Electronic Supplementary Information (ESI) for

Photochemical generation of acyl and carbamoyl radicals using a nucleophilic organic catalyst: applications and mechanism thereof

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A. General Information

The NMR spectra were recorded at 400 MHz and 500 MHz for ^{1}H and 100 or 125 MHz for ^{13}C. The chemical shift (δ) for ^{1}H and ^{13}C are given in ppm relative to residual signals of the solvents ($CHCl_3$ @ 7.26 ppm ^{1}H NMR and 77.16 ppm ^{13}C NMR, and tetramethylsilane @ 0 ppm). Coupling constants are given in Hertz. The following abbreviations are used to indicate the multiplicity: s, singlet; d, doublet; q, quartet; m, multiplet; bs, broad signal; app, apparent.
High resolution mass spectra (HRMS) were obtained from the ICIQ HRMS unit on MicroTOF Focus and Maxis Impact (Bruker Daltonics) with electrospray ionization. (ESI).
UV-vis measurements were carried out on a Shimadzu UV-2401PC spectrophotometer equipped with photomultiplier detector, double beam optics and D_2 and W light sources or an Agilent Cary60 spectrophotometer.
Emission spectra of light sources were recorded on Ocean Optics USB4000 fiber optic spectrometer.
Isolated yields refer to materials of >95% purity as determined by ^{1}H NMR.

The authors are indebted to the team of the Research Support Area at ICIQ, particularly to the NMR and the High-Resolution Mass Spectrometry Units. Grace Fox is thanked for proofreading the manuscript.

General Procedures. All reactions were set up under an argon atmosphere in oven-dried glassware. Synthesis grade solvents were used as purchased, anhydrous solvents were taken from a commercial SPS solvent dispenser. Chromatographic purification of products was accomplished using forced-flow chromatography (FC) on silica gel (35-70 mesh). For thin layer chromatography (TLC) analysis throughout this work, Merck pre-coated TLC plates (silica gel 60 GF_{254}, 0.25 mm) were employed, using UV light as the visualizing agent and an acidic mixture of vanillin or basic aqueous potassium permanganate ($KMnO_4$) stain solutions, and heat as developing agents. Organic solutions were concentrated under reduced pressure on a Büchi rotatory evaporator.

Determination of Enantiomeric Purity. UPC[2] analysis on chiral stationary phase was performed on a Waters Acquity instrument using an ID3 chiral column. The exact conditions for the analyses are specified within the characterization section.

Materials. Most of the starting materials used in this study are commercial and were purchased in the highest purity available from Sigma-Aldrich, Fluka, Alfa Aesar, Fluorochem, and used as received, without further purifications.

The following substrates were synthesized according to reported procedures (Figure S1).[1-8]

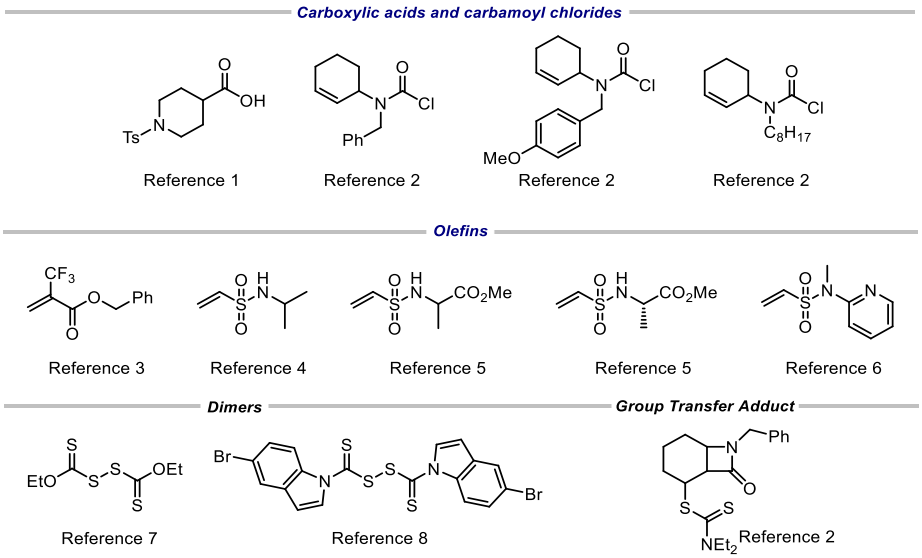
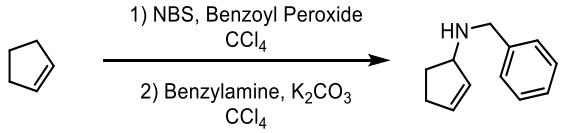


Figure S1: Starting materials synthesised according to known procedures.

B. Substrate Synthesis

Synthesis of *N*-benzylcyclopent-2-en-1-amine:

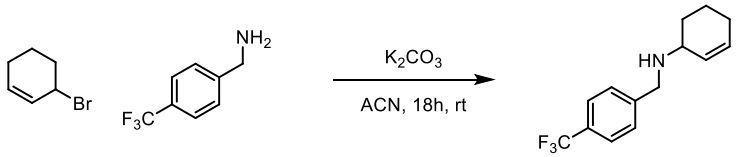


A 2 M solution of cyclopentene (0.973 mL, 11 mmol) in CCl_4 (5.4 mL) was prepared and then NBS (2.26 g, 10 mmol) and benzoic peroxyanhydride (36 mg, 0.15 mmol) were sequentially added. The solution was stirred at 40 °C for 4 hours, after which the reaction was left at ambient temperature without stirring. After 2 hours, the floating materials were filtered off and washed with CCl_4. The organic phase was then placed in a separatory funnel and washed with distilled water. The organic phase was collected, treated with $MgSO_4$ and subsequently filtered. At this stage, benzylamine (3.28 mL, 30 mmol) and K_2CO_3 (1.38 g, 10 mmol) were directly added to the solution. The reaction was stirred overnight at r.t and the resulting crude mixture was purified by silica gel chromatography (eluent: 9:1 hexane/AcOEt) to afford 234 mg of *N*-benzylcyclopent-2-en-1-amine (14% yield over 2 steps) as a yellow-orange oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 – 7.24 (m, 5H), 5.89 (m, 2H), 3.93 (m, 1H), 3.84 (dd, *J* =16.6, 12.9 Hz, 2H), 2.48 (m, 1H), 2.36 – 2.18 (m, 2H), 1.63 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 140.5, 133, 132.8, 128.4, 128.3, 126.9, 63.9, 51.8, 31.3, 30.8

Synthesis of *N*-(4-(trifluoromethyl)benzyl)cyclohex-2-en-1-amine:



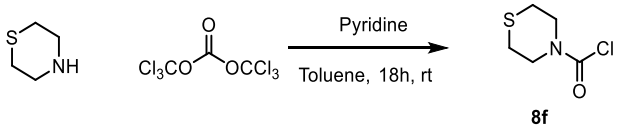
N-(4-(trifluoromethyl)benzyl)cyclohex-2-en-1-amine was prepared according to a reported procedure.[2] A solution of (4-(trifluoromethyl)phenyl)methanamine (1.314 g, 7.5 mmol) in CH_3CN (1.7 mL) was treated with 3-bromocyclohexene (0.288 mL, 2.5 mmol) and K_2CO_3 (346 mg, 2.5 mmol). After 2 hours at ambient temperature, the reaction mixture was quenched with H_2O (20 mL) and extracted with EtOAc (2 x 25 mL). The combined organic extracts were washed with brine (20 mL), dried over $MgSO_4$, filtered, evaporated under reduced pressure, and purified by column chromatography (eluent: CH_2Cl_2 to CH_2Cl_2/EtOH 9:1) to give the product (607 mg, 95 % yield) as a light-yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.57 (d, *J* = 8.1 Hz, 2H), 7.47 (d, *J* = 8.0 Hz, 2H) 5.82 – 5.76 (m, 1H), 5.75 – 5.62 (m, 1H) 3.90 (dd, *J* = 13.6, 3.3 Hz, 2H), 3.23 – 3.16 (m, 1H), 2.10 – 1.97 (m, 2H), 1.93 – 1.85 (m, 1H), 1.80 – 1.70 (m, 1H), 1.61 – 1.42 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 145.1, 129.8, 129.4, 129.3 (q, *J* = 32.7 Hz) 128.4, 125.4 (q, *J* = 3.7 Hz), 124.4 (q, *J* = 271.9 Hz), 52.6, 50.6, 29.6, 25.4, 20.3.

^{19}F NMR (376 MHz, $CDCl_3$) δ -62.47.

Synthesis of compound 8f:



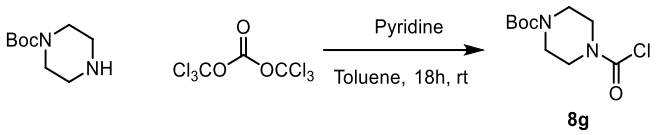
8f

Compound **8f** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (294 mg, 0.99 mmol) in toluene (15 mL) under N_2, pyridine (0.290 mL, 3.60 mmol)

and subsequently a solution of thiomorpholine (310 mg, 3 mmol) in toluene (5 mL) were added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to afford carbamoyl chloride **8f** (310 mg, 75% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 3.94 (dt, *J* = 38.9, 5.1 Hz, 1H), 2.72 – 2.64 (m, 1H).
^{13}C NMR (101 MHz, $CDCl_3$) δ 148.5, 51.7, 49.3, 27.7, 27.3

Synthesis of 8g:



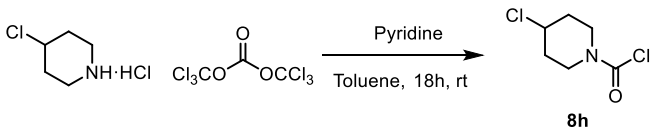
8g

Compound **8g** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (294 mg, 0.99 mmol) in toluene (15 mL) under N_2, pyridine (0.290 mL, 3.60 mmol) and subsequently a solution of *N*-Boc Piperazine (559 mg, 3 mmol) in toluene (5 mL) were sequentially added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **8g** (597 mg, 82% yield) as a colorless oil.

^{1}H NMR (300 MHz, $CDCl_3$) δ 3.64 (m, 4H), 3.48 (d, *J* = 4.8 Hz, 4H), 1.46 (s, 9H).
^{13}C NMR (101 MHz, $CDCl_3$) δ 154.3, 148.5, 80.7, 48.5, 46, 28.3.

HRMS (ESI pos): calculated for $C_{10}H_{17}ClNaN_2O_3$ ($M+Na^+$): 271.0800, found: 271.0818.

Synthesis of compound 8h:



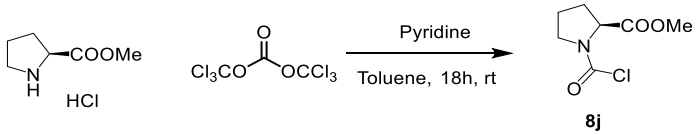
8h

Compound **8h** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (259 mg, 0.872 mmol) in toluene (15 mL) under N_2, pyridine (0.498 mL, 6.15 mmol) and subsequently a solution of 4-chloropiperidine hydrochloride (400 mg, 2.56 mmol) in toluene (5 mL) were sequentially added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **8h** (420 mg, 90% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 4.34 (tt, J = 6.5, 3.6 Hz, 1H), 4.01 – 3.64 (m, 4H), 2.18 – 2.03 (m, 2H), 2.00 – 1.86 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 148.4, 55.6, 45.6, 43.1, 34.7, 34.2.

Synthesis of compound 8j:

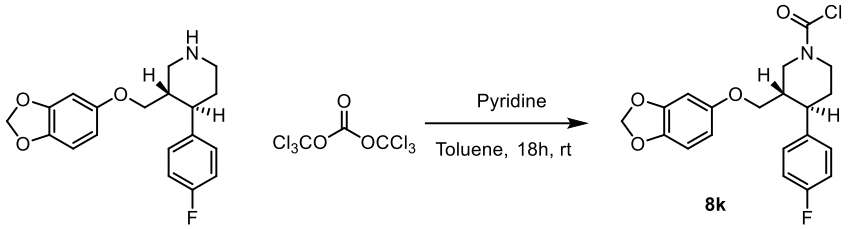


Compound **8j** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (207 mg, 0.68 mmol) in toluene (15 mL) under N_2, pyridine (0.204 mL, 2.54 mmol) and subsequently a solution of L-methyl prolinate hydrochloride (350 mg, 2.13 mmol). The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution), and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **8j** (275 mg, 68% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ: 4.57 – 4.46 (m, 1H), 3.85 - 3.55 (m, 2H), 3.77 (d, *J* = 12.4 Hz, 3H), 2.35 – 2.25 (m, 1H), 2.17 – 1.93 (m, 3H).

^{13}C NMR (124 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ: 171.8, 171.3, 147.8, 146.9, 62.4, 60.7, 52.9, 50.7, 49.2, 30.4, 30.3, 23.7, 23.6

Synthesis of compound 8k:



Compound **8k** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (89 mg, 0.30 mmol) in toluene (3 mL) under N_2, pyridine (88 μL, 1 mmol) and subsequently a solution of Paroxetine (300 mg, 0,91 mmol) in toluene (6 mL), were added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to afford carbamoyl chloride **8k** (130 mg, 36% yield) as a white crystal.

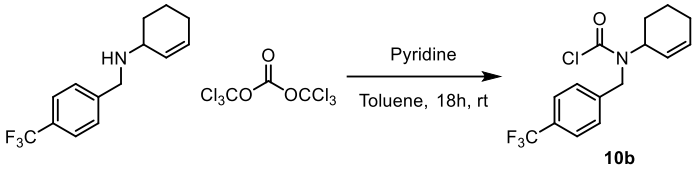
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.14 (m, 2H), 7.00 (m, 2H), 6.64 (m, 1H), 6.36 (s, 1H), 6.14 (m, 1H), 5.89 (s, 2H), 4.63 (m, 1H), 4.49 (m, 1H), 3.63 (t, *J* = 8.7 Hz, 1H), 3.48 (dd, *J* = 9.6, 6.0 Hz, 1H), 3.20 (t, *J* = 12.9 Hz, 1H), 3.02 (m, 1H), 2.82 (m, 1H), 2.10 (m, 1H), 1.93 (m, 1H), 1.82 (qd, *J* = 12.9, 4.4 Hz, 1H)

^{13}C NMR (126 MHz, $CDCl_3$) δ 162.9, 160.9, 154.0, 148.4, 142.0, 128.9, 115.8, 108.0, 105.8, 101.3, 98.1, 68.4, 52.2, 49.6, 47.0, 43.8, 42.3, 33.7

^{19}F NMR (376 MHz, $CDCl_3$, proton decoupled) δ -115.51

HRMS (ESI pos): calculated for $C_{20}H_{19}ClFNaNO_4$ ($M+Na^+$): 414.09, found 414.0884

Synthesis of compound 10b:



10b

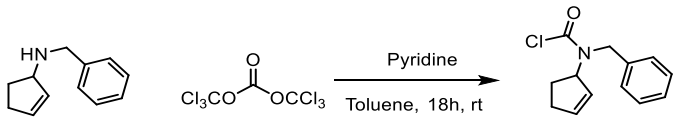
Compound **10b** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (252 mg, 0.848 mmol) in toluene (15 mL) under N_2, pyridine (0.242 mL, 2.99 mmol) and subsequently a solution of *N*-(4-(trifluoromethyl)benzyl)cyclohex-2-en-1-amine (637 mg, 2.5 mmol) in toluene (4 mL), were added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **10b** (722 mg, 91% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$ mixture of rotamers) δ 7.60 (dd, *J* = 16.7, 8.1 Hz, 2H), 7.36 (d, *J* = 7.9 Hz, 2H), 5.85 – 6.00 (m, 1H), 5.55 – 5.41 (m, 1H), 5.10 – 4.90 (m, 1H), 4.82 – 4.49 (m, 2H), 2.08 – 1.94 (m, 3H), 1.85 – 1.40 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$ mixture of rotamers) δ 150.4, 150.3, 141.8, 141.4, 133.5, 133.4, 127.3, 126.5, 126.1, 126.1, 125.84 – 125.46 (m), 124.1 (q, *J* = 271.9 Hz) 58.7, 57.0, 50.4, 49.1, 28.5, 27.6, 24.5, 24.4, 21.2, 21.1.

^{19}F NMR (376 MHz, $CDCl_3$ mixture of rotamers) δ -62.59, -62.63.

Synthesis of compound 10e:



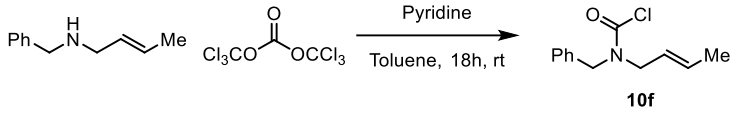
10e

Compound **10e** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (134 mg, 0.44 mmol) in toluene (8 mL) under N_2, pyridine (0.129 mL, 1.6 mmol) and subsequently a solution of *N*-benzylcyclopent-2-en-1-amine (231 mg, 1.33 mmol) in toluene (2 mL). The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **10e** (106 mg, 34% yield) as a yellowish oil.

^{1}H NMR (400 MHz, $CDCl_3$, mixture of rotamers) δ. 7.40 – 7.20 (m, 5H), 6.02 - 5.95 (m, 1H), 5.58 – 5.46 (m, 2H), 4.66 – 4.37 (m, 1H), 2.44 – 2.20 (m, 3H), 1.75 – 1.59 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$, mixture of rotamers) δ 150.1, 150, 137.3, 136.9, 136.4, 128.8, 128.7, 128.7, 128.6, 128.5, 127.3, 127.2, 126.2, 67.6, 66, 50.6, 48.9, 31.4, 31.3, 28.9, 28.4.
HRMS (ESI pos): calculated for $C_{13}H_{14}ClNaNO$ ($M+Na^+$) 258.07, found 258.0653.

Synthesis of compound 10f:



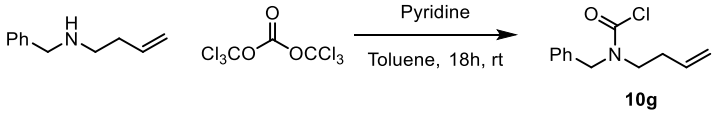
10f

Compound **10f** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (250 mg, 0.843 mmol) in toluene (15 mL) under N_2, pyridine (0.241 mL, 2.98 mmol) and subsequently a solution of *N*-benzylbut-2-en-1-amine (400 mg, 2.48 mmol) in toluene (4 mL), were added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **10f** (508 mg, 92% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$, 1:1 mixture of rotamers) 7.42 – 7.30 (m, 3H), 7.29 – 7.24 (m, 2H), 5.75 – 5.54 (m, 1H), 5.53 – 5.34 (m, 1H), 4.68 (s, 1H), 4.55 (s, 1H), 3.90 (dd, *J* = 15.6, 6.3 Hz, 2H), 1.78 – 1.66 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ 150.2, 149.6, 135.8, 135.6, 131.3, 130.7, 129.0, 128.9, 128.4, 128.3, 128.1, 128.1, 127.3, 124.3, 124.0, 53.2, 51.9, 51.5, 50.5, 17.8.

Synthesis of compound 10g:



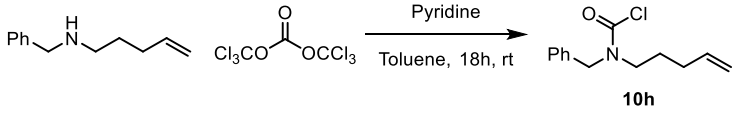
10g

Compound **10g** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (252 mg, 0.85 mmol) in toluene (15 mL) under N_2, pyridine (0.243 mL, 3.0 mmol) and subsequently a solution of *N*-benzylbut-3-en-1-amine (403 mg, 2.5 mmol) in toluene (4 mL), were added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40 mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **10g** (475 mg, 85% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ 7.41 – 7.31 (m, 3H), 7.30 – 7.24 (m, 2H), 5.80 – 5.67 (m, 1H), 5.16 – 5.04 (m, 2H), 4.72 (s, 1H), 4.59 (s, 1H), 3.53 – 3.35 (m, 2H), 2.42 – 2.30 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ 150.3, 149.6, 135.8, 135.6, 134.3, 134.0, 129.1, 129.0, 128.3, 128.2, 128.2, 127.2, 118.0, 117.8, 54.7, 52.7, 49.8, 48.9, 32.6, 31.7.

Synthesis of compound 10h:



10h

Compound **10h** was prepared according to a modification of a reported procedure.[2] To a solution of triphosgene (252 mg, 0.85 mmol) in toluene (15 mL) under N_2, pyridine (0.243 mL, 3.0 mmol) and subsequently a solution of *N*-benzylpent-4-en-1-amine (438 mg, 2.5 mmol) in toluene (4 mL), were added. The reaction mixture was stirred for 18 hours at ambient temperature, quenched with NH_4Cl (20 mL of a saturated aq. solution) and extracted with Et_2O (2 x 30 mL). The combined organic extracts were washed sequentially with HCl (40 mL of a 0.25 M aq. solution), H_2O (40

mL) and brine (40 mL), dried over $MgSO_4$, filtered and evaporated under reduced pressure to give carbamoyl chloride **10h** (553 mg, 93% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ 7.41 – 7.30 (m, 3H), 7.29 – 7.24 (m, 2H), 5.81 – 5.68 (m, 2H), 5.08 – 4.92 (m, 2H), 4.71 (s, 1H), 4.58 (s, 1H), 3.36 (dt, *J* = 13.6, 7.8 Hz, 2H), 2.05 (q, *J* = 7.5 Hz, 2H), 1.70 (app h, *J* = 7.6 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$, 1:1 mixture of rotamers) δ 150.3, 149.6, 137.3, 137.1, 135.9, 135.7, 129.0, 129.0, 128.2, 127.2, 115.8, 115.6, 54.5, 52.6, 50.0, 49.1, 30.8, 30.8, 27.1, 26.3.

C. Experimental Procedures

C1. Reaction of Aromatic Acyl Chlorides

C1.1 Experimental Setup

Our photoreactor consisted of a 12.5 cm diameter jar, fitted with 4 standard 29 sized ground glass joints arranged in a square and a central 29 sized joint. A commercial 1-meter LED strip was wrapped around the jar, followed by a layer of aluminium foil and cotton for insulation (Figure S2).

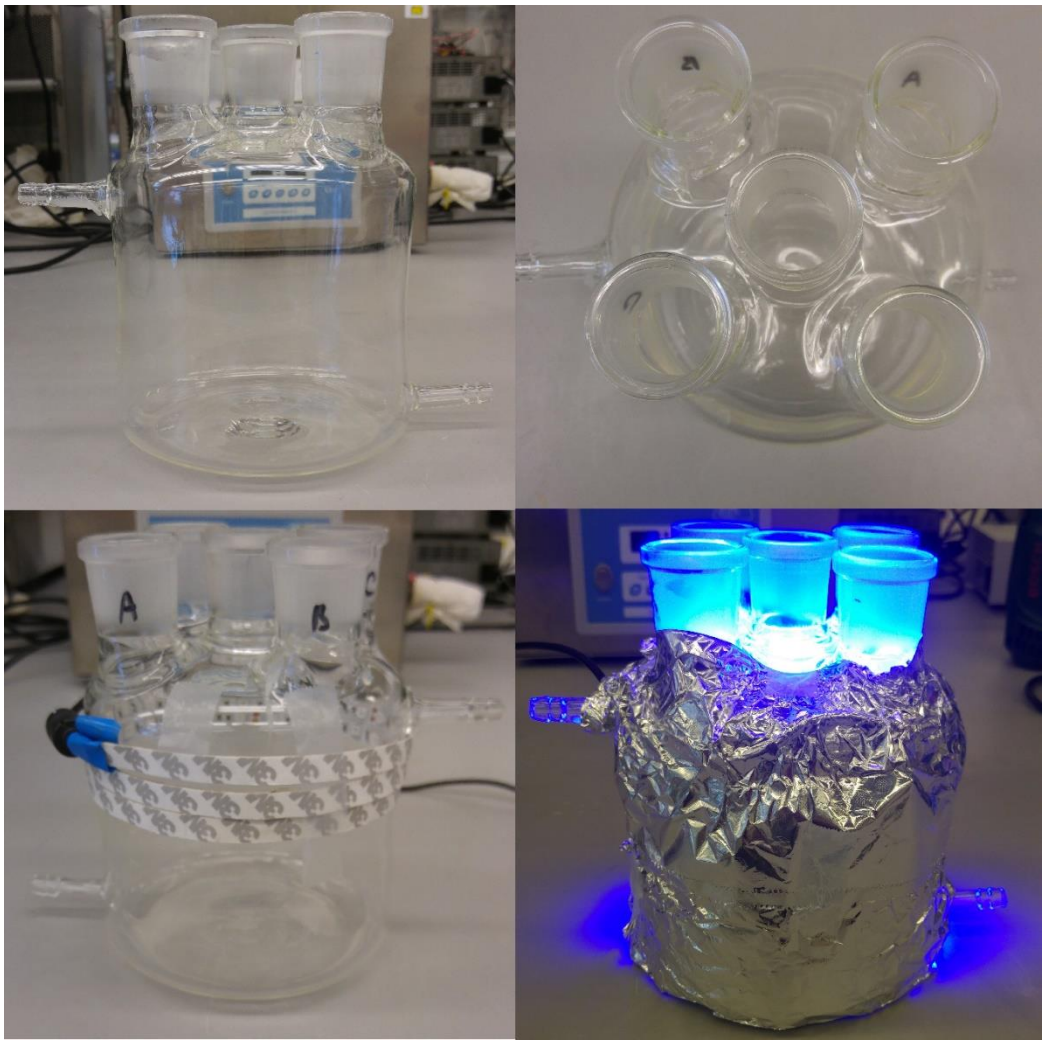


Figure S2: Photoreactor used for temperature-controlled reactions - pictures taken at different stages of the set-up assembly.

Each of the joints could be used to fit a standard 16 mm or 25 mm diameter Schlenk tube with a Teflon adaptor (Figure S3).

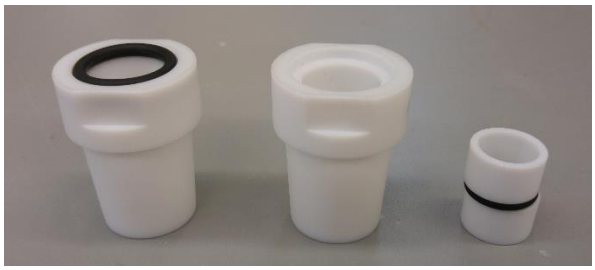


Figure S3: Teflon adaptors to use Schlenk tubes in the photoreactor.

An inlet and an outlet allow the circulation of liquid from a Huber Minichiller 300 inside the jar. This setup allows to perform reactions at temperatures ranging from -20 ºC to 80 ºC with accurate control of the reaction temperature (± 1ºC, Figure S4).

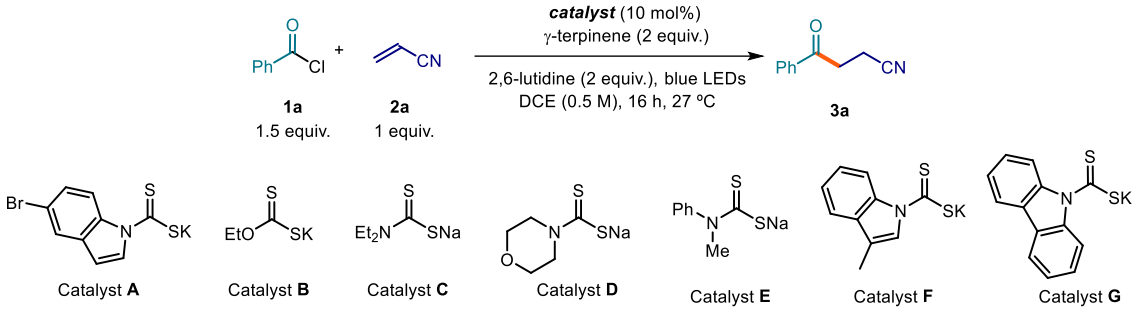
Figure S4: Fully assembled controlled temperature photoreactor in operation.

In order to maintain consistent illumination between different experiments, only the four external positions were used to perform reactions. The central position was used to monitor the

temperature inside a Schlenk tube identical to those used to perform reactions, ensuring that the reaction mixtures are at the desired temperature.

C1.2 Optimization Studies

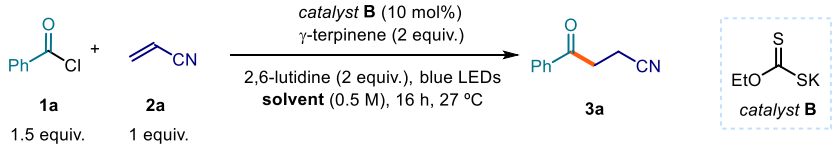
Table S1. Screening of the catalysts



entry	catalyst	wavelenght (nm)	NMR yield (%)
1	**A**	465	<5
2	**B**	465	30
3	**B**	400	18
4	**C**	465	23
5	**C**	400	20
6	**D**	465	18
7	**E**	465	<5
8	**F**	465	<5
9	**G**	465	<5

All reaction performed on 0.5 mmol scale; yield determined by ^{1}H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

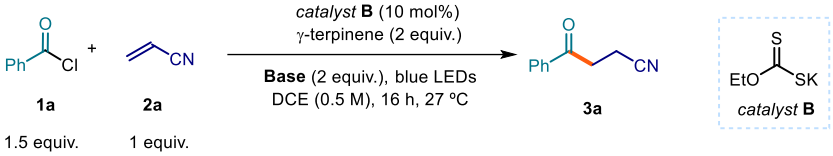
Table S2. Screening of the solvents



entry	solvent	NMR yield (%)
1	MeCN	20
2	AcOEt	20
3	DCE	30
4	MTBE	13
5	Toluene	20
6	Dioxane	20
7	DMF	0
8	Acetone	16
9	DCM	25
10	PhCl	16

All reaction performed on 0.5 mmol scale; yield determined by ^{1}H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

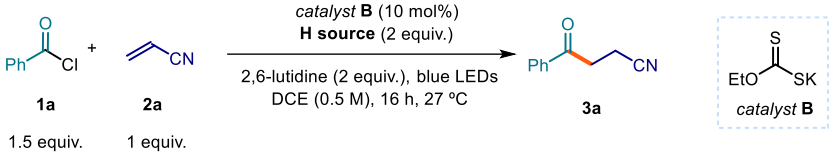
Table S3. Screening of the bases



entry	base	NMR yield (%)
1	2,6-lutidine	30
2	2,4,6-collidine	16
3	N-Methylmorpholine	0
4	N-Methylimidazole	0
5	K_2CO_3	24
6	NaOAc	19
7	KH_2PO_4	16
8	$NaHCO_3$	16

All reaction performed on 0.5 mmol scale; yield determined by ^{1}H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

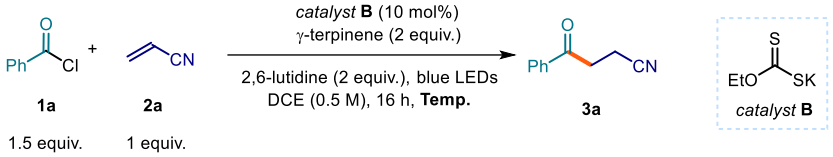
Table S4. Screening of the H-atom source



entry	H source	NMR yield (%)
1	γ-terpinene	30
2	Hantzsch ester	25
3	1,4-Cyclohexadiene	9
10	2,5-Dihydrofuran	5

All reaction performed on 0.5 mmol scale; yield determined by ^{1}H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

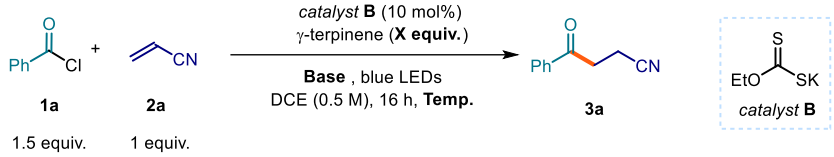
Table S5. Screening of the temperature



entry	temperature	NMR yield (%)
1	27 ºC	30
2	40 ºC	35
3	60 ºC	50

All reaction performed on 0.5 mmol scale; yield determined by ^{1}H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

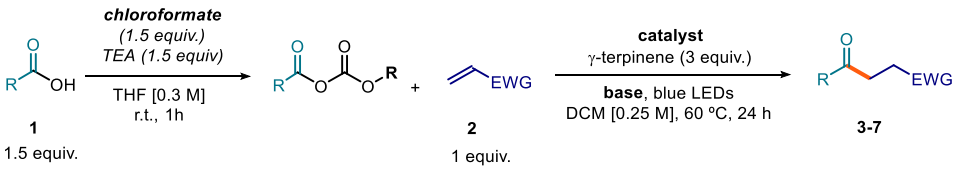
Table S6. Final cycle of optimization



entry	Base	Base (equiv.)	γ-terpinene (equiv.)	Other variations	yield (%)
1	2,6-lutidine	2	2	-	50
2	2,6-lutidine	1.2	2	-	50
3	Na_2CO_3	1.2	2	-	66
4	Na_2HPO_4	1.2	2	-	20
5	Na_3PO_4	1.2	2	-	66
6	Na_3PO_4	1.2	2	20 mol% catalyst	45
7	Na_3PO_4	1.2	3	-	55
8	Na_3PO_4	2	2	-	84
9	Na_3PO_4	2	2	5 mol% catalyst	62
10	Na_3PO_4	2	2	DCM [0.25 M]	85
11	Na_3PO_4	2	2	Vinyl sulfone as acceptor & DCM [0.25 M]	57
12	Na_3PO_4	2	3	Vinyl sulfone as acceptor & DCM [0.25 M]	85

All reaction performed on 0.5 mmol scale; yield determined by 1H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

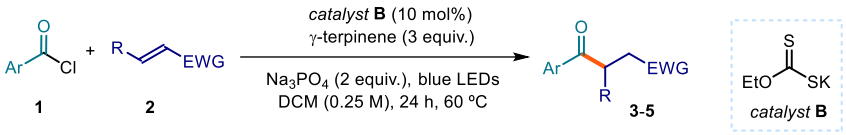
Table S7. Anhydride method - optimization



entry	Acid	Chloroformate	Base	Catalyst	Acceptor	NMR yield (%)
1	Benzoic	Ethyl	Na_3PO_4	10 mol% **B**	Acrylonitrile	50
2	Benzoic	Ethyl	Na_3PO_4	10 mol% **C**	Acrylonitrile	55
3	Benzoic	Ethyl	Na_3PO_4	20 mol% **B**	Acrylonitrile	60
4	Benzoic	Ethyl	Na_3PO_4 (1 equiv.)	20 mol% **B**	Acrylonitrile	69
5	Benzoic	Ethyl	-	20 mol% **B**	Acrylonitrile	71
6	Benzoic	Methyl	-	20 mol% **B**	Acrylonitrile	61
7	Benzoic	Isobutyl	-	20 mol% **B**	Acrylonitrile	15
8	Cyclohexyl	Ethyl	-	20 mol% **B**	Vinyl sulfone	64
9	Cyclohexyl	Ethyl	-	20 mol% **C**	Vinyl sulfone	42
10	Cyclohexyl	Ethyl	-	30 mol% **B**	Vinyl sulfone	83
11	Cyclohexyl	Ethyl	-	50 mol% **B**	Vinyl sulfone	82

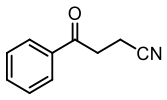
All reaction performed on 0.5 mmol scale; yield determined by 1H NMR analysis of the crude reaction mixture using trichloroethylene as the internal standard.

C1.3 General Procedure A



In an oven dried tube of 15 mL (16 mm × 125 mm) with a Teflon septum screw cap, potassium ethyl xanthogenate **B** (8 mg, 0.05 mmol, 0.1 equiv.), sodium phosphate (164 mg, 1.00 mmol, 2 equiv.), acyl chloride **1** (0.75 mmol, 1.5 equiv.) and the electron-poor olefin **2** (0.5 mmol, 1 equiv., *if solid*), were dissolved in DCM (2 mL, HPLC grade). Then, γ-terpinene (240 µL, 1.5 mmol, 3 equiv.) was added. The resulting yellow mixture was degassed with argon sparging for 60 seconds. When the electron-poor olefin **2** is *liquid*, it was added via syringe after the argon sparging. The reaction vessel was then placed in the temperature-controlled photoreactor (Figures S2-4) set at 60 ºC (60-61 ºC measured in the central well) and irradiated for 16 hours upon stirring, if not otherwise specified. Then, the solvent was evaporated and the residue purified by column chromatography to afford the corresponding product in the stated yield with >95% purity according to ^{1}H NMR analysis.

C1.4 Characterization of Products

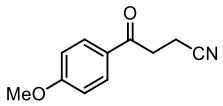


4-Oxo-4-phenylbutanenitrile (3a): Synthesized according to the general procedure A using benzoyl chloride (87 µL, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 µL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **3a** (65 mg, 82% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.98 – 7.93 (m, 2H), 7.64 – 7.59 (m, 1H), 7.53 – 7.47 (m, 2H), 3.41 – 3.35 (m, 2H), 2.80 – 2.75 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 195.4, 135.7, 134.0, 129.0, 128.1, 119.3, 34.4, 11.9

Matching reported literature data.[9]

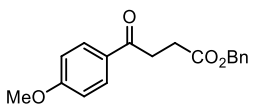


4-(4-methoxyphenyl)-4-oxobutanenitrile (3b): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 µL, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 µL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (15% AcOEt in hexanes as eluent) to afford **3b** (80 mg, 84% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.92 (app d, *J* = 8.9 Hz, 2H), 6.95 (app d, *J* = 9.0 Hz, 2H), 3.87 (s, 3H), 3.32 (t, *J* = 7.3 Hz, 2H), 2.75 (t, *J* = 7.3 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 193.9, 164.2, 130.4, 128.8, 119.5, 114.1, 55.7, 34.0, 12.0

Matching reported literature data.[9]

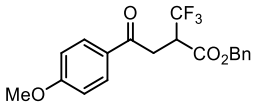


Benzyl 4-(4-methoxyphenyl)-4-oxobutanoate (3c): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 µL, 0.75 mmol, 1.5 equiv.) and benzyl acrylate (77 µL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (15% AcOEt in hexanes as eluent), followed by a second purification (AcOEt/hexanes/toluene 1:6:6 as eluent) to afford **3c** (96 mg, 64% yield) as a yellow solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.99 – 7.94 (m, 2H), 7.38 7.29 (m, 5H), 6.96 – 6.91 (m, 2H), 5.15 (s, 2H), 3.87 (s, 3H), 3.28 (t, *J* = 6.7 Hz, 2H), 2.81 (t, *J* = 6.7 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 196.6, 173.0, 163.7, 136.1, 130.4, 129.8, 128.6, 128.3 (2C overlapping), 113.9, 66.6, 55.6, 33.1, 28.5.

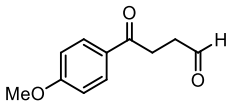
HRMS (ESI pos): calculated for $C_{18}H_{18}NaO_4$ ($M+Na^+$): 321.1097, found: 321.1091.



Benzyl 4-(4-methoxyphenyl)-4-oxo-2-(trifluoromethyl)butanoate (3d): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and benzyl 2-(trifluoromethyl)acrylate (115 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (10% AcOEt in hexanes as eluent). In order to remove traces of *p*-anisaldehyde formed as a byproduct during the reaction, after the chromatographic purification and solvent removal, the mixture was dissolved in 1.5 mL of MeOH, and 7.5 mL of saturated $NaHSO_3$ (aq) were added. Subsequently, the mixture was stirred for 30 s, diluted with 7.5 mL of H_2O, and extracted with 7.5 mL of 10% AcOEt in hexanes. The organic layer was dried with $MgSO_4$, filtered, and concentrated in vacuo[10] to afford **3d** (150 mg, 82% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 – 7.91 (m, 2H), 7.42 – 7.29 (m, 5H), 6.99 – 6.91 (m, 2H), 5.24 (dd, *J* = 18.3; 12.3 Hz, 2H), 4.01 – 3.89 (m, 1H), 3.87 (s, 3H), 3.78 (dd, *J* = 17.7, 10.8 Hz, 1H), 3.32 (dd, *J* = 17.7, 3.1 Hz, 1H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 193.8, 166.9 (q, *J* = 2.9 Hz), 164.2, 135.2, 130.6 (2CH overlapping), 128.9, 128.7, 128.5, 128.1, 125.0 (q, *J* = 280.4 Hz), 114.0, 67.9, 55.6, 45.9 (q, *J* = 27.9 Hz), 34.9 (d, *J* = 1.4 Hz).
^{19}F NMR (376 MHz, $CDCl_3$, proton decoupled) δ -67.51 (s, 3F).
HRMS (ESI pos): calculated for $C_{19}H_{17}F_3NaO_4$ ($M+Na^+$): 389.0971, found: 389.0978.

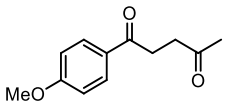


4-(4-Methoxyphenyl)-4-oxobutanal (3e): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and acrolein (33 μL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent), followed by a second purification (5:47:48 of Et_2O/DCM/hexanes as eluent) to afford **3e** (50 mg, 52% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.89 (s, 1H), 7.99 – 7.91 (m, 2H), 6.96 – 6.89 (m, 2H), 3.85 (s, 3H), 3.27 (app t, *J* = 6.4 Hz, 2H), 2.89 (app t, *J* = 6.5 Hz, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 201.0, 196.4, 163.7, 130.4, 129.6, 113.9, 55.6, 37.8, 30.8

Matching reported literature data.[11]

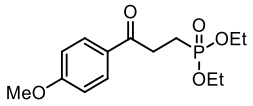


1-(4-Methoxyphenyl)pentane-1,4-dione (3f): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and methyl vinyl ketone (41 μL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent), followed by a second one (10:45:45 of Et_2O/DCM/Hexanes as eluent) to afford **3f** (49 mg, 48% yield) white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.98 – 7.91 (m, 2H), 6.95-6.89 (m, 2H), 3.85 (s, 3H), 3.25 – 3.18 (m, 2H), 2.88 – 2.82 (m, 2H), 2.24 (s, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 207.6, 197.1, 164.6, 130.4, 129.9, 113.8, 55.6, 37.2, 32.2, 30.2.

Matching reported literature data.[9]

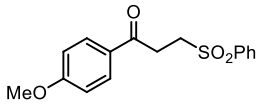


Diethyl (3-(4-methoxyphenyl)-3-oxopropyl)phosphonate (3g): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and diethyl vinylphosphonate (77 μL, 0.5 mmol, 1 equiv.). Irradiations time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **3g** (81 mg, 54% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.91 (app d, *J* = 8.8 Hz, 2H), 6.89 (app d, *J* = 8.9 Hz, 2H), 4.20 – 3.96 (m, 4H), 3.82 (s, 3H), 3.28 – 3.12 (m, 2H), 2.22 – 2.04 (m, 2H), 1.28 (t, *J* = 7.0 Hz, 6H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 196.0 (d, *J* = 16.2 Hz), 163.7, 130.3, 129.4, 113.8, 61.7 (d, *J* = 6.6 Hz), 55.5, 31.3 (d, *J* = 2.9 Hz), 19.9 (d, *J* = 144.3 Hz), 6.5 (d, *J* = 6.5 Hz).

Matching reported literature data.[12]

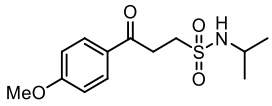


1-(4-Methoxyphenyl)-3-(phenylsulfonyl)propan-1-one (3h): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (25% AcOEt in hexanes as eluent), followed by a second one (20% AcOEt in hexanes as eluent) to afford **3h** (128 mg, 84% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.96 – 7.93 (m, 2H), 7.91 – 7.87 (m, 2H), 7.69 – 7.63 (m, 1H), 7.60 – 7.54 (m, 2H), 6.95 – 6.90 (m, 2H), 3.86 (s, 3H), 3.57 – 3.51 (m, 2H), 3.46 – 3.40 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 193.9, 164.1, 139.3, 134.0, 130.5, 129.5, 129.0, 128.1 114.1, 55.7, 51.3, 31.0.

Matching reported literature data.[13]

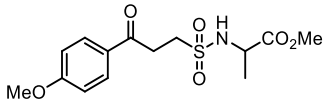


***N*-Isopropyl-3-(4-methoxyphenyl)-3-oxopropane-1-sulfonamide (3i):** Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and N-isopropylethenesulfonamide (75 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **3i** (98 mg, 69% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.98 – 7.91 (m, 2H), 6.97 – 6.90 (m, 2H), 4.35 (bs, 1H, NH), 3.87 (s, 3H), 3.74 – 3.58 (m, 1H), 3.54 – 3.38 (m, 4H), 1.24 (d, *J* = 6.4 Hz, 6H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 194.7, 164.1, 130.6, 129.2, 114.1, 55.7, 48.7, 46.5, 32.7, 24.4.

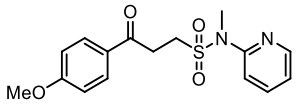
HRMS (ESI neg): calculated for $C_{13}H_{18}NO_4S$ (M^-): 284.0962, found 284.0974.



Methyl ((3-(4-methoxyphenyl)-3-oxopropyl)sulfonyl)alaninate (3j): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and methyl (vinylsulfonyl)alaninate (97 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (35% AcOEt in hexanes as eluent), followed by a second one (20:40:40 of AcOEt/DCM/Hexanes as eluent) to afford **3j** (83 mg, 50% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.97 – 7.89 (m, 2H), 6.96 – 6.89 (m, 2H), 5.29 (d, *J* = 8.4 Hz, 2H), 4.25 – 4.14 (m, 1H), 3.85 (s, 3H), 3.73 (s, 3H), 3.53 – 3.40 (m, 4H), 1.45 (d, *J* = 7.15 Hz, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 194.5, 173.2, 164.0, 130.5, 129.1, 114.0 55.6, 52.9, 51.7, 48.4, 32.2, 19.9. HRMS (ESI pos): calculated for $C_{14}H_{19}NNaO_6S$ ($M+Na^+$): 352.0825, found 352.0814.

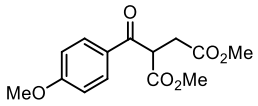


3-(4-Methoxyphenyl)-N-methyl-3-oxo-N-(pyridin-2-yl)propane-1-sulfonamide (3k): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and N-methyl-N-(pyridin-2-yl)ethenesulfonamide (99 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (20:20:60 of AcOEt/DCM/Hexanes as eluent), followed by a second one (20:20:60 of Et_2O/DCM/Hexanes as eluent) to afford **3k** (75 mg, 45% yield) as a yellowish oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.41 – 8.34 (m, 1H), 7.92 – 7.84 (m, 2H), 7.72 – 7.65 (m, 1H), 7.42 (app d, *J* = 8.3 Hz, 1H), 7.15 – 7.08 (m, 1H), 6.95 – 6.87 (m, 2H), 3.85 (s, 3H), 3.72 – 3.64 (m, 2H), 3.45 (s, 3H), 3.46 – 3.39 (m, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 194.2, 164.0, 154.0, 148.3, 138.2, 130.5, 129.1, 121.0, 118.6, 114.0, 55.6, 46.3, 35.9, 31.8.

HRMS (ESI pos): calculated for $C_{16}H_{19}N_2O_4S$ ($M+H^+$): 335.1060, found 335.1043.

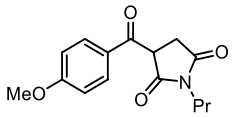


Dimethyl 2-(4-methoxybenzoyl)succinate (3l): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **3l** (122 mg, 87% yield) as a colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.03 – 7.98 (m, 2H), 6.96 – 6.92 (m, 2H), 4.82 (t, *J* = 7.1 Hz, 1H), 3.85 (s, 3H), 3.66 (s, 3H), 3.65 (s, 3H), 3.09 – 2.97 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 192.3, 171.9, 169.5, 164.2, 131.4, 128.8, 114.0, 129.0, 128.1, 114.1, 55.6, 52.8, 52.1, 33.2.

Matching reported literature data.[14]

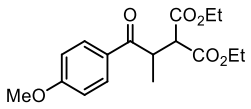


3-(4-Methoxybenzoyl)-1-propylpyrrolidine-2,5-dione (3m): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and 1-propyl-1H-pyrrole-2,5-dione (69.6 μL, 0.5 mmol, 1 equiv.). Chromatography on silica gel (20% AcOEt in hexanes as eluent) could not remove byproduct completely. Therefore, a further purification by semipreparative HPLC (Column SunFire C18, 60:40 Methanol/Water 6 min, up to 100% Methanol 1 min, 100% Methanol 4 min, 1 mL/min) was performed to obtain an analytical amount of the isolated product as a white solid. NMR yield (Trichloroethylene was used as internal standard): 53%.

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.12-8.07 (m, 2H), 7.02 – 6.97 (m, 2H), 4.78 (dd, *J* = 8.3, 3.9 Hz, 1H), 3.90 (s, 3H), 3.47 (t, *J* = 7.3 Hz, 2H), 3.37 (dd, *J* = 18.1, 3.8 Hz, 1H), 2.82 (dd, *J* = 18.1, 8.8 Hz, 1H), 1.64 – 1.54 (m, 2H, overlapping with water peak), 0.87 (t, *J* = 7.4 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 190.9, 176.1, 173.4, 164.7, 132.4, 128.6, 114.2, 55.7, 48.2, 41.0, 31.8, 21.0, 11.3

HRMS (ESI pos): calculated for $C_{15}H_{17}NNaO_4$ ($M+Na^+$): 298.1050, found 298.1056.

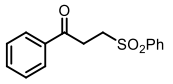


Diethyl 2-(1-(4-methoxyphenyl)-1-oxopropan-2-yl)malonate (3n): Synthesized according to the general procedure A using 4-methoxybenzoyl chloride (102 μL, 0.75 mmol, 1.5 equiv.) and diethyl 2-ethylidenemalonate (93 μL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (10% AcOEt in hexanes as eluent) to afford **3n** (60 mg, 37% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.03 – 7.96 (m, 2H), 6.98 – 6.93 (m, 2H), 4.31 – 4.21 (m, 2H) 4.20 – 4.02 (m, 3H), 3.97 (d, *J* = 10.8 Hz, 1H), 3.87 (s, 3H), 1.31 (t, *J* = 7.0 Hz, 3H), 1.19 (d, *J* = 7.0 Hz, 3H), 1.16 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 200.2, 169.0, 168.5, 163.8, 131.0, 128.6, 114.0, 61.7, 55.6, 55.1, 40.3, 16.25, 14.3, 14.0.

HRMS (ESI pos): calculated for $C_{17}H_{22}NaO_6$ ($M+Na^+$): 345.1309, found 345.1306.

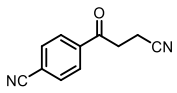


1-Phenyl-3-(phenylsulfonyl)propan-1-one (4a): Synthesized according to the general procedure A using benzoyl chloride (87 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **4a** (112 mg, 82% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 – 7.88 (m, 4H), 7.70 – 7.63 (m, 1H), 7.63 – 7.54 (m, 3H), 7.51 – 7.43 (m, 2H), 3.60 – 3.53 (m, 2H), 3.53 – 3.46 (m, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 195.5, 139.2, 135.9, 134.1, 133.9, 129.6, 128.9, 128.2, 128.1, 51.1, 31.5.

Matching reported literature data.[13]

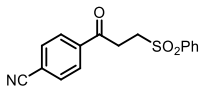


4-(3-Cyanopropanoyl)benzonitrile (4b): Synthesized according to the general procedure A using using 4-cyanobenzoyl chloride (124 mg, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 μL, 0.5 mmol, 1 equiv.). In this case the reaction was irradiated for 60 hours. The crude mixture was purified by flash column chromatography on silica gel (15% AcOEt in hexanes as eluent) to afford **4b** (92 mg, 45% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.04 (app d, *J* = 8.2 Hz, 2H), 7.80 (app d, *J* = 8.2 Hz, 2H), 3.39 (t, *J* = 6.9 Hz, 2H), 2.79 (t, *J* = 7.0 Hz, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 194.3, 138.5, 132.8, 128.6, 118.8, 117.7, 117.3, 34.7, 11.8.

Matching reported literature data.[9]

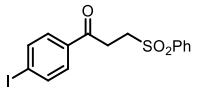


4-(3-(Phenylsulfonyl)propanoyl)benzonitrile (4c): Synthesized according to the general procedure A using 4-cyanobenzoyl chloride (124 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). In this case the reaction was irradiated for 60 hours. The crude mixture was purified by flash column chromatography on silica gel (25% AcOEt in hexanes as eluent) to afford **4c** (79 mg, 53% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.02 (app d, *J* = 8.5 Hz, 2H), 7.95 (app d, *J* = 7.3 Hz, 2H), 7.78 (app d, *J* = 8.4 Hz, 2H), 7.69 (app t, *J* = 7.4 Hz, 1H), 7.59 (app t, *J* = 7.7 Hz, 2H), 3.60 – 3.48 (m, 4H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 194.4, 139.1, 138.8, 134.2, 132.8, 129.6, 128.6, 128.1, 117.8, 117.2, 50.9, 31.8.

HRMS (ESI pos): calculated for $C_{16}H_{13}NNaO_3S$ ($M+Na^+$): 322.0508, found 322.0505.

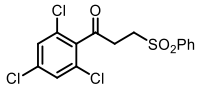


1-(4-Iodophenyl)-3-(phenylsulfonyl)propan-1-one (4d): Synthesized according to the general procedure A using 4-iodobenzoyl chloride (200 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). In this case the reaction was irradiated for 60 hours. The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **4d** (130 mg, 65% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.99 – 7.92 (m, 2H), 7.87 – 7.82 (m, 2H), 7.70 – 7.65 (m, 1H), 7.65 – 7.61 (m, 2H), 7.61 – 7.56 (m, 2H), 3.58 – 3.51 (m, 2H) 3.49 – 3.42 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 194.9, 139.2, 138.3, 135.2, 134.1, 129.6, 129.5, 128.1, 102.1, 51.0, 31.4

HRMS (ESI pos): calculated for $C_{15}H_{13}INaO_3S$ ($M+Na^+$): 422.9522, found 422.9519.

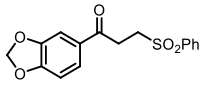


3-(Phenylsulfonyl)-1-(2,4,6-trichlorophenyl)propan-1-one (4e): Synthesized according to the general procedure A using 2,4,6-trichlorobenzoyl chloride (183 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). In this case the reaction was irradiated for 60 hours. The crude mixture was purified by flash column chromatography on silica gel (25% AcOEt in hexanes as eluent) followed by a second one (5:25:70 of AcOEt/DCM/Hexanes as eluent) to afford **4e** (95 mg, 50% yield) as a withe solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.98 – 7.92 (m, 2H), 7.72 – 7.65 (m, 1H), 7.63 – 7.56 (m, 2H), 7.36 (s, 2H), 3.58 – 3.50 (m, 2H), 3.33 – 3.25 (m, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 197.2, 138.9, 137.0, 136.6, 134.2, 131.2, 129.6, 128.5, 128.1, 50.1, 36.5

HRMS (ESI pos): calculated for $C_{15}H_{11}Cl_3NaO_3S$ ($M+Na^+$): 398.9387, found 398.9390.

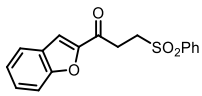


1-(Benzo[d][1,3]dioxol-5-yl)-3-(phenylsulfonyl)propan-1-one (4f): Synthesized according to the general procedure A using benzo[d][1,3]dioxole-5-carbonyl chloride (138 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (25% AcOEt in hexanes as eluent) to afford **4f** (90 mg, 57% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.96 – 7.92 (m, 2H), 7.67 (tt, *J* = 7.3, 1.8 Hz, 1H), 7.60 – 7.55 (m, 2H), 7.52 (dd, *J* = 8.1, 1.8 Hz, 1H), 7.36 (d, *J* = 1.7 Hz, 1H), 6.84 (d, *J* = 8.1 Hz, 1H), 6.04 (s, 2H), 3.57 – 3.50 (m, 2H), 3.44 – 3.37 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 193.5, 152.5, 148.5, 139.2, 134.0, 130.8, 129.5, 128.1, 124.7, 108.2, 107.8, 102.2, 51.3, 31.2.

HRMS (ESI pos): calculated for $C_{16}H_{14}NaO_5S$ ($M+Na^+$): 341.0454, found 341.0452.

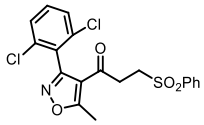


1-(Benzofuran-2-yl)-3-(phenylsulfonyl)propan-1-one (4g): Synthesized according to the general procedure A using benzofuran-2-carbonyl chloride (135 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (25% AcOEt in hexanes as eluent) followed by a second one (20% AcOEt in hexanes as eluent) to afford **4g** (77 mg, 49% yield) as a yellowish solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.99 – 7.94 (m, 2H), 7.71 (app d, *J* = 7.8 Hz, 1H), 7.70 – 7.65 (m, 1H), 7.61 – 7.55 (app t, *J* = 8.0 Hz, 3H), 7.55 (s, 1H), 7.53 – 7.48 (m, 1H), 7.35 – 7.30 (m, 1H), 3.61 – 3.55 (m, 2H), 3.53 – 3.47 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 186.6, 155.9, 151.6, 139.0, 134.2, 129.6, 128.9, 128.2, 126.9, 124.3, 123.6, 113.7, 112.6, 50.6, 31.8

HRMS (ESI pos): calculated for $C_{17}H_{14}NaO_4S$ ($M+Na^+$): 337.0505, found 337.0504.

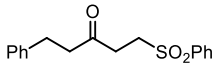


1-(3-(2,6-Dichlorophenyl)-5-methylisoxazol-4-yl)-3-(phenylsulfonyl)propan-1-one (4h): Synthesized according to the general procedure A using 3-(2,6-dichlorophenyl)-5-methylisoxazole-4-carbonyl chloride (218 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **4h** (75 mg, 35% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.75 – 7.67 (m, 2H), 7.67 – 7.60 (m, 1H), 7.57 – 7.43 (m, 5H), 3.41 – 3.34 (m, 2H), 2.74 (s, 3H), 3.68 – 3.60 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 189.0, 176.5, 157.2, 138.6, 135.6, 134.0, 132.2, 129.5, 128.6, 128.0, 127.9, 116.1, 50.1, 34.3, 14.2.

HRMS (ESI pos): calculated for $C_{19}H_{15}Cl_2NNaO_4S$ ($M+Na^+$): 445.9991, found 445.9992.

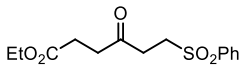


1-Phenyl-5-(phenylsulfonyl)pentan-3-one (5b): Synthesized according to the general procedure A using hydrocinnamoyl chloride (111 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). In this case the reaction was irradiated for 60 hours. The crude mixture was purified by two rounds of flash column chromatography on silica gel (25% AcOEt in hexanes as eluent): to afford **5b** (113 mg, 75% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.92 – 7.87 (m, 2H), 7.71 – 7.63 (m, 1H), 7.61 – 7.53 (m, 2H), 7.31 – 7.23 (m, 2H), 7.22 – 7.16 (m, 1H), 7.16 – 7.10 (m, 2H), 3.42 – 3.33 (m, 2H), 2.92 – 2.82 (m, 4H), 2.81 – 2.72 (m, 2H).

^{13}C NMR (100MHz, CDCl3) δ 205.3, 140.5, 139.1, 134.1, 129.5, 128.7, 128.4, 128.1, 126.5, 50.6, 44.4, 35.3, 29.7.

Matching reported literature data.[15]



Ethyl 4-oxo-6-(phenylsulfonyl)hexanoate (5c): Synthesized according to the general procedure A using ethyl 4-chloro-4-oxobutanoate (107 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Reaction time: 24 hours. The crude mixture was purified by flash column chromatography on silica gel (33% AcOEt in hexanes as eluent). Product was then dissolved in DCM, washed 3 times with a solution of $CuSO_4$ (5% in water), dried with $MgSO_4$ and evaporated under reduced pressure to afford **5c** (112 mg, 75% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.92 – 7.87 (m, 2H), 7.69 – 7.63 (m, 1H), 7.61 – 7.53 (m, 2H), 4.09 (q, *J* = 7.1 Hz, 2H), 3.42 – 3.35 (m, 2H), 2.98 – 2.91 (m, 2H), 2.75 – 2.69 (m, 2H), 2.59 – 2.52 (m, 2H), 1.22 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 204.5, 172.5, 139.1, 134.1, 129.5, 128.1, 60.9, 50.6, 37.2, 35.3, 28.0, 14.2

HRMS (ESI pos): calculated for $C_{14}H_{18}NaO_5S$ ($M+H^+$): 321.0767, found 321.0765.

C2. Reaction of Aliphatic Acyl Chlorides

C2.1 Experimental Setup

Our 3D printed photoreactor consisted of a 9 cm diameter crystallizing dish with a 3D printed support of 6 positions, and a hole of 22 mm in the middle to allow ventilation. A commercial 1-meter LED strip was wrapped around the crystallizing dish. In order to control the temperature, a fan was used to cool down the reactor. Reaction temperature was measured, through a vial containing a thermometer, and it stayed between 35-40 ºC (Figure S5). Each of the positions could be used to fit a standard 16 mm diameter vial with a Teflon screw cap.

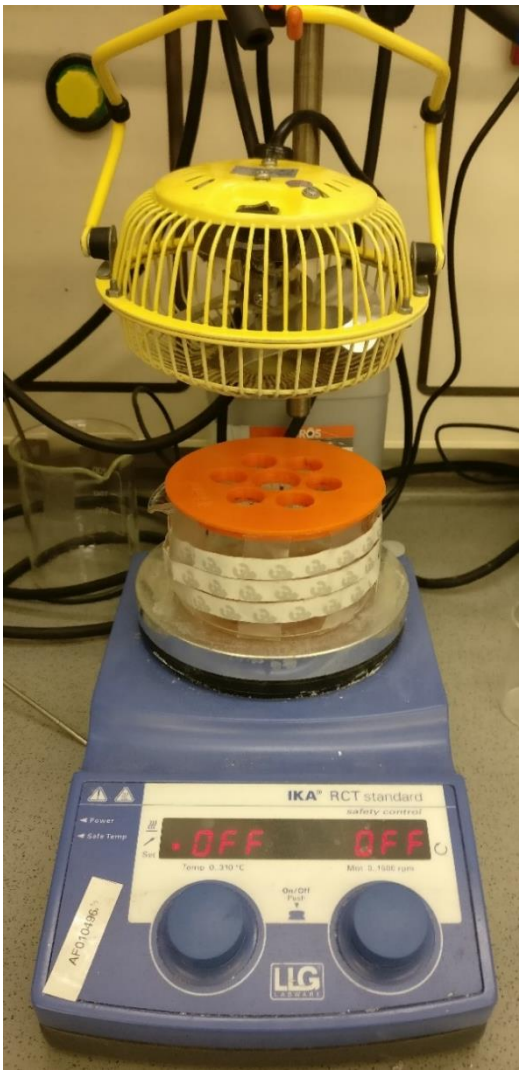


Figure S5: Photoreactor used for the reactions of aliphatic acyl chlorides.

Experiments at 465 nm were conducted using a 1m strip, 14.4W "LEDXON MODULAR 9009083 LED, SINGLE 5050" purchased from Farnell, catalog number 9009083. The emission spectrum of these LEDs was recorded (Figure S6).

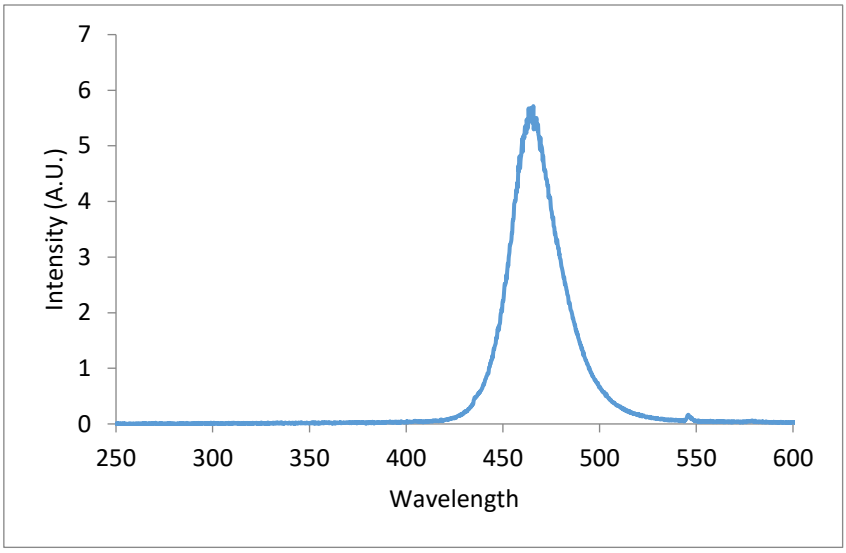
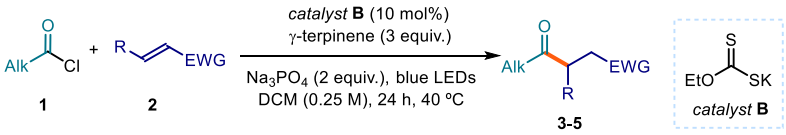


Figure S6: Emission spectrum of the 465 nm LED strip used in this study.

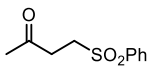
The emission maximum was determined as 465 nm with a spectral width of 30 nm (450-480 nm) at half peak intensity and a total spectral width of 120 nm (420-540 nm).

C2.2 General Procedure B



In an oven dried tube of 15 mL (16 mm × 125 mm) with a Teflon septum screw cap, potassium ethyl xanthogenate **B** (8 mg, 0.05 mmol, 0.1 equiv.), sodium phosphate (164 mg, 1.00 mmol, 2 equiv.), acyl chloride **1** (0.75 mmol, 1.5 equiv.) and the electron-poor olefin **2** (0.5 mmol, 1 equiv., *if solid*), were dissolved in DCM (2 mL, HPLC grade). Then, γ-terpinene (240 µL, 1.5 mmol, 3 equiv.) was added. The resulting yellow mixture was degassed with argon sparging for 60 seconds. When the electron-poor olefin **2** is *liquid*, it was added via syringe after the argon sparging. The vial was then placed in the 3D printed support photoreactor (Figure S6) and irradiated under stirring for 24 hours, if not otherwise specified. After this, the solvent was evaporated and the residue purified by column chromatography to afford the corresponding product in the stated yield with >95% purity according to ^{1}H NMR analysis.

C2.3 Characterization of Products

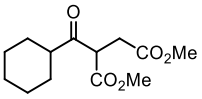


4-(Phenylsulfonyl)butan-2-one (5a): Synthesized according to the general procedure B using acetyl chloride (53 µL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (gradient from 25% to 100% AcOEt in hexanes as eluent): to afford product **5a** (70 mg 66% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.94 – 7.86 (m, 2H), 7.70 – 7.62 (m, 1H), 7.61 – 7.53 (m, 2H), 3.40 – 3.33 (m, 2H), 2.96 – 2.88 (m, 2H), 2.17 (s, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 203.8, 139.1, 134.0, 129.6, 128.1, 50.6, 36.0, 30.0

Matching reported literature data.[16]

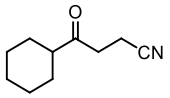


Dimethyl 2-(cyclohexanecarbonyl)succinate (5d): Synthesized according to general procedure B using cyclohexanecarbonyl chloride (100 μL, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (10% AcOEt in hexanes as eluent) to afford **5d** (107 mg, 83% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 4.14 (dd, *J* = 8.1, 6.2 Hz, 1H), 3.72 (s, 3H), 3.66 (s, 3H), 3.82 (s, 3H), 2.93 (dd, *J* = 17.5, 8.1 Hz, 1H), 2.81 (dd, *J* = 17.6, 6.5 Hz, 1H), 2.69 – 2.61 (m, 1H), 2.00 – 1.93 (m, 1H), 1.84 – 1.74 (m, 3H), 1.70 – 1.62 (m, 1H), 1.46 – 1.36 (m, 1H), 1.33 – 1.13 (m, 4H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 206.7, 171.9, 169.2, 52.8, 52.2, 52.1, 50.72, 32.4, 29.0, 28.1, 25.9, 25.8, 25.5.

Matching reported literature data.[17]



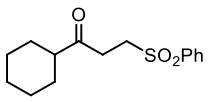
4-Cyclohexyl-4-oxobutanenitrile (5e): Synthesized according to the general procedure B using cyclohexanecarbonyl chloride (100 μL, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 μL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% Et_2O in pentane as eluent) to afford **5e** (52 mg, 63% yield) as a colorless oil.

(For the gram scale procedure see paragraph C5, general procedure E)

^{1}H NMR (500 MHz, $CDCl_3$) δ 2.85-2.80 (m, 2H); 2.60-2.54 (m, 2H); 2.36 (tt, *J* = 11.3, 3.5 Hz, 1H); 1.89-1.82 (m, 2H); 1.82-1.75 (m, 2H); 1.71-1.64 (m, 1H); 1.40-1.15 (m, 5H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 209.4, 119.3, 50.6, 35.9, 28.5, 25.8, 25.6, 11.6.

Matching reported literature data.[17]



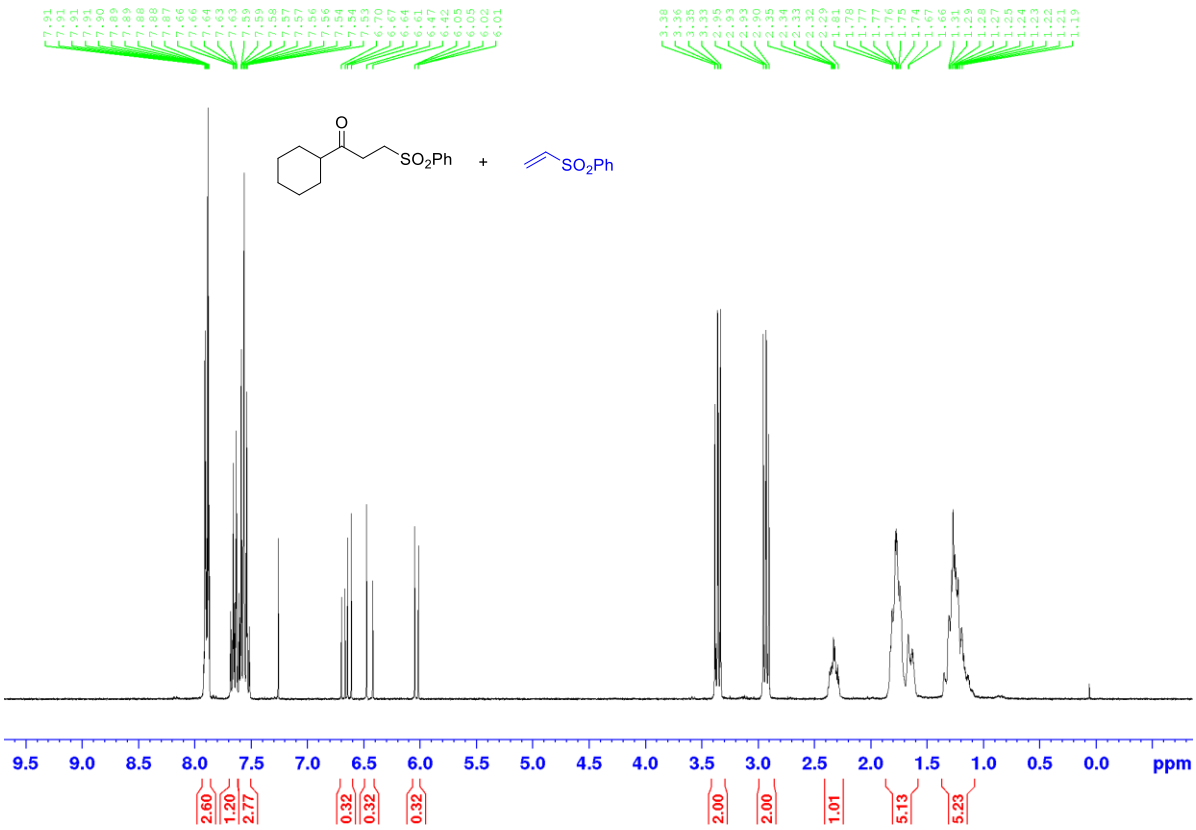
1-Cyclohexyl-3-(phenylsulfonyl)propan-1-one (5f): Synthesized according to the general procedure B using cyclohexanecarbonyl chloride (100 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone **2** (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **5f** (112 mg, 76% yield) as colorless oil.

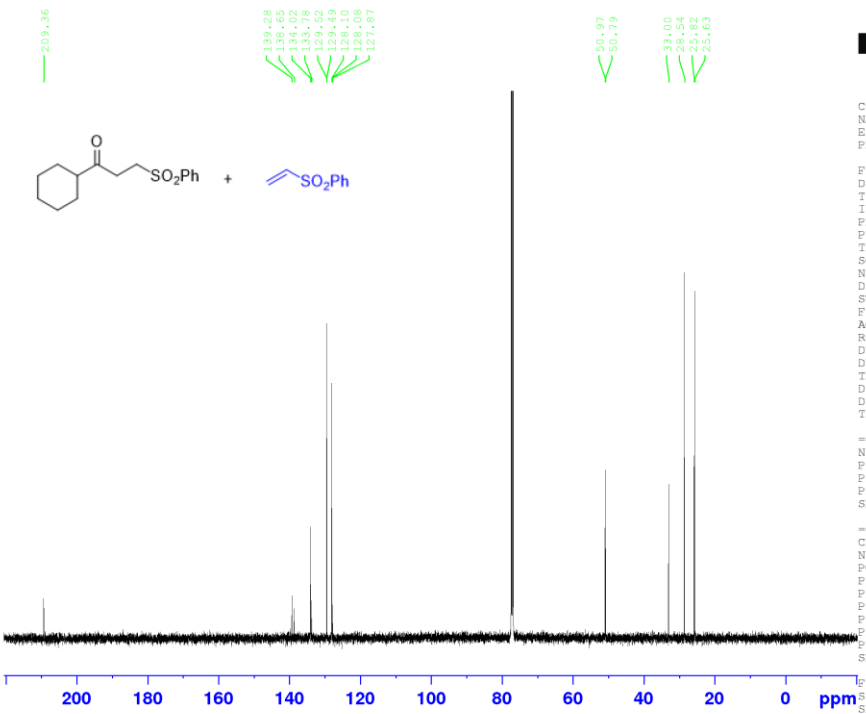
A purity of 85% weight was determined ^{1}H NMR analysis (mixture with phenyl vinyl sulfone, see Figure below). Corrected yield: 68%.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.93 – 7.86 (m, 2H), 7.69 – 7.62 (m, 1H), 7.62 – 7.50 (m, 2H), 3.39 – 3.32 (m, 2H), 2.97 – 2.89 (m, 2H), 2.39 – 2.25 (m, 1H), 1.88 – 1.58 (m, 5H), 1.38 – 1.08 (m, 5H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 193.9, 164.2, 130.4, 128.8, 119.5, 114.1, 55.7, 34.0, 12.0.

Matching reported literature data.[18]





BRUKER

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D11           0.03000000 sec
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SFO1      125.7703648 MHz

======== CHANNEL f2 ========
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PL12              11.54 dB
PL13              11.54 dB
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PL13W       0.96027696 W
SFO2      500.1320005 MHz

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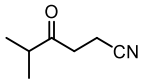
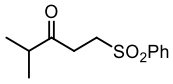


4-Cyclohexyl-4-oxobutanenitrile (5g): Synthesized according to the general procedure B using isobutanoyl chloride (100 μL, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 μL, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% Et_2O in pentane as eluent) to afford **5g** (39 mg, 62% yield) as a colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 2.83 (t, *J* = 7.1 Hz, 2H), 2.66 – 2.56 (m, 1H), 2.57 (t, *J* = 7.2 Hz, 2H), 1.12 (d, *J* = 7.0 Hz, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 210.0, 119.2, 40.7, 35.6, 18.2, 11.6

Matching reported literature data.[19]

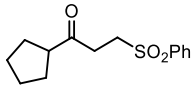


4-Methyl-1-(phenylsulfonyl)pentan-3-one (5h): Synthesized according to the general procedure B using isobutanoyl chloride (100 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent), followed by a second one (15% AcOEt in hexanes as eluent) to afford **5h** (61 mg, 51% yield) as a colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.94 – 7.88 (m, 2H), 7.69 – 7.64 (m, 1H), 7.61 – 7.54 (m, 2H), 3.40 – 3.35 (m, 2H), 3.00 – 2.93 (m, 2H), 2.66 – 2.55 (m, 1H), 1.08 (d, *J* = 7.0 Hz, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 210.0, 139.2, 134.0, 129.5, 128.1, 50.8, 41.1, 32.7, 18.3.

HRMS (ESI pos): calculated for $C_{12}H_{16}NaO_3S$ ($M+Na^+$): 263.0712, found 263.0714.

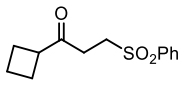


1-Cyclopentyl-3-(phenylsulfonyl)propan-1-one (5i): Synthesized according to the general procedure B using cyclopentanecarbonyl chloride (91 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **5i** (102 mg, 77% yield) colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.93 – 7.87 (m, 2H), 7.69 – 7.62 (m, 1H), 7.60 – 7.53 (m, 2H), 3.42 – 3.34 (m, 2H), 2.99 – 2.91 (m, 2H), 2.90 – 2.79 (m, 1H), 1.88 – 1.73 (m, 2H), 1.73 – 1.49 (m, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 208.5, 139.2 134.0, 129.5, 128.1, 51.5, 50.8, 34.0, 29.0, 26.0.

HRMS (ESI pos): calculated for C14H18NaO3S ($M+Na^+$): 289.0869, found 289.0873.

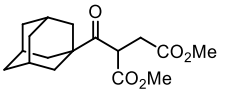


1-Cyclobutyl-3-(phenylsulfonyl)propan-1-one (5j): Synthesized according to the general procedure B using cyclobutanecarbonyl chloride (86 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **5j** (116 mg, 92% yield) as a colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.92 – 7.88 (m, 2H), 7.68 – 7.63 (m, 1H), 7.60 – 7.54 (m, 2H), 3.40 – 3.35 (m, 2H), 3.29 – 3.20 (m, 1H), 2.87 – 2.81 (m, 2H), 2.24 – 2.08 (m, 4H), 2.02 – 1.90 (m, 1H), 1.84 – 1.75 (m, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 207.1, 139.2, 134.1, 129.5, 128.1, 50.6, 45.4, 32.3, 24.5, 17.9

HRMS (ESI pos): calculated for $C_{13}H_{15}NaO_6$ ($M+Na^+$): 275.0712, found 275.0716.

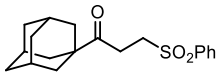


Dimethyl 2-((3r,5r,7r)-adamantane-1-carbonyl)succinate (5k): Synthesized according to the general procedure B using 1-adamantanecarbonyl chloride (149 mg, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexanes as eluent) to afford **5k** (85 mg, 55% yield) as a colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 4.37 (app t, *J* = 7.2 Hz, 1H), 3.67 (s, 3H), 3.64 (s, 3H), 2.79 (app d, *J* = 7.2 Hz, 2H), 2.03 (bs, 3H), 1.89 – 1.79 (m, 6H), 1.76 – 1.63 (m, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 208.8, 171.7, 169.5, 52.7, 52.1, 47.7, 47.4, 38.0, 36.4, 33.5, 27.9

HRMS (ESI pos): calculated for $C_{17}H_{24}NaO_5$ ($M+Na^+$): 331.1516, found 331.1523.



1-((3r,5r,7r)-Adamantan-1-yl)-3-(phenylsulfonyl)propan-1-one (5l): Synthesized according to the general procedure B using 1-adamantanecarbonyl chloride (149 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (15% AcOEt in hexanes as eluent) to afford **5l** (165 mg, 95% yield) as a colorless oil.

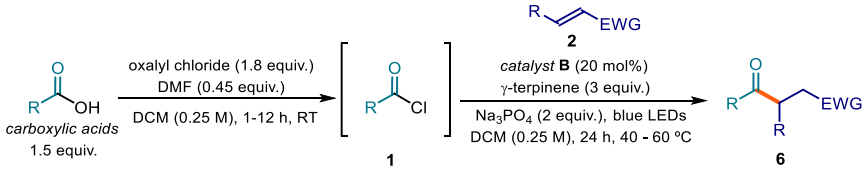
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.93 – 7.88 (m, 2H), 7.68 – 7.63 (m, 1H), 7.60 – 7.54 (m, 2H), 3.37 – 3.29 (m, 2H), 3.00-2.93 (m, 2H), 2.03 (bs, 3H), 1.79 – 1.70 (m, 9H), 1.66 (app d, *J* = 12.2 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 211.2, 139.3, 133.9, 129.4, 128.0, 50.9, 46.5, 38.3, 36.5, 29.1, 27.9.

HRMS (ESI pos): calculated for $C_{19}H_{25}O_3S$ ($M+H^+$): 333.1519, found 333.1519.

C3. Reaction of Carboxylic Acids through Acyl Chloride Formation

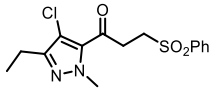
C3.1 General Procedure C:



In a round bottom flask, the carboxylic acid (0.75 mmol, 1.5 equiv) was dissolved in DCM (3 mL, HPLC grade). Then, oxalyl chloride (0.79 µL, 0.90 mmol, 1.8 equiv.) and DMF (17 µL, 0.22 mmol, 0.45 equiv.) were added at ambient temperature. The reaction was stirred at ambient temperature until complete consumption of the carboxylic acid was observed by TLC. After that, the solvent was evaporated to dryness under vacuum at ambient temperature to obtain the crude acyl chloride, which was used without further purification in the next step.

In an oven dried vial, with a Teflon septum screw cap, potassium ethyl xanthogenate **B** (16 mg, 0.10 mmol, 0.2 equiv.), sodium phosphate (164 mg, 1.00 mmol, 2 equiv.), and the electron-poor olefin **2** (0.5 mmol, 1 equiv.), were added. The crude acyl chloride was dissolved in DCM (2 mL, HPLC grade) and the solution was added to the vial, followed by γ-terpinene (240 µL, 1.5 mmol, 3 equiv.). The resulting yellow mixture was degassed via argon sparging for 60 seconds. If the electron-poor olefin **2** was *liquid*, it was added via syringe after the argon sparging. The vial was then placed in the correspondent reactor (depending on the temperature used for the reaction) and irradiated for 24 hours. The solvent was evaporated and the residue purified by column chromatography to afford the corresponding product in the stated yield with >95% purity according to ^{1}H NMR analysis.

C3.2 Characterization of Products

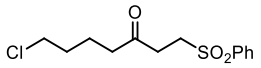


1-(4-Chloro-3-ethyl-1-methyl-1H-pyrazol-5-yl)-3-(phenylsulfonyl)propan-1-one (6a): Synthesized according to the general procedure C using 4-chloro-3-ethyl-1-methyl-1H-pyrazole-5-carboxylic acid (141 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 2 hours. The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent) to afford **6a** (52 mg, 31% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.98 – 7.92 (m, 2H), 7.71 – 7.64 (m, 1H), 7.62 – 7.54 (m, 2H), 3.98 (s, 3H), 3.57 – 3.51 (m, 2H), 3.49 – 3.42 (m, 2H), 2.63 (q, *J* = 7.6, 2H), 1.23 (t, *J* = 7.5, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 186.6, 150.4, 139.0, 134.6, 134.1, 129.5, 128.3, 112.7, 50.6, 41.6, 35.5, 19.2, 12.9.

HRMS (ESI pos): calculated for $C_{15}H_{18}ClN_2O_3S$ ($M+H^+$): 341.0721, found 341.0709.

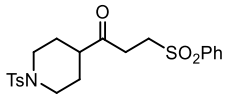


7-chloro-1-(phenylsulfonyl)heptan-3-one (6b): Synthesized according to the general procedure C using 5-chloropentanoic acid (72 µL, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 3 hours. The crude mixture was purified by flash column chromatography on silica gel (20% AcOEt in hexanes as eluent). The product was then dissolved in DCM, washed 3 times with a solution of $CuSO_4$ (5% in water), dried with $MgSO_4$ and evaporated under reduced pressure to afford **6b** (108 mg, 70% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.92 – 7.87 (m, 2H), 7.69 – 7.63 (m, 1H), 7.60 – 7.54 (m, 2H), 3.53 – 3.47 (m, 2H), 3.41 – 3.35 (m, 2H), 2.92 – 2.86 (m, 2H), 2.50 – 2.44 (m, 2H), 1.78 – 1.64 (m, 4H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 205.5, 139.1, 134.1, 129.5, 128.1, 50.6, 44.6, 41.9 35.0 31.8 20.9.

HRMS (ESI pos): calculated for $C_{13}H_{17}ClNaO_3S$ ($M+Na^+$): 311.0479, found 311.0477.

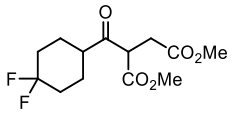


3-(Phenylsulfonyl)-1-(1-tosylpiperidin-4-yl)propan-1-one (6c): Synthesized according to the general procedure C using 1-tosylpiperidine-4-carboxylic acid (213 mg, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 3 hours. In this case the reaction was irradiated for 36 hours. The crude mixture was purified by flash column chromatography on silica gel (40% AcOEt in hexanes as eluent) to afford **6c** (164 mg, 75% yield) as a white solid.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.90 – 7.85 (m, 2H), 7.69 – 7.64 (m, 1H), 7.64 – 7.60 (m, 2H), 7.60 – 7.54 (m, 2H), 7.32 (app d, *J*= 7.9 Hz, 2H), 3.71 (dt, *J*= 12.2, 3.5 Hz, 2H), 3.35 (app t, *J*= 7.4 Hz, 2H), 2.91 (app t, *J*= 7.4 Hz, 2H), 2.43 (s, 3H), 2.38 (td, *J*= 11.7, 2.5 Hz, 2H), 2.33 – 2.24 (m, 1H), 1.93 – 1.84 (m, 2H), 1.75 – 1.63 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 206.9, 143.8, 139.1, 134.2, 133.2, 129.9, 129.6, 128.0, 127.8, 50.6, 47.6, 45.5, 33.0, 27.0, 21.7.

HRMS (ESI pos): calculated for $C_{21}H_{26}NO_5S_2$ ($M+H^+$): 436.1247, found 436.1251.



dimethyl 2-(4,4-difluorocyclohexane-1-carbonyl)succinate (6d): Synthesized according to the general procedure C using 4,4-difluorocyclohexane-1-carboxylic acid (123 mg, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 1 hour. The crude mixture was purified by

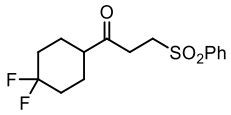
flash column chromatography on silica gel (20% Et_2O in hexanes as eluent) to afford **6d** (128 mg, 88% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 4.16 (dd, *J* = 9.1, 5.3 Hz, 1H), 3.73 (s, 3H), 3.67 (s, 3H), 3.03 (dd, *J* = 17.6, 9.3 Hz, 1H), 2.82 (dd, *J* = 17.5, 5.3 Hz, 1H), 2.83 – 2.74 (m, 1H), 2.22 – 2.02 (m, 3H), 1.98 – 1.65 (m, 5H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 205.6, 171.9, 168.8, 122.7 (dd, *J* = 241.6, 240.9 Hz), 53.0, 52.2, 52.1, 48.0, 32.7 (dd, *J* = 25.0 Hz), 25.2 (d, *J* = 9.0 Hz) 24.4 (d, *J* = 8.6 Hz)

^{19}F NMR (376 MHz, $CDCl_3$, proton decoupled) δ -93.75 (d, *J* = 237.2 Hz, 1F); -100.48 (d, *J* = 238.2 Hz, 1F).

HRMS (ESI pos): calculated for $C_{13}H_{18}F_2NaO_5$ ($M+Na^+$): 315.1015, found 315.1017.



