Electronic Supplementary Material (ESI) for Organic Chemistry Frontiers.

Divergent synthesis of pyrrolidine and glutamic acid derivatives using macrocyclic phase-transfer catalyst under high-pressure conditions

Agata Tyszka-Gumkowska and Janusz Jurczak*

Institute of Organic Chemistry, Polish Academy of Sciences, Kasprzaka 44/52, 01-224 Warsaw, Poland; e-mail: jurczak_group@icho.edu.pl

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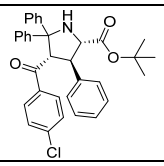
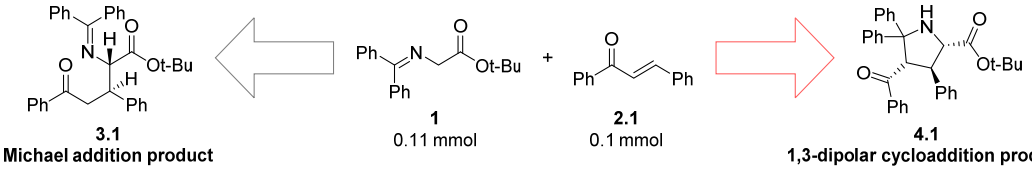
1. Crystallographic data

The monocrystals were obtained by slowly evaporating a saturated solution of **4.2** in hexane. Single crystal X-ray diffraction measurements were carried out on a Agilent Supernova diffractometer, at 100K with graphite monochromated Cu K_α radiation (1.54184 Å). The data reduction was made by using CrysAlisPRO1 software.[1] The structures were solved by direct methods and refined on F2 by full-matrix least-squares by using SHELXS97 and SHELXL97.[2] All non-hydrogen atoms were refined as anisotropic while hydrogen atoms were placed in calculated positions, and refined in riding mode.

Table S1: Crystallographic data for monocrystal of compound **4.2**		
compound	**4.2**	
structure		
Empirical formula	C34 H32 Cl N O3	
Moiety formula	C34 H32 Cl N O3	
Formula weight	538.09	
CCDC No.	2038651	
Temperature	100 K	
Wavelength	1.54184 Å (Cu K_α)	
Crystal system	triclinic	
Space group	*P-1*	
Unit cell dimensions	*a*=9.9043(6)	*α*=73.272(4)
	b=11.6621(6)	*β*=77.100(4)
	c=14.0011(6)	*γ*=68.468(5)
Volume	1428.06(14) Å^3	
Z	2	
Density Calc.	1.390 g/cm^3	
Absorption coefficient	1.457	
F(000)	570.3560	
Crystal	colourless block	
angular range Θ	4.2 – 70.0	
Index ranges	H min, max -11, 11 K min, max -14, 13. L min, max -16, 11	
Reflections collected (all / independent)	5322/4857	
Refinement method	Full-matrix least-squares on F^2	
Absorption correction	multi-scan	
Restraints / nodes / parameters	4857 / 0 / 359	
Goodness-of-fit on F^2	1.0528	
Final R indices [$F^2 > 2\sigma(F^2)$]	R_1= 0.0343 wR_2= 0.0909	
R indices (all data)	R_1= 0.0373 wR_2= 0. 09036	
p_{max} i p_{min}	0.2466 and -0.377	

2. Optimization of the reaction conditions

Table S2: Investigation of optimal reaction conditions at 10 kbar pressure and 2.5 mL of MTBE as a solvent



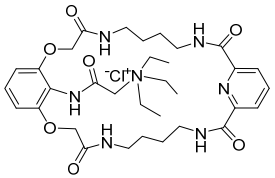
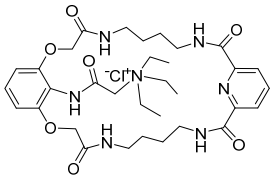
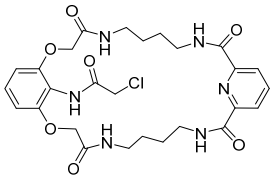
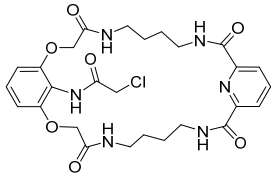
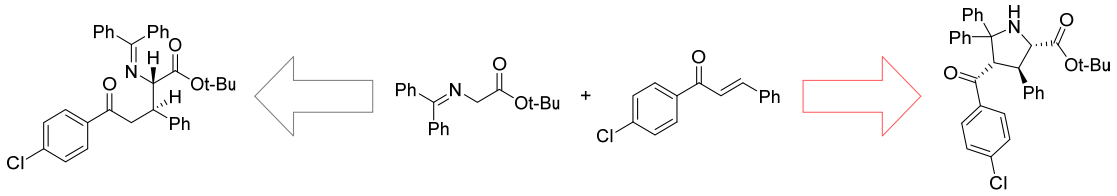
Base (5 equiv.)	**Without catalyst**	 **5 mol%**	**Without catalyst 50 ℃**	 **5 mol% in 50 ℃**	 **5 mol% + 50 mol% NEt_3**	 **5 mol% + 50 mol% NEt_3 in 50 ℃**
$CsOH·H_2O$	W=82% d.r. 91:9	W=96% d.r. 96:4	W=90% d.r. 57:43	W=98% d.r. 92:8	W=81% d.r. 50:50	W=88% d.r. 87:13
KOH	W=85 % d.r. 88:12	W=95% d.r. 96:4	W=88% d.r. 70:30	W=95% d.r. 80:20	W=80% d.r. 80:20	W=95% d.r. 96:4
50% KOH_{aq}	W=87% d.r. 80:20	W=95% d.r. 83:17	W=61 % d.r. 96:4	W=80% d.r. 99:1	W=99% d.r. 65:35	W=94% d.r. 96:4
Cs_2CO_3	W=87% d.r. 86:14	W=91% d.r. 96:4	W=72% d.r. 54:46	W=78% d.r. 82:18	W=80 % d.r. 85:15	W=99 % d.r. 99:1
K_2CO_3	No reaction	No reaction	W=65% d.r. 98:2	W=54% d.r. >99:1	W=76% d.r. 97:3	W=98% d.r. 96:4
$BaCO_3$	No reaction	No reaction	W=64% d.r. >99:1	W=66% d.r. >99:1	W=72% d.r. >99:1	W=93% d.r. 96:4

Table S3: Effect of different bases on the reaction course at 10 kbar pressure and 2.5 mL of MTBE as a solvent



3.2
Michael addition product

1
0.112 mmol, 1.1 equiv.

2.2
0.102 mmol, **1** equiv.

4.2
1,3-dipolar cycloaddition product

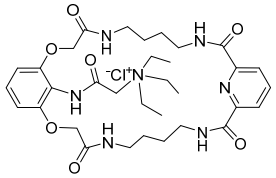
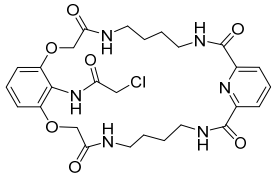
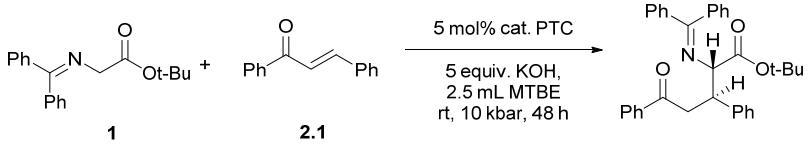
Base (5 equiv.)	 **5 mol%**	 **5 mol% + 50 mol% NEt_3 in 50 ℃**
$CsOH \cdot H_2O$	96% d.r. 84:16	94% d.r. 96:4
KOH	96% d.r. >99:1	95% d.r. 96:4
50% KOH_{aq}	63% d.r. 80:20	94% d.r. 92:8
Cs_2CO_3	W=93% d.r. 66:34	94 % d.r. 93:7
K_2CO_3	No reaction	94% d.r. 96:4
$BaCO_3$	No reaction	99% d.r. 98:2

Table S4: Effect of different PTC catalyst on the reaction course



1 0.112 mmol, 1.1 equiv. | **2.1** 0.102 mmol, 1 equiv. | **3.1**

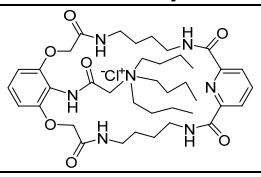
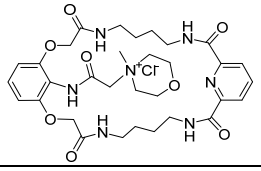
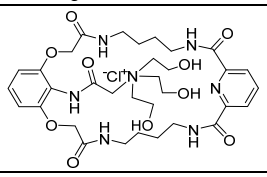
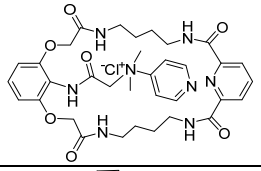
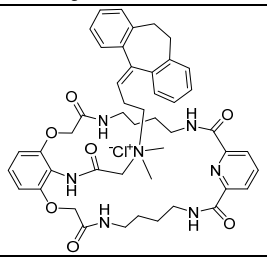
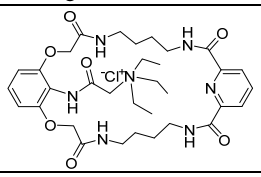
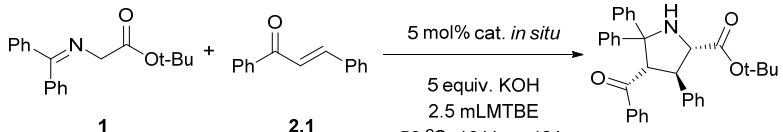
PTC catalyst	Yield	Diastereomeric ratio
	88%	92:8
	93%	95:5
	92%	95:5
	92%	95:5
	90%	97:3
	95%	96:4

Table S5: Effect of different PTC catalyst formed *in situ* on the reaction course



1 0.112 mmol, 1.1 equiv. **2.1** 0.102 mmol, 1 equiv. **4.1**

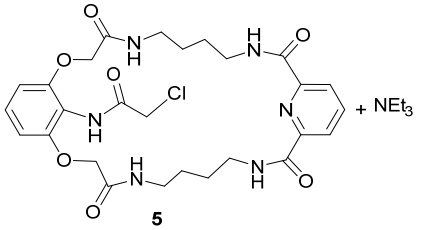
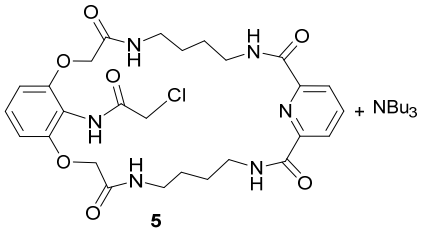
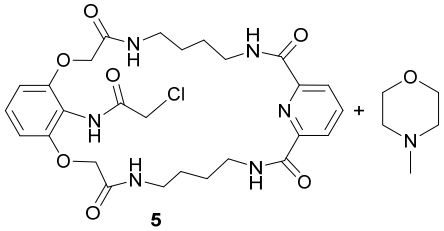
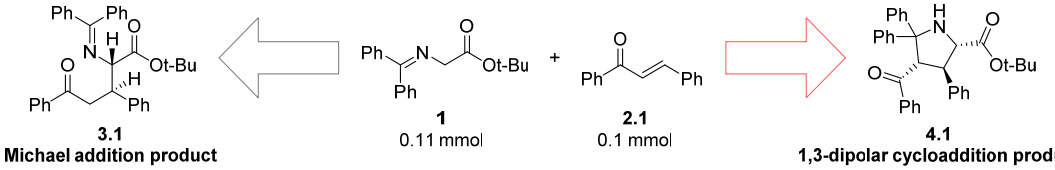
Catalyst precursor 5 mol% and 50 mol% of amine	Yield	Diastereomeric ratio
 **5**	95%	96:4
 **5**	80%	90:10
 **5**	40%	95:5

Table S6: Impact of pressure on the reaction course at 10 kbar pressure and 2.5 mL of MTBE as a solvent



Conditions	Pressure	Yield and diastereomeric ratio	Main product
5 mol% cat. **7**, 5 equiv. KOH, room temp., 48 hours	10 kbar	95%, d.r. 94:6	**3.1**
	8 kbar	90%, d.r. 94:6	**3.1**
	5 kbar	90%, d.r. 92:8	**3.1**
	atmospheric pressure	52%, d.r. 69:31	**3.1**
5 mol% of **5** and 50 mol% of NEt_3, 5 equiv. KOH, 50 °C, 48 hours	10 kbar	95%, d.r. 94:6	**4.1**
	8 kbar	87%, d.r. 89:11	**4.1**
	5 kbar	82%, d.r. 63:37	**4.1**
	atmospheric pressure	65%, d.r. 59:41	**4.1**

2. Synthetic procedures and substance analysis

2.1. General remarks

All solvents and reagents were obtained from common suppliers and used as received. Flash column chromatography was performed on silica gel (230−400 mesh), thin-layer chromatography (TLC) was carried out on aluminium sheets precoated with silica gel. ^{1}H NMR and $^{13}C\{^{1}H\}$ NMR spectra were recorded on Varian 600, Varian 500 and on Bruker Mercury. Chemical shifts are reported in ppm and are set to solvent residue peak (chloroform-d_3 and acetone-d_6). The splitting pattern of multiplets is described by abbreviations (s – singlet, d – doublet, t–triplet, q – quartet, dd – doublet of doublets, m – multiplet, c – covered signal, b – broad peak). *J* coupling constants values are reported in Hz. Melting points were determined using a Boëtius M HMK hot-stage apparatus and were uncorrected. High resolution mass spectra (HRMS) performed with the ESI-TOF technique on a Mariner mass spectrometer from PerSeptive Biosystem.

2.2. Synthetic procedures

General Procedure A for obtaining α,β-unsaturated ketones

In accordance with the modified literature procedure.[3] To a solution of KOH in water (8 g of KOH in 8 mL of water) the solution of appropriate methyl ketone (1.0 equiv., 5.0 mmol) and aldehyde (1.0 equiv, 5.0 mmol) in MeOH (10 mL) at 0 °C was added dropwise. Typically, the mixture started to solidified during addition of substrates. The reaction was monitored by TLC. After completion, H_2O (150 mL) was added at 0 °C and the resulting precipitate filtered. Recrystallization from EtOH afforded the pure α,β-unsaturated ketones. In the cases where precipitation did not occur, the reaction mixture was extracted with DCM (3 x 50 mL). Organic layers were combined, washed with brine, dried over Na_2SO_4, filtered and evaporated to dryness in vacuo. Subsequent purification by flash column chromatography using hexane:ethyl acetate (95:5→9:1) as an eluent afforded the pure products.

General Procedure B for obtaining α,β-unsaturated ketones

In accordance with the modified literature procedure.[4] To a solution of the appropriate methyl ketone (1.0 equiv., 5.0 mmol) and aldehyde (1.0 equiv., 5.0 mmol) in MeOH (10 mL) at 0 °C was added a 10% aqueous solution of KOH (30 mL, dropwise). Typically, the mixture started to solidified after 15 minutes. The reaction was monitored by TLC. After completion of the reaction, H_2O (150 mL) was added at 0 °C and the resulting precipitate was filtered. Recrystallization from EtOH afforded the pure α,β-unsaturated ketones. In the cases where precipitation did not occur, the reaction mixture was extracted with DCM (3 x 50 mL). Organic

layers were combined, washed with brine, dried over Na_2SO_4, filtered and evaporated to dryness in vacuo. Subsequent purification by flash column chromatography using hexane:ethyl acetate (95:5→9:1) as an eluent afforded the pure products.

General Procedure C for obtaining Michael adducts **3.2**-**3.23**

Glycine ketamine **1** (33 mg, 0.112 mmol, 1.1 equiv.), appropriate α, β-unsaturated ketone (1 equiv., 0.102 mmol), PTC **7** catalyst (3.5 mg, 5 mol%, 0.0051 mmol) and KOH (5 equiv., 28.5 mg, 0.510 mmol) were placed into a 2.5 mL Teflon reaction vessel. Then the reaction vessel was filled with MTBE and screwed tightly to avoid any air bubbles inside. The reaction was carried out in a high-pressure apparatus for 48 hours, using a pressure of 10kbar. After complexion, the reaction mixture was filtered through a pad of silica gel and magnesium sulphate, washing the product with DCM. After concentration, the crude product was purified by preparative HPLC (loading as a solution in DCM), eluting with a solvent system of 5% AcOEt + 1% NEt_3 in hexane to separate the excess of ketamine **1**. Combined fractions were concentrated and dried to receive the final compound.

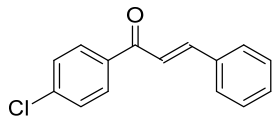
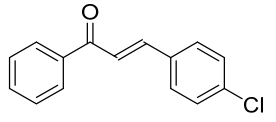
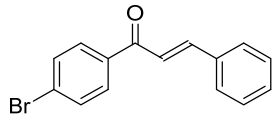
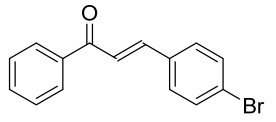
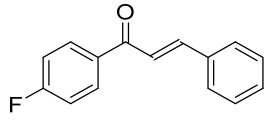
In experiments on larger scale glycine ketamine **1** (330 mg, 1.12 mmol, 1.1 equiv.), α, β-unsaturated ketone **2.1** (212 mg, 1.02 mmol, 1 equiv.), PTC **7** catalyst (35 mg, 5 mol%, 0.051 mmol) and KOH (5 equiv., 285 mg, 5.10 mmol) were placed into a 25 mL Teflon reaction vessel. After purification product were obtained as a clear oil (467 mg, 91%, d.r. 90:10).

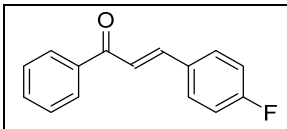
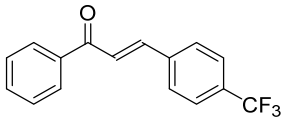
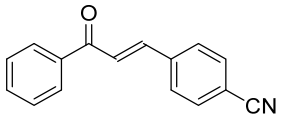
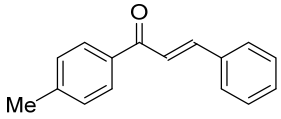
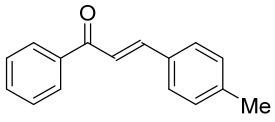
General Procedure D for obtaining 1,3-dipolar cycloaddition products **4.2**-**4.21**

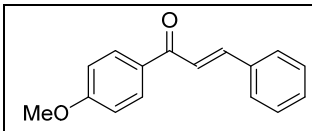
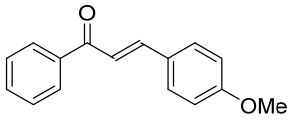
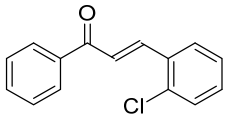
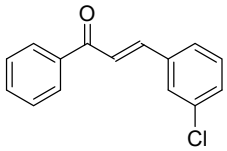
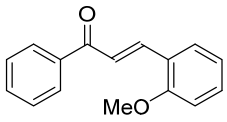
Glycine ketamine **1** (33 mg, 0.112 mmol, 1.1 equiv.), appropriate α, β-unsaturated ketone (1 equiv., 0.102 mmol), macrocyclic precursor **5** (3 mg, 5 mol%, 0.0051 mmol), NEt_3 (50 µL, 5 ekw.) and KOH (5 equiv., 28.5 mg, 0.510 mmol) were placed into a 2.5 mL Teflon reaction vessel. Then the reaction vessel was filled with MTBE and screwed tightly to avoid any air bubbles inside. The reaction was carried out in a high-pressure apparatus for 48 hours, using a pressure of 10kbar and temperature 50 °C. After complexion, the reaction mixture was filtered through a pad of silica gel and magnesium sulphate, washing the product with DCM. After concentration, the crude product was purified by preparative HPLC (loading as a solution in DCM), eluting with a solvent system of 5% AcOEt + 1% NEt_3 in hexane to separate the excess of ketamine **1**. Combined fractions were concentrated and dried to receive the final compound.

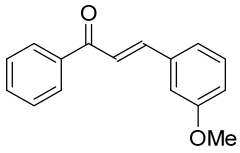
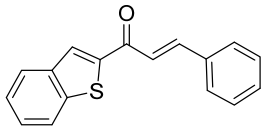
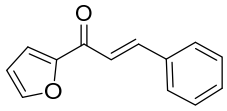
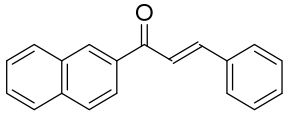
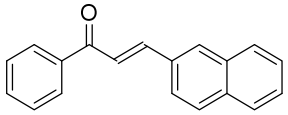
In experiments on larger scale glycine ketamine **1** (330 mg, 1.12 mmol, 1.1 equiv.), α, β-unsaturated ketone **2.1** (212 mg, 1.02 mmol, 1 equiv.), macrocyclic precursor **5** (30 mg, 5 mol%, 0.051 mmol), NEt_3 (500 µL, 5 ekw.) and KOH (5 equiv., 285 mg, 5.10 mmol) were placed into a 25 mL Teflon reaction vessel. After purification product were obtained as a clear oil (410 mg, 80%, d.r. 92:8).

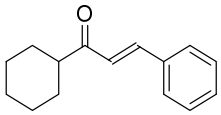
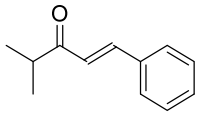
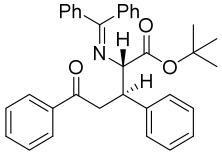
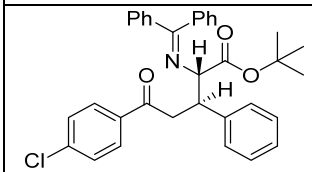
2.3. Substance analysis

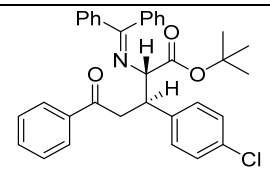
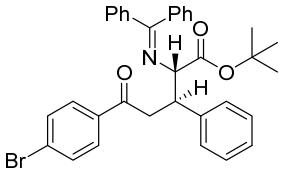
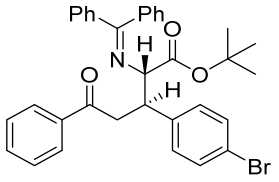
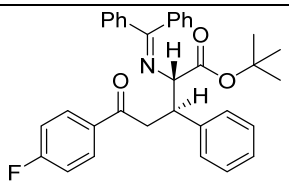
	Following Procedure A and using 4-chloroacetophenone (776 mg, 5 mmoli) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.2** was obtained as yellowish crystals (1068 mg, 88%).[5,8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.00 – 7.93 (m, 2H), 7.81 (d, *J* = 15.7 Hz, 1H), 7.68 – 7.60 (m, 2H), 7.54 – 7.37 (m, 6H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 189.1, 145.3, 139.2, 136.5, 134.7, 130.7, 129.9, 129.0, 128.9, 128.5, 121.6.
	Following Procedure A and using acetophenone (601 mg, 5 mmol) and 4-chlorobenzaldehyde (703 mg, 5mmoli) as starting materials, compound **2.3** was obtained as yellowish crystals (1043 mg, 86%).[3,7] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.04 – 7.97 (m, 1H), 7.76 (d, *J* = 15.7 Hz, 1H), 7.63 – 7.54 (m, 2H), 7.54 – 7.45 (m, 2H), 7.39 (d, *J* = 8.5 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.2, 143.3, 138.1, 136.4, 133.4, 132.9, 129.6, 129.2, 128.7, 128.5, 122.5.
	Following Procedure A and using 4-bromoacetophenone (995 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.4** was obtained as yellowish crystals (1307 mg, 92%).[6,7] **^{1}H NMR** (500 MHz, $cdcl_3$) δ 7.83 – 7.77 (m, 2H), 7.73 (d, *J* = 15.7 Hz, 1H), 7.58 – 7.52 (m, 4H), 7.39 (d, *J* = 15.7 Hz, 1H), 7.36 – 7.31 (m, 3H). **^{13}C NMR** (126 MHz, $cdcl_3$) δ 189.3, 145.4, 136.9, 134.7, 131.9, 130.7, 130.0, 128.9, 128.5, 127.9, 121.5.
	Following Procedure A and using acetophenone (601 mg, 5 mmol) and 4-bromobenzaldehyde (925 mg, 5mmoli) as starting materials, compound **2.5** was obtained as yellowish crystals (1278 mg, 89%).[3,7] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 5.3, 3.4 Hz, 1H), 7.74 (d, *J* = 15.7 Hz, 1H), 7.63 – 7.46 (m, 4H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.2, 143.3, 138.0, 133.8, 132.9, 132.2, 129.8, 128.7, 128.5, 124.8, 122.6.
	Following Procedure A and using 4-fluoroacetophenone (776 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.6** was obtained as yellowish crystals (1018 mg, 90%). [7,8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.05 (dd, *J* = 7.6, 5.5 Hz, 2H), 7.81 (d, *J* = 15.7 Hz, 1H), 7.64 (d, *J* = 2.9 Hz, 2H), 7.59 – 7.34 (m, 4H), 7.19 (dd, *J* = 24.6, 16.8 Hz, 2H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 188.80, 165.6 (d, $J_{C\text{-}F}$ = 252.9 Hz),145.0, 134.8, 134.6 (d, $J_{C\text{-}F}$ = 2.8 Hz), 131.1 (d, $J_{C\text{-}F}$ = 9.1 Hz), 130.6, 128.9, 128.5, 121.6, 115.7 (d, $J_{C\text{-}F}$ = 22.0 Hz).

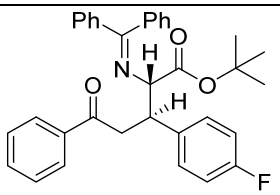
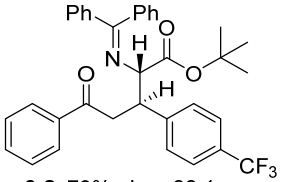
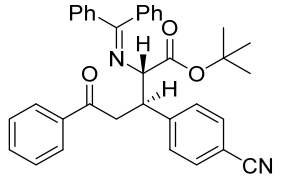
	Following Procedure A and using acetophenone (601 mg, 5 mmol) and 4-fuorobenzaldehyde (620mg, 5mmoli) as starting materials, compound **2.7** was obtained as yellowish crystals (1052 mg, 93%). [8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.4 Hz, 2H), 7.77 (d, *J* = 15.7 Hz, 1H), 7.67 – 7.54 (m, 3H), 7.54 – 7.38 (m, 3H), 7.10 (t, *J* = 8.5 Hz, 2H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.3, 164.1 (d, J_{C-F} = 251.9 Hz), 143.5, 138.2, 132.8, 131.2 (d, J_{C-F} = 3.3 Hz), 130.4, 130.3, 128.6, 128.5, 121.8 (d, J_{C-F} = 2.3 Hz), 116.1 (d, J_{C-F} = 21.9 Hz).
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 4-(trifluoromethyl)benzaldehyde (871 mg, 5mmoli) as starting materials, compound **2.8** was obtained as yellow flakes (870 mg, 63%).[8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.03 (d, *J* = 7.1 Hz, 2H), 7.90 – 7.40 (m, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.0, 142.7, 138.3, 137.8, 133.1, 128.7, 128.5, 128.5, 126.4, 125.4, 125.2, 124.3.
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 4-cyanobenzaldehyde (606 mg, 5mmoli) as starting materials, compound **2.9** was obtained as yellowish crystals (851 mg, 73%).[3] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.02 (d, *J* = 7.0 Hz, 2H), 7.65 (m, 9H).**^{13}C NMR** (101 MHz, $CDCl_3$) δ 189.7, 142.0, 139.2, 137.7, 133.3, 132.7, 125.1, 118.3, 113.5, 29.7.
	Following Procedure A and using 4-methylacetophenone (671 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2. 10** was obtained as yellowish crystals (856 mg, 77%).[5,8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.94 (d, *J* = 8.1 Hz, 2H), 7.81 (d, *J* = 15.7 Hz, 1H), 7.63 (dd, *J* = 6.4, 2.8 Hz, 2H), 7.53 (d, *J* = 15.7 Hz, 1H), 7.41 (dd, *J* = 4.9, 1.6 Hz, 3H), 7.30 (d, *J* = 8.0 Hz, 2H), 2.43 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 189.9, 144.4, 143.6, 135.7, 135.0, 130.4, 129.3, 128.9, 128.7, 128.4, 122.2, 21.7.
	Following Procedure A and using acetophenone (601 mg, 5 mmol) and 4-methylbenzaldehyde (606 mg, 5mmoli as starting materials, compound **2. 11** was obtained as yellowish crystals (889 mg, 80%).[8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.05 – 7.98 (m, 2H), 7.79 (d, *J* = 15.7 Hz, 1H), 7.62 – 7.45 (m, 6H), 7.23 (d, *J* = 8.0 Hz, 2H), 2.39 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.6, 144.9, 141.1, 138.4, 132.6, 132.2, 129.7, 128.6, 128.5, 128.5, 121.2, 21.5.

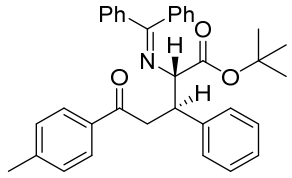
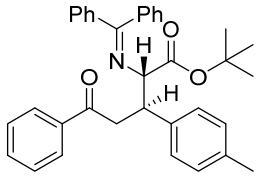
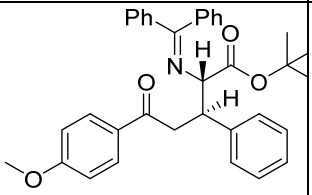
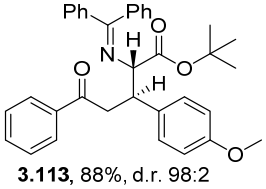
	Following Procedure A and using 4-methoxyacetophenone (751 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.12** was obtained as yellowish crystals (990 mg, 83%). [5,6,7] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.04 (d, *J* = 8.8 Hz, 2H), 7.80 (d, *J* = 15.7 Hz, 1H), 7.69 – 7.60 (m, 2H), 7.54 (d, *J* = 15.7 Hz, 1H), 7.47 – 7.33 (m, 3H), 6.99 (d, *J* = 8.8 Hz, 2H), 3.89 (s, *J* = 11.0 Hz, 3H).**^{13}C NMR** (101 MHz, $CDCl_3$) δ 188.7, 163.5, 143.9, 135.1, 131.1, 130.8, 130.3, 128.9, 128.4, 121.9, 113.9, 55.5.
	Following Procedure A and using acetophenone (601 mg, 5 mmol) and 4-methoxybenzaldehyde (681 mg, 5mmoli) as starting materials, compound **2.13** was obtained as yellowish crystals (1132 mg, 95%). [7,8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.1 Hz, 2H), 7.79 (d, *J* = 15.7 Hz, 1H), 7.58 (dd, *J* = 16.2, 8.0 Hz, 3H), 7.50 (t, *J* = 7.4 Hz, 2H), 7.41 (d, *J* = 15.6 Hz, 1H), 6.94 (d, *J* = 8.6 Hz, 2H), 3.86 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.6, 161.7, 144.7, 138.5, 132.5, 130.2, 128.6, 128.4, 127.7, 119.9, 114.4, 55.4.
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 2-chlorobenzaldehyde (703 mg, 5mmoli) as starting materials, compound **2.14** was obtained as yellowish crystals (364 mg, 30%).[9] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.18 (d, *J* = 15.8 Hz, 1H), 8.01 (dd, *J* = 5.2, 3.3 Hz, 2H), 7.75 (dd, *J* = 6.9, 2.5 Hz, 1H), 7.62 – 7.56 (m, 1H), 7.55 – 7.41 (m, 4H), 7.36 – 7.28 (m, 2H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.5, 140.6, 137.9, 135.5, 133.3, 132.9, 131.1, 130.3, 128.6, 128.6, 127.8, 127.1, 124.9.
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 3-chlorobenzaldehyde (703 mg, 5mmoli) as starting materials, compound **2.15** was obtained as yellowish crystals (813 mg, 67%).[9] **^{1}H NMR** (500 MHz, $cdcl_3$) δ 7.98 – 7.90 (m, 2H), 7.65 (d, *J* = 15.7 Hz, 1H), 7.57 – 7.49 (m, 2H), 7.45 (d, *J* = 7.2 Hz, 1H), 7.44 – 7.39 (m, 3H), 7.32 – 7.26 (m, 2H). **^{13}C NMR** (126 MHz, $cdcl_3$) δ 190.1, 143.0, 137.9, 136.7, 134.9, 133.0, 130.3, 130.2, 128.7, 128.5, 127.9, 126.8, 123.2.
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 2-methoxybenzaldehyde (681 mg, 5mmoli) as starting materials, compound **2.16** was obtained as yellow solid (870 mg, 73%).[8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.12 (d, *J* = 15.9 Hz, 1H), 8.05 – 7.97 (m, 2H), 7.66 – 7.53 (m, 3H), 7.52 – 7.46 (m, 2H), 7.38 (ddd, *J* = 8.3, 7.4, 1.7 Hz, 1H), 6.99 (td, *J* = 7.5, 1.1 Hz, 1H), 6.94 (dd, *J* = 8.3, 1.1 Hz, 1H), 3.91 (s, 3H).

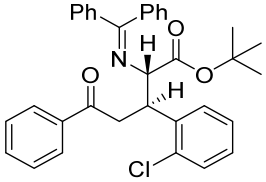
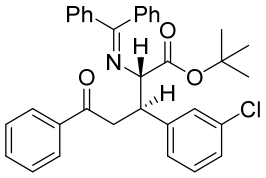
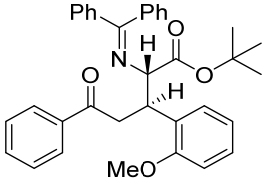
	^{13}C NMR (101 MHz, $CDCl_3$) δ 191.1, 158.8, 140.4, 138.6, 132.5, 131.7, 129.2, 128.5, 123.9, 122.9, 120.8, 111.3, 55.6.
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 3-methoxybenzaldehyde (681 mg, 5mmoli) as starting materials, compound **2.17** was obtained as yellow solid (727 mg, 61%).[8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.01 (dd, *J* = 8.4, 1.4 Hz, 2H), 7.77 (d, *J* = 15.7 Hz, 1H), 7.62 – 7.55 (m, 1H), 7.54 – 7.44 (m, 3H), 7.33 (t, *J* = 7.9 Hz, 1H), 7.27 – 7.21 (m, 1H), 7.15 (dd, *J* = 2.6, 1.6 Hz, 1H), 6.96 (ddd, *J* = 8.2, 2.6, 1.0 Hz, 1H), 3.85 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.5, 159.9, 144.7, 138.2, 136.3, 132.8, 129.9, 128.6, 128.5, 122.5, 121.1, 116.3, 113.5, 55.4.
	Following Procedure B and using 2-acetylbenzothiophene (882 mg, 5 mmol) and benzaldehyde (530 mg, 5 mmol) as starting materials, compound **2.18** was obtained as yellowish crystals (950 mg, 72%).[10] **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.12 (s, 1H), 7.98 – 7.84 (m, 3H), 7.69 (dd, *J* = 6.6, 2.7 Hz, 2H), 7.55 (d, *J* = 15.6 Hz, 1H), 7.51 – 7.38 (m, 5H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 183.4, 145.2, 144.4, 142.7, 139.3, 134.7, 130.7, 129.0, 128.8, 128.6, 127.4, 125.9, 125.0, 123.0, 121.2.
	Following Procedure B and using 2-acethylfurane (550 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.19** was obtained as beige crystals (922 mg, 93%).[8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.88 (d, *J* = 15.8 Hz, 1H), 7.65 (dt, *J* = 4.1, 2.7 Hz, 3H), 7.45 (d, *J* = 15.8 Hz, 1H), 7.42 – 7.39 (m, 3H), 7.33 (dd, *J* = 3.7, 0.8 Hz, 1H), 6.59 (dd, *J* = 3.5, 1.7 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 178.0, 154.4, 146.5, 143.9, 134.8, 130.6, 128.9, 128.5, 121.2, 117.5, 112.5.
	Following Procedure A and using 2-acetylnaphthalene (851 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.20** was obtained as yellowish crystals (1175mg, 91%).[5,8] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.54 (s, 1H), 8.11 (d, *J* = 7.8 Hz, 1H), 7.99 (d, *J* = 6.9 Hz, 1H), 7.98 – 7.83 (m, 3H), 7.78 – 7.66 (m, 3H), 7.60 (dd, *J* = 15.4, 7.5 Hz, 2H), 7.44 (d, *J* = 2.3 Hz, 3H).**^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.3, 144.8, 135.6, 135.5, 135.0, 132.6, 130.5, 129.9, 129.5, 129.0, 128.6, 128.5, 128.4, 127.8, 126.8, 124.5, 122.2.
	Following Procedure B and using acetophenone (601 mg, 5 mmol) and 2-naphthaldehyde (776 mg, 5mmoli) as starting materials, compound **2.21** was obtained as yellowish crystals (1150 mg, 89%).[4,9] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.05 (dd, *J* = 6.8, 5.3 Hz, 3H), 7.98 (d, *J* = 15.7 Hz, 1H), 7.87 (dt, *J* = 14.8, 5.2 Hz, 3H), 7.80 (dd, *J* = 8.6, 1.5 Hz, 1H), 7.62 (dd, *J* = 21.1, 11.6 Hz, 2H), 7.52 (dd, *J* = 8.6, 4.7 Hz, 4H).**^{13}C NMR** (101

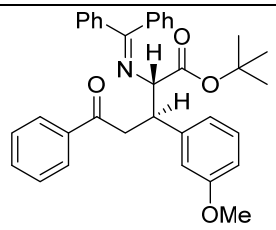
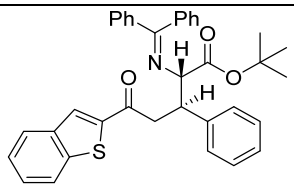
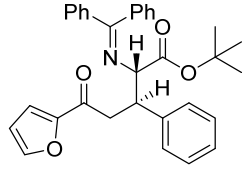
	MHz, $CDCl_3$) δ 190.5, 144.9, 143.6, 138.3, 134.4, 133.4, 132.8, 132.4, 130.6, 128.7, 128.6, 128.5, 127.8, 127.4, 126.8, 123.7, 122.3.
	Following Procedure B and using 1-cyclohexylethanone (631 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.22** was obtained as white flakes (997 mg, 93%).[6] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.63 – 7.49 (m, 3H), 7.42 – 7.30 (m, 3H), 6.81 (d, *J* = 16.0 Hz, 1H), 2.65 (tt, *J* = 11.3, 3.3 Hz, 1H), 1.95 – 1.62 (m, 5H), 1.51 – 1.16 (m, 5H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 203.1, 142.2, 134.8, 130.3, 128.9, 128.2, 124.7, 49.4, 28.7, 25.9, 25.8.
	Following Procedure B and using 3-methyl-2-butanone (430 mg, 5 mmol) and benzaldehyde (530 mg, 5mmoli) as starting materials, compound **2.23** was obtained as yellow oil (261mg, 30%).[11] **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.61 (d, *J* = 16.0 Hz, 1H), 7.58 – 7.53 (m, 1H), 7.38 (dd, *J* = 4.2, 2.4 Hz, 3H), 6.82 (d, *J* = 16.0 Hz, 1H), 2.93 (dt, *J* = 13.8, 6.9 Hz, 1H), 1.18 (d, *J* = 6.9 Hz, 7H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 203.8, 142.4, 134.7, 130.3, 128.9, 128.3, 124.5, 39.3, 18.5.
 **3.1**, 95%, d.r. 94:6	Following Procedure C using α,β-unsaturated ketone **2.1** (21 mg, 0.102 mmol) as starting material, compound **3.1** was obtained as clear oil (49 mg, 95%). [12,13,14,15] **^{1}H NMR** (400 MHz, Acetone) δ 7.97 (dd, *J* = 5.2, 3.3 Hz, 2H), 7.71 – 7.65 (m, 2H), 7.61 – 7.55 (m, 1H), 7.51 – 7.35 (m, 8H), 7.23 – 7.09 (m, 5H), 6.88 (dd, *J* = 7.0, 2.3 Hz, 2H), 4.26 – 4.16 (m, 2H), 3.79 – 3.58 (m, 2H), 1.28 (s, 9H).**^{13}C NMR** (101 MHz, Acetone) δ 198.9, 171.9, 170.5, 142.9, 140.6, 138.5, 137.5, 133.8, 131.5, 129.8, 129.7, 129.6, 129.6, 129.4, 129.2, 129.06, 129.05, 128.7, 127.5, 81.6, 72.2, 46.1, 41.2, 28.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 11.48 min, 15.08 min.
 **3.2**, 96%, d.r.>99:1	Following Procedure C using α,β-unsaturated ketone **2.2** (24.5 mg, 0.102 mmol) as starting material, compound **3.2** was obtained as clear foam (52 mg, 96%, mp 129.6℃).[12,14,15] **^{1}H NMR** (500 MHz, acetone) δ 7.98 (d, *J* = 8.4 Hz, 1H), 7.69 (d, *J* = 8.5 Hz, 1H), 7.57 (dt, *J* = 13.1, 6.8 Hz, 2H), 7.51 – 7.42 (m, 6H), 7.38 (t, *J* = 7.4 Hz, 2H), 7.23 (d, *J* = 3.4 Hz, 3H), 6.99 – 6.90 (m, 1H), 4.25 – 4.17 (m, 1H), 3.80 – 3.71 (m, 1H), 3.65 (dd, *J* = 17.1, 2.9 Hz, 1H), 1.29 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 197.6, 171.0, 169.2, 140.8, 139.4, 137.2, 136.2, 132.8, 132.4, 131.8, 130.5, 129.7, 128.6, 128.5, 128.4, 128.1, 127.9, 127.9, 127.5, 80.7, 70.8, 44.4, 40.0, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 18.87 min, 22.01 min.

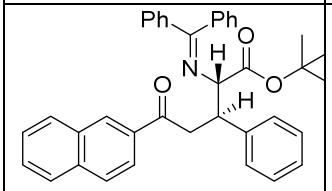
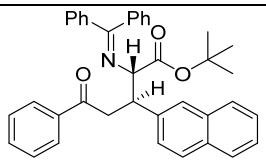
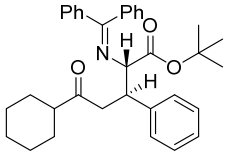
 **3.3**, 90%, d.r.>99:1	Following Procedure C using α,β-unsaturated ketone **2.3** (24.5 mg, 0.102 mmol) as starting material, compound **3.3** was obtained as colorless solid (49 mg, 96%, mp 144.2℃). [13,14,15] **^{1}H NMR** (400 MHz, Acetone) δ 7.98 (d, *J* = 8.6 Hz, 2H), 7.73 – 7.63 (m, 2H), 7.58 (tt, *J* = 7.2, 1.2 Hz, 1H), 7.51 – 7.35 (m, 8H), 7.23 (d, *J* = 1.2 Hz, 4H), 6.95 (dd, *J* = 6.6, 2.9 Hz, 2H), 4.21 (q, *J* = 3.4 Hz, 2H), 3.81 – 3.58 (m, 2H), 3.64 (dd, *J* = 17.1, 3.3 Hz, 1H), 1.29 (s, 9H).**^{13}C NMR** (101 MHz, Acetone) δ 198.7, 172.1, 170.3, 141.9, 140.5, 138.4, 137.3, 133.9, 132.8, 131.5, 131.5, 129.7, 129.7, 129.6, 129.5, 129.2, 129.02, 129.0, 128.6, 81.8, 71.8, 45.5, 41.1, 28.2.**HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.84 min, 14.07 min.
 **3.4**, 98%, d.r. 99:1	Following Procedure C using α,β-unsaturated ketone **2.4** (29 mg, 0.102 mmol) as starting material, compound **3.4** was obtained as clear oil (58 mg, 98%).[12,13] **^{1}H NMR** (400 MHz, Acetone) δ 8.02 – 7.94 (m, 2H), 7.71 – 7.64 (m, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.53 – 7.25 (m, 10H), 7.18 (d, *J* = 8.5 Hz, 2H), 6.94 (dd, *J* = 6.5, 3.0 Hz, 2H), 4.25 – 4.09 (m, 2H), 3.81 – 3.57 (m, 2H), 1.29 (s, 9H).**^{13}C NMR** (101 MHz, Acetone) δ 171.0, 169.2, 141.3, 139.4, 137.3, 136.2, 132.8, 130.9, 130.8, 130.4, 128.6, 128.6, 128.5, 128.4, 128.1, 127.9, 127.5, 119.8, 80.7, 70.7, 44.4, 39.9, 27.1 **HPLC:** Diacel IC (5μm), Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 70.82 min, 89.60 min.
 **3.5**, 79%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.5** (29 mg, 0.102 mmol) as starting material, compound **3.5** was obtained as clear oil (46 mg, 79%).[15] **^{1}H NMR** (500 MHz, acetone) δ 7.98 (d, *J* = 8.4 Hz, 1H), 7.68 (d, *J* = 8.5 Hz, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.52 – 7.42 (m, 6H), 7.41 – 7.34 (m, 4H), 7.18 (d, *J* = 8.5 Hz, 1H), 6.94 (dd, *J* = 6.4, 3.0 Hz, 2H), 4.23 – 4.15 (m, 2H), 3.80 – 3.71 (m, 1H), 3.68 – 3.59 (m, 1H), 1.29 (s, 9H).**^{13}C NMR** (126 MHz, acetone) δ 198.7, 172.1, 170.3, 142.4, 140.5, 138.3, 137.3, 133.9, 132.0, 131.9, 131.5, 129.7, 129.7, 129.6, 129.5, 129.2, 129.0, 128.6, 120.9, 81.8, 71.8, 45.5, 41.0. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.95 min, 14.41 min.
 **3.6**, 97%, d.r. 99:1	Following Procedure C using α,β-unsaturated ketone **2.6** (22.6 mg, 0.102 mmol) as starting material, compound **3.6** was obtained as clear oil (51 mg, 97%). **^{1}H NMR** (500 MHz, acetone) δ 8.11 – 8.03 (m, 2H), 7.68 (d, *J* = 7.1 Hz, 1H), 7.47 – 7.41 (m, 4H), 7.38 (t, *J* = 7.4 Hz, 2H), 7.26 – 7.11 (m, 7H), 6.88 (dd, *J* = 5.0, 2.5 Hz, 2H), 4.27 – 4.19 (m, 1H), 3.79 – 3.69 (m, 1H), 3.68 – 3.61 (m, 1H), 1.28 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 196.4, 170.8,

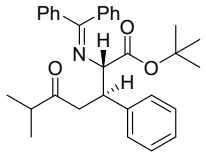
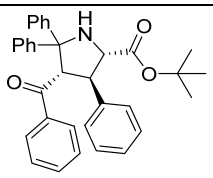
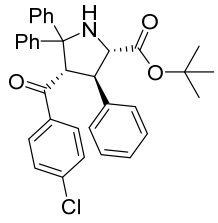
	169.4, 165.4 (d, *J* = 251.8 Hz), 141.8, 139.5, 136.3, 134.0 (d, *J* = 2.9 Hz), 130.9 (d, *J* = 9.4 Hz), 130.4, 128.7, 128.61, 128.5, 128.3, 128.0, 127.97, 127.6, 126.5, 115.4 (d, *J* = 22.0 Hz), 80.5, 71.0, 45.0, 40.1, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 12.58 min, 14.56 min.
 **3.7**, 97%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.7** (22.6 mg, 0.102 mmol) as starting material, compound **3.7** was obtained as clear oil (51 mg, 97%). [13,14,15] **^{1}H NMR** (400 MHz, Acetone) δ 7.98 (d, *J* = 8.5 Hz, 2H), 7.73 – 7.65 (m, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.52 – 7.42 (m, 6H), 7.42 – 7.34 (m, 2H), 7.28 – 7.20 (m, 2H), 7.01 – 6.89 (m, 4H), 4.29 – 4.17 (m, 2H), 3.78 – 3.58 (m, 2H), 1.29 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 198.9, 172.1, 170.4, 140.6, 138.9, 138.5, 137.4, 133.9, 131.6, 131.6, 131.5, 129.7, 129.7, 129.6, 129.5, 129.2, 129.1, 128.7, 115.6 (d, *J* = 22.0 Hz), 81.7, 72.1, 45.4, 41.4, 28.2.**HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 11.21 min, 15.38 min.
 **3.8**, 79%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.8** (28 mg, 0.102 mmol) as starting material, compound **3.8** was obtained as colorless foam (45 mg, 79%, 96.2℃).[12] **^{1}H NMR** (500 MHz, acetone) δ 7.86 (d, *J* = 7.7 Hz, 2H), 7.55 (d, *J* = 7.5 Hz, 2H), 7.45 (t, *J* = 7.4 Hz, 1H), 7.41 (d, *J* = 8.2 Hz, 2H), 7.38 – 7.27 (m, 9H), 7.25 (t, *J* = 7.6 Hz, 2H), 6.76 (d, *J* = 6.3 Hz, 2H), 4.20 – 4.13 (m, 1H), 4.11 (d, *J* = 6.0 Hz, 1H), 3.73 (dd, *J* = 17.5, 9.9 Hz, 1H), 3.59 (dd, *J* = 17.5, 3.8 Hz, 1H), 1.15 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 197.5, 171.2, 169.1, 146.7, 139.4, 137.2, 136.1, 132.9, 130.5, 129.5, 128.7, 128.6, 128.6, 128.4, 128.1, 127.9, 127.5, 124.8 (q, *J* = 3.8 Hz), 80.9, 70.6, 44.7, 39.7, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 9.98 min, 12.51 min.
 **3.9**, 70%, d.r. 83:17	Following Procedure C using α,β-unsaturated ketone **2.9** (23.3 mg, 0.102 mmol) as starting material, compound **3.8** was obtained as colorless foam (37 mg, 70%). **^{1}H NMR** (400 MHz, Acetone) δ 7.98 (d, *J* = 7.4 Hz, 2H), 7.67 (d, *J* = 7.2 Hz, 2H), 7.59 (t, *J* = 8.2 Hz, 3H), 7.51 – 7.41 (m, 8H), 7.38 (t, *J* = 7.4 Hz, 2H), 6.92 (d, *J* = 3.5 Hz, 2H), 4.31 – 4.20 (m, 2H), 3.86 (dd, *J* = 17.5, 9.4 Hz, 1H), 3.70 (dd, *J* = 17.5, 3.7 Hz, 1H), 1.29 (s, 9H).**^{13}C NMR** (101 MHz, Acetone) δ 197.5, 169.0, 147.8, 139.3, 137.2, 136.1, 132.9, 131.7, 130.5, 129.9, 129.7, 129.3, 128.7, 128.6, 128.4, 128.1, 127.9, 127.5, 110.3, 80.9, 70.3, 44.9, 39.7, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 22.04 min, 30.87 min. **HRMS** (m/z) calculated: $C_{35}H_{33}N_2O_3$ $[M+H]^+$: 529.2491, found: 529.2492.

