$) δ: 8.2-8.1 (m, 4H, Ph H-2,3,5,6), 3.98 (s, 3H, OCH_3).

^{13}C NMR (100 MHz, $CDCl_3$) δ: 180.3 (q, *J* = 35.5 Hz, $C{=}OCF_3$), 165.8 (C=O), 136.1 (Ph C-1), 133.2 (Ph C-4), 130.3-130.1 (Ph C-2,3,5,6), 116.6 (q, *J* = 291.0 Hz, CF_3), 52.9 (OCH_3).

^{19}F NMR (376 MHz, $CDCl_3$) δ: -71.72 (CF_3).

HRMS (ESI-TOF), *m/z*: calcd. for $C_{10}H_{7\text{-}8}F_3O_3^+$: 233.0420 $[M+H]^+$; found: 233.0398.

e) Intermolecular competition for intercepting the CF_3^- anion.

Weinreb amide **1a** (165 mg, 1.00 mmol, 1.00 equiv) and benzaldehyde **61** (106 mg, 1.00 mmol, 1.00 equiv) were dissolved in dry THF (5 mL). To this solution were sequentially added at rt (trifluoromethyl)silane (1422 g, 1.48 mL, 10.00 mmol, 10.0 equiv) and a 2 M THF solution of NaO*t*Bu (4.85 mL, 9.70 mmol, 9.7 equiv – dropwise addition). The resulting mixture was stirred at the same temperature overnight. After quenching with saturated (*aq.*) NH_4Cl (5 mL), extracting with dichloromethane (10 mL), washing the organic layer with saturated (*aq.*) NaCl (10 mL), drying over anhydrous Na_2SO_4, the solution was filtered and concentrated under reduced pressure. After chromatographic purification on silica gel (*n*-hexane/ethyl acetate 6:4 as eluent), compound **62** was obtained in 95% yield (167 mg), while Weinreb amide **1a** was recovered in 97% yield (160 mg).

Spectral data for compounds **62** and **1a** match those ones previously described.

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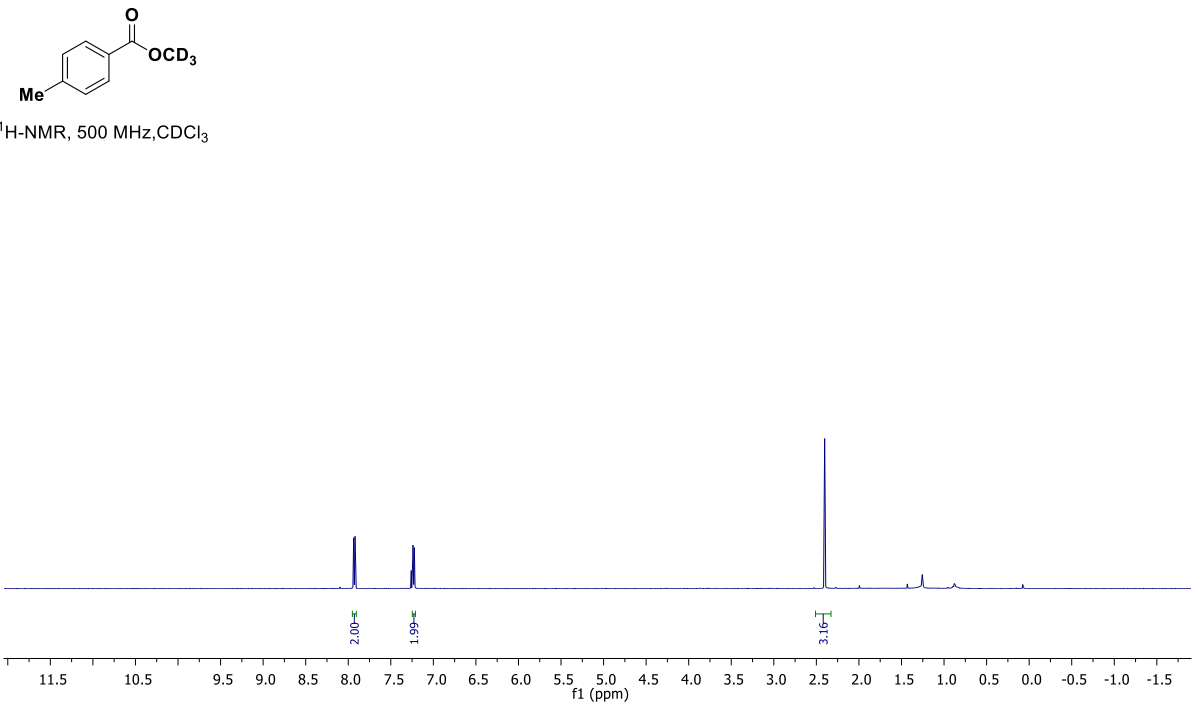
Copies of NMR spectra

Compound **2**

^{1}H-NMR, 400 MHz,$CDCl_3$

^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **3**



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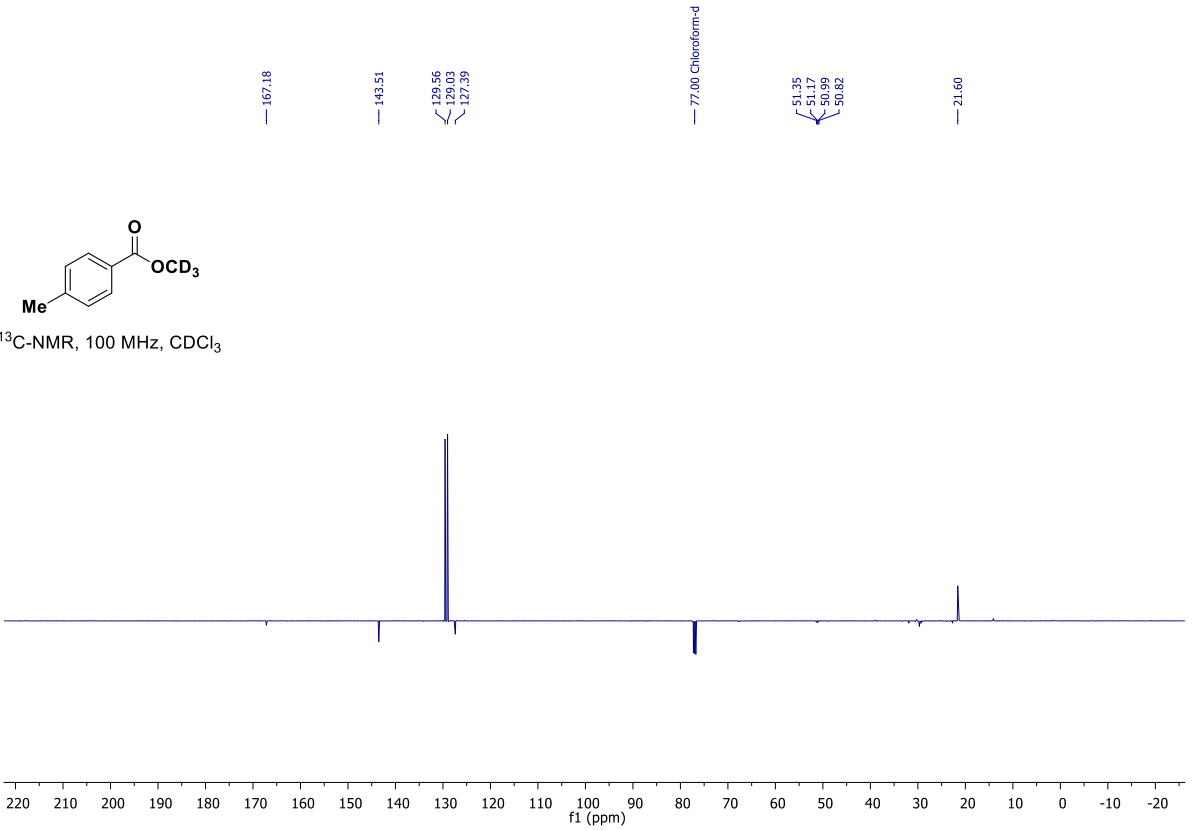
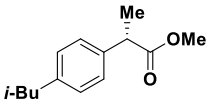


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **4**



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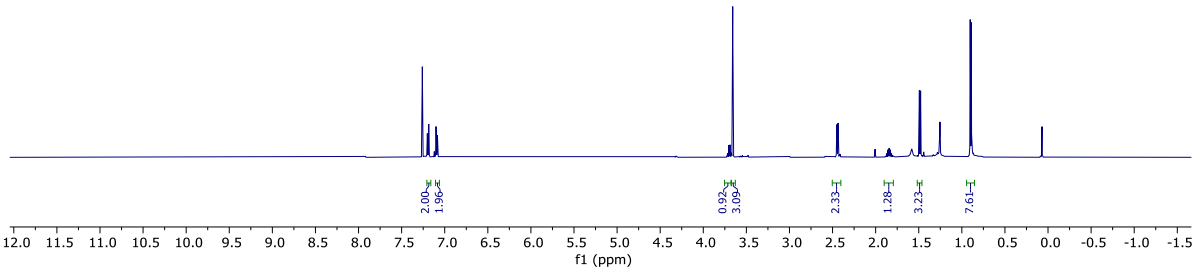

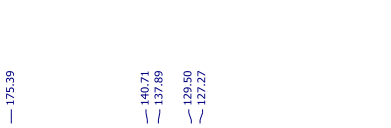

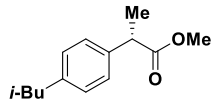

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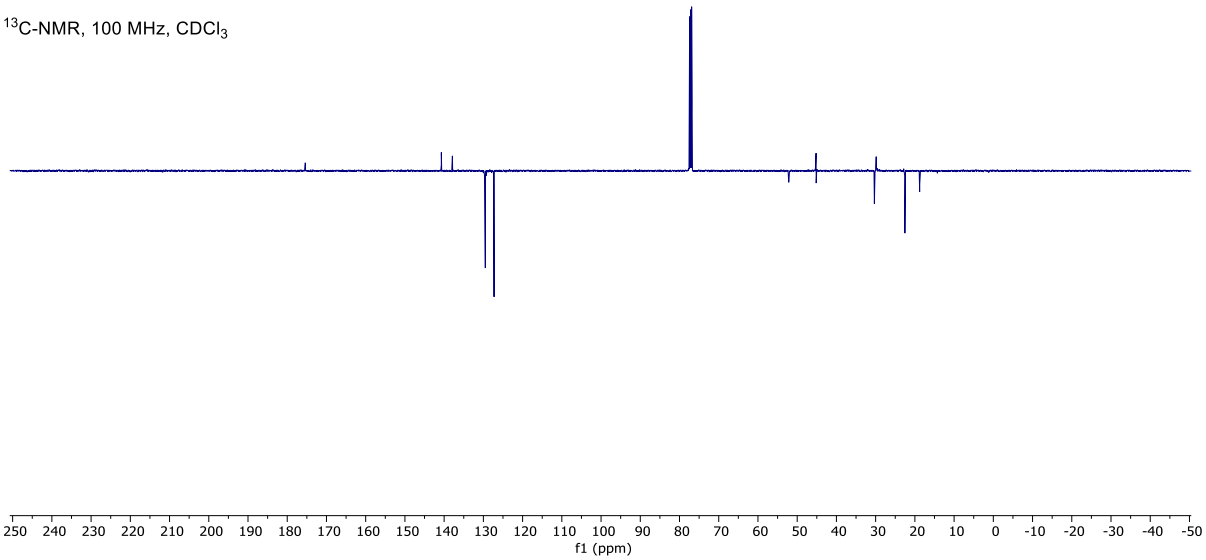
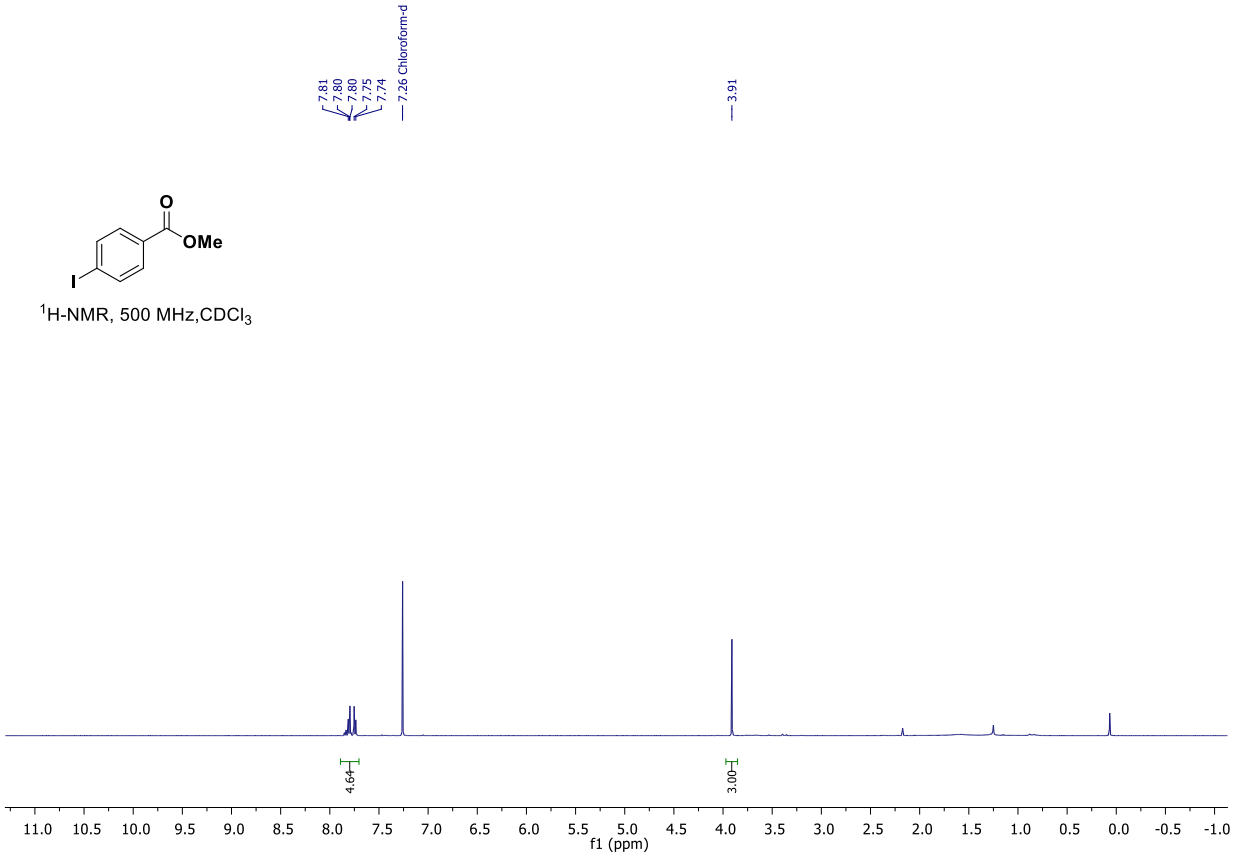


Compound **5**



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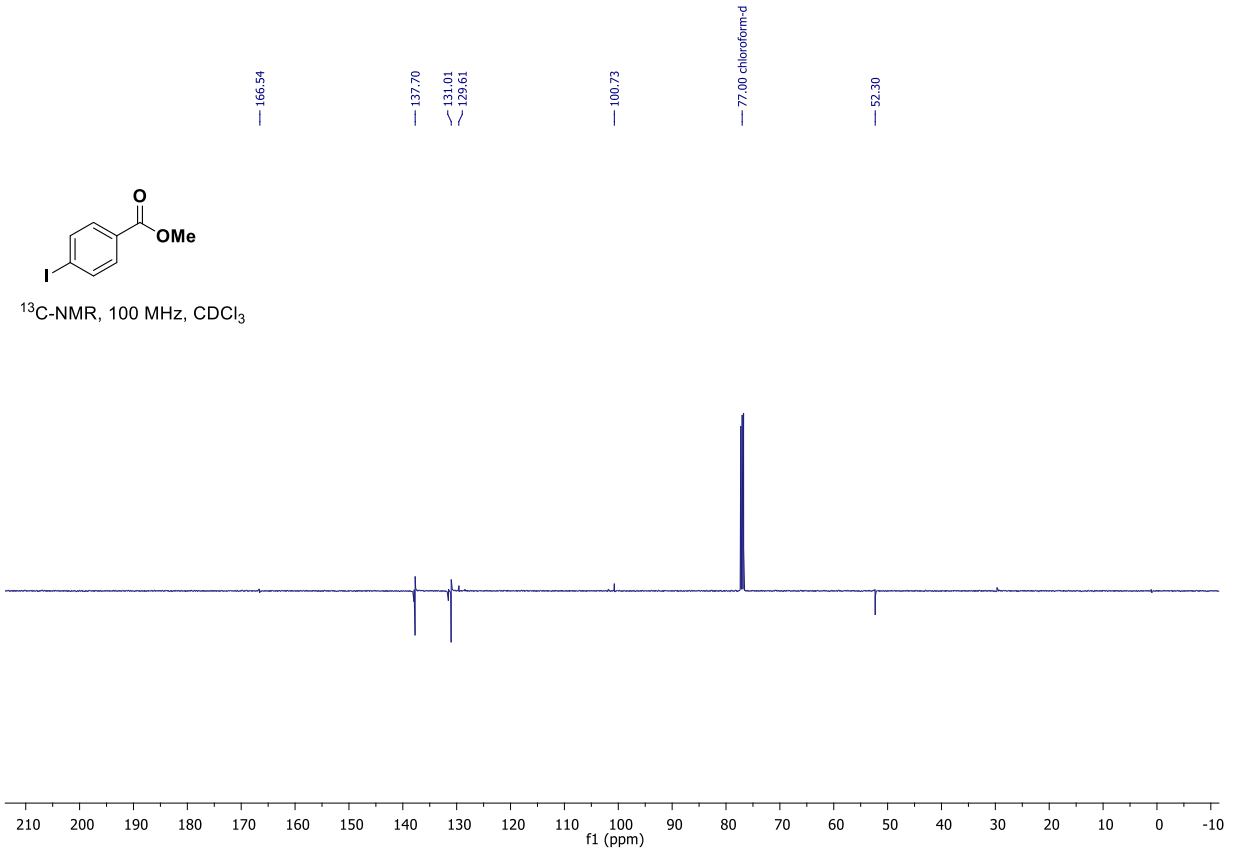

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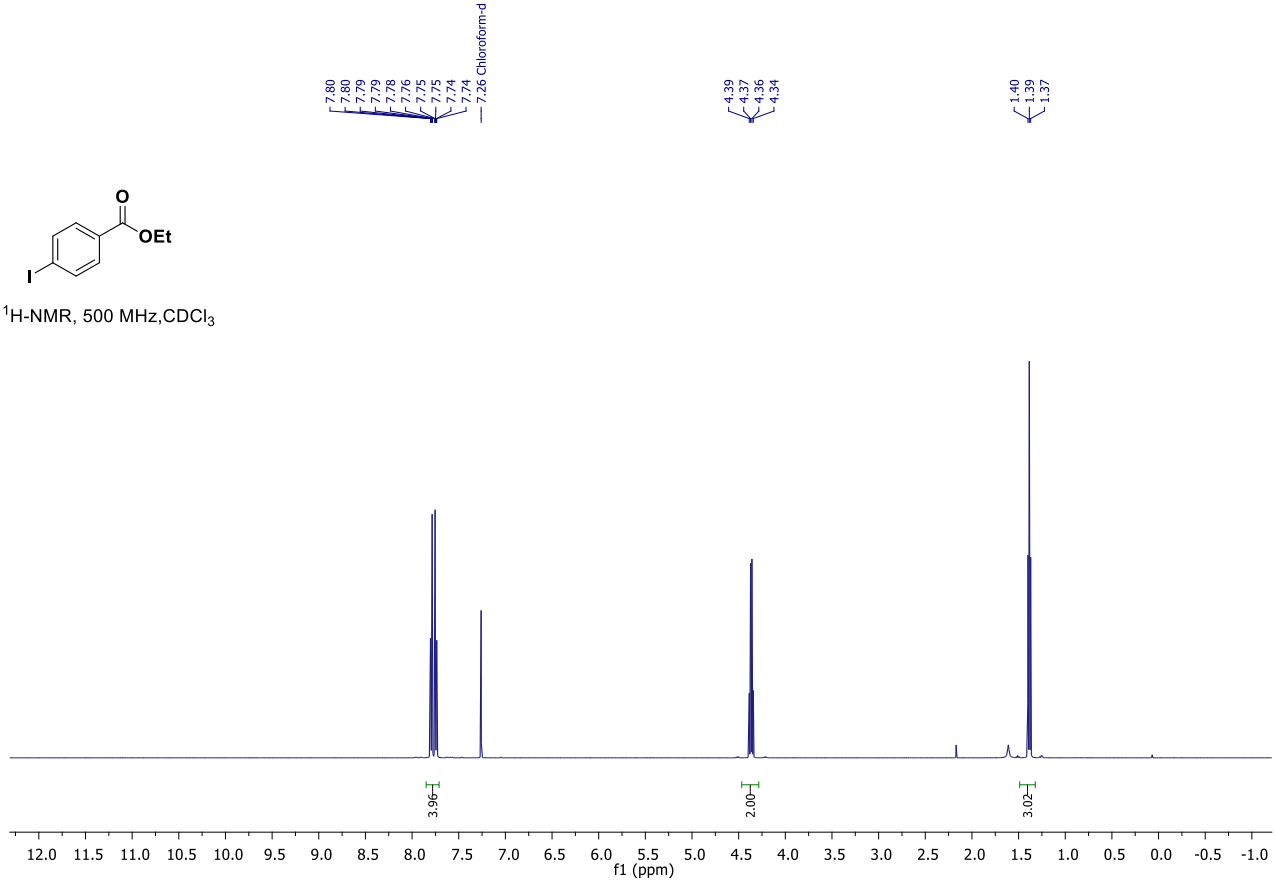
Compound **6**



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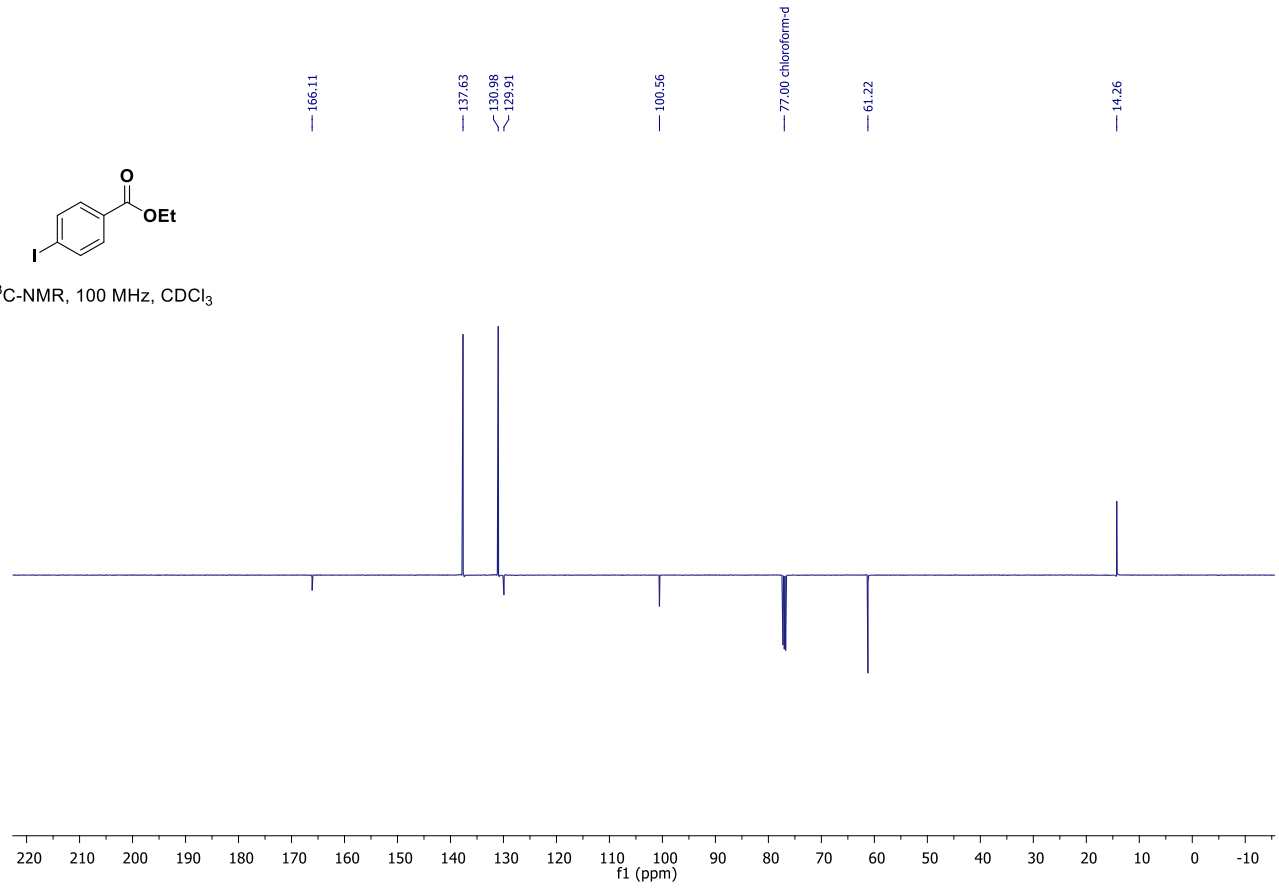
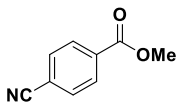


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **7**



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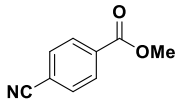

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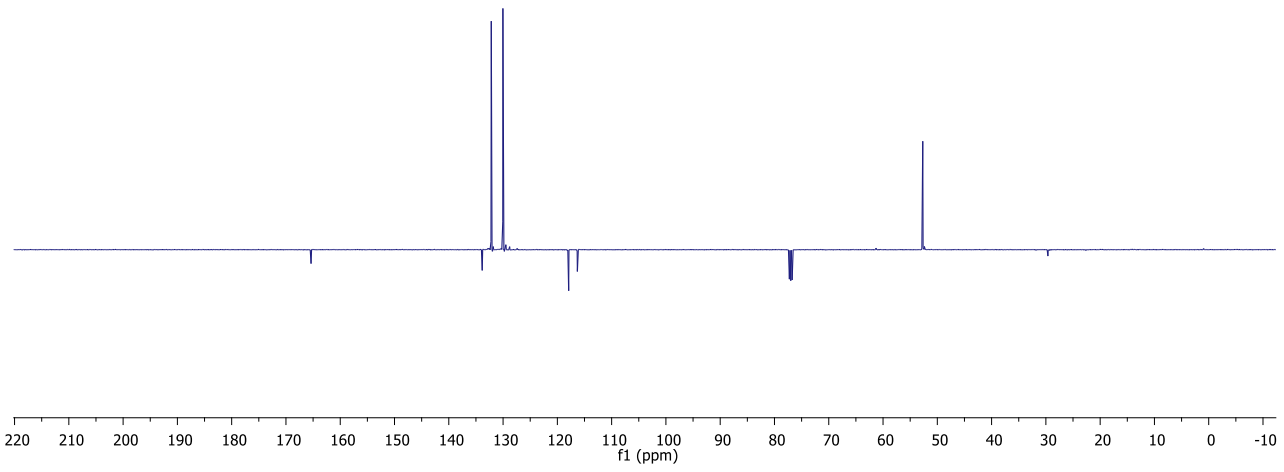

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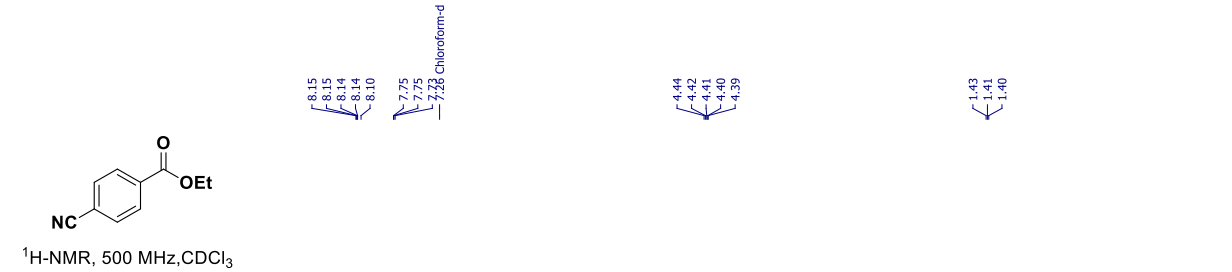

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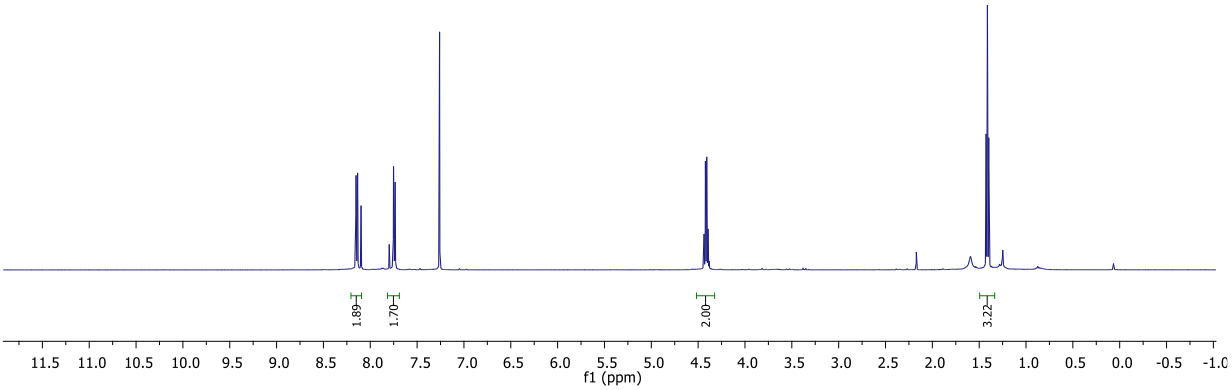
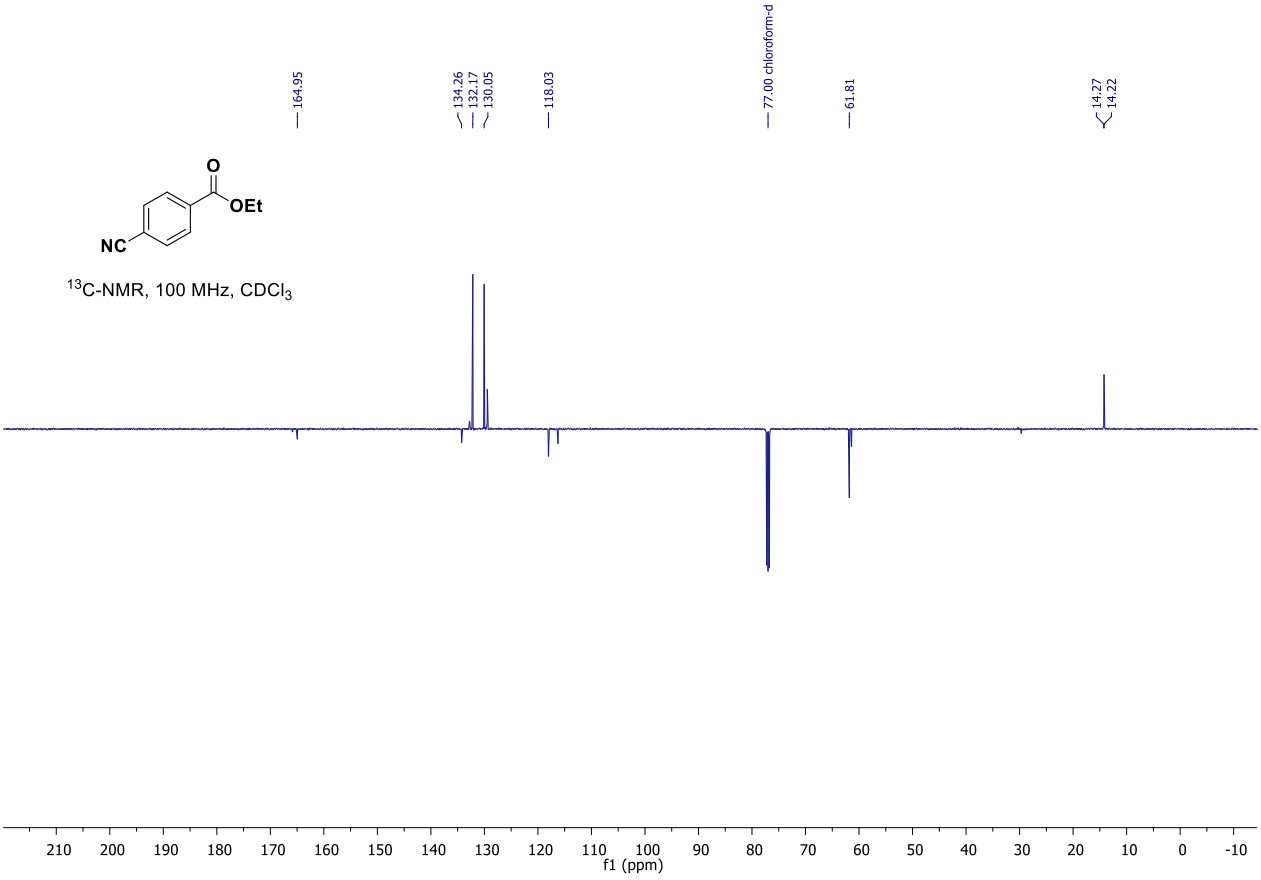
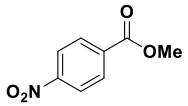




^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **9**



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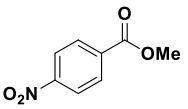

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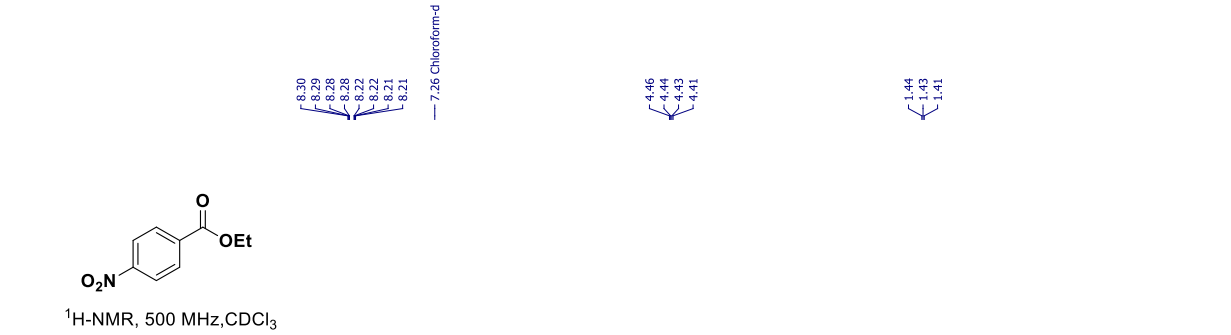
Compound **10**



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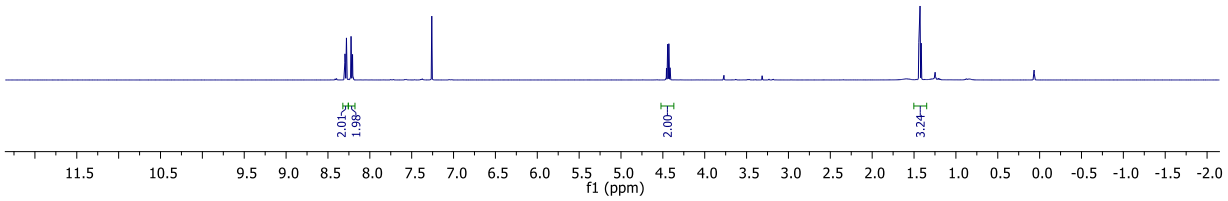