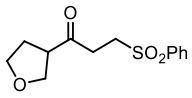
1-(4,4-Difluorocyclohexyl)-3-(phenylsulfonyl)propan-1-one (6e): Synthesized according to the general procedure C using 4,4-difluorocyclohexane-1-carboxylic acid (123 mg, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 1 hour. The crude mixture was purified by flash column chromatography on silica gel (30% AcOEt in hexanes as eluent) to afford **6e** (112 mg, 71% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.93 – 7.88 (m, 2H), 7.70 – 7.64 (m, 1H), 7.61 – 7.55 (m, 2H), 3.41 – 3.35 (m, 2H), 3.01 – 2.94 (m, 2H), 2.52 – 2.39 (m, 1H), 2.18 – 2.04 (m, 2H), 1.99 – 1.86 (m, 2H), 1.85 – 1.64 (m, 4H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 207.4, 139.2, 134.1, 129.6, 128.0, 122.5 (dd, *J* = 241.6, 240.7 Hz) 50.6, 48.1, 33.2, 32.7 (dd, *J* = 24.4, 24.2 Hz), 24.7 (d, *J* = 9.5 Hz).

^{19}F NMR (376 MHz, $CDCl_3$, proton decoupled) δ -93.72 (dd, *J* = 237.6 Hz); -100.82 (d, *J* = 237.7 Hz).

HRMS (ESI pos): calculated for $C_{15}H_{18}F_2NaO_3S$ ($M+Na^+$): 339.0837, found 339.0840.

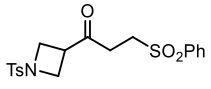


3-(Phenylsulfonyl)-1-(tetrahydrofuran-3-yl)propan-1-one (6f): Synthesized according to the general procedure C using tetrahydrofuran-3-carboxylic acid (72 µL, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 1 hour. The crude mixture was purified by flash column chromatography on silica gel (50% AcOEt in hexanes as eluent). The product was then dissolved in DCM, washed 3 times with a solution of $CuSO_4$ (5% in water), dried with $MgSO_4$ and evaporated under reduced pressure to afford **6f** (78 mg, 58% yield) as a colorless oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.94 – 7.87 (m, 2H), 7.71 – 7.64 (m, 1H), 7.62 – 7.54 (m, 2H), 3.94 – 3.73 (m, 4H), 3.47 – 3.34 (m, 2H), 3.26 – 3.17 (m, 1H), 3.07 – 2.89 (m, 2H), 3.16 – 2.01 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 205.6, 139.1, 134.1, 129.6, 128.1, 69.3, 68.4, 51.1, 50.6, 34.4, 29.1.

HRMS (ESI pos): calculated for $C_{13}H_{16}NaO_4S$ ($M+Na^+$): 291.0662, found 291.0665.



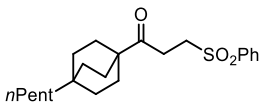
3-(Phenylsulfonyl)-1-(1-tosylazetidin-3-yl)propan-1-one (6g): Synthesized according to the general procedure C using 1-tosylazetidine-3-carboxylic acid (191 mg, 0.75 mmol, 1.5 equiv.) and dimethyl fumarate (72 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 2 hours. In this case the reaction was irradiated for 36 hours. The crude mixture was purified by flash column

chromatography on silica gel (40% AcOEt in hexanes as eluent) to afford **6g** (63 mg, 31% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.88 – 7.82 (m, 2H), 7.74 – 7.63 (m, 3H), 7.60 – 7.53 (m, 2H), 7.40 – 7.33 (m, 2H), 3.92 – 3.88 (m, 2H), 3.88 – 3.81 (m, 2H), 3.41 – 3.28 (m, 3H), 2.79 (app t, *J*= 7.3 Hz, 2H), 2.44 (s, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 202.1, 144.6, 138.9, 134.2, 131.3, 130.0, 129.6, 128.5, 128.0, 51.8, 50.3, 38.1, 33.1, 21.7.

HRMS (ESI pos): calculated for $C_{19}H_{21}NNaO_5S_2$ ($M+Na^+$): 430.0753, found 430.0748.



1-(4-Pentylbicyclo[2.2.2]octan-1-yl)-3-(phenylsulfonyl)propan-1-one (6h): Synthesized according to the general procedure C using 4-pentylbicyclo[2.2.2]octane-1-carboxylic acid (168 mg, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). Acyl chloride formation was complete after 2 hours. Chromatography on silica gel (10% AcOEt in hexanes as eluent) could not remove byproducts completely. Purification by semipreparative HPLC (IC column, 60:40 Hexane/Ethanol, 1 mL/min) was performed to obtain an analytical amount of product **6h** as a white solid. NMR yield (Trichloroethylene was used as internal standard): 80%.

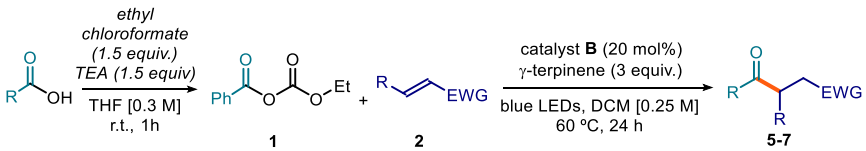
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.93 – 7.87 (m, 2H), 7.69 – 7.63 (m, 1H), 7.61 – 7.54 (m, 2H), 3.36 – 3.29 (m, 2H), 2.97 – 2.90 (m, 2H), 1.69 – 1.61 (m, 6H), 1.43 – 1.34 (m, 6H), 1.31 – 1.24 (m, 2H), 1.24 – 1.12 (m, 4H), 1.11 – 1.04 (m, 2H), 0.87 (t, *J*= 7.3 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 211.6, 139.4, 134.0, 129.5, 128.1, 51.0, 45.3, 41.3, 32.9, 30.8, 30.5, 30.1, 28.2, 23.5, 22.8, 14.2.

HRMS (ESI pos): calculated for $C_{22}H_{32}NaO_3S$ ($M+Na^+$): 399.1964, found 399.1951.

C4. Reaction of Carboxylic Acids through Anhydride Formation

C4.1 General Procedure D1



In a round bottom flask or vial, the carboxylic acid (0.75 mmol, 1.5 equiv) was dissolved in THF (2.5 mL, HPLC grade). Then, triethylamine (TEA, 105 µL, 0.75 mmol, 1.5 equiv.) and ethyl chloroformate (72 µL, 0.75 mmol, 1.5 equiv.) were added at ambient temperature. The reaction was stirred at ambient temperature for 1 hour. After that, it was filtered and the remaining solid was washed with diethyl ether. The organic layers were concentrated to dryness under reduced pressure to obtain the crude anhydride, which was used without further purification in the next step. (When the carboxylic acid is not completely soluble in 2.5 mL of THF, follow the general procedure D2 detailed below).

In an oven dried tube or a vial, with a Teflon septum screw cap, potassium ethyl xanthogenate **B** (16 mg, 0.10 mmol, 0.2 equiv.) and the electron-poor olefin **2** (0.5 mmol, 1 equiv., *if solid*), were added. The crude anhydride was dissolved in DCM (2 mL, HPLC grade) and the solution was added to the vial, followed by γ-terpinene (240 µL, 1.5 mmol, 3 equiv.). The resulting yellow mixture was degassed with argon sparging for 60 seconds. If the electron-poor olefin **2** was *liquid*, it was added via syringe after the argon sparging. The vial was then placed in the correspondent photoreactor (Figure S4 or S5, depending on the temperature used for the reaction) and irradiated for 24 hours. The solvent was evaporated and the residue purified by column chromatography to

afford the corresponding product in the stated yield with >95% purity, according to ^{1}H NMR analysis.

This procedure was employed for the optimization of the catalytic reaction with anhydride as radical precursor and for the scale-up process, as indicated below.

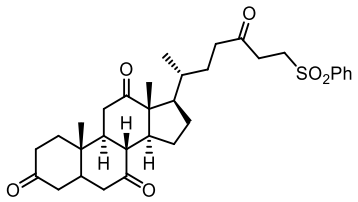
Note: Filtration of the triethylamonium salt is crucial for the reaction to work. Therefore, attempts to perform the reaction one-pot without removal of the ammonium salt were unsuccessful.

C4.2 General Procedure D2

In a round bottom flask or vial, the carboxylic acid (0.75 mmol, 1.5 equiv.) was dissolved in THF (10 mL, HPLC grade). Then, triethylamine (105 μL, 0.75 mmol, 1.5 equiv.) and ethyl chloroformate (72 μL, 0.75 mmol, 1.5 equiv.) were added at ambient temperature. The reaction was stirred for 1 hour. The reaction crude was washed with water and $NaHCO_3$ saturated solution, dried over $MgSO_4$, filtered and the organic layers concentrated to dryness under vacuum. The crude carbonate was used without further purification in the next step.

In an oven dried tube of 15 mL (16 mm × 12.5 mm) or a vial, with a Teflon septum screw cap, potassium ethyl xanthogenate (16.02 mg, 0.10 mmol, 0.2 equiv.) and the electron-poor olefin **2** (0.5 mmol, 1 equiv. *if solid*), were added. The crude carbonate was dissolved in DCM (2 mL, HPLC grade) and the solution was added to the vial, followed by γ-terpinene (240 μL, 1.5 mmol, 3 equiv.). The resulting yellow mixture was degassed with argon sparging for 60 seconds. If the electron-poor olefin **2** was *liquid*, it was added via syringe after the argon sparging. The vial was then placed in the correspondent photoreactor (Figure S4 or S5, depending on the temperature used for the reaction) and irradiated for 24 hours. After cooling to ambient temperature, the solvent was evaporated and the residue purified by column chromatography to afford the corresponding product in the stated yield with >95% purity according to ^{1}H NMR analysis.

C4.3 Characterization of Products



(8R,9S,10S,13R,14S,17R)-10,13-dimethyl-17-((R)-5-oxo-7-(phenylsulfonyl)heptan-2-yl)dodecahydro-3H-cyclopenta[a]phenanthrene-3,7,12(2H,4H)-trione (7): Synthesized according to the general procedure **D2** using dehydrocholic acid (302 μL, 0.75 mmol, 1.5 equiv.) and phenyl vinyl sulfone (84 mg, 0.5 mmol, 1 equiv.). The crude mixture was purified by flash column chromatography on silica gel (33% acetone in hexanes as eluent), followed by a second purification (20% AcOEt in DCM as eluent) to afford **7** (145 mg, 52% yield) as a colorless oil.

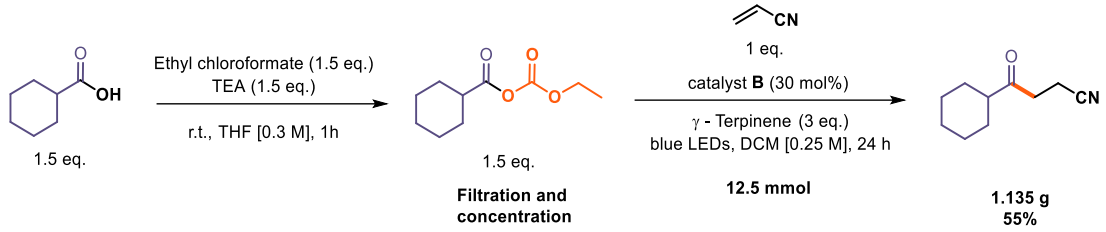
^{1}H NMR (500 MHz, $CDCl_3$) δ 7.93 – 7.88 (m, 2H), 7.70 – 7.64 (m, 1H), 7.61 – 7.55 (m, 2H), 3.44 – 3.32 (m, 2H), 2.95 – 2.79 (m, 5H), 2.54 – 2.44 (m, 1H), 2.44 – 2.10 (m, 9H), 2.07 – 1.90 (m, 4H), 1.89 – 1.80 (m, 1H), 1.80 – 1.70 (m, 1H), 1.67 – 1.56 (m, 1H), 1.39 (s, 3H), 1.36 – 1.20 (m, 4H), 1.05 (s, 3H), 0.81 (d, J = 6.5 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 212.0, 209.1, 208.8, 206.5, 139.2, 134.1, 129.6, 128.1, 57.0, 51.9, 50.6, 49.1, 47.0, 45.7, 45.7, 45.1, 42.9, 40.0, 38.8, 36.6, 36.1, 35.4, 35.4, 35.1, 29.1, 27.8, 25.2, 22.0, 18.9, 12.0.

HRMS (ESI pos): calculated for $C_{32}H_{42}NaO_6S$ ($M+Na^+$): 577.2594, found 577.2607.

C5 Scaled-Up Reaction

C5.1 Experimental Setup and Procedure



In a 100 mL round bottom flask, cyclohexanecarboxylic acid (2.34 mL, 18.75 mmol, 1.5 equiv.) was dissolved in THF (60 mL, HPLC grade). Then, triethylamine (2.61 mL, 18.75 mmol, 1.5 equiv.) and ethyl chloroformate (1.80 mL, 18.75 mmol, 1.5 equiv.) were added at ambient temperature. The reaction was stirred at ambient temperature for 1 hour. Then, it was filtered into a 100 mL reaction flask that will be used as reaction vessel for the next step (the remaining solid was carefully washed with diethyl ether). The organic phase was concentrated to dryness under vacuum to obtain the crude carbonate, which was used without further purification in the next step.

In the same 100 mL round bottom flask with a Teflon septum, the crude carbonate was dissolved in DCM (50 mL, HPLC grade). Potassium ethyl xanthogenate **B** (601 mg, 3.75 mmol, 0.3 equiv.) and γ-terpinene (6.01 mL, 37.5 mmol, 3 equiv.) were added to the solution. The resulting yellow mixture was degassed with Nitrogen sparging for 2 minutes. Finally, acrylonitrile (0.819 mL, 12.5 mmol, 1 equiv.) was added via syringe. The round bottom flask was then irradiated for 20 hours with a one meter 14W blue LED strip and cooled with a fan to keep the temperature between 30 and 35 ºC (see Figure S7). After 24 hours, complete conversion of acrylonitrile was inferred by ^{1}H NMR analysis. The mixture was transferred to an extraction funnel, water was added and the organic layer was extracted with DCM. The organic layer was dried ($MgSO_4$) and concentrated to dryness. The product was then purified by chromatography on silica gel (10% AcOEt in hexanes) to afford 1.130 g of product **5e** (6.87 mmol, 55% yield) as a yellowish oil. NMR analysis was consistent with product synthesized in the small scale process.

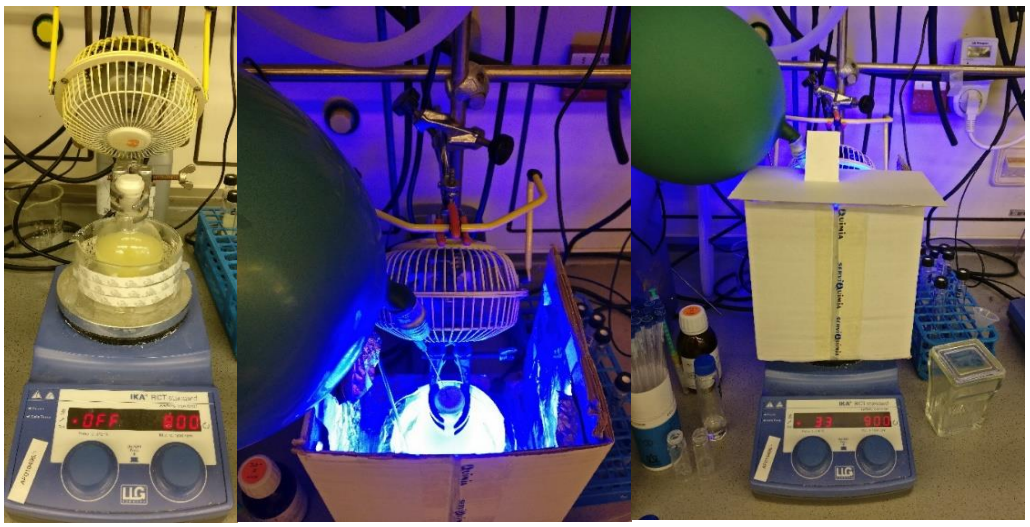


Figure S7: Experimental setup used for the large scale set up. (Left) Before irradiation. (Middle) Reaction set up from above. (Right) Reaction set up from the front.

C6. Reaction of Carbamoyl Chlorides

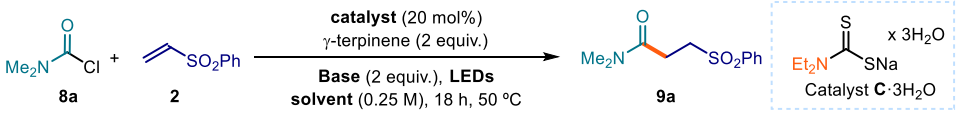
C6.1 Experimental Setup

For the generation of carbamoyl radicals, we used the Hepatochem PhotoRedOx Box equipped with an EvoluChem LED 18 W light source at 405 nm, supplied by Hepatochem. The reactor was connected to a Huber Minichiller 300 in order to perform reactions at 50 ºC with accurate control of the reaction temperature (± 1ºC, Figure S8).

Figure S8: Photoreactor used for the reaction with the carbamoyl chlorides

C6.2 Optimization Studies

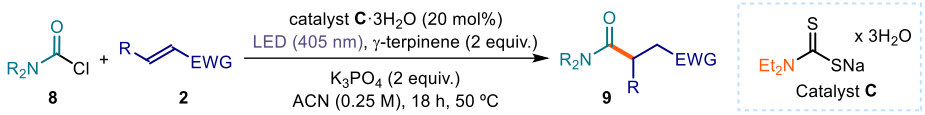
Table S8. Screening of the Catalysts



entry	catalyst	wavelenght (nm)	Base	Solvent	NMR yield (%)
1	**B**	460	Na_3PO_4	DCM	<5
2	**B**	405	Na_3PO_4	DCM	10%
3	**C**·$3H_2O$	405	Na_3PO_4	DCM	11%
4	**C**·$3H_2O$	405	Na_3PO_4	MeCN	20%
5	**C**·$3H_2O$	405	K_3PO_4	MeCN	60%

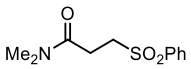
All reaction performed on 0.2 mmol scale, yield determined by ^{1}H NMR analysis of the crude reaction mixture by comparison with trichloroethylene as internal standard.

C6.3 General Procedure for the intermolecular Giese addition (General Procedure E)



An oven-dried 15 mL Schlenk tube was charged with a mixture of carbamoyl chloride **8** (0.4 mmol, 2 equiv.), catalyst **C** trihydrate (9 mg, 0.04 mmol, 0.2 equiv.), alkene **2** (0.2 mmol, 1 equiv.), γ–terpinene (64 µL, 0.4 mmol, 2 equiv.) and K_3PO_4 (85 mg, 0.4 mmol, 2 equiv.) in acetonitrile (0.8 mL, 0.25 M). The reaction mixture was placed under an atmosphere of argon, cooled to –78 °C, degassed *via* vacuum evacuation (5 minutes), backfilled with argon and, ultimately, warmed to ambient temperature. This freeze-pump-thaw cycle was repeated four times, and then the Schlenk tube was sealed with Parafilm and put into the Hepatochem PhotoRedOx Box equipped with a 405 nm EvoluChem LED 18 W light source at 50 ºC (Figure S8). After 18 hours stirring, the reaction was cooled down to ambient temperature, water was added and the mixture was extracted with ethyl acetate (2x15 mL). The combined layers were dried over magnesium sulfate, filtered, and concentrated. The resulting crude mixture was purified by column chromatography on silica gel to give the corresponding product **9** in the stated yield.

C6.4 Characterization of Products

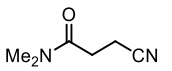


***N,N*-Dimethyl-3-(phenylsulfonyl)propanamide (9a):** Synthesized according to general procedure E using dimethylcarbamic chloride (37 µL, 0.4 mmol, 2.0 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to ethyl acetate 100%) to afford product **9a** (29 mg, 60% yield) as a pale-yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.95 – 7.88 (m, 2H), 7.69 – 7.62 (m, 1H), 7.61 – 7.52 (m, 2H), 3.53 – 3.33 (m, 2H), 2.99 (s, 3H), 2.89 (s, 3H), 2.85 – 2.73 (m, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 168.8, 139.2, 134.0, 129.5, 128.1, 52.2, 37.2, 35.7, 26.2.

HRMS (ESI pos): calculated for $C_{11}H_{15}NnaO_3S$ ($M+Na^+$): 264.0665, found 264.0653.

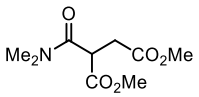


3-Cyano-*N,N*-dimethylpropanamide (9b): Synthesized according to general procedure E using dimethylcarbamic chloride (37 µL, 0.4 mmol, 2.0 equiv.) and acrylonitrile (13 µL, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to ethyl acetate 100%) to afford product **9b** (16 mg, 63% yield) as a pale-yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 3.01 (s, 3H), 2.97 (s, 3H), 2.68 (s, 4H).

^{13}C NMR (100 MHz, $CDCl_3$) δ168.8, 119.6, 37.0, 35.7, 29.5, 13.1.

HRMS (ESI pos): calculated for $C_6H_{11}N_2O$ ($M+H^+$): 127.0866, found: 127.0869.

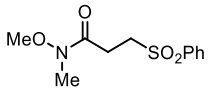


dimethyl 2-(dimethylcarbamoyl)succinate (9c): Synthesized according to general procedure E using dimethylcarbamic chloride (37 µL, 0.4 mmol, 2.0 equiv.) and dimethyl fumarate (29 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to ethyl acetate 100%) to afford product **9c** (27 mg, 62% yield) as a pale-yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 4.14 (dd, *J* = 8.3, 6.0 Hz, 1H), 3.72 (s, 3H), 3.67 (s, 3H), 3.16 (s, 3H), 3.11 – 2.80 (m, 6H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 172.4, 169.5, 167.9, 53.0, 52.2, 44.6, 38.0, 36.4, 33.6.

HRMS (ESI pos): calculated for $C_9H_{15}NNaO_5$ ($M+Na^+$): 240.0842, found: 240.0844.

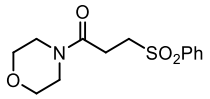


***N*-Methoxy-*N*-methyl-3-(phenylsulfonyl)propanamide (9d):** Synthesized according to general procedure E using methoxy(methyl)carbamic chloride (41 μL, 0.4 mmol, 2.0 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to hexane 50% : 50% ethyl acetate) to afford product **9d** (16 mg, 30% yield) as a pale yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.97 – 7.90 (m, 2H), 7.75 – 7.63 (m, 1H), 7.63 – 7.54 (m, 2H), 3.69 (s, 3H), 3.52 – 3.37 (m, 2H), 3.14 (s, 3H), 2.97 – 2.92 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) 170.4, 139.2, 134.0, 129.5, 128.2, 61.6, 51.5, 32.3, 25.4.

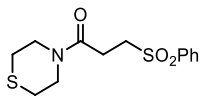
HRMS (ESI pos): calculated for $C_9H_{15}NNaO_5$ ($M+Na^+$): 240.0842, found: 240.0844.



1-Morpholino-3-(phenylsulfonyl)propan-1-one (9e): Synthesized according to general procedure E using morpholine-4-carbonyl chloride (47 μL, 0.4 mmol, 2.0 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to ethyl acetate 100%) to afford product **9e** (42 mg, 74% yield) as a pale-yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 – 7.85 (m, 2H), 7.71 – 7.62 (m, 1H), 7.62 – 7.51 (m, 1H), 3.76 – 3.58 (m, 5H), 3.55 – 3.49 (m, 2H), 3.47 – 3.42 (m, 3H), 2.94 – 2.74 (m, 2H).

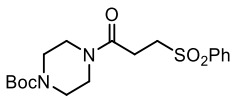
^{13}C NMR (100 MHz, $CDCl_3$) δ 167.5, 139.1, 134.0, 129.5, 128.0, 66.7, 66.5, 52.0, 45.8, 42.3, 25.9. HRMS (ESI pos): calculated for $C_{13}H_{17}NNaO_4S$ ($M+Na^+$): 306.0770, found: 306.0762.



3-(Phenylsulfonyl)-1-thiomorpholinopropan-1-one (9f): synthesized according the general procedure E using thiomorpholine-4-carbonyl chloride **8f** (99 mg, 0.4 mmol, 2 eq.) and phenyl vinyl sulfone (34 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexane), followed by a second one (50% AcOEt in Hexane as eluent) to afford **9f** (37.8 mg, 63% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.96 (m, 2H) 7.70 (m, 1H) 7.61 (m, 2H) 3.85 (m, 2H), 3.76 (m, 1H), 3.65 (m, 1H), 3.50 (m, 1H), 2.86, (m, 2H), 2.64 (m, 6H).

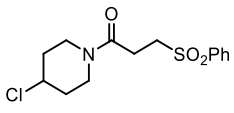
^{13}C NMR (126 MHz, $CDCl_3$) δ 167.3, 139.3, 134.1, 129.5, 128.1, 52.2, 48.3, 44.8, 27.9, 27.4, 26.2
HRMS (ESI pos): calculated for $C_{13}H_{17}NaNO_3S_2$ ($M+Na^+$): 322.05, found: 322.0533.



***tert*-Butyl 4-(3-(phenylsulfonyl)propanoyl)piperazine-1-carboxylate (9g):** synthesized according general procedure E using tert-butyl 4-(chlorocarbonyl)piperazine-1-carboxylate **8g** (99 mg, 0.4 mmol, 2 eq.) and phenyl vinyl sulfone (34 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexane), followed by a second purification (50% AcOEt in hexane as eluent) to afford **9g** (55 mg, 73% yield) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.91 (m, 2H), 7.66 (m, 1H), 7.57 (m, 2H), 3.42 (m, 4H) 3.21 (m, 6H), 2.83 (t, *J* = 7.8 Hz, 2H), 1.45 (s, 9H)

^{13}C NMR (126 MHz, $CDCl_3$) δ 167.6, 154.6, 139.3, 134.1, 129.6, 128.1, 80.7, 52.1, 45.4, 41.9, 28.5, 26.1
HRMS (ESI pos): calculated for $C_{18}H_{26}NaN_2O_5S$ ($M+Na^+$): 405.15, found 405.1455.

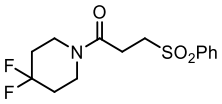


1-(4-Chloropiperidin-1-yl)-3-(phenylsulfonyl)propan-1-one (9h): Synthesized according to general procedure E using 4-chloropiperidine-1-carbonyl chloride (73 mg, 0.4 mmol, 2 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to ethyl acetate 100%) to afford product **9h** (41 mg, 65% yield) as a pale-yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.96 – 7.87 (m, 2H), 7.72 – 7.62 (m, 1H), 7.60 – 7.53 (m, 2H), 4.27 (tt, *J* = 7.0, 3.6 Hz, 1H), 3.68 (tdt, *J* = 11.7, 8.2, 3.5 Hz, 2H), 3.58 (ddd, *J* = 13.6, 6.9, 4.0 Hz, 1H), 3.49 – 3.42 (m, 2H), 3.38 (ddd, *J* = 13.9, 7.0, 3.7 Hz, 1H), 2.83 (td, *J* = 7.1, 1.9 Hz, 2H), 2.16 – 1.93 (m, 2H), 1.90 – 1.72 (m, 2H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 167.2, 139.2, 134.0, 129.5, 128.0, 56.1, 52.1, 42.5, 39.1, 35.1, 34.4, 25.9.

HRMS (ESI pos): calculated for $C_{14}H_{19}ClNO_3S$ ($M+H^+$): 316.0769, found: 316.0773.



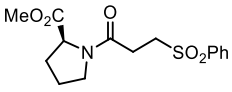
1-(4,4-Difluoropiperidin-1-yl)-3-(phenylsulfonyl)propan-1-one (9i): Synthesized according to general procedure E using 4,4-difluoropiperidine-1-carbonyl chloride (73 mg, 0.4 mmol, 2 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to 1:1 hexane/ethyl acetate) to afford product **9i** (43 mg, 68% yield) as an off-white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.96 – 7.88 (m, 2H), 7.71 – 7.63 (m, 1H), 7.61 – 7.54 (m, 2H), 3.61 (dt, *J* = 43.9, 6.0 Hz, 4H), 3.51 – 3.43 (m, 2H), 2.92 – 2.83 (m, 2H), 2.13 – 1.84 (m, 4H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 167.4, 139.2, 134.1, 129.5, 128.0, 121.3 (t, *J* = 242.4 Hz), 52.1, 40.7 (dt, *J* = 330.8, 5.4 Hz), 34.1 (dt, *J* = 78.0, 23.6 Hz), 25.9.

^{19}F NMR (376 MHz, $CDCl_3$) δ -98.22 (p, *J* = 13.5 Hz).

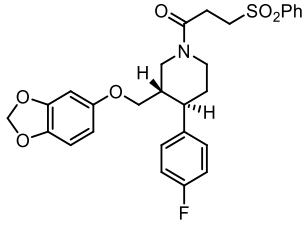
HRMS (ESI pos): calculated for $C_{18}H_{18}NaO_4$ ($M+Na^+$): 340.0789, found: 340.0785.



Methyl (3-(phenylsulfonyl)propanoyl)-L-prolinate (9j): synthesized according the general procedure E using methyl (chlorocarbonyl)-L-prolinate (77 mg, 0.4 mmol, 2 eq.) and phenyl vinyl sulfone (34 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexane) to afford 9j (46 mg, 58% yield) as a yellowish oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.95 – 7.89 (m, 2H), 7.69 – 7.64 (m, 1H), 7.61 – 7.53 (m, 2H), 4.42 (dd, *J* = 8.4, 3.5 Hz, 1H), 3.70 (s, 3H), 3.68 – 3.59 (m, 1H), 3.56 – 3.38 (m, 3H), 2.83 (dt, *J* = 9.7, 5.6 Hz, 2H), 2.11 – 1.94 (m, 4H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 172.6, 167.8, 139.2, 134, 129.5, 128.1, 58.9, 52.4, 51.7, 47.1, 29.3, 27.4, 24.8.
HRMS (ESI pos): calculated for $C_{15}H_{19}NaNO_5S$ ($M+Na^+$): 326.10, found: 326.1063.



1-(3-((Benzo[d][1,3]dioxol-5-yloxy)methyl)-4-(4-fluorophenyl)piperidin-1-yl)-3-(phenylsulfonyl)propan-1-one (9k): synthesized according the general procedure E using 3-((benzo[d][1,3]dioxol-5-yloxy)methyl)-4-(4-fluorophenyl)piperidine-1-carbonyl chloride **8k** (157 mg, 0.4 mmol, 2 eq.) and phenyl vinyl sulfone (34 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (gradient from hexane 100% to hexane 50% : 50% ethyl acetate) to afford product **9k** (46 mg, 29% yield) as a yellowish oil.

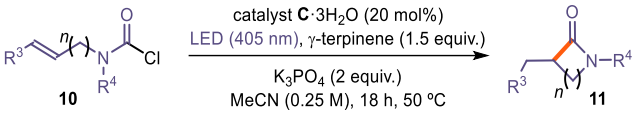
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.98 (m, 2H), 7.71 (m, 1H), 7.65 – 7.58 (m, 2H), 7.17 – 7.11 (m, 2H), 7.01 (m, 2H), 6.66 (dd, *J* = 17.8, 8.4 Hz, 1H), 6.38 (dd, *J* = 11.9, 2.5 Hz, 1H), 6.17 (ddd, *J* = 15.1, 8.5, 2.5 Hz, 1H), 5.92 (d, *J* = 13.5 Hz, 2H), 4.79 (dd, *J* = 55.2, 13.1 Hz, 1H), 4.07 (dd, *J* = 69.6, 13.5 Hz, 1H), 3.68 – 3.60 (m, 1H), 3.59 – 3.45 (m, 3H), 3.17 (m, 1H), 3.03 – 2.80 (m, 2H), 2.80 – 2.62 (m, 1H), 1.92 (m, 1H), 1.81 – 1.53 (m, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 167.5, 154.5, 148.7, 142.3, 139.6, 138.4, 134.3, 129.7, 129.1, 128.3, 115.7, 115.8, 108.2, 106.0, 101.5, 98.4, 68.9, 52.5, 49.2, 46.4, 44.5, 42.2, 34.6, 33.8, 30.1, 26.3.

^{19}F NMR (376 MHz, $CDCl_3$, proton decoupled) δ – 115.58

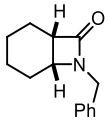
HRMS (ESI pos): calculated for $C_{28}H_{29}FNO_6S$ ($M+H^+$): 526.16, found: 526.1702.

C6.5 General Procedure for the intramolecular Giese type addition (General Procedure F)



An oven-dried 15 mL Schlenk tube was charged with a mixture of carbamoyl chloride **10** (0.2 mmol, 1 equiv.), catalyst **C** trihydrate (9 mg, 0.04 mmol, 0.2 equiv.), γ–terpinene (48 µL, 0.3 mmol, 1.5 equiv.) and K_3PO_4 (85 mg, 0.4 mmol, 2 equiv.) in acetonitrile (0.8 mL, 0.25 M). The reaction mixture was placed under an atmosphere of argon, cooled to –78 °C, degassed *via* vacuum evacuation (5 minutes), backfilled with argon and, ultimately, warmed to ambient temperature. This freeze-pump-thaw cycle was repeated four times, and then the Schlenk tube was sealed with Parafilm and put into the Hepatochem PhotoRedOx Box equipped with a 405 nm EvoluChem LED 18 W light source at 50 ºC (Figure S8). After 18 hours, the reaction vessel was cooled down to ambient temperature, water was added and the mixture was extracted with ethyl acetate (2x15 mL). The combined layers were dried over magnesium sulfate, filtered, and concentrated. The resulting crude mixture was purified by column chromatography on silica gel to give the corresponding product **3** in the stated yield.

C6.6 Characterization of Products

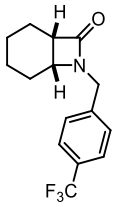


7-Benzyl-7-azabicyclo[4.2.0]octan-8-one (11a): Synthesized according to the general procedure F using benzyl(cyclohex-2-en-1-yl)carbamic chloride (50 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (10% AcOEt in hexanes as eluent) to afford product **11a** (26 mg, 60% yield) as a pale-yellow oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.35 – 7.29 (m, 2H), 7.29 – 7.22 (m, 3H), 4.57 (d, *J* = 15.1 Hz, 1H), 4.08 (d, *J* = 15.1 Hz, 1H), 3.62 (ddd, *J* = 5.4, 4.2, 3.1 Hz, 1H), 3.20 – 3.15 (m, 1H), 1.89 – 1.80 (m, 1H), 1.74 – 1.49 (m, 5H), 1.49 – 1.33 (m, 2H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 171.1, 136.4, 128.9, 128.5, 127.8, 50.3, 47.1, 44.6, 23.0, 19.8, 19.1, 17.0.

HRMS (ESI pos): calculated for $C_{18}H_{18}NaO_4$ ($M+H^+$): 216.1383, found: 216.1374.

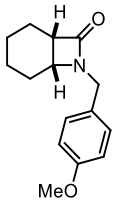


7-(4-(Trifluoromethyl)benzyl)-7-azabicyclo[4.2.0]octan-8-one (11b): Synthesized according to general procedure F using cyclohex-2-en-1-yl(4-(trifluoromethyl)benzyl)carbamic chloride (64 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexanes as eluent) to afford product **11b** (31 mg, 55% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.59 (d, *J* = 8.0 Hz, 2H), 7.39 (d, *J* = 8.0 Hz, 2H), 4.62 (d, *J* = 15.4 Hz, 1H), 4.16 (d, *J* = 15.4 Hz, 1H), 3.66 (dt, *J* = 5.1, 3.6 Hz, 1H), 3.23 (dt, *J* = 6.8, 4.6 Hz, 1H), 1.92 – 1.83 (m, 1H), 1.77 – 1.55 (m, 5H), 1.50 – 1.34 (m, 2H.

^{13}C NMR (126 MHz, $CDCl_3$) δ 171.1, 140.5, 130.1 (q, *J* = 32.6 Hz), 128.6, 125.9 (q, *J* = 3.8 Hz), 124.2 (q, *J* = 272.1 Hz), 50.5, 47.3, 44.1, 23.0, 19.7, 19.0, 16.9.

HRMS (ESI pos): calculated for $C_{15}H_{17}F_3NO$ ($M+H^+$): 284.1257, found: 284.1258.

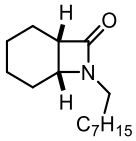


7-(4-Methoxybenzyl)-7-azabicyclo[4.2.0]octan-8-one (11c): Synthesized according to general procedure F using cyclohex-2-en-1-yl(4-methoxybenzyl)carbamic chloride (56 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (15% AcOEt in hexanes as eluent) to afford product **11c** (30 mg, 61% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.23 – 7.14 (m, 2H), 6.91 – 6.80 (m, 2H), 4.51 (d, *J* = 14.9 Hz, 1H), 4.04 (d, *J* = 14.9 Hz, 1H), 3.80 (s, 3H), 3.61 (ddd, *J* = 5.4, 4.1, 3.2 Hz, 1H), 3.17 (dt, *J* = 6.9, 4.6 Hz, 1H), 1.93 – 1.79 (m, 1H), 1.74 – 1.50 (m, 4H), 1.49 – 1.31 (m, 3H).

^{13}C NMR (100 MHz, $CDCl_3$) δ 170.9, 159.2, 129.7, 128.4, 114.2, 55.4, 50.0, 46.9, 43.9, 23.0, 19.7, 19.0, 16.9.

HRMS (ESI pos): calculated for $C_{15}H_{19}NnaO_2$ ($M+Na^+$): 268.1308, found: 268.1304.

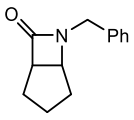


7-Octyl-7-azabicyclo[4.2.0]octan-8-one (11d): synthesized according the general procedure F using cyclohex-1-en-1-yl(octyl)carbamic chloride **10d** (54 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in Hexane) to afford **11d** (13 mg, 28% yield) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ: 3.72 (ddd, *J* = 5.3, 4.2, 3.2 Hz, 1H), 3.33 (dt, *J* = 13.9, 7.6 Hz, 1H), 3.20 – 3.11 (m, 1H), 2.94 (ddd, *J* = 14.0, 7.9, 6.2 Hz, 1H), 1.94 – 1.39 (m, 10H), 1.35 – 1.20 (m, 9H), 1.00 – 0.81 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 171, 50.2, 46.6, 40.3, 31.9, 29.4, 29.3, 28.2, 27.3, 23.3, 22.8, 19.7, 19, 17.1, 14.2.

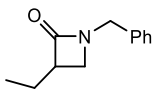
HRMS (ESI pos): calculated for $C_{15}H_{27}NO$ ($M+H^+$): 238,21 found: 238,2157



6-Benzyl-6-azabicyclo[3.2.0]heptan-7-one (11e): synthesized according the general procedure F using benzyl(cyclopent-2-en-1-yl)carbamic chloride **10e** (47 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexane) to afford **11e** (11 mg, 30% yield) as a yellowish oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54 – 7.08 (m, 5H), 4.50 (d, *J* = 15.1 Hz, 1H), 4.08 (d, *J* = 15.1 Hz, 1H), 3.91 (t, *J* = 4.1 Hz, 1H), 3.47 (dd, *J* = 8.0, 3.6 Hz, 1H), 2.05 (dd, *J* = 13.2, 6.3 Hz, 1H), 1.83 – 1.70 (m, 2H), 1.58 (m, 1H), 1.47 – 1.30 (m, 1H), 1.18 (m, 1H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.6, 136.3, 128.8, 128.4, 127.8, 57.6, 55.1, 44.2, 27, 25.1, 22.8. HRMS (ESI pos): calculated for $C_{13}H_{15}NaNO$ ($M+Na^+$): 224.11 found: 224.1041

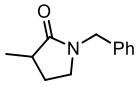


1-Benzyl-3-ethylazetidin-2-one (11f): synthesized according the general procedure F using benzyl(but-2-en-1-yl)carbamic chloride **10f** (47 mg, 0.2 mmol, 1 eq.). The crude mixture was purified by flash column chromatography on silica gel (5% AcOEt in hexane) to afford **11d** (11 mg, 29% yield) as a yellowish oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.37 – 7.26 (m, 5H), 4.46 (s, 2H), 3.60 – 3.52 (m, 2H), 3.18 – 3.10 (m, 1H), 1.72 – 1.65 (m, 2H), 0.93 (t, *J* = 7.3 Hz, 3H)

^{13}C NMR (126 MHz, $CDCl_3$) δ: 171.9 (C), 136.3 (C), 128.9 (CH), 128.3 (CH), 127.9 (CH), 53.6 (CH_2), 48.7 (CH_2), 44 (CH), 29 (CH_2), 11.9 (CH_3).

Matching reported literature data. [20]

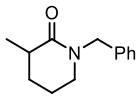


1-Benzyl-3-methylpyrrolidin-2-one (11g): Synthesized according to the general procedure F using benzyl(but-3-en-1-yl)carbamic chloride **10g** (48 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (10% AcOEt in hexanes as eluent) to afford product **11g** (23 mg, 60% yield) as a yellow oil.

^{1}H NMR (500 MHz, $CDCl_3$) δ 7.37 – 7.30 (m, 2H), 7.29 – 7.24 (m, 1H), 7.24 – 7.20 (m, 2H), 4.49 – 4.40 (m, 2H), 3.22 – 3.09 (m, 2H), 2.51 (ddt, *J* = 15.8, 8.7, 7.2 Hz, 1H), 2.21 (dddd, *J* = 12.9, 8.7, 6.5, 4.4 Hz, 1H), 1.59 (dq, *J* = 12.6, 8.5 Hz, 1H), 1.24 (d, *J* = 7.1 Hz, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 177.5, 136.8, 128.8, 128.2, 127.6, 46.9, 44.8, 36.9, 27.2, 16.5.

HRMS (ESI pos): calculated for $C_{12}H_{16}NO$ ($M+H^+$): 190.1226, found: 190.1228.



1-Benzyl-3-methylpiperidin-2-one (11h): Synthesized according to the general procedure F using benzyl(pent-4-en-1-yl)carbamic chloride **10h** (48 mg, 0.2 mmol). The crude mixture was purified by flash column chromatography on silica gel (10% AcOEt in hexanes as eluent) to afford product **11h** (21 mg, 52% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 – 7.28 (m, 2H), 7.28 – 7.21 (m, 3H), 4.66 (d, *J* = 14.6 Hz, 1H), 4.50 (d, *J* = 14.6 Hz, 1H), 3.20 (dd, J = 7.2, 5.1 Hz, 2H), 2.56 – 2.42 (m, 1H), 1.96 (dtd, *J* = 12.8, 6.2, 3.4 Hz, 1H), 1.84 (ddtd, *J* = 13.5, 6.6, 5.0, 3.4 Hz, 1H), 1.78 – 1.66 (m, 1H), 1.53 (dddd, *J* = 12.8, 10.4, 9.1, 3.4 Hz, 1H), 1.30 (d, *J* = 7.2 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 173.5, 137.7, 128.7, 128.1, 127.4, 50.4, 47.7, 36.8, 29.7, 21.8, 18.2.

HRMS (ESI pos): calculated for $C_{13}H_{18}NO$ ($M+H^+$): 204.1383, found: 204.1376.

C7. Unsuccessful Substrates

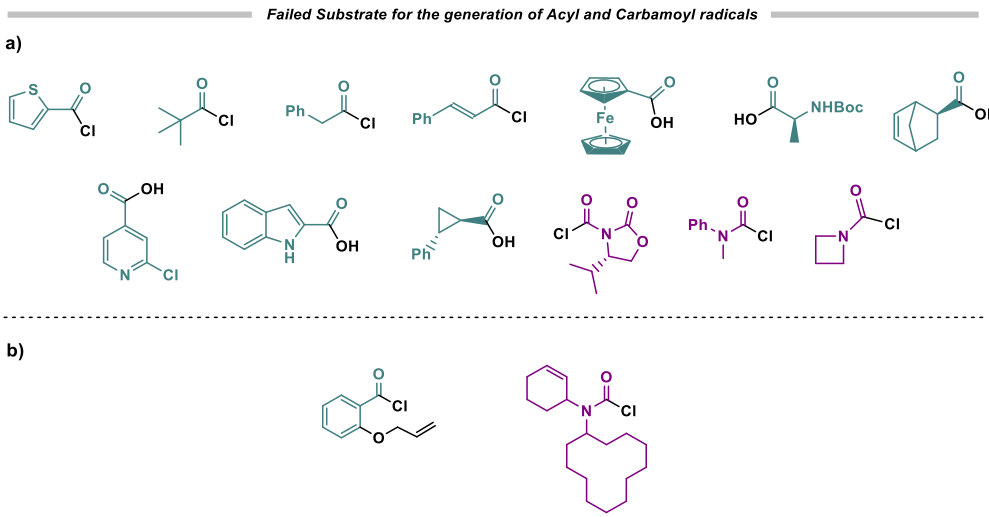
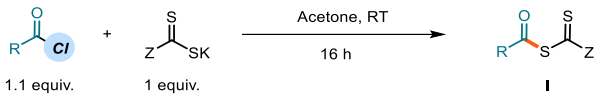


Figure S9: Unsuccessful substrates: (a) Intermolecular reaction using acrylonitrile as the electron-poor olefin. (b) Intramolecular reaction.

D. Mechanistic Studies

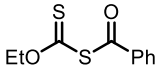
D1. Characterisation of Acylxanthate and Carbamoyldithiocarbamate Intermediates:

D1.1 General procedure for the synthesis of acyl xanthate intermediates (general procedure G)



In a round bottom flask, acyl chloride (1.1 equiv.) was dissolved in acetone (0.1 M) and cooled to 0 ºC. The dithiocarbamate anion or the xanthate salt **1a-c** (1 equiv.) was then added and the resulting reaction mixture was stirred for 1 hour at 0 ºC. The solvent was removed under reduced pressure at ambient temperature. The residue was then dissolved in DCM and washed with distilled water, $NaHCO_3$ solution and brine. The combined organic fractions were dried over $MgSO_4$ and concentrated to dryness to obtain the desired product.

D1.2 Characterization of the Intermediates



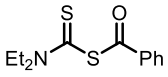
Benzoic (O-ethyl carbonothioic) thioanhydride (Ia).

Prepared according to the general procedure G using potassium ethyl xanthogenate **B** (1 mmol, 160 mg) and benzoyl chloride (1.1 mmol, 128 µL) in 10 mL of acetone. After work-up, the product **Ia** (226 mg, 99% yield) was obtained as a yellow oil.

^{1}H NMR (300 MHz, $CDCl_3$) δ 7.87 (app d, *J* = 7.7 Hz, 2 H); 7.64-7.54 (m, 1H); 7.49-7.39 (m, 2H); 4.69 (q, *J* = 7.1 Hz, 2H); 1.45 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 203.4, 185.0, 135.7, 134.4, 129.0, 127.9, 71.1, 13.5.

Matching reported literature data.[21]

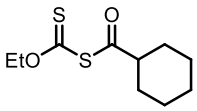


Benzoic diethylcarbamothioic thioanhydride (Ib).

Prepared according to the general procedure G using sodium diethylcarbamodithioate trihydrate **C** (1.05 mmol, 237 mg) and benzoyl chloride (1 mmol, 116 µL) in 10 mL of acetone. After work-up, the product **Ib** was obtained as a yellow oil (220 mg, 87% yield).

^{1}H NMR (300 MHz, $CDCl_3$) δ 7.95-7.88 (m, 2 H); 7.64-7.56 (m, 1H); 7.52-7.42 (m, 2H); 4.07-3.86 (m, 2H); 1.36 (t, *J* = 7.1 Hz, 3H).

Matching reported literature data.[22]



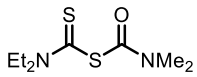
cyclohexanecarboxylic (O-ethyl carbonothioic) thioanhydride (Ic).

Prepared according to the general procedure G using potassium ethyl xanthogenate **B** (1 mmol, 160 mg) and cyclohexanecarbonyl chloride (1.1 mmol, 128 µL) in 10 mL of acetone. After work-up, the product **Ic** was obtained as a yellow oil (207 mg, 89% yield).

^{1}H NMR (300 MHz, $CDCl_3$) δ 4.65 (q, *J* = 7.1 Hz, 2H); 2.53-2.39 (m, 1H); 1.98-1.85 (m, 2H); 1.83-1.70 (m, 2H); 1.68-1.53 (m, 1H); 1.55-1.35 (m, 5H); 1.34-1.10 (m, 3 H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 204.6 (C); 194.9 (C); 70.8 (CH_2); 52.8 (CH); 29.1 (CH_2); 25.5 (CH_2); 25.32 (CH_2); 13.6 (CH_3).

HRMS (ESI pos): calculated for $C_{10}H_{16}NaO_2S_2$ ($M+Na^+$): 255.0484, found: 255.0482.



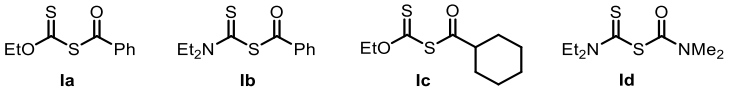
***N*-Diethyl, *N'*-Dimethyl-Thiodicarbonic diamide (Id).**

Prepared according to the general procedure G using potassium diethylcarbamodithioate trihydrate **C** (3 mmol, 724 mg) and dimethylcarbamyl chloride (1.1 mmol, 128 μL) in 10 mL of acetone. After work-up and chromatography on silica gel (8:2 hexane/AcOEt), the product **Id** was obtained as a yellow oil (177 mg, 80% yield).

^{1}H NMR (400 MHz, $CDCl_3$) δ 4.02 (q, *J* = 7.1 Hz, 1H), 3.79 (q, *J* = 7.2 Hz, 1H), 3.06 (s, 3H), 1.32 (dt, *J* = 9.7, 7.1 Hz, 3H)

^{13}C NMR (126 MHz, $CDCl_3$) δ 185.2 (C), 162 (C), 50.1 (CH_3), 49 (CH_3), 38.5 (CH_2), 37.3 (CH_2), 13.5 (CH_3), 11.3 (CH_3).

D1.3 UV-Vis Characterization of the Intermediates.



Intermediate	**λmax**	**tail of absorption**
Ia	397 nm	490 nm
Ib	400 nm	490 nm
Ic	400 nm	490 nm
Id	343 nm	500 nm

Table S9. Spectroscopic characteristics of **Ia-d**

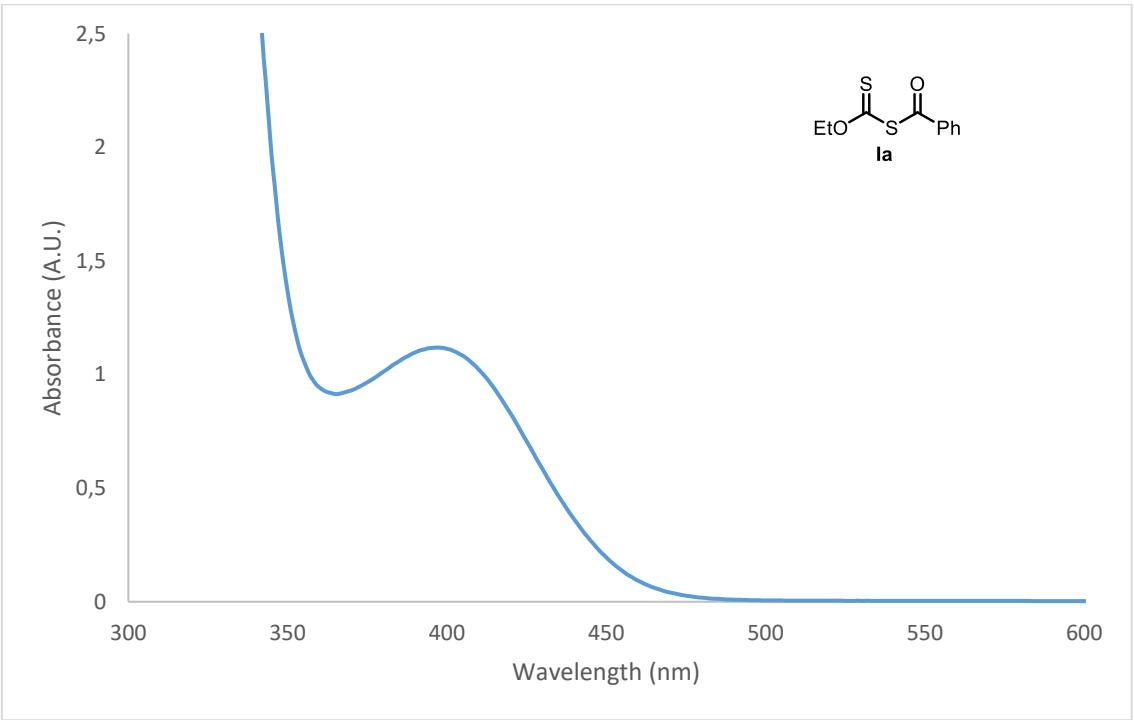


Figure S10: UV-Vis absorption spectrum of **Ia** recorded at $1 \cdot 10^{-2}$M concentration in acetonitrile

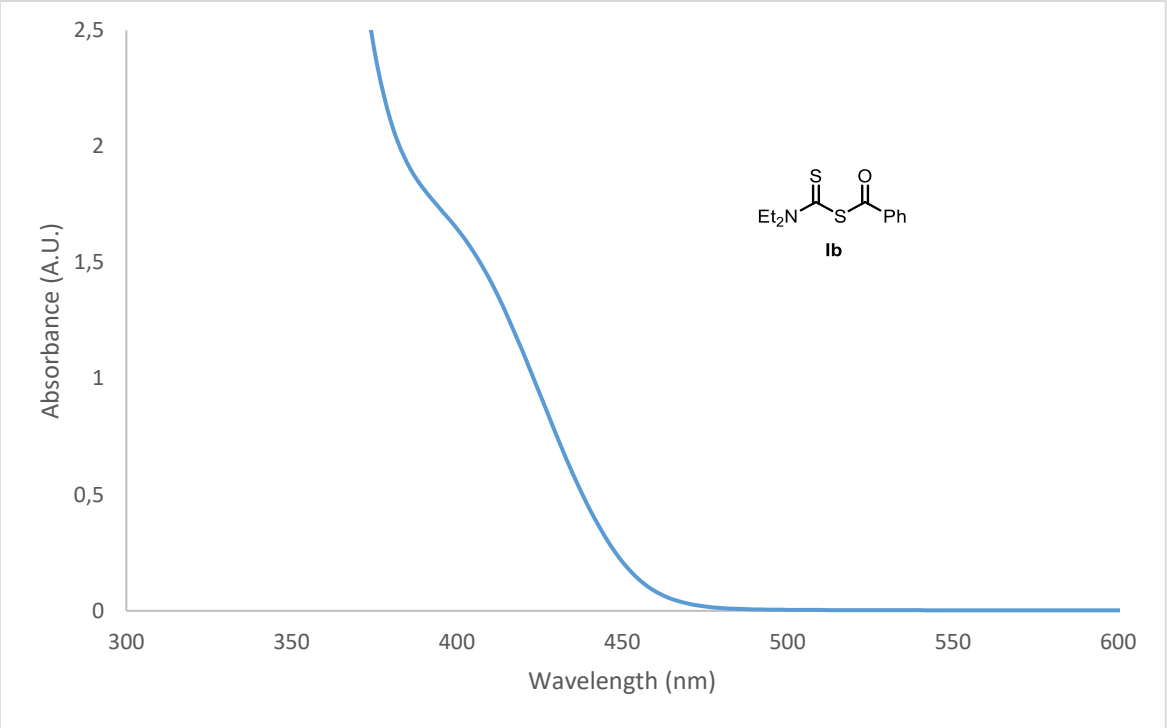


Figure S11: UV-Vis absorption spectrum of **Ib** recorded at $1 \cdot 10^{-2}$ M concentration in acetonitrile.

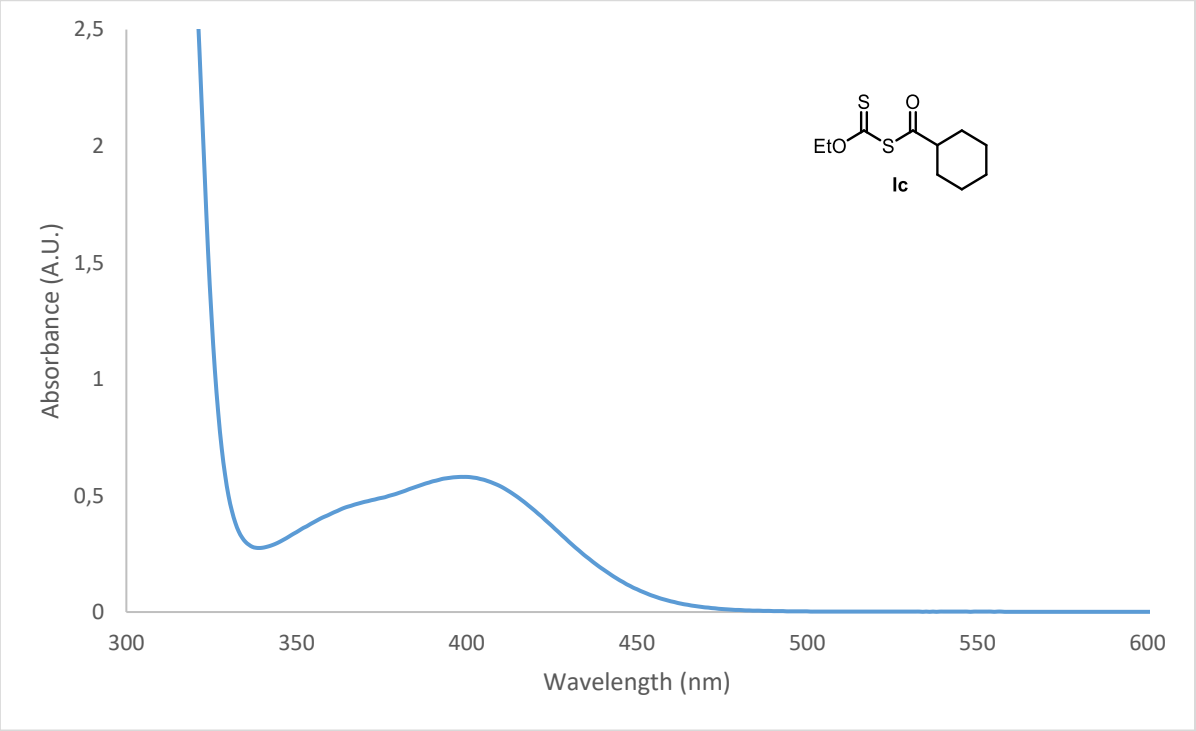


Figure S12: UV-Vis absorption spectrum of **Ic** recorded at $2 \cdot 10^{-2}$ M concentration in acetonitrile.

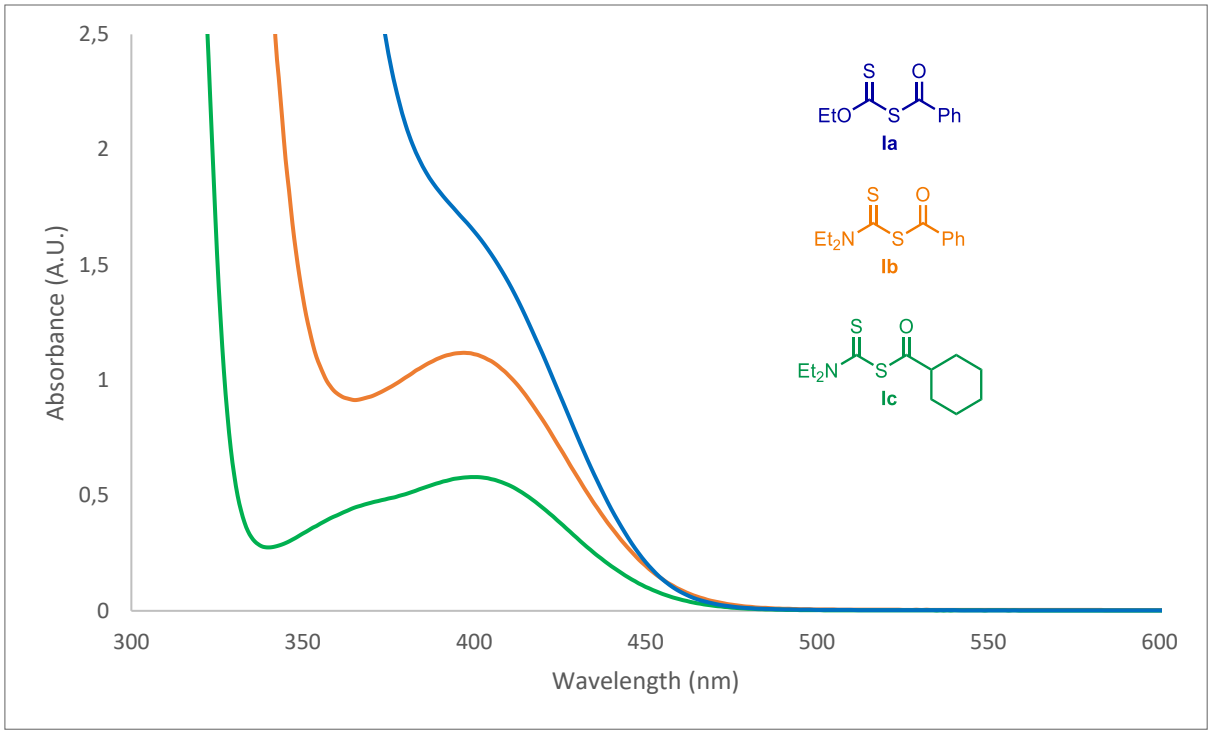


Figure S13: Superposition of the absorption spectra of the different acyl xanthates and acyl dithiocarbamate intermediates at the same concentration ($2 \cdot 10^{-2}$ M in acetonitrile).

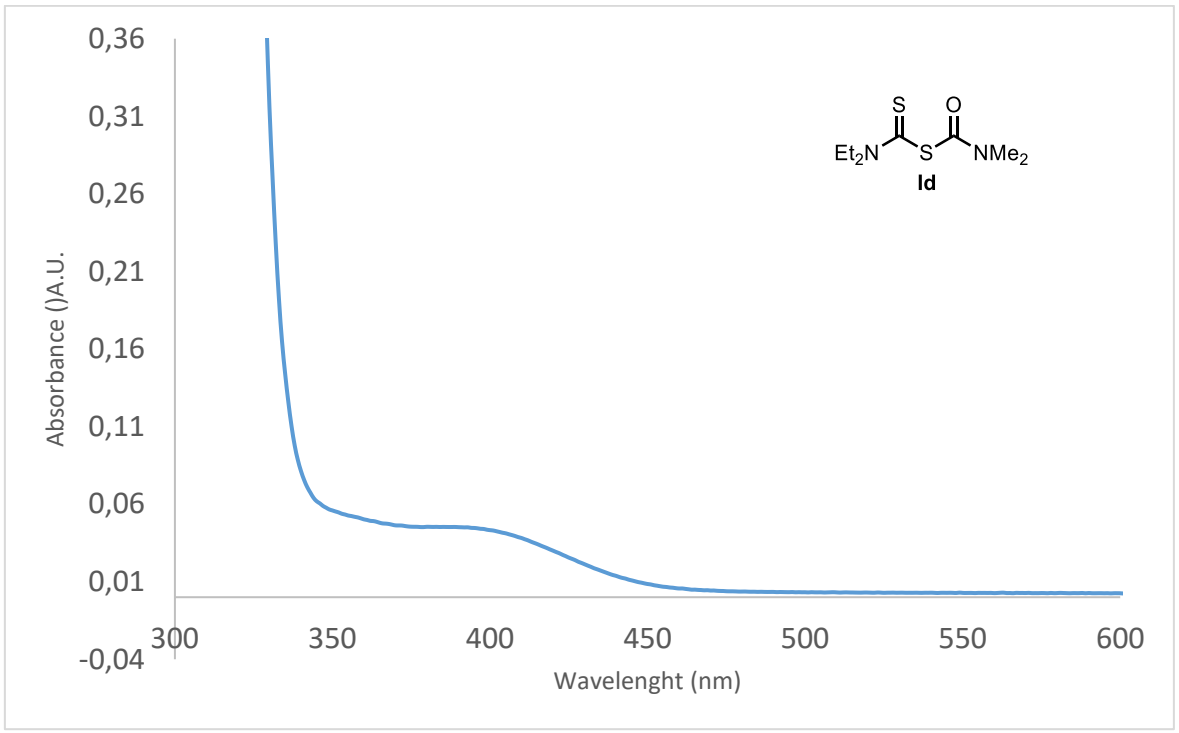


Figure S14: UV-Vis absorption spectrum of intermediate **Id** recorded at $2 \cdot 10^{-3}$ M concentration in acetonitrile.

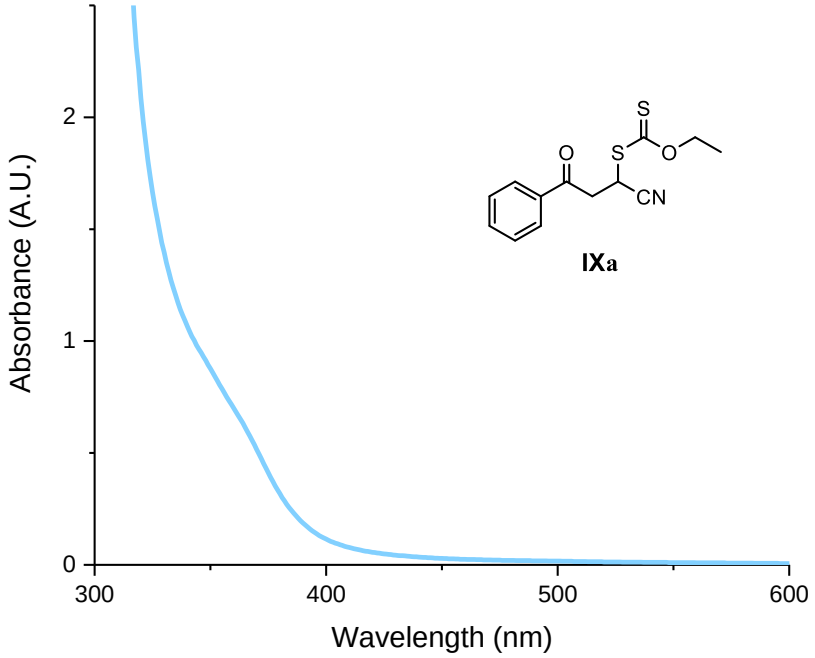
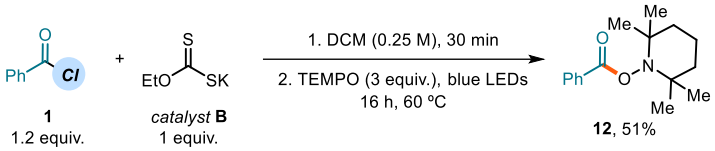


Figure S15: UV-Vis absorption spectrum of **IXa** recorded at $1 \cdot 10^{-2}$ M in acetonitrile

D1.4 TEMPO Trapping Experiments.

Stoichiometric reaction between TEMPO and in-situ acyl xanthate intermediate



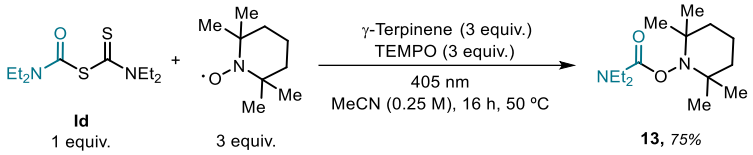
In an oven dried tube of 15 mL (16 mm × 125 mm) with a Teflon septum screw cap, potassium ethyl xanthogenate **B** (80.1 mg, 0.5 mmol, 1 equiv.) was suspended in DCM (2 mL, HPLC grade). Then, benzoyl chloride **1** (69.6 µL, 0.6 mmol, 1.2 equiv.) was added and the mixture was stirred at ambient temperature for 30 minutes. Then, TEMPO (234.4 mg, 1.5 mmol, 3 equiv.) was added and the resulting yellow solution was degassed with argon sparging for 60 seconds. The tube was then placed in the temperature controlled photoreactor (Figure S4) set at a temperature of 60 ºC (60-61ºC measured in the central well) and irradiated for 16 hours. Chromatography on silica gel (5% AcOEt in hexanes as eluent) afforded adduct **12** (66 mg, yellow oil, 51% yield).

^{1}H NMR (500 MHz, $CDCl_3$) δ 8.35 (d, *J* = 6.9 Hz, 2H), 7.83 (m, 1H), 7.74 (m, 2H), 2.12 – 1.70 (m, 6H), 1.55 (s, 6H), 1.40 (s, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 161.45, 128.17, 124.89, 124.74, 123.78, 55.52, 34.28, 27.19, 16.09, 12.26.

Matching reported literature data.[23]

Stoichiometric reaction between TEMPO and dithiocarbamate intermediate Id

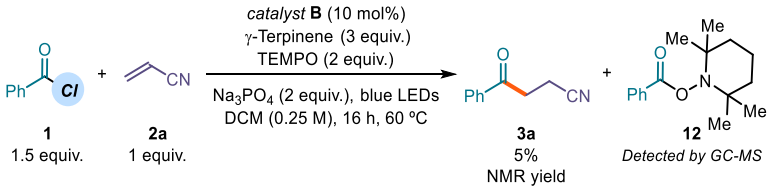


In an oven-dried 15 mL Schlenk tube was added a 0.25 M solution of the dithiocarbamate intermediate **Id** (28 mg, 127 mmol, 1 equiv.) and TEMPO (60 mg, 0.38 mmol, 3 equiv.) in acetonitrile (0.5 mL). The reaction mixture was placed under an atmosphere of argon, cooled to –78 °C, degassed *via* vacuum evacuation (5 minutes), backfilled with argon and, ultimately, warmed to ambient temperature. This freeze-pump-thaw cycle was repeated four times, and then the Schlenk tube was sealed with Parafilm and put into the Hepatochem PhotoRedOx Box (Figure S8) equipped with a 405 nm EvoluChem LED 18 W light source at 50 °C. After 18 hours, the reaction vessel was cooled down to ambient temperature, water was added and the mixture was extracted with ethyl acetate (2x15 mL). The combined layers were dried over $MgSO_4$, filtered, and concentrated. The resulting crude mixture was purified by column chromatography on silica gel (5% to 30% AcOEt in hexane) to give the corresponding product **11** (21 mg, 75% yield).

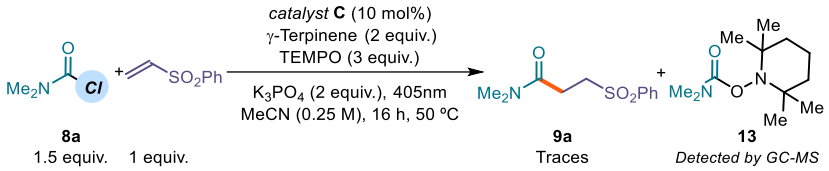
^{1}H NMR (400 MHz, $CDCl_3$) δ 2.96 (s, 6H), 1.73 – 1.48 (m, 6H), 3.06 (s, 3H), 1.13 (d, *J* = 17.6 Hz, 1H)

^{13}C NMR (101 MHz, $CDCl_3$) δ 157.8, 60.2, 50.1, 39.1, 31.9, 21.1, 17.2.

TEMPO inhibition of the model reactions



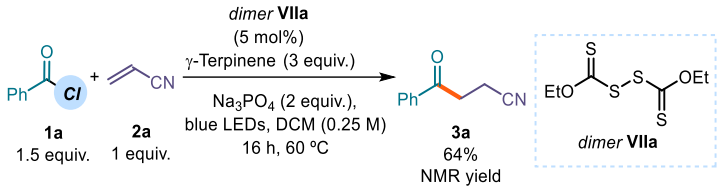
Reaction performed according to the general procedure A using benzoyl chloride (87 µL, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 µL, 0.5 mmol, 1 equiv.) and adding TEMPO (156.3 mg, 1 mmol, 2 equiv.) before the degassing step. The crude mixture was analyzed by ^{1}H NMR analysis after 16 hours using trichloroethylene (45 µL, 0.5 mmol, 1 equiv.) as internal standard, and by GC-MS. NMR yield: 5%. Traces of the TEMPO adduct **12** were detected by GC-MS analysis.



Reaction performed according to the general procedure E using dimethylcarbamyl chloride (37 µL, 0.4 mmol, 2 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol, 1 equiv.) and adding TEMPO (62 mg, 0.4 mmol, 2 equiv.) before the degassing step.

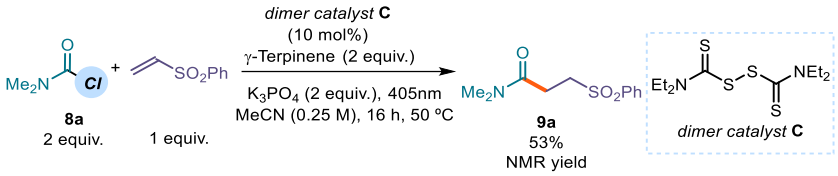
D1.5 Experiments with the Dimeric Catalysts.

Model reaction with catalyst dimer VIIa – Acylation



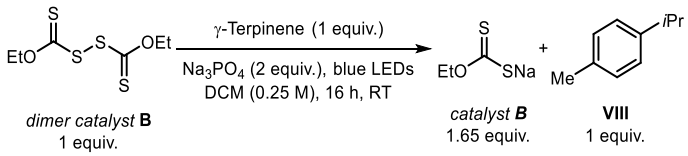
Reaction performed according to the general procedure A using benzoyl chloride (87 µL, 0.75 mmol, 1.5 equiv.) and acrylonitrile (33 µL, 0.5 mmol, 1 equiv.) while replacing *catalyst* **B** with dimer **VIIa** (6 mg, 0.025 mmol, 0.05 equiv.). The crude reaction mixture was analyzed by ^{1}H NMR analysis using trichloroethylene as internal standard. NMR yield: 64%.

Model reaction with dimer catalyst C - Carbamoylation



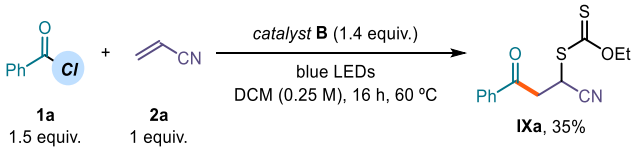
Reaction performed according to general procedure E using dimethylcarbamic chloride (37 µL, 0.4 mmol, 2.0 equiv.) and phenyl vinyl sulfone (34 mg, 0.2 mmol, 1 equiv.) while replacing *catalyst* **C** with *dimer catalyst* **C** (6 mg, 0.02 mmol, 0.1 equiv.). The crude reaction mixture was analyzed by ^{1}H NMR analysis using trichloroethylene as internal standard. NMR yield: 53%.

Turn-over experiment with dimer catalyst B and terpinene



In an oven dried vial (16 mm × 50 mm) with a Teflon septum screw cap, *dimer catalyst* **B** (60.6 mg, 0.25 mmol, 1 equiv.) and sodium phosphate (82 mg, 0.5 mmol, 2 equiv) were dissolved in DCM (2 mL, HPLC grade). Then, γ-terpinene (40 µL, 0.25 mmol, 1 equiv.) was added. The resulting yellow mixture was degassed with argon, sparging for 60 seconds. The vial was then placed in the 3D-printed support photoreactor (Figure S6) and irradiated for 24 hours. Trichloroethylene was added as internal standard and a sample of the crude mixture was diluted in d_6-DMSO to record the NMR yield.

D1.6 Group Transfer Experiments.
Stoichiometric group transfer reaction with in-situ acyl xanthate intermediate



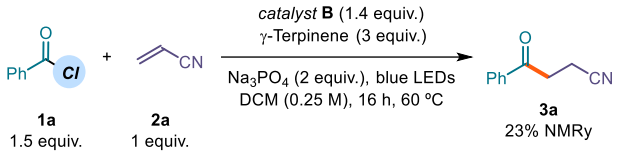
In an oven dried tube of 15 mL (16 mm × 125 mm) with a Teflon septum screw cap, potassium ethyl xanthogenate **B** (112 mg, 0.7 mmol, 1.4 equiv.) was suspended in DCM (2 mL, HPLC

grade). Then, benzoyl chloride (87 µL, 0.75 mmol, 1.5 equiv.) was added and the mixture was stirred at ambient temperature for 30 min. The reaction mixture was then degassed with argon, sparging for 60 seconds. Finally, acrylonitrile (33 µL, 0.5 mmol, 1 equiv.) was added via syringe. The tube was then placed in the temperature controlled photoreactor (Figure S4) set at a temperature of 60 ºC (60-61ºC measured in the central well) and irradiated for 16 hours. The crude mixture was purified by flash column chromatography on silica gel (5% to 10% AcOEt in hexanes as eluent) to afford **IXa** (50 mg, 35% yield) as a yellow oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.97 – 7.89 (m, 2H), 7.69 – 7.58 (m, 1H), 7.50 (app t, *J* = 7.5 Hz, 2H), 5.08 (t, *J* = 6.2 Hz, 1H), 4.72 (q, *J* = 7.1 Hz, 2H), 3.70 (d, *J* = 6.3 Hz, 2H), 1.47 (t, *J* = 7.1 Hz, 3H).

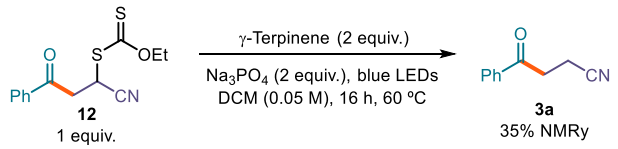
^{13}C NMR (101 MHz, $CDCl_3$) δ 209.05, 193.54, 135.35, 134.39, 129.09, 128.30, 117.96, 71.54, 40.67, 32.49, 13.84.

Stoichiometric group transfer reaction with in-situ acyl xanthate intermediate in the presence of γ-terpinene



In an oven dried tube of 15 mL (16 mm × 125 mm) with a Teflon septum screw cap, potassium ethyl xanthogenate (112 mg, 0.7 mmol, 1.4 equiv.) and sodium phosphate (164 mg, 1.0 mmol, 2 equiv) were dissolved in DCM (2 mL, HPLC grade). Benzoyl chloride (87 µL, 0.75 mmol, 1.5 equiv.) was added and the mixture was stirred at ambient temperature for 30 min. Then, γ-terpinene (240 µL, 1.5 mmol, 3 equiv.) was added. The mixture was degassed via argon sparging for 60 seconds. Finally, acrylonitrile (33 µL, 0.5 mmol, 1 equiv.) was added via syringe. The tube was then placed in the temperature controlled photoreactor (Figure S4) set at a temperature of 60 ºC (60-61 ºC measured in the central well) and irradiated for 16 hours. Trichloroethylene was added as internal standard, and a sample of the crude mixture was diluted in $CDCl_3$ to record the NMR yield. *No group transfer product **12** was observed.*

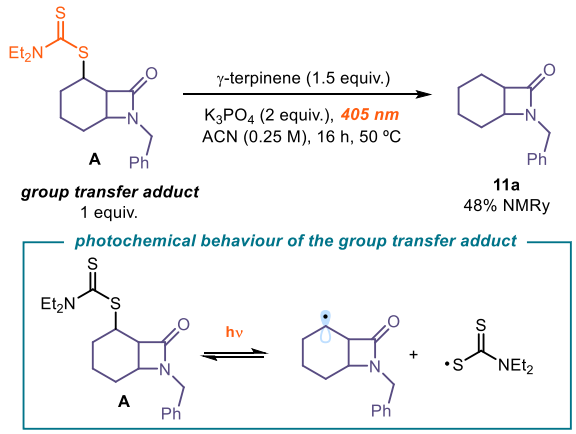
Direct photolysis of the group transfer product under reaction conditions



In an oven dried tube of 15 mL (16 mm × 125 mm) with a Teflon septum screw cap, the group transfer product **12** (28.01 mg, 0.1 mmol, 1 equiv.) and sodium phosphate (33 mg, 0.2 mmol, 2 equiv) were dissolved in DCM (2 mL, HPLC grade). Then, γ-terpinene (33 µL, 0.2 mmol, 2 equiv.) was added. The reaction mixture was degassed with Argon sparging for 60 seconds. The tube was then placed in the temperature controlled photoreactor (Figure S4) set at a temperature of 60 ºC (60-61 ºC measured in the central well) and irradiated for 16 hours.

Trichloroethylene was added as internal standard and a sample of the crude mixture was diluted in $CDCl_3$ to record the NMR yield – product **3a** was formed in 35%.

Direct photolysis of the group transfer product for the intramolecular reaction



An oven-dried 15 mL Schlenk tube was charged with an authentic sample of the group transfer adduct **A**, prepared according to Ref. 2, γ–terpinene (48 µL, 0.3 mmol, 1.5 equiv.) and K_3PO_4 (85 mg, 0.4 mmol, 2 equiv.) in acetonitrile (0.8 mL, 0.25 M). The reaction mixture was placed under an atmosphere of argon, cooled to –78 °C, degassed *via* vacuum evacuation (5 minutes), backfilled with argon and, ultimately, warmed to ambient temperature. This freeze-pump-thaw cycle was repeated four times, and then the Schlenk tube was sealed with Parafilm and put into the Hepatochem PhotoRedOx Box equipped with a 405 nm EvoluChem LED 18 W light source at 50 ºC (Figure S8). After 18 hours stirring, the reaction was cooled down to ambient temperature, trichloroethylene was added as internal standard and a sample of the crude mixture was diluted in $CDCl_3$ to record the NMR of the crude - product **11a** was formed in 48%.

D2. Cyclic Voltammetry Measurements

For the cyclic voltammetry (CV) measurements, a glassy carbon disk electrode (diameter: 3 mm) was used as a working electrode. A silver wire coated with AgCl immersed in a 3.5 M aqueous solution of KCl and separated from the analyte by a fritted glass disk was employed as the reference electrode. A Pt wire counter-electrode completed the electrochemical setup. The scan rate of used in each CV experiment is indicated case by case.

Potentials are quoted with the following notation: E_p^C refers to the cathodic peak potential, E_p^A refers to the anodic peak potential, while the E^{red} value describes the electrochemical properties of the referred compound.

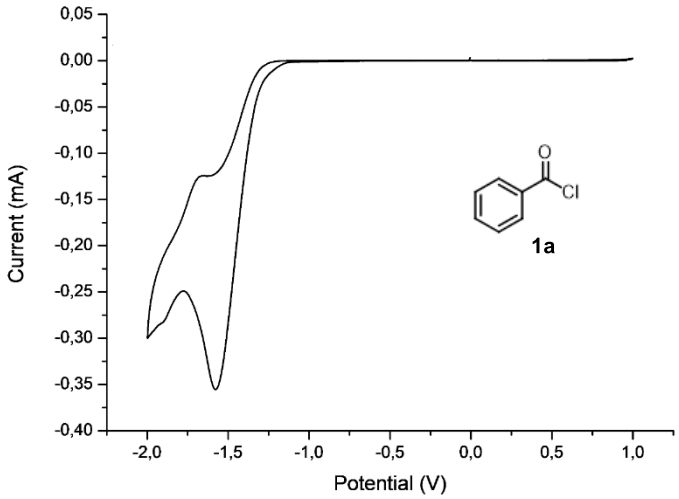


Figure S16: Cyclic voltammogram of benzoyl chloride **1a** [0.02 M] in [0.1 M] $TBAPF_6$ in CH_3CN. Sweep rate: 100 mV/s. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Irreversible reduction, $E_p^C = E^{red}$ (**1a**/**1a**$^{\bullet-}$) = -1.57 V.

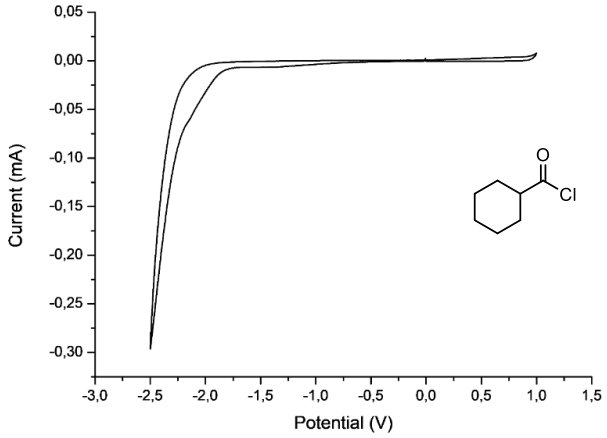


Figure S17: Cyclic voltammogram of cyclohexanecarbonyl chloride [0.02 M] in [0.1 M] $TBAPF_6$ in CH_3CN. Sweep rate: 100 mV/s. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Reduction of cyclohexanecarbonyl chloride was not observed in the registered potential window (from 0 to -2.50 V).

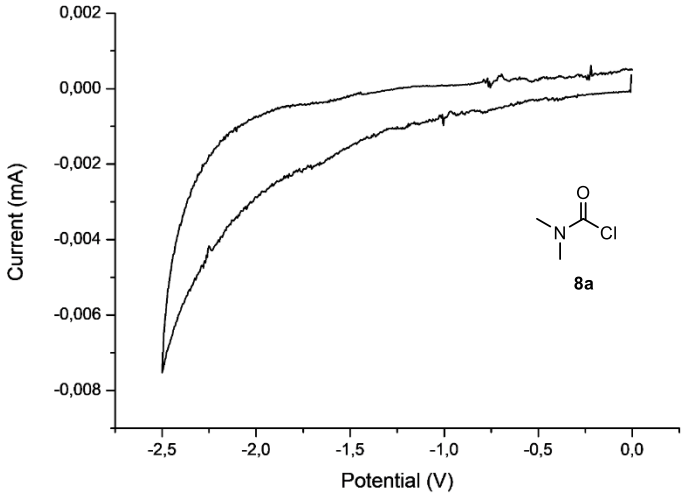


Figure S18: Cyclic voltammogram for **8a** [0.02M] in [0.1 M] $TBAPF_6$ in CH_3CN. Sweep rate: 50 mV/s. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Reduction of **8a** was not observed in the registered potential window (from 0 to -2.50 V).

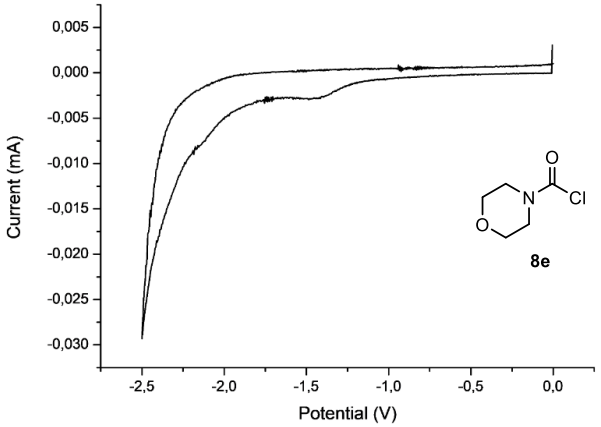


Figure S19: Cyclic voltammogram for **8e** [0.02M] in [0.1 M] $TBAPF_6$ in CH_3CN. Sweep rate: 100 mV/s. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Reduction of **8e** was not observed in the registered potential window (from 0 to -2.50 V).