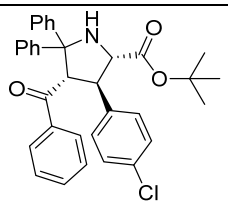
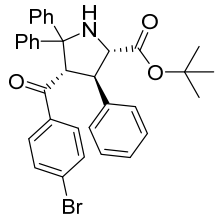
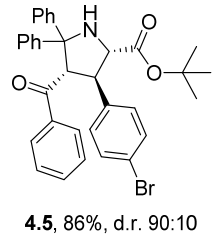
 **3.10**, 71%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.10** (22.3 mg, 0.102 mmol) as starting material, compound **3.10** was obtained as clear oil (37.5 mg, 71%).[13] **^{1}H NMR** (500 MHz, acetone) δ 7.88 (d, *J* = 8.2 Hz, 2H), 7.68 (d, *J* = 8.6 Hz, 1H), 7.49 – 7.35 (m, 6H), 7.28 (d, *J* = 8.0 Hz, 2H), 7.21 – 7.09 (m, 5H), 6.92 – 6.84 (m, 2H), 4.25 – 4.17 (m, 2H), 3.75 – 3.67 (m, 1H), 3.61 – 3.53 (m, 1H), 2.37 (s, 3H), 1.28 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 198.4, 171.8, 170.5, 144.5, 142.9, 140.6, 137.4, 136.0, 131.4, 130.2, 129.8, 129.7, 129.6, 129.4, 129.2, 129.1, 128.9, 128.6, 127.5, 81.5, 72.2, 46.1, 41.0, 28.2, 21.7. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 12.48 min, 17.20 min.
 **3.11**, 92%, d.r. 94:6	Following Procedure C using α,β-unsaturated ketone **2.11** (22.3 mg, 0.102 mmol) as starting material, compound **3.11** was obtained as clear oil (48 mg, 92%).[13] **^{1}H NMR** (400 MHz, Acetone) δ 7.98 (d, *J* = 7.1 Hz, 2H), 7.68 (d, *J* = 8.6 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.51 – 7.35 (m, 8H), 7.06 (d, *J* = 8.1 Hz, 2H), 6.99 (d, *J* = 8.0 Hz, 2H), 6.92 – 6.84 (m, 2H), 4.26 – 4.11 (m, 2H), 3.78 – 3.65 (m, 1H), 3.60 (dd, *J* = 16.4, 3.2 Hz, 1H), 2.22 (s, 3H), 1.29 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 198.9, 171.7, 170.5, 140.6, 139.8, 138.5, 137.4, 136.9, 133.7, 131.4, 129.63, 129.61, 129.6, 129.5, 129.5, 129.4, 129.1, 129.9, 128.6, 81.5, 72.2, 45.6, 41.2, 28.2, 21.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.62 min, 14.11 min.
 **3.12**, 85%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.12** (24 mg, 0.102 mmol) as starting material, compound **3.12** was obtained as clear oil (45 mg, 85%). [13,15] **^{1}H NMR** (400 MHz, Acetone) δ 7.99 – 7.92 (m, 2H), 7.72 – 7.63 (m, 2H), 7.48 – 7.33 (m, 6H), 7.20 – 7.08 (m, 5H), 7.00 – 6.94 (m, 2H), 6.91 – 6.83 (m, 2H), 4.26 – 4.14 (m, 2H), 3.85 (s, 3H), 3.72 – 3.61 (m, 1H), 3.57 – 3.48 (m, 1H), 1.27 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 196.2, 170.7, 169.4, 163.4, 141.9, 139.6, 136.4, 130.4, 130.3, 130.2, 128.7, 128.6, 128.5, 128.3, 128.0, 127.9, 127.6, 126.4, 113.6, 80.4, 71.1, 54.9, 45.1, 39.7, 27.1 **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 20.67 min, 33.78 min.
 **3.113**, 88%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.13** (24 mg, 0.102 mmol) as starting material, compound **3.12** was obtained as clear oil (47 mg, 88%). [13,15]

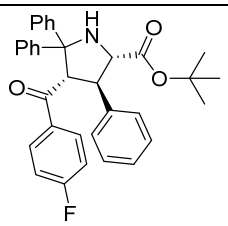
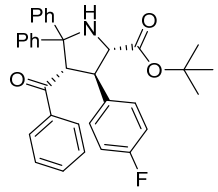
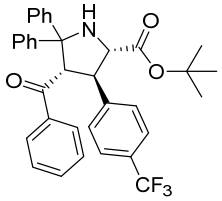
	^{1}H NMR (400 MHz, Acetone) δ 7.97 (d, *J* = 7.4 Hz, 2H), 7.69 (d, *J* = 7.3 Hz, 2H), 7.57 (d, *J* = 8.0 Hz, 1H), 7.51 – 7.30 (m, 8H), 7.10 (d, *J* = 8.0 Hz, 2H), 6.99 – 6.86 (m, 2H), 6.74 (d, *J* = 7.9 Hz, 2H), 4.27 – 4.09 (m, 2H), 3.80 – 3.48 (m, 1H, c), 3.70 (s, 3H), 1.29 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 199.0, 171.7, 170.6, 159.6, 140.7, 138.6, 137.5, 134.7, 133.8, 131.4, 130.8, 130.7, 129.7, 129.6, 129.4, 129.2, 129.0, 128.71, 114.4, 81.5, 72.4, 55.6, 45.4, 41.5, 28.3. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 15.67 min, 25.88 min.
 **3.14**, 89%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.14** (24.5 mg, 0.102 mmol) as starting material, compound **3.14** was obtained as clear oil (48 mg, 89%). [13,14,15] **^{1}H NMR** (500 MHz, acetone) δ 8.04 (d, *J* = 8.4 Hz, 1H), 7.70 – 7.64 (m, 2H), 7.63 – 7.58 (m, 1H), 7.51 (dd, *J* = 10.5, 4.8 Hz, 2H), 7.47 – 7.29 (m, 8H), 7.17 (td, *J* = 7.7, 1.7 Hz, 1H), 7.12 (td, *J* = 7.5, 1.2 Hz, 1H), 6.61 (d, *J* = 6.6 Hz, 2H), 4.77 (dt, *J* = 10.0, 4.1 Hz, 1H), 4.30 (d, *J* = 4.3 Hz, 1H), 4.10 – 4.02 (m, 1H), 3.77 (dd, *J* = 17.4, 4.0 Hz, 1H), 1.36 (d, *J* = 13.5 Hz, 9H). **^{13}C NMR** (126 MHz, acetone) δ 198.6, 172.1, 170.4, 140.4, 140.2, 138.3, 137.3, 135.3, 133.9, 131.4, 130.6, 130.5, 129.7, 129.6, 129.5, 129.3, 129.1, 129.0, 128.8, 128.3, 127.5, 81.9, 69.2, 41.6, 39.6, 28.3. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 11.95 min, 12.11 min.
 **3.15**, 91%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.15** (24.5 mg, 0.102 mmol) as starting material, compound **3.15** was obtained as clear oil (49 mg, 91%). [14] **^{1}H NMR** (500 MHz, acetone) δ 8.00 (d, *J* = 7.2 Hz, 2H), 7.68 (d, *J* = 7.1 Hz, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.52 – 7.42 (m, 6H), 7.39 (t, *J* = 7.4 Hz, 2H), 7.27 (s, 1H), 7.24 – 7.15 (m, 3H), 6.93 (dd, *J* = 6.4, 2.9 Hz, 2H), 4.25 – 4.17 (m, 2H), 3.84 – 3.76 (m, 1H), 3.71 – 3.62 (m, 1H), 1.29 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 197.6, 171.1, 169.2, 144.4, 139.4, 137.2, 136.2, 133.3, 132.9, 130.4, 129.6, 128.9, 128.62, 128.58, 128.5, 128.4, 128.0, 127.9, 127.5, 127.1, 126.5, 80.73, 70.6, 44.7, 39.8, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.96 min, 12.71 min.
 **3.16**, 88%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.16** (23.8 mg, 0.102 mmol) as starting material, compound **3.16** was obtained as clear oil (48 mg, 88%). **^{1}H NMR** (400 MHz, Acetone) δ 7.98 (d, *J* = 7.3 Hz, 2H), 7.66 (d, *J* = 7.2 Hz, 2H), 7.58 (t, *J* = 7.3 Hz, 1H), 7.52 – 7.34 (m, 8H), 7.16 – 7.07 (m, 2H), 6.87 – 6.76 (m, 3H), 6.73 (t, *J* = 7.4 Hz, 1H), 4.57 – 4.49 (m, 1H), 4.45 (d, *J* = 6.0 Hz, 1H), 3.87 – 3.75 (m, 1H), 3.62 – 3.49 (m, 4H), 1.28 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 198.2, 170.5, 169.9, 157.6, 139.6, 137.6, 136.6,

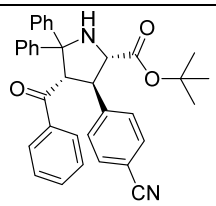
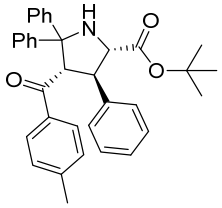
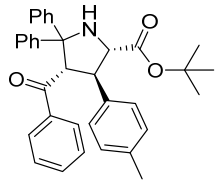
	132.6, 130.2, 129.5, 129.3, 128.6, 128.4, 128.3, 128.2, 128.0, 127.9, 127.6, 127.5, 119.8, 110.9, 80.1, 68.3, 54.6, 39.7, 38.5, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 17.31 min, 20.64 min. **HRMS** (m/z) calculated: $C_{35}H_{36}NO_4$ $[M+H]^+$: 534.2644, found: 534.2636.
 **3.17**, 90%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.17** (23.8 mg, 0.102 mmol) as starting material, compound **3.17** was obtained as clear oil (48 mg, 90%).[14] **^{1}H NMR** (500 MHz, acetone) δ 8.00 (d, *J* = 7.2 Hz, 1H), 7.70 (d, *J* = 7.1 Hz, 1H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.52 – 7.35 (m, 4H), 7.09 (t, *J* = 8.1 Hz, 1H), 6.91 – 6.81 (m, 1H), 6.79 – 6.73 (m, 1H), 6.74 – 6.67 (m, 1H), 4.26 – 4.16 (m, 1H), 3.84 – 3.73 (m, 1H), 3.69 – 3.64 (m, 1H), 3.65 (s, 3H), 1.31 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 198.9, 171.7, 170.5, 160.6, 144.5, 140.6, 138.5, 137.4, 133.8, 131.4, 129.9, 129.7, 129.6, 129.6, 129.4, 129.1, 129.0, 128.6, 121.9, 115.5, 113.0, 81.6, 72.0, 55.5, 45.9, 40.9, 28.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 13.15 min, 16.18 min.
 **3.18**, 90%, d.r. 96:4	Following Procedure C using α,β-unsaturated ketone **2.18** (21.4 mg, 0.102 mmol) as starting material, compound **3.18** was obtained as clear oil (46 mg, 90%). **^{1}H NMR** (400 MHz, Acetone) δ 8.30 (s, 1H), 8.01 – 7.96 (m, 1H), 7.96 – 7.91 (m, 1H), 7.71 – 7.66 (m, 2H), 7.52 – 7.31 (m, 8H), 7.25 – 7.10 (m, 5H), 6.88 (dd, *J* = 7.0, 2.5 Hz, 2H), 4.31 – 4.18 (m, 2H), 3.86 – 3.78 (m, 1H), 3.72 – 3.63 (m, 1H), 1.29 (s, 9H).**^{13}C NMR** (101 MHz, Acetone) δ 192.6, 170.9, 169.3, 144.1, 142.2, 141.6, 139.5, 136.3, 130.4, 129.7, 128.7, 128.6, 128.5, 128.4, 128.0, 127.6, 127.4, 126.6, 126.1, 124.9, 122.8, 80.6, 70.9, 45.2, 40.6, 27.1. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 18.81 min, 22.75 min. **HRMS** (m/z) calculated: $C_{36}H_{34}NO_3S$ $[M+H]^+$: 560.2259, found: 560.2275
 **3.19**, 91%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.19** (19.82 mg, 0.102 mmol) as starting material, compound **3.19** was obtained as colorless solid (45 mg, 91%, mp 89.9℃). [12,13,14] **^{1}H NMR** (500 MHz, acetone) δ 7.77 – 7.72 (m, 1H), 7.70 – 7.64 (m, 2H), 7.48 – 7.41 (m, 4H), 7.38 (t, *J* = 7.4 Hz, 2H), 7.27 (d, *J* = 3.5 Hz, 1H), 7.22 – 7.10 (m, 5H), 6.91 – 6.82 (m, 2H), 6.58 (dd, *J* = 3.5, 1.7 Hz, 1H), 4.25 – 4.16 (m, 2H), 3.64 – 3.55 (m, 1H), 3.40 (dd, *J* = 16.3, 3.7 Hz, 1H), 1.29 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 186.6, 170.8, 169.3, 153.0, 146.6, 141.6, 139.5, 136.3, 130.4, 128.7, 128.6, 128.5, 128.34, 128.0, 127.9, 127.6, 126.5, 116.9, 112.1, 80.5, 71.0, 44.8, 39.9, 27.1. **HPLC:** Kromasil

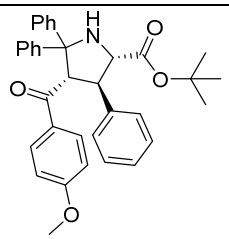
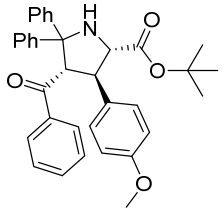
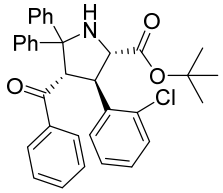
	OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 19.63 min, 26.06 min.
 **3.20**, 87%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.20** (23.8 mg, 0.102 mmol) as starting material, compound **3.20** was obtained as clear oil (48 mg, 87%). **^{1}H NMR** (400 MHz, Acetone) δ 8.66 (s, 1H), 8.09 (d, *J* = 8.0 Hz, 1H), 8.04 – 7.88 (m, 3H), 7.73 – 7.53 (m, 5H), 7.48 – 7.34 (m, 6H), 7.27 – 7.11 (m, 5H), 6.97 – 6.83 (m, 2H), 4.34 – 4.22 (m, 2H), 3.88 (dd, *J* = 16.8, 9.0 Hz, 1H), 3.77 (dd, *J* = 16.8, 4.1 Hz, 1H), 1.29 (s, 11H). **^{13}C NMR** (101 MHz, Acetone) δ 198.9, 171.9, 170.5, 143.0, 140.7, 137.5, 136.6, 135.9, 133.8, 131.4, 130.8, 130.8, 130.7, 129.9, 129.7, 129.6, 129.4, 129.3, 129.1, 129.1, 128.8, 128.7, 127.8, 127.6, 124.9, 81.6, 72.2, 46.3, 41.3, 28.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 16.09 min, 17.96 min.
 **3.21**, 83%, d.r. >99:1	Following Procedure C using α,β-unsaturated ketone **2.21** (23.8 mg, 0.102 mmol) as starting material, compound **3.21** was obtained as clear oil (46 mg, 83%). **^{1}H NMR** (400 MHz, Acetone) δ 8.17 (d, *J* = 8.1 Hz, 1H), 8.04 (dd, *J* = 8.3, 1.3 Hz, 2H), 7.88 (d, *J* = 7.6 Hz, 1H), 7.74 (d, *J* = 8.1 Hz, 1H), 7.69 – 7.63 (m, 2H), 7.59 (t, *J* = 8.0 Hz, 1H), 7.52 – 7.33 (m, 9H), 7.33 – 7.25 (m, 2H), 7.21 (t, *J* = 7.5 Hz, 1H), 7.08 (t, *J* = 7.6 Hz, 2H), 6.41 (d, *J* = 6.3 Hz, 2H), 5.30 – 5.14 (m, 1H), 4.34 (d, *J* = 4.5 Hz, 1H), 4.14 (dd, *J* = 17.4, 9.4 Hz, 1H), 3.86 (dd, *J* = 17.4, 4.3 Hz, 1H), 1.30 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 198.9, 171.8, 170.8, 140.5, 138.8, 138.5, 137.0, 135.2, 133.8, 133.0, 131.3, 129.7, 129.6, 129.6, 129.2, 129.0, 129.0, 128.9, 128.0, 128.0, 126.9, 126.4, 125.9, 124.2, 81.7, 70.6, 40.4, 28.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 13.28 min, 14.93 min.
 **3.22**, 96%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.22** (21.5 mg, 0.102 mmol) as starting material, compound **3.22** was obtained as clear oil (49 mg, 96%). **^{1}H NMR** (500 MHz, acetone) δ 7.52 (d, *J* = 8.6 Hz, 1H), 7.33 – 7.21 (m, 1H), 7.09 – 6.97 (m, 5H), 6.70 (d, *J* = 7.5 Hz, 1H), 3.97 (d, *J* = 6.0 Hz, 1H), 3.90 – 3.85 (m, 1H), 3.06 (dd, *J* = 17.1, 10.1 Hz, 1H), 2.91 (dd, *J* = 17.1, 3.9 Hz, 1H), 2.21 (ddd, *J* = 11.1, 7.3, 3.3 Hz, 1H), 1.63 – 1.39 (m, 6H), 1.15 (s, 9H), 1.12 – 1.03 (m, 2H), 1.02 – 0.87 (m, 2H).**^{13}C NMR** (126 MHz, acetone) δ 210.5, 170.5, 169.4, 142.0, 139.5, 136.3, 130.3, 128.7, 128.5, 128.5, 128.3, 128.1, 127.9, 127.5, 126.4, 80.4, 70.9, 50.3, 44.3, 42.1, 28.1, 28.1, 27.2, 25.7, 25.4, 25.3. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 9.26 min, 13.36 min.

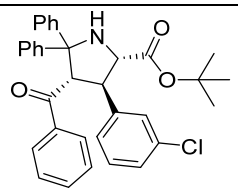
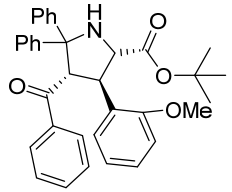
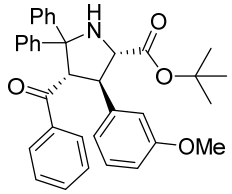
	HRMS (m/z) calculated: $C_{34}H_{40}NO_3$ $[M+H]^+$: 510.3008, found: 510.3003
 **3.23**, 70%, d.r. 98:2	Following Procedure C using α,β-unsaturated ketone **2.23** (23.8 mg, 0.102 mmol) as starting material, compound **3.22** was obtained as clear oil (34 mg, 70%). **^{1}H NMR** (500 MHz, acetone) δ 7.66 (d, *J* = 7.1 Hz, 2H), 7.52 – 7.32 (m, 6H), 7.26 – 7.08 (m, 5H), 6.85 (d, *J* = 7.4 Hz, 2H), 4.11 (d, *J* = 6.1 Hz, 1H), 4.01 (ddd, *J* = 10.1, 6.0, 4.0 Hz, 1H), 3.20 (dd, *J* = 17.1, 10.1 Hz, 1H), 3.06 (dd, *J* = 17.1, 3.9 Hz, 1H), 2.59 (dq, *J* = 13.8, 6.9 Hz, 1H), 1.28 (s, 9H), 0.95 (d, *J* = 6.9 Hz, 3H), 0.87 (d, *J* = 7.0 Hz, 3H). **^{13}C NMR** (126 MHz, acetone) δ 211.3, 170.6, 169.3, 141.9, 139.5, 136.3, 130.4, 128.7, 128.5, 128.5, 128.3, 128.1, 127.9, 127.5, 126.4, 80.4, 70.9, 44.4, 41.9, 40.5, 27.1, 17.37, 17.35. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 8.99 min, 12.06 min. **HRMS** (m/z) calculated: $C_{31}H_{36}NO_3$ $[M+H]^+$: 470.2695, found: 470.2699
 **4.1**, 95%, d.r. 96:4	Following Procedure D using α,β-unsaturated ketone **2.1** (21 mg, 0.102 mmol) as starting material, compound **3.22** was obtained as clear oil (49 mg, 95%). **^{1}H NMR** (400 MHz, Acetone) δ 7.95 (d, *J* = 7.5 Hz, 2H), 7.73 (d, *J* = 7.3 Hz, 2H), 7.57 (d, *J* = 7.5 Hz, 1H), 7.48 – 7.31 (m, 6H), 7.27 (t, *J* = 7.3 Hz, 1H), 7.21 – 7.12 (m, 3H), 7.10 – 6.95 (m, 3H), 6.86 (dd, *J* = 6.7, 2.8 Hz, 2H), 5.42 (d, *J* = 4.8 Hz, 1H), 4.01 (d, *J* = 12.4 Hz, 1H), 3.93 – 3.82 (m, 1H), 3.71 (dd, *J* = 8.8, 4.8 Hz, 1H), 1.35 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 203.4, 172.3, 147.6, 146.6, 142.3, 139.7, 134.0, 130.8, 129.8, 129.75, 129.5, 129.2, 129.1, 128.9, 128.0, 127.94, 127.91, 127.5, 127.2, 81.9, 78.4, 68.9, 64.5, 60.3, 28.3. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (96:4), 0.5 mL/min, 254 nm; retention time: 10.21 min, 13.86 min. **HRMS** (m/z) calculated: $C_{34}H_{33}NO_3Na$ $[M+Na]^+$: 526.2358, found: 526.2339.
 **4.2**, 96%, d.r. 96:4	Following Procedure D using α,β-unsaturated ketone **2.2** (24.5 mg, 0.102 mmol) as starting material, compound **4.2** was obtained as clear oil (52 mg, 96%). **^{1}H NMR** (400 MHz, Acetone) δ 7.94 (d, *J* = 7.4 Hz, 2H), 7.72 (d, *J* = 8.6 Hz, 2H), 7.45 – 7.31 (m, 7H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.19 – 7.13 (m, 3H), 7.10 – 6.95 (m, 3H), 6.86 (dd, *J* = 6.4, 3.1 Hz, 2H), 5.38 (d, *J* = 4.7 Hz, 1H), 4.10 – 3.94 (m, 1H), 3.86 (dd, *J* = 13.3, 6.3 Hz, 1H), 3.73 (dd, *J* = 8.7, 4.7 Hz, 1H), 1.34 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 201.2, 171.1, 146.3, 145.2, 141.1, 138.8, 137.1, 129.8, 128.8, 128.7, 128.4, 128.1, 127.9, 127.0, 126.9, 126.9, 126.5, 126.2, 80.8, 77.3, 67.7, 63.4, 58.9, 27.2. **HPLC:** Diacel IC (5µm), Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 17.86 min, 20.46 min. **HRMS** (m/z) calculated: $C_{34}H_{32}ClNO_3Na$ $[M+Na]^+$: 560.1968, found: 560.1959.

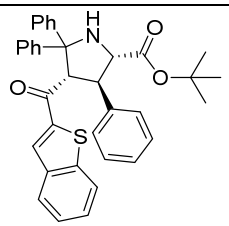
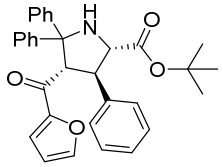
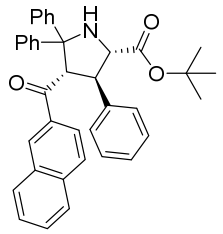
 **4.3**, 92%, d.r. 90:10	Following Procedure D using α,β-unsaturated ketone **2.3** (24.5 mg, 0.102 mmol) as starting material, compound **4.3** was obtained as clear oil (50 mg, 92%). **^{1}H NMR** (400 MHz, Acetone) δ 7.93 (d, *J* = 7.5 Hz, 2H), 7.74 (d, *J* = 7.4 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.45 – 7.31 (m, 6H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.20 – 7.13 (m, 2H), 7.09 – 6.95 (m, 3H), 6.85 (d, *J* = 8.4 Hz, 2H), 5.39 (d, *J* = 4.6 Hz, 1H), 4.01 (d, *J* = 11.8 Hz, 1H), 3.93 – 3.79 (m, 1H), 3.72 (dd, *J* = 8.5, 4.6 Hz, 1H), 1.36 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 203.1, 172.0, 147.4, 146.3, 141.4, 139.6, 134.1, 133.2, 131.0, 130.8, 129.9, 129.8, 129.4, 129.2, 128.9, 128.1, 127.9, 127.5, 127.2, 82.1, 78.4, 68.7, 64.2, 59.0, 28.3. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.37 min, 15.74 min. **HRMS** (m/z) calculated: $C_{34}H_{32}ClNO_3Na$ $[M+Na]^+$: 560.1968, found: 560.1956.
 **4.4**, 76%, d.r. 90:10	Following Procedure D using α,β-unsaturated ketone **2.4** (29 mg, 0.102 mmol) as starting material, compound **4.4** was obtained as clear oil (44 mg, 76%). **^{1}H NMR** (400 MHz, Acetone) δ 7.93 (d, *J* = 8.2 Hz, 2H), 7.74 (d, *J* = 8.3 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.45 – 7.30 (m, 8H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.08 – 6.96 (m, 3H), 6.79 (d, *J* = 8.5 Hz, 2H), 5.39 (d, *J* = 4.6 Hz, 1H), 4.02 (d, *J* = 11.9 Hz, 1H), 3.86 (dd, *J* = 11.9, 8.6 Hz, 1H), 3.71 (dd, *J* = 8.6, 4.5 Hz, 1H), 1.36 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 202.0, 170.9, 146.3, 145.2, 140.8, 138.5, 133.0, 131.3, 130.2, 128.8, 128.7, 128.1, 127.8, 127.0, 126.9, 126.4, 126.2, 120.2, 81.0, 77.3, 67.6, 63.0, 57.9, 27.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.62 min, 16.37 min. **HRMS** (m/z) calculated: $C_{34}H_{32}BrNO_3Na$ $[M+Na]^+$: 604.1463, found: 604.1452.
 **4.5**, 86%, d.r. 90:10	Following Procedure D using α,β-unsaturated ketone **2.5** (29 mg, 0.102 mmol) as starting material, compound **4.5** was obtained as clear oil (50 mg, 86%). **^{1}H NMR** (400 MHz, Acetone) δ 7.95 (d, *J* = 8.1 Hz, 2H), 7.75 (d, *J* = 7.7 Hz, 2H), 7.57 (d, *J* = 7.6 Hz, 1H), 7.47 – 7.23 (m, 9H), 7.10 – 6.94 (m, 3H), 6.81 (d, *J* = 8.3 Hz, 2H), 5.40 (d, *J* = 4.5 Hz, 1H), 4.03 (d, *J* = 10.0 Hz, 1H), 3.87 (d, *J* = 7.0 Hz, 1H), 3.73 (dd, *J* = 8.4, 4.4 Hz, 1H), 1.37 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 202.0, 170.9, 146.3, 145.2, 140.8, 138.5, 133.0, 131.3, 130.2, 128.8, 128.7, 128.1, 127.8, 127.0, 126.9, 126.4, 126.2, 120.2, 81.0, 77.3, 67.6, 63.0, 58.0, 27.3. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.68 min, 16.54 min. **HRMS** (m/z) calculated: $C_{34}H_{32}BrNO_3Na$ $[M+ Na]^+$: 604.1463, found: 604.1456.

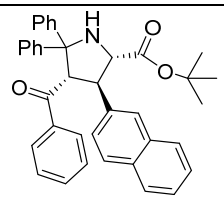
 **4.6**, 96%, d.r. 96:4	Following Procedure D using α,β-unsaturated ketone **2.6** (22.6 mg, 0.102 mmol) as starting material, compound **4.6** was obtained as colorless solid (50 mg, 96%, mp 138.2℃). **^{1}H NMR** (400 MHz, Acetone) δ 7.96 (d, *J* = 8.2 Hz, 2H), 7.86 – 7.78 (m, 2H), 7.42 – 7.30 (m, 4H), 7.27 (t, *J* = 7.3 Hz, 1H), 7.21 – 7.10 (m, 5H), 7.09 – 6.96 (m, 3H), 6.90 – 6.79 (m, 2H), 5.40 (d, *J* = 4.7 Hz, 1H), 4.00 (d, *J* = 11.6 Hz, 1H), 3.87 (t, *J* = 9.3 Hz, 1H), 3.78 – 3.66 (m, 1H), 1.35 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 200.8, 171.2, 165.6 (d, *J* = 252.6 Hz), 146.4, 145.3, 141.2, 135.2, 131.0(d, *J* = 9.4 Hz), 128.7, 128.4, 128.1, 127.8, 127.0, 126.9, 126.8, 126.4, 126.1, 115.54 (d, *J* = 22.1 Hz), 80.8, 77.3, 67.7, 63.3, 58.9, 27.2. **HPLC:** Diacel IC (5µm), Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 17.70 min, 20.61 min. **HRMS** (m/z) calculated: $C_{34}H_{32}FNO_3Na$ $[M+Na]^+$: 544.2264, found: 544.2260.
 **4.7**, 88%, d.r. 95:5	Following Procedure D using α,β-unsaturated ketone **2.7** (22.6 mg, 0.102 mmol) as starting material, compound **4.7** was obtained as colorless solid (46 mg, 88%, mp 126.2℃). **^{1}H NMR** (400 MHz, Acetone) δ 7.95 (d, *J* = 7.3 Hz, 2H), 7.74 (d, *J* = 7.2 Hz, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.39 (dddd, *J* = 8.2, 6.1, 5.1, 1.4 Hz, 6H), 7.27 (t, *J* = 7.3 Hz, 1H), 7.14 – 6.97 (m, 3H), 6.97 – 6.82 (m, 4H), 5.40 (d, *J* = 4.7 Hz, 1H), 4.09 – 3.94 (m, 1H), 3.92 – 3.82 (m, 1H), 3.74 (dd, *J* = 8.7, 4.6 Hz, 1H), 1.37 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 203.2, 172.1, 147.5, 146.5, 139.7, 138.5, 134.1, 131.1, 131.0, 129.9, 129.8, 129.5, 129.1, 128.9, 128.1, 127.9, 127.5, 127.2, 116.06 (d, *J* = 21.3 Hz), 101.1, 82.0, 78.3, 68.9, 64.4, 59.2, 28.3**. HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.59 min, 15.63 min. **HRMS** (m/z) calculated: $C_{34}H_{32}FNO_3Na$ $[M+Na]^+$: 544.2264, found: 544.2252.
 **4.8**, 84%, d.r. 92:8	Following Procedure D using α,β-unsaturated ketone **2.8** (28 mg, 0.102 mmol) as starting material, compound **4.8** was obtained as clear oil (48 mg, 84%). **^{1}H NMR** (400 MHz, Acetone) δ 7.96 (dd, *J* = 8.4, 1.0 Hz, 2H), 7.79 – 7.73 (m, 2H), 7.57 (dd, *J* = 11.7, 4.4 Hz, 1H), 7.51 (d, *J* = 8.1 Hz, 2H), 7.47 – 7.32 (m, 6H), 7.29 (dt, *J* = 9.0, 4.2 Hz, 1H), 7.13 – 6.97 (m, 5H), 5.46 (d, *J* = 4.5 Hz, 1H), 4.05 (d, *J* = 11.4 Hz, 1H), 3.94 (dt, *J* = 11.5, 5.7 Hz, 1H), 3.86 (dd, *J* = 8.7, 4.4 Hz, 1H), 1.37 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 201.9, 170.8, 146.1, 146.0, 145.0, 138.5, 133.0, 128.9, 128.8, 128.7, 128.4, 128.1, 127.83, 127.1, 126.9, 126.5, 126.2, 125.2 (q, *J* = 3.9 Hz), 81.1, 77.3, 67.4, 62.8, 57.9, 27.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 9.71 min, 16.29 min. **HRMS** (m/z) calculated: $C_{35}H_{32}F_3NO_3Na$ $[M+Na]^+$: 594.2232, found: 594.2218.

 **4.9**, 70%, d.r. 75:25	Following Procedure D using α,β-unsaturated ketone **2.9** (23.3 mg, 0.102 mmol) as starting material, compound **4.9** was obtained as clear oil (38 mg, 70%). **^{1}H NMR** (400 MHz, Acetone) δ 7.93 (d, *J* = 7.5 Hz, 2H), 7.74 (d, *J* = 7.7 Hz, 2H), 7.68 (d, *J* = 8.4 Hz, 1H), 7.57 (d, *J* = 8.3 Hz, 3H), 7.39 (ddd, *J* = 27.1, 13.1, 8.5 Hz, 6H), 7.27 (t, *J* = 7.3 Hz, 1H), 7.09 (d, *J* = 8.3 Hz, 2H), 7.03 (d, *J* = 7.7 Hz, 2H), 5.44 (d, *J* = 4.5 Hz, 1H), 4.04 (dd, *J* = 9.3, 4.8 Hz, 1H), 3.93 (dd, *J* = 13.3, 6.4 Hz, 1H), 3.89 – 3.81 (m, 1H), 1.36 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 201.7, 170.7, 146.9, 144.8, 133.1, 132.1, 131.7, 131.5, 130.7, 129.9, 129.3, 128.8, 128.7, 128.6, 128.1, 127.8, 126.9, 126.5, 126.3, 110.6, 81.2, 77.4, 67.3, 62.7, 57.9, 27.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 18.32 min, 29.84 min. **HRMS** (m/z) calculated: $C_{35}H_{32}N_2O_3Na$ $[M+Na]^+$: 551.2311, found: 551.2295.
 **4.10**, 83%, d.r. 96:4	Following Procedure D using α,β-unsaturated ketone **2.10** (22.3 mg, 0.102 mmol) as starting material, compound **4.10** was obtained as colorless solid (44 mg, 83%, mp 150.4℃). **^{1}H NMR** (500 MHz, acetone) δ 7.96 (d, *J* = 7.5 Hz, 2H), 7.67 (d, *J* = 8.2 Hz, 2H), 7.42 – 7.34 (m, 4H), 7.29 – 7.21 (m, 3H), 7.20 – 7.11 (m, 3H), 7.06 (t, *J* = 7.5 Hz, 2H), 6.99 (t, *J* = 7.3 Hz, 1H), 6.87 – 6.78 (m, 2H), 5.40 (d, *J* = 4.6 Hz, 1H), 4.10 – 3.98 (m, 1H), 3.88 (t, *J* = 8.4 Hz, 1H), 3.65 (dd, *J* = 8.7, 4.6 Hz, 1H), 2.37 (s, 3H), 1.35 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 202.9, 172.3, 147.7, 146.8, 144.9, 142.4, 137.2, 130.4, 129.8, 129.4, 129.3, 129.2, 128.9, 127.9, 127.8, 127.4, 127.1, 81.8, 78.4, 68.9, 64.2, 60.6, 28.3, 21.7. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 10.56 min, 11.42 min. **HRMS** (m/z) calculated: $C_{35}H_{36}NO_3$ $[M+H]^+$: 518.2695, found: 518.2692
 **4.11**, 90%, d.r. 94:6	Following Procedure D using α,β-unsaturated ketone **2.11** (22.3 mg, 0.102 mmol) as starting material, compound **4.11** was obtained as clear oil (47 mg, 90%). **^{1}H NMR** (400 MHz, Acetone) δ 7.94 (d, *J* = 7.4 Hz, 2H), 7.74 (d, *J* = 7.2 Hz, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.46 – 7.33 (m, 6H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.06 (t, *J* = 7.3 Hz, 2H), 6.99 (dd, *J* = 14.0, 7.5 Hz, 3H), 6.72 (d, *J* = 7.9 Hz, 2H), 5.39 (d, *J* = 4.6 Hz, 1H), 4.11 – 3.94 (m, 1H), 3.91 – 3.78 (m, 1H), 3.67 (dd, *J* = 8.6, 4.5 Hz, 1H), 2.24 (s, 3H), 1.36 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 203.4, 172.2, 147.5, 146.6, 139.6, 139.2, 137.2, 133.9, 129.9, 129.65, 129.6, 128.95, 128.9, 128.8, 127.8, 127.8, 127.3, 127.0, 81.7, 78.2, 68.8, 64.4, 59.8, 28.2, 21.0. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 9.77 min, 13.64 min. **HRMS** (m/z) calculated: $C_{35}H_{35}NO_3Na$ $[M+Na]^+$: 540.2515, found: 540.2507.

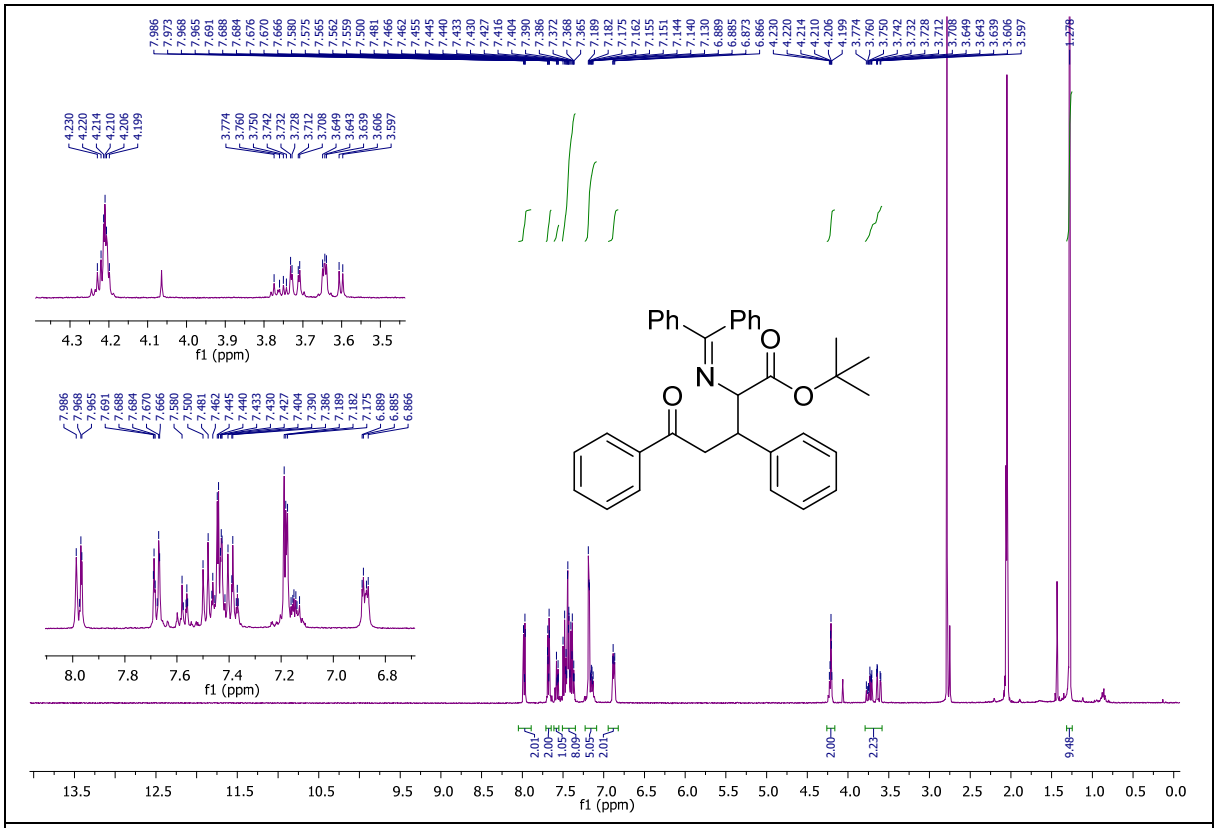
 **4.12**, 92%, d.r. 95:5	Following Procedure D using α,β-unsaturated ketone **2.12** (24 mg, 0.102 mmol) as starting material, compound **4.12** was obtained as colorless solid (50 mg, 92%, 147. 9℃). **^{1}H NMR** (400 MHz, Acetone) δ 7.96 (d, *J* = 7.4 Hz, 2H), 7.77 (d, *J* = 8.9 Hz, 2H), 7.42 – 7.30 (m, 4H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.19 – 7.11 (m, 3H), 7.09 – 7.02 (m, 2H), 7.01 – 6.91 (m, 3H), 6.85 – 6.76 (m, 2H), 5.36 (d, *J* = 4.6 Hz, 1H), 4.02 (d, *J* = 12.3 Hz, 1H), 3.91 – 3.78 (m, 1H, covered), 3.87 (s, 3H), 3.63 (dd, *J* = 8.7, 4.6 Hz, 1H), 1.34 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 201.6, 172.3, 164.8, 147.8, 146.9, 142.5, 132.5, 131.5, 129.8, 129.4, 129.1, 128.83, 127.87, 127.85, 127.8, 127.3, 127.0, 114.9, 81.8, 78.3, 68.9, 63.9, 60.6, 56.1, 28.3. **HPLC:** Diacel IC (5μm), Hexane:2-Propanol (95:5), 1 mL/min, 254 nm; retention time: 22.09 min, 27.45 min. **HRMS** (m/z) calculated: $C_{35}H_{35}NO_4Na$ $[M+Na]^+$: 556.2464, found: 556.2462.
 **4.13**, 85%, d.r. >99:1	Following Procedure D using α,β-unsaturated ketone **2.13** (24 mg, 0.102 mmol) as starting material, compound **4.11** was obtained as clear oil (48 mg, 85%). **^{1}H NMR** (400 MHz, Acetone) δ 7.95 (d, *J* = 7.4 Hz, 2H), 7.74 (d, *J* = 7.1 Hz, 2H), 7.62 – 7.55 (m, 1H), 7.47 – 7.31 (m, 6H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.12 – 6.95 (m, 3H), 6.73 (q, *J* = 9.0 Hz, 4H), 5.37 (d, *J* = 4.6 Hz, 1H), 3.82 (d, *J* = 8.7 Hz, 1H), 3.73 (s, 3H), 3.64 (dd, *J* = 8.8, 4.6 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 202.4, 171.3, 158.7, 146.6, 145.7, 138.6, 133.2, 132.9, 129.1, 128.7, 128.7, 128.0, 127.8, 126.9, 126.8, 126.3, 126.0, 113.7, 80.7, 77.2, 67.9, 63.6, 58.7, 54.5, 27.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 12.62 min, 20.11 min. **HRMS** (m/z) calculated: $C_{35}H_{35}NO_4Na$ $[M+ Na]^+$: 556.2464, found: 556.2454.
 **4.14**, 87%, d.r.>99:1	Following Procedure D using α,β-unsaturated ketone **2.14** (24.5 mg, 0.102 mmol as starting material, compound **4.14** was obtained as colorless solid (47 mg, 87%, mp 84.2℃). **^{1}H NMR** (400 MHz, Acetone) δ 7.93 (d, *J* = 7.4 Hz, 2H), 7.77 (d, *J* = 7.3 Hz, 2H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.45 – 7.24 (m, 8H), 7.19 (td, *J* = 7.7, 1.5 Hz, 1H), 7.08 – 6.92 (m, 4H), 6.49 (d, *J* = 8.0 Hz, 1H), 5.33 (d, *J* = 4.0 Hz, 1H), 4.37 (dd, *J* = 8.6, 4.0 Hz, 1H), 4.10 (d, *J* = 12.3 Hz, 1H), 3.97 (dd, *J* = 12.2, 8.6 Hz, 1H), 1.34 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 203.7, 171.8, 147.2, 145.4, 140.0, 139.7, 135.1, 133.9, 130.1, 129.8, 129.6, 129.5, 129.2, 129.1, 128.8, 128.2, 128.1, 128.0, 127.3, 127.2, 81.9, 78.6, 67.4, 63.3, 55.0, 28.1. **HPLC:** Diacel IC (5μm), Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 9.93 min, 10.99 min. **HRMS** (m/z) calculated: $C_{34}H_{33}ClNO_3$ $[M+H]^+$: 538.2149, found: 538.2143.

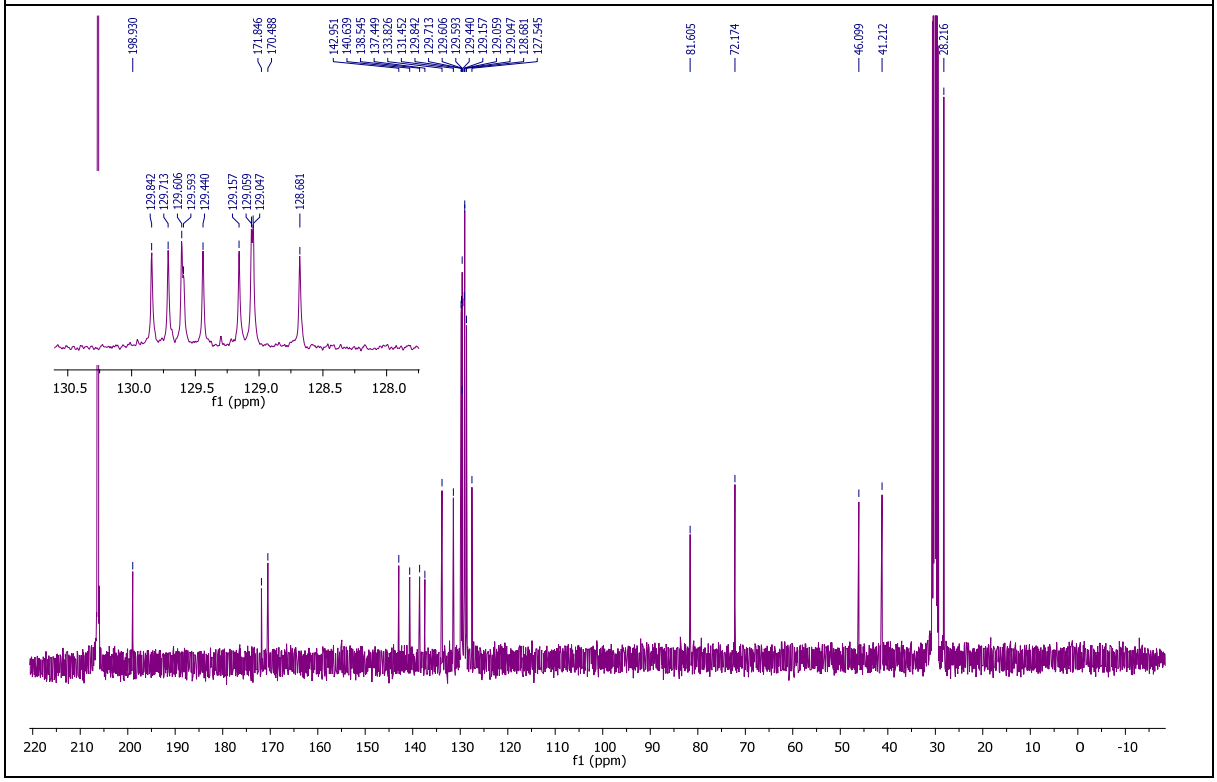
 **4.15**, 87%, d.r. 93:7	Following Procedure D using α,β-unsaturated ketone **2.15** (24.5 mg, 0.102 mmol) as starting material, compound **4.15** was obtained as colorless solid (47 mg, 87%, mp 112.9℃). **^{1}H NMR** (500 MHz, acetone) δ 7.98 (d, *J* = 7.8 Hz, 2H), 7.78 (d, *J* = 7.5 Hz, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.48 – 7.34 (m, 6H), 7.28 (t, *J* = 7.3 Hz, 1H), 7.24 – 7.16 (m, 2H), 7.06 (t, *J* = 7.5 Hz, 2H), 7.00 (t, *J* = 7.3 Hz, 1H), 6.87 (d, *J* = 6.8 Hz, 1H), 6.78 (d, *J* = 0.8 Hz, 1H), 5.43 (d, *J* = 4.3 Hz, 1H), 4.09 – 3.99 (m, 1H), 3.90 – 3.83 (m, 1H), 3.71 (dd, *J* = 8.5, 4.2 Hz, 1H), 1.38 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 202.8, 171.7, 147.0, 146.1, 144.7, 139.2, 134.6, 133.9, 130.7, 129.6, 129.5, 128.9, 128.9, 128.7, 127.9, 127.7, 127.7, 127.6, 127.2, 126.9, 81.8, 78.3, 68.7, 63.7, 59.0, 28.0. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 9.98 min, 13.17 min. **HRMS** (m/z) calculated: $C_{34}H_{33}ClNO_3$ $[M+H]^+$: 538.2149, found: 538.2137.
 **4.16**, 87%, d.r. 98:2	Following Procedure D using α,β-unsaturated ketone **2.16** (23.8 mg, 0.102 mmol) compound **4.16** was obtained as clear oil (46 mg, 87%). **^{1}H NMR** (500 MHz, acetone) δ 7.78 (dd, *J* = 19.2, 7.3 Hz, 4H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.43 (t, *J* = 7.7 Hz, 2H), 7.35 – 7.24 (m, 4H), 7.19 (ddd, *J* = 17.2, 11.4, 4.5 Hz, 2H), 7.03 – 6.92 (m, 3H), 6.89 (d, *J* = 8.1 Hz, 1H), 6.73 – 6.67 (m, 1H), 6.63 (dd, *J* = 7.6, 1.3 Hz, 1H), 5.30 (d, *J* = 4.5 Hz, 1H), 4.14 (dd, *J* = 8.6, 4.5 Hz, 1H), 4.01 (d, *J* = 8.4 Hz, 1H), 3.38 (s, 3H), 1.33 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 202.9, 171.4, 157.1, 146.5, 144.9, 138.9, 132.5, 129.0, 128.39, 128.38, 128.0, 127.7, 127.6, 127.3, 126.8, 126.7, 126.4, 125.9, 120.0, 110.1, 80.5, 76.7, 63.8, 61.5, 54.3, 51.7, 27.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 12.00 min, 17.33 min. **HRMS** (m/z) calculated: $C_{35}H_{36}NO_4$ $[M+H]^+$: 534.2644, found: 534.2644.
 **4.17**, 84%, d.r. 85:15	Following Procedure D using α,β-unsaturated ketone **2.17** (23.8 mg, 0.102 mmol) as starting material, compound **4.17** was obtained as colorless solid (44.5 mg, 84%, mp 107.8℃). **^{1}H NMR** (400 MHz, Acetone) δ 7.99 (d, *J* = 7.4 Hz, 2H), 7.75 (d, *J* = 8.5 Hz, 1H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.51 – 7.31 (m, 6H), 7.25 (t, *J* = 7.3 Hz, 1H), 7.07 (dd, *J* = 15.4, 7.9 Hz, 3H), 6.99 (t, *J* = 7.2 Hz, 1H), 6.73 (dd, *J* = 8.1, 2.2 Hz, 1H), 6.49 (d, *J* = 7.6 Hz, 1H), 6.43 – 6.33 (m, 1H), 5.44 (d, *J* = 4.5 Hz, 1H), 4.02 (s, 1H), 3.87 (d, *J* = 8.8 Hz, 1H), 3.66 (dd, *J* = 8.7, 4.4 Hz, 1H), 3.54 (s, 3H), 1.37 (s, 9H).**^{13}C NMR** (101 MHz, Acetone) δ 202.5, 171.1, 160.0, 146.6, 145.7, 142.9, 138.6, 132.9, 129.2, 128.9, 128.7, 128.1, 127.9, 126.9, 126.8, 126.3, 126.0, 120.8, 113.2, 112.4, 80.8, 77.4, 68.0, 63.3, 59.6, 54.5, 27.2. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 11.83 min, 16.85 min. **HRMS** (m/z) calculated: $C_{35}H_{36}NO_4$ $[M+H]^+$: 534.2644, found: 534.2637.

