Supporting Information for

Visible Light Irradiation of Acyl Oxime Esters and Styrenes Efficiently Constructs *β*-Carbonyl Imides by a Scission and Four-Component Reassembly Process

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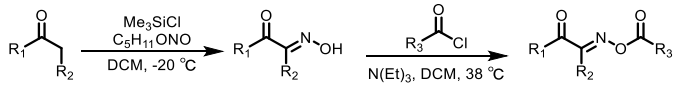
1. Materials and Methods

^{1}H NMR, ^{13}C NMR and ^{19}F NMR (400 MHz, 101 MHz and 377 MHz, respectively) spectra were measured in $CDCl_3$ or CD_3CN recorded on Bruker Avance DPX 400 MHz spectrometer. All chemical shifts (δ) were reported in ppm and coupling constants (J) in Hz. All chemical shifts were reported relative to tetramethylsilane in $CDCl_3$ (0 ppm for ^{1}H) or CD_3CN (1.94 ppm for ^{1}H), and $CDCl_3$ (77.16 ppm for ^{13}C), respectively. HRMS (ESI) spectra were recorded on Thermo Scientific Q Exactive Mass Spectrometer. All reagents were purchased from commercial suppliers and used without further purification. Flash chromatography was carried out with silica gel (200-300 mesh). Analytical TLC was performed with silica gel GF254 plates, and the products were visualized by UV detection. Blue LEDs (3 W, λ = 460 nm, 145 lm @700mA) were used as the irradiation light.

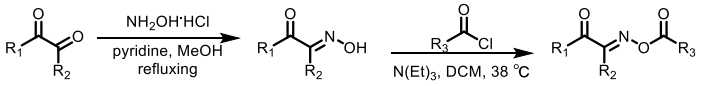
2. General Procedure for Preparation of Oxime Esters

Method A: [1, 2]



Step 1: To a solution of 10 mmol ketone in 5 mL DCM was added 1 equiv. TMSCl (1.24 mL) at -20 ℃. To this cooled solution was dropwise added 1 equiv. isoamyl nitrite (1.34 mL). The reaction was found to be instantaneous, but the mixture was stirred at r.t. for an additional period of 1 h before working up. The solution was directly concentrated in vacuo. The crude product was purified by flash column chromatography and the corresponding oximes was obtained. Step 2: Oxime (1 equiv, 6.1 mmol) and triethylamine (1.4 equiv, 8.6 mmol) were dissolved in DCE (20 mL). acyl chloride (1.2 equiv, 7.35 mmol) was gradually added at 0℃ for 15 minutes. Then, the mixture was stirred at 38 ℃ for 12 h (monitored by TLC). After this time, the mixture was quenched by adding 50 mL of saturated sodium bicarbonate aqueous solution. The organic layer was separated and washed with 50 mL of water. After evaporation of the solvent under vacuum, the crude mixture was purified by flash column chromatography (petroleum ether/ethyl acetate).

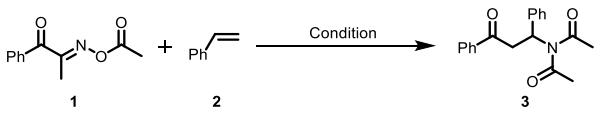
Method B: [3-5]



To a solution of 10 mmol 1,2-diketone in 30 mL MeOH was added 1.2 equiv. hydroxylamine hydrochloride (0.863 g) and 1.2 equiv. pyridine (1.2 mL). The reaction mixture was refluxed for 5 h. Crude oxime was obtained after removal of solvent in vacuo. Crude oxime and triethylamine (1.4 equiv, 14 mmol) were dissolved in DCE (20 mL). Acyl chloride (1.2 equiv, 12 mmol) was gradually added at 0℃ for 15 minutes. Then, the mixture was stirred at 38 ℃ for 12 h (monitored by TLC). After this time, the mixture was quenched by adding 50 mL of saturated sodium bicarbonate aqueous solution. The organic layer was separated and washed with 50 mL of water. After evaporation of the solvent under vacuum, the crude mixture was purified by flash column chromatography (petroleum ether/ethyl acetate).

3. Condition Optimization for Reaction of Oxime Ester and Styrene

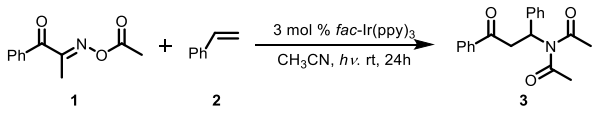
Table S1. Optimization of conditions[a]



Entry	Photocatalyst	Solvent	Time（h）	Yield[b] (%)
1	1 mol % *fac*-Ir(ppy)$_3$	CH_3CN	12	65
2	1 mol % [Ir(dtbbpy)(ppy)$_2$]PF_6	CH_3CN	12	20
3	1 mol % Ir[dF(CF_3)ppy$_2$(dtbpy)]PF_6	CH_3CN	12	0
4	1 mol % Ru(bpy)$_3$(BF4)$_2$	CH_3CN	12	0
5	1 mol % Eosin Y	CH_3CN	12	0
6	1 mol % *fac*-Ir(ppy)$_3$	EtOH	12	0
7	1 mol % *fac*-Ir(ppy)$_3$	DMF	12	0
8	1 mol % *fac*-Ir(ppy)$_3$	1,4-Dioxane	12	0
9	1 mol % *fac*-Ir(ppy)$_3$	DCE	12	< 5
10[c]	1 mol % *fac*-Ir(ppy)$_3$	CH_3CN /DMF	12	0
11[d]	1 mol % *fac*-Ir(ppy)$_3$	CH_3CN	12	52
12[e]	1 mol % *fac*-Ir(ppy)$_3$	CH_3CN	12	64
13	1 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	70
14	1 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	81
15[f]	2 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	70
16	3 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	86
17[g]	3 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	54
18[h]	3 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	< 5
19[i]	3 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	71
20[j]	3 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	0
21	--	CH_3CN	24	0
22[k]	3 mol % *fac*-Ir(ppy)$_3$	CH_3CN	24	57

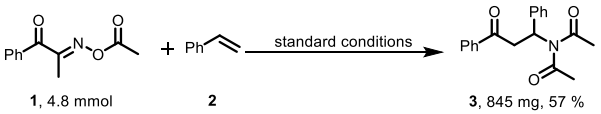
[a]Reaction Condition: oxime ester **1a** (0.2 mmol), styrene **2a** (5 equiv, 1.0 mmol), photocatalyst (1 mmol %), CH_3CN (2.0 mL), Ar, rt, under 460 nm LEDs irradiation. [b]Yields detected by ^{1}H NMR. [c]Volume ratio of CH_3CN/DMF was 1:1. [d]0.5 mL of CH_3CN. [e]1.0 mL of CH_3CN. [f]At 50 °C. [g]20 mol% tetrabutylammonium hexafluorophosphate was added. [h]20 mol% tetrabutylammonium iodide was added. [i]3 eq styrene was used. [j]In the absence of light. [k]In air.

4. General Procedure for Reaction of Oxime Ester and Styrene



A 10 mL Pyrex tube equipped with a magnetic stir bar was charged with **1** (0.2 mmol) and *fac*-Ir(ppy)$_3$ (3.9 mg, 6 $\times 10^{-3}$ mmol) in CH_3CN (2.0 mL). This system was bubbled with Ar for 15 minutes. Then, styrene **2** (115 ul, 1.0 mmol) were added into the tube. The tube was sealed and irradiated at room temperature by blue LEDs (460 nm) for 24 hours. When reaction was finished, the mixture was evaporated to remove the solvent and the residue was purified by flash chromatography on silica gel (eluting with petroleum ether/ethyl acetate = 16:1) to afford the desired product.

5. Scale-up Reaction of Oxime Ester and Styrene



1, 4.8 mmol **2** **3**, 845 mg, 57 %

A 200 mL Pyrex tube equipped with a magnetic stir bar was charged with **1** (4.8 mmol) and *fac*-$Ir(ppy)_3$ (94.3 mg, 14.4×10^{-2} mmol) in CH_3CN (48.0 mL). This system was bubbled with Ar for 15 minutes. Then, styrene **2** (2.76 ml, 24 mmol) were added into the tube. The tube was sealed and irradiated at room temperature by blue LEDs (460 nm) for 24 hours. When reaction was finished, the mixture was evaporated to remove the solvent and the residue was purified by flash chromatography on silica gel (eluting with petroleum ether/ethyl acetate = 16:1) to afford the desired product with 57% yield.

6. Optical Spectroscopic and Electrochemical Data

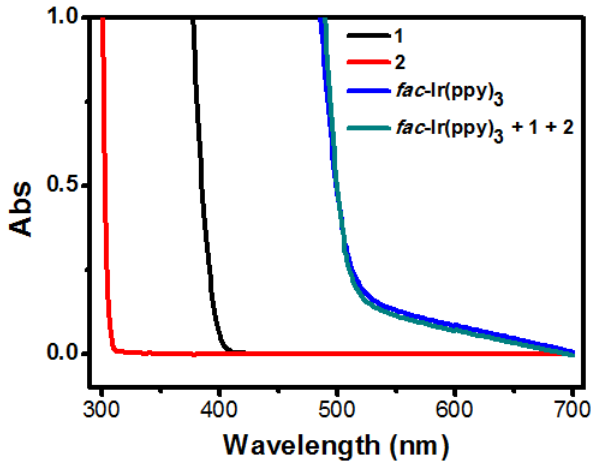


Figure S1. UV-vis absorption spectra of reaction system at reaction concentration: [**1**] = 0.1 M, [**2**] = 0.5 M, [*fac*-Ir(ppy)$_3$] = 3×10^{-3} M.

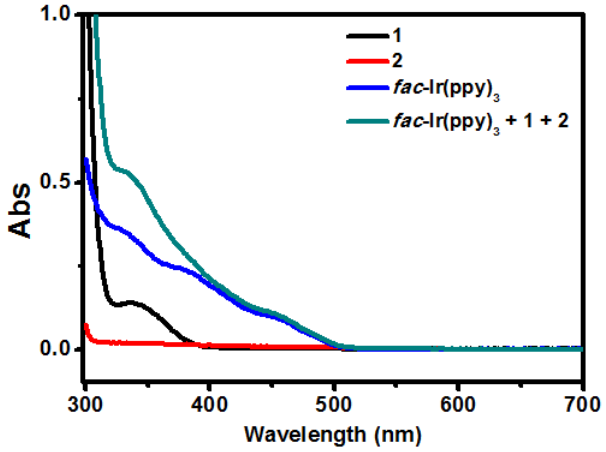


Figure S2. UV-vis absorption spectra of reaction system at low concentration: [**1**] = 3.33×10^{-3} M, [**2**] = 1.67×10^{-2} M, [*fac*-Ir(ppy)$_3$] = 1×10^{-4} M.

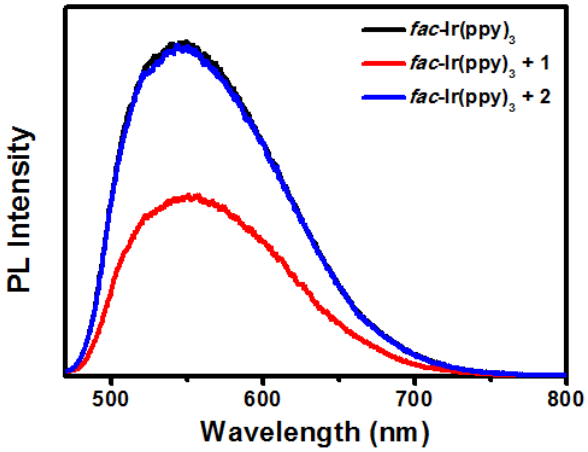


Figure S3. Steady state luminescence quenching experiment in CH_3CN: [*fac*-Ir(ppy)$_3$] = 1.00×10^{-5} M, [**1**] = 3.33×10^{-3} M, [**2**] = 1.67×10^{-2} M. Excitation wavelength was 450 nm.

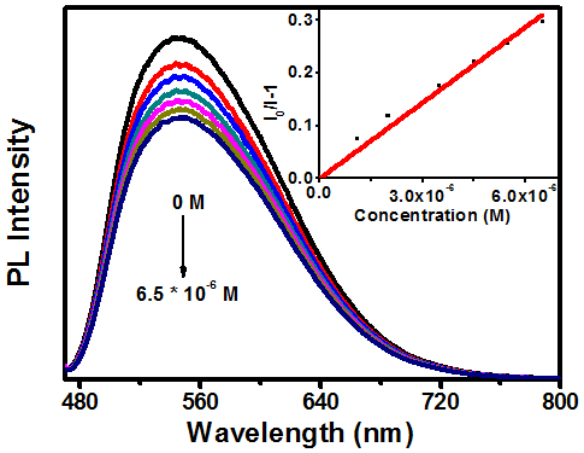


Figure S4. Luminescence spectrum of *fac*-Ir(ppy)$_3$ as a function of concentration of oxime ester **1** in degassed CH_3CN with excitation at 450 nm, [*fac*-Ir(ppy)$_3$] = 5.0×10^{-5} M. Quenching constant k_{et} = 2.52×10^{10} s^{-1} M^{-1}.

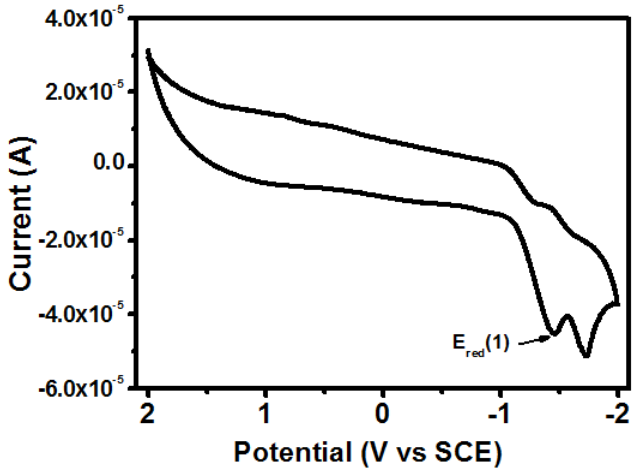


Figure S5. CV experiment of **1** ((*E*)-2-(acetoxyimino)-1-phenylpropan-1-one) and NBu_4PF_6 in degassed CH_3CN, [**1**] = 1.00×10^{-3} M, [NBu_4PF_6] = 1.00×10^{-1} M. E^{red}(**1**) = -1.42 V SCE.

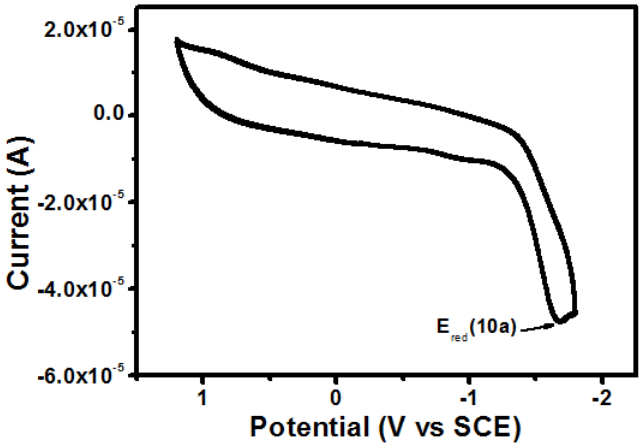
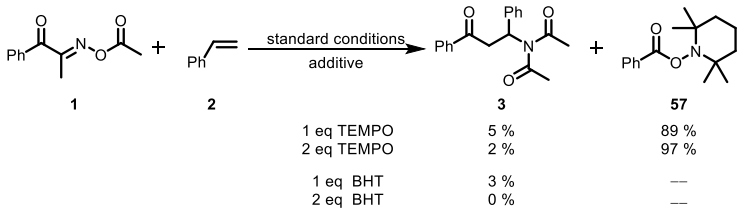


Figure S6. CV experiment of **10a** ((*E*)-3-(acetoxyimino) butan-2-one) and NBu_4PF_6 in degassed CH_3CN, [**1**] = 1.00×10^{-3} M, [NBu_4PF_6] = 1.00×10^{-1} M. E^{red}(**10a**) = -1.67 V SCE.

7. Control Experiments for Mechanistic Study

a) Capture of reaction intermediates:



A 10 mL Pyrex tube equipped with a magnetic stir bar was charged with **1** (0.2 mmol), TEMPO (or BHT) and *fac*-Ir(ppy)$_3$ (3.9 mg, 6 $\times 10^{-3}$ mmol) in CH_3CN (2.0 mL). This system was bubbled with Ar for 15 minutes. Then, styrene **2** (115 ul, 1.0 mmol) were added into the tube. The tube was sealed and irradiated at room temperature by blue LEDs (460 nm) for 24 hours. When reaction was finished, the mixture was evaporated to remove the solvent and tested by ^{1}H NMR with 2,2-diphenylacetonitrile as internal standard. For 1 equiv. TEMPO, 5 % **3** and 89 % **57** was detected. For 2 equiv. TEMPO, 2 % **3** and 97 % **57** was detected. For 1 equiv. BHT, 3 % **3** was detected. For 2 equiv. BHT, 0 % **3** was detected.

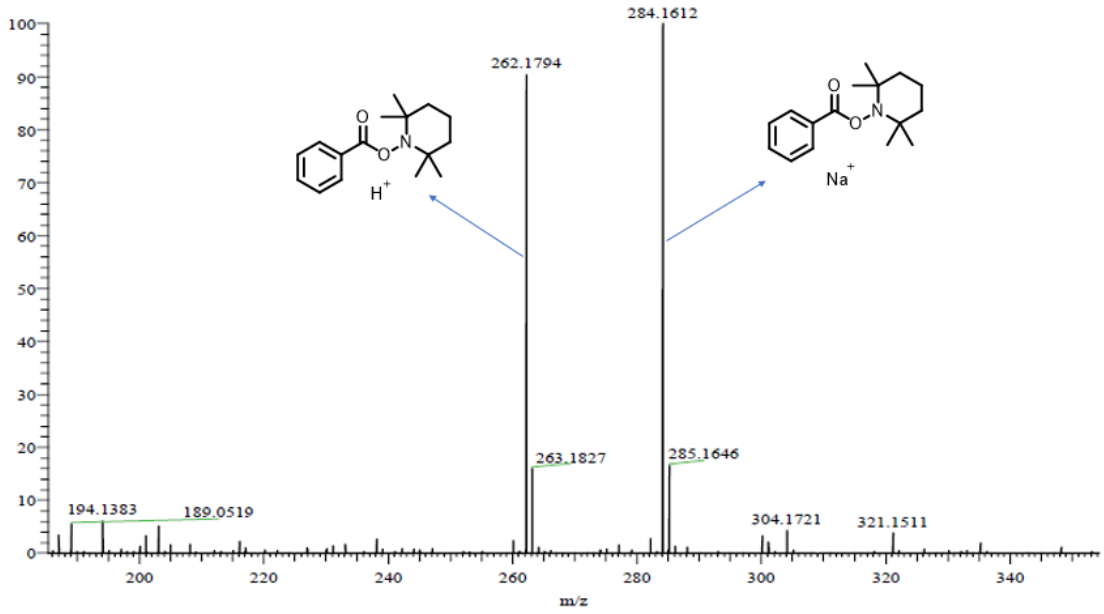
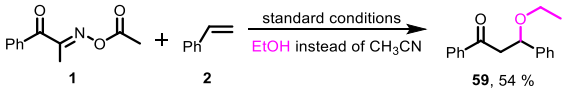
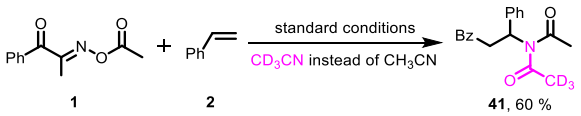


Figure S7. The GC-Mass of capture experiments of reaction intermediates.



A 10 mL Pyrex tube equipped with a magnetic stir bar was charged with **1** (0.2 mmol) and *fac*-Ir(ppy)$_3$ (3.9 mg, 6 ×10^{-3} mmol) in CH_3CH_2OH (2.0 mL). This system was bubbled with Ar for 15 minutes. Then, styrene **2** (115 ul, 1.0 mmol) were added into the tube. The tube was sealed and irradiated at room temperature by blue LEDs (460 nm) for 24 hours. When reaction was finished, the mixture was evaporated to remove the solvent and the residue was purified by flash chromatography on silica gel (petroleum ether/ethyl acetate) to afford the desired product **59** with 54% yield of isolated products based on 0.2 mmol **1**.

b) Deuterium labeling experiment and NMR experiment in situ:



1 **2** **41**, 60 %

Two 10 mL Pyrex tubes equipped with a magnetic stir bar were charged with **1** (0.2 mmol) and *fac*-Ir(ppy)$_3$ (3.9 mg, 6 ×10^{-3} mmol) in CD_3CN (2.0 mL). These two systems were bubbled with Ar for 15 minutes. Then, styrene **2** (115 ul, 1.0 mmol) were added into these tubes. One reaction system was tested by ^{1}H NMR directly. The other one was sealed and irradiated at room temperature by blue LEDs (460 nm) for 24 hours. When reaction was finished, the mixture was tested by ^{1}H NMR with 2,2-diphenylacetonitrile as internal standard. 60 % **41**, 40 % free acetic anion and 100% acetonitrile fragmentation from **1** were detected. These facts revealed an intriguing scission and reassembly of oxime ester into styrene.

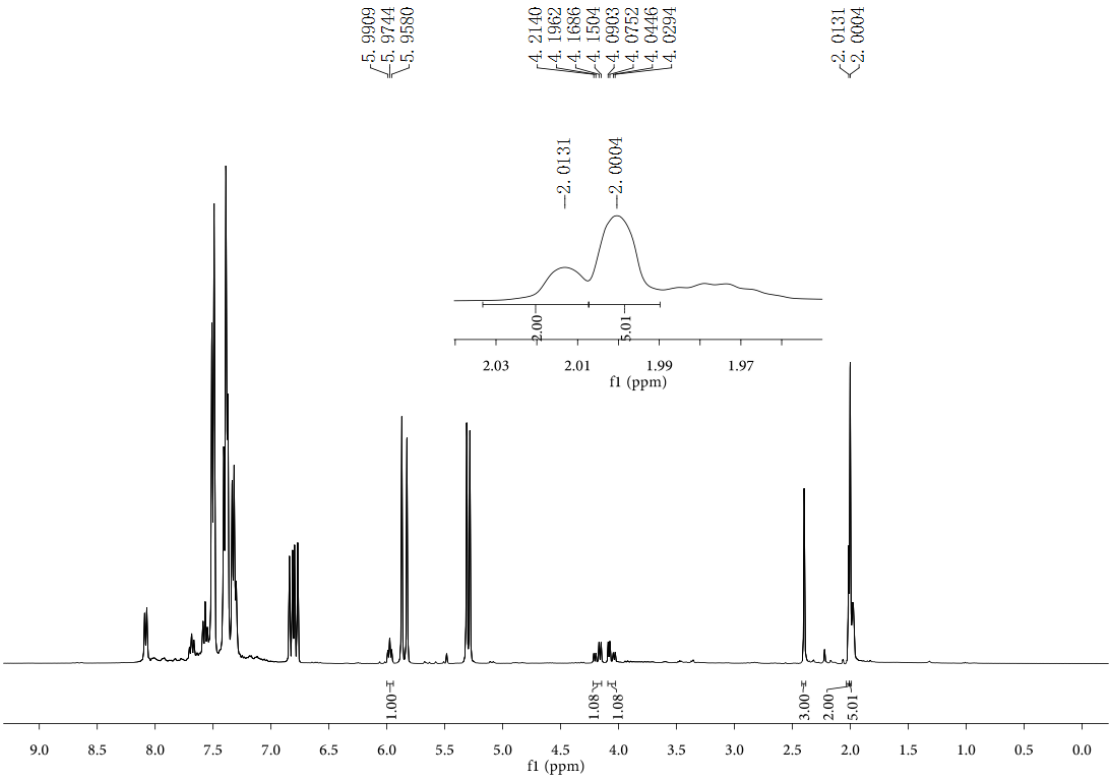


Figure S8. In situ ^{1}H NMR spectra of reaction mixture after 24 h.

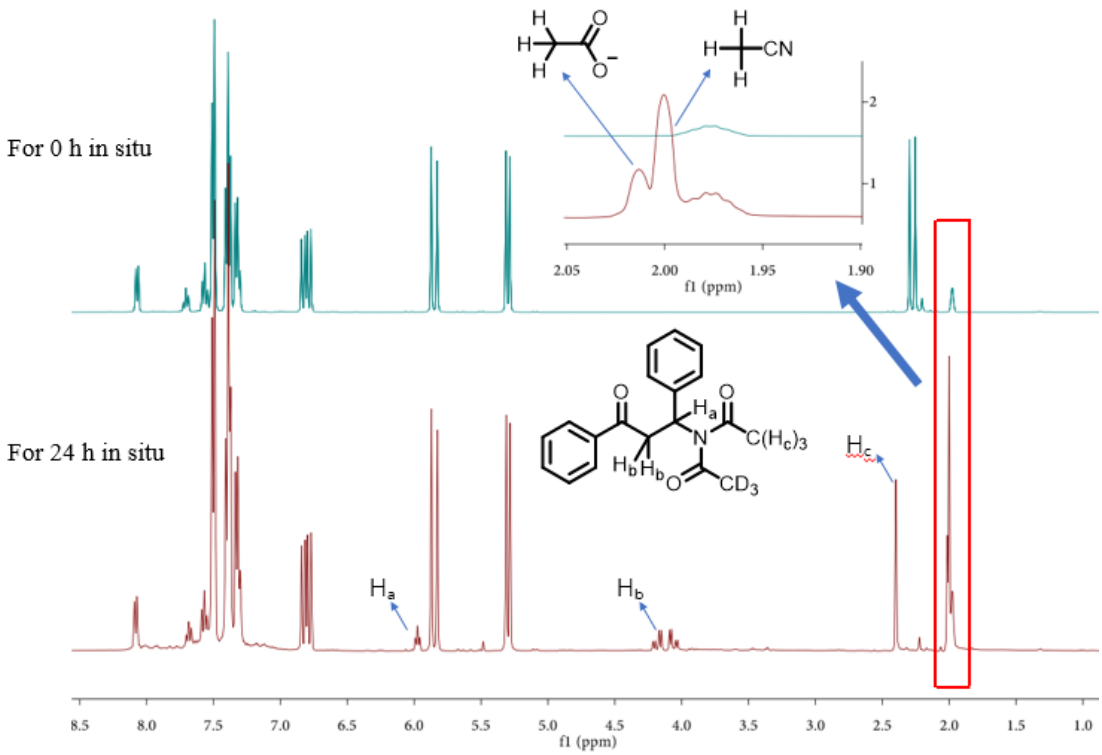
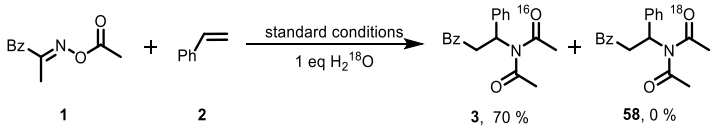


Figure S9. Comparison of in situ ^{1}H NMR spectra of reaction system before and after reaction.

c) ^{18}O labeled reaction for the reaction possibility of water:



A 10 mL Pyrex tube equipped with a magnetic stir bar was charged with **1** (0.2 mmol) and *fac*-Ir(ppy)$_3$ (3.9 mg, 6 $\times 10^{-3}$ mmol) in CH_3CN (2.0 mL). This system was bubbled with Ar for 15 minutes. Then, styrene **2** (115ul, 1.0 mmol) were added into the tube. The tube was sealed and irradiated at room temperature by blue LEDs (460 nm) for 24 hours. When reaction was finished, the mixture was evaporated to remove the solvent and the residue was purified by flash chromatography on silica gel (petroleum ether/ethyl acetate) to afford the desired product **3** with 70 % yield. The HRMS (ESI) examination of **3** (calcd for $C_{19}H_{19}NNaO_3$ $[M+Na]^+$ 332.14257, found 332.1247) found no ^{18}O-labeled product.

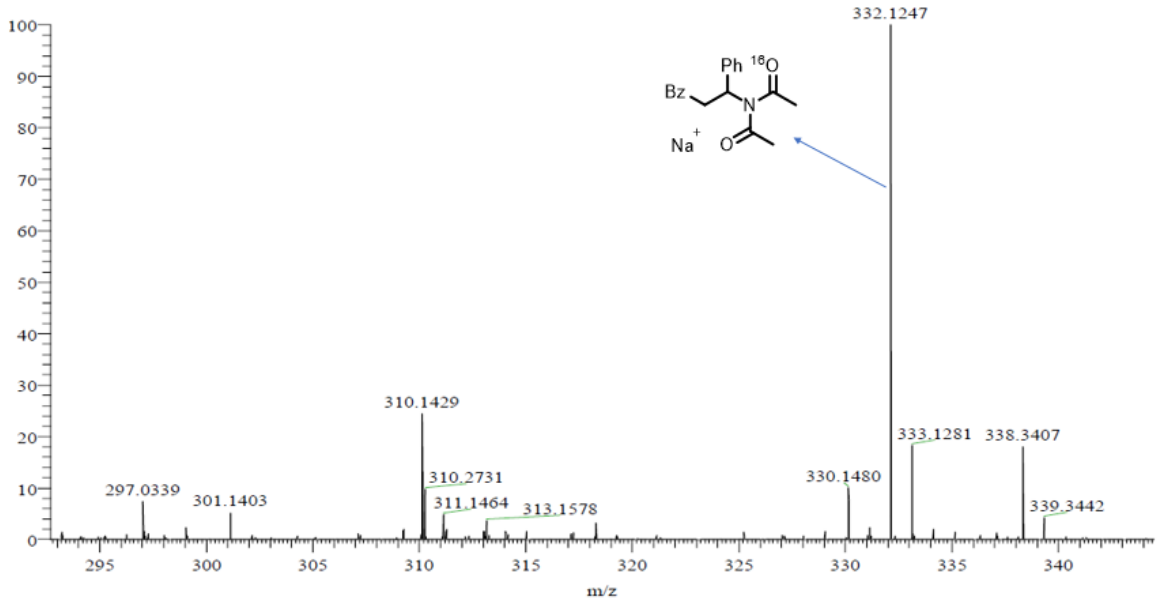
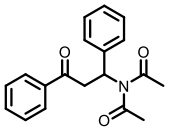


Figure S10. HRMS (ESI) examination of ^{18}O-labeled reaction.

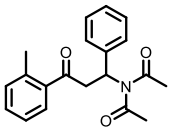
8. Characterization Data of All Products

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)acetamide (3)**:



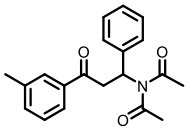
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 83% (51.3 mg, yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.7 Hz, 2H), 7.60 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.6 Hz, 2H), 7.37 – 7.26 (m, 5H), 5.94 – 5.81 (m, 1H), 4.26 (dd, *J* = 18.1, 7.8 Hz, 1H), 3.85 (dd, *J* = 18.2, 5.3 Hz, 1H), 2.46 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.00, 174.42, 139.40, 136.43, 133.66, 128.79, 128.68, 128.25, 127.40, 126.09, 55.96, 41.60, 26.86. HRMS (ESI): calcd for $C_{19}H_{19}NNaO_3$ $[M+Na]^+$ 332.1257, found 332.1247.

***N*-acetyl-*N*-(3-oxo-1-phenyl-3-(o-tolyl)propyl)acetamide (4)**:



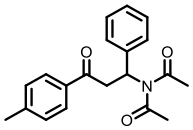
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 46% (30.0 mg, colorless oil).^{1}H NMR (400 MHz, $CDCl_3$) δ 7.71 (d, J = 7.7 Hz, 1H), 7.40 (t, *J* = 7.4 Hz, 1H), 7.36 – 7.31 (m, 2H), 7.30 – 7.24 (m, 5H), 5.91 – 5.80 (m, 1H), 4.17 (dd, *J* = 17.9, 7.9 Hz, 1H), 3.76 (dd, *J* = 17.9, 5.4 Hz, 1H), 2.48 (s, 3H), 2.46 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 201.54, 174.43, 139.37, 138.49, 137.16, 132.13, 131.90, 128.91, 128.69, 127.41, 126.12, 125.91, 56.16, 44.34, 26.88, 21.37. HRMS (ESI) : calcd for $C_{20}H_{21}NNa0_3$ $[M+Na]^+$ 346.1414, found 346.1401.

***N*-acetyl-*N*-(3-oxo-1-phenyl-3-(m-tolyl)propyl)acetamide (5)**:



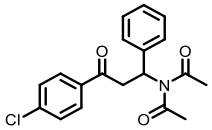
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 61% (39.4 mg, white soild). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.84 – 7.77 (m, 2H), 7.43 – 7.26 (m, 7H), 5.94 – 5.82 (m, 1H), 4.23 (dd, *J* = 18.1, 7.7 Hz, 1H), 3.85 (dd, *J* = 18.2, 5.0 Hz, 1H), 2.46 (s, 6H), 2.41 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.15, 174.42, 139.45, 138.62, 136.43, 134.43, 128.77, 128.67, 127.37, 126.07, 125.47, 55.96, 41.65, 26.87, 21.35. HRMS (ESI): calcd for $C_{20}H_{21}NNa0_3$ $[M+Na]^+$ 346.1414, found 346.1402.

***N*-acetyl-*N*-(3-oxo-1-phenyl-3-(p-tolyl)propyl)acetamide (6)**:



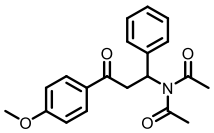
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 61% (39.5 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.02 (d, *J* = 8.1 Hz, 2H), 7.48 – 7.37 (m, 7H), 6.05 – 5.95 (m, 1H), 4.33 (dd, *J* = 18.0, 7.7 Hz, 1H), 3.94 (dd, *J* = 18.0, 5.3 Hz, 1H), 2.57 (s, 6H), 2.53 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.58, 174.43, 144.59, 139.49, 133.97, 129.46, 128.66, 128.39, 127.35, 126.06, 56.00, 41.44, 26.87, 21.71. HRMS (ESI): calcd for $C_{20}H_{21}NNa0_3$ $[M+Na]^+$ 346.1414, found 346.1402.

***N*-acetyl-*N*-(3-(4-chlorophenyl)-3-oxo-1-phenylpropyl)acetamide (7)**:



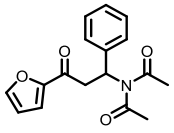
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 56% (38.4 mg, pale yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.05 (d, *J* = 8.5 Hz, 2H), 7.56 (d, *J* = 8.5 Hz, 2H), 7.48 – 7.43 (m, 2H), 7.42 – 7.37 (m, 3H), 5.97 (dd, *J* = 7.3, 5.8 Hz, 1H), 4.37 (dd, *J* = 18.1, 7.9 Hz, 1H), 3.91 (dd, *J* = 18.1, 5.3 Hz, 1H), 2.56 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 196.83, 174.40, 140.19, 139.19, 134.71, 129.67, 129.11, 128.72, 127.50, 126.08, 55.93, 41.55, 26.85. HRMS (ESI): calcd for $C_{19}H_{18}ClNNaO_3$ $[M+Na]^+$ 366.0867, found 366.0857.

***N*-acetyl-*N*-(3-(4-methoxyphenyl)-3-oxo-1-phenylpropyl)acetamide (8)**:



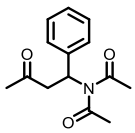
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 43% (29.2 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.9 Hz, 2H), 7.37 – 7.25 (m, 5H), 6.95 (d, *J* = 7.8 Hz, 2H), 5.93 – 5.83 (m, 1H), 4.19 (dd, *J* = 17.8, 7.7 Hz, 1H), 3.88 (s, 3H), 3.79 (dd, *J* = 17.8, 5.1 Hz, 1H), 2.45 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 196.45, 174.48, 163.98, 139.55, 130.63, 129.53, 128.66, 127.33, 126.05, 113.94, 56.13, 55.55, 41.16, 26.86. HRMS (ESI): calcd for $C_{20}H_{21}NNaO_4$ $[M+Na]^+$ 362.1363, found 362.1351.

***N*-acetyl-*N*-(3-(furan-2-yl)-3-oxo-1-phenylpropyl)acetamide(9)**:



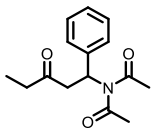
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 86% (51.4 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.63 (s, 1H), 7.37 – 7.26 (m, 6H), 6.63 – 6.53 (m, 1H), 5.85 (dd, *J* = 8.2, 5.4 Hz, 1H), 4.11 (dd, *J* = 17.5, 8.4 Hz, 1H), 3.70 (dd, *J* = 17.5, 5.3 Hz, 1H), 2.44 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 186.70, 174.32, 152.23, 147.09, 139.17, 128.67, 127.45, 126.04, 118.32, 112.51, 55.55, 41.08, 26.84. HRMS (ESI): calcd for $C_{17}H_{17}NaNO_4$ $[M+H]^+$ 322.1050, found 322.1039.

***N*-acetyl-*N*-(3-oxo-1-phenylbutyl)acetamide (10)**:



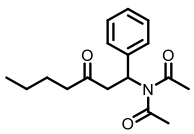
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 60% (29.7 mg, pale yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 (dd, J = 7.4, 7.6 Hz, 2H), 7.29 – 2.26 (m, 1H), 7.24 – 7.20 (m, 2H) 5.73 – 5.60 (t, *J* = 6.5 Hz, 1H), 3.67 (dd, *J* = 18.4, 7.8 Hz, 1H), 3.36 (dd, *J* = 18.4, 5.3 Hz, 1H), 2.43 (s, 6H), 2.22 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 206.46, 174.37, 139.16, 128.67, 127.44, 126.03, 55.31, 46.40, 30.31, 26.83. HRMS (ESI): calcd for $C_{14}H_{17}NaNO_3$ $[M+Na]^+$ 270.1101, found 270.1095.

***N*-acetyl-*N*-(3-oxo-1-phenylpentyl)acetamide (11)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 44% (23.0 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 (t, *J* = 7.4 Hz, 2H), 7.28 – 7.20 (m, 3H), 5.77 – 5.61 (m, 1H), 3.66 (dd, *J* = 18.1, 8.0 Hz, 1H), 3.31 (dd, *J* = 18.1, 5.1 Hz, 1H), 2.50 (q, *J* = 14.0, 7.1 Hz, 2H), 2.43 (s, 6H), 1.08 (t, *J* = 7.2 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 209.37, 174.39, 139.26, 128.66, 127.41, 126.04, 55.46, 45.12, 36.38, 26.82, 7.68. HRMS (ESI): calcd for $C_{15}H_{19}NNaO_3$ $[M+Na]^+$ 284.1257, found 284.1249.

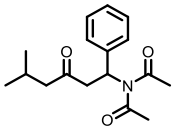
***N*-acetyl-*N*-(3-oxo-1-phenylheptyl)acetamide (12)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 66% (38.2 mg, pale yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 (t, *J* = 7.4 Hz, 2H), 7.28 – 7.20 (m, 3H), 5.78 – 5.57 (m, 1H), 3.67 (dd, *J* = 18.1, 8.1 Hz, 1H), 3.30 (dd, *J* = 18.2, 5.1 Hz, 1H), 2.59 – 2.31 (m, 8H), 1.63 – 1.52 (m, 2H),

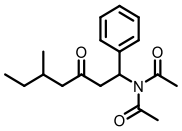
1.36 – 1.25 (m, 2H), 0.91 (t, *J* = 7.3 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 209.10, 174.39, 139.27, 128.65, 127.40, 126.04, 55.46, 45.45, 42.97, 26.82, 25.79, 22.28, 13.81. HRMS (ESI): calcd for $C_{17}H_{23}NNaO_3$ $[M+Na]^+$ 312.1570, found 312.1560.

***N*-acetyl-*N*-(5-methyl-3-oxo-1-phenylhexyl)acetamide (13)**:



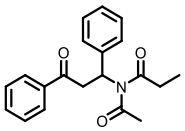
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 73% (42.2 mg, pale yellow oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 (t, *J* = 7.6 Hz, 2H), 7.27 – 7.21 (m, 3H), 5.66 (dd, *J* = 7.7, 5.6 Hz, 1H), 3.68 (dd, *J* = 18.2, 8.2 Hz, 1H), 3.26 (dd, *J* = 18.2, 5.2 Hz, 1H), 2.44 (s, 6H), 2.34 (d, *J* = 7.0 Hz, 2H), 2.21 – 2.10 (m, 1H), 0.92 (d, *J* = 6.6 Hz, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 208.72, 174.52, 139.55, 128.80, 127.56, 126.31, 55.70, 52.42, 46.22, 26.89, 24.76, 22.70, 22.61. HRMS (ESI): calcd for $C_{17}H_{23}NNaO_3$ $[M+Na]^+$ 312.1570, found 312.1562.

***N*-acetyl-*N*-(5-methyl-3-oxo-1-phenylheptyl)acetamide (14)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 47% (28.5 mg, pale yellow oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.33 (t, J = 7.5 Hz, 2H), 7.26 –7.21 (m, 3H), 5.77 – 5.59 (m, 1H), 3.75 – 3.62 (m, 1H), 3.31 – 3.22 (m, 1H), 2.57 – 2.32 (m, 7H), 2.30 – 2.23 (m, 1H), 1.97 – 1.87 (m, 1H), 1.36 – 1.27 (m, 1H), 1.24 – 1.13 (m, 1H), 0.91 – 0.85 (m, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 209.01, 208.96, 174.40, 139.29, 139.27, 128.65, 127.41, 126.08, 55.52, 55.46, 50.37, 50.33, 45.99, 45.94, 30.82, 30.80, 29.52, 29.41, 26.83, 19.35, 19.33, 11.31, 11.29. HRMS (ESI): calcd for $C_{18}H_{25}NNaO_3$ $[M+Na]^+$ 326.1727, found 326.1716.

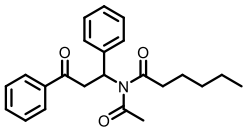
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)propionamide (15)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 84% (54.3 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.93 (d, *J* = 7.7 Hz, 2H), 7.52 (t, *J* = 7.3 Hz, 1H), 7.40 (t, *J* = 7.7 Hz, 2H), 7.28 – 7.17 (m, 5H), 5.91 – 5.77 (m, 1H), 4.12 (dd, *J* = 18.1, 7.5 Hz, 1H), 3.81 (dd, *J* = 18.1, 5.5 Hz, 1H), 2.80 (dq, *J* = 17.0, 7.3 Hz, 1H), 2.61 (dq, *J* = 17.0, 7.3 Hz,1H), 2.37 (s, 3H), 1.03 (t, *J* = 7.3 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.01, 178.27, 174.42, 139.56, 136.43, 133.65, 128.78, 128.66,

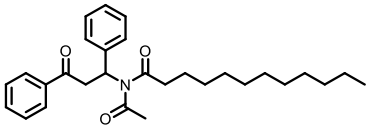
128.26, 127.33, 126.05, 55.46, 41.87, 31.68, 26.93, 9.29. HRMS (ESI): calcd for $C_{20}H_{21}NNaO_3$ $[M+Na]^+$ 346.1414, found 346.1404.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)hexanamide (16)**:



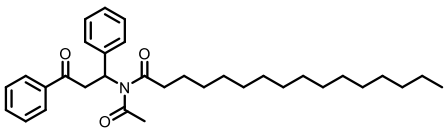
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 56% (29.7 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.59 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.4 Hz, 2H), 7.34 – 7.24 (m, 5H), 6.03 – 5.84 (m, 1H), 4.20 (dd, *J* = 18.1, 7.4 Hz, 1H), 3.88 (dd, *J* = 18.1, 5.3 Hz, 1H), 2.81 (dt, *J* = 16.4 Hz, 7.4 Hz, 1H), 2.68 (dt, *J* = 16.4 Hz, 7.4 Hz, 1H), 2.45 (s, 3H), 1.59 (tt, *J* = 7.0 Hz, 2H), 1.31 – 1.18 (m, 4H), 0.84 (t, *J* = 6.6 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.10, 177.86, 174.57, 139.84, 136.77, 133.73, 128.92, 128.80, 128.43, 127.49, 126.36, 55.77, 42.07, 38.48, 31.42, 26.89, 24.91, 22.55, 13.99. HRMS (ESI): calcd for $C_{23}H_{27}NNaO_3$ $[M+Na]^+$ 388.1883, found 388.1873.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)tridecanamide (17)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 60% (59.9 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.59 (t, *J* = 7.2 Hz, 1H), 7.47 (t, *J* = 7.4 Hz, 2H), 7.36 – 7.24 (m, 5H), 5.97 – 5.84 (m, 1H), 4.20 (dd, *J* = 18.1, 7.4 Hz, 1H), 3.88 (dd, *J* = 18.1, 5.3 Hz, 1H), 2.80 (dt, *J* = 16.4 Hz, 7.4 Hz, 1H), 2.65 (dt, *J* = 16.4 Hz, 7.4 Hz, 1H), 2.44 (s, 3H), 1.63 – 1.54 (m, 2H), 1.45 – 1.02 (m, 18H), 0.88 (t, *J* = 6.4 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.96, 177.70, 174.44, 139.59, 136.47, 133.63, 128.77, 128.65, 128.27, 127.33, 126.12, 55.49, 41.83, 38.34, 31.93, 29.61, 29.60, 29.46, 29.39, 29.34, 29.09, 26.85, 25.06, 22.70, 14.13. HRMS (ESI): calcd for $C_{29}H_{39}NNaO_3$ $[M+Na]^+$ 472.2822, found 472.2808.

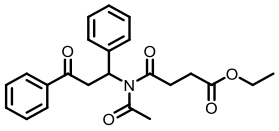
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)tridecanamide (18)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 54% (54.6 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.4 Hz, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.47 (t, *J* = 7.7 Hz, 2H), 7.36 – 7.22 (m, 5H), 5.98 – 5.83 (m, 1H), 4.20 (dd, *J* = 18.1, 7.5 Hz, 1H), 3.88 (dd, *J* = 18.1, 5.6 Hz, 1H), 2.86 – 2.75 (m, 1H), 2.70 – 2.60 (m, 1H), 2.44 (s, 3H), 1.62 – 1.54 (m, 2H), 1.29 – 1.18 (m, 24H),

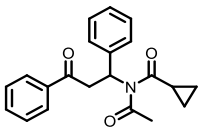
0.88 (t, *J* = 6.8 Hz, 3H). ^{13}C NMR (101 MHz, CDCl3) δ 197.94, 177.68, 174.42, 139.57, 136.45, 133.62, 128.76, 128.64, 128.26, 127.32, 126.10, 55.48, 41.83, 38.34, 31.94, 29.71, 29.69, 29.67, 29.61, 29.46, 29.40, 29.38, 29.10, 26.85, 25.06, 22.71, 14.13. HRMS (ESI): calcd for $C_{33}H_{47}NNaO_3$ $[M+Na]^+$ 528.3448, found 528.3428.

Ethyl 4-oxo-4-(*N*-(3-oxo-1,3-diphenylpropyl)acetamido)butanoate (19):



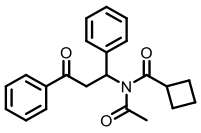
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 70% (55.3 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.59 (t, *J* = 7.2 Hz, 1H), 7.47 (t, *J* = 7.5 Hz, 2H), 7.36 – 7.23 (m, 5H), 6.00 – 5.86 (t, 1H), 4.22 (dd, *J* = 18.3, 7.3 Hz, 1H), 4.07 (q, *J* = 7.0 Hz, 2H), 3.90 (dd, *J* = 18.3, 5.2 Hz, 1H), 3.17 (dt, *J* = 17.2, 5.9 Hz, 1H), 3.04 (dt, *J* = 13.2, 6.3 Hz, 1H), 2.74 – 2.56 (m, 2H), 2.44 (s, 3H), 1.21 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.98, 176.08, 174.34, 172.59, 139.31, 136.44, 133.61, 128.74, 128.66, 128.27, 127.29, 125.94, 60.60, 55.34, 41.71, 33.28, 29.45, 26.72, 14.18. HRMS (ESI): calcd for $C_{23}H_{25}NNaO_5$ $[M+Na]^+$ 418.1625, found 418.1608.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclopropanecarboxamide (20)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 53% (35.5 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.5 Hz, 2H), 7.59 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.40 – 7.26 (m, 5H), 6.25 – 6.11 (m, 1H), 4.22 (dd, *J* = 17.9, 7.6 Hz, 1H), 3.88 (dd, *J* = 17.9, 5.6 Hz, 1H), 2.39 (s, 3H), 2.14 – 2.05 (m, 1H), 1.12 (m, 2H), 0.96 (m, 2H). ^{13}C NMR (101 MHz, CDCl3) δ 197.82, 179.01, 173.61, 139.66, 136.55, 133.53, 128.74, 128.58, 128.25, 127.33, 126.52, 55.43, 41.74, 26.63, 17.11, 11.17, 11.06. HRMS (ESI): calcd for $C_{21}H_{21}NNaO_3$ $[M+Na]^+$ 358.1414, found 358.1402.

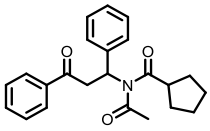
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclobutanecarboxamide (21)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 78% (54.4 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.6 Hz, 2H), 7.60 (t, *J* = 7.3 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.35 – 7.29 (m, 2H), 7.26 – 7.21 (m, 3H), 5.88 –5.77 (m, 1H), 4.10 – 3.93 (m, 2H), 3.69 (p, *J* = 8.5 Hz,

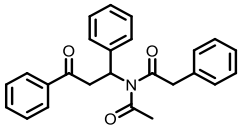
1H), 2.43 (s, 3H), 2.30 – 2.10 (m, 4H), 1.98 – 1.85 (m, 1H), 1.77 (t, *J* = 9.4 Hz, 1H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.86, 179.25, 174.23, 139.66, 136.41, 133.64, 128.77, 128.60, 128.27, 127.23, 125.96, 55.17, 42.19, 41.53, 26.80, 25.70, 25.60, 17.55. HRMS (ESI): calcd for $C_{22}H_{23}NNaO_3$ $[M+Na]^+$ 372.1570, found 372.1559.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclopentanecarboxamide (22)**:



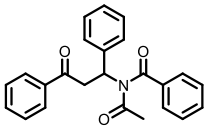
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 55% (39.9 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.94 (d, *J* = 7.6 Hz, 2H), 7.53 (t, *J* = 7.2 Hz, 1H), 7.41 (t, *J* = 7.4 Hz, 2H), 7.29 – 7.16 (m, 5H), 6.04 – 5.78 (m, 1H), 4.00 (dd, *J* = 18.1, 6.7 Hz, 1H), 3.90 (dd, *J* = 18.1, 6.0 Hz, 1H), 3.36 – 3.13 (m, 1H), 2.36 (s, 3H), 1.88 – 1.72 (m, 2H), 1.72 – 1.55 (m, 4H), 1.52 – 1.41 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.79, 182.01, 174.45, 139.66, 136.44, 133.61, 128.76, 128.60, 128.26, 127.29, 126.20, 55.35, 46.55, 42.18, 31.33, 31.12, 26.61, 26.14, 26.09. HRMS (ESI): calcd for $C_{23}H_{25}NNaO_3$ $[M+Na]^+$ 386.1727, found 386.1716.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)-2-phenylacetamide (23)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 55% (42.4 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.6 Hz, 2H), 7.61 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.31 – 7.19 (m, 8H), 7.17 – 7.09 (d, *J* = 6.7 Hz, 2H), 6.06 – 5.79 (m, 1H), 4.22 – 4.02 (m, 3H), 3.89 (dd, *J* = 18.2, 5.6 Hz, 1H), 2.47 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.99, 175.81, 174.78, 139.41, 136.69, 134.39, 133.76, 129.72, 128.92, 128.76, 128.67, 128.44, 127.55, 127.18, 126.48, 56.18, 45.30, 41.85, 26.57. HRMS (ESI): calcd for $C_{25}H_{23}NNaO_3$ $[M+Na]^+$ 408.1570, found 408.1558.

