Supplementary Information
for
Ni-Catalyzed Regioselective and Site-Divergent Reductive Arylalkylations of Allylic Amines

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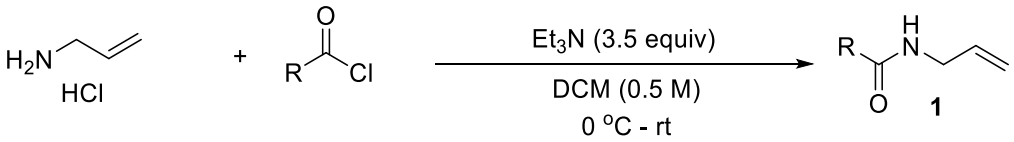
I. General Information

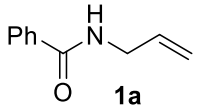
General remarks: Unless otherwise stated, reactions were performed under a nitrogen atmosphere using dried solvents. Commercially available reagents were used without further purification. Thin layer chromatography (TLC) was performed using Jiangyou TLC silica gel plates HSG F254 and visualized using UV light or phosphomolybdic acid (PMA). Flash column chromatography was performed over silica gel (200-300 mesh). ^{1}H and ^{13}C NMR spectra were recorded in $CDCl_3$, unless otherwise noted, on a Bruker AVANCE 600 MHz or a Bruker AVANCE 400 MHz spectrometer. Chemical shifts in ^{1}H NMR spectra were reported in parts per million (ppm) on the δ scale from an internal standard of residual chloroform (7.26 ppm). Data for ^{1}H NMR spectra are reported as follows: chemical shift (δ ppm) (multiplicity, coupling constant (Hz), integration). Multiplicity and qualifier abbreviations are as follows: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, br = broad. Data for ^{13}C NMR spectra were reported in terms of chemical shift in ppm from the central peak of $CDCl_3$ (77.16 ppm). High-resolution electrospray ionization and electronic impact mass spectrometry was performed on a Thermo Scientific Q Exactive mass spectrometer (mass analyzer type: Orbitrap).

Methods and materials: Unless otherwise noted, commercial reagents were purchased from Energy Chemical Limited, J&K, Adamas-beta®, Aladdin, Macklin Reagent, Bidepharm and used directly without further purification. DCM, DMA and MeCN were distilled over CaH_2 and stored under nitrogen atmosphere.

II. Synthesis and Characterization of Substrates

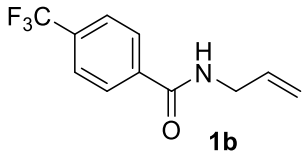


General Procedure A: To a solution of amine hydrochloride (10.0 mmol, 1.0 equiv) in CH_2Cl_2 (0.5 M) at 0 °C was added Et_3N (35.0 mmol, 3.5 equiv). After stirring for 0.5 h, then acyl chloride (11.0 mmol, 1.1 equiv) was added dropwise to the above solution at 0 °C. The resulting solution was stirred at room temperature for 4 h. The mixture was diluted with CH_2Cl_2 and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography.[1]



***N*-Allylbenzamide (1a)**

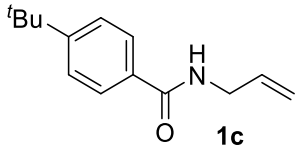
Colorless oil. **^{1}H NMR (600 MHz, $CDCl_3$)** δ 7.80 – 7.76 (m, 2H), 7.51 – 7.48 (m, 1H), 7.43 (dd, *J* = 8.4, 6.9 Hz, 2H), 6.29 (brs, 1H), 5.94 (ddt, *J* = 17.2, 10.2, 5.7 Hz, 1H), 5.26 (dd, *J* = 17.1, 1.6 Hz, 1H), 5.18 (dd, *J* = 10.2, 1.4 Hz, 1H), 4.09 (tt, *J* = 5.8, 1.6 Hz, 2H).



1b

***N*-Allyl-4-(trifluoromethyl)benzamide (1b)**

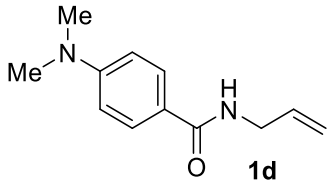
White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.91 (d, *J* = 8.1 Hz, 2H), 7.72 (d, *J* = 8.1 Hz, 2H), 6.31 (brs, 1H), 5.96 (ddt, *J* = 17.2, 10.2, 5.8 Hz, 1H), 5.30 (dd, *J* = 17.1, 1.5 Hz, 1H), 5.24 (dd, *J* = 10.2, 1.4 Hz, 1H), 4.15 – 4.11 (m, 2H).



1c

***N*-Allyl-4-(*tert*-butyl)benzamide (1c)**

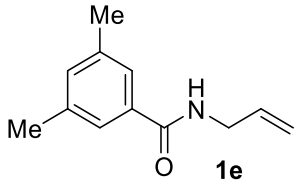
White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.72 (d, *J* = 8.5 Hz, 2H), 7.45 (d, *J* = 8.5 Hz, 2H), 6.18 (brs, 1H), 5.94 (ddt, *J* = 17.1, 10.2, 5.6 Hz, 1H), 5.26 (dd, *J* = 17.1, 1.5 Hz, 1H), 5.18 (dd, *J* = 10.2, 1.4 Hz, 1H), 4.09 (ddd, *J* = 5.7, 4.1, 1.6 Hz, 2H), 1.33 (s, 9H).



1d

***N*-Allyl-4-(dimethylamino)benzamide (1d)**

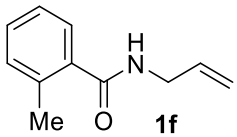
White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.69 (d, *J* = 8.9 Hz, 2H), 6.67 (d, *J* = 8.9 Hz, 2H), 6.10 (brs, 1H), 6.00 – 5.87 (m, 1H), 5.24 (dd, *J* = 17.1, 1.7 Hz, 1H), 5.15 (dd, *J* = 10.2, 1.6 Hz, 1H), 4.07 (td, *J* = 5.7, 2.8 Hz, 2H), 3.01 (s, 6H).



1e

***N*-Allyl-3,5-dimethylbenzamide (1e)**

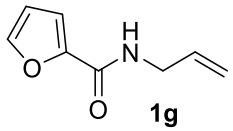
Colorless oil. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.38 (s, 1H), 7.12 (s, 1H), 6.25 (brs, 1H), 5.93 (ddt, *J* = 17.2, 10.2, 5.7 Hz, 1H), 5.25 (dq, *J* = 17.2, 1.6 Hz, 1H), 5.17 (dq, *J* = 10.3, 1.4 Hz, 1H), 4.07 (tt, *J* = 5.7, 1.6 Hz, 2H), 2.34 (s, 6H).



1f

***N*-Allyl-2-methylbenzamide (1f)**

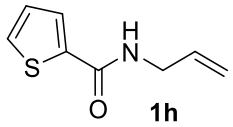
White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.37 (d, *J* = 7.6 Hz, 1H), 7.33 – 7.29 (m, 1H), 7.23 – 7.18 (m, 2H), 5.94 (ddt, *J* = 16.2, 10.7, 5.6 Hz, 1H), 5.83 (brs, 1H), 5.27 (dd, *J* = 17.2, 1.8 Hz, 1H), 5.19 (dd, *J* = 10.2, 1.6 Hz, 1H), 4.07 (t, *J* = 5.7 Hz, 2H), 2.45 (s, 3H).



1g

***N*-Allylfuran-2-carboxamide (1g)**

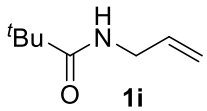
Colorless oil. **^{1}H NMR (600 MHz, $CDCl_3$)** δ 7.43 (dd, *J* = 1.8, 0.8 Hz, 1H), 7.12 (dd, *J* = 3.5, 0.8 Hz, 1H), 6.50 (dd, *J* = 3.5, 1.8 Hz, 1H), 6.43 (brs, 1H), 5.91 (ddt, *J* = 17.2, 10.3, 5.6 Hz, 1H), 5.26 (dq, *J* = 17.1, 1.6 Hz, 1H), 5.18 (dq, *J* = 10.2, 1.4 Hz, 1H), 4.05 (tt, *J* = 5.8, 1.6 Hz, 2H).



1h

***N*-Allylthiophene-2-carboxamide (1h)**

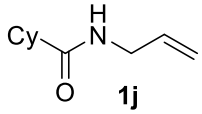
White solid. **^{1}H NMR (600 MHz, $CDCl_3$)** δ 7.52 (dd, *J* = 3.7, 1.2 Hz, 1H), 7.47 (dd, *J* = 5.0, 1.2 Hz, 1H), 7.07 (dd, *J* = 5.0, 3.7 Hz, 1H), 6.10 (brs, 1H), 5.92 (ddt, *J* = 17.2, 10.2, 5.7 Hz, 1H), 5.26 (dd, *J* = 17.2, 1.6 Hz, 1H), 5.18 (dd, *J* = 10.2, 1.4 Hz, 1H), 4.06 (tt, *J* = 5.8, 1.6 Hz, 2H).



1i

***N*-Allylpivalamide (1i)**

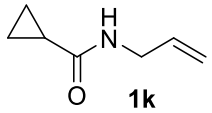
Colorless oil. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 5.78 (ddt, *J* = 17.3, 10.3, 5.6 Hz, 1H), 5.67 (brs, 1H), 5.16 – 5.02 (m, 2H), 3.86 – 3.73 (m, 2H), 1.15 (s, 9H).



1j

***N*-Allylcyclohexanecarboxamide (1j)**

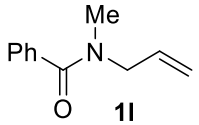
White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 5.77 (ddt, *J* = 17.2, 10.3, 5.6 Hz, 1H), 5.46 (brs, 1H), 5.16 – 5.01 (m, 2H), 3.84 – 3.78 (m, 2H), 2.03 (tt, *J* = 11.7, 3.5 Hz, 1H), 1.85 – 1.70 (m, 4H), 1.61 (ddt, *J* = 9.2, 5.0, 1.8 Hz, 1H), 1.38 (qd, *J* = 12.0, 3.0 Hz, 2H), 1.26 – 1.11 (m, 3H).



1k

***N*-Allylcyclopropanecarboxamide (1k)**

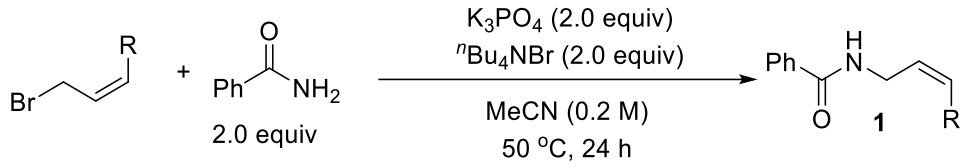
White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 5.85 (ddt, *J* = 17.2, 10.2, 5.7 Hz, 1H), 5.72 (brs, 1H), 5.20 (dd, *J* = 17.2, 1.6 Hz, 1H), 5.13 (dd, *J* = 10.2, 1.5 Hz, 1H), 3.80 – 4.00 (m, 2H), 1.35 (tt, *J* = 7.9, 4.5 Hz, 1H), 1.01 – 0.91 (m, 2H), 0.74 (dt, *J* = 7.9, 3.4 Hz, 2H).



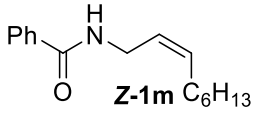
1l

***N*-Allyl-*N*-methylbenzamide (1l)**

Colorless oil. **^{1}H NMR (600 MHz, $CDCl_3$)** δ 7.61 – 7.35 (m, 5H), 5.92 – 5.69 (m, 1H), 5.34 – 5.17 (m, 2H), 4.21 – 3.76 (m, 2H), 3.12 – 2.65 (m, 3H)

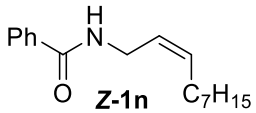


General Procedure B: In a two-neck 200 mL flask, 10.0 mmol (2.0 equiv) of benzamide in MeCN (0.2 M) are introduced initially, potassium hydroxide (10.0 mmol, 2.0 equiv) are introduced with stirring. Tetrabutylammonium bromide (10.0 mmol, 2.0 equiv) are added and the mixture. 1-Bromohex-2-ene (5.0 mmol, 1.0 equiv) are then added dropwise with stirring. The mixture is stirred for another 24 h at 50 °C. Then filtered, and purified by flash chromatography.[2]



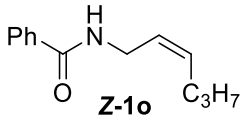
(*Z*)-*N*-(Non-2-en-1-yl)benzamide (*Z*-1m)

Colorless oil. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.78 – 7.71 (m, 2H), 7.52 – 7.46 (m, 1H), 7.45 – 7.39 (m, 2H), 6.06 (brs, 1H), 5.67 – 5.57 (m, 1H), 5.54 – 5.42 (m, 1H), 4.16 – 4.01 (m, 2H), 2.23 – 2.06 (m, 2H), 1.41 – 1.34 (m, 2H), 1.33 – 1.17 (m, 6H), 0.95 – 0.08 (m, 3H).



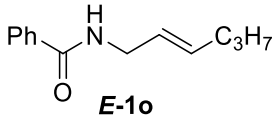
(*Z*)-*N*-(Dec-2-en-1-yl)benzamide (*Z*-1n)

Colorless oil. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.79 – 7.72 (m, 2H), 7.52 – 7.47 (m, 1H), 7.45 – 7.40 (m, 2H), 6.04 (brs, 1H), 5.62 (dddd, *J* = 10.9, 9.4, 3.3, 1.8 Hz, 1H), 5.54 – 5.45 (m, 1H), 4.10 (ddd, *J* = 6.8, 5.3, 1.4 Hz, 2H), 2.19 – 2.05 (m, 2H), 1.41 – 1.26 (m, 10H), 0.94 – 0.79 (m, 3H).



(*Z*)-*N*-(Hex-2-en-1-yl)benzamide (*Z*-1o)

White solid. **^{1}H NMR (400 MHz, $CDCl_3$)** δ 7.84 – 7.70 (m, 2H), 7.52 – 7.46 (m, 1H), 7.45 – 7.38 (m, 2H), 6.06 (brs, 1H), 5.67 – 5.58 (m, 1H), 5.56 – 5.46 (m, 1H), 4.10 (t, *J* = 6.2 Hz, 2H), 2.12 (q, *J* = 7.3 Hz, 2H), 1.42 (q, *J* = 7.4 Hz, 2H), 0.93 (t, *J* = 7.4 Hz, 3H).

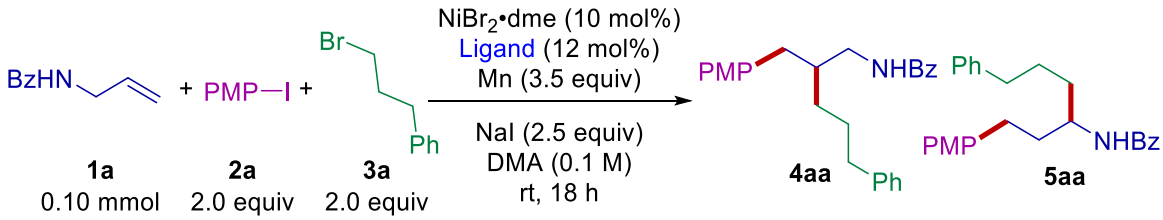


(*E*)-*N*-(Hex-2-en-1-yl)benzamide (*E*-1o)

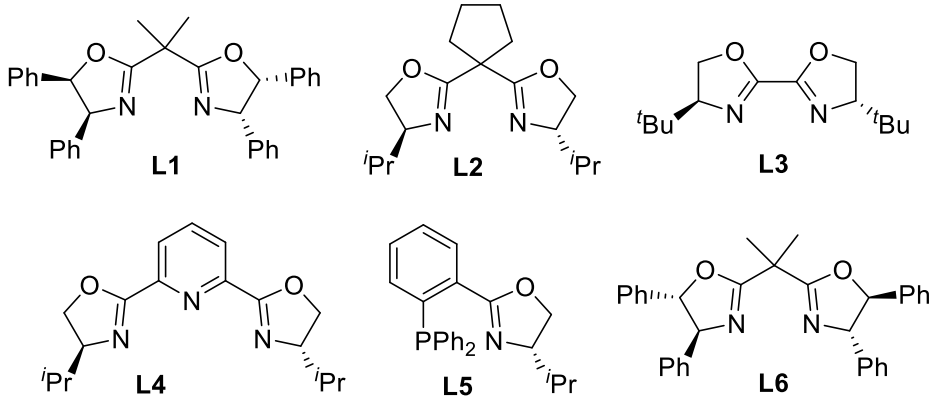
Colorless oil. **^{1}H NMR (600 MHz, $CDCl_3$)** δ 7.72 – 7.69 (m, 2H), 7.44 – 7.40 (m, 1H), 7.37 – 7.33 (m, 2H), 6.08 (brs, 1H), 5.66 – 5.60 (m, 1H), 5.51 – 5.45 (m, 1H), 3.98 – 3.94 (m, 2H), 2.00 – 1.91 (m, 2H), 1.33 (h, *J* = 7.4 Hz, 2H), 0.83 (t, *J* = 7.4 Hz, 3H).

III. Optimization of Reaction Parameters

Table S1. Optimization of ligand[a]

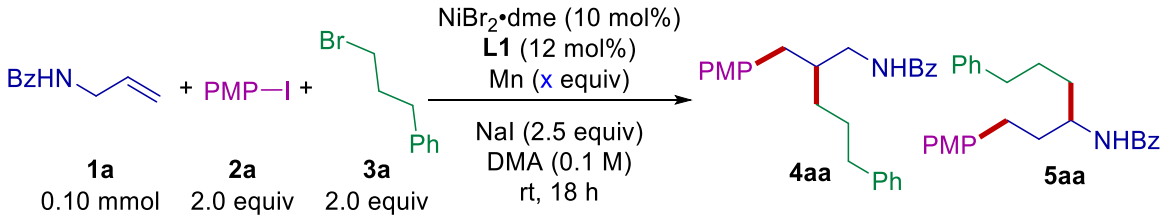


Entry	Ligand	RSM of **1a**	Yield of **4aa**	rr	ee of **4aa**
1	No Ligand	27%	32%	5:1	/
2	**L1**	0%	85% (82%)[b]	>20:1	4%
3	**L2**	0%	61%	>20:1	2%
4	**L3**	55%	16%	>20:1	5%
5	**L4**	37%	39%	>20:1	4%
6	**L5**	58%	25%	>20:1	2%
7	**L6**	0%	43%	3:1	13%
8	PCy_3	27%	34%	>20:1	/
9[c]	**L6**	0%	28%	1:1.4	0%



[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. The ee value was determined by HPLC on a chiral stationary phase. 'rr' = Regiomeric ratio of **4aa**/**5aa**. [b] Isolated yield. [c] 50 °C.

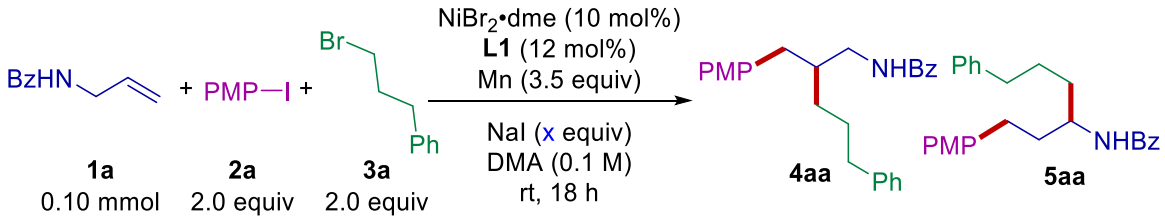
Table S2. Evaluation of loading of Mn for **4aa**[a]



Entry	Mn (x equiv)	RSM of **1a**	Yield of **4aa**	rr
1	2.5	0%	53%	>20:1
2	3.0	0%	71%	20:1
3	3.3	0%	76%	13:1
4	3.5	0%	83%	18:1
5	3.8	0%	81%	16:1
6	4.0	0%	83%	17:1
7	4.5	0%	77%	>20:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **4aa**/**5aa**.

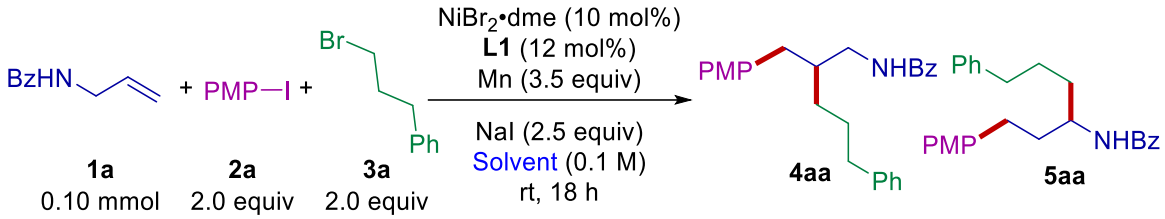
Table S3. Evaluation of loading of NaI for **4aa**[a]



Entry	NaI (x equiv)	RSM of **1a**	Yield of **4aa**	rr
1	0	0%	67%	5:1
2	1.0	0%	68%	10:1
3	2.3	0%	72%	10:1
4	2.5	0%	83%	15:1
5	3.0	0%	74%	18:1
6	3.5	0%	72%	11:1
7	4.0	0%	68%	12:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **4aa**/**5aa**.

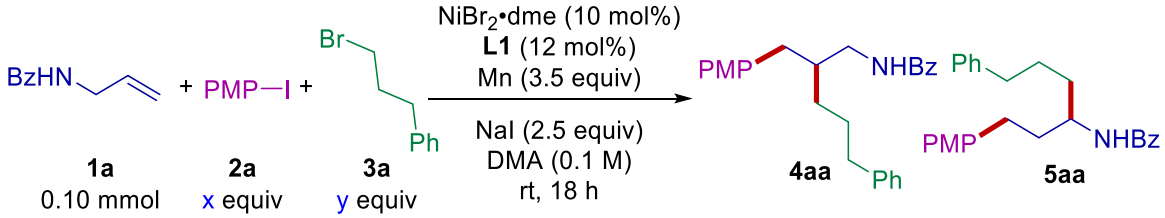
Table S4. Evaluation of Solvent for **4aa**[a]



Entry	Solvent	RSM of **1a**	Yield of **4aa**	rr
1	DMA	0%	83%	18:1
2	NMP	0%	61%	>20:1
3	IPA	0%	52%	>20:1
4	^{i}BuOH	67%	0%	/

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **4aa**/**5aa**.

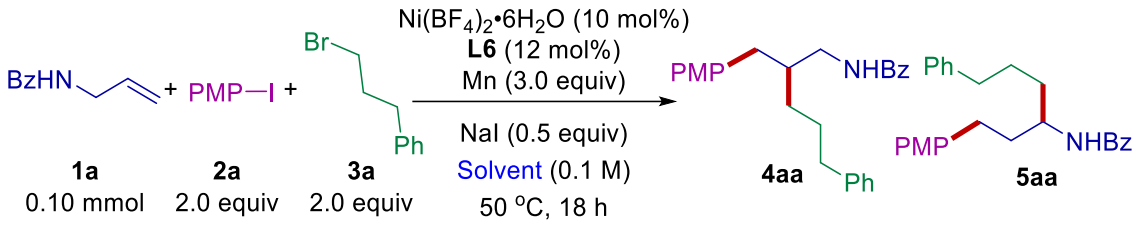
Table S5. Evaluation of loading of **2a** and **3a** for **4aa**[a]



Entry	**2a**:**3a** = x:y	RSM of **1a**	Yield of **4aa**	rr
1	1.5:1.5	0%	69%	>20:1
2	2.0:2.0	0%	85%	>20:1
3	2.5:2.5	0%	74%	>20:1
4	1.5:2.0	0%	66%	>20:1
5	1.5:2.5	0%	56%	>20:1
6	2.0:1.5	0%	70%	19:1
7	2.0:2.5	0%	72%	>20:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **4aa**/**5aa**.

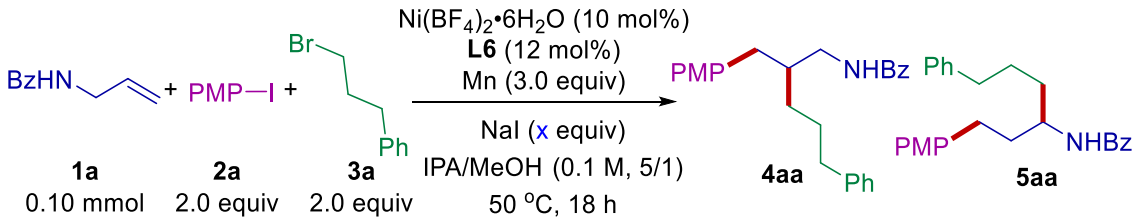
Table S6. Evaluation of solvent for **5aa**[a]



Entry	Solvent	RSM of **1a**	Yield of **5aa**	rr
1	DMA	56%	6%	>20:1
2	IPA	22%	49%	>20:1
3	MeOH	18%	28%	>20:1
4	IPA/MeOH (5/1)	0%	64%	>20:1
5	IPA/EtOH (5/1)	0%	67%	16:1
6	IPA/^{n}PrOH (5/1)	0%	50%	>20:1
7	^{n}BuOH/MeOH (5/1)	5%	50%	>20:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **5aa**/**4aa**.

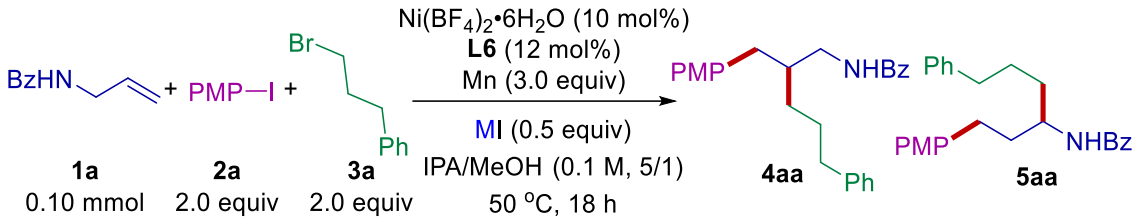
Table S7. Evaluation of loading of NaI for **5aa**[a]



Entry	NaI (x equiv)	RSM of **1a**	Yield of **5aa**	rr
1	0	0%	26%	9:1
2	0.2	0%	63%	>20:1
3	0.4	0%	63%	>20:1
4	0.5	0%	66%	>20:1
5	0.6	0%	66%	>20:1
6	0.7	0%	64%	>20:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **5aa**/**4aa**.

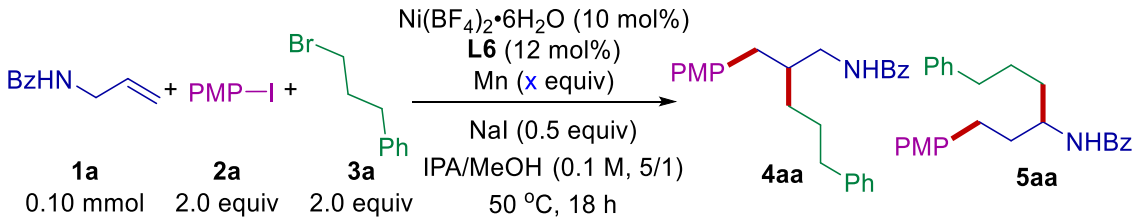
Table S8. Evaluation of iodine source for **5aa**[a]



Entry	MI	RSM of **1a**	Yield of **5aa**	rr
1	LiI	56%	6%	>20:1
2	NaI	0%	75%	18:1
3	KI	0%	61%	>20:1
4	RbI	0%	64%	>20:1
5	CdI_2	0%	66%	>20:1
6	CaI_2	30%	17%	>20:1
7	TEAI	0%	58%	8:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **5aa**/**4aa**.

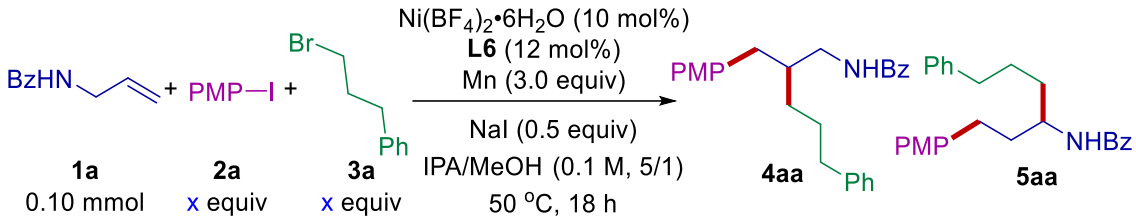
Table S9. Evaluation of loading of Mn for **5aa**[a]



Entry	Mn (x equiv)	RSM of **1a**	Yield of **5aa**	rr
1	1.5	0%	65%	>20:1
2	2.0	0%	69%	>20:1
3	2.5	0%	70%	>20:1
4	2.8	0%	71%	19:1
5	3.0	0%	75%	14:1
6	3.3	0%	70%	17:1
7	3.6	0%	72%	19:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **5aa**/**4aa**.

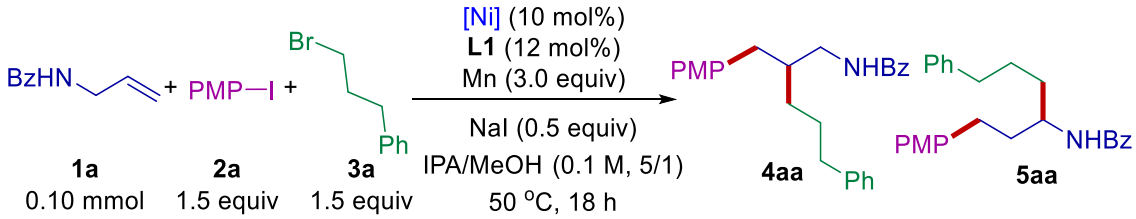
Table S10. Evaluation of loading of **2a** and **3a** for **5aa**[a]



Entry	**2a**:**3a** = x:y	RSM of **1a**	Yield of **5aa**	rr
1	1.5:1.5	0%	76% (72%)[b]	16:1
2	1.8:1.8	0%	70%	11:1
3	2.0:2.0	0%	70%	8:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **5aa**/**4aa**. [b] Isolated yield.

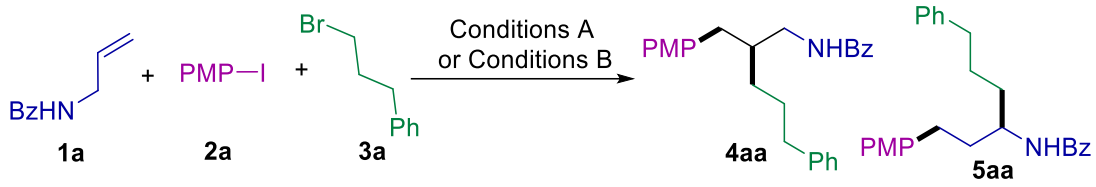
Table S11. Evaluation of catalyst for **5aa**[a]



Entry	[Ni]	RSM of **1a**	Yield of **5aa**	rr
1	$NiCl_2$·dme	0%	72%	12:1
2	$NiBr_2$·dme	0%	64%	9:1
3	NiI_2	0%	66%	>20:1
4	$NiBr_2$	80%	0%	/
5	$Ni(OAc)_2·4H_2O$	5%	54%	7:1
6	$NiBr_2$·diglyme	0%	62%	12:1
7	$Ni(BF_4)_2·6H_2O$	0%	75%	19:1

[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2a**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. 'rr' = Regiomeric ratio of **5aa**/**4aa.**

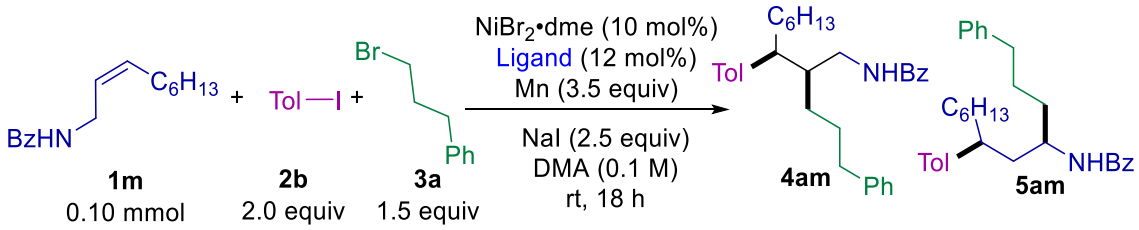
Table S12. Evaluation of reductant[a]



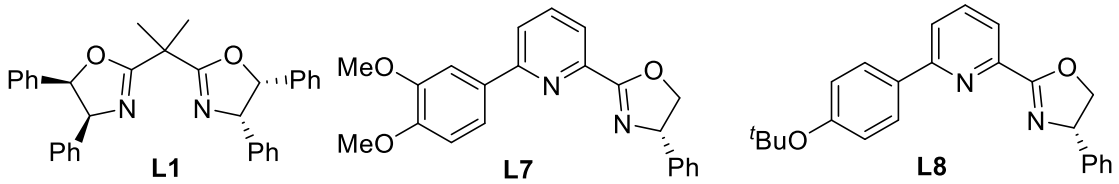
Entry	Reductant	Conditions	RSM of **1a**	Yield of **4aa**	Yield of **5aa**
1	Zn	Conditions A	47%	8%	0%
2	Fe	Conditions A	95%	0%	0%
3	Zn	Conditions B	0%	0%	7%
4	Fe	Conditions B	99%	0%	0%

[a] Reaction was run in 0.1 mmol scale. Conditions A: **1a** (0.10 mmol), **2a** (0.20 mmol), **3a** (0.20 mmol), $NiBr_2$·dme (10 mol%), **L1** (12 mol%), Mn (3.5 equiv), NaI (2.5 equiv), DMA (0.1 M) under rt for 18 h). Conditions B: **1a** (0.10 mmol), **2a** (0.15 mmol), **3a** (0.15 mmol) $Ni(BF_4)_2·6H_2O$ (10 mol%), **L6** (12 mol%), Mn (3.0 equiv), NaI (0.5 equiv), IPA/MeOH (5/1, 0.1 M) under 50 °C for 18 h). Yield was determined by GC analysis using *n*-dodecane as internal standard.

Table S13. Evaluation of ligand for non-terminal alkene[a]



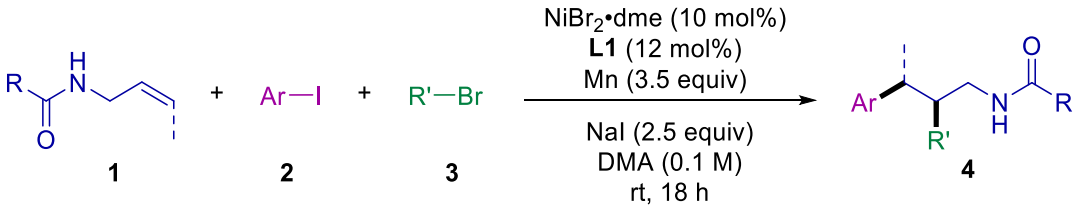
Entry	Ligand	RSM of **1a**	Yield of **4am**	dr	rr
1	L1	7%	15%	>20:1	>20:1
2	L7	7%	50% [c]	>20:1	>20:1
3	L8	10%	33%	>20:1	>20:1



[a] Reaction was run using 0.1 mmol of **1a**, 0.2 mmol of **2b**, and 0.2 mmol of **3a** under indicated conditions for 18 h. Yield was determined by GC analysis using *n*-dodecane as internal standard. [b] 'rr' = Regiomeric ratio of **4am**/**5am**. [c] Isolated yield.

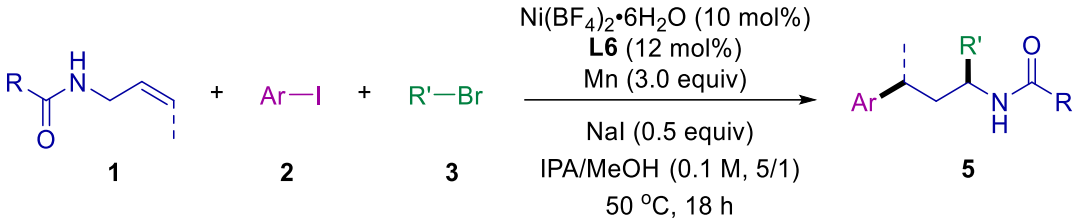
IV. General Procedures for Ni-Catalyzed Regiodivergent Arylalkylations of Allylic Amines

General procedure for Ni-catalyzed 1,2-arylalkylations of allylic amines



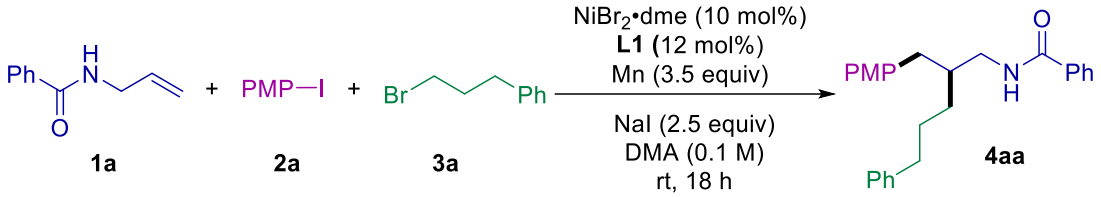
General Procedure C: In a nitrogen-filled glovebox, $NiBr_2$·dme (6.2 mg, 0.02 mmol, 10 mol%), **L1** (11.6 mg, 0.024 mmol, 12 mol%), aryl iodide **2** (0.40 mmol, 2.0 equiv, if **2** was solid), Mn (38.6 mg, 0.70 mmol, 3.5 equiv), NaI (75.0 mg, 0.50 mmol, 2.5 equiv) and DMA (2.0 mL) were added to a 10.0 mL vial equipped with a stirring bar. Then, **1** (0.20 mmol, 1.0 equiv), aryl iodide **2** (0.40 mmol, 2.0 equiv, if **2** was oil), and alkyl bromide **3** (0.40 mmol, 2.0 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried over anhydrous Na_2SO_4, filtered, concentrated. The residue was purified by flash chromatography to afford **4**.

General procedure for Ni-catalyzed 1,3-arylalkylations of allylic amines



General Procedure D: In a nitrogen-filled glovebox, $Ni(BF_4)_2$·$6H_2O$ (6.8 mg, 0.02 mmol, 10 mol%), **L6** (11.6 mg, 0.024 mmol, 12 mol%), aryl iodide **2** (0.30 mmol, 1.5 equiv, if **2** was solid), Mn (33.0 mg, 0.60 mmol, 3.0 equiv), NaI (15.0 mg, 0.10 mmol, 0.5 equiv), IPA (1.65 mL) and MeOH (0.35 mL) were added to a 10.0 mL vial equipped with a stirring bar. Then, **1** (0.20 mmol, 1.0 equiv), aryl iodide **2** (0.30 mmol, 1.5 equiv, if **2** was oil), and alkyl bromide **3** (0.30 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 °C for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried over anhydrous Na_2SO_4, filtered, concentrated. The residue was purified by flash chromatography to afford **5**.

V. Characterization of Products



***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)benzamide (4aa)**

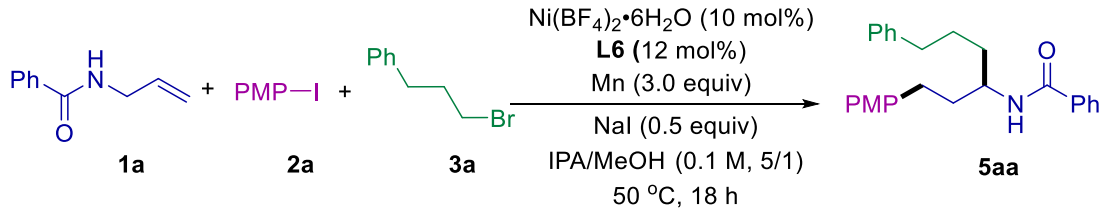
Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4aa** (63.1 mg, 82% yield, >20:1 rr, 4% ee) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49 (dd, *J* = 8.2, 1.5 Hz, 2H), 7.46 – 7.42 (m, 1H), 7.34 (dd, *J* = 8.2, 6.9 Hz, 2H), 7.27 – 7.21 (m, 2H), 7.20 – 7.13 (m, 3H), 7.08 (d, *J* = 8.6 Hz, 2H), 6.81 (d, *J* = 8.6 Hz, 2H), 5.95 – 5.86 (m, 1H), 3.76 (s, 3H), 3.52 (ddd, *J* = 13.7, 6.6, 5.4 Hz, 1H), 3.25 (ddd, *J* = 13.5, 7.1, 5.2 Hz, 1H), 2.70 (dd, *J* = 13.9, 5.9 Hz, 1H), 2.60 (t, *J* = 7.5 Hz, 2H), 2.49 (dd, *J* = 13.9, 8.2 Hz, 1H), 1.94 (dt, *J* = 13.2, 6.7 Hz, 1H), 1.73 (ddt, *J* = 10.4, 8.7, 3.2 Hz, 2H), 1.40 (dt, *J* = 9.5, 6.1 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 142.4, 134.7, 132.6, 131.4, 130.1, 128.55, 128.51, 128.4, 126.8, 125.9, 114.2, 55.4, 43.8, 40.6, 38.9, 36.1, 31.9, 28.6.

HR-MS (ESI) m/z calcd for $C_{26}H_{30}NO_2^+$ [M+H$^+$]: 388.2271, found 388.2269.

HPLC (CHIRALCEL OD-H, 80:20 hexane:isopropanol, 1.0 mL/min, 254 nm) retention time = 15.9 min (minor) and 20.8 min (major).



***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)benzamide (5aa)**

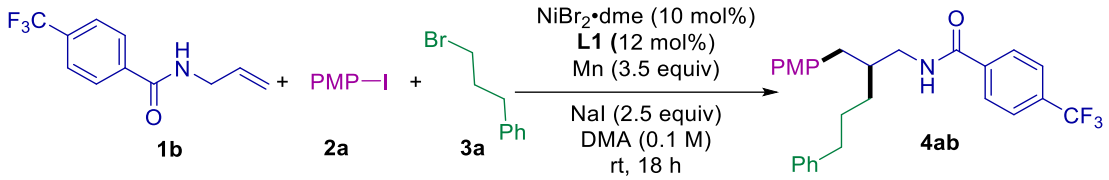
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5aa** (56.0 mg, 72% yield, 14:1 rr, 10% ee) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 – 7.53 (m, 2H), 7.46 – 7.39 (m, 1H), 7.37 – 7.28 (m, 2H), 7.23 – 7.15 (m, 2H), 7.13 – 7.04 (m, 3H), 7.04 – 6.97 (m, 2H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.73 (d, *J* = 9.3 Hz, 1H), 4.17 (dh, *J* = 8.6, 4.3 Hz, 1H), 3.68 (s, 3H), 2.64 – 2.46 (m, 4H), 1.88 – 1.76 (m, 1H), 1.72 – 1.66 (m, 2H), 1.61 – 1.55 (m, 2H), 1.52 – 1.42 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 157.9, 142.2, 134.9, 134.0, 131.5, 129.4, 128.64, 128.57, 128.4, 126.9, 125.9, 114.0, 55.4, 49.6, 37.3, 35.8, 35.0, 31.6, 27.9.

HR-MS (ESI) m/z calcd for $C_{26}H_{30}NO_2^+$ [M+H$^+$]: 388.2271, found 388.2267.

HPLC (CHIRALCEL OD-H, 80:20 hexane:isopropanol, 1.0 mL/min, 230 nm) retention time = 12.1 min (minor) and 14.7 min (major).



***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-4-(trifluoromethyl)benzamide (4ab)**

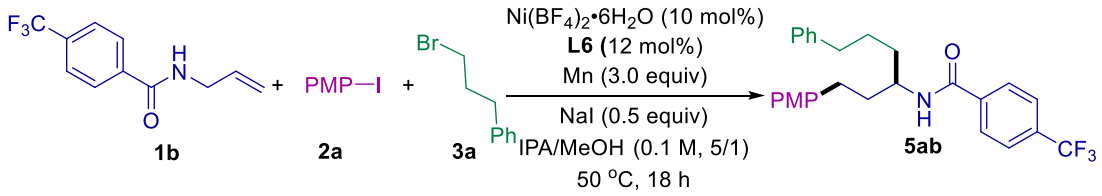
Following General Procedure C, *N*-allyl-4-(trifluoromethyl)benzamide (45.8 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ab** (71.8 mg, 79% yield, 17:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.55 – 7.49 (m, 2H), 7.44 (d, *J* = 8.2 Hz, 2H), 7.21 – 7.15 (m, 2H), 7.12 – 7.06 (m, 3H), 7.01 (d, *J* = 8.6 Hz, 2H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.81 (t, *J* = 5.9 Hz, 1H), 3.67 (s, 3H), 3.48 (ddd, *J* = 13.6, 6.7, 5.1 Hz, 1H), 3.15 (ddd, *J* = 13.6, 7.4, 5.0 Hz, 1H), 2.67 (dd, *J* = 13.9, 5.5 Hz, 1H), 2.54 (t, *J* = 7.5 Hz, 2H), 2.38 (dd, *J* = 13.9, 8.6 Hz, 1H), 1.88 (ddd, *J* = 13.5, 7.5, 5.5 Hz, 1H), 1.67 (ddt, *J* = 12.5, 10.3, 7.0 Hz, 2H), 1.36 – 1.26 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 165.9, 158.2, 142.3, 137.9, 132.5, 130.0, 128.5, 128.4, 127.3, 125.9, 125.5 (q, *J* = 3.7 Hz), 123.8 (q, *J* = 272.5 Hz), 114.2, 55.3, 44.2, 40.5, 39.1, 36.0, 32.1, 28.6.

^{19}F NMR (376 MHz, $CDCl_3$) δ -62.88.

HR-MS (ESI) m/z calcd for $C_{27}H_{29}F_3NO_2^+$ [M+H$^+$]: 456.2145, found 456.2142.



***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)-4-(trifluoromethyl)benzamide (5ab)**

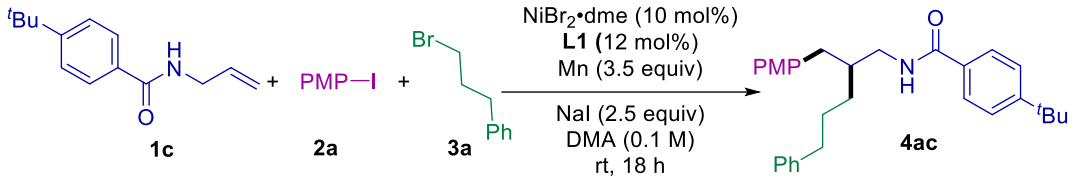
Following General Procedure D, *N*-allyl-4-(trifluoromethyl)benzamide (45.8 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ab** (66.2 mg, 73% yield, 12:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.73 (d, *J* = 8.9 Hz, 2H), 7.65 (d, *J* = 8.2 Hz, 2H), 7.36 – 7.23 (m, 2H), 7.19 – 7.13 (m, 3H), 7.11 – 7.01 (m, 2H), 6.80 (d, *J* = 8.6 Hz, 2H), 5.93 (d, *J* = 8.8 Hz, 1H), 4.26 (dt, *J* = 8.6, 4.4 Hz, 1H), 3.75 (s, 3H), 2.72 – 2.57 (m, 4H), 1.92 (ddt, *J* = 13.9, 7.9, 3.9 Hz, 1H), 1.85 – 1.77 (m, 1H), 1.72 – 1.61 (m, 4H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 165.9, 158.0, 142.1, 138.2, 133.8, 129.4, 128.6, 128.5, 127.4, 126.0, 125.7 (q, *J* = 3.7 Hz), 123.8 (q, *J* = 272.5 Hz), 114.1, 55.3, 50.0, 36.9, 35.7, 34.8, 31.5, 27.9.

^{19}F NMR (376 MHz, $CDCl_3$) δ -62.91.

HR-MS (ESI) m/z calcd for $C_{27}H_{29}F_3NO_2^+$ [M+H$^+$]: 456.2145, found 456.2144.



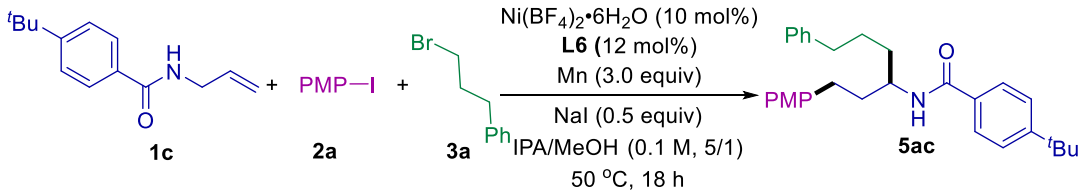
4-(*tert*-Butyl)-*N*-(2-(4-methoxybenzyl)-5-phenylpentyl)benzamide (4ac)

Following General Procedure C, *N*-allyl-4-(*tert*-butyl)benzamide (43.4 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 3:1) to give the product **4ac** (58.2 mg, 66% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.41 – 7.33 (m, 2H), 7.32 – 7.26 (m, 2H), 7.17 (ddd, *J* = 7.2, 5.6, 1.5 Hz, 2H), 7.12 – 7.04 (m, 3H), 7.00 (d, *J* = 8.6 Hz, 2H), 6.74 (d, *J* = 8.6 Hz, 2H), 5.83 (t, *J* = 5.9 Hz, 1H), 3.68 (s, 3H), 3.44 (ddd, *J* = 13.6, 6.6, 5.4 Hz, 1H), 3.22 – 3.12 (m, 1H), 2.60 (dd, *J* = 13.9, 6.0 Hz, 1H), 2.51 (t, *J* = 7.6 Hz, 2H), 2.42 (dd, *J* = 13.9, 8.0 Hz, 1H), 1.86 (p, *J* = 6.5 Hz, 1H), 1.71 – 1.59 (m, 2H), 1.37 – 1.27 (m, 2H), 1.24 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 158.1, 154.8, 142.4, 132.6, 131.8, 130.0, 128.5, 128.4, 126.7, 125.8, 125.4, 114.1, 55.3, 43.6, 40.5, 38.8, 36.1, 34.9, 31.8, 31.3, 28.6.

HR-MS (ESI) m/z calcd for $C_{30}H_{38}NO_2^+$ [M+H$^+$]: 444.2897, found 444.2894.



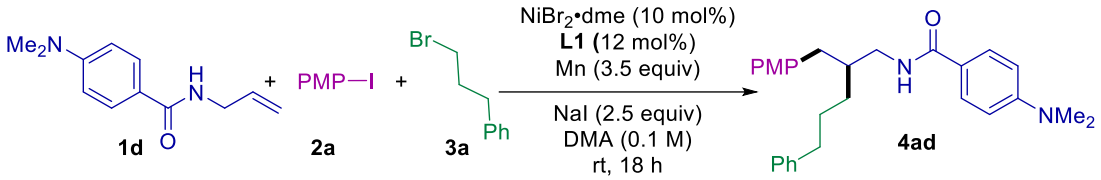
4-(*tert*-Butyl)-*N*-(1-(4-methoxyphenyl)-6-phenylhexan-3-yl)benzamide (5ac)

Following General Procedure D, *N*-allyl-4-(*tert*-butyl)benzamide (43.4 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **5ac** (80.6 mg, 91% yield, 11:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.58 (d, *J* = 8.4 Hz, 2H), 7.38 (d, *J* = 8.4 Hz, 2H), 7.24 – 7.18 (m, 2H), 7.14 – 7.07 (m, 3H), 7.03 (d, *J* = 8.6 Hz, 2H), 6.75 (d, *J* = 8.6 Hz, 2H), 5.75 (d, *J* = 9.2 Hz, 1H), 4.20 (dq, *J* = 8.6, 4.3 Hz, 1H), 3.71 (s, 3H), 2.58 (qd, *J* = 6.9, 3.9 Hz, 4H), 1.87 – 1.81 (m, 1H), 1.75 – 1.68 (m, 2H), 1.61 – 1.54 (m, 2H), 1.52 – 1.45 (m, 1H), 1.29 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.1, 157.9, 154.9, 142.3, 134.0, 132.1, 129.4, 128.6, 128.4, 126.8, 125.9, 125.6, 114.0, 55.3, 49.5, 37.4, 35.8, 35.1, 35.0, 31.6, 31.3, 27.8.

HR-MS (ESI) m/z calcd for $C_{30}H_{38}NO_2^+$ [M+H$^+$]: 444.2897, found 444.2898.



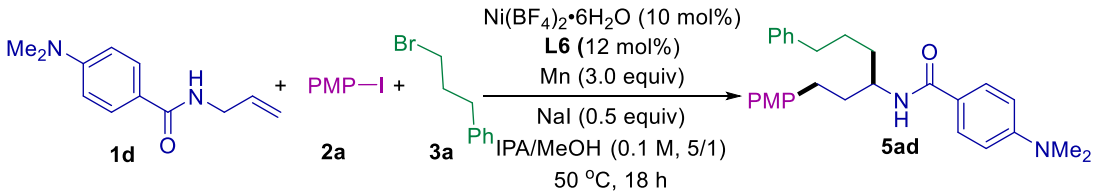
4-(Dimethylamino)-*N*-(2-(4-methoxybenzyl)-5-phenylpentyl)benzamide (4ad)

Following General Procedure C, *N*-allyl-4-(dimethylamino)benzamide (40.8 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 3:1) to give the product **4ad** (67.4 mg, 78% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 – 7.32 (m, 2H), 7.20 – 7.13 (m, 2H), 7.07 (ddd, *J* = 8.1, 6.9, 1.7 Hz, 2H), 7.02 – 6.95 (m, 2H), 6.90 (d, *J* = 21.7 Hz, 1H), 6.73 (d, *J* = 8.7 Hz, 2H), 6.51 (d, *J* = 9.0 Hz, 2H), 5.75 (t, *J* = 5.8 Hz, 1H), 3.68 (s, 3H), 3.45 – 3.37 (m, 1H), 3.15 (ddd, *J* = 13.6, 7.1, 5.2 Hz, 1H), 2.90 (s, 6H), 2.61 – 2.35 (m, 4H), 1.85 (d, *J* = 6.7 Hz, 1H), 1.64 (pd, *J* = 7.0, 2.2 Hz, 2H), 1.30 (dt, *J* = 8.9, 5.8 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.0, 152.4, 142.5, 132.7, 130.0, 128.5, 128.35, 128.30, 125.7, 121.5, 114.0, 111.0, 55.3, 43.5, 40.6, 40.2, 38.7, 36.1, 31.8, 28.6.

HR-MS (ESI) m/z calcd for $C_{28}H_{35}N_2O_2^+$ [M+H$^+$]: 431.2693, found 431.2692.



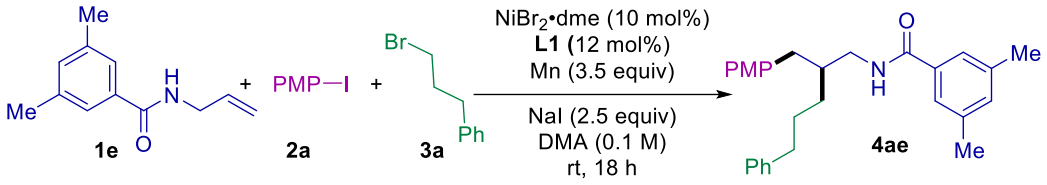
4-(Dimethylamino)-*N*-(1-(4-methoxyphenyl)-6-phenylhexan-3-yl)benzamide (5ad)

Following General Procedure D, *N*-allyl-4-(dimethylamino)benzamide (40.8 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **5ad** (72.6 mg, 84% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 (d, *J* = 8.9 Hz, 2H), 7.19 – 7.12 (m, 2H), 7.12 – 7.01 (m, 3H), 6.99 (d, *J* = 8.6 Hz, 2H), 6.71 (d, *J* = 8.6 Hz, 2H), 6.56 (d, *J* = 8.9 Hz, 2H), 5.67 (d, *J* = 9.2 Hz, 1H), 4.15 (qt, *J* = 8.8, 4.8 Hz, 1H), 3.67 (s, 3H), 2.91 (s, 6H), 2.61 – 2.44 (m, 4H), 1.83 – 1.75 (m, 1H), 1.68 – 1.48 (m, 4H), 1.45 – 1.32 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.1, 157.8, 152.5, 142.4, 134.2, 129.4, 128.6, 128.4, 125.8, 121.7, 113.9, 111.2, 55.3, 49.2, 40.2, 37.5, 35.8, 35.1, 31.6, 27.8.

HR-MS (ESI) m/z calcd for $C_{28}H_{35}N_2O_2^+$ [M+H$^+$]: 431.2693, found 431.2637.



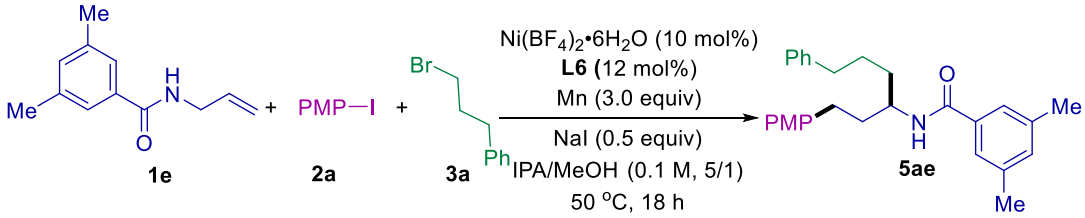
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-3,5-dimethylbenzamide (4ae)**

Following General Procedure C, *N*-allyl-3,5-dimethylbenzamide (37.8 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ae** (60.4 mg, 73% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.21 – 7.14 (m, 2H), 7.11 – 7.05 (m, 3H), 7.01 (d, *J* = 8.7 Hz, 5H), 6.74 (d, *J* = 8.6 Hz, 2H), 5.78 (t, *J* = 5.9 Hz, 1H), 3.67 (s, 3H), 3.46 (ddd, *J* = 13.7, 6.6, 5.1 Hz, 1H), 3.15 (ddd, *J* = 13.6, 7.3, 5.1 Hz, 1H), 2.62 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.52 (t, *J* = 7.6 Hz, 2H), 2.41 (dd, *J* = 13.8, 8.2 Hz, 1H), 2.22 (s, 6H), 1.86 (p, *J* = 6.8 Hz, 1H), 1.71 – 1.59 (m, 2H), 1.32 (dt, *J* = 9.9, 6.4 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.6, 158.1, 142.4, 138.2, 134.6, 132.9, 132.6, 130.0, 128.5, 128.4, 125.8, 124.6, 114.1, 55.2, 43.9, 40.5, 39.0, 36.1, 32.1, 28.6, 21.2.

HR-MS (ESI) m/z calcd for $C_{28}H_{34}NO_2^+$ [M+H$^+$]: 416.2584, found 416.2580.



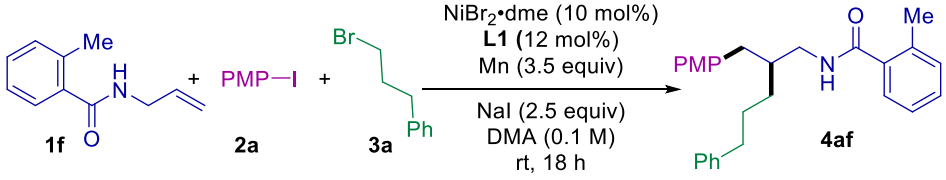
***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)-3,5-dimethylbenzamide (5ae)**

Following General Procedure D, *N*-allyl-3,5-dimethylbenzamide (37.8 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ae** (67.3 mg, 81% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.25 – 7.15 (m, 5H), 7.13 – 7.07 (m, 3H), 7.05 – 6.98 (m, 3H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.65 (d, *J* = 9.2 Hz, 1H), 4.18 (tq, *J* = 8.7, 4.5 Hz, 1H), 3.68 (s, 3H), 2.62 – 2.49 (m, 4H), 2.27 (s, 6H), 1.80 (d, *J* = 6.6 Hz, 1H), 1.71 – 1.61 (m, 3H), 1.46 (ddd, *J* = 12.9, 7.5, 5.6 Hz, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.5, 157.9, 142.3, 138.4, 134.9, 134.0, 133.0, 129.4, 128.6, 128.4, 125.9, 124.7, 114.0, 55.3, 49.5, 37.3, 35.8, 35.1, 31.6, 27.8, 21.4.

HR-MS (ESI) m/z calcd for $C_{28}H_{34}NO_2^+$ [M+H$^+$]: 416.2584, found 416.2581.



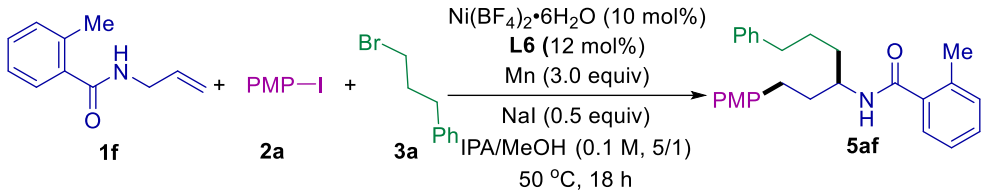
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-2-methylbenzamide (4af)**

Following General Procedure C, *N*-allyl-2-methylbenzamide (35.0 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4af** (52.1 mg, 65% yield, 9:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.22 – 7.14 (m, 3H), 7.11 – 7.05 (m, 5H), 7.04 – 7.02 (m, 1H), 6.98 (d, *J* = 8.6 Hz, 2H), 6.72 (d, *J* = 8.6 Hz, 2H), 5.50 (t, *J* = 5.9 Hz, 1H), 3.68 (s, 3H), 3.36 (dt, *J* = 13.5, 6.2 Hz, 1H), 3.19 (ddd, *J* = 13.6, 6.5, 5.5 Hz, 1H), 2.57 – 2.38 (m, 4H), 2.31 (s, 3H), 1.87 – 1.75 (m, 1H), 1.71 – 1.58 (m, 2H), 1.36 – 1.24 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.1, 158.1, 142.3, 136.7, 136.1, 132.3, 131.0, 130.0, 129.8, 128.5, 128.4, 126.6, 125.8, 125.7, 114.0, 55.3, 43.0, 40.5, 38.3, 36.1, 31.4, 28.5, 19.9.

HR-MS (ESI) m/z calcd for $C_{27}H_{32}NO_2^+$ [M+H$^+$]: 402.2428, found 402.2425.



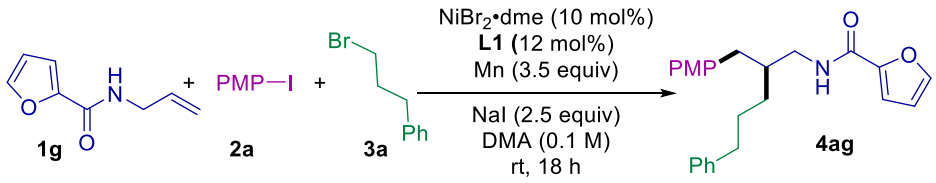
***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)-2-methylbenzamide (5af)**

Following General Procedure D, *N*-allyl-2-methylbenzamide (35.0 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5af** (57.6 mg, 72% yield, 4:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.24 – 7.16 (m, 5H), 7.13 – 7.07 (m, 4H), 7.02 (d, *J* = 8.6 Hz, 2H), 6.74 (d, *J* = 8.6 Hz, 2H), 5.41 (d, *J* = 9.4 Hz, 1H), 4.14 (tt, *J* = 8.8, 4.2 Hz, 1H), 3.69 (s, 3H), 2.56 (ddt, *J* = 16.2, 9.0, 4.6 Hz, 4H), 2.37 (s, 3H), 1.77 (tdd, *J* = 11.7, 6.0, 3.4 Hz, 1H), 1.62 – 1.53 (m, 4H), 1.48 – 1.38 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 169.9, 158.0, 142.2, 137.1, 136.0, 133.9, 131.1, 129.8, 129.4, 128.55, 128.45, 126.5, 125.9, 125.8, 114.0, 55.4, 49.2, 37.6, 35.7, 35.0, 31.7, 27.9, 19.9.

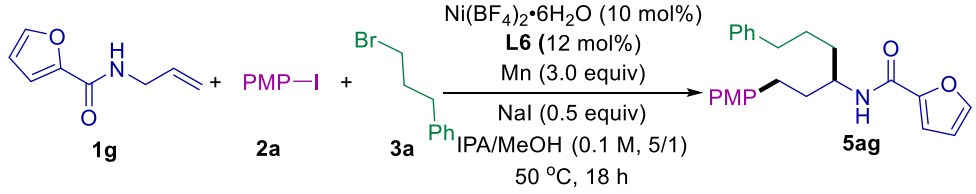
HR-MS (ESI) m/z calcd for $C_{27}H_{32}NO_2^+$ [M+H$^+$]: 402.2428, found 402.2415.



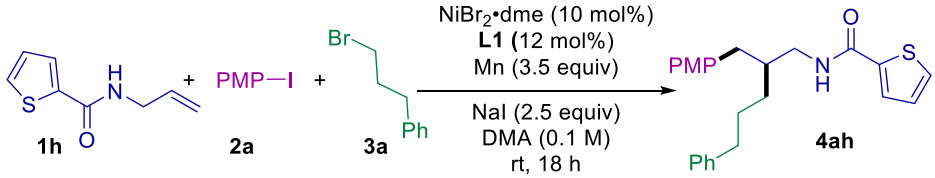
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)furan-2-carboxamide (4ag)**

Following General Procedure C, *N*-allylfuran-2-carboxamide (30.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ag** (40.9 mg, 54% yield, 7:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.38 (dd, *J* = 1.7, 0.9 Hz, 1H), 7.27 – 7.22 (m, 2H), 7.16 (ddd, *J* = 8.1, 6.9, 1.6 Hz, 3H), 7.09 – 7.00 (m, 3H), 6.86 – 6.77 (m, 2H), 6.47 (dd, *J* = 3.5, 1.8 Hz, 1H), 6.14 (s, 1H), 3.78 (s, 3H), 3.48 – 3.37 (m, 1H), 3.27 (ddd, *J* = 13.7, 6.6, 5.7 Hz, 1H), 2.69 – 2.57 (m, 3H), 2.51 (dd, *J* = 13.9, 7.8 Hz, 1H), 1.92 (p, *J* = 6.3 Hz, 1H), 1.75 – 1.66 (m, 2H), 1.39 (dt, *J* = 9.3, 6.5 Hz, 2H).
^{13}C NMR (101 MHz, $CDCl_3$) δ 158.5, 158.1, 148.2, 143.7, 142.4, 132.3, 130.0, 128.5, 128.4, 125.8, 114.04, 114.98, 112.2, 55.4, 42.4, 40.5, 38.3, 36.1, 31.5, 28.6.
HR-MS (ESI) m/z calcd for $C_{24}H_{28}NO_3^+$ [M+H$^+$]: 378.2064, found 378.2061.

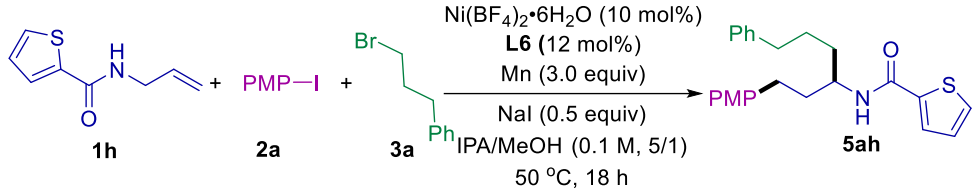


***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)furan-2-carboxamide (5ag)**
Following General Procedure D, *N*-allylfuran-2-carboxamide (30.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ag** (46.4 mg, 61% yield, 5:1 rr) as a colorless oil.
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34 (ddd, *J* = 5.1, 1.8, 0.9 Hz, 1H), 7.23 – 7.13 (m, 2H), 7.12 – 7.06 (m, 3H), 7.03 – 6.96 (m, 3H), 6.72 (d, *J* = 8.6 Hz, 2H), 6.42 (dd, *J* = 3.5, 1.7 Hz, 1H), 5.98 (d, *J* = 9.3 Hz, 1H), 4.11 (tt, *J* = 8.8, 4.3 Hz, 1H), 3.69 (s, 3H), 2.63 – 2.44 (m, 4H), 1.84 – 1.76 (m, 1H), 1.64 – 1.51 (m, 3H), 1.48 – 1.40 (m, 1H), 1.21 (t, *J* = 7.8 Hz, 1H).
^{13}C NMR (101 MHz, $CDCl_3$) δ 157.9, 148.2, 143.7, 142.2, 133.9, 129.4, 128.6, 128.4, 125.9, 114.2, 113.9, 112.3, 55.3, 48.8, 37.5, 35.7, 35.1, 31.5, 27.8.
HR-MS (ESI) m/z calcd for $C_{24}H_{27}NO_3Na^+$ [M+Na$^+$]: 400.1883, found 400.1882.

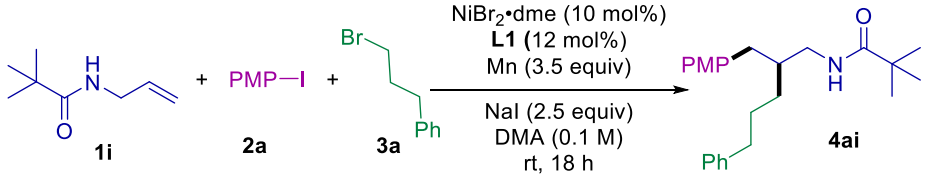


***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)thiophene-2-carboxamide (4ah)**
Following General Procedure C, *N*-allylthiophene-2-carboxamide (33.4 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ah** (51.8 mg, 66% yield, 6:1 rr) as a colorless oil.
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34 (dd, *J* = 5.0, 1.2 Hz, 1H), 7.21 – 7.14 (m, 2H), 7.12 – 7.06 (m, 4H), 7.01 (d, *J* = 8.6 Hz, 2H), 6.93 (dd, *J* = 5.0, 3.7 Hz, 1H), 6.75 (d, *J* = 8.6 Hz, 2H), 5.64 (t, *J* = 5.8 Hz, 1H), 3.70 (s, 3H), 3.42 (ddd, *J* = 13.6, 6.6, 5.3 Hz, 1H), 3.20 – 3.11 (m, 1H), 2.62 (dd, *J* = 13.9, 5.9 Hz, 1H), 2.53 (t, *J* = 7.6 Hz, 2H), 2.41 (dd, *J* = 13.9, 8.2 Hz, 1H), 1.86 (p, *J* = 6.5 Hz, 1H), 1.66 (td, *J* = 7.6, 4.0 Hz, 2H), 1.32 (dt, *J* = 9.0, 6.0 Hz, 2H).

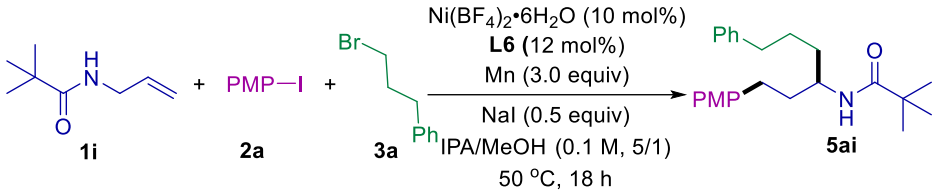
^{13}C NMR (101 MHz, $CDCl_3$) δ 161.8, 158.2, 142.4, 139.3, 132.5, 130.0, 129.8, 128.6, 128.4, 127.7, 127.5, 125.9, 114.2, 55.4, 43.7, 40.6, 38.8, 36.1, 31.9, 28.6.
HR-MS (ESI) m/z calcd for $C_{24}H_{28}NO_2S^+$ [M+H$^+$]: 394.1835, found 394.1834.



***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)thiophene-2-carboxamide (5ah)**
Following General Procedure D, *N*-allylthiophene-2-carboxamide (33.4 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ah** (57.2 mg, 73% yield, >20:1 rr) as a colorless oil.
^{1}H NMR (600 MHz, $CDCl_3$) δ 7.38 (dd, *J* = 5.0, 1.1 Hz, 1H), 7.30 (dd, *J* = 3.7, 1.2 Hz, 1H), 7.21 – 7.16 (m, 2H), 7.12 – 7.05 (m, 3H), 7.02 – 6.93 (m, 3H), 6.72 (d, *J* = 8.6 Hz, 2H), 5.56 (d, *J* = 9.1 Hz, 1H), 4.12 (tt, *J* = 8.7, 4.0 Hz, 1H), 3.69 (s, 3H), 2.62 – 2.45 (m, 4H), 1.87 – 1.77 (m, 1H), 1.72 – 1.53 (m, 4H), 1.51 – 1.40 (m, 1H).
^{13}C NMR (151 MHz, $CDCl_3$) δ 161.6, 158.0, 142.2, 139.4, 133.9, 129.8, 129.4, 128.6, 128.5, 127.8, 127.7, 125.9, 114.0, 55.4, 49.7, 37.3, 35.7, 35.0, 31.6, 27.8.
HR-MS (ESI) m/z calcd for $C_{24}H_{28}NO_2S^+$ [M+H$^+$]: 394.1835, found 394.1834.



***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)pivalamide (4ai)**
Following General Procedure C, *N*-allylpivalamide (28.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ai** (60.1 mg, 82% yield, 10:1 rr) as a colorless oil.
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.31 – 7.23 (m, 2H), 7.21 – 7.14 (m, 3H), 7.07 (d, *J* = 8.6 Hz, 2H), 6.84 (d, *J* = 8.6 Hz, 2H), 5.41 (t, *J* = 5.9 Hz, 1H), 3.79 (s, 3H), 3.32 (ddd, *J* = 13.6, 6.4, 5.4 Hz, 1H), 3.07 (ddd, *J* = 13.6, 6.9, 5.2 Hz, 1H), 2.68 – 2.58 (m, 3H), 2.43 (dd, *J* = 13.8, 8.0 Hz, 1H), 1.83 (p, *J* = 6.6 Hz, 1H), 1.78 – 1.66 (m, 2H), 1.40 – 1.29 (m, 2H), 1.07 (s, 9H).
^{13}C NMR (151 MHz, $CDCl_3$) δ 178.3, 158.2, 142.4, 132.6, 130.0, 128.5, 128.4, 125.8, 114.1, 55.4, 43.2, 40.5, 38.7, 38.7, 36.1, 31.8, 28.6, 27.6.
HR-MS (ESI) m/z calcd for $C_{24}H_{34}NO_2^+$ [M+H$^+$]: 368.2584, found 368.2581.



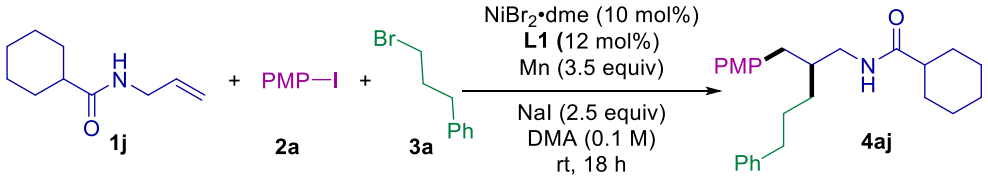
***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)pivalamide (5ai)**

Following General Procedure D, *N*-allylpivalamide (28.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ai** (62.6 mg, 85% yield, 14:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 – 7.25 (m, 3H), 7.17 (dd, *J* = 7.6, 6.0 Hz, 2H), 7.08 (dd, *J* = 8.5, 3.9 Hz, 2H), 6.83 (d, *J* = 8.6 Hz, 2H), 5.35 – 5.29 (m, 1H), 4.04 (qt, *J* = 8.8, 4.8 Hz, 1H), 3.78 (s, 3H), 2.67 – 2.49 (m, 4H), 1.82 – 1.74 (m, 1H), 1.69 – 1.60 (m, 3H), 1.59 – 1.50 (m, 1H), 1.47 – 1.36 (m, 1H), 1.19 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 178.0, 157.9, 142.3, 134.0, 129.3, 128.5, 128.4, 125.8, 114.0, 55.3, 48.6, 38.8, 37.5, 35.7, 34.8, 31.5, 27.75, 27.72.

HR-MS (ESI) m/z calcd for $C_{24}H_{34}NO_2^+$ [M+H$^+$]: 368.2584, found 368.2583.



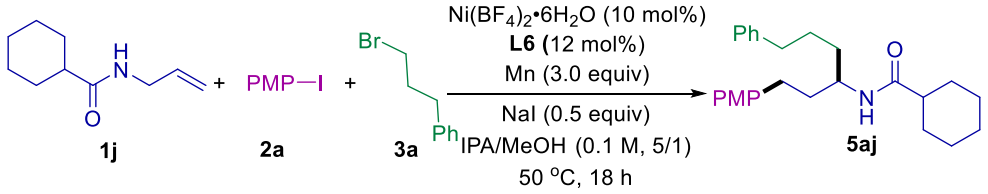
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)cyclohexanecarboxamide (4aj)**

Following General Procedure C, *N*-allylcyclohexanecarboxamide (33.4 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4aj** (69.0 mg, 88% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.29 – 7.22 (m, 2H), 7.19 – 7.12 (m, 3H), 7.04 (d, *J* = 8.6 Hz, 2H), 6.82 (d, *J* = 8.7 Hz, 2H), 5.23 (t, *J* = 5.9 Hz, 1H), 3.78 (s, 3H), 3.27 (dt, *J* = 13.5, 6.1 Hz, 1H), 3.06 (ddd, *J* = 13.6, 6.8, 5.4 Hz, 1H), 2.63 – 2.52 (m, 3H), 2.43 (dd, *J* = 13.9, 7.8 Hz, 1H), 1.89 (tt, *J* = 8.2, 3.3 Hz, 1H), 1.80 – 1.60 (m, 7H), 1.33 – 1.18 (m, 8H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 176.0, 158.1, 142.4, 132.5, 130.0, 128.6, 128.4, 125.8, 114.0, 55.4, 45.7, 42.7, 40.4, 38.5, 36.1, 31.4, 29.8, 28.5, 25.9, 25.8.

HR-MS (ESI) m/z calcd for $C_{26}H_{36}NO_2^+$ [M+H$^+$]: 394.2741, found 394.2738.



***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)cyclohexanecarboxamide (5aj)**

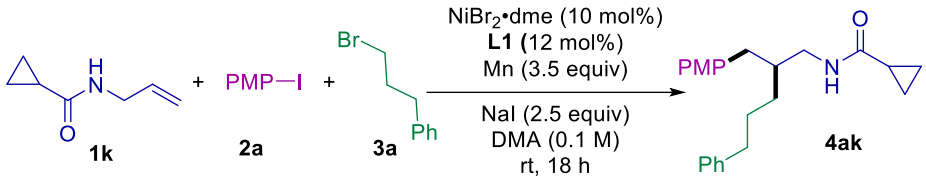
Following General Procedure D, *N*-allylcyclohexanecarboxamide (33.4 mg, 0.2

mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5aj** (54.4 mg, 69% yield, 12:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.35 – 7.24 (m, 2H), 7.21 – 7.12 (m, 3H), 7.08 (d, *J* = 8.6 Hz, 2H), 6.82 (d, *J* = 8.6 Hz, 2H), 5.19 (d, *J* = 9.3 Hz, 1H), 4.04 (qt, *J* = 9.0, 4.8 Hz, 1H), 3.78 (s, 3H), 2.69 – 2.49 (m, 4H), 2.08 – 2.00 (m, 1H), 1.83 – 1.74 (m, 5H), 1.65 (ddd, *J* = 14.5, 8.6, 6.6 Hz, 3H), 1.58 – 1.50 (m, 1H), 1.46 – 1.38 (m, 3H), 1.31 – 1.18 (m, 4H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 175.8, 157.9, 142.3, 134.1, 129.3, 128.5, 128.4, 125.8, 113.9, 55.3, 48.4, 45.9, 37.5, 35.7, 34.9, 31.5, 30.0, 29.9, 27.7, 25.9.

HR-MS (ESI) m/z calcd for $C_{26}H_{36}NO_2^+$ [M+H$^+$]: 394.2741, found 394.2738.



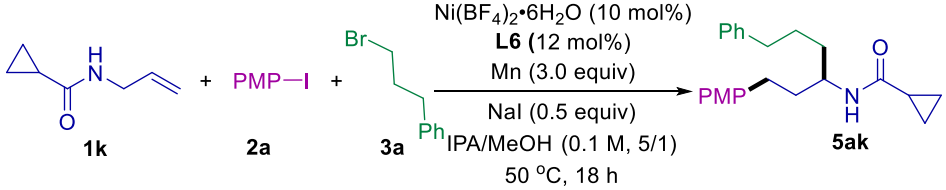
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)cyclopropanecarboxamide (4ak)**

Following General Procedure C, *N*-allylcyclopropanecarboxamide (25.0 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ak** (43.5 mg, 62% yield, 9:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.23 – 7.14 (m, 2H), 7.12 – 7.03 (m, 3H), 6.96 (d, *J* = 8.5 Hz, 2H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.48 (t, *J* = 6.0 Hz, 1H), 3.69 (s, 3H), 3.18 (dt, *J* = 12.8, 6.1 Hz, 1H), 3.03 (dd, *J* = 13.4, 6.3 Hz, 1H), 2.48 (q, *J* = 6.7, 5.9 Hz, 3H), 2.39 (dd, *J* = 13.9, 7.4 Hz, 1H), 1.73 (p, *J* = 6.5 Hz, 1H), 1.60 (tq, *J* = 12.2, 5.4, 3.9 Hz, 2H), 1.30 – 1.17 (m, 2H), 1.10 (tt, *J* = 8.0, 4.5 Hz, 1H), 0.82 (dt, *J* = 6.6, 3.4 Hz, 2H), 0.58 (dq, *J* = 7.1, 3.9 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 158.0, 142.4, 132.5, 130.0, 128.5, 128.3, 125.8, 113.9, 55.3, 43.0, 40.3, 38.1, 36.0, 31.2, 28.4, 14.7, 7.0.

HR-MS (ESI) m/z calcd for $C_{23}H_{30}NO_2S^+$ [M+H$^+$]: 352.2271, found 352.2268.



***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)cyclopropanecarboxamide (5ak)**

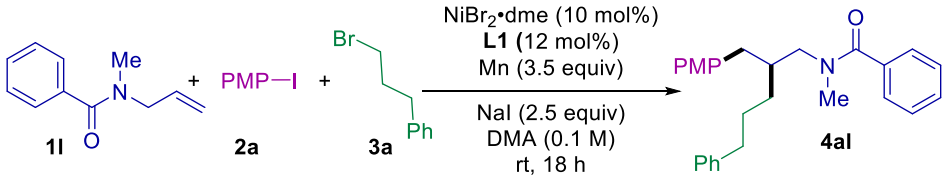
Following General Procedure D, *N*-allylcyclopropanecarboxamide (12.5 mg, 0.1 mmol), 4-iodoanisole (35.1 mg, 0.15 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 28.7 mg, 0.15 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ak** (27.5 mg, 78% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.23 – 7.18 (m, 2H), 7.11 – 7.07 (m, 3H), 7.00 (d, *J* =

8.5 Hz, 2H), 6.74 (d, *J* = 8.6 Hz, 2H), 5.24 (d, *J* = 9.2 Hz, 1H), 3.96 (tt, *J* = 8.7, 3.9 Hz, 1H), 3.70 (s, 3H), 2.51 (dddd, *J* = 20.8, 17.2, 13.4, 7.1 Hz, 4H), 1.73 – 1.66 (m, 1H), 1.60 – 1.54 (m, 3H), 1.51 – 1.42 (m, 1H), 1.38 – 1.32 (m, 1H), 1.23 – 1.11 (m, 1H), 0.89 (tt, *J* = 4.5, 2.7 Hz, 2H), 0.68 – 0.57 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 173.2, 157.9, 142.4, 134.1, 129.4, 128.6, 128.4, 125.9, 113.9, 55.4, 49.1, 37.6, 35.8, 35.1, 31.6, 27.8, 15.0, 7.14, 7.12.

HR-MS (ESI) m/z calcd for $C_{23}H_{29}NO_2SNa^+$ [M+Na$^+$]: 374.2091, found 374.2088.



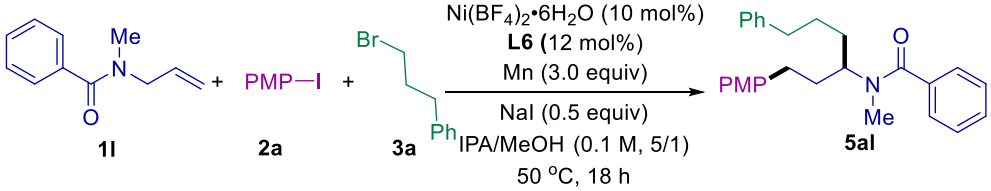
***N*-(-(2-(4-Methoxybenzyl)-5-phenylpentyl)-*N*-methylbenzamide (4al)**

Following General Procedure C, *N*-allyl-*N*-methylbenzamide (35.0 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4al** (54.5 mg, 68% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 – 7.32 (m, 4H), 7.28 – 7.23 (m, 3H), 7.21 – 7.04 (m, 4H), 6.92 – 6.75 (m, 3H), 3.79 (s, 3H), 3.64 – 3.35 (m, 1H), 3.28 – 3.09 (m, 1H), 3.04 – 2.71 (m, 3H), 2.65 – 2.44 (m, 3H), 2.35 – 2.10 (m, 1H), 1.93 – 1.61 (m, 2H), 1.41 (s, 2H), 1.26 – 1.07 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 158.0, 136.9, 130.0, 129.9, 129.8, 129.4, 128.6, 128.4, 127.1, 127.0, 125.8, 113.9, 55.4, 55.2, 51.3, 38.0, 37.8, 36.2, 31.1, 28.4.

HR-MS (ESI) m/z calcd for $C_{27}H_{32}NO_2^+$ [M+H$^+$]: 402.2428, found 402.2422.



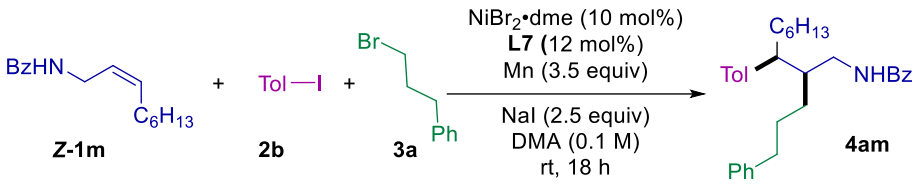
***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)-*N*-methylbenzamide (5al)**

Following General Procedure D, *N*-allyl-*N*-methylbenzamide (35.0 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5al** (34.5 mg, 43% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42 – 7.33 (m, 4H), 7.30 – 7.23 (m, 3H), 7.21 – 7.16 (m, 2H), 7.14 – 7.07 (m, 2H), 6.97 (d, *J* = 8.5 Hz, 1H), 6.80 (dd, *J* = 18.0, 8.6 Hz, 2H), 3.78 (s, 3H), 3.70 – 3.49 (m, 1H), 2.90 (s, 1H), 2.67 (s, 2H), 2.62 – 2.50 (m, 2H), 2.41 (td, *J* = 9.2, 6.7 Hz, 1H), 1.87 – 1.68 (m, 2H), 1.64 (s, 1H), 1.57 – 1.44 (m, 3H), 1.32 – 1.21 (m, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 158.2, 134.8, 132.8, 131.7, 131.4, 130.9, 130.1, 128.5, 126.8, 124.8, 123.8, 114.2, 55.4, 44.0, 40.8, 39.1, 32.7, 29.2, 26.9, 18.1, 12.9.

HR-MS (ESI) m/z calcd for $C_{27}H_{35}N_2O_2^+$ [M+NH$_4^+$]: 419.2693, found 419.2747.



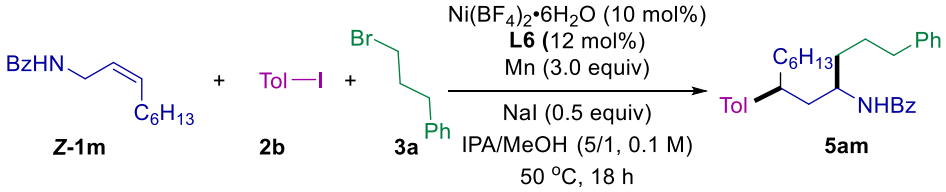
***N*-2-(3-Phenylpropyl)-3-(*p*-tolyl)nonyl)benzamide (4am)**

Following General Procedure C, $NiBr_2$·dme (3.1 mg, 0.01 mmol, 10 mol%), **L7** (4.3 mg, 0.012 mmol, 12 mol%), *(Z)-N*-(non-2-en-1-yl)benzamide (24.5 mg, 0.1 mmol), 4-iodotoluene (43.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 39.6 mg, 0.2 mmol), Mn (19.3 mg, 0.35 mmol), NaI (37.5 mg, 0.50 mmol) and DMA (1.0 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4am** (22.8 mg, 50% yield, >20:1 dr, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 – 7.31 (m, 3H), 7.30 – 7.23 (m, 2H), 7.17 (d, *J* = 6.4 Hz, 2H), 7.12 – 7.08 (m, 3H), 7.04 (d, *J* = 7.9 Hz, 2H), 6.98 (d, *J* = 8.0 Hz, 2H), 5.36 (t, *J* = 5.9 Hz, 1H), 3.26 (t, *J* = 5.8 Hz, 2H), 2.56 (td, *J* = 7.4, 2.1 Hz, 2H), 2.41 (ddd, *J* = 11.4, 7.7, 4.2 Hz, 1H), 2.25 (s, 3H), 1.78 – 1.60 (m, 5H), 1.49 – 1.43 (m, 1H), 1.40 – 1.31 (m, 1H), 1.17 – 1.06 (m, 6H), 1.02 – 0.94 (m, 2H), 0.77 (t, *J* = 7.0 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.0, 142.5, 140.7, 136.1, 134.7, 131.2, 129.5, 128.6, 128.44, 128.42, 126.8, 125.8, 48.1, 44.2, 41.8, 36.2, 33.2, 31.8, 30.0, 29.5, 28.3, 27.8, 22.8, 21.1, 14.2.

HR-MS (ESI) m/z calcd for $C_{32}H_{41}NONa^+$ [M+Na^+]: 478.3080, found 478.3080.



***N*-(1-Phenyl-6-(*p*-tolyl)dodecan-4-yl)benzamide (5am)**

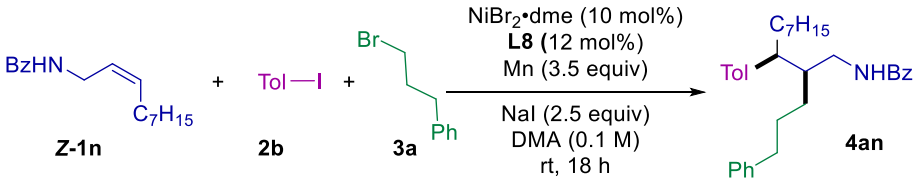
Following General Procedure D, $Ni(BF_4)_2$·$6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.8 mg, 0.012 mmol, 12 mol%), *(Z)-N*-(non-2-en-1-yl)benzamide (24.5 mg, 0.1 mmol), 4-iodotoluene (43.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 29.7 mg, 0.15 mmol), Mn (16.5 mg, 0.3 mmol), NaI (7.5 mg, 0.05 mmol), MeOH (0.17 mL) and IPA (0.83 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5am** (25.6 mg, 56% yield, >20:1 dr, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.44 (dd, *J* = 11.5, 7.2 Hz, 2H), 7.34 (d, *J* = 15.4 Hz, 2H), 7.28 – 7.22 (m, 3H), 7.15 (dd, *J* = 14.1, 7.1 Hz, 3H), 7.06 – 6.96 (m, 4H), 5.49 (d, *J* = 8.7 Hz, 1H), 4.14 (ddt, *J* = 15.9, 11.3, 5.6 Hz, 1H), 2.64 – 2.48 (m, 3H), 2.23 (s, 3H), 1.86 (dt, *J* = 14.1, 5.3 Hz, 1H), 1.78 (dt, *J* = 14.2, 8.8 Hz, 1H), 1.64 (tdd, *J* = 10.2, 6.0, 3.5 Hz, 4H), 1.48 (tt, *J* = 8.3, 3.6 Hz, 2H), 1.29 – 1.24 (m, 2H), 1.21 (q, *J* = 6.6 Hz, 2H), 1.15 (d, *J* = 8.5 Hz, 2H), 1.10 – 1.02 (m, 2H), 0.82 (t, *J* = 7.1 Hz, 3H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 166.9, 142.9, 142.4, 135.6, 134.9, 131.2, 129.4, 128.6, 128.44, 128.42, 127.4, 126.8, 125.9, 49.3, 43.4, 42.2, 37.7, 35.9, 35.4, 31.9, 29.4, 27.6,

27.4, 22.8, 21.1, 14.2.

HR-MS (ESI) m/z calcd for $C_{32}H_{41}NO_2Na^+$ [M+Na$^+$]: 478.3080, found 478.3079.



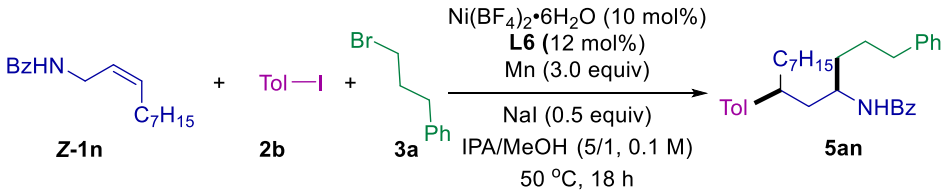
***N*-2-(3-Phenylpropyl)-3-(*p*-tolyl)decyl)benzamide (4an)**

Following General Procedure C, $NiBr_2$·dme (3.1 mg, 0.01 mmol, 10 mol%), **L8** (4.6 mg, 0.012 mmol, 12 mol%), *(Z)*-*N*-(dec-2-en-1-yl)benzamide (25.9 mg, 0.1 mmol), 4-iodotoluene (43.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (30.0 μL, 39.6 mg, 0.2 mmol), Mn (19.3 mg, 0.35 mmol), NaI (37.5 mg, 0.25 mmol) and DMA (1.0 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4an** (23.9 mg, 51% yield, >20:1dr, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45 – 7.39 (m, 3H), 7.37 – 7.31 (m, 2H), 7.28 – 7.22 (m, 2H), 7.19 – 7.15 (m, 3H), 7.10 (d, *J* = 7.8 Hz, 2H), 7.05 (d, *J* = 8.1 Hz, 2H), 5.44 (d, *J* = 6.7 Hz, 1H), 3.33 (t, *J* = 5.8 Hz, 2H), 2.68 – 2.59 (m, 2H), 2.48 (ddd, *J* = 11.4, 7.5, 4.2 Hz, 1H), 2.32 (s, 3H), 1.84 – 1.78 (m, 2H), 1.77 – 1.68 (m, 3H), 1.63 (dd, *J* = 10.7, 7.0 Hz, 1H), 1.57 – 1.49 (m, 1H), 1.47 – 1.40 (m, 1H), 1.30 – 1.14 (m, 7H), 1.11 – 1.03 (m, 2H), 0.86 – 0.79 (m, 3H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.0, 142.5, 140.7, 136.1, 134.8, 131.2, 129.5, 128.6, 128.44, 128.43, 126.8, 125.8, 48.1, 44.2, 41.8, 36.2, 33.2, 32.0, 30.0, 29.0, 28.3, 27.5, 22.7, 21.1, 14.2.

HR-MS (ESI) m/z calcd for $C_{33}H_{44}NO_2^+$ [M+H$^+$]: 470.3417, found 470.3412.



***N*-1-Phenyl-6-(*p*-tolyl)tridecan-4-yl)benzamide (5an)**

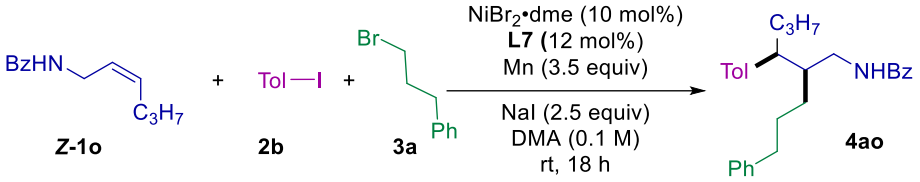
Following General Procedure D, $Ni(BF_4)_2$·$6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.8 mg, 0.012 mmol, 12 mol%), *(Z)*-*N*-(dec-2-en-1-yl)benzamide (25.9 mg, 0.1 mmol), 4-iodotoluene (43.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 29.7 mg, 0.15 mmol), Mn (16.5 mg, 0.3 mmol), NaI (7.5 mg, 0.05 mmol), MeOH (0.17 mL) and IPA (0.83 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5an** (25.5 mg, 54% yield, >20:1 dr, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 – 7.43 (m, 2H), 7.38 – 7.29 (m, 2H), 7.25 (d, *J* = 8.0 Hz, 3H), 7.20 – 7.11 (m, 3H), 7.04 – 6.96 (m, 4H), 5.49 (d, *J* = 8.7 Hz, 1H), 4.16 (dq, *J* = 9.8, 5.4, 4.7 Hz, 1H), 2.58 (dq, *J* = 14.0, 8.1, 7.4 Hz, 3H), 2.23 (s, 3H), 1.90 – 1.76 (m, 2H), 1.69 – 1.60 (m, 5H), 1.49 (td, *J* = 8.7, 4.9 Hz, 2H), 1.31 – 1.04 (m, 9H), 0.85 – 0.73 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 166.9, 142.9, 142.4, 135.6, 134.9, 131.2, 129.4, 128.6,

128.43, 128.42, 127.4, 126.8, 125.9, 49.3, 43.4, 42.2, 37.6, 35.9, 35.4, 32.0, 27.6, 27.1, 22.7, 21.1, 14.2.

HR-MS (ESI) m/z calcd for $C_{33}H_{43}NONa^+$ [M+Na$^+$]: 492.3237, found 492.3243.



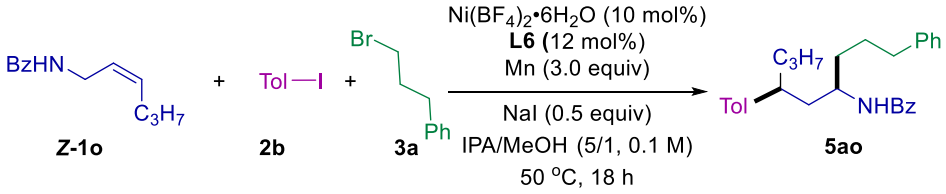
***N*-2-(3-Phenylpropyl)-3-(*p*-tolyl)hexyl)benzamide (4ao)**

Following General Procedure C, $NiBr_2$·dme (3.1 mg, 0.01 mmol, 10 mol%), **L7** (4.3 mg, 0.012 mmol, 12 mol%), *(Z)-N*-(hex-2-en-1-yl)benzamide (20.3 mg, 0.1 mmol), 4-iodotoluene (43.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (30.0 μL, 39.6 mg, 0.2 mmol), Mn (19.3 mg, 0.35 mmol), NaI (37.5 mg, 0.25 mmol) and DMA (1.0 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4ao** (21.3 mg, 52% yield, >20:1 dr, 4:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.46 – 7.39 (m, 3H), 7.38 – 7.32 (m, 2H), 7.25 (d, *J* = 7.0 Hz, 2H), 7.21 – 7.15 (m, 3H), 7.11 (d, *J* = 7.9 Hz, 2H), 7.08 – 7.01 (m, 2H), 5.44 (d, *J* = 6.2 Hz, 1H), 3.41 – 3.26 (m, 2H), 2.64 (td, *J* = 7.5, 2.2 Hz, 2H), 2.51 (ddd, *J* = 10.6, 7.7, 4.4 Hz, 1H), 2.32 (s, 3H), 1.84 – 1.67 (m, 5H), 1.55 (td, *J* = 5.3, 3.4 Hz, 1H), 1.48 – 1.41 (m, 1H), 1.16 – 1.01 (m, 2H), 0.83 (t, *J* = 7.4 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.0, 142.5, 140.7, 136.2, 134.8, 131.2, 129.5, 128.6, 128.44, 128.43, 126.8, 125.8, 47.8, 44.1, 41.8, 36.2, 35.4, 30.0, 28.3, 21.1, 20.9, 14.2.

HR-MS (ESI) m/z calcd for $C_{29}H_{35}NO_2Na^+$ [M+Na$^+$]: 436.2611, found 436.2611.



***N*-1-Phenyl-6-(*p*-tolyl)nonan-4-yl)benzamide (5ao)**

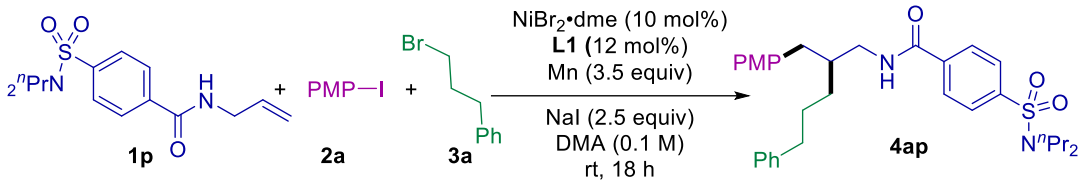
Following General Procedure D, $Ni(BF_4)_2$·$6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.8 mg, 0.012 mmol, 12 mol%), *(Z)-N*-(hex-2-en-1-yl)benzamide (20.3 mg, 0.1 mmol), 4-iodotoluene (43.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 29.7 mg, 0.15 mmol), Mn (16.5 mg, 0.3 mmol), NaI (0.75 mg, 0.05 mmol), MeOH (0.17 mL) and IPA (0.83 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5ao** (23.5 mg, 57% yield, >20:1 dr, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49 – 7.41 (m, 3H), 7.34 (dd, *J* = 8.2, 6.8 Hz, 2H), 7.29 – 7.23 (m, 1H), 7.20 – 7.11 (m, 4H), 7.04 – 6.96 (m, 4H), 5.53 (d, *J* = 8.7 Hz, 1H), 4.22 – 4.11 (m, 1H), 2.65 – 2.53 (m, 3H), 2.24 (s, 3H), 1.89 – 1.78 (m, 2H), 1.64 (dtd, *J* = 18.7, 10.1, 4.1 Hz, 4H), 1.54 – 1.42 (m, 2H), 1.16 – 1.04 (m, 2H), 0.81 (t, *J* = 7.3 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 166.9, 142.8, 142.4, 135.6, 134.9, 131.2, 129.4, 128.6, 128.42, 128.40, 127.4, 126.8, 125.9, 49.3, 43.1, 42.2, 39.8, 35.9, 35.4, 27.6, 21.1, 20.5,

14.1.

HR-MS (ESI) m/z calcd for $C_{29}H_{35}NO_2Na^+$ [M+Na$^+$]: 436.2611, found 436.2610.



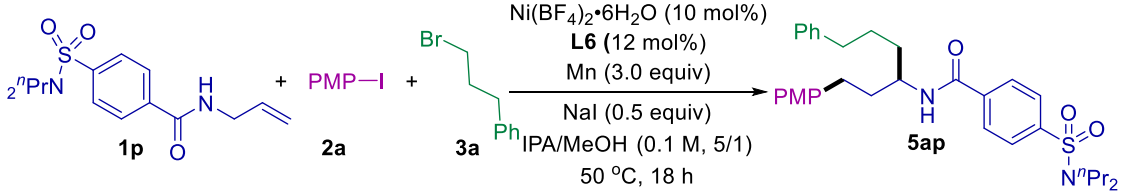
4-(*N*,*N*-Dipropylsulfamoyl)-*N*-(2-(4-methoxybenzyl)-5-phenylpentyl)benzamide (4ap)

Following General Procedure C, $NiBr_2$·dme (3.1 mg, 0.01 mmol, 10 mol%), **L1** (5.8 mg, 0.012 mmol, 12 mol%), *N*-allyl-4-(*N*,*N*-dipropylsulfamoyl)benzamide (32.4 mg, 0.1 mmol), 4-iodoanisole (46.8 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (30.0 μL, 39.6 mg, 0.2 mmol), , Mn (19.3 mg, 0.35 mmol), NaI (37.5 mg, 0.25 mmol) and DMA (1.0 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 3:1) to give the product **4ap** (43.2 mg, 79% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.80 (s, 1H), 7.74 (d, *J* = 8.4 Hz, 2H), 7.55 (d, *J* = 8.5 Hz, 2H), 7.25 (dd, *J* = 8.1, 1.5 Hz, 1H), 7.20 – 7.13 (m, 3H), 7.09 (d, *J* = 8.7 Hz, 2H), 6.82 (d, *J* = 8.6 Hz, 2H), 5.99 (t, *J* = 5.8 Hz, 1H), 3.77 (s, 3H), 3.55 (ddd, *J* = 13.6, 6.6, 5.2 Hz, 1H), 3.25 (ddd, *J* = 13.6, 7.4, 5.0 Hz, 1H), 3.11 – 3.03 (m, 4H), 2.74 (dd, *J* = 13.9, 5.7 Hz, 1H), 2.62 (t, *J* = 7.5 Hz, 2H), 2.49 (dd, *J* = 13.9, 8.4 Hz, 1H), 2.04 – 1.93 (m, 1H), 1.75 (dt, *J* = 15.0, 7.5 Hz, 2H), 1.61 – 1.48 (m, 4H), 1.41 (dd, *J* = 15.9, 6.3 Hz, 2H), 0.86 (t, *J* = 7.4 Hz, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 166.0, 158.2, 142.7, 142.3, 138.2, 132.5, 130.0, 128.5, 128.4, 127.6, 127.1, 125.9, 114.2, 55.4, 50.1, 44.1, 40.4, 39.0, 36.0, 32.0, 28.5, 22.0, 11.3.

HR-MS (ESI) m/z calcd for $C_{32}H_{42}N_2O_4SNa^+$ [M+Na$^+$]: 573.2757, found 573.2756.



4-(*N*,*N*-Dipropylsulfamoyl)-*N*-(1-(4-methoxyphenyl)-6-phenylhexan-3-yl)benzamide (5ap)

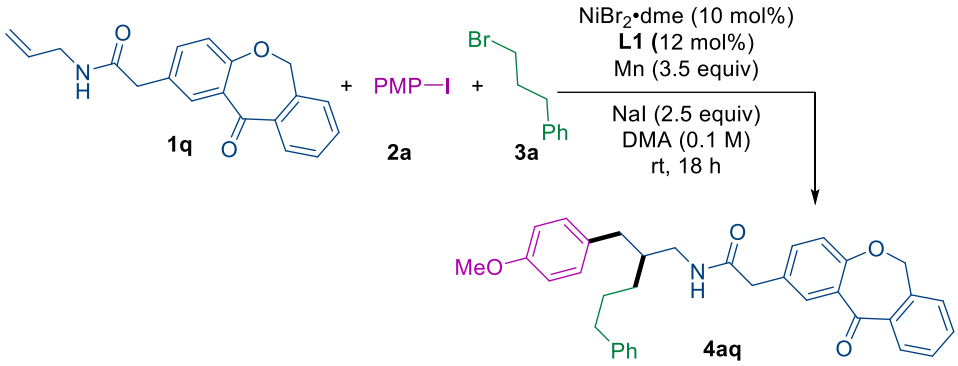
Following General Procedure D, $Ni(BF_4)_2$·$6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.8 mg, 0.012 mmol, 12 mol%), *N*-allyl-4-(*N*,*N*-dipropylsulfamoyl)benzamide (32.4 mg, 0.1 mmol), 4-iodoanisole (35.1 mg, 0.15 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 29.7 mg, 0.15 mmol), Mn (16.5 mg, 0.3 mmol), NaI (7.5 mg, 0.05 mmol), MeOH (0.17 mL) and IPA (0.83 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **5ap** (40.2 mg, 73% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 – 7.78 (m, 2H), 7.72 (d, *J* = 8.5 Hz, 2H), 7.31 – 7.22 (m, 2H), 7.21 – 7.12 (m, 3H), 7.11 – 7.04 (m, 2H), 6.85 – 6.72 (m, 2H), 5.79 (d,

J = 9.0 Hz, 1H), 4.24 (dt, *J* = 8.8, 4.4 Hz, 1H), 3.76 (s, 3H), 3.18 – 2.98 (m, 4H), 2.70 – 2.52 (m, 4H), 1.96 – 1.76 (m, 2H), 1.70 (q, *J* = 6.3, 5.8 Hz, 2H), 1.62 – 1.51 (m, 6H), 0.87 (t, *J* = 7.4 Hz, 6H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 166.0, 158.0, 142.6, 142.2, 138.6, 133.8, 129.4, 128.53, 128.46, 127.7, 127.2, 126.0, 114.1, 55.4, 50.1, 50.0, 37.0, 35.7, 34.8, 31.6, 27.9, 22.1, 11.3.

HR-MS (ESI) m/z calcd for $C_{32}H_{42}N_2O_4SNa^+$ [M+Na^+]: 573.2757, found 573.2758.



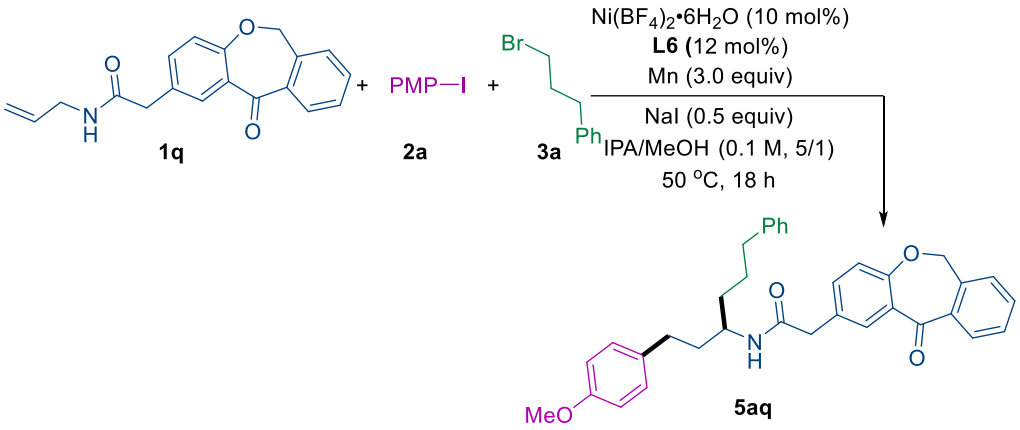
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-2-(11-oxo-6,11-dihydrodibenzo[*b*,*e*]oxepin-1-yl)acetamide (4aq)**

Following General Procedure C, $NiBr_2$·dme (3.1 mg, 0.01 mmol, 10 mol%), **L1** (5.8 mg, 0.012 mmol, 12 mol%), *N*-allyl-2-(11-oxo-6,11-dihydrodibenzo[*b*,*e*]oxepin-1-yl)acetamide (30.7 mg, 0.1 mmol), 4-iodoanisole (46.8 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (30.0 μL, 39.6 mg, 0.2 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4aq** (40.5 mg, 76% yield, 10:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.06 (d, *J* = 2.4 Hz, 1H), 7.88 (dd, *J* = 7.8, 1.4 Hz, 1H), 7.56 (dd, *J* = 7.4, 1.4 Hz, 1H), 7.50 – 7.44 (m, 1H), 7.35 (ddd, *J* = 10.8, 8.0, 1.8 Hz, 2H), 7.25 (ddd, *J* = 7.6, 6.2, 1.4 Hz, 2H), 7.20 – 7.09 (m, 3H), 7.02 (d, *J* = 8.4 Hz, 1H), 6.94 (d, *J* = 8.6 Hz, 2H), 6.77 (d, *J* = 8.6 Hz, 2H), 5.24 (t, *J* = 5.9 Hz, 1H), 5.18 (s, 2H), 3.76 (s, 3H), 3.45 (s, 2H), 3.20 (dt, *J* = 13.6, 6.1 Hz, 1H), 3.09 (dt, *J* = 13.5, 6.0 Hz, 1H), 2.51 (dt, *J* = 12.0, 6.9 Hz, 3H), 2.34 (dd, *J* = 13.9, 7.6 Hz, 1H), 1.76 (q, *J* = 6.6 Hz, 1H), 1.65 – 1.55 (m, 2H), 1.30 – 1.20 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 190.9, 170.6, 160.7, 158.0, 142.4, 140.5, 136.5, 135.6, 133.0, 132.4, 132.2, 130.0, 129.6, 129.5, 129.0, 128.6, 128.4, 128.0, 125.9, 125.4, 121.6, 114.0, 73.8, 55.4, 42.9, 40.3, 38.1, 36.1, 31.4, 28.5.

HR-MS (ESI) m/z calcd for $C_{35}H_{36}NO_4^+$ [M+H^+]: 534.2639, found 534.2630.



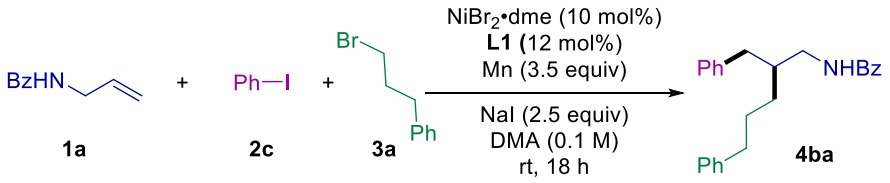
***N*-(1-(4-Methoxyphenyl)-6-phenylhexan-3-yl)-2-(11-oxo-6,11-dihydrodibenzo[*b*,*e*]oxepin-1-yl)acetamide (5aq)**

Following General Procedure D, $Ni(BF_4)_2{\cdot}6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.8 mg, 0.012 mmol, 12 mol%), *N*-allyl-2-(11-oxo-6,11-dihydrodibenzo[*b*,*e*]oxepin-1-yl)acetamide (30.7 mg, 0.1 mmol), 4-iodoanisole (35.1 mg, 0.15 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 29.7 mg, 0.15 mmol), Mn (16.5 mg, 0.3 mmol), NaI (7.5 mg, 0.05 mmol), MeOH (0.17 mL) and IPA (0.83 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5aq** (39.1 mg, 73% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.03 (d, *J* = 2.5 Hz, 1H), 7.79 (dd, *J* = 7.7, 1.4 Hz, 1H), 7.53 – 7.46 (m, 1H), 7.42 – 7.33 (m, 2H), 7.29 (dd, *J* = 7.5, 1.2 Hz, 1H), 7.19 – 7.12 (m, 2H), 7.07 (d, *J* = 7.4 Hz, 1H), 7.03 – 6.98 (m, 2H), 6.97 – 6.89 (m, 3H), 6.73 – 6.67 (m, 2H), 5.16 – 4.99 (m, 3H), 3.92 (tt, *J* = 8.7, 4.2 Hz, 1H), 3.68 (s, 3H), 3.45 (s, 2H), 2.52 – 2.36 (m, 4H), 1.64 (ddt, *J* = 16.3, 8.4, 4.1 Hz, 1H), 1.52 – 1.39 (m, 3H), 1.30 – 1.15 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 190.9, 170.4, 160.7, 157.9, 142.2, 140.5, 136.4, 135.6, 133.9, 133.0, 132.3, 129.6, 129.4, 129.3, 129.2, 128.5, 128.4, 128.0, 125.9, 125.4, 121.7, 113.9, 73.8, 55.4, 49.2, 43.1, 37.4, 35.7, 34.8, 31.5, 27.7.

