Supporting Information

Base-controlled chemoselectivity: Direct coupling of acetonitriles and alcohols to synthesise α-alkylated arylacetonitriles or acetamides

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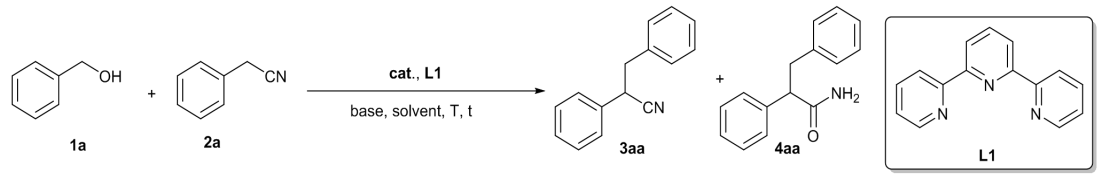
1. General information

NMR data were obtained on Bruker AVANCE Ⅲ 500MHz for ^{1}H at 500 MHz and for ^{13}C at 126 MHz with TMS as the internal standard; HRMS data were measured on an Agilent 6120 LC/TOF-MS with ESI source or Waters Premier GC/TOF-MS with EI source. Column chromatography and flash chromatography experiments were conducted using silica gel GF254 (200-300 mesh) eluting with ethyl ether and petroleum ether. TLC experiments were carried out on glass-backed silica plates. Unless otherwise noted, chemicals were used without purification as commercially available.

2. General procedures

Screening of the reaction conditions

Table S1 Optimization of Reaction Conditions[a]

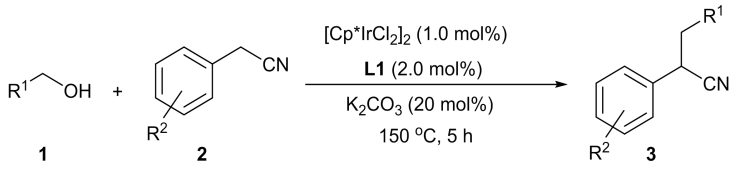


entry	cat.	base	base loading /mol%	solvent	temperature /°C	yield[b]/%	
						3aa	**4aa**
1	-	^{t}BuOK	20	toluene	150	0	0
2	$[CP^*IrCl_2]_2$	^{t}BuOK	20	toluene	150	12	80
3	$[Ir(cod)Cl_2]_2$	^{t}BuOK	20	toluene	150	41	28
4	$IrCl_3$	^{t}BuOK	20	toluene	150	48	18
5	$RuCl_2(CO)(PPh_3)_3$	^{t}BuOK	20	toluene	150	35	8
6	$[Cp^*RuCl_2]_2$	^{t}BuOK	20	toluene	150	0	0
7	$[CP^*IrCl_2]_2$	-	20	toluene	150	0	0
8	$[CP^*IrCl_2]_2$	Cs_2CO_3	20	toluene	150	80	13
9	$[CP^*IrCl_2]_2$	^{t}BuONa	20	toluene	150	24	61
10	$[CP^*IrCl_2]_2$	$KHCO_3$	20	toluene	150	83	7
11	$[CP^*IrCl_2]_2$	KOH	20	toluene	150	40	49
12	$[CP^*IrCl_2]_2$	K_2CO_3	20	toluene	150	85	0
13	$[CP^*IrCl_2]_2$	K_2CO_3	10	toluene	150	65	0
14	$[CP^*IrCl_2]_2$	K_2CO_3	15	toluene	150	73	0
15	$[CP^*IrCl_2]_2$	K_2CO_3	30	toluene	150	82	7
16	$[CP^*IrCl_2]_2$	K_2CO_3	20	xylene	150	83	0
17	$[CP^*IrCl_2]_2$	K_2CO_3	20	DMSO	150	0	0
18	$[CP^*IrCl_2]_2$	**K_2CO_3**	**20**	***tert*-amyl alcohol**	**150**	**95**	**0**
19	$[CP^*IrCl_2]_2$	K_2CO_3	20	*tert*-amyl alcohol	100	45	0
20	$[CP^*IrCl_2]_2$	K_2CO_3	20	*tert*-amyl alcohol	120	62	0
21	$[CP^*IrCl_2]_2$	K_2CO_3	20	*tert*-amyl alcohol	140	82	0
22	$[CP^*IrCl_2]_2$	^{t}BuOK	20	toluene	150	12	80
23	$[CP^*IrCl_2]_2$	^{t}BuOK	10	toluene	150	85	5

24	$[CP^*IrCl_2]_2$	^{t}BuOK	15	toluene	150	73	10
25	$[CP^*IrCl_2]_2$	^{t}BuOK	30	toluene	150	10	73
26	$[CP^*IrCl_2]_2$	^{t}BuOK	20	xylene	150	15	75
27	$[CP^*IrCl_2]_2$	^{t}BuOK	20	DMSO	150	-	-
28	$[CP^*IrCl_2]_2$	**^{t}BuOK**	**20**	***tert*-amyl alcohol**	**150**	**0**	**90**
29	$[CP^*IrCl_2]_2$	^{t}BuOK	20	*tert*-amyl alcohol	100	10	0
30	$[CP^*IrCl_2]_2$	^{t}BuOK	20	*tert*-amyl alcohol	120	55	7
31	$[CP^*IrCl_2]_2$	^{t}BuOK	20	*tert*-amyl alcohol	140	46	32

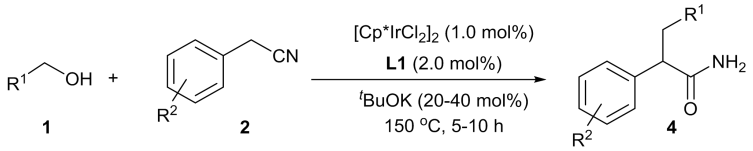
[a]Reaction conditions: benzonitrile **2a** (1.0 mmol), benzyl alcohol **1a** (1.1 mmol), **cat.** (1.0 mmol%), **L1** (2.0 mmol%) and base (20 mol%) were heated in solvent (1.0 mL) under N_2. [b]Isolated yield.

General procedures for the synthesis of products 3



Alcohol **1** (1.1 mmol), arylacetronitrile **2** (1.0 mmol, 1.0 equiv.), $[Cp^*IrCl_2]_2$ (1.0 mol%), **L1** (2.0 mol%), and K_2CO_3 (20 mol%) were heated at 150 °C in *tert*-amyl alcohol (1.0 mL) for 5 h under N_2. The mixture was cooled to room temperature when it was over. Then the mixture was extracted with EtOAc (10.0 mL × 3). The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated. The residue was purified by flash chromatography on silica gel with petroleum ether/ethyl acetate (20:1 to 5:1) to afford the products **3**.

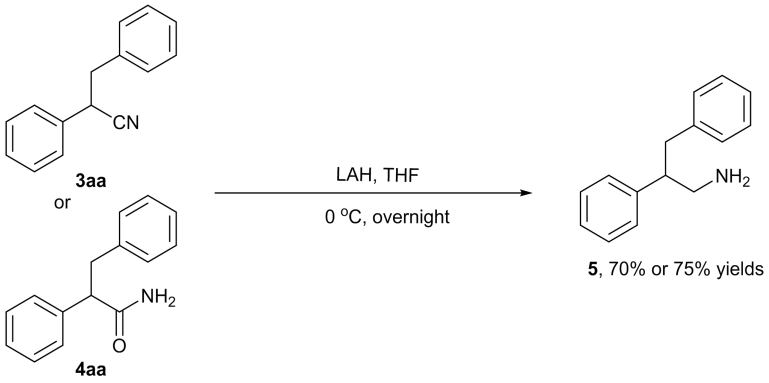
General procedures for the synthesis of products 4



Alcohol **1** (1.1 mmol), acetronitrile **2** (1.0 mmol, 1.0 equiv.), $[Cp^*IrCl_2]_2$ (1.0 mol%), **L1** (2.0 mol%), and ^{t}BuOK (20 mol%) were heated at 150 °C in *tert*-amyl alcohol (1.0 mL) for 5 h under N_2. The mixture was cooled to room temperature when it was over. Then the mixture was extracted with EtOAc (10.0 mL × 3). The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated. The residue was purified by flash chromatography on silica gel with petroleum ether/ethyl acetate (5:1 to 1:1) to afford the products **4**.

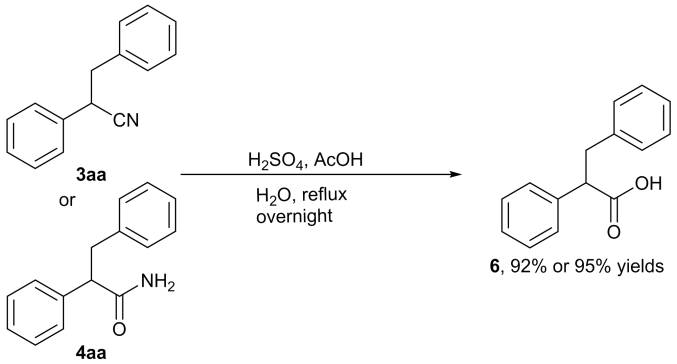
3. Functional group transformations and synthesis of drug fragment 7

Procedure for the synthesis of the product 5 from 3aa and 4aa



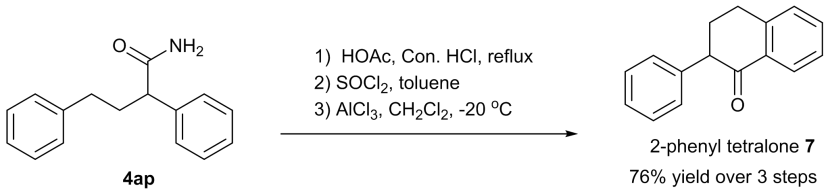
3aa (1.0 mmol, 207.0 mg) or **4aa** (1.0 mmol, 225.0 mg) in dry THF (10.0 mL) was dropwise added to a suspension of 2.5 mL $LiAlH_4$ (1.0 M) in dry THF at 0 °C under N_2. The mixture was stirred for 12 h. Then the mixture was very slowly quenched with 5.0 mL H_2O and diluted with DCM. The mixture was stirred another 0.5 h at room temperature. Then the mixture was extracted with EtOAc (10.0 mL × 3). The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated. The residue was purified by flash chromatography on silica gel with petroleum ether/ethyl acetate (1:1) to afford 2,3-diphenylpropan-1-amine **5** 147.7 mg in 70% yield or 158.3 mg in 75% yield, respectively.

Procedure for synthesis of the product 6 from 3aa and 4aa



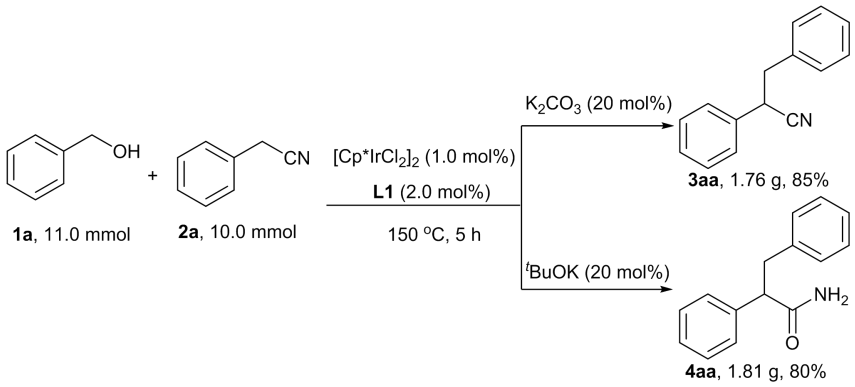
3aa (1.0 mmol, 207.0 mg) or **4aa** (1.0 mmol, 225.0 mg) in a mixture of concentrated H_2SO_4 (4.0 mL), H_2O (4.0 mL) and acetic acid (2.0 mL) was refluxed for 24 h. Then the mixture was quenched very slowly with 5.0 mL H_2O and diluted with 10.0 mL DCM. The mixture was stirred another 0.5 h at room temperature, then it was extracted with EtOAc (10.0 mL × 3). The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated. The residue was purified by flash chromatography on silica gel with petroleum ether/ethyl acetate (2:1) to afford 2,3-diphenylpropanoic acid **6** 207.9 mg in 92% yield or 214.7 mg in 95% yield, respectively.

Procedure for synthesis of the product 7



Compound **4ap** (1.0 mmol, 239.0 mg) was mixed with 20.0 mL glacial acetic acid and 8.0 mL concentrated hydrochloric acid. The solution was refluxed for 24 h. After the reaction was completed, water was added to the reaction mixture and the resulting solution was extracted with DCM. The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated to obtain the carboxylic acid product. Then $SOCl_2$ (0.25 mL, 3.0 eq.) was slowly added into the cooled solution of the carboxylic acid product in 15.0 mL dry toluene at 0 °C. The mixture was stirred for another 15 min at 0 °C and refluxed for 4 h. The volatiles were removed under reduced pressure, and the resulting oil was dissolved in 10.0 mL dry DCM and was dropwise added into a stirred suspension of $AlCl_3$ (327.0 mg, 2.0 eq.) in 20.0 mL dry DCM at -20 °C within 40 min. The reaction was stirred at -20 °C for 2 h and quenched with 10.0 mL HCl (4.0 M). The mixture was extracted with EtOAc (20.0 mL × 3). The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated. The residue was purified by flash chromatography on silica gel with petroleum ether/ethyl acetate (10:1) to afford 2-phenyl tetralone **7** 168.7 mg in 76% yield over 3 steps.

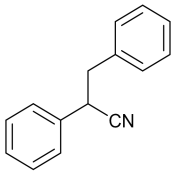
4. Multigram-scale synthesis of products 3aa and 4aa



Benzyl alcohol **1a** (11.0 mmol, 1.19 g), phenylacetronitrile **2a** (10.0 mmol, 1.17 g), catalyst $[Cp^*IrCl_2]_2$ (1.0 mol%), **L1** (2.0 mol%), K_2CO_3 (20 mol%) or ^{t}BuOK (20 mol%) were heated at 150 °C in *tert*-amyl alcohol (1.0 mL) for 5 h under N_2. The mixture was cooled to room temperature when it was over. Then the mixture was extracted with EtOAc (20.0 mL × 3). The combined organic phases were washed with water and brine, dried ($MgSO_4$), filtered, and concentrated. The residue was purified by flash chromatography on silica gel with petroleum ether/ethyl acetate (20-3:1) to afford the product **3aa** 1.76 g in 85% yield or **4aa** 1.81 g in 80% yield.

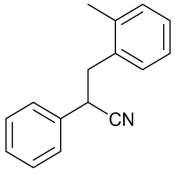
5. Characterization of products

2,3-diphenylpropanenitrile (**3aa**)



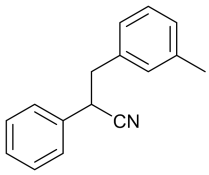
Yield: 95%; colorless solid; m.p. 46-48 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.26 (m, 8H), 7.20 – 7.14 (m, 2H), 4.03 (dd, *J* = 8.4, 6.4 Hz, 1H), 3.19 (qd, *J* = 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.27, 135.22, 129.19 (2C), 128.99 (2C), 128.60 (2C), 128.18, 127.47 (2C), 127.36, 120.34, 42.16, 39.76; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{13}NO$ ($[M+Na]^+$) 230.0940, found 230.0944.

2-phenyl-3-(o-tolyl)propanenitrile (**3ab**)



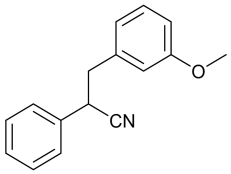
Yield: 85%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.34 (m, 3H), 7.33 – 7.26 (m, 2H), 7.24 – 7.15 (m, 4H), 3.99 (dd, *J* = 8.7, 6.6 Hz, 1H), 3.21 (ddd, *J* = 20.4, 13.8, 7.7 Hz, 2H), 2.26 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.25, 135.46, 134.67, 130.56, 130.03, 129.03 (2C), 128.20, 127.51, 127.37 (2C), 126.25, 120.45, 39.45, 38.73, 19.20**; HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}N$ ($[M+Na]^+$) 244.1097, found 244.1094.

2-phenyl-3-(m-tolyl)propanenitrile (**3ac**)



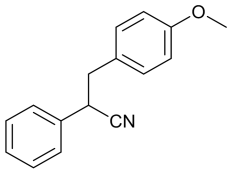
Yield: 92%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.34 (m, 3H), 7.33 – 7.27 (m, 2H), 7.22 (t, *J* = 7.5 Hz, 1H), 7.12 (d, *J* = 7.6 Hz, 1H), 7.02 – 6.96 (m, 2H), 4.02 (dd, *J* = 8.6, 6.3 Hz, 1H), 3.15 (qd, *J* = 13.6, 7.5 Hz, 2H), 2.35 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 138.21, 136.24, 135.38, 129.91, 128.96 (2C), 128.47, 128.14, 128.08, 127.44 (2C), 126.16, 120.38, 42.16, 39.81, 21.30; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}N$ ($[M+Na]^+$) 244.1097, found 244.1095.

3-(3-methoxyphenyl)-2-phenylpropanenitrile (**3ad**)



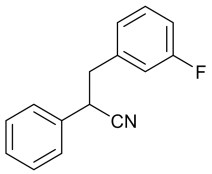
Yield: 92%; white solid; m.p. 37-39 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.33 (m, 3H), 7.33 – 7.27 (m, 2H), 7.24 (t, *J* = 7.9 Hz, 1H), 6.84 (dd, *J* = 8.3, 2.4 Hz, 1H), 6.77 (d, *J* = 7.5 Hz, 1H), 6.71 – 6.66 (m, 1H), 4.03 (dd, *J* = 8.3, 6.5 Hz, 1H), 3.77 (s, 3H), 3.16 (ddd, *J* = 20.0, 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 159.62, 137.73, 135.19, 129.59, 128.98 (2C), 128.16, 127.45 (2C), 121.45, 120.35, 114.72, 112.92, 55.11, 42.15, 39.61; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}NO$ ($[M+Na]^+$) 260.1046, found 260.1048.

3-(4-methoxyphenyl)-2-phenylpropanenitrile (**3ae**)



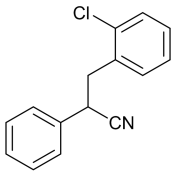
Yield: 96%; white solid; m.p. 84-85 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.41 – 7.32 (m, 3H), 7.29 – 7.25 (m, 2H), 7.10 – 7.03 (m, 2H), 6.88 – 6.82 (m, 2H), 3.98 (dd, *J* = 8.1, 6.5 Hz, 1H), 3.81 (s, 3H), 3.13 (qd, *J* = 13.7, 7.3 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 158.88, 135.28, 130.28 (2C), 128.97 (2C), 128.31, 128.13, 127.50 (2C), 120.45, 113.99 (2C), 55.22, 41.38, 40.04; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}NO$ ($[M+Na]^+$) 260.1046, found 260.1046.

3-(3-fluorophenyl)-2-phenylpropanenitrile (**3af**)



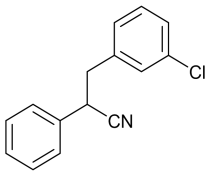
Yield: 90%; white solid; m.p. 46-48 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.41 – 7.35 (m, 3H), 7.31 – 7.25 (m, 3H), 7.03 – 6.92 (m, 2H), 6.88 – 6.81 (m, 1H), 4.03 (dd, *J* = 8.2, 6.5 Hz, 1H), 3.18 (qd, *J* = 13.7, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 162.75 (d, $J^1_{C\text{-}F}$ = 246.5 Hz, 1C), 138.59 (d, $J^3_{C\text{-}F}$ = 7.4 Hz, 1C), 134.81, 130.14 (d, $J^3_{C\text{-}F}$ = 8.3 Hz, 1C), 129.10 (2C), 128.37, 127.42 (2C), 124.93 (d, $J^4_{C\text{-}F}$ = 2.9 Hz, 1C), 120.05, 116.16 (d, $J^2_{C\text{-}F}$ = 21.4 Hz, 1C), 114.40 (d, $J^2_{C\text{-}F}$ = 21.0 Hz, 1C), 41.74 (d, $J^4_{C\text{-}F}$ = 1.6 Hz, 1C), 39.44; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}FN$ ($[M+Na]^+$) 248.0846, found 248.0844.

3-(2-chlorophenyl)-2-phenylpropanenitrile **(3ag)**



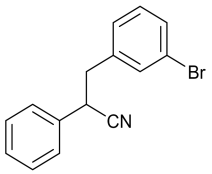
Yield: 94%; white solid; m.p. 66-67 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.45 – 7.34 (m, 6H), 7.29 – 7.22 (m, 3H), 4.20 (dd, *J* = 9.7, 6.1 Hz, 1H), 3.29 (ddd, *J* = 23.2, 13.6, 7.9 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.26, 134.17, 134.01, 131.81, 129.72, 129.11 (2C), 129.09, 128.30, 127.29 (2C), 127.15, 120.10, 40.44, 37.63; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}ClN$ ($[M+Na]^+$) 264.0550, found 264.0551.

3-(3-chlorophenyl)-2-phenylpropanenitrile (**3ah**)



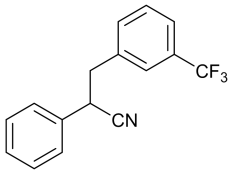
Yield: 97%; white solid; m.p. 67-68 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.34 (m, 3H), 7.31 – 7.24 (m, 4H), 7.15 – 7.11 (m, 1H), 7.08 – 7.02 (m, 1H), 4.02 (dd, *J* = 8.3, 6.5 Hz, 1H), 3.15 (qd, *J* = 13.7, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 138.14, 134.76, 134.38, 129.88, 129.31, 129.11 (2C), 128.40, 127.65, 127.45, 127.43 (2C), 119.97, 41.69, 39.46; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}ClN$ ($[M+Na]^+$) 264.0550, found 264.0543.

3-(3-bromophenyl)-2-phenylpropanenitrile (**3ai**)



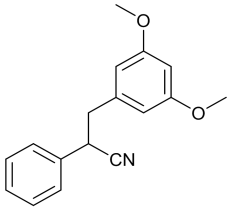
Yield: 85%; white solid; m.p. 83-84 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.45 – 7.34 (m, 4H), 7.31 – 7.25 (m, 3H), 7.22 – 7.15 (m, 1H), 7.12 – 7.07 (m, 1H), 4.01 (dd, *J* = 8.3, 6.5 Hz, 1H), 3.14 (qd, *J* = 13.7, 7.5 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 138.43, 134.74, 132.21, 130.57, 130.16, 129.11 (2C), 128.40, 127.92, 127.43 (2C), 122.55, 119.95, 41.64, 39.47; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}BrN$ ($[M+Na]^+$) 308.0045, found 308.0046.

2-phenyl-3-(3-(trifluoromethyl)phenyl)propanenitrile (**3aj**)



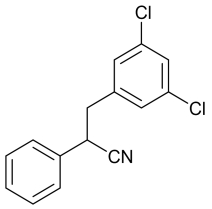
Yield: 85%; white solid; m.p. 65-66 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.55 (d, *J* = 7.8 Hz, 1H), 7.44 (t, *J* = 7.7 Hz, 1H), 7.40 – 7.34 (m, 4H), 7.31 (s, 1H), 7.28 – 7.24 (m, 2H), 4.09 – 4.01 (m, 1H), 3.30 – 3.19 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 137.00, 134.52, 132.73, 130.92 (q, *J* = 32.4 Hz, 1C), 129.15 (2C), 129.12, 128.48, 127.45 (2C), 126.06 (q, *J* = 3.7 Hz, 1C), 124.32 (q, *J* = 3.8 Hz, 1C), 123.91 (q, *J* = 272.4 Hz, 1C), 119.85, 41.79, 39.40; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{12}F_3N$ ($[M+Na]^+$) 298.0814, found 298.0816.

3-(3,5-dimethoxyphenyl)-2-phenylpropanenitrile (**3ak**)



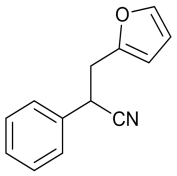
Yield: 83%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.27 (m, 5H), 6.39 (t, *J* = 2.2 Hz, 1H), 6.30 (d, *J* = 2.2 Hz, 2H), 4.01 (dd, *J* = 8.3, 6.5 Hz, 1H), 3.75 (s, 6H), 3.11 (ddd, *J* = 20.0, 13.5, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 160.85 (2C), 138.49, 135.28, 129.04 (2C), 128.23, 127.52 (2C), 120.44, 107.20 (2C), 99.45, 55.30 (2C), 42.43, 39.57; **HRMS** (ES+) *m/z* calcd for $C_{17}H_{17}NO_2$ ($[M+Na]^+$) 290.1151, found 290.1153.

3-(3,5-dichlorophenyl)-2-phenylpropanenitrile (**3al**)



Yield: 78%; white solid; m.p. 50-51 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.36 (m, 3H), 7.31 – 7.25 (m, 3H), 7.03 (d, *J* = 1.8 Hz, 2H), 4.02 (dd, *J* = 8.1, 6.6 Hz, 1H), 3.18 – 3.07 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 139.32, 135.04 (2C), 134.31, 129.20 (2C), 128.58, 127.73 (3C), 127.36 (2C), 119.63, 41.32, 39.11; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{11}Cl_2N$ ($[M+Na]^+$) 298.0161, found 298.0154.

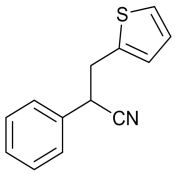
3-(furan-2-yl)-2-phenylpropanenitrile (**3am**)



Yield: 65%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.26 (m, 6H), 6.34 – 6.28 (m, 1H), 6.17 – 6.11 (m, 1H), 4.19 – 4.13 (m, 1H), 3.23 (ddd, *J* = 21.5, 15.0, 7.5 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.96, 142.14, 134.86, 129.08 (2C), 128.32,

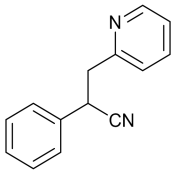
127.25 (2C), 120.07, 110.49, 108.20, 37.05, 34.62; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{11}NO$ ([M+Na]$^+$) 220.0733, found 220.0732.

2-phenyl-3-(thiophen-2-yl)propanenitrile (**3an**)



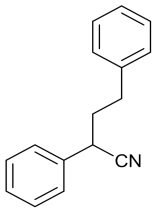
Yield: 76%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.30 (m, 5H), 7.20 (dd, *J* = 5.1, 1.1 Hz, 1H), 6.95 (dd, *J* = 5.1, 3.5 Hz, 1H), 6.90 – 6.85 (m, 1H), 4.06 (dd, *J* = 8.1, 6.4 Hz, 1H), 3.42 (ddd, *J* = 21.1, 14.7, 7.2 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 137.92, 134.74, 129.10 (2C), 128.41, 127.46 (2C), 127.10, 126.97, 124.91, 120.10, 40.06, 36.17; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{11}NS$ ([M+Na]$^+$) 236.0504, found 236.0501.

2-phenyl-3-(pyridin-2-yl)propanenitrile (**3ao**)



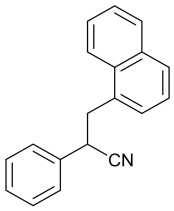
Yield: 83%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.61 (d, *J* = 4.8 Hz, 1H), 7.62 (td, *J* = 7.7, 1.7 Hz, 1H), 7.40 – 7.30 (m, 5H), 7.21 (dd, *J* = 7.5, 4.9 Hz, 1H), 7.13 (d, *J* = 7.7 Hz, 1H), 4.50 (dd, *J* = 9.2, 6.6 Hz, 1H), 3.33 (ddd, *J* = 20.4, 13.9, 7.9 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 156.16, 149.66, 136.72, 135.46, 129.07 (2C), 128.16, 127.39 (2C), 123.90, 122.35, 120.55, 44.15, 37.27; **HRMS** (ES+) *m/z* calcd for $C_{14}H_{12}N_2$ ([M+Na]$^+$) 231.0893, found 231.0892.

2,4-diphenylbutanenitrile (**3ap**)



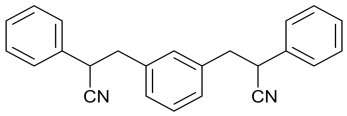
Yield: 81%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.45 – 7.40 (m, 2H), 7.38 – 7.32 (m, 5H), 7.31 – 7.20 (m, 3H), 3.77 (dd, *J* = 9.0, 6.1 Hz, 1H), 2.91 – 2.79 (m, 2H), 2.35 – 2.26 (m, 1H), 2.25 – 2.15 (m, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 139.77, 135.62, 129.10 (2C), 128.67 (2C), 128.41 (2C), 128.12, 127.26 (2C), 126.48, 120.62, 37.33, 36.53, 33.01; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}N$ ([M+Na]$^+$) 244.1097, found 244.1094.

3-(naphthalen-1-yl)-2-phenylpropanenitrile (**3aq**)



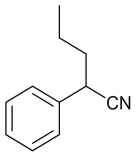
Yield: 90%; white solid; m.p. 84-85 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.00 – 7.90 (m, 2H), 7.83 (d, *J* = 8.2 Hz, 1H), 7.62 – 7.51 (m, 2H), 7.45 – 7.31 (m, 7H), 4.20 (dd, *J* = 8.8, 6.6 Hz, 1H), 3.65 (qd, *J* = 14.0, 7.7 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.62, 133.97, 132.22, 131.31, 129.25, 129.12 (2C), 128.32, 128.29, 128.10, 127.35 (2C), 126.53, 125.78, 125.47, 122.60, 120.46, 39.56, 38.80; **HRMS** (ES+) *m/z* calcd for $C_{19}H_{15}N$ ($[M+Na]^+$) 280.1097, found 280.1097.

3,3'-(1,3-phenylene)bis(2-phenylpropanenitrile) (**3ar**)



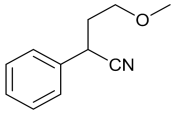
Yield: 85%; white solid; m.p. 145-146 °C;**^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.33 (m, 10H), 7.25 – 7.20 (m, 1H), 7.18 (s, 1H), 7.15 – 7.11 (m, 2H), 4.51 – 4.43 (m, 2H), 3.19 – 3.07 (m, 4H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 137.03, 136.99, 135.79 (2C), 130.01, 128.88 (4C), 128.24, 127.95 (2C), 127.82 (2C), 127.54 (4C), 120.92, 120.88, 40.39, 40.37, 37.84, 37.82. **HRMS** (ES+) *m/z* calcd for $C_{24}H_{20}N_2$ ($[M+Na]^+$) 359.1519, found 359.1526.

2-phenylpentanenitrile (**3as**)



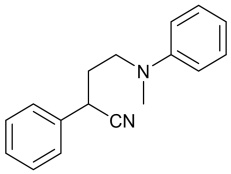
Yield: 68%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.37 (m, 2H), 7.37 – 7.32 (m, 3H), 3.80 (dd, *J* = 8.6, 6.3 Hz, 1H), 1.99 – 1.80 (m, 2H), 1.61 – 1.43 (m, 2H), 0.98 (t, *J* = 7.4 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.03, 129.01 (2C), 127.95, 127.22 (2C), 120.89, 37.86, 37.14, 20.27, 13.39; **HRMS** (ES+) *m/z* calcd for $C_{11}H_{13}N$ ($[M+Na]^+$) 182.0940, found 182.0942.

4-methoxy-2-phenylbutanenitrile (**3at**)



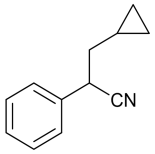
Yield: 85%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.31 (m, 5H), 4.06 (dd, *J* = 8.8, 6.8 Hz, 1H), 3.56 (ddd, *J* = 9.8, 8.0, 4.4 Hz, 1H), 3.44 – 3.33 (m, 4H), 2.25 – 2.04 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.55, 129.12 (2C), 128.12, 127.40 (2C), 120.76, 68.58, 58.81, 35.93, 33.80; **HRMS** (ES+) *m/z* calcd for $C_{11}H_{13}NO$ ($[M+Na]^+$) 198.0889, found 198.0885.

4-(methyl(phenyl)amino)-2-phenylbutanenitrile (**3au**)



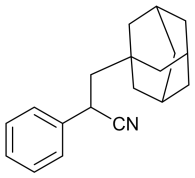
Yield: 82%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.45 – 7.40 (m, 2H), 7.39 – 7.35 (m, 3H), 7.30 – 7.24 (m, 2H), 6.78 (t, *J* = 7.3 Hz, 1H), 6.72 (d, *J* = 8.0 Hz, 2H), 3.89 (t, *J* = 7.4 Hz, 1H), 3.55 – 3.49 (m, 2H), 2.97 (s, 3H), 2.21 (dd, *J* = 14.5, 7.3 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 148.94, 135.33, 129.34 (2C), 129.22 (2C), 128.28, 127.25 (2C), 120.57, 117.13, 112.76 (2C), 50.05, 38.73, 34.81, 32.89; **HRMS** (ES+) *m/z* calcd for $C_{17}H_{18}N_2$ ($[M+Na]^+$) 273.1362, found 273.1365.

3-cyclopropyl-2-phenylpropanenitrile (**3av**)



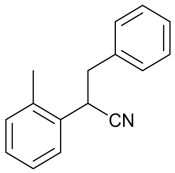
Yield: 80%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.41 – 7.31 (m, 5H), 3.88 (dd, *J* = 8.4, 6.3 Hz, 1H), 1.98 – 1.69 (m, 2H), 0.90 – 0.81 (m, 1H), 0.64 – 0.48 (m, 2H), 0.27 – 0.10 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.96, 128.99 (2C), 127.98, 127.31 (2C), 121.03, 41.04, 37.84, 8.81, 4.75, 4.46; **HRMS** (ES+) *m/z* calcd for $C_{12}H_{13}N$ ($[M+Na]^+$) 194.0940, found 194.0936.

3-(adamantan-1-yl)-2-phenylpropanenitrile (**3aw**)



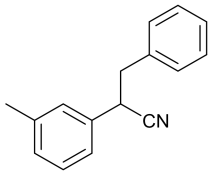
Yield: 64%; white solid; m.p. 49-50 ^{o}C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.41 – 7.29 (m, 5H), 3.82 (dd, *J* = 10.4, 3.3 Hz, 1H), 2.07 – 1.90 (m, 4H), 1.80 – 1.60 (m, 13H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 138.08, 129.12 (2C), 127.76, 127.16 (2C), 122.36, 51.09, 42.21 (3C), 36.81 (3C), 33.03, 31.34, 28.48 (3C); **HRMS** (ES+) *m/z* calcd for $C_{19}H_{23}N$ ($[M+Na]^+$) 288.1723, found 288.1722.

3-phenyl-2-(o-tolyl)propanenitrile (**3ba**)



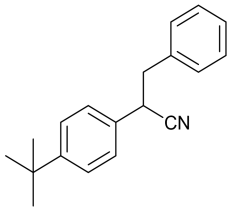
Yield: 75%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.48 – 7.44 (m, 1H), 7.37 – 7.25 (m, 5H), 7.23 – 7.18 (m, 3H), 4.18 (dd, *J* = 8.8, 5.9 Hz, 1H), 3.15 (ddd, *J* = 19.5, 13.6, 7.4 Hz, 2H), 2.29 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.57, 135.06, 133.72, 130.96, 129.16 (2C), 128.71 (2C), 128.29, 127.70, 127.45, 126.91, 120.76, 41.01, 36.64, 19.06; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}N$ ($[M+Na]^+$) 244.1097, found 244.1092.

3-phenyl-2-(m-tolyl)propanenitrile (**3bb**)



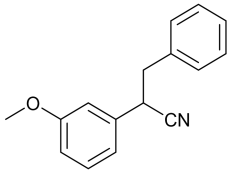
Yield: 92%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.36 – 7.25 (m, 4H), 7.21 – 7.14 (m, 3H), 7.13 (s, 1H), 7.09 (d, *J* = 7.7 Hz, 1H), 3.98 (dd, *J* = 8.6, 6.3 Hz, 1H), 3.17 (qd, *J* = 13.6, 7.5 Hz, 2H), 2.38 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 138.88, 136.47, 135.21, 129.22 (2C), 128.94, 128.89, 128.62 (2C), 128.14, 127.37, 124.53, 120.48, 42.25, 39.81, 21.36; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}N$ ($[M+Na]^+$) 244.1097, found 244.1089.

2-(4-(tert-butyl)phenyl)-3-phenylpropanenitrile (**3bc**)



Yield: 84%; white solid; m.p. 66-67 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.39 (m, 2H), 7.37 – 7.28 (m, 3H), 7.28 – 7.19 (m, 4H), 4.00 (dd, *J* = 8.8, 6.3 Hz, 1H), 3.26 – 3.11 (m, 2H), 1.35 (s, 9H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 151.30, 136.58, 132.30, 129.16 (2C), 128.63 (2C), 127.33, 127.09 (2C), 125.95 (2C), 120.50, 42.22, 39.47, 34.57, 31.27 (3C); **HRMS** (ES+) *m/z* calcd for $C_{19}H_{21}N$ ($[M+Na]^+$) 286.1566, found 286.1566.

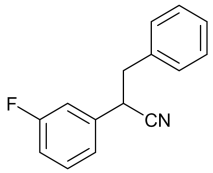
2-(3-methoxyphenyl)-3-phenylpropanenitrile (**3bd**)



Yield: 85%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.26 (m, 4H), 7.20 – 7.16 (m, 2H), 6.91 – 6.86 (m, 2H), 6.79 (t, *J* = 2.1 Hz, 1H), 3.99 (dd, *J* = 8.4, 6.4 Hz, 1H), 3.80 (s, 3H), 3.18 (qd, *J* = 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 159.97, 136.64, 136.30, 130.06, 129.21 (2C), 128.62 (2C), 127.38, 120.27, 119.71,

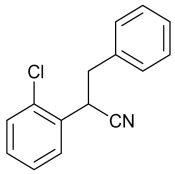
113.75, 113.17, 55.30, 42.08, 39.77; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}NO$ ([M+Na]$^+$) 260.1046, found 260.1044.

2-(3-fluorophenyl)-3-phenylpropanenitrile (**3be**)



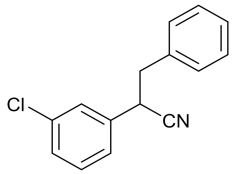
Yield: 62%; white solid; m.p. 64-65 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 – 7.27 (m, 4H), 7.18 – 7.13 (m, 2H), 7.10 – 7.02 (m, 2H), 7.02 – 6.97 (m, 1H), 4.02 (dd, *J* = 8.2, 6.5 Hz, 1H), 3.19 (ddd, *J* = 20.1, 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 162.90 (d, $J^1_{C\text{-}F}$ = 247.7 Hz, 1C), 137.48 (d, $J^3_{C\text{-}F}$ = 7.4 Hz, 1C), 135.82, 130.64 (d, $J^3_{C\text{-}F}$ = 8.4 Hz, 1C), 129.18 (2C), 128.72 (2C), 127.57, 123.24 (d, $J^4_{C\text{-}F}$ = 3.0 Hz, 1C), 119.81, 115.31 (d, $J^2_{C\text{-}F}$ = 21.1 Hz, 1C), 114.73 (d, $J^2_{C\text{-}F}$ = 22.7 Hz, 1C), 41.94, 39.45 (d, $J^4_{C\text{-}F}$ = 1.8 Hz); **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}FN$ ([M+Na]$^+$) 2248.0846, found 248.0838.

2-(2-chlorophenyl)-3-phenylpropanenitrile (**3bf**)



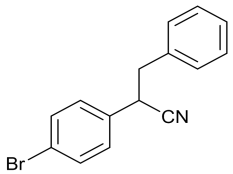
Yield: 60%; white solid; m.p. 65-66 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.52 – 7.43 (m, 2H), 7.37 – 7.30 (m, 5H), 7.28 – 7.24 (m, 2H), 4.55 (dd, *J* = 9.4, 4.8 Hz, 1H), 3.16 (ddd, *J* = 23.0, 13.6, 7.1 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.11, 133.04, 132.64, 130.03, 129.68, 129.25 (2C), 129.22, 128.69 (2C), 127.58, 127.53, 119.77, 40.14, 37.34; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}ClN$ ([M+Na]$^+$) 264.0550, found 264.0549.

2-(3-chlorophenyl)-3-phenylpropanenitrile (**3bg**)



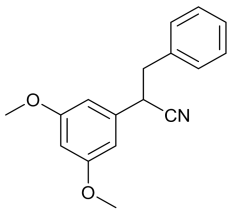
Yield: 92%; white solid; m.p. 64-65 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.36 – 7.26 (m, 6H), 7.18 – 7.13 (m, 3H), 4.00 (dd, *J* = 8.3, 6.5 Hz, 1H), 3.17 (ddd, *J* = 20.0, 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 137.08, 135.79, 134.91, 130.29, 129.20 (2C), 128.73 (2C), 128.53, 127.72, 127.60, 125.74, 119.75, 41.97, 39.42; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}ClN$ ([M+Na]$^+$) 264.0550, found 264.0546.

2-(4-bromophenyl)-3-phenylpropanenitrile (**3bh**)



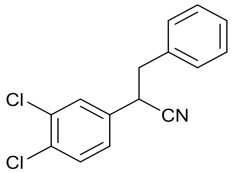
Yield: 90%; white solid; m.p. 67-68 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.52 – 7.47 (m, 2H), 7.35 – 7.27 (m, 3H), 7.16 – 7.09 (m, 4H), 3.99 (dd, *J* = 7.8, 6.8 Hz, 1H), 3.16 (ddd, *J* = 20.2, 13.6, 7.3 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.78, 134.16, 132.16 (2C), 129.24 (2C), 129.23 (2C), 128.72 (2C), 127.56, 122.32, 119.90, 41.95, 39.21; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{12}BrN$ ($[M+Na]^+$) 308.0045, found 308.0038.

2-(3,5-dimethoxyphenyl)-3-phenylpropanenitrile (**3bi**)



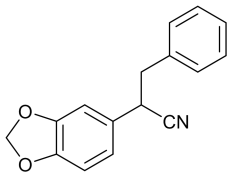
Yield: 85%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 – 7.26 (m, 3H), 7.22 – 7.16 (m, 2H), 6.45 – 6.39 (m, 3H), 3.95 (dd, *J* = 8.3, 6.4 Hz, 1H), 3.77 (s, 6H), 3.17 (qd, *J* = 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 161.16 (2C), 137.36, 136.35, 129.25 (2C), 128.65 (2C), 127.41, 120.26, 105.63 (2C), 100.08, 55.43 (2C), 41.99, 39.94; **HRMS** (ES+) *m/z* calcd for $C_{17}H_{17}NO_2$ ($[M+Na]^+$) 290.1151, found 290.1153.

2-(3,4-dichlorophenyl)-3-phenylpropanenitrile (**3bj**)



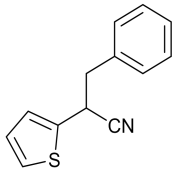
Yield: 82%; white solid; m.p. 88-89 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.44 (d, *J* = 8.3 Hz, 1H), 7.39 – 7.28 (m, 4H), 7.17 – 7.06 (m, 3H), 3.99 (dd, *J* = 7.8, 6.8 Hz, 1H), 3.16 (ddd, *J* = 20.2, 13.6, 7.3 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.43, 135.19, 133.20, 132.64, 130.95, 129.55, 129.22 (2C), 128.81 (2C), 127.73, 126.90, 119.45, 41.81, 38.88; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{11}Cl_2N$ ($[M+Na]^+$) 298.0161, found 298.0153.

2-(benzo[d][1,3]dioxol-5-yl)-3-phenylpropanenitrile (**3bk**)



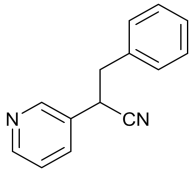
Yield: 83%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.26 (m, 3H), 7.20 – 7.14 (m, 2H), 6.80 – 6.76 (m, 2H), 6.71 (dd, *J* = 8.0, 1.7 Hz, 1H), 5.99 (s, 2H), 3.93 (dd, *J* = 8.2, 6.6 Hz, 1H), 3.15 (ddd, *J* = 20.1, 13.6, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 148.15, 147.50, 136.22, 129.17 (2C), 128.83, 128.60 (2C), 127.36, 120.98, 120.40, 108.50, 107.82, 101.38, 42.20, 39.39; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{13}NO_2$ ($[M+Na]^+$) 274.0838, found 274.0840.

3-phenyl-2-(thiophen-2-yl)propanenitrile (**3bl**)



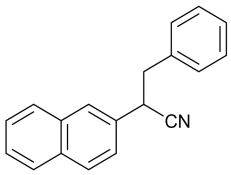
Yield: 55%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.27 (m, 4H), 7.25 – 7.21 (m, 2H), 7.03 – 6.96 (m, 2H), 4.34 – 4.28 (m, 1H), 3.33 – 3.22 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 137.14, 135.91, 129.14 (2C), 128.71 (2C), 127.58, 127.06, 126.50, 125.65, 119.46, 42.19, 34.87; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{11}NS$ ($[M+Na]^+$) 236.0504, found 236.0509.

3-phenyl-2-(pyridin-3-yl)propanenitrile (**3bm**)



Yield: 64%; white solid; m.p. 64-65 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.59 (dd, *J* = 4.8, 1.5 Hz, 1H), 8.47 (d, *J* = 2.3 Hz, 1H), 7.62 – 7.56 (m, 1H), 7.34 – 7.26 (m, 4H), 7.15 – 7.09 (m, 2H), 4.10 – 4.04 (m, 1H), 3.20 (ddd, *J* = 20.3, 13.6, 7.3 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.63, 148.81, 135.31, 135.03, 131.00, 129.22 (2C), 128.78 (2C), 127.70, 123.68, 119.39, 41.77, 37.21; **HRMS** (ES+) *m/z* calcd for $C_{14}H_{12}N_2$ ($[M+Na]^+$) 231.0893, found 231.0894.

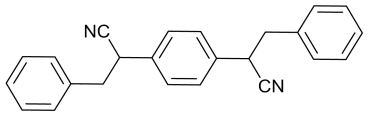
2-(naphthalen-2-yl)-3-phenylpropanenitrile (**3bn**)



Yield: 85%; white solid; m.p. 35-37 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.91 – 7.81 (m, 3H), 7.76 (s, 1H), 7.57 – 7.52 (m, 2H), 7.38 (dd, *J* = 8.5, 1.8 Hz, 1H), 7.35 – 7.26 (m, 3H), 7.23 – 7.17 (m, 2H), 4.20 (dd, *J* = 8.2, 6.5 Hz, 1H), 3.28 (qd, *J* = 13.7, 7.4 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.27, 133.24, 132.85, 132.50, 129.24 (2C), 128.98, 128.66 (2C), 127.90, 127.72, 127.42, 126.70, 126.64, 126.55, 124.95, 120.36,

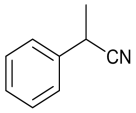
42.10, 39.97; **HRMS** (ES+) *m/z* calcd for $C_{19}H_{15}N$ ([M+Na]$^+$) 280.1097, found 280.1092.

2,2'-(1,4-phenylene)bis(3-phenylpropanenitrile) (**3bo**)



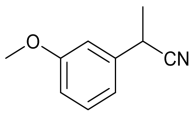
Yield: 88%; white solid; m.p. 147-149 ^{o}C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 (s, 4H), 7.34 – 7.29 (m, 4H), 7.28 – 7.23 (m, 6H), 4.57 (t, *J* = 7.7 Hz, 2H), 3.17 (d, *J* = 7.7 Hz, 4H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 136.90 (2C), 135.60 (2C), 129.19 (4C), 128.26 (4C), 128.11 (4C), 126.95 (2C), 120.81 (2C), 40.16 (2C), 37.43 (2C). **HRMS** (ES+) *m/z* calcd for $C_{24}H_{20}N_2$ ([M+Na]$^+$) 359.1519, found 359.1526.

2-phenylpropanenitrile (**3ca**)



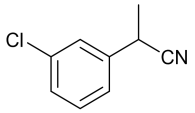
Yield: 46%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.40 – 7.31 (m, 5H), 3.90 (q, *J* = 7.3 Hz, 1H), 1.64 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 137.06, 129.13 (2C), 128.03, 126.68 (2C), 121.56, 31.23, 21.44; **HRMS** (ES+) *m/z* calcd for C_9H_9N ([M+Na]$^+$) 154.0627, found 154.0624.

2-(3-methoxyphenyl)propanenitrile (**3cb**)



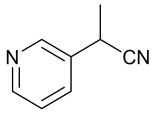
Yield: 57%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.31 (t, *J* = 7.9 Hz, 1H), 6.98 – 6.86 (m, 3H), 3.88 (q, *J* = 7.3 Hz, 1H), 3.84 (s, 3H), 1.65 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 160.13, 138.55, 130.22, 121.52, 118.95, 113.36, 112.60, 55.32, 31.23, 21.38; **HRMS** (ES+) *m/z* calcd for $C_{10}H_{11}NO$ ([M+Na]$^+$) 184.0733, found 184.0737.

2-(3-chlorophenyl)propanenitrile (**3cc**)



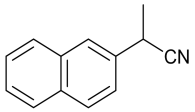
Yield: 55%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.39 – 7.31 (m, 3H), 7.28 – 7.25 (m, 1H), 3.90 (q, *J* = 7.3 Hz, 1H), 1.65 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 138.92, 135.01, 130.47, 128.36, 127.01, 124.96, 120.93, 30.93, 21.27; **HRMS** (ES+) *m/z* calcd for C_9H_8ClN ([M+Na]$^+$) 188.0237, found 188.0235.

2-(pyridin-3-yl)propanenitrile (**3cd**)



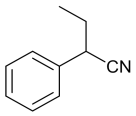
Yield: 45%; colorless oil; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.77 – 8.56 (m, 2H), 7.76 (d, *J* = 7.9 Hz, 1H), 7.37 (dd, *J* = 7.8, 4.8 Hz, 1H), 3.97 (q, *J* = 7.3 Hz, 1H), 1.70 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 149.49, 148.14, 134.38, 132.94, 123.95, 120.48, 29.02, 21.22; **HRMS** (ES+) *m/z* calcd for $C_8H_8N_2$ ($[M+Na]^+$) 155.0580, found 155.0578.

2-(naphthalen-2-yl)propanenitrile (**3ce**)



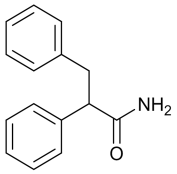
Yield: 63%; white solid; m.p. 60-61 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.92 – 7.84 (m, 4H), 7.58 – 7.51 (m, 2H), 7.45 (dd, *J* = 8.5, 1.8 Hz, 1H), 4.09 (q, *J* = 7.3 Hz, 1H), 1.75 (d, *J* = 7.3 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 134.35, 133.35, 132.80, 129.16, 127.87, 127.74, 126.75, 126.50, 125.60, 124.42, 121.59, 31.44, 21.43; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{11}N$ ($[M+Na]^+$) 204.0784, found 204.0786.

2-phenylbutanenitrile (**3cf**)



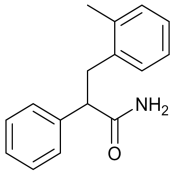
Yield: 54%; colorless oil °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.40 – 7.35 (m, 2H), 7.34 – 7.30 (m, 3H), 3.73 (dd, *J* = 9.5, 4.9 Hz, 1H), 1.98 – 1.90 (m, 2H), 1.07 (t, *J* = 7.4 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 135.72, 128.97 (2C), 127.97, 127.25 (2C), 120.71, 38.87, 29.16, 11.42; **HRMS** (ES+) *m/z* calcd for $C_{10}H_{11}N$ ($[M+Na]^+$) 168.0784, found 168.0788.

2,3-diphenylpropanamide (**4aa**)



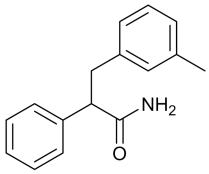
Yield: 90%; white solid; m.p. 127-128 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.26 (m, 5H), 7.25 – 7.20 (m, 2H), 7.19 – 7.15 (m, 1H), 7.13 – 7.09 (m, 2H), 5.69 (s, 1H), 5.41 (s, 1H), 3.66 (t, *J* = 7.5 Hz, 1H), 3.54 (dd, *J* = 13.7, 7.6 Hz, 1H), 3.01 (dd, *J* = 13.7, 7.4 Hz, 1H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.24, 139.52, 139.40, 129.00 (2C), 128.82 (2C), 128.30 (2C), 128.06 (2C), 127.46, 126.25, 54.82, 39.37. **HRMS** (ES+) *m/z* calcd for $C_{15}H_{15}NO$ ($[M+Na]^+$) 248.1046, found 248.1050.

2-phenyl-3-(o-tolyl)propenamide (**4ab**)



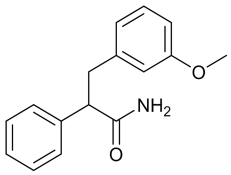
Yield: 83%; white solid; m.p. 149-150 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.26 (m, 5H), 7.14 – 7.01 (m, 4H), 5.65 (s, 1H), 5.39 (s, 1H), 3.64 (t, *J* = 7.3 Hz, 1H), 3.55 (dd, *J* = 13.9, 7.4 Hz, 1H), 3.01 (dd, *J* = 13.9, 7.1 Hz, 1H), 2.26 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.27, 139.66, 137.68, 136.19, 130.21, 129.61, 128.78 (2C), 128.01 (2C), 127.42, 126.36, 125.82, 53.42, 36.58, 19.42; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO$ ($[M+Na]^+$) 262.1202, found 262.1207.

2-phenyl-3-(m-tolyl)propenamide (**4ac**)



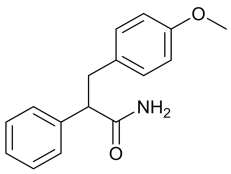
Yield: 77%; white solid; m.p. 107-108 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.34 – 7.26 (m, 5H), 7.14 – 7.09 (m, 1H), 7.02 – 6.89 (m, 3H), 5.67 (s, 1H), 5.41 (s, 1H), 3.65 (t, *J* = 7.5 Hz, 1H), 3.50 (dd, *J* = 13.7, 7.8 Hz, 1H), 2.97 (dd, *J* = 13.7, 7.1 Hz, 1H), 2.29 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.27, 139.60, 139.48, 137.82, 129.80, 128.77 (2C), 128.17, 128.04 (2C), 127.39, 126.99, 125.95, 54.81, 39.35, 21.34; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO$ ($[M+Na]^+$) 262.1202, found 262.1208.

3-(3-methoxyphenyl)-2-phenylpropanamide (**4ad**)



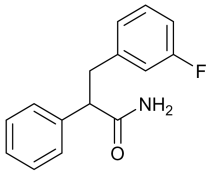
Yield: 86%; white solid; m.p. 97-98 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.25 (m, 5H), 7.14 (t, *J* = 7.9 Hz, 1H), 6.76 – 6.68 (m, 2H), 6.66 – 6.62 (m, 1H), 5.69 (s, 1H), 5.43 (s, 1H), 3.72 (s, 3H), 3.65 (t, *J* = 7.5 Hz, 1H), 3.51 (dd, *J* = 13.7, 7.5 Hz, 1H), 2.98 (dd, *J* = 13.7, 7.4 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.21, 159.48, 141.13, 139.46, 129.24, 128.80 (2C), 128.07 (2C), 127.44, 121.37, 114.60, 111.82, 55.08, 54.68, 39.40; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO_2$ ($[M+Na]^+$) 278.1151, found 278.1156.

3-(4-methoxyphenyl)-2-phenylpropanamide (**4ae**)



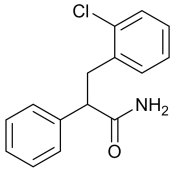
Yield: 94%; white solid; m.p. 157-158 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.34 – 7.25 (m, 5H), 7.05 – 7.00 (m, 2H), 6.79 – 6.73 (m, 2H), 5.51 (s, 1H), 5.35 (s, 1H), 3.76 (s, 3H), 3.61 (t, *J* = 7.5 Hz, 1H), 3.48 (dd, *J* = 13.8, 7.6 Hz, 1H), 2.96 (dd, *J* = 13.8, 7.3 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.20, 158.05, 139.47, 131.57, 129.94 (2C), 128.79 (2C), 128.06 (2C), 127.40, 113.71 (2C), 55.17, 55.11, 38.55; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO_2$ ($[M+Na]^+$) 278.1151, found 278.1157.

3-(3-fluorophenyl)-2-phenylpropanamide (**4af**)



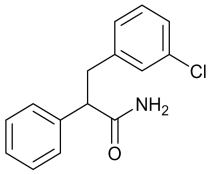
Yield: 85%; white solid; m.p. 133-134 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.34 – 7.25 (m, 5H), 7.20 – 7.14 (m, 1H), 6.91 – 6.78 (m, 3H), 5.65 (s, 1H), 5.40 (s, 1H), 3.64 (t, *J* = 7.5 Hz, 1H), 3.54 (dd, *J* = 13.7, 7.5 Hz, 1H), 2.99 (dd, *J* = 13.7, 7.5 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.87, 162.73 (d, $J^1_{C\text{-}F}$ = 245.4 Hz, 1C), 142.05 (d, $J^3_{C\text{-}F}$ = 7.4 Hz, 1C), 139.04, 129.68 (d, $J^3_{C\text{-}F}$ = 8.3 Hz, 1C), 128.93 (2C), 128.01 (2C), 127.64, 124.71 (d, $J^4_{C\text{-}F}$ = 2.8 Hz, 1C), 115.83 (d, $J^2_{C\text{-}F}$ = 21.0 Hz, 1C), 113.17 (d, $J^2_{C\text{-}F}$ = 21.0 Hz, 1C), 54.51, 39.01; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}FNO$ ($[M+Na]^+$) 266.0952, found 266.0957.

3-(2-chlorophenyl)-2-phenylpropanamide (**4ag**)



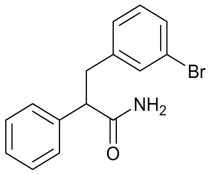
Yield: 83%; white solid; m.p. 174-175 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.31 (m, 4H), 7.29 – 7.27 (m, 2H), 7.15 – 7.06 (m, 3H), 5.52 (s, 1H), 5.36 (s, 1H), 3.84 (t, *J* = 7.4 Hz, 1H), 3.60 (dd, *J* = 13.6, 7.9 Hz, 1H), 3.14 (dd, *J* = 13.6, 7.0 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.81, 139.27, 136.92, 134.01, 131.85, 129.37, 128.82 (2C), 127.94 (2C), 127.87, 127.50, 126.64, 52.07, 37.52; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}ClNO$ ($[M+Na]^+$) 282.0656, found 282.0659.

3-(3-chlorophenyl)-2-phenylpropanamide (**4ah**)



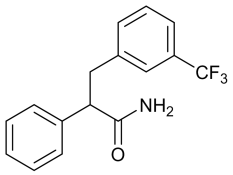
Yield: 95%; white solid; m.p. 121-122 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.25 (m, 5H), 7.16 – 7.09 (m, 3H), 7.00 – 6.95 (m, 1H), 5.74 (s, 1H), 5.44 (s, 1H), 3.63 (t, *J* = 7.5 Hz, 1H), 3.51 (dd, *J* = 13.7, 7.6 Hz, 1H), 2.96 (dd, *J* = 13.7, 7.4 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.85, 141.56, 138.99, 133.96, 129.50, 129.05, 128.91 (2C), 127.98 (2C), 127.62, 127.27, 126.46, 54.45, 38.95; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}ClNO$ ($[M+Na]^+$) 282.0656, found 282.0658.

3-(3-bromophenyl)-2-phenylpropanamide (**4ai**)



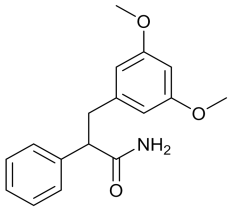
Yield: 65%; white solid; m.p. 106-107 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.25 (m, 7H), 7.09 – 7.05 (m, 1H), 7.04 – 6.99 (m, 1H), 5.80 (s, 1H), 5.44 (s, 1H), 3.62 (t, *J* = 7.5 Hz, 1H), 3.50 (dd, *J* = 13.7, 7.6 Hz, 1H), 2.95 (dd, *J* = 13.7, 7.4 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.92, 141.85, 138.94, 131.96, 129.81, 129.39, 128.92 (2C), 127.99 (2C), 127.74, 127.64, 122.26, 54.48, 38.92; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}BrNO$ ($[M+Na]^+$) 326.0151, found 326.0156.

2-phenyl-3-(3-(trifluoromethyl)phenyl)propenamide (**4aj**)



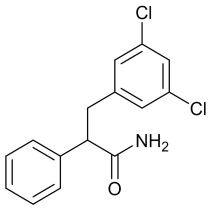
Yield: 89%; light yellow solid; m.p. 97-98 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.45 – 7.40 (m, 1H), 7.35 – 7.24 (m, 8H), 5.83 (s, 1H), 5.43 (s, 1H), 3.70 – 3.54 (m, 2H), 3.05 (dd, *J* = 13.4, 7.4 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.90, 140.38, 138.76, 132.52, 130.52 (q, *J* = 31.8 Hz, 1C), 128.97 (2C), 128.66, 128.03 (2C), 127.73, 125.70 (q, *J* = 3.7 Hz, 1C), 124.12 (q, *J* = 273.4 Hz, 1C), 123.14 (q, *J* = 3.8 Hz, 1C), 54.49, 39.08; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{14}F_3NO$ ($[M+Na]^+$) 316.0920, found 316.0925.

3-(3,5-dimethoxyphenyl)-2-phenylpropanamide (**4ak**)



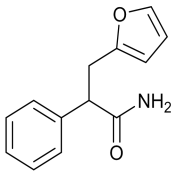
Yield: 87%; white solid; m.p. 115-116 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.26 (m, 5H), 6.30 – 6.23 (m, 3H), 5.84 (s, 1H), 5.46 (s, 1H), 3.70 (s, 6H), 3.64 (t, *J* = 7.5 Hz, 1H), 3.47 (dd, *J* = 13.7, 7.4 Hz, 1H), 2.95 (dd, *J* = 13.6, 7.5 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.45, 160.59 (2C), 141.84, 139.38, 128.82 (2C), 128.10 (2C), 127.47, 107.00 (2C), 98.45, 55.20 (2C), 54.61, 39.63; **HRMS** (ES+) *m/z* calcd for $C_{17}H_{19}NO_3$ ($[M+Na]^+$) 308.1257, found 308.1263.

3-(3,5-dichlorophenyl)-2-phenylpropanamide (**4al**)



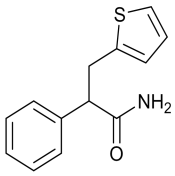
Yield: 64%; white solid; m.p. 123-124 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.36 – 7.25 (m, 5H), 7.19 – 7.15 (m, 1H), 6.99 (d, *J* = 1.7 Hz, 2H), 6.00 (s, 1H), 5.49 (s, 1H), 3.62 (t, *J* = 7.5 Hz, 1H), 3.49 (dd, *J* = 13.8, 7.6 Hz, 1H), 2.93 (dd, *J* = 13.8, 7.4 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.87, 142.84, 138.52, 134.63 (2C), 129.07 (2C), 127.95 (2C), 127.89, 127.56 (2C), 126.59, 54.16, 38.69; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{13}Cl_2NO$ ($[M+Na]^+$) 316.0266, found 316.0272.

3-(furan-2-yl)-2-phenylpropanamide (**4am**)



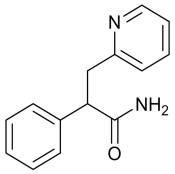
Yield: 80%; yellow solid; m.p. 100-101 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.24 (m, 6H), 6.21 (dd, *J* = 3.0, 1.9 Hz, 1H), 5.92 (d, *J* = 2.7 Hz, 1H), 5.84 (s, 1H), 5.52 (s, 1H), 3.83 (t, *J* = 7.6 Hz, 1H), 3.52 (dd, *J* = 15.2, 7.6 Hz, 1H), 3.06 (dd, *J* = 15.2, 7.5 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.02, 153.12, 141.13, 139.04, 128.84 (2C), 127.86 (2C), 127.56, 110.23, 106.56, 51.45, 31.70; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{13}NO_2$ ($[M+Na]^+$) 238.0838, found 238.0842.

2-phenyl-3-(thiophen-2-yl)propenamide (**4an**)



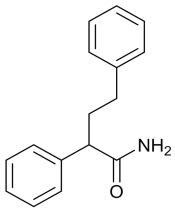
Yield: 87%; light yellow solid; m.p. 117-119 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.36 – 7.27 (m, 5H), 7.10 – 7.06 (m, 1H), 6.89 – 6.82 (m, 1H), 6.74 – 6.71 (m, 1H), 5.78 (s, 1H), 5.48 (s, 1H), 3.80 – 3.66 (m, 2H), 3.24 (dd, *J* = 14.1, 6.7 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.85, 141.73, 138.97, 128.89 (2C), 128.04 (2C), 127.65, 126.66, 125.71, 123.70, 54.87, 33.41; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{13}NOS$ ($[M+Na]^+$) 254.0610, found 254.0616.

2-phenyl-3-(pyridin-2-yl)propenamide (**4ao**)



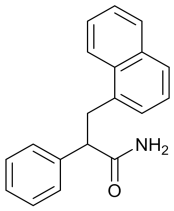
Yield: 75%; light grey solid; m.p. 162-163 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.51 (dd, *J* = 4.8, 0.8 Hz, 1H), 7.56 – 7.48 (m, 1H), 7.38 – 7.22 (m, 5H), 7.13 – 7.03 (m, 2H), 5.83 (s, 1H), 5.45 (s, 1H), 4.18 (dd, *J* = 8.4, 6.6 Hz, 1H), 3.63 (dd, *J* = 14.1, 8.5 Hz, 1H), 3.17 (dd, *J* = 14.1, 6.6 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.13, 159.14, 149.04, 139.55, 136.37, 128.77 (2C), 127.98 (2C), 127.35, 124.16, 121.43, 51.88, 41.56; **HRMS** (ES+) *m/z* calcd for $C_{14}H_{14}N_2O$ ($[M+Na]^+$) 249.0998, found 249.0998.

2,4-diphenylbutanamide (**4ap**)



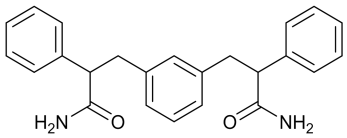
Yield: 74%; white solid; m.p. 95-96 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.39 – 7.35 (m, 2H), 7.34 – 7.27 (m, 5H), 7.23 – 7.15 (m, 3H), 5.88 (s, 1H), 5.43 (s, 1H), 3.38 (dd, *J* = 7.9, 7.1 Hz, 1H), 2.60 (t, *J* = 7.6 Hz, 2H), 2.52 (ddt, *J* = 14.0, 8.3, 6.9 Hz, 1H), 2.13 (ddd, *J* = 15.2, 13.5, 7.5 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.89, 141.37, 139.59, 128.95 (2C), 128.49 (2C), 128.36 (2C), 128.03 (2C), 127.45, 125.94, 51.69, 34.22, 33.44; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO$ ($[M+Na]^+$) 262.1202, found 262.1211.

3-(naphthalen-1-yl)-2-phenylpropanamide (**4aq**)



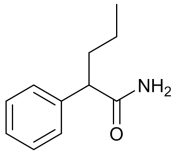
Yield: 85%; white solid; m.p. 151-152 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.07 (d, *J* = 8.4 Hz, 1H), 7.90 – 7.84 (m, 1H), 7.71 (d, *J* = 8.2 Hz, 1H), 7.57 – 7.47 (m, 2H), 7.36 – 7.26 (m, 6H), 7.18 (d, *J* = 6.8 Hz, 1H), 5.64 (s, 1H), 5.31 (s, 1H), 4.06 (dd, *J* = 14.0, 7.5 Hz, 1H), 3.83 (t, *J* = 7.2 Hz, 1H), 3.43 (dd, *J* = 14.0, 6.8 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.24, 139.70, 135.30, 133.91, 131.65, 128.96, 128.84 (2C), 127.97 (2C), 127.47, 127.43, 127.09, 126.04, 125.43 (2C), 123.47, 53.58, 36.51; **HRMS** (ES+) *m/z* calcd for $C_{19}H_{17}NO$ ($[M+Na]^+$) 298.1202, found 298.1210.

3,3'-(1,3-phenylene)bis(2-phenylpropanamide) (**4ar**)



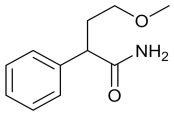
Yield: 83%; white solid; m.p. 143-144 °C; **^{1}H NMR** (500 MHz, DMSO) δ 7.44 – 7.40 (m, 2H), 7.39 – 7.34 (m, 4H), 7.33 – 7.27 (m, 4H), 7.25 – 7.20 (m, 2H), 7.10 – 7.03 (m, 2H), 6.97 – 6.93 (m, 2H), 6.80 (s, 2H), 3.74 (dd, *J* = 9.0, 6.2 Hz, 2H), 3.26 (dd, *J* = 13.6, 9.2 Hz, 2H), 2.78 (dd, *J* = 13.6, 6.0 Hz, 2H). **^{13}C NMR** (126 MHz, DMSO) δ 174.46 (2C), 141.29 (2C), 140.10 (2C), 129.88, 128.63 (4C), 128.20 (5C), 127.05 (2C), 126.90 (2C), 53.15 (2C), 39.18 (2C). **HRMS** (ES+) *m/z* calcd for $C_{24}H_{24}N_2O_2$ ($[M+Na]^+$) 395.1730, found 395.1735.

2-phenylpentanamide (**4as**)



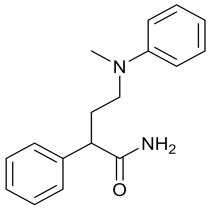
Yield: 80%; white solid; m.p. 85-86 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.36 – 7.26 (m, 5H), 5.92 (s, 1H), 5.47 (s, 1H), 3.46 – 3.37 (m, 1H), 2.12 (ddt, *J* = 13.1, 10.0, 6.4 Hz, 1H), 1.87 – 1.69 (m, 1H), 1.39 – 1.19 (m, 2H), 0.91 (t, *J* = 7.3 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.37, 139.99, 128.83 (2C), 127.94 (2C), 127.27, 52.56, 35.00, 20.78, 13.83; **HRMS** (ES+) *m/z* calcd for $C_{11}H_{15}NO$ ($[M+Na]^+$) 200.1046, found 200.1052.

4-methoxy-2-phenylbutanamide (**4at**)



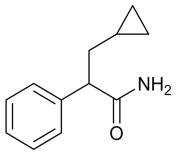
Yield: 81%; white solid; m.p. 86-87 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.30 (m, 4H), 7.29 – 7.25 (m, 1H), 5.89 (s, 1H), 5.66 (s, 1H), 3.65 (t, *J* = 7.6 Hz, 1H), 3.39 (ddd, *J* = 9.7, 6.3, 5.4 Hz, 1H), 3.32 – 3.22 (m, 4H), 2.48 – 2.34 (m, 1H), 2.03 – 1.93 (m, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.86, 139.59, 128.81 (2C), 128.00 (2C), 127.32, 69.95, 58.47, 48.65, 32.90; **HRMS** (ES+) *m/z* calcd for $C_{11}H_{15}NO_2$ ($[M+Na]^+$) 216.0995, found 216.1001.

4-(methyl(phenyl)amino)-2-phenylbutanamide (**4au**)



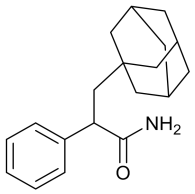
Yield: 81%; brown solid; m.p. 141-142 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.42 – 7.28 (m, 5H), 7.24 – 7.17 (m, 2H), 6.74 – 6.63 (m, 3H), 5.91 (s, 1H), 5.42 (s, 1H), 3.45 (t, *J* = 7.5 Hz, 1H), 3.38 – 3.25 (m, 2H), 2.90 (s, 3H), 2.56 – 2.43 (m, 1H), 2.09 – 1.97 (m, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.83, 149.35, 139.47, 129.16 (2C), 129.07 (2C), 127.94 (2C), 127.64, 116.37, 112.48 (2C), 50.74, 50.00, 38.11, 29.95; **HRMS** (ES+) *m/z* calcd for $C_{17}H_{20}N_2O$ ($[M+Na]^+$) 291.1468, found 291.1470.

3-cyclopropyl-2-phenylpropanamide (**4av**)



Yield: 82%; white solid; m.p. 105-106 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 – 7.31 (m, 4H), 7.29 – 7.25 (m, 1H), 6.04 (s, 1H), 5.53 (s, 1H), 3.52 (t, *J* = 7.5 Hz, 1H), 1.95 (dt, *J* = 14.4, 7.3 Hz, 1H), 1.76 (ddd, *J* = 14.1, 7.8, 6.7 Hz, 1H), 0.70 – 0.55 (m, 1H), 0.46 – 0.32 (m, 2H), 0.16 – 0.00(m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.42, 140.07, 128.80 (2C), 128.02 (2C), 127.28, 53.15, 38.13, 9.33, 4.70, 4.40; **HRMS** (ES+) *m/z* calcd for $C_{12}H_{15}NO$ ($[M+Na]^+$) 212.1046, found 212.1050.

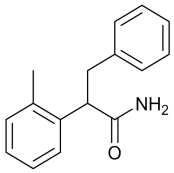
3-(adamantan-1-yl)-2-phenylpropanamide (**4aw**)



Yield: 64%; white solid; m.p. 144-145 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.29 (m, 4H), 7.27 – 7.23 (m, 1H), 5.70 (s, 1H), 5.50 (s, 1H), 3.55 (dd, *J* = 7.2, 5.3 Hz, 1H), 2.23 (dd, *J* = 14.2, 7.2 Hz, 1H), 1.95 – 1.90 (m, 3H), 1.71 – 1.64 (m, 3H), 1.63 – 1.57 (m, 3H), 1.54 – 1.43 (m, 7H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.69, 142.15, 128.81

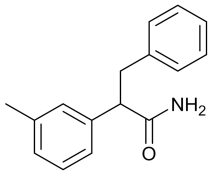
(2C), 127.77 (2C), 127.00, 47.38, 47.21, 42.47 (3C), 36.99 (3C), 32.95, 28.62 (3C); **HRMS** (ES+) *m/z* calcd for $C_{19}H_{25}NO$ ([M+Na]$^+$) 306.1828, found 306.1832.

3-phenyl-2-(o-tolyl)propenamide (**4ba**)



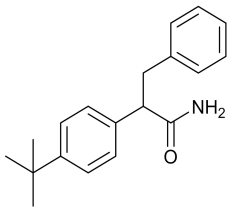
Yield: 68%; white solid; m.p. 130-131 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.25 – 7.05 (m, 9H), 5.74 (s, 1H), 5.29 (s, 1H), 3.93 (t, *J* = 7.4 Hz, 1H), 3.57 (dd, *J* = 13.7, 6.9 Hz, 1H), 2.97 (dd, *J* = 13.7, 7.9 Hz, 1H), 2.18 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.52, 139.67, 137.66, 136.15, 130.67, 128.94 (2C), 128.24 (2C), 127.55, 127.29, 126.66, 126.19, 50.43, 38.84, 19.63; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO$ ([M+Na]$^+$) 262.1202, found 262.1210.

3-phenyl-2-(m-tolyl)propenamide (**4bb**)



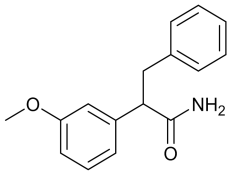
Yield: 75%; white solid; m.p. 93-94 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.27 – 7.06 (m, 9H), 5.75 (s, 1H), 5.44 (s, 1H), 3.63 (t, *J* = 7.4 Hz, 1H), 3.53 (dd, *J* = 13.6, 7.9 Hz, 1H), 2.99 (dd, *J* = 13.6, 7.0 Hz, 1H), 2.34 (s, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.43, 139.68, 139.41, 138.50, 129.00 (2C), 128.67 (2C), 128.29 (2C), 128.21, 126.22, 125.09, 54.73, 39.29, 21.41; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO$ ([M+Na]$^+$) 262.1202, found 262.1209.

2-(4-(tert-butyl)phenyl)-3-phenylpropanamide (**4bc**)



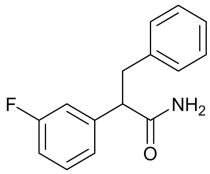
Yield: 88%; white solid; m.p. 121-122 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 – 7.33 (m, 2H), 7.29 – 7.21 (m, 5H), 7.21 – 7.12 (m, 2H), 5.67 (s, 1H), 5.40 (s, 1H), 3.71 – 3.61 (m, 1H), 3.54 (dd, *J* = 13.6, 8.2 Hz, 1H), 2.99 (dd, *J* = 13.6, 6.6 Hz, 1H), 1.32 (s, 9H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.52, 150.37, 139.76, 136.39, 128.99 (2C), 128.29 (2C), 127.59 (2C), 126.21, 125.72 (2C), 54.38, 39.32, 34.47, 31.33 (3C); **HRMS** (ES+) *m/z* calcd for $C_{19}H_{23}NO$ ([M+Na]$^+$) 304.1672, found 304.1677.

2-(3-methoxyphenyl)-3-phenylpropanamide (**4bd**)



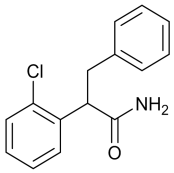
Yield: 92%; white solid; m.p. 84-85 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.16 – 7.00 (m, 6H), 6.80 – 6.69 (m, 3H), 5.61 (s, 1H), 5.35 (s, 1H), 3.68 (s, 3H), 3.53 (t, *J* = 7.5 Hz, 1H), 3.42 (dd, *J* = 13.7, 7.6 Hz, 1H), 2.90 (dd, *J* = 13.7, 7.3 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.08, 159.84, 140.94, 139.50, 129.77, 128.96 (2C), 128.27 (2C), 126.22, 120.39, 113.69, 112.85, 55.20, 54.73, 39.19; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO_2$ ($[M+Na]^+$) 278.1151, found 278.1158.