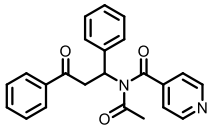
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)benzamide (24)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 54% (40.1 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.92 (d, *J* = 7.6 Hz, 2H), 7.53 – 7.18 (m, 13H), 6.20 (dd, *J* = 8.7, 5.3 Hz, 1H), 4.39 (dd, *J* = 17.9, 9.2 Hz, 1H), 3.71 (dd, *J* = 17.9, 5.1 Hz, 1H), 1.80 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.62, 174.60, 173.84, 139.46, 136.69, 136.66, 133.36, 132.71, 128.92, 128.82,

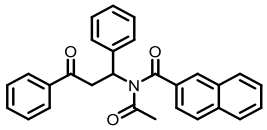
128.67, 128.50, 128.17, 127.76, 127.65, 56.43, 41.22, 27.66. HRMS (ESI): calcd for $C_{24}H_{21}NNaO_3$ $[M+Na]^+$ 394.1414, found 394.1401

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)isonicotinamide (25)**:



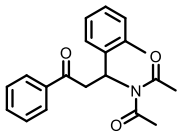
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 47% (35.0 mg, pale yellow oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.69 (d, *J* = 4.7 Hz, 2H), 7.98 (d, *J* = 7.7 Hz, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.50 – 7.43 (m, 4H), 7.41 (d, *J* = 4.7 Hz, 2H), 7.37 (t, *J* = 7.4 Hz, 2H), 7.32 – 7.28 (m, 1H), 6.06 (dd, *J* = 9.8, 4.2 Hz, 1H), 4.55 (dd, *J* = 18.2, 9.9 Hz, 1H), 3.67 (dd, *J* = 18.2, 4.3 Hz, 1H), 2.12 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.69, 173.94, 172.87, 150.60, 143.79, 138.94, 136.38, 133.65, 128.77, 128.14, 127.93, 127.29, 121.63, 57.11, 41.11, 27.14. HRMS (ESI): calcd for $C_{23}H_{21}N_2O_3$ $[M+H]^+$ 373.1547, found 373.1547.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)-2-naphthamide (26)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 74% (63.3 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.24 (d, *J* = 8.1 Hz, 1H), 8.03 (d, *J* = 7.6 Hz, 2H), 7.92 (d, *J* = 7.9 Hz, 1H), 7.85 (d, *J* = 7.8 Hz, 1H), 7.61 – 7.44 (m, 7H), 7.42 – 7.32 (m, 4H), 7.27 (t, *J* = 7.6 Hz, 1H), 6.39 (dd, *J* = 8.7, 5.4 Hz, 1H), 4.56 (dd, *J* = 17.8, 9.2 Hz, 1H), 3.84 (dd, *J* = 17.8, 5.0 Hz, 1H), 1.78 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.80, 174.42, 173.54, 139.53, 136.78, 134.44, 133.83, 133.39, 132.21, 130.42, 128.72, 128.58, 128.53, 128.22, 128.03, 127.74, 127.04, 126.88, 125.01, 124.61, 56.11, 41.14, 27.66. HRMS (ESI): calcd for $C_{28}H_{23}NNaO_3$ $[M+Na]^+$ 444.1570, found 444.1555.

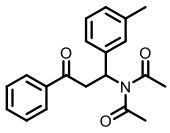
***N*-acetyl-*N*-(3-oxo-3-phenyl-1-(o-tolyl)propyl)acetamide (27)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 53% (34.2 mg, pale yellow oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.97 (d, *J* = 7.8 Hz, 2H), 7.58 (t, *J* = 7.3 Hz, 1H), 7.46 (t, *J* = 7.6 Hz, 2H), 7.38 (d, *J* = 7.2 Hz, 1H), 7.22 – 7.12 (m, 3H), 6.07 – 5.93 (m, 1H), 4.14 (dd, *J* = 18.0, 8.0 Hz, 1H), 3.70 (dd, *J* = 18.0, 5.9 Hz, 1H), 2.34 (s, 3H), 2.32 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.51, 174.81,

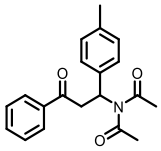
137.19, 136.34, 134.86, 133.58, 130.98, 128.77, 128.18, 127.84, 127.77, 126.45, 54.36, 40.84, 26.66, 19.42. HRMS (ESI): calcd for $C_{20}H_{21}NNaO_3$ $[M+Na]^+$ 346.1414, found 346.1407.

***N*-acetyl-*N*-(3-oxo-3-phenyl-1-(m-tolyl)propyl)acetamide (28)**:



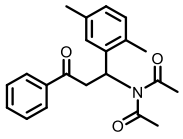
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 66% (42.6 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.59 (t, *J* = 7.1 Hz, 1H), 7.47 (t, *J* = 7.6 Hz, 2H), 7.22 (t, *J* = 7.9 Hz, 1H), 7.12 – 7.04 (m, 3H), 5.98 – 5.72 (m, 1H), 4.27 (dd, *J* = 18.1, 7.9 Hz, 1H), 3.81 (dd, *J* = 18.1, 5.1 Hz, 1H), 2.45 (s, 6H), 2.34 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.09, 174.49, 139.39, 138.34, 136.49, 133.63, 128.78, 128.58, 128.26, 128.21, 126.78, 123.16, 55.97, 41.62, 26.87, 21.62. HRMS (ESI): calcd for $C_{20}H_{21}NNaO_3$ $[M+Na]^+$ 346.1414, found 346.1406.

***N*-acetyl-*N*-(3-oxo-3-phenyl-1-(p-tolyl)propyl)acetamide (29)**:



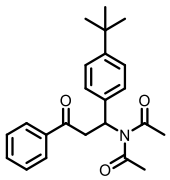
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 64% (41.3 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.92 (d, *J* = 7.8 Hz, 2H), 7.51 (t, *J* = 7.3 Hz, 1H), 7.40 (t, *J* = 7.6 Hz, 2H), 7.11 (d, J = 8.0 Hz, 2H), 7.06 (d, J = 8.0 Hz, 2H), 5.82 – 5.71 (m, 1H), 4.18 (dd, *J* = 18.1, 7.8 Hz, 1H), 3.74 (dd, *J* = 18.1, 5.3 Hz, 1H), 2.37 (s, 6H), 2.25 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.07, 174.45, 137.11, 136.48, 136.36, 133.60, 129.34, 128.76, 128.24, 126.08, 55.83, 41.58, 26.87, 20.98. HRMS (ESI): calcd for $C_{20}H_{21}NNaO_3$ $[M+Na]^+$ 346.1414, found 346.1405.

***N*-acetyl-*N*-(1-(2,5-dimethylphenyl)-3-oxo-3-phenylpropyl)acetamide (30)**:



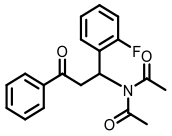
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 54% (36.4 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.97 (d, *J* = 7.4 Hz, 2H), 7.58 (t, *J* = 7.0 Hz, 1H), 7.47 (t, *J* = 7.2 Hz, 2H), 7.18 (s, 1H), 7.05 (d, *J* = 7.5 Hz, 1H), 7.00 (d, *J* = 7.5 Hz, 1H), 5.98 (t, *J* = 6.0 Hz, 1H), 4.21 (dd, *J* = 18.0, 8.4 Hz, 1H), 3.58 (dd, *J* = 18.1, 4.5 Hz, 1H), 2.33 (s, 6H), 2.29 (s, 3H), 2.28 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.66, 175.00, 137.19, 136.35, 136.03, 133.56, 131.45, 130.86, 128.76, 128.57, 128.34, 128.18, 54.58, 40.89, 26.64, 21.26, 18.93. HRMS (ESI): calcd for $C_{21}H_{23}NNaO_3$ $[M+Na]^+$ 360.1570, found 360.1559.

***N*-acetyl-*N*-(1-(4-(tert-butyl)phenyl)-3-oxo-3-phenylpropyl)acetamide (31)**:



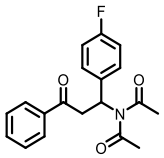
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 55% (40.2 mg, yellow soild). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.60 (t, *J* = 7.3 Hz, 1H), 7.48 (t, *J* = 7.6 Hz, 2H), 7.35 (d, *J* = 8.3 Hz, 2H), 7.22 (d, *J* = 8.3 Hz, 2H), 5.85 (dd, *J* = 7.2, 5.8 Hz, 1H), 4.28 (dd, *J* = 18.1, 7.9 Hz, 1H), 3.82 (dd, *J* = 18.1, 5.2 Hz, 1H), 2.46 (s, 6H), 1.30 (s, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 199.48, 175.84, 151.68, 138.01, 137.77, 134.89, 130.11, 129.61, 127.25, 126.95, 57.28, 43.18, 35.81, 32.65, 28.13, 28.12. HRMS (ESI): calcd for $C_{23}H_{27}NNaO_3$ $[M+Na]^+$ 388.1883, found 388.1873.

***N*-acetyl-*N*-(1-(2-fluorophenyl)-3-oxo-3-phenylpropyl)acetamide (32)**:



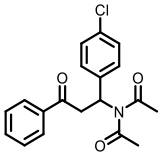
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 63% (41.2 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.8 Hz, 2H), 7.60 (t, *J* = 7.2 Hz, 1H), 7.52 – 7.44 (m, 3H), 7.37 – 7.18 (m, 2H), 7.14 – 7.02 (m, 2H), 6.07 – 5.88 (m, 1H), 4.22 (dd, *J* = 18.1, 7.7 Hz, 1H), 3.93 (dd, *J* = 18.1, 5.7 Hz, 1H), 2.46 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.45, 174.62, 160.40 (d, *J* = 244.0 Hz), 136.37, 133.68, 129.72 (d, *J* = 3.5 Hz), 129.48 (d, *J* = 8.7 Hz), 128.79, 128.19, 125.68 (d, *J* = 12.5 Hz), 124.00 (d, *J* = 3.3 Hz), 115.54 (d, *J* = 22.4 Hz), 51.31 (d, *J* = 1.6 Hz), 40.09, 26.55, 26.53. ^{19}F NMR (377 MHz, CDCl3) δ -116.10. HRMS (ESI): calcd for $C_{19}H_{18}FNNaO_3$ $[M+Na]^+$ 350.1163, found 350.1152.

***N*-acetyl-*N*-(1-(4-fluorophenyl)-3-oxo-3-phenylpropyl)acetamide (33)**:



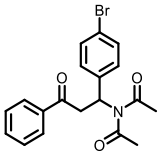
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 89% (58.2 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.6 Hz, 2H), 7.60 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.33 – 7.27 (m, 2H), 7.05 – 6.99 (m, 2H), 5.91 – 5.77 (m, 1H), 4.24 (dd, *J* = 18.2, 7.6 Hz, 1H), 3.83 (dd, *J* = 18.2, 5.3 Hz, 1H), 2.45 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.77, 174.31, 161.94 (d, *J* = 244.9 Hz), 136.31, 135.15 (d, *J* = 3.3 Hz), 133.74, 128.81, 128.22, 128.13 (d, *J* = 8.0 Hz), 115.49 (d, *J* = 21.4 Hz), 55.48, 41.59, 26.88. ^{19}F NMR (377 MHz, CDCl3) δ -115.01. HRMS (ESI): calcd for $C_{19}H_{18}FNNaO_3$ $[M+Na]^+$ 350.1163, found 350.1151.

***N*-acetyl-*N*-(1-(4-chlorophenyl)-3-oxo-3-phenylpropyl)acetamide (34)**:



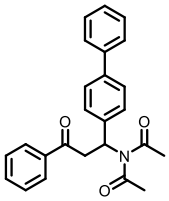
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 71% (48.7 mg, pale yellow oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.9 Hz, 2H), 7.60 (t, *J* = 7.3 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.30 (d, *J* = 7.9 Hz, 2H), 7.24 (d, *J* = 8.2 Hz, 2H), 5.90 – 5.78 (m, 1H), 4.21 (dd, *J* = 18.2, 7.5 Hz, 1H), 3.83 (dd, *J* = 18.2, 5.4 Hz, 1H), 2.45 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.69, 174.23, 137.97, 136.30, 133.78, 133.29, 128.83, 128.79, 128.24, 127.73, 55.46, 41.46, 26.86. HRMS (ESI): calcd for $C_{19}H_{18}ClNNaO_3$ $[M+Na]^+$ 366.0867, found 366.0858.

***N*-acetyl-*N*-(1-(4-bromophenyl)-3-oxo-3-phenylpropyl)acetamide (35)**:



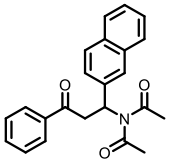
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 90% (69.8 mg, yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 7.7 Hz, 2H), 7.61 (t, *J* = 7.2 Hz, 1H), 7.52 – 7.44 (m, 4H), 7.18 (d, *J* = 7.9 Hz, 2H), 5.88 – 5.76 (m, 1H), 4.20 (dd, *J* = 18.2, 7.4 Hz, 1H), 3.84 (dd, *J* = 18.2, 5.2 Hz, 1H), 2.45 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.66, 174.21, 138.47, 136.25, 133.79, 131.75, 128.83, 128.23, 128.02, 121.38, 55.49, 41.42, 26.88. HRMS (ESI): calcd for $C_{19}H_{18}BrNNaO_3$ $[M+Na]^+$ 410.0362, 412.0342, found 410.0351, 412.0330.

***N*-(1-([1,1'-biphenyl]-4-yl)-3-oxo-3-phenylpropyl)-*N*-acetylacetamide (36)**:



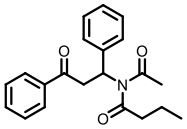
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 62% (47.7 mg, pale yellow oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.98 – 7.88 (m, 2H), 7.82 – 7.69 (m, 3H), 7.66 – 7.60 (m, 1H), 7.57 – 7.50 (m, 2H), 7.47 – 7.35 (m, 4H), 7.33 – 7.28 (m, 1H), 7.19 (s, 1H), 6.38 (dd, *J* = 8.5, 5.2 Hz, 1H), 4.52 (dd, *J* = 17.9, 9.3 Hz, 1H), 3.82 (dd, *J* = 17.9, 5.0 Hz, 1H), 1.80 (s, 3H), 1.51 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.99, 174.44, 140.50, 140.35, 138.39, 136.43, 133.70, 128.80, 128.27, 127.40, 127.07, 126.58, 55.81, 41.65, 26.91. HRMS (ESI): calcd for $C_{25}H_{23}NNaO_3$ $[M+Na]^+$ 408.1570, found 408.1564.

***N*-acetyl-*N*-(1-(naphthalen-2-yl)-3-oxo-3-phenylpropyl)acetamide(37)**:



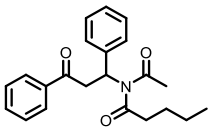
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 69% (49.6 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.04 (d, *J* = 7.6 Hz, 2H), 7.86 – 7.78 (m, 3H), 7.74 (s, 1H), 7.62 (t, *J* = 7.3 Hz, 1H), 7.53 – 7.42 (m, 5H), 6.12 – 5.98 (m, 1H), 4.38 (dd, *J* = 18.1, 7.8 Hz, 1H), 3.97 (dd, *J* = 18.1, 5.1 Hz, 1H), 2.49 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.00, 174.51, 136.76, 136.45, 133.70, 133.21, 132.58, 128.81, 128.53, 128.28, 128.04, 127.56, 126.40, 126.16, 125.15, 124.22, 56.16, 41.60, 26.93. HRMS (ESI): calcd for $C_{23}H_{21}NNaO_3$ $[M+Na]^+$ 382.1414, found 382.1407.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)butyramide (38)**:



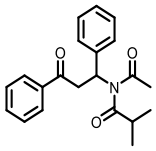
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 51% (34.4 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.59 (t, *J* = 7.3 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.34 – 7.25 (m, 5H), 6.00 – 5.77 (m, 1H), 4.20 (dd, *J* = 18.1, 7.4 Hz, 1H), 3.89 (dd, *J* = 18.1, 5.5 Hz, 1H), 2.81 (dt, *J* = 16.5, 7.2 Hz, 1H), 2.65 (dt, *J* = 16.0, 7.9 Hz, 1H), 2.44 (s, 3H), 1.72 – 1.53 (m, 2H), 0.89 (t, *J* = 7.4 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.98, 177.45, 174.43, 139.54, 136.44, 133.64, 128.77, 128.65, 128.26, 127.32, 126.07, 55.44, 41.85, 40.17, 26.89, 18.45, 13.63. HRMS (ESI): calcd for $C_{21}H_{23}NNaO_3$ $[M+Na]^+$ 360.1570, found 360.1554.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)pentanamide (39)**:



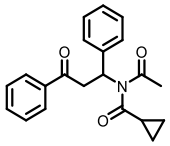
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 66% (46.3 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.94 (d, *J* = 7.7 Hz, 2H), 7.53 (t, *J* = 7.2 Hz, 1H), 7.42 (t, *J* = 7.5 Hz, 2H), 7.29 – 7.19 (m, 5H), 5.97 – 5.74 (t, *J* = 6.2 Hz, 1H), 4.12 (dd, *J* = 18.1, 7.4 Hz, 1H), 3.82 (dd, *J* = 18.0, 5.5 Hz, 1H), 2.75 (dt, *J* = 16.3, 7.4 Hz, 1H), 2.59 (dt, *J* = 16.3, 7.4 Hz, 1H), 2.37 (s, 3H), 1.52 – 1.49 (m, 2H), 1.24 – 1.18 (m, 6.8 Hz, 2H), 0.79 (t, *J* = 7.3 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.97, 177.66, 174.44, 139.55, 136.45, 133.62, 128.76, 128.64, 128.25, 127.32, 126.08, 55.48, 41.85, 38.03, 27.11, 26.84, 22.20, 13.81. HRMS (ESI): calcd for $C_{22}H_{25}NNaO_3$ $[M+Na]^+$ 374.1727, found 374.1712.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)isobutyramide (40)**:



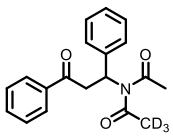
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 52% (35.1 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.7 Hz, 2H), 7.59 (t, *J* = 7.3 Hz, 1H), 7.48 (t, *J* = 7.6 Hz, 2H), 7.33 – 7.24 (m, 5H), 6.02 – 5.87 (m, 1H), 4.13 (dd, *J* = 18.1, 7.2 Hz, 1H), 3.91 (dd, *J* = 18.1, 5.7 Hz, 1H), 3.26 – 3.12 (m, 1H), 2.44 (s, 3H), 1.06 (dd, *J* = 6.9 Hz, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.76, 182.82, 174.52, 139.51, 136.44, 133.62, 128.77, 128.67, 128.62, 128.26, 127.38, 126.33, 55.46, 41.96, 35.96, 26.28, 19.65, 19.48. HRMS (ESI): calcd for $C_{21}H_{23}NNaO_3$ $[M+Na]^+$ 360.1570, found 360.1556.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclopropanecarboxamide (20')**:



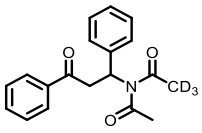
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 81% (54.3 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.93 (d, *J* = 7.6 Hz, 2H), 7.52 (t, *J* = 7.2 Hz, 1H), 7.41 (t, *J* = 7.4 Hz, 2H), 7.31 – 7.15 (m, 5H), 6.26 – 5.95 (m, 1H), 4.14 (dd, *J* = 17.9, 7.6 Hz, 1H), 3.81 (dd, *J* = 18.0, 5.6 Hz, 1H), 2.32 (s, 3H), 2.08 – 1.97 (m, 1H), 1.15 – 0.97 (m, 2H), 0.93 – 0.80 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 197.84, 179.02, 173.63, 139.68, 136.58, 133.53, 128.74, 128.58, 128.25, 127.34, 126.53, 55.45, 41.75, 26.61, 17.11, 11.16, 11.04. HRMS (ESI): calcd for $C_{21}H_{21}NNaO_3$ $[M+Na]^+$ 358.1414, found 358.1400.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)acetamide-d$_3$ (41)**:



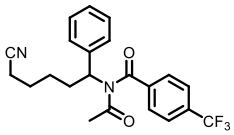
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. ^{1}H NMR Yield: 60%, white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.00 (d, *J* = 7.7 Hz, 2H), 7.60 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.5 Hz, 2H), 7.36 – 7.25 (m, 5H), 5.97 – 5.79 (m, 1H), 4.26 (dd, *J* = 18.1, 7.8 Hz, 1H), 3.85 (dd, *J* = 18.2, 5.2 Hz, 1H), 2.46 (s, 3H).^{13}C NMR (101 MHz, $CDCl_3$) δ 198.00, 174.42, 139.39, 136.42, 133.66, 128.79, 128.68, 128.25, 127.40, 126.09, 55.93, 41.59, 26.86, 26.20 (h, *J* = 19.9 Hz). HRMS (ESI): calcd for $C_{19}H_{16}D_3NNaO_3$ $[M+Na]^+$ 335.1445, found 335.1426.

***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)acetamide-d$_3$ (41')**:



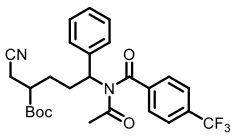
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 61% (38.1 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 (d, *J* = 7.8 Hz, 2H), 7.59 (t, *J* = 7.2 Hz, 1H), 7.48 (t, *J* = 7.7 Hz, 2H), 7.37 – 7.25 (m, 5H), 5.88 (dd, *J* = 7.3, 5.8 Hz, 1H), 4.27 (dd, *J* = 18.1, 7.8 Hz, 1H), 3.85 (dd, *J* = 18.1, 5.3 Hz, 1H), 2.46 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 198.00, 174.41, 139.40, 136.42, 133.66, 128.79, 128.68, 128.25, 127.40, 126.09, 55.92, 41.59, 26.86, 26.20 (h, *J* = 19.8 Hz). HRMS (ESI): calcd for $C_{19}H_{16}D_3NNaO_3$ $[M+Na]^+$ 335.1445, found 335.1426.

***N*-acetyl-*N*-(5-cyano-1-phenylpentyl)-4-(trifluoromethyl)benzamide (42)**:



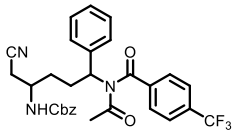
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 84% (67.5 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.69 – 7.63 (m, 4H), 7.43 (d, *J* = 7.6 Hz, 2H), 7.31 (t, *J* = 7.5 Hz, 2H), 7.27 – 7.25 (m, 1H), 5.71 (t, *J* = 7.8 Hz, 1H), 2.49 – 2.39 (m, 1H), 2.36 (t, *J* = 7.0 Hz, 2H), 2.32 – 2.23(m, 1H), 1.88 (s, 3H), 1.81 – 1.70 (m, 2H), 1.59 – 1.51 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.17, 172.88, 139.83, 138.88, 134.28 (q, *J* = 32.8 Hz), 128.95, 128.54, 128.12, 127.97, 126.01 (q, *J* = 3.6 Hz), 123.33 (q, *J* = 271.1 Hz), 119.41, 60.14, 31.25, 27.55, 26.10, 25.08, 17.09. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.15. HRMS (ESI): calcd for $C_{22}H_{21}F_3N_2NaO_2$ $[M+Na]^+$ 425.1447, found 425.1434.

Tert-butyl 5-(*N*-acetyl-4-(trifluoromethyl)benzamido)-2-(cyanomethyl)-5-phenylpentanoate (43):



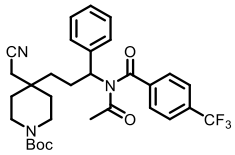
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 43% (43.2 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.83 – 7.70 (m, 4H), 7.53 (d, *J* = 7.5 Hz, 2H), 7.42 (t, *J* = 7.4 Hz, 2H), 7.39 – 7.36 (m, 1H), 5.87 – 5.76 (m, 1H), 2.88 – 2.70 (m, 2H), 2.69 – 2.33 (m, 3H), 1.99 (s, 3H), 1.96 – 1.80 (m, 2H), 1.60 – 1.55 (m, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.12, 173.09, 172.85, 172.75, 171.30, 171.29, 139.76, 138.69, 138.46, 134.32 (q, *J* = 32.6 Hz), 128.96, 128.58, 128.12, 128.07, 128.04, 126.01 (q, *J* = 3.6 Hz), 123.31 (q, *J* = 271.0 Hz), 117.75, 117.66, 82.36, 82.34, 60.14, 59.83, 42.10, 41.76, 29.16, 28.82, 28.76, 28.70, 27.97, 27.59, 27.52, 19.55. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.16. HRMS (ESI): calcd for $C_{27}H_{29}F_3N_2NaO_4$ $[M+Na]^+$ 525.1972, found 525.1978.

Benzyl (5-(*N*-acetyl-4-(trifluoromethyl)benzamido)-1-cyano-5-phenylpentan-2-yl)carbamate (44):



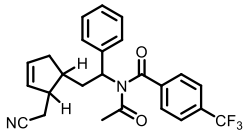
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 41% (45.2 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.69 – 7.61 (m, 4H), 7.44 – 7.40 (m, 2H), 7.39 – 7.19 (m, 8H), 5.75 (dd, *J* = 16.1, 8.1 Hz, 1H), 5.13 (s, 2H), 3.99 (s, 1H), 2.87 – 2.69 (m, 1H), 2.65 – 2.47 (m, 2H), 2.43 – 2.26 (m, 1H), 1.88 (s, 3H), 1.79 – 1.66 (m, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 174.63, 174.21, 156.06, 141.19, 140.15, 135.82 (q, *J* = 32.7 Hz), 130.36, 129.99, 129.55, 129.51, 127.38 (q, *J* = 3.7 Hz), 124.70 (q, *J* = 124.70 Hz), 118.65, 81.22, 62.23, 35.84, 35.64, 35.38, 35.23, 29.78, 28.87, 27.39, 27.34. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.18. HRMS (ESI): calcd for $C_{30}H_{28}F_3N_3NaO_4$ $[M+Na]^+$ 574.1924, found 575.1925.

Tert-butyl 4-(3-(*N*-acetyl-4-(trifluoromethyl)benzamido)-3-phenylpropyl)-4-(cyanomethyl)piperidine-1-carboxylate (45):



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 68% (77.7 mg, pale yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.75 – 7.55 (m, 4H), 7.44 (d, *J* = 7.4 Hz, 2H), 7.32 (t, *J* = 7.3 Hz, 2H), 7.29 – 7.26 (m, 1H), 5.66 (t, *J* = 7.5 Hz, 1H), 3.40 – 3.34 (m, 3H), 2.51 – 2.34 (m, 3H), 2.28 – 2.17 (m, 1H), 1.89 (s, 3H), 1.66 – 1.49 (m, 8H), 1.45 (s, 9H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.28, 172.90, 154.68, 139.74, 138.68, 134.41(q, *J* = 32.8 Hz), 128.99, 128.64, 128.18, 126.06 (q, *J* = 3.7 Hz), 123.31(q, *J* = 271.2 Hz), 117.41, 79.89, 60.72, 34.46, 34.26, 33.95, 33.70, 28.41, 27.64, 25.98, 25.85. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.17. HRMS (ESI): calcd for $C_{31}H_{36}F_3N_3NaO_4$ $[M+Na]^+$ 594.2550, found 594.2562.

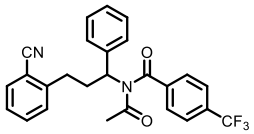
***N*-acetyl-*N*-(2-(2-(cyanomethyl)cyclopent-3-en-1-yl)-1-phenylethyl)-4-(trifluoromethyl)benzamide (46)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 54% (47.5 mg, white solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.70 – 7.61 (m, 4H), 7.45 (d, *J* = 7.6 Hz, 2H), 7.34 – 7.29 (m, 2H), 7.28 – 7.24 (m, 1H), 5.87 – 5.74 (m, 2H), 5.72 – 5.58 (m, 1H), 2.88 – 2.64 (m, 3H), 2.53 – 2.39 (m, 2H),

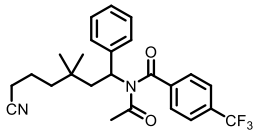
2.32 – 1.96 (m, 3H), 1.86 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.27, 173.25, 173.15, 172.48, 139.86, 139.82, 139.30, 138.18, 134.53 (q, *J* = 32.9 Hz), 134.68 (q, *J* = 32.9 Hz), 132.65, 132.48, 130.75, 130.57, 129.00, 128.59, 128.56, 128.16, 128.03, 128.00, 126.10, 126.07, 126.03, 125.99, 125.91, 123.32 (q, *J* = 272.1 Hz), 118.72, 118.54, 58.83, 58.70, 48.35, 41.19, 40.72, 38.87, 38.83, 37.92, 37.23, 27.81, 27.64, 22.72, 22.47. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.17. HRMS (ESI): calcd for $C_{25}H_{23}F_3N_2NaO_2$ $[M+Na]^+$ 463.1604, found 463.1589.

***N*-acetyl-*N*-(3-(2-cyanophenyl)-1-phenylpropyl)-4-(trifluoromethyl)benzamide (47)**:



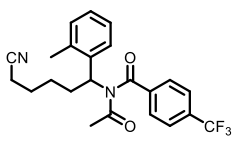
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 53% (47.7 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.73 –7.59 (m, 5H), 7.53 – 7.45 (m, 3H), 7.34 – 7.26 (m, 5H), 5.83 – 5.66 (m, 1H), 2.99 – 2.86 (m, 2H), 2.80 – 2.64 (m, 2H), 1.94 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.23, 172.98, 145.03, 139.79, 138.54, 134.18 (q, *J* = 32.6 Hz), 132.92, 129.50, 128.93, 128.59, 128.26, 128.05, 125.99 (q, *J* = 3.6 Hz), 126.89, 123.37 (q, *J* = 271.0 Hz), 117.97, 112.44, 60.17, 33.19, 32.10, 27.47. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.11. HRMS (ESI): calcd for $C_{26}H_{21}F_3N_2NaO_2$ $[M+Na]^+$ 473.1447, found 473.1433.

***N*-acetyl-*N*-(6-cyano-3,3-dimethyl-1-phenylhexyl)-4-(trifluoromethyl)benzamide (48)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 53% (47.1 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 (d, *J* = 8.0 Hz, 2H), 7.56 (d, *J* = 8.0 Hz, 2H), 7.51 (d, *J* = 7.3 Hz, 2H), 7.33 – 7.23 (m, 3H), 5.95 – 5.79 (m, 1H), 2.52 (dd, *J* = 14.8, 7.2 Hz, 1H), 2.27 – 2.12 (m, 3H), 1.79 (s, 3H), 1.65 – 1.55 (m, 2H), 1.43 – 1.29 (m, 2H), 0.92 (s, 3H), 0.90 (s, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.28, 172.42, 140.23, 140.19, 134.29 (q, *J* = 32.8 Hz), 128.88, 128.78, 128.45, 127.98, 126.00 (q, *J* = 3.7 Hz), 123.32 (q, *J* = 271.1 Hz),119.64, 57.37, 43.69, 41.37, 33.30, 28.01, 27.27, 27.23, 20.48, 17.73. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.16. HRMS (ESI): calcd for $C_{25}H_{27}F_3N_2NaO_2$ $[M+Na]^+$ 467.1917, found 467.1891.

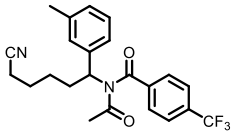
***N*-acetyl-*N*-(5-cyano-1-(o-tolyl)pentyl)-4-(trifluoromethyl)benzamide (49)**:



The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 89% (74.1 mg, colorless oil). ^{1}H NMR

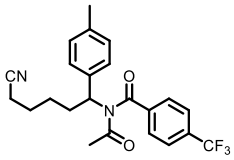
(400 MHz, $CDCl_3$) δ 7.62 (d, *J* = 8.3 Hz, 2H), 7.55 (d, *J* = 8.2 Hz, 2H), 7.35 (d, *J* = 7.7 Hz, 1H), 7.17 – 7.03 (m, 3H), 5.92 (t, *J* = 7.7 Hz, 1H), 2.40 (s, 3H), 2.38 – 2.20 (m, 4H), 1.90 (s, 3H), 1.80 – 1.69 (m, 2H), 1.56 – 1.45 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.39, 172.21, 139.85, 136.83, 135.87, 134.30 (q, *J* = 32.7 Hz), 130.78, 128.90, 128.35, 128.04, 125.93, 125.88 (q, *J* = 3.7 Hz), 123.32 (q, *J* = 271.0 Hz), 119.44, 56.38, 31.97, 27.07, 25.98, 25.12, 19.59, 17.04. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.11. HRMS (ESI): calcd for $C_{23}H_{23}F_3N_2NaO_2$ $[M+Na]^+$ 439.1604, found 439.1598.

***N*-acetyl-*N*-(5-cyano-1-(m-tolyl)pentyl)-4-(trifluoromethyl)benzamide (50)**:



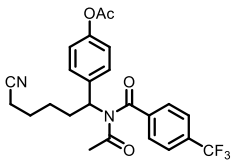
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 71% (59.1 mg, colorless oil). ^1H NMR (400 MHz, $CDCl_3$) δ 7.71 – 7.60 (m, 4H), 7.24 – 7.16 (m, 3H), 7.06 (d, *J* = 6.8 Hz, 1H), 5.67 (t, *J* = 7.8 Hz, 1H), 2.43 – 2,34 (m, 3H), 2.32 (s, 3H), 2.28 – 2.22 (m, 1H), 1.90 (s, 3H), 1.74 (tt, *J* = 14.0, 7.0 Hz, 2H), 1.58 – 1.49 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.22, 172.94, 139.85, 138.81, 138.17, 134.23 (q, *J* = 32.8 Hz), 128.96, 128.79, 128.71, 128.42, 125.96 (q, *J* = 3.6 Hz), 125.13, 123.35 (q, *J* = 271.1 Hz), 119.43, 60.09, 31.30, 27.49, 26.10, 25.08, 21.47, 17.08. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.15. HRMS (ESI): calcd for $C_{23}H_{23}F_3N_2NaO_2$ $[M+Na]^+$ 439.1604, found 439.1600.

***N*-acetyl-*N*-(5-cyano-1-(p-tolyl)pentyl)-4-(trifluoromethyl)benzamide (51)**:



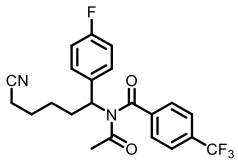
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 56% (46.6 mg, colorless oil). ^1H NMR (400 MHz, $CDCl_3$) δ 7.76 – 7.57 (m, 4H), 7.31 (d, *J* = 7.8 Hz, 2H), 7.11 (d, *J* = 7.7 Hz, 2H), 5.67 (t, *J* = 7.8 Hz, 1H), 2.43 – 2.33 (m, 3H), 2.32 – 2.24 (m, 4H), 1.88 (s, 3H), 1.75 (tt, *J* = 14.2, 6.9 Hz, 2H), 1.58 – 1.49 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.21, 172.88, 139.90, 137.71, 135.78, 134.23 (q, *J* = 32.7 Hz), 129.21, 128.96, 128.06, 125.98 (q, *J* = 3.6 Hz), 123.35 (q, *J* = 171.1 Hz), 119.43, 59.95, 31.33, 27.54, 26.13, 25.09, 21.05, 17.09. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.13. HRMS (ESI): calcd for $C_{23}H_{23}F_3N_2NaO_2$ $[M+Na]^+$ 439.1604, found 439.1590.

4-(1-(*N*-acetyl-4-(trifluoromethyl)benzamido)-5-cyanopentyl)phenyl acetate (52):



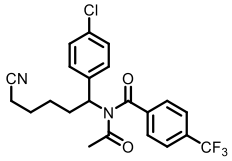
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 55% (50.6 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.74 – 7.62 (m, 4H), 7.46 (d, *J* = 8.3 Hz, 2H), 7.04 (d, *J* = 8.3 Hz, 2H), 5.70 (t, *J* = 7.7 Hz, 1H), 2.48 – 2.40 (m, 1H), 2.36 (t, *J* = 6.9 Hz, 2H), 2.29 – 2.19 (m, 4H), 1.87 (s, 3H), 1.73 (tt, *J* = 15.1, 7.6 Hz, 2H), 1.53 (tt, *J* = 14.6, 7.3 Hz, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.05, 172.86, 169.18, 150.25, 139.78, 136.48, 134.4 (q, *J* = 32.8 Hz), 129.36, 128.96, 126.1 (q, *J* = 3.6 Hz), 123.3 (q, *J* = 123.3 Hz) 119.33, 59.62, 31.31, 27.69, 26.07, 25.04, 21.08, 17.07. 19F NMR (377 MHz, $CDCl_3$) δ -63.16. HRMS (ESI): calcd for $C_{24}H_{23}F_3N_2NaO_4$ $[M+Na]^+$ 483.1502, found 483.1487.

***N*-acetyl-*N*-(5-cyano-1-(4-fluorophenyl)pentyl)-4-(trifluoromethyl)benzamide (53)**:



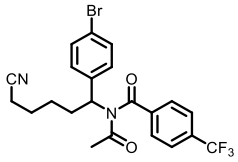
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 63% (52.9 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.72-7.73 (m, 4H), 7.43 (dd, *J* = 8.4, 5.5 Hz, 2H), 7.03 – 6.96 (m, 2H), 5.69 (t, *J* = 7.9 Hz, 1H), 2.47 – 2.33 (m, 3H), 2.28 – 2.21 (m, 1H), 1.85 (s, 3H), 1.78 – 1.69 (m, 2H), 1.56 – 1.48 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.01, 172.81, 162.23 (d, *J* = 245.5 Hz), 139.76, 134.72 (d, *J* = 3.1 Hz), 134.46 (q, *J* = 32.8 Hz), 130.06 (d, *J* = 8.1 Hz), 128.97, 126.11 (q, *J* = 3.6 Hz), 123.29 (q, *J* = 271.1 Hz), 119.35, 115.39 (d, *J* = 21.2 Hz), 59.54, 31.38, 27.73, 26.08, 25.02, 17.08. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.17 (s), -113.91 (s). HRMS (ESI): calcd for $C_{22}H_{20}F_4N_2NaO_2$ $[M+Na]^+$ 443.1353, found 443.1342.

***N*-acetyl-*N*-(1-(4-chlorophenyl)-5-cyanopentyl)-4-(trifluoromethyl)benzamide (54)**:



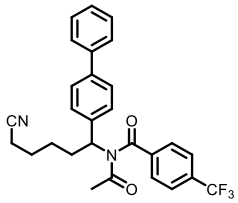
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 54% (47.2 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.73 – 7.63 (m, 4H), 7.40 (d, *J* = 8.4 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 5.68 (t, *J* = 7.8 Hz, 1H), 2.47 –2.33 (m, 3H), 2.28 – 2.18 (m, 1H), 1.85 (s, 3H), 1.79 –1.69 (m, 2H), 1.56 – 1.48 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 172.92, 172.87, 139.69, 137.44, 134.51 (q, *J* = 32.7 Hz), 133.82, 129.67, 128.98, 128.70, 126.15 (q, *J* = 3.5 Hz), 123.28 (q, *J* = 271.1 Hz), 119.34, 59.56, 31.14, 27.79, 26.04, 25.01, 17.09. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.17. HRMS (ESI): calcd for $C_{22}H_{20}ClF_3N_2NaO_2$ $[M+Na]^+$ 459.1058, found 459.1047.

***N*-acetyl-*N*-(1-(4-bromophenyl)-5-cyanopentyl)-4-(trifluoromethyl)benzamide (55)**:



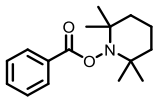
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 62% (59.6 mg, pale yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.72 (d, J = 8.6 Hz, 2H), 7.68 (d, *J* = 8.5 Hz, 2H), 7.46 (d, *J* = 8.4 Hz, 2H), 7.35 (d, *J* = 8.4 Hz, 2H), 5.67 (t, *J* = 7.8 Hz, 1H), 2.48 – 2.35 (m, 3H), 2.25 (tt, *J* = 14.7, 7.3 Hz, 1H), 1.87 (s, 3H), 1.76 (tt, *J* = 14.9, 7.3 Hz, 2H), 1.58 – 1.50 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 172.89, 172.84, 139.68, 137.98, 134.53 (q, *J* = 32.8 Hz), 131.67, 129.99, 128.97, 126.15 (q, *J* = 3.6 Hz), 123.27 (q, *J* = 271.1 Hz), 122.01, 119.21, 59.62, 31.08, 27.80, 26.04, 25.01, 17.09. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.16. HRMS (ESI): calcd for $C_{22}H_{20}BrF_3N_2NaO_2$ $[M+Na]^+$ 503.0552, 505.0532, found 503.0557, 505.0538.

***N*-(1-([1,1'-biphenyl]-4-yl)-5-cyanopentyl)-*N*-acetyl-4-(trifluoromethyl)benzamide (56)**:



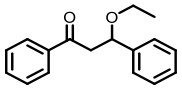
The compound was prepared according to the general procedure for reaction of oxime ester and styrene with petroleum ether/ethyl acetate as eluent. Yield: 54% (51.6 mg, pale yellow solid). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.74 – 7.66 (m, 4H), 7.58 – 7.49 (m, 6H), 7.45 – 7.40 (m, 2H), 7.34 (t, *J* = 7.2 Hz, 1H), 5.76 (t, *J* = 7.8 Hz, 1H), 2.54 – 2.42 (m, 1H), 2.41 – 2.22 (m, 3H), 1.92 (s, 3H), 1.84 – 1.70 (m, 2H), 1.64 – 1.53 (m, 2H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 173.18, 172.99, 140.79, 140.41, 139.83, 137.86, 134.86, 134.54, 134.21, 133.88, 130.53, 129.00, 128.79, 128.59, 127.46, 127.20, 127.02, 126.11, 126.08, 126.04, 126.01, 124.68, 121.97, 119.40, 119.26, 59.95, 31.28, 27.66, 26.14, 25.10, 17.11. ^{19}F NMR (377 MHz, $CDCl_3$) δ -63.13. HRMS (ESI): calcd for $C_{28}H_{25}F_3N_2NaO_2$ $[M+Na]^+$ 501.1760, found 501.1747.

2,2,6,6-Tetramethylpiperidin-1-yl benzoate (57):



The compound was prepared according to the procedure for capture of reaction intermediates and isolated with petroleum ether/ethyl acetate as eluent. ^{1}H NMR Yield: 97%, white solid. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.08 (d, *J* = 7.6 Hz, 2H), 7.56 (t, *J* = 7.3 Hz, 1H), 7.46 (t, *J* = 7.4 Hz, 2H), 1.84 – 1.65 (m, 3H), 1.63 – 1.53 (m, 2H), 1.49 – 1.42 (m, 1H), 1.27 (s, 6H), 1.13 (s, 6H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 166.37, 132.83, 129.78, 129.57, 128.44, 60.42, 39.10, 32.00, 20.87, 17.03. HRMS (ESI): calcd for $C_{14}H_{24}NO_2$ $[M+H]^+$ 262.1802, found 262.1794. calcd for $C_{14}H_{23}NNaO_2$ $[M+H]^+$ 284.1621, found 282.1612.

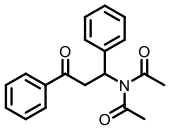
3-Ethoxy-1,3-diphenylpropan-1-one (59):

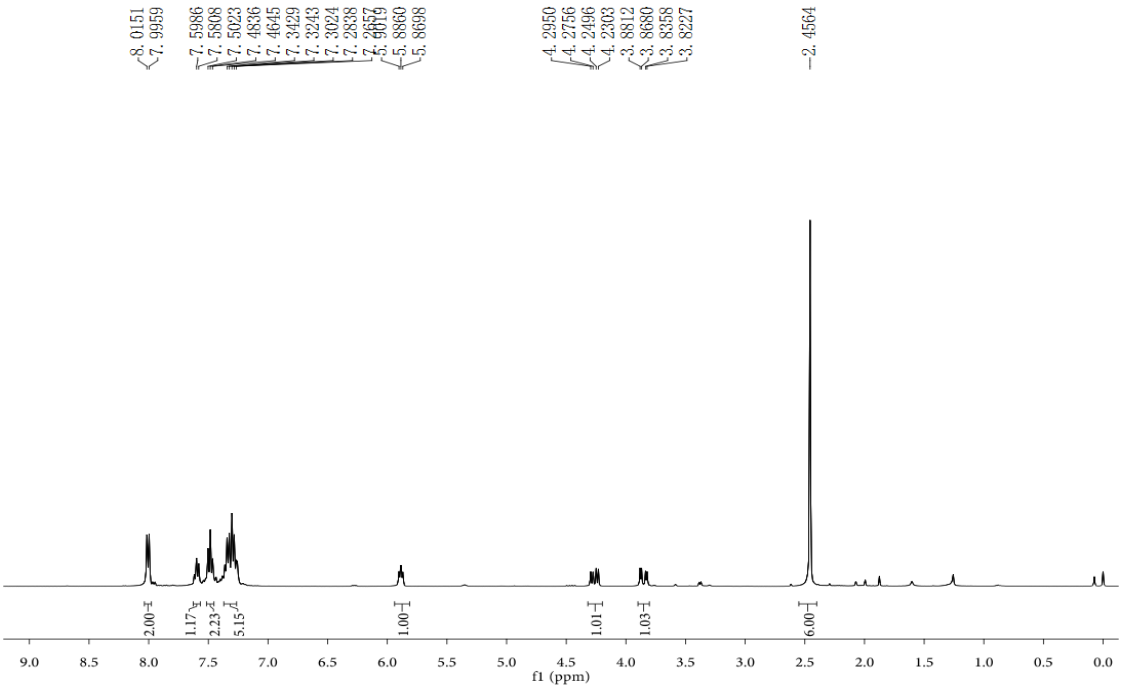


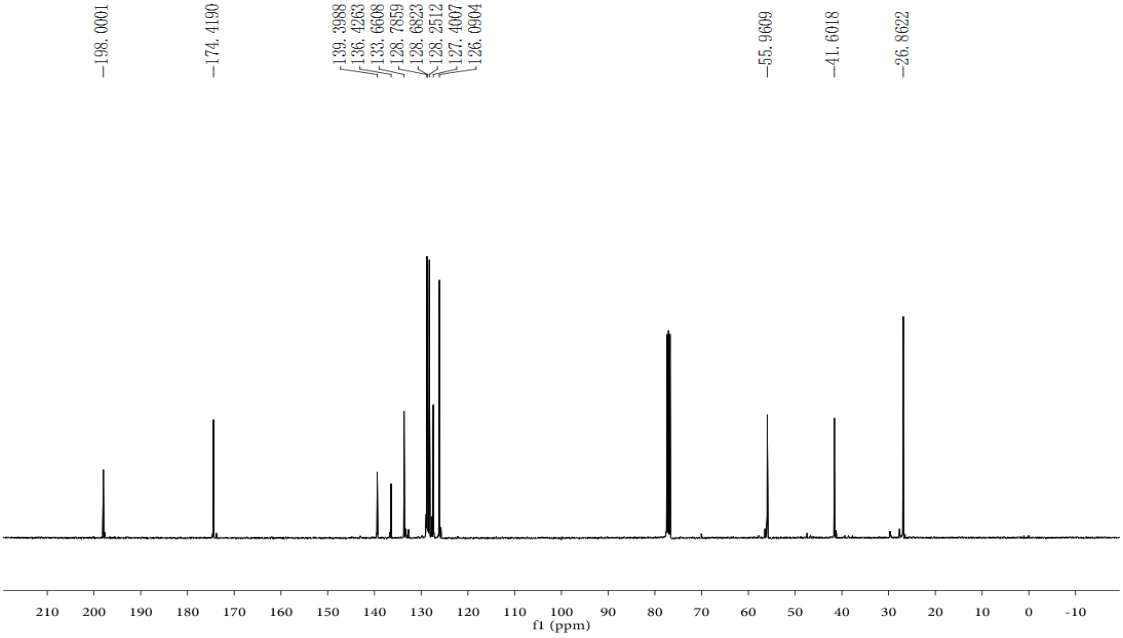
The compound was prepared according to the procedure for capture of reaction intermediates with petroleum ether/ethyl acetate as eluent. Yield: 54% (27.4 mg, colorless oil). ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.93 (d, *J* = 7.7 Hz, 2H), 7.53 (t, *J* = 7.3 Hz, 1H), 7.46 – 7.39 (m, 4H), 7.35 (t, *J* = 7.3 Hz, 2H), 7.30 – 7.25 (m, 1H), 4.99 (dd, *J* = 8.0, 4.6 Hz, 1H), 3.59 (dd, *J* = 16.4, 8.2 Hz, 1H), 3.40 (q, *J* = 7.0 Hz, 2H), 3.09 (dd, *J* = 16.4, 4.5 Hz, 1H), 1.12 (t, *J* = 7.0 Hz, 3H). ^{13}C NMR (101 MHz, $CDCl_3$) δ 199.18, 143.75, 138.94, 134.25, 129.86, 129.83, 129.61, 129.02, 127.94, 79.21, 65.85, 48.88, 16.53. HRMS (ESI): calcd for $C_{17}H_{18}NNaO_2$ $[M+Na]^+$ 277.1199, found 277.1190.