HR-MS (ESI) m/z calcd for $C_{35}H_{36}NO_4^+$ [M+H$^+$]: 534.2639, found 534.2629.



***N*-(2-Benzyl-5-phenylpentyl)benzamide (4ba)**

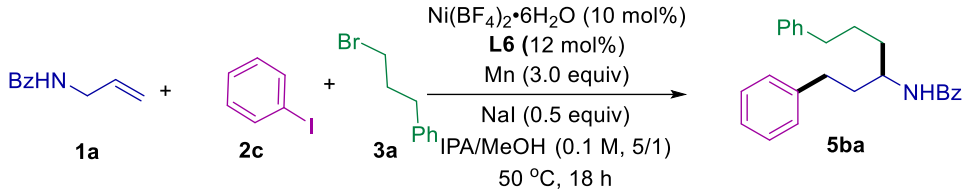
Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), iodobenzene (44.0 μL, 81.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol), were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4ba** (35.3 mg, 49% yield, 12:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.54 – 7.50 (m, 2H), 7.48 (d, *J* = 7.4 Hz, 1H), 7.31 – 7.27 (m, 2H), 7.34 – 7.28 (m, 3H), 7.28 – 7.26 (m, 1H), 7.20 (dd, *J* = 9.2, 7.1 Hz, 6H),

5.91 (t, *J* = 6.0 Hz, 1H), 3.58 (ddd, *J* = 13.6, 6.6, 5.4 Hz, 1H), 3.31 (ddd, *J* = 13.6, 7.0, 5.3 Hz, 1H), 2.79 (dd, *J* = 13.8, 6.0 Hz, 1H), 2.64 (t, *J* = 7.6 Hz, 2H), 2.61 – 2.55 (m, 1H), 2.12 – 2.00 (m, 1H), 1.82 – 1.68 (m, 2H), 1.52 – 1.42 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.4, 142.4, 140.7, 134.7, 131.4, 129.2, 128.8, 128.58, 128.56, 128.5, 126.9, 126.3, 125.9, 43.8, 40.5, 39.8, 36.1, 32.0, 28.6.

HR-MS (ESI) m/z calcd for $C_{25}H_{28}NO^+$ [M+H$^+$]: 358.2165, found 358.2164.



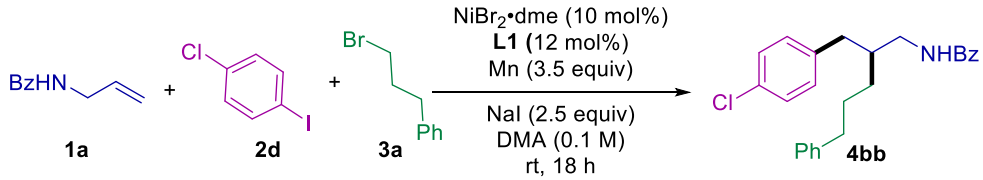
***N*-(1,6-Diphenylhexan-3-yl)benzamide (5ba)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), iodobenzene (33.0 μL, 61.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5ba** (61.1 mg, 86% yield, 12:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.67 (dd, *J* = 8.3, 1.3 Hz, 2H), 7.51 – 7.45 (m, 1H), 7.41 (dd, *J* = 8.2, 6.9 Hz, 2H), 7.28 – 7.23 (m, 4H), 7.19 – 7.13 (m, 6H), 5.77 (d, *J* = 9.1 Hz, 1H), 4.27 (tt, *J* = 8.6, 4.1 Hz, 1H), 2.74 – 2.68 (m, 2H), 2.67 – 2.58 (m, 2H), 1.93 (dddd, *J* = 13.8, 9.1, 7.1, 4.7 Hz, 1H), 1.80 (dtd, *J* = 13.9, 8.8, 6.5 Hz, 1H), 1.74 – 1.64 (m, 2H), 1.59 – 1.53 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.2, 142.2, 142.0, 135.0, 131.5, 128.7, 128.64, 128.59, 128.49, 128.47, 126.9, 126.1, 125.9, 49.7, 37.2, 35.8, 35.0, 32.5, 27.9.

HR-MS (ESI) m/z calcd for $C_{25}H_{28}NO^+$ [M+H$^+$]: 358.2165, found 358.2152.



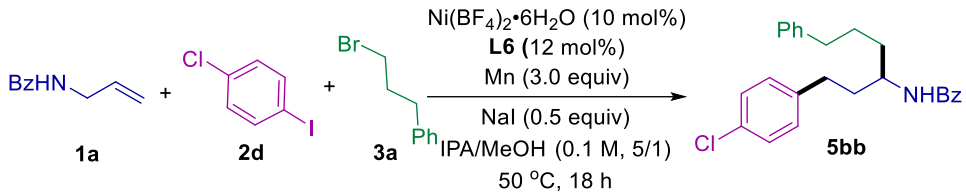
***N*-(2-(4-Chlorobenzyl)-5-phenylpentyl)benzamide (4bb)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-chloro-4-iodobenzene (95.2 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4bb** (39.9 mg, 51% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 – 7.43 (m, 2H), 7.41 – 7.37 (m, 1H), 7.36 – 7.28 (m, 2H), 7.20 (d, *J* = 5.5 Hz, 1H), 7.18 – 7.14 (m, 3H), 7.11 (d, *J* = 6.7 Hz, 1H), 7.09 – 7.05 (m, 2H), 7.01 (d, *J* = 8.4 Hz, 2H), 5.83 (t, *J* = 5.7 Hz, 1H), 3.47 – 3.36 (m, 1H), 3.21 (dd, *J* = 20.2, 5.9 Hz, 1H), 2.64 – 2.41 (m, 4H), 1.90 (p, *J* = 6.6 Hz, 1H), 1.64 (d, *J* = 6.6 Hz, 2H), 1.38 – 1.28 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.5, 142.2, 139.1, 134.6, 132.1, 131.5, 130.5, 128.8, 128.7, 128.54, 128.47, 126.8, 125.9, 43.6, 40.4, 38.9, 36.0, 31.5, 28.5.

HR-MS (ESI) m/z calcd for $C_{25}H_{27}ClNO^+$ [M+H$^+$]: 392.1776, found 392.1774.



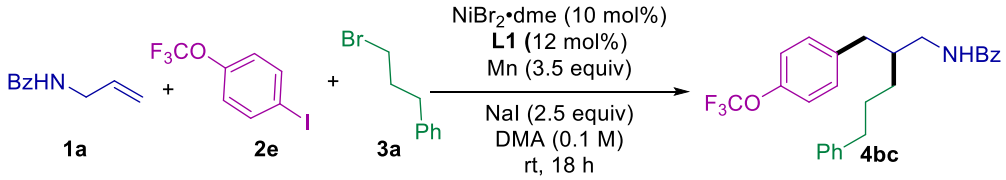
***N*-(1-(4-Chlorophenyl)-6-phenylhexan-3-yl)benzamide (5bb)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-chloro-4-iodobenzene (71.4 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5bb** (56.9 mg, 73% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 (d, *J* = 7.2 Hz, 2H), 7.47 – 7.42 (m, 1H), 7.37 (dd, *J* = 8.3, 6.8 Hz, 2H), 7.25 – 7.19 (m, 2H), 7.18 – 7.13 (m, 2H), 7.11 (dd, *J* = 8.6, 7.0 Hz, 3H), 7.04 (d, *J* = 8.3 Hz, 2H), 5.79 (d, *J* = 9.2 Hz, 1H), 4.19 (qt, *J* = 8.8, 4.8 Hz, 1H), 2.59 (ddd, *J* = 14.3, 9.8, 6.5 Hz, 4H), 1.90 – 1.79 (m, 1H), 1.74 – 1.57 (m, 4H), 1.54 – 1.45 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 142.1, 140.4, 134.8, 131.8, 131.6, 129.8, 128.70, 128.66, 128.6, 128.5, 126.9, 126.0, 49.5, 37.2, 35.7, 35.0, 31.9, 27.8.

HR-MS (ESI) m/z calcd for $C_{25}H_{27}ClNO^+$ [M+H$^+$]: 392.1776, found 392.1778.



***N*-(5-Phenyl-2-(4-(trifluoromethoxy)benzyl)pentyl)benzamide (4bc)**

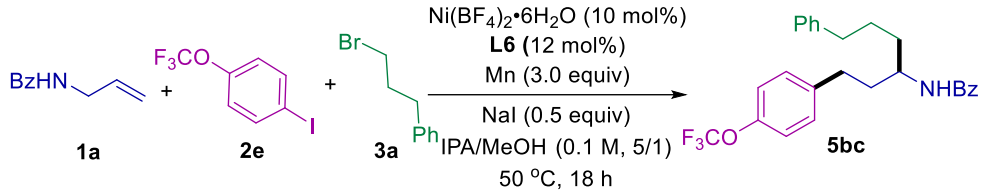
Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-4-(trifluoromethoxy)benzene (62.6 μL, 115.2 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4bc** (43.0 mg, 49% yield, 10:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.61 – 7.54 (m, 2H), 7.51 – 7.45 (m, 1H), 7.42 – 7.35 (m, 2H), 7.29 – 7.22 (m, 1H), 7.20 – 7.15 (m, 5H), 7.14 – 7.07 (m, 3H), 5.95 (q, *J* = 6.2 Hz, 1H), 3.53 – 3.45 (m, 1H), 3.37 – 3.27 (m, 1H), 2.69 (dd, *J* = 13.9, 6.4 Hz, 1H), 2.65 – 2.54 (m, 3H), 2.00 (p, *J* = 6.5 Hz, 1H), 1.79 – 1.70 (m, 2H), 1.46 – 1.37 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.6, 147.8, 142.2, 139.3, 134.7, 131.6, 130.4, 128.7, 128.6, 128.5, 126.9, 126.0, 120.6 (q, *J* = 254.9 Hz), 121.1, 43.5, 40.4, 38.7, 36.0, 31.4, 28.4.

^{19}F NMR (376 MHz, $CDCl_3$) δ -57.87.

HR-MS (ESI) m/z calcd for $C_{26}H_{27}F_3NO_2^+$ [M+H$^+$]: 442.1988, found 442.1990.



***N*-(6-Phenyl-1-(4-(trifluoromethoxy)phenyl)hexan-3-yl)benzamide (5bc)**

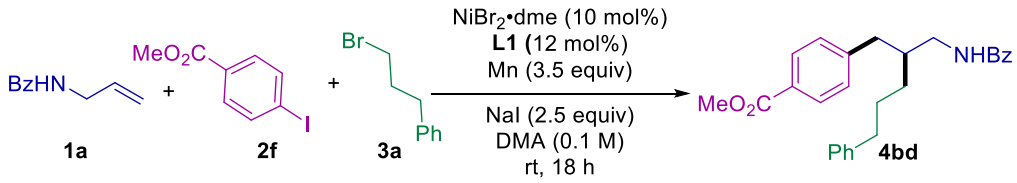
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-4-(trifluoromethoxy)benzene (58.0 μL, 86.4 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5bc** (63.3 mg, 72% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.59 (d, *J* = 7.9 Hz, 2H), 7.40 – 7.34 (m, 1H), 7.29 (d, *J* = 7.6 Hz, 2H), 7.17 – 7.09 (m, 2H), 7.04 (d, *J* = 8.3 Hz, 5H), 6.96 (d, *J* = 8.3 Hz, 2H), 5.86 (d, *J* = 9.2 Hz, 1H), 4.12 (qt, *J* = 8.8, 4.7 Hz, 1H), 2.62 – 2.41 (m, 4H), 1.76 (dq, *J* = 12.0, 3.8, 3.4 Hz, 2H), 1.68 – 1.62 (m, 1H), 1.63 – 1.54 (m, 1H), 1.53 – 1.47 (m, 1H), 1.41 (dq, *J* = 14.5, 8.0, 7.6 Hz, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.4, 147.5, 142.1, 140.7, 134.8, 131.6, 129.7, 128.7, 128.5, 128.4, 126.9, 125.9, 121.1, 119.3 (q, *J* = 253.3 Hz), 49.5, 37.2, 35.7, 35.0, 31.9, 27.8.

^{19}F NMR (376 MHz, $CDCl_3$) δ-57.87.

HR-MS (ESI) m/z calcd for $C_{26}H_{27}F_3NO_2^+$ [M+H$^+$]: 442.1988, found 442.1986.



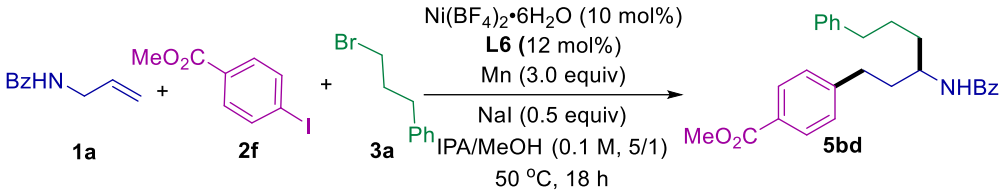
Methyl-4-(2-(benzamidomethyl)-5-phenylpentyl)benzoate (4bd)

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), methyl 4-iodobenzoate (104.8 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4bd** (48.2 mg, 58% yield, 10:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.85 (d, *J* = 8.3 Hz, 2H), 7.49 – 7.43 (m, 2H), 7.41 – 7.34 (m, 1H), 7.28 (dd, *J* = 8.3, 6.9 Hz, 2H), 7.20 – 7.13 (m, 5H), 7.10 – 7.01 (m, 2H), 5.93 (t, *J* = 6.0 Hz, 1H), 3.82 (s, 3H), 3.40 (dt, *J* = 13.6, 6.1 Hz, 1H), 3.22 (ddd, *J* = 13.7, 6.8, 5.6 Hz, 1H), 2.65 (dd, *J* = 13.7, 6.7 Hz, 1H), 2.60 – 2.47 (m, 3H), 1.96 (p, *J* = 6.6 Hz, 1H), 1.64 (dtd, *J* = 14.9, 8.0, 7.0, 3.2 Hz, 2H), 1.37 – 1.26 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.6, 167.1, 146.2, 142.2, 134.6, 131.5, 130.0, 129.2, 128.6, 128.54, 128.48, 128.3, 126.8, 125.9, 52.2, 43.6, 40.4, 39.5, 36.0, 31.5, 28.4.

HR-MS (ESI) m/z calcd for $C_{27}H_{30}NO_3^+$ [M+H$^+$]: 416.2220, found 416.2219.



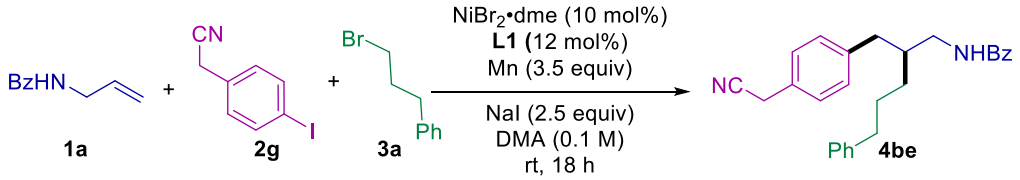
Methyl-4-(3-benzamido-6-phenylhexyl)benzoate (5bd)

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), methyl 4-iodobenzoate (78.6 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5bd** (47.6 mg, 57% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.84 (d, *J* = 8.3 Hz, 2H), 7.64 – 7.58 (m, 2H), 7.44 – 7.38 (m, 1H), 7.33 (dd, *J* = 8.2, 6.7 Hz, 2H), 7.20 – 7.13 (m, 4H), 7.11 – 7.03 (m, 3H), 5.79 (d, *J* = 9.2 Hz, 1H), 4.18 (qt, *J* = 8.7, 4.8 Hz, 1H), 3.80 (s, 3H), 2.66 (dd, *J* = 8.9, 7.0 Hz, 2H), 2.60 – 2.47 (m, 2H), 1.91 – 1.80 (m, 1H), 1.77 – 1.70 (m, 1H), 1.63 (q, *J* = 6.7, 6.2 Hz, 2H), 1.59 – 1.53 (m, 1H), 1.52 – 1.41 (m, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 167.2, 147.5, 142.1, 134.8, 131.5, 129.9, 128.7, 128.55, 128.49, 128.47, 128.0, 126.9, 126.0, 52.1, 49.6, 37.0, 35.7, 35.0, 32.7, 27.8.

HR-MS (ESI) m/z calcd for $C_{27}H_{30}NO_3^+$ [M+H$^+$]: 416.2220, found 416.2222.



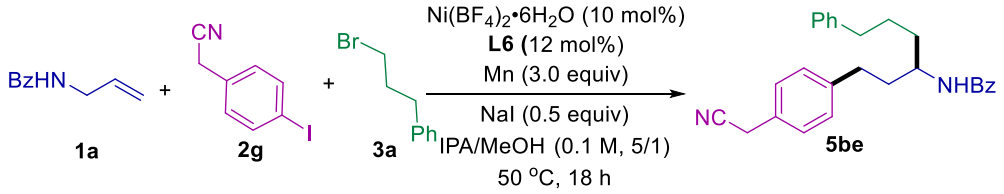
***N*-(2-(4-(Cyanomethyl)benzyl)-5-phenylpentyl)benzamide (4be)**

Following General Procedure C, *N*-allylbenzamide (16.1 mg, 0.1 mmol), 2-(4-iodophenyl)acetonitrile (48.6 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (30.0 μL, 39.6 mg, 0.2 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 3:1) to give the product **4be** (30.2 mg, 76% yield, 7:1 rr) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.51 – 7.46 (m, 2H), 7.44 – 7.37 (m, 1H), 7.32 (dd, *J* = 8.3, 6.9 Hz, 2H), 7.21 – 7.13 (m, 4H), 7.08 (dd, *J* = 8.1, 6.4 Hz, 5H), 5.85 (t, *J* = 6.0 Hz, 1H), 3.60 (s, 2H), 3.40 (dt, *J* = 13.7, 6.1 Hz, 1H), 3.23 (dt, *J* = 13.3, 6.2 Hz, 1H), 2.63 (dd, *J* = 13.8, 6.3 Hz, 1H), 2.51 (dt, *J* = 14.5, 7.8 Hz, 3H), 1.93 (p, *J* = 6.9 Hz, 1H), 1.66 (dq, *J* = 9.6, 7.1 Hz, 2H), 1.33 (ddd, *J* = 12.2, 7.3, 2.8 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.5, 142.3, 140.6, 134.6, 131.5, 129.9, 128.6, 128.54, 128.46, 128.2, 127.8, 126.8, 125.9, 118.1, 43.5, 40.3, 39.0, 36.0, 31.5, 28.5, 23.3.

HR-MS (ESI) m/z calcd for $C_{27}H_{29}N_2O^+$ [M+H$^+$]: 397.2274, found 397.2275.



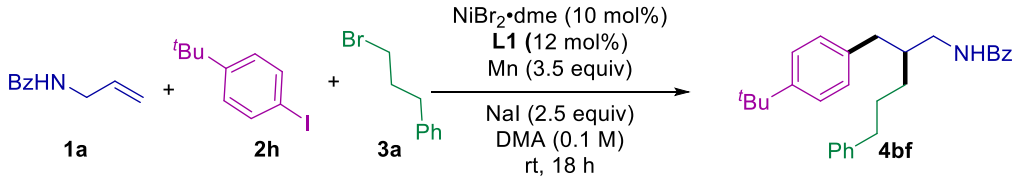
***N*-(1-(4-(Cyanomethyl)phenyl)-6-phenylhexan-3-yl)benzamide (5be)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 2-(4-iodophenyl)acetonitrile (72.9 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **5be** (44.7 mg, 56% yield, >20:1 rr) as a white solid

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.72 (d, *J* = 7.0 Hz, 2H), 7.54 – 7.48 (m, 1H), 7.43 (dd, *J* = 8.3, 6.8 Hz, 2H), 7.28 (dd, *J* = 8.6, 6.2 Hz, 2H), 7.23 – 7.13 (m, 7H), 5.91 (d, *J* = 9.2 Hz, 1H), 4.26 (qt, *J* = 8.8, 4.7 Hz, 1H), 3.68 (s, 2H), 2.74 – 2.55 (m, 4H), 1.97 – 1.88 (m, 1H), 1.83 – 1.72 (m, 3H), 1.69 – 1.63 (m, 1H), 1.60 – 1.52 (m, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 142.1, 141.9, 134.8, 131.5, 129.2, 128.7, 128.5, 128.4, 128.1, 127.5, 126.9, 125.9, 118.1, 49.5, 37.1, 35.7, 35.0, 32.2, 27.8, 23.3.

HR-MS (ESI) m/z calcd for $C_{27}H_{29}N_2O^+$ [M+H$^+$]: 397.2274, found 397.2272.



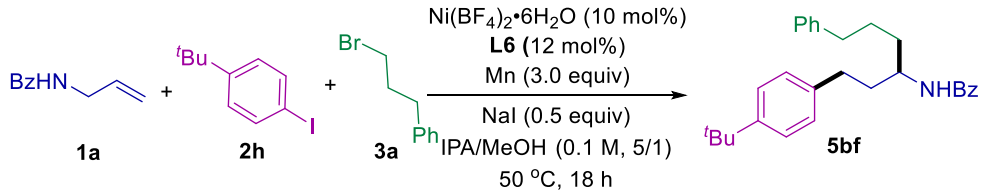
***N*-(2-(4-(*tert*-Butyl)benzyl)-5-phenylpentyl)benzamide (4bf)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-(*tert*-butyl)-4-iodobenzene (70.8 μL, 104.0 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4bf** (64.1 mg, 78% yield, 14:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49 – 7.45 (m, 2H), 7.45 – 7.40 (m, 1H), 7.36 – 7.32 (m, 2H), 7.30 (d, *J* = 8.3 Hz, 2H), 7.27 – 7.23 (m, 2H), 7.18 – 7.13 (m, 3H), 7.11 (d, *J* = 8.3 Hz, 2H), 5.86 (t, *J* = 5.9 Hz, 1H), 3.56 (ddd, *J* = 13.6, 6.6, 5.1 Hz, 1H), 3.26 (ddd, *J* = 13.6, 7.2, 5.1 Hz, 1H), 2.75 (dd, *J* = 13.8, 5.6 Hz, 1H), 2.61 (t, *J* = 7.6 Hz, 2H), 2.50 (dd, *J* = 13.8, 8.4 Hz, 1H), 2.03 – 1.96 (m, 1H), 1.81 – 1.70 (m, 2H), 1.48 – 1.38 (m, 2H), 1.30 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 149.2, 142.4, 137.5, 134.7, 131.3, 128.8, 128.54, 128.51, 128.4, 126.8, 125.8, 125.6, 44.0, 40.4, 39.5, 36.1, 34.5, 32.2, 31.5, 28.6.

HR-MS (ESI) m/z calcd for $C_{29}H_{35}NONa^+$ [M+Na$^+$]: 436.2611, found 436.2608.



***N*-(1-(4-(*tert*-Butyl)phenyl)-6-phenylhexan-3-yl)benzamide (5bf)**

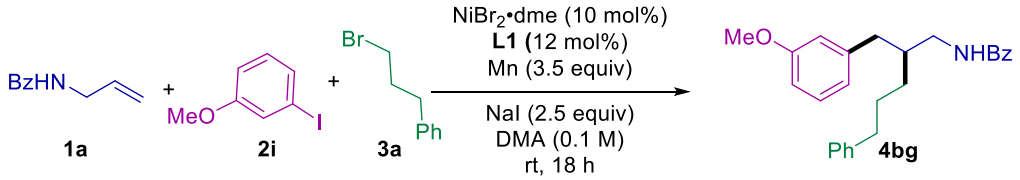
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-(*tert*-butyl)-4-iodobenzene (57.0 μL, 78.0 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction.

The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5bf** (58.4 mg, 71% yield, 11:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.63 – 7.55 (m, 2H), 7.39 (d, *J* = 7.4 Hz, 1H), 7.36 – 7.28 (m, 2H), 7.23 – 7.14 (m, 4H), 7.12 – 7.05 (m, 3H), 7.03 (d, *J* = 8.3 Hz, 2H), 5.73 (d, *J* = 9.1 Hz, 1H), 4.20 (ddt, *J* = 12.9, 8.6, 4.0 Hz, 1H), 2.63 – 2.52 (m, 4H), 1.89 – 1.79 (m, 1H), 1.76 – 1.70 (m, 1H), 1.65 (d, *J* = 7.3 Hz, 1H), 1.62 – 1.55 (m, 2H), 1.51 – 1.43 (m, 1H), 1.21 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 148.8, 142.3, 138.8, 131.4, 128.7, 128.6, 128.5, 128.1, 126.9, 125.9, 125.5, 49.7, 36.9, 35.8, 35.0, 34.5, 31.9, 31.5, 27.8.

HR-MS (ESI) m/z calcd for $C_{29}H_{35}NONa^+$ [M+Na^+]: 436.2611, found 436.2609.



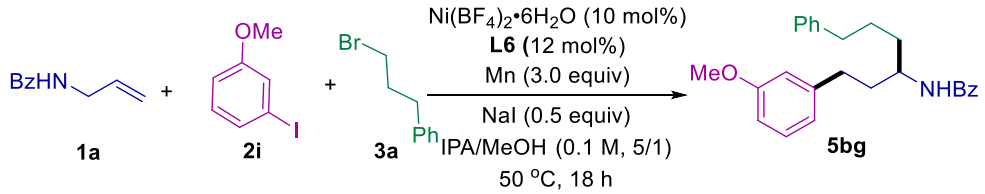
***N*-(2-(3-Methoxybenzyl)-5-phenylpentyl)benzamide (4bg)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-3-methoxybenzene (48.0 μL, 93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4bg** (43.3 mg, 56% yield, 8:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45 – 7.35 (m, 3H), 7.28 (dd, *J* = 8.2, 6.8 Hz, 2H), 7.22 – 7.14 (m, 3H), 7.09 (dd, *J* = 8.5, 6.5 Hz, 3H), 6.74 – 6.60 (m, 3H), 5.83 – 5.74 (m, 1H), 3.68 (s, 3H), 3.48 (ddd, *J* = 13.6, 6.6, 5.3 Hz, 1H), 3.20 (ddd, *J* = 13.6, 7.2, 5.2 Hz, 1H), 2.67 (dd, *J* = 13.8, 5.9 Hz, 1H), 2.54 (t, *J* = 7.6 Hz, 2H), 2.45 (dd, *J* = 13.8, 8.3 Hz, 1H), 1.98 – 1.86 (m, 1H), 1.67 (dtd, *J* = 15.7, 7.9, 5.3 Hz, 2H), 1.35 (ddd, *J* = 11.4, 6.5, 2.9 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.4, 160.0, 142.4, 142.4, 134.7, 131.4, 129.8, 128.6, 128.5, 128.4, 126.9, 125.9, 121.5, 114.9, 111.6, 55.3, 43.8, 40.4, 40.0, 36.1, 32.1, 28.6.

HR-MS (ESI) m/z calcd for $C_{26}H_{29}NO_2Na^+$ [M+Na^+]: 410.2091, found 410.2088.



***N*-(1-(3-Methoxyphenyl)-6-phenylhexan-3-yl)benzamide (5bg)**

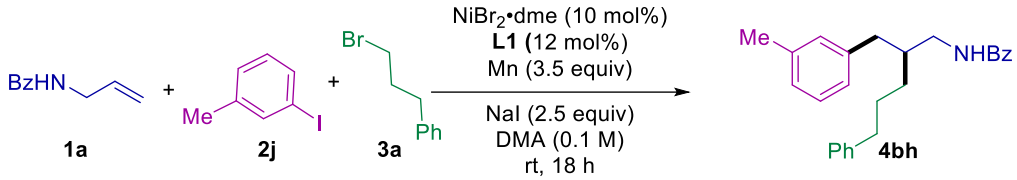
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-3-methoxybenzene (36.0 μL, 70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5bg** (65.6 mg, 85% yield, >20:1 rr) as a

colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.61 – 7.52 (m, 2H), 7.40 – 7.34 (m, 1H), 7.28 (dd, *J* = 8.3, 6.8 Hz, 2H), 7.19 – 7.12 (m, 2H), 7.08 – 6.98 (m, 4H), 6.67 – 6.63 (m, 1H), 6.60 (dd, *J* = 8.5, 1.9 Hz, 2H), 5.81 (d, *J* = 9.2 Hz, 1H), 4.20 (dq, *J* = 8.8, 4.3 Hz, 1H), 3.64 (s, 3H), 2.61 – 2.44 (m, 4H), 1.86 – 1.78 (m, 1H), 1.74 – 1.65 (m, 1H), 1.61 (d, *J* = 7.2 Hz, 2H), 1.54 (d, *J* = 6.9 Hz, 1H), 1.44 (t, *J* = 7.1 Hz, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 159.8, 143.6, 142.2, 134.9, 131.4, 129.5, 128.6, 128.5, 128.4, 126.9, 125.9, 120.8, 114.2, 111.4, 55.2, 49.7, 36.9, 35.7, 35.0, 32.6, 27.8.

HR-MS (ESI) m/z calcd for $C_{26}H_{29}NO_2Na^+$ [M+Na^+]: 410.2091, found 410.2088.



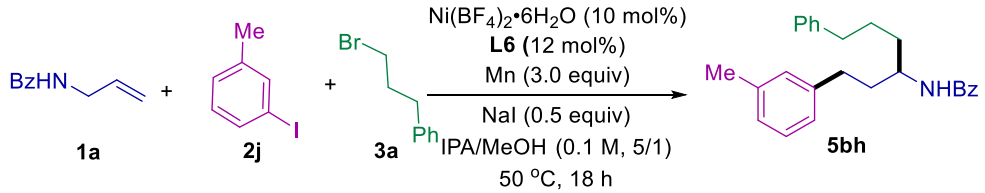
***N*-(2-(3-Methylbenzyl)-5-phenylpentyl)benzamide (4bh)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-3-methylbenzene (51.0 μL, 87.2 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4bh** (52.2 mg, 70% yield, 14:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42 – 7.34 (m, 3H), 7.31 – 7.24 (m, 2H), 7.18 (dd, *J* = 8.9, 6.2 Hz, 2H), 7.09 (dd, *J* = 7.4, 5.0 Hz, 4H), 6.97 – 6.82 (m, 3H), 5.81 – 5.73 (m, 1H), 3.50 (ddd, *J* = 13.7, 6.7, 5.2 Hz, 1H), 3.18 (ddd, *J* = 13.4, 7.2, 5.1 Hz, 1H), 2.68 (dd, *J* = 13.7, 5.7 Hz, 1H), 2.54 (t, *J* = 7.6 Hz, 2H), 2.42 (dd, *J* = 13.7, 8.4 Hz, 1H), 2.21 (s, 3H), 1.92 (p, *J* = 6.4 Hz, 1H), 1.67 (ddd, *J* = 21.3, 10.9, 5.2 Hz, 2H), 1.35 (dt, *J* = 9.0, 5.5 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 142.4, 140.7, 138.4, 134.7, 131.3, 129.9, 128.7, 128.5, 128.43, 128.39, 127.0, 126.8, 126.1, 125.8, 43.9, 40.4, 39.9, 36.0, 32.1, 28.6, 21.5.

HR-MS (ESI) m/z calcd for $C_{26}H_{29}NONa^+$ [M+Na^+]: 394.2141, found 394.2142.



***N*-(6-Phenyl-1-(*m*-tolyl)hexan-3-yl)benzamide (5bh)**

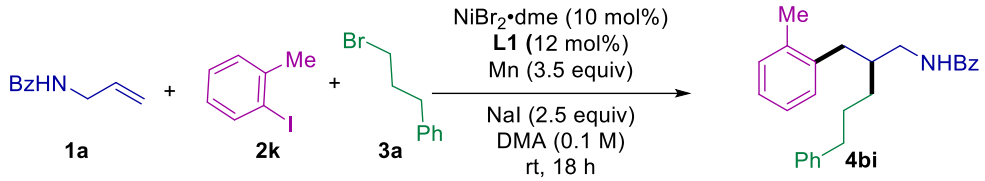
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-3-methylbenzene (38.0 μL, 65.4 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5bh** (45.2 mg, 61% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 – 7.58 (m, 2H), 7.46 – 7.40 (m, 1H), 7.35 (d, *J* = 14.9 Hz, 2H), 7.24 – 7.19 (m, 2H), 7.15 – 7.07 (m, 4H), 6.96 – 6.89 (m, 3H), 5.80 (d,

J = 9.1 Hz, 1H), 4.28 – 4.16 (m, 1H), 2.60 (ddd, *J* = 12.8, 8.7, 6.6 Hz, 4H), 2.24 (s, 3H), 1.92 – 1.84 (m, 1H), 1.76 (d, *J* = 7.8 Hz, 1H), 1.66 (d, *J* = 7.0 Hz, 2H), 1.60 (ddd, *J* = 8.5, 6.9, 5.0 Hz, 1H), 1.55 – 1.47 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 142.2, 141.9, 138.2, 134.9, 131.4, 129.3, 128.62, 128.56, 128.5, 128.4, 126.9, 126.8, 125.9, 125.4, 49.8, 37.1, 35.8, 34.9, 32.4, 27.9, 21.5.

HR-MS (ESI) m/z calcd for $C_{26}H_{29}NONa^+$ [M+Na^+]: 394.2141, found 394.2140.



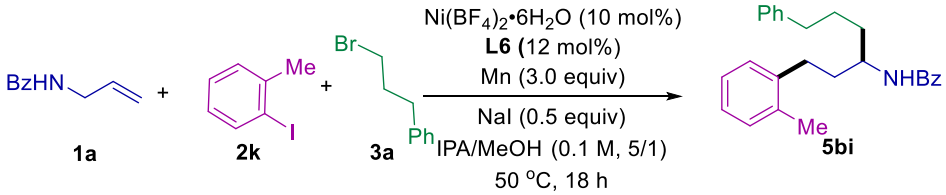
***N*-(6-Phenyl-1-(*o*-tolyl)hexan-3-yl)benzamide (4bi)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-2-methylbenzene (51.0 μL, 87.2 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **4bi** (44.2 mg, 60% yield, 20:1 rr) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.47 – 7.41 (m, 3H), 7.37 – 7.30 (m, 2H), 7.28 – 7.23 (m, 2H), 7.19 – 7.09 (m, 7H), 5.84 (t, *J* = 5.8 Hz, 1H), 3.63 (ddd, *J* = 13.5, 7.0, 5.2 Hz, 1H), 3.20 (ddd, *J* = 13.6, 7.3, 4.8 Hz, 1H), 2.77 (dd, *J* = 13.9, 6.0 Hz, 1H), 2.66 – 2.49 (m, 3H), 2.29 (s, 3H), 2.07 – 1.92 (m, 1H), 1.76 (dddd, *J* = 15.2, 11.5, 7.3, 2.1 Hz, 2H), 1.45 (qd, *J* = 8.0, 7.4, 5.1 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 142.4, 139.0, 136.4, 134.6, 131.4, 130.8, 130.0, 128.55, 128.50, 128.4, 126.8, 126.5, 126.3, 125.9, 44.0, 39.2, 37.7, 36.1, 32.6, 28.6, 19.7.

HR-MS (ESI) m/z calcd for $C_{26}H_{30}NO^+$ [M+H^+]: 372.2322, found 372.2323.



***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-4-(trifluoromethyl)benzamide (5bi)**

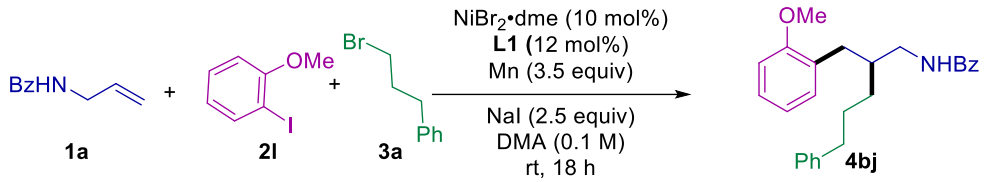
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-2-methylbenzene (38.0 μL, 65.4 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 12:1) to give the product **5bi** (40.0 mg, 54% yield, 13:1 rr) as a white solid.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.65 – 7.60 (m, 2H), 7.46 – 7.38 (m, 1H), 7.35 (dd, *J* = 8.3, 7.0 Hz, 2H), 7.21 – 7.16 (m, 2H), 7.14 – 7.07 (m, 3H), 7.06 – 6.97 (m, 4H), 5.76 (d, *J* = 9.2 Hz, 1H), 4.22 (ddq, *J* = 13.2, 8.6, 4.8 Hz, 1H), 2.66 – 2.50 (m, 4H), 2.20 (s, 3H), 1.86 – 1.77 (m, 1H), 1.71 – 1.61 (m, 4H), 1.52 – 1.43 (m, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 142.2, 140.1, 135.9, 135.0, 131.5, 130.4, 128.8, 128.7, 128.6, 128.5, 126.9, 126.24, 126.21, 126.0, 50.0, 36.0, 35.8, 35.0, 29.9, 27.9,

19.4.

HR-MS (ESI) m/z calcd for $C_{26}H_{30}NO^+$ [M+H$^+$]: 372.2322, found 372.2320.



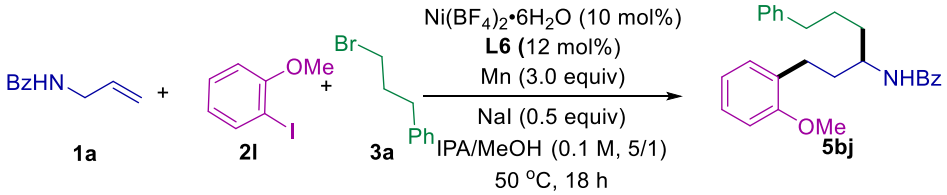
***N*-(2-(2-Methoxybenzyl)-5-phenylpentyl)benzamide (4bj)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-2-methoxybenzene (93.6 mg, 0.4 mmol) and 1-bromo-3-phenylpropane (60.0 μL, 79.2 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4bj** (55.1 mg, 71% yield, 8:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.57 – 7.50 (m, 2H), 7.42 – 7.36 (m, 1H), 7.35 – 7.28 (m, 2H), 7.21 – 7.15 (m, 2H), 7.14 – 7.06 (m, 4H), 7.04 (dd, *J* = 7.5, 1.8 Hz, 1H), 6.86 – 6.81 (m, 1H), 6.78 (dd, *J* = 8.3, 1.1 Hz, 1H), 6.37 (t, *J* = 6.0 Hz, 1H), 3.70 (s, 3H), 3.25 (t, *J* = 5.7 Hz, 2H), 2.60 (dd, *J* = 6.9, 3.1 Hz, 2H), 2.54 (t, *J* = 7.5 Hz, 2H), 1.93 – 1.84 (m, 1H), 1.75 – 1.61 (m, 2H), 1.36 (dtd, *J* = 9.1, 6.6, 2.0 Hz, 2H).

^{13}C NMR (101 MHz, CDCl$_3$) δ 167.5, 157.4, 142.6, 135.2, 131.3, 131.1, 128.9, 128.6, 128.5, 128.4, 127.6, 126.9, 125.8, 121.1, 110.9, 55.6, 42.6, 39.6, 36.1, 33.0, 32.2, 28.8.

HR-MS (ESI) m/z calcd for $C_{26}H_{29}NO_2Na^+$ [M+Na$^+$]: 410.2091, found 410.2088.



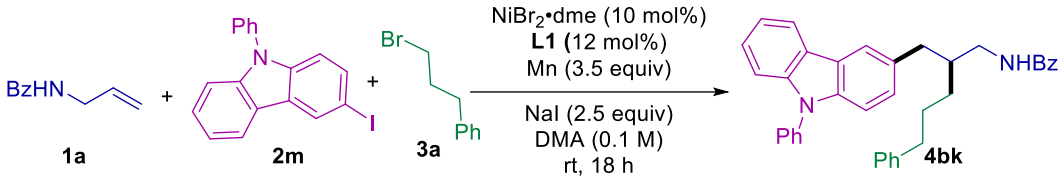
***N*-(6-Phenyl-1-(*o*-tolyl)hexan-3-yl)benzamide (5bj)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-2-methoxybenzene (70.2 mg, 0.3 mmol) and 1-bromo-3-phenylpropane (45.0 μL, 59.4 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5bj** (39.6 mg, 51% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.71 – 7.64 (m, 2H), 7.46 – 7.41 (m, 1H), 7.39 – 7.34 (m, 2H), 7.23 – 7.19 (m, 2H), 7.15 – 7.04 (m, 5H), 6.85 – 6.79 (m, 1H), 6.77 (d, *J* = 8.1 Hz, 1H), 5.90 (d, *J* = 9.0 Hz, 1H), 4.20 (dp, *J* = 12.6, 4.3, 3.8 Hz, 1H), 3.71 (s, 3H), 2.70 (ddd, *J* = 14.7, 9.7, 5.4 Hz, 1H), 2.59 (q, *J* = 7.4 Hz, 3H), 1.87 (ddt, *J* = 11.7, 5.9, 3.0 Hz, 1H), 1.73 – 1.64 (m, 4H), 1.57 – 1.49 (m, 1H).

^{13}C NMR (101 MHz, CDCl$_3$) δ 167.3, 157.4, 142.4, 135.2, 131.4, 130.4, 130.0, 128.62, 128.56, 128.4, 127.3, 126.9, 125.9, 120.7, 110.5, 55.4, 49.9, 35.9, 35.2, 34.9, 27.9, 26.9.

HR-MS (ESI) m/z calcd for $C_{26}H_{29}NO_2Na^+$ [M+Na$^+$]: 410.2091, found 410.2089.



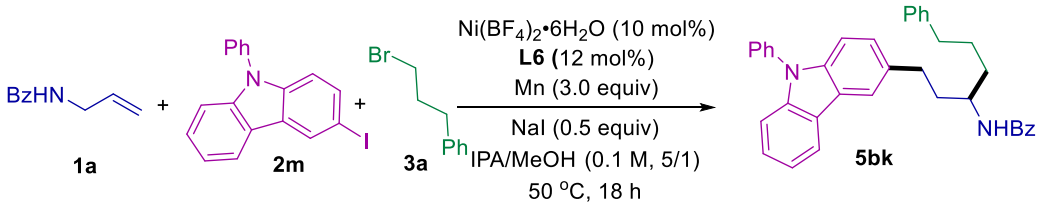
***N*-(5-Phenyl-2-((9-phenyl-9*H*-carbazol-3-yl)methyl)pentyl)benzamide (4bk)**

Following General Procedure C, *N*-allylbenzamide (16.1 mg, 0.1 mmol), 3-iodo-*N*-phenylcarbazole (73.8 mg, 0.2 mmol) and 1-bromo-3-phenylpropane (30.0 μL, 39.6 mg, 0.2 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 5:1) to give the product **4bk** (36.0 mg, 69% yield, >20:1 rr) as a white solid.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.95 (d, *J* = 7.8 Hz, 1H), 7.81 (d, *J* = 1.6 Hz, 1H), 7.45 – 7.40 (m, 2H), 7.35 – 7.32 (m, 2H), 7.30 – 7.24 (m, 3H), 7.20 – 7.17 (m, 2H), 7.15 (d, *J* = 8.6 Hz, 2H), 7.12 – 7.04 (m, 4H), 7.04 – 7.00 (m, 3H), 6.99 – 6.94 (m, 2H), 5.63 (t, *J* = 5.8 Hz, 1H), 3.49 (ddd, *J* = 13.7, 6.6, 4.9 Hz, 1H), 3.15 (ddd, *J* = 13.1, 7.4, 4.9 Hz, 1H), 2.85 (dd, *J* = 13.8, 5.6 Hz, 1H), 2.57 (dd, *J* = 13.9, 8.5 Hz, 1H), 2.48 (t, *J* = 7.6 Hz, 2H), 1.95 (p, *J* = 6.7 Hz, 1H), 1.71 – 1.60 (m, 2H), 1.34 (q, *J* = 7.5 Hz, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.2, 142.5, 141.2, 139.7, 137.8, 134.6, 132.2, 131.2, 130.0, 128.6, 128.4, 128.3, 127.5, 127.2, 127.0, 126.7, 126.2, 125.9, 123.9, 123.1, 120.5, 120.3, 120.1, 110.1, 109.9, 44.2, 41.2, 40.3, 36.2, 32.4, 28.8.

HR-MS (ESI) m/z calcd for $C_{37}H_{35}N_2O^+$ [M+H$^+$]: 523.2744, found 523.2745.



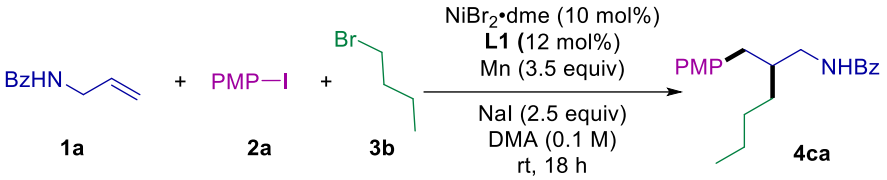
***N*-(6-Phenyl-1-(9-phenyl-9*H*-carbazol-2-yl)hexan-3-yl)benzamide (5bk)**

Following General Procedure D, *N*-allylbenzamide (16.1 mg, 0.1 mmol), 3-iodo-*N*-phenylcarbazole (55.3 mg, 0.15 mmol) and 1-bromo-3-phenylpropane (22.5 μL, 29.7 mg, 0.15 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 7:1) to give the product **5bk** (38.6 mg, 74% yield, >20:1 rr) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.09 (d, *J* = 7.8 Hz, 1H), 7.94 (d, *J* = 1.7 Hz, 1H), 7.79 – 7.72 (m, 1H), 7.65 – 7.57 (m, 4H), 7.53 – 7.49 (m, 2H), 7.47 – 7.38 (m, 4H), 7.35 – 7.28 (m, 3H), 7.26 – 7.21 (m, 3H), 7.20 – 7.14 (m, 3H), 5.79 (d, *J* = 9.0 Hz, 1H), 4.34 (tt, *J* = 8.6, 4.0 Hz, 1H), 2.96 – 2.87 (m, 2H), 2.66 (dh, *J* = 21.3, 7.2 Hz, 2H), 2.09 – 2.05 (m, 1H), 1.96 – 1.88 (m, 1H), 1.80 – 1.69 (m, 3H), 1.67 – 1.62 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 142.3, 141.2, 139.6, 137.9, 135.0, 133.6, 131.4, 130.0, 128.61, 128.59, 128.5, 127.4, 127.1, 126.9, 126.7, 126.0, 125.9, 123.7, 123.3, 120.4, 119.9, 119.7, 109.9, 109.8, 49.9, 37.8, 35.8, 35.0, 32.6, 27.9.

HR-MS (ESI) m/z calcd for $C_{37}H_{35}N_2O^+$ [M+H$^+$]: 523.2744, found 523.2748.



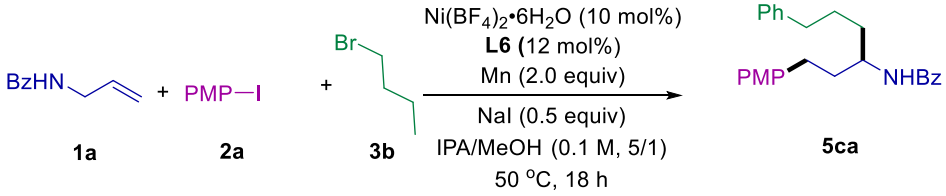
***N*-(2-(4-Methoxybenzyl)hexyl)benzamide (4ca)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromobutane (43.0 μL, 54.4 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ca** (39.7 mg, 61% yield, 12:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.55 – 7.50 (m, 2H), 7.47 – 7.40 (m, 1H), 7.38 – 7.32 (m, 2H), 7.16 – 7.08 (m, 2H), 6.83 (d, *J* = 8.7 Hz, 2H), 5.93 (t, *J* = 6.0 Hz, 1H), 3.77 (s, 3H), 3.57 (ddd, *J* = 13.6, 6.6, 5.0 Hz, 1H), 3.25 (ddd, *J* = 13.6, 7.4, 5.1 Hz, 1H), 2.74 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.50 (dd, *J* = 13.9, 8.4 Hz, 1H), 1.92 (tdd, *J* = 12.6, 6.5, 2.9 Hz, 1H), 1.39 – 1.26 (m, 6H), 0.89 (t, *J* = 7.2 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 134.8, 132.8, 131.3, 130.1, 128.5, 126.8, 114.2, 55.3, 44.0, 40.7, 39.1, 32.4, 29.1, 23.0, 14.2.

HR-MS (ESI) m/z calcd for $C_{21}H_{28}NO_2^+$ [M+H$^+$]: 326.2115, found 326.2112.



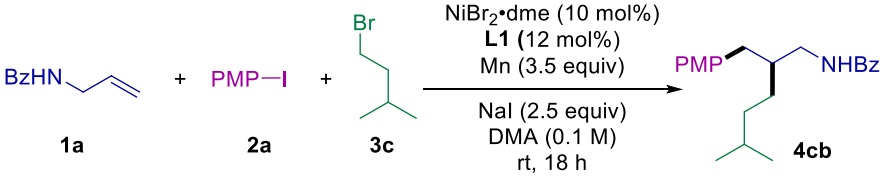
***N*-(1-(4-Methoxyphenyl)heptan-3-yl)benzamide (5ca)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromobutane (32.2 μL, 40.8 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ca** (33.6 mg, 52% yield, 4:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.73 – 7.65 (m, 2H), 7.51 – 7.46 (m, 1H), 7.45 – 7.36 (m, 2H), 7.11 (d, *J* = 8.6 Hz, 2H), 6.81 (d, *J* = 8.6 Hz, 2H), 5.84 (d, *J* = 9.1 Hz, 1H), 4.26 – 4.13 (m, 1H), 3.76 (s, 3H), 2.67 (dd, *J* = 8.7, 7.0 Hz, 2H), 1.96 – 1.86 (m, 1H), 1.85 – 1.77 (m, 1H), 1.67 – 1.60 (m, 1H), 1.54 – 1.48 (m, 1H), 1.34 (qd, *J* = 8.4, 7.5, 3.8 Hz, 4H), 0.93 – 0.82 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 158.0, 135.1, 134.1, 131.4, 129.4, 128.6, 126.9, 114.0, 55.4, 49.8, 37.3, 35.2, 31.6, 28.2, 22.8, 14.2.

HR-MS (ESI) m/z calcd for $C_{21}H_{28}NO_2^+$ [M+H$^+$]: 326.2115, found 326.2113.



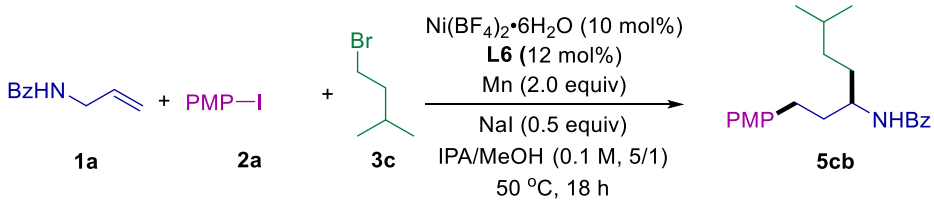
***N*-((2-(4-Methoxybenzyl)-5-methylhexyl)benzamide (4cb)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-methylbutane (47.8 μL, 60.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cb** (36.5 mg, 54% yield, 4:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 – 7.49 (m, 2H), 7.49 – 7.40 (m, 1H), 7.39 – 7.30 (m, 2H), 7.13 (d, *J* = 8.6 Hz, 2H), 6.83 (d, *J* = 8.6 Hz, 2H), 5.89 (s, 1H), 3.77 (s, 3H), 3.62 – 3.50 (m, 1H), 3.31 – 3.16 (m, 1H), 2.75 (dd, *J* = 13.9, 5.7 Hz, 1H), 2.50 (dd, *J* = 13.9, 8.4 Hz, 1H), 1.90 (ddt, *J* = 10.5, 7.0, 3.9 Hz, 1H), 1.52 (dt, *J* = 13.1, 6.6 Hz, 1H), 1.38 – 1.25 (m, 4H), 0.88 (d, *J* = 3.0 Hz, 3H), 0.87 (d, *J* = 2.9 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 134.8, 132.8, 131.4, 130.1, 128.5, 126.8, 114.2, 55.4, 44.1, 41.0, 39.2, 36.1, 30.5, 28.4, 22.8, 22.7.

HR-MS (ESI) m/z calcd for $C_{22}H_{30}NO_2^+$ [M+H$^+$]: 340.2271, found 340.2270.



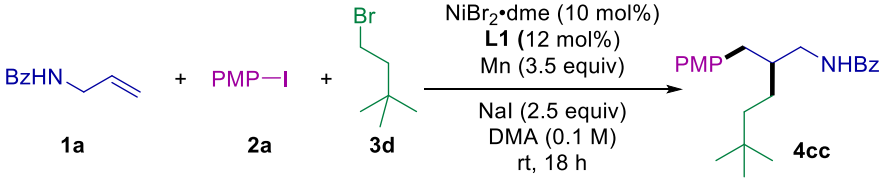
***N*-(1-(4-Methoxyphenyl)-6-methylheptan-3-yl)benzamide (5cb)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-methylbutane (36.0 μL, 45.0 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cb** (47.2 mg, 69% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.66 – 7.56 (m, 2H), 7.44 – 7.39 (m, 1H), 7.37 – 7.32 (m, 2H), 7.04 (d, *J* = 8.6 Hz, 2H), 6.74 (d, *J* = 8.6 Hz, 2H), 5.74 (d, *J* = 9.1 Hz, 1H), 4.17 – 4.07 (m, 1H), 3.69 (s, 3H), 2.59 (dd, *J* = 8.7, 7.0 Hz, 2H), 1.89 – 1.81 (m, 1H), 1.75 – 1.67 (m, 1H), 1.50 – 1.39 (m, 2H), 1.25 – 1.14 (m, 3H), 0.81 (d, *J* = 2.2 Hz, 3H), 0.80 (d, *J* = 2.2 Hz, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 158.0, 135.1, 134.1, 131.4, 129.4, 128.7, 126.9, 114.0, 55.4, 50.1, 37.3, 35.1, 33.3, 31.6, 28.2, 22.8, 22.7.

HR-MS (ESI) m/z calcd for $C_{22}H_{30}NO_2^+$ [M+H$^+$]: 340.2271, found 340.2265.



***N*-(2-(4-Methoxybenzyl)-5,5-dimethylhexyl)benzamide (4cc)**

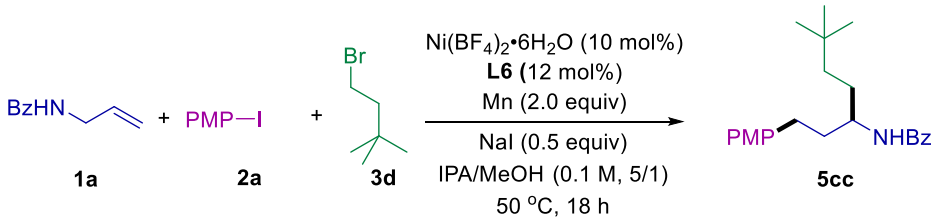
Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3,3-dimethylbutane (57.0 μL, 65.6 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cc** (39.1 mg, 55% yield, 4:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45 – 7.39 (m, 2H), 7.39 – 7.34 (m, 1H), 7.29 (dd, *J*

= 8.2, 6.8 Hz, 2H), 7.06 (d, *J* = 8.6 Hz, 2H), 6.77 (d, *J* = 8.6 Hz, 2H), 5.80 – 5.72 (m, 1H), 3.70 (s, 3H), 3.53 (ddd, *J* = 13.6, 6.7, 4.9 Hz, 1H), 3.17 (ddd, *J* = 13.6, 7.5, 4.9 Hz, 1H), 2.70 (dd, *J* = 13.9, 5.6 Hz, 1H), 2.43 (dd, *J* = 13.9, 8.5 Hz, 1H), 1.86 – 1.73 (m, 1H), 1.30 – 1.17 (m, 4H), 0.80 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 134.8, 132.8, 131.4, 130.1, 128.5, 126.8, 114.2, 55.4, 44.1, 41.4, 41.0, 39.2, 30.4, 29.5, 27.5.

HR-MS (ESI) m/z calcd for $C_{23}H_{32}NO_2^+$ [M+H$^+$]: 354.2428, found 354.2420.



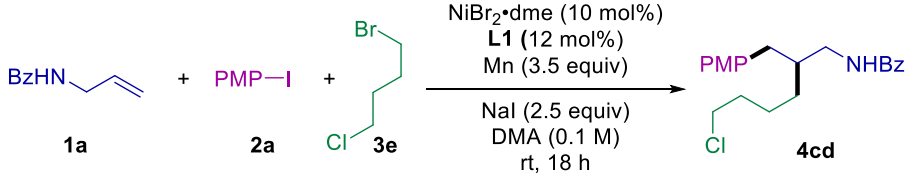
***N*-(1-(4-Methoxyphenyl)-6,6-dimethylheptan-3-yl)benzamide (5cc)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3,3-dimethylbutane (43.0 μL, 49.2 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cc** (50.4 mg, 71% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.67 – 7.57 (m, 2H), 7.45 – 7.38 (m, 1H), 7.35 – 7.30 (m, 2H), 7.03 (d, *J* = 8.6 Hz, 2H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.83 (d, *J* = 9.1 Hz, 1H), 4.10 (dq, *J* = 7.9, 3.7 Hz, 1H), 3.68 (s, 3H), 2.58 (dd, *J* = 8.9, 6.9 Hz, 2H), 1.87 – 1.81 (m, 1H), 1.74 – 1.65 (m, 1H), 1.56 – 1.48 (m, 1H), 1.44 – 1.37 (m, 1H), 1.18 (ddd, *J* = 10.6, 5.5, 4.0 Hz, 2H), 0.79 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.1, 157.9, 135.1, 134.1, 131.4, 129.4, 128.6, 126.9, 114.0, 55.3, 50.4, 40.0, 37.2, 31.6, 30.4, 30.2, 29.4.

HR-MS (ESI) m/z calcd for $C_{23}H_{32}NO_2^+$ [M+H$^+$]: 354.2428, found 354.2426.



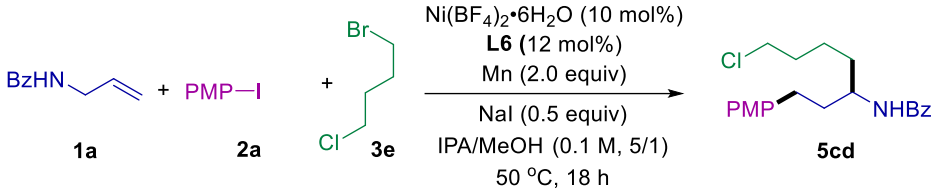
***N*-(6-Chloro-2-(4-methoxybenzyl)hexyl)benzamide (4cd)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-4-chlorobutane (46.0 μL, 68.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cd** (38.7 mg, 54% yield, 8:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.56 – 7.51 (m, 2H), 7.45 (d, *J* = 7.4 Hz, 1H), 7.40 – 7.33 (m, 2H), 7.12 (d, *J* = 8.6 Hz, 2H), 6.84 (d, *J* = 8.6 Hz, 2H), 5.96 (t, *J* = 6.0 Hz, 1H), 3.77 (d, *J* = 1.9 Hz, 3H), 3.61 – 3.47 (m, 3H), 3.27 (ddd, *J* = 13.7, 7.2, 5.2 Hz, 1H), 2.72 (dd, *J* = 13.8, 6.1 Hz, 1H), 2.53 (dd, *J* = 14.0, 8.2 Hz, 1H), 1.95 (dt, *J* = 11.6, 6.8 Hz, 1H), 1.83 – 1.71 (m, 2H), 1.63 – 1.51 (m, 2H), 1.39 (dd, *J* = 8.8, 6.6 Hz, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.4, 158.2, 134.7, 132.4, 131.4, 130.0, 128.5, 126.8, 114.2, 55.4, 45.0, 43.8, 40.7, 38.9, 32.8, 31.7, 24.2.

HR-MS (ESI) m/z calcd for $C_{21}H_{27}ClNO_2^+$ [M+H$^+$]: 360.1725, found 360.1723.



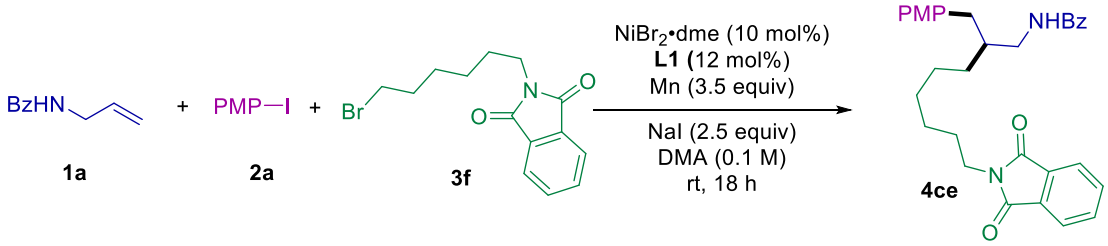
***N*-(7-Chloro-1-(4-methoxyphenyl)heptan-3-yl)benzamide (5cd)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-4-chlorobutane (34.5 μL, 51.0 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cd** (41.0 mg, 57% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.70 – 7.65 (m, 2H), 7.52 – 7.45 (m, 1H), 7.44 – 7.37 (m, 2H), 7.10 (d, *J* = 8.6 Hz, 2H), 6.81 (d, *J* = 8.7 Hz, 2H), 5.87 (d, *J* = 9.2 Hz, 1H), 4.21 (td, *J* = 8.2, 3.8 Hz, 1H), 3.76 (s, 3H), 3.52 (td, *J* = 6.6, 2.1 Hz, 2H), 2.67 (dd, *J* = 8.8, 6.7 Hz, 2H), 1.95 – 1.87 (m, 1H), 1.85 – 1.75 (m, 3H), 1.66 – 1.61 (m, 1H), 1.57 – 1.49 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.0, 134.9, 133.9, 131.5, 129.4, 128.7, 126.9, 114.1, 55.4, 49.6, 45.0, 37.2, 34.7, 32.4, 31.6, 23.3.

HR-MS (ESI) m/z calcd for $C_{21}H_{27}ClNO_2^+$ [M+H$^+$]: 360.1725, found 360.1726.



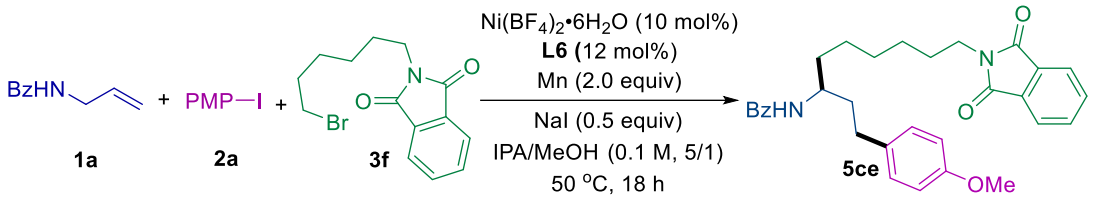
***N*-(8-(1,3-Dioxoisoindolin-2-yl)-2-(4-methoxybenzyl)octyl)benzamide (4ce)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 2-(6-bromohexyl)isoindoline-1,3-dione (124.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 3:1) to give the product **4ce** (69.6 mg, 70% yield, 7:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.82 (dd, *J* = 5.5, 3.0 Hz, 2H), 7.69 (dd, *J* = 5.4, 3.0 Hz, 2H), 7.56 – 7.50 (m, 2H), 7.46 – 7.40 (m, 1H), 7.38 – 7.32 (m, 2H), 7.11 (d, *J* = 8.6 Hz, 2H), 6.82 (d, *J* = 8.6 Hz, 2H), 5.98 – 5.91 (m, 1H), 3.76 (s, 3H), 3.66 (t, *J* = 7.3 Hz, 2H), 3.53 (ddd, *J* = 13.8, 6.5, 5.0 Hz, 1H), 3.25 (ddd, *J* = 13.7, 7.2, 5.2 Hz, 1H), 2.71 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.49 (dd, *J* = 13.9, 8.3 Hz, 1H), 1.89 (d, *J* = 6.4 Hz, 1H), 1.77 (d, *J* = 5.0 Hz, 1H), 1.69 – 1.64 (m, 3H), 1.41 – 1.29 (m, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.6, 167.3, 158.2, 134.8, 134.0, 132.7, 132.3, 131.3, 130.1, 128.5, 126.9, 123.3, 114.2, 55.3, 43.9, 40.7, 39.0, 38.0, 32.5, 29.4, 28.6, 26.8, 26.7.

HR-MS (ESI) m/z calcd for $C_{31}H_{35}N_2O_4^+$ [M+H$^+$]: 499.2591, found 499.2591.



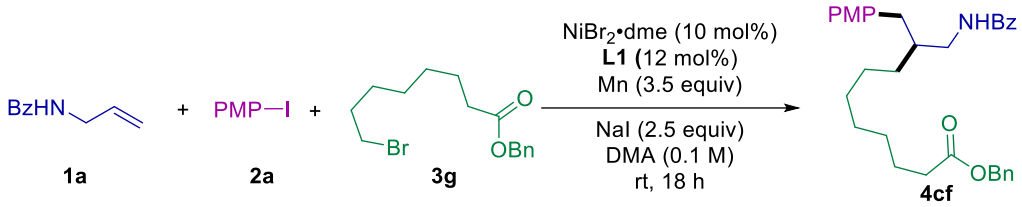
***N*-(9-(1,3-Dioxoisoindolin-2-yl)-1-(4-methoxyphenyl)nonan-3-yl)benzamide (5ce)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 2-(6-bromohexyl)isoindoline-1,3-dione (93.0 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 6:1) to give the product **5ce** (53.8 mg, 54% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.81 (dd, *J* = 5.4, 3.0 Hz, 2H), 7.71 – 7.66 (m, 4H), 7.49 – 7.44 (m, 1H), 7.41 – 7.34 (m, 2H), 7.09 (d, *J* = 8.7 Hz, 2H), 6.79 (d, *J* = 8.6 Hz, 2H), 5.93 (d, *J* = 9.1 Hz, 1H), 4.19 (dt, *J* = 7.9, 4.3 Hz, 1H), 3.75 (s, 3H), 3.64 (t, *J* = 7.3 Hz, 2H), 2.64 (dd, *J* = 8.8, 7.0 Hz, 2H), 1.87 (td, *J* = 8.1, 4.7 Hz, 2H), 1.82 – 1.74 (m, 1H), 1.68 – 1.61 (m, 2H), 1.52 – 1.48 (m, 1H), 1.39 – 1.29 (m, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.5, 167.2, 157.9, 135.0, 134.0, 133.9, 132.2, 131.4, 129.3, 128.6, 126.9, 123.2, 114.0, 55.3, 49.8, 38.0, 37.3, 35.3, 31.6, 29.2, 28.5, 26.8, 25.9.

HR-MS (ESI) m/z calcd for $C_{31}H_{35}N_2O_4^+$ [M+H$^+$]: 499.2591, found 499.2572.



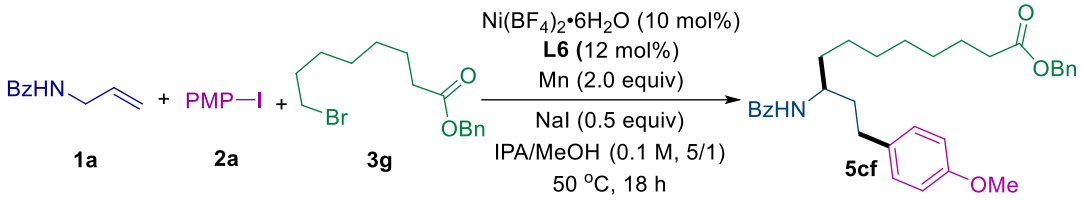
Benzyl-10-benzamido-9-(4-methoxybenzyl)decanoate (4cf)

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and benzyl 8-bromooctanoate (124.8 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cf** (42.3 mg, 42% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.54 – 7.50 (m, 2H), 7.47 – 7.43 (m, 1H), 7.38 – 7.34 (m, 6H), 7.33 – 7.30 (m, 1H), 7.12 (d, *J* = 8.5 Hz, 2H), 6.84 (d, *J* = 8.6 Hz, 2H), 5.90 (t, *J* = 5.7 Hz, 1H), 5.11 (s, 2H), 3.77 (s, 3H), 3.56 (ddd, *J* = 13.6, 6.6, 5.0 Hz, 1H), 3.25 (ddd, *J* = 13.6, 7.3, 5.1 Hz, 1H), 2.73 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.50 (dd, *J* = 13.9, 8.3 Hz, 1H), 2.34 (t, *J* = 7.5 Hz, 2H), 1.91 (dd, *J* = 9.8, 3.7 Hz, 1H), 1.62 (q, *J* = 7.2 Hz, 2H), 1.41 – 1.33 (m, 4H), 1.33 – 1.23 (m, 6H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 173.8, 167.3, 158.2, 136.3, 134.8, 132.7, 131.4, 130.1, 128.7, 128.5, 128.3, 126.8, 114.2, 66.2, 55.4, 44.0, 40.7, 39.1, 34.4, 32.7, 29.7, 29.25, 29.17, 26.8, 25.0.

HR-MS (ESI) m/z calcd for $C_{32}H_{40}NO_4^+$ [M+H$^+$]: 502.2952, found 502.2950.



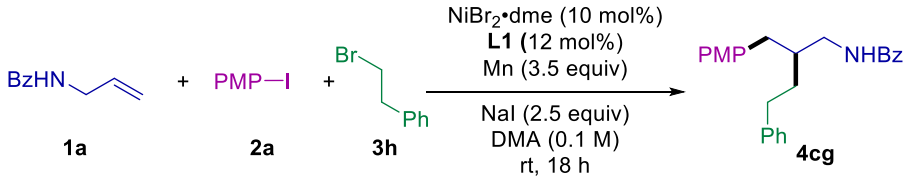
Benzyl-9-benzamido-11-(4-methoxyphenyl)undecanoate (5cf)

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and benzyl 8-bromooctanoate (93.6 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cf** (52.1 mg, 52% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.63 – 7.57 (m, 2H), 7.45 – 7.39 (m, 1H), 7.36 – 7.32 (m, 2H), 7.29 – 7.26 (m, 4H), 7.24 (d, *J* = 3.1 Hz, 1H), 7.03 (d, *J* = 8.5 Hz, 2H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.74 (d, *J* = 9.1 Hz, 1H), 5.03 (s, 2H), 4.13 (tt, *J* = 8.6, 3.7 Hz, 1H), 3.69 (s, 3H), 2.59 (dd, *J* = 9.0, 6.6 Hz, 2H), 2.26 (t, *J* = 7.6 Hz, 2H), 1.88 – 1.78 (m, 1H), 1.75 – 1.66 (m, 1H), 1.57 – 1.48 (m, 3H), 1.47 – 1.36 (m, 1H), 1.30 – 1.25 (m, 2H), 1.22 – 1.18 (m, 6H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 173.8, 167.2, 158.0, 136.3, 135.1, 134.1, 131.4, 129.4, 128.7, 128.6, 128.3, 126.9, 114.0, 66.2, 55.4, 49.8, 37.3, 35.5, 34.4, 31.6, 29.5, 29.2, 29.1, 26.0, 25.0.

HR-MS (ESI) m/z calcd for $C_{32}H_{40}NO_4^+$ [M+H$^+$]: 502.2952, found 502.2949.



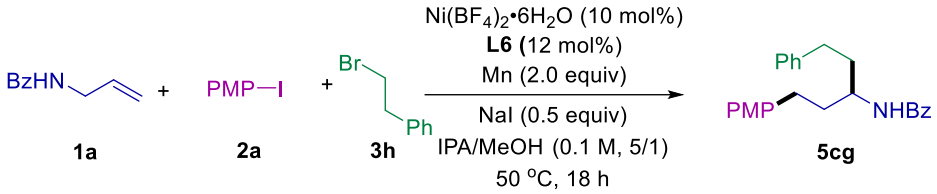
***N*-(2-(4-Methoxybenzyl)-4-phenylbutyl)benzamide (4cg)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and (2-bromoethyl)benzene (55.0 μL, 73.6 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cg** (37.8 mg, 51% yield, 5:1 rr) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.55 – 7.50 (m, 2H), 7.48 – 7.44 (m, 1H), 7.37 (dd, *J* = 8.2, 6.8 Hz, 2H), 7.31 – 7.26 (m, 2H), 7.22 – 7.15 (m, 3H), 7.12 (d, *J* = 8.6 Hz, 2H), 6.85 (d, *J* = 8.6 Hz, 2H), 5.90 (t, *J* = 6.0 Hz, 1H), 3.78 (s, 3H), 3.60 (ddd, *J* = 13.6, 6.5, 5.3 Hz, 1H), 3.35 (ddd, *J* = 13.6, 6.9, 5.2 Hz, 1H), 2.86 – 2.69 (m, 3H), 2.58 (dd, *J* = 13.9, 8.2 Hz, 1H), 2.02 – 1.93 (m, 1H), 1.78 – 1.65 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.4, 158.3, 142.3, 134.7, 132.4, 131.4, 130.1, 128.54, 128.52, 126.9, 126.0, 114.2, 55.4, 43.7, 40.2, 38.9, 34.3, 33.2.

HR-MS (ESI) m/z calcd for $C_{25}H_{27}NO_2Na^+$ [M+Na$^+$]: 396.1934, found 396.1926.



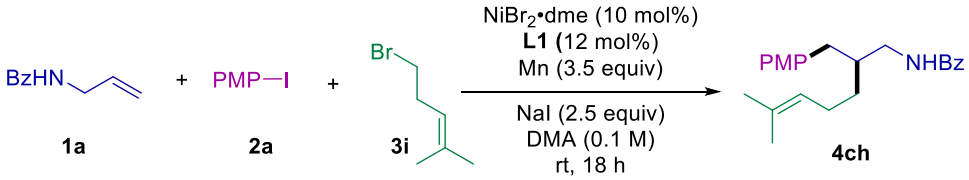
***N*-(1-(4-Methoxyphenyl)-5-phenylpentan-3-yl)benzamide (5cg)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and (2-bromoethyl)benzene (41.0 μL, 55.2 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cg** (58.3 mg, 78% yield, >20:1 rr) as a white solid.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.62 – 7.55 (m, 2H), 7.46 – 7.41 (m, 1H), 7.39 – 7.33 (m, 2H), 7.24 – 7.18 (m, 2H), 7.14 (d, *J* = 7.3 Hz, 3H), 7.05 (d, *J* = 8.6 Hz, 2H), 6.76 (d, *J* = 8.6 Hz, 2H), 5.83 (d, *J* = 9.1 Hz, 1H), 4.26 (tdd, *J* = 8.5, 4.7, 3.5 Hz, 1H), 3.72 (s, 3H), 2.65 (dt, *J* = 19.4, 7.9 Hz, 4H), 1.97 – 1.87 (m, 2H), 1.80 – 1.75 (m, 1H), 1.70 – 1.61 (m, 1H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 158.0, 141.9, 134.9, 133.9, 131.5, 129.4, 128.6, 128.5, 126.9, 126.8, 126.1, 114.0, 55.4, 49.8, 37.3, 37.2, 32.5, 31.6.

HR-MS (ESI) m/z calcd for $C_{25}H_{28}NO_2^+$ [M+H$^+$]: 374.2115, found 374.2098.



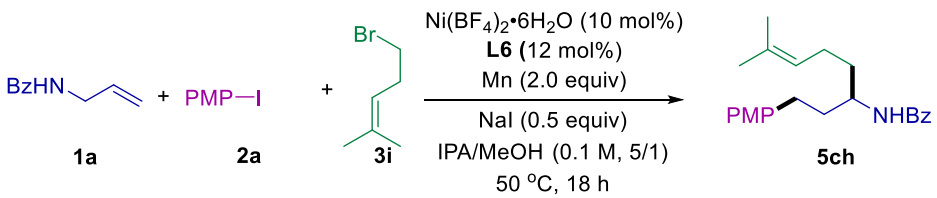
***N*-(2-(4-Methoxybenzyl)-6-methylhept-5-en-1-yl)benzamide (4ch)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 5-bromo-2-methylpent-2-ene (54.0 μL, 64.8 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ch** (44.9 mg, 64% yield, 4:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.56 – 7.50 (m, 2H), 7.48 – 7.43 (m, 1H), 7.36 (dd, *J* = 8.2, 6.8 Hz, 2H), 7.17 – 7.10 (m, 2H), 6.84 (d, *J* = 8.5 Hz, 2H), 5.94 – 5.86 (m, 1H), 5.09 (ddt, *J* = 8.6, 7.1, 1.5 Hz, 1H), 3.78 (s, 3H), 3.56 (ddd, *J* = 13.5, 6.5, 5.2 Hz, 1H), 3.30 (ddd, *J* = 13.5, 7.1, 5.1 Hz, 1H), 2.76 (dd, *J* = 13.9, 5.7 Hz, 1H), 2.51 (dd, *J* = 13.9, 8.4 Hz, 1H), 2.10 (q, *J* = 7.7 Hz, 2H), 1.95 (p, *J* = 6.7 Hz, 1H), 1.69 (s, 3H), 1.61 (s, 3H), 1.47 – 1.36 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 134.8, 132.7, 132.1, 131.4, 130.1, 128.5, 126.8, 124.3, 114.2, 55.4, 43.9, 40.3, 39.0, 32.8, 25.9, 25.5, 17.9.

HR-MS (ESI) m/z calcd for $C_{23}H_{30}NO_2^+$ [M+H$^+$]: 352.2271, found 352.2269.



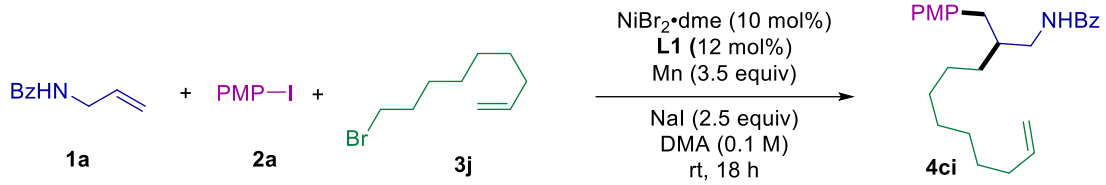
***N*-(1-(4-Methoxyphenyl)-7-methyloct-6-en-3-yl)benzamide (5ch)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 5-bromo-2-methylpent-2-ene (40.0 μL, 48.6 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ch** (35.1 mg, 50% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.68 – 7.64 (m, 2H), 7.47 – 7.41 (m, 1H), 7.36 (dd, *J* = 8.4, 7.0 Hz, 2H), 7.06 (d, *J* = 8.6 Hz, 2H), 6.76 (d, *J* = 8.6 Hz, 2H), 5.89 (d, *J* = 9.0 Hz, 1H), 5.08 (tt, *J* = 7.0, 1.6 Hz, 1H), 4.22 – 4.13 (m, 1H), 3.72 (s, 3H), 2.62 (t, *J* = 7.9 Hz, 2H), 2.04 (q, *J* = 8.1 Hz, 2H), 1.89 – 1.83 (m, 1H), 1.80 – 1.74 (m, 1H), 1.65 – 1.60 (m, 4H), 1.56 – 1.49 (m, 4H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.1, 157.9, 135.1, 134.1, 132.3, 131.4, 129.4, 128.6, 126.9, 123.9, 114.0, 55.3, 49.8, 37.3, 35.3, 31.6, 25.8, 24.7, 17.8.

HR-MS (ESI) m/z calcd for $C_{23}H_{30}NO_2^+$ [M+H$^+$]: 352.271, found 352.2269.



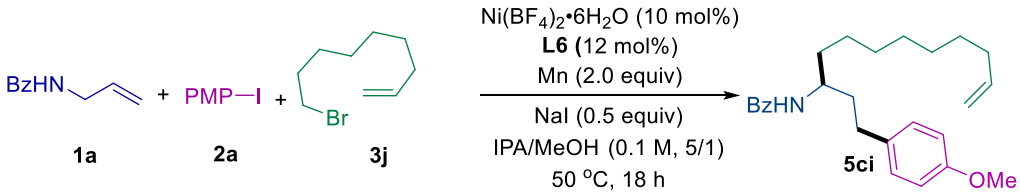
***N*-(2-(4-Methoxybenzyl)undec-10-en-1-yl)benzamide (4ci)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 9-bromonon-1-ene (74.3 μL, 82.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ci** (31.0 mg, 39% yield, 6:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 (d, *J* = 7.7 Hz, 2H), 7.48 – 7.41 (m, 1H), 7.39 – 7.33 (m, 2H), 7.12 (d, *J* = 8.5 Hz, 2H), 6.84 (d, *J* = 8.5 Hz, 2H), 5.88 (t, *J* = 5.8 Hz, 1H), 5.53 – 5.28 (m, 3H), 3.77 (s, 3H), 3.57 (dt, *J* = 11.7, 4.4 Hz, 1H), 3.25 (dt, *J* = 13.4, 6.4 Hz, 1H), 2.74 (dd, *J* = 14.1, 5.8 Hz, 1H), 2.50 (dd, *J* = 14.0, 8.3 Hz, 1H), 1.98 (dt, *J* = 24.9, 10.0 Hz, 4H), 1.71 – 1.57 (m, 2H), 1.29 (dd, *J* = 9.9, 6.3 Hz, 7H), 0.92 – 0.79 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 158.2, 134.8, 132.8, 131.4, 130.1, 128.5, 126.8, 124.8, 123.8, 114.2, 55.4, 44.0, 40.7, 39.1, 32.7, 29.9, 29.6, 29.2, 26.9, 18.1, 14.1.

HR-MS (ESI) m/z calcd for $C_{26}H_{36}NO_2^+$ [M+H$^+$]: 394.2741, found 394.2735.



***N*-(1-(4-Methoxyphenyl)dodec-11-en-3-yl)benzamide (5ci)**

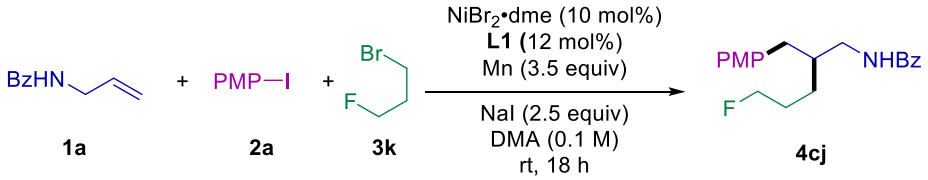
Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 9-bromonon-1-ene (55.7 μL, 61.5 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was

purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ci** (42.4 mg, 54% yield, 6:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$)) δ 7.63 – 7.57 (m, 2H), 7.43 – 7.38 (m, 1H), 7.33 (dd, *J* = 8.2, 6.6 Hz, 2H), 7.03 (d, *J* = 8.7 Hz, 2H), 6.73 (d, *J* = 8.6 Hz, 2H), 5.79 (d, *J* = 9.6 Hz, 1H), 5.76 – 5.66 (m, 1H), 4.90 (dd, *J* = 17.2, 1.9 Hz, 1H), 4.86 – 4.79 (m, 1H), 4.12 (tt, *J* = 8.6, 3.6 Hz, 1H), 3.68 (s, 3H), 2.58 (dd, *J* = 8.8, 6.9 Hz, 2H), 1.98 – 1.91 (m, 2H), 1.87 – 1.79 (m, 1H), 1.74 – 1.65 (m, 1H), 1.58 – 1.51 (m, 2H), 1.44 – 1.38 (m, 1H), 1.23 – 1.14 (m, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 157.9, 139.3, 135.0, 134.1, 131.4, 129.4, 128.6, 126.9, 114.3, 114.0, 55.3, 49.9, 37.3, 35.5, 33.9, 31.6, 29.2, 29.0, 26.0, 22.8, 14.2.

HR-MS (ESI) m/z calcd for $C_{26}H_{36}NO_2^+$ [M+H$^+$]: 394.2741, found 394.2733.



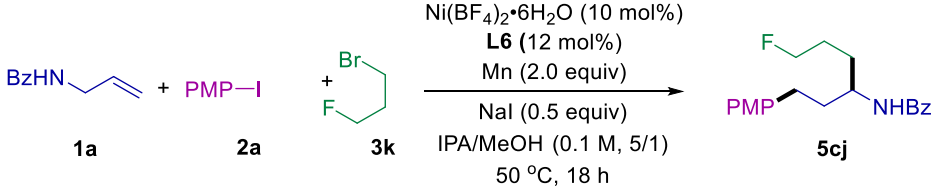
***N*-(5-Fluoro-2-(4-methoxybenzyl)pentyl)benzamide (4cj)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-3-fluoropropane (37.0 μL, 56.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cj** (50.0 mg, 76% yield, >20:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.56 – 7.51 (m, 2H), 7.48 – 7.43 (m, 1H), 7.39 – 7.34 (m, 2H), 7.12 (d, *J* = 8.6 Hz, 2H), 6.84 (d, *J* = 8.6 Hz, 2H), 6.01 – 5.97 (m, 1H), 4.50 – 4.44 (m, 1H), 4.43 – 4.36 (m, 1H), 3.77 (s, 3H), 3.55 (ddd, *J* = 13.7, 6.6, 5.3 Hz, 1H), 3.30 (ddd, *J* = 13.7, 7.0, 5.3 Hz, 1H), 2.73 (dd, *J* = 13.9, 6.0 Hz, 1H), 2.54 (dd, *J* = 13.9, 8.2 Hz, 1H), 1.99 (dt, *J* = 13.2, 6.5 Hz, 1H), 1.86 – 1.78 (m, 2H), 1.52 – 1.46 (m, 2H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.4, 158.3, 134.6, 132.3, 131.5, 130.0, 128.6, 126.9, 114.2, 84.3 (d, *J* = 164.8 Hz), 55.4, 43.6, 40.4, 39.0, 28.2 (d, *J* = 4.8 Hz), 27.8 (d, *J* = 19.4 Hz).

HR-MS (ESI) m/z calcd for $C_{20}H_{25}FNO_2^+$ [M+H$^+$]: 330.1864, found 330.1856.



***N*-(6-Fluoro-1-(4-methoxyphenyl)hexan-3-yl)benzamide (5cj)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-3-fluoropropane (28.0 μL, 42.0 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cj** (48.4 mg, 74% yield, 6:1 rr) as a colorless oil.

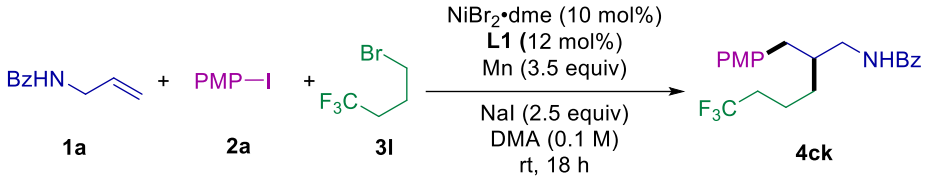
^{1}H NMR (600 MHz, $CDCl_3$) δ 7.63 – 7.59 (m, 2H), 7.40 (dd, *J* = 8.3, 6.7 Hz, 1H),

7.35 – 7.26 (m, 2H), 7.01 (d, *J* = 8.6 Hz, 2H), 6.72 (d, *J* = 8.6 Hz, 2H), 5.95 (d, *J* = 9.1 Hz, 1H), 4.44 – 4.37 (m, 1H), 4.32 (dtd, *J* = 9.1, 4.5, 2.6 Hz, 1H), 4.16 (tt, *J* = 8.9, 4.5 Hz, 1H), 3.67 (s, 3H), 2.65 – 2.54 (m, 2H), 1.86 – 1.79 (m, 1H), 1.73 – 1.63 (m, 4H), 1.57 – 1.49 (m, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 158.0, 134.8, 133.8, 131.5, 129.3, 128.6, 126.9, 114.0, 83.9 (d, *J* = 164.6 Hz), 55.3, 49.4, 37.3, 31.6, 31.3 (d, *J* = 4.3 Hz), 27.2 (d, *J* = 19.8 Hz).

^{19}F NMR (376 MHz, $CDCl_3$) δ -220.7 – -213.1 (m).

HR-MS (ESI) m/z calcd for $C_{20}H_{25}FNO_2^+$ [M+H$^+$]: 330.1864, found 330.1855.



***N*-(6,6,6-Trifluoro-2-(4-methoxybenzyl)hexyl)benzamide (4ck)**

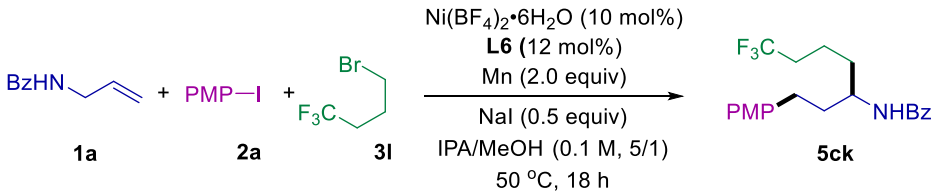
Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 4-bromo-1,1,1-trifluorobutane (49.0 μL, 76.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4ck** (52.3mg, 69% yield, 4:1 rr) as a colorless oil.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.56 – 7.50 (m, 2H), 7.48 – 7.45 (m, 1H), 7.40 – 7.33 (m, 2H), 7.11 (d, *J* = 8.5 Hz, 2H), 6.84 (d, *J* = 8.6 Hz, 2H), 5.95 (t, *J* = 6.1 Hz, 1H), 3.78 (s, 3H), 3.56 (ddd, *J* = 13.7, 6.7, 5.1 Hz, 1H), 3.28 (ddd, *J* = 13.7, 7.2, 5.3 Hz, 1H), 2.72 (dd, *J* = 13.9, 6.0 Hz, 1H), 2.54 (dd, *J* = 14.0, 8.2 Hz, 1H), 2.11 – 2.02 (m, 2H), 2.00 – 1.90 (m, 1H), 1.68 (q, *J* = 7.5 Hz, 2H), 1.49 – 1.38 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.4, 158.4, 134.6, 132.1, 131.5, 130.0, 128.6, 127.2 (q, *J* = 283.3 Hz), 126.9, 114.3, 55.4, 43.6, 40.6, 38.8, 34.0 (q, *J* = 28.5 Hz), 31.6, 19.5 (q, *J* = 3.1 Hz).

^{19}F NMR (376 MHz, $CDCl_3$) δ -63.19 – -66.95 (m)

HR-MS (ESI) m/z calcd for $C_{21}H_{25}F_3NO_2^+$ [M+H$^+$]: 380.1832, found 380.1831.



***N*-(1-(4-Methoxyphenyl)heptan-3-yl)benzamide (5ck)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 4-bromo-1,1,1-trifluorobutane (37.0 μL, 57.0 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5ck** (41.1 mg, 54% yield, >20:1 rr) as a colorless oil.

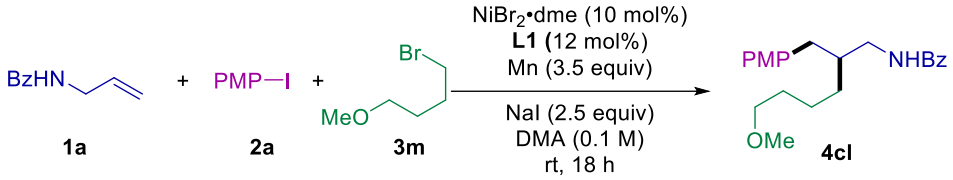
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.74 – 7.67 (m, 2H), 7.54 – 7.49 (m, 1H), 7.46 – 7.40 (m, 2H), 7.12 (d, *J* = 8.6 Hz, 2H), 6.83 (d, *J* = 8.6 Hz, 2H), 6.09 (d, *J* = 9.1 Hz, 1H),

4.23 (tt, *J* = 8.7, 4.1 Hz, 1H), 3.78 (s, 3H), 2.69 (dt, *J* = 10.1, 4.7 Hz, 2H), 2.20 – 2.08 (m, 2H), 1.97 – 1.81 (m, 2H), 1.72 – 1.60 (m, 4H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.4, 158.1, 134.7, 133.6, 131.6, 129.4, 128.7, 126.9, 125.8 (q, *J* = 276.2 Hz), 114.1, 55.4, 49.3, 37.1, 34.6, 33.5 (d, *J* = 28.5 Hz), 31.6, 18.7 (d, *J* = 3.0 Hz).

^{19}F NMR (376 MHz, $CDCl_3$) δ -64.61 – -68.65 (m)

HR-MS (ESI) m/z calcd for $C_{21}H_{25}F_3NO_2^+$ [M+H$^+$]: 380.1832, found 380.1830.



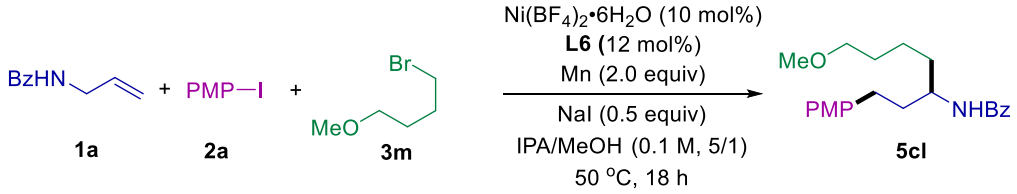
***N*-(6-Methoxy-2-(4-methoxybenzyl)hexyl)benzamide (4cl)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 1-bromo-4-methoxybutane (51.0 μL, 66.4 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cl** (49.0 mg, 69% yield, 5:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.50 – 7.44 (m, 2H), 7.41 – 7.34 (m, 1H), 7.32 – 7.26 (m, 2H), 7.06 – 7.00 (m, 2H), 6.76 (d, *J* = 8.4 Hz, 2H), 5.90 (s, 1H), 3.69 (s, 3H), 3.48 (dt, *J* = 12.2, 6.0 Hz, 1H), 3.29 (t, *J* = 6.2 Hz, 2H), 3.23 (s, 3H), 3.19 – 3.14 (m, 1H), 2.69 – 2.55 (m, 1H), 2.49 – 2.41 (m, 1H), 1.89 – 1.75 (m, 1H), 1.53 – 1.47 (m, 2H), 1.43 – 1.36 (m, 2H), 1.34 – 1.28 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 134.7, 132.6, 131.4, 130.1, 128.5, 126.9, 114.2, 72.7, 58.7, 55.3, 43.8, 40.7, 38.9, 32.3, 29.9, 23.5.

HR-MS (ESI) m/z calcd for $C_{22}H_{30}NO_3^+$ [M+H$^+$]: 356.2220, found 356.2218.



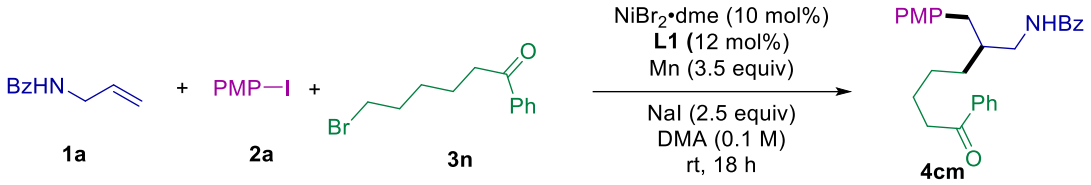
***N*-(7-Methoxy-1-(4-methoxyphenyl)heptan-3-yl)benzamide (5cl)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 1-bromo-4-methoxybutane (38.0 μL, 49.8 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cl** (43.2 mg, 61% yield, 20:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.72 – 7.67 (m, 2H), 7.50 – 7.45 (m, 1H), 7.40 (dd, *J* = 8.2, 6.7 Hz, 2H), 7.10 (d, *J* = 8.6 Hz, 2H), 6.80 (d, *J* = 8.6 Hz, 2H), 5.97 (d, *J* = 9.0 Hz, 1H), 4.25 – 4.17 (m, 1H), 3.75 (s, 3H), 3.35 (td, *J* = 6.4, 1.6 Hz, 2H), 3.30 (s, 3H), 2.66 (dd, *J* = 8.7, 7.0 Hz, 2H), 1.96 – 1.87 (m, 1H), 1.85 – 1.75 (m, 1H), 1.65 – 1.52 (m, 4H), 1.49 – 1.38 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.2, 157.9, 135.0, 134.0, 131.4, 129.3, 128.6, 126.9, 114.0, 72.7, 58.6, 55.3, 49.8, 37.2, 35.2, 31.6, 29.6, 22.7.

HR-MS (ESI) m/z calcd for $C_{22}H_{30}NO_3^+$ [M+H$^+$]: 356.2220, found 356.2217.



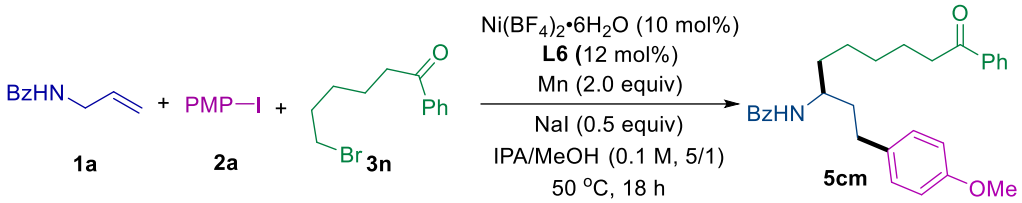
***N*-(2-(4-Methoxybenzyl)-8-oxo-8-phenyloctyl)benzamide (4cm)**

Following General Procedure C, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (93.6 mg, 0.4 mmol) and 6-bromo-1-phenylhexan-1-one (102.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cm** (60.2 mg, 68% yield, 6:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, CDCl$_3$) δ 8.00 – 7.92 (m, 2H), 7.58 – 7.49 (m, 3H), 7.49 – 7.42 (m, 3H), 7.36 (dd, *J* = 8.1, 6.8 Hz, 2H), 7.12 (d, *J* = 8.6 Hz, 2H), 6.83 (d, *J* = 8.6 Hz, 2H), 5.95 – 5.87 (m, 1H), 3.77 (s, 3H), 3.57 (ddd, *J* = 13.6, 6.6, 5.1 Hz, 1H), 3.27 (ddd, *J* = 13.6, 7.2, 5.1 Hz, 1H), 2.96 (t, *J* = 7.3 Hz, 2H), 2.73 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.51 (dd, *J* = 13.9, 8.3 Hz, 1H), 1.94 (p, *J* = 6.5 Hz, 1H), 1.81 – 1.69 (m, 2H), 1.50 – 1.43 (m, 2H), 1.41 – 1.37 (m, 3H), 1.31 – 1.23 (m, 1H).

^{13}C NMR (101 MHz, CDCl$_3$) δ 200.6, 167.3, 158.2, 137.2, 134.8, 133.1, 132.7, 131.4, 130.1, 128.7, 128.5, 128.2, 126.9, 114.2, 55.4, 43.9, 40.7, 39.1, 38.6, 32.5, 29.6, 26.8, 24.2.

HR-MS (ESI) m/z calcd for $C_{29}H_{34}NO_3^+$ [M+H$^+$]: 444.2533, found 44.2532.



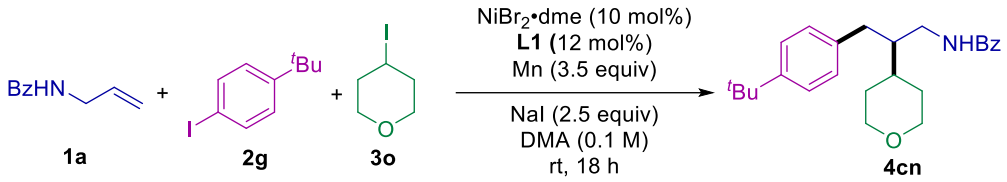
***N*-(3-(4-Methoxyphenyl)-2-(tetrahydro-2*H*-pyran-4-yl)propyl)benzamide (5cm)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 4-iodoanisole (70.2 mg, 0.3 mmol) and 6-bromo-1-phenylhexan-1-one (76.5 mg, 0.3 mmol), Mn (22.0 mg, 0.4 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cm** (51.8 mg, 58% yield, 6:1 rr) as a colorless oil.

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.96 – 7.88 (m, 2H), 7.72 – 7.65 (m, 2H), 7.56 – 7.51 (m, 1H), 7.49 – 7.36 (m, 5H), 7.10 (d, *J* = 8.6 Hz, 2H), 6.80 (d, *J* = 8.6 Hz, 2H), 5.94 (d, *J* = 9.2 Hz, 1H), 4.21 (dt, *J* = 9.3, 4.6 Hz, 1H), 3.75 (s, 3H), 2.94 (t, *J* = 7.3 Hz, 2H), 2.66 (t, *J* = 7.8 Hz, 2H), 1.93 – 1.86 (m, 1H), 1.83 – 1.78 (m, 1H), 1.72 (t, *J* = 7.0 Hz, 2H), 1.67 – 1.58 (m, 2H), 1.49 – 1.36 (m, 4H).

^{13}C NMR (101 MHz, CDCl$_3$) δ 200.6, 167.2, 157.9, 137.1, 135.0, 134.0, 133.0, 131.4, 129.4, 128.7, 128.6, 128.1, 126.9, 114.0, 55.3, 49.7, 38.5, 37.3, 35.3, 31.6, 29.3, 25.9, 24.2.

HR-MS (ESI) m/z calcd for $C_{29}H_{34}NO_3^+$ [M+H$^+$]: 444.2533, found 444.2433.



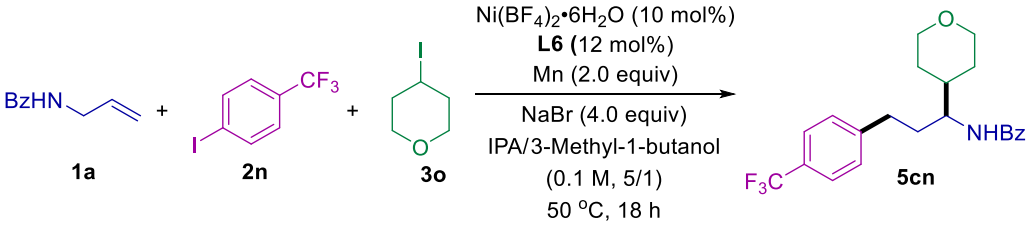
***N*-(3-(4-Methoxyphenyl)-2-(tetrahydro-2*H*-pyran-4-yl)propyl)benzamide (4cn)**

Following General Procedure C, *N*-allylbenzamide (**1a**, 32.2 mg, 0.2 mmol), 1-(*tert*-butyl)-4-iodobenzene (**2g**, 104.0 mg, 0.4 mmol) and 4-iodotetrahydro-2*H*-pyran (**3o**, 63.6 mg, 0.3 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 4:1) to give the product **4cn** (41.7 mg, 55% yield, 10:1 rr) as a white solid.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.42 (d, *J* = 7.3 Hz, 3H), 7.35 – 7.31 (m, 4H), 7.16 (d, *J* = 8.1 Hz, 2H), 5.73 (t, *J* = 6.0 Hz, 1H), 4.05 – 3.98 (m, 2H), 3.74 (ddd, *J* = 13.7, 6.9, 4.3 Hz, 1H), 3.38 (td, *J* = 11.6, 2.1 Hz, 2H), 3.25 – 3.18 (m, 1H), 2.93 – 2.88 (m, 1H), 2.46 (dd, *J* = 13.8, 10.0 Hz, 1H), 1.86 (ddd, *J* = 9.6, 7.7, 4.4 Hz, 1H), 1.71 – 1.65 (m, 3H), 1.60 (qd, *J* = 12.1, 4.5 Hz, 2H), 1.30 (s, 9H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.0, 149.4, 137.8, 134.5, 131.3, 128.7, 128.5, 126.7, 125.9, 68.5, 68.4, 45.9, 42.0, 38.0, 36.6, 34.5, 31.5, 30.3, 29.8.

HR-MS (ESI) m/z calcd for $C_{25}H_{34}NO_2^+$ [M+H$^+$]: 380.2584, found 380.2576.



***N*-(1-(Tetrahydro-2*H*-pyran-4-yl)-3-(4-(trifluoromethyl)phenyl)propyl)benzamide (5cn)**

Following General Procedure D, *N*-allylbenzamide (32.2 mg, 0.2 mmol), 1-iodo-4-(trifluoromethyl)benzene (**2n**, 108.8 mg, 0.4 mmol), 4-iodotetrahydro-*2H*-pyran (34.5 μL, 63.6 mg, 0.3 mmol), NaBr (82.4 mg, 0.8 mmol), IPA (1.65 mL) and 3-methyl-1-butanol (0.35 mL) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5cn** (30.4 mg, 39% yield, >20:1 rr) as a white solid.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.75 – 7.65 (m, 2H), 7.53 – 7.49 (m, 3H), 7.44 (dd, *J* = 8.2, 6.7 Hz, 2H), 7.29 (d, *J* = 7.9 Hz, 2H), 5.80 (d, *J* = 9.7 Hz, 1H), 4.16 (tdd, *J* = 9.7, 6.0, 3.5 Hz, 1H), 4.05 – 3.96 (m, 2H), 3.36 (tdd, *J* = 11.8, 3.8, 2.3 Hz, 2H), 2.82 – 2.72 (m, 2H), 2.06 – 1.94 (m, 1H), 1.85 – 1.72 (m, 2H), 1.68 – 1.61 (m, 2H), 1.52 – 1.40 (m, 2H).

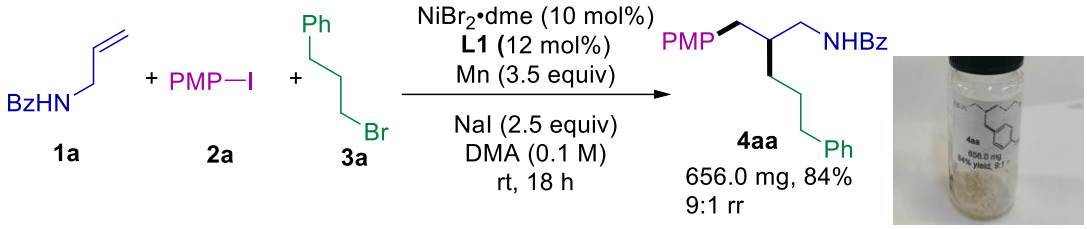
^{13}C NMR (151 MHz, $CDCl_3$) δ 167.6, 145.9, 134.6, 131.8, 128.84, 128.81, 127.8 (q, *J* = 262.9 Hz), 126.9, 125.6 (q, *J* = 3.7 Hz), 68.0, 67.9, 53.5, 40.2, 33.9, 32.7, 29.9, 28.6.

^{19}F NMR (376 MHz, $CDCl_3$) δ -62.3.

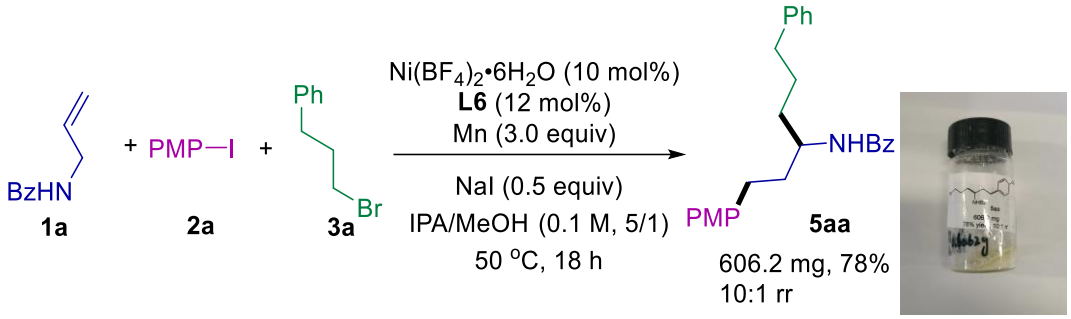
HR-MS (ESI) m/z calcd for $C_{22}H_{25}F_3NO_2^+$ [M+H$^+$]: 392.1832, found 392.1800.

VI. Mechanistic Experiments

6.1 Scale-up reactions of three-component arylalkylations of allylic amines

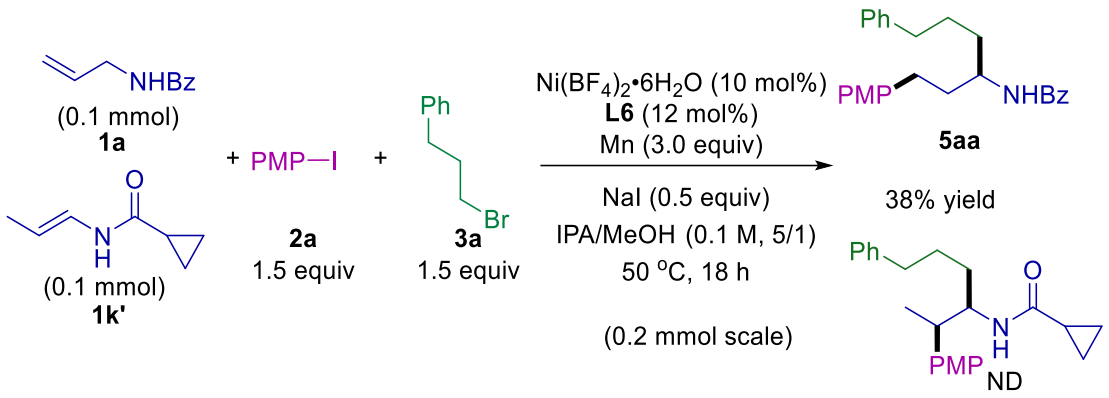


In a nitrogen-filled glovebox, $NiBr_2$·dme (62.0 mg, 0.2 mmol, 10 mol%), **L1** (116.0 mg, 0.24 mmol, 12 mol%), 4-iodoanisole **2a** (936.1 mg, 4.0 mmol, 2.0 equiv), Mn (386.0 mg, 7.0 mmol, 3.5 equiv), NaI (750.0 mg, 5.0 mmol, 2.5 equiv) and DMA (20.0 mL) were added to a 100-mL vial equipped with a stirring bar. Then, **1a** (322.0 mg, 2.0 mmol, 1.0 equiv) and 1-bromo-3-phenylpropane **3a** (792.0 mg, 4.0 mmol, 2.0 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **4aa** (light yellow solid, 656.0 mg, 84% yield, 9:1 rr).



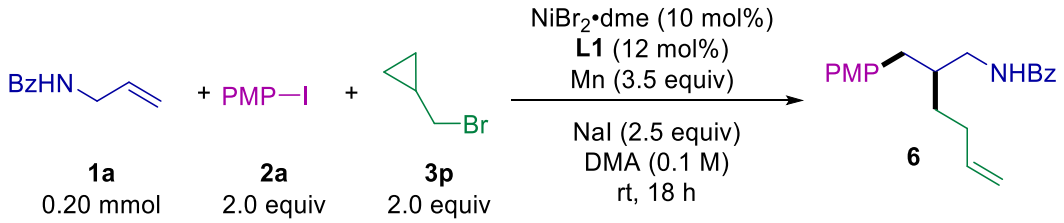
In a nitrogen-filled glovebox, $Ni(BF_4)_2$·$6H_2O$ (68.0 mg, 0.2 mmol, 10 mol%), **L6** (116.0 mg, 0.24 mmol, 12 mol%), 4-iodoanisole **2a** (702.1 mg, 3.0 mmol, 1.5 equiv), Mn (330.0 mg, 6.0 mmol, 3.0 equiv), NaI (150.0 mg, 1.0 mmol, 0.5 equiv), IPA (16.5 mL) and MeOH (3.5 mL) were added to a 100-mL vial equipped with a stirring bar. Then, **1a** (322.0 mg, 2.0 mmol, 1.0 equiv), and 1-bromo-3-phenylpropane **3a** (594.0 mg, 3.0 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 ^oC for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **5aa** (light yellow solid, 606.2 mg, 78% yield, 10:1 rr).

6.2 Intermolecular cross-over reaction

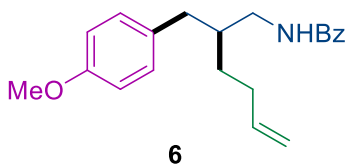


In a nitrogen-filled glovebox, $Ni(BF_4)_2{\cdot}6H_2O$ (6.8 mg, 0.02 mmol, 10 mol%), **L6** (11.6 mg, 0.024 mmol, 12 mol%), 4-iodoanisole **2a** (70.2 mg, 0.3 mmol, 1.5 equiv), Mn (33.0 mg, 0.6 mmol, 3.0 equiv), NaI (15.0 mg, 0.1 mmol, 0.5 equiv), IPA (1.65 mL) and MeOH (0.35 mL) were added to a 10-mL vial equipped with a stirring bar. Then, **1a** (16.1 mg, 0.1 mmol, 0.5 equiv), **1k'** (12.5 mg, 0.1 mmol, 0.5 equiv), and 1-bromo-3-phenylpropane **3a** (59.4 mg, 0.3 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 °C for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **5aa** (light yellow solid, 29.4 mg, 38% yield, >20:1 rr).