2-(3-fluorophenyl)-3-phenylpropanamide (**4be**)



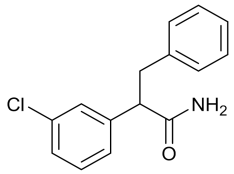
Yield: 80%; white solid; m.p. 141-142 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.32 – 7.21 (m, 4H), 7.14 – 7.03 (m, 4H), 7.00 – 6.92 (m, 1H), 5.66 (s, 1H), 5.39 (s, 1H), 3.64 (t, *J* = 7.5 Hz, 1H), 3.50 (dd, *J* = 13.7, 7.8 Hz, 1H), 2.99 (dd, *J* = 13.7, 7.3 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.54, 162.93 (d, $J^1_{C\text{-}F}$ = 246.6 Hz, 1C), 141.73 (d, $J^3_{C\text{-}F}$ = 7.3 Hz, 1C), 139.01, 130.24 (d, $J^3_{C\text{-}F}$ = 8.3 Hz, 1C), 128.93 (2C), 128.40 (2C), 126.44, 123.75 (d, $J^4_{C\text{-}F}$ = 2.9 Hz, 1C), 115.01 (d, $J^2_{C\text{-}F}$ = 21.9 Hz, 1C), 114.44 (d, $J^2_{C\text{-}F}$ = 21.1 Hz, 1C), 54.53, 39.45; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}FNO$ ($[M+Na]^+$) 266.0952, found 266.0959.

2-(2-chlorophenyl)-3-phenylpropanamide (**4bf**)



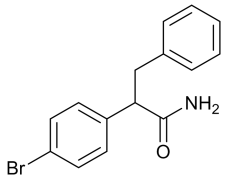
Yield: 66%; white solid; m.p. 124-125 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.60 – 7.55 (m, 1H), 7.39 – 7.35 (m, 1H), 7.31 – 7.18 (m, 7H), 5.71 (s, 1H), 5.47 (s, 1H), 4.29 (dd, *J* = 8.6, 6.2 Hz, 1H), 3.52 (dd, *J* = 13.7, 8.7 Hz, 1H), 3.01 (dd, *J* = 13.7, 6.1 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.08, 139.21, 137.00, 133.58, 129.62, 129.00 (2C), 128.98, 128.59, 128.39 (2C), 127.50, 126.40, 49.94, 38.29; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}ClNO$ ($[M+Na]^+$) 282.0656, found 282.0663.

2-(3-chlorophenyl)-3-phenylpropanamide (**4bg**)



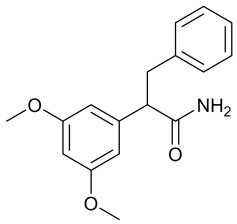
Yield: 84%; light yellow solid; m.p. 122-123 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.32 (s, 1H), 7.28 – 7.17 (m, 6H), 7.14 – 7.09 (m, 2H), 5.76 (s, 1H), 5.46 (s, 1H), 3.62 (t, *J* = 7.5 Hz, 1H), 3.48 (dd, *J* = 13.7, 8.0 Hz, 1H), 2.98 (dd, *J* = 13.7, 7.0 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.53, 141.34, 138.98, 134.55, 130.01, 128.95 (2C), 128.43 (2C), 128.16, 127.67, 126.48, 126.20, 54.44, 39.46; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}ClNO$ ($[M+Na]^+$) 282.0656, found 282.0664.

2-(4-bromophenyl)-3-phenylpropanamide (**4bh**)



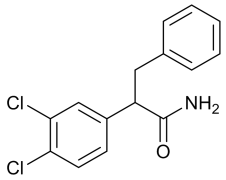
Yield: 68%; white solid; m.p. 169-170 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.47 – 7.42 (m, 2H), 7.26 – 7.16 (m, 5H), 7.13 – 7.08 (m, 2H), 5.48 (s, 1H), 5.33 (s, 1H), 3.60 (t, *J* = 7.5 Hz, 1H), 3.49 (dd, *J* = 13.6, 7.6 Hz, 1H), 2.97 (dd, *J* = 13.6, 7.4 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.46, 138.99, 138.29, 131.89 (2C), 129.74 (2C), 128.95 (2C), 128.41 (2C), 126.44, 121.46, 54.28, 39.51; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}BrNO$ ($[M+Na]^+$) 326.0151, found 326.0155.

2-(3,5-dimethoxyphenyl)-3-phenylpropanamide (**4bi**)



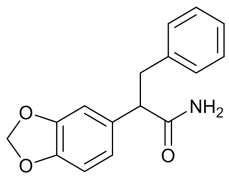
Yield: 77%; light yellow solid; m.p. 134-135 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.26 – 7.11 (m, 5H), 6.45 (d, *J* = 2.2 Hz, 2H), 6.36 (t, *J* = 2.2 Hz, 1H), 5.64 (s, 1H), 5.47 (s, 1H), 3.76 (s, 6H), 3.59 (t, *J* = 7.4 Hz, 1H), 3.50 (dd, *J* = 13.7, 7.5 Hz, 1H), 2.99 (dd, *J* = 13.7, 7.3 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.92, 161.01 (2C), 141.70, 139.51, 128.97 (2C), 128.30 (2C), 126.24, 106.17 (2C), 99.32, 55.34 (2C), 54.91, 39.04; **HRMS** (ES+) *m/z* calcd for $C_{17}H_{19}NO_3$ ($[M+Na]^+$) 308.1257, found 308.1264.

2-(3,4-dichlorophenyl)-3-phenylpropanamide (**4bj**)



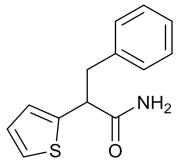
Yield: 77%; white solid; m.p. 128-129 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.43 – 7.36 (m, 2H), 7.30 – 7.19 (m, 3H), 7.17 – 7.09 (m, 3H), 5.68 (s, 1H), 5.44 (s, 1H), 3.59 (t, *J* = 7.5 Hz, 1H), 3.45 (dd, *J* = 13.7, 8.0 Hz, 1H), 2.96 (dd, *J* = 13.7, 7.1 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.06, 139.48, 138.61, 132.73, 131.59, 130.63, 129.96, 128.91 (2C), 128.52 (2C), 127.36, 126.62, 53.90, 39.61; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{13}Cl_2NO$ ($[M+Na]^+$) 316.0266, found 316.0271.

2-(benzo[d][1,3]dioxol-5-yl)-3-phenylpropanamide (**4bk**)



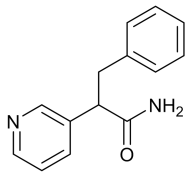
Yield: 77%; white solid; m.p. 139-140 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.26 – 7.21 (m, 2H), 7.20 – 7.15 (m, 1H), 7.14 – 7.09 (m, 2H), 6.86 – 6.83 (m, 1H), 6.75 – 6.67 (m, 2H), 5.95 (dd, *J* = 5.8, 1.4 Hz, 2H), 5.64 (s, 1H), 5.42 (s, 1H), 3.57 (t, *J* = 7.5 Hz, 1H), 3.48 (dd, *J* = 13.6, 7.4 Hz, 1H), 2.95 (dd, *J* = 13.6, 7.6 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.29, 147.99, 146.90, 139.43, 133.13, 128.96 (2C), 128.30 (2C), 126.25, 121.43, 108.35, 108.20, 101.09, 54.36, 39.39; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{15}NO_3$ ($[M+Na]^+$) 292.0944, found 292.0946.

3-phenyl-2-(thiophen-2-yl)propenamide (**4bl**)



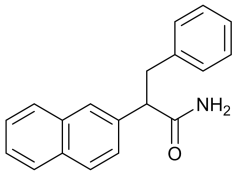
Yield: 67%; white solid; m.p. 122-123 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.29 – 7.14 (m, 6H), 6.94 (dt, *J* = 10.4, 3.2 Hz, 2H), 5.82 (s, 1H), 5.59 (s, 1H), 3.98 (t, *J* = 7.6 Hz, 1H), 3.51 (dd, *J* = 13.7, 7.5 Hz, 1H), 3.09 (dd, *J* = 13.7, 7.7 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.45, 141.65, 138.89, 128.95 (2C), 128.38 (2C), 126.87, 126.51, 125.76, 124.89, 49.97, 40.54; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{13}NOS$ ($[M+Na]^+$) 254.0610, found 254.0613.

3-phenyl-2-(pyridin-3-yl)propenamide (**4bm**)



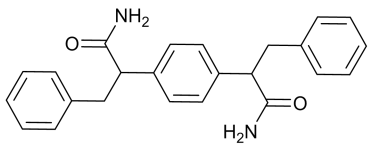
Yield: 62%; white solid; m.p. 187-188 °C; **^{1}H NMR** (500 MHz, DMSO) δ 8.49 (d, *J* = 1.9 Hz, 1H), 8.42 (dd, *J* = 4.7, 1.6 Hz, 1H), 7.79 (dt, *J* = 7.9, 1.9 Hz, 1H), 7.54 (s, 1H), 7.33 (dd, *J* = 7.8, 4.8 Hz, 1H), 7.26 – 7.12 (m, 5H), 6.92 (s, 1H), 3.82 (dd, *J* = 8.4, 7.1 Hz, 1H), 3.31 (dd, *J* = 13.6, 8.7 Hz, 1H), 2.90 (dd, *J* = 13.6, 6.8 Hz, 1H); **^{13}C NMR** (126 MHz, DMSO) δ 173.91, 149.65, 148.40, 139.91, 136.51, 135.46, 129.31 (2C), 128.58 (2C), 126.54, 123.85, 50.65, 38.76; **HRMS** (ES+) *m/z* calcd for $C_{14}H_{14}N_2O$ ($[M+Na]^+$) 249.0998, found 249.0999.

2-(naphthalen-2-yl)-3-phenylpropanamide (**4bn**)



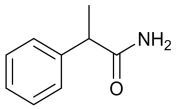
Yield: 77%; white solid; m.p. 143-144 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.86 – 7.76 (m, 3H), 7.72 (s, 1H), 7.53 – 7.44 (m, 3H), 7.25 – 7.12 (m, 5H), 5.68 (s, 1H), 5.45 (s, 1H), 3.83 (t, *J* = 7.5 Hz, 1H), 3.64 (dd, *J* = 13.8, 7.4 Hz, 1H), 3.12 (dd, *J* = 13.8, 7.5 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.15, 139.50, 136.85, 133.44, 132.70, 129.02 (2C), 128.65, 128.34 (2C), 127.80, 127.67, 127.05, 126.31, 126.28, 126.01, 125.87, 54.91, 39.29; **HRMS** (ES+) *m/z* calcd for $C_{19}H_{17}NO$ ($[M+Na]^+$) 298.1202, found 298.1207.

2,2'-(1,4-phenylene)bis(3-phenylpropanamide) (**4bo**)



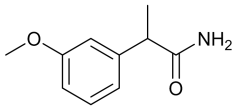
Yield: 82%; white solid; m.p. 156-158 °C;^{1}H NMR (500 MHz, DMSO) δ 7.41 (s, 2H), 7.30 (s, 4H), 7.26 – 7.14 (m, 10H), 6.77 (s, 2H), 3.73 (dd, *J* = 9.1, 5.9 Hz, 2H), 3.29 (dd, *J* = 13.2, 9.7 Hz, 2H), 2.83 (dd, *J* = 13.4, 5.4 Hz, 2H). ^{13}C NMR (126 MHz, DMSO) δ 174.42 (2C), 140.53 (2C), 139.60 (2C), 129.27 (4C), 128.52 (4C), 127.95 (4C), 126.39 (2C), 52.87 (2C), 39.08 (2C). **HRMS** (ES+) *m/z* calcd for $C_{24}H_{24}N_2O_2$ ($[M+Na]^+$) 395.1730, found 395.1732.

2-phenylpropanamide (**4ca**)



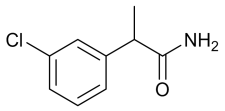
Yield: 71%; white solid; m.p. 88-89 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.38 – 7.26 (m, 5H), 6.05 (s, 1H), 5.45 (s, 1H), 3.60 (q, *J* = 7.2 Hz, 1H), 1.52 (d, *J* = 7.2 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.95, 141.25, 128.91 (2C), 127.56 (2C), 127.31, 46.57, 18.28; **HRMS** (ES+) *m/z* calcd for $C_9H_{11}NO$ ($[M+Na]^+$) 172.0733, found 172.0737.

2-(3-methoxyphenyl)propenamide (**4cb**)



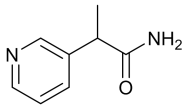
Yield: 57%; white solid; m.p. 83-84 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.22 (m, 1H), 6.95 – 6.77 (m, 3H), 5.84 (s, 1H), 5.43 (s, 1H), 3.81 (s, 3H), 3.58 (q, *J* = 7.2 Hz, 1H), 1.52 (d, *J* = 7.2 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.61, 159.99, 142.83, 129.97, 119.90, 113.37, 112.63, 55.22, 46.63, 18.19; **HRMS** (ES+) *m/z* calcd for $C_{10}H_{13}NO_2$ ($[M+Na]^+$) 202.0838, found 202.0841.

2-(3-chlorophenyl)propenamide (**4cc**)



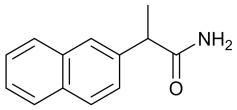
Yield: 62%; white solid; m.p. 82-83 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.35 – 7.18 (m, 4H), 5.94 (s, 1H), 5.47 (s, 1H), 3.57 (q, *J* = 7.2 Hz, 1H), 1.51 (d, *J* = 7.2 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.98, 143.19, 134.69, 130.18, 127.78, 127.54, 125.77, 46.27, 18.36; **HRMS** (ES+) *m/z* calcd for $C_9H_{10}ClNO$ ($[M+Na]^+$) 206.343, found 206.348.

2-(pyridin-3-yl)propenamide (**4cd**)



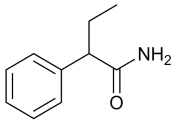
Yield: 68%; white solid; m.p. 98-99 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.49 (s, 2H), 7.71 (d, *J* = 7.8 Hz, 1H), 7.37 – 7.18 (m, 1H), 6.12 (s, 2H), 3.61 (q, *J* = 7.1 Hz, 1H), 1.50 (d, *J* = 7.1 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.89, 149.00, 148.50, 137.02, 134.97, 123.81, 43.84, 18.59; **HRMS** (ES+) *m/z* calcd for $C_8H_{10}N_2O$ ($[M+Na]^+$) 173.0685, found 173.0688.

2-(naphthalen-2-yl)propenamide (**4ce**)



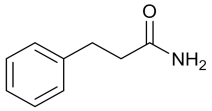
Yield: 45%; white solid; m.p. 125-126 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.92 – 7.73 (m, 4H), 7.58 – 7.40 (m, 3H), 5.85 (s, 1H), 5.44 (s, 1H), 3.78 (q, *J* = 7.2 Hz, 1H), 1.62 (d, *J* = 7.2 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.66, 138.74, 133.53, 132.64, 128.79, 127.73, 127.69, 126.41, 126.28, 126.02, 125.67, 46.75, 18.32; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{13}NO$ ($[M+Na]^+$) 222.0889, found 222.0891.

2-phenylbutanamide (**4af**)



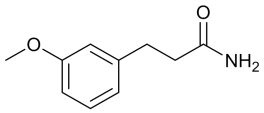
Yield: 72%; white solid; m.p. 74-75 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.37 – 7.26 (m, 5H), 5.98 (s, 1H), 5.51 (s, 1H), 3.29 (t, *J* = 7.6 Hz, 1H), 2.25 – 2.11 (m, 1H), 1.86 – 1.74 (m, 1H), 0.90 (t, *J* = 7.4 Hz, 3H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.31, 139.80, 128.81 (2C), 127.96 (2C), 127.28, 54.53, 26.09, 12.25; **HRMS** (ES+) *m/z* calcd for $C_{10}H_{13}NO$ ($[M+Na]^+$) 186.0889, found 186.0893.

3-phenylpropanamide (**4da**)



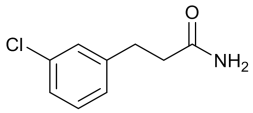
Yield: 45%; white solid; m.p. 100-101 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.34 – 7.16 (m, 5H), 6.04 (s, 1H), 5.63 (s, 1H), 3.00 – 2.91 (m, 2H), 2.58 – 2.47 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.01, 140.69, 128.57 (2C), 128.31 (2C), 126.30, 37.50, 31.40; **HRMS** (ES+) *m/z* calcd for $C_9H_{11}NO$ ($[M+Na]^+$) 172.0733, found 172.0734.

3-(3-methoxyphenyl)propenamide (**4db**)



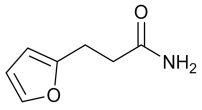
Yield: 52%; white solid; m.p. 105-107 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.25 – 7.17 (m, 1H), 6.87 – 6.71 (m, 3H), 5.84 (s, 1H), 5.53 (s, 1H), 3.80 (s, 3H), 2.99 – 2.89 (m, 2H), 2.58 – 2.47 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.70, 159.75, 142.32, 129.57, 120.64, 114.11, 111.59, 55.16, 37.40, 31.43; **HRMS** (ES+) *m/z* calcd for $C_{10}H_{13}NO_2$ ($[M+Na]^+$) 202.0838, found 202.0841.

3-(3-chlorophenyl)propenamide (**4dc**)



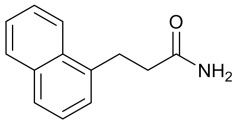
Yield: 51%; white solid; m.p. 103-104 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.26 – 7.16 (m, 3H), 7.13 – 7.06 (m, 1H), 5.83 (s, 1H), 5.52 (s, 1H), 3.02 – 2.90 (m, 2H), 2.57 – 2.48 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.16, 142.74, 134.25, 129.81, 128.45, 126.59, 126.50, 37.05, 30.89; **HRMS** (ES+) *m/z* calcd for $C_9H_{10}ClNO$ ($[M+Na]^+$) 206.0343, found 206.0343.

3-(furan-2-yl)propenamide (**4dd**)



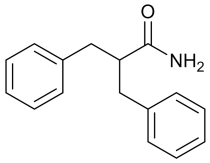
Yield: 42%; white solid; m.p. 96-97 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.32 (d, *J* = 1.1 Hz, 1H), 6.30 (dd, *J* = 3.1, 1.9 Hz, 1H), 6.06 (dd, *J* = 3.1, 0.7 Hz, 1H), 5.49 (s, 2H), 3.13 – 2.93 (m, 2H), 2.65 – 2.53 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 173.98, 154.17, 141.26, 110.29, 105.55, 34.11, 23.75; **HRMS** (ES+) *m/z* calcd for $C_7H_9NO_2$ ($[M+Na]^+$) 162.0525, found 162.0526.

3-(naphthalen-1-yl)propenamide (**4de**)



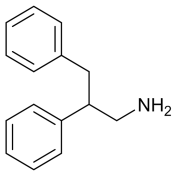
Yield: 54%; white solid; m.p. 95-96 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.10 – 8.03 (m, 1H), 7.92 – 7.85 (m, 1H), 7.80 – 7.71 (m, 1H), 7.58 – 7.47 (m, 2H), 7.45 – 7.34 (m, 2H), 5.70 (s, 1H), 5.43 (s, 1H), 3.49 – 3.33 (m, 2H), 2.71 – 2.58 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.65, 136.69, 133.92, 131.54, 128.92, 127.14, 126.13, 126.12, 125.64, 125.62, 123.42, 36.70, 28.46; **HRMS** (ES+) *m/z* calcd for $C_{13}H_{13}NO$ ($[M+Na]^+$) 222.0889, found 222.0892.

2-benzyl-3-phenylpropanamide (**4df**)



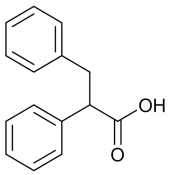
Yield: 58%; white solid; m.p. 121-122 °C; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.32 – 7.27 (m, 5H), 7.25 – 7.20 (m, 3H), 7.18 – 7.14 (m, 2H), 5.77 (s, 1H), 4.40 (d, *J* = 5.7 Hz, 2H), 3.01 (t, *J* = 7.6 Hz, 2H), 2.53 (t, *J* = 7.6 Hz, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 172.03, 140.75, 138.11, 128.66 (2C), 128.56 (2C), 128.41 (2C), 127.74 (2C), 127.46, 126.27, 43.59, 38.48, 31.73; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{17}NO$ ($[M+Na]^+$) 262.1202, found 262.1209.

2,3-diphenylpropan-1-amine (**5**)



white solid; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.33 – 7.28 (m, 2H), 7.25 – 7.20 (m, 3H), 7.20 – 7.14 (m, 3H), 7.10 – 7.05 (m, 2H), 3.03 – 2.88 (m, 5H), 1.94 (s, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 142.67, 140.03, 129.04 (2C), 128.56 (2C), 128.18 (2C), 128.02 (2C), 126.65, 125.95, 51.05, 46.73, 40.77; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{17}N$ ($[M+H]^+$) 212.1434, found 212.1433.

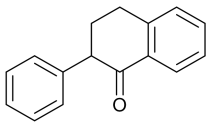
2,3-diphenylpropanoic acid (**6**)



white solid; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 7.31 – 7.28 (m, 4H), 7.28 – 7.14 (m, 4H), 7.11 – 7.07 (m, 2H), 3.85 (dd, *J* = 8.1, 7.3 Hz, 1H), 3.40 (dd, *J* = 13.8, 8.4 Hz, 1H),

3.02 (dd, *J* = 13.8, 7.0 Hz, 1H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 179.30, 138.68, 137.93, 128.93 (2C), 128.72 (2C), 128.39 (2C), 128.12 (2C), 127.64, 126.47, 53.46, 39.27; **HRMS** (ES+) *m/z* calcd for $C_{15}H_{14}O_2$ ($[M+Na]^+$) 249.0886, found 249.0887.

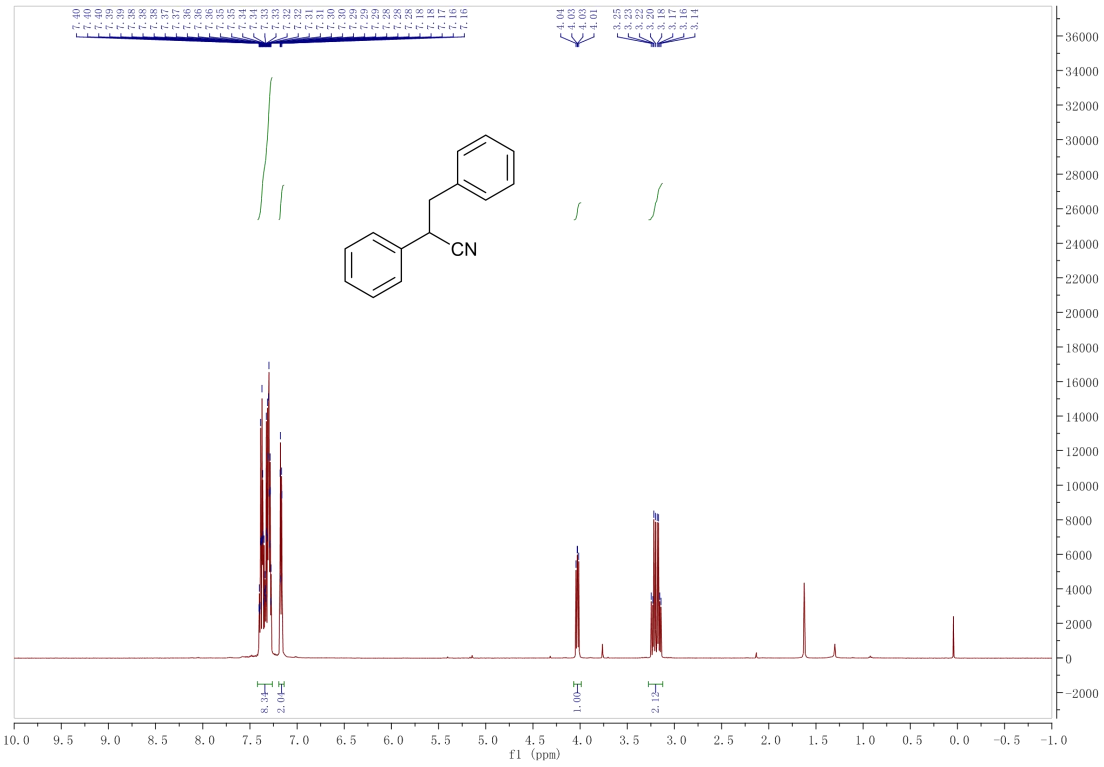
2-phenyl-3,4-dihydronaphthalen-1(2H)-one (**7**)

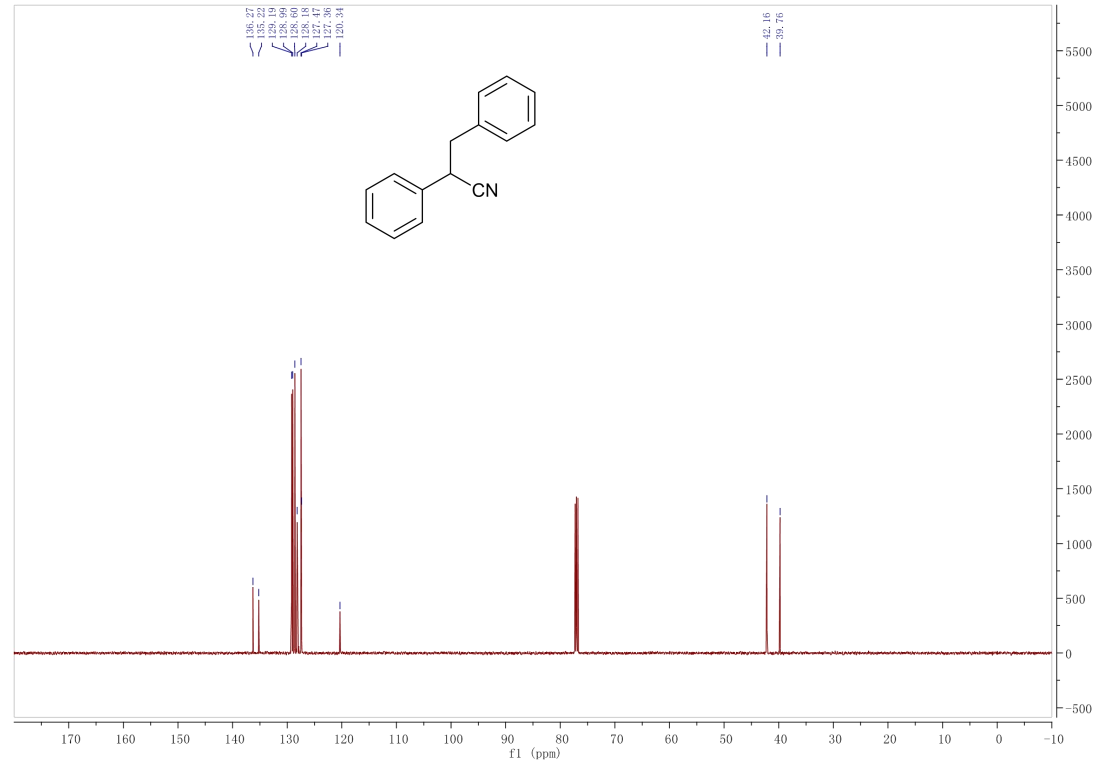


white solid; **^{1}H NMR** (500 MHz, $CDCl_3$) δ 8.13 (dd, *J* = 7.8, 0.8 Hz, 1H), 7.57 – 7.50 (m, 1H), 7.41 – 7.34 (m, 3H), 7.33 – 7.27 (m, 2H), 7.25 – 7.18 (m, 2H), 3.83 (dd, *J* = 9.2, 6.7 Hz, 1H), 3.22 – 3.01 (m, 2H), 2.54 – 2.41 (m, 2H); **^{13}C NMR** (126 MHz, $CDCl_3$) δ 198.21, 144.06, 139.73, 133.43, 132.86, 128.77, 128.52 (2C), 128.42 (2C), 127.79, 126.92, 126.77, 54.39, 31.17, 28.76; **HRMS** (ES+) *m/z* calcd for $C_{16}H_{14}O$ ($[M+Na]^+$) 245.0937, found 245.0941.

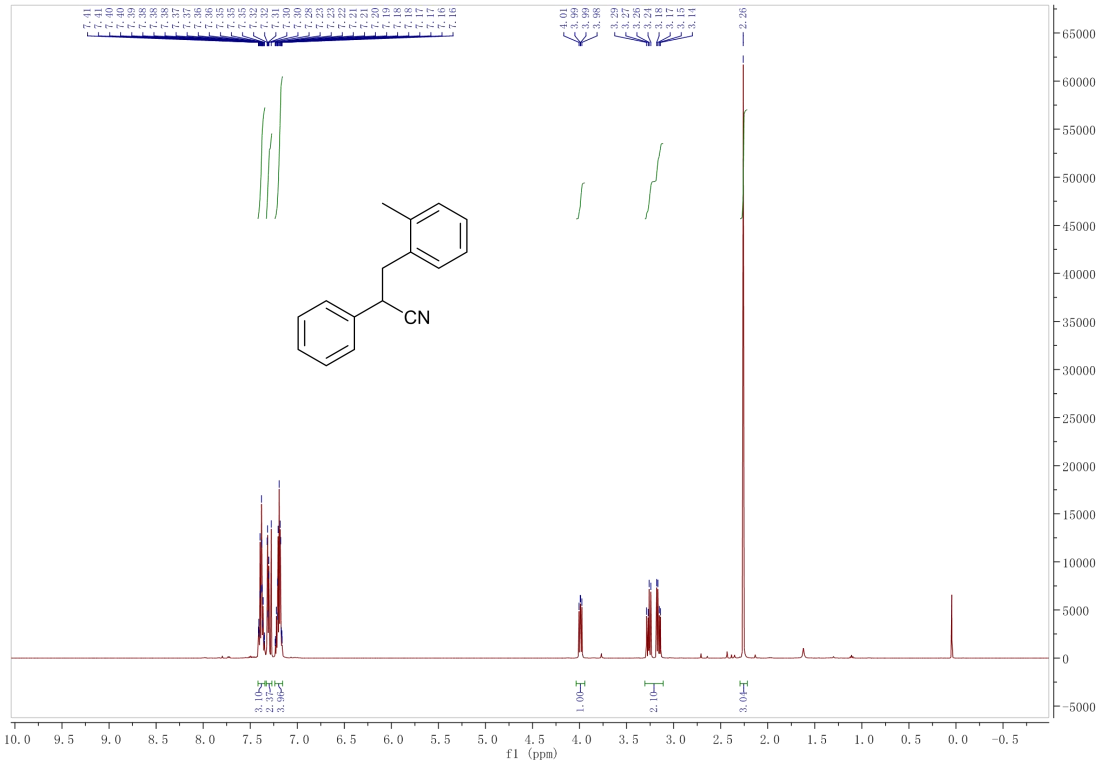
6. ^{1}H, ^{13}C NMR spectra

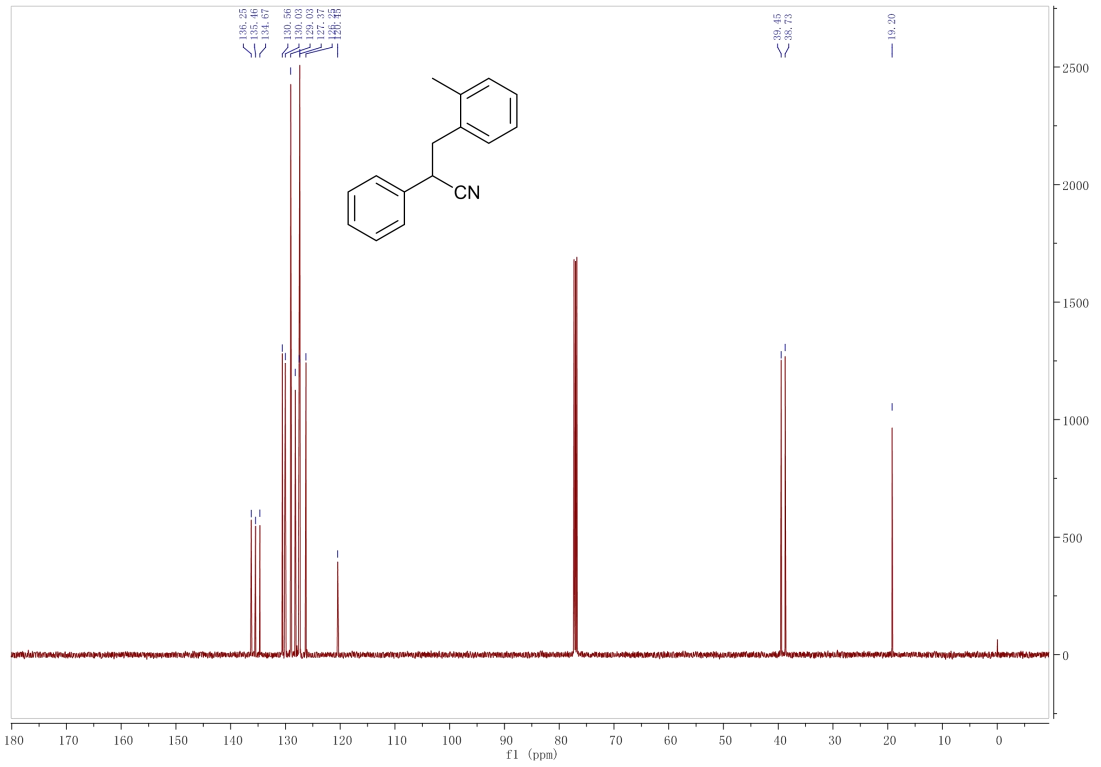
2,3-diphenylpropanenitrile (**3aa**)



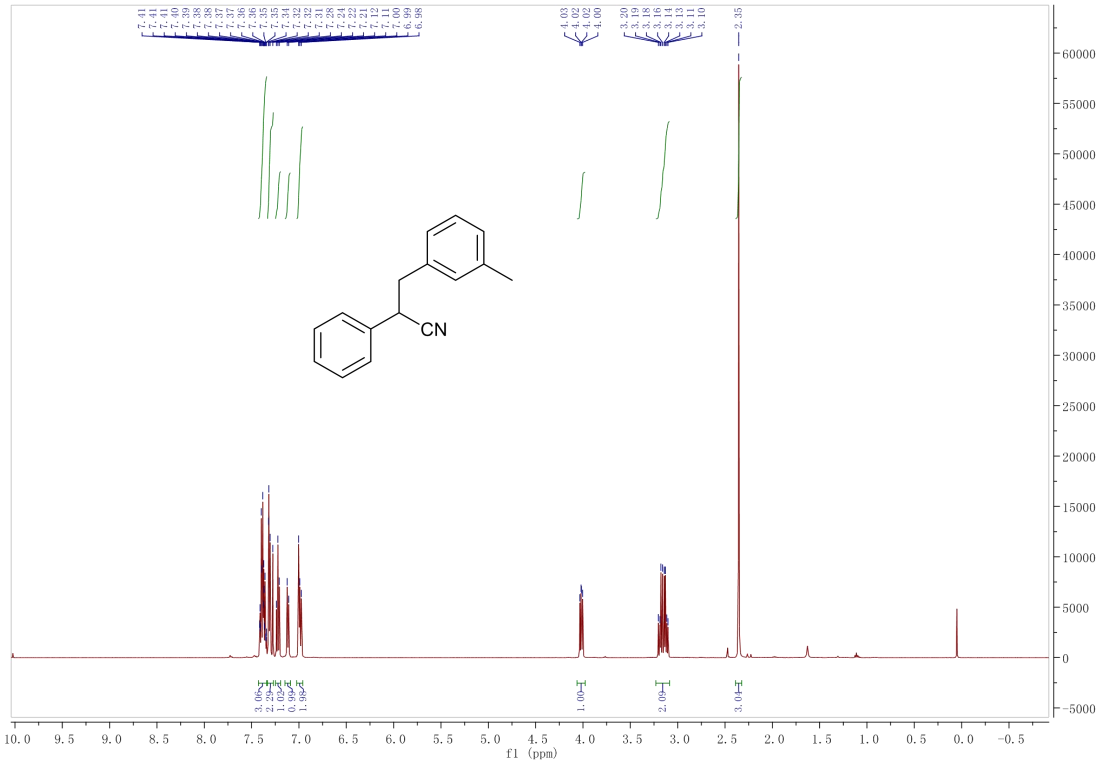


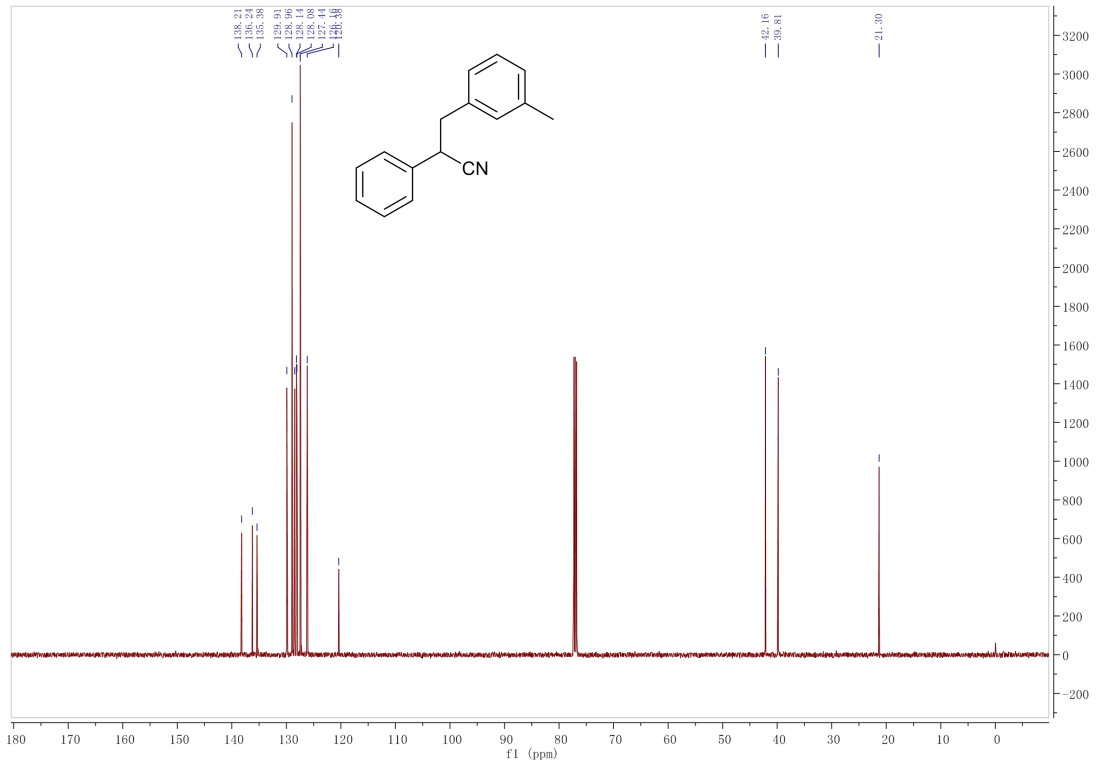
2-phenyl-3-(o-tolyl)propanenitrile (**3ab**)



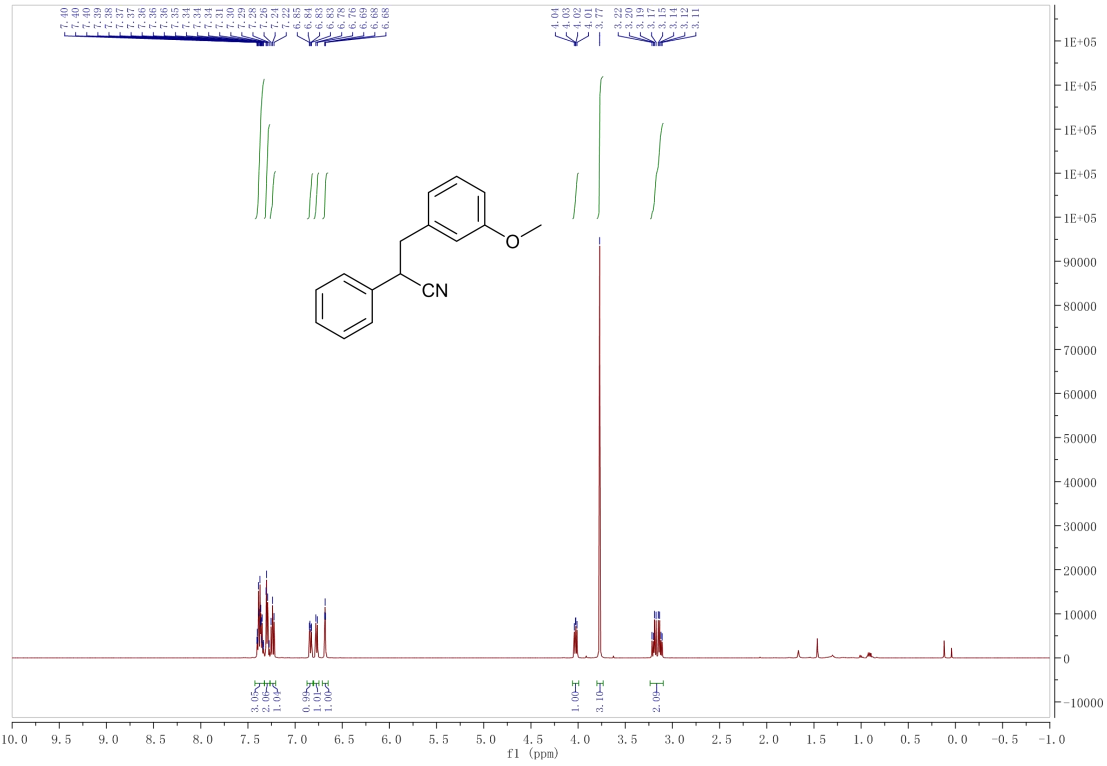


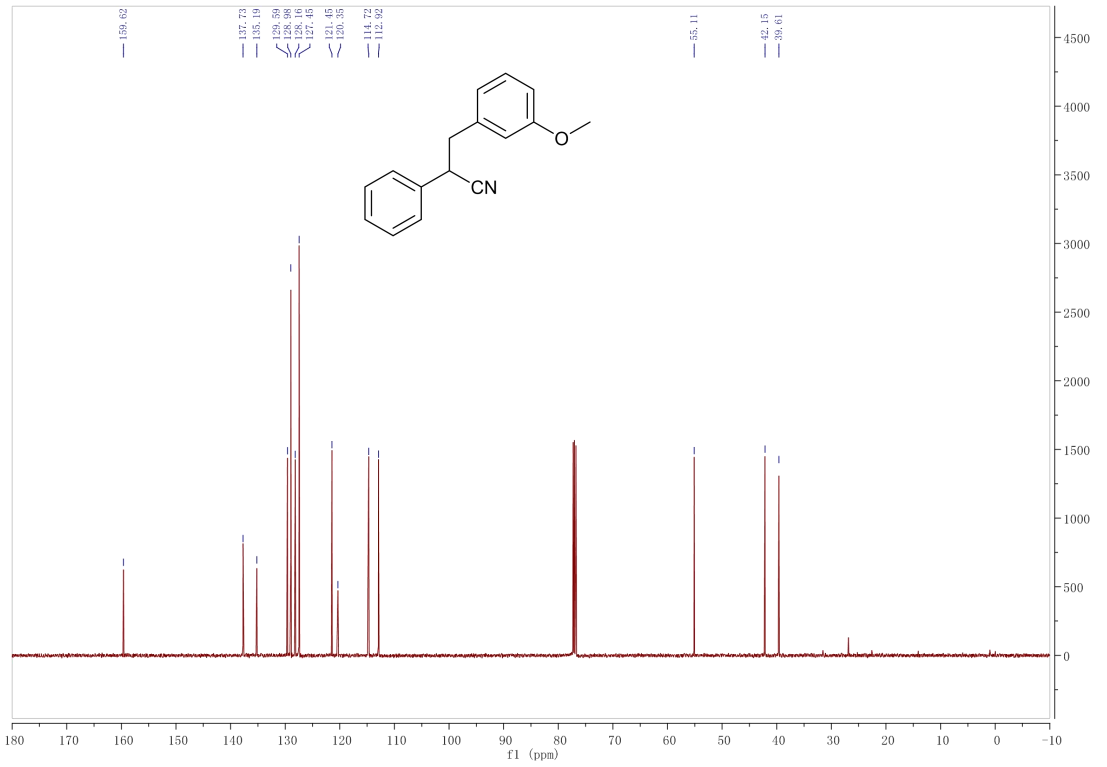
2-phenyl-3-(m-tolyl)propanenitrile (**3ac**)



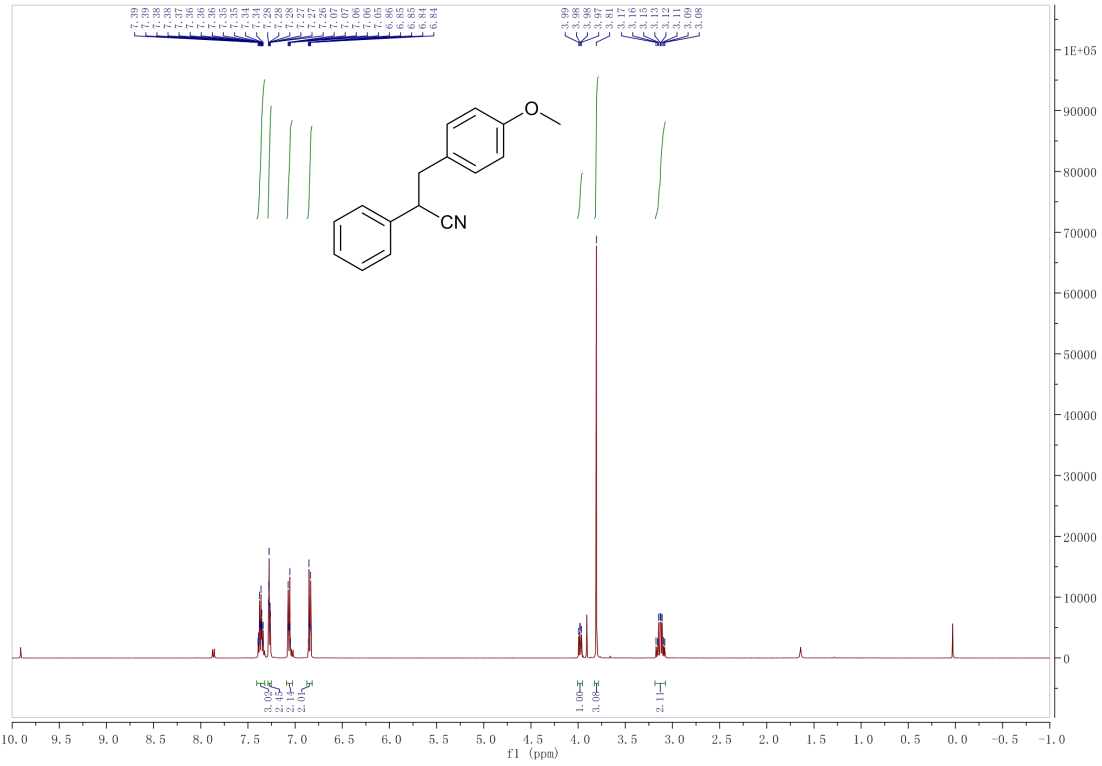


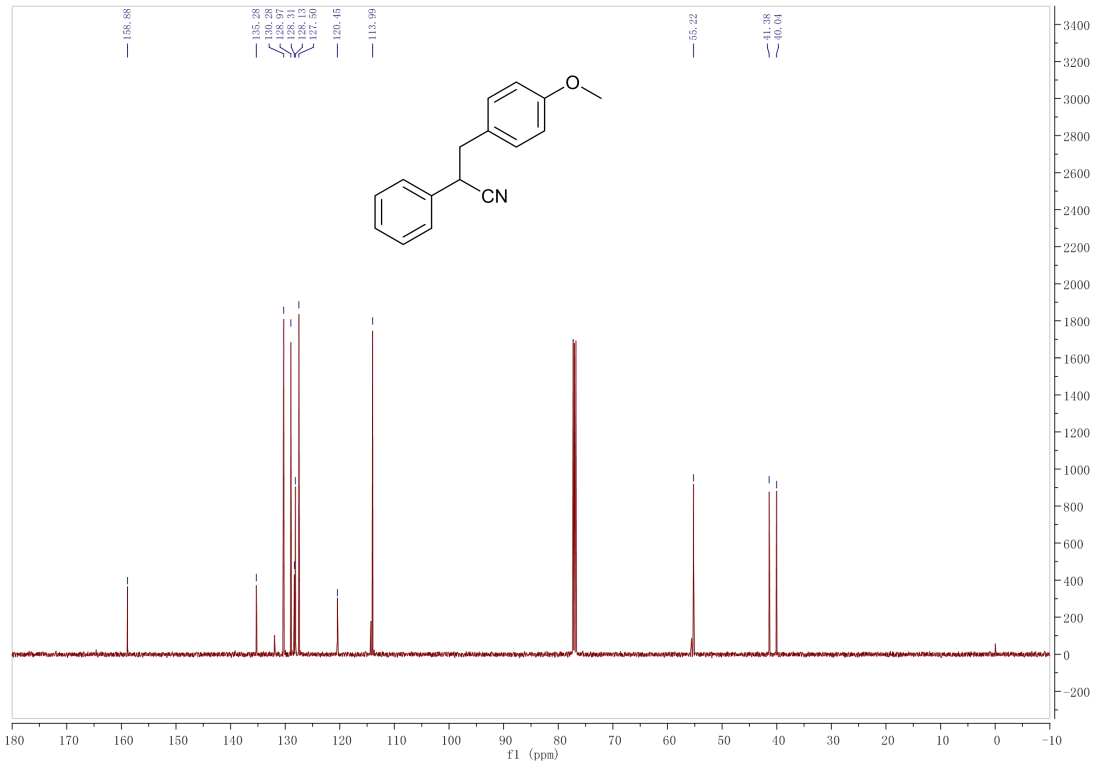
3-(3-methoxyphenyl)-2-phenylpropanenitrile (**3ad**)



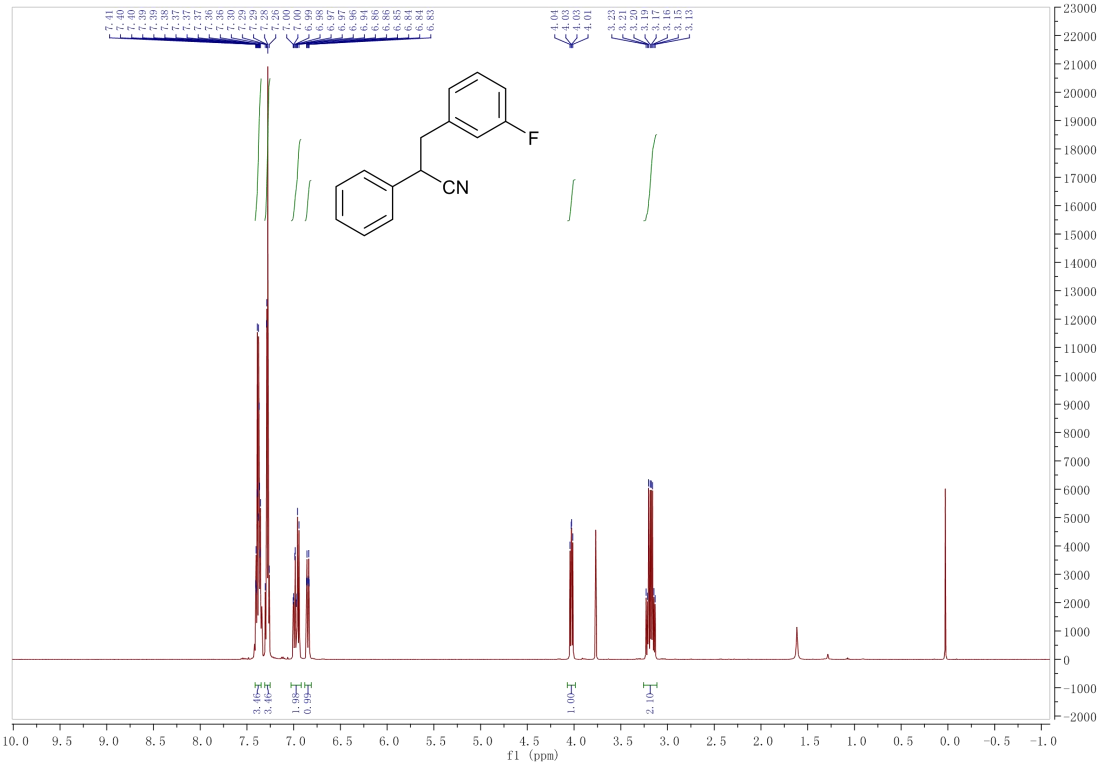


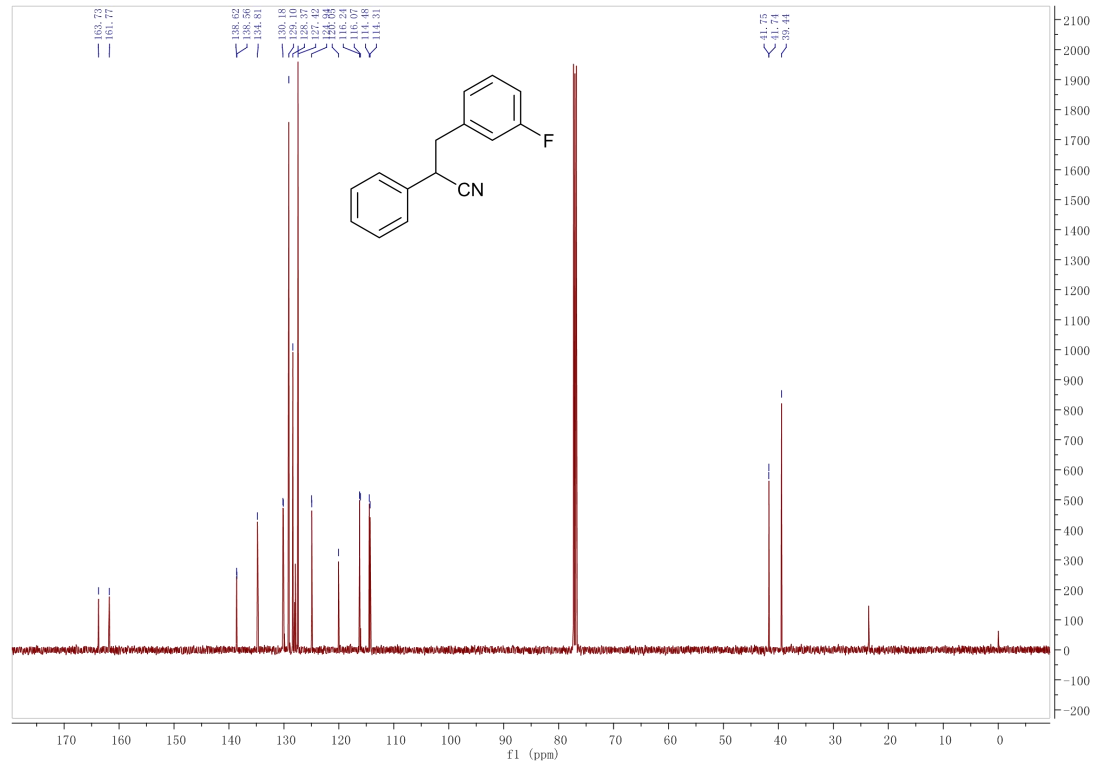
3-(4-methoxyphenyl)-2-phenylpropanenitrile (**3ae**)



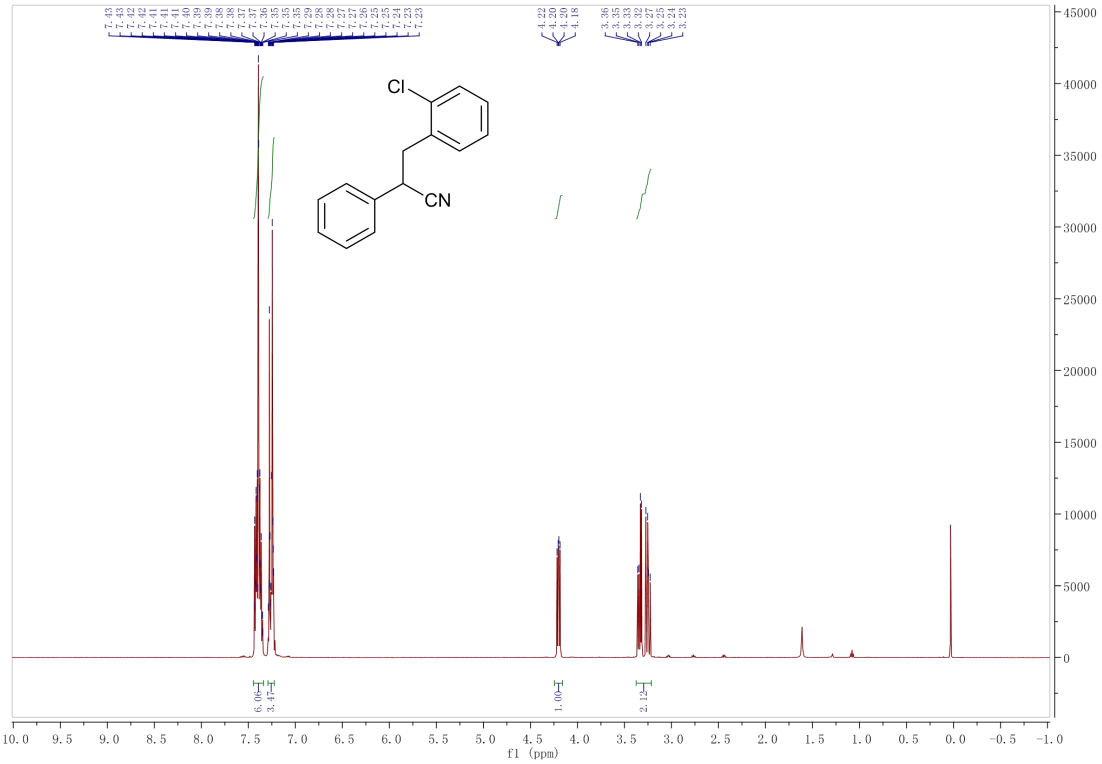


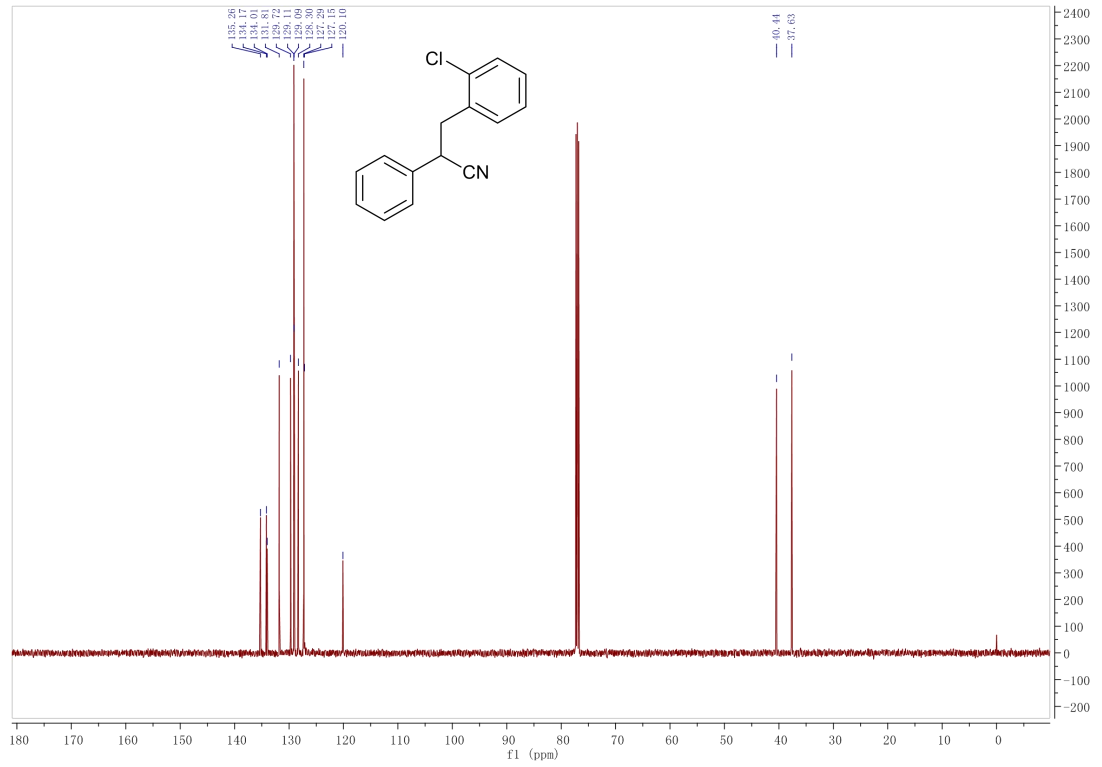
3-(3-fluorophenyl)-2-phenylpropanenitrile (**3af**)



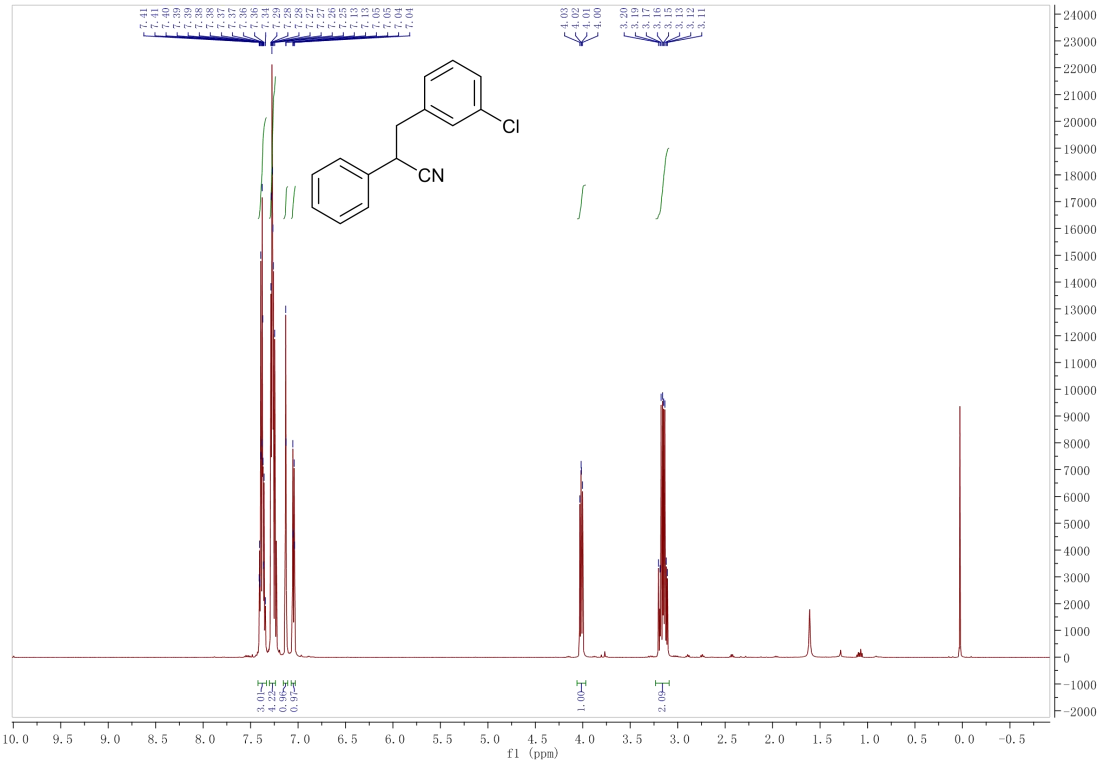


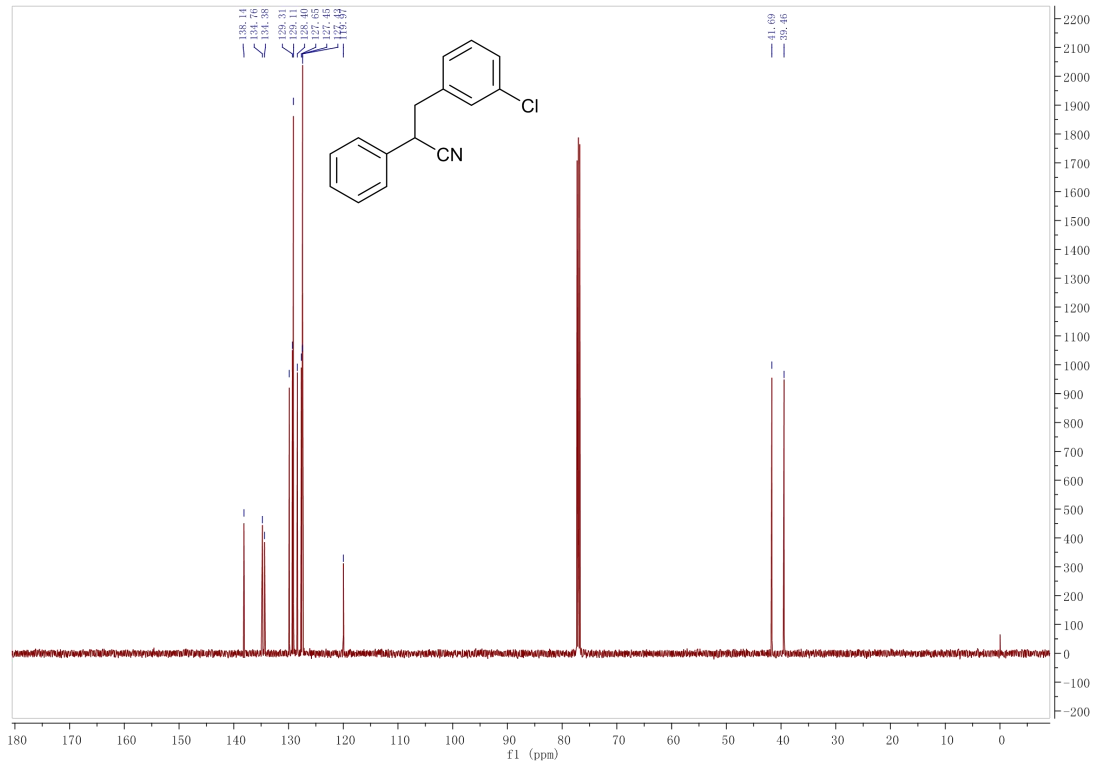
3-(2-chlorophenyl)-2-phenylpropanenitrile (**3ag**)



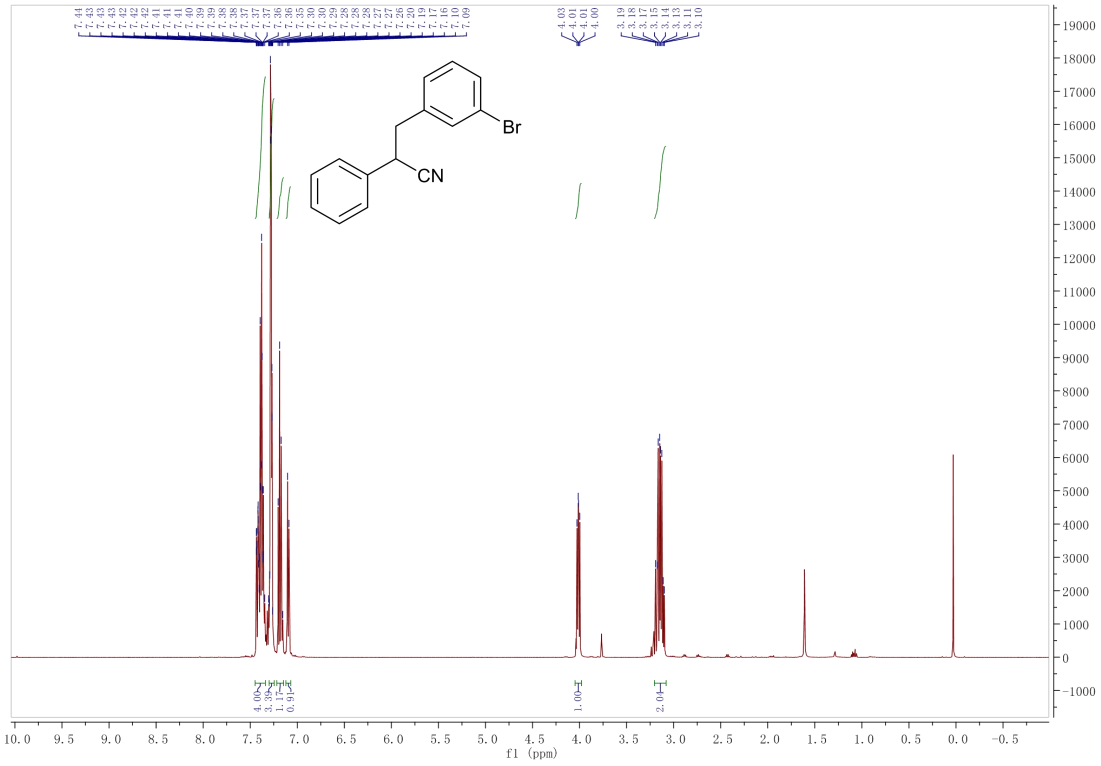


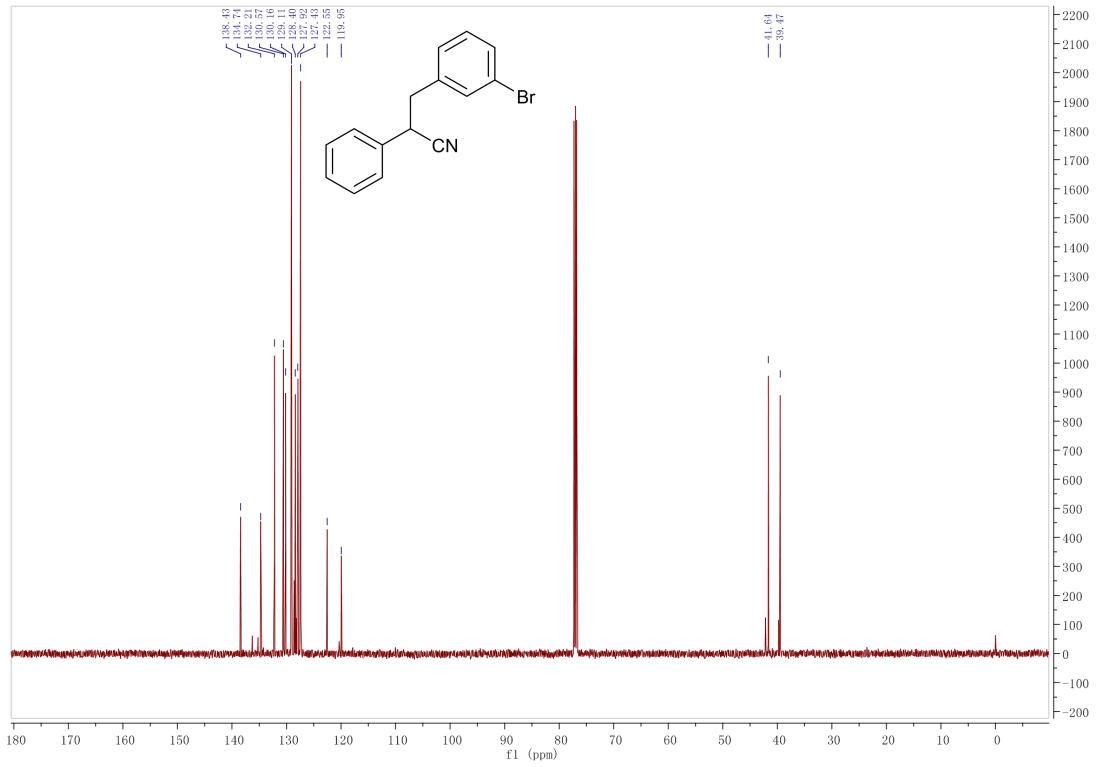
3-(3-chlorophenyl)-2-phenylpropanenitrile (**3ah**)



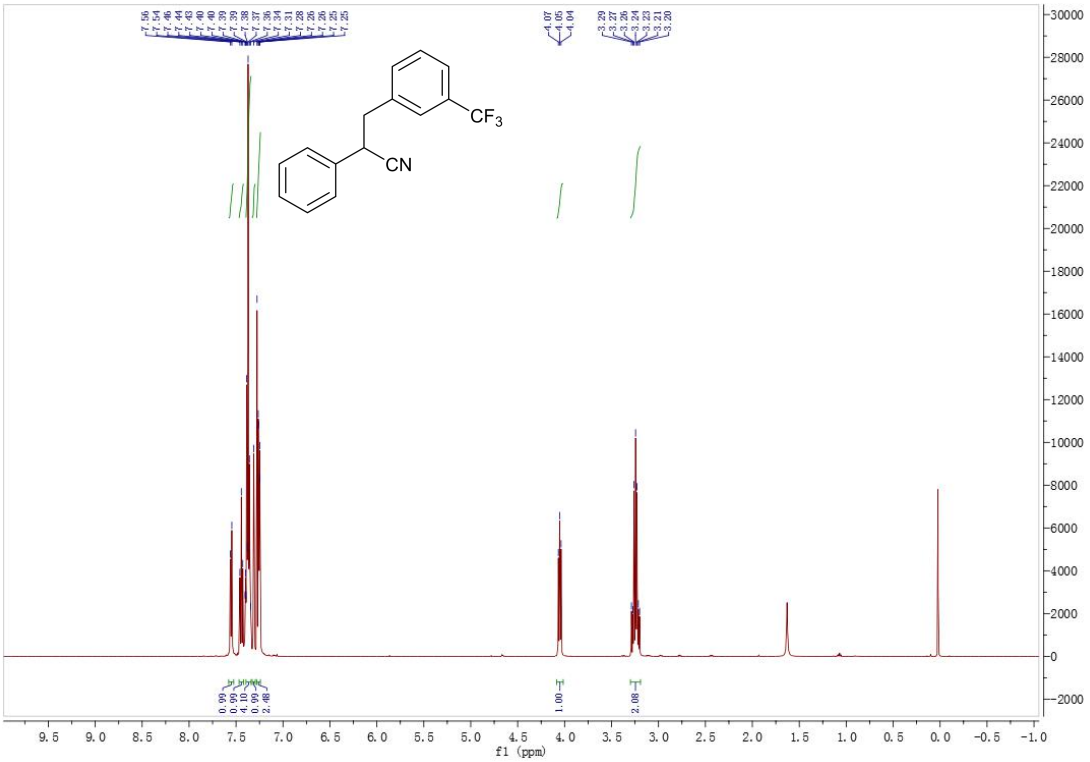


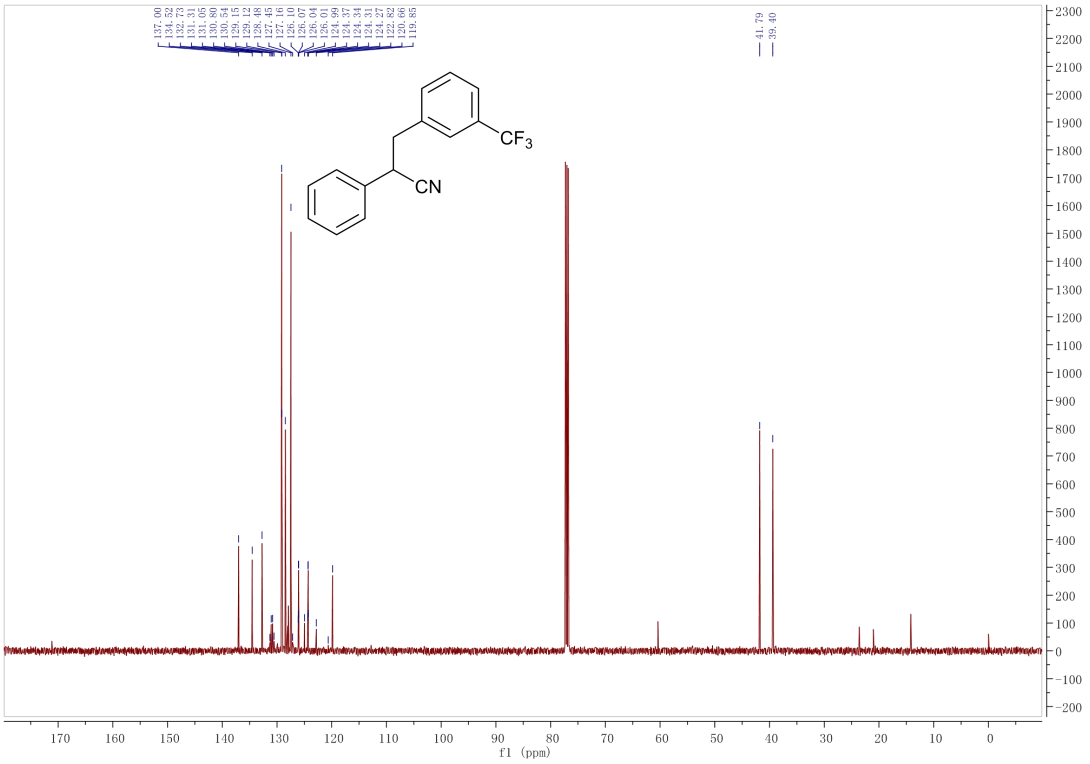
3-(3-bromophenyl)-2-phenylpropanenitrile (**3ai**)