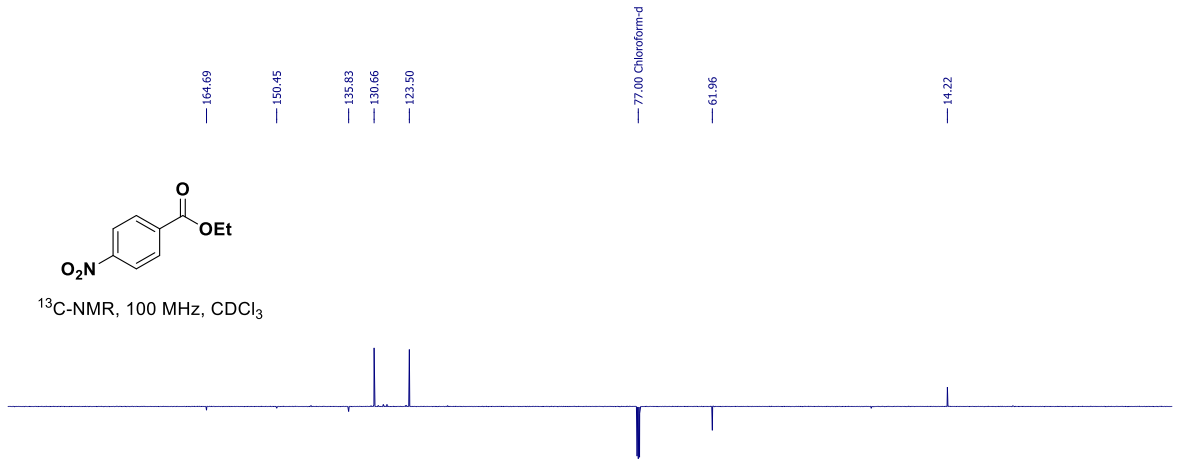

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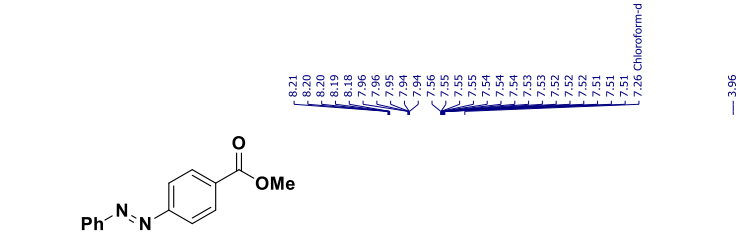
Compound **11**



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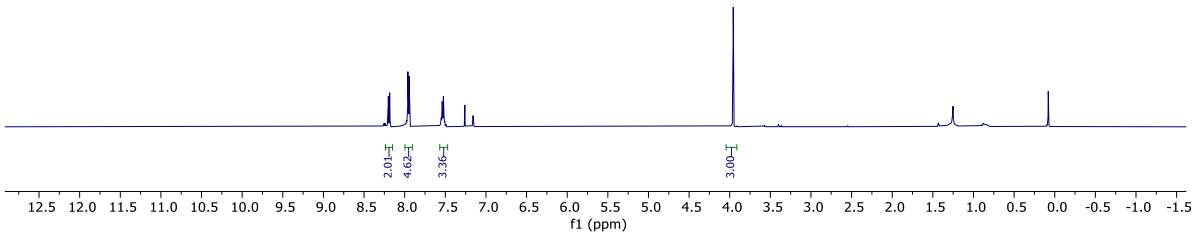
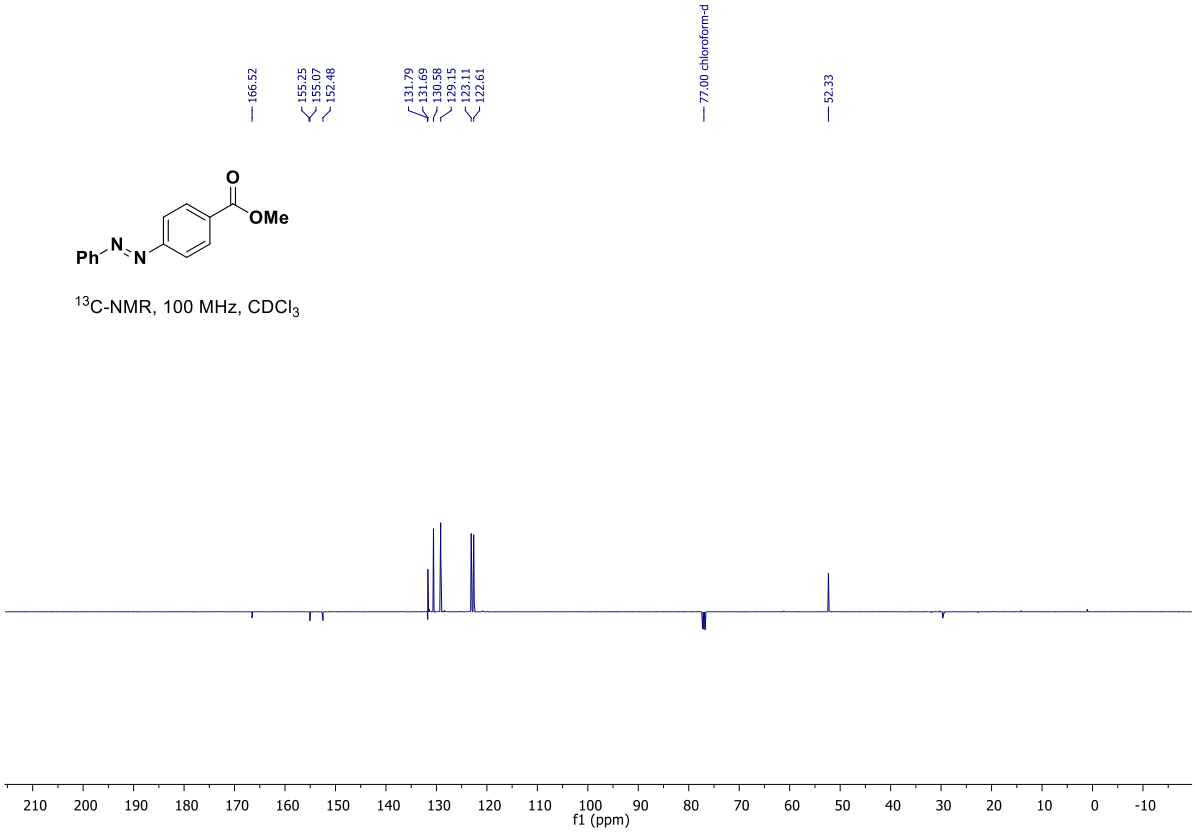
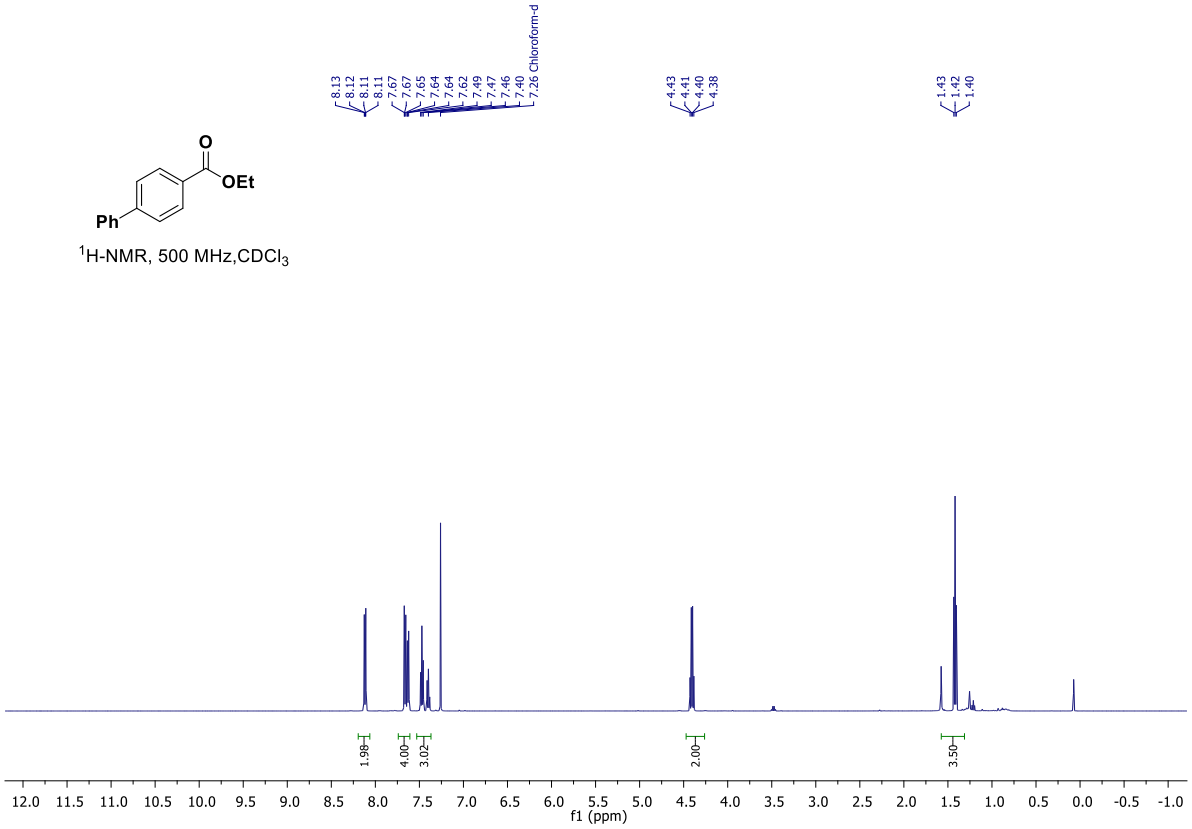




^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **12**



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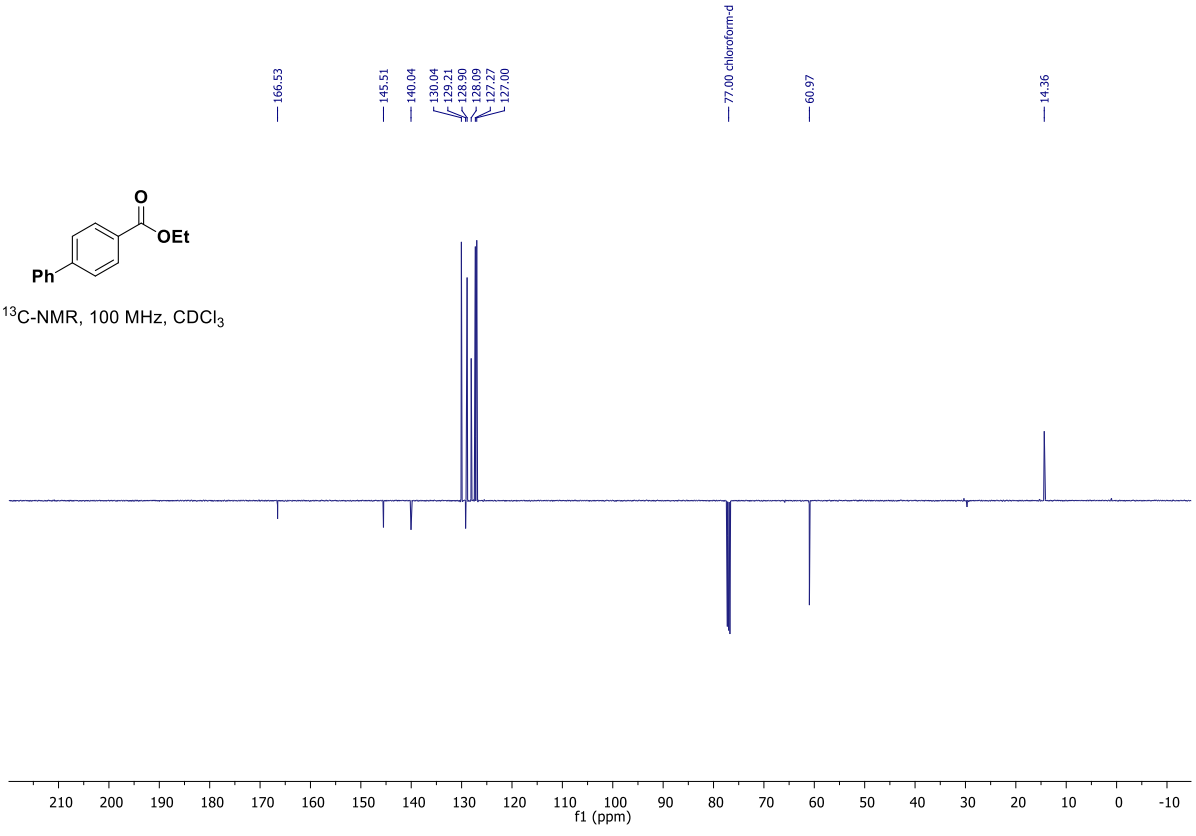

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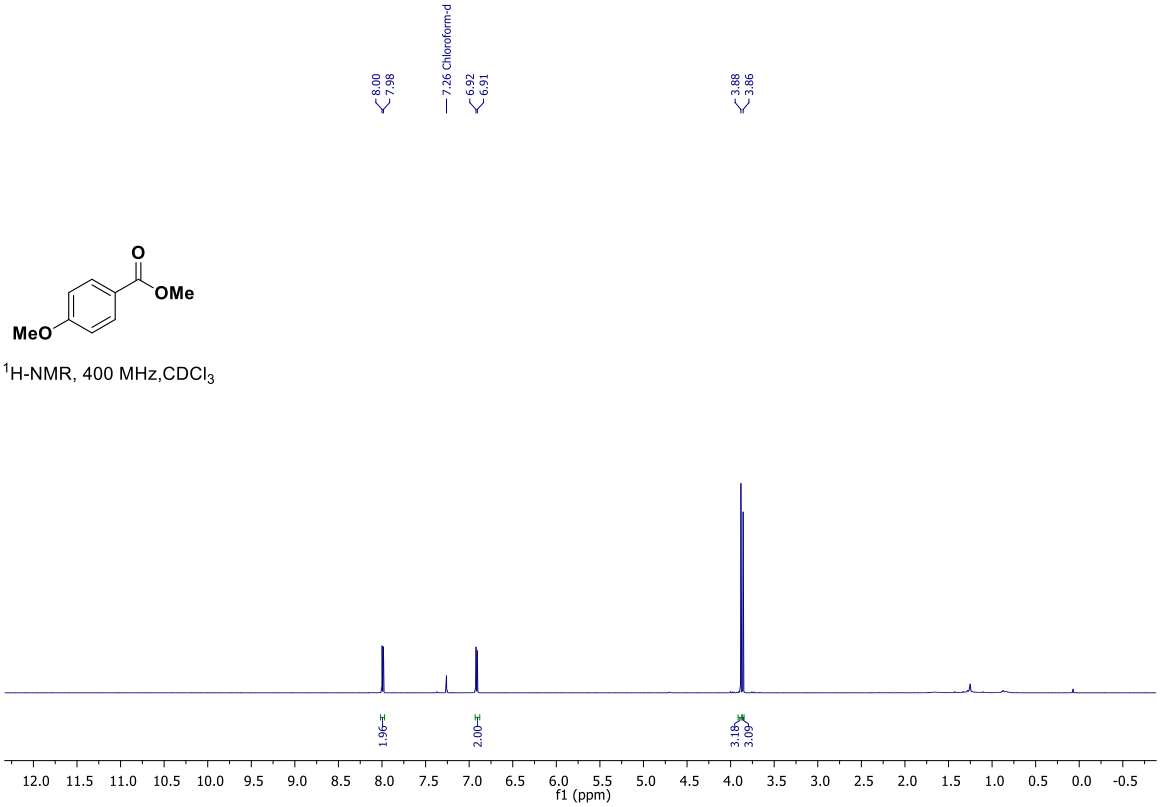
Compound **13**



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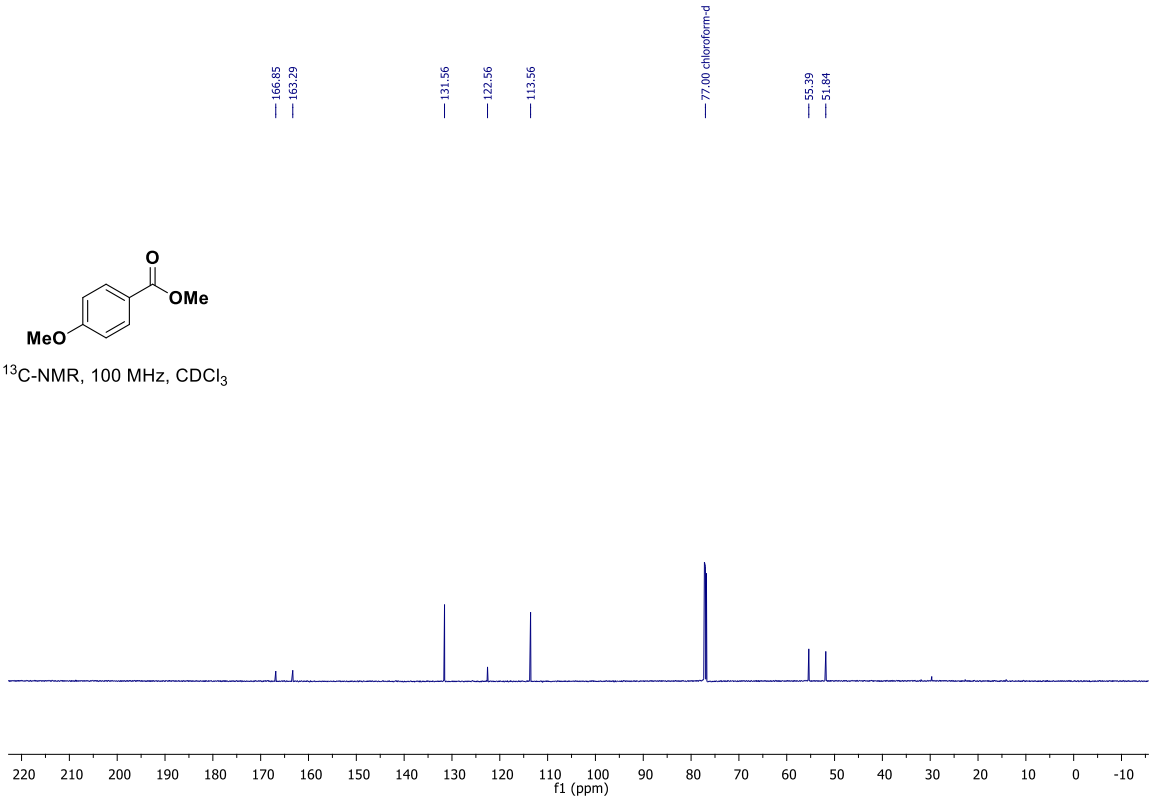

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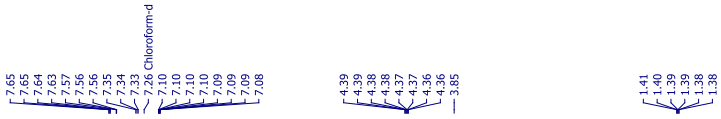
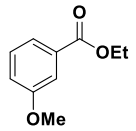
Compound **14**





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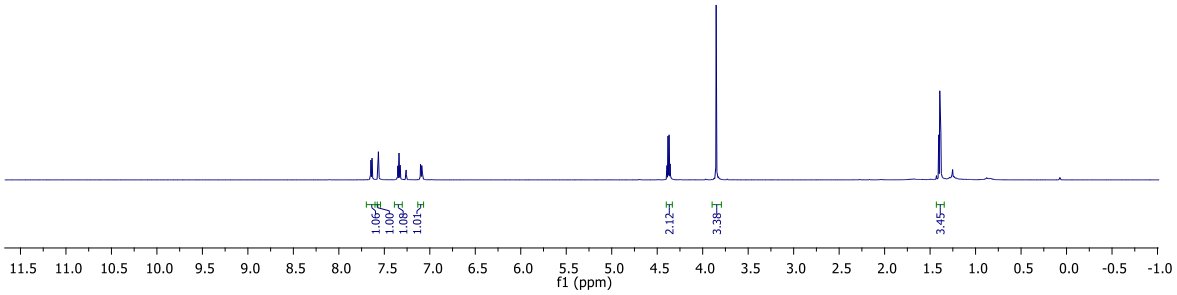

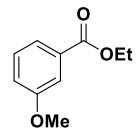

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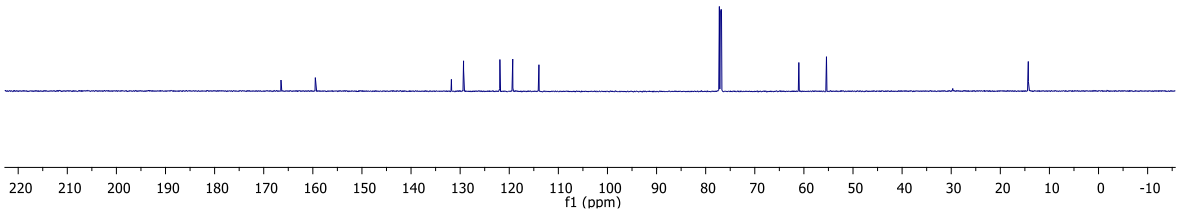

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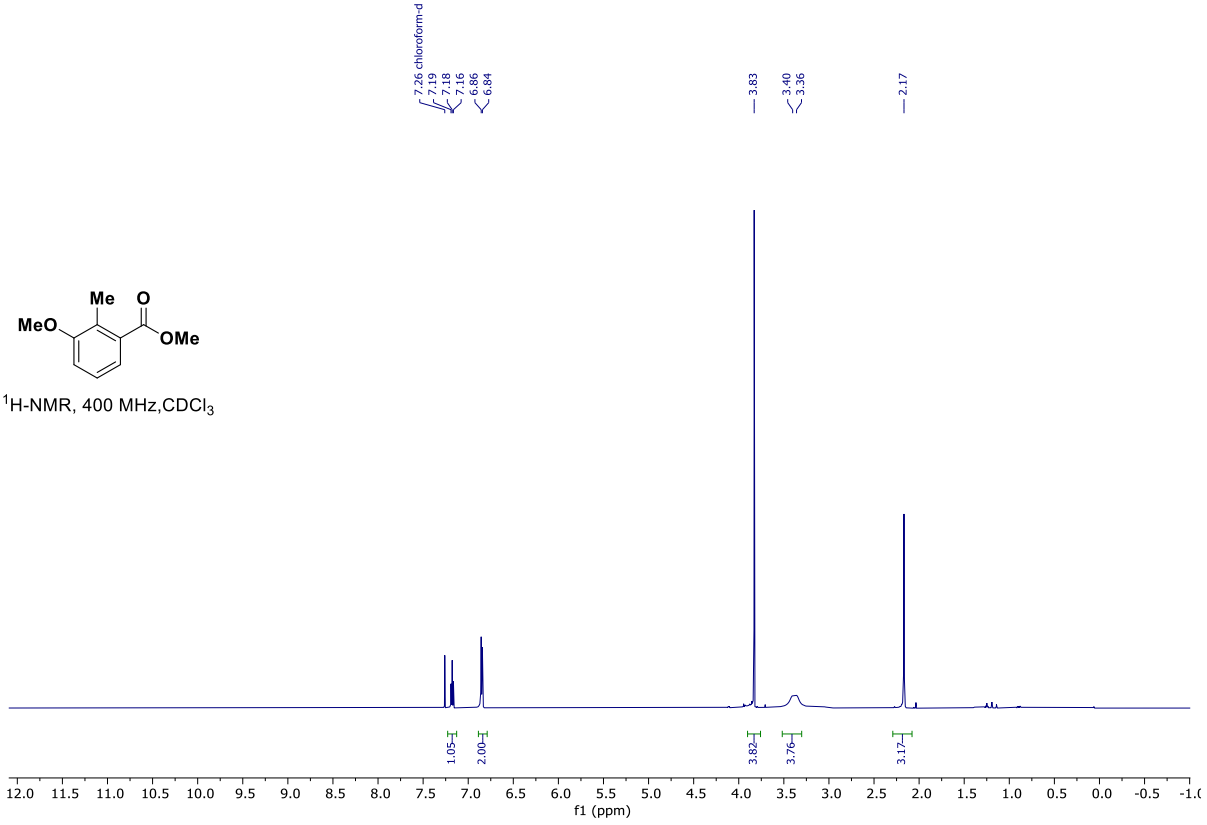

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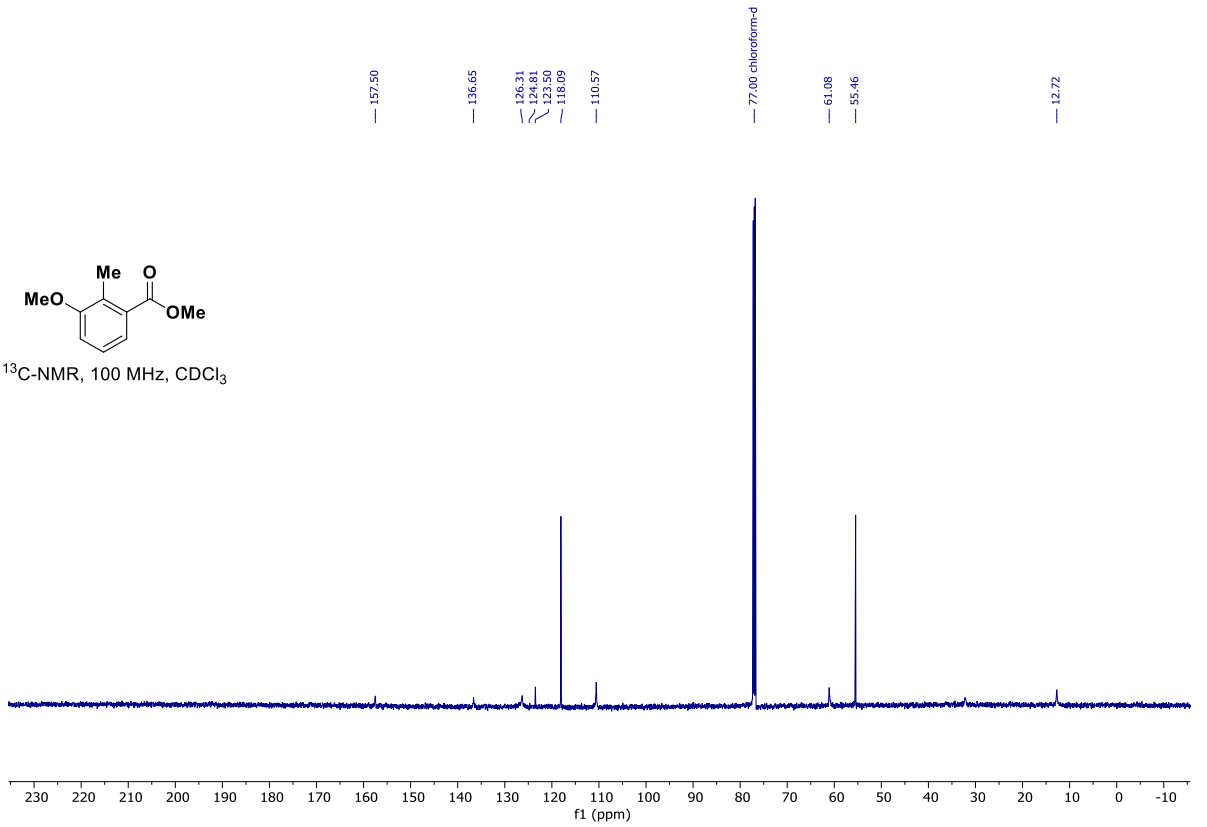

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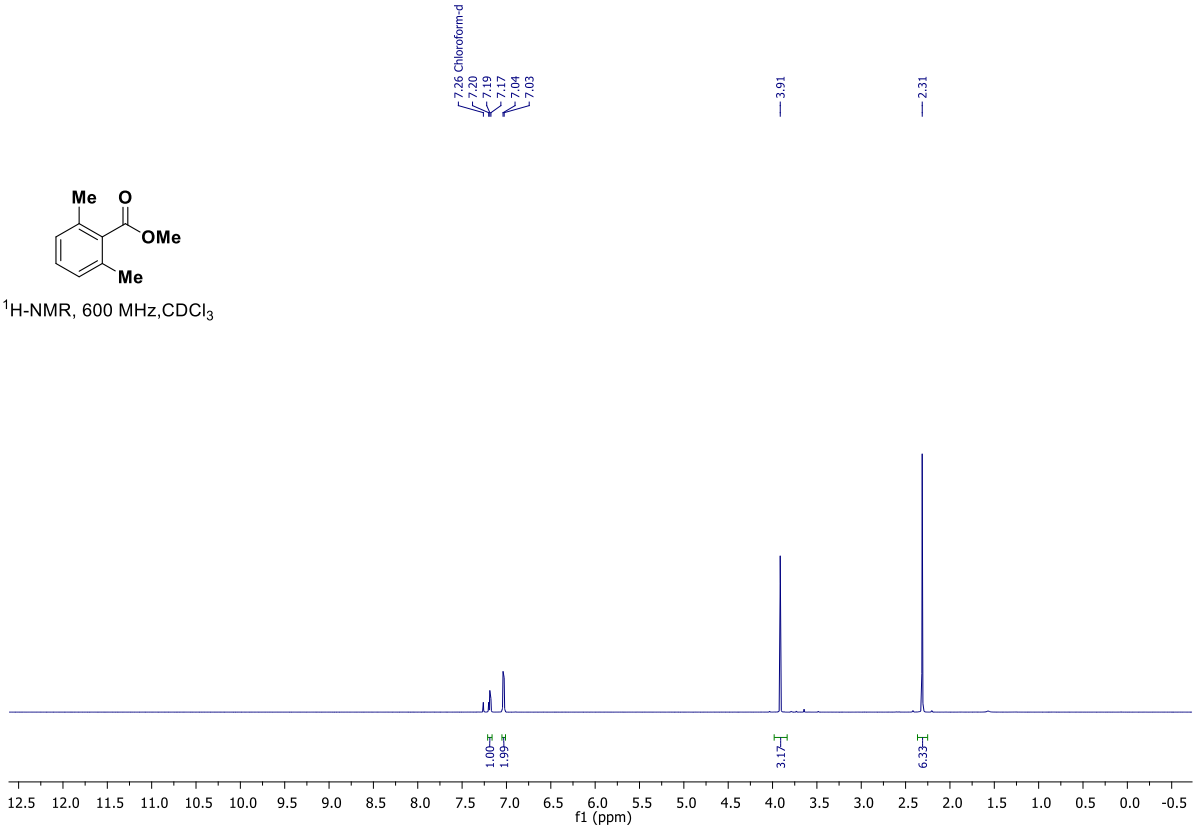
Compound **16**



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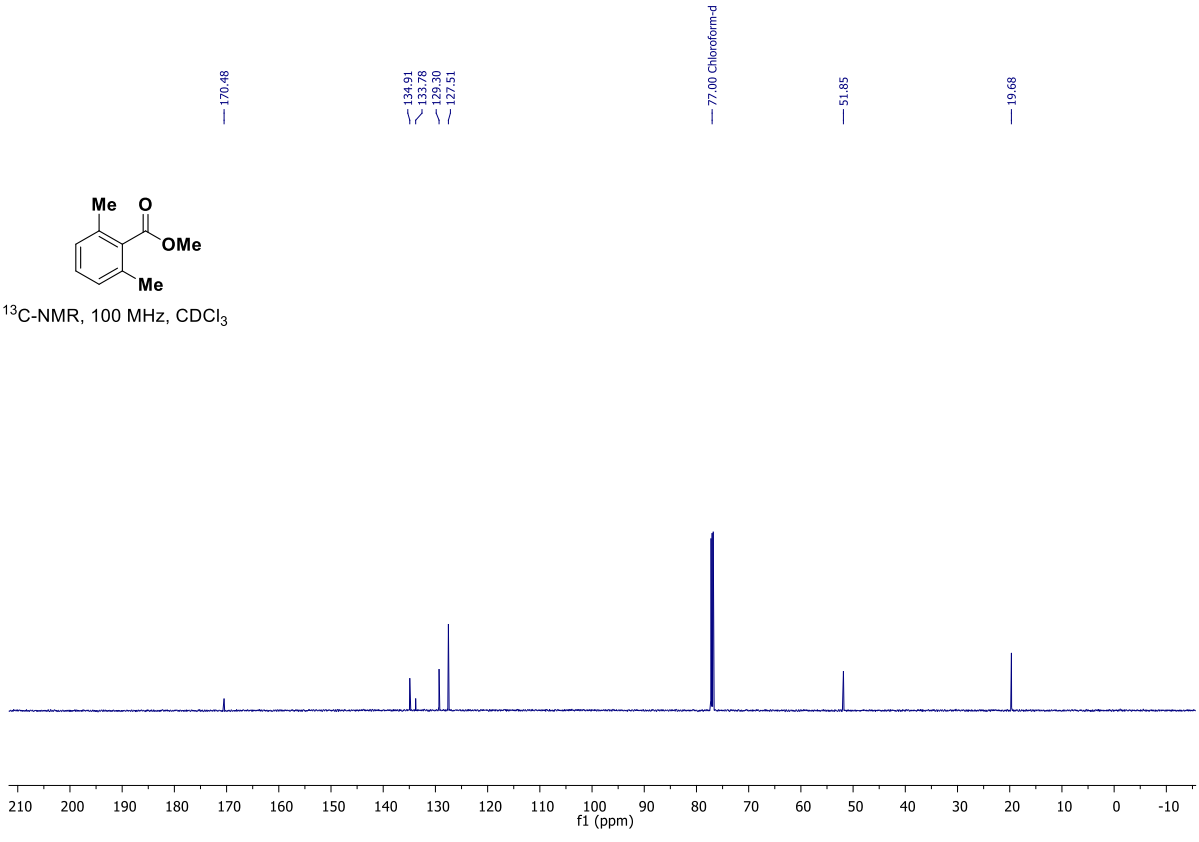

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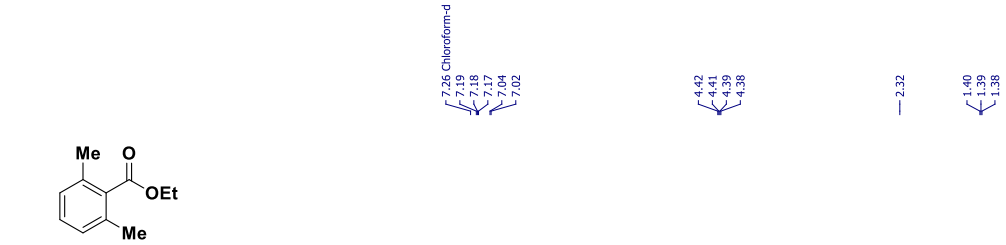
Compound **17**