6.3 Radical clock reactions



In a nitrogen-filled glovebox, $NiBr_2{\cdot}dme$ (6.2 mg, 0.02 mmol, 10 mol%), **L1** (11.6 mg, 0.024 mmol, 12 mol%), 4-iodoanisole **2a** (93.6 mg, 0.40 mmol, 2.0 equiv), Mn (38.6 mg, 0.70 mmol, 3.5 equiv), NaI (75.0 mg, 0.50 mmol, 2.5 equiv) and DMA (2.0 mL) were added to a 10-mL vial equipped with a stirring bar. Then, **1a** (32.2 mg, 0.20 mmol, 1.0 equiv), and 1-(bromomethyl)cyclopropane **3** (39.0 μL, 54.0 mg, 0.40 mmol, 2.0 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **6** (32.2 mg, 50% yield, 12:1 rr) as a colorless oil.



6

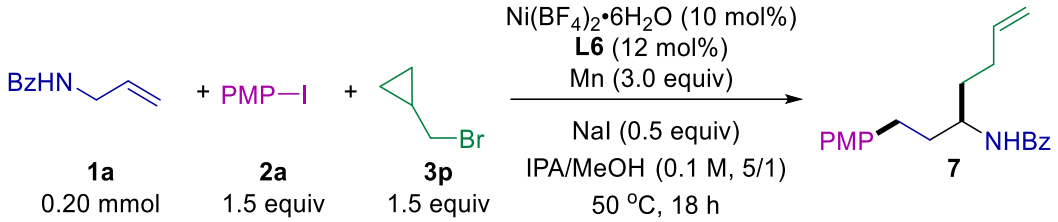
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-4-(trifluoromethyl)benzamide (6)**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 (dd, *J* = 8.4, 1.4 Hz, 2H), 7.47 – 7.41 (m, 1H),

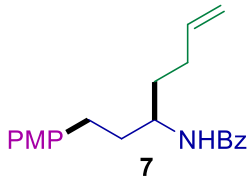
7.39 – 7.31 (m, 2H), 7.12 (d, *J* = 8.6 Hz, 2H), 6.87 – 6.77 (m, 2H), 5.95 (t, *J* = 5.7 Hz, 1H), 5.79 (ddt, *J* = 16.9, 10.3, 6.6 Hz, 1H), 5.04 (dd, *J* = 17.1, 1.8 Hz, 1H), 4.97 (dd, *J* = 10.3, 1.8 Hz, 1H), 3.77 (s, 3H), 3.56 (ddd, *J* = 13.6, 6.5, 5.1 Hz, 1H), 3.28 (ddd, *J* = 13.6, 7.2, 5.2 Hz, 1H), 2.75 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.51 (dd, *J* = 13.9, 8.4 Hz, 1H), 2.23 – 2.12 (m, 2H), 2.03 – 1.91 (m, 1H), 1.53 – 1.41 (m, 2H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 167.3, 158.2, 138.5, 134.7, 132.5, 131.4, 130.1, 128.5, 126.8, 115.0, 114.2, 55.3, 43.8, 40.1, 38.9, 31.7, 31.1.

HR-MS (ESI) m/z calcd for $C_{21}H_{26}NO_2^+$ [M+H$^+$]: 324.1958, found 324.1957.



In a nitrogen-filled glovebox, $Ni(BF_4)_2{\cdot}6H_2O$ (6.8 mg, 0.02 mmol, 10 mol%), **L6** (11.6 mg, 0.024 mmol, 12 mol%), 4-iodoanisole **2** (70.2 mg, 0.30 mmol, 1.5 equiv), Mn (33.0 mg, 0.60 mmol, 3.0 equiv), NaI (15.0 mg, 0.10 mmol, 0.5 equiv), IPA (1.65 mL) and MeOH (0.35 mL) were added to a 10-mL vial equipped with a stirring bar. Then, **1a** (32.2 mg, 0.20 mmol, 1.0 equiv), and 1-(bromomethyl)cyclopropane **3** (29.0 μL, 40.5 mg, 0.30 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 °C for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **7** (42.1 mg, 65% yield, 4:1 rr) as a colorless oil.



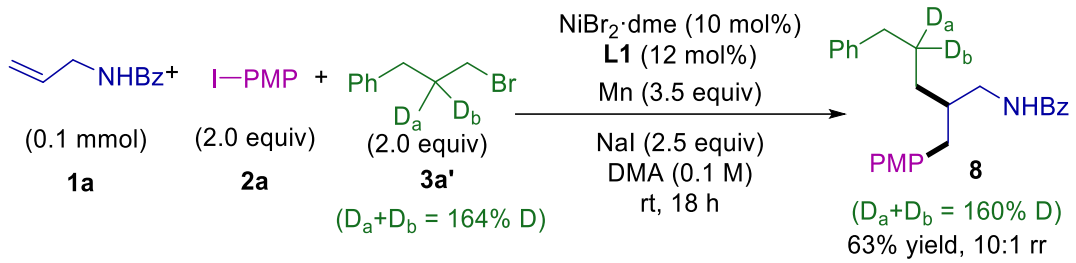
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-4-(trifluoromethyl)benzamide (7)**

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.74 – 7.64 (m, 2H), 7.52 – 7.40 (m, 3H), 7.11 (d, *J* = 8.6 Hz, 2H), 6.81 (d, *J* = 8.6 Hz, 2H), 5.83 (dtd, *J* = 13.4, 10.2, 6.6 Hz, 2H), 5.03 (dd, *J* = 17.1, 1.7 Hz, 1H), 4.97 (dd, *J* = 10.2, 1.7 Hz, 1H), 4.26 (ddt, *J* = 12.9, 8.5, 4.3 Hz, 1H), 3.77 (s, 3H), 2.67 (dd, *J* = 8.7, 7.0 Hz, 2H), 2.16 (dddd, *J* = 7.7, 6.4, 5.2, 1.4 Hz, 2H), 1.96 – 1.89 (m, 1H), 1.82 – 1.72 (m, 1H), 1.69 – 1.59 (m, 2H).

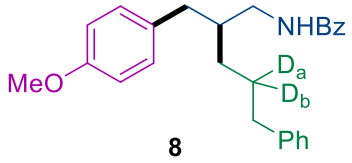
^{13}C NMR (151 MHz, $CDCl_3$) δ 167.2, 158.0, 138.2, 135.0, 134.0, 131.5, 129.4, 128.7, 126.9, 115.2, 114.1, 55.4, 49.6, 37.3, 34.7, 31.6, 30.4.

HR-MS (ESI) m/z calcd for $C_{21}H_{26}NO_2^+$ [M+H$^+$]: 324.1958, found 324.1955.

6.4 Deuterium-labeling experiments



In a nitrogen-filled glovebox, $NiBr_2$·dme (3.1 mg, 0.02 mmol, 10 mol%), **L1** (5.9 mg, 0.012 mmol, 12 mol%), 4-iodoanisole **2a** (46.8 mg, 0.20 mmol, 2.0 equiv), Mn (19.3 mg, 0.35 mmol, 3.5 equiv), NaI (37.5 mg, 0.25 mmol, 2.5 equiv) and DMA (1.0 mL) were added to a 10-mL vial equipped with a stirring bar. Then, **1a** (16.1 mg, 0.10 mmol, 1.0 equiv), and alkyl bromide **3a'** (40.0 mg, 0.20 mmol, 2.0 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **8** as colorless oil (24.4 mg, 63% yield, 10:1 rr, 160% D).



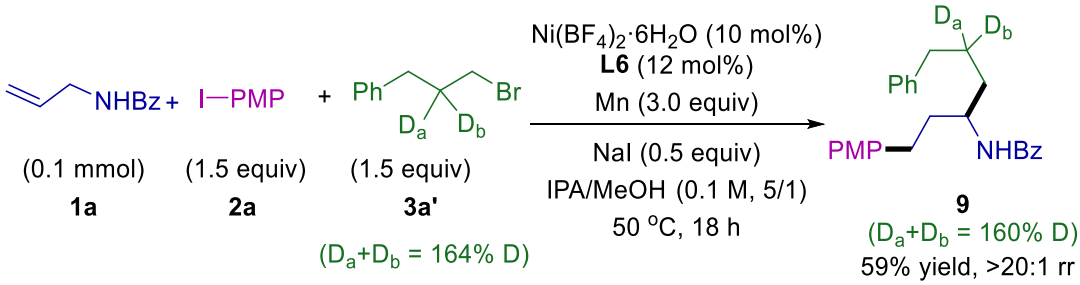
8

***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-4-(trifluoromethyl)benzamide (8)**

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.51 – 7.48 (m, 2H), 7.45 (d, *J* = 7.3 Hz, 1H), 7.39 – 7.34 (m, 2H), 7.28 – 7.24 (m, 2H), 7.19 – 7.14 (m, 3H), 7.10 (d, *J* = 8.5 Hz, 2H), 6.83 (d, *J* = 8.5 Hz, 2H), 5.81 (d, *J* = 6.0 Hz, 1H), 3.78 (s, 3H), 3.55 (dt, *J* = 13.7, 5.9 Hz, 1H), 3.26 (ddd, *J* = 13.1, 7.1, 5.2 Hz, 1H), 2.72 (dd, *J* = 13.9, 5.8 Hz, 1H), 2.60 (s, 2H), 2.50 (dd, *J* = 13.9, 8.3 Hz, 1H), 1.96 (p, *J* = 6.4 Hz, 1H), 1.80 – 1.71 (m, 0.4H), 1.40 (d, *J* = 6.6 Hz, 2H).

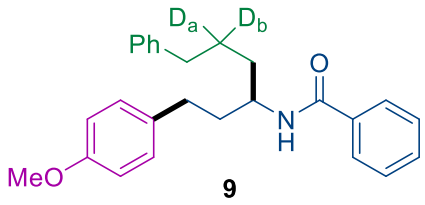
^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 158.2, 142.4, 134.8, 132.6, 131.4, 130.1, 128.6, 128.53, 128.45, 126.9, 125.9, 114.2, 55.4, 43.8, 40.6, 39.0, 35.9, 31.8, 28.2 – 27.5 (m).

HR-MS (ESI) m/z calcd for $C_{26}H_{27}D_2NO_2Na^+$ [M+Na^+]: 421.2212, found 412.2213.



In a nitrogen-filled glovebox, $Ni(BF_4)_2·6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.9 mg, 0.012 mmol, 12 mol%), 4-iodoanisole **2a** (35.1 mg, 0.15 mmol, 1.5 equiv), Mn (16.5 mg, 0.30 mmol, 3.0 equiv), NaI (7.5 mg, 0.05 mmol, 0.5 equiv), IPA (0.83 mL) and MeOH (0.17 mL) were added to a 10-mL vial equipped with a stirring bar. Then,

1a (16.1 mg, 0.10 mmol, 1.0 equiv), and alkyl bromide **3a'** (30.0 mg, 0.30 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 °C for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **9** (colorless oil, 22.8 mg, 59% yield, >20:1 rr, 160% D).



9

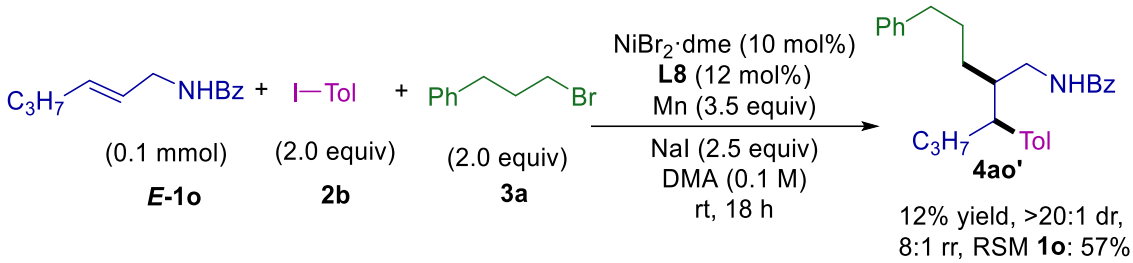
***N*-(2-(4-Methoxybenzyl)-5-phenylpentyl)-4-(trifluoromethyl)benzamide (9)**

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.69 – 7.64 (m, 2H), 7.51 – 7.46 (m, 1H), 7.41 (dd, *J* = 8.2, 7.0 Hz, 2H), 7.28 – 7.22 (m, 2H), 7.19 – 7.12 (m, 3H), 7.10 – 7.06 (m, 2H), 6.81 (d, *J* = 8.6 Hz, 2H), 5.77 (d, *J* = 9.2 Hz, 1H), 4.30 – 4.23 (m, 1H), 3.76 (s, 3H), 2.69 – 2.56 (m, 4H), 1.90 (dddd, *J* = 13.5, 8.8, 7.3, 4.6 Hz, 1H), 1.77 (dtd, *J* = 13.7, 8.6, 6.5 Hz, 1H), 1.72 – 1.69 (m, 0.4H), 1.67 – 1.60 (m, 1H), 1.54 (dd, *J* = 13.8, 8.2 Hz, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.2, 158.0, 142.2, 135.0, 134.0, 131.5, 129.4, 128.7, 128.6, 128.5, 126.9, 125.9, 114.1, 55.4, 49.6, 37.3, 35.6, 34.8, 31.6, 28.0 – 26.7 (m).

HR-MS (ESI) m/z calcd for $C_{26}H_{27}D_2NO_2Na^+$ [M+Na$^+$]: 421.2212, found 412.2214.

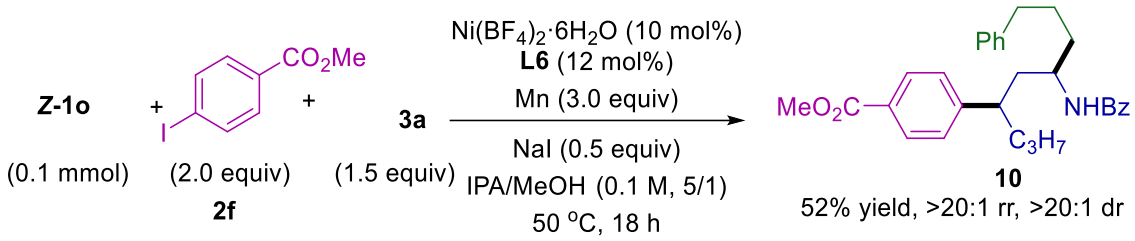
6.5 Reaction with *E*-alkene or *Z*-alkenes:



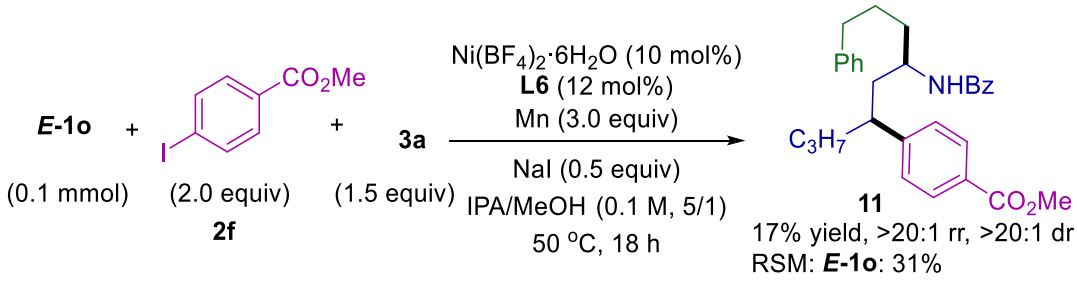
In a nitrogen-filled glovebox, $NiBr_2$·dme (3.1 mg, 0.02 mmol, 10 mol%), **L8** (4.3 mg, 0.012 mmol, 12 mol%), 4-iodotoluene **2b** (43.6 mg, 0.20 mmol, 2.0 equiv), Mn (19.3 mg, 0.35 mmol, 3.5 equiv), NaI (37.5 mg, 0.25 mmol, 2.5 equiv) and DMA (1.0 mL) were added to a 10-mL vial equipped with a stirring bar. Then, ***E*-1o** (20.3 mg, 0.10 mmol, 1.0 equiv), and 1-bromo-3-phenylpropane **3a** (30.0 μL, 39.6 mg, 0.20 mmol, 2.0 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **4ao'** as colorless oil (5.0 mg, 12% yield, 8:1 rr, >20:1 dr).

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 – 7.42 (m, 3H), 7.39 – 7.32 (m, 2H), 7.25 – 7.19 (m, 2H), 7.16 – 7.10 (m, 5H), 7.07 (d, *J* = 8.1 Hz, 2H), 5.63 (s, 1H), 3.62 – 3.53 (m, 1H), 3.43 (dt, *J* = 13.8, 5.2 Hz, 1H), 2.69 (dt, *J* = 10.4, 5.2 Hz, 1H), 2.56 (h, *J* = 6.6 Hz, 2H), 2.34 (s, 3H), 1.91 (dt, *J* = 9.5, 5.1 Hz, 1H), 1.77 – 1.63 (m, 5H), 1.47 (tt, *J* =

10.3, 5.2 Hz, 1H), 1.18 – 1.06 (m, 2H), 0.84 (t, *J* = 7.3 Hz, 3H).
^{13}C NMR (151 MHz, $CDCl_3$) δ 167.3, 142.4, 140.5, 136.0, 134.8, 131.3, 129.4, 128.6, 128.5, 128.4, 126.9, 125.8, 60.5, 47.6, 43.9, 41.2, 36.1, 34.0, 28.9, 28.4, 21.09, 14.3.
HR-MS (ESI) m/z calcd for $C_{29}H_{36}NO_2^+$ [M+H$^+$]: 414.2791, found 414.2784.



In a nitrogen-filled glovebox, $Ni(BF_4)_2{\cdot}6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.9 mg, 0.012 mmol, 12 mol%), methyl 4-iodo-benzoate (**2f**, 52.4 mg, 0.20 mmol, 2.0 equiv), Mn (16.5 mg, 0.30 mmol, 3.0 equiv), NaI (7.5 mg, 0.05 mmol, 0.5 equiv), IPA (0.83 mL) and MeOH (0.17 mL) were added to a 10-mL vial equipped with a stirring bar. Then, ***Z*-1o** (20.3 mg, 0.10 mmol, 1.0 equiv), and 1-bromo-3-phenylpropane **3a** (22.5 μL, 29.7 mg, 0.30 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 °C for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous Na_2SO_4, filtered, and purified by flash chromatography to afford **10** (white solid, 23.8 mg, 52% yield, >20:1 rr, >20:1 dr).
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 (d, *J* = 8.3 Hz, 2H), 7.49 – 7.41 (m, 3H), 7.33 (dd, *J* = 8.1, 6.8 Hz, 2H), 7.28 – 7.23 (m, 2H), 7.20 – 7.11 (m, 5H), 5.48 (d, *J* = 9.0 Hz, 1H), 4.16 (ddt, *J* = 12.1, 7.5, 3.9 Hz, 1H), 3.87 (s, 3H), 2.74 – 2.66 (m, 1H), 2.59 (dd, *J* = 9.3, 7.0 Hz, 2H), 1.92 – 1.79 (m, 2H), 1.70 – 1.62 (m, 4H), 1.53 – 1.40 (m, 2H), 1.09 (dtd, *J* = 15.4, 9.0, 4.3 Hz, 2H), 0.80 (t, *J* = 7.3 Hz, 3H).
^{13}C NMR (101 MHz, $CDCl_3$) δ 167.1, 166.9, 151.5, 142.2, 134.7, 131.4, 130.1, 128.6, 128.52, 128.48, 128.2, 127.6, 126.8, 126.0, 52.1, 49.0, 43.6, 42.3, 39.5, 35.8, 35.3, 27.6, 20.5, 14.1.
HR-MS (ESI) m/z calcd for $C_{30}H_{36}NO_3^+$ [M+H$^+$]: 458.2690, found 458.2681.



In a nitrogen-filled glovebox, $Ni(BF_4)_2{\cdot}6H_2O$ (3.4 mg, 0.01 mmol, 10 mol%), **L6** (5.9 mg, 0.012 mmol, 12 mol%), methyl 4-iodo-benzoate **2f** (52.4 mg, 0.20 mmol, 2.0 equiv), Mn (16.5 mg, 0.30 mmol, 3.0 equiv), NaI (7.5 mg, 0.05 mmol, 0.5 equiv), IPA (0.83 mL) and MeOH (0.17 mL) were added to a 10-mL vial equipped with a stirring bar. Then, ***E*-1o** (20.3 mg, 0.10 mmol, 1.0 equiv), and 1-bromo-3-phenylpropane **3a** (29.7 mg, 0.30 mmol, 1.5 equiv) were added. The reaction mixture was transferred out of the glovebox and stirred at 50 °C for 18 h. The mixture was diluted with EtOAc and washed with water and brine. The organic phase was dried with anhydrous

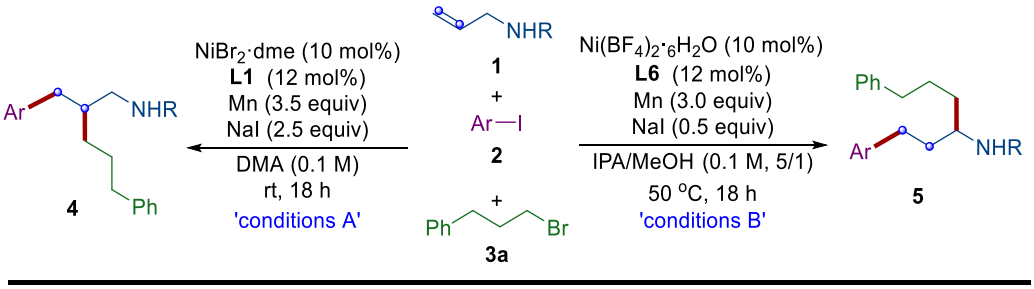
Na_2SO_4, filtered, and evaporated under vacuum. Conversion of ***E*-1o** was determined to be 69% based on the ^{1}H NMR of the crude mixture using mesitylene as internal standard. Purification by flash chromatography afforded **11** (white solid, 7.8 mg, 17% yield, >20:1 rr, >20:1 dr).

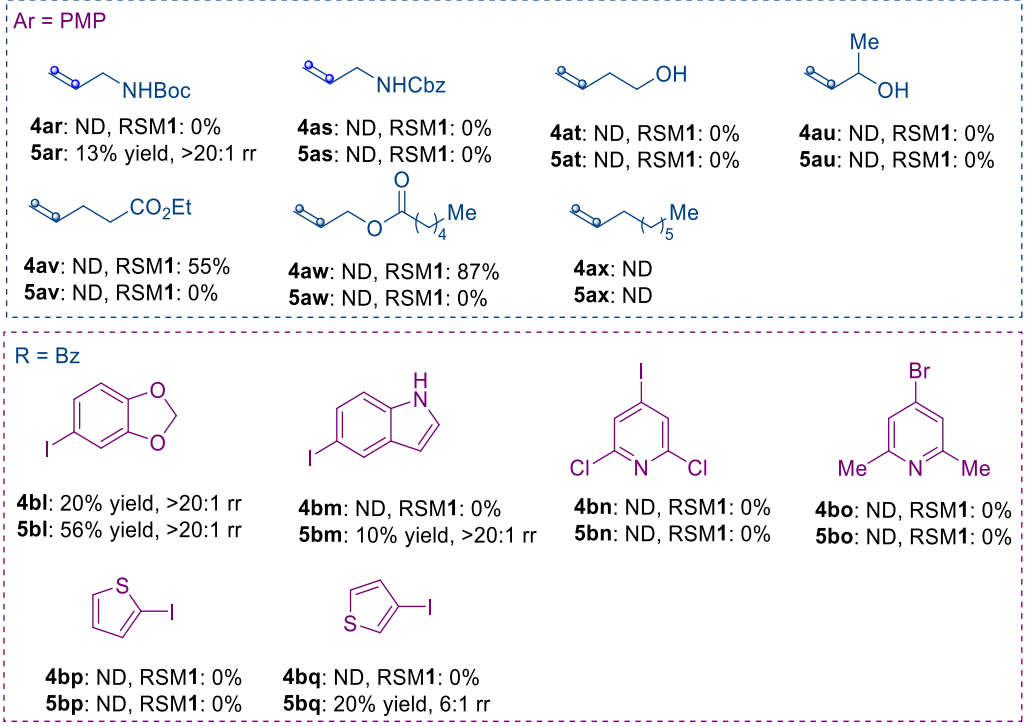
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.95 (d, *J* = 8.3 Hz, 2H), 7.59 – 7.53 (m, 2H), 7.50 – 7.36 (m, 4H), 7.30 (d, *J* = 2.9 Hz, 1H), 7.25 – 7.19 (m, 3H), 7.11 – 7.08 (m, 2H), 5.56 (d, *J* = 8.9 Hz, 1H), 4.06 – 4.01 (m, 1H), 3.90 (s, 3H), 2.73 (td, *J* = 11.9, 11.3, 7.7 Hz, 1H), 2.60 – 2.48 (m, 2H), 2.03 (q, *J* = 7.0 Hz, 1H), 1.93 – 1.81 (m, 2H), 1.65 – 1.59 (m, 2H), 1.53 – 1.47 (m, 2H), 1.41 (q, *J* = 7.4 Hz, 1H), 1.16 – 1.03 (m, 2H), 0.81 (t, *J* = 7.3 Hz, 3H).

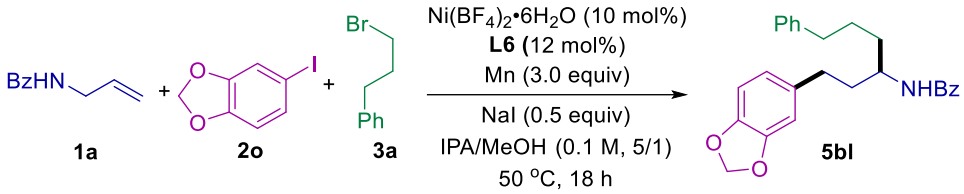
^{13}C NMR (151 MHz, $CDCl_3$) δ 167.2, 166.8, 151.1, 142.2, 134.9, 134.3, 131.5, 130.1, 128.63, 128.58, 128.4, 128.0, 126.8, 125.9, 52.1, 48.2, 42.5, 42.3, 39.4, 35.6, 34.9, 27.8, 20.7, 14.1.

HR-MS (ESI) m/z calcd for $C_{30}H_{36}NO_3^+$ [M+H$^+$]: 458.2690, found 458.2681.

6.5 Unsuccessful substrates







***N*-(1-(Benzo[d][1,3]dioxol-5-yl)-6-phenylhexan-3-yl)benzamide (5bl)**

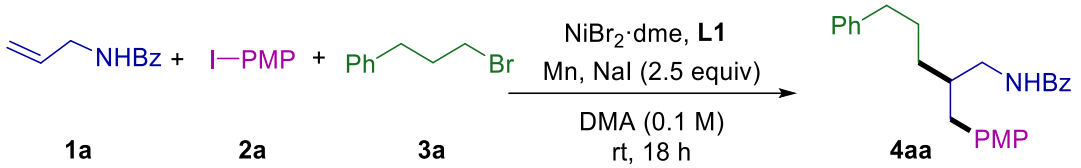
Following General Procedure D, *N*-allylbenzamide (16.1 mg, 0.1 mmol), 1-iodo-3,4-methylenedioxybenzene (19.5 μL, 37.2 mg, 0.15 mmol) and 1-bromo-3-phenylpropane (23.0 μL, 29.7 mg, 0.15 mmol) were used for the reaction. The crude mixture was purified by flash chromatography on silica gel (eluted with hexanes/EtOAc = 8:1) to give the product **5bl** (22.6 mg, 56% yield, 20:1 rr) as a white solid.

^{1}H NMR (600 MHz, $CDCl_3$) δ 7.70 – 7.65 (m, 2H), 7.51 – 7.45 (m, 1H), 7.41 (dd, *J* = 8.4, 7.0 Hz, 2H), 7.28 – 7.23 (m, 2H), 7.19 – 7.11 (m, 3H), 6.69 (d, *J* = 7.9 Hz, 1H), 6.65 (d, *J* = 1.7 Hz, 1H), 6.60 (dd, *J* = 7.8, 1.7 Hz, 1H), 5.87 (dd, *J* = 12.0, 1.5 Hz, 2H), 5.83 (d, *J* = 9.1 Hz, 1H), 4.24 (qt, *J* = 8.8, 4.8 Hz, 1H), 2.68 – 2.54 (m, 4H), 1.91 – 1.83 (m, 1H), 1.76 – 1.68 (m, 3H), 1.68 – 1.61 (m, 1H), 1.57 – 1.49 (m, 1H).

^{13}C NMR (151 MHz, $CDCl_3$) δ 167.2, 147.8, 145.8, 142.2, 135.8, 134.9, 131.5, 128.65, 128.56, 128.5, 126.9, 125.9, 121.2, 108.9, 108.3, 100.9, 49.6, 37.4, 35.8, 35.0, 32.3, 27.8.

HR-MS (ESI) m/z calcd for $C_{26}H_{28}NO_3^+$ [M+H$^+$]: 402.2064, found 402.2062.

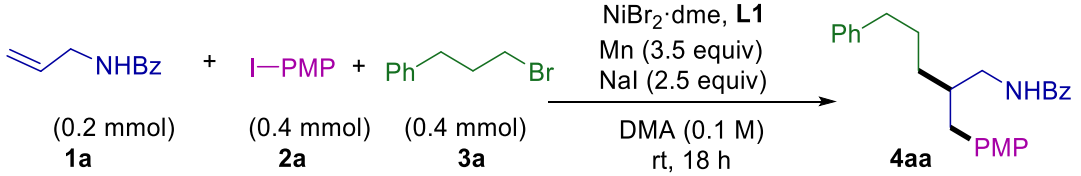
6.6 Kinetic analysis of the reaction



added internal standard: 0.2 mmol *n*-dedocane

In a nitrogen-filled glovebox, $NiBr_2$·dme, **L1**, 4-iodoanisole **2a**, Mn, NaI (75.0 mg, 0.5 mmol, 2.5 equiv) and DMA (0.1 M) were added to a 10-mL vial equipped with a stirring bar. Then, **1a**, 1-bromo-3-phenylpropane **3a** and internal standard (0.2 mmol *n*-dedocane) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature. The aliquot (20.0 μL) of the reaction mixture were taken each time, and immediately placed to H_2O (200 μL) to quench. The composition of mixture was analyzed by GC.

The rate on the concentration of $NiBr_2$·dme&L1



added internal standard: 0.2 mmol *n*-dedocane

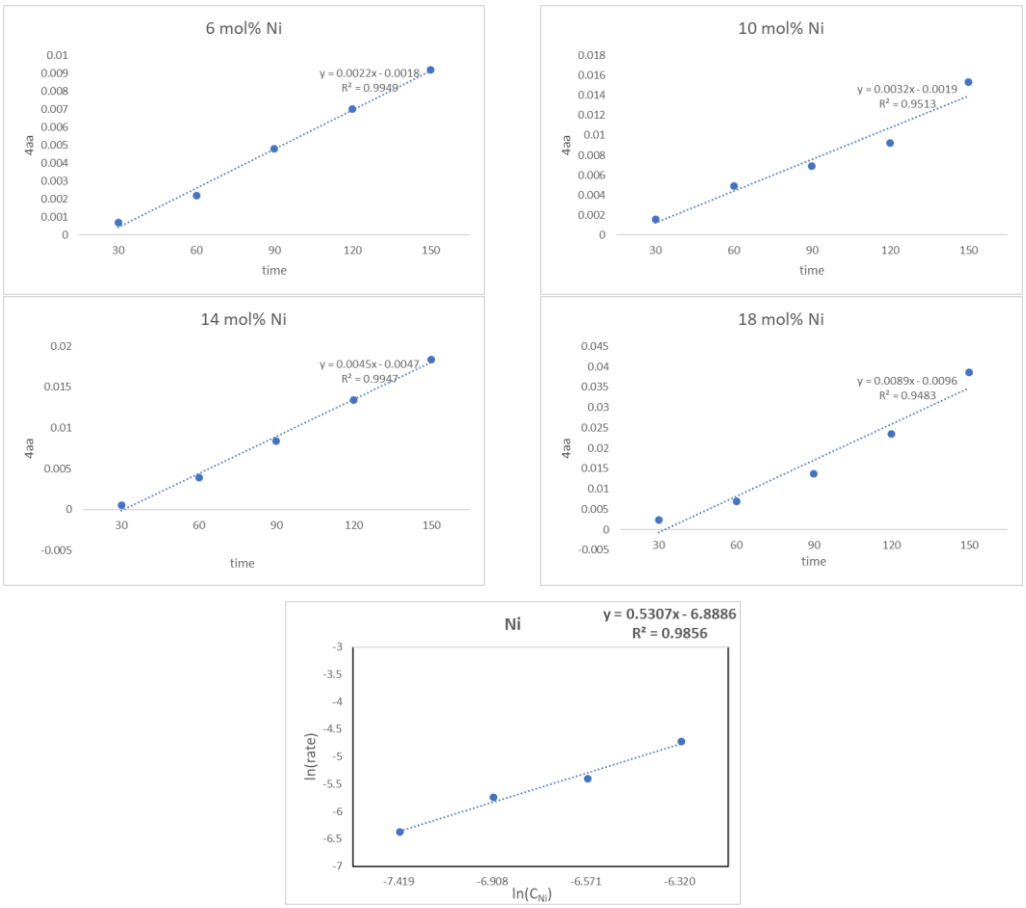
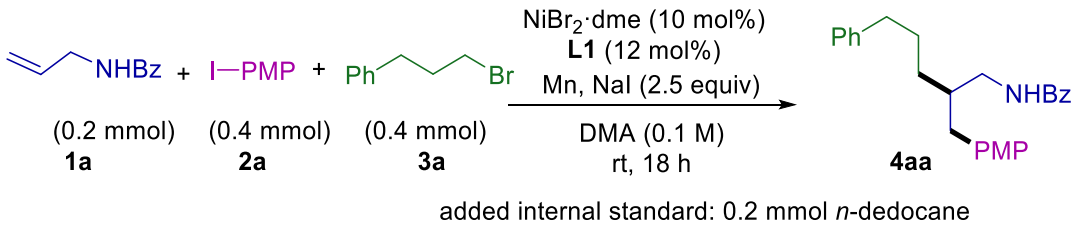
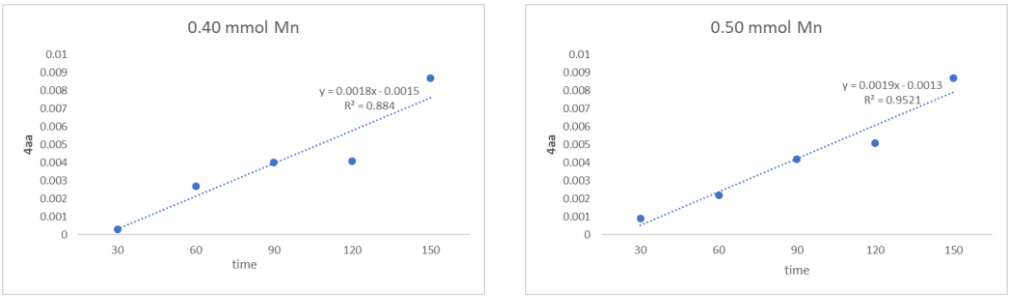


Figure S1. Rate on the concentration of $NiBr_2$·dme & **L1** from the reaction of **1a** (0.10 M), **2a** (0.20 M), **3a** (0.20 M), Mn (0.35 M), NaI (0.25 M) with 0.006 M, 0.01 M, 0.014 M, 0.018 M of $NiBr_2$·dme & **L1**.

The rate dependence on the concentration of Mn



added internal standard: 0.2 mmol *n*-dedocane



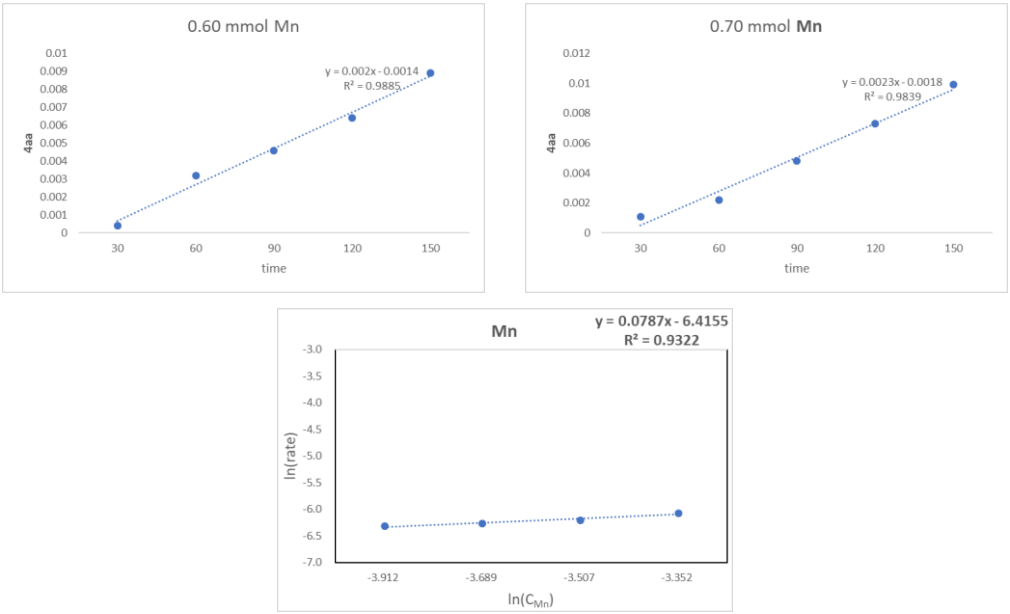
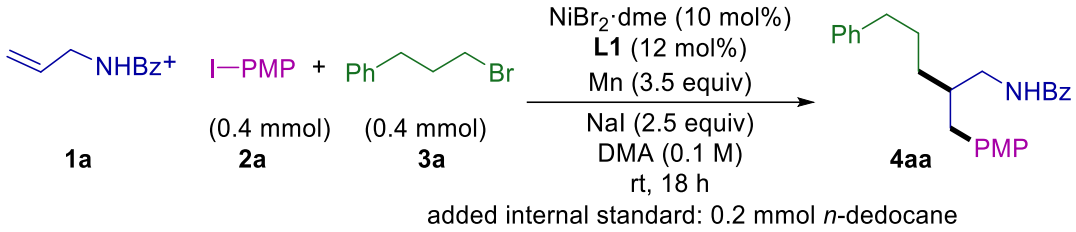
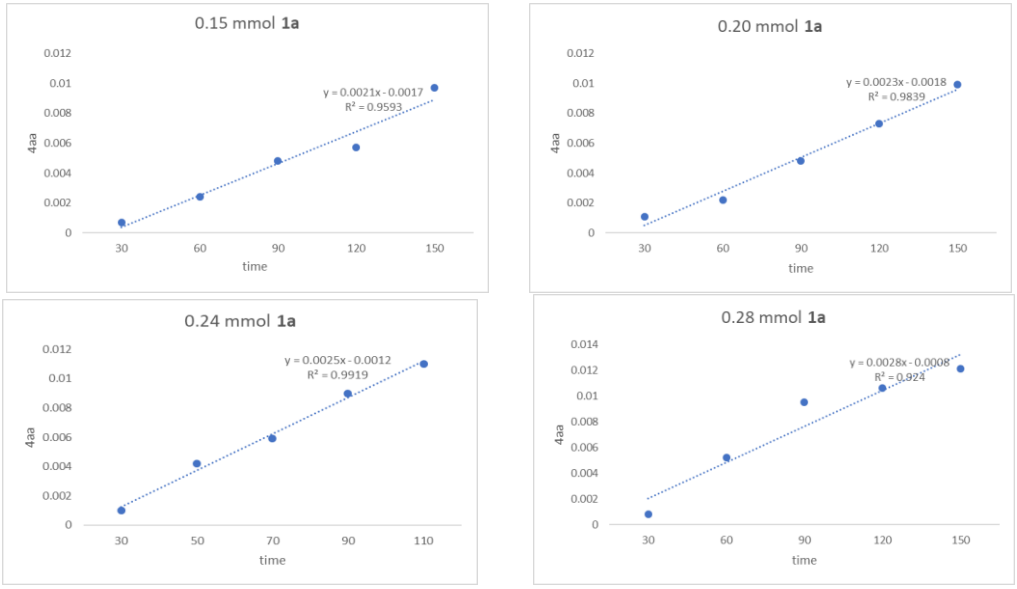


Figure S2. Rate on the concentration of Mn from the reaction of **1a** (0.10 M), **2a** (0.20 M), **3a** (0.20 M), $NiBr_2$·dme (0.01 M), **L1** (0.012 M), NaI (0.25 M) with 0.2 M, 0.25 M, 0.30 M, 0.35 M of Mn.

The rate dependence on the concentration of 1a





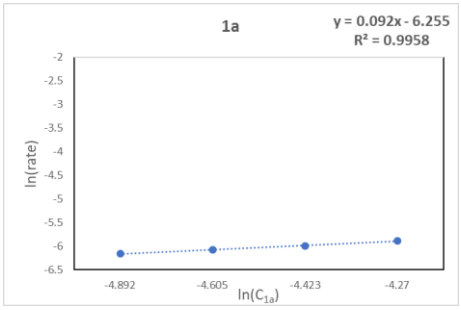
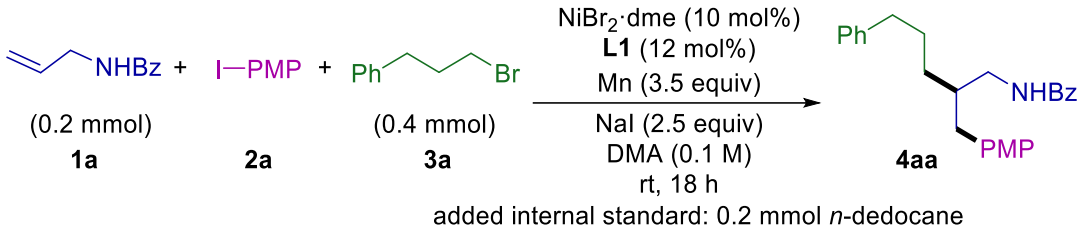


Figure S3. Rate on the concentration of **1a** from the reaction of **2a** (0.20 M), **3a** (0.20 M), $NiBr_2$·dme (0.01 M), **L1** (0.012 M), Mn (0.36 M), NaI (0.25 M) with 0.075 M, 0.10 M, 0.12 M, 0.14 M of **1a**.

The rate dependence on the concentration of 2a



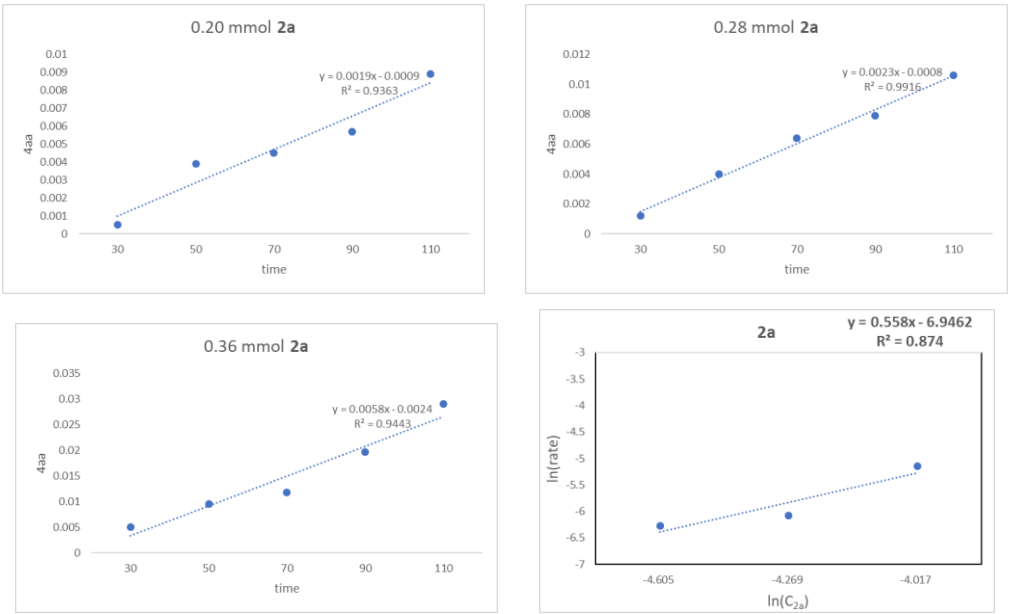
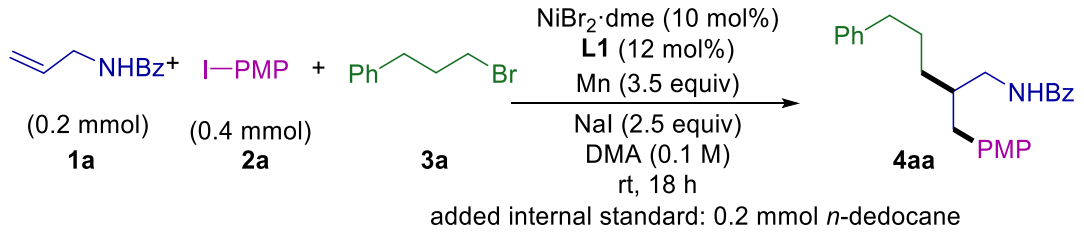


Figure S4. Rate on the concentration of **2a** from the reaction of **1a** (0.10 M), **3a** (0.20 M), $NiBr_2$·dme (0.01 M), **L1** (0.012 M), Mn (0.35 M), NaI (0.25 M) with 0.10 M, 0.14 M, 0.18 M of **2a**.

The rate dependence on the concentration of 3a



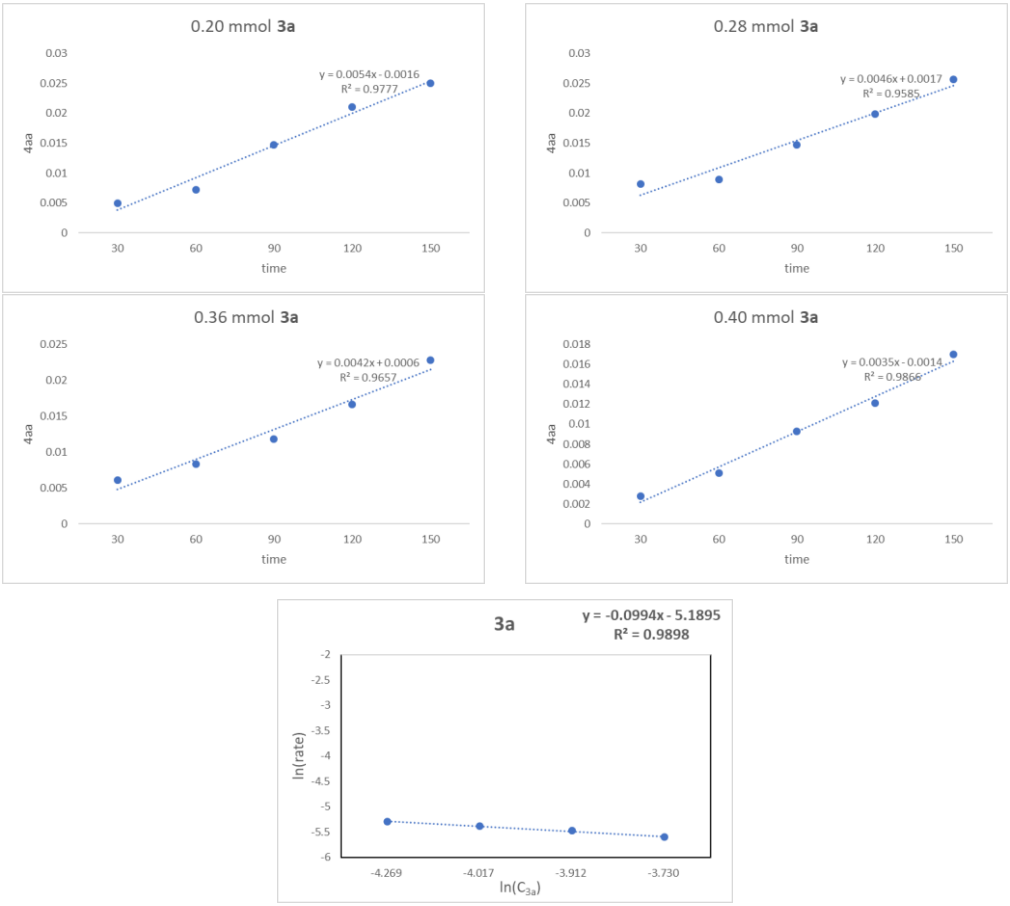
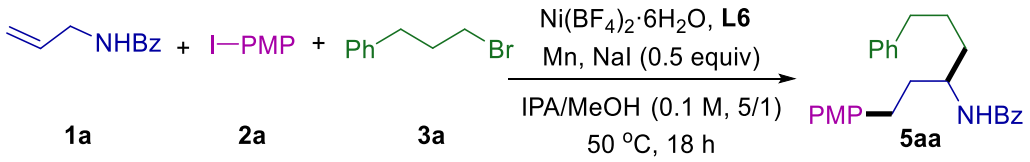


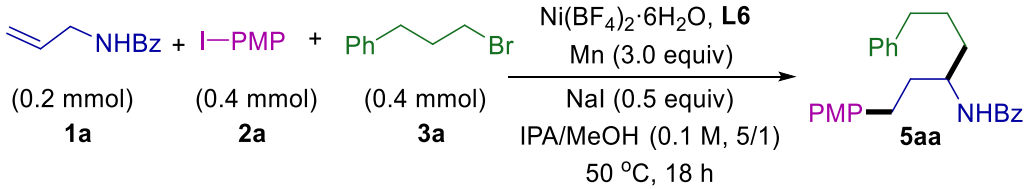
Figure S5. Rate on the concentration of **3a** from the reaction of **1a** (0.10 M), **2a** (0.20 M), $NiBr_2$·dme (0.01 M), **L1** (0.012 M), Mn (0.35 M), NaI (0.25 M) with 0.10 M, 0.14 M, 0.18 M, 0.20 M of **3a**.



added internal standard: 0.2 mmol *n*-dedocane

In a nitrogen-filled glovebox, $Ni(BF_4)_2·6H_2O$, **L6**, 4-iodoanisole **2a**, Mn, NaI (15.0 mg, 0.1 mmol, 0.5 equiv) and IPA/MeOH (0.1 M, 5/1) were added to a 10-mL vial equipped with a stirring bar. Then, **1a**, 1-bromo-3-phenylpropane **3a** and internal standard (0.2 mmol *n*-dodecane) were added. The reaction mixture was transferred out of the glovebox and stirred at room temperature. The aliquot (20.0 μL) of the reaction mixture were taken each time, and immediately placed to H_2O (200 μL) to quench. The composition of mixture was analyzed by GC.

The rate dependence on the concentration of $Ni(BF_4)_2·6H_2O$&L6



added internal standard: 0.2 mmol *n*-dedocane

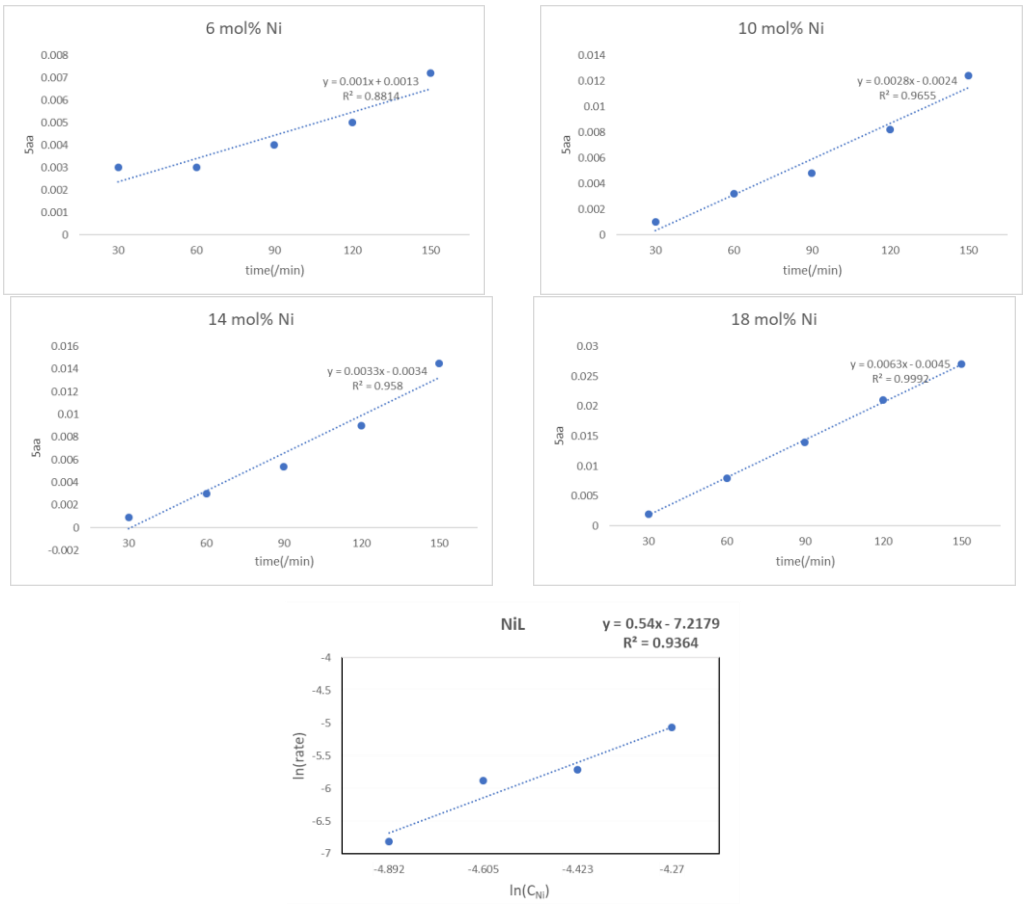
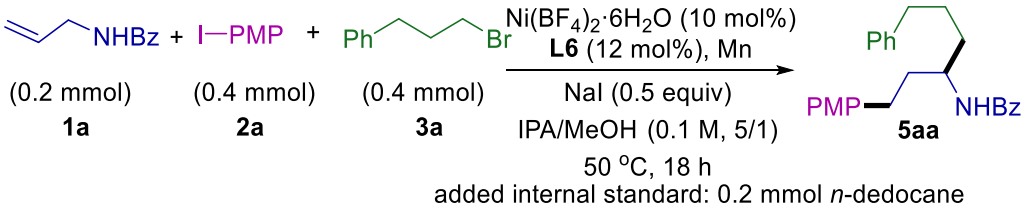
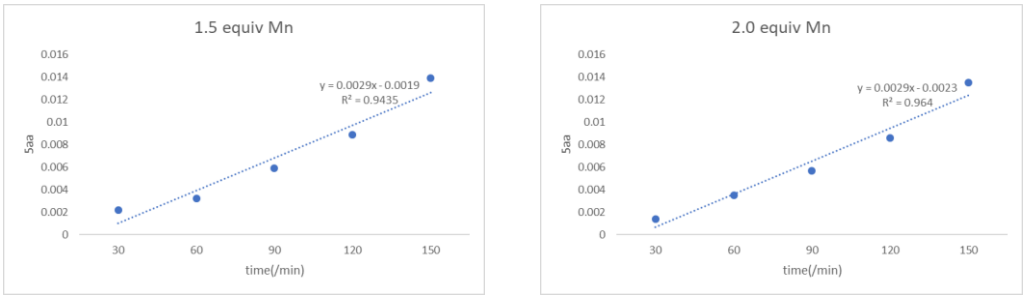


Figure S6. Rate on the concentration of $Ni(BF_4)_2 \cdot 6H_2O$ & **L6** from the reaction of **1a** (0.10 M), **2a** (0.15 M), **3a** (0.15 M), Mn (0.35 M), NaI (0.25 M) with 0.06 M, 0.01 M, 0.014 M, 0.018 M of $Ni(BF_4)_2 \cdot 6H_2O$ & **L6**.

The rate dependence on the concentration of Mn





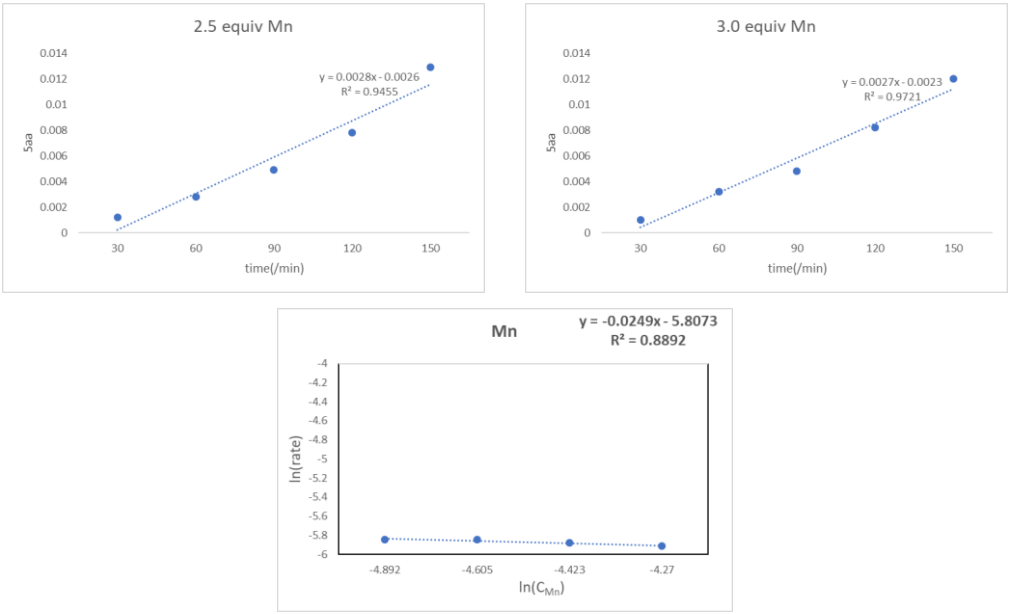
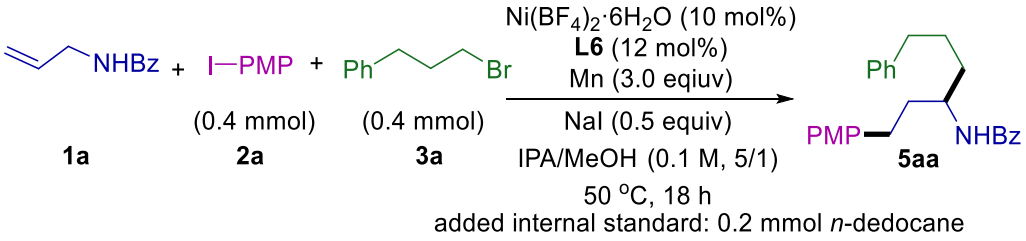
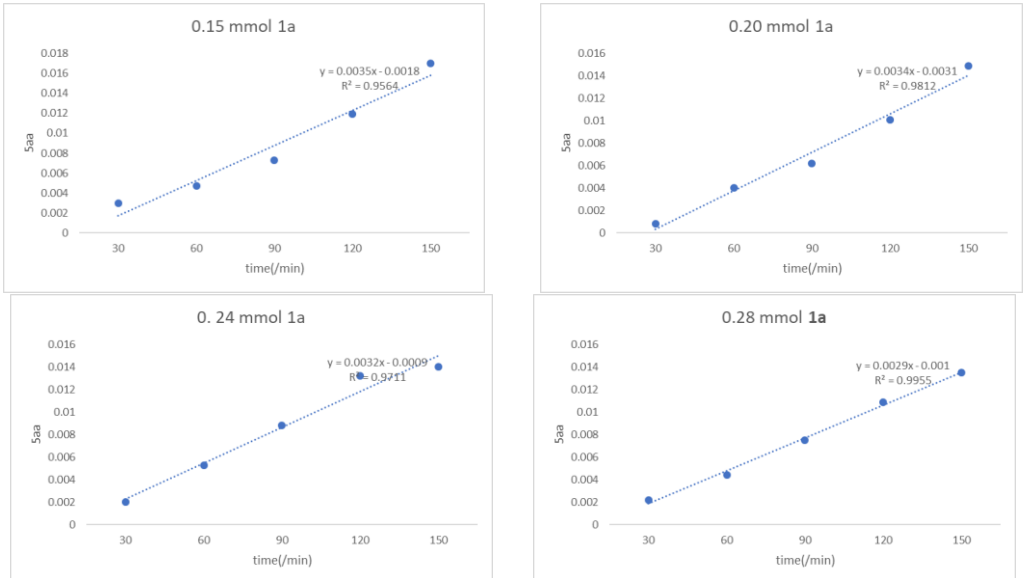


Figure S7. Rate on the concentration of Mn from the reaction of **1a** (0.10 M), **2a** (0.15 M), **3a** (0.15 M), $Ni(BF_4)_2{\cdot}6H_2O$ (0.01 M), **L6** (0.012 M), NaI (0.05 M) with 0.15 M, 0.20 M, 0.25 M, 0.30 M of Mn.

The rate dependence on the concentration of 1a





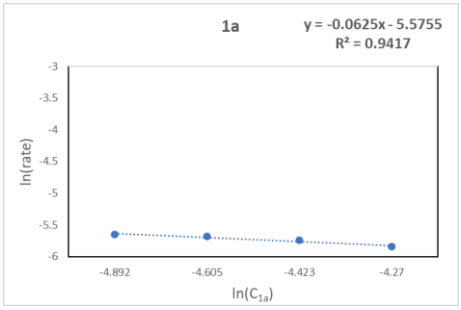
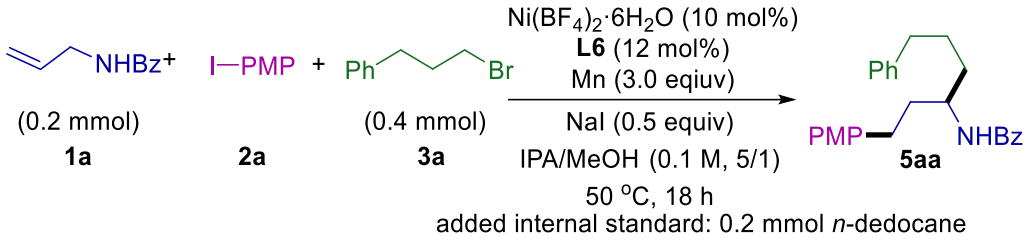
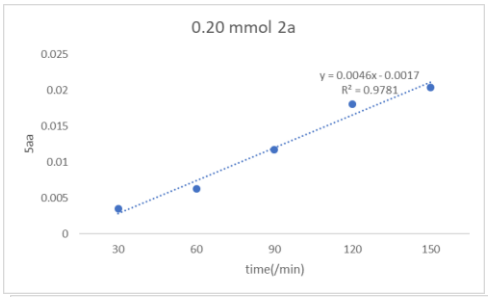
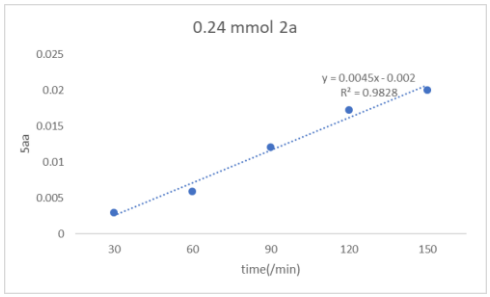


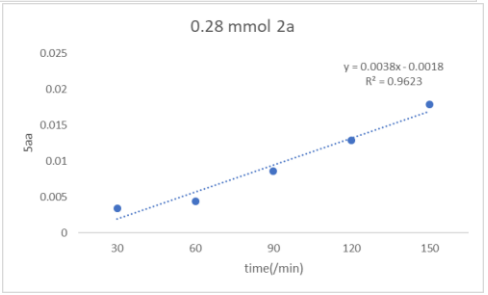
Figure S8. Rate on the concentration of **1a** from the reaction of **2a** (0.15 M), **3a** (0.15 M), $Ni(BF_4)_2·6H_2O$ (0.01 M), **L6** (0.012 M), NaI (0.05 M) with 0.075 M, 0.10 M, 0.12 M, 0.14 M of **1a**.

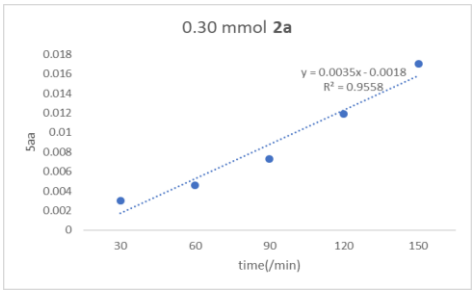
The rate dependence on the concentration of 2a











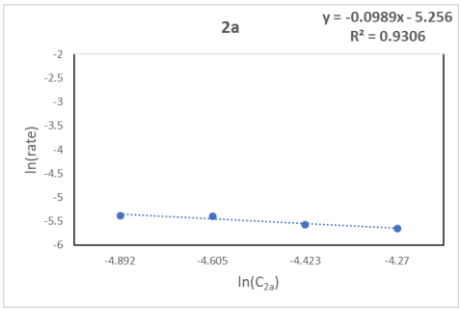


Figure S9. Rate on the concentration of **2a** from the reaction of **1a** (0.10 M), **3a** (0.15 M), $Ni(BF_4)_2·6H_2O$ (0.01 M), **L6** (0.012 M), NaI (0.05 M) with 0.10 M, 0.12 M, 0.14 M, 0.15 M of **2a**.

The rate dependence on the concentration of 3a

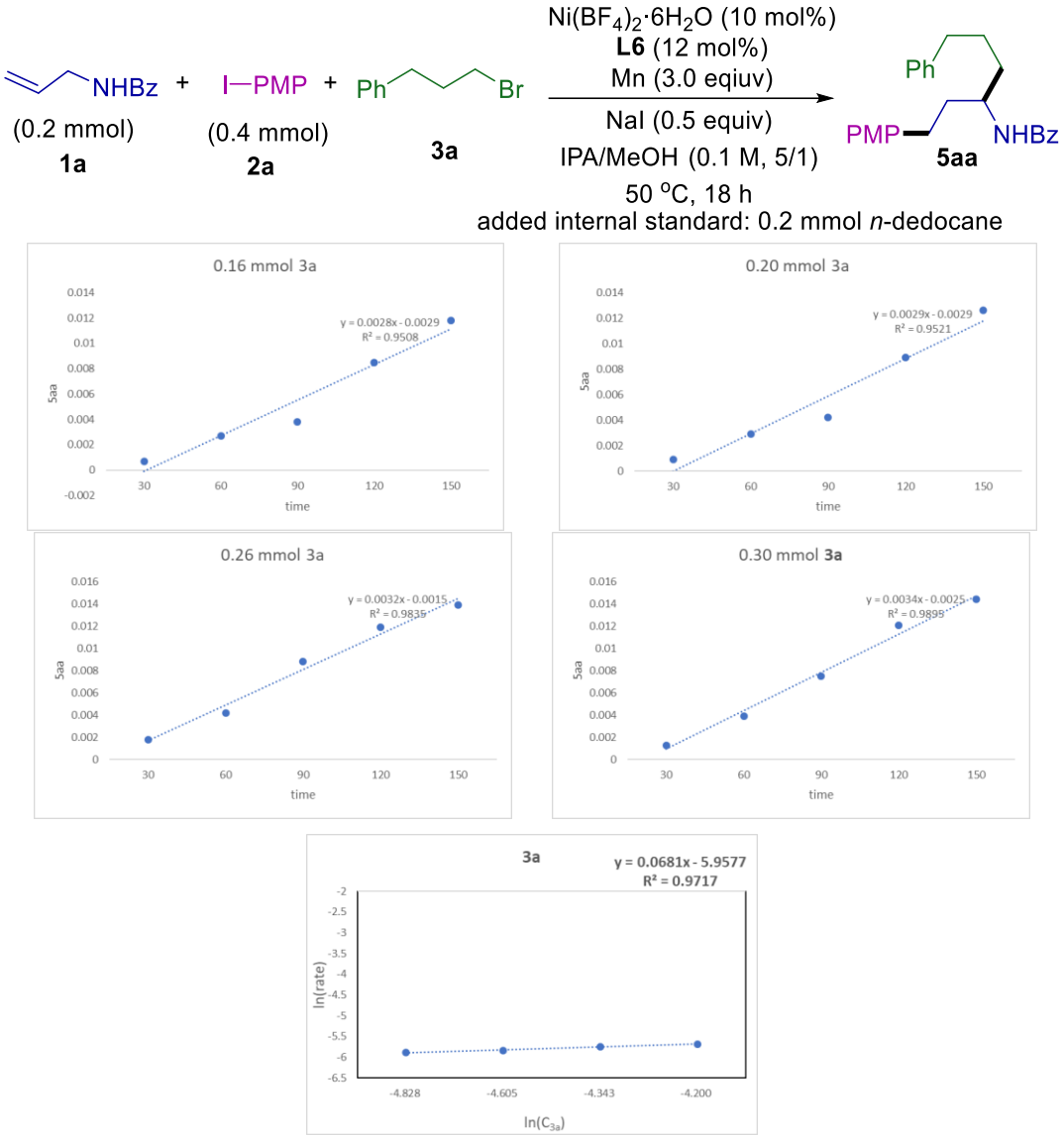


Figure S10. Rate on the concentration of **3a** from the reaction of **1a** (0.10 M), **2a** (0.15 M), $Ni(BF_4)_2·6H_2O$ (0.01 M), **L6** (0.012 M), NaI (0.05 M) with 0.08 M, 0.10 M, 0.13 M, 0.15 M of **3a**.

VII. X-Ray Diffraction Data of 4af and 5be

X-Ray Diffraction Data of 4af (CCDC 2361506)

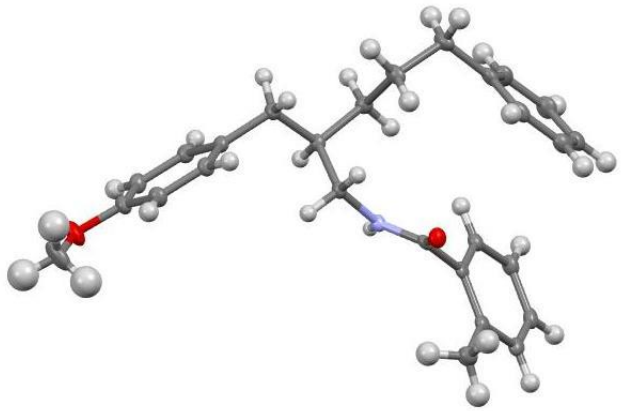


Table S14 Crystal data and structure refinement for 4af (MH2023112301_0m).

Identification code	MH2023112301_0m
Empirical formula	$C_{27}H_{31}NO_2$
Formula weight	401.53
Temperature/K	100.0(2)
Crystal system	monoclinic
Space group	$P2_1/n$
a/Å	12.5383(6)
b/Å	9.5231(4)
c/Å	18.6900(10)
α/°	90
β/°	97.104(2)
γ/°	90
Volume/Å^3	2214.52(18)
Z	4
ρ_{calc}g/cm^3	1.204
μ/mm^{-1}	0.583
F(000)	864.0
Crystal size/mm^3	0.03 × 0.02 × 0.02
Radiation	CuKα (λ = 1.54178)
2Θ range for data collection/°	8.052 to 144.514
Index ranges	-15 ≤ h ≤ 15, -11 ≤ k ≤ 11, -23 ≤ l ≤ 22
Reflections collected	22110
Independent reflections	4341 [R_{int} = 0.1052, R_{sigma} = 0.0802]
Data/restraints/parameters	4341/0/278
Goodness-of-fit on F^2	1.053
Final R indexes [I>=2σ (I)]	R_1 = 0.0837, wR_2 = 0.2105
Final R indexes [all data]	R_1 = 0.0910, wR_2 = 0.2218
Largest diff. peak/hole / e Å^{-3}	0.54/-0.57

X-Ray Diffraction Data of 5be (CCDC 2361509)

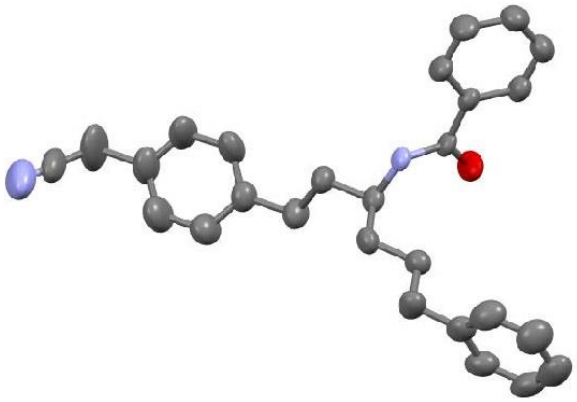


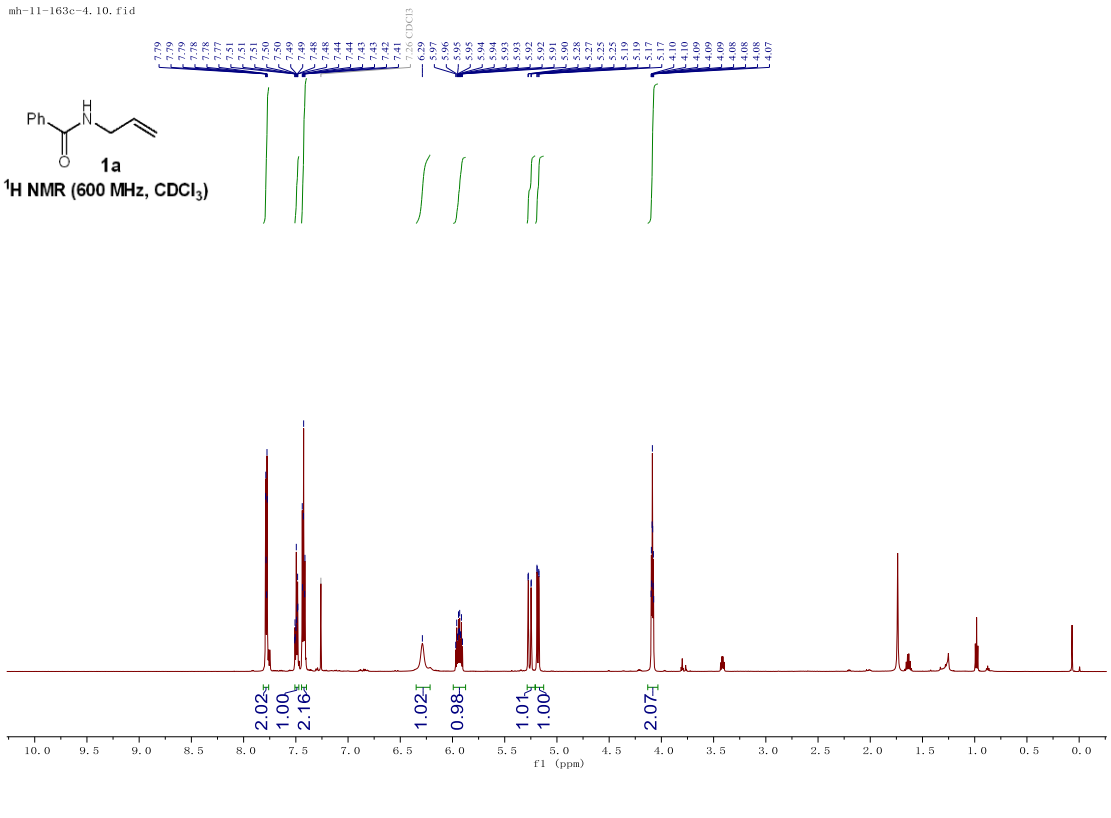
Table S15 Crystal data and structure refinement for 5be (MH2023112002_0m).

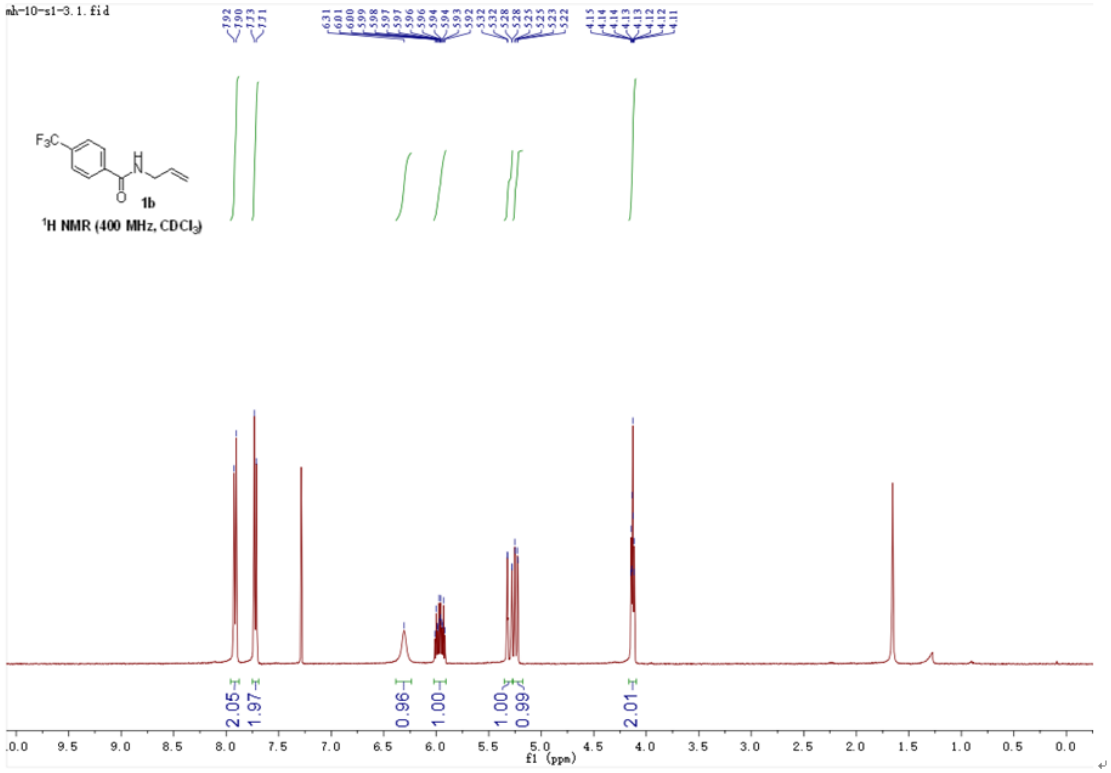
Identification code	MH2023112002_0m
Empirical formula	$C_{27}H_{27}N_2O$
Formula weight	395.528
Temperature/K	227.00
Crystal system	monoclinic
Space group	Cc
a/Å	13.8063(6)
b/Å	17.9373(8)
c/Å	9.9554(5)
α/°	90
β/°	113.319(2)
γ/°	90
Volume/Å^3	2264.04(18)
Z	4
ρ_{calc}g/cm^3	1.160
μ/mm^{-1}	0.547
F(000)	846.4
Crystal size/mm^3	0.02 × 0.01 × 0.01
Radiation	Cu Kα (λ = 1.54178)
2Θ range for data collection/°	8.54 to 144.06
Index ranges	-16 ≤ h ≤ 16, -22 ≤ k ≤ 19, -12 ≤ l ≤ 12
Reflections collected	12925
Independent reflections	4152 [R_{int} = 0.0566, R_{sigma} = 0.0606]
Data/restraints/parameters	4152/2/271
Goodness-of-fit on F^2	1.037
Final R indexes [I>=2σ (I)]	R_1 = 0.0561, wR_2 = 0.1503
Final R indexes [all data]	R_1 = 0.0615, wR_2 = 0.1552
Largest diff. peak/hole / e Å^{-3}	0.29/-0.19
Flack parameter	0.5(4)

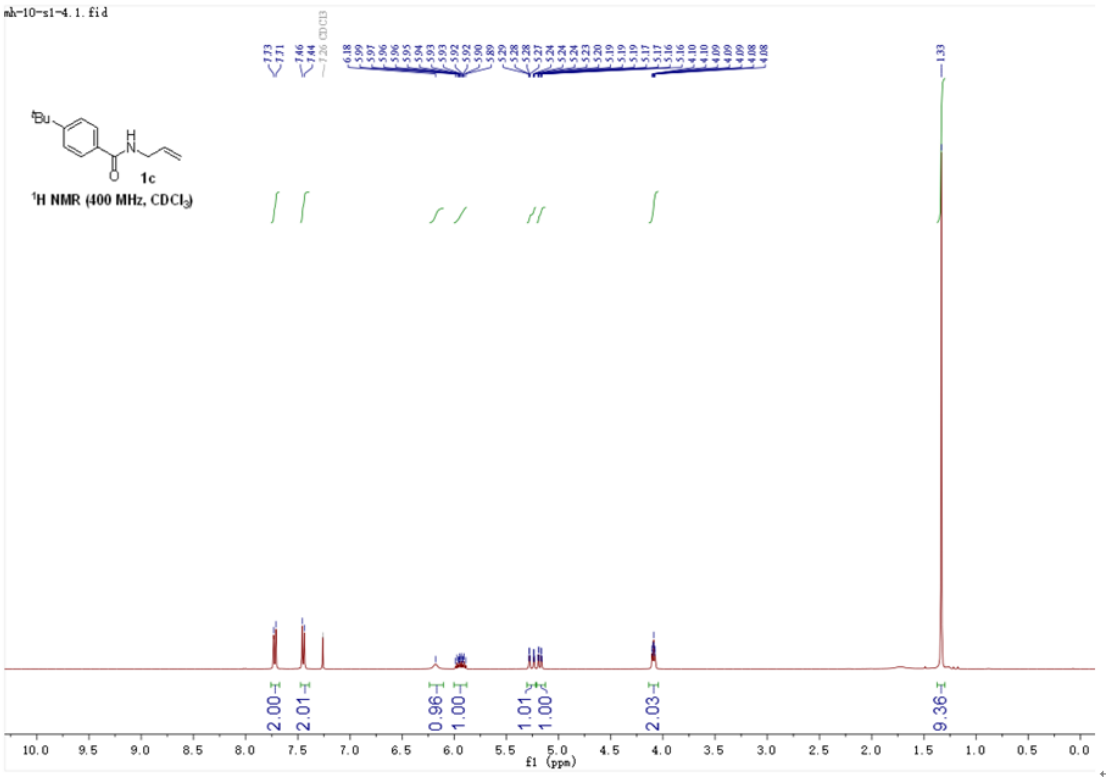
VIII. References

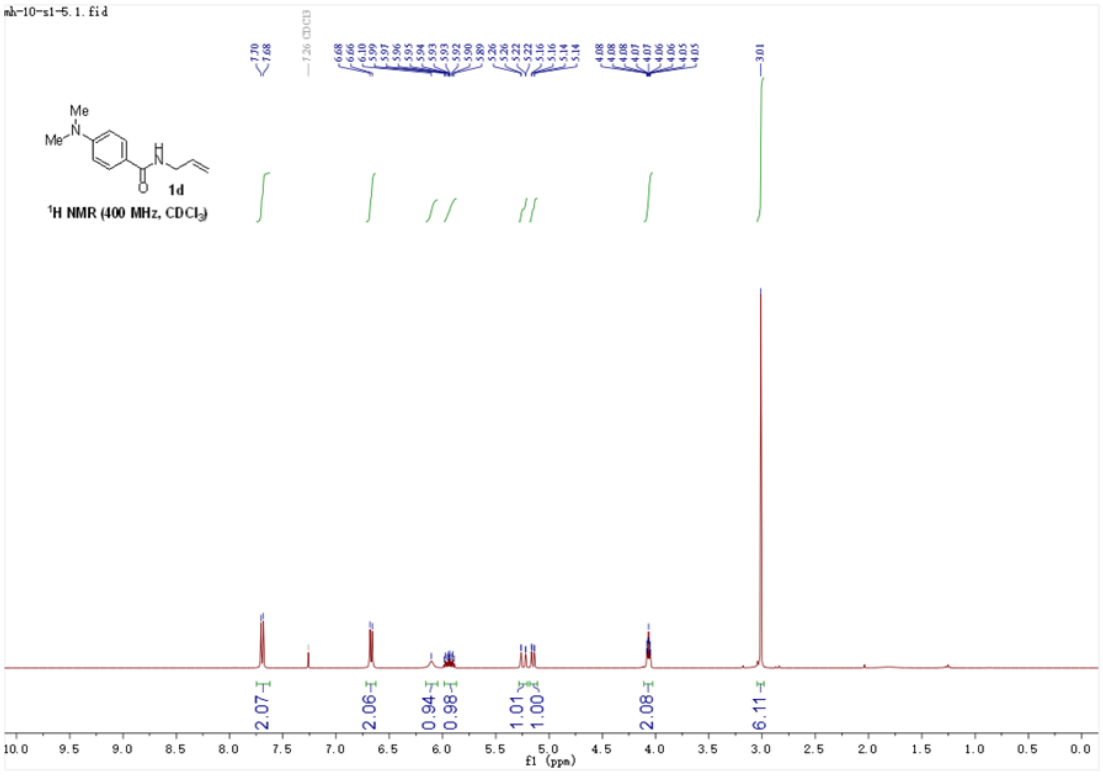
1. Yang, P.-F.; Shu, W. *Angew. Chem. Int. Ed*. **2022**, *61*, e202208018.
2. Hibbard, J. P.; Yam, J. G.; Alsalek, E. B.; Bahamonde, A. *J. Org. Chem*. **2022**, *87*, 12036-12040.

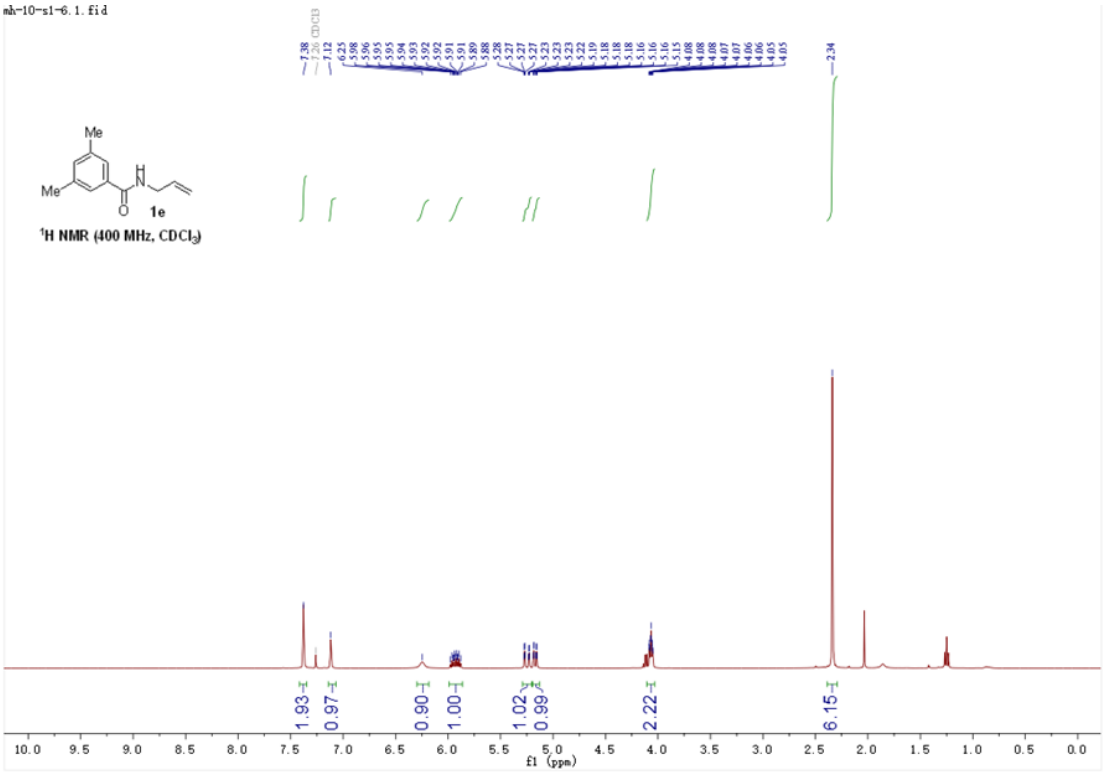
IX. ^{1}H NMR and ^{13}C NMR Spectra Data

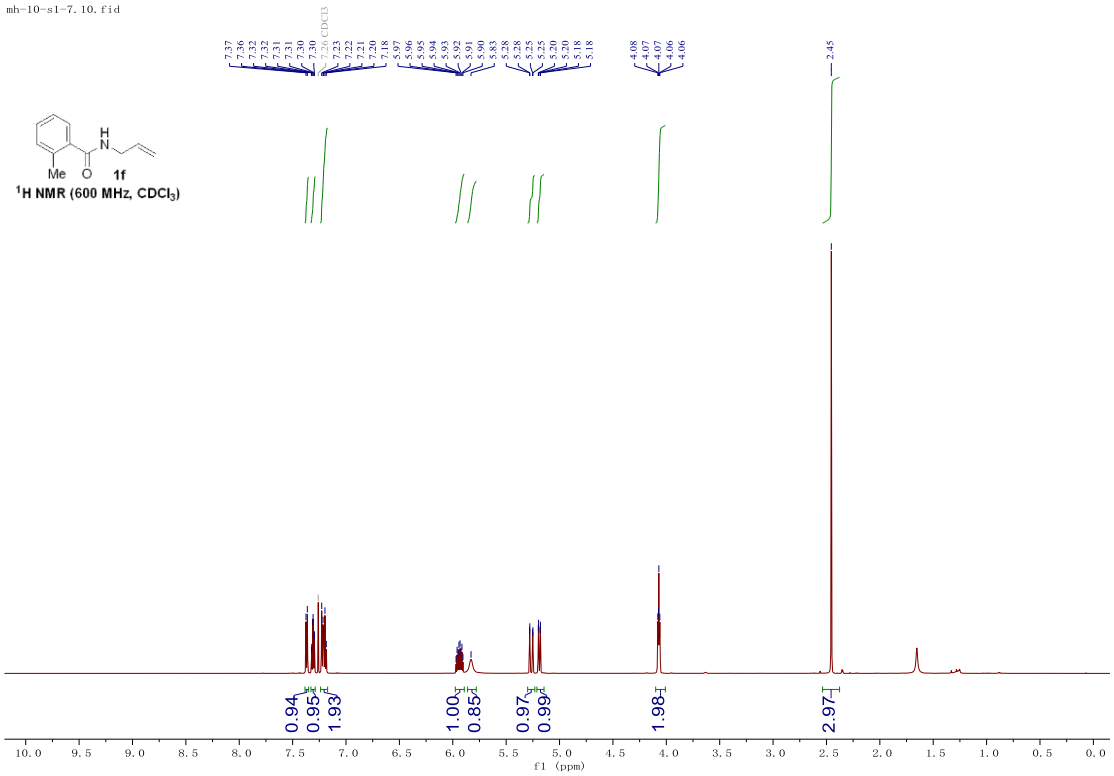


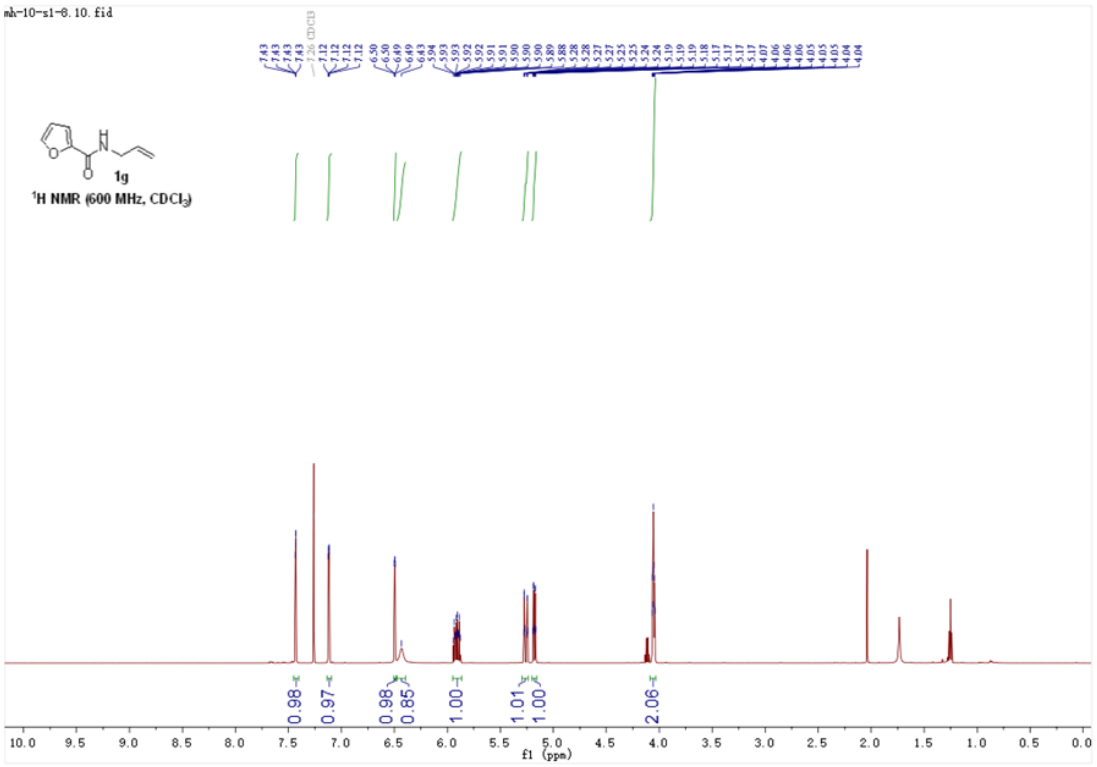


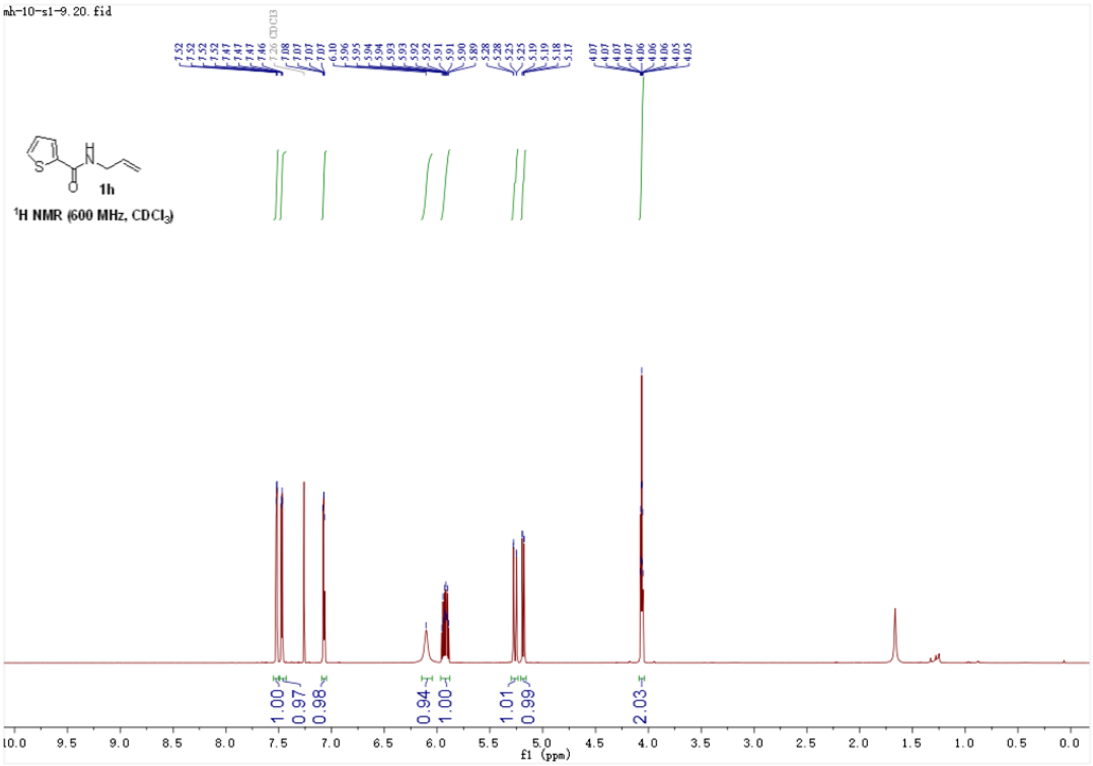

mh-10-s1-4.1.fid
tBu
H
N
O
1c
¹H NMR (400 MHz, CDCl₃)
7.73
7.71
7.46
7.44
7.26 CDCl3
6.18
5.99
5.97
5.96
5.95
5.94
5.93
5.93
5.92
5.92
5.90
5.89
5.29
5.28
5.28
5.27
5.24
5.24
5.23
5.20
5.19
5.19
5.17
5.17
5.16
5.16
4.10
4.10
4.09
4.09
4.08
4.08
1.33
2.00
2.01
0.96
1.00
1.01
1.00
2.03
9.36
f1 (ppm)

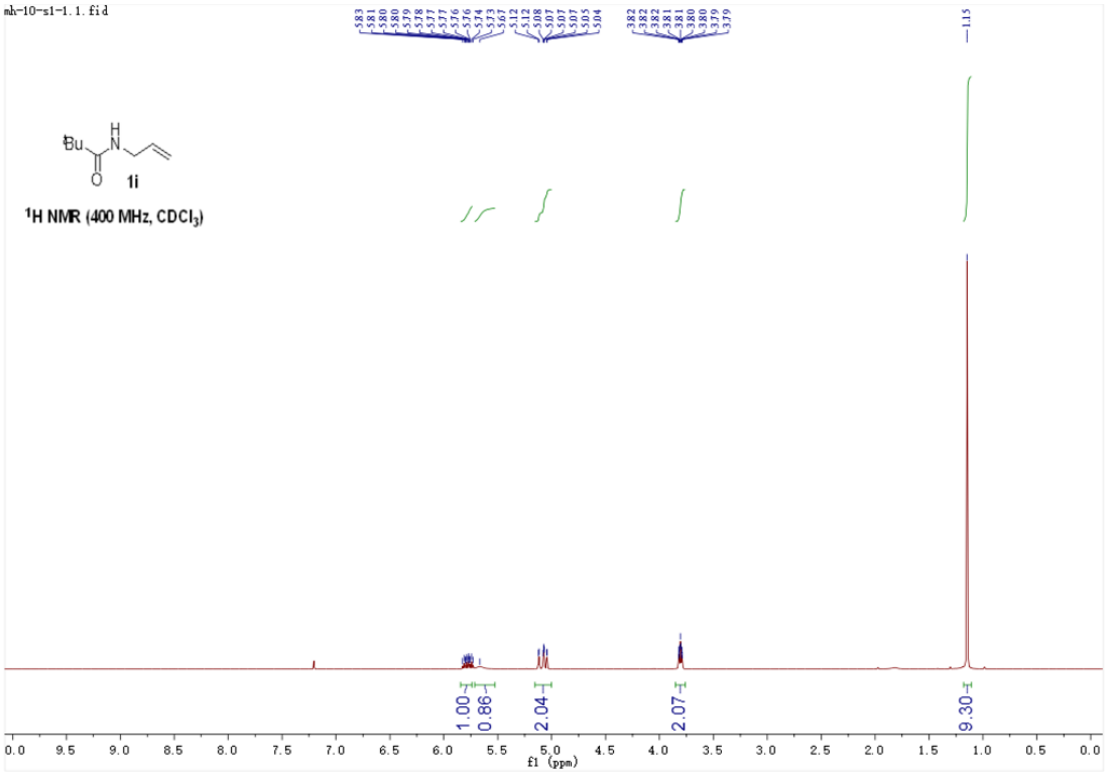

mh-10-s1-5.1.fid
Me
N
Me
H
N
O
1d
¹H NMR (400 MHz, CDCl₃)
7.70
7.68
7.26 CDCl3
6.68
6.66
6.10
5.99
5.97
5.96
5.95
5.94
5.93
5.93
5.92
5.92
5.90
5.89
5.26
5.26
5.22
5.22
5.16
5.16
5.14
5.14
4.08
4.08
4.08
4.08
4.07
4.07
4.06
4.06
4.05
4.05
3.01
2.07
2.06
0.94
0.98
1.01
1.00
2.08
6.11
f1 (ppm)

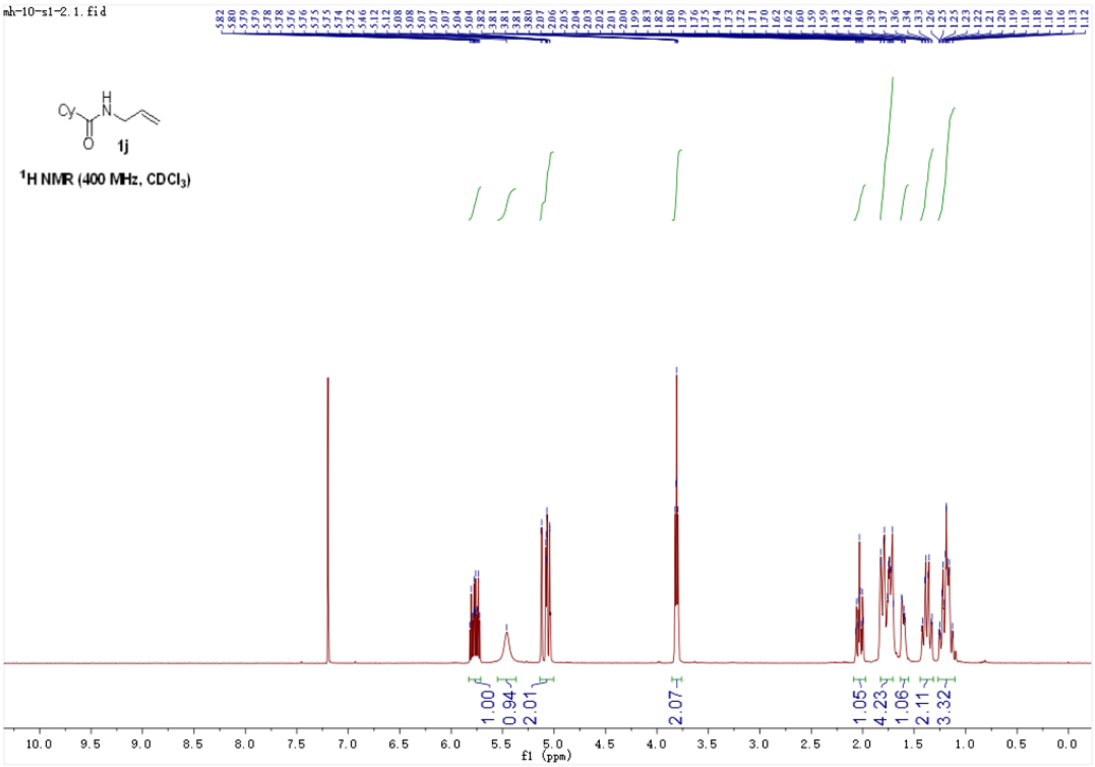

mh-10-s1-6.1.fid
Me
Me
1e
¹H NMR (400 MHz, CDCl₃)
1.93
0.97
0.90
1.00
1.02
0.99
2.22
6.15
f1 (ppm)

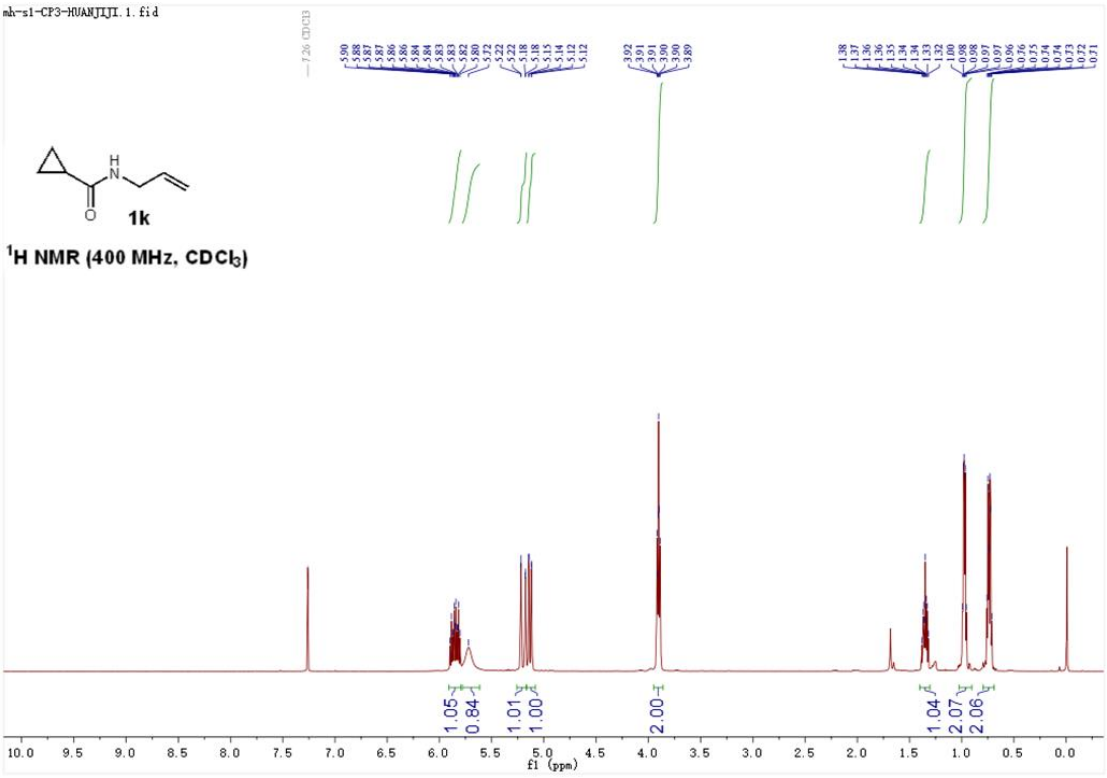

mh-10-s1-7.10.fid
Me
1f
¹H NMR (600 MHz, CDCl₃)
0.94
0.95
1.93
1.00
0.85
0.97
0.99
1.98
2.97
f1 (ppm)

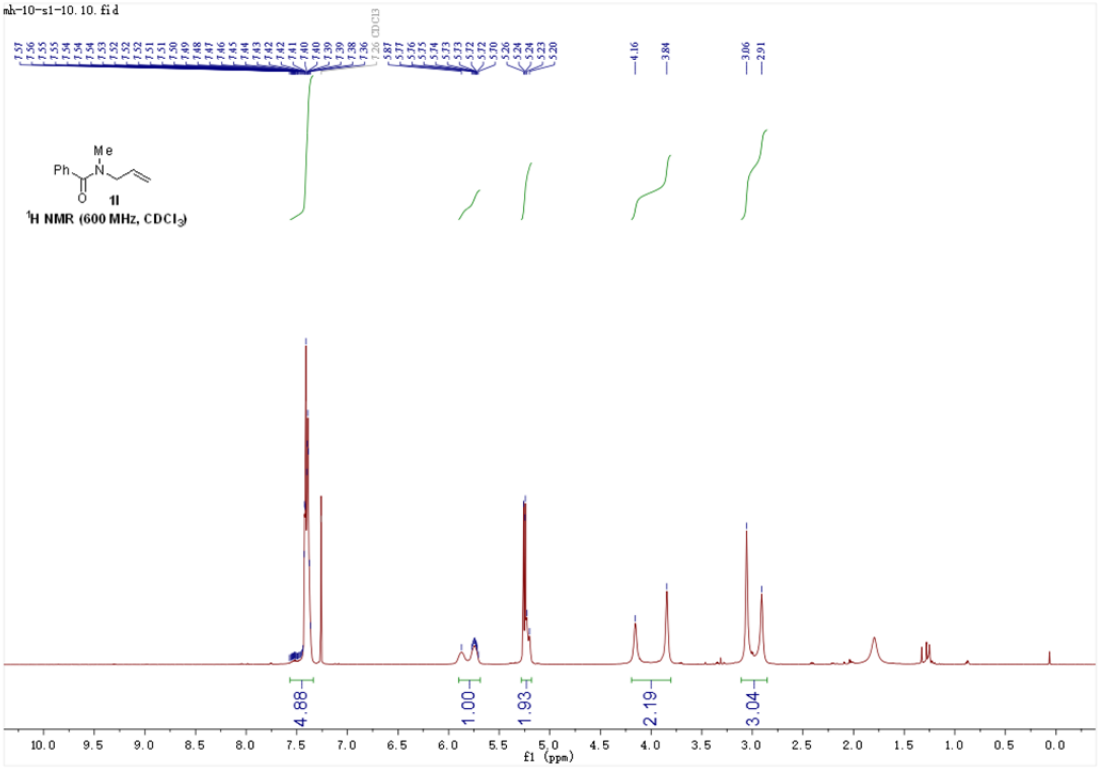

mk-10-s1-8.10.fid
1g
¹H NMR (600 MHz, CDCl₃)
0.98
0.97
0.98
0.85
1.00
1.01
1.00
2.06
f1 (ppm)

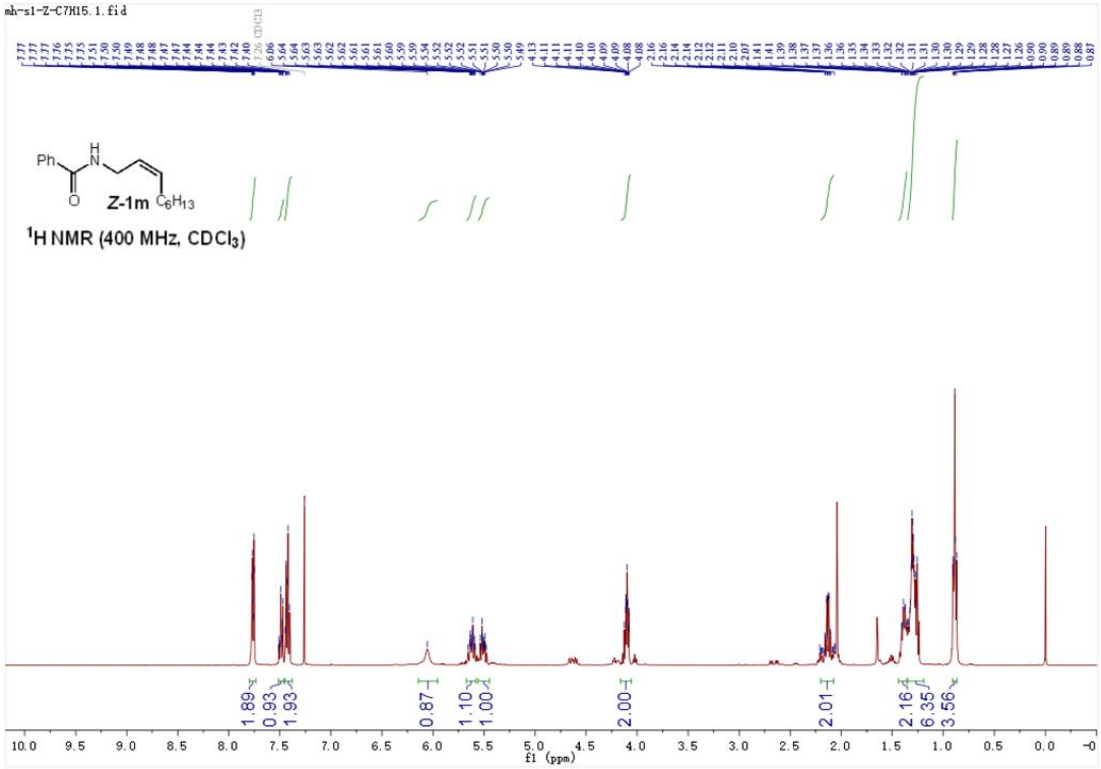

mk-10-s1-9.20.fid
1h
¹H NMR (600 MHz, CDCl₃)
1.00
0.97
0.98
0.94
1.00
1.01
0.99
2.03
f1 (ppm)

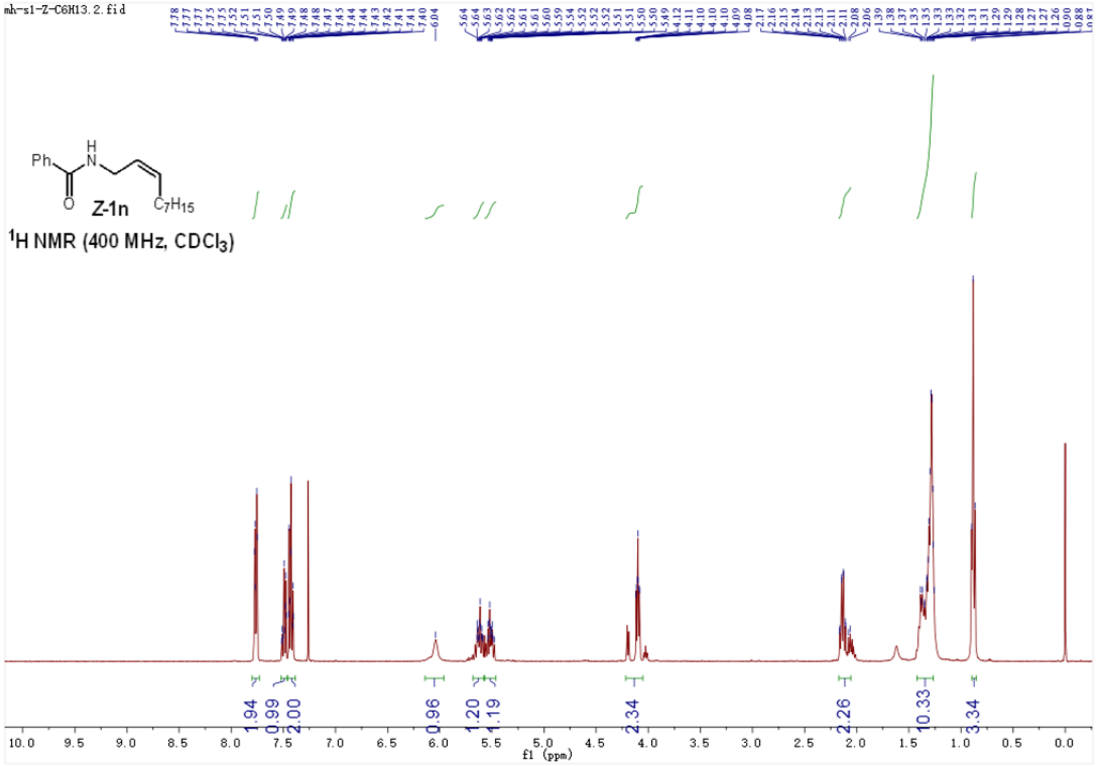

mh-10-s1-1.1.fid
tBu
H
N
O
1i
^{1}H NMR (400 MHz, CDCl$_3$)
1.00
0.86
2.04
2.07
9.30
f1 (ppm)