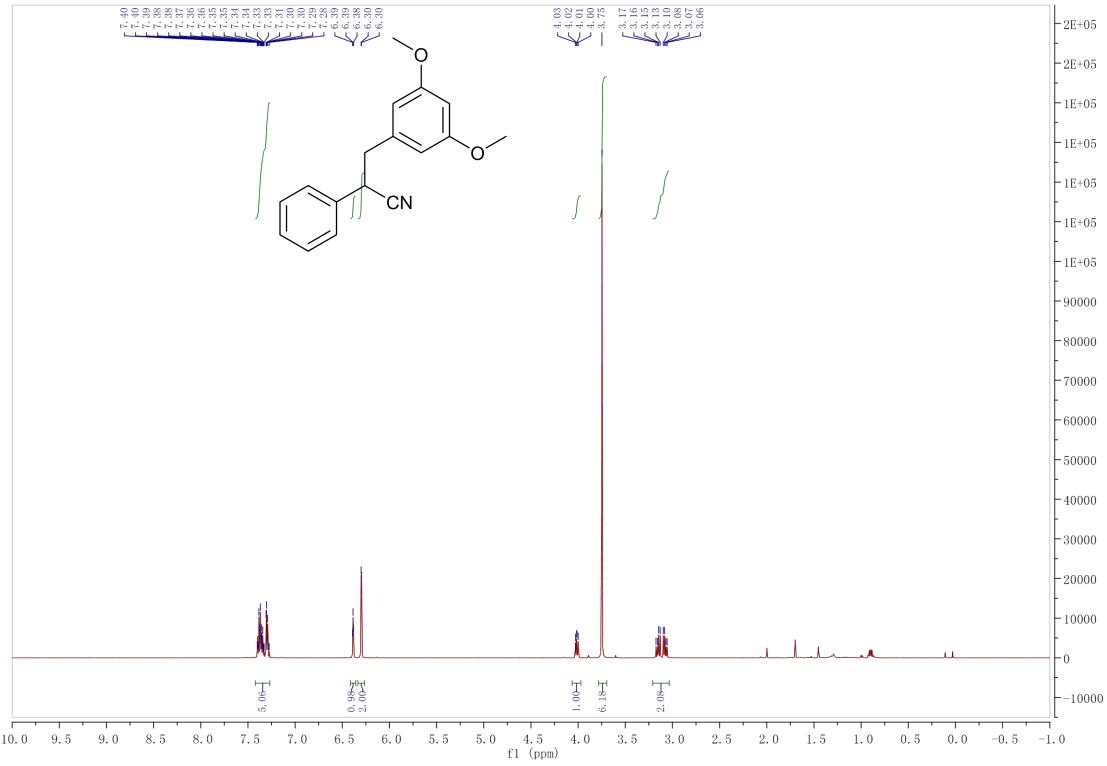


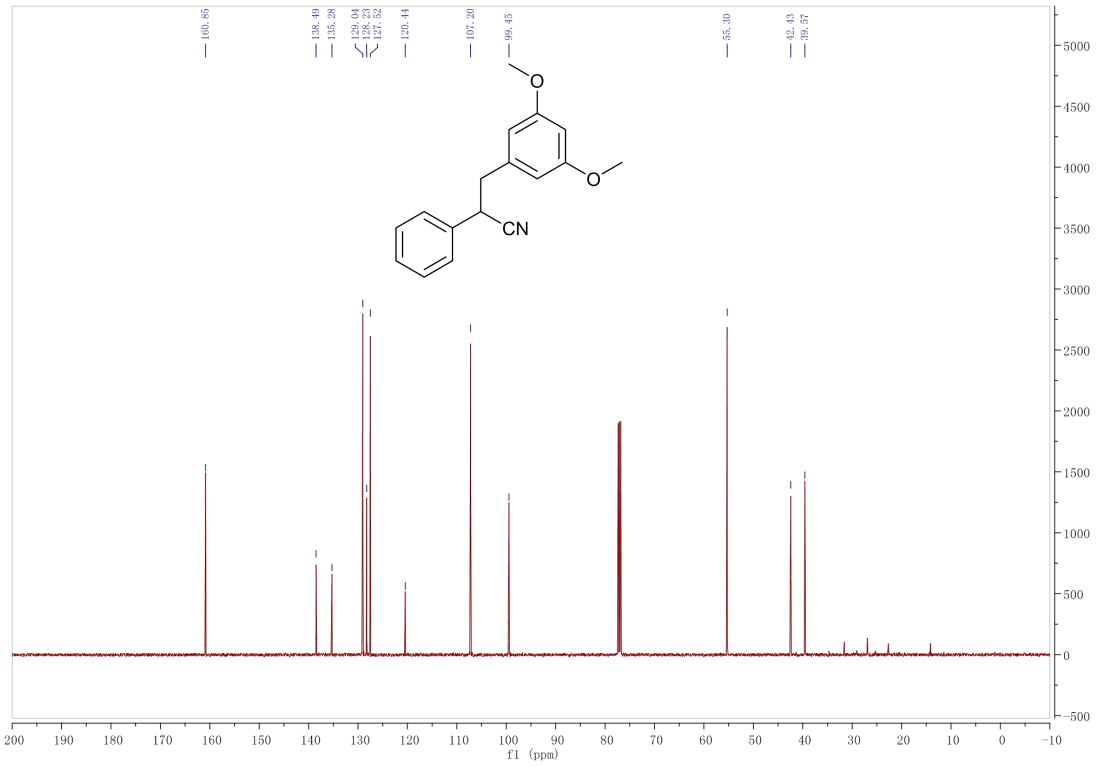
2-phenyl-3-(3-(trifluoromethyl)phenyl)propanenitrile (**3aj**)



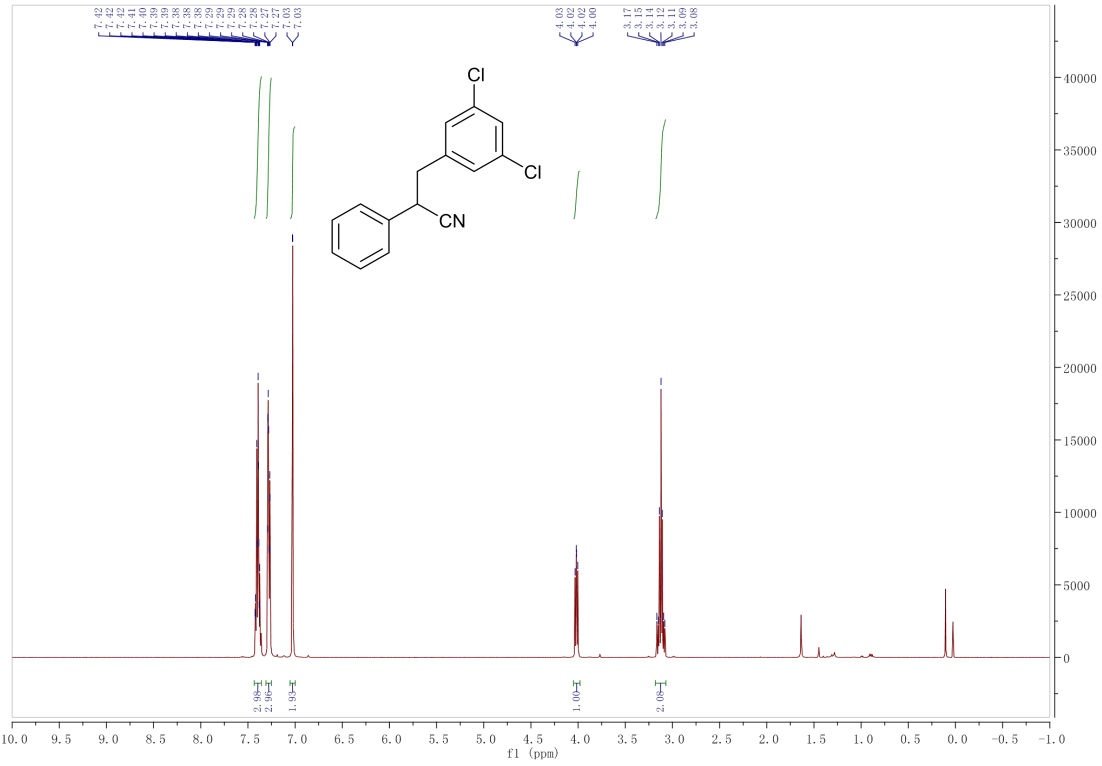


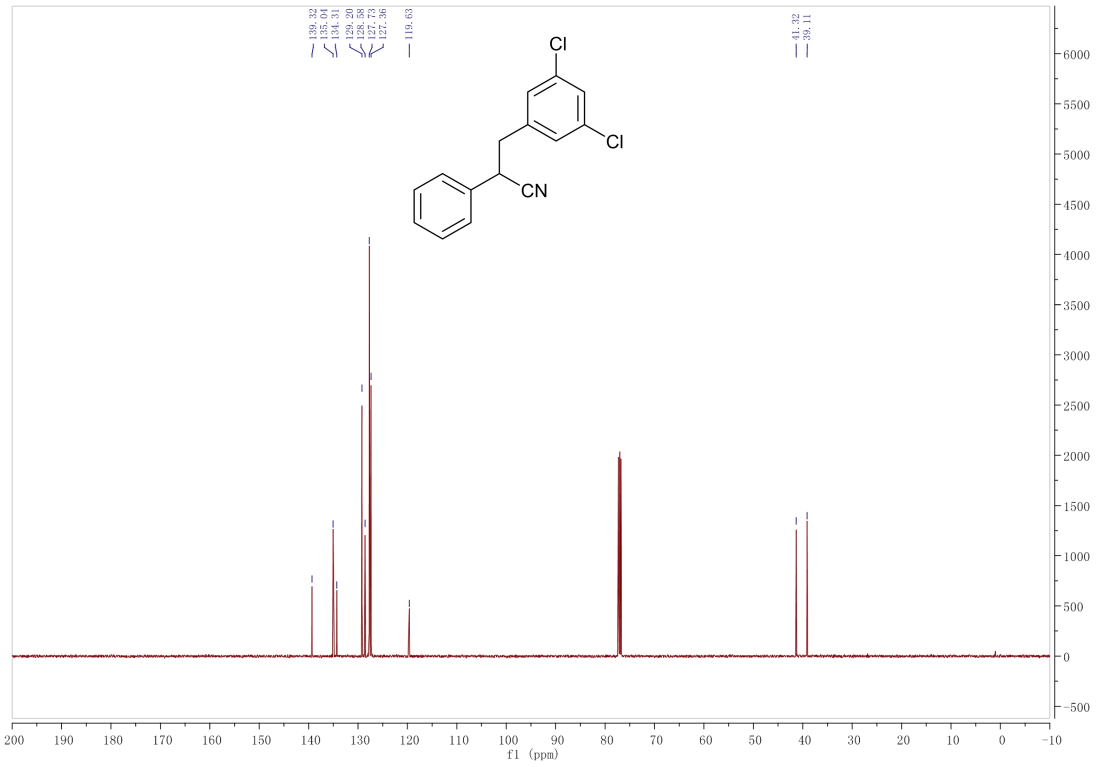
3-(3,5-dimethoxyphenyl)-2-phenylpropanenitrile (**3ak**)



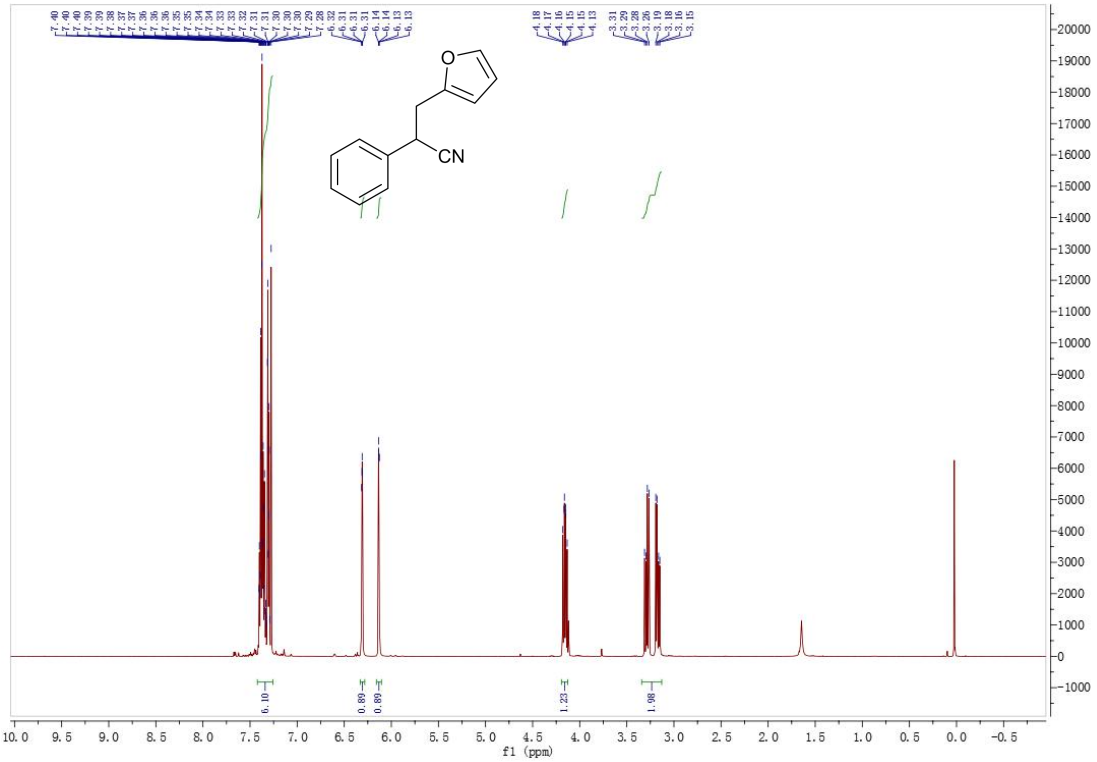


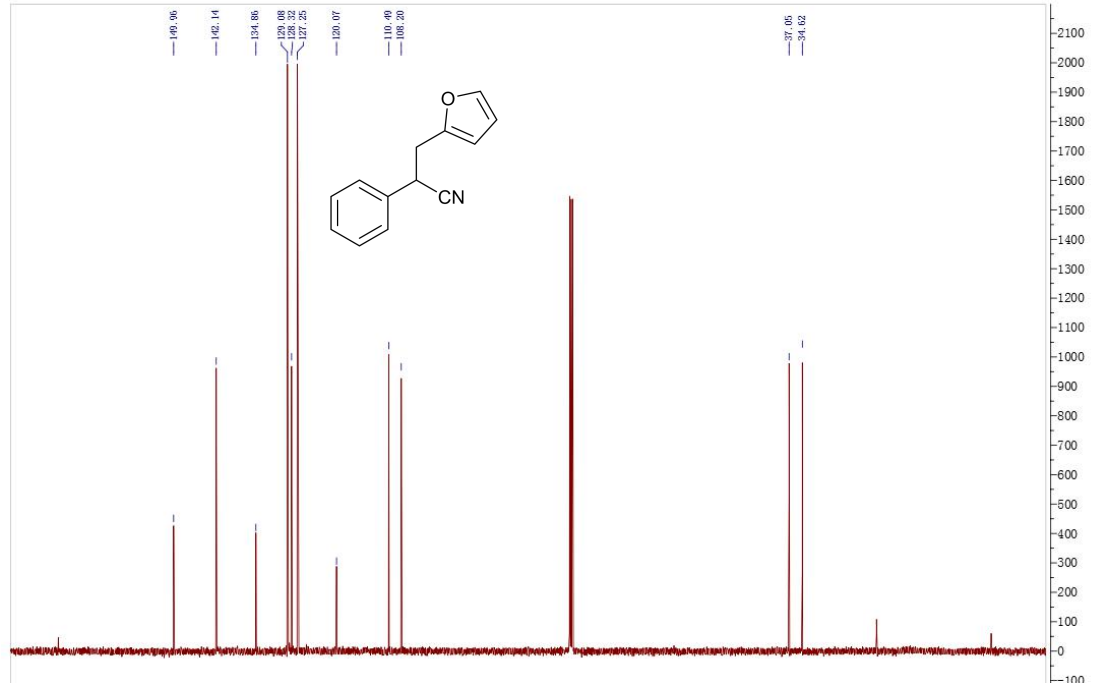
3-(3,5-dichlorophenyl)-2-phenylpropanenitrile (**3al**)



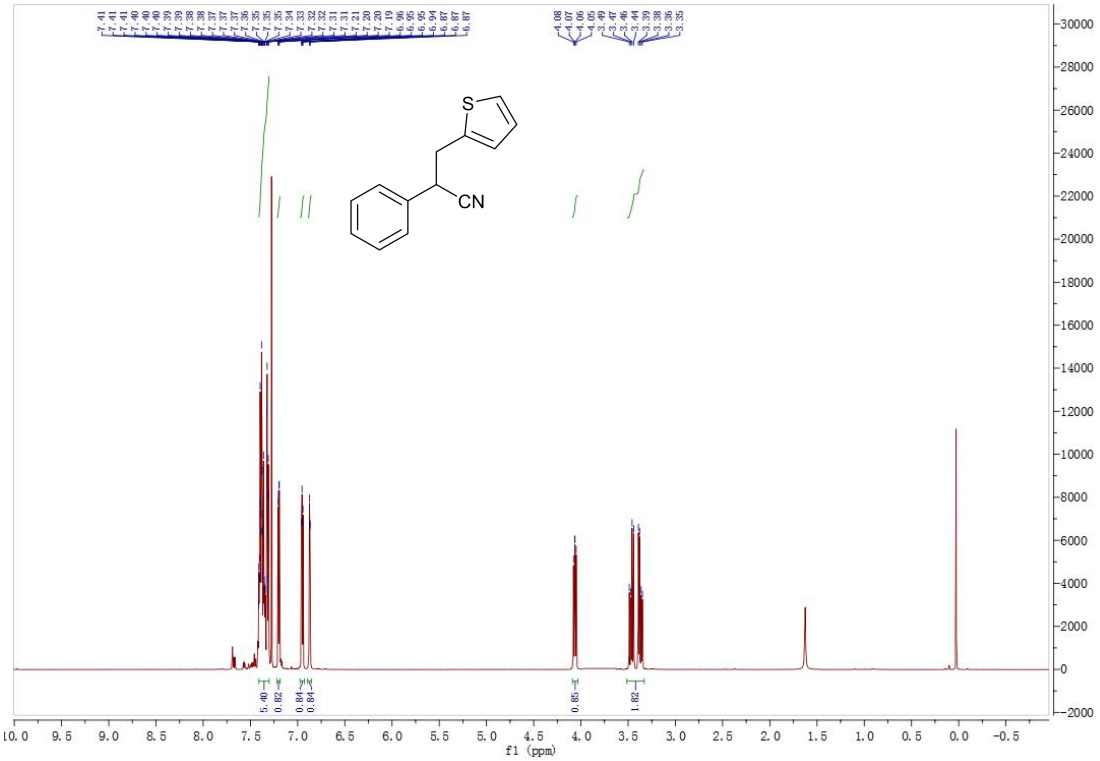


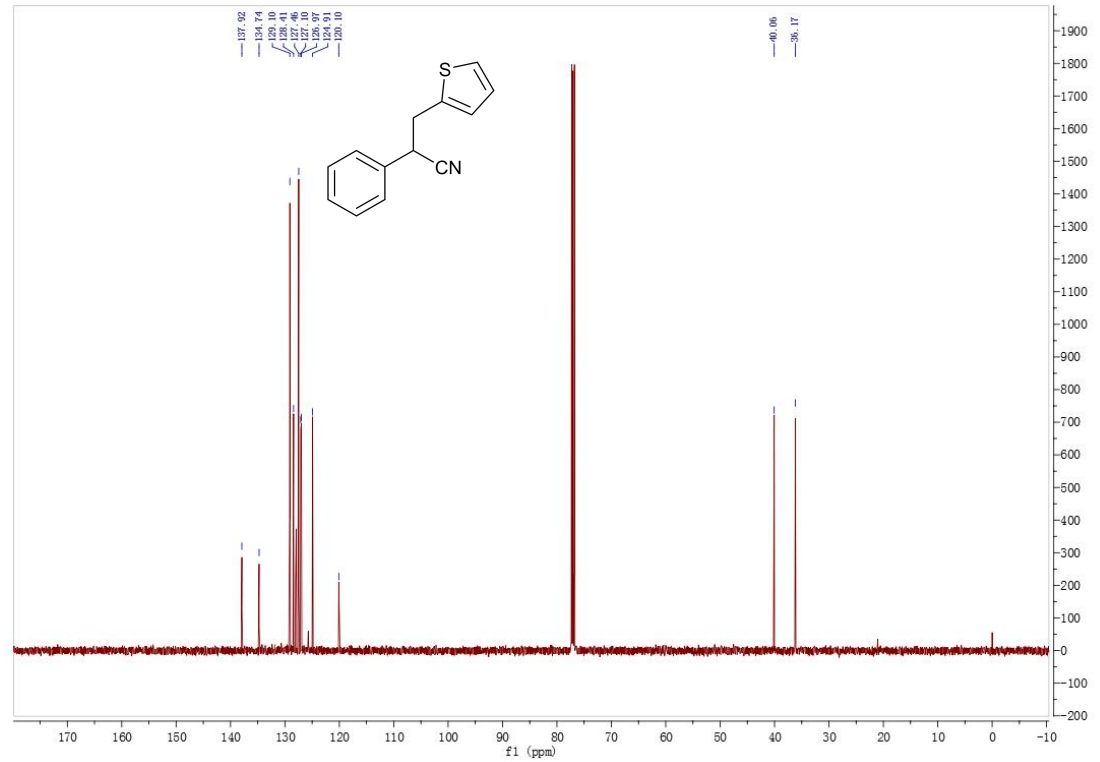
3-(furan-2-yl)-2-phenylpropanenitrile (**3am**)



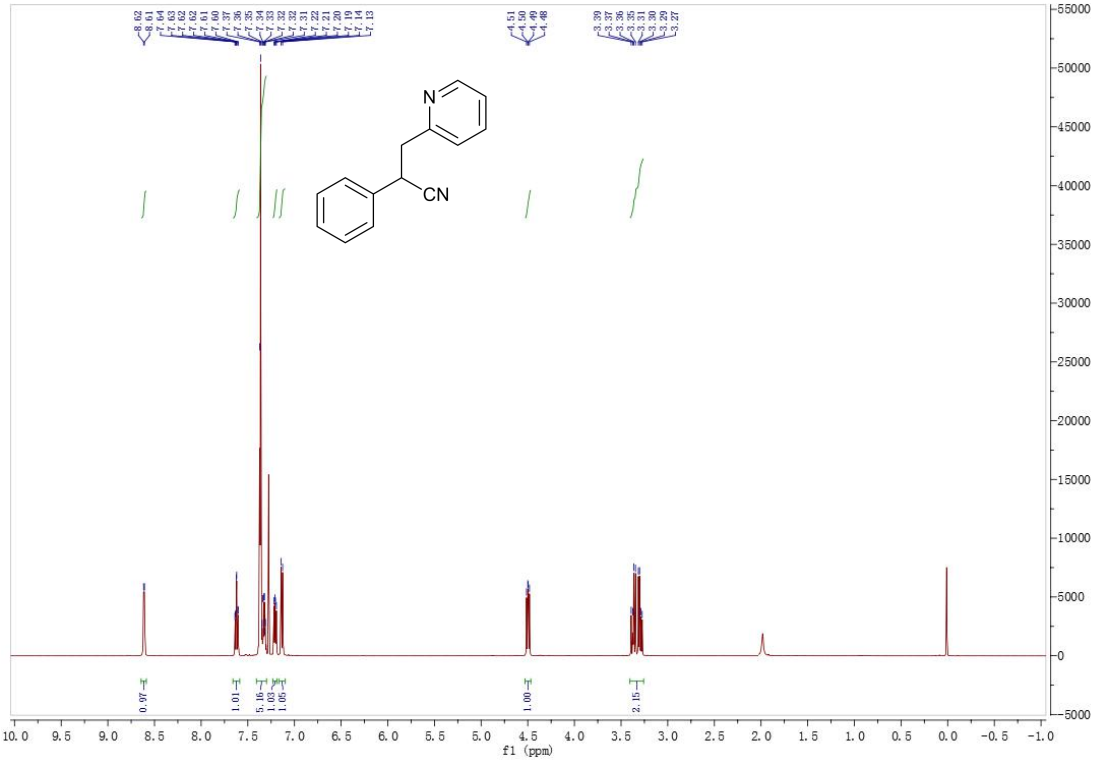


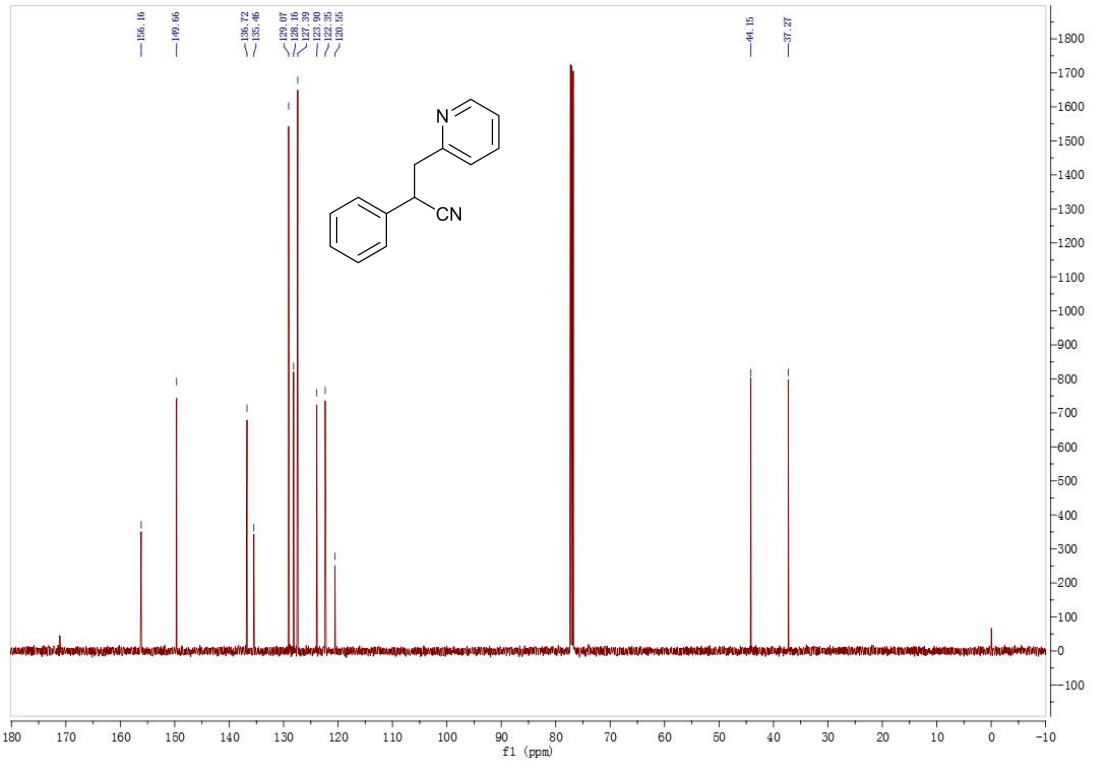
2-phenyl-3-(thiophen-2-yl)propanenitrile (**3an**)



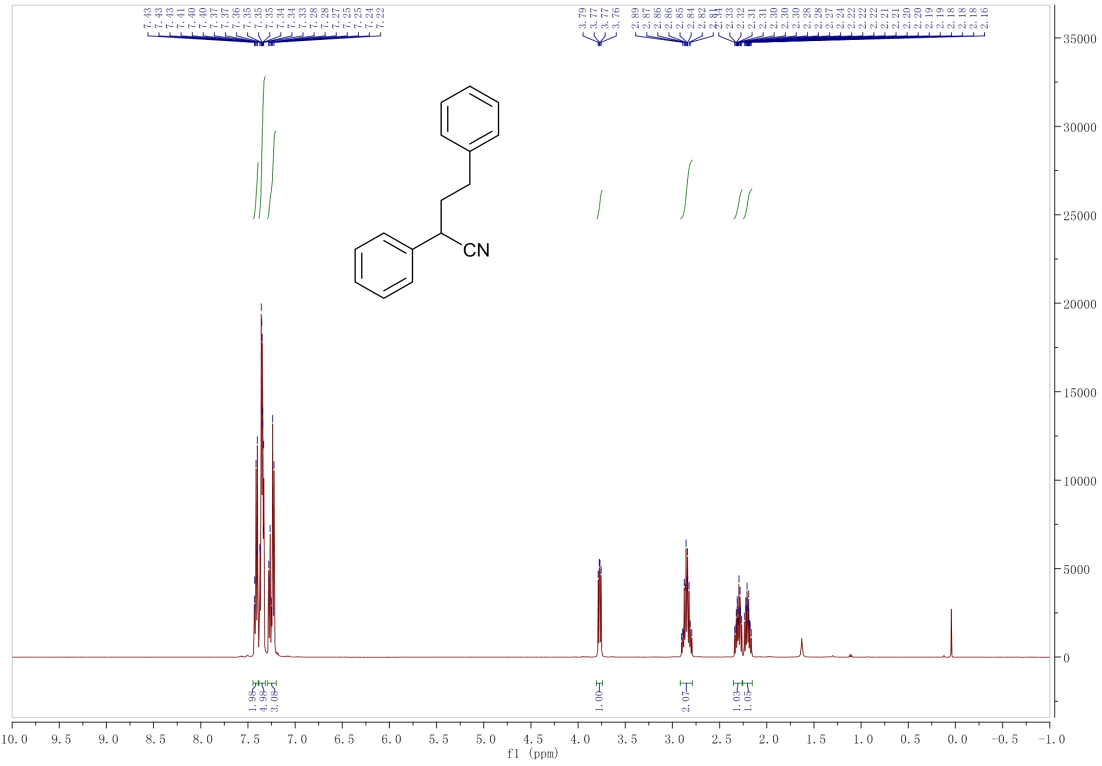


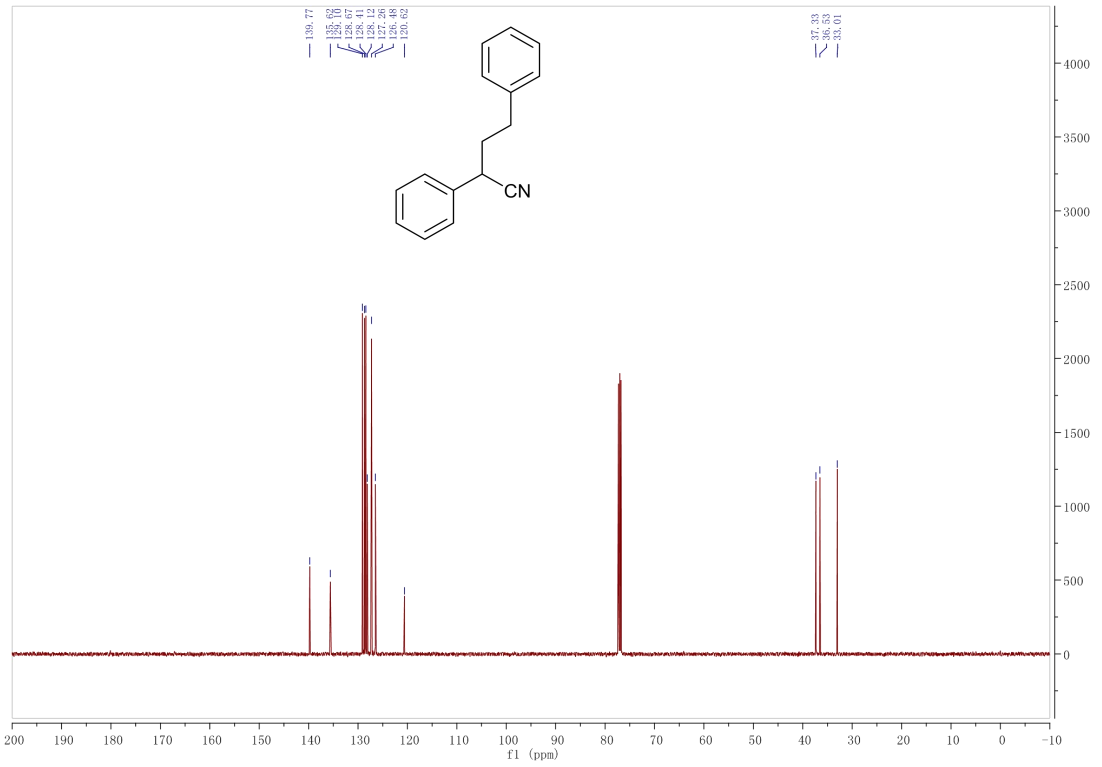
2-phenyl-3-(pyridin-2-yl)propanenitrile (**3ao**)



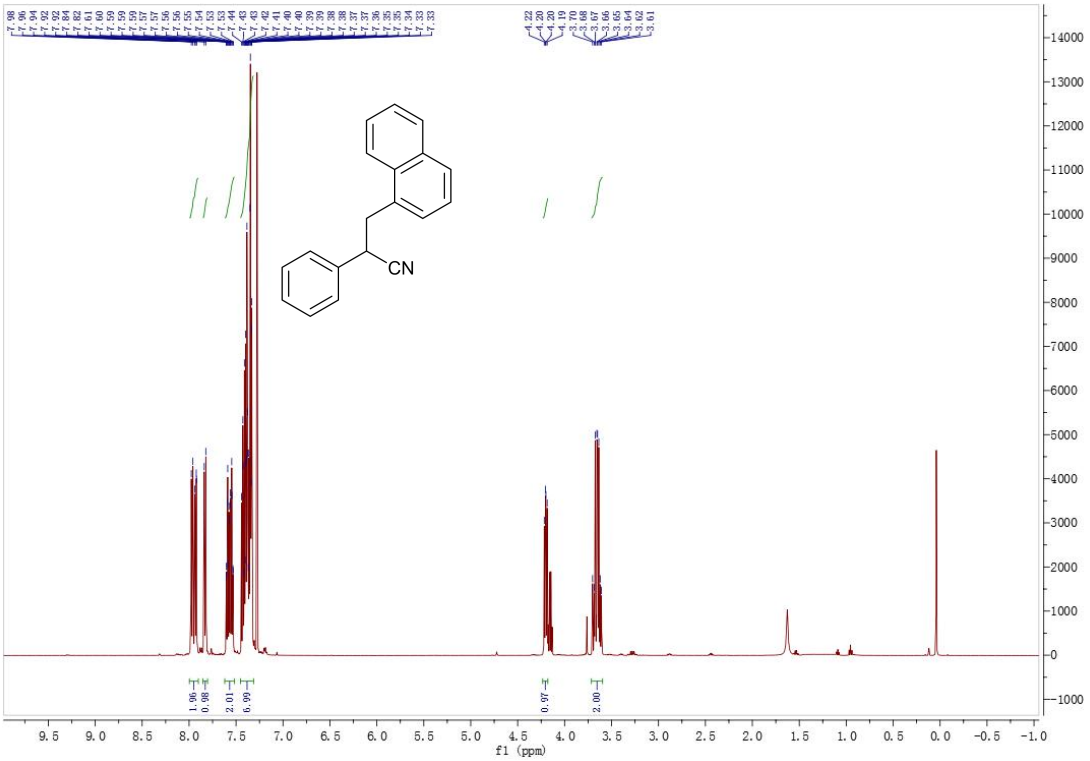


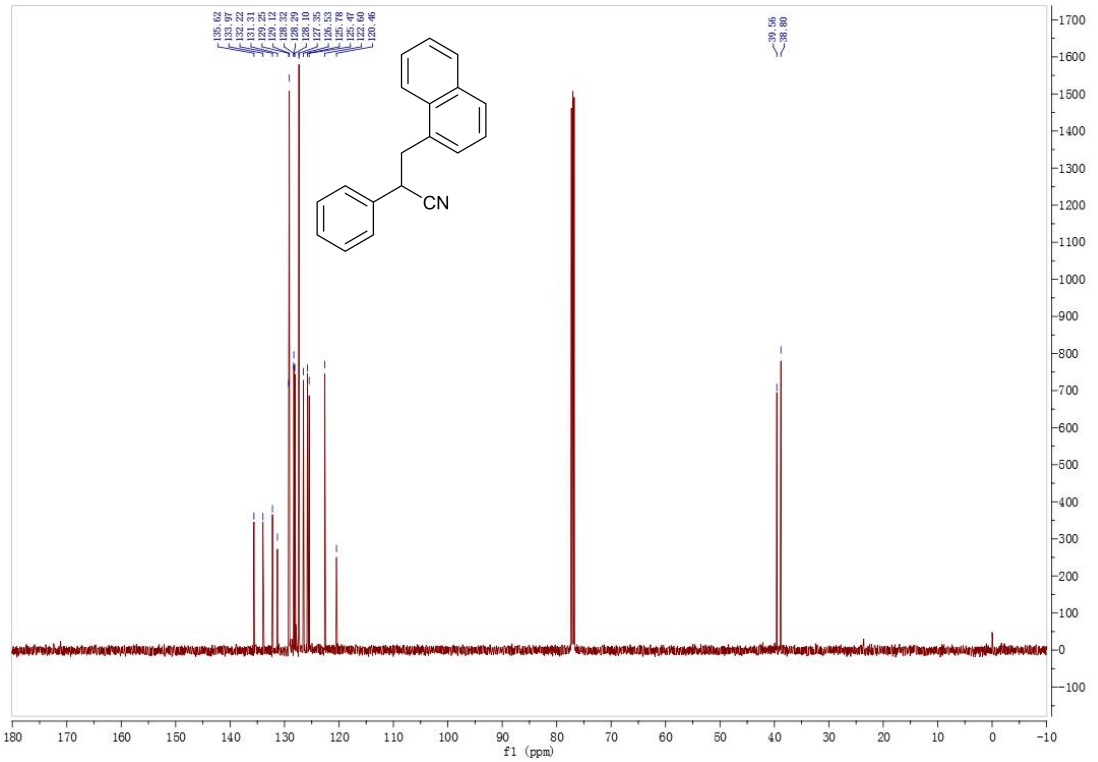
2,4-diphenylbutanenitrile (**3ap**)



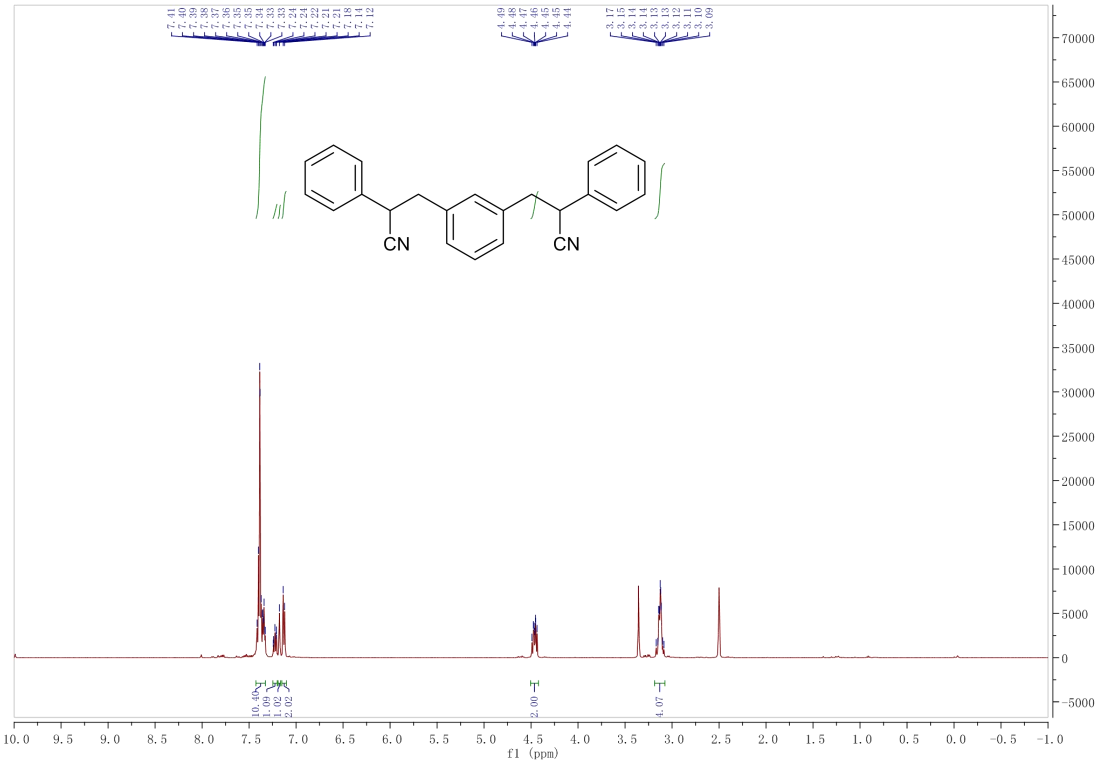


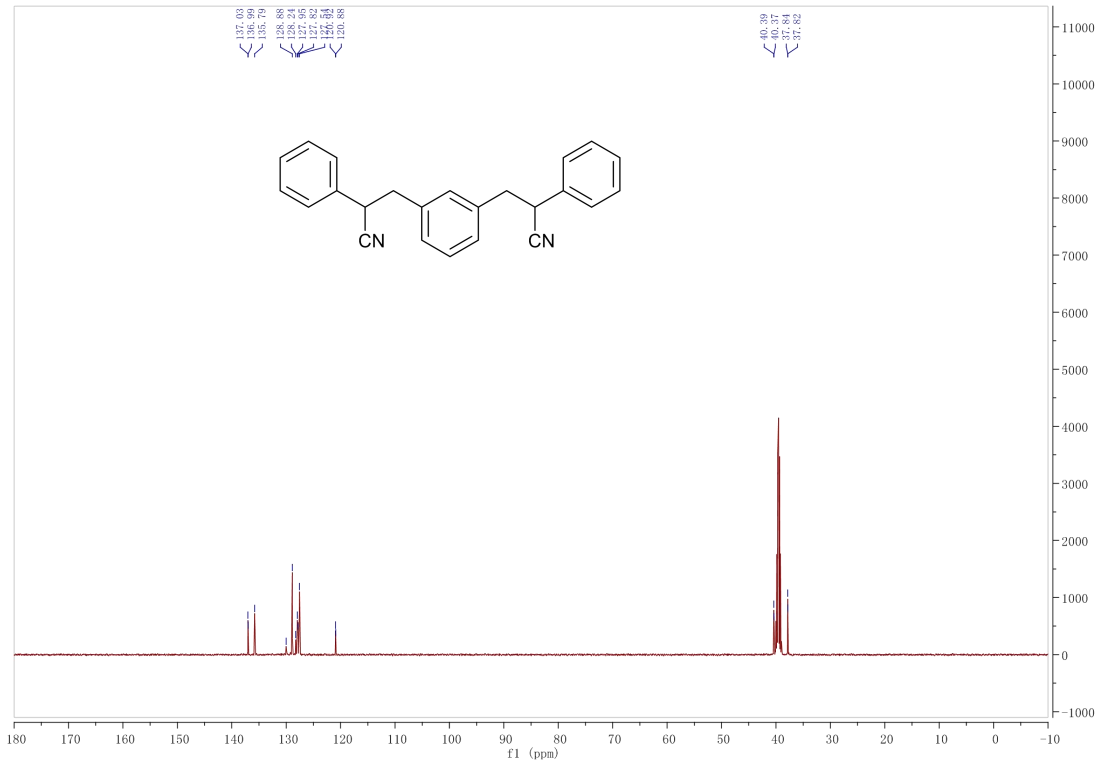
3-(naphthalen-1-yl)-2-phenylpropanenitrile (**3aq**)



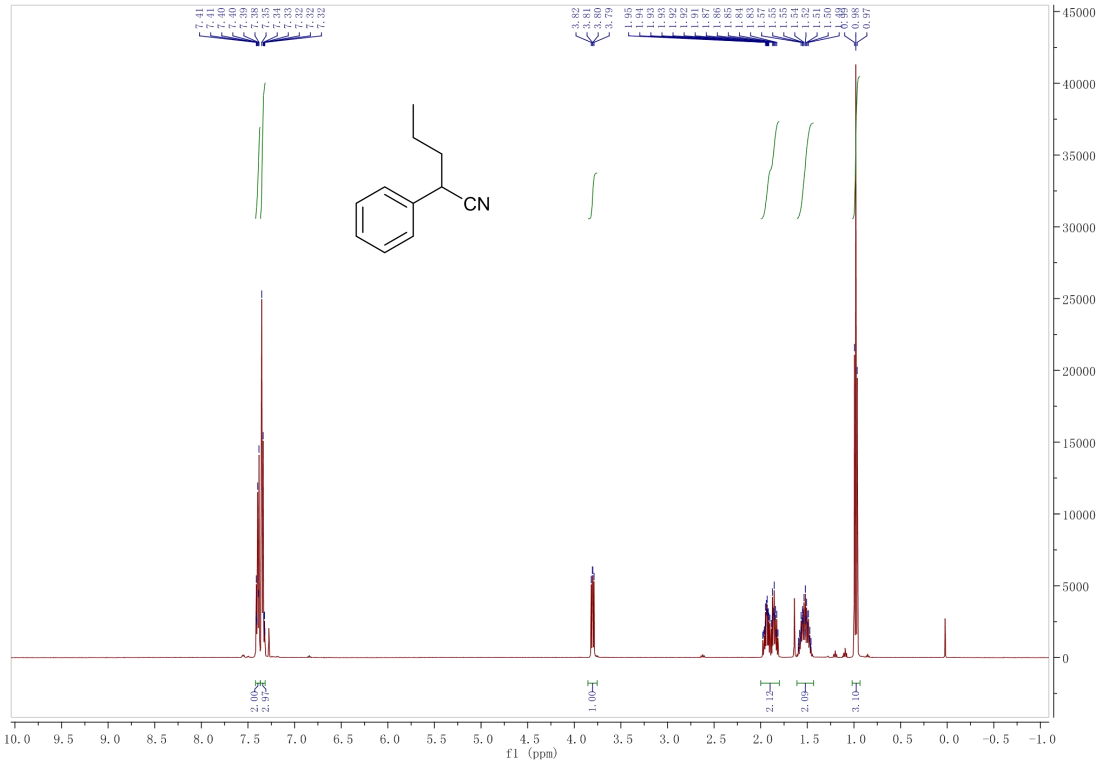


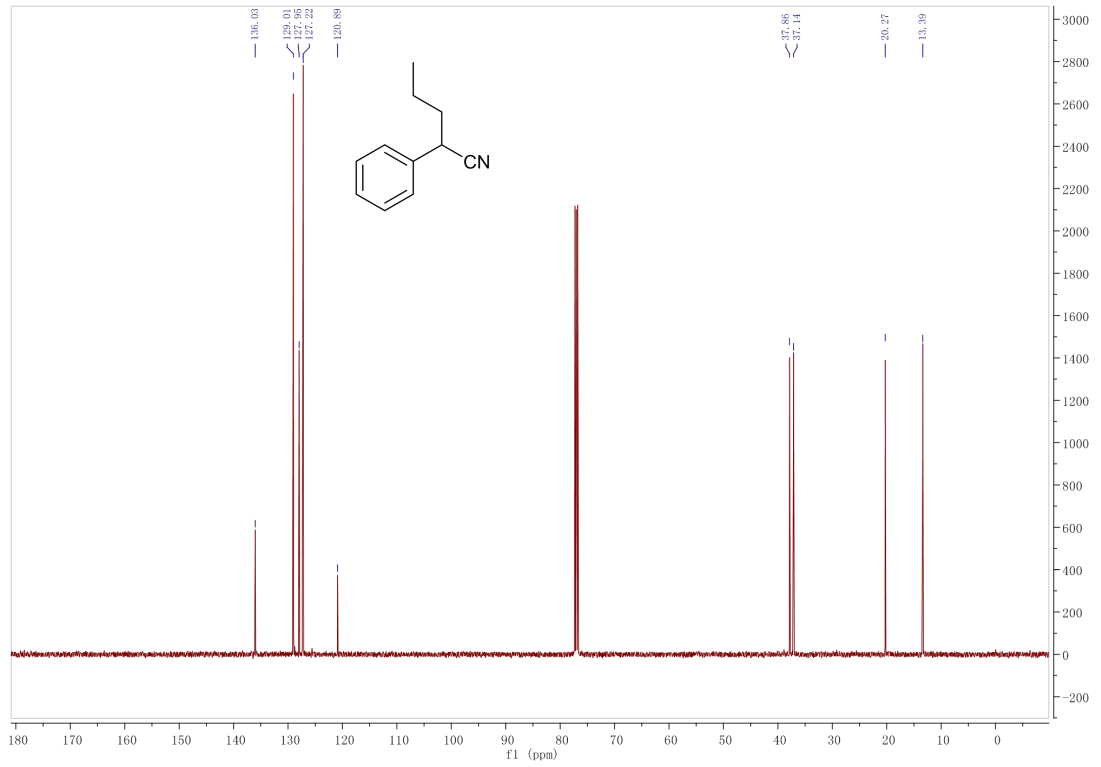
3,3'-(1,3-phenylene)bis(2-phenylpropanenitrile) (**3ar**)



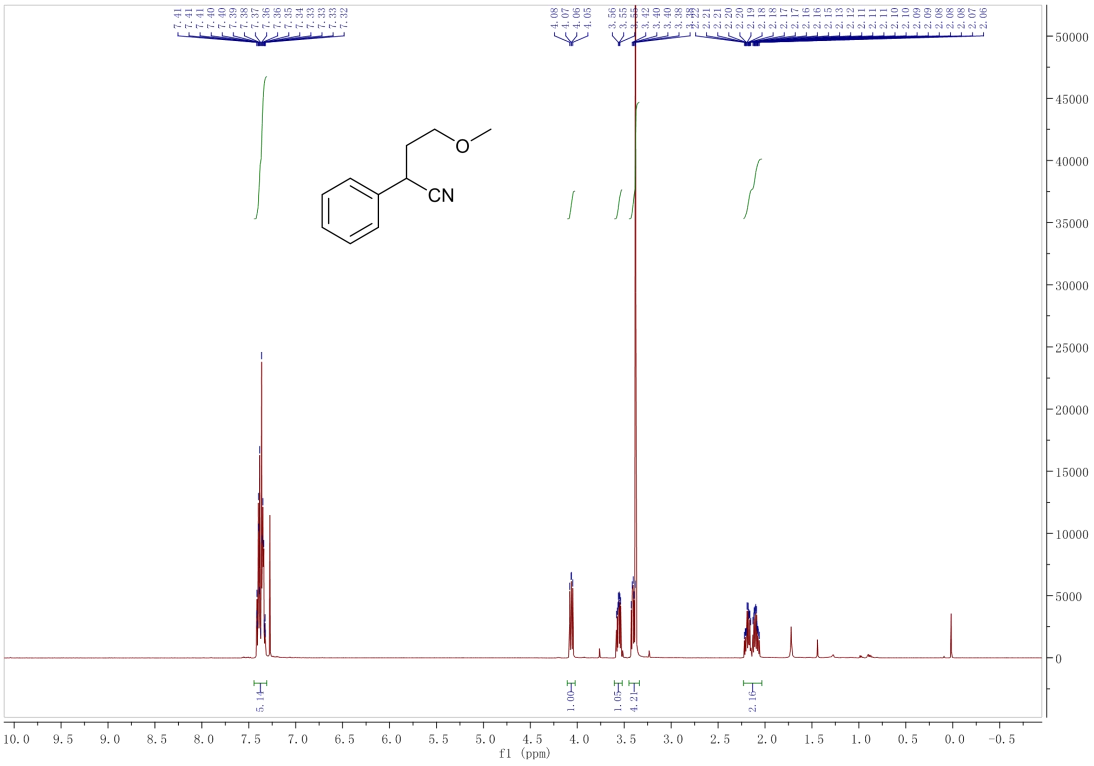


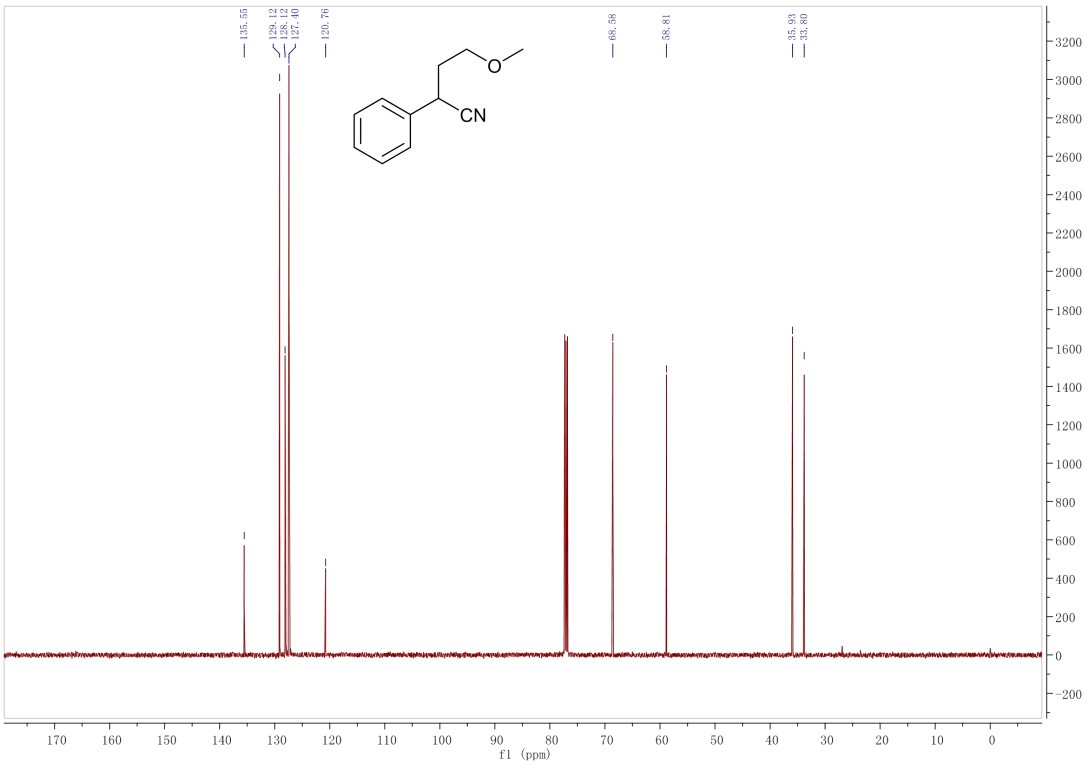
2-phenylpentanenitrile (**3as**)



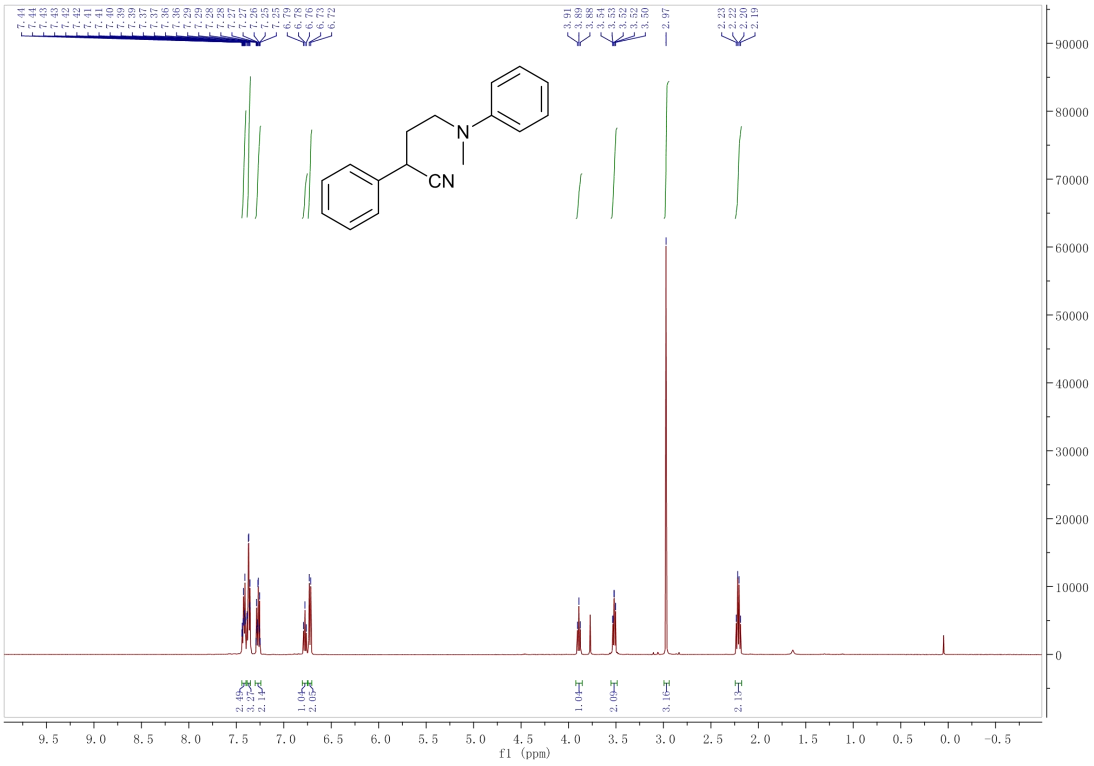


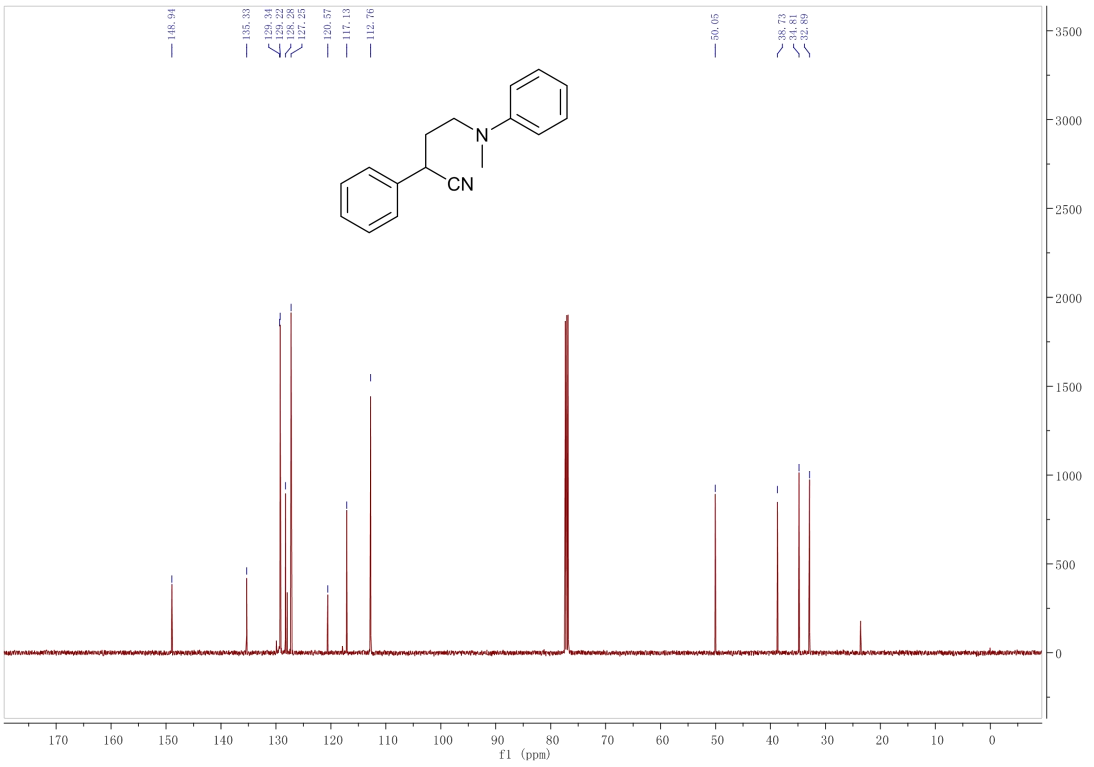
4-methoxy-2-phenylbutanenitrile (**3at**)



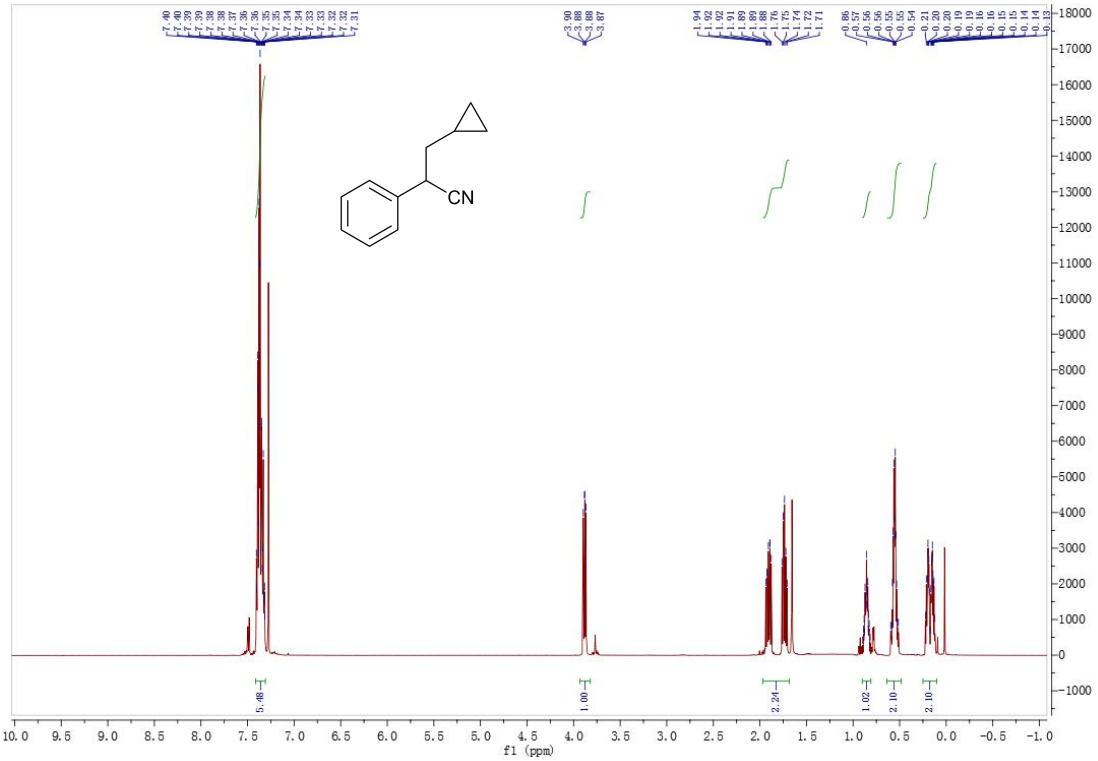


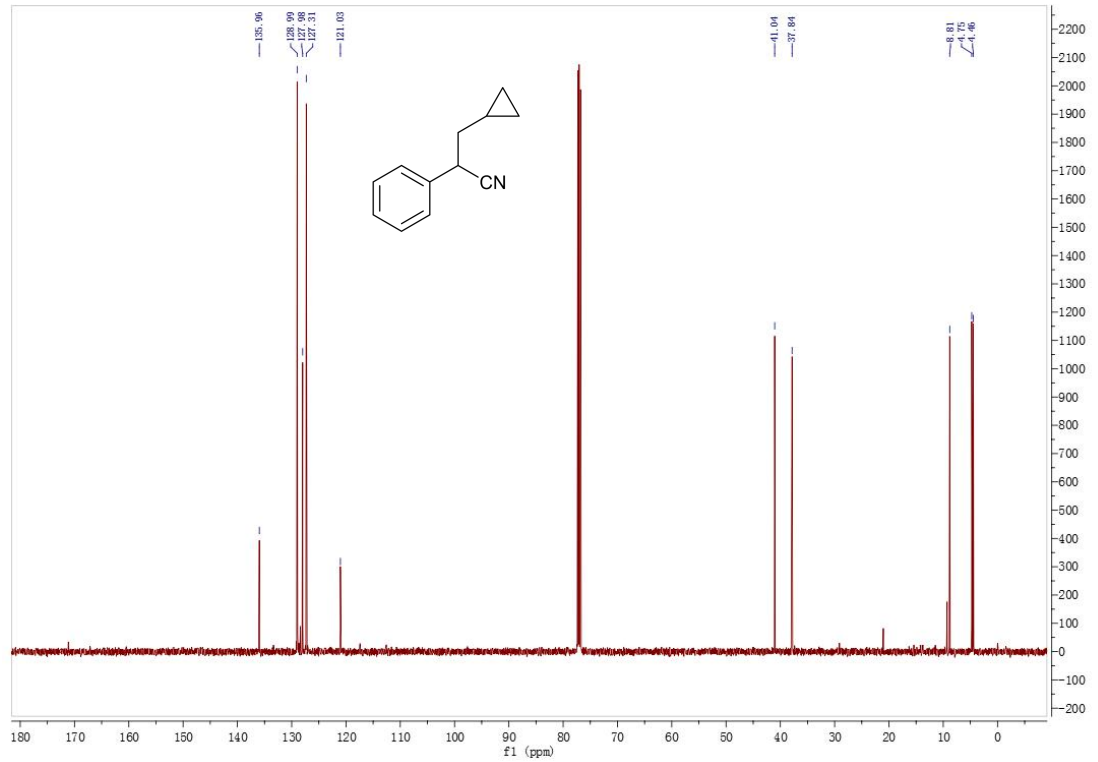
4-(methyl(phenyl)amino)-2-phenylbutanenitrile (**3au**)



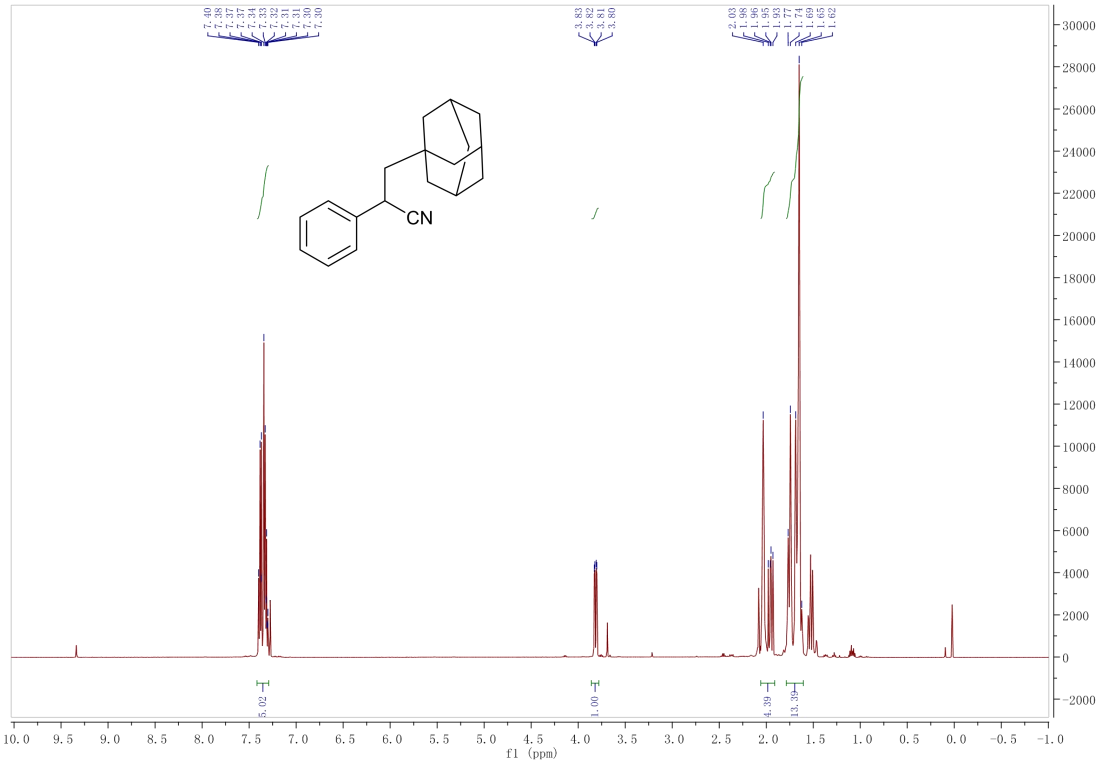


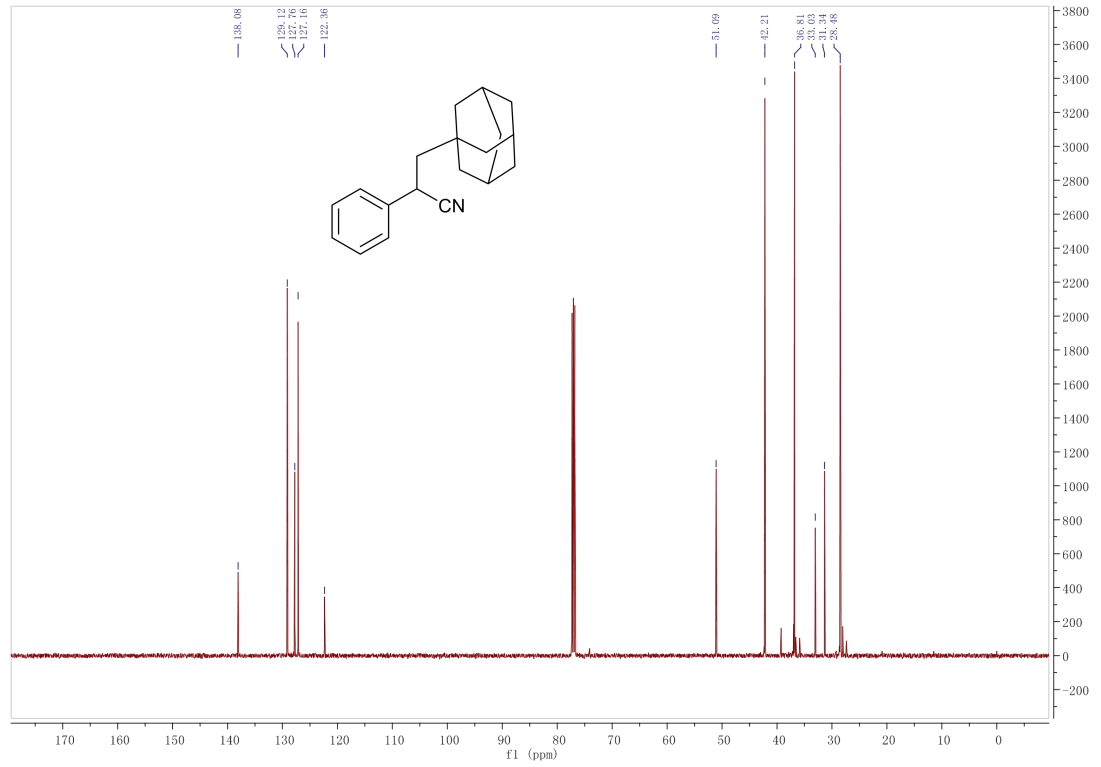
3-cyclopropyl-2-phenylpropanenitrile (**3av**)



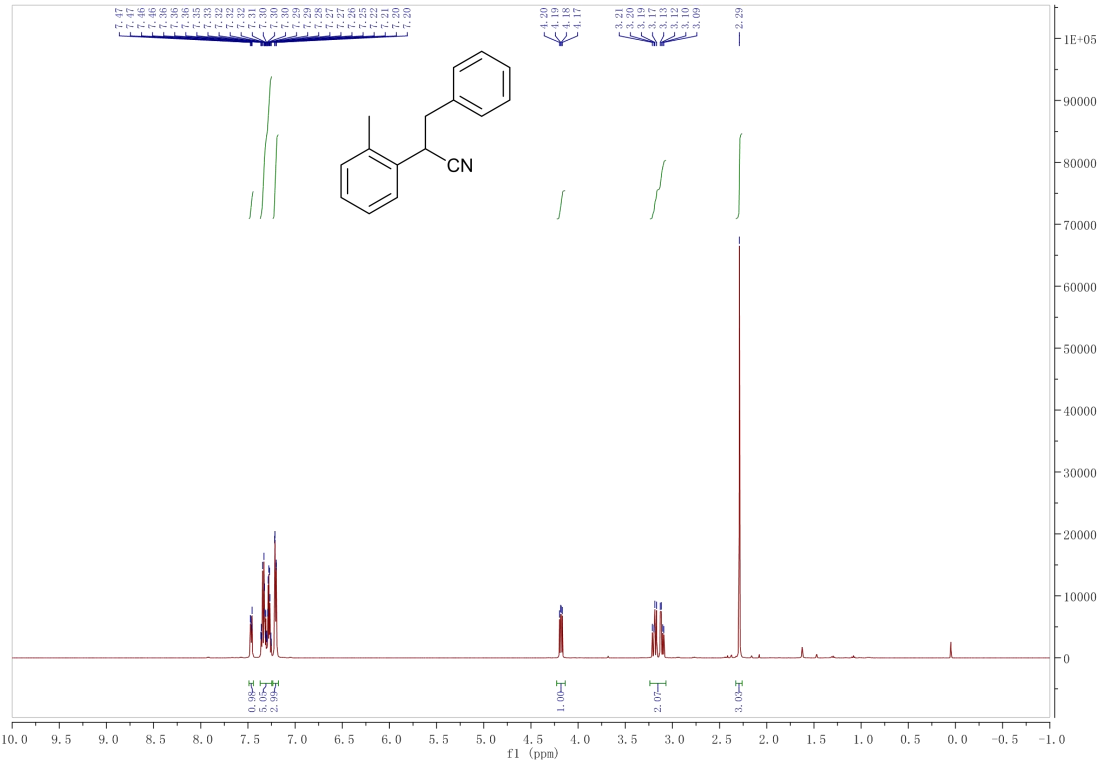


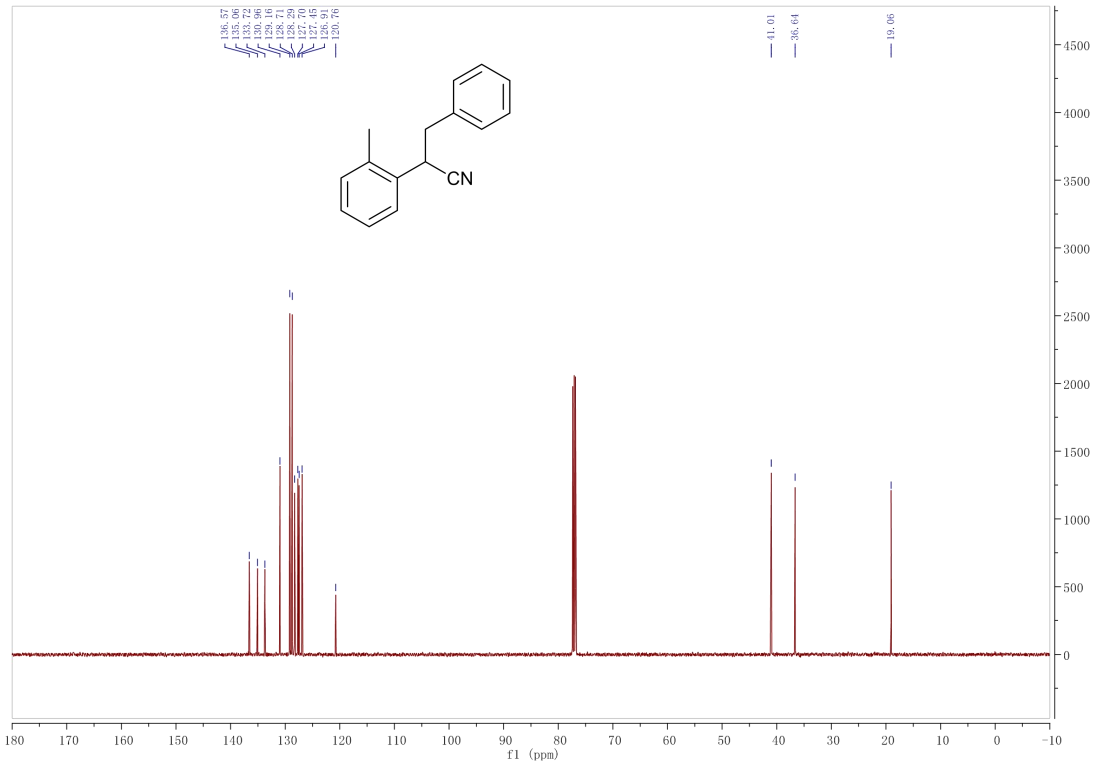
3-(adamantan-1-yl)-2-phenylpropanenitrile (**3aw**)



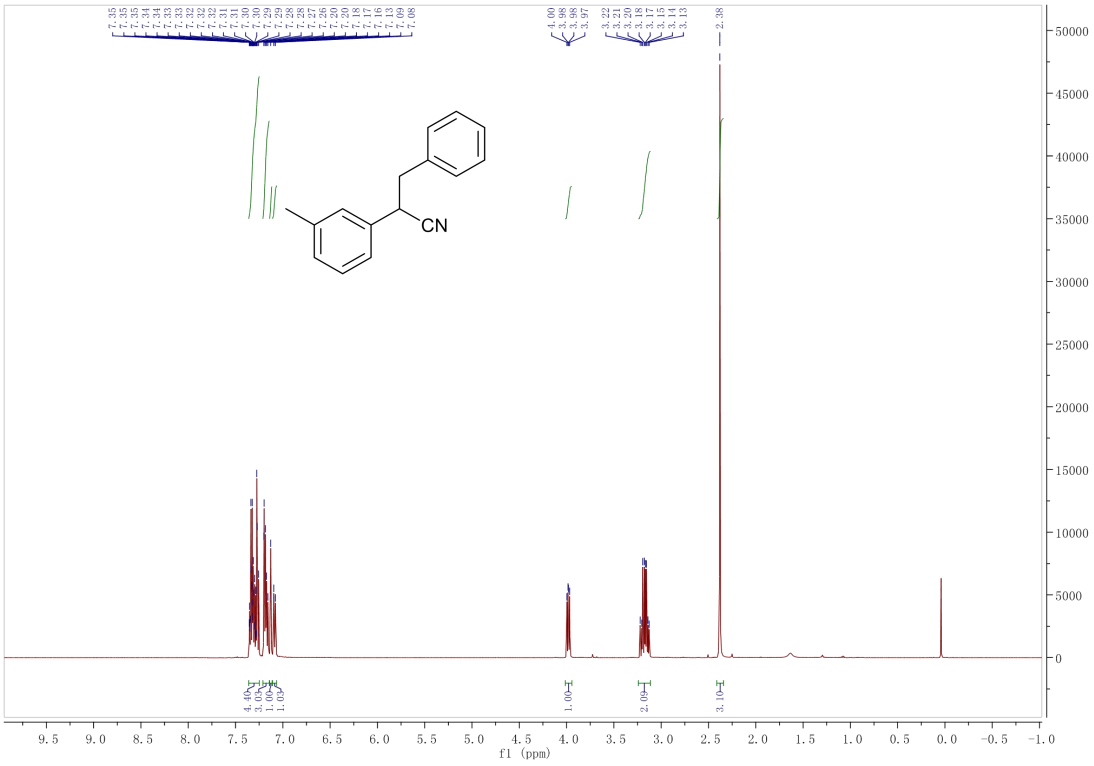


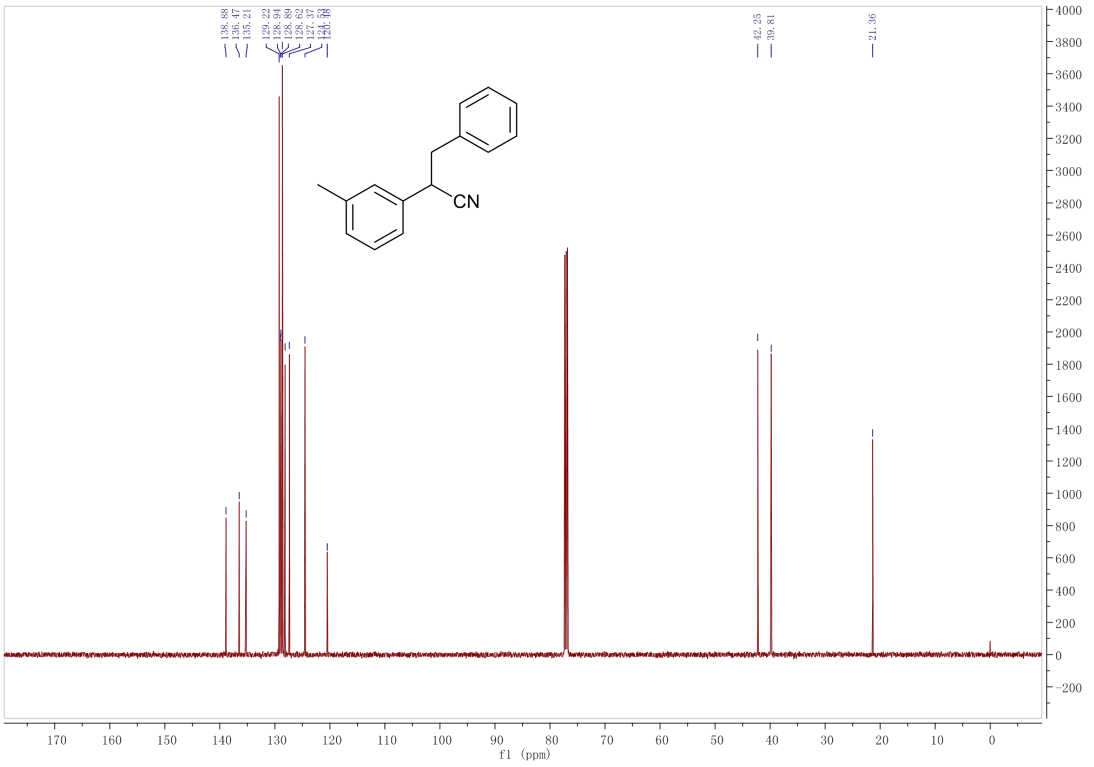
3-phenyl-2-(o-tolyl)propanenitrile (**3ba**)