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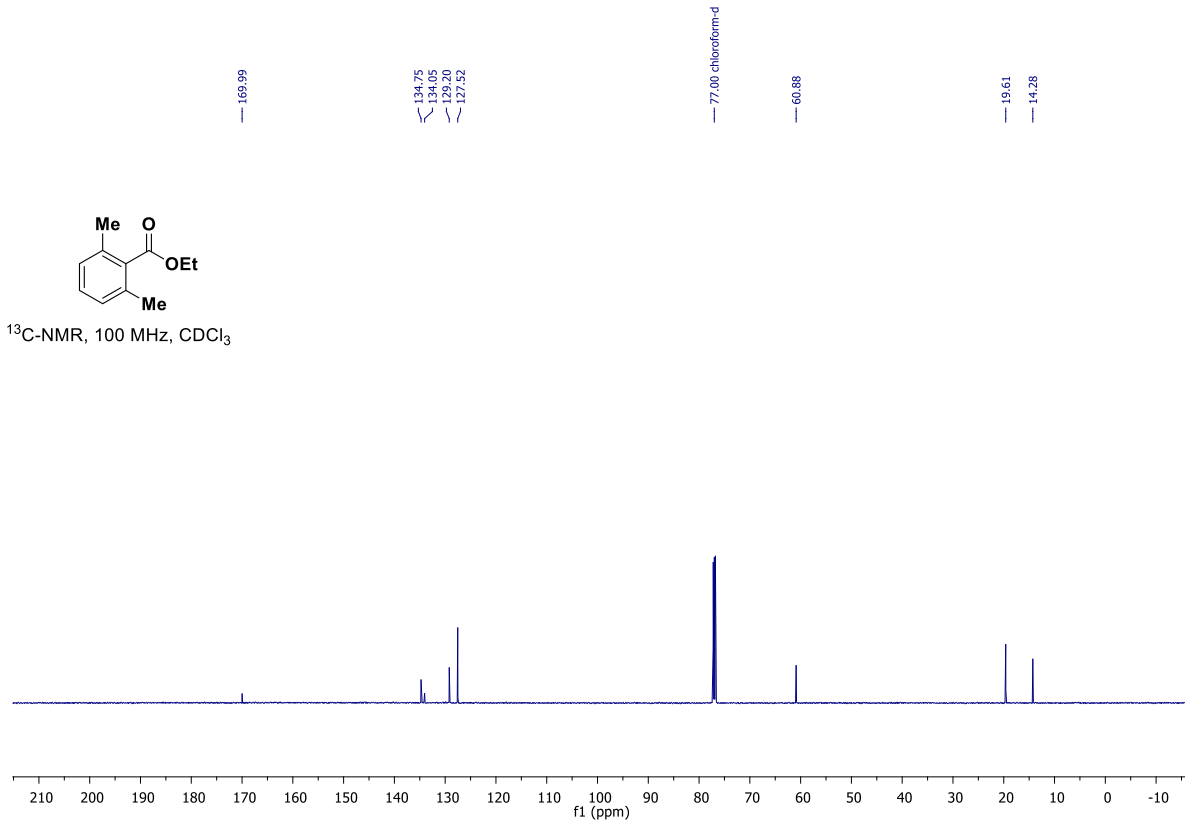
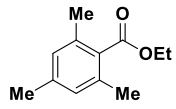
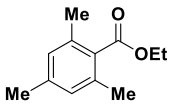


^{13}C-NMR, 100 MHz, $CDCl_3$

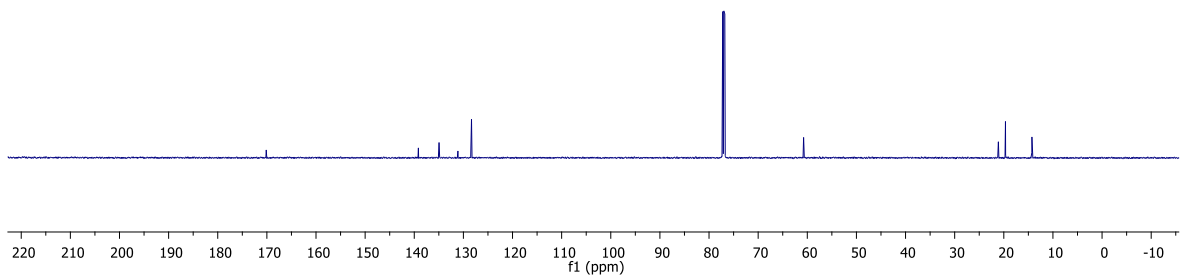
Compound **18**



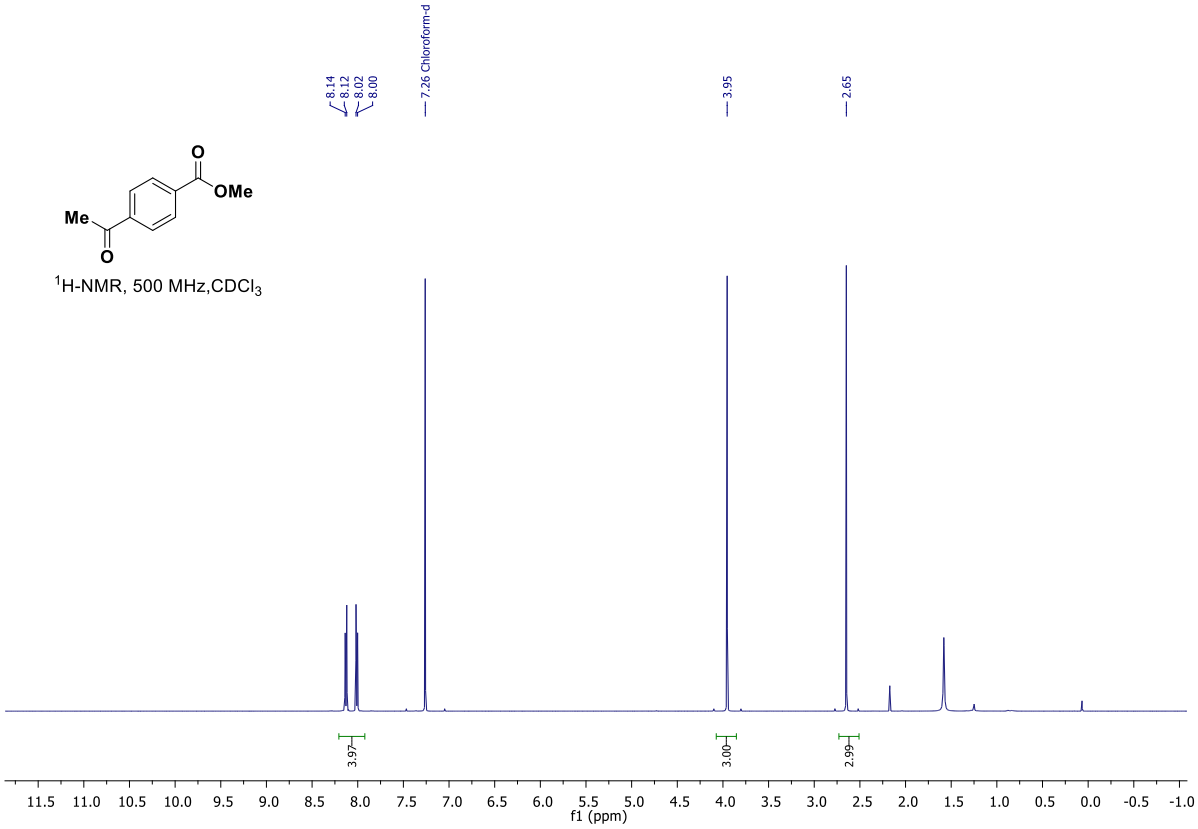
^{1}H-NMR, 600 MHz,$CDCl_3$



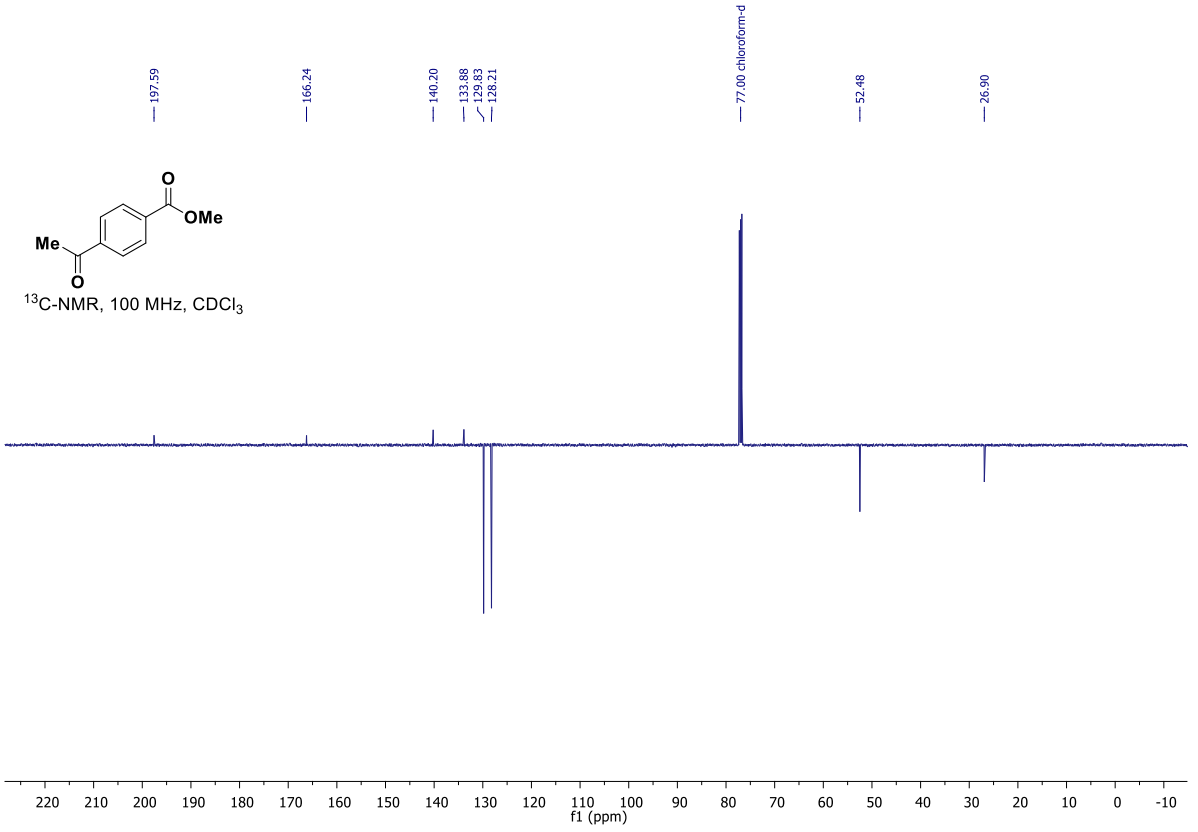
^{13}C-NMR, 100 MHz, $CDCl_3$



Compound **19**

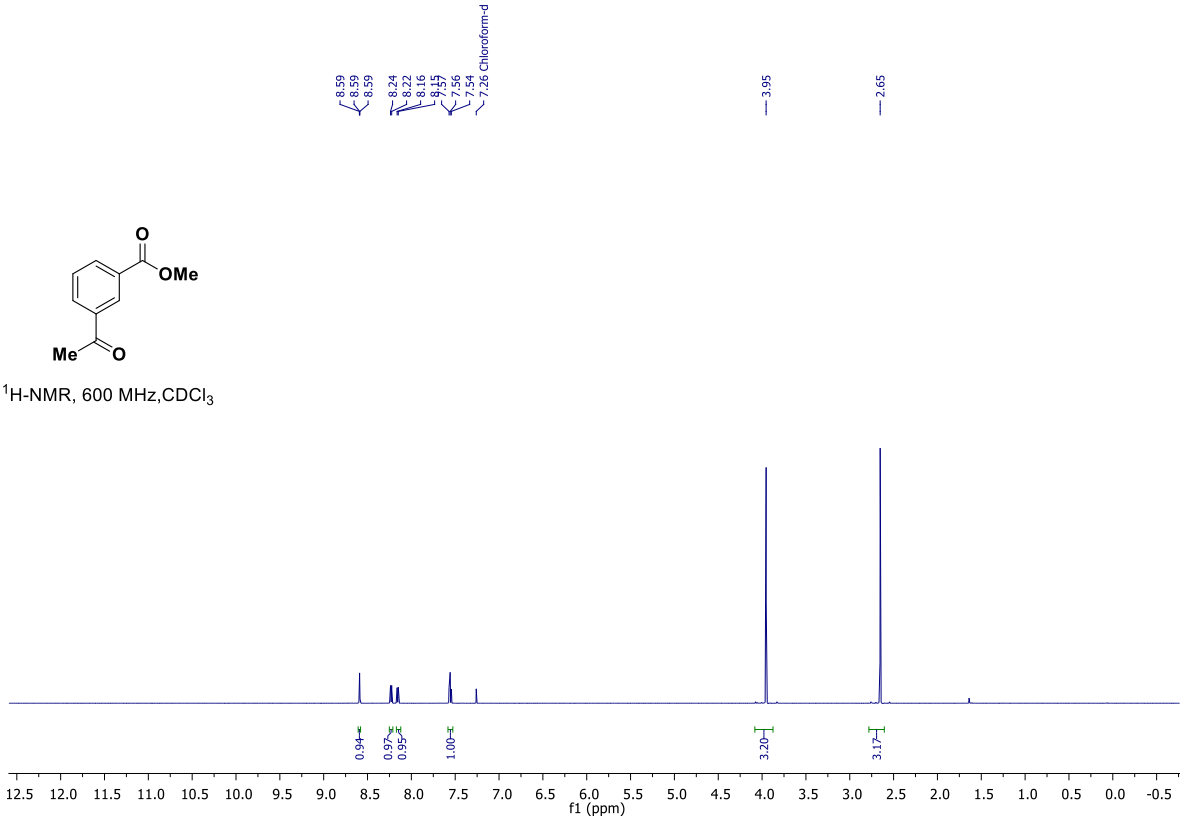


^{1}H-NMR, 500 MHz,$CDCl_3$

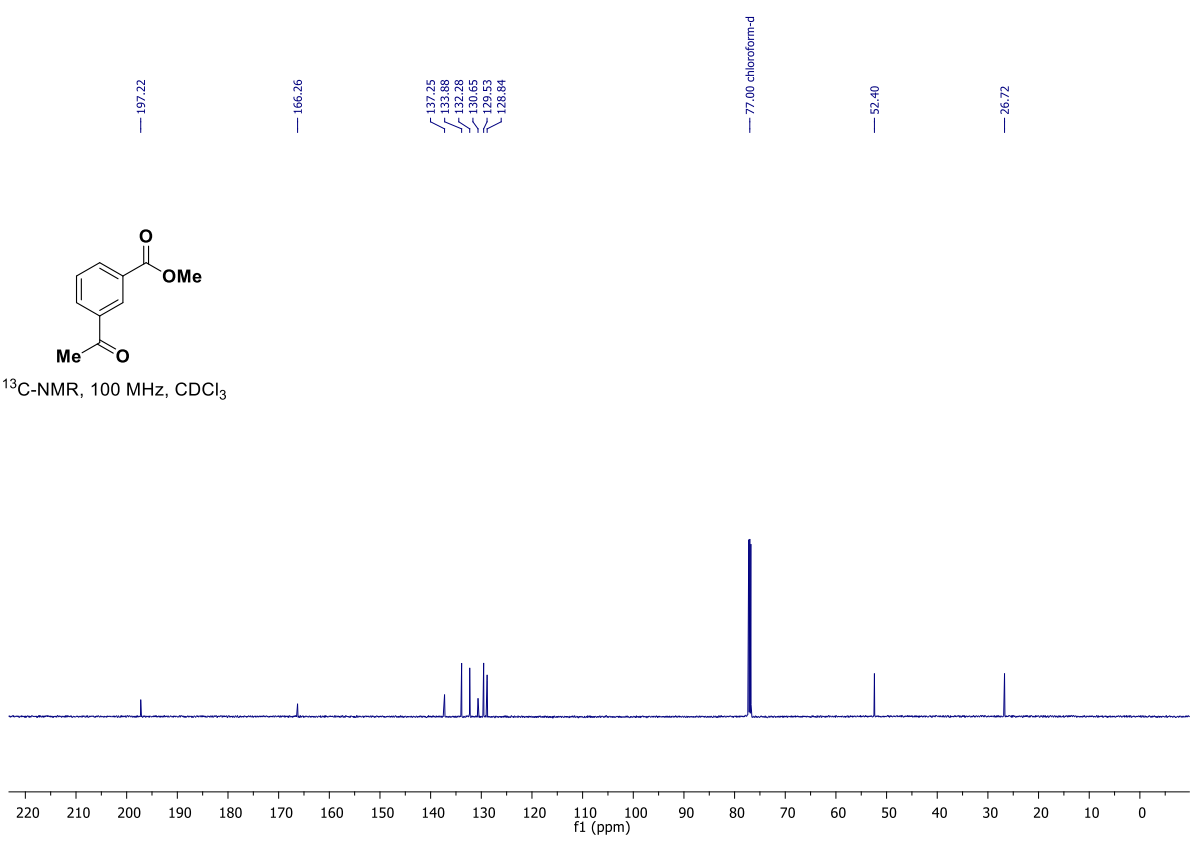


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **20**

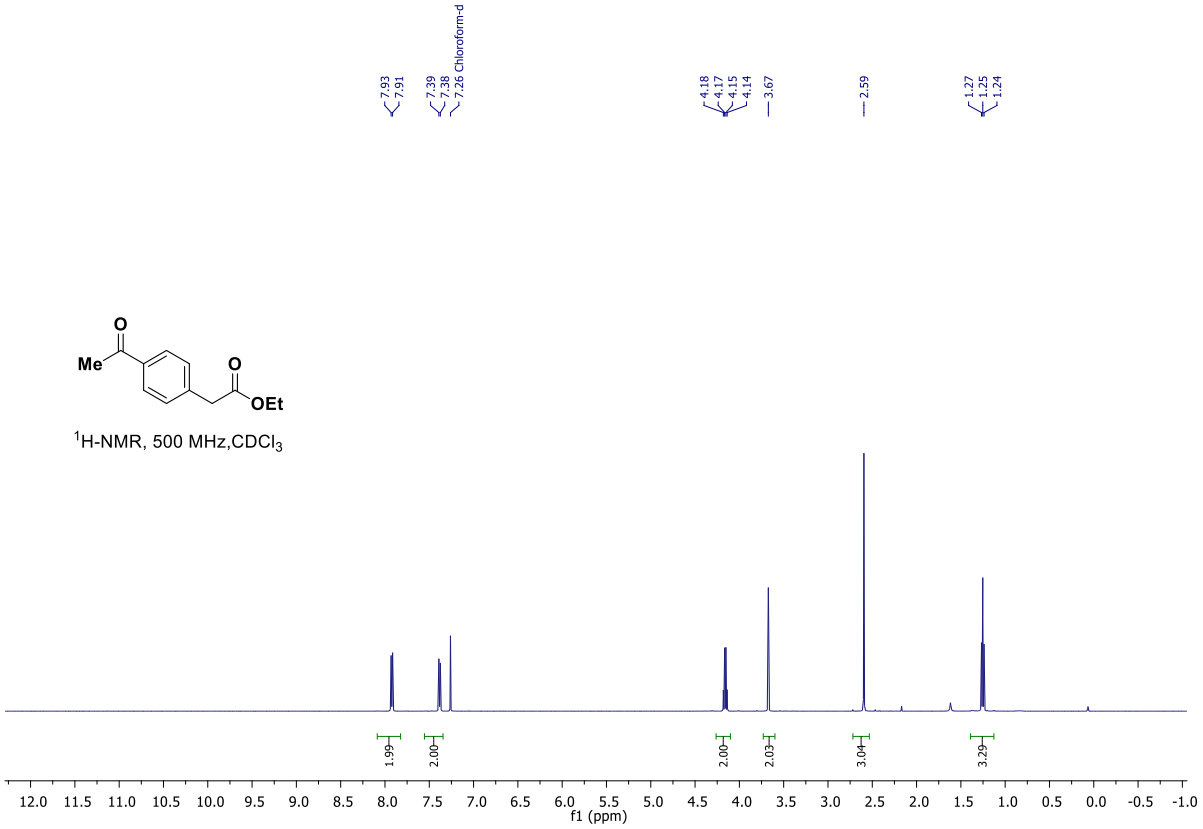


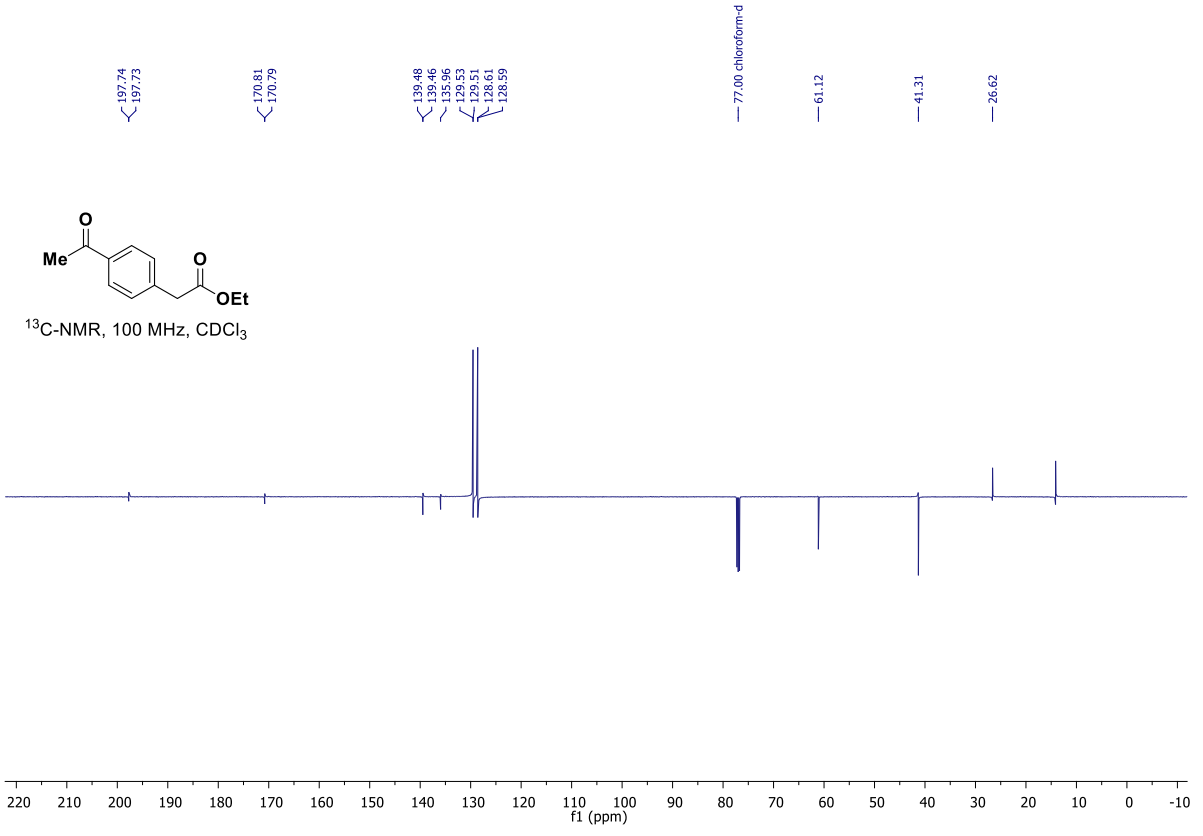
^{1}H-NMR, 600 MHz,$CDCl_3$



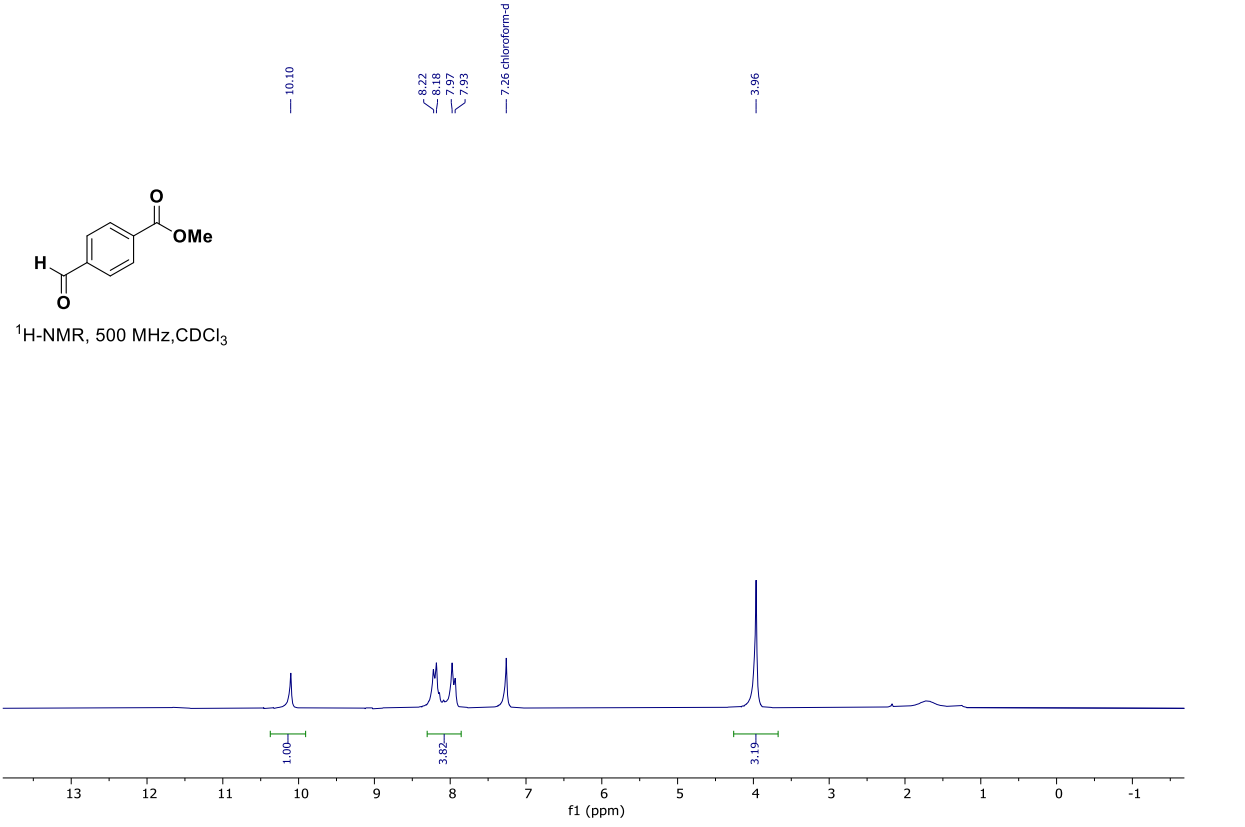
^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **21**

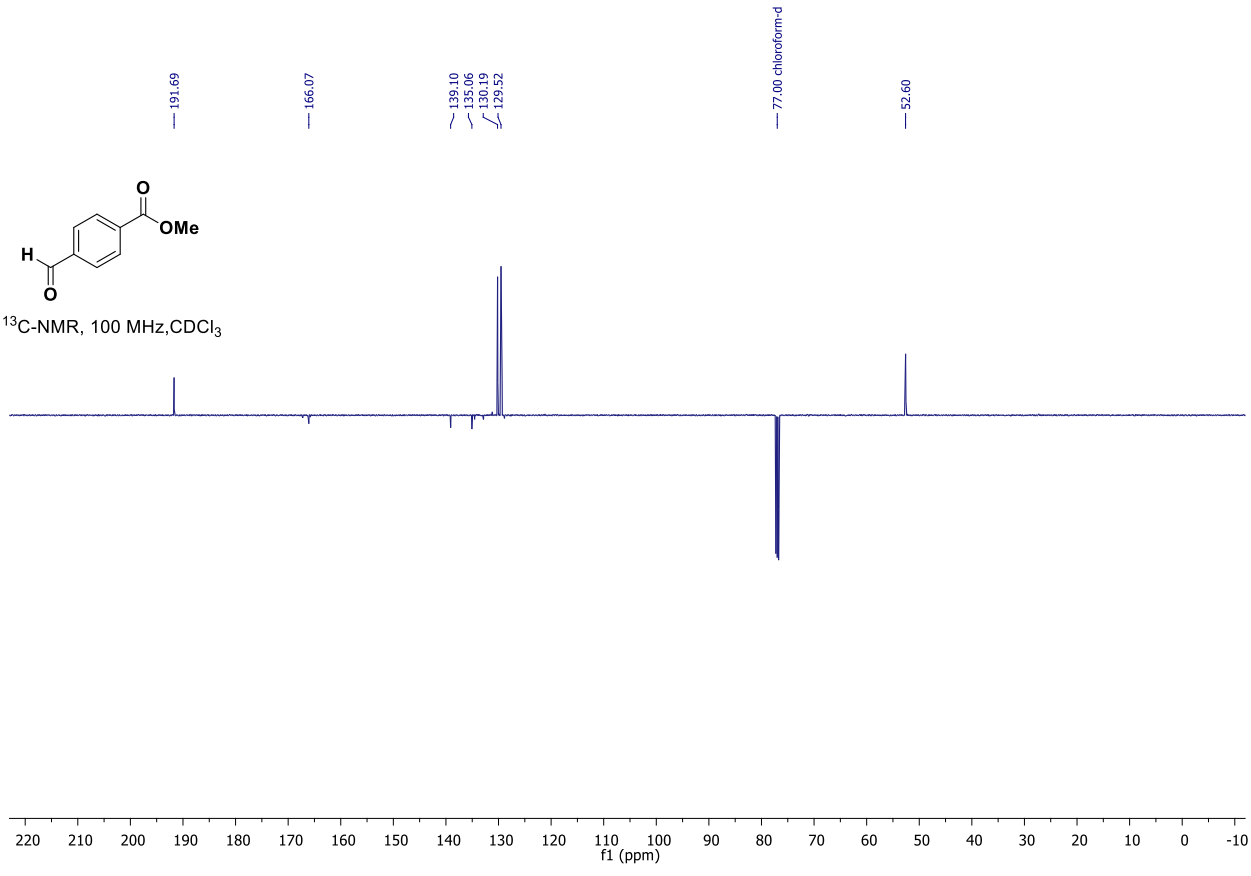

7.93
7.91
7.39
7.38
7.26 Chloroform-d
4.18
4.17
4.15
4.14
3.67
2.59
1.27
1.25
1.24
Me
O
O
OEt
1H-NMR, 500 MHz,CDCl3
1.99
2.00
2.00
2.03
3.04
3.29
f1 (ppm)


197.74
197.73
170.81
170.79
139.48
139.46
135.56
129.53
129.51
128.61
128.59
77.00 chloroform-d
61.12
41.31
26.62
Me
O
O
OEt
13C-NMR, 100 MHz, CDCl3
f1 (ppm)