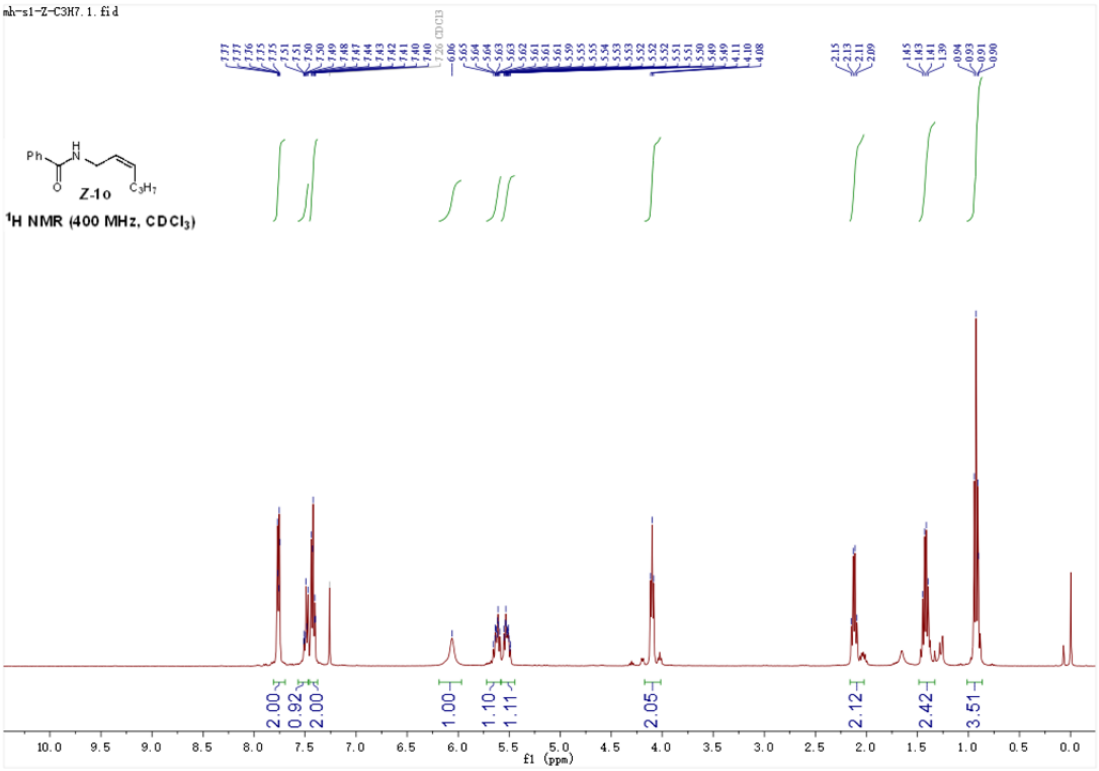

mh-10-s1-2.1.fid
Cy
H
N
O
1j
^{1}H NMR (400 MHz, CDCl$_3$)
1.00
0.94
2.01
2.07
1.05
4.23
1.06
2.11
3.32
f1 (ppm)

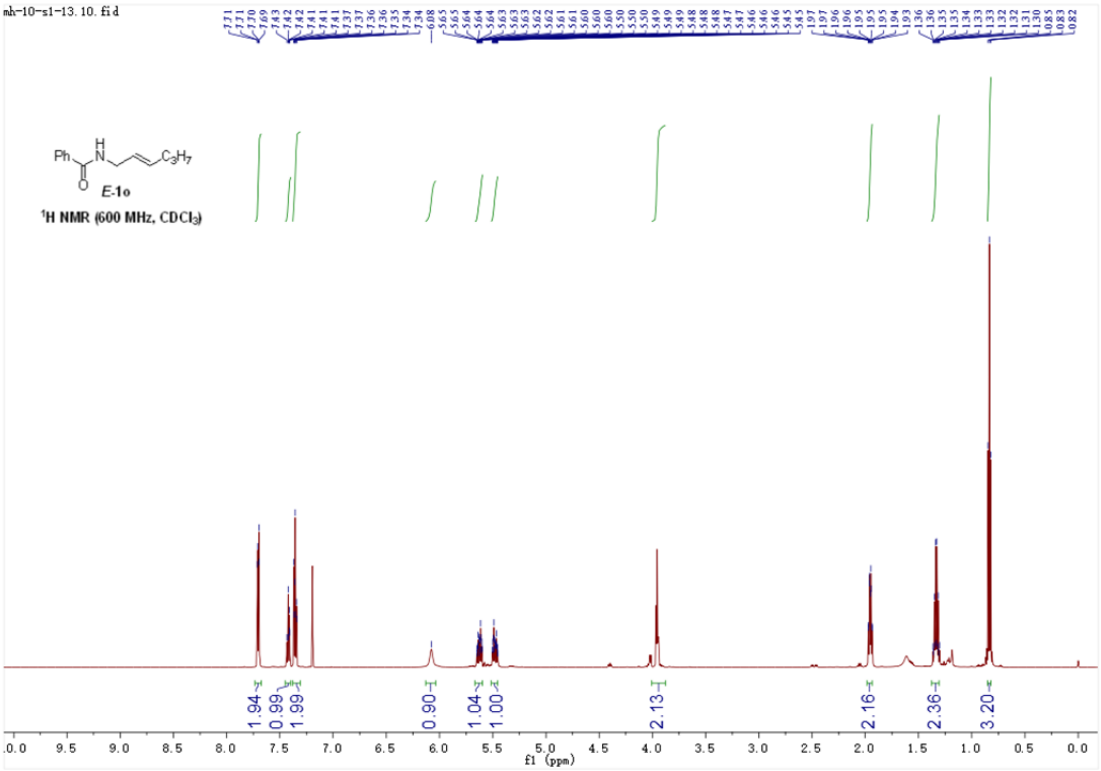

mk-s1-CP3-HUANJIJI.1.fid
1k
^{1}H NMR (400 MHz, CDCl$_3$)
1.05
0.84
1.01
1.00
2.00
1.04
2.07
2.06
f1 (ppm)

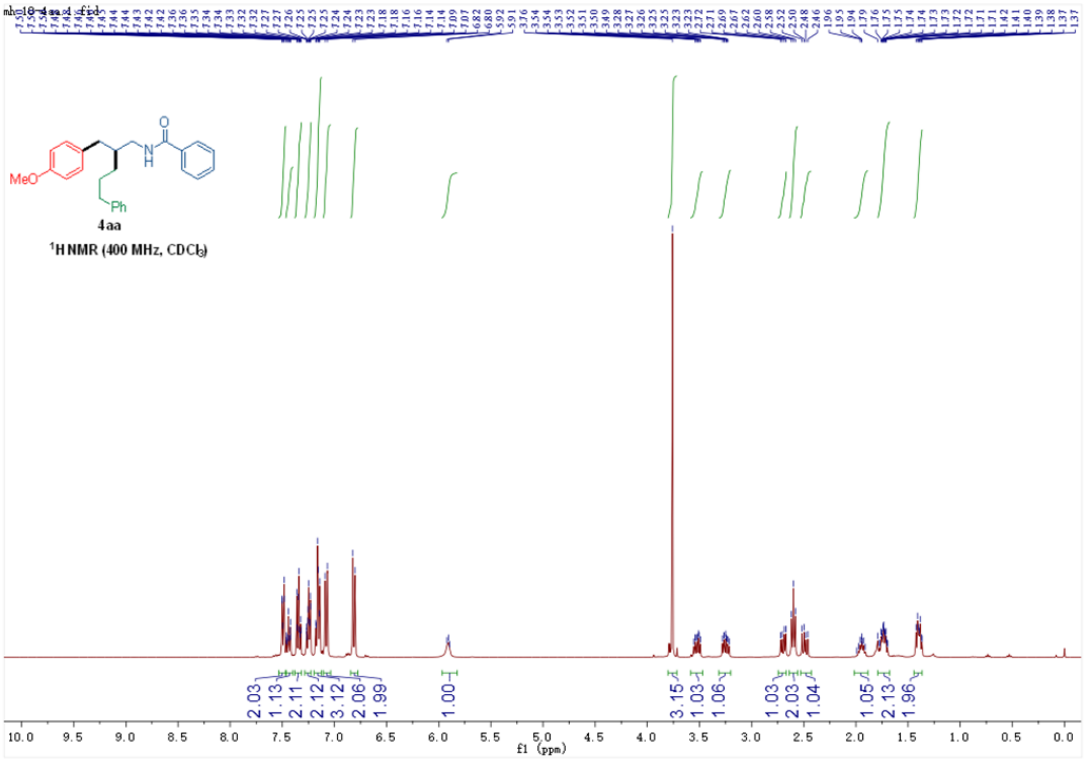

mk-10-s1-10.10.fid
1l
^{1}H NMR (600 MHz, CDCl$_3$)
4.88
1.00
1.93
2.19
3.04
f1 (ppm)

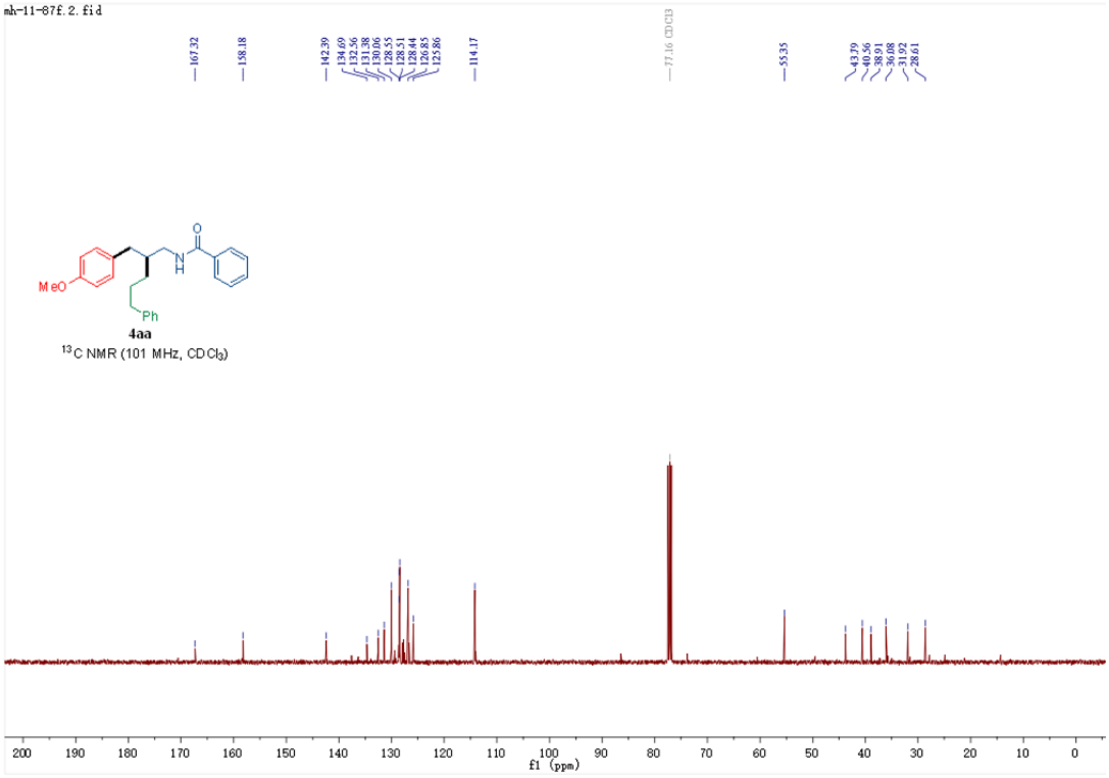

mh-s1-Z-C7H15.1.fid
Z-1m
^{1}H NMR (400 MHz, $CDCl_3$)
1.89
0.93
1.93
0.87
1.10
1.00
2.00
2.01
2.16
6.35
3.56
f1 (ppm)

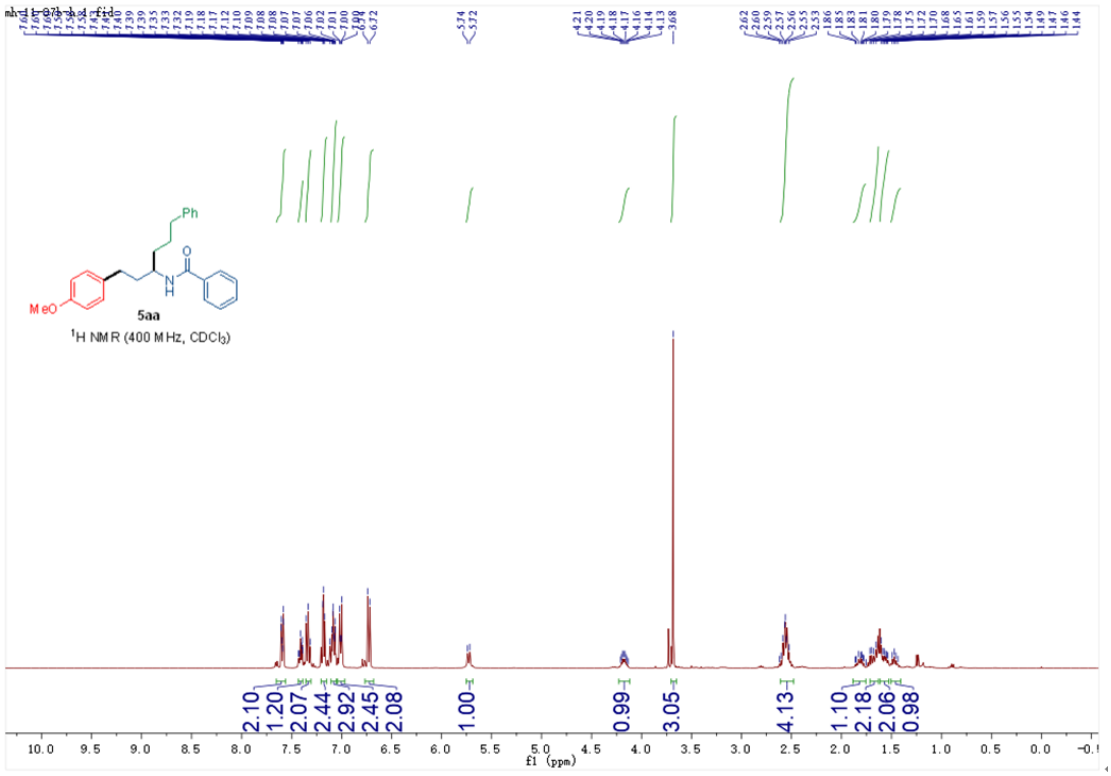

mh-s1-Z-C6H13.2.fid
Z-1n
^{1}H NMR (400 MHz, $CDCl_3$)
1.94
0.99
2.00
0.96
1.20
1.19
2.34
2.26
10.33
3.34
f1 (ppm)

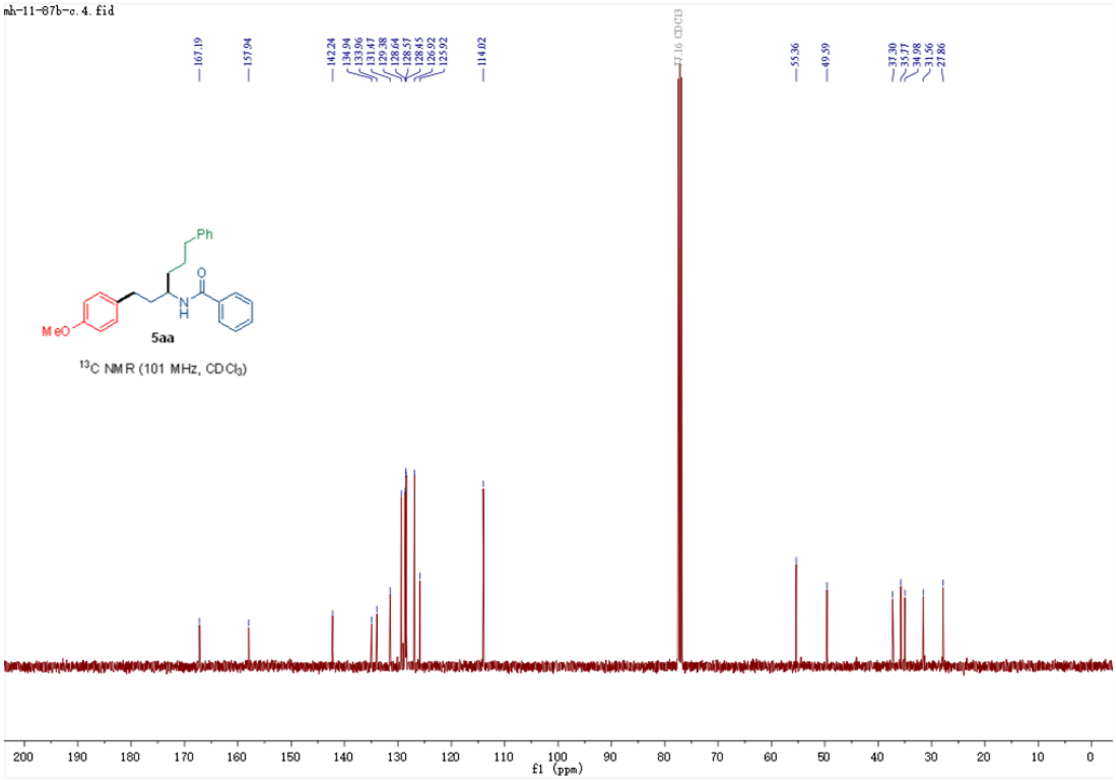

mk-s1-Z-C3H7.1.fid
Ph
N
H
O
C3H7
Z-1o
¹H NMR (400 MHz, CDCl3)
2.00
0.92
2.00
1.00
1.10
1.11
2.05
2.12
2.42
3.51
f1 (ppm)

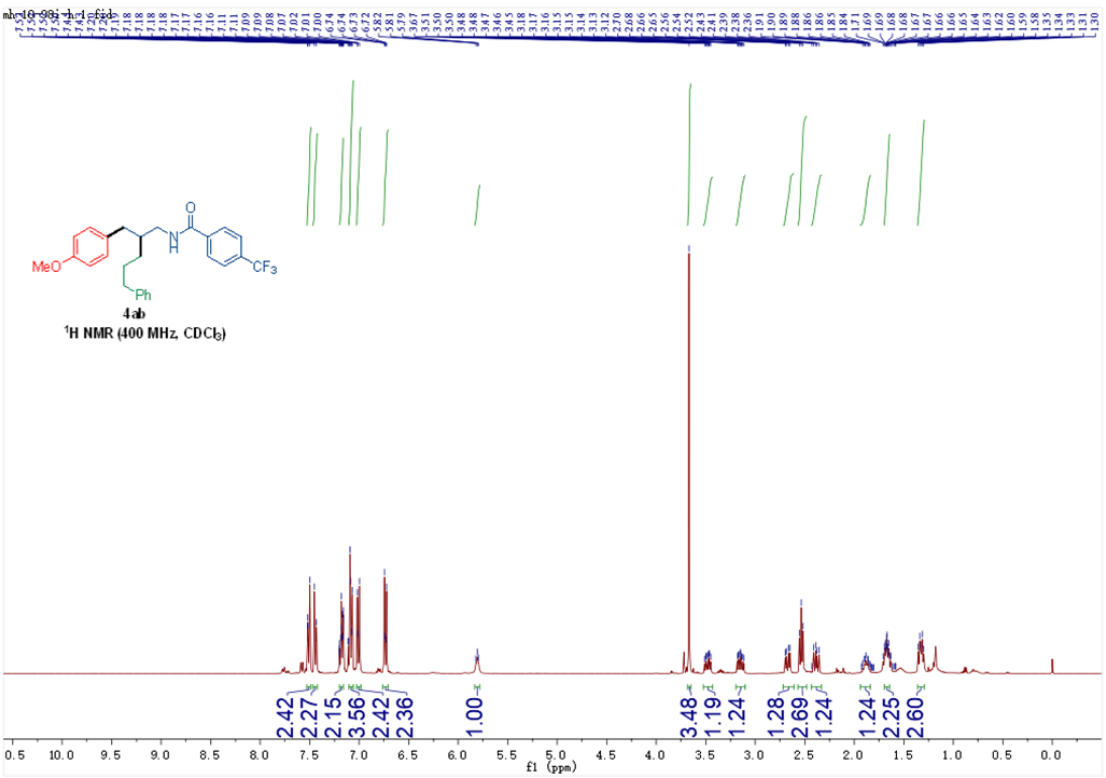

mk-10-s1-13.10.fid
Ph
N
H
O
C3H7
E-1o
¹H NMR (600 MHz, CDCl3)
1.94
0.99
1.99
0.90
1.04
1.00
2.13
2.16
2.36
3.20
f1 (ppm)

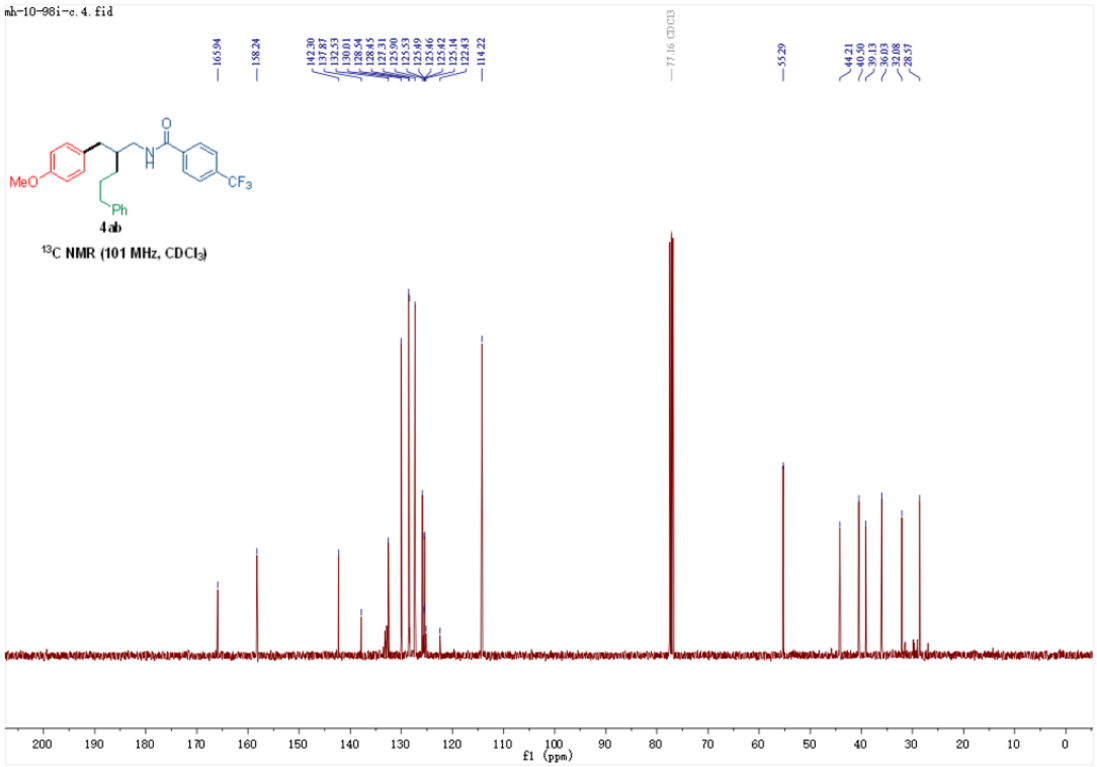

4aa
^{1}H NMR (400 MHz, CDCl$_3$)
f1 (ppm)

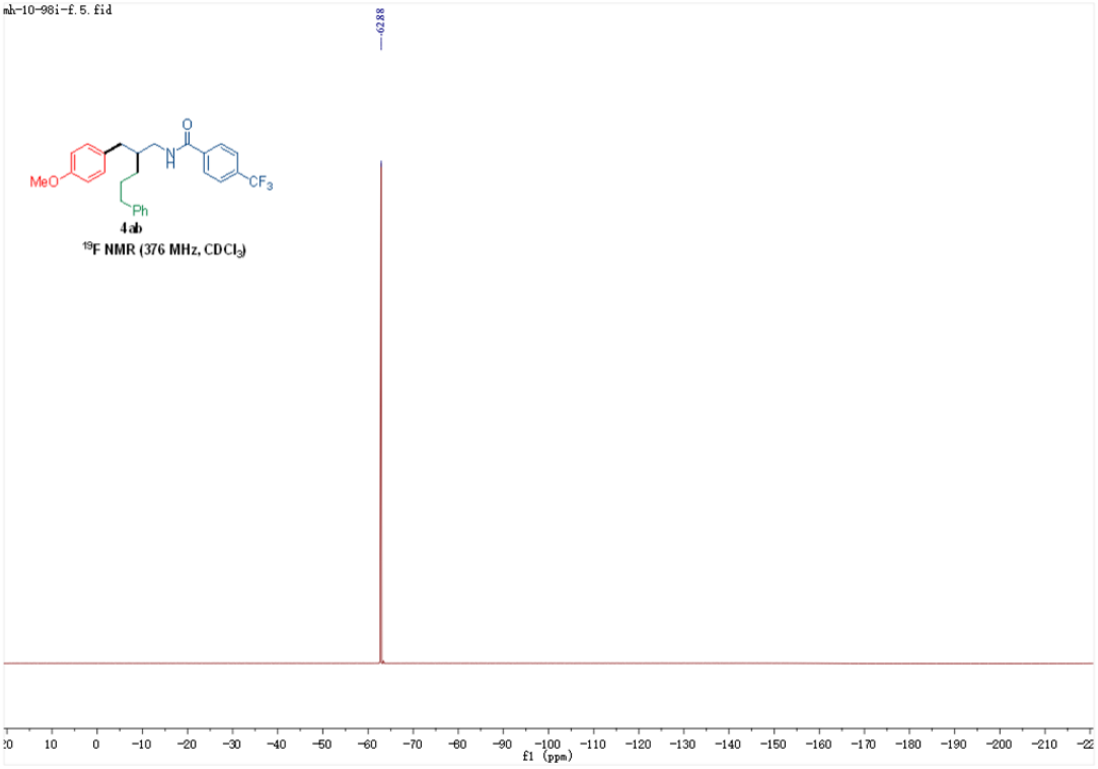

4aa
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

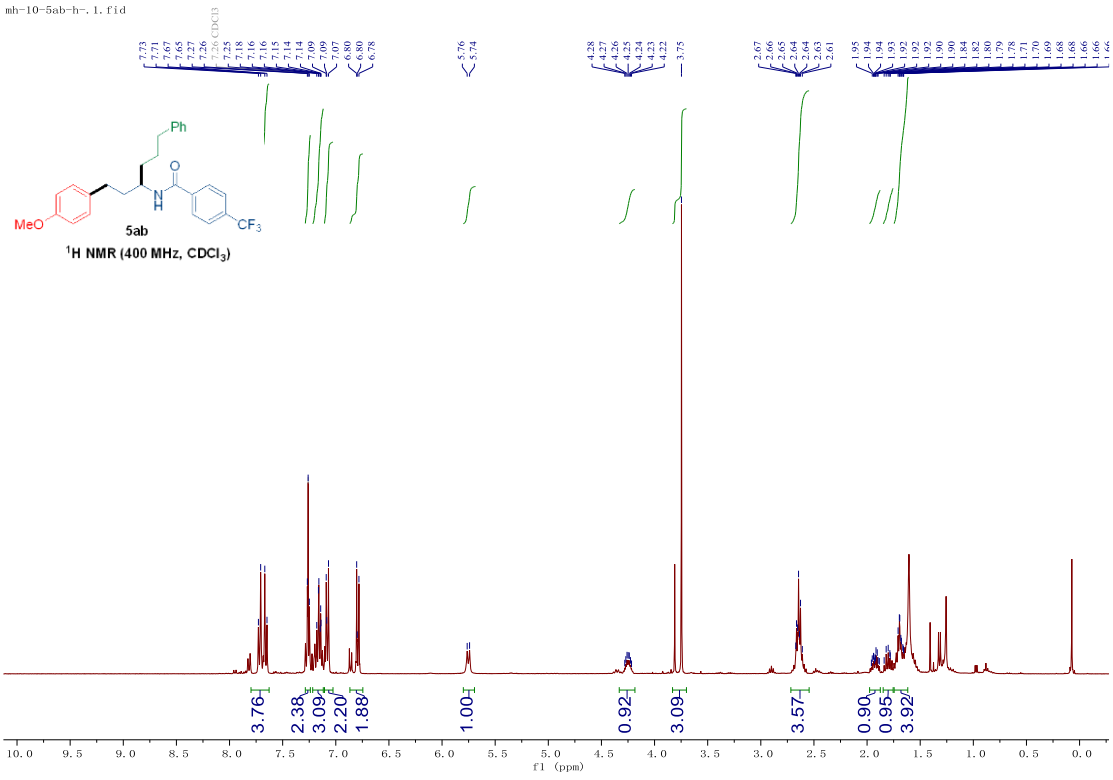

Ph
MeO
N
H
O
5aa
^{1}H NMR (400 MHz, CDCl$_3$)
2.10
1.20
2.07
2.44
2.92
2.45
2.08
1.00
0.99
3.05
4.13
1.10
2.18
2.06
0.98
f1 (ppm)

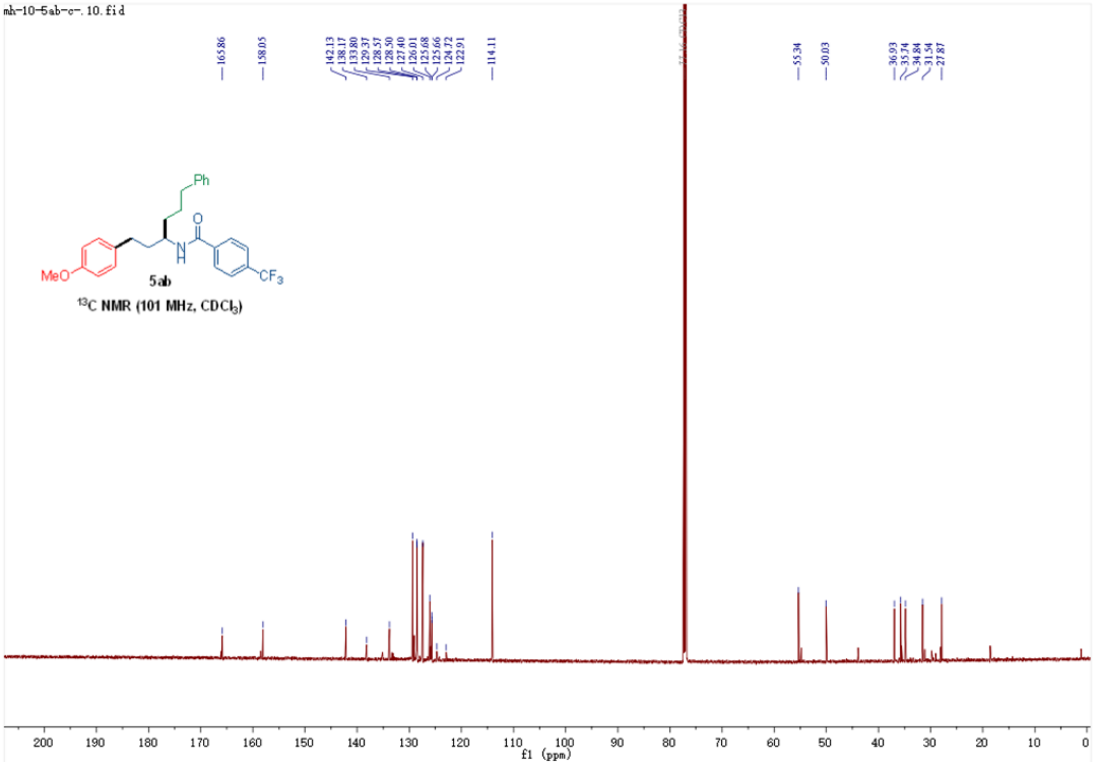

mh-11-87b-c.4.fid
167.19
157.94
142.24
134.94
133.06
131.47
129.38
128.64
128.37
128.15
126.92
125.92
114.02
77.16 CDCl3
55.36
49.59
37.30
35.77
34.98
31.56
27.86
Ph
MeO
N
H
O
5aa
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

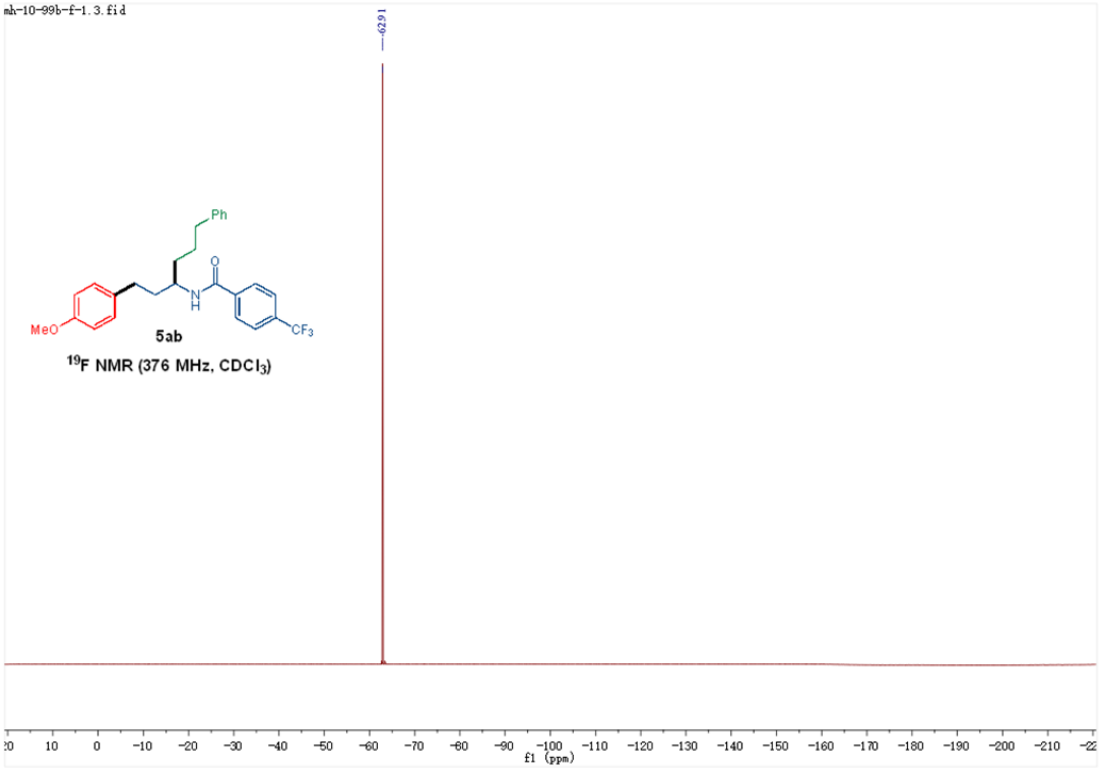

MeO
O
N
H
CF3
Ph
4ab
1H NMR (400 MHz, CDCl3)
2.42
2.27
2.15
3.56
2.42
2.36
1.00
3.48
1.19
1.24
1.28
2.69
1.24
1.24
2.25
2.60
f1 (ppm)

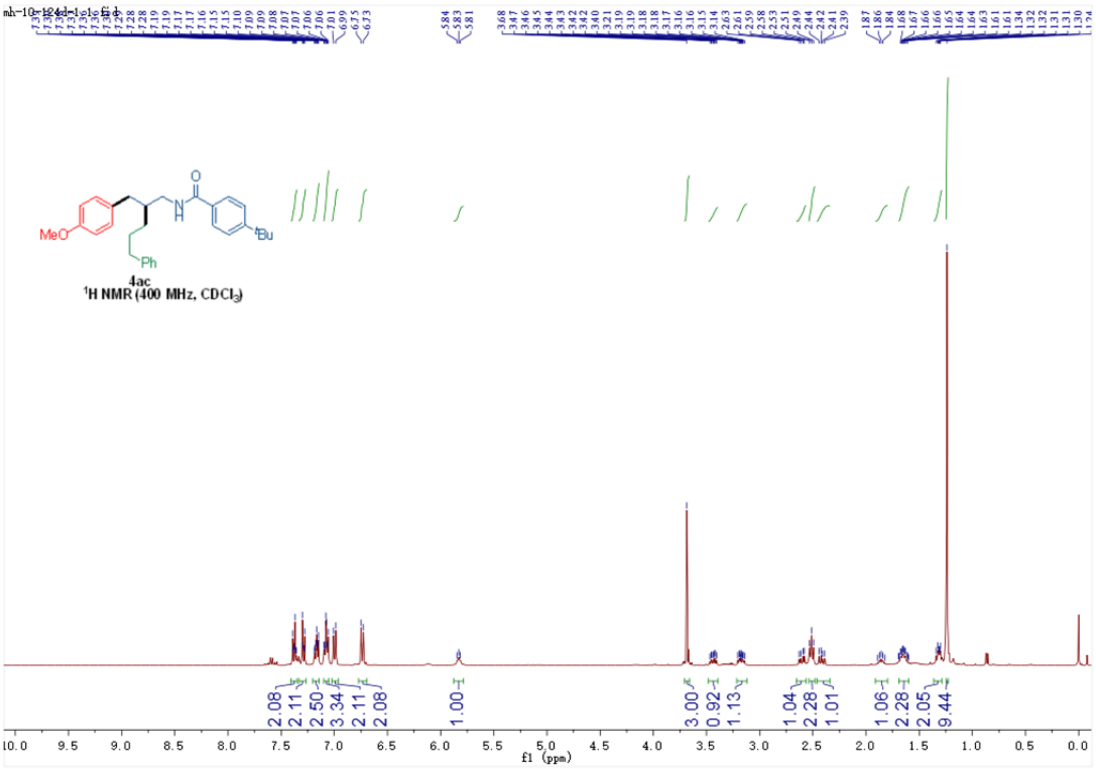

165.94
158.24
142.30
137.87
132.53
130.01
128.54
128.45
127.31
125.00
123.53
123.49
123.46
123.42
123.14
122.83
114.22
77.16 CDCl3
55.29
44.21
40.50
39.13
36.03
32.08
28.57
MeO
O
N
H
CF3
Ph
4ab
13C NMR (101 MHz, CDCl3)
f1 (ppm)

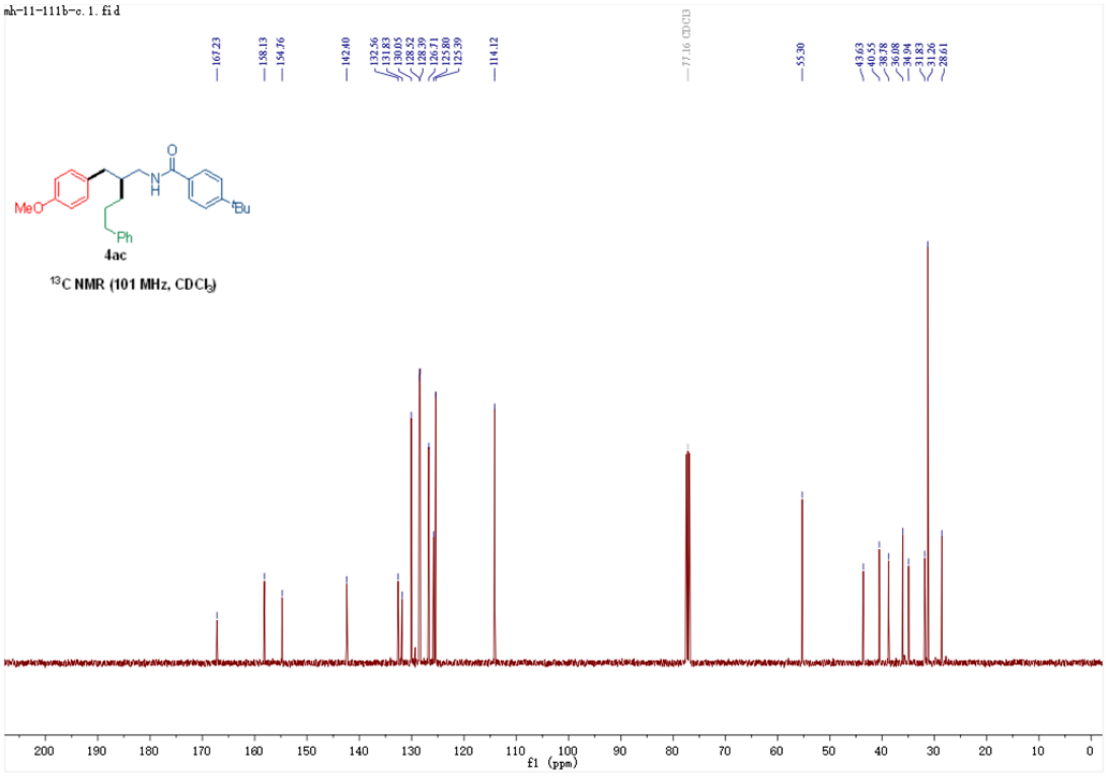

mh-10-98i-f.5.fid
-62.88
MeO
Ph
CF3
4ab
19F NMR (376 MHz, CDCl3)
f1 (ppm)

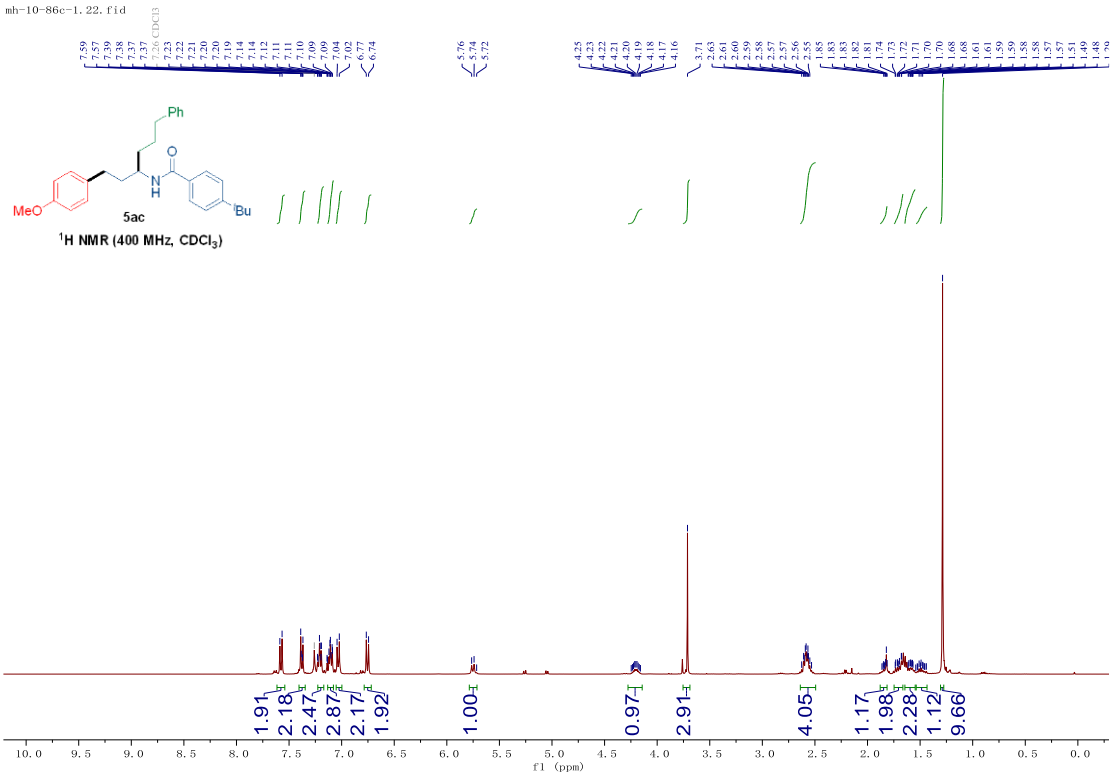

mh-10-5ab-h-.1.fid
MeO
Ph
CF3
5ab
1H NMR (400 MHz, CDCl3)
3.76
2.38
3.09
2.20
1.88
1.00
0.92
3.09
3.57
0.90
0.95
3.92
f1 (ppm)

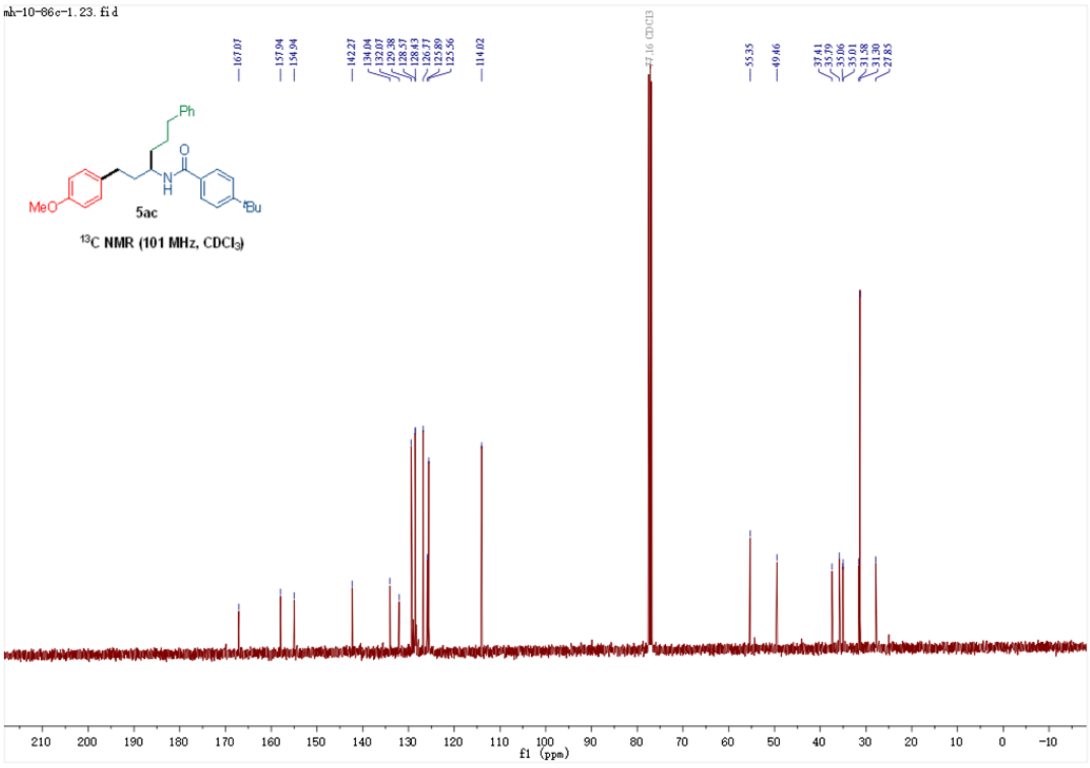

mh-10-5ab-c-. 10. fid
165.86
138.05
142.13
138.17
133.80
129.37
128.57
128.50
127.40
126.01
125.68
125.66
125.12
122.91
114.11
55.34
50.03
36.93
35.74
34.84
31.54
27.87
Ph
O
N
H
MeO
CF3
5ab
13C NMR (101 MHz, CDCl3)
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

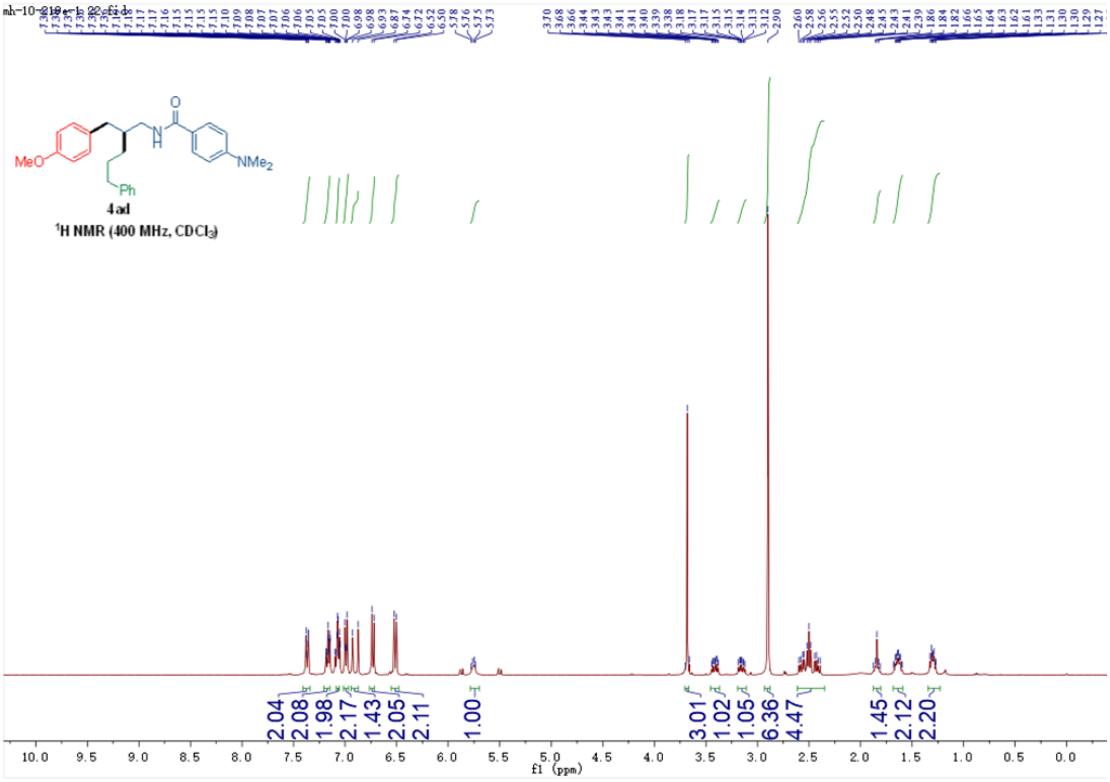

mh-10-99b-f-1. 3. fid
-62.91
Ph
O
N
H
MeO
CF3
5ab
19F NMR (376 MHz, CDCl3)
10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210
f1 (ppm)

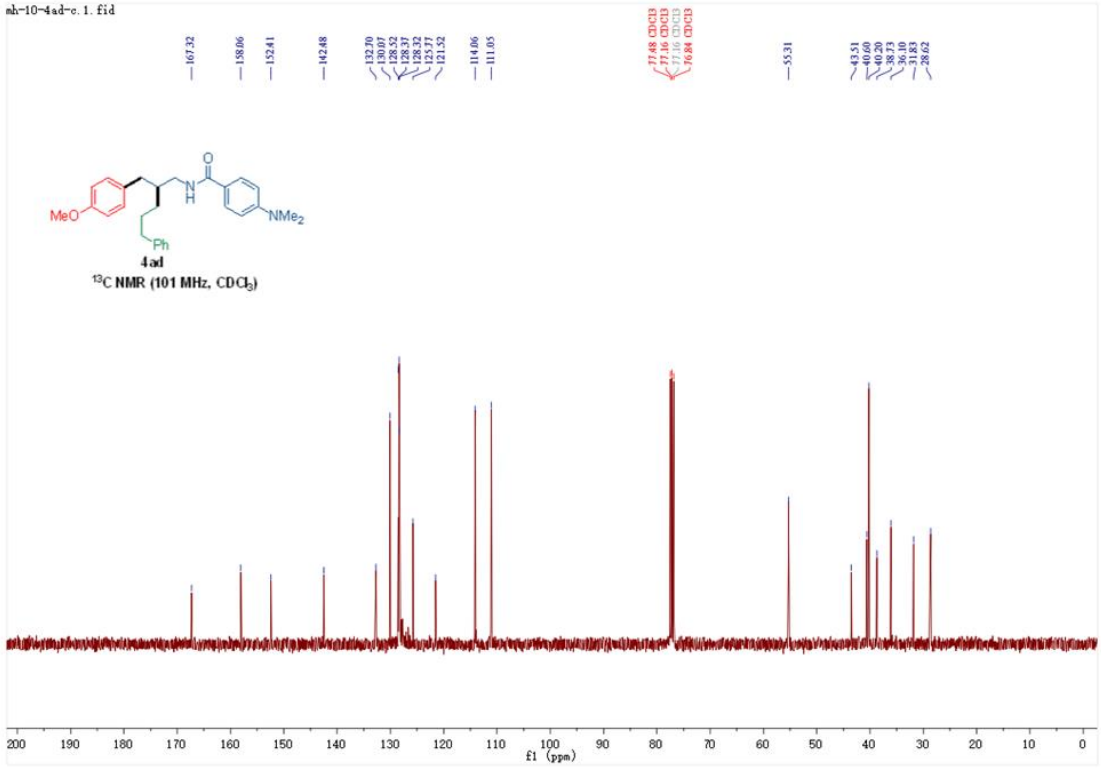

4ac
^{1}H NMR (400 MHz, CDCl$_3$)
f1 (ppm)

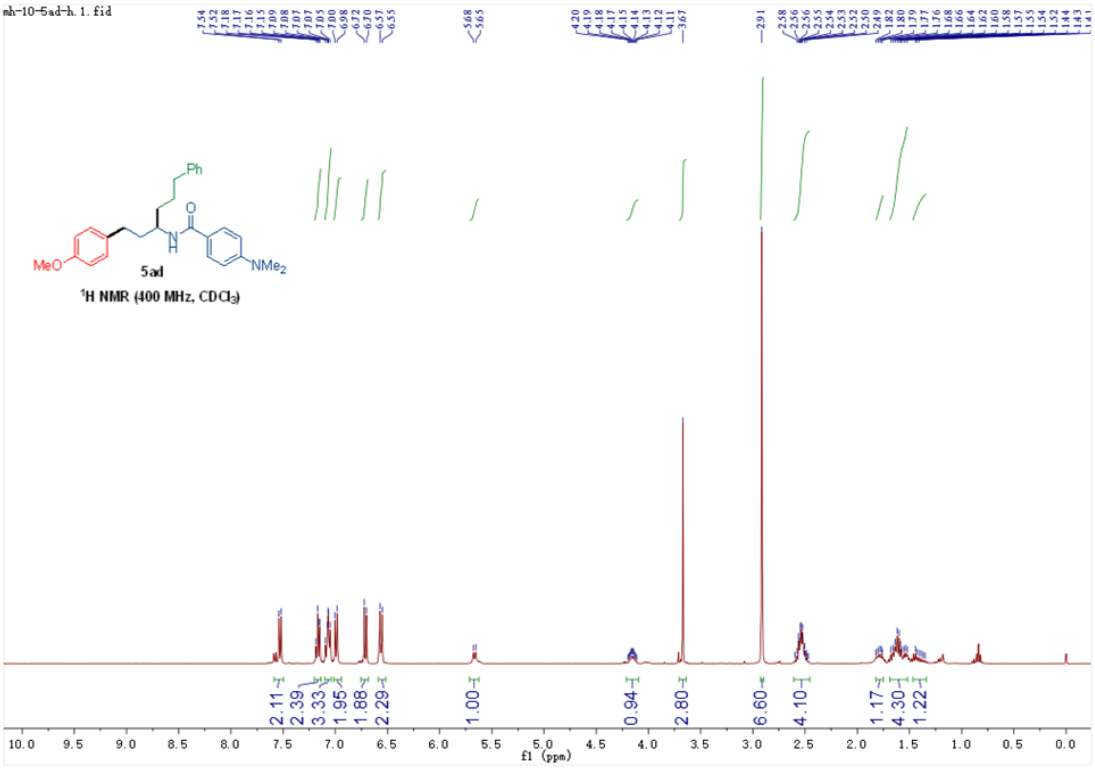

4ac
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

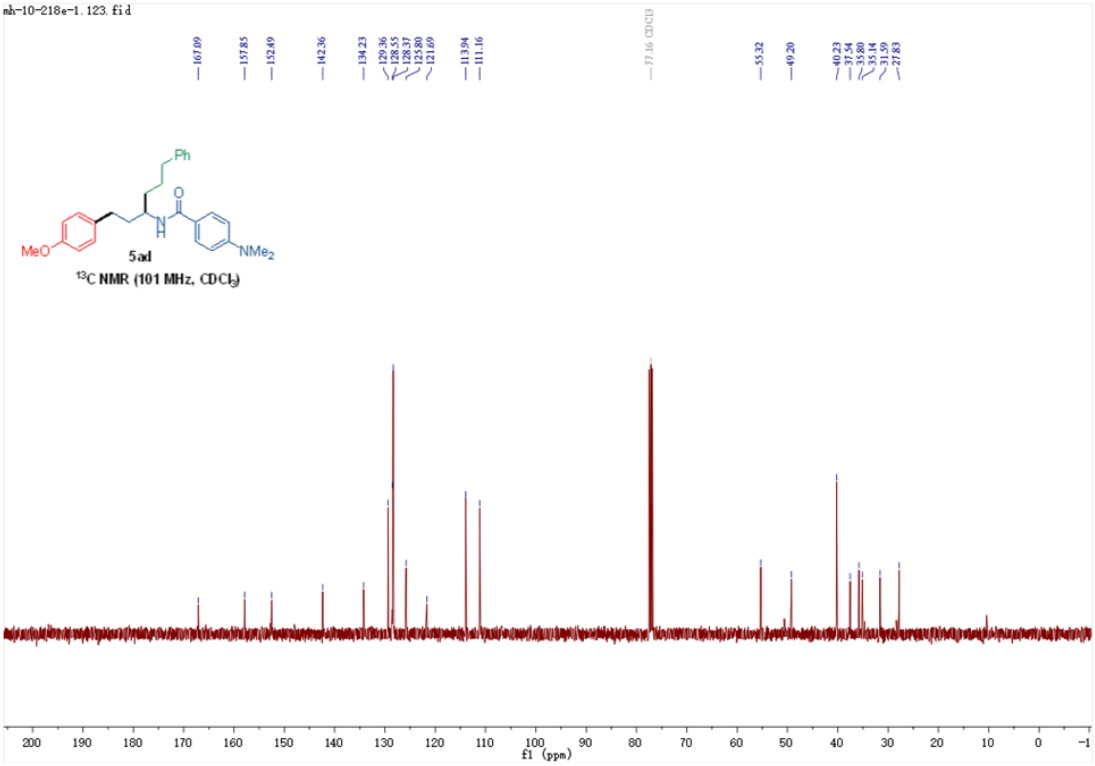

mh-10-86c-1.22.fid
Ph
MeO
N
H
O
tBu
5ac
^{1}H NMR (400 MHz, CDCl$_3$)
1.91
2.18
2.47
2.87
2.17
1.92
1.00
0.97
2.91
4.05
1.17
1.98
2.28
1.12
9.66
f1 (ppm)

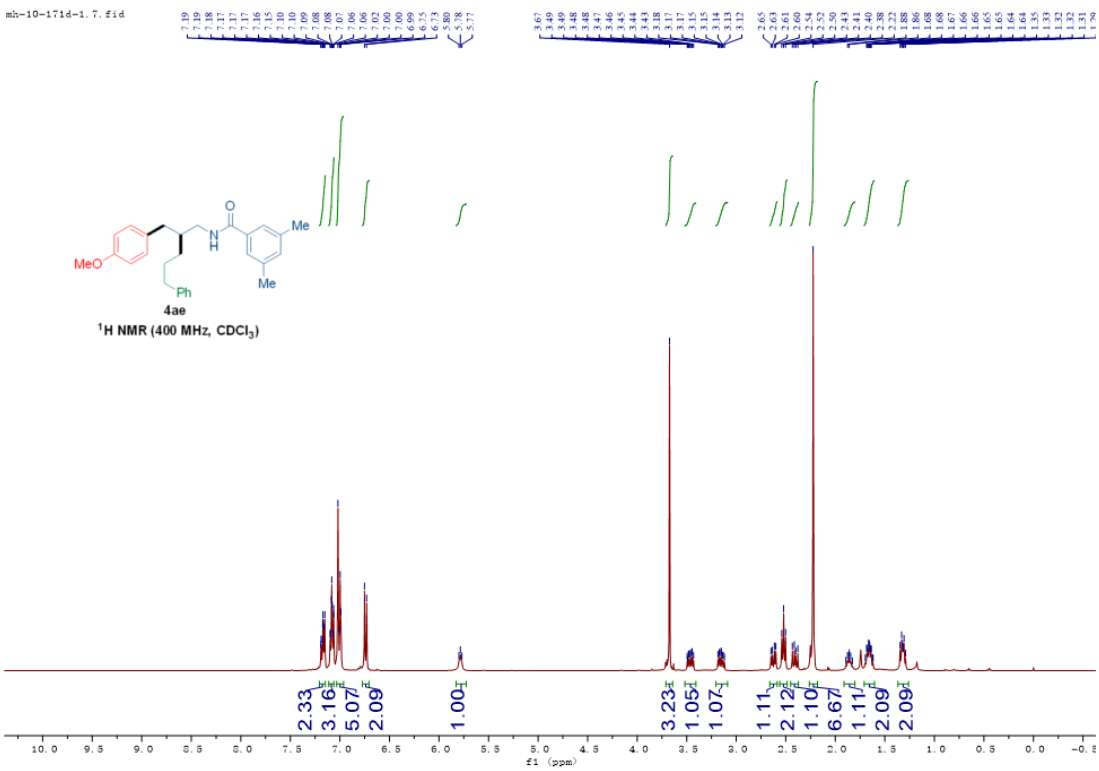

mh-10-86c-1.23.fid
Ph
MeO
N
H
O
tBu
5ac
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

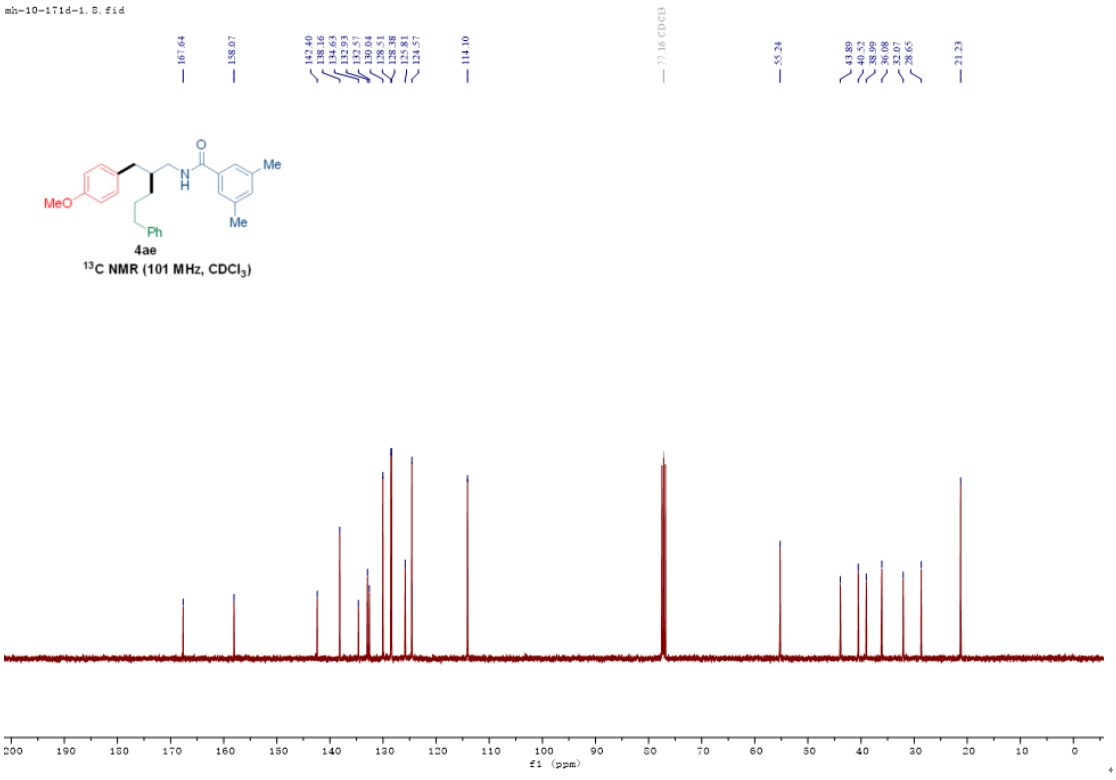

4ad
^{1}H NMR (400 MHz, CDCl$_3$)
MeO
NMe$_2$
Ph
2.04
2.08
1.98
2.17
1.43
2.05
2.11
1.00
3.01
1.02
1.05
6.36
4.47
1.45
2.12
2.20
f1 (ppm)

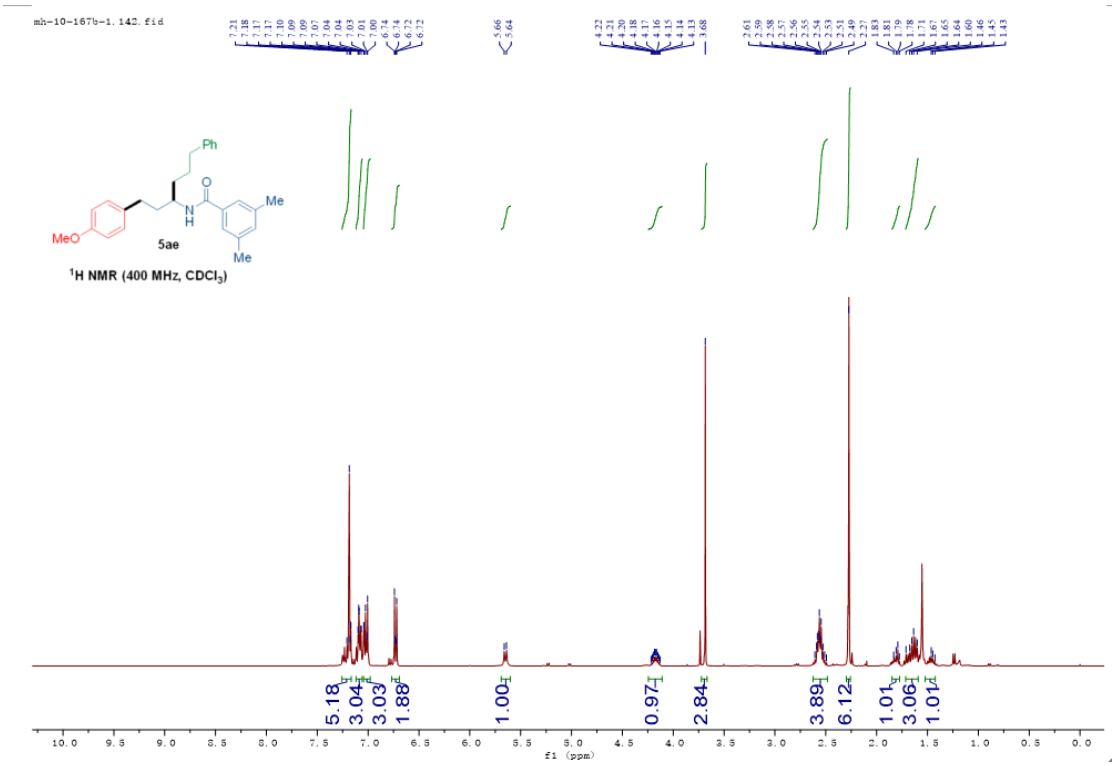

4ad
^{13}C NMR (101 MHz, CDCl$_3$)
MeO
NMe$_2$
Ph
167.32
158.06
152.41
142.48
132.70
130.07
128.52
128.37
128.32
125.77
121.52
114.06
111.05
77.48 CDCl3
77.16 CDCl3
76.84 CDCl3
55.31
43.51
40.60
40.20
38.23
36.10
31.83
28.62
f1 (ppm)

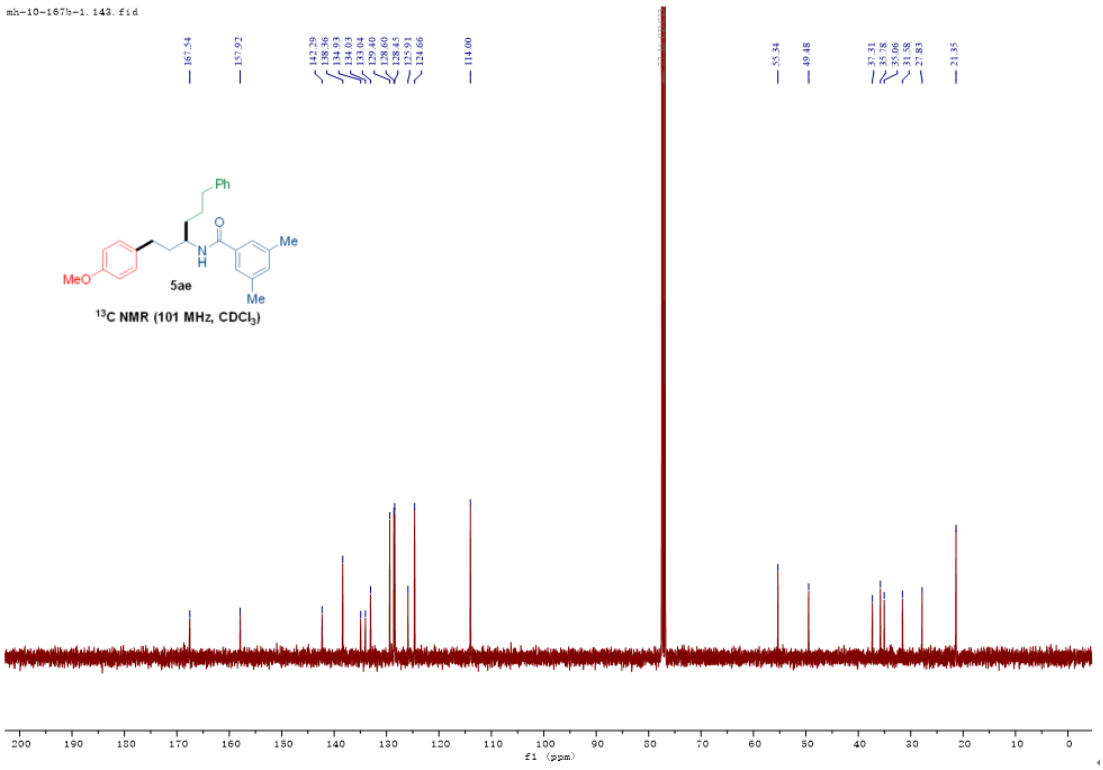

mh-10-5ad-h.1.fid
Ph
O
N
H
MeO
NMe2
5ad
1H NMR (400 MHz, CDCl3)
2.11
2.39
3.33
1.95
1.88
2.29
1.00
0.94
2.80
6.60
4.10
1.17
4.30
1.22
f1 (ppm)

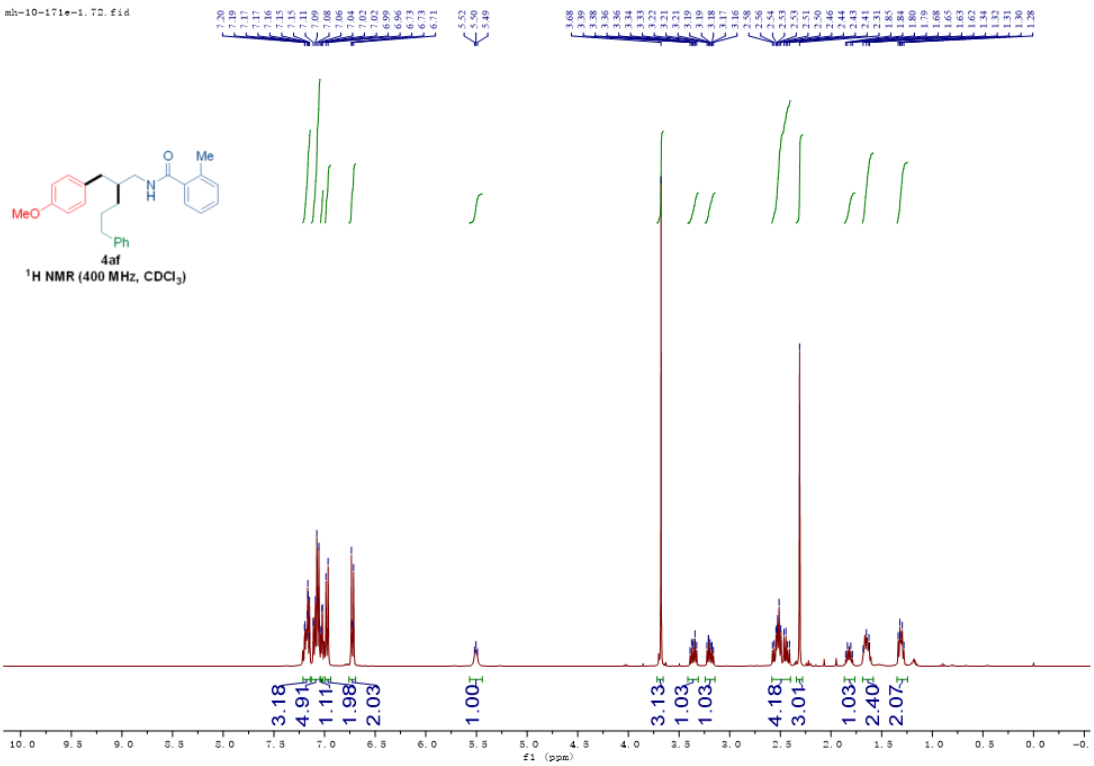

mh-10-218e-1.123.fid
167.89
157.85
152.49
142.36
134.23
129.36
128.55
128.37
125.80
121.69
113.94
111.16
77.16 CDCl3
55.32
49.20
40.23
37.54
35.80
35.14
31.59
27.83
Ph
O
N
H
MeO
NMe2
5ad
13C NMR (101 MHz, CDCl3)
f1 (ppm)

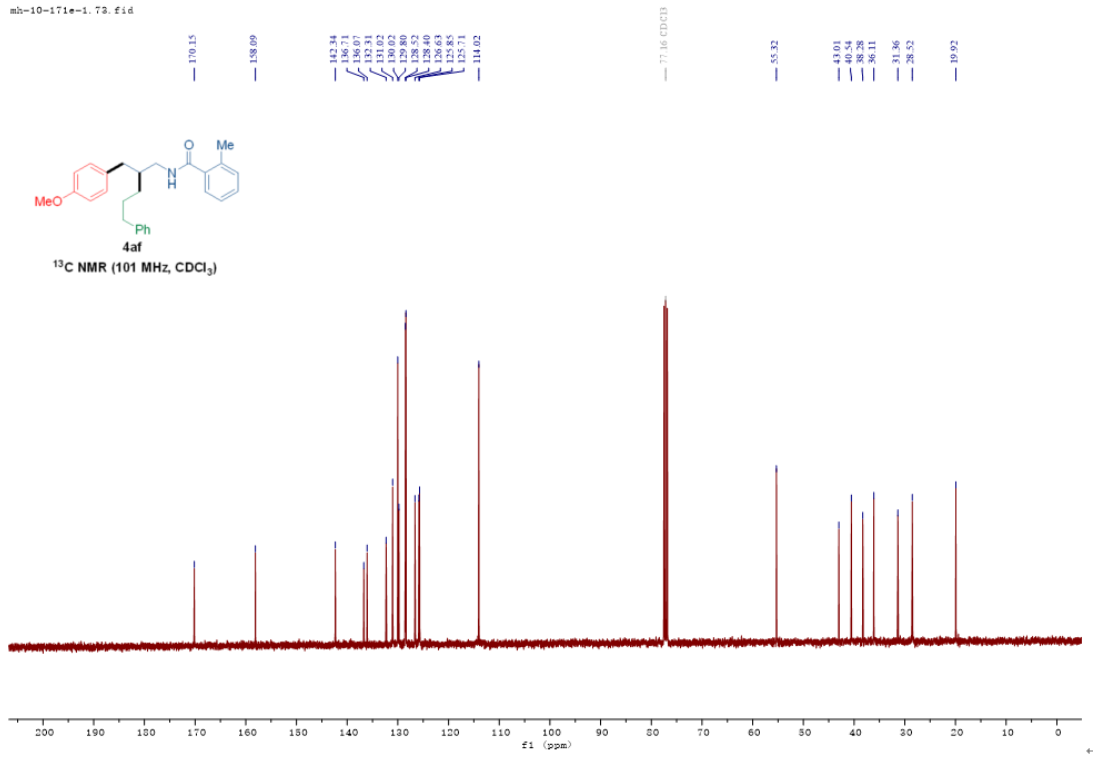

mh-10-171d-1.7.fid
MeO
Ph
Me
Me
4ae
^{1}H NMR (400 MHz, CDCl$_3$)
2.33
3.16
5.07
2.09
1.00
3.23
1.05
1.07
1.11
2.12
1.10
6.67
1.11
2.09
2.09
f1 (ppm)

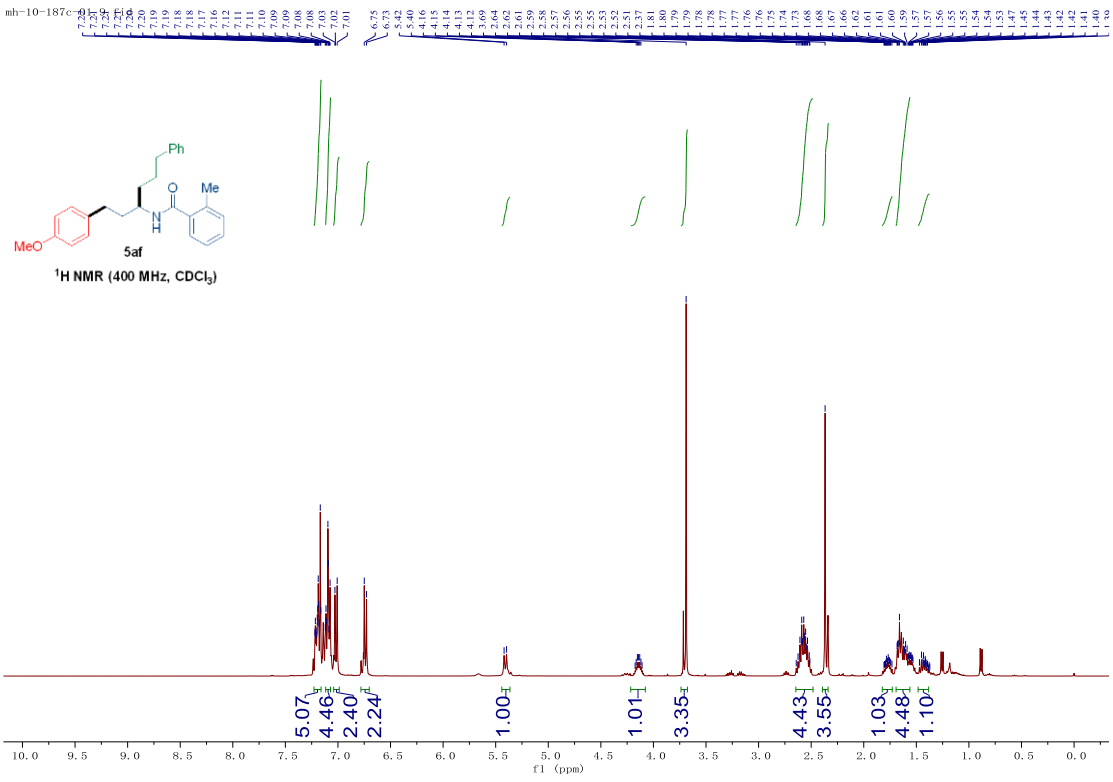

mh-10-171d-1.8.fid
167.64
158.07
142.40
138.16
134.63
132.93
132.57
130.04
128.51
128.38
125.81
124.57
114.10
77.16 CDCl3
55.24
43.89
40.52
38.99
36.08
23.07
28.65
21.23
MeO
Ph
Me
Me
4ae
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

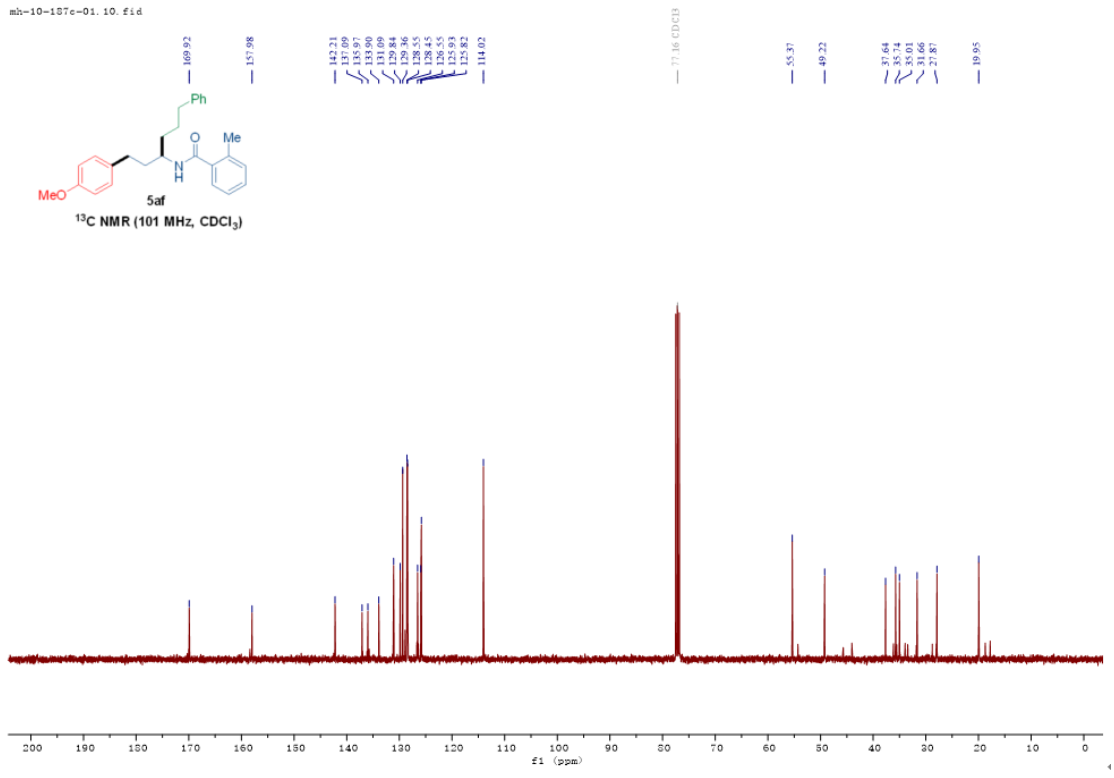

mh-10-167b-1.142.fid
Ph
Me
MeO
N
H
O
Me
5ae
^{1}H NMR (400 MHz, CDCl$_3$)
5.18
3.04
3.03
1.88
1.00
0.97
2.84
3.89
6.12
1.01
3.06
1.01
f1 (ppm)

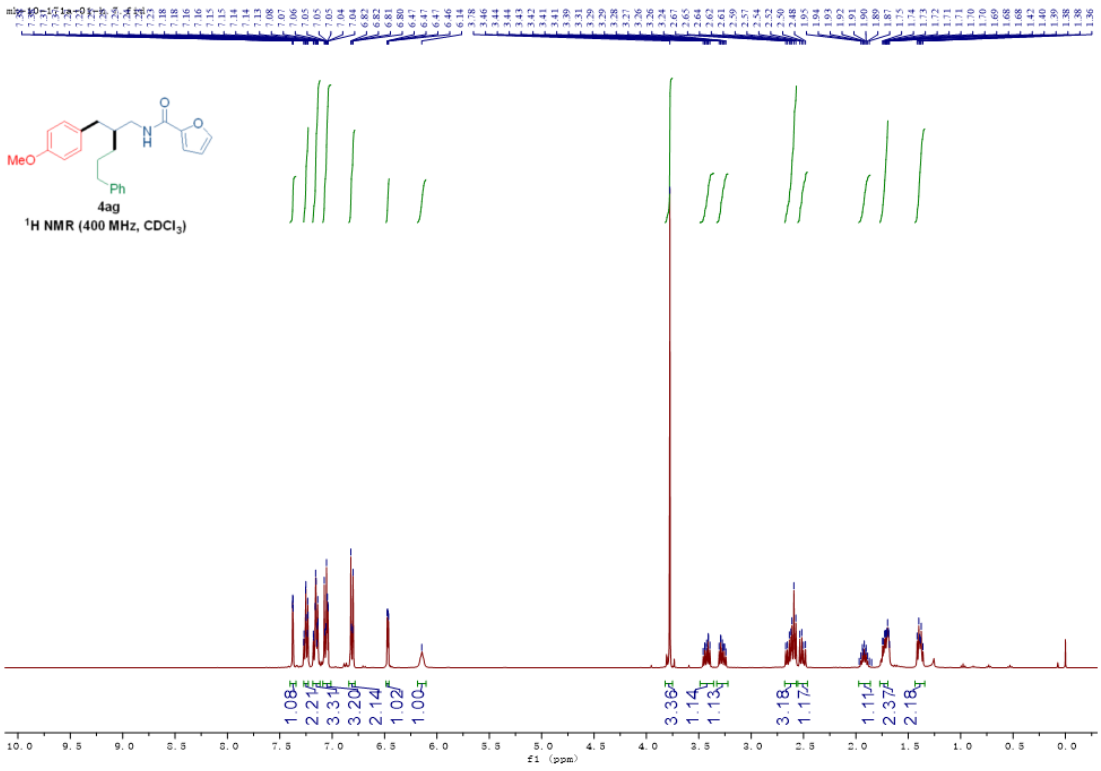

mh-10-167b-1.143.fid
167.54
157.92
142.29
138.56
134.93
134.03
133.04
129.40
128.60
128.45
125.93
124.66
114.00
55.34
49.48
37.31
35.38
35.06
31.58
27.83
21.35
Ph
Me
MeO
N
H
O
Me
5ae
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

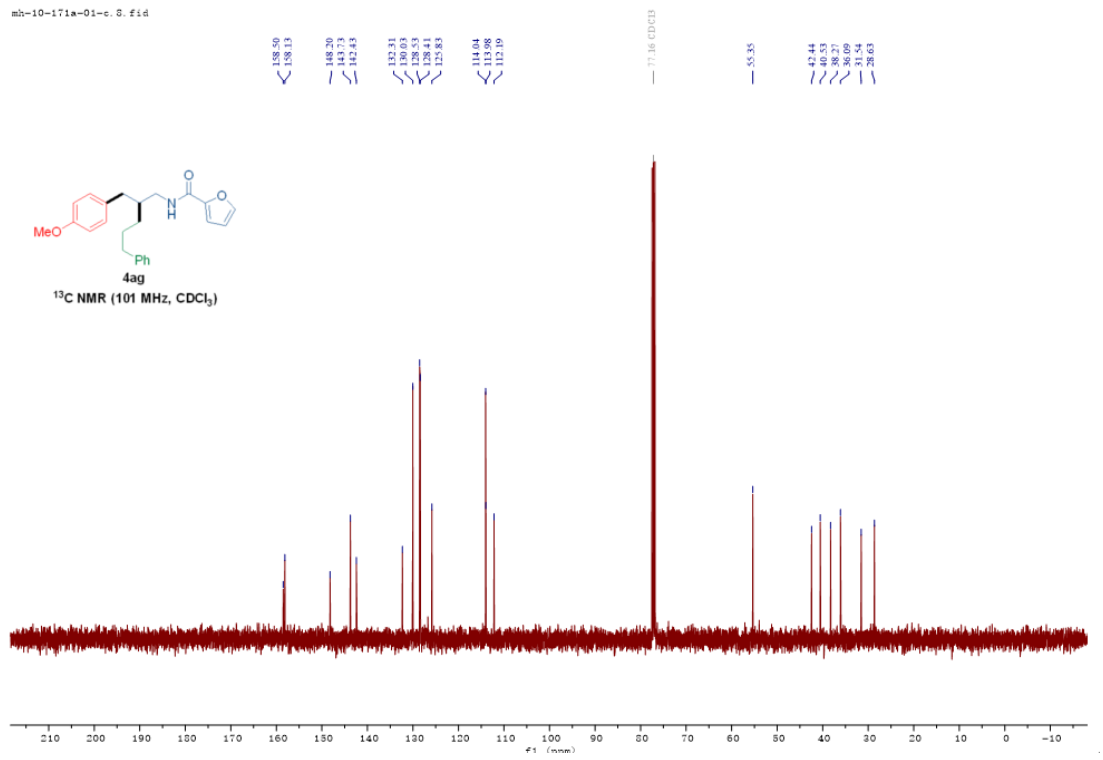

mh-10-171e-1.72.fid
MeO
Ph
Me
4af
^{1}H NMR (400 MHz, CDCl$_3$)
3.18
4.91
1.11
1.98
2.03
1.00
3.13
1.03
1.03
4.18
3.01
1.03
2.40
2.07
f1 (ppm)

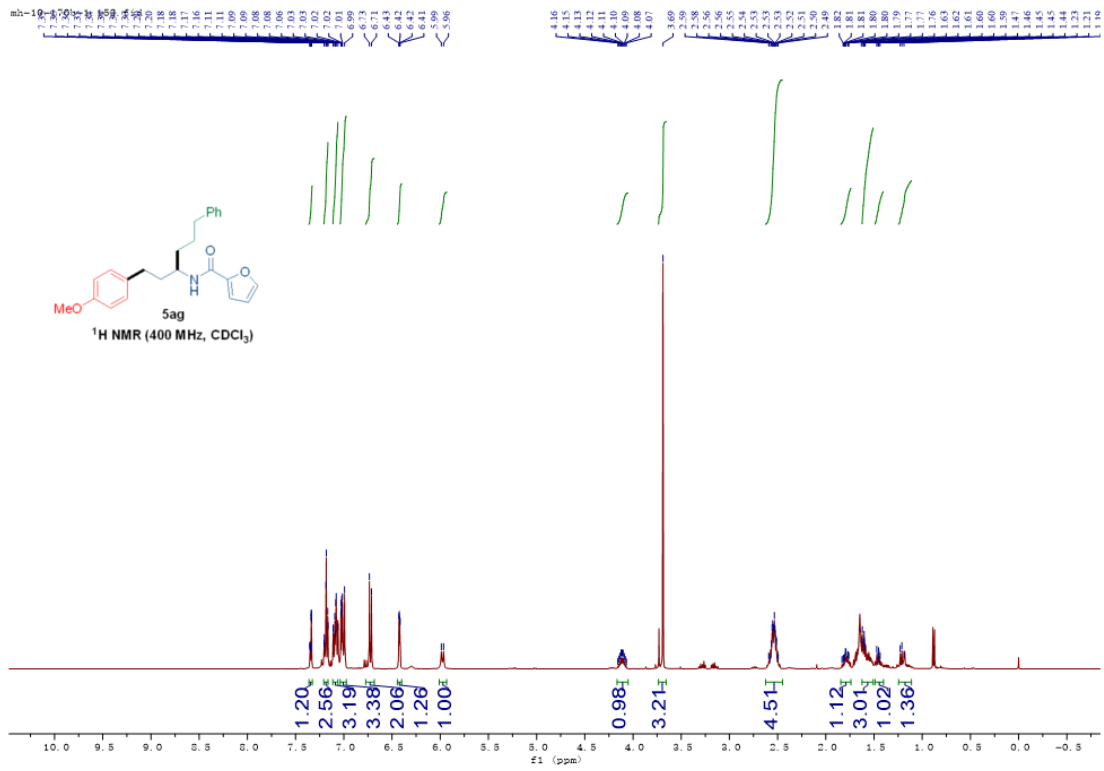

mh-10-171e-1.73.fid
MeO
Ph
Me
4af
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)


Ph
Me
O
N
H
MeO
5af
^{1}H NMR (400 MHz, CDCl$_3$)
5.07
4.46
2.40
2.24
1.00
1.01
3.35
4.43
3.55
1.03
4.48
1.10
f1 (ppm)


mh-10-187e-01.10.fid
Ph
Me
O
N
H
MeO
5af
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

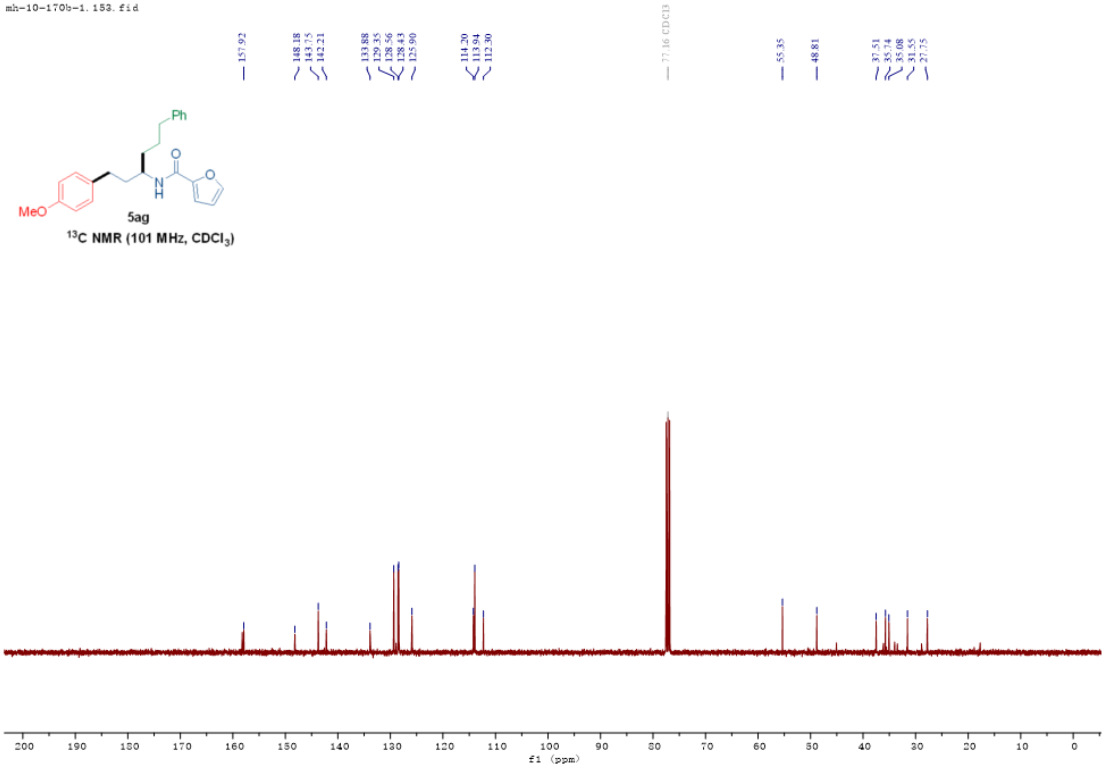

MeO
Ph
4ag
^{1}H NMR (400 MHz, CDCl$_3$)
1.08
2.21
3.31
3.20
2.14
1.02
1.00
3.36
1.14
1.13
3.18
1.17
1.11
2.37
2.18
f1 (ppm)


mh-10-171a-01-c.S.fid
MeO
Ph
4ag
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)



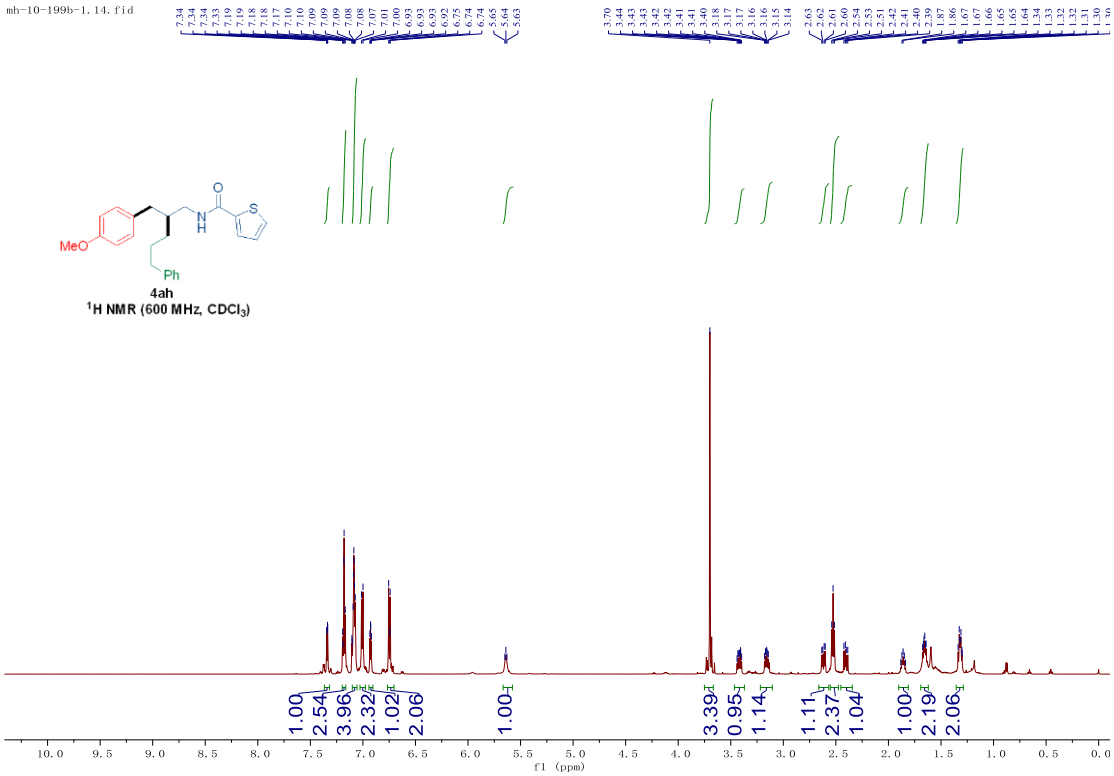
5ag

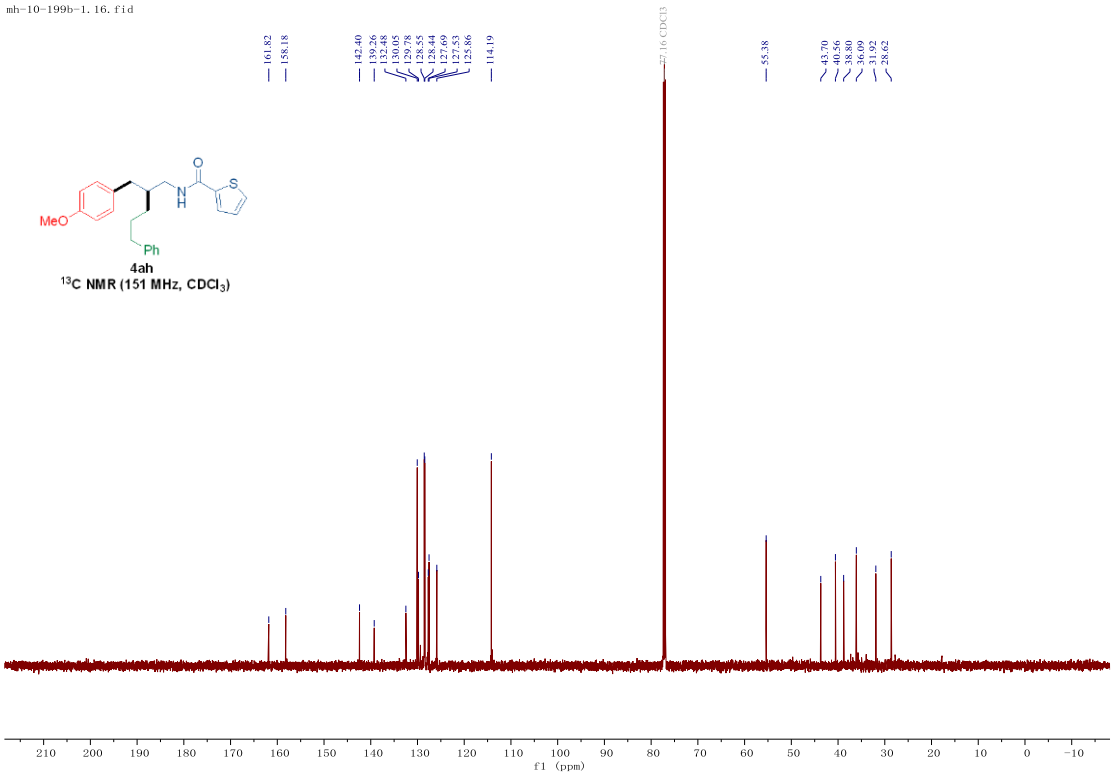
^{1}H NMR (400 MHz, $CDCl_3$)

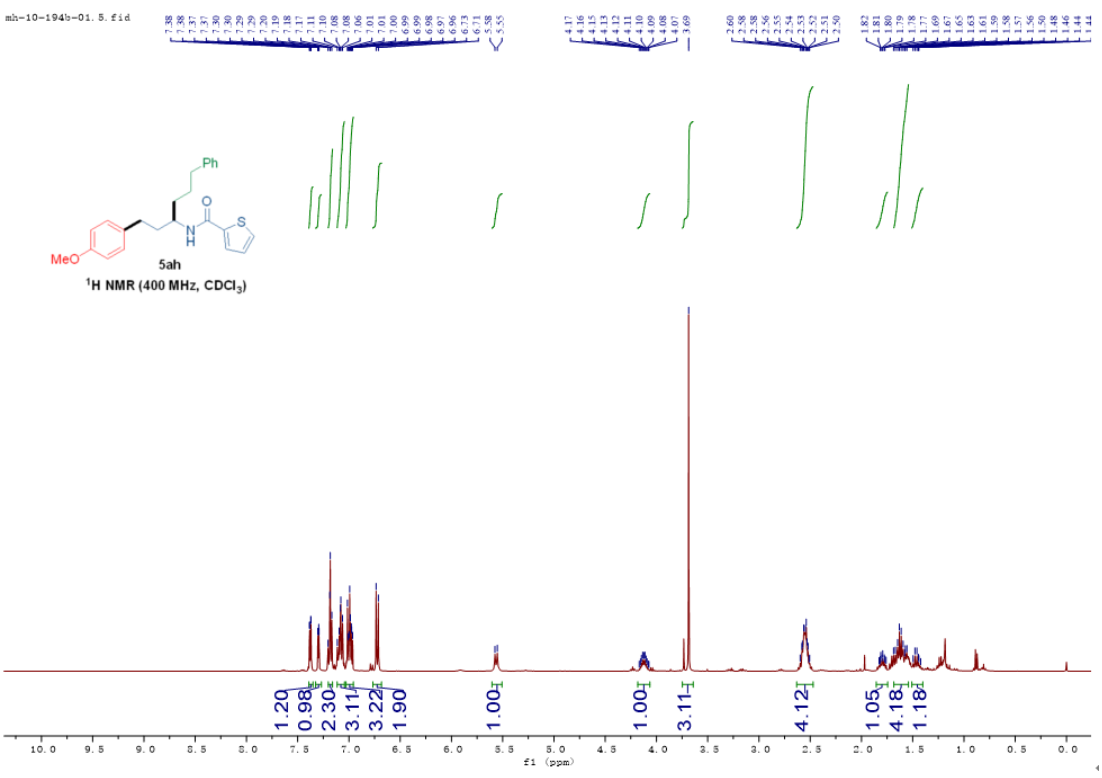


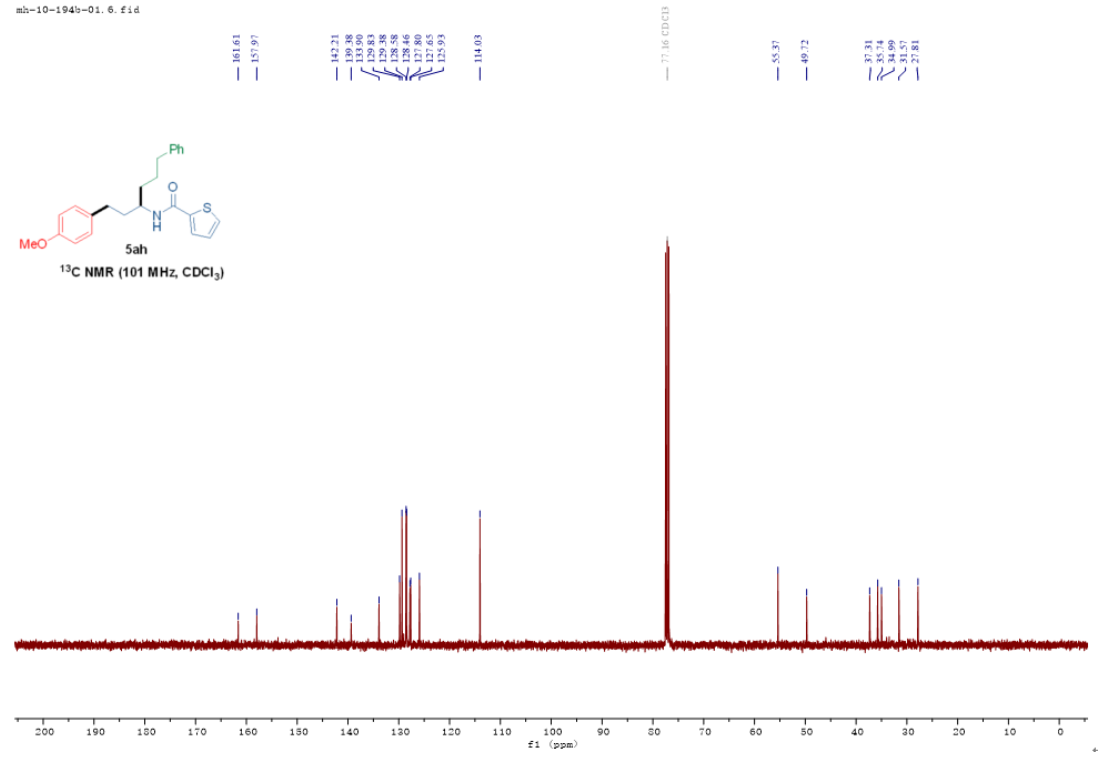
5ag

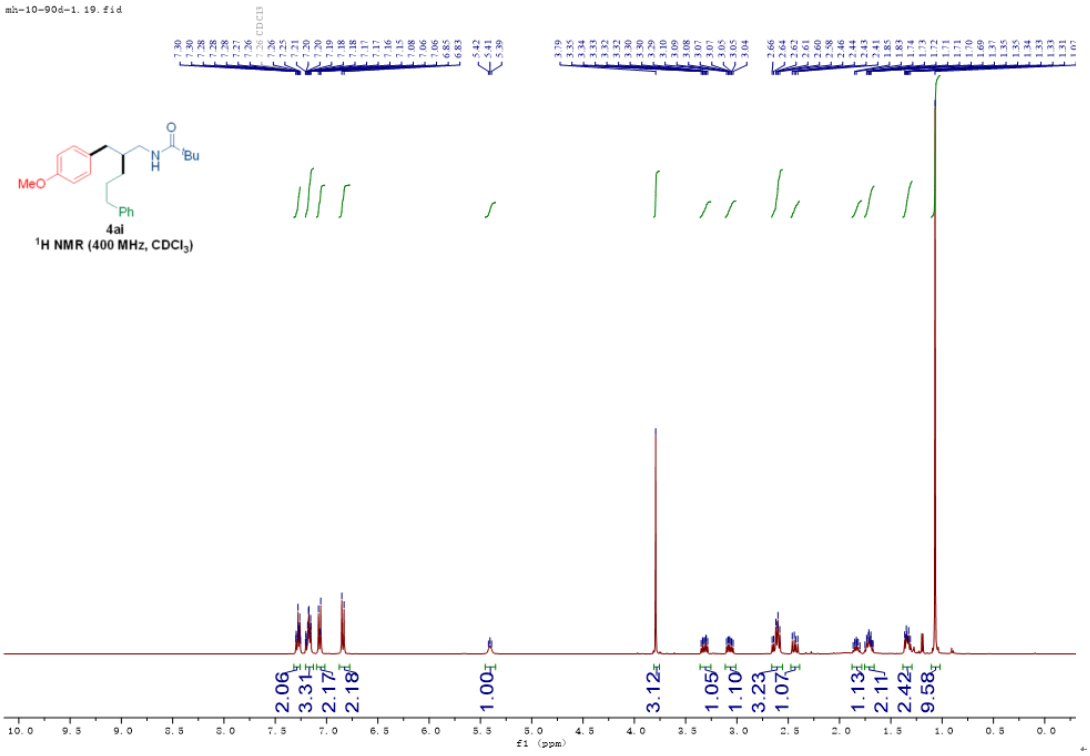
^{13}C NMR (101 MHz, $CDCl_3$)

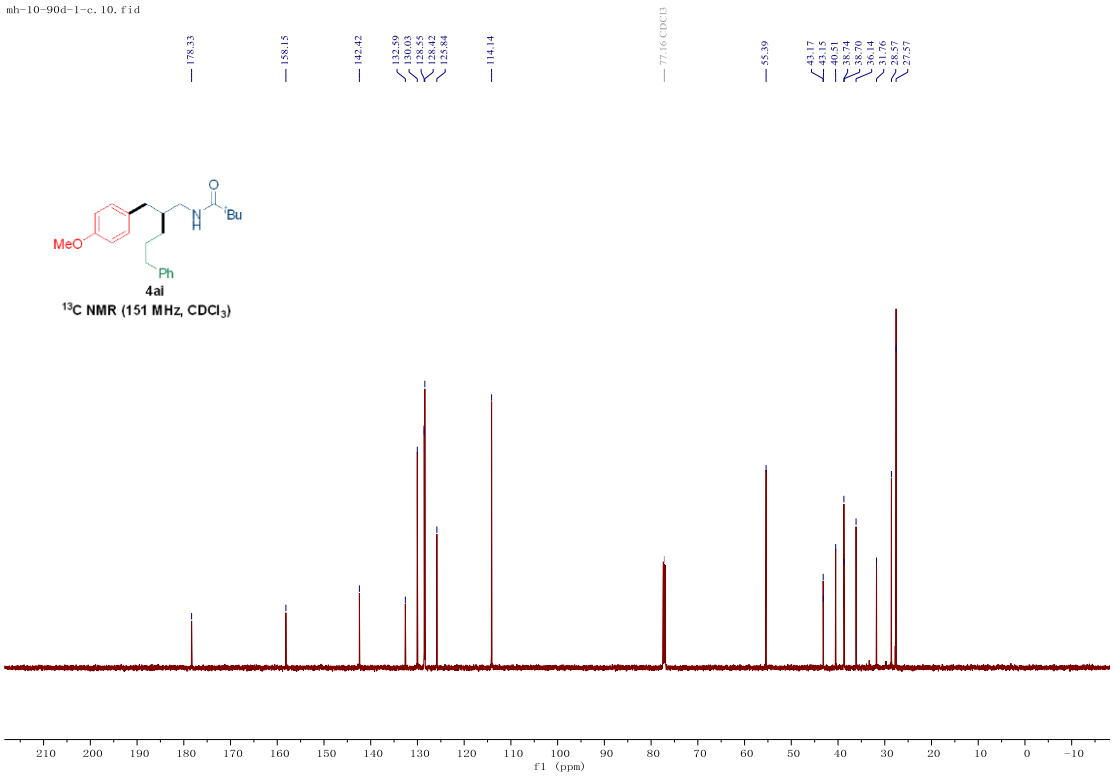

mh-10-199b-1.14.fid
MeO
Ph
4ah
^{1}H NMR (600 MHz, CDCl$_3$)
1.00
2.54
3.96
2.32
1.02
2.06
1.00
3.39
0.95
1.14
1.11
2.37
1.04
1.00
2.19
2.06
f1 (ppm)

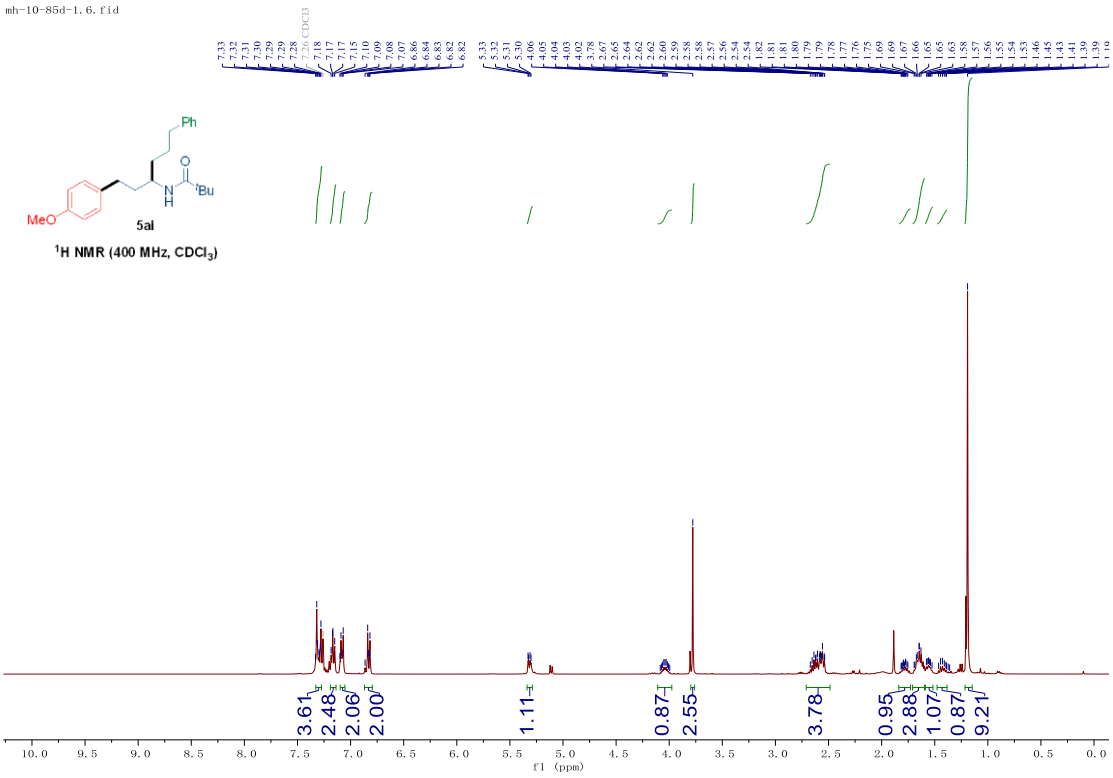

mh-10-199b-1.16.fid
161.82
158.18
142.40
139.26
132.48
130.05
129.78
128.55
128.44
127.69
127.53
125.86
114.19
77.16 CDCl3
55.38
43.70
40.56
38.80
36.09
31.92
28.62
MeO
Ph
4ah
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