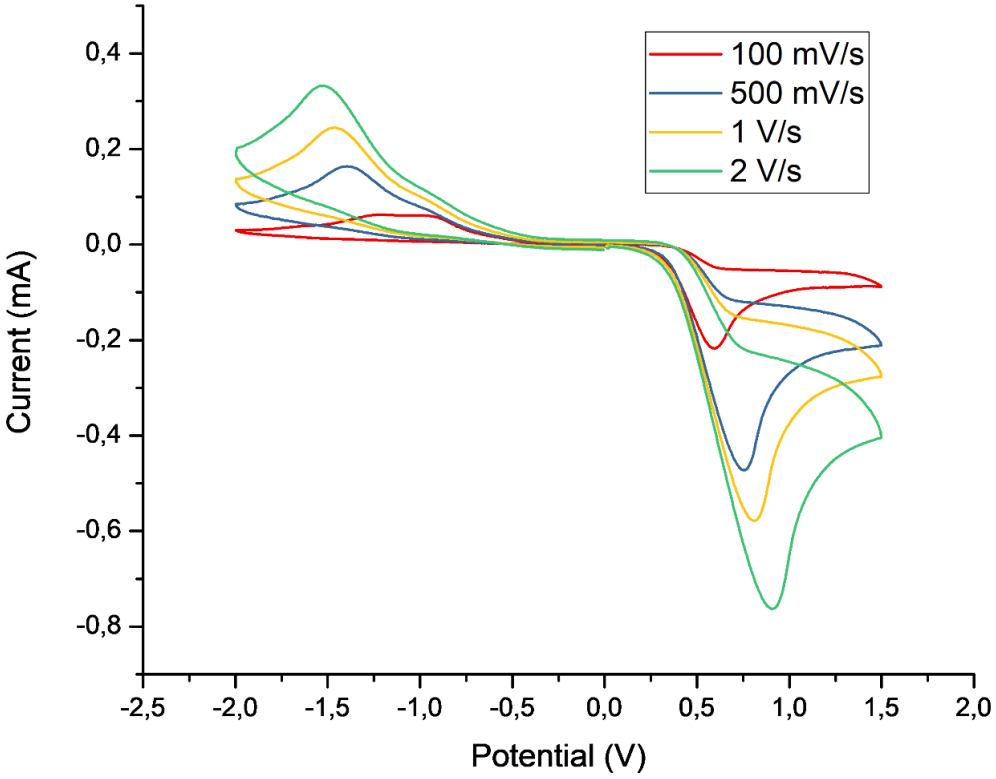


Figure S20: Cyclic voltammogram for catalyst **B** [0.02 M] in [0.1 M] $TBAPF_6$ in CH_3CN. Measurement started by oxidation from 0 to +1.5 V, followed by reduction from +1.5 V to -2.0 V, and finishing at 0 V. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Two irreversible peaks observed increasing with sweep rate.

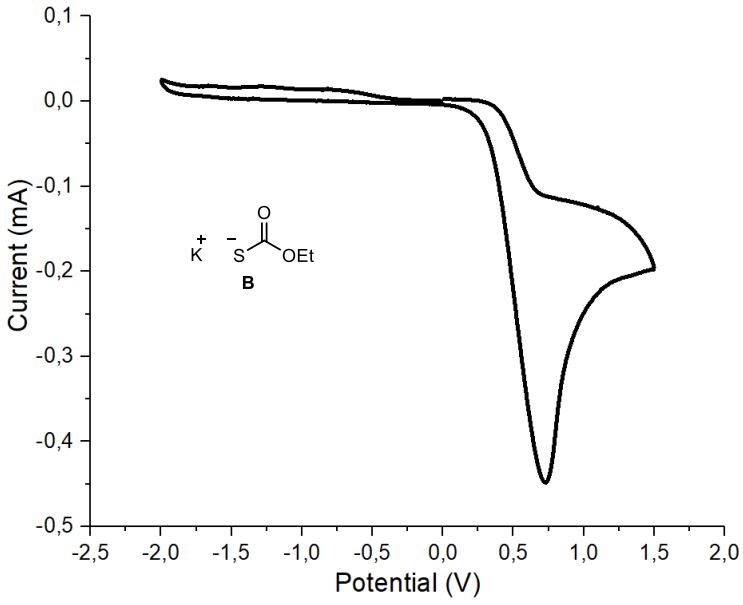


Figure S21: Cyclic voltammogram for catalyst **B** [0.02M] in [0.1 M] $TBAPF_6$ in CH_3CN. Measurement started by reduction from 0 to -2.0 V, followed by oxidation from -2.0 V to +1.5 V, and finishing at 0 V. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Only one irreversible peak observed. Sweep rate: 500 mV/s.

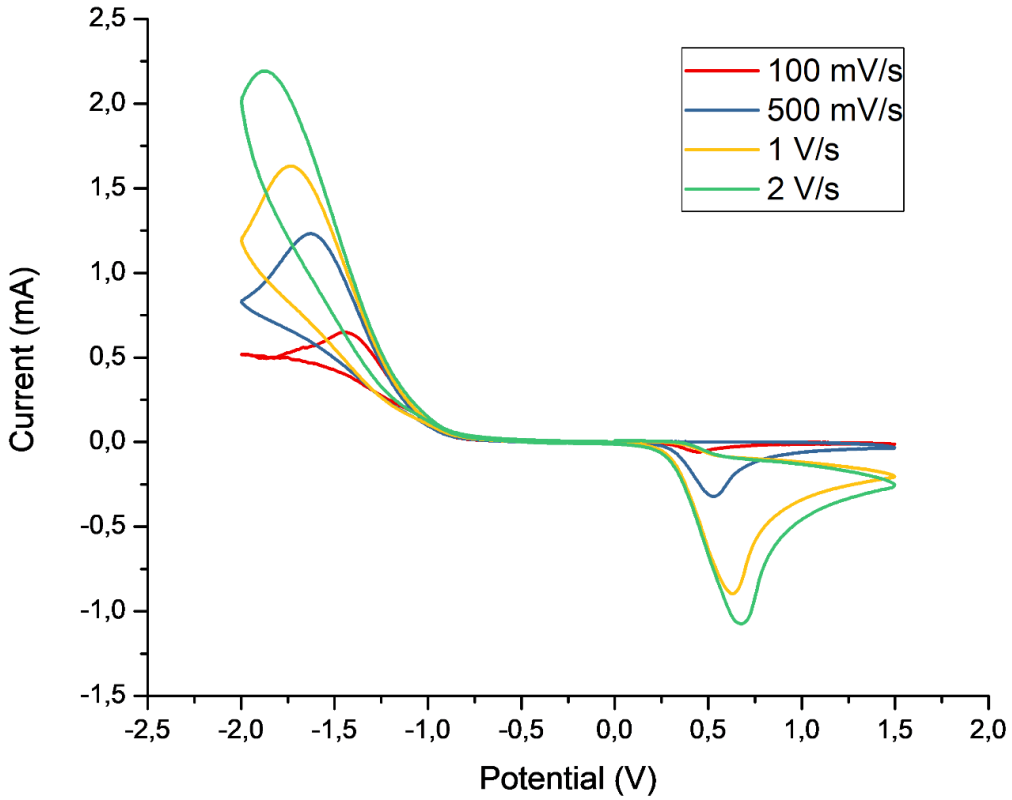


Figure S22: Cyclic voltammogram for dimer **VIIa** [0.02 M] in [0.1 M] $TBAPF_6$ in CH_3CN. Measurement started by reduction from 0 to -2.0 V, followed by oxidation from -2.0 V to +1.5 V, and finishing at 0 V. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Two irreversible peaks observed increasing with sweep rate.

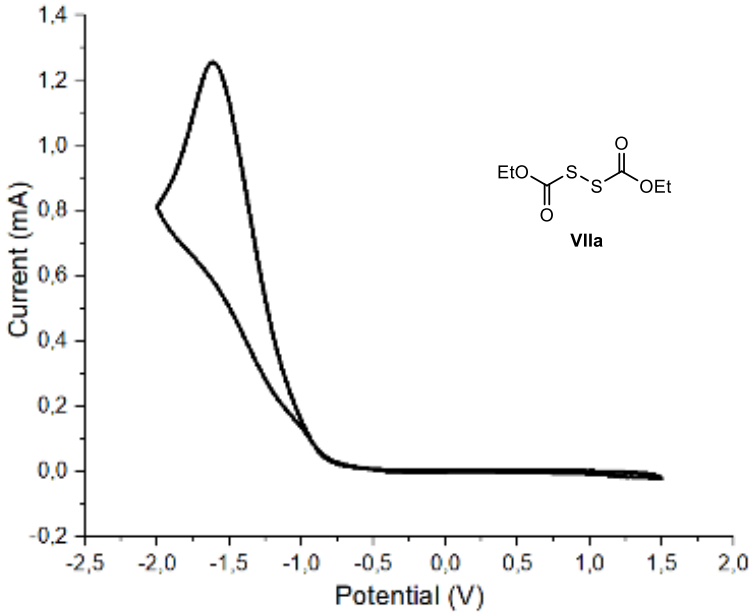


Figure S23: Cyclic voltammogram for dimer **VIIa** [0.02M] in [0.1 M] $TBAPF_6$ in CH_3CN. Measurement started by oxidation from 0 to +1.5 V, followed by reduction from +1.5 V to -2.0 V, and finishing at 0 V. Glassy carbon electrode working electrode, Ag/AgCl (KCl 3.5 M) reference electrode, Pt wire auxiliary electrode. Two irreversible peaks observed increasing with sweep rate.

D3. Transient Absorption Spectroscopy (TAS).

Studies with microsecond transient absorption spectroscopy (TAS) were performed using an excitation source of NdYAG (neodymium-doped yttrium aluminium garnet) Opolette laser with an optical parametric oscillator (OPO) system that allows variable wavelength excitation from 400 -1800 nm, pulse width of 6 ns, up to 2 mJ of energy from OPO output with fiber optic coupled, and high energy output from direct NdYAG harmonics 355 (20 mJ, 5 ns) and 532 (45mJ, 6 ns). The system is completed with 150 W tungsten lamp as probe; 2 monochromators Minuteman MM151; Si amplified photodetector module for VIS; DSPDAU high speed data rate recorder and interface software from RAMDSP. Laser intensities for each wavelength were the following: 355 nm – 1.30 mJ; 420 nm– 1.20 mJ; 460 nm – 1.95 mJ.

Several studies with different wavelengths and laser intensities were carried out, each of the conditions are indicated in a case by case bases. We selected a logarithmic time scale suitable for clearly showing the decay of the transient species in the samples. The characteristics of the detected transient species match literature data.[24]

In a typical transient absorption spectroscopy experiment, solutions in acetonitrile of each of the substrates were prepared under an argon atmosphere and transferred into a screw-top 3.0 mL quartz cuvette for measurement. Upon irradiation with the appropriated wavelength, the decay of absorption at 620 nm of the transient xanthyl radical **IIIa** was recorded.

Acylxanthate Ia

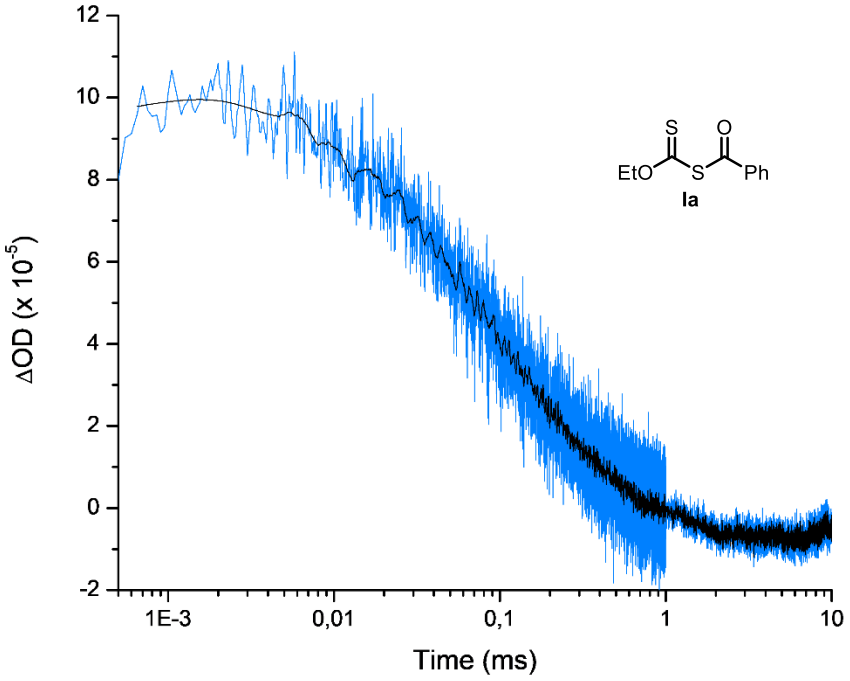


Figure S24: Absorption at 620 nm of the transient xanthyl radical **IIIa** (blue line) generated upon 355 nm laser excitation of Acylxanthate **Ia** ([**Ia**]$_0$ = 3.00 mM in acetonitrile). Note logarithmic scale for time. Absorption decay (black line) processed through Savinsky Golay filter to facilitate lifetime measurement. ΔOD: optical density variation.

Compound **Ia** was also measured upon 460 nm excitation in order to mimic the conditions of photolysis under catalytic conditions. Since photolysis of **Ia** is less efficient at longer wavelengths, a higher concentration of **Ia** was needed to obtain a comparable scale signal. Note that changes in concentration of both **Ia** and transient **IIIa** generated upon photolytic cleavage directly affects the lifetime of the detected species.

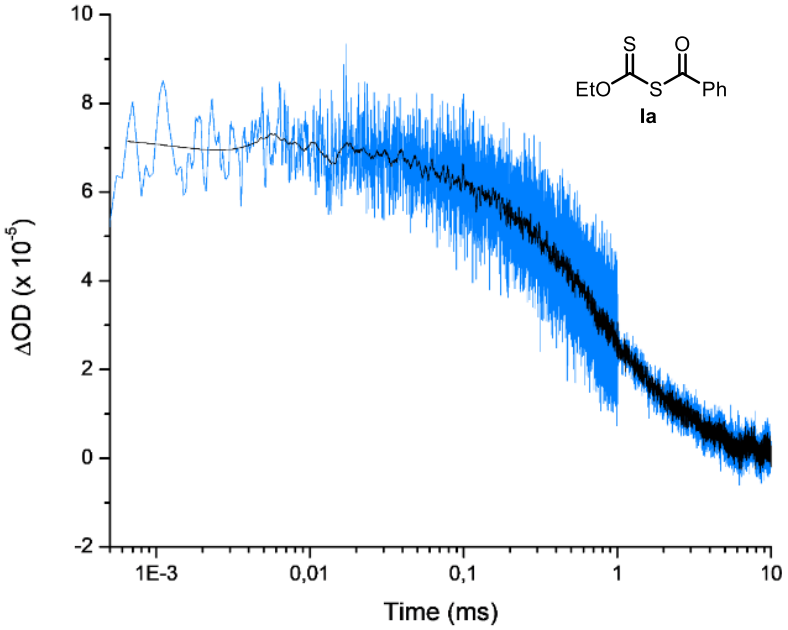


Figure S25: Absorption at 620 nm of the transient xanthyl radical **IIIa** (blue line) generated upon 460 nm laser excitation of acylxanthate **Ia** ([**Ia**]$_0$ = 300 mM in acetonitrile). Note logarithmic scale for time. Absorption decay (black line) processed through Savinsky Golay filter to facilitate lifetime measurement. ΔOD: optical density variation.

Dimer VIIa

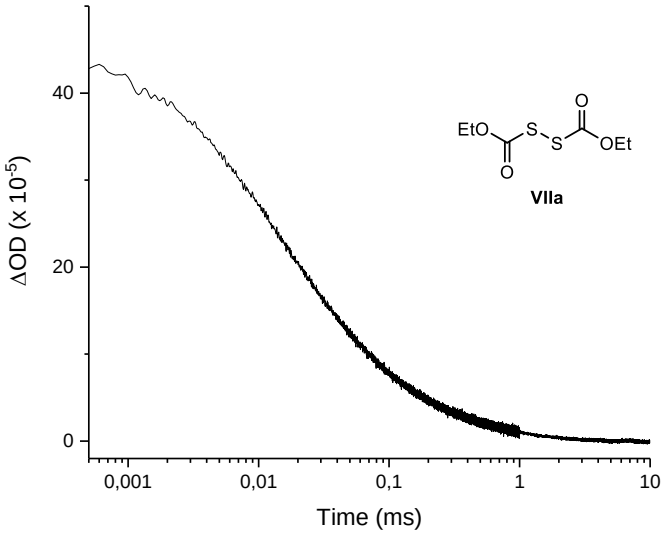


Figure S26: Absorption at 620 nm of the transient xanthyl radical **IIIa** (black line) generated upon 355 nm laser excitation of dimer **VIIa** ([**VIIa**]$_0$ = 3.00 mM in acetonitrile). Note logarithmic scale for time. ΔOD: optical density variation.

Dimer **VIIa** was also measured upon 420 nm and 460 nm irradiation in order to support photolysis under the reaction conditions. A higher concentration of **VIIa** was used to ensure comparable scale signal.

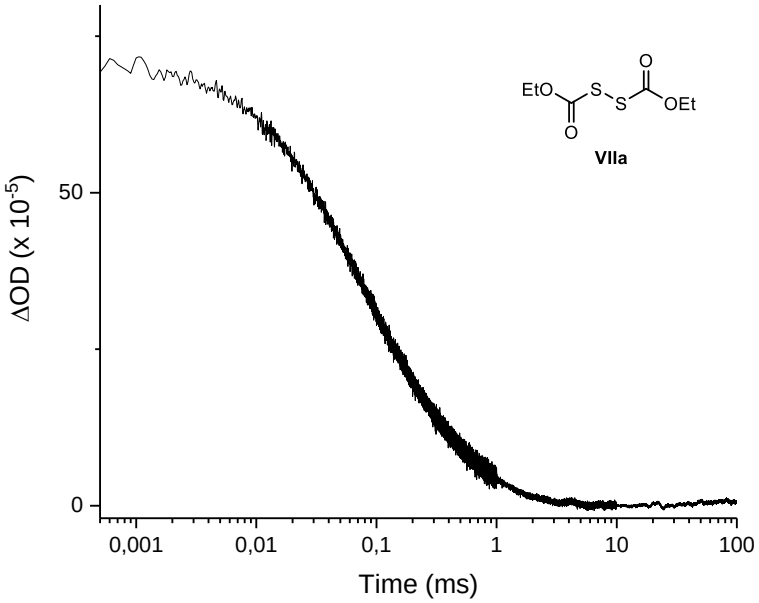


Figure S27: Absorption at 620 nm of the transient xanthyl radical **IIIa** (black line) generated upon 420 nm laser excitation of dimer **VIIa** ([**VIIa**]$_0$ = 300 mM in acetonitrile). Note logarithmic scale for time. ΔOD: optical density variation.

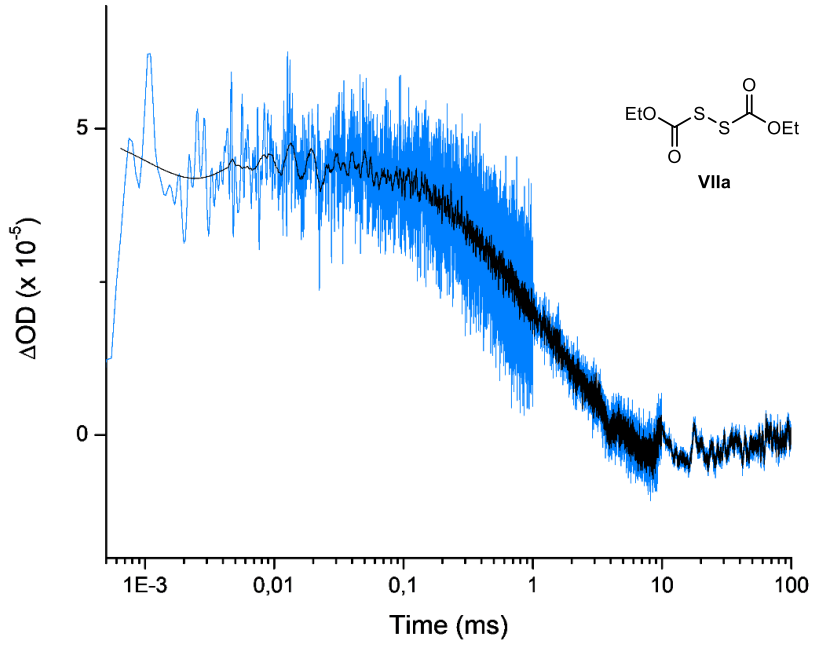


Figure S28: Absorption at 620 nm of the transient xanthyl radical **IIIa** (blue line) generated upon 460 nm laser excitation of dimer **VIIa** ([**VIIa**]$_0$ = 300 mM in acetonitrile). Note logarithmic scale for time. Absorption decay (black line) processed through Savinsky Golay filter to facilitate lifetime measurement. ΔOD: optical density variation.

In order to perform the quenching experiment, increasing amounts of pure γ-terpinene was added while observing the effect on the absorption at 620 nm of the transient **IIIa**, which was recorded after every addition. Increasing amounts of pure γ-terpinene (up to 60 equivalents, 60 μL) were added sequentially to a 2 mL solution of **VIIa** (3 mM in acetonitrile) in a screw-top quartz cuvette, providing a final concentration of 2.91 mM. A decay of absorption of the transient xanthyl radical,

and therefore a shorter lifetime, was observed upon addition of γ-terpinene (Figure S29), which is consonant with a reaction between the two species. Turquoise line: ratio **VIIa**/γ-terpinene mimics the reaction conditions.

Note that precipitation of a solid, associated to ethyl xanthogenate, was observed upon addition and irradiation of the sample.

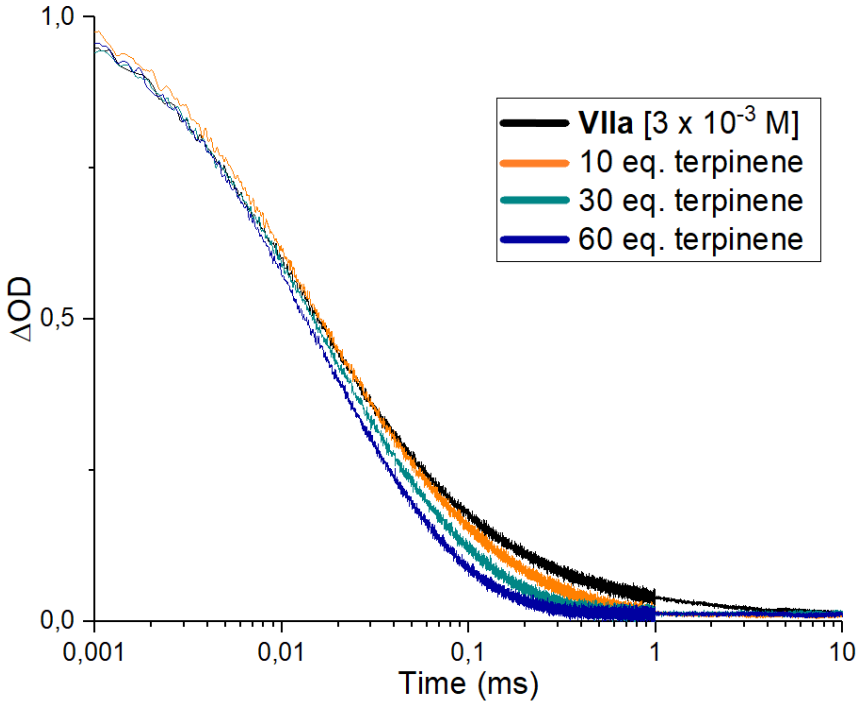


Figure S29: Absorption at 620 nm of the transient xanthyl radical **IIIa** (black line) generated upon 355 nm laser excitation of dimer **VIIa** ([**VIIa**]$_0$ = 3 mM in acetonitrile) and subsequent decay of the absorption upon addition of 10 (orange line), 30 (green line, mimics proportions under reaction conditions) and 60 (blue line) equivalents of γ-terpinene, respectively. Note logarithmic scale for time. Absorption decay was normalized to 1. ΔOD: normalized optical density variation.

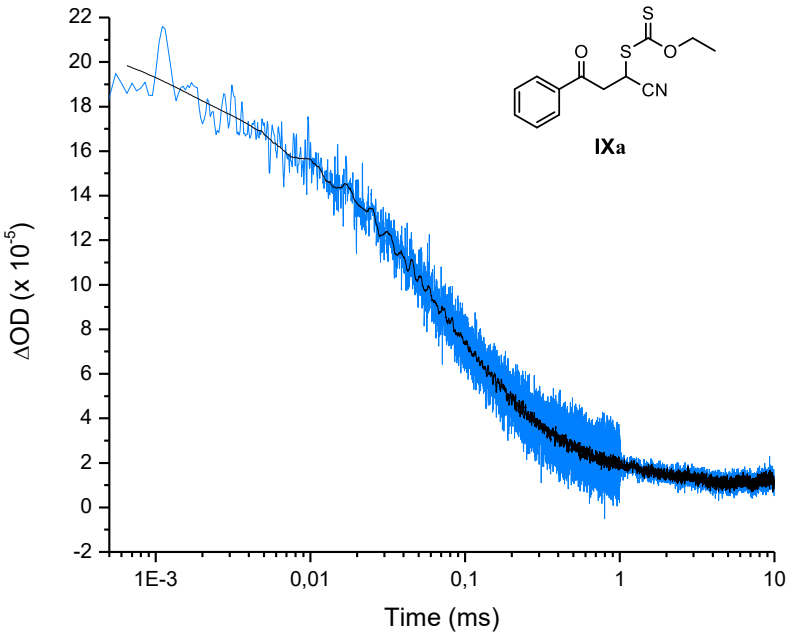


Figure S30: Absorption at 620 nm of the transient xanthyl radical **IIIa** (blue line) generated upon 355 nm laser excitation of **IXa** ([**IXa**]$_0$ = 3 mM in acetonitrile). Note logarithmic scale for time. Absorption decay (black line) processed through Savinsky Golay filter to facilitate lifetime measurement. ΔOD: optical density variation.

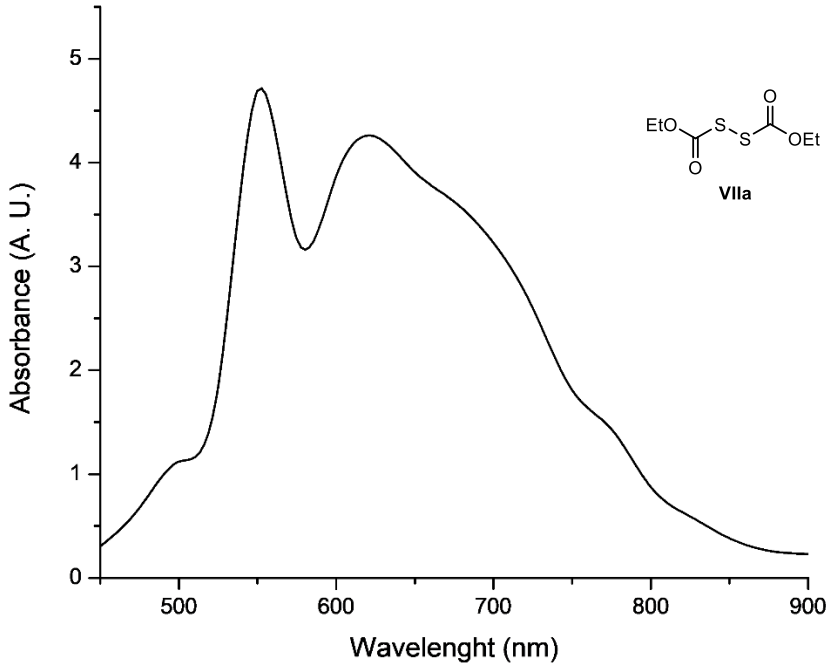


Figure S31: Absorption spectra of the transient xanthyl radical **IIIa** generated upon 355 nm laser excitation of Dimer **VIIa** ([**VIIa**]$_0$ = 3 mM in acetonitrile) at 1 µS time of irradiation. Maximum characteristic from xanthyl raical can be observed around 625 nm.

D4. Electron paramagnetic resonance (EPR)

EPR spectra were acquired on a Bruker EMX X-band EPR spectrometer with an ER 4116 HS cavity (9.86 GHz at room temperature) using 100 kHz field modulation (modulation amplitude: 1 G). Individual EPR tubes were filled with ~0.7 mL of the solution and were placed at the same position of the resonant cavity for EPR spectral acquisition. The spectral data were collected at 298 K with the following spectrometer settings: microwave power = 2.020 mW; center field = 3518 G, sweep width = 200 G, sweep time = 30 s, modulation frequency = 100 KHz, modulation amplitude = 1 G, power attenuation = 20 dB, time constant = 0.01 ms.

A fresh solution of acylxanthate **Ia** 0.10 M in Toluene was prepared under air and measured without further precautions to remove oxygen from the solution. As expected, no signal was observed before of irradiation (note that **Ia** decomposes rapidly, and a sample older than one day did show signals appearing before irradiation, due to decomposition); on the other hand, upon irradiation of the sample, appearance of a triplet at 3505 G was observed with a g-value of 2.00272 and a hyperfine splitting value α_H (2.6, 2H, γ-H). This signal reaches a maximum of intensity after 12.5 minutes of irradiation. The calculated EPR spectrum for the carbon radical of type **VI**, which lies in proximity of two sulfur atoms and an ethoxy moiety, is shown in the right panel of Figure S32.

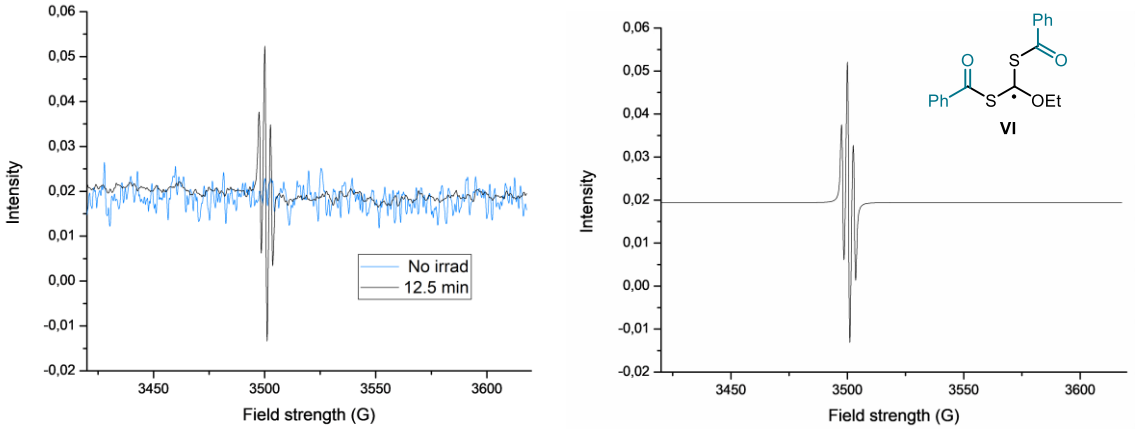


Figure S32: Comparison between (left) EPR spectra of acylxanthate **Ia** (0.1 M in toluene) before irradiation (blue line) and after irradiation with a LSB610 100W mercury lamp during 12.5 min (black line). Open-shell specie was detected by appearance of a new signal centered at 3505 G (triplet); and (right) calculated EPR spectrum for intermediate **VI** for a hyperfine coupling with two equivalent nuclei of spin ½.

D5. Quantum Yield Determination

A ferrioxalate actinometer solution was prepared by following the Hammond variation of the Hatchard and Parker procedure outlined in the Handbook of Photochemistry.[25] The ferrioxalate actinometer solution measures the decomposition of ferric ions to ferrous ions, which are complexed by 1,10-phenanthroline and monitored by UV/Vis absorbance at 510 nm. The moles of iron-phenanthroline complex formed are related to moles of photons absorbed. The following solutions were prepared and stored in a dark laboratory (red light):

1. Potassium ferrioxalate solution: 294.8 mg of potassium ferrioxalate (commercially available from Alfa Aesar) and 139 μL of sulfuric acid (96%) were added to a 50 mL volumetric flask, and filled to the mark with water (HPLC grade).

2. Phenanthroline solution: 0.2% by weight of 1,10-phenanthroline in water (100 mg in 50 mL volumetric flask).

3. Buffer solution: 2.47 g of NaOAc and 0.5 mL of sulfuric acid (96%) were added to a 50 mL volumetric flask, and filled to the mark with water (HPLC grade).

The actinometry measurements were done as follows:

1. 1 mL of the actinometer solution was added to a screw-cap vial and placed om a single HP LED 1.5 cm away from the light source. The solution was irradiated at 460 nm (irradiance 40 mW/cm^2). This procedure was repeated 4 times, quenching the solutions after different time intervals: 10 sec, 15 sec, 20 sec, and 25 sec.

2. After irradiation, the actinometer solutions were removed and placed in a 10 mL volumetric flask containing 0.5 mL of 1,10-phenanthroline solution and 2 mL of buffer solution. These flasks were filled to the mark with water (HPLC grade).

3. The UV-Vis spectra of the complexed actinometer samples were recorded for each time interval. The absorbance of the complexed actinometer solution was monitored at 510 nm.

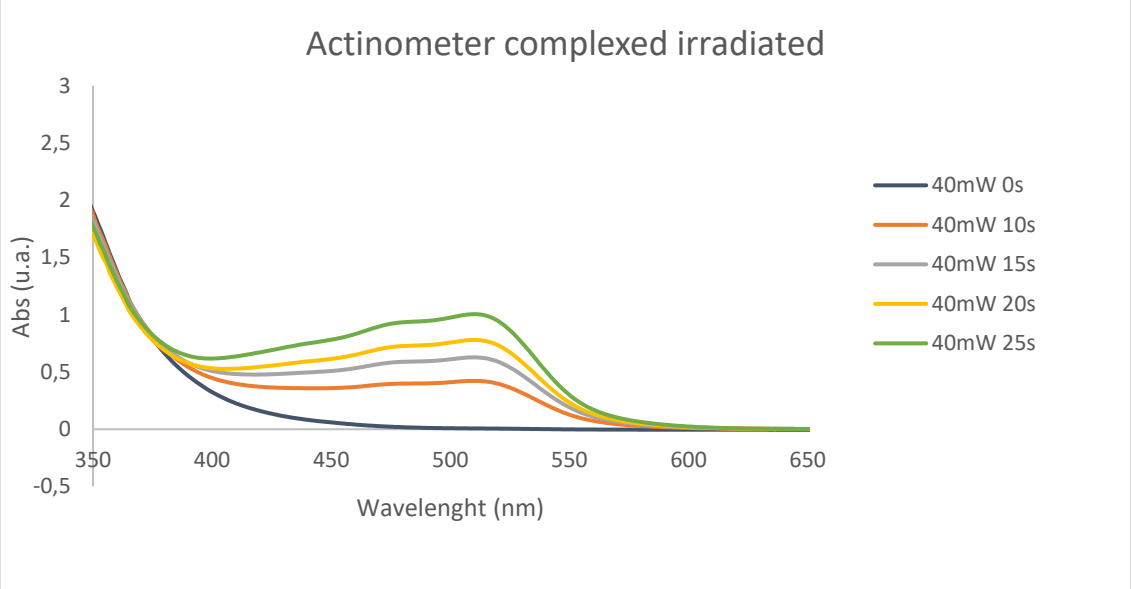


Figure S33: Absorbance of the complexed actinometer solutions.

The moles of Fe^{2+} formed for each sample is determined using Beers' Law (Eq. 1) :

$$Mols\ of\ Fe(II) = V_1 \times V_3 \times \Delta A(510\ \text{nm})/10^3 \times V_2 \times l \times \varepsilon(510\ nm) \text{ (Eq. 1)}$$

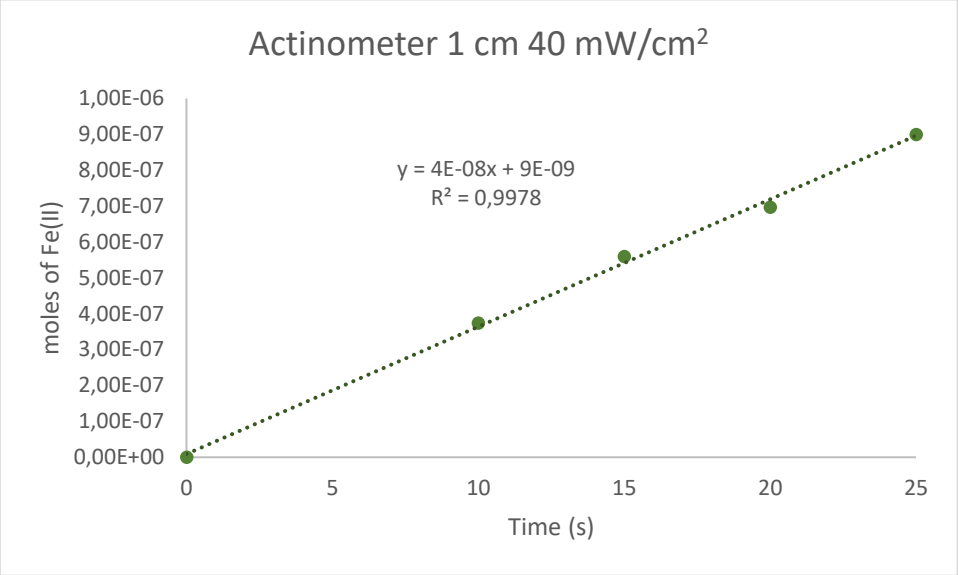
where V_1 is the irradiated volume (1 mL), V_2 is the aliquot of the irradiated solution taken for the determination of the ferrous ions (1 mL), V_3 is the final volume after complexation with phenanthroline (10 mL), l is the optical path-length of the irradiation cell (1 cm), ΔA(510 nm) is the optical difference in absorbance between the irradiated solution and the one stored in the dark, ε(510 nm) is the extinction coefficient the complex $Fe(phen)_3^{2+}$ at 510 nm (11100 L mol^{-1} cm^{-1}). The moles of Fe^{2+} formed (x) are plotted as a function of time (t). The slope of this line was correlated to the moles of incident photons by unit of time ($q_{n,}{}^0$) by the use of the following Equation 2:

$$\Phi(\lambda) = dx/dt\ q_{n,p}{}^0\ [1-10^{-A(\lambda)}] \text{ (Eq. 2)}$$

where dx/dt is the rate of change of a measurable quantity (spectral or any other property), the quantum yield (Φ) for Fe^{2+} at 458 nm is 1.1[45], [1-10$^{-A(λ)}$] is the ratio of absorbed photons by the

solution, and A(λ) is the absorbance of the actinometer at the wavelength used to carry out the experiments (460 nm). The absorbance at 460 nm A(460) was measured using a Shimadzu 2401PC UV-Vis spectrophotometer in a 1 cm path quartz cuvette, obtaining an absorbance of 0.158.

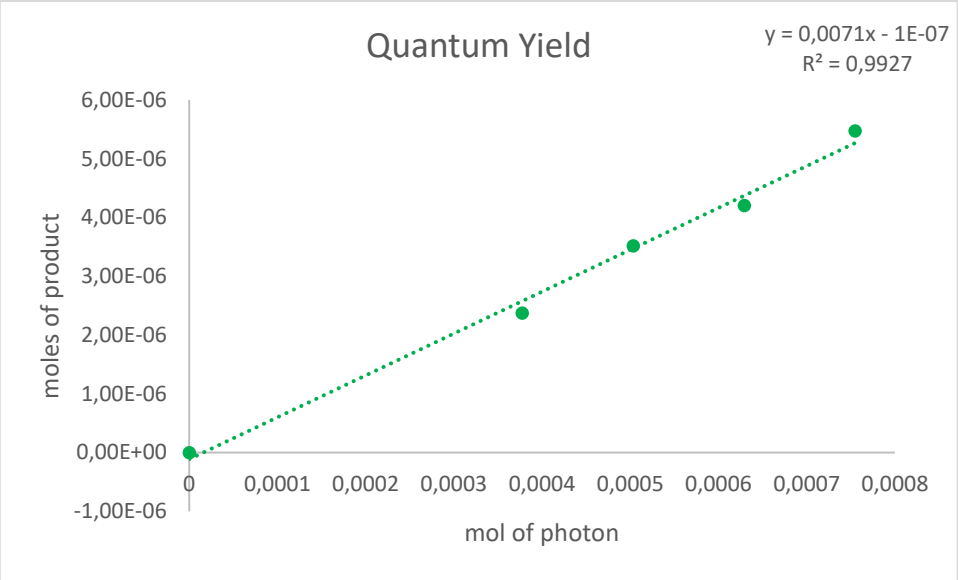
$q_{n,}{}^{0}$, which is the photon flux, was determined to be 1.048×10^{-7} einstein s^{-1}.



Consequently, the model reactions were performed.

The reactions were prepared on a screw-cap vial with stir bar. Cyclohexanecarbonyl chloride (50 μL, 0.375 mmol, 1.5 equiv.), γ-terpinene (120 μL, 0.75 mmol, 3 equiv.), and lutidine (58 μL, 0.5 mmol, 2 equiv.), were added to a solution of catalyst **B** (4 mg, 0.1 equiv.) in acetonitrile (1 mL). After degassing by bubbling Argon for 30 s, acrylonitrile **2a** (16 μL, 0.25 mmol) was added and the tube was sealed with parafilm and put in the HP-LED 460 nm at 1 cm distance at ambient temperature (reaction reaches around 35 ºC) with irradiance of 40 mW/cm^2. Four different reactions were setup and irradiated for different times: 60 min, 80 min, 100 min and 120 min.

The moles of product **5e** formed for the model reaction were determined by GC measurement (FID detector) using 1,3,5-trimethoxybenzene as internal standard. The moles of product per unit of time are related to the number of photons absorbed. The photons absorbed are correlated to the number of incident photons by the use of Equation 1. According to this, plotting the moles of product (x) versus the moles of incident photons ($q_{n,}{}^{0}$·dt), the slope is equal to: $\Phi \cdot (1\text{-}10^{-A(\lambda)(460\ nm)})$, where Φ is the quantum yield to be determined and A(460 nm) is the absorption of the reaction under study. A(460 nm) was measured using a Shimadzu 2401PC UV-Vis spectrophotometer in 10 mm path quartz. An absorbance of 0.103 was determined for the model reaction mixture. The quantum yield (Φ) of the photochemical transformation was measured to be 0.0338. The procedure was repeated a second time to provide a similar value: quantum yield (Φ) at 460 nm of 0.0332.


Quantum Yield
y = 0,0071x - 1E-07
R² = 0,9927
6,00E-06
5,00E-06
4,00E-06
3,00E-06
2,00E-06
1,00E-06
0,00E+00
-1,00E-06
moles of product
0
0,0001
0,0002
0,0003
0,0004
0,0005
0,0006
0,0007
0,0008
mol of photon

E. References

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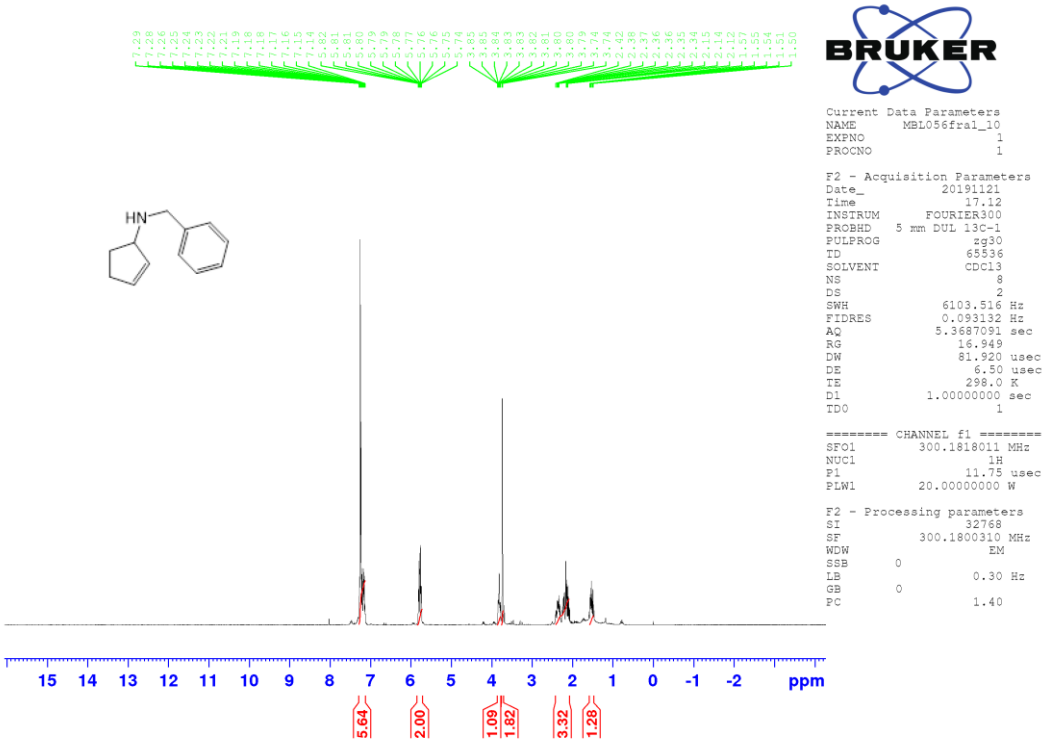
F. NMR Spectra

F1. Starting Materials

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Current Data Parameters
NAME       MBL056fra1_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191121
Time               17.12
INSTRUM       FOURIER300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6103.516 Hz
FIDRES          0.093132 Hz
AQ              5.3687091 sec
RG                16.949
DW                81.920 usec
DE                 6.50 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          300.1818011 MHz
NUC1                    1H
P1                  11.75 usec
PLW1         20.00000000 W

F2 - Processing parameters
SI                 32768
SF            300.1800310 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.40
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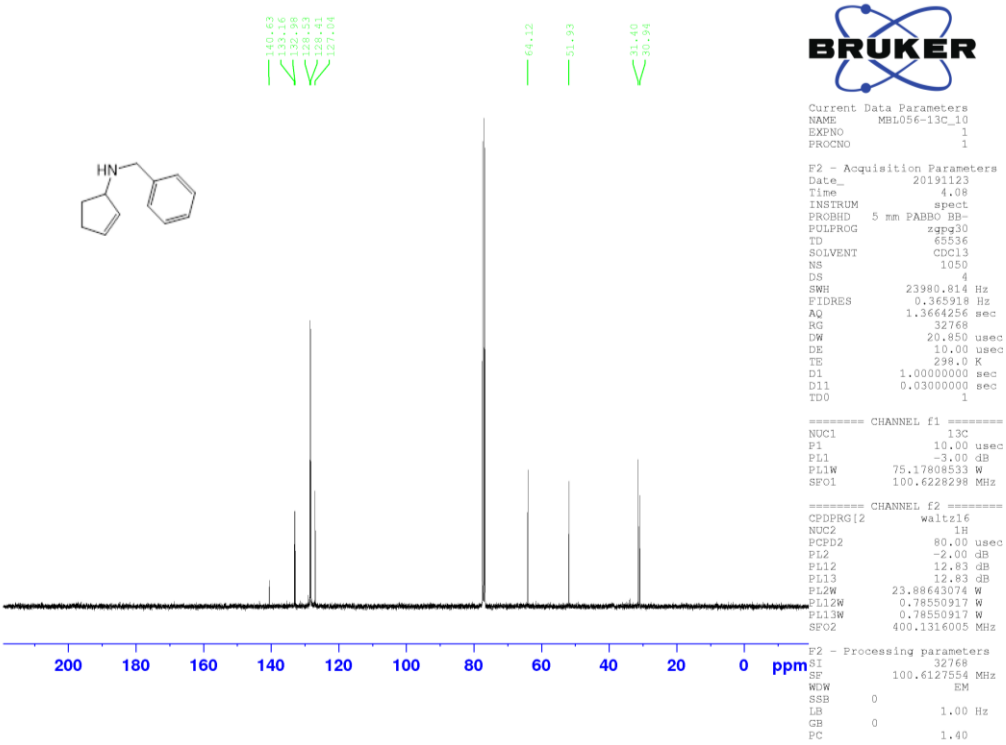


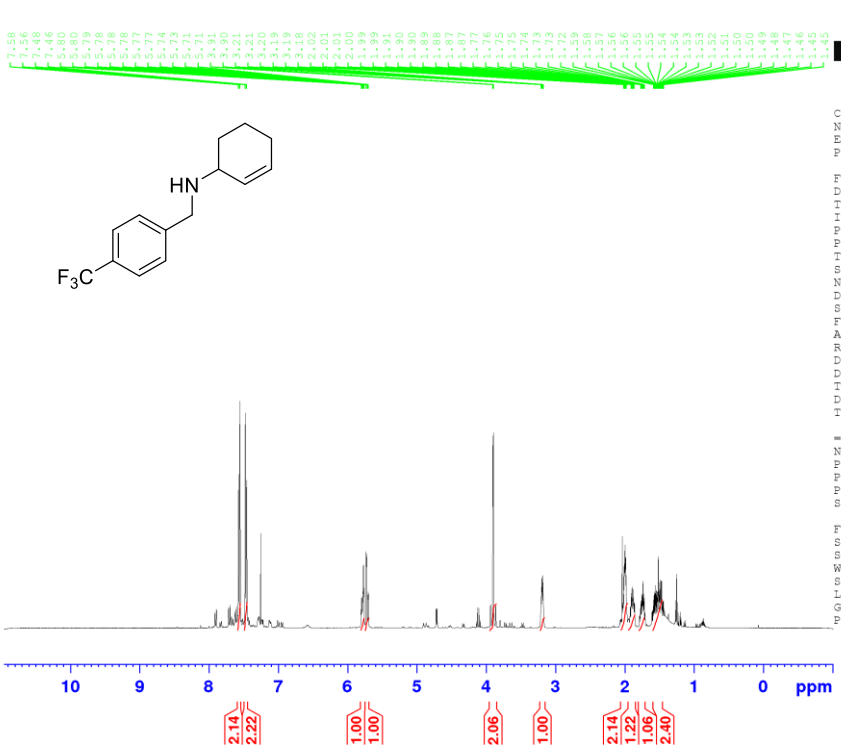

```
Current Data Parameters
NAME       MBL056-13C_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191123
Time               4.08
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1050
DS                     4
SWH            23980.814 Hz
FIDRES          0.365918 Hz
AQ              1.3664256 sec
RG                 32768
DW                20.850 usec
DE                 10.00 usec
TE                298.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 10.00 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1         100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               12.83 dB
PL13               12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2         400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF            100.6127554 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



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```
Current Data Parameters
NAME          DMZ-1-131_10
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190921
Time                 13.25
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                      8
DS                      2
SWH              4789.272 Hz
FIDRES           0.146157 Hz
AQ               3.4209793 sec
RG                    128
DW                104.400 usec
DE                  6.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   1H
P1                  14.50 usec
PL1                 -2.00 dB
PL1W          23.88643074 W
SFO1          400.1320007 MHz

F2 - Processing parameters
SI                  16384
SF            400.1300095 MHz
WDW                    EM
SSB       0
LB                  0.30 Hz
GB        0
PC                  1.00
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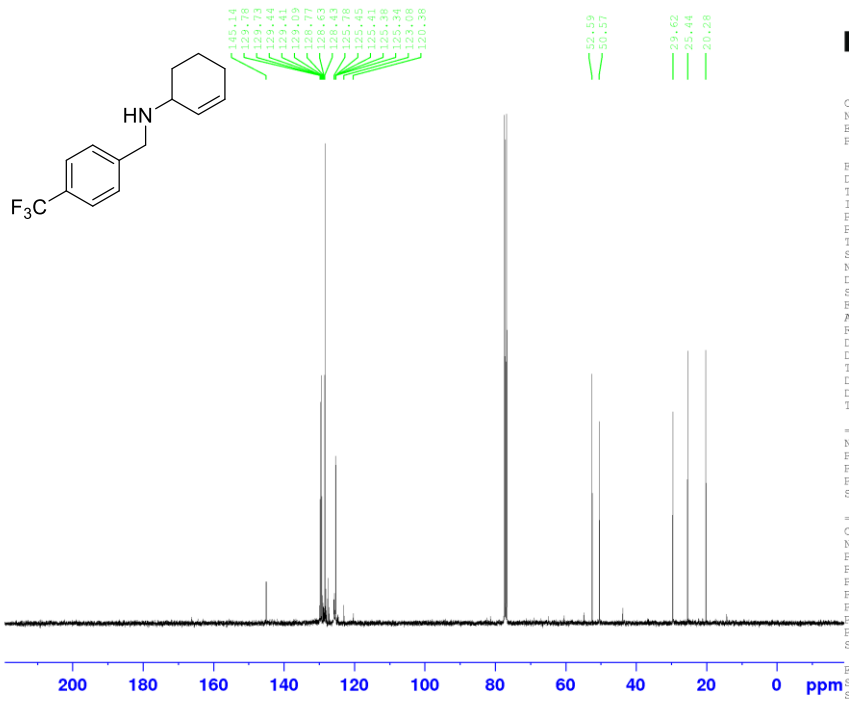

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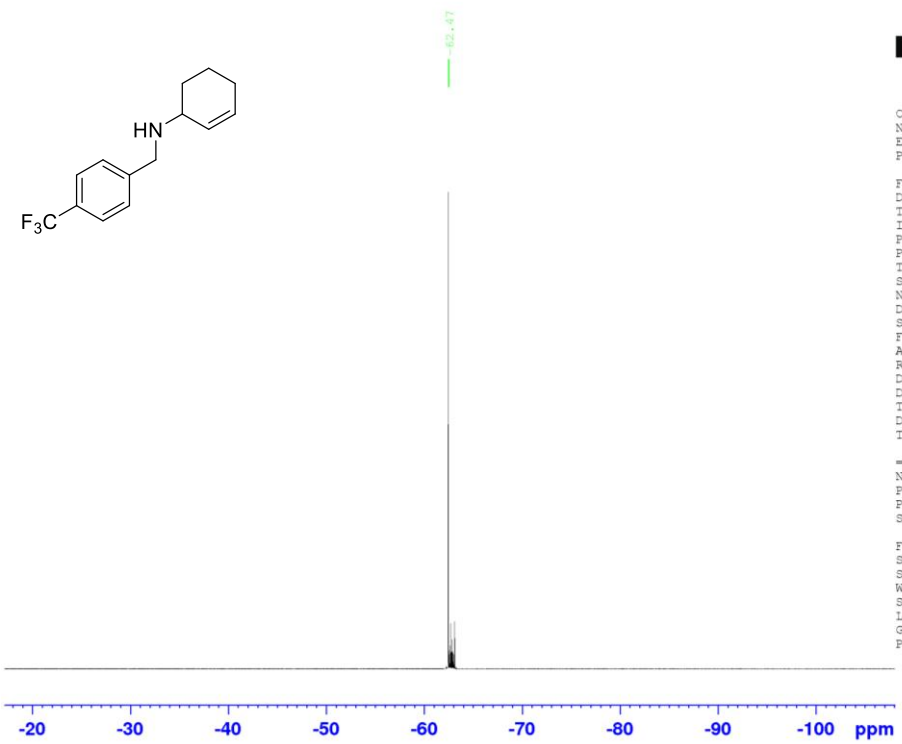
```
Current Data Parameters
NAME          DMZ-1-131_11
EXPNO                    2
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190921
Time                 20.38
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   1024
DS                      4
SWH             23980.814 Hz
FIDRES           0.365918 Hz
AQ               1.3664256 sec
RG                  32768
DW                20.850 usec
DE                  10.00 usec
TE                298.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                  13C
P1                  10.00 usec
PL1                 -3.00 dB
PL1W          75.17808533 W
SFO1          100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                   1H
PCPD2               80.00 usec
PL2                 -2.00 dB
PL12                12.83 dB
PL13                12.83 dB
PL2W          23.88643074 W
PL12W          0.78550917 W
PL13W          0.78550917 W
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                  32768
SF            100.6127549 MHz
WDW                    EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.40
```

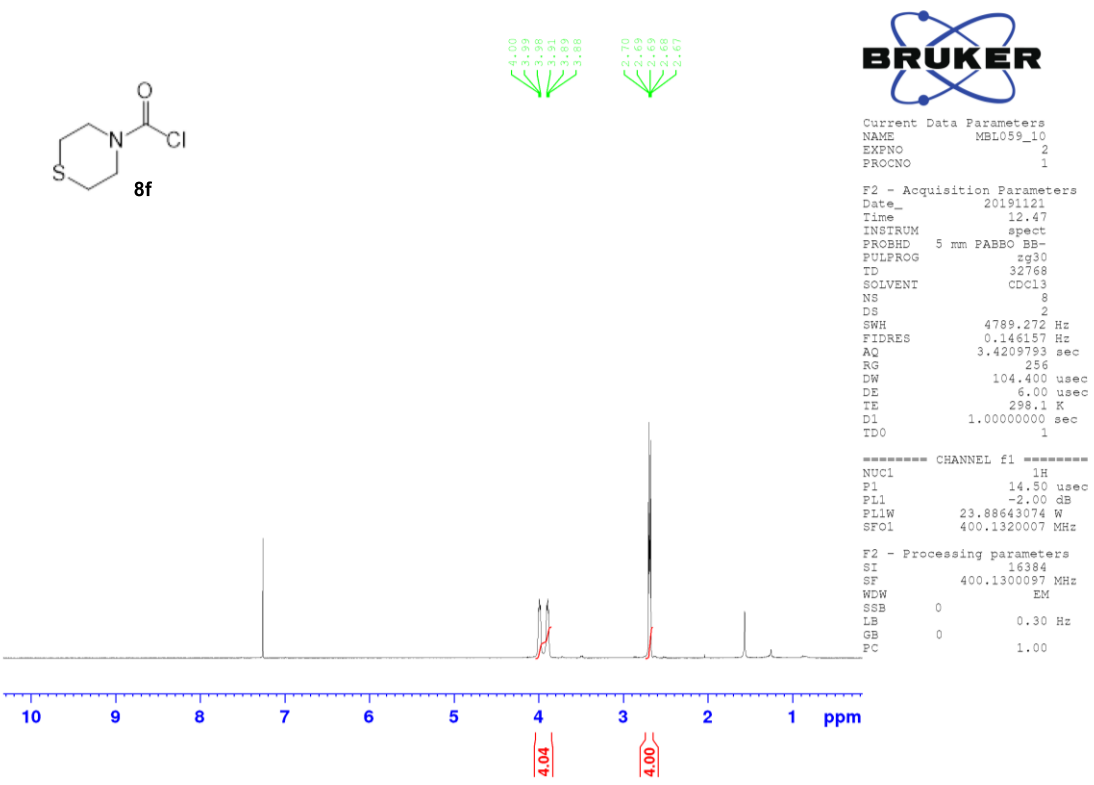



```
Current Data Parameters
NAME                  DMZ-1-131_12
EXPNO                            1
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20190921
Time                         13.28
INSTRUM                      spect
PROBHD    5 mm PABBO BB-
PULPROG                      zg30
TD                         131072
SOLVENT                     CDCl3
NS                               8
DS                               2
SWH                    75187.969 Hz
FIDRES                 0.573639 Hz
AQ                     0.8716288 sec
RG                            2048
DW                        6.650 usec
DE                         7.14 usec
TE                        298.1 K
D1                   5.00000000 sec
TD0                              1

======== CHANNEL f1 ========
NUC1                          19F
P1                         12.00 usec
PL1                        -3.00 dB
SFO1                376.4607040 MHz

F2 - Processing parameters
SI                           65536
SF                  376.4984036 MHz
WDW                             EM
SSB                 0
LB                         1.00 Hz
GB                  0
PC                         1.00
```

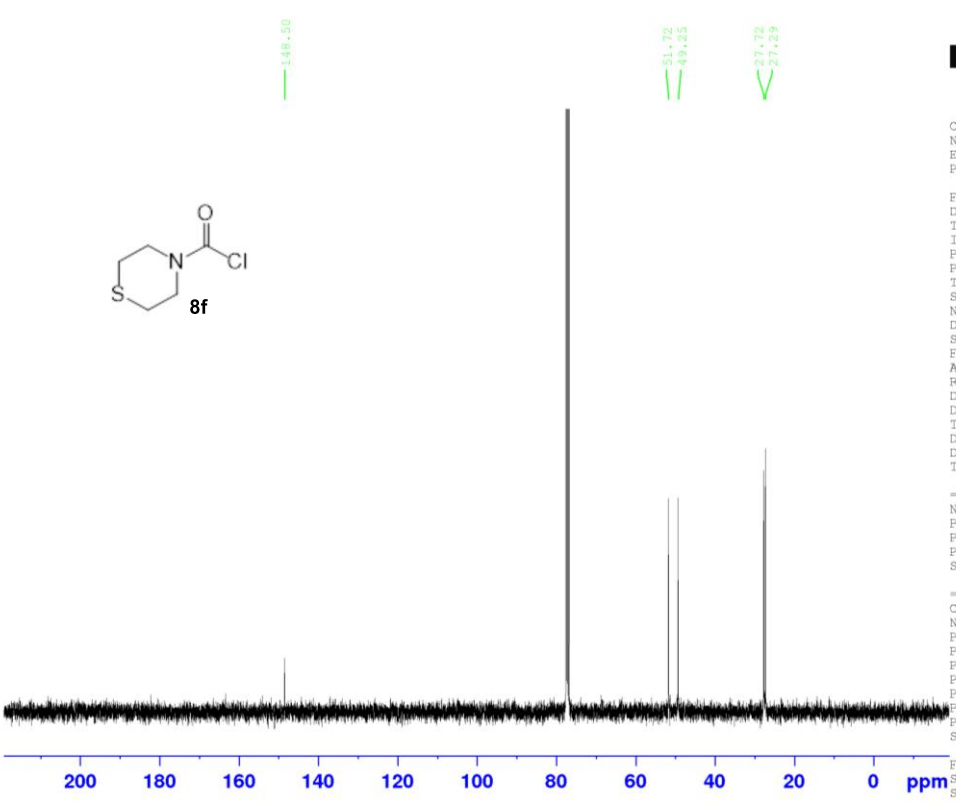



```
Current Data Parameters
NAME                  MBL059_10
EXPNO                            2
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20191121
Time                         12.47
INSTRUM                      spect
PROBHD    5 mm PABBO BB-
PULPROG                      zg30
TD                          32768
SOLVENT                     CDCl3
NS                               8
DS                               2
SWH                    4789.272 Hz
FIDRES                 0.146157 Hz
AQ                     3.4209793 sec
RG                             256
DW                       104.400 usec
DE                         6.00 usec
TE                        298.1 K
D1                   1.00000000 sec
TD0                              1

======== CHANNEL f1 ========
NUC1                           1H
P1                         14.50 usec
PL1                        -2.00 dB
PL1W                23.88643074 W
SFO1                400.1320007 MHz

F2 - Processing parameters
SI                           16384
SF                  400.1300097 MHz
WDW                             EM
SSB                 0
LB                         0.30 Hz
GB                  0
PC                         1.00
```



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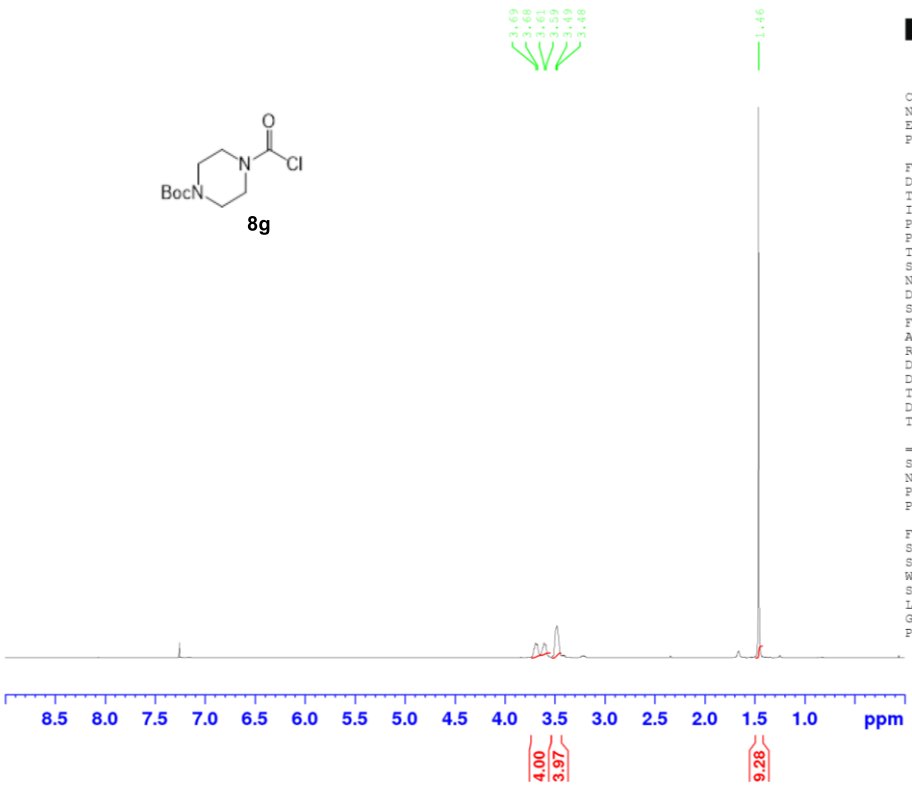
```
Current Data Parameters
NAME       MBL059-13C_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191123
Time                4.57
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1050
DS                    4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                26008
DW               20.850 usec
DE               10.00 usec
TE               298.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                10.00 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127557 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



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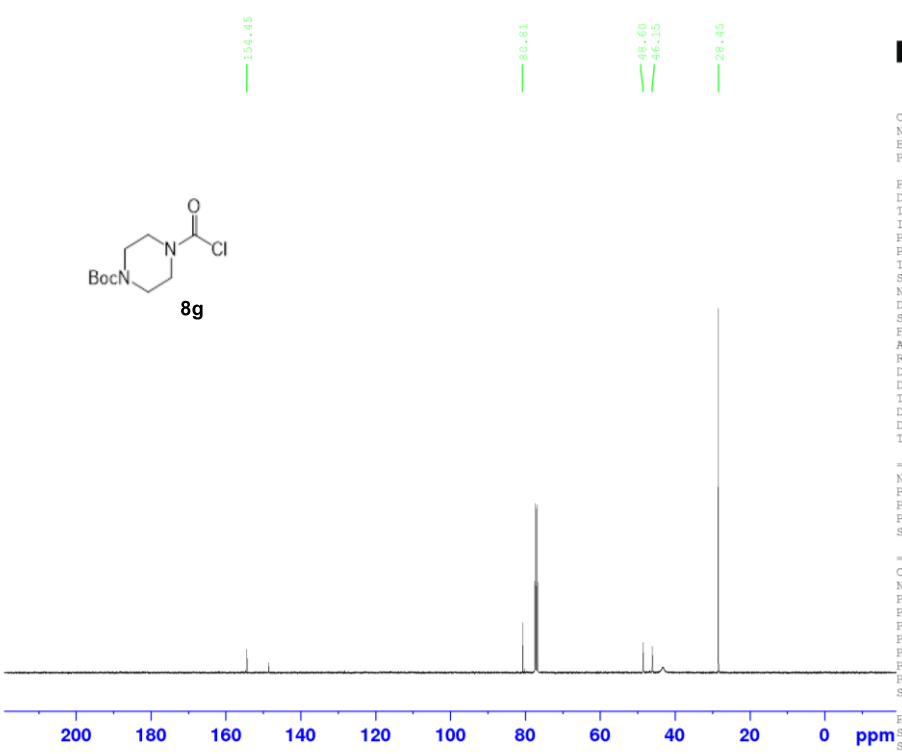
```
Current Data Parameters
NAME           MBL036_10
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191031
Time               12.47
INSTRUM       FOURIER300
PROBHD   5 mm DUL 13C-1
PULPROG             zg30
TD                65536
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6103.516 Hz
FIDRES         0.093132 Hz
AQ             5.3687091 sec
RG                23.3612
DW                81.920 usec
DE                 6.50 usec
TE                298.0 K
D1           1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         300.1818011 MHz
NUC1                   1H
P1                11.75 usec
PLW1         20.00000000 W

F2 - Processing parameters
SI                 32768
SF          300.1800056 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.40
```



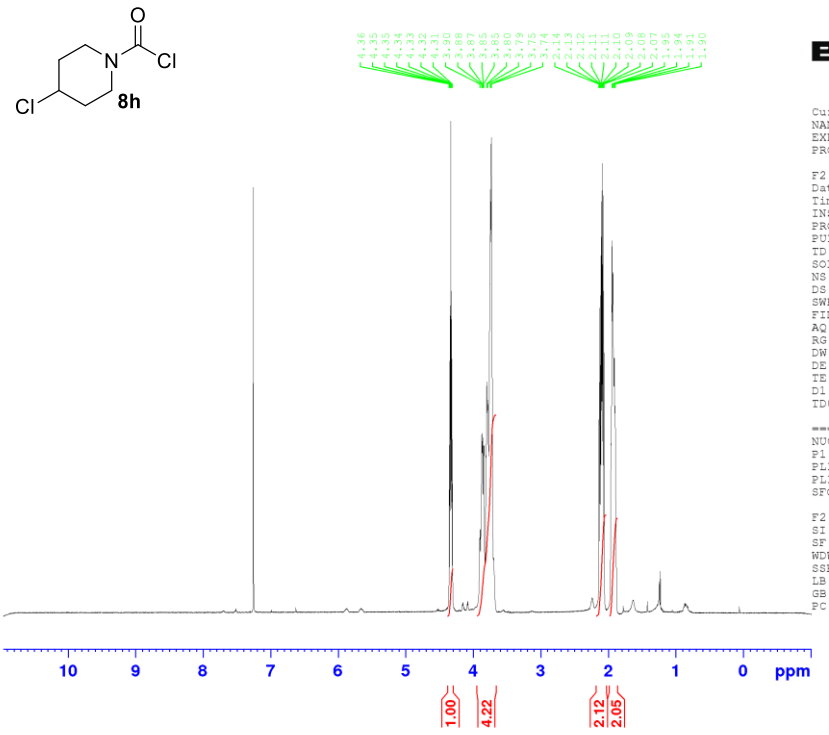

```
Current Data Parameters
NAME       MBL036_13C_10
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191101
Time              11.33
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                1050
DS                   4
SWH          23980.814 Hz
FIDRES        0.365918 Hz
AQ           1.3664256 sec
RG               26008
DW              20.850 usec
DE              10.00 usec
TE              298.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                13C
P1                10.00 usec
PL1               -3.00 dB
PL1W        75.17808533 W
SFO1       100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2        waltz16
NUC2                1H
PCPD2            80.00 usec
PL2              -2.00 dB
PL12             12.83 dB
PL13             12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2       400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127564 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

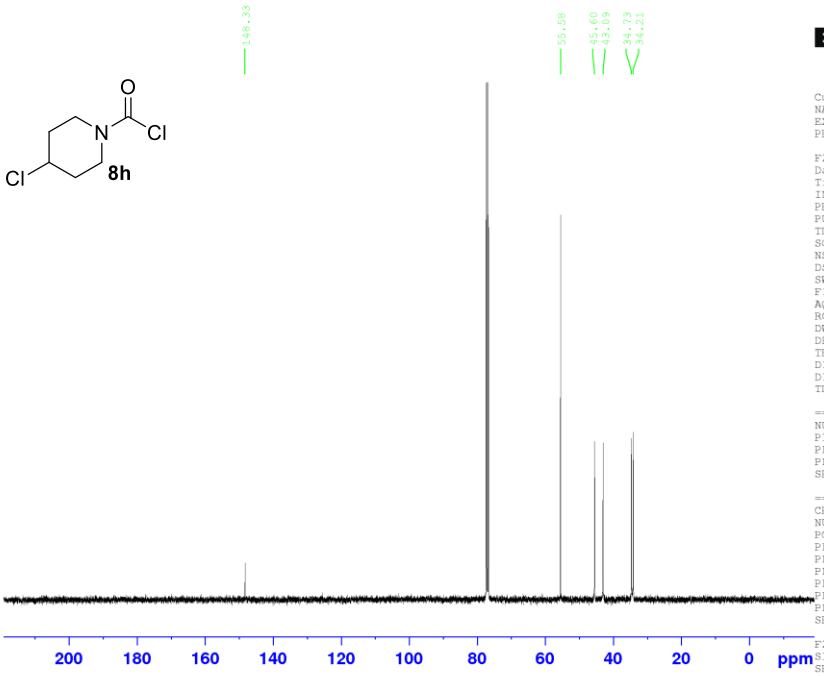



```
Current Data Parameters
NAME      DMZ-1-218Dry_10
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20191217
Time              12.19
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT          CDCl3
NS                     8
DS                     2
SWH           4789.272 Hz
FIDRES        0.146157 Hz
AQ           3.4209793 sec
RG                   181
DW             104.400 usec
DE               6.00 usec
TE               298.1 K
D1           1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1       400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300095 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



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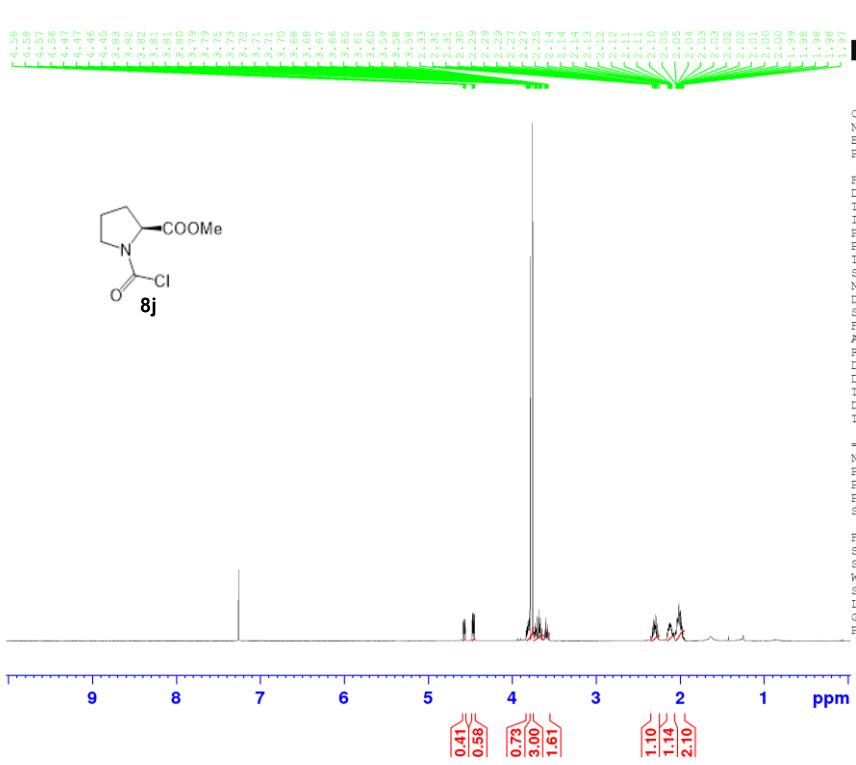
```
Current Data Parameters
NAME      DMZ-1-218Dry_11
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191217
Time              14.41
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1548
DS                    4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                32768
DW               20.850 usec
DE               10.00 usec
TE               298.1 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 10.00 usec
PL1                -3.00 dB
PL1W        75.17808533 W
SFO1       100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                 1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               12.83 dB
PL13               12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2       400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127581 MHz
WDW                   EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



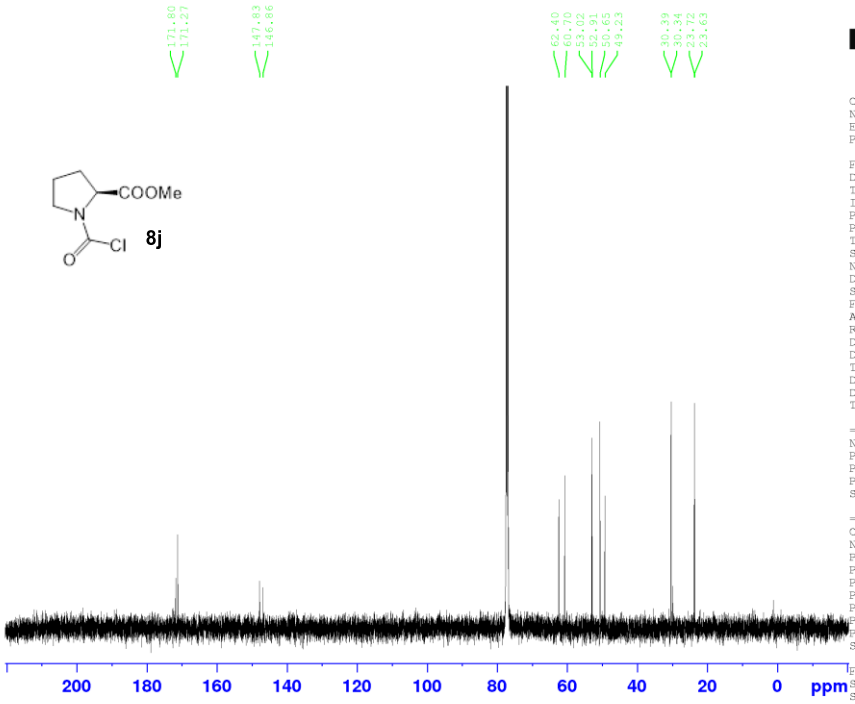
BRUKER

```
Current Data Parameters
NAME            MBL096_10
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_           20200116
Time              17.13
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG             zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES         0.183399 Hz
AQ            2.7262976 sec
RG                  322
DW               83.200 usec
DE               10.00 usec
TE               300.0 K
D1           1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                   1H
P1                 14.00 usec
PL1                -4.08 dB
PL1W        35.02648163 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF          500.1300137 MHz
WDW                   EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```



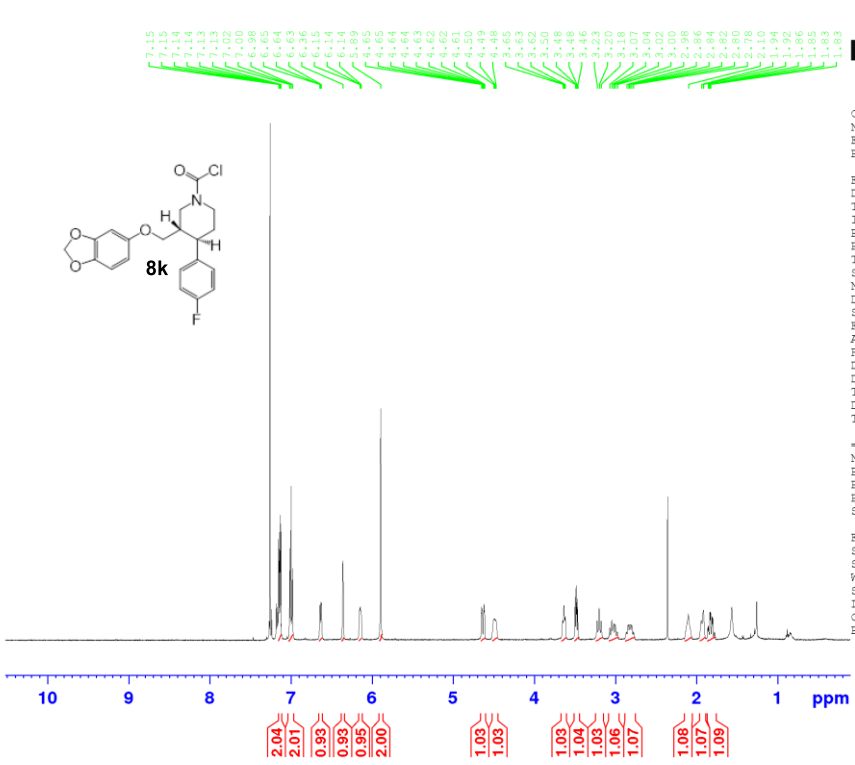

```
Current Data Parameters
NAME                  MBL096F2
EXPNO                        4
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20200121
Time                      9.07
INSTRUM                  spect
PROBHD    5 mm PATBO BB-
PULPROG                 zgpg30
TD                       65536
SOLVENT                  CDCl3
NS                        4629
DS                           4
SWH                30303.031 Hz
FIDRES              0.462388 Hz
AQ                  1.0813440 sec
RG                        7290
DW                     16.500 usec
DE                     10.00 usec
TE                     273.0 K
D1                  2.00000000 sec
D11                 0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        9.25 usec
PL1          0 dB
PL1W            53.75436783 W
SFO1           125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2               waltz16
NUC2                       1H
PCPD2                  80.00 usec
PL2                    -4.08 dB
PL12                   11.54 dB
PL13                   11.54 dB
PL2W            35.02648163 W
PL12W            0.96027696 W
PL13W            0.96027696 W
SFO2           500.1320005 MHz

F2 - Processing parameters
SI                       32768
SF                 125.7577835 MHz
WDW                         EM
SSB          0
LB                     1.00 Hz
GB           0
PC                     1.40
```

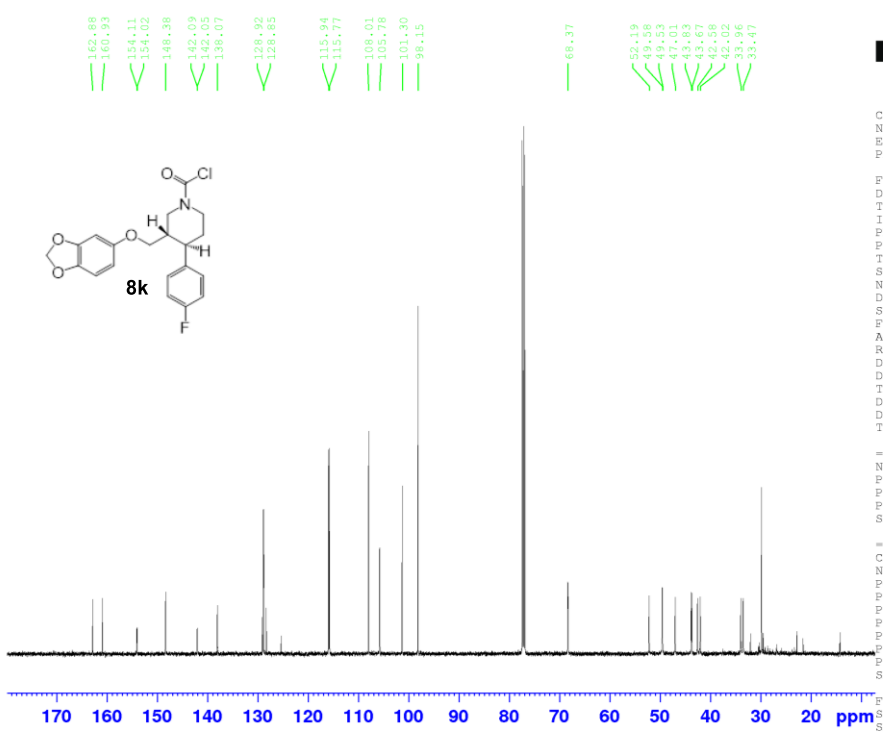



```
Current Data Parameters
NAME                  MBL067_10
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20191128
Time                     17.05
INSTRUM                  spect
PROBHD    5 mm PATBO BB-
PULPROG                  zg30
TD                       32768
SOLVENT                  CDCl3
NS                           8
DS                           2
SWH                6009.615 Hz
FIDRES              0.183399 Hz
AQ                  2.7262976 sec
RG                         575
DW                     83.200 usec
DE                     10.00 usec
TE                     300.0 K
D1                  1.00000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       1H
P1                       14.00 usec
PL1                    -4.08 dB
PL1W            35.02648163 W
SFO1           500.1325007 MHz

F2 - Processing parameters
SI                       16384
SF                 500.1300137 MHz
WDW                         EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```



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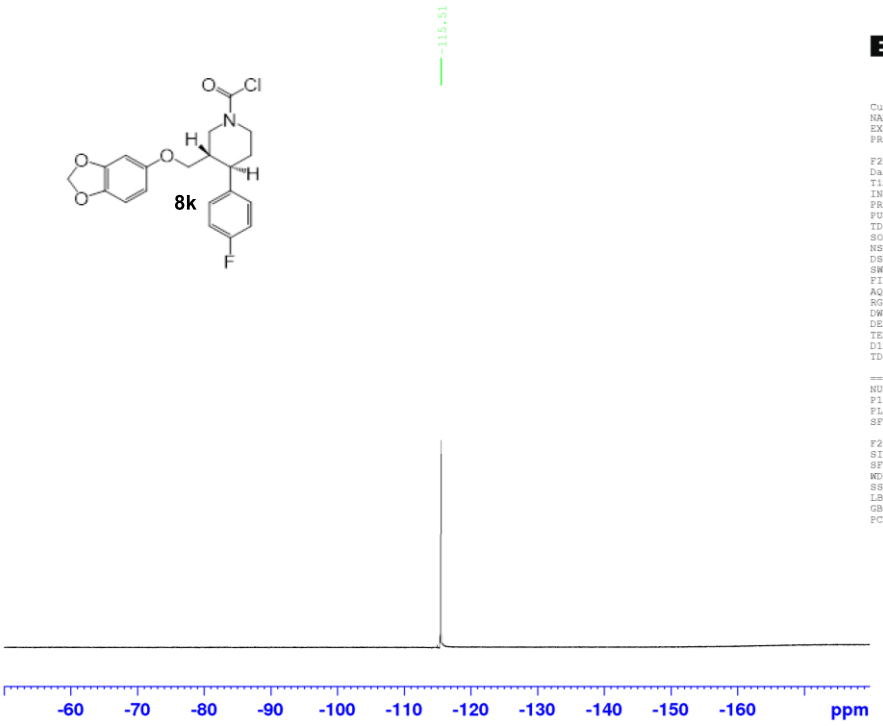
```
Current Data Parameters
NAME       MBL067-13C_10
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_          20191218
Time              17.03
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                1179
DS                   4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG               10300
DW              16.500 usec
DE              10.00 usec
TE              299.4 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                13C
P1                 9.25 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1      125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2              -4.08 dB
PL12             11.54 dB
PL13             11.54 dB
PL2W       35.02648163 W
PL12W       0.96027696 W
PL13W       0.96027696 W
SFO2      500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577759 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



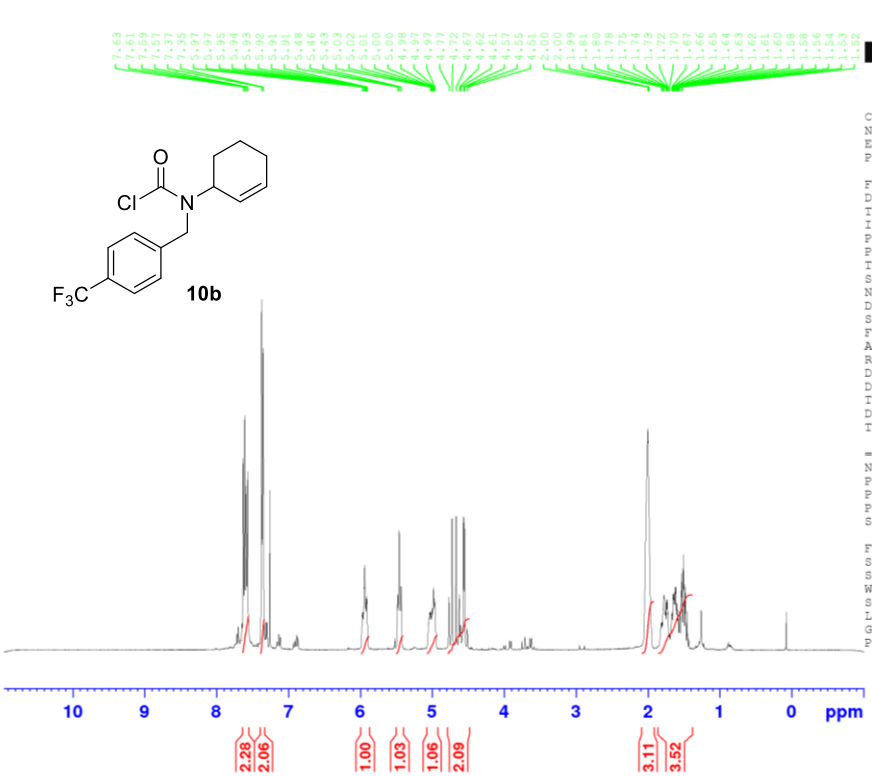
BRUKER

```
Current Data Parameters
NAME     MBL paroxetine carbamoyl_F
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_          20200115
Time              11.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD              131072
SOLVENT           CDCl3
NS                   8
DS                   2
SWH          75187.969 Hz
FIDRES        0.573639 Hz
AQ            0.8716288 sec
RG                2048
DW               6.650 usec
DE               7.14 usec
TE               298.1 K
D1          5.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               19F
P1                12.00 usec
PL1               -3.00 dB
SFO1      376.4607040 MHz

F2 - Processing parameters
SI                65536
SF          376.4984036 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.00
```