Compound **22**

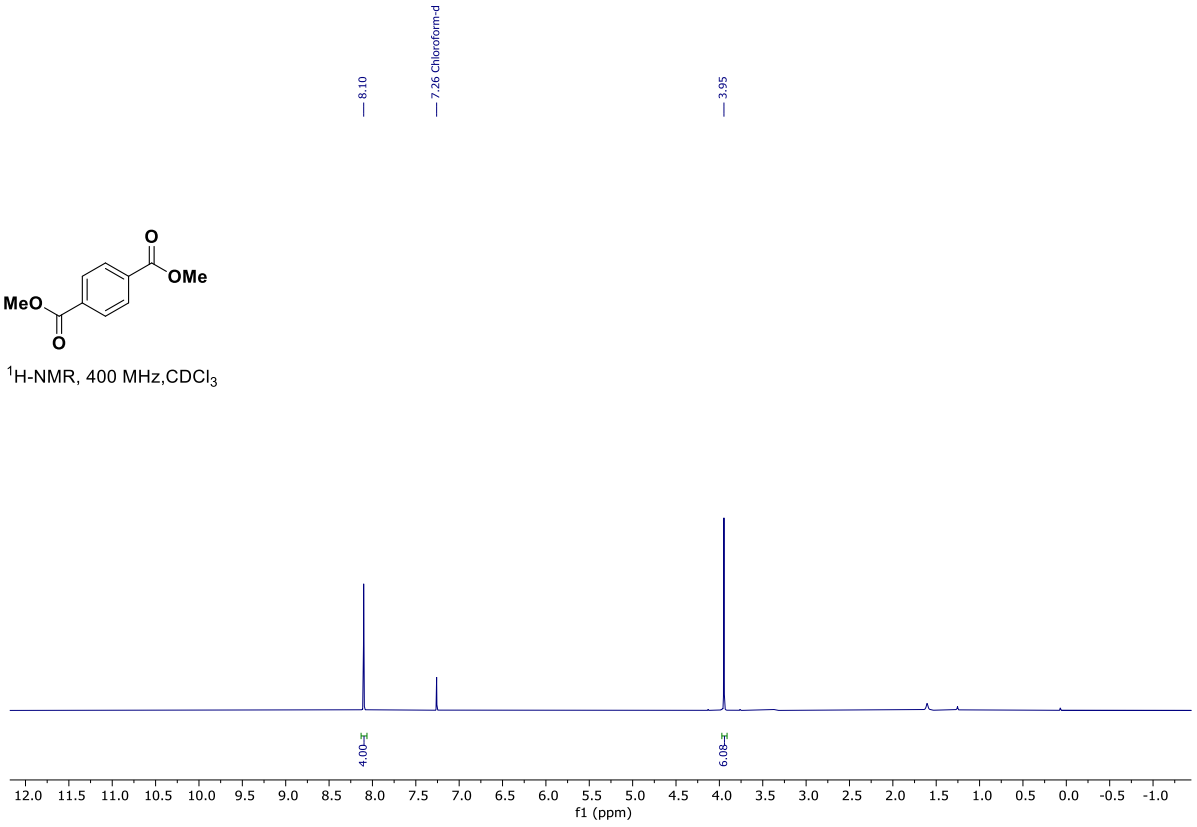


^{1}H-NMR, 500 MHz,$CDCl_3$

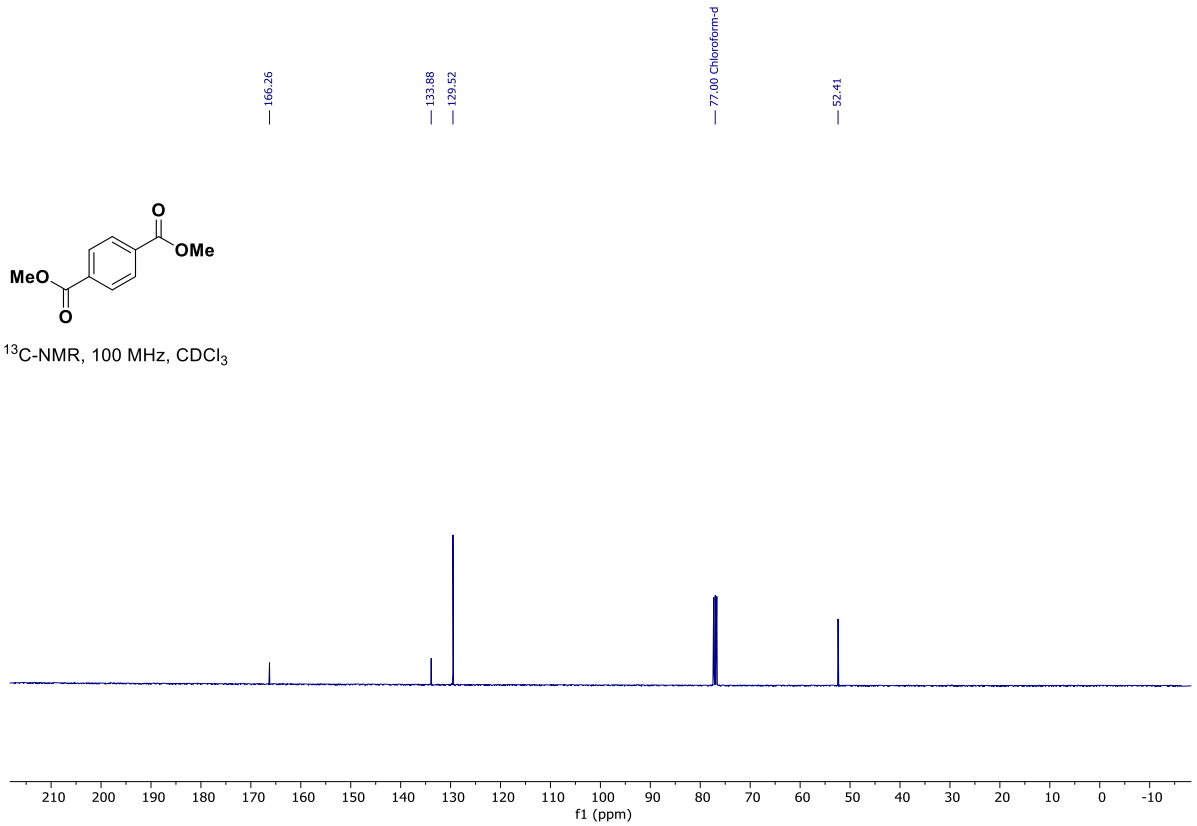


^{13}C-NMR, 100 MHz,$CDCl_3$

Compound **23**

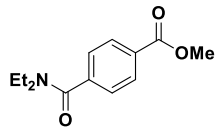


^{1}H-NMR, 400 MHz,$CDCl_3$

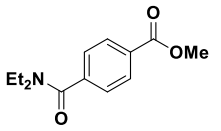


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **24**

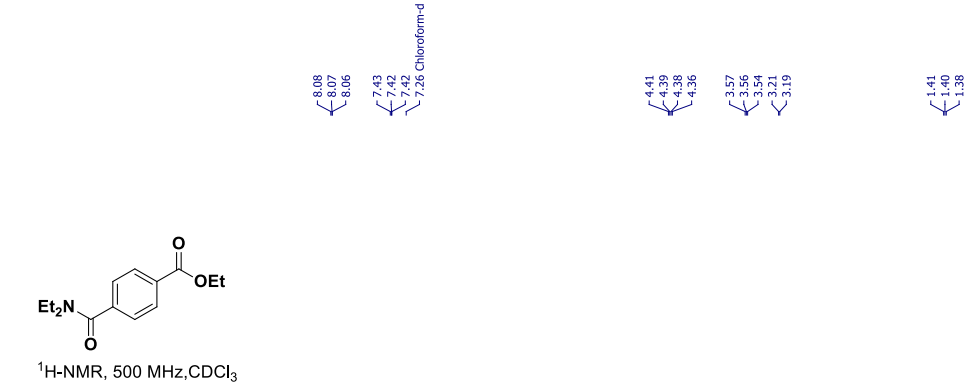


^{1}H-NMR, 500 MHz,$CDCl_3$

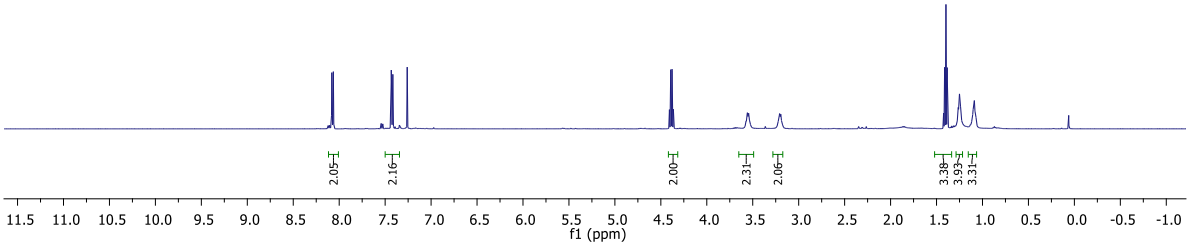


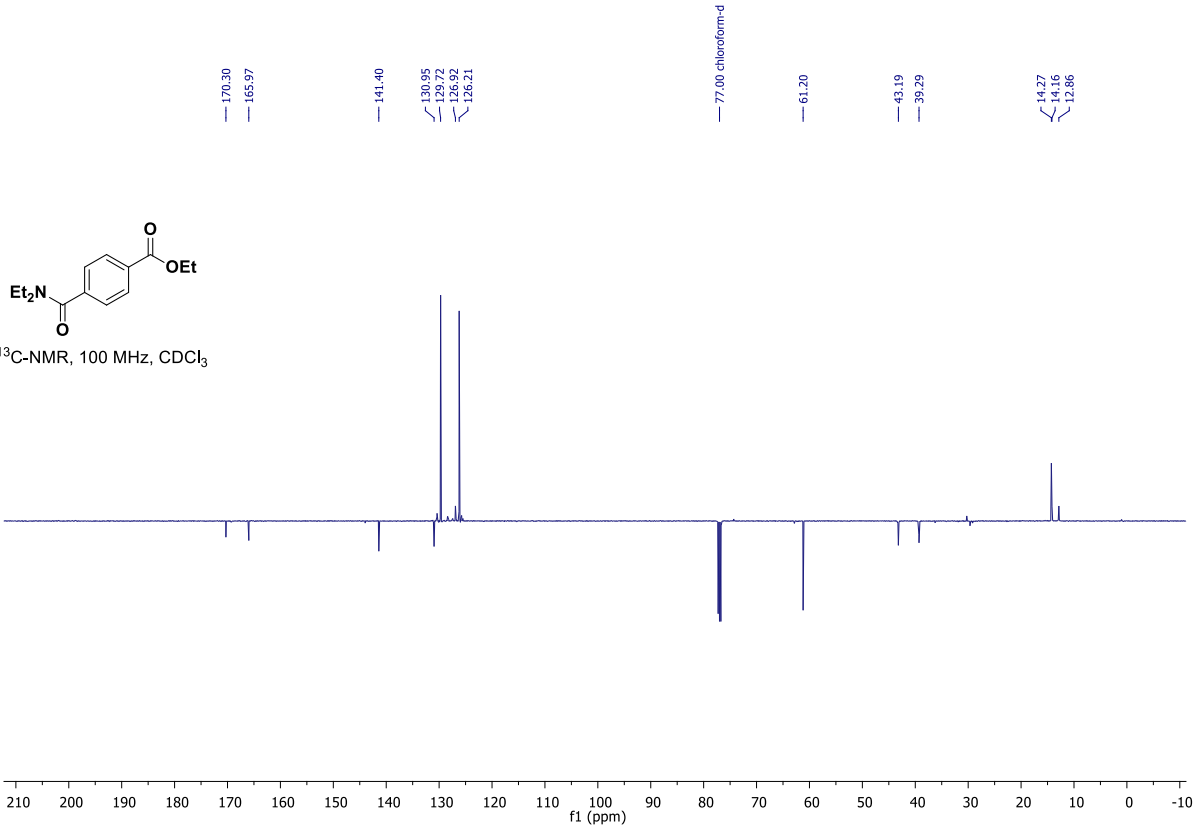
^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **25**



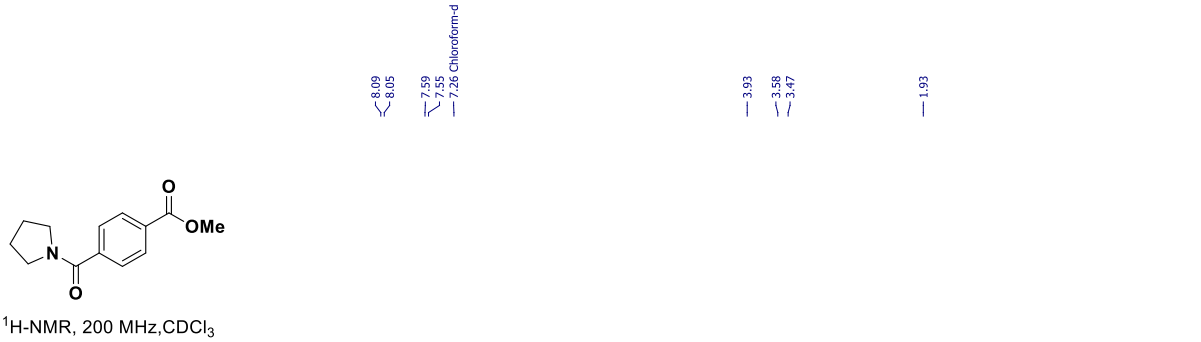
^{1}H-NMR, 500 MHz,$CDCl_3$



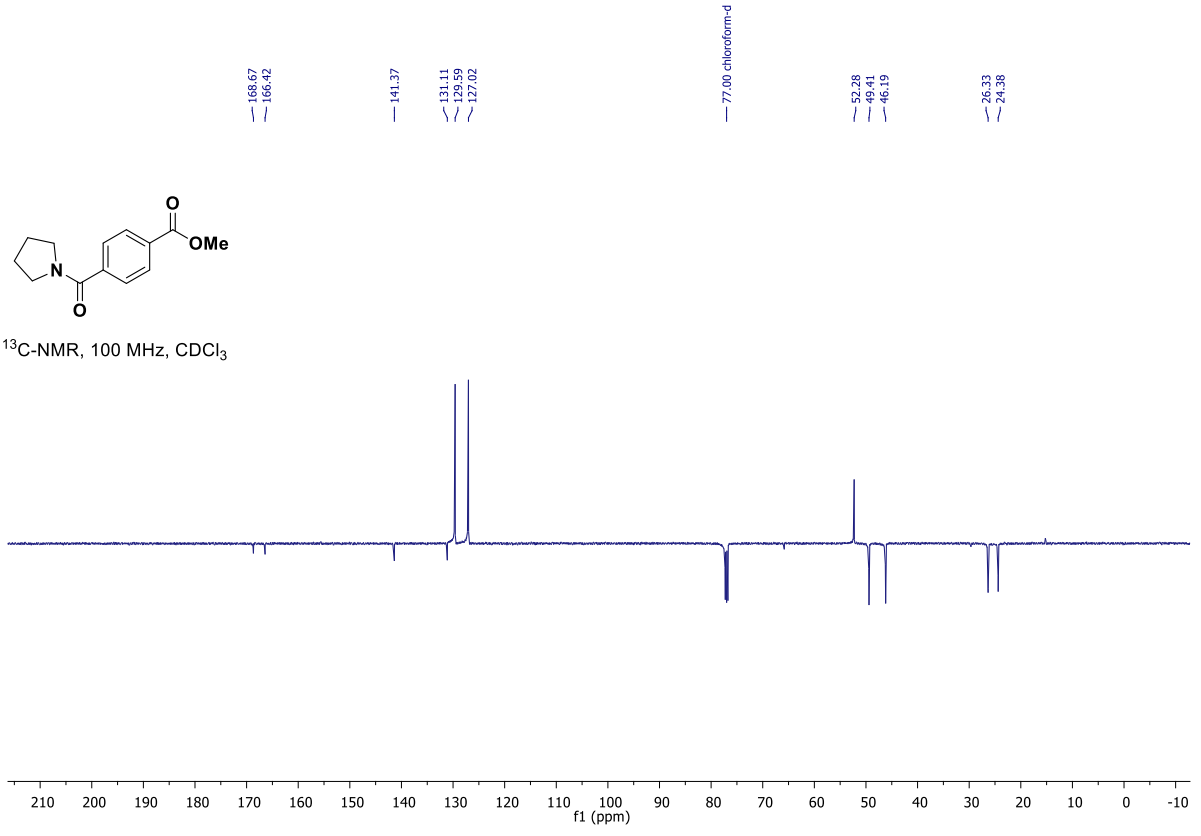


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **26**

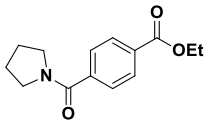


^{1}H-NMR, 200 MHz,$CDCl_3$

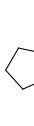


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **27**

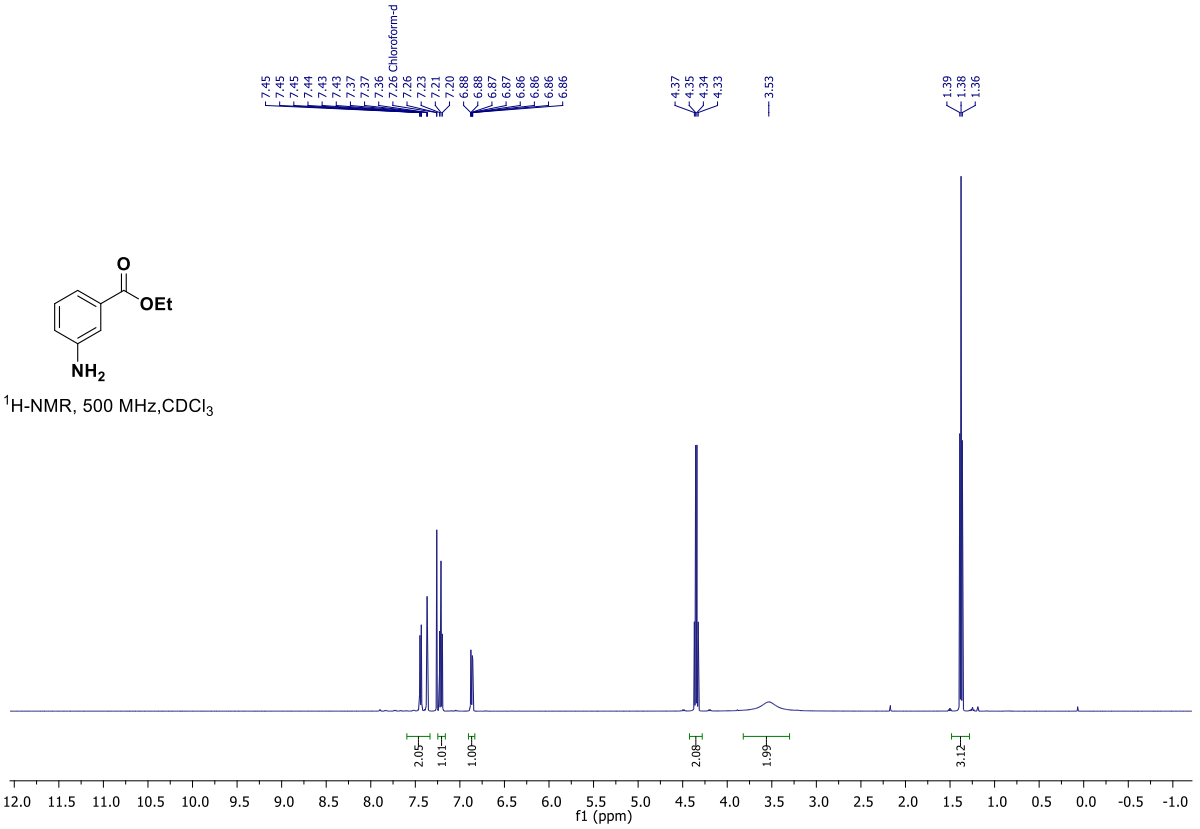


^{1}H-NMR, 500 MHz,$CDCl_3$

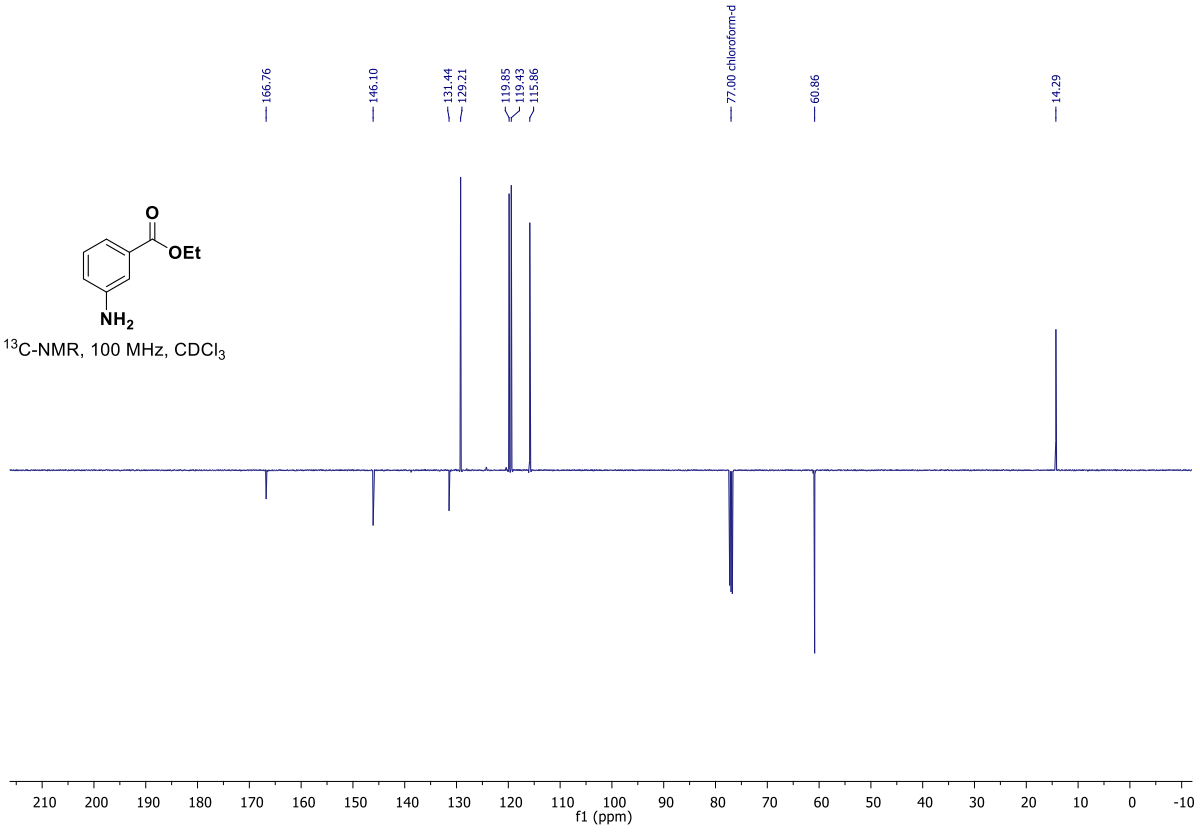


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **28**

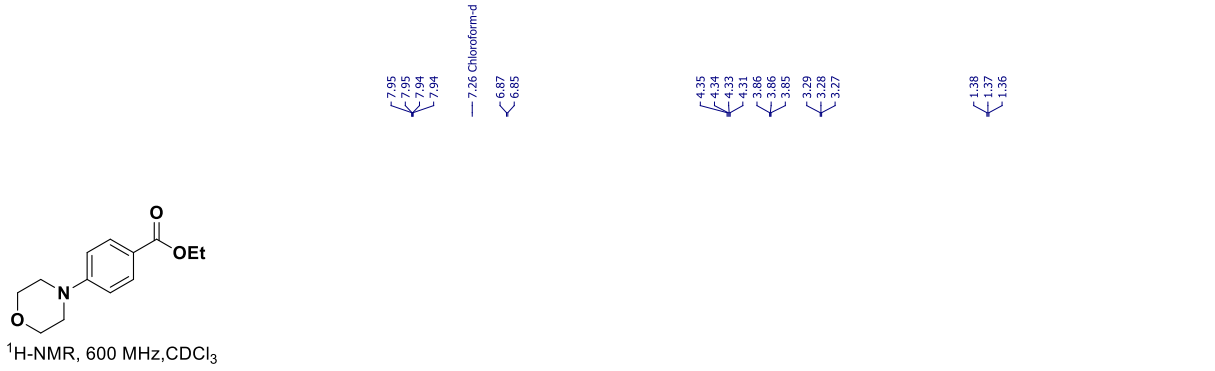


^{1}H-NMR, 500 MHz,$CDCl_3$

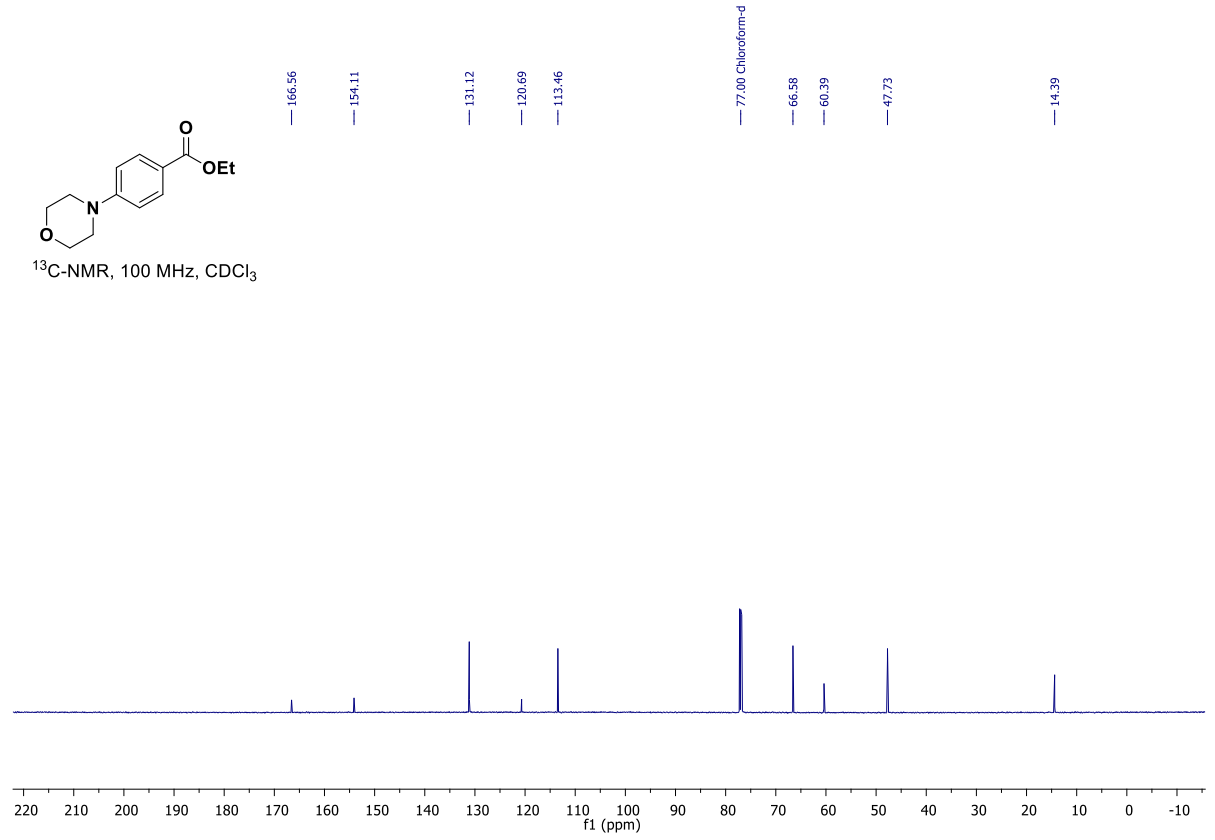


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **29**

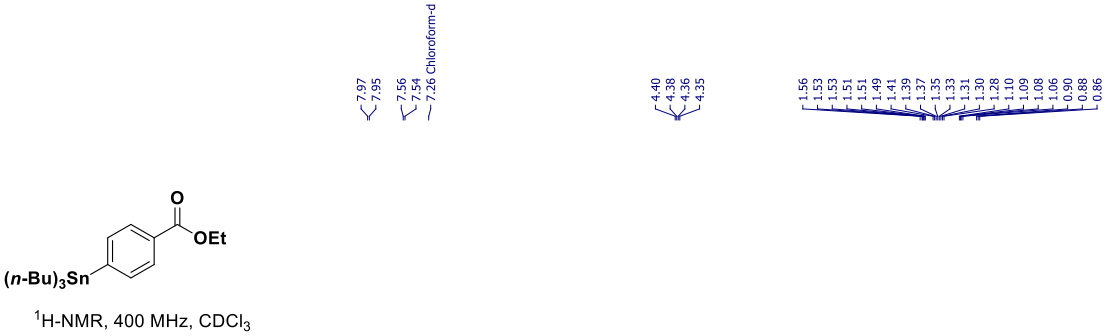


^{1}H-NMR, 600 MHz,$CDCl_3$

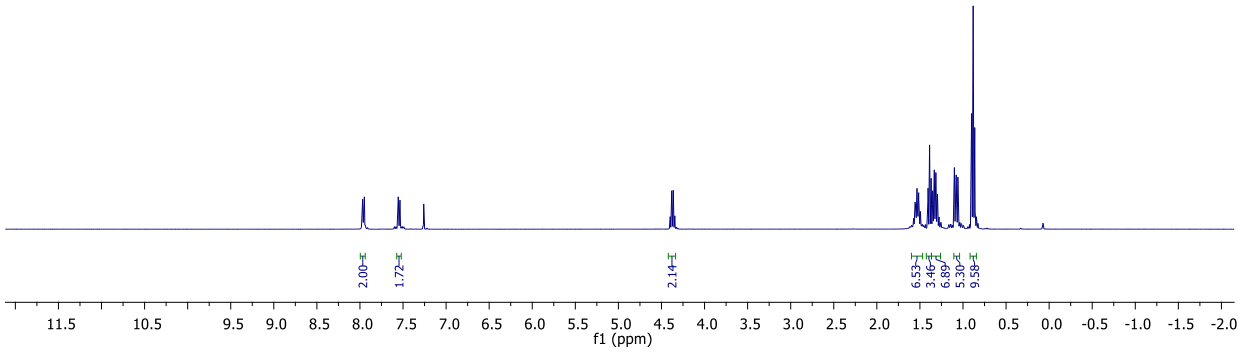


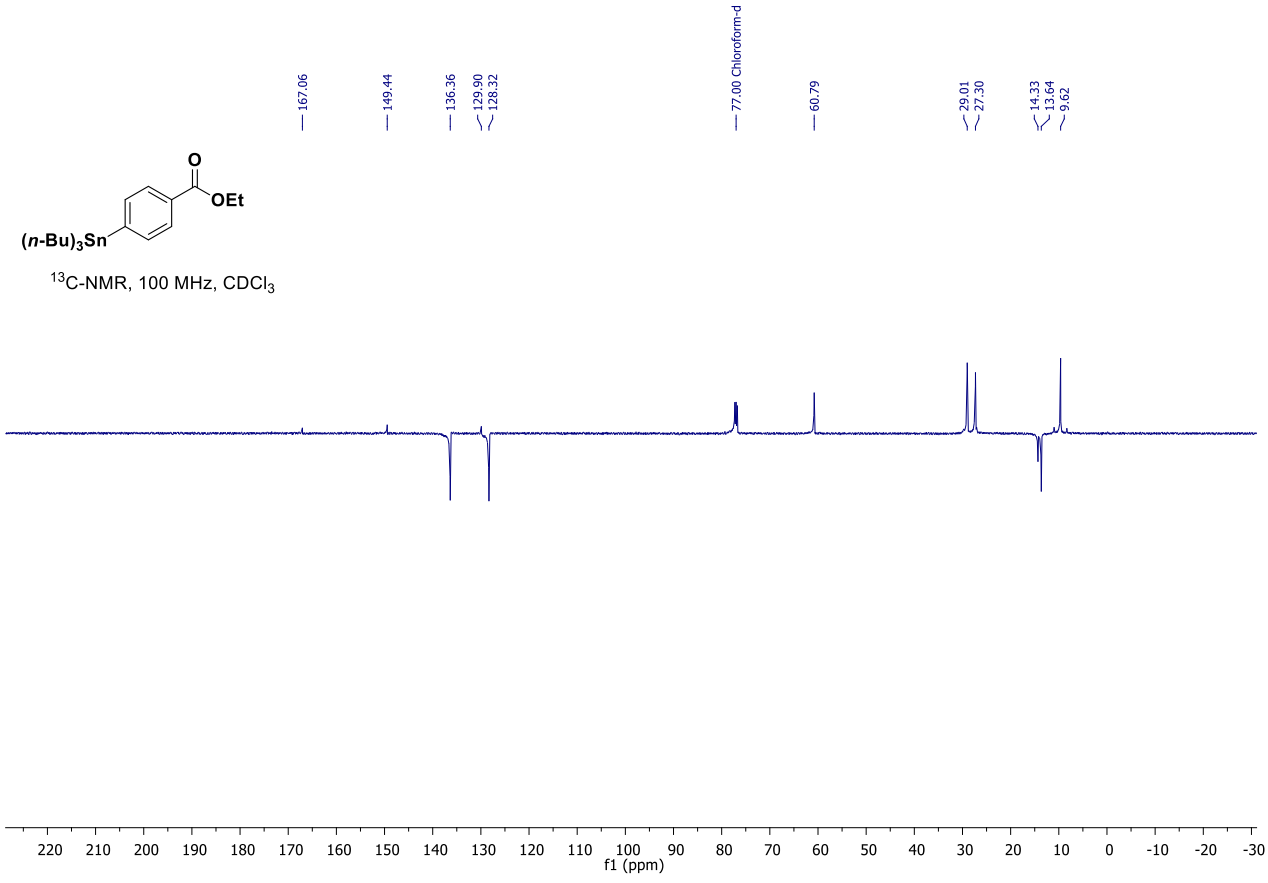
^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **30**



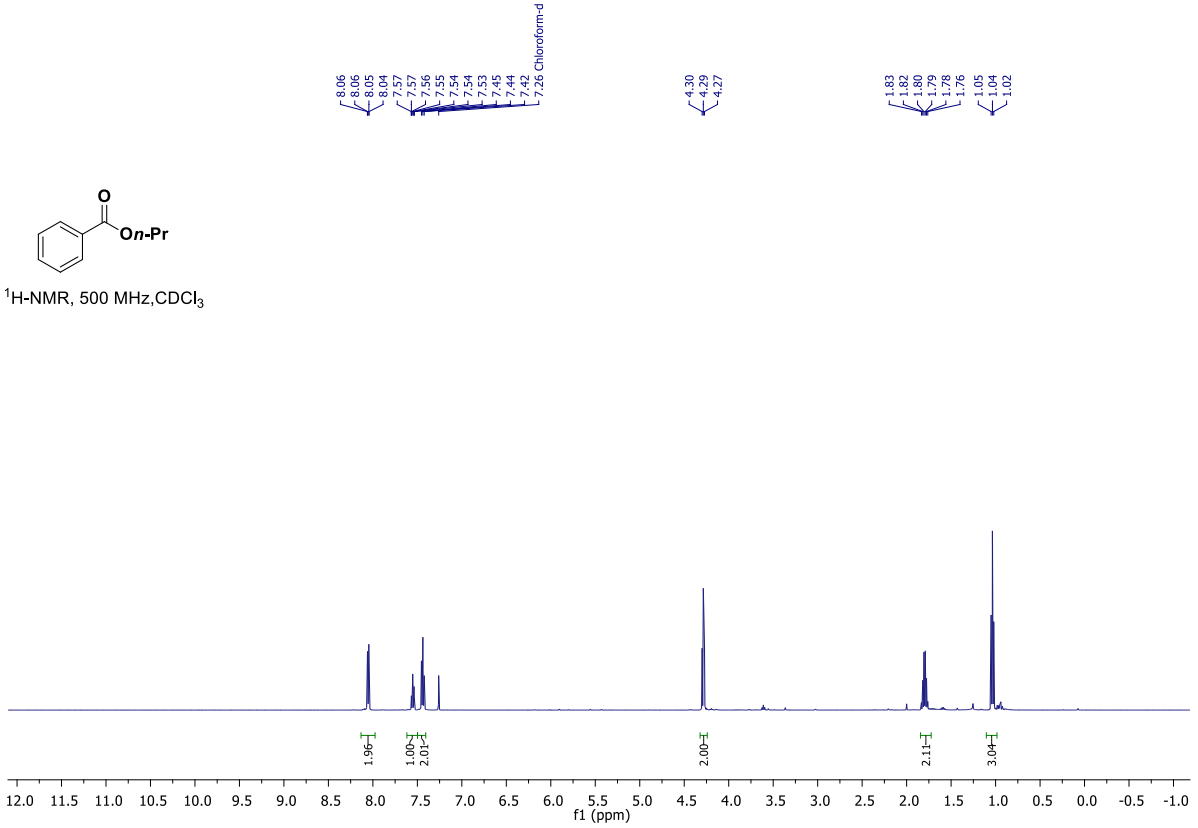
^{1}H-NMR, 400 MHz, $CDCl_3$

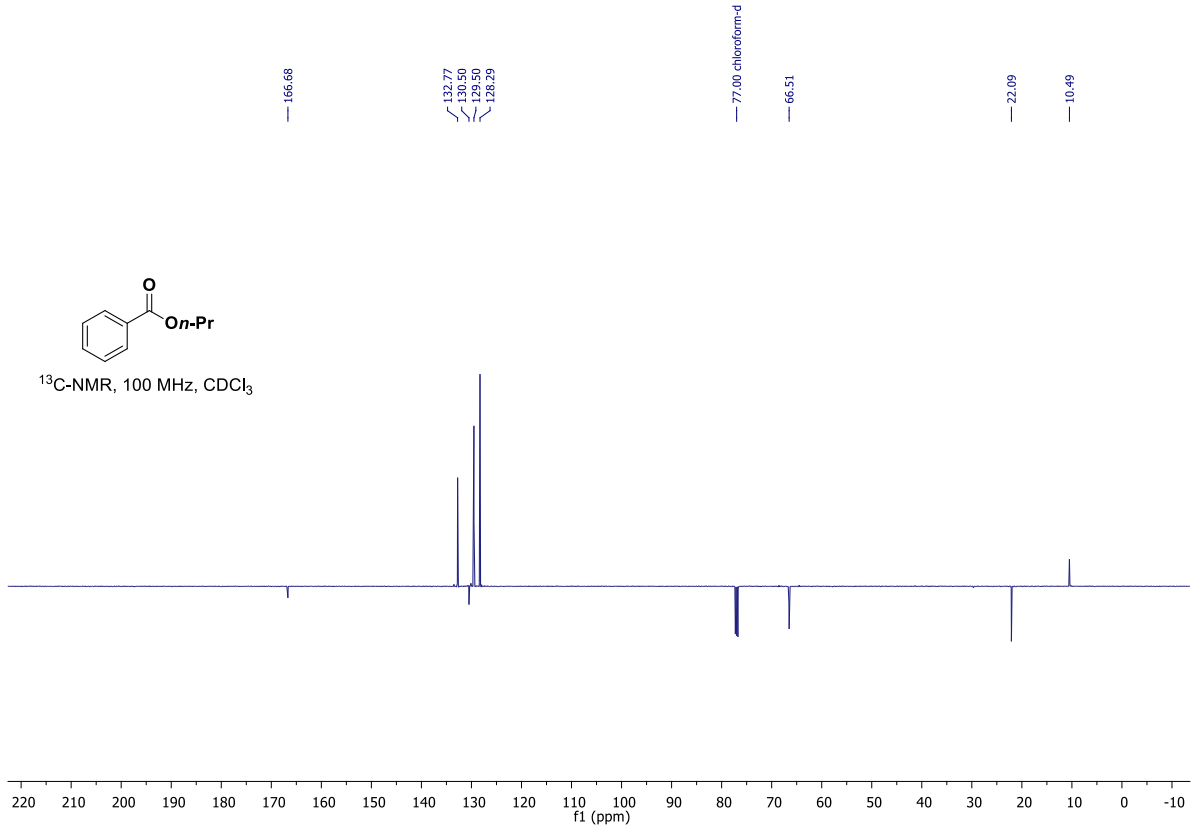




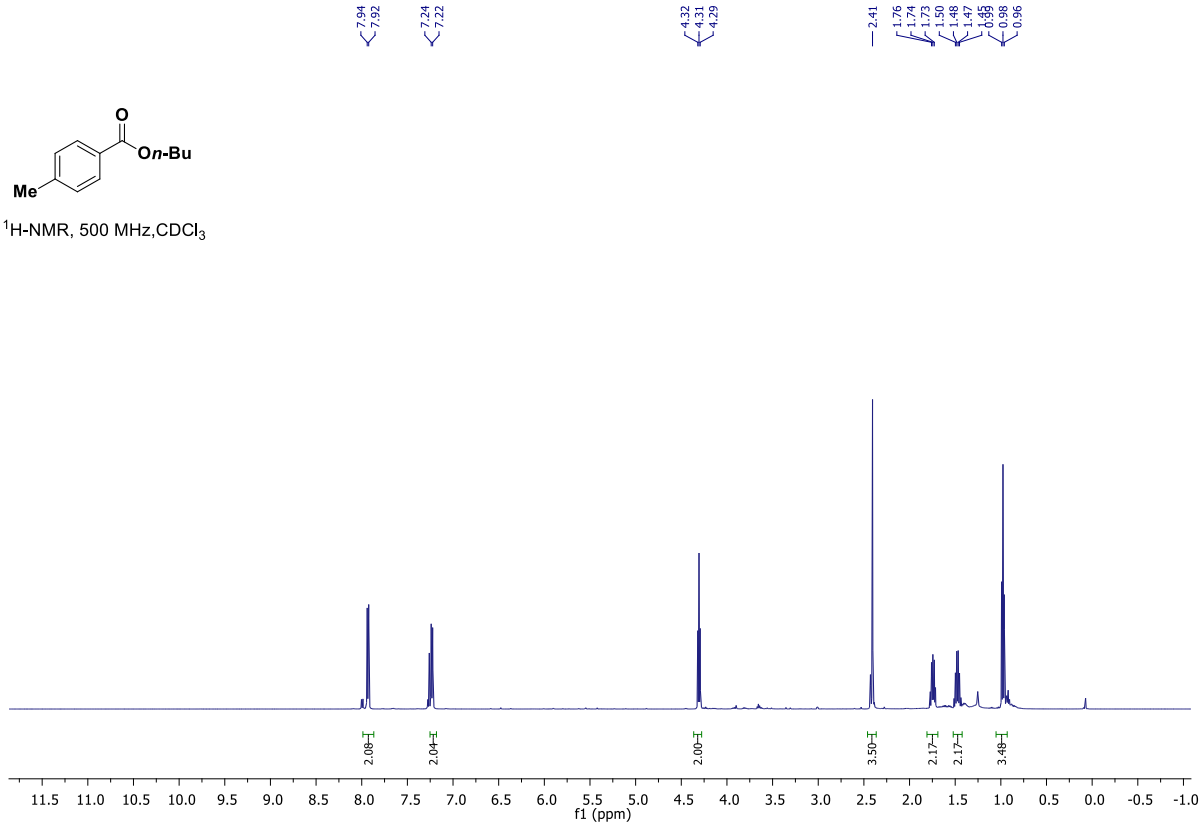
^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **31**