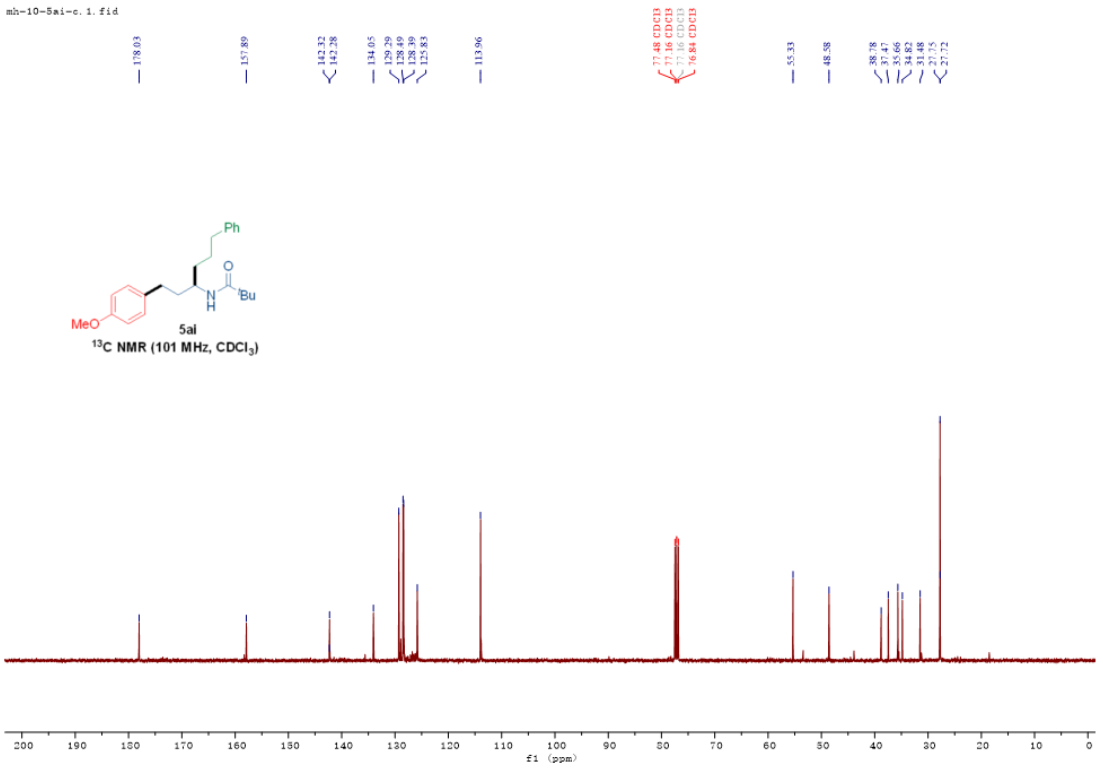

mh-10-194b-01.5.fid
Ph
MeO
5ah
^{1}H NMR (400 MHz, CDCl$_3$)
1.20
0.98
2.30
3.11
3.22
1.90
1.00
1.00
3.11
4.12
1.05
4.18
1.18
f1 (ppm)

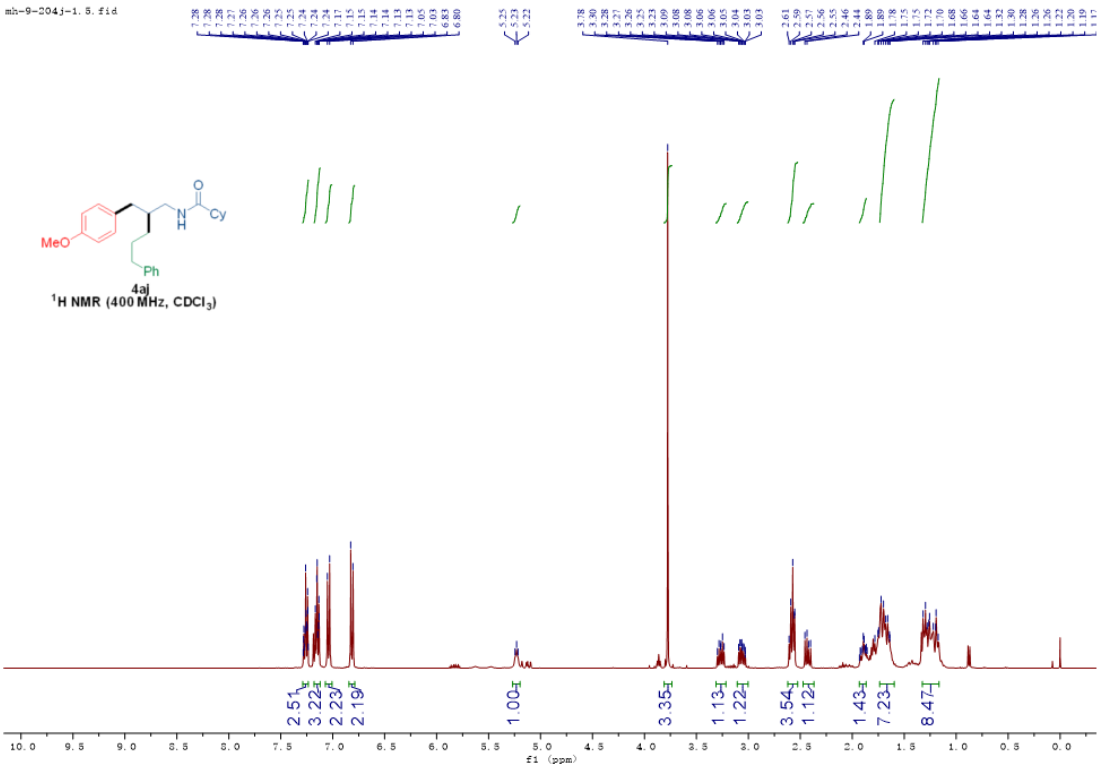

mh-10-194b-01.6.fid
Ph
MeO
5ah
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

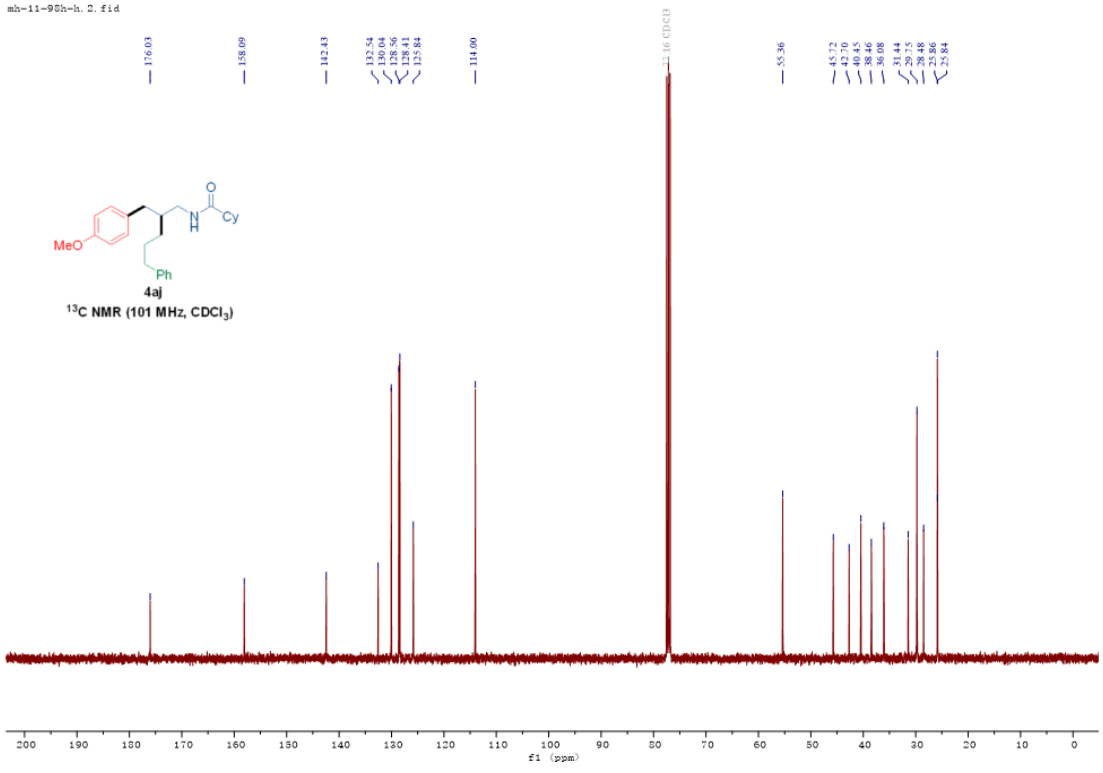

mh-10-90d-1.19.fid
MeO
Ph
N
H
O
Bu
4ai
^{1}H NMR (400 MHz, $CDCl_3$)
2.06
3.31
2.17
2.18
1.00
3.12
1.05
1.10
3.23
1.07
1.13
2.11
2.42
9.58
f1 (ppm)

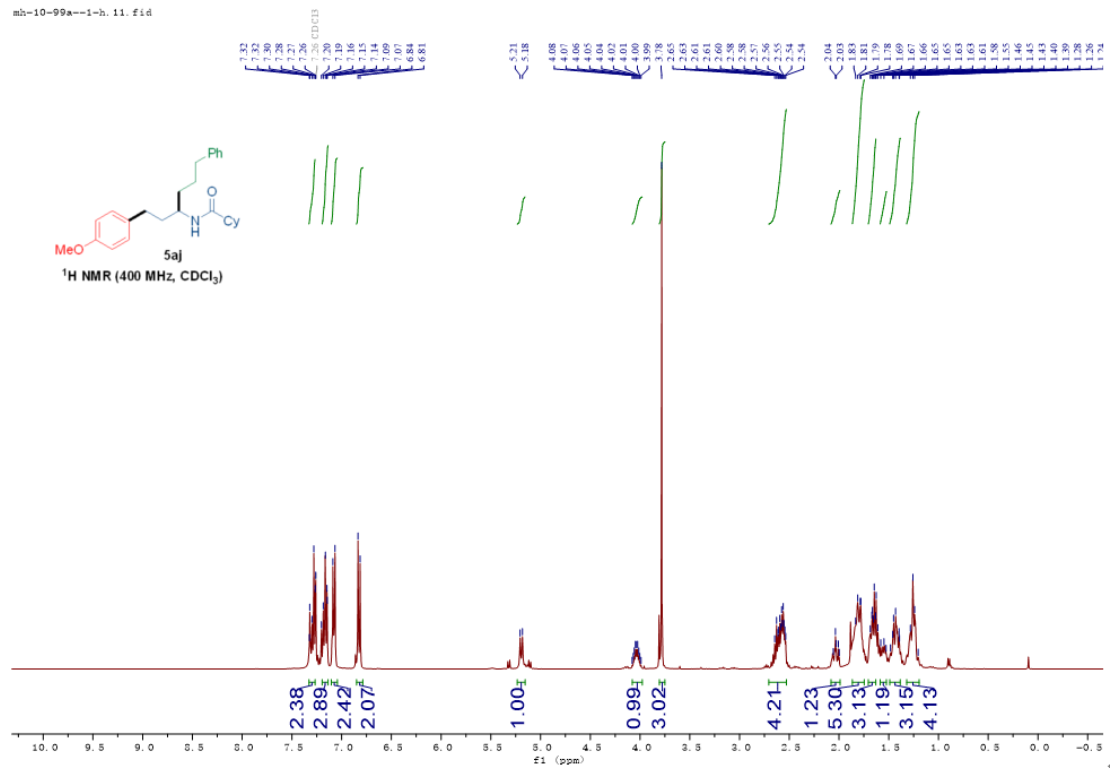

mh-10-90d-1-c.10.fid
178.33
158.15
142.42
132.59
130.68
128.55
128.42
125.84
114.14
77.16 CDCl3
55.39
43.17
43.15
40.51
38.74
38.70
34.14
31.76
28.57
27.57
MeO
Ph
N
H
O
Bu
4ai
^{13}C NMR (151 MHz, $CDCl_3$)
f1 (ppm)

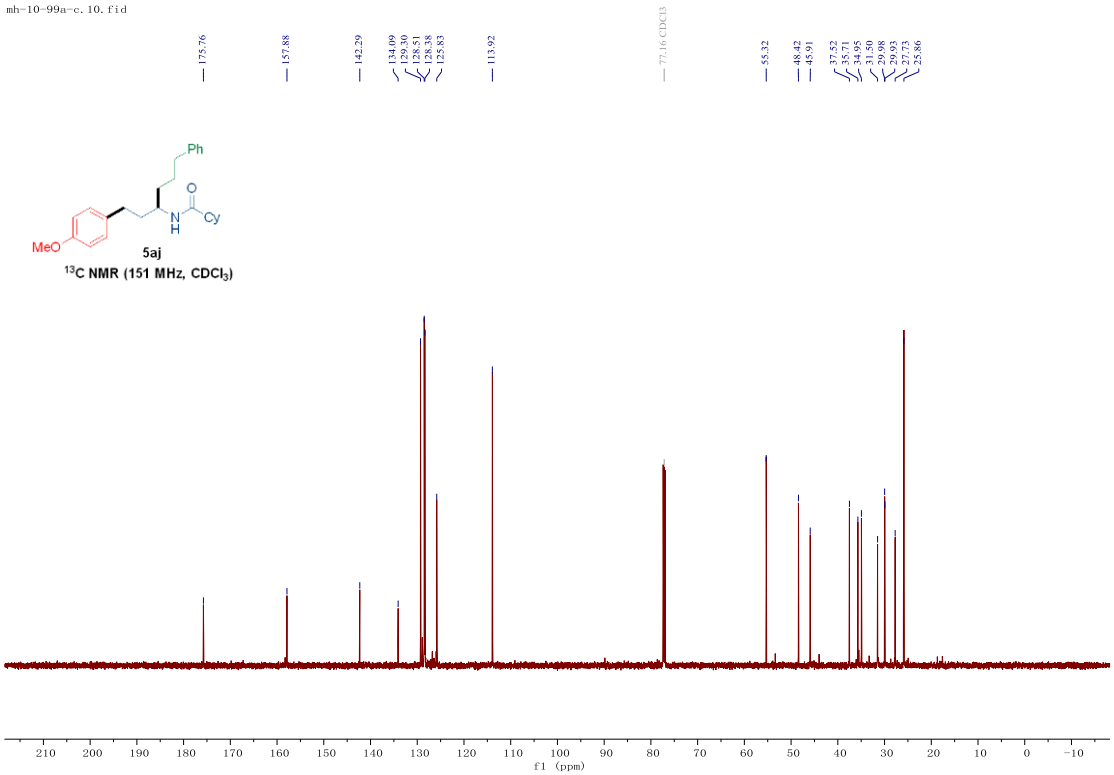

mh-10-85d-1.6.fid
Ph
O
N
H
tBu
MeO
5al
^{1}H NMR (400 MHz, $CDCl_3$)
3.61
2.48
2.06
2.00
1.11
0.87
2.55
3.78
0.95
2.88
1.07
0.87
9.21
f1 (ppm)

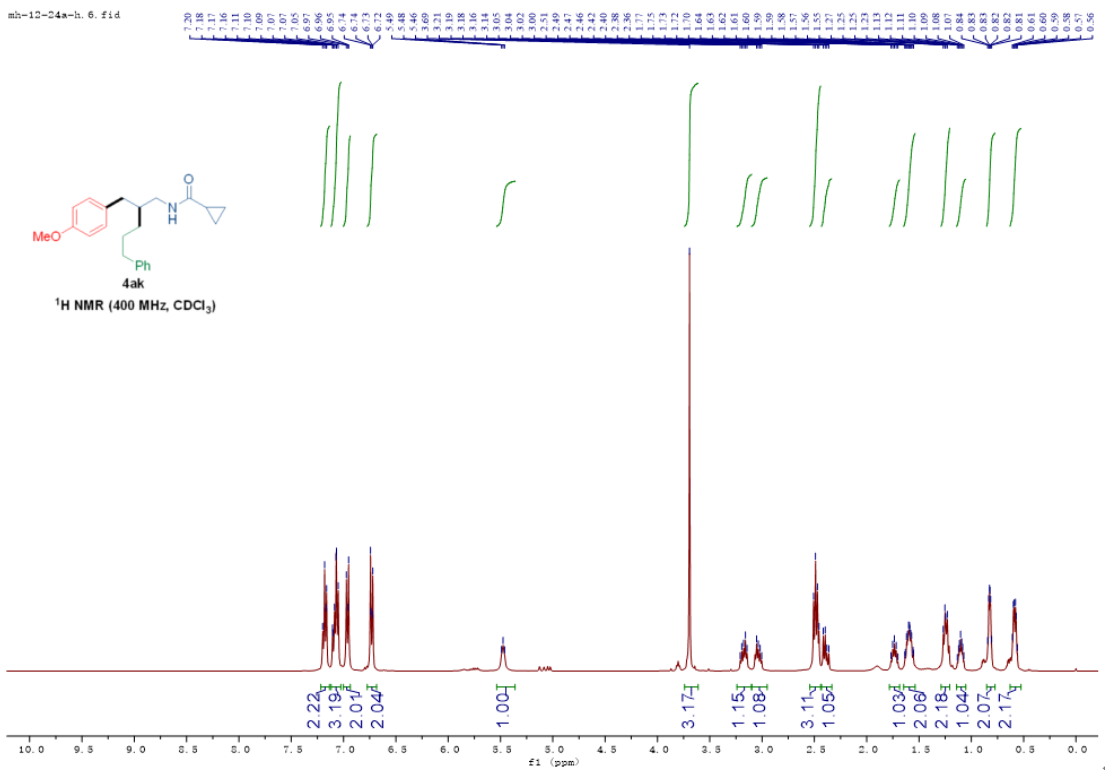

mh-10-5ai-c.1.fid
Ph
O
N
H
tBu
MeO
5al
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)

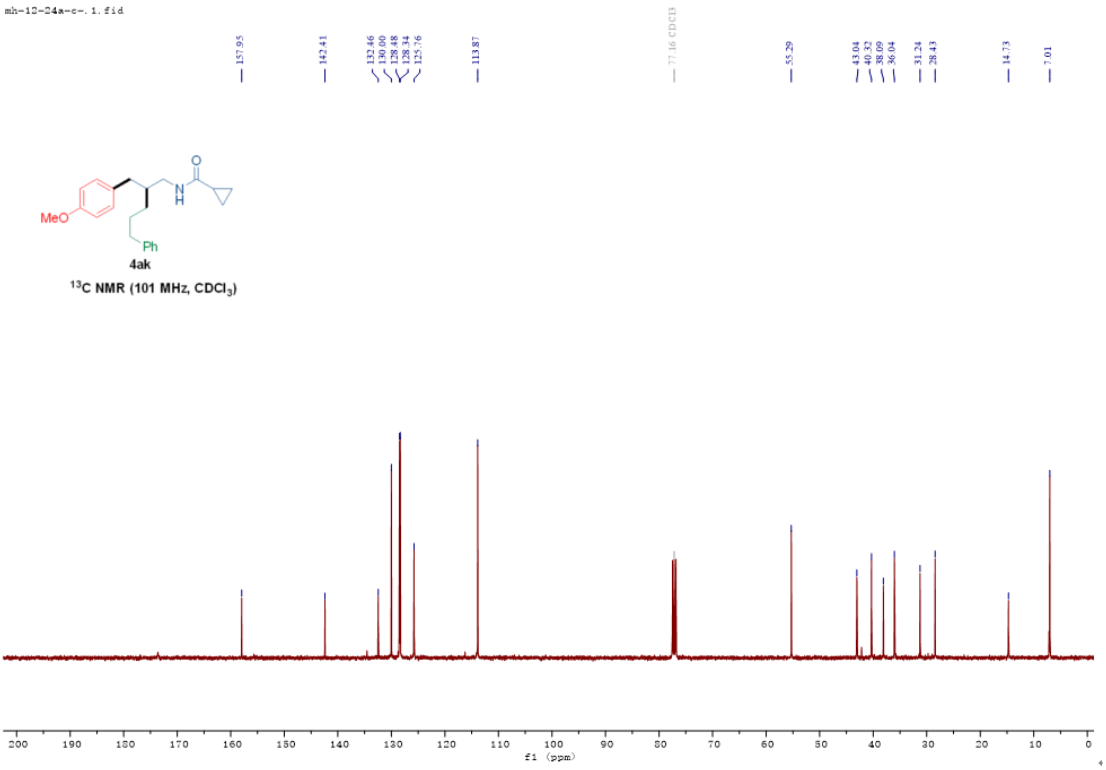

mh-9-204j-1.5.fid
MeO
Ph
N
H
O
Cy
4aj
^{1}H NMR (400 MHz, CDCl$_3$)
2.51
3.22
2.23
2.19
1.00
3.35
1.13
1.22
3.54
1.12
1.43
7.23
8.47
f1 (ppm)

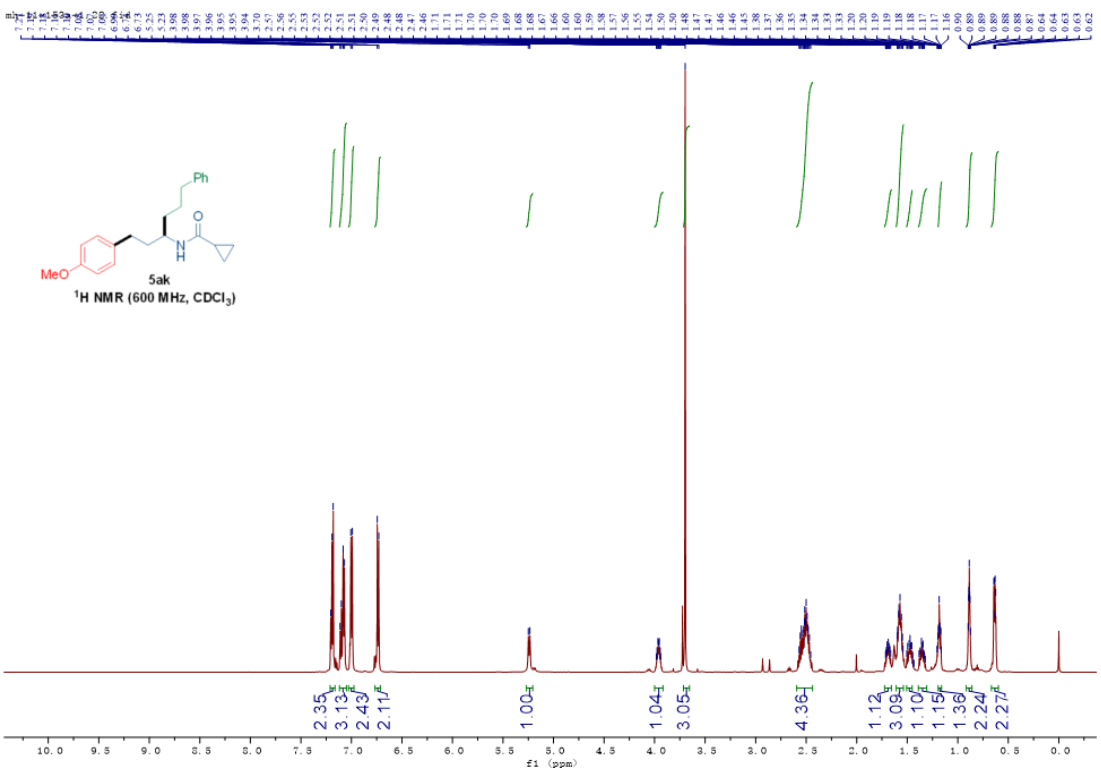

mh-11-95h-h.2.fid
176.03
158.09
142.43
132.54
130.04
128.56
128.41
125.84
114.00
77.16 CDCl3
55.36
45.72
42.76
40.45
38.46
36.08
31.44
29.75
28.48
25.86
25.84
MeO
Ph
N
H
O
Cy
4aj
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

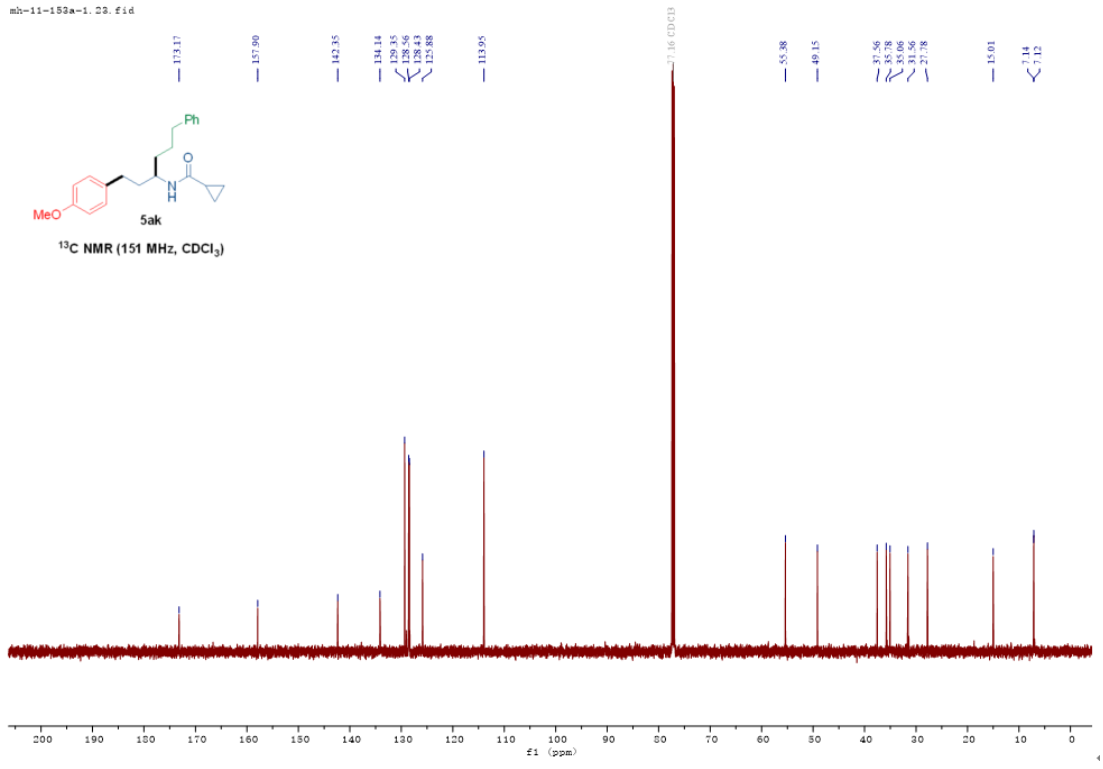

mh-10-99a--1-h.11.fid
Ph
O
Cy
N
H
MeO
5aj
^{1}H NMR (400 MHz, CDCl$_3$)
2.38
2.89
2.42
2.07
1.00
0.99
3.02
4.21
1.23
5.30
3.13
1.19
3.15
4.13
f1 (ppm)

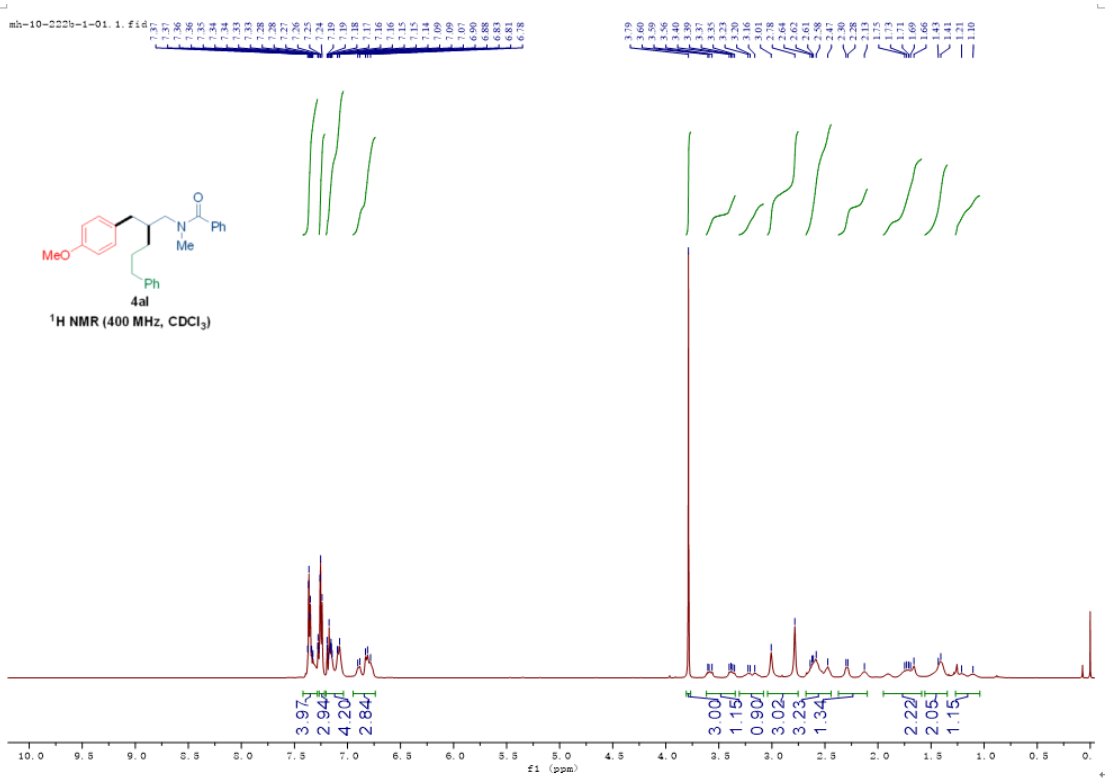

mh-10-99a-c.10.fid
Ph
O
Cy
N
H
MeO
5aj
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

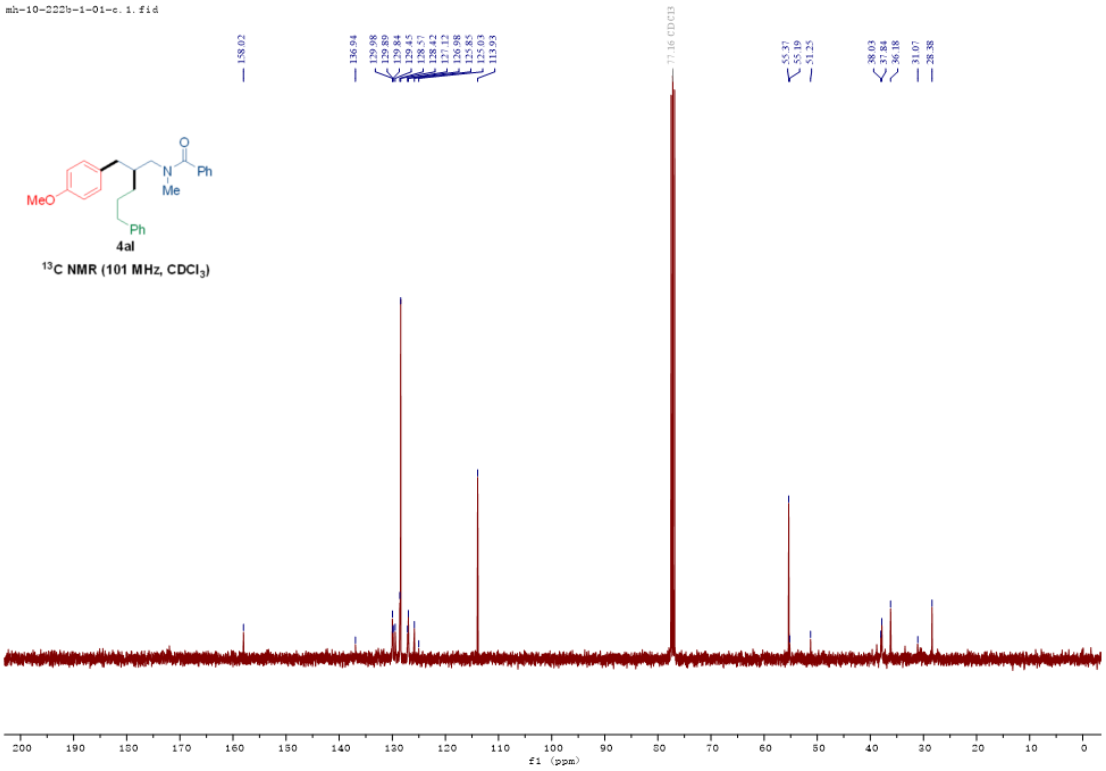

mh-12-24a-h.6.fid
MeO
Ph
4ak
^{1}H NMR (400 MHz, CDCl$_3$)
2.22
3.19
2.01
2.04
1.00
3.17
1.15
1.08
3.11
1.05
1.03
2.06
2.18
1.04
2.07
2.17
f1 (ppm)

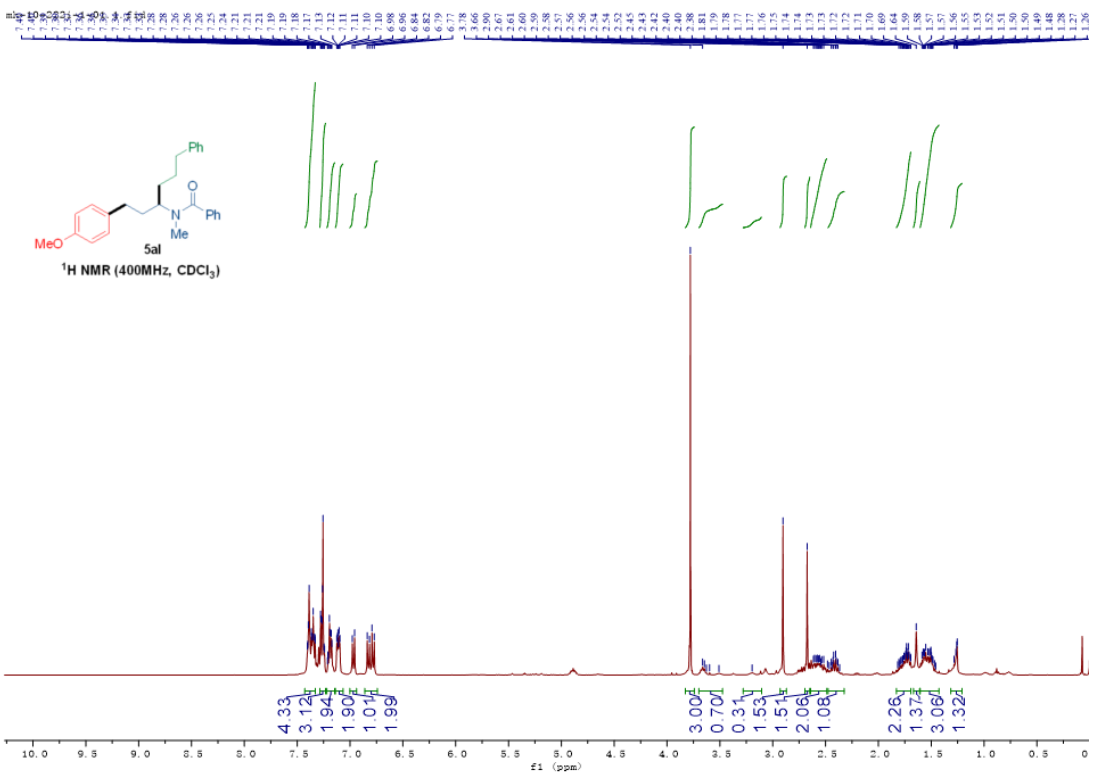

mh-12-24a-c-.1.fid
157.95
142.41
132.46
130.00
128.48
128.34
125.76
113.87
77.16 CDCl3
55.29
43.04
40.32
38.09
36.04
31.24
28.43
14.73
7.01
MeO
Ph
4ak
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

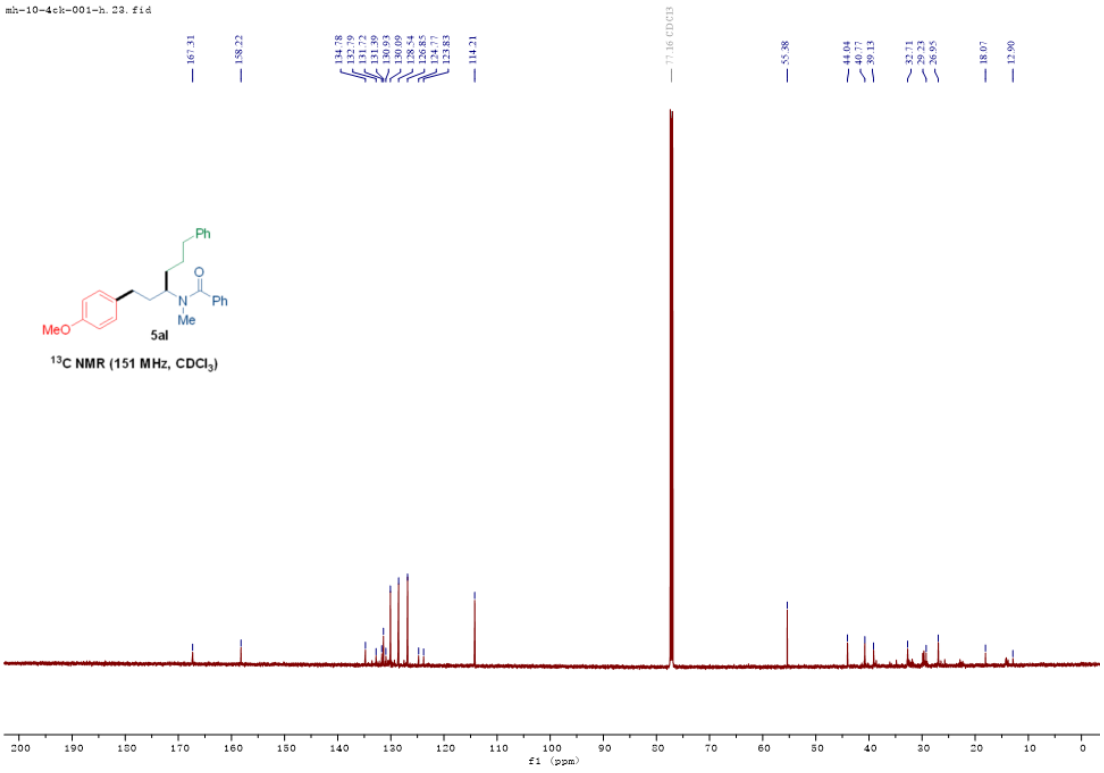

Ph
MeO
N
H
O
5ak
^{1}H NMR (600 MHz, CDCl$_3$)
2.35
3.13
2.43
2.11
1.00
1.04
3.05
4.36
1.12
3.09
1.10
1.15
1.36
2.24
2.27
f1 (ppm)

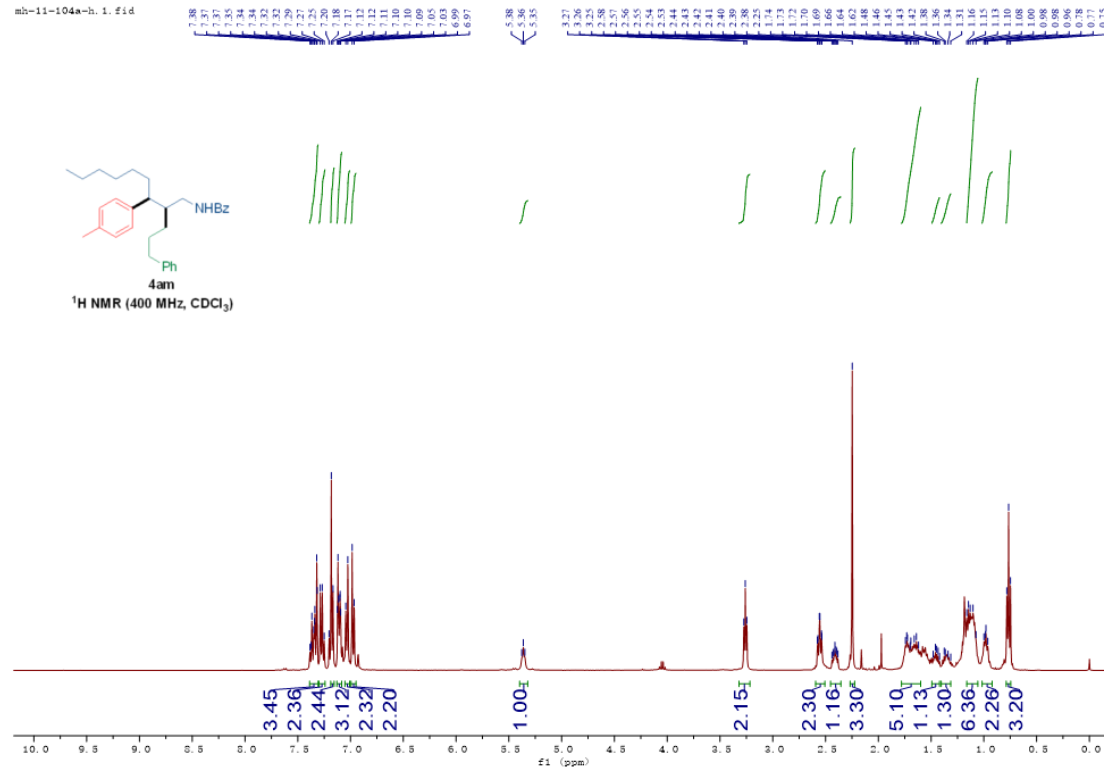

mh-11-153a-1.23.fid
173.17
157.90
142.35
134.14
129.35
128.56
128.43
125.88
113.95
77.16 CDCl3
55.38
49.15
37.56
35.78
35.06
31.56
27.78
15.01
7.14
7.12
Ph
MeO
N
H
O
5ak
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

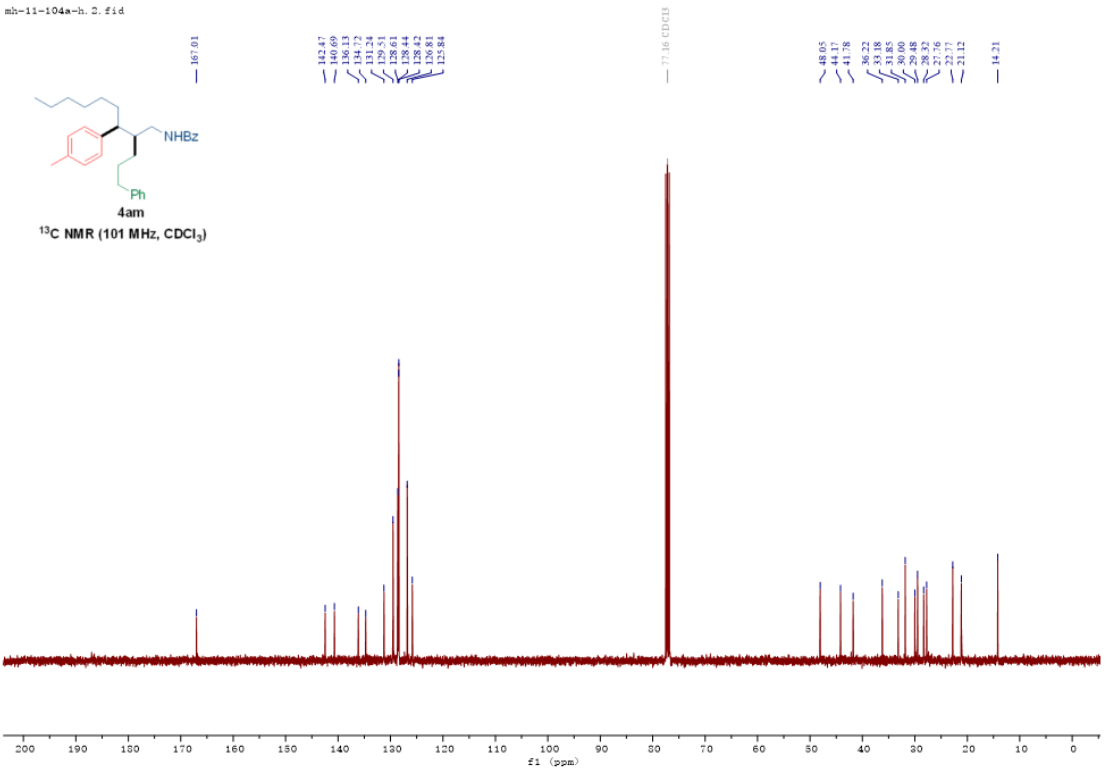

mh-10-222b-1-01.1.fid
MeO
N
Me
O
Ph
Ph
4al
^{1}H NMR (400 MHz, CDCl$_3$)
3.97
2.94
4.20
2.84
3.00
1.15
0.90
3.02
3.23
1.34
2.22
2.05
1.15
f1 (ppm)

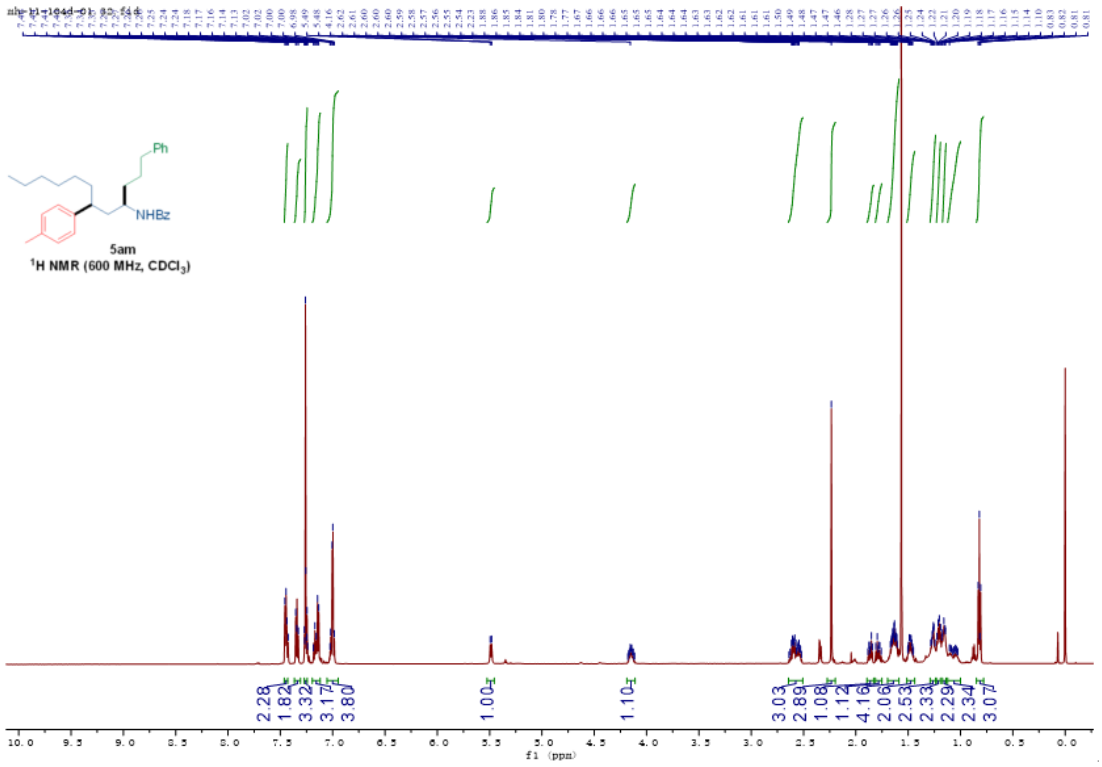

mh-10-222b-1-01-c.1.fid
MeO
N
Me
O
Ph
Ph
4al
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

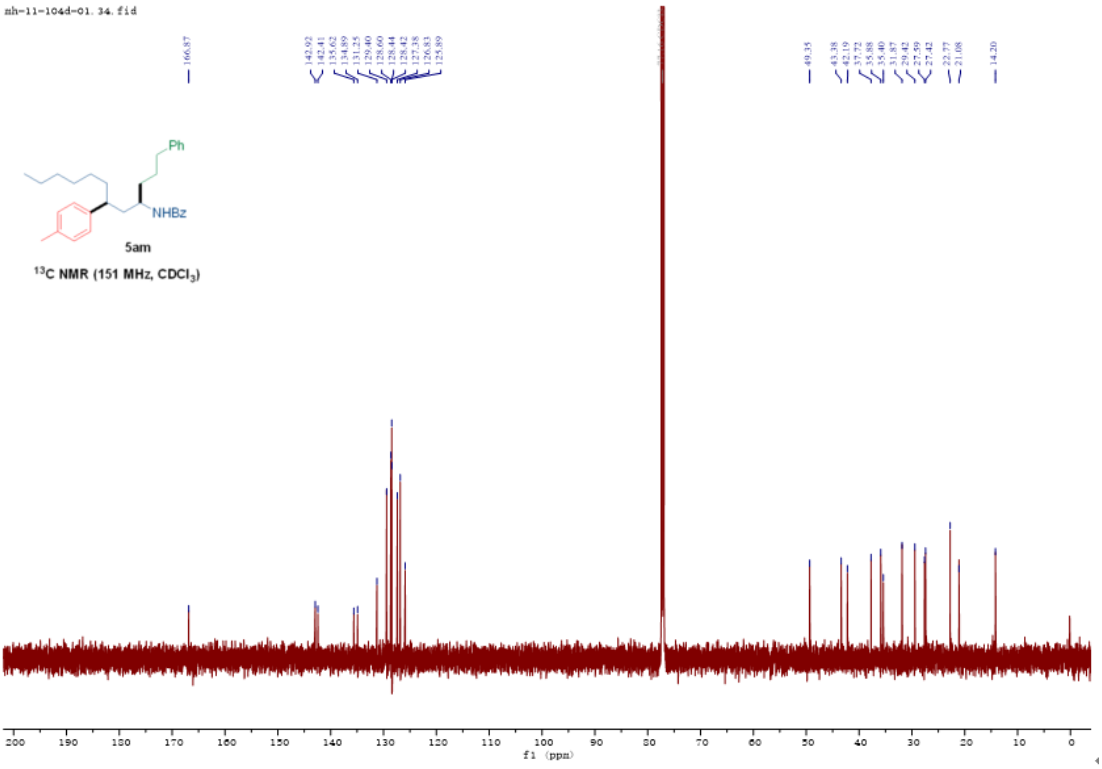

Ph
O
N
Ph
Me
MeO
5al
^{1}H NMR (400MHz, CDCl$_3$)
4.33
3.12
1.94
1.90
1.01
1.99
3.00
0.70
0.31
1.53
1.51
2.06
1.08
2.26
1.37
3.06
1.32
f1 (ppm)

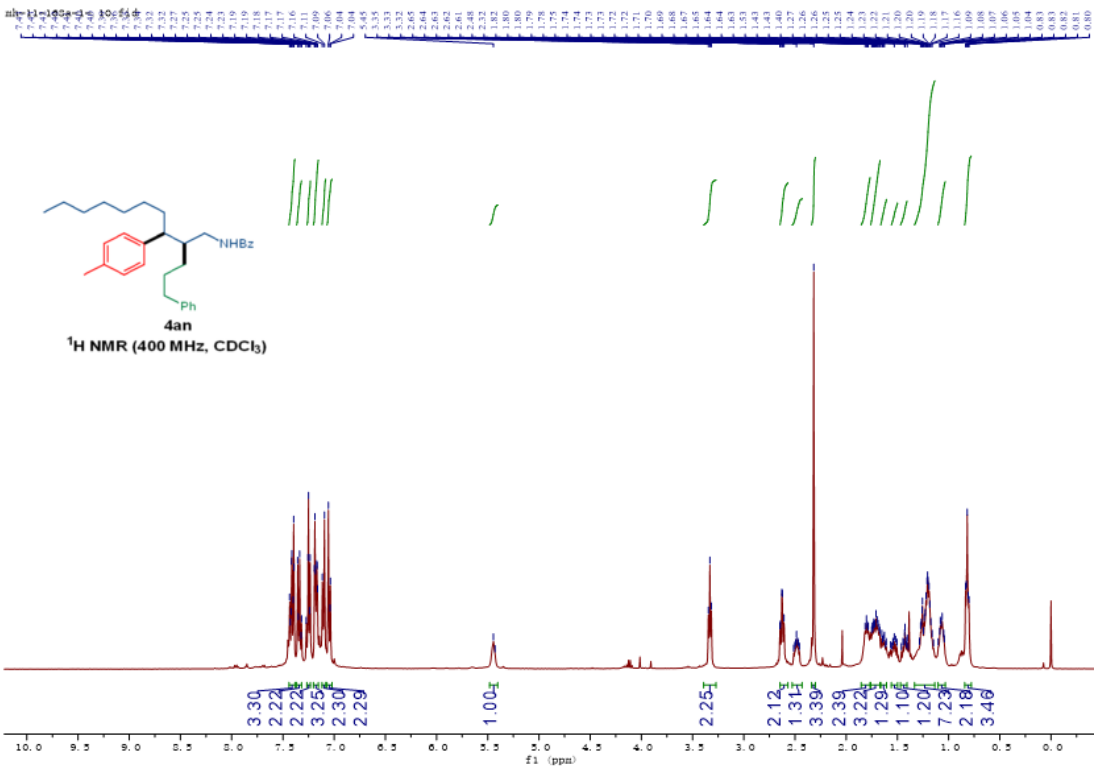

mh-10-4ck-001-h.23.fid
167.31
158.22
134.78
132.79
131.72
131.39
130.93
130.09
128.54
126.55
124.77
123.83
114.21
77.16 CDCl3
55.38
44.04
40.77
39.13
32.71
29.23
26.95
18.67
12.90
Ph
O
N
Ph
Me
MeO
5al
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

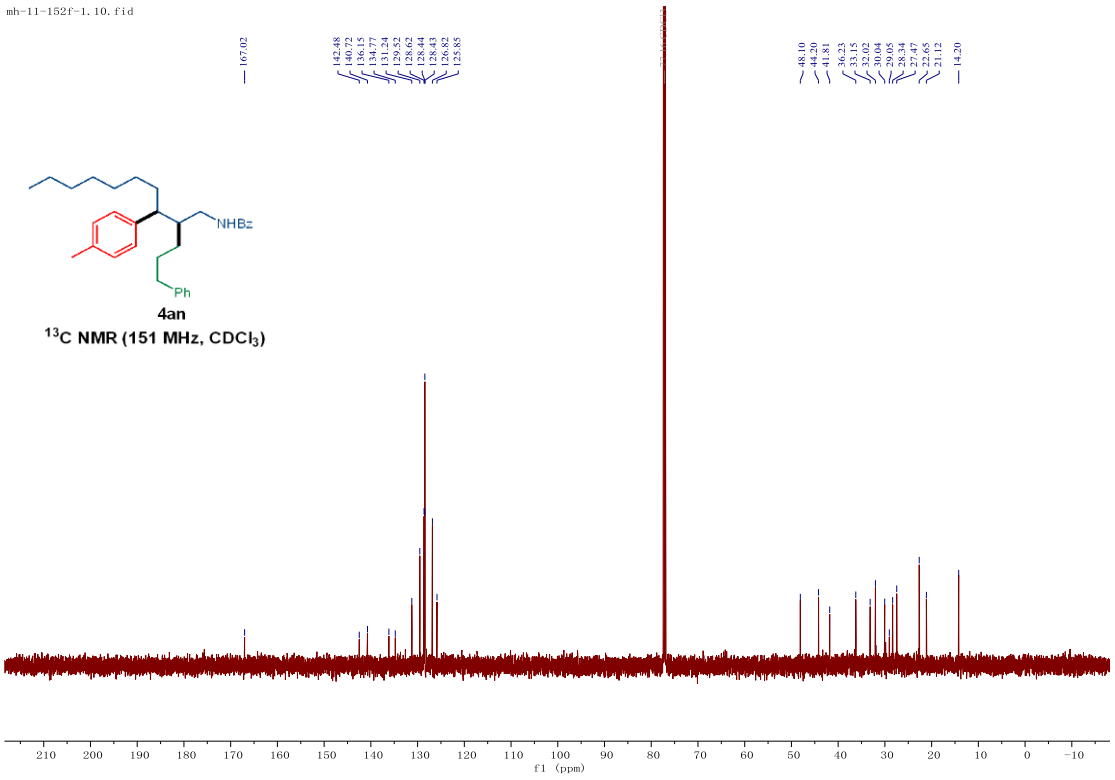

mh-11-104a-h.1.fid
NHBz
Ph
4am
^{1}H NMR (400 MHz, CDCl$_3$)
3.45
2.36
2.44
3.12
2.32
2.20
1.00
2.15
2.30
1.16
3.30
5.10
1.13
1.30
6.36
2.26
3.20
f1 (ppm)

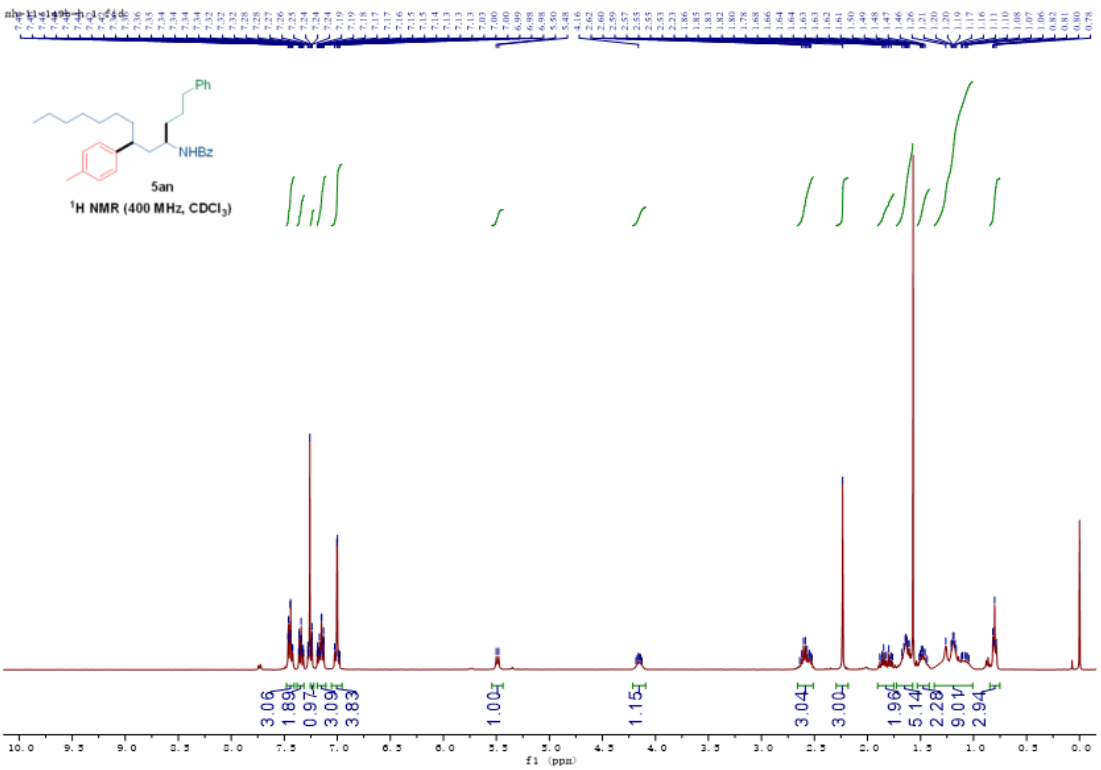

mh-11-104a-h.2.fid
NHBz
Ph
4am
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

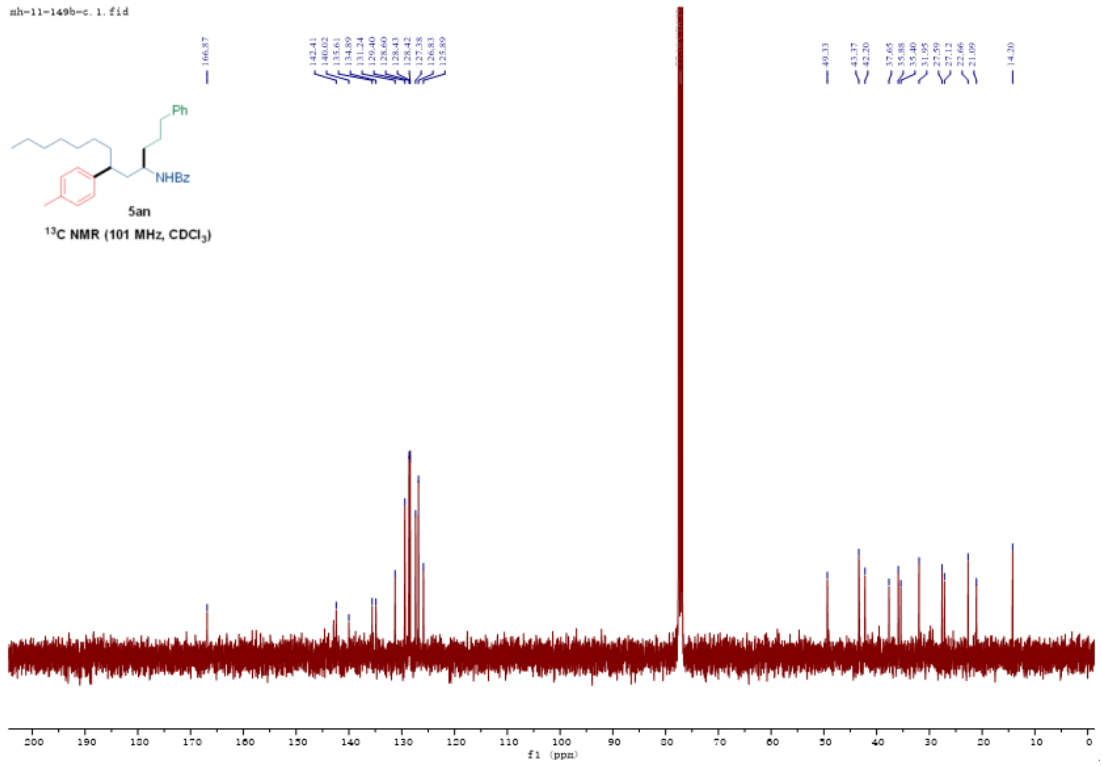

Ph
NHBz
5am
^{1}H NMR (600 MHz, CDCl$_3$)
2.28
1.82
3.32
3.17
3.80
1.00
1.10
3.03
2.89
1.08
1.12
4.16
2.06
2.53
2.33
2.29
2.34
3.07
f1 (ppm)

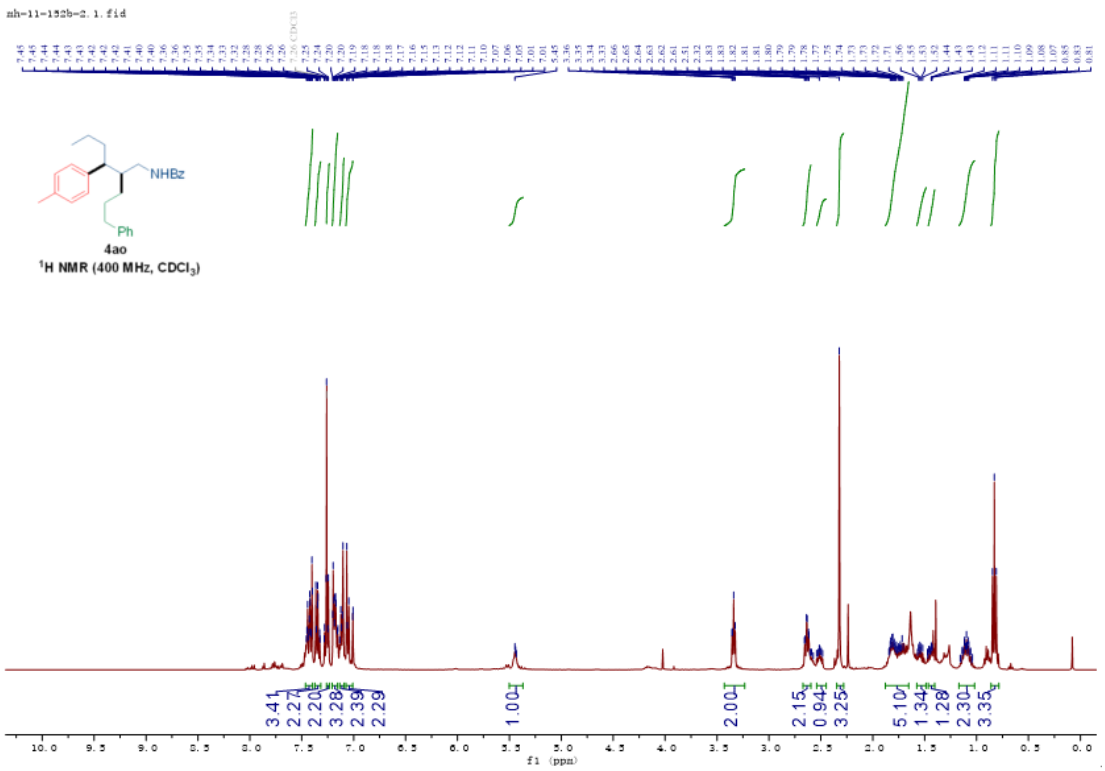

nh-11-104d-01. 34. fid
166.87
142.92
142.41
135.62
134.89
131.25
129.46
128.60
128.44
128.42
127.38
126.83
125.89
49.35
43.38
42.19
41.72
35.88
35.40
31.87
29.42
27.59
27.42
22.77
21.08
14.20
Ph
NHBz
5am
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

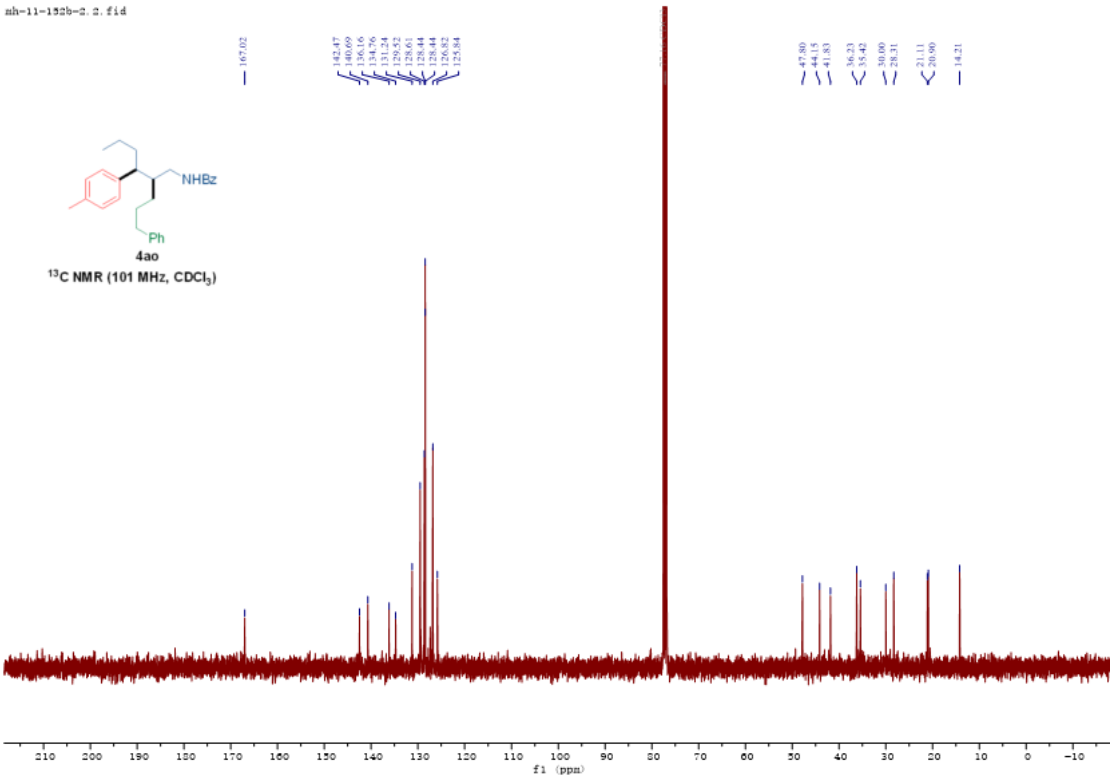

NHBz
Ph
4an
^{1}H NMR (400 MHz, CDCl$_3$)
3.30
2.22
2.22
3.25
2.30
2.29
1.00
2.25
2.12
1.31
3.39
2.39
3.22
1.29
1.10
1.20
7.23
2.18
3.46
f1 (ppm)

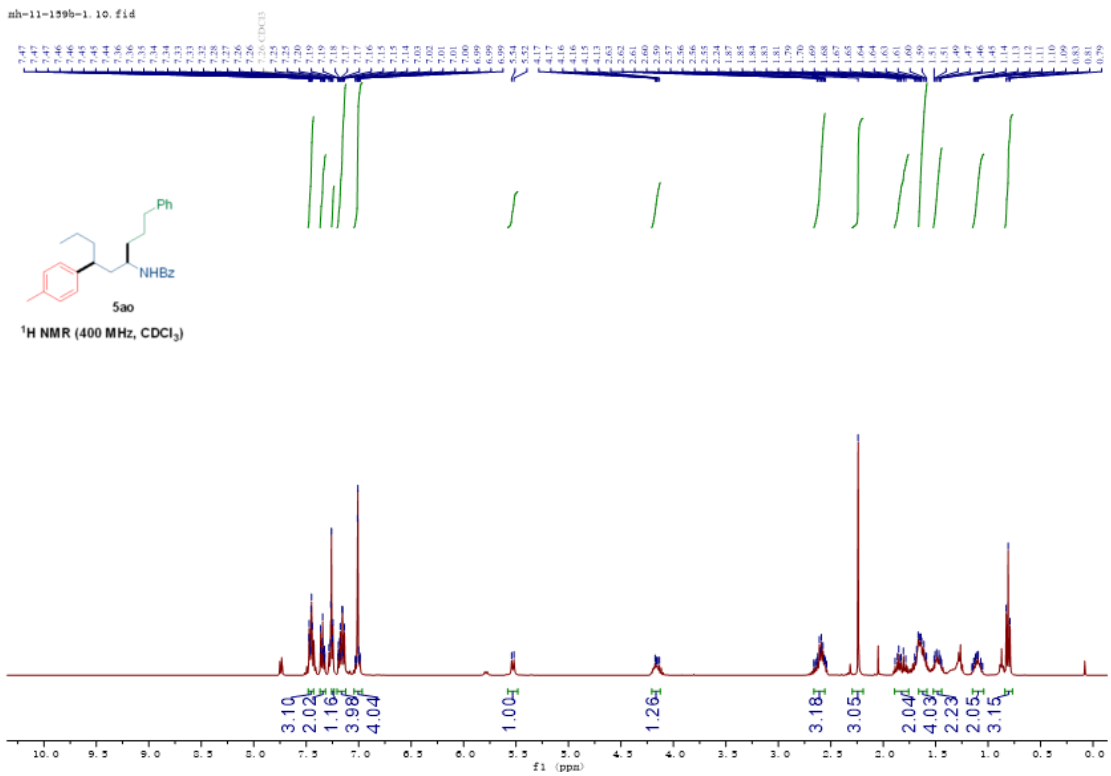

mh-11-152f-1.10.fid
167.02
142.48
140.72
136.15
134.77
131.24
129.52
128.62
128.44
128.43
126.82
125.85
48.10
44.90
41.81
36.23
33.15
32.02
30.04
29.05
28.34
27.47
22.65
21.12
14.20
NHBz
Ph
4an
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)


Ph
NHBz
5an
^{1}H NMR (400 MHz, CDCl$_3$)
3.06
1.89
0.97
3.09
3.83
1.00
1.15
3.04
3.01
1.96
5.14
2.28
9.01
2.94
f1 (ppm)

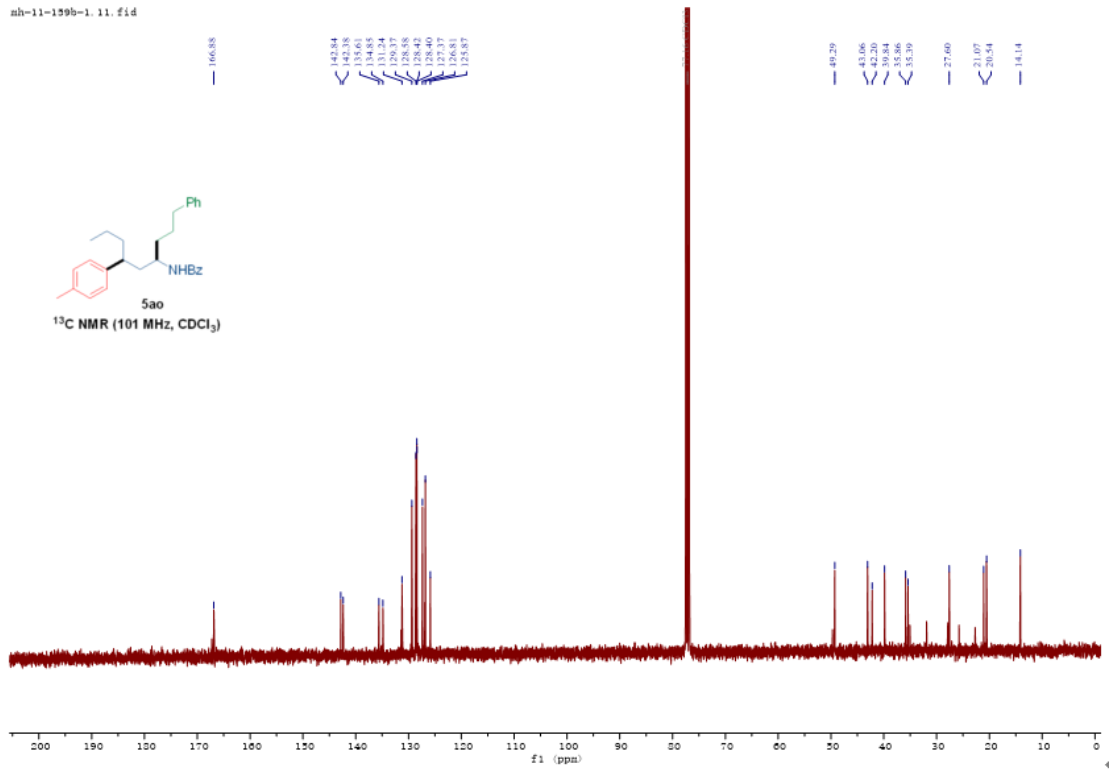

Ph
NHBz
5an
^{13}C NMR (101 MHz, CDCl$_3$)
166.87
142.41
140.02
135.61
134.89
131.24
129.40
128.60
128.43
128.42
127.38
126.83
125.89
49.33
43.37
42.20
37.65
35.88
35.46
31.95
27.59
27.12
22.66
21.09
14.20
f1 (ppm)


mh-11-152b-2. 1. fid
NHBz
Ph
4ao
^{1}H NMR (400 MHz, CDCl$_3$)
3.41
2.27
2.20
3.28
2.39
2.29
1.00
2.00
2.15
0.94
3.25
5.10
1.34
1.28
2.30
3.35
f1 (ppm)

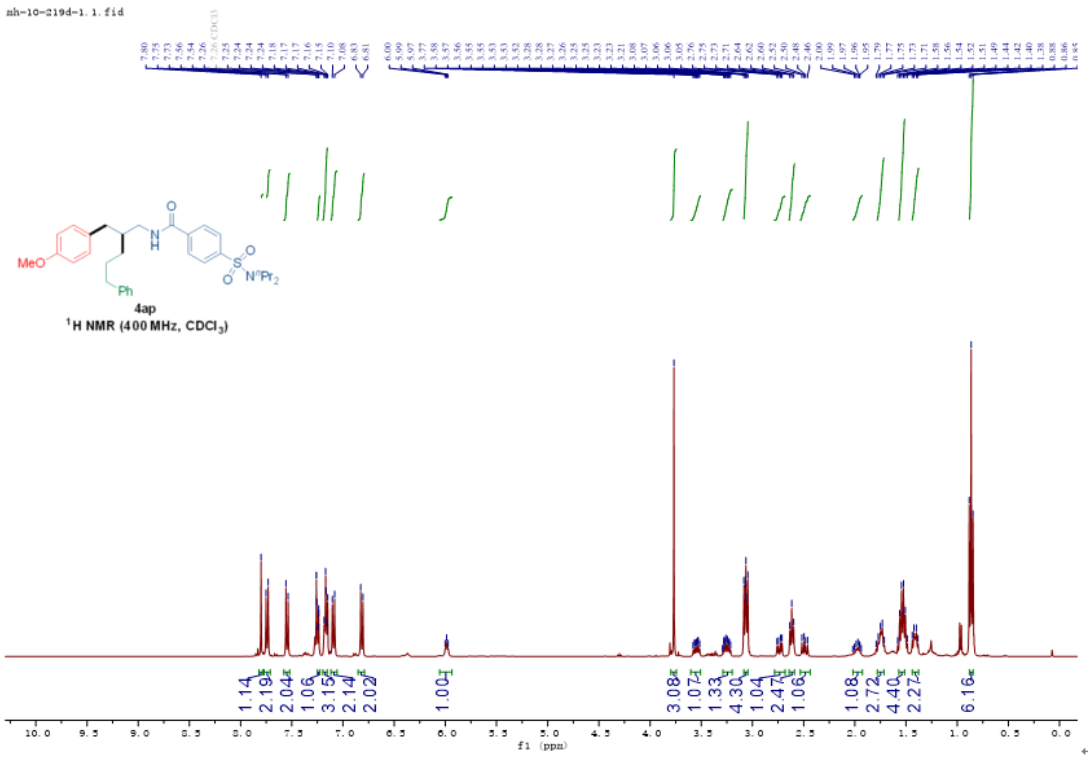

mh-11-152b-2. 2. fid
167.02
142.47
140.69
136.16
134.76
131.24
129.52
128.61
128.44
128.44
126.82
125.84
47.80
44.15
41.83
36.23
35.42
30.09
28.31
21.11
20.90
14.21
NHBz
Ph
4ao
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

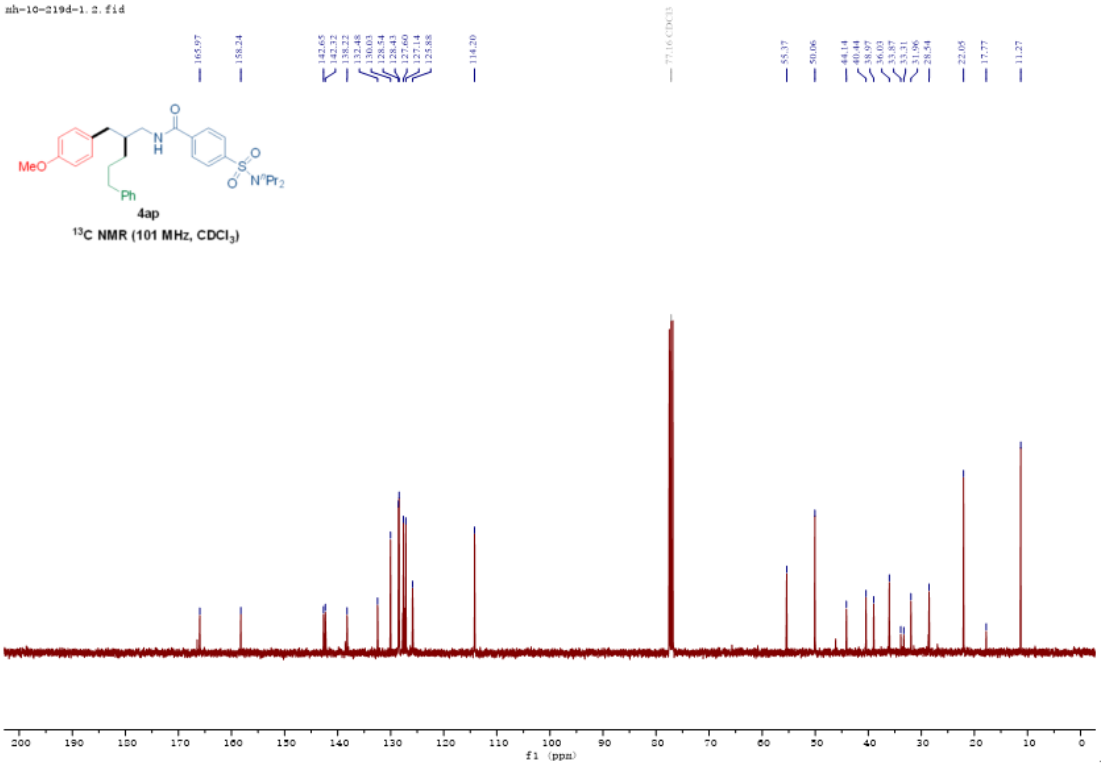


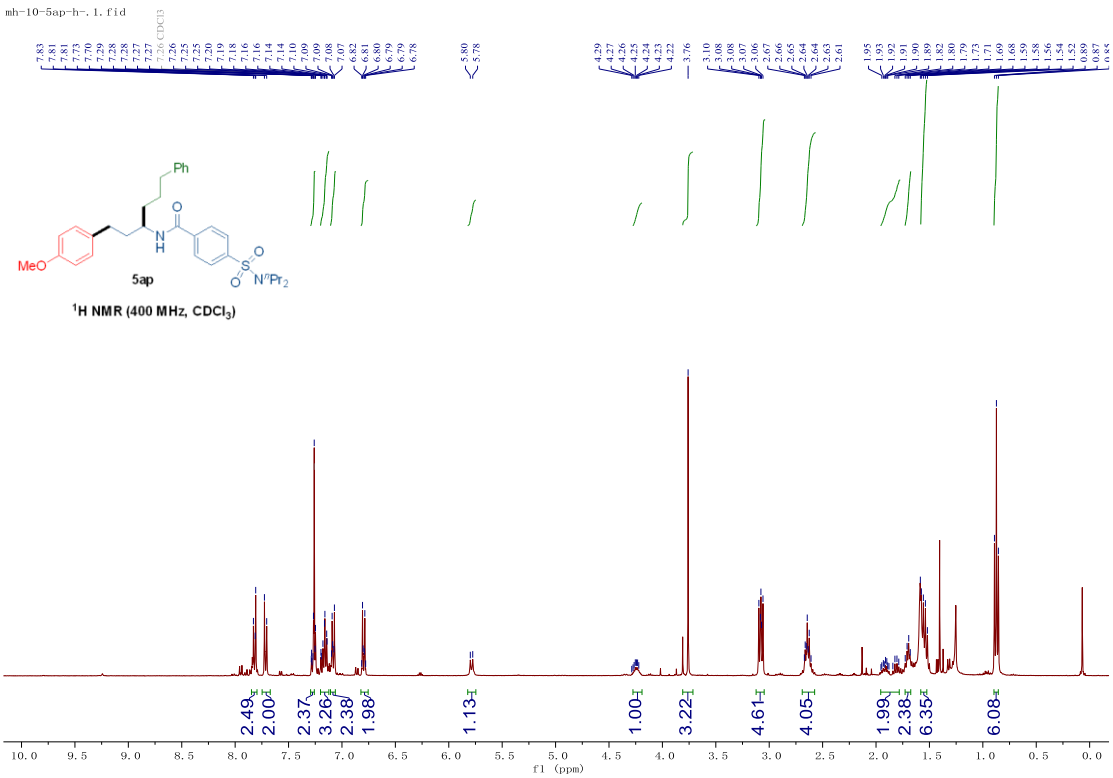
^{1}H NMR (400 MHz, $CDCl_3$)

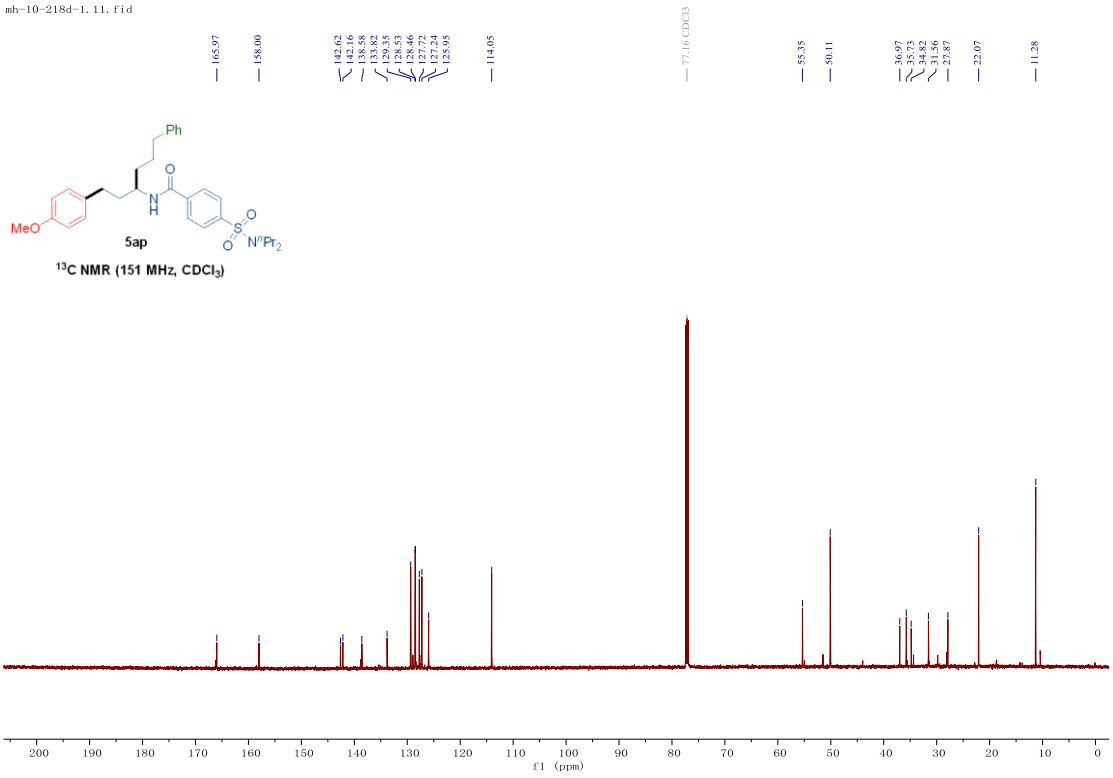


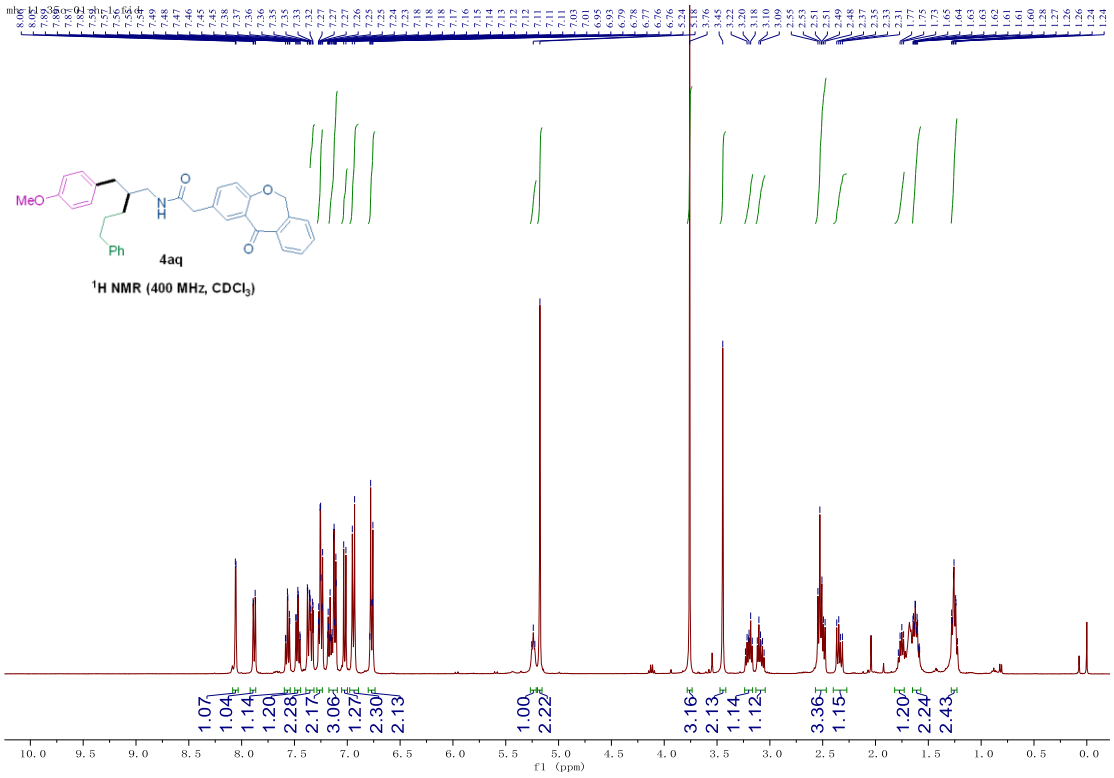
^{13}C NMR (101 MHz, $CDCl_3$)

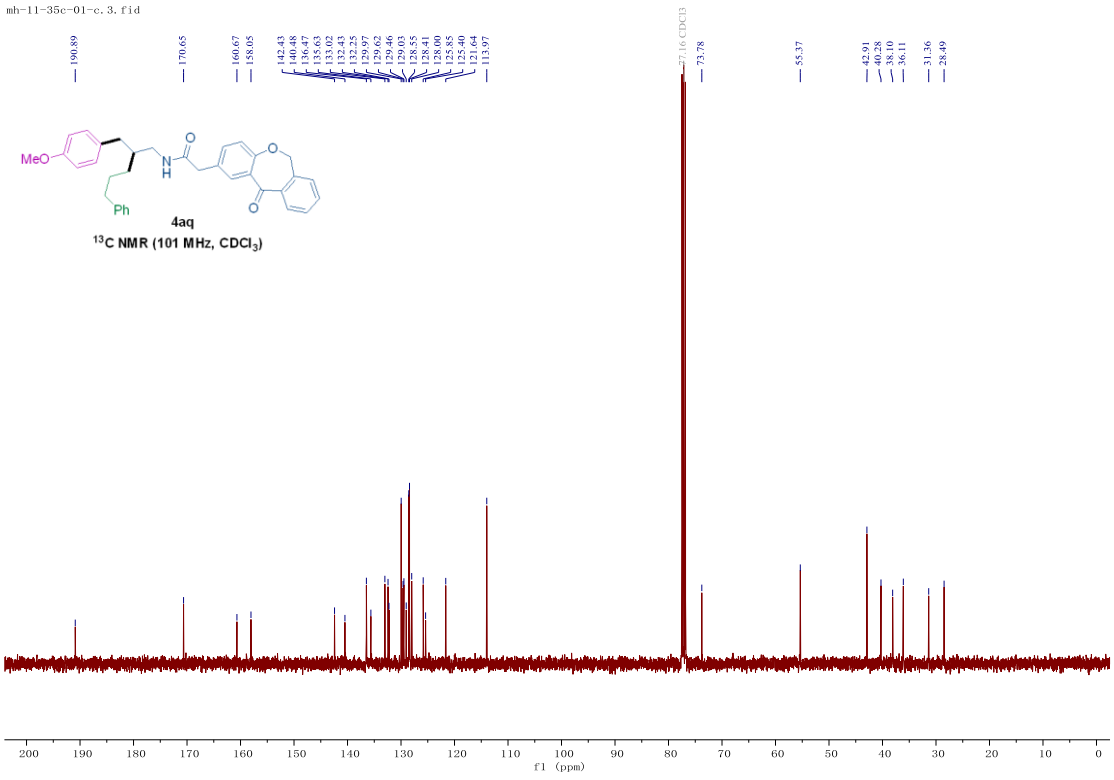

mh-10-219d-1.1.fid
MeO
Ph
4ap
^{1}H NMR (400 MHz, CDCl$_3$)
f1 (ppm)

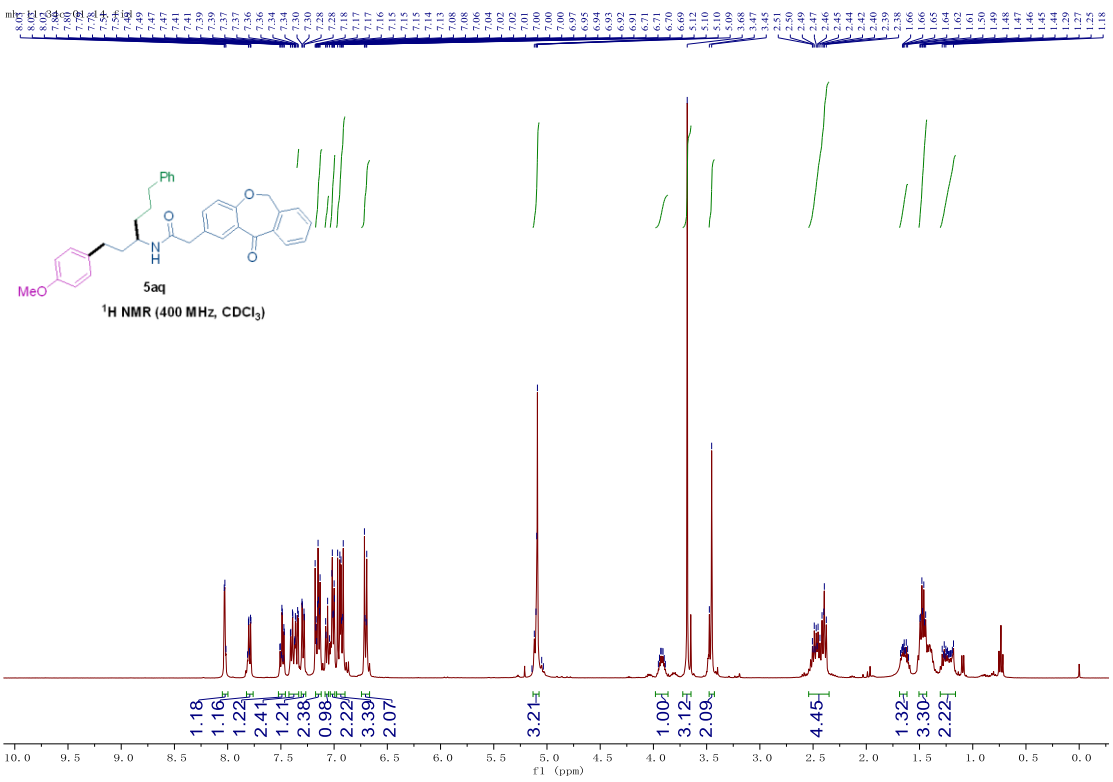

mh-10-219d-1.2.fid
MeO
Ph
4ap
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

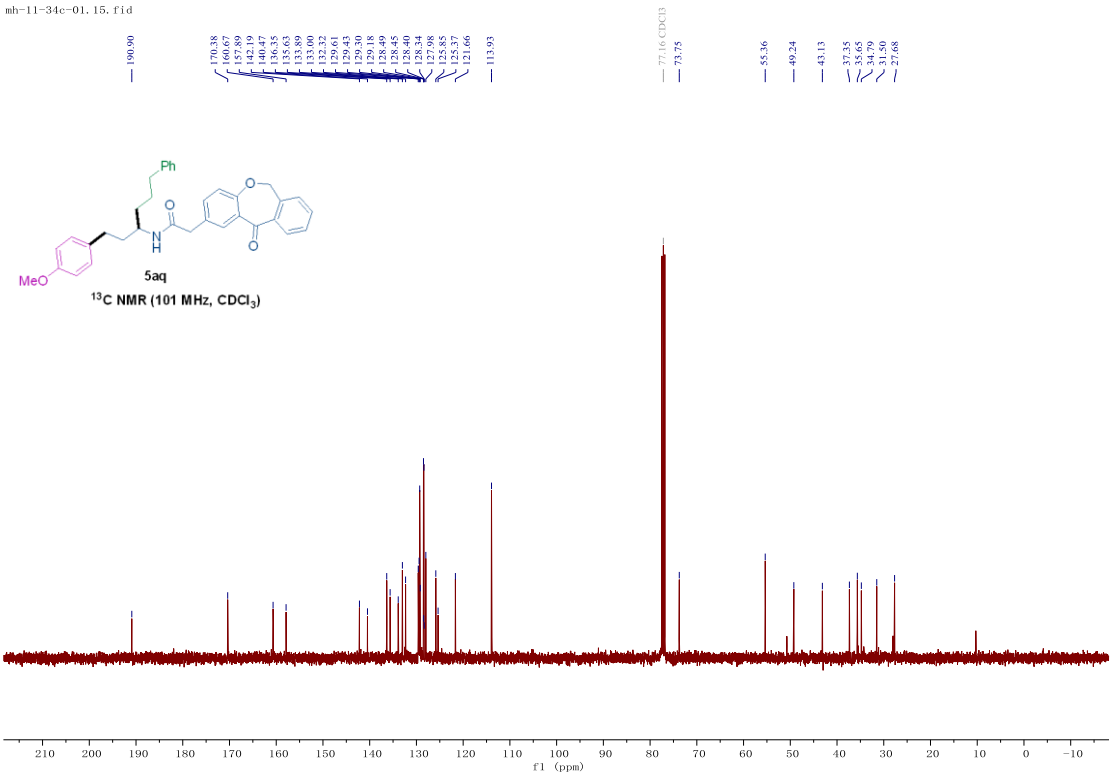

mh-10-5ap-h-.1.fid
Ph
MeO
5ap
^{1}H NMR (400 MHz, CDCl$_3$)
2.49
2.00
2.37
3.26
2.38
1.98
1.13
1.00
3.22
4.61
4.05
1.99
2.38
6.35
6.08
f1 (ppm)

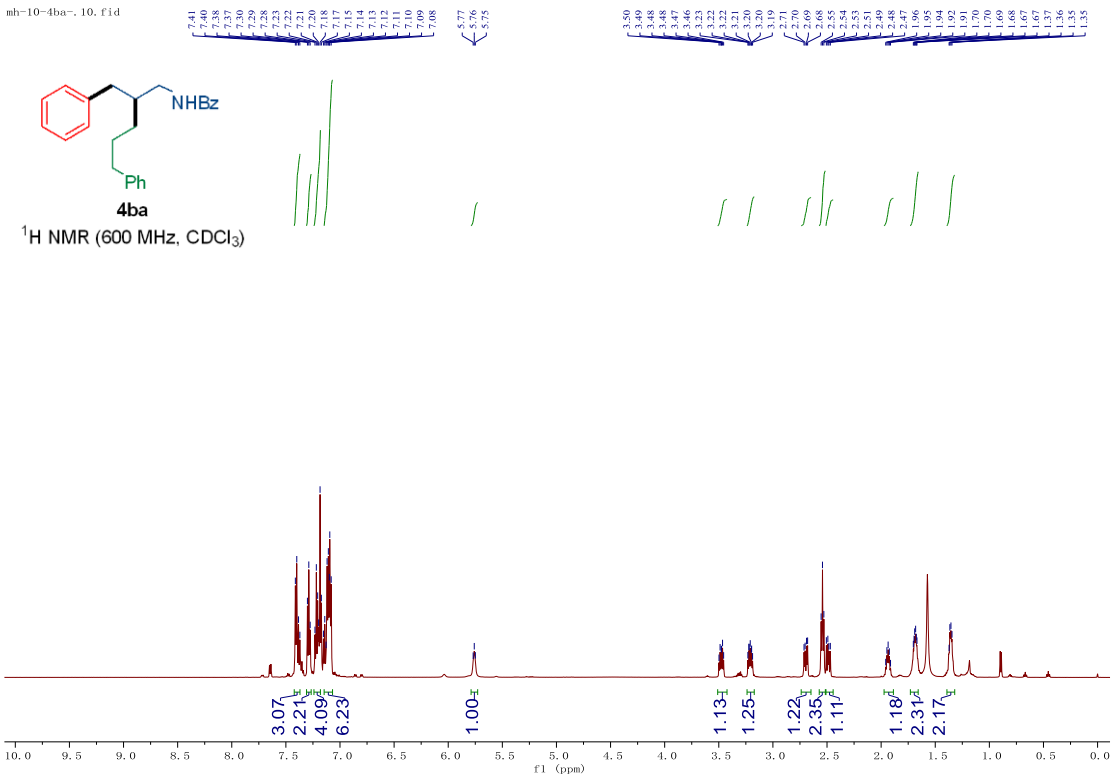

mh-10-218d-1.11.fid
Ph
MeO
5ap
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

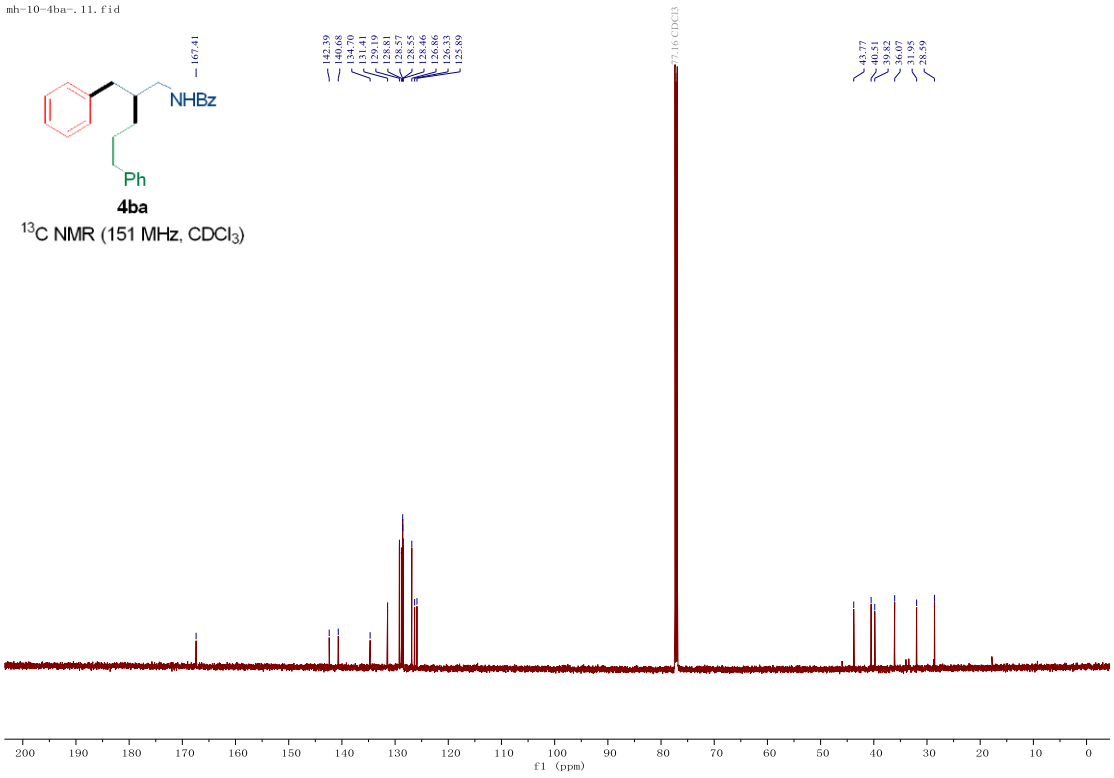

MeO
N
H
O
O
Ph
4aq
^{1}H NMR (400 MHz, CDCl$_3$)
1.07
1.04
1.14
1.20
2.28
2.17
3.06
1.27
2.30
2.13
1.00
2.22
3.16
2.13
1.14
1.12
3.36
1.15
1.20
2.24
2.43
f1 (ppm)

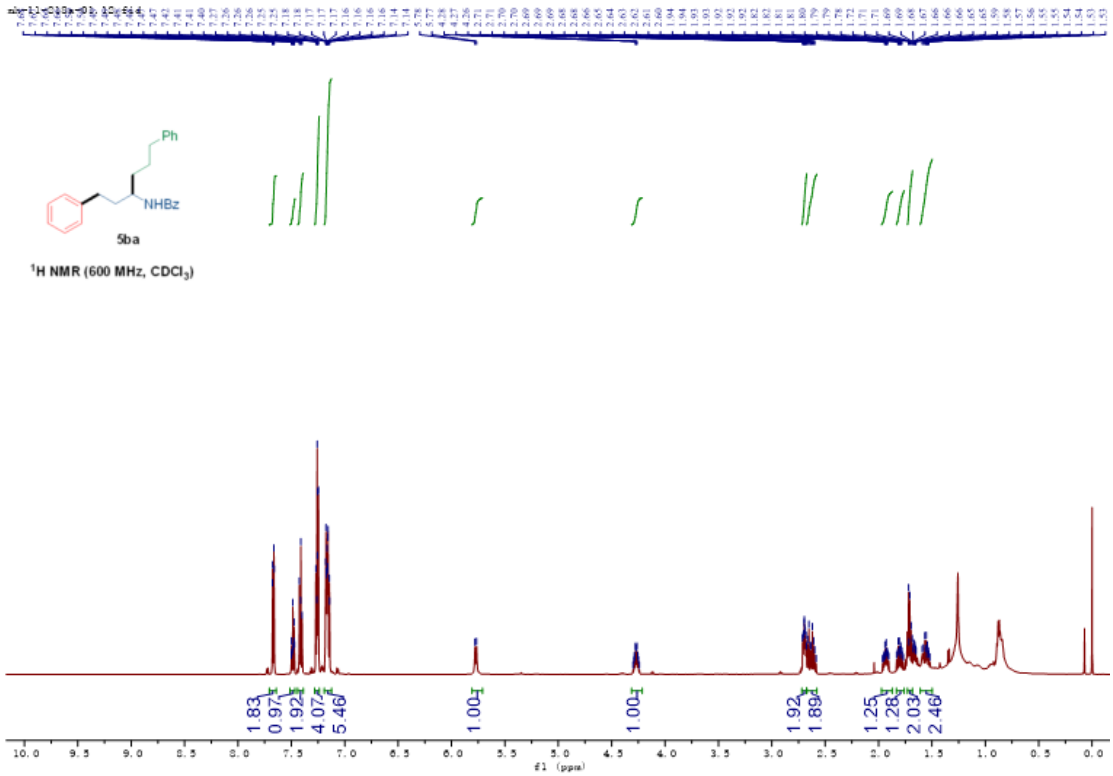

mh-11-35c-01-c.3.fid
MeO
N
H
O
O
Ph
4aq
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)


Ph
O
N
H
O
O
MeO
5aq
^{1}H NMR (400 MHz, CDCl$_3$)
1.18
1.16
1.22
2.41
1.21
2.38
0.98
2.22
3.39
2.07
3.21
1.00
3.12
2.09
4.45
1.32
3.30
2.22
f1 (ppm)


mh-11-34c-01.15.fid
Ph
O
N
H
O
O
MeO
5aq
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

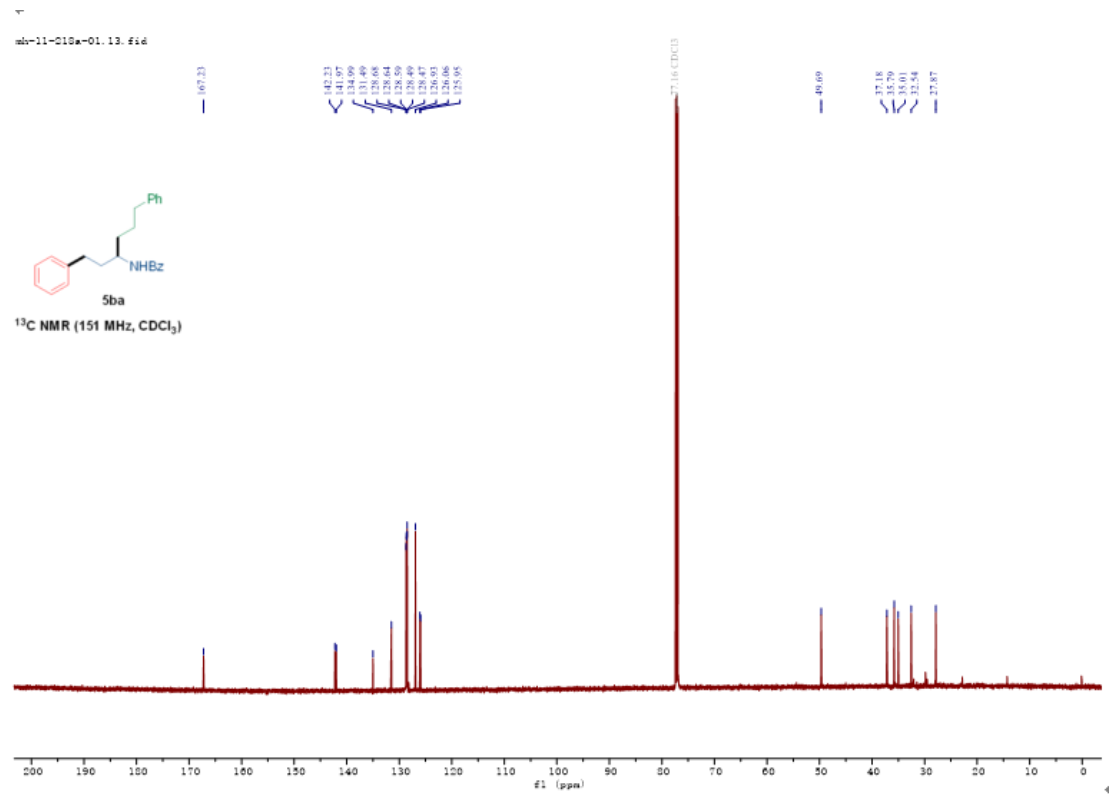

mh-10-4ba-. 10. fid
NHBz
Ph
4ba
1H NMR (600 MHz, CDCl3)
3.07
2.21
4.09
6.23
1.00
1.13
1.25
1.22
2.35
1.11
1.18
2.31
2.17
f1 (ppm)


mh-10-4ba-. 11. fid
167.41
142.39
140.68
134.70
131.41
129.19
128.81
128.57
128.55
128.46
126.86
126.33
125.89
77.16 CDCl3
43.77
40.51
39.82
36.07
31.55
28.59
NHBz
Ph
4ba
13C NMR (151 MHz, CDCl3)
f1 (ppm)



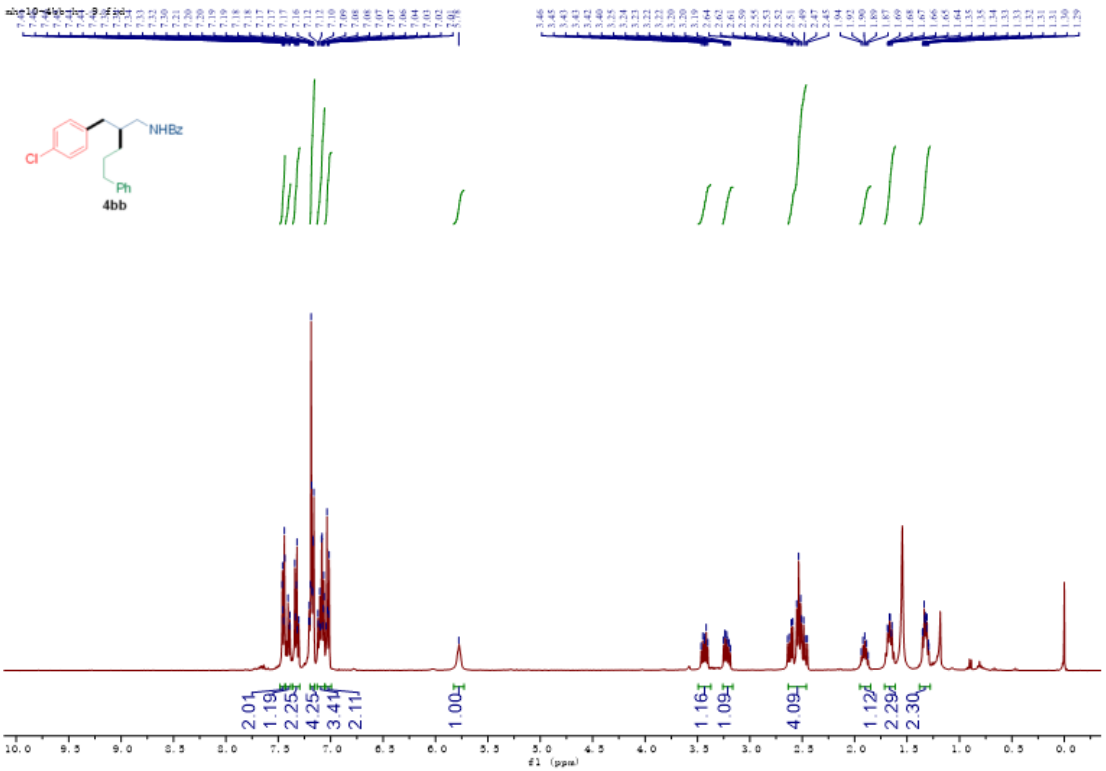
5ba

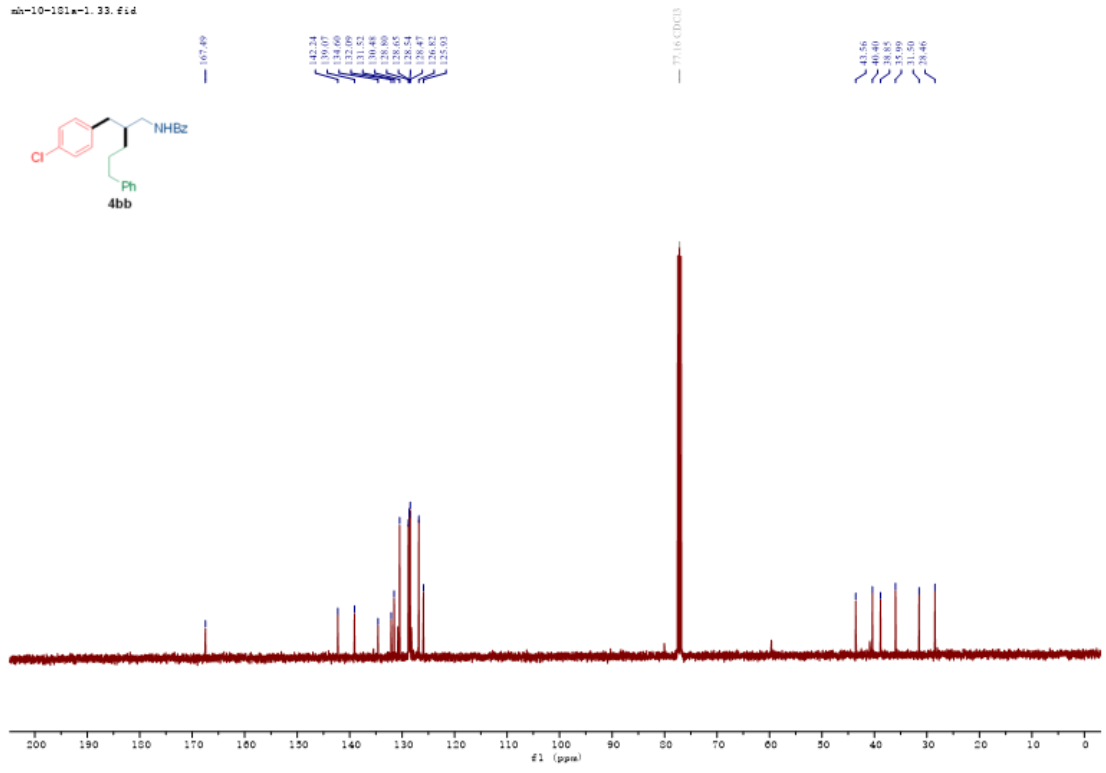
^{1}H NMR (600 MHz, $CDCl_3$)