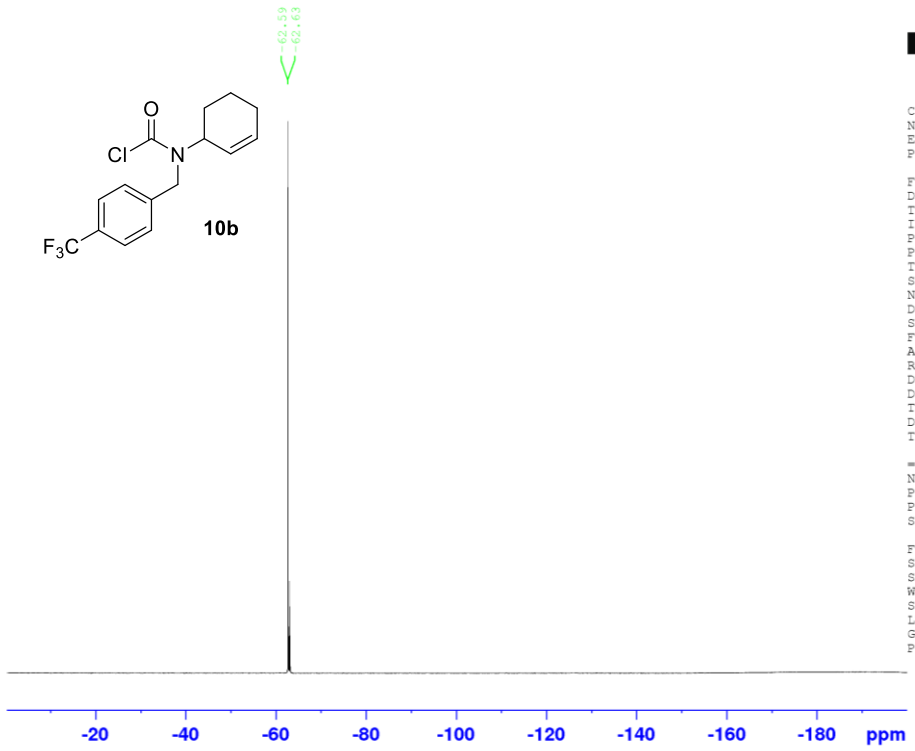



```
Current Data Parameters
NAME      DMZ-1-134-7_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20200305
Time              14.31
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES         0.146157 Hz
AQ             3.4209793 sec
RG                  128
DW              104.400 usec
DE                6.00 usec
TE               298.0 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1       400.1320007 MHz

F2 - Processing parameters
SI                16384
SF         400.1300098 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```

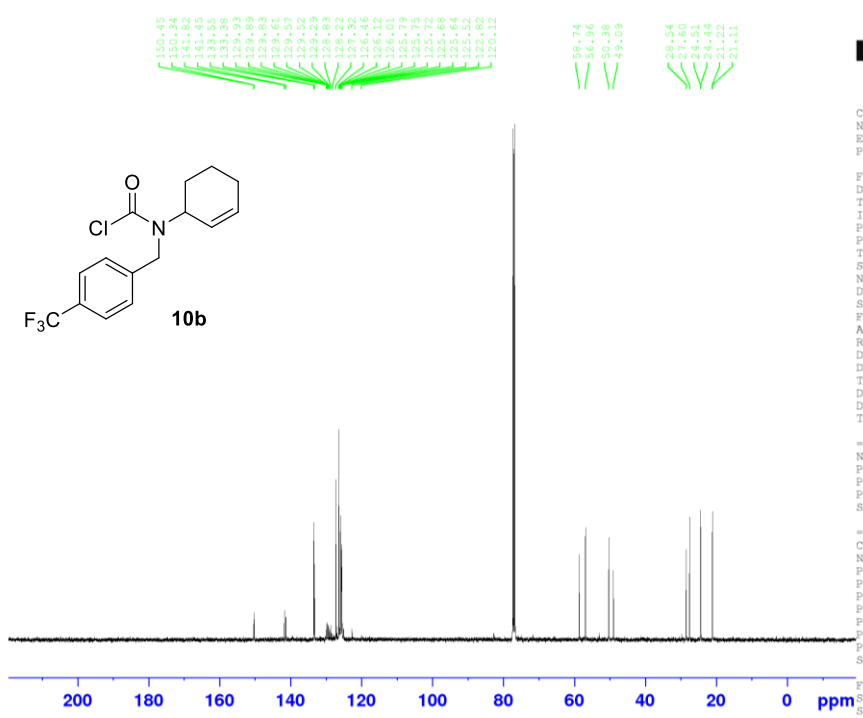



```
Current Data Parameters
NAME      DMZ-1-134-7_11
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20200305
Time              14.34
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD               131072
SOLVENT           CDCl3
NS                    8
DS                    2
SWH           75187.969 Hz
FIDRES         0.573639 Hz
AQ             0.8716288 sec
RG                 2048
DW               6.650 usec
DE                7.14 usec
TE               298.0 K
D1            5.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 19F
P1               12.00 usec
PL1               -3.00 dB
SFO1       376.4607040 MHz

F2 - Processing parameters
SI                65536
SF         376.4984036 MHz
WDW                  EM
SSB       0
LB             1.00 Hz
GB        0
PC                1.00
```



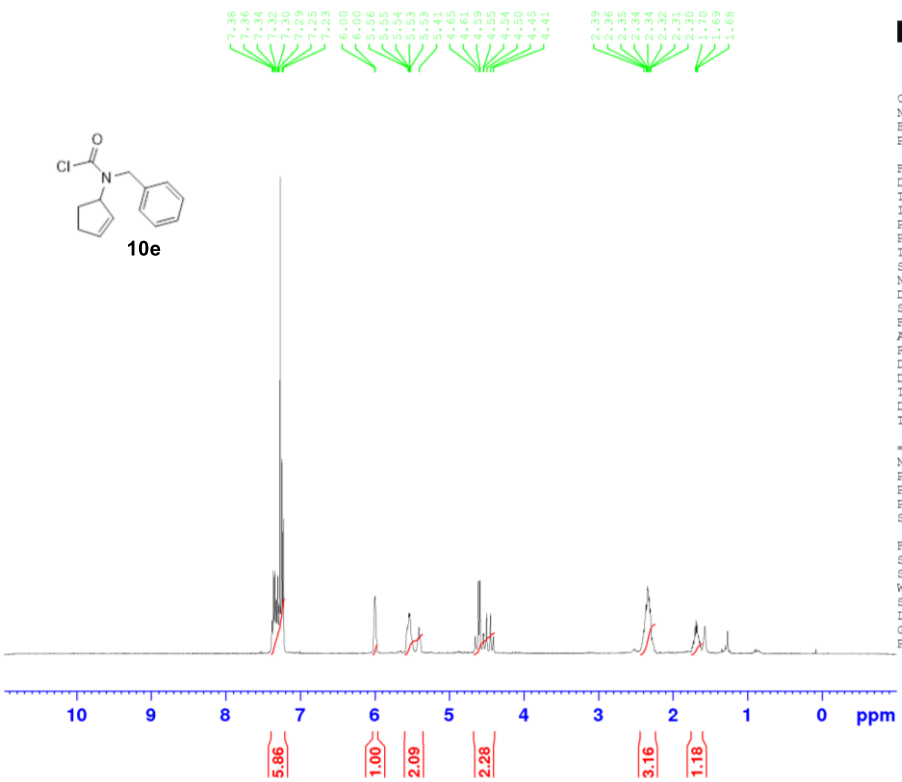
```
Current Data Parameters
NAME      DMZ-1-134-7_20
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20200305
Time               18.47
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1548
DS                    4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631488 sec
RG              23170.5
DW               20.800 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                   9.25 usec
PL1                 -3.00 dB
PL1W         75.17808533 W
SFO1         100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                 -3.00 dB
PL12                13.05 dB
PL13                13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2         400.1616006 MHz

F2 - Processing parameters
SI                 32768
SF           100.6202988 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

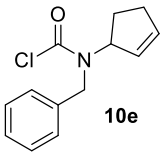


```
Current Data Parameters
NAME        MBL061-f2_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191127
Time               5.50
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                32768
SOLVENT           CDCl3
NS                   32
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                322.5
DW               104.400 usec
DE                 6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300058 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



10e

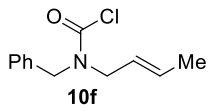

```
Current Data Parameters
NAME      MBL061-13C (PRODOTTO)
EXPNO                1
PROCNO               1

F2 - Acquisition Parameters
Date_          20191127
Time             22.15
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD               65536
SOLVENT          CDCl3
NS                2200
DS                   4
SWH          24038.461 Hz
FIDRES       0.366798 Hz
AQ           1.3631488 sec
RG               26008
DW              20.800 usec
DE              10.00 usec
TE              298.1 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                  1

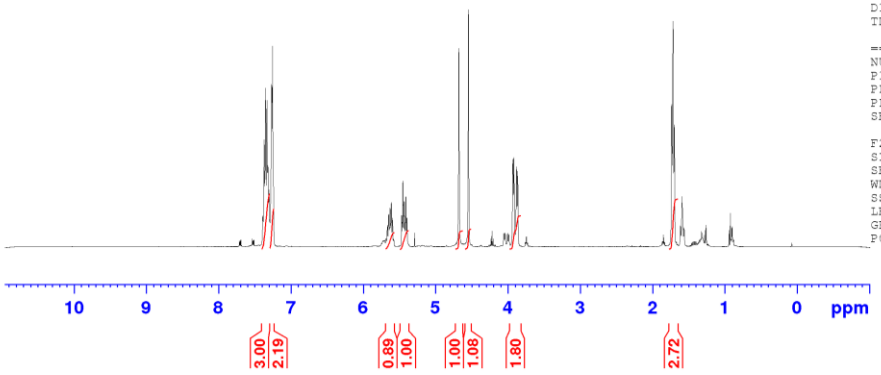
======== CHANNEL f1 ========
NUC1               13C
P1                9.25 usec
PL1              -3.00 dB
PL1W       75.17808533 W
SFO1      100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2        waltz16
NUC2               1H
PCPD2           80.00 usec
PL2              -3.00 dB
PL12             13.05 dB
PL13             13.05 dB
PL2W       30.07123375 W
PL12W       0.74670875 W
PL13W       0.74670875 W
SFO2      400.1616006 MHz

F2 - Processing parameters
SI               32768
SF        100.6202979 MHz
WDW                 EM
SSB      0
LB                1.00 Hz
GB       0
PC                1.40
```



10f

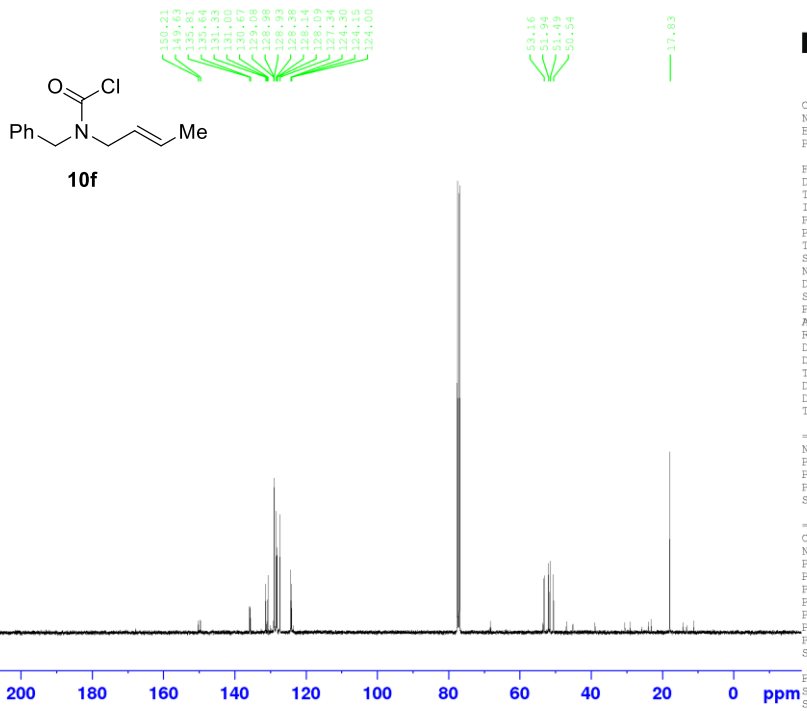



```
Current Data Parameters
NAME      DMZ-1-114-2_10
EXPNO                1
PROCNO               1

F2 - Acquisition Parameters
Date_          20200302
Time             16.36
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH          4789.272 Hz
FIDRES       0.146157 Hz
AQ           3.4209793 sec
RG                 128
DW              104.400 usec
DE                6.00 usec
TE              298.1 K
D1          1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               1H
P1               14.50 usec
PL1              -2.00 dB
PL1W       23.88643074 W
SFO1      400.1320007 MHz

F2 - Processing parameters
SI               16384
SF        400.1300097 MHz
WDW                 EM
SSB      0
LB               0.30 Hz
GB       0
PC                1.00
```



BRUKER

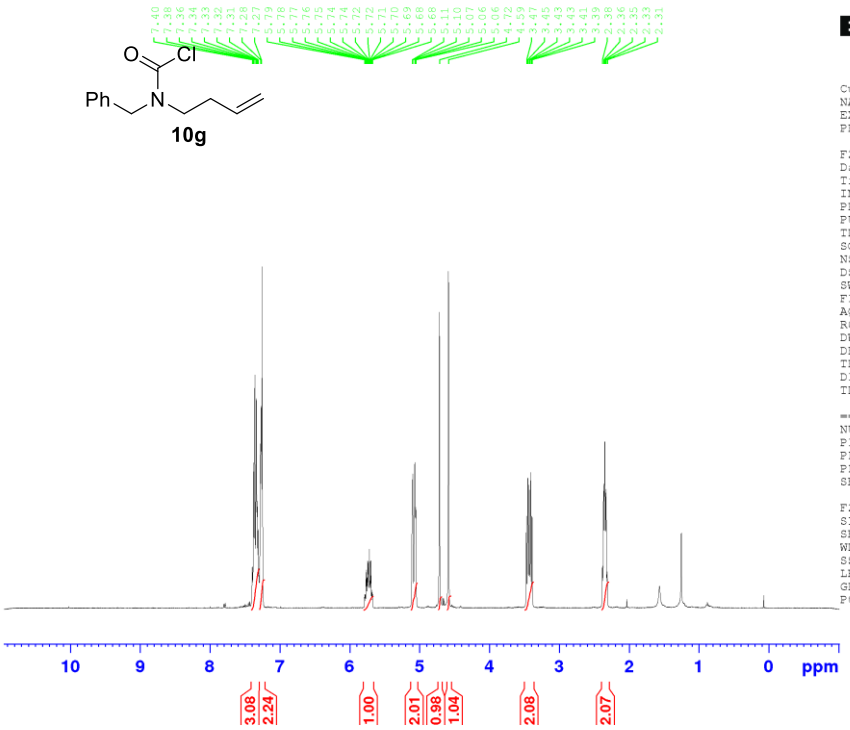
```
Current Data Parameters
NAME      DMZ-1-114-2_12
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_              20200303
Time                   1.51
INSTRUM               spect
PROBHD   5 mm PABBO BB-
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                    1548
DS                       4
SWH              23980.814 Hz
FIDRES           0.365918 Hz
AQ               1.3664256 sec
RG                 20642.5
DW                  20.850 usec
DE                  10.00 usec
TE                  298.0 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                  10.00 usec
PL1                 -3.00 dB
PL1W          75.17808533 W
SFO1          100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2           waltz16
NUC2                  1H
PCPD2               80.00 usec
PL2                 -2.00 dB
PL12                12.83 dB
PL13                12.83 dB
PL2W          23.88643074 W
PL12W          0.78550917 W
PL13W          0.78550917 W
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                    32768
SF            100.6127571 MHz
WDW                      EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.40
```



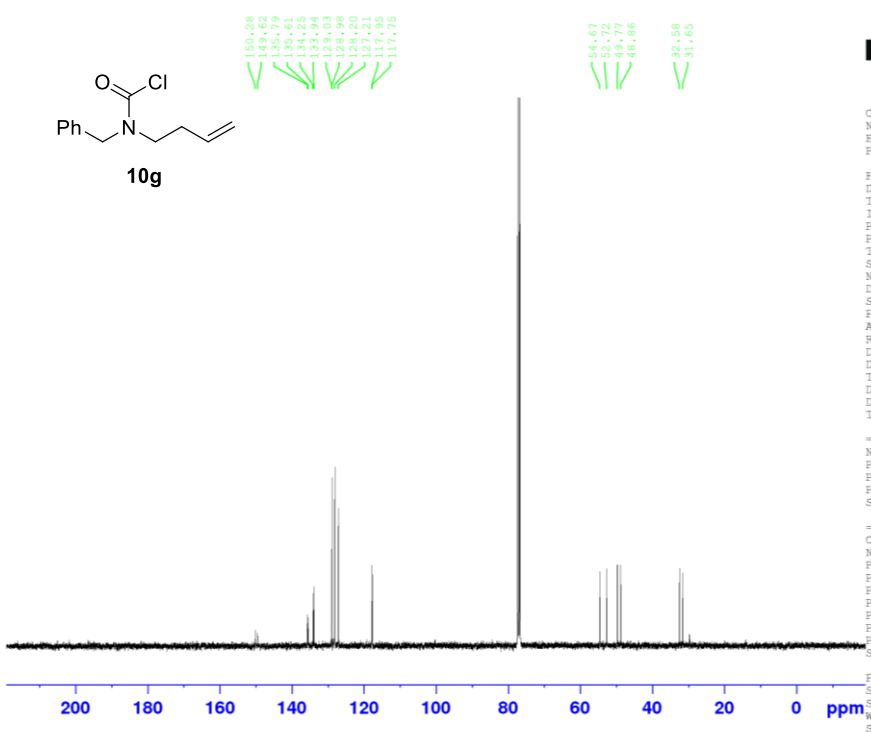
BRUKER

```
Current Data Parameters
NAME      DMZ-CarbPenteny1_10
EXPNO                     4
PROCNO                    1

F2 - Acquisition Parameters
Date_              20200302
Time                  16.42
INSTRUM               spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                   32768
SOLVENT              CDCl3
NS                       8
DS                       2
SWH              4789.272 Hz
FIDRES           0.146157 Hz
AQ               3.4209793 sec
RG                     181
DW                 104.400 usec
DE                   6.00 usec
TE                  298.0 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   1H
P1                  14.50 usec
PL1                 -2.00 dB
PL1W          23.88643074 W
SFO1          400.1320007 MHz

F2 - Processing parameters
SI                    16384
SF            400.1300117 MHz
WDW                      EM
SSB       0
LB                  0.30 Hz
GB        0
PC                  1.00
```



BRUKER

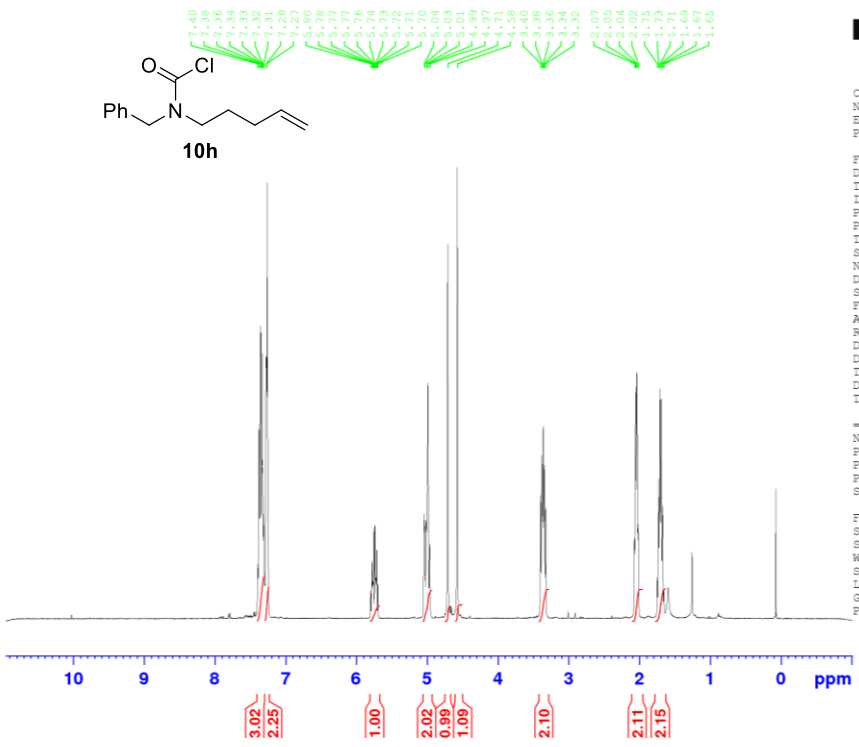
```
Current Data Parameters
NAME      DMZ-CarbPentenyl_11-2
EXPNO                         1
PROCNO                        1

F2 - Acquisition Parameters
Date_                  20200302
Time                      21.52
INSTRUM                   spect
PROBHD    5 mm PABBO BB-
PULPROG                 zgpg30
TD                       65536
SOLVENT                  CDCl3
NS                        1548
DS                           4
SWH                  23980.814 Hz
FIDRES                0.365918 Hz
AQ                    1.3664256 sec
RG                       32768
DW                      20.850 usec
DE                      10.00 usec
TE                      298.0 K
D1                    1.00000000 sec
D11                   0.03000000 sec
TD0                           1

======== CHANNEL f1 ========
NUC1                        13C
P1                       10.00 usec
PL1                      -3.00 dB
PL1W                75.17808533 W
SFO1               100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2                waltz16
NUC2                        1H
PCPD2                    80.00 usec
PL2                      -2.00 dB
PL12                     12.83 dB
PL13                     12.83 dB
PL2W                23.88643074 W
PL12W                0.78550917 W
PL13W                0.78550917 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                           32768
SF                 100.6127585 MHz
WDW                             EM
SSB                  0
LB                        1.00 Hz
GB                   0
PC                        1.40
```



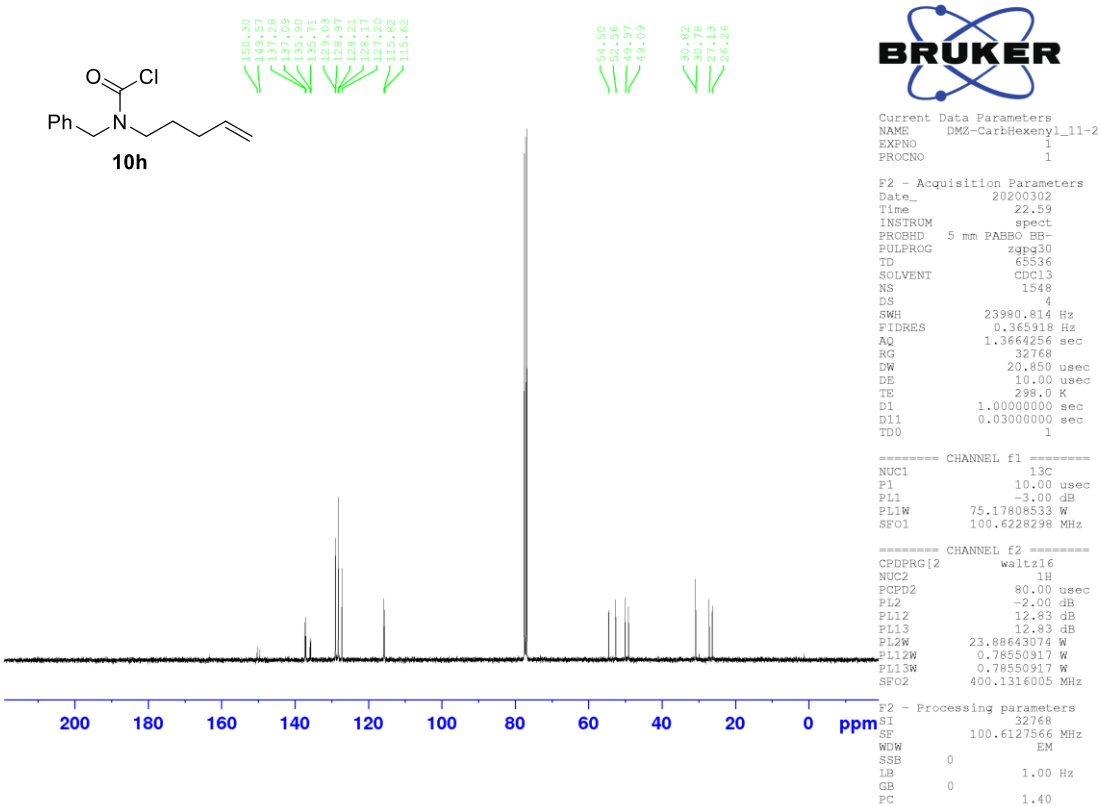
BRUKER

```
Current Data Parameters
NAME      DMZ-CarbHexenyl_10
EXPNO                      2
PROCNO                     1

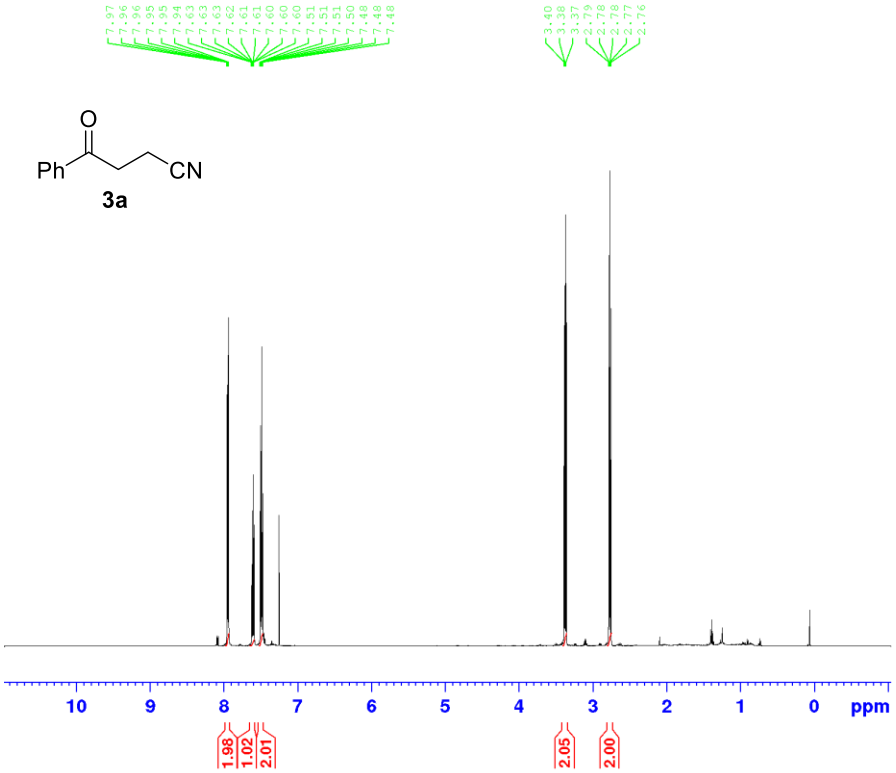
F2 - Acquisition Parameters
Date_               20200302
Time                   16.47
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                    32768
SOLVENT               CDCl3
NS                        8
DS                        2
SWH                4789.272 Hz
FIDRES             0.146157 Hz
AQ                 3.4209793 sec
RG                      181
DW                  104.400 usec
DE                    6.00 usec
TE                  298.0 K
D1                 1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                     1H
P1                    14.50 usec
PL1                   -2.00 dB
PL1W             23.88643074 W
SFO1            400.1320007 MHz

F2 - Processing parameters
SI                     16384
SF              400.1300104 MHz
WDW                      EM
SSB                  0
LB                    0.30 Hz
GB                   0
PC                    1.00
```


150.30
149.57
137.28
137.09
135.90
135.71
129.03
128.97
128.21
128.17
127.20
115.82
115.62
54.50
52.56
49.97
49.09
30.82
30.78
27.13
26.26
O
Cl
Ph
N
10h
200
180
160
140
120
100
80
60
40
20
0
ppm
BRUKER
Current Data Parameters
NAME DMZ-CarbHexenyl_11-2
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20200302
Time 22.59
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 1548
DS 4
SWH 23980.814 Hz
FIDRES 0.365918 Hz
AQ 1.3664256 sec
RG 32768
DW 20.850 usec
DE 10.00 usec
TE 298.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 10.00 usec
PL1 -3.00 dB
PL1W 75.17808533 W
SFO1 100.6228298 MHz
======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 12.83 dB
PL13 12.83 dB
PL2W 23.88643074 W
PL12W 0.78550917 W
PL13W 0.78550917 W
SFO2 400.1316005 MHz
F2 - Processing parameters
SI 32768
SF 100.6127566 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

F2. Products

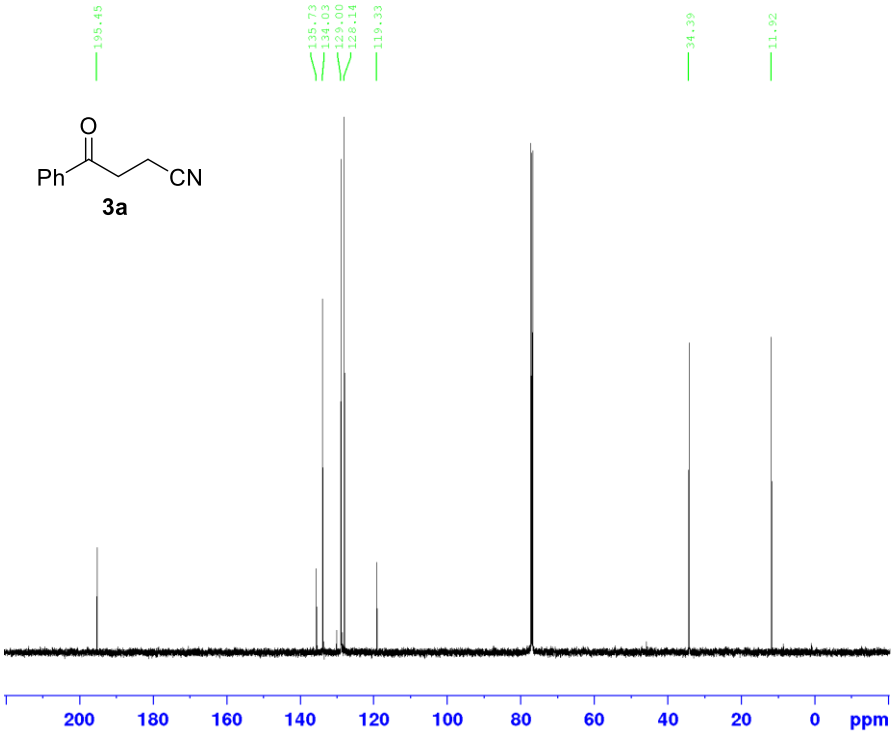



```
Current Data Parameters
NAME      epb713-prod-1H
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190520
Time              17.58
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                  203
DW               83.200 usec
DE               10.00 usec
TE                298.2 K
D1          1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300137 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



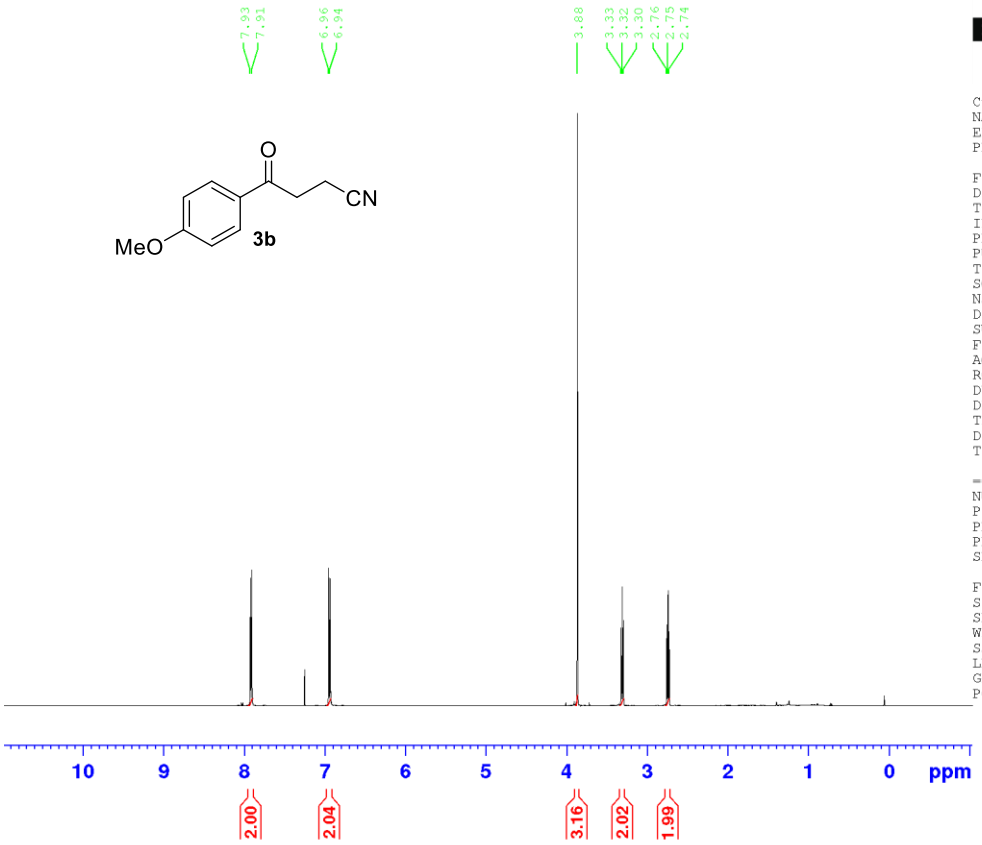

```
Current Data Parameters
NAME      epb713-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190520
Time              23.07
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                14600
DW               16.500 usec
DE               10.00 usec
TE                298.3 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577751 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

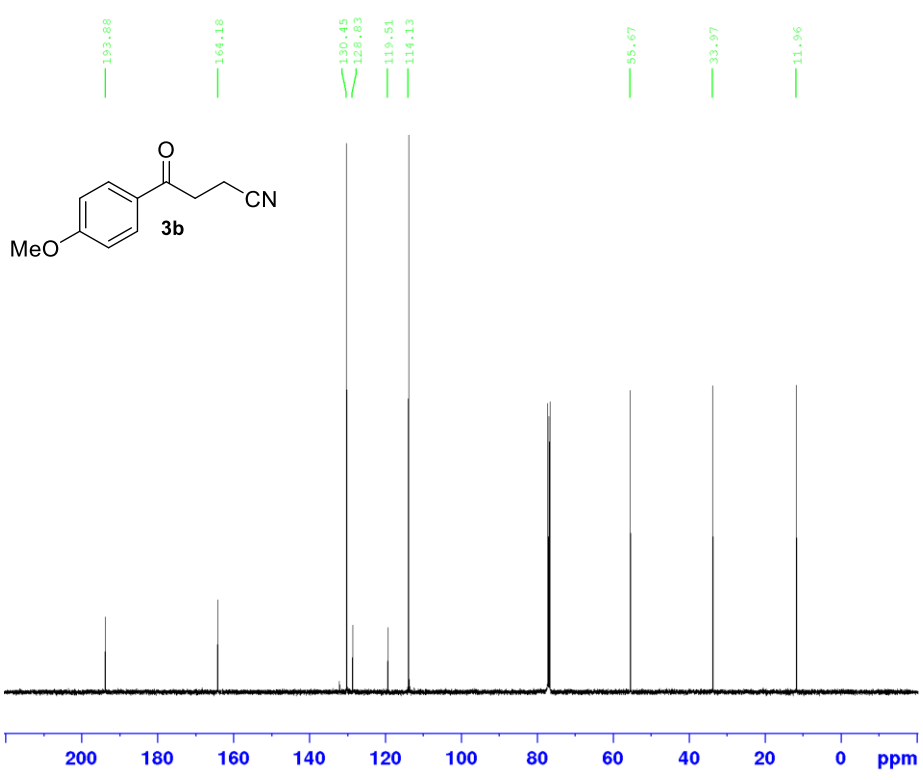



```
Current Data Parameters
NAME         epb717-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190318
Time              18.19
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           6009.615 Hz
FIDRES         0.183399 Hz
AQ            2.7262976 sec
RG                 144
DW              83.200 usec
DE              10.00 usec
TE              297.8 K
D1           1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1              12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI               16384
SF          500.1300130 MHz
WDW                 EM
SSB       0
LB               0.30 Hz
GB        0
PC               1.00
```



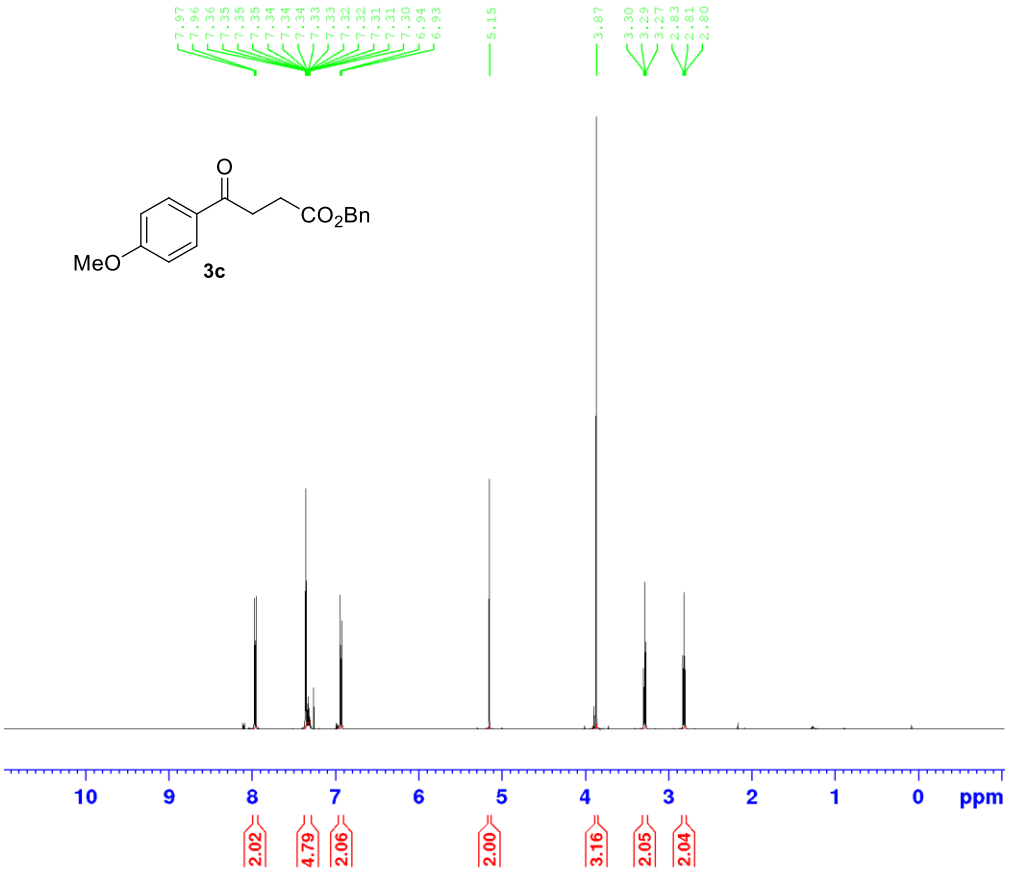

```
Current Data Parameters
NAME      epb717-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190318
Time              21.57
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH          30303.031 Hz
FIDRES         0.462388 Hz
AQ            1.0813440 sec
RG                 11500
DW              16.500 usec
DE              10.00 usec
TE              298.7 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               13C
P1               8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2       0 dB
PL12             16.12 dB
PL13             16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI               32768
SF          125.7577764 MHz
WDW                 EM
SSB       0
LB               1.00 Hz
GB        0
PC               1.40
```

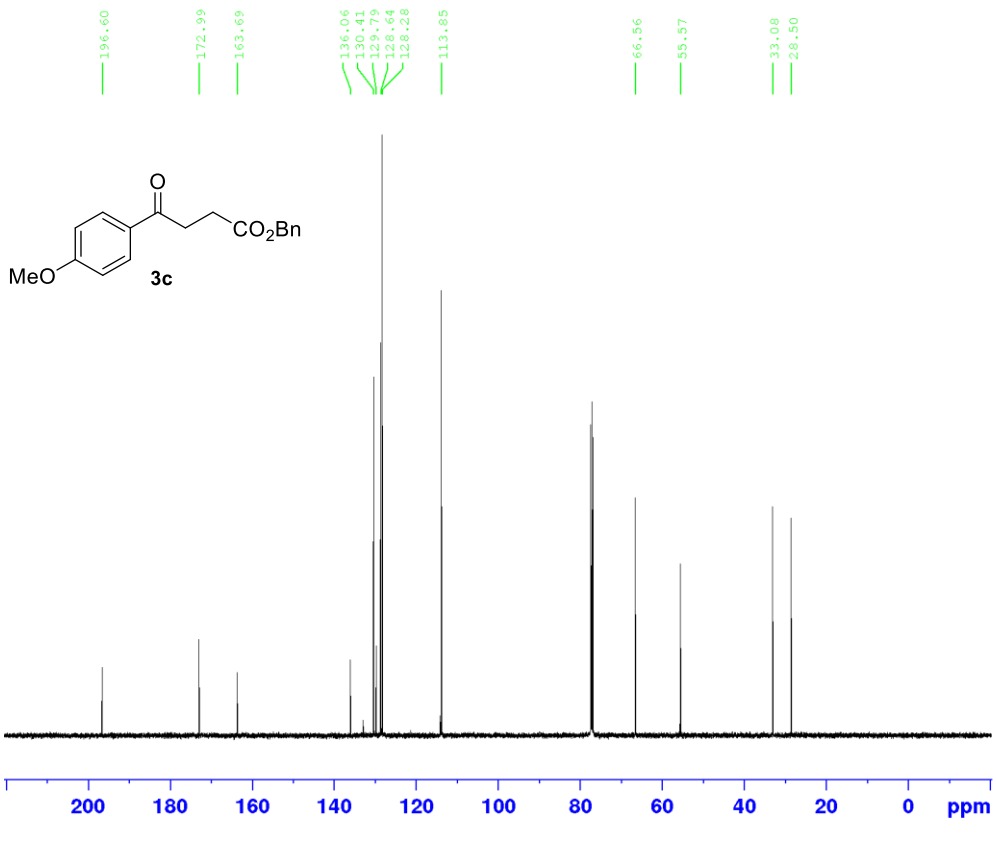


Current Data Parameters
NAME epb743-prod
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190318
Time 16.17
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 8
DS 2
SWH 6009.615 Hz
FIDRES 0.183399 Hz
AQ 2.7262976 sec
RG 80.6
DW 83.200 usec
DE 10.00 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 12.50 usec
PL1 0 dB
PL1W 13.68978119 W
SFO1 500.1325007 MHz

F2 - Processing parameters
SI 16384
SF 500.1300134 MHz
WDW no
SSB 0
LB 0 Hz
GB 0
PC 1.00



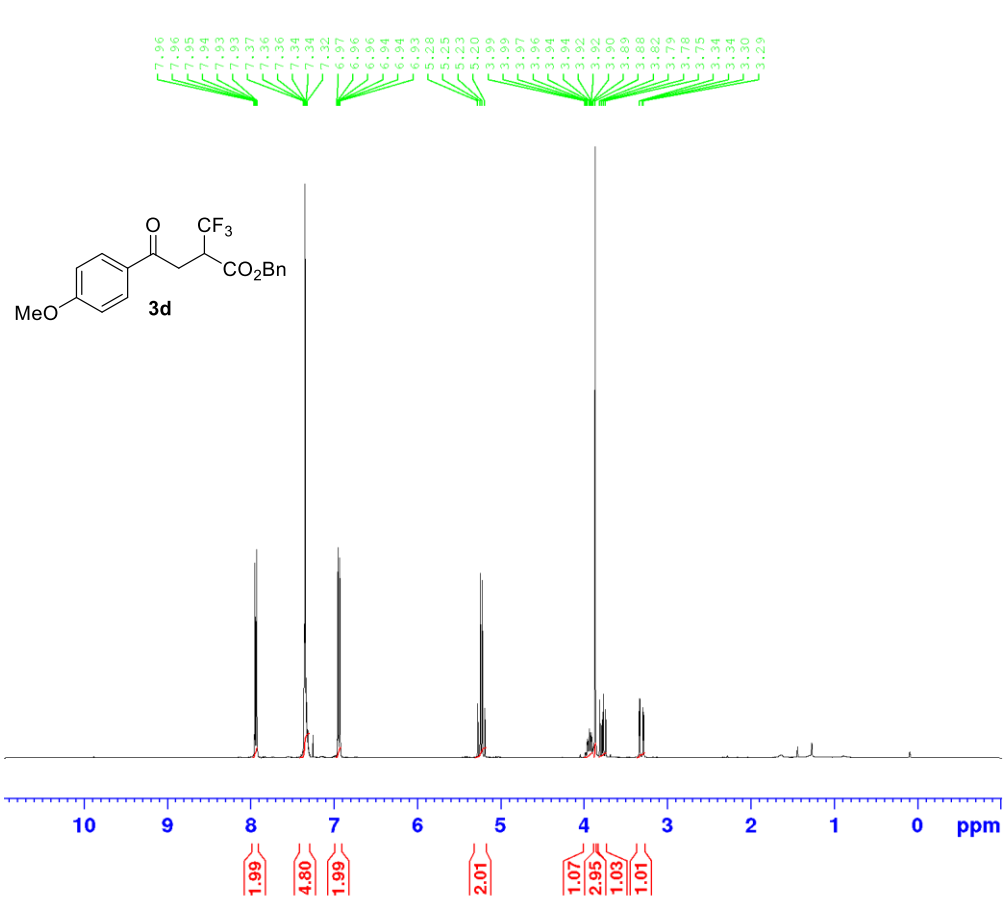
Current Data Parameters
NAME epb743-prod-13C
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190318
Time 19.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 4
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813440 sec
RG 10300
DW 16.500 usec
DE 10.00 usec
TE 300.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 8.60 usec
PL1 0 dB
PL1W 53.75436783 W
SFO1 125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0 dB
PL12 16.12 dB
PL13 16.12 dB
PL2W 13.68978119 W
PL12W 0.33450022 W
PL13W 0.33450022 W
SFO2 500.1320005 MHz

F2 - Processing parameters
SI 32768
SF 125.7577774 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



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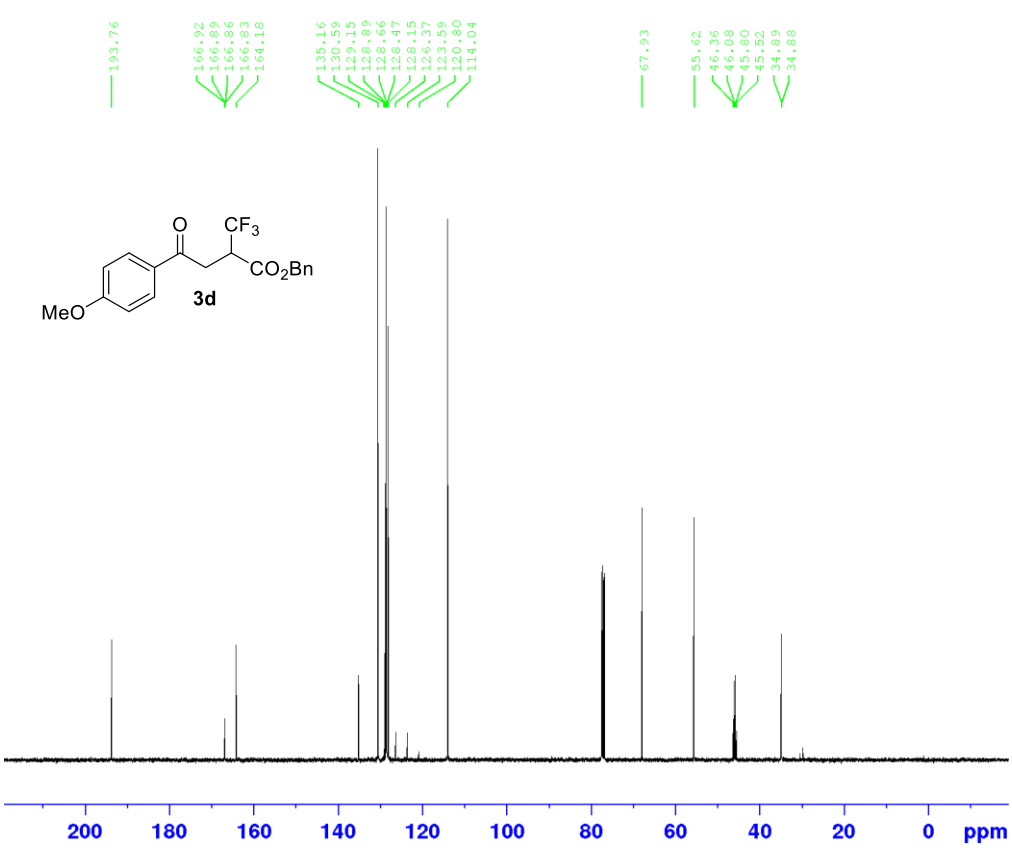
```
Current Data Parameters
NAME          epb802-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190531
Time               12.04
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDC13
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                  71.8
DW                104.400 usec
DE                  6.00 usec
TE                298.1 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300095 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



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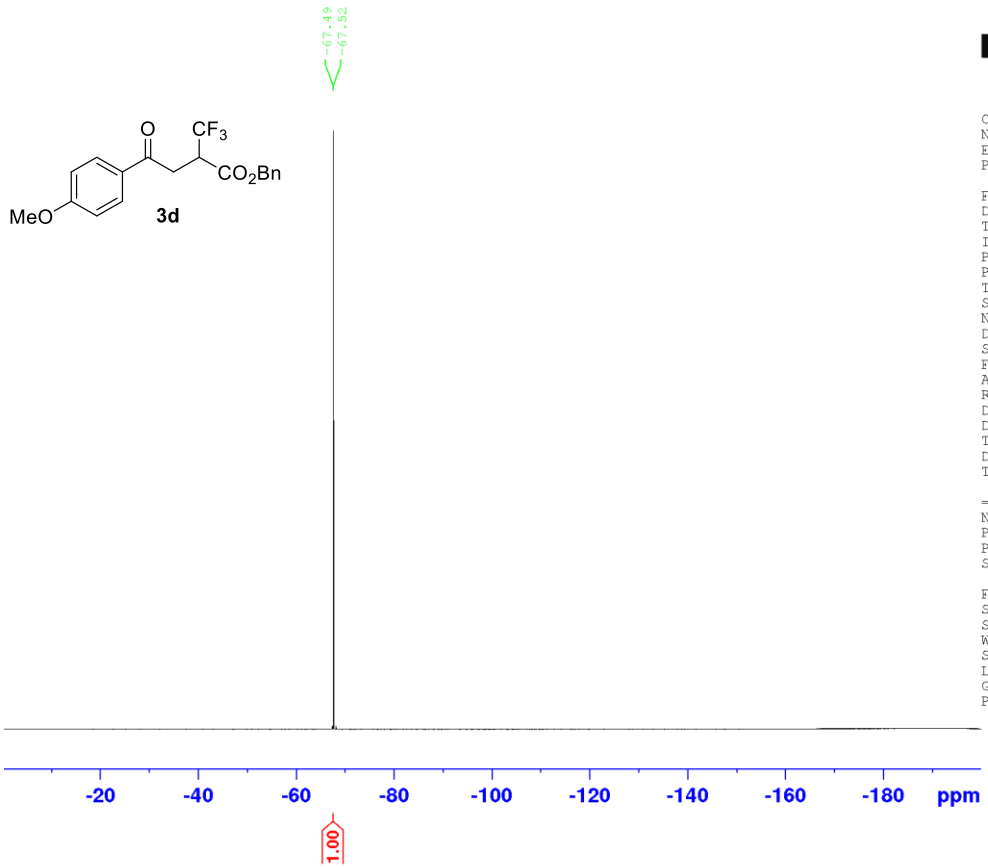
```
Current Data Parameters
NAME      epb802-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190531
Time               14.07
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                 65536
SOLVENT            CDC13
NS                   512
DS                     4
SWH            23980.814 Hz
FIDRES          0.365918 Hz
AQ              1.3664256 sec
RG                 32768
DW                20.850 usec
DE                10.00 usec
TE                298.3 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                10.00 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1         100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2         400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF           100.6127590 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

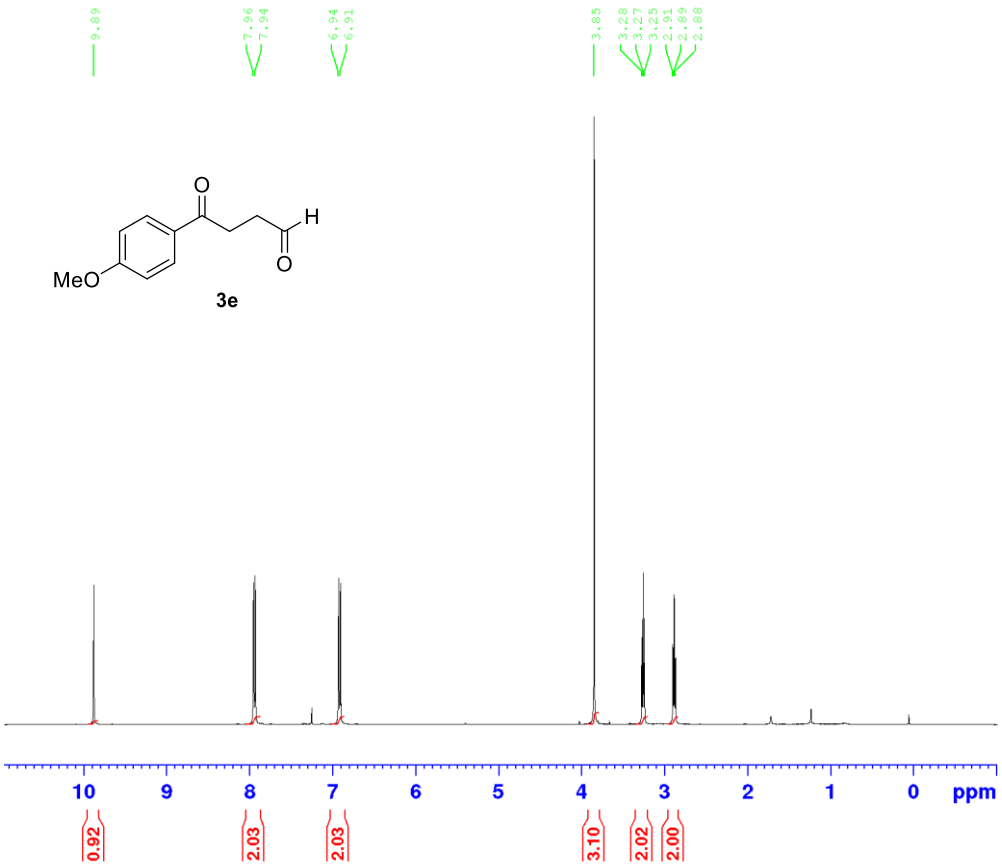



```
Current Data Parameters
NAME      epb802-prod-19F
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190531
Time               12.06
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                131072
SOLVENT             CDCl3
NS                      8
DS                      2
SWH            75187.969 Hz
FIDRES             0.573639 Hz
AQ              0.8716288 sec
RG                 1625.5
DW                 6.650 usec
DE                 7.14 usec
TE                 298.1 K
D1             5.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   19F
P1                 12.00 usec
PL1                -3.00 dB
SFO1         376.4607040 MHz

F2 - Processing parameters
SI                  65536
SF           376.4984036 MHz
WDW                    EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.00
```

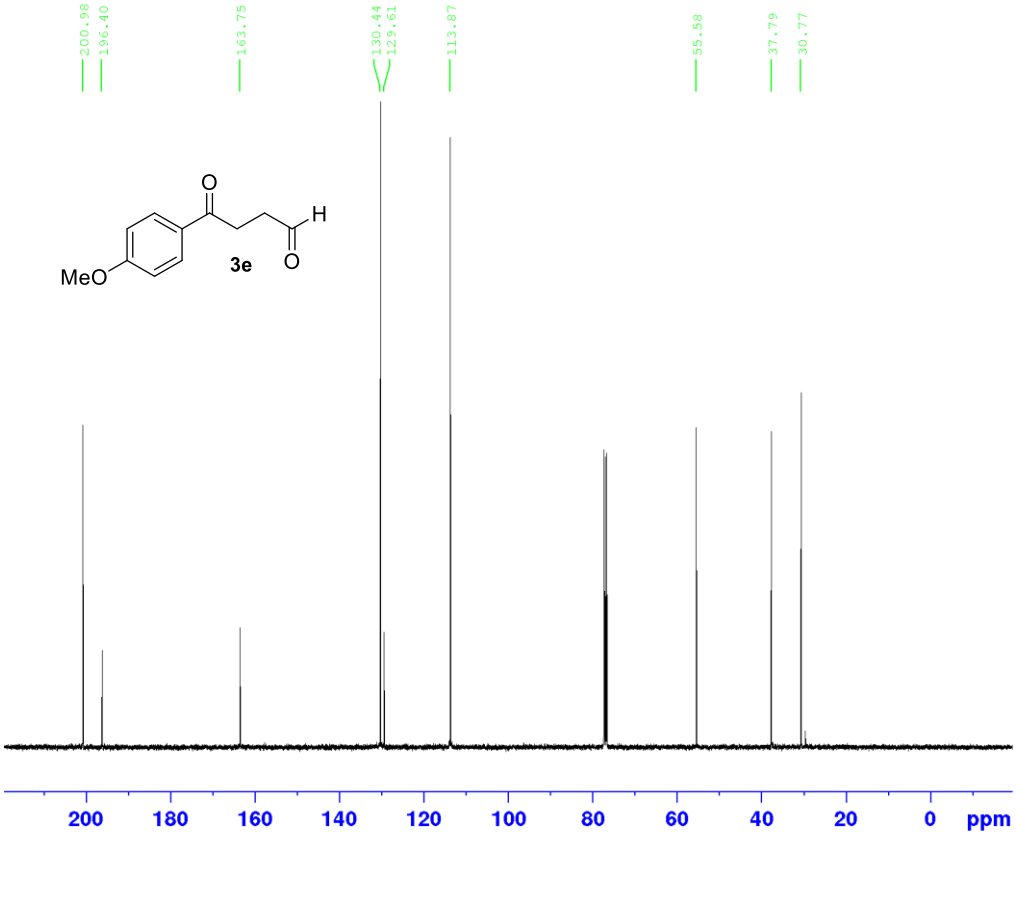



```
Current Data Parameters
NAME      epb997-prod-1H
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190617
Time               9.38
INSTRUM           spect
PROBHD    5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDC13
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                   114
DW                104.400 usec
DE                  6.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300098 MHz
WDW                   no
SSB       0
LB        0 Hz
GB        0
PC                  1.00
```



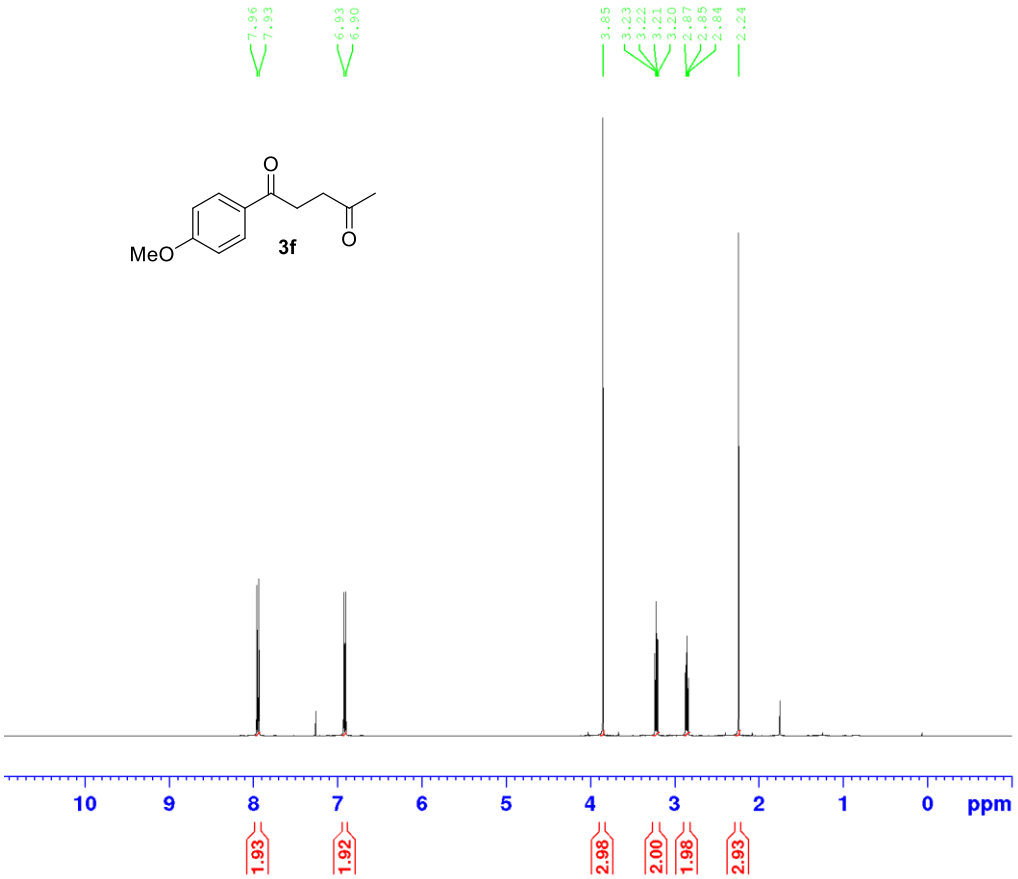

```
Current Data Parameters
NAME      epb997-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190617
Time              14.10
INSTRUM           spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDC13
NS                   512
DS                     4
SWH            24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 23170.5
DW                20.800 usec
DE                10.00 usec
TE                298.1 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1        100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -3.00 dB
PL12               13.05 dB
PL13               13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2        400.1616006 MHz

F2 - Processing parameters
SI                 32768
SF          100.6203027 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                  1.40
```

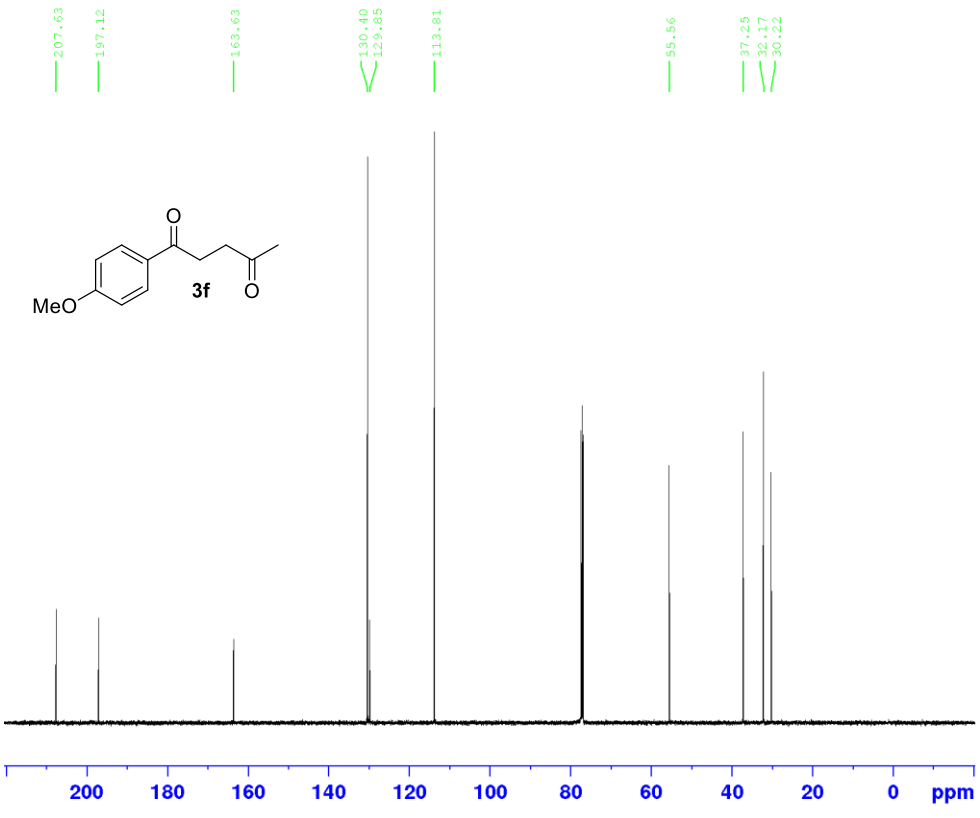



```
Current Data Parameters
NAME      epb995-prod-1H
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190617
Time               9.33
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                 114
DW             104.400 usec
DE               6.00 usec
TE               298.0 K
D1          1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1               14.50 usec
PL1              -2.00 dB
PL1W       23.88643074 W
SFO1       400.1320007 MHz

F2 - Processing parameters
SI                16384
SF        400.1300095 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                1.00
```



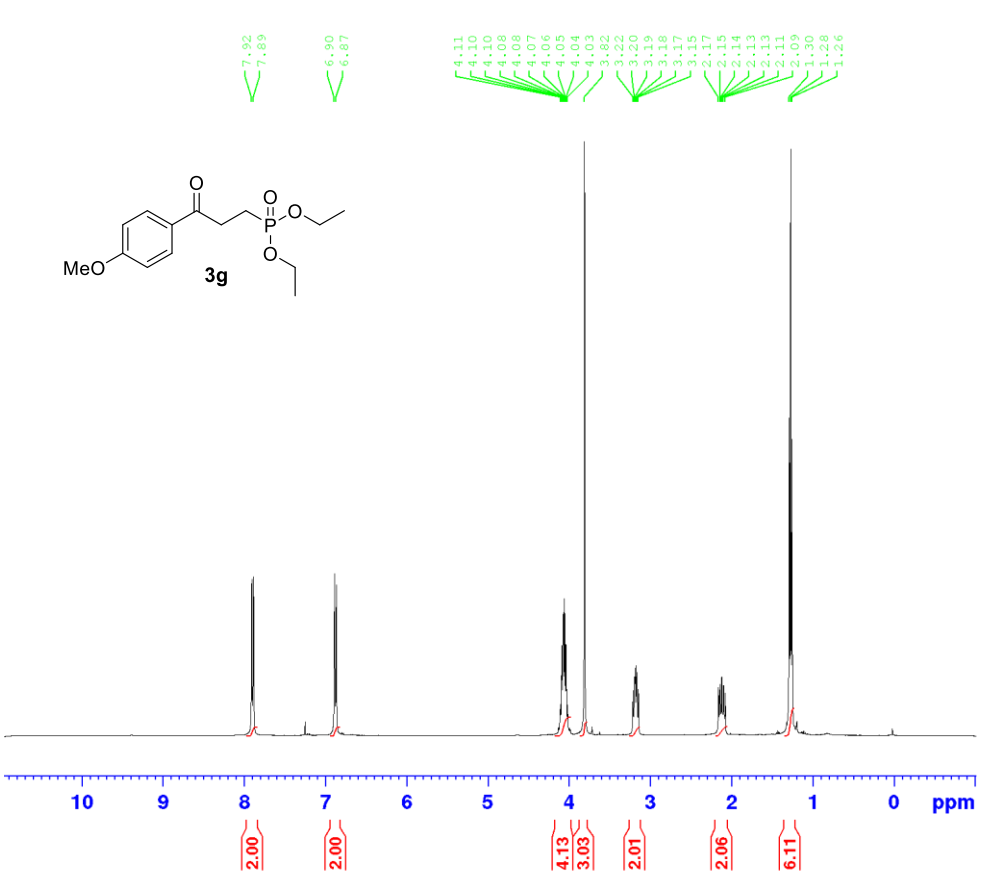

```
Current Data Parameters
NAME      epb995-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190617
Time              10.40
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                10300
DW               16.500 usec
DE               10.00 usec
TE               298.1 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                1H
PCPD2            80.00 usec
PL2       0 dB
PL12             16.12 dB
PL13             16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF        125.7577769 MHz
WDW                  EM
SSB       0
LB               1.00 Hz
GB        0
PC                1.40
```

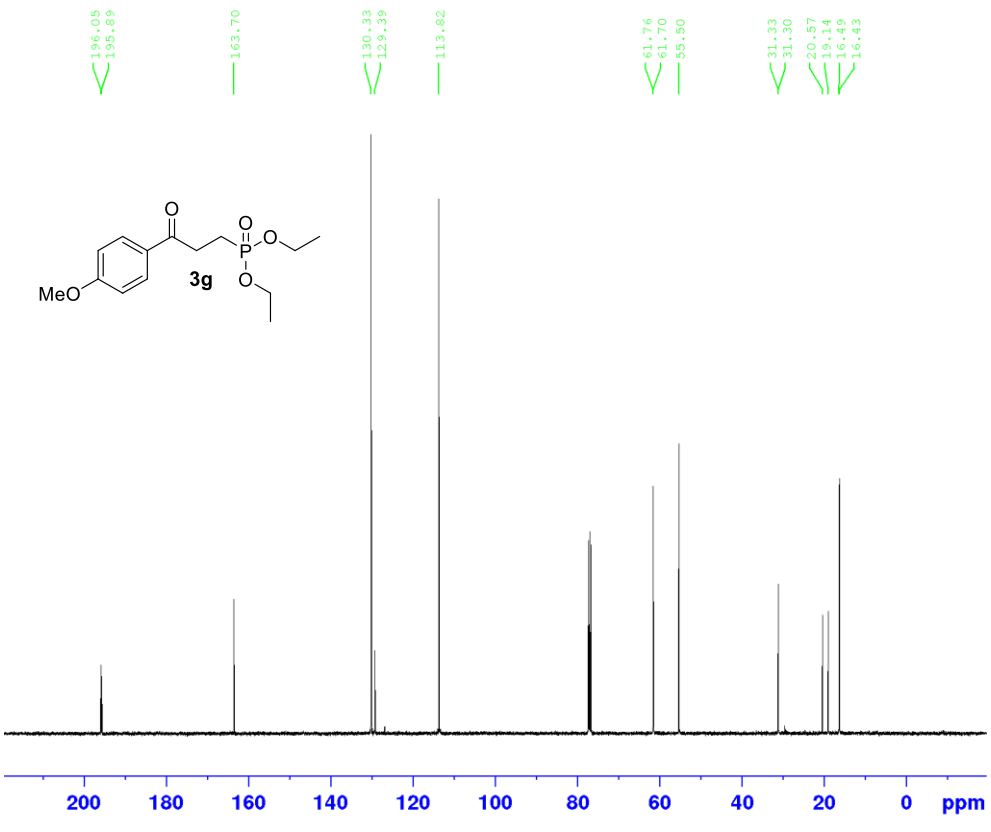



```
Current Data Parameters
NAME         epb849-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190314
Time               10.49
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           4789.272 Hz
FIDRES         0.146157 Hz
AQ            3.4209793 sec
RG                  57
DW              104.400 usec
DE                6.00 usec
TE               297.9 K
D1           1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1               14.50 usec
PL1              -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300096 MHz
WDW                EM
SSB       0
LB              0.30 Hz
GB        0
PC              1.00
```



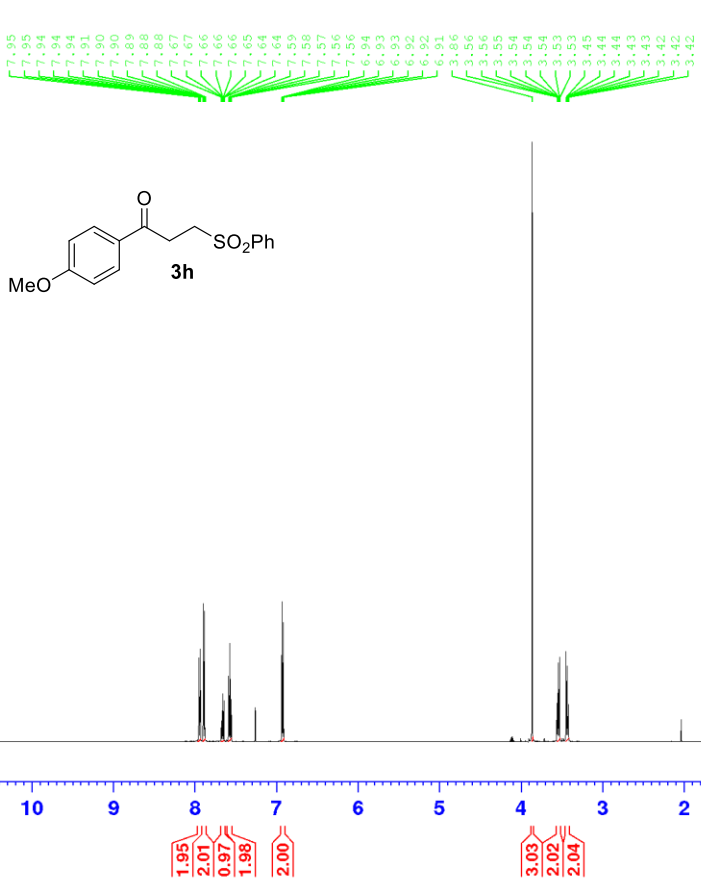

```
Current Data Parameters
NAME      epb849-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190314
Time               19.15
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH           24038.461 Hz
FIDRES         0.366798 Hz
AQ            1.3631488 sec
RG                26008
DW              20.800 usec
DE              10.00 usec
TE               298.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               13C
P1               9.25 usec
PL1              -3.00 dB
PL1W        75.17808533 W
SFO1        100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2              -3.00 dB
PL12             13.05 dB
PL13             13.05 dB
PL2W        30.07123375 W
PL12W        0.74670875 W
PL13W        0.74670875 W
SFO2        400.1616006 MHz

F2 - Processing parameters
SI                32768
SF          100.6203070 MHz
WDW                EM
SSB       0
LB              1.00 Hz
GB        0
PC              1.40
```



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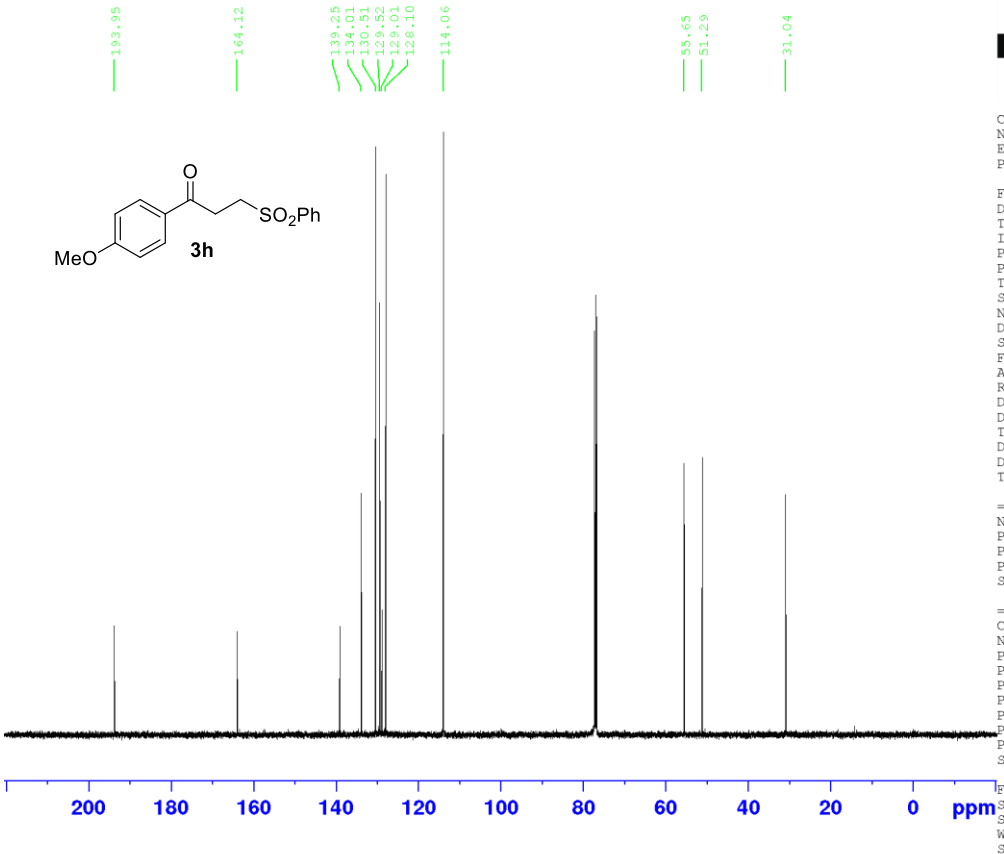
```
Current Data Parameters
NAME          epb737-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190318
Time               18.26
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              2.7262976 sec
RG                  90.5
DW                83.200 usec
DE                10.00 usec
TE                297.9 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                   1H
P1                 12.50 usec
PL1        0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF           500.1300133 MHz
WDW                   EM
SSB        0
LB                 0.30 Hz
GB         0
PC                 1.00
```



BRUKER

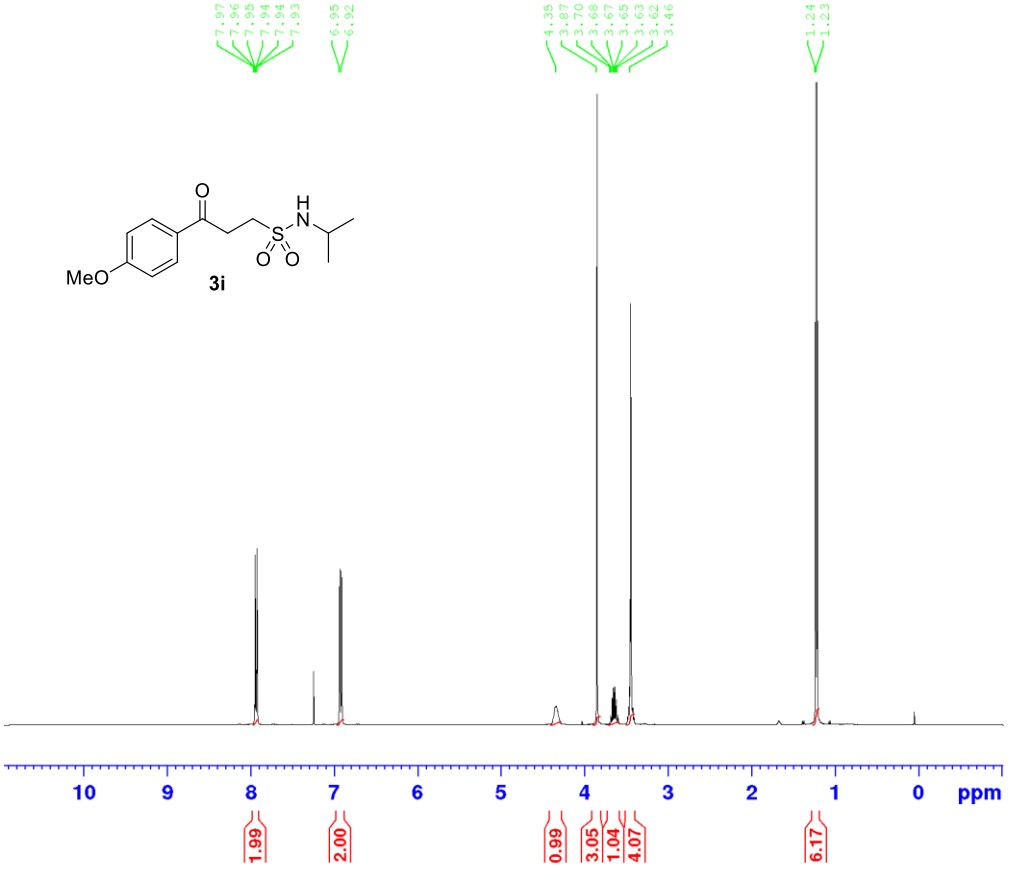
```
Current Data Parameters
NAME      epb737-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190318
Time               22.27
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            30303.031 Hz
FIDRES          0.462388 Hz
AQ              1.0813440 sec
RG                 11500
DW                16.500 usec
DE                10.00 usec
TE                298.3 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 8.60 usec
PL1        0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                   1H
PCPD2              80.00 usec
PL2        0 dB
PL12               16.12 dB
PL13               16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577759 MHz
WDW                   EM
SSB        0
LB                 1.00 Hz
GB         0
PC                 1.40
```

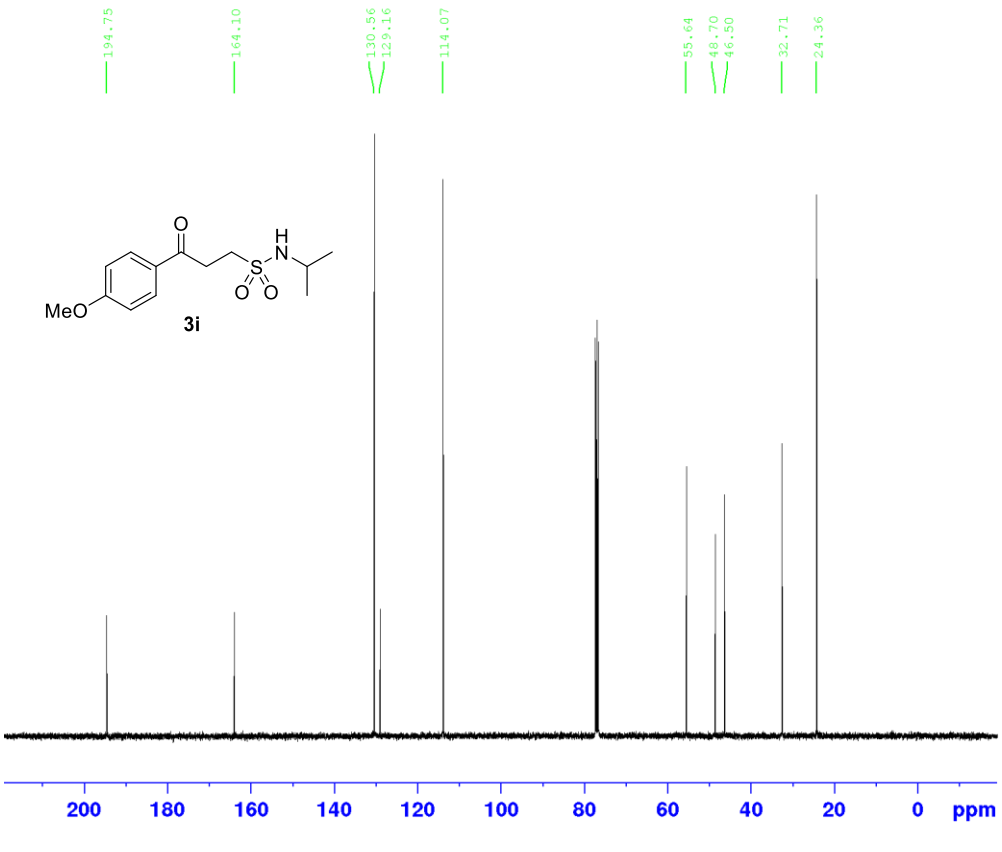


Current Data Parameters
NAME epb801-prod
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190319
Time 18.31
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 8
DS 2
SWH 4789.272 Hz
FIDRES 0.146157 Hz
AQ 3.4209793 sec
RG 114
DW 104.400 usec
DE 6.00 usec
TE 298.1 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 14.50 usec
PL1 -2.00 dB
PL1W 23.88643074 W
SFO1 400.1320007 MHz

F2 - Processing parameters
SI 16384
SF 400.1300097 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



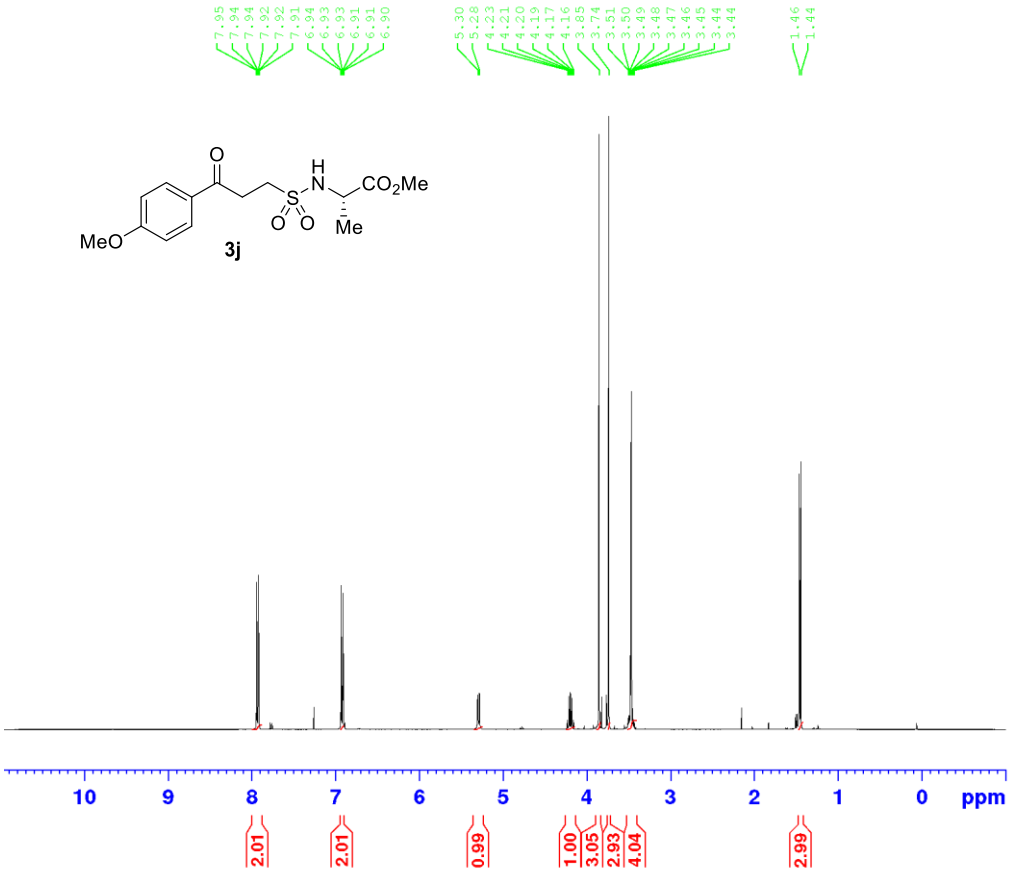
Current Data Parameters
NAME epb801-prod-13C
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20190319
Time 22.10
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 4
SWH 23980.814 Hz
FIDRES 0.365918 Hz
AQ 1.3664256 sec
RG 26008
DW 20.850 usec
DE 10.00 usec
TE 298.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 10.00 usec
PL1 -3.00 dB
PL1W 75.17808533 W
SFO1 100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 12.83 dB
PL13 12.83 dB
PL2W 23.88643074 W
PL12W 0.78550917 W
PL13W 0.78550917 W
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6127583 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



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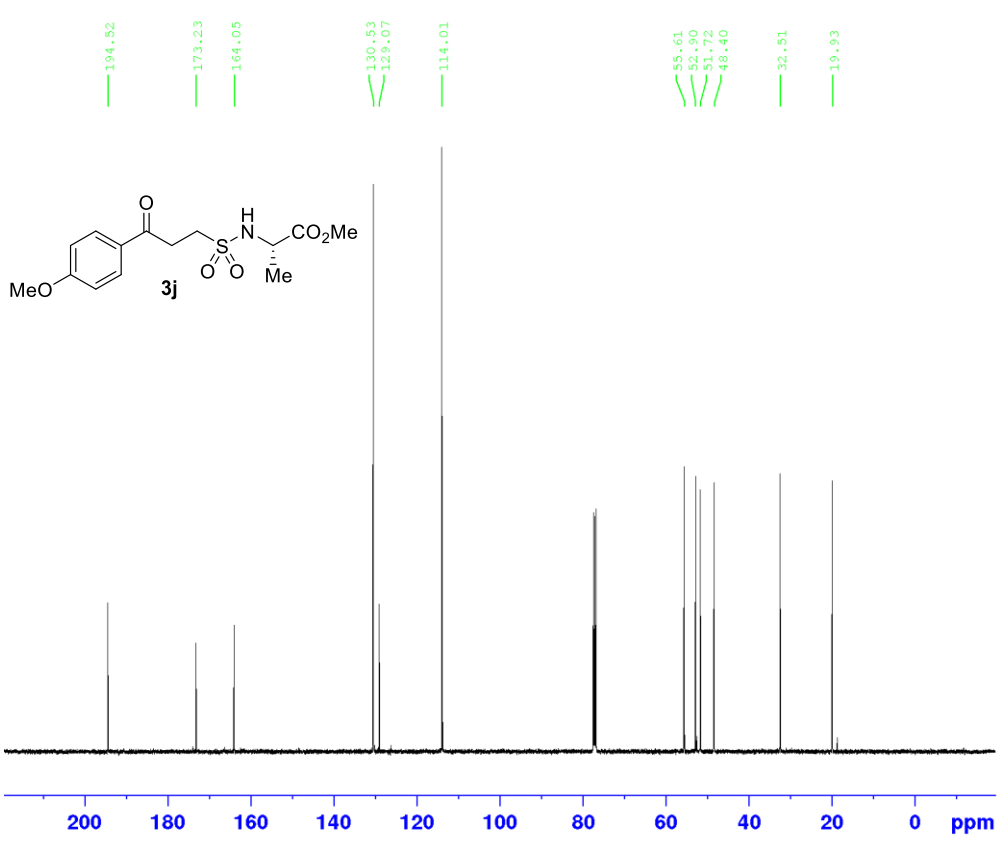
```
Current Data Parameters
NAME         epb841-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190611
Time                9.05
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                  71.8
DW                104.400 usec
DE                  6.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300095 MHz
WDW                   no
SSB       0
LB        0 Hz
GB        0
PC                  1.00
```



BRUKER

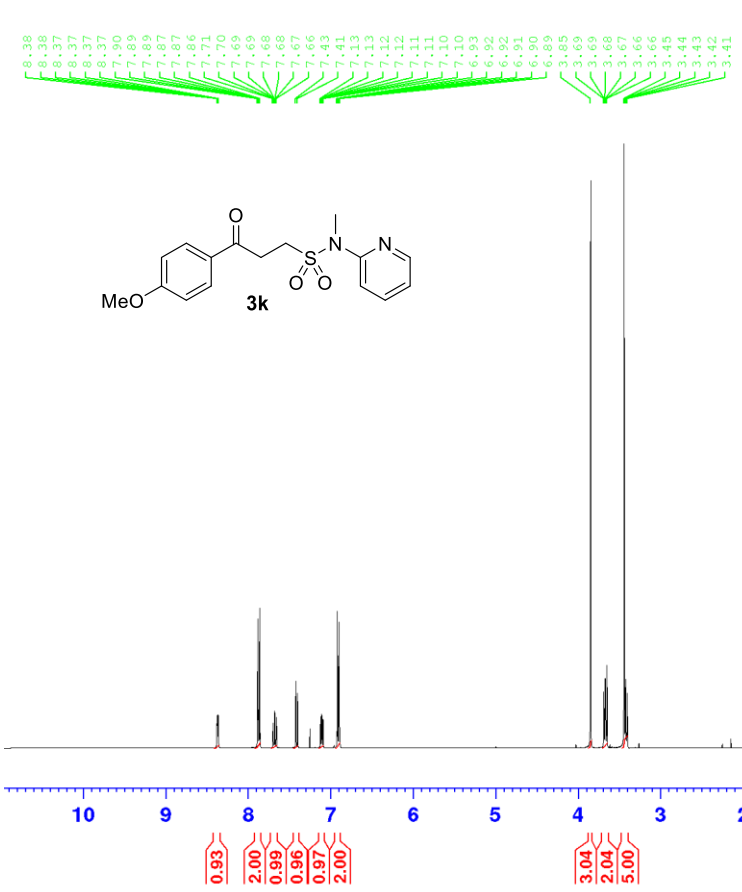
```
Current Data Parameters
NAME      epb841-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190611
Time               19.40
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 20642.5
DW                 20.800 usec
DE                 10.00 usec
TE                 298.1 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 9.25 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1         100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -3.00 dB
PL12               13.05 dB
PL13               13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2         400.1616006 MHz