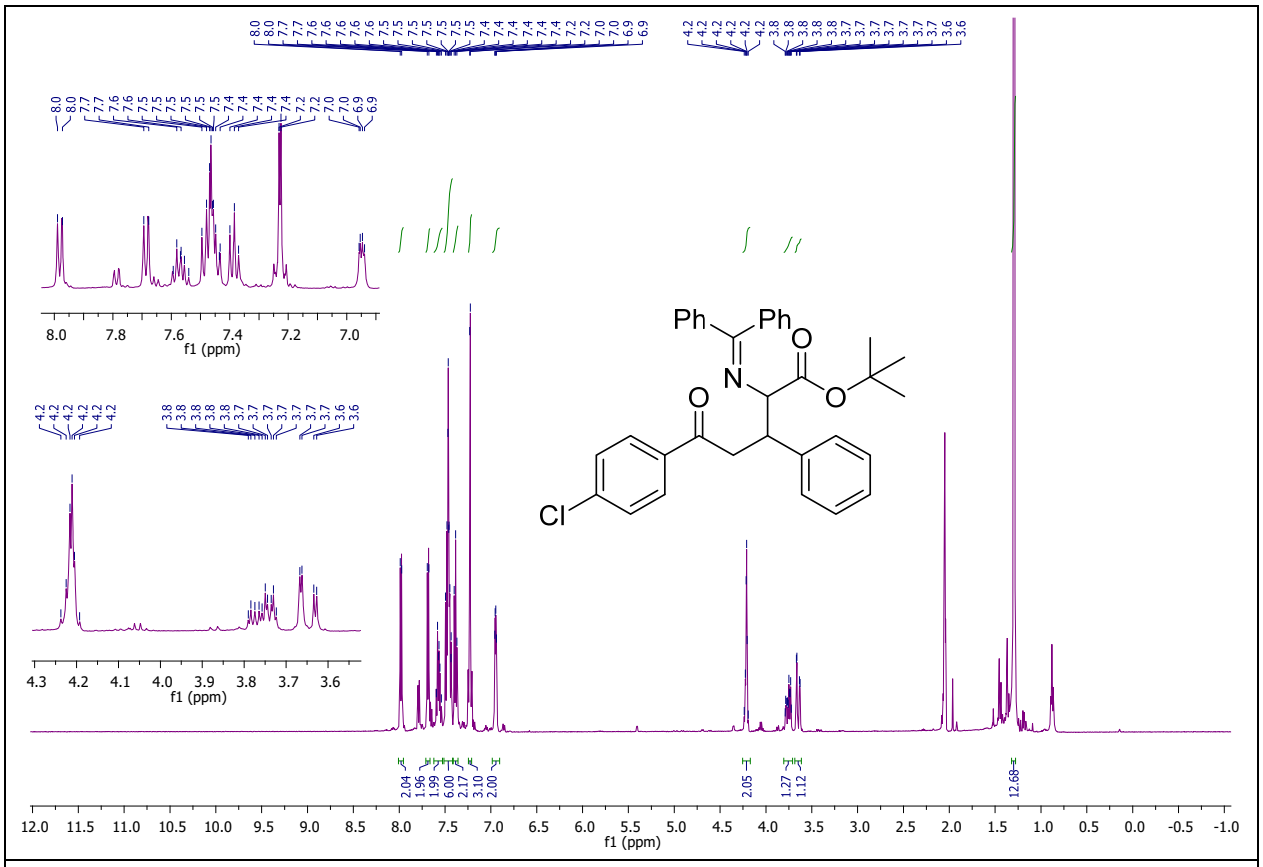
 **4.18**, 78%, d.r. 95:5	Following Procedure D using α,β-unsaturated ketone **2.18** (21.4 mg, 0.102 mmol) as starting material, compound **4.18** was obtained as colorless solid (40 mg, 78%, mp 171.2 ℃). **^{1}H NMR** (600 MHz, acetone) δ 8.32 (d, *J* = 2.1 Hz, 1H), 8.02 (d, *J* = 7.6 Hz, 2H), 7.95 (dd, *J* = 8.2, 1.7 Hz, 2H), 7.50 (dd, *J* = 16.4, 7.6 Hz, 3H), 7.42 (dt, *J* = 15.6, 7.5 Hz, 3H), 7.28 (t, *J* = 7.3 Hz, 1H), 7.19 – 7.12 (m, 3H), 7.06 (t, *J* = 7.7 Hz, 2H), 6.99 (t, *J* = 7.3 Hz, 1H), 6.86 (d, *J* = 7.7 Hz, 2H), 5.42 (d, *J* = 4.5 Hz, 1H), 4.01 (d, *J* = 12.1 Hz, 1H), 3.92 – 3.85 (m, 1H), 3.74 (dd, *J* = 8.7, 4.4 Hz, 1H), 1.34 (s, 9H). **^{13}C NMR** (151 MHz, acetone) δ 196.3, 171.0, 146.3, 145.4, 145.3, 142.8, 141.2, 139.4, 130.1, 128.8, 128.3, 128.1, 127.9, 127.7, 126.9, 126.8, 126.8, 126.4, 126.2, 125.1, 122.9, 80.9, 77.3, 67.6, 64.6, 59.4, 27.2. **HPLC** Diacel IC (5μm), Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 24.57 min, 31.53 min. **HRMS** (m/z) calculated: $C_{36}H_{34}NO_3S$ $[M+H]^+$: 560.2259, found: 560.2272
 **4.19**, 69%, d.r. >99:1	Following Procedure D using α,β-unsaturated ketone **2.19** (19.82 mg, 0.102 mmol) as starting material, compound **4.19** was obtained as colorless solid (34 mg, 69%, mp 121.5 ℃). **^{1}H NMR** (500 MHz, acetone) δ 7.99 (d, *J* = 7.6 Hz, 2H), 7.80 (d, *J* = 0.9 Hz, 1H), 7.42 (t, *J* = 7.8 Hz, 2H), 7.37 (d, *J* = 7.5 Hz, 2H), 7.29 (t, *J* = 7.3 Hz, 1H), 7.23 – 7.11 (m, 4H), 7.07 (t, *J* = 7.6 Hz, 2H), 7.00 (t, *J* = 7.3 Hz, 1H), 6.88 (dd, *J* = 6.5, 2.8 Hz, 2H), 6.58 (dd, *J* = 3.6, 1.6 Hz, 1H), 5.21 (d, *J* = 4.3 Hz, 1H), 3.91 (s, 1H), 3.86 – 3.73 (m, 2H), 1.35 (s, 9H). **^{13}C NMR** (126 MHz, acetone) δ 192.5, 173.8, 156.2, 149.9, 149.0, 147.3, 144.00, 131.4, 130.9, 130.7, 130.4, 129.7, 129.6, 129.4, 128.88, 128.86, 120.2, 115.4, 83.5, 79.6, 69.9, 66.6, 60.7, 29.9. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 14.52 min, 16.13 min. **HRMS** (m/z) calculated: $C_{32}H_{32}NO_4$ $[M+H]^+$: 494.2331, found: 494.2321.
 **4.20**, 96%, d.r. 99:1	Following Procedure D using α,β-unsaturated ketone **2.20** (23.8 mg, 0.102 mmol) compound **4.20** was obtained as clear oil (53 mg, 96%). **^{1}H NMR** (400 MHz, Acetone) δ 8.41 (s, 1H), 8.04 – 7.99 (m, 2H), 7.90 (dd, *J* = 16.4, 8.5 Hz, 3H), 7.73 (dd, *J* = 8.7, 1.7 Hz, 1H), 7.65 – 7.59 (m, 1H), 7.57 – 7.52 (m, 1H), 7.43 – 7.36 (m, 4H), 7.26 (t, *J* = 7.3 Hz, 1H), 7.17 (dd, *J* = 5.0, 1.9 Hz, 3H), 7.05 – 6.95 (m, 3H), 6.91 (dd, *J* = 6.4, 3.1 Hz, 2H), 5.60 (d, *J* = 4.8 Hz, 1H), 3.95 (d, *J* = 8.7 Hz, 1H), 3.79 (dd, *J* = 8.7, 4.8 Hz, 1H), 1.35 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 202.0, 171.2, 146.6, 145.6, 141.3, 135.9, 135.5, 132.6, 129.8, 129.6, 128.8, 128.6, 128.5, 128.4, 128.2, 127.9, 127.7, 126.9, 126.9, 126.9, 126.8, 126.5, 126.1, 123.9, 80.8, 77.3, 67.8, 63.6, 59.2, 27.3. **HPLC:** Diacel IC (5μm), Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 34.07 min, 36.73 min. **HRMS** (m/z) calculated: $C_{38}H_{35}NO_3Na$ [M+Na]+: 576.2515, found: 576.2512.

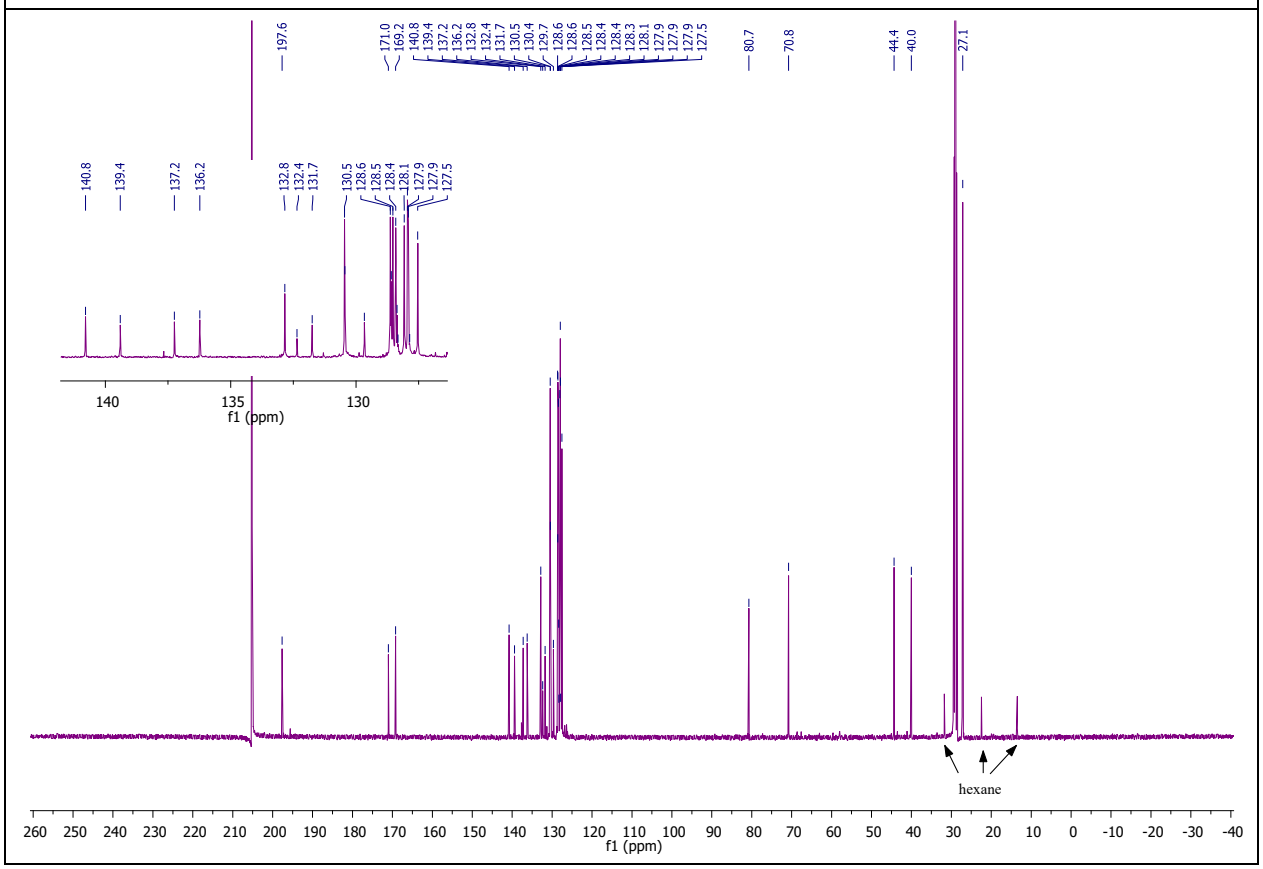
 **4.21**, 99%, d.r. >99:1	Following Procedure D using α,β-unsaturated ketone **2.21** (23.8 mg, 0.102 mmol) compound **4.21** was obtained as clear oil (55 mg, 99%). **^{1}H NMR** (400 MHz, Acetone) δ 7.93 (d, *J* = 7.3 Hz, 2H), 7.87 (d, *J* = 7.6 Hz, 1H), 7.81 (d, *J* = 8.7 Hz, 1H), 7.75 (d, *J* = 8.2 Hz, 1H), 7.62 (dd, *J* = 8.3, 1.2 Hz, 2H), 7.49 – 7.36 (m, 4H), 7.33 – 7.22 (m, 1H), 7.04 – 6.94 (m, 3H), 6.90 (d, *J* = 6.7 Hz, 1H), 5.46 (d, *J* = 4.9 Hz, 1H), 4.85 – 4.72 (m, 1H), 4.11 (d, *J* = 7.1 Hz, 2H), 1.13 (s, 9H). **^{13}C NMR** (101 MHz, Acetone) δ 204.0, 172.3, 147.4, 145.4, 139.9, 138.5, 134.9, 133.8, 133.2, 129.9, 129.7, 129.5, 129.0, 128.7, 128.3, 128.2, 128.1, 127.7, 127.3, 127.0, 126.5, 126.4, 125.5, 124.0, 81.7, 78.6, 68.4, 64.8, 53.2, 28.0. **HPLC:** Kromasil OD-H, Hexane:2-Propanol (98:2), 0.5 mL/min, 254 nm; retention time: 11.06 min, 11.58 min. **HRMS** (m/z) calculated: $C_{38}H_{35}NO_3Na$ $[M+ Na]^+$: 576.2515, found: 576.2494.

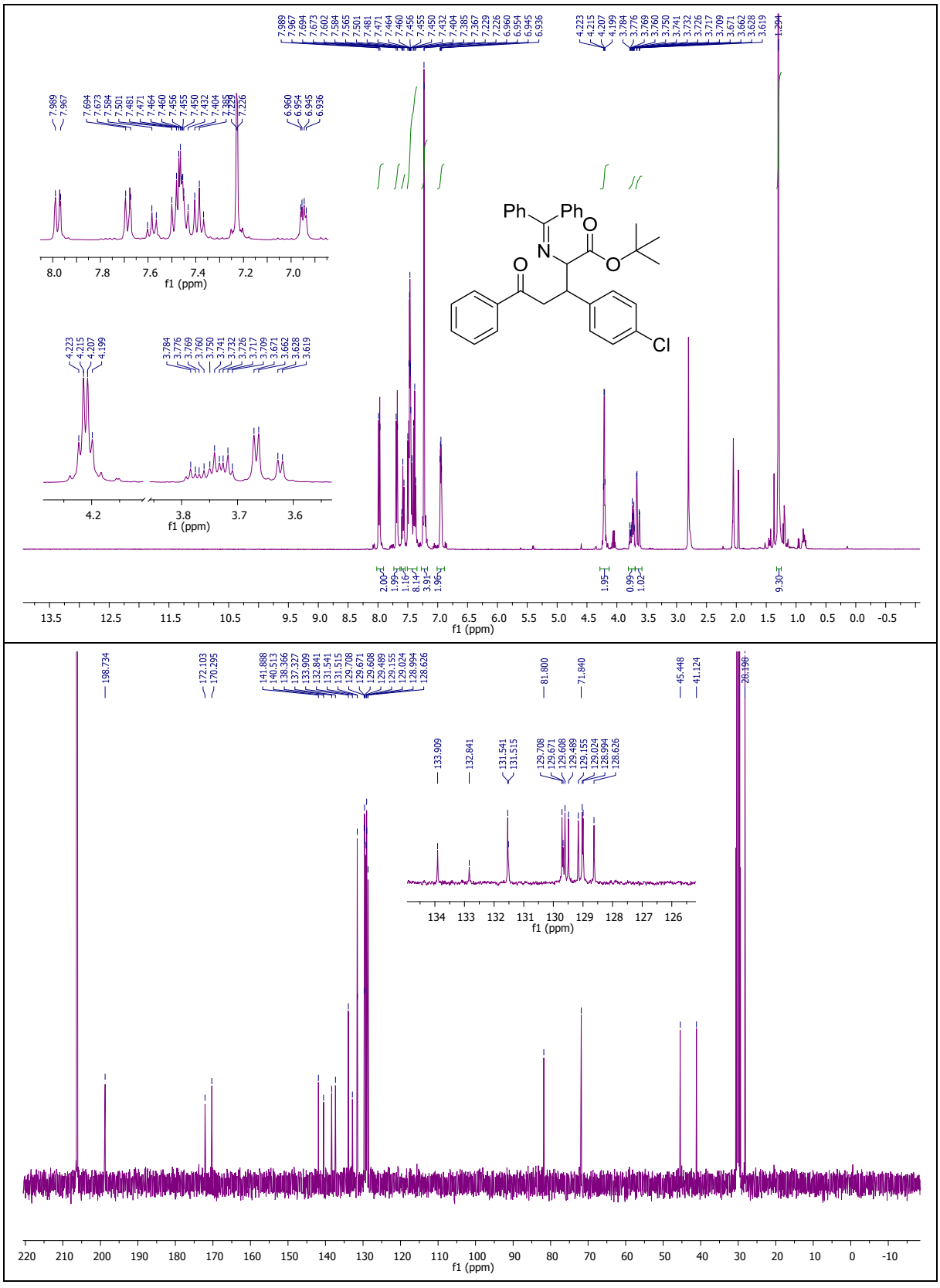
3. Copies of ^{1}H and ^{13}C NMR spectra

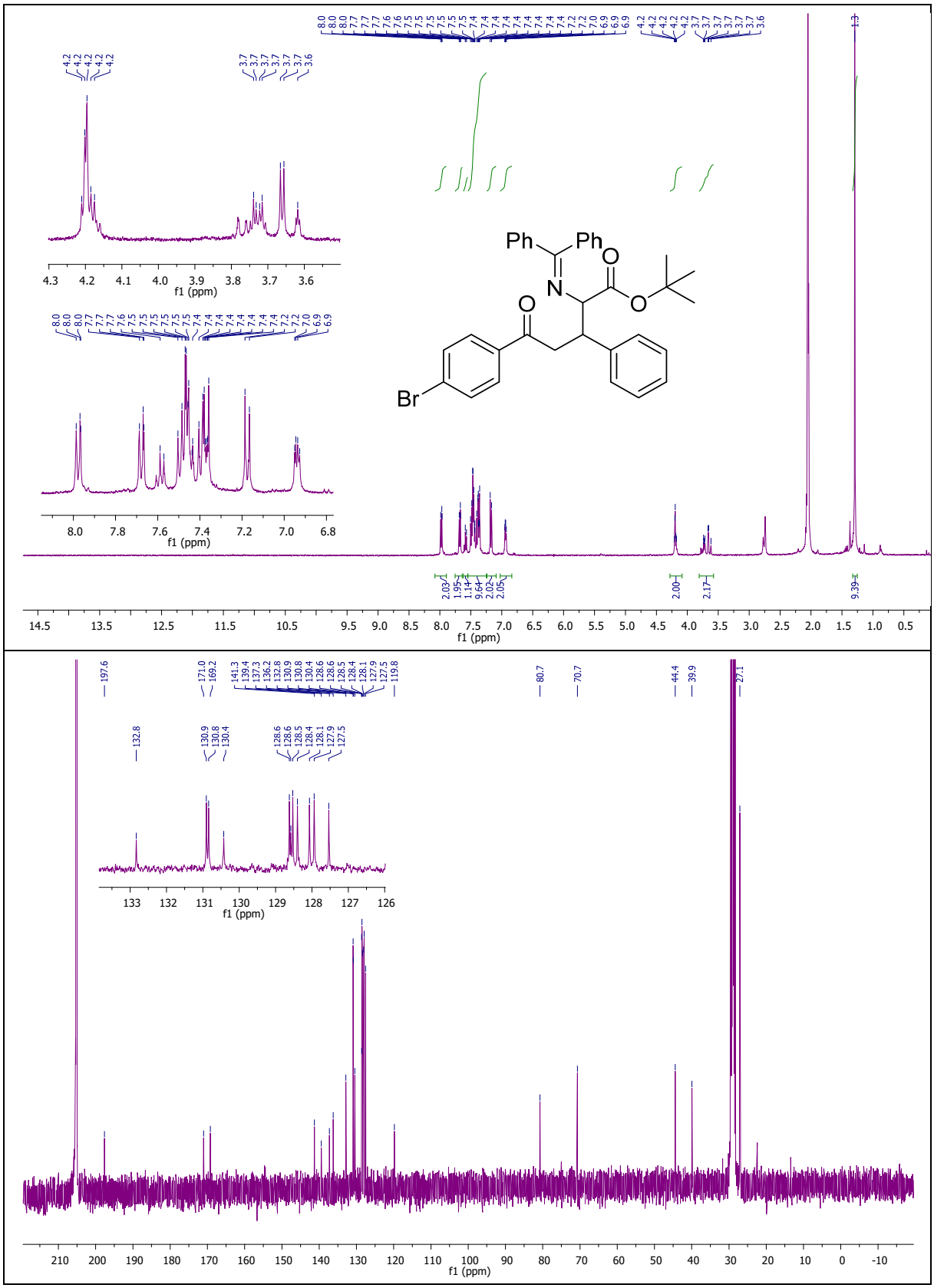


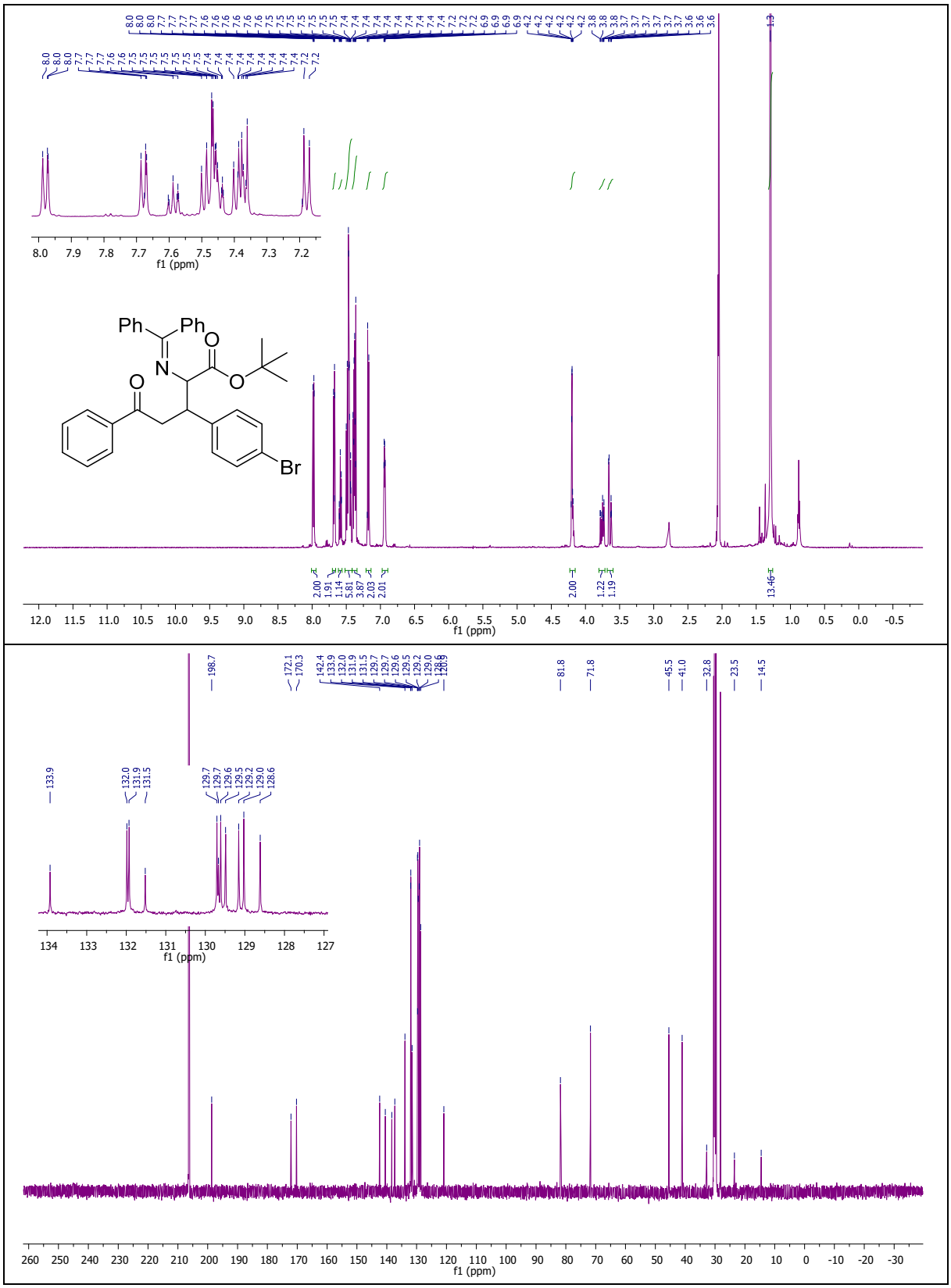



Ph
Ph
O
N
O
O
Cl
f1 (ppm)


hexane
f1 (ppm)


Ph
Ph
O
N
O
O
Cl
f1 (ppm)


Ph
Ph
O
N
O
O
Br
f1 (ppm)


Ph
Ph
O
N
O
O
Br
f1 (ppm)
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170.3
142.4
133.9
132.0
131.9
131.5
129.7
129.6
129.5
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128.8
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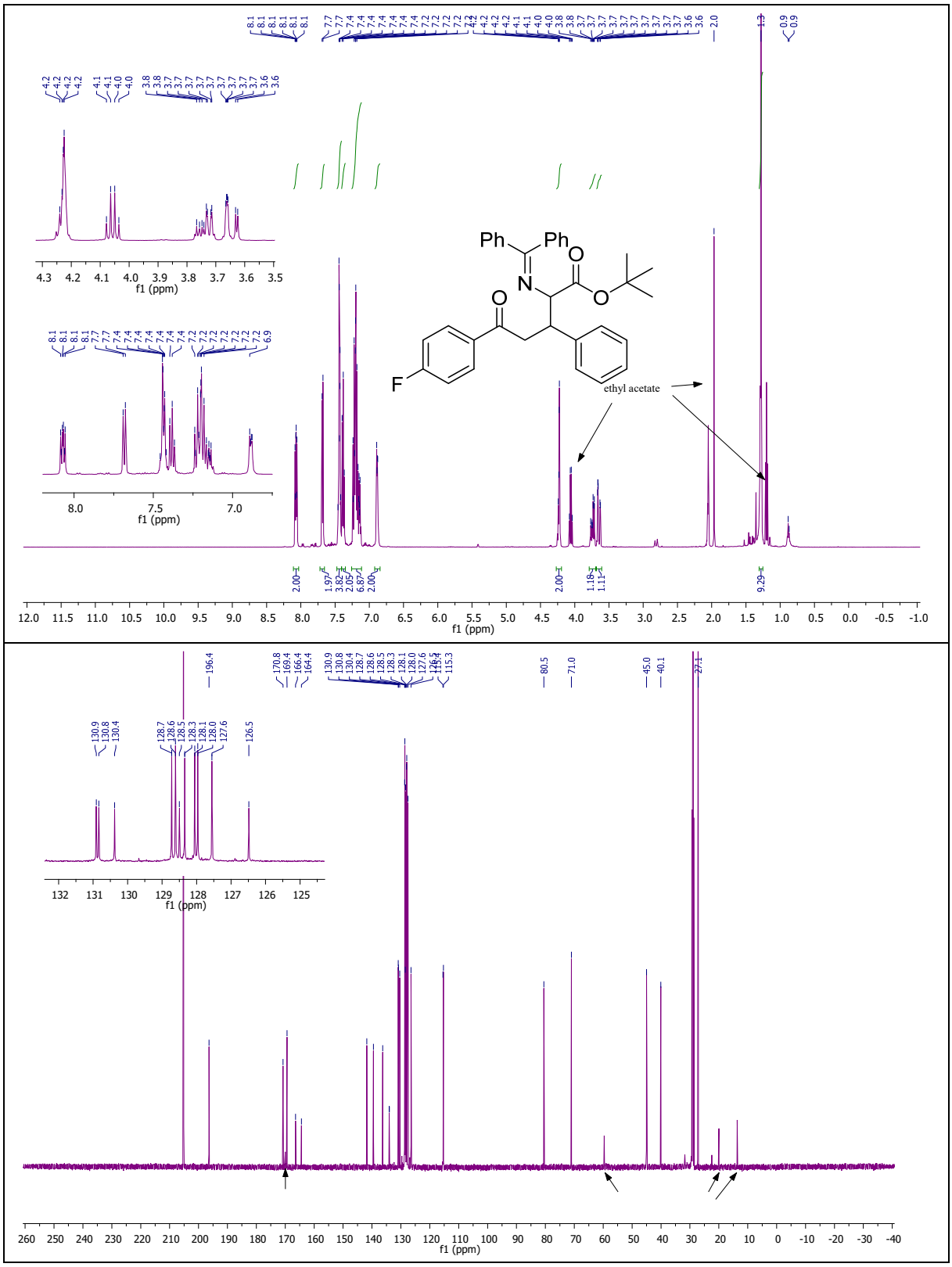
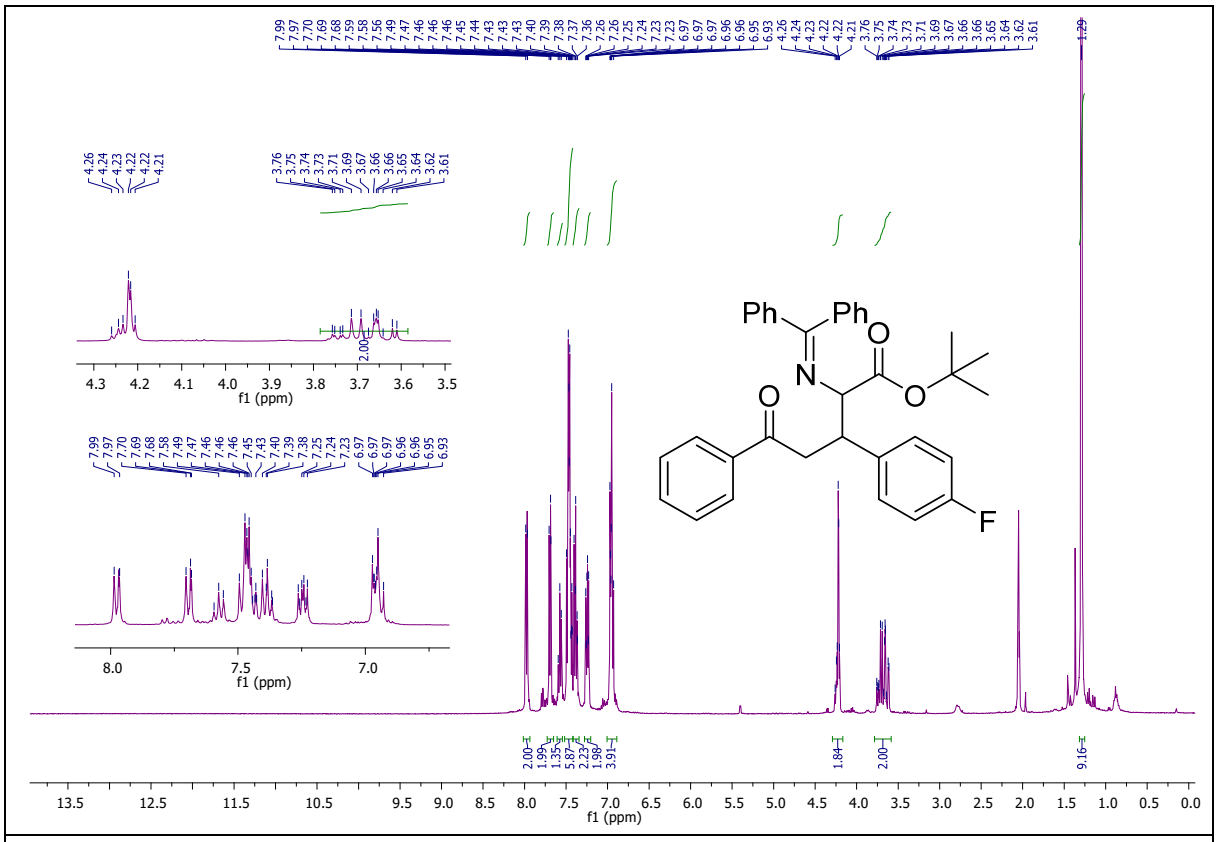
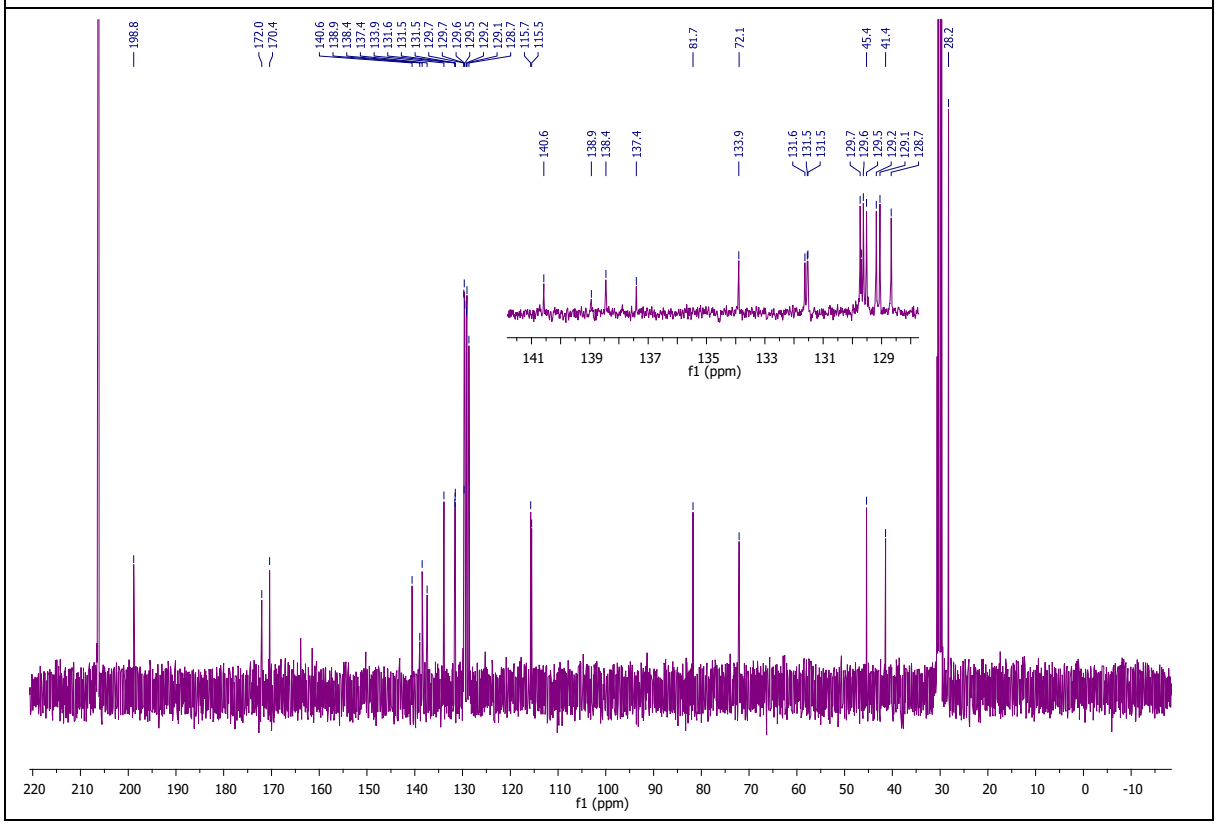
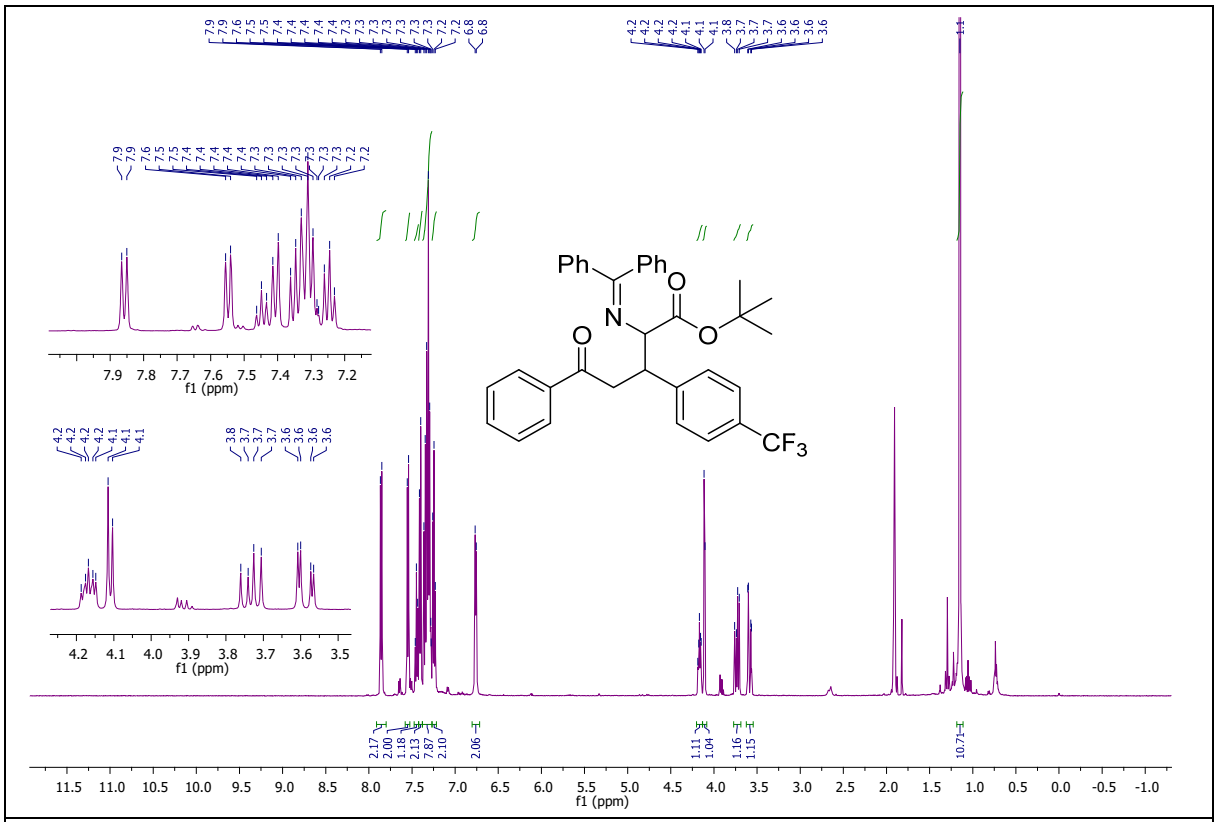
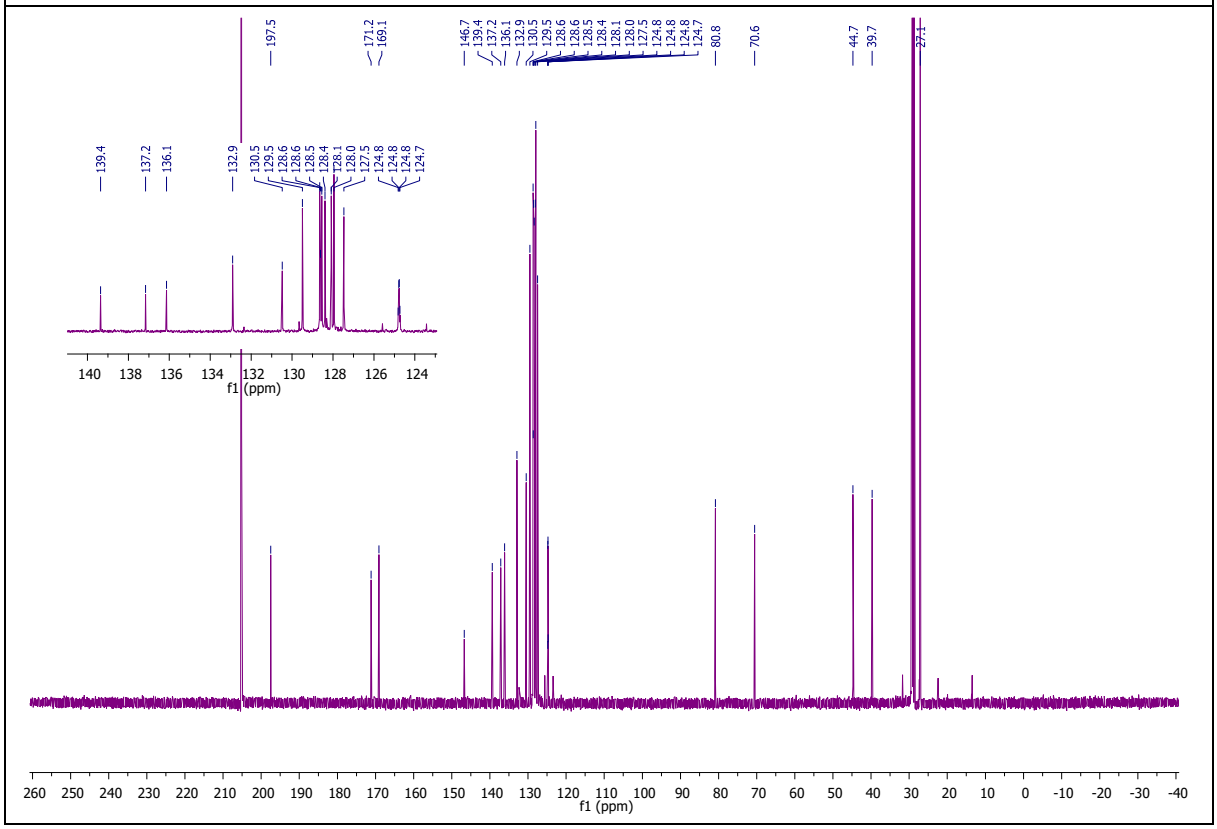
81.8
71.8
45.5
41.0
32.8
23.5
14.5

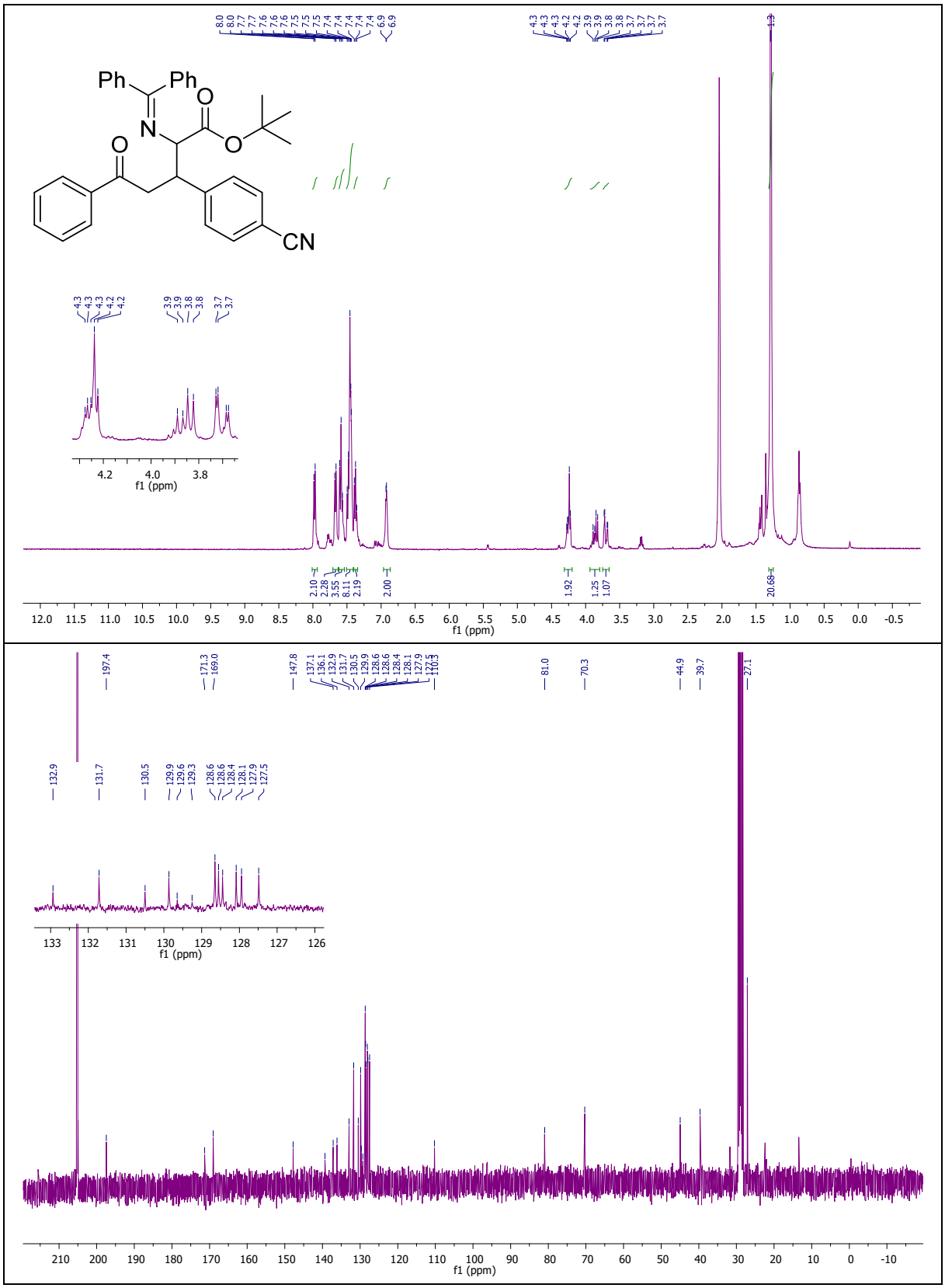

Ph
Ph
O
N
O
O
F
ethyl acetate
f1 (ppm)