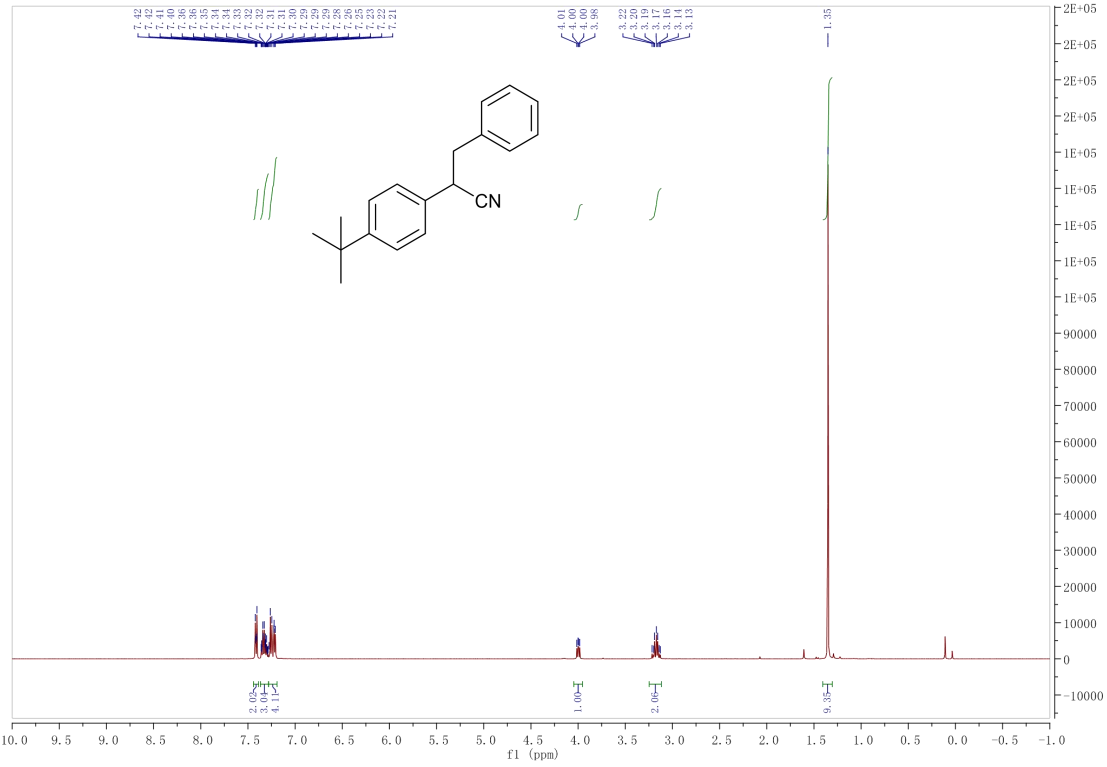


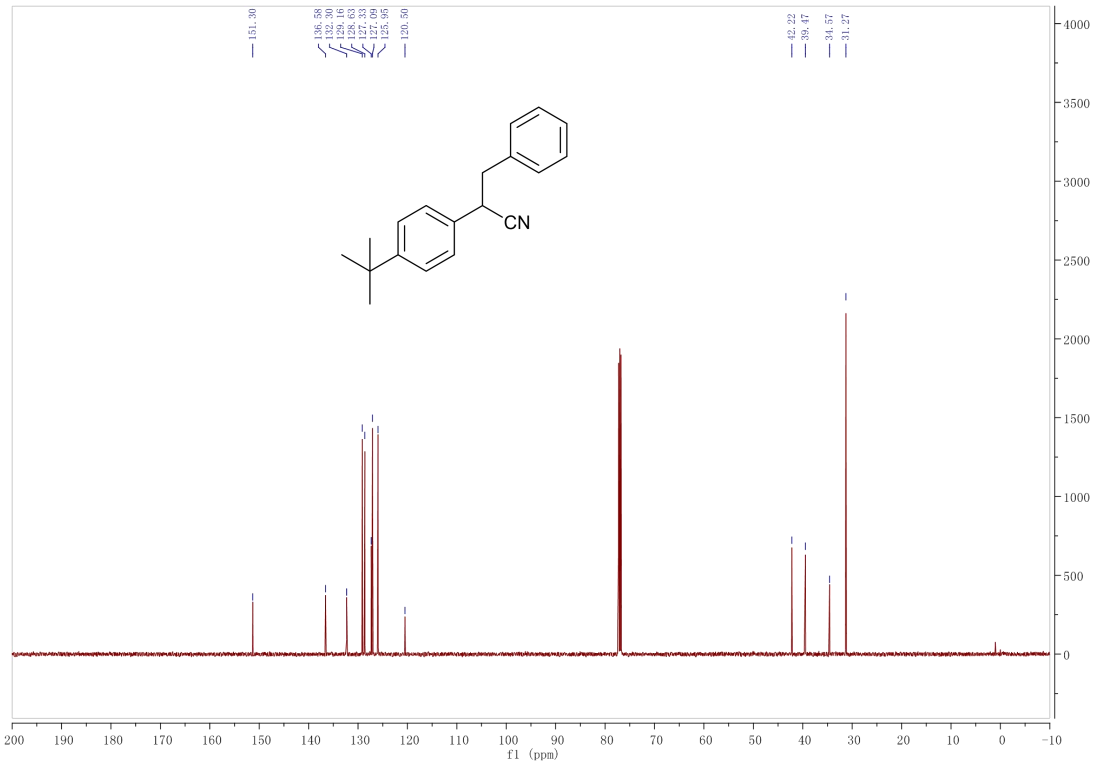
3-phenyl-2-(m-tolyl)propanenitrile (**3bb**)



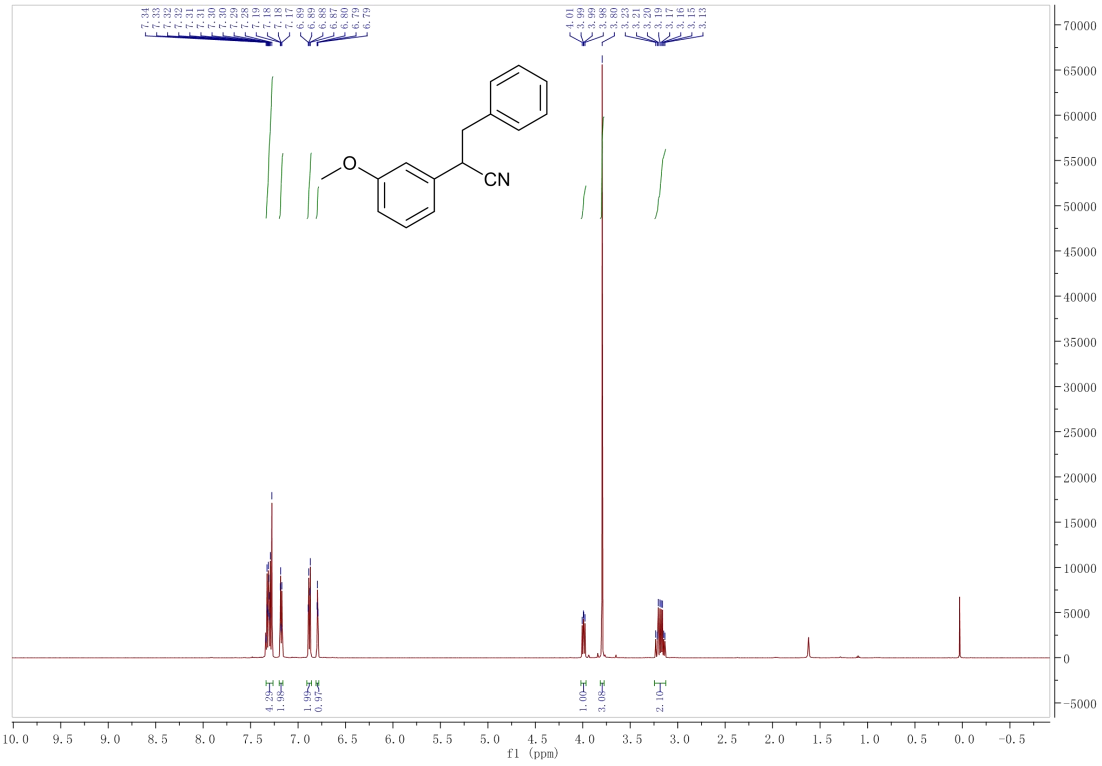


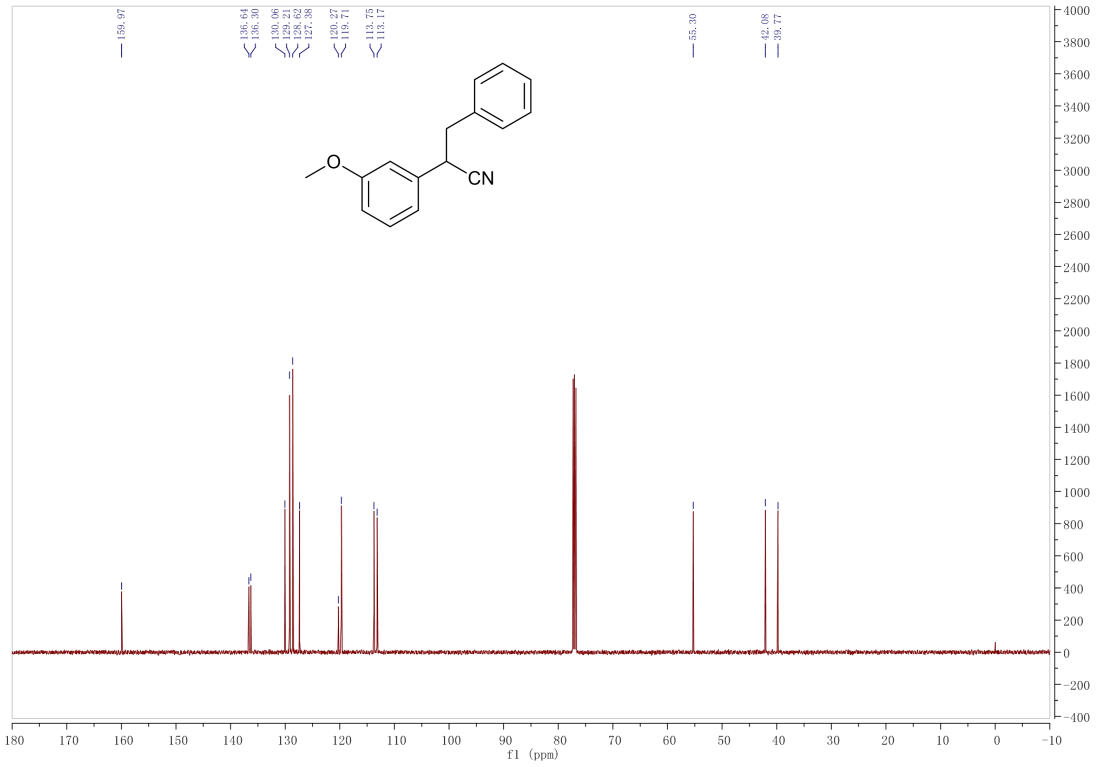
2-(4-(tert-butyl)phenyl)-3-phenylpropanenitrile (**3bc**)



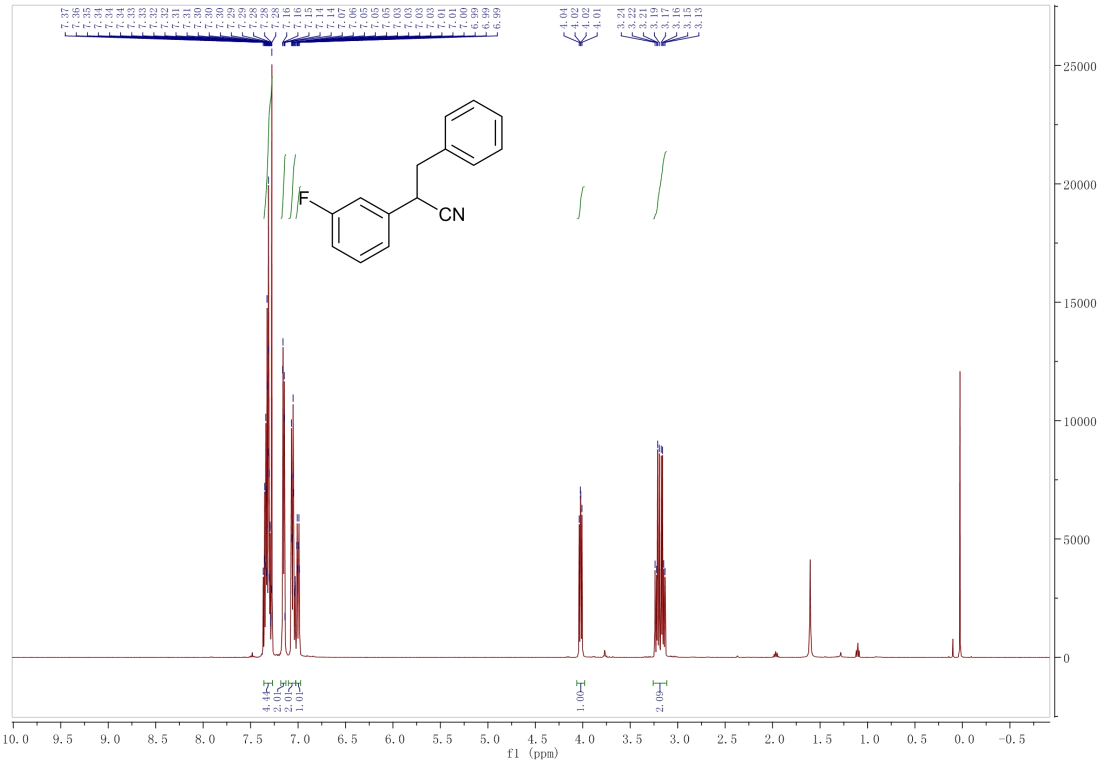


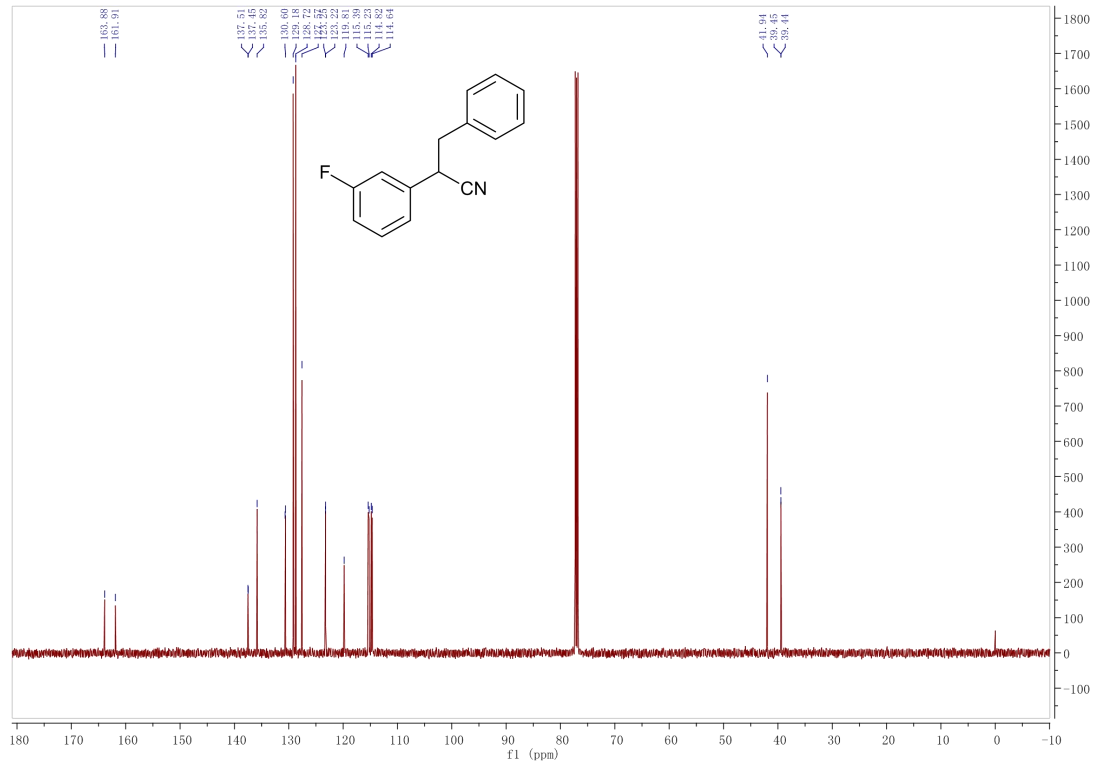
2-(3-methoxyphenyl)-3-phenylpropanenitrile (**3bd**)



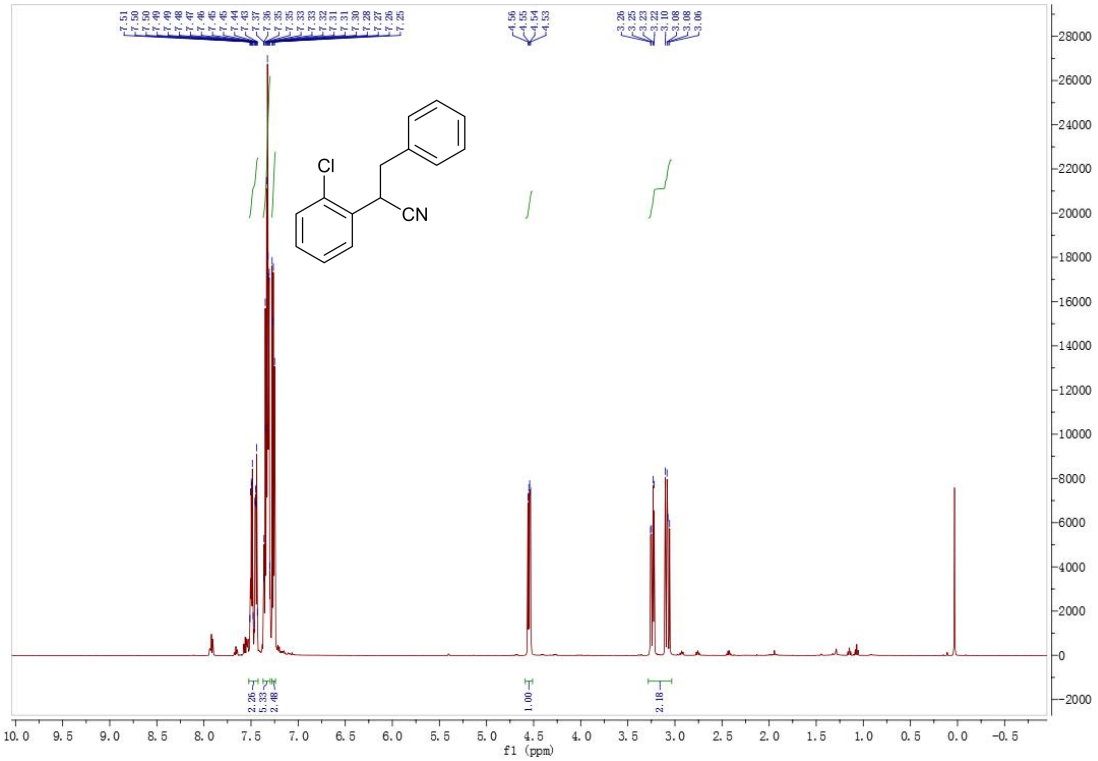


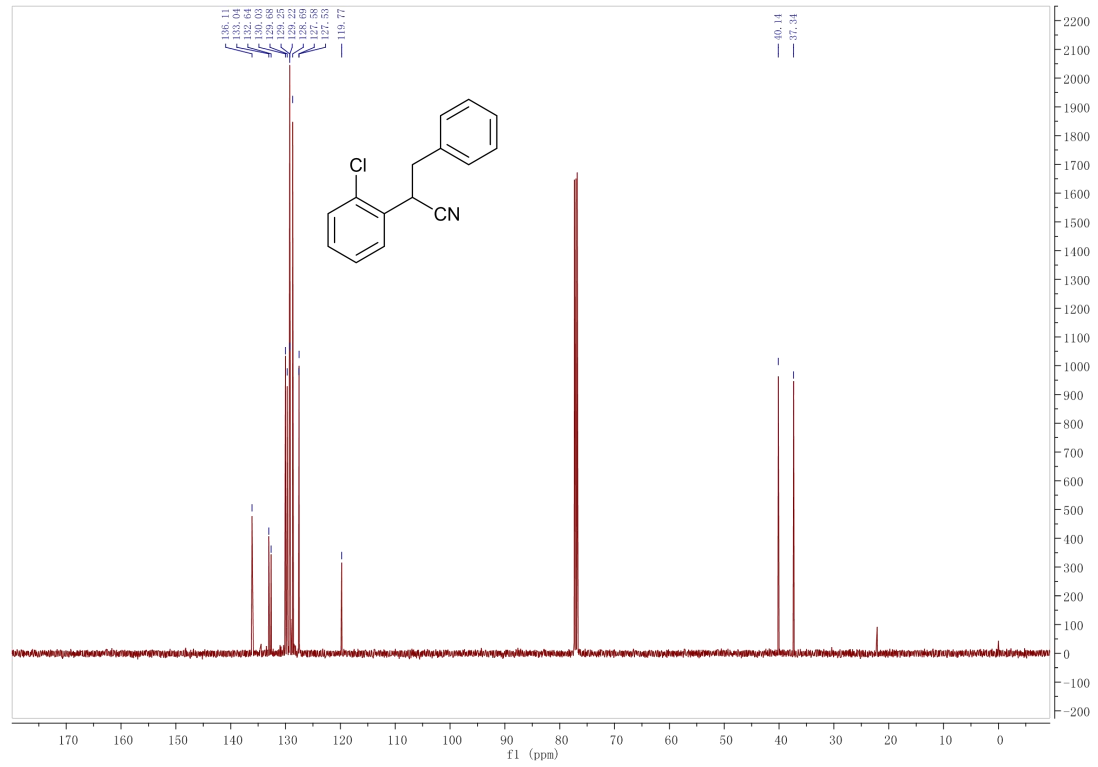
2-(3-fluorophenyl)-3-phenylpropanenitrile (**3be**)



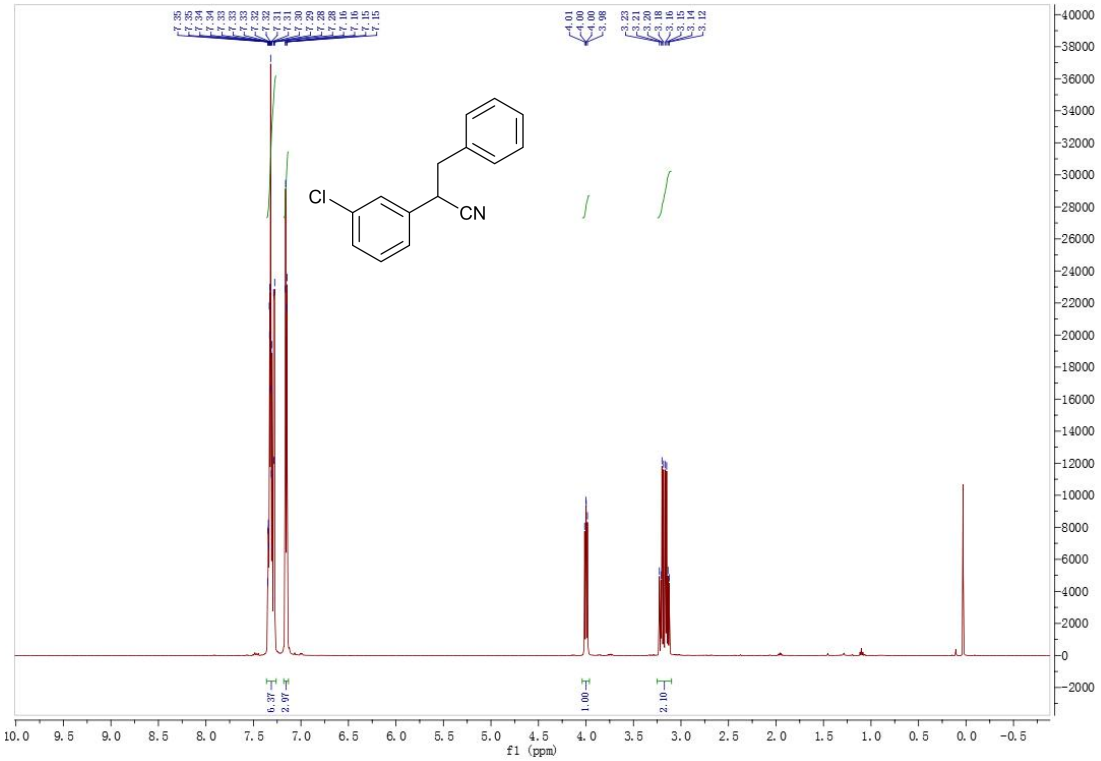


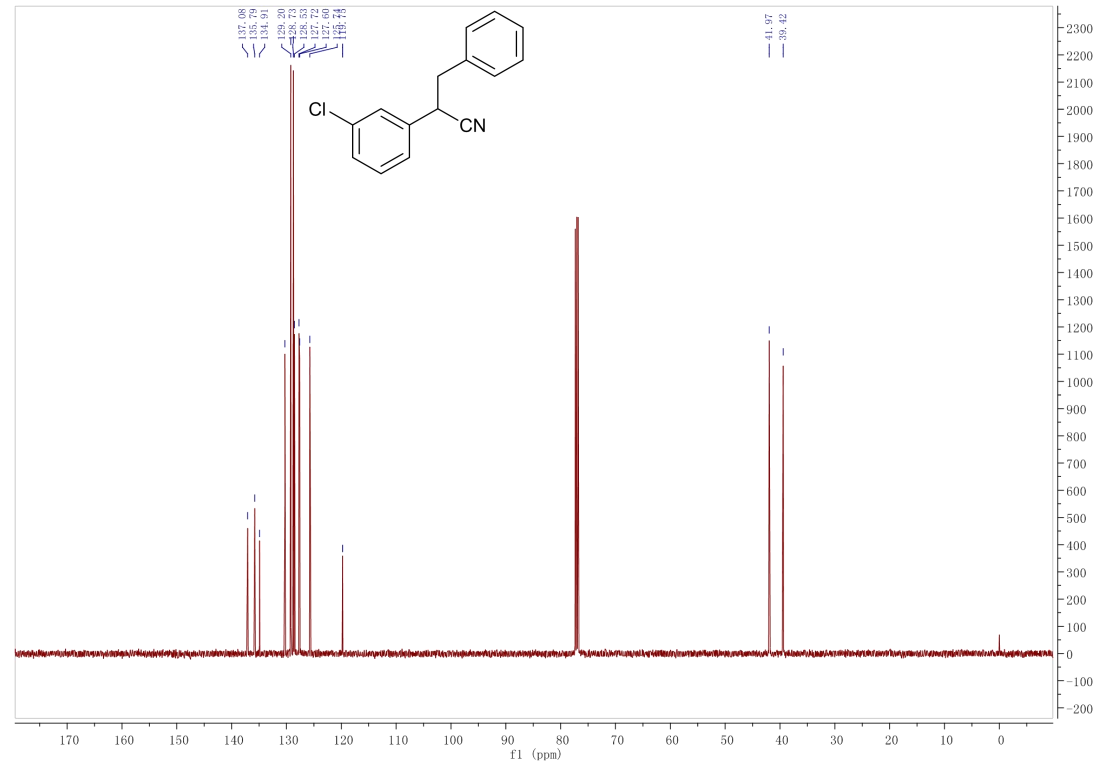
2-(2-chlorophenyl)-3-phenylpropanenitrile (**3bf**)



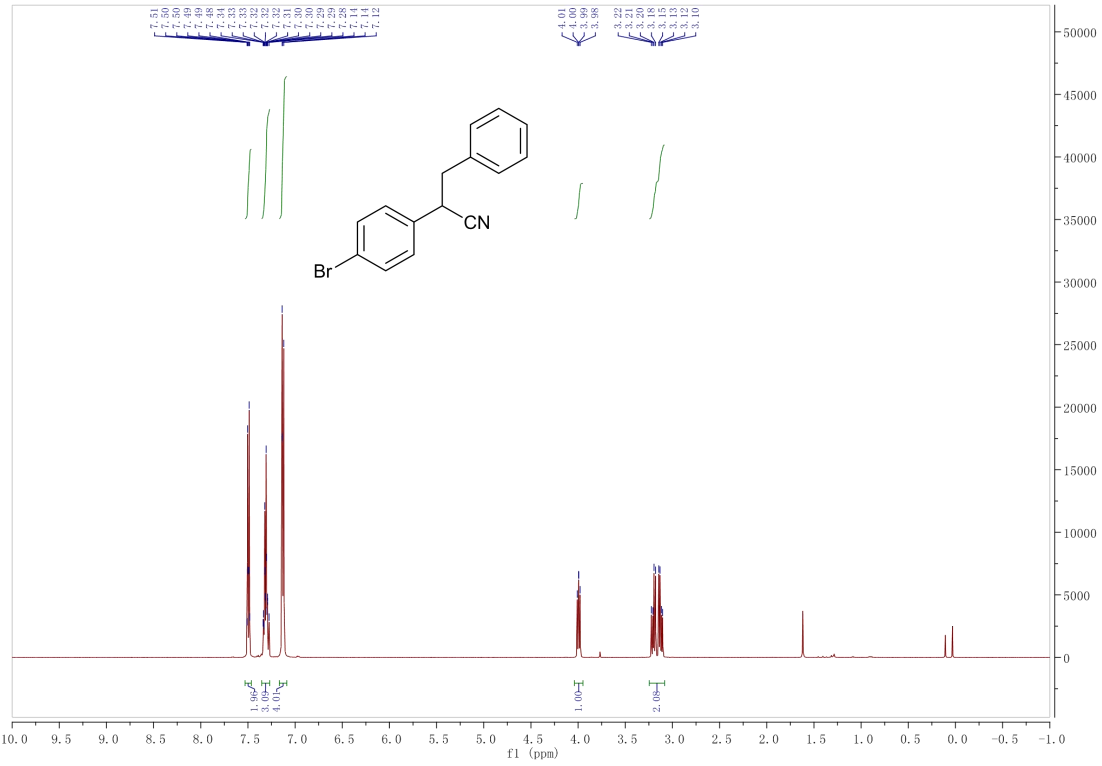


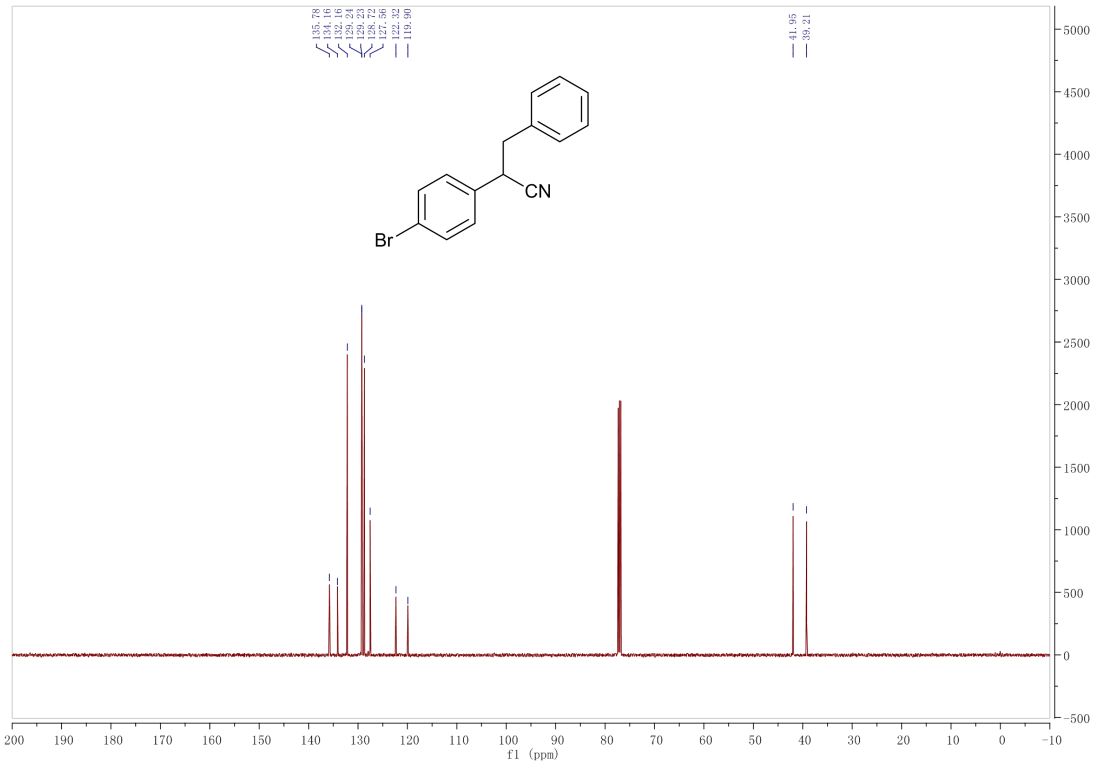
2-(3-chlorophenyl)-3-phenylpropanenitrile (**3bg**)



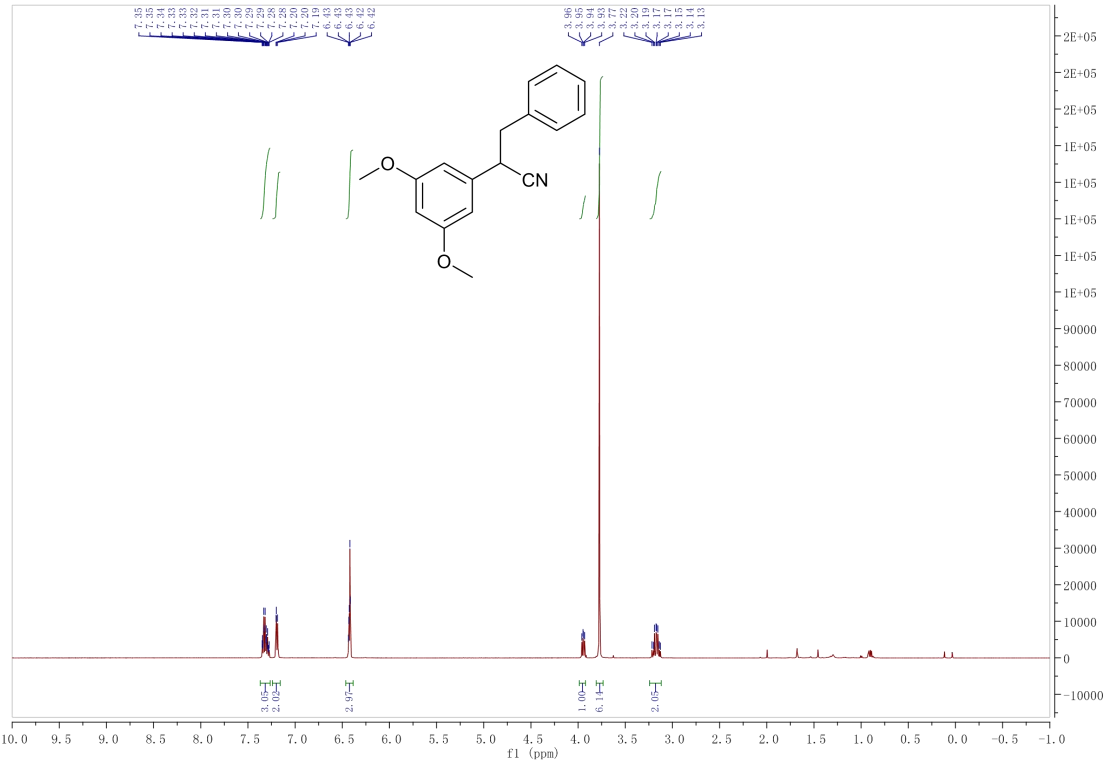


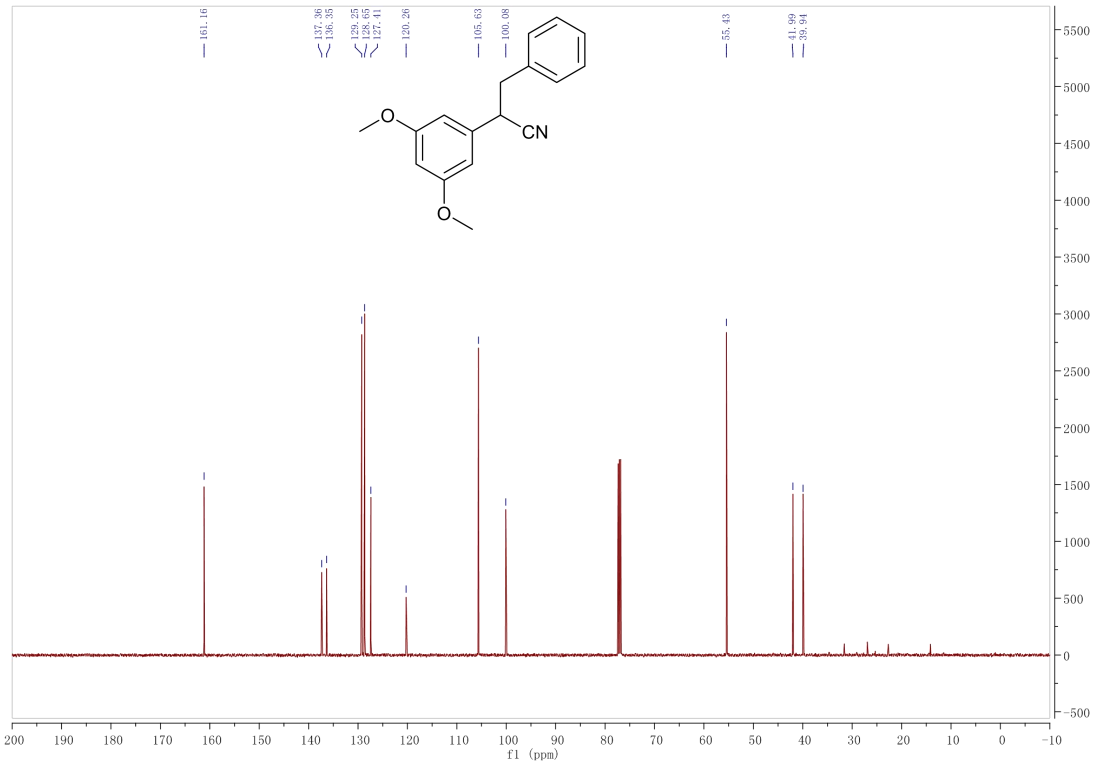
2-(4-bromophenyl)-3-phenylpropanenitrile (**3bh**)



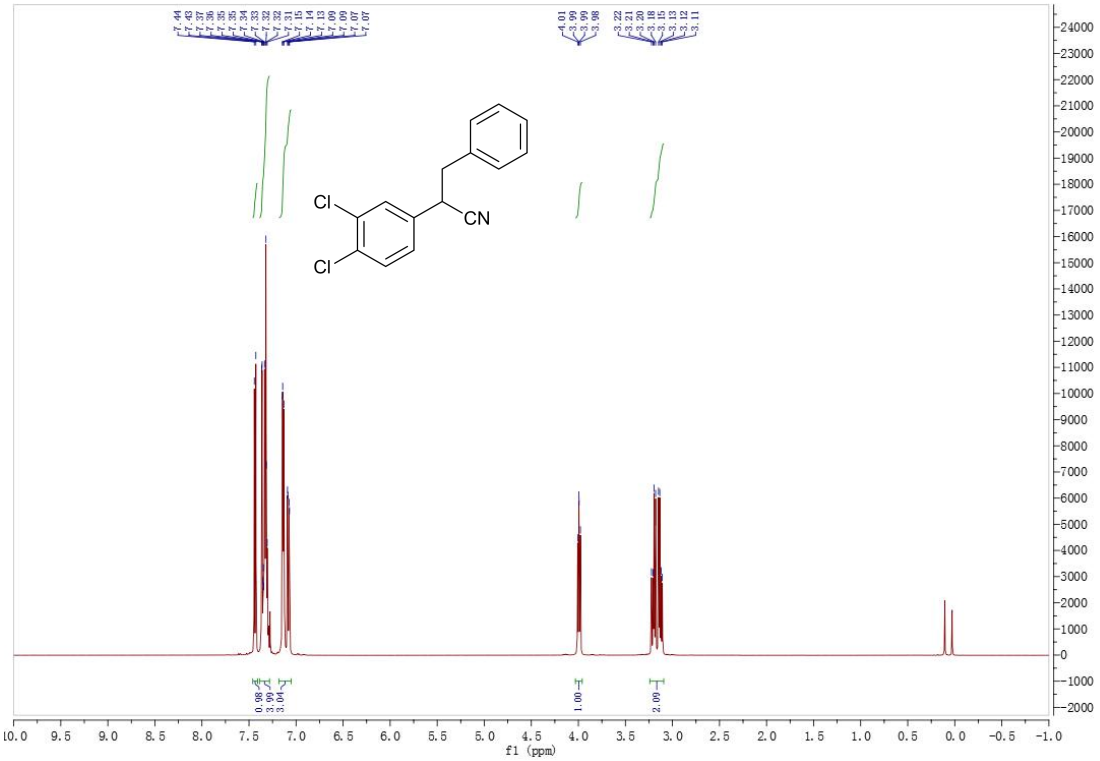


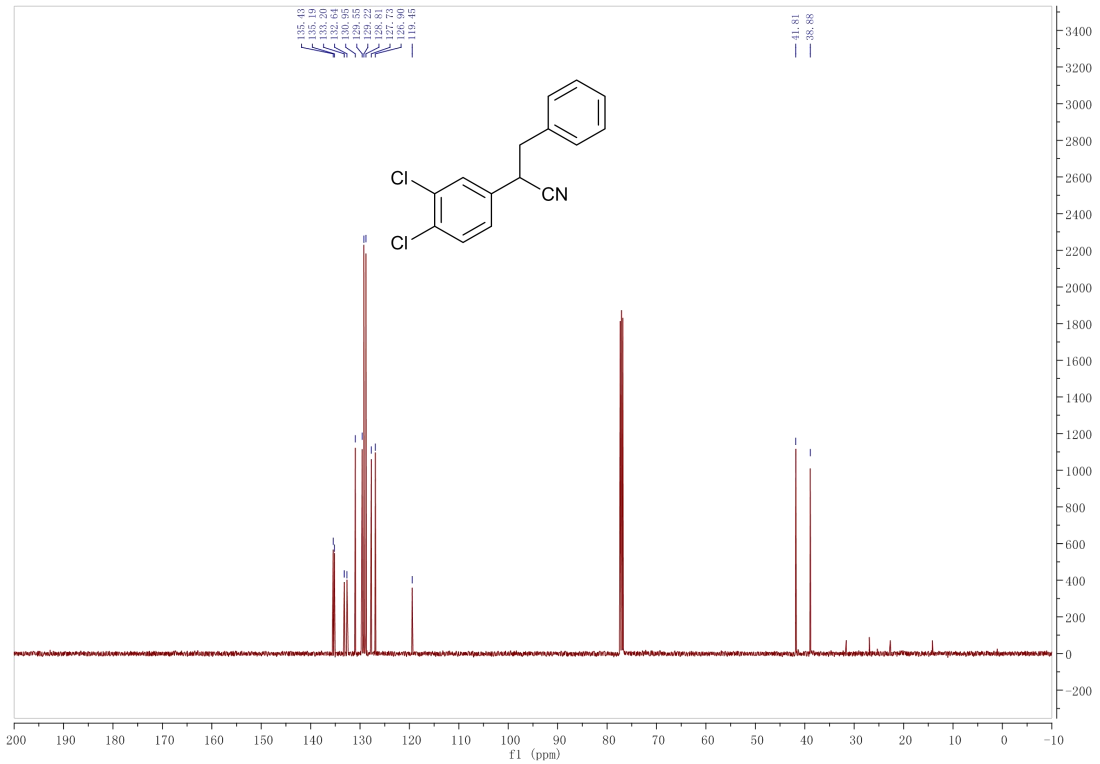
2-(3,5-dimethoxyphenyl)-3-phenylpropanenitrile (**3bi**)



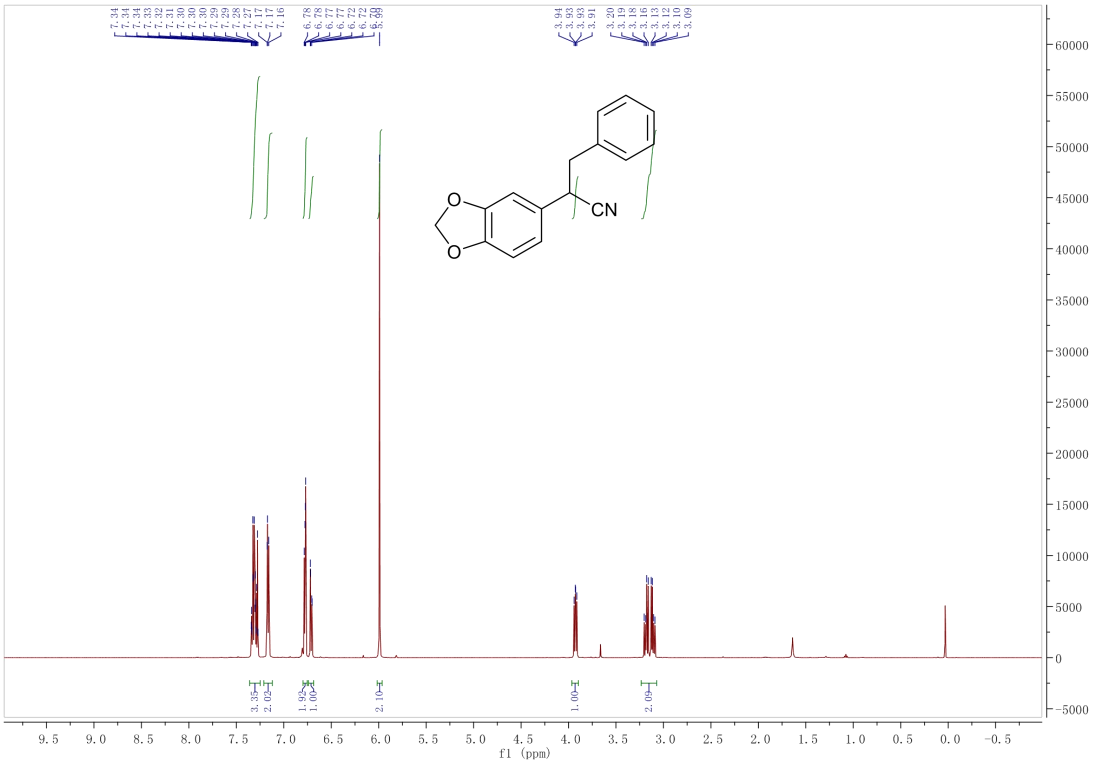


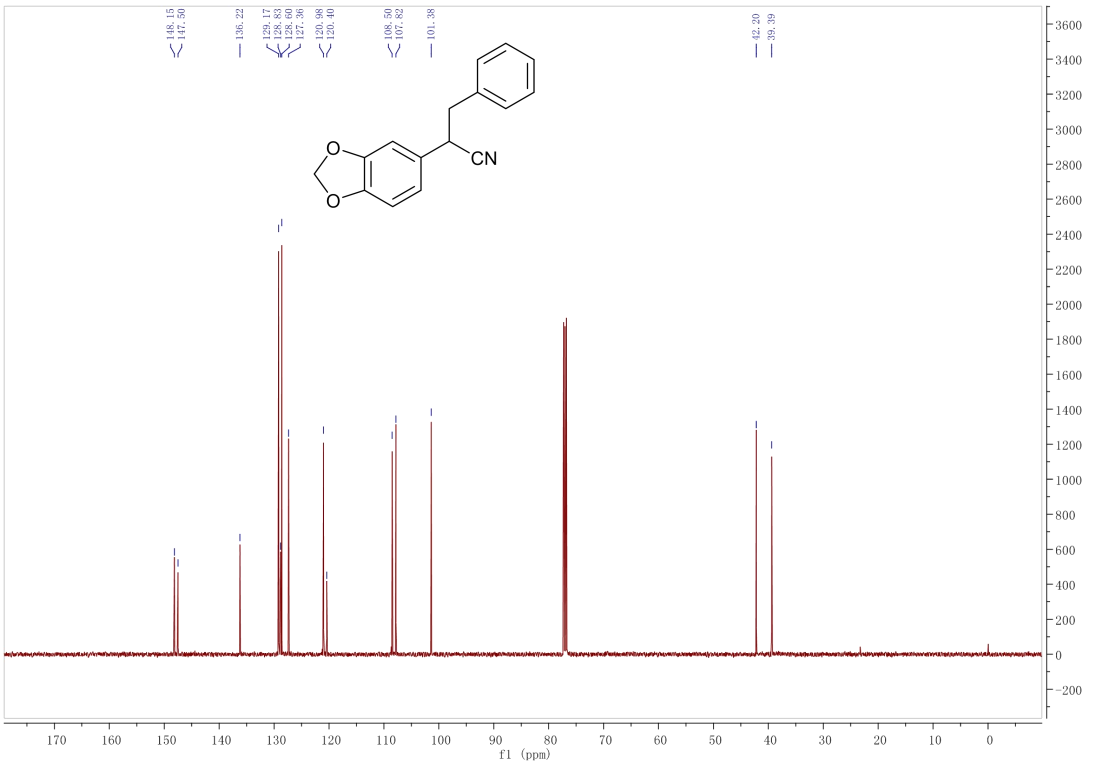
2-(3,4-dichlorophenyl)-3-phenylpropanenitrile (**3bj**)



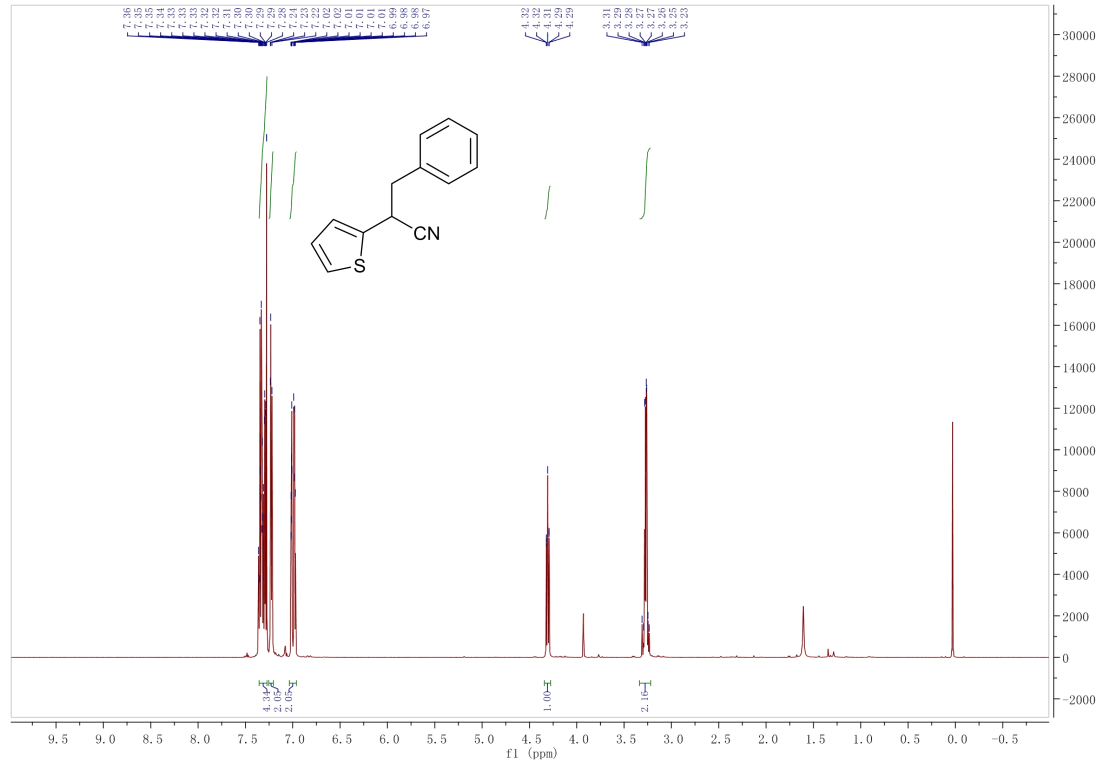


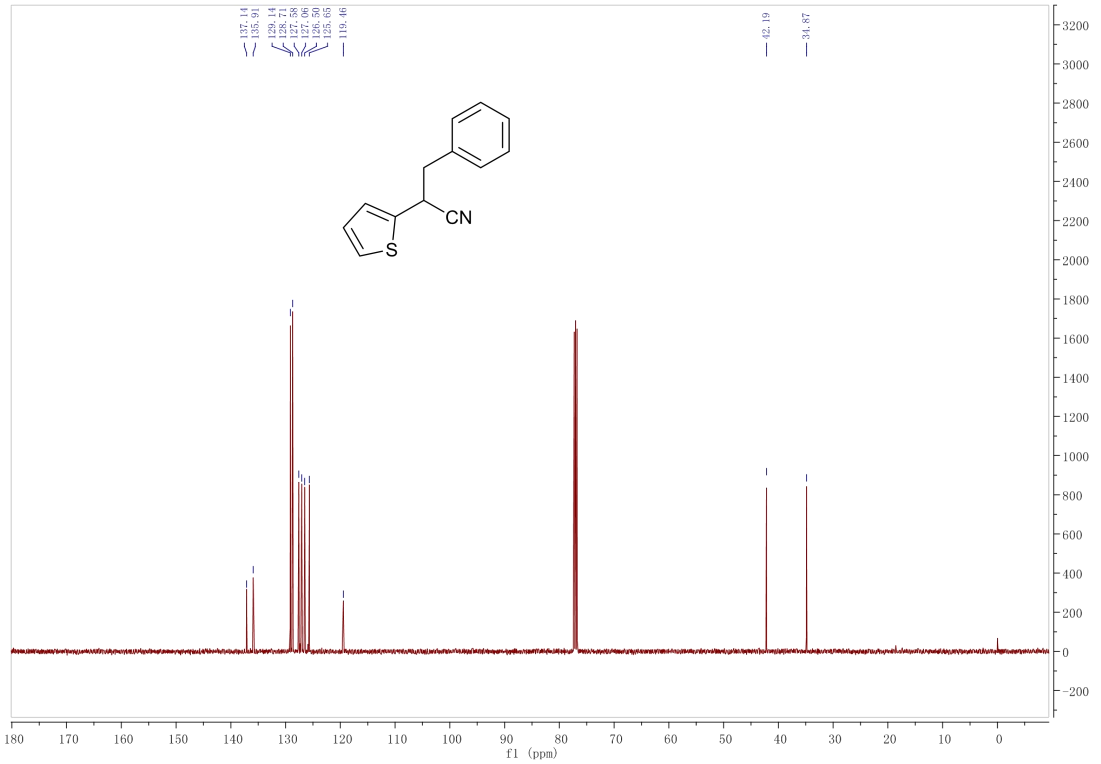
2-(benzo[d][1,3]dioxol-5-yl)-3-phenylpropanenitrile (**3bk**)



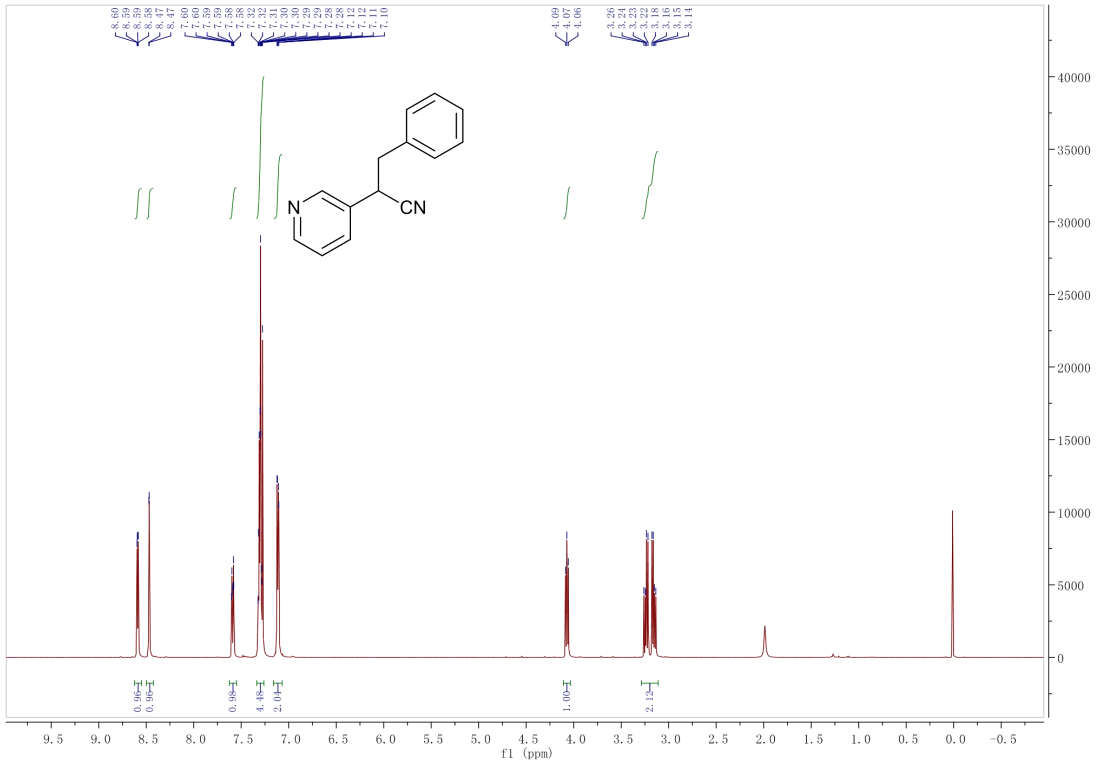


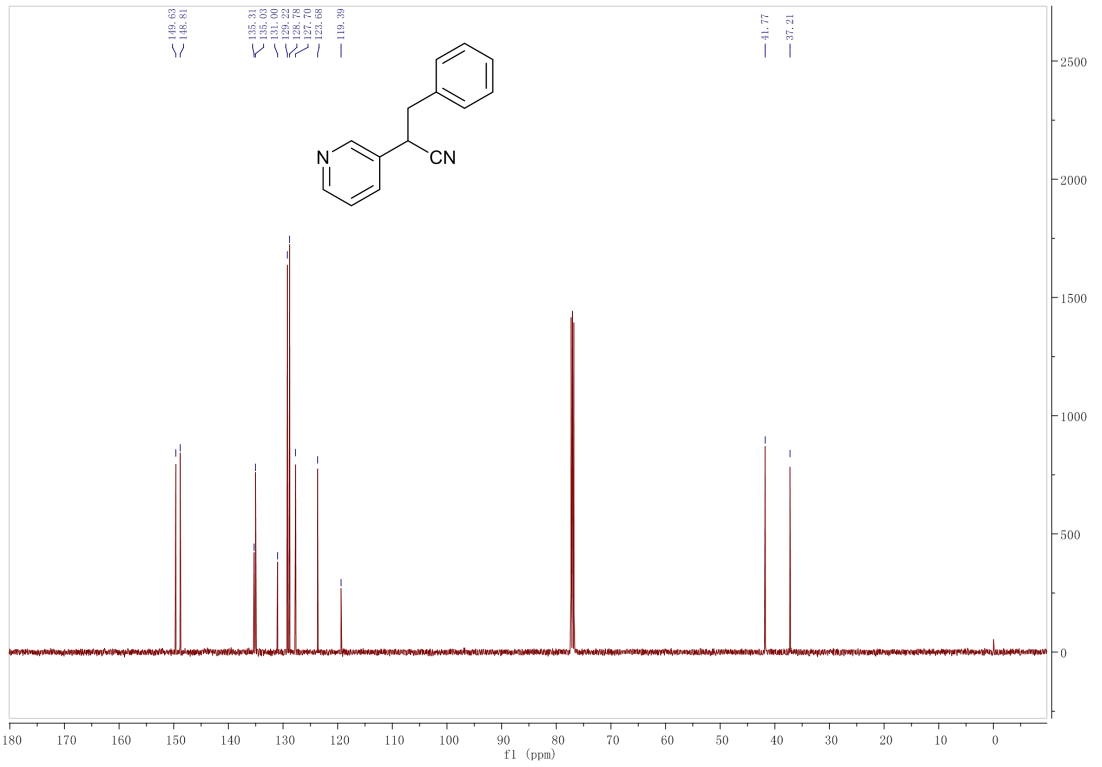
3-phenyl-2-(thiophen-2-yl)propanenitrile (**3bl**)



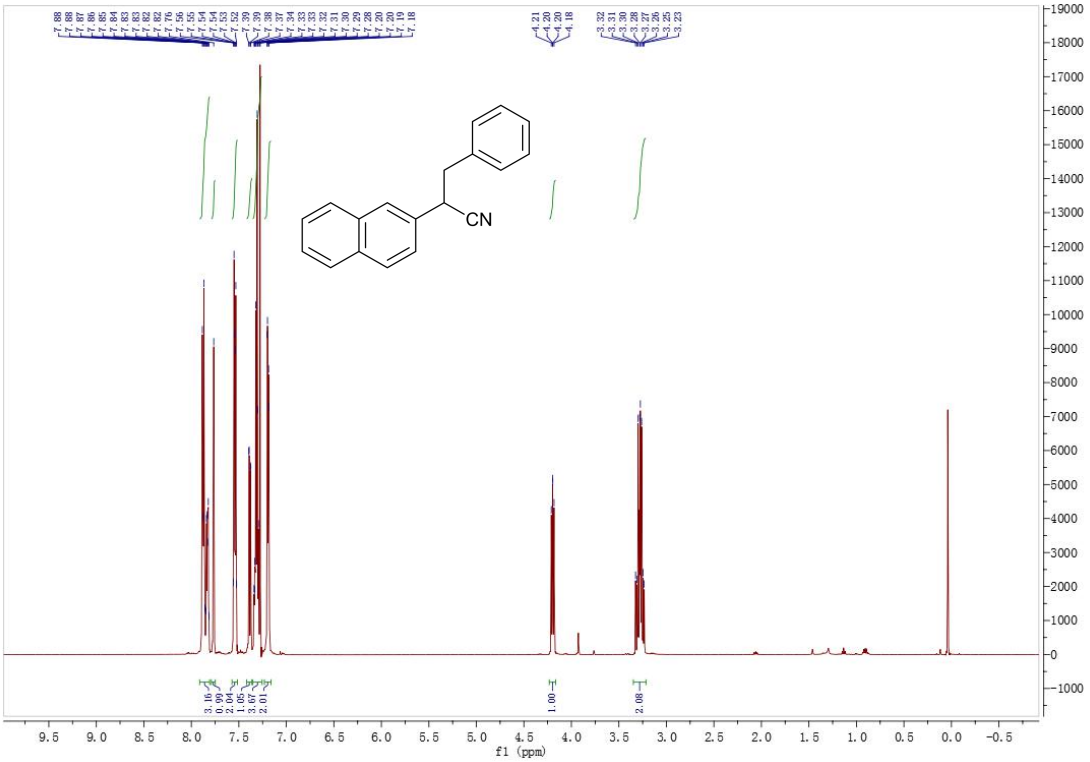


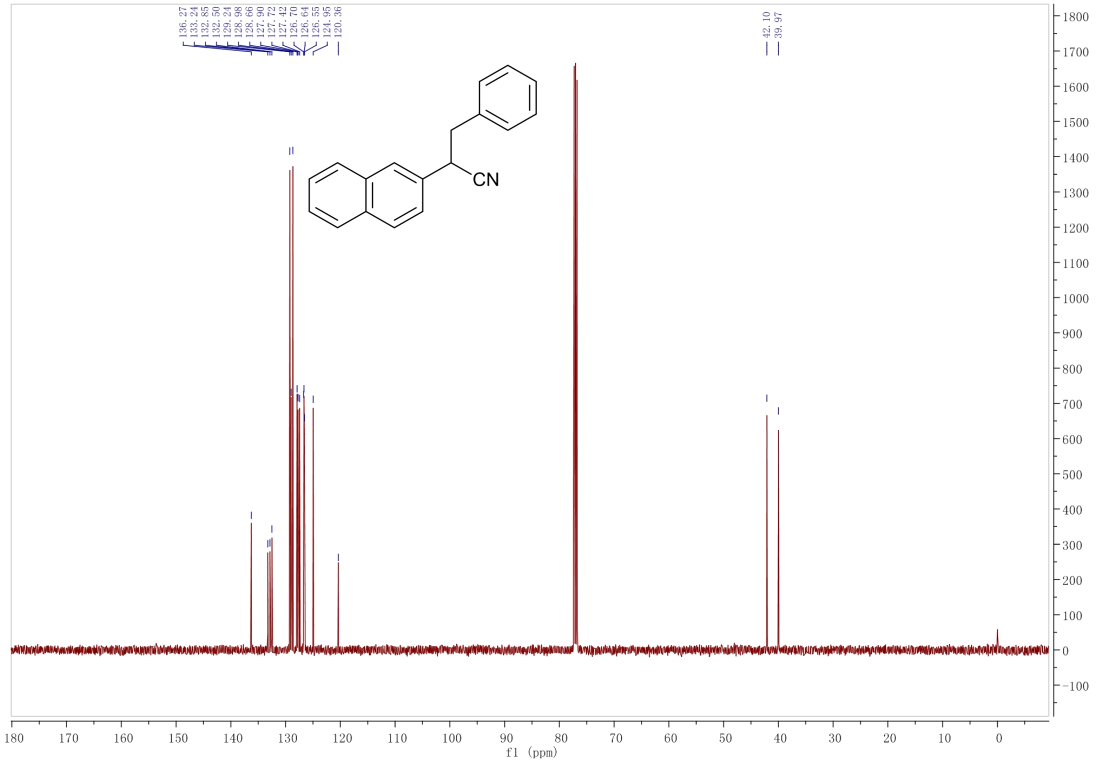
3-phenyl-2-(pyridin-3-yl)propanenitrile (**3bm**)



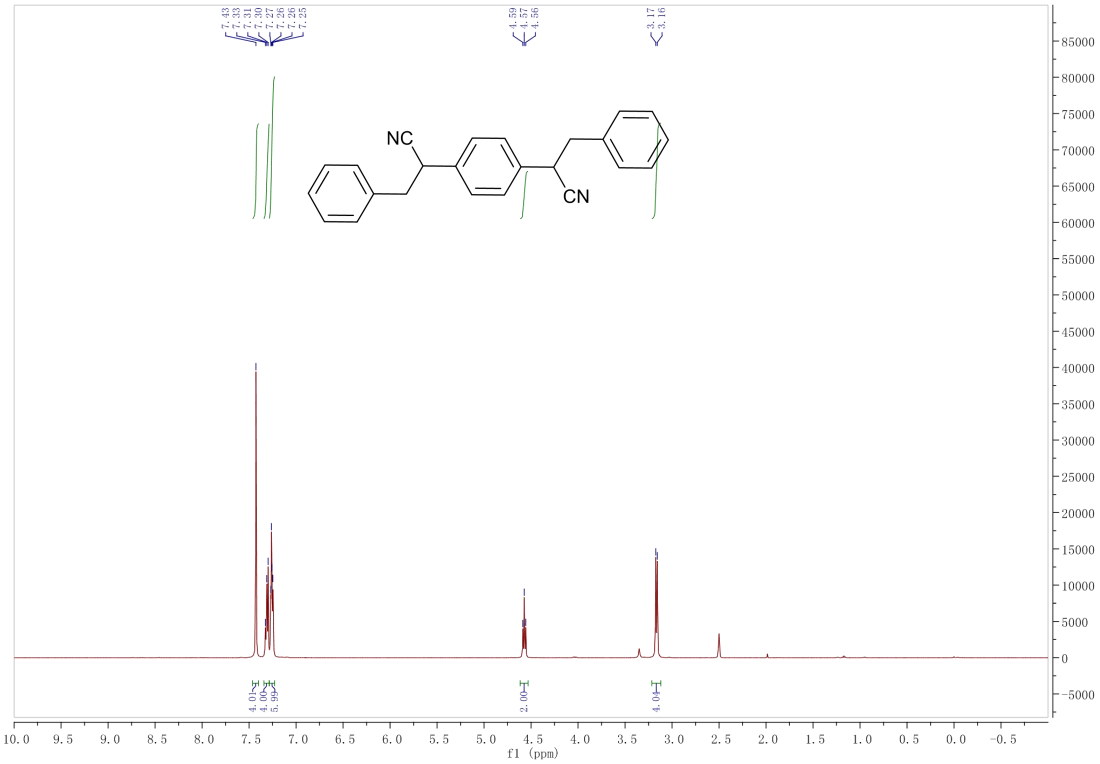


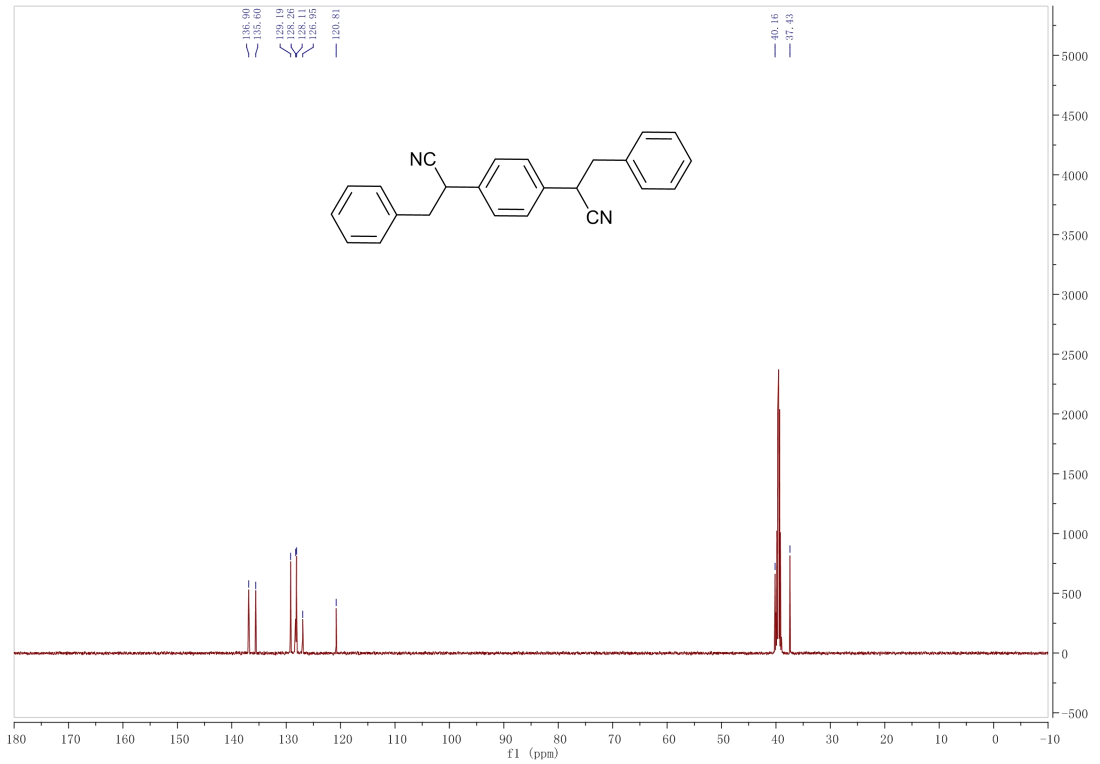
2-(naphthalen-2-yl)-3-phenylpropanenitrile (**3bn**)



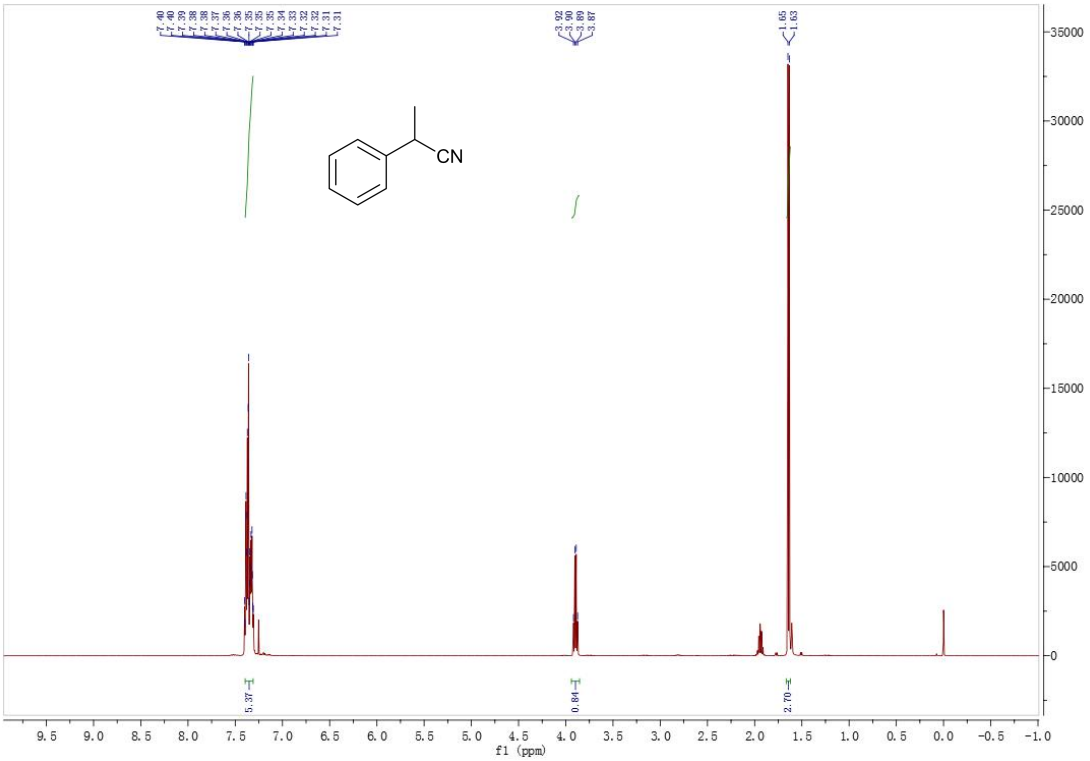


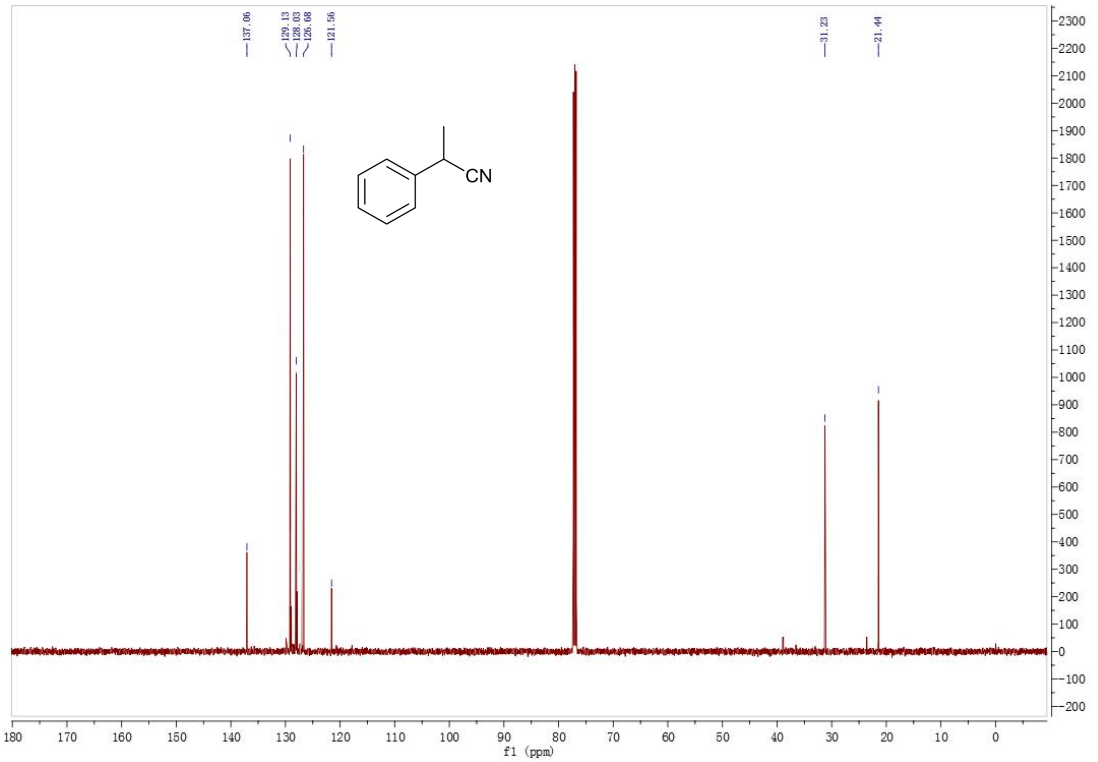
2,2'-(1,4-phenylene)bis(3-phenylpropanenitrile) (**3bo**)