9. ^{1}H,^{13}C and ^{19}F spectra of All Products

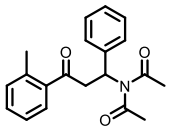
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)acetamide (3)**:

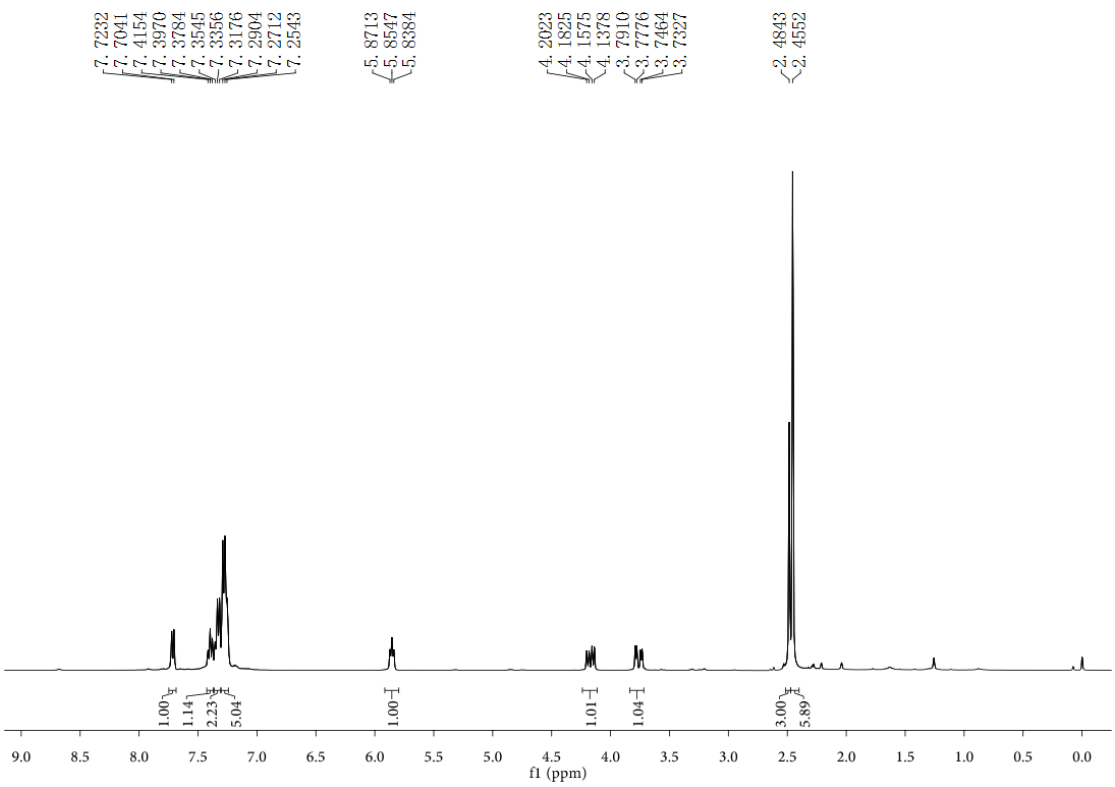


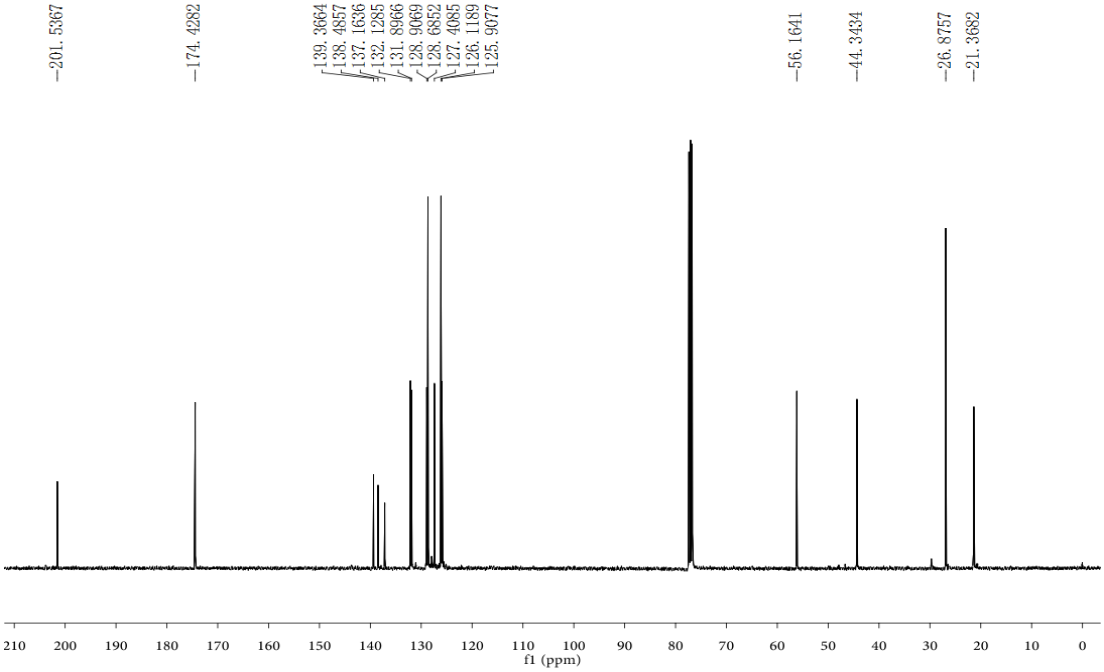




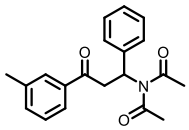
***N*-acetyl-*N*-(3-oxo-1-phenyl-3-(o-tolyl)propyl)acetamide (4)**:

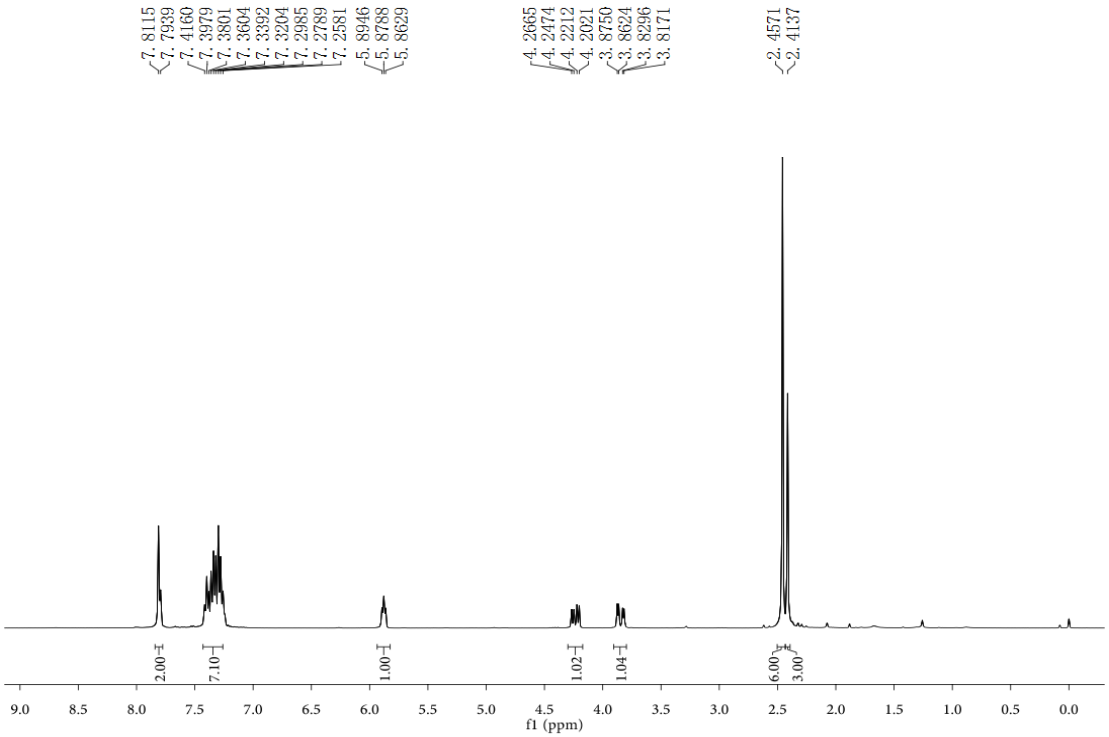


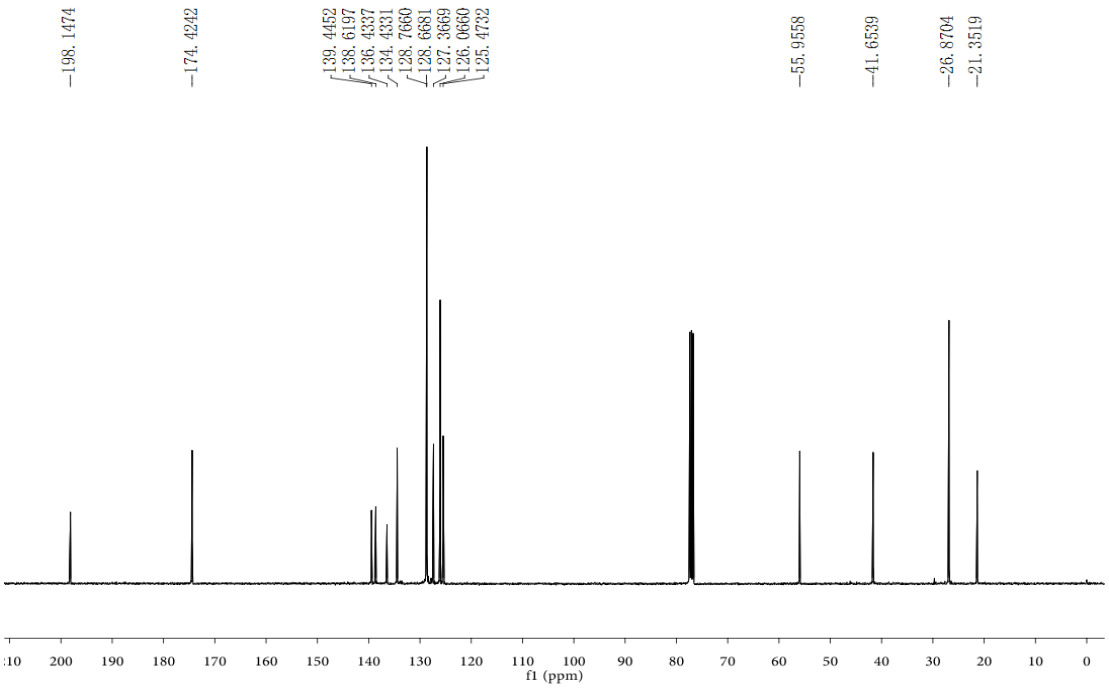




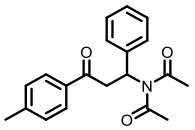
***N*-acetyl-*N*-(3-oxo-1-phenyl-3-(m-tolyl)propyl)acetamide (5)**:

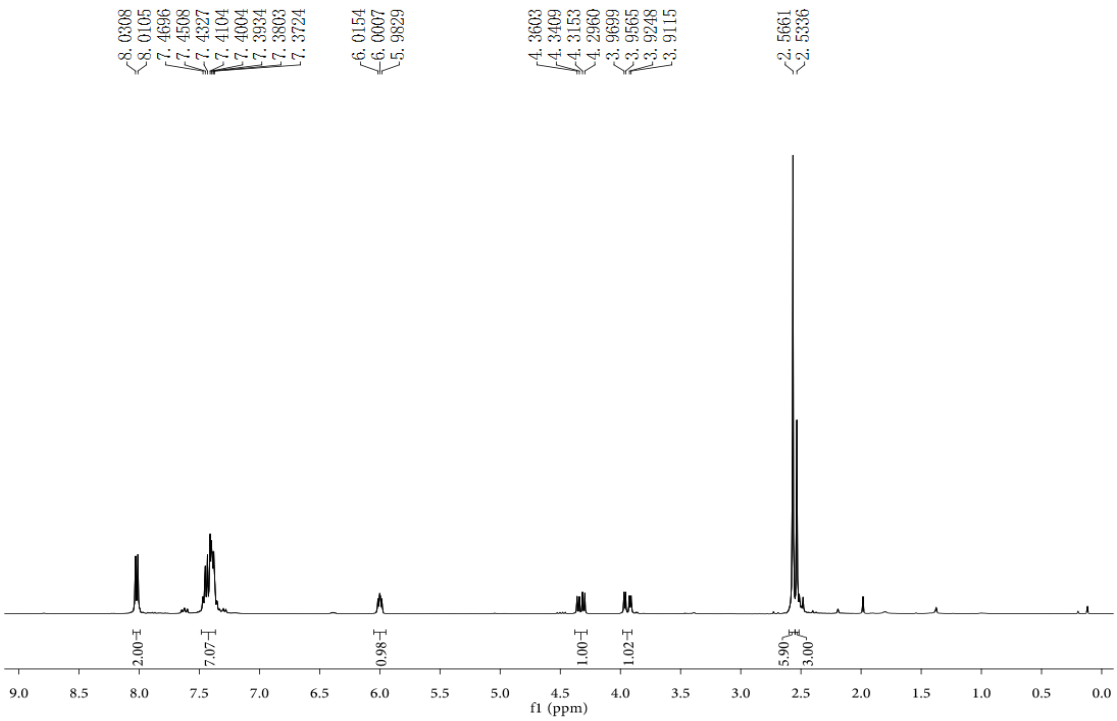


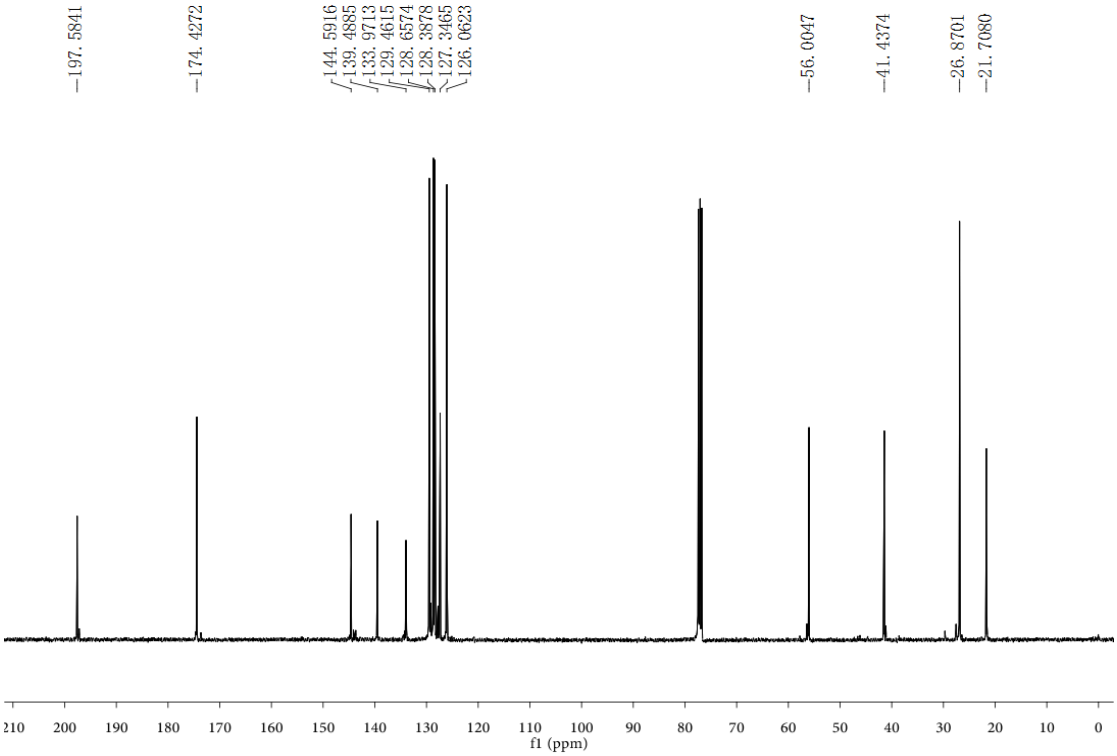




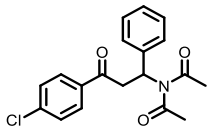
***N*-acetyl-*N*-(3-oxo-1-phenyl-3-(p-tolyl)propyl)acetamide (6)**:

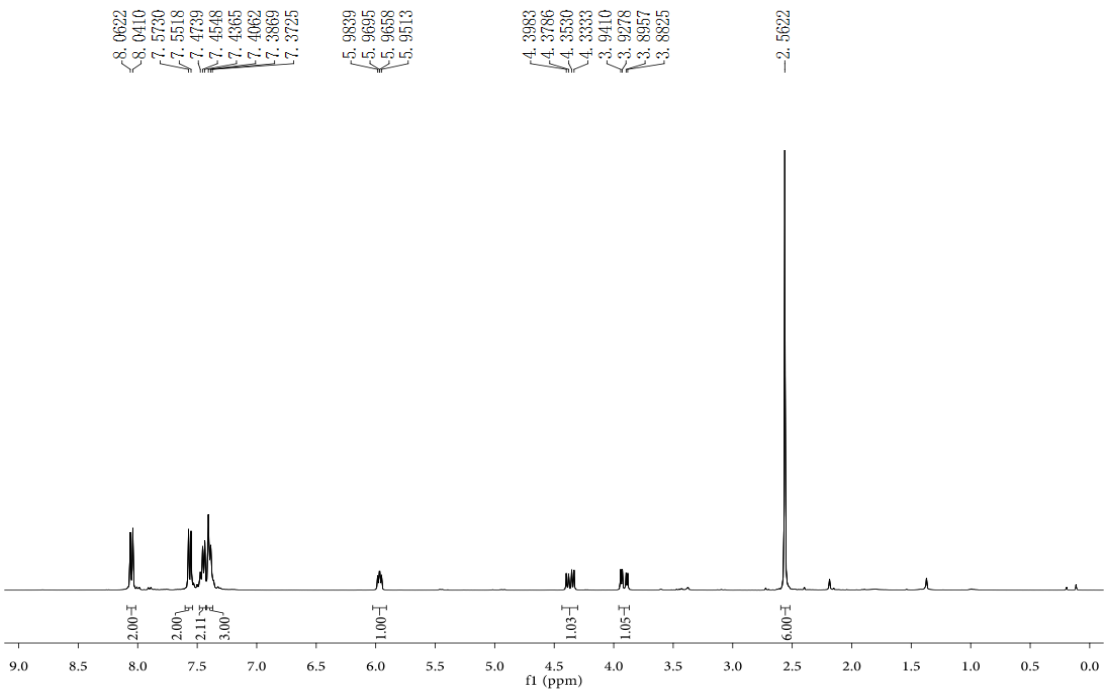


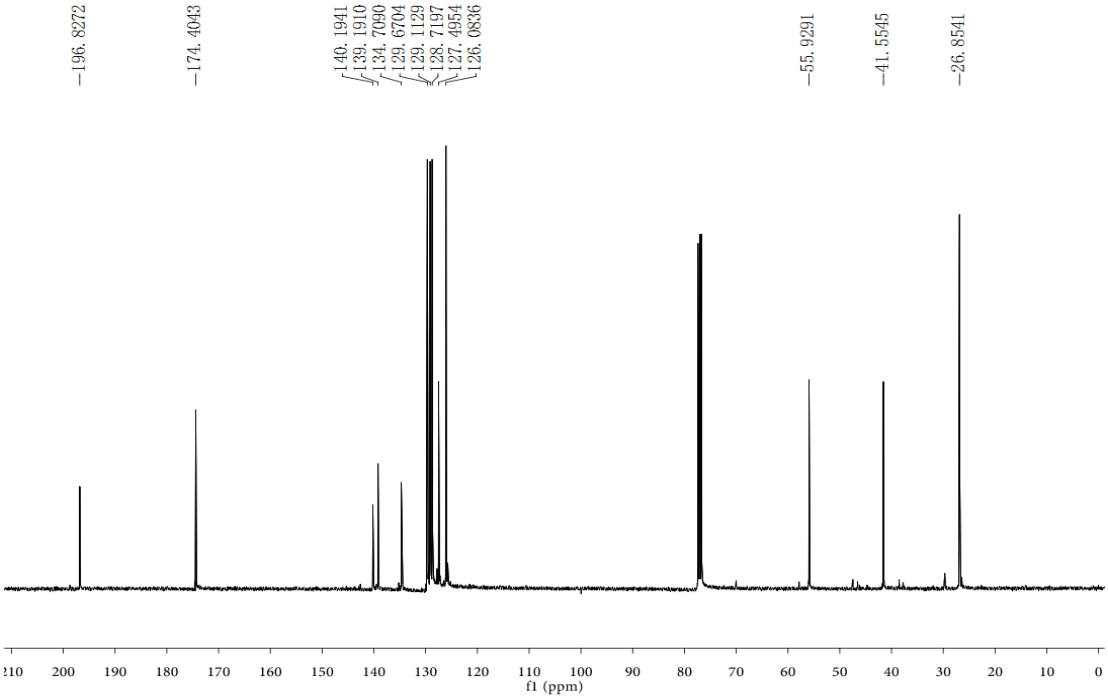




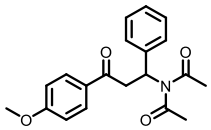
***N*-acetyl-*N*-(3-(4-chlorophenyl)-3-oxo-1-phenylpropyl)acetamide (7)**:

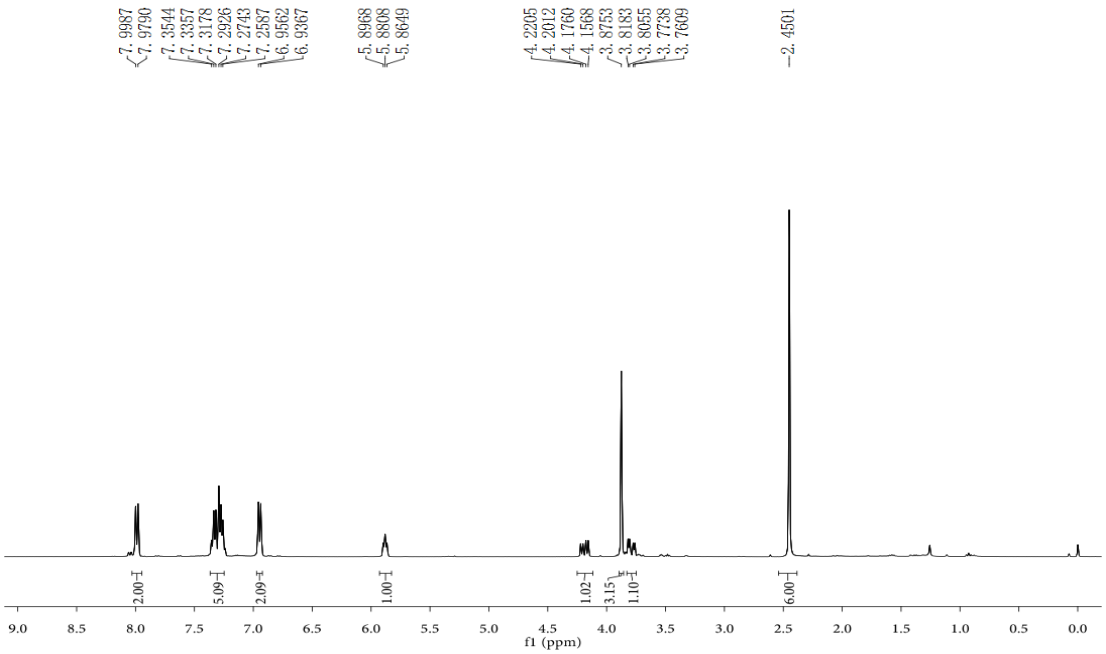


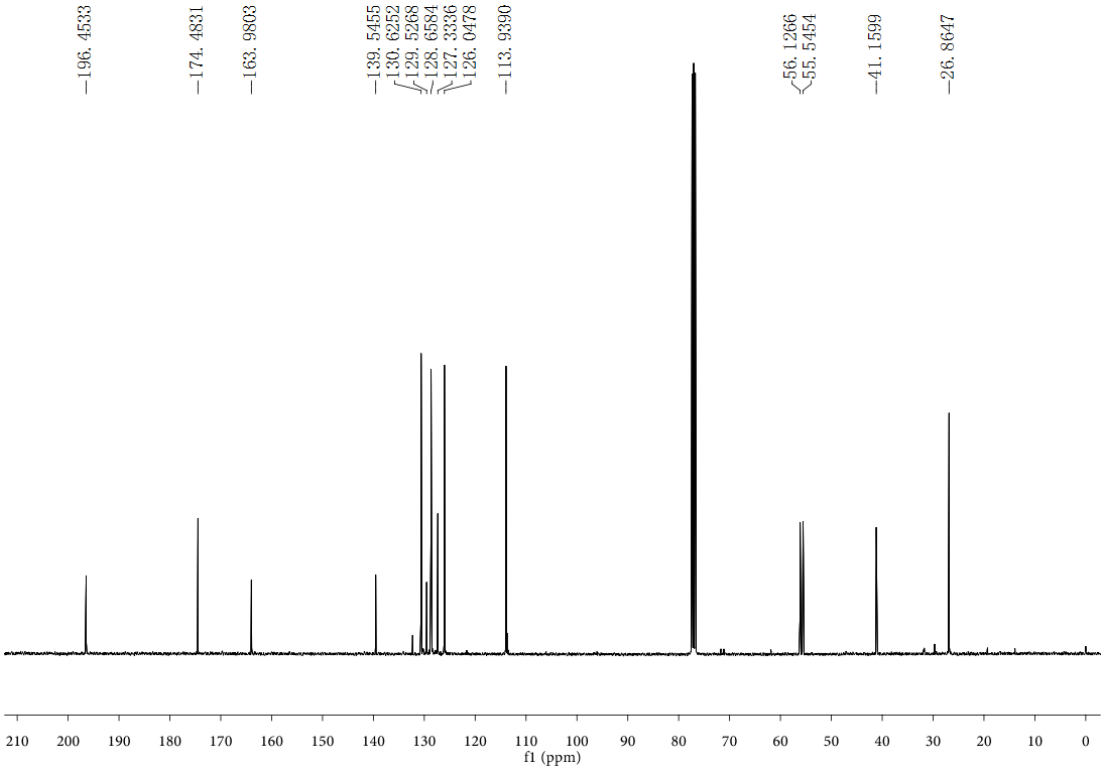




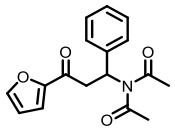
***N*-acetyl-*N*-(3-(4-methoxyphenyl)-3-oxo-1-phenylpropyl)acetamide (8)**:

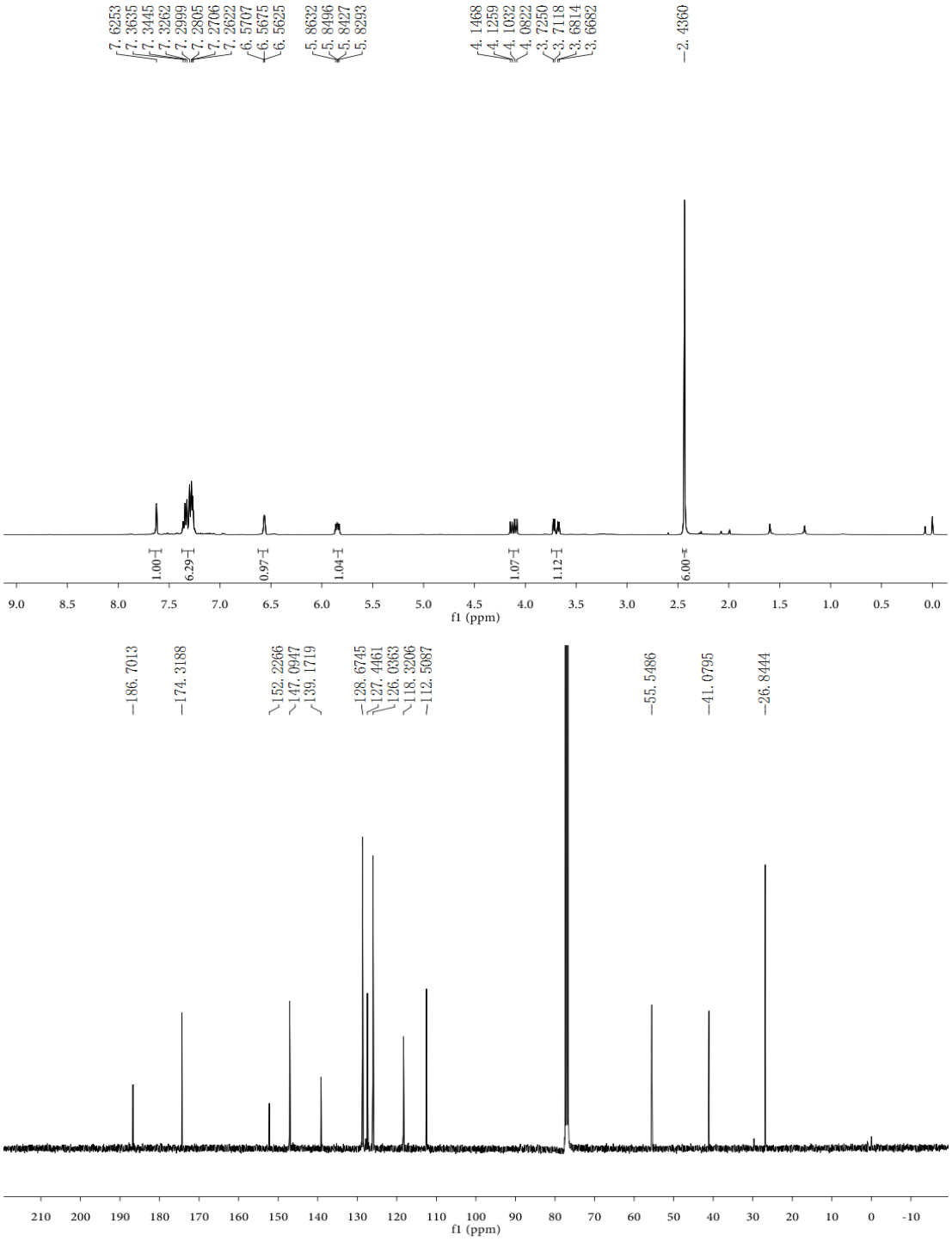




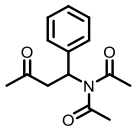


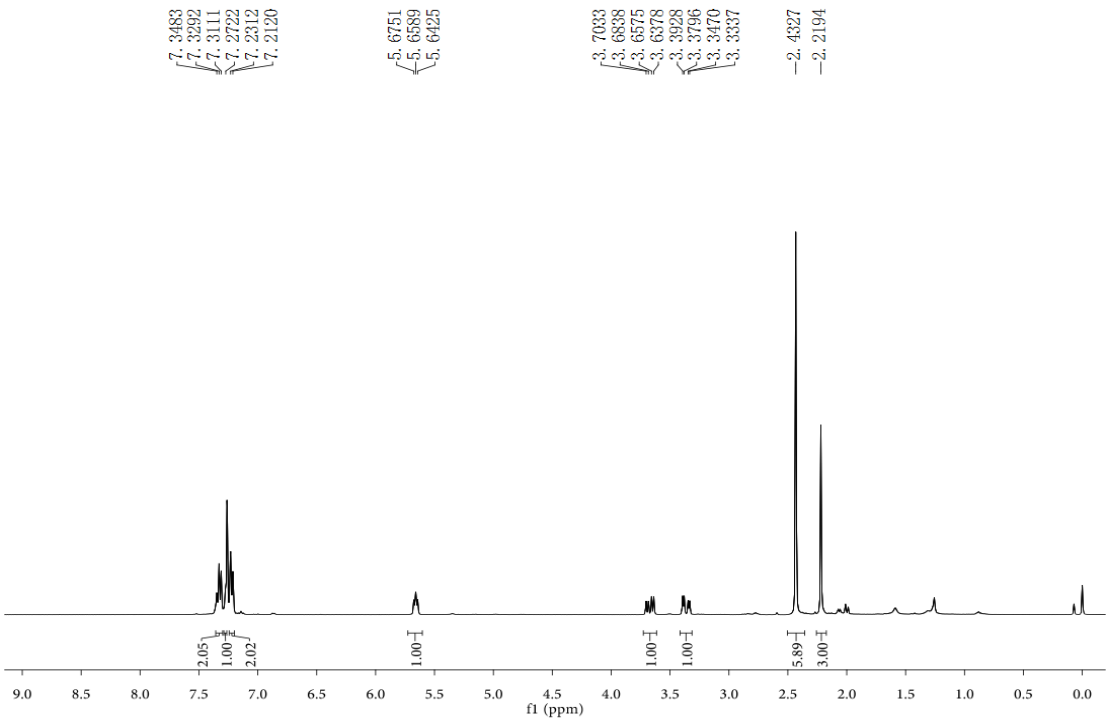
***N*-acetyl-*N*-(3-(furan-2-yl)-3-oxo-1-phenylpropyl)acetamide(9)**:

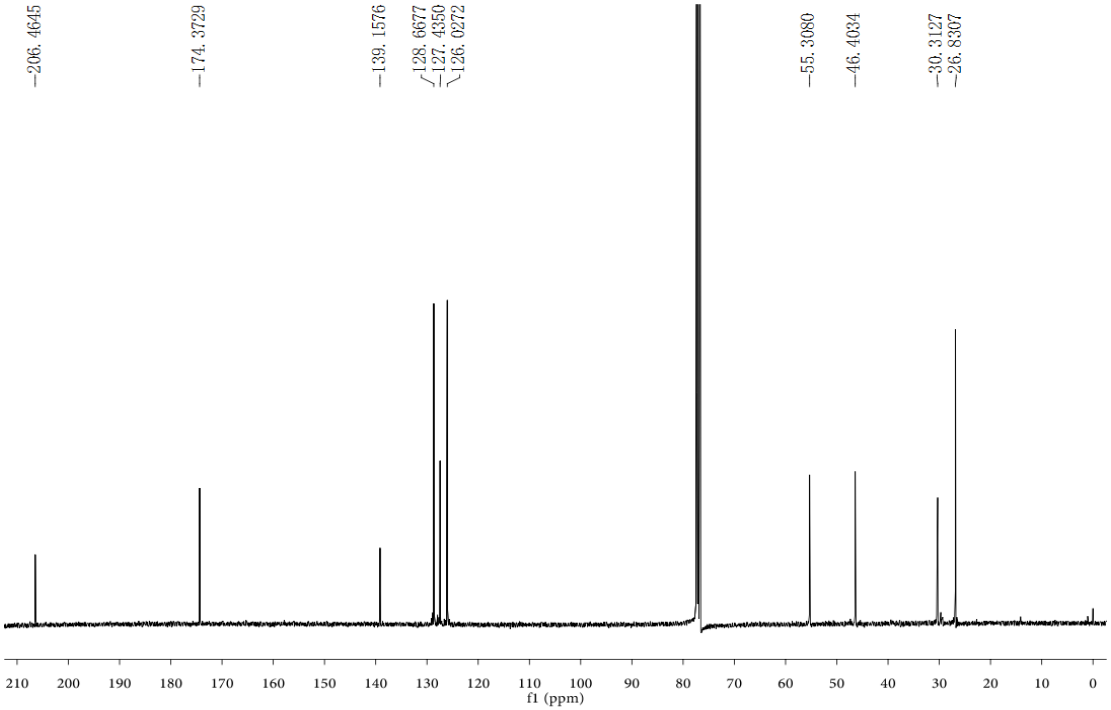




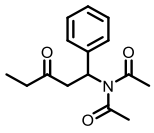
***N*-acetyl-*N*-(3-oxo-1-phenylbutyl)acetamide (10)**:

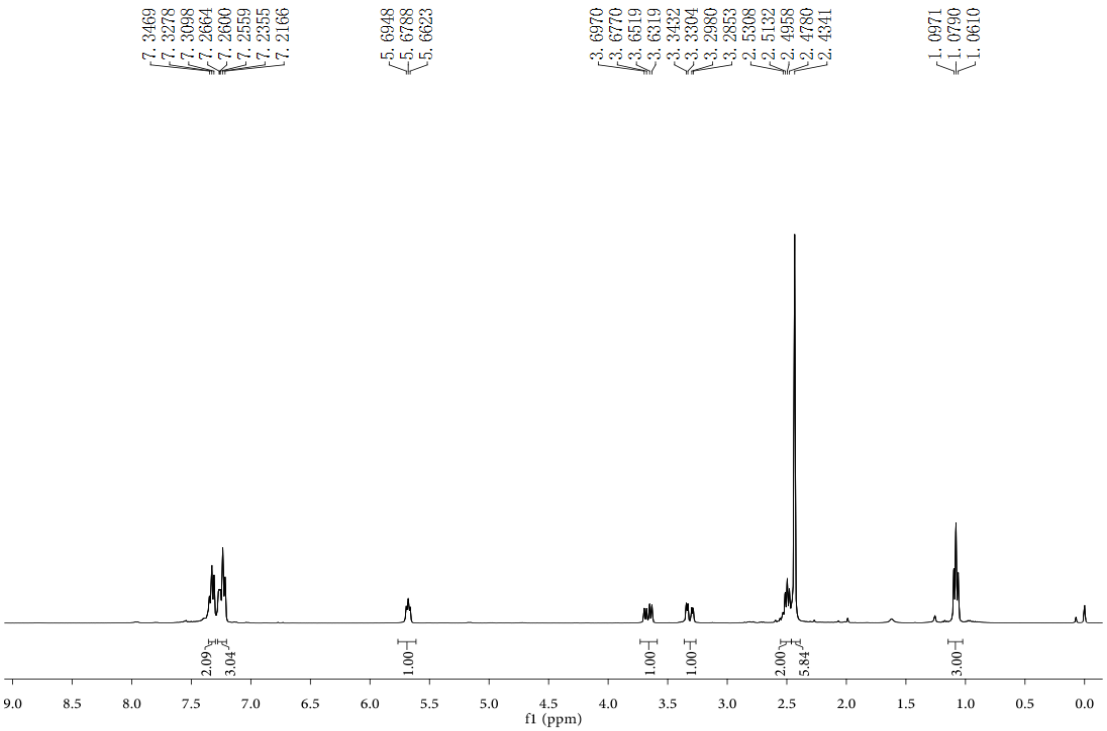


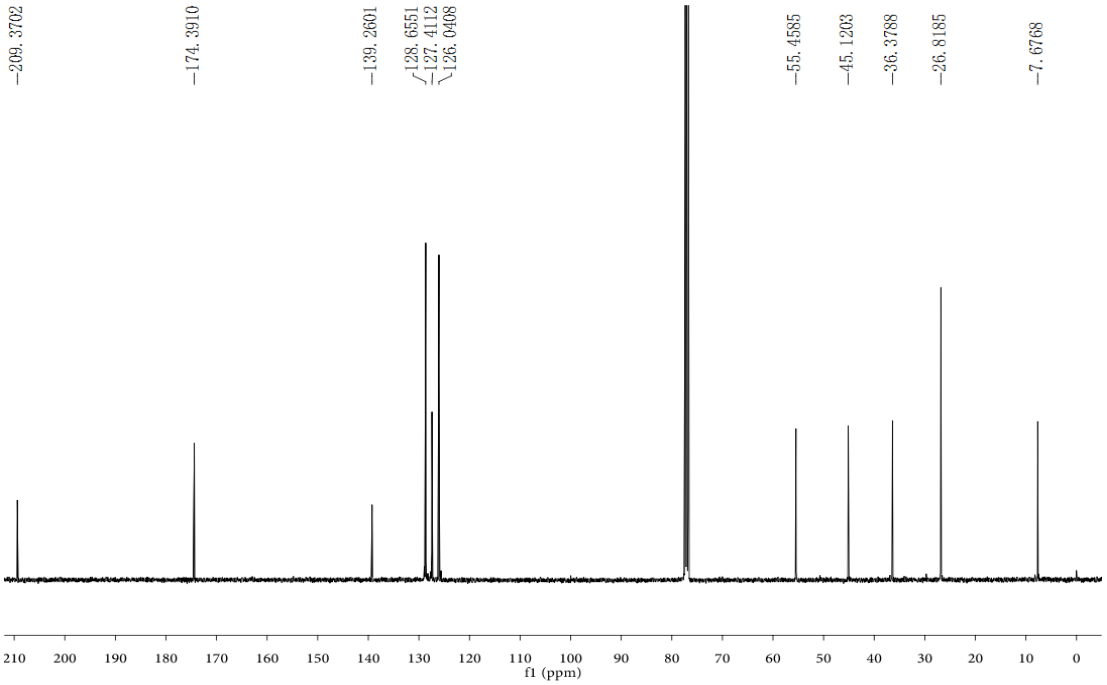




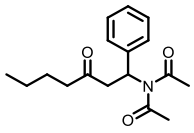
***N*-acetyl-*N*-(3-oxo-1-phenylpentyl)acetamide (11)**:

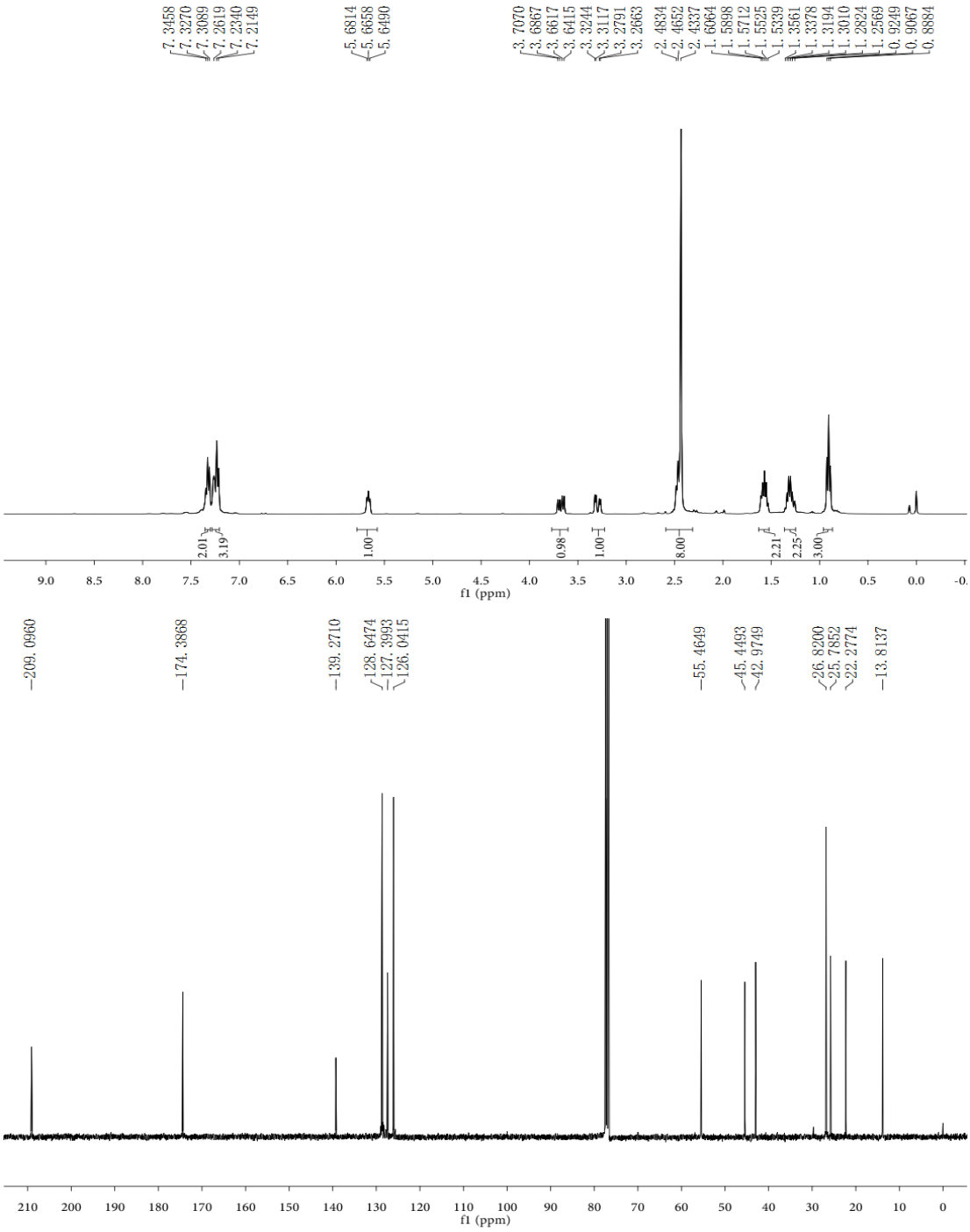




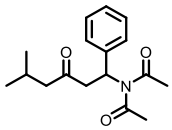


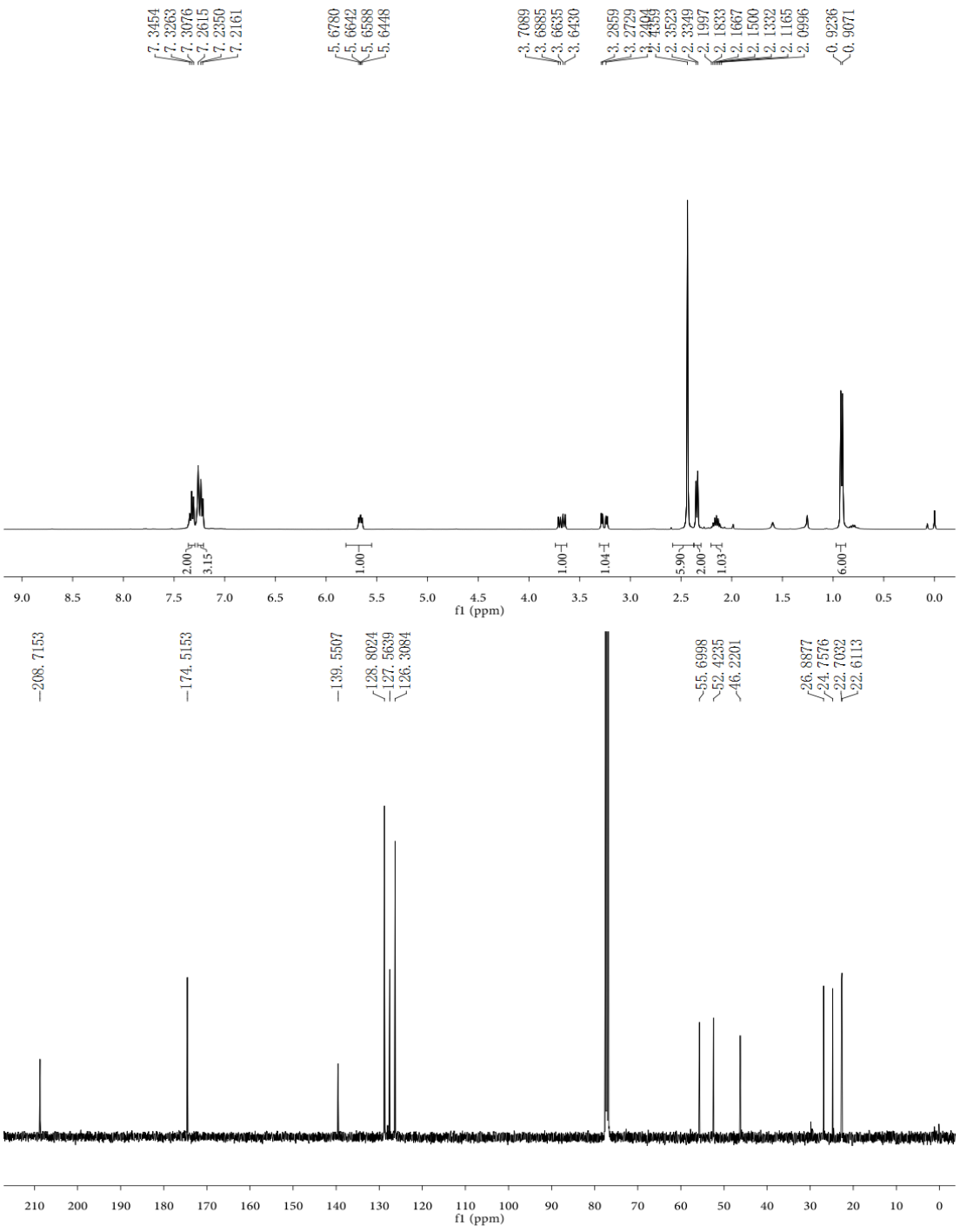
***N*-acetyl-*N*-(3-oxo-1-phenylheptyl)acetamide (12)**:



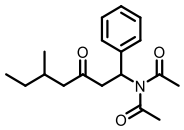


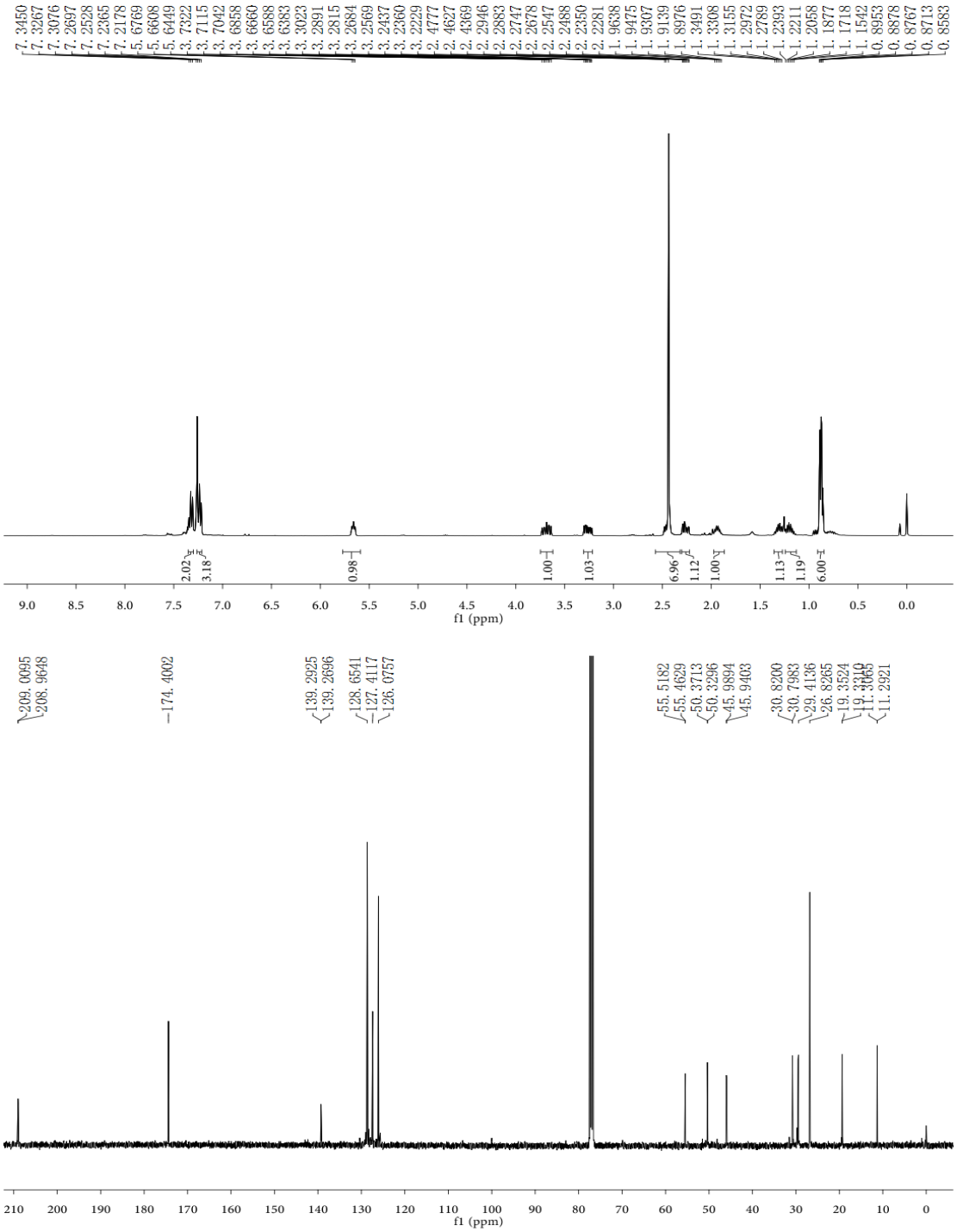
***N*-acetyl-*N*-(5-methyl-3-oxo-1-phenylhexyl)acetamide (13)**:



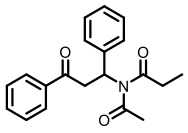


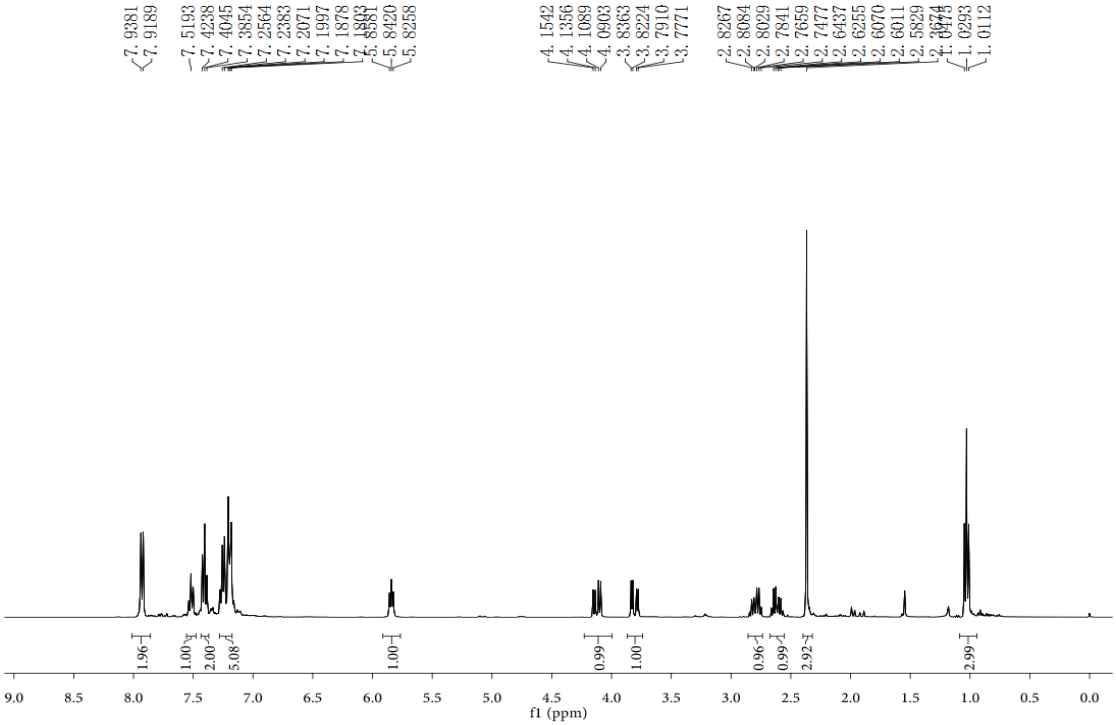
***N*-acetyl-*N*-(5-methyl-3-oxo-1-phenylheptyl)acetamide (14)**:

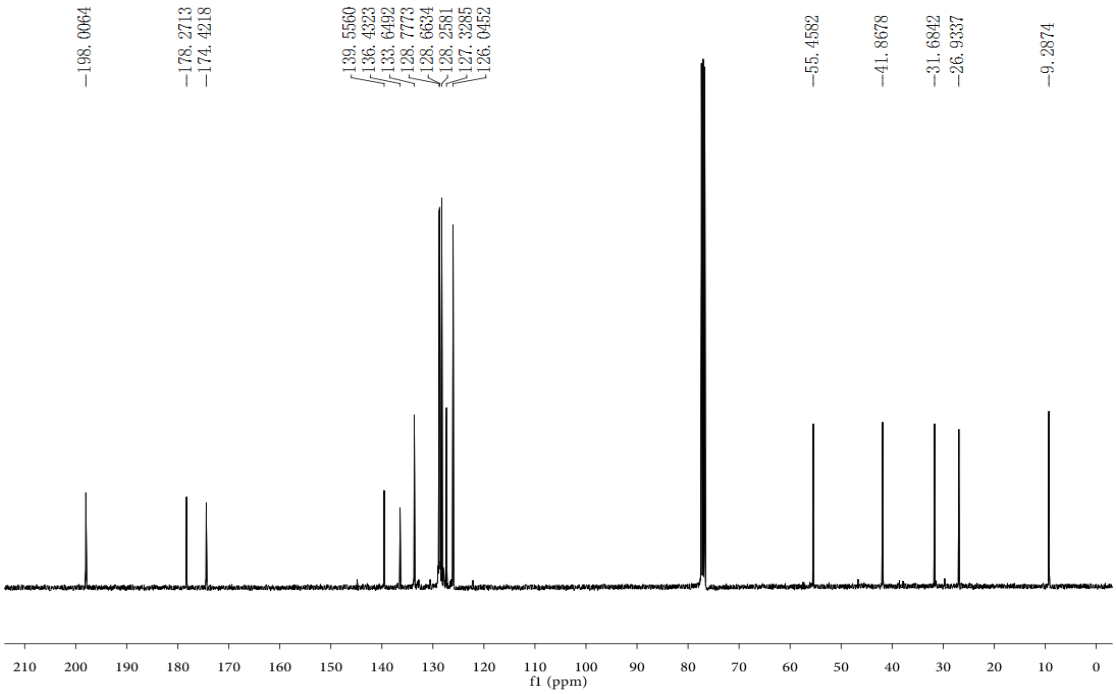




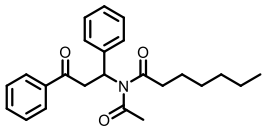
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)propionamide (15)**:

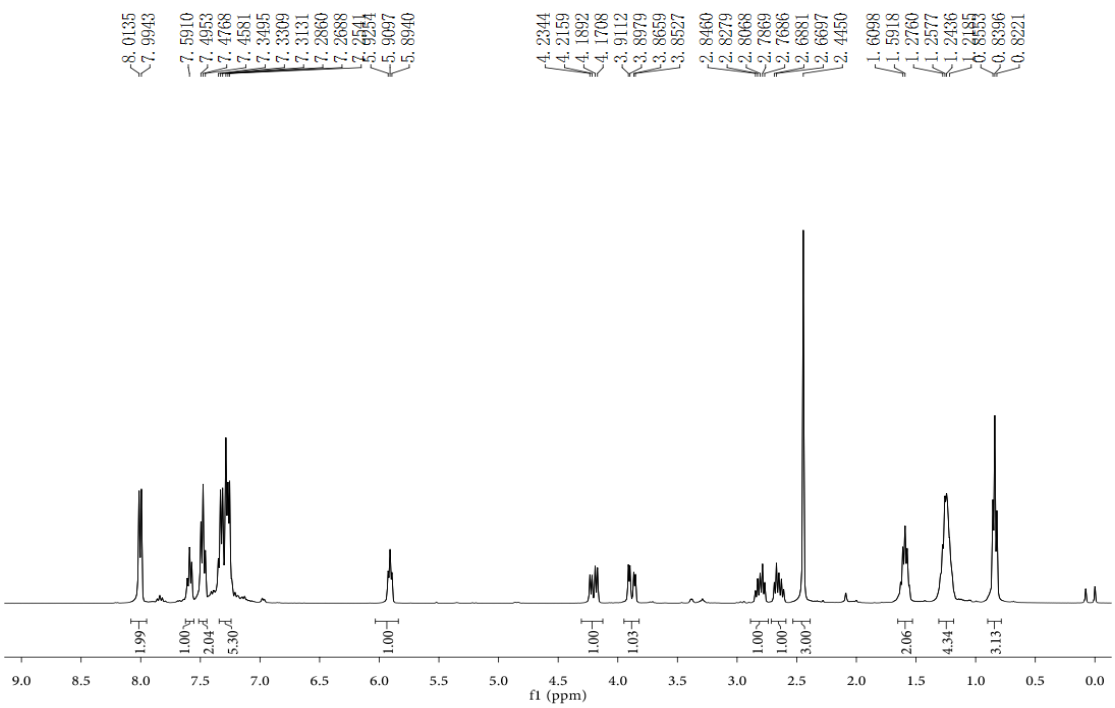


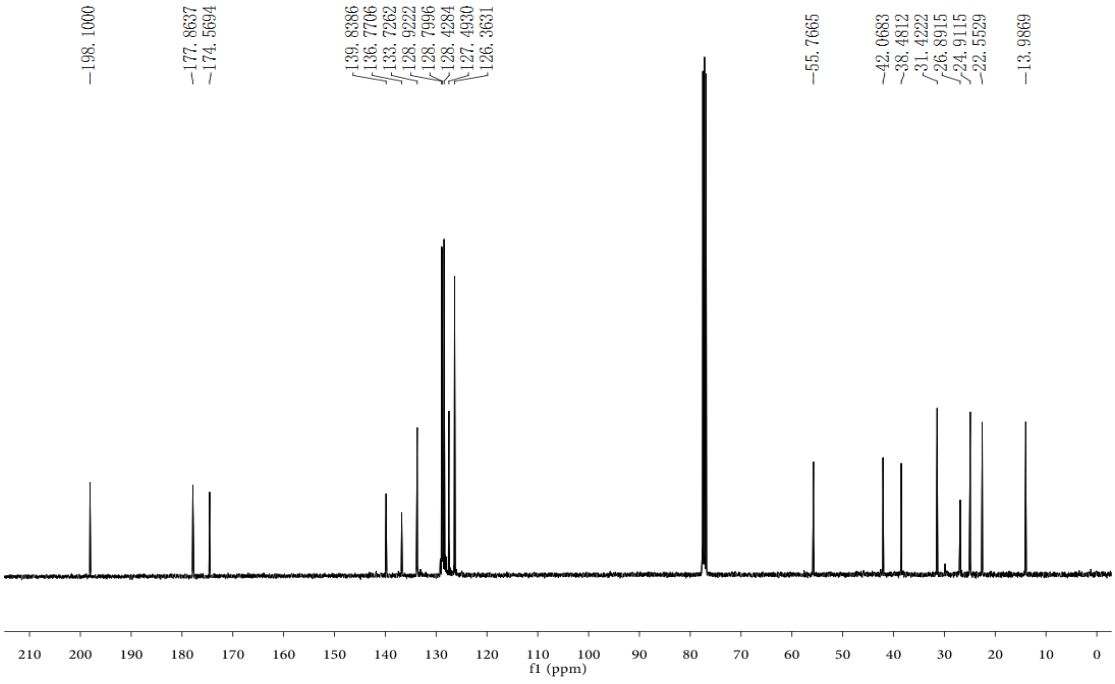




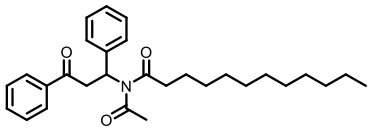
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)hexanamide (16)**:

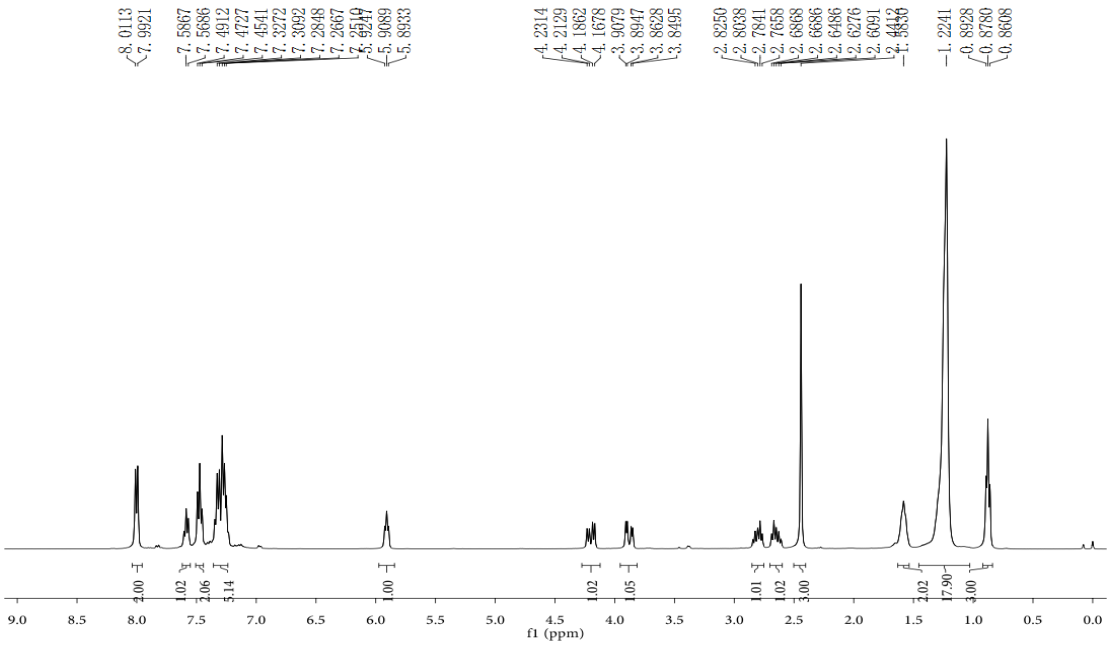


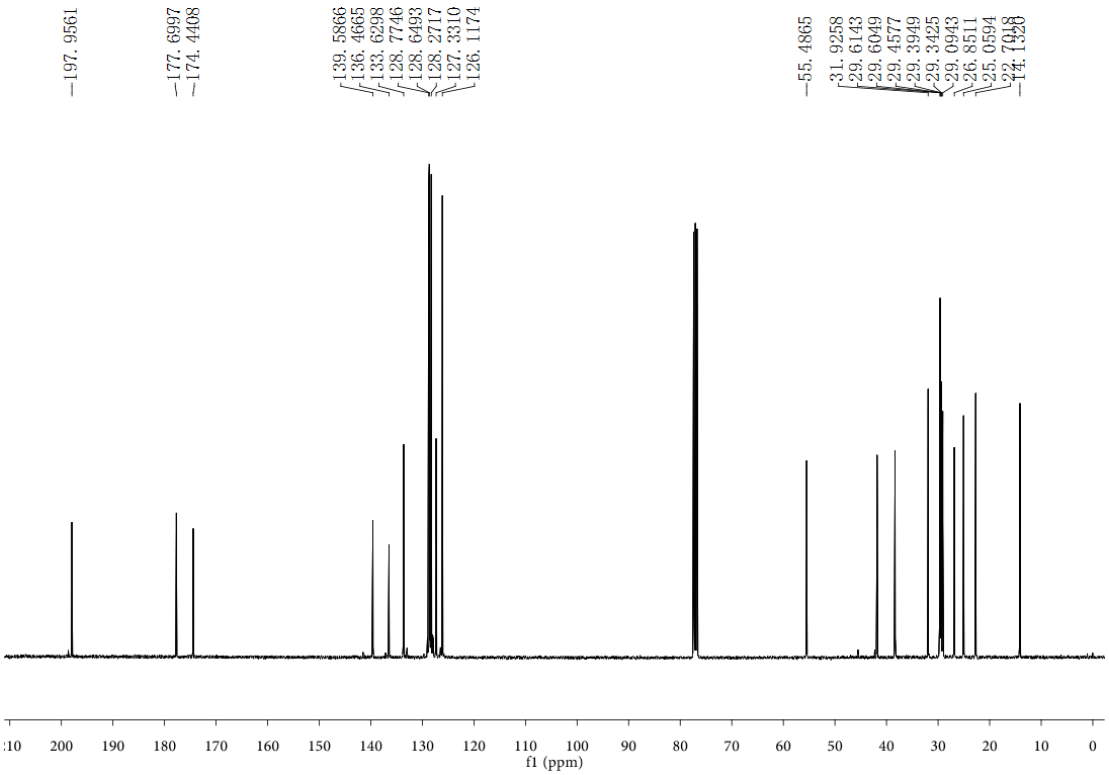




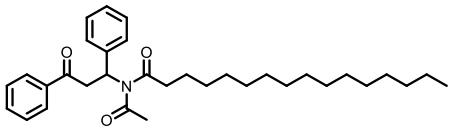
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)tridecanamide (17)**:

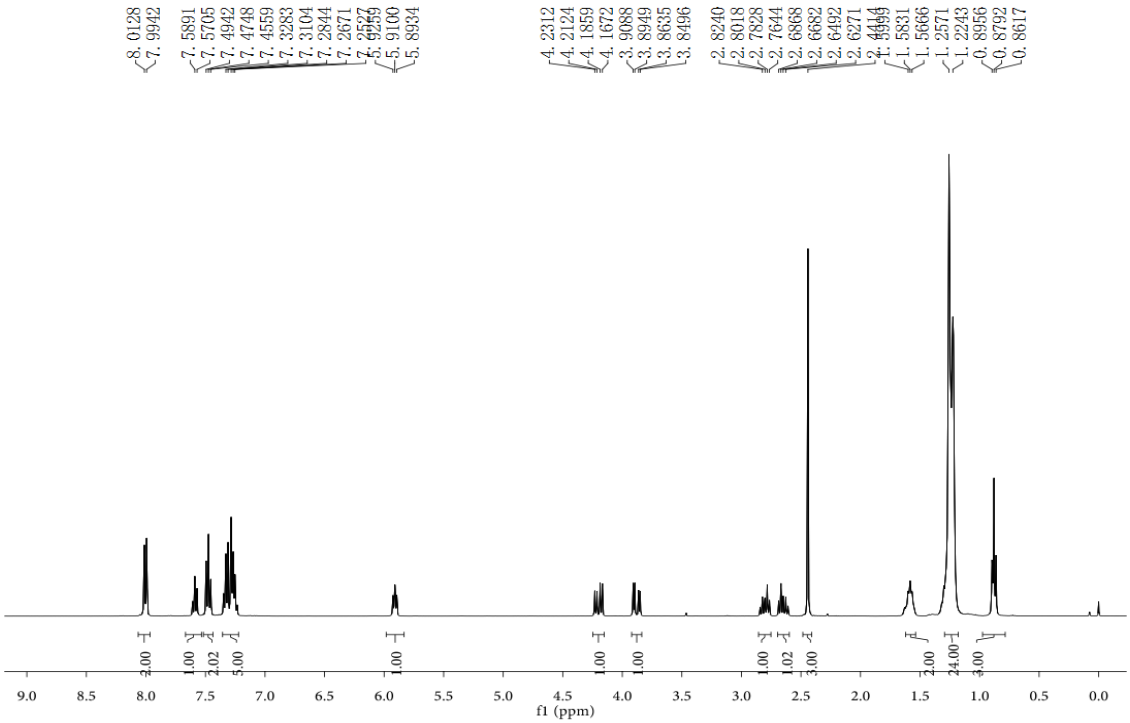


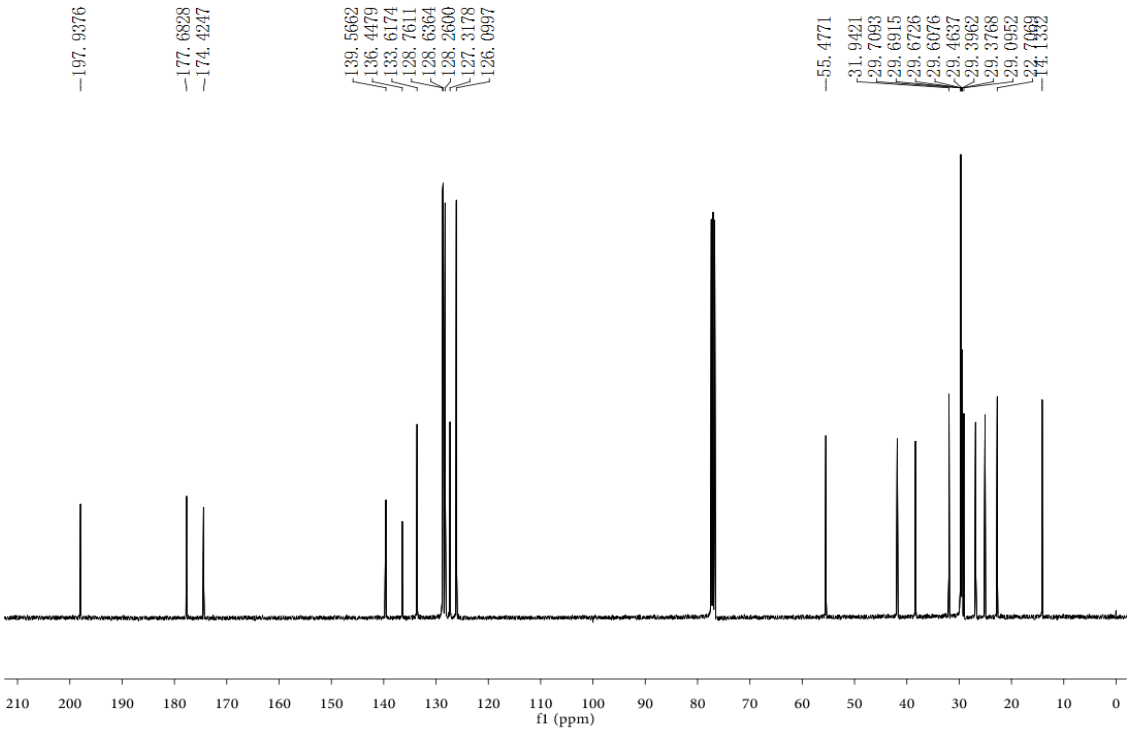




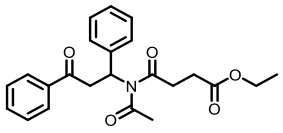
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)tridecanamide (18)**:

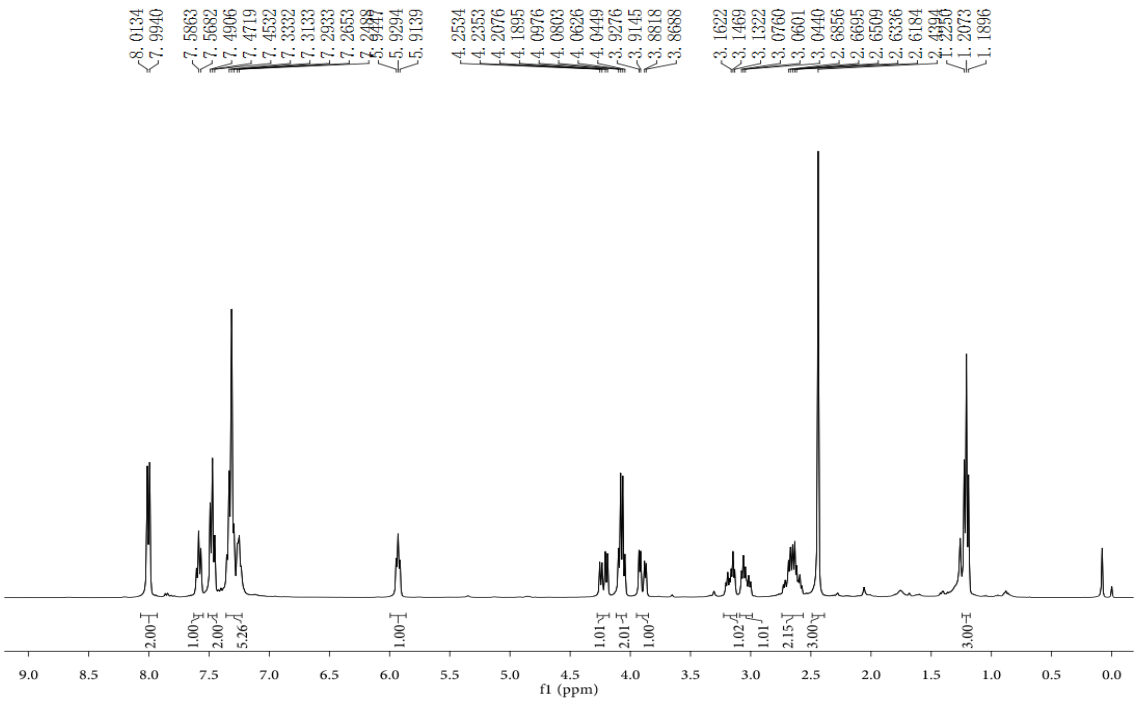


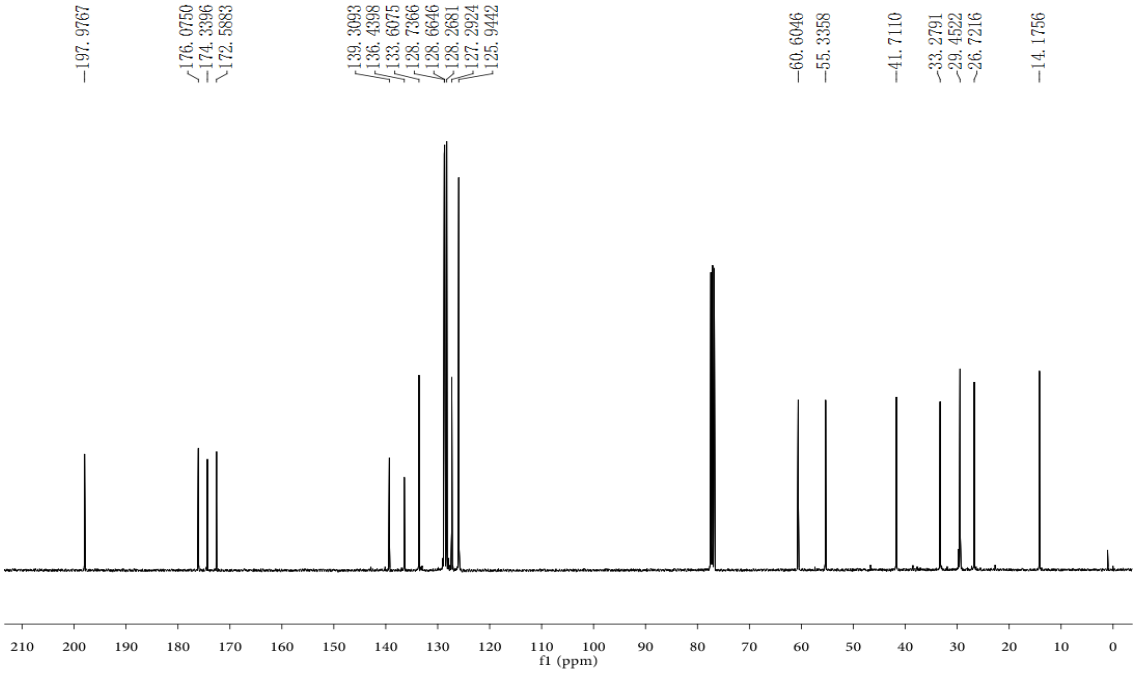




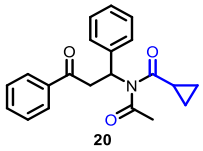
Ethyl 4-oxo-4-(*N*-(3-oxo-1,3-diphenylpropyl)acetamido)butanoate (19):

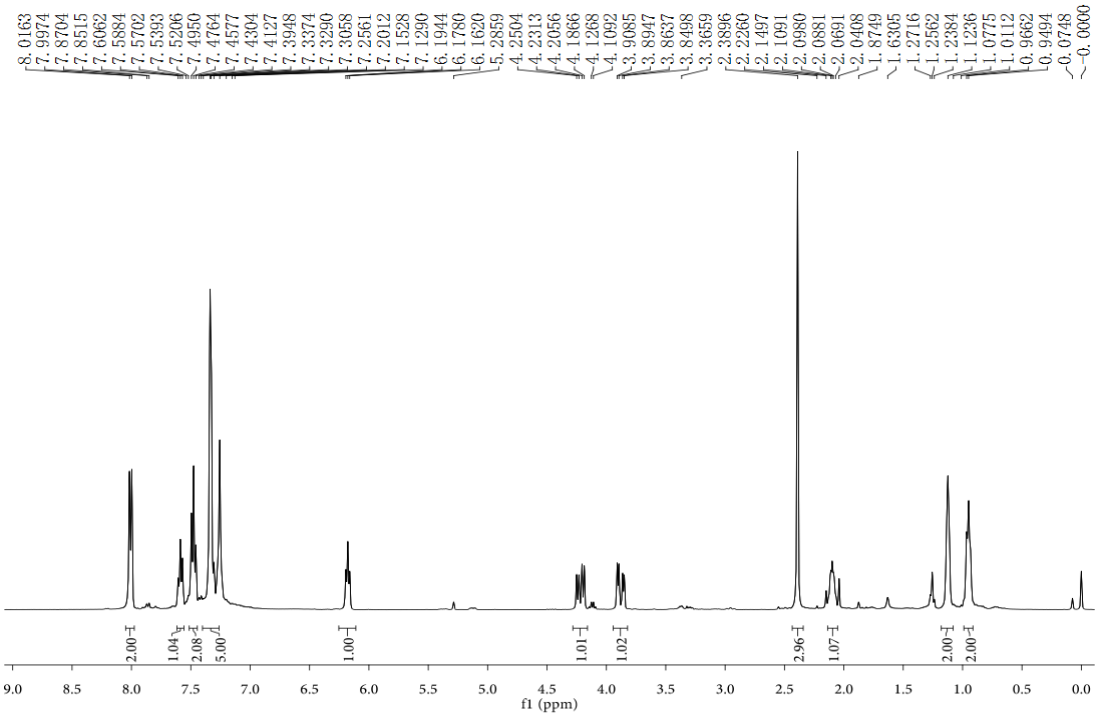


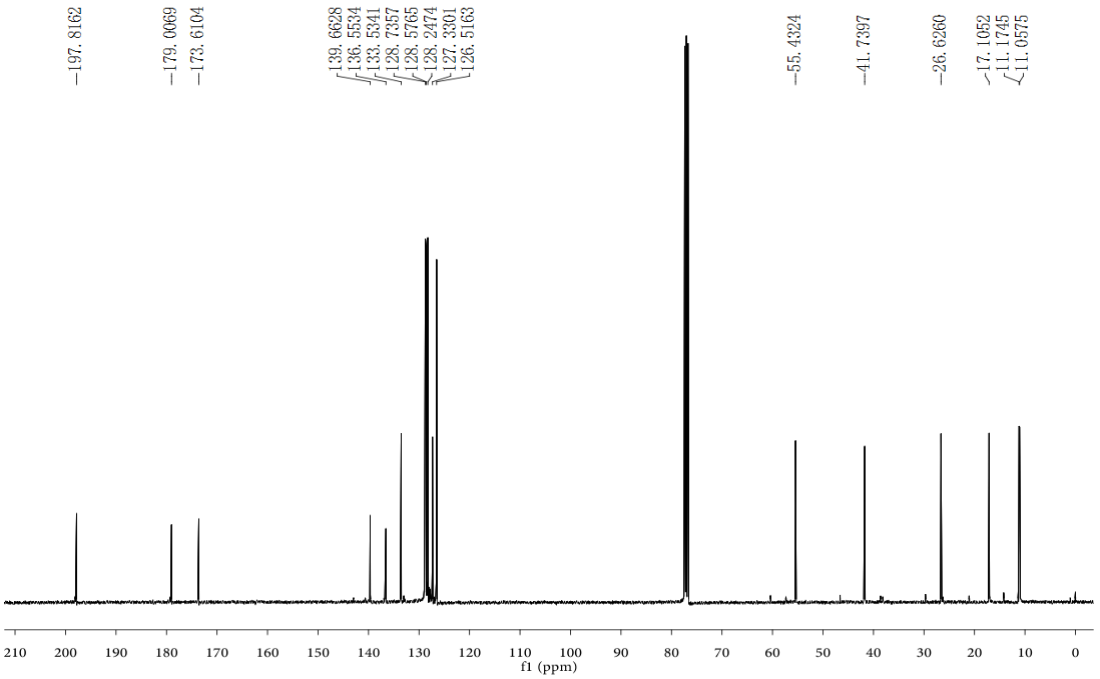




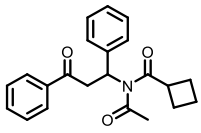
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclopropanecarboxamide (20)**:

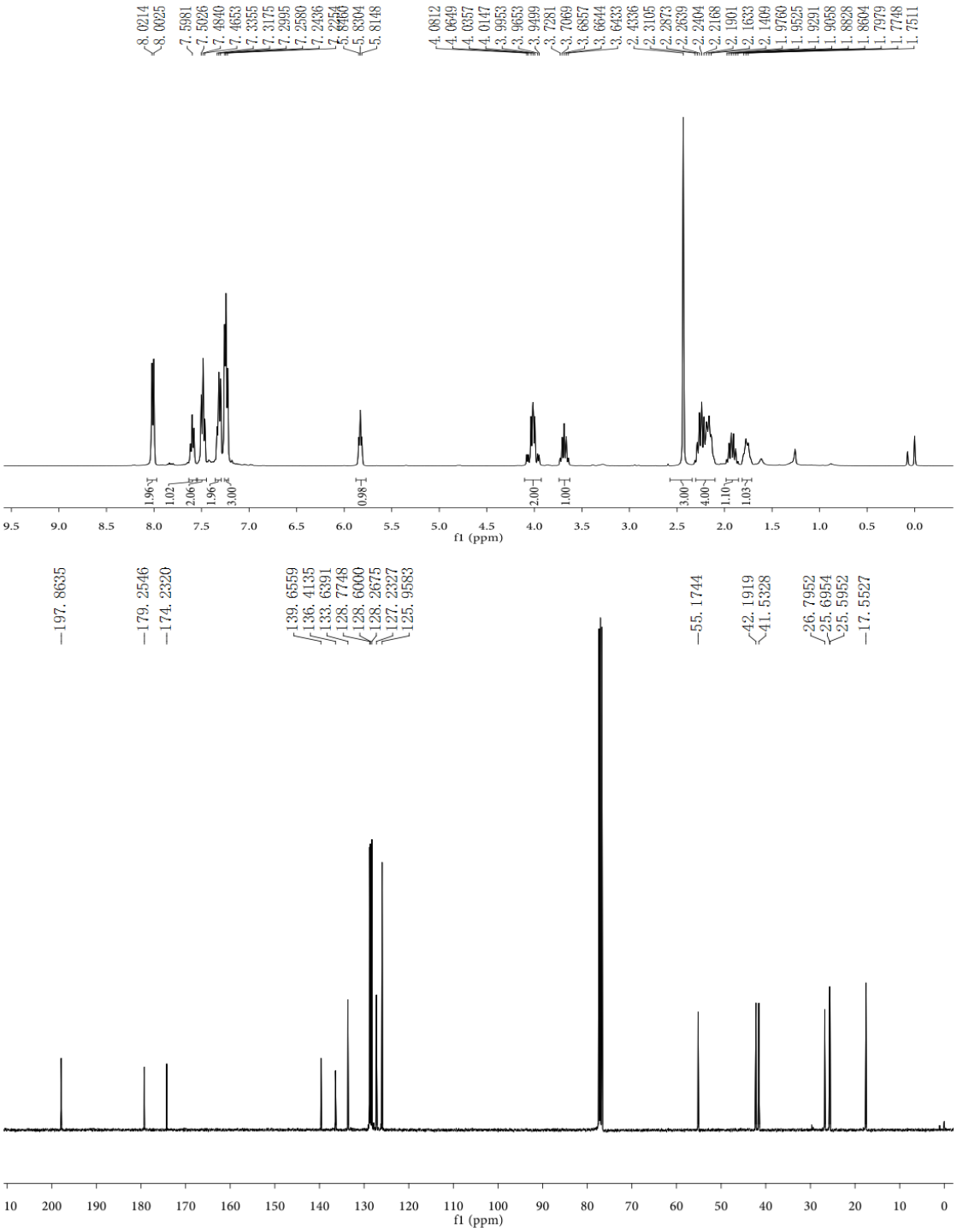




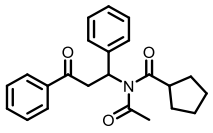


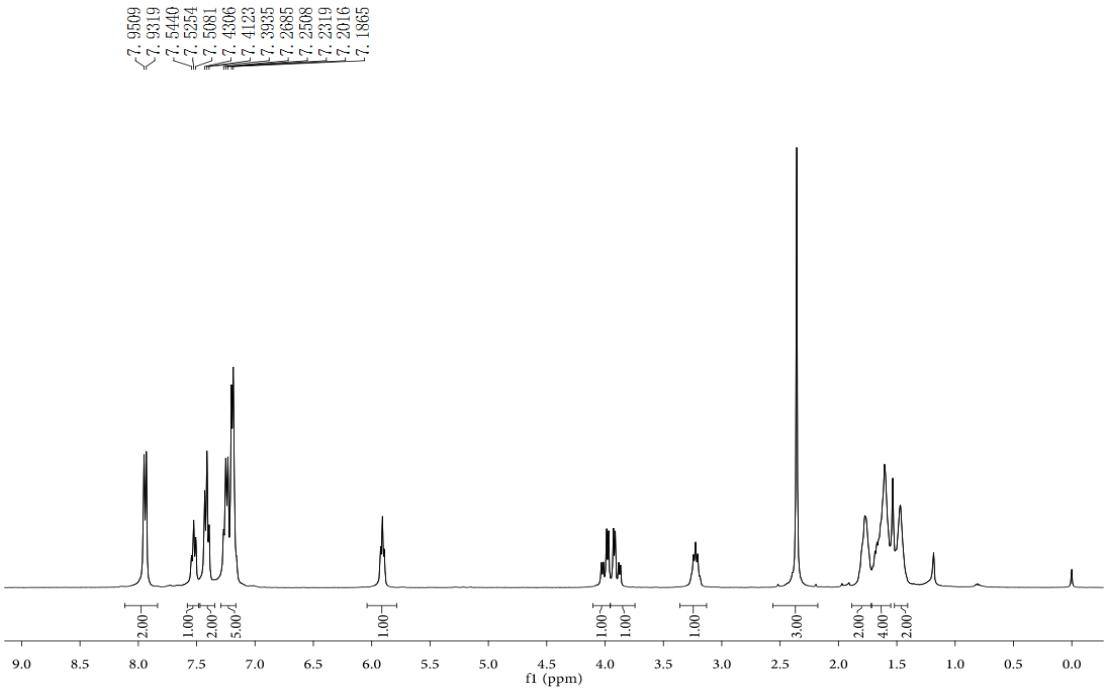
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclobutanecarboxamide (21)**:

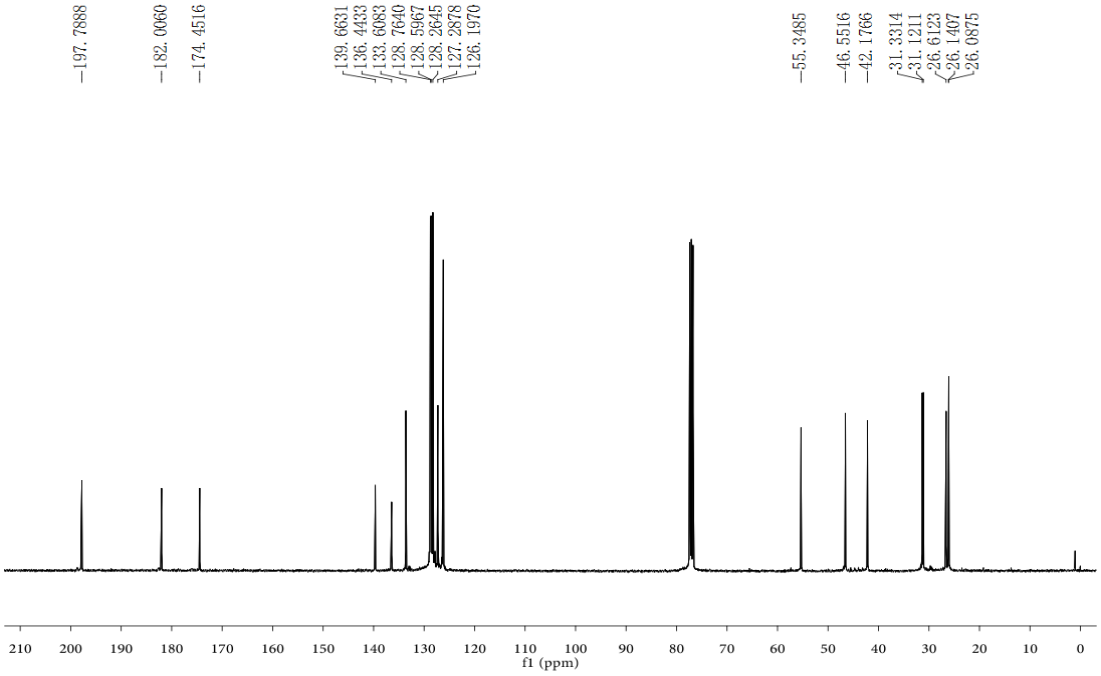




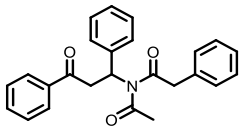
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclopentanecarboxamide (22)**:

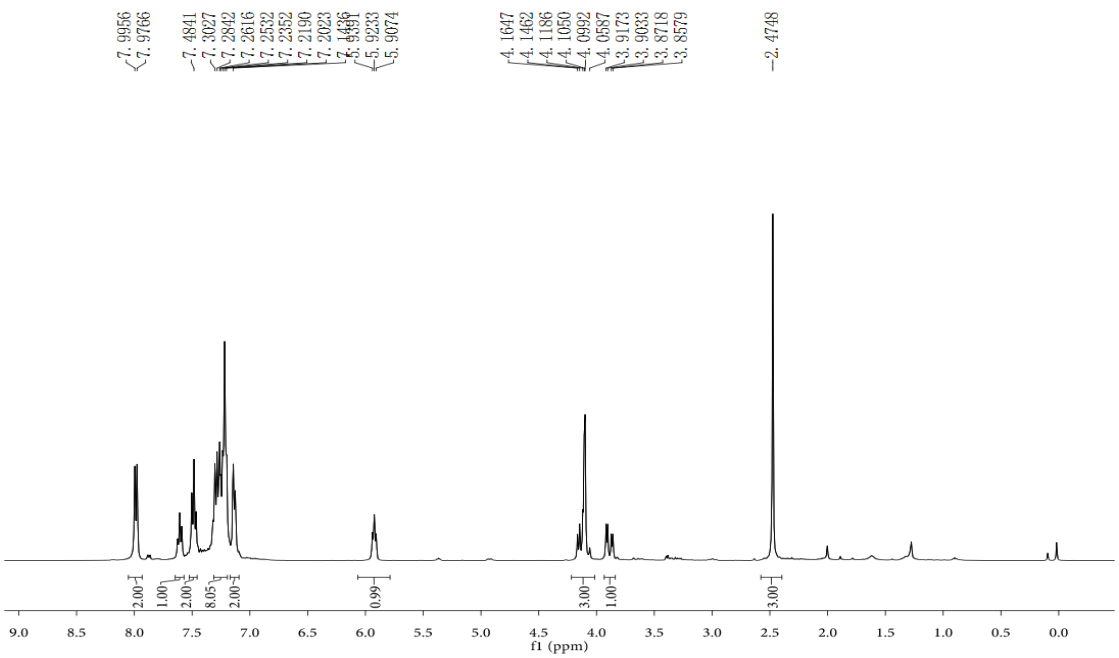


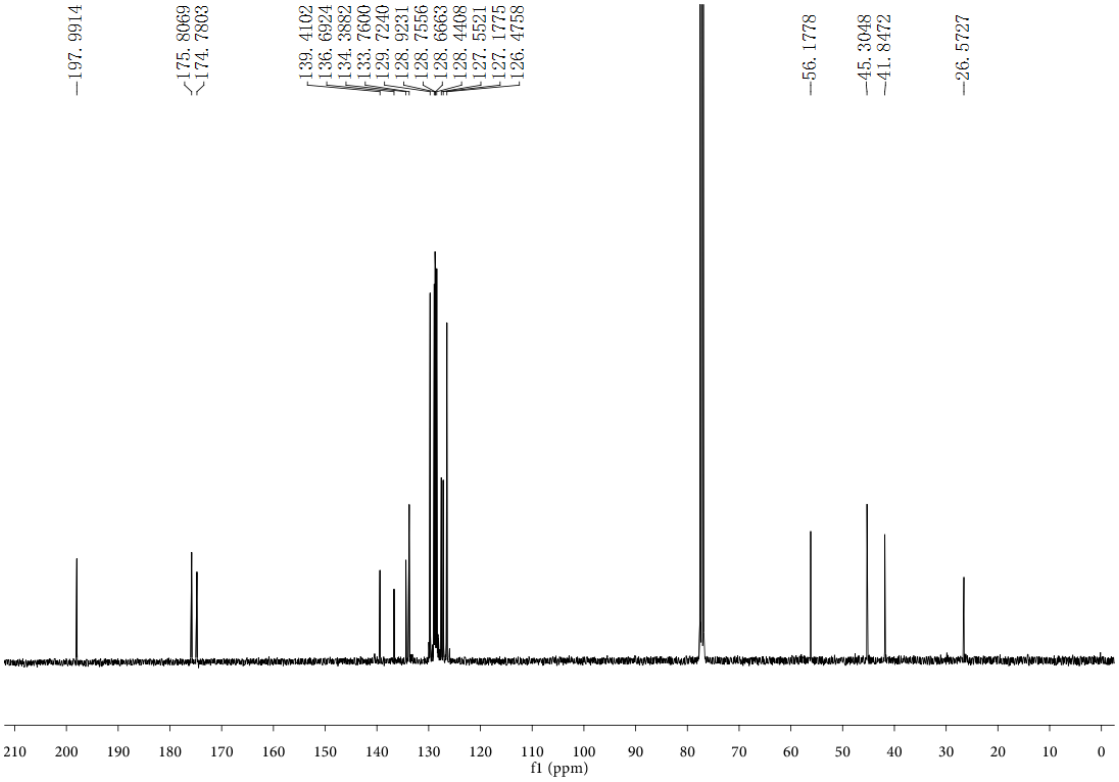




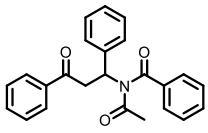
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)-2-phenylacetamide (23)**:

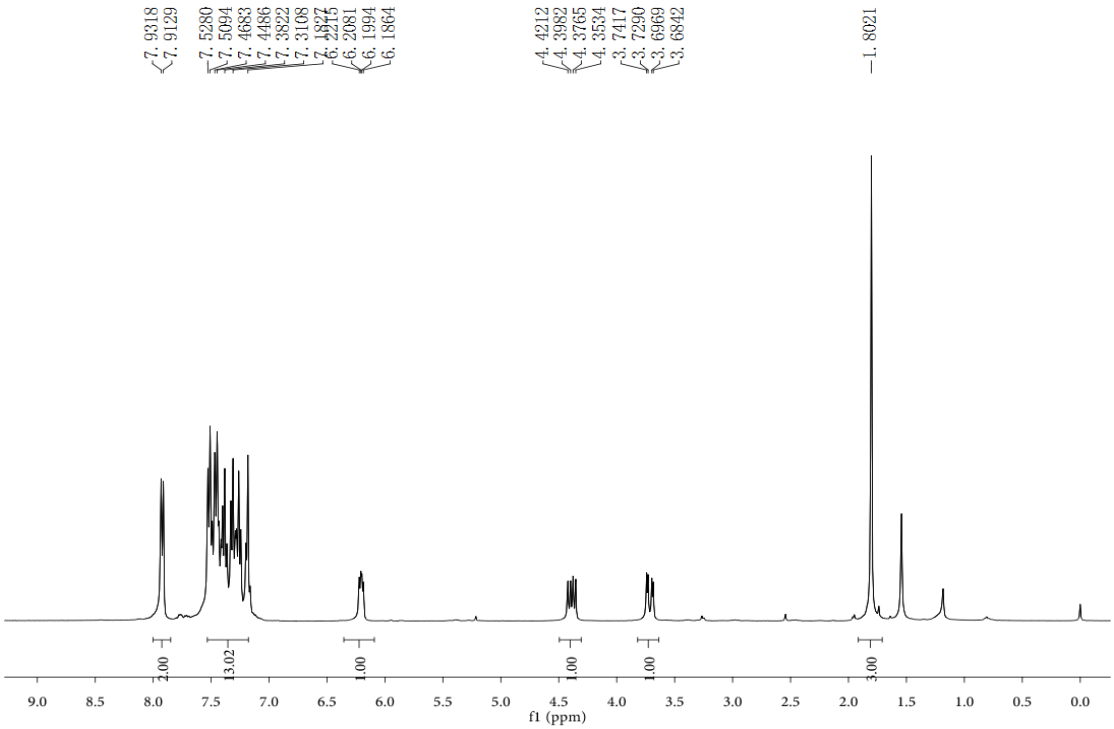


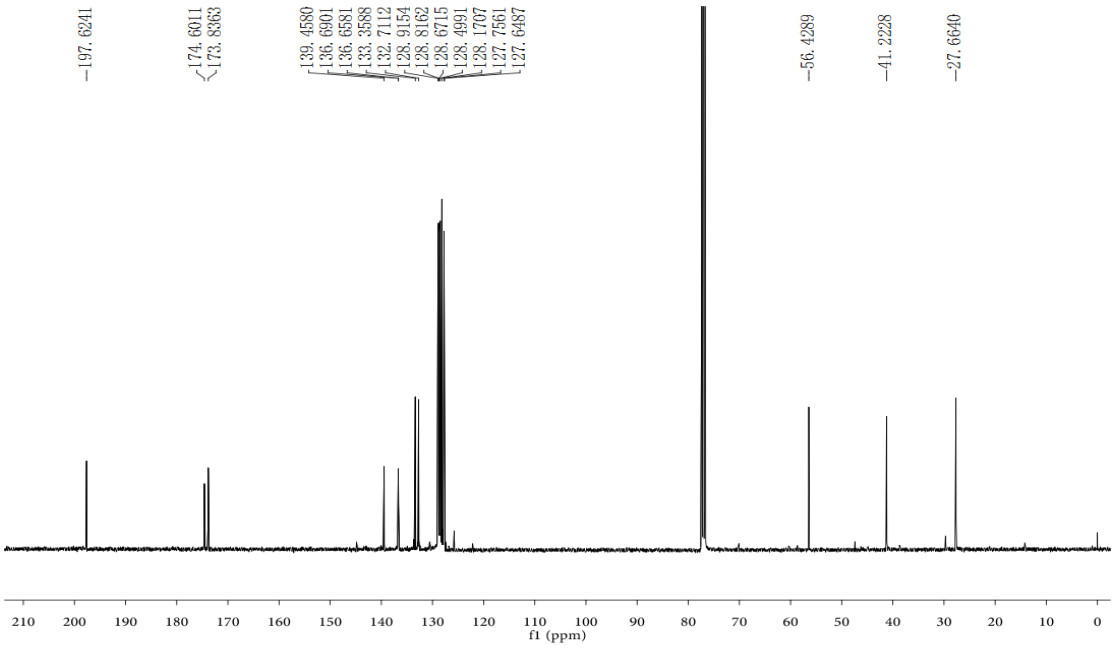




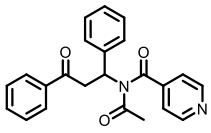
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)benzamide (24)**:

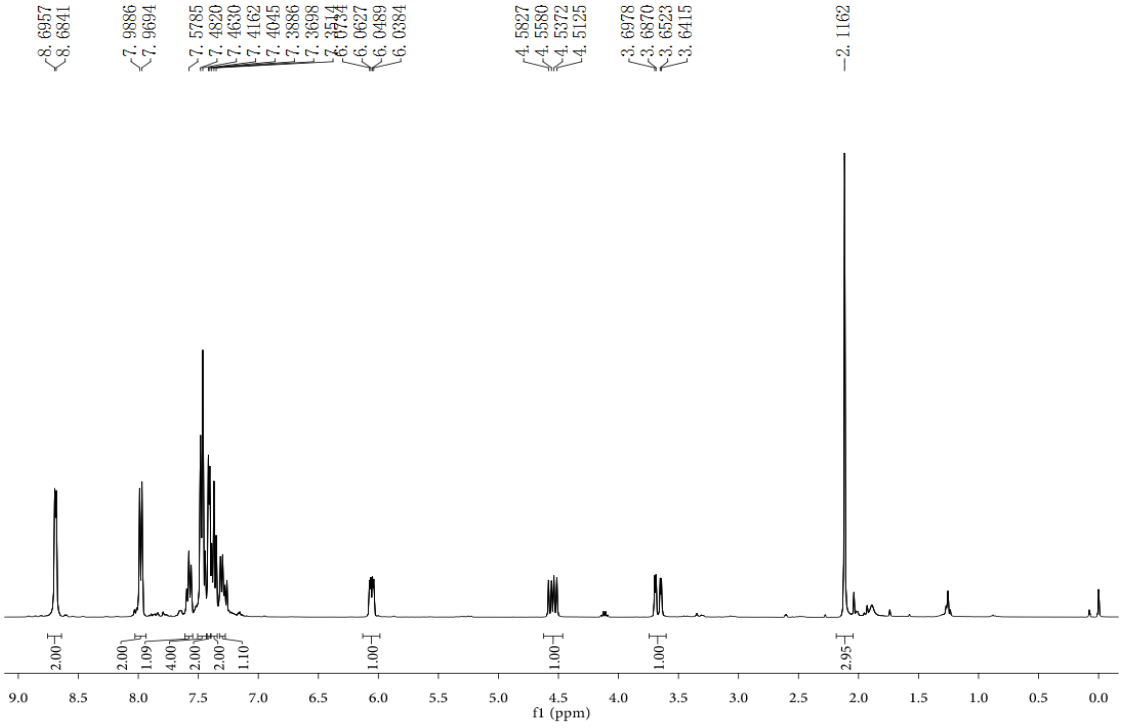


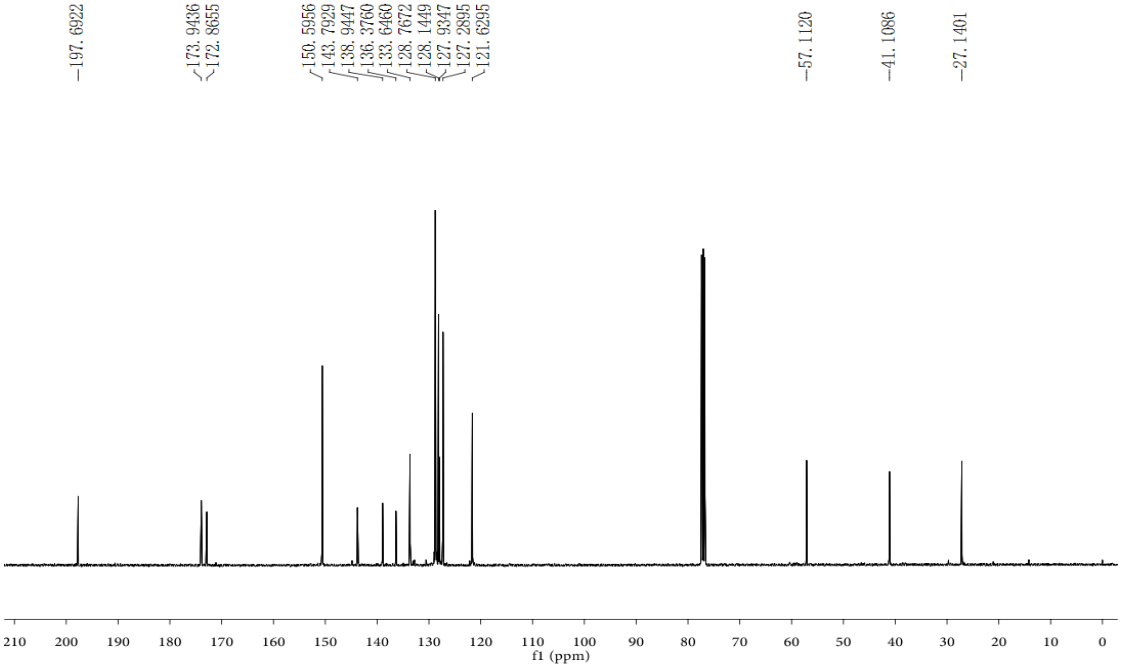




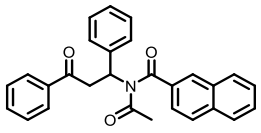
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)isonicotinamide (25)**:

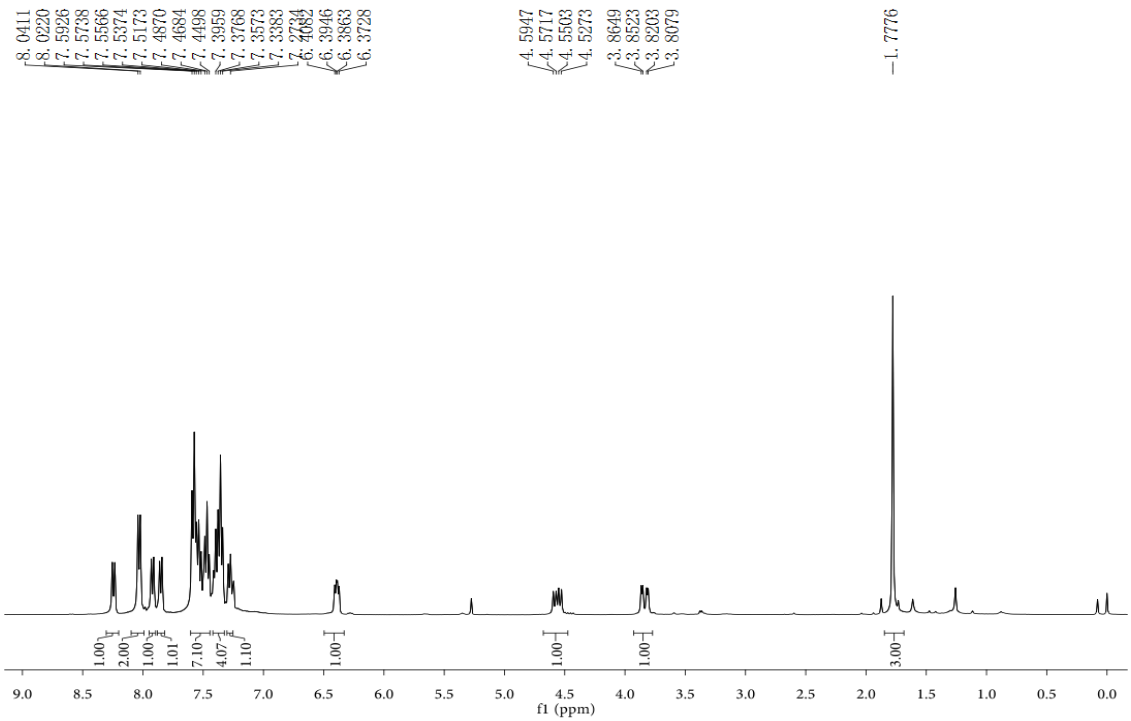


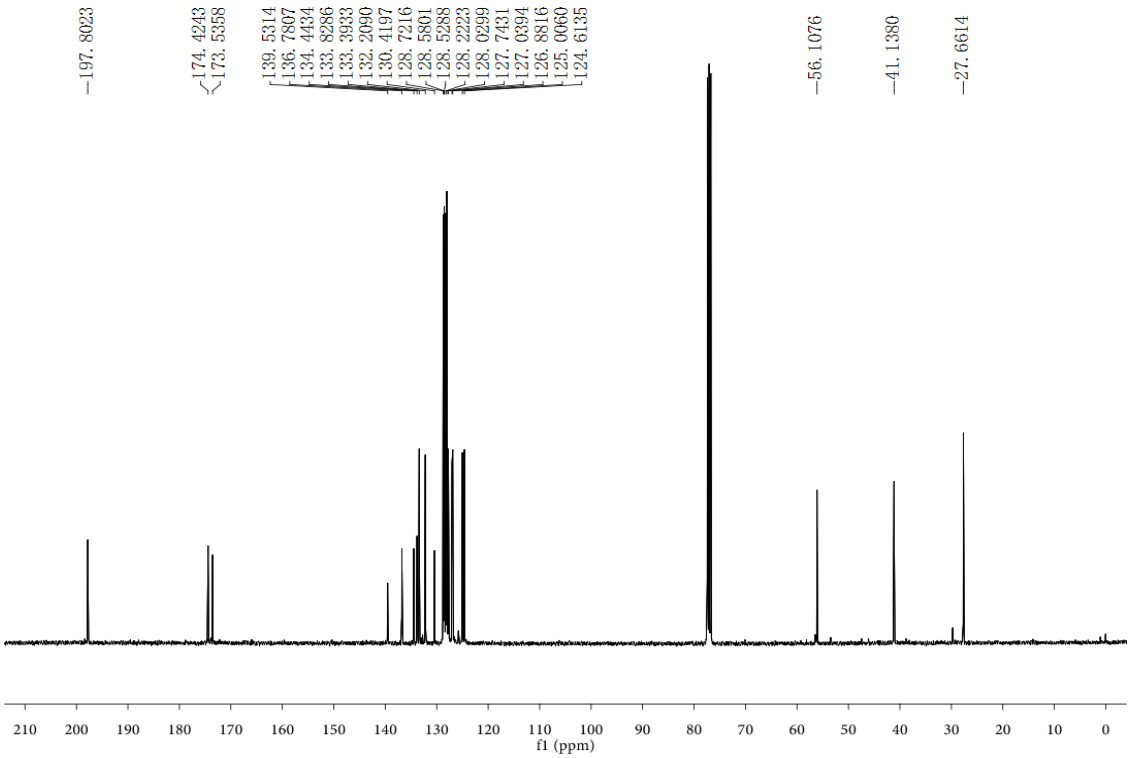




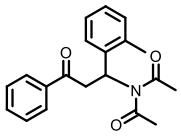
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)-2-naphthamide (26)**:

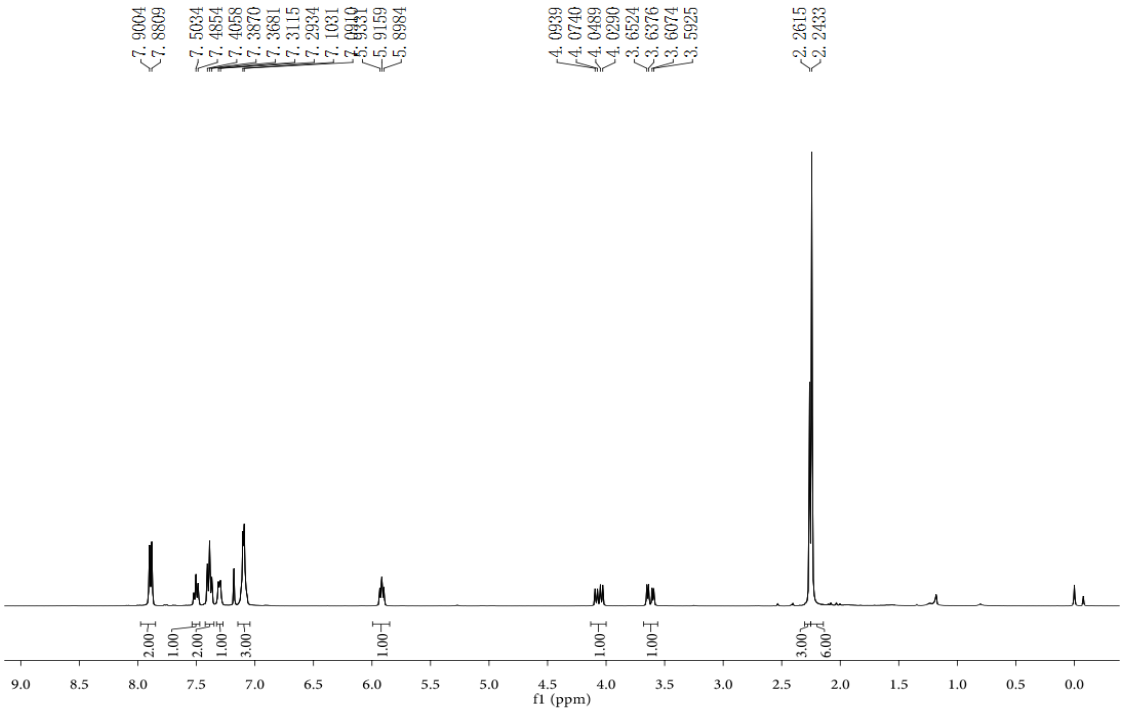


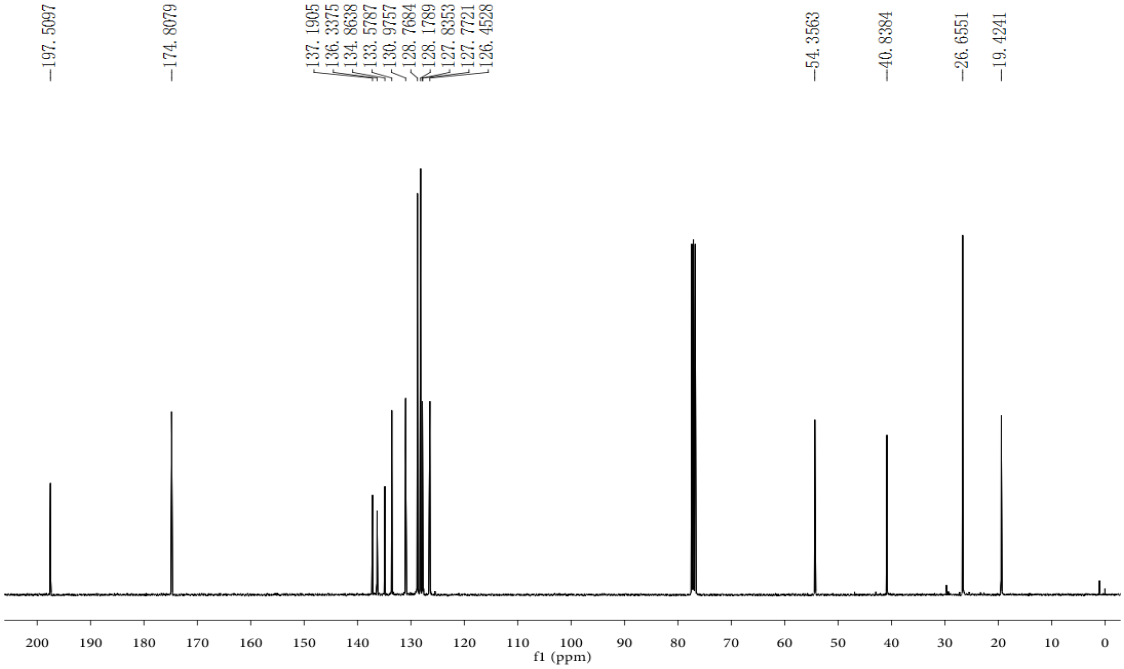




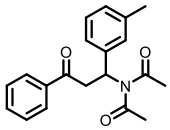
***N*-acetyl-*N*-(3-oxo-3-phenyl-1-(o-tolyl)propyl)acetamide (27)**:

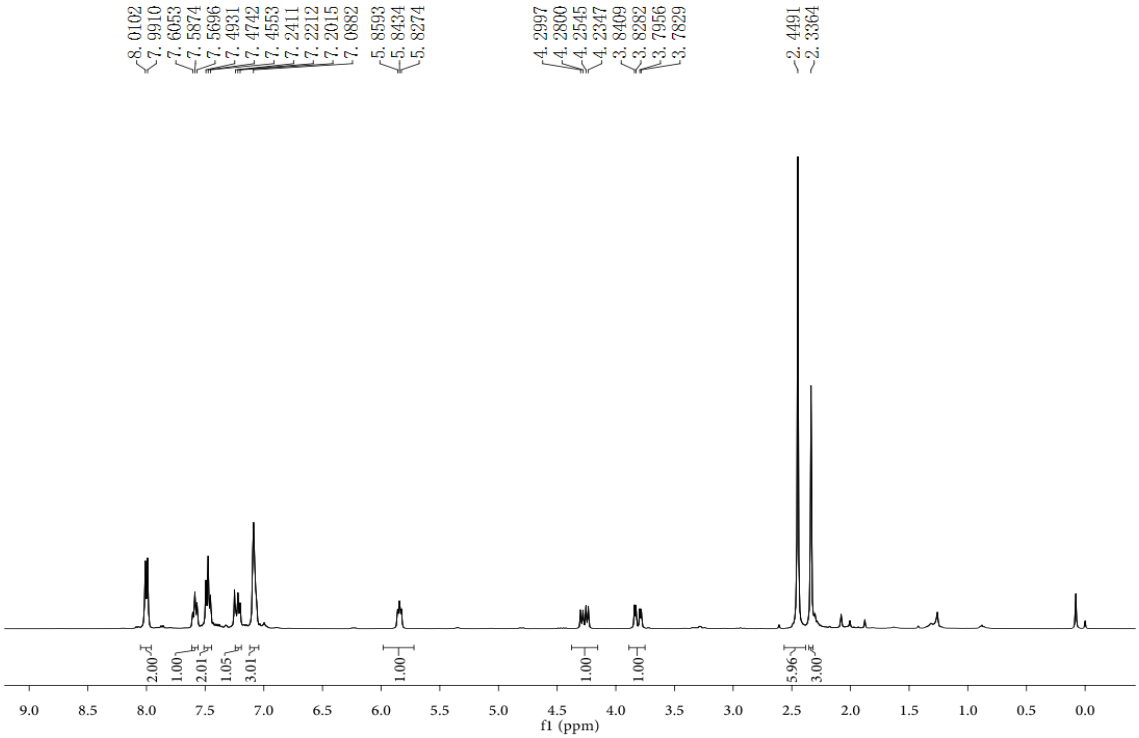


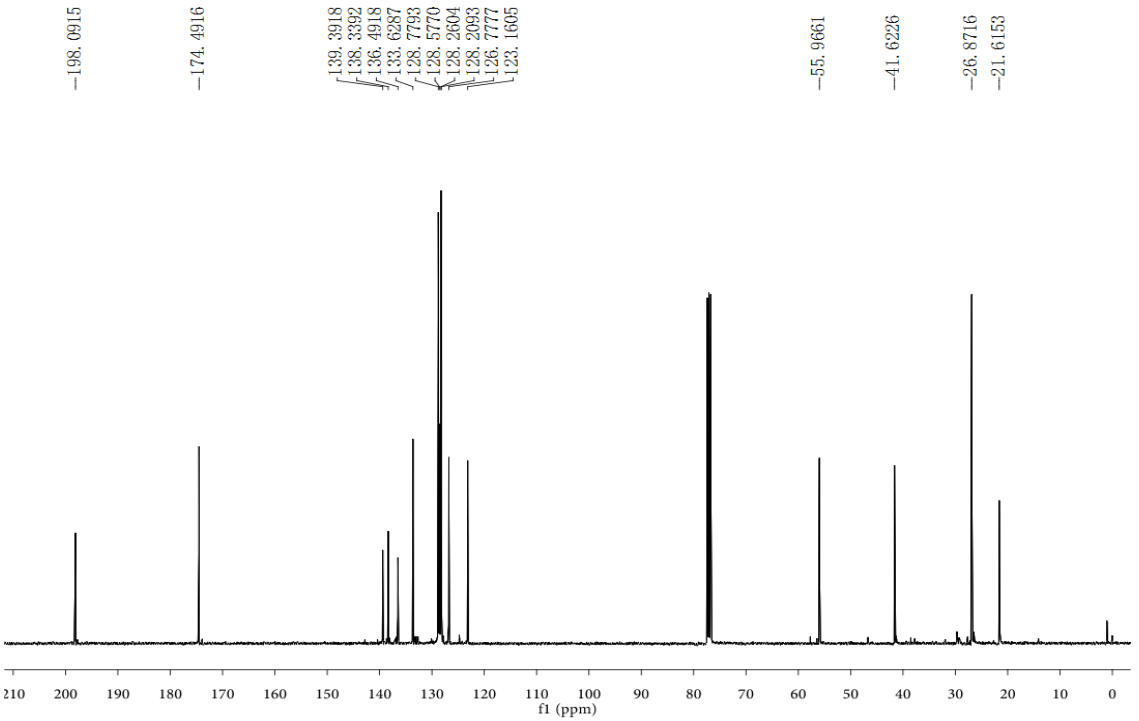




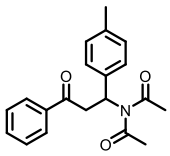
***N*-acetyl-*N*-(3-oxo-3-phenyl-1-(m-tolyl)propyl)acetamide (28)**:

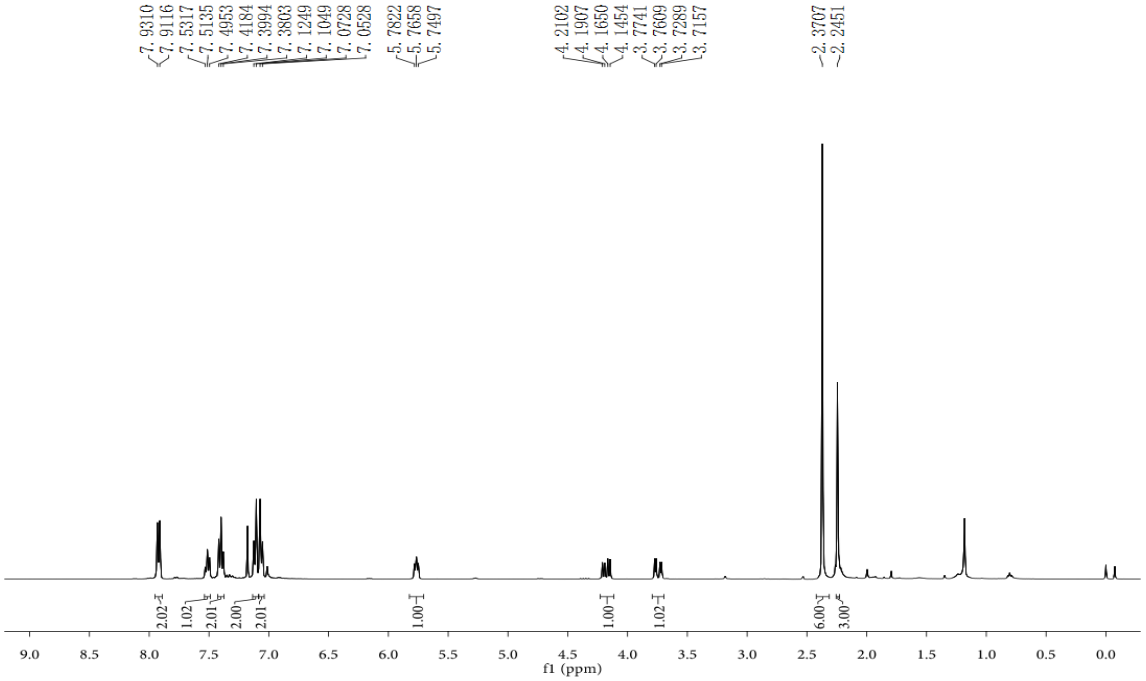


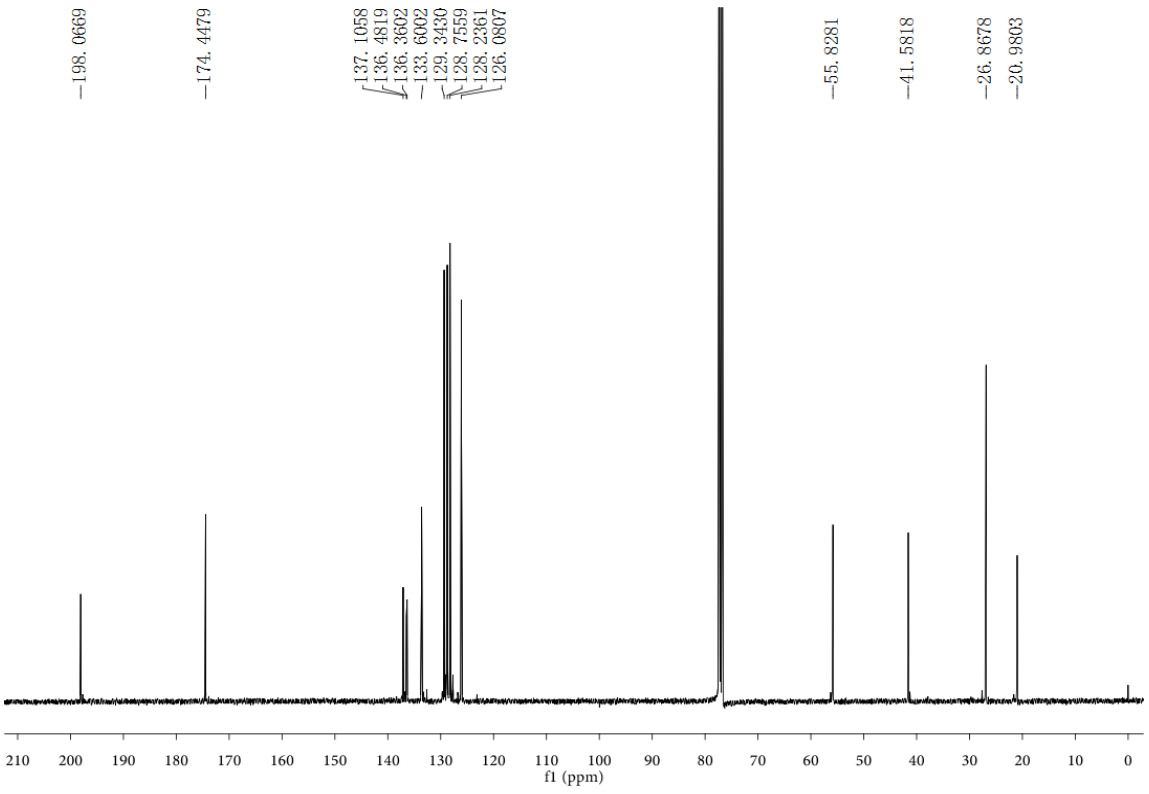




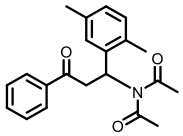
***N*-acetyl-*N*-(3-oxo-3-phenyl-1-(p-tolyl)propyl)acetamide (29)**:

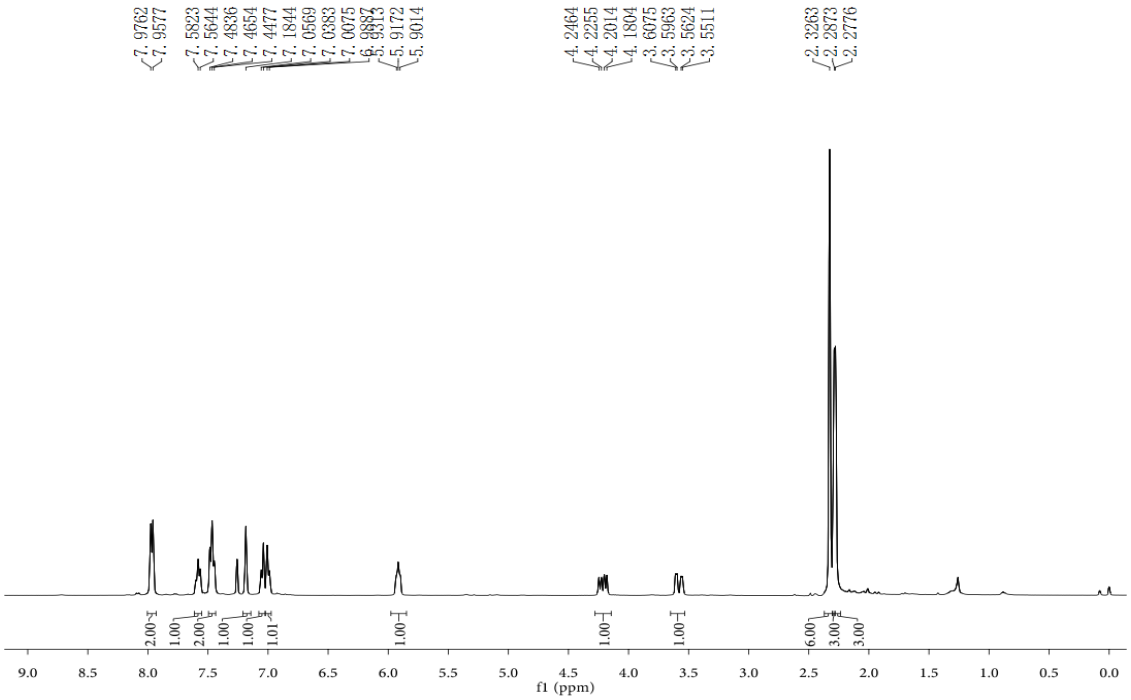


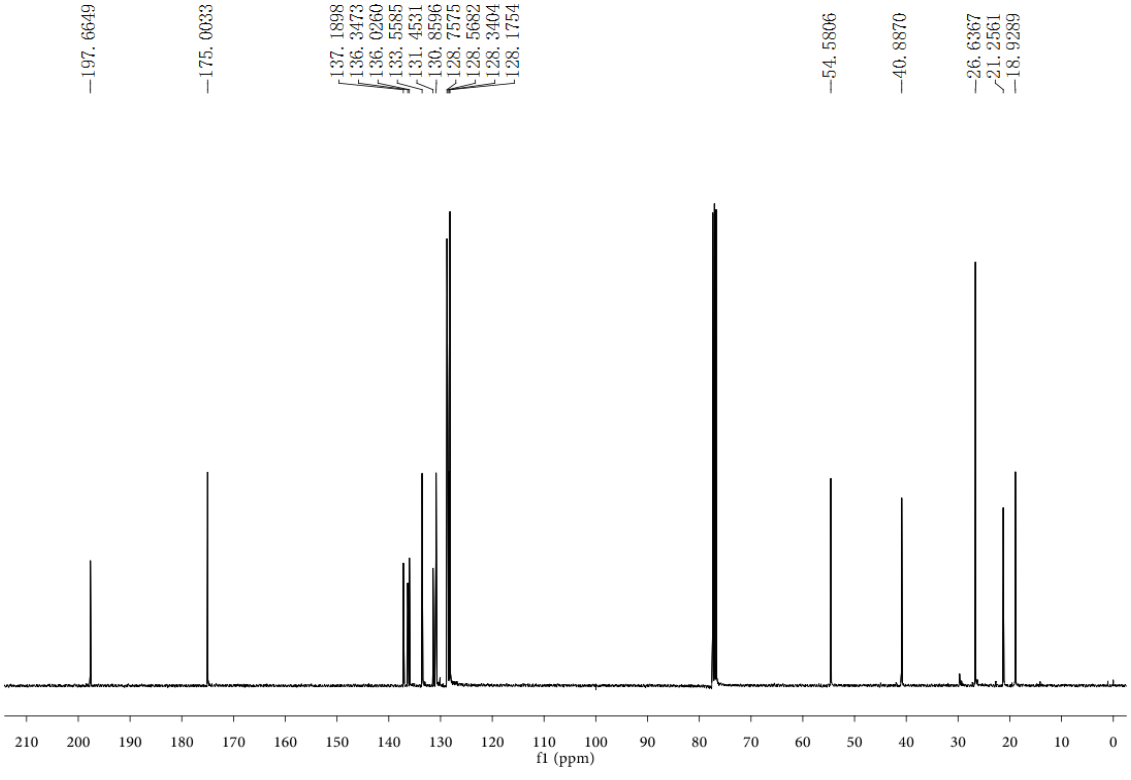




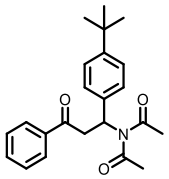
***N*-acetyl-*N*-(1-(2,5-dimethylphenyl)-3-oxo-3-phenylpropyl)acetamide (30)**:

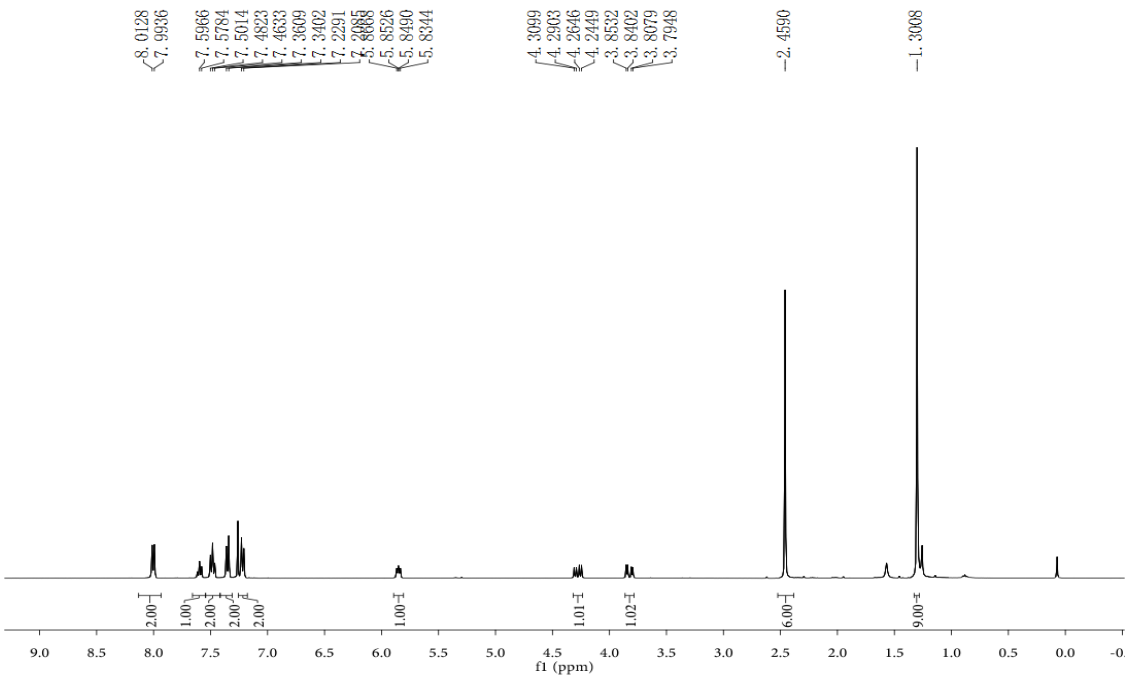


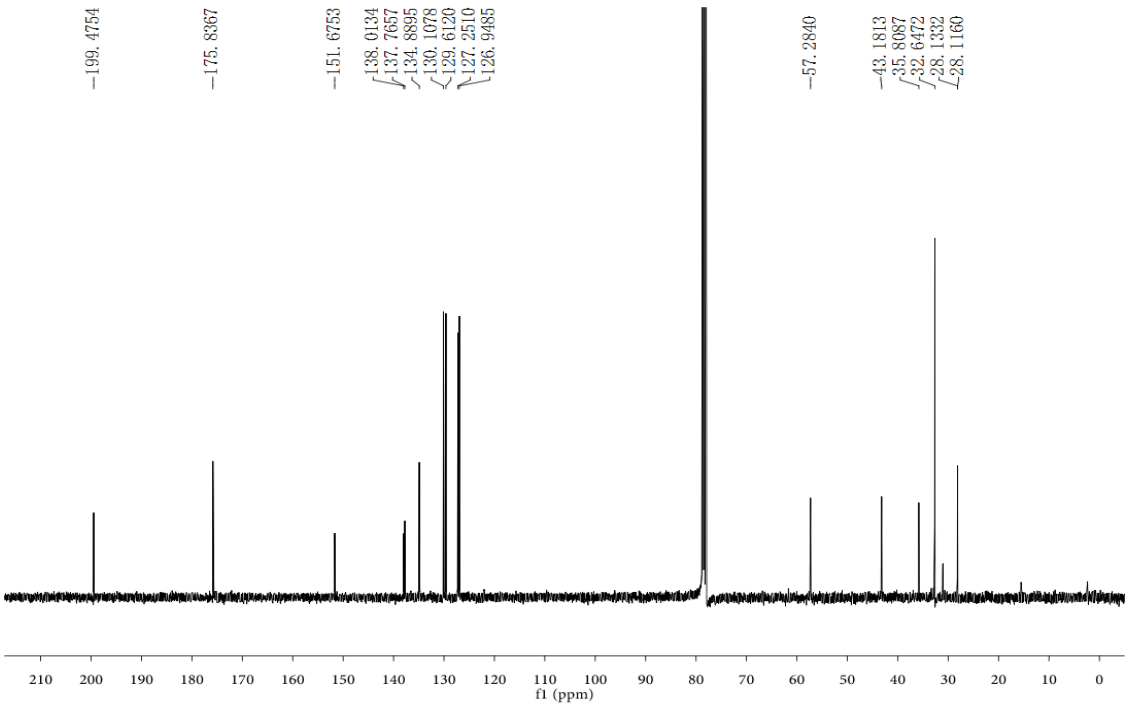




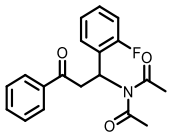
***N*-acetyl-*N*-(1-(4-(tert-butyl)phenyl)-3-oxo-3-phenylpropyl)acetamide (31)**:

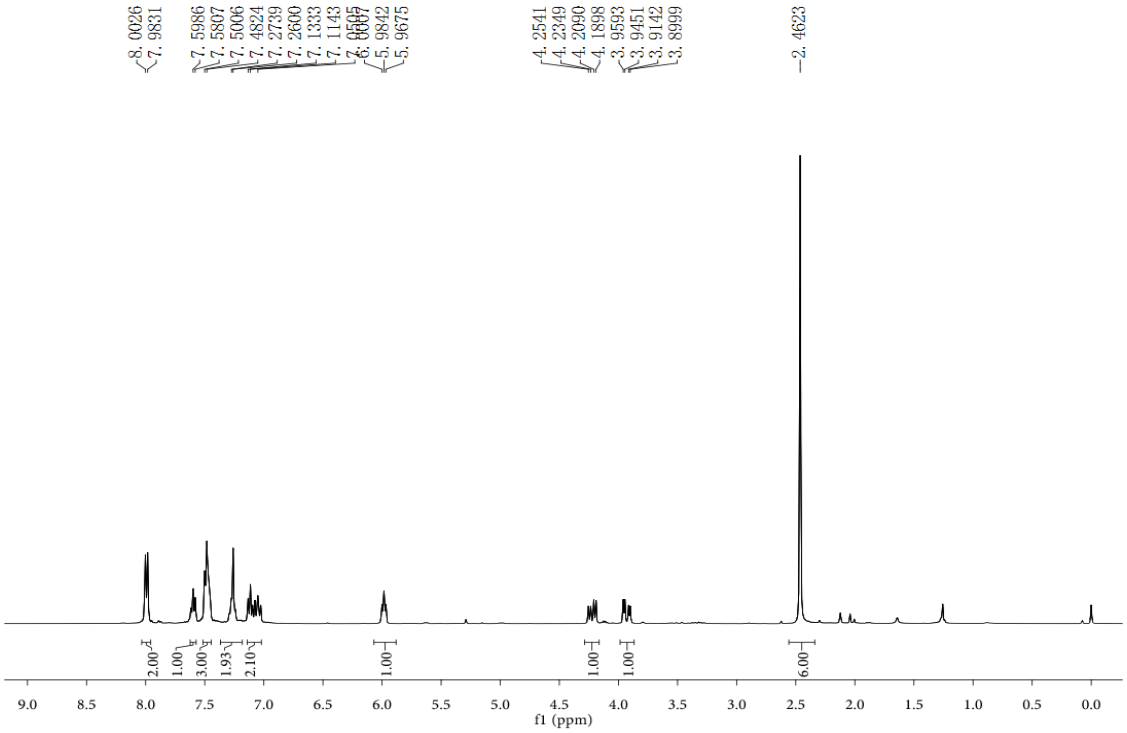


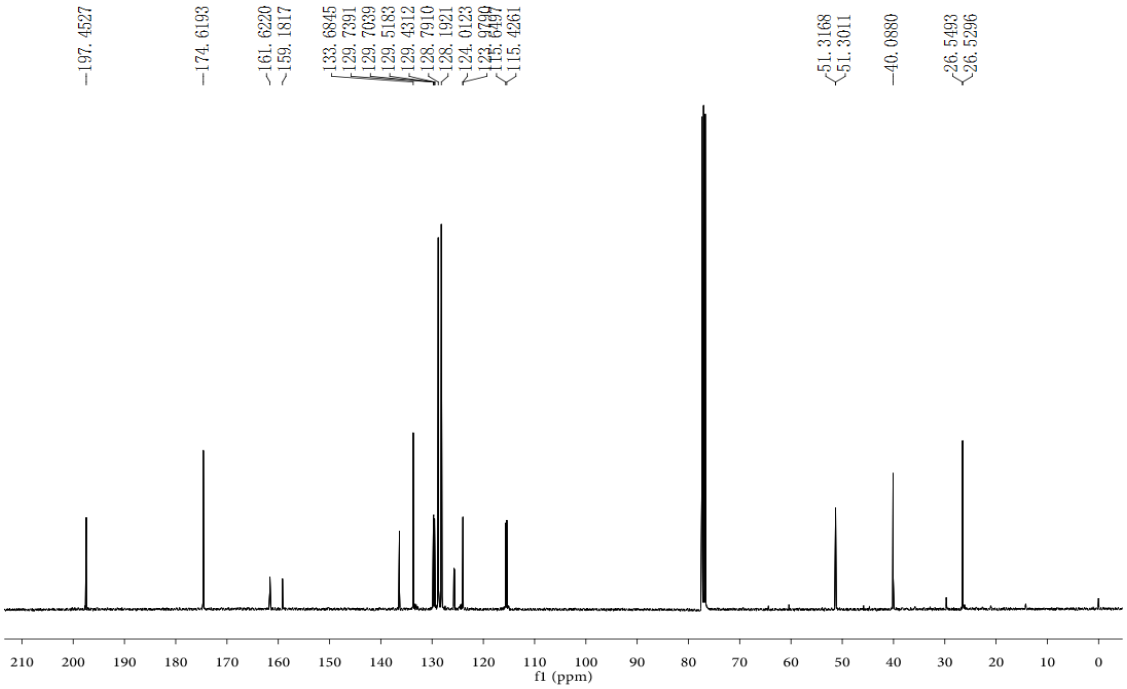


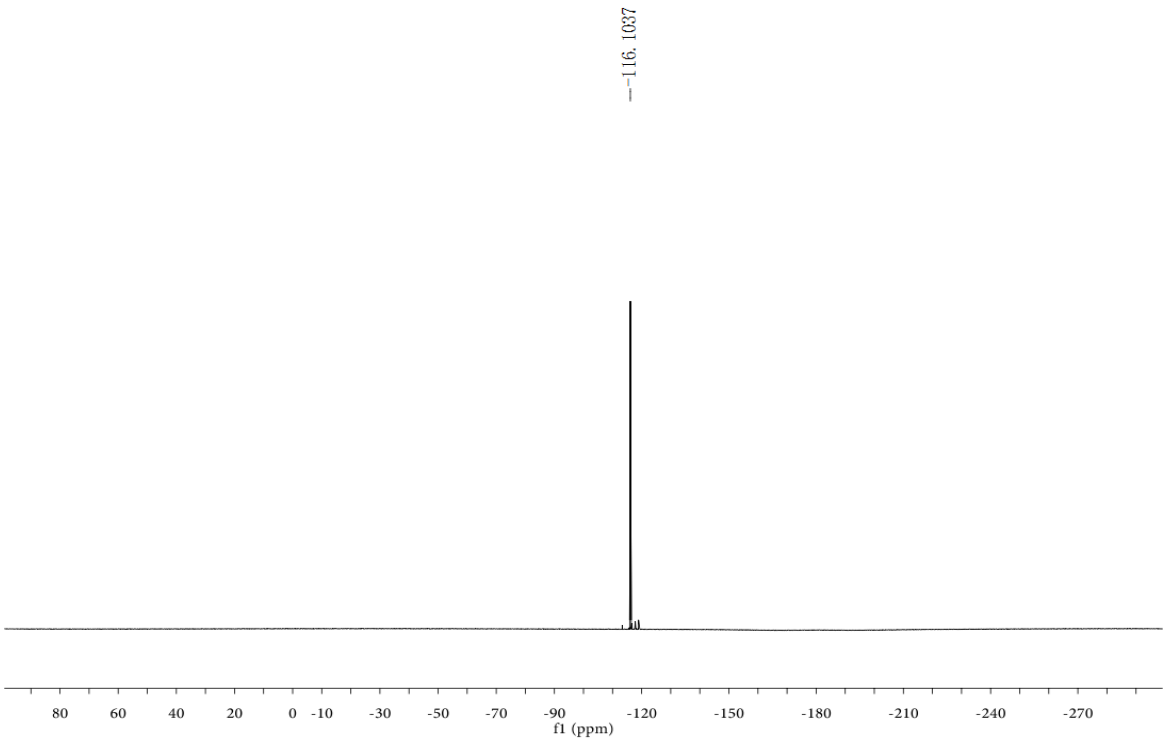


***N*-acetyl-*N*-(1-(2-fluorophenyl)-3-oxo-3-phenylpropyl)acetamide (32)**:

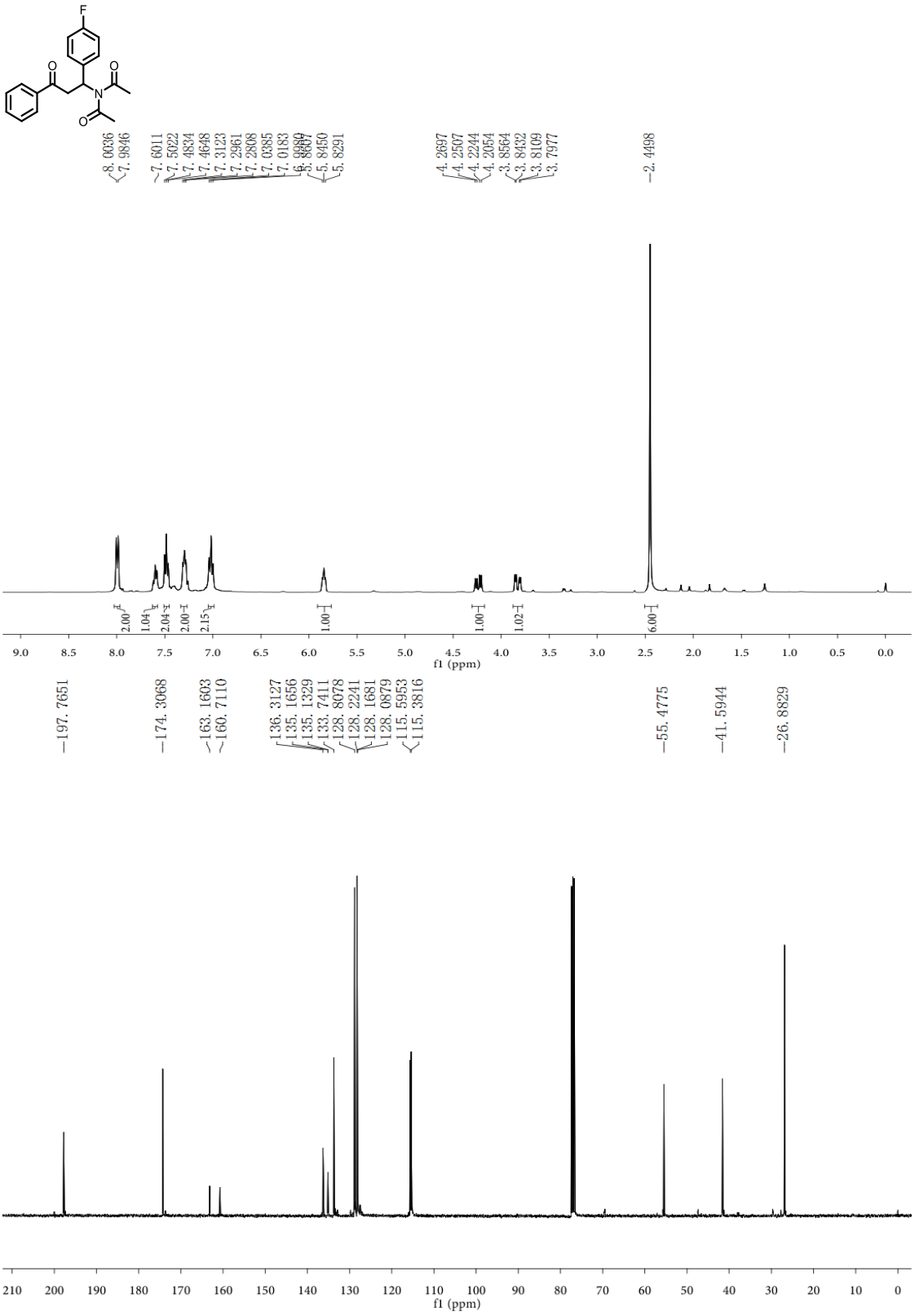


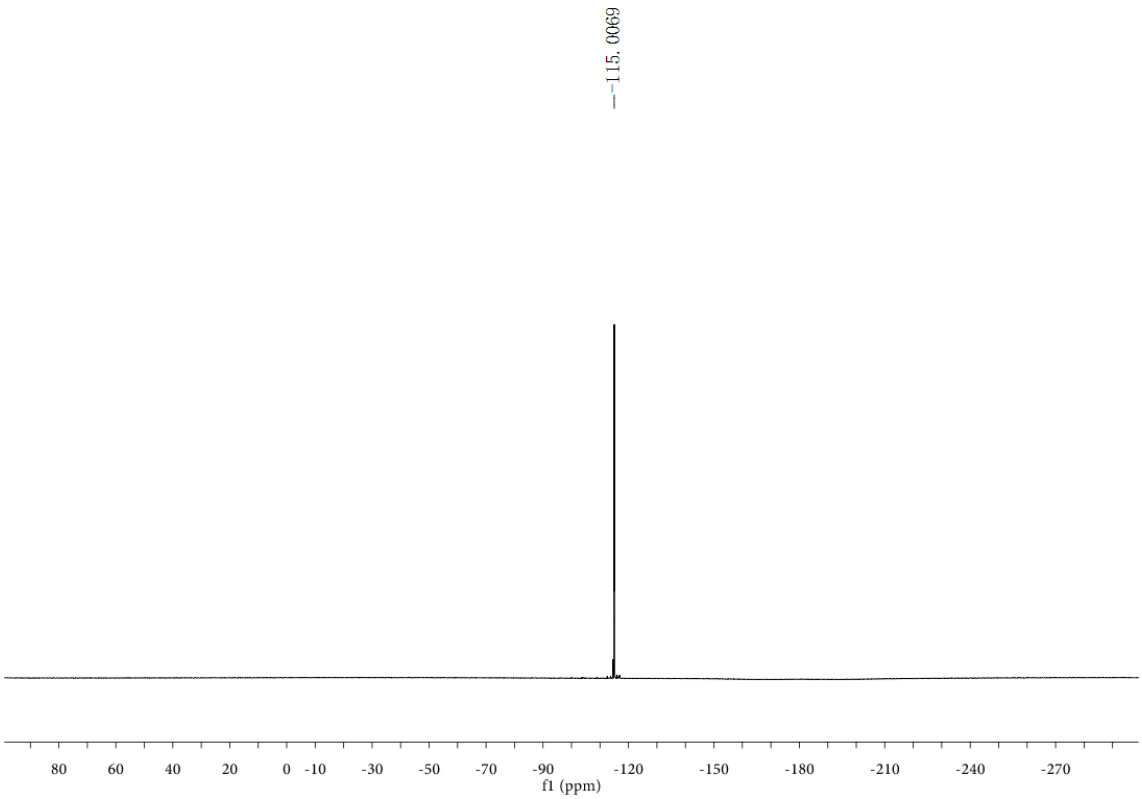




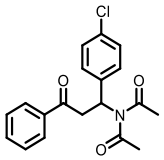

-116.1037
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

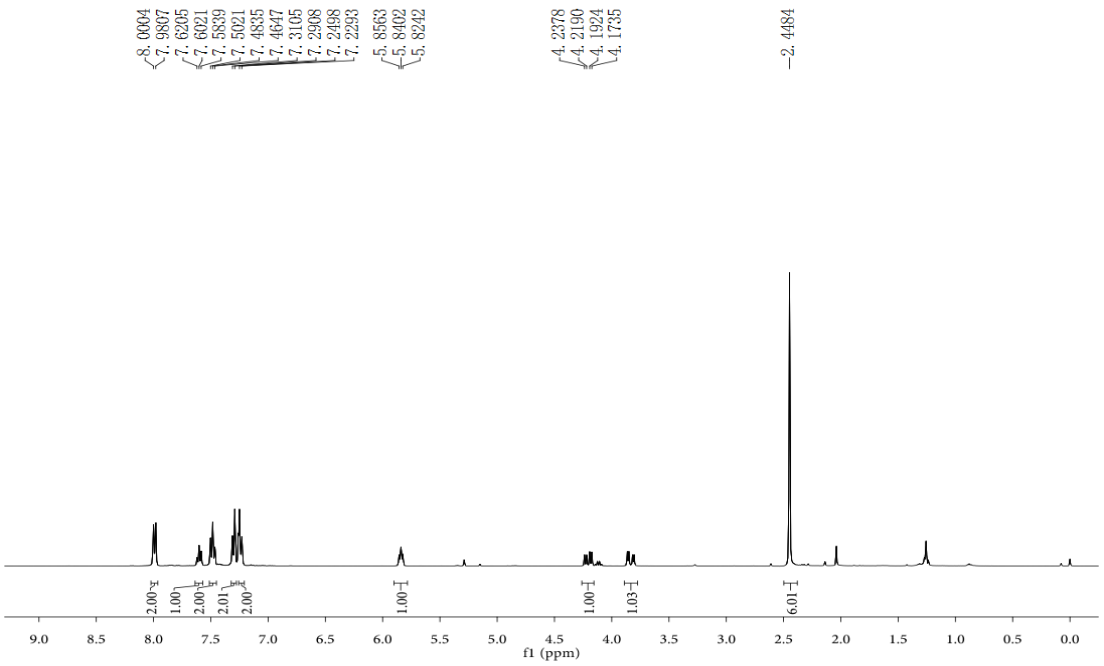
***N*-acetyl-*N*-(1-(4-fluorophenyl)-3-oxo-3-phenylpropyl)acetamide (33)**:

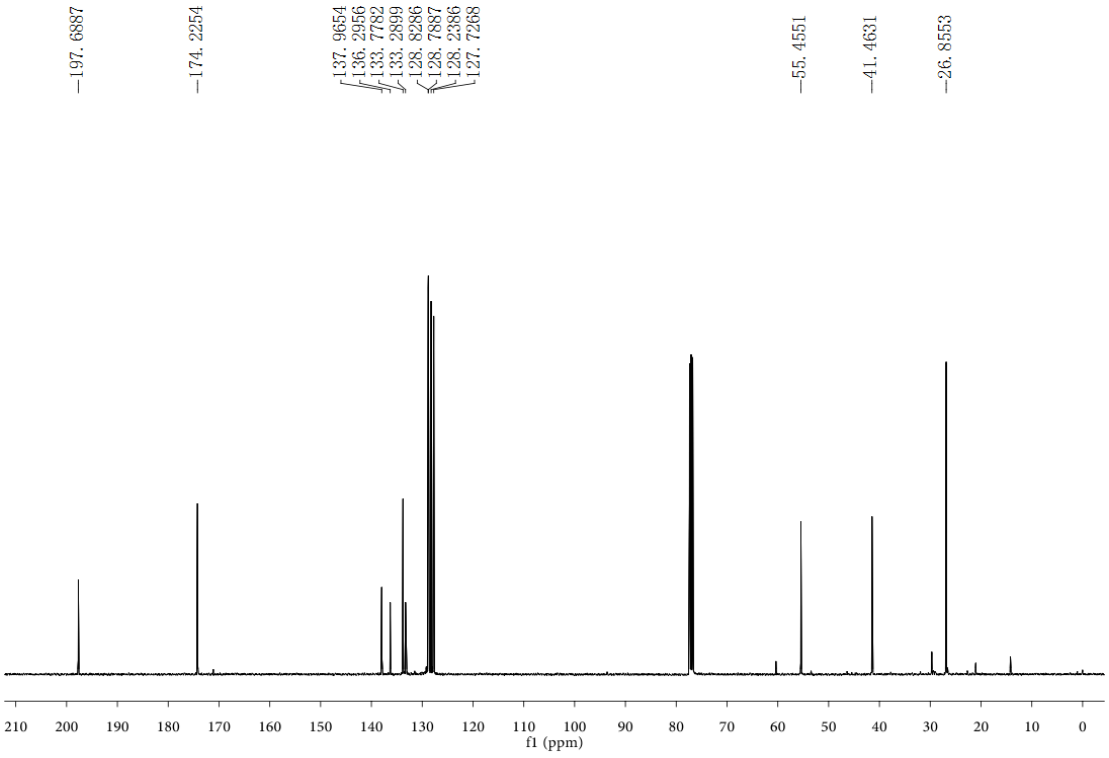



−115.0069
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

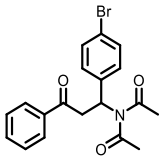
***N*-acetyl-*N*-(1-(4-chlorophenyl)-3-oxo-3-phenylpropyl)acetamide (34)**:

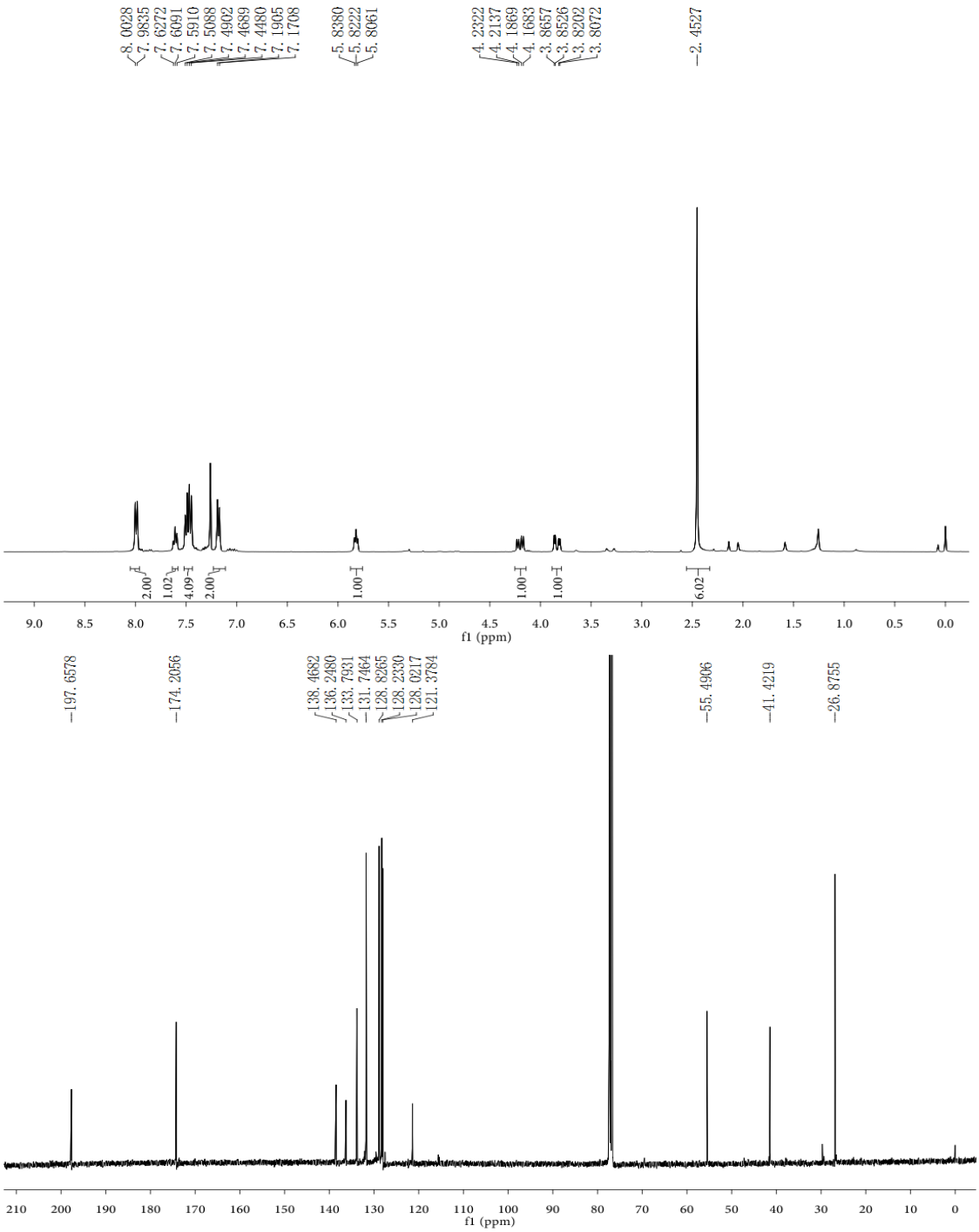




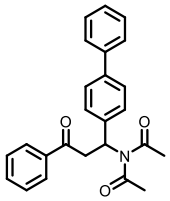


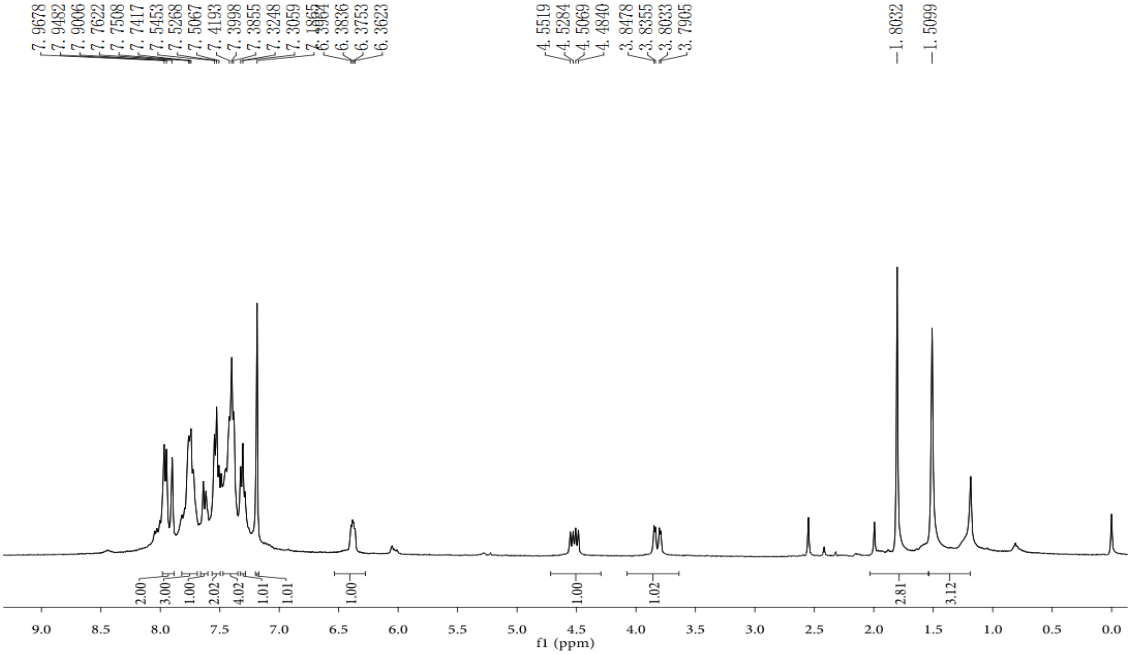
***N*-acetyl-*N*-(1-(4-bromophenyl)-3-oxo-3-phenylpropyl)acetamide (35)**:

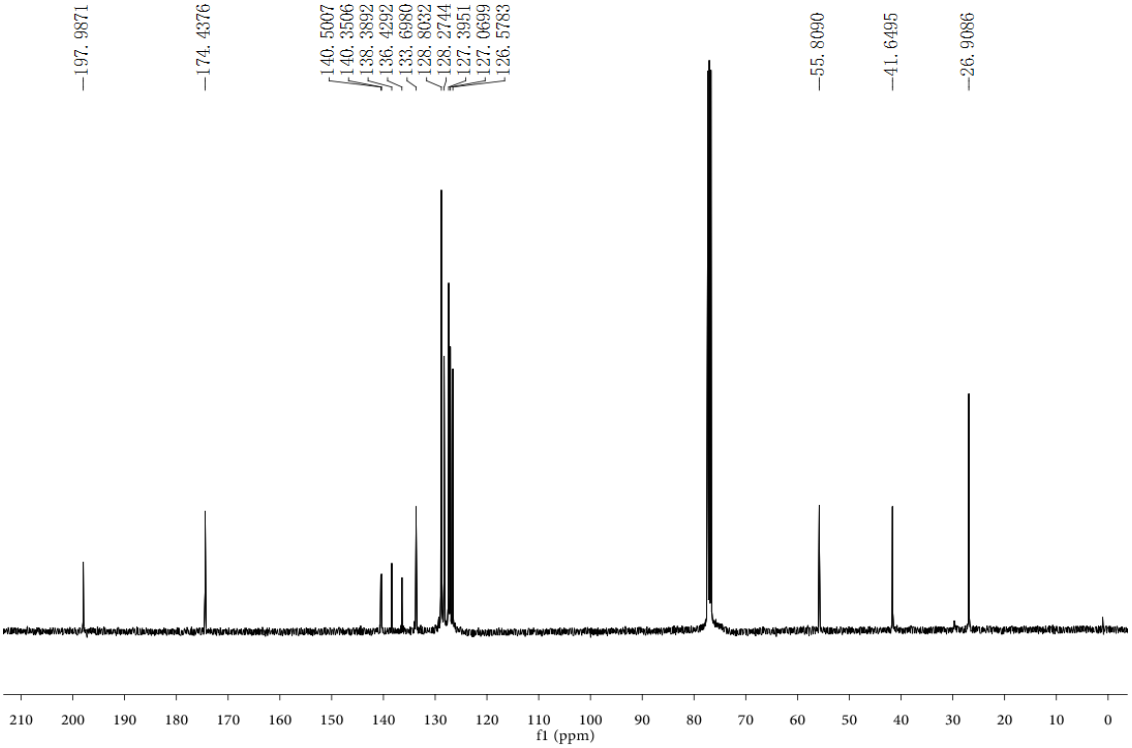




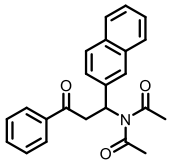
***N*-(1-([1,1'-biphenyl]-4-yl)-3-oxo-3-phenylpropyl)-*N*-acetylacetamide (36)**:

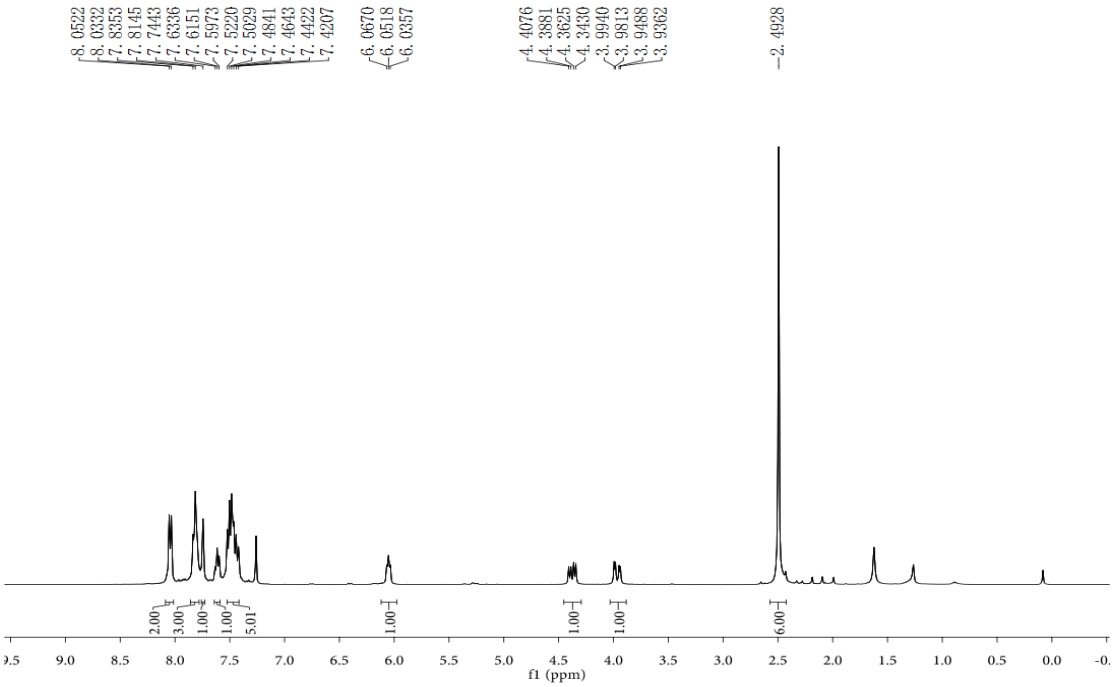


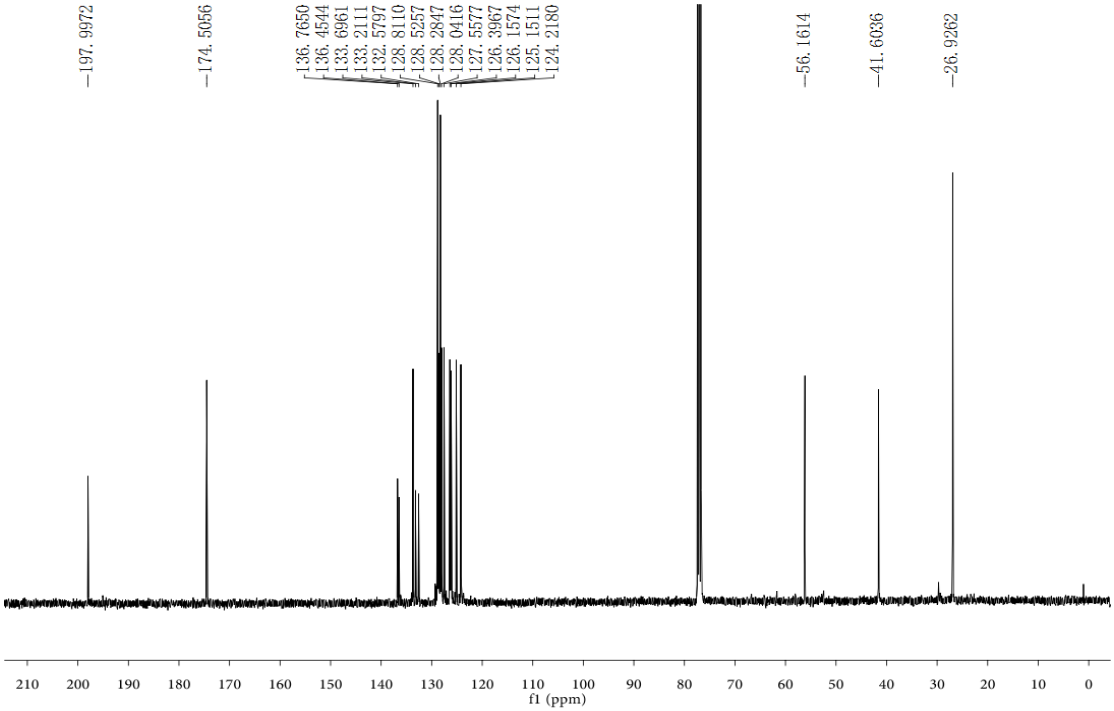




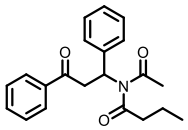
***N*-acetyl-*N*-(1-(naphthalen-2-yl)-3-oxo-3-phenylpropyl)acetamide(37)**:

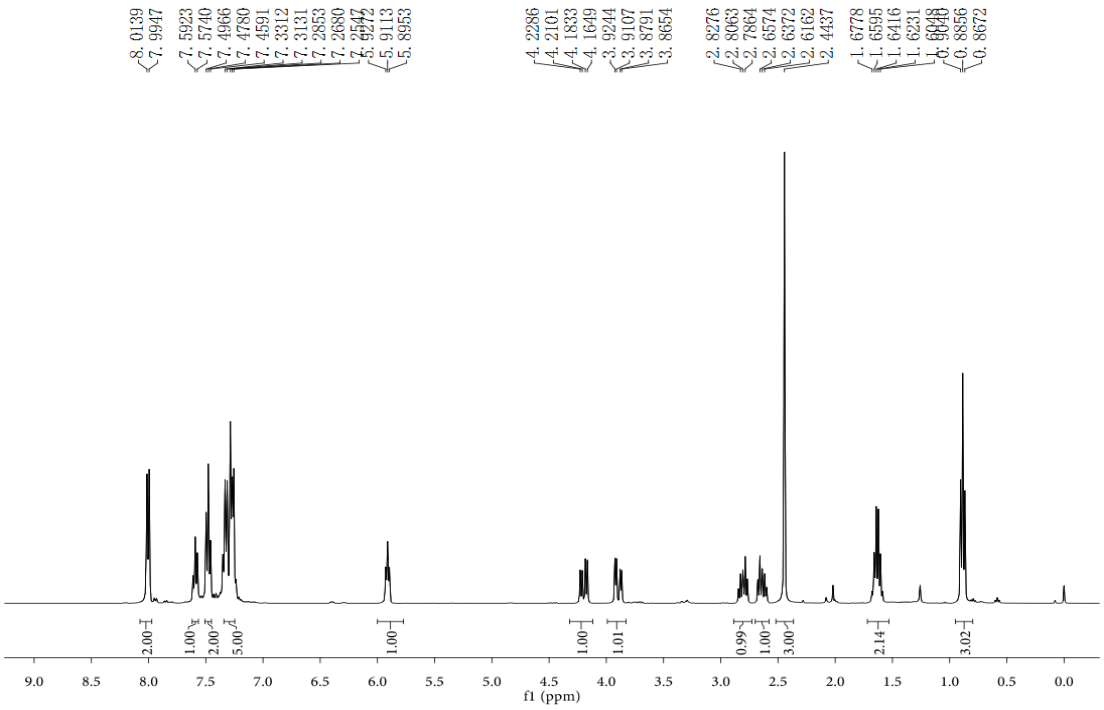


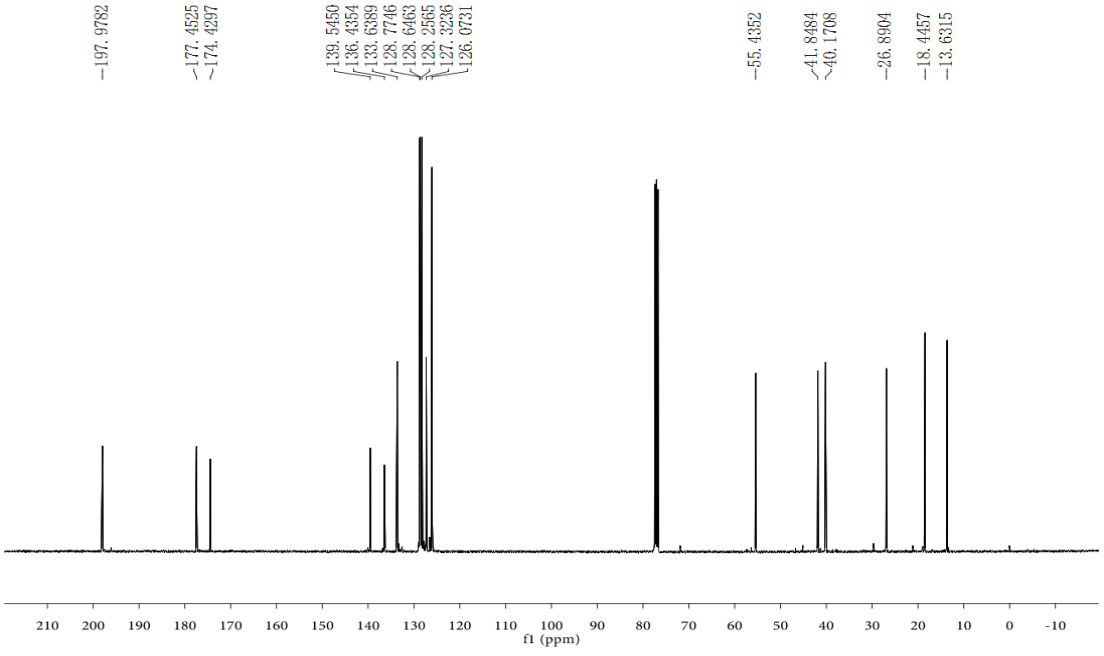




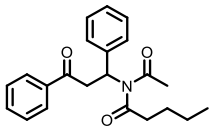
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)butyramide (38)**:

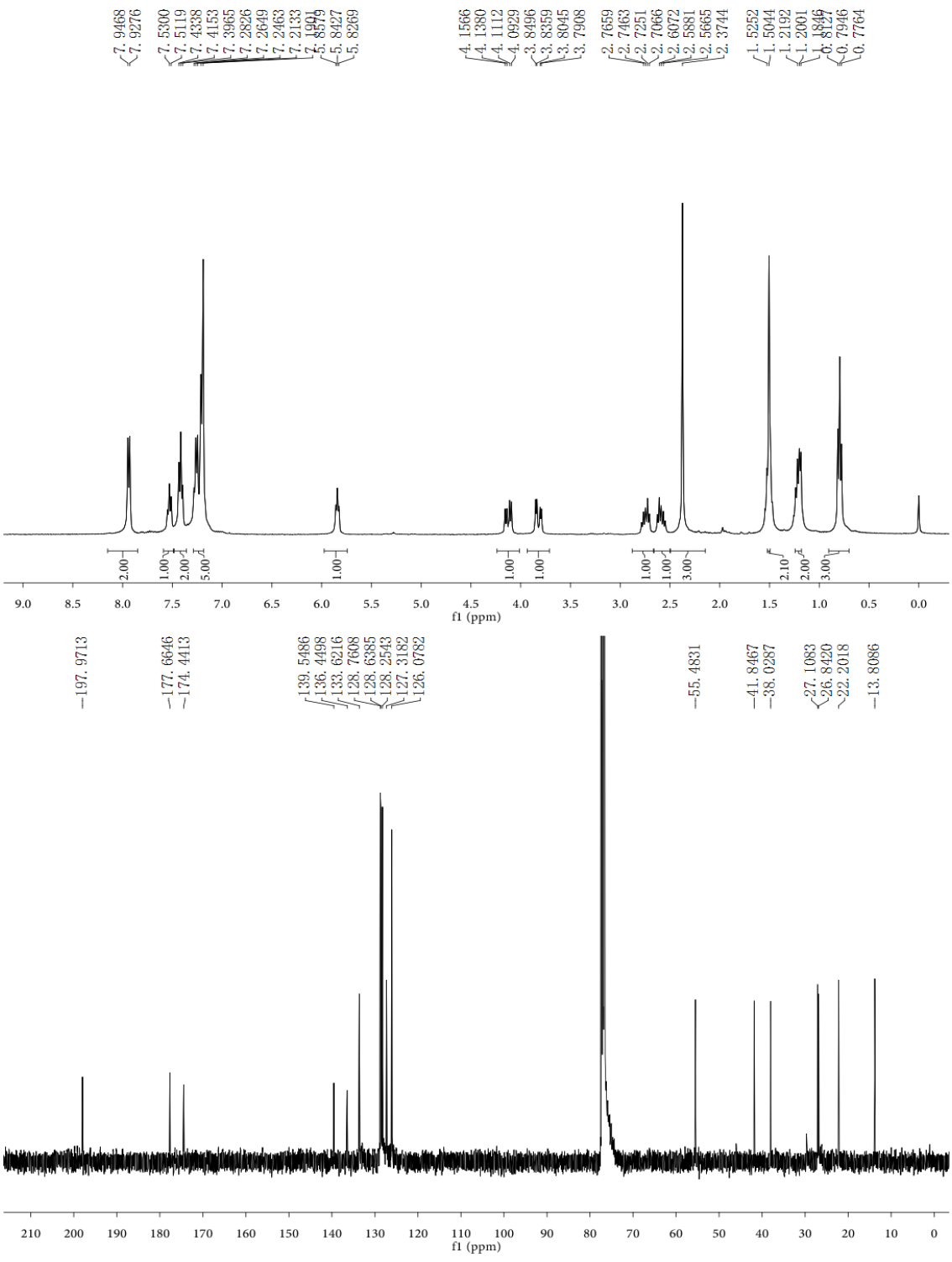




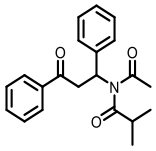


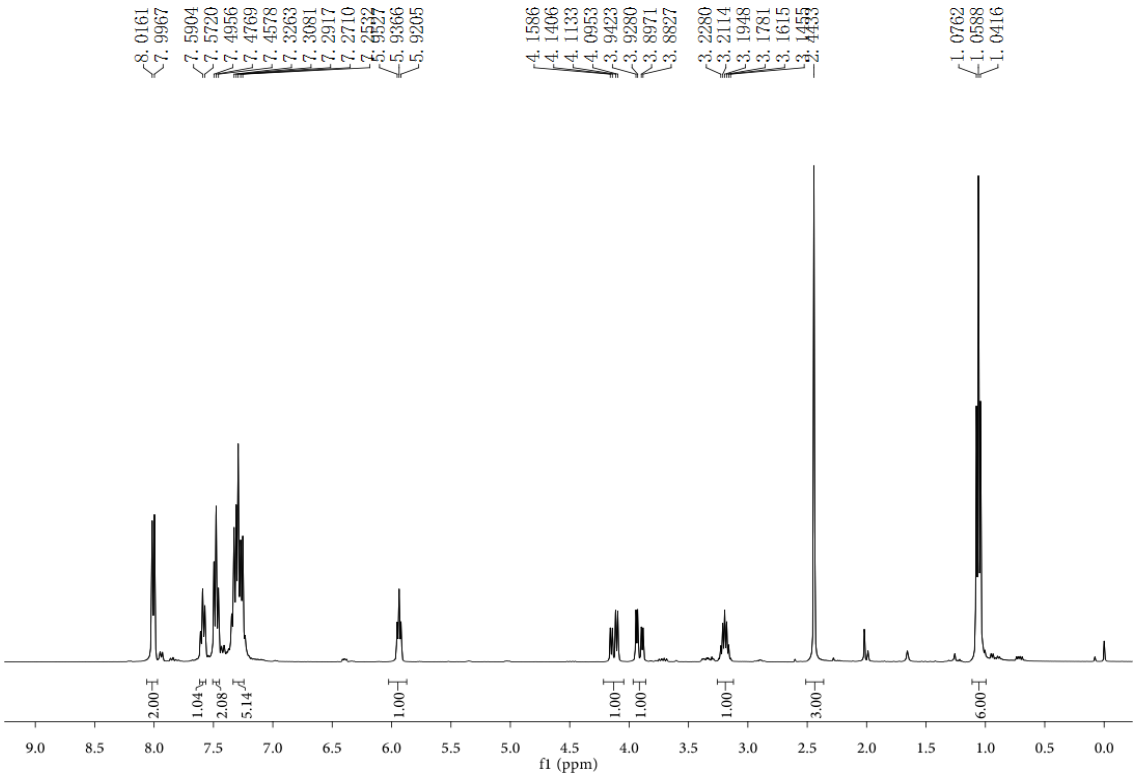
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)pentanamide (39)**:

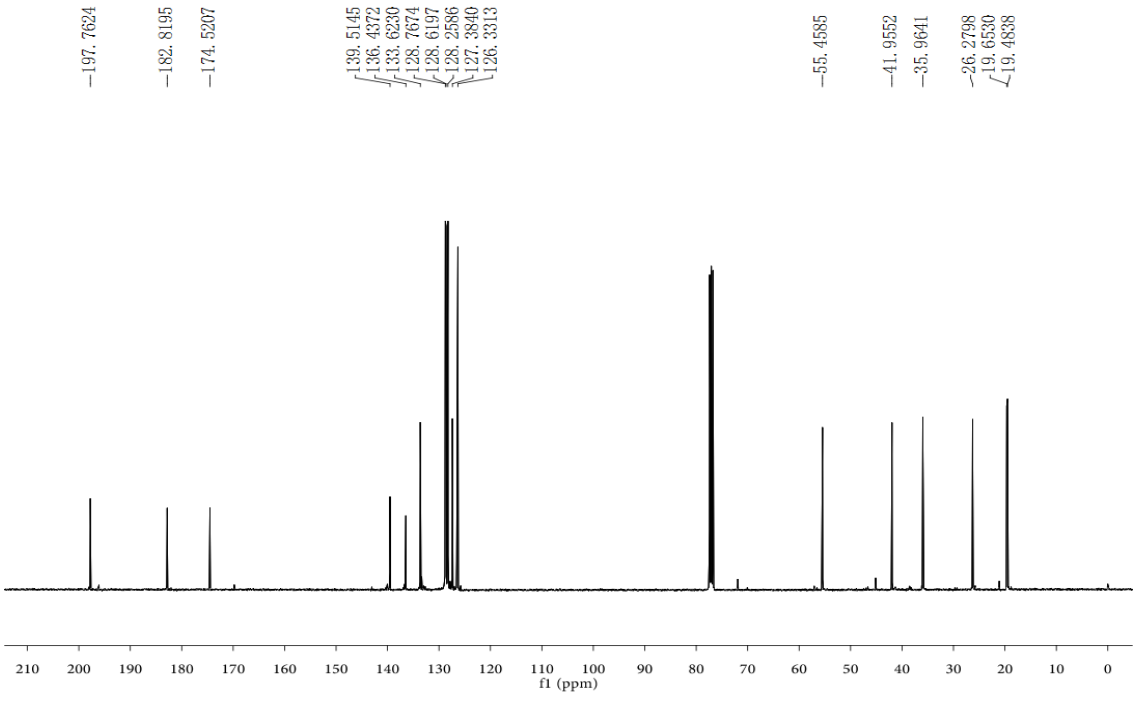




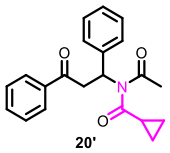
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)isobutyramide (40)**:

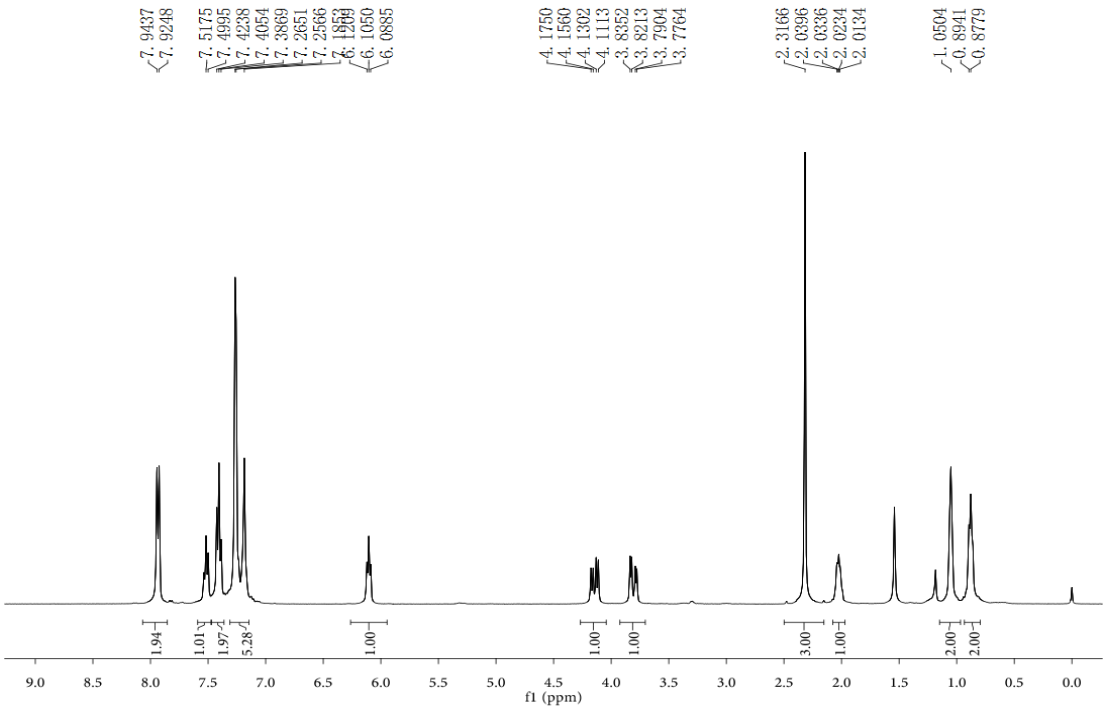


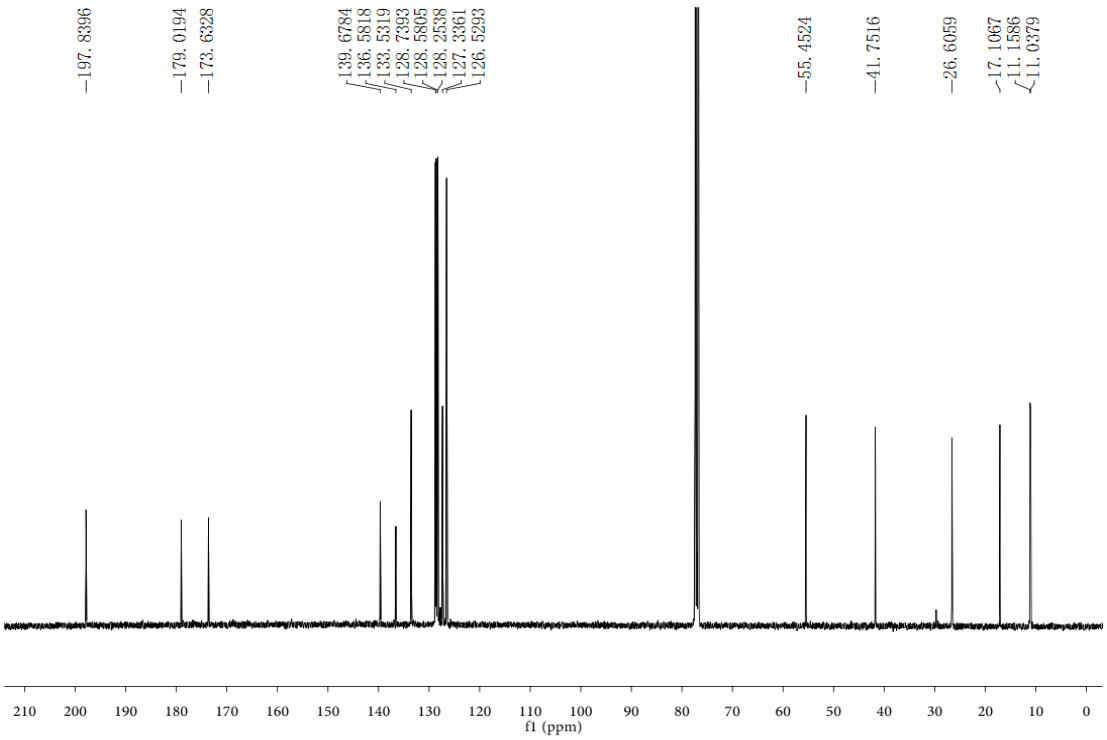




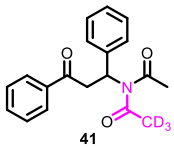
***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)cyclopropanecarboxamide (20')**:



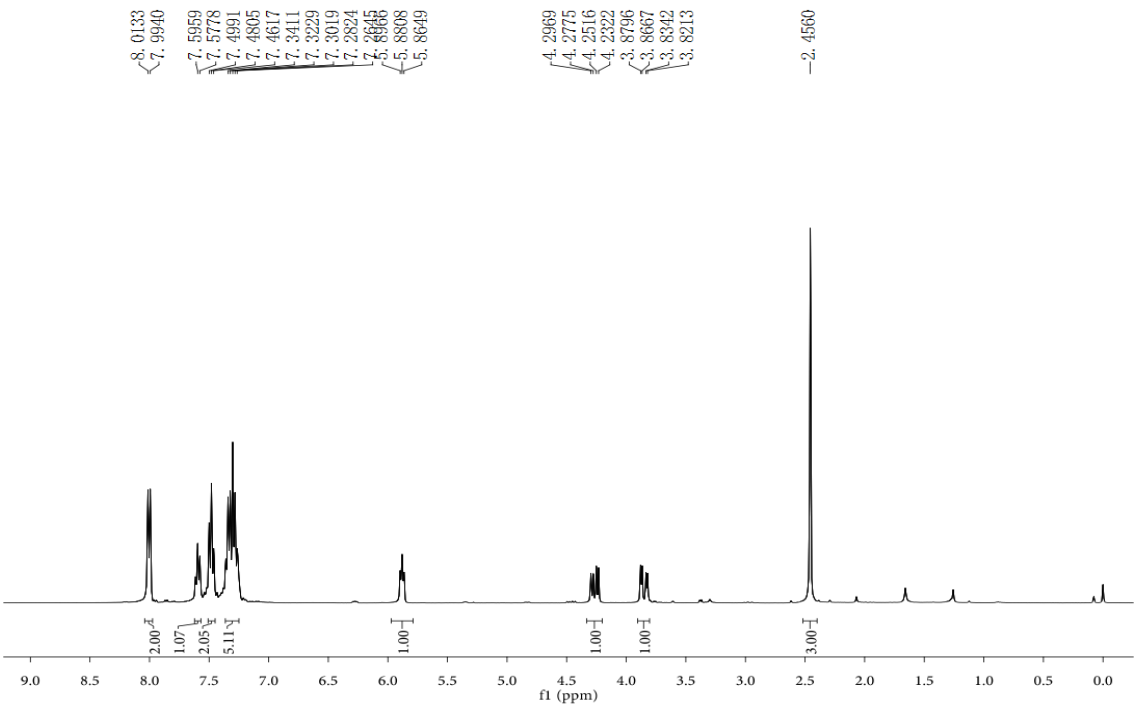


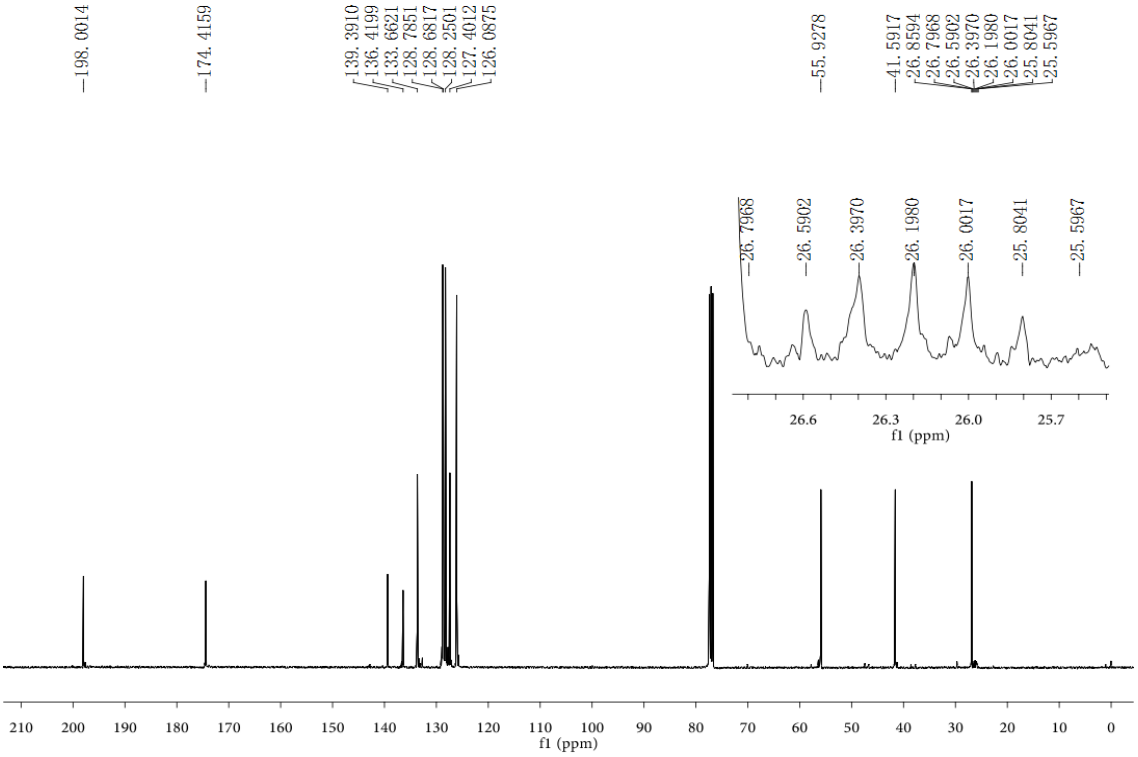


***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)acetamide-d_3 (41)**:

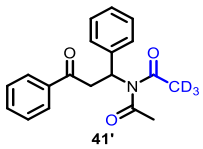


41

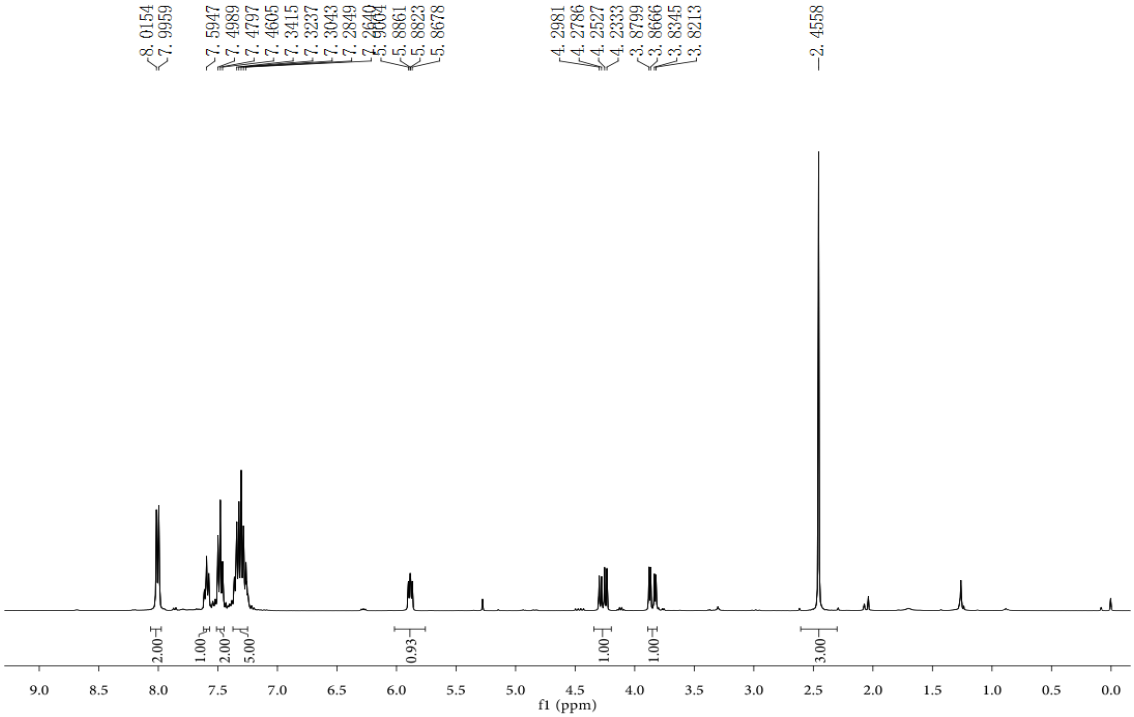


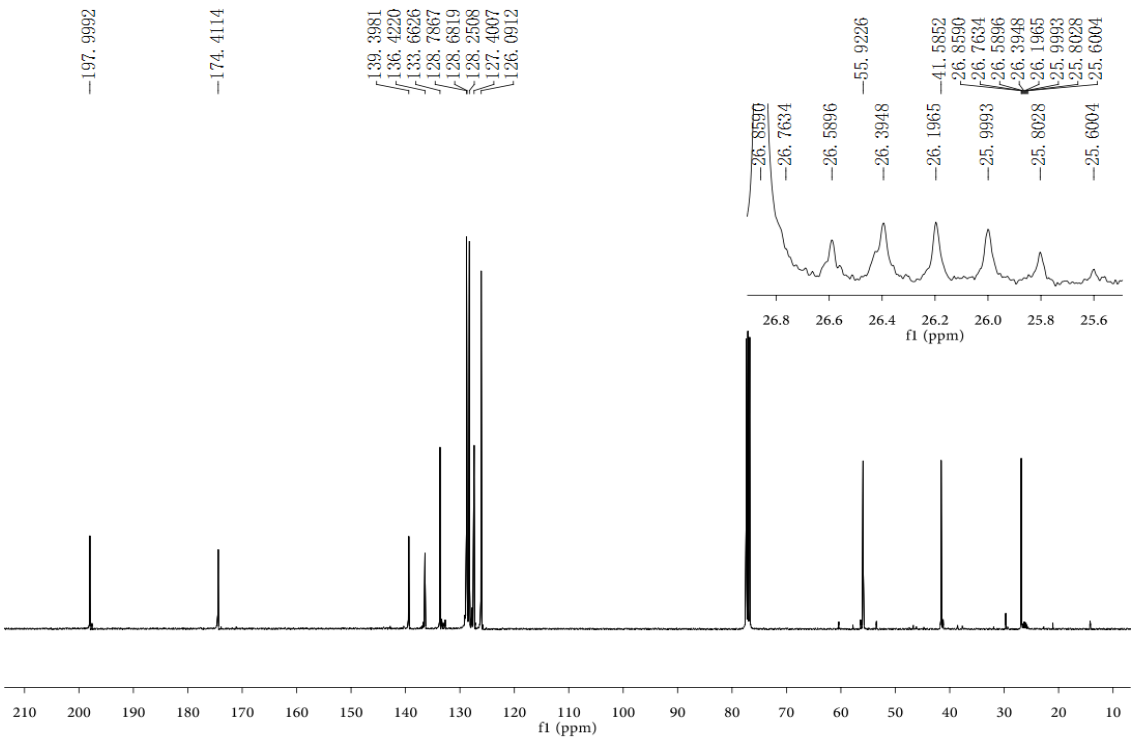


***N*-acetyl-*N*-(3-oxo-1,3-diphenylpropyl)acetamide-d_3 (41')**:

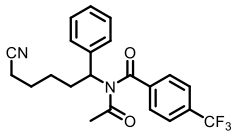


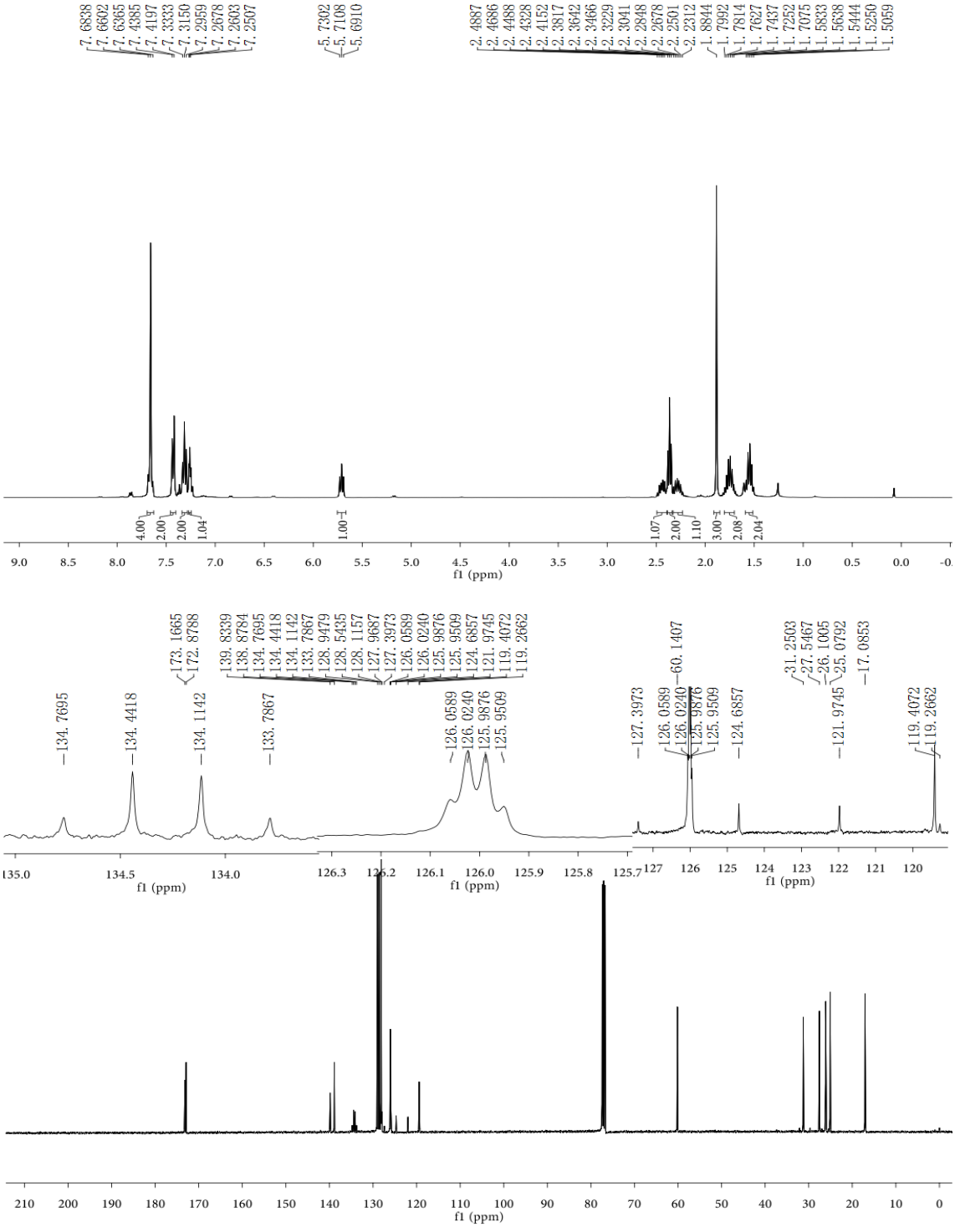
41'

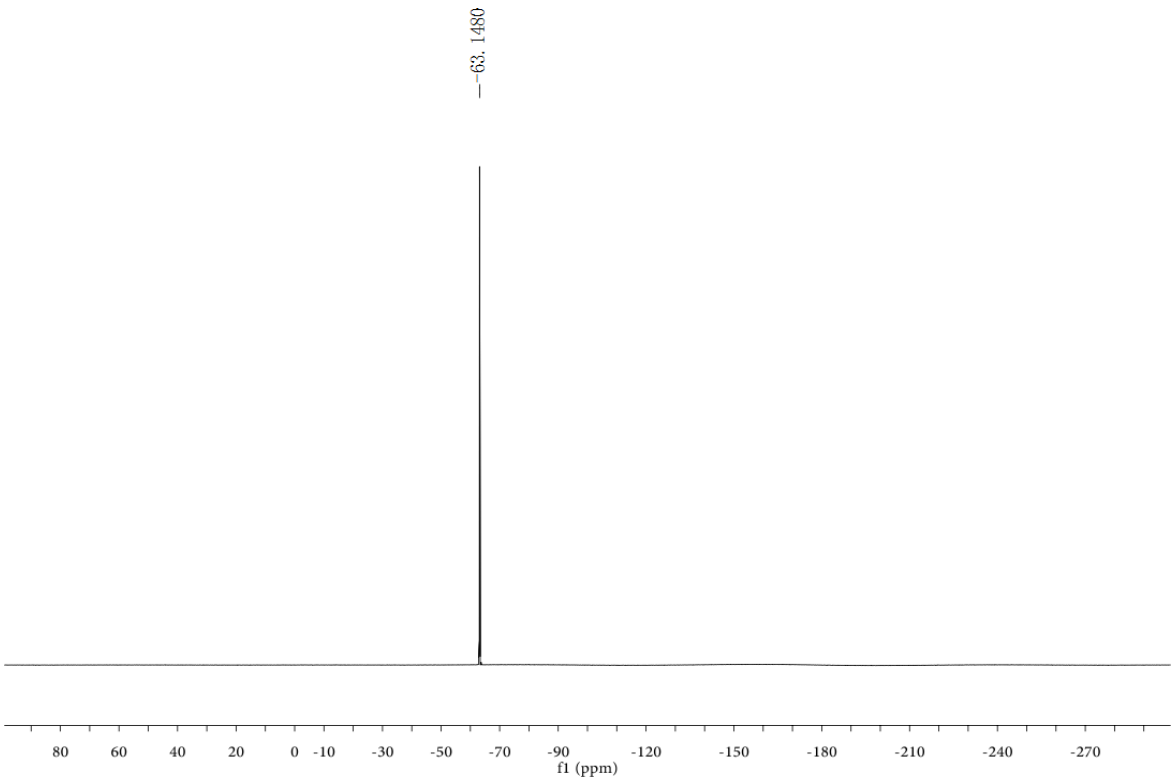




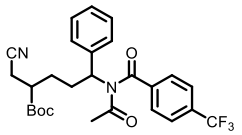
***N*-acetyl-*N*-(5-cyano-1-phenylpentyl)-4-(trifluoromethyl)benzamide (42)**:

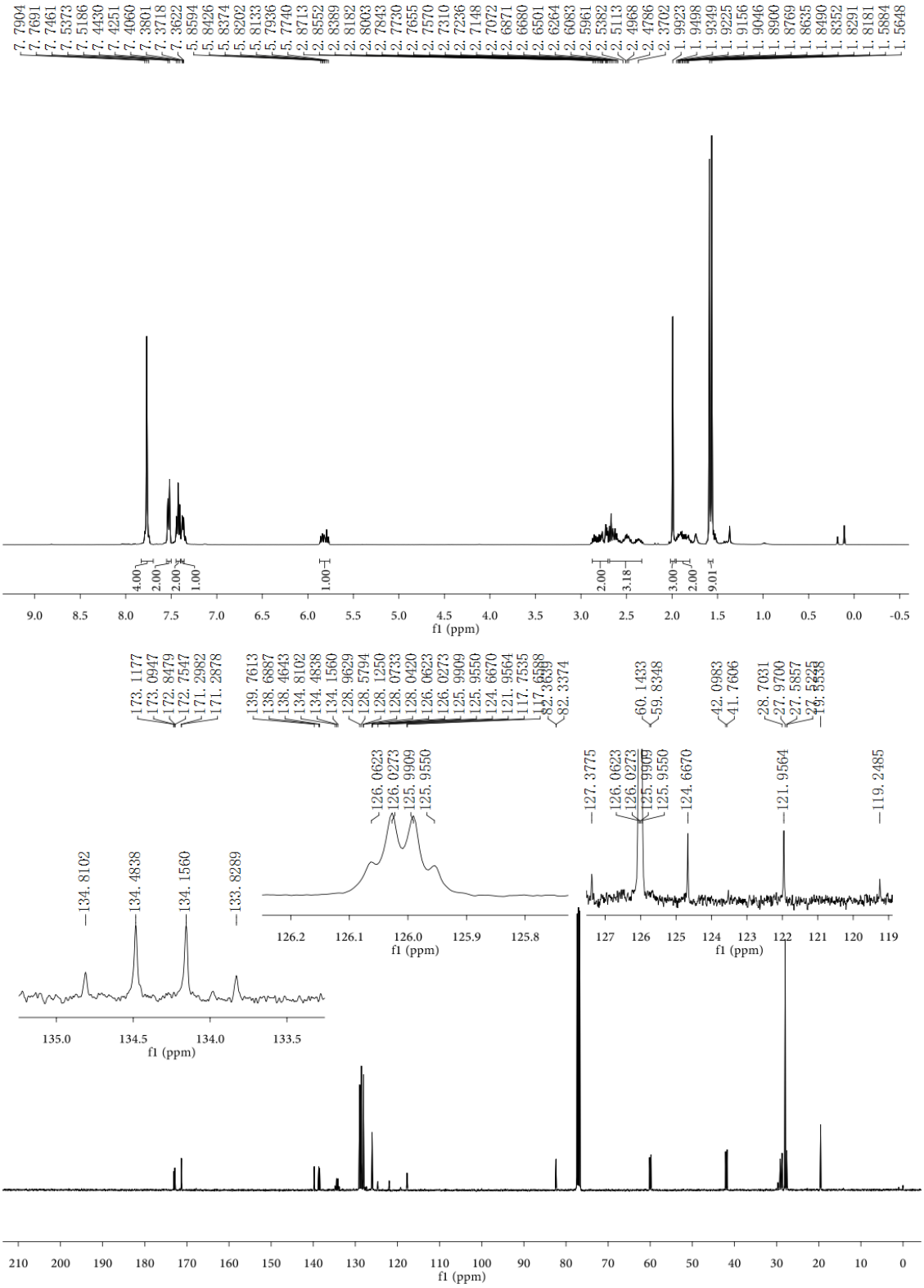


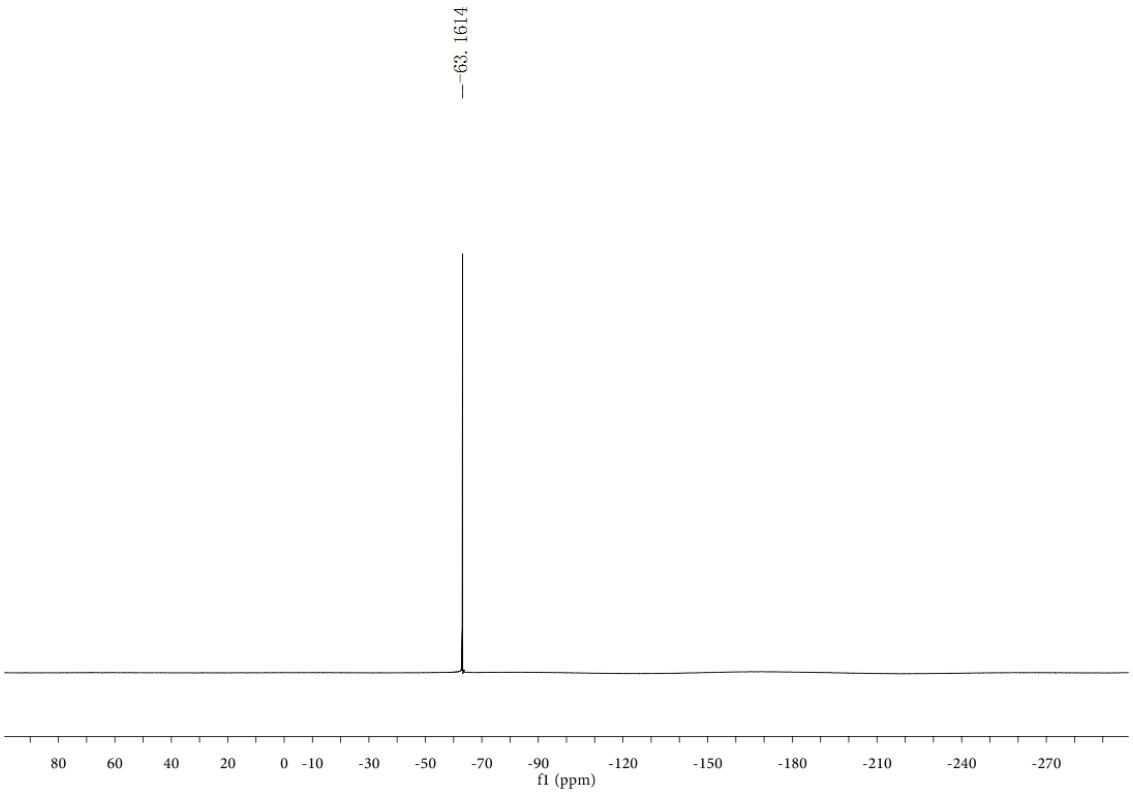



−63.1480
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

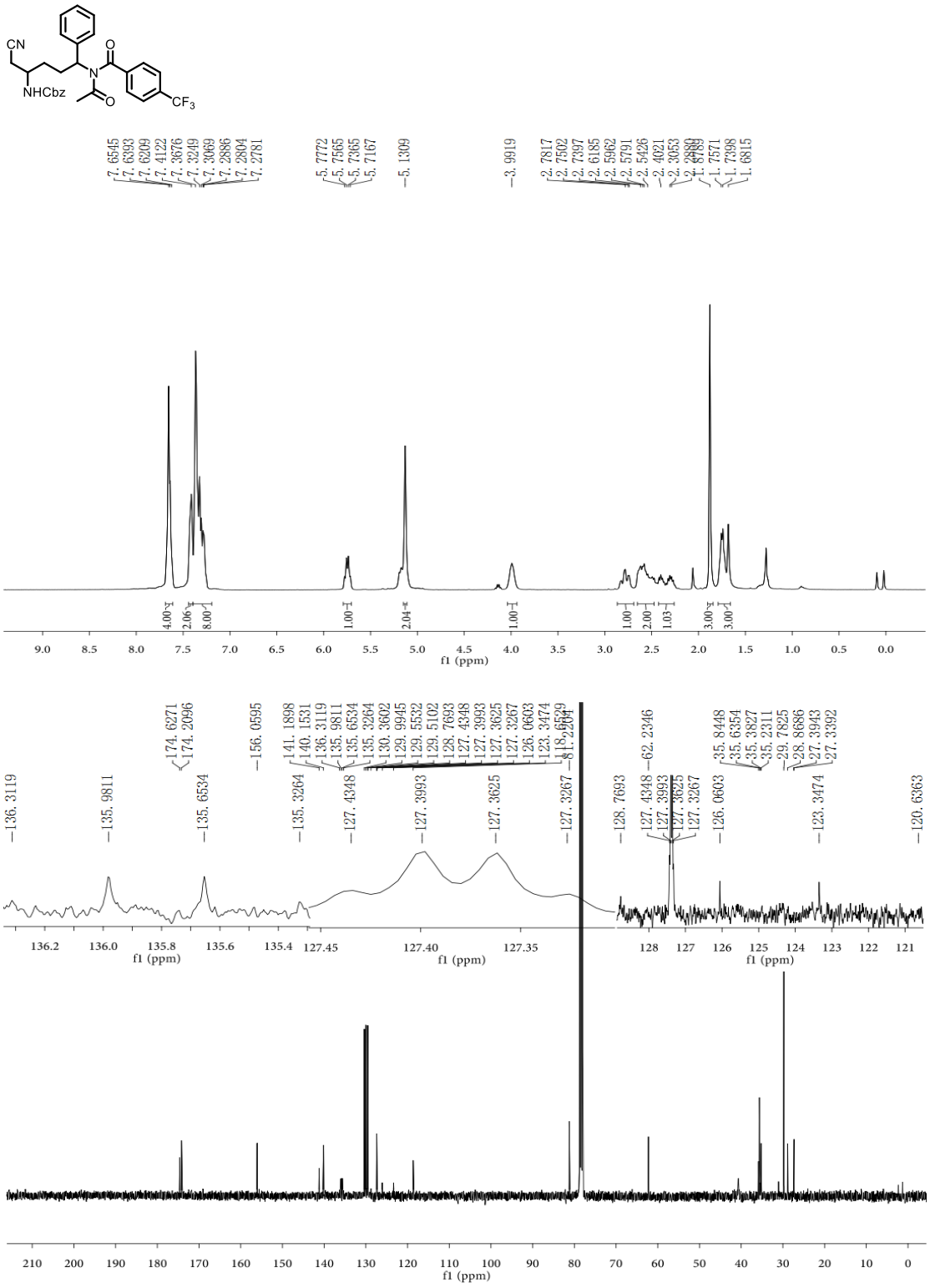
Tert-butyl 5-(*N*-acetyl-4-(trifluoromethyl)benzamido)-2-(cyanomethyl)-5-phenylpentanoate (43):