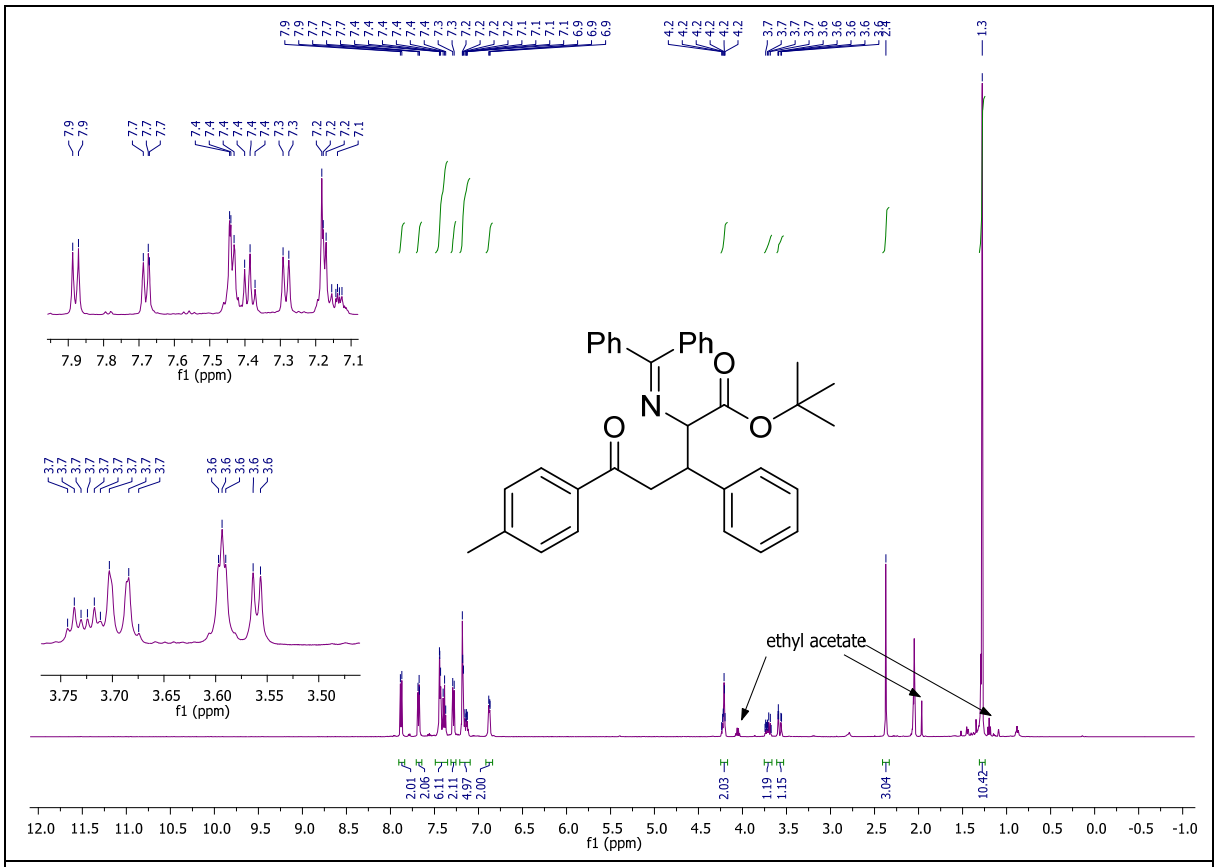

Ph
Ph
O
N
O
O
F
f1 (ppm)

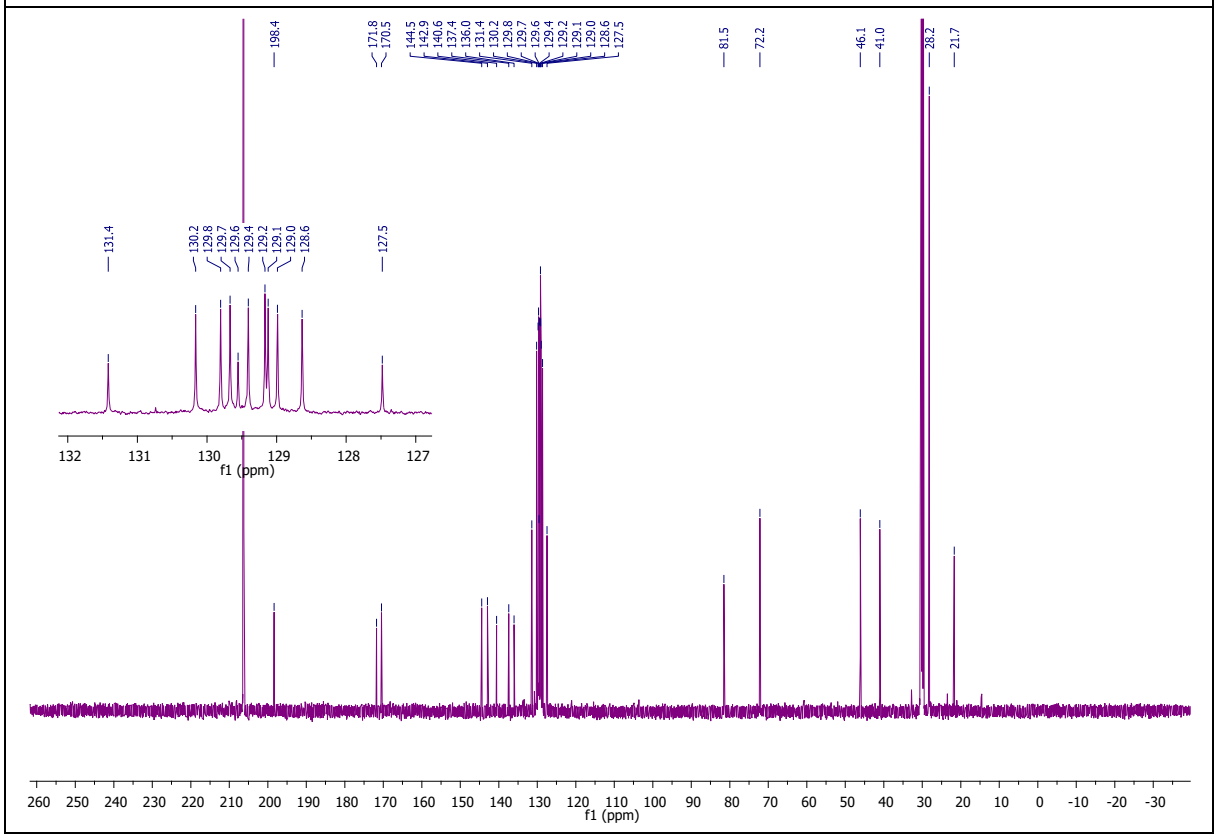

f1 (ppm)

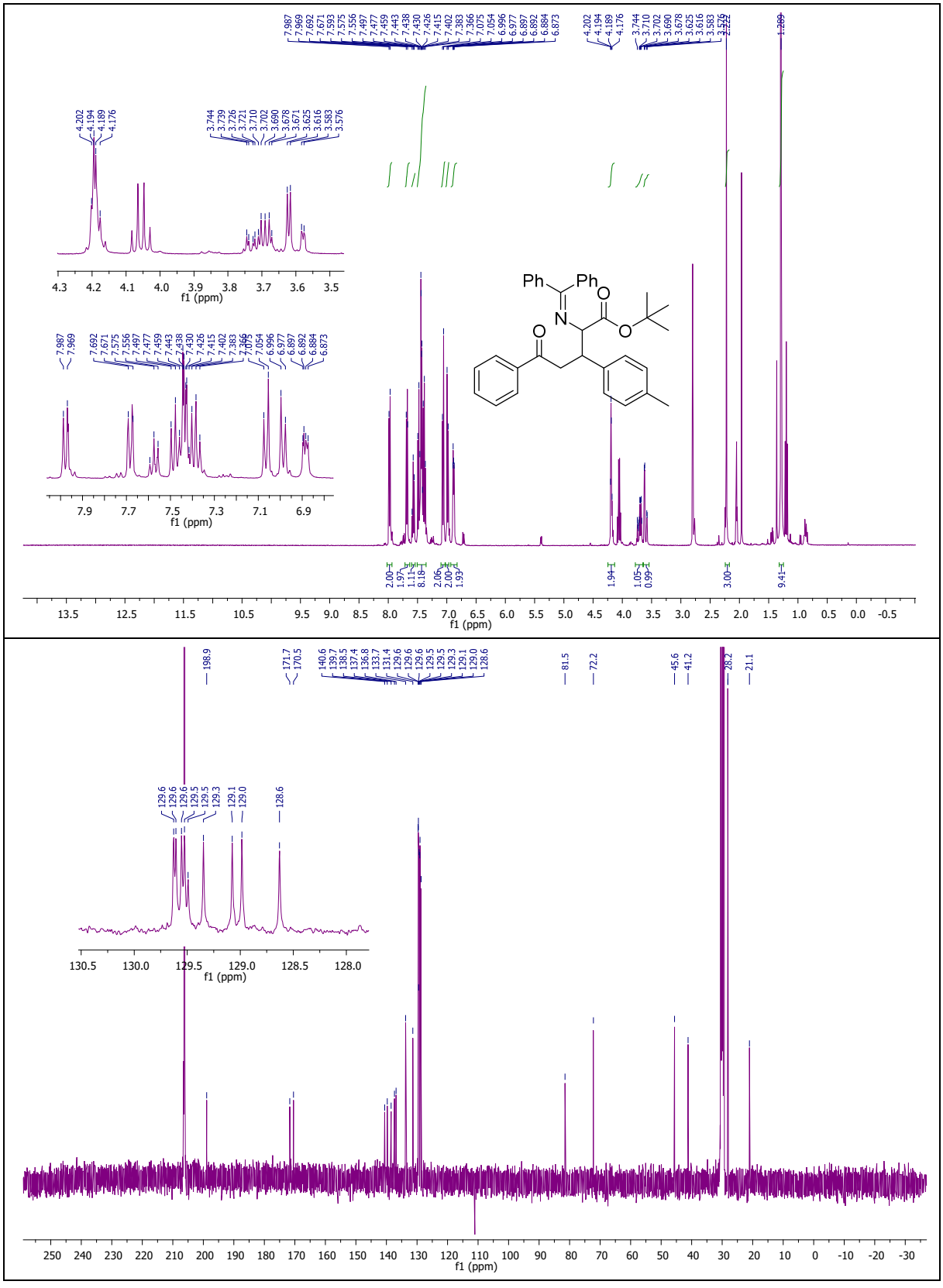

Ph
Ph
O
N
O
O
CF3
f1 (ppm)

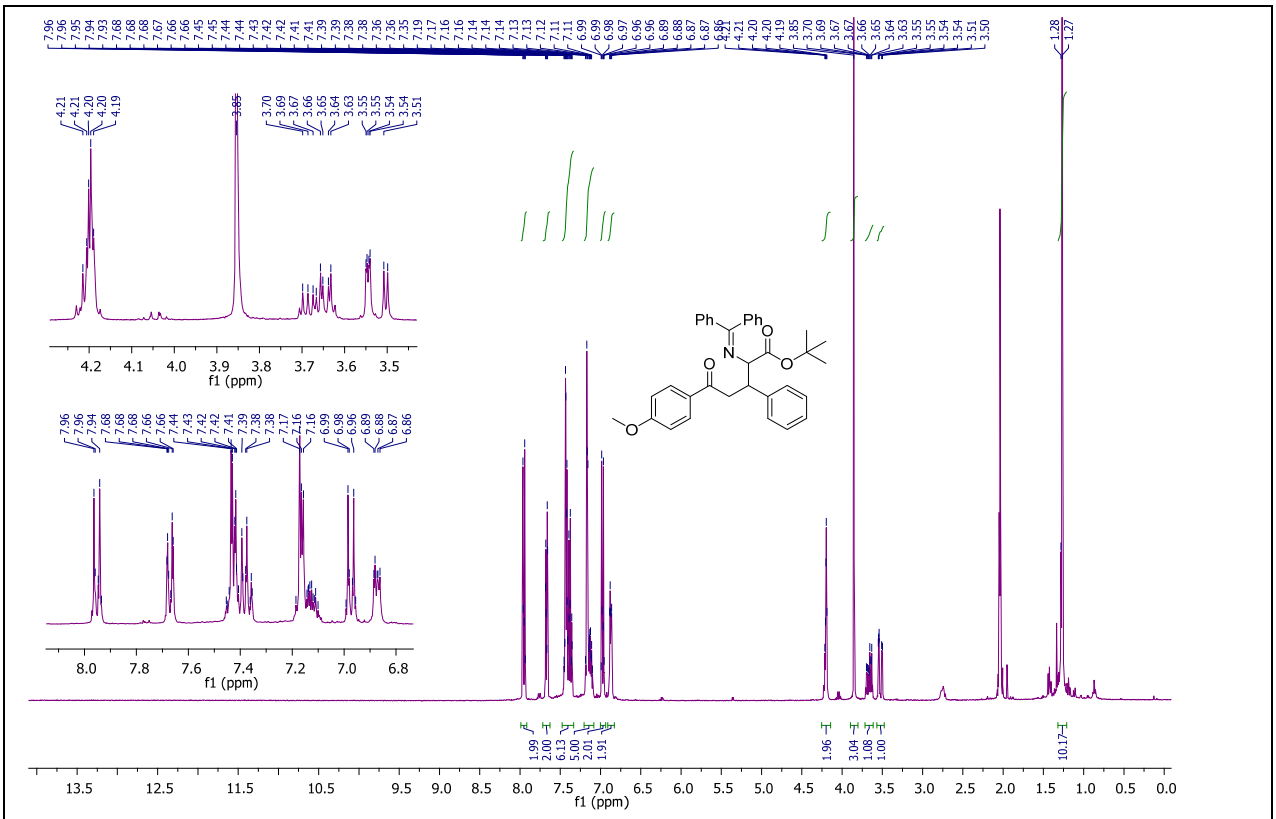

f1 (ppm)

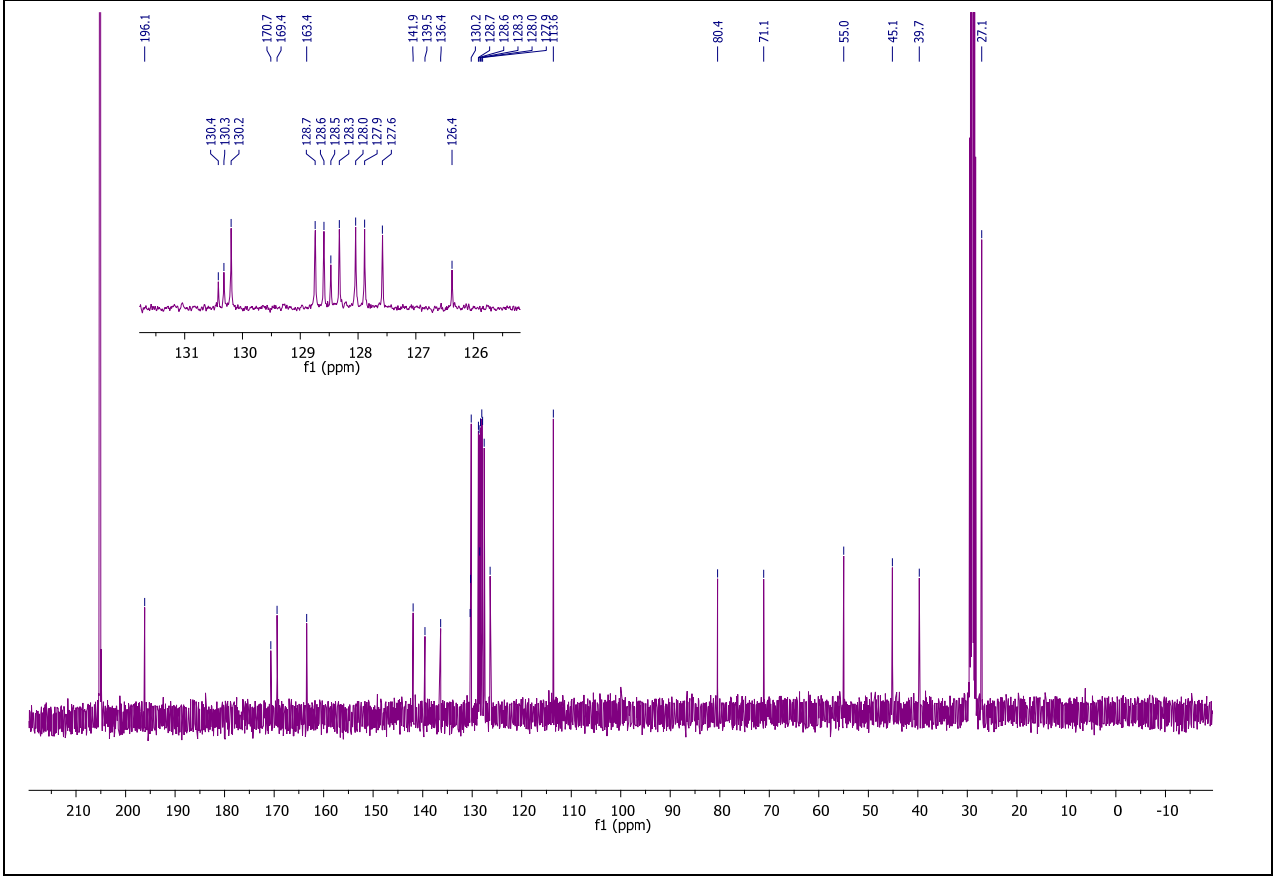

Ph
Ph
O
N
O
O
CN
f1 (ppm)
f1 (ppm)
f1 (ppm)

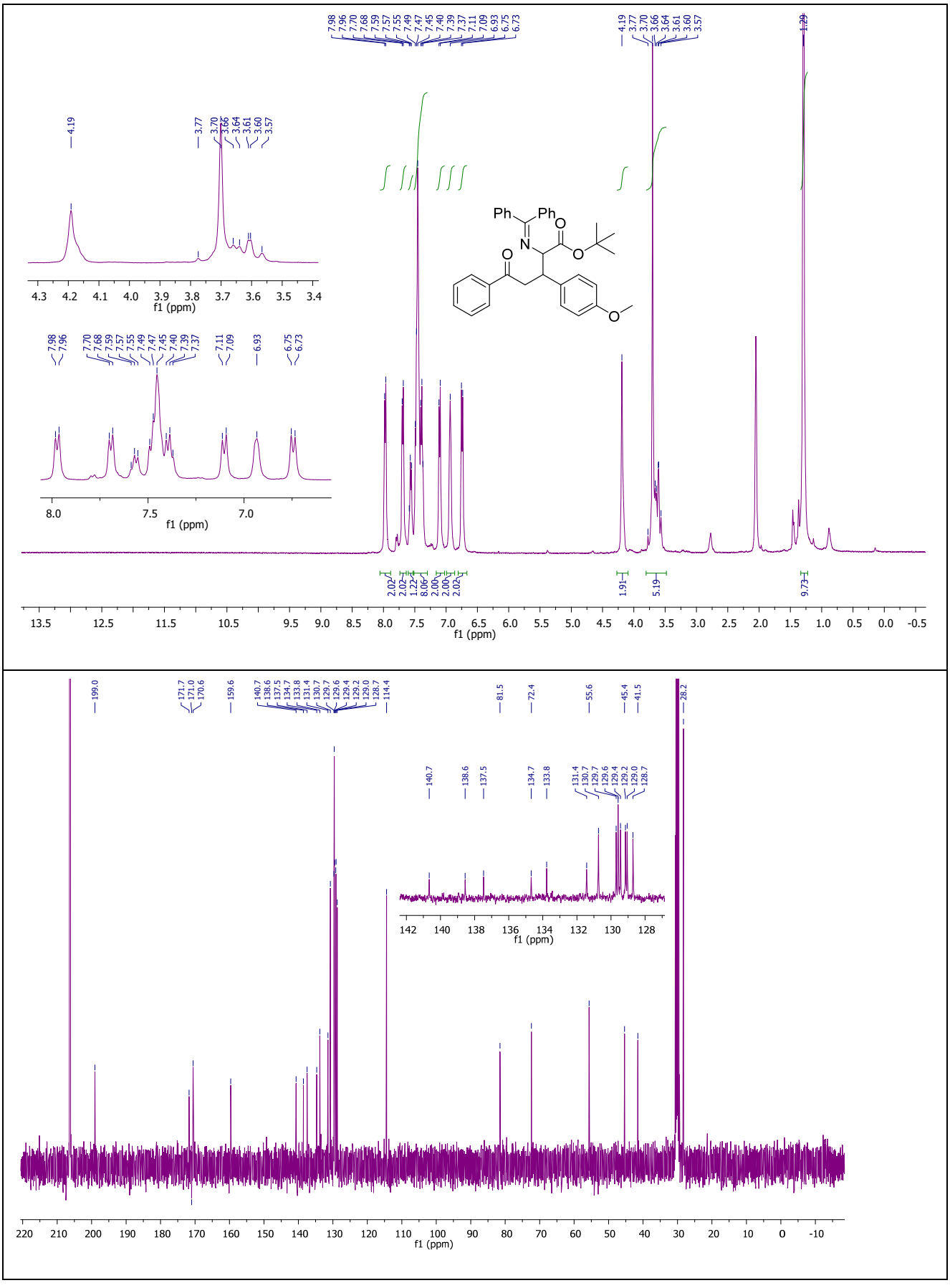

Ph
Ph
O
N
O
O
ethyl acetate
f1 (ppm)


f1 (ppm)

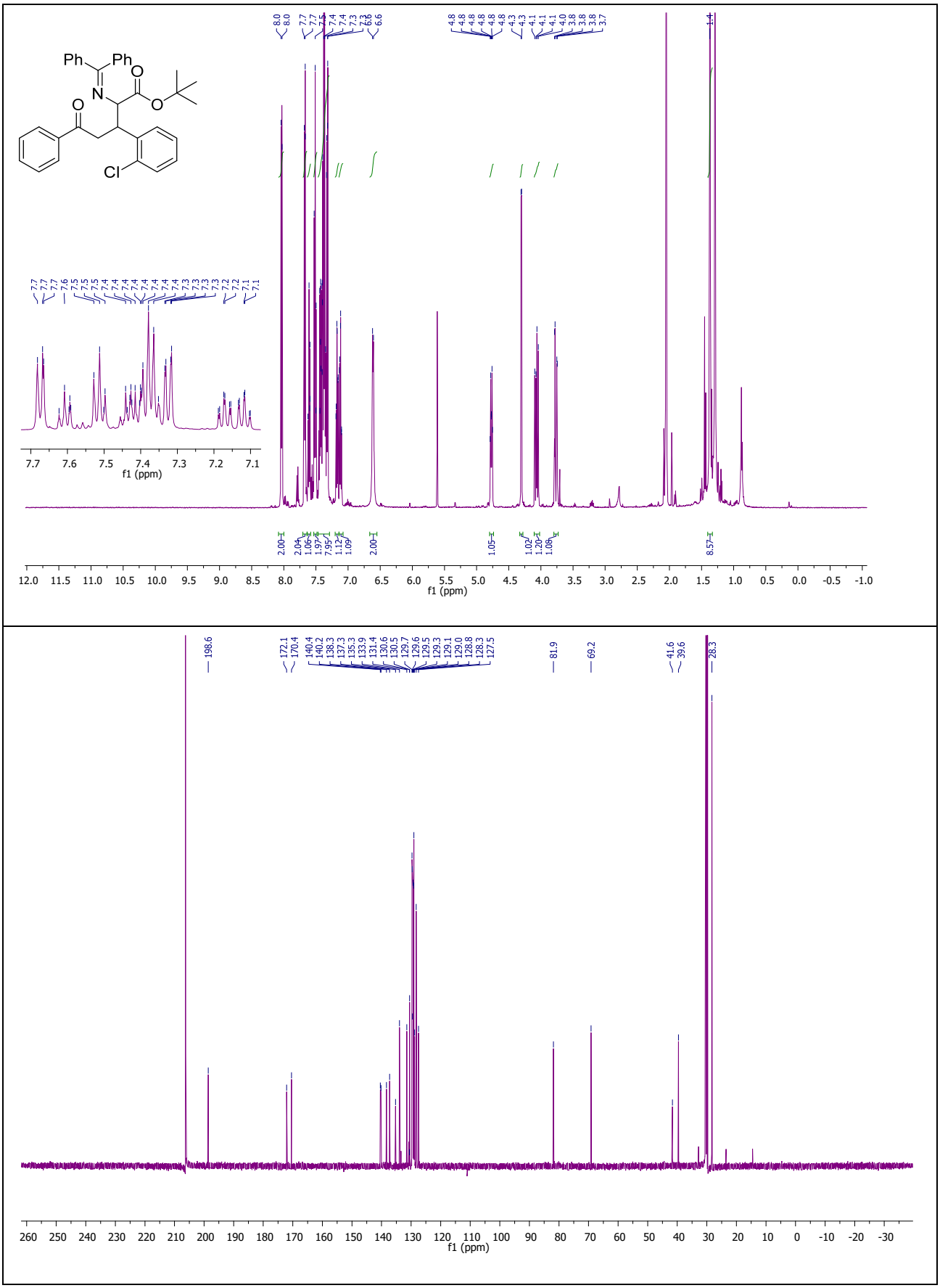

Ph
Ph
O
N
O
O
f1 (ppm)

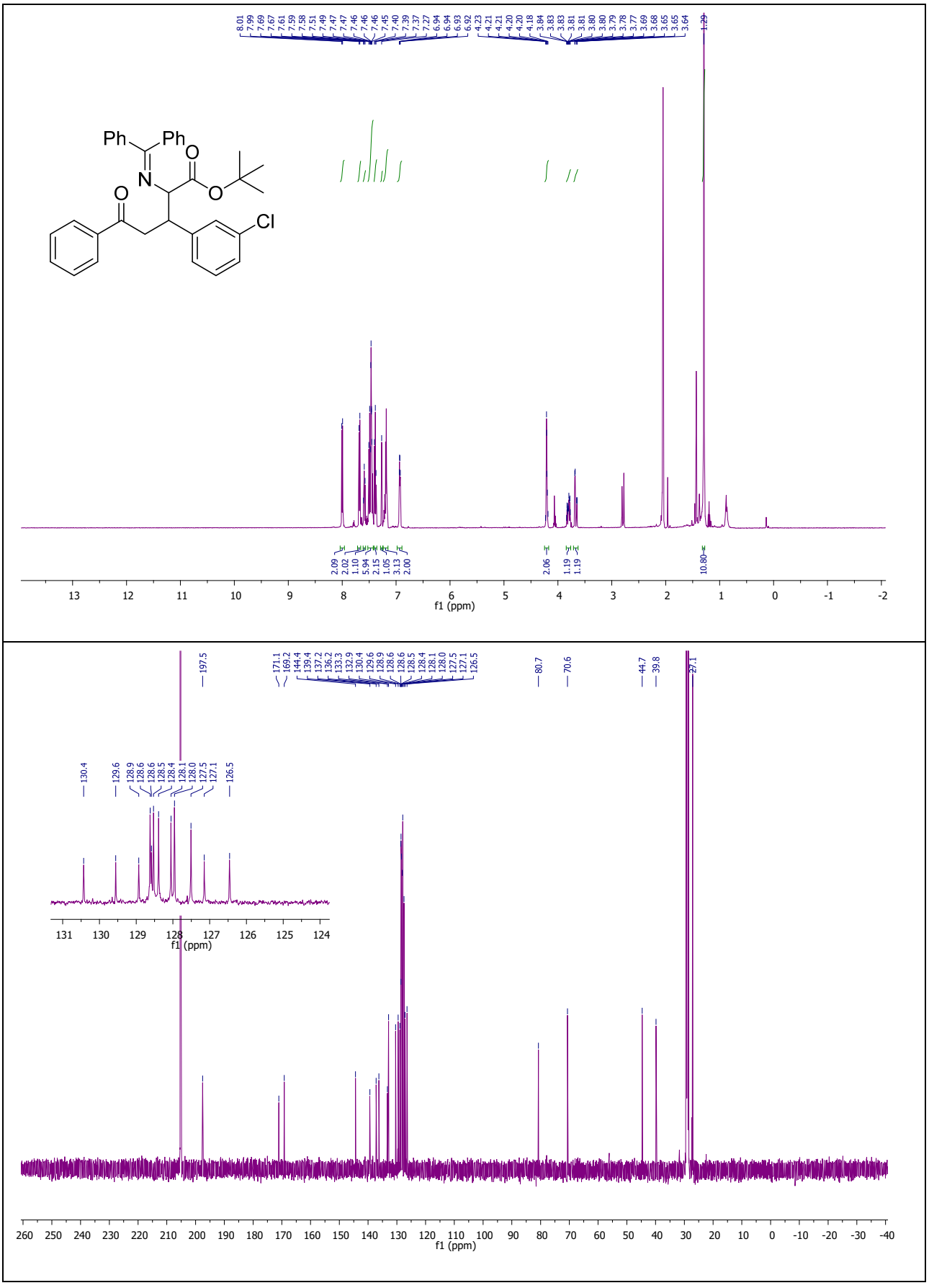

Ph
Ph
N
O
O
O
O
f1 (ppm)

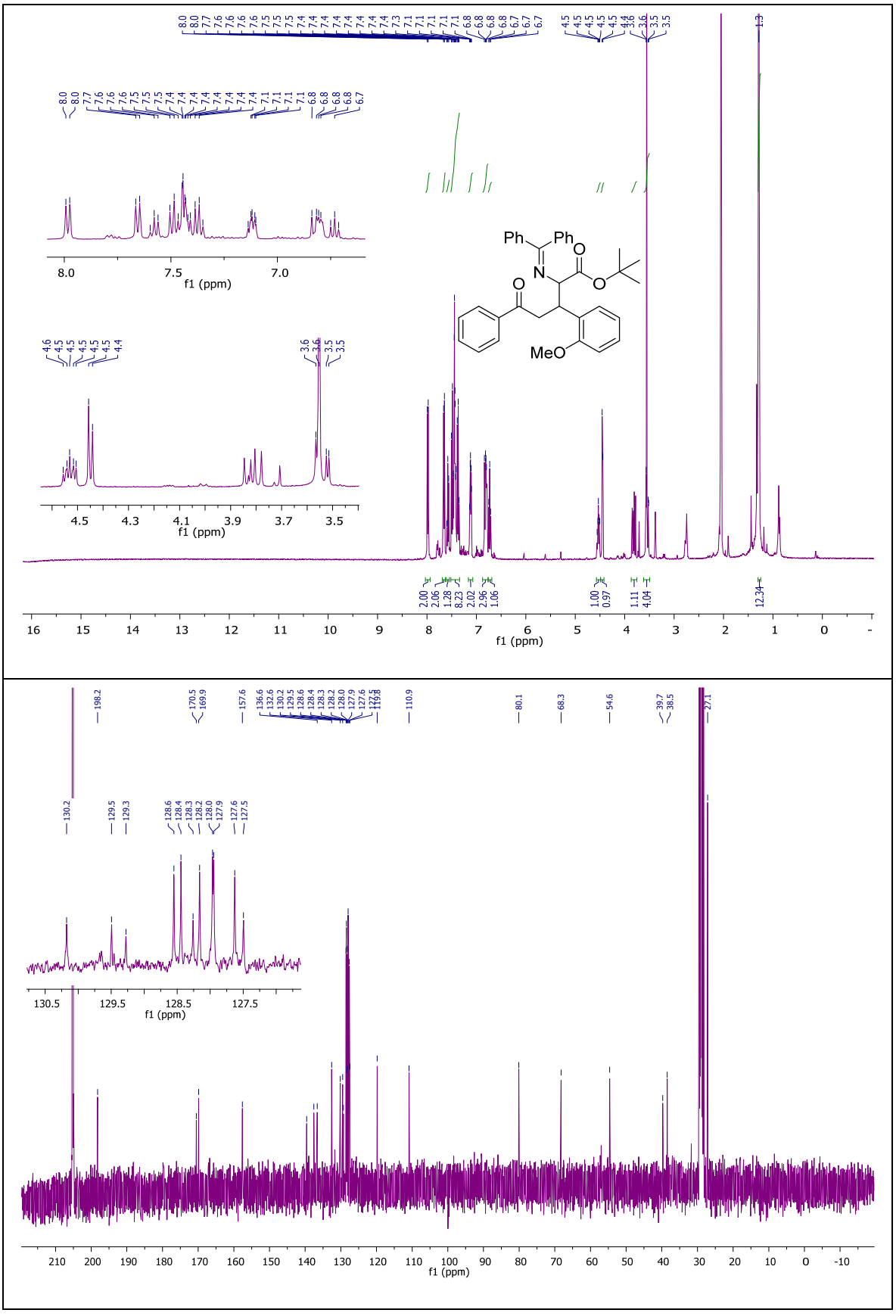

f1 (ppm)

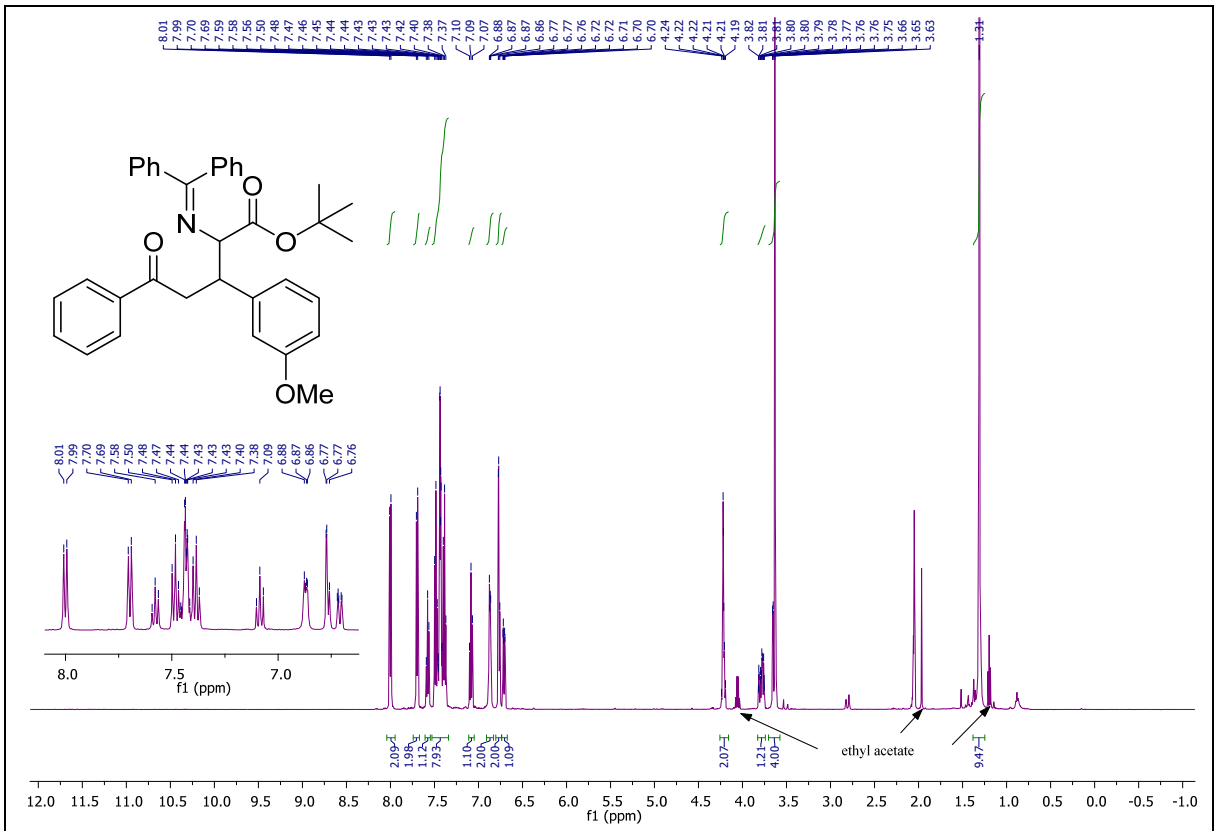

7.98
7.96
7.70
7.68
7.59
7.57
7.55
7.49
7.47
7.45
7.40
7.39
7.37
7.11
7.09
6.93
6.75
6.73
4.19
3.77
3.70
3.66
3.64
3.61
3.60
3.57
1.29
Ph
Ph
N
O
O
O
O
2.02
2.02
1.22
8.06
2.00
2.00
2.02
1.91
5.19
9.73
f1 (ppm)

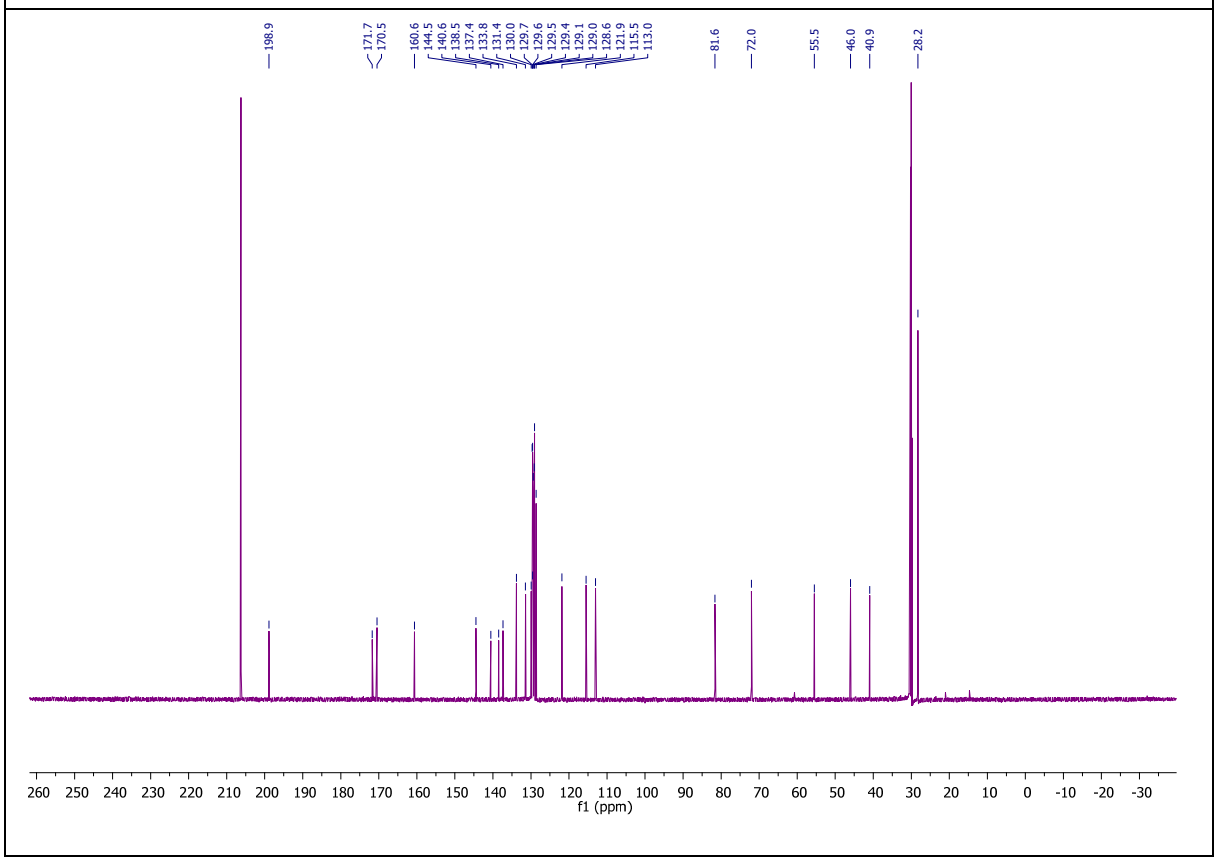
199.0
171.7
171.0
170.6
159.6
140.7
138.6
137.5
134.7
133.8
131.4
130.7
129.7
129.6
129.4
129.2
129.0
128.7
114.4
81.5
72.4
55.6
45.4
41.5
28.2
f1 (ppm)

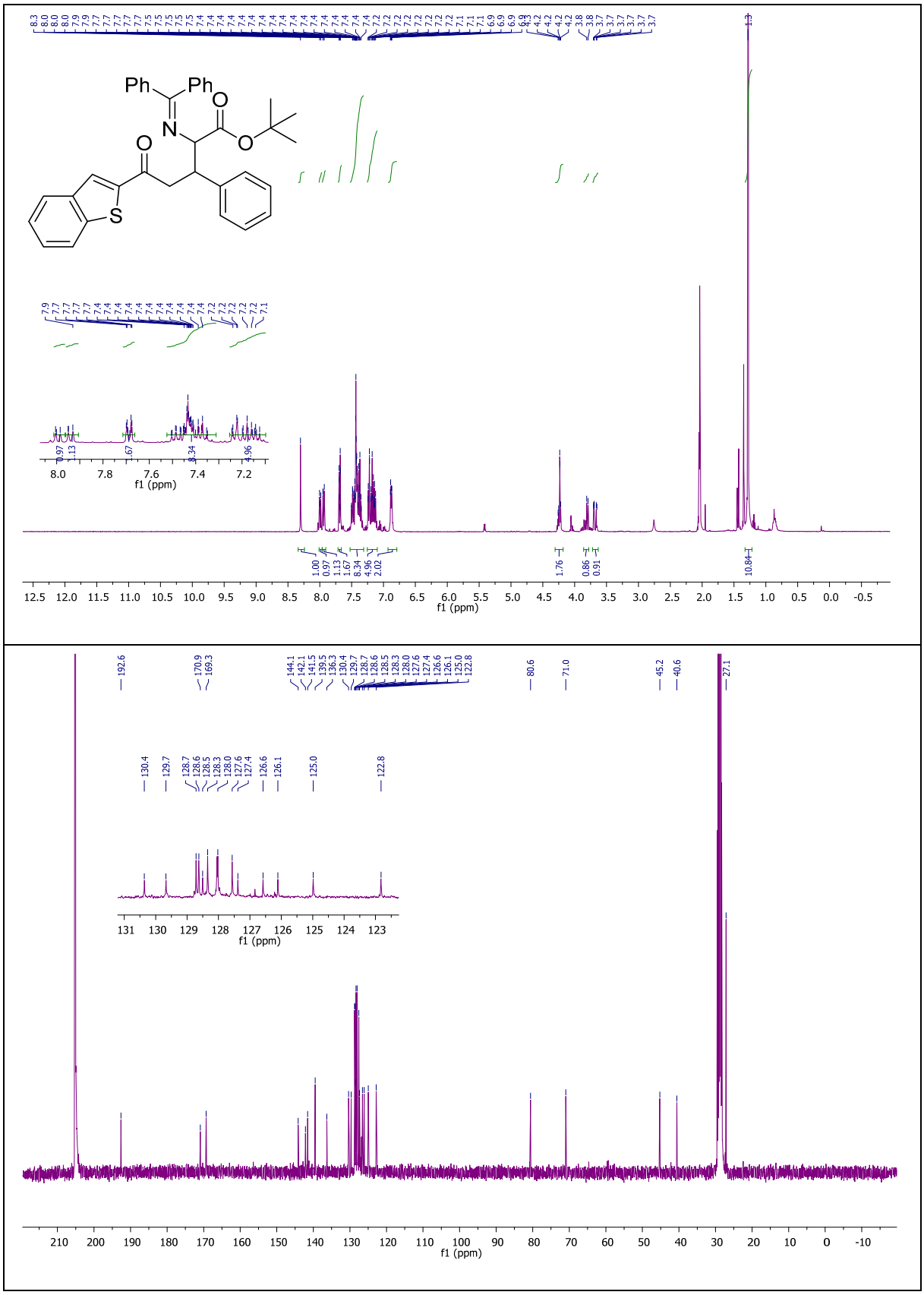

Ph
Ph
O
N
O
O
Cl
f1 (ppm)
198.6
172.1
170.4
140.4
140.2
138.3
137.3
135.3
133.9
131.4
130.6
130.5
129.7
129.6
129.5
129.3
129.1
129.0
128.8
128.3
127.5
81.9
69.2
41.6
39.6
28.3

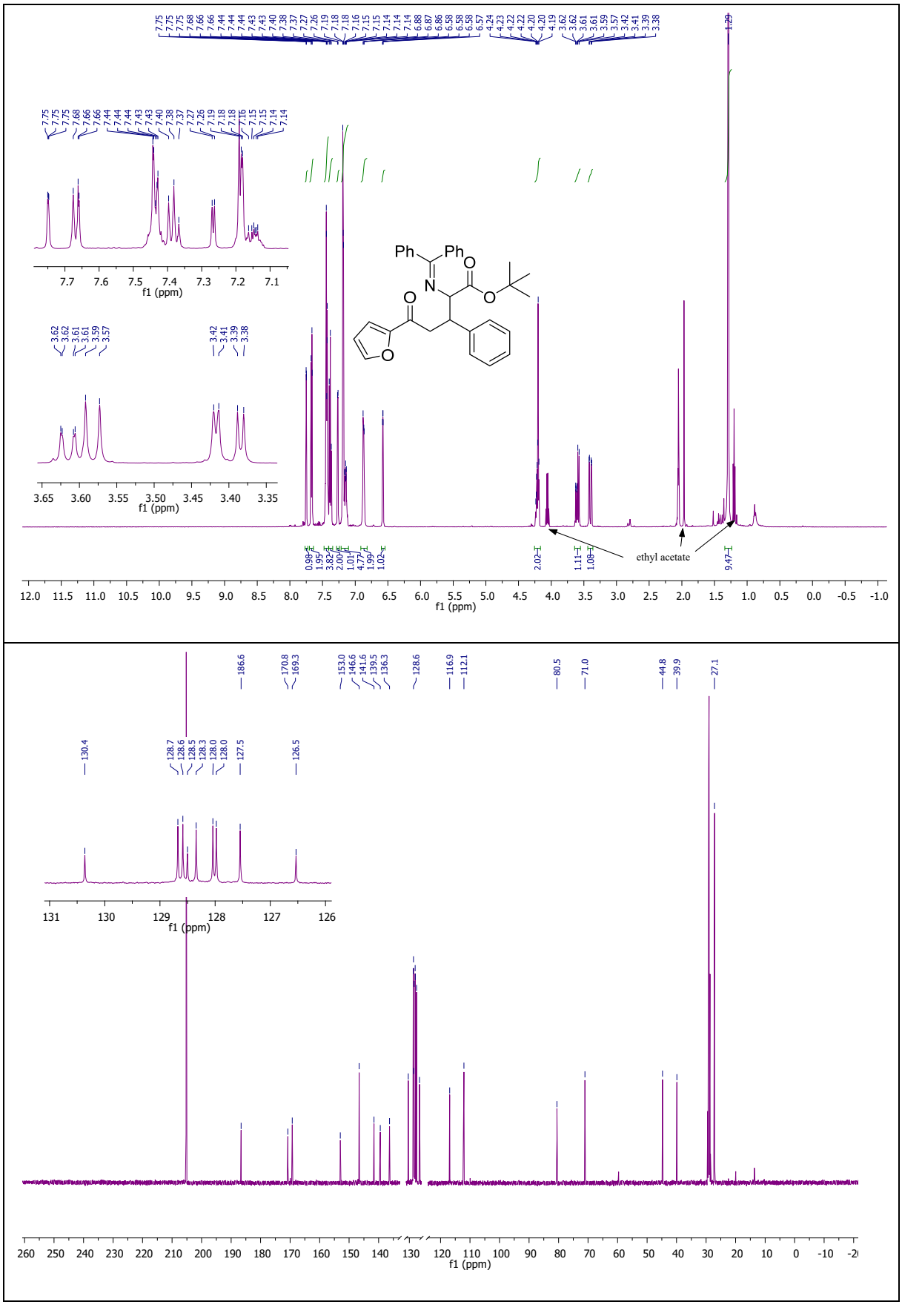

Ph
Ph
O
N
O
O
Cl
f1 (ppm)
f1 (ppm)
f1 (ppm)

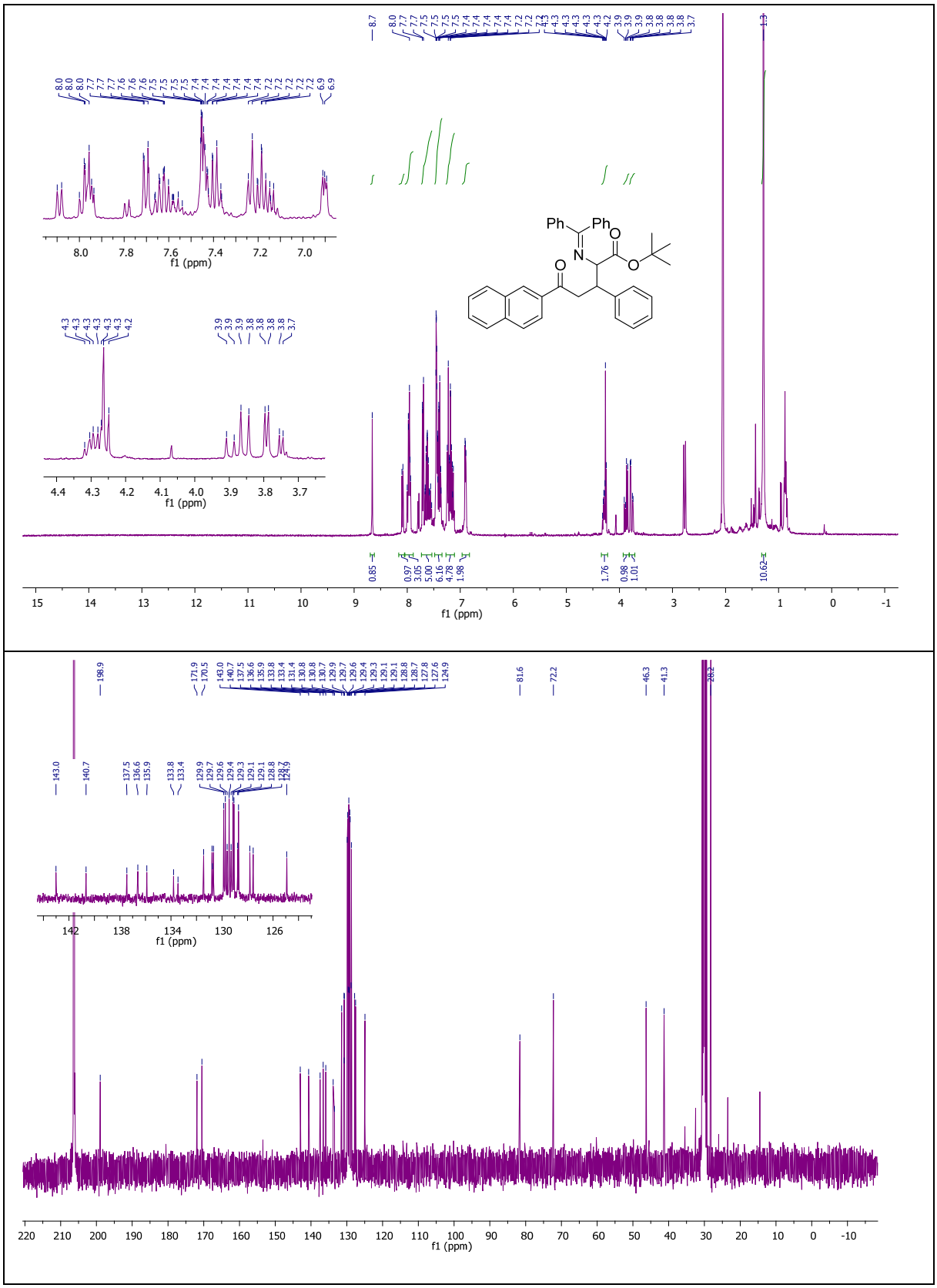

Ph
Ph
O
N
O
O
MeO
f1 (ppm)