F2 - Processing parameters
SI                 32768
SF           100.6203048 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                  1.40
```



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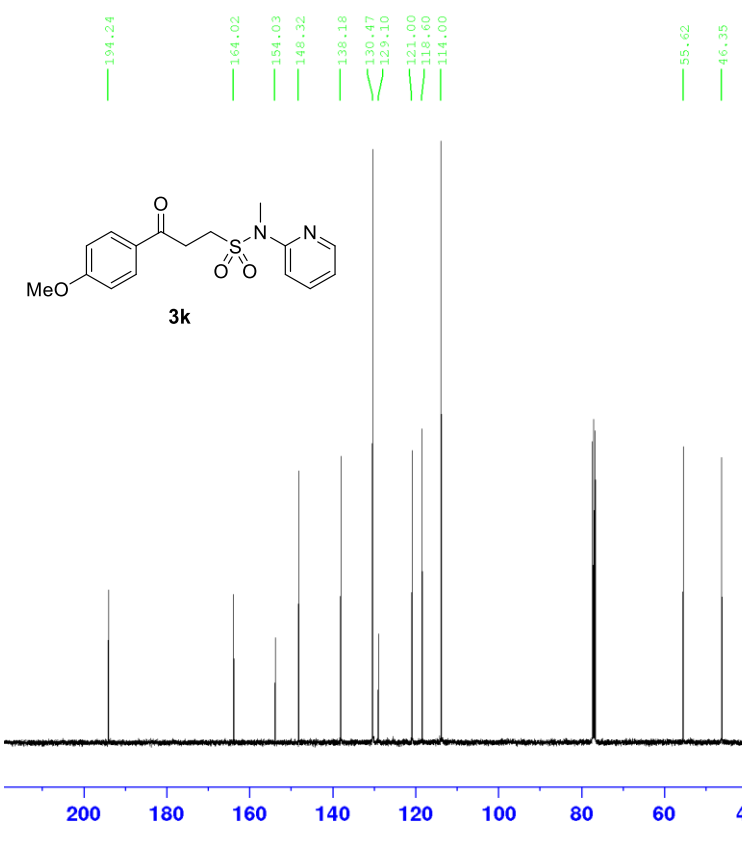
```
Current Data Parameters
NAME         epb818-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190611
Time                8.37
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                  90.5
DW                104.400 usec
DE                  6.00 usec
TE                298.0 K
D1              1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300095 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



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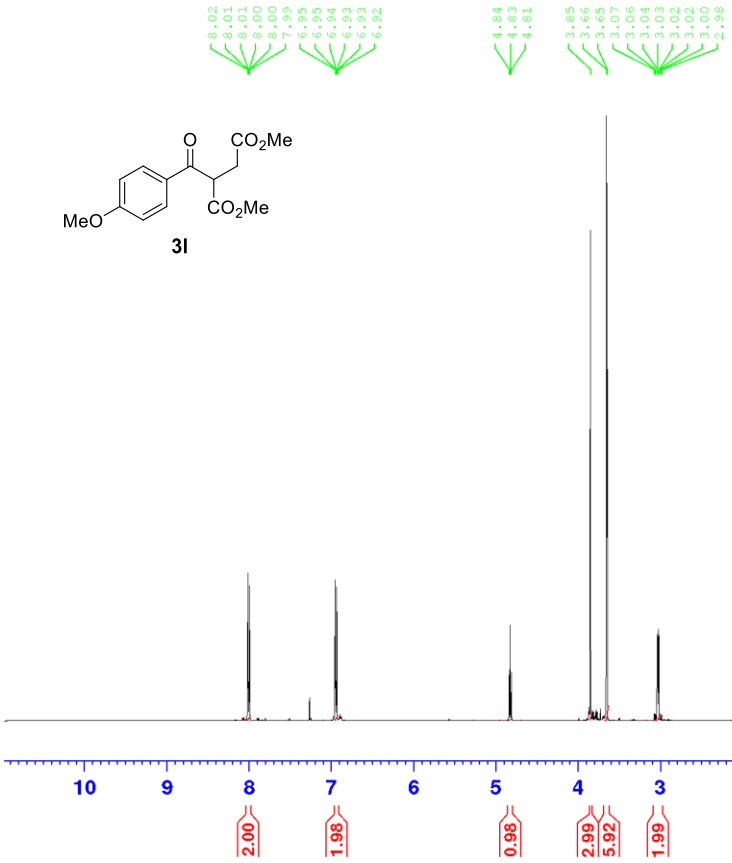
```
Current Data Parameters
NAME      epb818-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190611
Time                9.00
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            23980.814 Hz
FIDRES          0.365918 Hz
AQ              1.3664256 sec
RG                 26008
DW                20.850 usec
DE                10.00 usec
TE                298.1 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 10.00 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               12.83 dB
PL13               12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127596 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



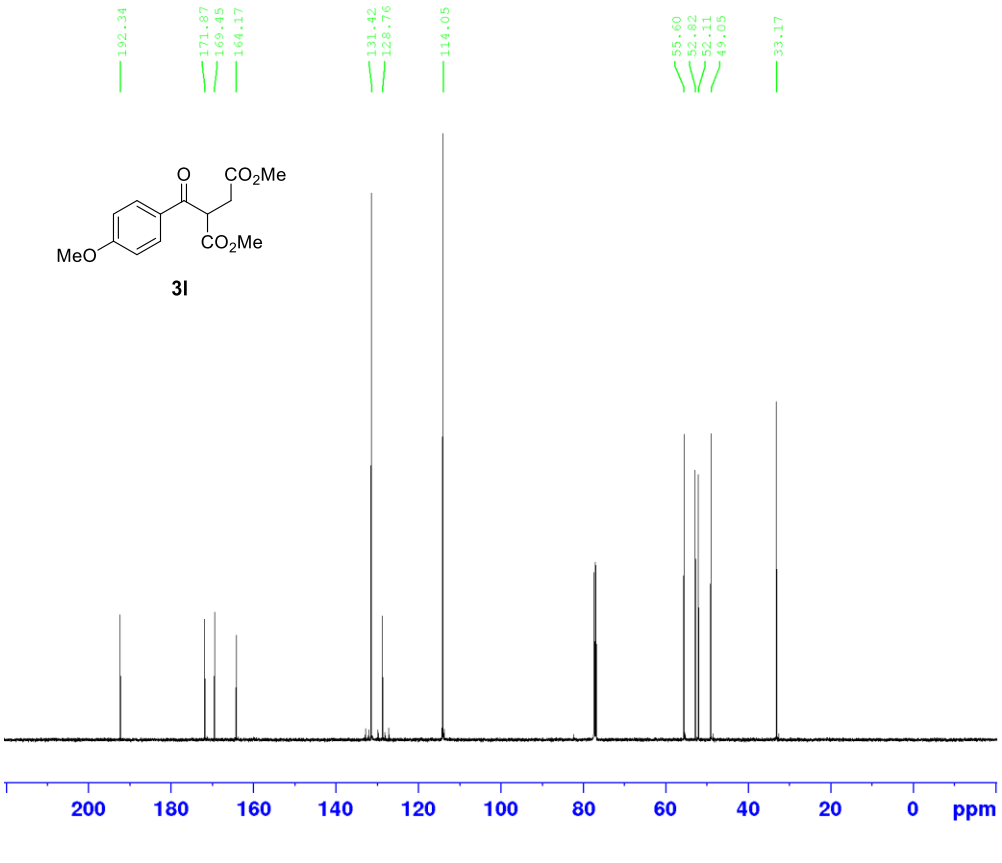
BRUKER

```
Current Data Parameters
NAME      epb742-prod-1H
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190520
Time               18.04
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES         0.183399 Hz
AQ             2.7262976 sec
RG                 50.8
DW               83.200 usec
DE               10.00 usec
TE               298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1        500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300130 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



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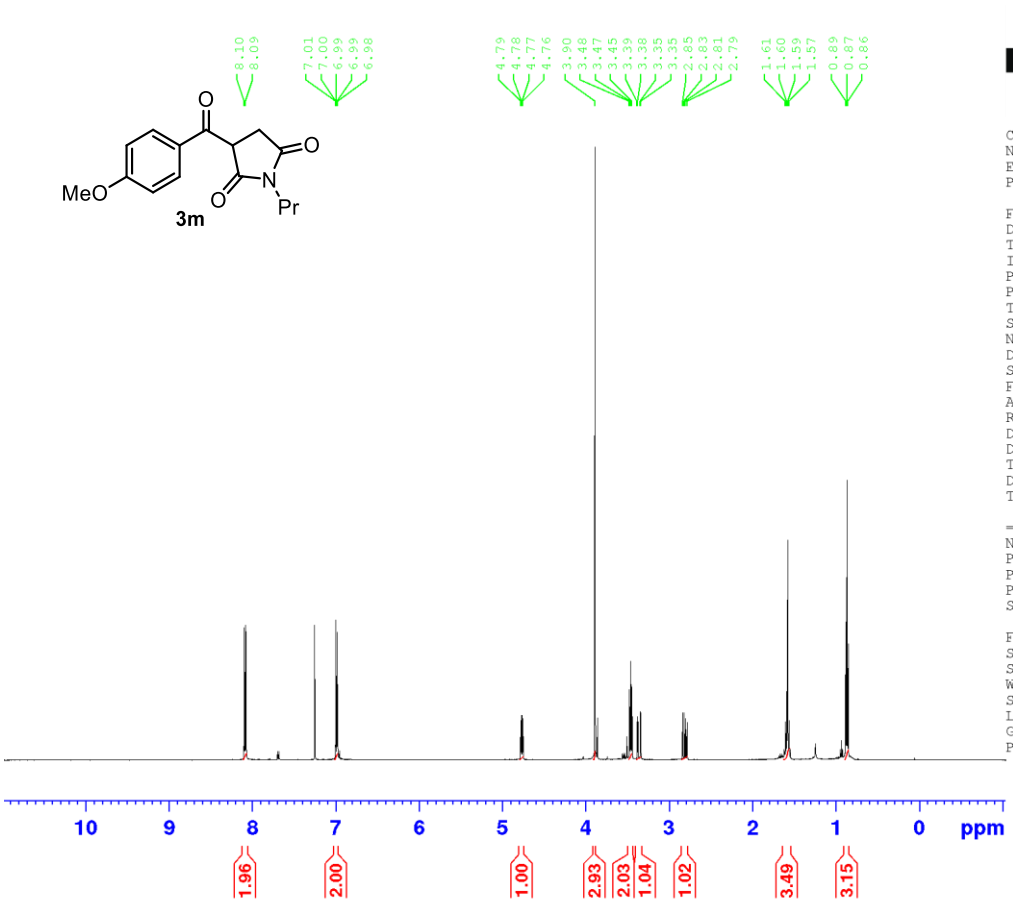
```
Current Data Parameters
NAME      epb742-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190520
Time               23.37
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ             1.0813440 sec
RG                 9200
DW               16.500 usec
DE               10.00 usec
TE               298.2 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1        125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577808 MHz
WDW                  EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



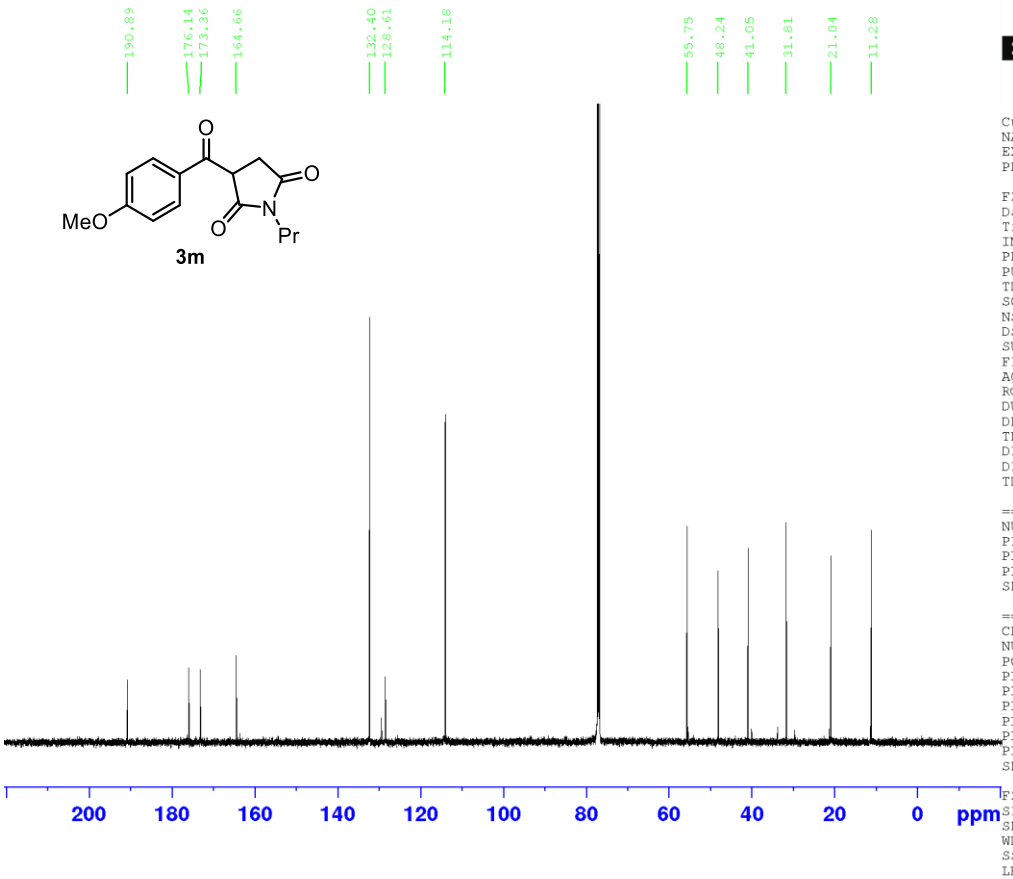
BRUKER

```
Current Data Parameters
NAME      epb-2-2-f1-HPLC
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190724
Time                15.01
INSTRUM             spect
PROBHD    5 mm PATBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              2.7262976 sec
RG                   406
DW                83.200 usec
DE                10.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.00 usec
PL1                -4.08 dB
PL1W         35.02648163 W
SFO1         500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF           500.1300138 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



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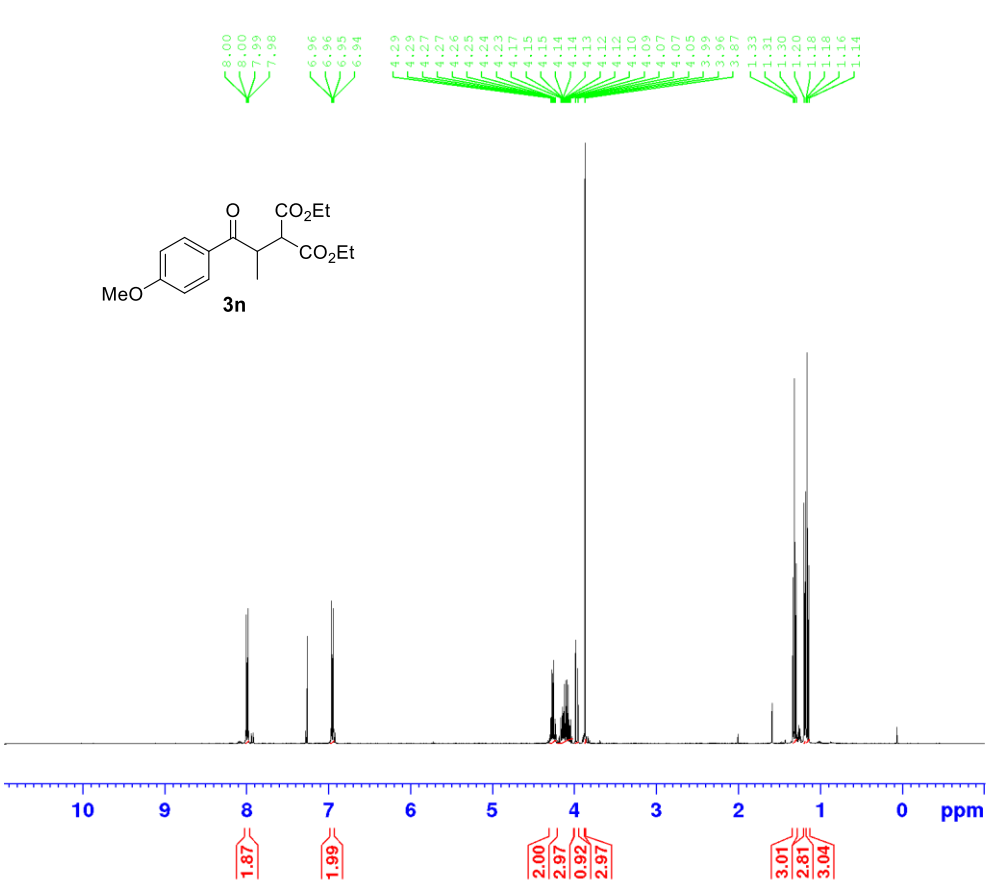
```
Current Data Parameters
NAME      epb-2-2-f1-HPLC-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190724
Time                22.08
INSTRUM             spect
PROBHD    5 mm PATBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  2048
DS                     4
SWH            30303.031 Hz
FIDRES          0.462388 Hz
AQ              1.0813440 sec
RG                 13000
DW                16.500 usec
DE                10.00 usec
TE                299.4 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1        0 dB
PL1W         53.75436783 W
SFO1         125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -4.08 dB
PL12               11.54 dB
PL13               11.54 dB
PL2W         35.02648163 W
PL12W         0.96027696 W
PL13W         0.96027696 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577723 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

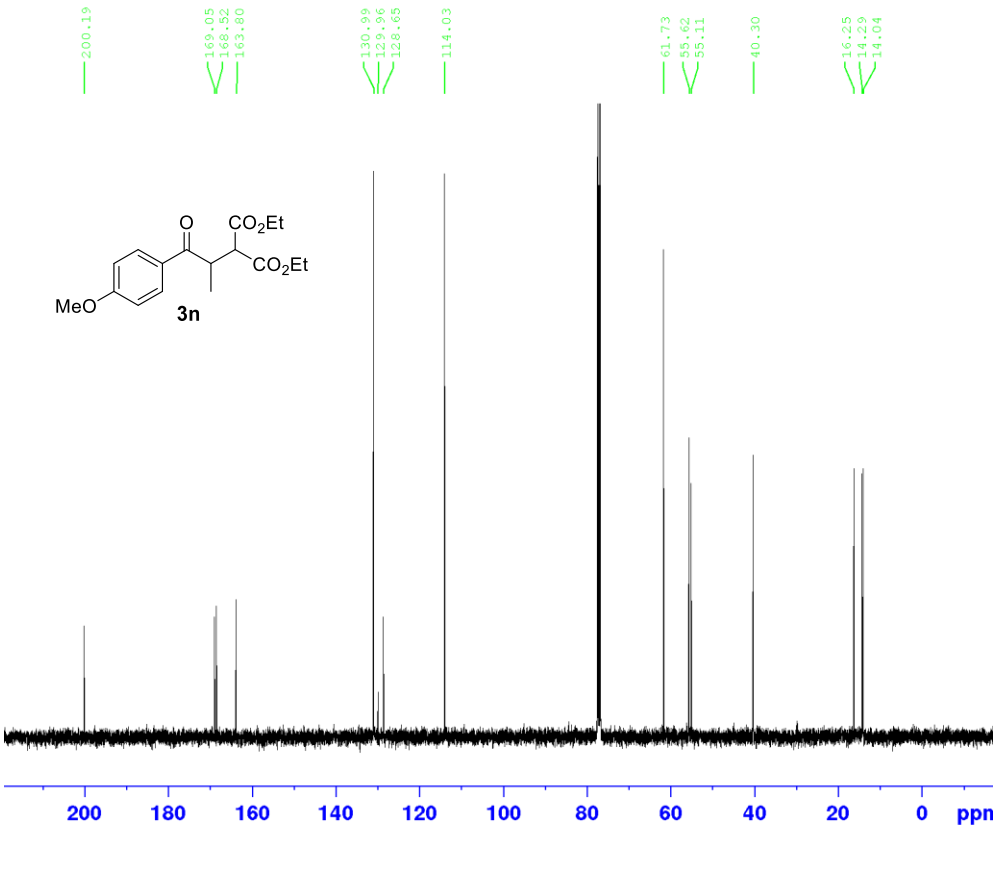


```
Current Data Parameters
NAME         epb750-f1-1
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190609
Time               15.50
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH           4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                  181
DW              104.400 usec
DE                6.00 usec
TE                298.0 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300095 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



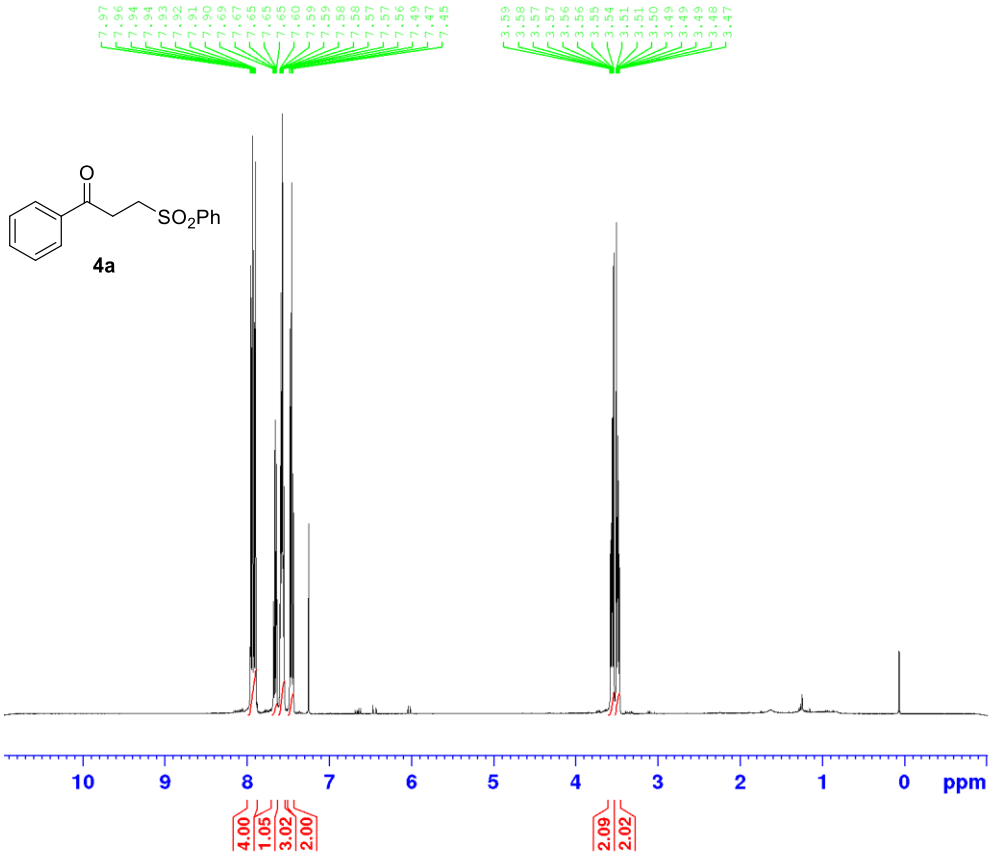
```
Current Data Parameters
NAME      epb750-f1-1-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190609
Time               16.12
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                26008
DW              20.850 usec
DE              10.00 usec
TE                298.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1              10.00 usec
PL1              -3.00 dB
PL1W        75.17808533 W
SFO1         100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2            80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2         400.1316005 MHz

F2 - Processing parameters
SI                32768
SF          100.6127555 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                 1.40
```

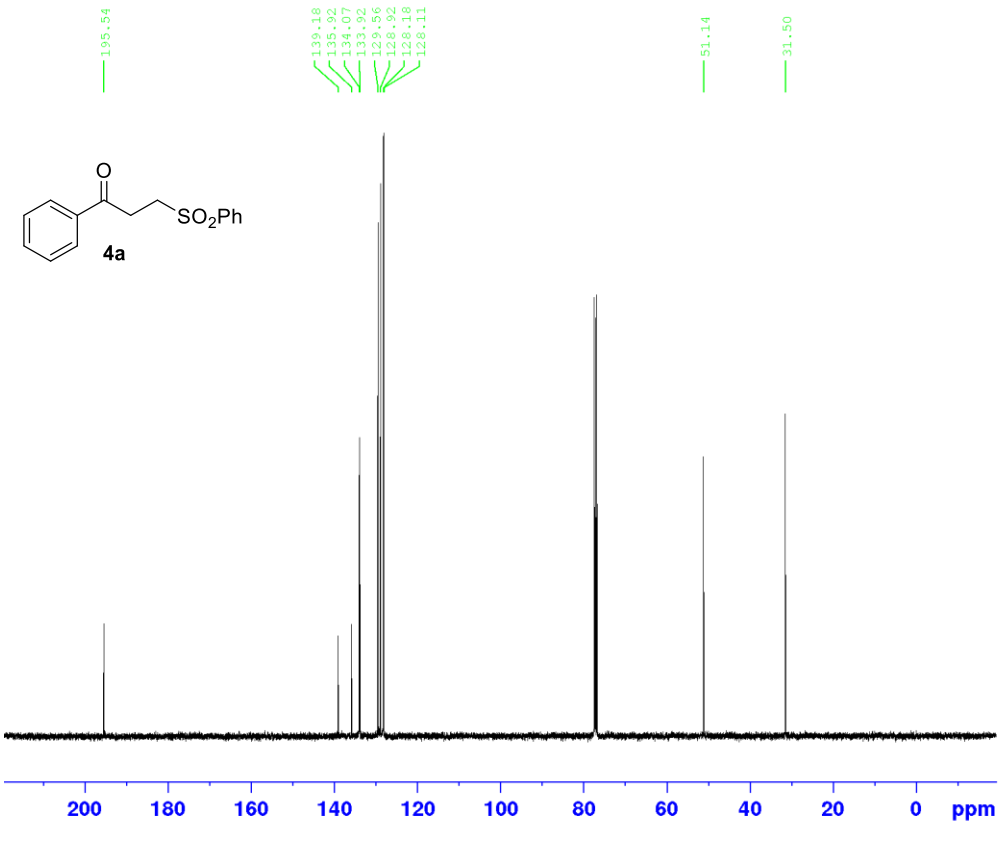


```
Current Data Parameters
NAME         epb696-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190611
Time                9.10
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                 161.3
DW               104.400 usec
DE                 6.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300097 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



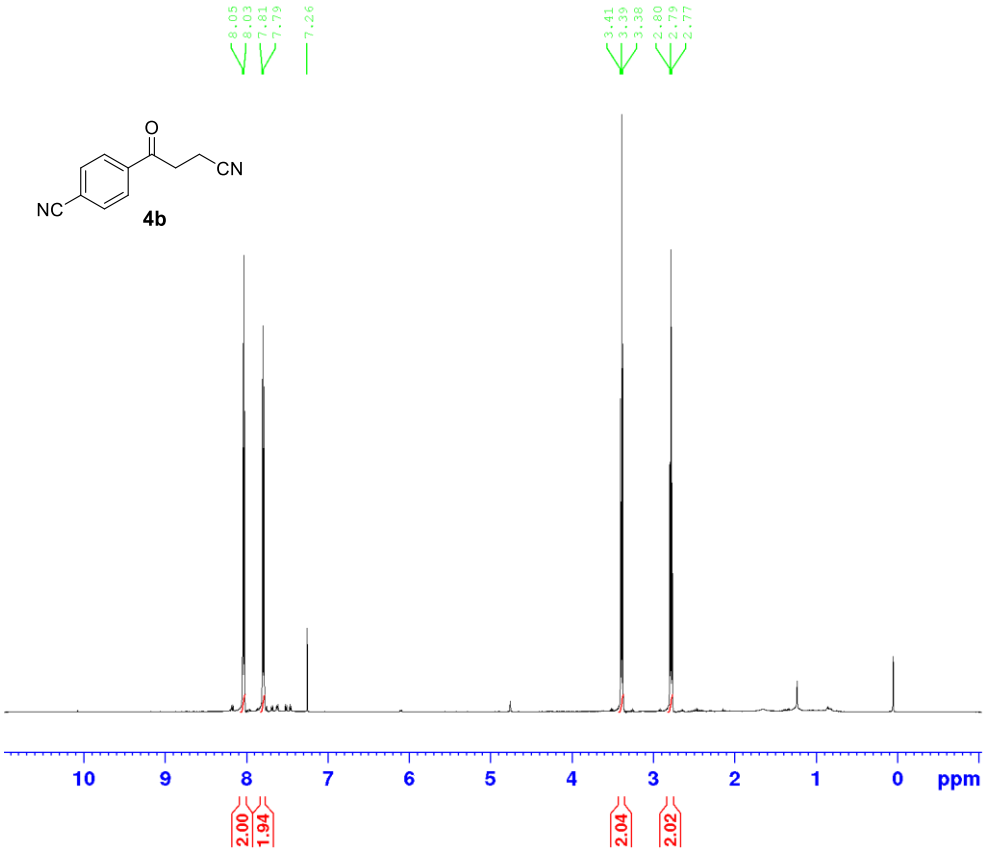
```
Current Data Parameters
NAME      epb696-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190611
Time                18.27
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH             24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 20642.5
DW                 20.800 usec
DE                 10.00 usec
TE                 298.1 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                  9.25 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1         100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -3.00 dB
PL12               13.05 dB
PL13               13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2         400.1616006 MHz

F2 - Processing parameters
SI                 32768
SF           100.6203016 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



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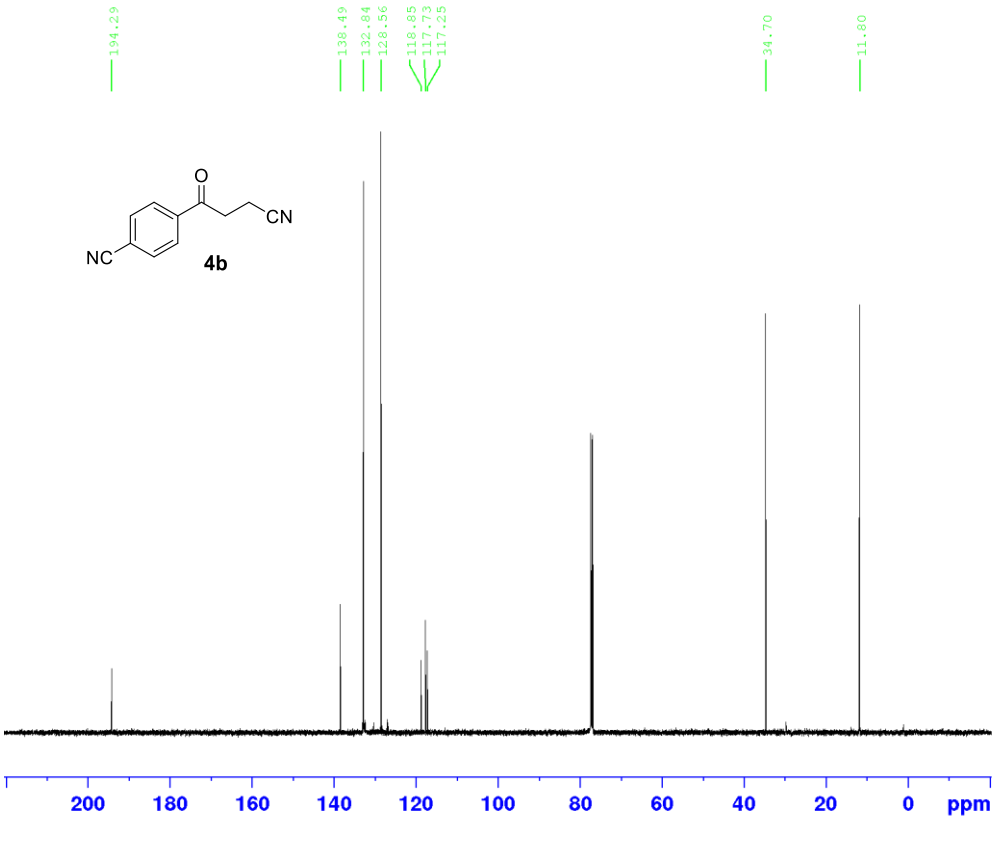
```
Current Data Parameters
NAME         epb745-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              18.45
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                  144
DW               83.200 usec
DE               10.00 usec
TE               298.2 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI               16384
SF          500.1300134 MHz
WDW                 no
SSB       0
LB        0 Hz
GB        0
PC                1.00
```



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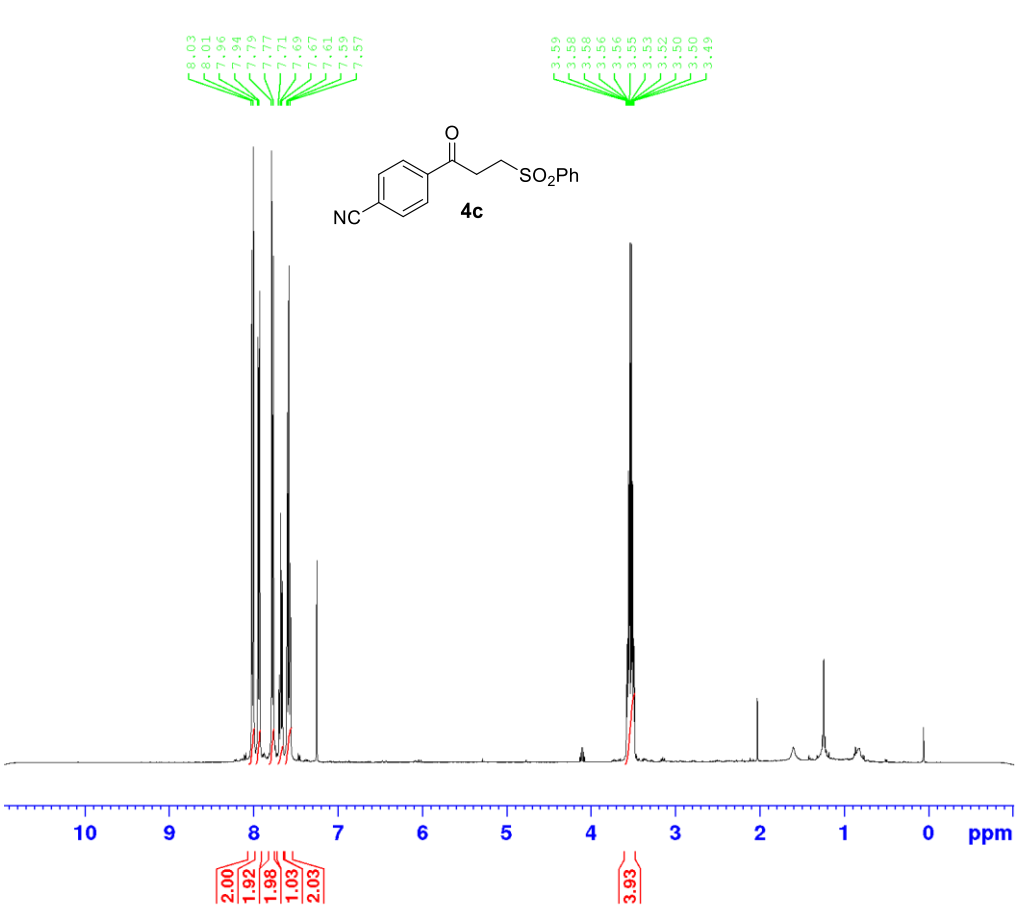
```
Current Data Parameters
NAME      epb745-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190316
Time              15.32
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                14600
DW               16.500 usec
DE               10.00 usec
TE               298.3 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                 8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI               32768
SF          125.7577805 MHz
WDW                 EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



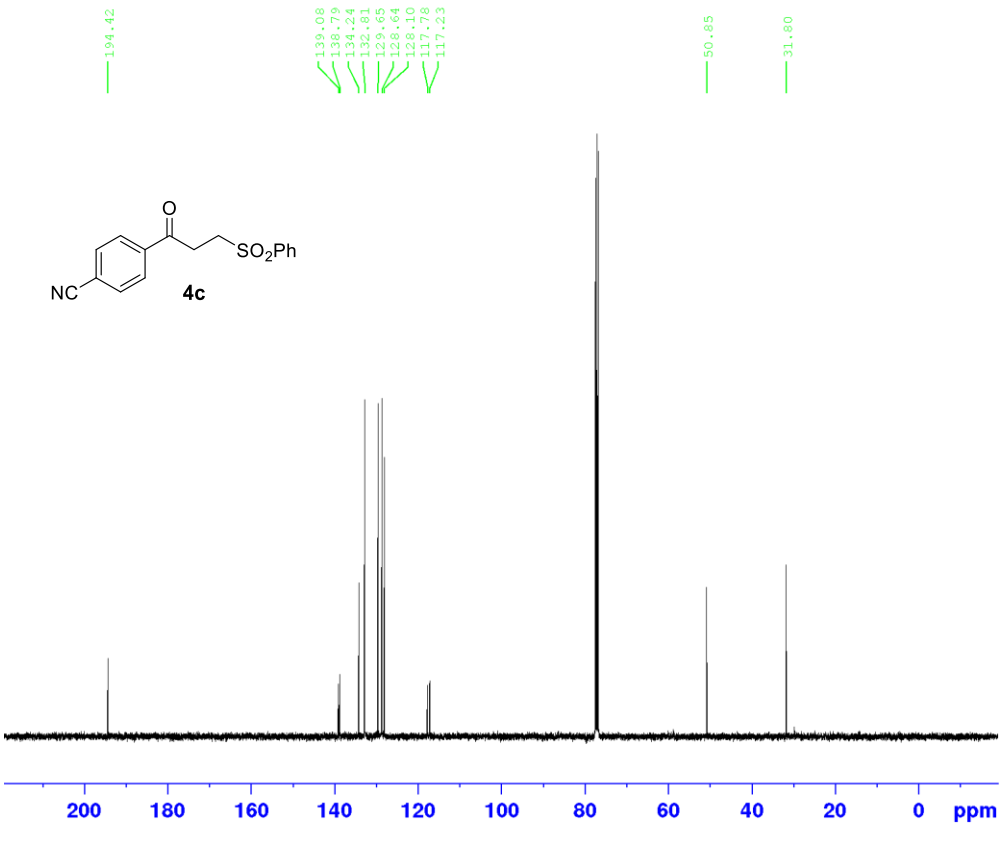
BRUKER

```
Current Data Parameters
NAME                 epb835-f1
EXPNO                       10
PROCNO                       1

F2 - Acquisition Parameters
Date_               20190305
Time                    1.12
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                 zg30
TD                     32768
SOLVENT                CDCl3
NS                        32
DS                         2
SWH                 4789.272 Hz
FIDRES               0.146157 Hz
AQ                  3.4209793 sec
RG                       181
DW                   104.400 usec
DE                     6.00 usec
TE                     298.0 K
D1                1.00000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       14.50 usec
PL1                      -2.00 dB
PL1W               23.88643074 W
SFO1               400.1320007 MHz

F2 - Processing parameters
SI                       16384
SF                 400.1300098 MHz
WDW                         EM
SSB          0
LB                       0.30 Hz
GB           0
PC                       1.00
```



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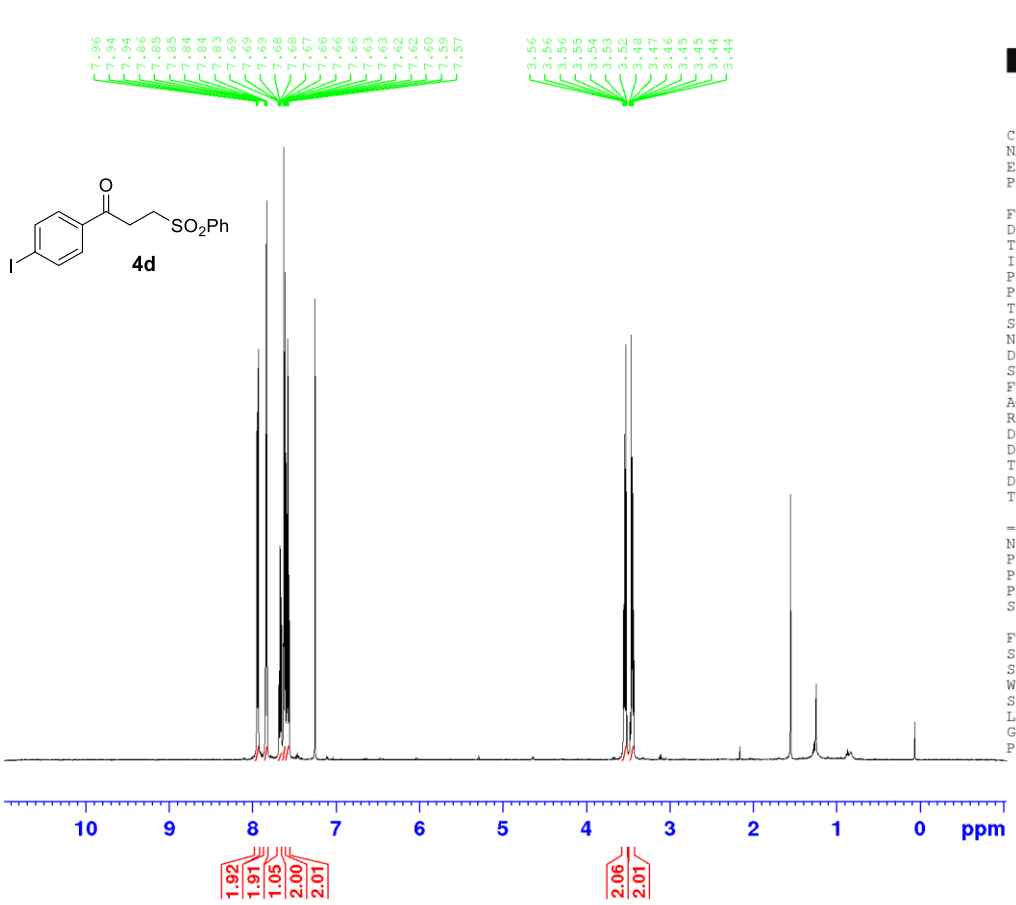
```
Current Data Parameters
NAME              epb835-f1-13C
EXPNO                        10
PROCNO                        1

F2 - Acquisition Parameters
Date_               20190305
Time                    1.34
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                     65536
SOLVENT                CDCl3
NS                       512
DS                         4
SWH                23980.814 Hz
FIDRES               0.365918 Hz
AQ                  1.3664256 sec
RG                     32768
DW                   20.850 usec
DE                     10.00 usec
TE                     298.1 K
D1                1.00000000 sec
D11               0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                       10.00 usec
PL1                      -3.00 dB
PL1W               75.17808533 W
SFO1               100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2             waltz16
NUC2                        1H
PCPD2                    80.00 usec
PL2                      -2.00 dB
PL12                     12.83 dB
PL13                     12.83 dB
PL2W               23.88643074 W
PL12W               0.78550917 W
PL13W               0.78550917 W
SFO2               400.1316005 MHz

F2 - Processing parameters
SI                       32768
SF                 100.6127570 MHz
WDW                         EM
SSB          0
LB                       1.00 Hz
GB           0
PC                       1.40
```



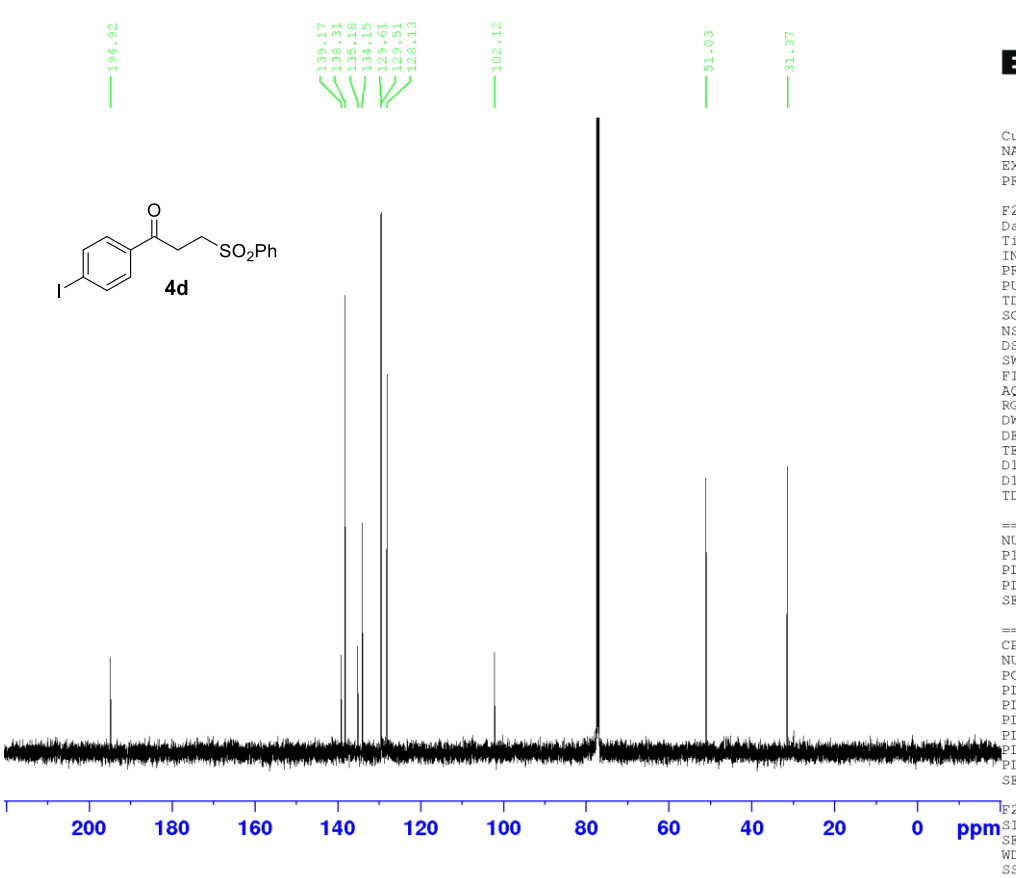
BRUKER

```
Current Data Parameters
NAME         epb836-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time               19.04
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                  362
DW             83.200 usec
DE              10.00 usec
TE                300.0 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1        500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300134 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



BRUKER

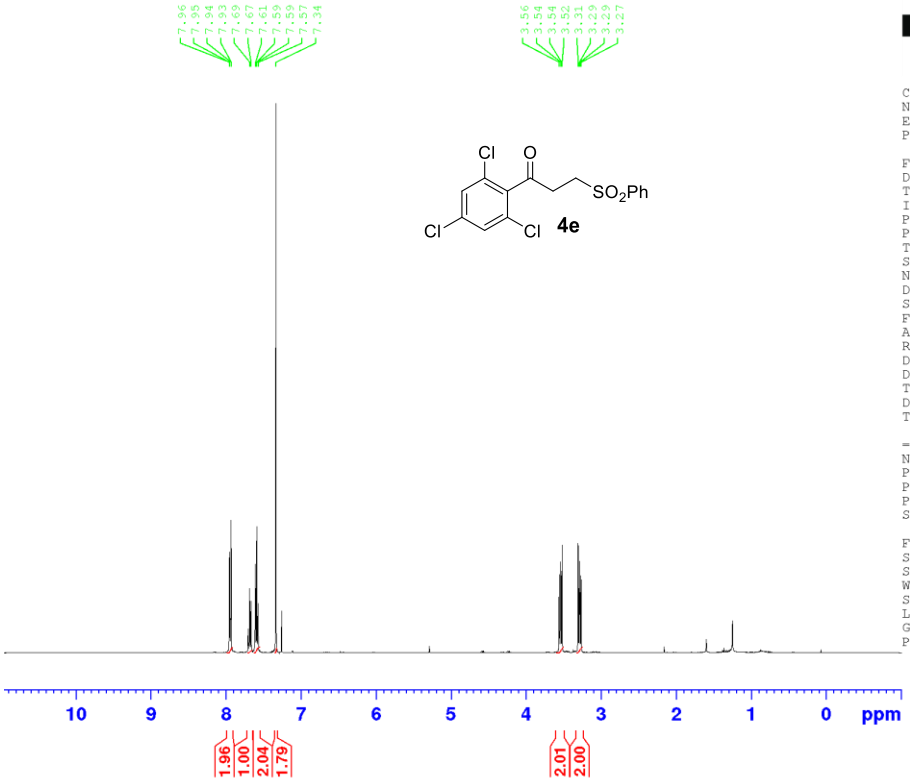
```
Current Data Parameters
NAME      epb836-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190316
Time                17.40
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT           CDCl3
NS                   512
DS                     4
SWH            30303.031 Hz
FIDRES         0.462388 Hz
AQ             1.0813440 sec
RG                 13000
DW              16.500 usec
DE                 10.00 usec
TE                 300.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1        125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577727 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

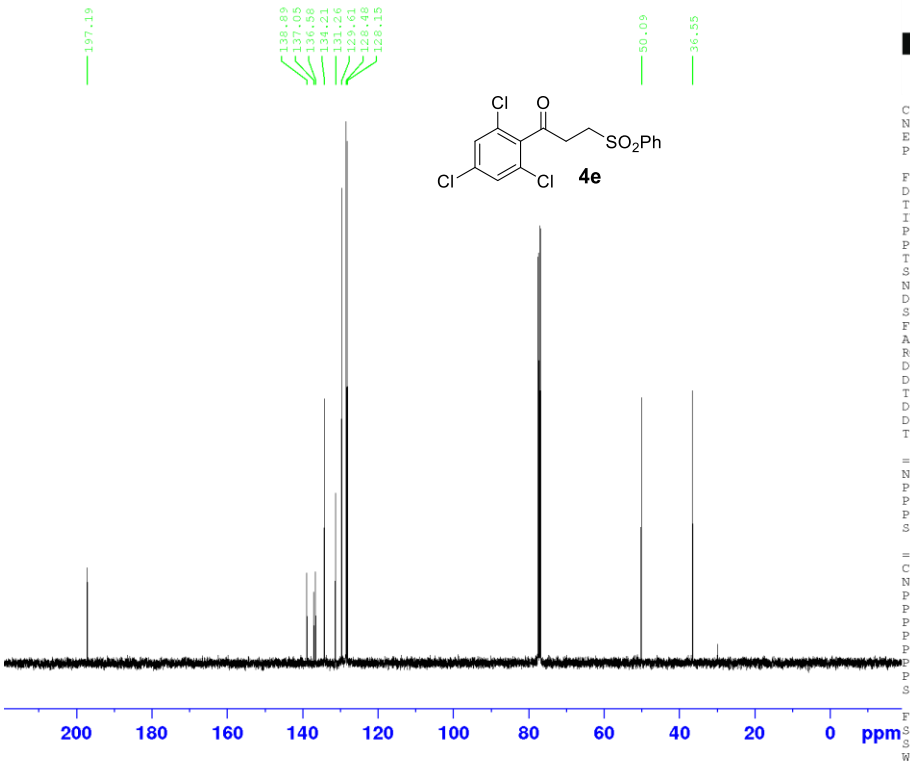



```
Current Data Parameters
NAME         epb837-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190610
Time                8.29
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH           4789.272 Hz
FIDRES         0.146157 Hz
AQ            3.4209793 sec
RG                   181
DW              104.400 usec
DE                6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300098 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



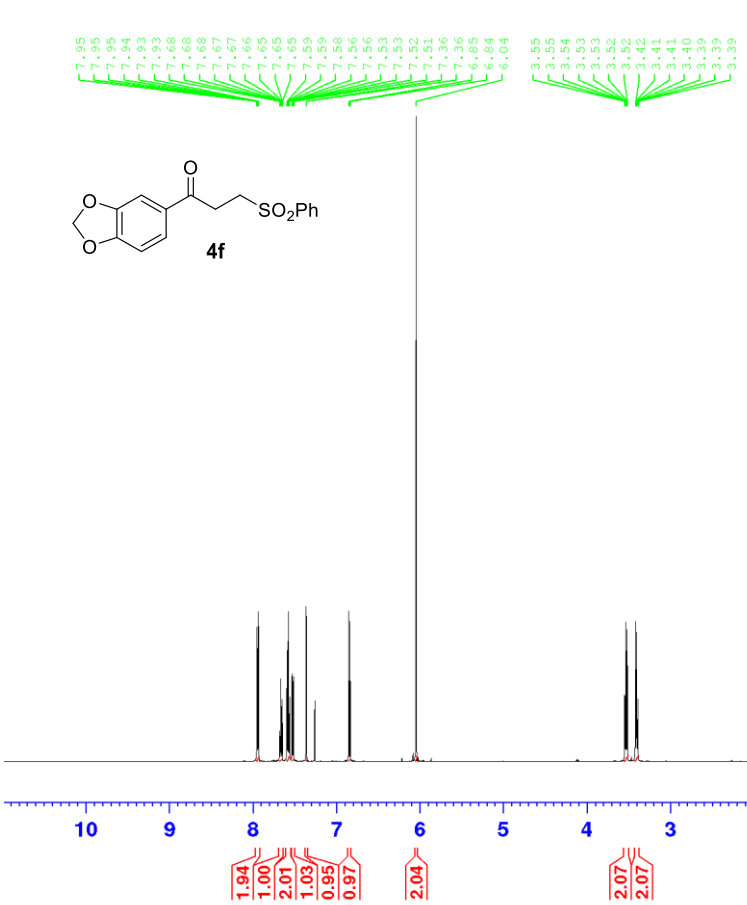

```
Current Data Parameters
NAME      epb837-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190610
Time                8.41
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   267
DS                     4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                 23170.5
DW              20.850 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                10.00 usec
PL1               -3.00 dB
PL1W        75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127577 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

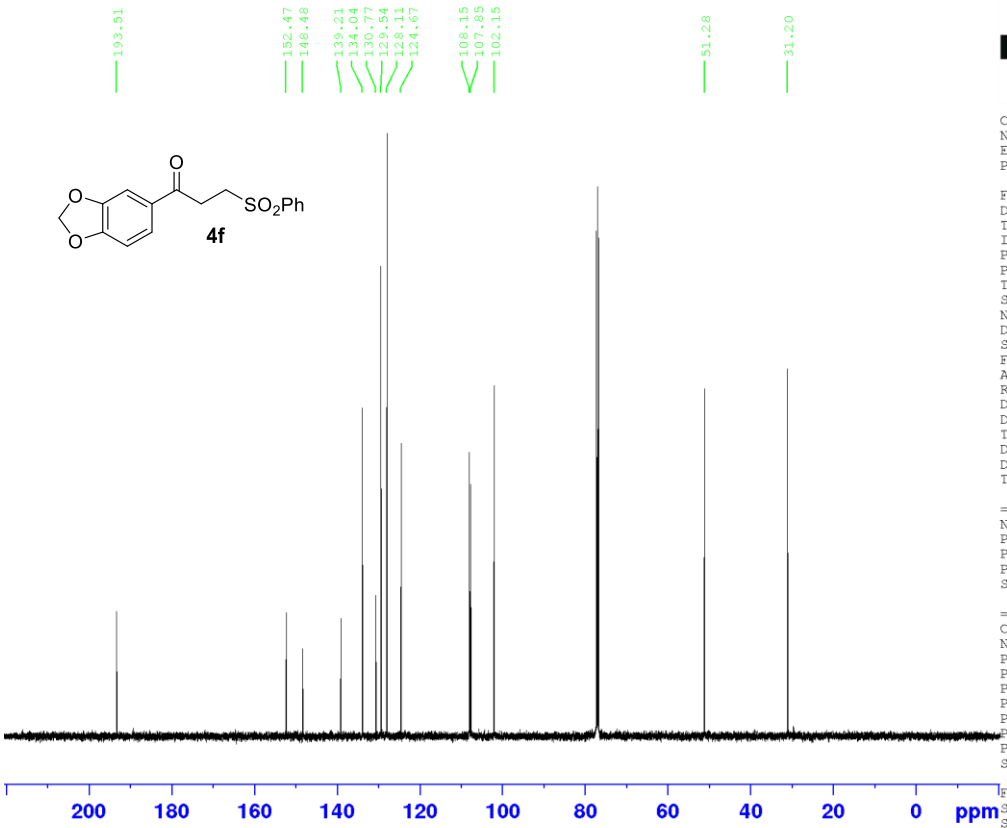


```
Current Data Parameters
NAME         epb827-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              18.58
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES          0.183399 Hz
AQ             2.7262976 sec
RG                  181
DW               83.200 usec
DE               10.00 usec
TE               298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300130 MHz
WDW                EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



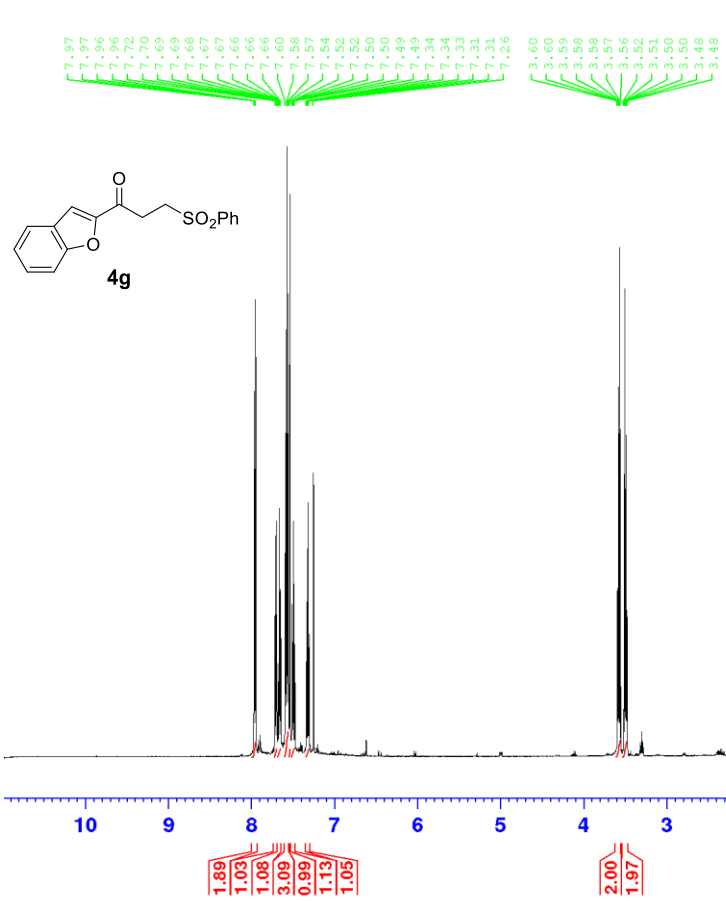
```
Current Data Parameters
NAME      epb827-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190316
Time              17.12
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES          0.462388 Hz
AQ             1.0813440 sec
RG                13000
DW               16.500 usec
DE               10.00 usec
TE               298.3 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12             16.12 dB
PL13             16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577750 MHz
WDW                EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

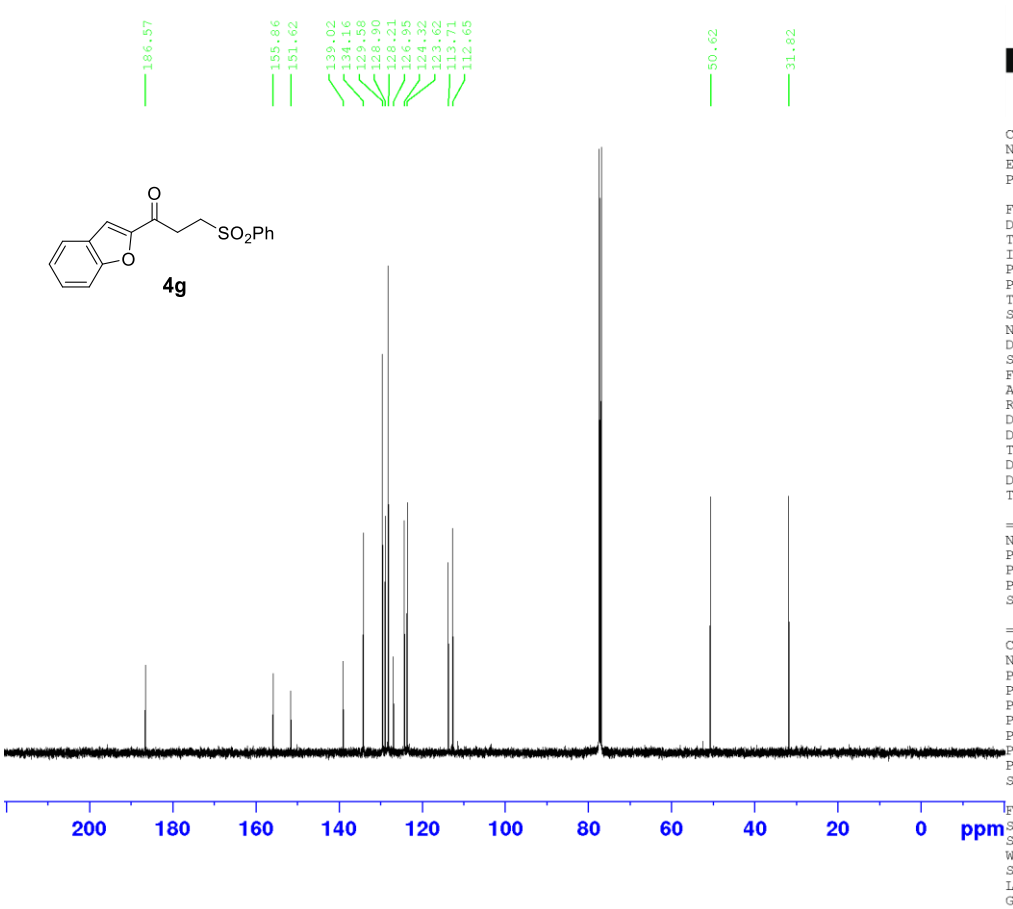



```
Current Data Parameters
NAME         epb840-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20190315
Time              19.10
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           6009.615 Hz
FIDRES        0.183399 Hz
AQ           2.7262976 sec
RG                 203
DW              83.200 usec
DE              10.00 usec
TE              297.8 K
D1          1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1              12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1        500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF          500.1300133 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



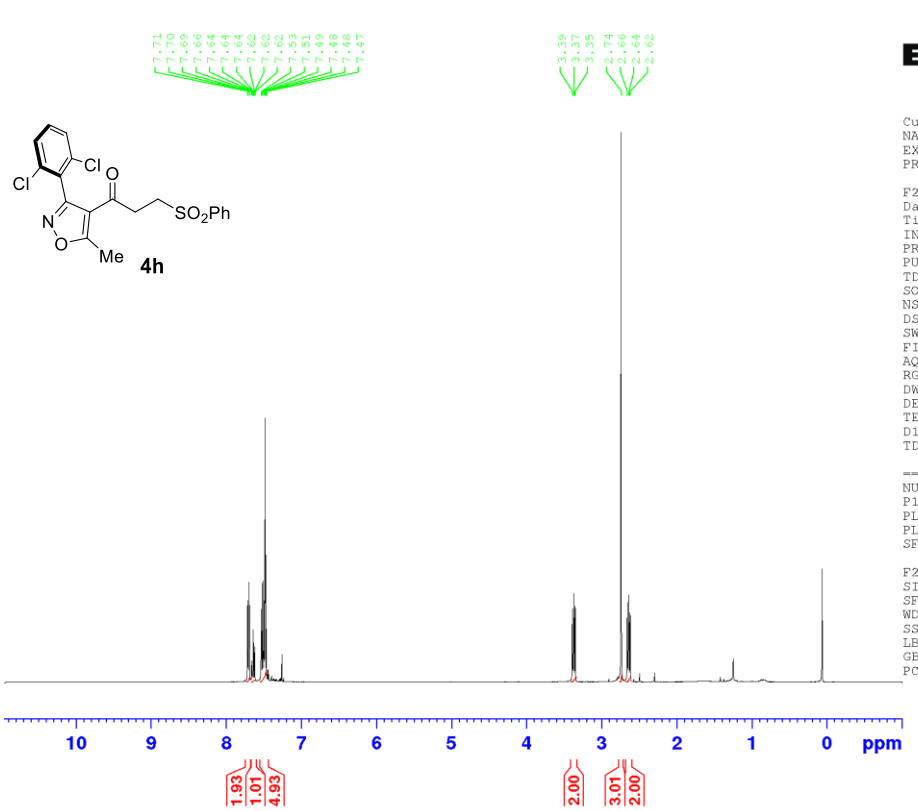

```
Current Data Parameters
NAME      epb840-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_          20190316
Time              18.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ           1.0813440 sec
RG                13000
DW              16.500 usec
DE              10.00 usec
TE              298.3 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               13C
P1              8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2           80.00 usec
PL2       0 dB
PL12             16.12 dB
PL13             16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577740 MHz
WDW                  EM
SSB       0
LB             1.00 Hz
GB        0
PC                1.40
```

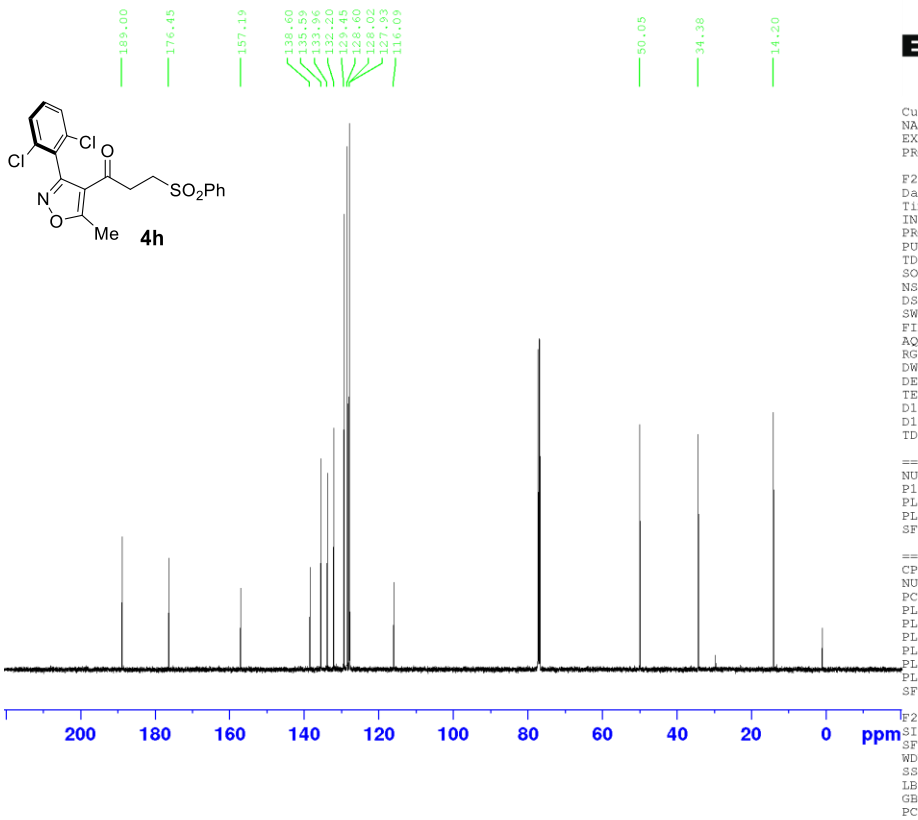



```
Current Data Parameters
NAME         epb-2-1-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190627
Time              11.11
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                  128
DW              104.400 usec
DE                6.00 usec
TE                298.1 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                1H
P1               14.50 usec
PL1              -2.00 dB
PL1W        23.88643074 W
SFO1       400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF            400.1300098 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



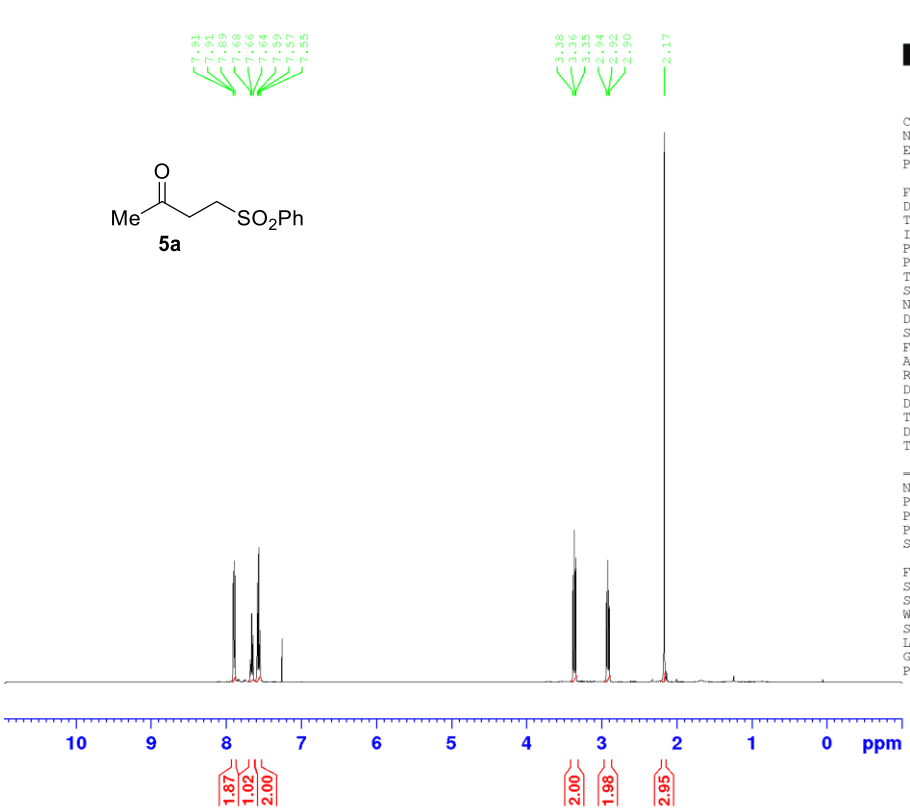

```
Current Data Parameters
NAME      epb-2-1-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190628
Time              17.54
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ            1.0813440 sec
RG                 9200
DW              16.500 usec
DE                10.00 usec
TE                298.6 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                9.25 usec
PL1       0 dB
PL1W        53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                1H
PCPD2            80.00 usec
PL2              -4.08 dB
PL12             11.54 dB
PL13             11.54 dB
PL2W        35.02648163 W
PL12W        0.96027696 W
PL13W        0.96027696 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF            125.7577787 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

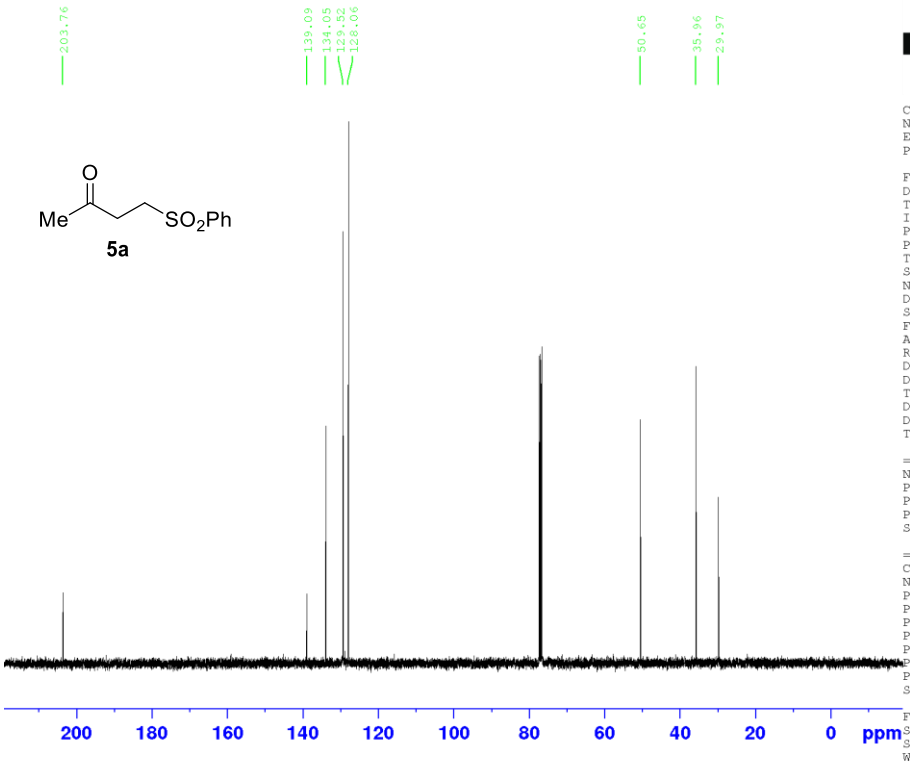



```
Current Data Parameters
NAME         epb791-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190319
Time              18.26
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           4789.272 Hz
FIDRES         0.146157 Hz
AQ            3.4209793 sec
RG                 128
DW              104.400 usec
DE                6.00 usec
TE               298.1 K
D1            1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1               14.50 usec
PL1              -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300097 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



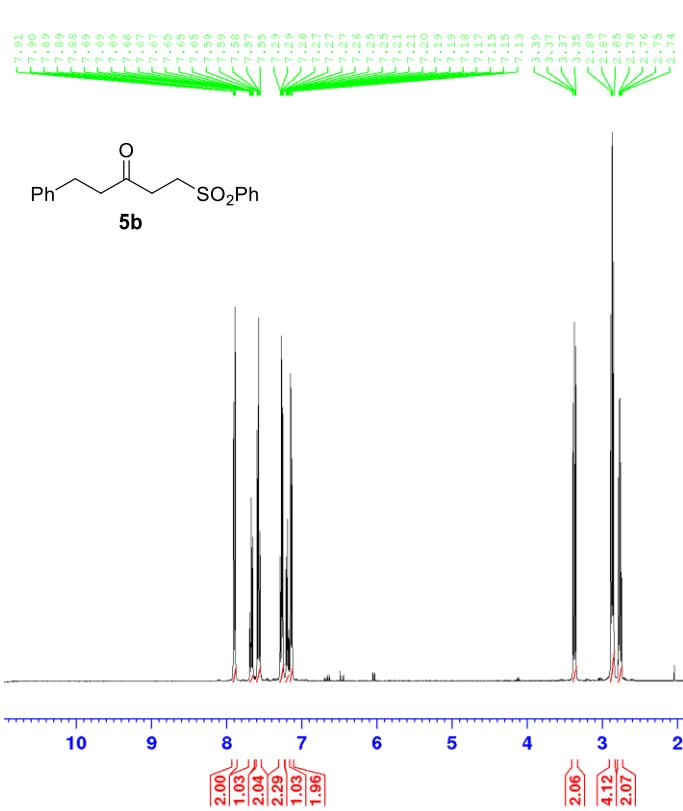

```
Current Data Parameters
NAME      epb791-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190319
Time              21.39
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 128
DS                   4
SWH          23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                 32768
DW              20.850 usec
DE                10.00 usec
TE               298.1 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               13C
P1               10.00 usec
PL1              -3.00 dB
PL1W        75.17808533 W
SFO1       100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2              -2.00 dB
PL12             12.83 dB
PL13             12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2       400.1316005 MHz

F2 - Processing parameters
SI                32768
SF          100.6127588 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



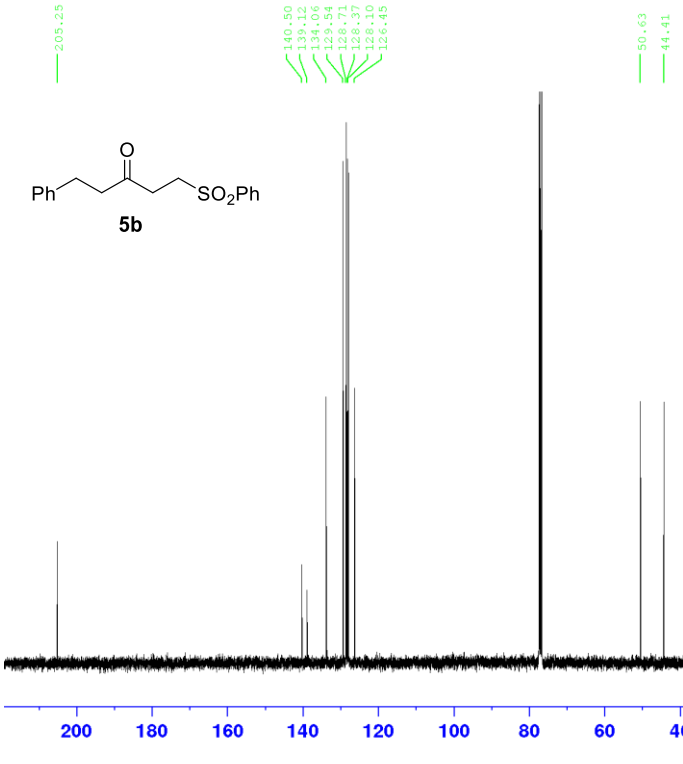
BRUKER

```
Current Data Parameters
NAME          epb838-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190319
Time               18.21
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH           4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                 228.1
DW              104.400 usec
DE                6.00 usec
TE                298.0 K
D1            1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300097 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



BRUKER

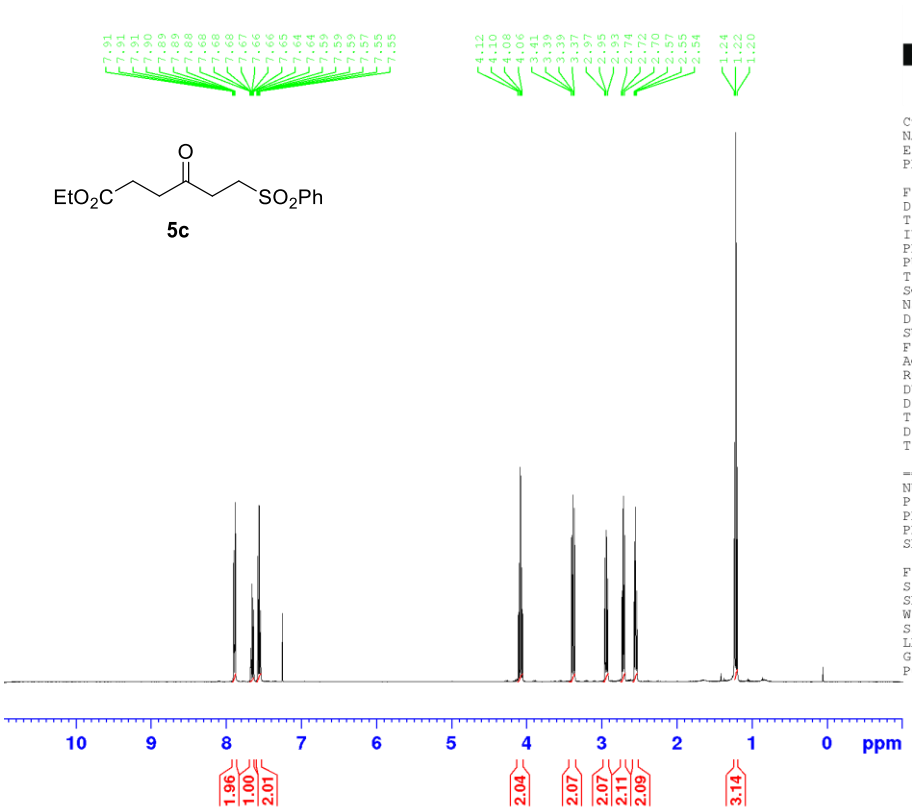
```
Current Data Parameters
NAME       epb838-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190319
Time               21.22
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                 26008
DW              20.850 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 10.00 usec
PL1                -3.00 dB
PL1W        75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               12.83 dB
PL13               12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127562 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



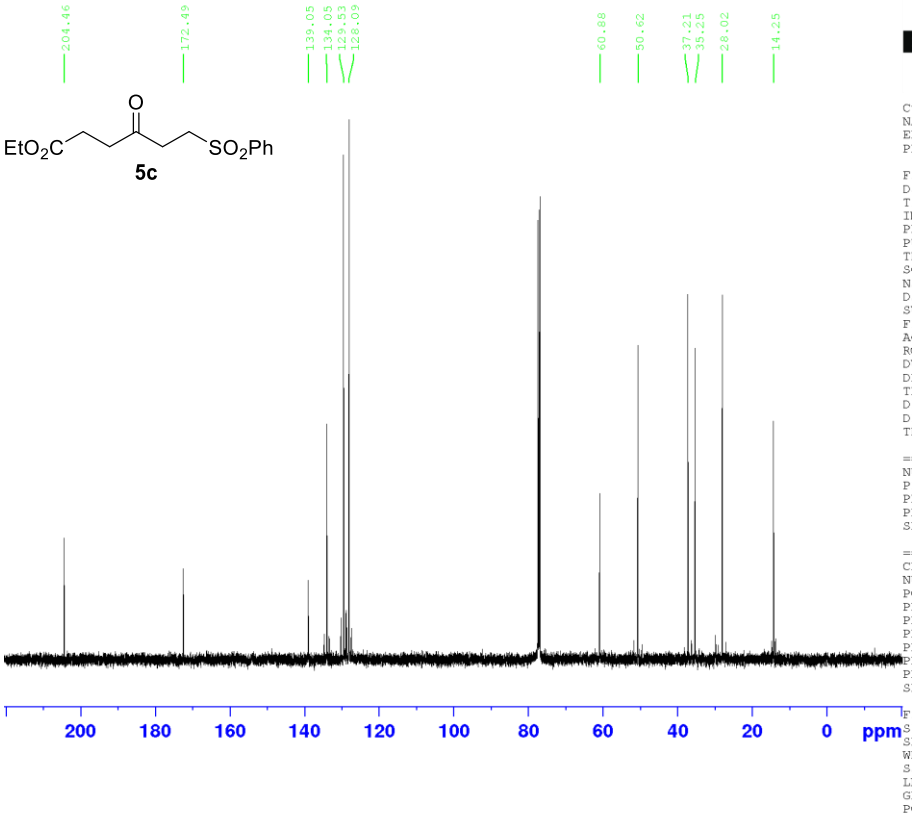
BRUKER

```
Current Data Parameters
NAME         epb814-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190416
Time              15.11
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   4
DS                   2
SWH           4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                 128
DW              104.400 usec
DE                6.00 usec
TE               298.0 K
D1           1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1               14.50 usec
PL1              -2.00 dB
PL1W        23.88643074 W
SFO1       400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300097 MHz
WDW                   no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



BRUKER

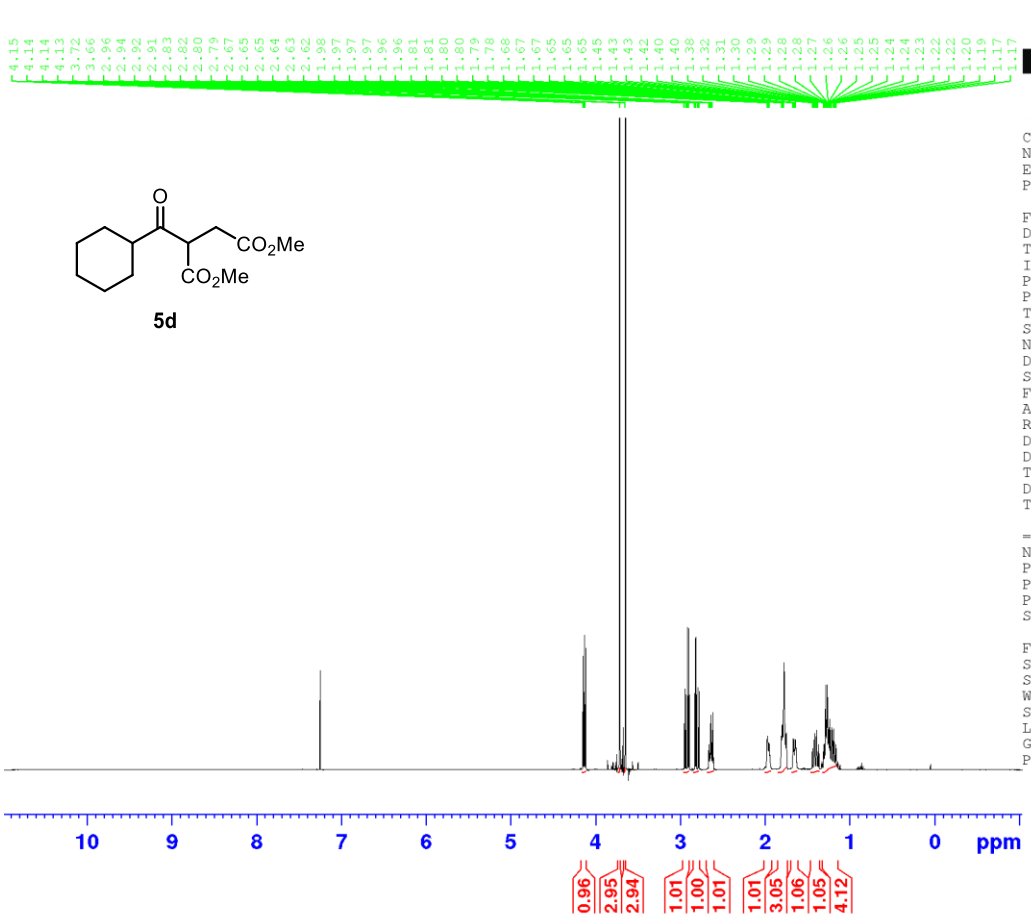
```
Current Data Parameters
NAME      epb814-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190416
Time               16.26
INSTRUM            spect
PROBHD    5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ            1.0813440 sec
RG                10300
DW              16.500 usec
DE                10.00 usec
TE               298.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1               16.20 usec
PL1              -0.50 dB
PL1W        60.31339645 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -1.00 dB
PL12              20.80 dB
PL13              20.80 dB
PL2W        17.23441315 W
PL12W        0.11386666 W
PL13W        0.11386666 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577761 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