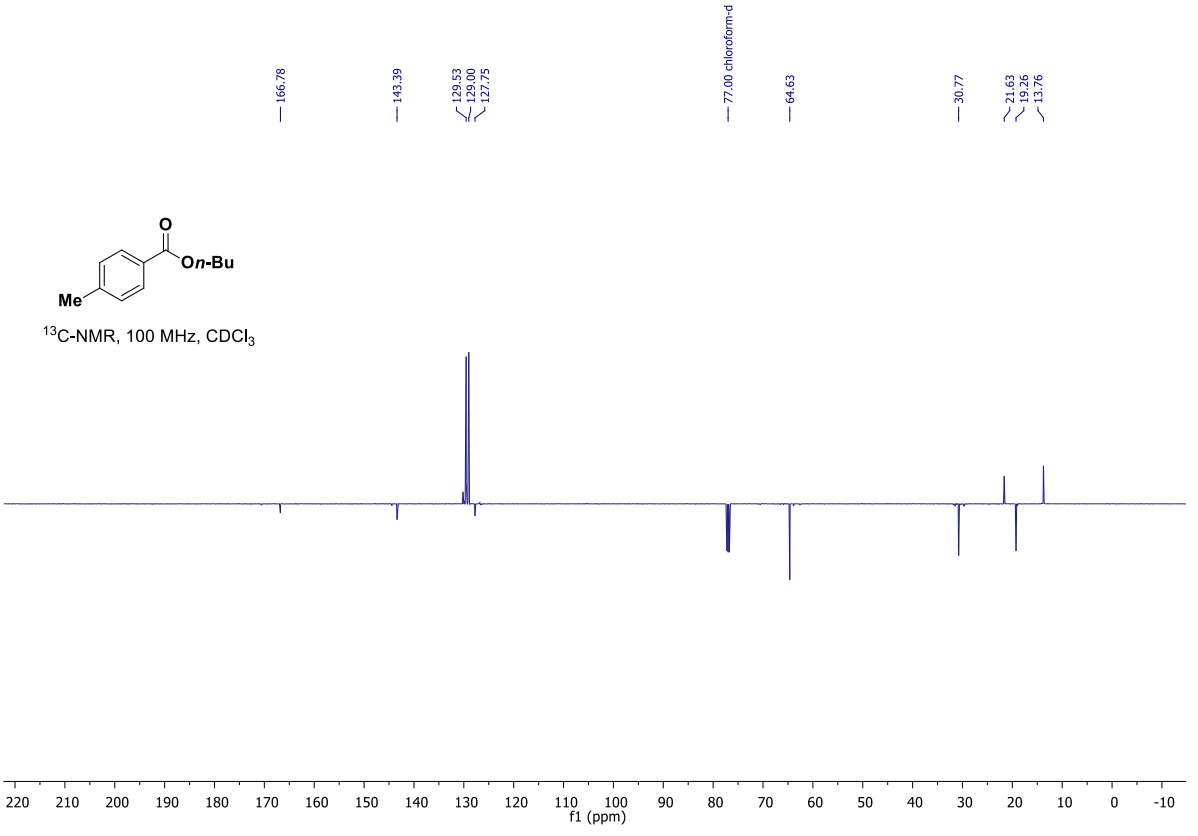

8.06
8.06
8.05
8.04
7.57
7.57
7.56
7.55
7.54
7.54
7.53
7.45
7.44
7.42
7.26 Chloroform-d
4.30
4.29
4.27
1.83
1.82
1.80
1.79
1.78
1.76
1.05
1.04
1.02
O
On-Pr
1H-NMR, 500 MHz,CDCl3
1.96
1.00
2.01
2.00
2.11
3.04
f1 (ppm)


166.68
132.77
130.50
129.50
128.29
77.00 chloroform-d
66.51
22.09
10.49
O
On-Pr
13C-NMR, 100 MHz, CDCl3
f1 (ppm)

Compound **32**

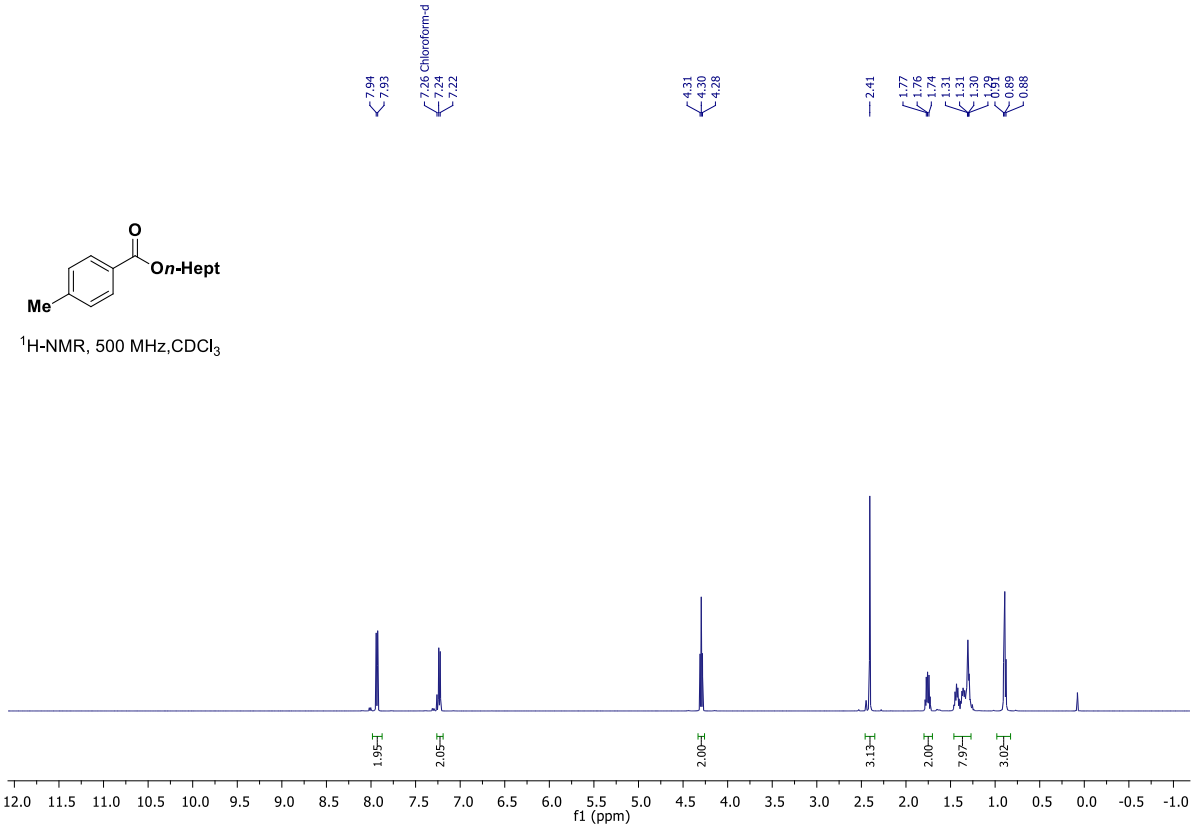


^{1}H-NMR, 500 MHz,$CDCl_3$

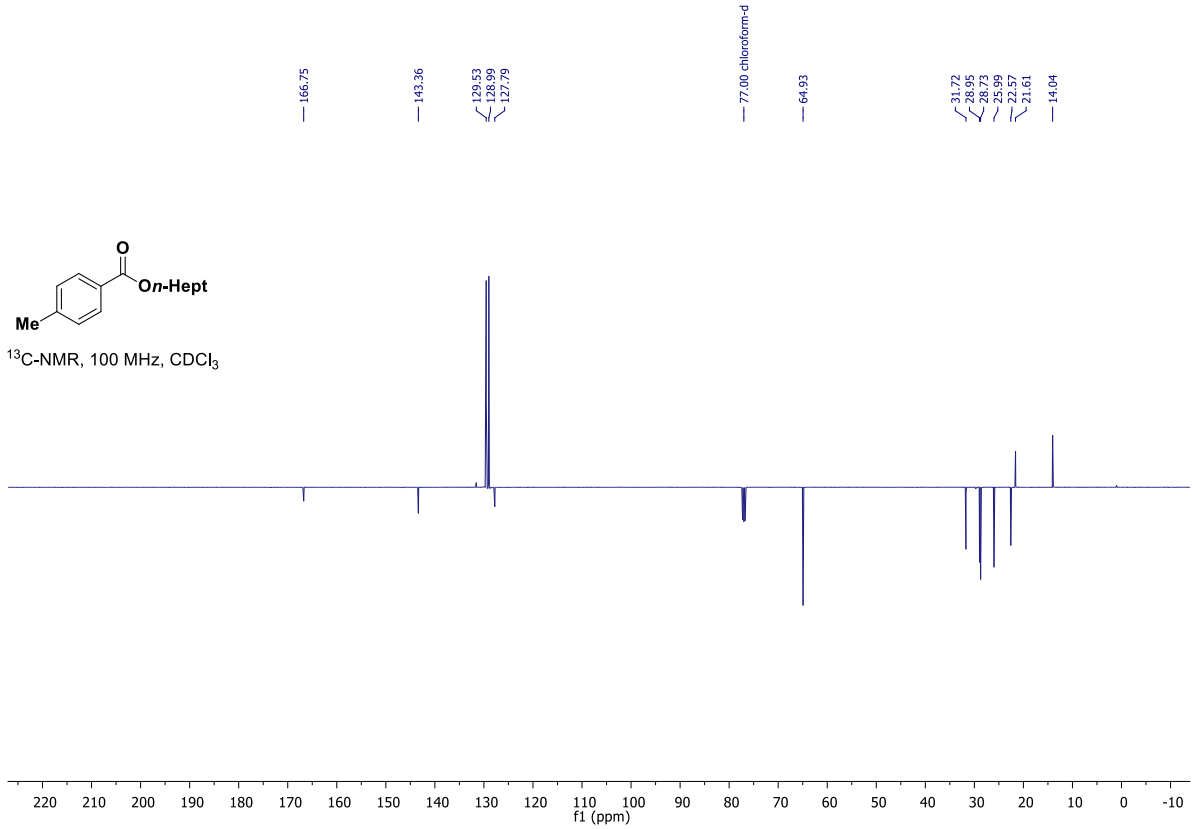


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **33**

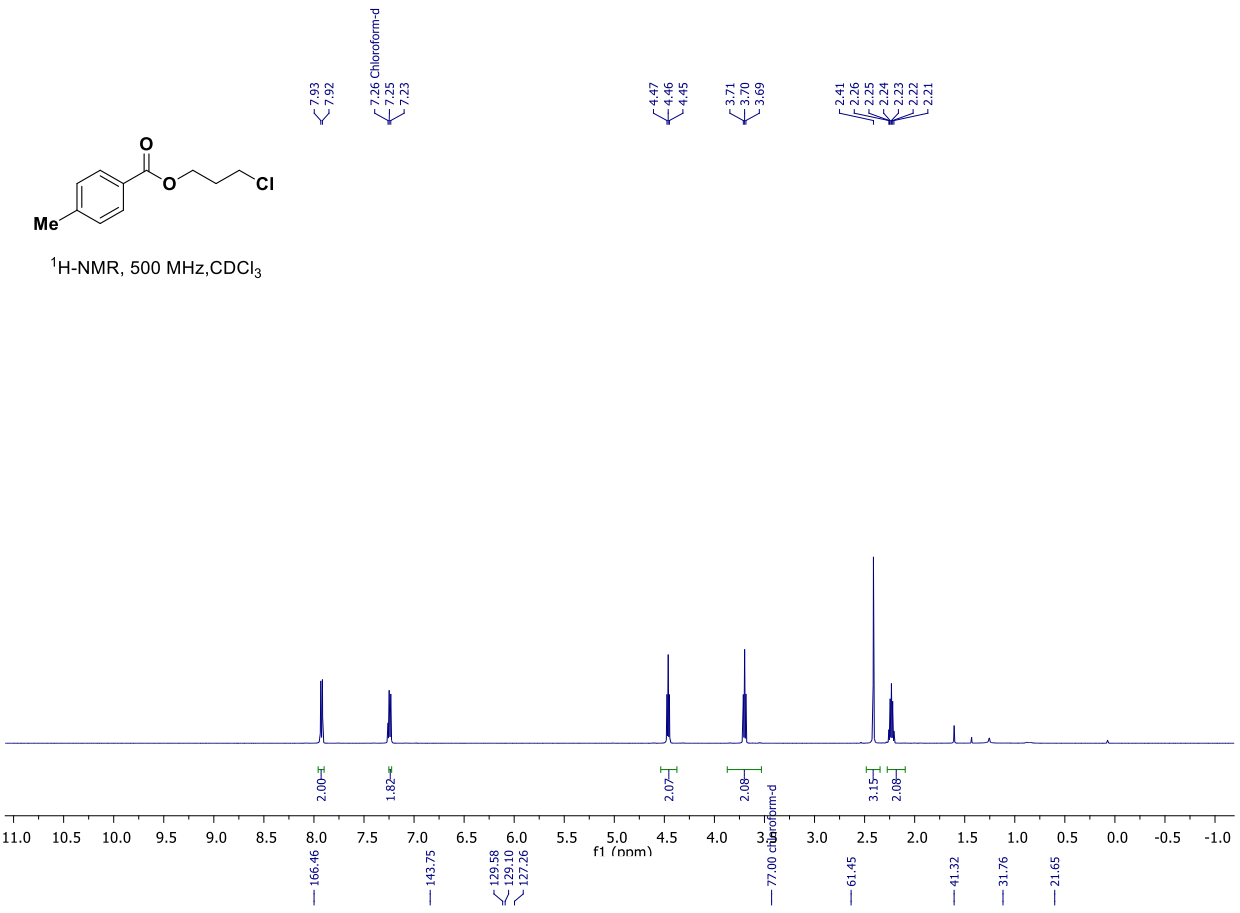


^{1}H-NMR, 500 MHz,$CDCl_3$

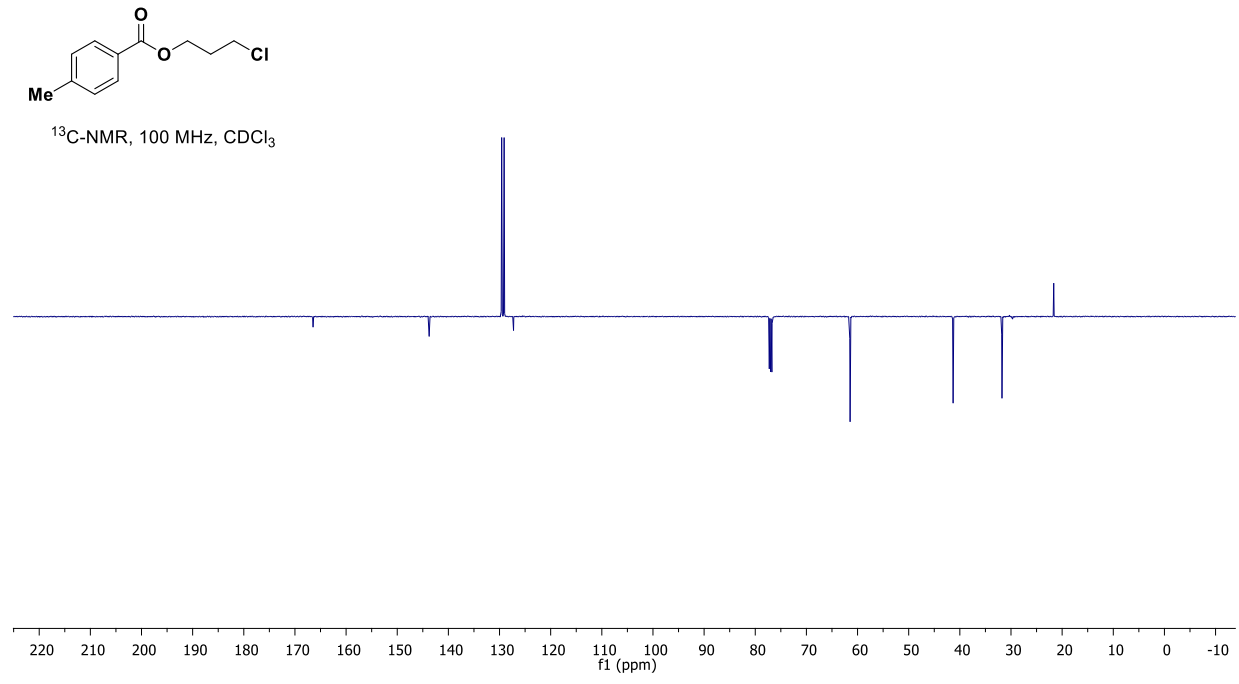


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **34**

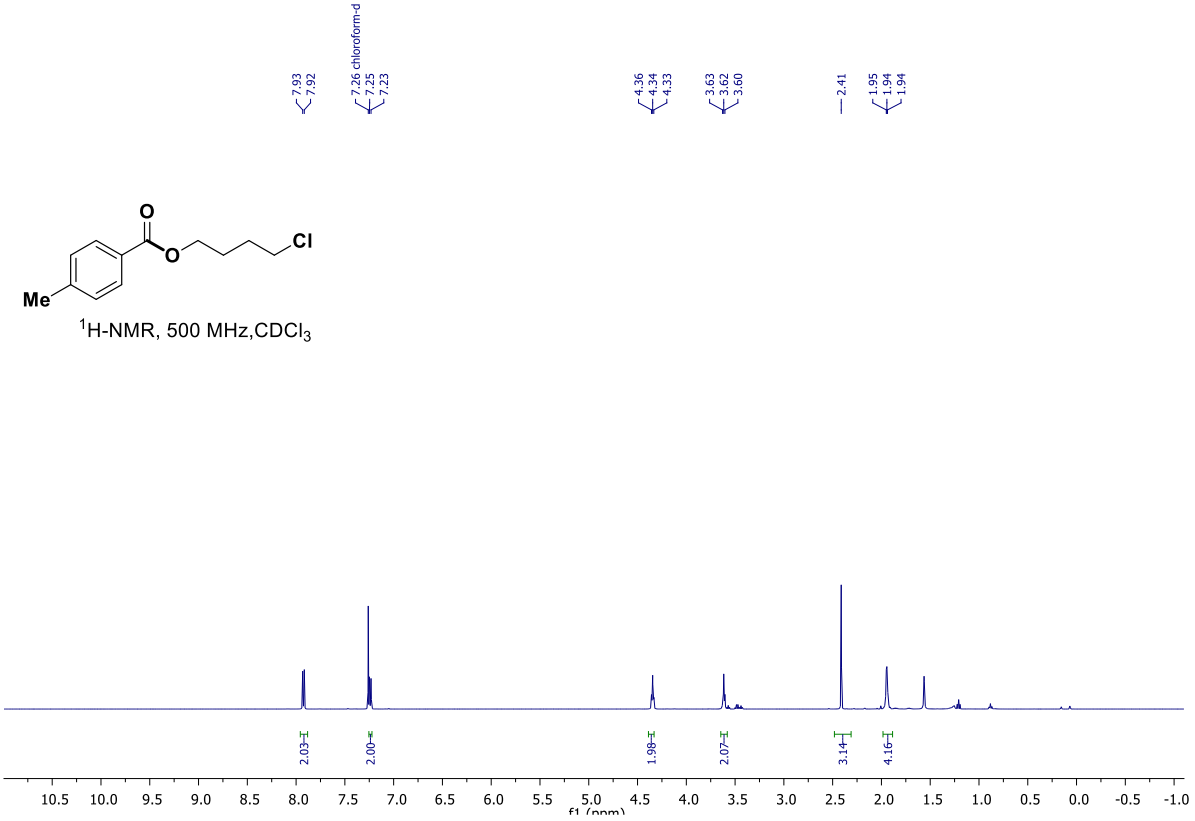


^{1}H-NMR, 500 MHz,$CDCl_3$

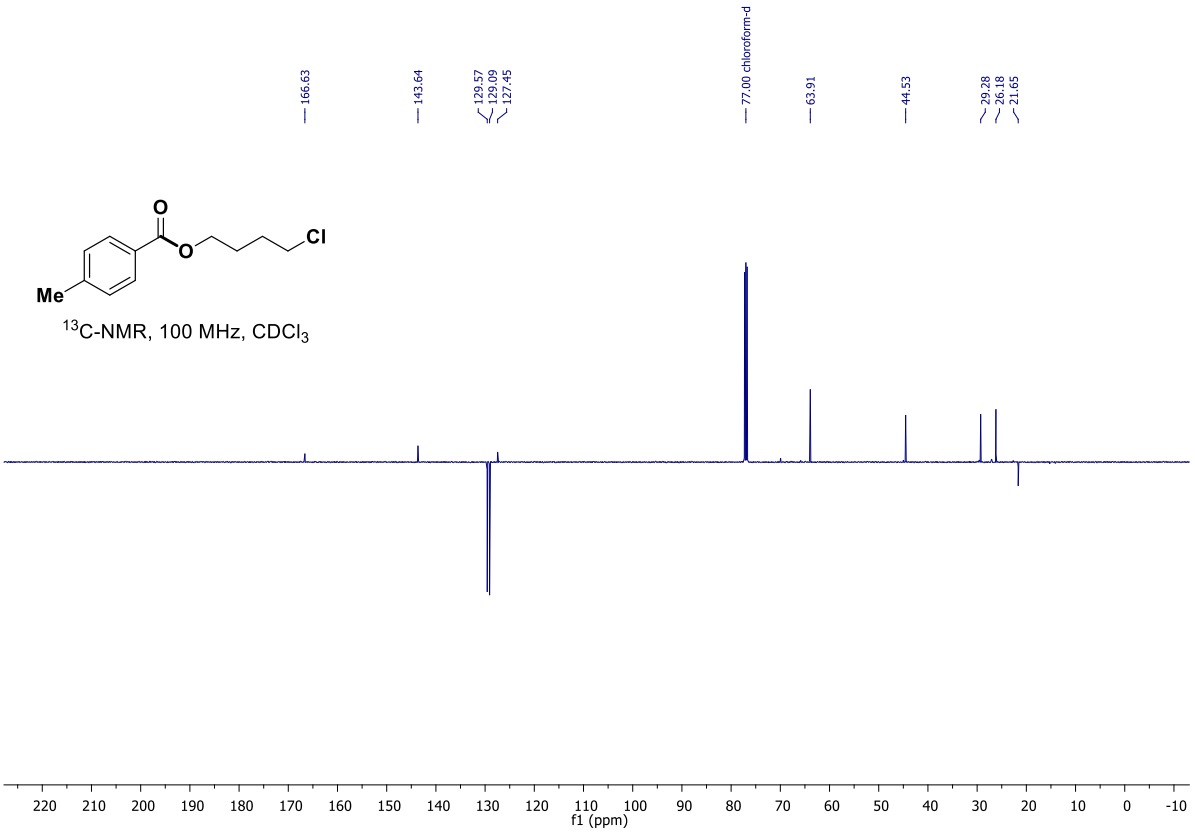


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **35**

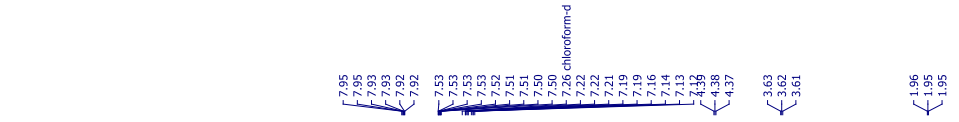


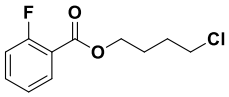
^{1}H-NMR, 500 MHz,$CDCl_3$



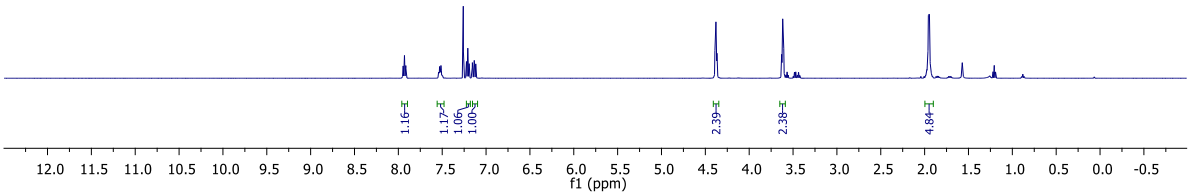
^{13}C-NMR, 100 MHz, $CDCl_3$

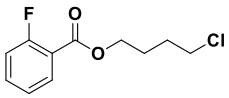
Compound **36**



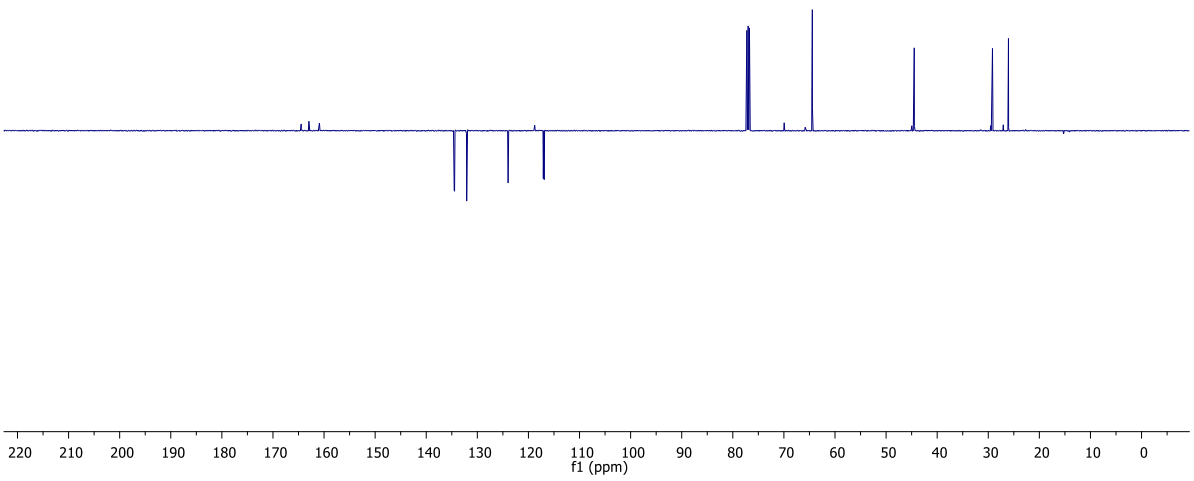


^{1}H-NMR, 500 MHz,$CDCl_3$

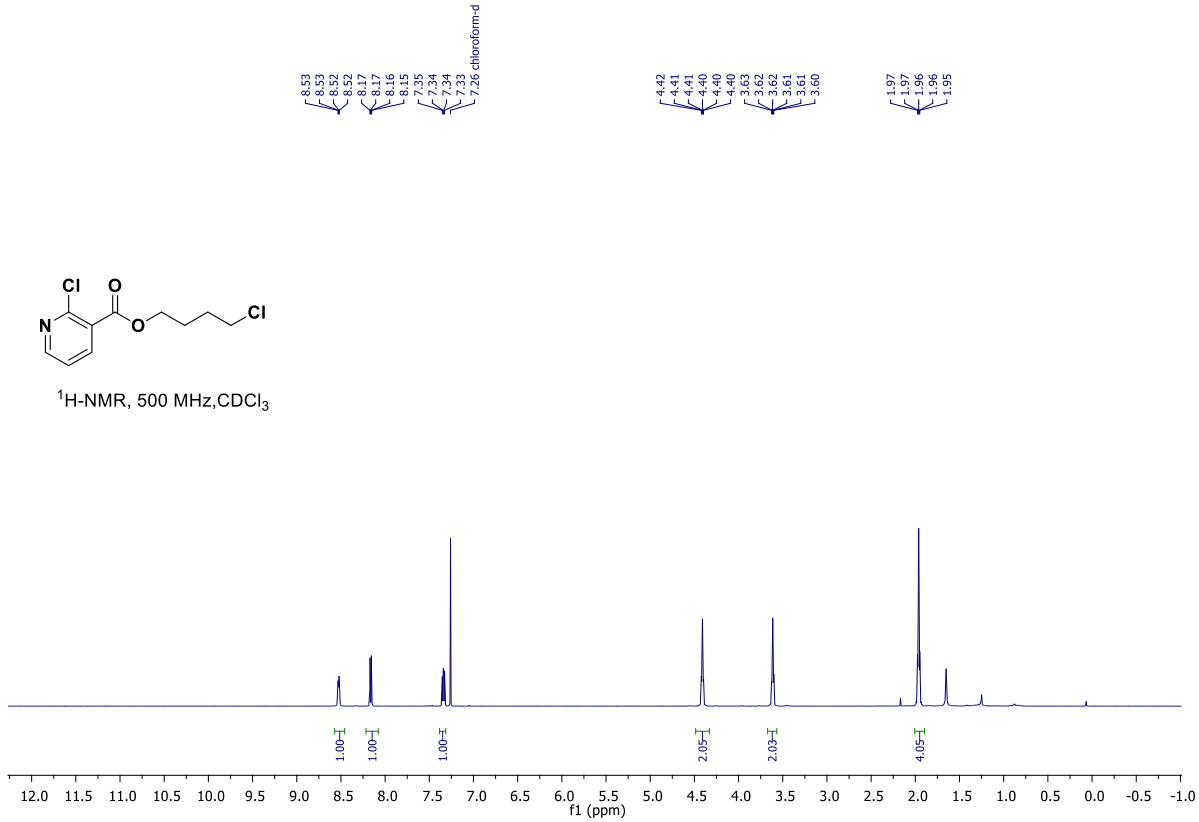




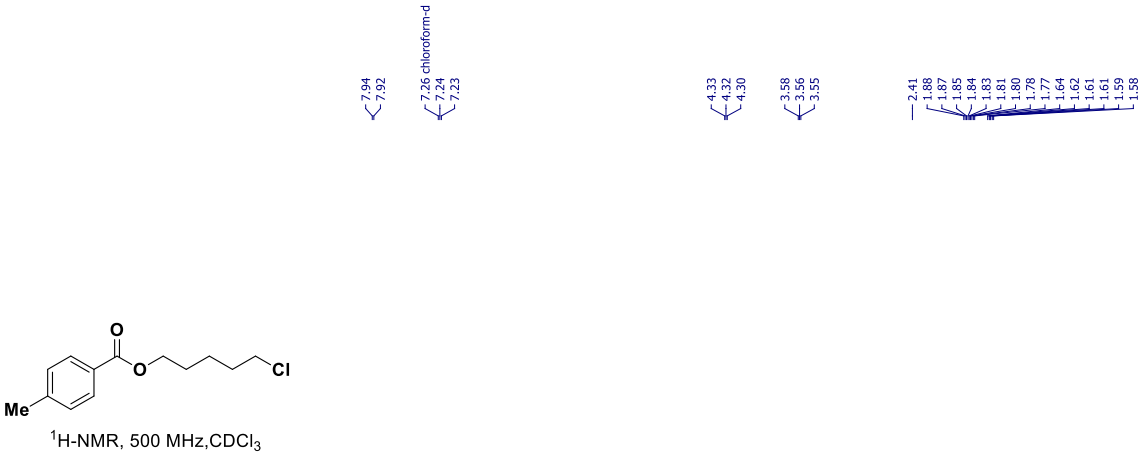
^{13}C-NMR, 100 MHz, $CDCl_3$



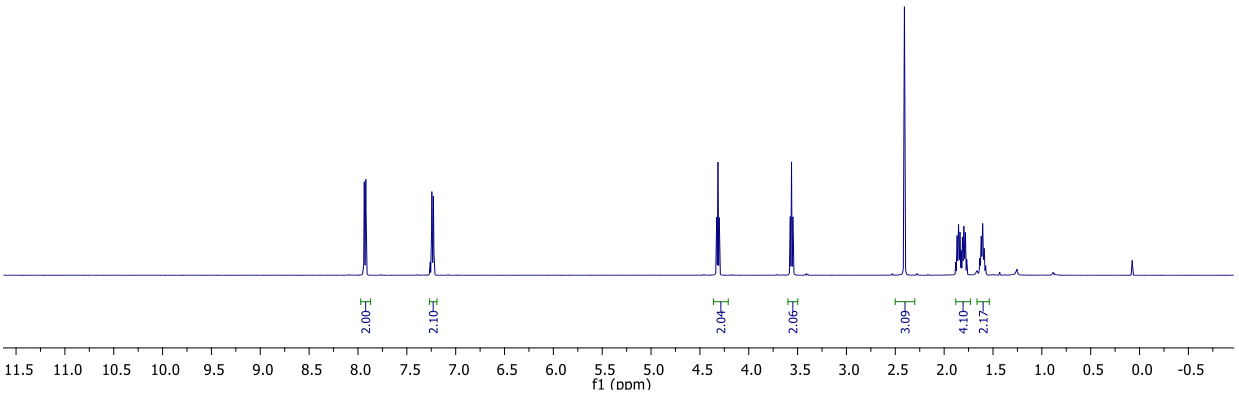
Compound **37**

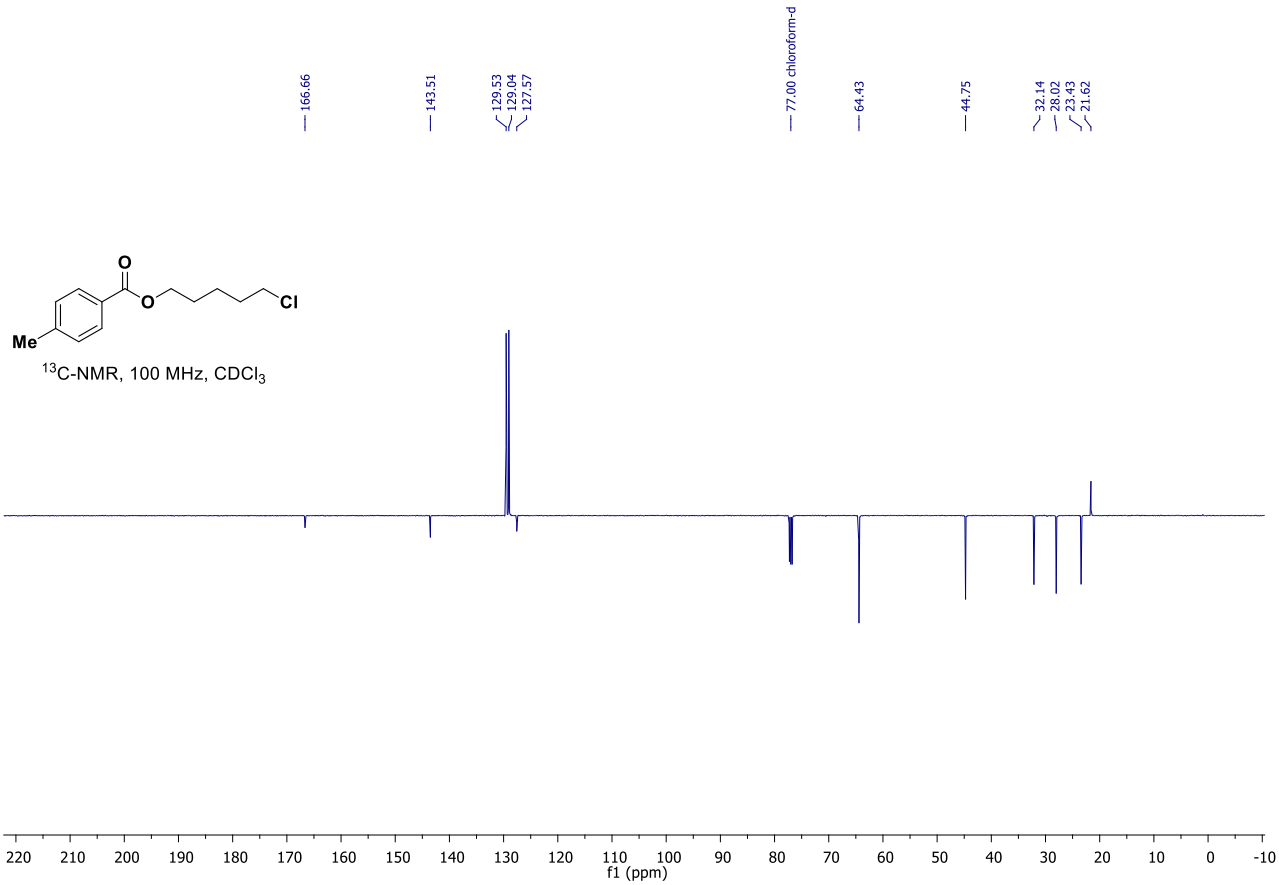

8.53
8.53
8.52
8.52
8.17
8.16
8.15
7.35
7.34
7.34
7.33
7.26 chloroform-d
4.42
4.41
4.41
4.40
4.40
4.40
3.63
3.62
3.62
3.61
3.61
3.60
1.97
1.97
1.96
1.96
1.95
Cl
O
N
O
Cl
1H-NMR, 500 MHz,CDCl3
1.00
1.00
1.00
2.05
2.03
4.05
12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0
f1 (ppm)
164.60
151.89
149.94
140.31
126.99
122.12
77.00 chloroform-d
65.28
44.36
29.12
25.95
Cl
O
N
O
Cl
13C-NMR, 100 MHz, CDCl3
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