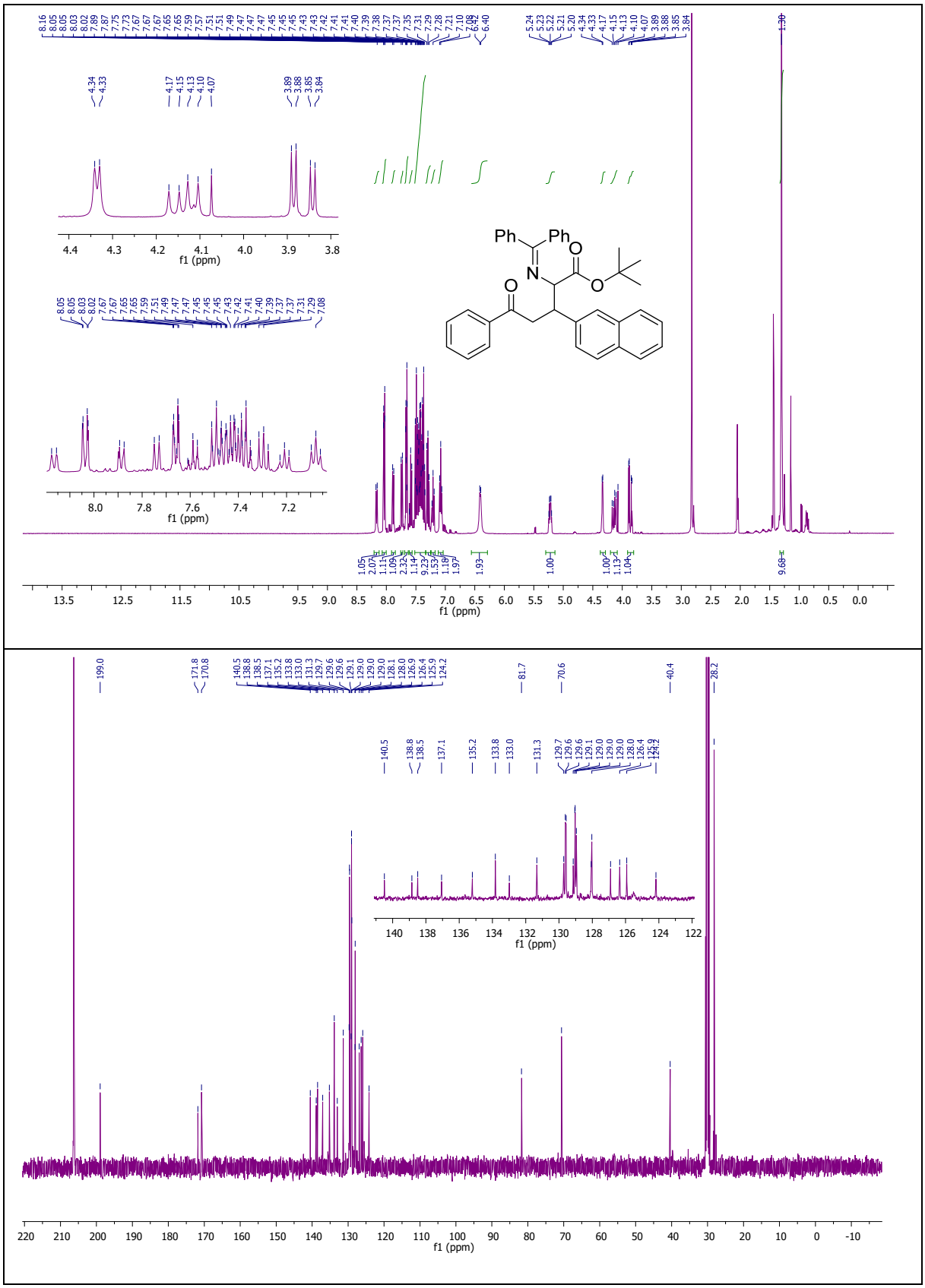

Ph
Ph
O
N
O
O
OMe
ethyl acetate
f1 (ppm)

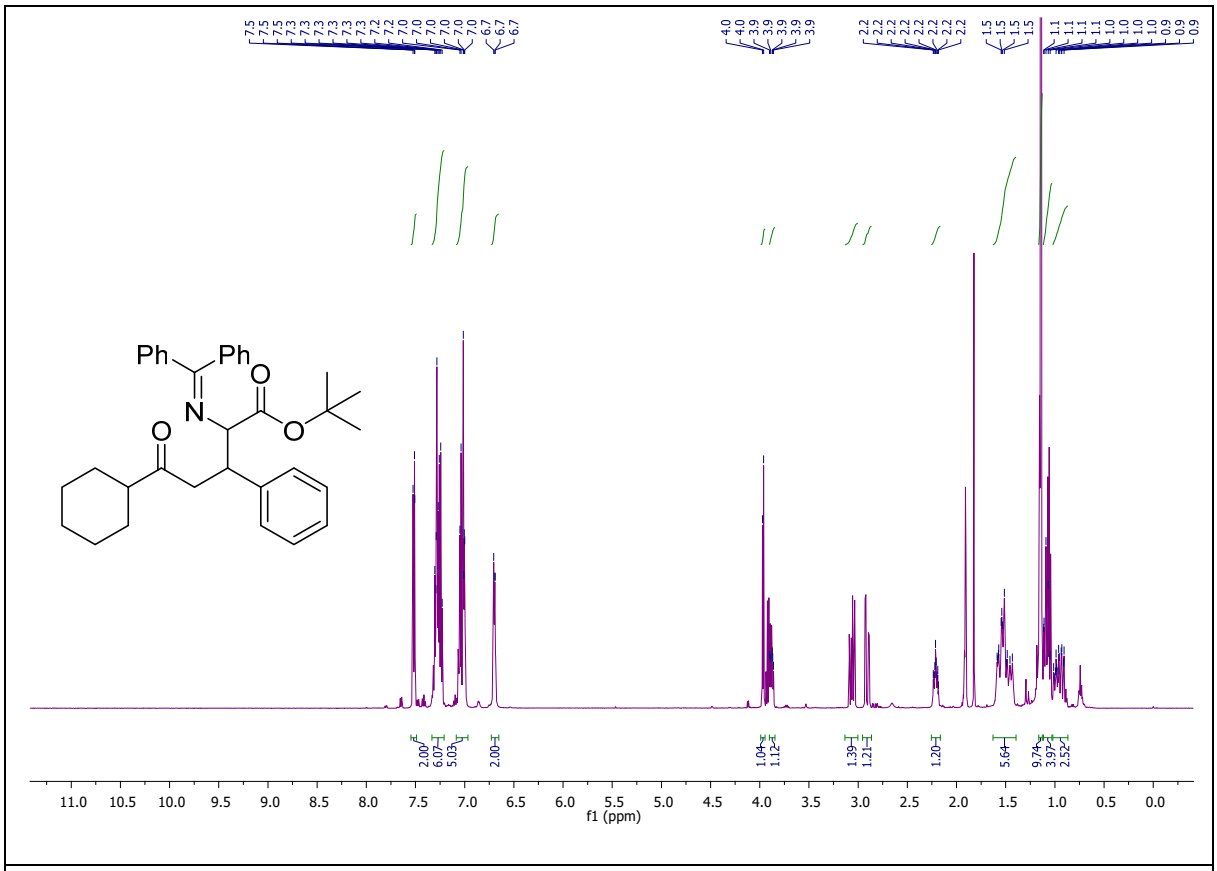

f1 (ppm)

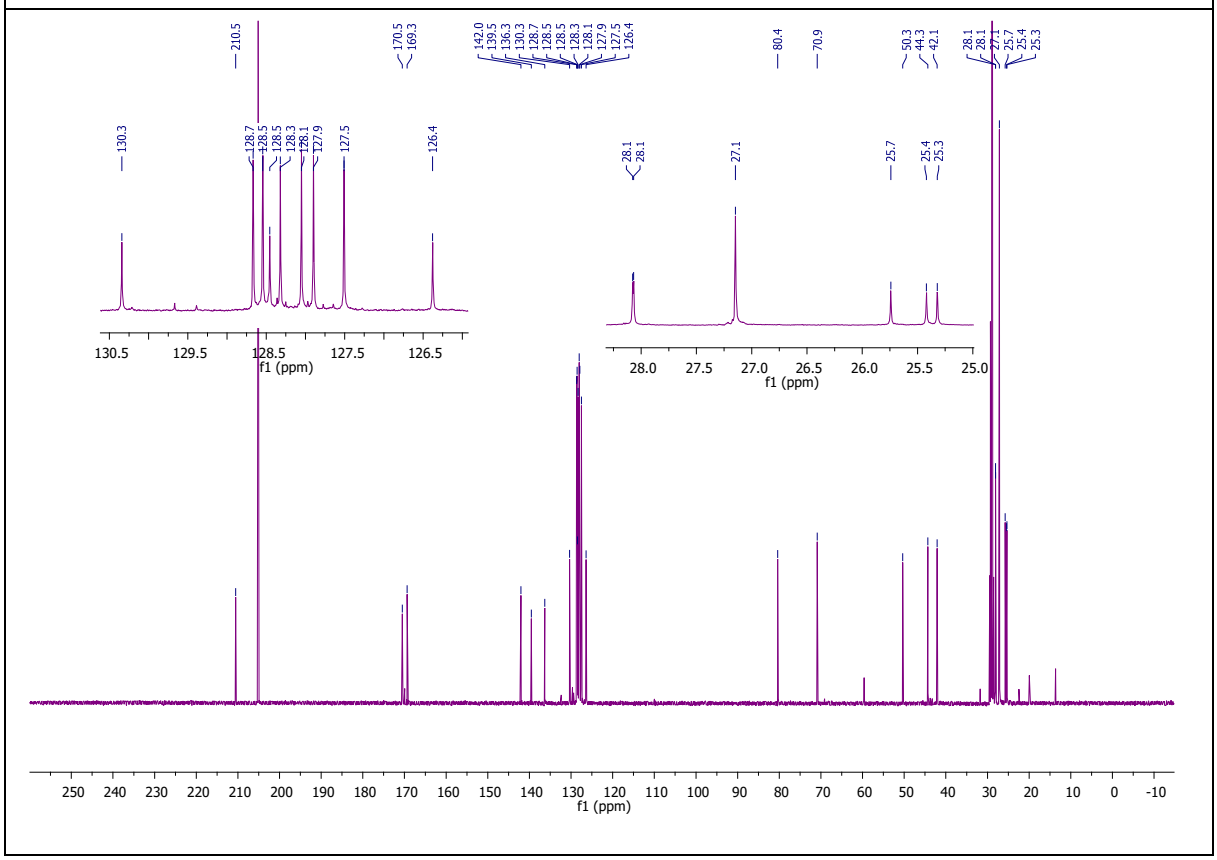

Ph
Ph
O
N
O
O
S
f1 (ppm)
f1 (ppm)
f1 (ppm)

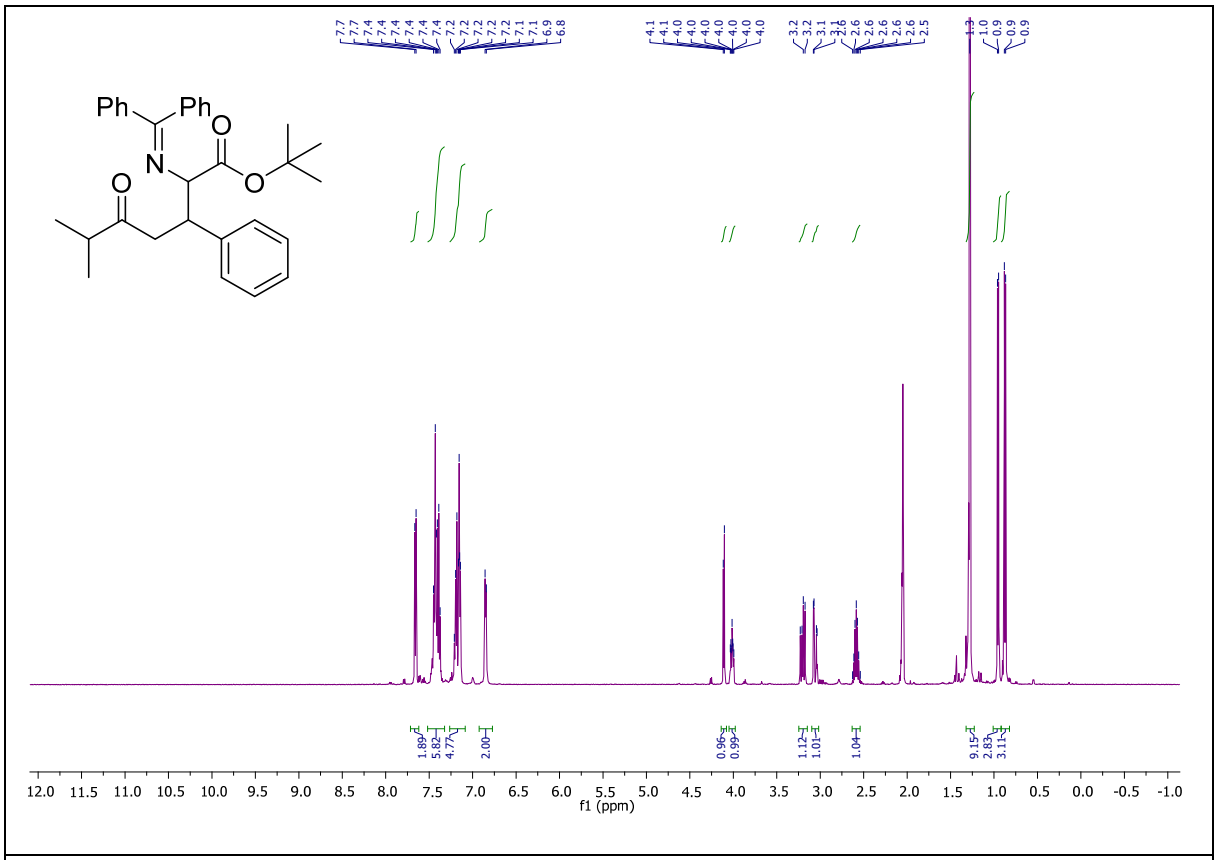

Ph
Ph
N
O
O
O
O
ethyl acetate
f1 (ppm)

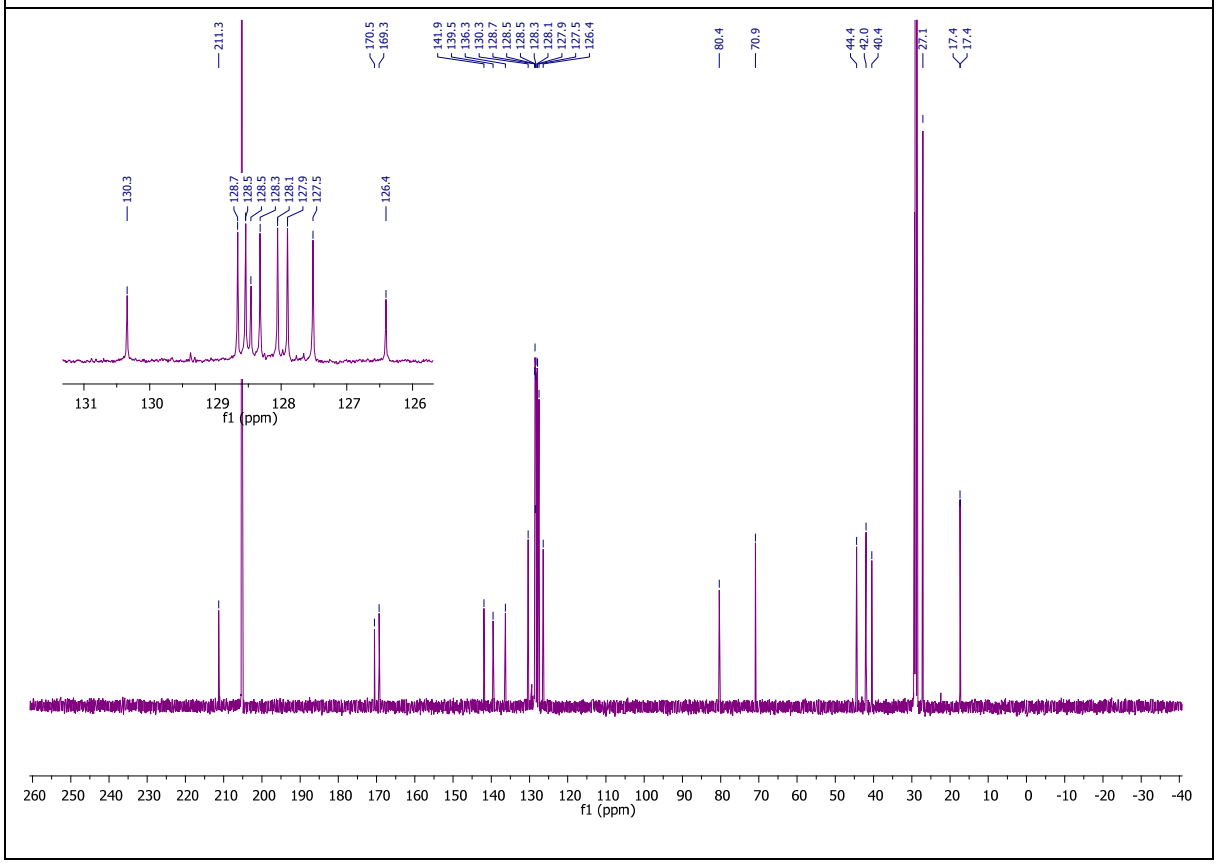

Ph
Ph
N
O
O
O
f1 (ppm)

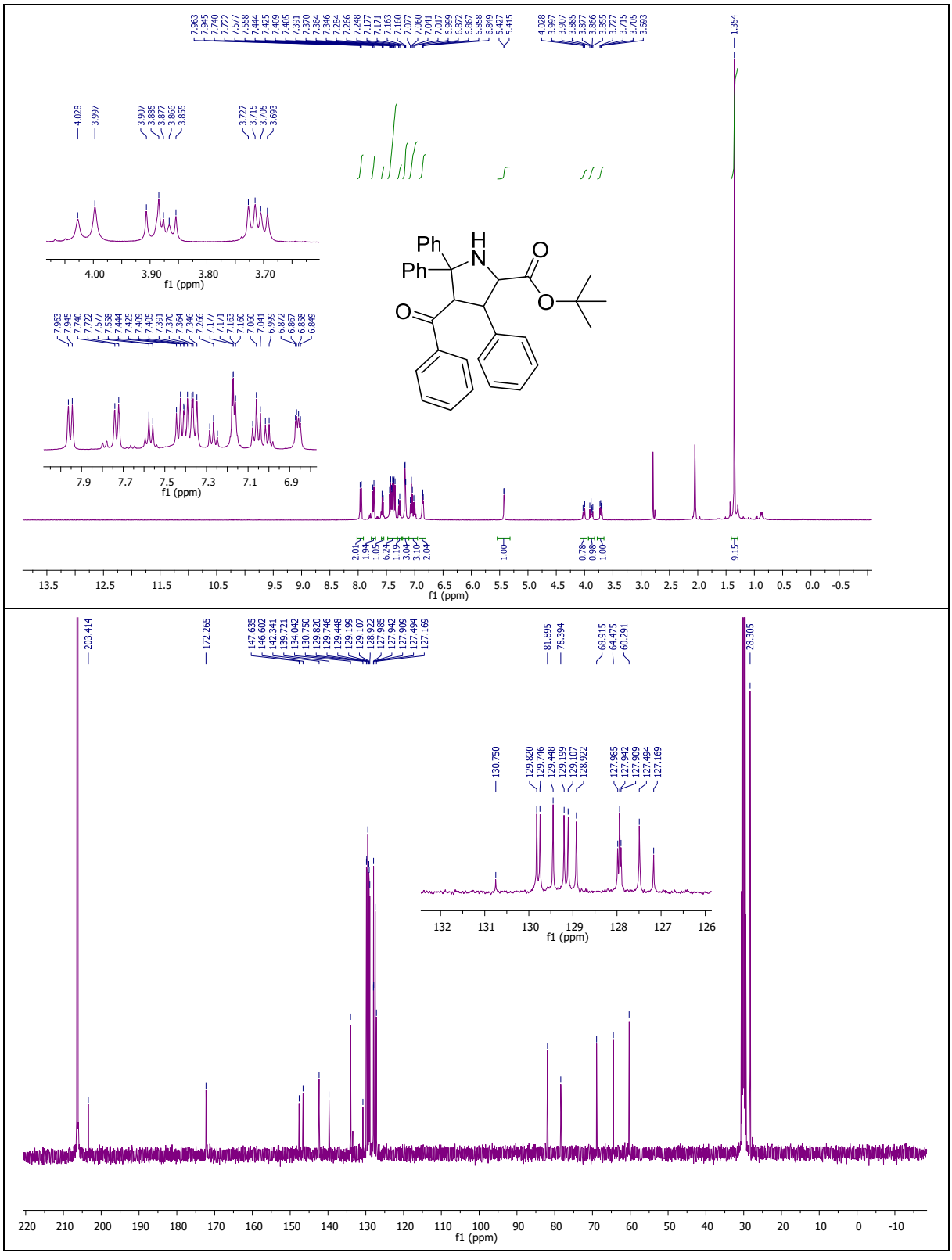

Ph
Ph
O
N
O
O
f1 (ppm)

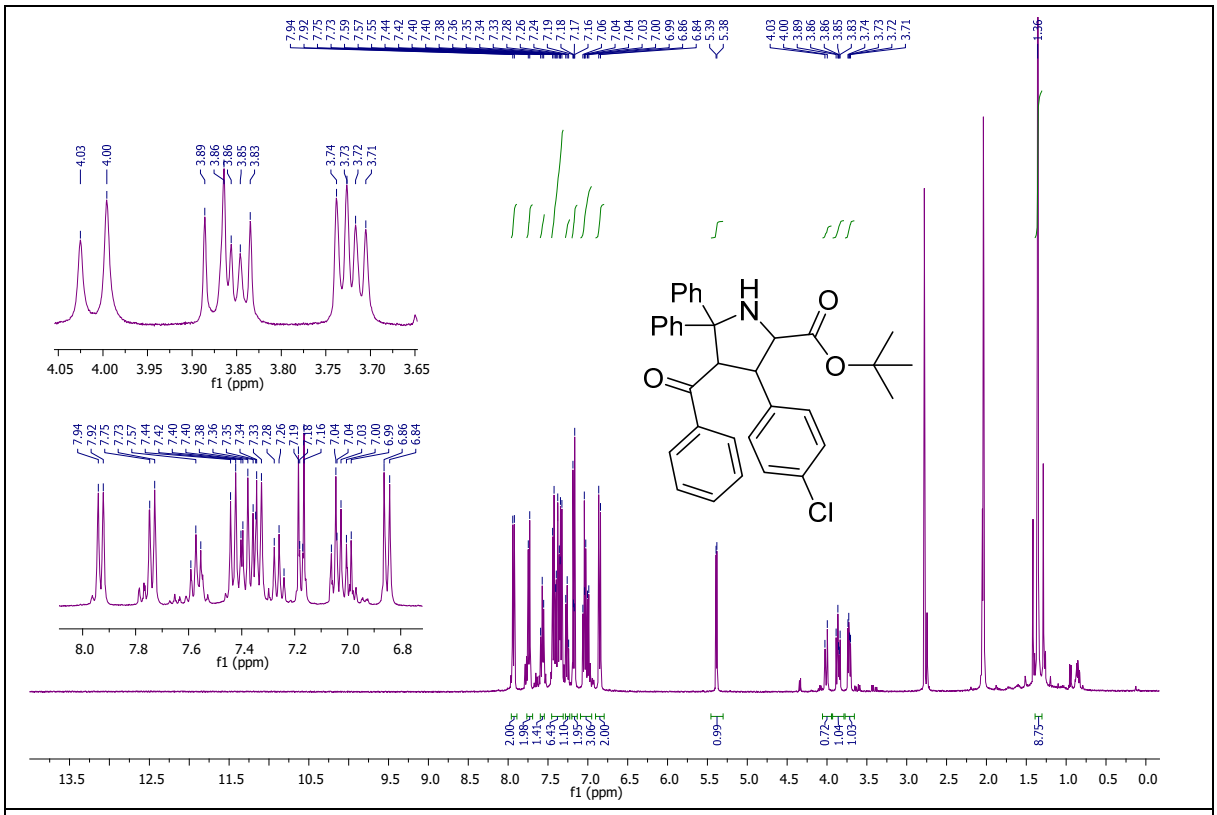

Ph
Ph
N
O
O
O
f1 (ppm)

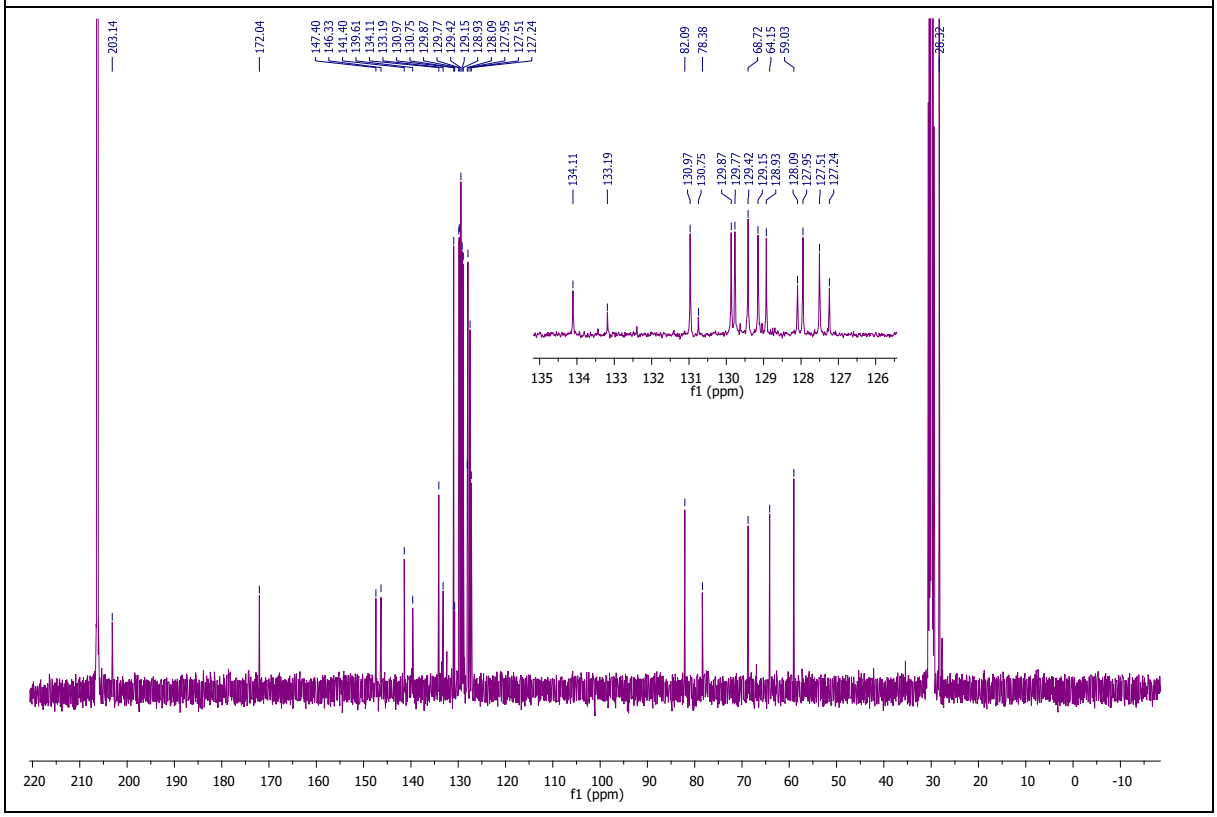

f1 (ppm)
f1 (ppm)
f1 (ppm)

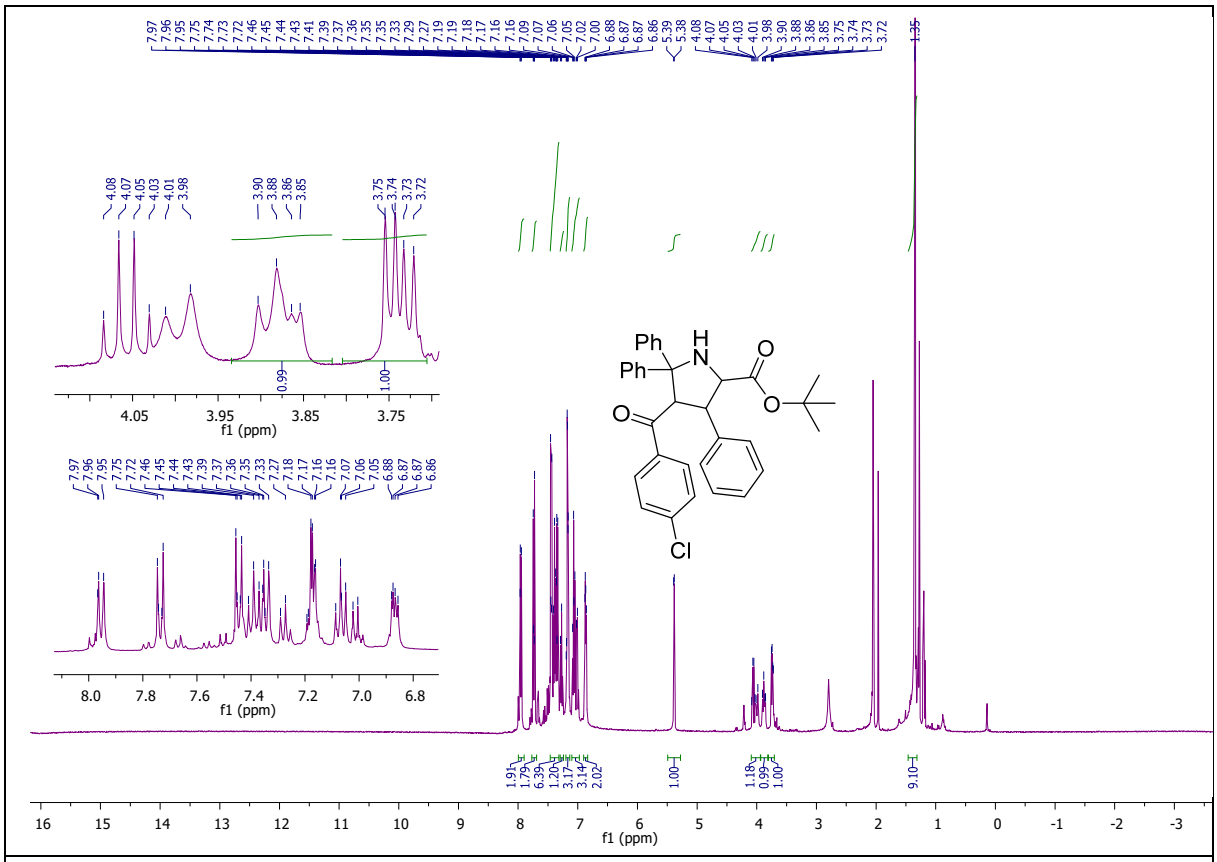

Ph
Ph
O
N
O
O
f1 (ppm)

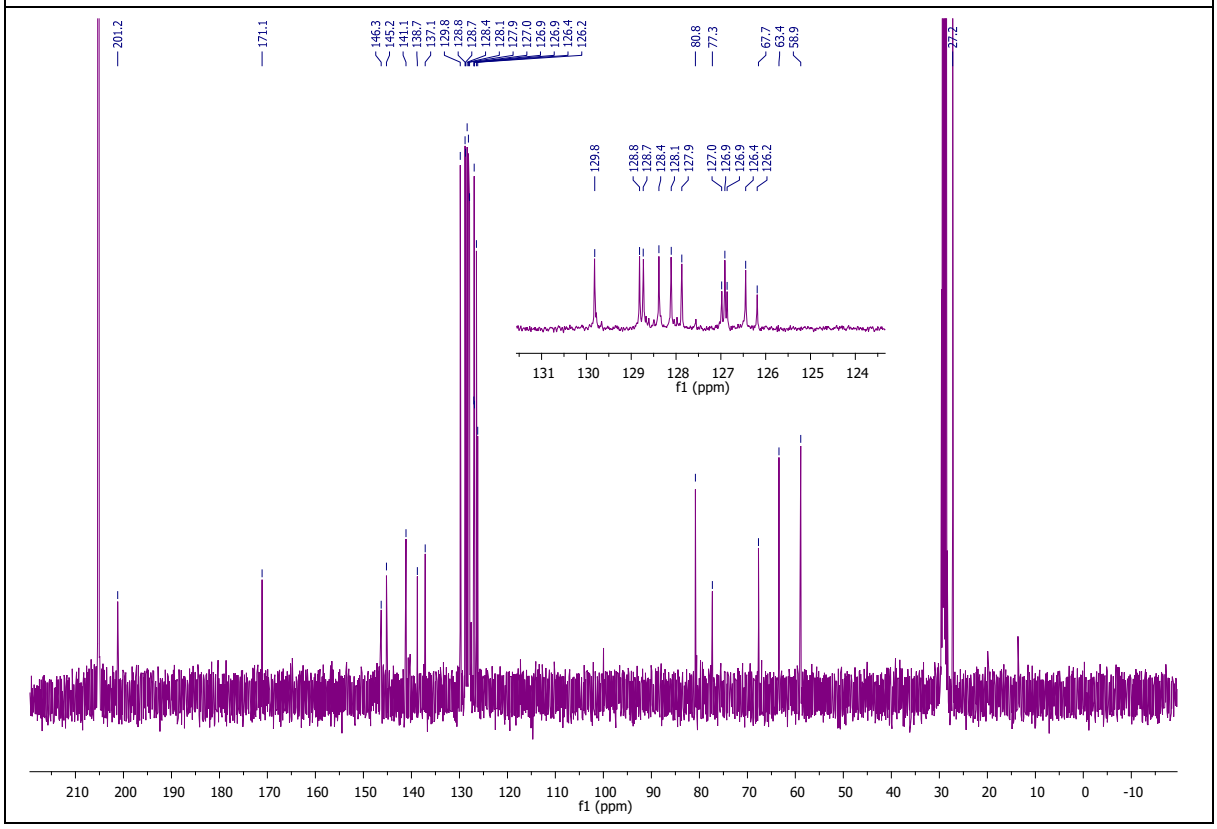

f1 (ppm)
f1 (ppm)

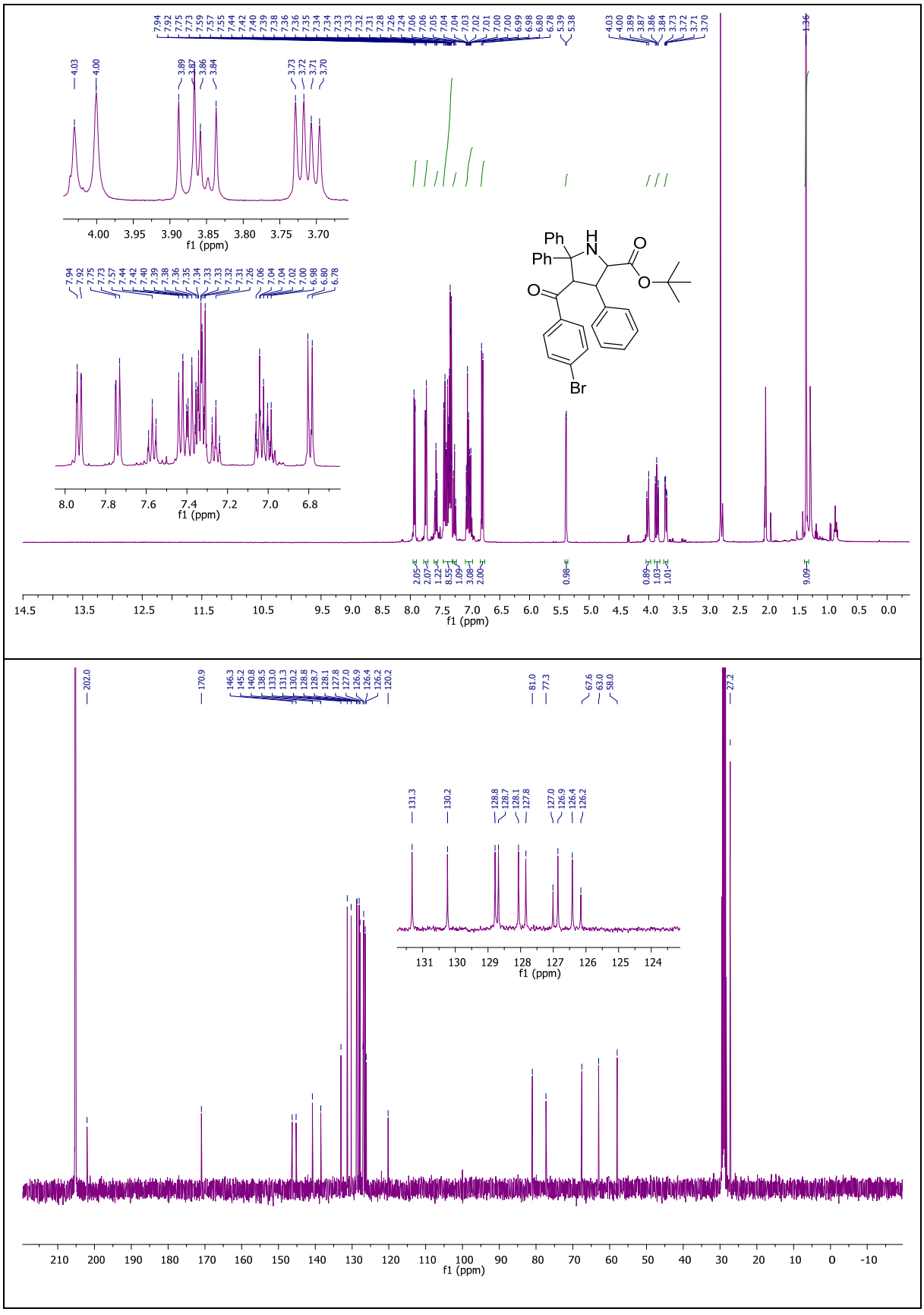

Ph
Ph
H
N
O
O
O
f1 (ppm)
f1 (ppm)
f1 (ppm)
f1 (ppm)

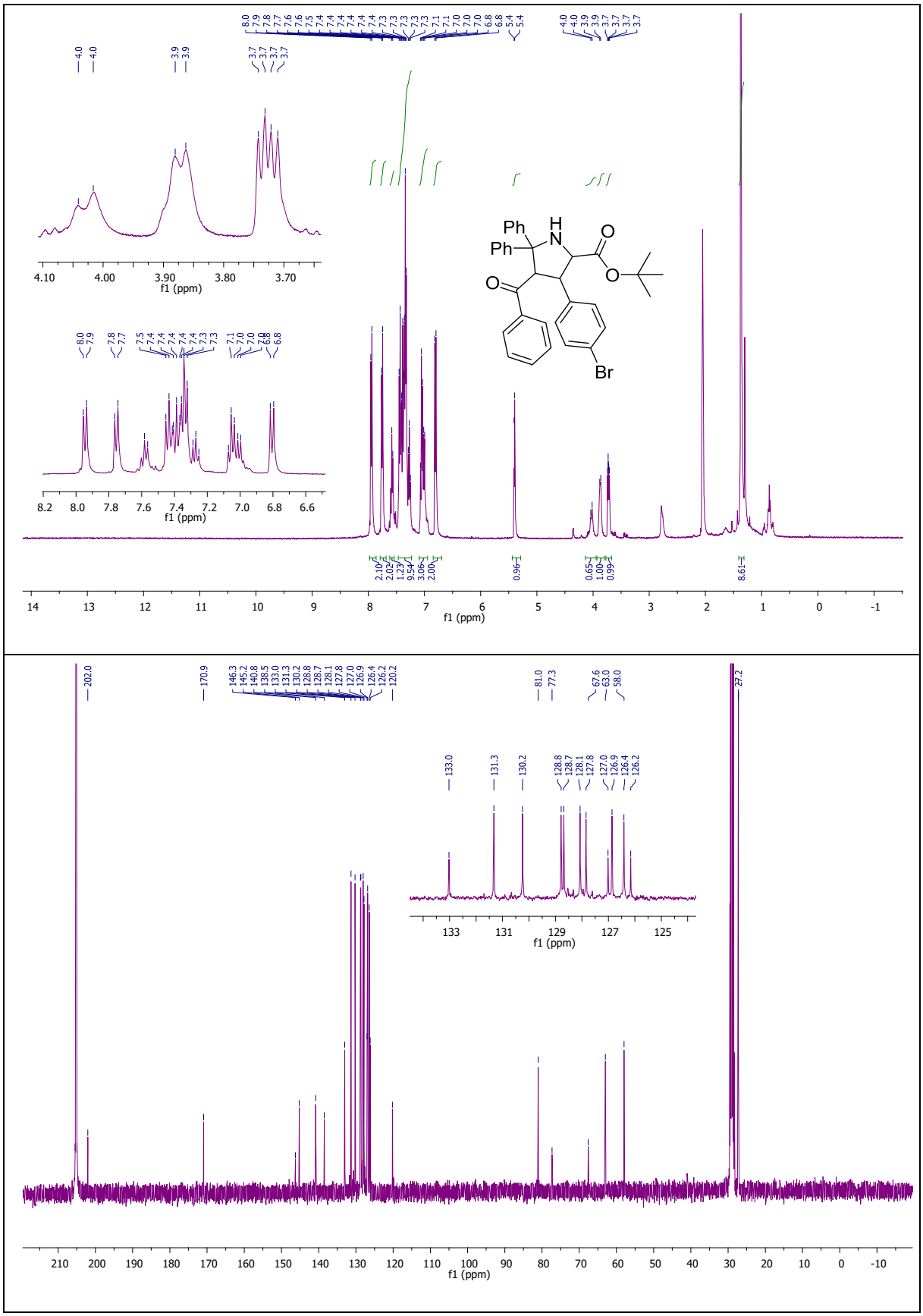

Ph
Ph
H
N
O
O
O
Cl
f1 (ppm)

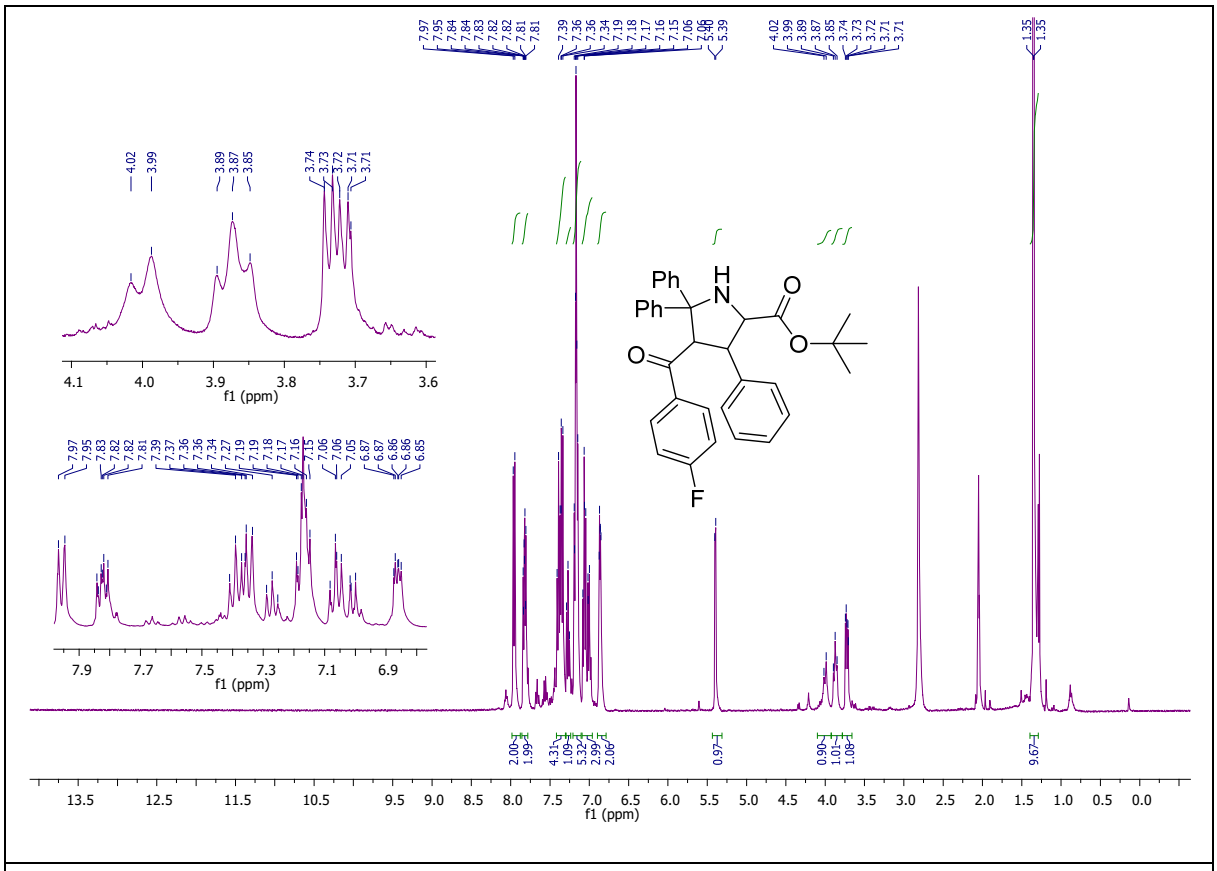

f1 (ppm)

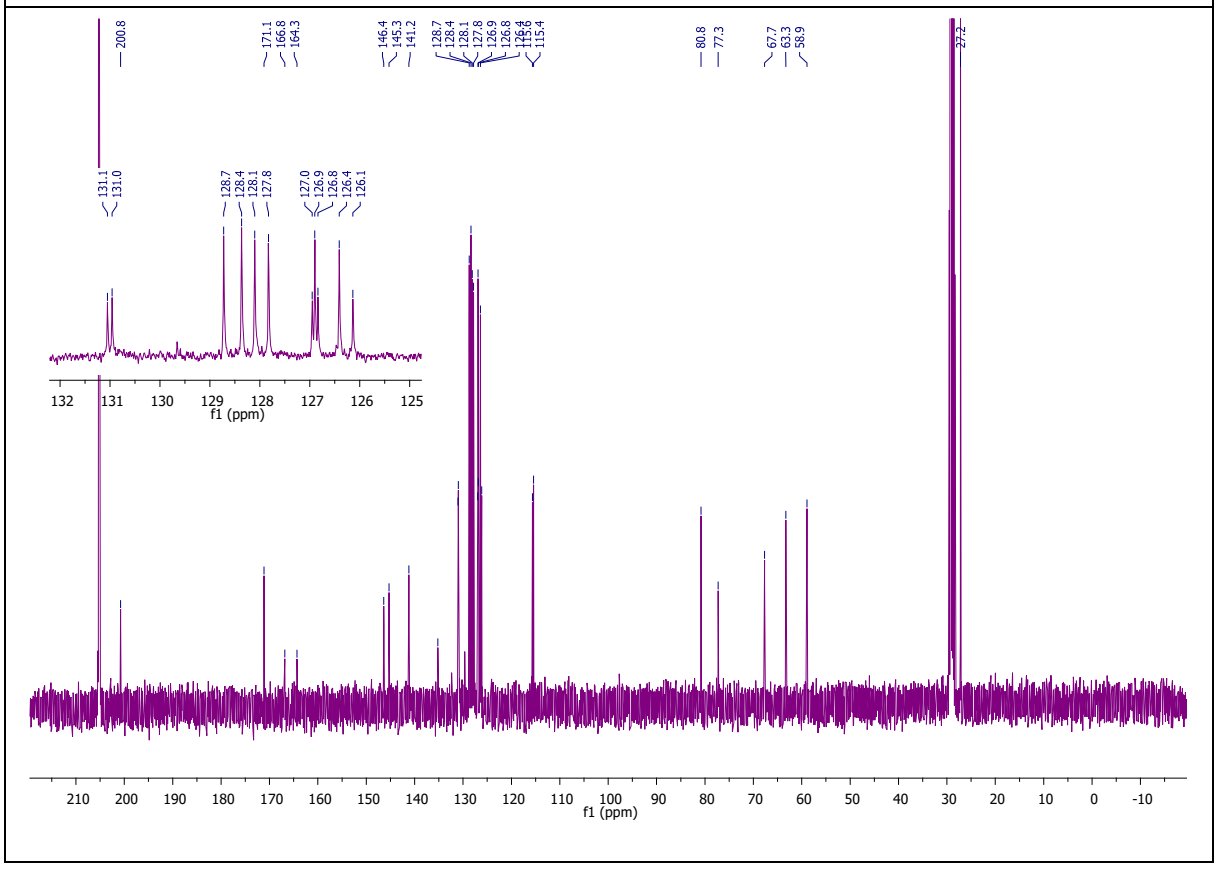

Ph
Ph
H
N
O
O
O
Cl
f1 (ppm)