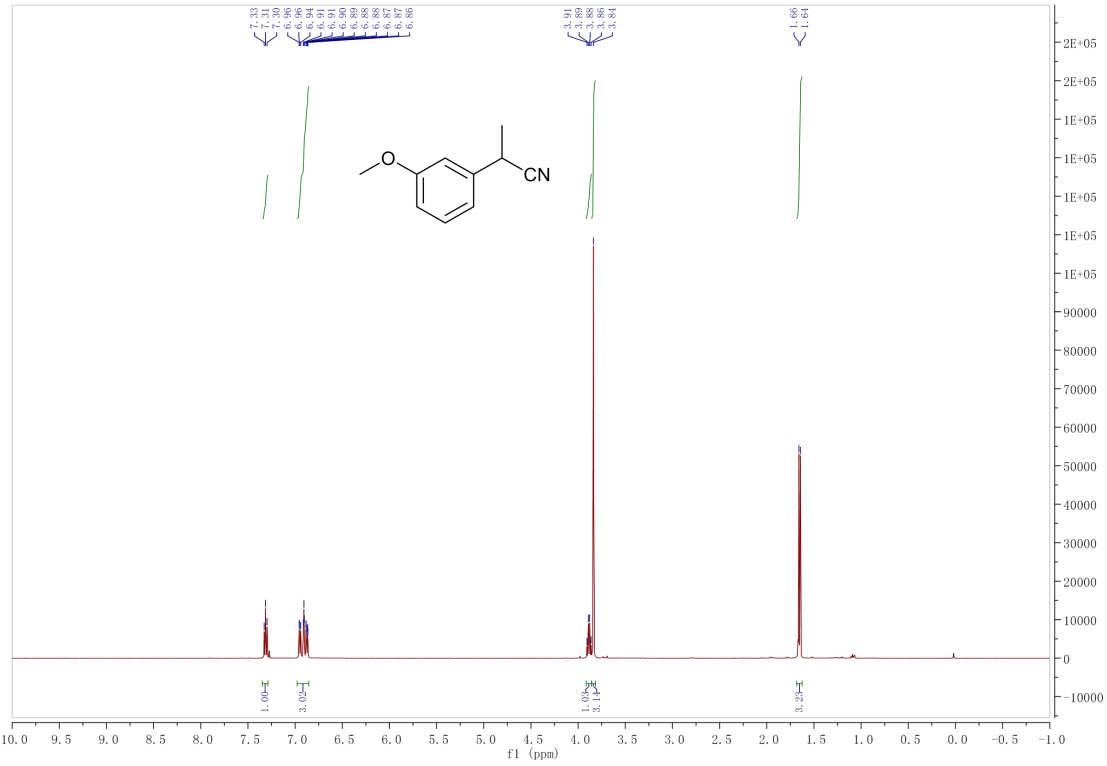


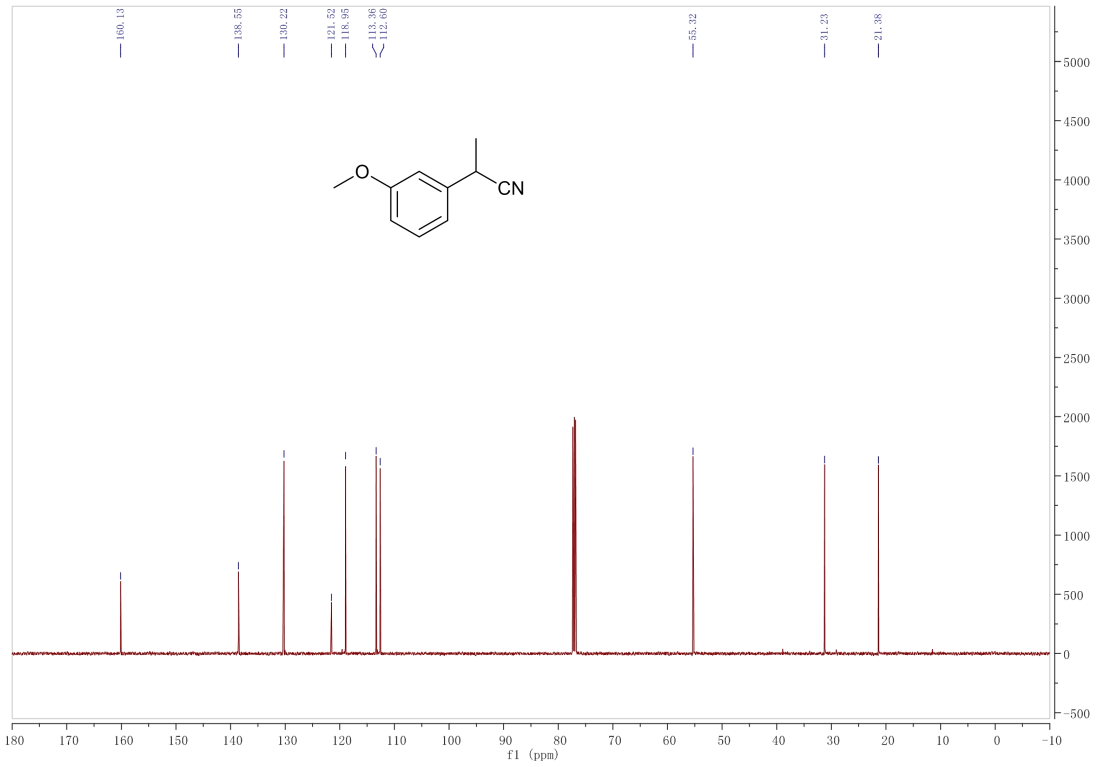
2-phenylpropanenitrile (**3ca**)



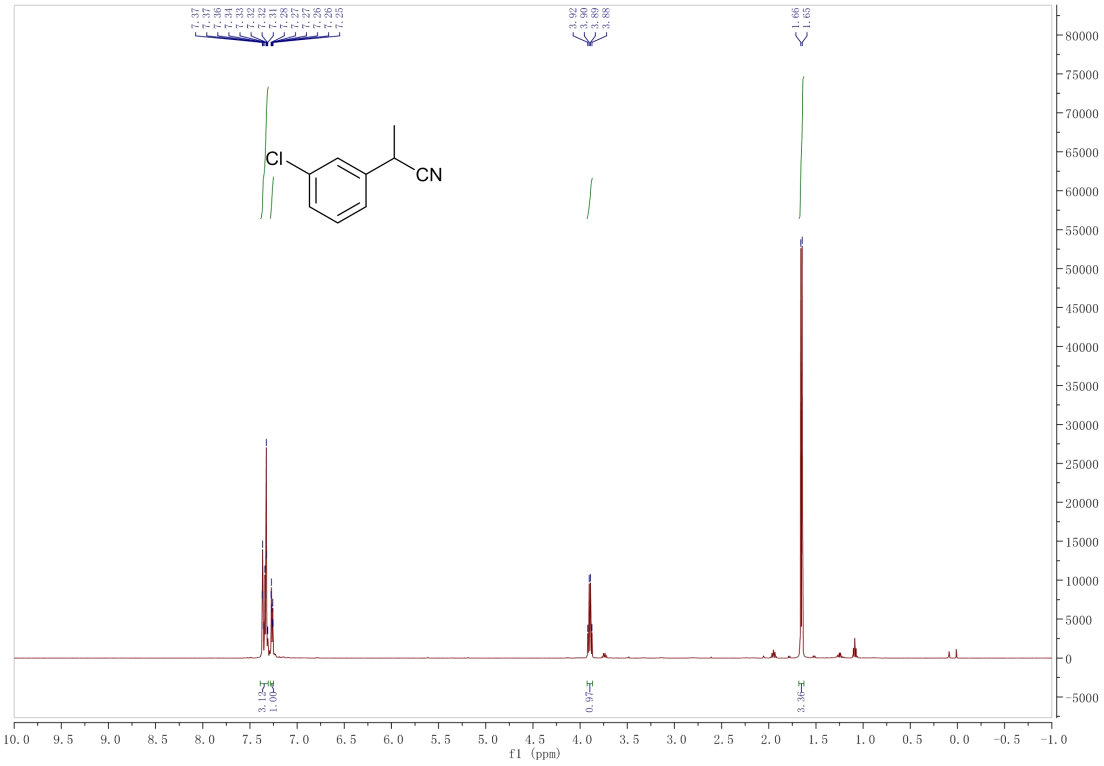


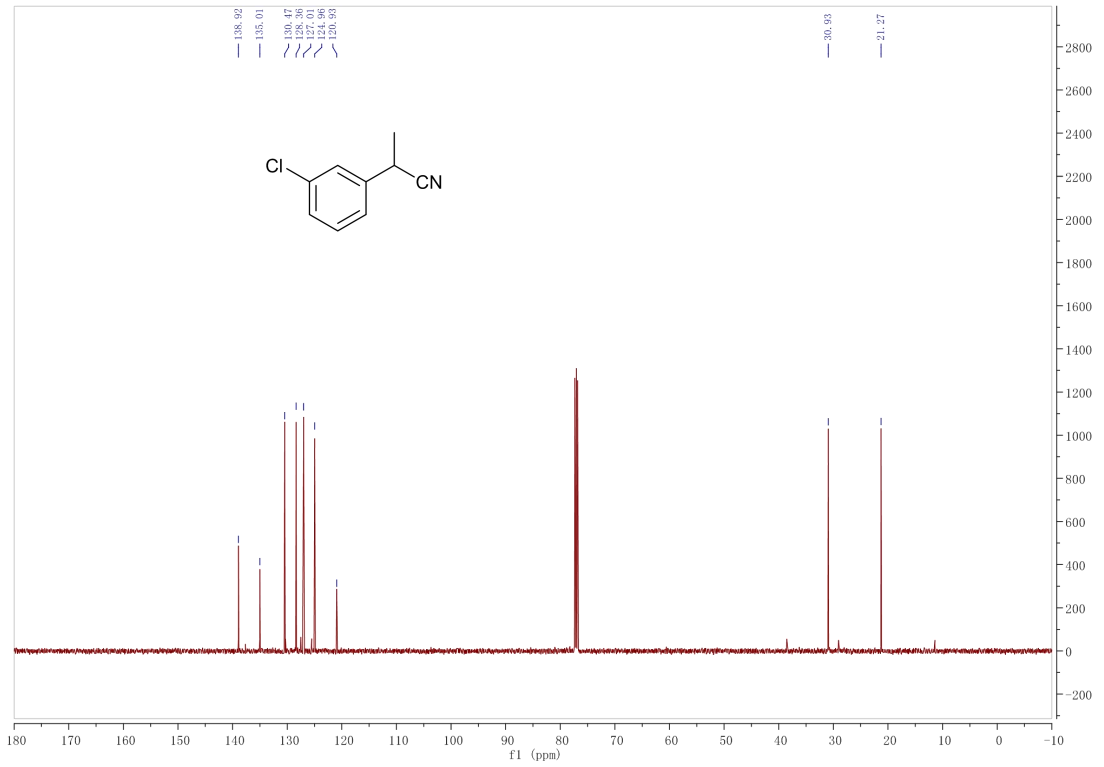
2-(3-methoxyphenyl)propanenitrile (**3cb**)



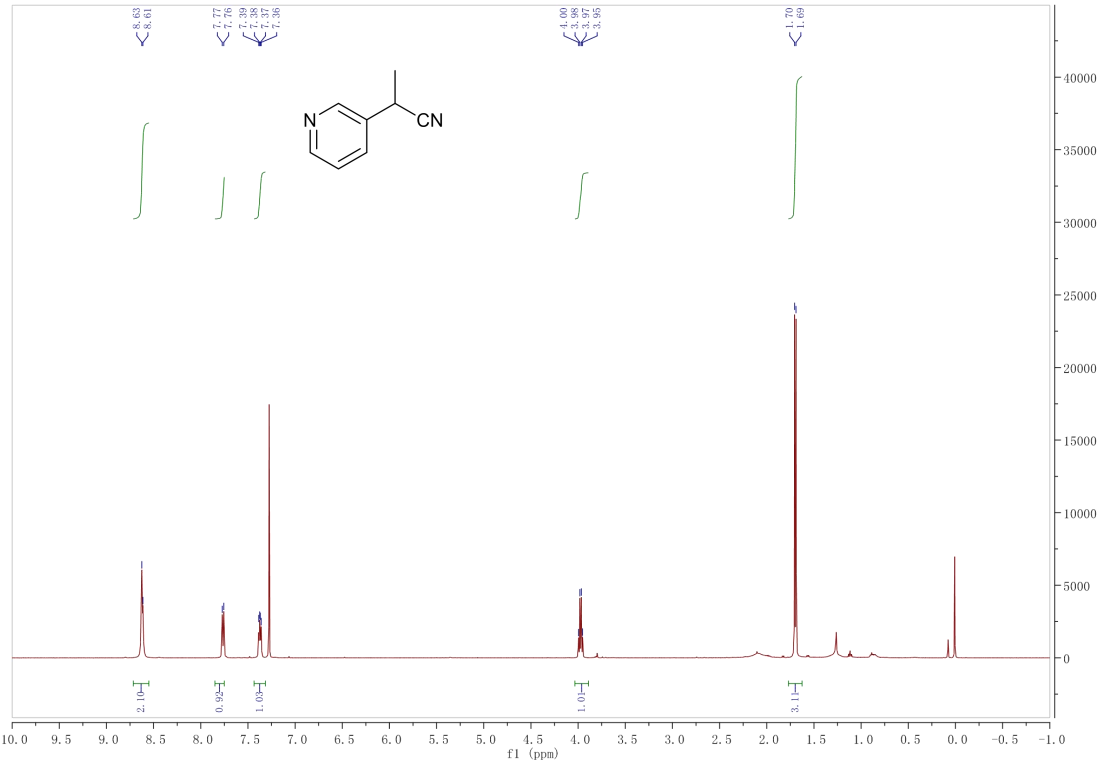


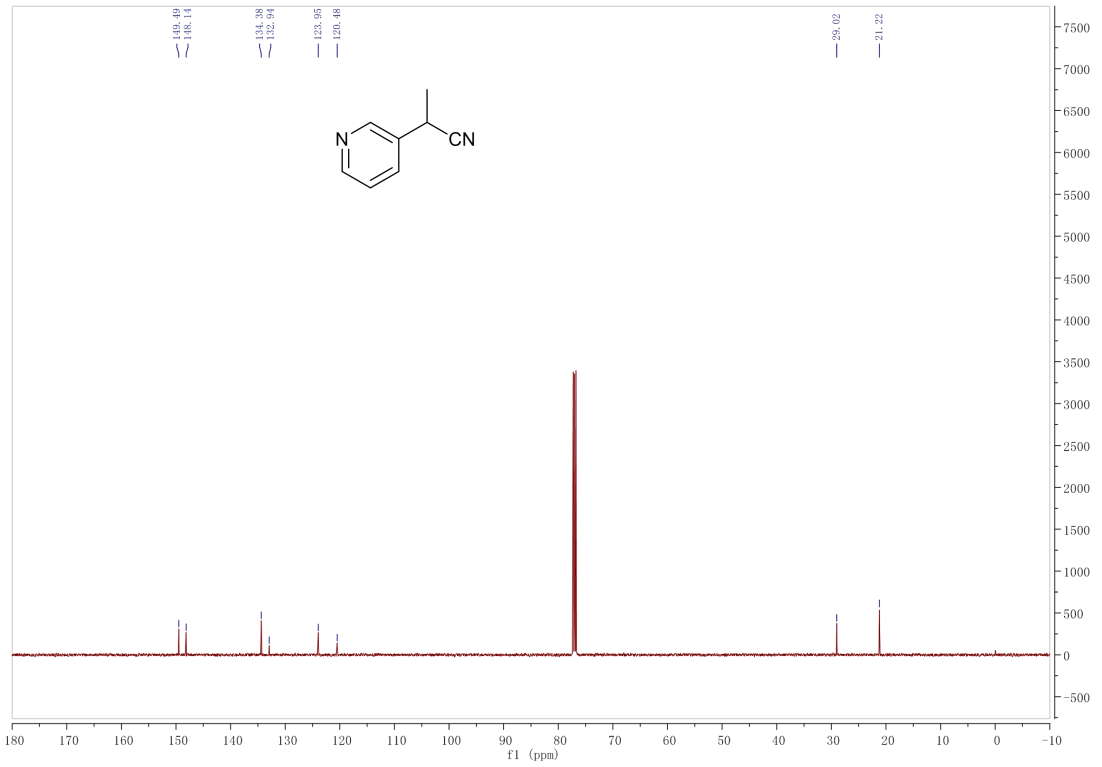
2-(3-chlorophenyl)propanenitrile (**3cc**)



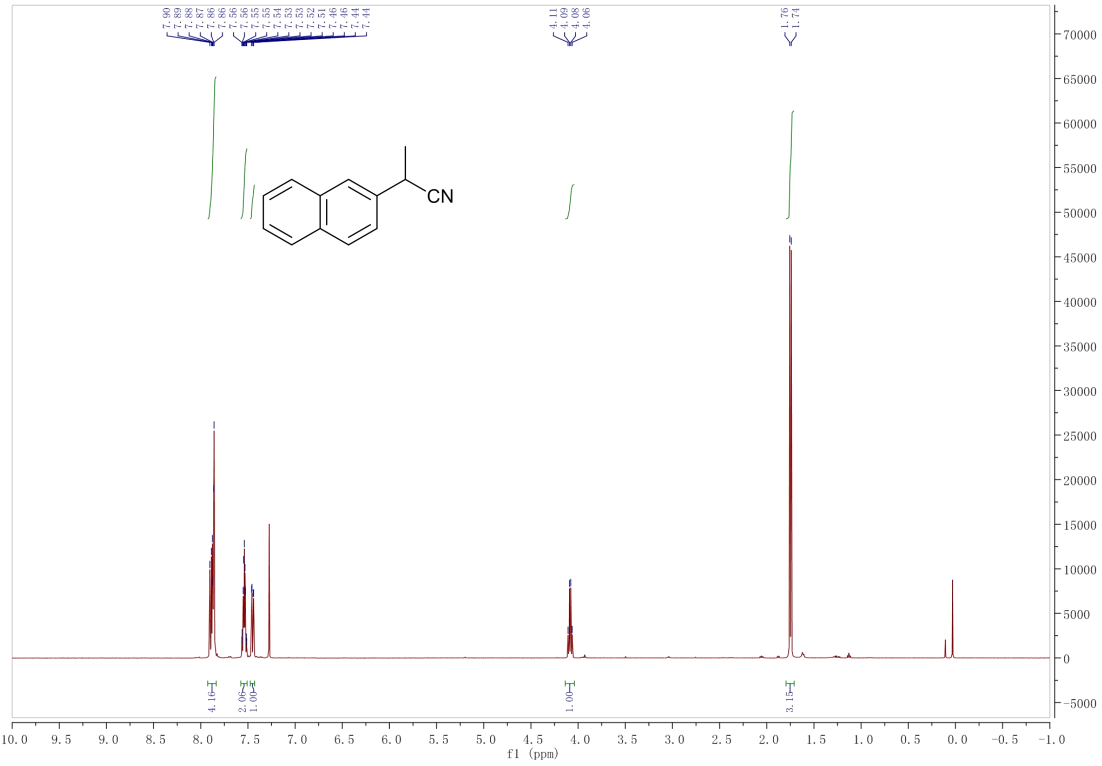


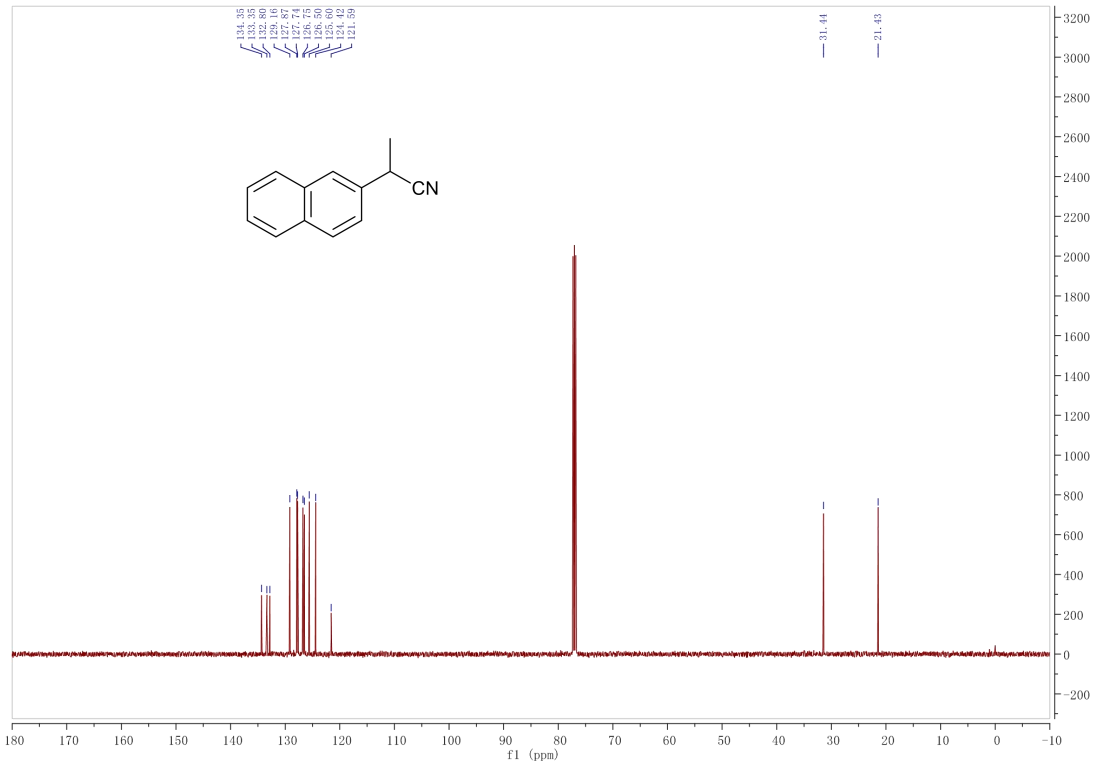
2-(pyridin-3-yl)propanenitrile (**3cd**)



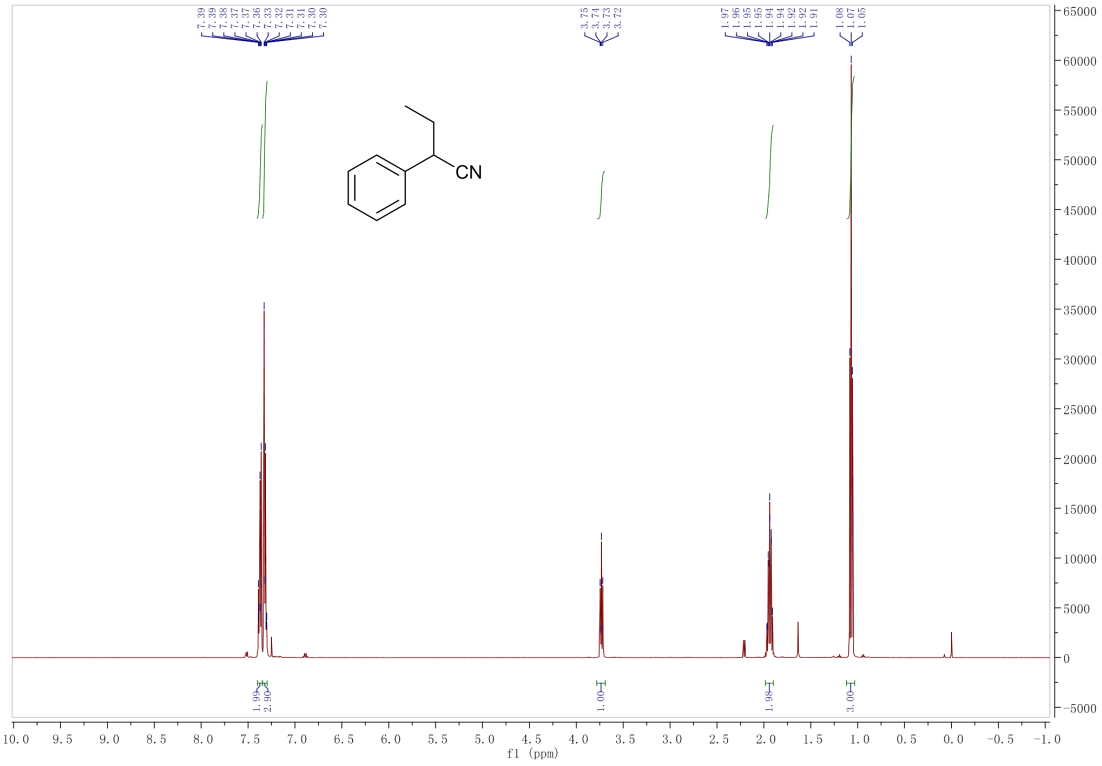


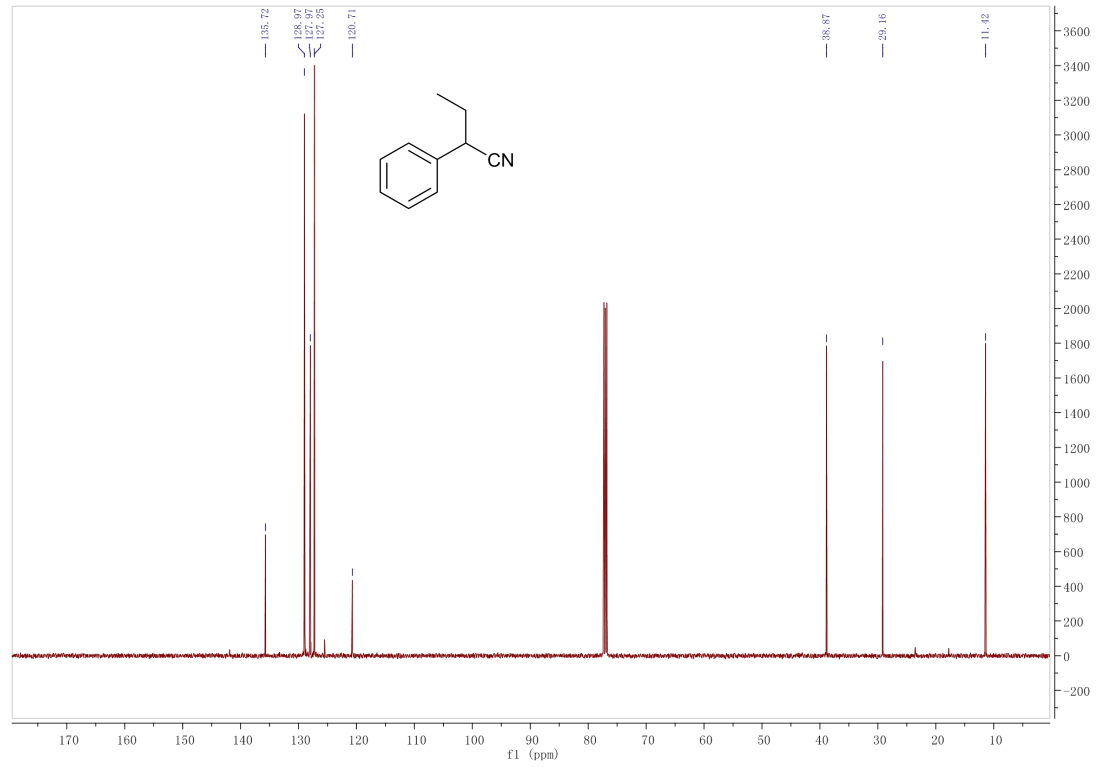
2-(naphthalen-2-yl)propanenitrile (**3ce**)



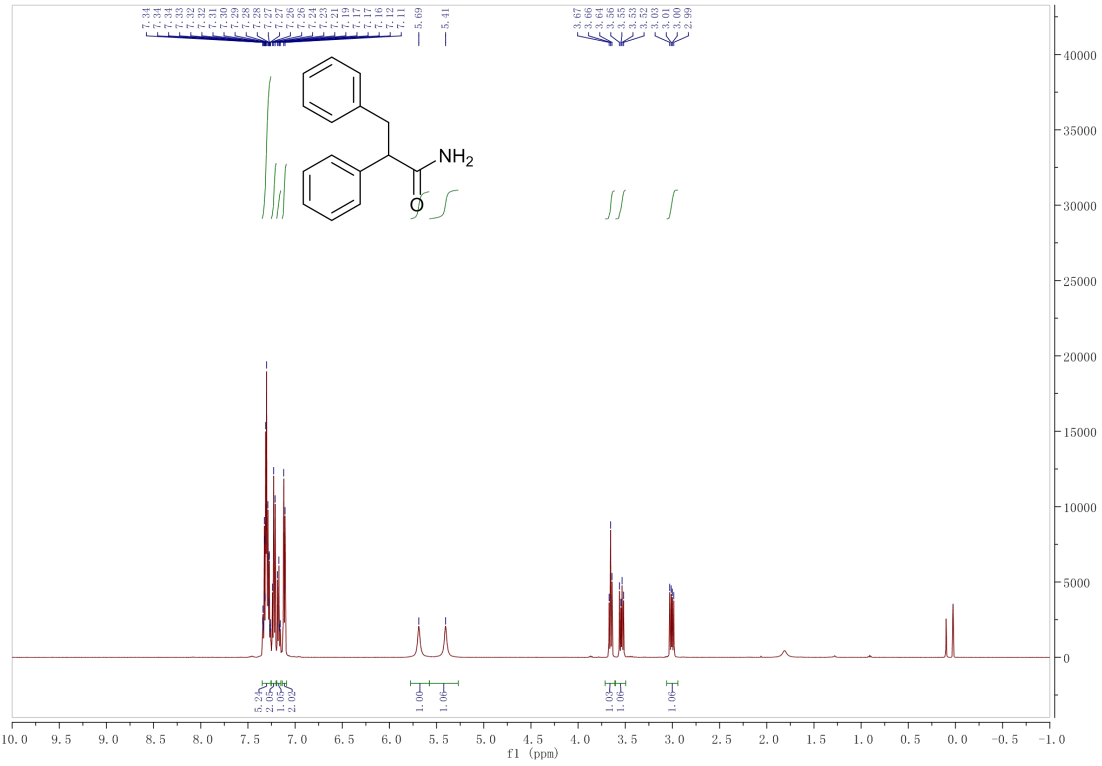


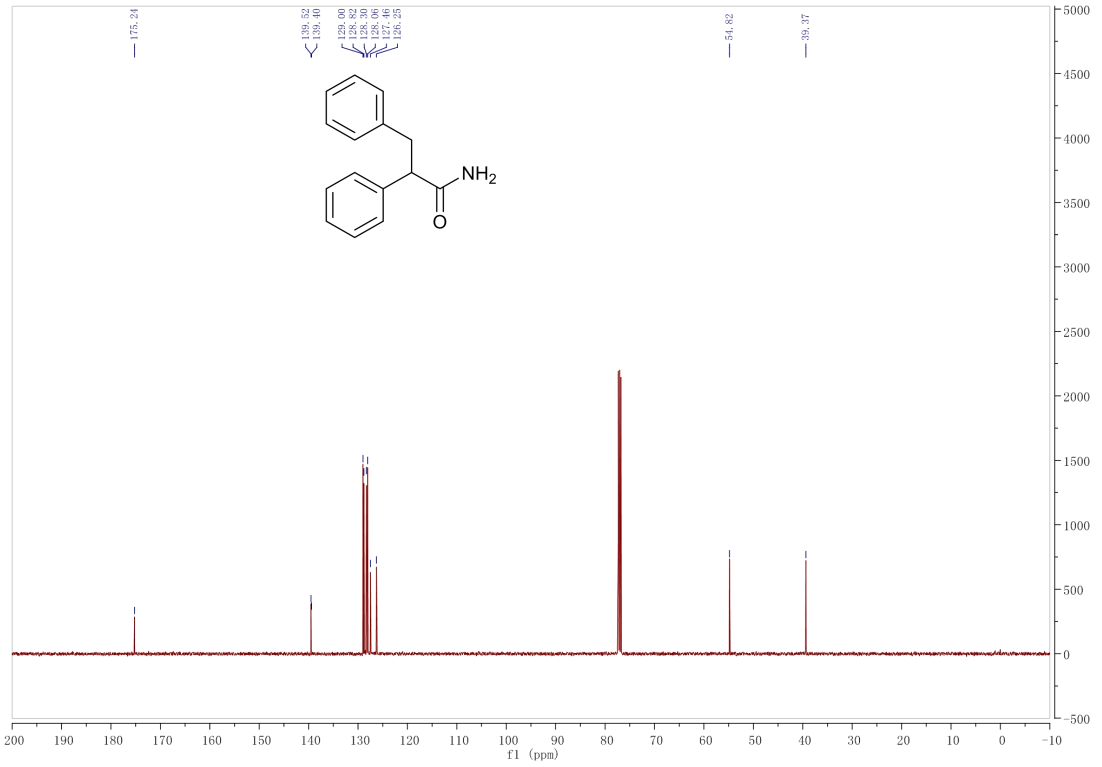
2-phenylbutanenitrile (**3cf**)



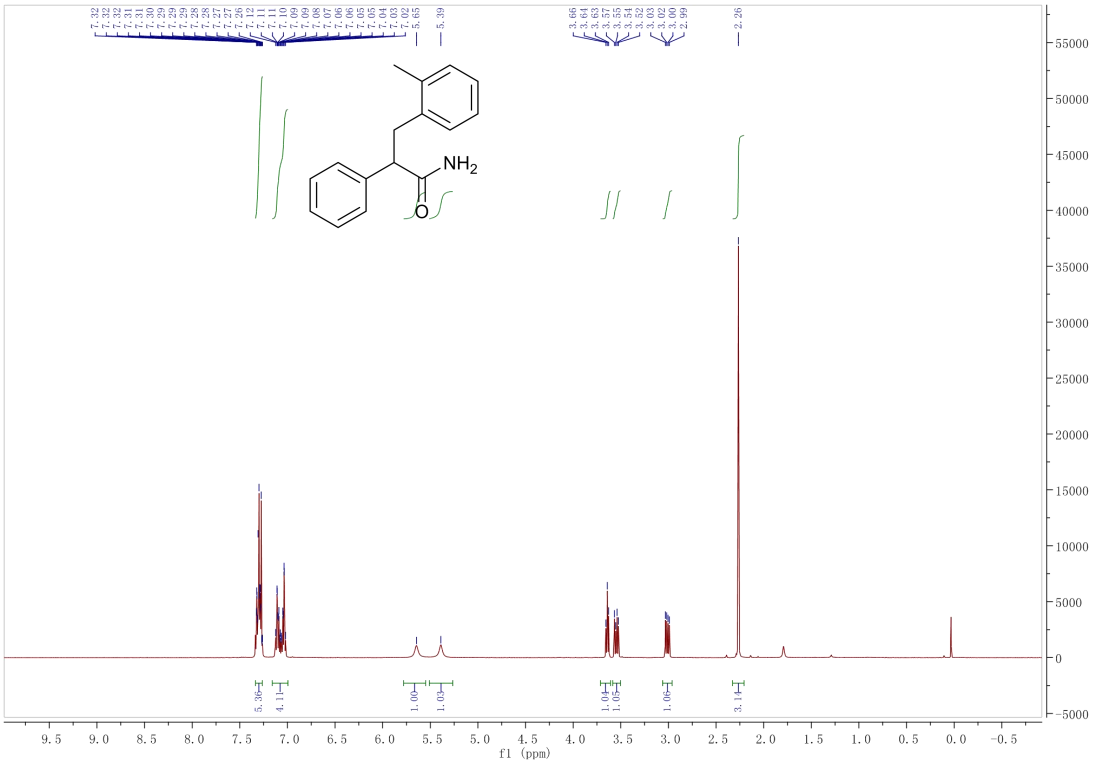


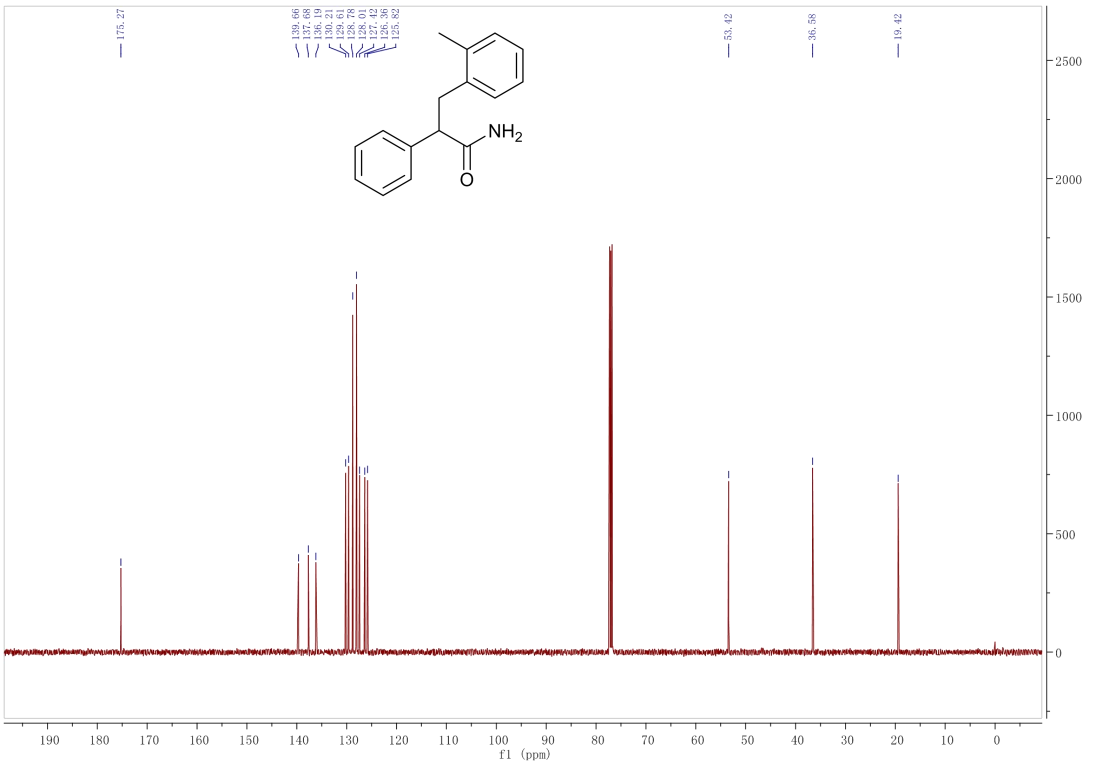
2,3-diphenylpropanamide (**4aa**)



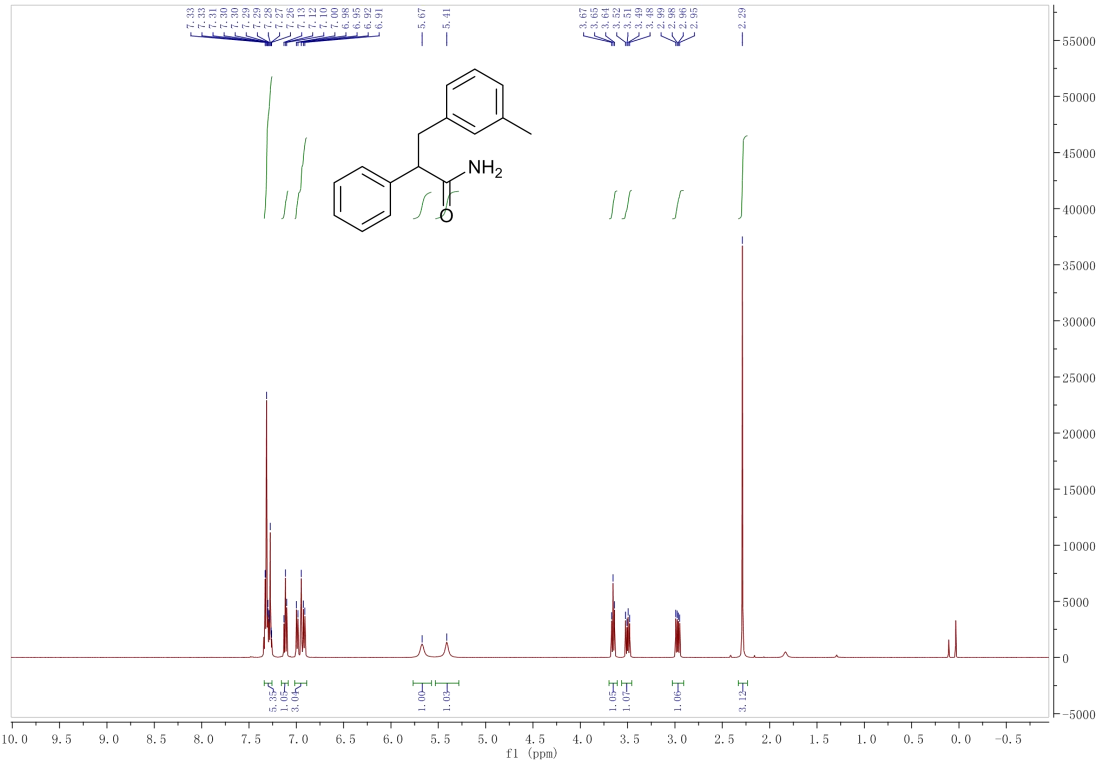


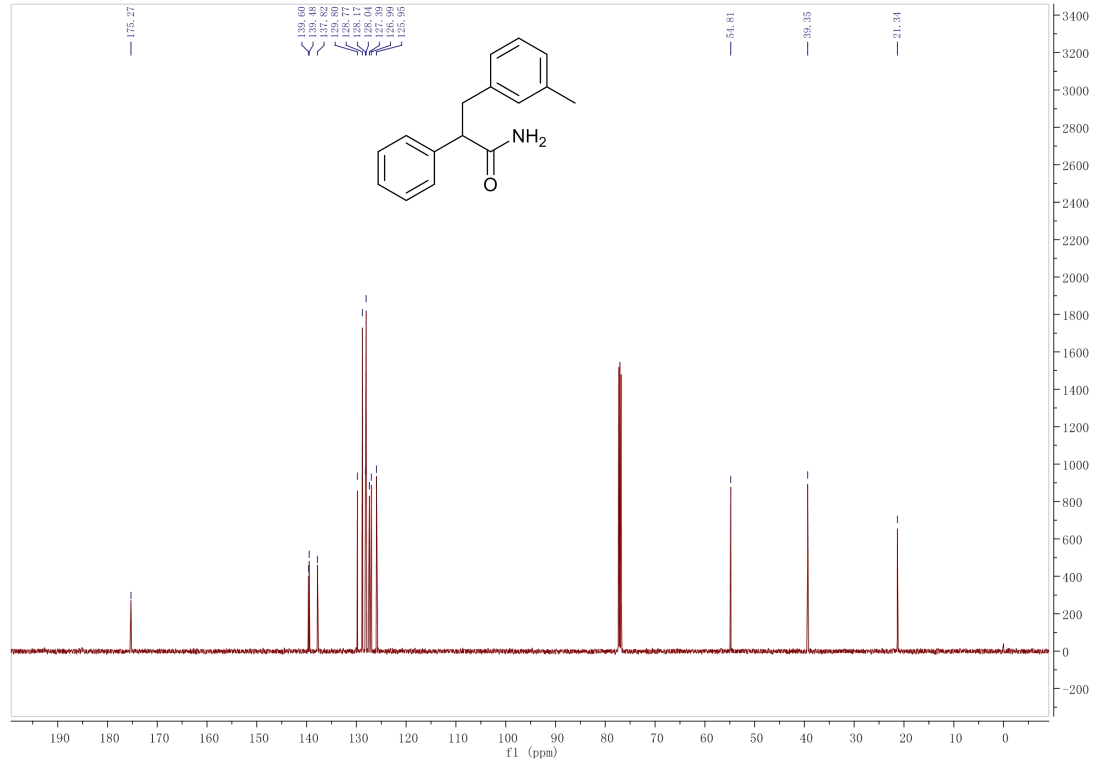
2-phenyl-3-(o-tolyl)propenamide (**4ab**)



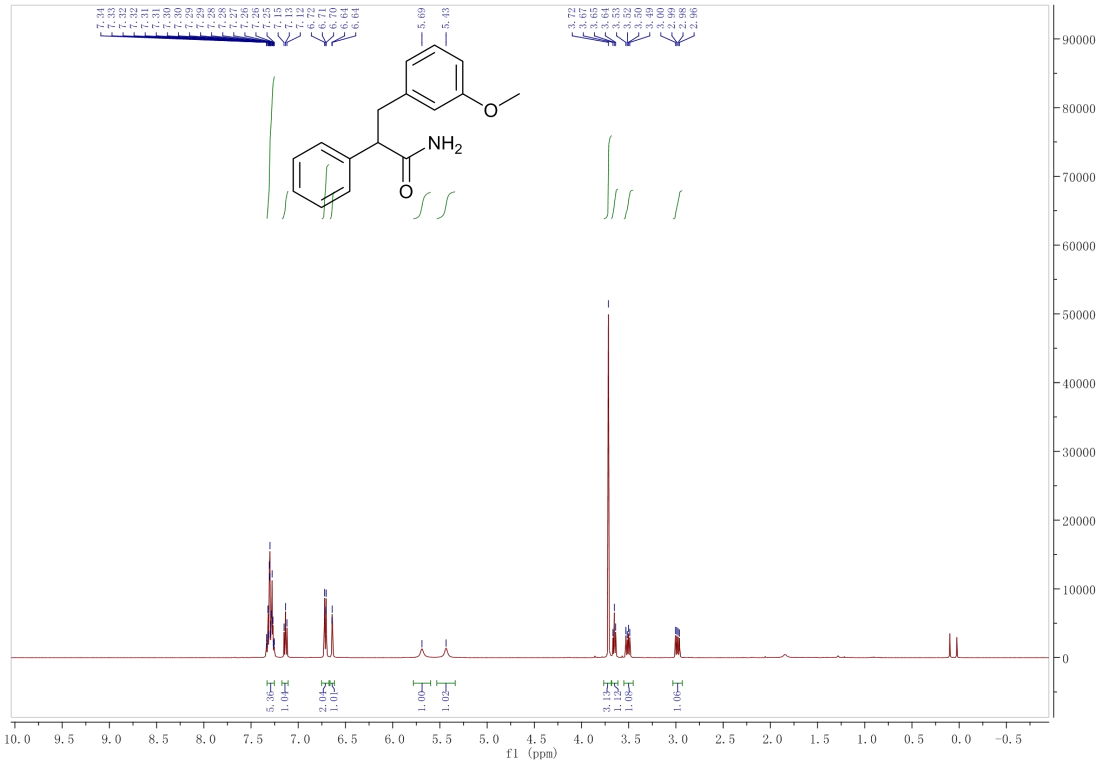


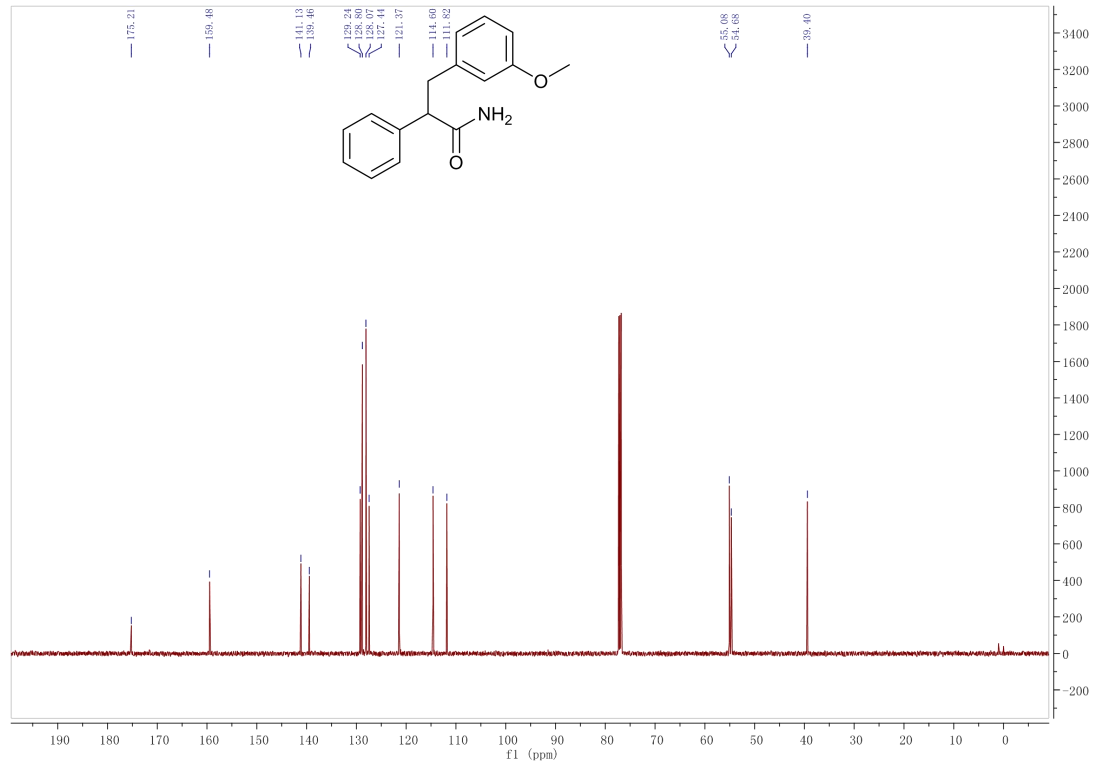
2-phenyl-3-(m-tolyl)propenamide (**4ac**)



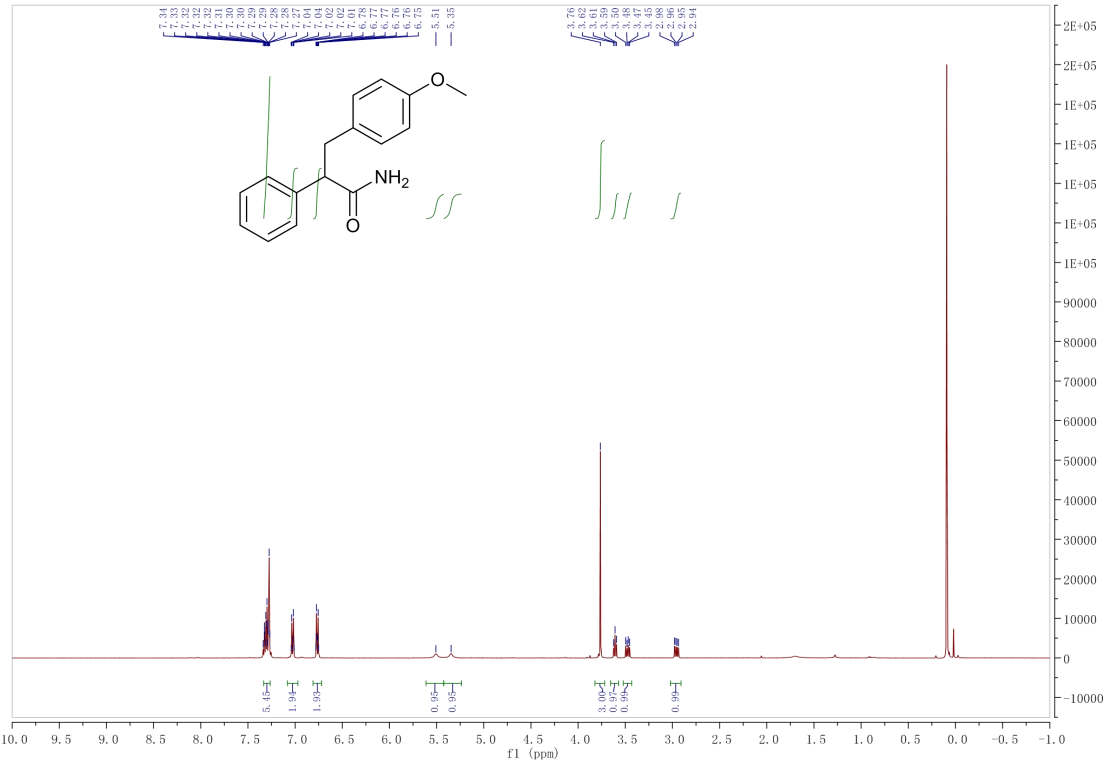


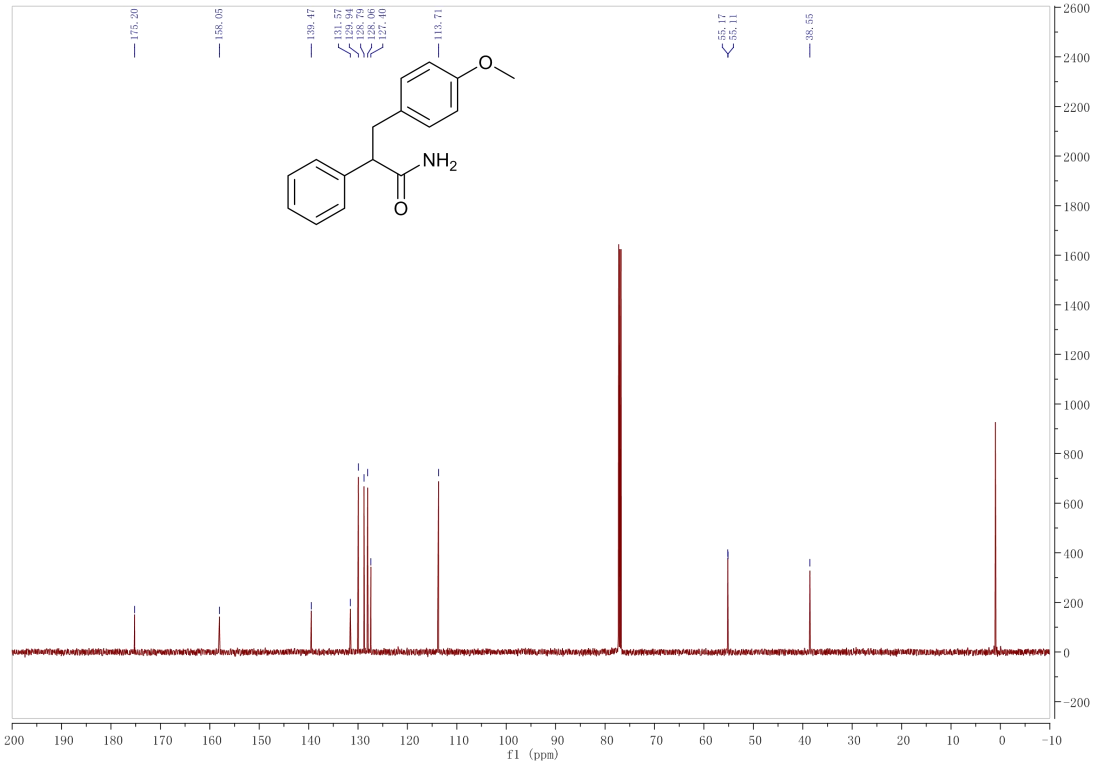
3-(3-methoxyphenyl)-2-phenylpropanamide (**4ad**)



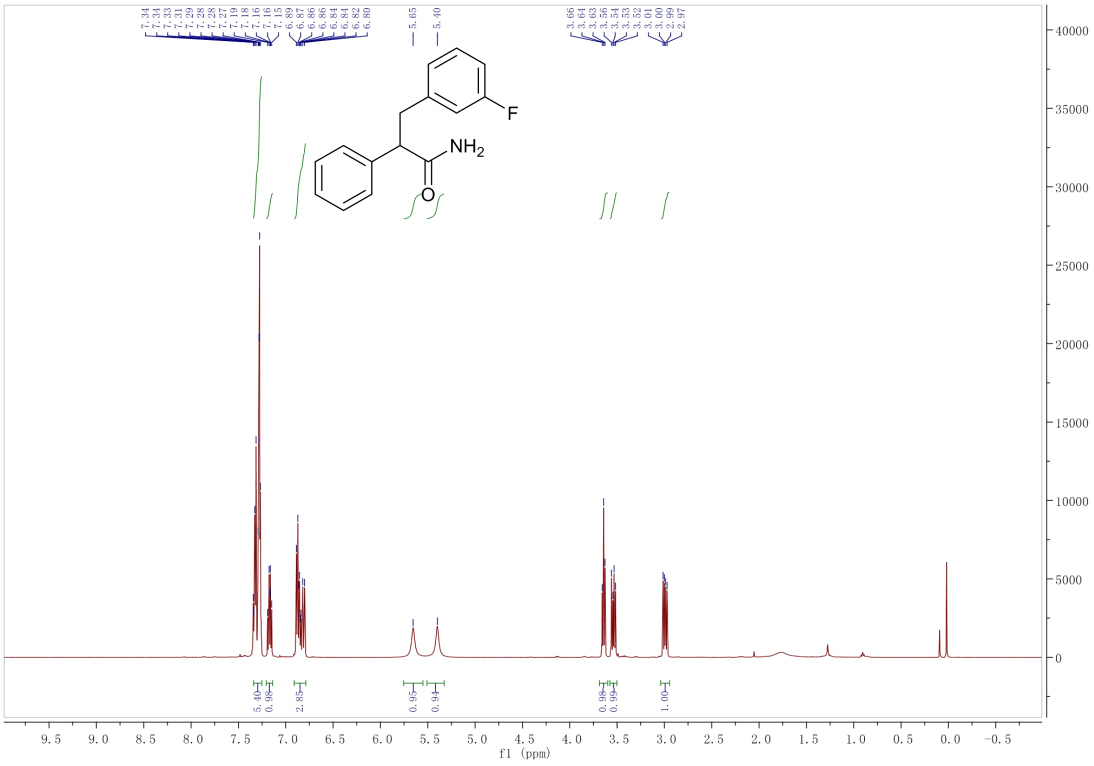


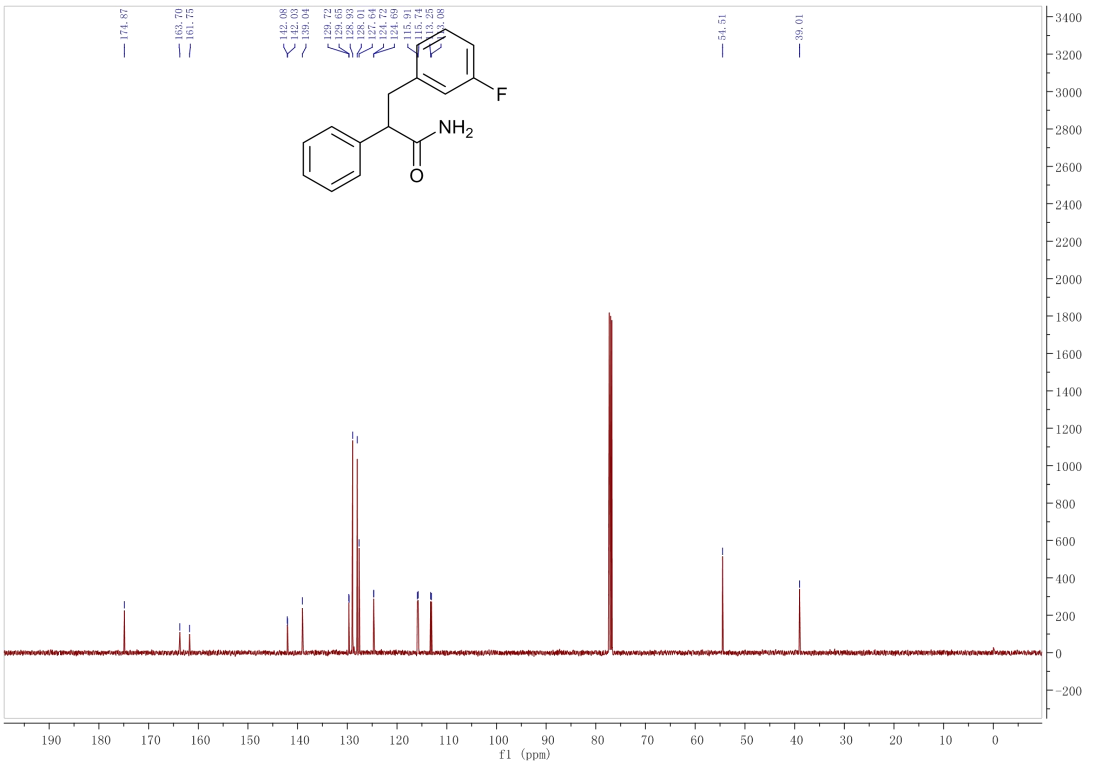
3-(4-methoxyphenyl)-2-phenylpropanamide (**4ae**)



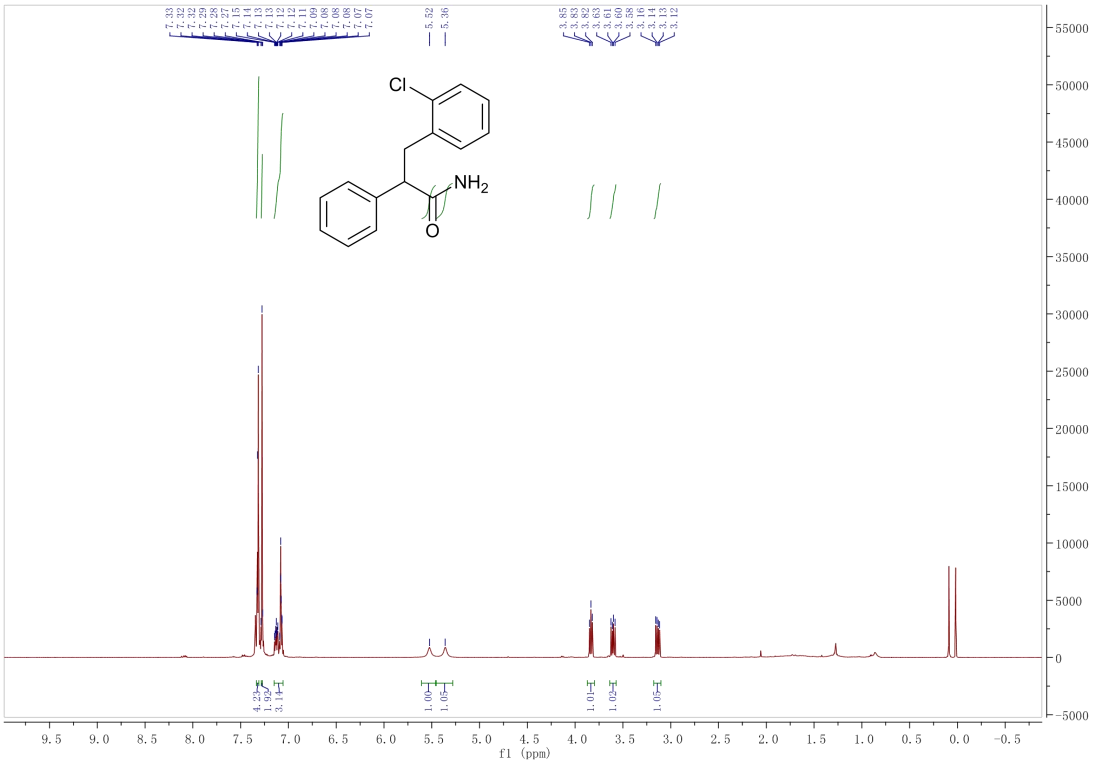


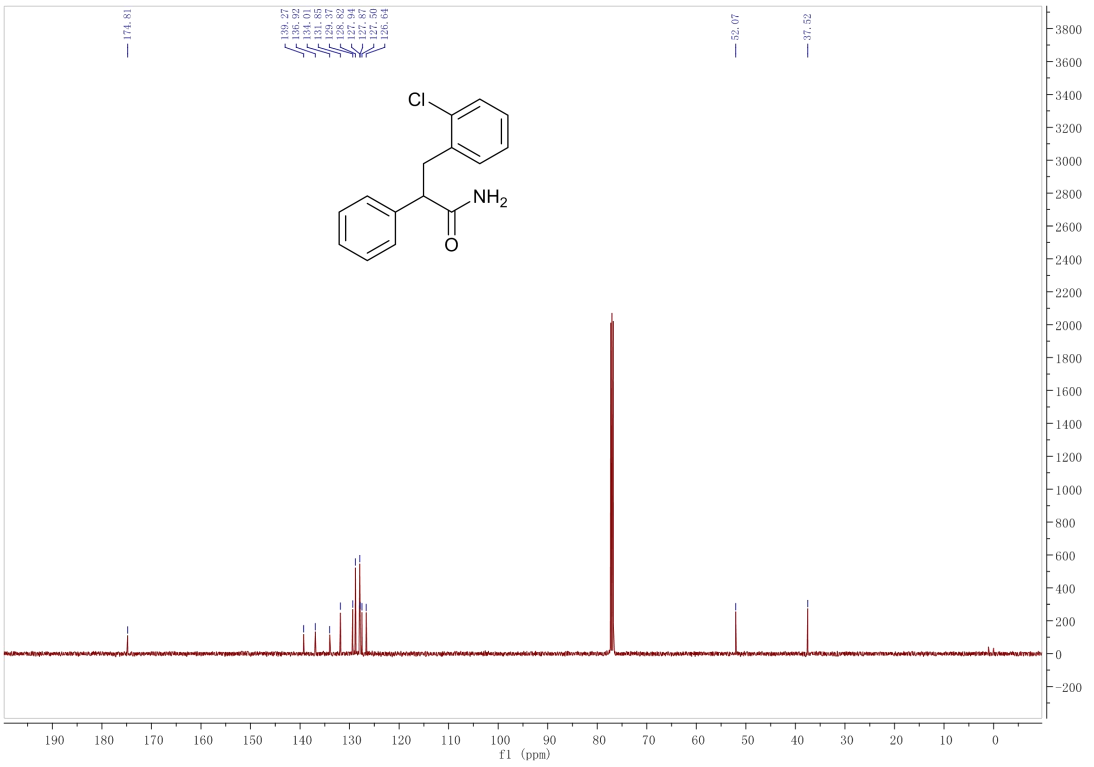
3-(3-fluorophenyl)-2-phenylpropanamide (**4af**)



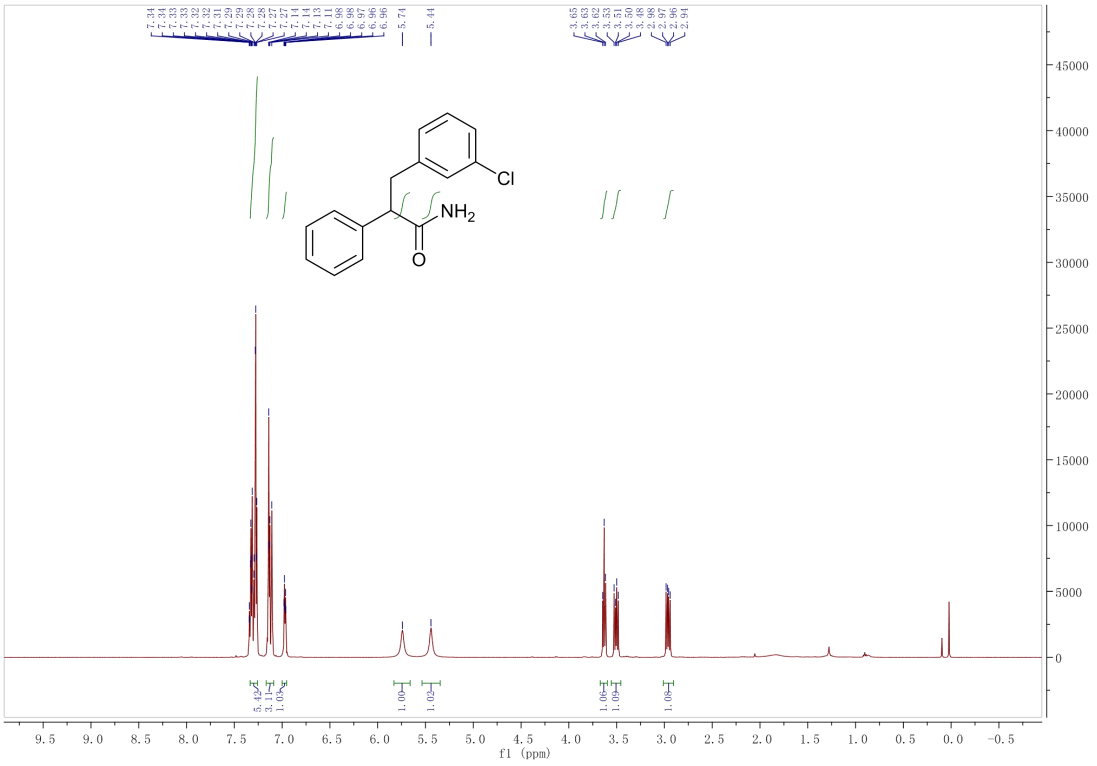


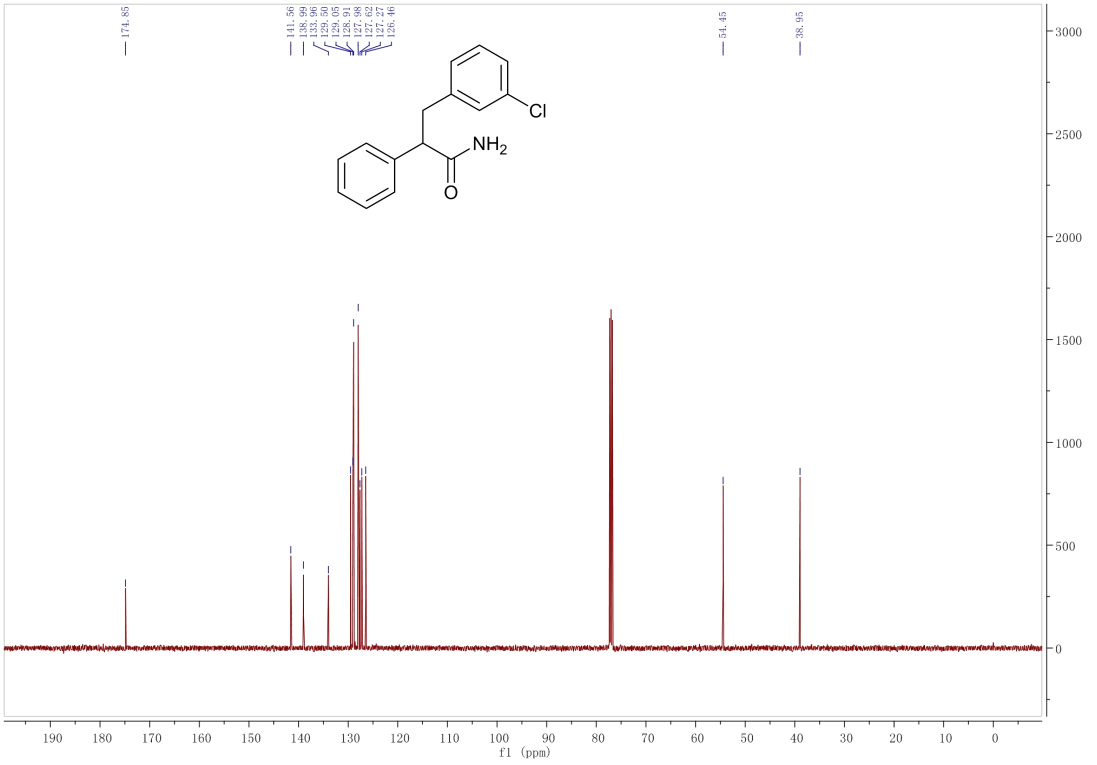
3-(2-chlorophenyl)-2-phenylpropanamide (**4ag**)



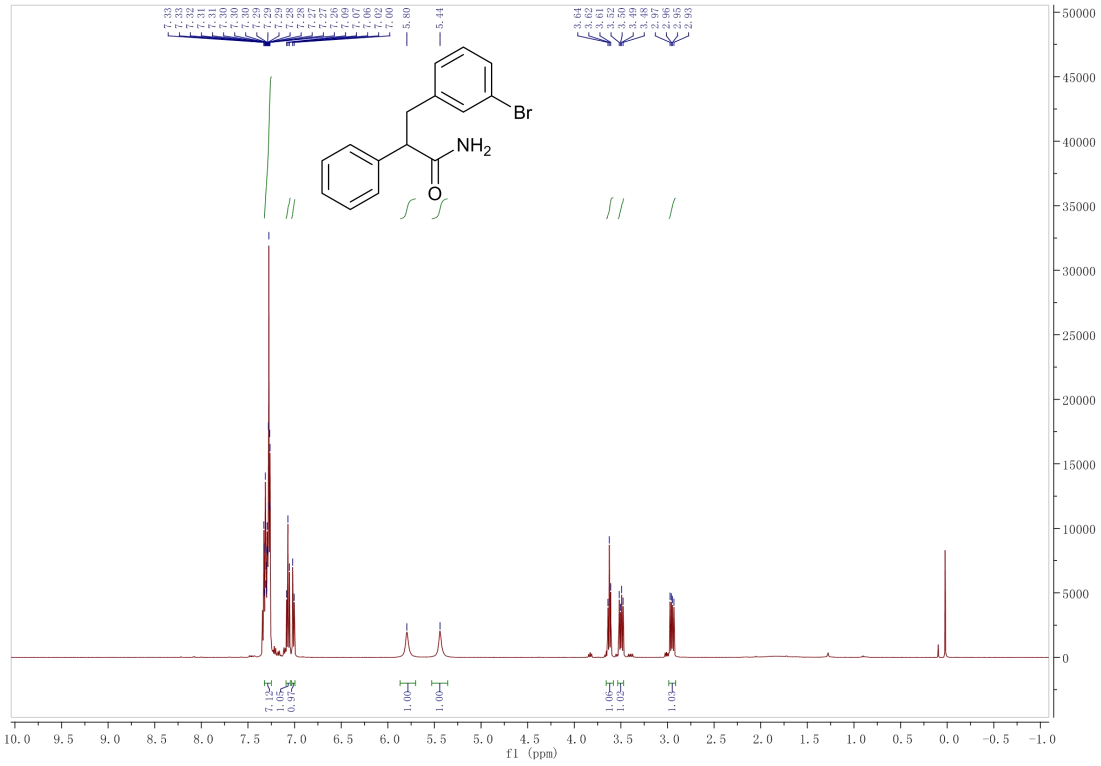


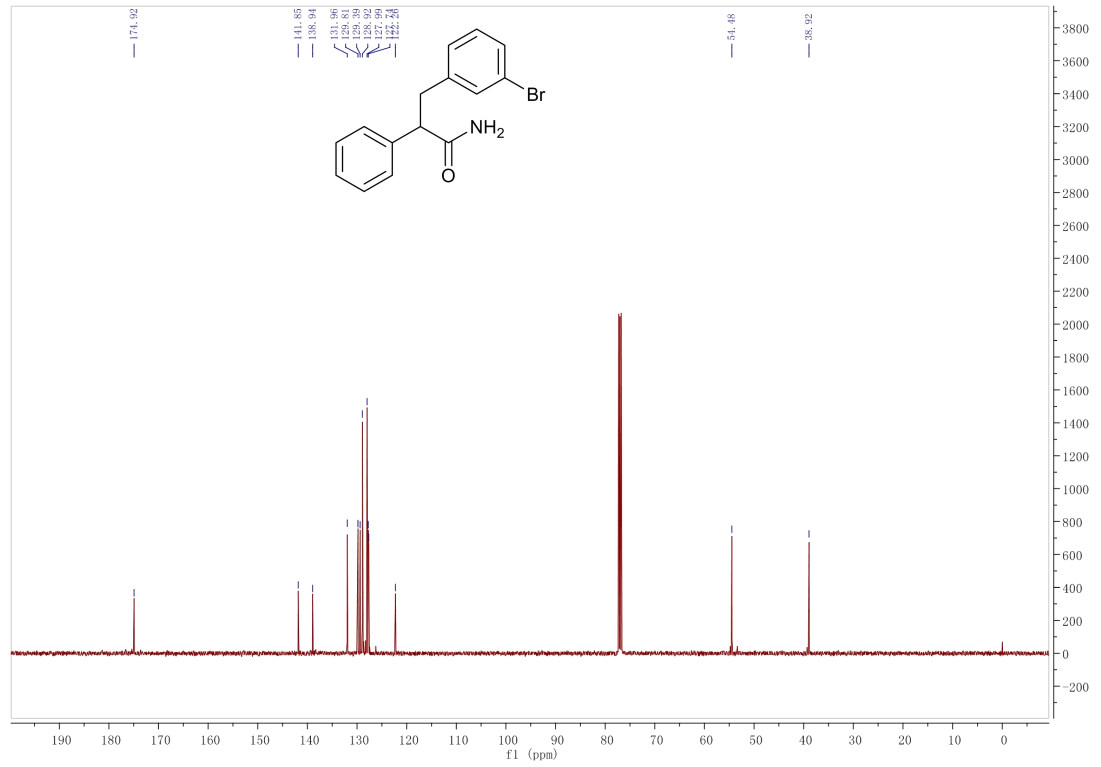
3-(3-chlorophenyl)-2-phenylpropanamide (**4ah**)