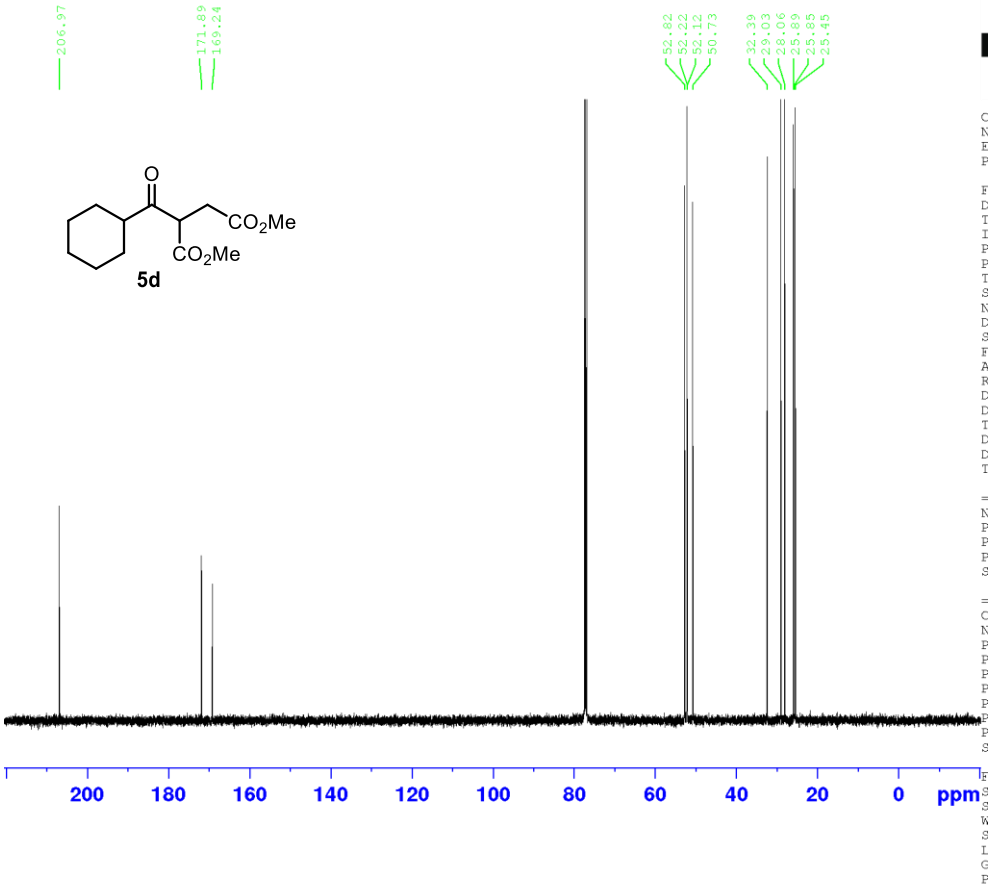
BRUKER

```
Current Data Parameters
NAME         epb766-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190318
Time               18.32
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDC13
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                 71.8
DW               83.200 usec
DE               10.00 usec
TE               298.2 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300130 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



BRUKER

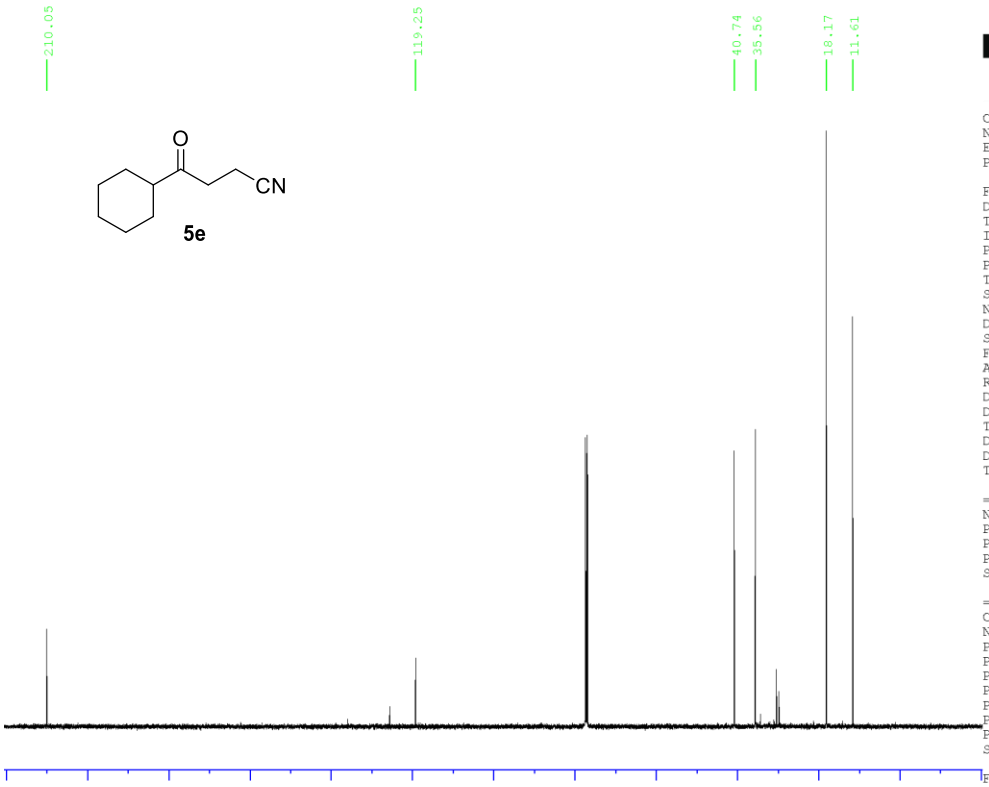
```
Current Data Parameters
NAME      epb766-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190318
Time               22.55
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDC13
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ            1.0813440 sec
RG                10300
DW               16.500 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577733 MHz
WDW                  EM
SSB       0
LB             1.00 Hz
GB        0
PC                 1.40
```



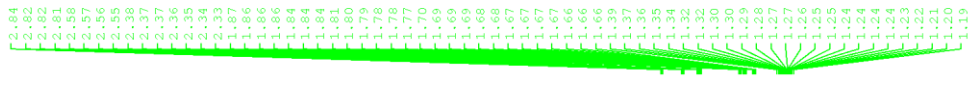

```
Current Data Parameters
NAME      epb778-prod-13C
EXPNO                  10
PROCNO                  1

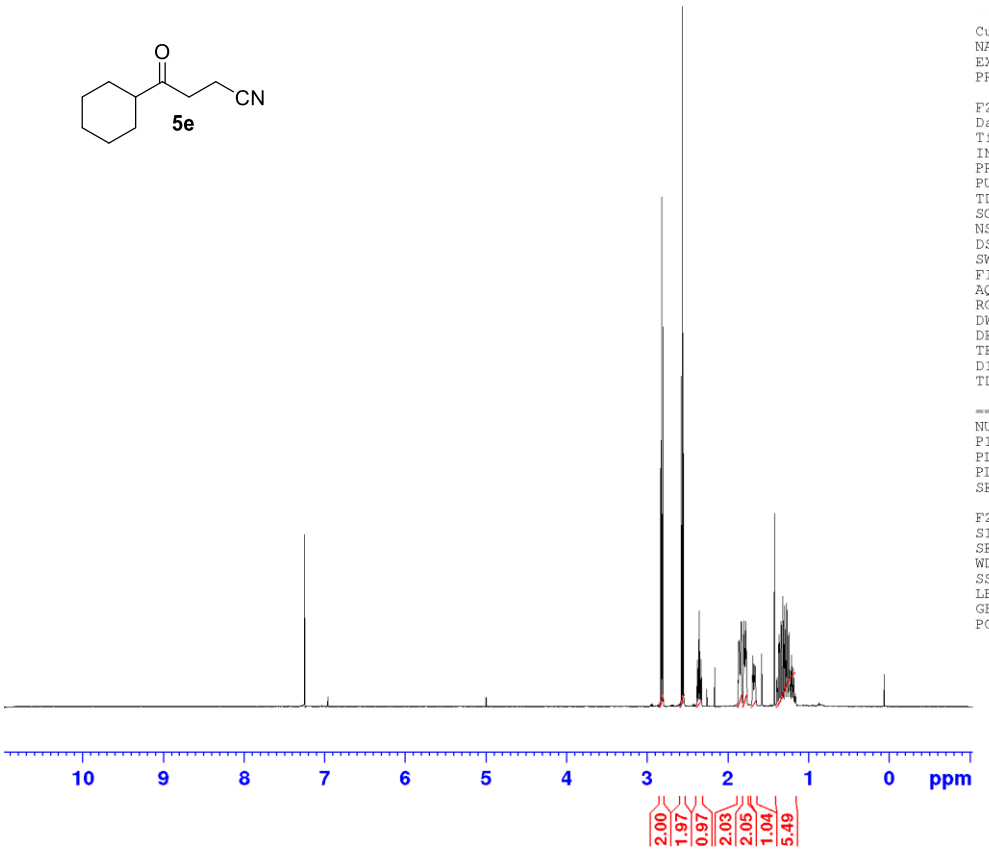
F2 - Acquisition Parameters
Date_           20190318
Time              23.24
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                10300
DW              16.500 usec
DE              10.00 usec
TE                298.1 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                8.60 usec
PL1       0 dB
PL1W        53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W        13.68978119 W
PL12W        0.33450022 W
PL13W        0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577776 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



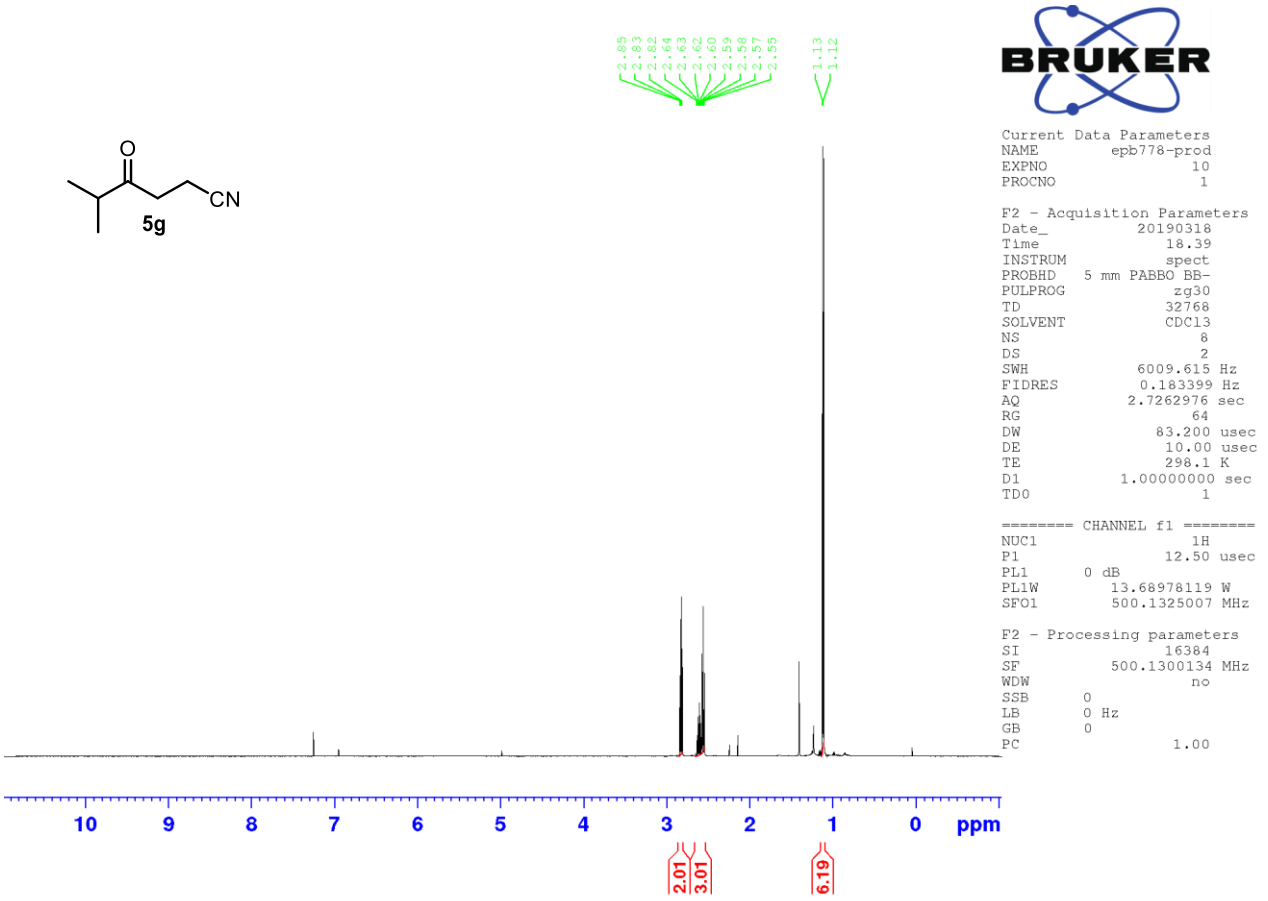



```
Current Data Parameters
NAME        epb776-prod
EXPNO                10
PROCNO                1

F2 - Acquisition Parameters
Date_           20190318
Time              16.23
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                  181
DW              83.200 usec
DE              10.00 usec
TE                298.0 K
D1          1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W        13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300138 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                1.00
```

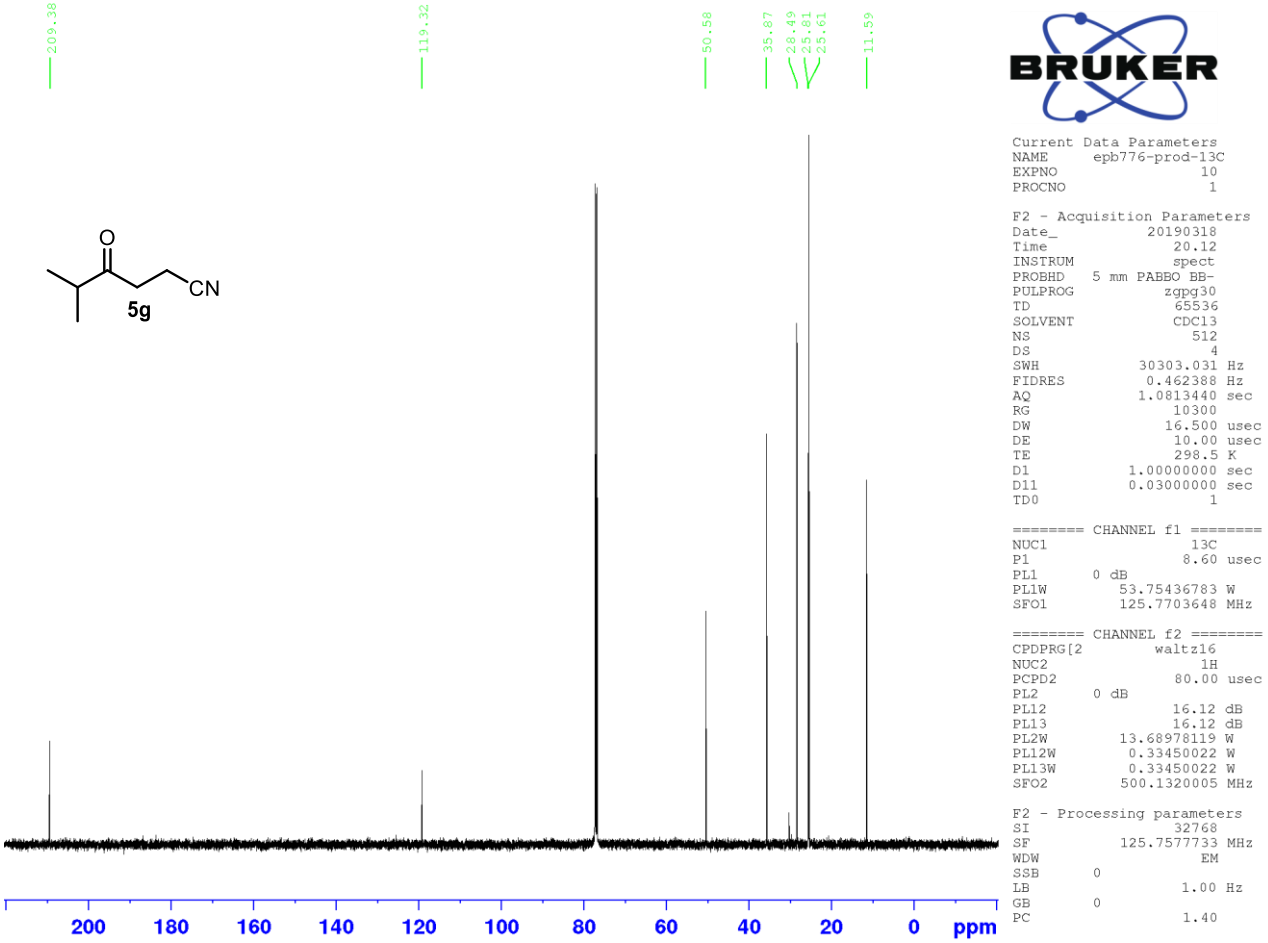



```
Current Data Parameters
NAME         epb778-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190318
Time               18.39
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES         0.183399 Hz
AQ             2.7262976 sec
RG                   64
DW                83.200 usec
DE                10.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W        13.68978119 W
SFO1         500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300134 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



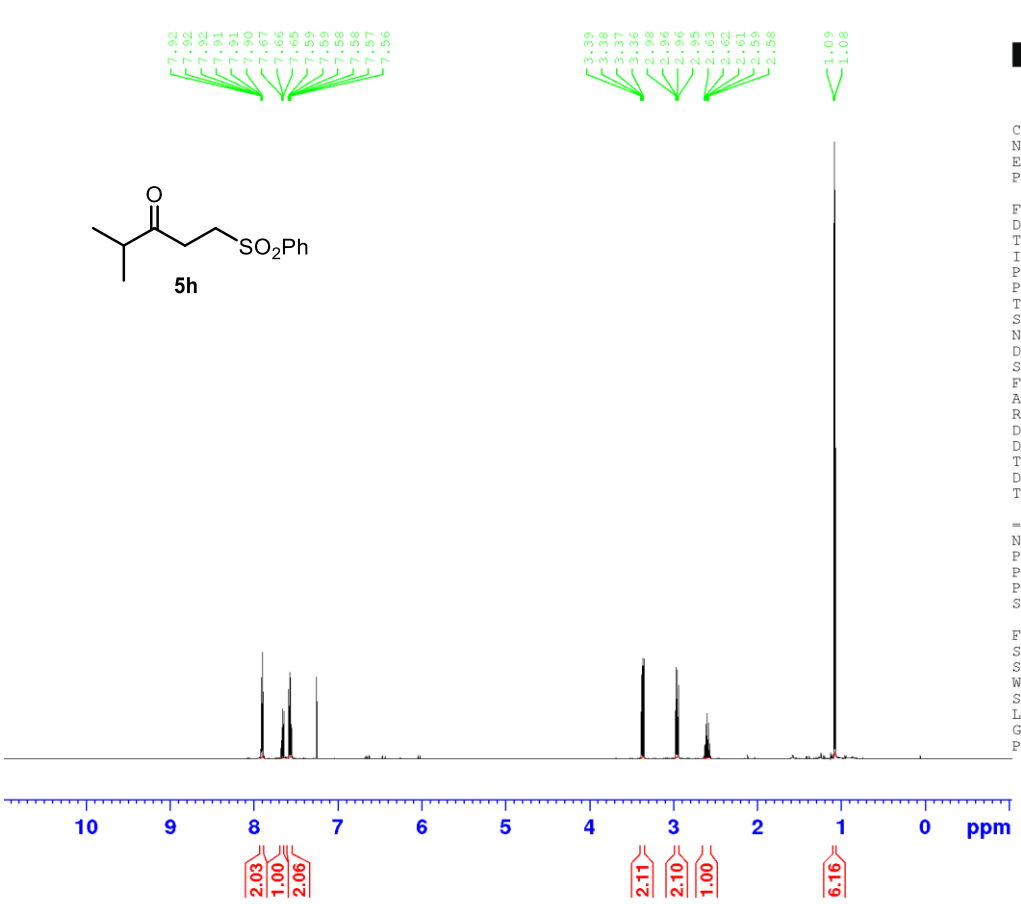

```
Current Data Parameters
NAME      epb776-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190318
Time               20.12
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ             1.0813440 sec
RG                10300
DW                16.500 usec
DE                10.00 usec
TE                298.5 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W        53.75436783 W
SFO1         125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W        13.68978119 W
PL12W        0.33450022 W
PL13W        0.33450022 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577733 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                 1.40
```

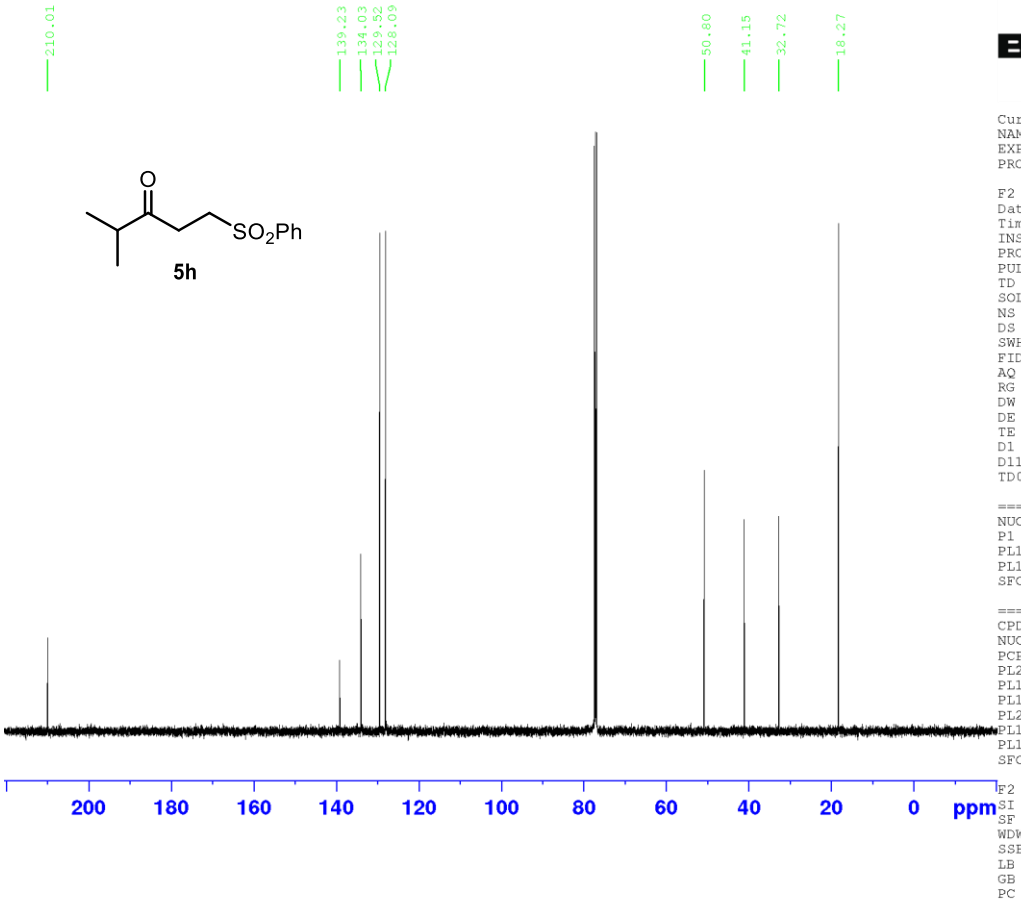


```
Current Data Parameters
NAME         epb780-f1-1
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190415
Time              19.25
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES          0.183399 Hz
AQ             2.7262976 sec
RG                  228
DW               83.200 usec
DE               10.00 usec
TE               298.2 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1        500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300134 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



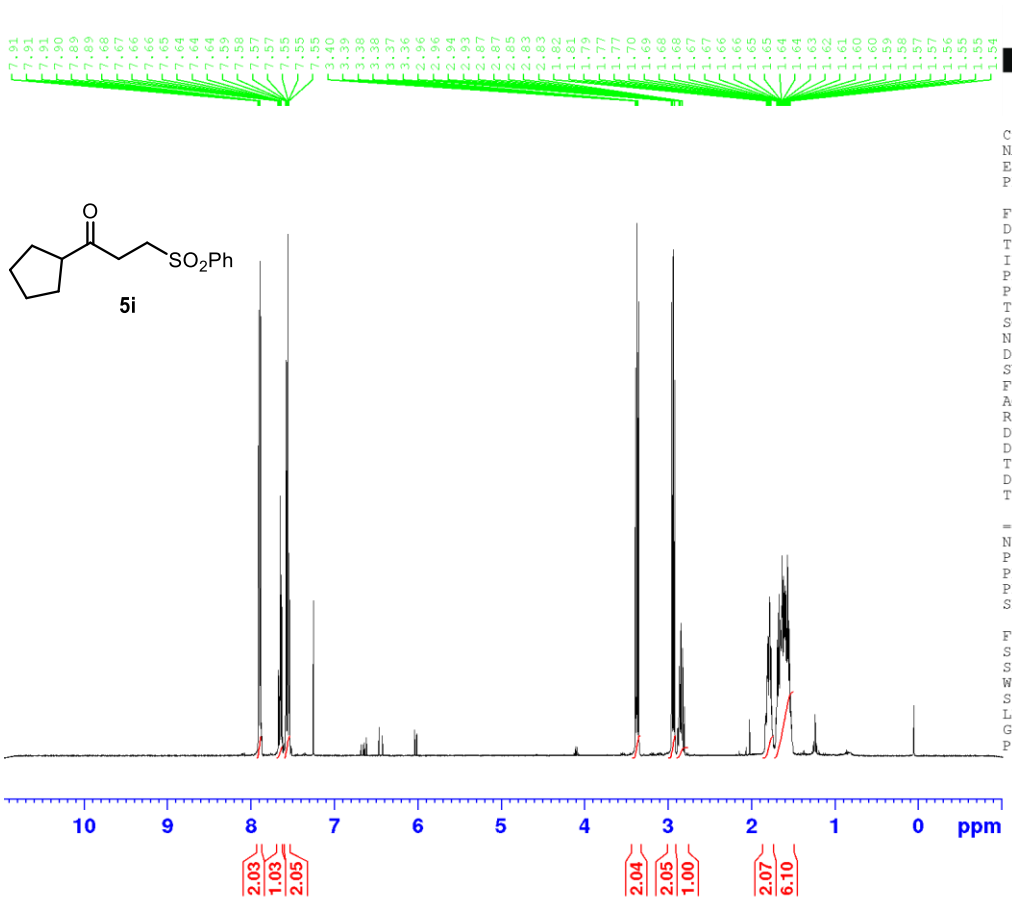
```
Current Data Parameters
NAME      epb780-f1-1-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190416
Time              1.24
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES          0.462388 Hz
AQ             1.0813440 sec
RG                11500
DW               16.500 usec
DE               10.00 usec
TE               300.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1        125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577733 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                 1.40
```

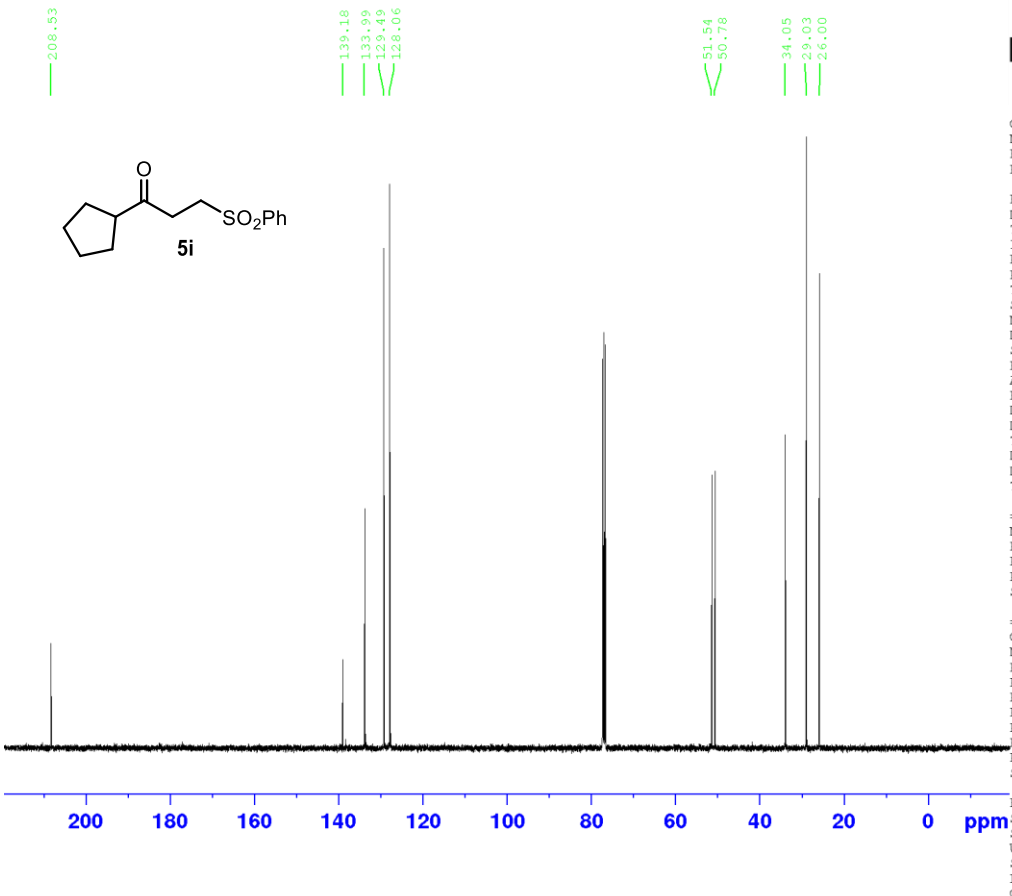



```
Current Data Parameters
NAME          epb789-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190319
Time                12.22
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     4
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                   128
DW               104.400 usec
DE                 6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1          400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300098 MHz
WDW                   no
SSB       0
LB        0 Hz
GB        0
PC                  1.00
```



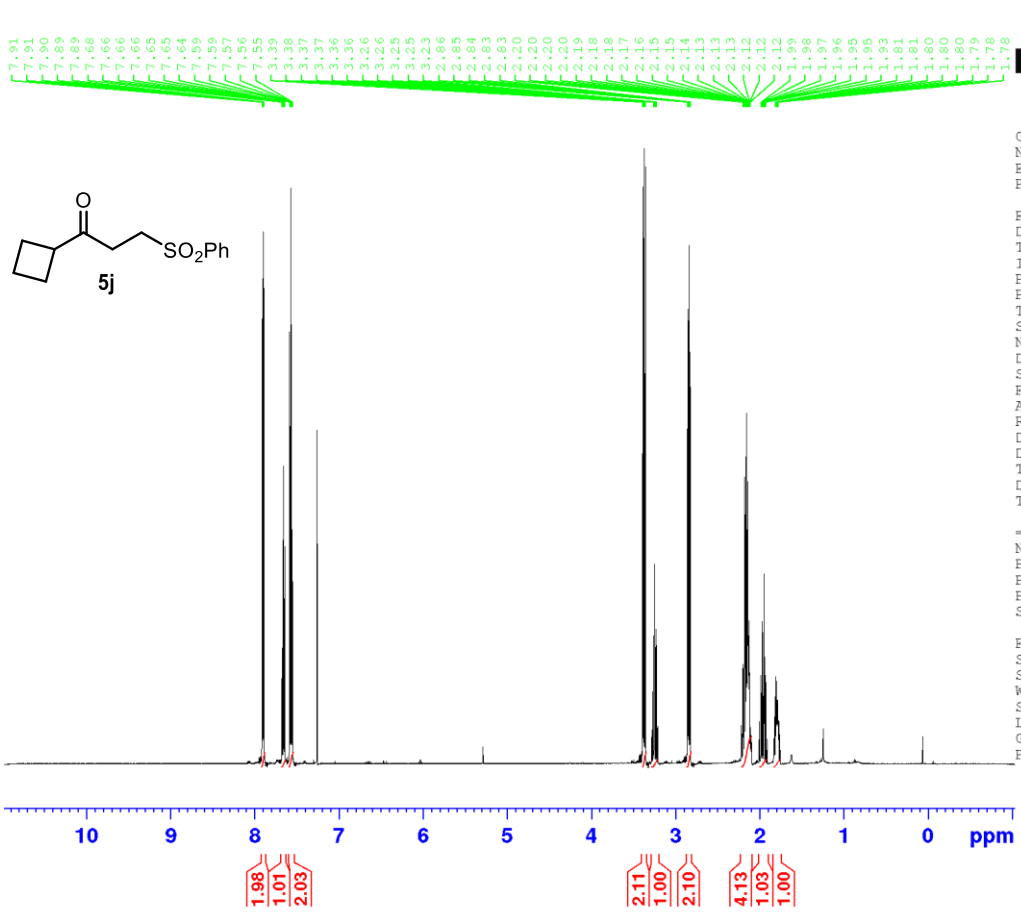

```
Current Data Parameters
NAME       epb789-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_            20190319
Time                16.30
INSTRUM             spect
PROBHD    5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 32768
DW                20.800 usec
DE                10.00 usec
TE                297.9 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1          100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -3.00 dB
PL12               13.05 dB
PL13               13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2          400.1616006 MHz

F2 - Processing parameters
SI                 32768
SF           100.6203019 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                  1.40
```

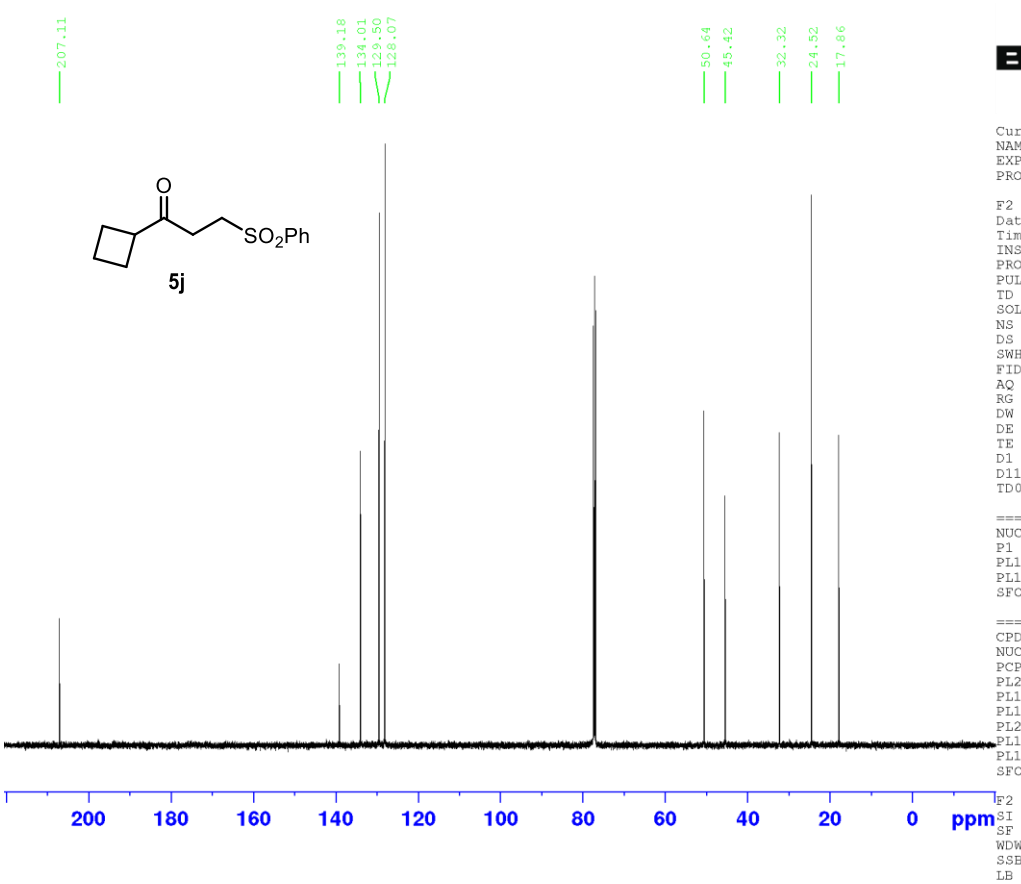



```
Current Data Parameters
NAME         epb781-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              10.58
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                90.5
DW              83.200 usec
DE              10.00 usec
TE              300.0 K
D1          1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W     13.68978119 W
SFO1      500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300134 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                1.00
```



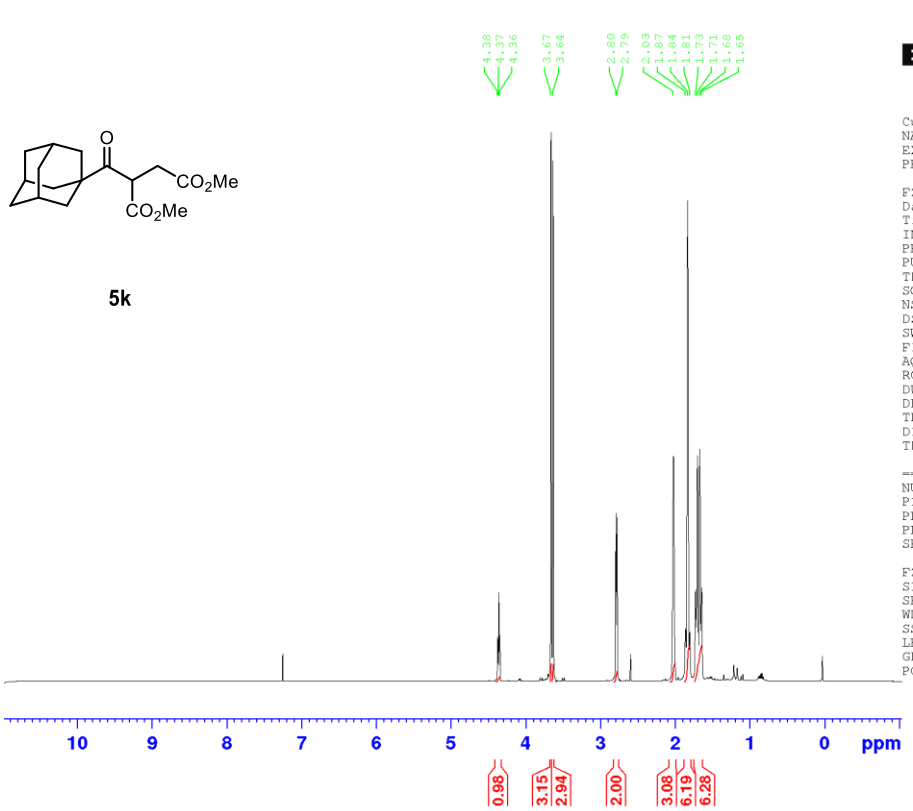

```
Current Data Parameters
NAME      epb781-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              23.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                8200
DW              16.500 usec
DE              10.00 usec
TE              298.2 K
D1          1.00000000 sec
D11         0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W     53.75436783 W
SFO1      125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12             16.12 dB
PL13             16.12 dB
PL2W        13.68978119 W
PL12W        0.33450022 W
PL13W        0.33450022 W
SFO2      500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577751 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



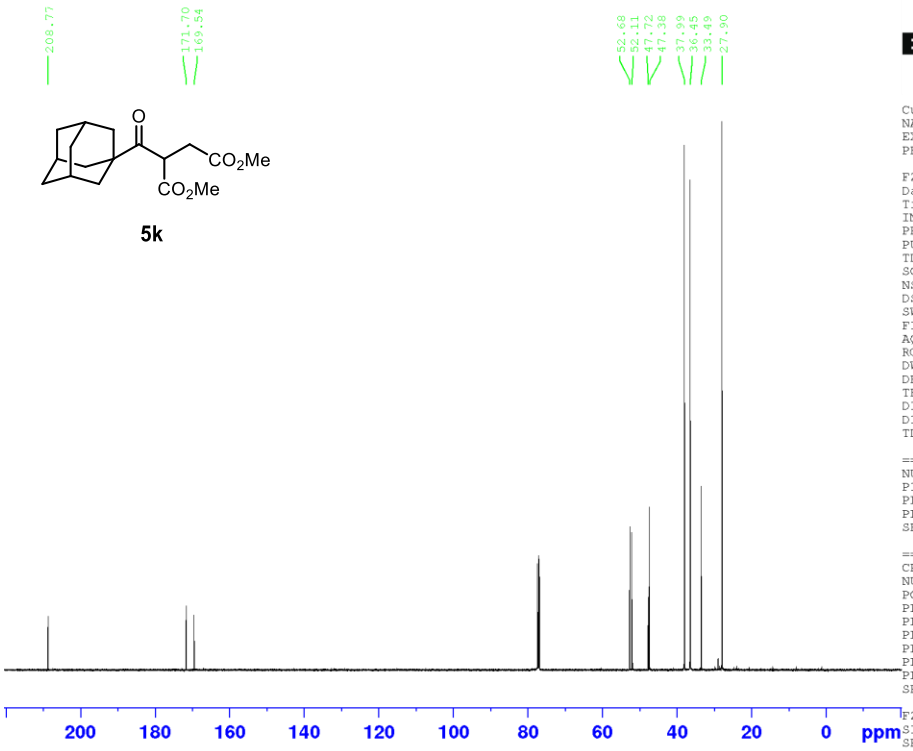
5k

```
Current Data Parameters
NAME      epb764-prod-1H
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190520
Time              18.09
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                 40.3
DW               83.200 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1        500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300131 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



5k

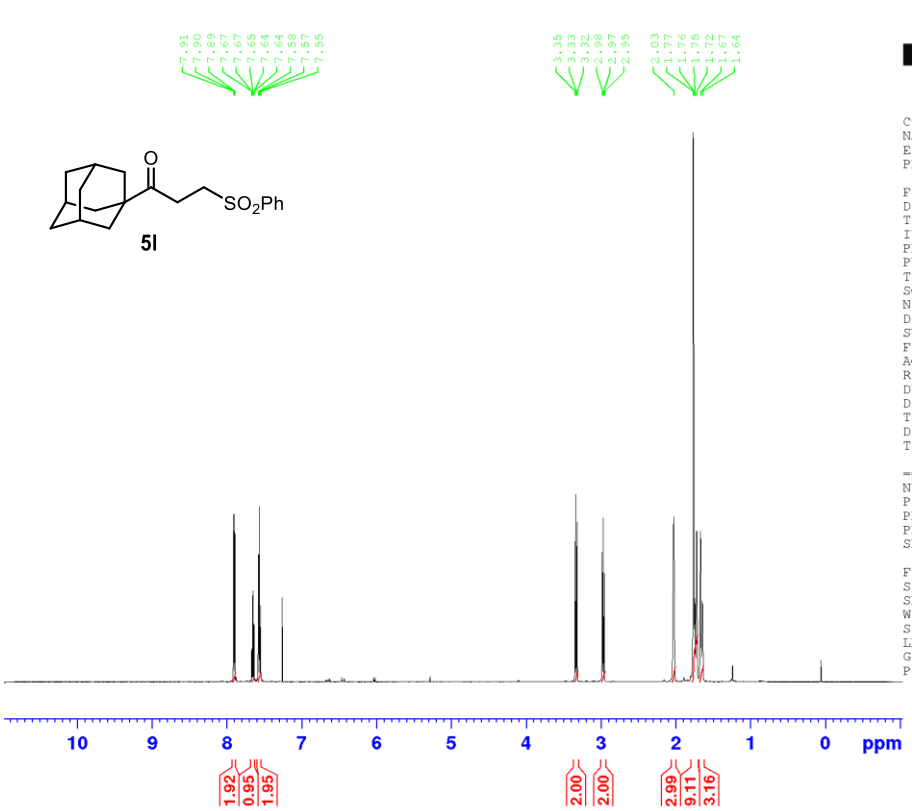
```
Current Data Parameters
NAME      epb764-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190521
Time              0.06
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                 9200
DW               16.500 usec
DE               10.00 usec
TE               298.2 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1        125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577777 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



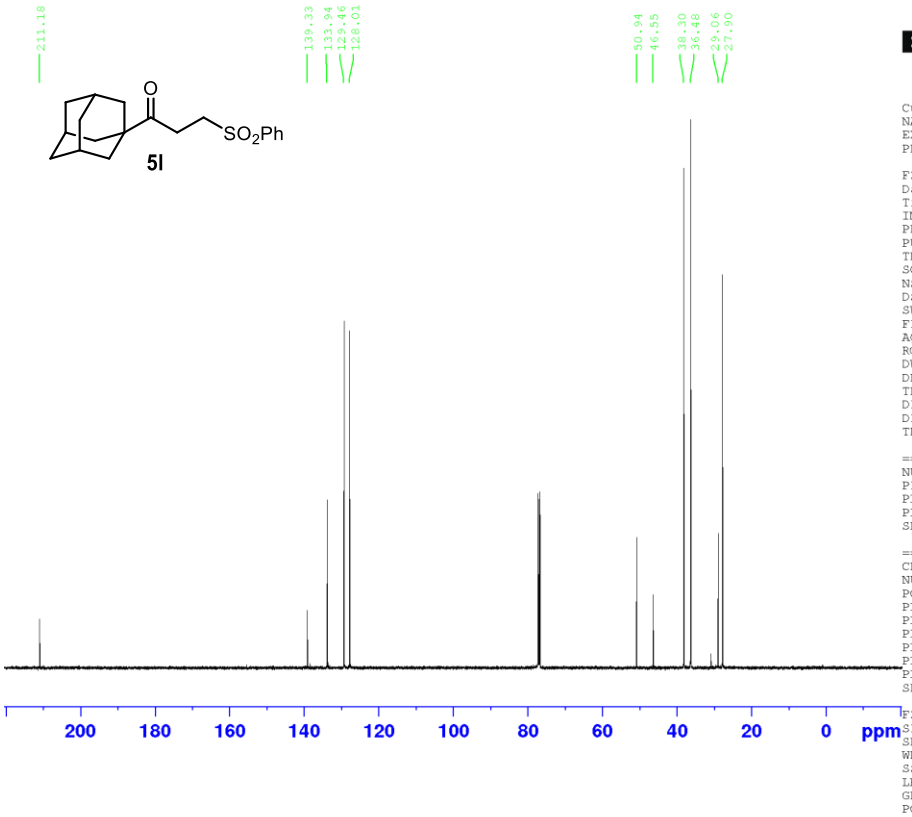
BRUKER

```
Current Data Parameters
NAME         epb783-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              11.04
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                  57
DW               83.200 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1                1H
P1               12.50 usec
PL1        0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF         500.1300134 MHz
WDW                  no
SSB        0
LB         0 Hz
GB         0
PC                 1.00
```



BRUKER

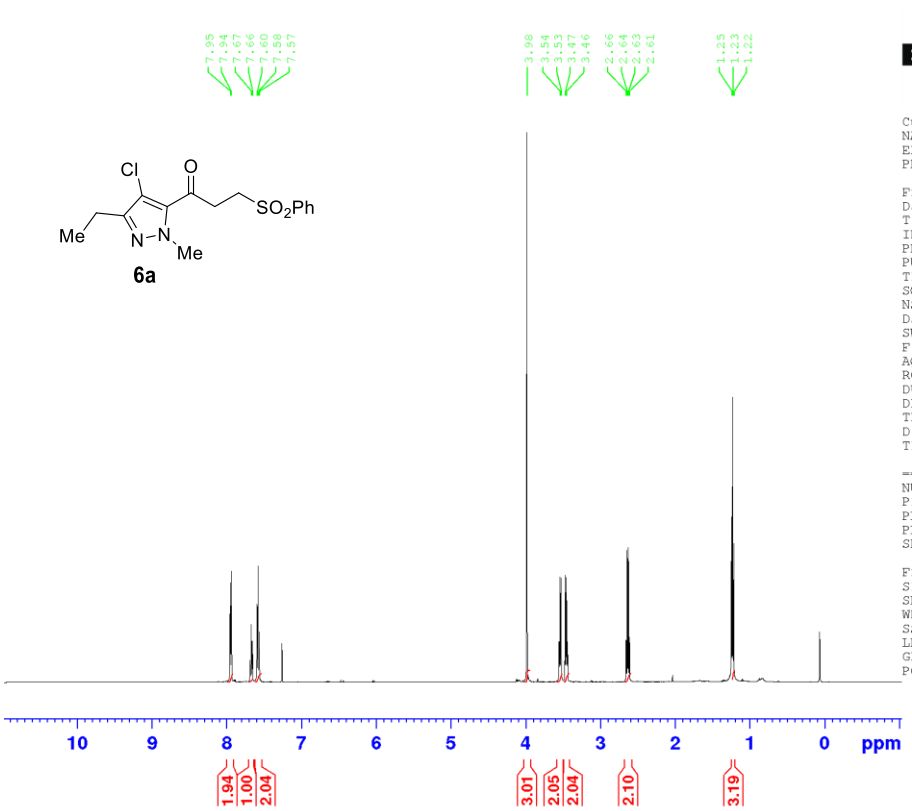
```
Current Data Parameters
NAME      epb783-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              23.40
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 512
DS                   4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                14600
DW               16.500 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                  1

======== CHANNEL f1 ========
NUC1               13C
P1                8.60 usec
PL1        0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2        0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF         125.7577776 MHz
WDW                  EM
SSB        0
LB                1.00 Hz
GB         0
PC                 1.40
```

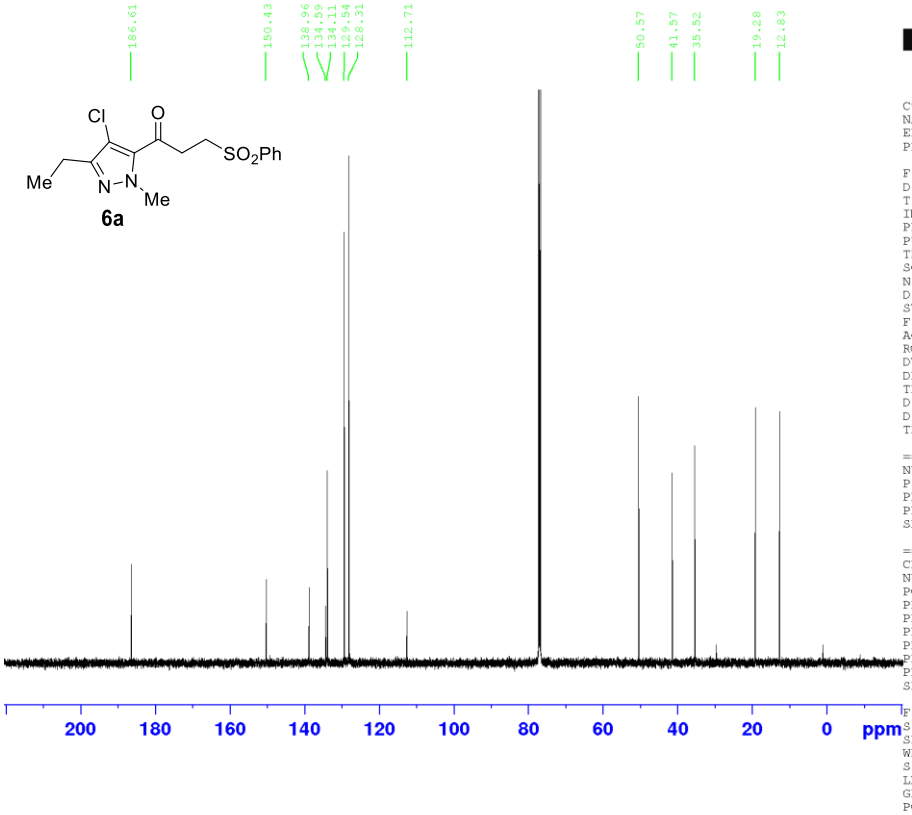



```
Current Data Parameters
NAME          epb989-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190609
Time               17.49
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              2.7262976 sec
RG                   181
DW                83.200 usec
DE                10.00 usec
TE                300.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                12.50 usec
PL1        0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF          500.1300133 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



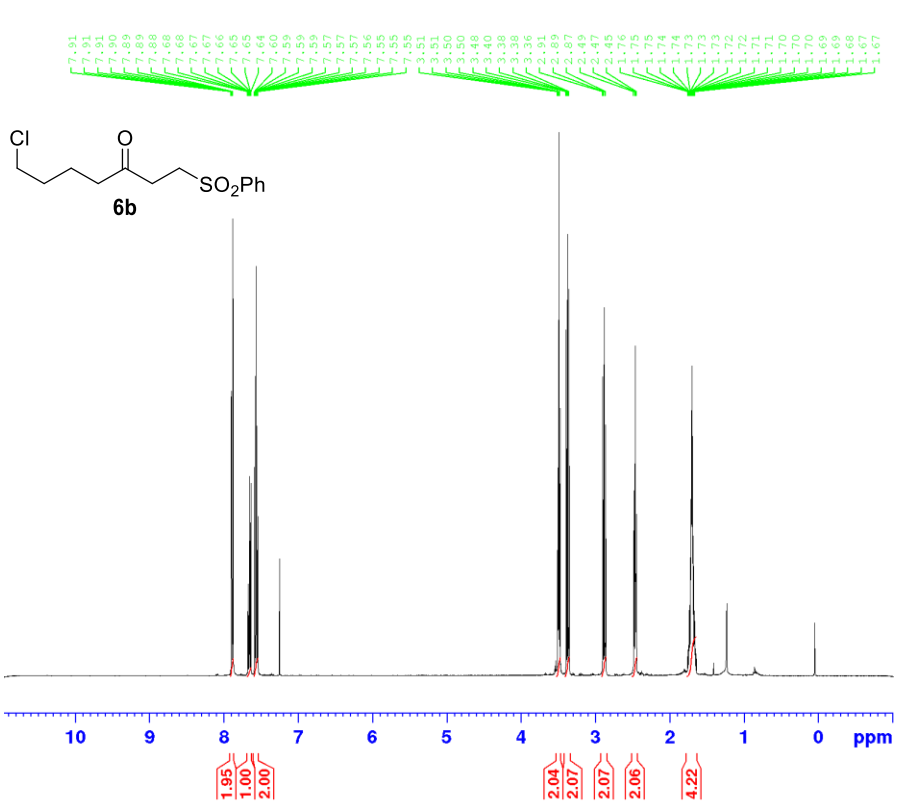

```
Current Data Parameters
NAME      epb989-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190609
Time               18.08
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            30303.031 Hz
FIDRES          0.462388 Hz
AQ              1.0813440 sec
RG                 13000
DW                16.500 usec
DE                10.00 usec
TE                300.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                8.60 usec
PL1        0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2        0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577733 MHz
WDW                   EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

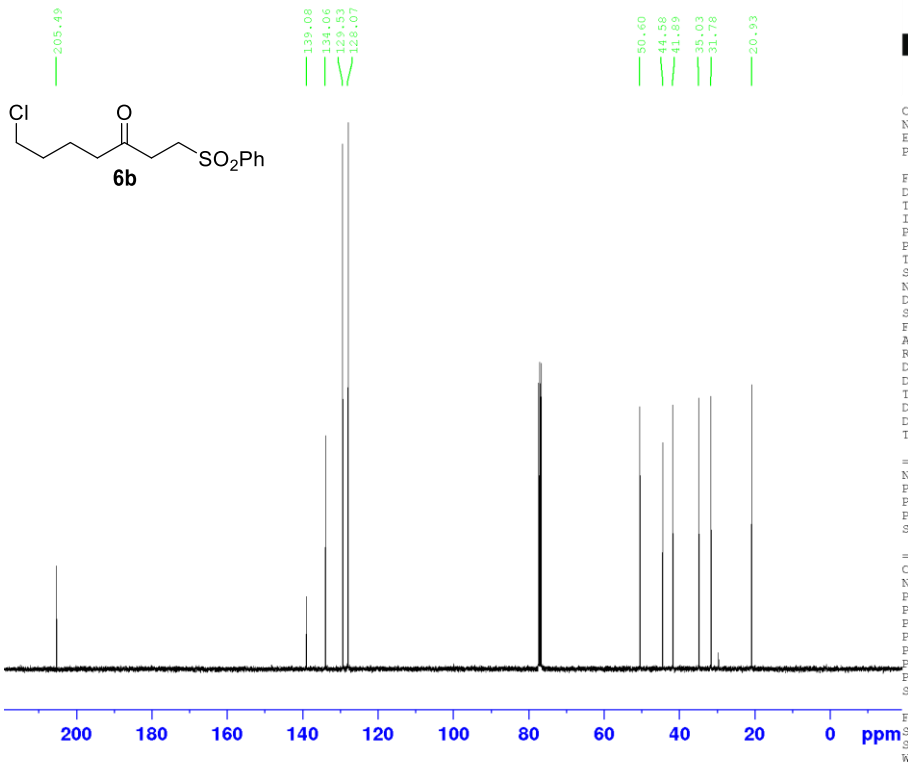



```
Current Data Parameters
NAME          epb857-prod
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190423
Time               9.05
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                  114
DW              104.400 usec
DE                6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300098 MHz
WDW                   no
SSB       0
LB        0 Hz
GB        0
PC                 1.00
```



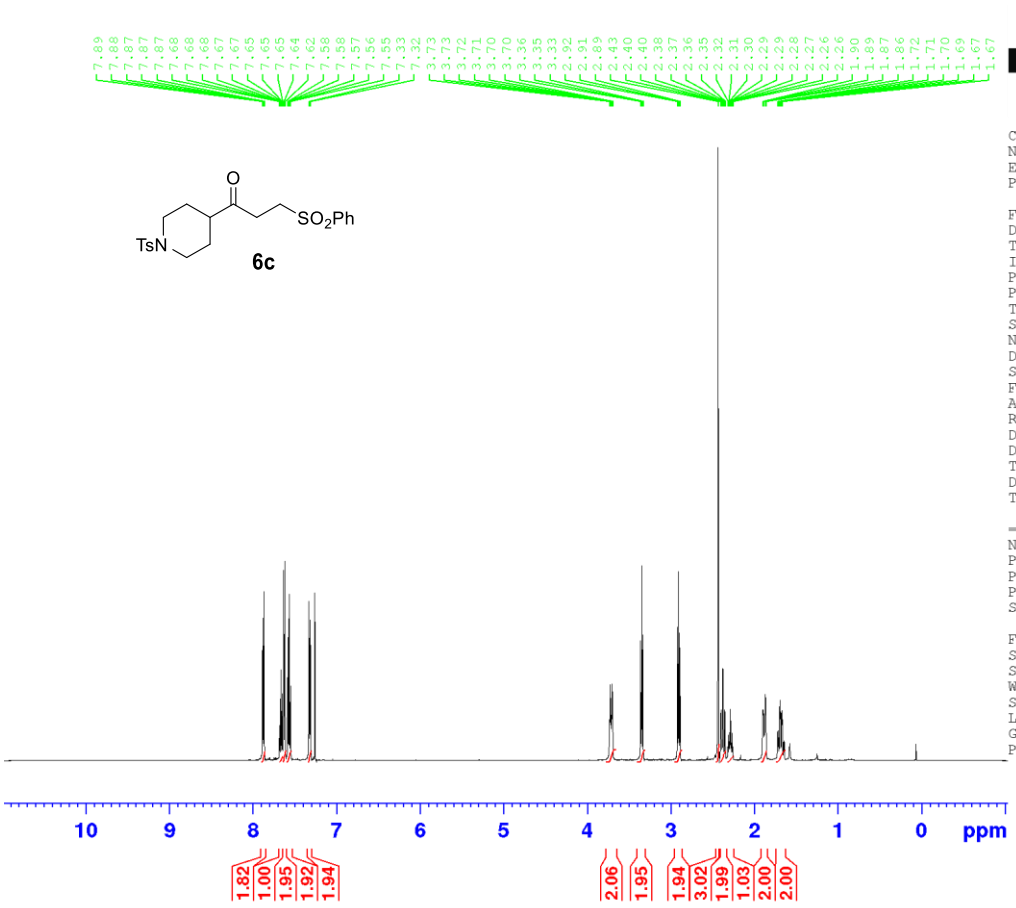

```
Current Data Parameters
NAME       epb857-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190423
Time              10.18
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ            1.3664256 sec
RG                26008
DW              20.850 usec
DE                10.00 usec
TE                298.2 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1               13C
P1                10.00 usec
PL1               -3.00 dB
PL1W        75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127591 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



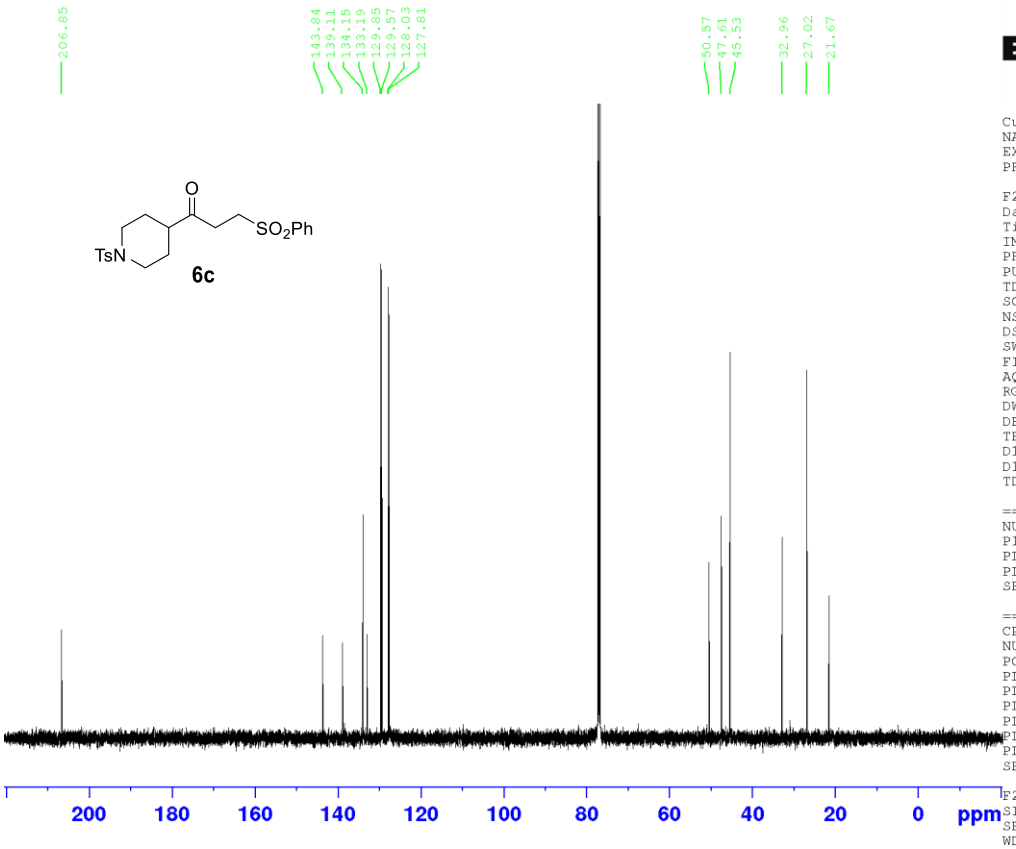
BRUKER

```
Current Data Parameters
NAME         epb823-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190315
Time              18.50
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES          0.183399 Hz
AQ             2.7262976 sec
RG                  228
DW               83.200 usec
DE               10.00 usec
TE                300.0 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                12.50 usec
PL1       0 dB
PL1W       13.68978119 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF          500.1300134 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



BRUKER

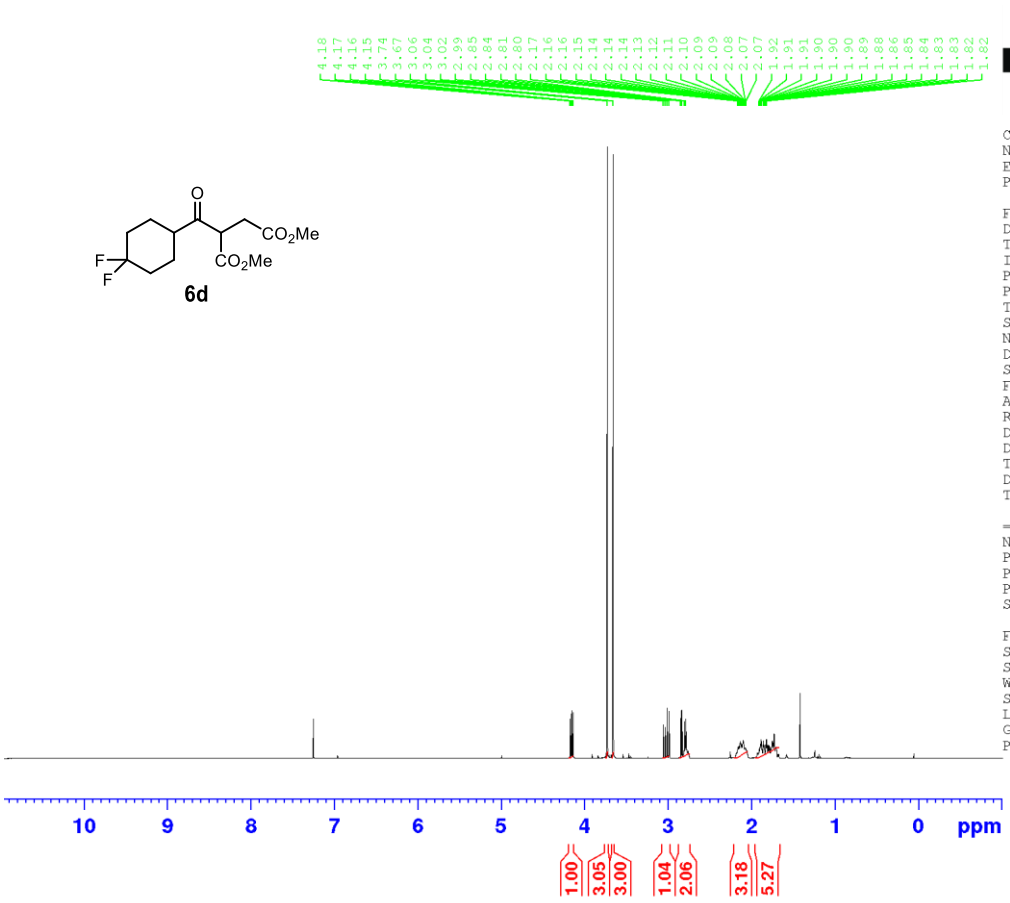
```
Current Data Parameters
NAME      epb823-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190316
Time              16.42
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  512
DS                    4
SWH           30303.031 Hz
FIDRES          0.462388 Hz
AQ             1.0813440 sec
RG                13000
DW               16.500 usec
DE               10.00 usec
TE                300.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                8.60 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2       0 dB
PL12              16.12 dB
PL13              16.12 dB
PL2W       13.68978119 W
PL12W       0.33450022 W
PL13W       0.33450022 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577733 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

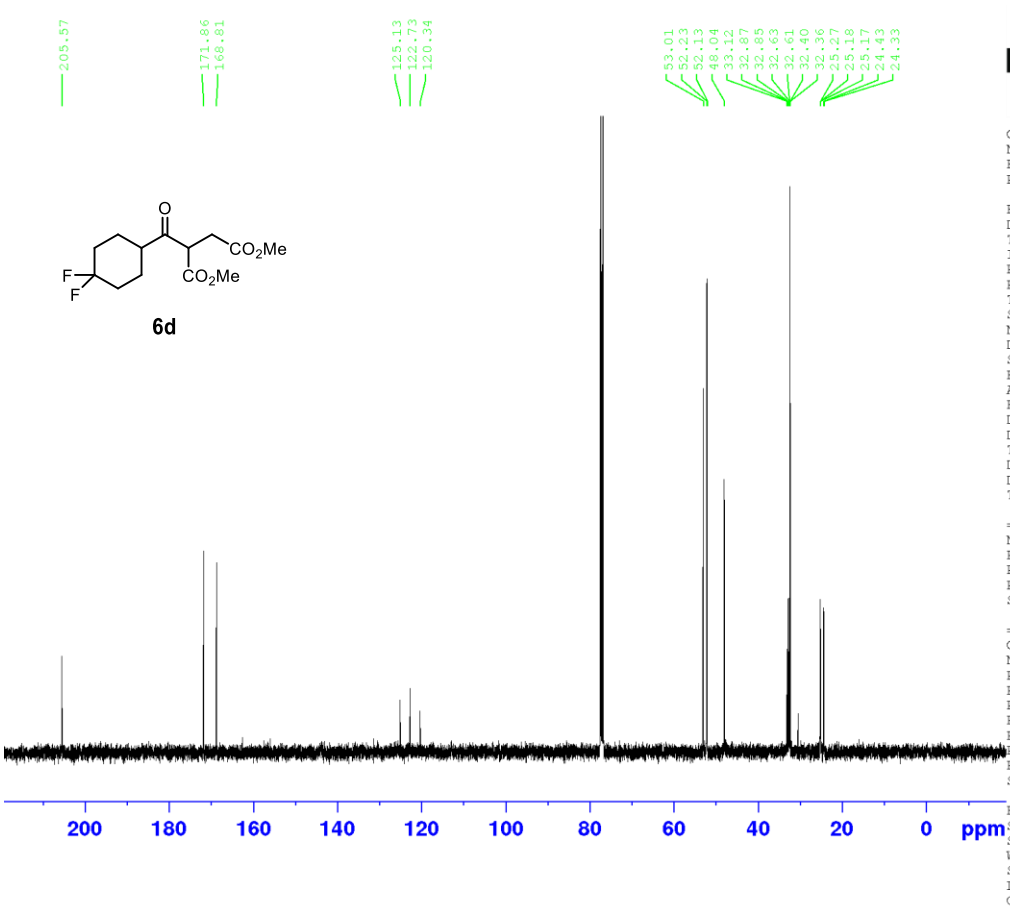



```
Current Data Parameters
NAME                 epb784-f1
EXPNO                       10
PROCNO                       1

F2 - Acquisition Parameters
Date_               20190307
Time                   17.56
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    32768
SOLVENT                CDCl3
NS                         8
DS                         2
SWH                 4789.272 Hz
FIDRES                0.146157 Hz
AQ                  3.4209793 sec
RG                       128
DW                   104.400 usec
DE                     6.00 usec
TE                     298.1 K
D1                  1.00000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                        1H
P1                       14.50 usec
PL1                      -2.00 dB
PL1W                23.88643074 W
SFO1                400.1320007 MHz

F2 - Processing parameters
SI                       16384
SF                  400.1300096 MHz
WDW                         no
SSB                  0
LB                   0 Hz
GB                   0
PC                        1.00
```



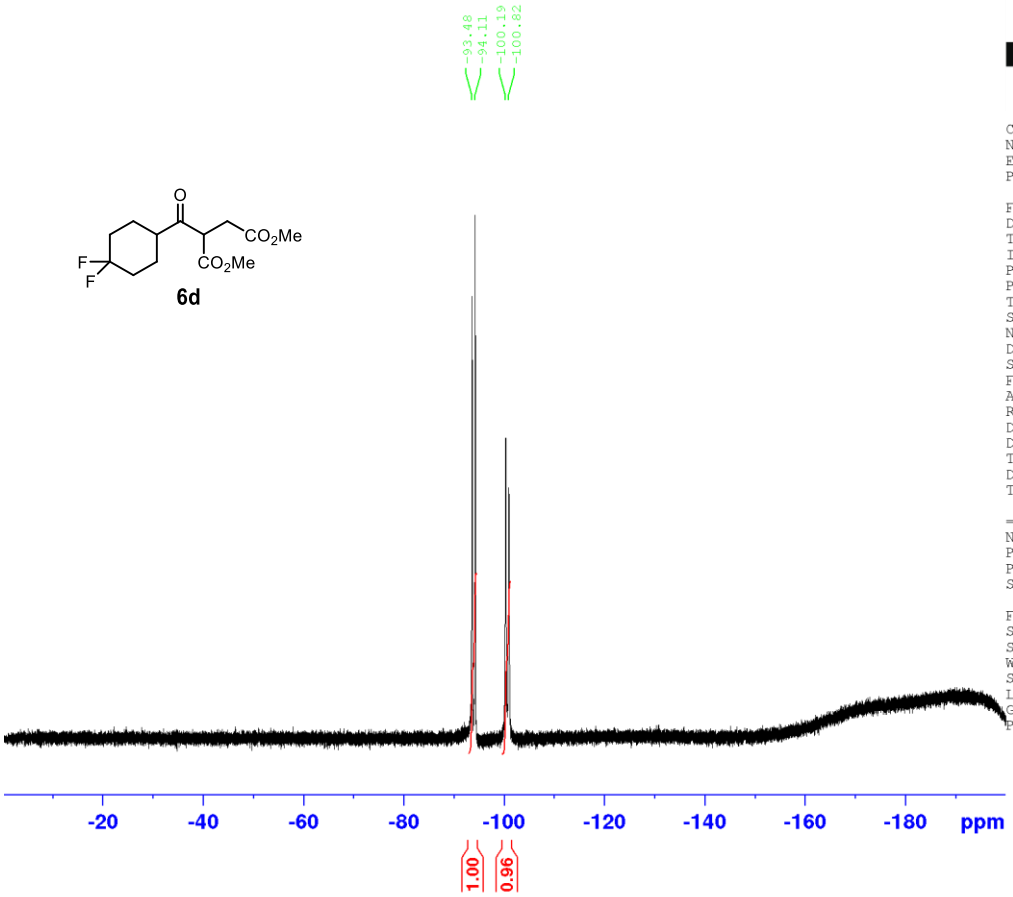

```
Current Data Parameters
NAME              epb784-f1-13C
EXPNO                       10
PROCNO                       1

F2 - Acquisition Parameters
Date_               20190307
Time                   21.59
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG              zgpg30
TD                    65536
SOLVENT                CDCl3
NS                       512
DS                         4
SWH                23980.814 Hz
FIDRES                0.365918 Hz
AQ                  1.3664256 sec
RG                       26008
DW                   20.850 usec
DE                     10.00 usec
TE                     298.0 K
D1                  1.00000000 sec
D11                 0.03000000 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                       10.00 usec
PL1                      -3.00 dB
PL1W                75.17808533 W
SFO1                100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2                waltz16
NUC2                        1H
PCPD2                    80.00 usec
PL2                      -2.00 dB
PL12                     12.83 dB
PL13                     12.83 dB
PL2W                23.88643074 W
PL12W                0.78550917 W
PL13W                0.78550917 W
SFO2                400.1316005 MHz

F2 - Processing parameters
SI                       32768
SF                  100.6127551 MHz
WDW                         EM
SSB                  0
LB                        1.00 Hz
GB                   0
PC                        1.40
```

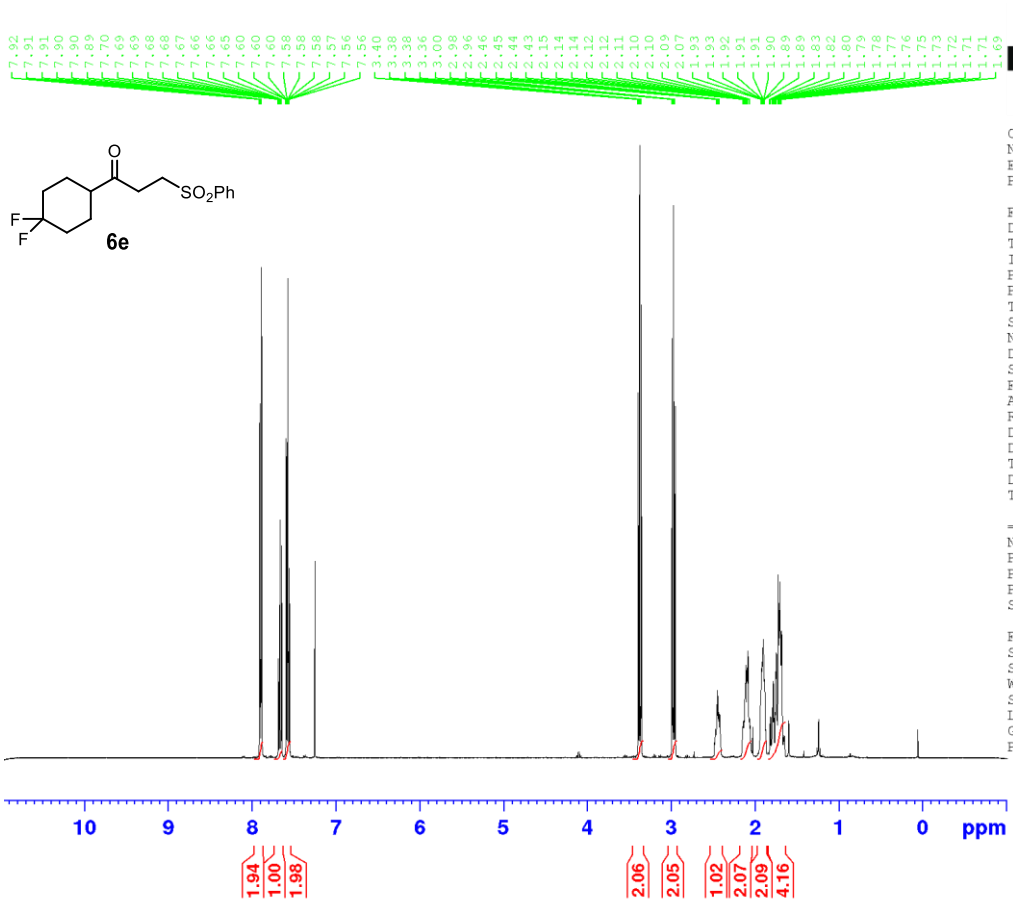



```
Current Data Parameters
NAME       epb784-f1-19F
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190307
Time              17.59
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD              131072
SOLVENT           CDCl3
NS                    8
DS                    2
SWH           75187.969 Hz
FIDRES         0.573639 Hz
AQ             0.8716288 sec
RG                 2048
DW                6.650 usec
DE                7.14 usec
TE                297.9 K
D1           5.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 19F
P1                12.00 usec
PL1               -3.00 dB
SFO1        376.4607040 MHz

F2 - Processing parameters
SI                65536
SF          376.4984036 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.00
```

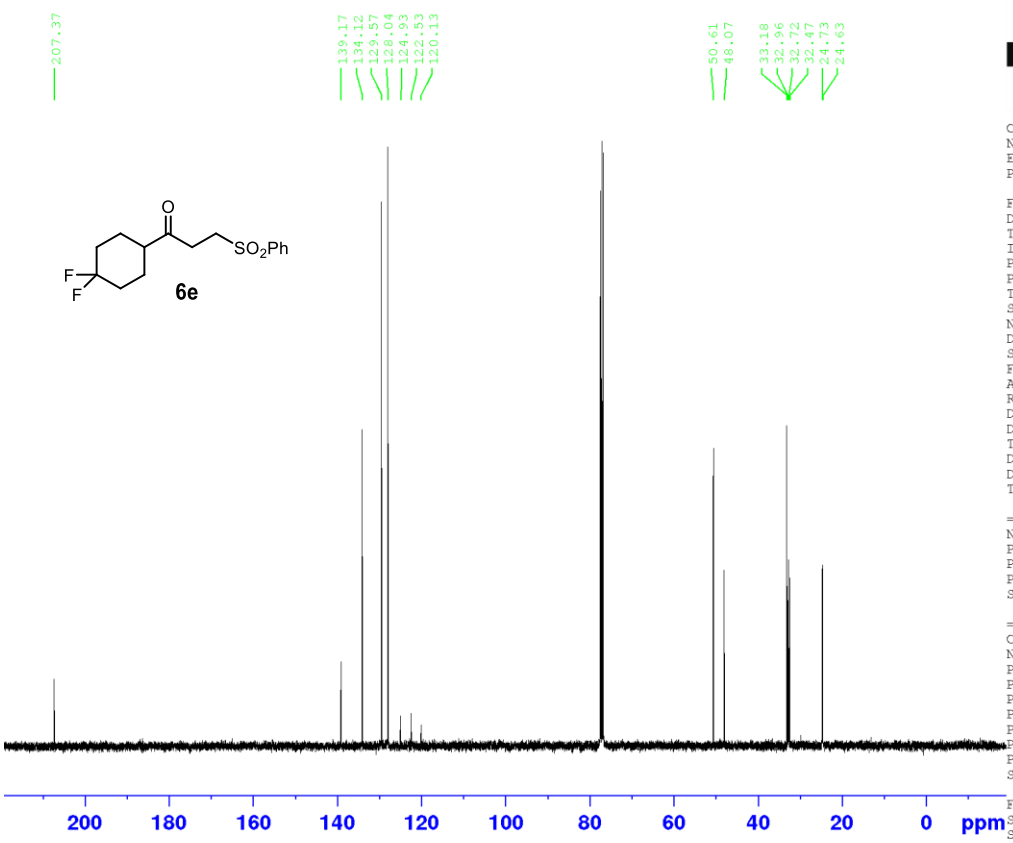



```
Current Data Parameters
NAME           epb795-f1
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190307
Time              18.04
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES         0.146157 Hz
AQ             3.4209793 sec
RG                  128
DW                104.400 usec
DE                6.00 usec
TE                298.1 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300098 MHz
WDW                  no
SSB       0
LB        0 Hz
GB        0
PC                1.00
```



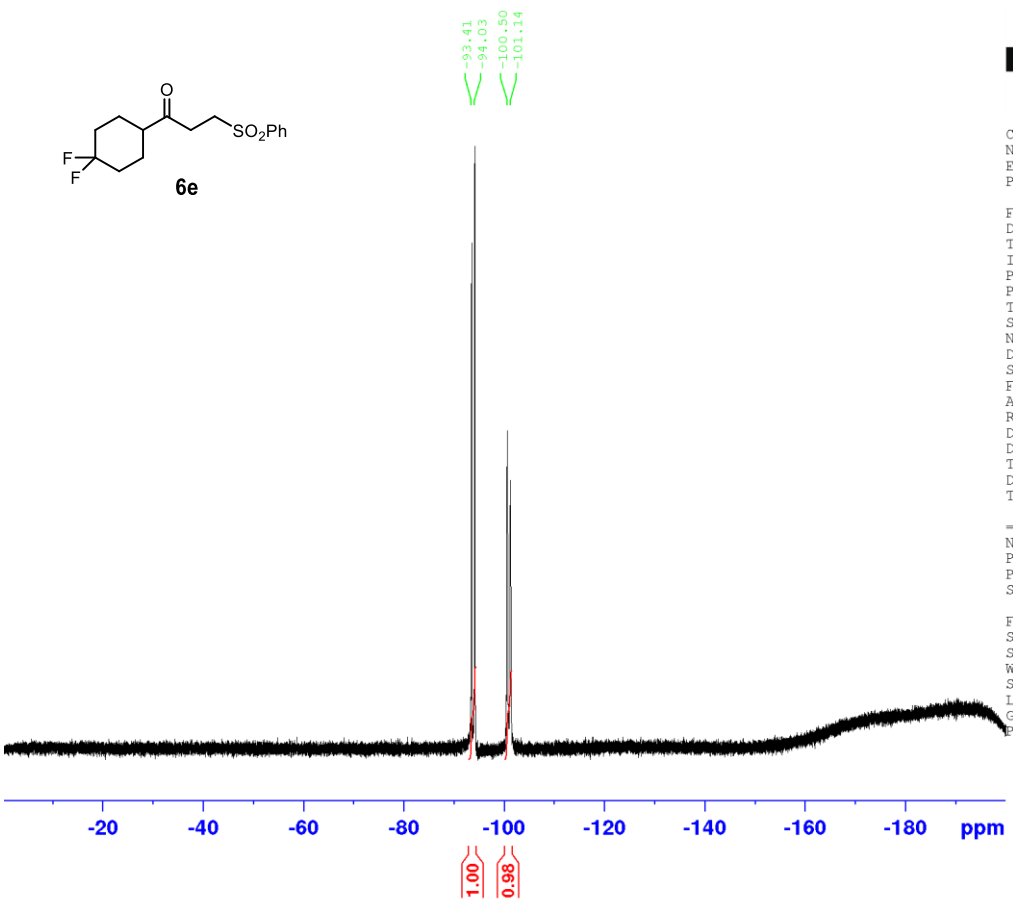

```
Current Data Parameters
NAME       epb795-f1-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190307
Time               22.30
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD              65536
SOLVENT           CDC13
NS                  512
DS                    4
SWH           23980.814 Hz
FIDRES        0.365918 Hz
AQ            1.3664256 sec
RG                32768
DW               20.850 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                13C
P1                10.00 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2            80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF          100.6127570 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

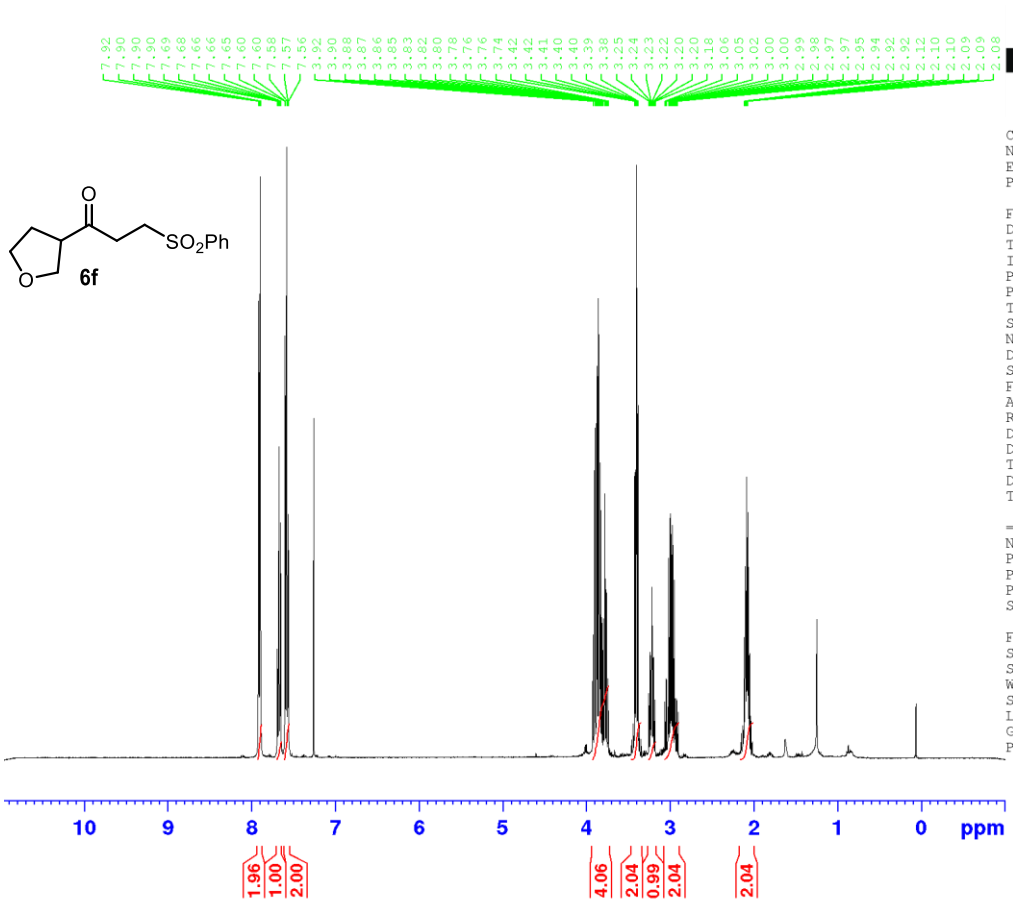