Compound **38**



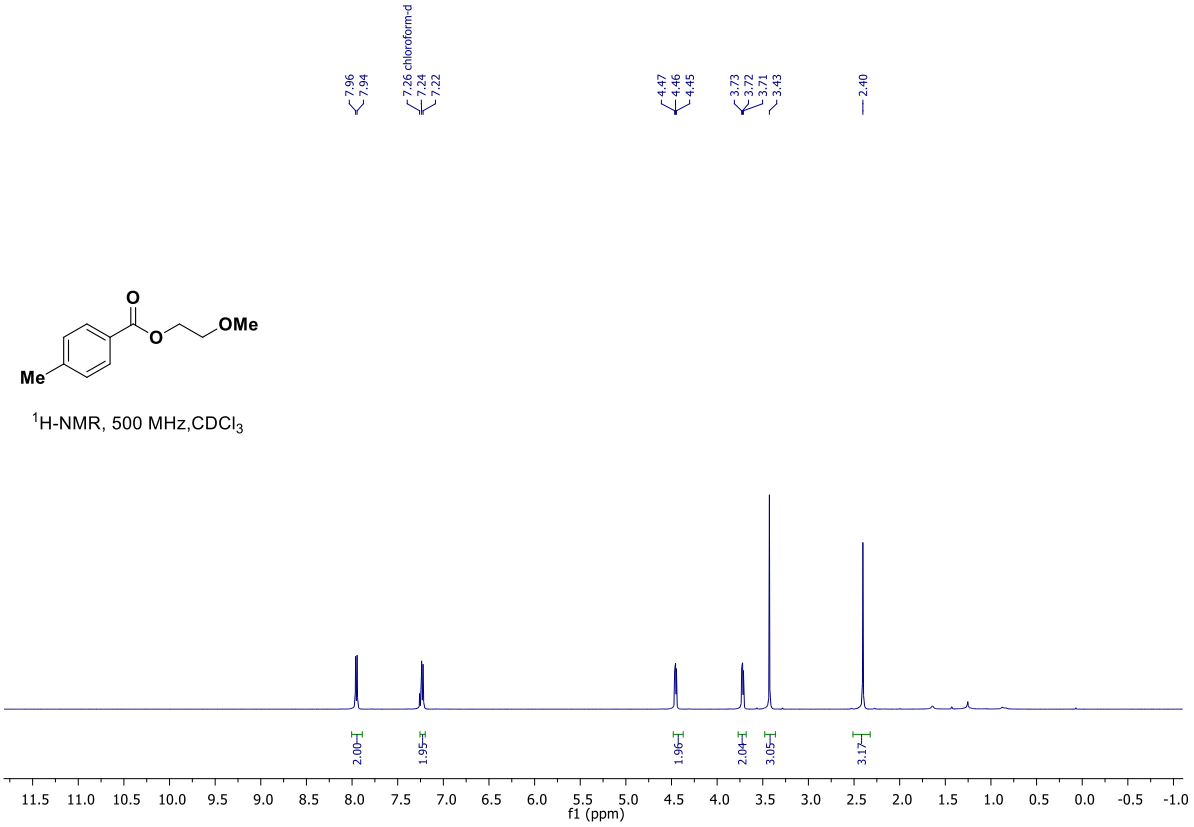
^{1}H-NMR, 500 MHz,$CDCl_3$



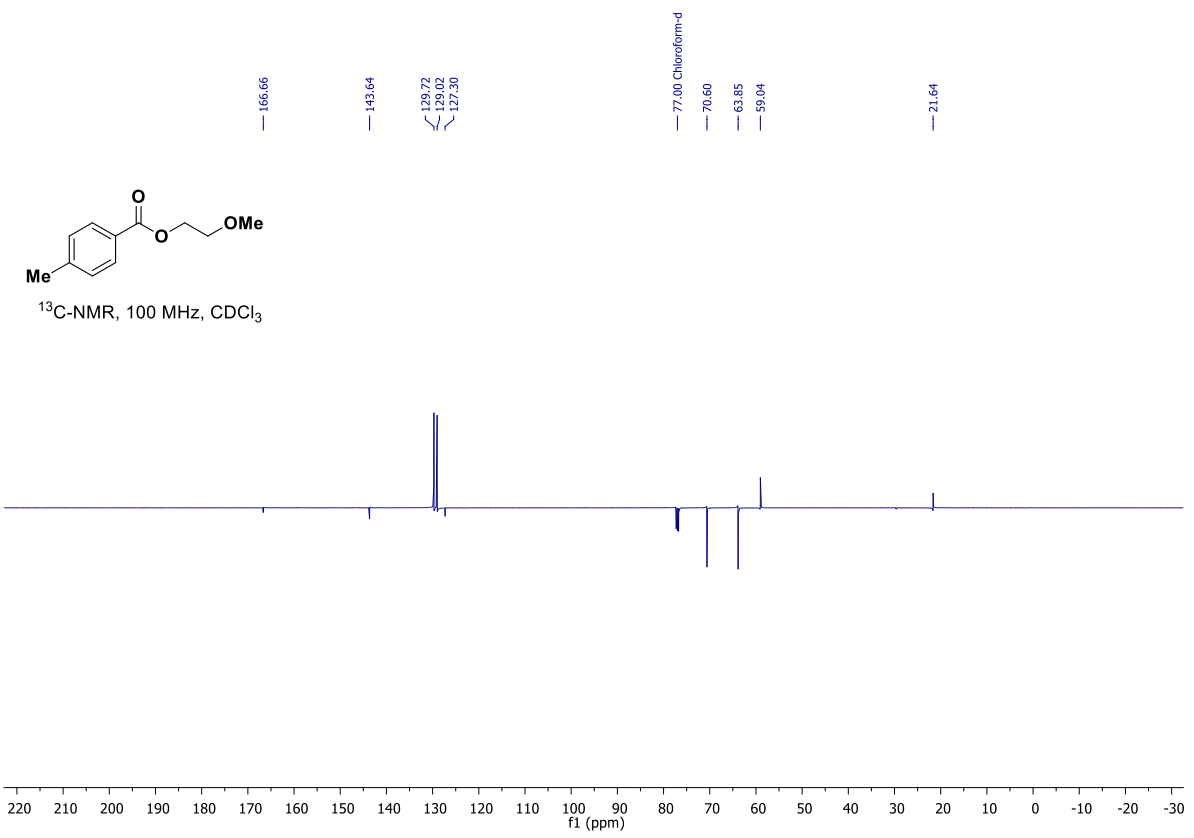


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **39**

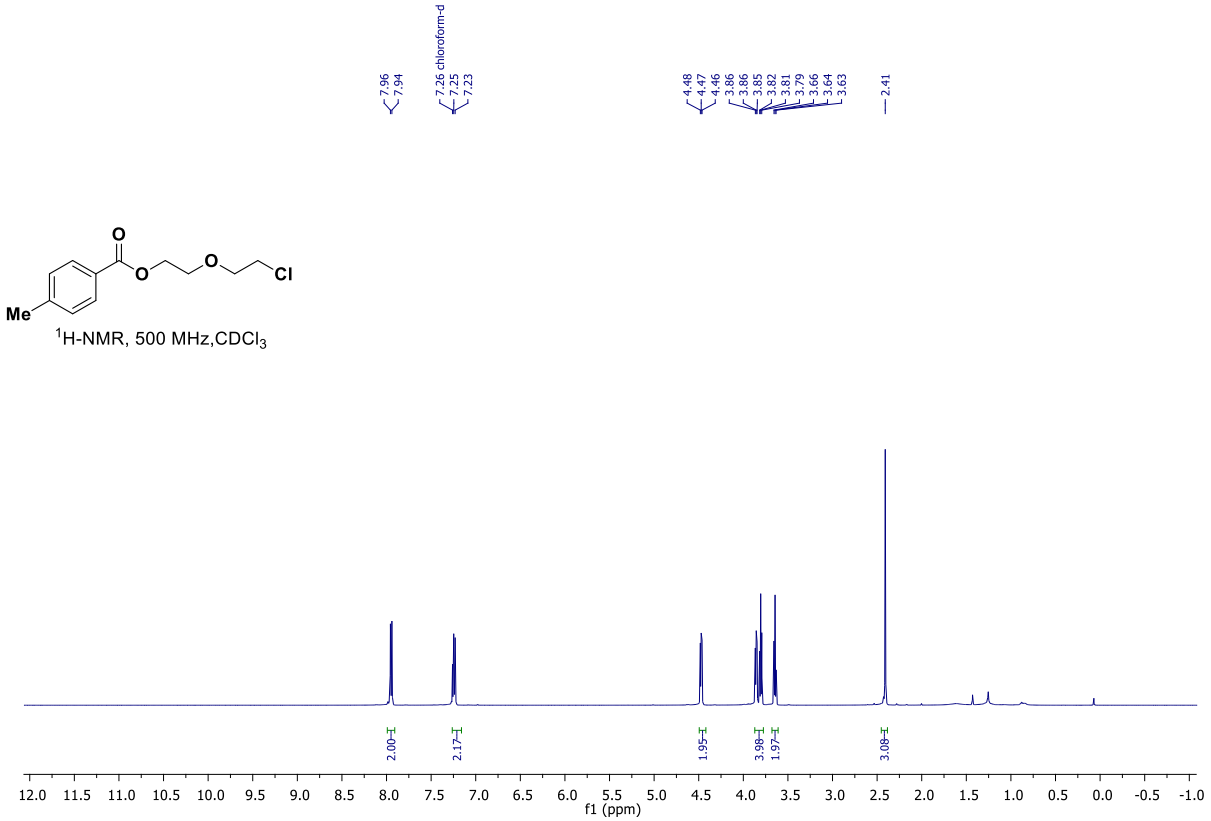


^{1}H-NMR, 500 MHz,$CDCl_3$

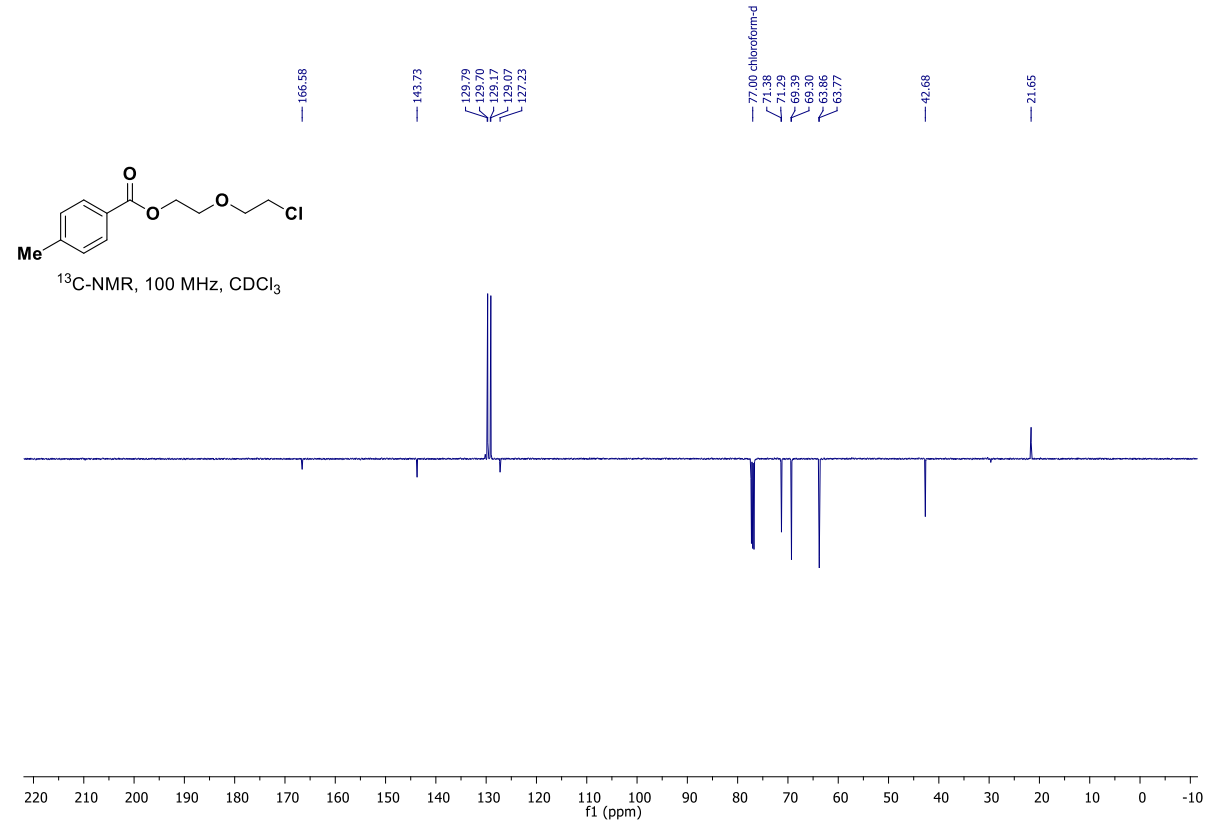


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **40**

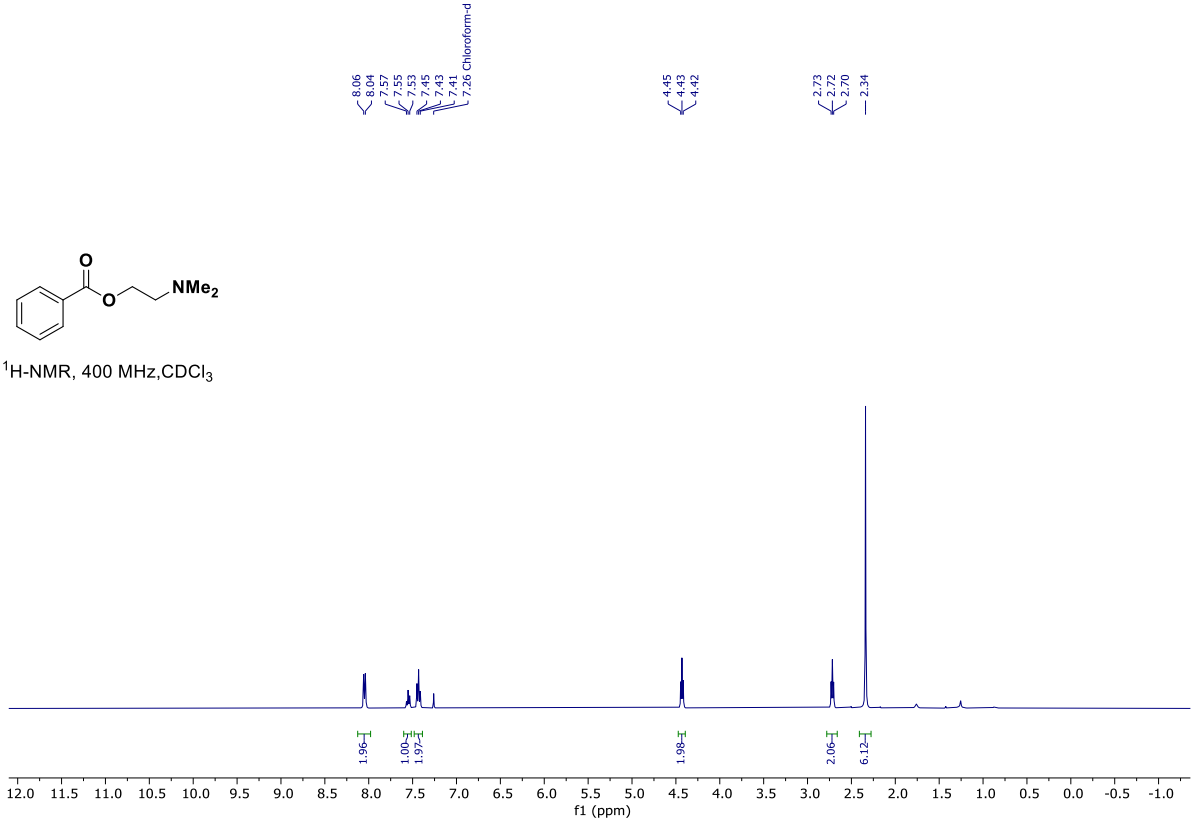


^{1}H-NMR, 500 MHz,$CDCl_3$

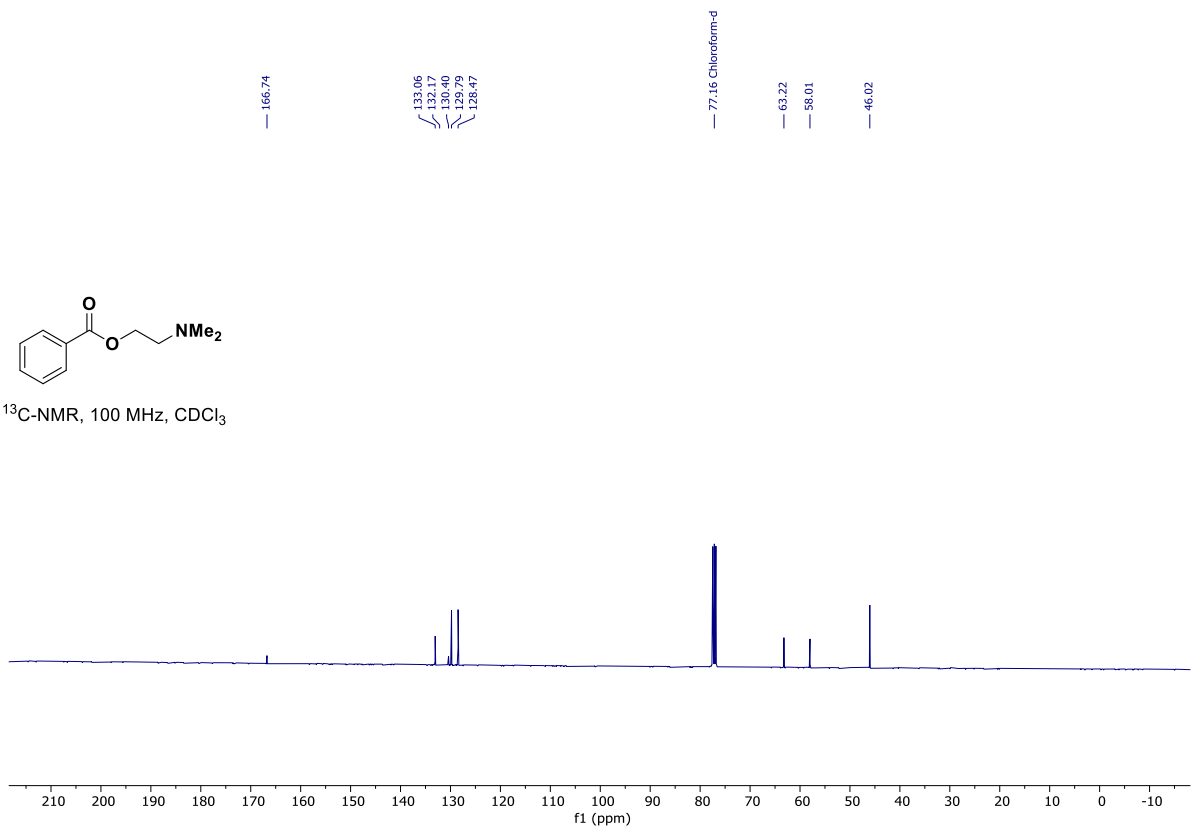


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **41**

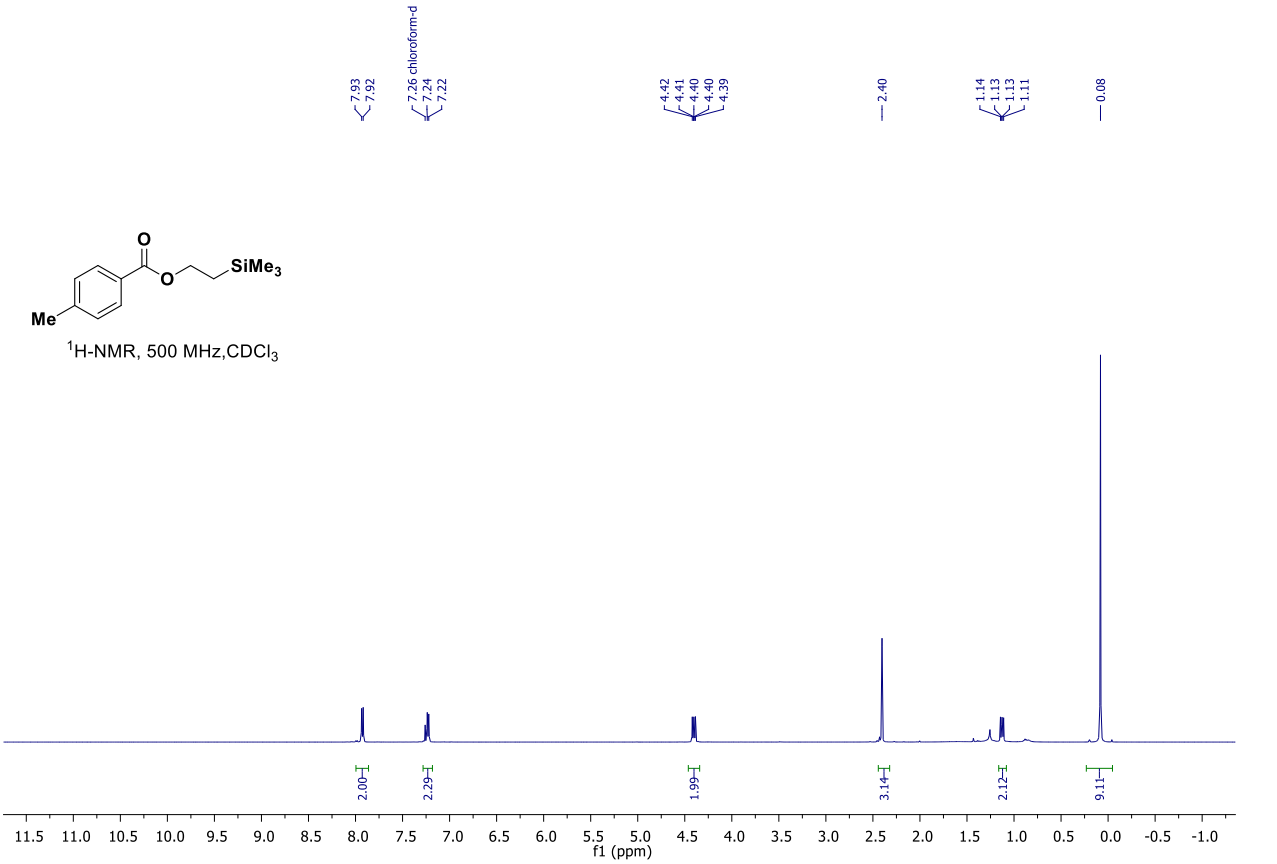


^{1}H-NMR, 400 MHz,$CDCl_3$

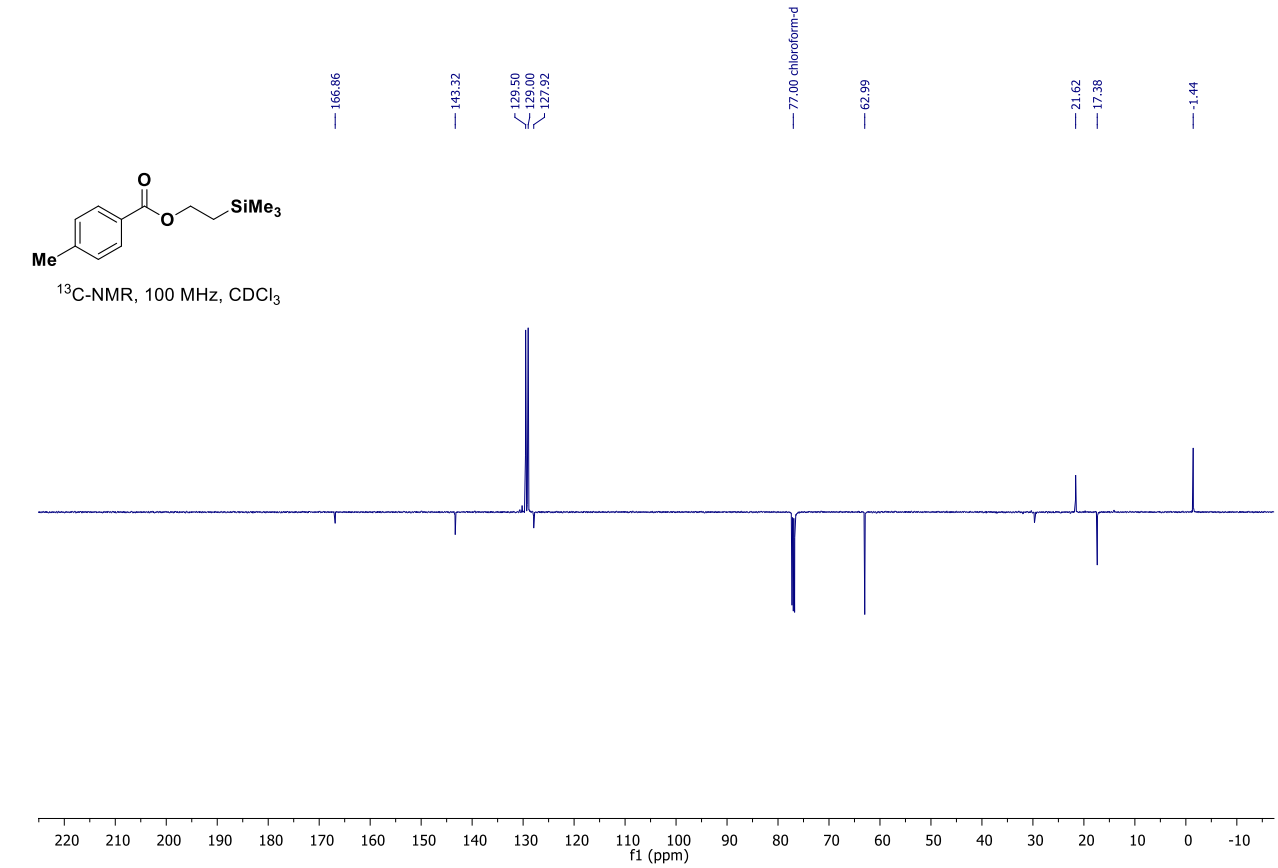


^{13}C-NMR, 100 MHz, $CDCl_3$

Compound **42**

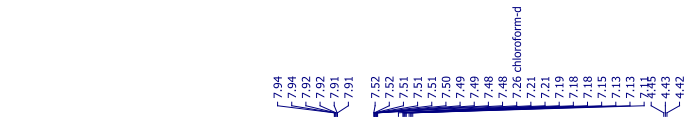


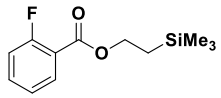
^{1}H-NMR, 500 MHz,$CDCl_3$



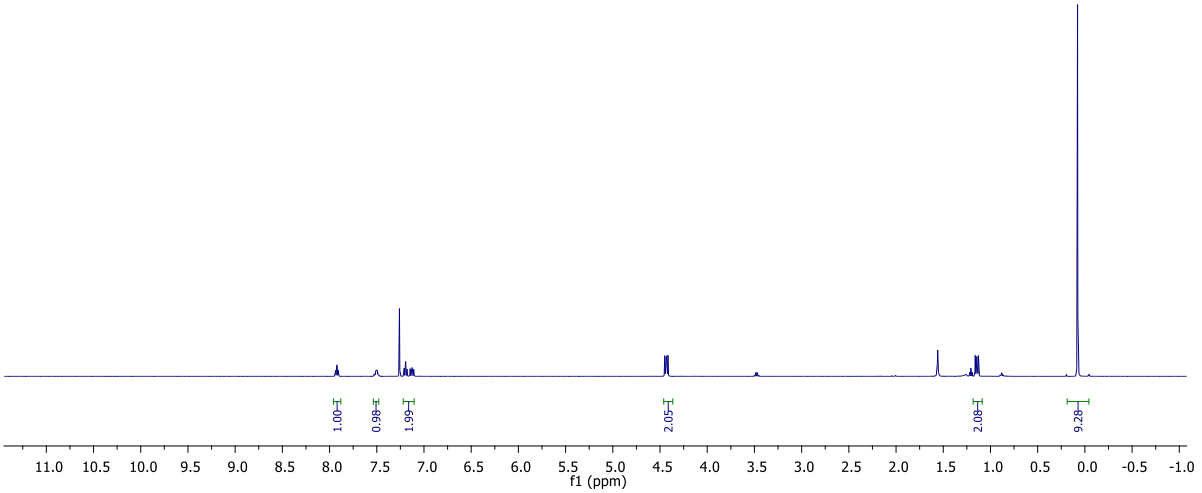
^{13}C-NMR, 100 MHz, $CDCl_3$

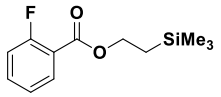
Compound **43**



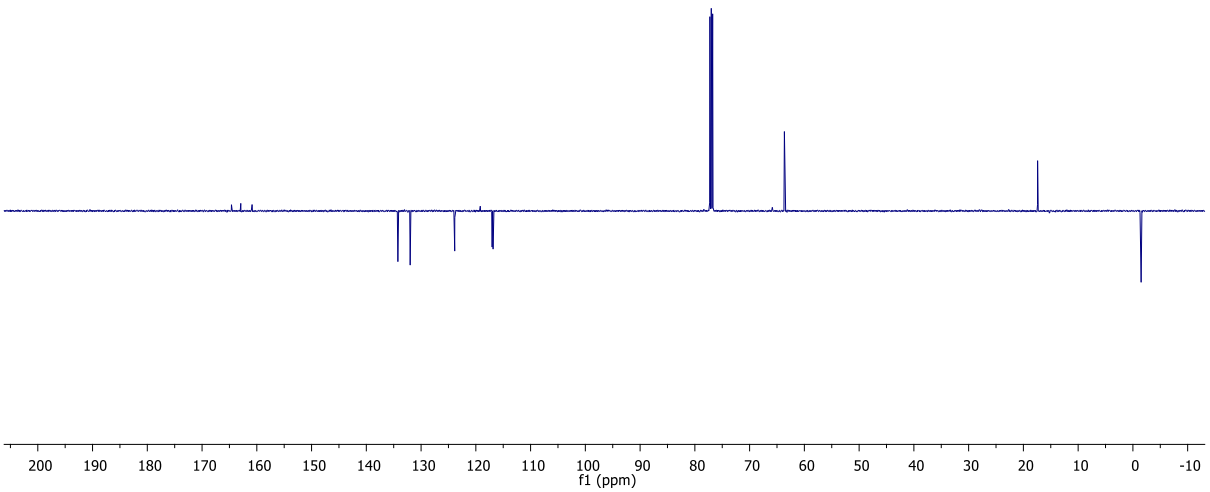


^{1}H-NMR, 500 MHz,$CDCl_3$

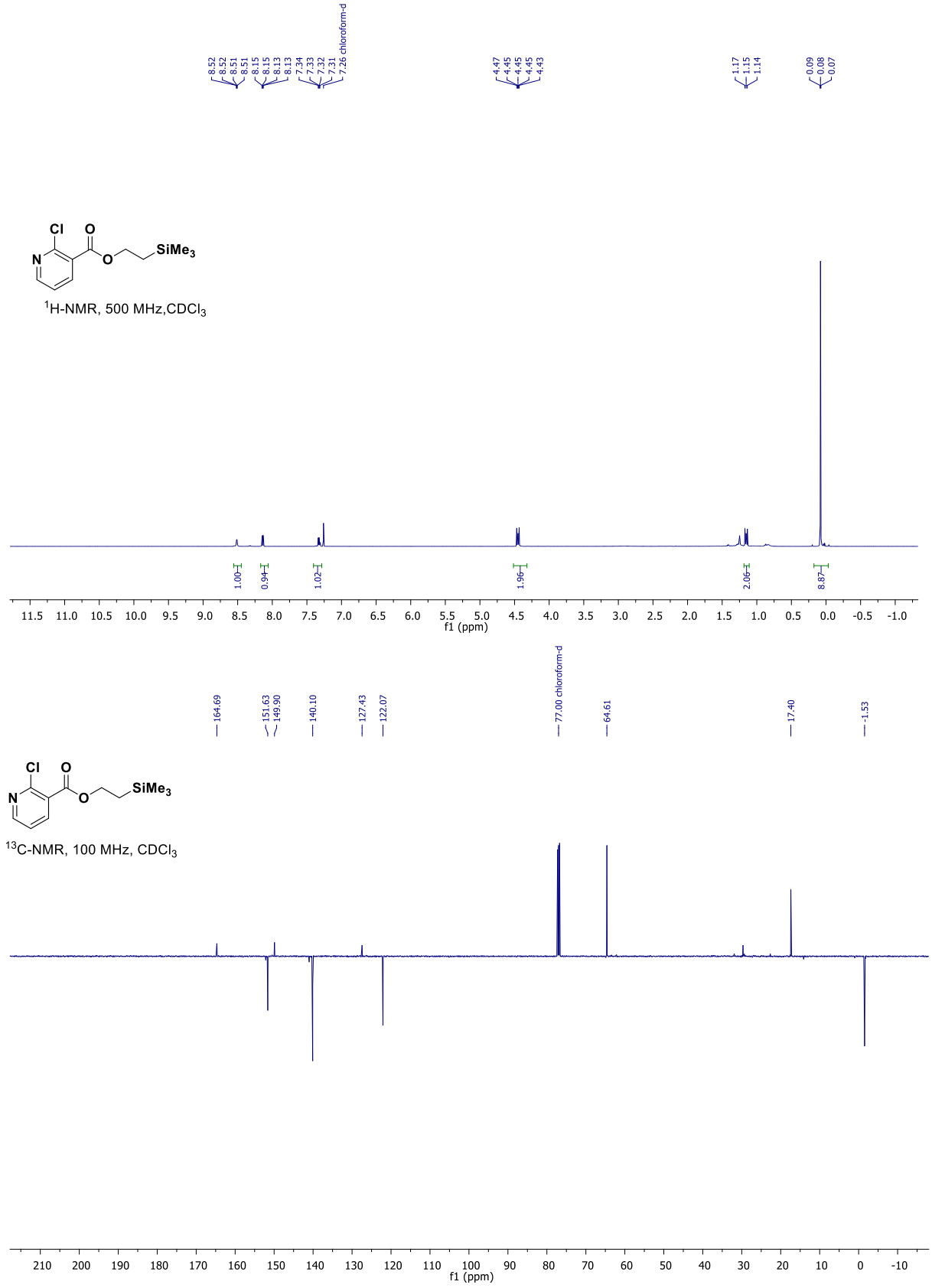




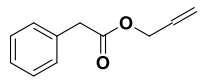
^{13}C-NMR, 100 MHz, $CDCl_3$



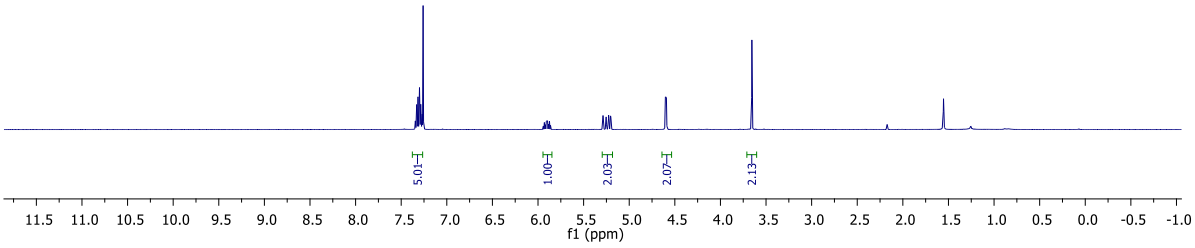
Compound **44**

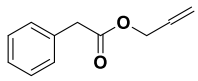

8.52
8.52
8.51
8.51
8.15
8.15
8.13
8.13
7.34
7.33
7.32
7.31
7.26 chloroform-d
4.47
4.45
4.45
4.45
4.43
1.17
1.15
1.14
0.09
0.08
0.07
Cl
O
N
O
SiMe3
1H-NMR, 500 MHz,CDCl3
1.00
0.94
1.02
1.96
2.06
8.87
11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0
f1 (ppm)
164.69
151.63
149.90
140.10
127.43
122.07
77.00 chloroform-d
64.61
17.40
-1.53
Cl
O
N
O
SiMe3
13C-NMR, 100 MHz, CDCl3
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