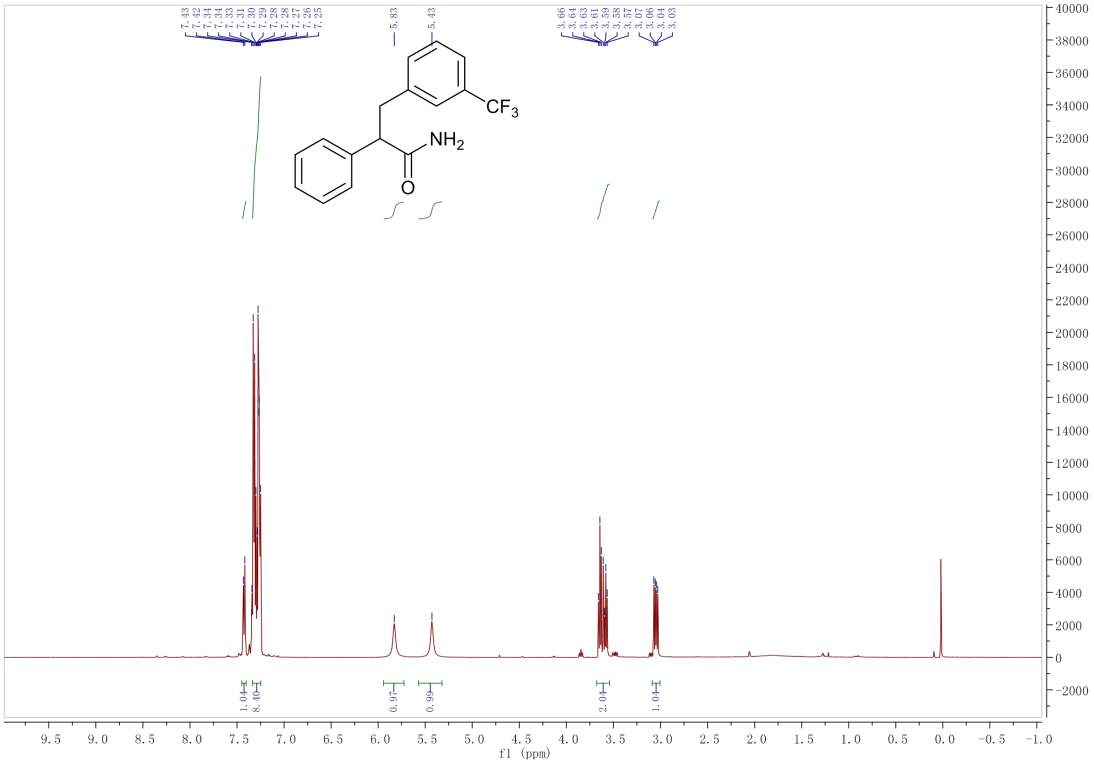


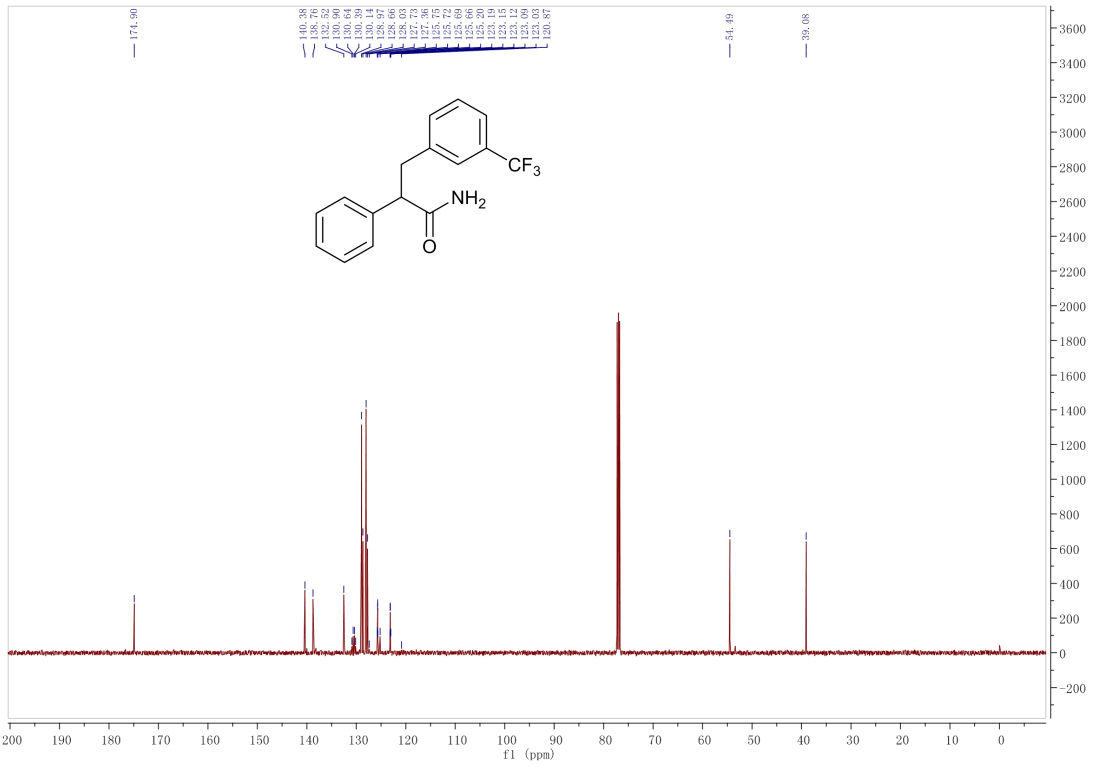
3-(3-bromophenyl)-2-phenylpropanamide (**4ai**)



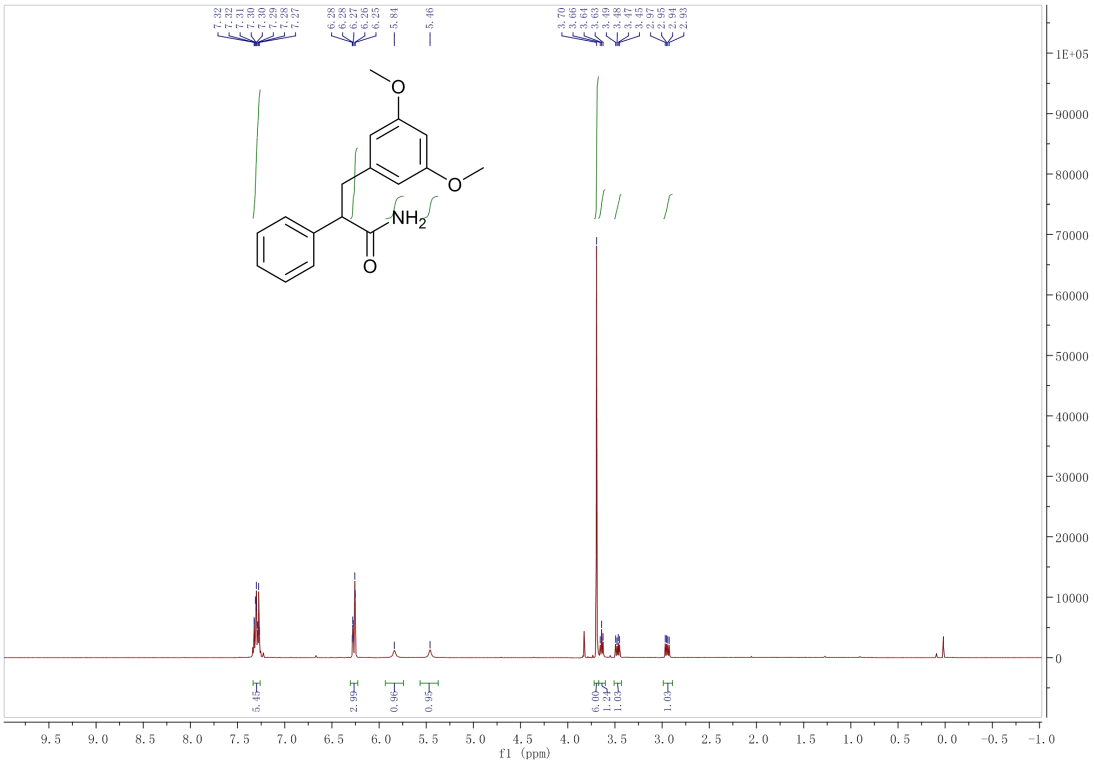


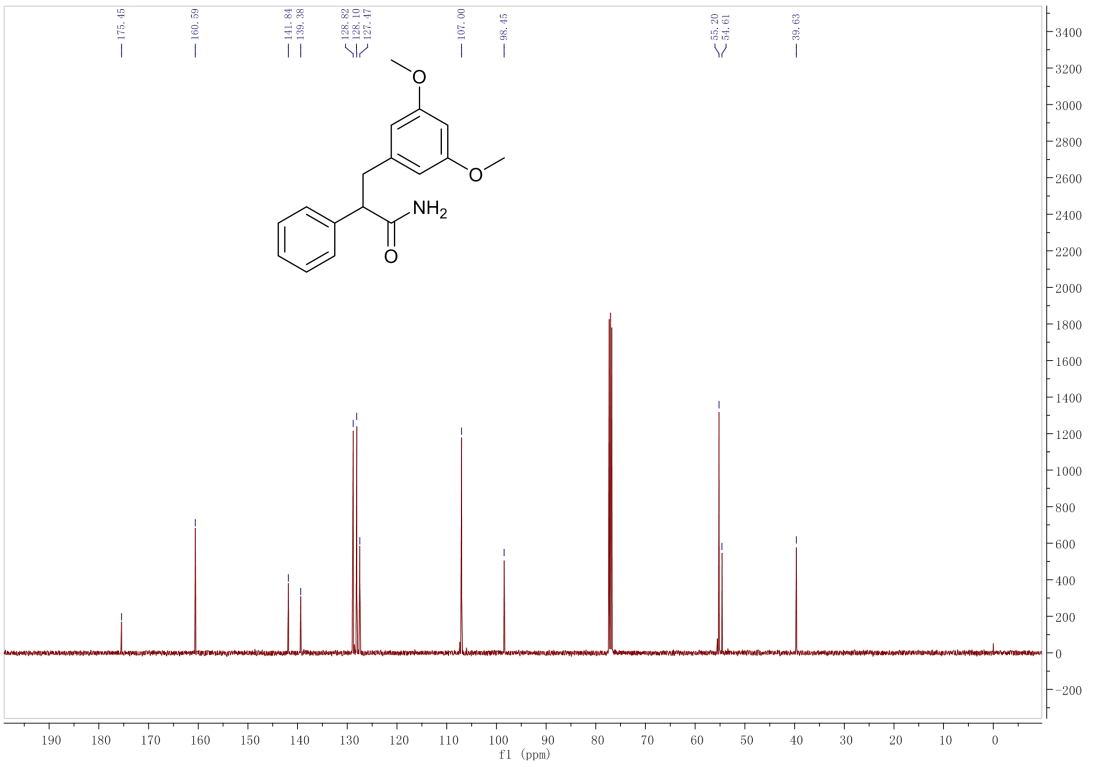
2-phenyl-3-(3-(trifluoromethyl)phenyl)propenamide (**4aj**)



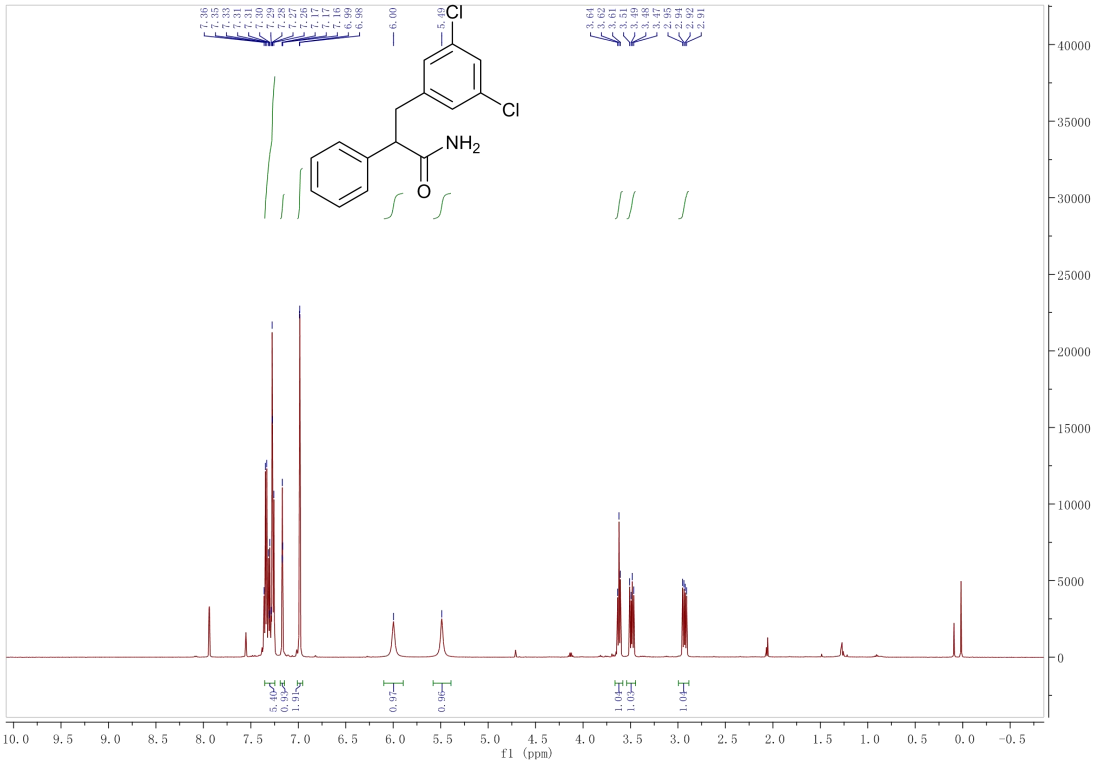


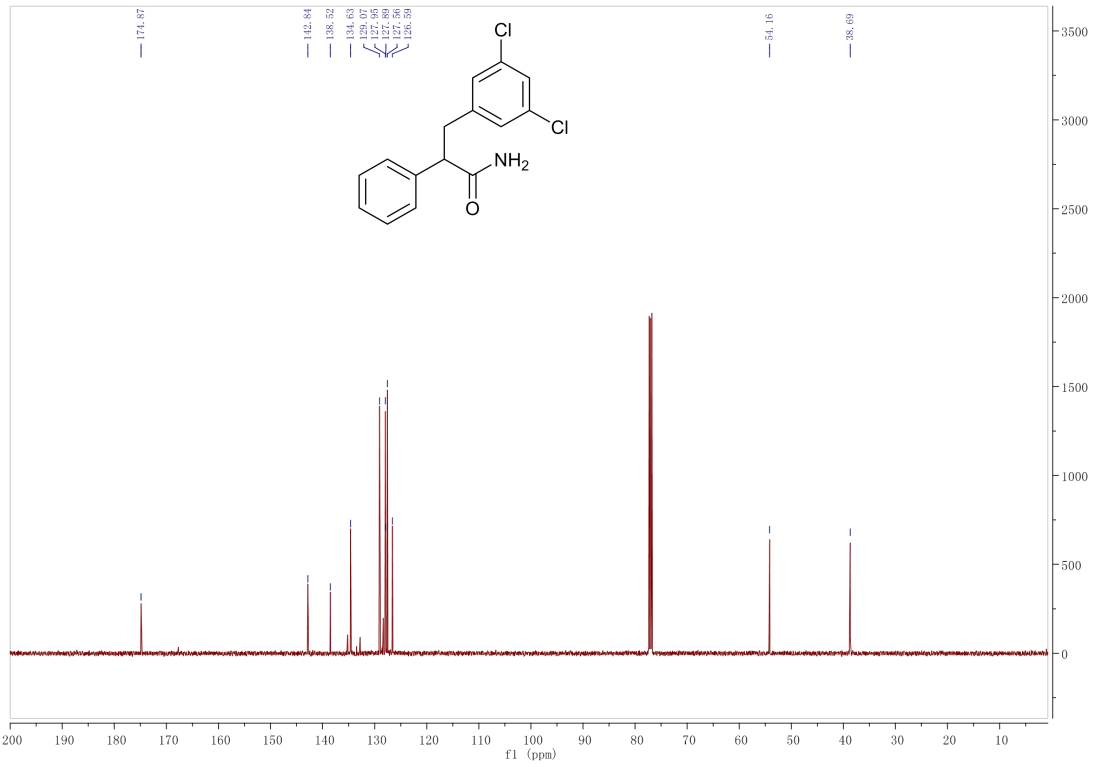
3-(3,5-dimethoxyphenyl)-2-phenylpropanamide (**4ak**)



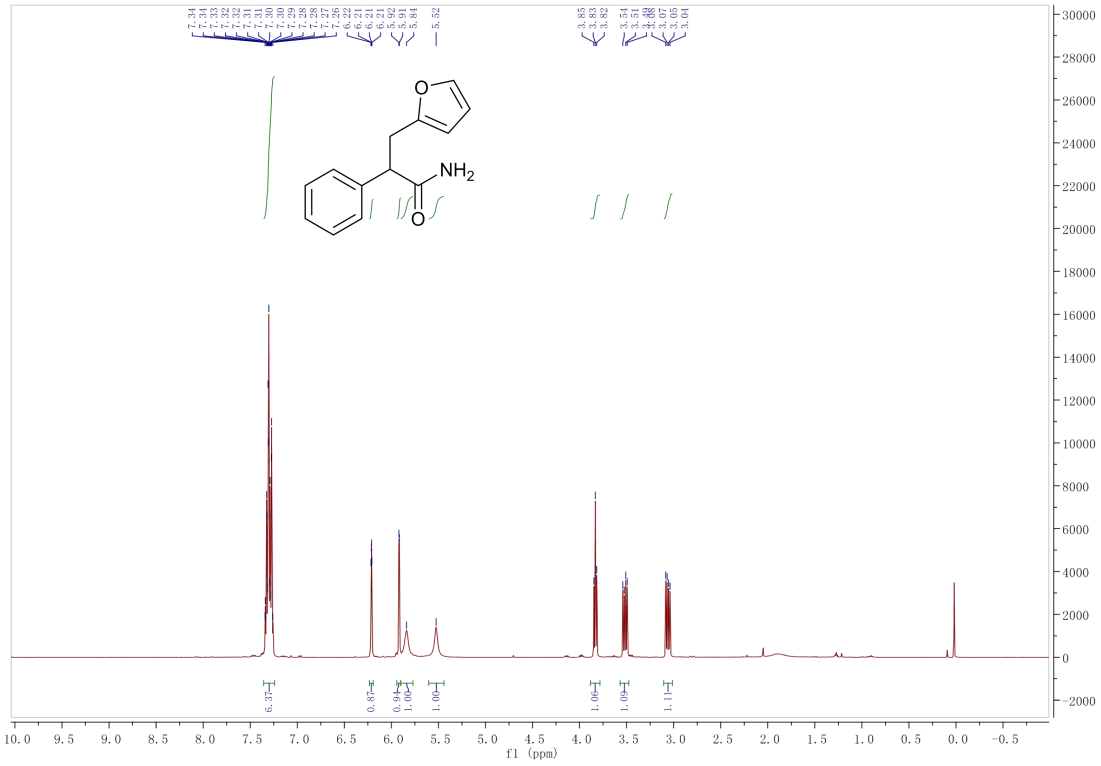


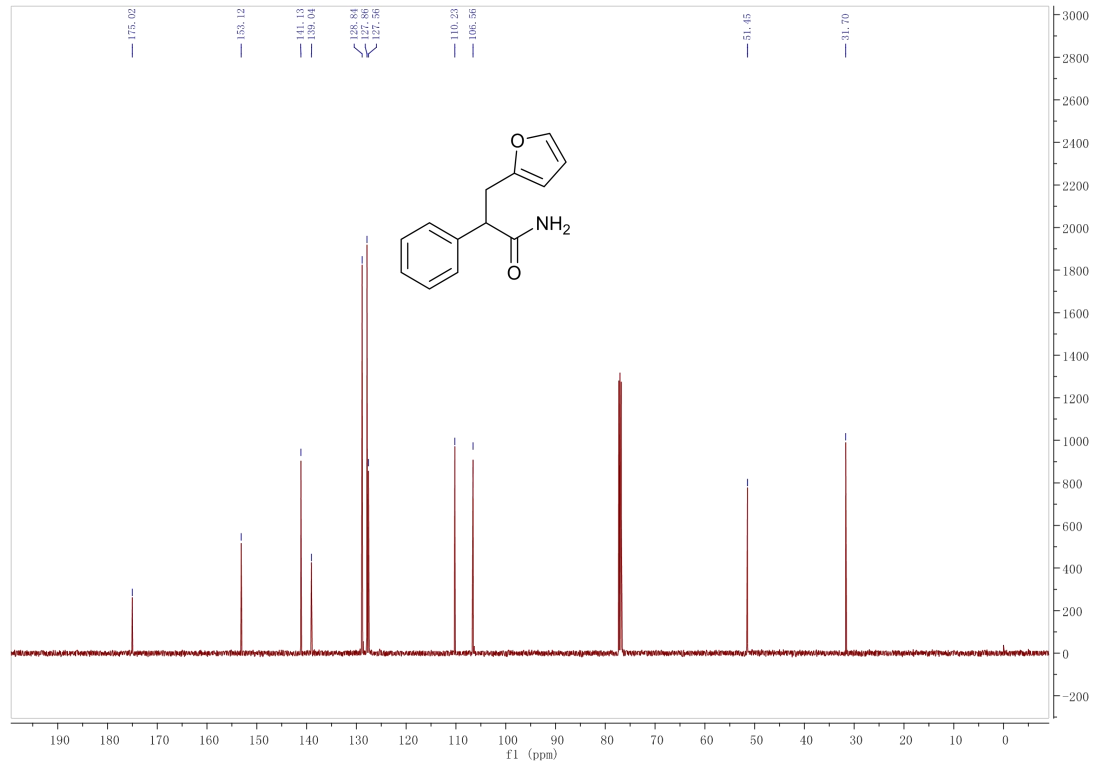
3-(3,5-dichlorophenyl)-2-phenylpropanamide (**4al**)



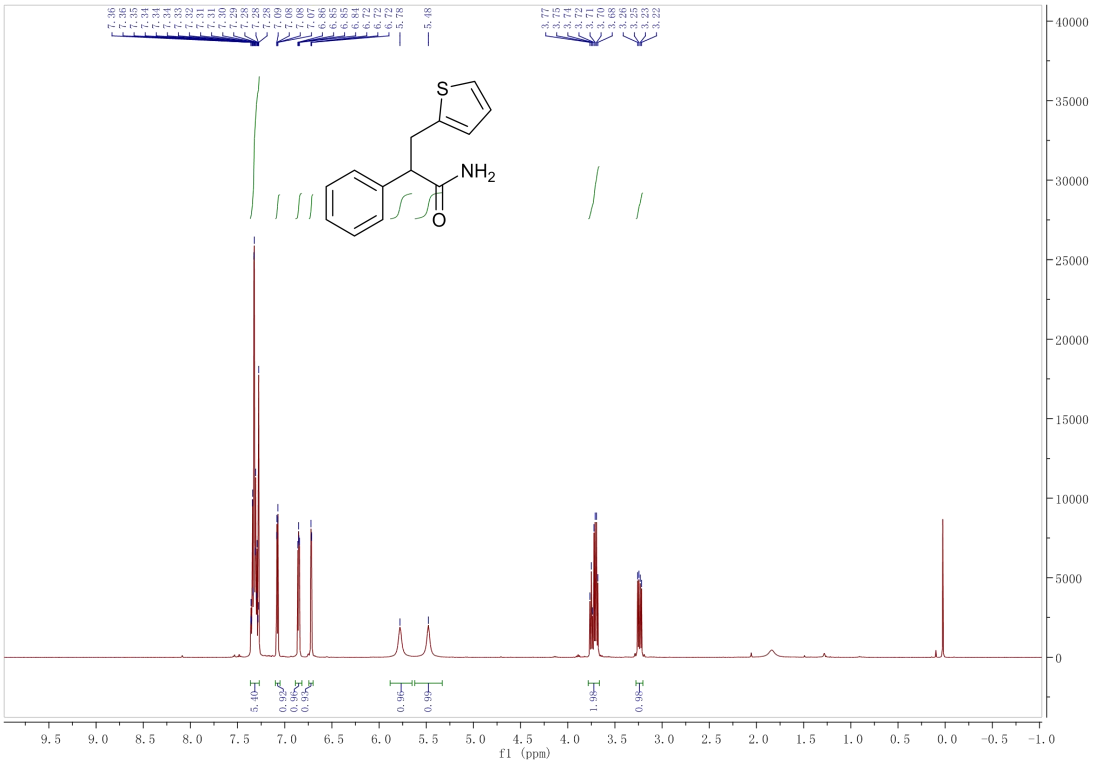


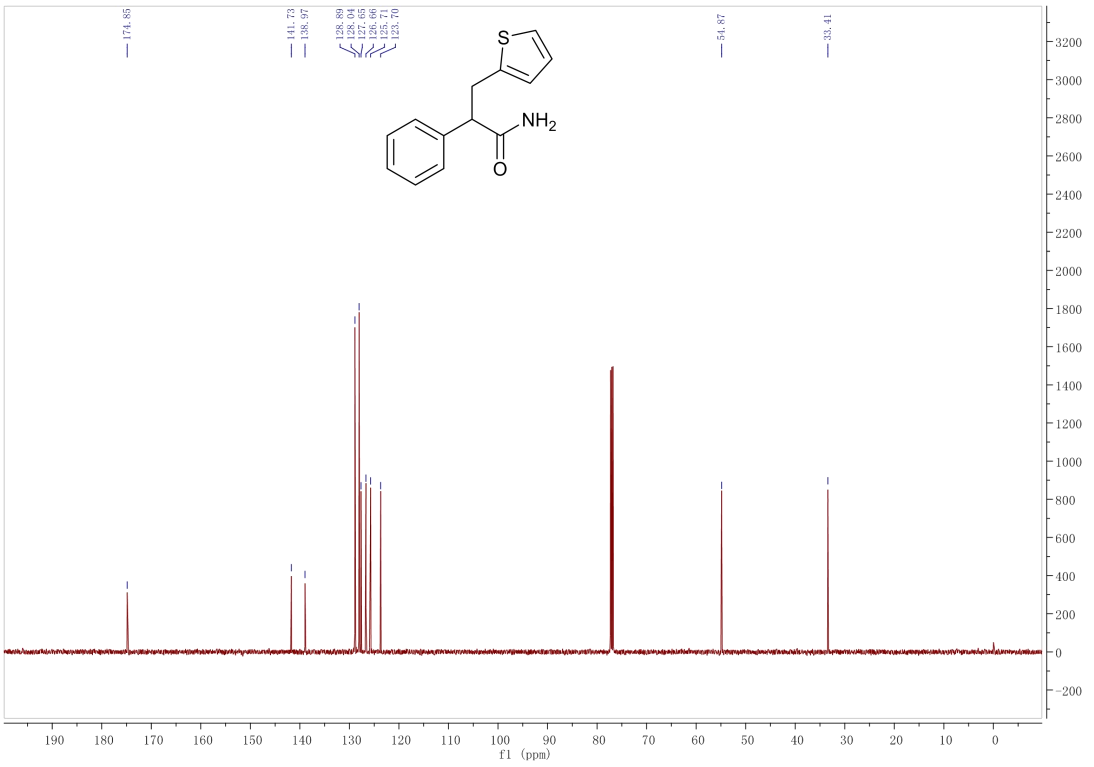
3-(furan-2-yl)-2-phenylpropanamide (**4am**)



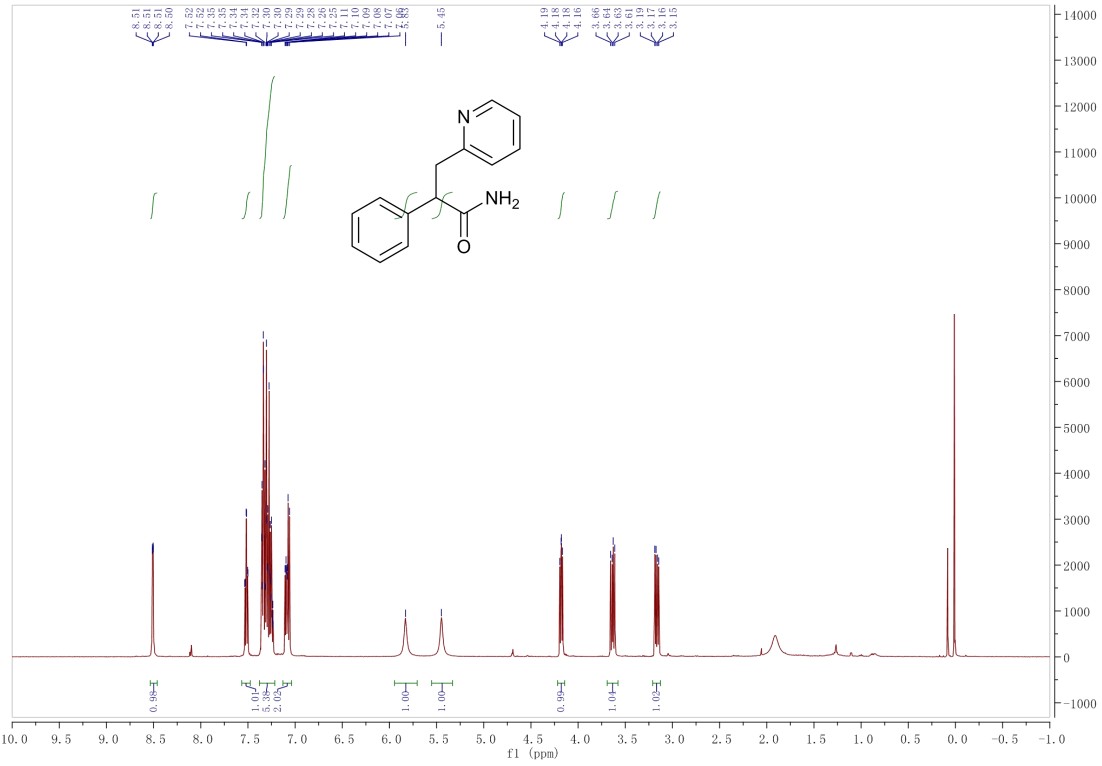


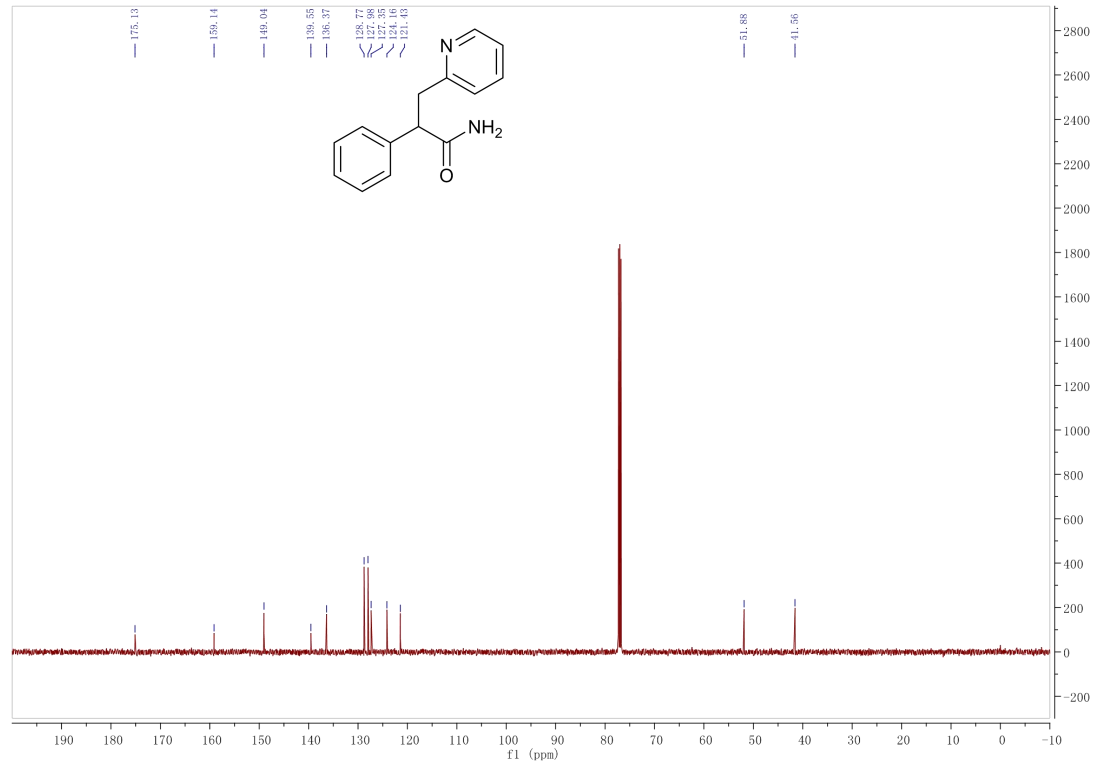
2-phenyl-3-(thiophen-2-yl)propenamide (**4an**)



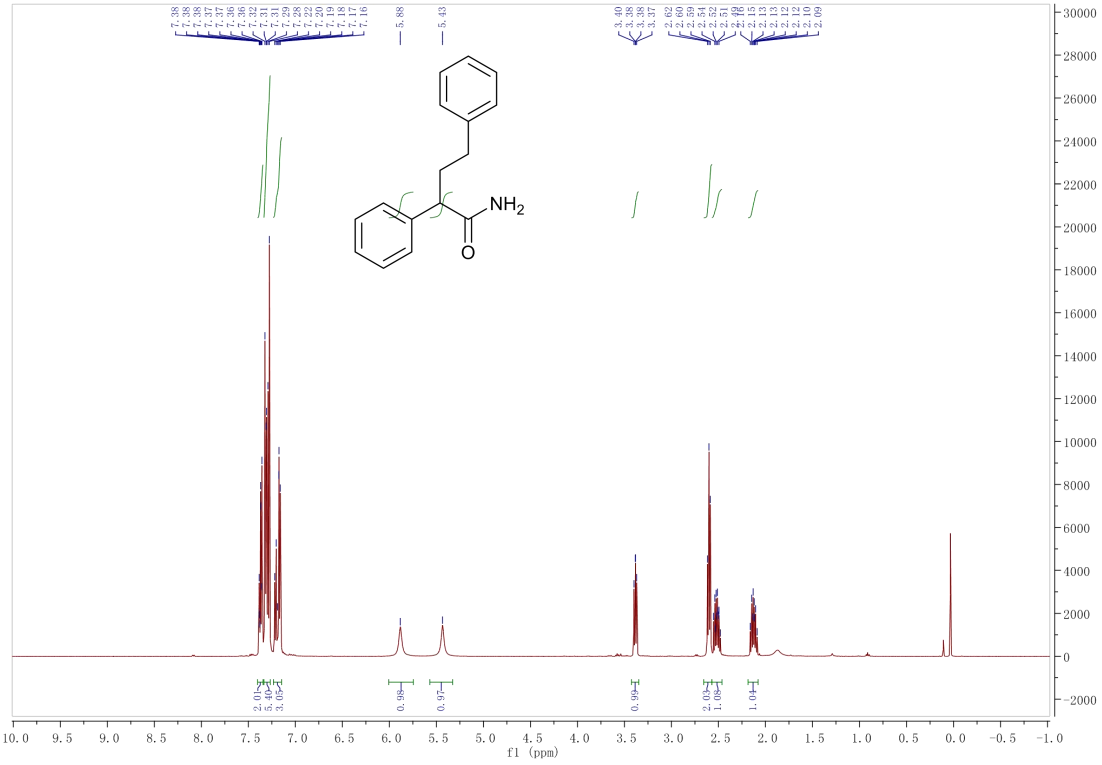


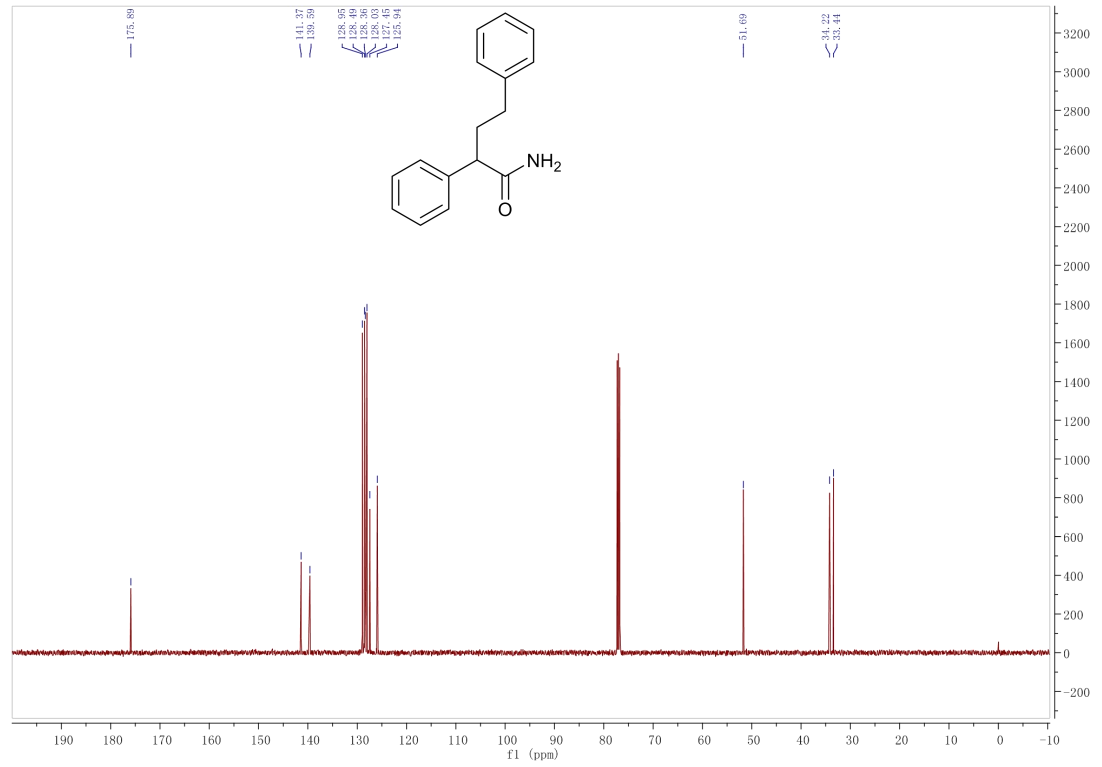
2-phenyl-3-(pyridin-2-yl)propenamide (**4ao**)



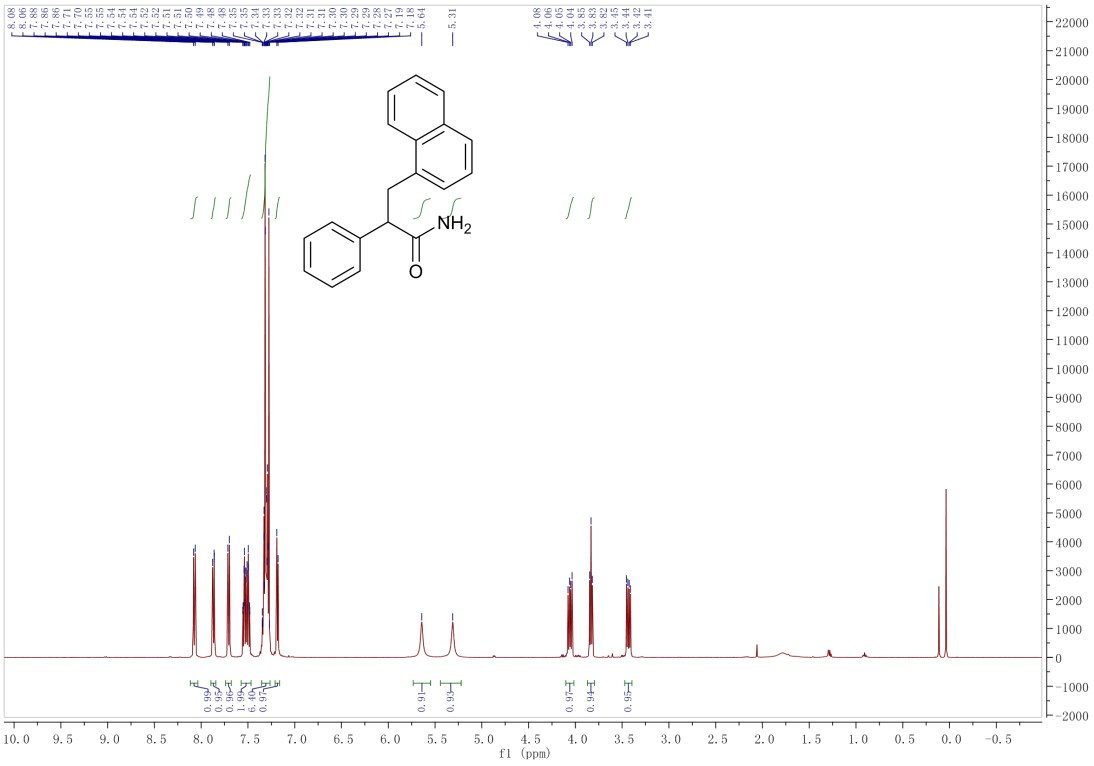


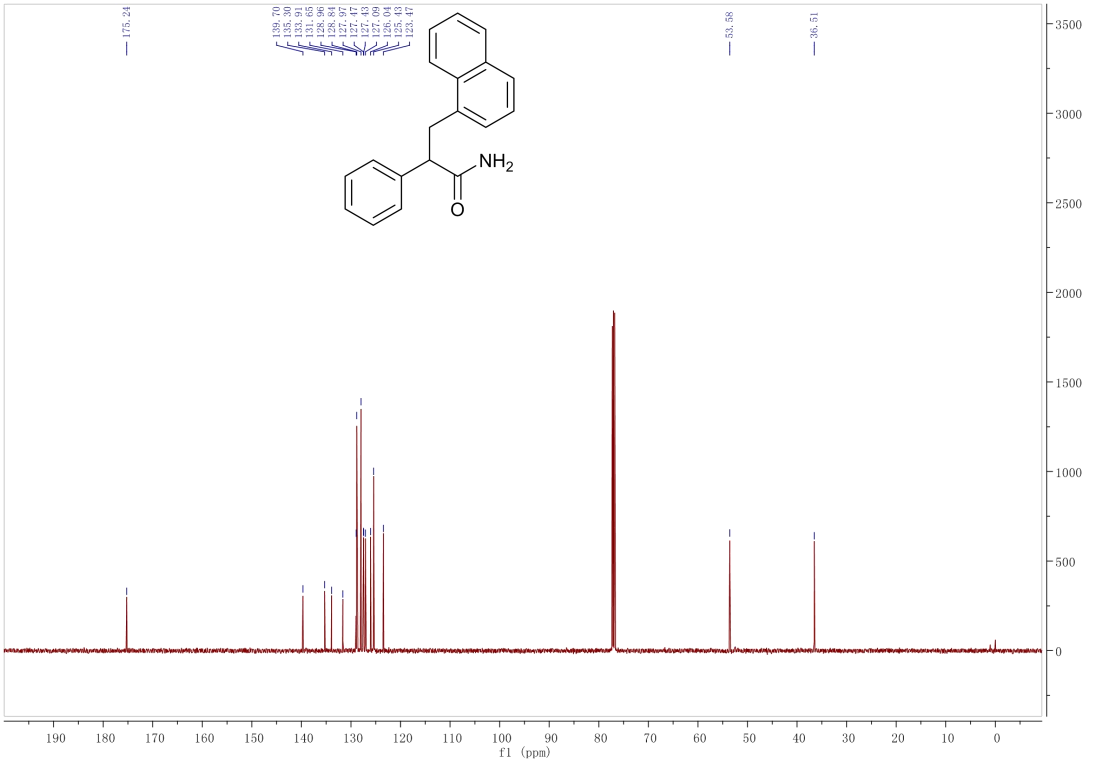
2,4-diphenylbutanamide (**4ap**)



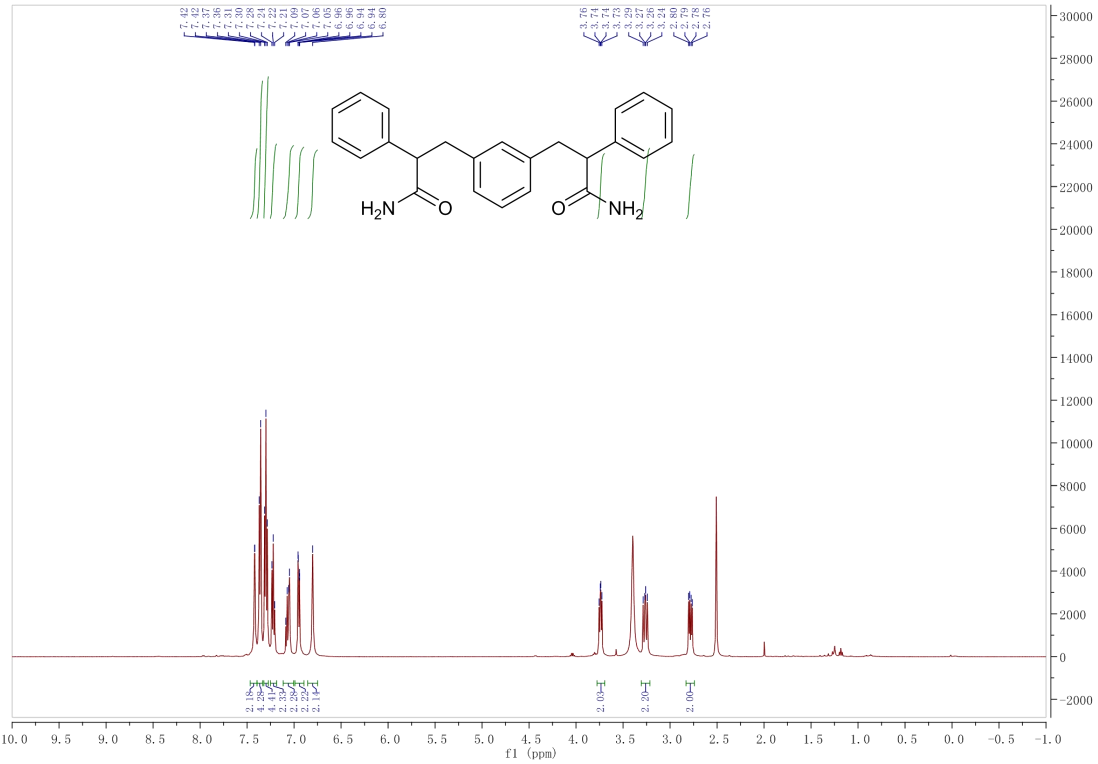


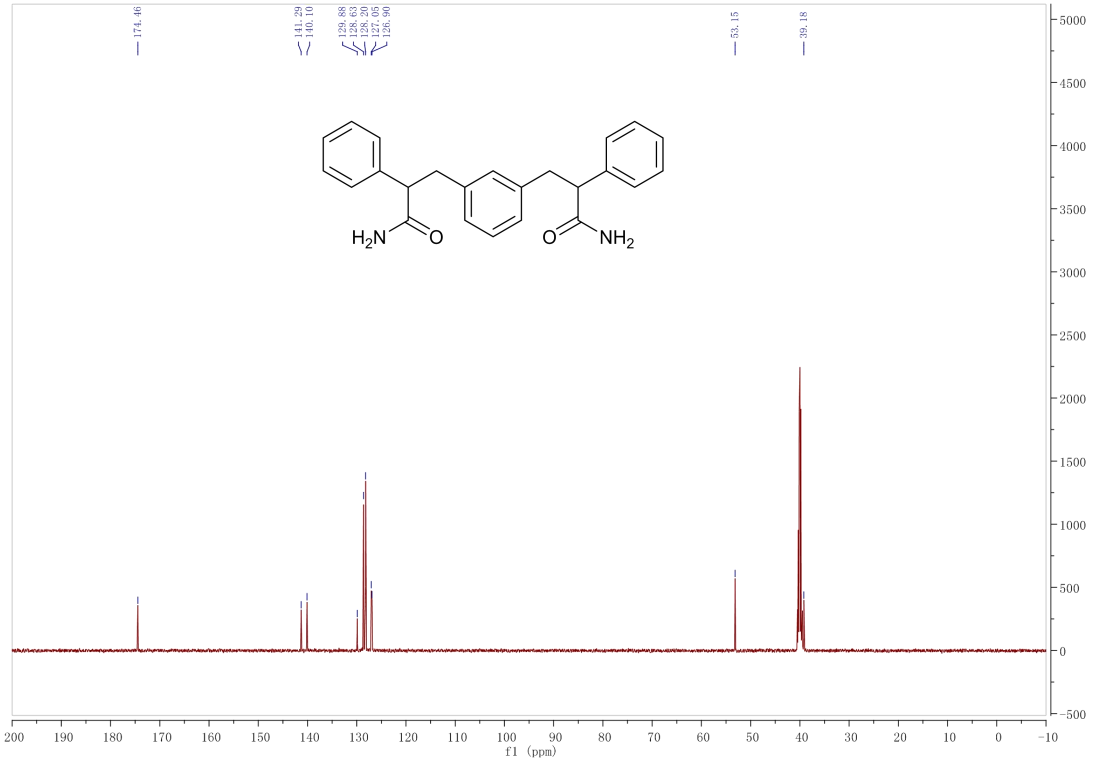
3-(naphthalen-1-yl)-2-phenylpropanamide (**4aq**)



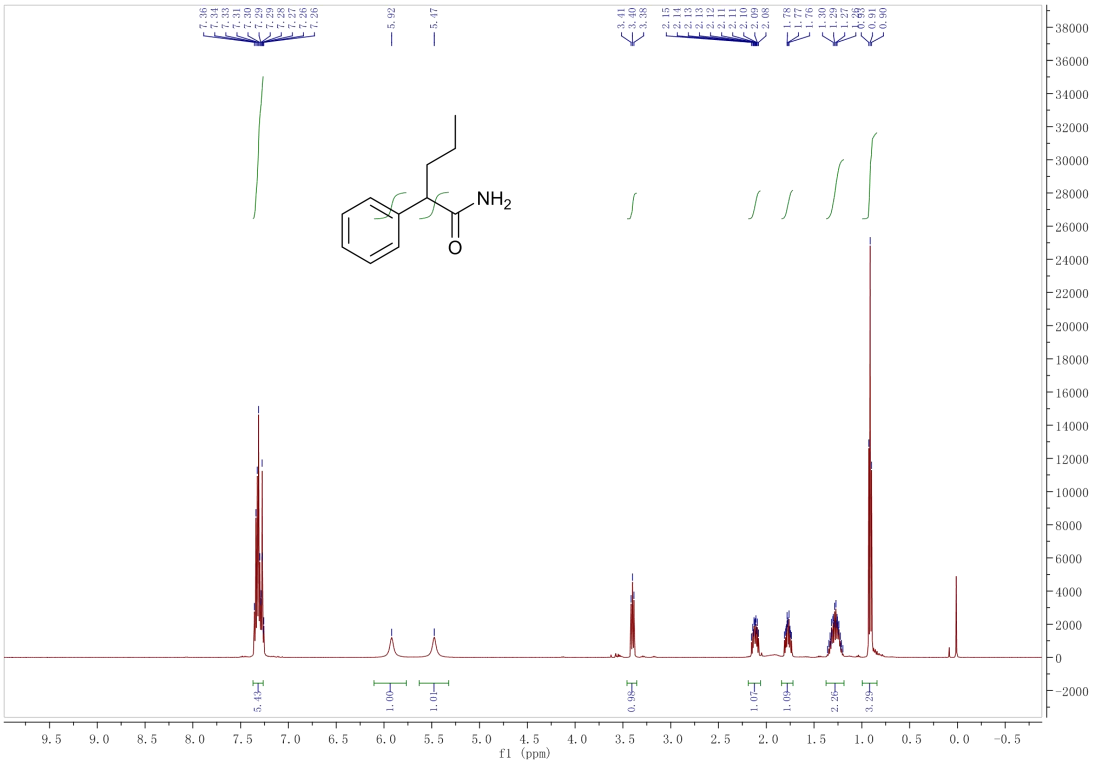


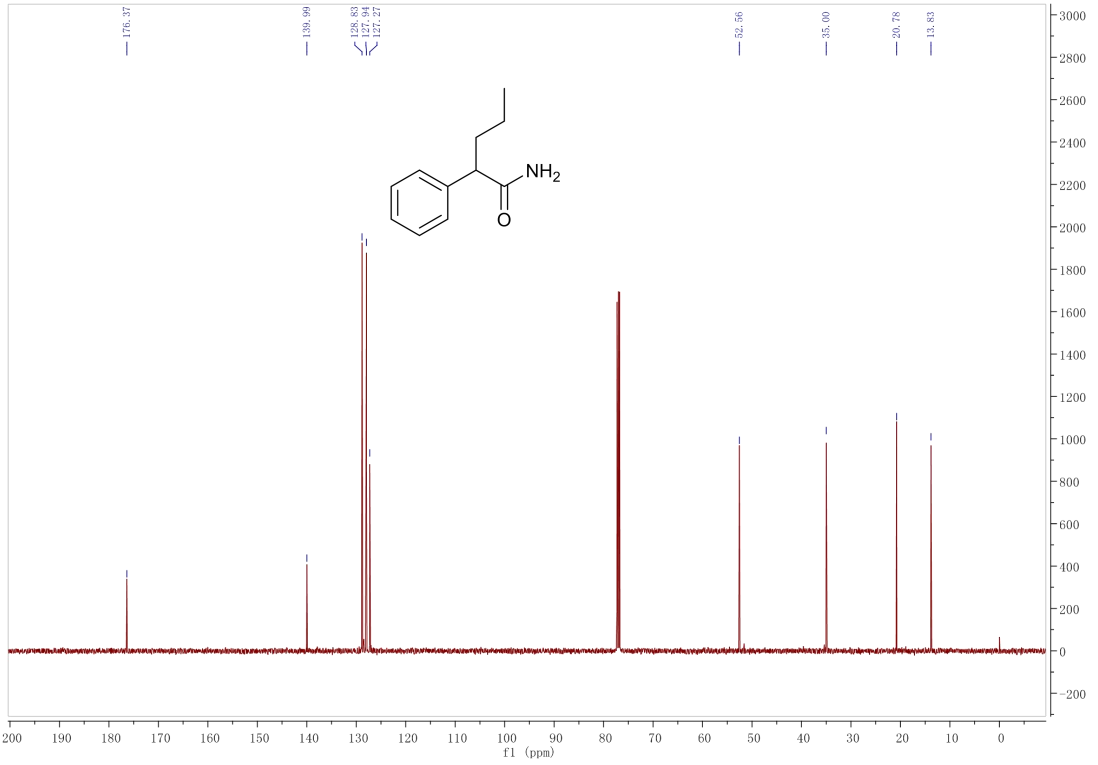
3,3'-(1,3-phenylene)bis(2-phenylpropanamide) (**4ar**)



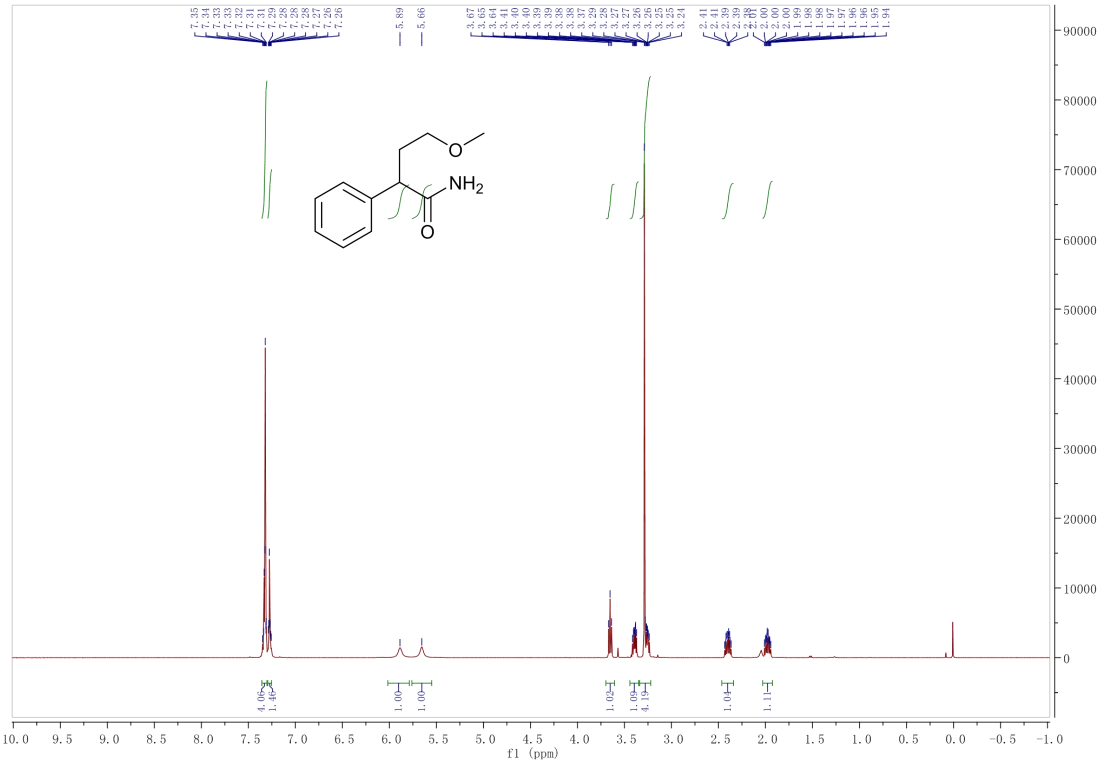


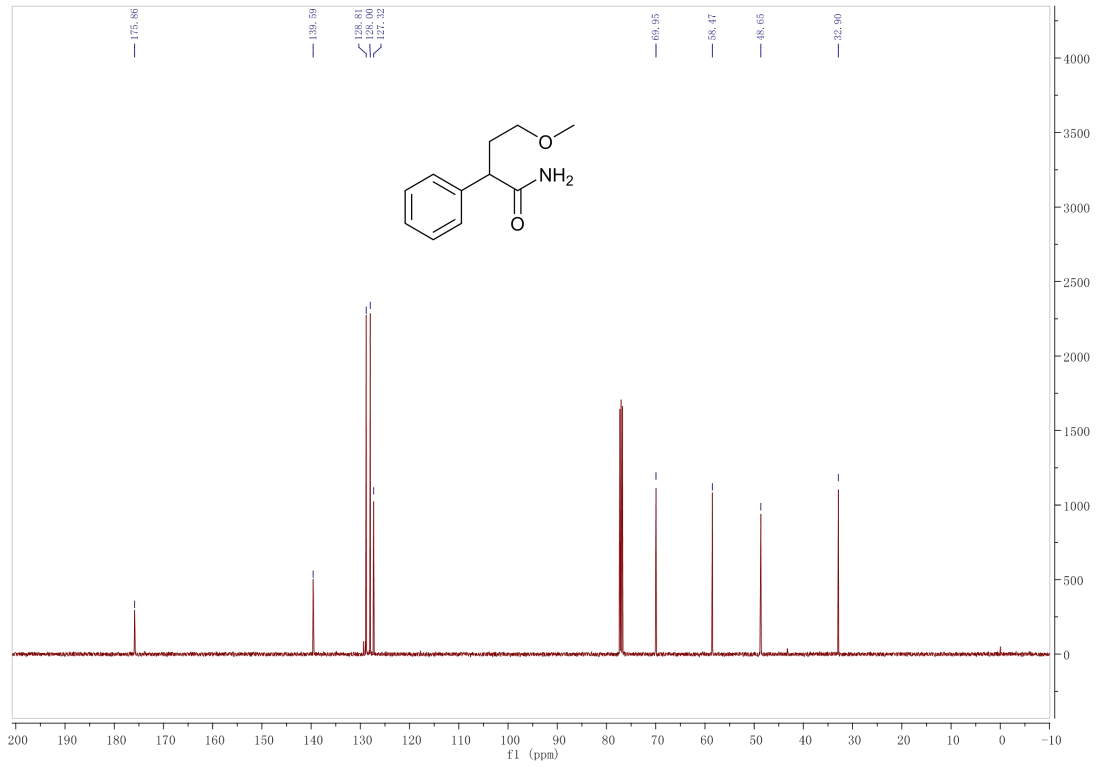
2-phenylpentanamide (**4as**)



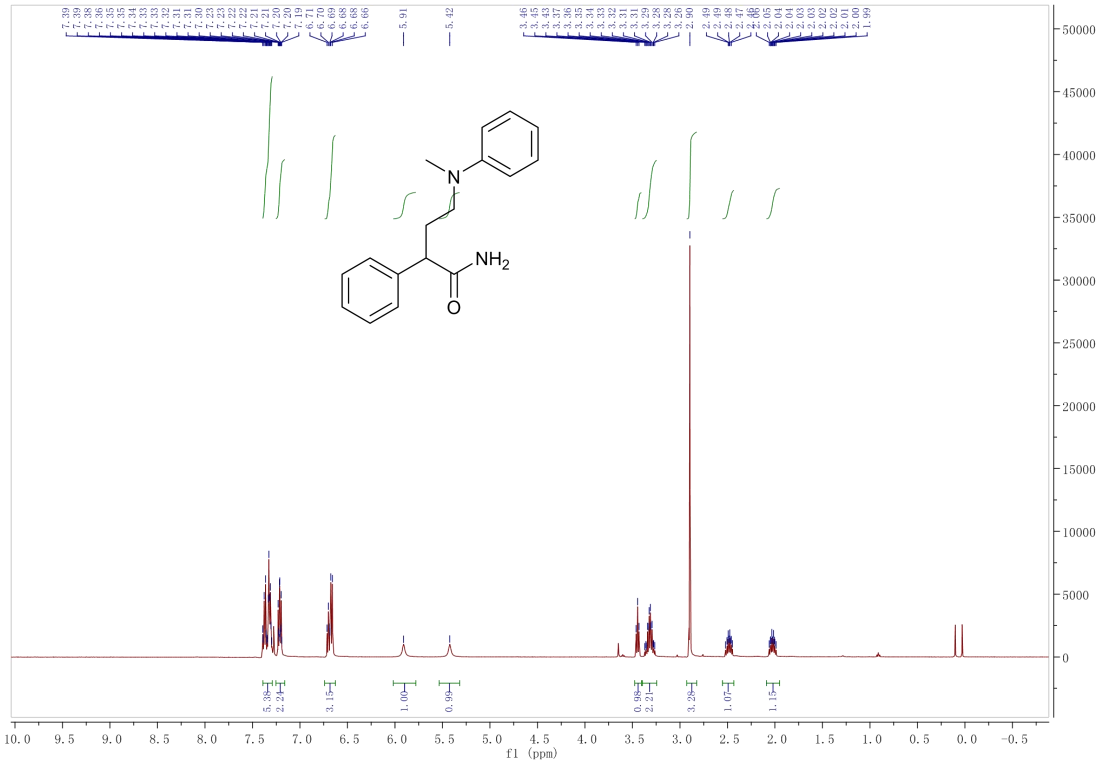


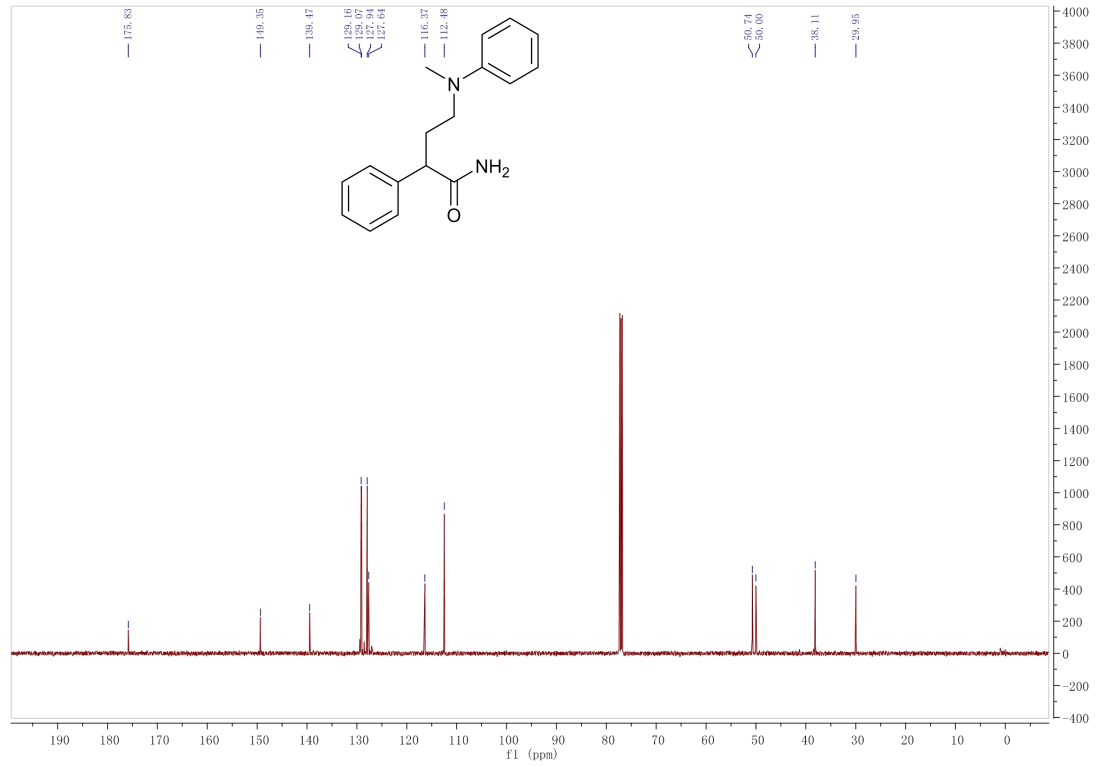
4-methoxy-2-phenylbutanamide (**4at**)



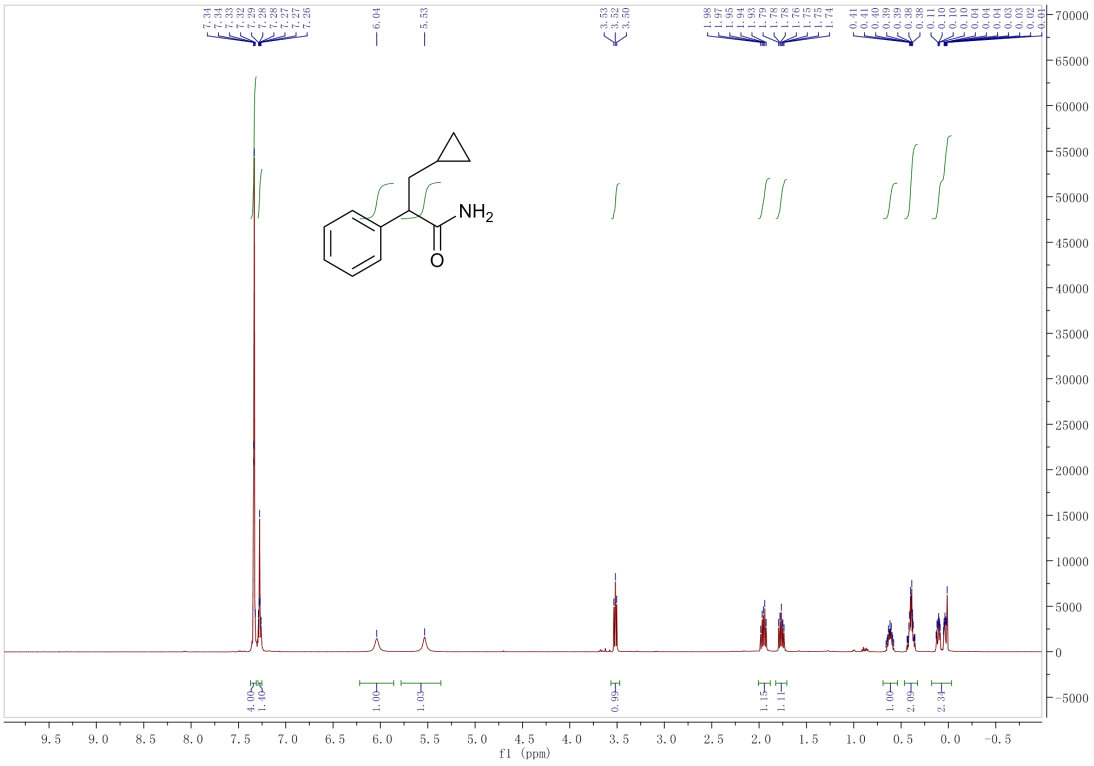


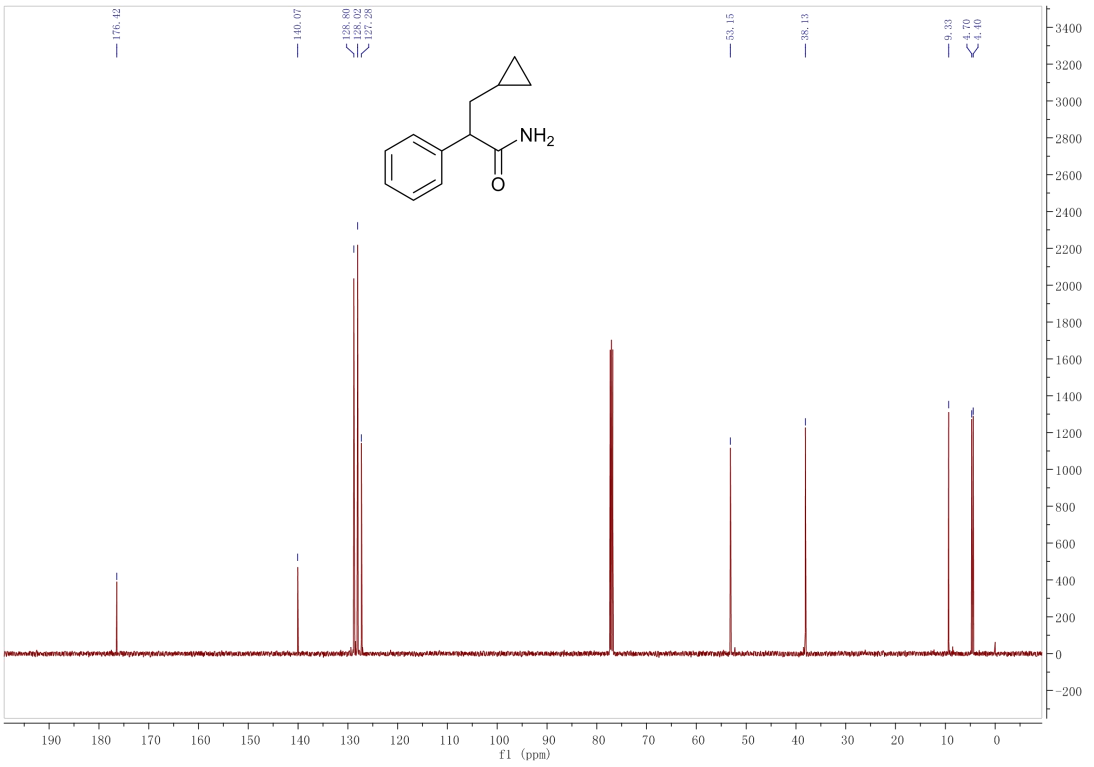
4-(methyl(phenyl)amino)-2-phenylbutanamide (**4au**)



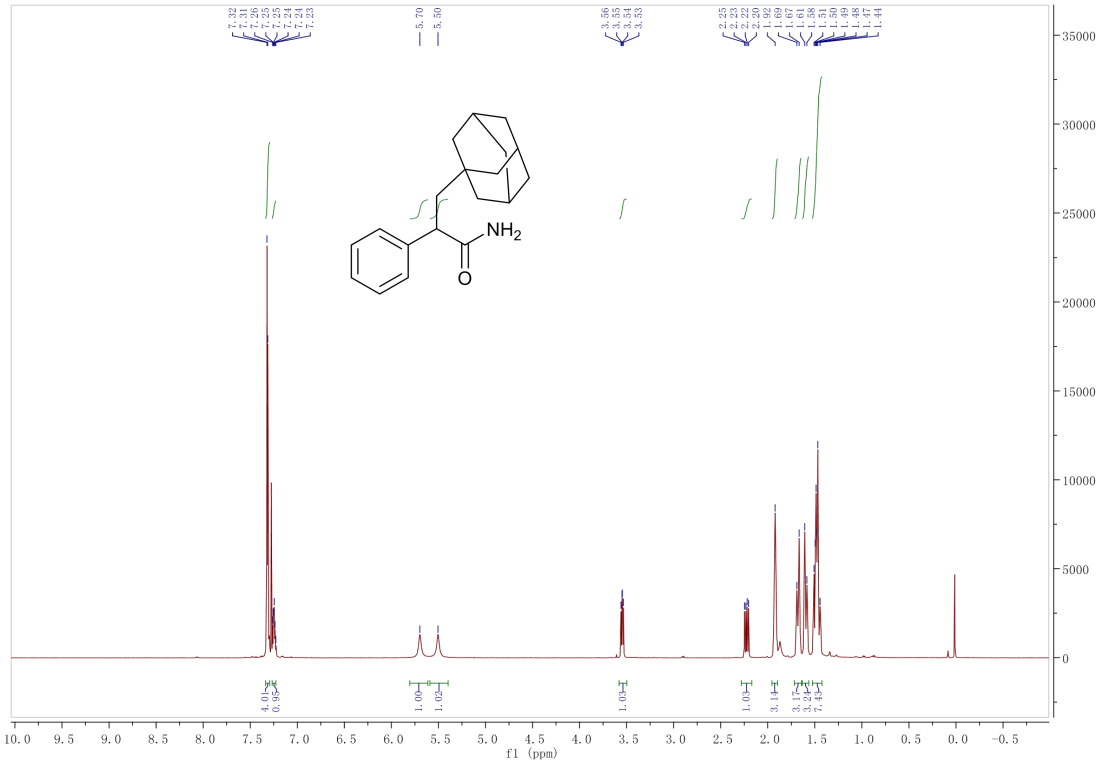


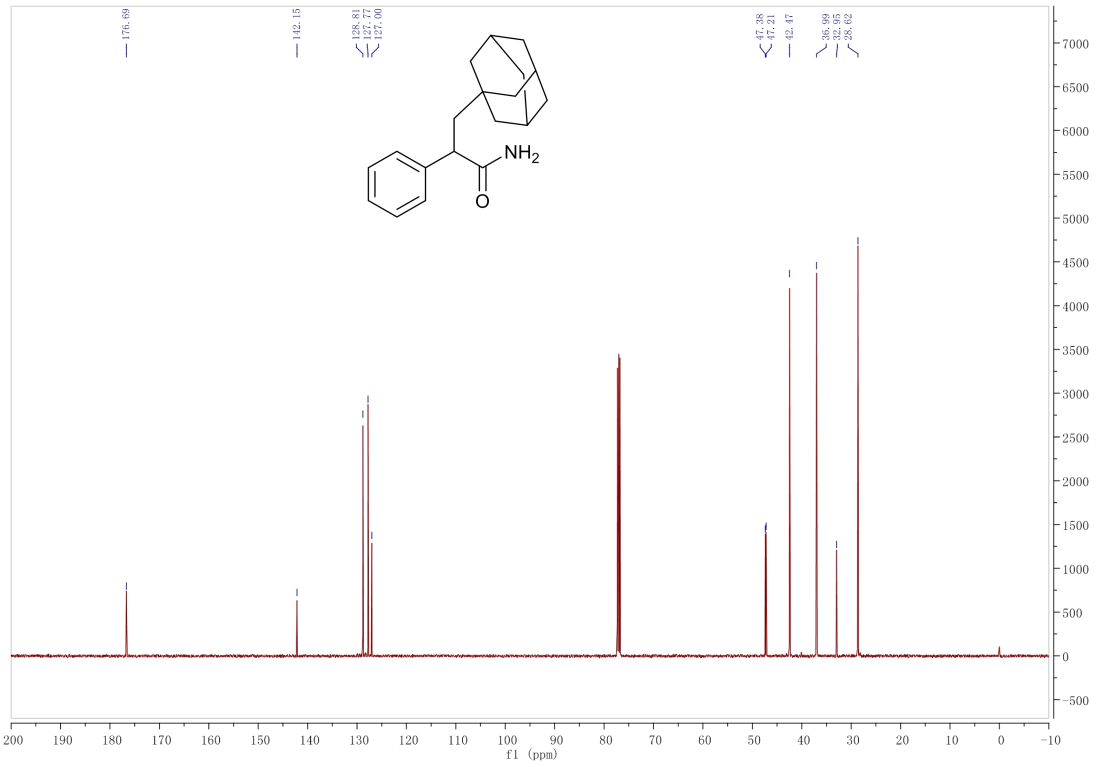
3-cyclopropyl-2-phenylpropanamide (**4av**)