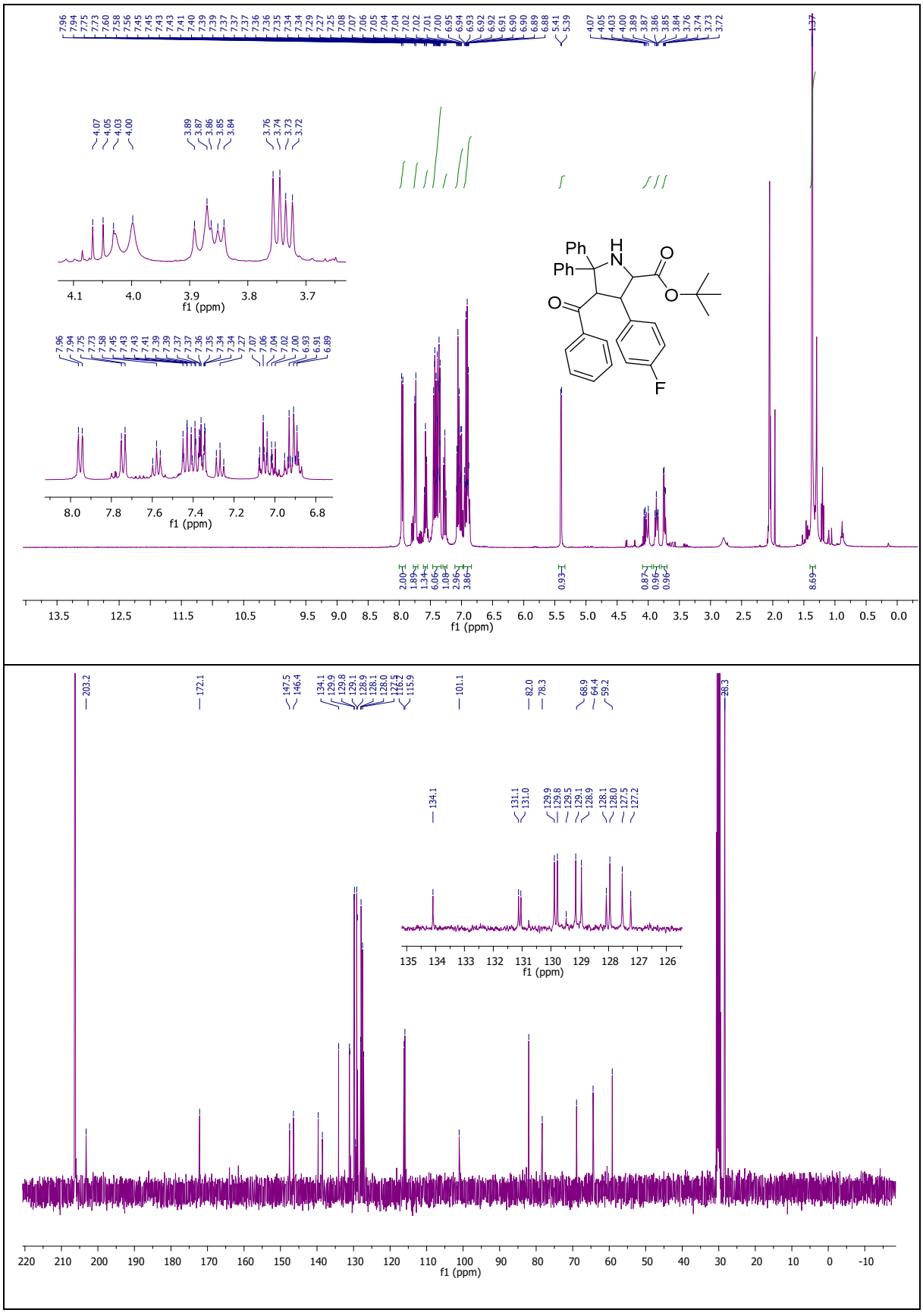

f1 (ppm)

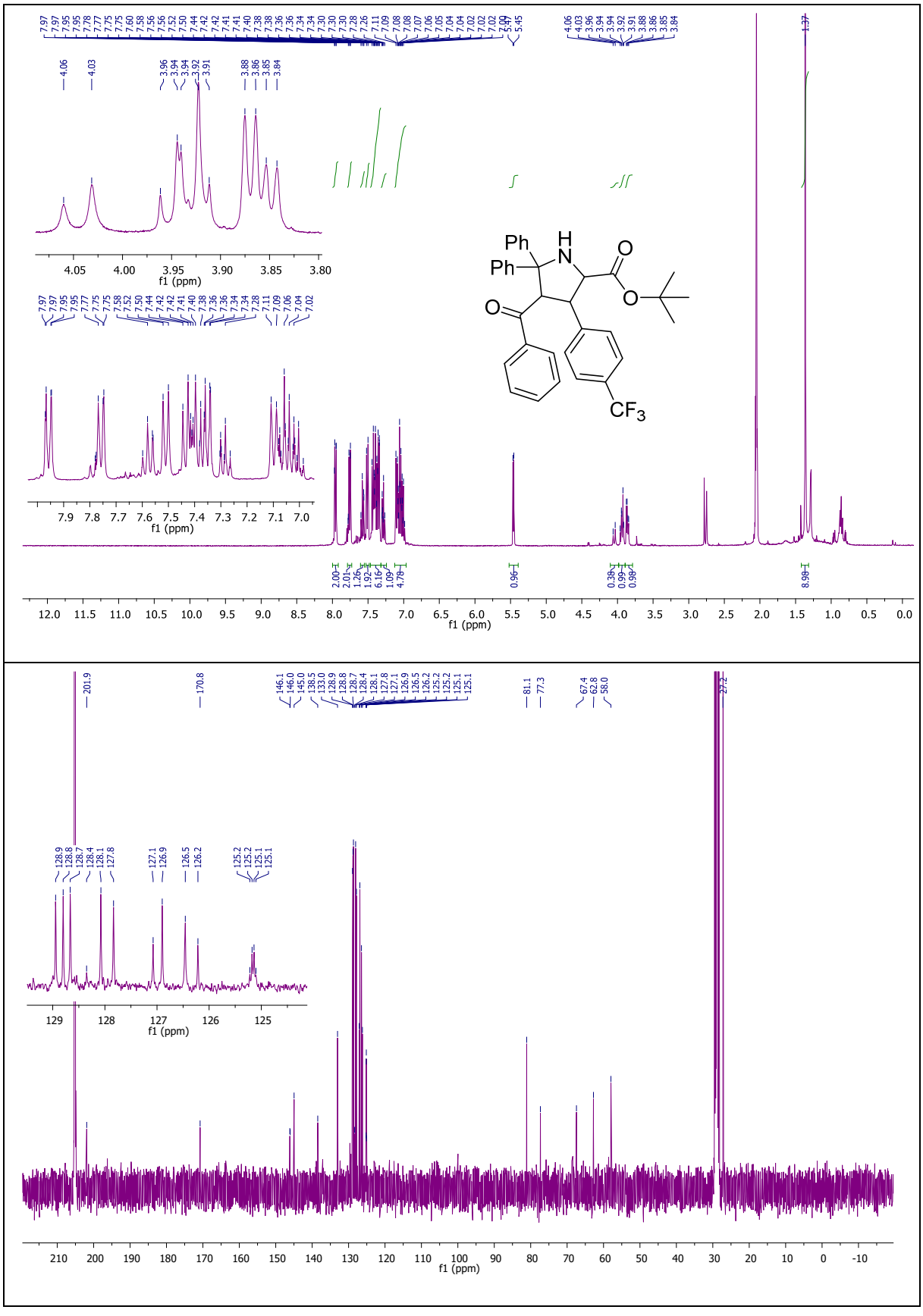

Ph
Ph
H
N
O
O
O
Br
f1 (ppm)

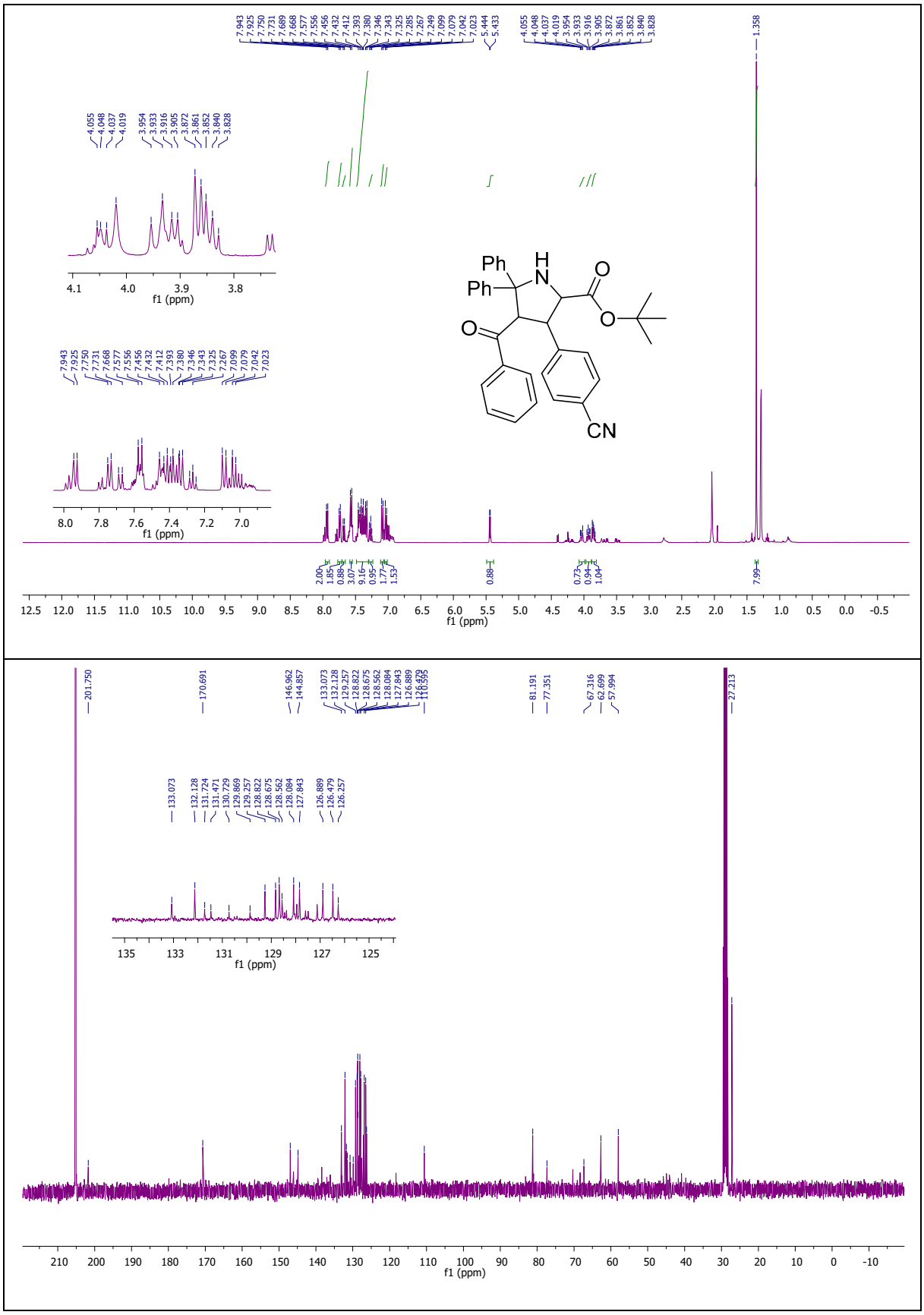

Ph
Ph
H
N
O
O
O
Br
f1 (ppm)

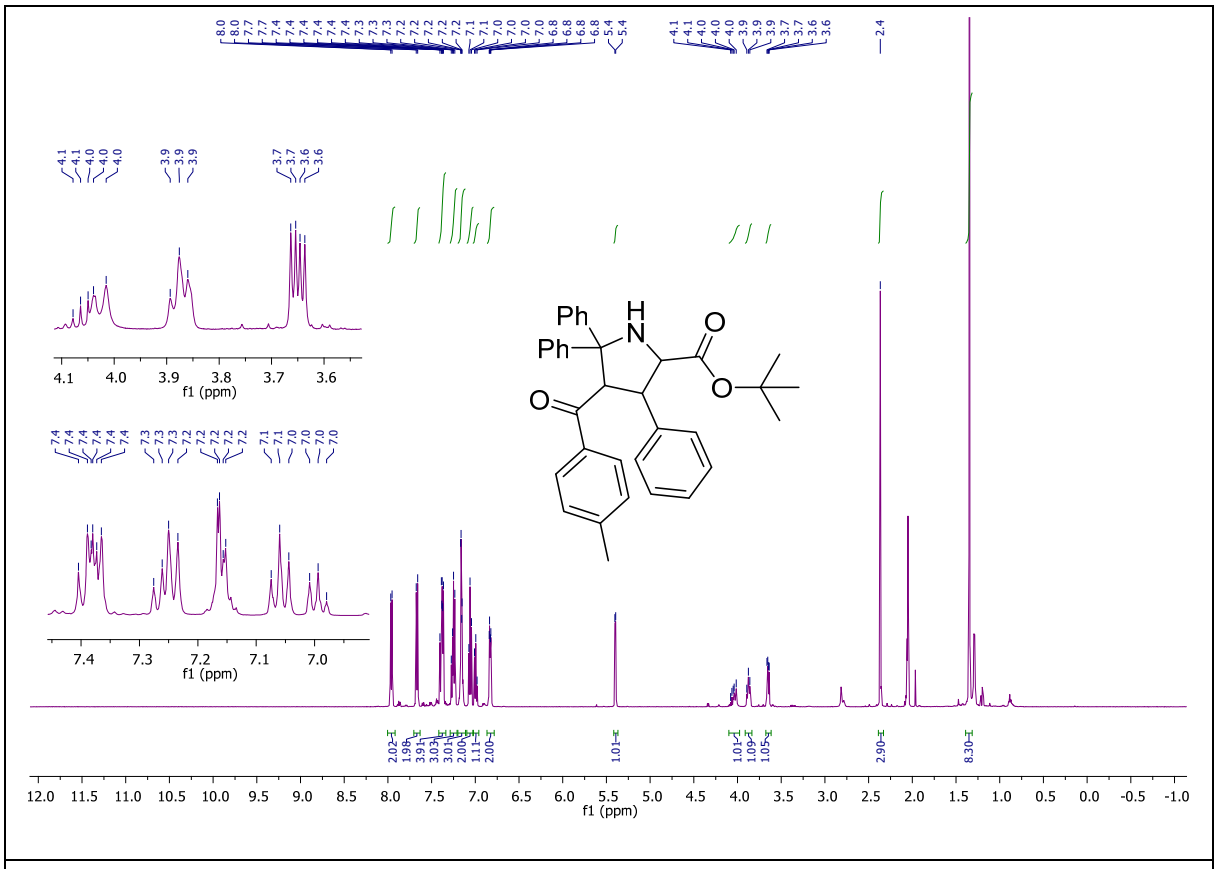

Ph
Ph
H
N
O
O
O
F
f1 (ppm)

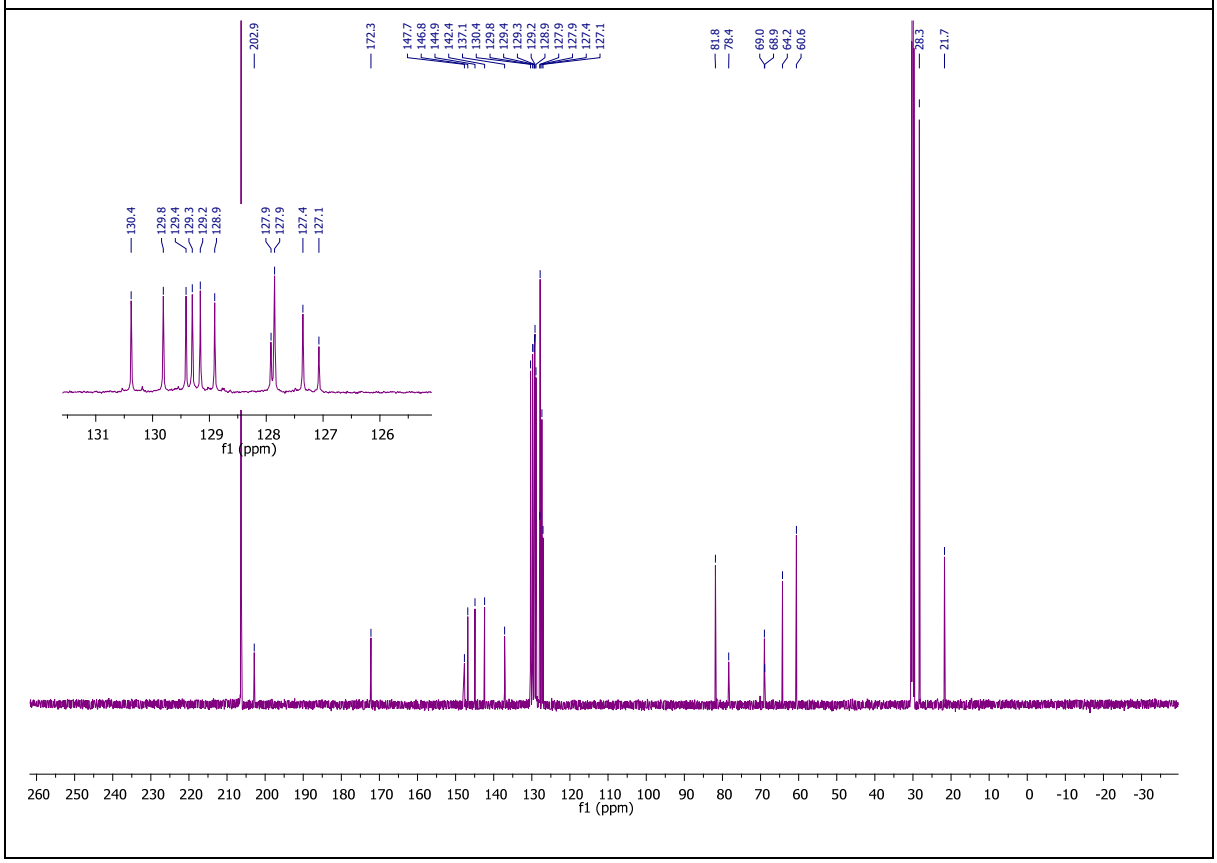

f1 (ppm)

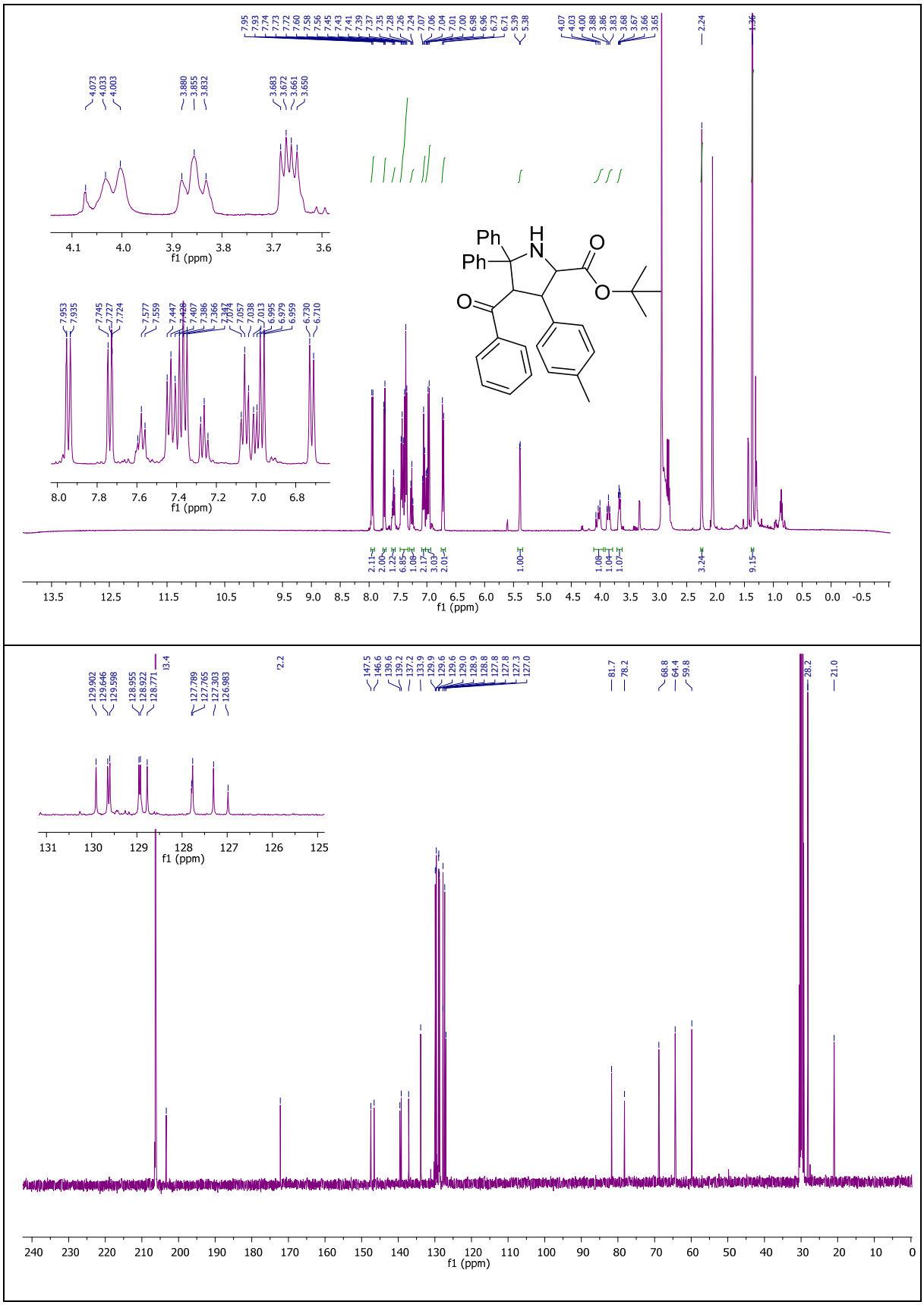

Ph
Ph
H
N
O
O
O
F
f1 (ppm)

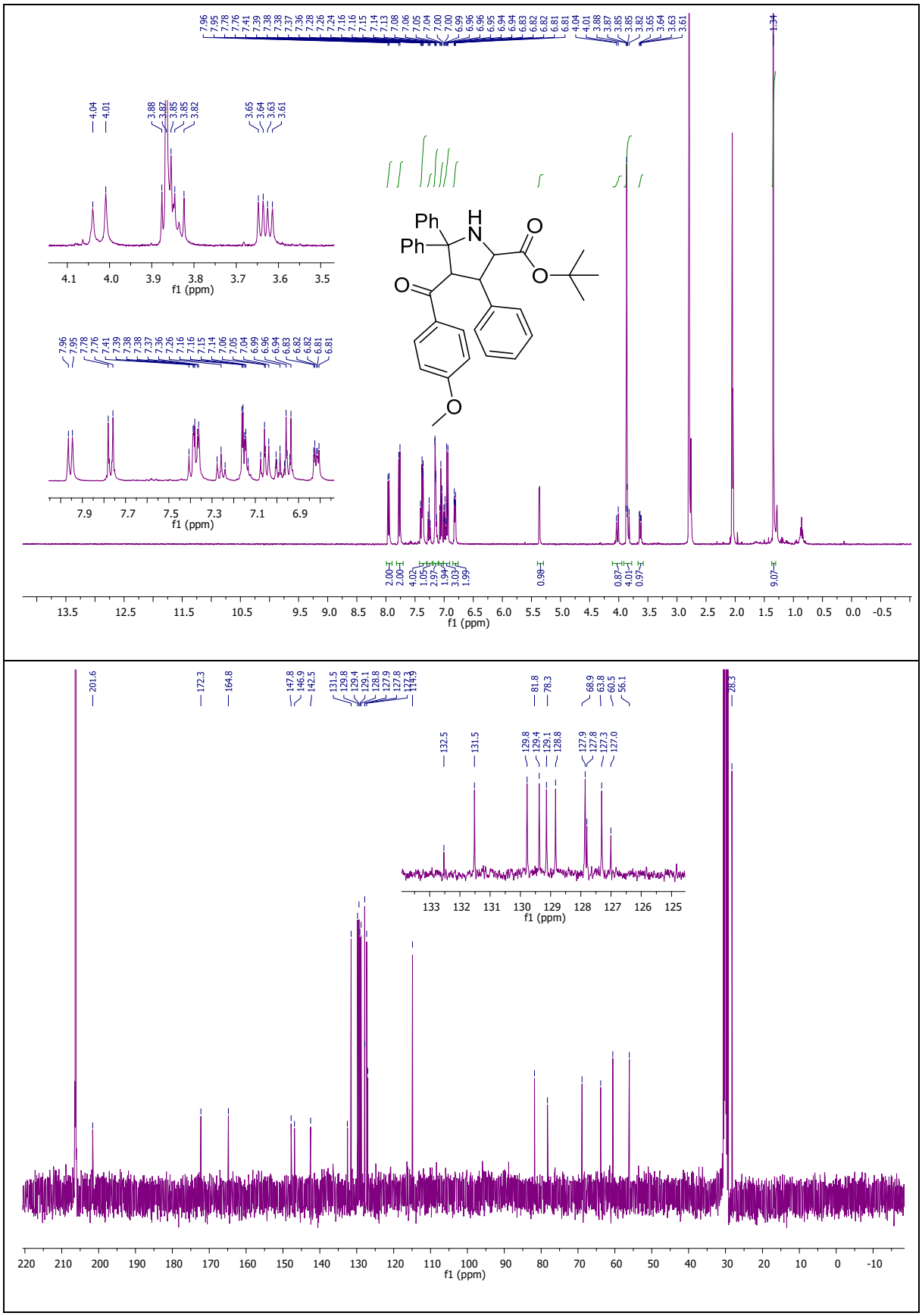

Ph
Ph
H
N
O
O
O
CF3
f1 (ppm)

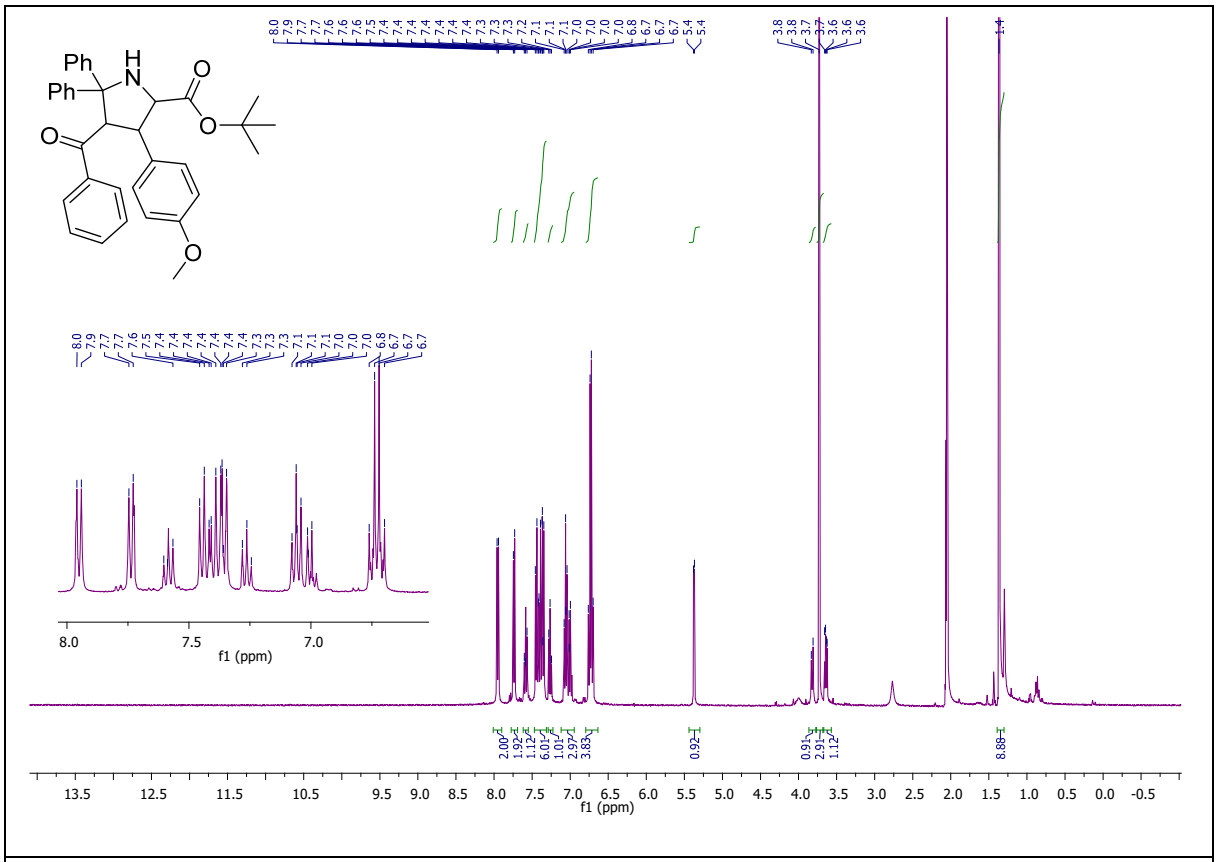

Ph
Ph
H
N
O
O
O
CN
f1 (ppm)

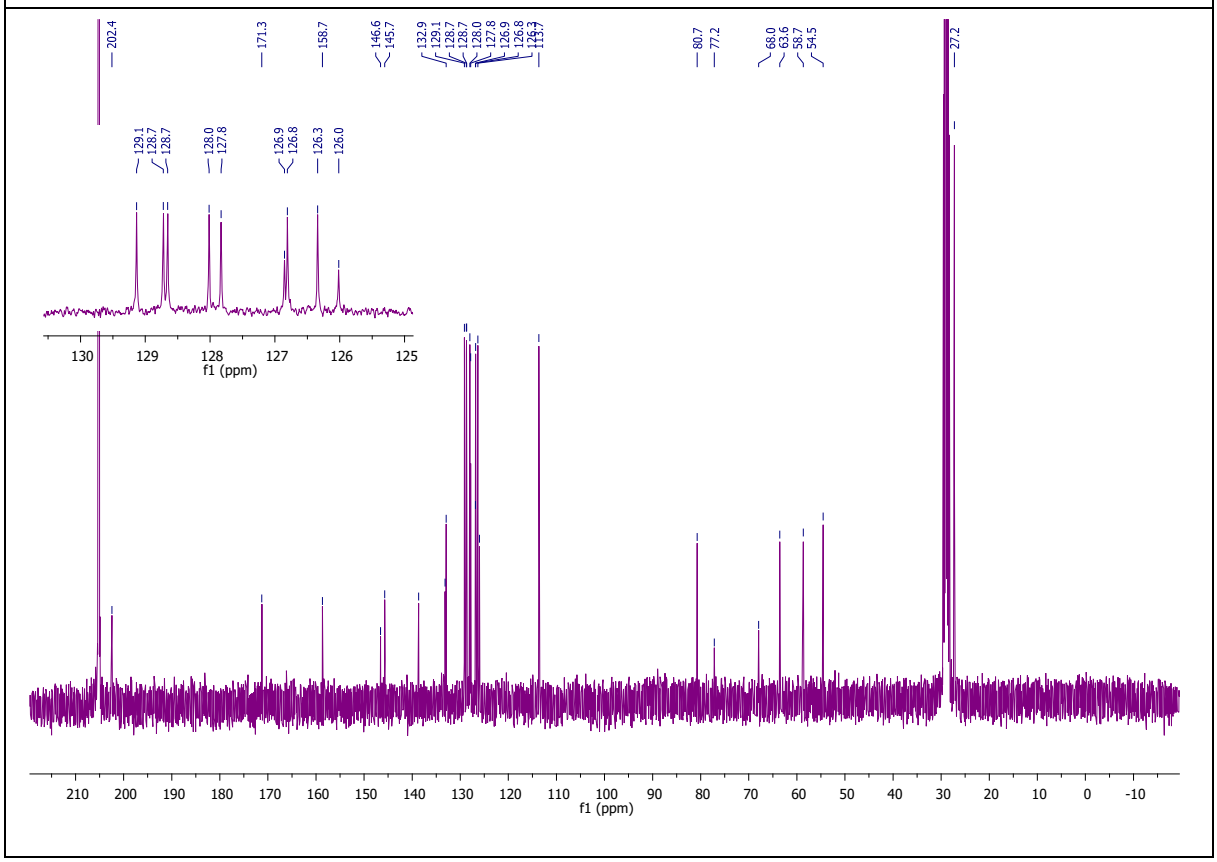

Ph
Ph
H
N
O
O
O
f1 (ppm)

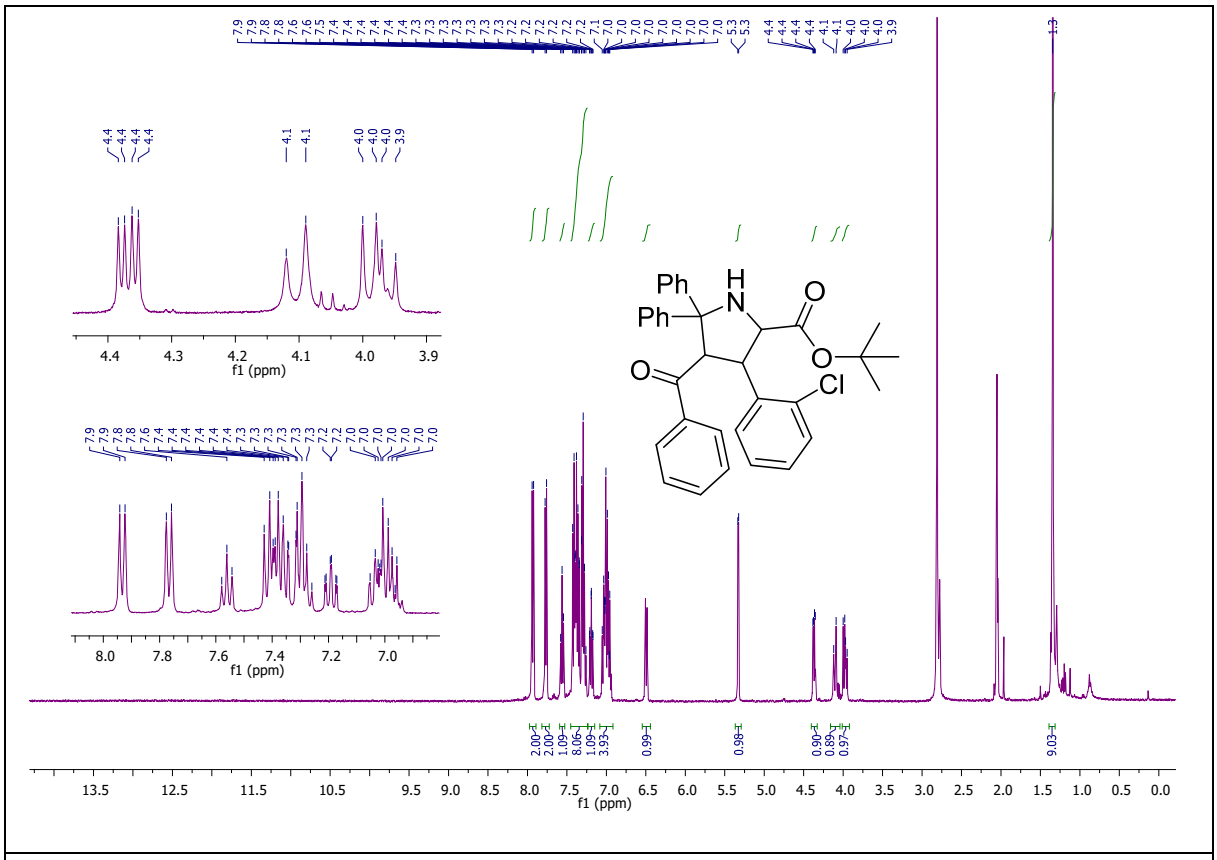

f1 (ppm)

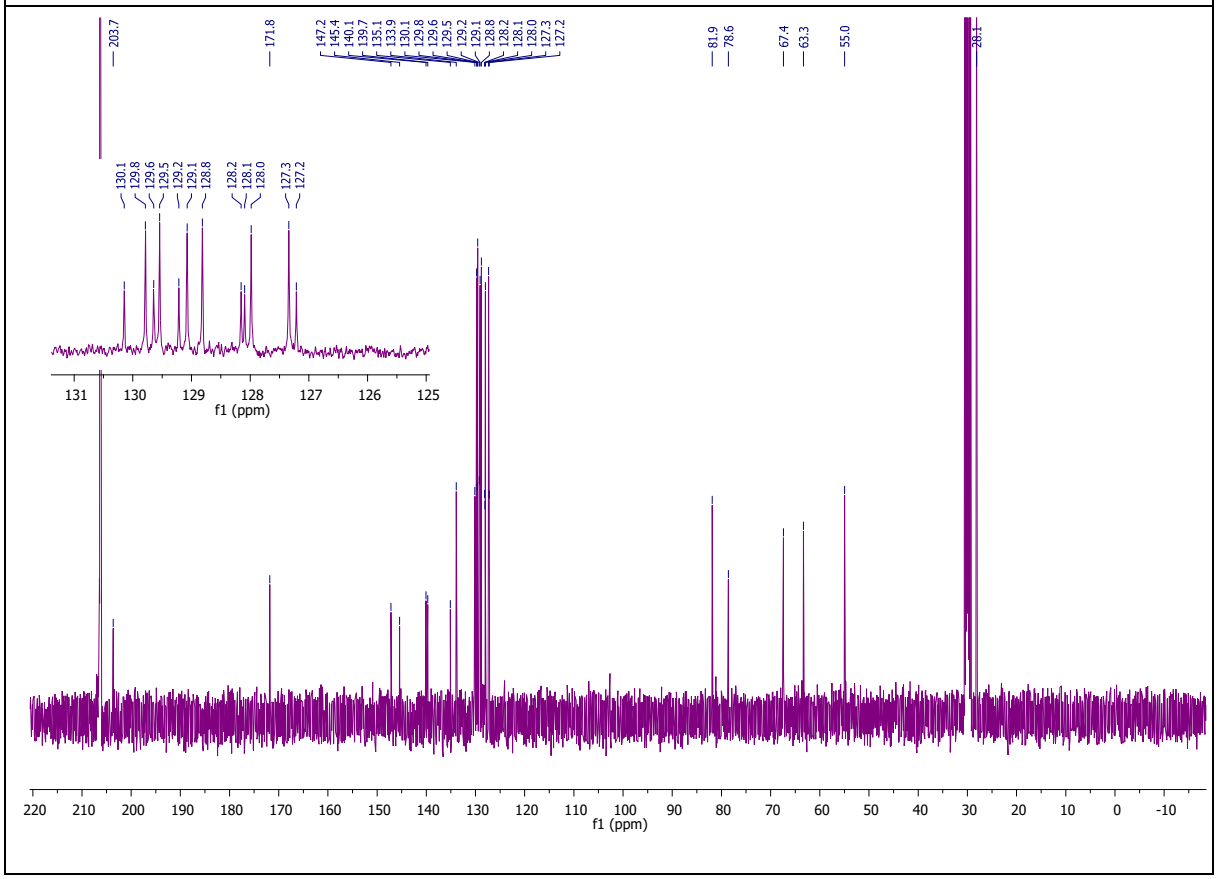

Ph
Ph
H
N
O
O
O
f1 (ppm)

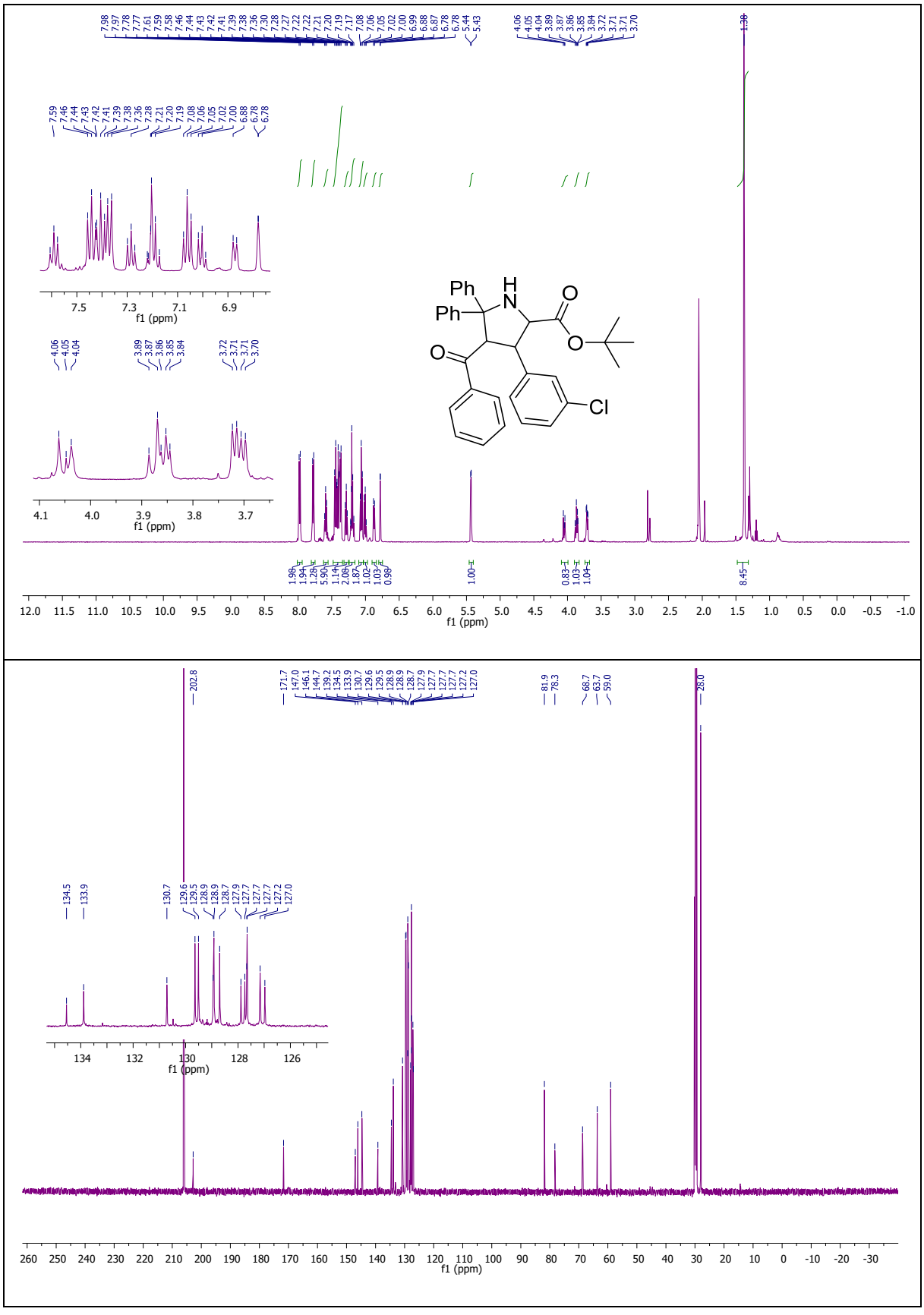

Ph
Ph
H
N
O
O
O
O
f1 (ppm)
f1 (ppm)
f1 (ppm)
f1 (ppm)

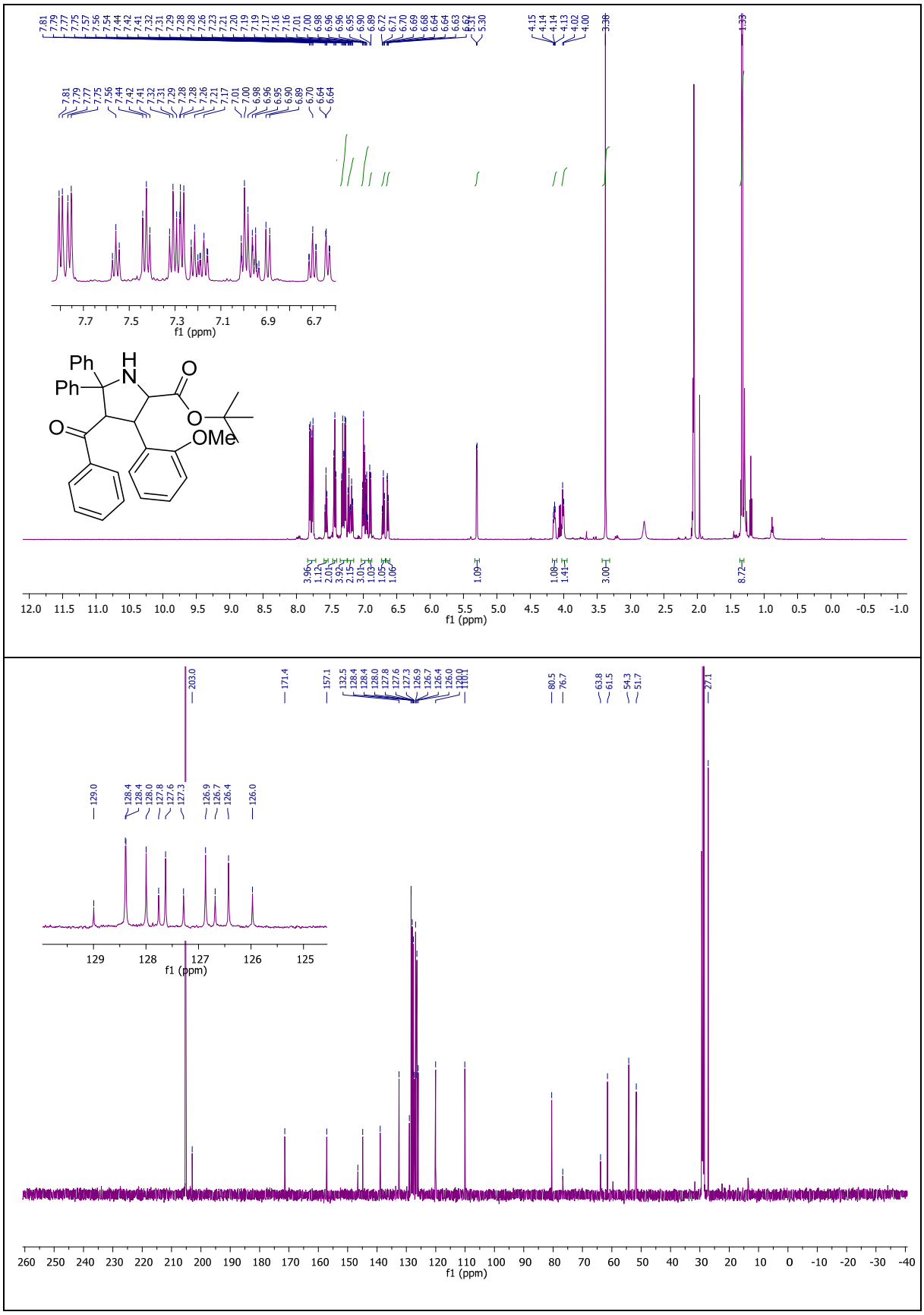

Ph
Ph
H
N
O
O
O
O
f1 (ppm)
f1 (ppm)