Compound **45**

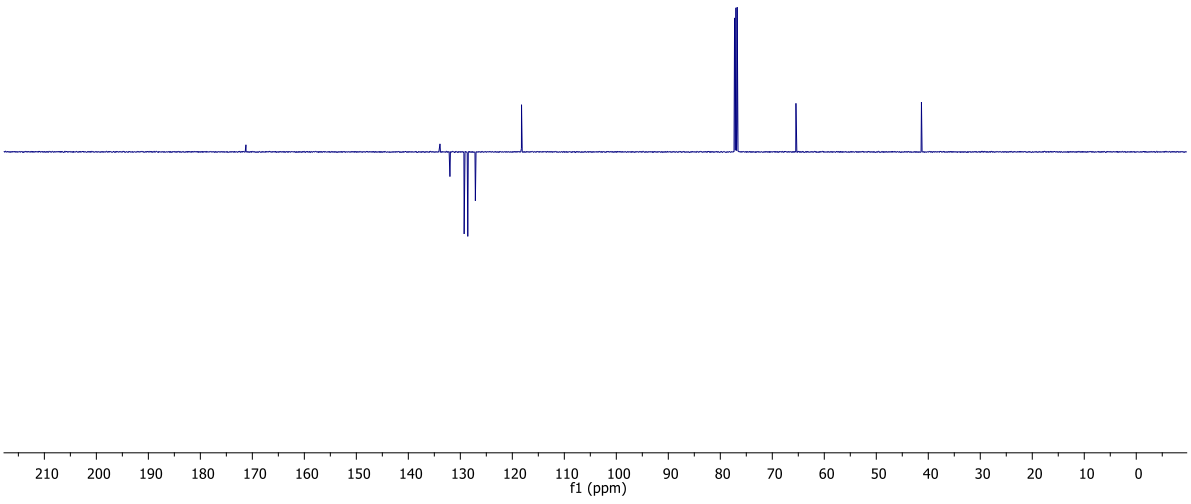


^{1}H-NMR, 500 MHz,$CDCl_3$

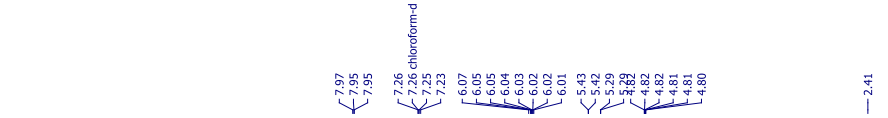


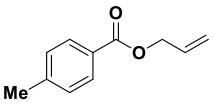


^{13}C-NMR, 100 MHz, $CDCl_3$

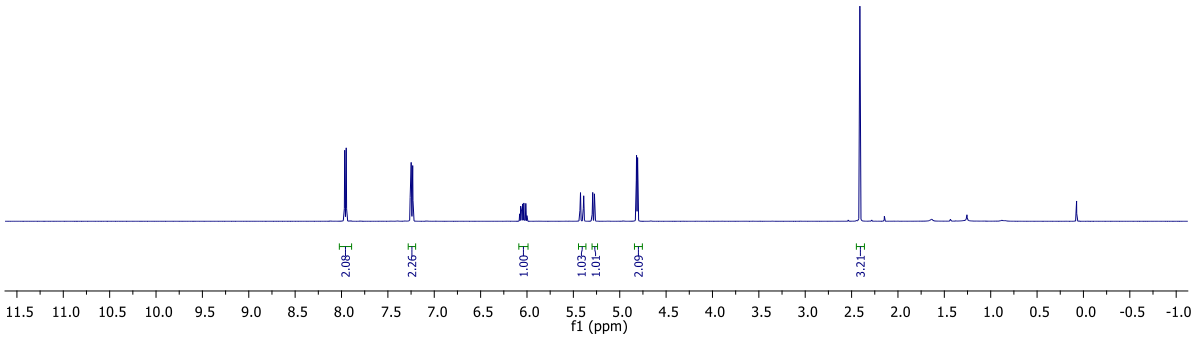


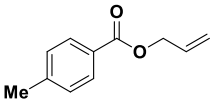
Compound **46**



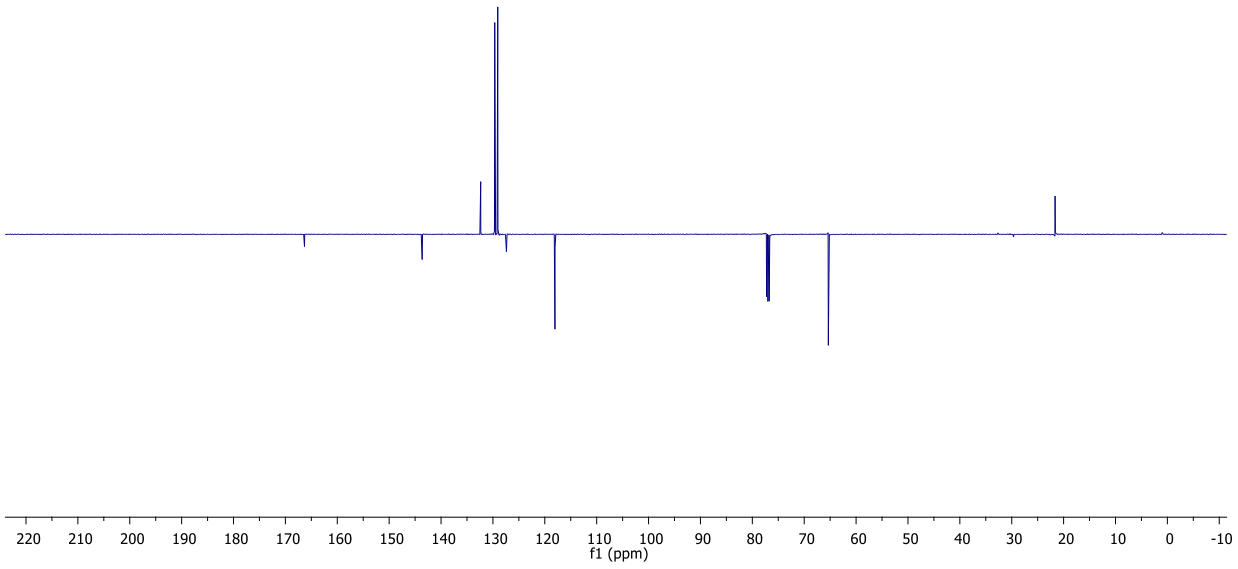


^{1}H-NMR, 500 MHz,$CDCl_3$

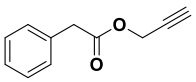




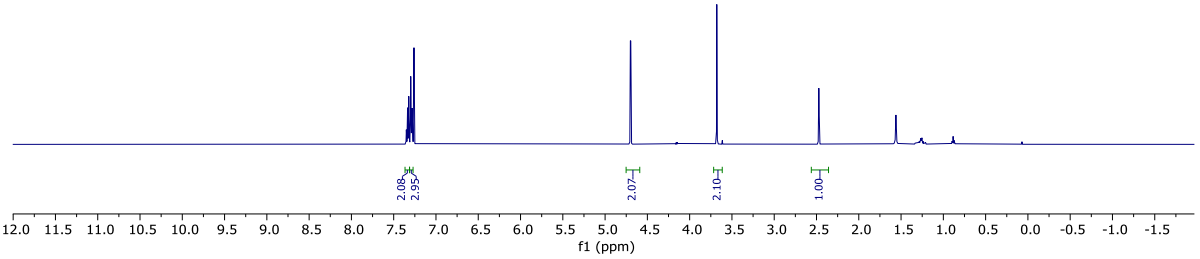
^{13}C-NMR, 100 MHz, $CDCl_3$

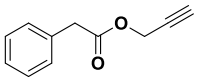


Compound **47**

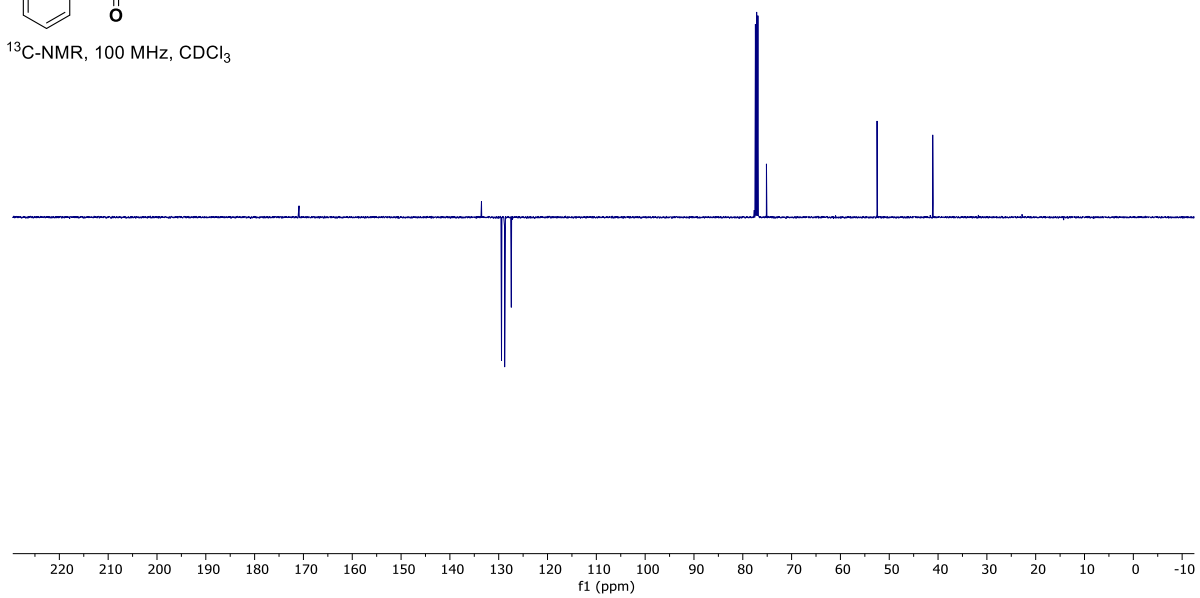


^{1}H-NMR, 500 MHz,$CDCl_3$

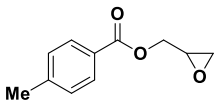




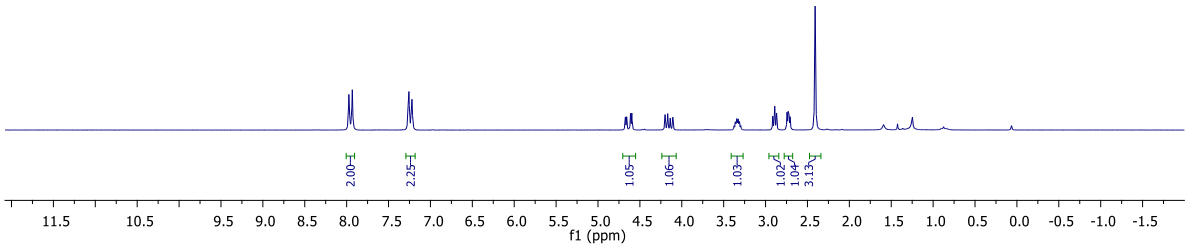
^{13}C-NMR, 100 MHz, $CDCl_3$

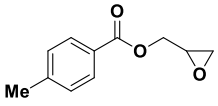


Compound **48**

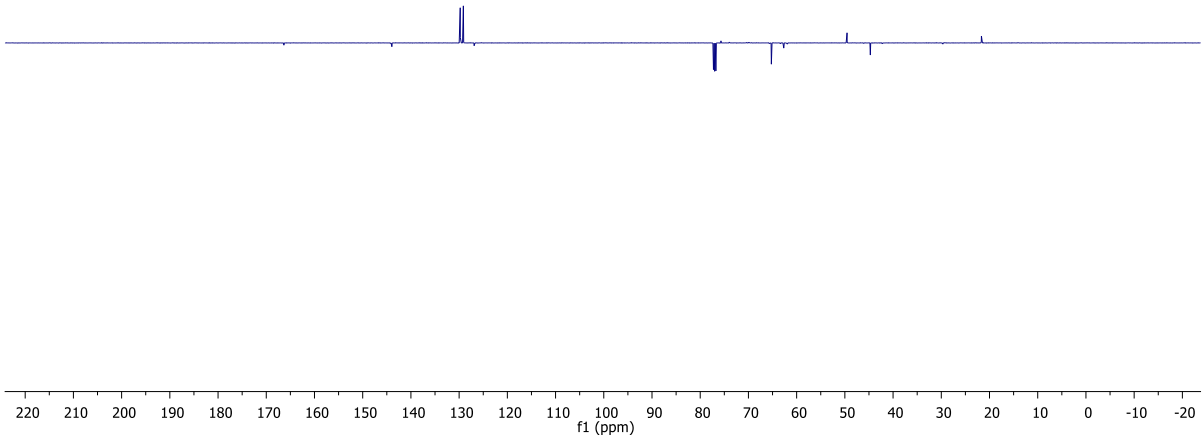


^{1}H-NMR, 500 MHz,$CDCl_3$

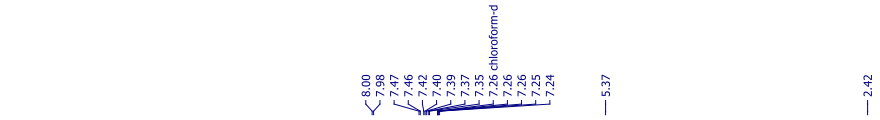


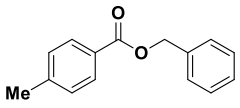


^{13}C-NMR, 100 MHz, $CDCl_3$

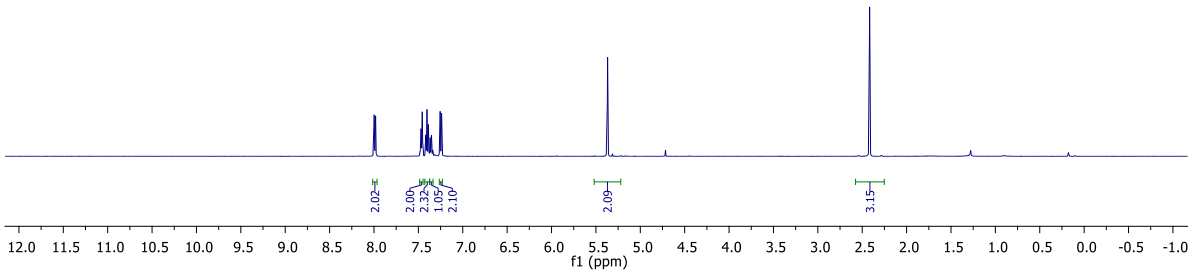


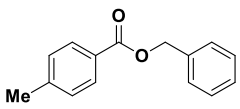
Compound **49**



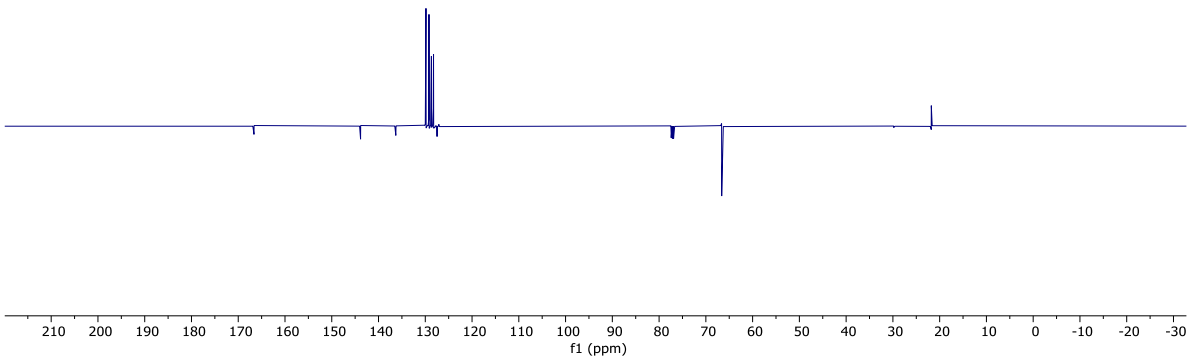


^{1}H-NMR, 500 MHz,$CDCl_3$

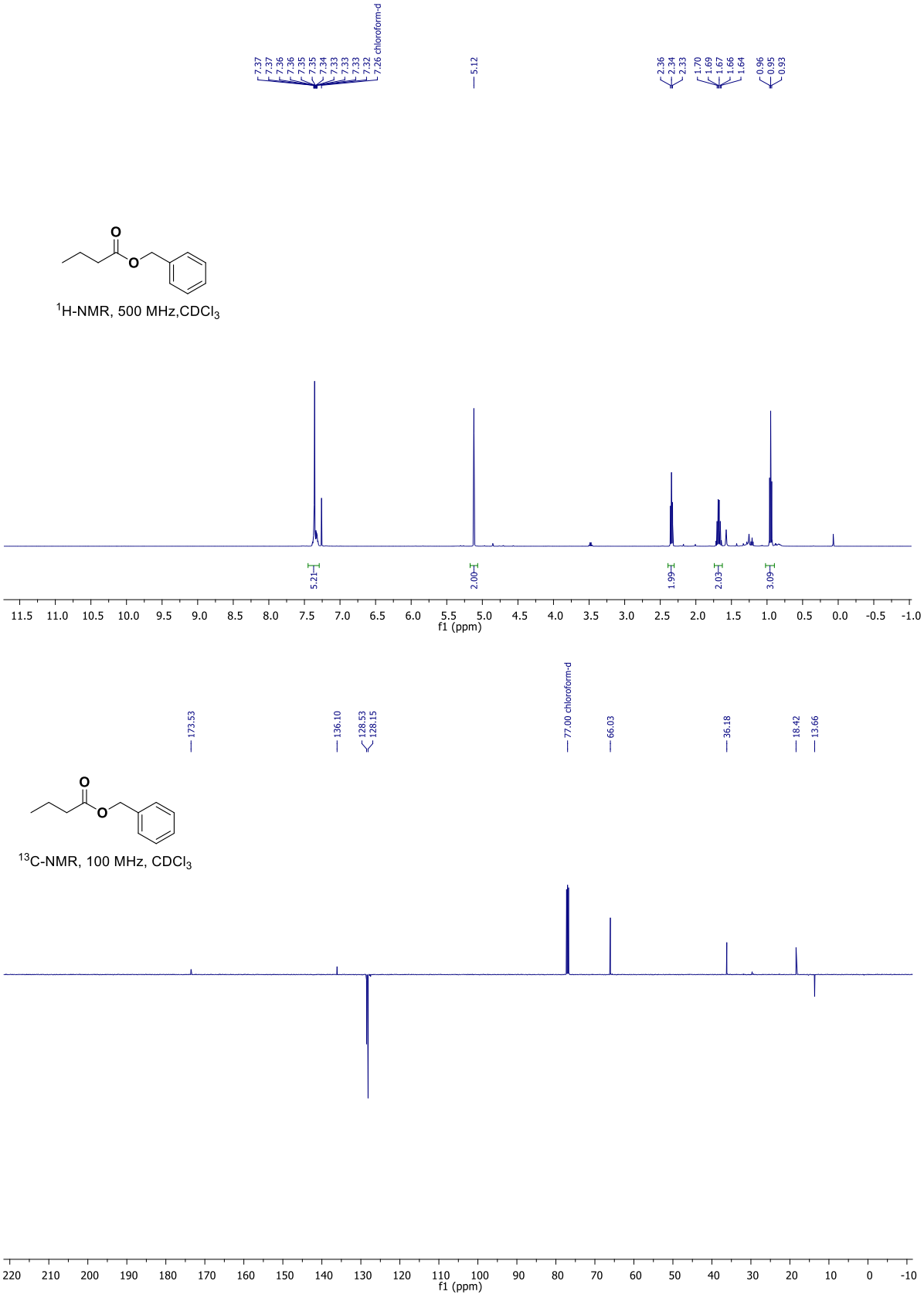




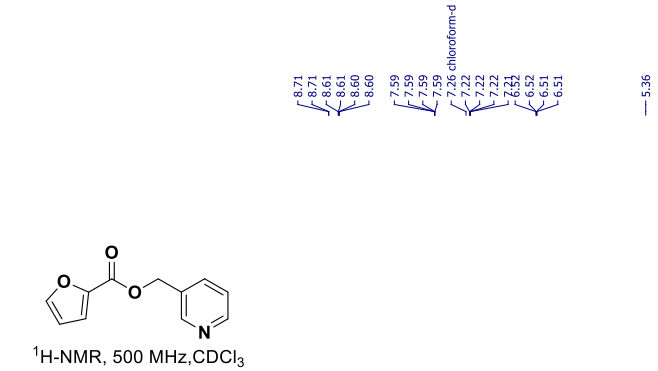
^{13}C-NMR, 100 MHz, $CDCl_3$



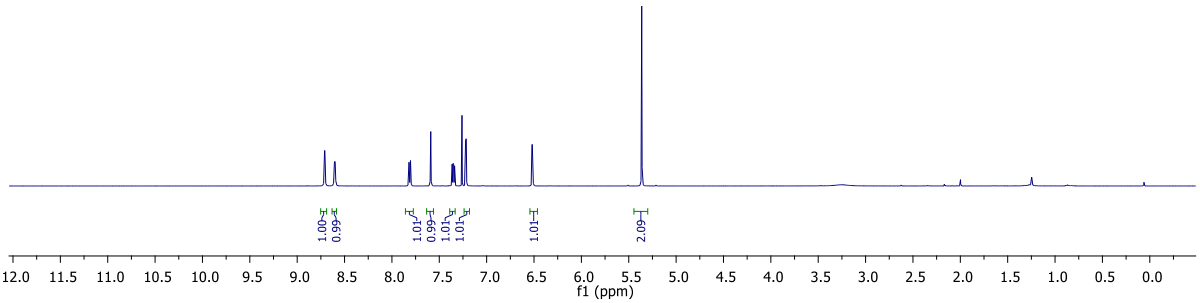
Compound **50**

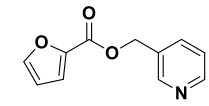

7.37
7.37
7.36
7.36
7.35
7.35
7.34
7.33
7.33
7.32
7.26 chloroform-d
5.12
2.36
2.34
2.33
1.70
1.69
1.67
1.66
1.64
0.96
0.95
0.93
O
O
1H-NMR, 500 MHz,CDCl3
5.21
2.00
1.99
2.03
3.09
11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0
f1 (ppm)
173.53
136.10
128.53
128.15
77.00 chloroform-d
66.03
36.18
18.42
13.66
O
O
13C-NMR, 100 MHz, CDCl3
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