```
Current Data Parameters
NAME       epb795-f1-19F
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190307
Time               18.05
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD             131072
SOLVENT           CDC13
NS                    8
DS                    2
SWH           75187.969 Hz
FIDRES        0.573639 Hz
AQ            0.8716288 sec
RG                 2048
DW                6.650 usec
DE                7.14 usec
TE                297.9 K
D1            5.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                19F
P1                12.00 usec
PL1               -3.00 dB
SFO1        376.4607040 MHz

F2 - Processing parameters
SI                 65536
SF          376.4984036 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.00
```



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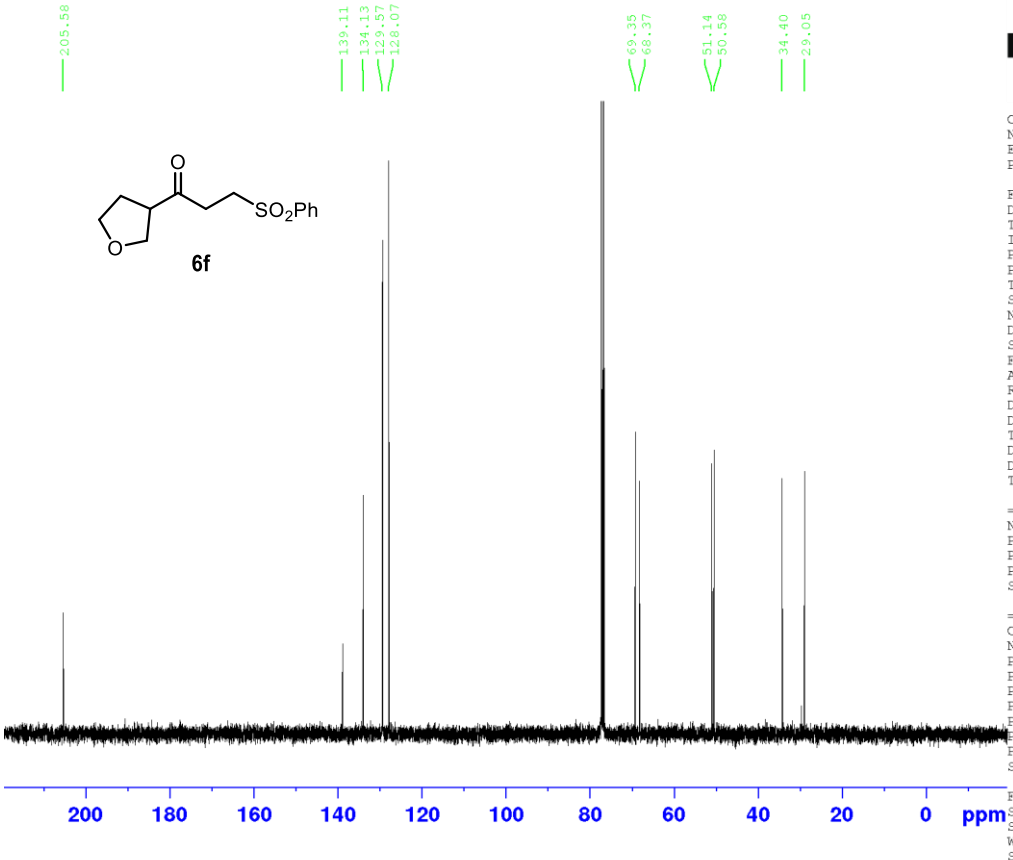
```
Current Data Parameters
NAME         epb807-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190417
Time               9.32
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                  181
DW              104.400 usec
DE                6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300096 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



BRUKER

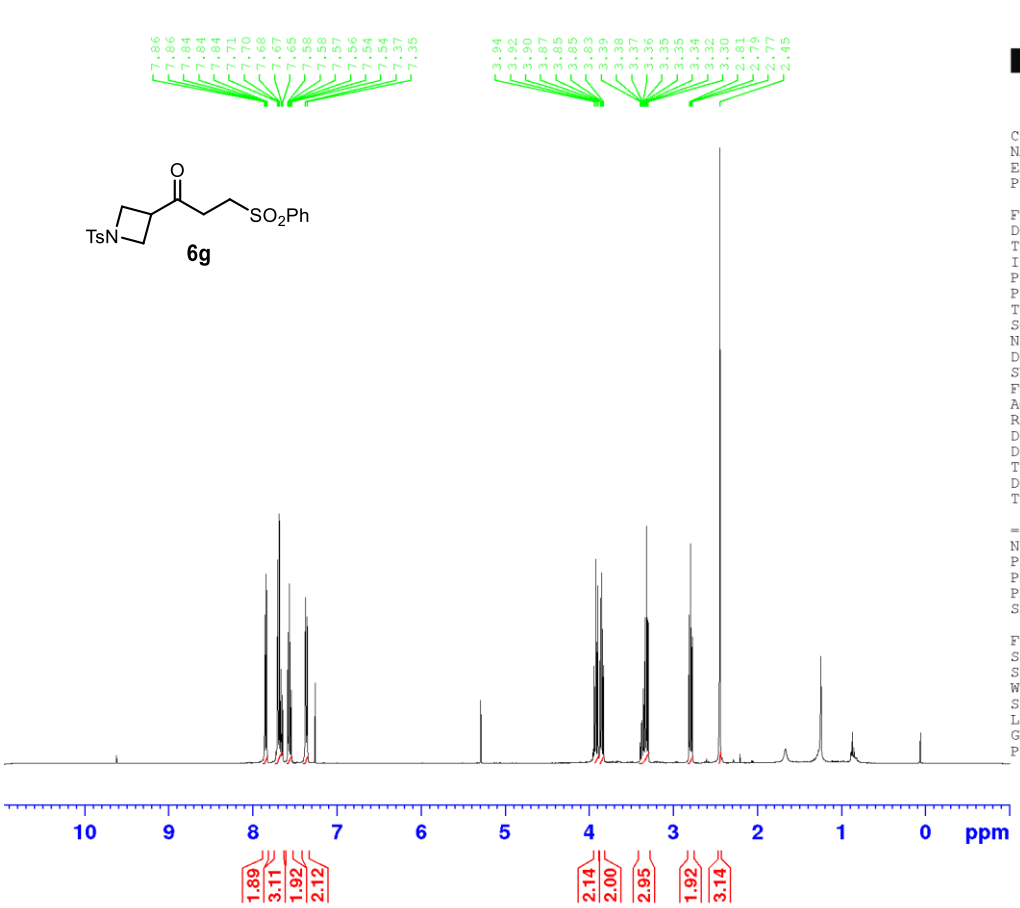
```
Current Data Parameters
NAME      epb807-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190417
Time              16.38
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  188
DS                    4
SWH           24038.461 Hz
FIDRES        0.366798 Hz
AQ            1.3631488 sec
RG                32768
DW              20.800 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1         100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2               -3.00 dB
PL12               13.05 dB
PL13               13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2         400.1616006 MHz

F2 - Processing parameters
SI                32768
SF          100.6203004 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



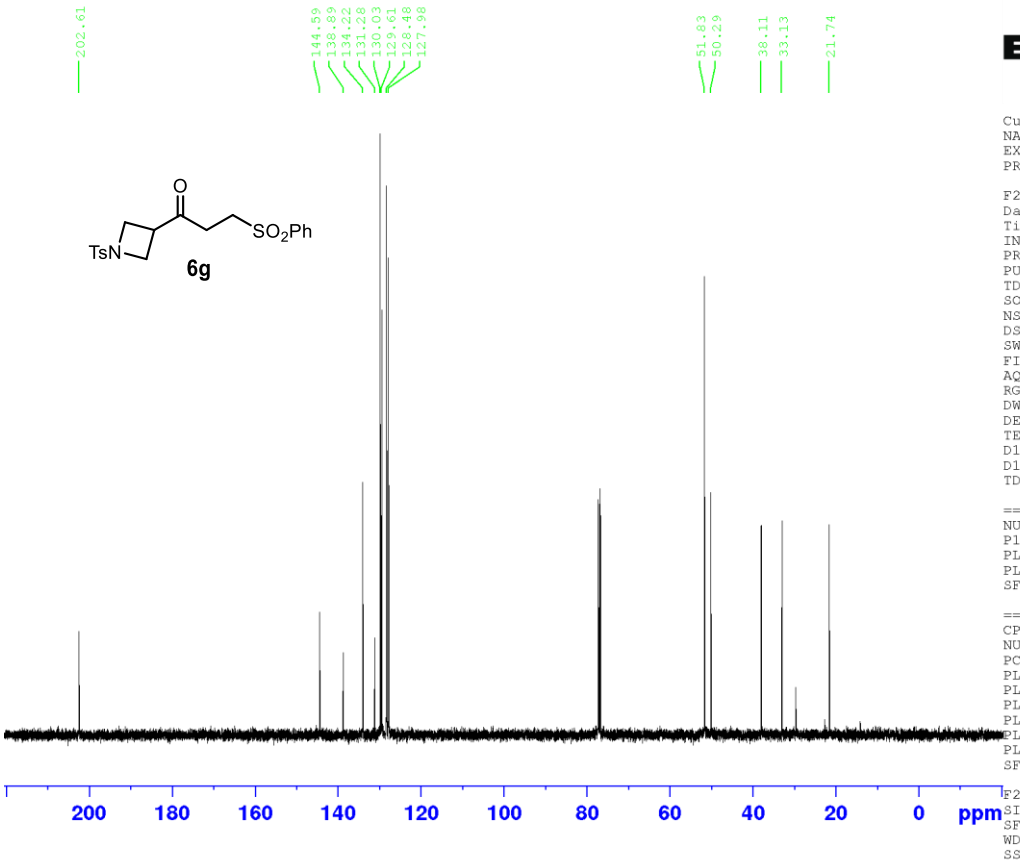
BRUKER

```
Current Data Parameters
NAME         epb933-prod
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190425
Time               9.44
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES          0.146157 Hz
AQ             3.4209793 sec
RG                  128
DW              104.400 usec
DE                6.00 usec
TE               298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1       400.1320007 MHz

F2 - Processing parameters
SI                16384
SF         400.1300097 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



BRUKER

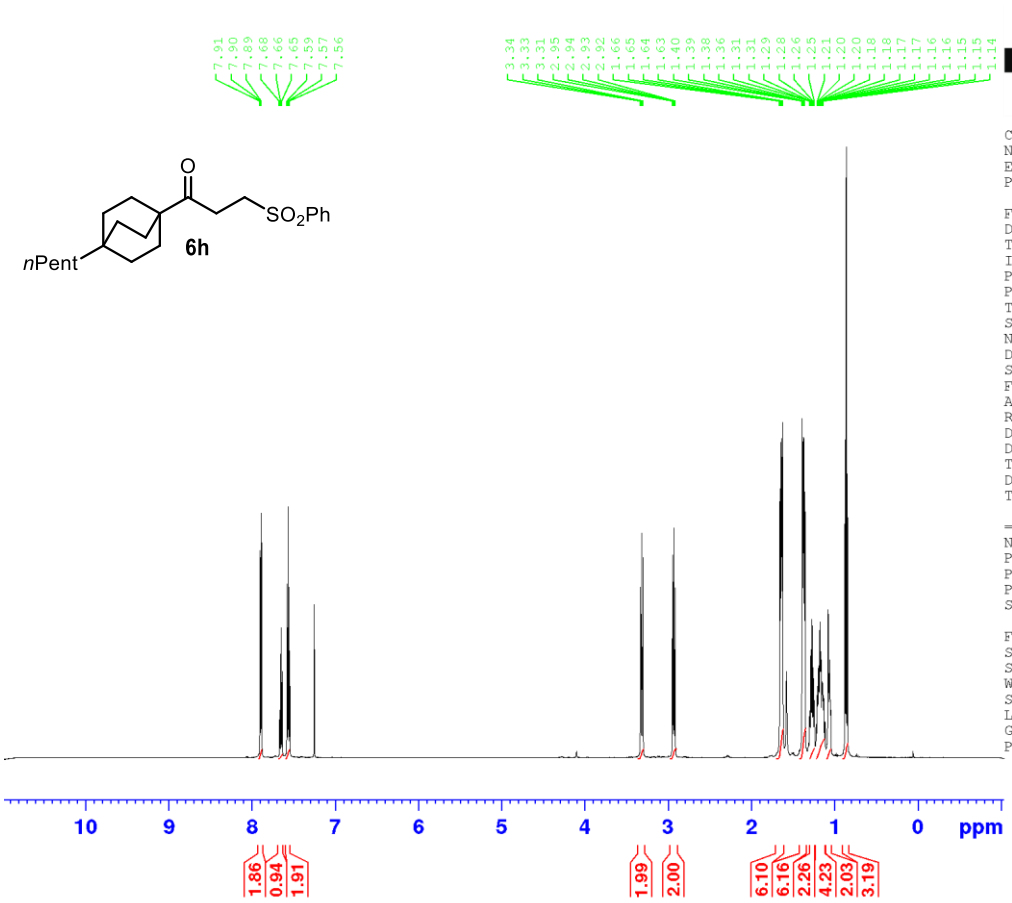
```
Current Data Parameters
NAME      epb933-prod-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190425
Time               15.41
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  168
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ             1.0813440 sec
RG                10300
DW              16.500 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                13C
P1                16.20 usec
PL1               -0.50 dB
PL1W        60.31339645 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -1.00 dB
PL12              20.80 dB
PL13              20.80 dB
PL2W        17.23441315 W
PL12W        0.11386666 W
PL13W        0.11386666 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                32768
SF         125.7577771 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



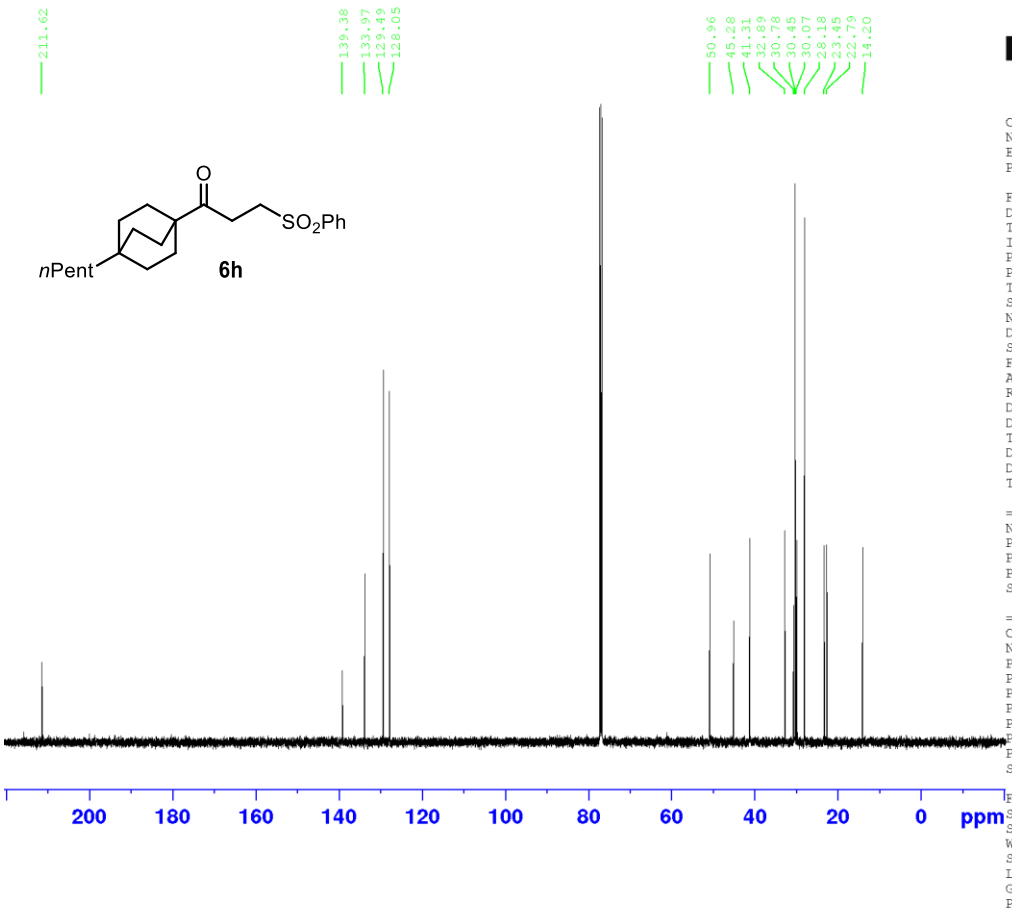
BRUKER

```
Current Data Parameters
NAME       epb856-prod1H
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190805
Time               19.49
INSTRUM            spect
PROBHD   5 mm PATBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                    32
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              2.7262976 sec
RG                   228
DW                83.200 usec
DE                10.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.00 usec
PL1                -4.08 dB
PL1W         35.02648163 W
SFO1         500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF           500.1300137 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



BRUKER

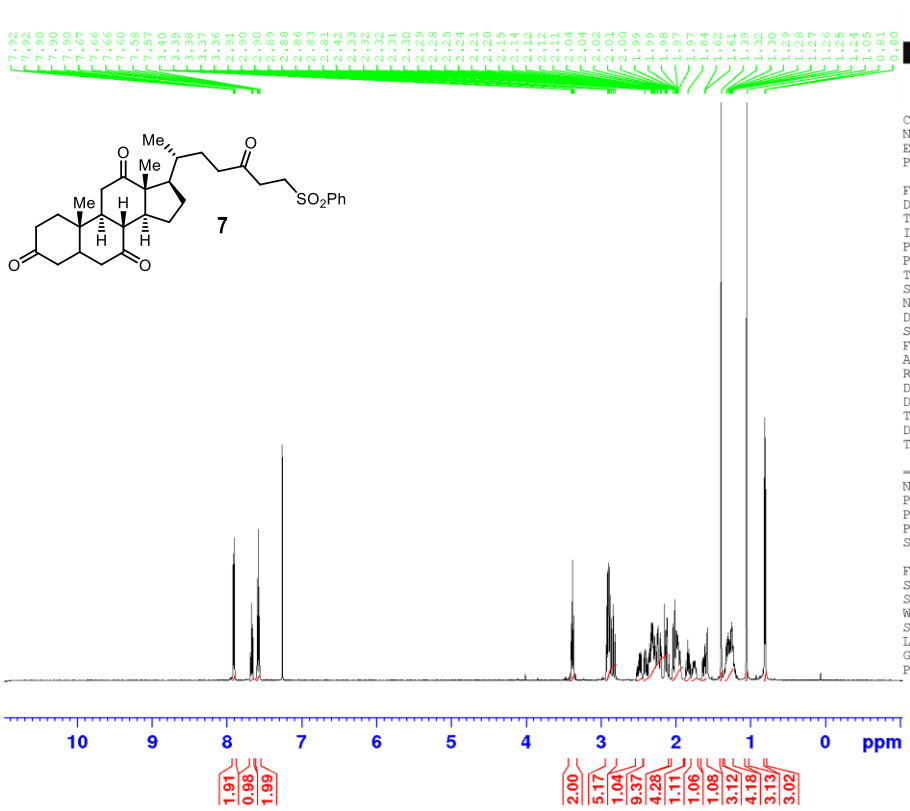
```
Current Data Parameters
NAME       epb856-prod-13C
EXPNO                 10
PROCNO                 1

F2 - Acquisition Parameters
Date_           20190806
Time                5.33
INSTRUM            spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                 65536
SOLVENT            CDCl3
NS                   512
DS                     4
SWH            30303.031 Hz
FIDRES          0.462388 Hz
AQ              1.0813440 sec
RG                  8200
DW                16.500 usec
DE                10.00 usec
TE                299.2 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1        0 dB
PL1W         53.75436783 W
SFO1         125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -4.08 dB
PL12               11.54 dB
PL13               11.54 dB
PL2W         35.02648163 W
PL12W         0.96027696 W
PL13W         0.96027696 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577723 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



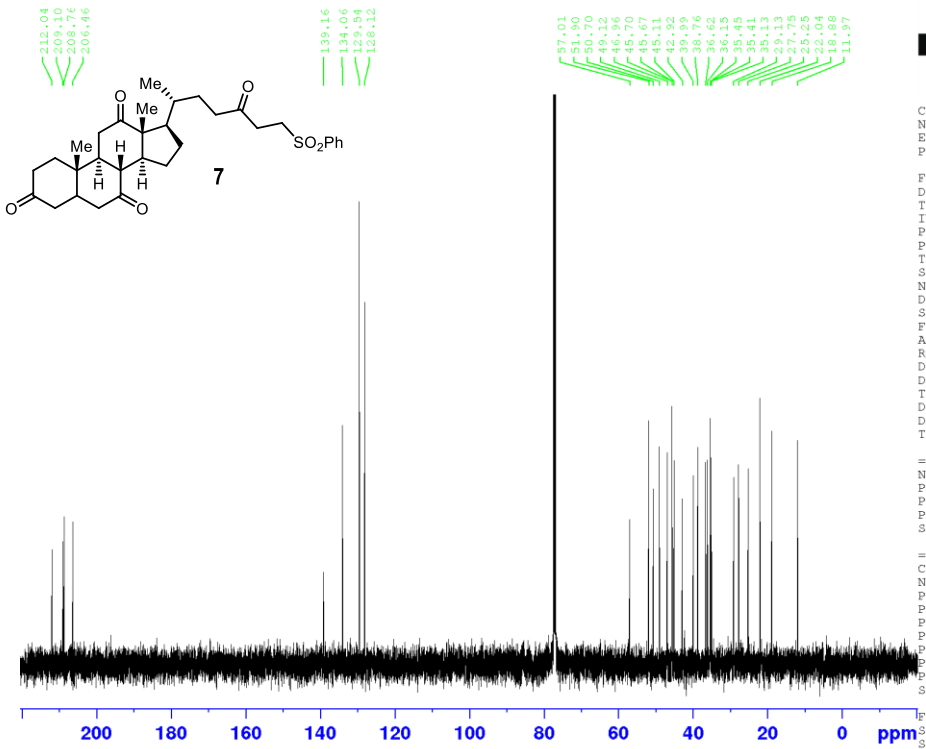
BRUKER

```
Current Data Parameters
NAME      epb965-2-prod-1H
EXPNO                   20
PROCNO                   1

F2 - Acquisition Parameters
Date_               20190611
Time                   19.43
INSTRUM                spect
PROBHD   5 mm PABBO BB-
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                        8
DS                        2
SWH                6009.615 Hz
FIDRES            0.183399 Hz
AQ                2.7262976 sec
RG                      256
DW                   83.200 usec
DE                   10.00 usec
TE                   298.0 K
D1              1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                     1H
P1                   12.50 usec
PL1          0 dB
PL1W          13.68978119 W
SFO1          500.1325007 MHz

F2 - Processing parameters
SI                    16384
SF             500.1300134 MHz
WDW                      EM
SSB          0
LB                    0.30 Hz
GB           0
PC                    1.00
```



BRUKER

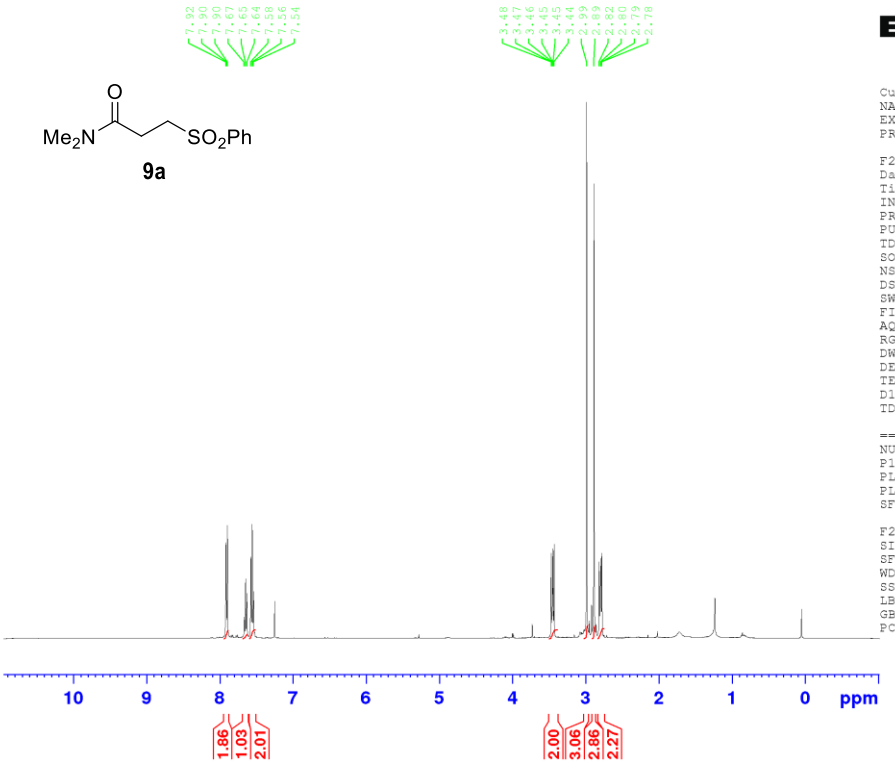
```
Current Data Parameters
NAME      epb965-2-prod-13C
EXPNO                   20
PROCNO                   1

F2 - Acquisition Parameters
Date_               20190612
Time                   8.30
INSTRUM                spect
PROBHD   5 mm PABBO BB-
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                      339
DS                        4
SWH               30303.031 Hz
FIDRES            0.462388 Hz
AQ                1.0813440 sec
RG                    13000
DW                   16.500 usec
DE                   10.00 usec
TE                   298.9 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                    13C
P1                    8.60 usec
PL1          0 dB
PL1W          53.75436783 W
SFO1         125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                     1H
PCPD2                80.00 usec
PL2          0 dB
PL12                 16.12 dB
PL13                 16.12 dB
PL2W          13.68978119 W
PL12W          0.33450022 W
PL13W          0.33450022 W
SFO2          500.1320005 MHz

F2 - Processing parameters
SI                    32768
SF             125.7577723 MHz
WDW                      EM
SSB          0
LB                    1.00 Hz
GB           0
PC                    1.40
```



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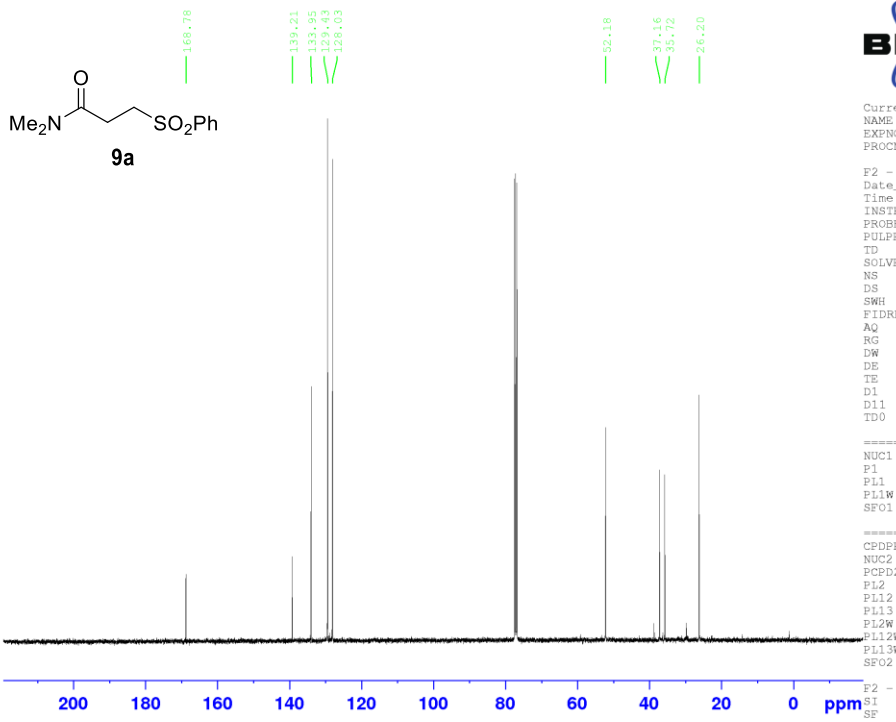
```
Current Data Parameters
NAME      DMZ-1-101Fr59-70_10
EXPNO                       2
PROCNO                      1

F2 - Acquisition Parameters
Date_              20190729
Time                  17.19
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                        8
DS                        2
SWH                4789.272 Hz
FIDRES            0.146157 Hz
AQ                3.4209793 sec
RG                      181
DW                  104.400 usec
DE                    6.00 usec
TE                  298.0 K
D1                1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                      1H
P1                    14.50 usec
PL1                   -2.00 dB
PL1W           23.88643074 W
SFO1           400.1320007 MHz

F2 - Processing parameters
SI                    16384
SF             400.1300110 MHz
WDW                      EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.00
```



BRUKER

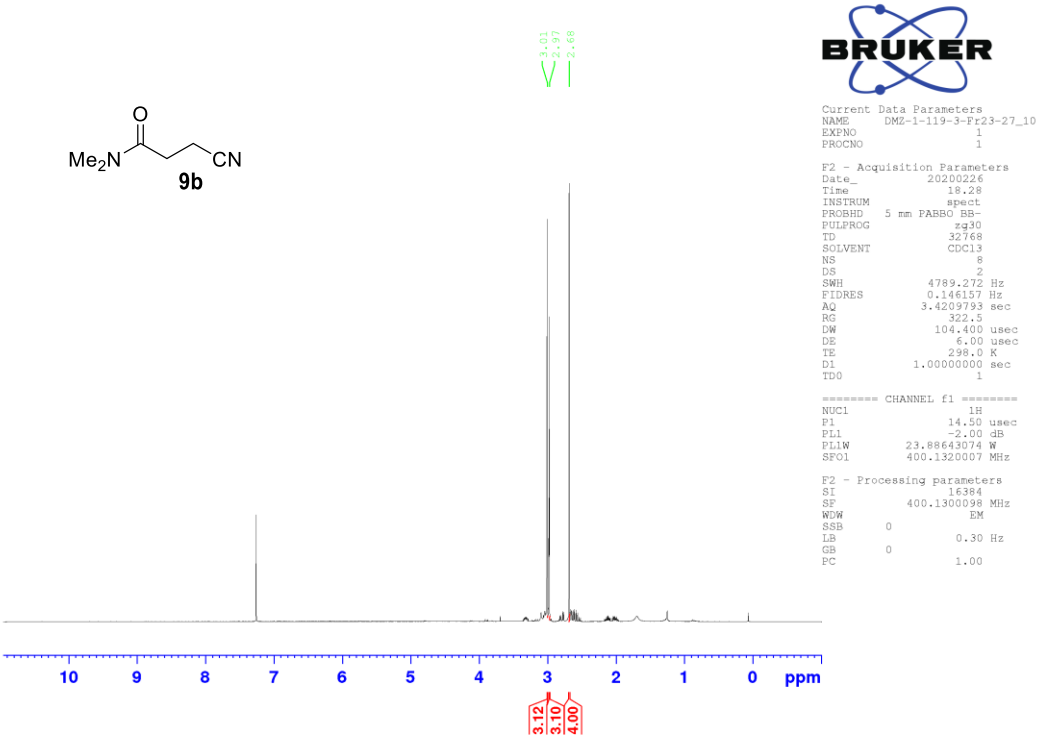
```
Current Data Parameters
NAME      DMZ-1-101Pr59-70_20
EXPNO                       1
PROCNO                      1

F2 - Acquisition Parameters
Date_              20190730
Time                  0.38
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG            zgpg30
TD                    65536
SOLVENT               CDCl3
NS                     1524
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                  23170.5
DW                  20.800 usec
DE                  10.00 usec
TE                  298.0 K
D1                1.00000000 sec
D11               0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                     13C
P1                    9.25 usec
PL1                  -3.00 dB
PL1W           75.17808533 W
SFO1           100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                     1H
PCPD2                80.00 usec
PL2                  -3.00 dB
PL12                 13.05 dB
PL13                 13.05 dB
PL2W           30.07123375 W
PL12W           0.74670875 W
PL13W           0.74670875 W
SFO2           400.1616006 MHz

F2 - Processing parameters
SI                    32768
SF             100.6203038 MHz
WDW                      EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```



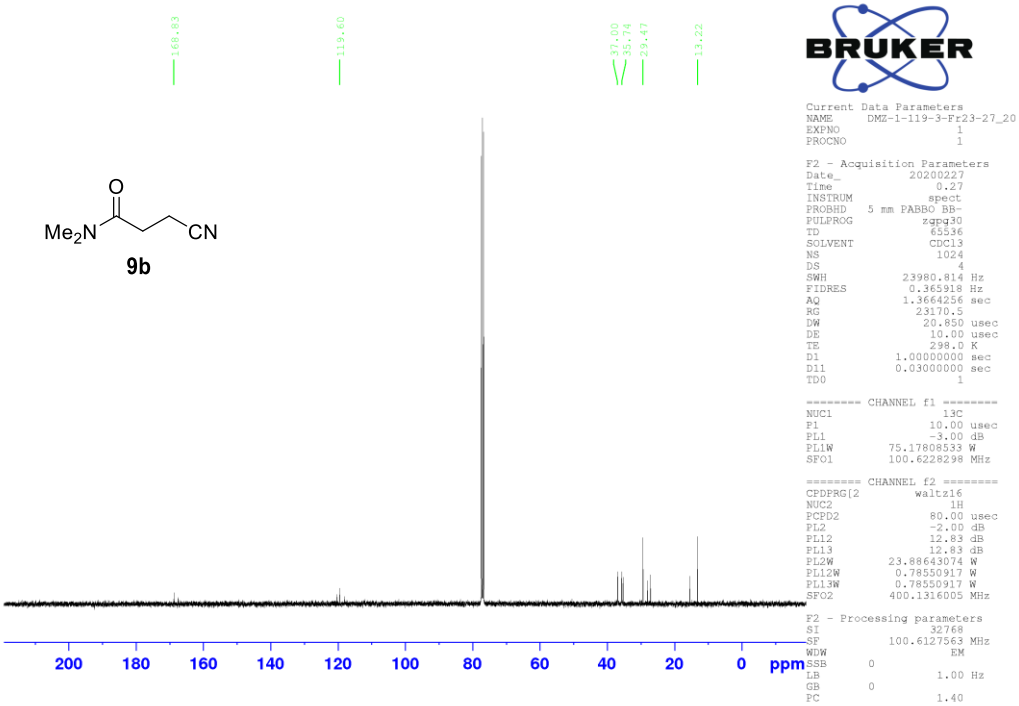
BRUKER

```
Current Data Parameters
NAME      DMZ-1-119-3-Fr23-27_10
EXPNO                1
PROCNO               1

F2 - Acquisition Parameters
Date_            20200226
Time               18.28
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                322.5
DW              104.400 usec
DE                6.00 usec
TE                298.0 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                14.50 usec
PL1               -2.00 dB
PL1W        23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300098 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



BRUKER

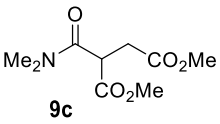
```
Current Data Parameters
NAME      DMZ-1-119-3-Fr23-27_20
EXPNO                1
PROCNO               1

F2 - Acquisition Parameters
Date_            20200227
Time               0.27
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1024
DS                    4
SWH           23980.814 Hz
FIDRES        0.365918 Hz
AQ            1.3664256 sec
RG                23170.5
DW              20.850 usec
DE                10.00 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

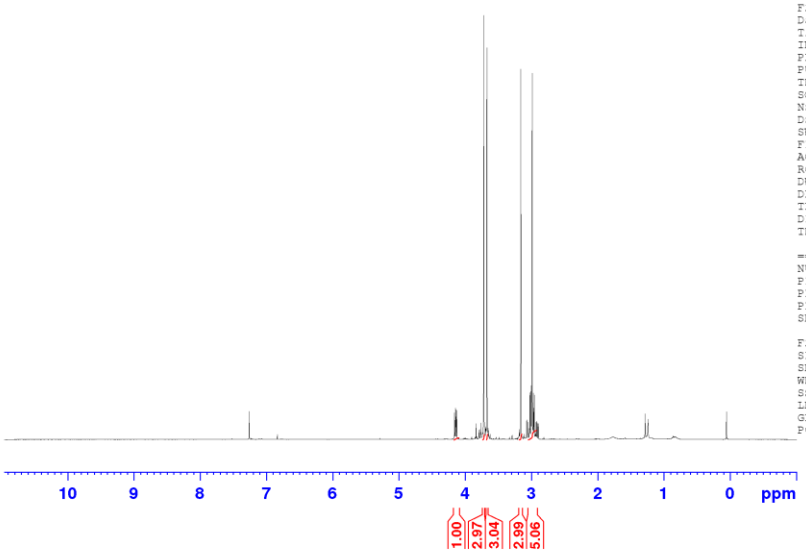
======== CHANNEL f1 ========
NUC1                13C
P1                10.00 usec
PL1               -3.00 dB
PL1W        75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                32768
SF          100.6127563 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```



9c

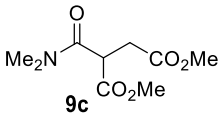


```
Current Data Parameters
NAME      DMZ-1-117Clean_10
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190909
Time                  17.44
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                        8
DS                        2
SWH                4789.272 Hz
FIDRES            0.146157 Hz
AQ                3.4209793 sec
RG                    161.3
DW                  104.400 usec
DE                    6.00 usec
TE                   298.0 K
D1                1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                     1H
P1                    14.50 usec
PL1                   -2.00 dB
PL1W           23.88643074 W
SFO1           400.1320007 MHz

F2 - Processing parameters
SI                    16384
SF             400.1300097 MHz
WDW                      EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.00
```



9c

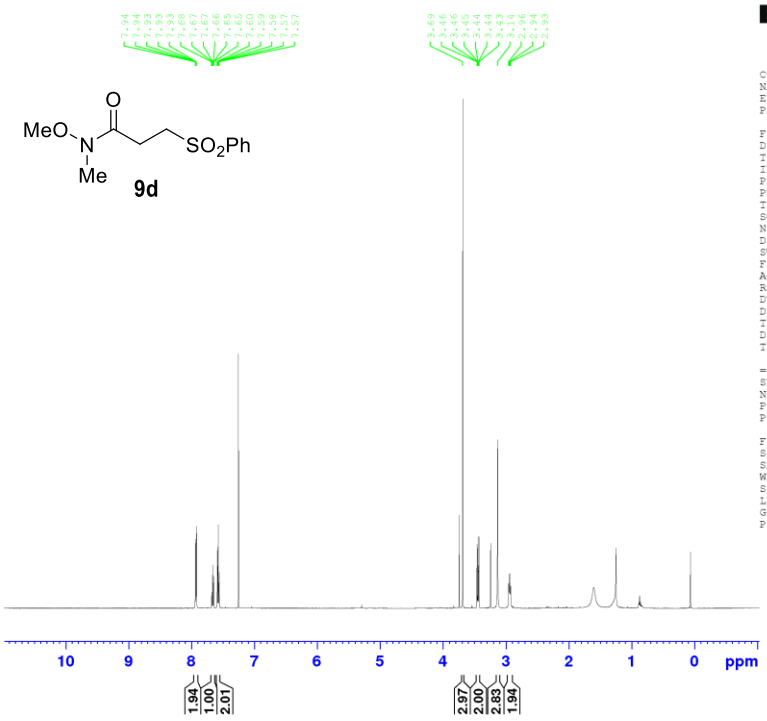
```
Current Data Parameters
NAME      DMZ-1-117Clean_12
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190909
Time                  23.51
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                    65536
SOLVENT               CDCl3
NS                     1508
DS                        4
SWH               24038.461 Hz
FIDRES            0.366798 Hz
AQ                1.3631488 sec
RG                    32768
DW                  20.800 usec
DE                   10.00 usec
TE                   298.1 K
D1                1.00000000 sec
D11               0.03000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                    13C
P1                    9.25 usec
PL1                  -3.00 dB
PL1W           75.17808533 W
SFO1           100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                     1H
PCPD2                80.00 usec
PL2                  -3.00 dB
PL12                 13.05 dB
PL13                 13.05 dB
PL2W           30.07123375 W
PL12W           0.74670875 W
PL13W           0.74670875 W
SFO2           400.1616006 MHz

F2 - Processing parameters
SI                    32768
SF             100.6203006 MHz
WDW                      EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.40
```

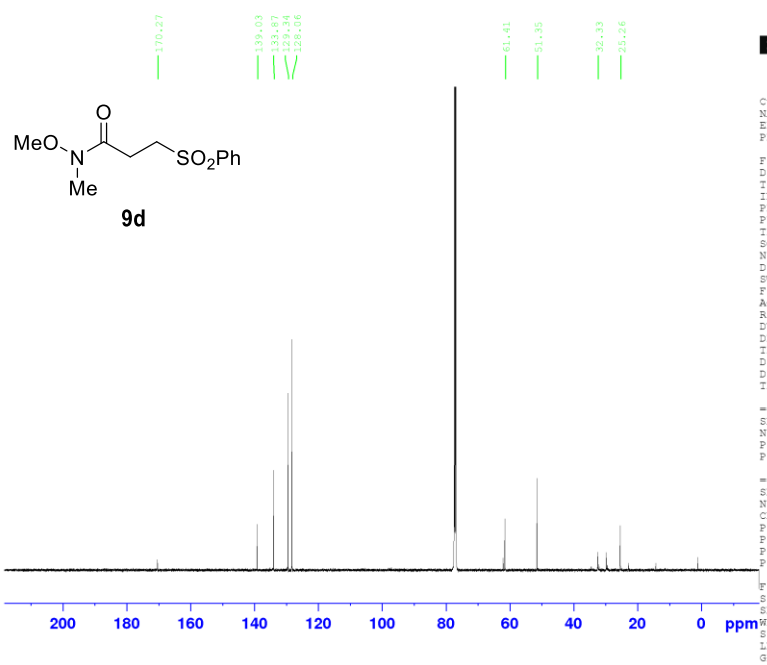



```
Current Data Parameters
NAME      DMZ-1-167-2Fr12-19
EXPNO                      1
PROCNO                     1

F2 - Acquisition Parameters
Date_            20200226
Time                9.35
INSTRUM            spect
PROBHD   5 mm CPQNP 1H/
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              2.7262976 sec
RG                   181
DW                83.200 usec
DE                40.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          500.4925025 MHz
NUC1                  1H
P1                 15.00 usec
PLW1           7.49889994 W

F2 - Processing parameters
SI                 32768
SF            500.4900124 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.40
```



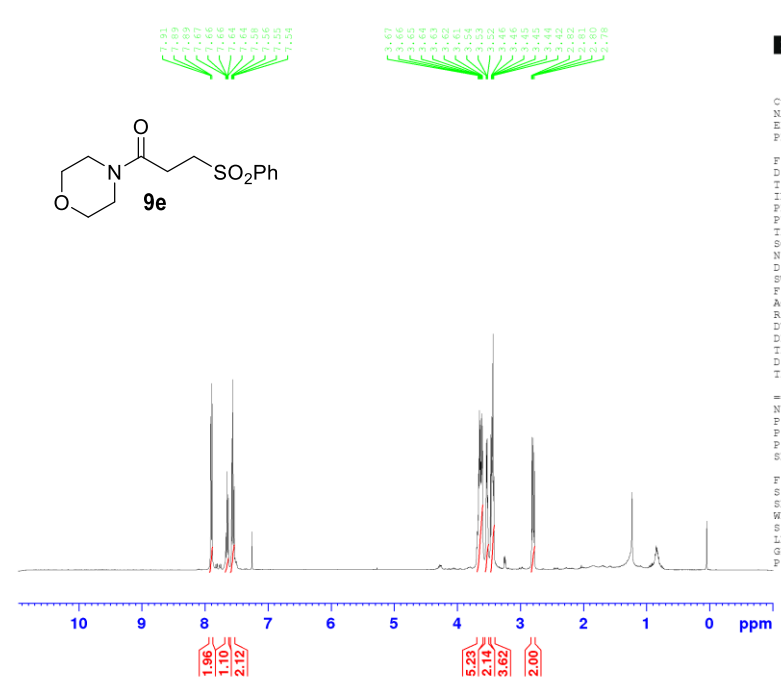

```
Current Data Parameters
NAME      DMZ-1-167-2Fr12-19
EXPNO                      2
PROCNO                     1

F2 - Acquisition Parameters
Date_            20200226
Time                9.39
INSTRUM            spect
PROBHD   5 mm CPQNP 1H/
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  3316
DS                     2
SWH            29761.904 Hz
FIDRES          0.454131 Hz
AQ              1.1010048 sec
RG                  1440
DW                16.800 usec
DE                18.00 usec
TE                298.0 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1          125.8608968 MHz
NUC1                  13C
P1                 10.00 usec
PLW1          63.00000000 W

======== CHANNEL f2 ========
SFO2          500.4925025 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              80.00 usec
PLW2           7.49889994 W
PLW12          0.26363000 W
PLW13          0.16873001 W

F2 - Processing parameters
SI                 32768
SF            125.8482942 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

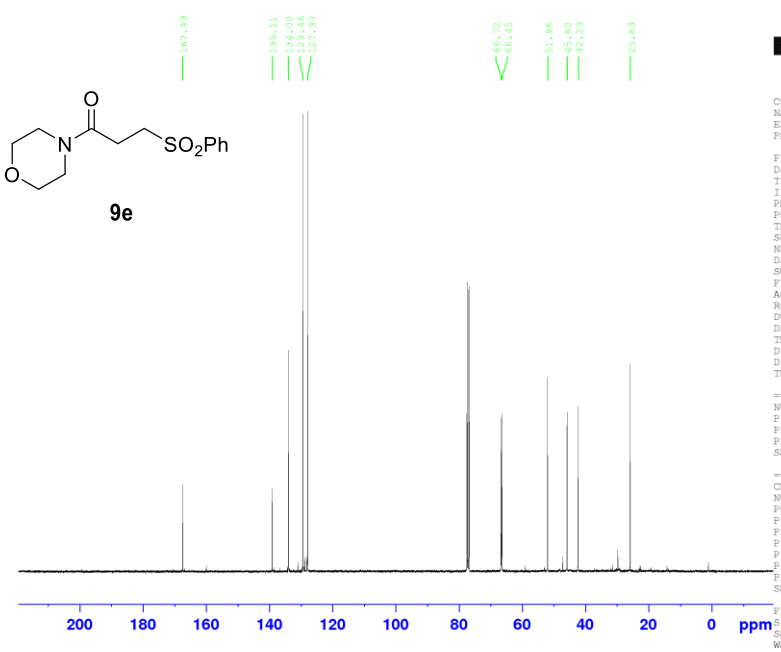


```
Current Data Parameters
NAME       DMZ-1-120Clean_10
EXPNO                     1
PROCNO                    1

F2 - Acquisition Parameters
Date_            20190909
Time                17.49
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES          0.146157 Hz
AQ              3.4209793 sec
RG                  90.5
DW                104.400 usec
DE                  6.00 usec
TE                298.1 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF           400.1300098 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



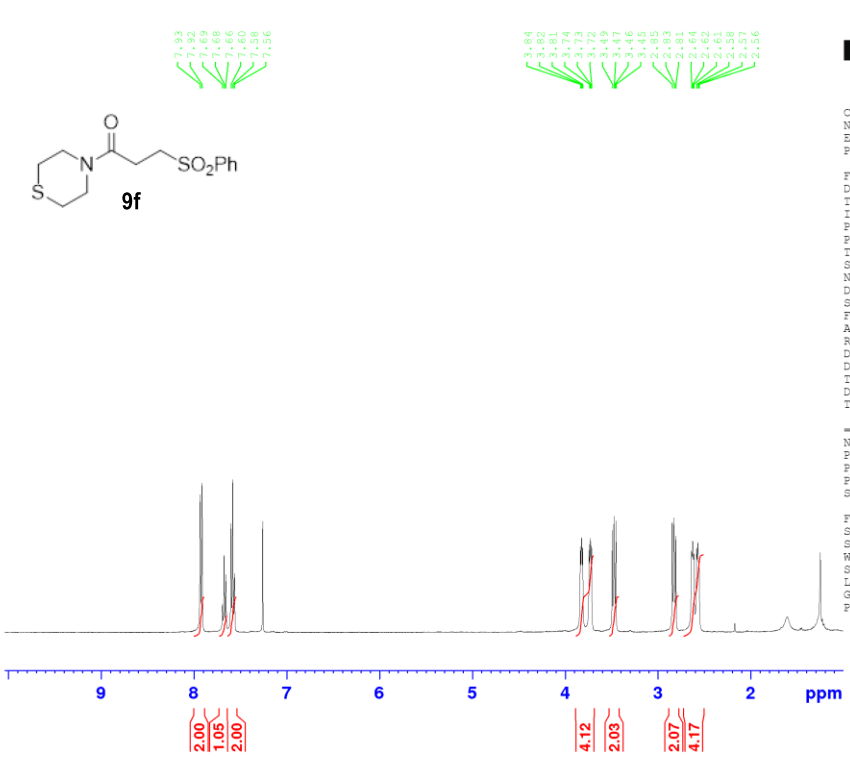
```
Current Data Parameters
NAME       DMZ-1-120Clean_12
EXPNO                     1
PROCNO                    1

F2 - Acquisition Parameters
Date_            20190910
Time                 0.56
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1508
DS                     4
SWH            24038.461 Hz
FIDRES          0.366798 Hz
AQ              1.3631488 sec
RG                 26008
DW                20.800 usec
DE                10.00 usec
TE                298.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 9.25 usec
PL1                -3.00 dB
PL1W         75.17808533 W
SFO1         100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -3.00 dB
PL12               13.05 dB
PL13               13.05 dB
PL2W         30.07123375 W
PL12W         0.74670875 W
PL13W         0.74670875 W
SFO2         400.1616006 MHz

F2 - Processing parameters
SI                 32768
SF           100.6203074 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



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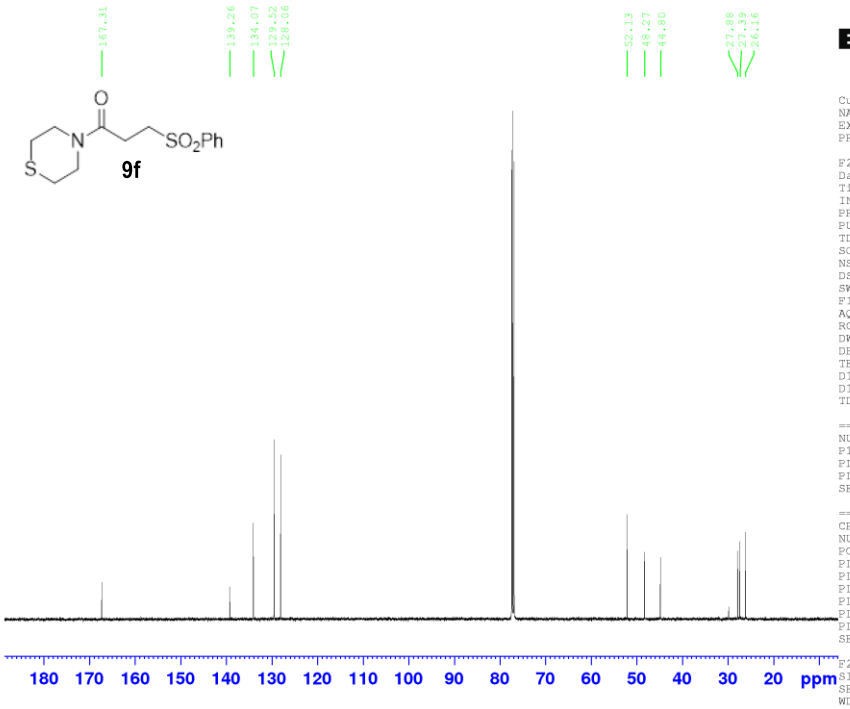
```
Current Data Parameters
NAME       MBL060-1H (Prodotto)
EXPNO                         3
PROCNO                        1

F2 - Acquisition Parameters
Date_               20200225
Time                    8.32
INSTRUM                spect
PROBHD   5 mm PABBO BB-
PULPROG                 zg30
TD                     32768
SOLVENT                CDCl3
NS                         8
DS                         2
SWH                4789.272 Hz
FIDRES            0.146157 Hz
AQ                3.4209793 sec
RG                       256
DW                   104.400 usec
DE                     6.00 usec
TE                    298.0 K
D1                1.00000000 sec
TD0                        1

======== CHANNEL f1 ========
NUC1                      1H
P1                     14.50 usec
PL1                    -2.00 dB
PL1W            23.88643074 W
SFO1            400.1320007 MHz

F2 - Processing parameters
SI                     16384
SF                400.1300098 MHz
WDW                       EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```



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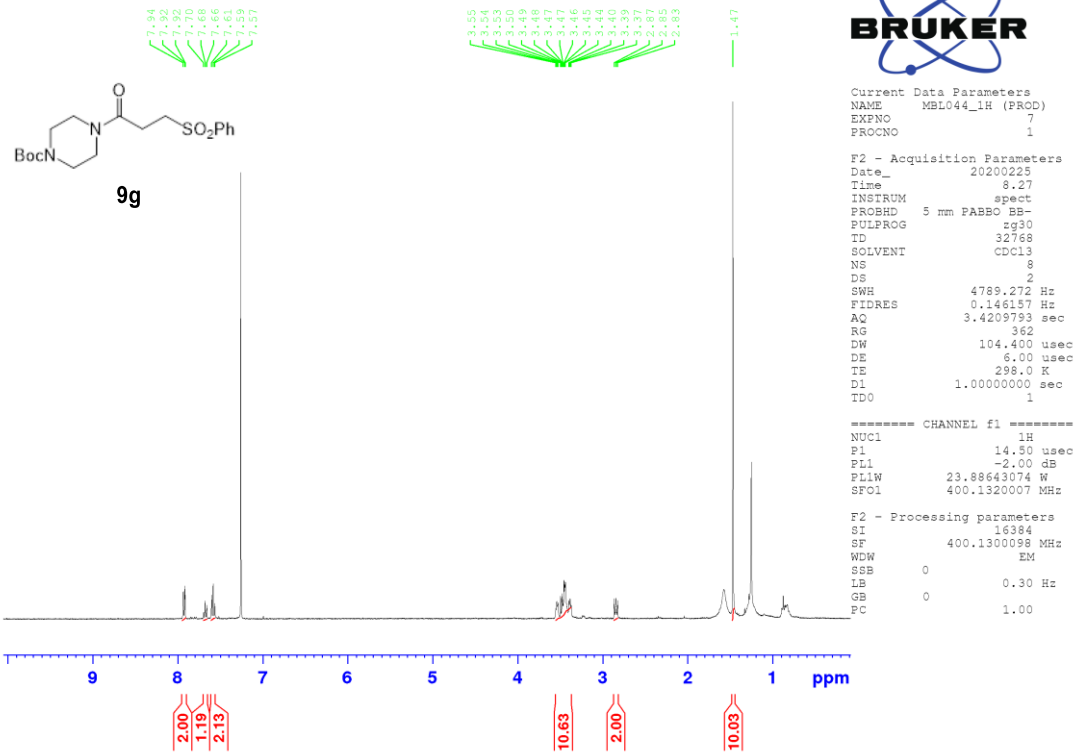
```
Current Data Parameters
NAME       MBL060-13C_OK
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_           20200225
Time               17.29
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 2100
DS                    4
SWH           30303.031 Hz
FIDRES         0.462388 Hz
AQ             1.0813440 sec
RG                 7290
DW               16.500 usec
DE               10.00 usec
TE                299.8 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1       0 dB
PL1W         53.75436783 W
SFO1        125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2              80.00 usec
PL2                -4.08 dB
PL12               11.54 dB
PL13               11.54 dB
PL2W         35.02648163 W
PL12W         0.96027696 W
PL13W         0.96027696 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                   32768
SF              125.7577740 MHz
WDW                     EM
SSB          0
LB                  1.00 Hz
GB           0
PC                  1.40
```



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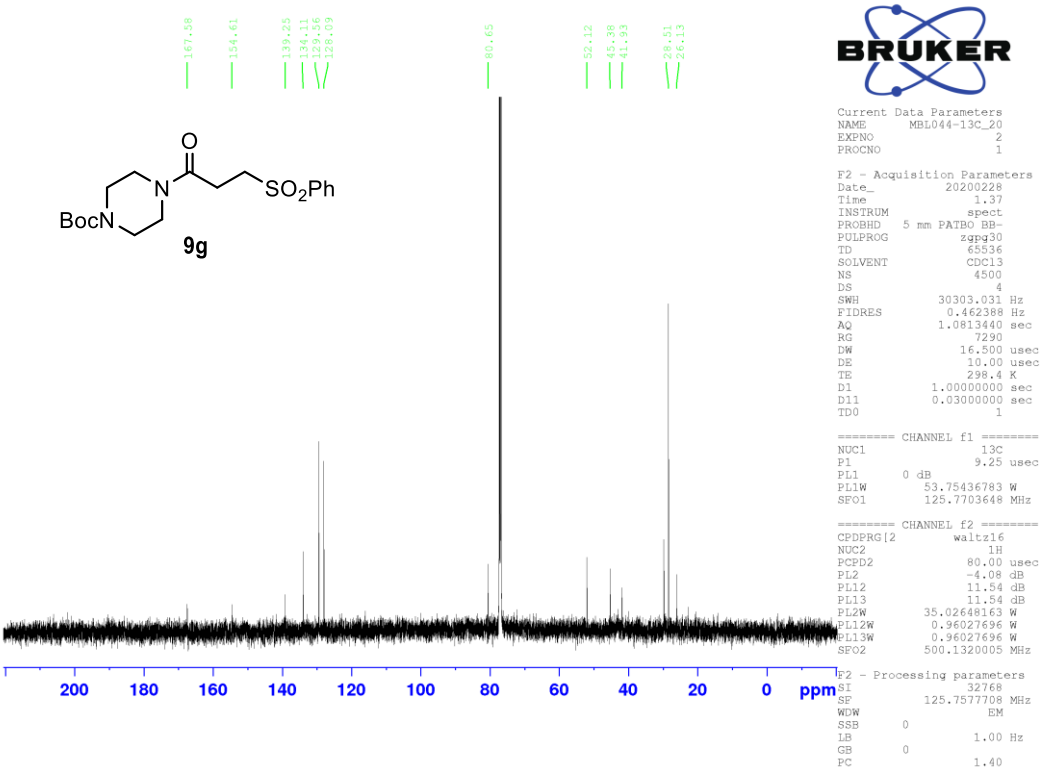
```
Current Data Parameters
NAME      MBL044_1H (PROD)
EXPNO                  7
PROCNO                 1

F2 - Acquisition Parameters
Date_           20200225
Time               8.27
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG            zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ             3.4209793 sec
RG                  362
DW              104.400 usec
DE                6.00 usec
TE               298.0 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                  1H
P1                 14.50 usec
PL1                -2.00 dB
PL1W         23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300098 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



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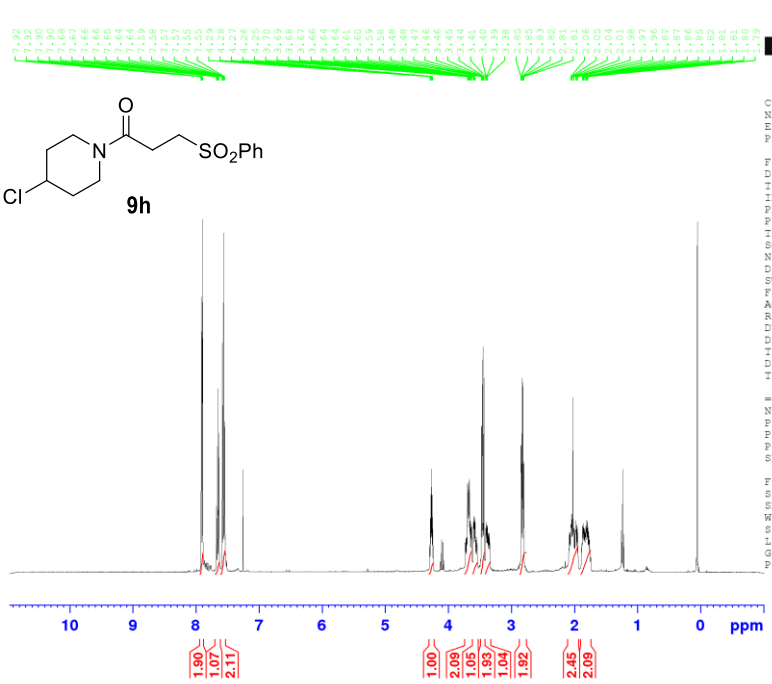
```
Current Data Parameters
NAME      MBL044-13C_20
EXPNO                 2
PROCNO                1

F2 - Acquisition Parameters
Date_           20200228
Time               1.37
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 4500
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ             1.0813440 sec
RG                 7290
DW               16.500 usec
DE                10.00 usec
TE                298.4 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1       0 dB
PL1W        53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -4.08 dB
PL12               11.54 dB
PL13               11.54 dB
PL2W        35.02648163 W
PL12W        0.96027696 W
PL13W        0.96027696 W
SFO2       500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF         125.7577708 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

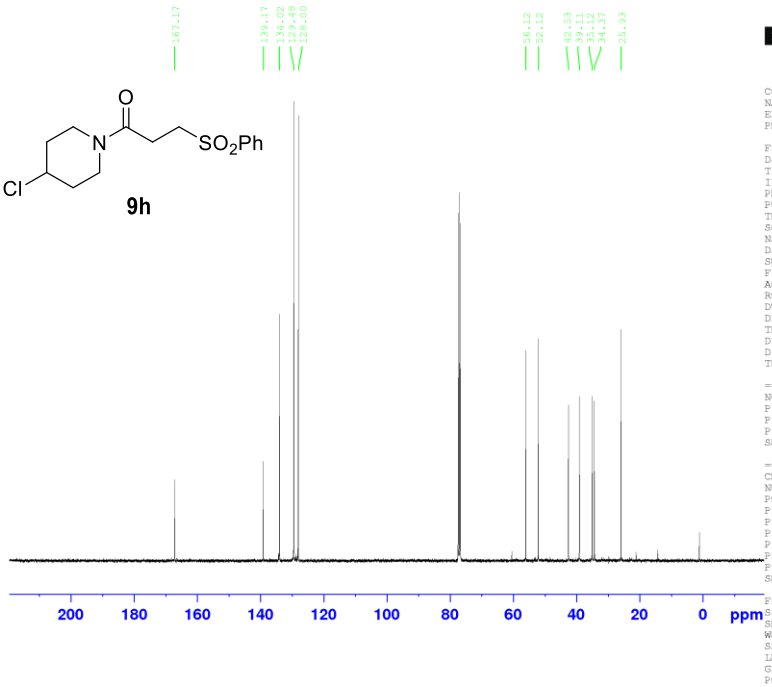



```
Current Data Parameters
NAME      DMZ-1-221PURE_10
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20200113
Time                 11.04
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                      8
DS                      2
SWH              4789.272 Hz
FIDRES           0.146157 Hz
AQ               3.4209793 sec
RG                   90.5
DW                104.400 usec
DE                  6.00 usec
TE                 298.0 K
D1              1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   1H
P1                  14.50 usec
PL1                 -2.00 dB
PL1W          23.88643074 W
SFO1          400.1320007 MHz

F2 - Processing parameters
SI                     16384
SF            400.1300095 MHz
WDW                       EM
SSB       0
LB                   0.30 Hz
GB        0
PC                   1.00
```



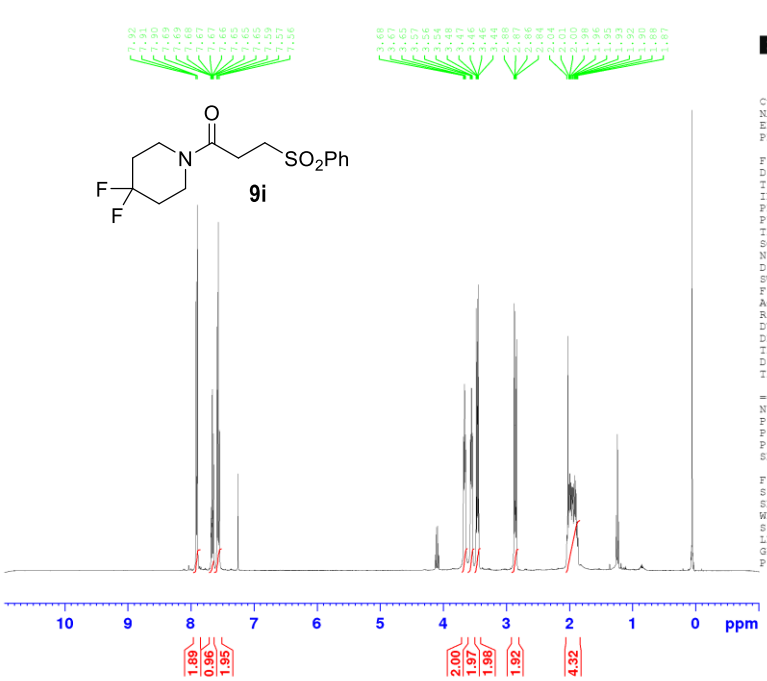

```
Current Data Parameters
NAME      DMZ-1-221PURE_11
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20200113
Time                 21.08
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   1524
DS                      4
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631488 sec
RG                   26008
DW                20.800 usec
DE                  10.00 usec
TE                 298.0 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                  13C
P1                  9.25 usec
PL1                 -3.00 dB
PL1W          75.17808533 W
SFO1          100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                   1H
PCPD2               80.00 usec
PL2                 -3.00 dB
PL12                13.05 dB
PL13                13.05 dB
PL2W          30.07123375 W
PL12W          0.74670875 W
PL13W          0.74670875 W
SFO2          400.1616006 MHz

F2 - Processing parameters
SI                     32768
SF            100.6203047 MHz
WDW                       EM
SSB       0
LB                   1.00 Hz
GB        0
PC                   1.40
```

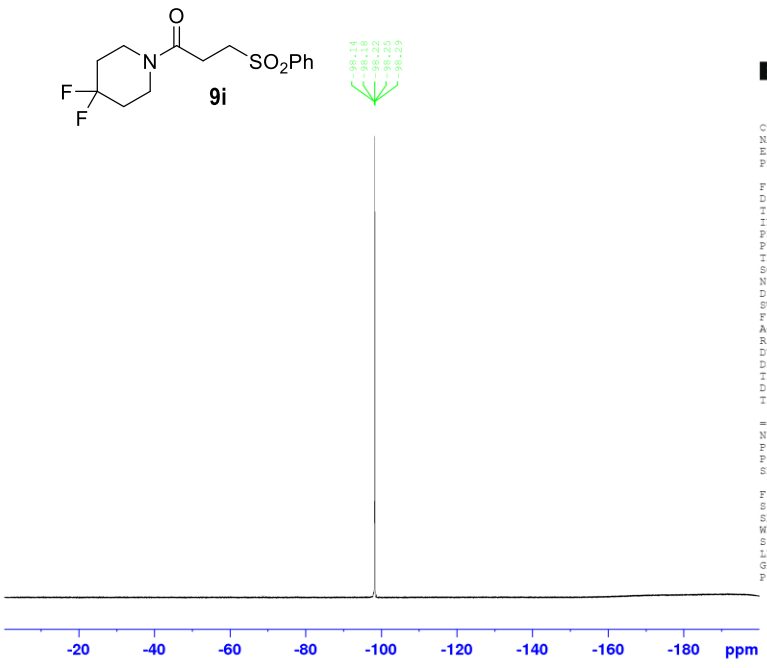


```
Current Data Parameters
NAME      DMZ-1-226Fr36-43_10
EXPNO                      1
PROCNO                     1

F2 - Acquisition Parameters
Date_              20200116
Time                 17.33
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                  32768
SOLVENT              CDCl3
NS                       8
DS                       2
SWH               4789.272 Hz
FIDRES            0.146157 Hz
AQ                3.4209793 sec
RG                    90.5
DW                  104.400 usec
DE                    6.00 usec
TE                  298.0 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                    1H
P1                   14.50 usec
PL1                  -2.00 dB
PL1W           23.88643074 W
SFO1           400.1320007 MHz

F2 - Processing parameters
SI                   16384
SF             400.1300095 MHz
WDW                     EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.00
```

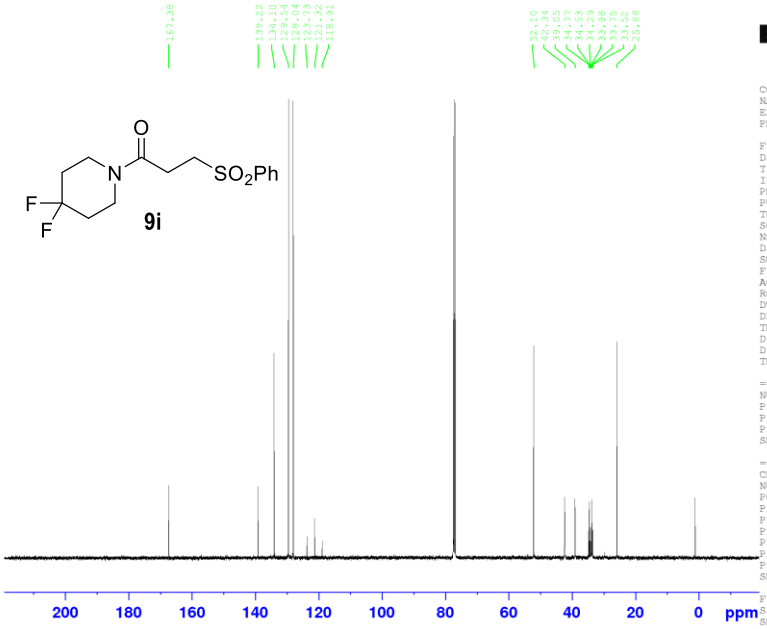


```
Current Data Parameters
NAME      DMZ-1-226Fr36-43_11
EXPNO                      1
PROCNO                     1

F2 - Acquisition Parameters
Date_              20200116
Time                 17.34
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG              zg30
TD                 131072
SOLVENT              CDCl3
NS                       8
DS                       2
SWH              75187.969 Hz
FIDRES            0.573639 Hz
AQ                0.8716288 sec
RG                   2896.3
DW                    6.650 usec
DE                    7.14 usec
TE                  298.0 K
D1              5.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   19F
P1                   12.00 usec
PL1                  -3.00 dB
SFO1           376.4607040 MHz

F2 - Processing parameters
SI                   65536
SF             376.4984036 MHz
WDW                     EM
SSB       0
LB                    1.00 Hz
GB        0
PC                    1.00
```



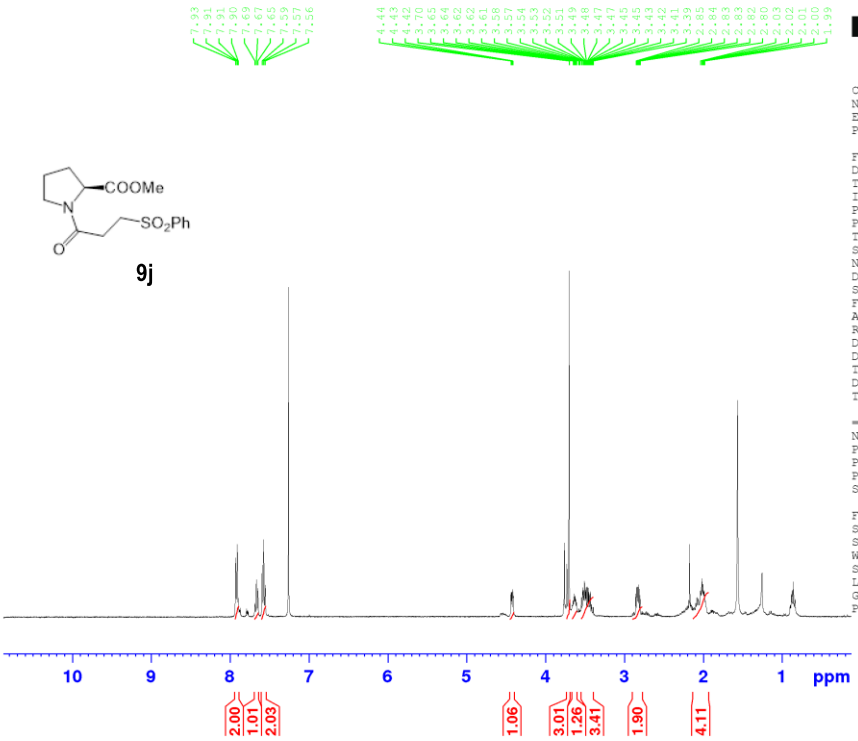

```
Current Data Parameters
NAME      DMZ-1-226Pure_11
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20200117
Time                 20.53
INSTRUM              spect
PROBHD  5 mm PABBO BB-
PULPROG           zgpg30
TD                 65536
SOLVENT            CDCl3
NS                  1524
DS                     4
SWH            23980.814 Hz
FIDRES             0.365918 Hz
AQ             1.3664256 sec
RG                  26008
DW                20.850 usec
DE                10.00 usec
TE                299.0 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 10.00 usec
PL1                -3.00 dB
PL1W          75.17808533 W
SFO1          100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               12.83 dB
PL13               12.83 dB
PL2W          23.88643074 W
PL12W          0.78550917 W
PL13W          0.78550917 W
SFO2          400.1316005 MHz

F2 - Processing parameters
SI                 32768
SF            100.6127575 MHz
WDW                   EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```

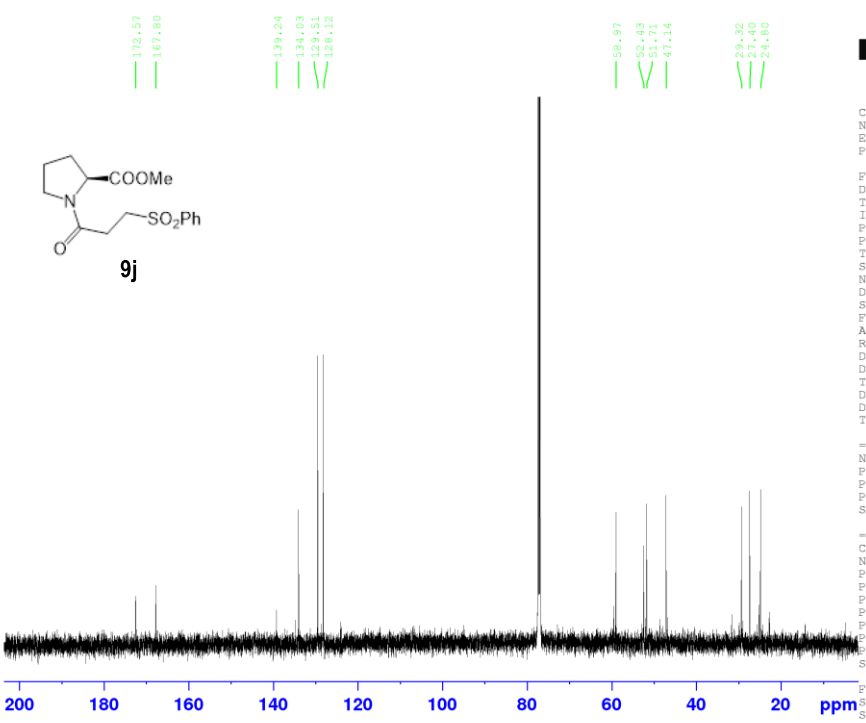



```
Current Data Parameters
NAME      MBL071-f4_(Ok)
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_              20200113
Time                 16.20
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG              zg30
TD                  32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             4789.272 Hz
FIDRES             0.146157 Hz
AQ             3.4209793 sec
RG                   362
DW                104.400 usec
DE                  6.00 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W          23.88643074 W
SFO1          400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF            400.1300098 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



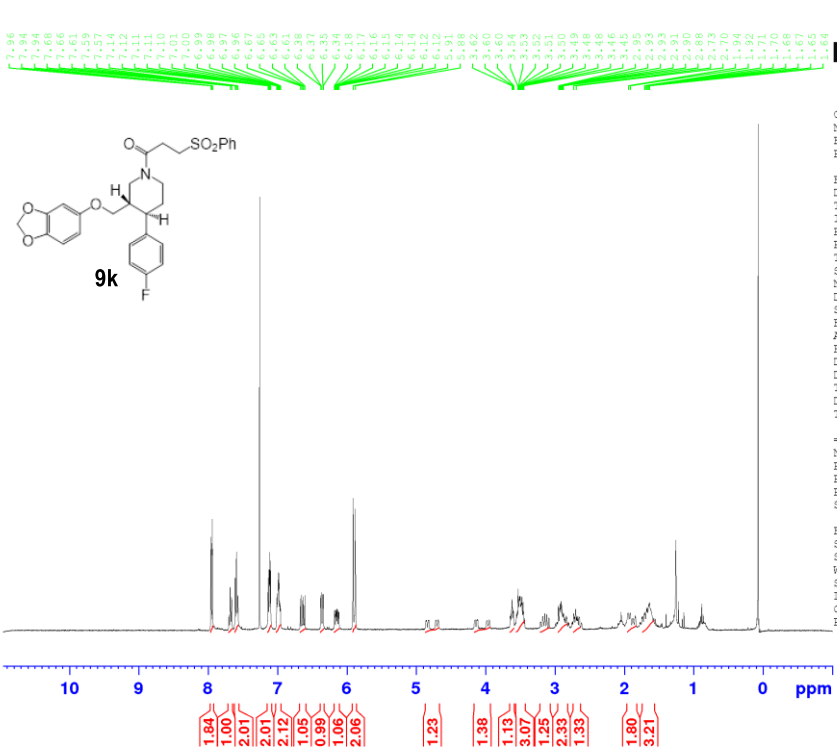

```
Current Data Parameters
NAME       MBL071-13C_10
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_          20200114
Time              1.52
INSTRUM          spect
PROBHD   5 mm PATBO BB-
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                2600
DS                   4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                7290
DW              16.500 usec
DE              10.00 usec
TE                300.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1        0 dB
PL1W       53.75436783 W
SFO1      125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2         waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -4.08 dB
PL12              11.54 dB
PL13              11.54 dB
PL2W       35.02648163 W
PL12W       0.96027696 W
PL13W       0.96027696 W
SFO2      500.1320005 MHz

F2 - Processing parameters
SI                32768
SF         125.7577711 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

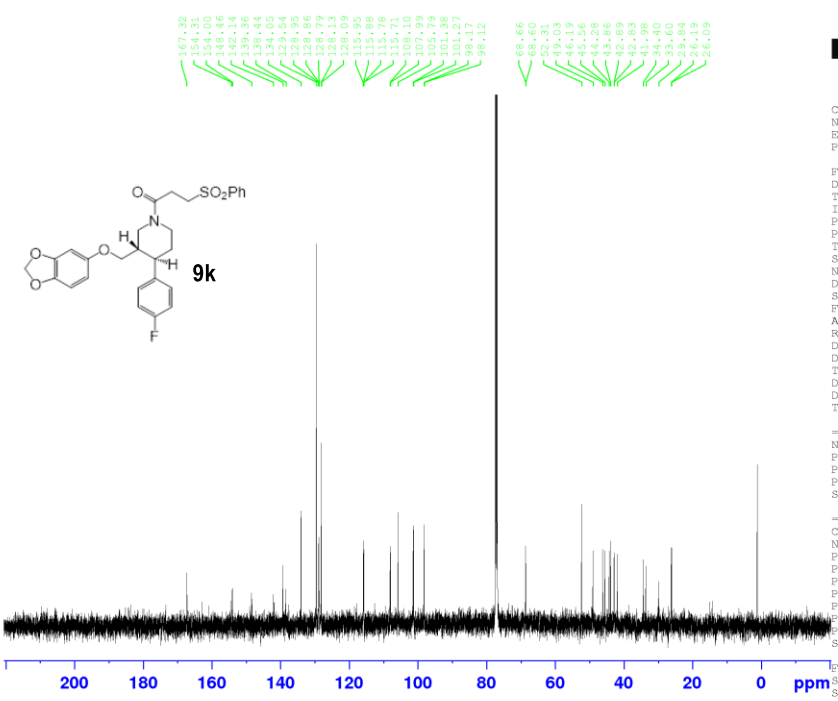



```
Current Data Parameters
NAME       MBL073-1H_10
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_          20191212
Time              15.31
INSTRUM          spect
PROBHD   5 mm PABBO BB-
PULPROG           zg30
TD               32768
SOLVENT          CDCl3
NS                   8
DS                   2
SWH           4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                322.5
DW              104.400 usec
DE                6.00 usec
TE                298.0 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                14.50 usec
PL1               -2.00 dB
PL1W       23.88643074 W
SFO1      400.1320007 MHz

F2 - Processing parameters
SI                16384
SF         400.1300098 MHz
WDW                  EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.00
```



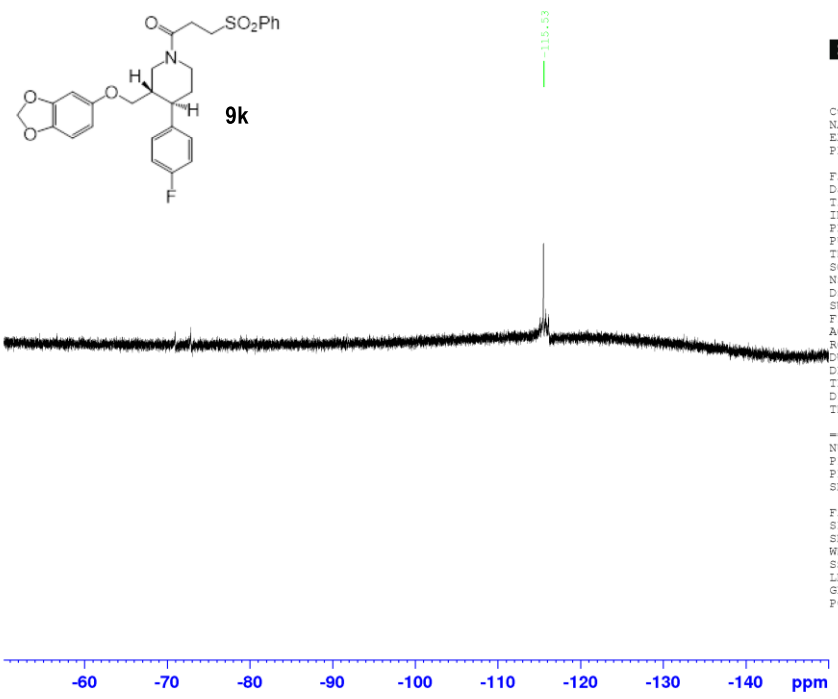

```
Current Data Parameters
NAME          MBL073-13C_11
EXPNO                     1
PROCNO                    1

F2 - Acquisition Parameters
Date_           20191213
Time              22.33
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 3000
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                 7290
DW              16.500 usec
DE              10.00 usec
TE                299.0 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                 9.25 usec
PL1       0 dB
PL1W       53.75436783 W
SFO1      125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2              80.00 usec
PL2               -4.08 dB
PL12              11.54 dB
PL13              11.54 dB
PL2W       35.02648163 W
PL12W       0.96027696 W
PL13W       0.96027696 W
SFO2      500.1320005 MHz

F2 - Processing parameters
SI                32768
SF          125.7577717 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

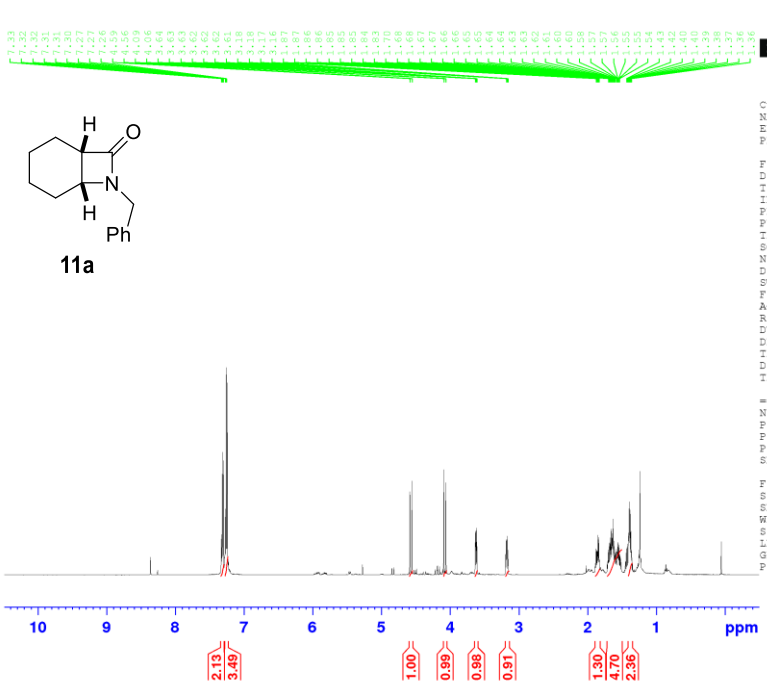



```
Current Data Parameters
NAME      MBLparoxFluo_10
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20200220
Time              21.27
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                131072
SOLVENT           CDCl3
NS                  200
DS                    2
SWH           75187.969 Hz
FIDRES        0.573639 Hz
AQ            0.8716288 sec
RG                 2048
DW               6.650 usec
DE               7.14 usec
TE                298.1 K
D1           5.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 19F
P1                12.00 usec
PL1               -3.00 dB
SFO1      376.4607040 MHz

F2 - Processing parameters
SI                65536
SF          376.4984036 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.00
```

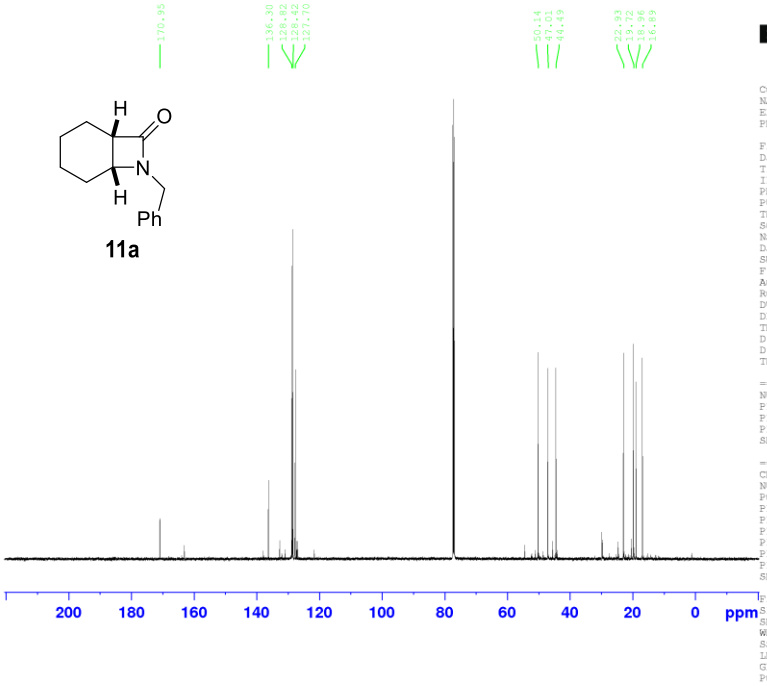



```
Current Data Parameters
NAME      DMZ-1-072PURE_10
EXPNO                    2
PROCNO                   1

F2 - Acquisition Parameters
Date_              20190628
Time                 15.13
INSTRUM              spect
PROBHD    5 mm PATBO BB-
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                      8
DS                      2
SWH             6009.615 Hz
FIDRES          0.183399 Hz
AQ              2.7262976 sec
RG                    203
DW                83.200 usec
DE                10.00 usec
TE                300.0 K
D1             1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   1H
P1                  14.00 usec
PL1                 -4.08 dB
PL1W          35.02648163 W
SFO1         500.1325007 MHz

F2 - Processing parameters
SI                  16384
SF           500.1300210 MHz
WDW                    EM
SSB       0
LB                  0.30 Hz
GB        0
PC                  1.00
```