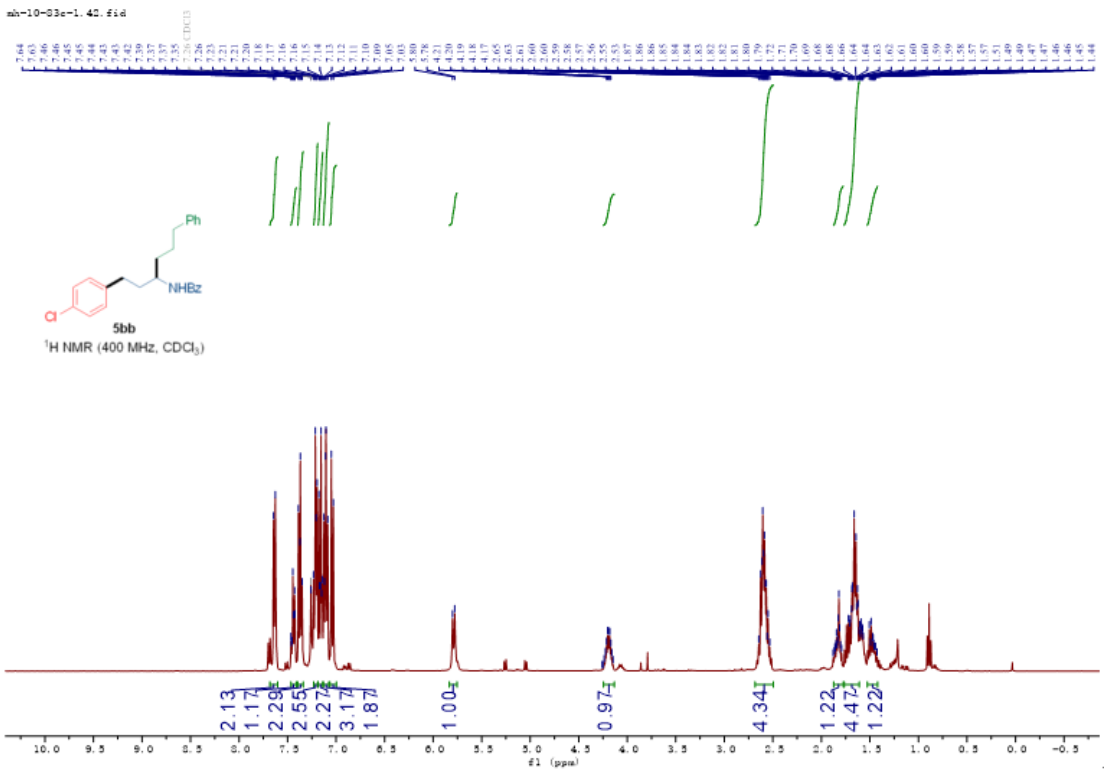


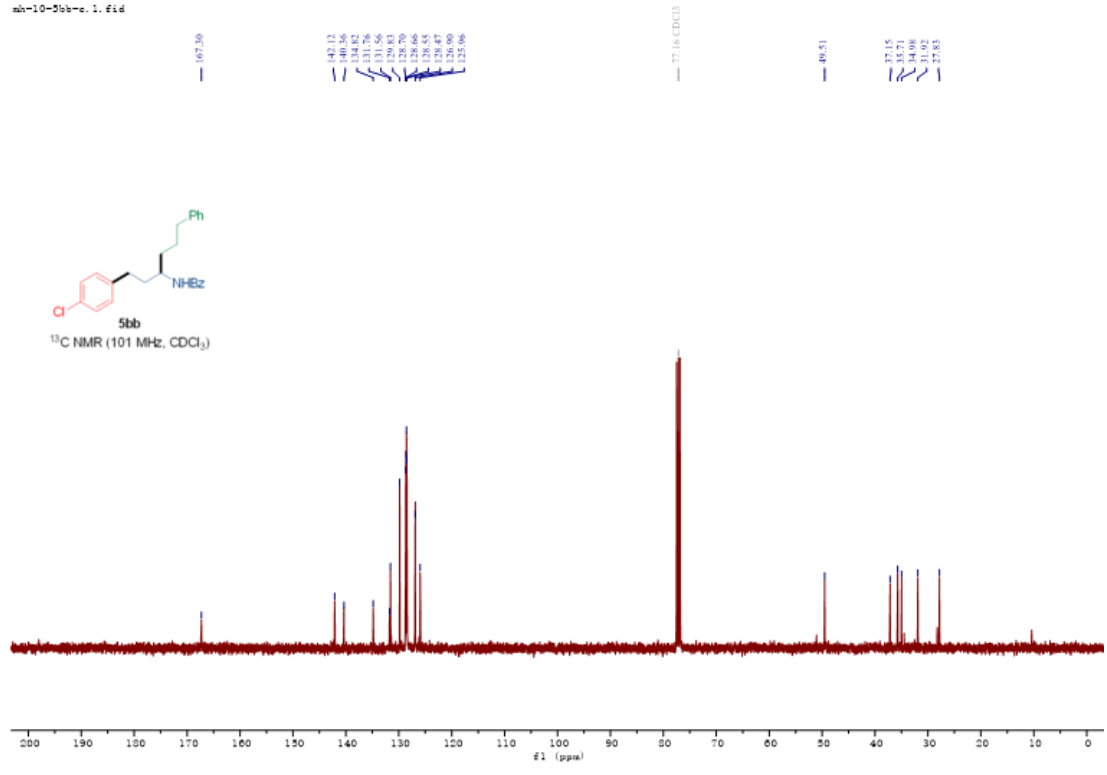
5ba

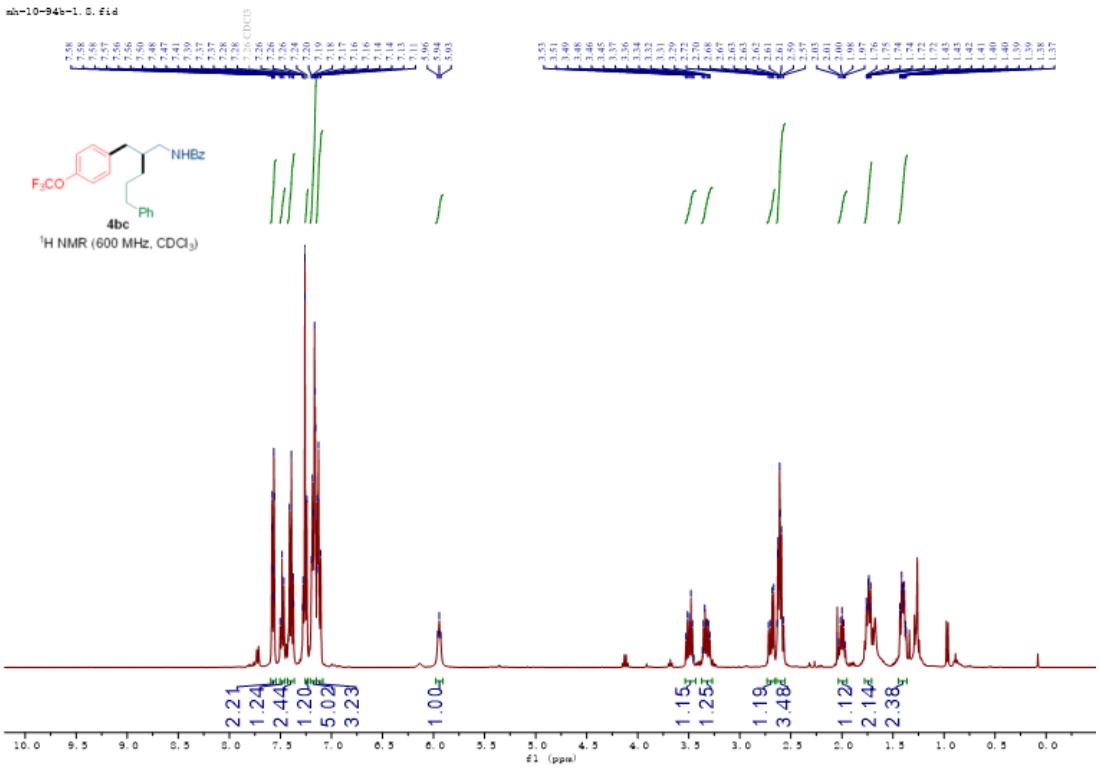
^{13}C NMR (151 MHz, $CDCl_3$)

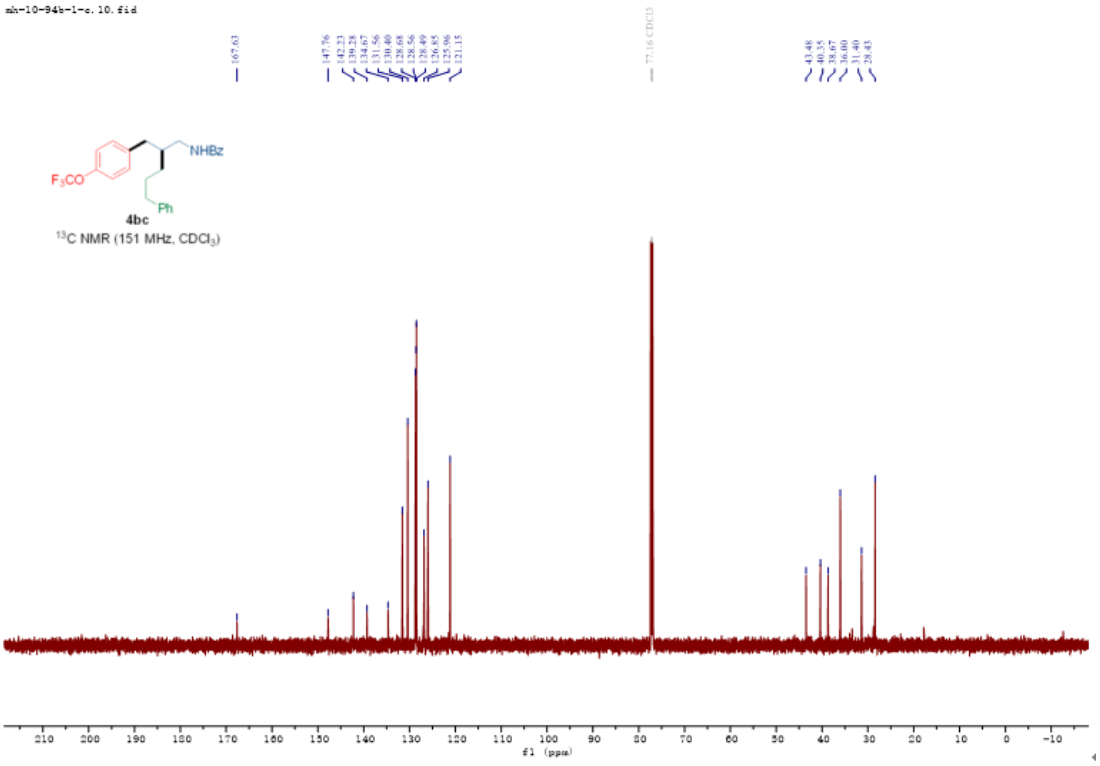

NHBz
Cl
Ph
4bb
2.01
1.19
2.25
4.25
3.41
2.11
1.00
1.16
1.09
4.09
1.12
2.29
2.30
f1 (ppm)


NHBz
Cl
Ph
4bb
f1 (ppm)


mh-10-03c-1.42.fid
Ph
NHBz
Cl
5bb
^{1}H NMR (400 MHz, CDCl$_3$)
2.13
1.17
2.29
2.55
2.27
3.17
1.87
1.00
0.97
4.34
1.22
4.47
1.22
f1 (ppm)


mh-10-5bb-c.1.fid
Ph
NHBz
Cl
5bb
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)


mh-10-94b-1.8.fid
NHBz
F3CO
Ph
4bc
1H NMR (600 MHz, CDCl3)
2.21
1.24
2.44
1.20
5.02
3.23
1.00
1.15
1.25
1.19
3.48
1.12
2.14
2.38
f1 (ppm)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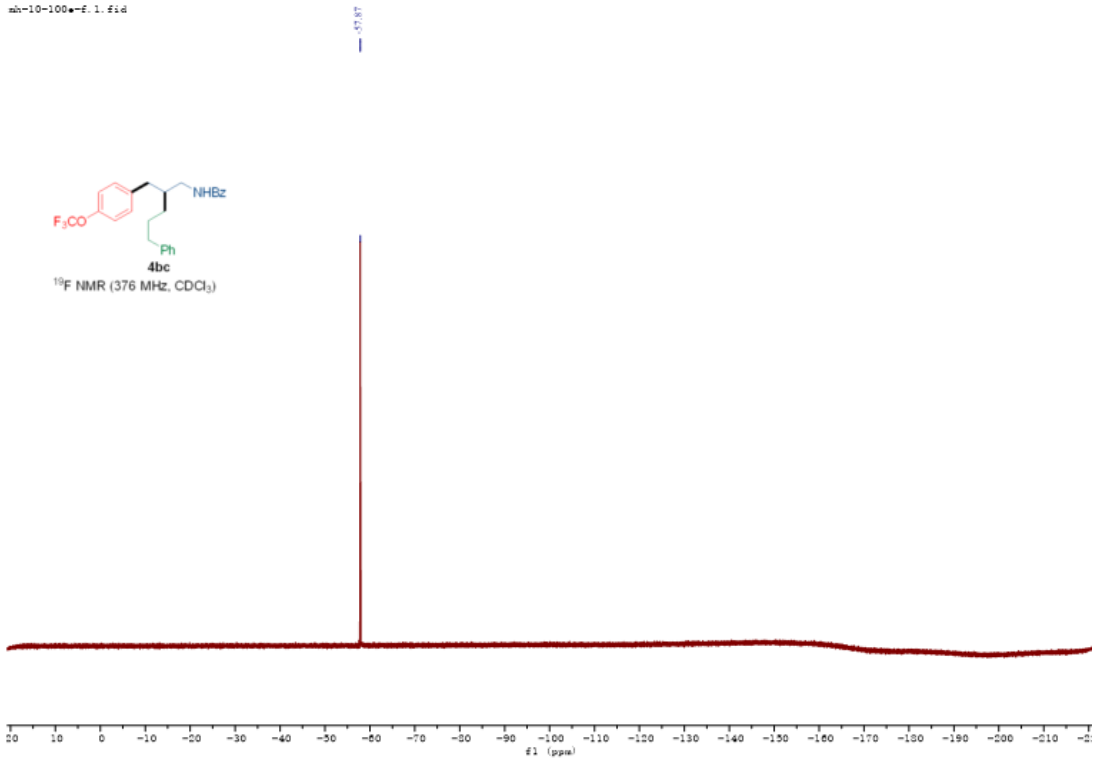
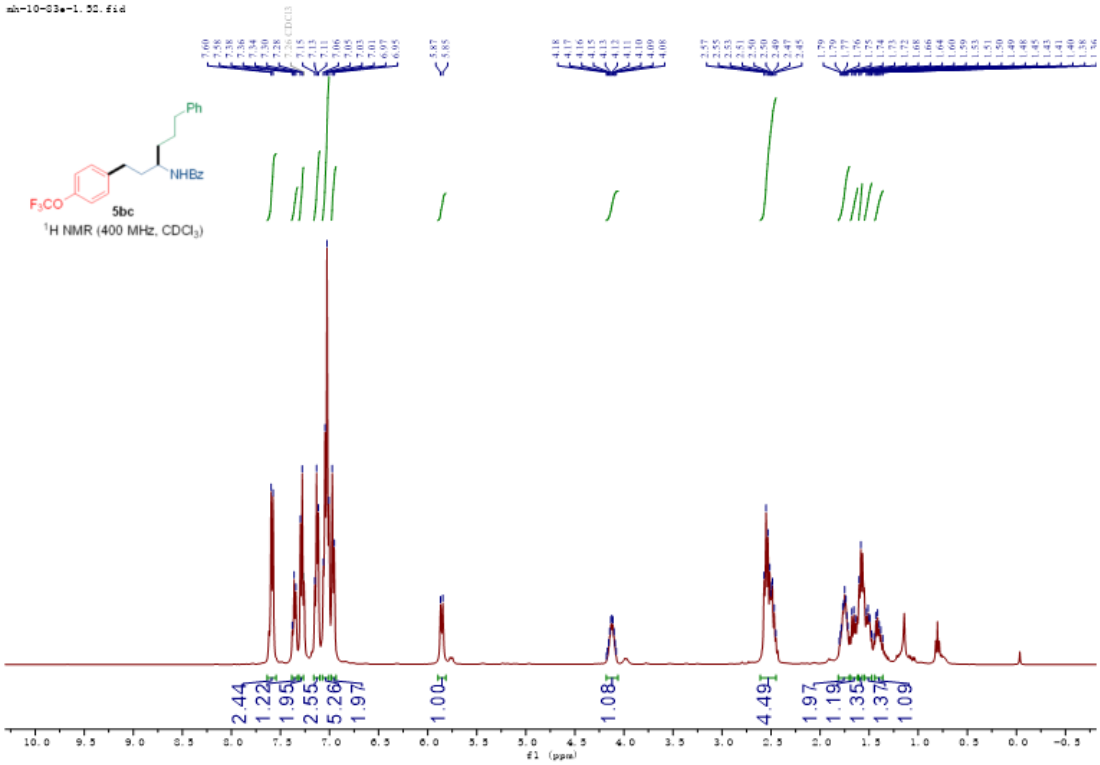
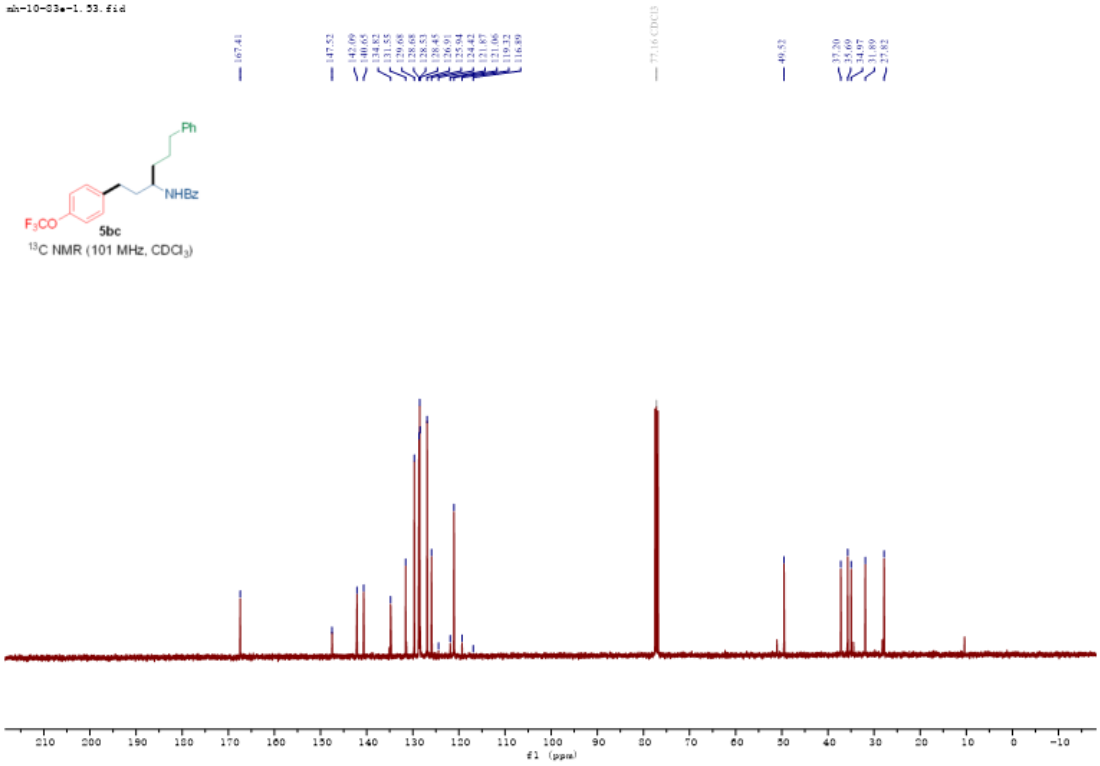
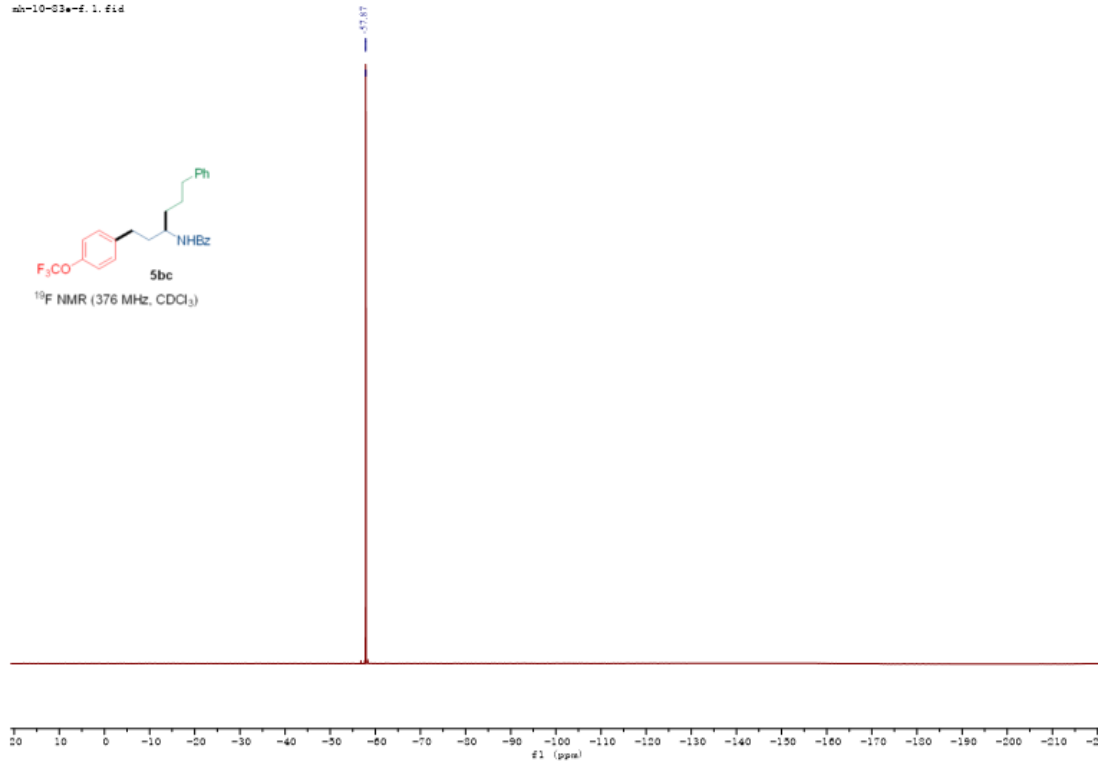
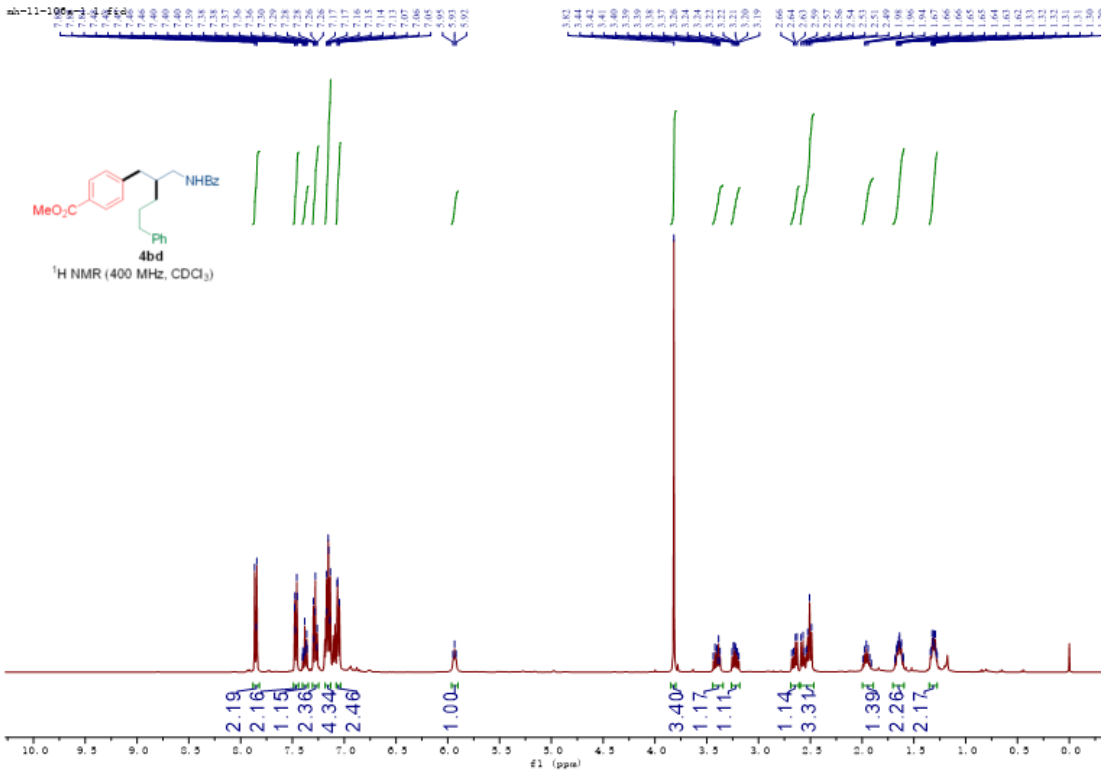
NHBz
F3CO
Ph
4bc
13C NMR (151 MHz, CDCl3)
f1 (ppm)

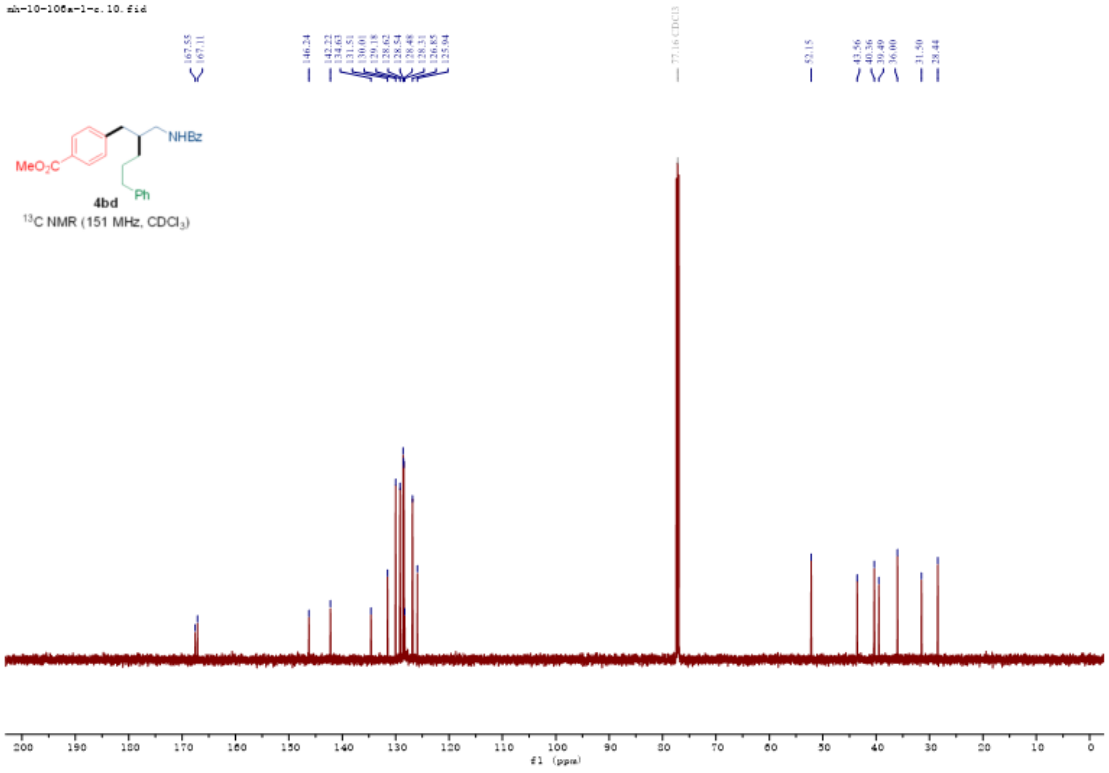

mh-10-100e-f.1.fid
-57.87
NHBz
F3CO
Ph
4bc
19F NMR (376 MHz, CDCl3)
f1 (ppm)

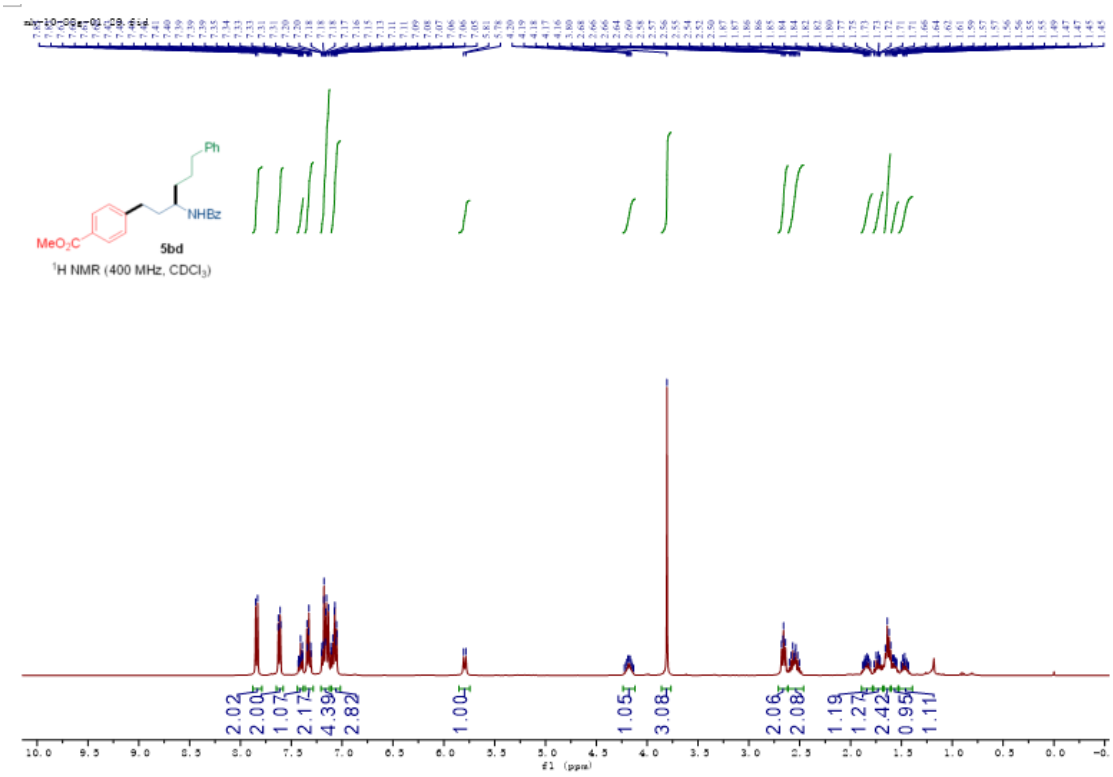

mh-10-83e-1.52.fid
Ph
NHBz
F3CO
5bc
1H NMR (400 MHz, CDCl3)
2.44
1.22
1.95
2.55
5.26
1.97
1.00
1.08
4.49
1.97
1.19
1.35
1.37
1.09
f1 (ppm)

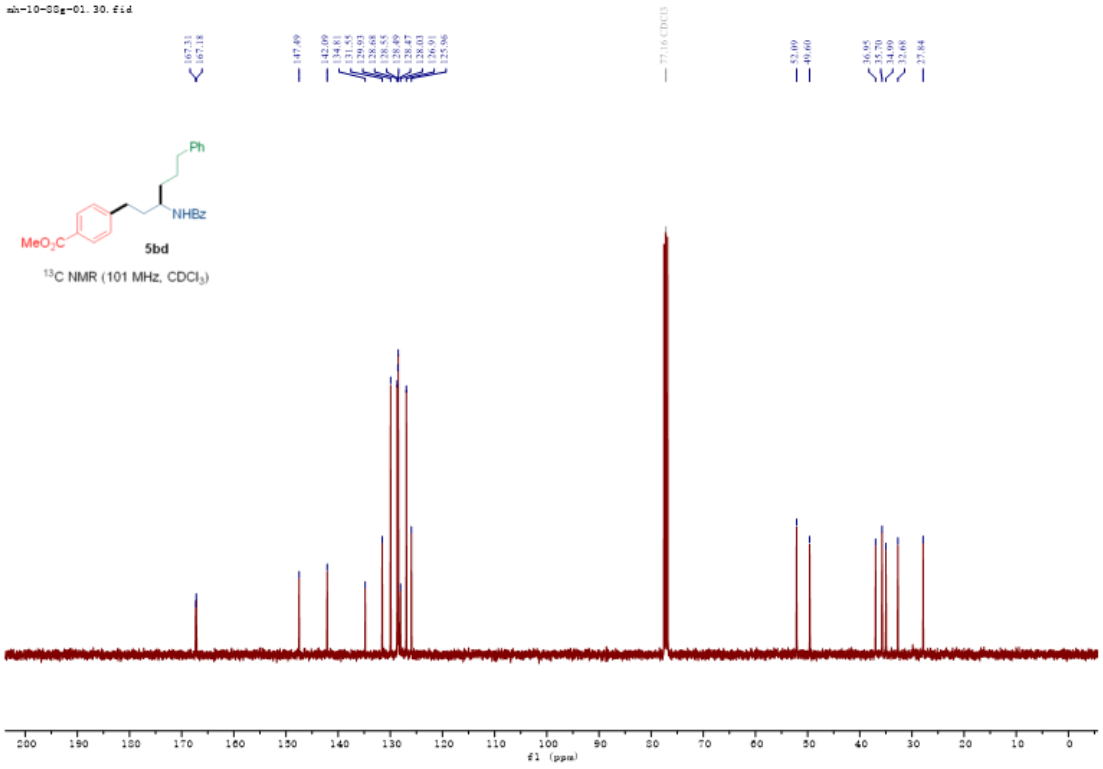

mh-10-03e-1.53.fid
167.41
147.53
142.09
140.65
134.82
131.55
129.68
128.68
128.53
126.45
126.91
125.94
124.42
121.87
121.06
119.32
116.89
77.16 CDCl3
49.52
37.20
35.69
34.97
31.89
27.82
Ph
NHBz
F3CO
5bc
13C NMR (101 MHz, CDCl3)
f1 (ppm)

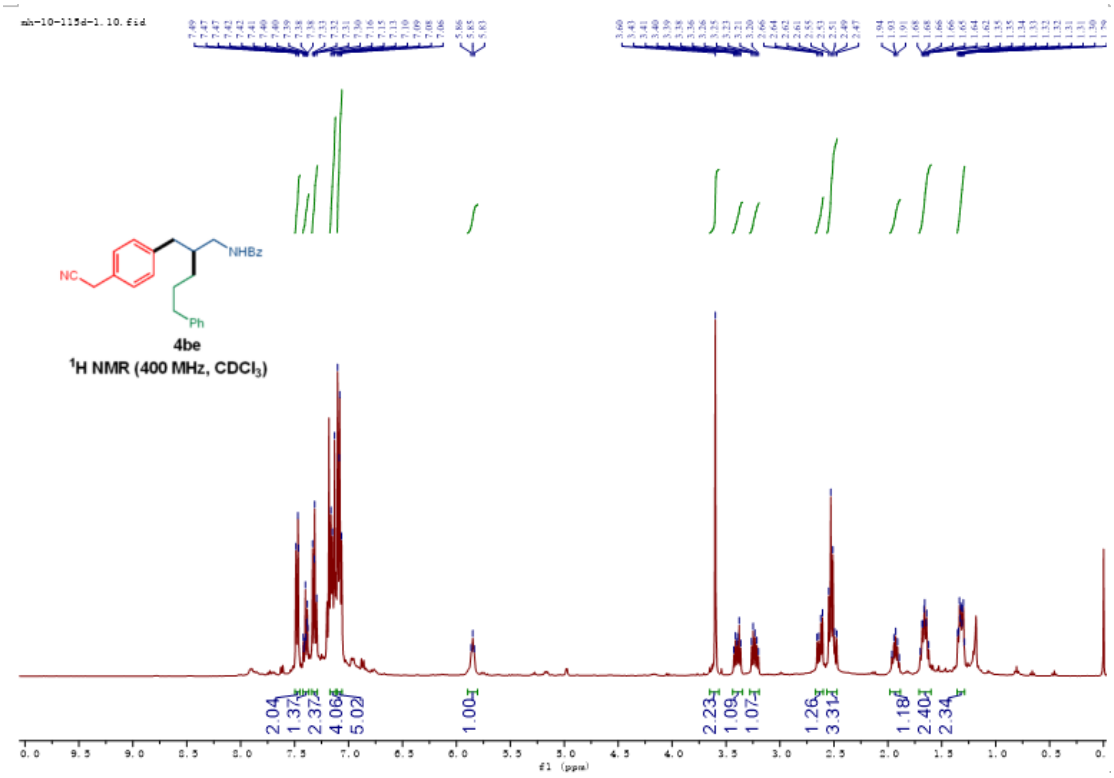

mh-10-03e-f.1.fid
-57.87
Ph
NHBz
F3CO
5bc
19F NMR (376 MHz, CDCl3)
f1 (ppm)

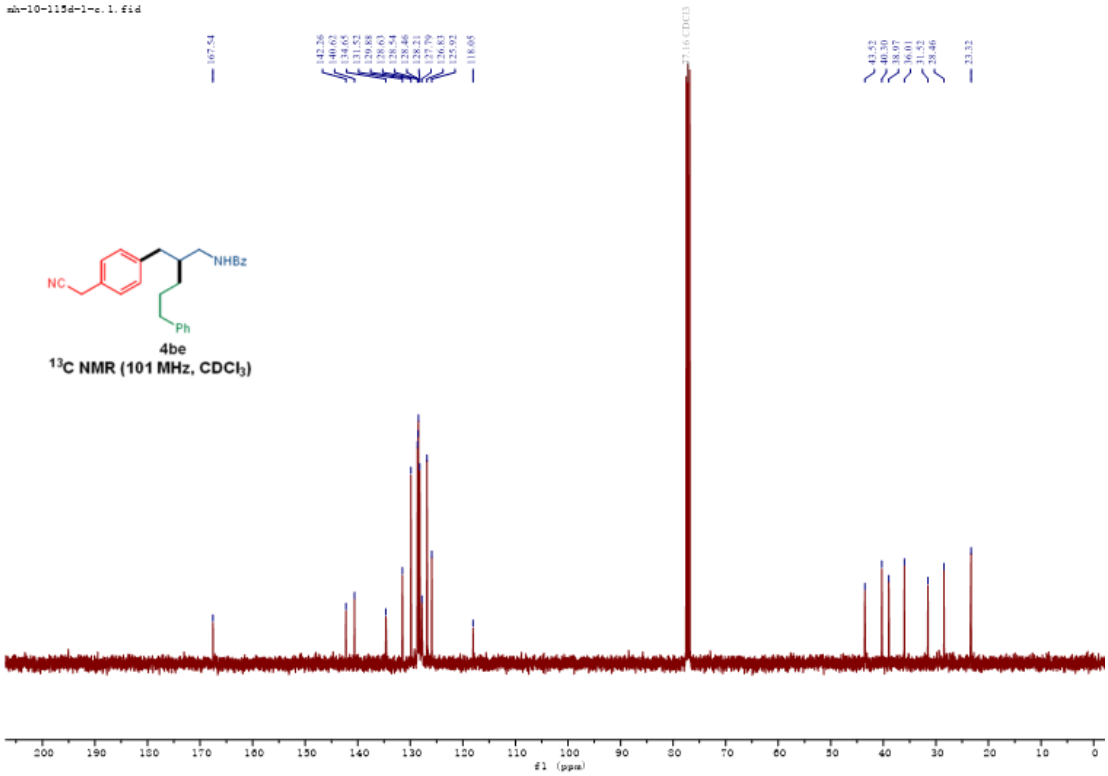

NHBz
MeO2C
Ph
4bd
1H NMR (400 MHz, CDCl3)
2.19
2.16
1.15
2.36
4.34
2.46
1.00
3.40
1.17
1.11
1.14
3.31
1.39
2.26
2.17
f1 (ppm)

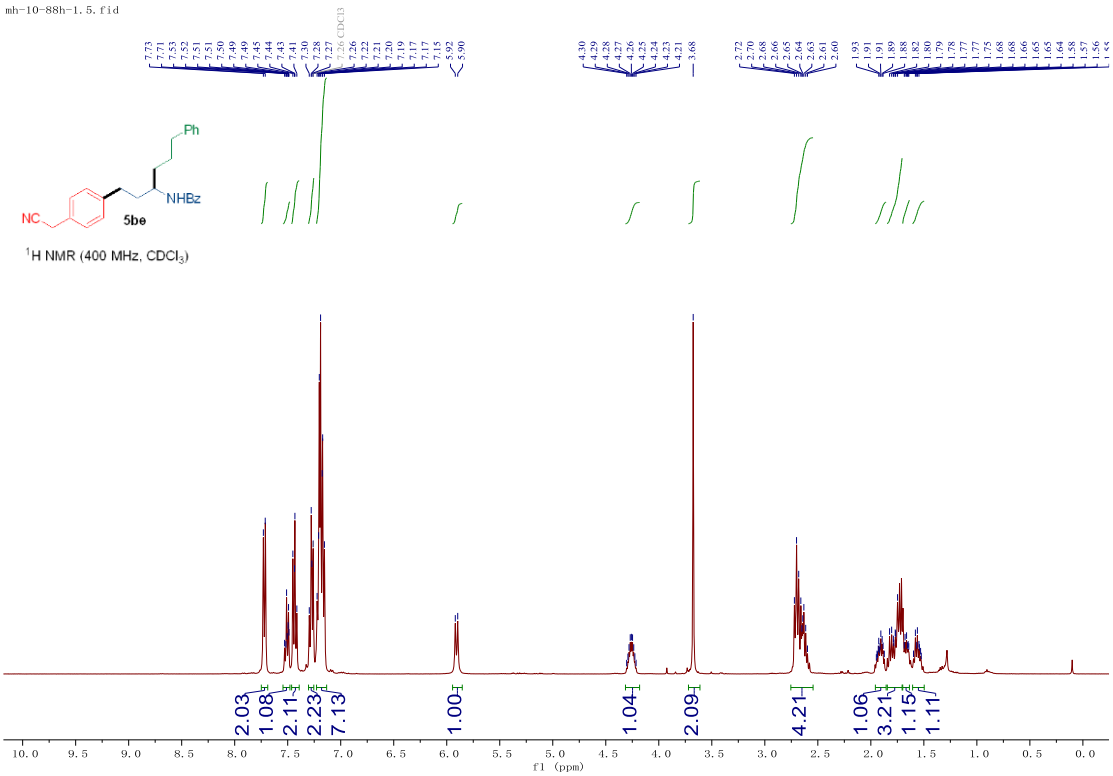

NHBz
MeO2C
Ph
4bd
13C NMR (151 MHz, CDCl3)
f1 (ppm)

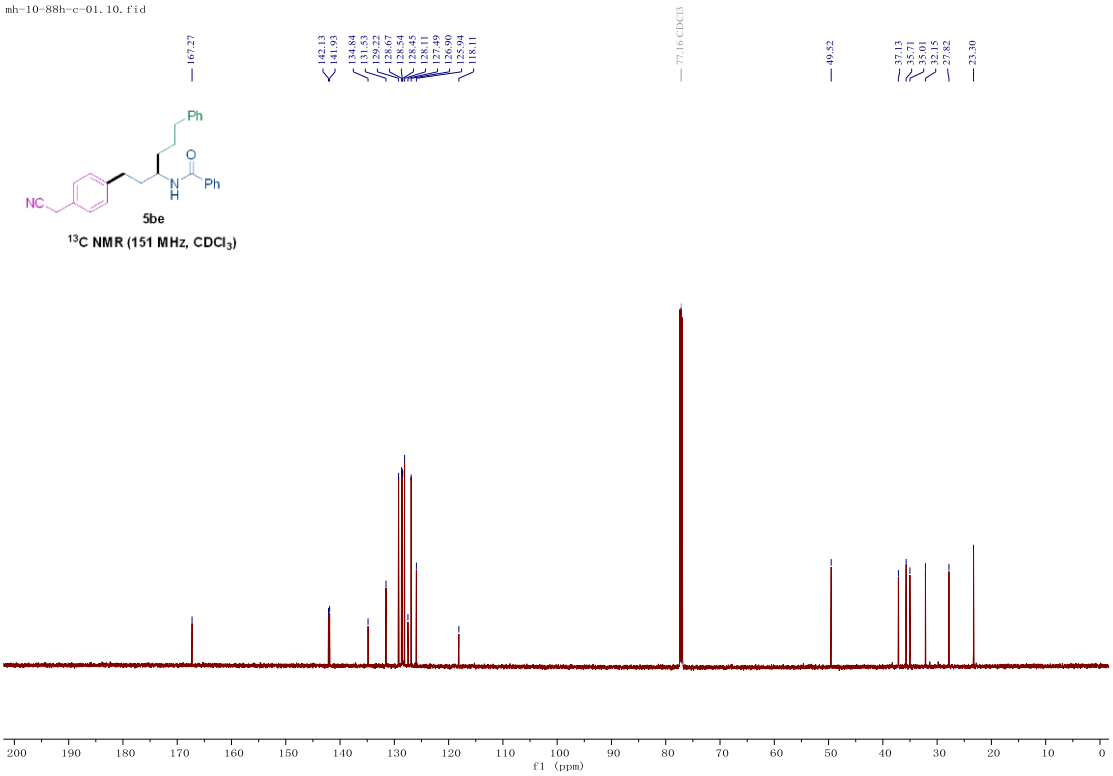

Ph
NHBz
MeO2C
5bd
1H NMR (400 MHz, CDCl3)
2.02
2.00
1.07
2.17
4.39
2.82
1.00
1.05
3.08
2.06
2.08
1.19
1.27
2.42
0.95
1.11
f1 (ppm)

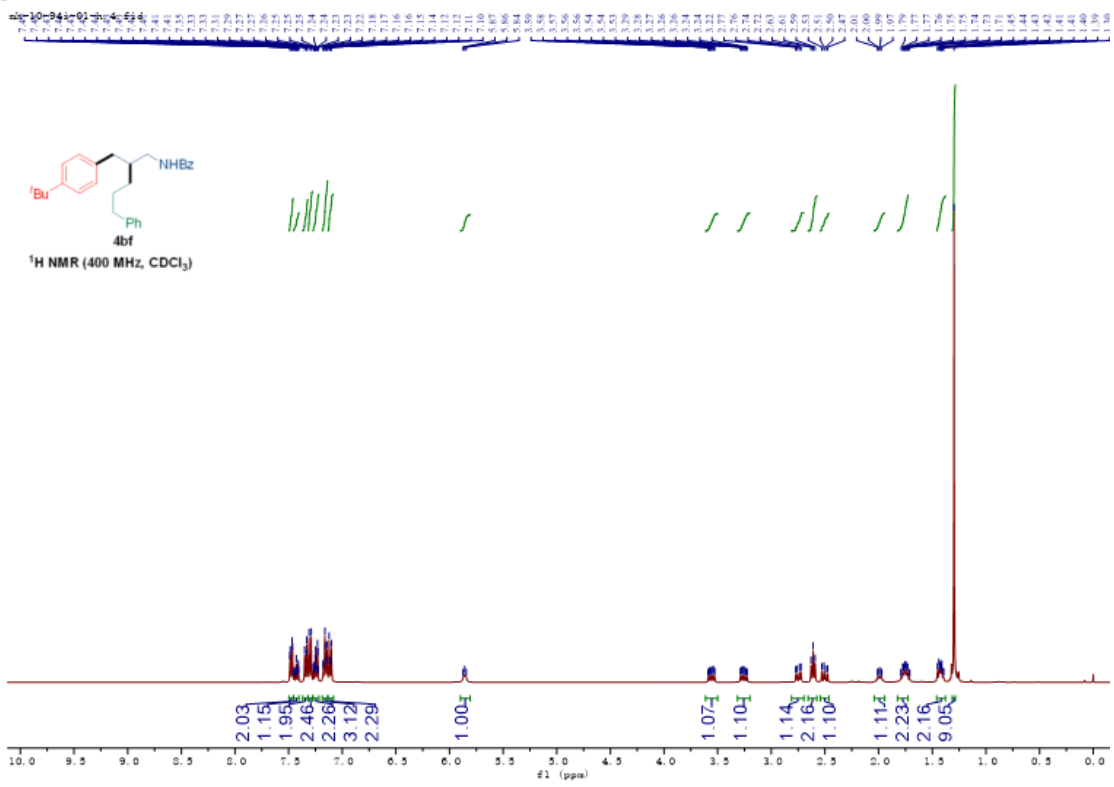

Ph
NHBz
MeO2C
5bd
13C NMR (101 MHz, CDCl3)
f1 (ppm)

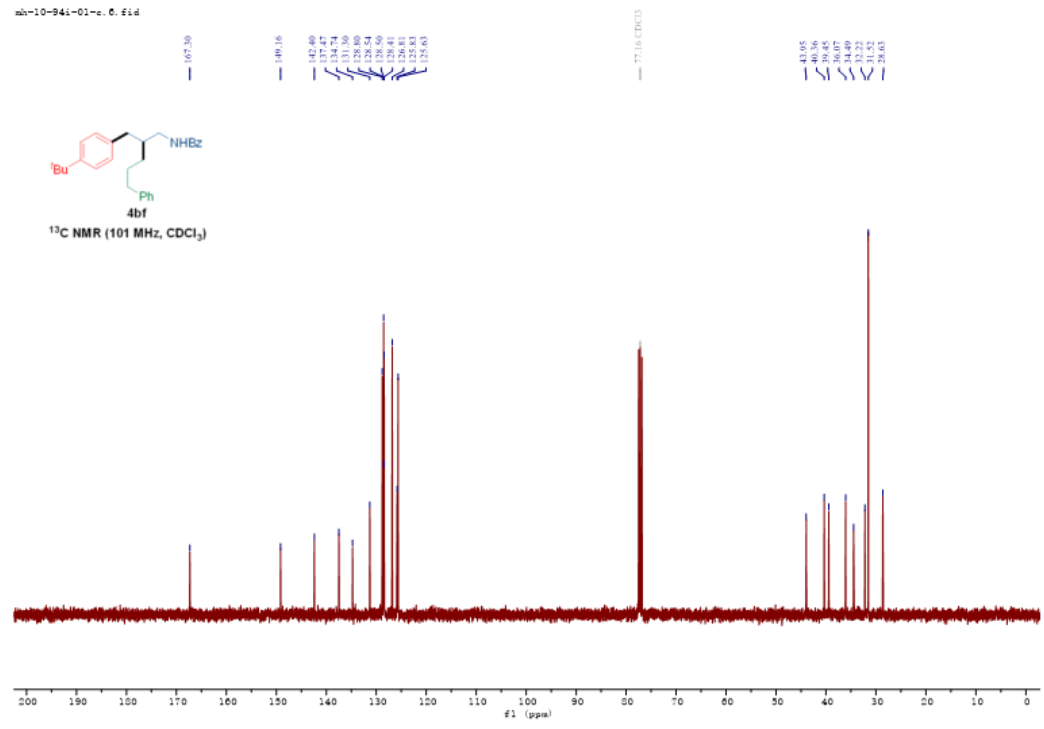

NC
NHBz
Ph
4be
^{1}H NMR (400 MHz, CDCl$_3$)

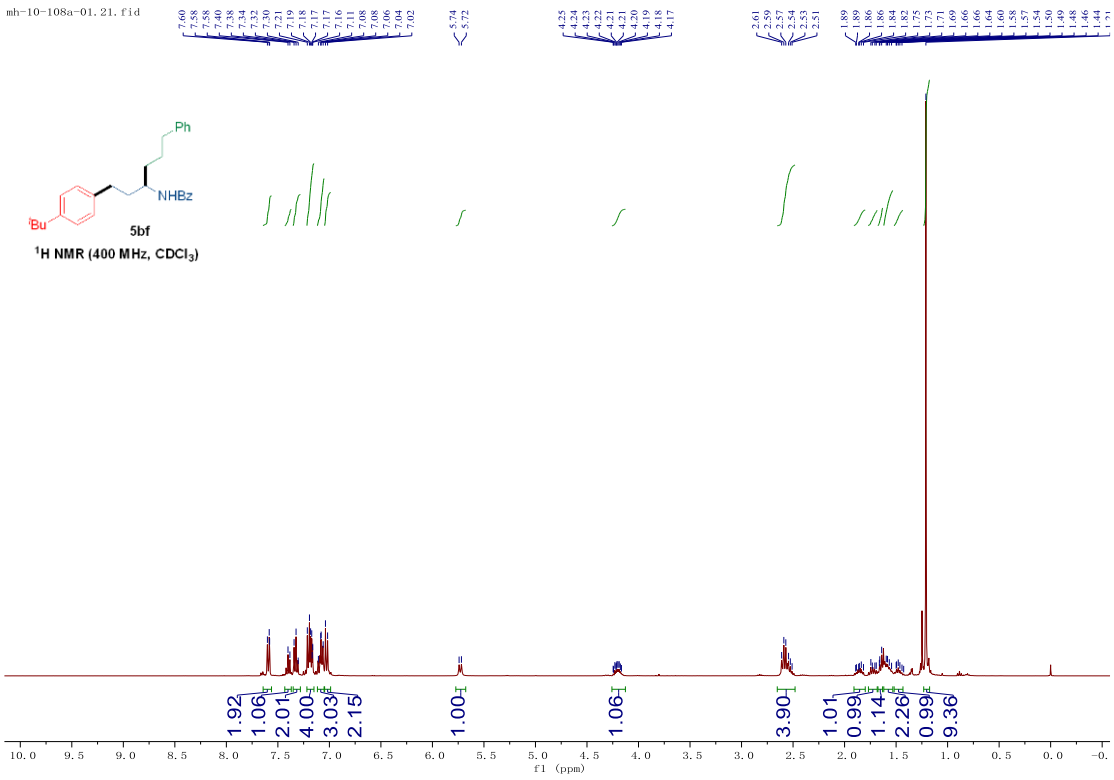

NC
NHBz
Ph
4be
^{13}C NMR (101 MHz, CDCl$_3$)

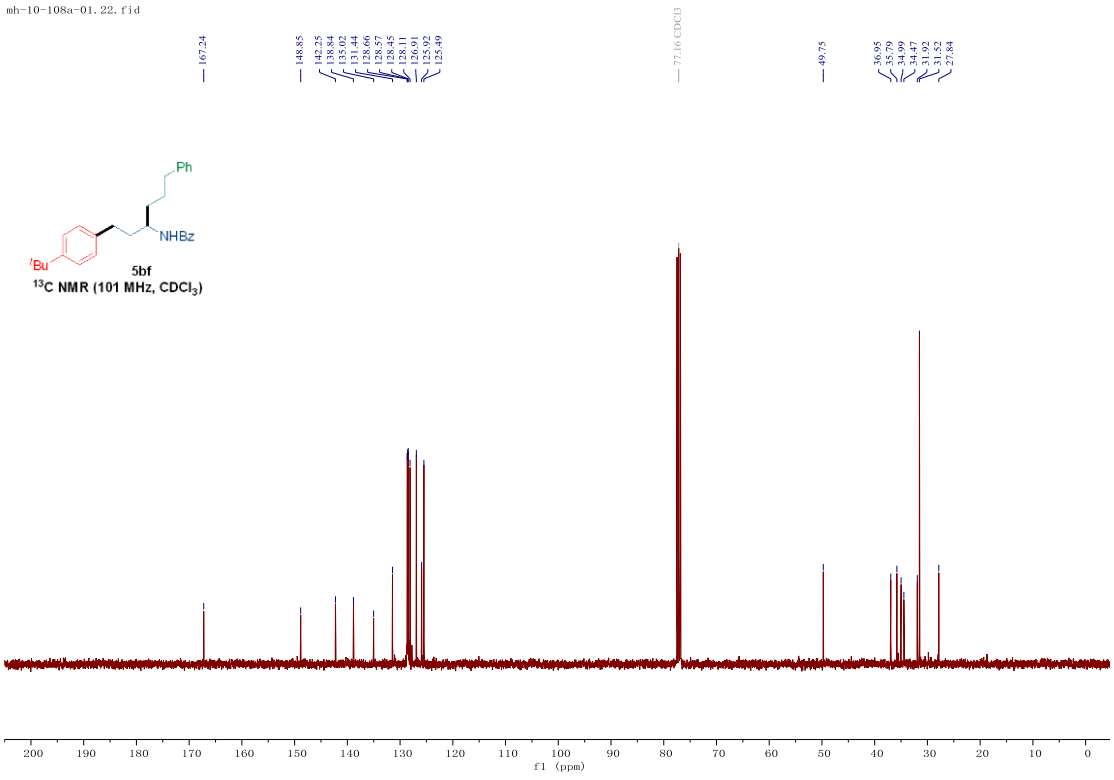

mh-10-88h-1.5.fid
Ph
NHBz
NC
5be
^{1}H NMR (400 MHz, CDCl$_3$)
2.03
1.08
2.11
2.23
7.13
1.00
1.04
2.09
4.21
1.06
3.21
1.15
1.11
f1 (ppm)

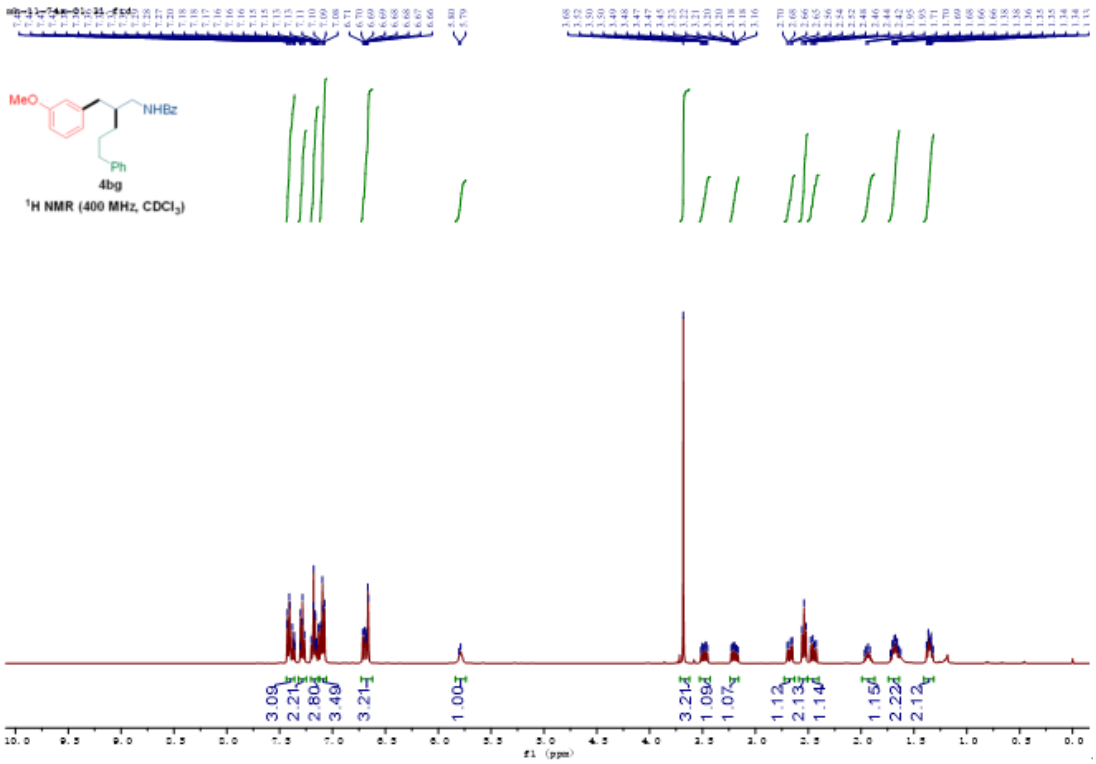

mh-10-88h-c-01.10.fid
Ph
O
N
H
Ph
NC
5be
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

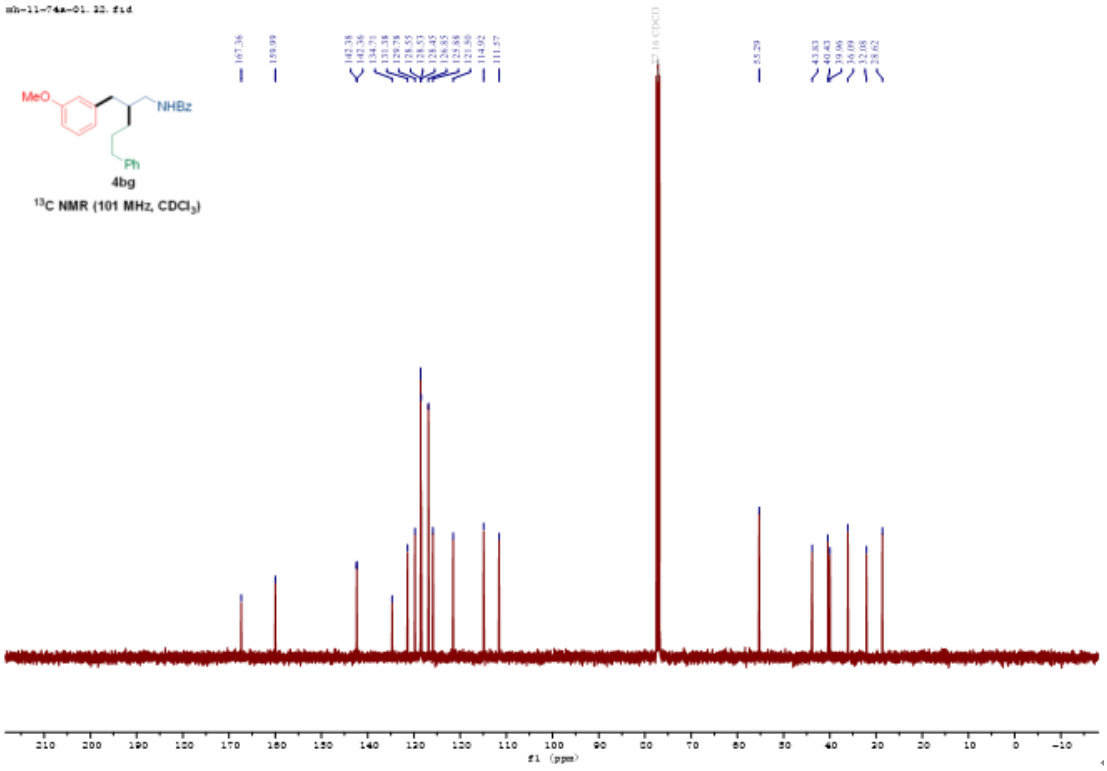

NHBz
tBu
Ph
4bf
1H NMR (400 MHz, CDCl3)
2.03
1.15
1.95
2.46
2.26
3.12
2.29
1.00
1.07
1.10
1.14
2.16
1.10
1.11
2.23
2.16
9.05
f1 (ppm)

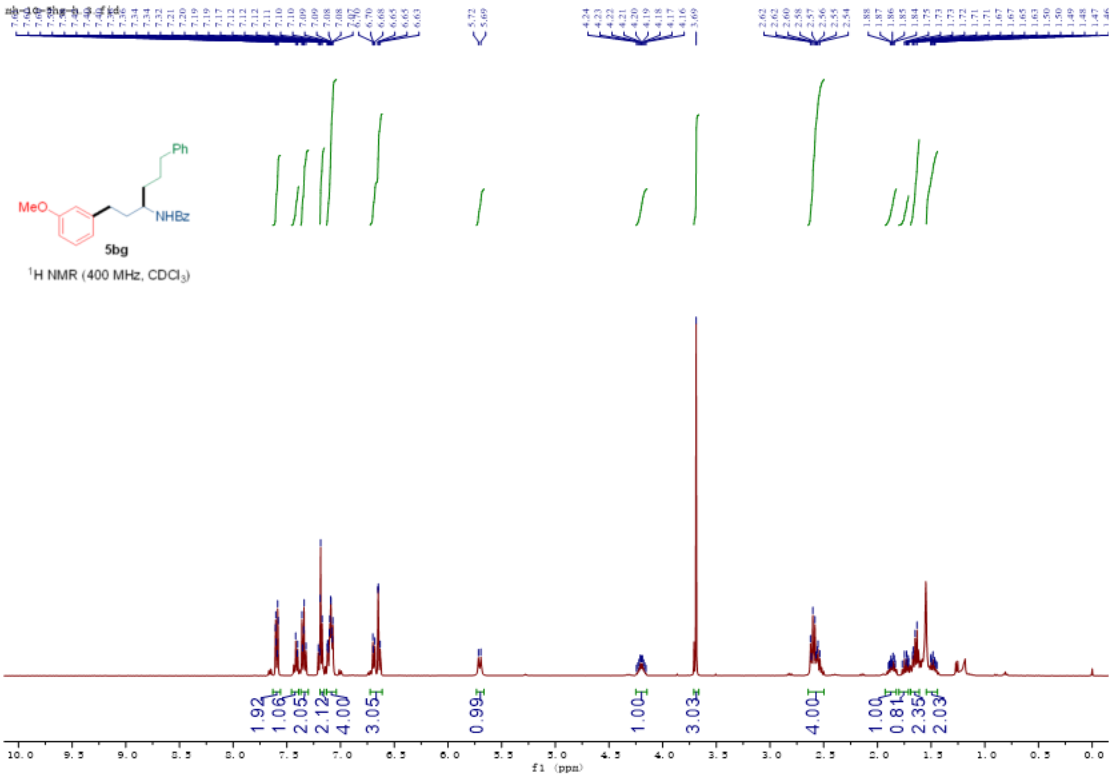

NHBz
tBu
Ph
4bf
13C NMR (101 MHz, CDCl3)
f1 (ppm)

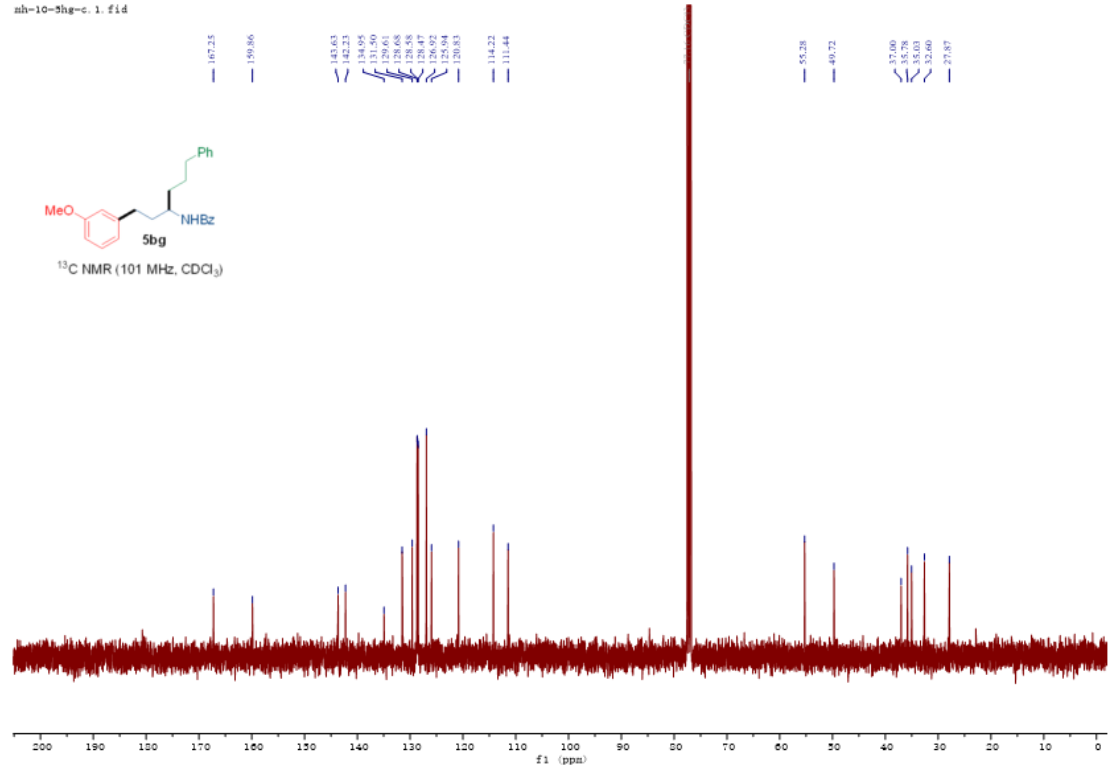

mh-10-108a-01.21.fid
Ph
NHBz
tBu
5bf
1H NMR (400 MHz, CDCl3)
1.92
1.06
2.01
4.00
3.03
2.15
1.00
1.06
3.90
1.01
0.99
1.14
2.26
0.99
9.36
f1 (ppm)

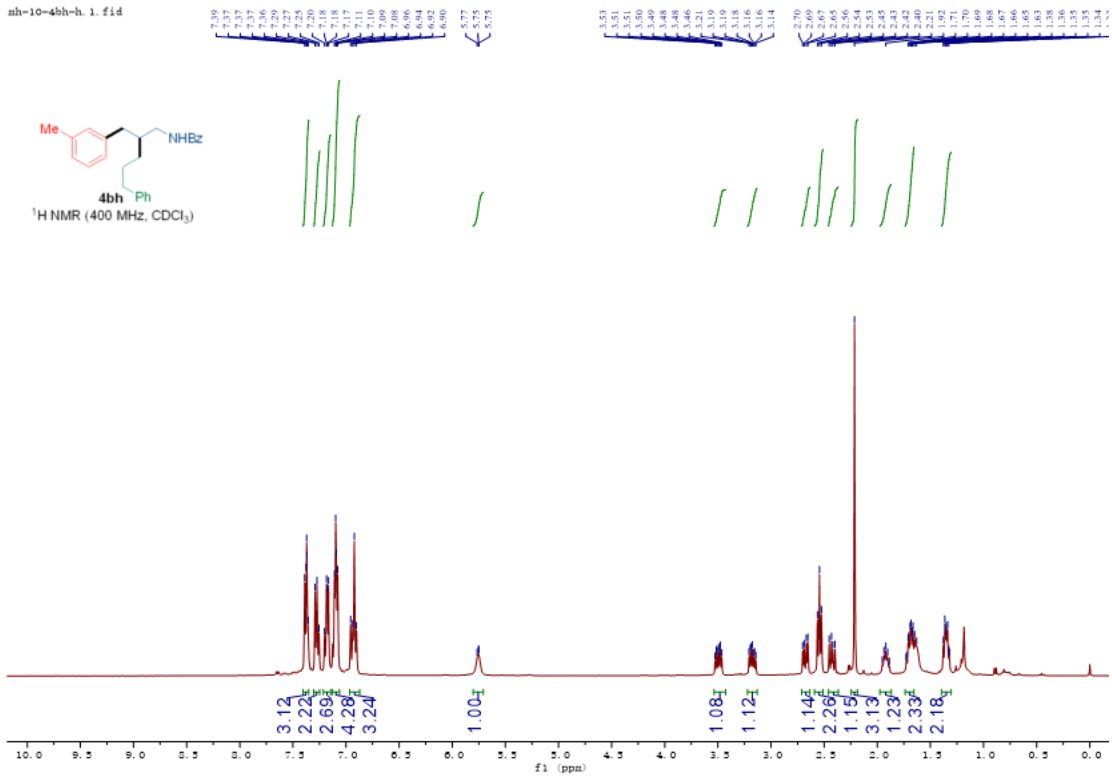

mh-10-108a-01.22.fid
167.24
148.85
142.25
138.84
135.02
131.44
128.66
128.57
128.45
128.11
126.91
125.92
125.49
77.16 CDCl3
49.75
36.95
35.79
34.99
34.47
31.93
31.52
27.84
Ph
NHBz
tBu
5bf
13C NMR (101 MHz, CDCl3)
f1 (ppm)

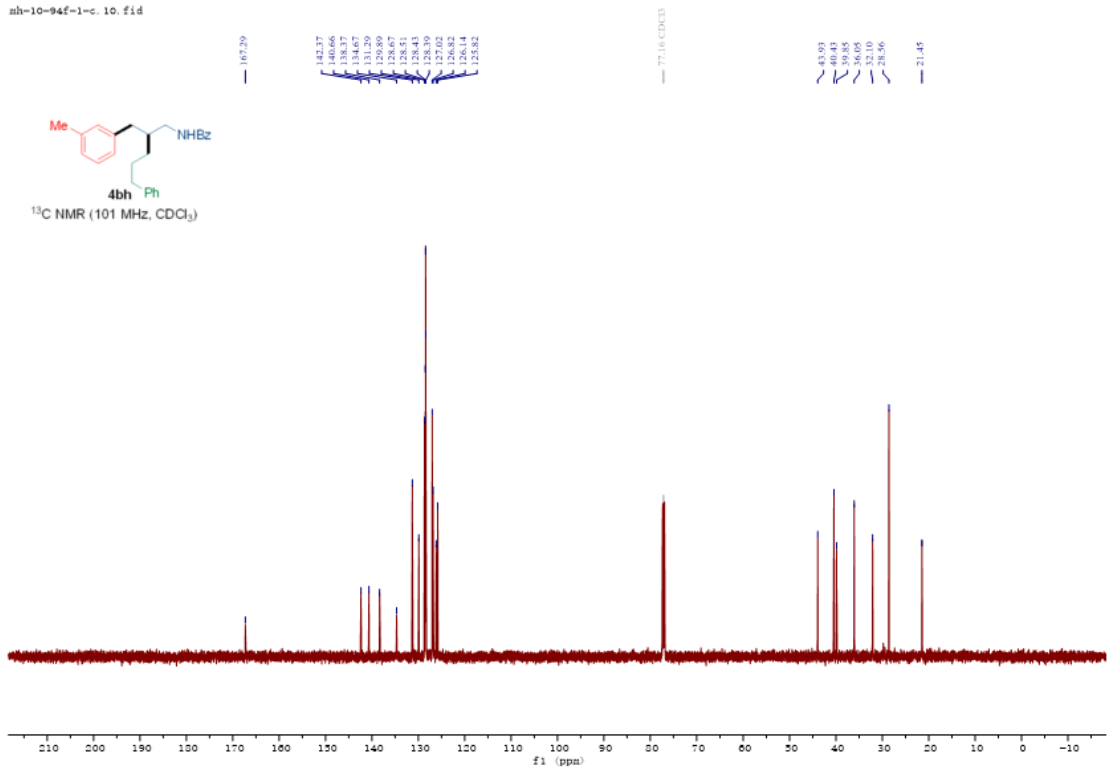

MeO
NHBz
Ph
4bg
^{1}H NMR (400 MHz, CDCl$_3$)
3.09
2.21
2.80
3.49
3.21
1.00
3.21
1.09
1.07
1.12
2.13
1.14
1.15
2.22
2.12
f1 (ppm)

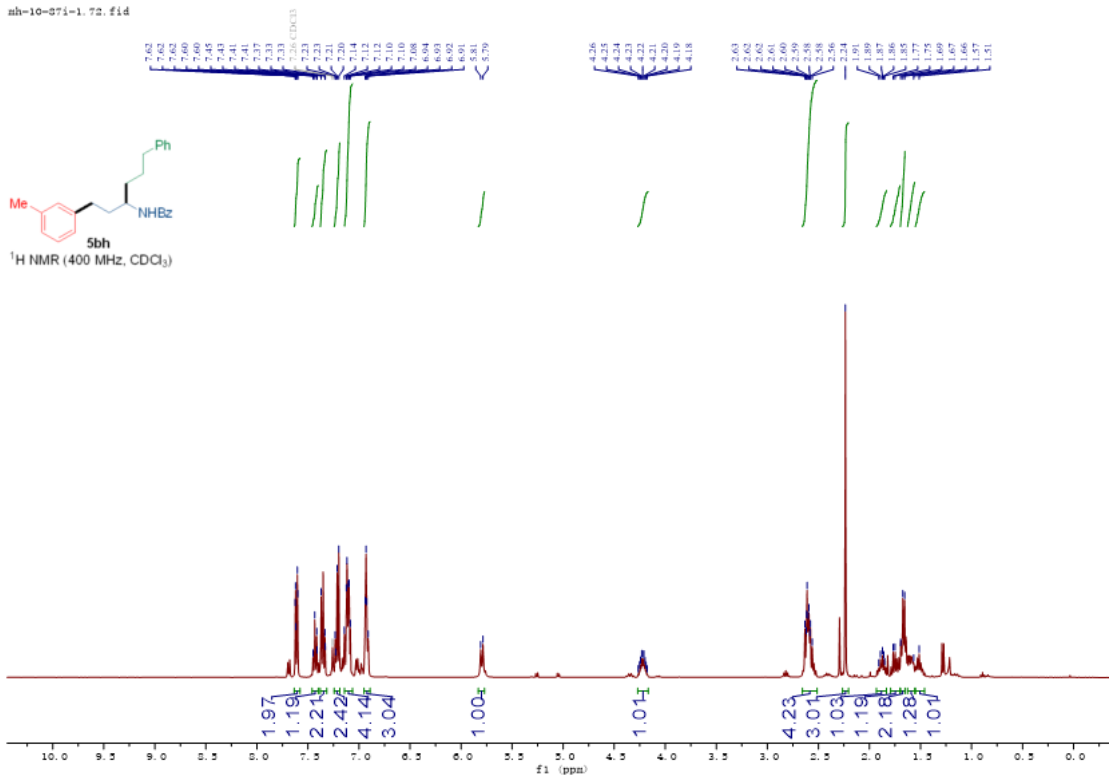

MeO
NHBz
Ph
4bg
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

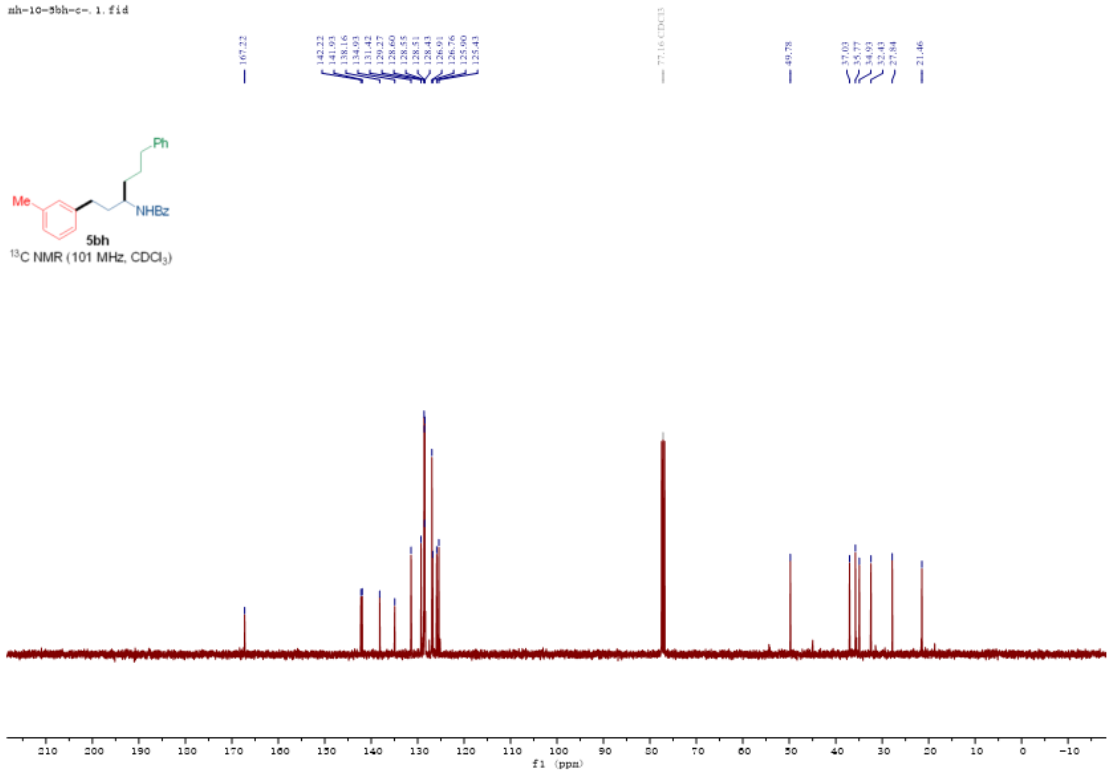

Ph
MeO
NHBz
5bg
^{1}H NMR (400 MHz, CDCl$_3$)
1.92
1.06
2.05
2.12
4.00
3.05
0.99
1.00
3.03
4.00
1.00
0.81
2.35
2.03
f1 (ppm)

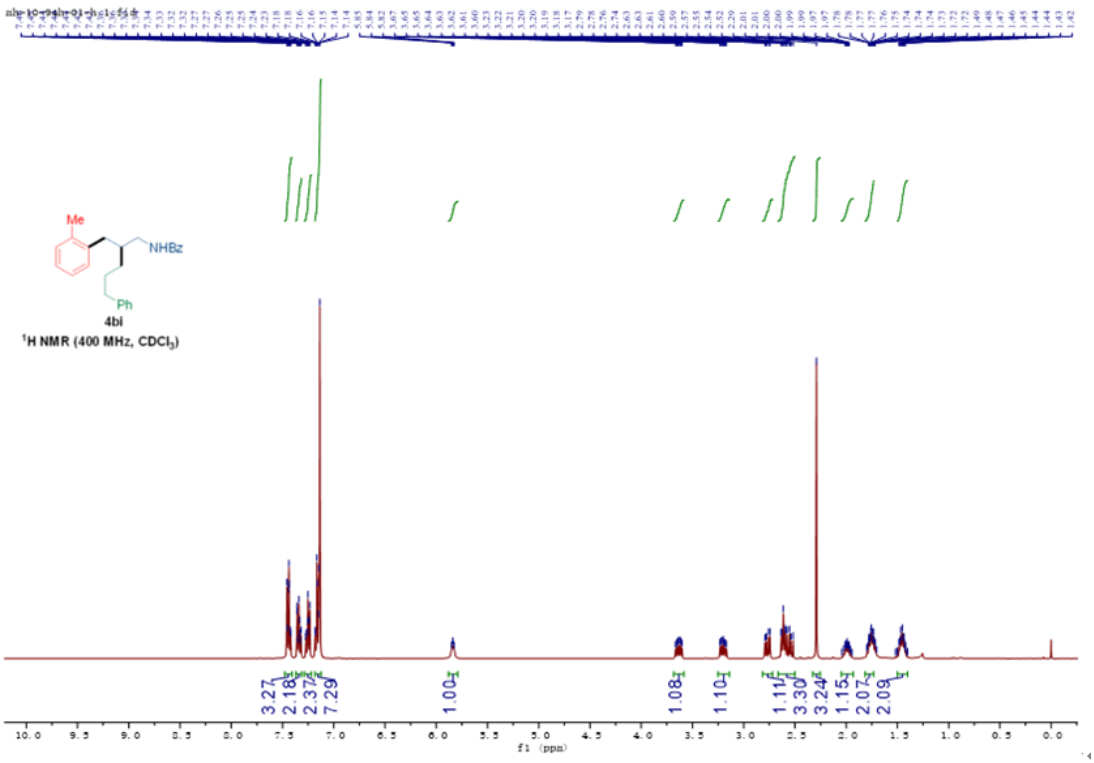

zh-10-5bg-c. 1. fid
Ph
MeO
NHBz
5bg
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

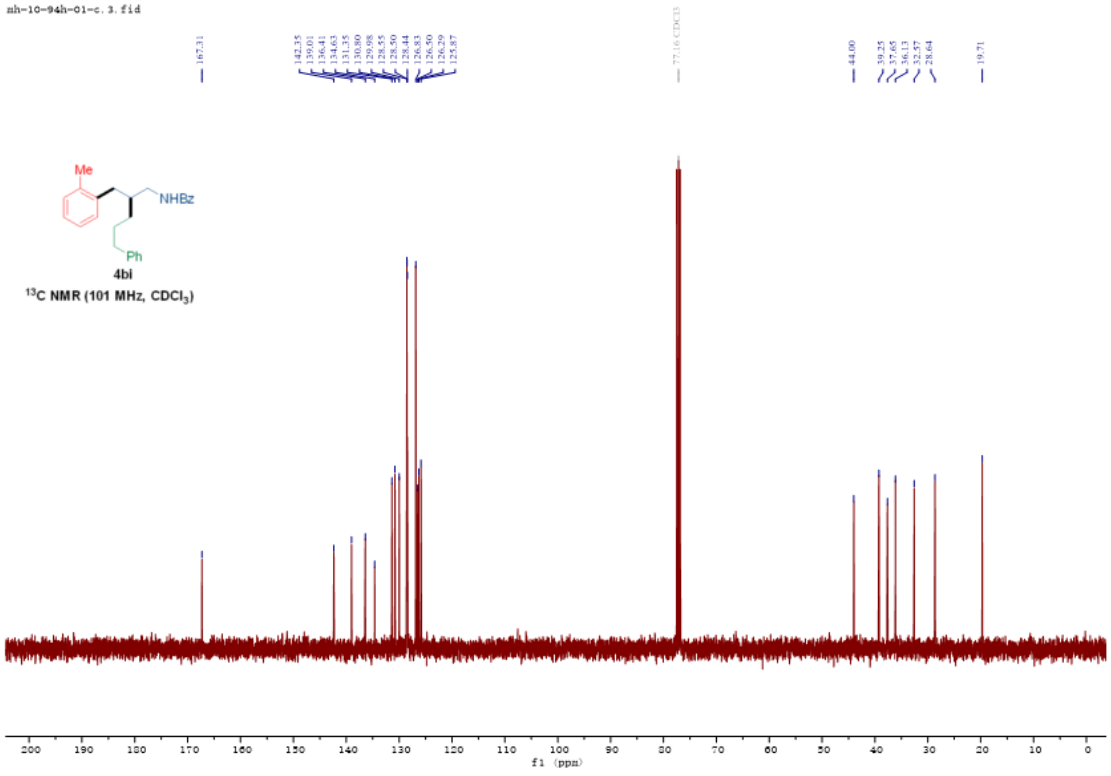

nh-10-4bh-h. 1. fid
Me
NHBz
Ph
4bh
^{1}H NMR (400 MHz, CDCl$_3$)
3.12
2.22
2.69
4.28
3.24
1.00
1.08
1.12
1.14
2.26
1.15
3.13
1.23
2.33
2.18
f1 (ppm)

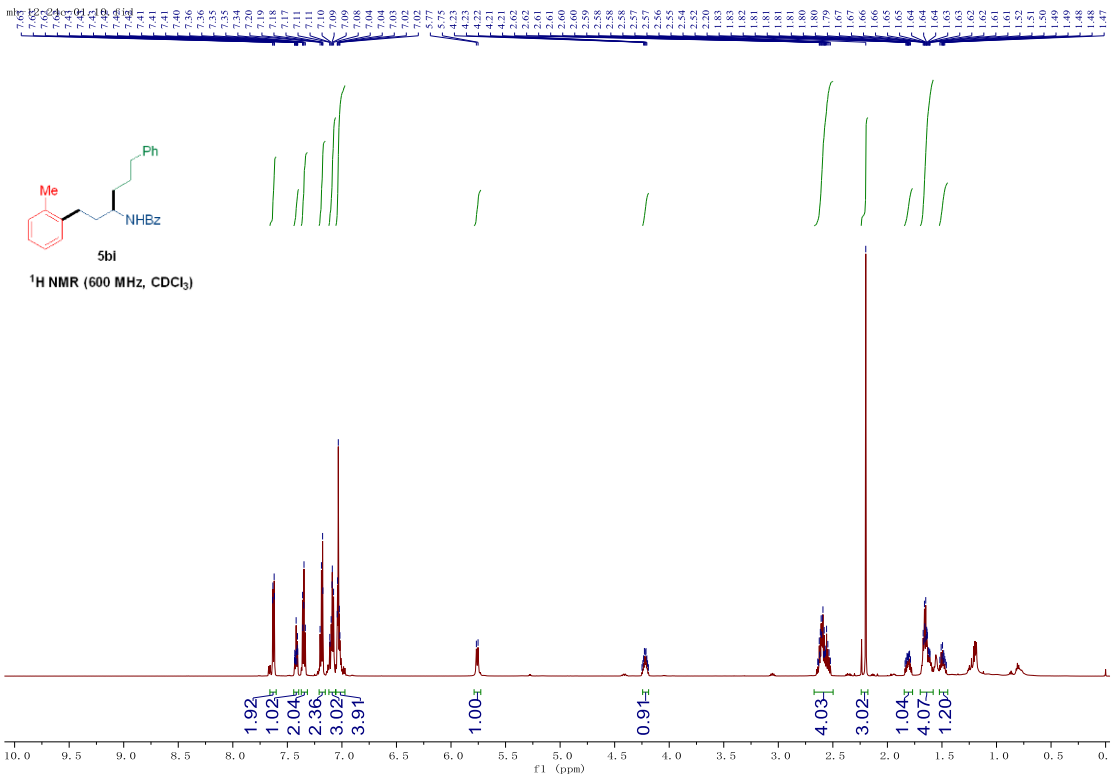

nh-10-94f-1-c. 10. fid
Me
NHBz
Ph
4bh
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

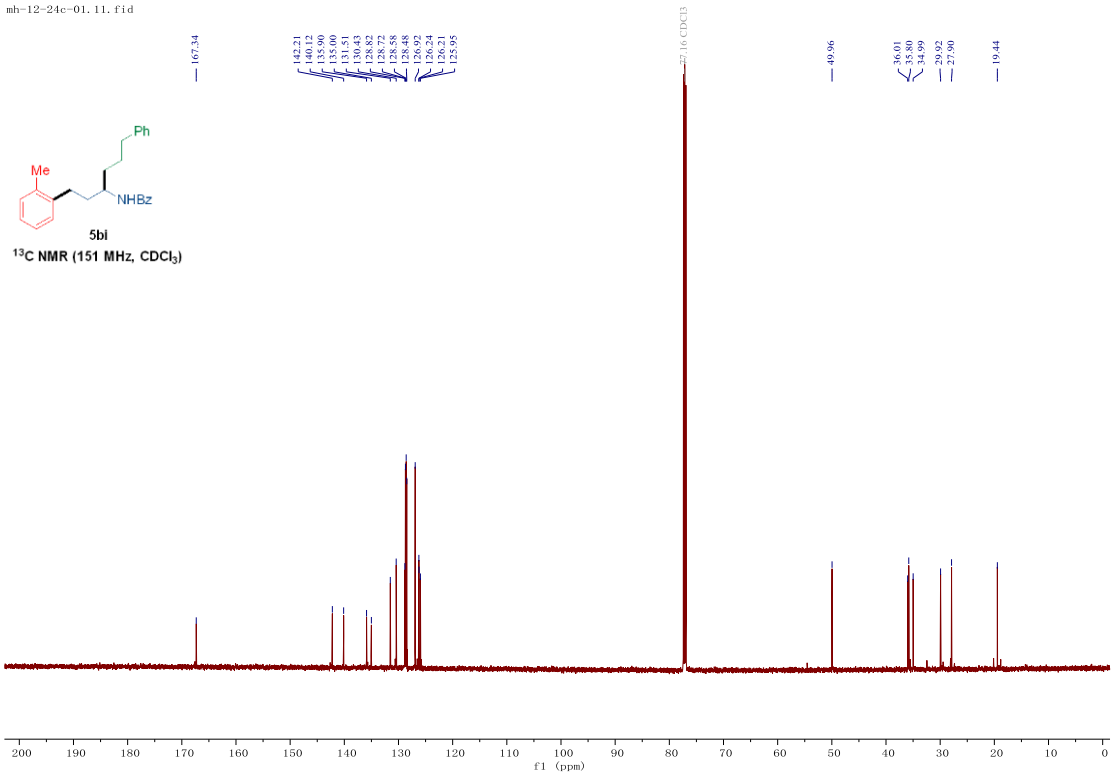

nh-10-37i-1.72.fid
Ph
Me
NHBz
5bh
^{1}H NMR (400 MHz, CDCl$_3$)
1.97
1.19
2.21
2.42
4.14
3.04
1.00
1.01
4.23
3.01
1.03
1.19
2.18
1.28
1.01
f1 (ppm)

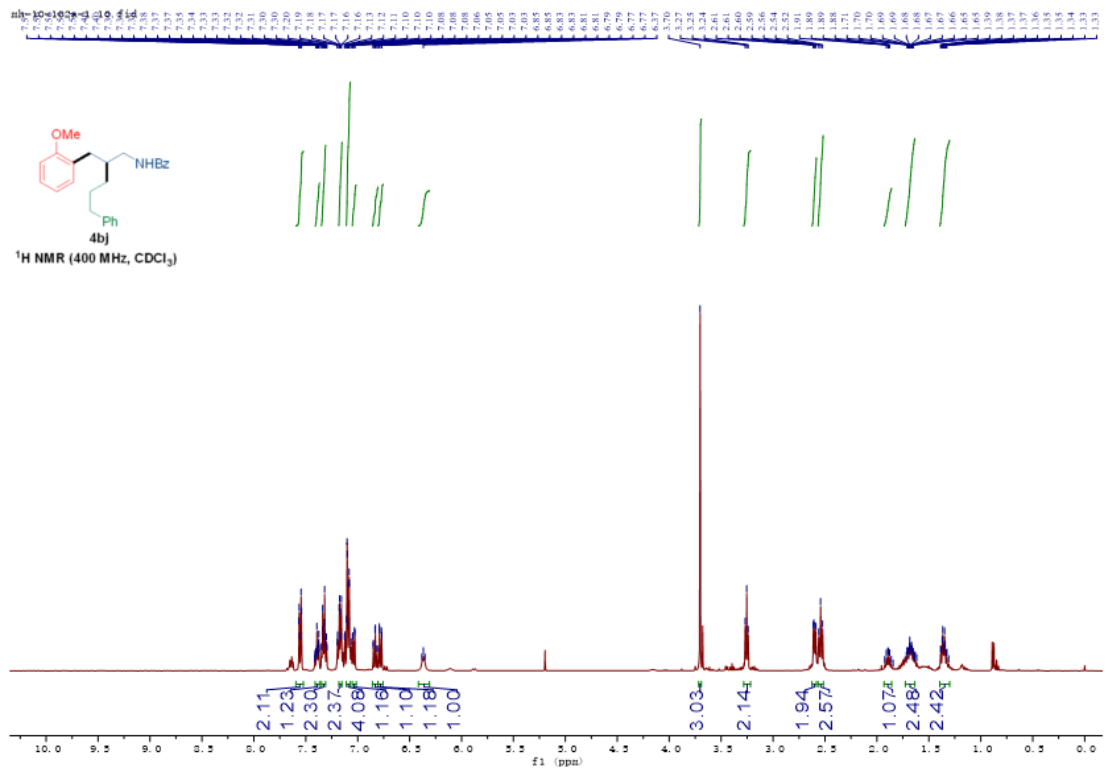

nh-10-5bh-c-.1.fid
Ph
Me
NHBz
5bh
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

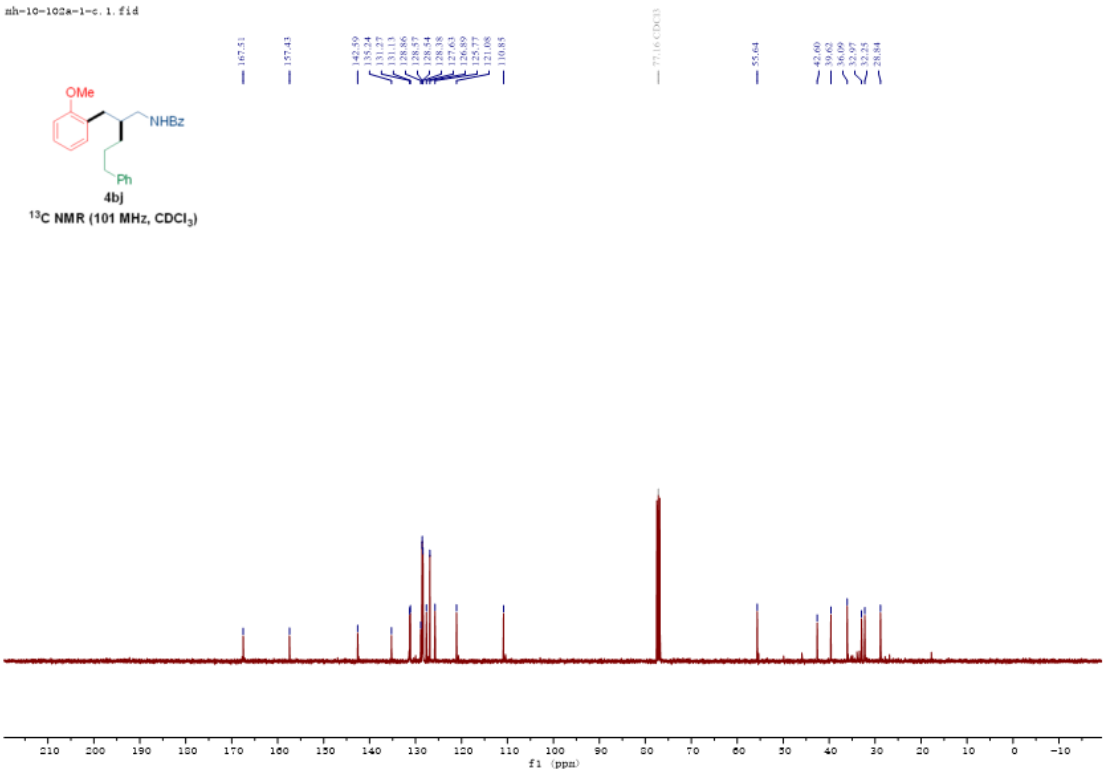

Me
NHBz
Ph
4bi
^{1}H NMR (400 MHz, CDCl$_3$)
3.27
2.18
2.37
7.29
1.00
1.08
1.10
1.11
3.30
3.24
1.15
2.07
2.09
f1 (ppm)

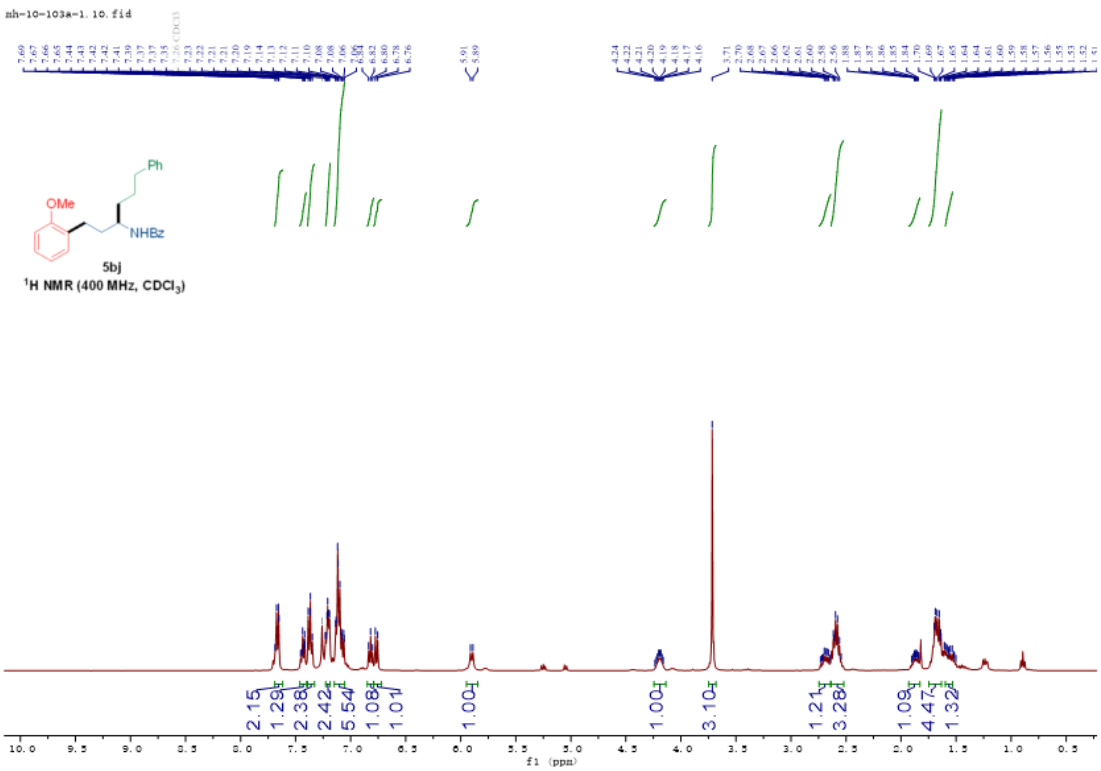

Me
NHBz
Ph
4bi
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

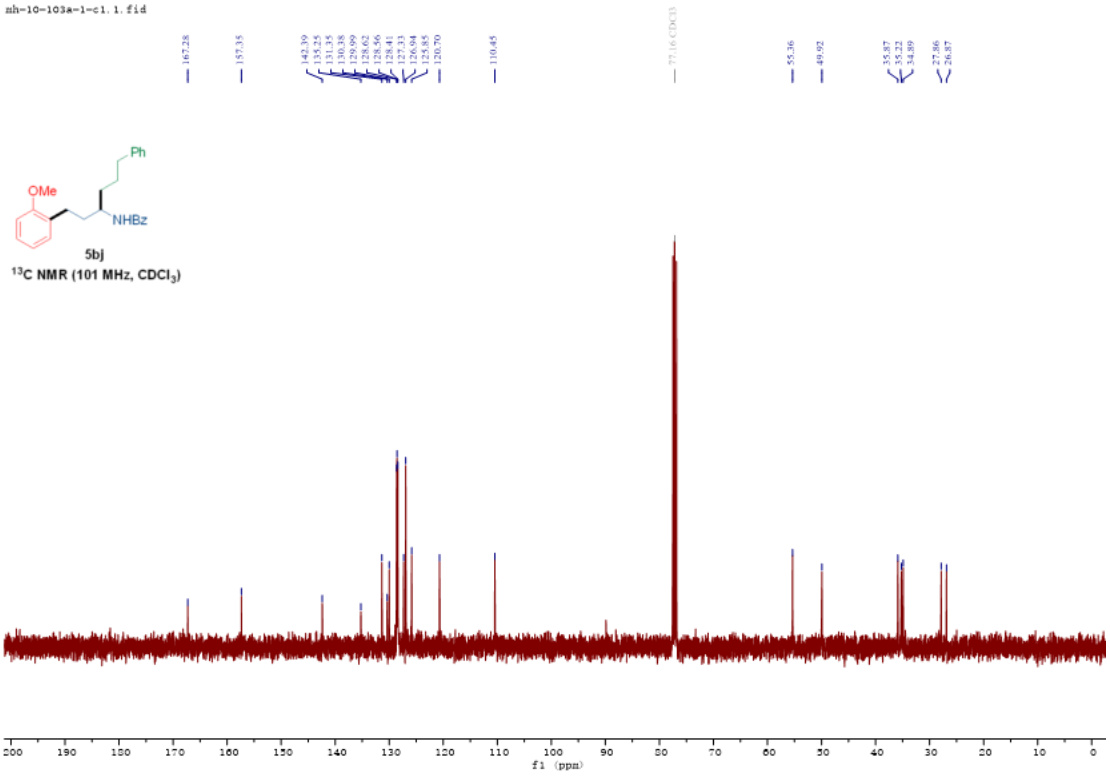

Ph
Me
NHBz
5bi
1H NMR (600 MHz, CDCl3)
1.92
1.02
2.04
2.36
3.02
3.91
1.00
0.91
4.03
3.02
1.04
4.07
1.20
f1 (ppm)

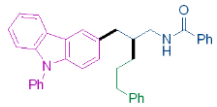

mh-12-24c-01.11.fid
167.34
142.21
140.12
135.90
135.00
131.51
130.43
128.82
128.72
128.58
128.48
126.92
126.24
126.21
125.95
77.16 CDCl3
49.96
36.01
35.80
34.99
29.92
27.90
19.44
Ph
Me
NHBz
5bi
13C NMR (151 MHz, CDCl3)
f1 (ppm)


OMe
NHBz
Ph
4bj
^{1}H NMR (400 MHz, $CDCl_3$)
2.11
1.23
2.30
2.37
4.08
1.16
1.10
1.18
1.00
3.03
2.14
1.94
2.57
1.07
2.48
2.42
f1 (ppm)


OMe
NHBz
Ph
4bj
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)

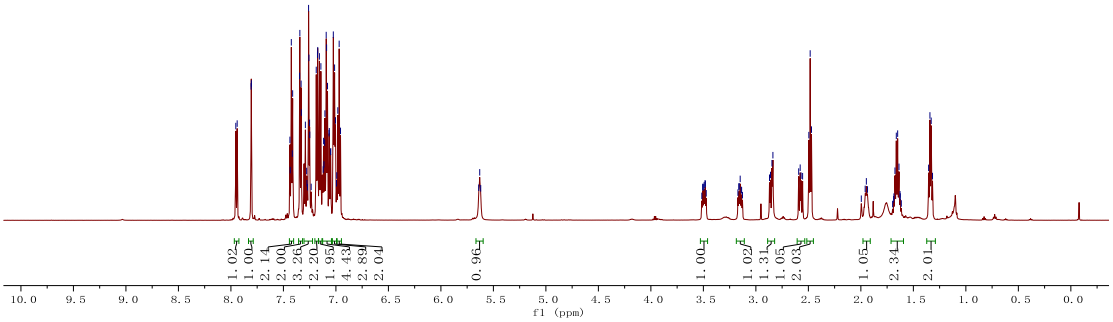

nh-10-103a-1. 10. fid
Ph
OMe
NHBz
5bj
^{1}H NMR (400 MHz, $CDCl_3$)
2.15
1.29
2.36
2.42
5.54
1.08
1.01
1.00
1.00
3.10
1.21
3.28
1.09
4.47
1.32
f1 (ppm)

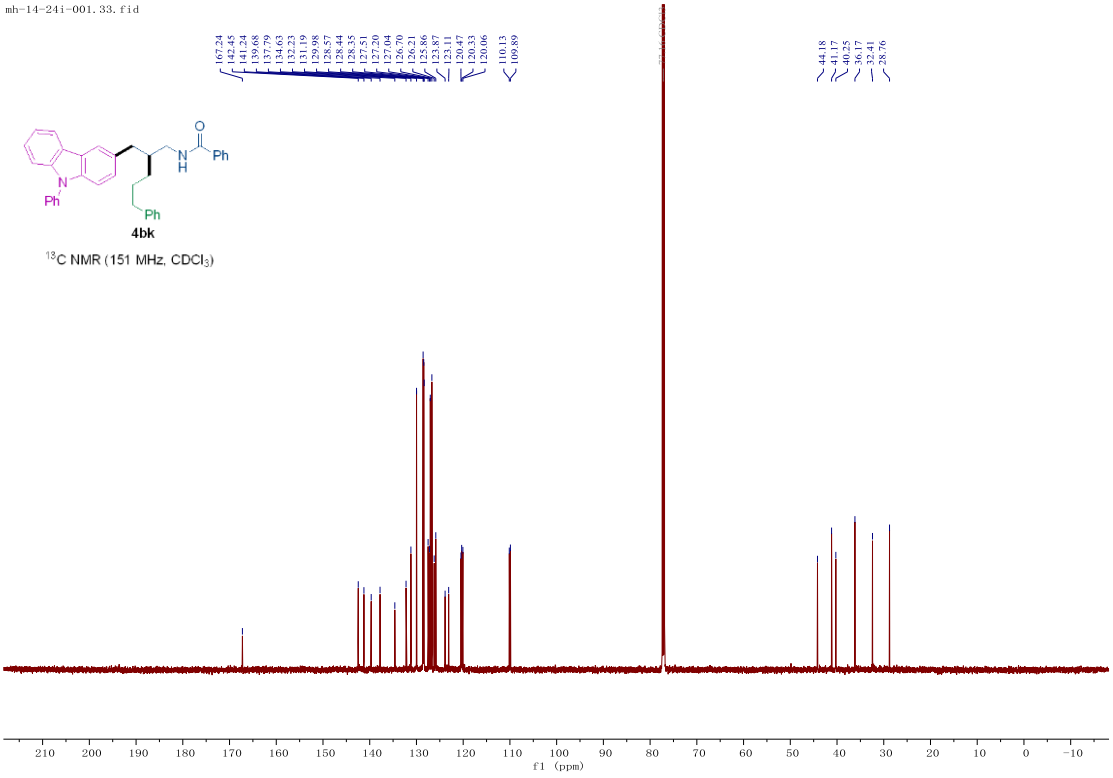

nh-10-103a-1-c1. 1. fid
167.28
157.35
142.39
135.35
131.35
130.38
129.99
128.62
128.56
128.41
127.33
126.94
125.85
120.70
110.45
77.16 CDCl3
55.36
49.92
35.87
35.22
34.89
27.86
26.87
Ph
OMe
NHBz
5bj
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)



4bk

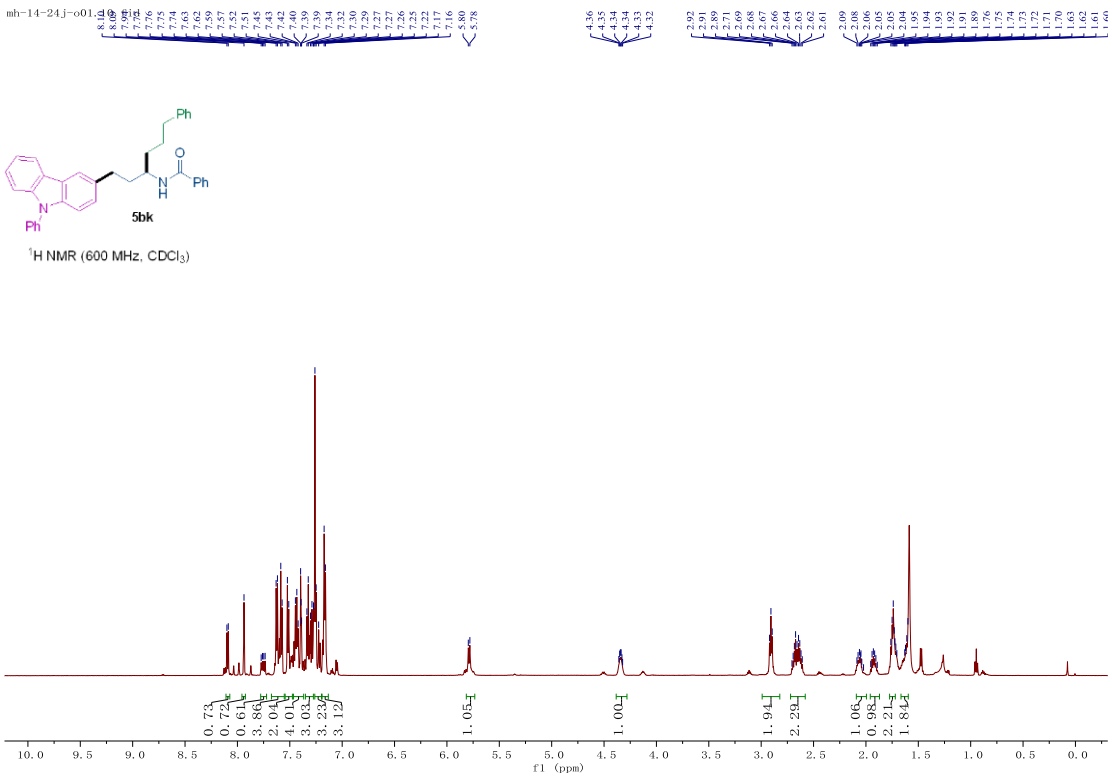
^{1}H NMR (600 MHz, $CDCl_3$)