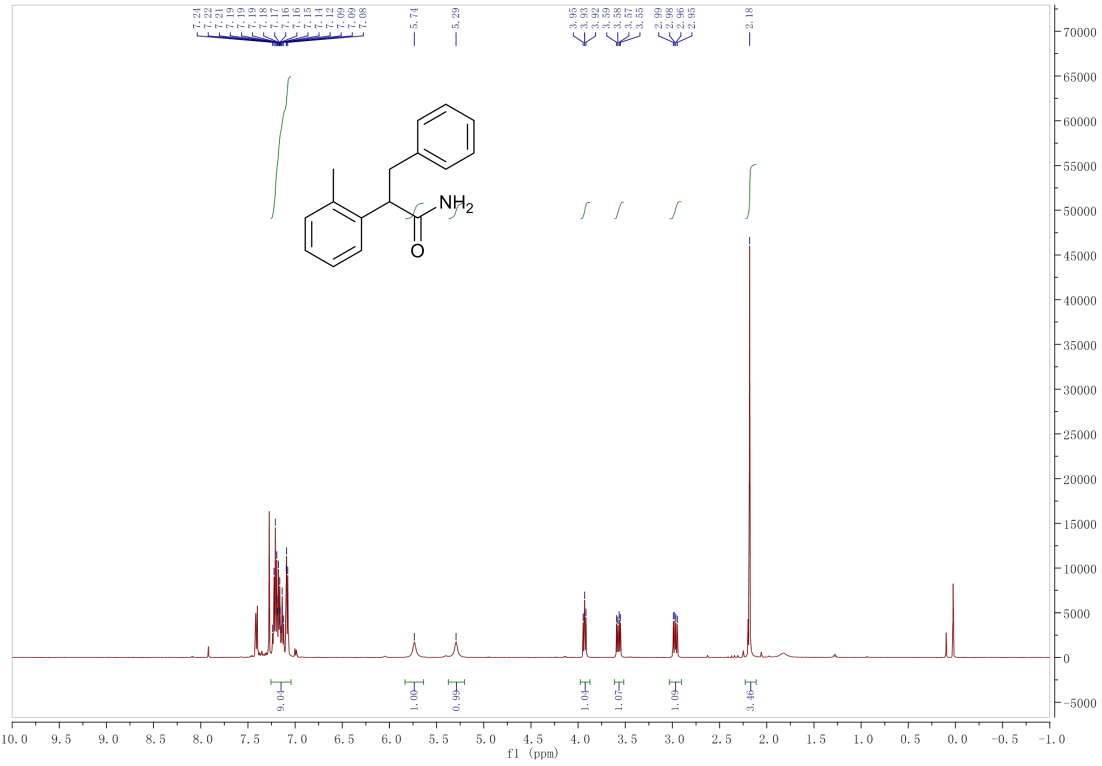


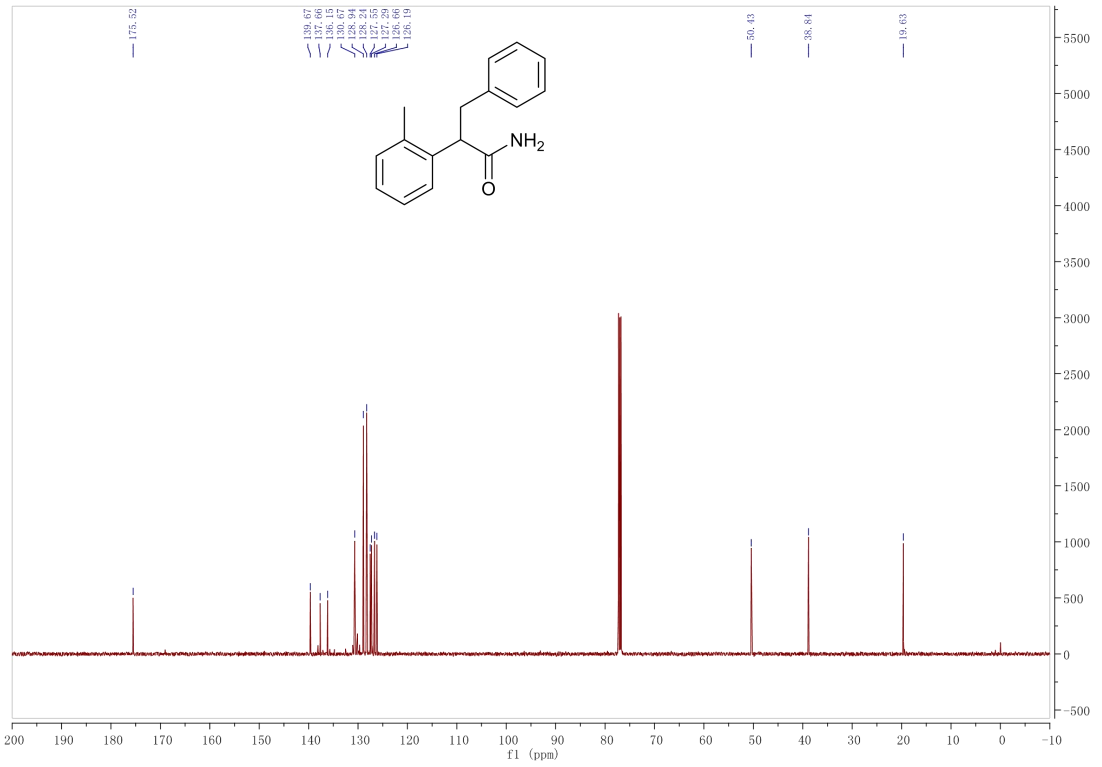
3-(adamantan-1-yl)-2-phenylpropanamide (**4aw**)



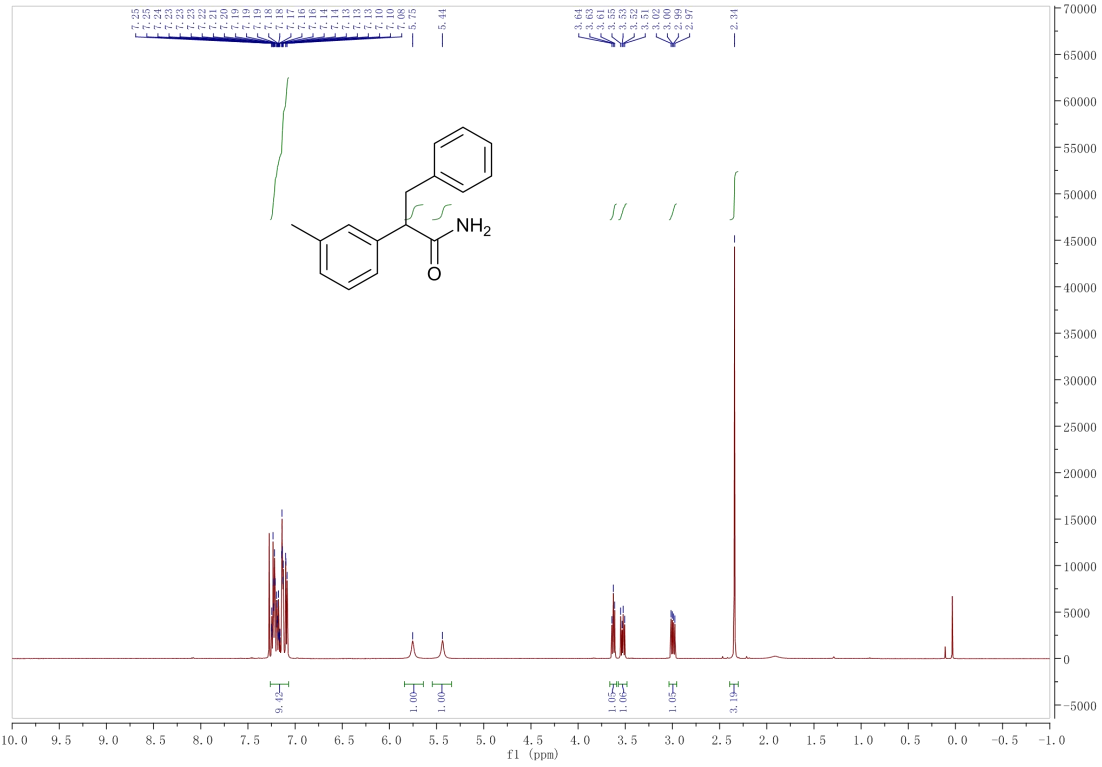


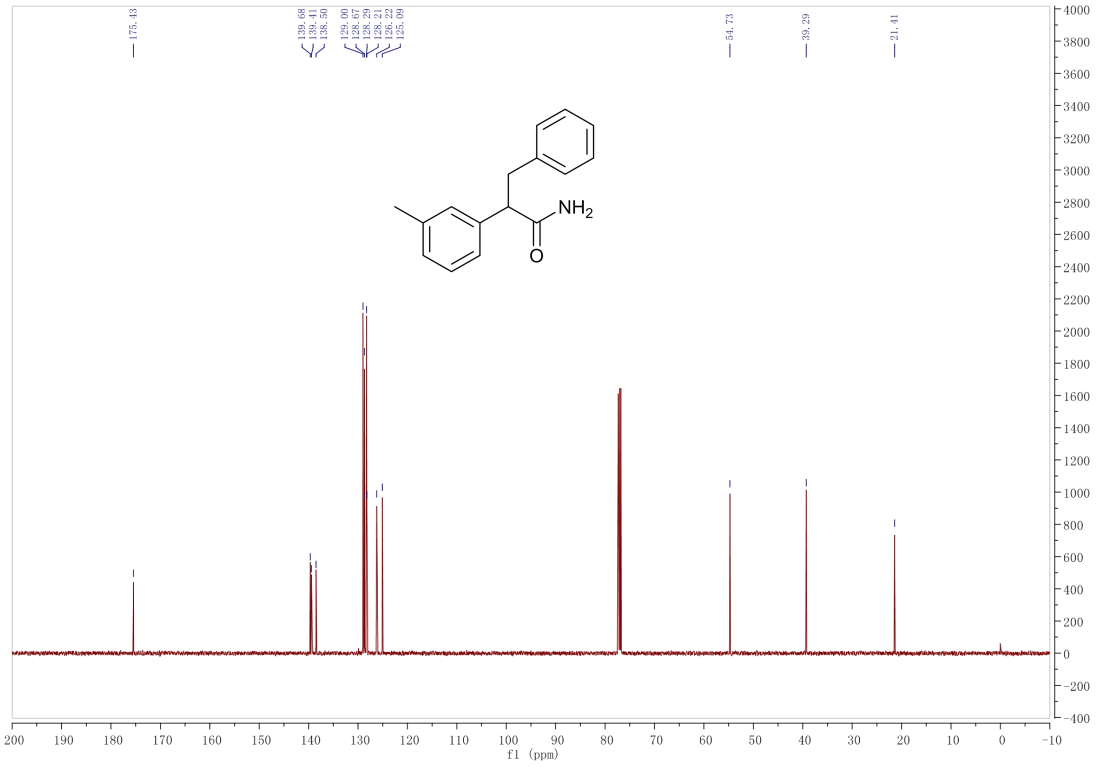
3-phenyl-2-(o-tolyl)propenamide (**4ba**)



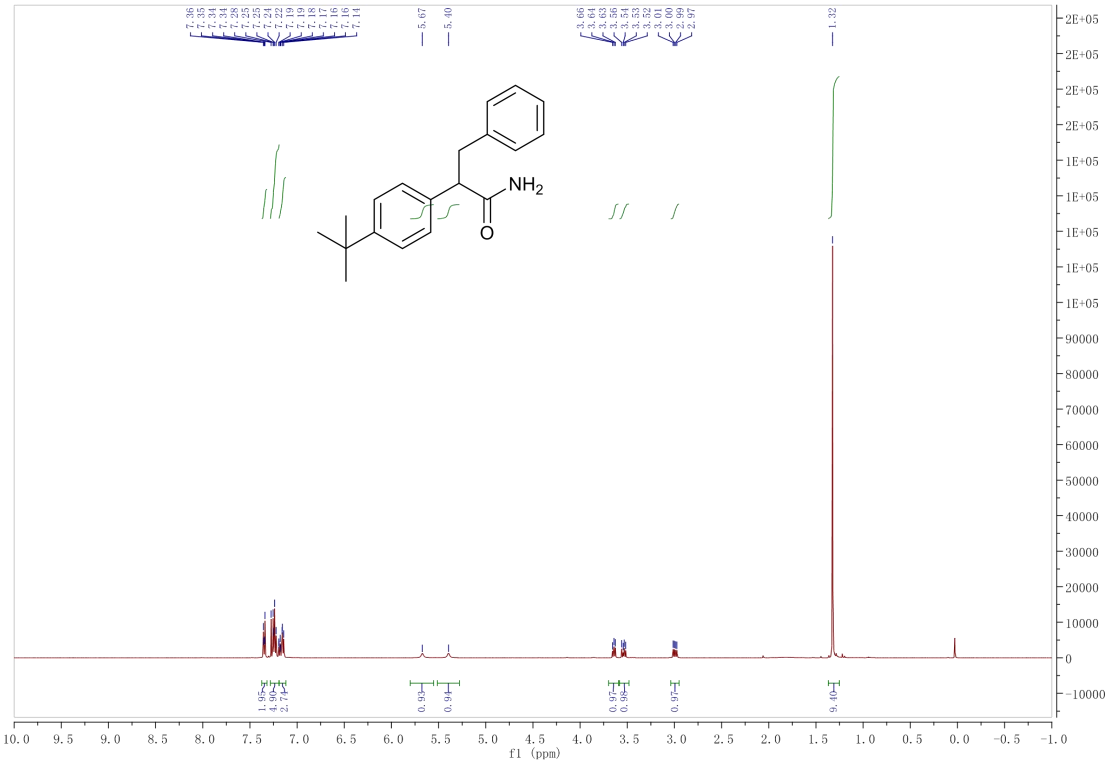


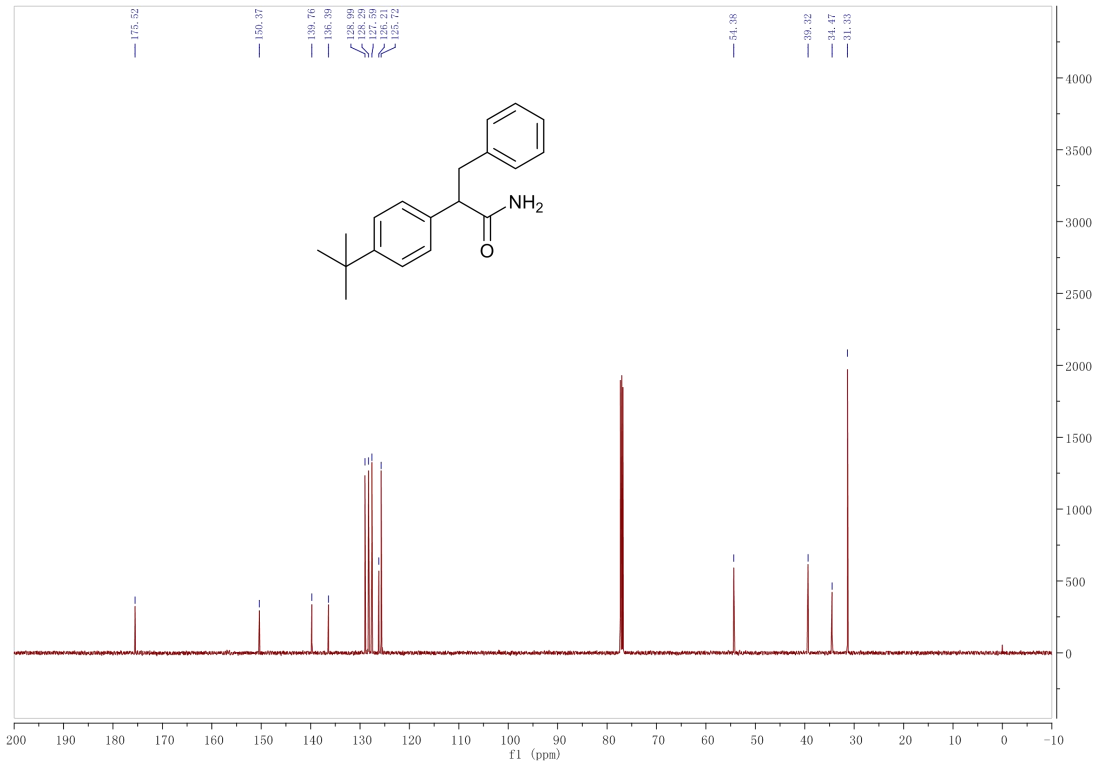
3-phenyl-2-(m-tolyl)propenamide (**4bb**)



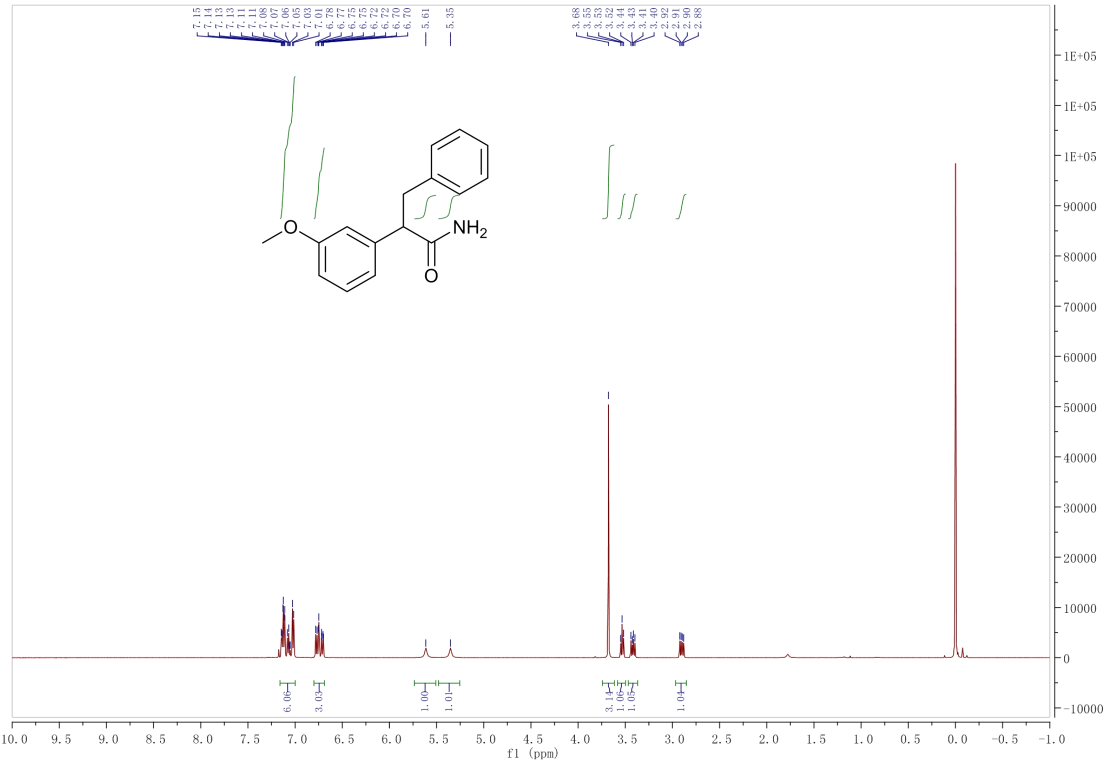


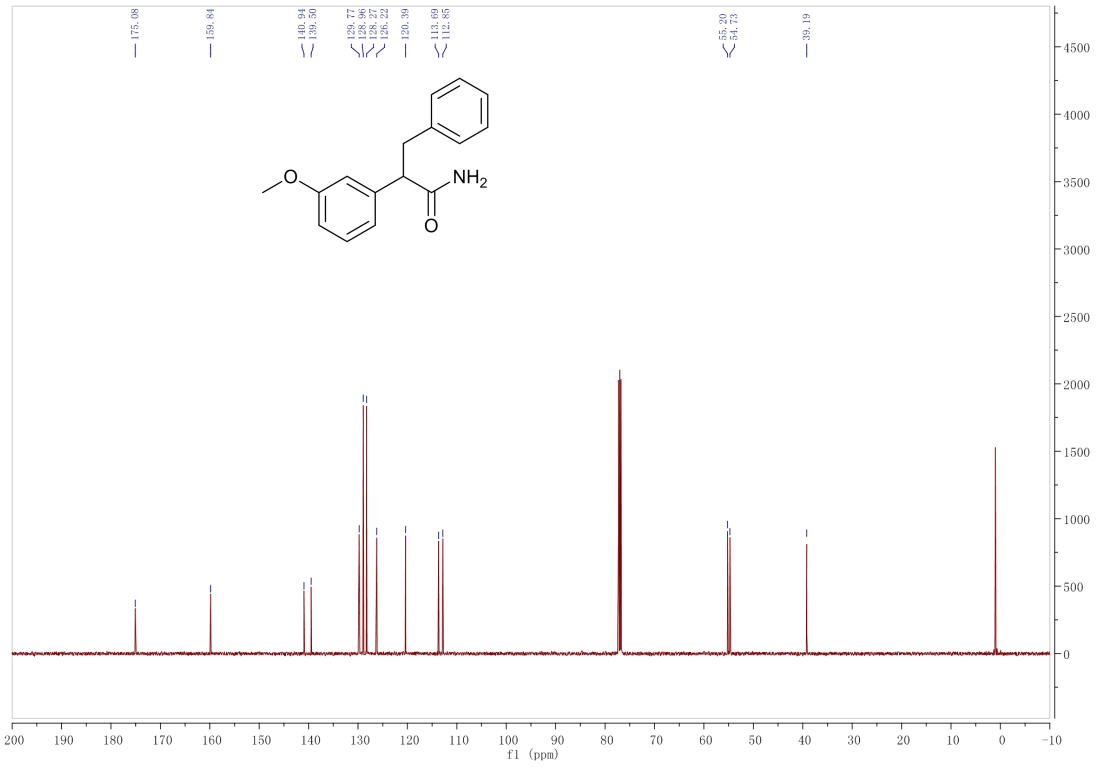
2-(4-(tert-butyl)phenyl)-3-phenylpropanamide (**4bc**)



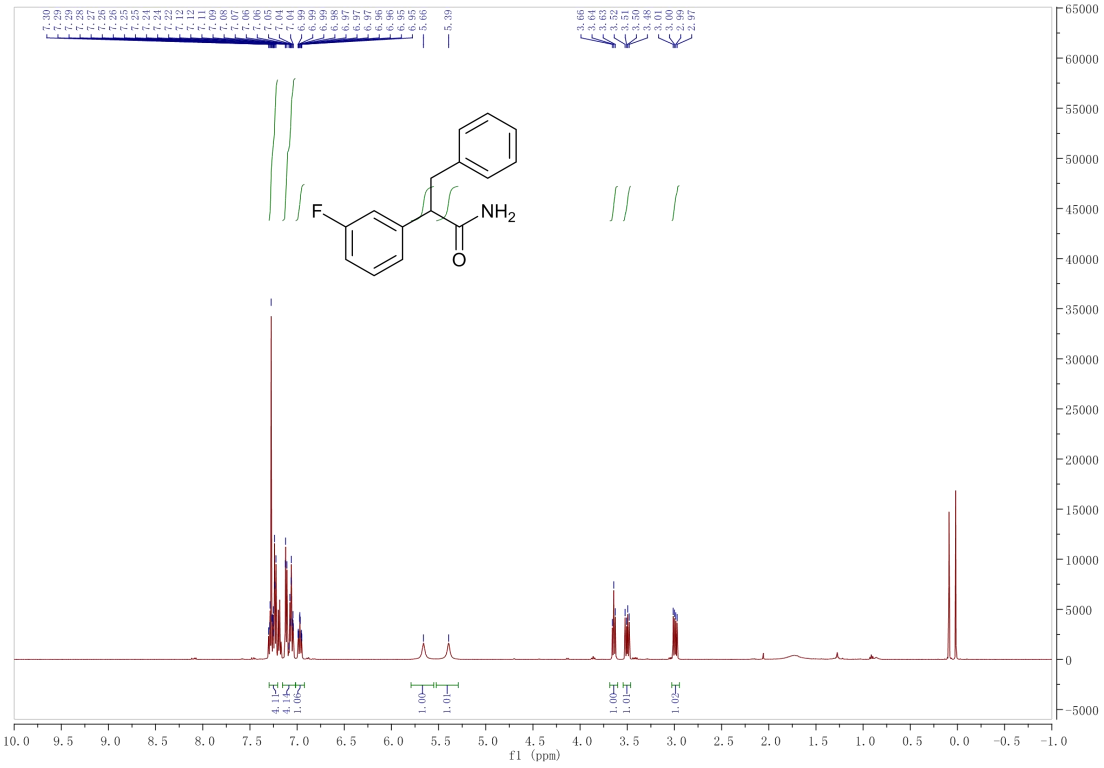


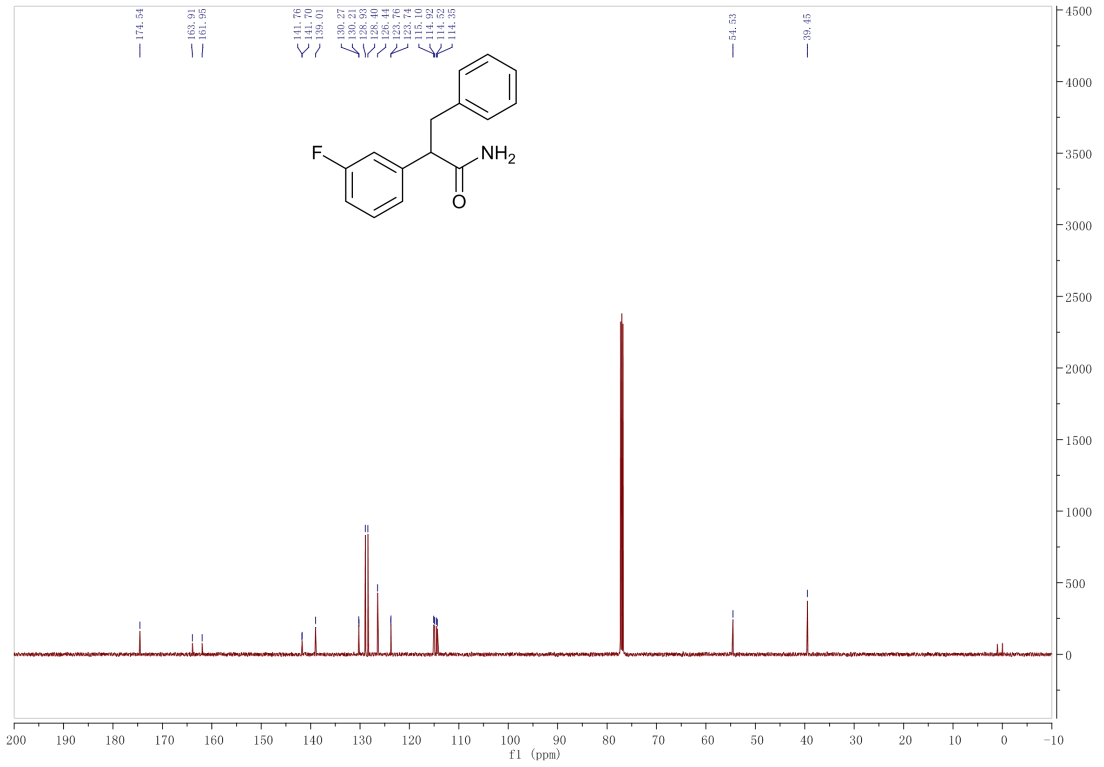
2-(3-methoxyphenyl)-3-phenylpropanamide (**4bd**)



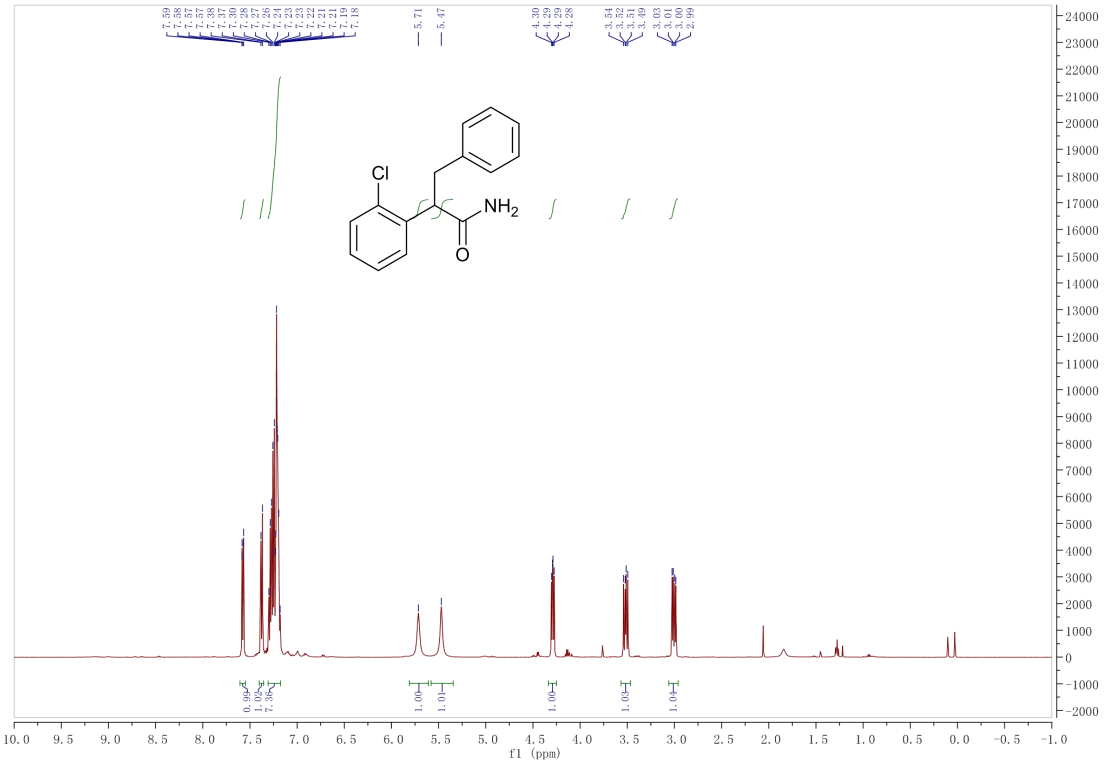


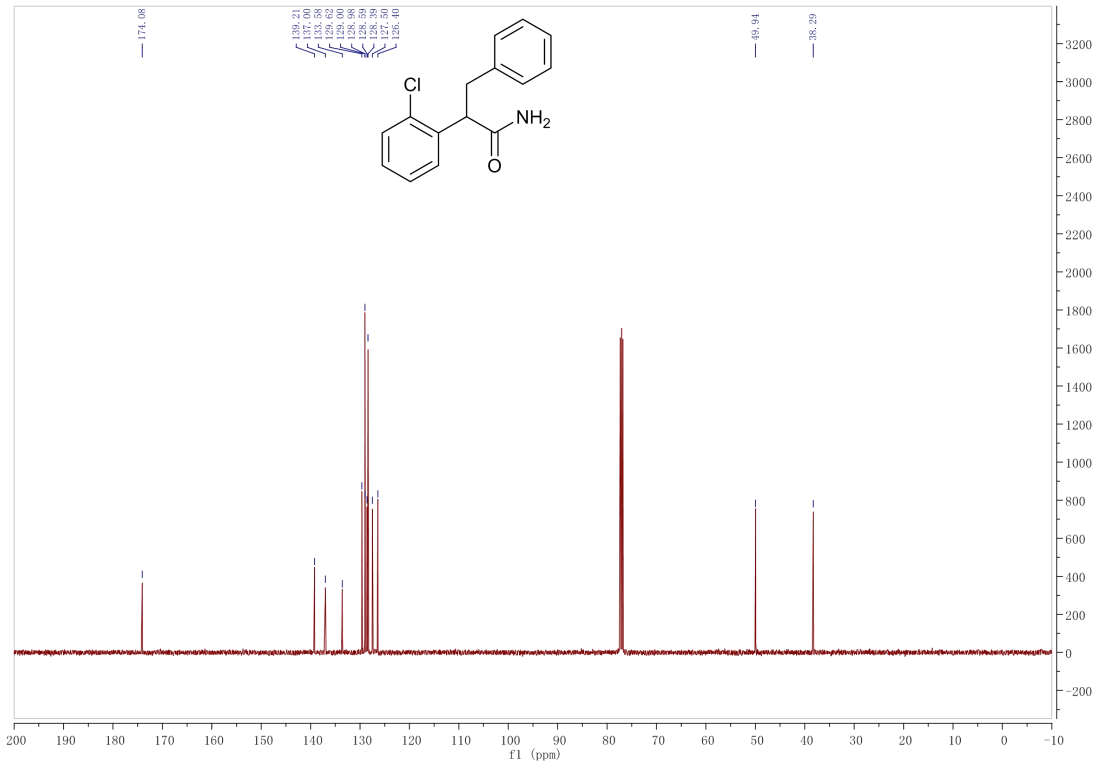
2-(3-fluorophenyl)-3-phenylpropanamide (**4be**)



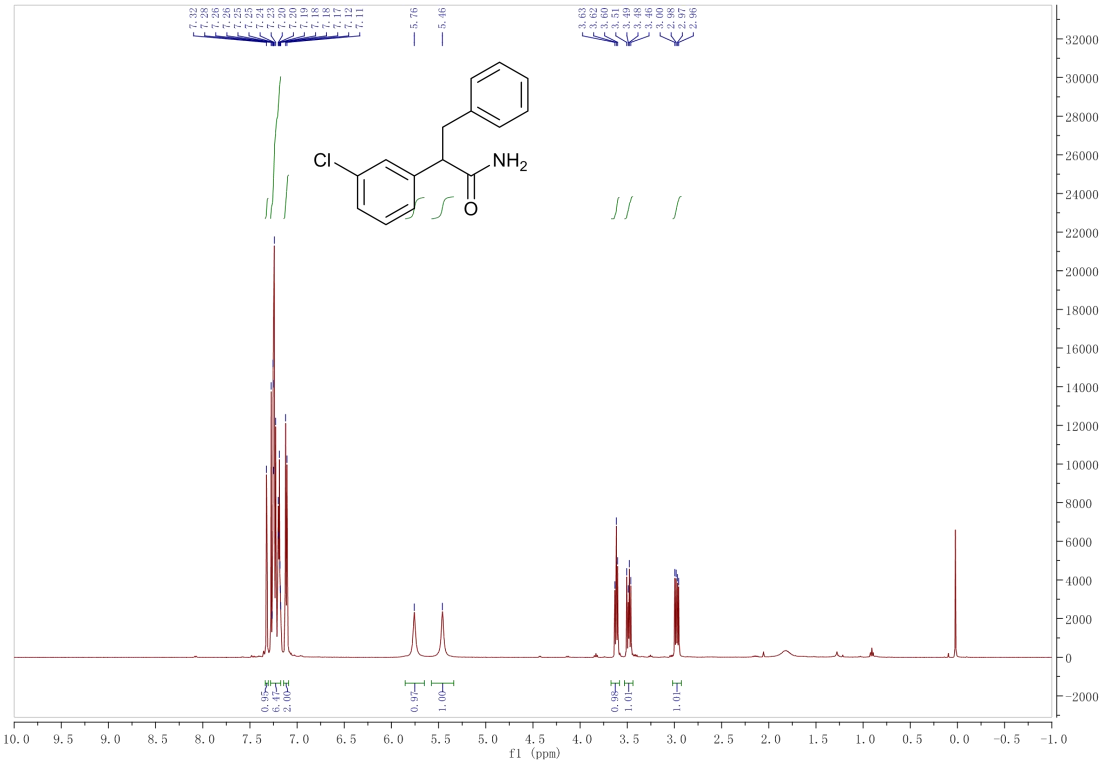


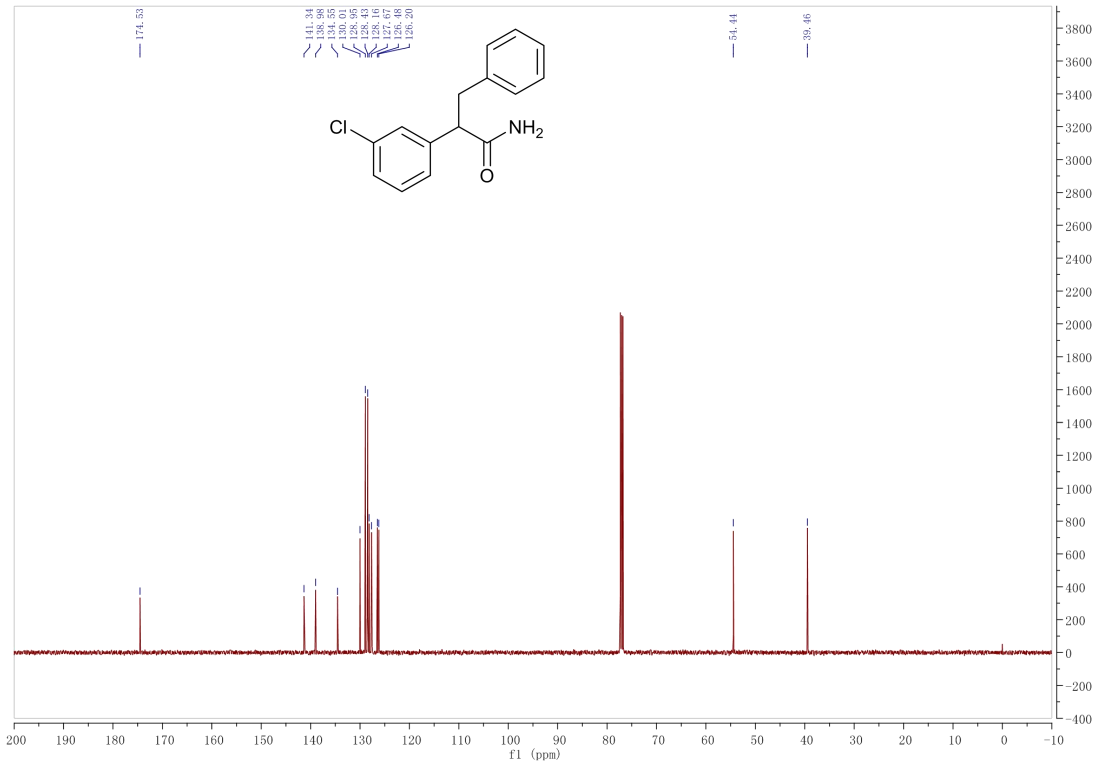
2-(2-chlorophenyl)-3-phenylpropanamide (**4bf**)



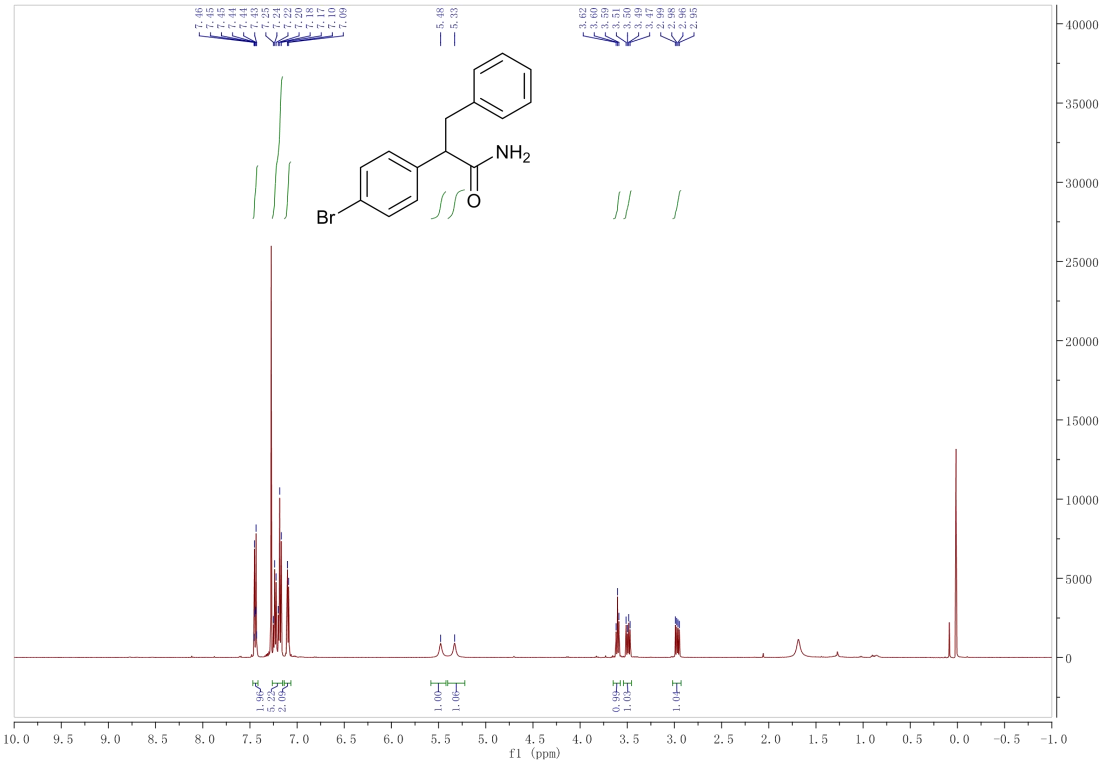


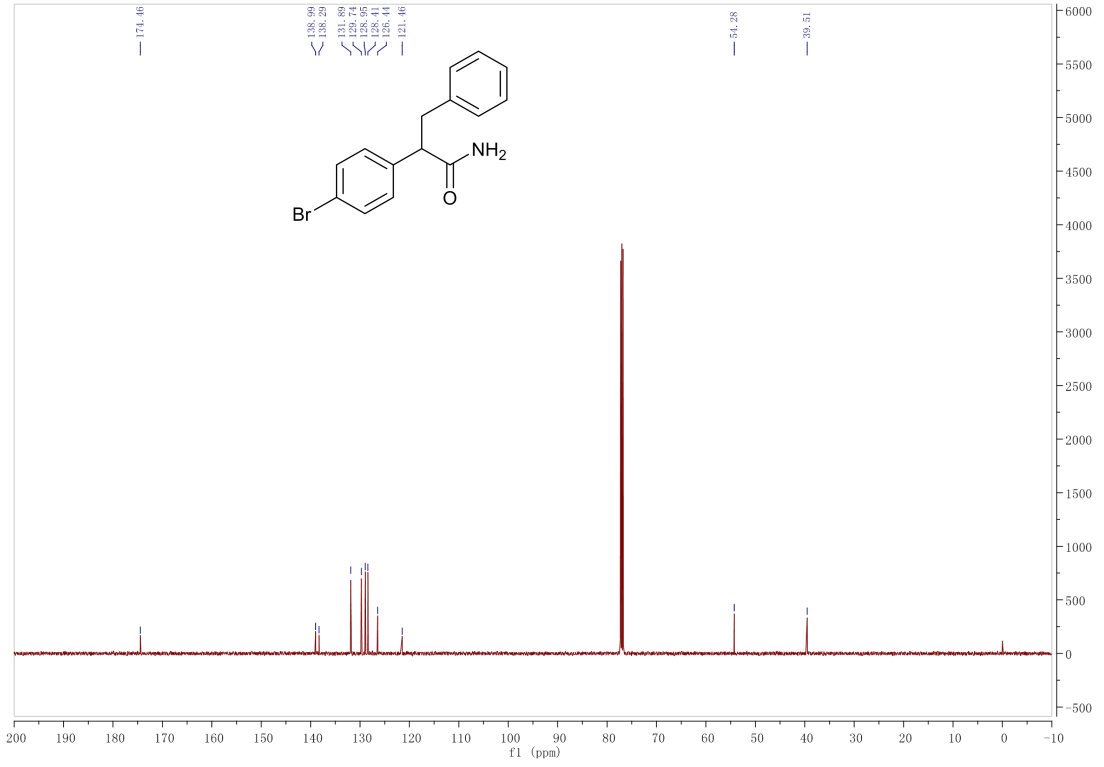
2-(3-chlorophenyl)-3-phenylpropanamide (**4bg**)



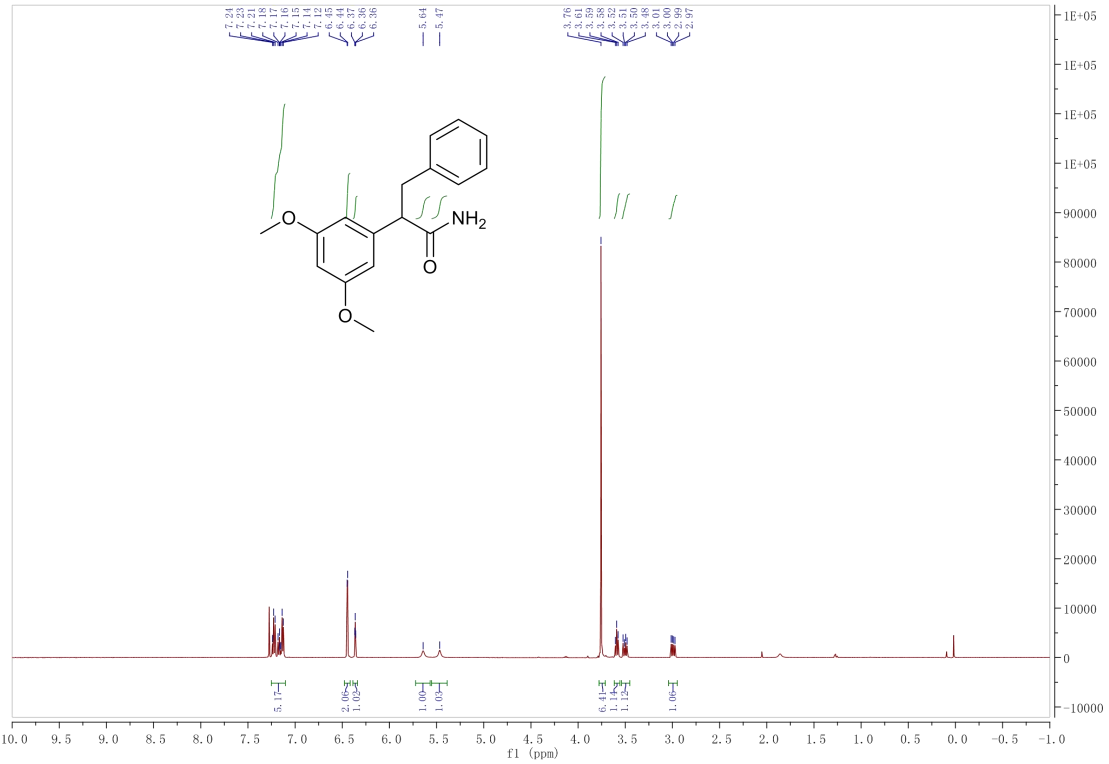


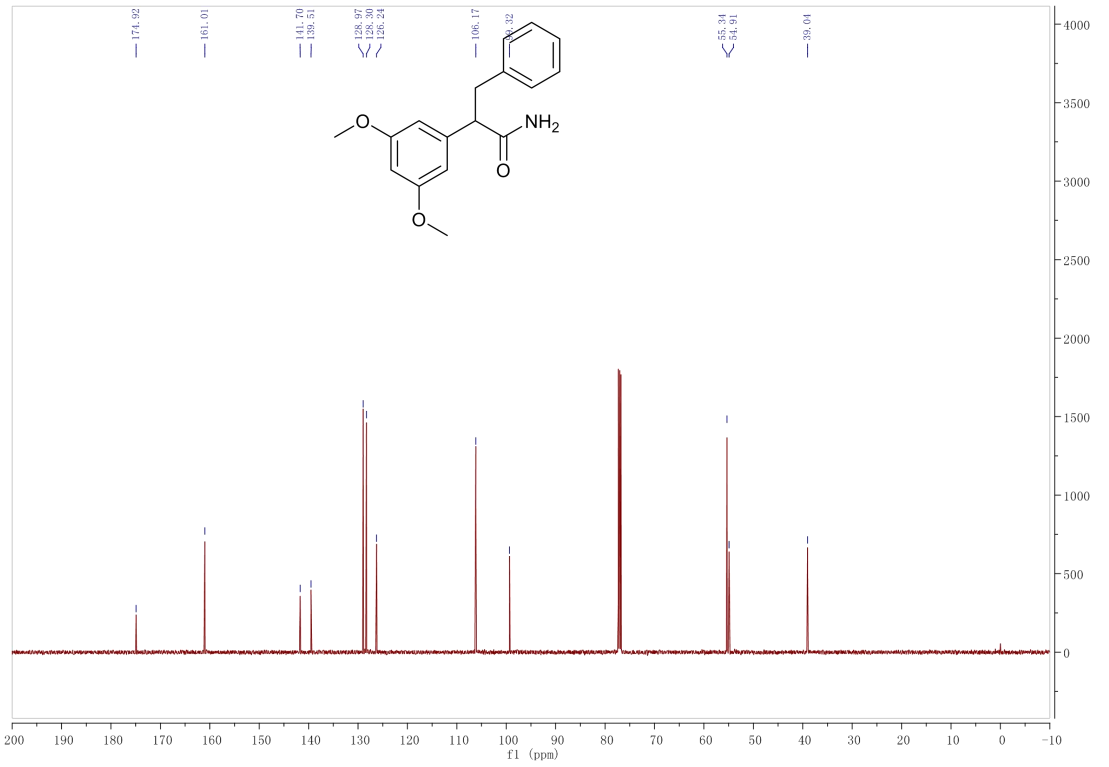
2-(4-bromophenyl)-3-phenylpropanamide (**4bh**)



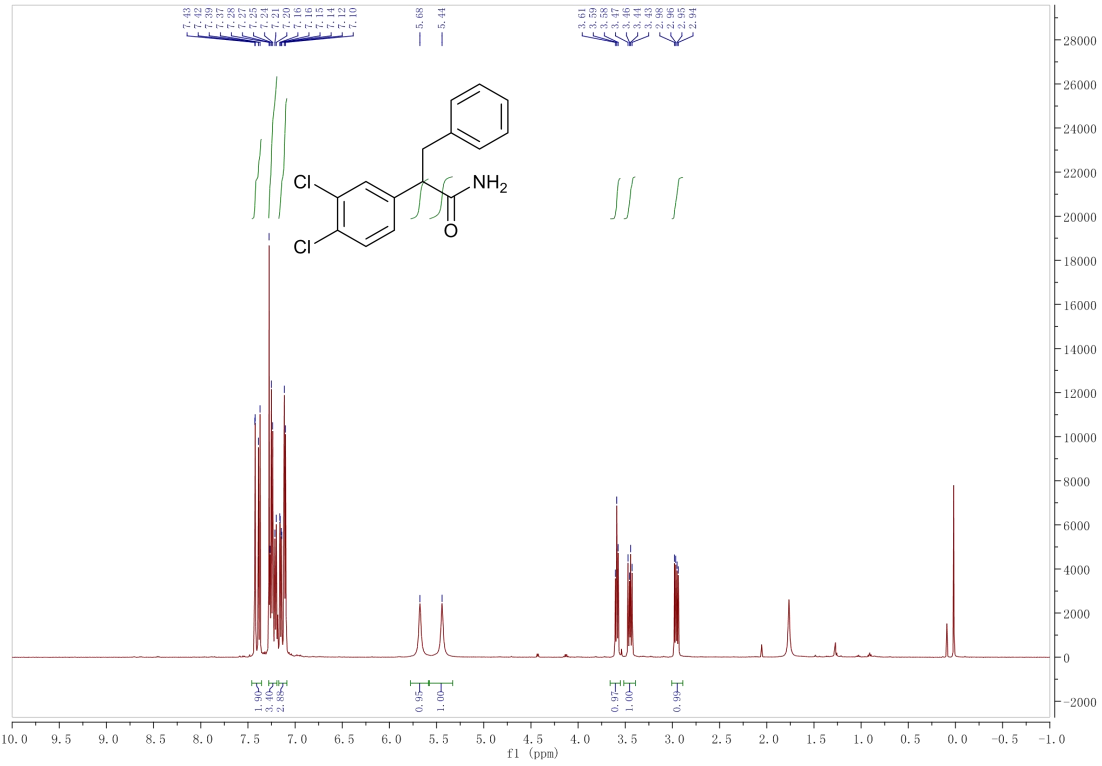


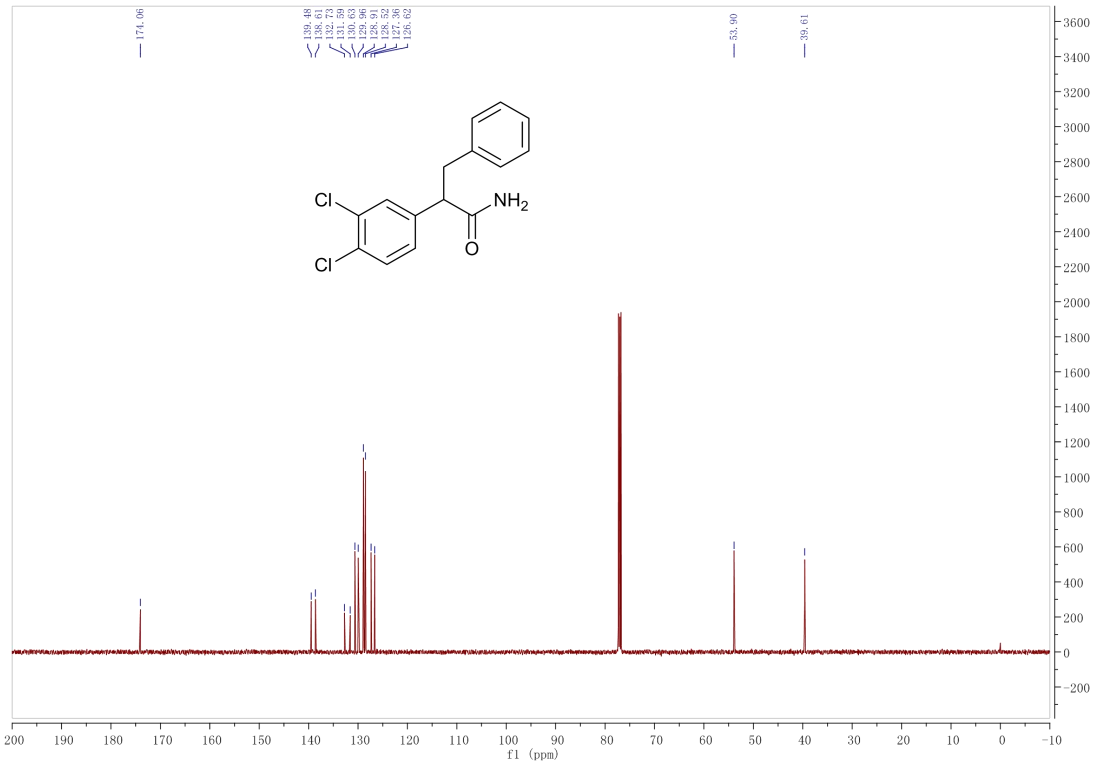
2-(3,5-dimethoxyphenyl)-3-phenylpropanamide (**4bi**)



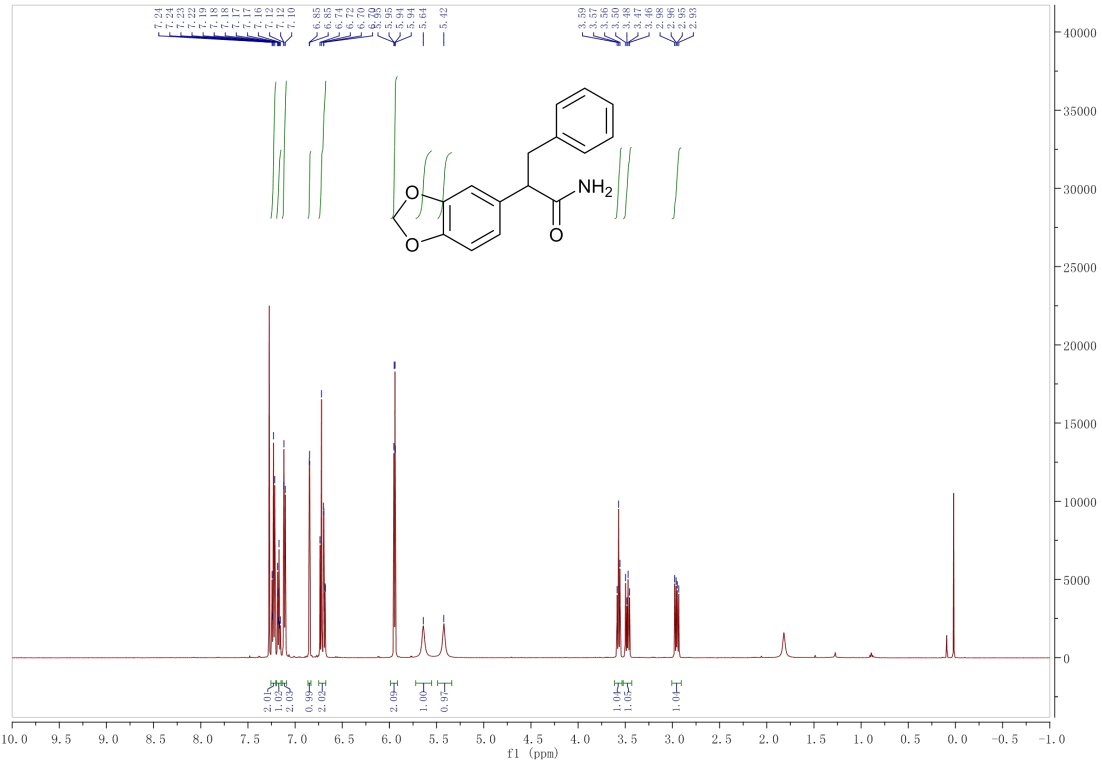


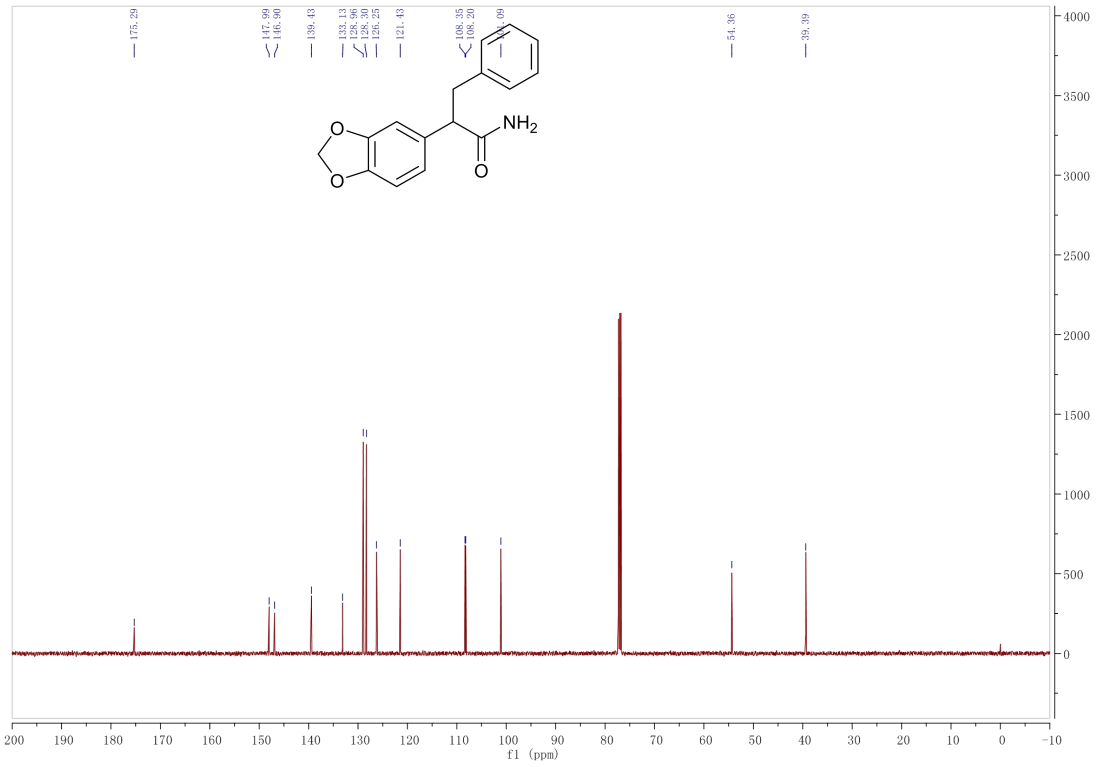
2-(3,4-dichlorophenyl)-3-phenylpropanamide (**4bj**)



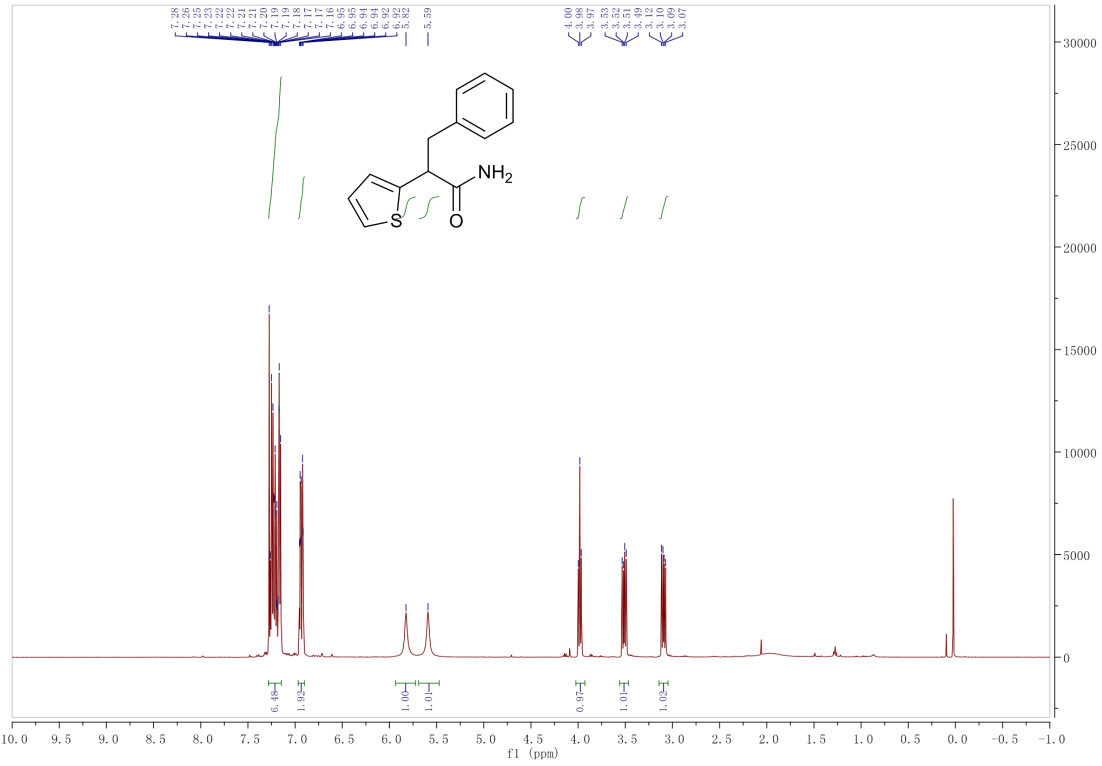


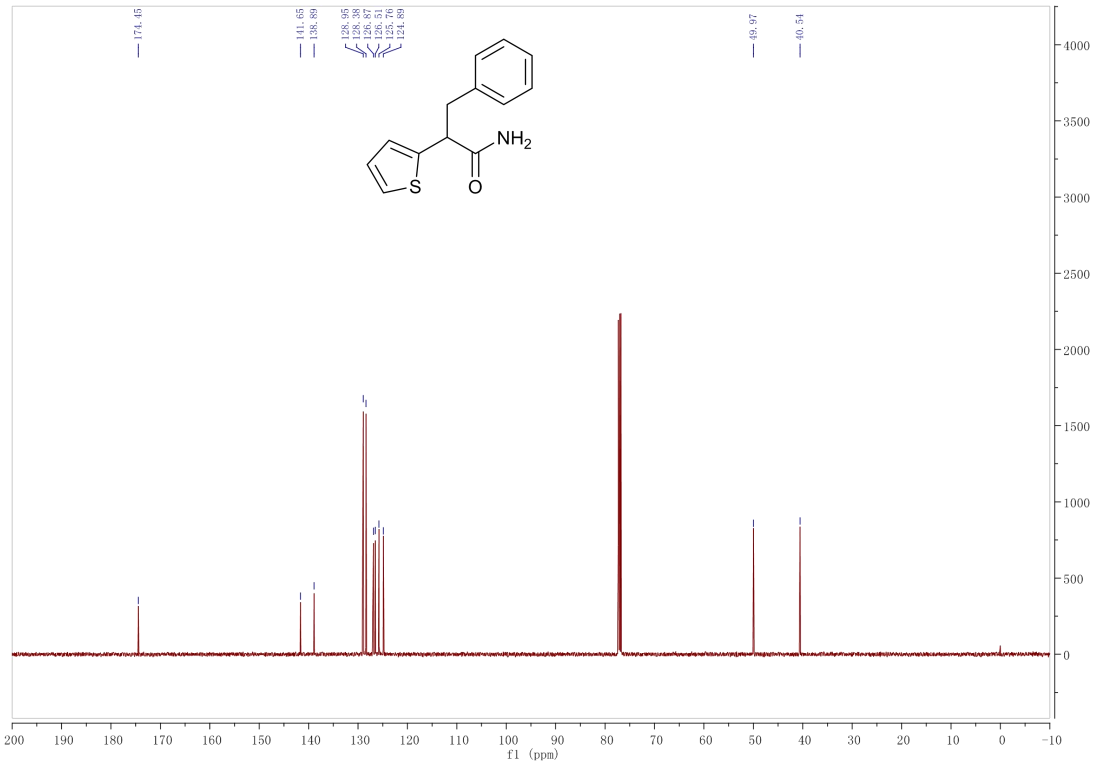
2-(benzo[d][1,3]dioxol-5-yl)-3-phenylpropanamide (**4bk**)



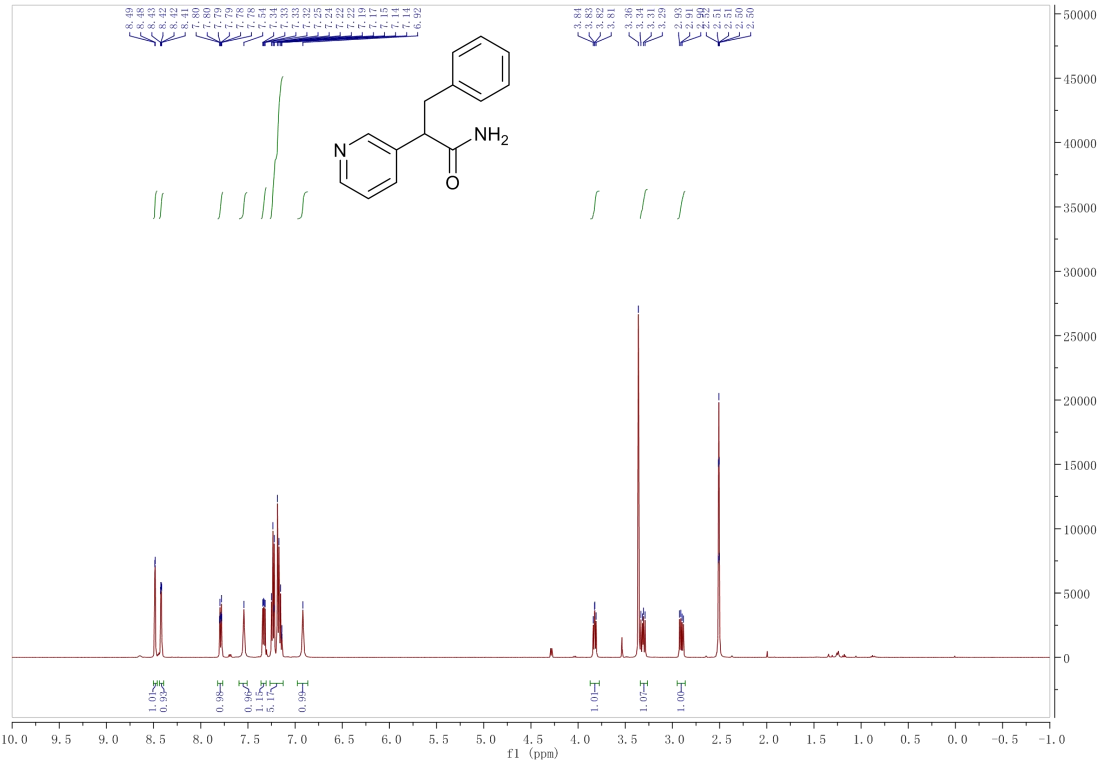


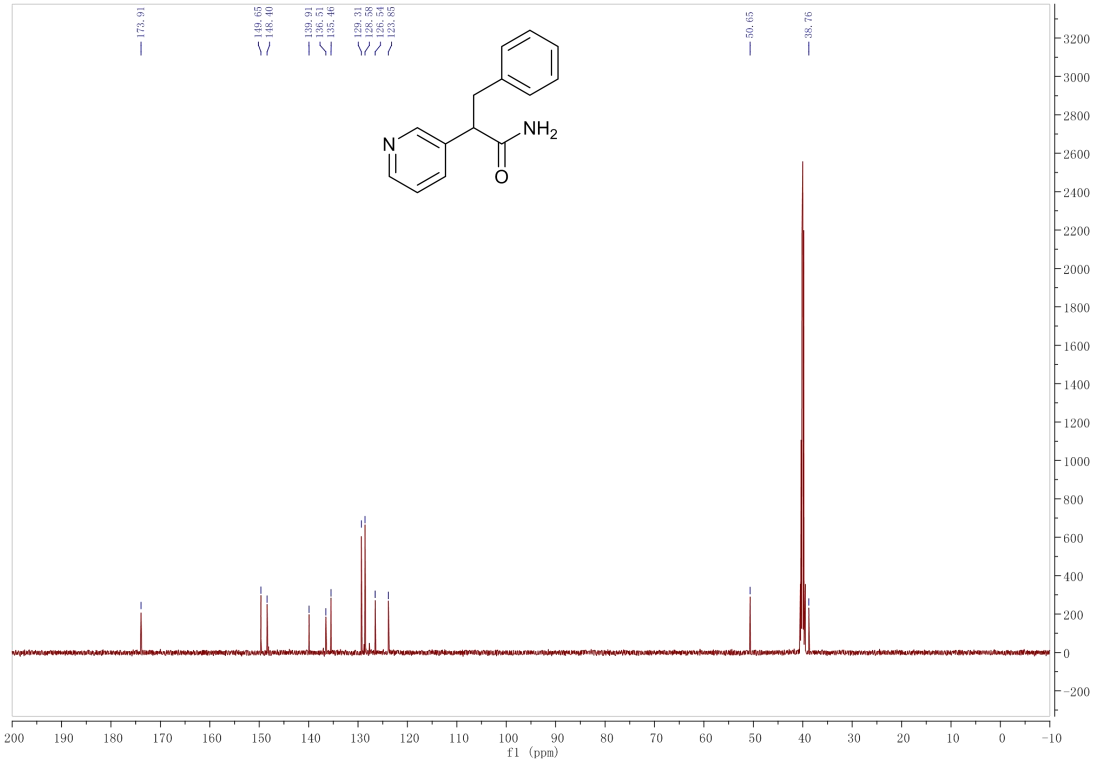
3-phenyl-2-(thiophen-2-yl)propenamide (**4bl**)



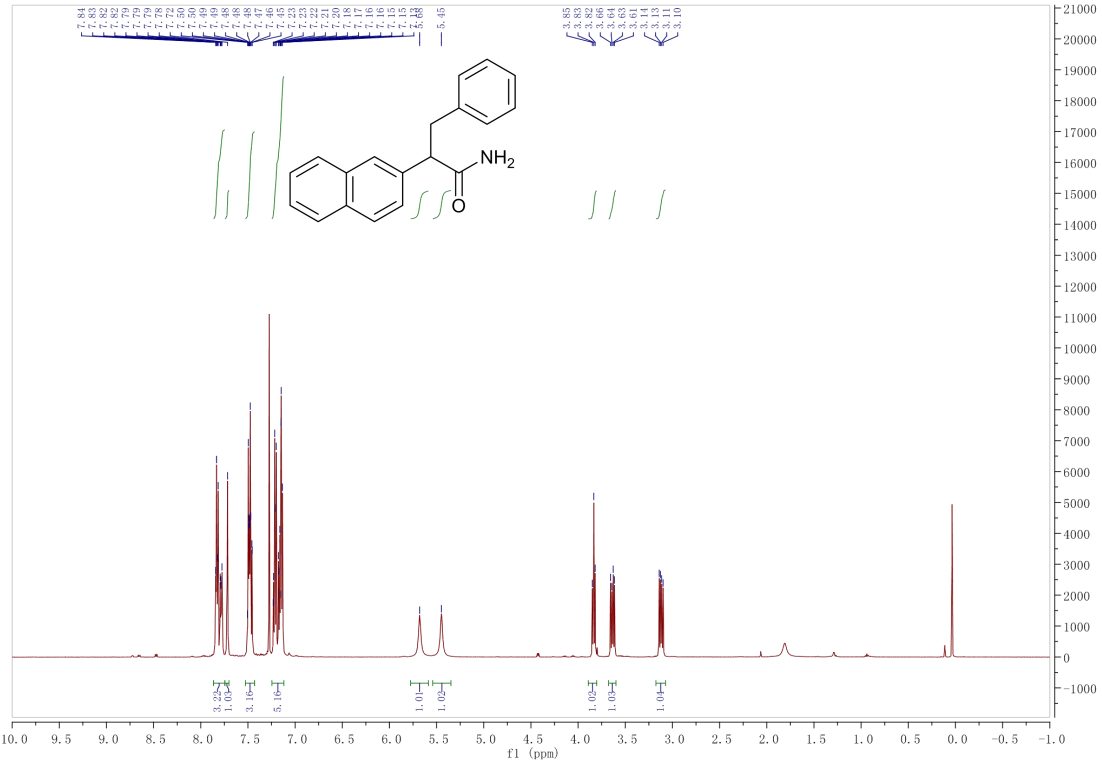


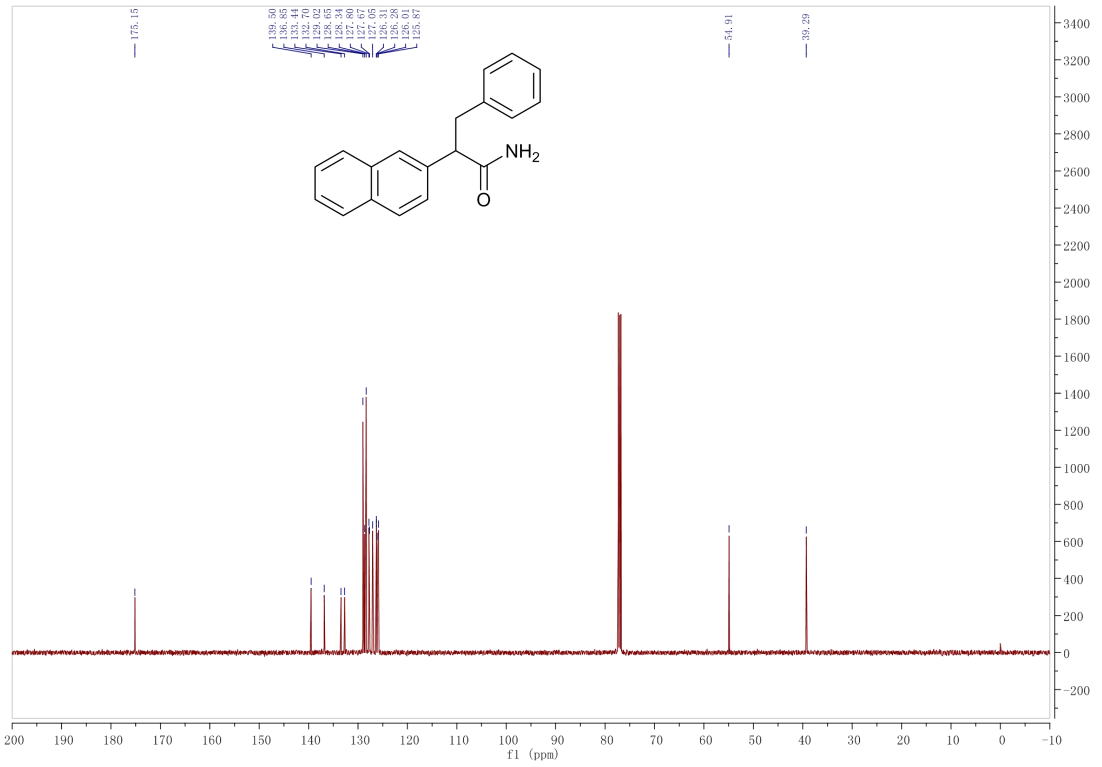
3-phenyl-2-(pyridin-3-yl)propenamide (**4bm**)



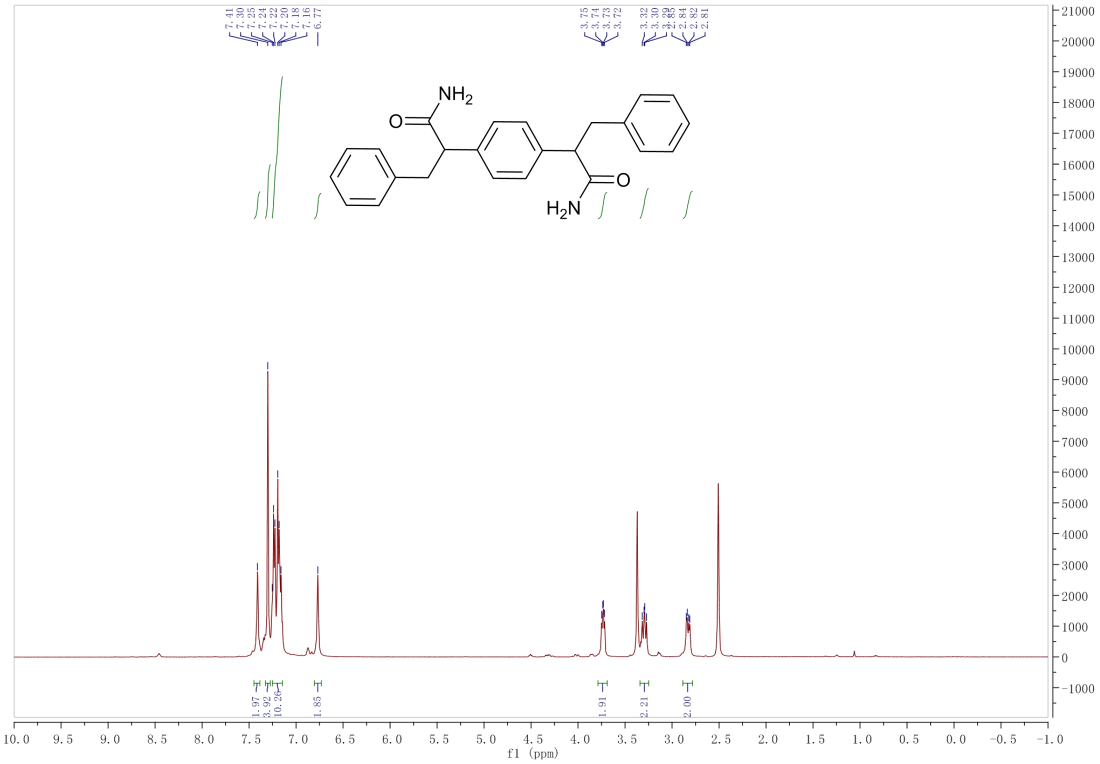


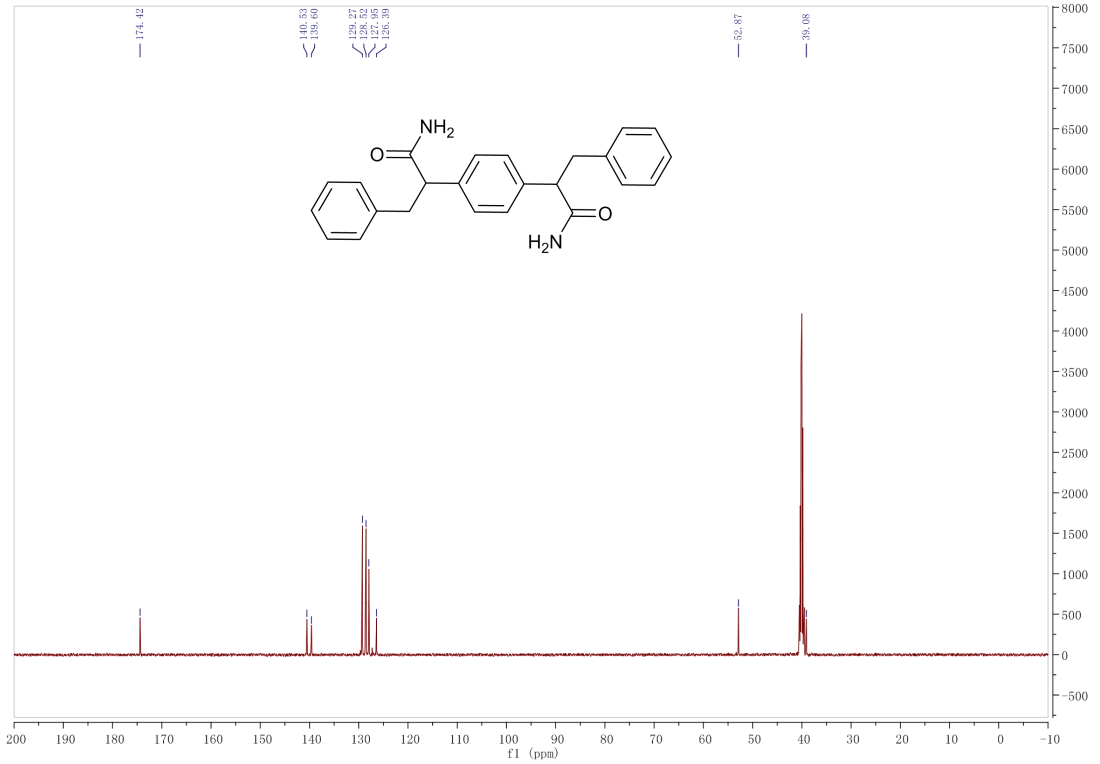
2-(naphthalen-2-yl)-3-phenylpropanamide (**4bn**)