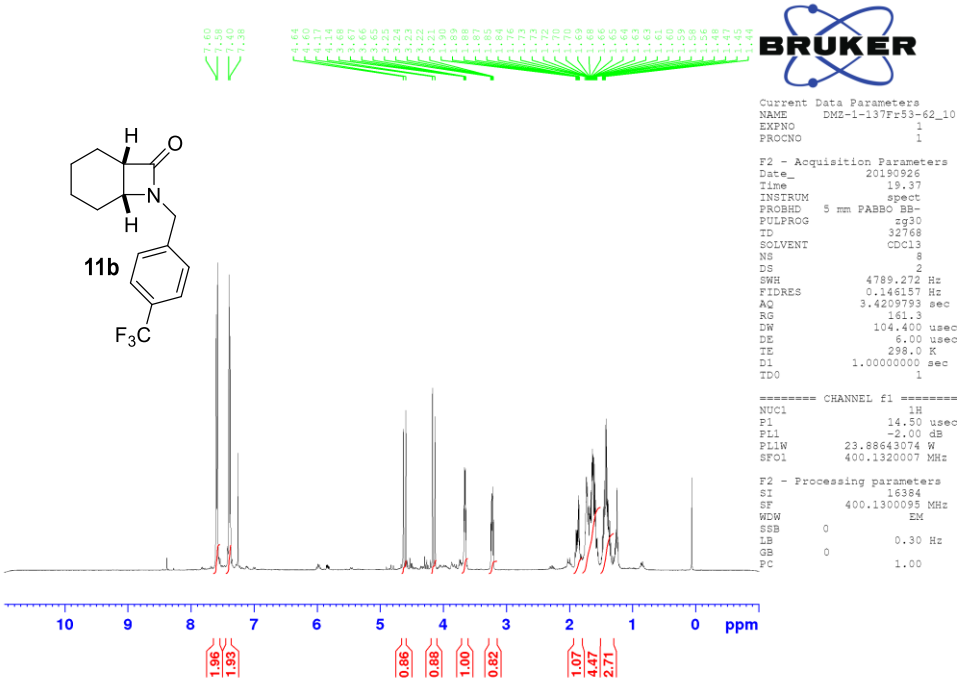

```
Current Data Parameters
NAME      DMZ-1-072PURE_11
EXPNO                    3
PROCNO                   1

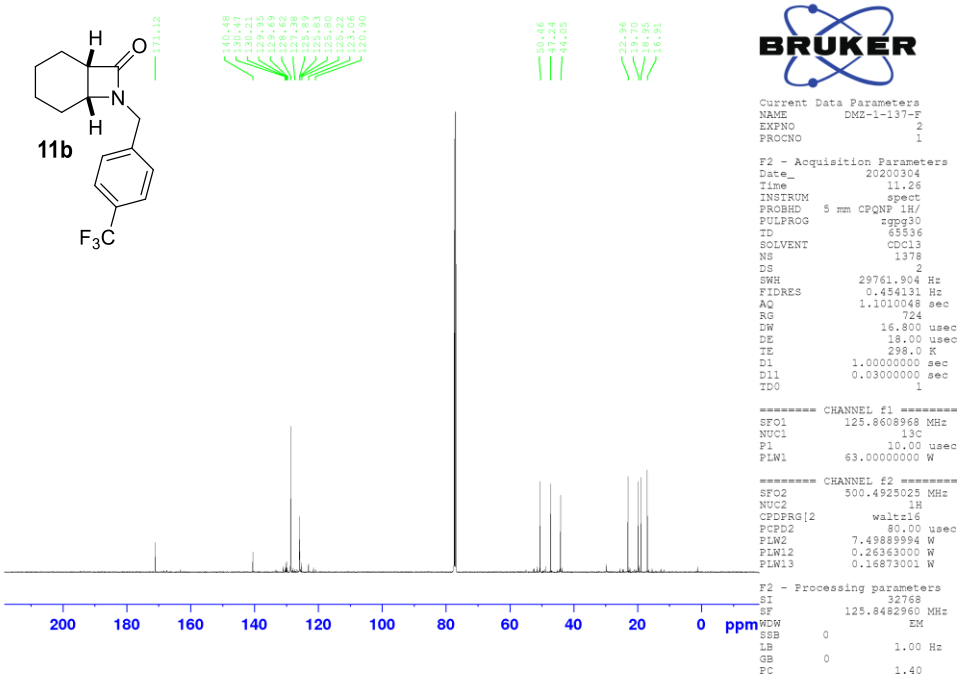
F2 - Acquisition Parameters
Date_              20190628
Time                 23.57
INSTRUM              spect
PROBHD    5 mm PATBO BB-
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   2048
DS                      4
SWH            30303.031 Hz
FIDRES          0.462308 Hz
AQ              1.0813440 sec
RG                   9200
DW                16.500 usec
DE                10.00 usec
TE                298.9 K
D1             1.00000000 sec
D11            0.03000000 sec
TD0                     1

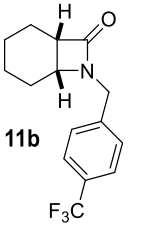
======== CHANNEL f1 ========
NUC1                  13C
P1                  9.25 usec
PL1       0 dB
PL1W          53.75436783 W
SFO1         125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                   1H
PCPD2               80.00 usec
PL2                 -4.08 dB
PL12                11.54 dB
PL13                11.54 dB
PL2W          35.02648163 W
PL12W          0.96027696 W
PL13W          0.96027696 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                  32768
SF           125.7577758 MHz
WDW                    EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.40
```


11b
Current Data Parameters
NAME DMZ-1-137Fr53-62_10
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20190926
Time 19.37
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 8
DS 2
SWH 4789.272 Hz
FIDRES 0.146157 Hz
AQ 3.4209793 sec
RG 161.3
DW 104.400 usec
DE 6.00 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 14.50 usec
PL1 -2.00 dB
PL1W 23.88643074 W
SFO1 400.1320007 MHz
F2 - Processing parameters
SI 16384
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
10 9 8 7 6 5 4 3 2 1 0 ppm
1.96 1.93 0.86 0.88 1.00 0.82 1.07 4.47 2.71


11b
Current Data Parameters
NAME DMZ-1-137-F
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20200304
Time 11.26
INSTRUM spect
PROBHD 5 mm CPQNP 1H/
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 1378
DS 2
SWH 29761.904 Hz
FIDRES 0.454131 Hz
AQ 1.1010048 sec
RG 724
DW 16.800 usec
DE 18.00 usec
TE 298.0 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 125.8608968 MHz
NUC1 13C
P1 10.00 usec
PLW1 63.00000000 W
======== CHANNEL f2 ========
SFO2 500.4925025 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 80.00 usec
PLW2 7.49889994 W
PLW12 0.26363000 W
PLW13 0.16873001 W
F2 - Processing parameters
SI 32768
SF 125.8482960 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
200 180 160 140 120 100 80 60 40 20 0 ppm

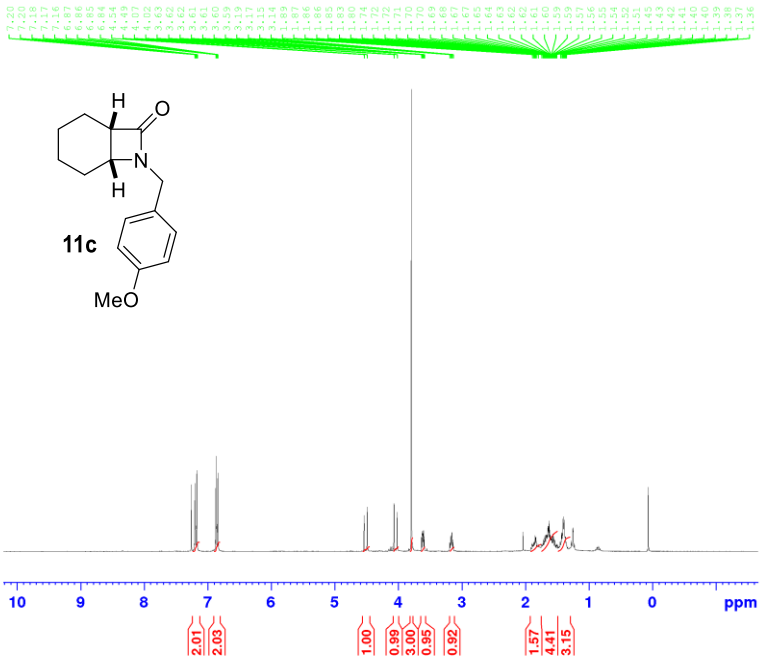



```
Current Data Parameters
NAME      DMZ-1-137-F_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20200302
Time              16.27
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                131072
SOLVENT             CDCl3
NS                     8
DS                     2
SWH           75187.969 Hz
FIDRES         0.573639 Hz
AQ             0.8716288 sec
RG                2298.8
DW                6.650 usec
DE                7.14 usec
TE                298.0 K
D1            5.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  19F
P1                  12.00 usec
PL1                 -3.00 dB
SFO1         376.4607040 MHz

F2 - Processing parameters
SI                 65536
SF           376.4984036 MHz
WDW                   EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.00
```

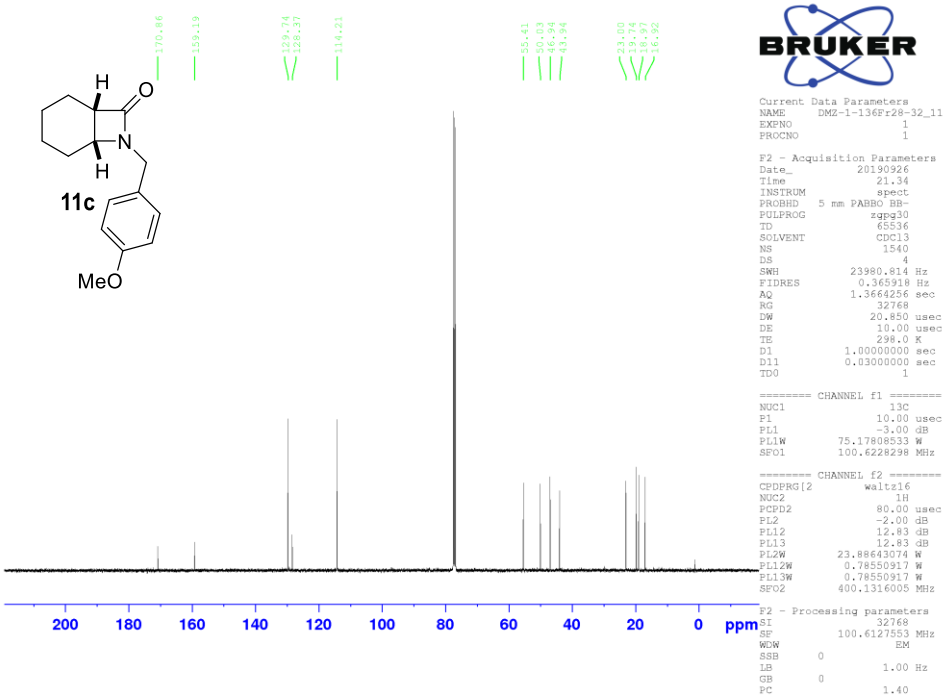



```
Current Data Parameters
NAME      DMZ-1-136Fr28-32_10
EXPNO                    1
PROCNO                   1

F2 - Acquisition Parameters
Date_             20190926
Time                14.54
INSTRUM        FOURIER300
PROBHD   5 mm DUL 13C-1
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       8
DS                       2
SWH             6103.516 Hz
FIDRES          0.093132 Hz
AQ              5.3687091 sec
RG                 48.5692
DW                 81.920 usec
DE                   6.50 usec
TE                 298.0 K
D1             1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1          300.1818011 MHz
NUC1                     1H
P1                  11.75 usec
PLW1         20.00000000 W

F2 - Processing parameters
SI                   32768
SF            300.1800057 MHz
WDW                     EM
SSB       0
LB                   0.30 Hz
GB        0
PC                   1.40
```



BRUKER

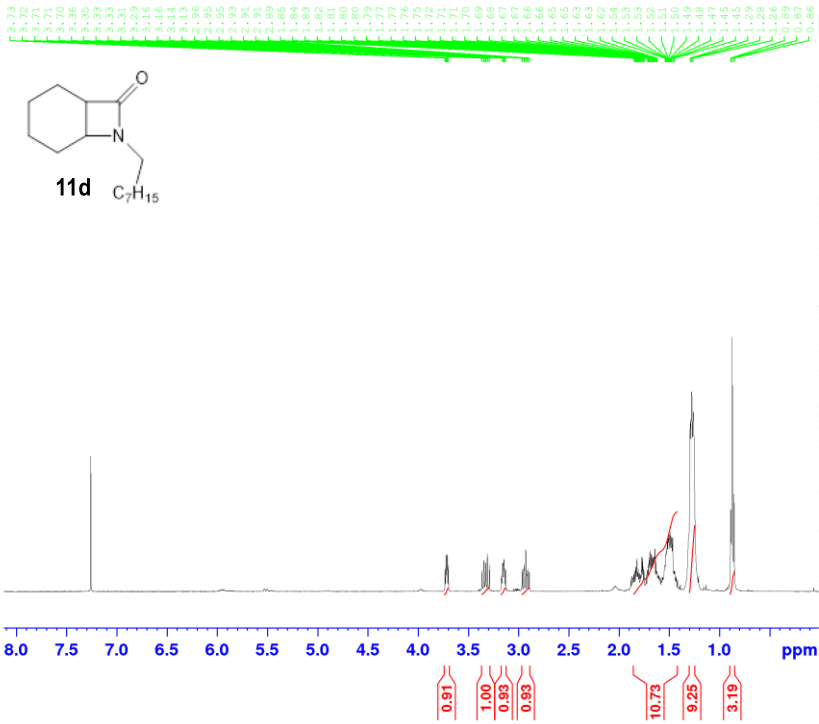
```
Current Data Parameters
NAME      DMZ-1-136Fr28-32_11
EXPNO                      1
PROCNO                     1

F2 - Acquisition Parameters
Date_              20190926
Time                 21.34
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                   1540
DS                      4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ             1.3664256 sec
RG                  32768
DW               20.850 usec
DE               10.00 usec
TE                298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                  13C
P1                10.00 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                   32768
SF          100.6127553 MHz
WDW                     EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



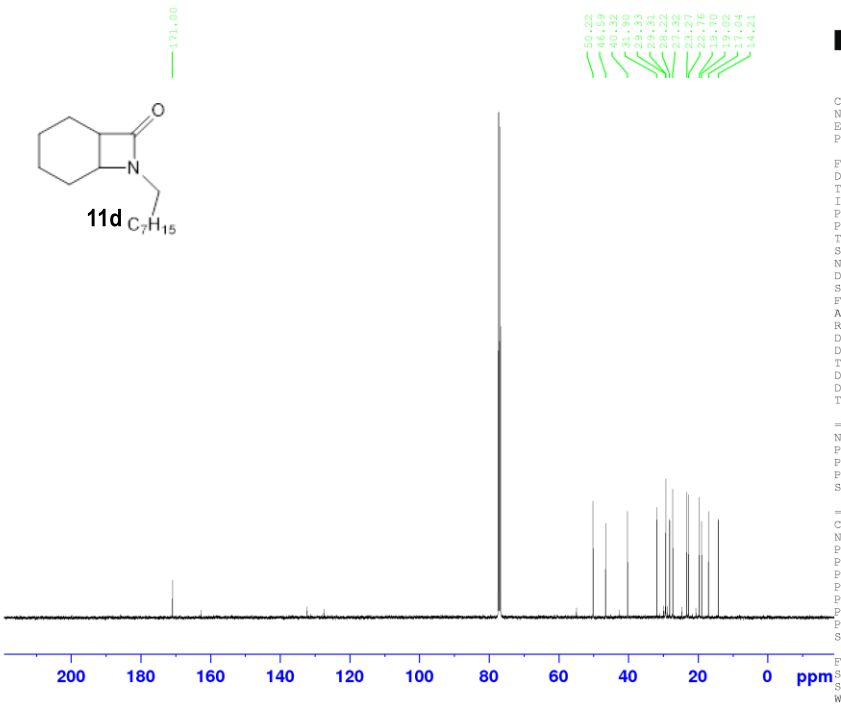
BRUKER

```
Current Data Parameters
NAME          MBL120f2_10
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20200221
Time               10.06
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                     8
DS                     2
SWH            4789.272 Hz
FIDRES         0.146157 Hz
AQ             3.4209793 sec
RG                   181
DW               104.400 usec
DE                 6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                   1H
P1                14.50 usec
PL1               -2.00 dB
PL1W         23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                 16384
SF          400.1300097 MHz
WDW                    EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



BRUKER

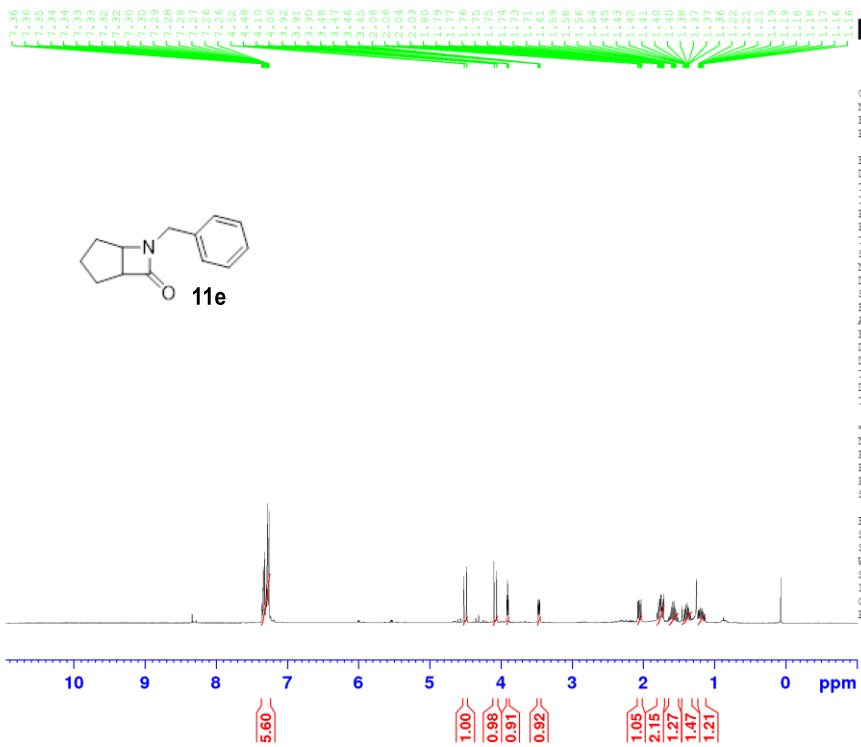
```
Current Data Parameters
NAME        MBL120-13C_10
EXPNO               1
PROCNO              1

F2 - Acquisition Parameters
Date_           20200221
Time              22.11
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 3000
DS                    4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ             1.3664256 sec
RG               23170.5
DW              20.850 usec
DE              10.00 usec
TE                298.1 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                10.00 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                   32768
SF          100.6127551 MHz
WDW                     EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```



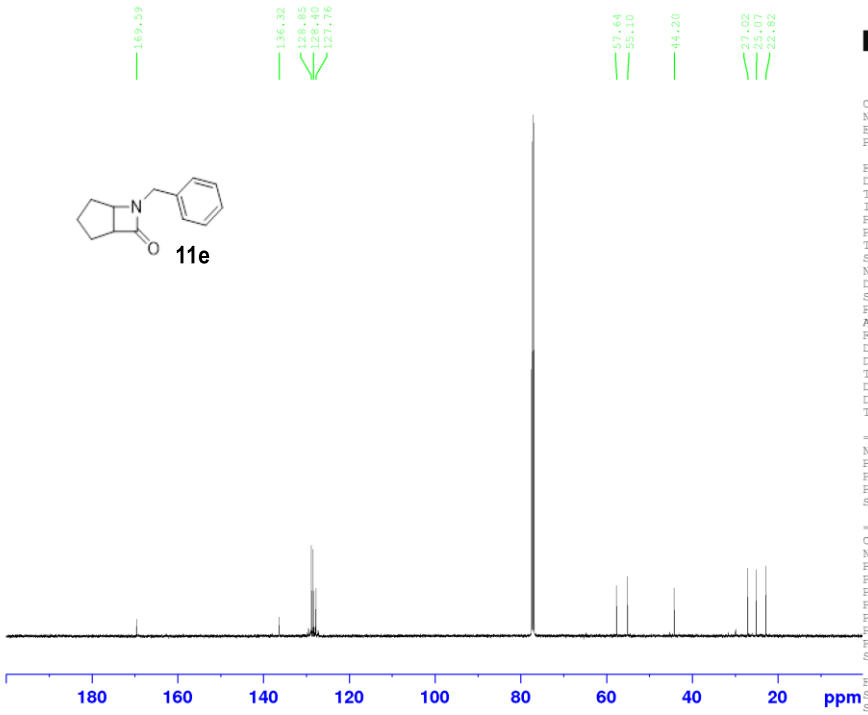
BRUKER

```
Current Data Parameters
NAME      MBL078-f2_ (PROD)
EXPNO                    2
PROCNO                   1

F2 - Acquisition Parameters
Date_           20191209
Time              18.54
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES         0.146157 Hz
AQ             3.4209793 sec
RG                  181
DW             104.400 usec
DE               6.00 usec
TE                298.1 K
D1            1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                14.50 usec
PL1               -2.00 dB
PL1W         23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300101 MHz
WDW                     EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```



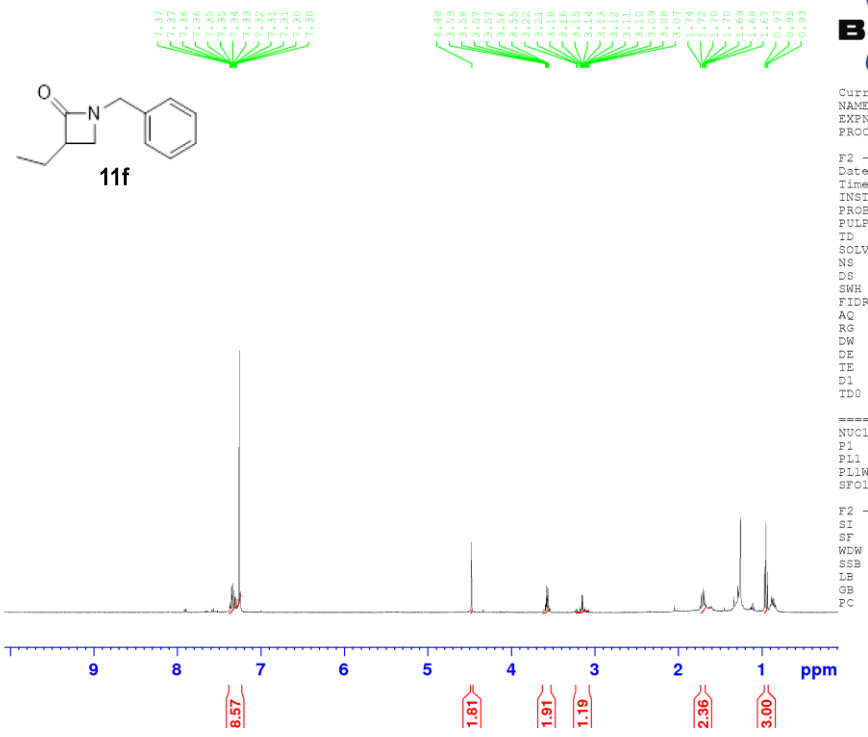

```
Current Data Parameters
NAME       MBL078-13C_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20191210
Time               4.15
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 2800
DS                    4
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                 7290
DW               16.500 usec
DE               10.00 usec
TE                298.1 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 9.25 usec
PL1        0 dB
PL1W         53.75436783 W
SFO1        125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -4.08 dB
PL12               11.54 dB
PL13               11.54 dB
PL2W         35.02648163 W
PL12W         0.96027696 W
PL13W         0.96027696 W
SFO2        500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF          125.7577730 MHz
WDW                   EM
SSB        0
LB                 1.00 Hz
GB         0
PC                 1.40
```

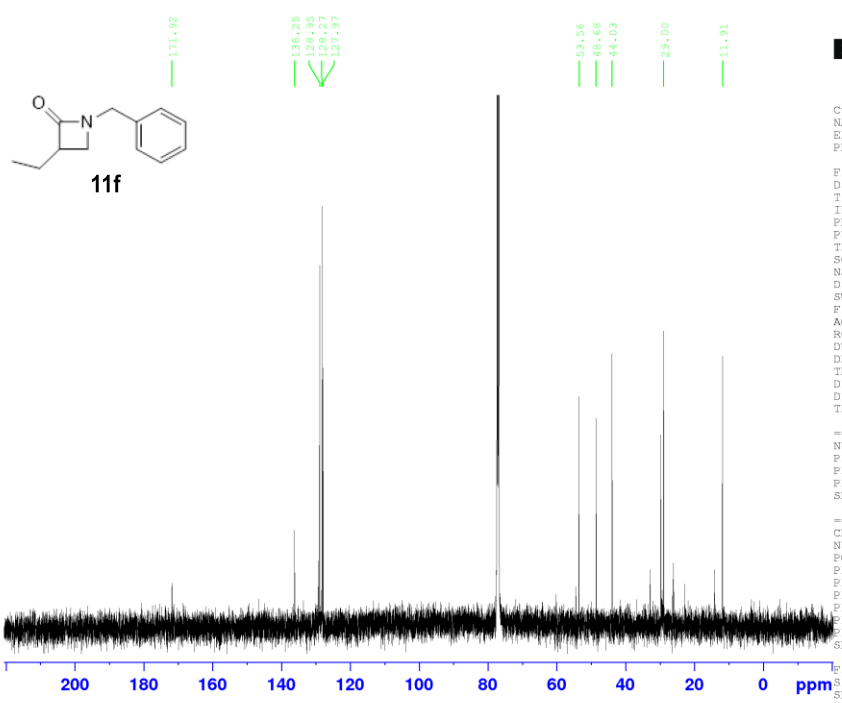



```
Current Data Parameters
NAME         MBL121f7_10
EXPNO                  1
PROCNO                 1

F2 - Acquisition Parameters
Date_           20200301
Time              14.14
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG             zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            4789.272 Hz
FIDRES        0.146157 Hz
AQ            3.4209793 sec
RG                  362
DW              104.400 usec
DE                6.00 usec
TE                298.0 K
D1            1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.50 usec
PL1               -2.00 dB
PL1W         23.88643074 W
SFO1        400.1320007 MHz

F2 - Processing parameters
SI                16384
SF          400.1300098 MHz
WDW                   EM
SSB        0
LB                 0.30 Hz
GB         0
PC                 1.00
```



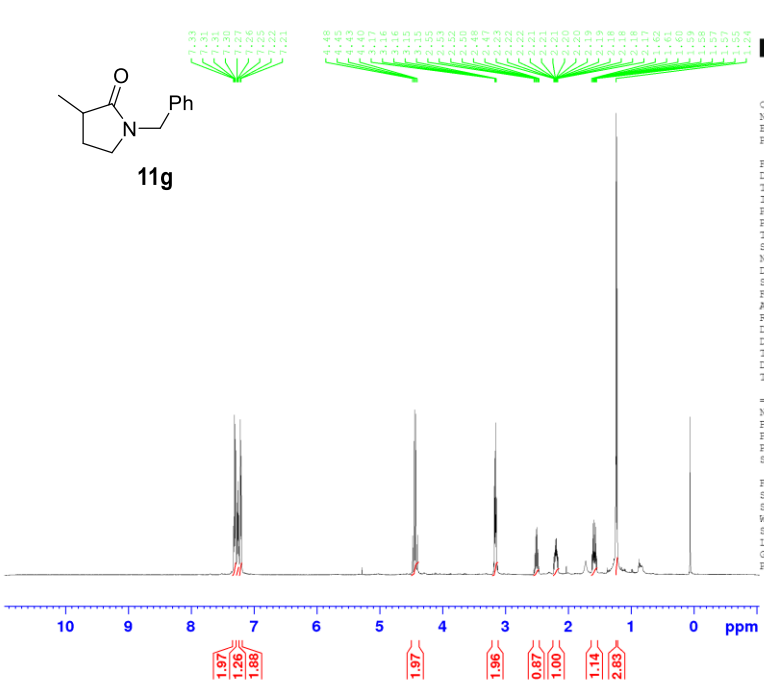

```
Current Data Parameters
NAME        MBL121-13C_10
EXPNO                   1
PROCNO                  1

F2 - Acquisition Parameters
Date_            20200303
Time                0.31
INSTRUM            spect
PROBHD   5 mm PATBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                 6500
DS                    4
SWH          30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813440 sec
RG                 7290
DW               16.500 usec
DE               10.00 usec
TE                298.8 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  13C
P1                 9.25 usec
PL1        0 dB
PL1W         53.75436783 W
SFO1         125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -4.08 dB
PL12               11.54 dB
PL13               11.54 dB
PL2W         35.02648163 W
PL12W         0.96027696 W
PL13W         0.96027696 W
SFO2         500.1320005 MHz

F2 - Processing parameters
SI                 32768
SF           125.7577700 MHz
WDW                   EM
SSB        0
LB                 1.00 Hz
GB         0
PC                 1.40
```

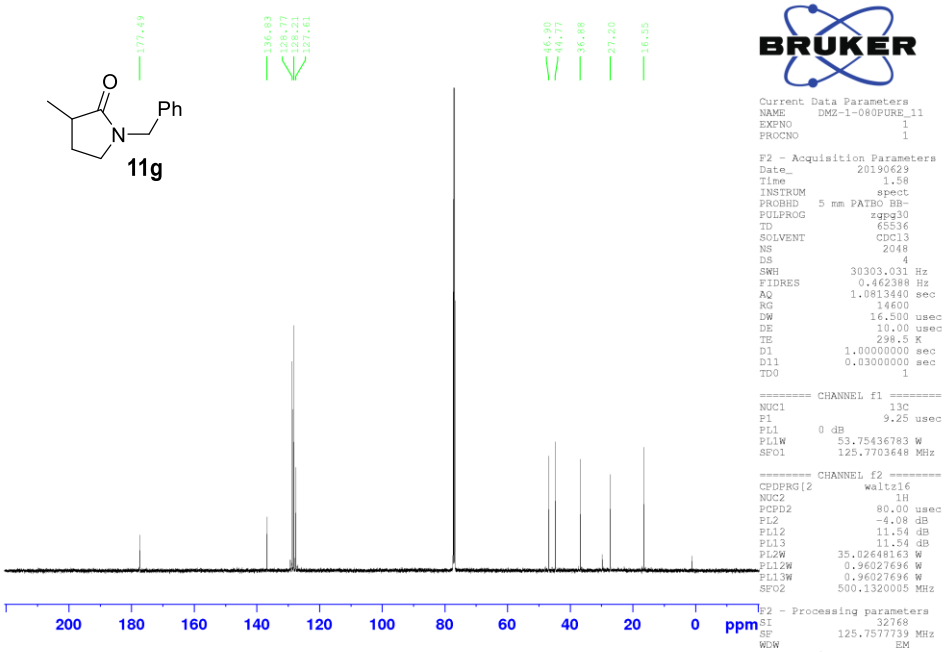



```
Current Data Parameters
NAME      DMZ-1-080PURE_10
EXPNO                    2
PROCNO                   1

F2 - Acquisition Parameters
Date_            20190628
Time                15.24
INSTRUM            spect
PROBHD   5 mm PATBO BB-
PULPROG             zg30
TD                 32768
SOLVENT           CDCl3
NS                     8
DS                     2
SWH           6009.615 Hz
FIDRES        0.183399 Hz
AQ            2.7262976 sec
RG                   256
DW               83.200 usec
DE               10.00 usec
TE                300.0 K
D1            1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                14.00 usec
PL1                -4.08 dB
PL1W         35.02648163 W
SFO1         500.1325007 MHz

F2 - Processing parameters
SI                 16384
SF           500.1300165 MHz
WDW                   EM
SSB        0
LB                 0.30 Hz
GB         0
PC                 1.00
```


177.49
136.83
128.77
128.21
127.61
46.90
44.77
36.88
27.20
16.55
O
N
Ph
11g
200
180
160
140
120
100
80
60
40
20
0
ppm

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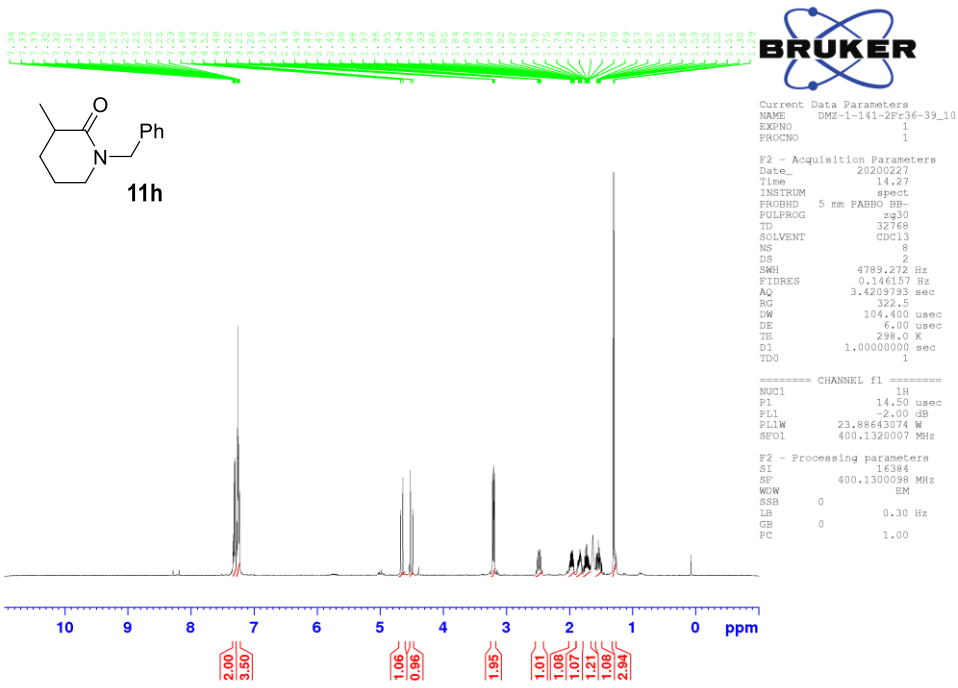
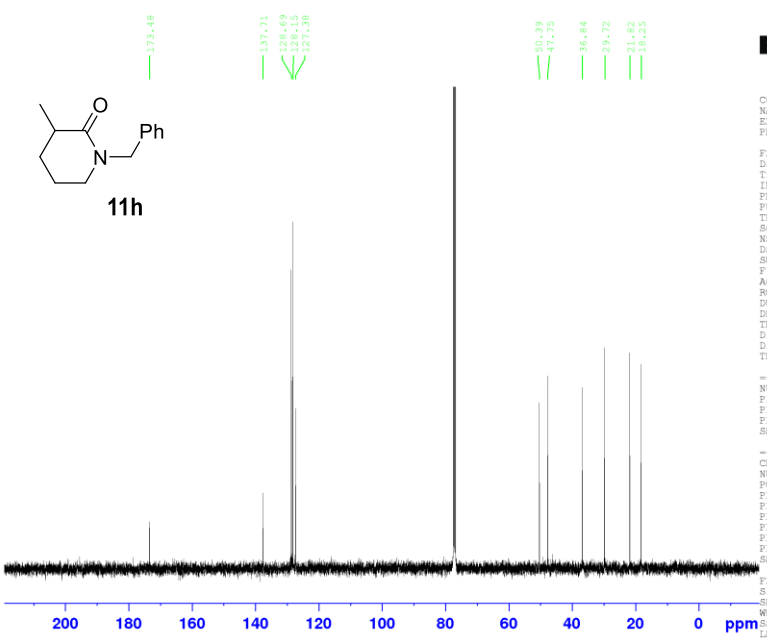
Current Data Parameters
NAME DMZ-1-080PURE_11
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20190629
Time 1.58
INSTRUM spect
PROBHD 5 mm PATBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 2048
DS 4
SWH 30303.031 Hz
FIDRES 0.462308 Hz
AQ 1.0813440 sec
RG 14600
DW 16.500 usec
DE 10.00 usec
TE 298.5 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 13C
P1 9.25 usec
PL1 0 dB
PL1W 53.75436783 W
SFO1 125.7703648 MHz
======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -4.08 dB
PL12 11.54 dB
PL13 11.54 dB
PL2W 35.02648163 W
PL12W 0.96027696 W
PL13W 0.96027696 W
SFO2 500.1320005 MHz
F2 - Processing parameters
SI 32768
SF 125.7577739 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


O
N
Ph
11h
10
9
8
7
6
5
4
3
2
1
0
ppm
2.00
3.50
1.06
0.96
1.95
1.01
1.08
1.07
1.21
1.09
2.94

BRUKER
Current Data Parameters
NAME DMZ-1-141-2Fr36-39_10
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20200227
Time 14.27
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 8
DS 2
SWH 4789.272 Hz
FIDRES 0.146157 Hz
AQ 3.4209793 sec
RG 322.5
DW 104.400 usec
DE 6.00 usec
TE 298.0 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 14.50 usec
PL1 -2.00 dB
PL1W 23.88643074 W
SFO1 400.1320007 MHz
F2 - Processing parameters
SI 16384
SF 400.1300098 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



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```
Current Data Parameters
NAME      DMZ-1-141-2-fr36-39_20
EXPNO                  1
PROCNO                 1

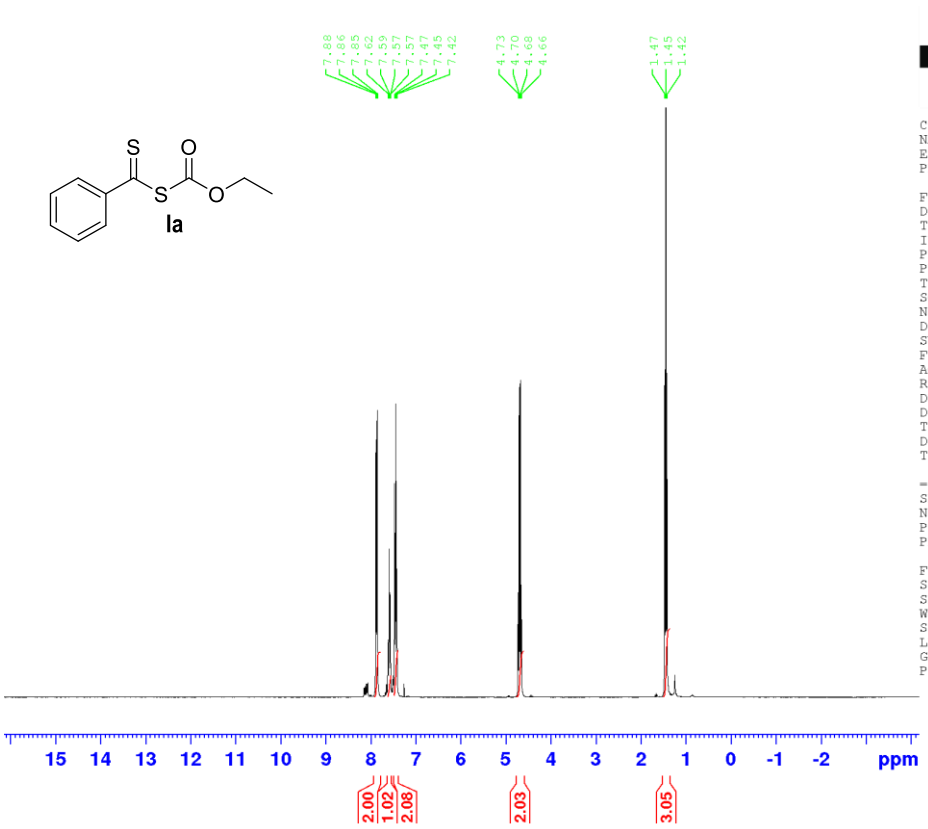
F2 - Acquisition Parameters
Date_           20200227
Time              20.46
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG           zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1532
DS                    4
SWH           23980.814 Hz
FIDRES         0.365918 Hz
AQ             1.3664256 sec
RG                32768
DW               20.850 usec
DE               10.00 usec
TE               298.0 K
D1            1.00000000 sec
D11           0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                10.00 usec
PL1               -3.00 dB
PL1W         75.17808533 W
SFO1        100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W         23.88643074 W
PL12W         0.78550917 W
PL13W         0.78550917 W
SFO2        400.1316005 MHz

F2 - Processing parameters
SI                32768
SF          100.6127548 MHz
WDW                  EM
SSB       0
LB                1.00 Hz
GB        0
PC                1.40
```

F3. Acyl Intermediates, TEMPO Trapping and Group Transfer Products



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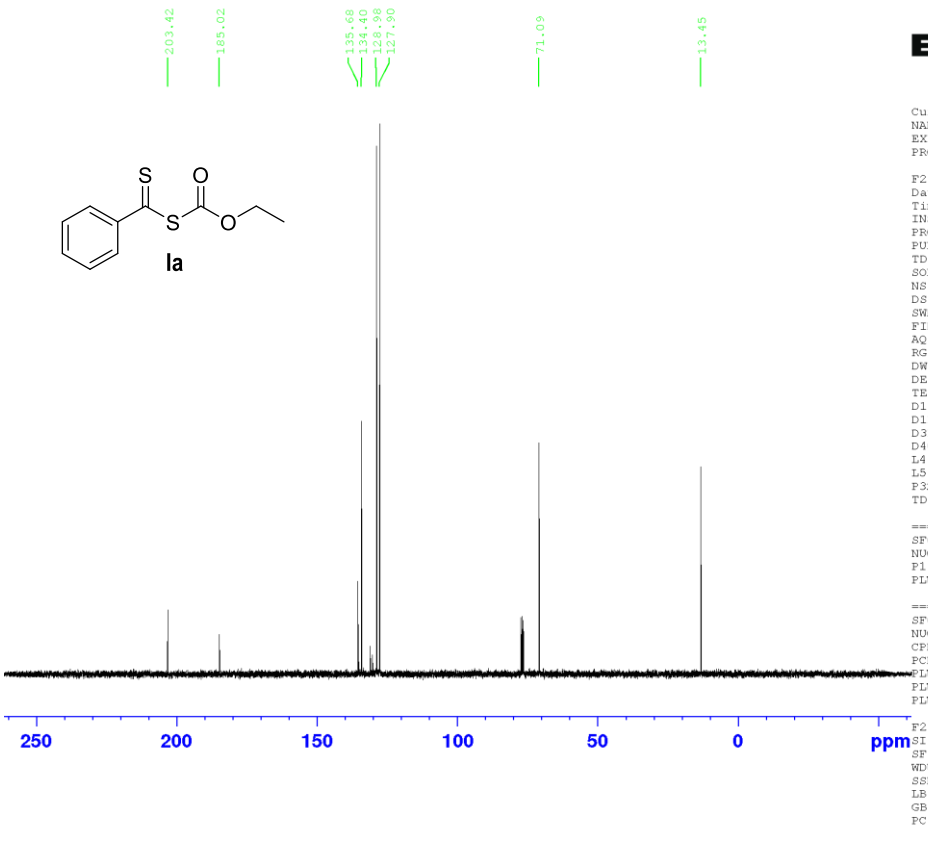
```
Current Data Parameters
NAME                  epb-2-21
EXPNO                       10
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20190703
Time                     11.23
INSTRUM             FOURIER300
PROBHD    5 mm DUL 13C-1
PULPROG                  zg30
TD                      65536
SOLVENT                 CDCl3
NS                          8
DS                          2
SWH                  6103.516 Hz
FIDRES               0.093132 Hz
AQ                   5.3687091 sec
RG                     5.39184
DW                    81.920 usec
DE                     6.50 usec
TE                     298.0 K
D1                   1.00000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1          300.1818011 MHz
NUC1                     1H
P1                    11.75 usec
PLW1          20.00000000 W

F2 - Processing parameters
SI                      32768
SF                300.1800056 MHz
WDW                        EM
SSB                 0
LB                    0.30 Hz
GB                  0
PC                    1.40
```



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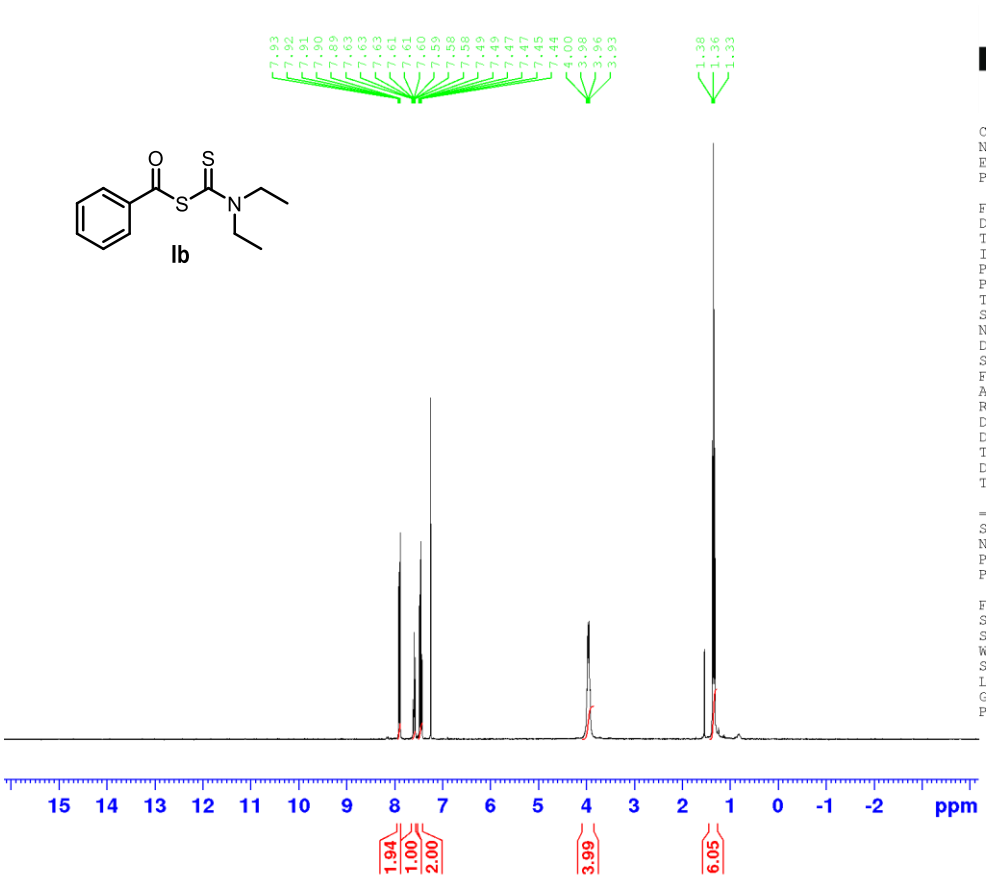
```
Current Data Parameters
NAME                  epb-2-21
EXPNO                       11
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20190703
Time                     11.26
INSTRUM             FOURIER300
PROBHD    5 mm DUL 13C-1
PULPROG              zgpg30
TD                      65536
SOLVENT                 CDCl3
NS                          84
DS                          4
SWH                 24414.063 Hz
FIDRES               0.372529 Hz
AQ                   1.3421773 sec
RG                     501.187
DW                    20.480 usec
DE                     6.50 usec
TE                     298.1 K
D1                   1.00000000 sec
D11                  0.03000000 sec
D31                  0.00001050 sec
D40                  0.01641260 sec
L4                          45
L5                          32
P32                   80.00 usec
TD0                         1

======== CHANNEL f1 ========
SFO1          75.4878688 MHz
NUC1                     13C
P1                    10.50 usec
PLW1          50.00000000 W

======== CHANNEL f2 ========
SFO2          300.1812007 MHz
NUC2                     1H
CPDPRG[2             waltz16
PCPD2                 80.00 usec
PLW2          20.00000000 W
PLW12          0.43145001 W
PLW13          0.43145001 W

F2 - Processing parameters
SI                      32768
SF                75.4803267 MHz
WDW                        EM
SSB                 0
LB                    1.00 Hz
GB                  0
PC                    1.40
```

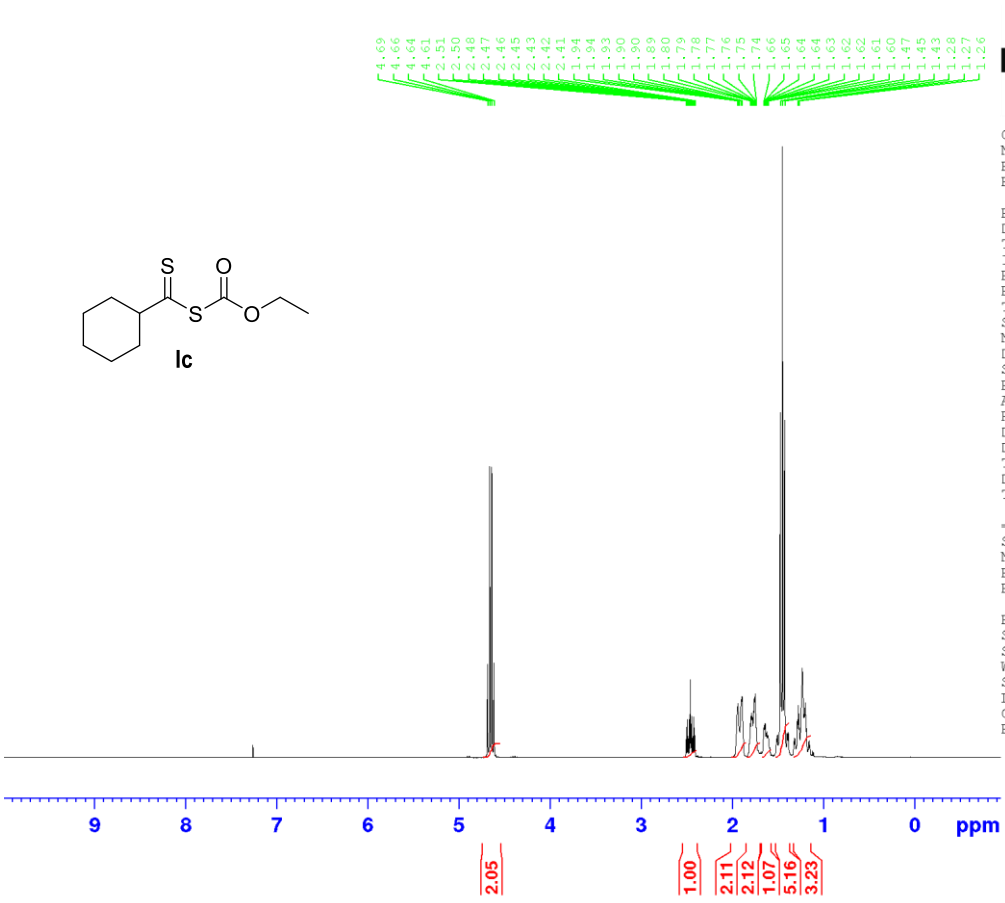



```
Current Data Parameters
NAME          epb-2-22-f1
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20190724
Time               10.45
INSTRUM       FOURIER300
PROBHD    5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6103.516 Hz
FIDRES          0.093132 Hz
AQ              5.3687091 sec
RG                97.5238
DW                81.920 usec
DE                 6.50 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         300.1818011 MHz
NUC1                   1H
P1                 11.75 usec
PLW1         20.00000000 W

F2 - Processing parameters
SI                 32768
SF            300.1800055 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.40
```

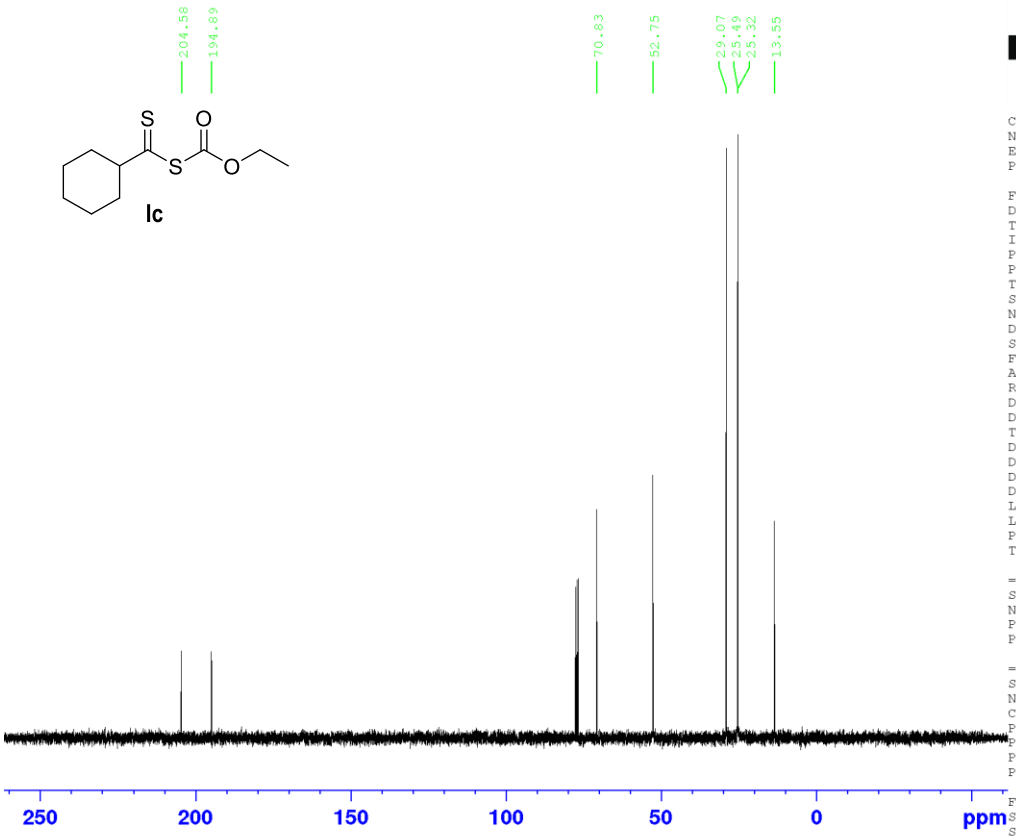



```
Current Data Parameters
NAME          epb-2-18
EXPNO                10
PROCNO                1

F2 - Acquisition Parameters
Date_           20190703
Time               11.13
INSTRUM       FOURIER300
PROBHD    5 mm DUL 13C-1
PULPROG             zg30
TD                 65536
SOLVENT            CDCl3
NS                     8
DS                     2
SWH             6103.516 Hz
FIDRES          0.093132 Hz
AQ              5.3687091 sec
RG                4.72252
DW                81.920 usec
DE                 6.50 usec
TE                298.0 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         300.1818011 MHz
NUC1                   1H
P1                 11.75 usec
PLW1         20.00000000 W

F2 - Processing parameters
SI                 32768
SF            300.1800057 MHz
WDW                   EM
SSB       0
LB                0.30 Hz
GB        0
PC                1.40
```



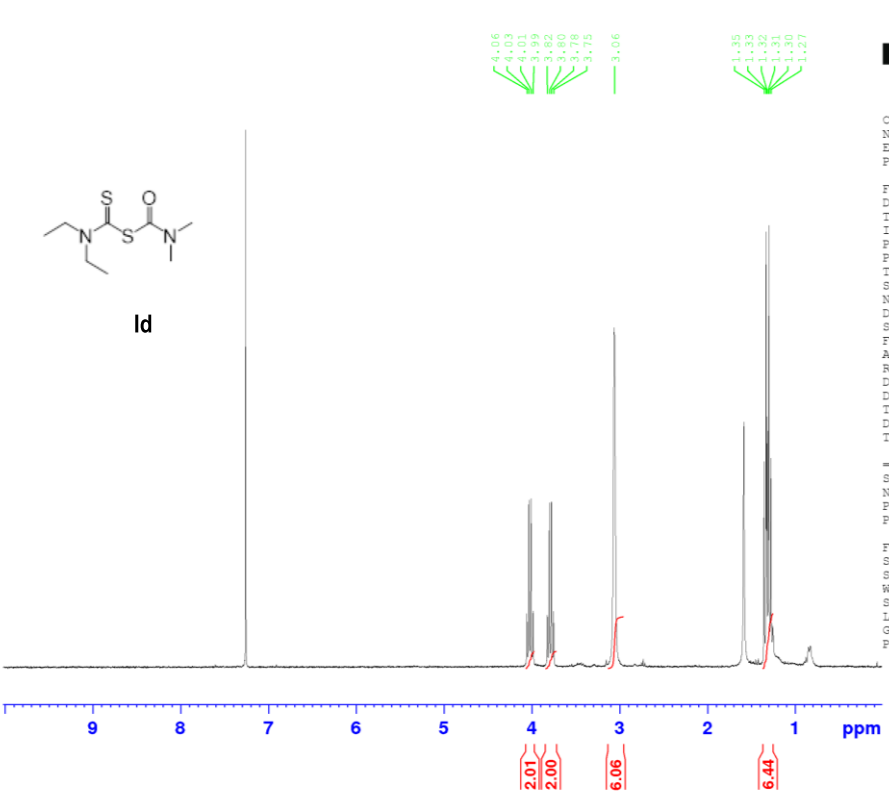

```
Current Data Parameters
NAME                  epb-2-18
EXPNO                       11
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20190703
Time                     11.16
INSTRUM             FOURIER300
PROBHD    5 mm DUL 13C-1
PULPROG                zgpg30
TD                      65536
SOLVENT                 CDCl3
NS                         43
DS                          4
SWH                 24414.063 Hz
FIDRES               0.372529 Hz
AQ                   1.3421773 sec
RG                     501.187
DW                      20.480 usec
DE                       6.50 usec
TE                      298.1 K
D1                   1.00000000 sec
D11                  0.03000000 sec
D31                  0.00001050 sec
D40                  0.01641260 sec
L4                         45
L5                         32
P32                     80.00 usec
TD0                         1

======== CHANNEL f1 ========
SFO1                 75.4878688 MHz
NUC1                        13C
P1                       10.50 usec
PLW1                50.00000000 W

======== CHANNEL f2 ========
SFO2                300.1812007 MHz
NUC2                        1H
CPDPRG[2                waltz16
PCPD2                    80.00 usec
PLW2                20.00000000 W
PLW12                0.43145001 W
PLW13                0.43145001 W

F2 - Processing parameters
SI                         32768
SF                   75.4803190 MHz
WDW                           EM
SSB                 0
LB                        1.00 Hz
GB                  0
PC                        1.40
```

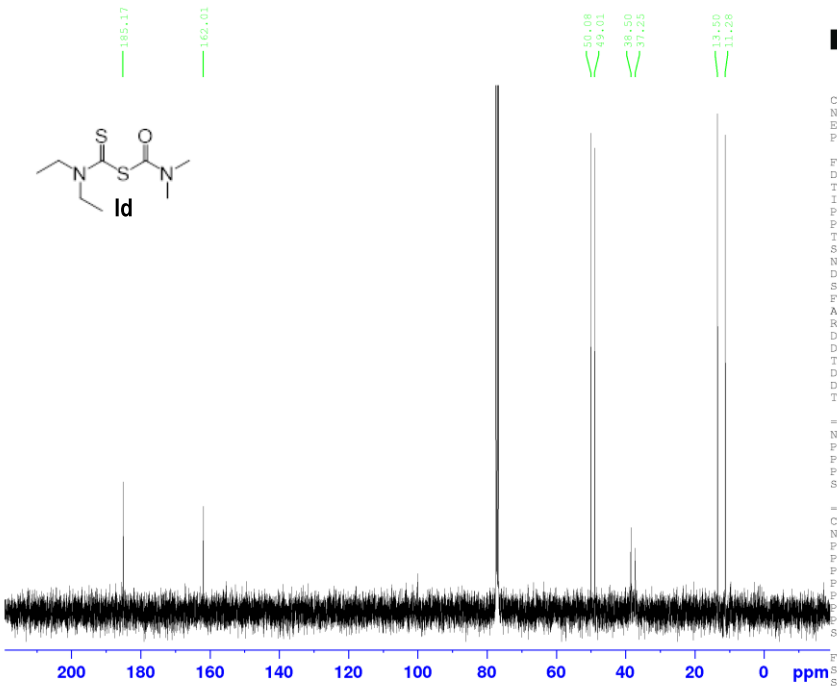



```
Current Data Parameters
NAME                 MBL046_10
EXPNO                        1
PROCNO                       1

F2 - Acquisition Parameters
Date_                 20191115
Time                     14.35
INSTRUM             FOURIER300
PROBHD    5 mm DUL 13C-1
PULPROG                 zg30
TD                      65536
SOLVENT                 CDCl3
NS                          8
DS                          2
SWH                 6103.516 Hz
FIDRES               0.093132 Hz
AQ                   5.3687091 sec
RG                     108.743
DW                      81.920 usec
DE                       6.50 usec
TE                      298.0 K
D1                   1.00000000 sec
TD0                         1

======== CHANNEL f1 ========
SFO1                300.1818011 MHz
NUC1                        1H
P1                       11.75 usec
PLW1                20.00000000 W

F2 - Processing parameters
SI                         32768
SF                  300.1800055 MHz
WDW                           EM
SSB                 0
LB                        0.30 Hz
GB                  0
PC                        1.40
```



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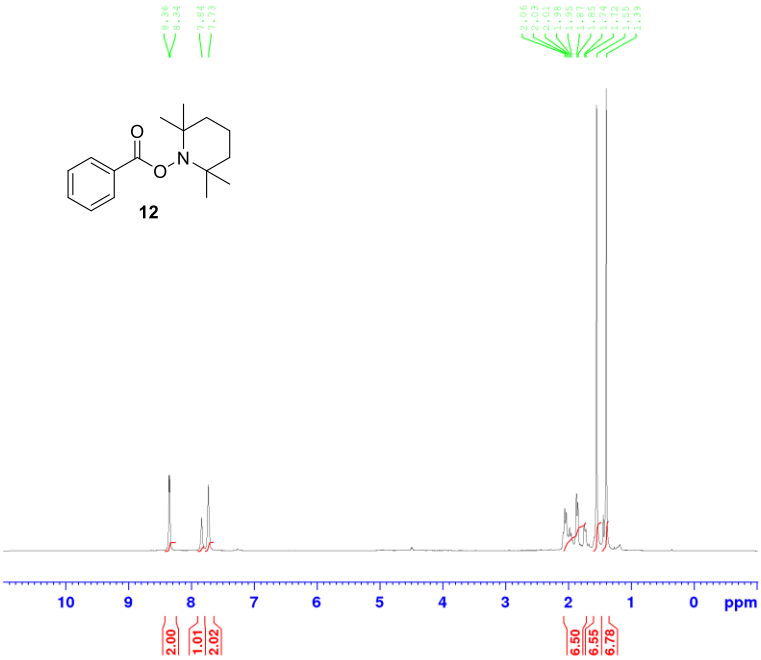
```
Current Data Parameters
NAME       MBL046-13C_10
EXPNO                 1
PROCNO                1

F2 - Acquisition Parameters
Date_           20191116
Time              13.59
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG         zgpg30
TD                65536
SOLVENT           CDCl3
NS                 1100
DS                    4
SWH           23980.814 Hz
FIDRES        0.365918 Hz
AQ            1.3664256 sec
RG                26008
DW               20.850 usec
DE               10.00 usec
TE               298.5 K
D1           1.00000000 sec
D11          0.03000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                10.00 usec
PL1               -3.00 dB
PL1W        75.17808533 W
SFO1       100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              12.83 dB
PL13              12.83 dB
PL2W        23.88643074 W
PL12W        0.78550917 W
PL13W        0.78550917 W
SFO2       400.1316005 MHz

F2 - Processing parameters
SI                32768
SF         100.6127554 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```



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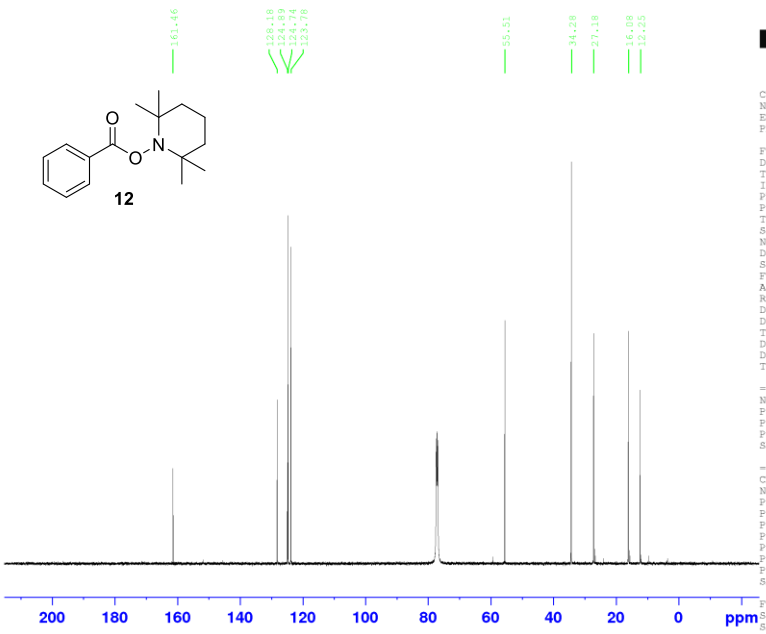
```
Current Data Parameters
NAME      epb-2-187-f2-1H
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_           20191219
Time              2.44
INSTRUM           spect
PROBHD   5 mm PATBO BB-
PULPROG             zg30
TD                32768
SOLVENT           CDCl3
NS                    8
DS                    2
SWH            6009.615 Hz
FIDRES         0.183399 Hz
AQ            2.7262976 sec
RG                   57
DW               83.200 usec
DE               10.00 usec
TE               297.9 K
D1           1.00000000 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 1H
P1                14.00 usec
PL1               -4.08 dB
PL1W        35.02648163 W
SFO1       500.1325007 MHz

F2 - Processing parameters
SI                16384
SF         500.1300061 MHz
WDW                  EM
SSB                   0
LB                 0.30 Hz
GB                    0
PC                 1.00
```



BRUKER

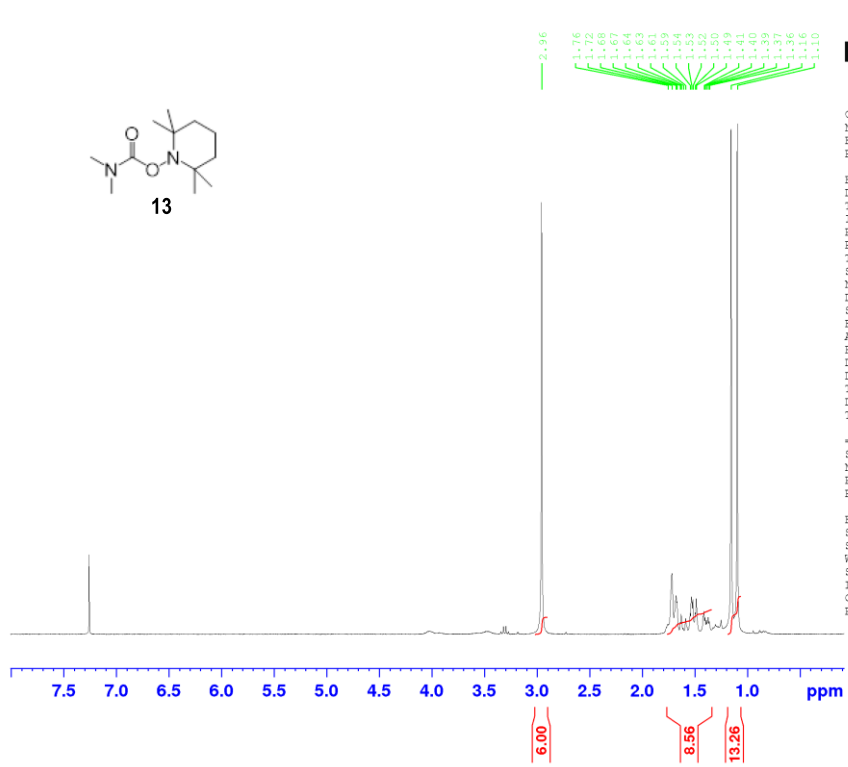
```
Current Data Parameters
NAME      epb-2-187-f2-13C
EXPNO                  10
PROCNO                  1

F2 - Acquisition Parameters
Date_              20191219
Time                   3.03
INSTRUM               spect
PROBHD  5 mm PATBO BB-
PULPROG            zgpg30
TD                  65536
SOLVENT             CDCl3
NS                    512
DS                      4
SWH             30303.031 Hz
FIDRES              0.462398 Hz
AQ              1.0813440 sec
RG                    7290
DW                 16.500 usec
DE                 10.00 usec
TE                 299.1 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
NUC1                  13C
P1                  9.25 usec
PL1        0 dB
PL1W        53.75436783 W
SFO1       125.7703648 MHz

======== CHANNEL f2 ========
CPDPRG[2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2               -4.08 dB
PL12              11.54 dB
PL13              11.54 dB
PL2W            35.02648163 W
PL12W            0.96027696 W
PL13W            0.96027696 W
SFO2            500.1320005 MHz

F2 - Processing parameters
SI                    32768
SF             125.7584397 MHz
WDW                      EM
SSB        0
LB                 1.00 Hz
GB         0
PC                 1.40
```



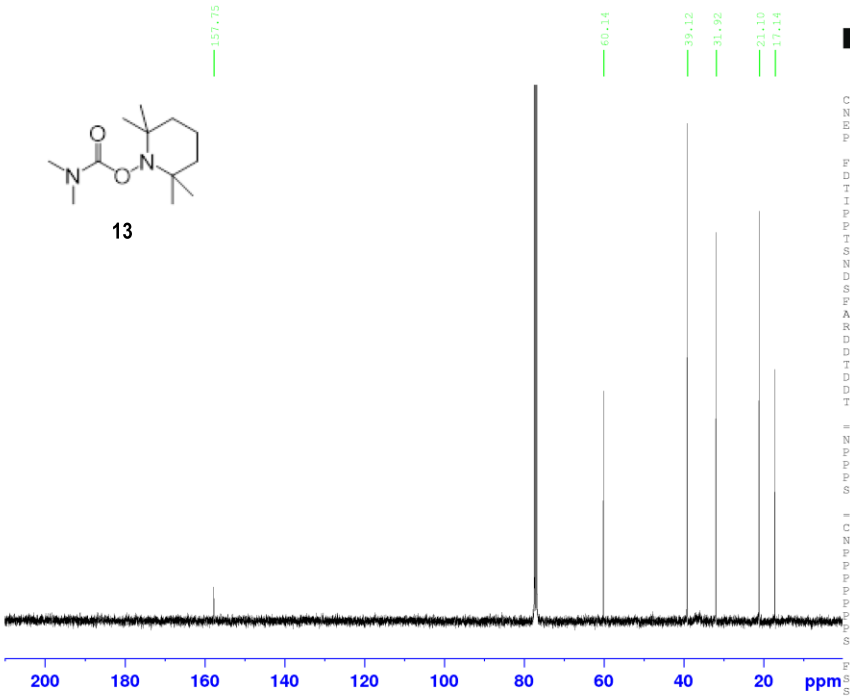
BRUKER

```
Current Data Parameters
NAME          MBL52-f1_10
EXPNO                   3
PROCNO                  1

F2 - Acquisition Parameters
Date_              20191120
Time                  11.43
INSTRUM          FOURIER300
PROBHD   5 mm DUL 13C-1
PULPROG               zg30
TD                   65536
SOLVENT              CDCl3
NS                       8
DS                       2
SWH              6103.516 Hz
FIDRES           0.093132 Hz
AQ               5.3687091 sec
RG                  46.7224
DW                  81.920 usec
DE                   6.50 usec
TE                  298.0 K
D1               1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
SFO1            300.1818011 MHz
NUC1                    1H
P1                  11.75 usec
PLW1            20.00000000 W

F2 - Processing parameters
SI                    32768
SF             300.1800055 MHz
WDW                      EM
SSB        0
LB                  0.30 Hz
GB         0
PC                  1.40
```



13

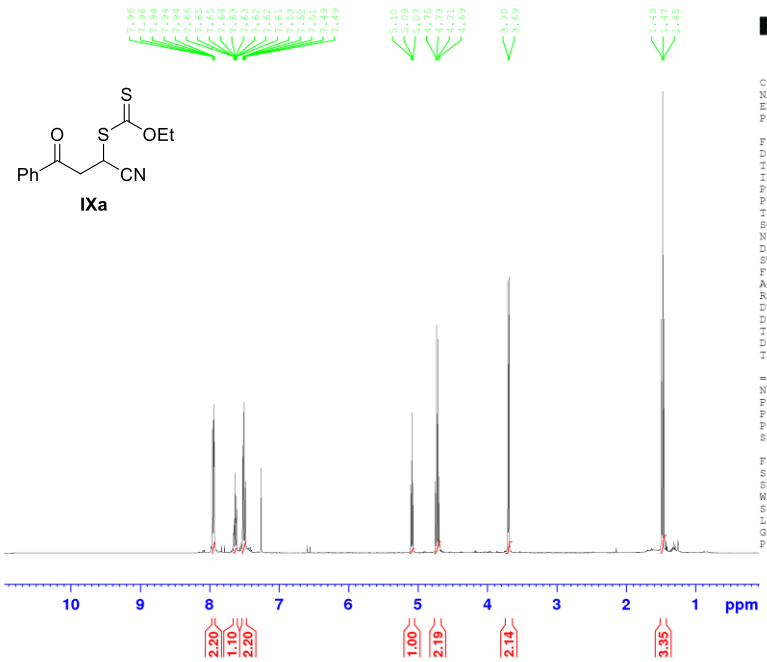
```
Current Data Parameters
NAME          MBL052-f1_13C
EXPNO                     1
PROCNO                    1

F2 - Acquisition Parameters
Date_               20191121
Time                    4.29
INSTRUM                spect
PROBHD   5 mm PABBO BB-
PULPROG             zgpg30
TD                   65536
SOLVENT              CDCl3
NS                    1500
DS                       4
SWH             24038.461 Hz
FIDRES           0.366798 Hz
AQ               1.3631488 sec
RG                 20642.5
DW                  20.800 usec
DE                  10.00 usec
TE                  298.2 K
D1              1.00000000 sec
D11             0.03000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                    9.25 usec
PL1                  -3.00 dB
PL1W          75.17808533 W
SFO1         100.6303736 MHz

======== CHANNEL f2 ========
CPDPRG[2            waltz16
NUC2                   1H
PCPD2                80.00 usec
PL2                  -3.00 dB
PL12                 13.05 dB
PL13                 13.05 dB
PL2W          30.07123375 W
PL12W          0.74670875 W
PL13W          0.74670875 W
SFO2         400.1616006 MHz

F2 - Processing parameters
SI                     32768
SF           100.6203000 MHz
WDW                       EM
SSB                    0
LB                    1.00 Hz
GB                     0
PC                    1.40
```



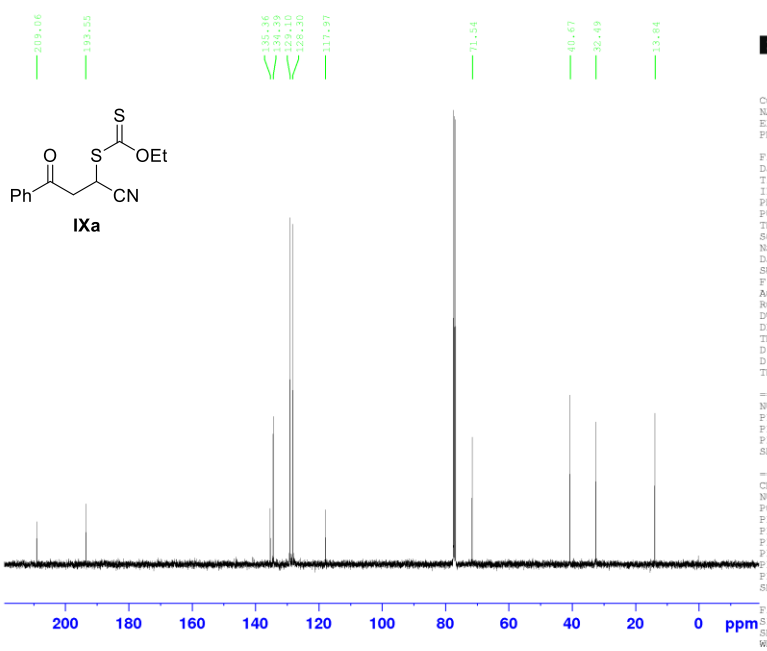
IXa

```
Current Data Parameters
NAME          epb-2-213-f1
EXPNO                   10
PROCNO                   1

F2 - Acquisition Parameters
Date_               20200116
Time                   11.41
INSTRUM                spect
PROBHD   5 mm PABBO BB-
PULPROG                zg30
TD                    32768
SOLVENT              CDCl3
NS                        8
DS                        2
SWH              4789.272 Hz
FIDRES           0.146157 Hz
AQ               3.4209793 sec
RG                      181
DW                  104.400 usec
DE                    6.00 usec
TE                  298.0 K
D1              1.00000000 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   1H
P1                   14.50 usec
PL1                  -2.00 dB
PL1W          23.88643074 W
SFO1         400.1320007 MHz

F2 - Processing parameters
SI                     16384
SF           400.1300097 MHz
WDW                       EM
SSB                    0
LB                    0.30 Hz
GB                     0
PC                    1.00
```



Current Data Parameters
NAME epb-2-213-f1-13C
EXPNO 10
PROCNO 1

F2 - Acquisition Parameters
Date_ 20200116
Time 15.09
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 512
DS 4
SWH 23980.814 Hz
FIDRES 0.365918 Hz
AQ 1.3664256 sec
RG 32768
DW 20.850 usec
DE 10.00 usec
TE 298.8 K
D1 1.00000000 sec
D11 0.03000000 sec
TD0 1

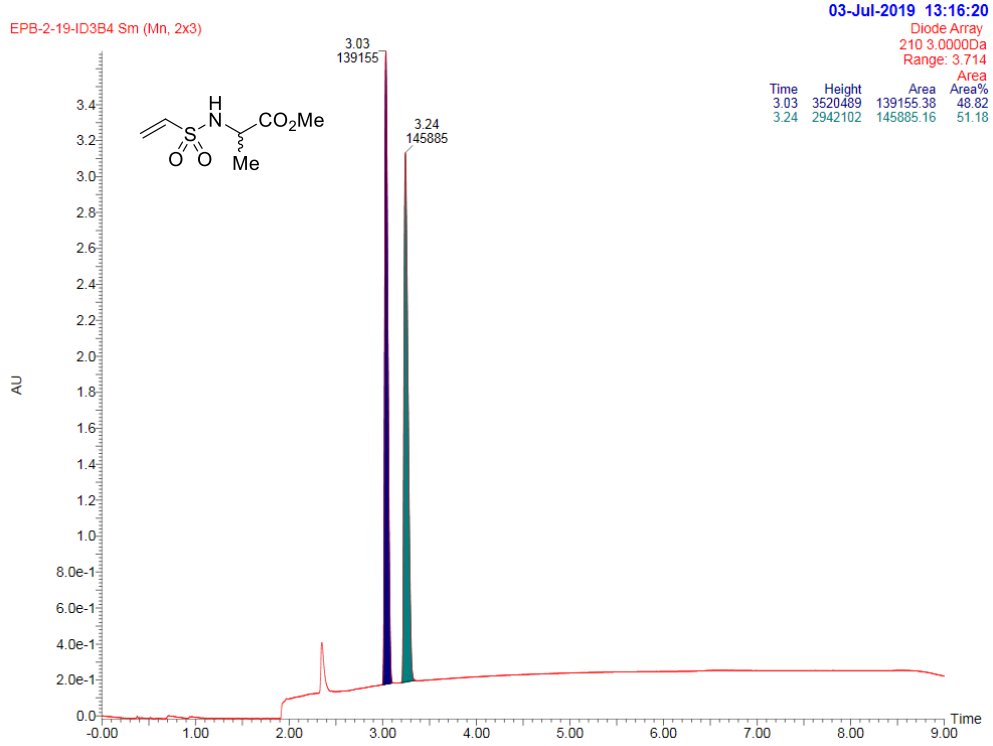
======== CHANNEL f1 ========
NUC1 13C
P1 10.00 usec
PL1 -3.00 dB
PL1W 75.17808533 W
SFO1 100.6228298 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 12.83 dB
PL13 12.83 dB
PL2W 23.88643074 W
PL12W 0.78550917 W
PL13W 0.78550917 W
SFO2 400.1316005 MHz

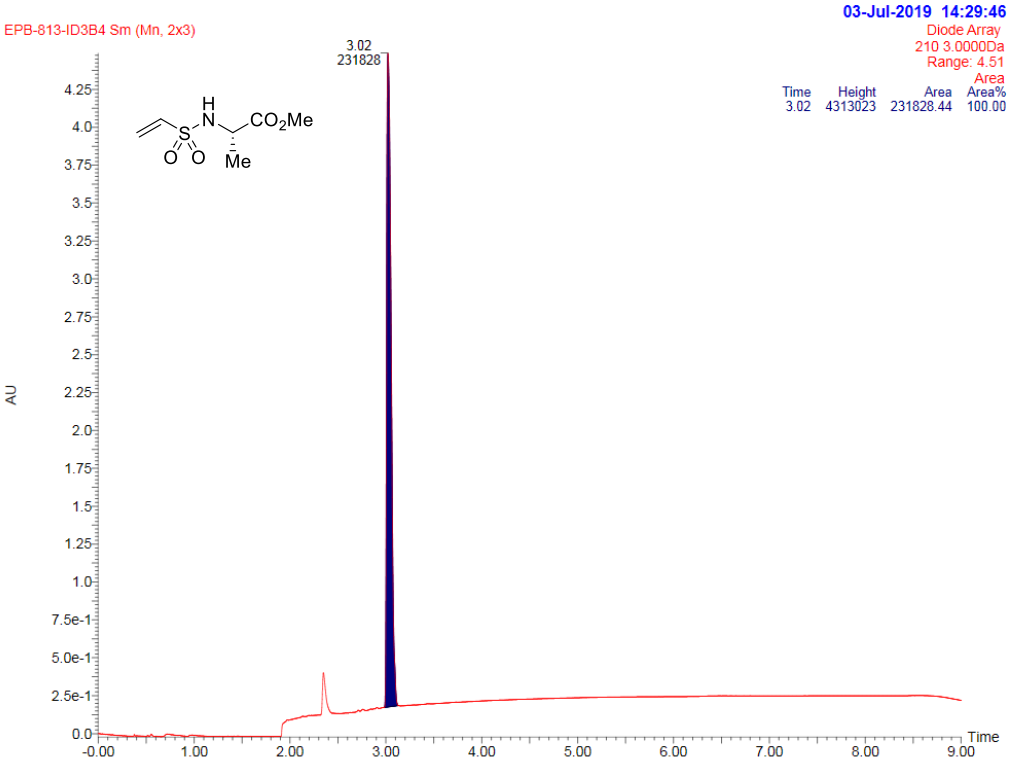
F2 - Processing parameters
SI 32768
SF 100.6127558 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

G. UPC^2 Traces

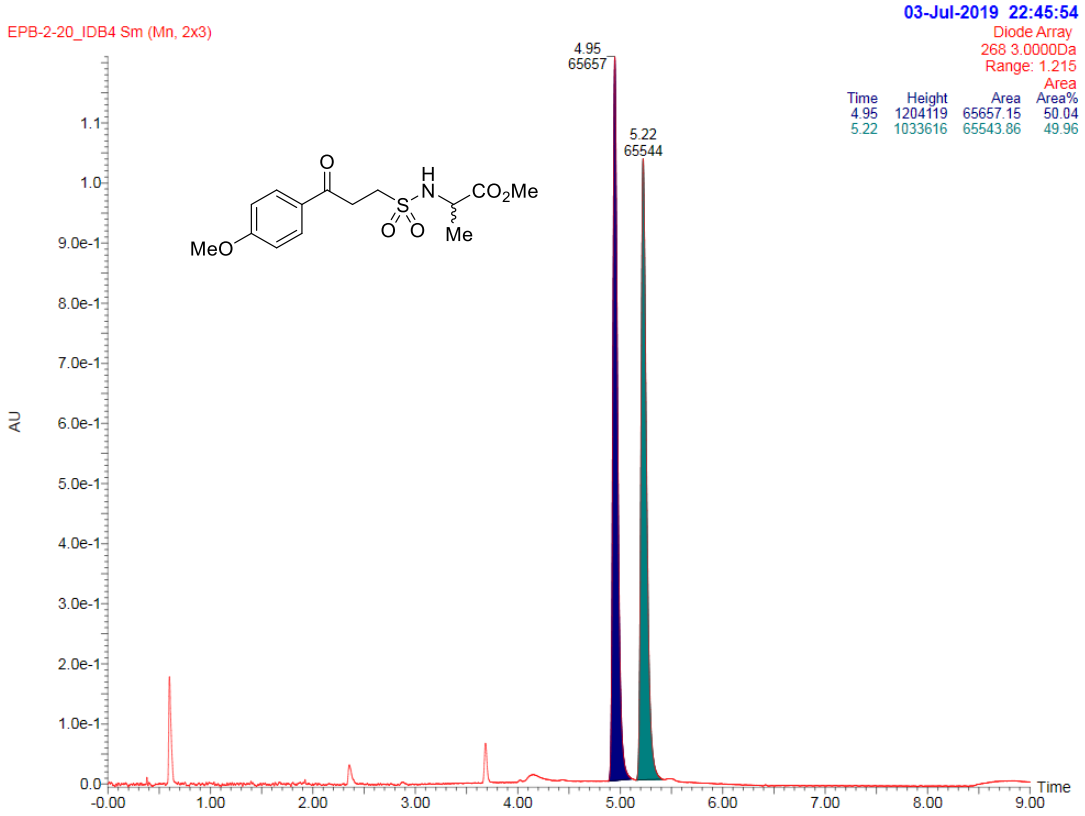
Conditions: UPC2 (Daicel Chiralpak ID-3 column, 20 °C, gradient CO_2/EtOH from 100% CO_2 to 60:40 over 4 minutes, curve 6, flow rate 3 mL/min, λ = 220 nm).



Conditions: UPC2 (Daicel Chiralpak ID-3 column, 20 °C, gradient CO_2/EtOH from 100% CO_2 to 60:40 over 4 minutes, curve 6, flow rate 3 mL/min, λ = 220 nm).



Conditions: UPC2 (Daicel Chiralpak ID-3 column, 20 °C, gradient CO_2/EtOH from 100% CO_2 to 60:40 over 4 minutes, curve 6, flow rate 3 mL/min, λ = 268 nm).



Conditions: UPC2 (Daicel Chiralpak ID-3 column, 20 °C, gradient CO_2/EtOH from 100% CO_2 to 60:40 over 4 minutes, curve 6, flow rate 3 mL/min, λ = 268 nm).