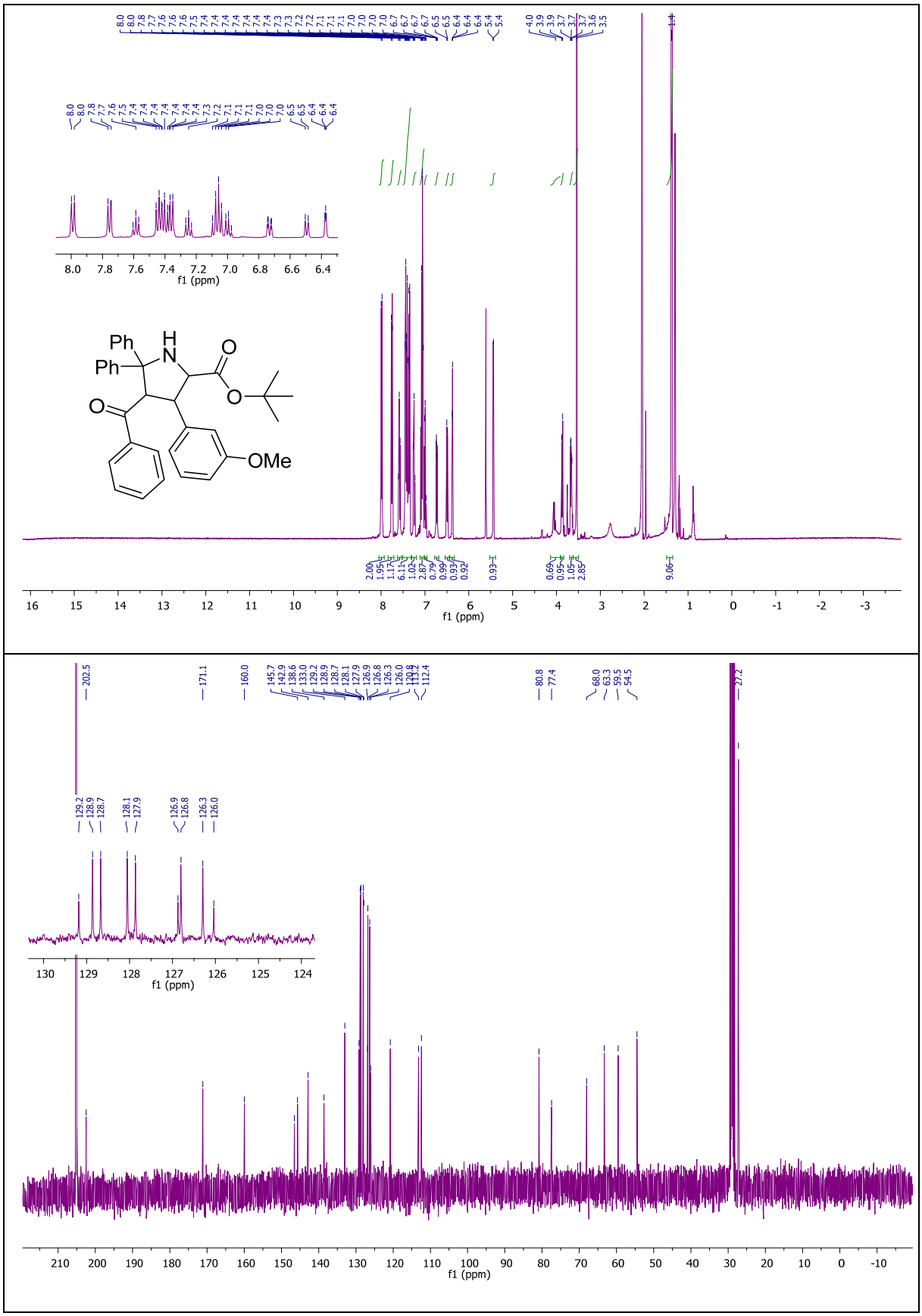

f1 (ppm)
f1 (ppm)

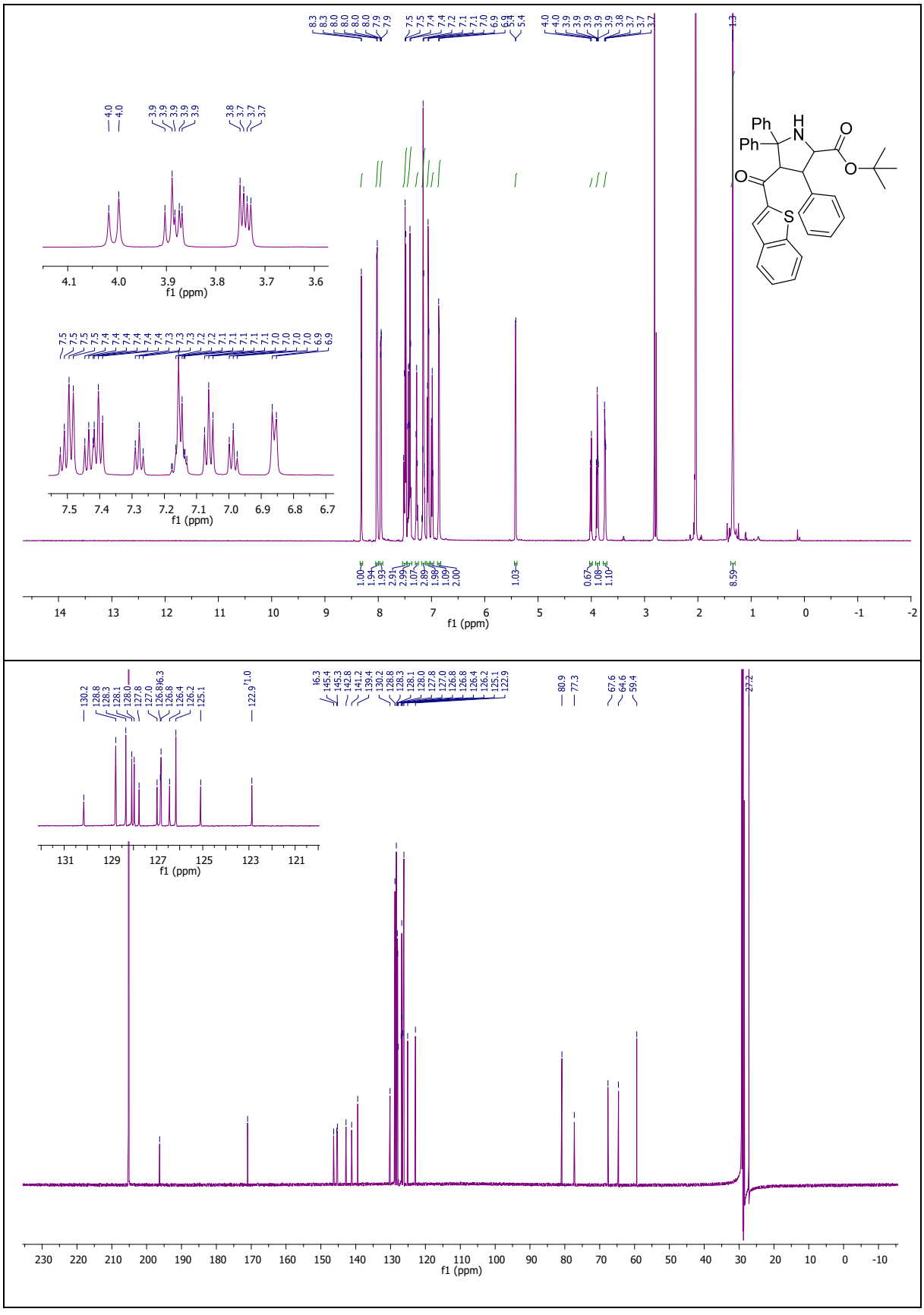

Ph
Ph
H
N
O
O
O
Cl
f1 (ppm)

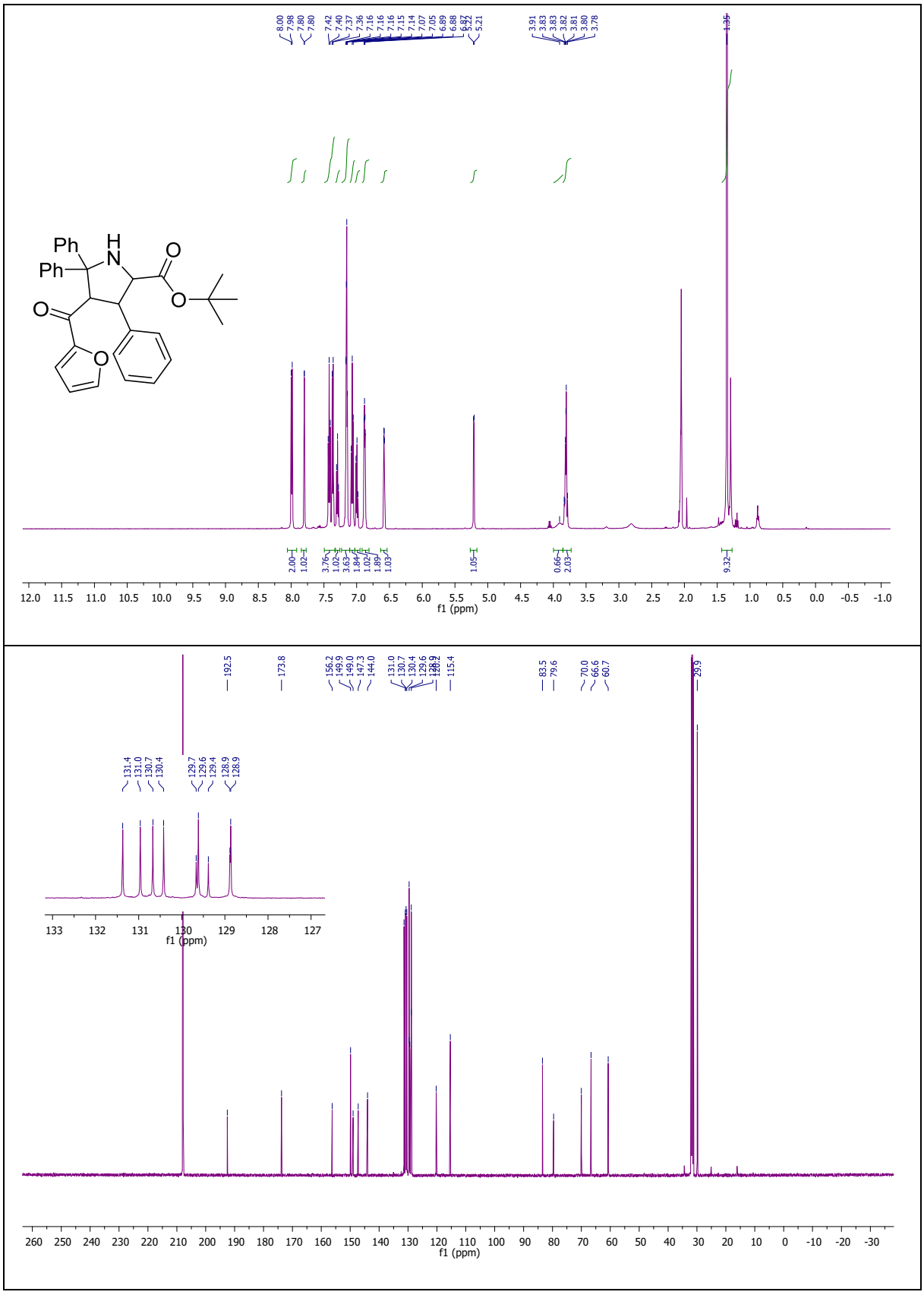

f1 (ppm)

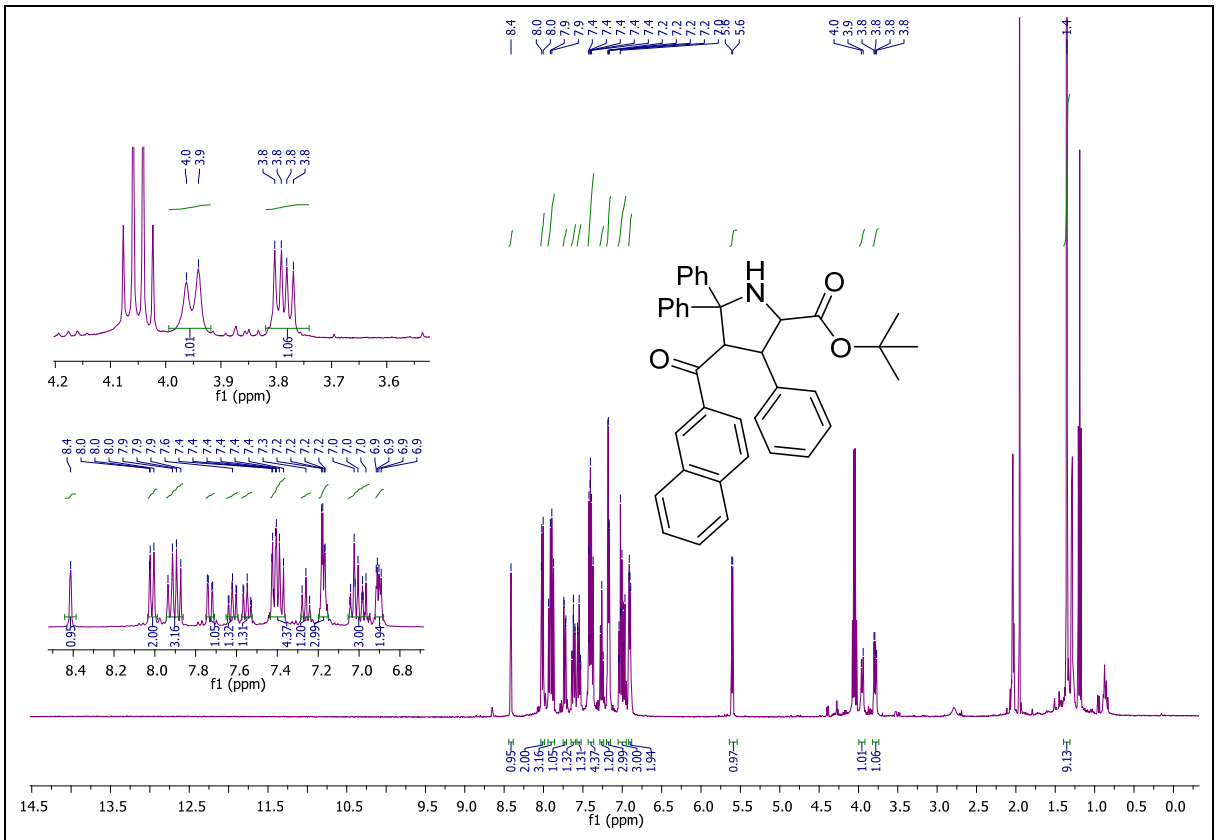

Ph
Ph
H
N
O
O
O
Cl
f1 (ppm)

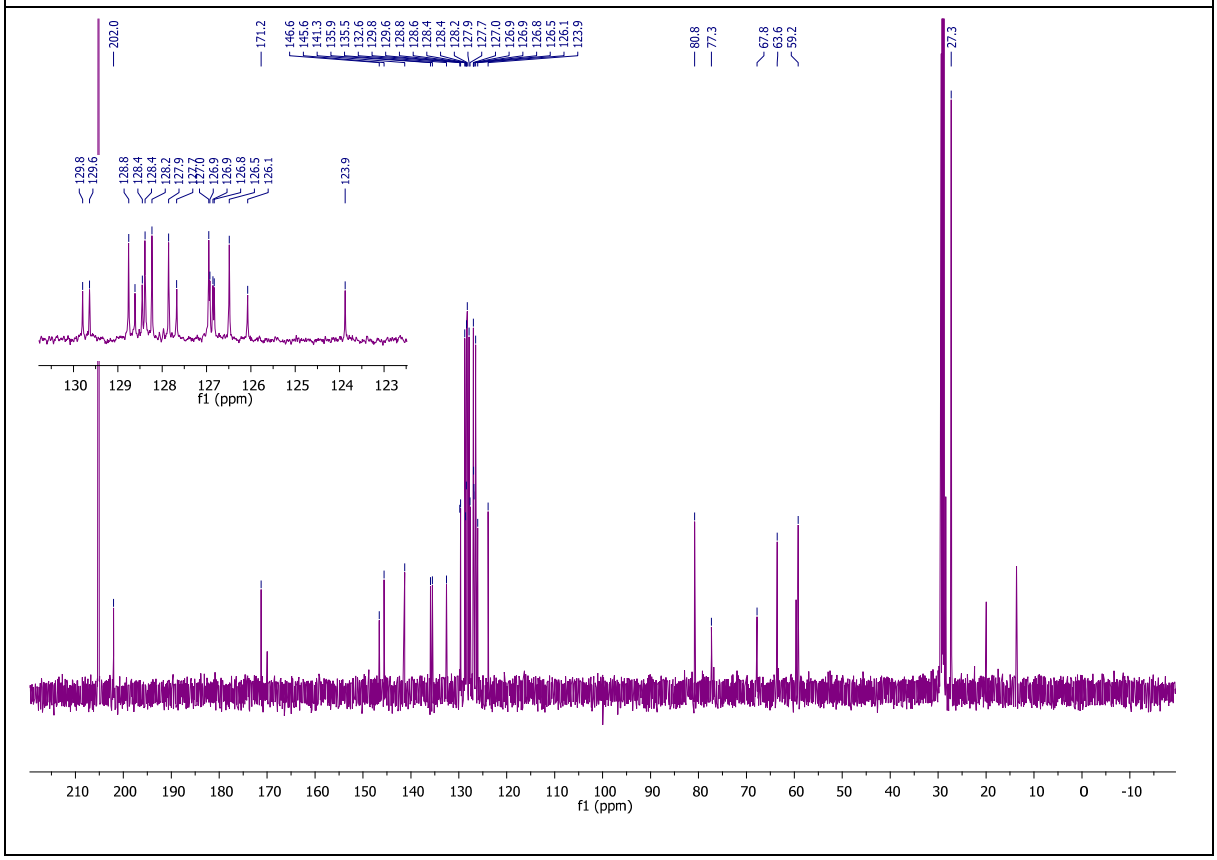

Ph
Ph
H
N
O
O
O
OMe
f1 (ppm)

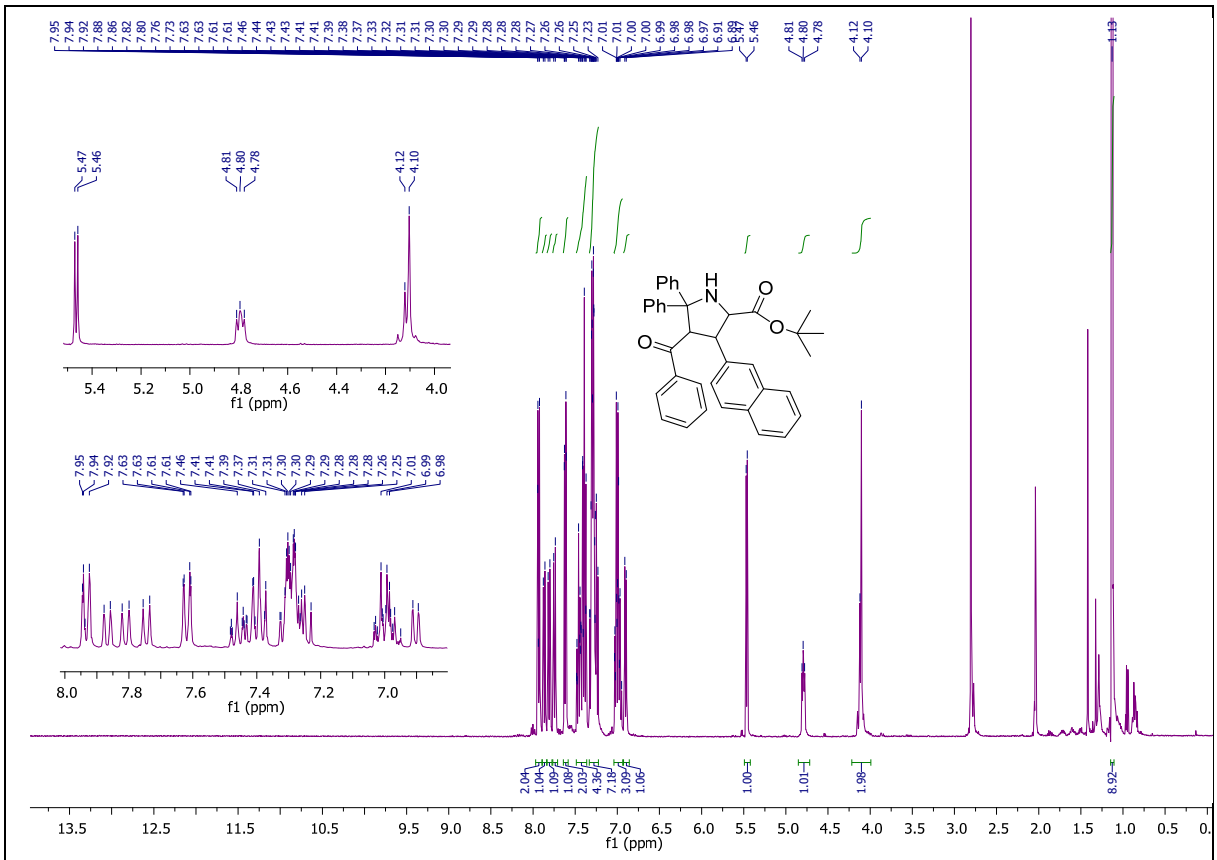

Ph
Ph
H
N
O
O
O
OMe
f1 (ppm)

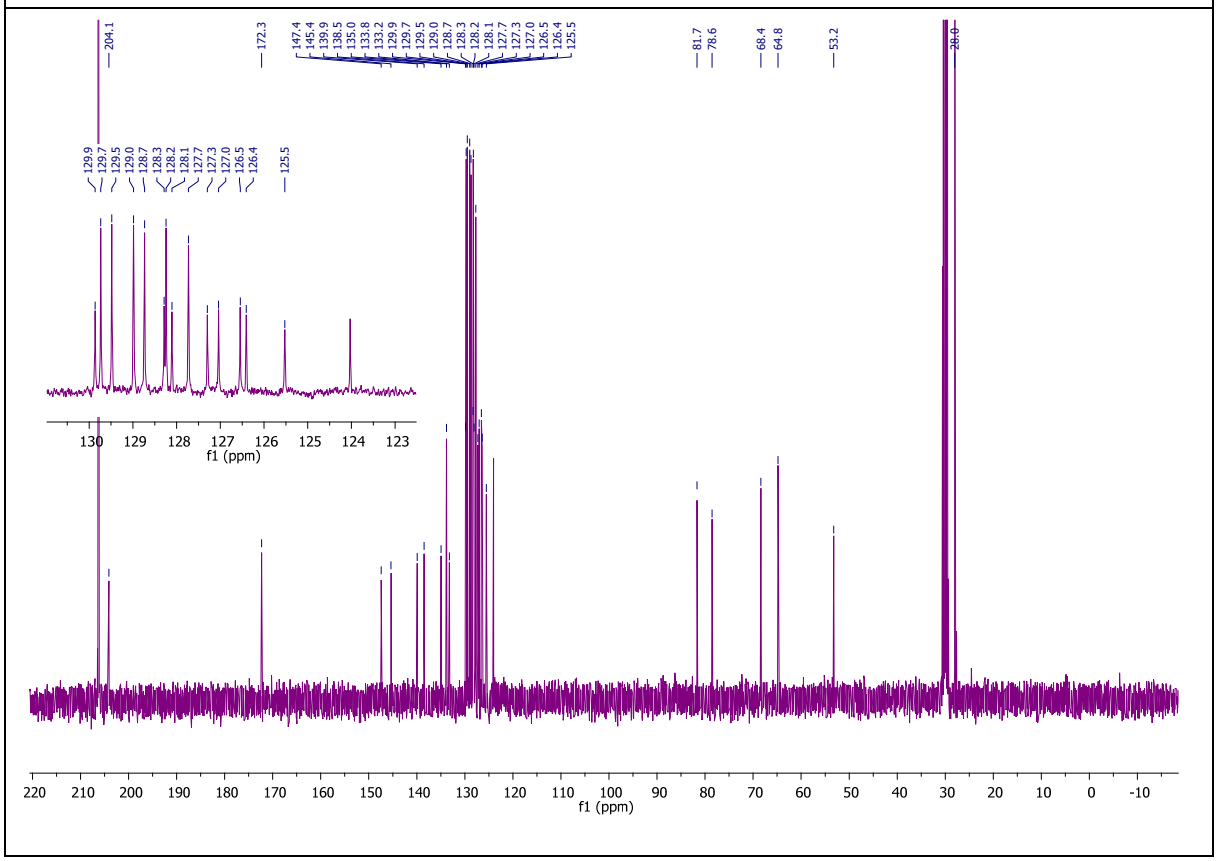

Ph
Ph
H
N
O
O
O
S
f1 (ppm)


Ph
Ph
H
N
O
O
O
O
f1 (ppm)
f1 (ppm)

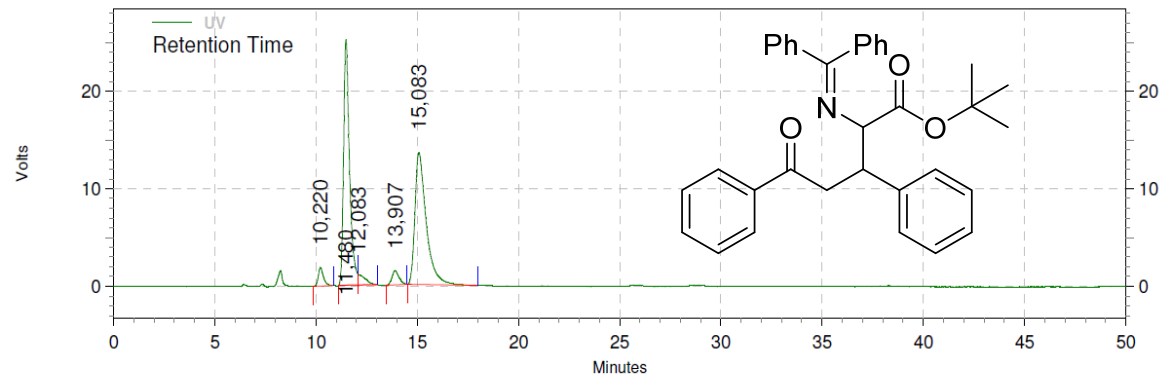

Ph
Ph
H
N
O
O
O
f1 (ppm)


f1 (ppm)


Ph
Ph
H
N
O
O
O
f1 (ppm)

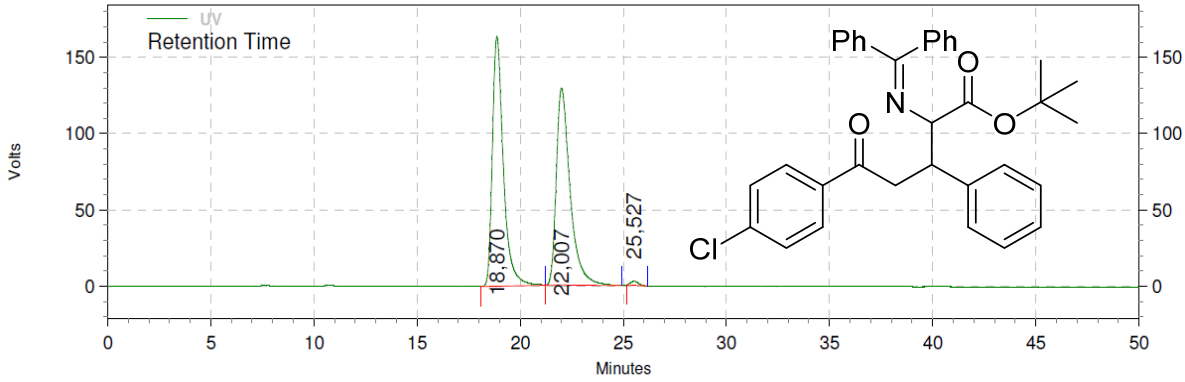

f1 (ppm)

4. Copies of HPLC chromatograms



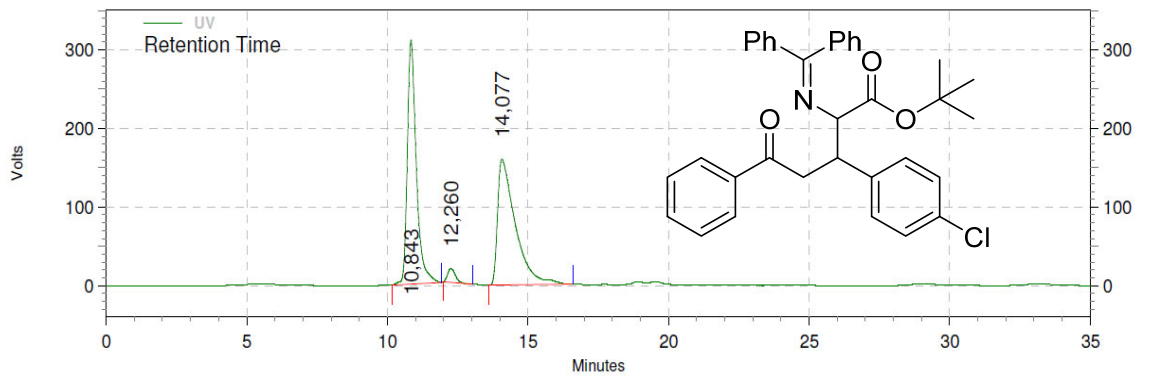
UV Results

Retention Time	Area	Area %	Height	Height %
10,220	135527	2,99	7638	4,42
11,480	2060954	45,54	100593	58,26
12,083	104872	2,32	4387	2,54
13,907	138264	3,05	5774	3,34
15,083	2086410	46,10	54270	31,43
Totals	4526027	100,00	172662	100,00



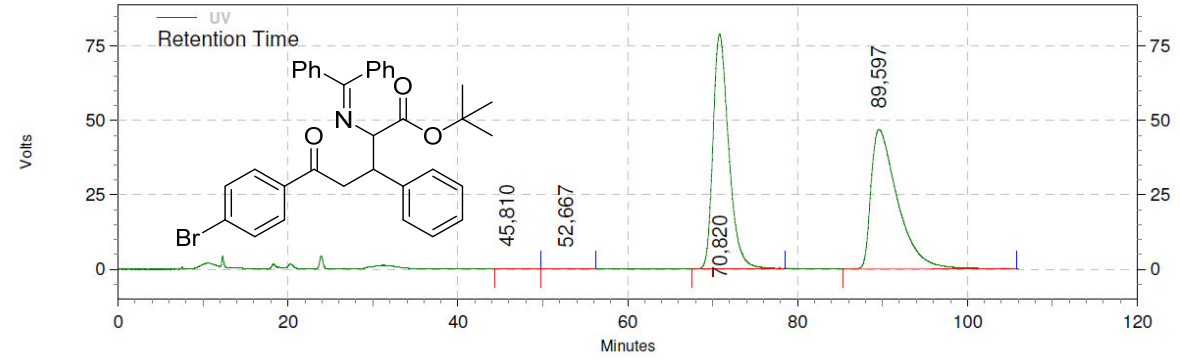
UV Results

Retention Time	Area	Area %	Height	Height %
18,870	24185589	49,86	654541	55,35
22,007	24038674	49,56	516998	43,72
25,527	282766	0,58	10994	0,93
Totals	48507029	100,00	1182533	100,00



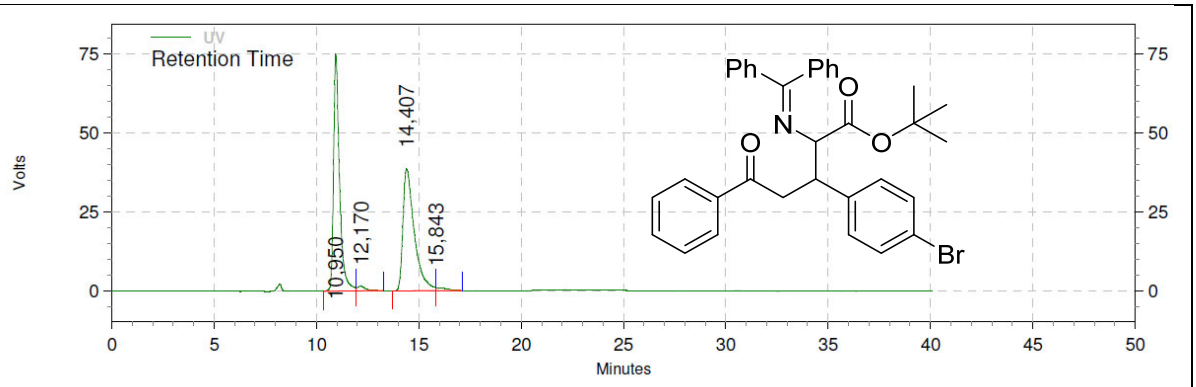
UV Results

Retention Time	Area	Area %	Height	Height %
10,843	27505736	48,28	1242523	63,59
12,260	1340855	2,35	70533	3,61
14,077	28128019	49,37	640982	32,80
Totals	56974610	100,00	1954038	100,00



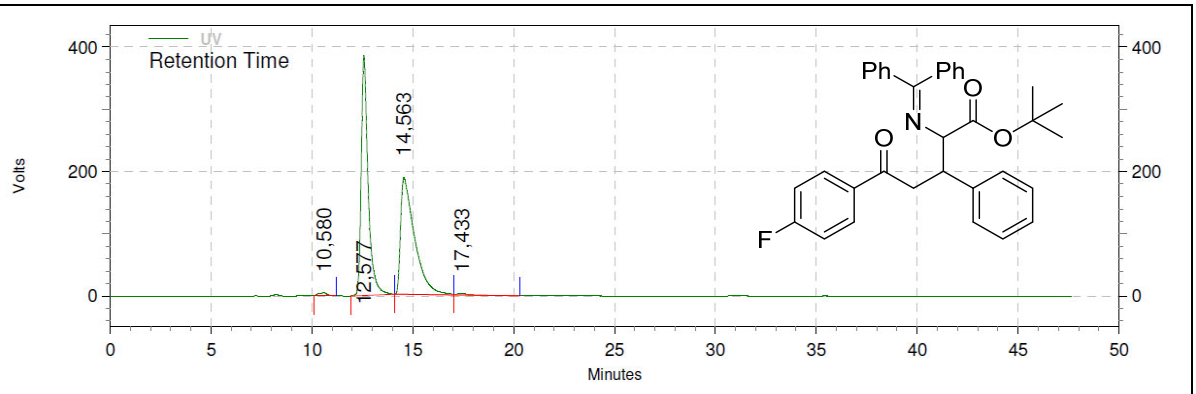
UV Results

Retention Time	Area	Area %	Height	Height %
45,810	54188	0,07	488	0,10
52,667	145028	0,18	1065	0,21
70,820	40481504	49,66	315219	62,47
89,597	40829810	50,09	187816	37,22
Totals	81510530	100,00	504588	100,00



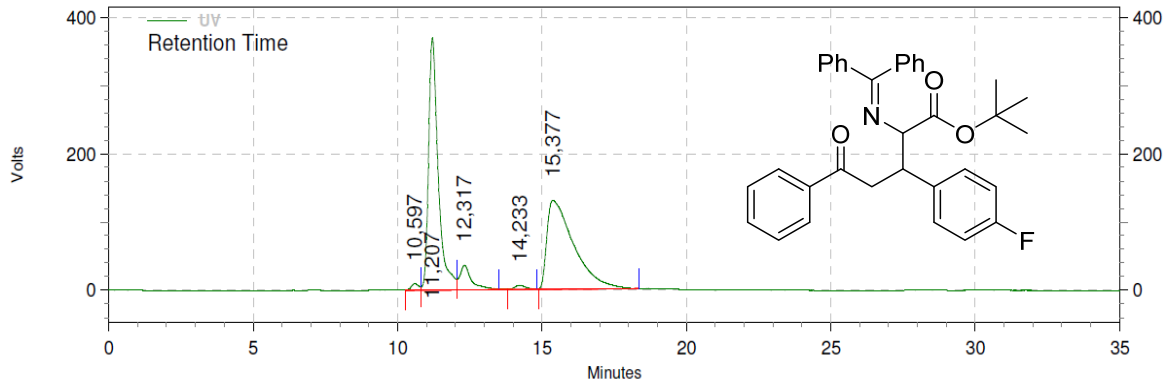
UV Results

Retention Time	Area	Area %	Height	Height %
10,950	6035019	49,31	299378	64,60
12,170	172776	1,41	6365	1,37
14,407	5907471	48,27	154003	33,23
15,843	123716	1,01	3711	0,80
Totals	12238982	100,00	463457	100,00



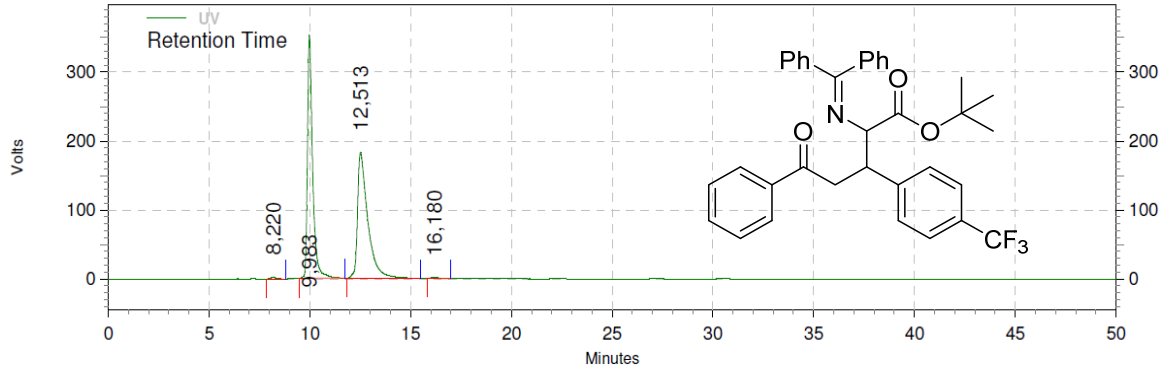
UV Results

Retention Time	Area	Area %	Height	Height %
10,580	573293	0,78	19501	0,84
12,577	36831929	49,87	1539862	66,49
14,563	36126403	48,91	747977	32,30
17,433	328989	0,45	8611	0,37
Totals	73860614	100,00	2315951	100,00



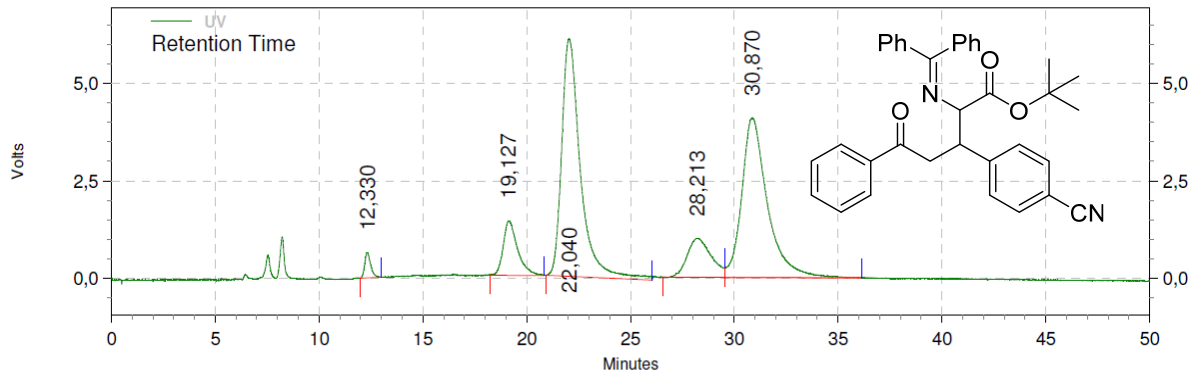
UV Results

Retention Time	Area	Area %	Height	Height %
10,597	684499	0,93	37631	1,71
11,207	34328957	46,75	1477925	67,04
12,317	4072342	5,55	143724	6,52
14,233	699319	0,95	24265	1,10
15,377	33652072	45,82	520990	23,63
Totals	73437189	100,00	2204535	100,00



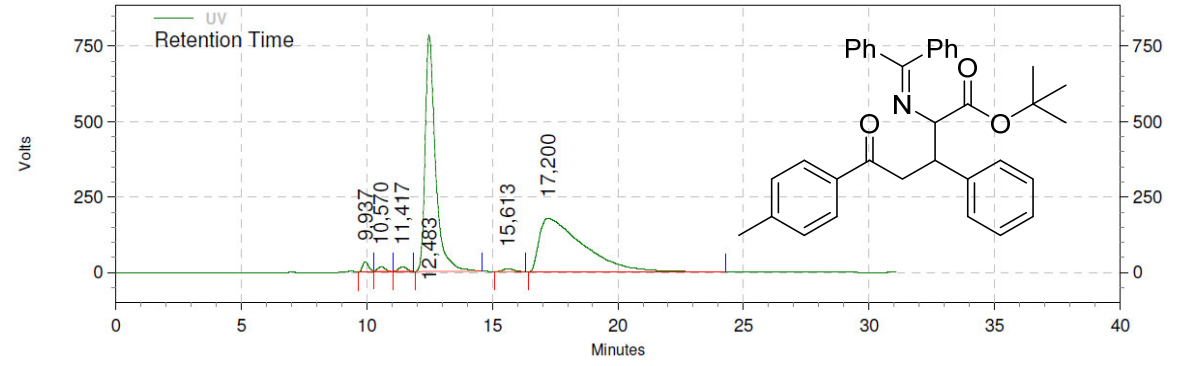
UV Results

Retention Time	Area	Area %	Height	Height %
8,220	158319	0,31	10311	0,48
9,983	25117857	49,16	1409130	65,37
12,513	25657890	50,22	730425	33,88
16,180	158897	0,31	5813	0,27
Totals	51092963	100,00	2155679	100,00



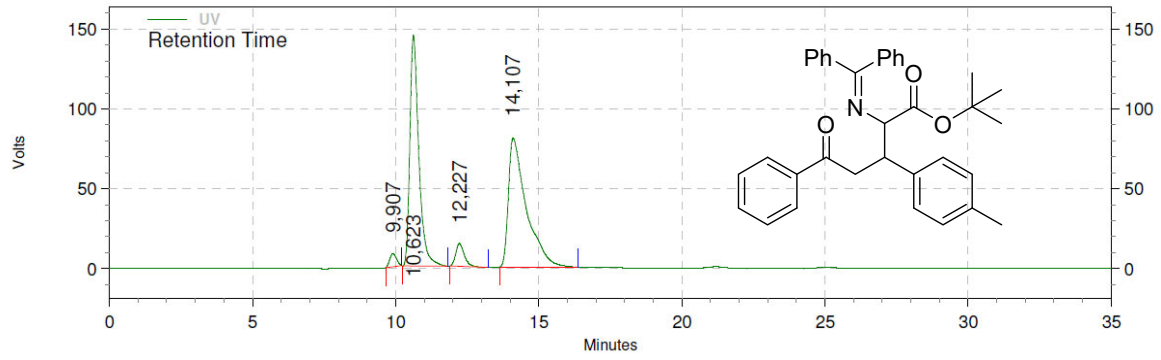
UV Results

Retention Time	Area	Area %	Height	Height %
12,330	51816	1,45	2583	4,86
19,127	268152	7,50	5609	10,56
22,040	1521751	42,59	24436	46,02
28,213	321133	8,99	4012	7,56
30,870	1410471	39,47	16460	31,00
Totals	3573323	100,00	53100	100,00



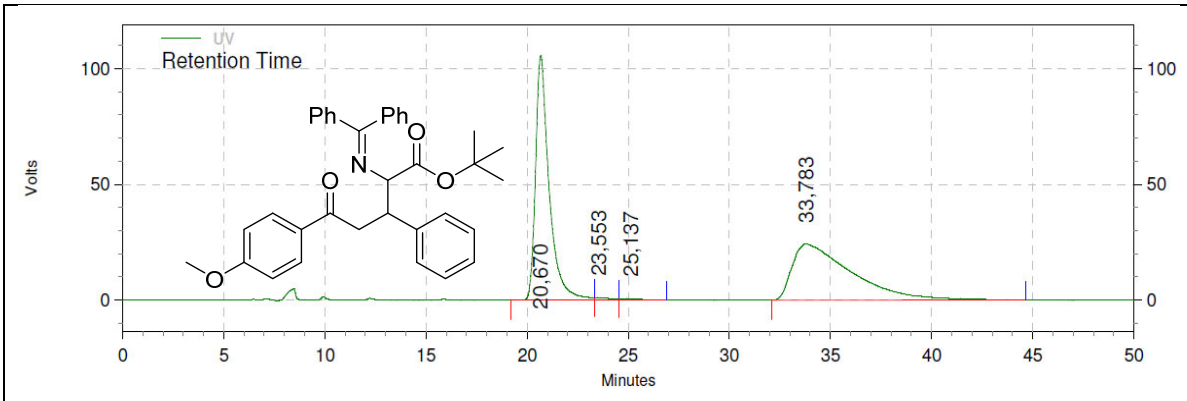
UV Results

Retention Time	Area	Area %	Height	Height %
9,937	2288442	1,26	134444	3,24
10,570	1455690	0,80	70912	1,71
11,417	1452724	0,80	67580	1,63
12,483	88775685	48,87	3131978	75,41
15,613	1113788	0,61	37741	0,91
17,200	86582556	47,66	710826	17,11
Totals	181668885	100,00	4153481	100,00



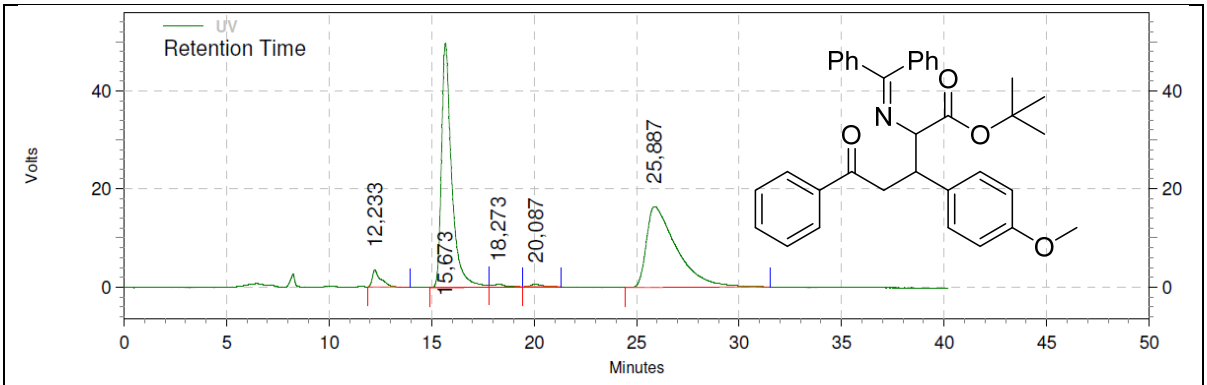
UV Results

Retention Time	Area	Area %	Height	Height %
9,907	526123	1,86	32465	3,28
10,623	12537526	44,34	576840	58,27
12,227	1177590	4,16	57200	5,78
14,107	14032246	49,63	323482	32,68
Totals	28273485	100,00	989987	100,00



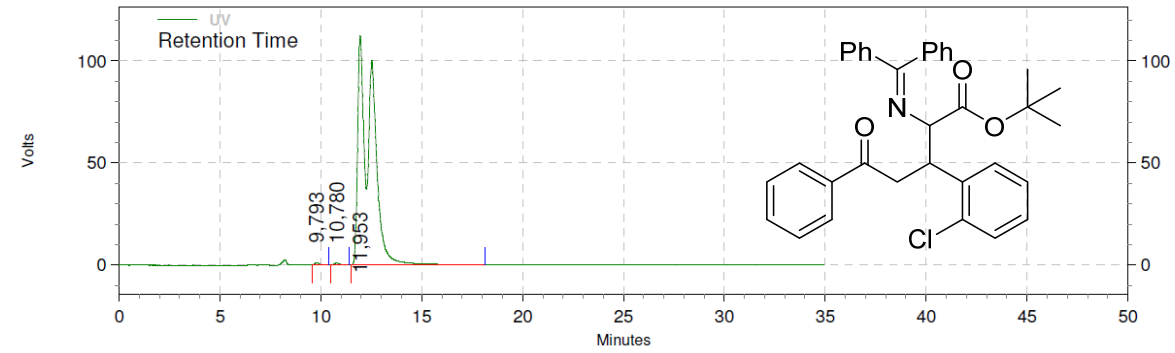
UV Results

Retention Time	Area	Area %	Height	Height %
20,670	19715310	49,60	422294	80,42
23,553	197694	0,50	3739	0,71
25,137	125601	0,32	2023	0,39
33,783	19706039	49,58	97080	18,49
Totals	39744644	100,00	525136	100,00



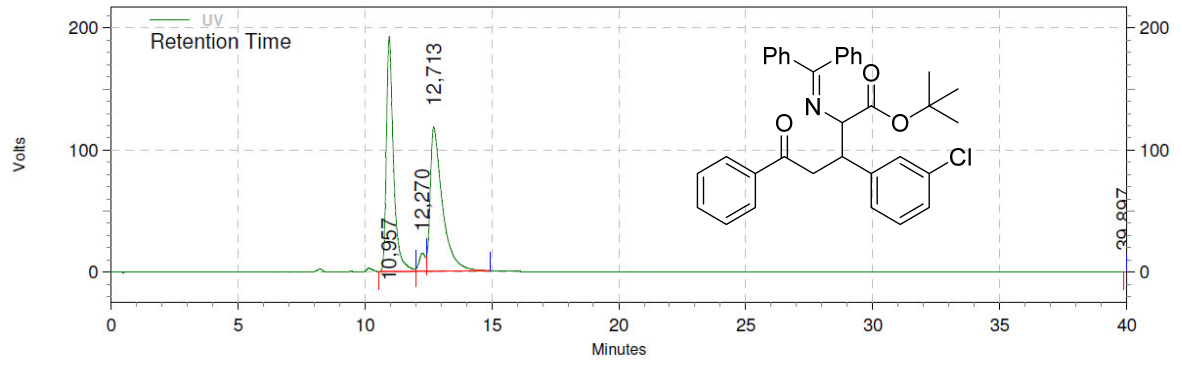
UV Results

Retention Time	Area	Area %	Height	Height %
12,233	402789	2,84	14069	4,96
15,673	6868858	48,37	198922	70,17
18,273	108416	0,76	2457	0,87
20,087	94720	0,67	2136	0,75
25,887	6726983	47,37	65894	23,24
Totals	14201766	100,00	283478	100,00