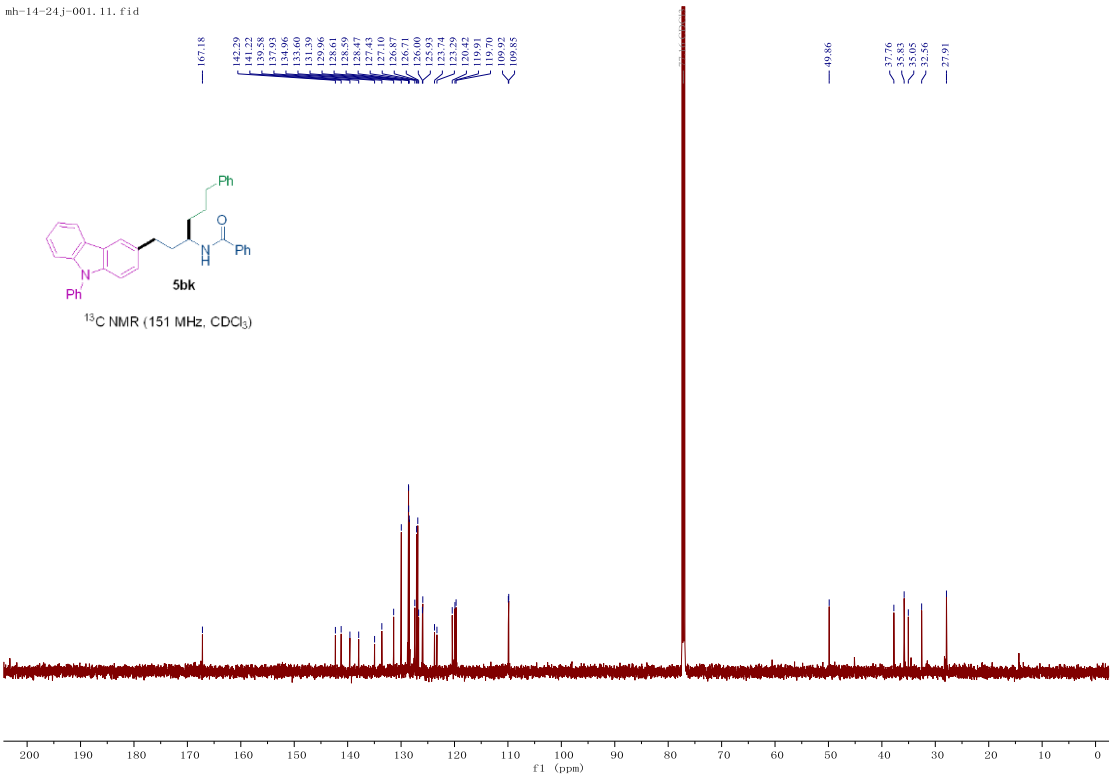


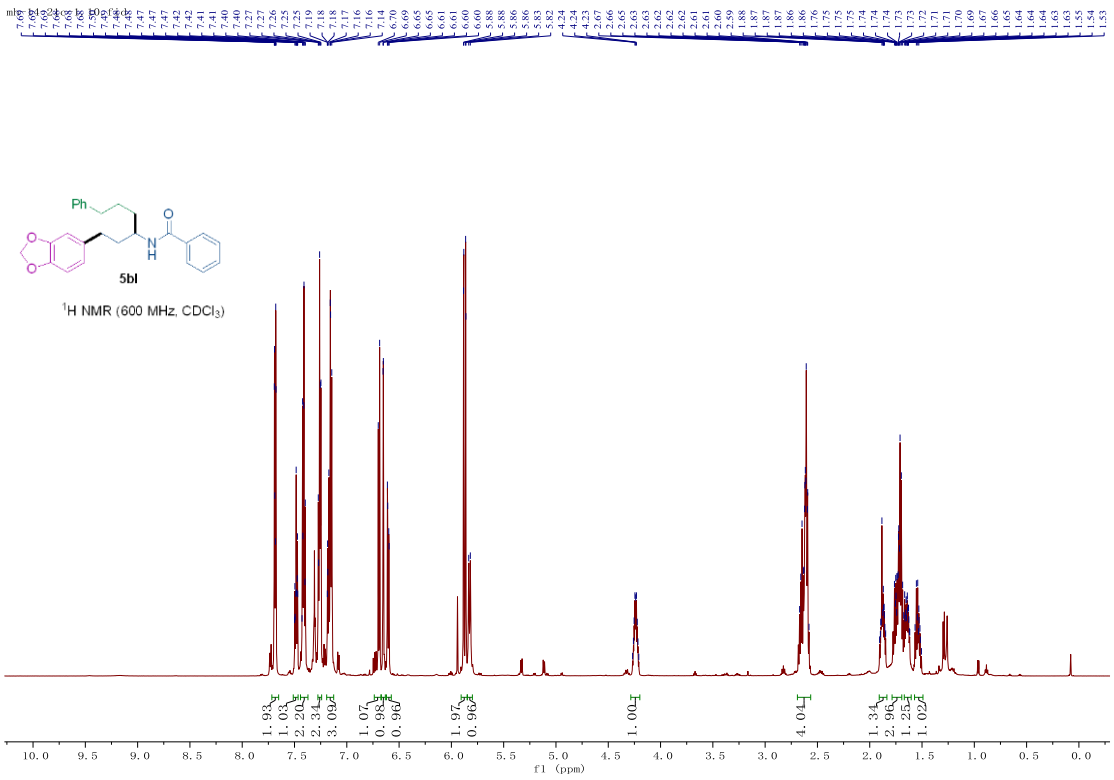


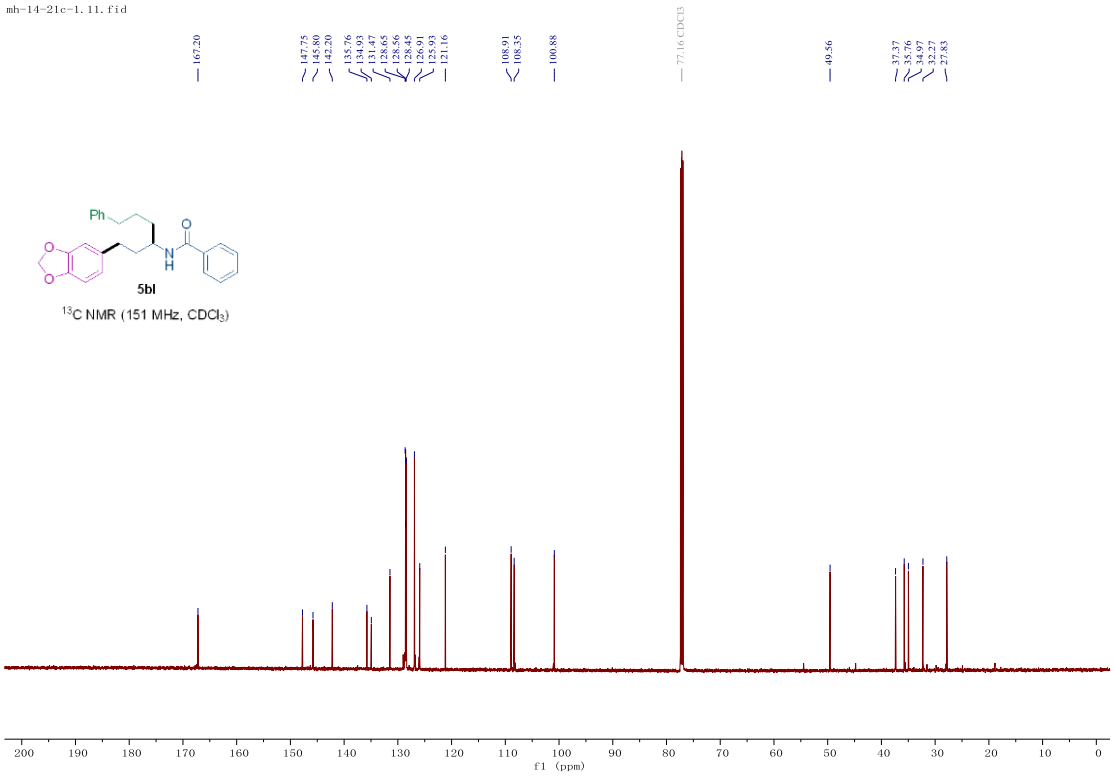
4bk

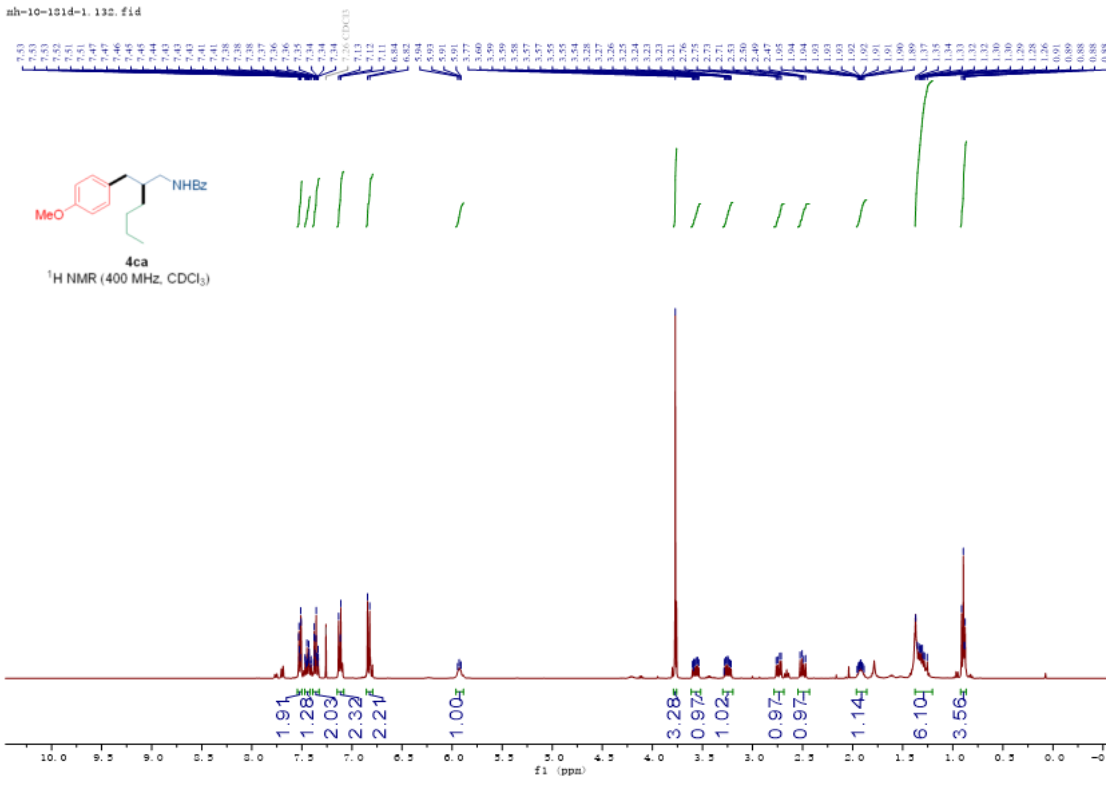
^{13}C NMR (151 MHz, $CDCl_3$)

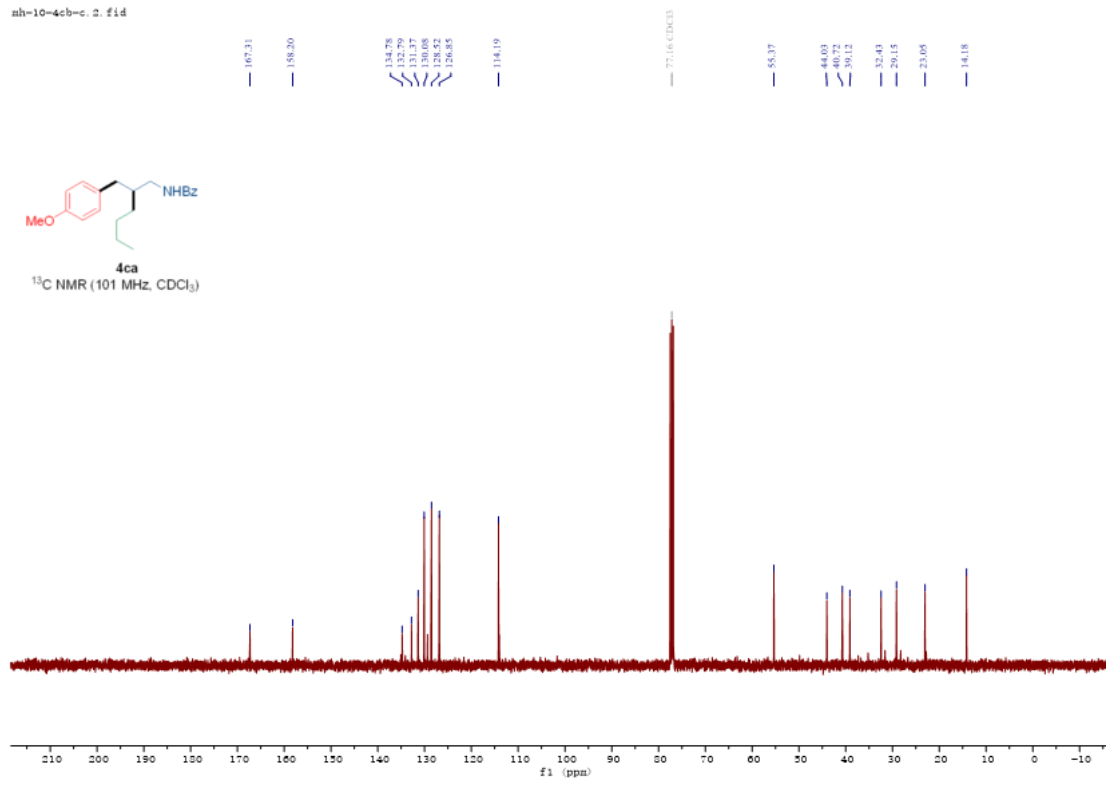

mh-14-24j-o01.1.fid
Ph
O
N
H
Ph
N
Ph
5bk
^{1}H NMR (600 MHz, CDCl$_3$)
0.73
0.72
0.61
3.86
2.04
4.01
3.03
3.23
3.12
1.05
1.00
1.94
2.29
1.06
0.98
2.21
1.84
f1 (ppm)

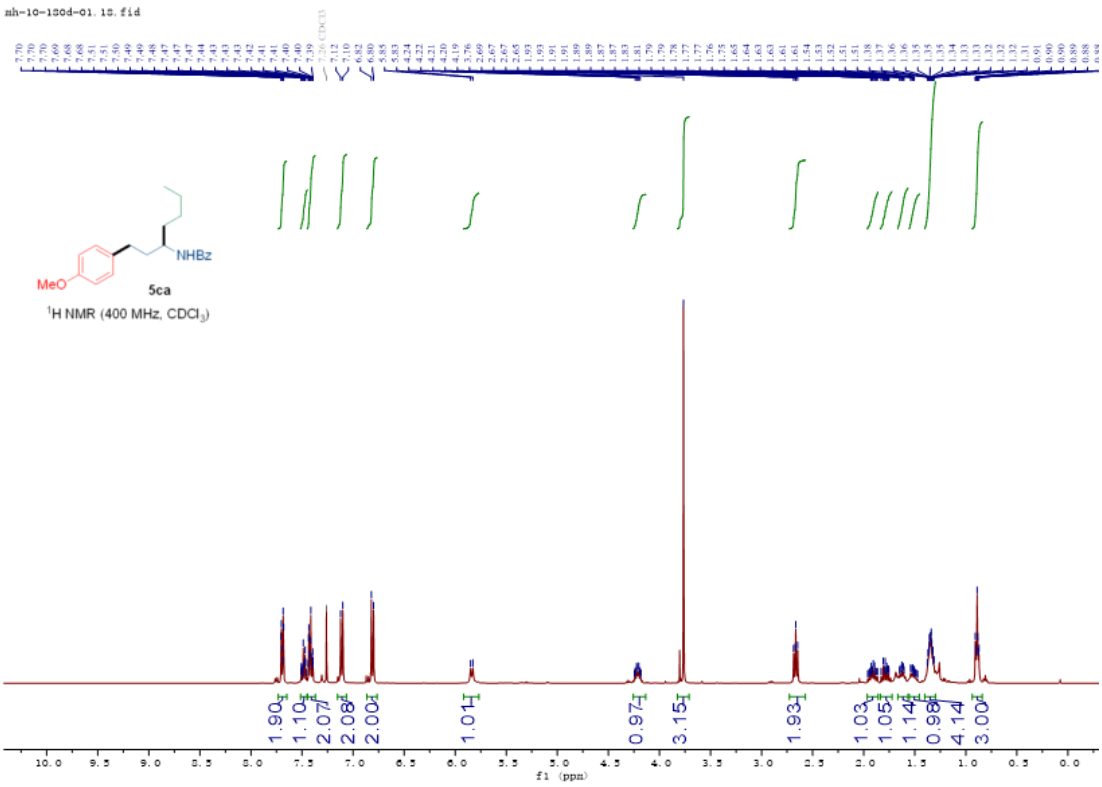

mh-14-24j-001.11.fid
Ph
O
N
H
Ph
N
Ph
5bk
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

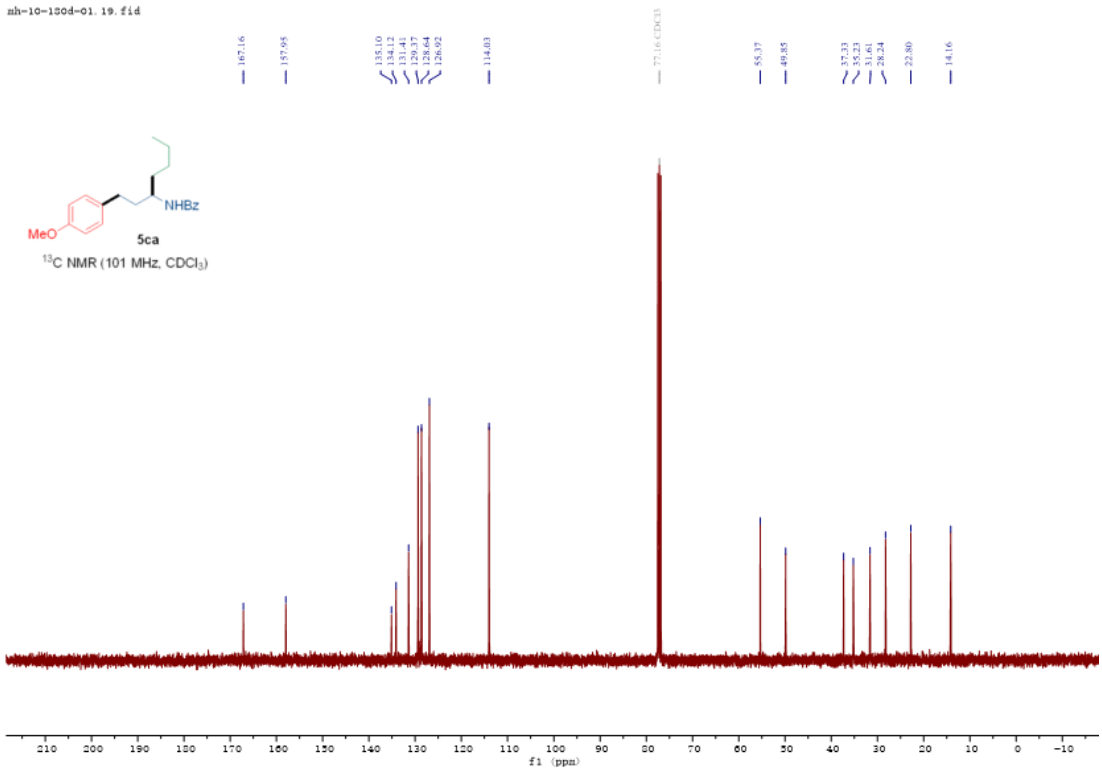

Ph
O
N
H
O
O
5bl
^{1}H NMR (600 MHz, $CDCl_3$)
1.93
1.03
2.20
2.34
3.09
1.07
0.98
0.96
1.97
0.96
1.00
4.04
1.34
2.96
1.25
1.02
f1 (ppm)

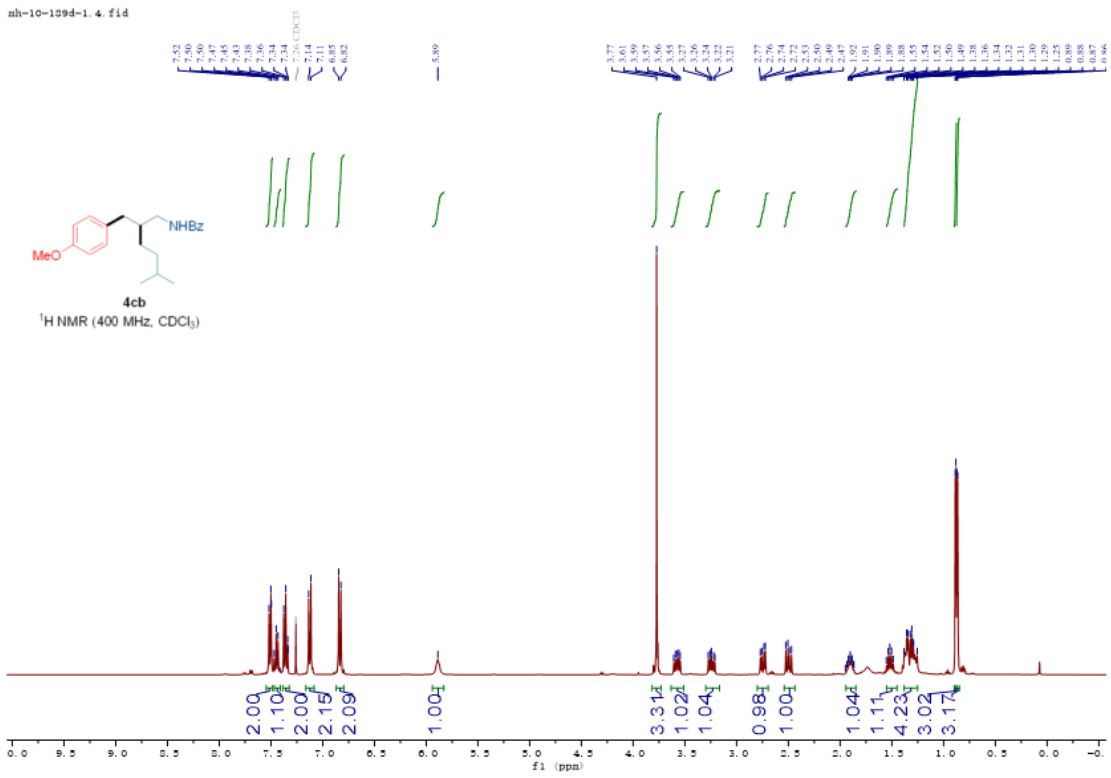

mh-14-21c-1.11.fid
167.20
147.75
145.80
142.20
135.76
134.93
131.47
128.65
128.56
128.45
126.91
125.93
121.16
108.91
108.35
100.88
77.16 CDCl3
49.56
37.37
35.76
34.97
32.27
27.83
Ph
O
N
H
O
O
5bl
^{13}C NMR (151 MHz, $CDCl_3$)
f1 (ppm)

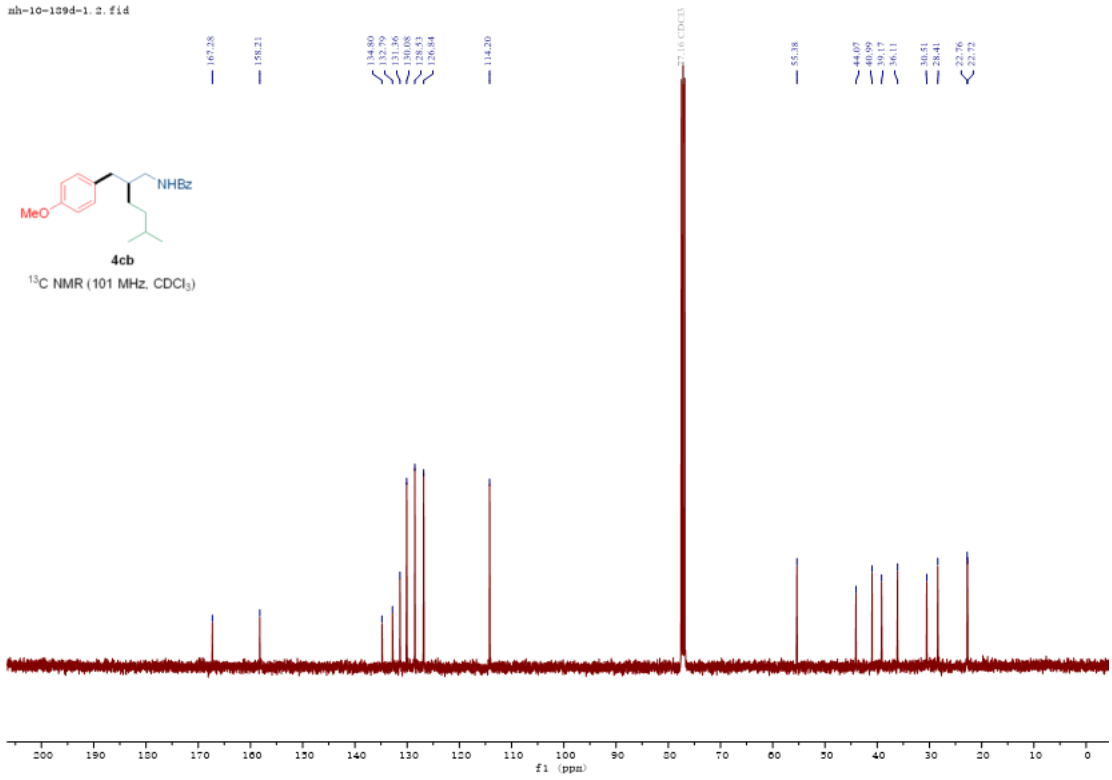

NHBz
MeO
4ca
^{1}H NMR (400 MHz, CDCl$_3$)
1.91
1.28
2.03
2.32
2.21
1.00
3.28
0.97
1.02
0.97
0.97
1.14
6.10
3.56
f1 (ppm)

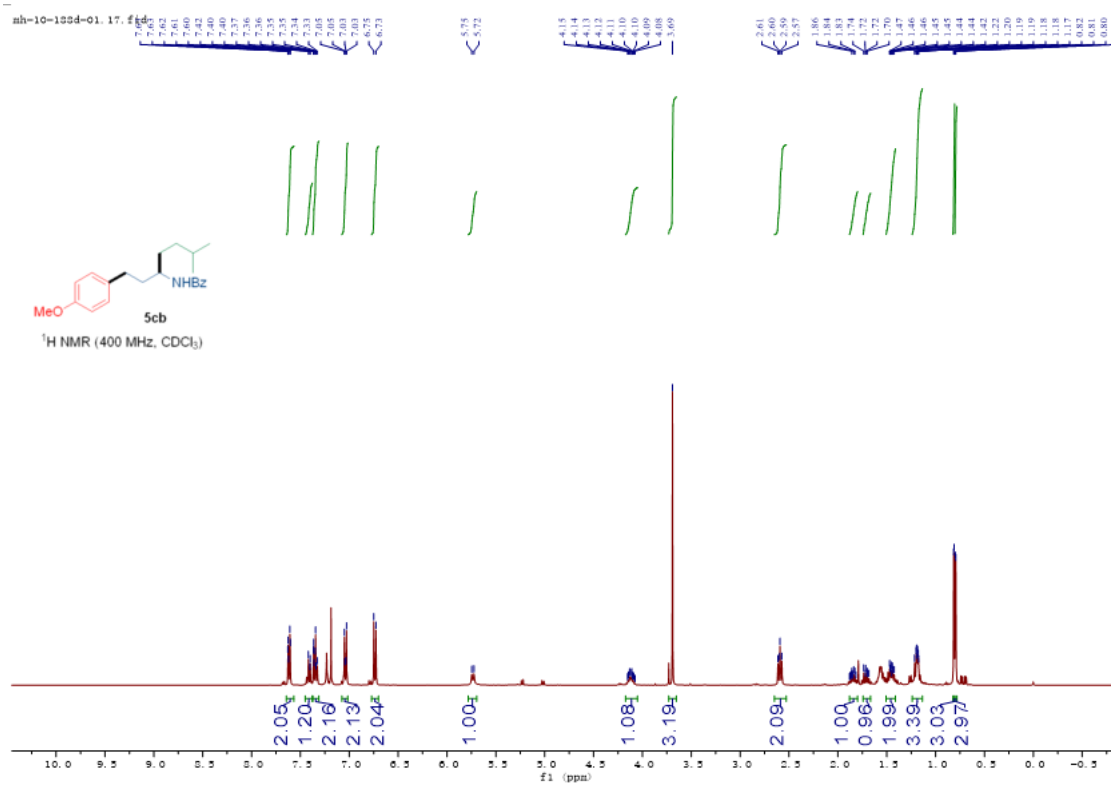

NHBz
MeO
4ca
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

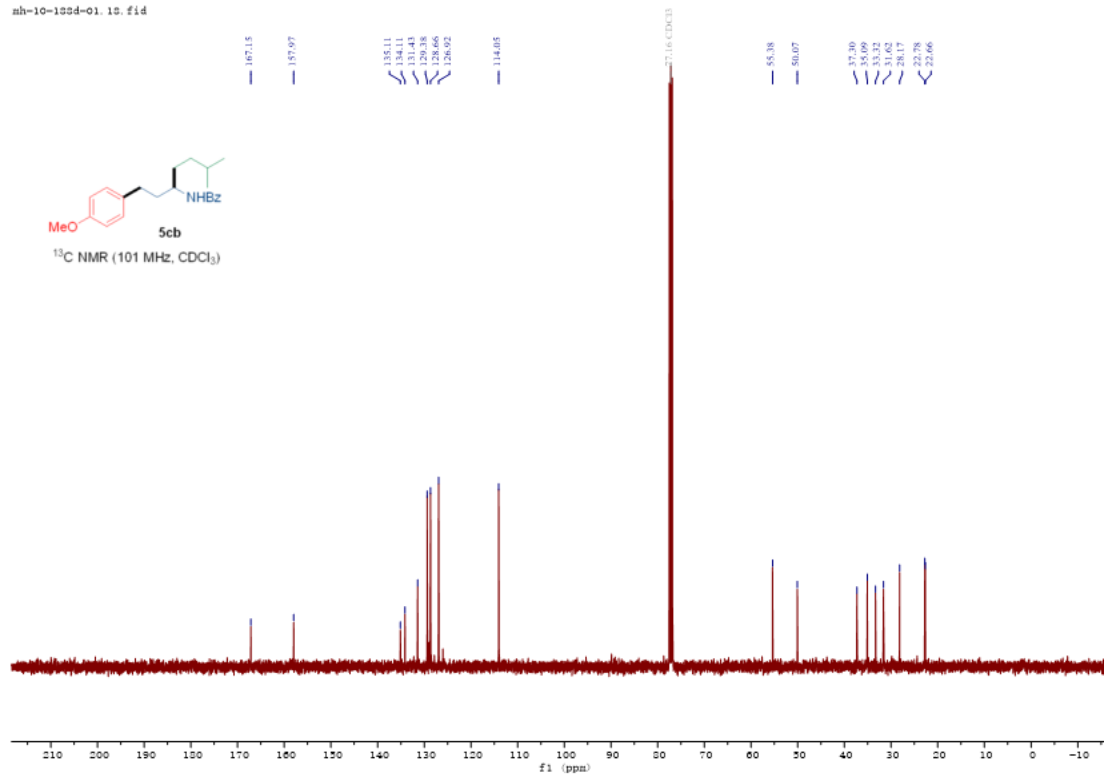

zh-1c-130d-01.12.fid
NHBz
MeO
5ca
^{1}H NMR (400 MHz, CDCl$_3$)
1.90
1.10
2.07
2.08
2.00
1.01
0.97
3.15
1.93
1.03
1.05
1.14
0.98
4.14
3.00
f1 (ppm)

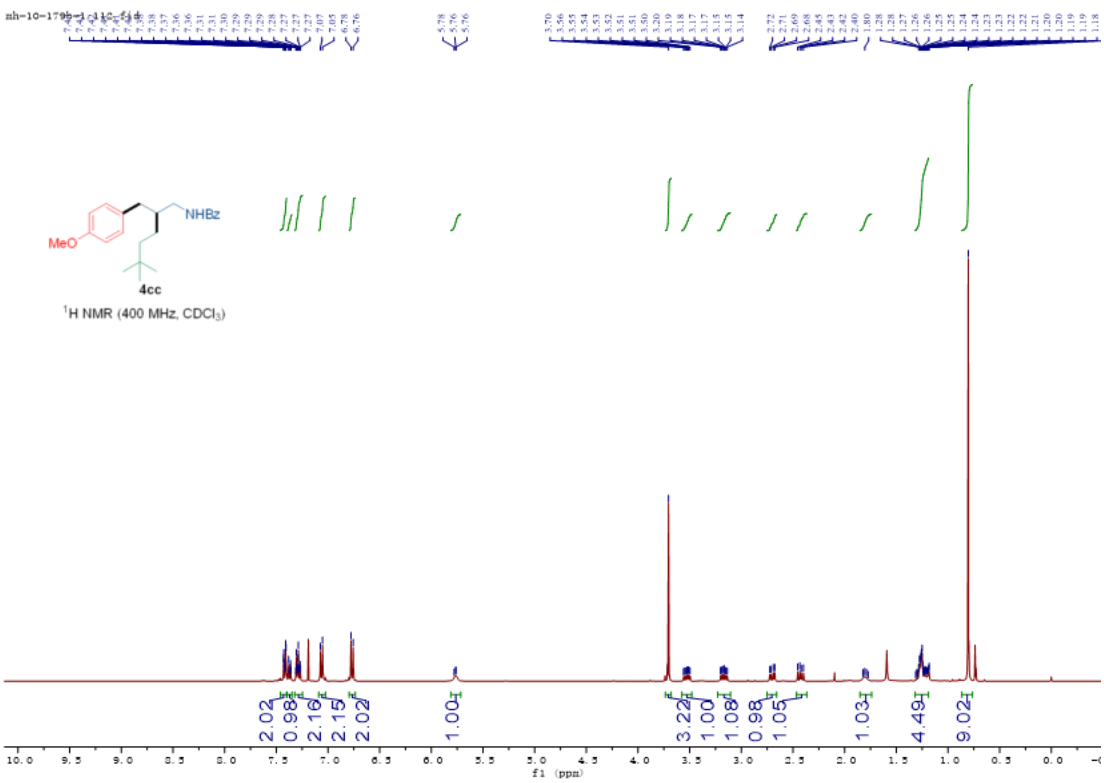

zh-1c-130d-01.19.fid
167.16
157.95
135.10
134.12
131.41
129.37
128.64
126.92
114.03
77.16 CDCl3
55.37
49.85
37.23
37.23
31.61
28.24
22.80
14.16
NHBz
MeO
5ca
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

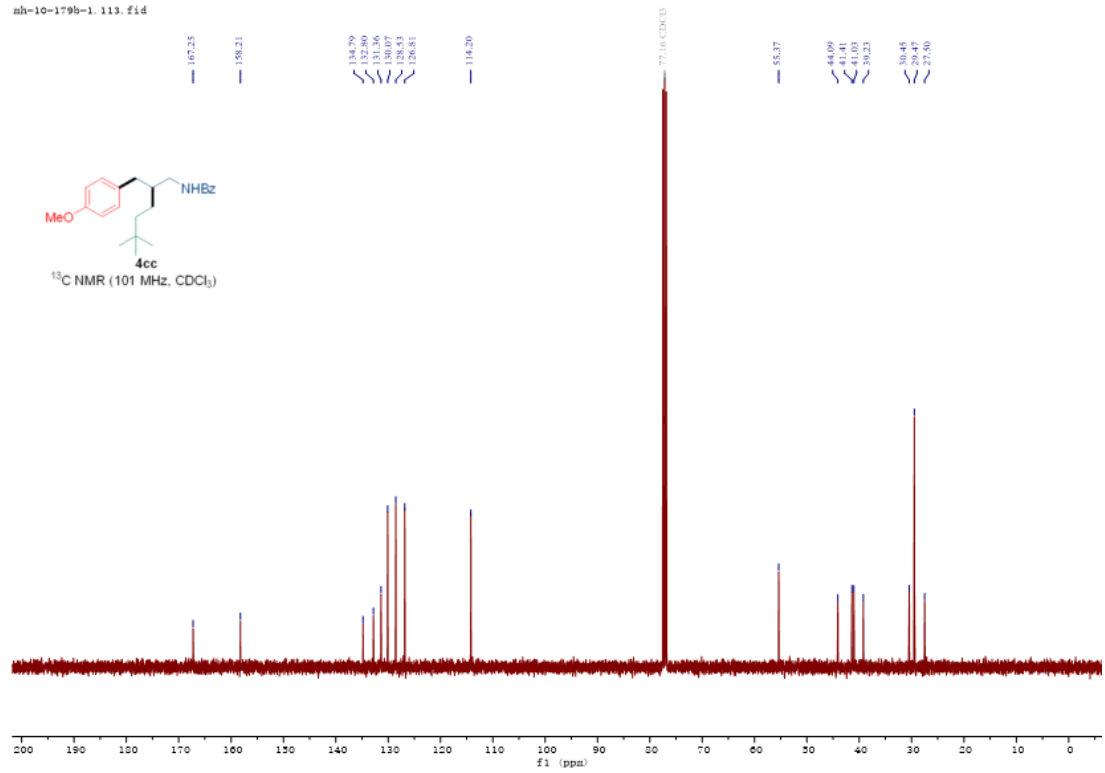

nh-10-139d-1.4.fid
NHBz
MeO
4cb
^{1}H NMR (400 MHz, CDCl$_3$)
2.00
1.10
2.00
2.15
2.09
1.00
3.31
1.02
1.04
0.98
1.00
1.04
1.11
4.23
3.02
3.17
f1 (ppm)

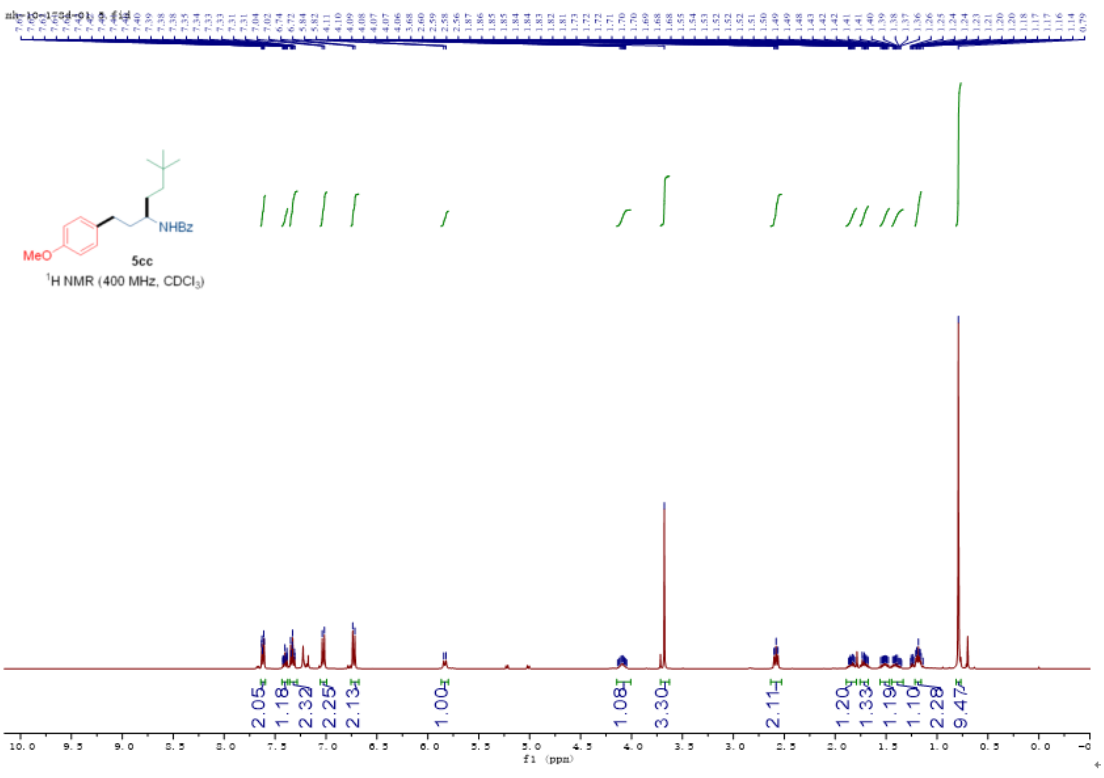

nh-10-139d-1.2.fid
NHBz
MeO
4cb
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

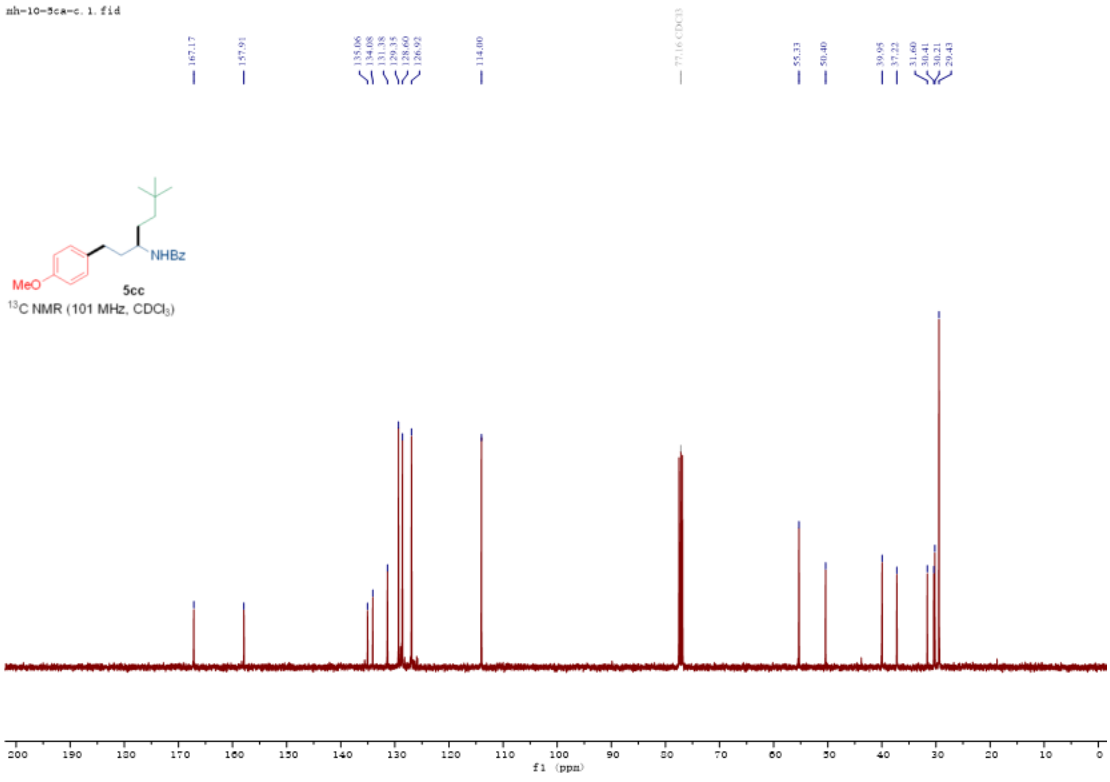

zh-10-133d-01.17.fid
NHBz
MeO
5cb
^{1}H NMR (400 MHz, CDCl$_3$)
2.05
1.20
2.16
2.13
2.04
1.00
1.08
3.19
2.09
1.00
0.96
1.99
3.39
3.03
2.97
f1 (ppm)

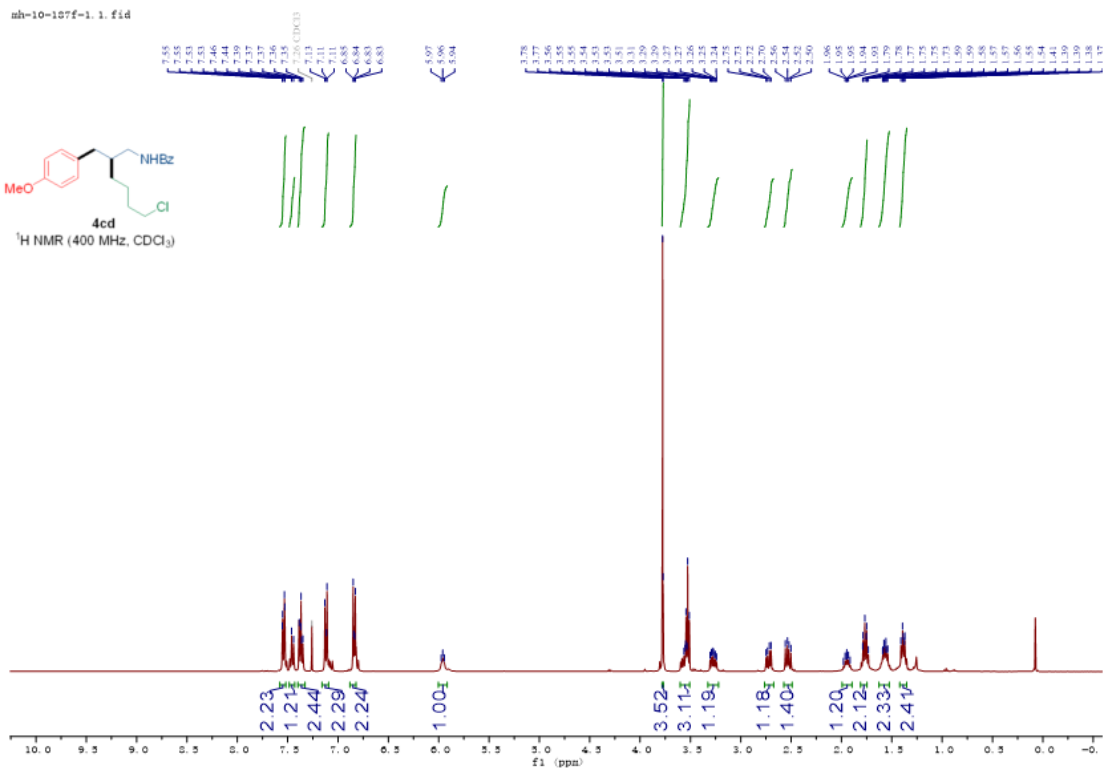

zh-10-133d-01.13.fid
NHBz
MeO
5cb
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

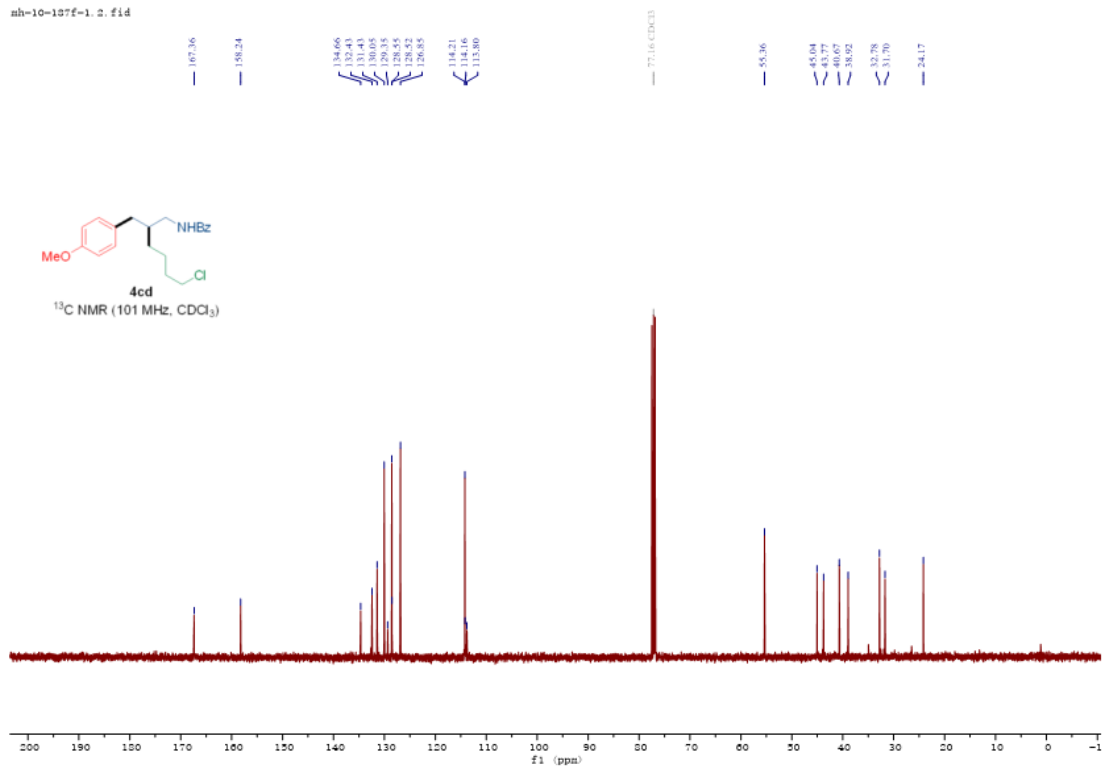

NHBz
MeO
4cc
^{1}H NMR (400 MHz, CDCl$_3$)
2.02
0.98
2.16
2.15
2.02
1.00
3.22
1.00
1.08
0.98
1.05
1.03
4.49
9.02
f1 (ppm)

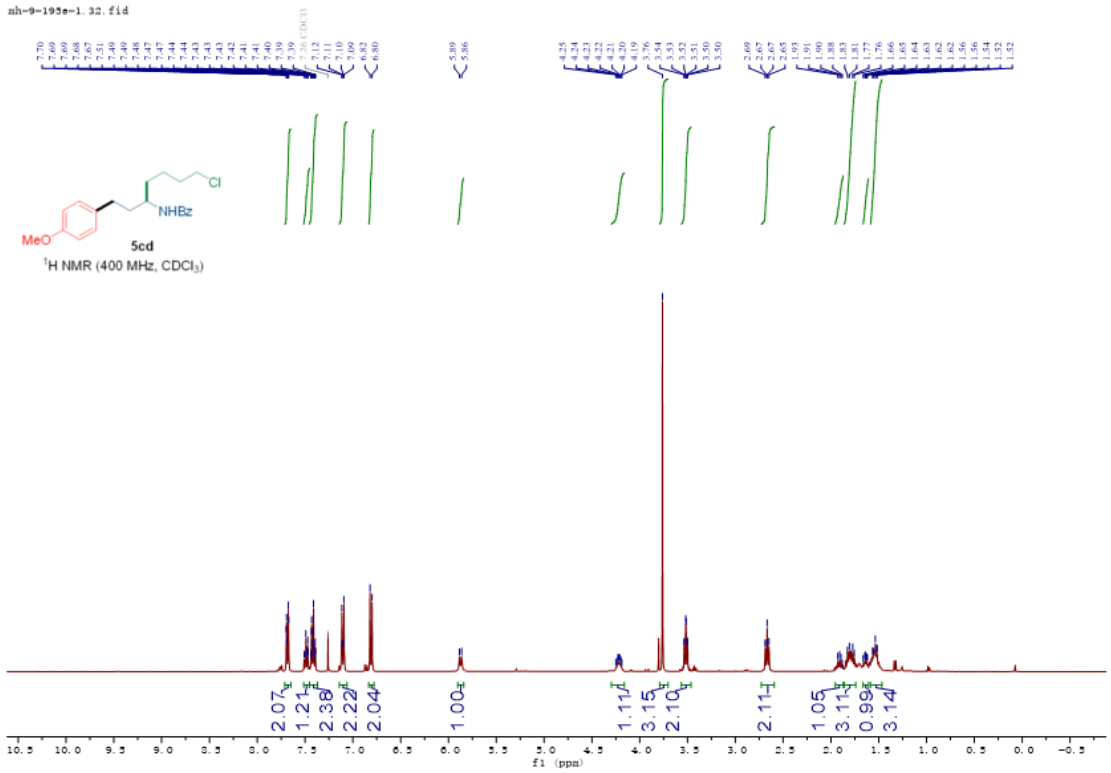

NHBz
MeO
4cc
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

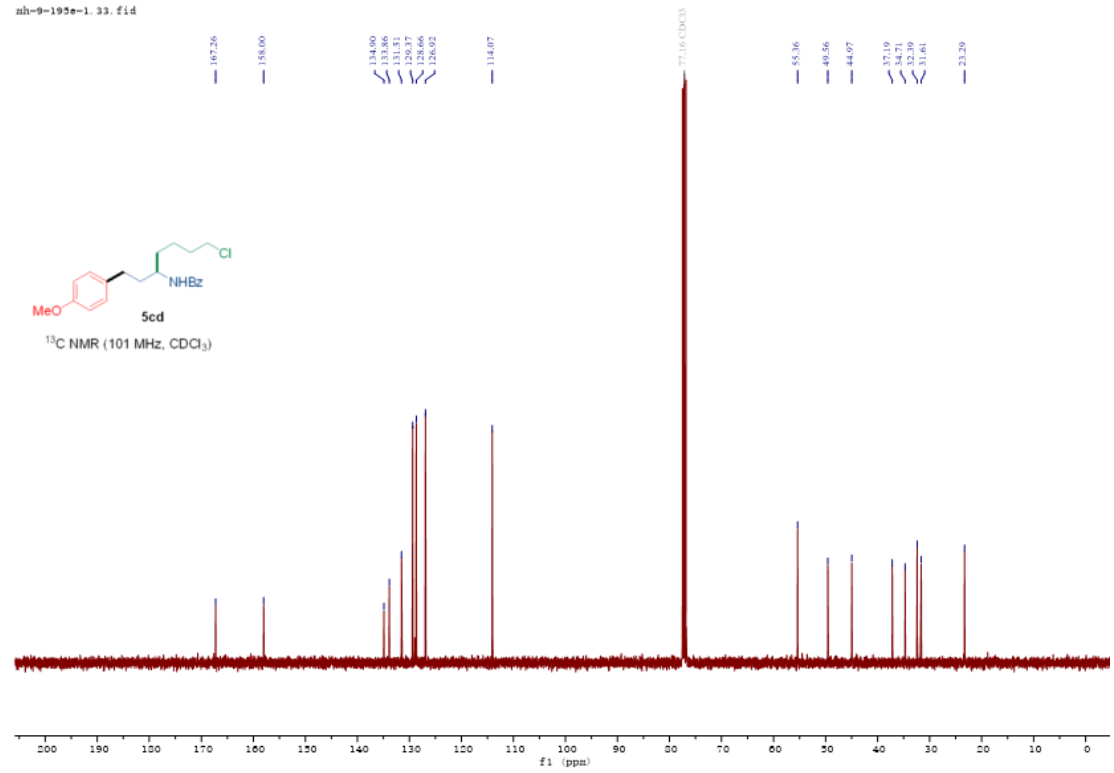

NHBz
MeO
5cc
^{1}H NMR (400 MHz, CDCl$_3$)
2.05
1.18
2.32
2.25
2.13
1.00
1.08
3.30
2.11
1.20
1.33
1.19
1.10
2.28
9.47
f1 (ppm)

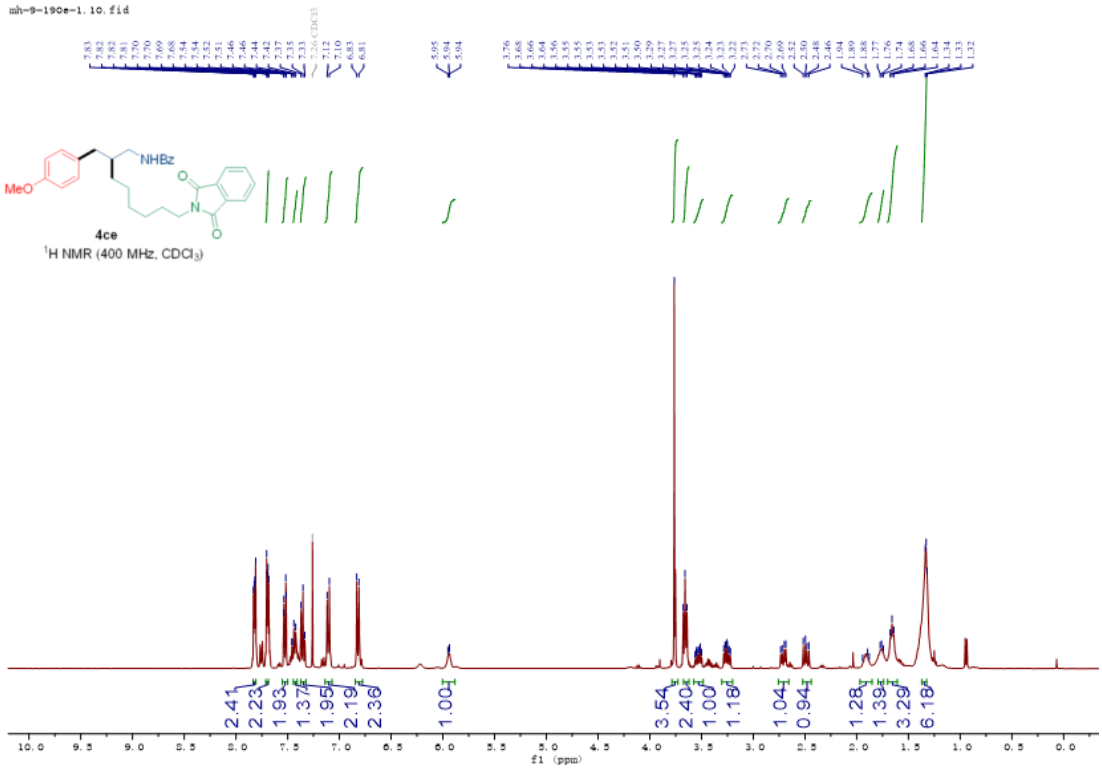

NHBz
MeO
5cc
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

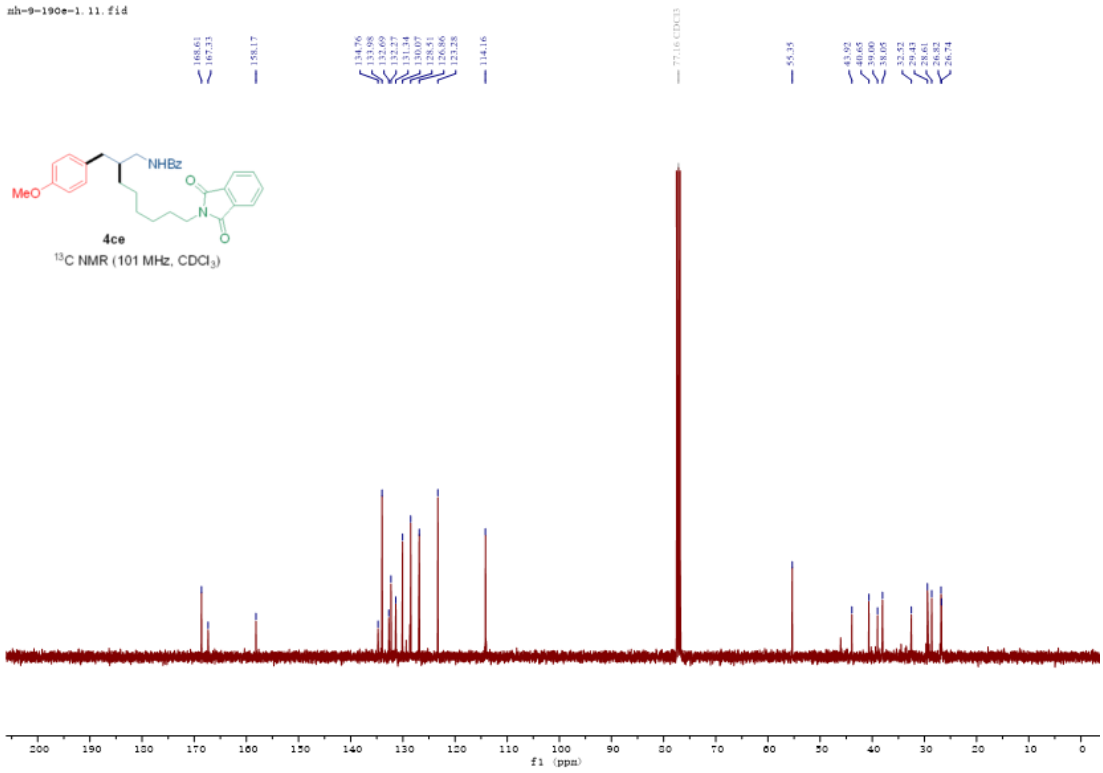

mh-10-137f-1. 1. fid
MeO
NHBz
Cl
4cd
^{1}H NMR (400 MHz, $CDCl_3$)
2.23
1.21
2.44
2.29
2.24
1.00
3.52
3.11
1.19
1.18
1.40
1.20
2.12
2.33
2.41
f1 (ppm)

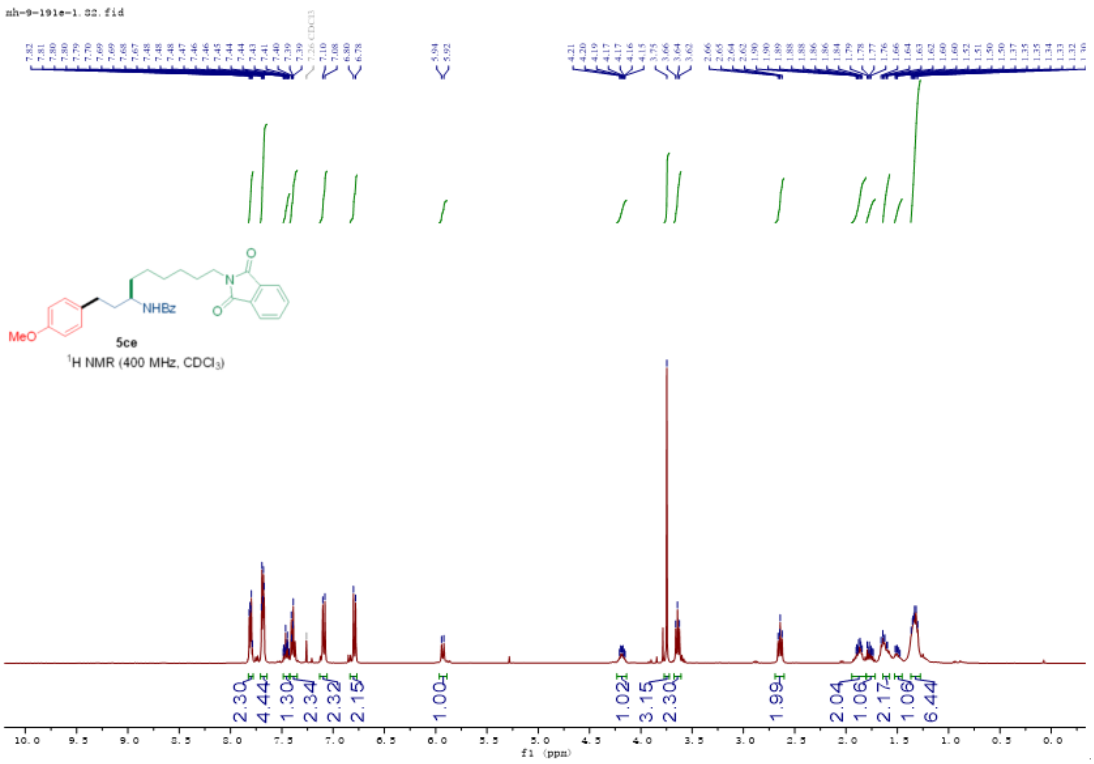

mh-10-137f-1. 2. fid
MeO
NHBz
Cl
4cd
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)

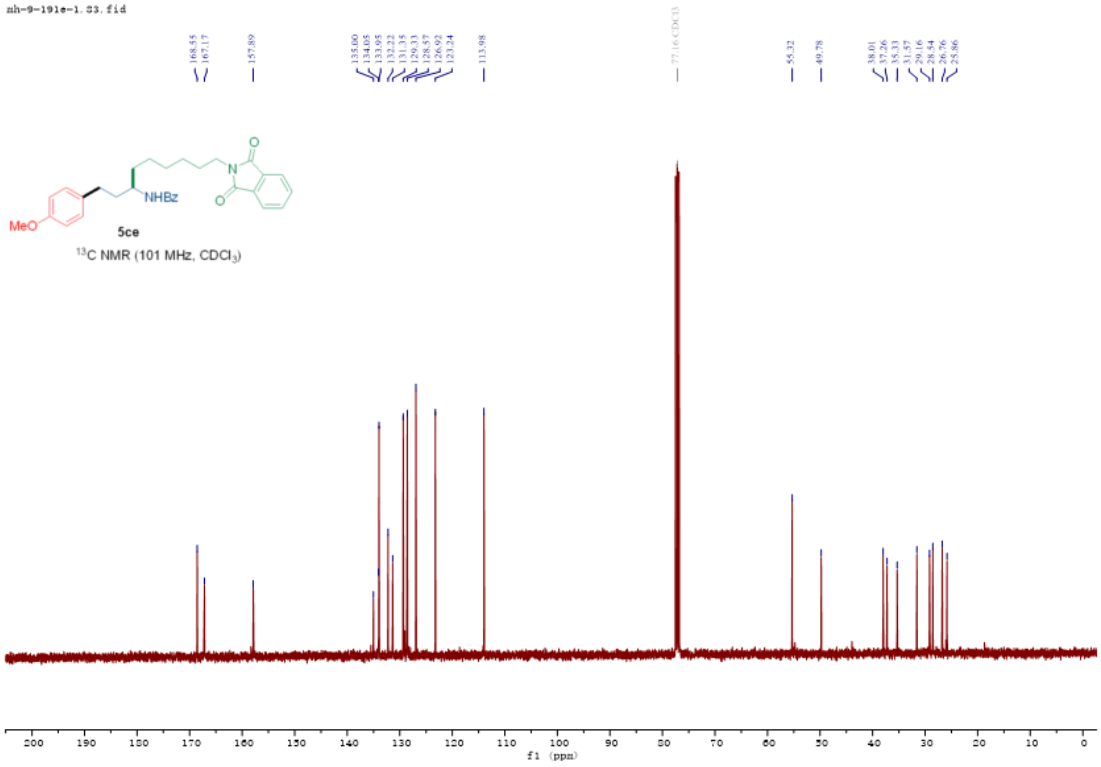

nh-9-195e-1.32.fid
Cl
NHBz
MeO
5cd
^{1}H NMR (400 MHz, $CDCl_3$)
2.07
1.21
2.38
2.22
2.04
1.00
1.11
3.15
2.10
2.11
1.05
3.11
0.99
3.14
f1 (ppm)

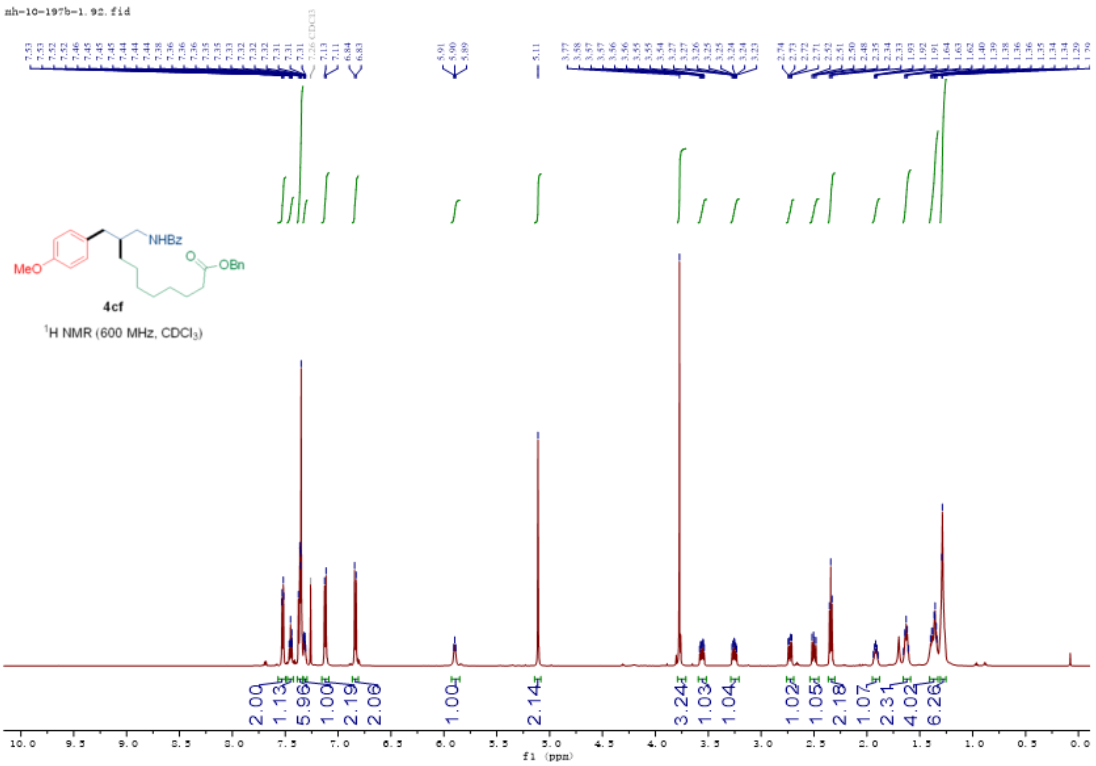

nh-9-195e-1.33.fid
167.26
158.00
134.90
133.86
131.51
129.37
128.66
126.92
114.07
77.16 CDCl3
55.36
49.56
44.97
37.19
34.71
32.39
31.61
23.29
Cl
NHBz
MeO
5cd
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)

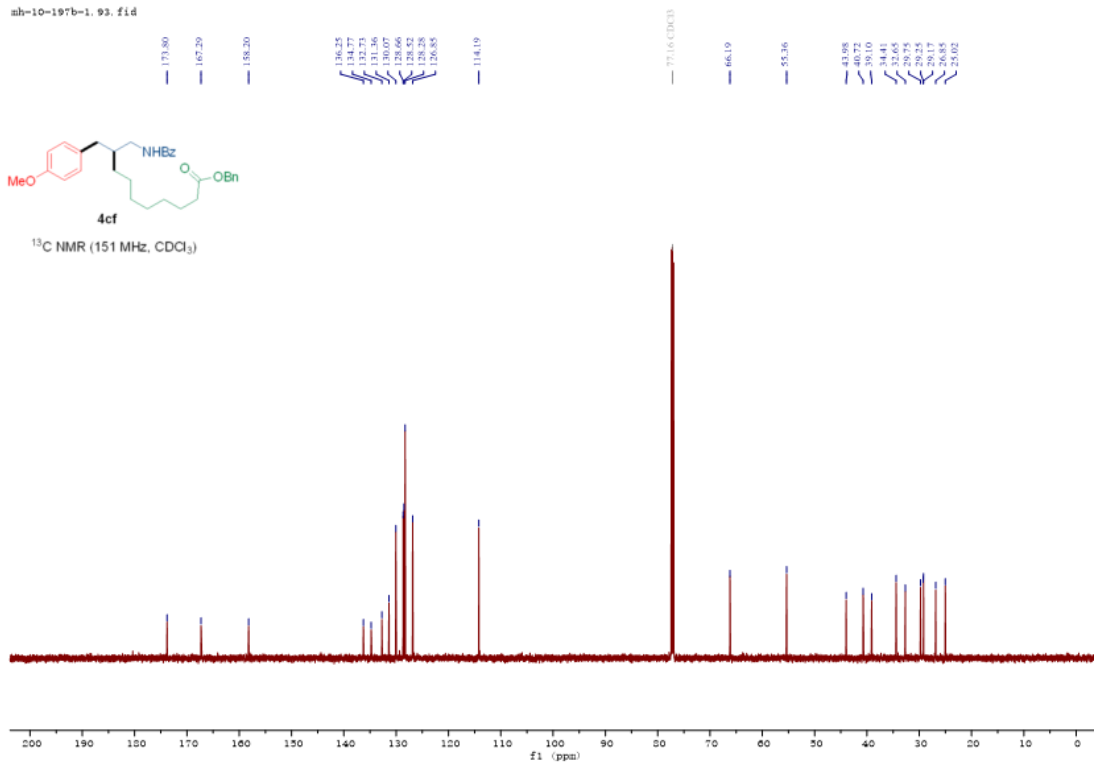

mh-9-190e-1.10.fid
NHBz
MeO
4ce
^{1}H NMR (400 MHz, CDCl$_3$)
2.41
2.23
1.93
1.37
1.95
2.19
2.36
1.00
3.54
2.40
1.00
1.18
1.04
0.94
1.28
1.39
3.29
6.18
f1 (ppm)

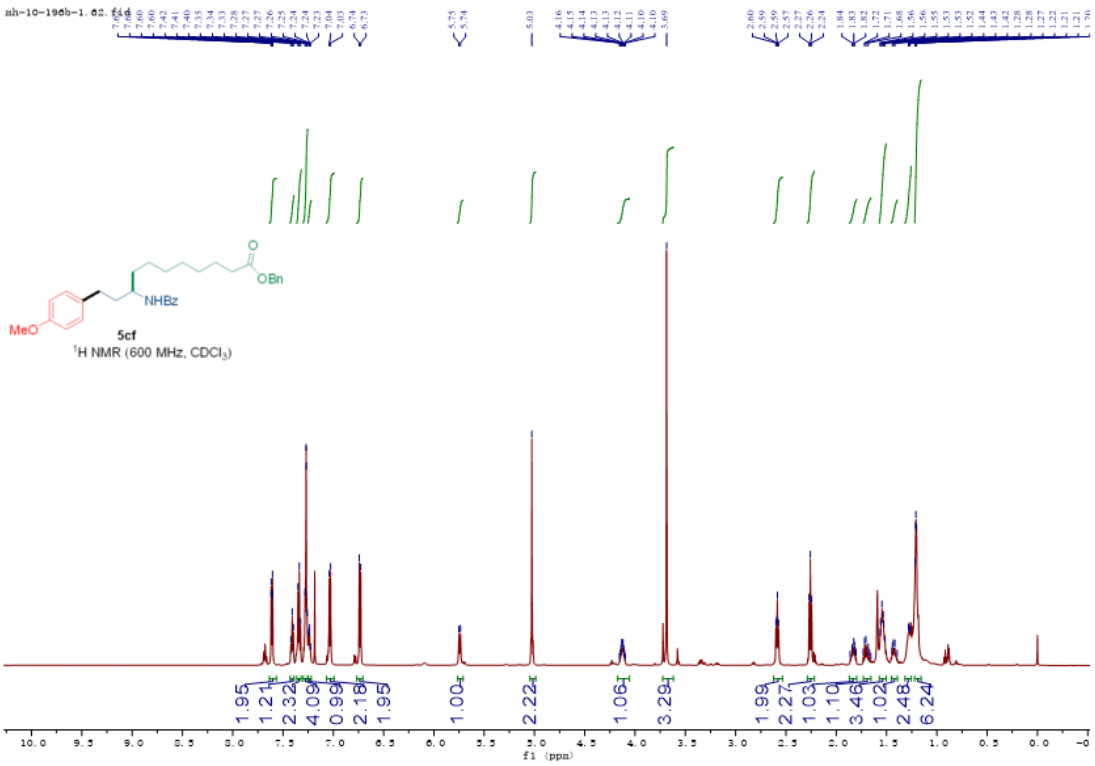

mh-9-190e-1.11.fid
NHBz
MeO
4ce
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

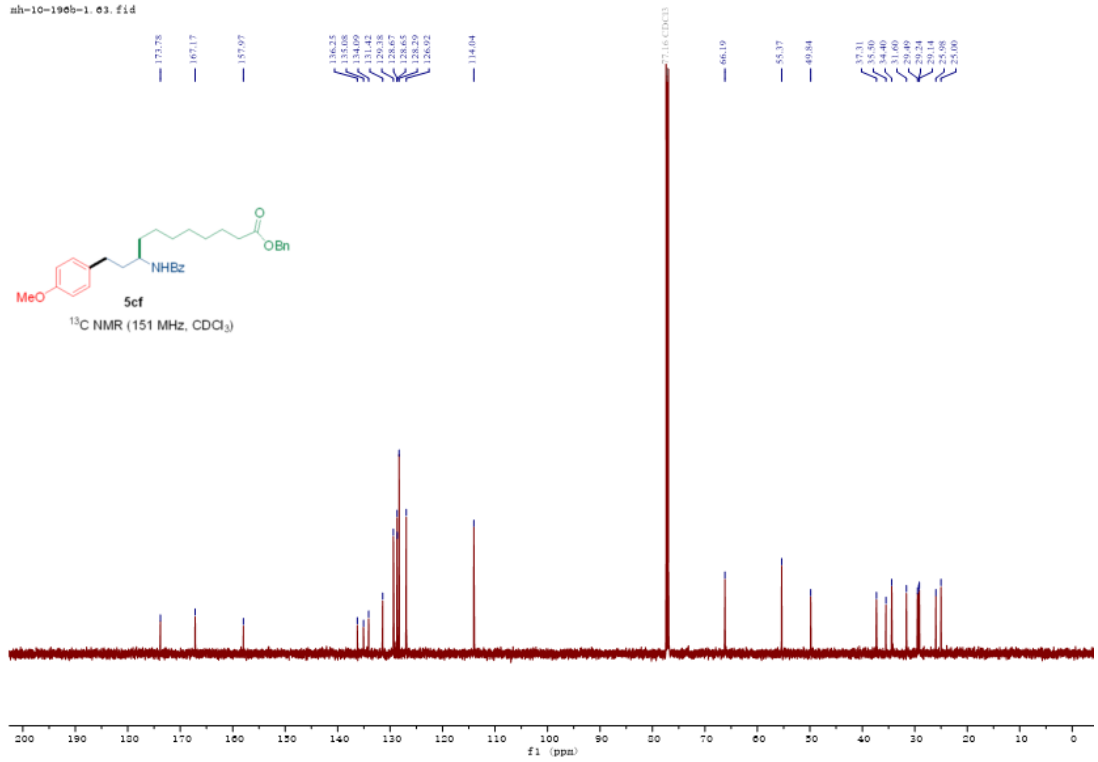

zh-9-191e-1.32.fid
NHBz
MeO
5ce
^{1}H NMR (400 MHz, CDCl$_3$)
f1 (ppm)

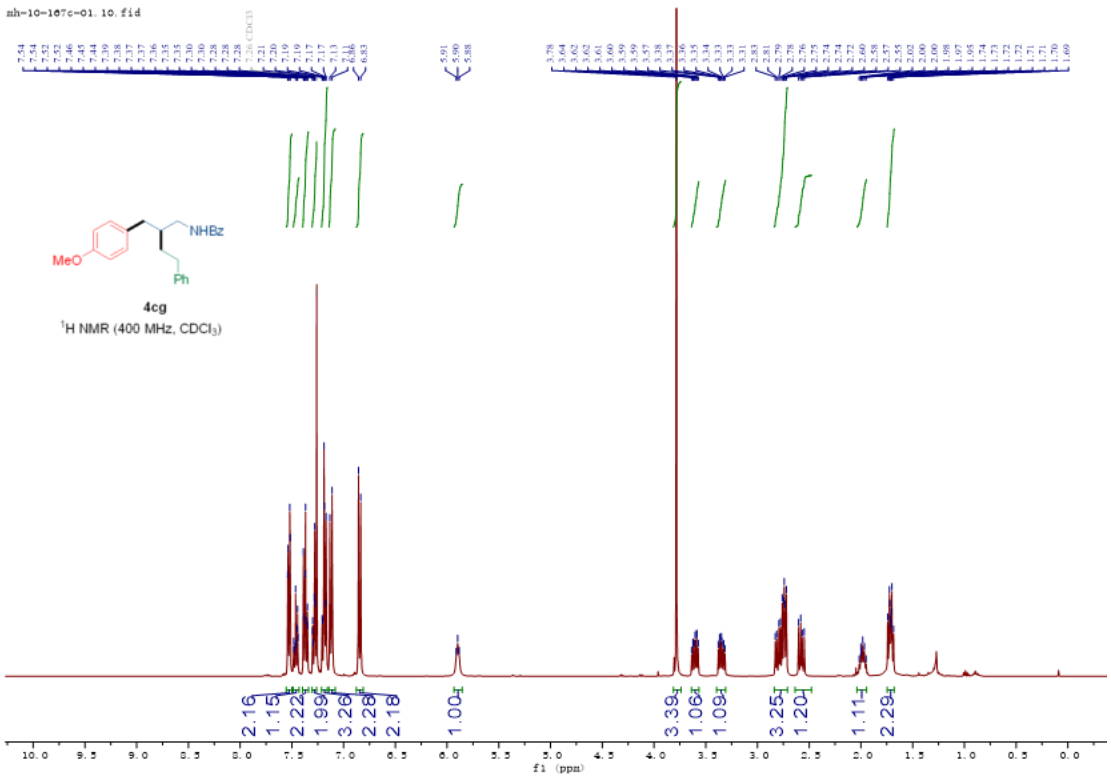

zh-9-191e-1.33.fid
NHBz
MeO
5ce
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

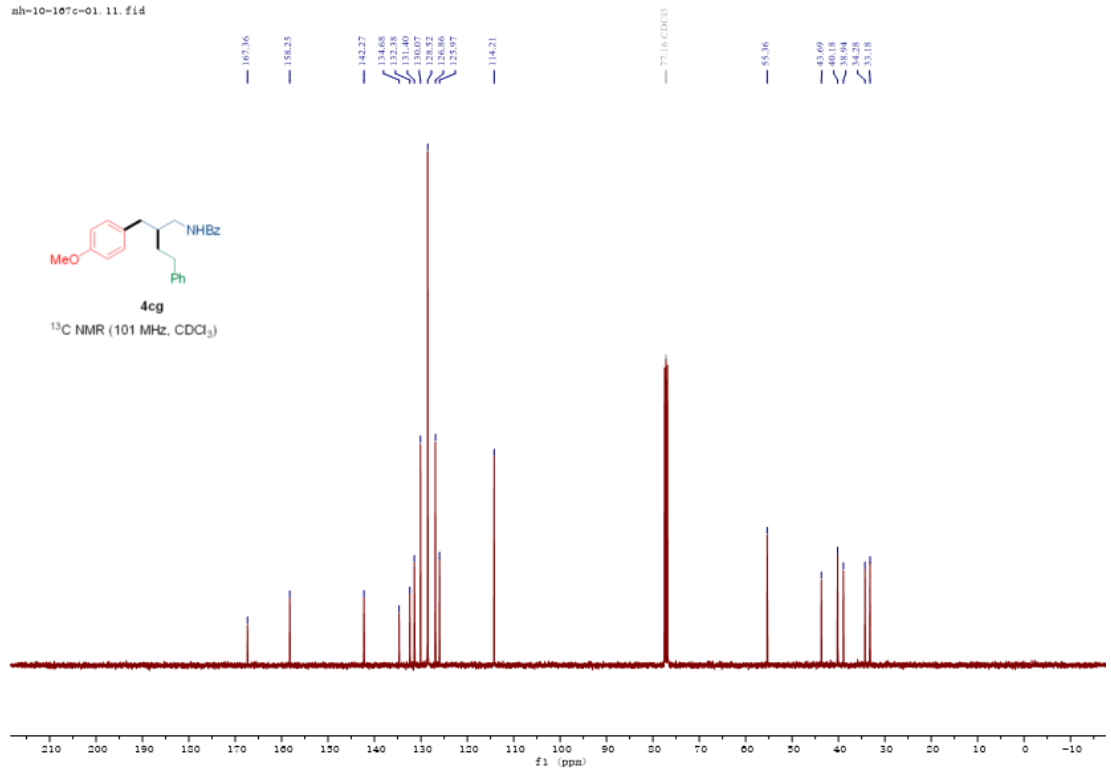

zh-10-197b-1.92.fid
NHBz
MeO
OBn
4cf
^{1}H NMR (600 MHz, CDCl$_3$)
2.00
1.13
5.96
1.00
2.19
2.06
1.00
2.14
3.24
1.03
1.04
1.02
1.05
2.18
1.07
2.31
4.02
6.26
f1 (ppm)

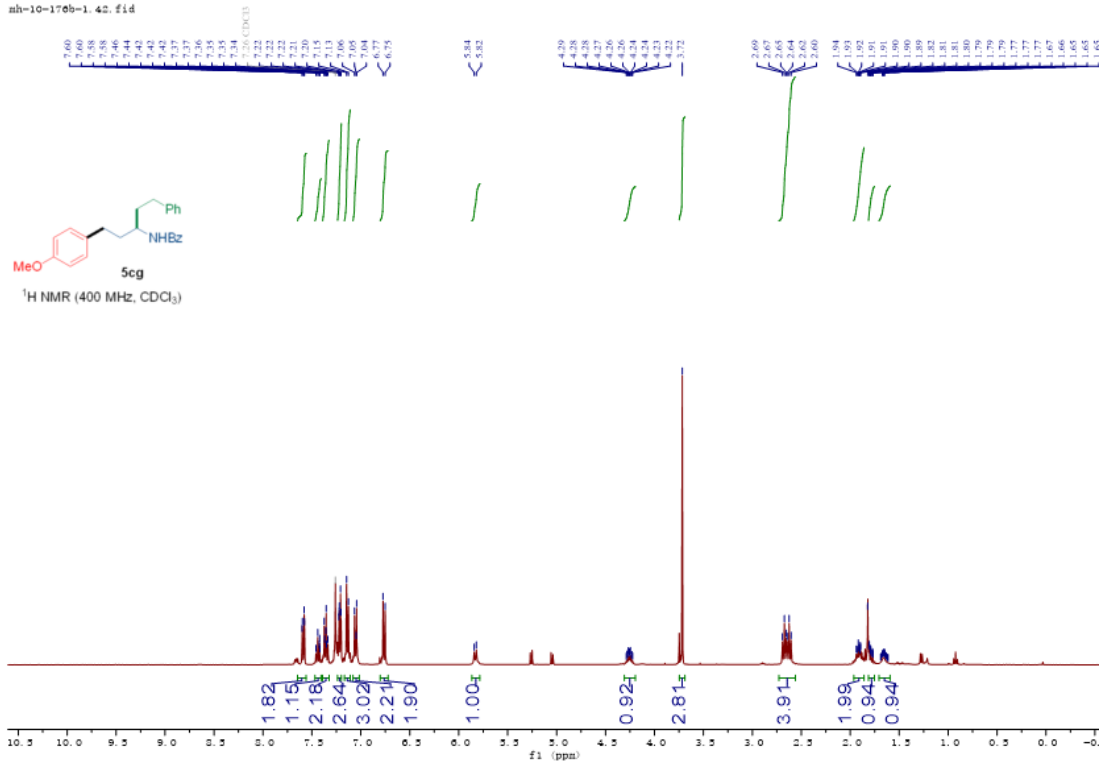

zh-10-197b-1.93.fid
NHBz
MeO
OBn
4cf
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

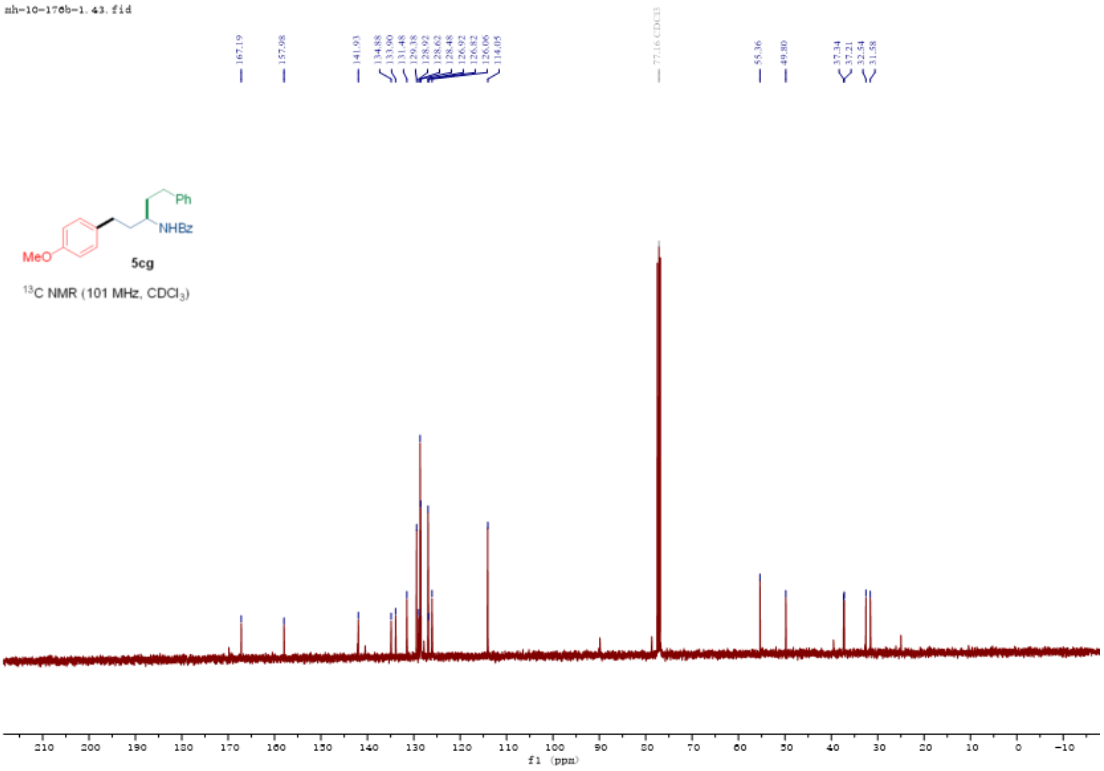

zh-10-196b-1.62.fid
OBn
NHBz
MeO
5cf
^{1}H NMR (600 MHz, CDCl$_3$)
1.95
1.21
2.32
4.09
0.99
2.18
1.95
1.00
2.22
1.06
3.29
1.99
2.27
1.03
1.10
3.46
1.02
2.48
6.24
f1 (ppm)

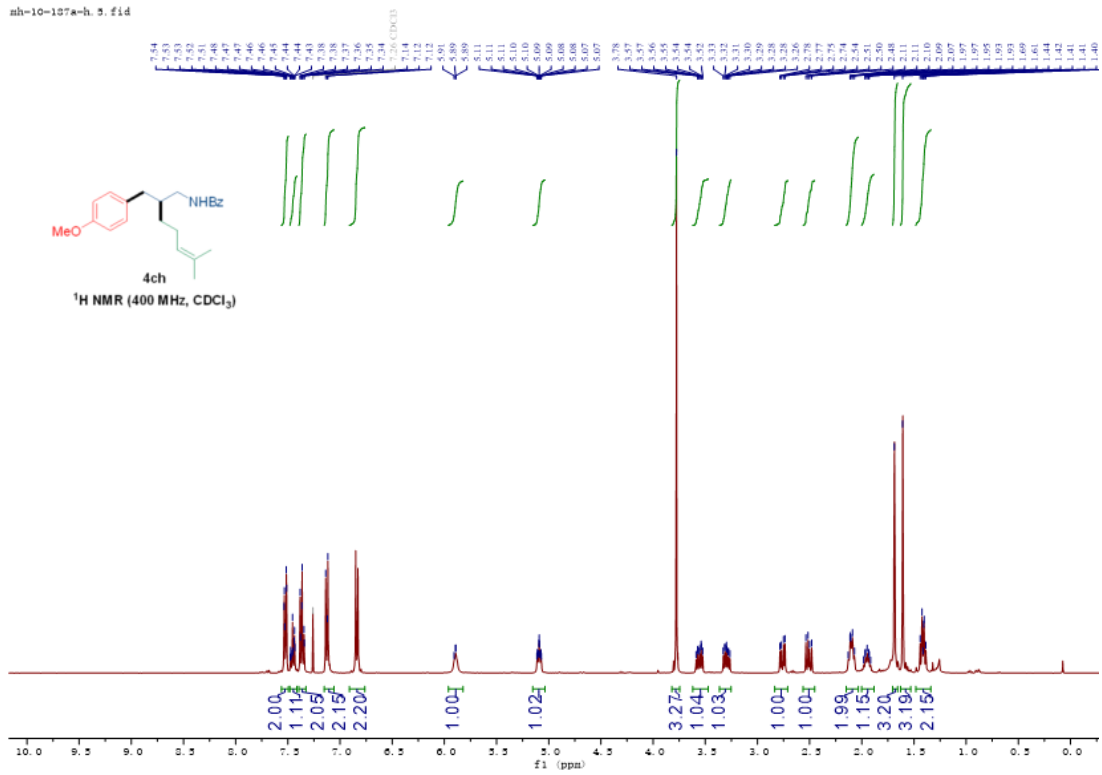

zh-10-196b-1.63.fid
OBn
NHBz
MeO
5cf
^{13}C NMR (151 MHz, CDCl$_3$)
f1 (ppm)

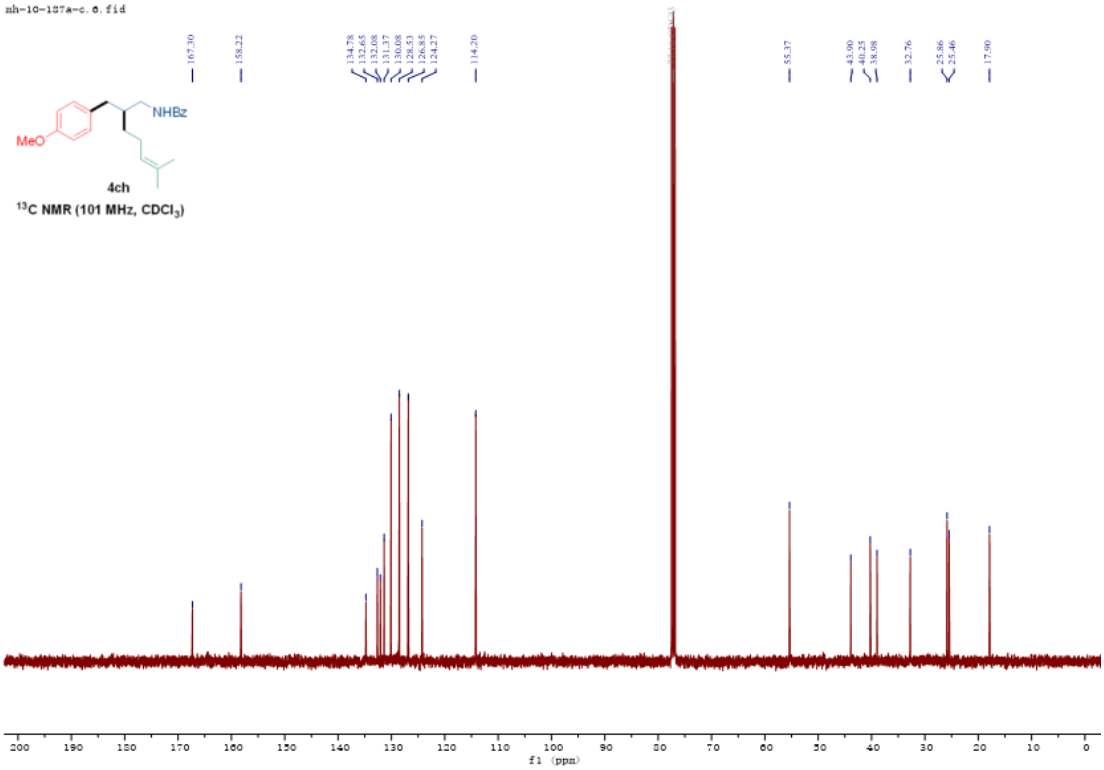

zh-10-167c-01. 10. fid
NHBz
MeO
Ph
4cg
^{1}H NMR (400 MHz, $CDCl_3$)
2.16
1.15
2.22
1.99
3.26
2.28
2.18
1.00
3.39
1.06
1.09
3.25
1.20
1.11
2.29
f1 (ppm)

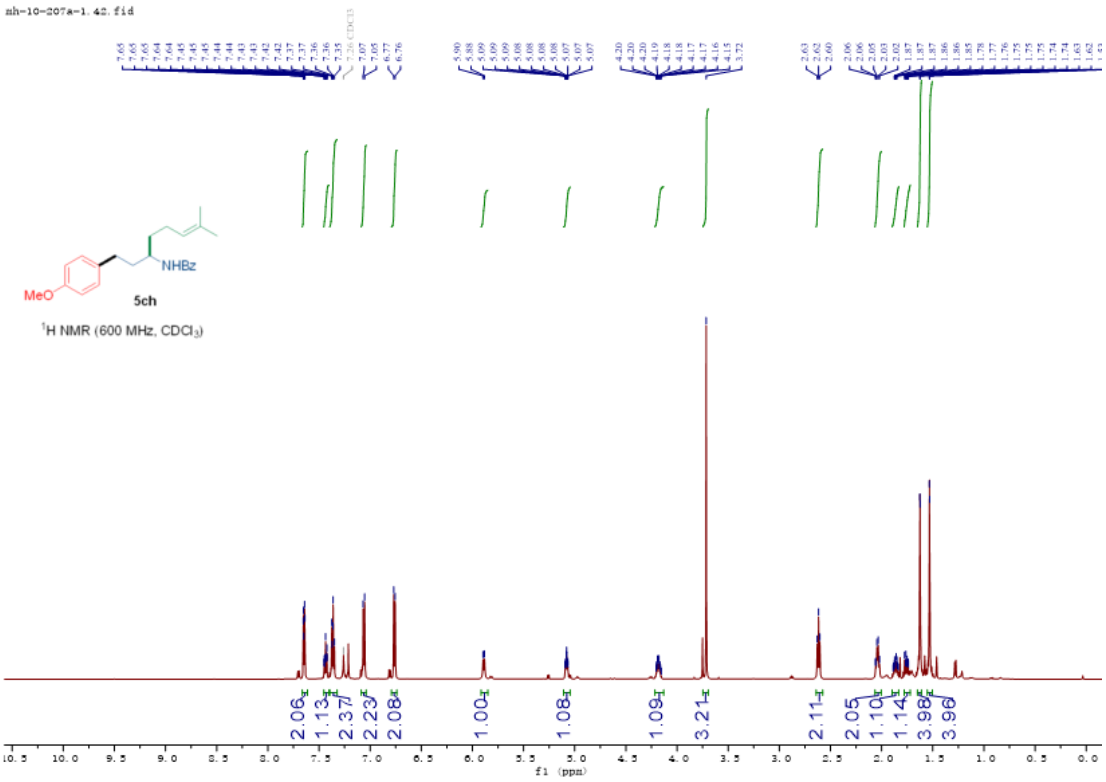

zh-10-167c-01. 11. fid
167.36
158.25
142.27
134.68
132.38
131.40
130.07
128.52
126.86
125.97
114.21
77.16 CDCl3
55.36
43.69
40.18
38.94
34.28
33.18
NHBz
MeO
Ph
4cg
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)

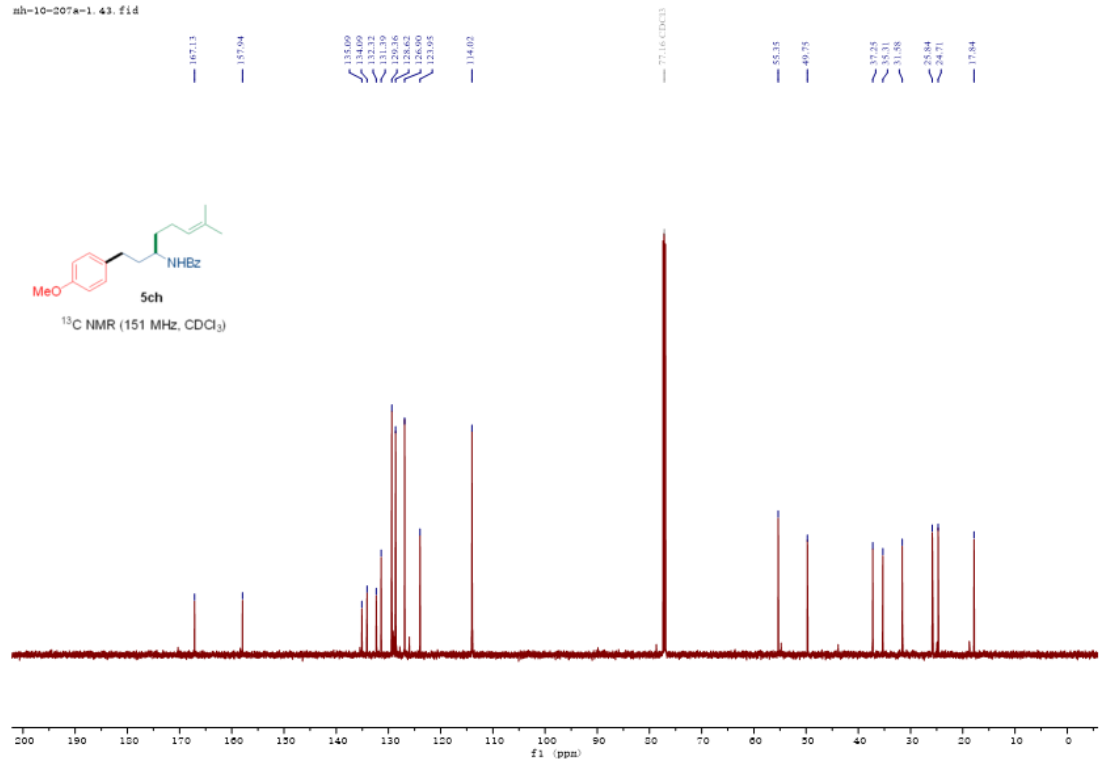

nh-10-176b-1.42.fid
Ph
NHBz
MeO
5cg
^{1}H NMR (400 MHz, CDCl$_3$)
1.82
1.15
2.18
2.64
3.02
2.21
1.90
1.00
0.92
2.81
3.91
1.99
0.94
0.94
f1 (ppm)

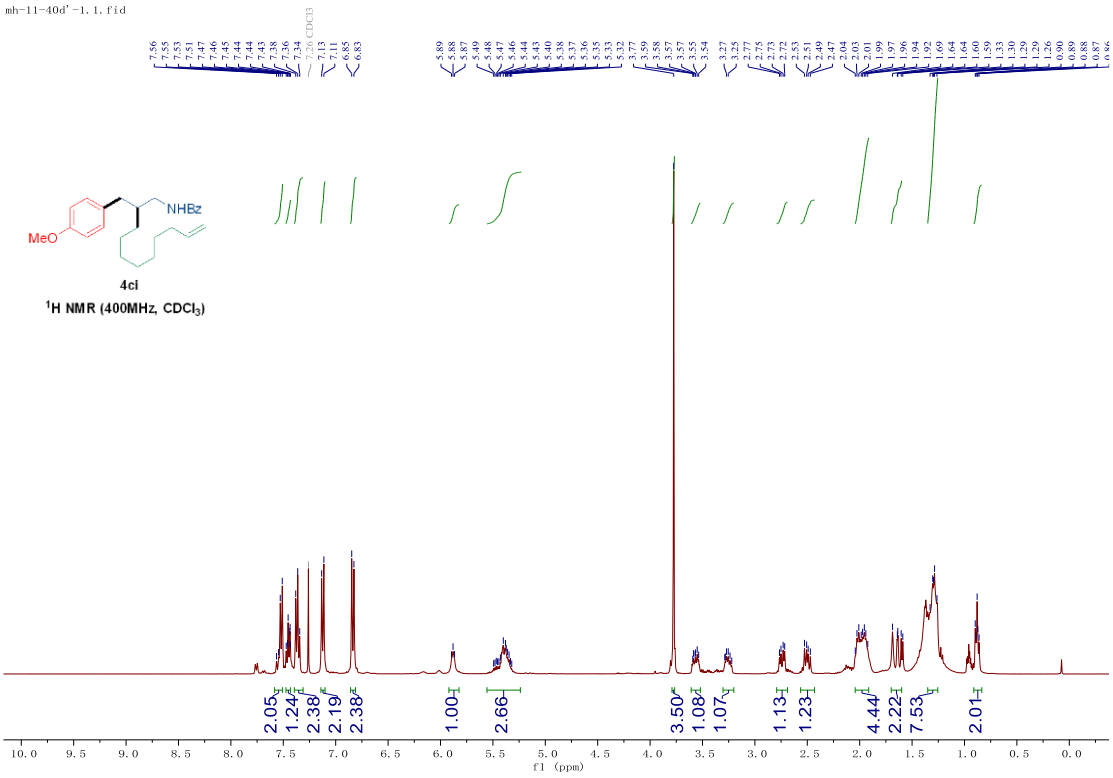

nh-10-176b-1.43.fid
Ph
NHBz
MeO
5cg
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

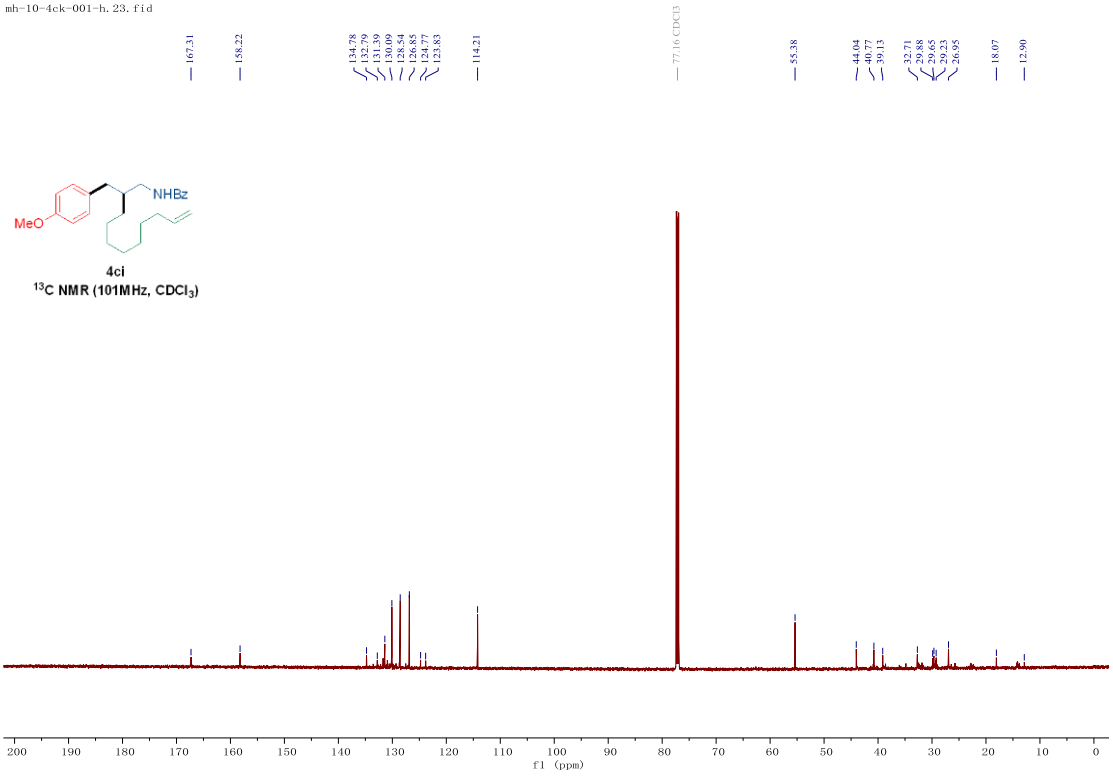

zh-10-137a-h. 3. fid
NHBz
MeO
4ch
^{1}H NMR (400 MHz, CDCl$_3$)
f1 (ppm)

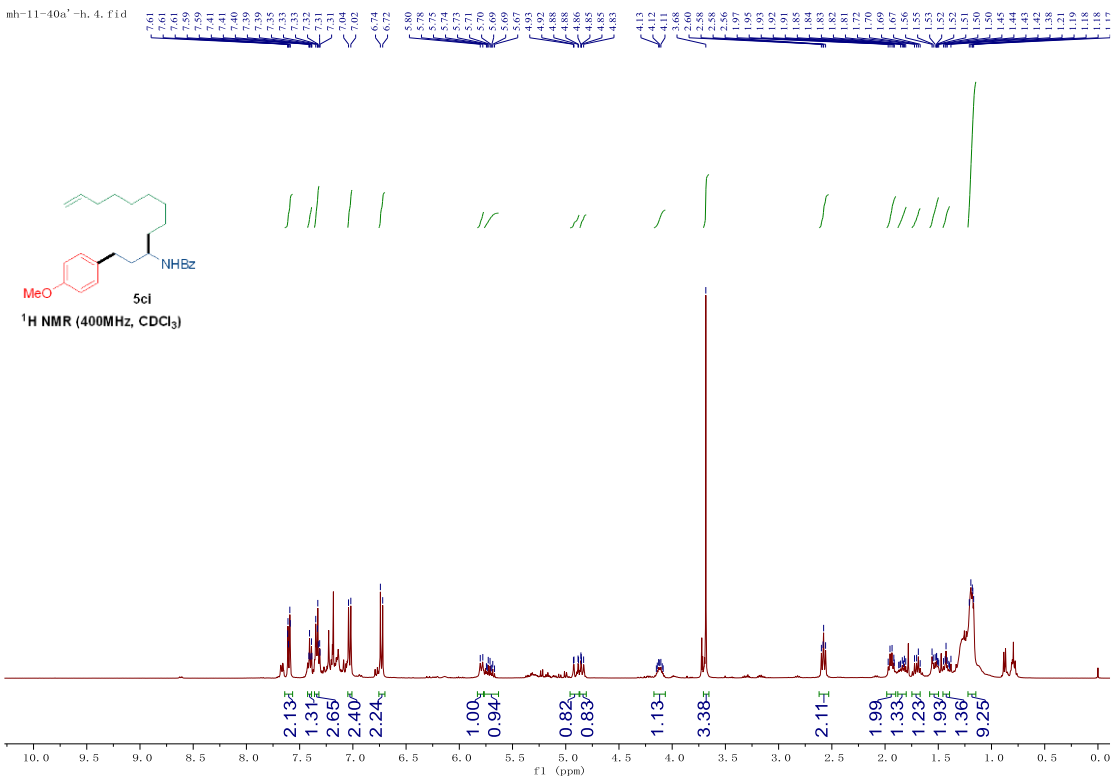

zh-10-137a-c. 6. fid
NHBz
MeO
4ch
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

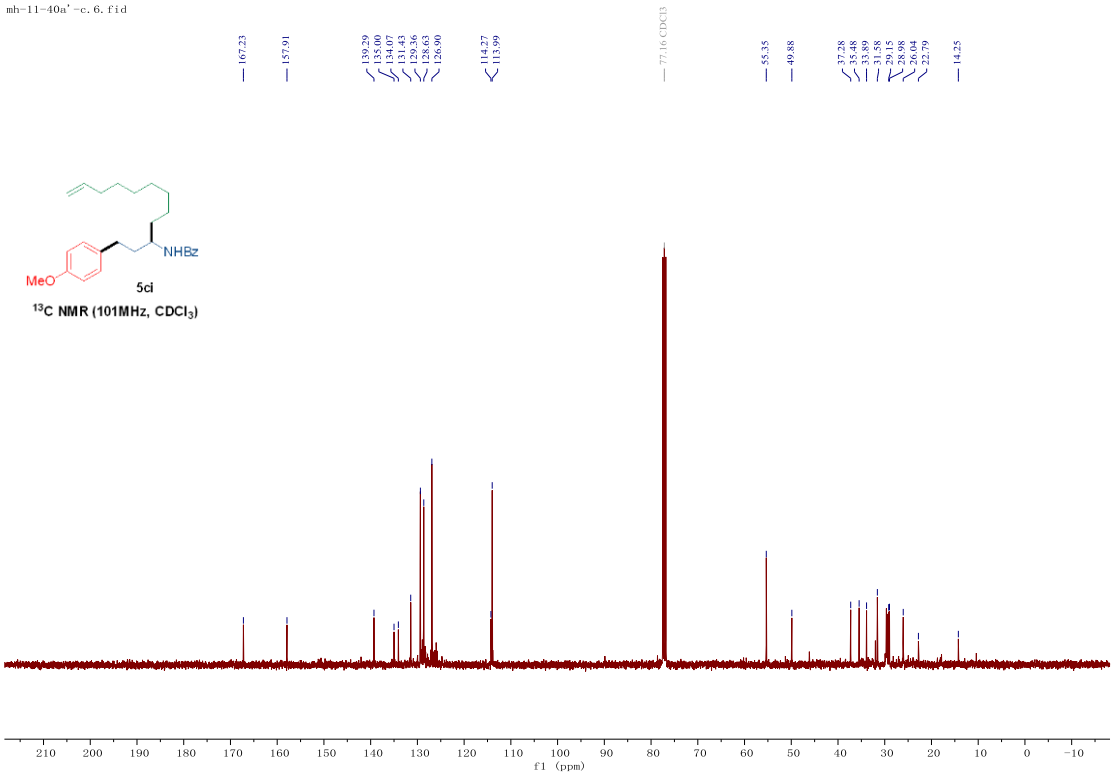

nh-10-207a-1.42.fid
NHBz
MeO
5ch
^{1}H NMR (600 MHz, $CDCl_3$)
2.06
1.13
2.37
2.23
2.08
1.00
1.08
1.09
3.21
2.11
2.05
1.10
1.14
3.98
3.90
f1 (ppm)