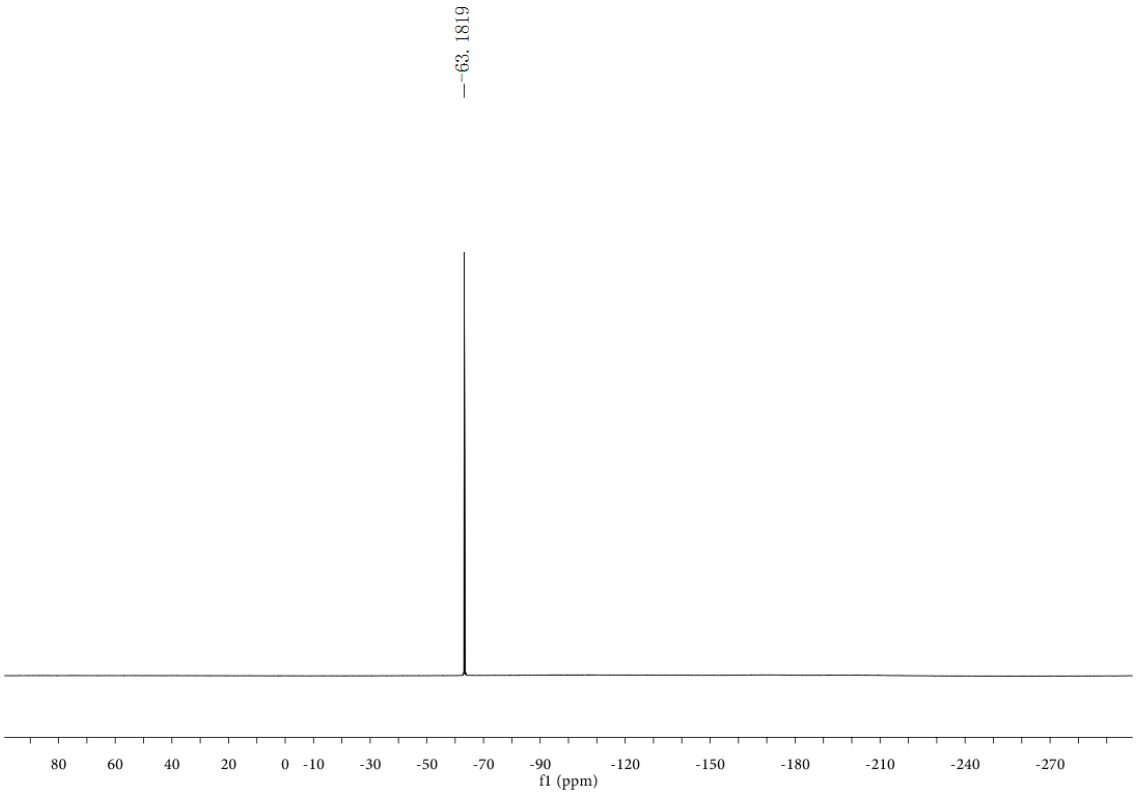




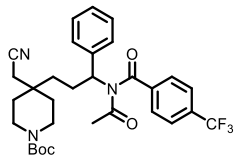

−63.1614
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

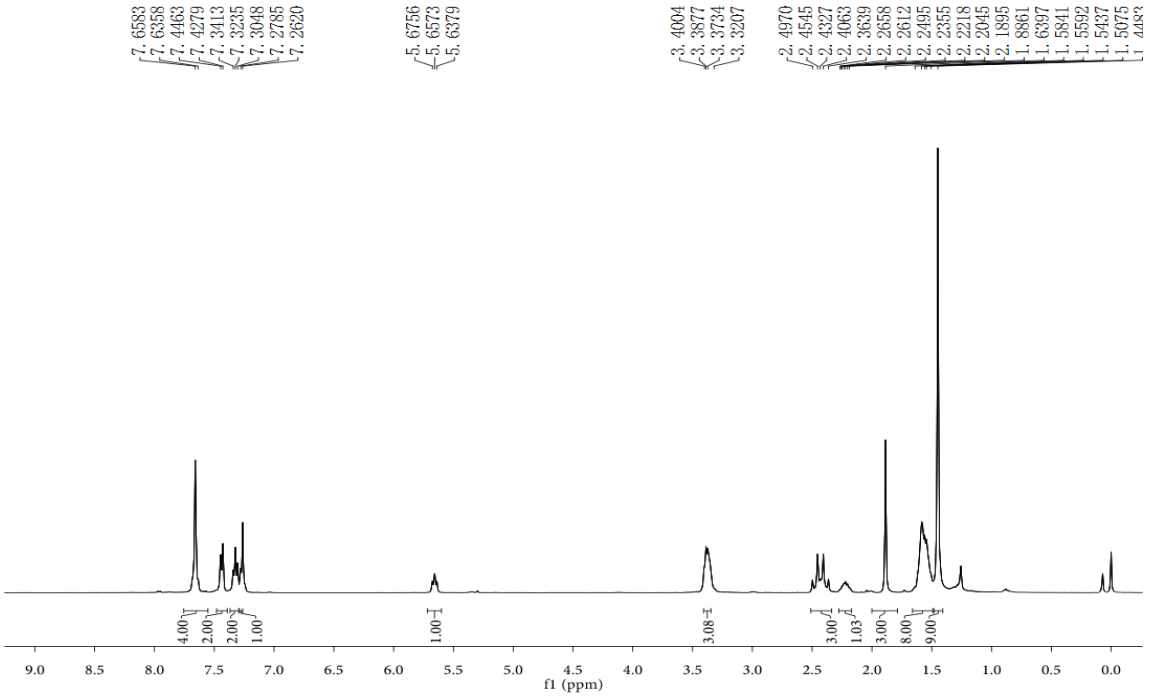
Benzyl (5-(*N*-acetyl-4-(trifluoromethyl)benzamido)-1-cyano-5-phenylpentan-2-yl)carbamate (44):

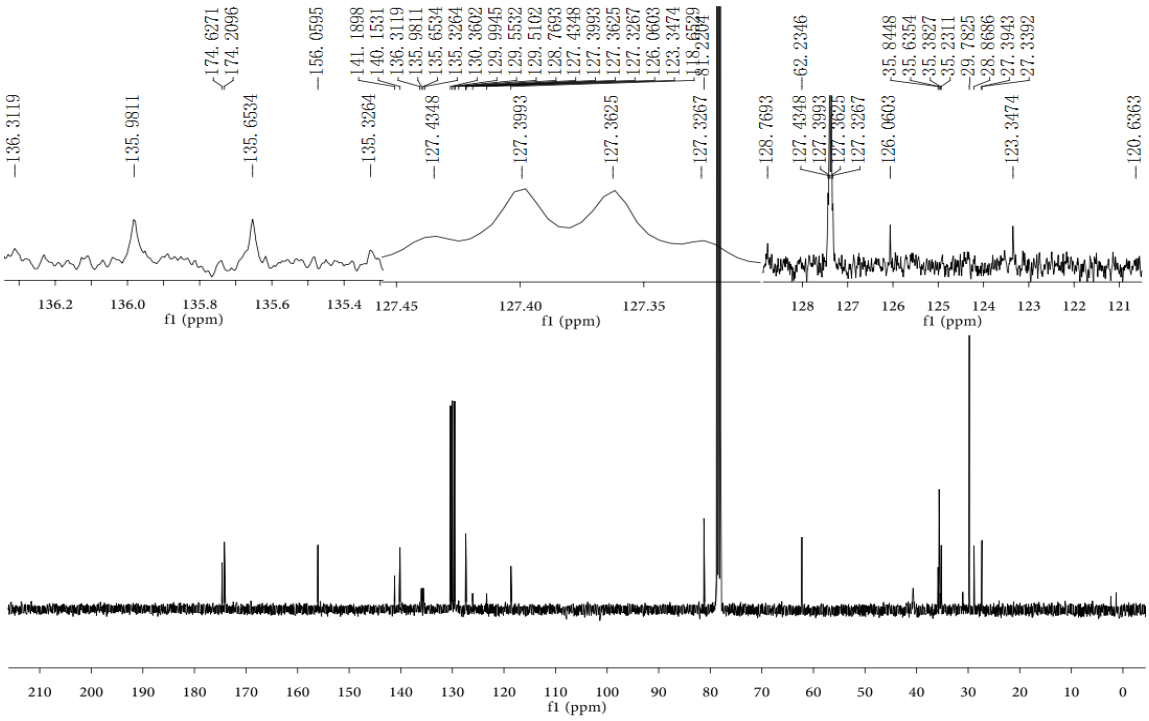


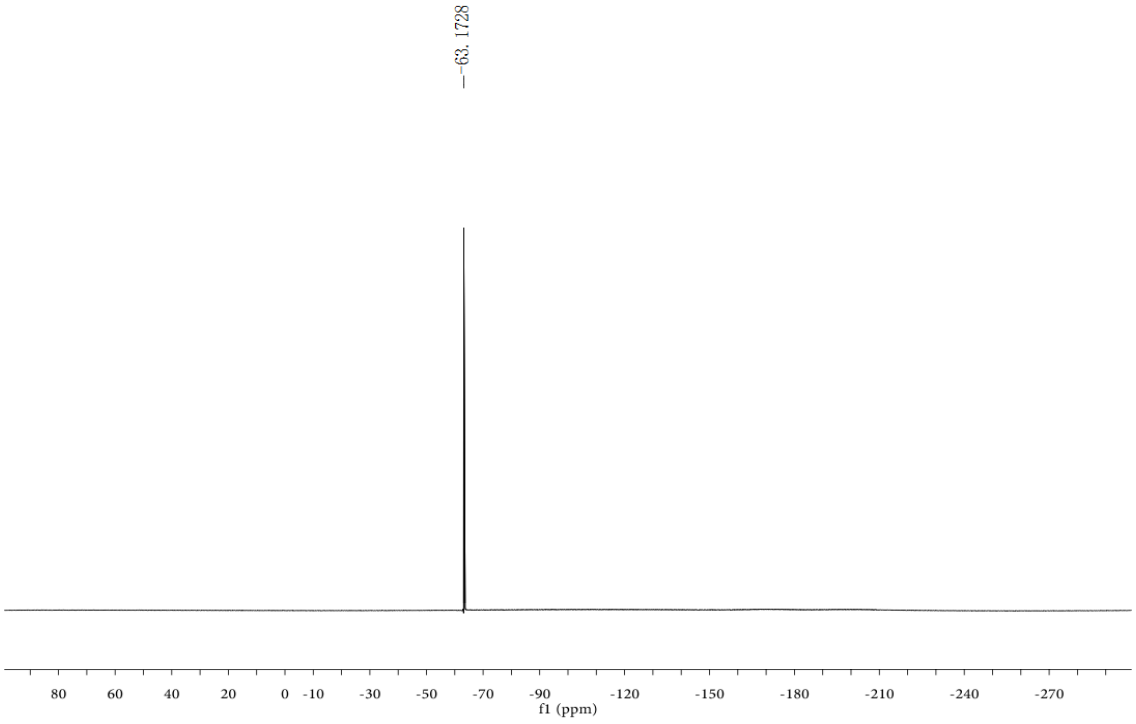

-63.1819
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

Tert-butyl 4-(3-(*N*-acetyl-4-(trifluoromethyl)benzamido)-3-phenylpropyl)-4-(cyanomethyl)piperidine-1-carboxylate (45):

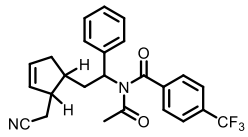


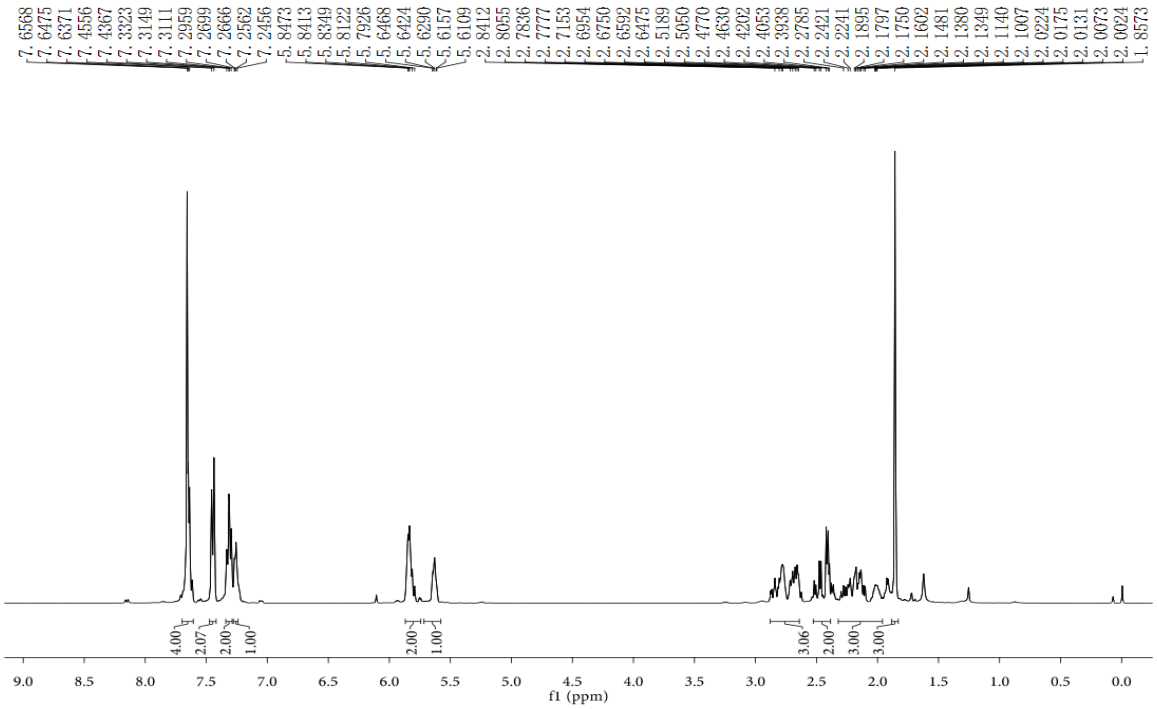


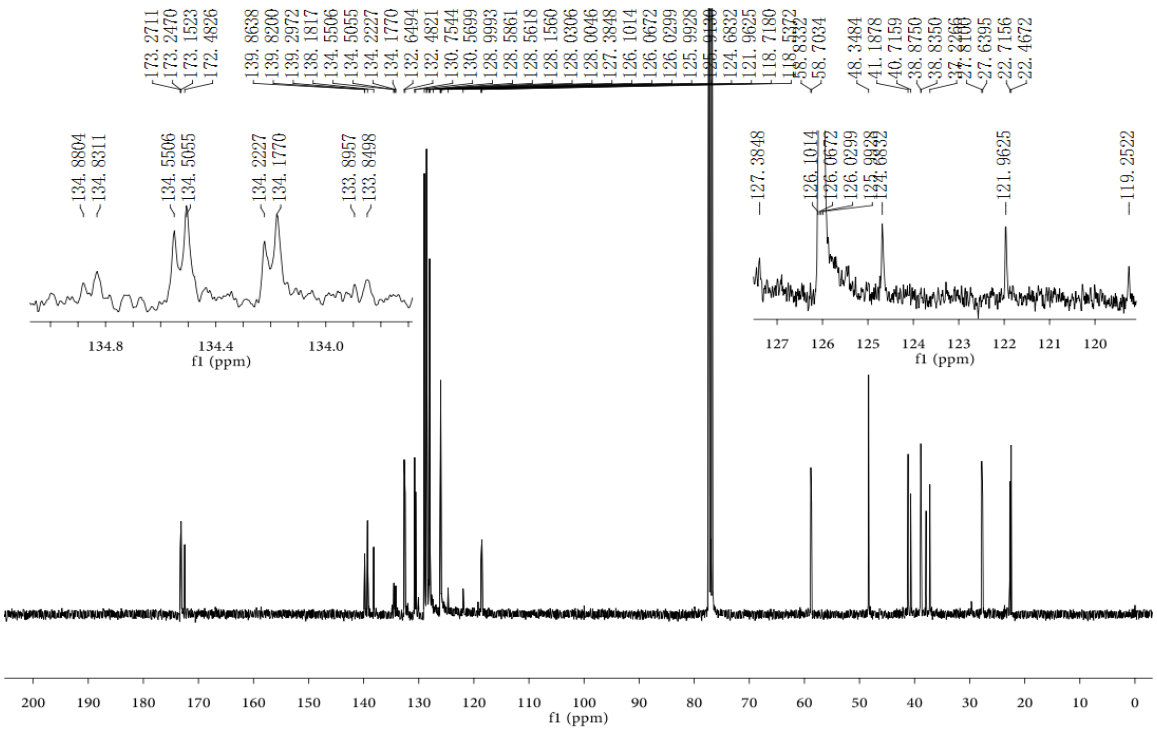


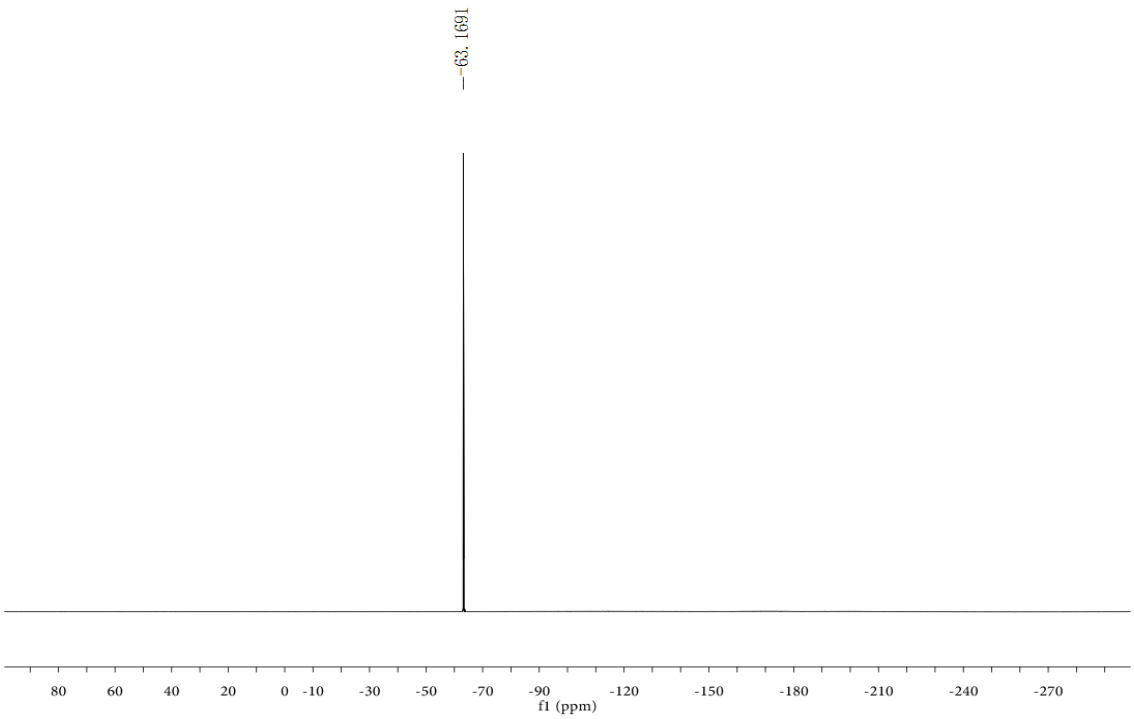

−63.1728
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

***N*-acetyl-*N*-(2-(2-(cyanomethyl)cyclopent-3-en-1-yl)-1-phenylethyl)-4-(trifluoromethyl)benzamide (46)**:

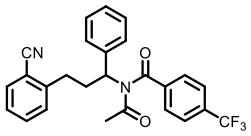


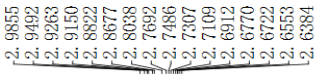


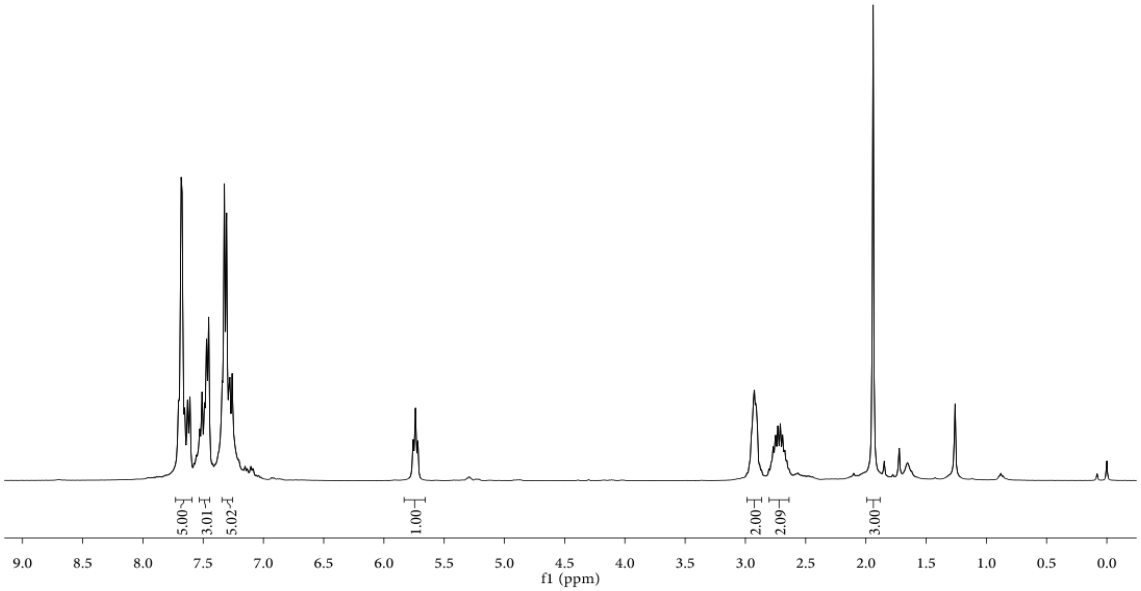


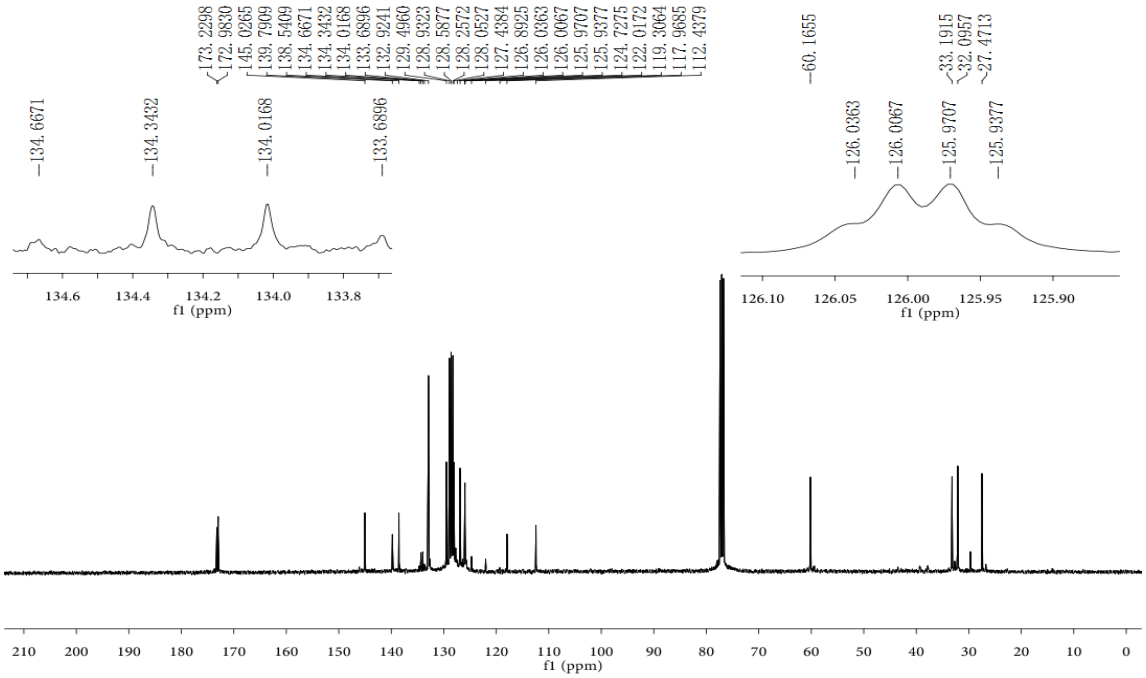

—63.1691
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

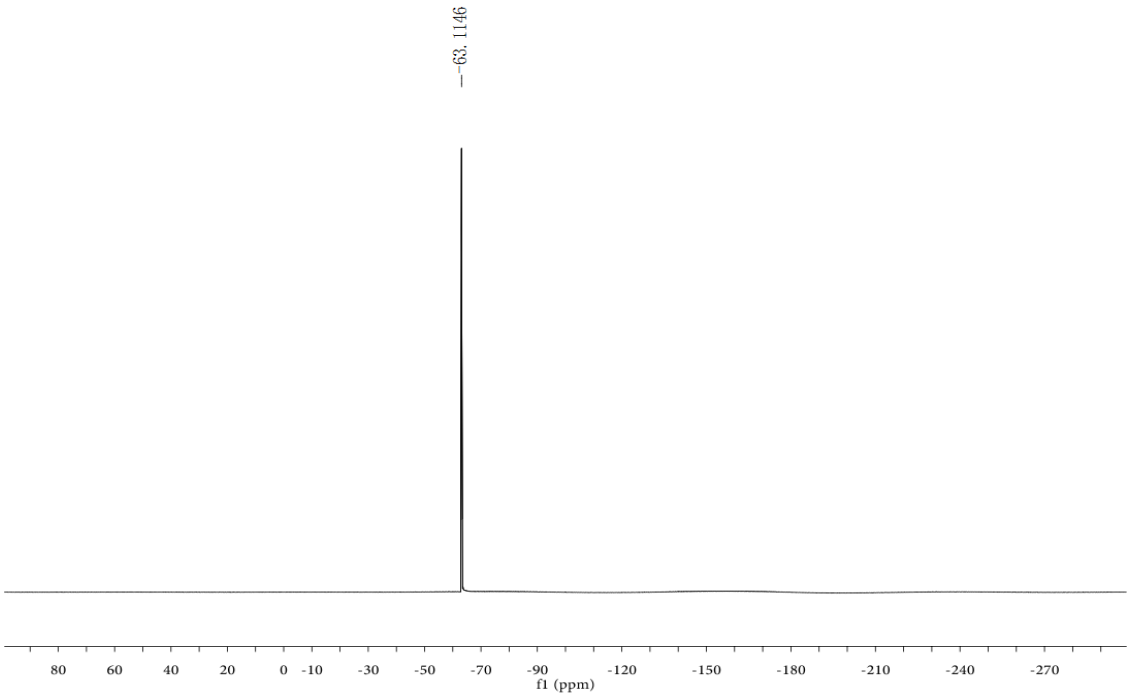
***N*-acetyl-*N*-(3-(2-cyanophenyl)-1-phenylpropyl)-4-(trifluoromethyl)benzamide (47)**:



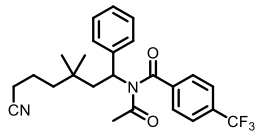


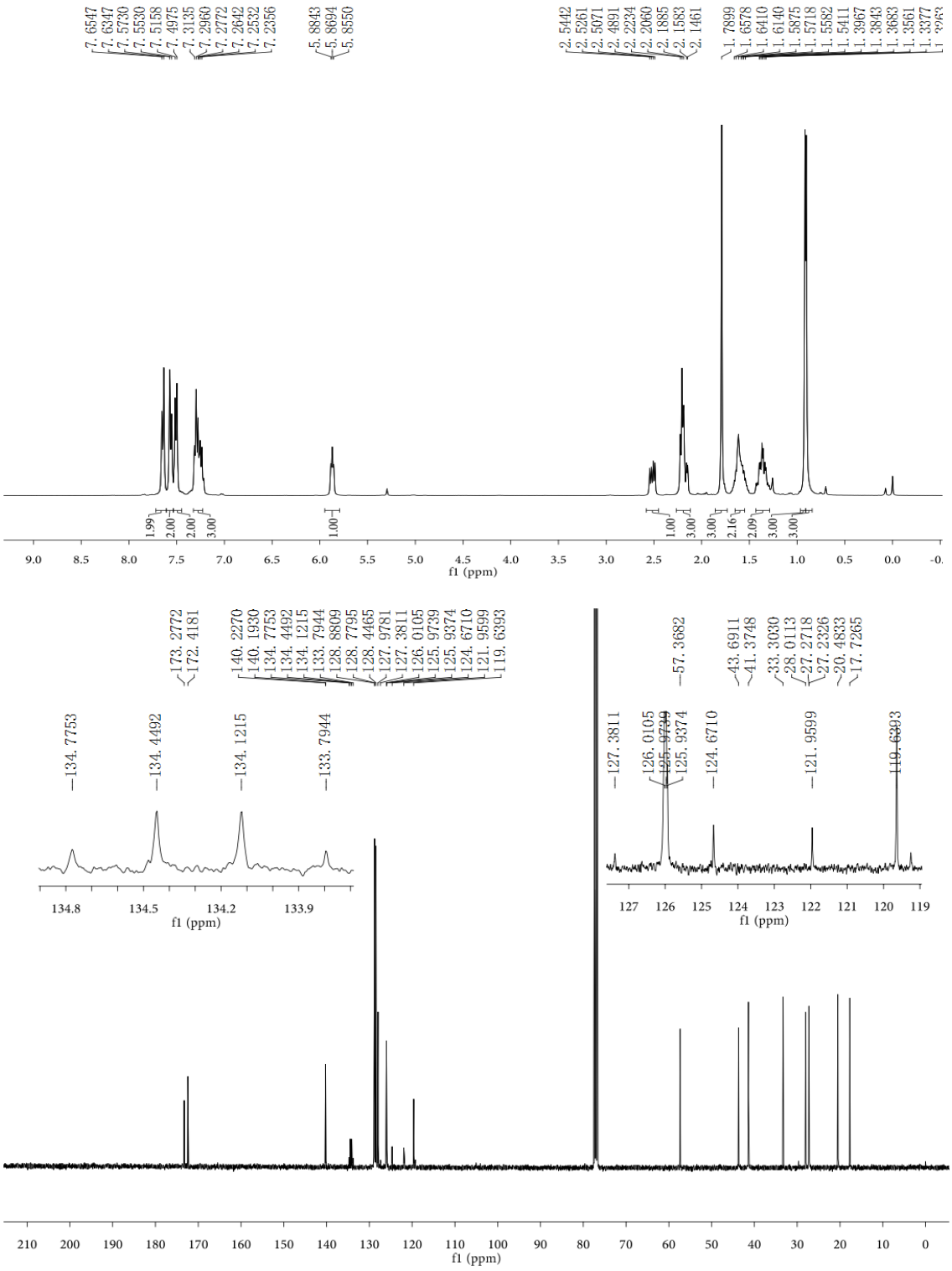


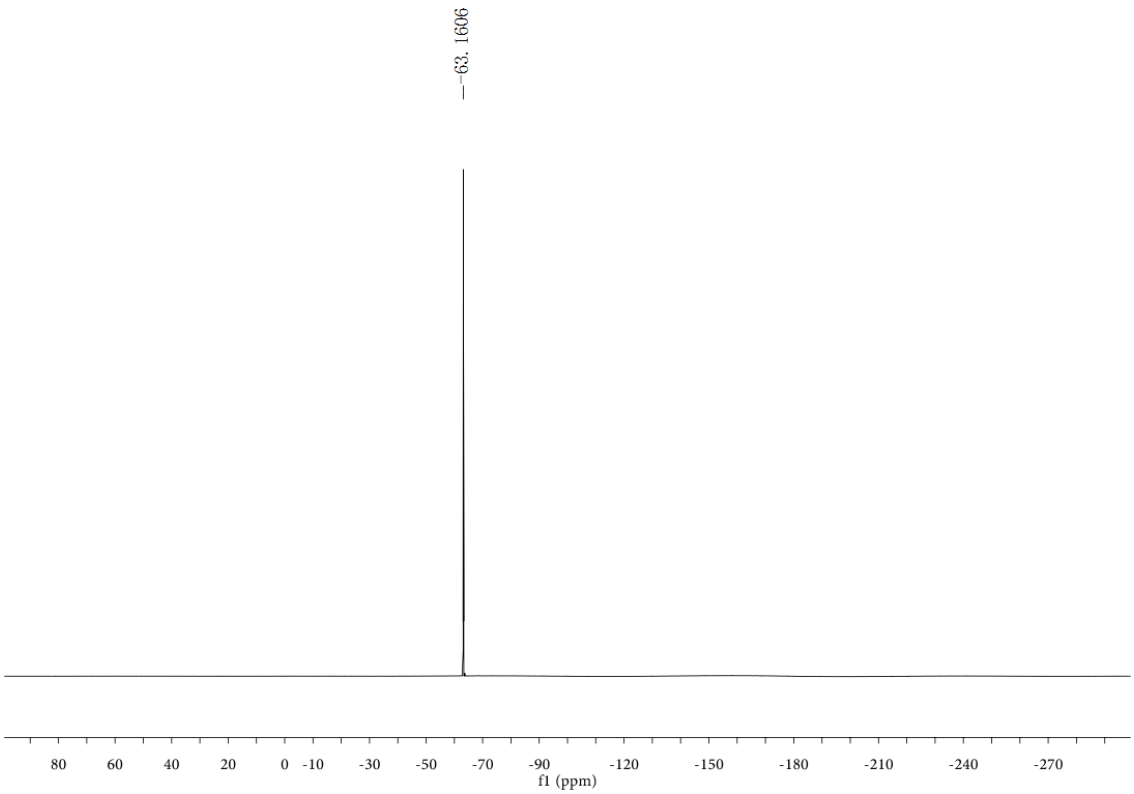



-63.1146
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

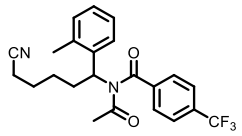
***N*-acetyl-*N*-(6-cyano-3,3-dimethyl-1-phenylhexyl)-4-(trifluoromethyl)benzamide (48)**:

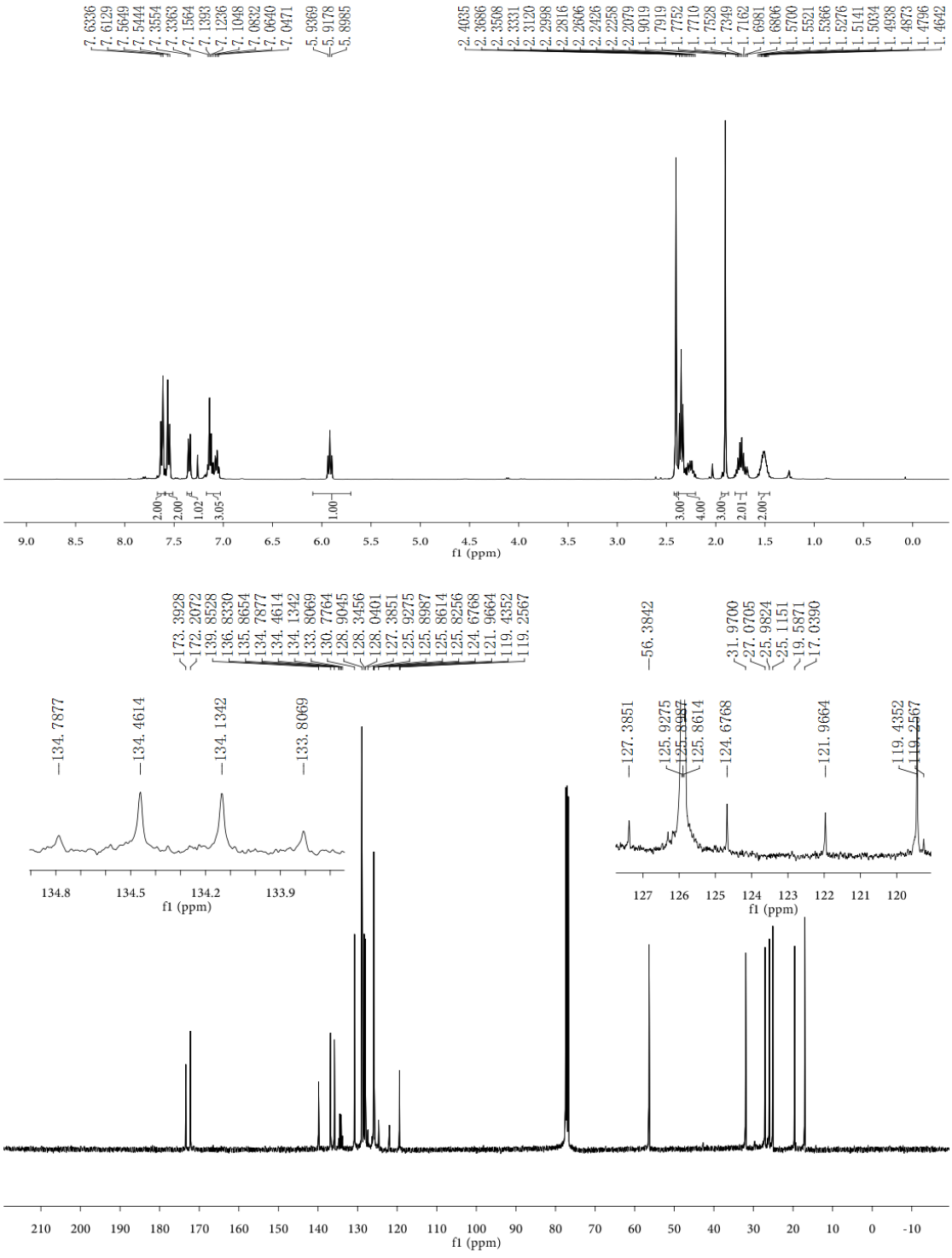


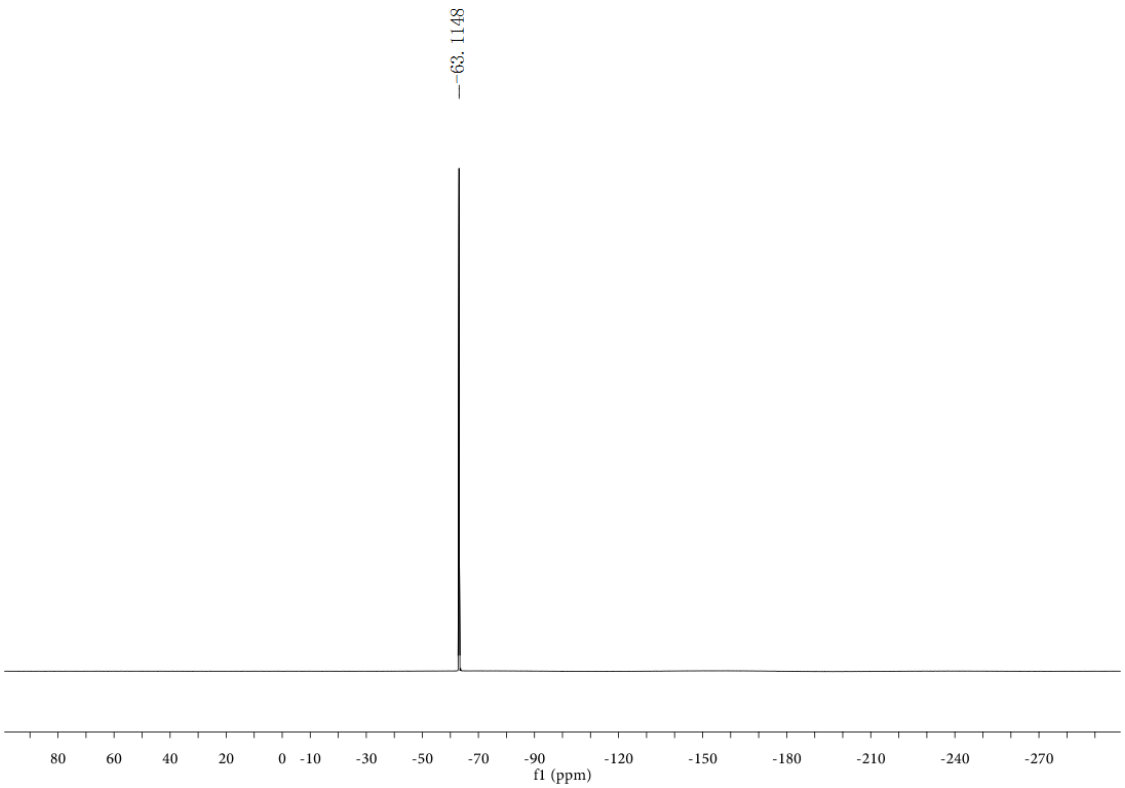



-63.1606
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

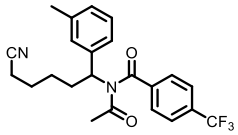
***N*-acetyl-*N*-(5-cyano-1-(o-tolyl)pentyl)-4-(trifluoromethyl)benzamide (49)**:

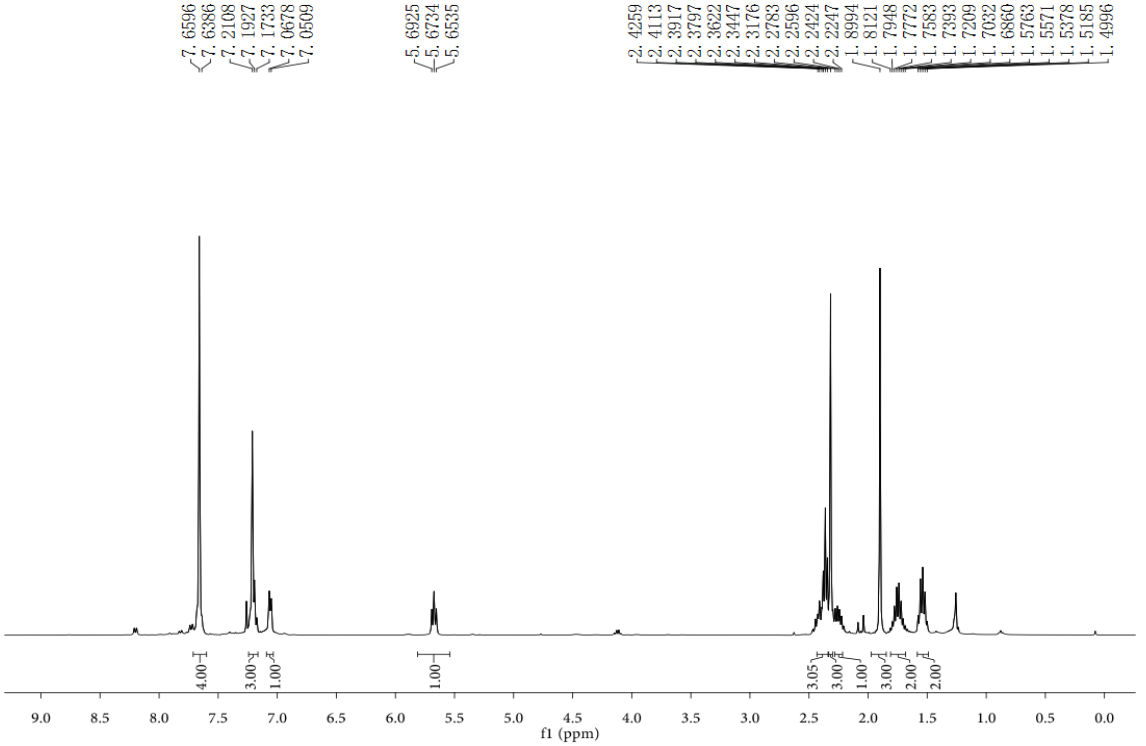


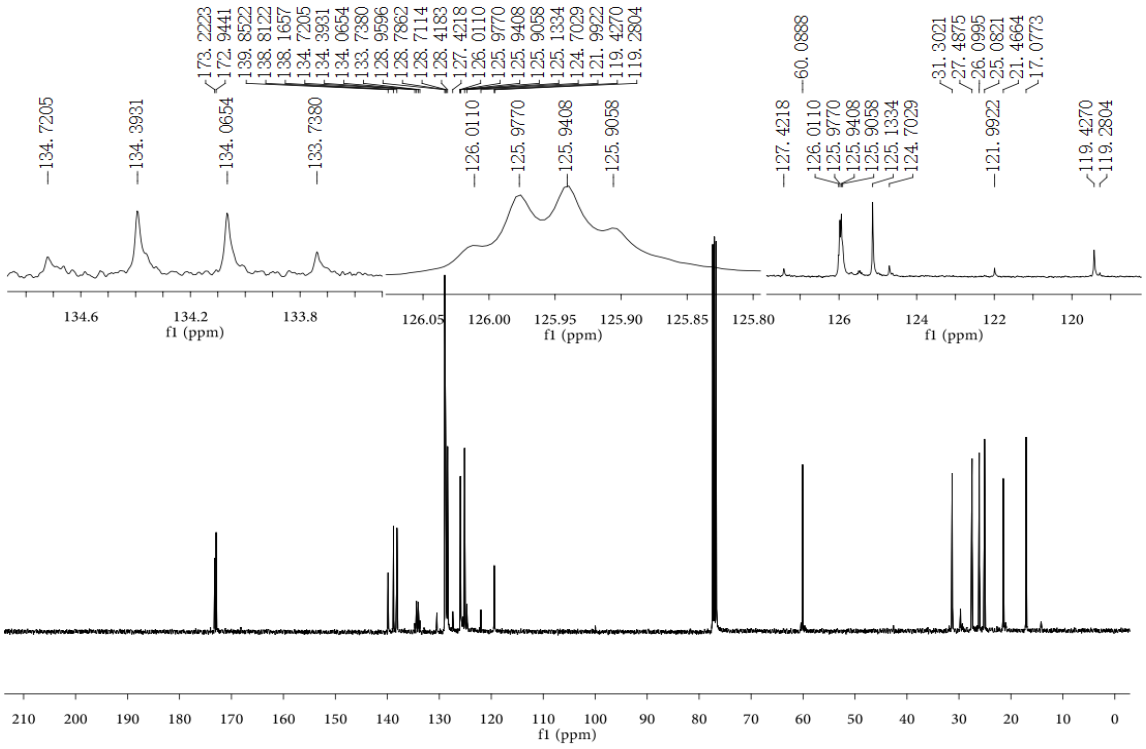


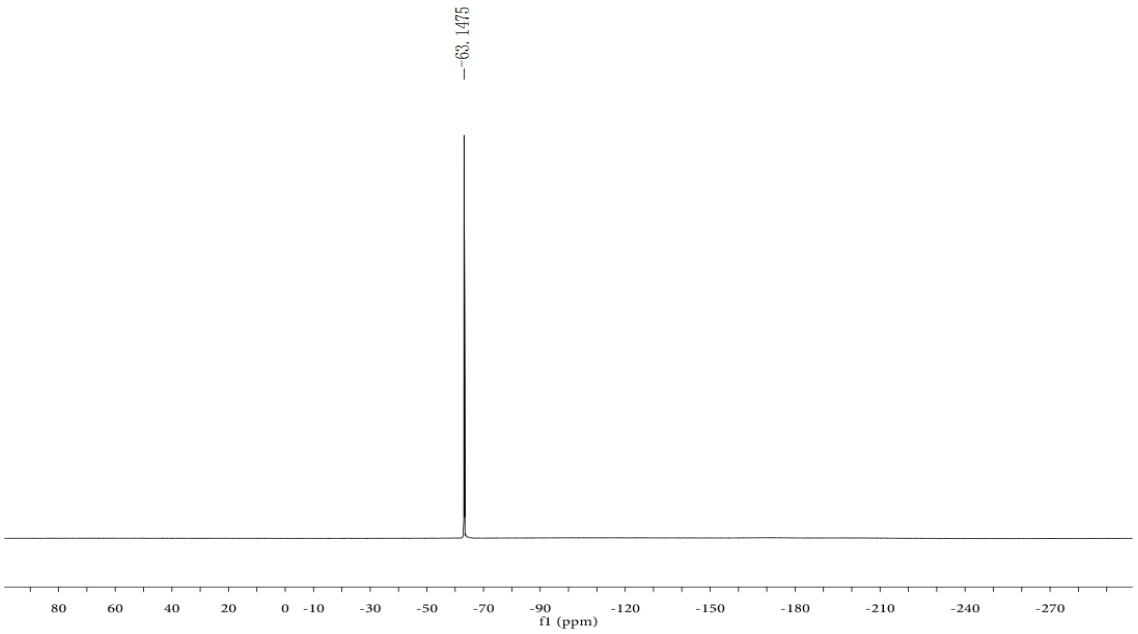

−63.1148
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

***N*-acetyl-*N*-(5-cyano-1-(m-tolyl)pentyl)-4-(trifluoromethyl)benzamide (50)**:

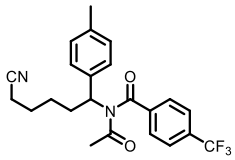


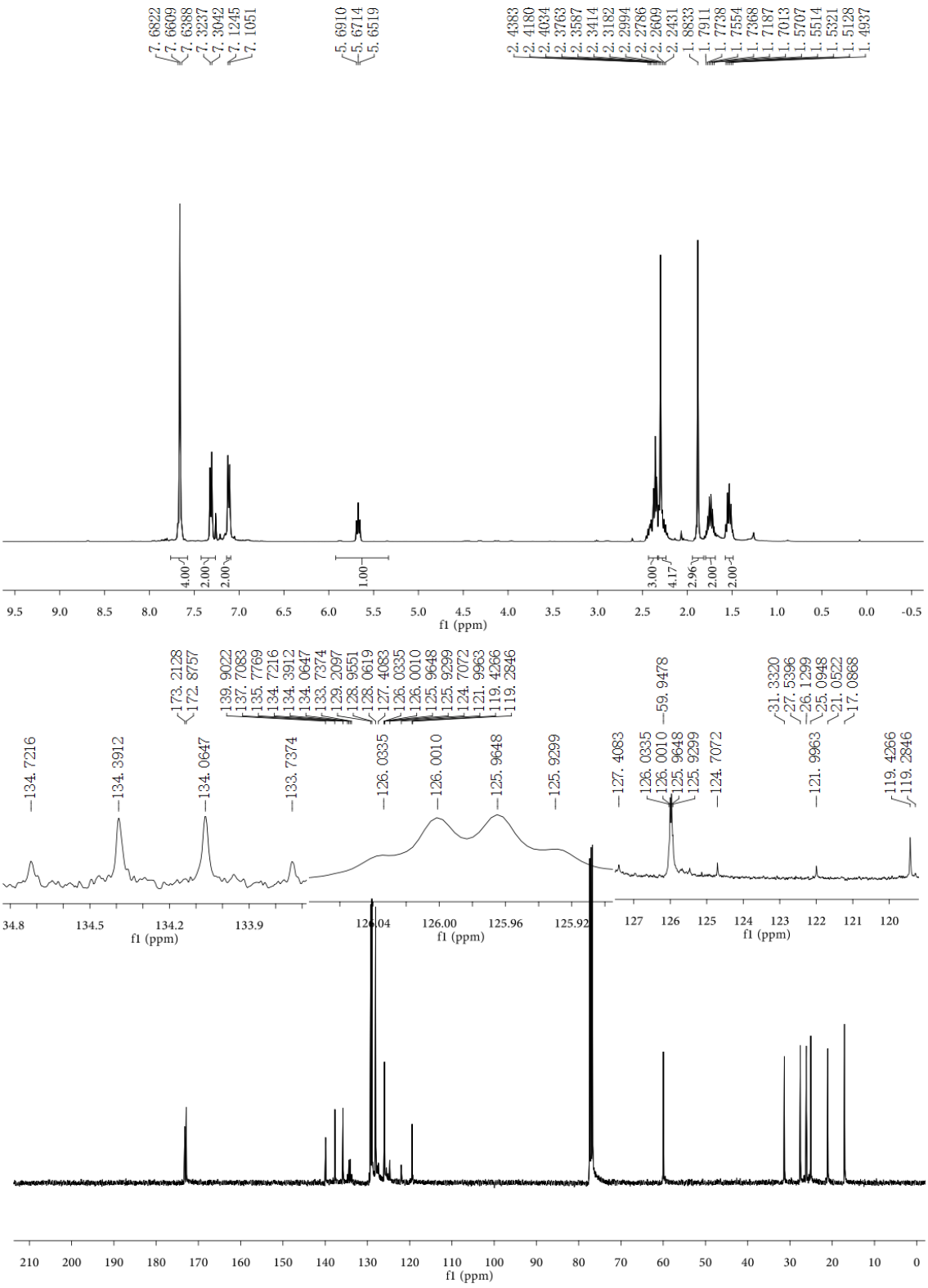


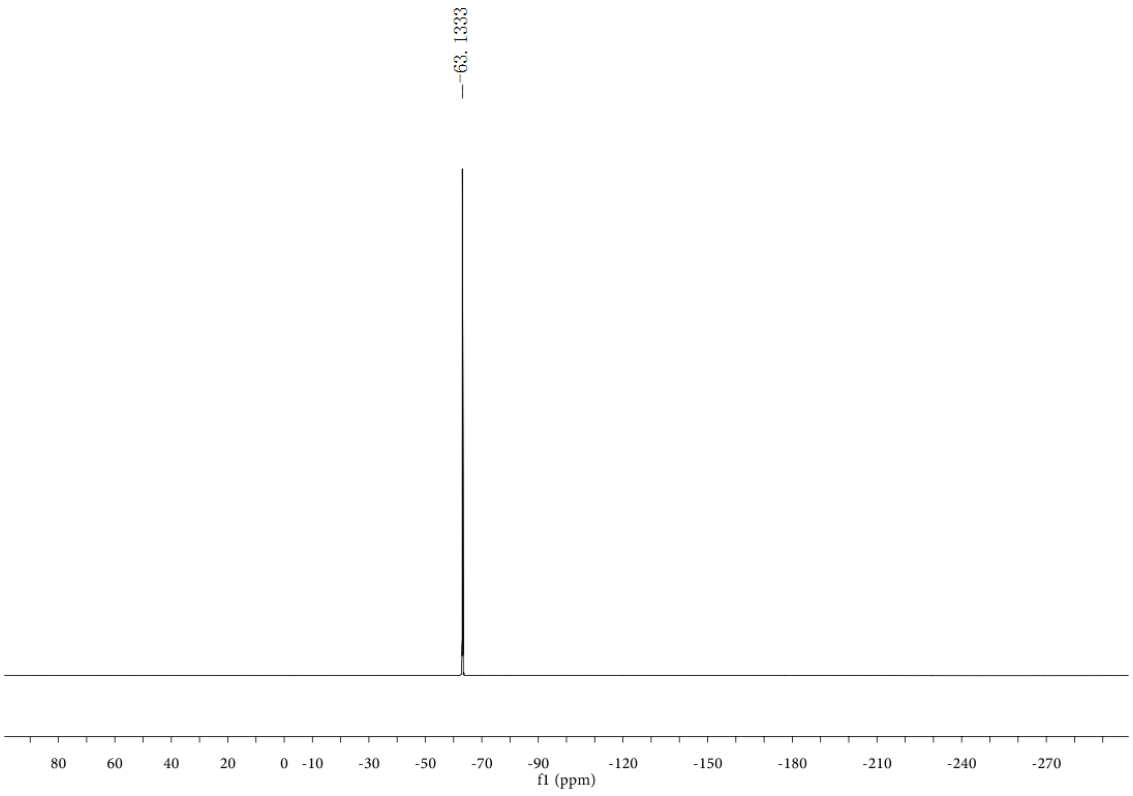



−63.1475
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

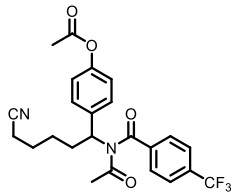
***N*-acetyl-*N*-(5-cyano-1-(p-tolyl)pentyl)-4-(trifluoromethyl)benzamide (51)**:

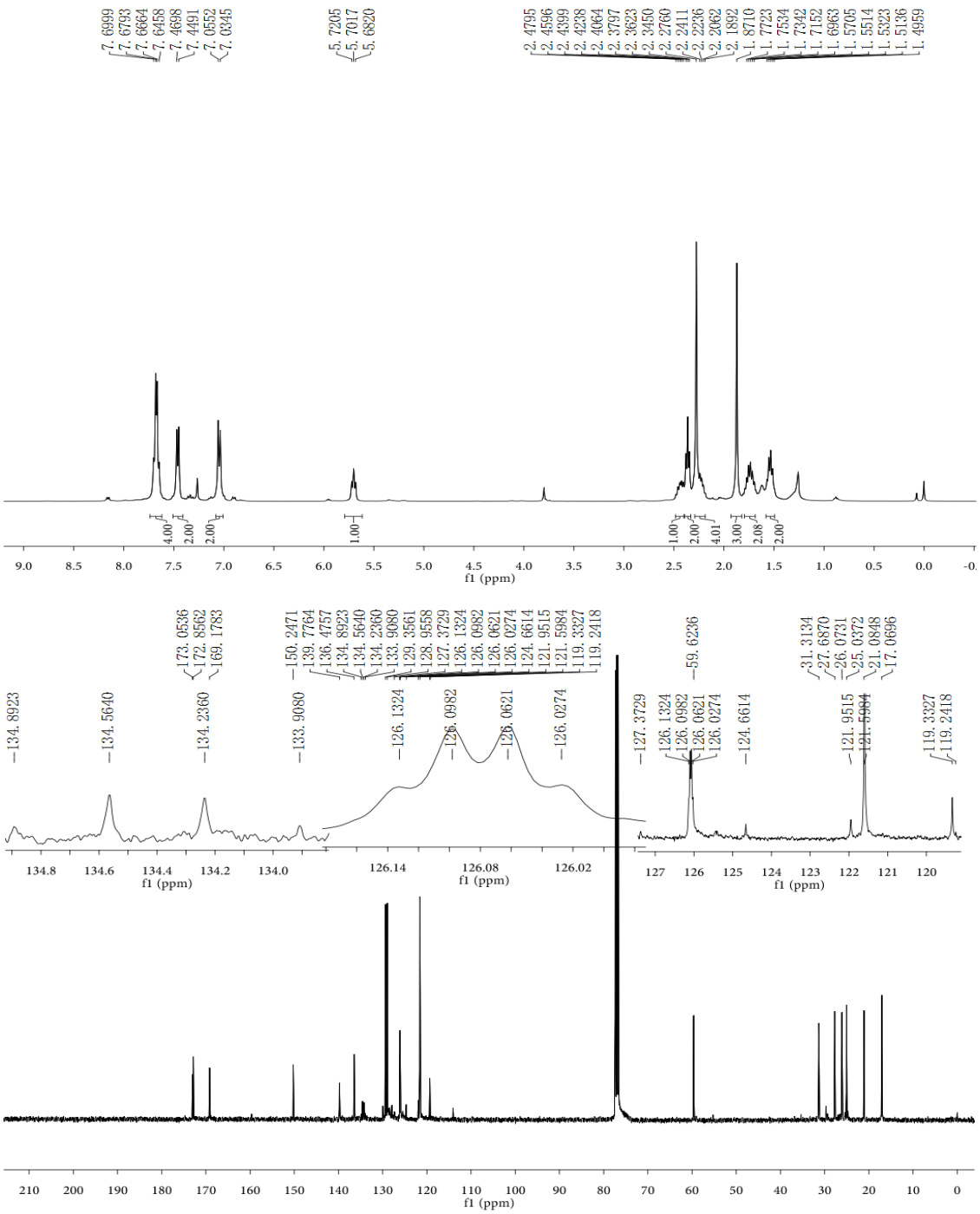


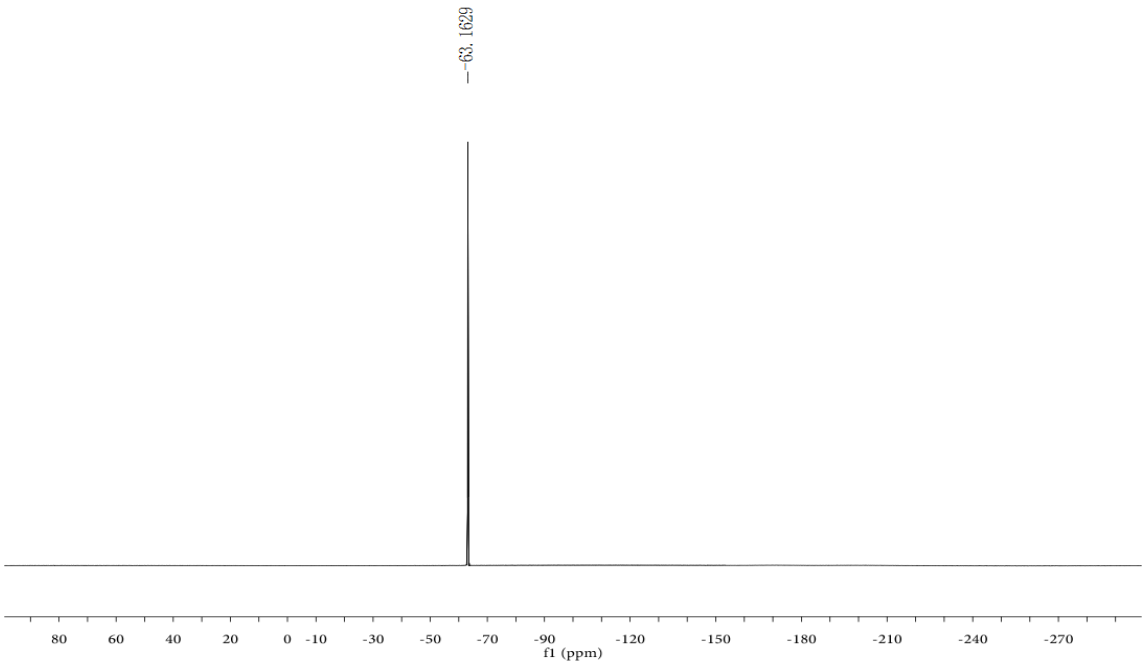



−63.1333
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

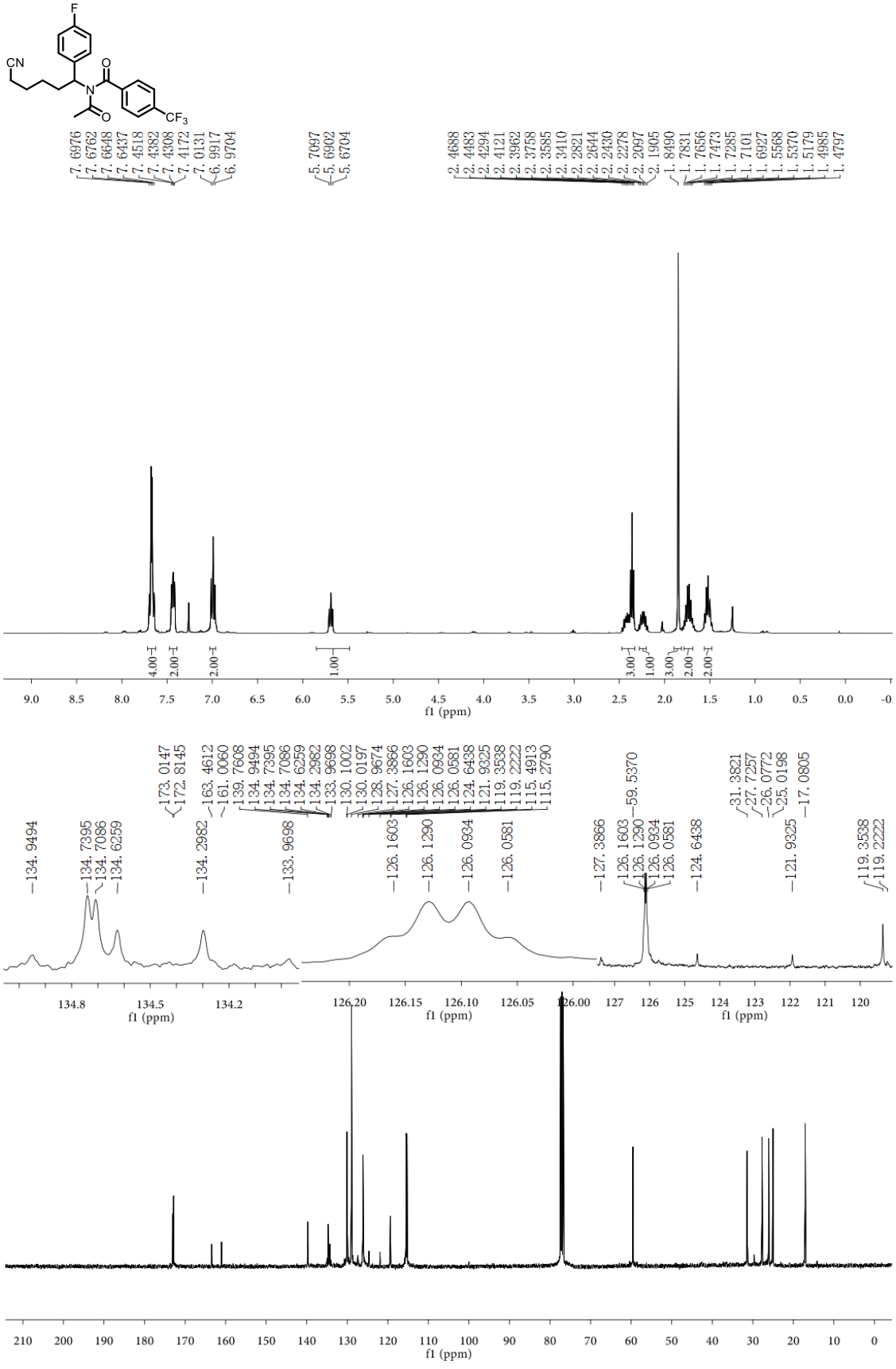
4-(1-(*N*-acetyl-4-(trifluoromethyl)benzamido)-5-cyanopentyl)phenyl acetate (52):

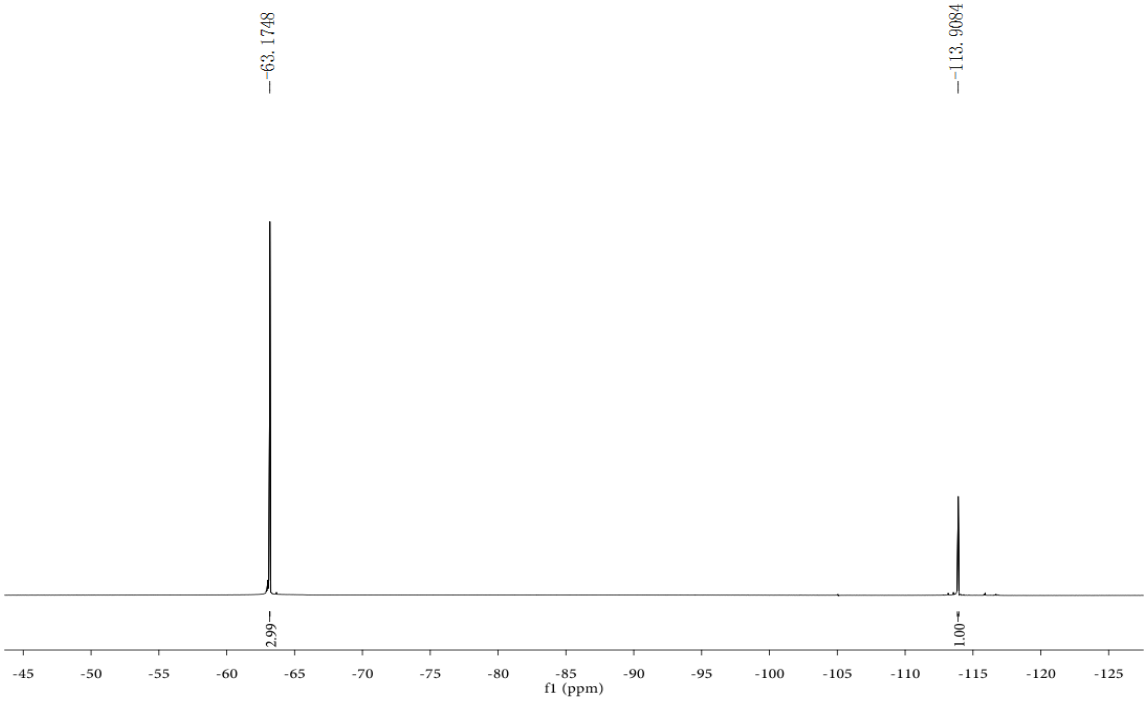




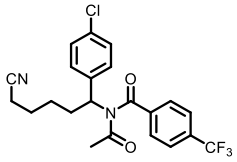

−63.1629
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

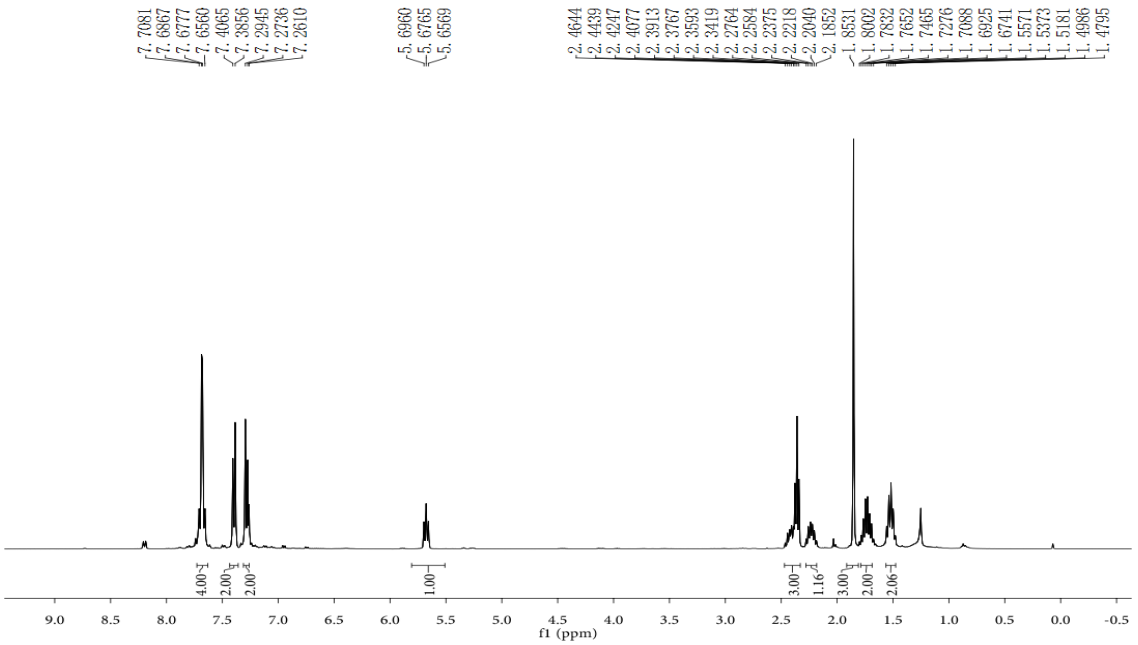
***N*-acetyl-*N*-(5-cyano-1-(4-fluorophenyl)pentyl)-4-(trifluoromethyl)benzamide (53)**:

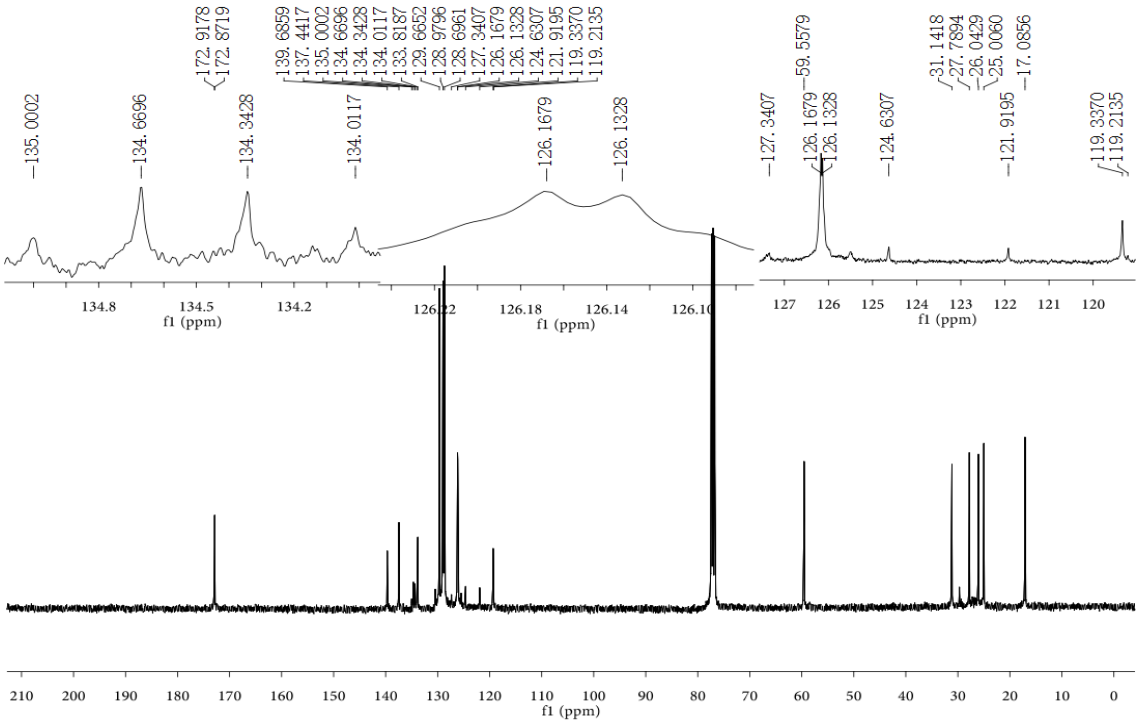


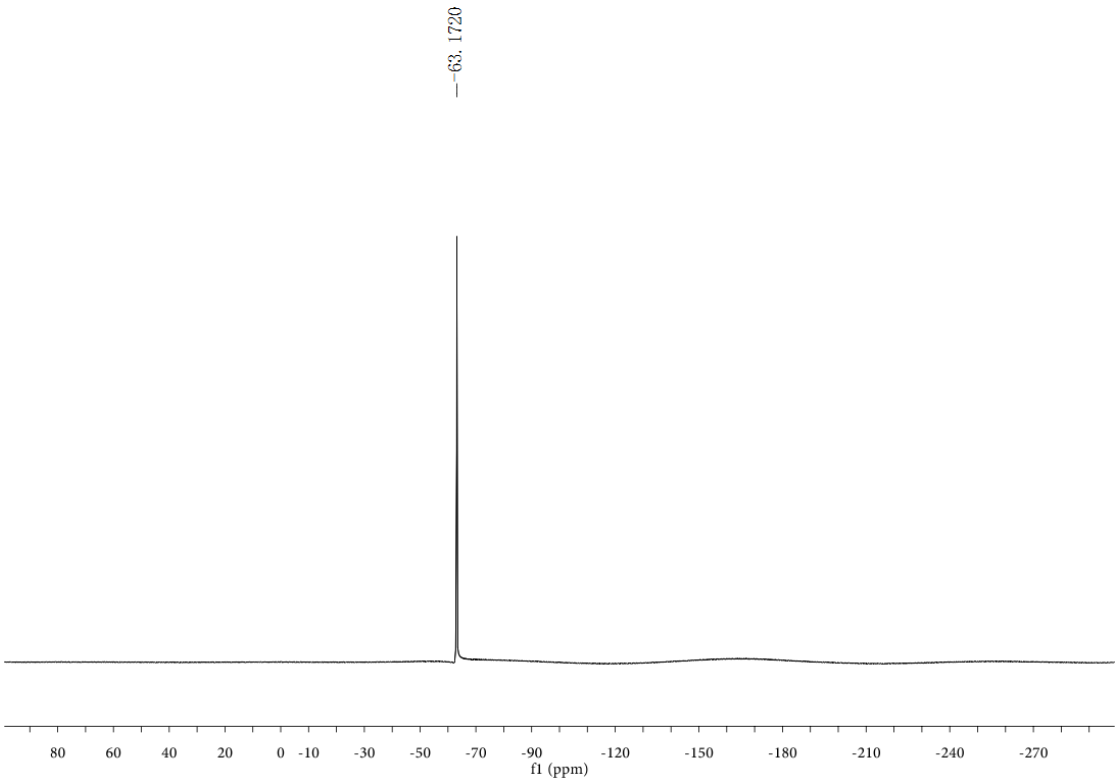

−63.1748
−113.9084
2.99
1.00
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
-115
-120
-125
f1 (ppm)

***N*-acetyl-*N*-(1-(4-chlorophenyl)-5-cyanopentyl)-4-(trifluoromethyl)benzamide (54)**:

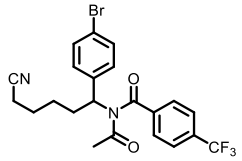


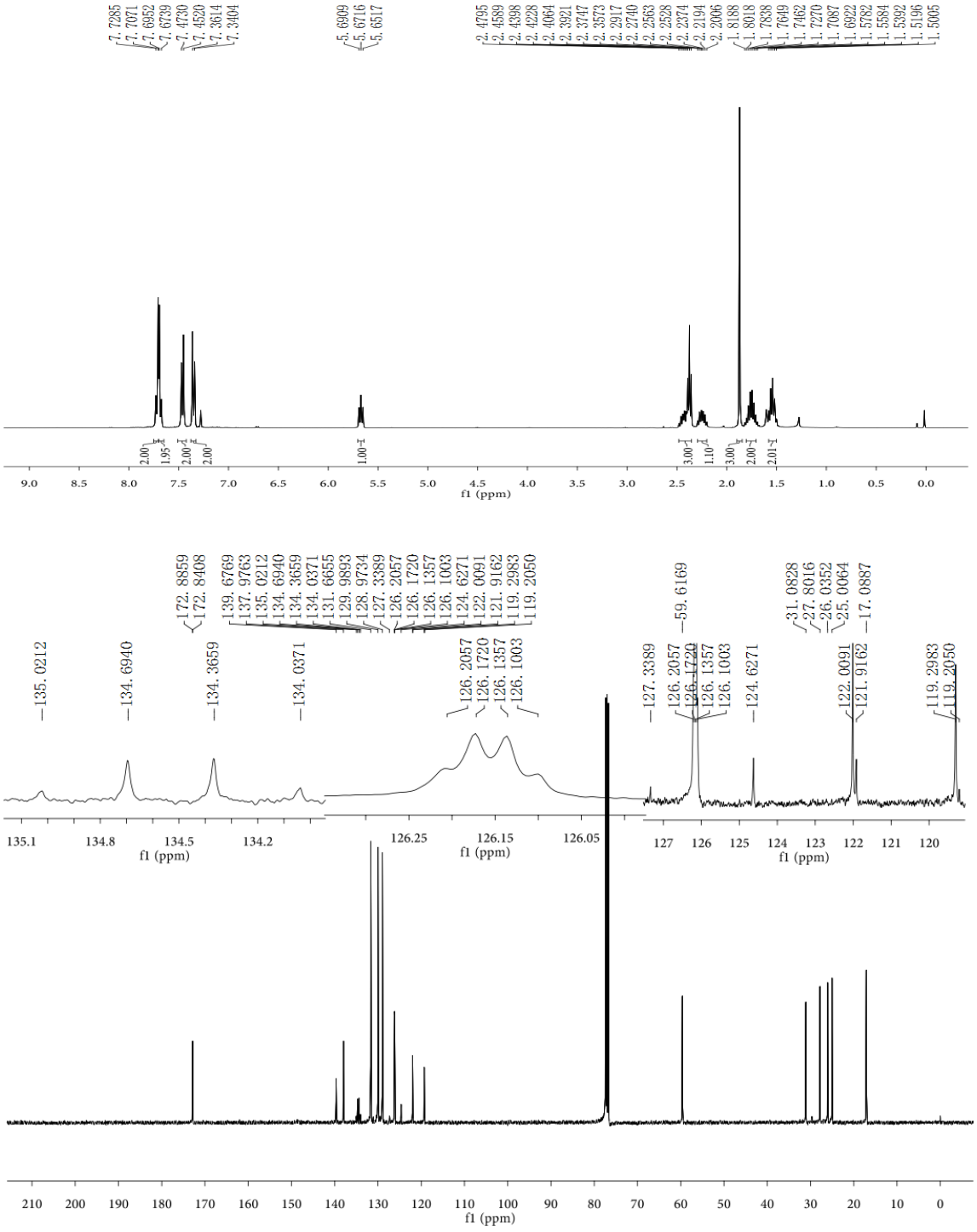


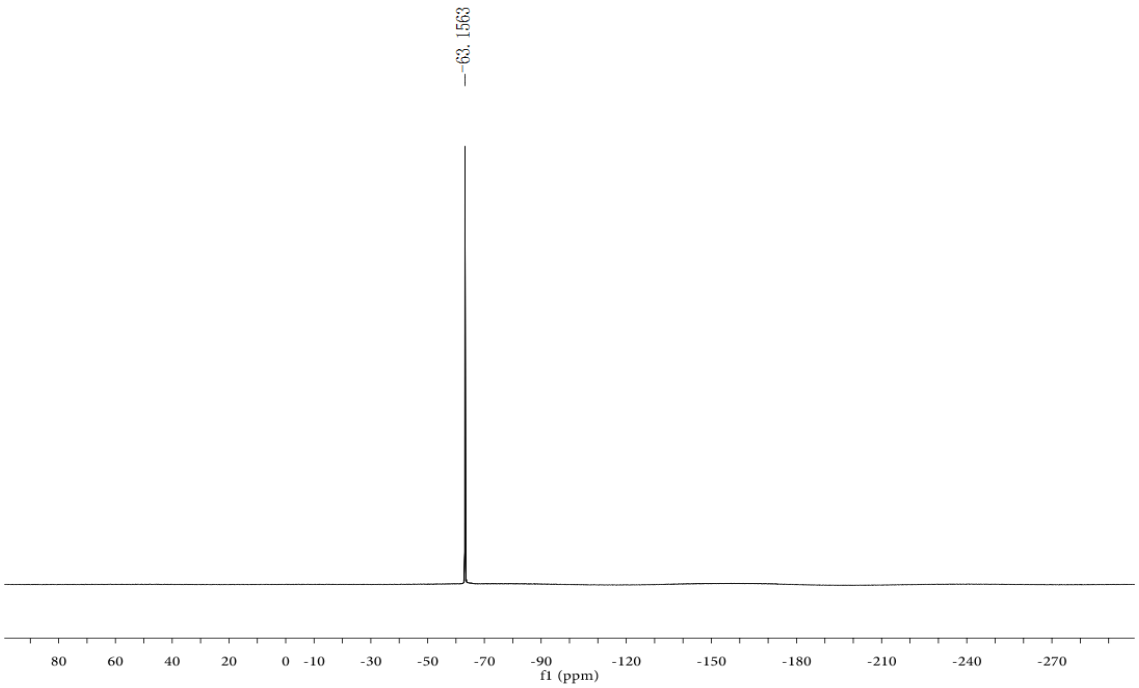



−63.1720
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

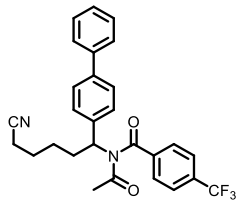
***N*-acetyl-*N*-(1-(4-bromophenyl)-5-cyanopentyl)-4-(trifluoromethyl)benzamide (55)**:

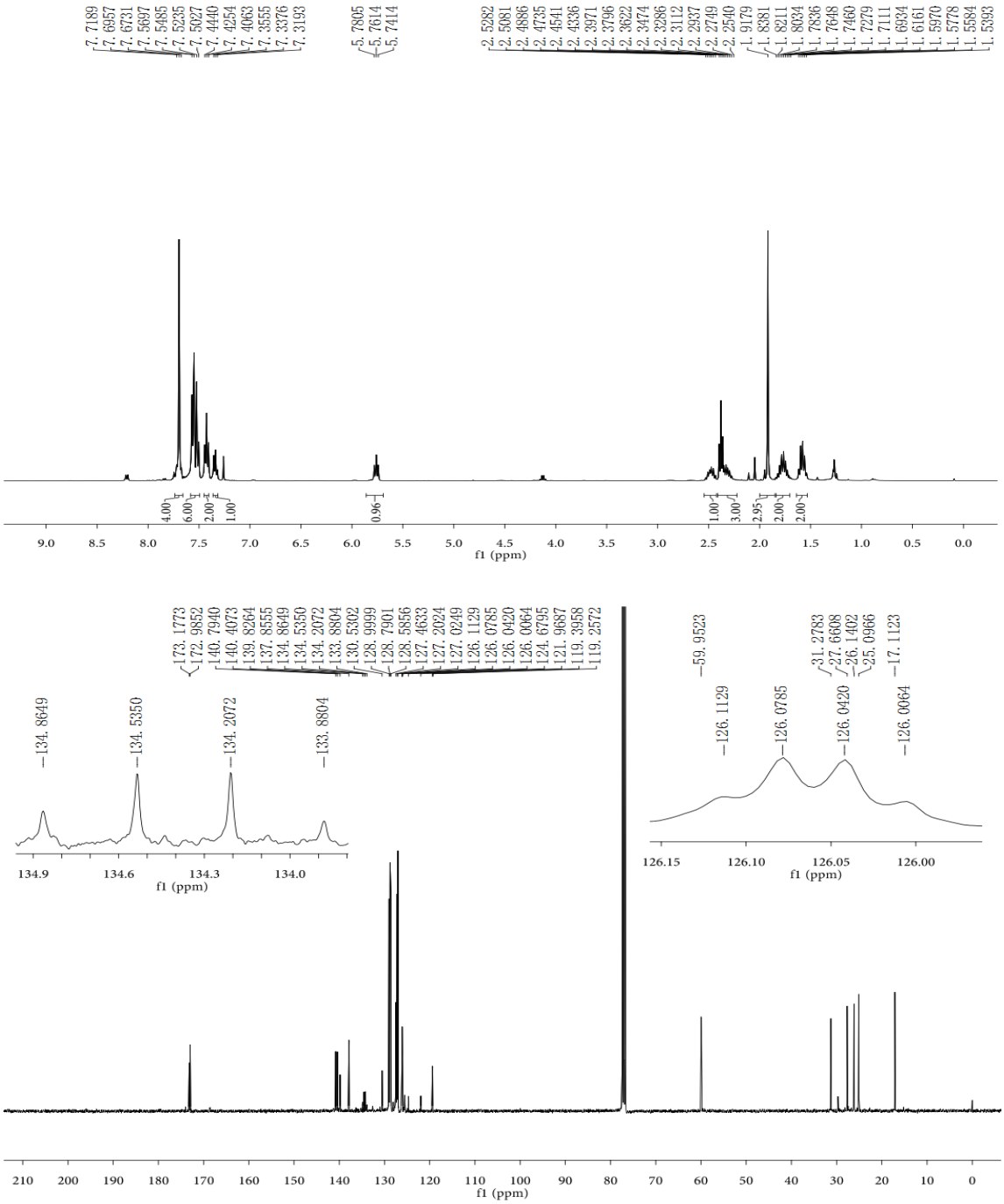


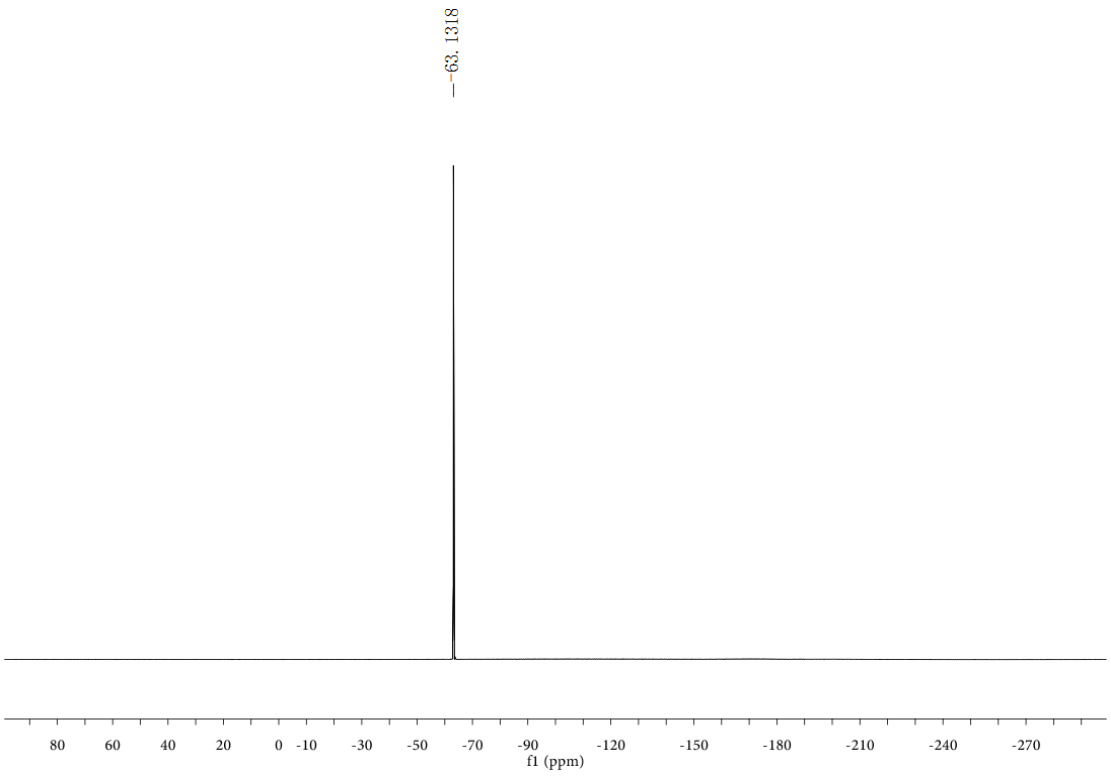



−63.1563
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

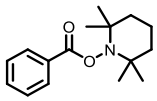
***N*-(1-([1,1'-biphenyl]-4-yl)-5-cyanopentyl)-*N*-acetyl-4-(trifluoromethyl)benzamide (56)**:

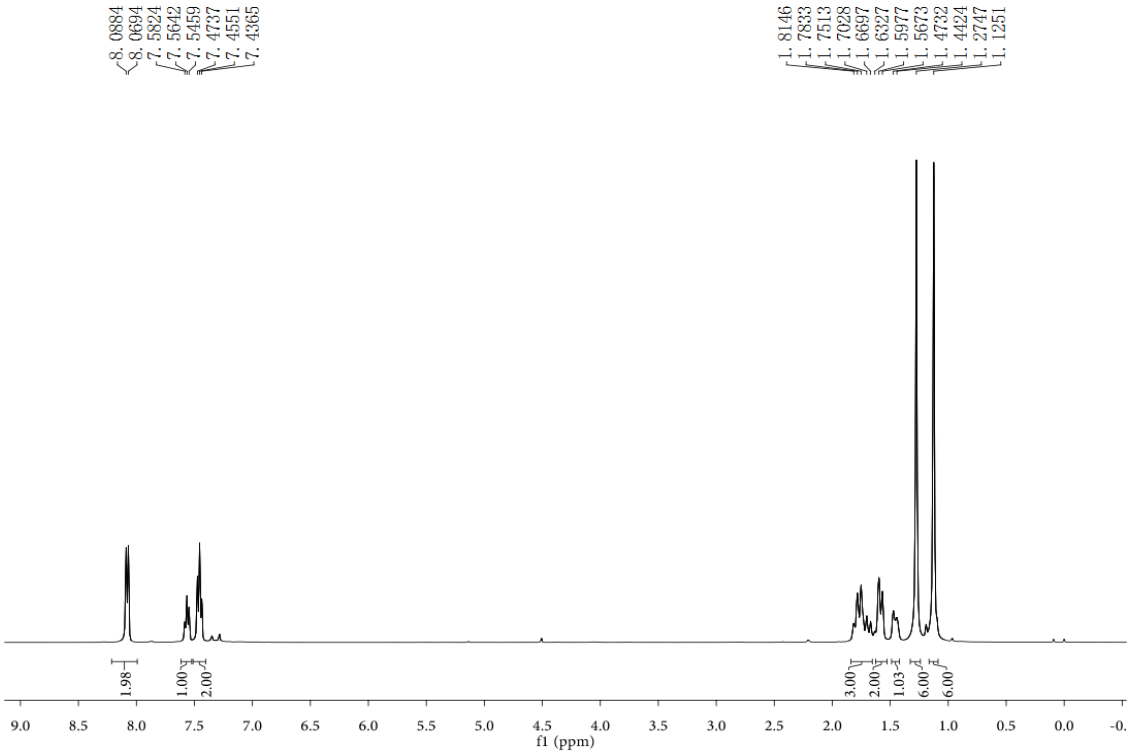


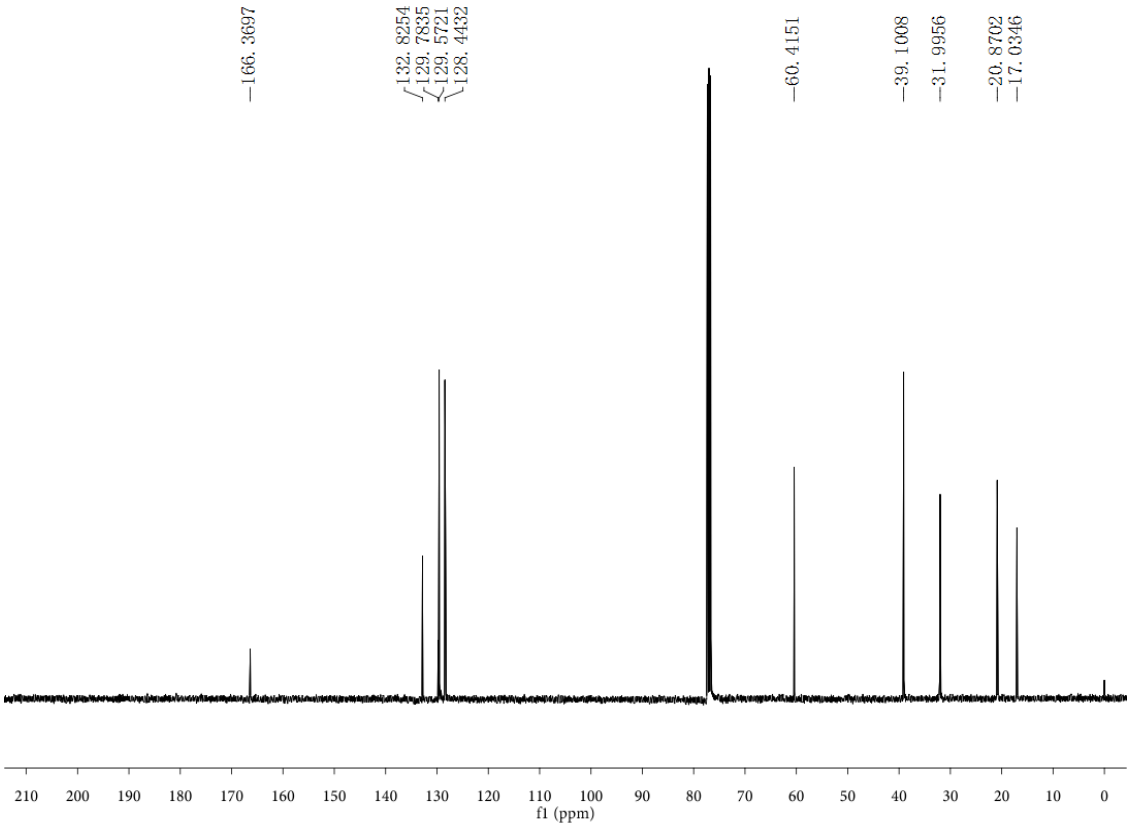



−63.1318
80
60
40
20
0
-10
-30
-50
-70
-90
-120
-150
-180
-210
-240
-270
f1 (ppm)

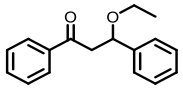
2,2,6,6-Tetramethylpiperidin-1-yl benzoate (57):

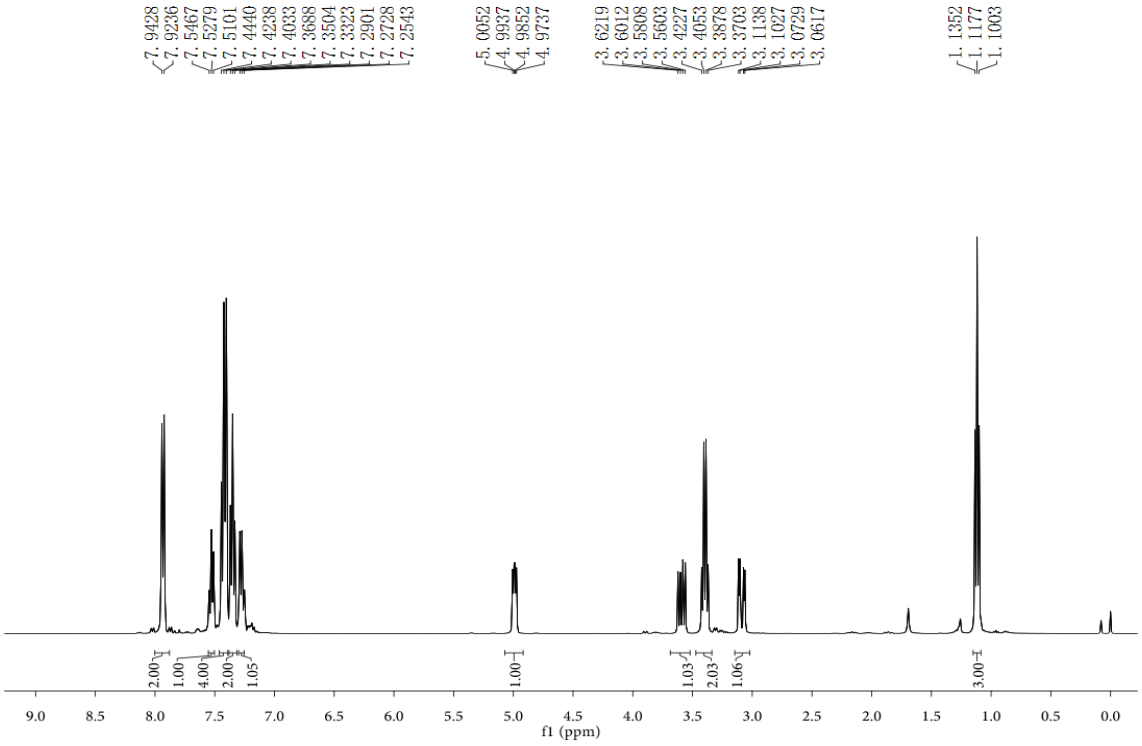


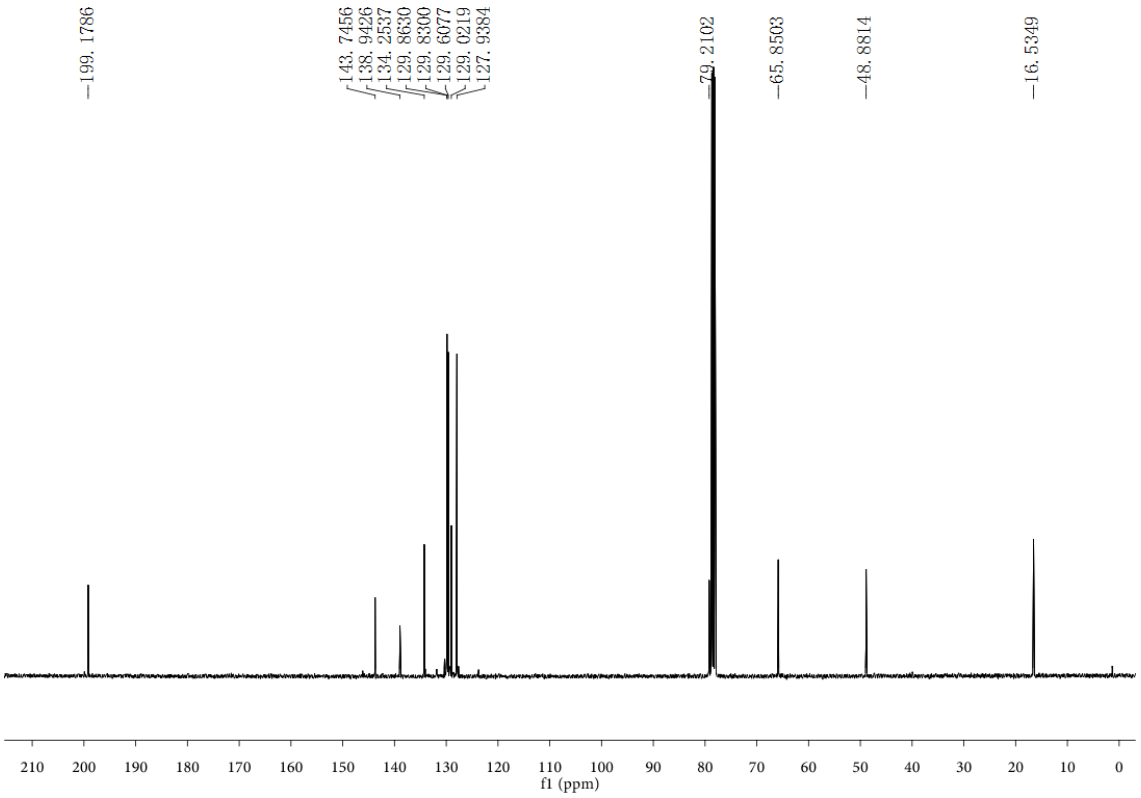




3-Ethoxy-1,3-diphenylpropan-1-one(59):







10. References

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(2) Fan, X.; Lei, T.; Chen, B.; Tung, C. H.; Wu, L. Z., Photocatalytic C-C Bond Activation of Oxime Ester for Acyl Radical Generation and Application. *Org. Lett.* **2019**, 21, 4153-4158.

(3) Shen, X.; Zhao, J. J.; Yu, S. Y., Photoredox-Catalyzed Intermolecular Remote C-H and C-C Vinylation via Iminyl Radicals. *Org. Lett.* **2018**, *20*, 5523-5527.

(4) Yu, X.-Y.; Chen, J.-R.; Wang, P.-Z.; Yang, M.-N.; Liang, D.; Xiao, W.-J., A Visible-Light-Driven Iminyl Radical-Mediated C-C Single Bond Cleavage/Radical Addition Cascade of Oxime Esters. *Angew. Chem. Int. Ed.* **2018**, *57*, 738-743.

(5) Yu, X. Y.; Zhao, Q. Q.; Chen, J.; Chen, J. R.; Xiao, W. J., Copper-Catalyzed Radical Cross-Coupling of Redox-Active Oxime Esters, Styrenes, and Boronic Acids. *Angew. Chem. Int. Ed*. **2018,** *57*, 15505-15509.