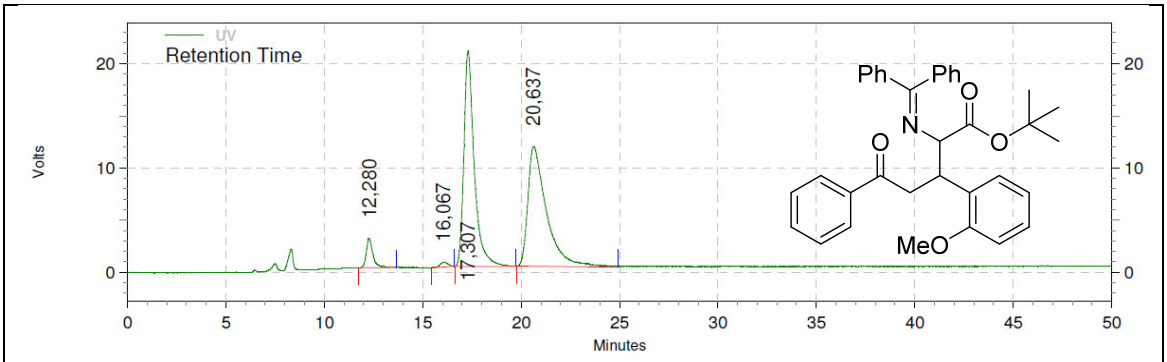
UV Results

Retention Time	Area	Area %	Height	Height %
9,793	68228	0,32	4220	0,92
10,780	72194	0,33	3840	0,84
11,953	21439552	99,35	448886	98,24
Totals	21579974	100,00	456946	100,00



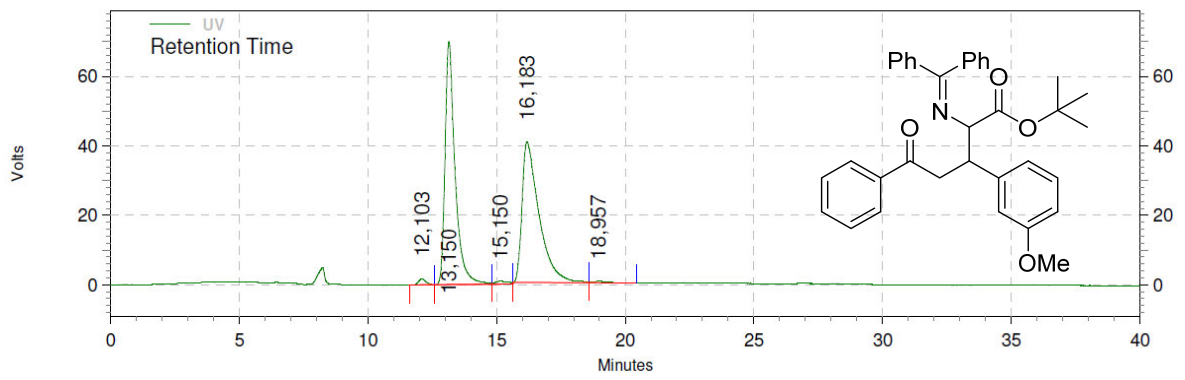
UV Results

Retention Time	Area	Area %	Height	Height %
10,957	15104985	47,54	769471	59,13
12,270	1032116	3,25	59572	4,58
12,713	15633670	49,21	472137	36,28
39,897	147	0,00	48	0,00
Totals	31770918	100,00	1301228	100,00



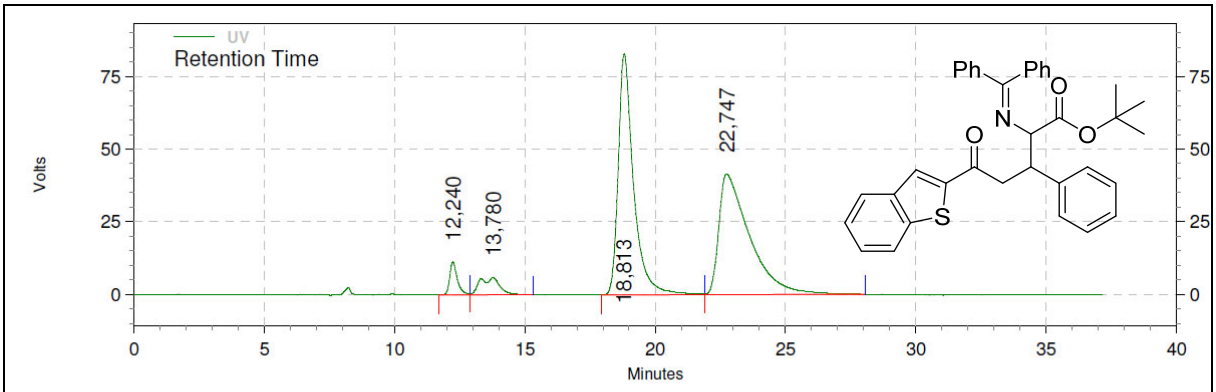
UV Results

Retention Time	Area	Area %	Height	Height %
12,280	262424	4,12	11313	7,97
16,067	52763	0,83	1965	1,38
17,307	3028757	47,53	82748	58,27
20,637	3027692	47,52	45987	32,38
Totals	6371636	100,00	142013	100,00



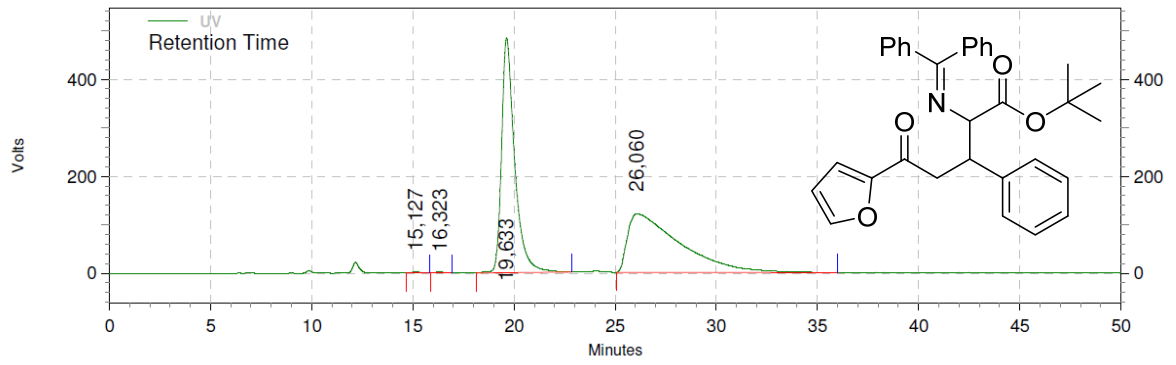
UV Results

Retention Time	Area	Area %	Height	Height %
12,103	135840	0,88	6937	1,53
13,150	7562044	49,21	280088	61,69
15,150	119198	0,78	3266	0,72
16,183	7471148	48,61	162085	35,70
18,957	80072	0,52	1628	0,36
Totals	15368302	100,00	454004	100,00



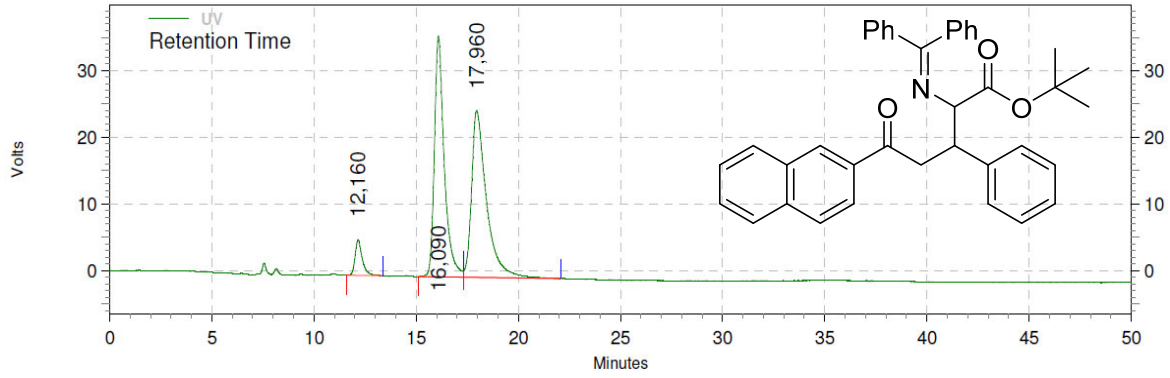
UV Results

Retention Time	Area	Area %	Height	Height %
12,240	924325	3,14	45422	8,00
13,780	1251680	4,26	23690	4,17
18,813	13624925	46,34	332148	58,52
22,747	13604194	46,26	166343	29,31
Totals	29405124	100,00	567603	100,00



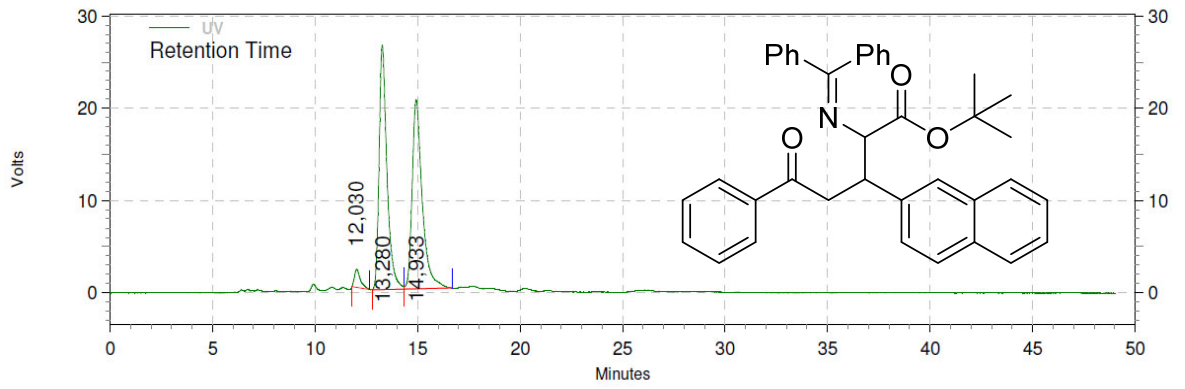
UV Results

Retention Time	Area	Area %	Height	Height %
15,127	257100	0,15	8592	0,35
16,323	242474	0,14	7857	0,32
19,633	87089035	49,99	1937518	79,50
26,060	86613613	49,72	483189	19,83
Totals	174202222	100,00	2437156	100,00



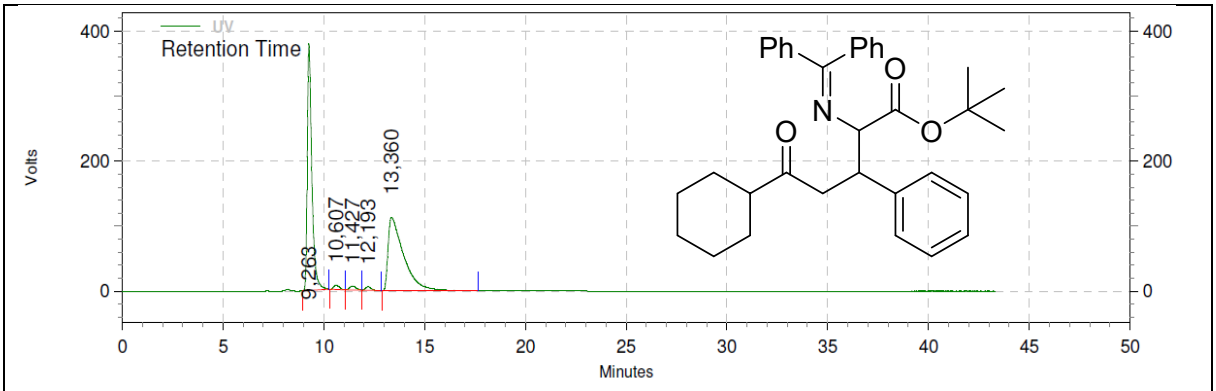
UV Results

Retention Time	Area	Area %	Height	Height %
12,160	523036	5,00	21470	8,07
16,090	4854837	46,43	144440	54,31
17,960	5078474	48,57	100065	37,62
Totals	10456347	100,00	265975	100,00



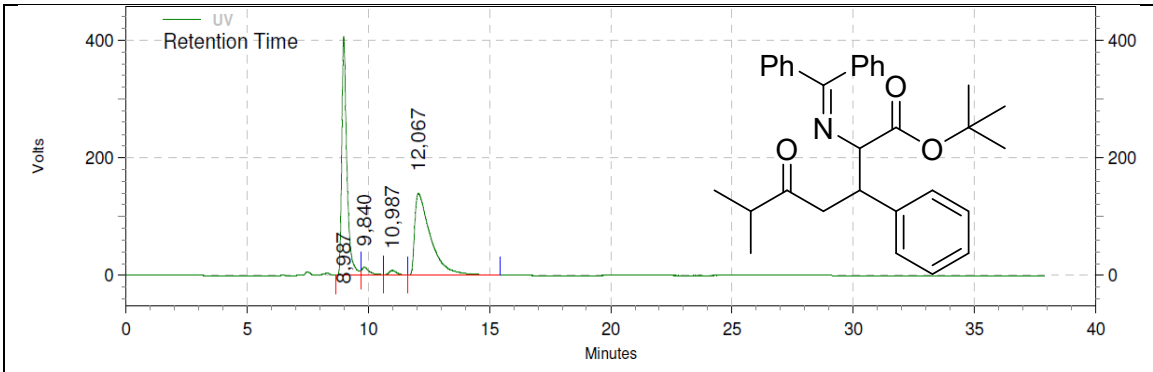
UV Results

Retention Time	Area	Area %	Height	Height %
12,030	157275	2,73	7839	4,01
13,280	2820609	48,90	105830	54,10
14,933	2790519	48,38	81934	41,89
Totals	5768403	100,00	195603	100,00



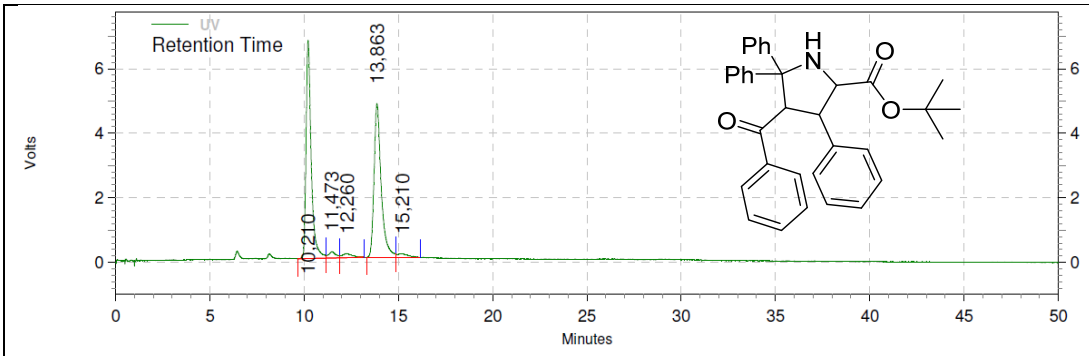
UV Results

Retention Time	Area	Area %	Height	Height %
9,263	23884191	48,09	1516857	74,18
10,607	538404	1,08	28547	1,40
11,427	521409	1,05	25126	1,23
12,193	394632	0,79	21205	1,04
13,360	24323127	48,98	453014	22,15
Totals	49661763	100,00	2044749	100,00



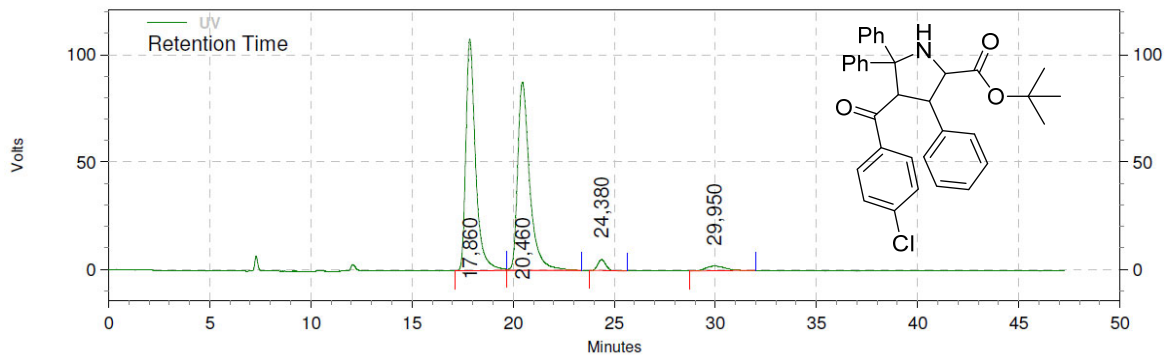
UV Results

Retention Time	Area	Area %	Height	Height %
8,987	23721853	46,71	1622788	71,60
9,840	1206360	2,38	53371	2,35
10,987	744127	1,47	32704	1,44
12,067	25109485	49,45	557489	24,60
Totals	50781825	100,00	2266352	100,00



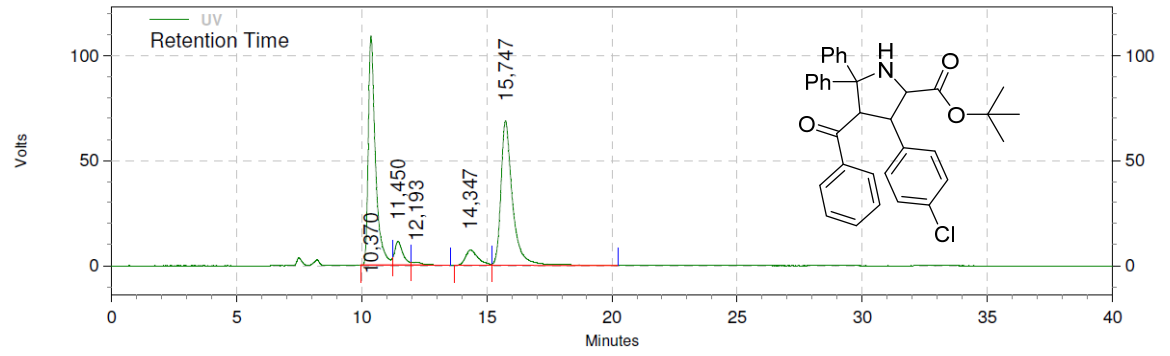
UV Results

Retention Time	Area	Area %	Height	Height %
10,210	507235	47,73	27002	56,52
11,473	20160	1,90	787	1,65
12,260	18634	1,75	532	1,11
13,863	499144	46,97	19020	39,81
15,210	17511	1,65	435	0,91
Totals	1062684	100,00	47776	100,00



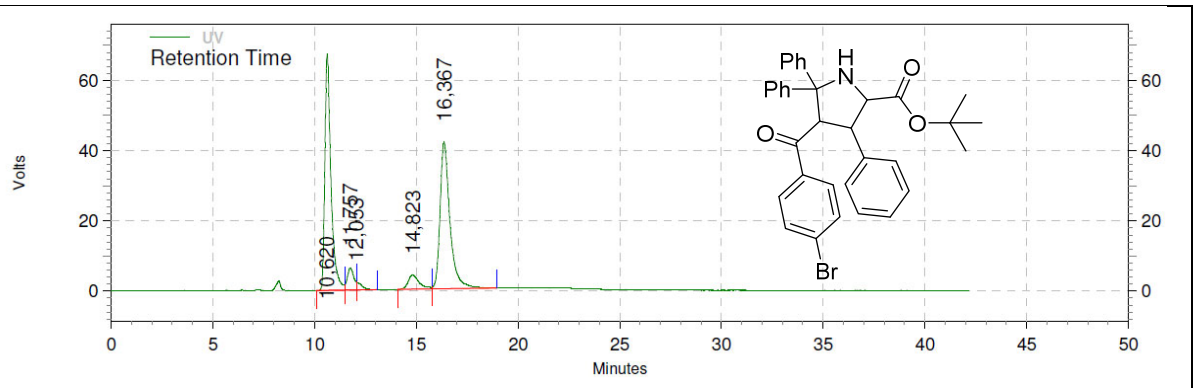
UV Results

Retention Time	Area	Area %	Height	Height %
17,860	14351469	47,95	431471	53,12
20,460	14447172	48,27	351234	43,24
24,380	553586	1,85	20776	2,56
29,950	576635	1,93	8807	1,08
Totals	29928862	100,00	812288	100,00



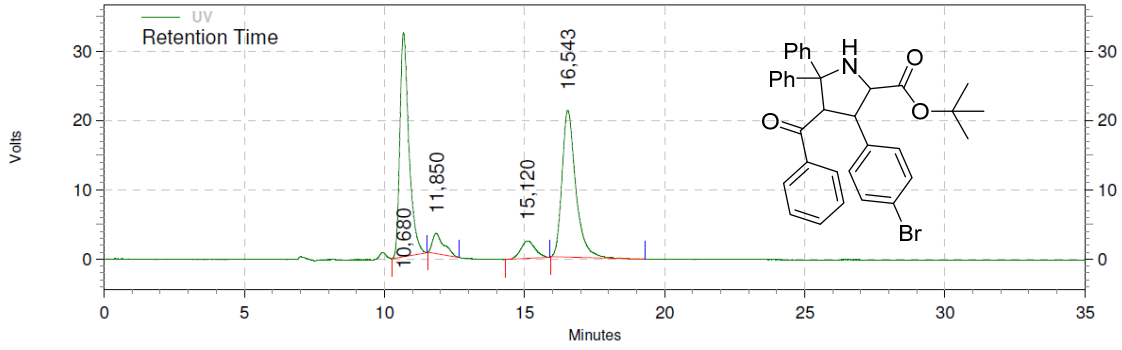
UV Results

Retention Time	Area	Area %	Height	Height %
10,370	8664947	44,03	435640	55,14
11,450	1026256	5,21	45134	5,71
12,193	169167	0,86	5547	0,70
14,347	1008622	5,13	28975	3,67
15,747	8810000	44,77	274770	34,78
Totals	19678992	100,00	790066	100,00



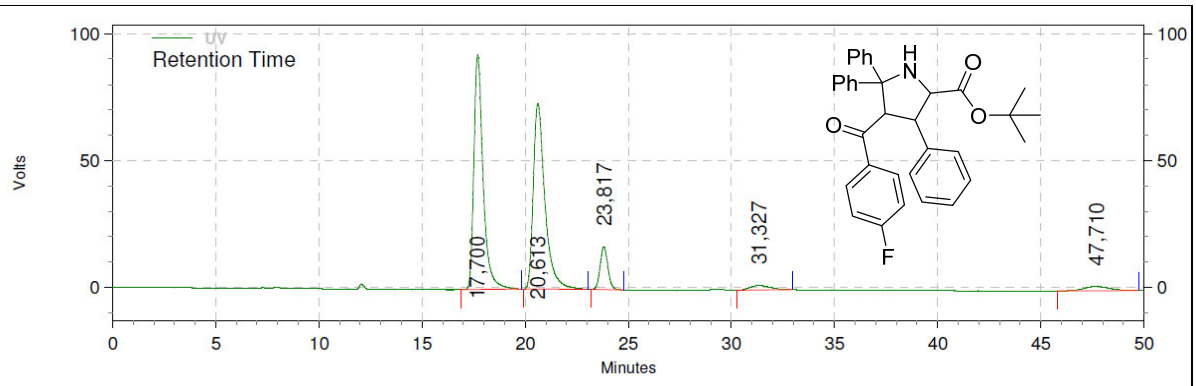
UV Results

Retention Time	Area	Area %	Height	Height %
10,620	5571008	44,54	269279	55,32
11,757	558545	4,47	25140	5,16
12,053	168109	1,34	9015	1,85
14,823	617001	4,93	16449	3,38
16,367	5594325	44,72	166895	34,29
Totals	12508988	100,00	486778	100,00



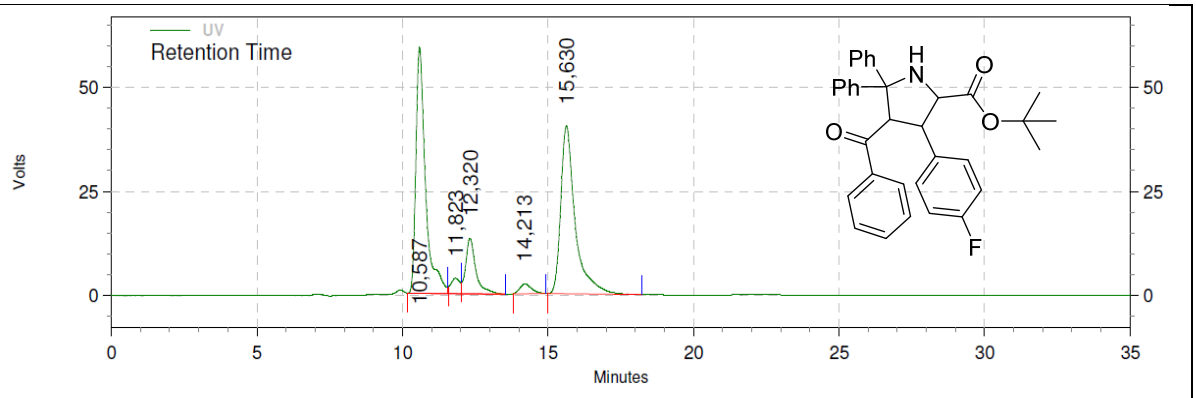
UV Results

Retention Time	Area	Area %	Height	Height %
10,680	2904447	44,84	129159	54,77
11,850	327490	5,06	11729	4,97
15,120	354896	5,48	10093	4,28
16,543	2889810	44,62	84857	35,98
Totals	6476643	100,00	235838	100,00



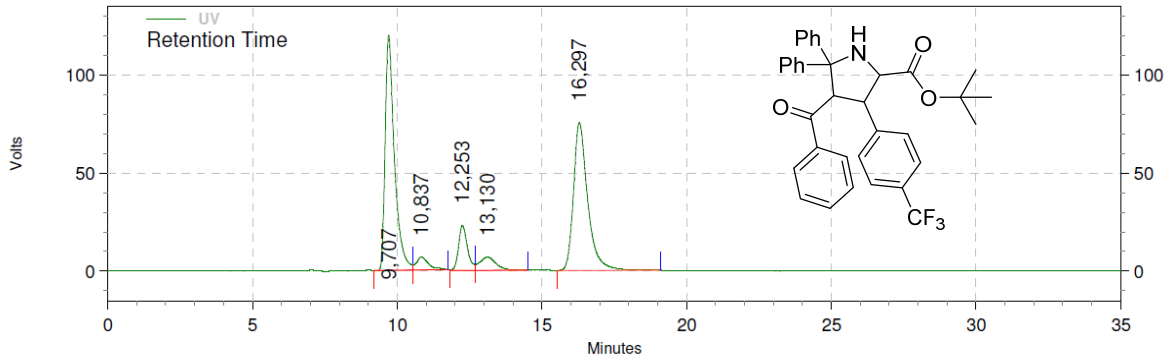
UV Results

Retention Time	Area	Area %	Height	Height %
17,700	11555090	44,69	370234	49,74
20,613	11476265	44,38	292825	39,34
23,817	1765469	6,83	67394	9,06
31,327	487744	1,89	7257	0,98
47,710	574158	2,22	6554	0,88
Totals	25858726	100,00	744264	100,00



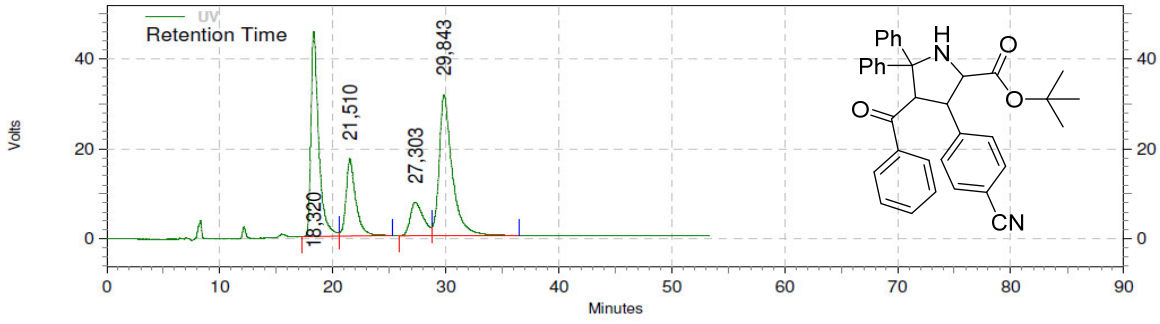
UV Results

Retention Time	Area	Area %	Height	Height %
10,587	5444052	42,38	235833	49,71
11,823	305198	2,38	14959	3,15
12,320	1289341	10,04	53232	11,22
14,213	259369	2,02	9134	1,93
15,630	5548329	43,19	161289	34,00
Totals	12846289	100,00	474447	100,00



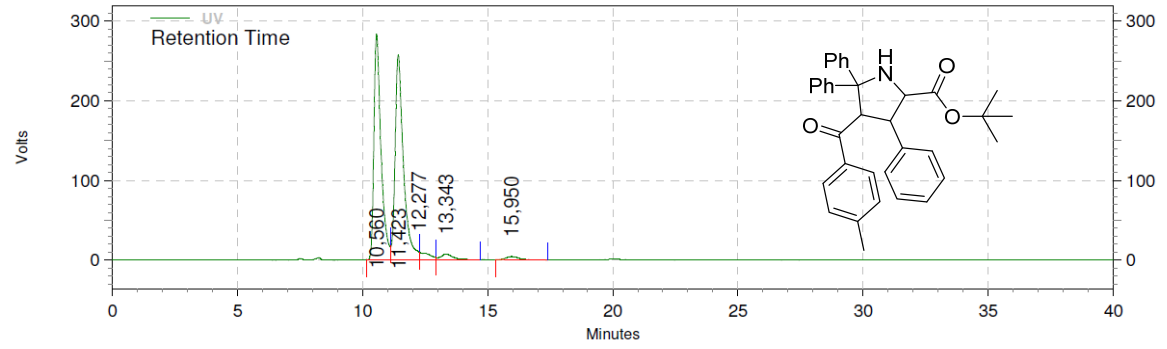
UV Results

Retention Time	Area	Area %	Height	Height %
9,707	10664258	43,00	479665	51,79
10,837	756895	3,05	26028	2,81
12,253	1961188	7,91	92421	9,98
13,130	1095221	4,42	26738	2,89
16,297	10320198	41,62	301394	32,54
Totals	24797760	100,00	926246	100,00



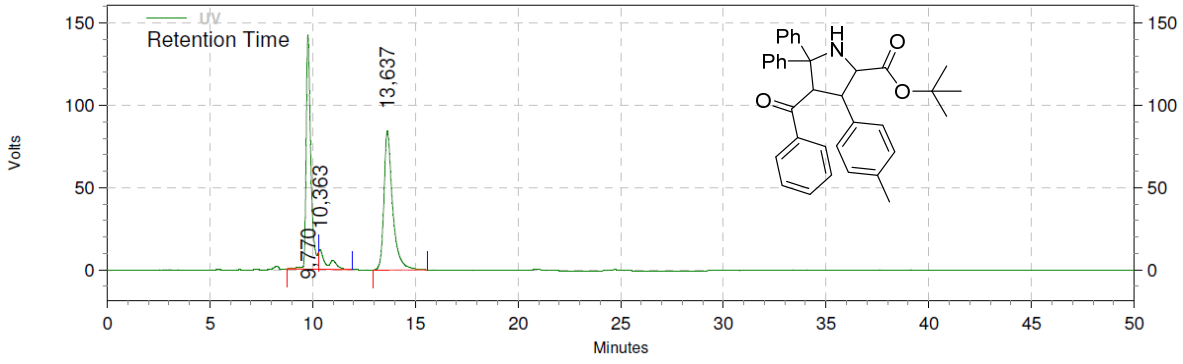
UV Results

Retention Time	Area	Area %	Height	Height %
18,320	8620454	34,38	181773	44,90
21,510	4066674	16,22	68574	16,94
27,303	2421993	9,66	29789	7,36
29,843	9963831	39,74	124679	30,80
Totals	25072952	100,00	404815	100,00



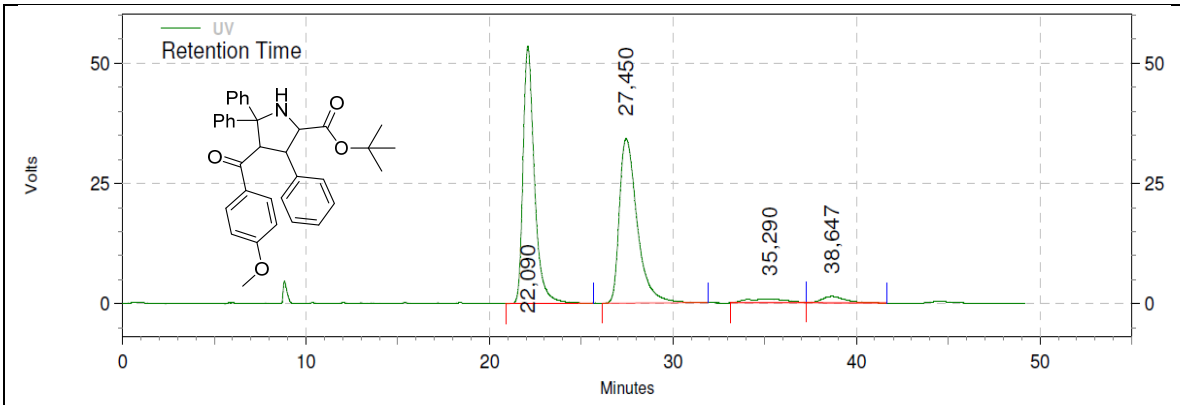
UV Results

Retention Time	Area	Area %	Height	Height %
10,560	22217442	45,98	1130830	50,54
11,423	23582053	48,80	1026014	45,85
12,277	955510	1,98	37484	1,68
13,343	929714	1,92	26658	1,19
15,950	639960	1,32	16573	0,74
Totals	48324679	100,00	2237559	100,00



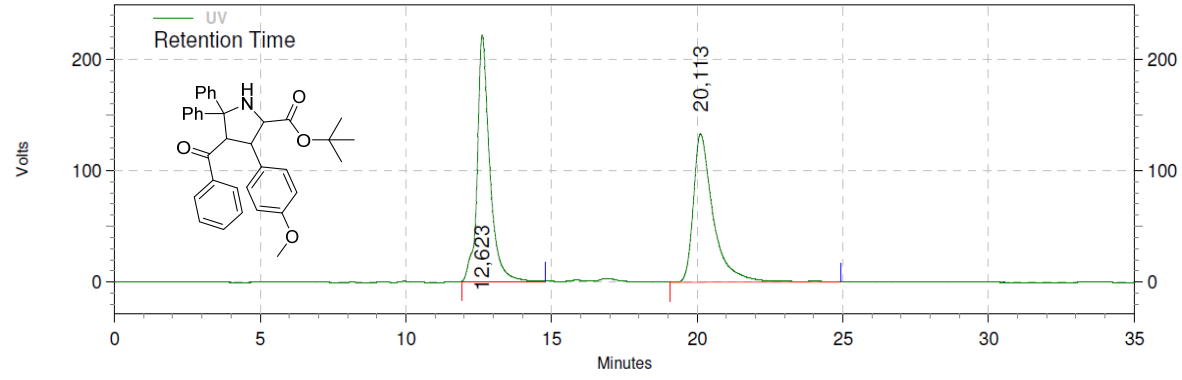
UV Results

Retention Time	Area	Area %	Height	Height %
9,770	9082520	44,77	568630	59,56
10,363	1318192	6,50	48001	5,03
13,637	9884253	48,73	338017	35,41
Totals	20284965	100,00	954648	100,00



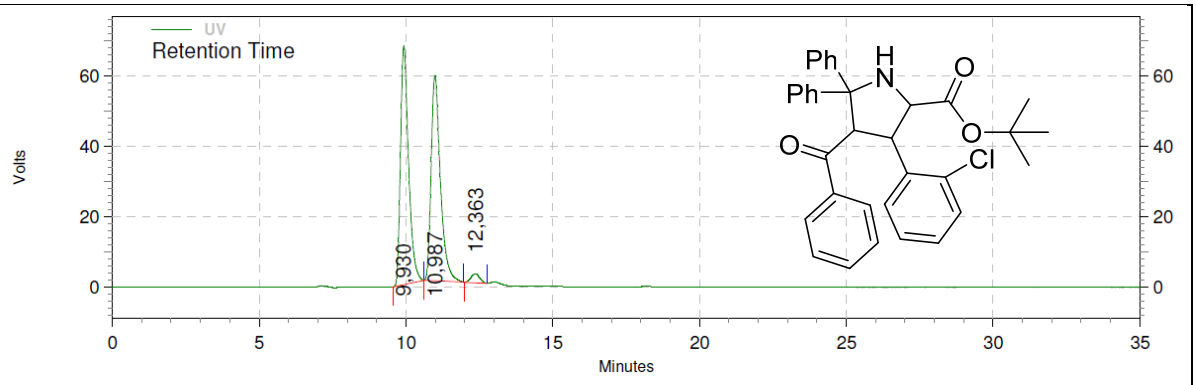
UV Results

Retention Time	Area	Area %	Height	Height %
22,090	9200236	47,50	213596	59,61
27,450	9217892	47,59	136597	38,12
35,290	474260	2,45	2922	0,82
38,647	478192	2,47	5210	1,45
Totals	19370580	100,00	358325	100,00



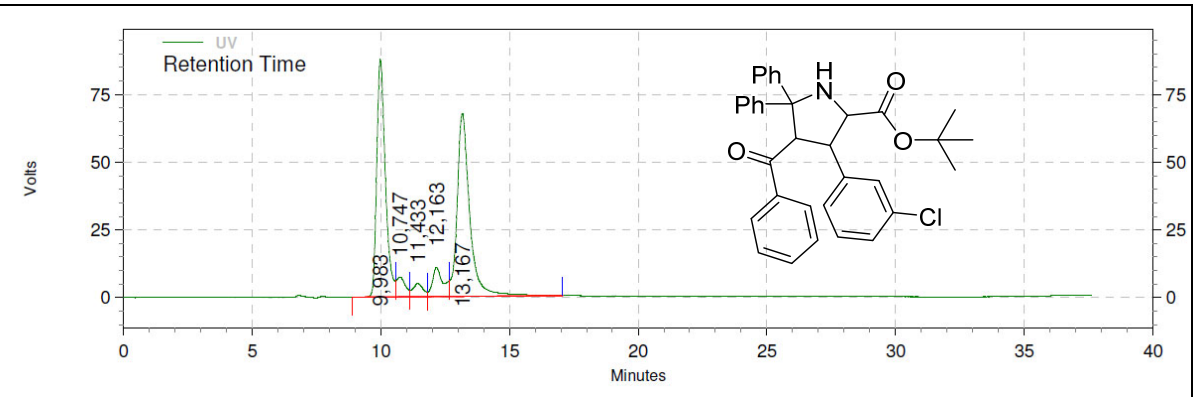
UV Results

Retention Time	Area	Area %	Height	Height %
12,623	26384045	51,12	885337	62,44
20,113	25226758	48,88	532639	37,56
Totals	51610803	100,00	1417976	100,00



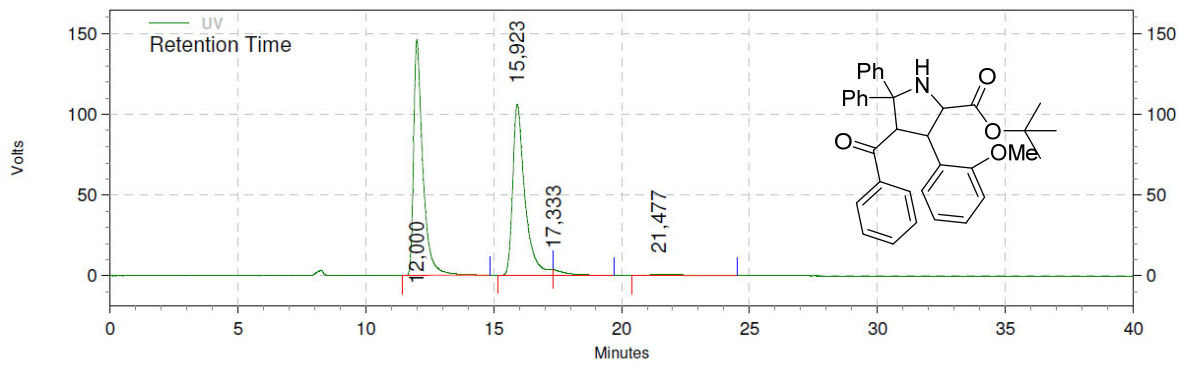
UV Results

Retention Time	Area	Area %	Height	Height %
9,930	5144056	49,19	270673	52,67
10,987	5107003	48,83	233016	45,34
12,363	207440	1,98	10235	1,99
Totals	10458499	100,00	513924	100,00



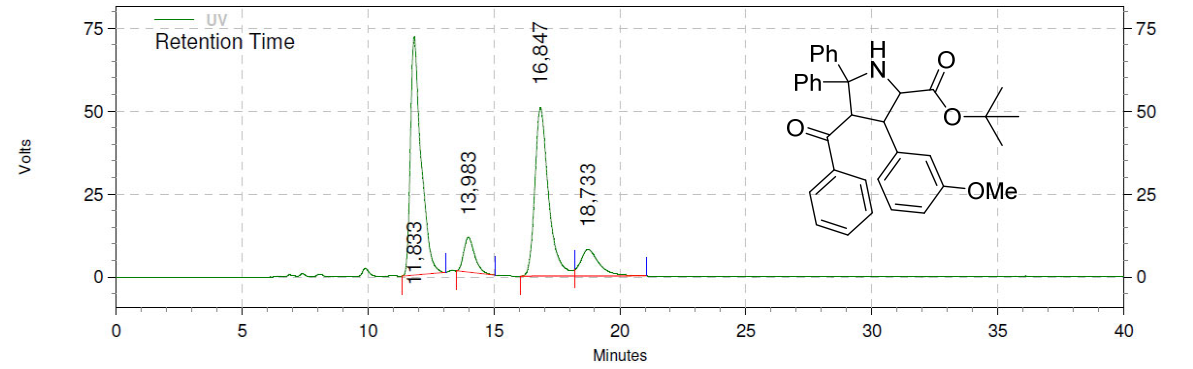
UV Results

Retention Time	Area	Area %	Height	Height %
9,983	8185801	41,24	351033	49,23
10,747	678479	3,42	29332	4,11
11,433	548892	2,77	19494	2,73
12,163	1252941	6,31	43250	6,07
13,167	9183358	46,26	269955	37,86
Totals	19849471	100,00	713064	100,00



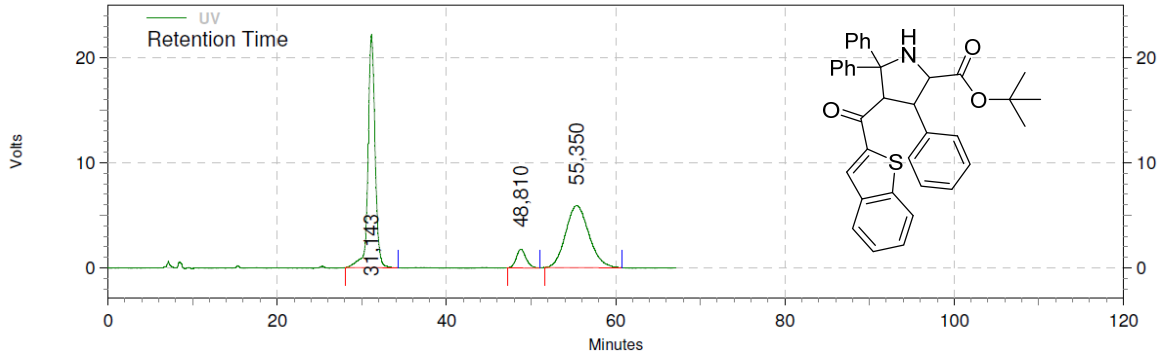
UV Results

Retention Time	Area	Area %	Height	Height %
12,000	14559713	49,60	583572	57,05
15,923	14076720	47,96	422448	41,30
17,333	457064	1,56	14034	1,37
21,477	259167	0,88	2851	0,28
Totals	29352664	100,00	1022905	100,00



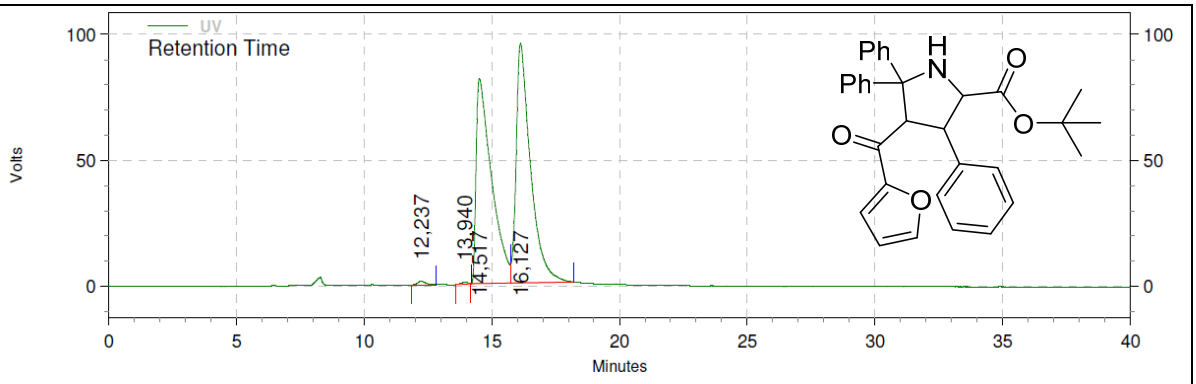
UV Results

Retention Time	Area	Area %	Height	Height %
11,833	8401627	44,20	287214	50,86
13,983	1259654	6,63	42298	7,49
16,847	7710264	40,57	203086	35,96
18,733	1635302	8,60	32151	5,69
Totals	19006847	100,00	564749	100,00



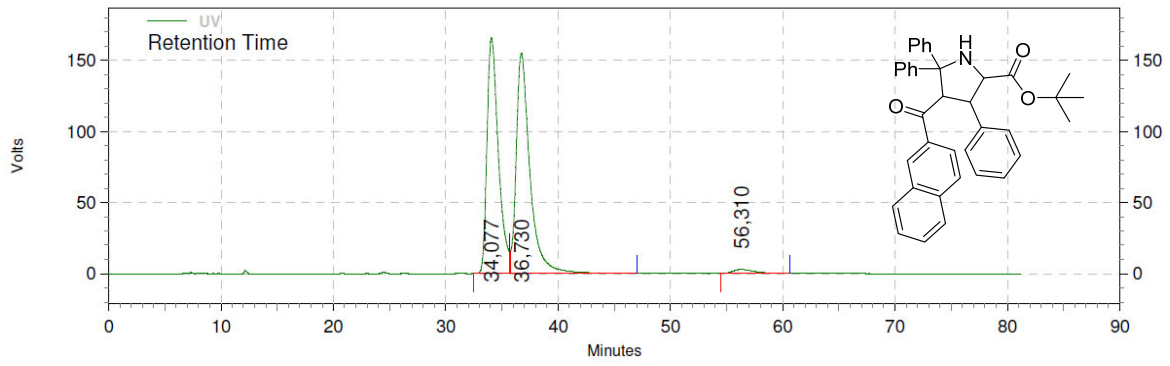
UV Results

Retention Time	Area	Area %	Height	Height %
31,143	5157697	50,23	88770	74,28
48,810	571848	5,57	7106	5,95
55,350	4539581	44,21	23636	19,78
Totals	10269126	100,00	119512	100,00



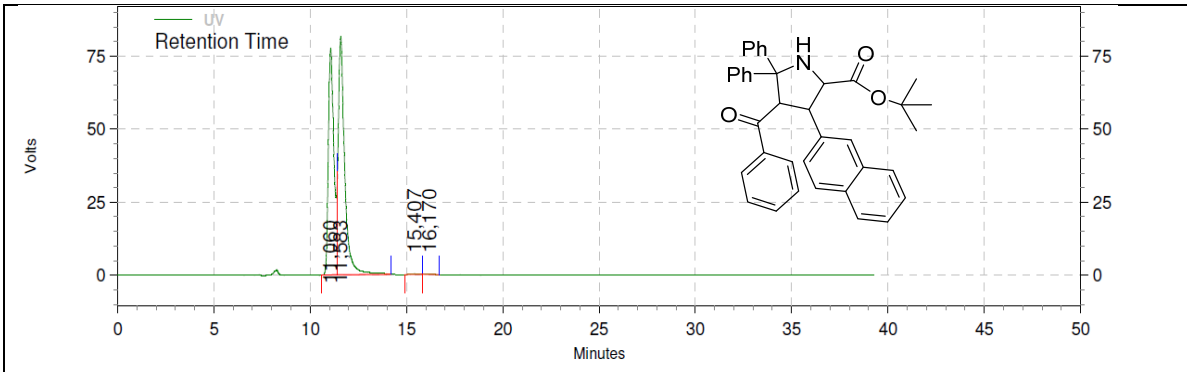
UV Results

Retention Time	Area	Area %	Height	Height %
12,237	114250	0,40	5835	0,82
13,940	57741	0,20	3318	0,46
14,517	13605918	47,53	325646	45,54
16,127	14846856	51,87	380325	53,18
Totals	28624765	100,00	715124	100,00



UV Results

Retention Time	Area	Area %	Height	Height %
34,077	46546004	46,28	662964	51,24
36,730	52543025	52,25	620134	47,93
56,310	1477183	1,47	10851	0,84
Totals	100566212	100,00	1293949	100,00



UV Results

Retention Time	Area	Area %	Height	Height %
11,060	6378503	46,43	310615	48,64
11,583	7312971	53,23	326212	51,08
15,407	21701	0,16	868	0,14
16,170	24551	0,18	901	0,14
Totals	13737726	100,00	638596	100,00

5. References

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