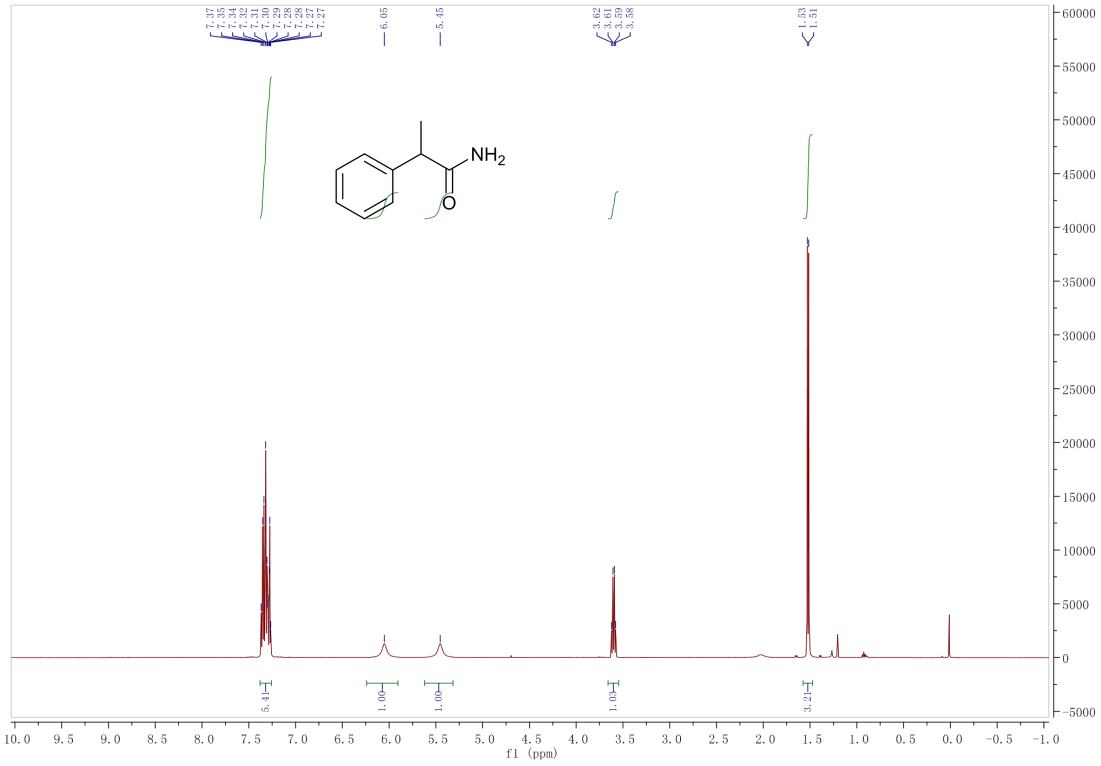


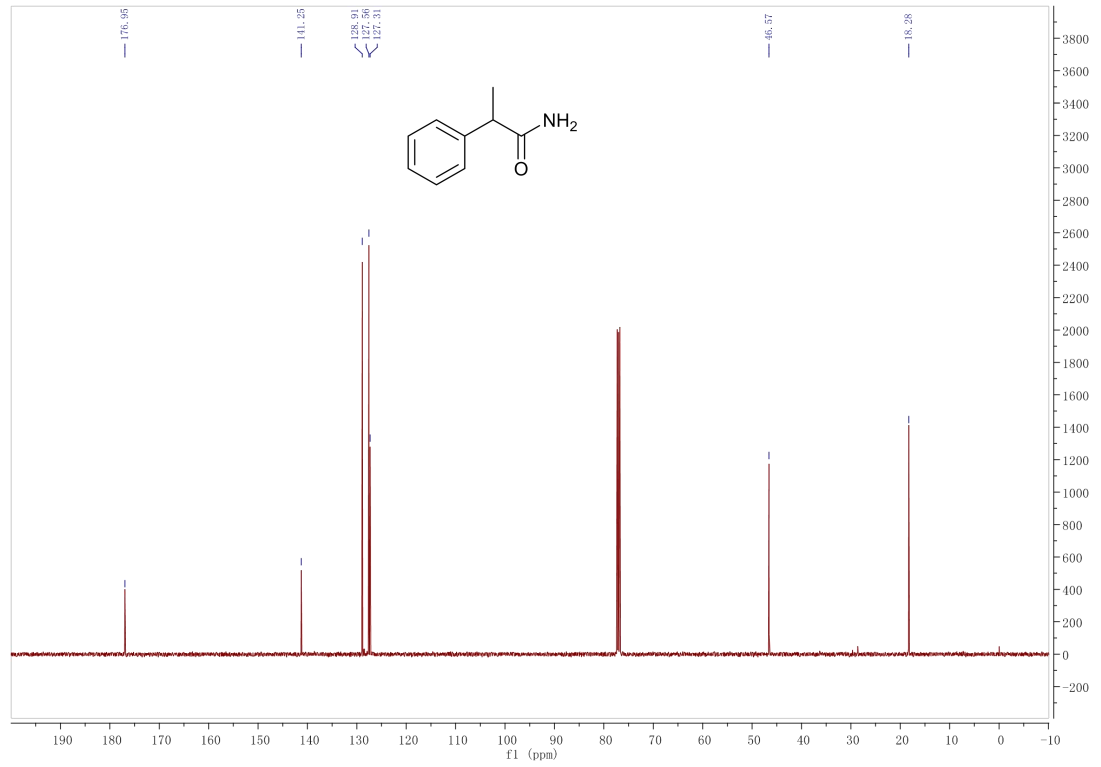
2,2'-(1,4-phenylene)bis(3-phenylpropanamide) (**4bo**)



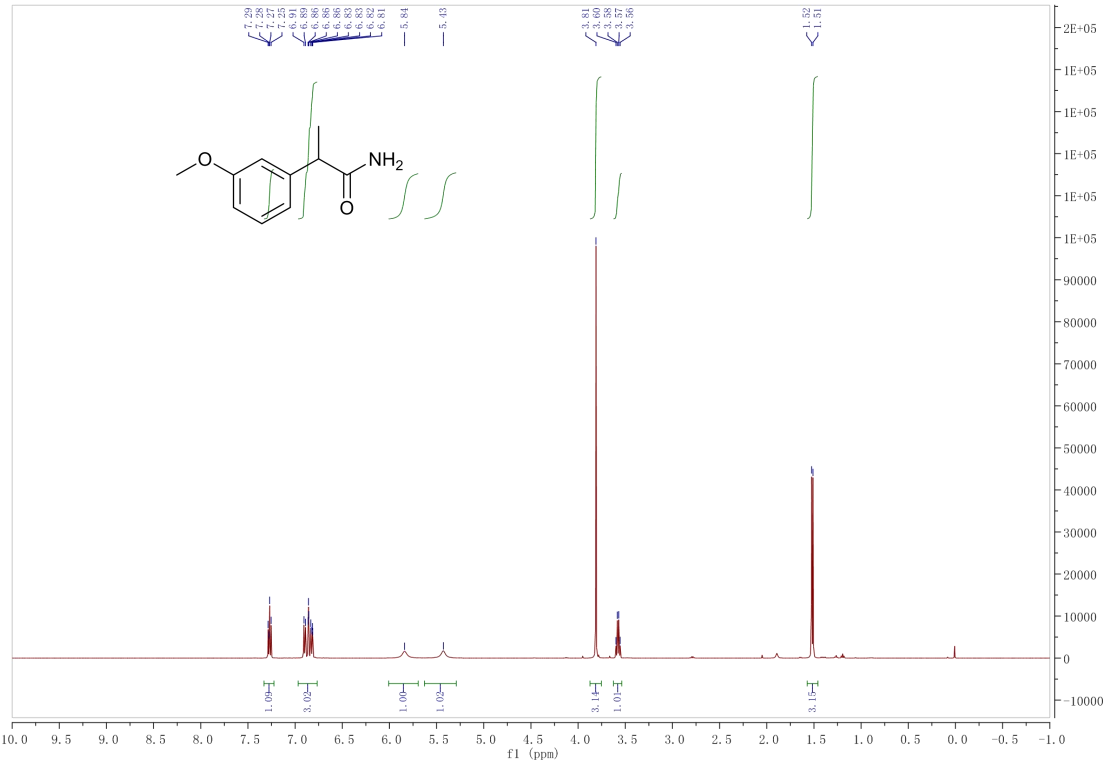


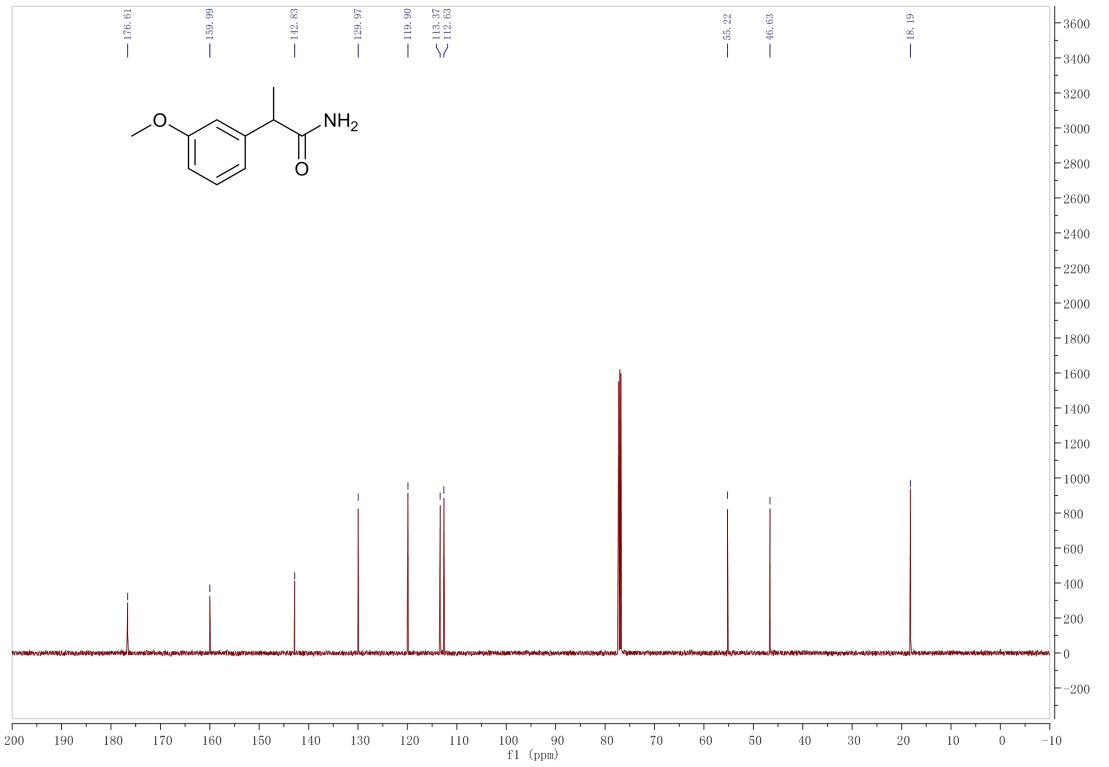
2-phenylpropanamide (**4ca**)



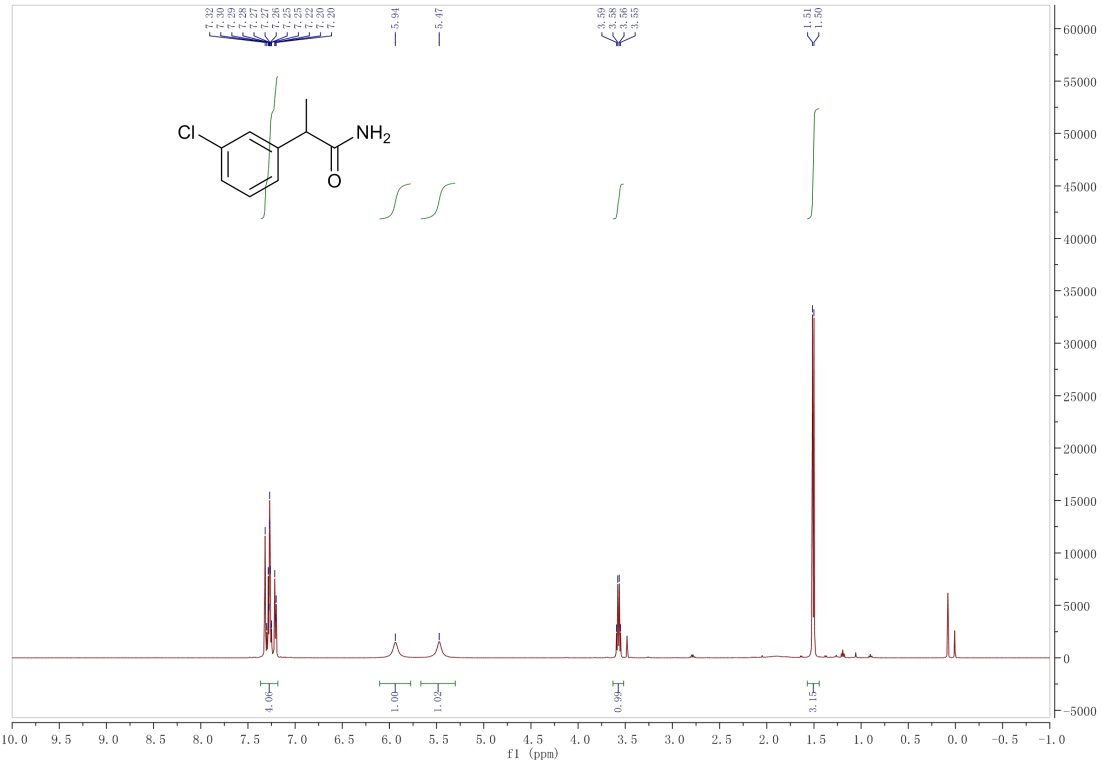


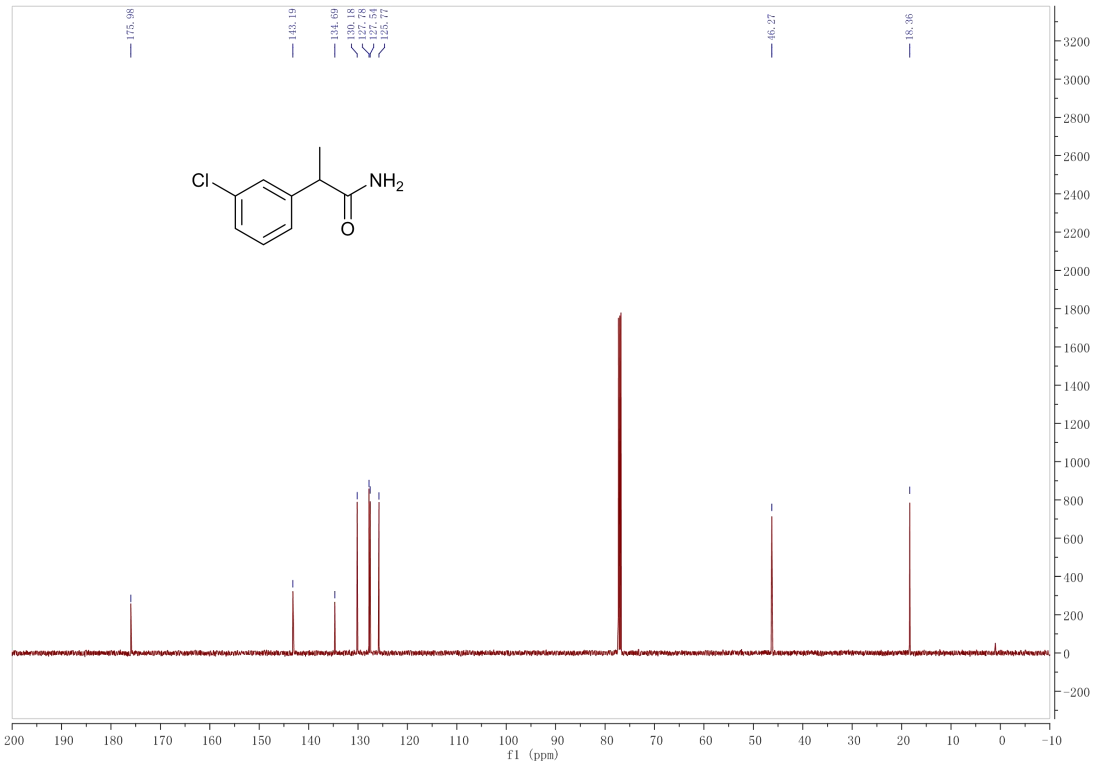
2-(3-methoxyphenyl)propenamide (**4cb**)



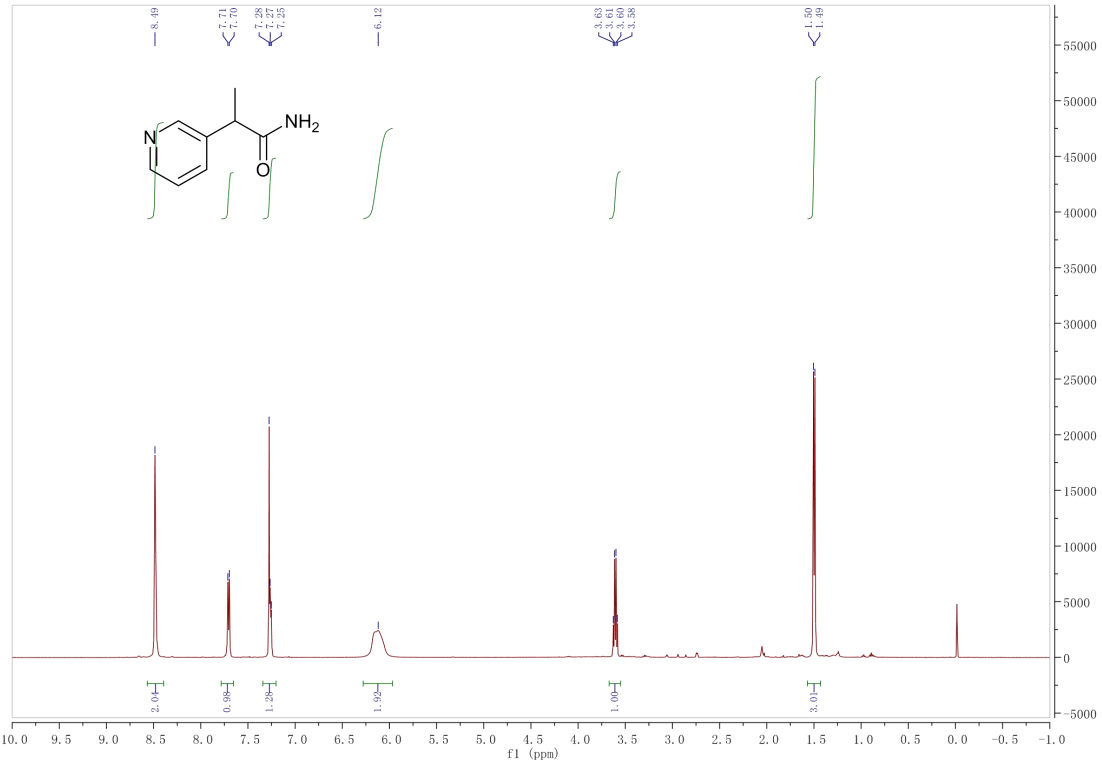


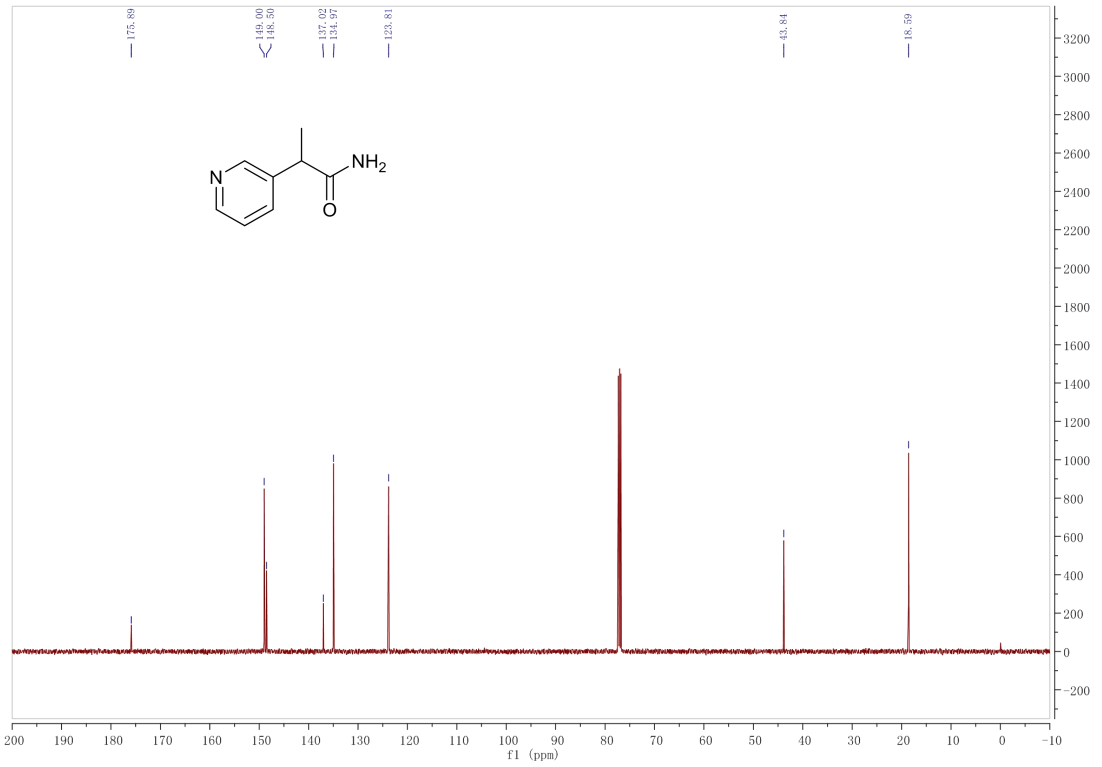
2-(3-chlorophenyl)propenamide (**4cc**)



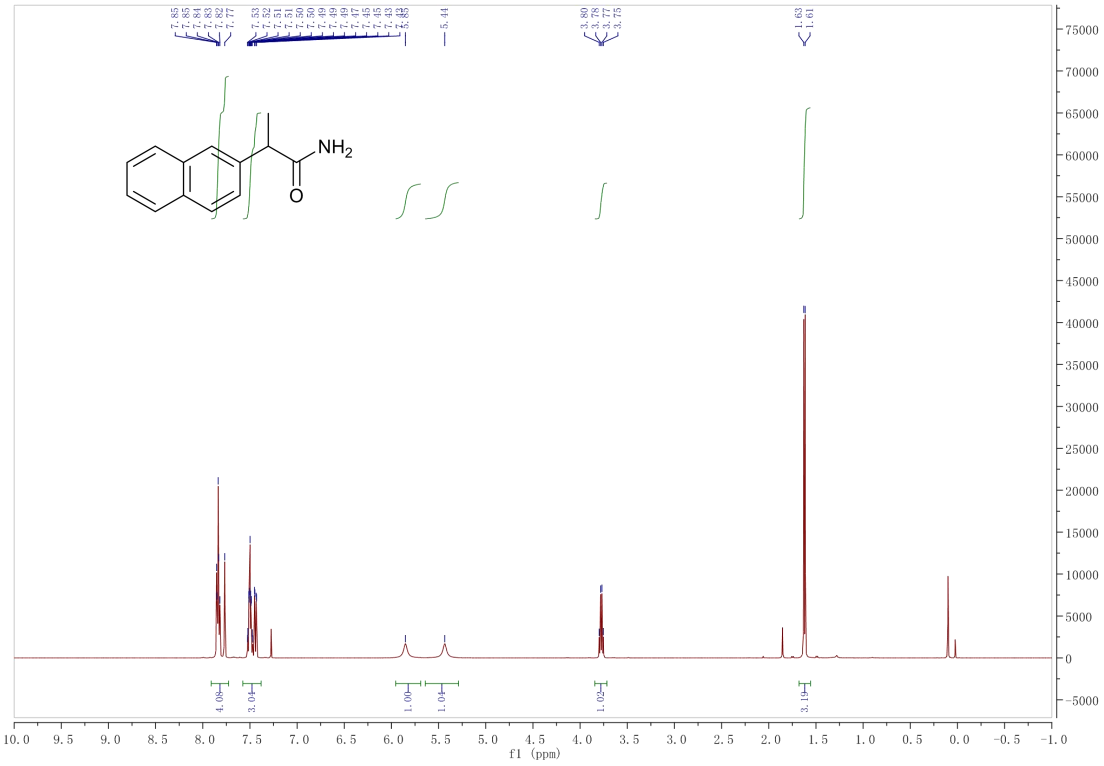


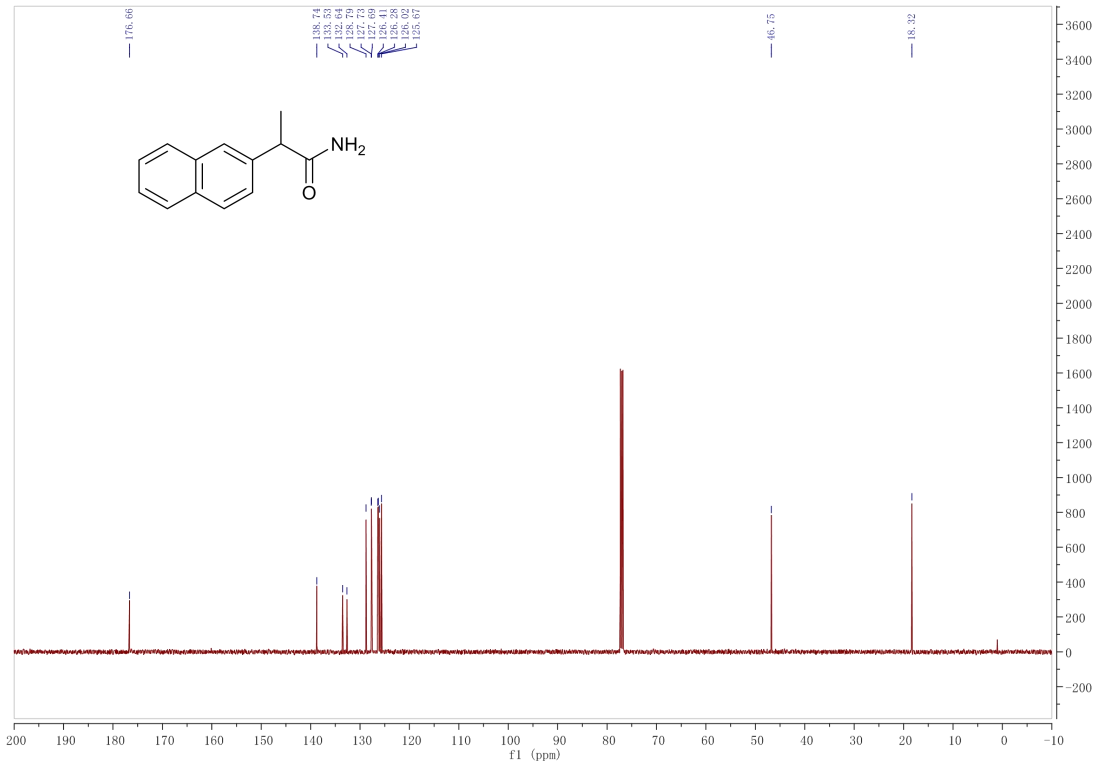
2-(pyridin-3-yl)propenamide (**4cd**)



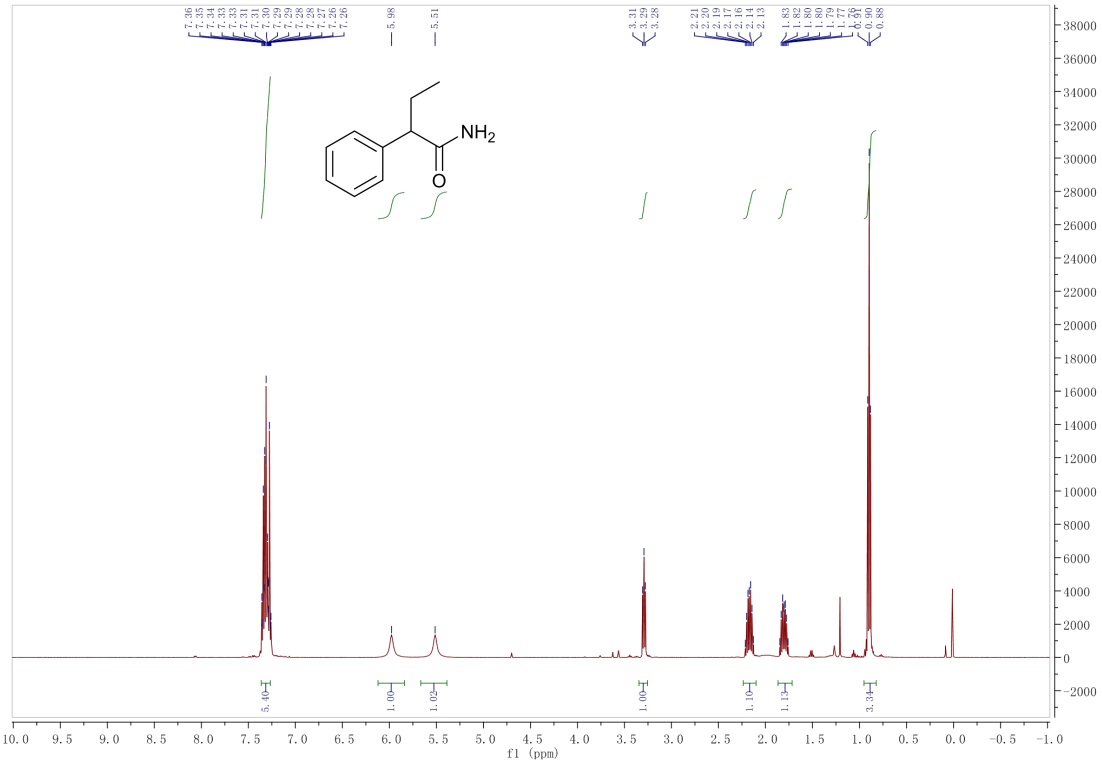


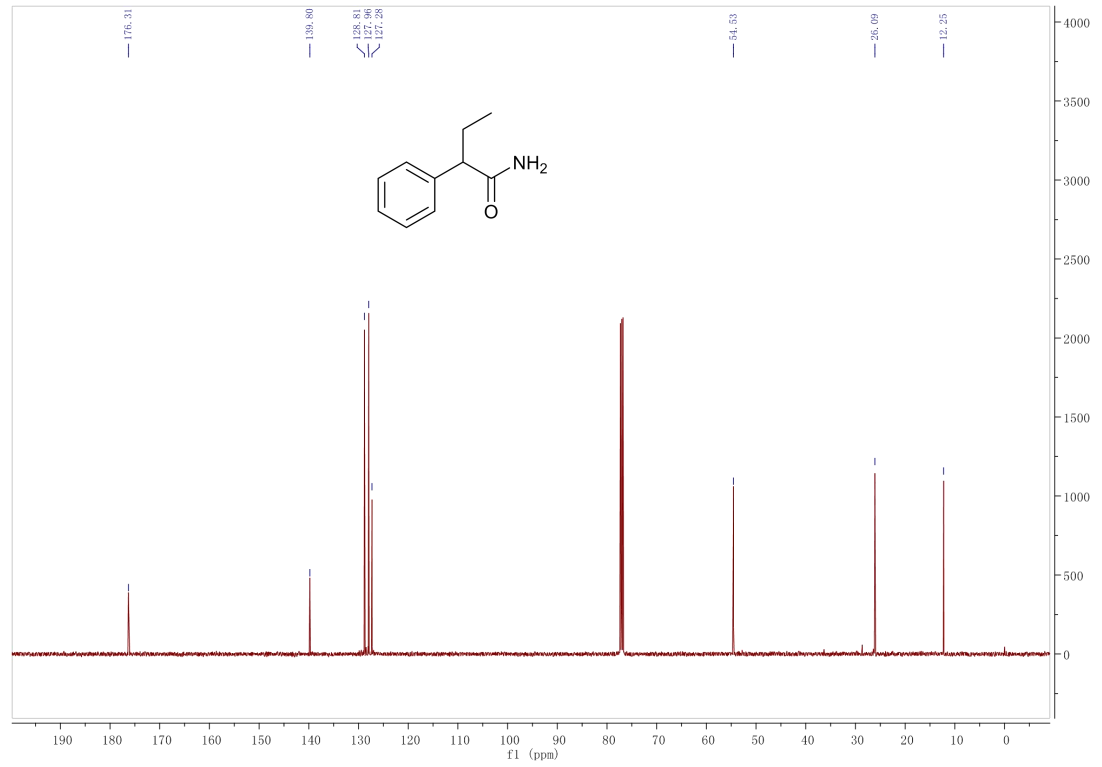
2-(naphthalen-2-yl)propenamide (**4ce**)



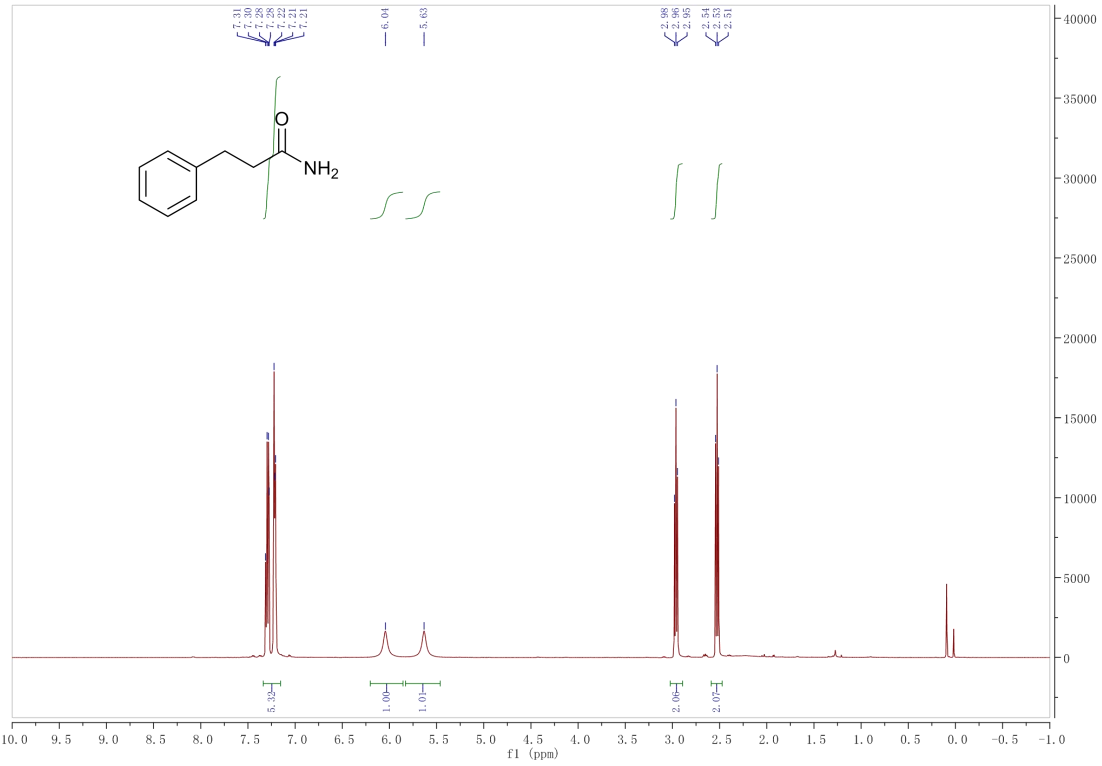


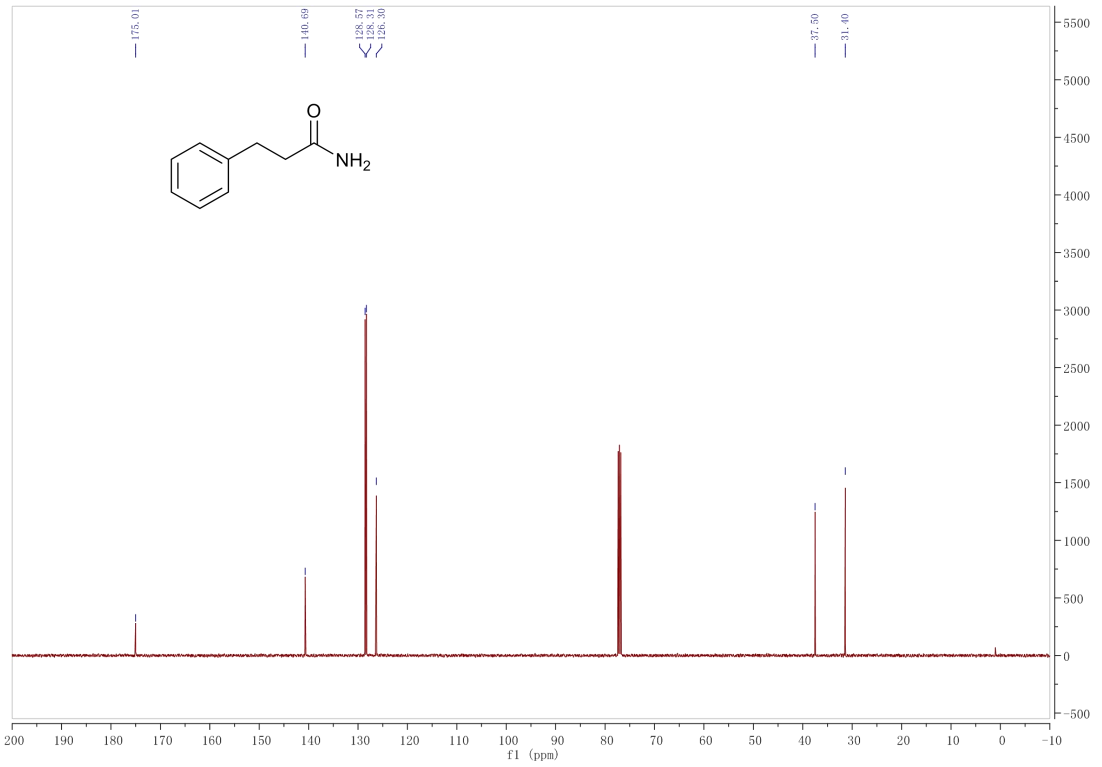
2-phenylbutanamide (**4cf**)



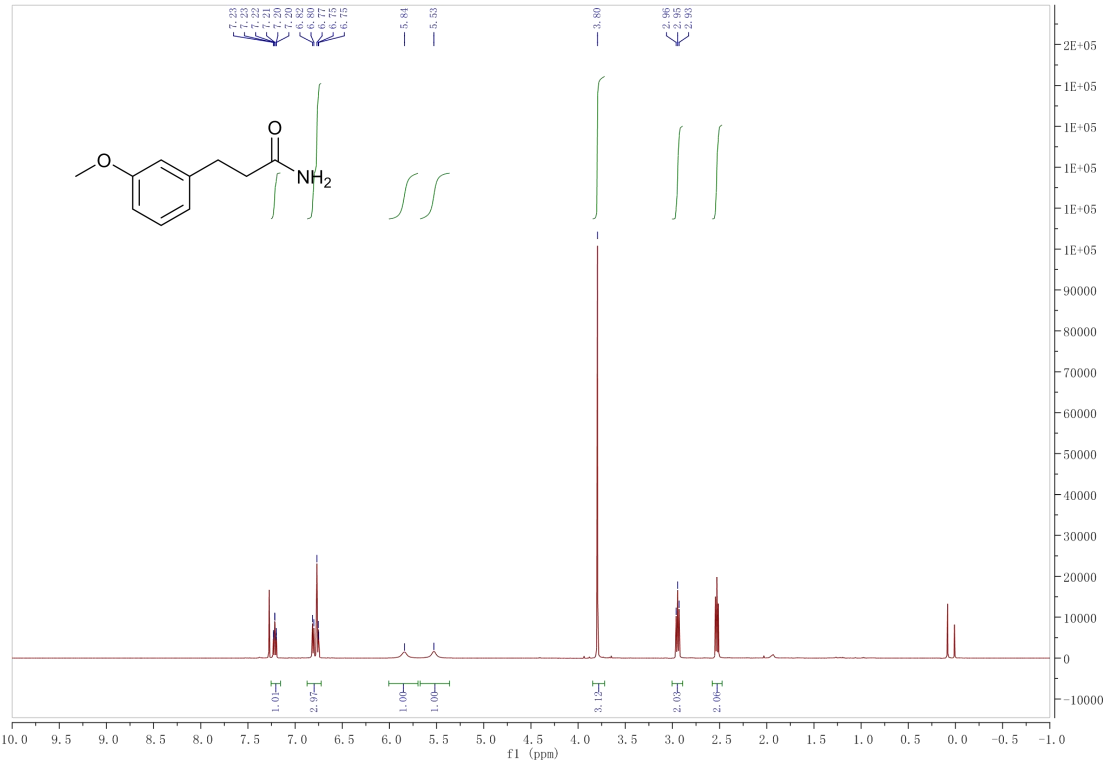


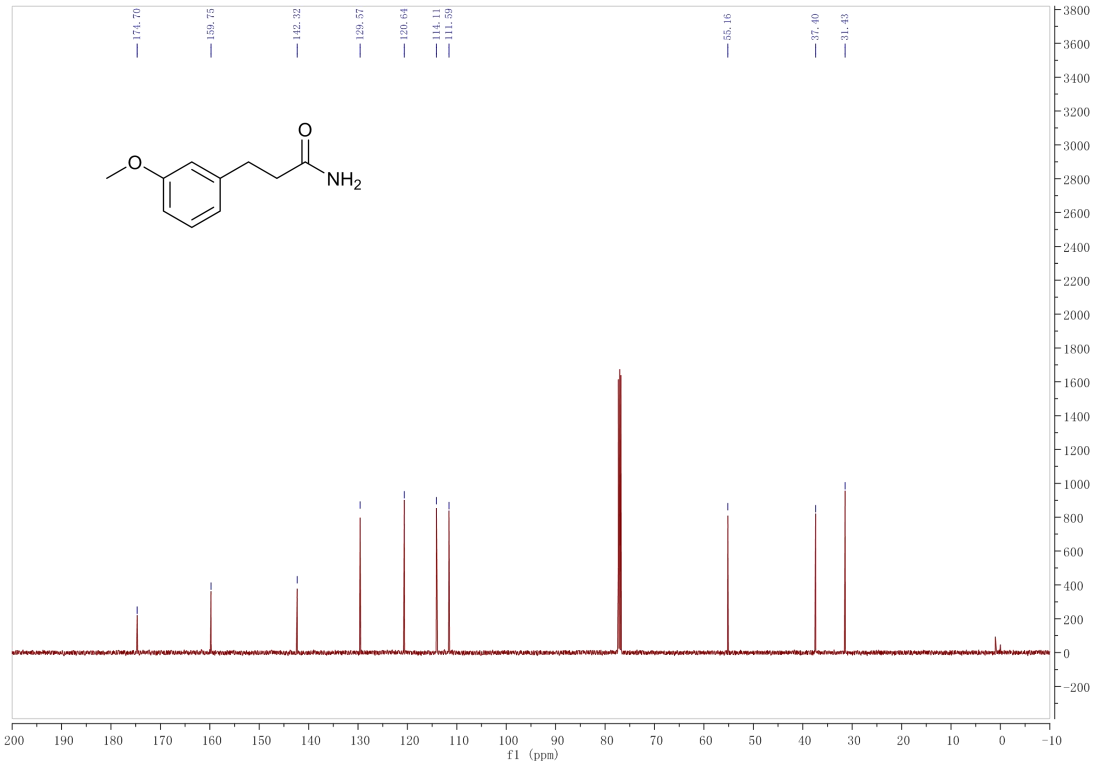
3-phenylpropanamide (**4da**)



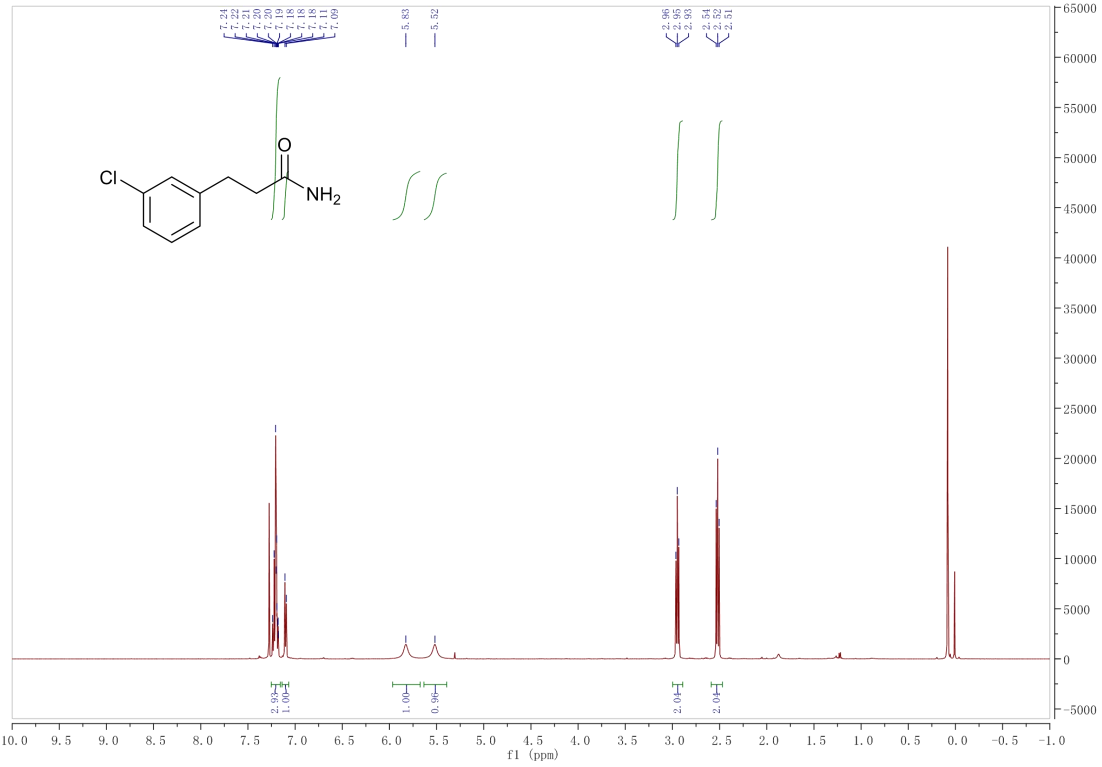


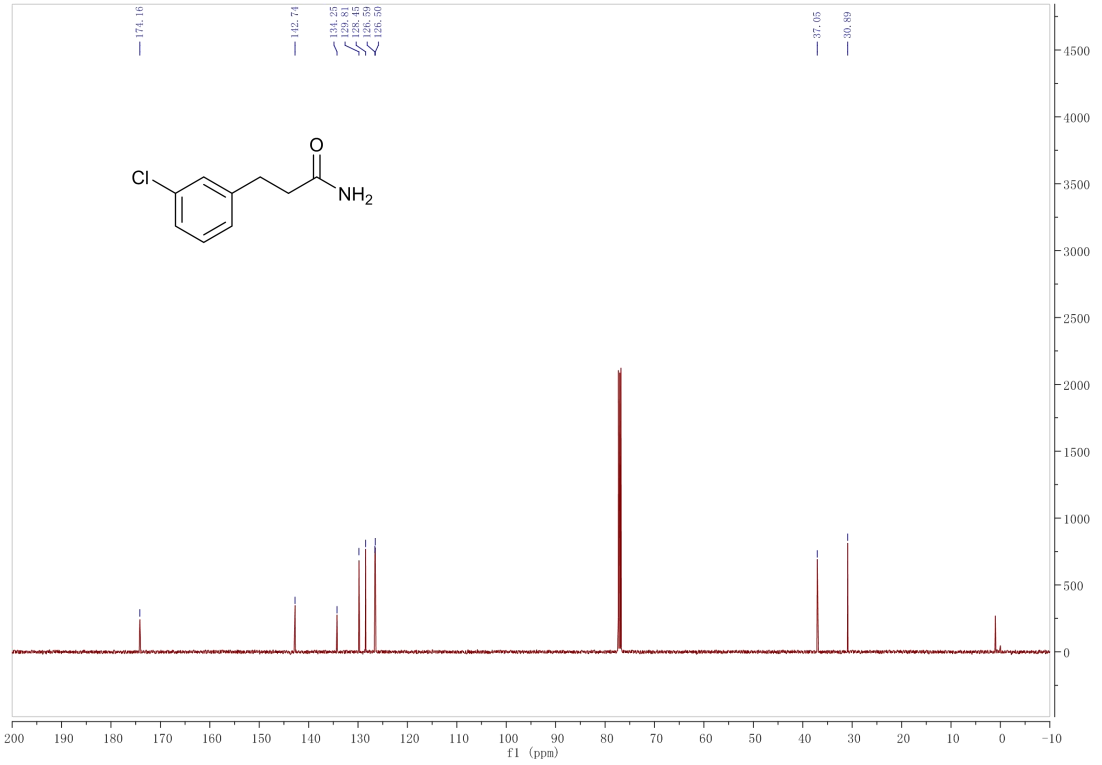
3-(3-methoxyphenyl)propenamide (**4db**)



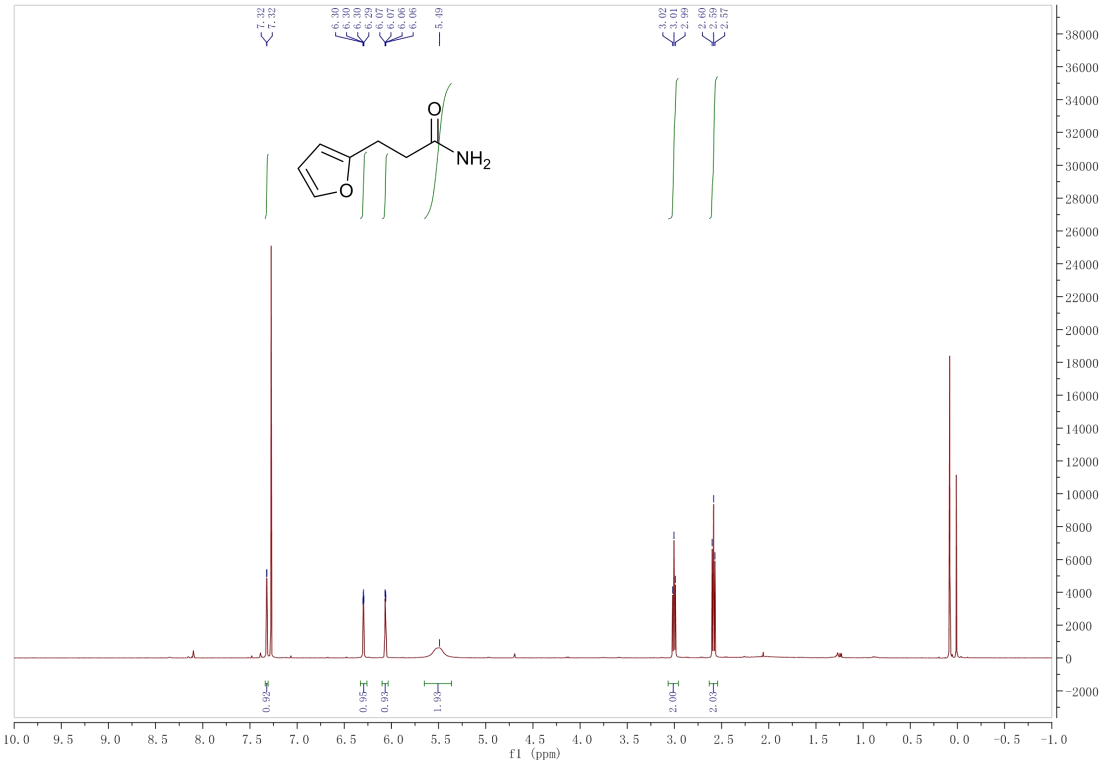


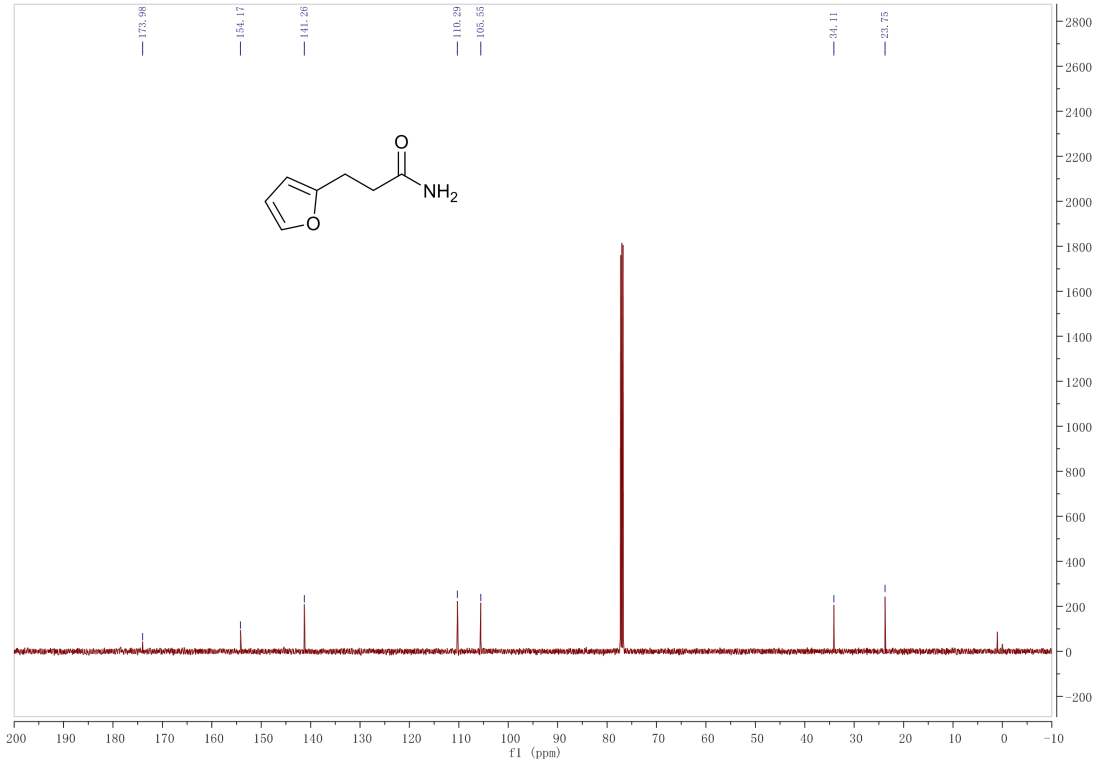
3-(3-chlorophenyl)propenamide (**4dc**)



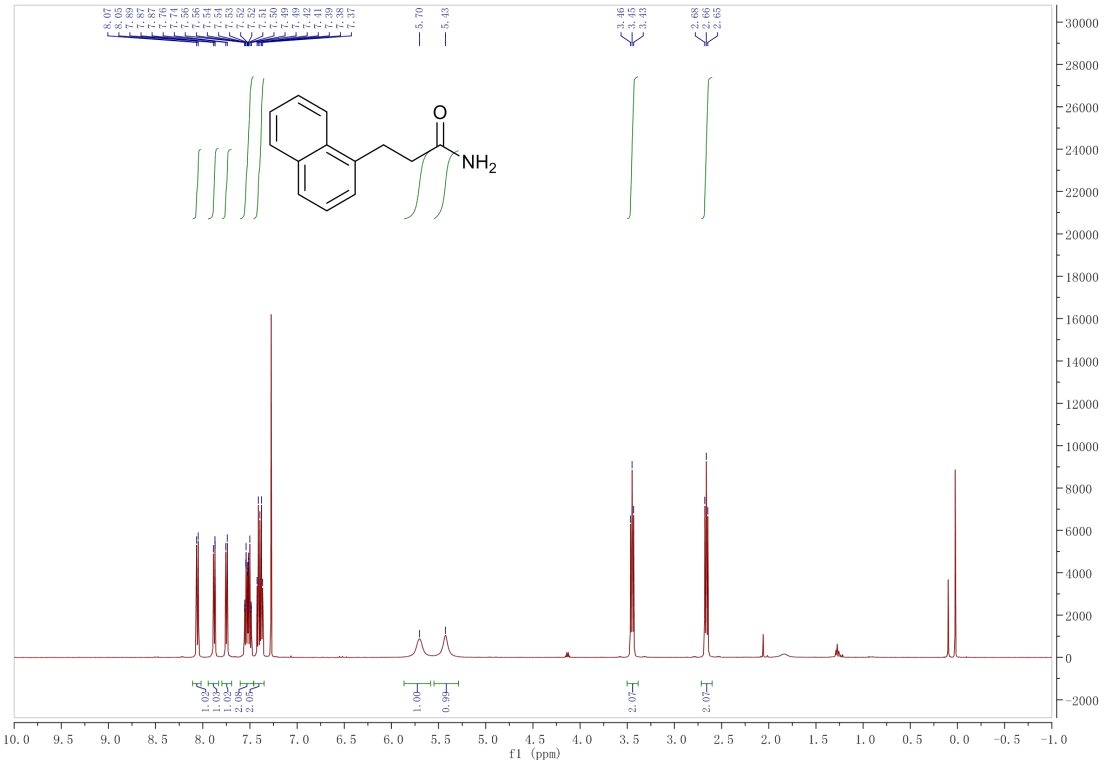


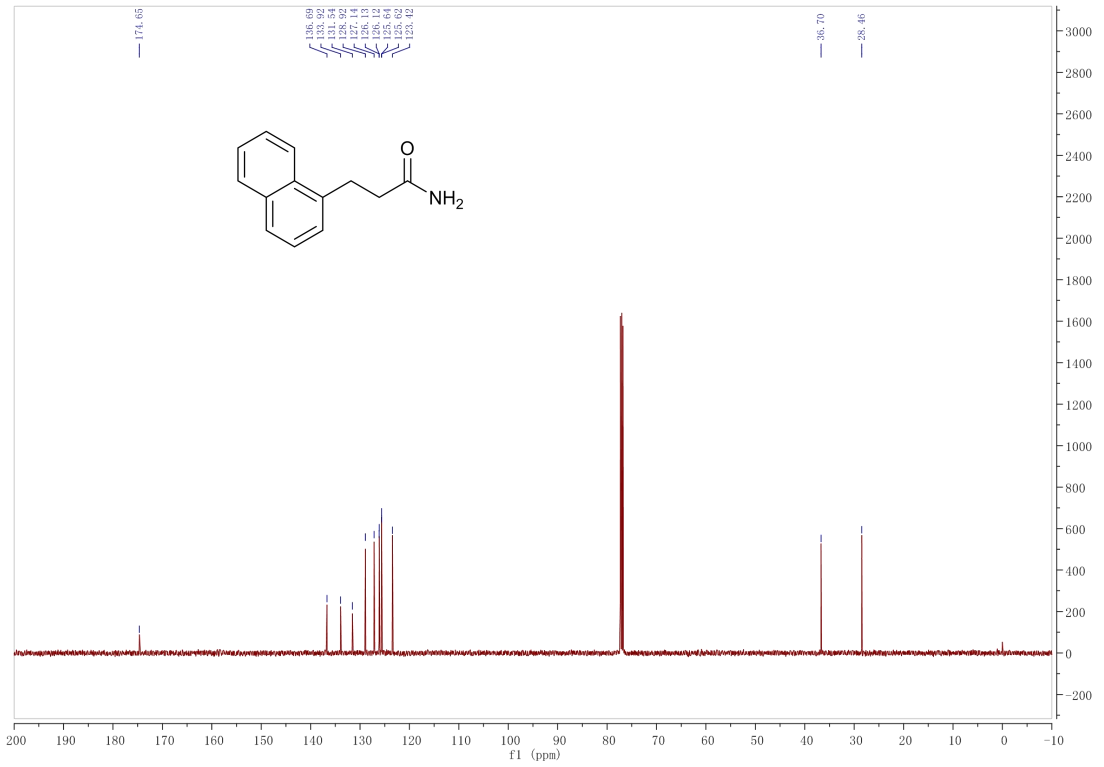
3-(furan-2-yl)propenamide (**4dd**)



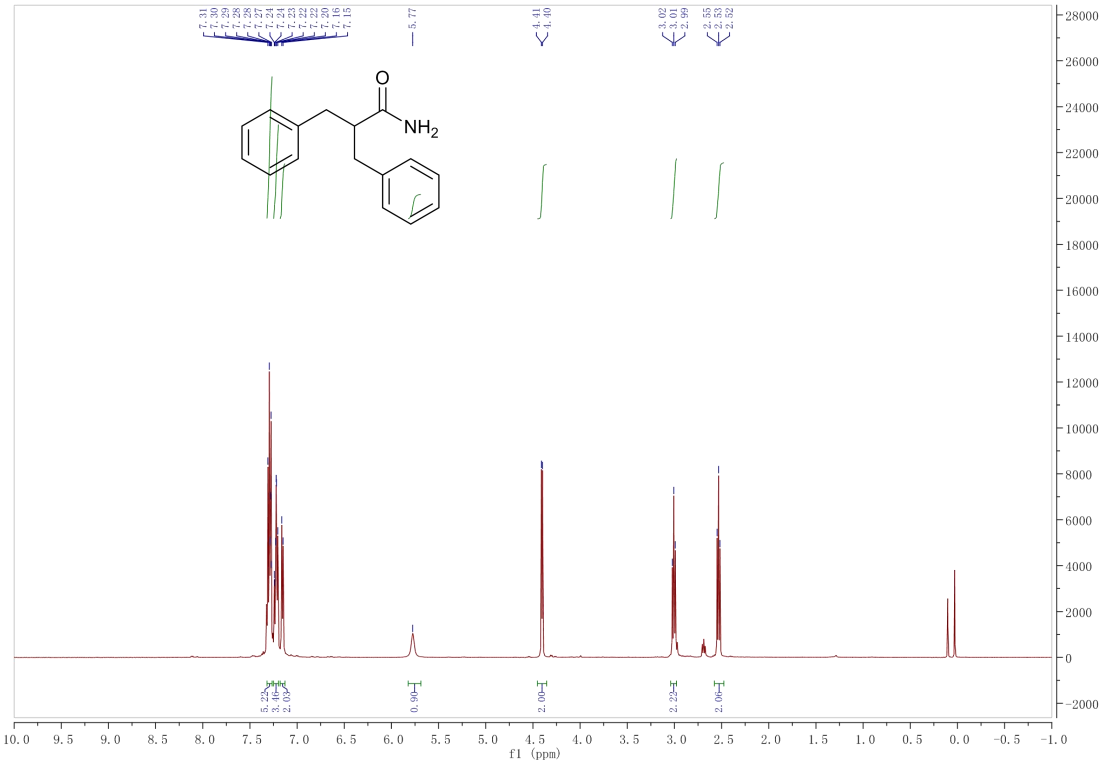


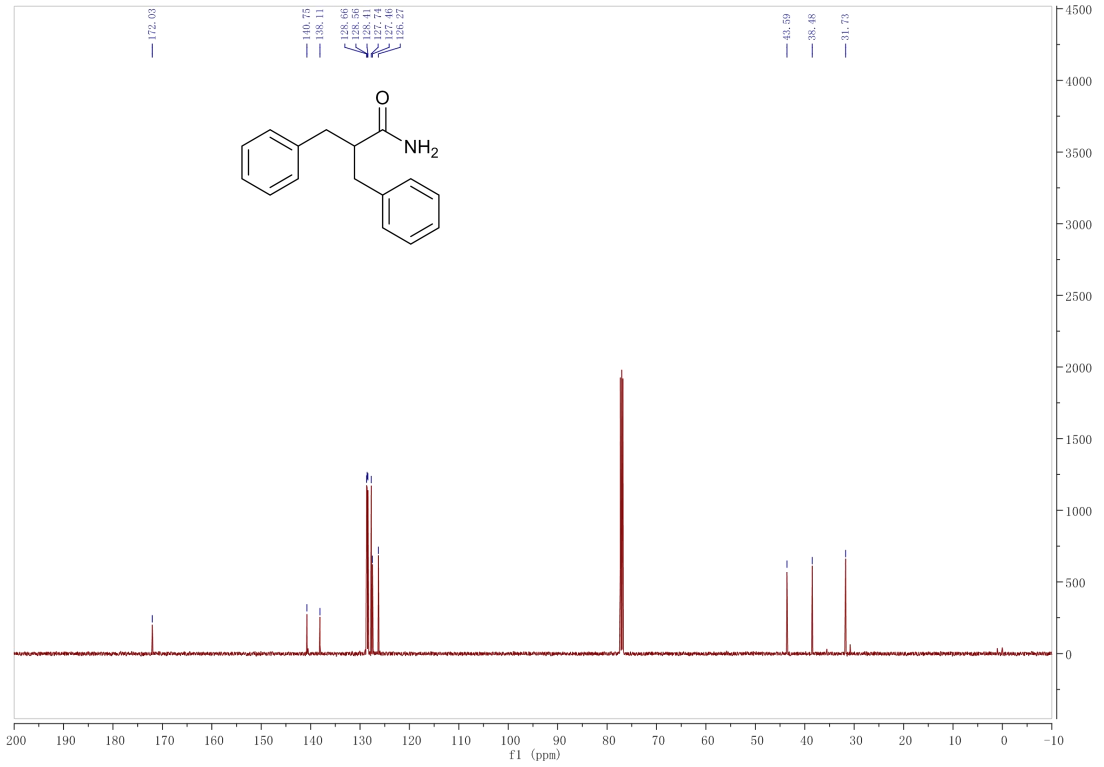
3-(naphthalen-1-yl)propenamide (**4de**)



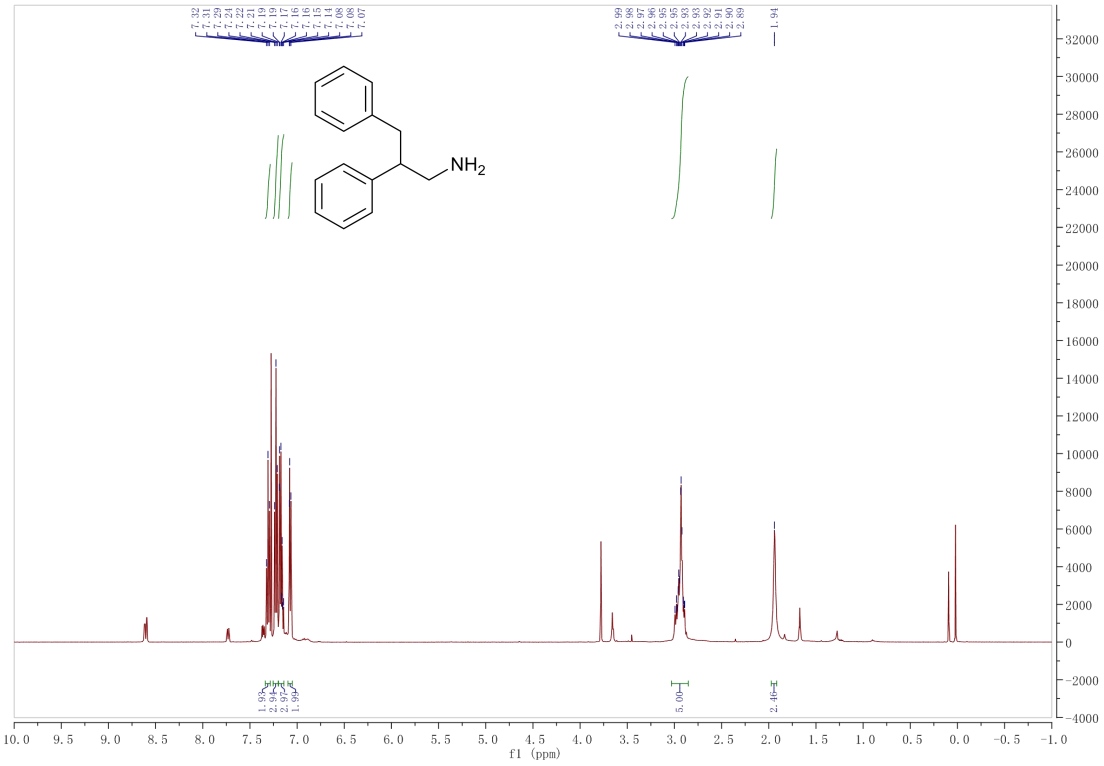


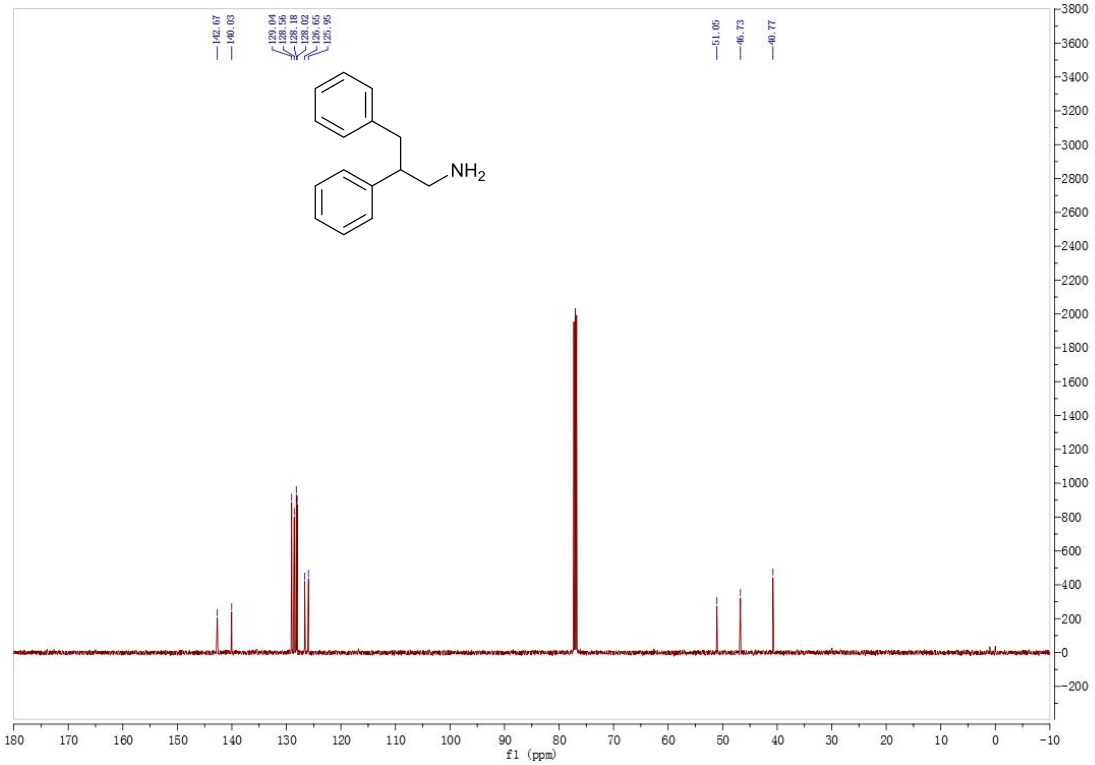
2-benzyl-3-phenylpropanamide (**4df**)



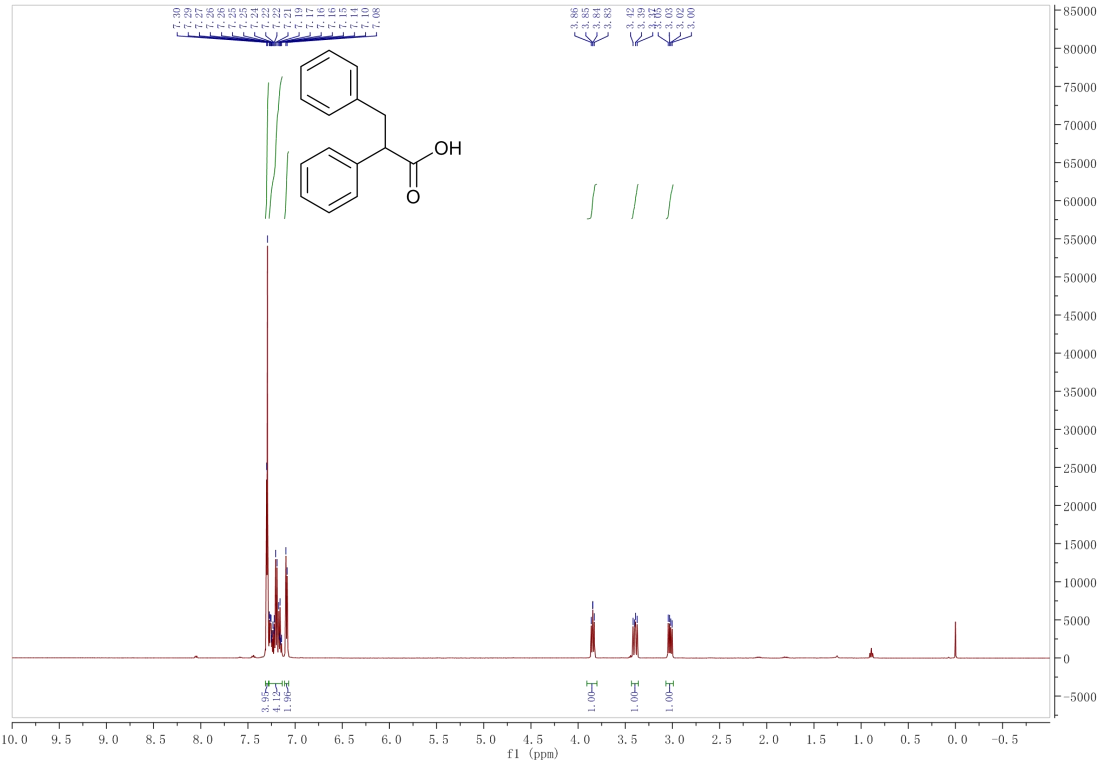


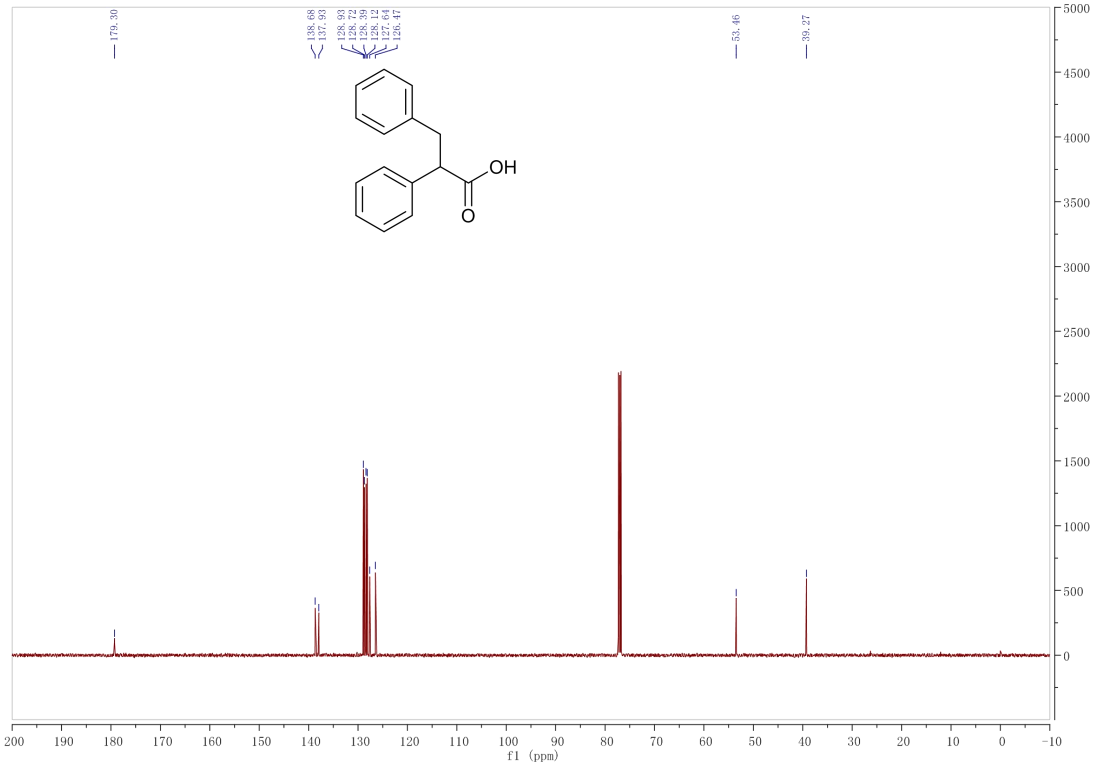
2,3-diphenylpropan-1-amine (**5**)





2,3-diphenylpropanoic acid (**6**)





2-phenyl-3,4-dihydronaphthalen-1(2H)-one (**7**)