Compound **51**



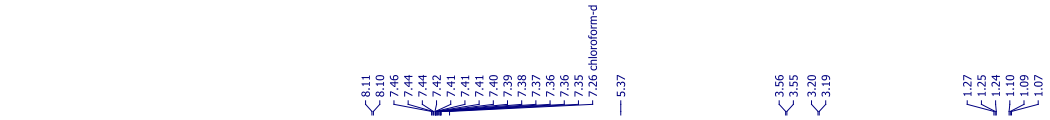
^{1}H-NMR, 500 MHz,$CDCl_3$

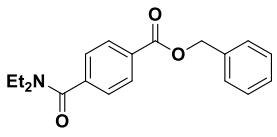




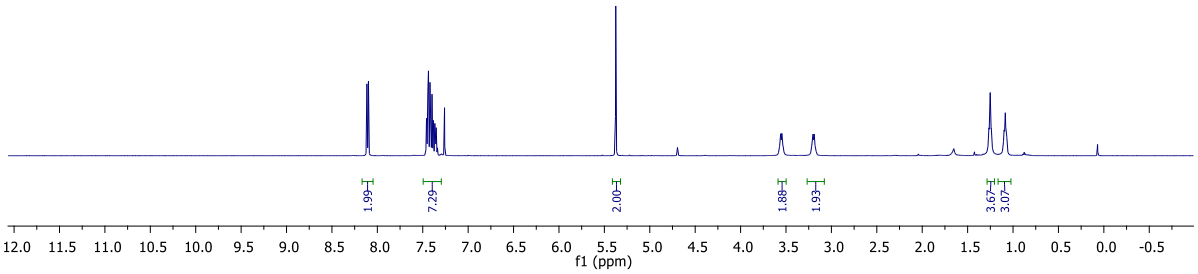
^{13}C-NMR, 100 MHz, $CDCl_3$

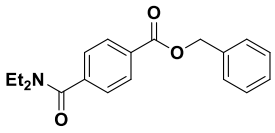
Compound **52**





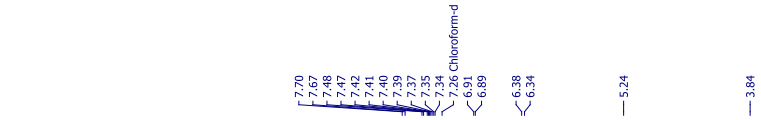
^{1}H-NMR, 500 MHz,$CDCl_3$

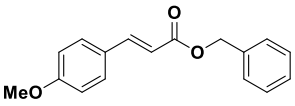




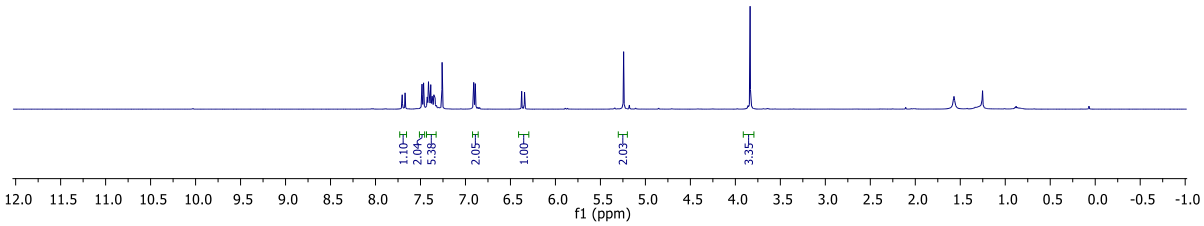
^{13}C-NMR, 100 MHz, $CDCl_3$

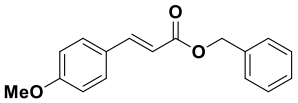
Compound **53**



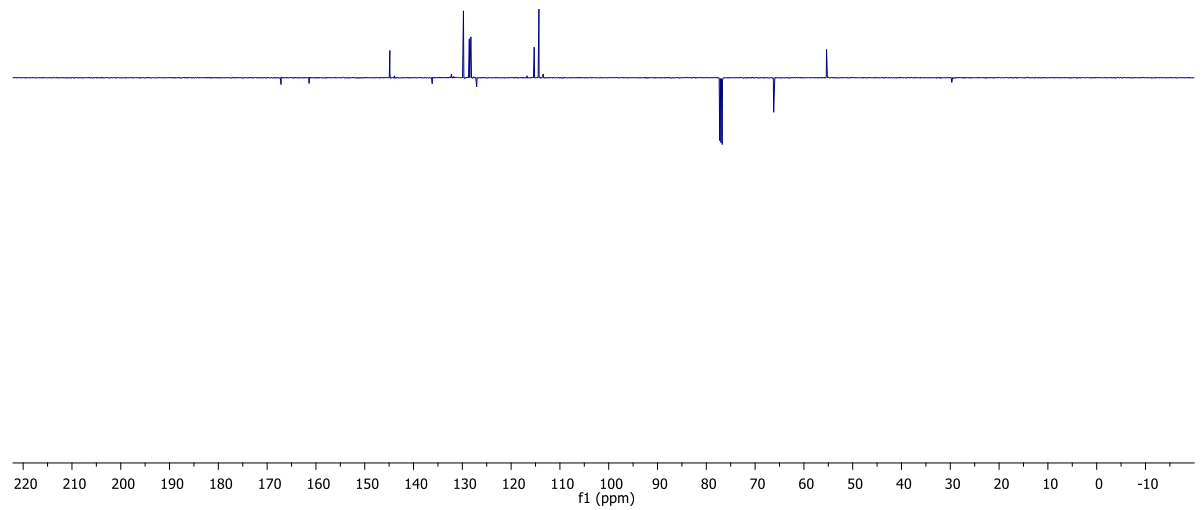


^{1}H-NMR, 500 MHz,$CDCl_3$

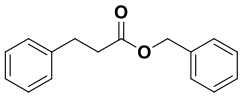




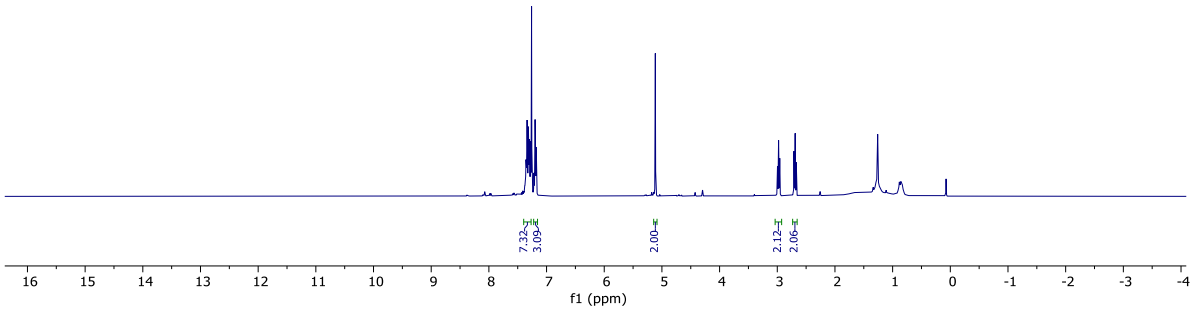
^{13}C-NMR, 100 MHz, $CDCl_3$

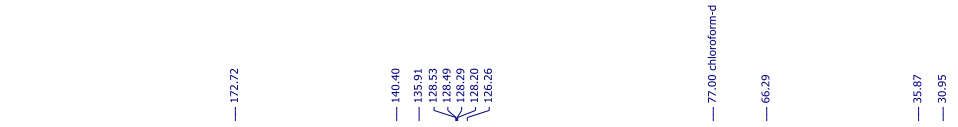


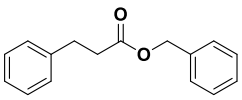
Compound **54**



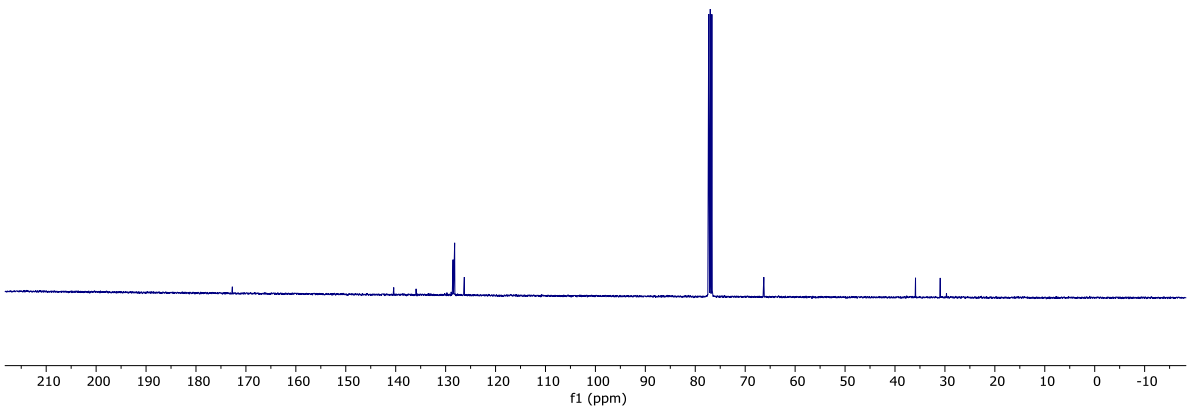
^{1}H-NMR, 400 MHz,$CDCl_3$



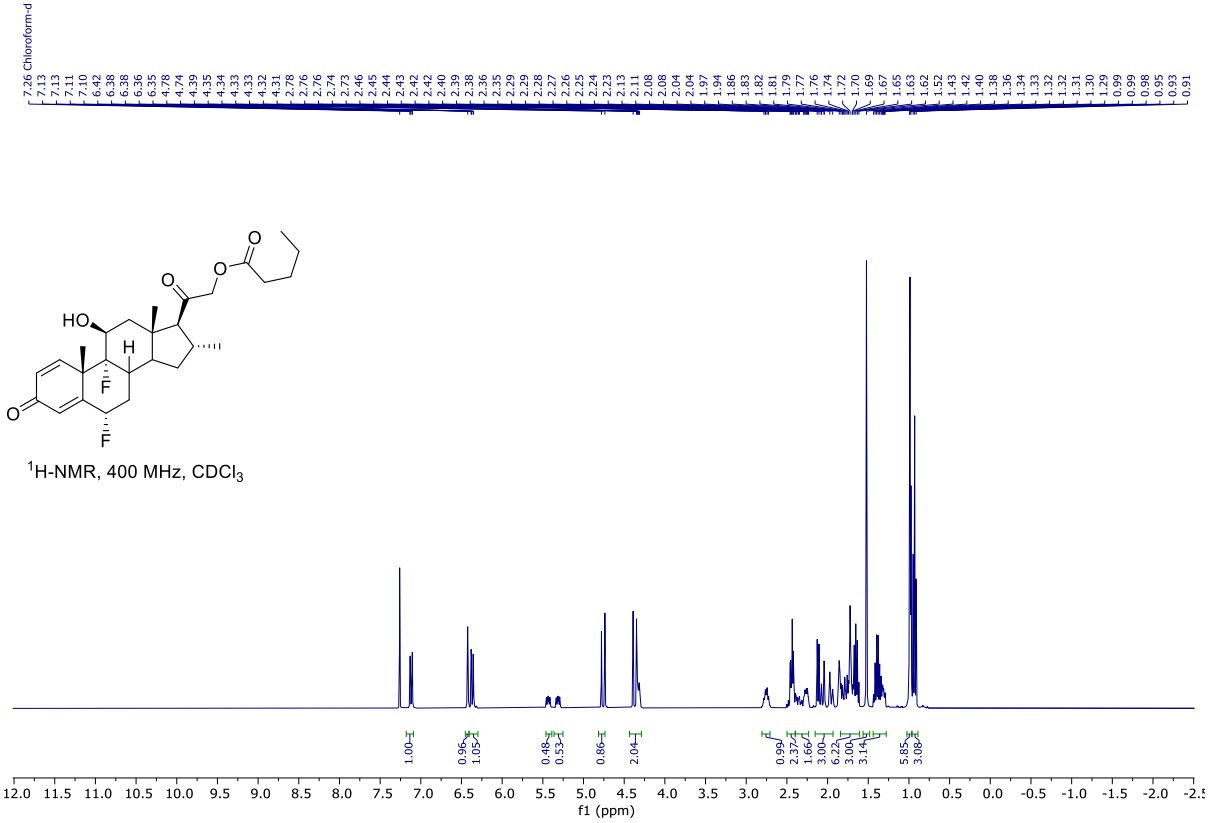


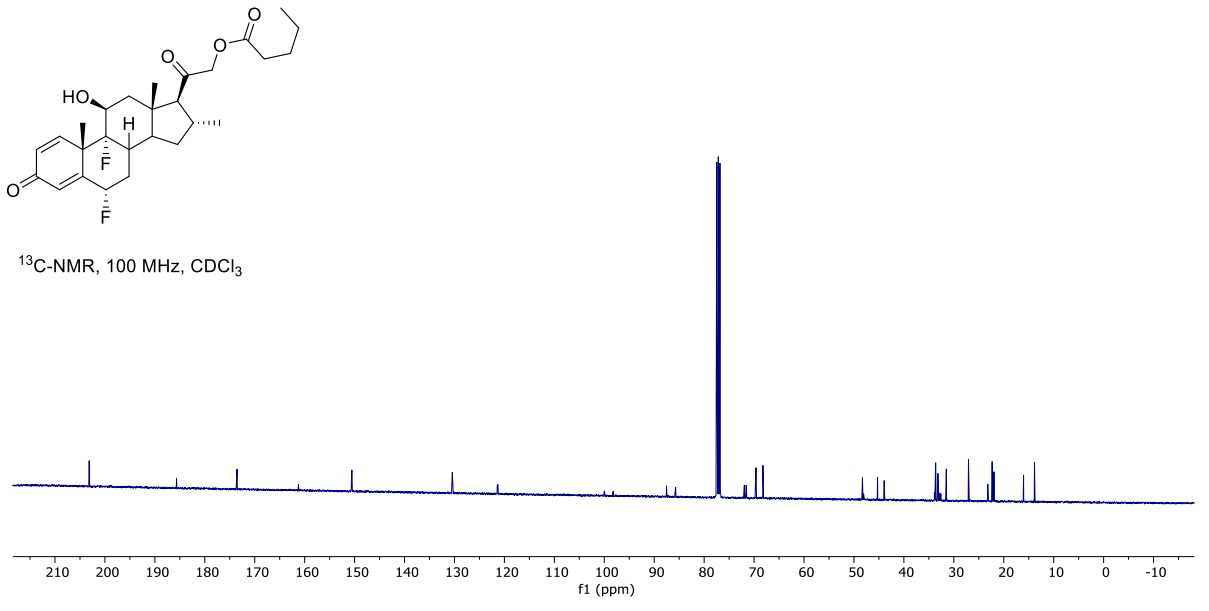


^{13}C-NMR, 100 MHz, $CDCl_3$

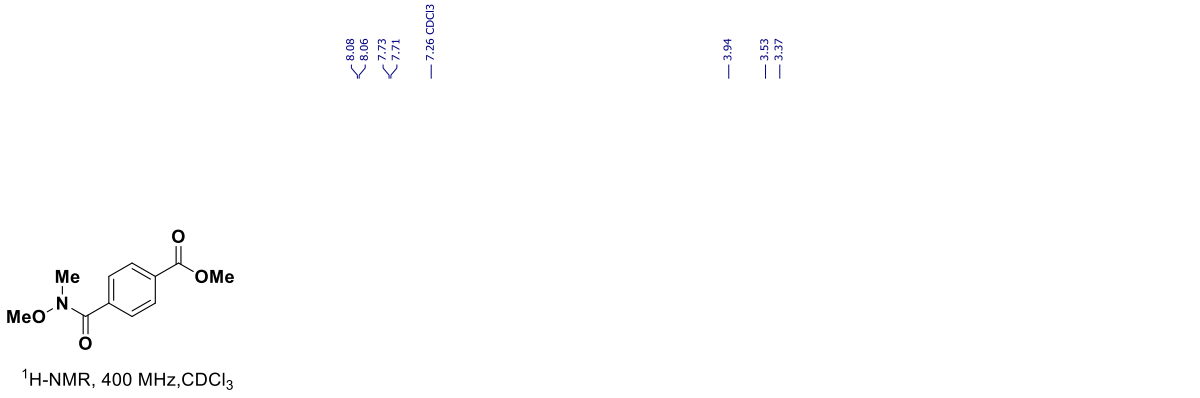


Compound **55**

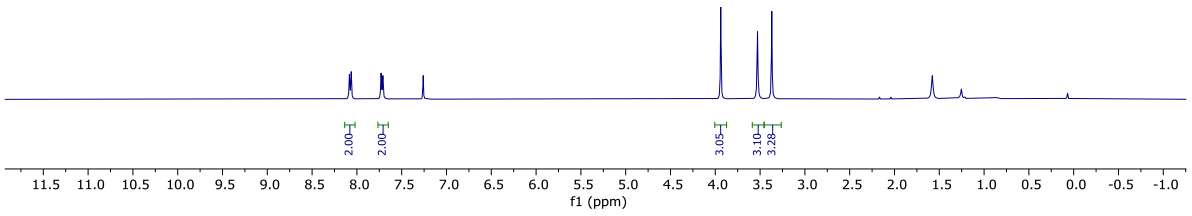

HO
H
F
O
F
^{1}H-NMR, 400 MHz, $CDCl_3$
f1 (ppm)

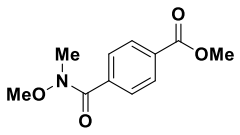

HO
H
F
O
F
^{13}C-NMR, 100 MHz, $CDCl_3$
f1 (ppm)

Compound **58**

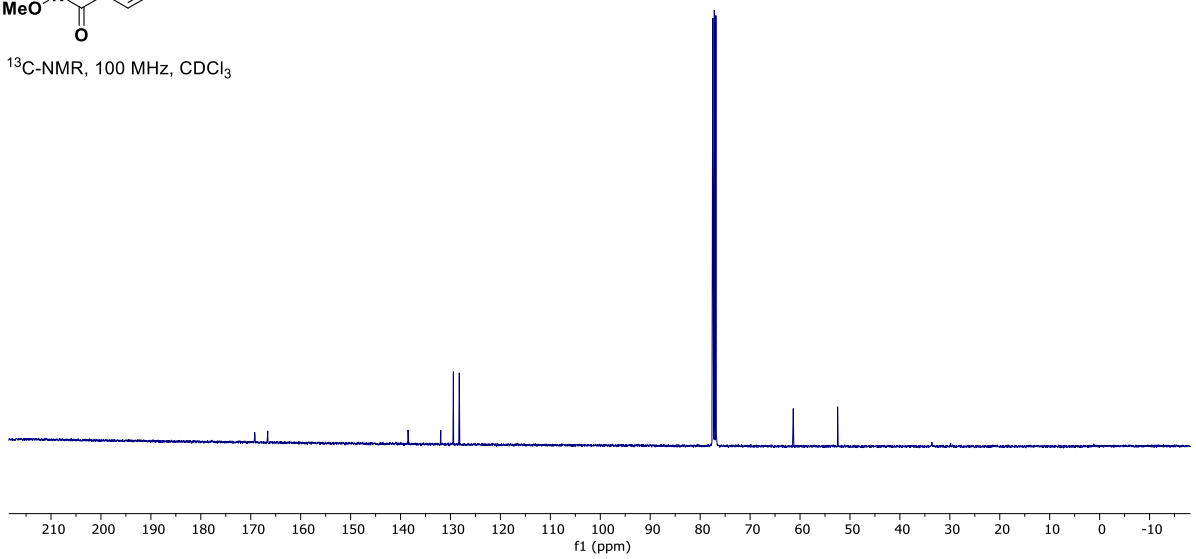


^{1}H-NMR, 400 MHz,$CDCl_3$

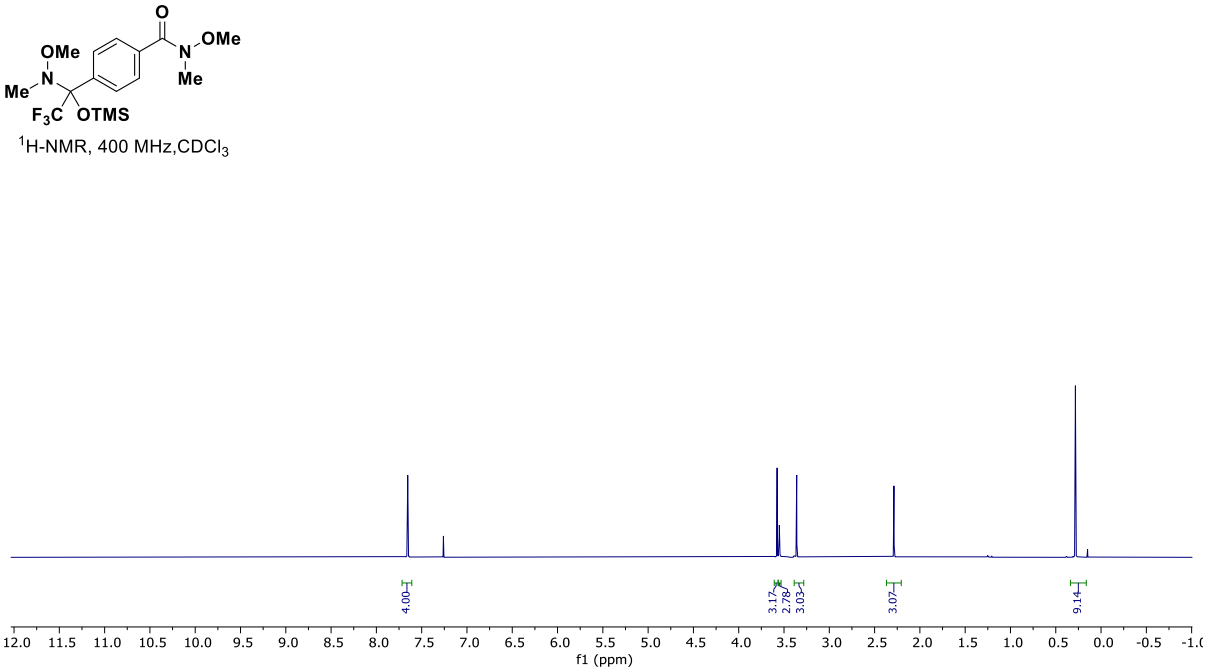


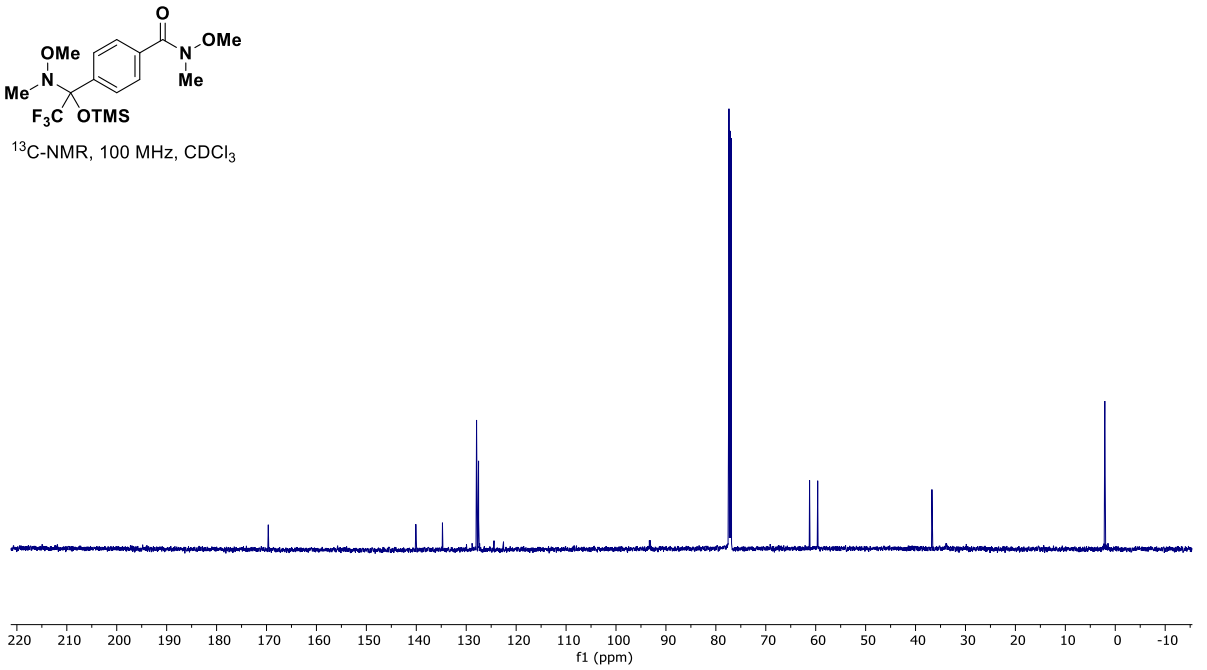


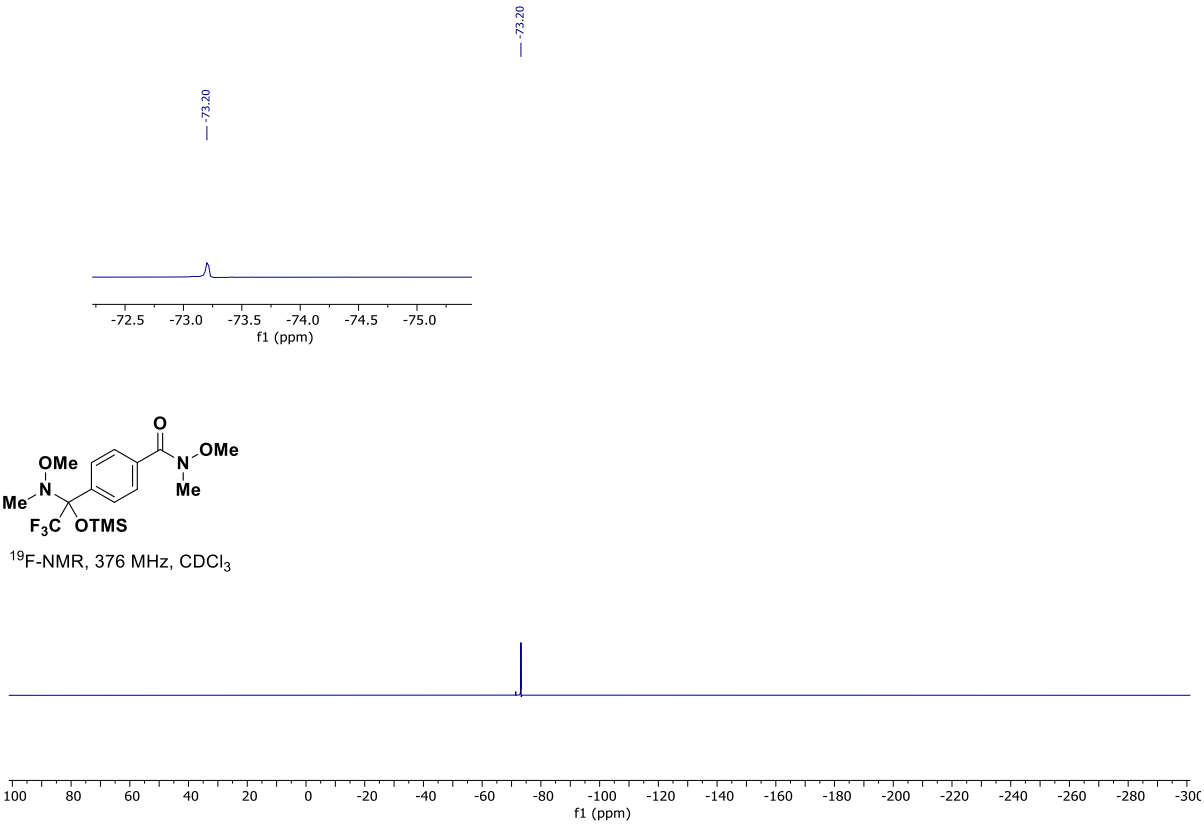
^{13}C-NMR, 100 MHz, $CDCl_3$



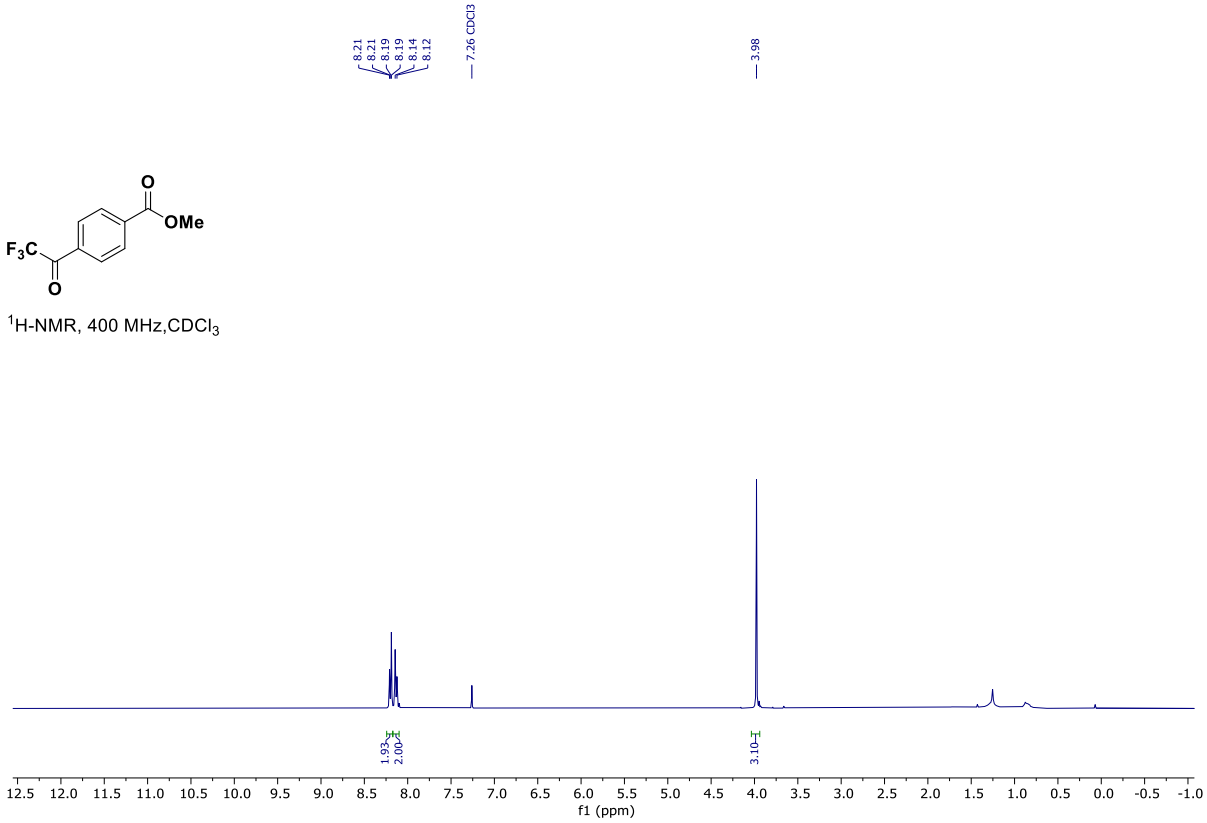
Compound **59**

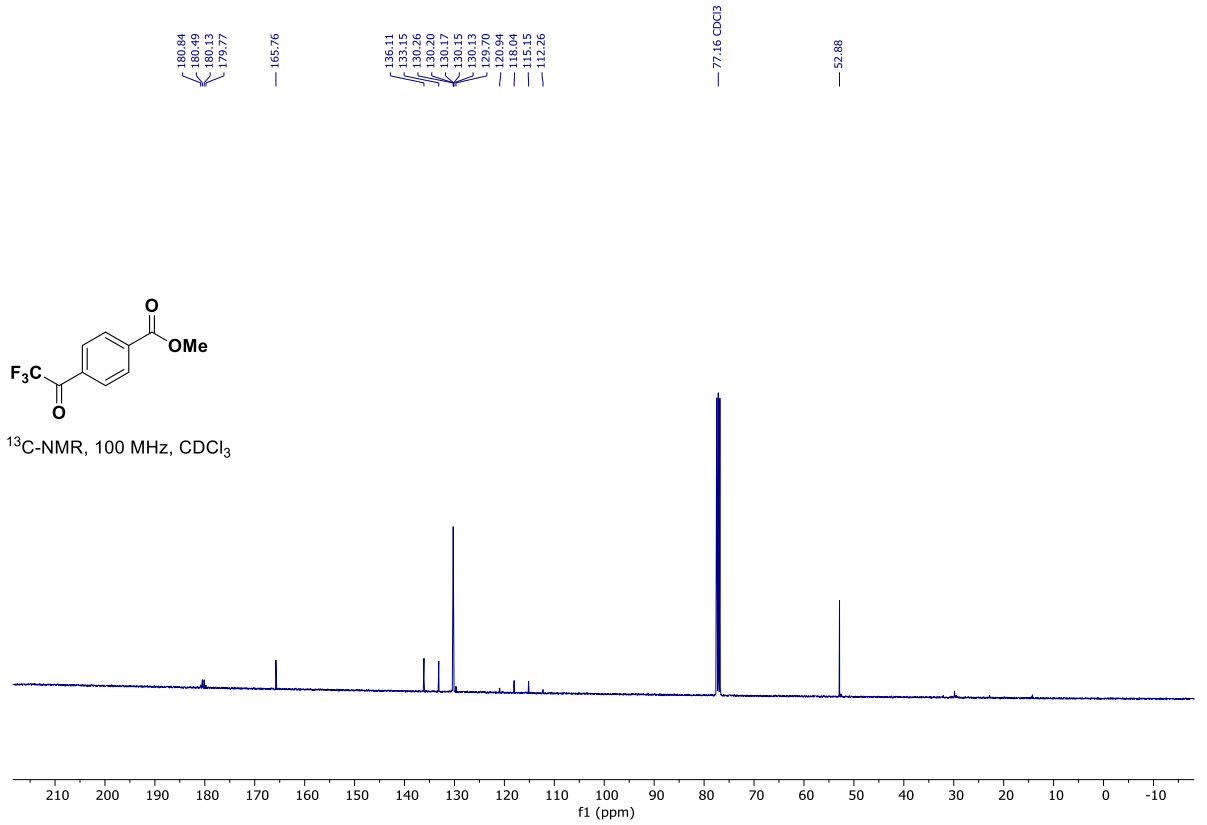

7.65
7.26 Chloroform-d
3.58
3.55
3.36
2.29
0.28
4.00
3.17
2.79
3.03
3.07
9.14
f1 (ppm)

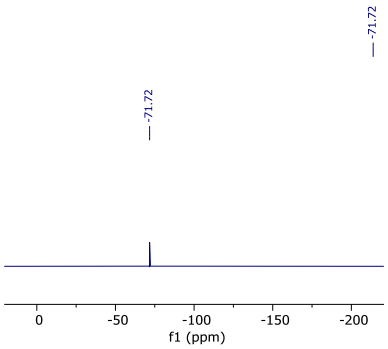

169.65
140.10
134.76
127.93
127.53
126.35
124.44
122.53
121.20
93.52
93.32
93.13
92.94
77.16 chloroform-d
61.23
59.60
36.72
2.09
f1 (ppm)

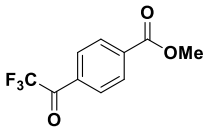

-73.20
-73.20
-72.5
-73.0
-73.5
-74.0
-74.5
-75.0
f1 (ppm)
O
OMe
N
OMe
Me
N
Me
F3C
OTMS
19F-NMR, 376 MHz, CDCl3
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
f1 (ppm)

Compound **60**

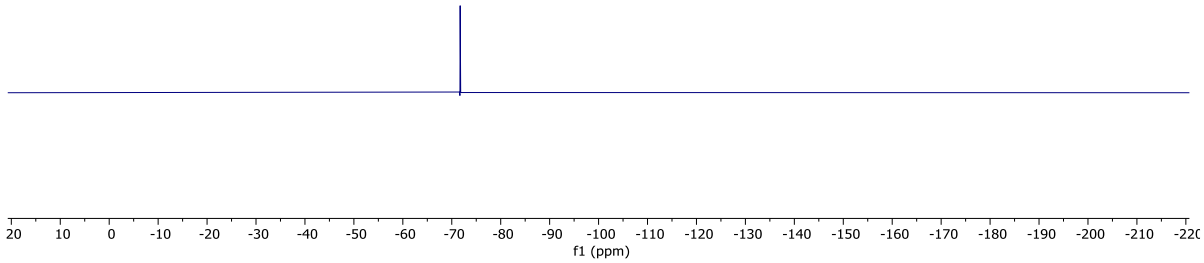

8.21
8.21
8.19
8.19
8.14
8.12
7.26 CDCl3
3.98
O
OMe
F3C
O
1H-NMR, 400 MHz,CDCl3
1.93
2.00
3.10
12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0
f1 (ppm)


180.84
180.49
180.13
179.77
165.76
136.11
133.15
130.26
130.20
130.17
130.15
130.13
129.70
120.94
118.04
115.15
112.26
77.16 CDCl3
52.88
O
OMe
F3C
O
13C-NMR, 100 MHz, CDCl3
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

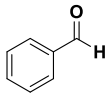




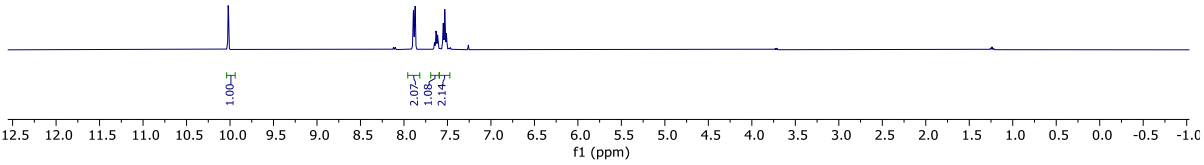
^{19}F-NMR, 376 MHz, $CDCl_3$

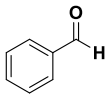


Compound **61**

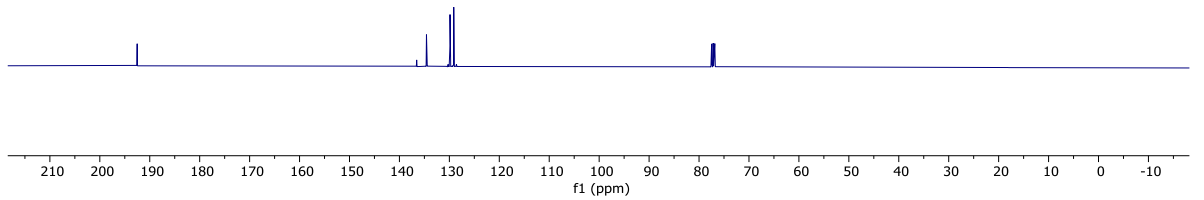


^{1}H-NMR, 400MHz, $CDCl_3$

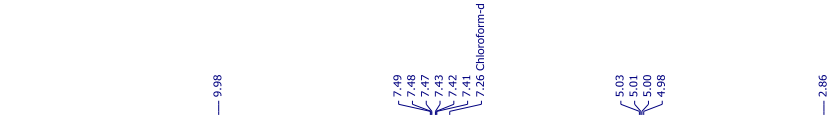


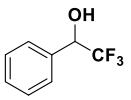


^{13}C-NMR, 100 MHz, $CDCl_3$

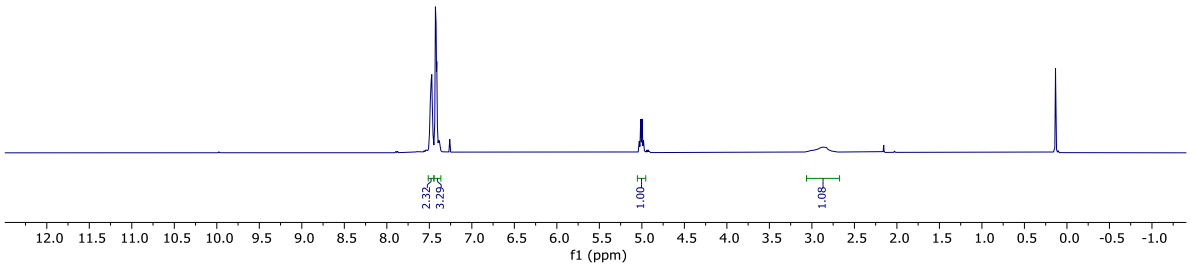


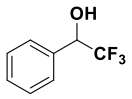
Compound **62**



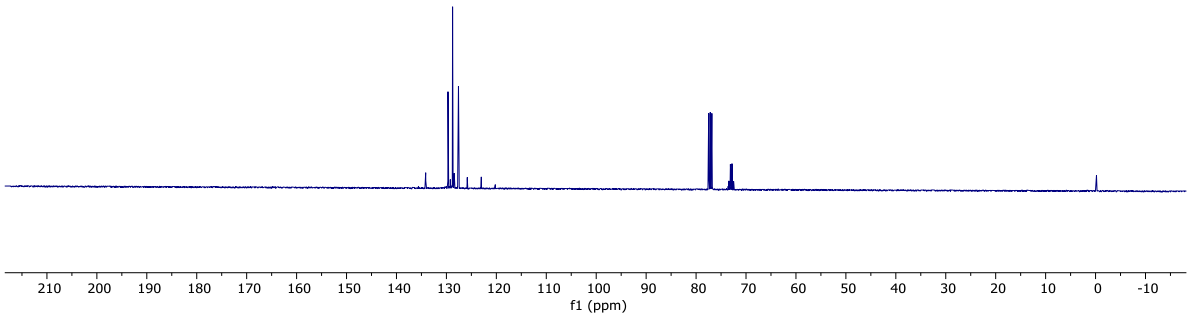


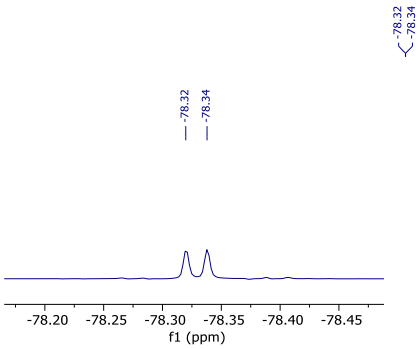
^{1}H-NMR, 400MHz, $CDCl_3$

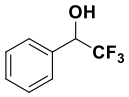




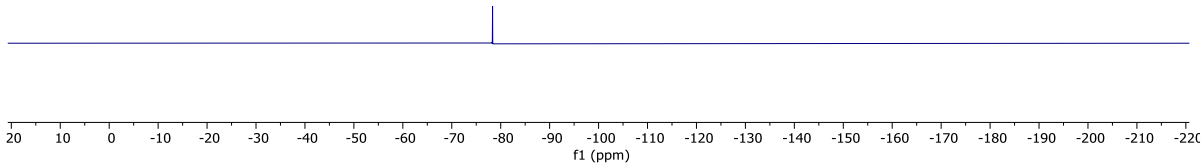
^{13}C-NMR, 100 MHz, $CDCl_3$



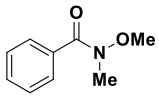




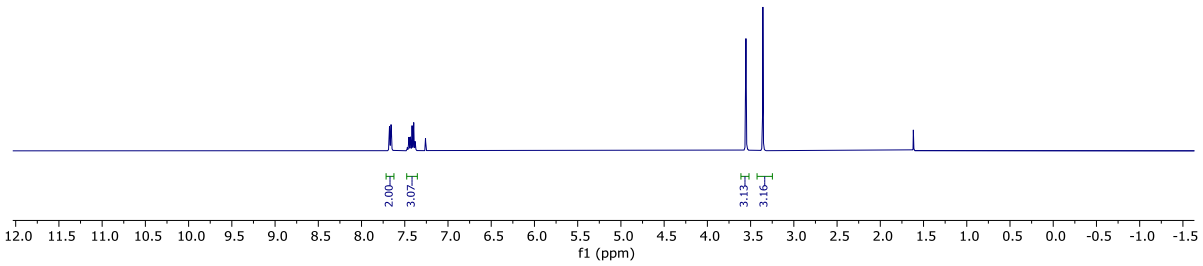
^{19}F-NMR, 376 MHz, $CDCl_3$

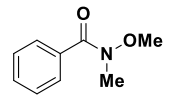


Compound **1a**



^{1}H-NMR, 400MHz, $CDCl_3$





^{13}C-NMR, 100 MHz, $CDCl_3$