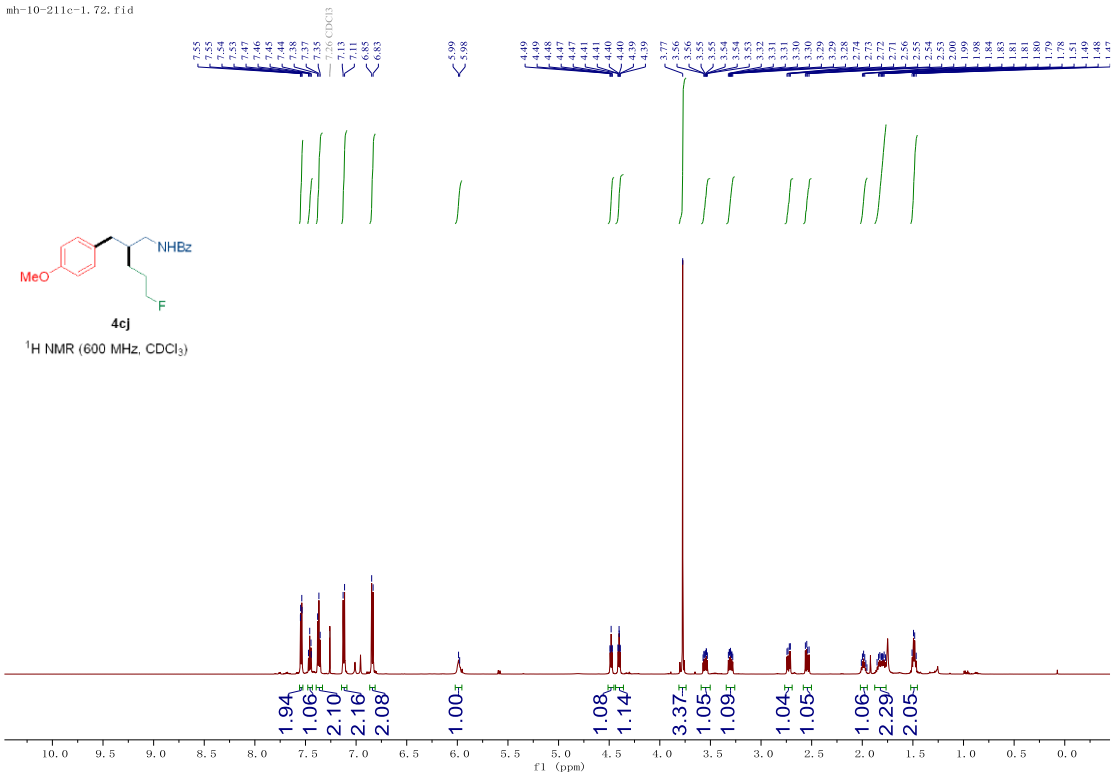

nh-10-207a-1.43.fid
NHBz
MeO
5ch
^{13}C NMR (151 MHz, $CDCl_3$)
f1 (ppm)

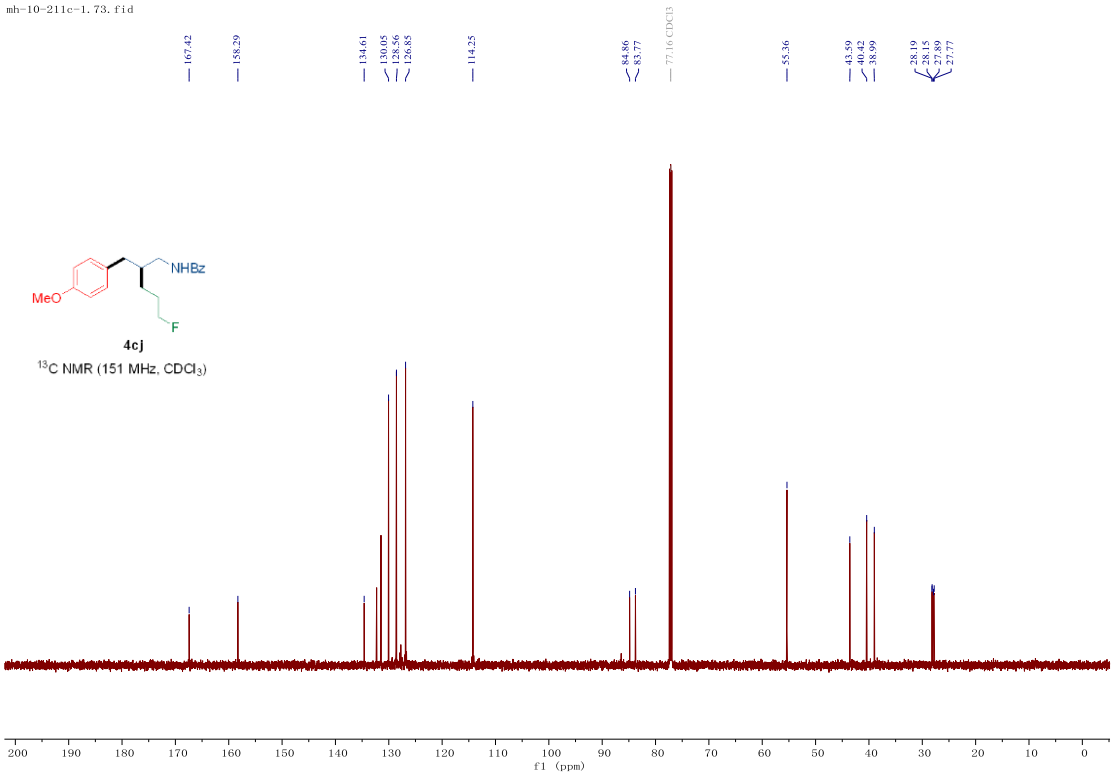

mh-11-40d'-1.1.fid
NHBz
MeO
4ci
^{1}H NMR (400MHz, CDCl$_3$)
f1 (ppm)


mh-10-4ck-001-h.23.fid
NHBz
MeO
4ci
^{13}C NMR (101MHz, CDCl$_3$)
f1 (ppm)

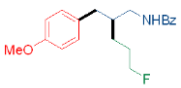

mh-11-40a'-h.4.fid
NHBz
MeO
5ci
^{1}H NMR (400MHz, CDCl$_3$)
2.13
1.31
2.65
2.40
2.24
1.00
0.94
0.82
0.83
1.13
3.38
2.11
1.99
1.33
1.23
1.93
1.36
9.25
f1 (ppm)


mh-11-40a'-c.6.fid
167.23
157.91
139.29
135.00
134.07
131.43
129.36
128.63
126.90
114.27
113.99
77.16 CDCl3
55.35
49.88
37.28
35.48
33.89
31.58
29.15
28.98
26.04
22.79
14.25
NHBz
MeO
5ci
^{13}C NMR (101MHz, CDCl$_3$)
f1 (ppm)


mh-10-211c-1.72.fid
NHBz
MeO
F
4cj
^{1}H NMR (600 MHz, $CDCl_3$)
1.94
1.06
2.10
2.16
2.08
1.00
1.08
1.14
3.37
1.05
1.09
1.04
1.05
1.06
2.29
2.05
f1 (ppm)

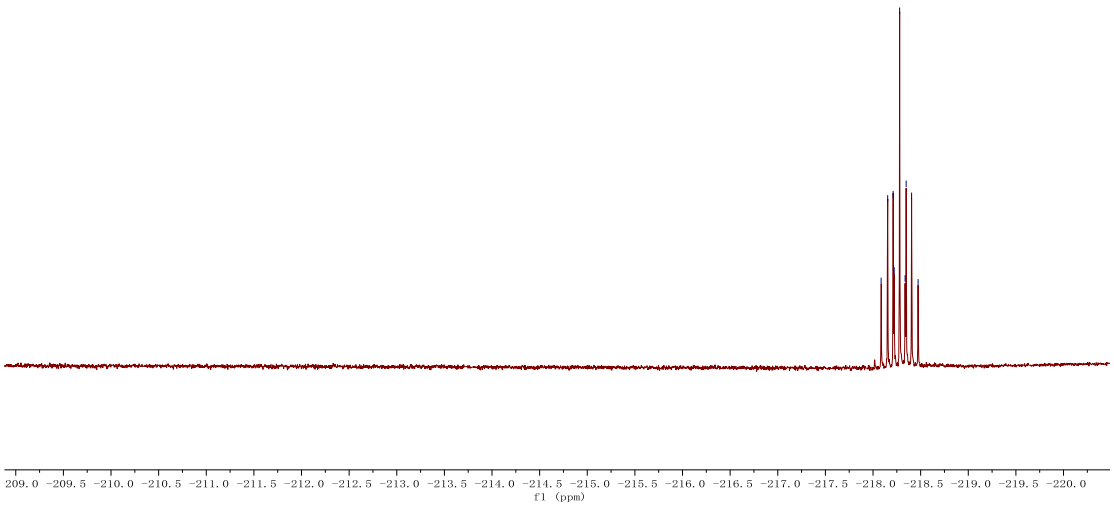

mh-10-211c-1.73.fid
NHBz
MeO
F
4cj
^{13}C NMR (151 MHz, $CDCl_3$)
f1 (ppm)

mh-10-211c-f. 1. fid

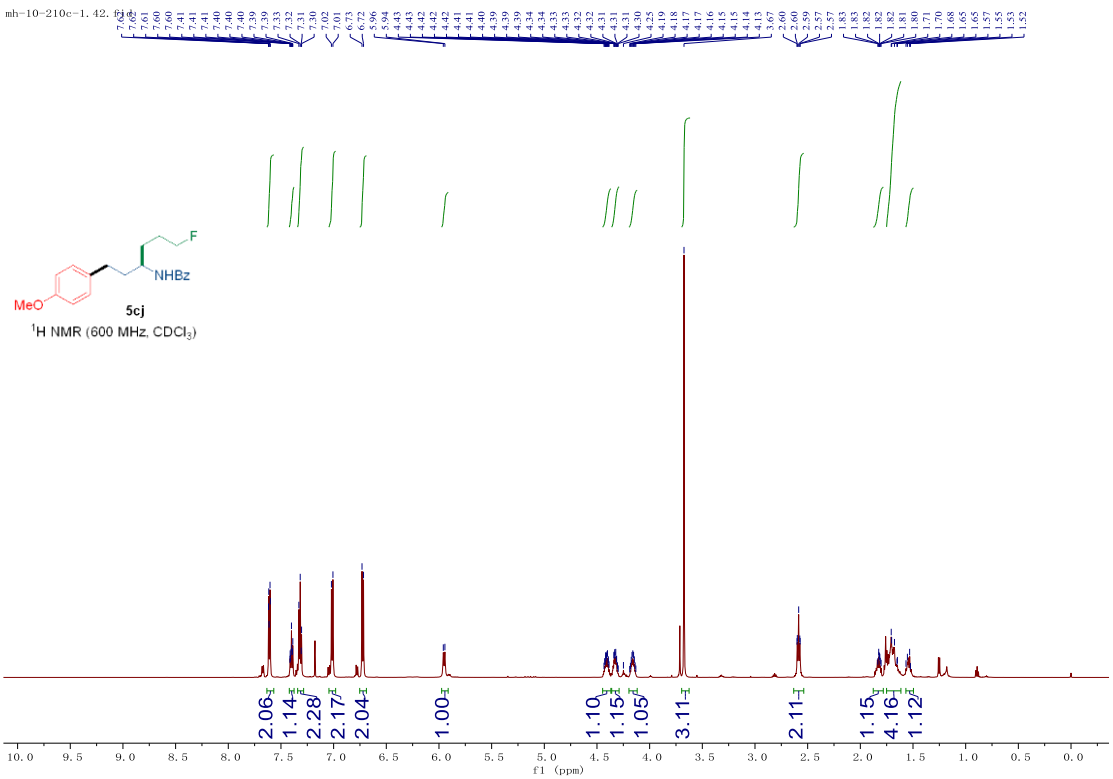


4cj

^{19}F NMR (376 MHz, $CDCl_3$)



mh-10-210c-1. 42. fid

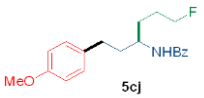


5cj

^{1}H NMR (600 MHz, $CDCl_3$)

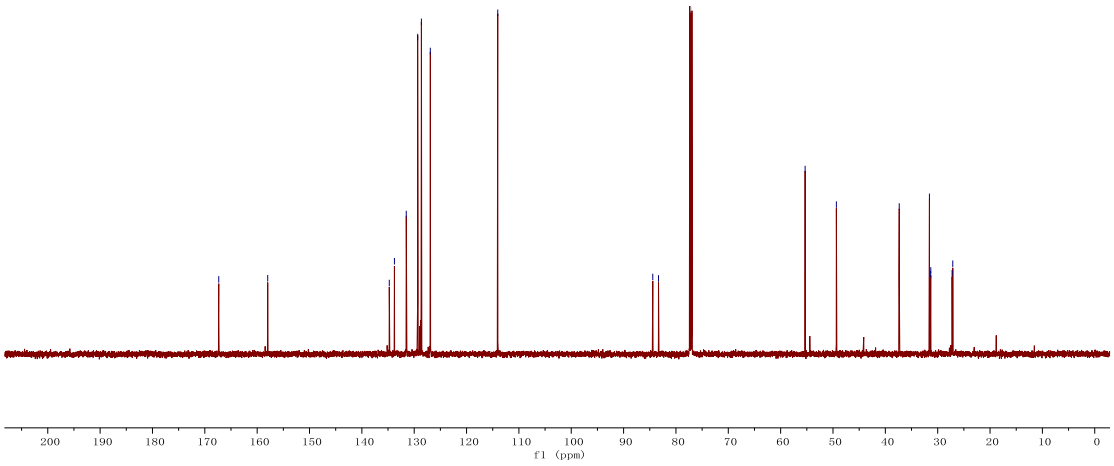
mh-10-210c-1.43.fid

167.34
157.98
134.76
133.78
131.52
129.34
128.62
126.92
114.04
84.43
83.34
77.16 CDCl3
55.32
49.35
37.35
31.58
31.35
31.32
27.25
27.12



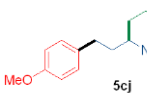
5cj

^{13}C NMR (151 MHz, $CDCl_3$)



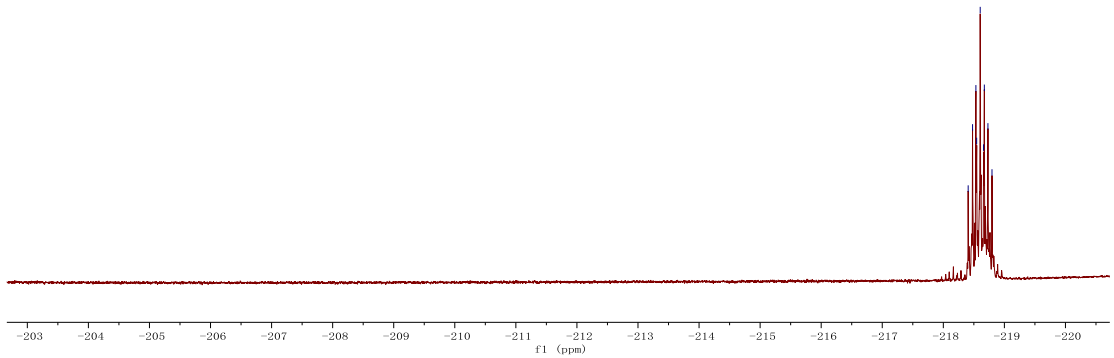
mh-10-210c-f.1.fid

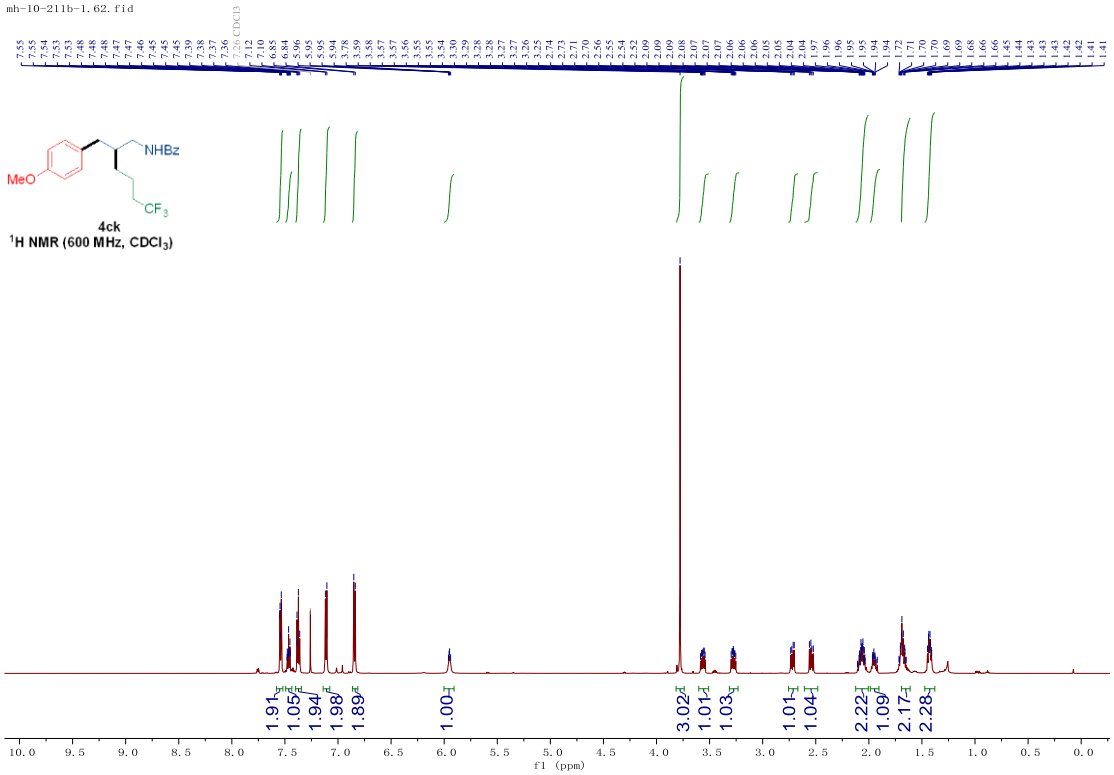
-218.41
-218.48
-218.53
-218.55
-218.60
-218.66
-218.67
-218.73
-218.80

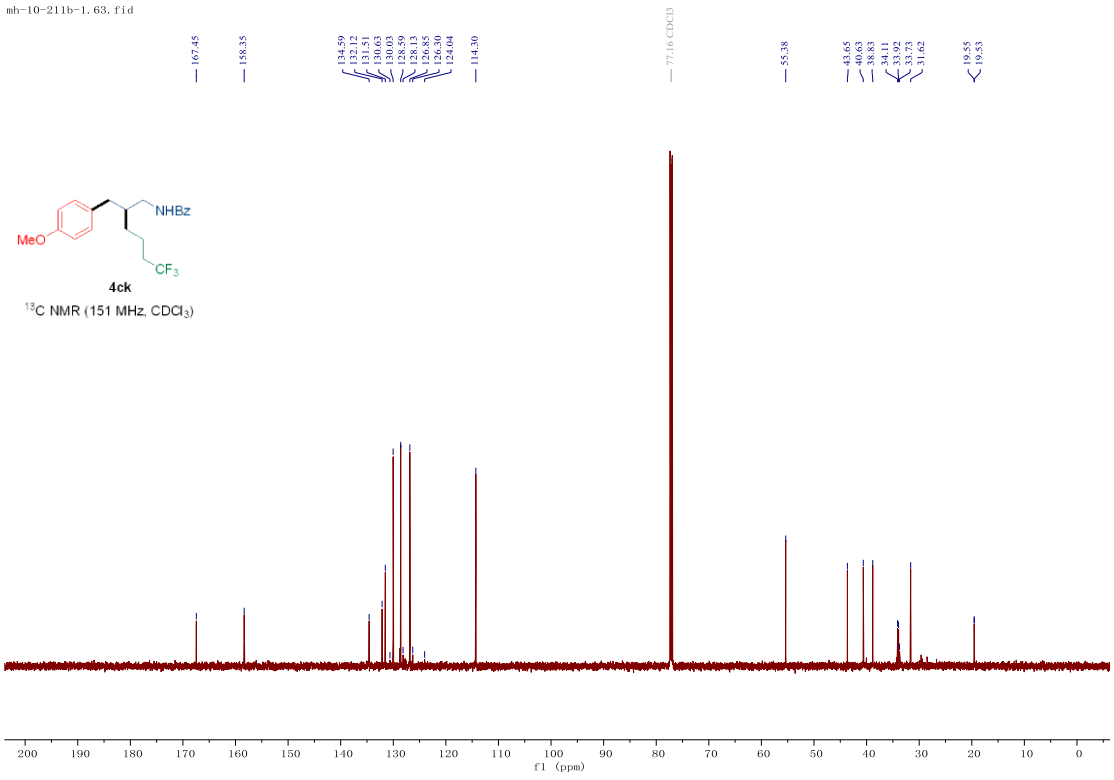


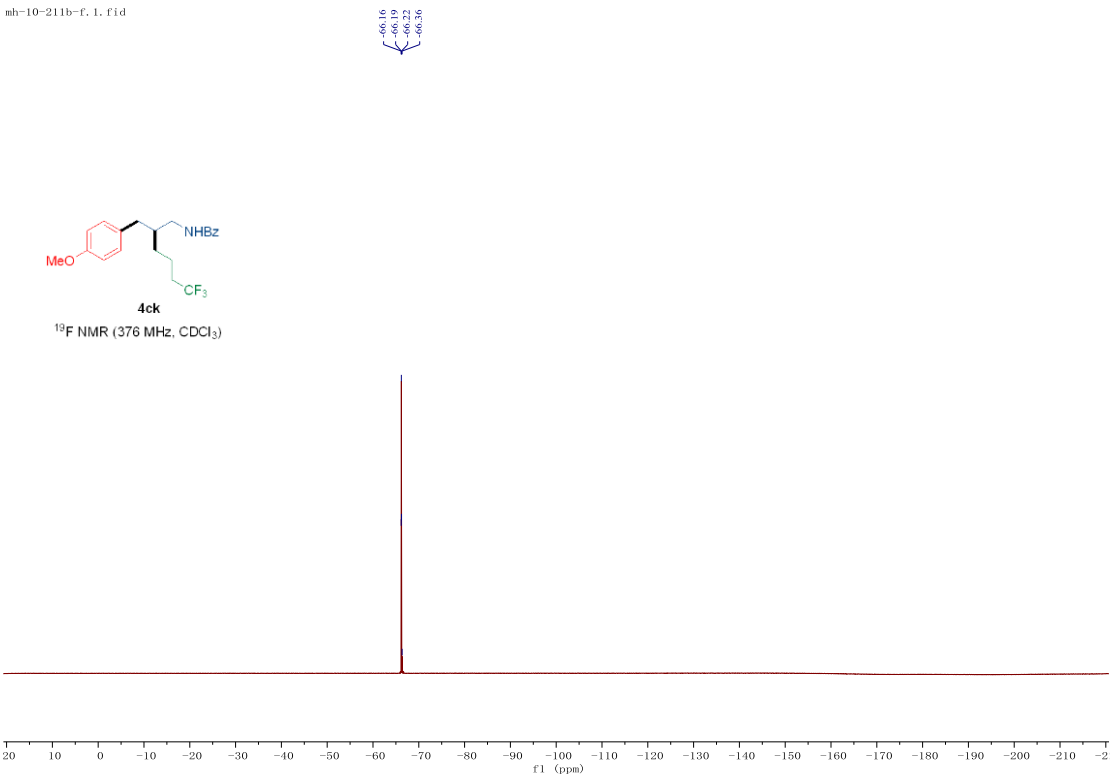
5cj

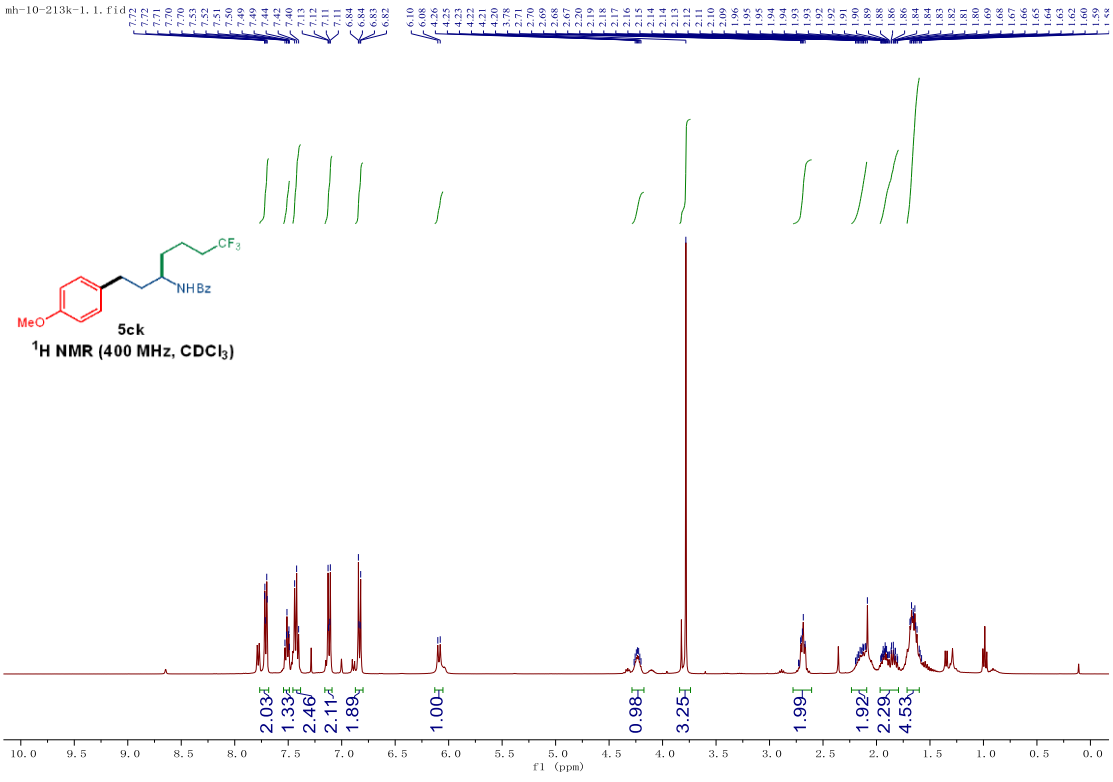
^{19}F NMR (376 MHz, $CDCl_3$)




mh-10-211b-1.62.fid
NHBz
MeO
CF3
4ck
1H NMR (600 MHz, CDCl3)
1.91
1.05
1.94
1.98
1.89
1.00
3.02
1.01
1.03
1.01
1.04
2.22
1.09
2.17
2.28
f1 (ppm)

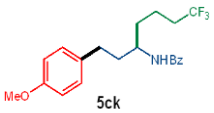

mh-10-211b-1.63.fid
167.45
158.35
134.59
132.12
131.51
130.03
128.59
128.13
126.85
126.30
124.04
114.30
77.16 CDCl3
55.38
43.65
40.63
38.63
34.11
33.92
33.73
31.62
19.55
19.53
NHBz
MeO
CF3
4ck
13C NMR (151 MHz, CDCl3)
f1 (ppm)


mh-10-211b-f.1.fid
-66.16
-66.19
-66.23
-66.36
NHBz
MeO
CF3
4ck
19F NMR (376 MHz, CDCl3)
f1 (ppm)


mh-10-213k-1.1.fid
CF3
NHBz
MeO
5ck
1H NMR (400 MHz, CDCl3)
2.03
1.33
2.46
2.11
1.89
1.00
0.98
3.25
1.99
1.92
2.29
4.53
f1 (ppm)

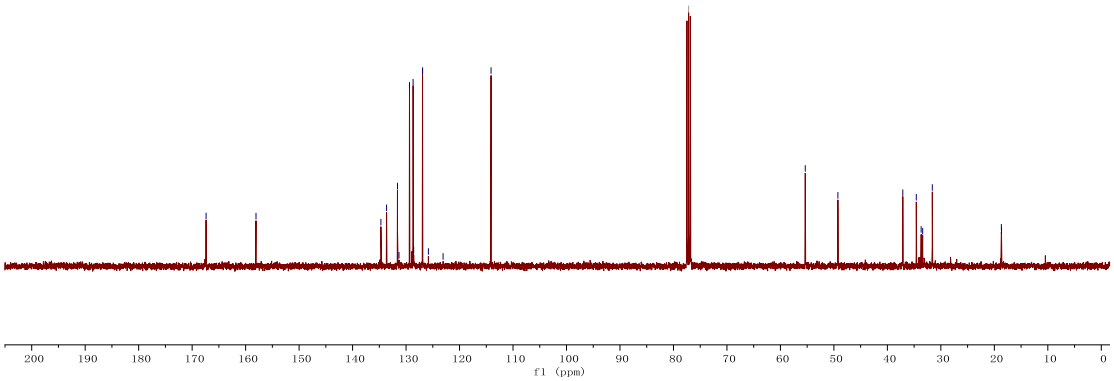
mh-10-5ci-c.2.fid

167.39
158.06
134.70
133.64
131.61
131.32
129.36
128.68
128.57
126.92
125.82
123.08
114.11
77.16 CDCl3
55.35
49.25
37.12
34.59
33.68
33.40
31.60
18.68
18.65



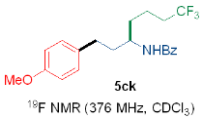
5ck

^{13}C NMR (101 MHz, $CDCl_3$)



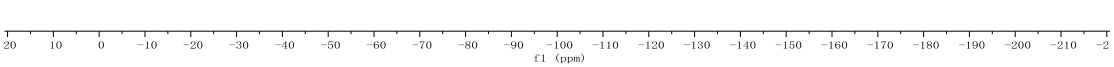
mh-10-210b-f.1.fid

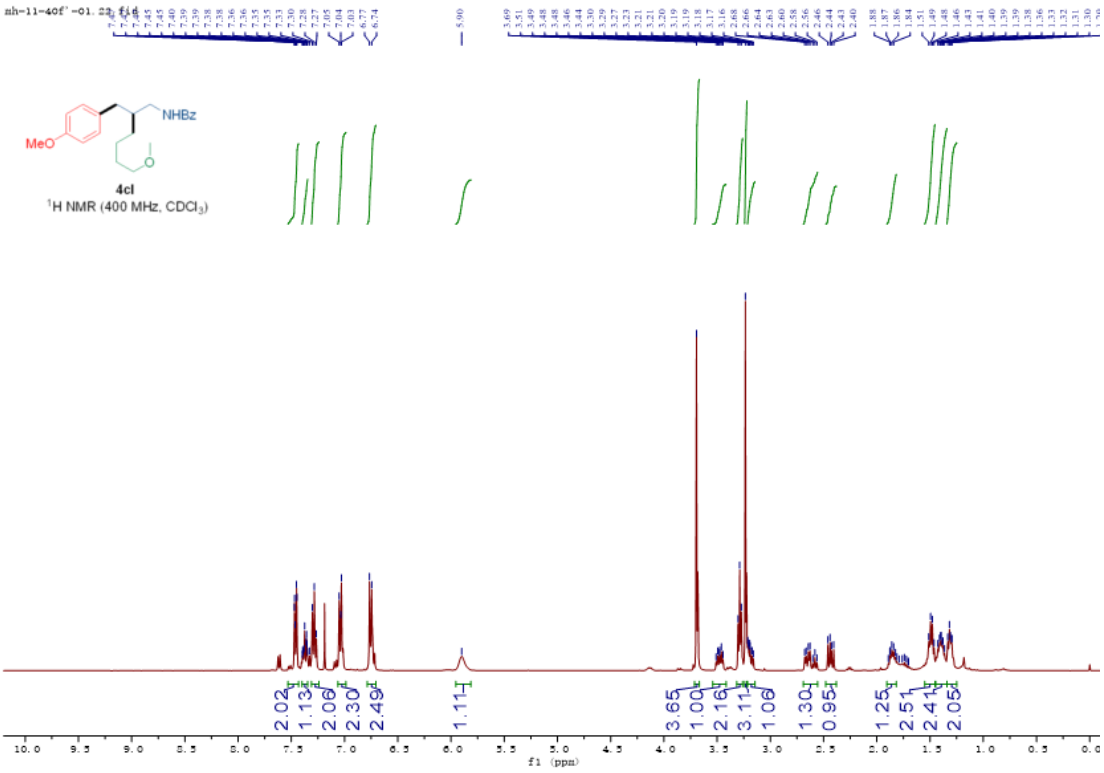
-66.10
-66.11
-66.13
-66.14
-66.15
-66.17
-66.17

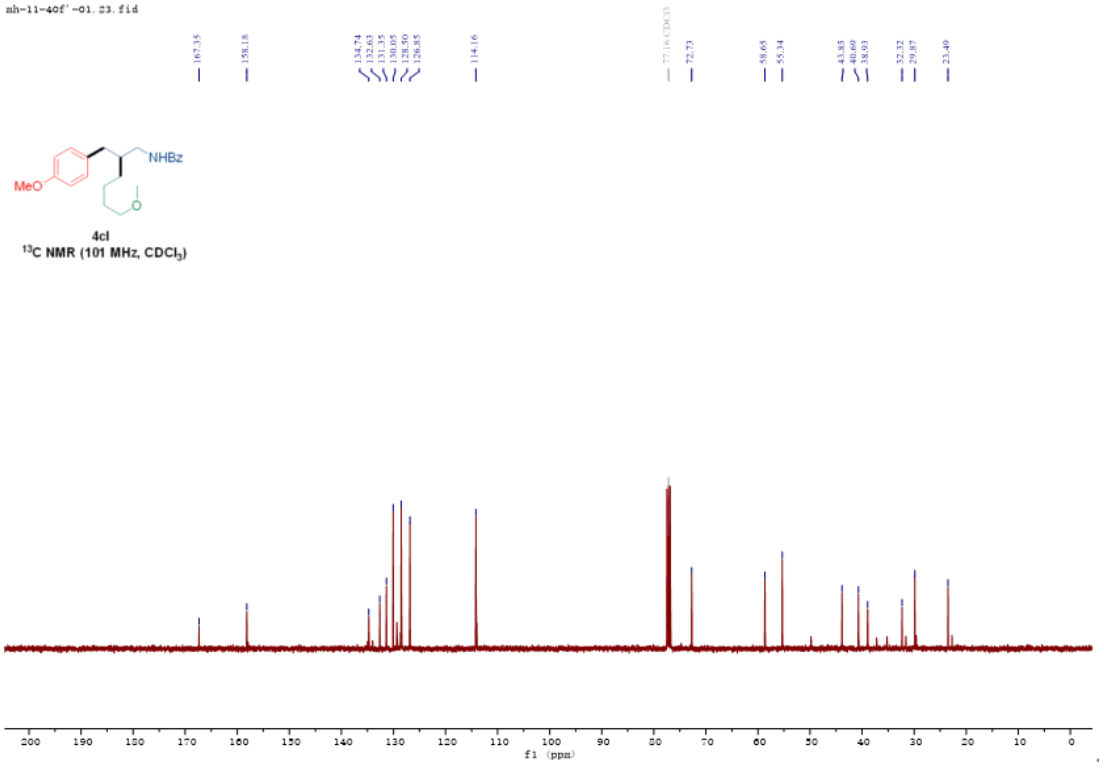


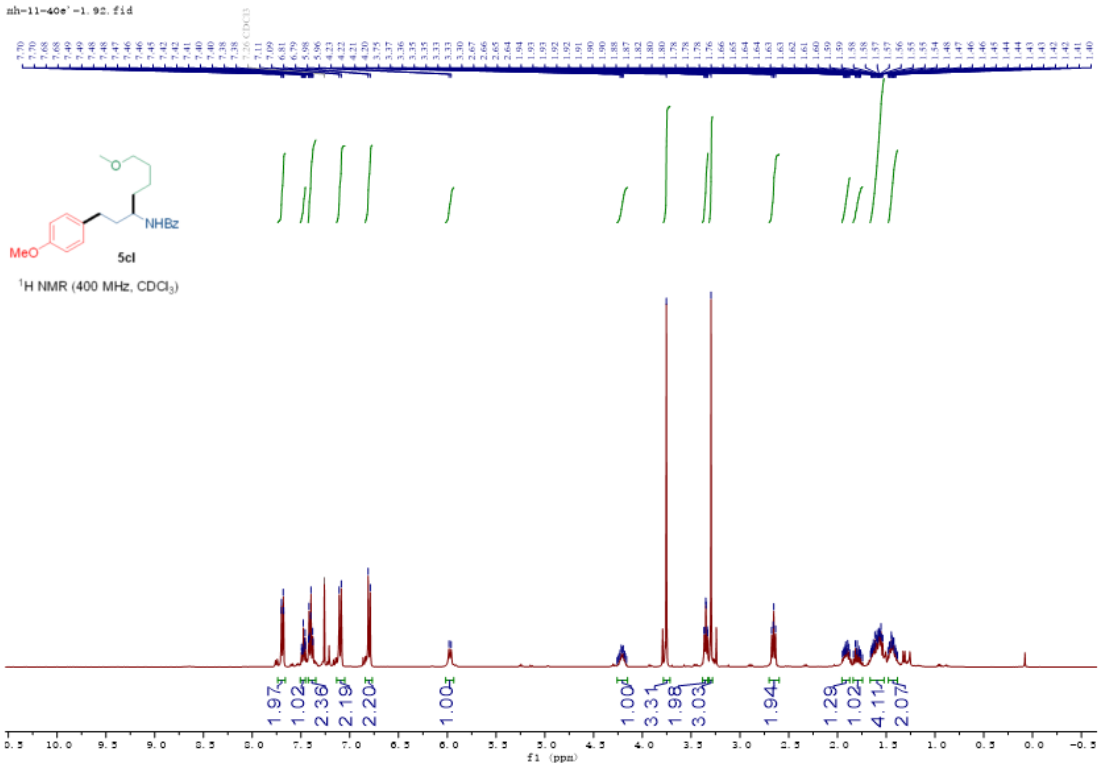
5ck

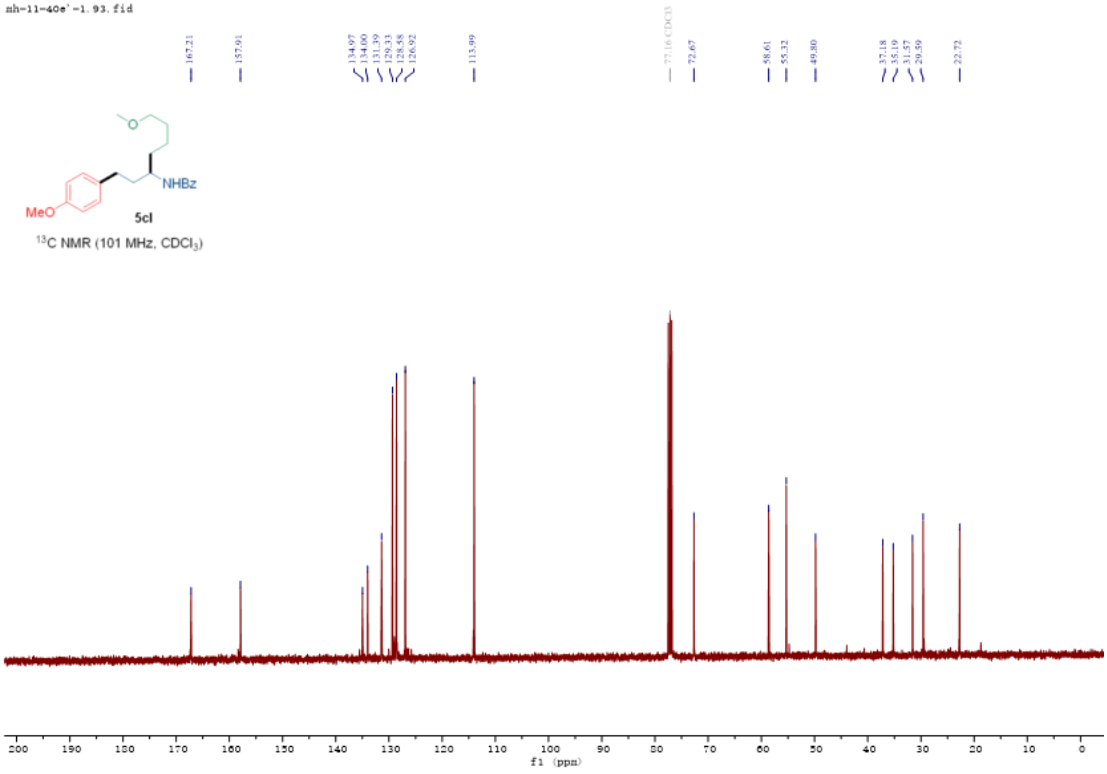
^{19}F NMR (376 MHz, $CDCl_3$)

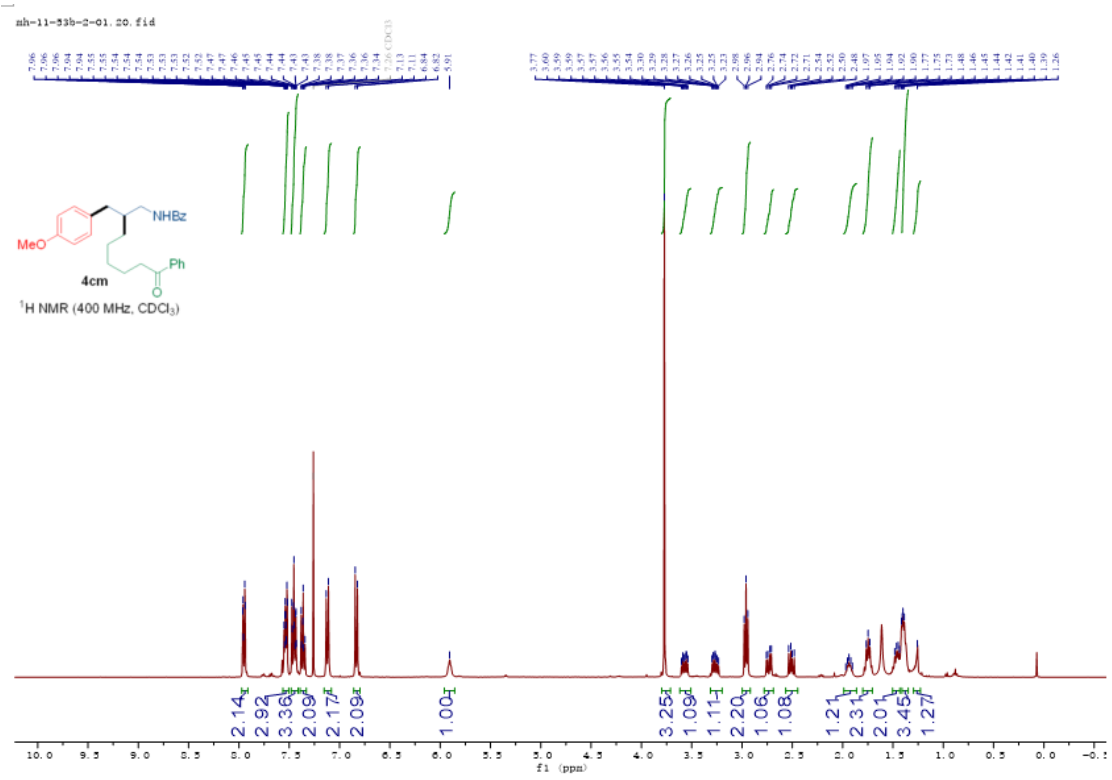


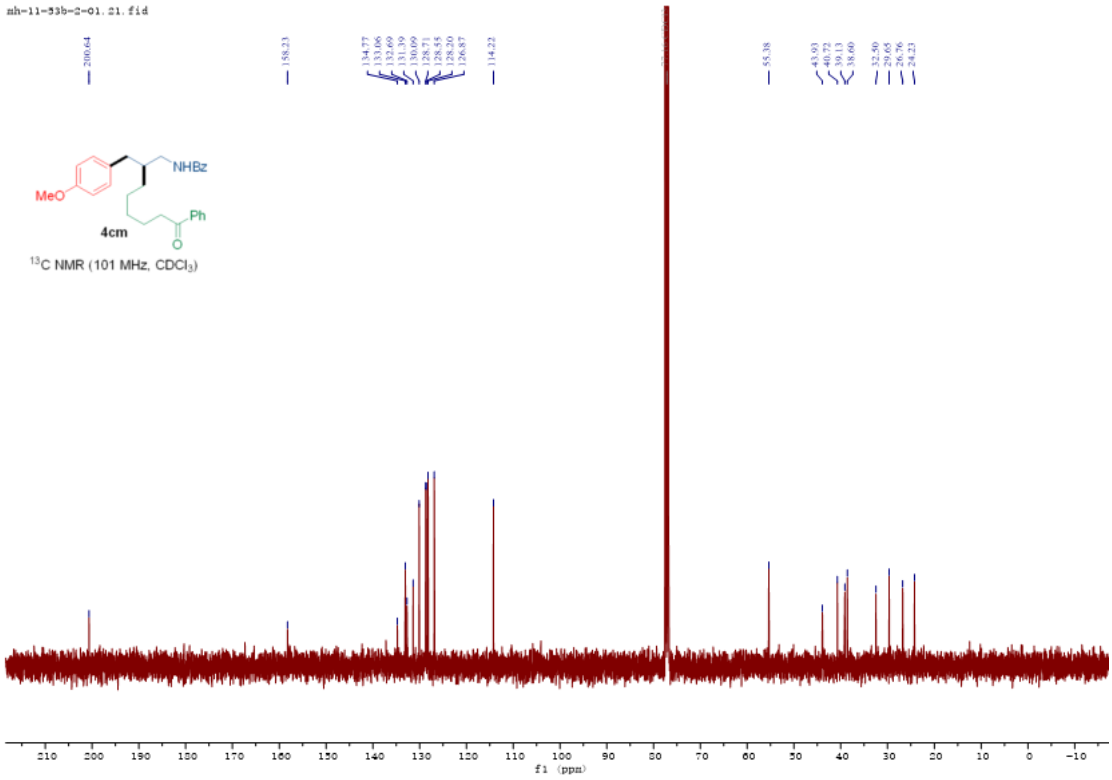

NHBz
MeO
4cl
^{1}H NMR (400 MHz, CDCl$_3$)

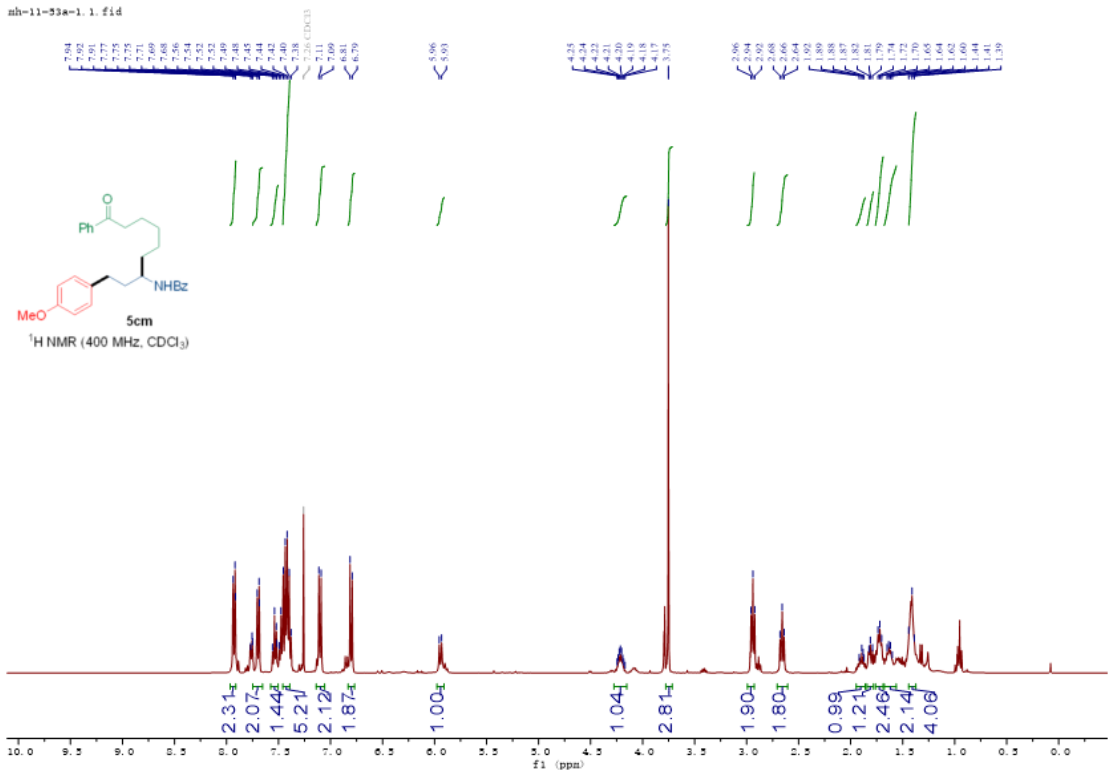

NHBz
MeO
4cl
^{13}C NMR (101 MHz, CDCl$_3$)

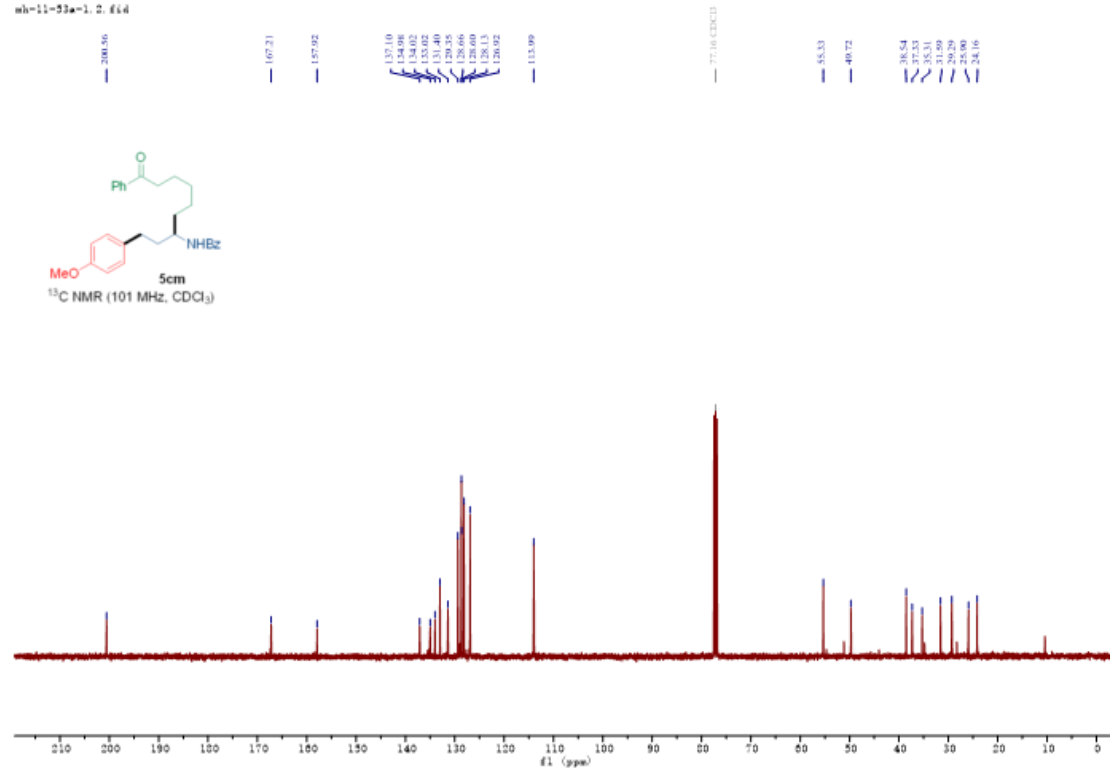

zh-11-40e'-1.92.fid
NHBz
MeO
5cl
^{1}H NMR (400 MHz, $CDCl_3$)
1.97
1.02
2.36
2.19
2.20
1.00
1.00
3.31
1.98
3.03
1.94
1.29
1.02
4.11
2.07
f1 (ppm)

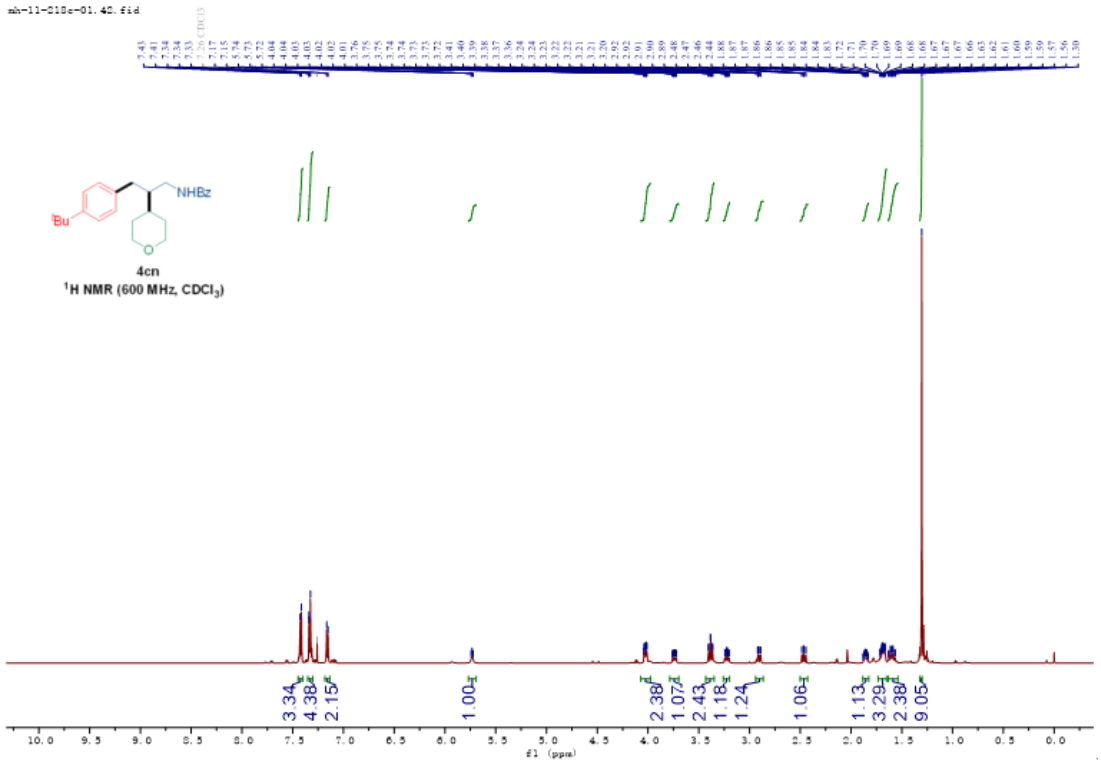

zh-11-40e'-1.93.fid
167.21
157.91
134.97
134.00
131.39
129.33
128.54
126.92
113.99
77.16 CDCl3
72.67
58.61
55.32
49.80
37.18
35.19
31.57
29.59
22.72
NHBz
MeO
5cl
^{13}C NMR (101 MHz, $CDCl_3$)
f1 (ppm)

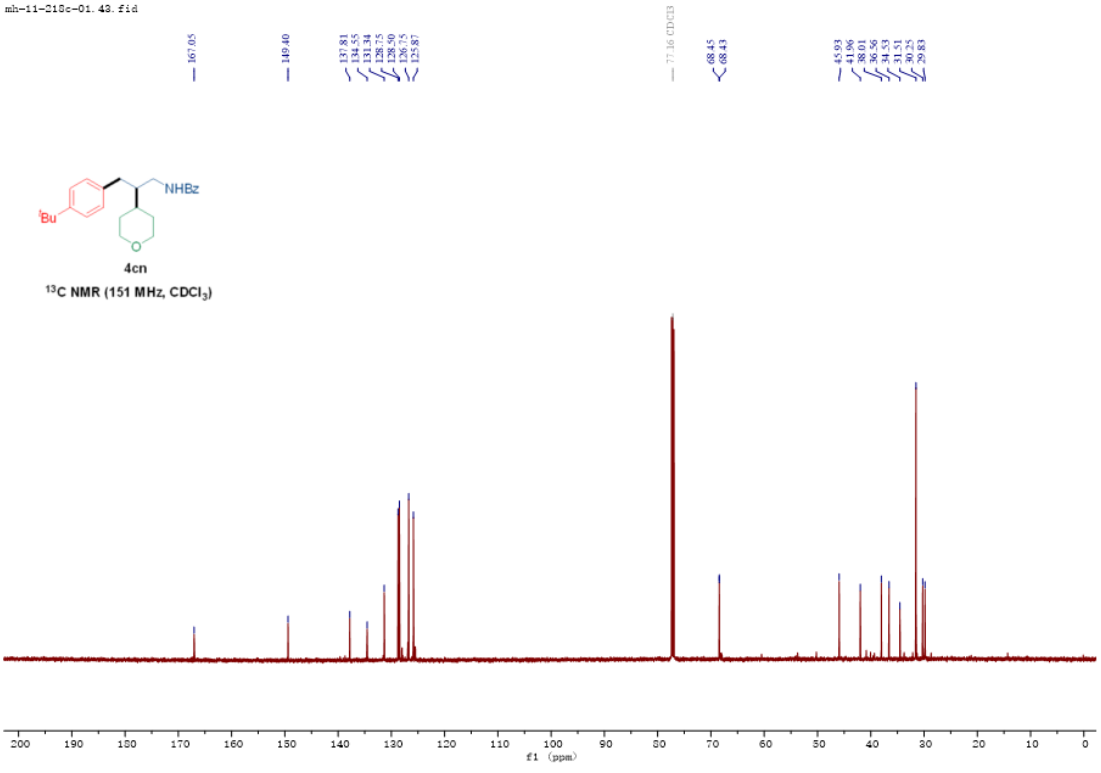

mh-11-53b-2-01.20.fid
NHBz
MeO
Ph
4cm
^{1}H NMR (400 MHz, CDCl$_3$)
2.14
2.92
3.36
2.09
2.17
2.09
1.00
3.25
1.09
1.11
2.20
1.06
1.08
1.21
2.31
2.01
3.45
1.27
f1 (ppm)

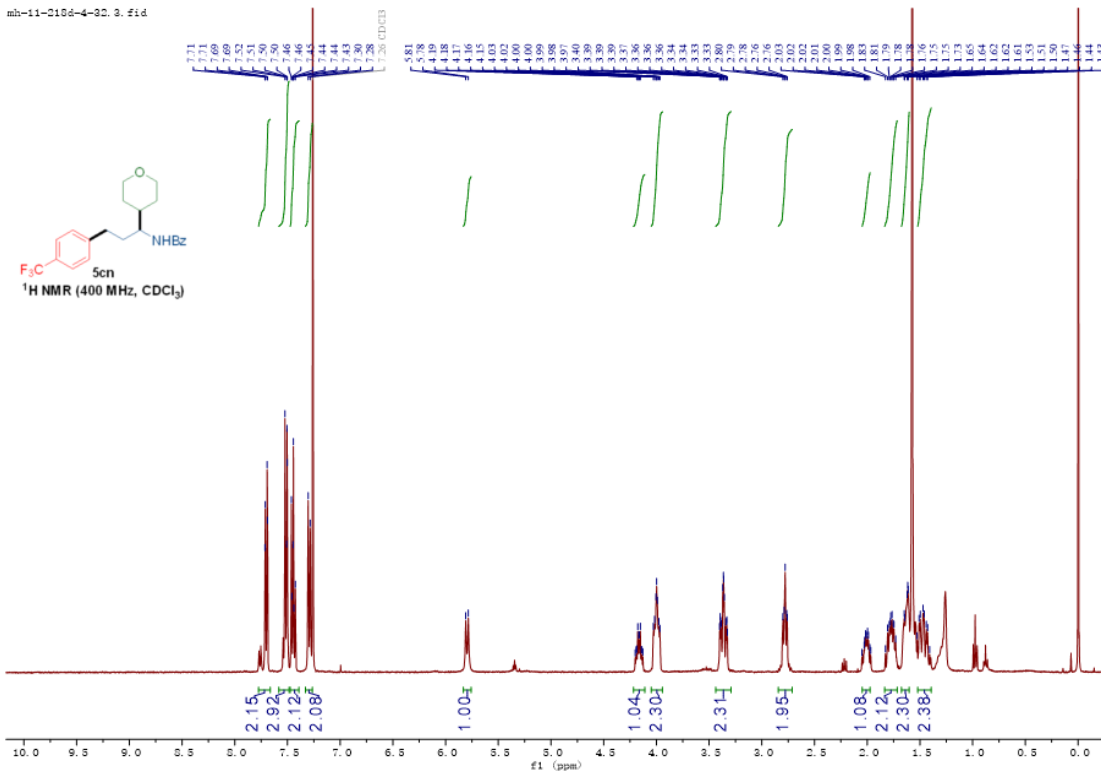

mh-11-53b-2-01.21.fid
200.64
158.23
134.77
133.66
132.69
131.39
130.09
128.71
128.55
128.20
126.87
114.22
55.38
43.93
40.72
40.13
38.60
32.50
29.65
26.76
24.23
NHBz
MeO
Ph
4cm
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

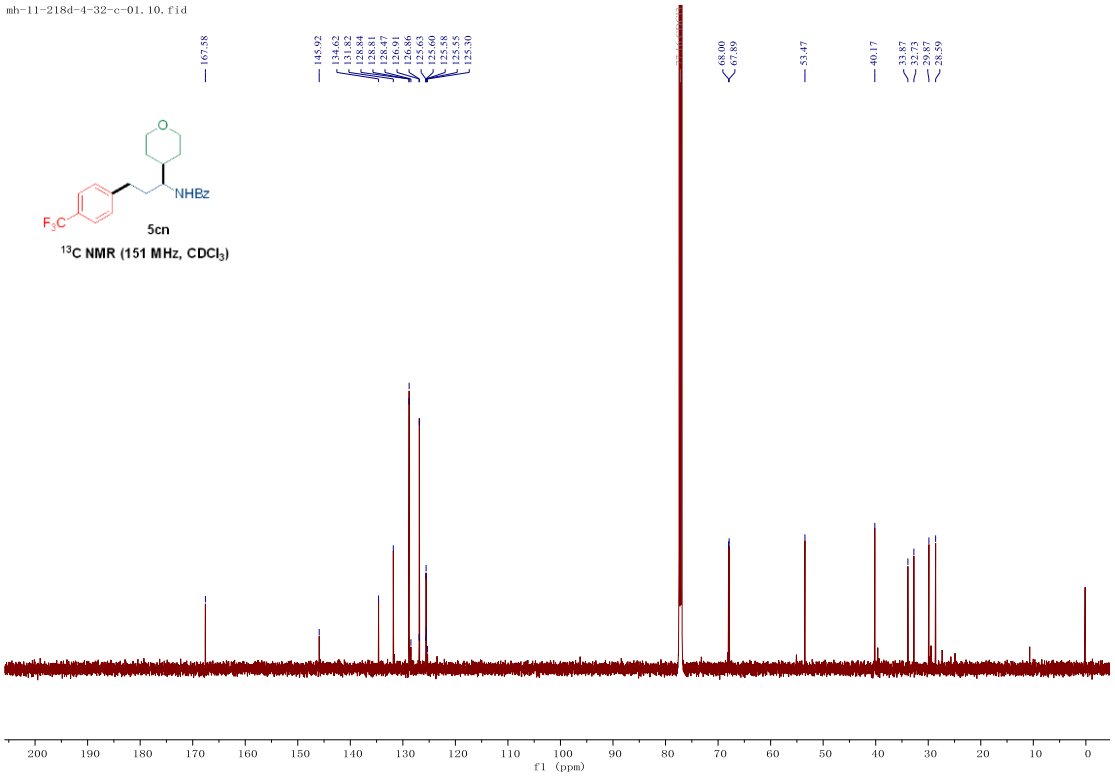

nh-11-53a-1.1.fid
Ph
NHBz
MeO
5cm
^{1}H NMR (400 MHz, CDCl$_3$)
2.31
2.07
1.44
5.21
2.12
1.87
1.00
1.04
2.81
1.90
1.80
0.99
1.21
2.46
2.14
4.06
f1 (ppm)

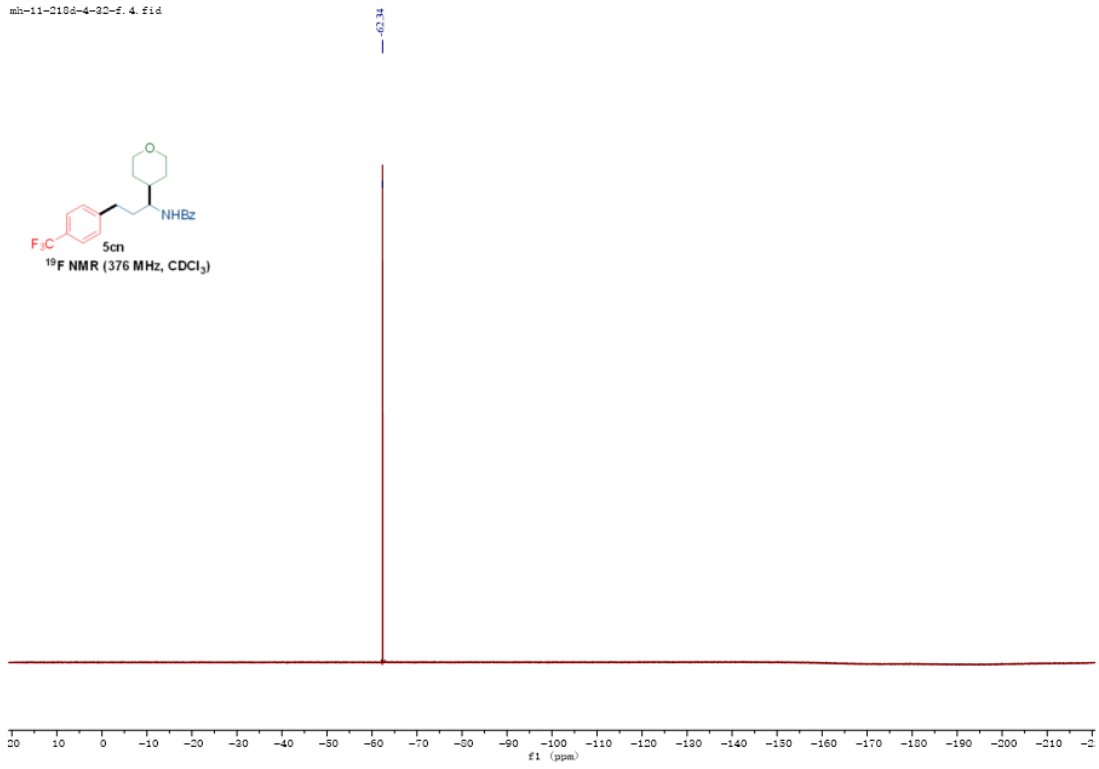

nh-11-53a-1.2.fid
Ph
NHBz
MeO
5cm
^{13}C NMR (101 MHz, CDCl$_3$)
f1 (ppm)

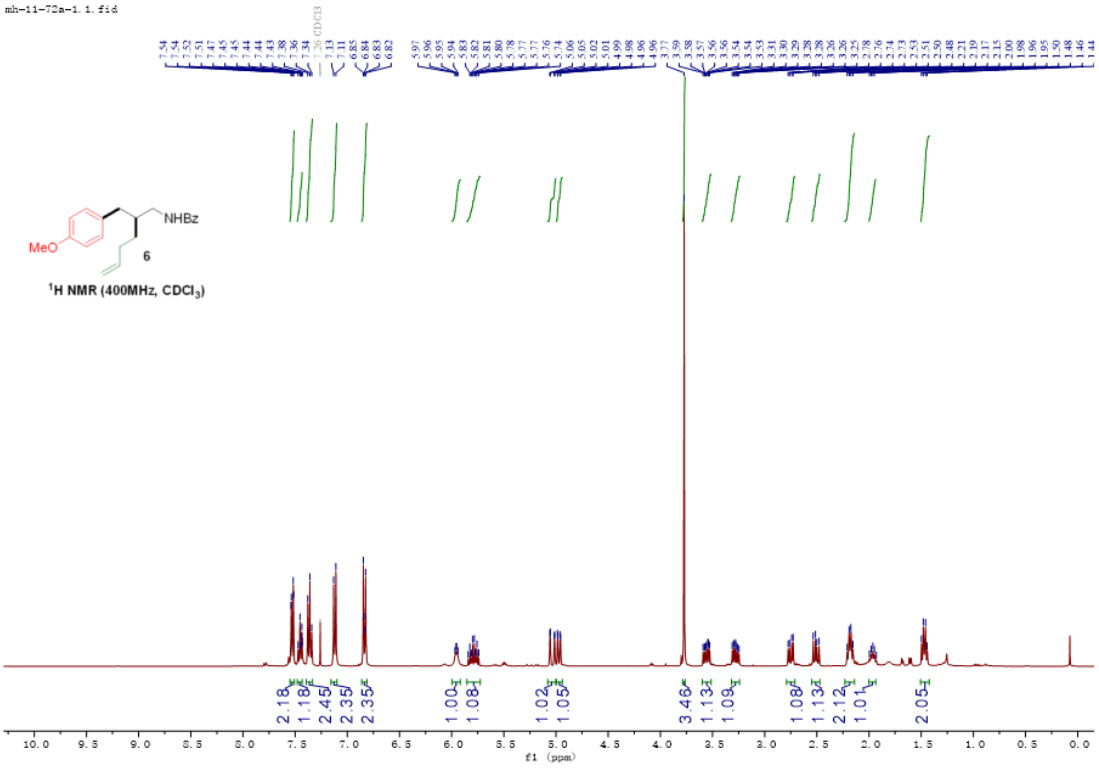

mh-11-218c-01.42.fid
NHBz
tBu
4cn
1H NMR (600 MHz, CDCl3)
3.34
4.38
2.15
1.00
2.38
1.07
2.43
1.18
1.24
1.06
1.13
3.29
2.38
9.05
f1 (ppm)

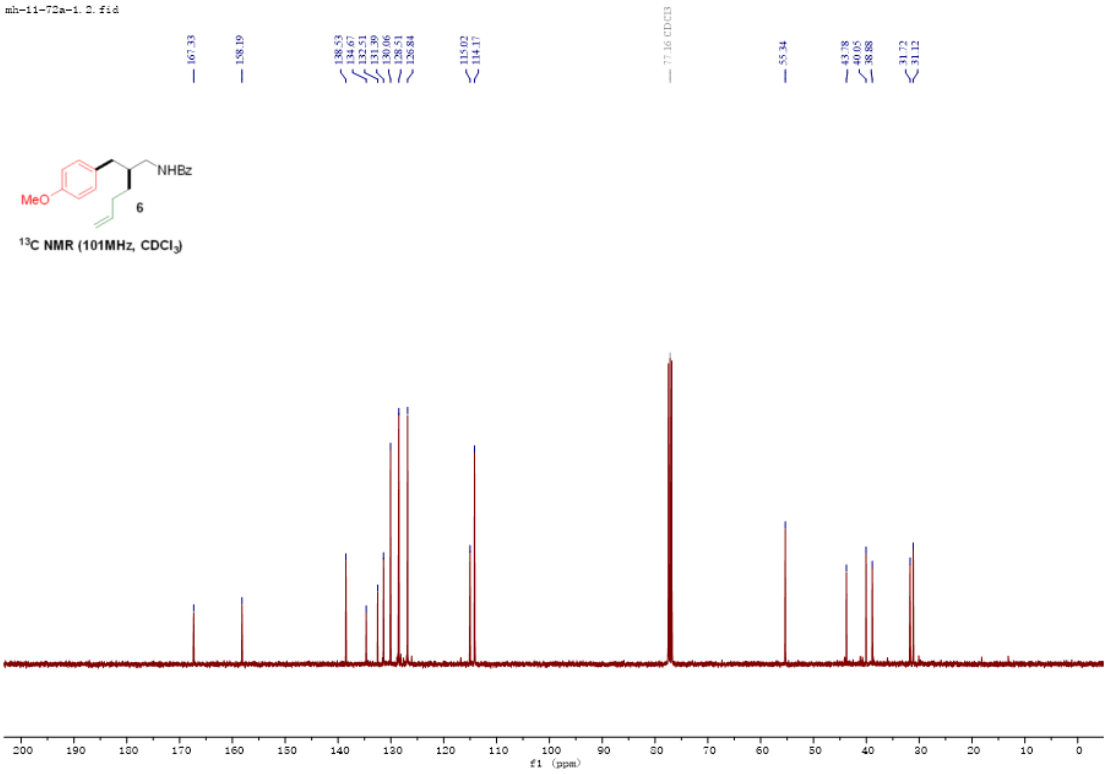

mh-11-218c-01.43.fid
167.05
149.40
137.81
134.55
133.34
128.35
128.30
126.75
125.87
77.16 CDCl3
68.45
68.43
45.93
41.96
38.01
36.56
34.55
31.51
30.24
29.83
NHBz
tBu
4cn
13C NMR (151 MHz, CDCl3)
f1 (ppm)

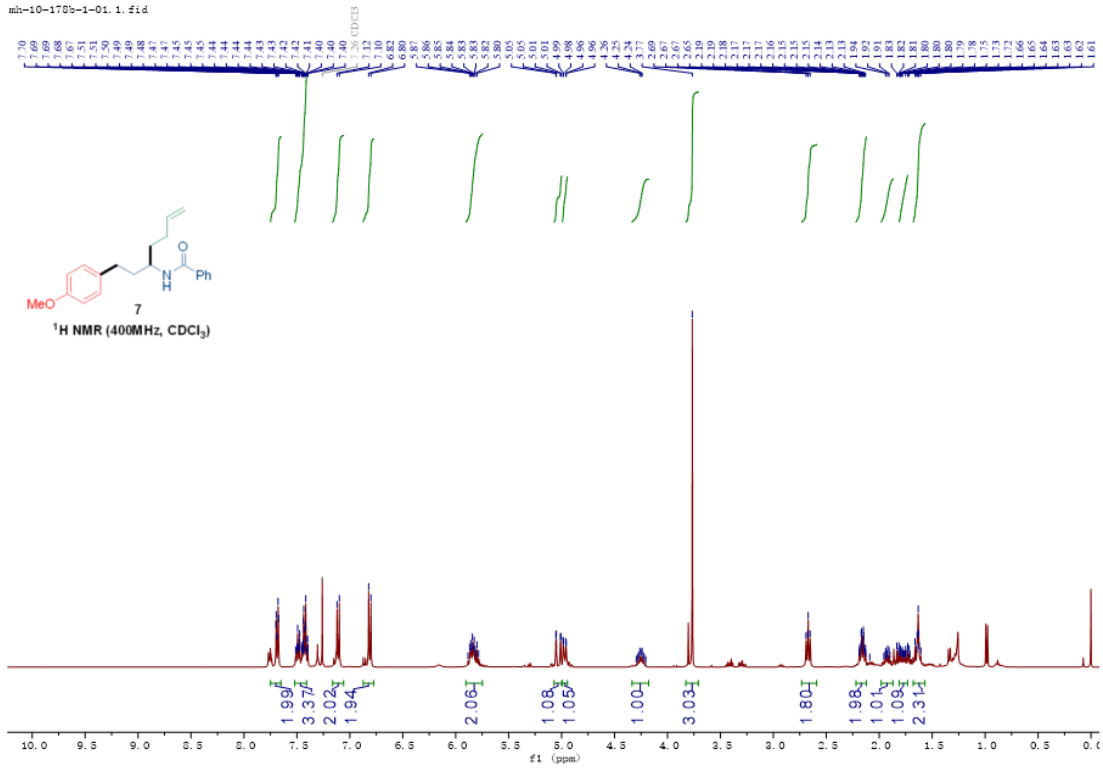

mh-11-218d-4-32.3.fid
NHBz
F3C
5cn
1H NMR (400 MHz, CDCl3)
2.15
2.92
2.12
2.08
1.00
1.04
2.30
2.31
1.95
1.08
2.12
2.30
2.38
f1 (ppm)

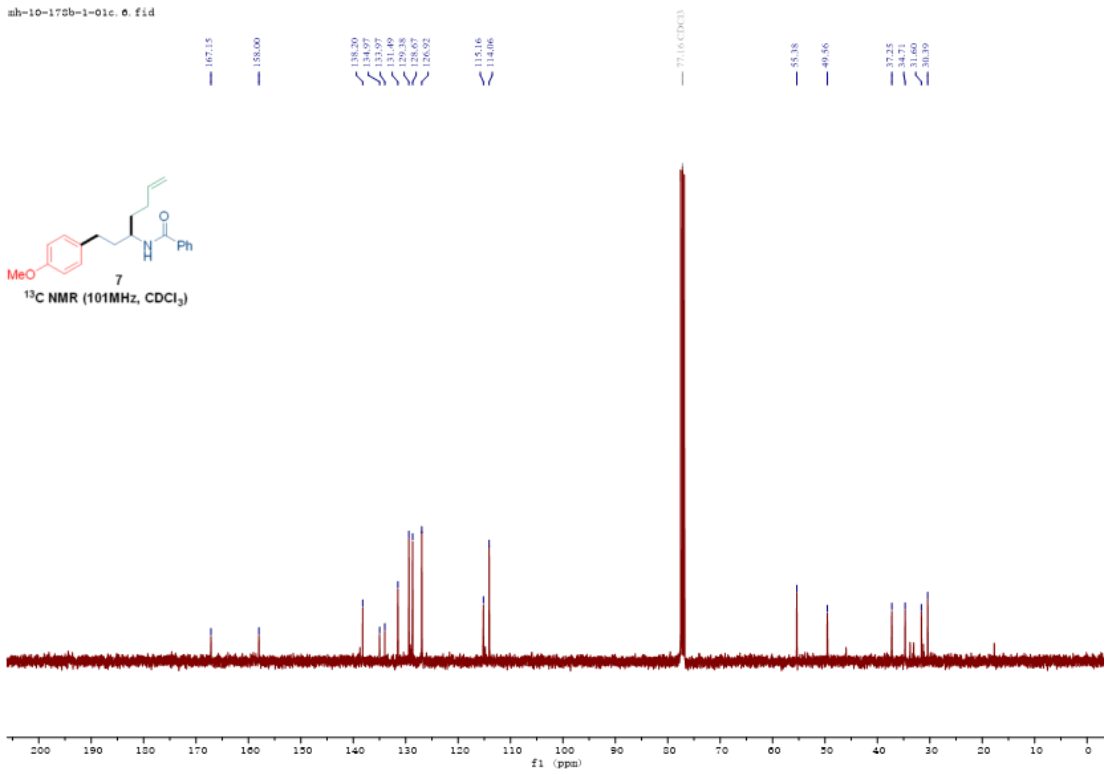

mh-11-218d-4-32-c-01.10.fid
167.58
145.92
134.62
131.82
128.84
128.81
128.47
126.91
126.66
125.63
125.60
125.58
125.55
125.30
68.00
67.89
53.47
40.17
33.87
32.73
29.87
28.59
NHBz
F3C
5cn
13C NMR (151 MHz, CDCl3)
f1 (ppm)

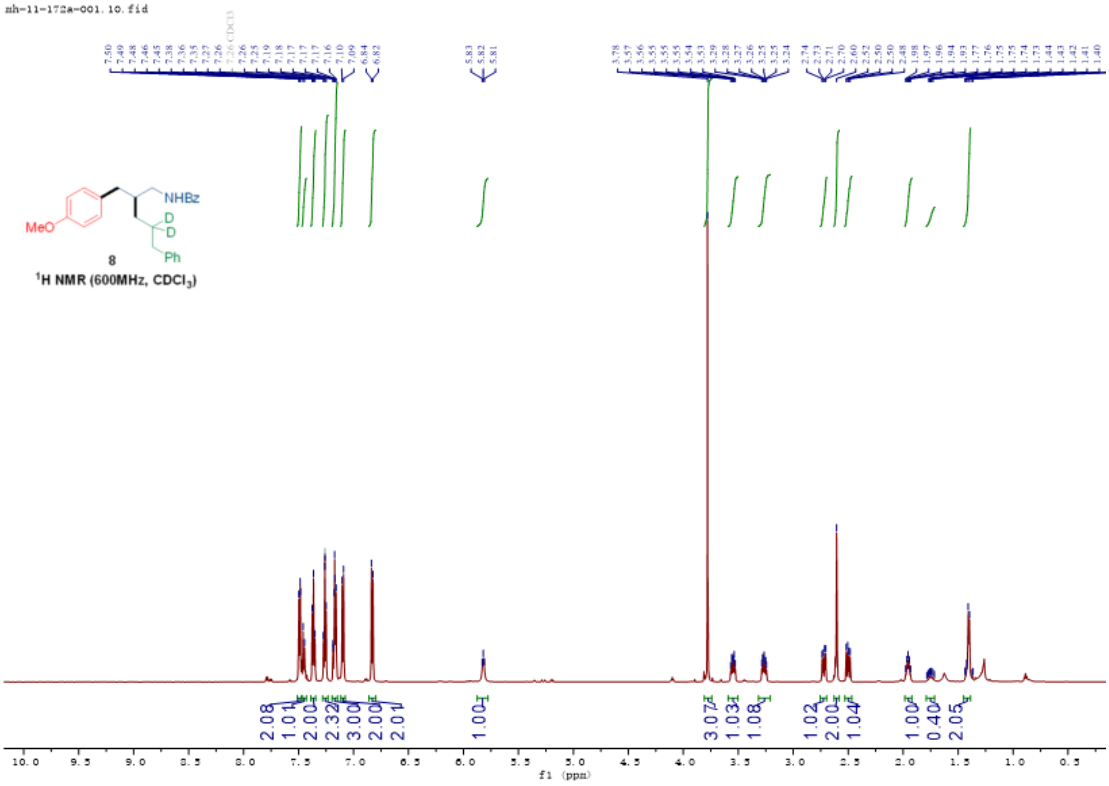

mh-11-218d-4-32-f.4.fid
-62.34
NHBz
F3C
5cn
19F NMR (376 MHz, CDCl3)
f1 (ppm)

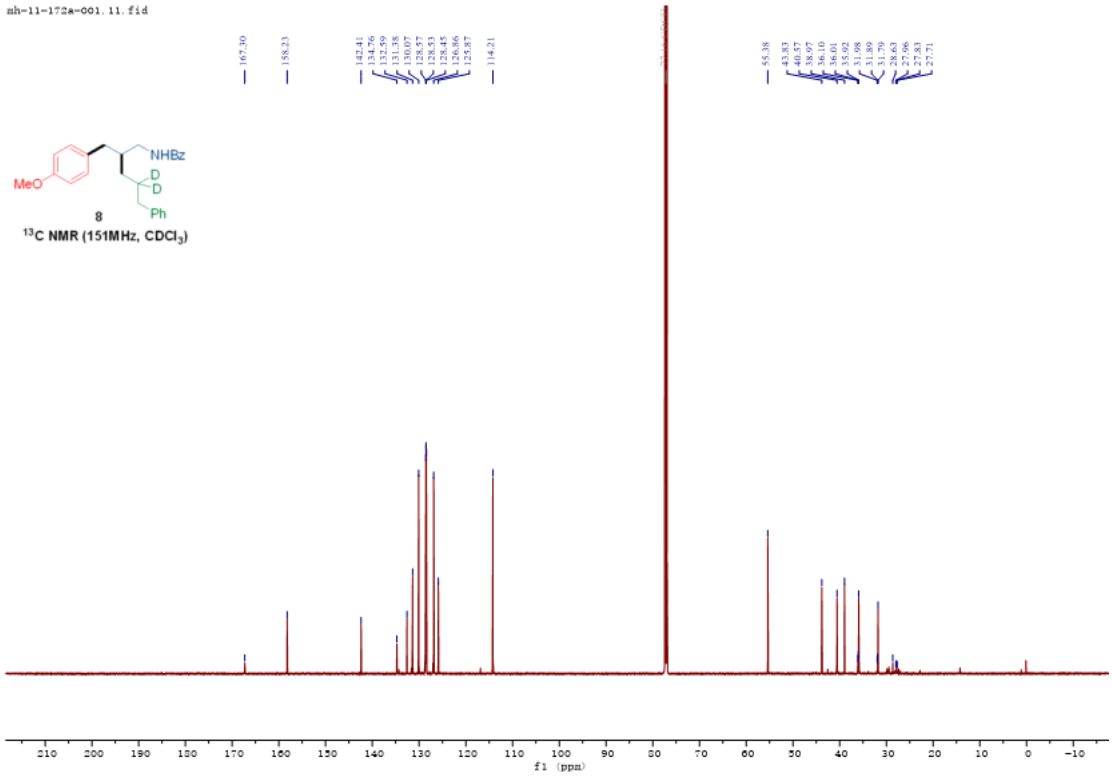

mh-11-72a-1.1.fid
NHBz
MeO
6
1H NMR (400MHz, CDCl3)
2.18
1.18
2.45
2.35
2.35
1.00
1.08
1.02
1.05
3.46
1.13
1.09
1.08
1.13
2.12
1.01
2.05
f1 (ppm)

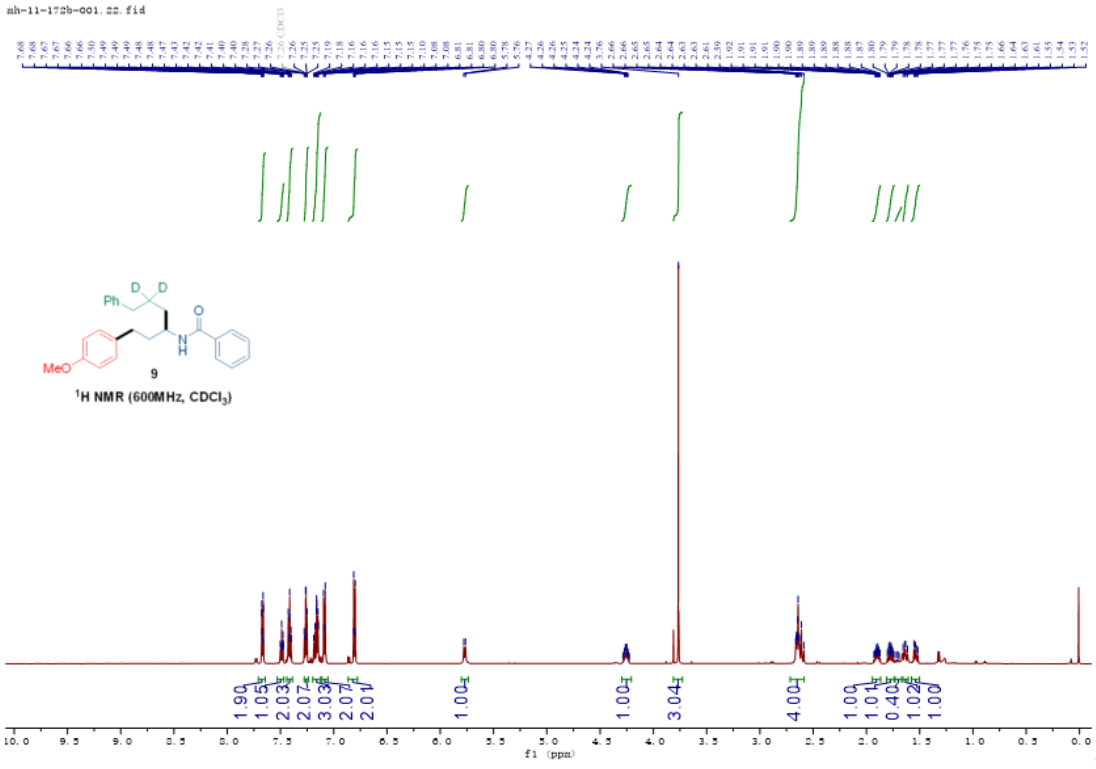

mh-11-72a-1.2.fid
167.33
158.19
138.53
134.67
132.51
131.39
130.06
128.51
126.84
115.02
114.17
77.16 CDCl3
55.34
43.78
40.05
38.88
31.72
31.12
NHBz
MeO
6
13C NMR (101MHz, CDCl3)
f1 (ppm)

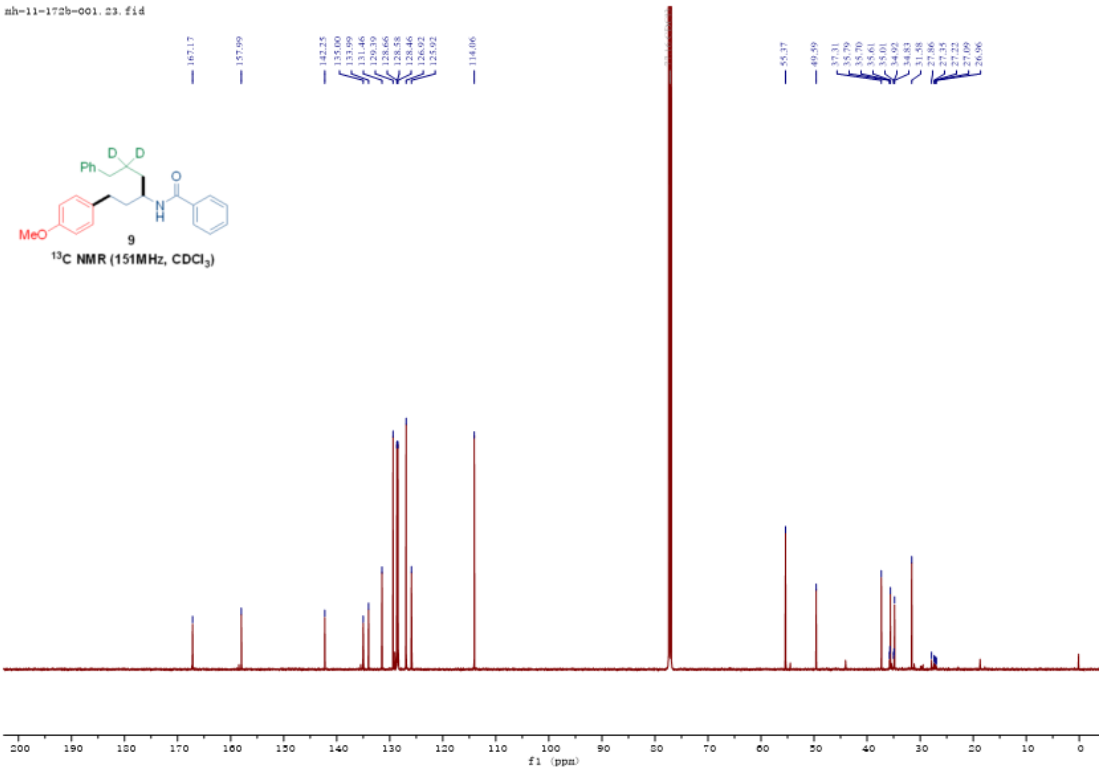

mh-10-170b-1-01.1.fid
MeO
N
H
O
Ph
7
1H NMR (400MHz, CDCl3)
1.99
3.37
2.02
1.94
2.06
1.08
1.05
1.00
3.03
1.80
1.98
1.01
1.09
2.31
f1 (ppm)

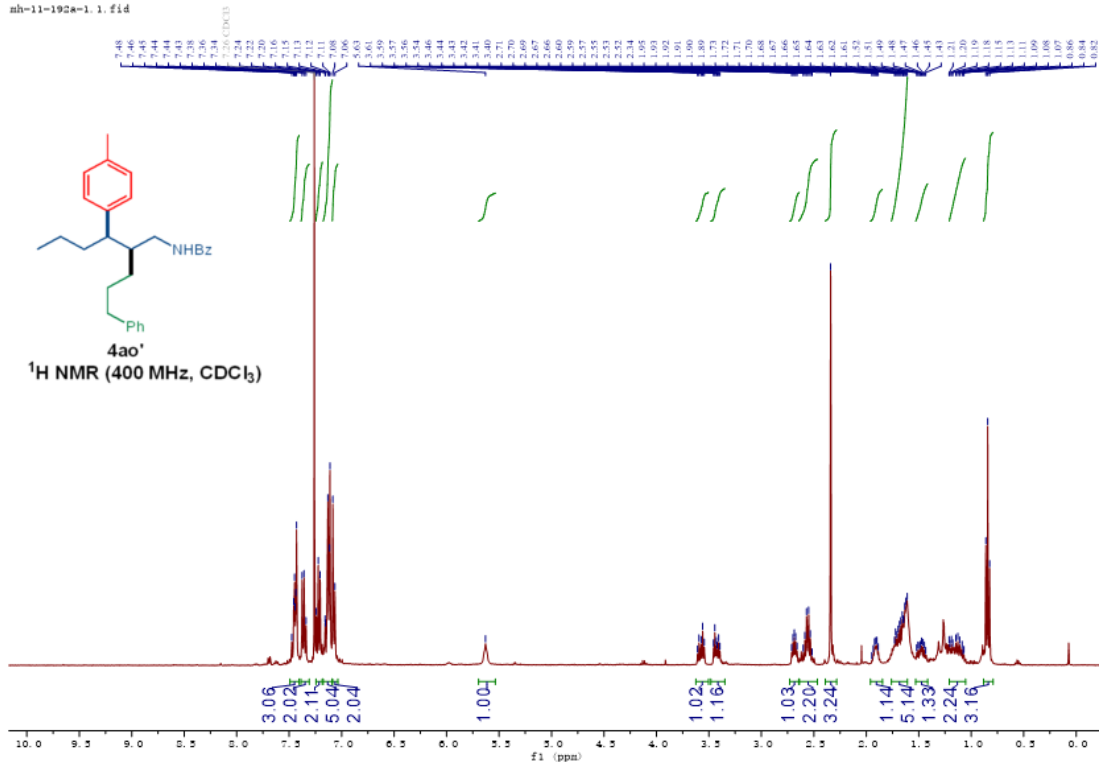

mh-10-172b-1-01c.6.fid
MeO
Ph
7
^{13}C NMR (101MHz, CDCl$_3$)
f1 (ppm)

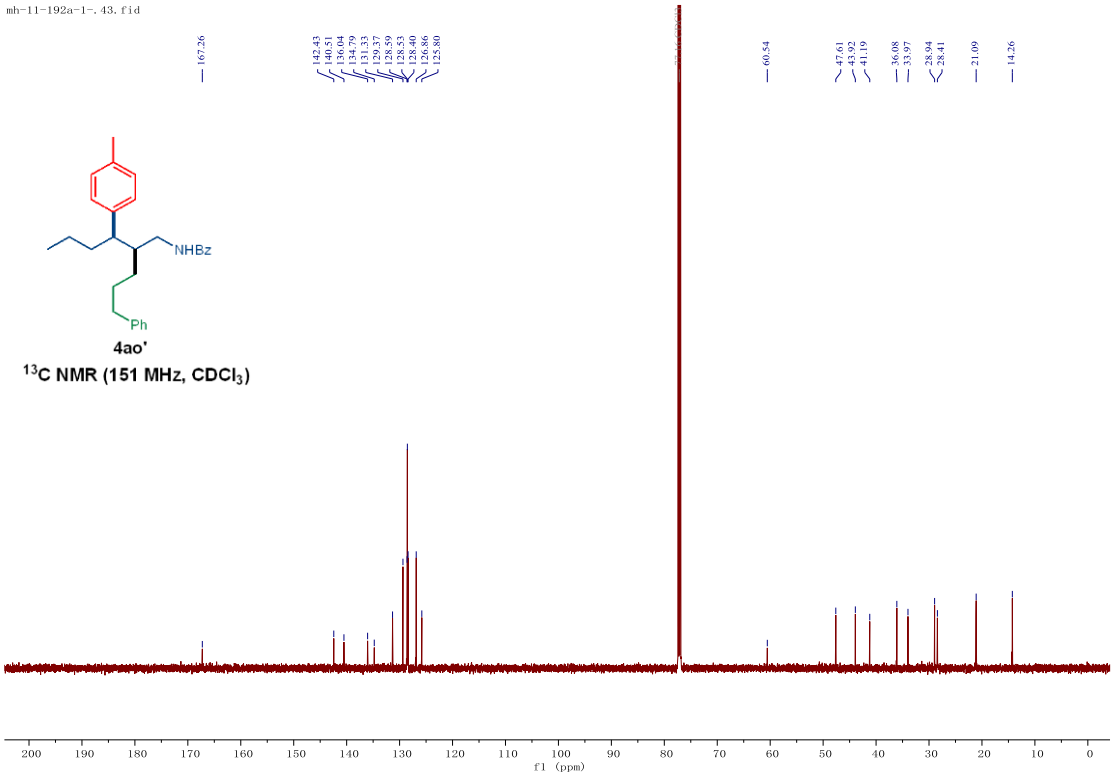

mh-11-172a-001.10.fid
MeO
NHBz
D
D
Ph
8
^{1}H NMR (600MHz, CDCl$_3$)
f1 (ppm)

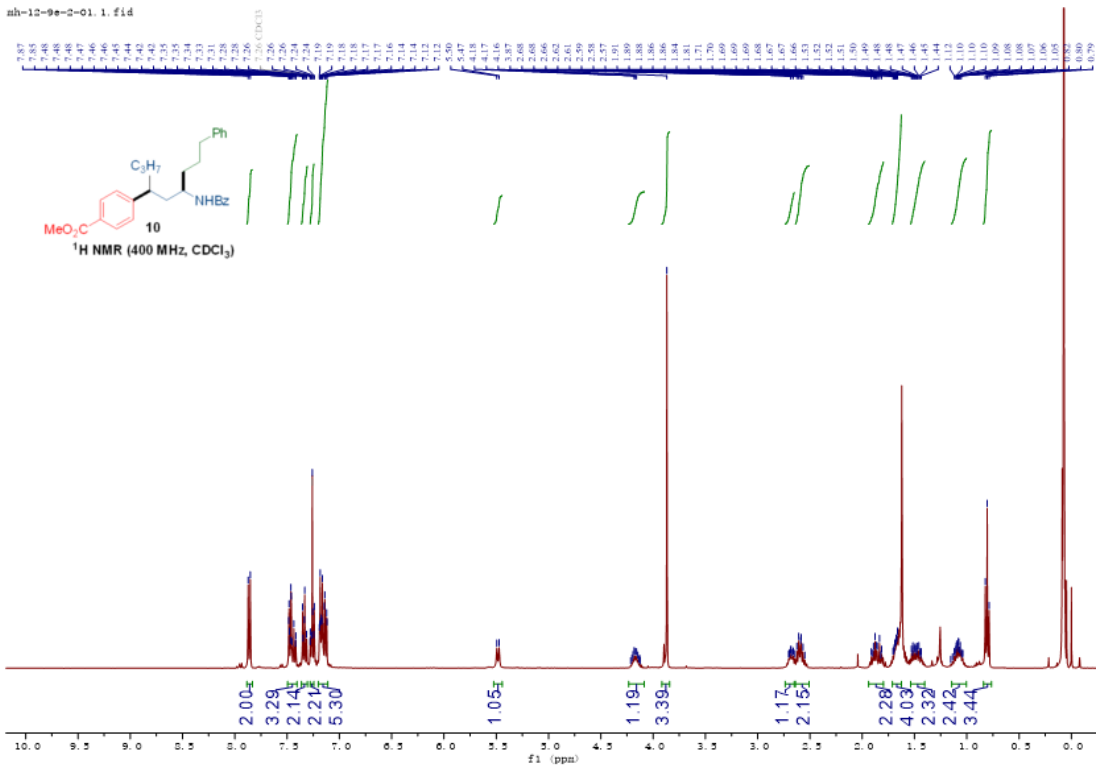

mh-11-172a-001.11.fid
NHBz
MeO
D
D
Ph
8
^{13}C NMR (151MHz, CDCl$_3$)
f1 (ppm)

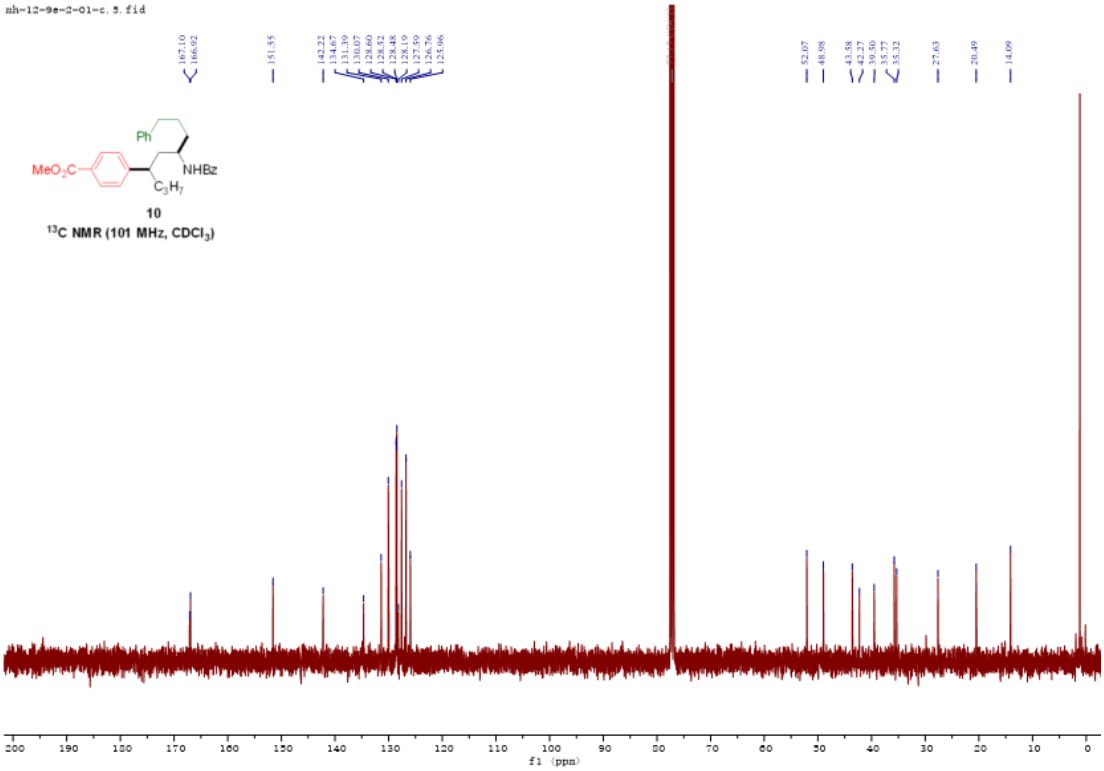

mh-11-172b-001.22.fid
Ph
D
D
O
N
H
MeO
9
^{1}H NMR (600MHz, CDCl$_3$)
f1 (ppm)

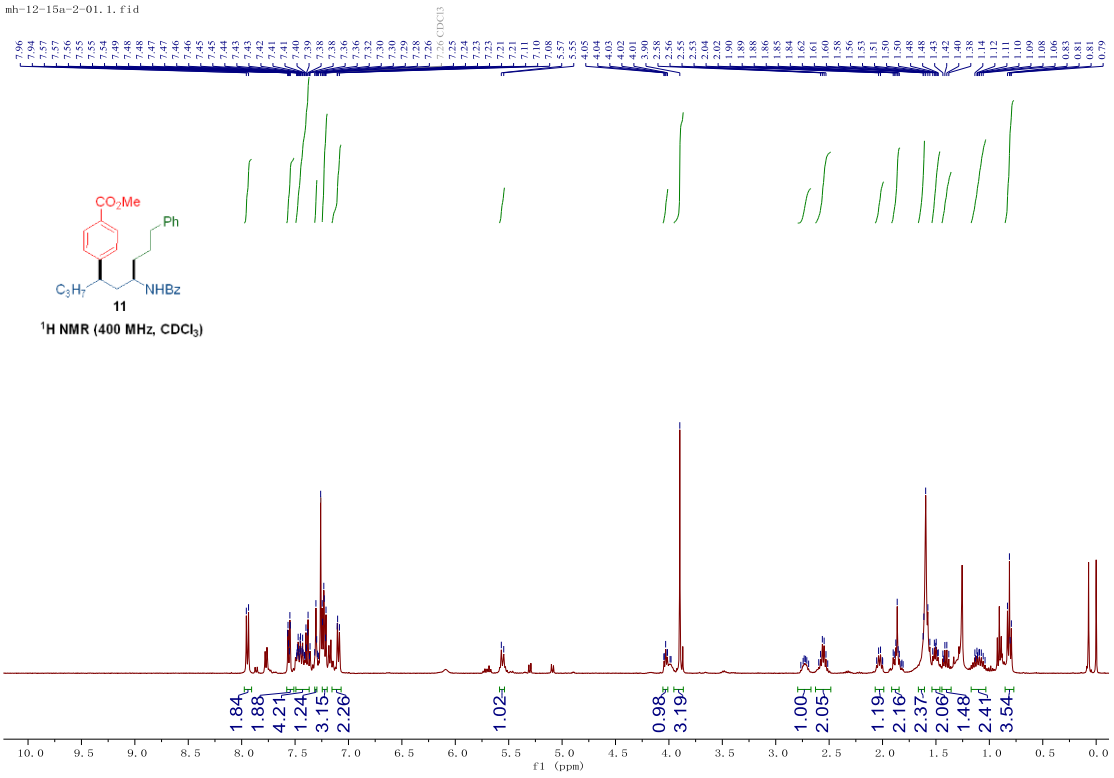

mh-11-172b-001.23.fid
Ph
D
D
MeO
O
N
H
9
^{13}C NMR (151MHz, CDCl$_3$)
f1 (ppm)

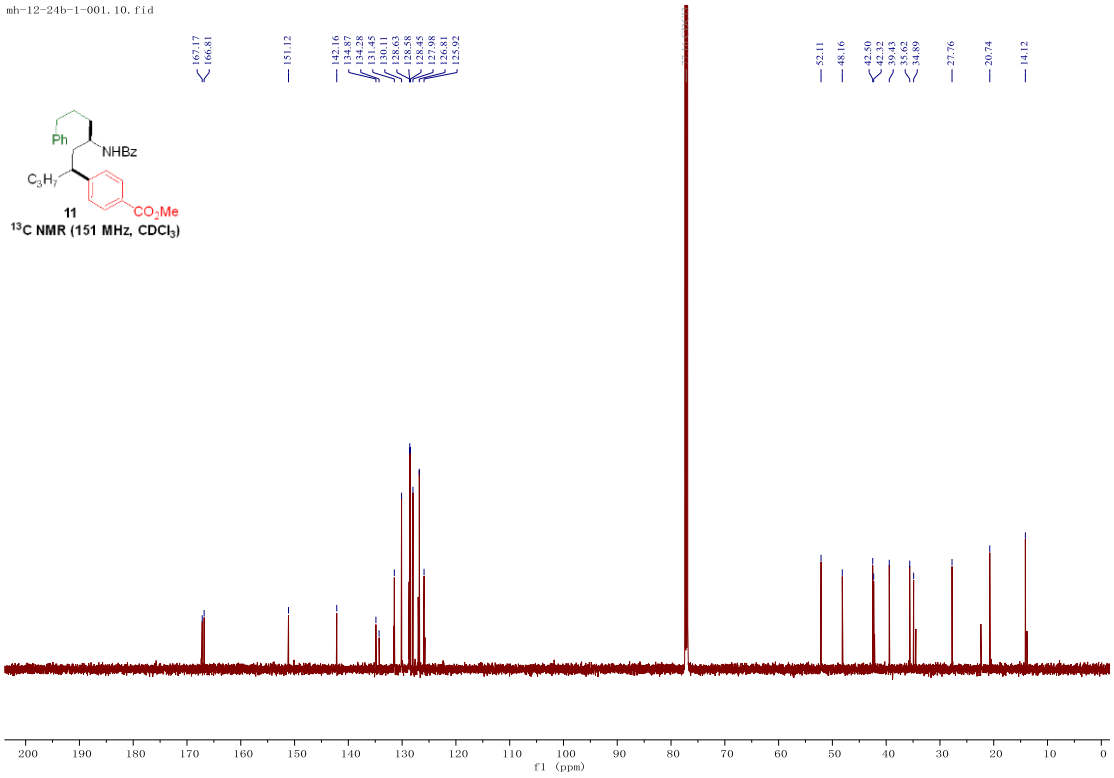

mh-11-192a-1.1.fid
NHBz
Ph
4ao'
^{1}H NMR (400 MHz, CDCl$_3$)
3.06
2.02
2.11
5.04
2.04
1.00
1.02
1.16
1.03
2.20
3.24
1.14
5.14
1.33
2.24
3.16
f1 (ppm)


mh-11-192a-1-. 43. fid
167.26
142.43
140.51
136.04
134.79
131.35
129.37
128.59
128.53
128.40
126.86
125.80
60.54
47.61
43.92
41.19
36.08
33.97
28.94
28.41
21.09
14.26
NHBz
Ph
4ao'
13C NMR (151 MHz, CDCl3)
f1 (ppm)

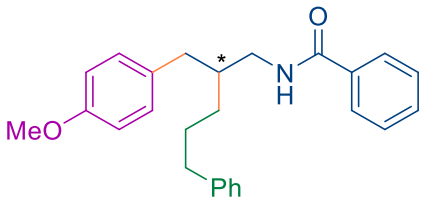

mh-12-9e-2-01. 1. fid
Ph
C3H7
NHBz
MeO2C
10
1H NMR (400 MHz, CDCl3)
2.00
3.29
2.14
2.21
5.30
1.05
1.19
3.39
1.17
2.15
2.28
4.03
2.32
2.42
3.44
f1 (ppm)


mh-12-9e-2-01-c.3.fid
Ph
MeO2C
NHBz
C3H7
10
13C NMR (101 MHz, CDCl3)
f1 (ppm)


mh-12-15a-2-01.1.fid
CO2Me
Ph
C3H7
NHBz
11
1H NMR (400 MHz, CDCl3)
1.84
1.88
4.21
1.24
3.15
2.26
1.02
0.98
3.19
1.00
2.05
1.19
2.16
2.37
2.06
1.48
2.41
3.54
f1 (ppm)

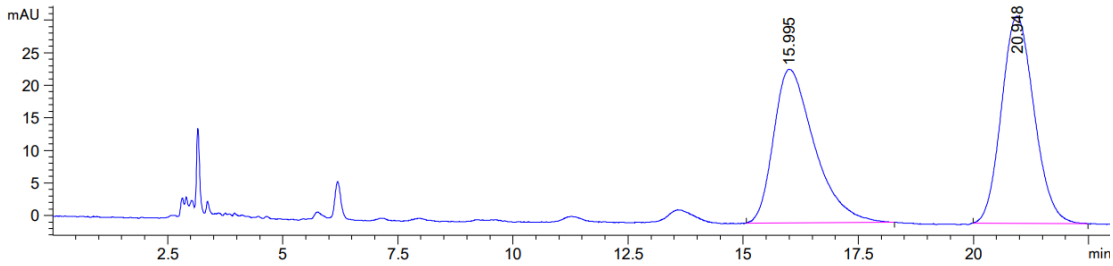

mh-12-24b-1-001.10.fid
167.17
166.81
151.12
142.16
134.87
134.28
131.45
130.11
128.63
128.58
128.45
127.98
126.81
125.92
52.11
48.16
42.50
42.32
39.43
35.62
34.89
27.76
20.74
14.12
Ph
NHBz
C3H7
CO2Me
11
13C NMR (151 MHz, CDCl3)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

X. HPLC Traces



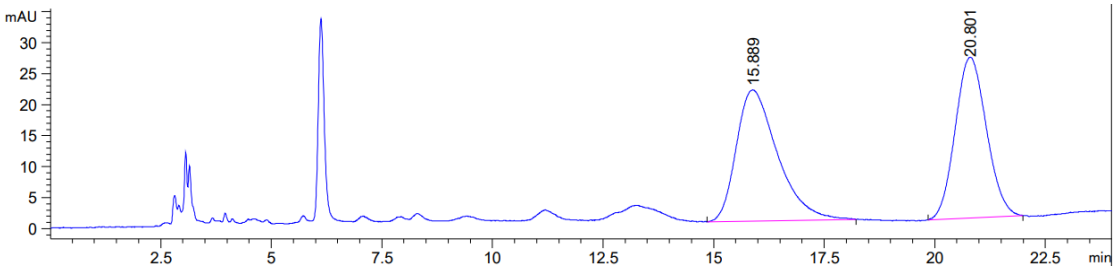
4aa

HPLC data using *rac*-**L1**

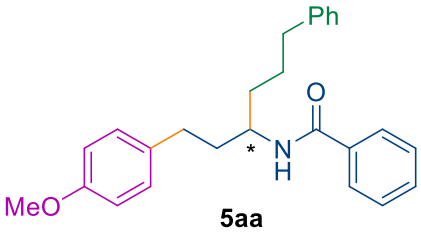


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	15.995	BB	0.7322	1452.49963	23.59635	48.0214
2	20.948	BB	0.7078	1572.19128	31.85792	51.9786

HPLC data using **L1**

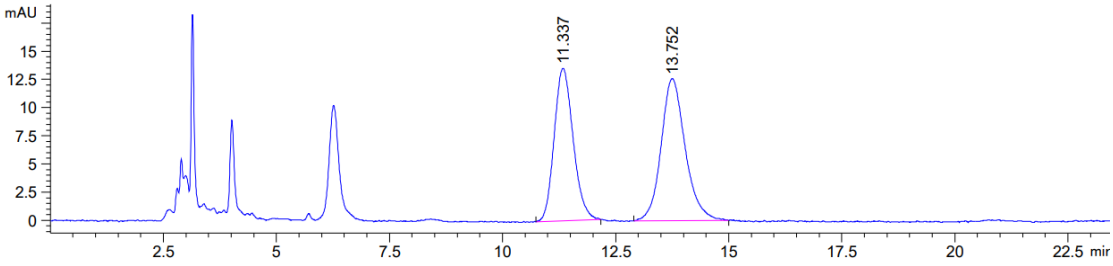


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	15.889	BB	0.7723	1372.72192	21.17680	51.8019
2	20.801	BB	0.6620	1277.22278	25.96108	48.1981



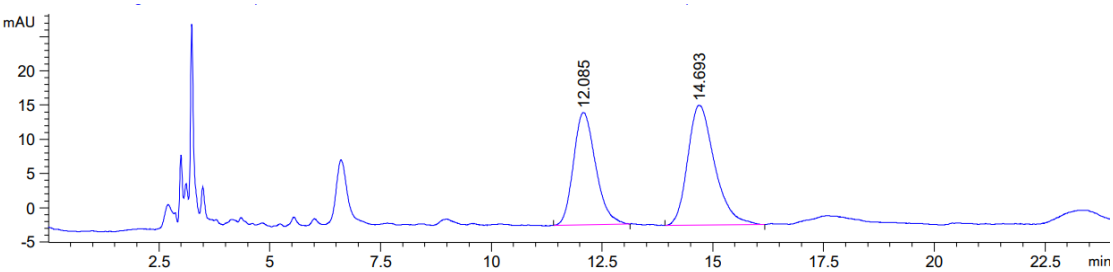
5aa

HPLC data using *rac*-**L6**



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.351	BB	0.3564	73.43568	2.51700	47.1911
2	13.729	BB	0.4288	82.17783	2.30022	52.8089

HPLC data using **L6**



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.083	BB	0.5357	455.88101	12.79363	44.8563
2	14.698	BB	0.6371	560.43231	13.26001	55.1437